ALPINE CITY COUNCIL AGENDA

NOTICE is hereby given that the **CITY COUNCIL** of Alpine City, Utah will hold a Public Meeting on **Tuesday, September 26, 2023, at 6:00 pm,** 20 North Main Street and can be viewed on the **Alpine City YouTube Channel**. A direct link to the channel can be found on the home page of the Alpine City website: **alpinecity.org** Public Comments will be accepted during the Public Comment portion of the meeting.

I. CALL MEETING TO ORDER

A.	**Roll Call**	**Mayor Carla Merrill**
B.	**Prayer:**	**Jessica Smuin**
C.	**Pledge:**	**By Invitation**

II. CONSENT CALENDAR

A. Approve City Council minutes of September 12, 2023
B. Bond Releases

III. PUBLIC COMMENT

IV. REPORTS AND PRESENTATIONS

A. Eagle Scout Presentation-Luke Sherman
B. Report on Radar Speed Limit Signs

V. ACTION/ DISCUSSION ITEMS

A. Resolution R2023:29: Approval of the Lambert Park Management Plan
B. Resolution R2023:30: Approval of the Lambert Park Conservation Easement
C. Request for approval to Expand a Legel Non-Conforming Structure Located at 45 E 100 N.
D. Resolution R2023-32 A Resolution Ratifying a Real Estate Purchase Contract for the Purchase of Real Property Located at 124 East 100 South, Alpine, Utah, and Approving the Purchase and Authorizing the Mayor to Execute the Closing Documents.
E. Resolution No. R2023-20: Amendment to Construction Standard Specifications and Details
F. Approval for Alpine Water Reuse Application with Timpanogas Special Service District
G. Resolution R2023-31: Contract for City Administrator

VI. STAFF REPORTS

VII. COUNCIL COMMUNICATION

VII. EXECUTIVE SESSION: Discuss litigation, property acquisition, or the professional character, conduct or competency of personnel.

Mayor Carla Merrill
September 22, 2023

THE PUBLIC IS INVITED TO PARTICIPATE IN ALL CITY COUNCIL MEETINGS. If you need a special accommodation to participate, please call the City Recorder's Office at (801) 756-6347 x 4.
CERTIFICATE OF POSTING. The undersigned duly appointed recorder does hereby certify that the above agenda notice was on the bulletin board located inside City Hall at 20 North Main Alpine, UT. This agenda is also available on our website at alpinecity.org and on the Utah Public Meeting Notices website at www.utah.gov/pmn/index.html

PUBLIC MEETING AND PUBLIC HEARING ETIQUETTE

Please remember all public meetings and public hearings are now recorded.

- All comments **must** be recognized by the Chairperson and addressed through the microphone.
- When speaking to the Planning Commission/City Council, please stand, speak slowly and clearly into the microphone, and state your name and address for the recorded record.
- Be respectful to others and refrain from disruptions during the meeting. Please refrain from conversation with others in the audience as the microphones are very sensitive and can pick up whispers in the back of the room.
- Keep comments constructive and not disruptive.
- Avoid verbal approval or dissatisfaction of the ongoing discussion (i.e., booing or applauding).
- Exhibits (photos, petitions, etc.) given to the City become the property of the City.
- Please silence all cellular phones, beepers, pagers, or other noise making devices.
- Be considerate of others who wish to speak by limiting your comments to a reasonable length and avoiding repetition of what has already been said. Individuals may be limited to two minutes and group representatives may be limited to five minutes.
- Refrain from congregating near the doors or in the lobby area outside the council room to talk as it can be very noisy and disruptive. If you must carry on conversation in this area, please be as quiet as possible. (The doors must remain open during a public meeting/hearing.)

Public Hearing vs. Public Meeting

If the meeting is a **public hearing**, the public may participate during that time and may present opinions and evidence for the issue for which the hearing is being held. In a public hearing there may be some restrictions on participation such as time limits.

Anyone can observe a **public meeting**, but there is no right to speak or be heard there - the public participates in presenting opinions and evidence at the pleasure of the body conducting the meeting.

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ALPINE CITY COUNCIL MEETING

on **Tuesday, September 12, 2023**

Mayor Carla Merrill called the meeting to order at 6:07 pm.

I. CALL MEETING TO ORDER

A. Roll Call: The following were present at the anchor location and constituted a quorum: Lon Lott, Jessica Smuin, Kelli Law, Greg Gordon, and Jason Thelin.

B. Prayer: Lon Lott

C. Pledge: Jason Thelin

Staff: Shane Sorensen, Ryan Robinson, Steve Doxey, Chief Brian Gwilliam, Chief Brian Patten, and Bonnie Cooper

Others: Greg Smith, David Lynton, Gil Greer, Natalie Slemboski, Claire Slemboski, Clay Shubin, Jeffrey McCellan, Samantha McClellan, Brian Schmidt, Vanessa Hogan, Cathy Farr, Elsie Hume, Jim Bishop, Jennifer Bishop Eric Farr, Mathew Bird, Wes Hume, Emily Teuscher, Jessica Chase, Blake Teuscher, Eric Teuscher, Doug Barton, Robin Barton, MaKay Alldredge, Daniel Alldredge, Sue Mika, Camille Hein, Matt Hein, Rob McFadden, Cheryl Lee Eberting, Michelle Zimmerman Smith, Steve Dennis, Nil Wyatt, Tyler Chatterton, Bryan Hofheins, Brett Ruff, Revan Ruff, Crystal Anderson, Jill LaRiviere, Dan LaRiviere, Porter James, Ian Luna, Camden Blackham, Brynny, Brooky, Quinn Myers, Adam Dayton, Benson Roberts, Josh Williams, Stewart Perry, Jacob Christiansen, Gray Hillstead, Mark Hafen, Amy Hafen, Zacharias Hafen, Aubrey Willimas, Paul Blackham, Amanda Collin, Heidi Smith, Pamela Pamela, Thomas Feppier, Cameron Ketch, Dexter Farnsworth, Zach Brinton, Ida Luna, Isaac Alldredge, Jennifer McIntyre, Dennis McIntyre, Craig Skidmore, E. Bea, Maddie Alggsen, Ann Boyle, Katherine Wilson, Nathan Houten, Krieg Starr, Spencer Scoville, Carter Bolz, Rob Myers, Charlotte Myers, Nate Birch, Tommy Rowley, Deb Rowley, Hayley Ketch, Vickie Reay, Amor De La Monté, Nick Mellar, Ezra Wadsworth, August Gheciu, Heather Paeper, Ian Scoville, Hannah Murdoch, Colin Barton, J. Christian Barton, Madeline Airmet, Madelaine Edwards, Trent Edwards, Ledger Edwards, Nick Hudson, Nathan Nelson, Chris Wareham, Delin Wareham, Chelsea Hertig, Mary Jean Ridges, April Cooper, Robert A. McFadden, Vera Frazier, Stephanie Cotton-Betteridge, Josh Barlow, Darin Paeper, Megan Nelson, Kayla Daniels, Emily Adams, Shelly Butterfield, Tara Mickelsen, Samuel Cotton-Betteridge, Gavin Moody, Quincy Peper, Ross McKinley, Shelley Cox Snarr, Jo Peper.

II. CONSENT CALENDAR

A. Approve City Council minutes of August 24, 2023

B. Approval of New Hook Lift Truck, Premier Truck Group of Salt Lake City: $125,985.00

C. Partial Payment No. 1 – 2023 Overlay Project: Morgan Asphalt: $572,649.94

D. Partial Payment No. 2 – Grove Drive Realignment Project: SMM Excavation: $95,617.12

E. Adoption of Ordinance 2023-23: Updating the City's Zoning Map, to Recognize the Previously Approved Zone Change at 663 Patterson Lane Parcel Number 11:048:0015

F. Approval of Materials Bid for Thermoplastic – Road Safe Traffic Systems: $16,119.44

G. Approval of Striping Bid – All Star Striping: $24,787.00

Mayor Carla Merrill explained the correct amount on item B should be $125,985.00 for the new hook lift truck.

Motion: Lon Lott moved to approve the consent calendar with item B (New Hook Lift Truck) being changed to $125,985.00 and with four different corrections he made to the minutes August 24, 2023, as it pertained to the count of the votes. Greg Gordon seconded the motion. There were 5 yes votes, 0 no votes, and 0 excused as recorded below. The motion passed unanimously.

Yes	No	Excused
Lon Lott		
Greg Gordon		
Jessica Smuin		
Jason Thelin		

DRAFT

Kelli Law

III. PUBLIC COMMENT

No Public Comments were made.

IV. REPORTS AND PRESENTATIONS

A. Eagle Scout Presentation – Elsie Hume

Elsie Hume is presenting her Eagle project, which involves building two mini libraries in Alpine's parks, one at Legacy Park and one at Creekside, preferably near benches or pavilions. She aims to encourage reading in the community, reuse books, and address the absence of libraries in Alpine. Elsie plans to fill the libraries with a variety of book genres and hopes the city can advertise their availability in the monthly newsletter. She intends to work with her troop, friends, and family to build, paint, and install these libraries once she obtains approval. City Council member Lon Lott asked who would be maintaining the libraries. Elsie said her scout troop would check on the libraries every few months. City Council member Jessica Smuin asked if it would be like a book exchange. Elsie answered yes. City Council members Kelli Law and Greg Gordon both liked Miss Hume idea of mini libraries in the park. Mayor Carla Merrill suggested putting one library in at Legacy Park first. She also suggested Elsie work with Jason Thelin to finish her Eagle Scout project.

B. Financial Report

Shane Sorensen gave a financial report update to the council. Property taxes had been received. Revenue Pressurized Irrigation was up but that is to be expected because of the summer months. The annual audit will be starting tomorrow.

V. ACTION/ DISCUSSION ITEMS

A. Public Hearing: Lambert Park Conservation Easement and Management Plan

Mayor Carla Merrill asked Lambert Park Preservation Lambert Park/City Council member Greg Gordon Greg Gordon to discuss the history of the Lambert Park Conservation Plan and Management Plan. Greg Gordon noting that the City Council had previously received unfavorable feedback from the Planning Commission a few years ago. He highlighted that the recent votes in favor of these plans indicated significant improvements. Greg mentioned that the benefit of the current structure is that it retains control of the park for the city's public purposes but reduces the potential incentives to sell or lose control of the park.

City Attorney Steve Doxey expressed his appreciation for the Lambert Park preservation committee's work over the past three years and emphasized that the proposed plans represent a compromise between preserving Lambert Park in perpetuity and having the flexibility to make necessary changes. He highlighted that the management plan gives the city control and responsibility for maintaining the park while preserving its natural beauty. He explained that the elevated voting requirements for amending these plans would ensure public input and transparency.

Steve Doxey also clarified that the current draft allows for the potential addition of paved parking areas in Lambert Park, but this would require a unanimous vote of the council. He addressed concerns about the Moyle Drive extension, stating that the conservation easement does not permanently prevent it from being paved if necessary. He refuted claims that the proposed plans are illegal under the Alpine development code, explaining that the code's provisions about access points pertain to streets within subdivisions, not collector streets like Moyle Drive.

Steve Doxey said he has addressed concerns about potential conflicts of interest among council members, noting that Utah law does not prevent them from participating in discussions or voting on these matters based on their geographic location of residence.

Shane Sorensen spoke about the history of the secondary access road through Lambert Park. Shane Sorensen provided historical context regarding the road through Lambert Park. He mentioned that in the early '90s, the city

was sued by a developer of the Box Elder subdivision, resulting in a settlement agreement requiring the developer to build a secondary access road through Lambert Park. This road was meant for emergency use. Over the years, the road fell into disrepair, and in 2012, after the Quail Fire, the city decided to improve and widen it for both emergency access and as a firebreak. He also noted that the road was accessible for emergency use even before it was paved. In 2019, a lawsuit required the city to maintain the road to ensure that emergency vehicles could access it. The city has been performing maintenance on the road, including grading, adding road base, and snow plowing, over the past 11 years to meet this requirement.

Mayor Carla Merrill opened the public hearing to hear the public's comments. Each resident filled out a comment card. She reminded the

Amanda Collins
1593 Rosanna Lane

Amanda Collins presented two petitions, one with 340 signatures in favor of completing the paving and opening the secondary access road before implementing the conservation easement and the other against the conservation easement. She highlighted the historical context of the Moyle Drive Extension, which has been planned since 1994. She emphasized the need for the road's completion for the safety of residents in the neighborhood. She also mentioned a recent incident highlighting the safety concerns caused by having only one exit crossing the trails through Lambert Park..

Keith Clarke
904 Quail Ridge
Keith Clarke expressed support for preserving the park but sought more information about who would manage it, whether the city or the county, before making any final decisions on the matter.

Steve Bening
13343 Grove Drive
Steve Benning introduced himself and shared that he and his wife, Terry, moved to Alpine Cove five years ago. He mentioned his background in natural resources management/forestry, including training and work on a wildfire crew for the United States Forest Service. He expressed concerns about the safety of Alpine Cove, particularly regarding the evacuation plan during wildfires. He cited examples of recent wildfires, such as the Campfire and the Valley Fire, to highlight the potential dangers and emphasized the importance of taking necessary precautions to protect residents.

Michael Whipple
1551 Box Elder Circle
Michael Whipple expressed support for the conservation easement but emphasized the need for an exception for the road through Lambert Park. He highlighted the importance of having a second access point for the neighborhood, particularly in the winter when the existing exit becomes icy and challenging to navigate. Michael believed that maintaining an unpaved road during winter is difficult due to limited sun exposure. He argued against making it a supermajority vote requirement, stating that this road's controversy should be resolved appropriately.

James Bishop
1105 Grove Drive
Jim Bishop mentioned concerns about traffic on Grove Drive, referencing an unfulfilled promise of installing stop signs to divert traffic onto Alpine Boulevard. He expressed support for a road through Lambert Park to alleviate traffic issues in the area.

Vanessa Hoggan
344 Waynes Court
Vanessa Hoggan expressed her love for Lambert Park and her frustration with the planning and execution of growth in Alpine. She questioned the need for a third party to govern their land, emphasizing that the city government should act in the best interests of Alpine residents. She believed that personal interests were prioritized over safety and the residents' interests. She raised concerns about the neglect of addressing safety and traffic flow around Lambert Park.

Vanessa Hoggan also highlighted that Alpine's city code states that minor streets should encourage circulation but discourage through traffic, and subdivisions with 20 or more lots should provide two working accesses. She disagreed with the city lawyer's interpretation that this code might not apply and argued that it does. She expressed support for paving the road through Lambert Park to ensure safety for park users, students crossing streets, and residents in emergencies. Vanessa urged for a more thoughtful and planned approach to the situation.

Wes Hume
837 cottonwood Circle

Wes Hume, a mountain biker, and frequent visitor to Lambert Park, expressed concerns about the potential impact of paving the road through the park. He acknowledged the need for fire safety but believed that other concerns, such as flooding, were manageable and didn't warrant paving the road. Wes mentioned that the residents living in the area should accept the risks associated with their location.

He proposed an alternative solution, suggesting that the road could remain gravel but with added safety measures like cameras and a speed limit of 10 miles per hour for enforcement. Wes argued that this approach would preserve the natural environment of Lambert Park while addressing safety concerns, ensuring that it remains an enjoyable place for outdoor activities like biking and hiking.

Eric Farr
595 N 400 W

Eric Farr, a long-time Alpine resident, provided several key points against paving the proposed road through Lambert Park:

1. *The general plan of the city does not include the paving of the road.*
2. *Lambert Park is designated as a non-motorized park in the general plan, intended for all Alpine citizens to enjoy.*
3. *Paving the road would disrupt at least six trails, creating safety hazards and reducing trail flow.*
4. *Traffic in this area is already lower compared to other parts of the city, as it is on the outskirts of the city limits.*

Eric Farr also expressed his opposition to paving the road and advocated for the continuation of the conservation easement to protect Lambert Park for the benefit of Alpine's citizens.

Clay Shubin
10 S Wildflower Drive

Clay Shubin highlighted the legal aspects regarding the obligation to pave a secondary access road to the Box Elder subdivisions:

1. *He referred to a court ruling of November 27, 2018, where plaintiffs had requested the city to be legally obligated to maintain a year-round secondary access road for Box Elder subdivisions.*
2. *The court ruled that the secondary access should have a graded gravel surface and must primarily serve as an alternative means for emergency vehicles.*
3. *Clay mentioned a recent incident where the Moyle Road access was used to avoid a road shutdown, demonstrating its effectiveness as an emergency access route.*
4. *Plaintiffs argued that city ordinances required the road to be opened for public use and paved, but the court's decision clarified that the obligation was solely for maintaining it for emergency purposes.*

Clay Shubin emphasized the importance of not compromising safety for mere convenience when considering the road's future.

Jeffery McCellon
770 N Main Street

Jeffrey McClellan, residing at 770 North Main Street, provided a neutral perspective on the proposed road. He conducted an analysis to assess whether the new road would reduce traffic on Main Street. His findings indicated that:

1. *The new road might not significantly decrease traffic on Main Street or Grove Drive.*
2. *For those traveling south and west toward Lehi and American Fork, Main Street and Grove Drive would still be shorter routes than using the proposed new road and Alpine Boulevard.*
3. *However, for those heading south and east toward Cedar Hills and Pleasant Grove, the new road and Alpine Boulevard would be slightly shorter, around a fifth of a mile.*

Jeffrey presented this information to the council, leaving it to their discretion to evaluate the potential traffic implications and whether the proposed road would provide substantial benefits in reducing congestion on Main Street or Grove Drive.

Matt Bird
371 Roberts Circle
Natalie Slemboski
134 Glacier Lily Drive

Natalie Slemboski and Matt Bird, residents of Alpine City, shared their concerns about the proposed road through Lambert Park. They emphasized the importance of Lambert Park for mountain biking and recreational activities, particularly for children.

Key points made by Natalie and Matt:

1. *The proposed road would fundamentally change the park's current use and increase dangers for kids and mountain bikers.*
2. *They believe an unpaved road maintains access to the park while preserving its natural environment for mountain biking.*
3. *Mentioned a rise in cyclist deaths in 2022 and expressed concerns about increased risk due to multiple road crossings if the road is paved.*
4. *Shared personal experiences with accidents involving cyclists crossing roads, emphasizing the need for safety.*
5. *Request a balance between providing emergency access through a paved road while keeping the rest of Lambert Park unpaved and accessible for recreational purposes.*
6. *Reminded the council that some members had run on the platform of a conservation easement, and they believe this reflects the desires of Alpine residents.*

Natalie and Matt urged the council to consider the safety of park users and the preservation of Lambert Park's natural beauty in their decision regarding the road.

Tom Watkins
734 Summitt Way

Tom Watkins expressed his perspective on the proposed conservation easement and the issue of creating a road through Lambert Park. Key points from his comment include:

1. *Tom mentioned the experience of his sister living in Paradise, emphasizing that the lack of a secondary access road was not the primary cause of death and property loss in fires.*
2. *He also highlighted his experience in Lahaina, where a lack of a secondary access road did not result in fatalities during an emergency.*
3. *Tom referred to the recent Alpine election, where three council members focused on issues related to the Blue Bison development and the creation of a road that does not currently exist.*
4. *He noted that the conservation easement and the preservation of Lambert Park without a paved road were significant factors in the election, with most voters supporting these positions.*
5. *Tom expressed his disagreement with some council members but emphasized that he did not question their integrity.*
6. *He called for the council to represent the entire city of Alpine and not prioritize one neighborhood's interests, advocating in favor of the conservation easement based on the desires of Alpine citizens.*

In summary, Tom Watkins supported the conservation easement and encouraged the council to respect the will of the citizens of Alpine in preserving Lambert Park without a paved road.

Morgan Lynch
1247 Moyle Drive
Morgan Lynch expressed concerns about the proposal to pave a road through Lambert Park. He shared a personal incident where his son was run over by a truck on Alpine Boulevard, highlighting the dangers of traffic on such roads. Morgan emphasized that turning the park into a paved road with six trails would create visibility issues, increase speeds, and pose safety risks. He also expressed opposition to alternative solutions like underpasses, believing they would detract from the park's beauty and overall experience.

Gil Greer
1523 E Box Elder Drive
Gil Greer expressed his concerns about the proposed road through Lambert Park. He appreciated the efforts of council members like Kelli Law in stopping development in the Blue Bison area but noted that this situation is different, as the road in question had been planned since he moved into the development in 2007. He mentioned discussions with council members like Jessica Smuin and Jason Thelin regarding traffic concerns and highlighted the need for safety for residents living near Box Elder. Gil Greer suggested a compromise that would involve paving the road and providing safety measures like underpasses for bikers to maintain both safety and accessibility.

David Lynton
136 N Preston
David Linton an avid mountain biker, expressed his support for the conservation easement. He referred to the Alpine General Plan adopted in November 2021 and highlighted several points from it. The plan emphasizes pedestrian safety, the designation of traffic trails for specific uses, and Lambert Park's designation as a non-motorized park. David expressed concerns about increased traffic and the potential danger it poses to mountain bikers, aligning his perspective with the principles outlined in the General Plan
.

Greg Smith
1365 Box Elder Dr.
Greg Smith addressed the misconception that a developer is behind the road paving proposal for Lambert Park. He clarified that the developer had already sold all the lots in Lambert Park Estates and had no incentive to pave any roads. He argued that the conservation easement primarily concerns a short stretch of dirt road connecting Box Elder Way to Moyle Drive, which was open for decades but was closed off with the city's recent master plan.

Greg Smith pointed out that some claim safety concerns regarding trails crossing the road, but there are already trails crossing paved roads in Lambert Park. He argued that a finished dirt road would result in fewer cars using Box Elder Drive, reducing encounters with bikers there. He also mentioned the possibility of viaducts and emphasized the importance of safety for the residents of Box Elder.

Michelle Smith
1365 Box Elder Dr.
Michelle Smith showed a photo to the room. The photo illustrates the rapid movement of fires and highlighted the importance of fire safety. She mentioned that in the past 30 years, there have been ten fires near Box Elder Drive, emphasizing the need for safety measures. Michelle argued that the responsibility for protecting citizens falls on the city, and the argument that residents chose to live there does not absolve the city of its duty.

She also referred to past situations where property owners sued the city for preventing development, emphasizing the legal right of residents to live in the area. Michelle Smith expressed her support for the conservation easement and urged the city to prioritize safety and conservation.

Lane Franks
866 N Country Manor Lane
Lane Franks, residing at 866 North Country Manor Road, shared his perspective. He mentioned his involvement in discussions about Lambert Park over the past decade and pointed out the importance of preserving the park for safety reasons. Lane stated that the city's experts have consistently supported the conservation easement for safety purposes, and he emphasized the need to prioritize conservation for the community rather than convenience for a few residents.

Brett Ruff
380 Silver Circle
Brett Ruff, who resides at 380 Silver Circle, shared a recent incident where he and his son were mountain biking in Lambert Park, and a Ford F-150 nearly struck his son while he was crossing High Bench Road. Brett stressed that the gravel road is long, steep, and straight, making it easy for cars to travel at high speeds, potentially endangering cyclists, and pedestrians. He highlighted the danger of vehicles being on the road, as evidenced by the incident involving his son and emphasized the need for safety in Lambert Park, particularly for children who frequent the area.

Stuart Peay
469 Glacier Drive
Stuart Peay emphasized the importance of preserving Alpine's character and the town's appeal. He addressed the rights of landowners and development agreements with the city, emphasizing the court's interpretation that the road should be a dirt road.

Stuart Peay raised the question of whether Alpine should prioritize development and increased roads over what residents' love about the town. He argued against turning Lambert Park into a developed area for convenience, emphasizing that dirt roads can serve evacuation purposes effectively.

Stuart Peay also advised specifying the easement details to avoid potential legal issues, underscoring the importance of clarity in such agreements.

Chris Wareham
13425 Bayberry Circle
Chris Wareham briefly mentioned that he had come to the meeting expecting to discuss potential trail closures north of town, possibly for mountain biking, but since that topic was not being addressed, they decided to yield their time back.

Robert McFadden
1513 Box Elder Drive
Robert McFadden represents a coalition of individuals who are concerned about the safety of the road through Lambert Park. He shared a personal experience involving the tragic loss of his son and emphasized the importance of quick emergency response times. He expressed concerns about the safety of bikers and mentioned that safety should be a primary consideration. Mr. McFadden also mentioned his willingness to work on safety improvements and called for a more thoughtful approach rather than a simple "yes" or "no" decision on the road's status.

Vickie Reay
1502 Box Elder Dr
Vickie Reay expressed concerns about the safety of cyclists crossing roads, specifically at Box Elder Drive, and suggested that the city should consider installing a gate, poles, or other traffic-calming measures to improve safety. They mentioned that some cyclists don't stop at intersections and highlighted the need for roadblocks to ensure cyclists crossroads safely. The speaker also voiced support for paving the road for emergency access and shared their experience during a fire and flooding incident when access was limited.

Amy Hafen
1281 Moyle Dr
Amy Hafen expressed concerns about the proposed paving of the road through Lambert Park. She cited issues with speeding on the current road, emphasizing that even if the road were paved, drivers would still need to adhere to speed limits for safety. Amy mentioned that some people build outside of city limits and then expect the city to handle the resulting issues, and she also mentioned that the property on the other side of Lambert Park may not even be part of the city. She questioned whether paving another road would make it safer for cyclists, given that they would still need to cross the road. Amy also highlighted the number of children living on Moyle Drive and expressed her concerns for their safety.

Craig Skidmore
13447 Alpine Cove Drive

Craig Skidmore, who was previously head of the trails committee for five years, expressed gratitude towards the city council for what he sees as a balanced compromise in the Lambert Park plan. He acknowledged that parts of Lambert Park have already been sold off in the past due to the lack of a supermajority requirement. Craig particularly commended the plan's provision for a supermajority vote, allowing the city to adjust its approach in the future. He also mentioned the straightening of Grove Drive as an improvement that could benefit park access and traffic flow.

Heidi Smith
860 Alleganey Circle
Heidi Smith expressed her support for maintaining Lambert Park as a non-motorized park. She reiterated her love for the park in its current state and emphasized her desire to conserve it as is.

Annette Flygare
913 E Quail Ridge
Annette Flygare expressed her support for the easement and her opposition to paving a road through Lambert Park. She commended the city council for their work on the park's trails and infrastructure, emphasizing her desire to preserve it in its current state.

Sue Mika
1020 Sunbrook Circle
Sue Mika expressed appreciation for the discussions and shared opinions. She emphasized the importance of open space, natural beauty, and outdoor opportunities as key reasons for living in Alpine. Sumika suggested that paving a road through Lambert Park might alter its identity, potentially causing confusion among users about its intended purpose. She hoped that the park would be preserved for its current uses, primarily emergency access.

Dexter Farnsworth
10124 N Yorkshire Court
Dexter Farnsworth highlighted the potential risks associated with not everyone adhering to the rules. He acknowledged the propensity for teenagers, including himself, to make poor decisions, given that their brains are still developing. He emphasized that even one person not following the rules could lead to a dangerous situation. He expressed concerns about the increased risk of accidents if the road were paved and allowed more traffic from the upper neighborhood into the rest of Alpine.

Charlotte Myers
333 E Maple Drive
Charlotte Myers expressed their deep love for Lambert Park and their desire to protect it. They mentioned having a younger brother who is just learning to ride a bike and expressed concerns for his safety. The speaker shared a scary experience when their brother was almost hit by a car while riding at Lambert Park.

Shelly Butterfield
1360 Grove Dr
Shelly Butterfield, who has lived on Grove Drive for 27 years, reminisced about the peaceful past of the area when cars rarely passed by. They expressed concerns about the speeding cars and mentioned various scary experiences they have had as a pedestrian, cyclist, and horseback rider. The speaker emphasized the importance of preserving open spaces like Lambert Park for the mental and physical health benefits, especially for children. They urged the council not to build a road for the convenience of a few, as it could endanger parkgoers and detract from the park's aesthetics.

Stephanie Cotton- Betteridge
1443 E Box Elder Dr.
Stephanie Cotton-Betteridge addressed Mr. Steve Doxey's comments regarding conflicts of interest. She referenced Alpine Code 306.030, which states that council members should declare a conflict or recuse themselves from voting when a decision affects them personally. Stephanie expressed concerns that such recusals or declarations have not been consistently applied in previous decisions, especially related to the Box Elder Drive extension. She clarified that her comments were not questioning the personal integrity of council members but rather the decisions they make concerning issues close to where they live.

Mayor Carla Merrill suggested Stephanie meet with the city attorney after the meeting.

Heather Peper
380 Silver Circle
Heather Peper emphasized the importance of preserving Lambert Park for mountain biking and other outdoor activities. They compared the idea of paving a road through the park to paving a road through sports fields like soccer or baseball fields, highlighting that this would be met with outrage. The speaker also mentioned that stopping along the trail, as suggested by some, is not practical for mountain biking, as it disrupts the flow of the sport. They stressed that mountain biking is not limited to teenagers and that people of all ages, including children and families, participate in this activity. The speaker pointed out that the mountain bike team is a significant part of the community, and getting outside for mental health benefits is crucial for many residents.

Brian Hoffeins
1612 Prospect Lane
Brian Hoffeins suggested a potential solution to the issue by proposing the construction of a paved road over Lambert Park with a conduit for safe passage underneath for recreational users. They also questioned why there is a lack of trust in future decisions made by the council and suggested that the current system of decision-making has worked well in the past. Additionally, the speaker mentioned the challenges faced during winter due to steep terrain and the potential for accidents and pileups on the road. They highlighted the importance of considering emergency access in the area.

April Cooper
1136 Birch Circle
April Cooper expressed support for the compromise reached on the Lambert Park issue, mentioning their initial concerns about a group from Salt Lake City managing Alpine's interests. They proposed considering an overpass from Lambert Estates and Box Elder over Lambert Park as a potential solution to minimize the impact on local roads. The speaker also emphasized the importance of separating the issues of traffic on Moyle from putting Lambert Park in a conservation easement. They disagreed with the idea that council members should not recuse themselves due to potential economic benefits related to home values. Finally, they mentioned concerns about council members recruiting individuals to run for office on this issue.

Jo Peper
380 Silver Circle
Jo Peper expressed her opposition to having a road through Lambert Park, citing concerns about safety for bikers and pedestrians. They mentioned accidents involving bikers who were hit by cars and highlighted the importance of preserving Lambert Park as a recreational space for the community's future generations. ….

Samuel Cotton- Betteridge
1443 Box Elder Drive
Samuel Cotton Betteridge a resident of Alpine since 1994, emphasized that the discussion should focus on the Lambert Park management plan rather than the specific issue of paving while Drive. They suggested that the plan should be put to a vote by Alpine citizens rather than being decided solely by the City Council.

Cameron Ketch
734 Cumberland Court
Cameron Ketch expressed gratitude for the City Council's effort to carefully evaluate the different options regarding Lambert Park. They acknowledged the emotional nature of the issue and shared their hope that Lambert Park can remain preserved due to its significance to Alpine. They also emphasized the importance of considering the safety of residents higher up in the park and suggested seeking a compromise.

Mayor Carla Merrill expressed gratitude for the opportunity to share their thoughts and encouraged respectful dialogue. They mentioned that the City Council will review the comments and vote on the conservation easement and management plan in two weeks. She said there would be a three-minute break.

B. Resolution No. R2023-28: Amendments to the Timpanogos Special Service District Interlocal Agreement

Shane Sorensen mentioned that Lon Lott serves as the representative on the Timpanogos Special Service District (TSSD) board, which is proposing to reorganize as a special district due to changes in state law. This reorganization would streamline the process and reduce the county's control over the TSSD. The county had requested this change to address certain financial requirements they must meet. This reorganization would allow each city, including Alpine, to have more say in how the TSSD operates.

Motion: Jason Thelin moved to approve Resolution No. R2023-28 including reorganization of the Timpanogos Special Service District. Kelli Law seconded the motion. There were 5 yes votes, 0 no votes, and 0 excused as recorded below. The motion passed unanimously.

Yes	No	Excused
Lon Lott		
Greg Gordon		
Jessica Smuin		
Jason Thelin		
Kelli Law		

C. Contract for City Administrator

VI. STAFF REPORTS

Chief Brian Gwilliam

Chief Brian Gwilliam discussed the use of Flock cameras in Alpine. He reported two recent success stories involving the use of these cameras:

1. **Vehicle Burglary**: On July 15, 2023, officers responded to a vehicle burglary in progress in Alpine. The suspect stole a purse from a vehicle and fled the scene. Flock cameras captured images of the suspect's vehicle, which were used to identify the vehicle and the suspect. The suspect was subsequently arrested.
2. **Bicycle Theft**: On July 22, 2023, a bicycle theft occurred in Highland. The suspect, who was an Amazon delivery driver, stole a bicycle while making deliveries. Flock cameras captured images of the suspect's vehicle, and detectives used this information to locate the suspect and recover the stolen bicycle. The suspect was arrested.

Chief Gwilliam emphasized that the use of Flock cameras has been instrumental in solving these cases quickly. He also mentioned the transparency portal on the Lone Peak Police Department's website, which provides information about camera usage and access policies. The portal allows the public to see data related to camera searches and usage.

Additionally, the council discussed the expansion of the Flock camera network, including cameras in the Three Falls area. Council members raised questions about the cost and access to the cameras, and Chief Gwilliam clarified that the subscription cost is covered by the police department's budget. The cameras are accessible to other law enforcement agencies in the region, enhancing cooperation and information sharing.

Ryan Robinson

Ryan Robinson explained that with the recent mass gathering code amendment, he has had questions specifically related to fun runs and races. The council sought clarification on what constitutes a race and whether events taking place on school properties would be exempt from certain regulations. It was mentioned that if an event is timed, includes medal distribution, or involves number bibs, it may be considered a race.

Council members asked for an update on the upcoming PARC tax vote. Arguments for and against the tax are due by the 18th of the month, and the council encouraged residents to become informed about the tax's implications. There was a suggestion to hold an informational meeting for the public, possibly during a city council night, to

educate residents about the park tax. The council would look into the possibility of sharing videos from other cities to provide information about the tax.

Bonnie Cooper

Sample ballots would be posted on September 22, 2023.

Shane Sorensen

Shane Sorensen covered various projects and updates related to construction, community events, and city operations in Alpine:

1. **Comcast Construction**: Comcast had started construction work in Alpine Cove and Box Elder, but they encountered challenges related to the terrain. Boring machines were not effective in these areas, leading to the need for pre-construction discussions. The city aimed to ensure that the construction work did not disrupt residents' landscaping and that proper restoration measures were in place.
2. **Day of Service Recap**: A summary of the recent Day of Service was provided, highlighting the various projects and activities that took place. These included indoor and outdoor projects, such as making sleeping mats, blankets, hygiene kits, and providing meals. Additionally, work was done on bridges, sodding at the cemetery expansion, and painting a bridge at Peterson Park. It was noted that volunteers and the community were enthusiastic about participating and plans for next year's event were already underway.
3. **Rodeo Bleachers**: Cody Smith was working on ideas for the rodeo bleachers, and more information about this project would be presented in the future.
4. **Main Street Overlay**: An update on the Main Street overlay project was provided. While the project had been causing some inconvenience for residents, it was progressing. The project involved milling the old asphalt and repaving Main Street. Additional work and costs were necessary to ensure that the road was properly constructed, and this would be discussed with the City Council.
5. **Roundabout and Road Closures**: There was a detailed plan for the upcoming work on the roundabout and road closures in the Main Street area. The closure would allow for milling and repaving, with the goal of minimizing inconvenience for residents and ensuring the safety of the construction site.
6. **Grove Drive Realignment**: The update on the Grove Drive realignment project included the completion of wing walls for the box culvert. This project was progressing well, with a timeline for further work.
7. **Burgess Park**: There were ongoing developments in Burgess Park, including the placement of gravel for new trails. The park was undergoing significant improvements.
8. **Water Quality Concerns**: Concerns about water quality, specifically regarding brown water and E. coli in the Lehi area, were briefly discussed. It was mentioned that such issues can occur when fire hydrants are activated and stir up sediment in water lines. However, more information was needed on this topic.
9. **Staffing and Recruitment**: The city was actively recruiting for positions, particularly with the departure of Heidi Jackman.

VII. COUNCIL COMMUNICATION

Lon Lott

Lon Lott asked for an update on the fruit stand on Alpine Highway. Ryan Robinson discussed centered around the Alpine Peach Stand and the challenges it was facing. Here are the key points:

1. **Conditional Use Permit**: The Peach Stand had received approval for a conditional use permit at the Planning Commission level to construct a new building. However, due to various delays, the new building had not been completed in time.
2. **Temporary Operation**: As a result, the Peach Stand had been operating out of its old building. To address this situation temporarily, they had put up "no parking" signs along the side where the stand was located.
3. **Traffic and Parking Issues**: The main issue was that people were crossing the road to get to the stand, leading to safety concerns. The Peach Stand had placed "no parking" signs and orange cones to address this issue.

4. **Need for More Permanent Signs**: It was noted that the current signs did not look very official, but more permanent signage would be installed when the new building was ready. This would help in enforcing parking regulations.
5. **Parking Concerns with New Location**: There was a concern that when the Peach Stand moved to its new location, which had limited parking spots, additional parking issues might arise. It was unclear where the overflow of cars would park, especially if the new location became popular.
6. **Planning for New Parking**: To mitigate this issue, there was a suggestion to discuss with the Peach Stand the possibility of creating more parking spaces on their property by potentially removing some trees. Additionally, the question of whether the Peach Stand should be required to provide more parking spaces would be examined.
7. **Ticket Sales Coverage**: It was mentioned that revenue from ticket sales could potentially cover the cost of creating more parking spaces without causing significant financial hardship.

Overall, the discussion revolved around managing parking issues at the Peach Stand's current and future locations and ensuring public safety during their operations.

Jessica Smuin

Jessica Smuin said she attended Utah Outdoor Recreation Summitt and was a keynote speaker. She spoke about The Alpine's aging healthy program and how Alpine is supporting our seniors. She asked for the council for feedback about using federal funding through the Land and Water Conservation Fund (LWCF) for Lambert Park. Here are the key points:

1. LWCF Grant: The LWCF is a federal grant program that provides funding for outdoor recreational projects. There are millions of dollars available through this grant program.
2. Potential Park Updates: The idea was to explore the possibility of using LWCF funding to update Creekside Park. The updates could include replacing the water feature and making the playground more in line with current trends, possibly incorporating natural elements.
3. Matching Funds: The council expressed an interest in knowing the matching fund requirements for the LWCF grant. Understanding the matching fund obligation is crucial to determine the financial commitment required from the city.
4. Timing: Timing was considered important, and it was suggested that there should be sufficient time for planning, obtaining bids, and completing the necessary paperwork to secure the grant.
5. Long-Term Project: Updating the park using LWCF funding is seen as a long-term project that would involve multiple steps, including creating specifications and obtaining outside expertise.

The discussion highlighted the potential opportunity to enhance Creekside Park using federal funding, and further exploration of the grant requirements and project details would be needed to move forward.

Kelli Law

Kelli Law asked why Resolution No. R2023- was not on tonight's agenda. Shane Sorensen said he and Alpine City Engineer wanted to meet with Kelli Law before the next City Council meeting to go over his questions on the Resolution. Shane Sorensen listed a few key points of why the resolution was needed:

1. Background: A while ago, there was a change in an ordinance or engineering standard related to road excavation, which allowed for excavation within a certain timeframe. However, the discussion about this change was not scheduled for the current meeting as it was a public hearing.
2. Discussion with Jed: Jed, who seems to be an individual responsible for handling this matter, had been trying to get in touch with someone to discuss the proposed changes. A response to Jed's inquiries was expected to determine if a work session was needed to go over the details of the proposed ordinance.
3. Concerns About Arbitrary Decisions: There was a concern about the potential arbitrariness of the ordinance, especially regarding what constituted an emergency for road excavation. The aim was to make the ordinance more specific and less arbitrary in its language.
4. Example: An example was provided where another city had to deal with a situation where a utility company wanted to replace a pipeline that ran under recently paved roads. Such situations could be planned differently if there were clear guidelines in place.

5. Moratorium on Road Cuts: It was mentioned that it's common for cities to have moratoriums on cutting roads, especially when they've recently been paved. UDOT (Utah Department of Transportation) also follows similar practices.
6. Research and Proposed Language: Jed conducted research on how other cities handle road excavation and proposed language for the ordinance.
7. Future Meeting: The plan was to include this discussion as an action item in the next meeting's agenda. If there were many questions or concerns from the council members, a work session could be scheduled to go over the details with Jed.

Overall, the discussion revolved around the need for clear guidelines regarding road excavation to prevent arbitrary decisions and ensure the city's infrastructure was maintained effectively.

Greg Gordon

Greg Gordon said he and Chief Patten met with a fire alert system. Here are the key points:

1. **System Overview:** The city officials had met with a couple of companies that offered a fire alert system. This system was designed to provide 24-hour fire monitoring and early detection. The system would be placed on a high hill, allowing it to rotate and identify fires that start on hillsides or homes within a minute.
2. **Human Verification:** One of the crucial features of this system was human verification. Once the system identified a potential fire, it would confirm the alert with human operators. These operators would then notify the fire department or dispatch accordingly.
3. **Cost-Effective:** The system was considered cost-effective, making it an attractive option for the city.
4. **Fire Chief's Input:** The Fire Chief also provided input during the discussion. He emphasized the potential benefits of the system, such as providing firefighters with extra time, which could make a significant difference in responding to wildfires.
5. **Formal Recommendation:** The city officials were seeking a formal recommendation from the Fire Chief regarding the adoption of this system. The decision to move forward with the system would likely depend on its effectiveness and cost.
6. **Early Pricing:** The city officials mentioned that they would be obtaining early pricing information from one of the companies the following week. This information would likely be crucial in deciding.

Overall, the discussion revolved around the potential adoption of a fire alert system with human verification, with a focus on its benefits and cost-effectiveness. The Fire Chief's recommendation would play a significant role in the decision-making process.

Mayor Carla Merrill

Mayor Carla Merrill discussed the following:

1. **Collecting Sales Tax for Milkshakes:** There was a question about whether the city could collect sales tax from Cherry Hills Farms for milkshakes they sell. It was confirmed that the city already collects sales tax for milkshakes, and this process is handled in conjunction with the county. Typically, businesses settle their sales tax obligations at the end of the season.
2. **Red Curbs:** There was a suggestion to continue using red curbs in the city. Additionally, it was mentioned that if any youth groups or scouting groups were looking for service projects, they could help repaint the red curbs along Canyon Crest Road, particularly on the south side, which had started to fade. The city had the necessary equipment for this task.
3. **Service Project Opportunity:** Repainting the red curbs was proposed as a service project for local youth or scouting groups. This would involve repainting curbs along Canyon Crest Road, across from Burgess Park. It was noted that there was still a significant amount of curbing that needed attention.

Overall, the discussion covered the collection of sales tax, the maintenance of red curbs, and the potential for service projects involving local youth or scouting groups to contribute to the upkeep of the curbs.

VII. EXECUTIVE SESSION:

Motion: Lon Lott moved to adjourn to Executive Session to discuss litigation, property acquisition, professional character and adjourn from City Council once the executive session has completed. Jessica Smuin seconded the motion. There were 5 yes votes, 0 no votes, and 0 excused as recorded below. The motion passed unanimously.

	Yes	**No**	**Excused**
	Lon Lott		
	Greg Gordon		
	Jessica Smuin		
	Jason Thelin		
	Kelli Law		

City Council Adjourned at 9:05pm

City Council Executive Session Adjourned 10:00pm

DRAFT

ALPINE CITY COUNCIL AGENDA

SUBJECT: Review of Lambert Park Management Plan

FOR CONSIDERATION ON: September 26th, 2023

PETITIONER: Councilman Greg Gordon

ACTION REQUESTED BY PETITIONER: Approve the Lambert Park Conservation Management Plan.

BACKGROUND INFORMATION:
Alpine City Attorney Steve Doxey has been working on a final draft of the Lambert Park Management Plan. This plan was discussed and reviewed during the July 25th City Council meeting. The City Council made a motion to forward them to the Planning Commission for review and to make recommendations to the City Council where a public hearing was held during their September 12th meeting. If the plans are approved by the City Council, they will go to Utah County (as the potential holder of the conservation easement) for their review.

The Planning Commission reviewed these documents during their August 1st meeting. A separate motion was made for each document, but the discussion involved both the management plan and the easement. Alan Macdonald and Jeff Davis from the Planning Commission were also part of the conservation easement committee, along with Councilmen Gordon they discussed some of the background and clarified general questions regarding the easement and management plan. The main points of discussion included:

- The length of the easement, why it was done as a renewal document vs. perpetual.
- Voting requirements, which require 80% approval vs. 100% from the city and county. Primarily regarding expanding paved or unpaved parking.
- The role of Utah County as the holder of the easement and associated fees.
- Uses that will be allowed with this easement.
- The purpose of the easement and having all the rules and requirements in one place instead of spreading them out throughout sections of the code.

Several motions were made/discussed. The following were approved as separate motions for first the management plan and then the conservation easement:

The motion for the Management Plan was made to make the management plan and conversation easement match the requirement for city approval of expanding parking lots within Lambert Park. the previous version required unanimity only for paved parking. Both versions are available and when making a motion it should be specified which option the council would prefer.

MOTION: *Planning Commission member Susan Whittenburg moved to recommend approval of the Lambert Park Management Plan with these conditions:*
1. Remove the word paved in Section 8 of the Management Plan.

Troy Slade seconded the motion. There were 7 Ayes and 0 Nays. The motion passed.

The changes recommended by the Planning Commission have been incorporated into the most recent versions of the easement and management plans.

The City Council held a public hearing during their September 12th meeting. Most of the comments from the public were focused on the current secondary access road that goes from East Box Elder Way to Moyle Drive. Those for and against the easement cited safety concerns around the use of that road. For more details regarding that hearing please see the minutes from that meeting as this is not meant to be a comprehensive summary.

Staff Recommendation

Review the attached Management Plan, because this is a legislative decision the standards for approval or denial are that the proposed application should be compatible with the standards found in the general plan as well as the current city code and policies. A decision for approval or denial based on those criteria.

Sample Motions

SAMPLE MOTION TO APPROVE

I move to approve the Conservation Easement Management Plan for Lambert Park as proposed.

SAMPLE MOTION TO APPROVE WITH CONDITIONS

I move to approve the Conservation Easement Management Plan for Lambert Park with the following conditions:
INSERT FINDINGS

MOTION TO TABLE/Deny

I move to table/deny the Conservation Easement Management Plan for Lambert Park based on the following:
INSERT FINDINGS

DRAFT August 18, 2023

ALPINE CITY
LAMBERT PARK MANAGEMENT PLAN

THIS LAMBERT PARK MANAGEMENT PLAN ("***Plan***") is made and adopted as of _____, 2023, (the "***Effective Date***") by ALPINE CITY (the "***City***") for the ongoing maintenance and management of the City property commonly known as LAMBERT PARK, a map of which is attached as **Exhibit A** (the "***Park***").

The Park is an invaluable asset of the City that provides significant public benefit, both to residents of the City and to others who use the Park. As owner of the Park, the City has the right and responsibility to manage the Park, including the right to protect, preserve, and maintain the Park predominantly in a natural, scenic, and open condition, and for recreational, agricultural, cultural, historical, and educational use to benefit the public (collectively, the "***Public Purposes***").

The City finds that it is in the best interest of the health, safety, and welfare of the City and its residents to adopt this Plan for the management and maintenance of the Park. The City also intends to grant a conservation easement to Utah County under the Utah Land Conservation Easement Act, *Utah Code Ann.* § 57-18-1 *et seq.*, in substantially the form of the attached **Exhibit B** (the "***Conservation Easement***"), to preserve the Park exclusively for the Public Purposes. The Conservation Easement refers to and recognizes this Plan and contains restrictions on the amendment or modification of the Plan.

NOW, THEREFORE, the City, through its city council, hereby adopts the following Plan for the Park:

1. APPLICABILTY. This Plan applies and is intended to be enforced over, under, and across the entire Park to advance the Public Purposes.

2. PUBLIC PURPOSES.

A. Exclusive Use. The Park shall be used exclusively for the Public Purposes. The Public Purposes include the protection, preservation, and maintenance of the Park predominantly in a natural, scenic, and open condition, and for recreational, agricultural, cultural, historical, and educational use for the public benefit. The Public Purposes allow the City and its agents to construct and maintain critical infrastructure, including public utilities, as well as improvements to the Park, for the public benefit in accordance with this Plan.

B. Lawful Existing Uses. The City intends to use, maintain, and preserve the Park in substantially the manner in which it has been used, maintained, and preserved historically. All lawful uses of the Park as of the Effective Date are hereby permitted and declared to be consistent with the Public Purposes, subject to any restriction imposed by the City in accordance with this Plan or the Conservation Easement.

C. Future Uses. Future uses and enhancements of the Park are permitted if (i) they would have no material adverse impact on the Public Purposes, and (ii) they are specifically allowed under this Plan, as amended.

3. PROHIBITED ACTIVITIES IN PARK. Subject to lawful existing uses of the Park, this Plan prohibits any activity in the Park that has or would have a material adverse impact on the Public Purposes. This Plan and the Conservation Easement specifically prohibit the following:

A. Development Activities. Residential, commercial, or industrial development of any portion of the Park is prohibited. This includes actual or *de facto* subdivision of any portion of the Park and any construction in the Park, other than as specifically permitted in this Plan for the Public Purposes.

B. Transfer of Development Rights. Proffer or dedication of any portion of the Park as open space in or as part of any residential, commercial, or industrial development is prohibited. Proffer or dedication of any portion of the Park for the purpose of fulfilling density requirements to obtain approvals for any zoning, subdivision, site plan, or building permit is prohibited. Transfer of any development rights that have been encumbered or extinguished by the Conservation Easement to any other property pursuant to a transferable development rights scheme, cluster development arrangement, or otherwise, is prohibited.

4. TERM. Unless sooner terminated in accordance with the Conservation Easement, this Plan will remain in effect during the entire term of the Conservation Easement.

5. MAINTENANCE AND MANAGEMENT OF THE PARK. The City expressly reserves and may exercise all rights associated with the ownership of the Park, subject to any restrictions imposed under the Conservation Easement, including the following:

A. Water Resources. The City owns or is authorized to use and maintain water resources and water-related infrastructure in the Park, including springs, water tanks, water storage ponds, ditches, and pipelines, as part of the City's public responsibility as a municipality. The City may develop, add to, enhance, install, maintain, repair, relocate, and replace such water resources and infrastructure as the City determines. The City may also exercise its rights and responsibilities with respect to the water resources and infrastructure of Alpine Irrigation Company located in the Park.

B. Public Access, Trails, and Trailheads. The City may identify, maintain, reroute, relocate, improve, and construct recreational and educational trails and trailhead parking areas in the Park for the benefit of the public, including to provide access for those with disabilities. The City may temporarily or permanently close trails as necessary for public safety, maintenance, trail restoration, or otherwise, consistent with the Public Purposes. A map of the current trails located within the Park, including portions of the Bonneville Shoreline Trail, is attached to this Plan as **Exhibit C**, which may be replaced without otherwise amending this Plan as trail modifications are approved.

C. Fire Suppression. The City may remove brush and vegetation and take other measures as necessary to minimize the risk of wildfire, or to suppress wildfires, in or adjacent to the Park.

D. Utilities. The City may maintain, improve, repair, replace or relocate existing utilities, including the existing cell tower, as long as the Park is restored, as much as reasonably practicable, to its original undisturbed nature. The City may allow for co-location on the existing cell tower, but no new cell towers will be permitted in the Park unless otherwise provided in this Plan. The City may install, construct, maintain, repair, and replace new underground utilities as long as the Park is restored, as much as reasonably practicable, to its original undisturbed nature.

E. Park Facilities and Public Gathering Areas. The City may construct and improve park facilities, bathroom facilities, emergency aid facilities, landscaping, picnic areas, pavilions, boweries, and gathering areas in the Park. The City may install other park improvements, such as bridges, boardwalks, culverts, and separated street crossings, for the public use and enjoyment.

F. Fences. The City may construct new fencing, replace existing fencing, and install gates for the purpose of defining Park boundaries, delineating specific uses, or restricting unauthorized access to or across the Park.

G. Roads.

(1) *Generally*. The City may maintain and allow the use of existing maintenance roads (including the road to the existing cell tower), emergency access roads, the rodeo grounds road, and other roads in the Park (paved or unpaved) consistent with their historical maintenance and use. The City may construct new roads only as necessary to provide access to trailhead parking areas or to maintain critical infrastructure consistent with the Public Purposes. The City may reroute or improve the portion of Box Elder Drive that crosses the Park and may improve the portion of Grove Drive that crosses the Park as reasonably necessary to maintain or enhance public safety.

(2) *Moyle Drive Extension*. An unpaved extension of Moyle Drive crosses the Park to the terminus of Box Elder Way (the "***Moyle Drive Extension***"). The Moyle Drive Extension may be used only for maintenance and emergency purposes and shall be maintained in an unpaved condition substantially as it exists on the Effective Date, except as otherwise provided in this Plan and the Conservation Easement.

(3) *Motor Vehicle Use*. The City may adopt and enforce policies, consistent with this Plan, prohibiting or restricting motorized vehicles in designated areas of the Park.

H. Rodeo Grounds. The City may use and maintain the portion of the Park known as the "rodeo grounds" and associated roads and parking areas for public events.

I. Signs. The City may place signs in the Park, except for commercial, political, or other off-premise signs or billboards, as long as the signs are consistent with the Public Purposes.

J. Public Safety. The City may conduct and restrict activities in the Park as reasonably necessary to preserve the public health, safety, and welfare, including for purposes of fire suppression and prevention; flood control and prevention; response to avalanche, earth movement, and other circumstances beyond the City's control; and preventing similar threats or injury to persons or to the Park. The City may adopt and enforce rules regulating hours of use or activities in the Park, including rules requiring permits for any overnight after-hours activity and rules governing the interaction among pedestrian, equestrian, bicycle, and other uses, in order to promote public safety. Any such rules may be appended to this Plan as an exhibit, but failure to so append the rules will not invalidate them. Certain rules in effect as of the Effective Date are attached as **Exhibit D**, which may be replaced without otherwise amending this Plan as rules are adopted or modified. Any amendments to the rules that are inconsistent with this Plan will not be incorporated into this Plan, except by the formal amendment process provided herein.

6. EXISTING ORDINANCES AND PLANS INCORPORATED IN PLAN. This Plan acknowledges and incorporates by reference all current provisions of the Alpine City Municipal Code (the "***Code***"), Alpine City General Plan (the "***General Plan***"), and master plans (the "***Master Plans***")

applicable to the Park as a whole or certain areas within the Park. The portion of the General Plan applicable to the Park and the Master Plan for the rodeo grounds are attached to this Plan as **Exhibit E**. Any amendments to the Code, General Plan, or Master Plans that are inconsistent with this Plan will not be incorporated into this Plan, except by the formal amendment process provided herein.

7. ENFORCEMENT. In the event any person violates this Plan or any rules or regulations adopted pursuant to this plan, the City may pursue any remedy allowed under this Plan, at law, or in equity. Specifically, the City will be entitled to pursue temporary, preliminary, and permanent injunctive relief to prevent the violation of this Plan or any such rule or regulation, and may issue warnings or citations or otherwise pursue criminal remedies for any violation. The City's remedies under this Plan, at law, or in equity are cumulative.

8. AMENDMENT. This Plan may be amended or modified only after a public hearing and upon the concurrence of at least eighty percent (**80%**) of the members of the City Council. Notwithstanding the foregoing, the unanimous vote of all members of the City Council is required for any amendment or modification that would allow the addition of a paved vehicle roadway, pavement of an existing unpaved vehicle roadway (such as the Moyle Drive Extension), the addition of a paved parking area, or the disposition of any parcel of land within the Park.

9. GOVERNMENTAL IMMUNITY. The City is a governmental entity under the Governmental Immunity Act of Utah, *Utah Code Ann.* § 63G-7-101, *et seq.* (the "***Governmental Immunity Act***"). Nothing in this Plan waives any defense or any limit of liability available to the City under the Governmental Immunity Act.

10. MISCELLANEOUS PROVISIONS.

a. Severability. The provisions of this Plan are severable, and the invalidity or unenforceability of any provision of this Plan will not affect the validity or enforceability of the remaining provisions.

b. No Third-Party Beneficiaries. This Plan is made for the exclusive benefit of the City and its successors, and assigns. No other person or entity, including residents of the City, will have any enforceable interest under this Plan or be classified as a third-party beneficiary. The City will not be liable to any third-party claimant for any obligation of the City under this Plan.

c. Exhibits. All exhibits to this Plan are incorporated in this Plan by reference.

ADOPTED by the City Council of Alpine City _____, 2023.

EXHIBIT A

Map of the Park

EXHIBIT B

Form of Conservation Easement

EXHIBIT C

Trail Map

EXHIBIT D

Park Rules

The following rules apply to the use of Lambert Park:

1. **Hours of Operation.** The Park is open from dawn until dusk. Exceptions are by written City permission only, and include City-sponsored events and overnight camping in the Bowery area by permit only.

2. **Firearms and Fireworks.** Target shooting, hunting, firearm discharge, and fireworks within the Park are prohibited.

3. **Fires.** No fires are allowed in the Park, except in designated fire pits near the Bowery. The City may further restrict fires as necessary.

4. **Motor Vehicles.** No motorized vehicles are allowed in the Park, except for emergency situations, maintenance operations, and City-permitted events, and as otherwise expressly provided in this Plan. Members of the public with a disability or other special needs may use a motor vehicle on the Moyle Drive Extension for access to the poppy fields if they first obtain a permit from the City.

5. **Electric Bikes.** Class 1 Electric Bikes that are pedal-assist only and have a maximum assisted speed of 20 mph are permitted in the Park. Other types of electric bikes or other motorized vehicles are not permitted, except as expressly provided in this Plan.

6. **Trail Conditions.** No trail in the Park may be used when the trail is wet or muddy.

7. **Races.** No organized races of any type are permitted in the Park, except for City-organized or City-sanctioned races.

EXHIBIT E

Excerpt of General Plan and Master Plan for the Rodeo Grounds

ALPINE CITY COUNCIL AGENDA

SUBJECT: Review of Lambert Park Management Plan

FOR CONSIDERATION ON: September 26th, 2023

PETITIONER: Councilman Greg Gordon

ACTION REQUESTED BY PETITIONER: Approve the Lambert Park Conservation Management Plan.

BACKGROUND INFORMATION:
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- The length of the easement, why it was done as a renewal document vs. perpetual.
- Voting requirements, which require 80% approval vs. 100% from the city and county. Primarily regarding expanding paved or unpaved parking.
- The role of Utah County as the holder of the easement and associated fees.
- Uses that will be allowed with this easement.
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Several motions were made/discussed. The following were approved as separate motions for first the management plan and then the conservation easement:

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MOTION: *Planning Commission member Susan Whittenburg moved to recommend approval of the Lambert Park Management Plan with these conditions:*
1. Remove the word paved in Section 8 of the Management Plan.

Troy Slade seconded the motion. There were 7 Ayes and 0 Nays. The motion passed.

The changes recommended by the Planning Commission have been incorporated into the most recent versions of the easement and management plans.

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Staff Recommendation

Review the attached Management Plan, because this is a legislative decision the standards for approval or denial are that the proposed application should be compatible with the standards found in the general plan as well as the current city code and policies. A decision for approval or denial based on those criteria.

Sample Motions

SAMPLE MOTION TO APPROVE

I move to approve the Conservation Easement Management Plan for Lambert Park as proposed.

SAMPLE MOTION TO APPROVE WITH CONDITIONS

I move to approve the Conservation Easement Management Plan for Lambert Park with the following conditions:
INSERT FINDINGS

MOTION TO TABLE/Deny

I move to table/deny the Conservation Easement Management Plan for Lambert Park based on the following:
INSERT FINDINGS

ALPINE CITY

RESOLUTION NO. R2023-29
A RESOLUTION ADOPTING THE LAMBERT PARK MANAGEMENT PLAN

WHEREAS, Lambert Park is an invaluable asset of Alpine City (the "***City***") that provides significant public benefit, both to residents of the City and to others who use the Park;

WHEREAS, as owner of the Park, the City has the right and responsibility to manage the Park, including the right to protect, preserve, and maintain the Park predominantly in a natural, scenic, and open condition, and for recreational, agricultural, cultural, historical, and educational use to benefit the public (collectively, the "***Public Purposes***");

WHEREAS, the City, through its duly appointed Lambert Park Preservation Committee, Planning Commission, and City Council, has studied extensively various options for preserving and maintaining Lambert Park consistent with the Public Purposes;

WHEREAS, the City has held numerous public meetings and public hearings to consider such options, and has received abundant public input on the options considered;

WHEREAS, the Planning Commission, after public hearing, has recommended the adoption of a management plan for Lambert Park in the form of the attached **Exhibit A** (the "***Management Plan***");

WHEREAS, the City Council received public input on the Planning Commission's recommendation at a public hearing during its meeting on September 12, 2023;

WHEREAS, the City Council finds that it is in the best interest of the health, safety, and welfare of the City and its residents to adopt the Management Plan for the management and maintenance of the Park;

NOW THEREFORE, BE IT RESOLVED by the City Council of Alpine City that the Lambert Park Management Plan in the form attached as **Exhibit A** is hereby adopted as the plan for the ongoing management and maintenance of Lambert Park.

[Signatures on following page.]

PASSED AND APPROVED this 26th day of September, 2023.

By:_____
Carla Merrill, *Mayor*

[SEAL]

VOTING:

Jessica Smuin	Yea ___ Nay ___
Lon Lott	Yea ___ Nay ___
Jason Thelin	Yea ___ Nay ___
Kelli Law	Yea ___ Nay ___
Greg Gordon	Yea ___ Nay ___

ATTEST:

_____
Bonnie Cooper, *City Recorder*

EXHIBIT A

Lambert Park Management Plan

ALPINE CITY COUNCIL AGENDA

SUBJECT: Review of Lambert Park Conservation Easement.

FOR CONSIDERATION ON: September 26th, 2023

PETITIONER: Councilman Greg Gordon

ACTION REQUESTED BY PETITIONER: Approve the Lambert Park Conservation Easement.

BACKGROUND INFORMATION:
Alpine City Attorney Steve Doxey has been working on a final draft of the Lambert Park Conservation Plan and Management Plan. These plans were discussed and reviewed during the July 25th City Council meeting. The City Council made a motion to forward them to the Planning Commission for review and to make recommendations to the City Council where a public hearing will be held during their meeting. If the plans are approved by the City Council, they will go to Utah County (as the potential holder of the conservation easement) for their review.

The Planning Commission reviewed these documents during their August 1st meeting. A separate motion was made for each document, but the discussion involved both the management plan and the easement. Alan Macdonald and Jeff Davis from the Planning Commission were also part of the conservation easement committee, along with Councilmen Gordon they discussed some of the background and clarified general questions regarding the easement and management plan. The main points of discussion included:

- The length of the easement, why it was done as a renewal document vs. perpetual.
- Voting requirements, which require 80% approval vs. 100% from the city and county. Primarily regarding expanding paved or unpaved parking.
- The role of Utah County as the holder of the easement and associated fees.
- Uses that will be allowed with this easement.
- The purpose of the easement is to have all the rules and requirements in one place instead of spreading them out throughout sections of the code.

Several motions were made/discussed. The following were approved as separate motions for first the management plan and then the conservation easement:

The motion for the Management Plan was made to make the management plan and conversation easement match the requirement for city approval of expanding parking lots within Lambert Park. the previous version required unanimity only for paved parking. Both versions are available and when making a motion it should be specified which option the council would prefer.

MOTION: *Planning Commission member Troy Slade moved to recommend approval of the Lambert Park Conservation Easement.*

Susan Whittenburg seconded the motion. There were 5 Ayes and 2 Nays (recorded below). The motion passed.

Ayes:

Jane Griener
Alan Macdonald
Jeff Davis
Troy Slade
Susan Whittenburg

Nays:

John Mackay
Ethan Allen

Staff Recommendation:

Review the attached Management Plan, because this is a legislative decision the standards for approval or denial are that the proposed application should be compatible with the standards found in the general plan as well as the current city code and policies. A decision for approval or denial based on those criteria.

Sample Motions

SAMPLE MOTION TO APPROVE
I move to approve the Conservation Easement for Lambert Park as proposed.

SAMPLE MOTION TO APPROVE WITH CONDITIONS
I move to approve the Conservation Easement for Lambert Park with the following conditions:
INSERT FINDINGS

MOTION TO TABLE/Deny
I move to table/deny the Conservation Easement for Lambert Park based on the following:
INSERT FINDINGS

WHEN RECORDED, RETURN TO:

DRAFT August 18, 2023

Utah County Attorney
100 East Center Street, Suite 2100
Provo, Utah 84606

LAMBERT PARK
DEED OF TEMPORARY CONSERVATION EASEMENT

THIS DEED OF TEMPORARY CONSERVATION EASEMENT ("***Easement***") is made and granted as of _____, 2023, (the "***Effective Date***") by ALPINE CITY ("***Grantor***"), having an address of 20 North Main Street, Alpine, Utah 84004, to UTAH COUNTY ("***Grantee***"), having an address of 100 East Center Street, Provo, Utah 84606, to be held and enforced for the benefit of the public in accordance with the terms and for the purposes set forth in this Easement.

RECITALS:

A. Grantor owns five parcels of real property, located in Alpine City, State of Utah, commonly known as Lambert Park, as described in the legal description attached as **Exhibit A** and as depicted in the property map attached as **Exhibit B** (collectively, the "***Property***").

B. The Property provides a significant public benefit, both to residents of Alpine City and to others who use the Property, including residents of Utah County living outside of Alpine City.

C. Grantor has the right, as owner of the Property, to protect, preserve, and maintain the Property predominantly in a natural, scenic, and open condition, and for recreational, agricultural, cultural, historical, and educational use to benefit the public, including the residents of Alpine City (collectively, the "***Public Purposes***").

D. The Utah Land Conservation Easement Act, *Utah Code Ann.* § 57-18-1 *et seq.* (the "***Conservation Easement Act***"), authorizes Grantor to grant this Easement to further the Public Purposes. Grantor finds that it is in the best interest of the health, safety, and welfare of the residents of Alpine City to do so. Grantor's city council (the "***City Council***") has duly adopted a resolution approving and authorizing Grantor's conveyance, execution, and recordation of this Easement.

E. Under Section 57-18-3 of the Conservation Easement Act, Grantee, as a governmental entity, is qualified to acquire and hold a conservation easement to help Grantor achieve the Public Purposes.

F. Grantee's legislative body has duly adopted a resolution approving Grantee's acceptance, execution, and recordation of this Easement.

G. This Easement constitutes a public charitable trust to be held and enforced by Grantee for the benefit of the public, including the residents of Alpine City. The parties

acknowledge that Grantor is also entitled to enforce this Easement under the Conservation Easement Act.

H. Grantor finds that Grantee's agreement to hold and enforce this Easement to advance the Public Purposes constitutes adequate consideration for the grant of this Easement.

I. The parties desire that this Easement be construed to further the Public Purposes.

J. The Parties are authorized to enter into this Easement under the Conservation Easement Act and the Interlocal Cooperation Act, *Utah Code Ann.* § 11-13-101, *et seq*. (the "***Interlocal Cooperation Act***").

NOW, THEREFORE, for valuable consideration, including the mutual covenants set forth below, the receipt and sufficiency of which are acknowledged, the parties agree as follows:

1. GRANT OF TEMPORARY CONSERVATION EASEMENT. Grantor hereby grants and conveys to Grantee and its successors in interest a TEMPORARY CONSERVATION EASEMENT under the Conservation Easement Act, to be held and enforced for the benefit of the public, including the residents of Alpine City, in accordance with the terms of this Easement. This Easement is granted over and across the entire Property to advance the Public Purposes. Any mortgage, lien or other encumbrance against the Property, other than an encumbrance of record existing on the Effective Date or an encumbrance determined by an appropriate court to have been in existence on the Effective Date, shall be subordinate to all rights granted under this Easement.

2. PUBLIC PURPOSES.

A. Exclusive Use. During the term of this Easement, the Property shall be used exclusively for the Public Purposes. The parties agree that the Public Purposes include the protection, preservation, and maintenance of the Property predominantly in a natural, scenic, and open condition, and for recreational, agricultural, cultural, historical, and educational use for the public benefit. The Public Purposes also allow for the construction and maintenance of critical infrastructure, including public utilities, as well as improvement of the Property, for the public benefit in accordance with this Easement.

B. Lawful Existing Uses. Grantor, its successors, and assigns shall be permitted to use, maintain, and preserve the Property in substantially the manner in which it has been used, maintained, and preserved historically. All lawful uses of the Property as of the Effective Date are hereby permitted and declared to be consistent with the Public Purposes, subject to any restriction imposed by Grantor in accordance with this Easement.

C. Moyle Drive Extension. The parties acknowledge that an unpaved extension of Moyle Drive crosses the Property to the terminus of Box Elder Way (the "***Moyle Drive Extension***"). The Moyle Drive Extension may be used only for maintenance and emergency purposes and shall be maintained in an unpaved condition substantially as it exists on the Effective Date, except as otherwise provided in this Easement or by order of a court of competent jurisdiction.

D. Future Uses. Future uses and enhancements of the Property shall be permitted if (i) they would be consistent with and have no material adverse impact on the Public Purposes, and (ii) they are specifically allowed under the Management Plan (as defined below).

3. PROHIBITED ACTIVITIES ON PROPERTY. Subject to lawful existing uses of the Property, this Easement prohibits any activity on the Property that has or would have a material adverse impact on the Public Purposes. This Easement specifically prohibits the following:

A. Development Activities. Residential, commercial, or industrial development of any portion of the Property is prohibited. This includes actual or *de facto* subdivision of any portion of the Property and any construction on the Property, other than as specifically permitted in this Easement for the Public Purposes. Grantor may not approve any such development during the term of this Easement, except by prior written consent of the parties in accordance with this Easement and only if consistent with the Public Purposes.

B. Transfer of Development Rights. Proffer or dedication of any portion of the Property as open space in or as part of any residential, commercial, or industrial development is prohibited. Proffer or dedication of any portion of the Property for the purpose of fulfilling density requirements to obtain approvals for any zoning, subdivision, site plan, or building permit is prohibited. Transfer of any development rights that have been encumbered or extinguished by this Easement to any other property pursuant to a transferable development rights scheme, cluster development arrangement, or otherwise, is prohibited.

4. TERM OF EASEMENT. This Easement will remain in effect for a term of ten (10) years after the Effective Date (the "***Initial Term***"). This Easement will automatically renew for up to five renewal terms of eight (8) years each (each, a "***Renewal Term***") unless Grantor, upon the vote of at least eighty percent (**80%**) of the members of the City Council after a public hearing, or Grantee, by unanimous vote of its governing body after a public hearing, gives written notice of its intent not to renew this Easement. Such notice must be given at least one (1) year prior to expiration of the Initial Term or any applicable Renewal Term. Upon the expiration or sooner termination of this Easement, the rights and obligations of the parties, except for any rights or obligations which expressly or by their context survive this Easement (such as indemnity rights and obligations), will cease and the Property will no longer be encumbered by this Easement.

5. RIGHTS AND OBLIGATIONS OF GRANTOR.

A. Maintenance and Management. Grantor expressly reserves and retains all rights associated with the ownership of the Property, subject to any restrictions imposed under this Easement. Grantor retains the right and responsibility to maintain and manage the Property for the Public Purposes. Subject to the terms of this Easement and the Management Plan (as defined below), Grantor's exclusive authority over the Property includes the following:

(1) ***Water Resources*****.** Grantor owns or is authorized to use and maintain water resources and water-related infrastructure, including springs, water tanks, water storage ponds, ditches, and pipelines, as part of Grantor's public responsibility as a municipality. Grantor may develop, add to, enhance, install, maintain, repair, relocate, and replace such existing water resources and infrastructure. The parties acknowledge that this Easement does not impair any

existing rights of Alpine Irrigation Company, its successors, or assigns to use and maintain its existing water resources and infrastructure on the Property, or any rights or obligations of Grantor with respect to such resources and infrastructure.

(2) *Public Access, Trails, and Trailheads*. Grantor has the right to identify, maintain, reroute, relocate, improve, and construct recreational and educational trails and trailhead parking areas on the Property for the benefit of the public, including to provide access for those with disabilities. Grantor may temporarily or permanently close trails as necessary for public safety, maintenance, trail restoration, or otherwise, consistent with the Public Purposes.

(3) *Fire Suppression*. Grantor retains the right to remove brush and vegetation and take other measures as necessary to minimize the risk of wildfire, or to suppress wildfires, on or adjacent to the Property. Grantor reserves the right to restrict target shooting, hunting, or any firearm discharge or fireworks on the Property.

(4) *Utilities*. Notwithstanding any provision of this Easement to the contrary, Grantor may maintain, improve, repair, replace or relocate existing utilities, including the existing cell tower, as long as the Property is restored, as much as reasonably practicable, to its original undisturbed nature. Grantor may allow for co-location on the existing cell tower, but no new cell towers will be permitted on the Property unless otherwise provided in the Management Plan (as defined below). Grantor reserves the right to install, construct, maintain, repair, and replace new underground utilities as long as the Property is restored, as much as reasonably practicable, to its original undisturbed nature.

(5) *Park Facilities and Public Gathering Areas*. Grantor retains the right to construct and improve existing park facilities, bathroom facilities, emergency aid facilities, landscaping, picnic areas, pavilions, boweries, and gathering areas on the Property. Grantor may install other park improvements, such as bridges, boardwalks, culverts, and separated street crossings, for the public use and enjoyment so long as they are consistent with the Public Purposes.

(6) *Fencing*. Grantor may construct new fencing, replace existing fencing, and install gates for the purpose of defining Property boundaries, delineating specific uses, or restricting unauthorized access across the Property consistent with the Public Purposes.

(7) *Roads*. Grantor may maintain and allow the use of existing maintenance roads (including the road to the existing cell tower), emergency access roads, the rodeo grounds road, and other roads on the Property (paved or unpaved) consistent with their historical maintenance and use. Except as otherwise provided in this Easement, Grantor may construct new roads only as necessary to provide access to trailhead parking areas or to maintain critical infrastructure consistent with the Public Purposes. Grantor may reroute or improve the portion of Box Elder Drive that crosses the Property and may improve the portion of Grove Drive that crosses the Property as reasonably necessary to maintain or enhance public safety. Grantor retains the right to adopt and enforce policies prohibiting or restricting motorized vehicles in designated areas of the Property.

(8) *Rodeo Grounds*. Grantor reserves the right to use and maintain the portion of the Property known as the "rodeo grounds" and associated roads and parking areas for public events.

(9) *Signs*. Grantor may place signs on the Property, except for commercial, political, or other off-premise signs or billboards, as long as the signs do not materially interfere with the Public Purposes.

(10) *Public Safety*. Grantor retains the right to conduct and restrict activities on the Property as reasonably necessary to preserve the public health, safety, and welfare, including for purposes of fire suppression and prevention; flood control and prevention; response to avalanche, earth movement, and other circumstances beyond Grantor's control; and preventing similar threats or injury to persons or property. Grantor may adopt and enforce rules regulating hours of use or activities on the Property, including rules governing the interaction among pedestrian, equestrian, bicycle, and other uses, in order to promote public safety.

B. Management Plan. The parties acknowledge that Grantor has adopted a Lambert Park Management Plan for the ongoing maintenance and management of the Property (the "***Management Plan***"). The Management Plan provides for the adoption and enforcement of rules and regulations for the use of the Property and provides plans for the maintenance of and improvements to the Property. Any amendment or other modification of the Management Plan will be permitted only if it is consistent with the Public Purposes and receives the affirmative vote of at least eighty percent (**80%**) of the members of the City Council. Notwithstanding the foregoing, the unanimous vote of all members of the City Council is required for any amendment or modification that would allow the addition of a paved vehicle roadway, pavement of an existing unpaved vehicle roadway~~,~~ (such as the Moyle Drive Extension), the addition or expansion of a paved parking area, or the disposition of any parcel of land within the Property.

C. Indemnity. Grantor will defend, indemnify, and hold harmless Grantee, its elected and appointed officials, employees, agents, and volunteers (collectively, the "***Grantee Parties***") from and against any claim, demand, damage, liability, loss, or cost (including reasonable attorney fees) (collectively, "***Claim***") to the extent arising out of or resulting from (i) the acts or omissions of Grantor, its elected and appointed officials, employees, agents, and volunteers (collectively, the "***Grantor Parties***") related to this Easement or the Property; (ii) Grantee's enforcement of any breach, or threatened breach, of this Easement; (iii) the presence or release of any toxic or hazardous material or substance on the Property, except to the extent the presence or release was directly caused by Grantee; or (iv) any Claim made by a third party related to this Easement or the Property. Grantee will be entitled to select counsel and control the defense and settlement of the Claim.

D. Summary of Voting and Public Hearing Requirements. Grantor will comply with the voting and public hearing requirements of this Easement, which are summarized below:

Action	**Vote of City Council**	**Public Hearing**
Amendment/Waiver of Easement Provision	80%	Yes
Non-renewal of Easement	80%	Yes
Amendment of Management Plan	80%	Yes
Amendment of Management Plan Allowing Paved Roadway, Additional		

Paved Parking, or Disposition of Property	100%	Yes

To the extent this summary conflicts with the specific voting requirements in the body of this Agreement, such specific voting requirements shall control.

E. Administrative Fee. In consideration of Grantee's agreement to hold and enforce this Easement, Grantor will pay Grantee an administrative fee of FIVE THOUSAND AND NO/100 DOLLARS (**$5,000.00**) upon execution of this Easement.

F. Enforcement Reserve. Grantor will deposit FIVE THOUSAND AND NO/100 DOLLARS (**$5,000.00**) with Grantee upon the commencement of each Renewal Term, if any. Such deposits, if any, will be used as a reserve (the "***Enforcement Reserve***") against Grantee's costs of enforcing this Easement. Grantee may draw upon the Enforcement Reserve as necessary to reimburse Grantee's costs of enforcement in the event of a breach or threatened breach of this Easement. Upon the expiration or sooner termination of this Easement, Grantee will return to Grantor any unused balance of the Enforcement Reserve.

6. RIGHTS AND OBLIGATIONS OF GRANTEE.

A. Enforcement. Grantee shall have the right and responsibility to enforce this Easement through appropriate legal proceedings in the event of a default or threatened default by Grantor or any act of a third party that has or would have a material adverse impact on the Public Purposes.

B. Inspection. Grantee shall have the right to enter upon the Property at reasonable times and in a reasonable manner to monitor Grantor's compliance with and otherwise enforce the terms of this Easement. In the case of an emergency, as determined by Grantee, Grantee shall notify Grantor prior to entering onto the Property, if possible, or as soon thereafter as is reasonably practical.

C. Indemnity. Grantee will indemnify and hold harmless Grantor Parties from and against any Claim to the extent arising out of or resulting from Grantee's unwarranted enforcement of any violation, or threatened violation, of this Easement, as determined by a court of competent jurisdiction. Grantor will be entitled to select counsel and control the defense and settlement of any such Claim.

D. Voting and Public Hearing Requirements. Any amendment to, waiver of, or consent given under this Easement that would have a material adverse impact on the Public Purposes will require a public hearing and the concurring vote of a majority of the members of Grantee's governing body. Any notice of non-renewal of this Easement will require a public hearing and the unanimous vote of Grantee's governing body.

7. DEFAULT. Either party will be in default if the party substantially fails to perform its obligations under this Easement and, after sixty (60) days' written notice from the non-defaulting party of such failure, the party has not cured the failure; or, if the failure is not capable of being cured within such time, has not commenced to cure the failure within such time and diligently completed the cure within a reasonable time thereafter, as determined by non-defaulting party.

8. REMEDIES. In the event of either party's default, the other party may pursue any remedy allowed under this Easement, at law, or in equity. In the event of a threatened default by Grantor or the act of a third party that has or would have a material adverse impact on the Public Purposes, Grantee will be specifically entitled to pursue temporary, preliminary, and permanent injunctive relief to prevent the default and restore the Property, as much as reasonably practicable, to its original condition. The parties' respective remedies under this Easement, at law, or in equity are cumulative.

9. SUPERIORITY OF EASEMENT AND RESTRICTION ON TRANSFER. Any conveyance, lease, mortgage, trust deed, lien, judgment, encumbrance, or other interest executed or entered against the Property after the Effective Date (collectively, an "***Encumbrance***") shall be subordinate to this Easement and shall not entitle the holder of the Encumbrance to violate the terms of this Easement or otherwise create a material adverse impact on the Public Purposes. Further, any such Encumbrance (other than a valid judgment of a court of competent jurisdiction) shall be prohibited without the consent of Grantor, which consent shall not be unreasonably withheld.

10. EXTINGUISHMENT. This Easement may be extinguished in whole or in part (whether through release, termination, eminent domain, abandonment, swap, exchange, reconfiguration, or otherwise) only (A) through a judicial proceeding in a court of competent jurisdiction, and (B) upon a finding by the court that a subsequent unexpected change in conditions has made impossible or impractical the continued use of the Property (or the portion thereof to be removed from this Easement) for conservation purposes. Any removal of land from this Easement constitutes an extinguishment regardless of how such removal might be characterized. In the event of an extinguishment of this Easement, the Easement shall revert to Grantor.

11. MERGER. The Parties intend that this Easement will not merge even in the event Grantee becomes the fee title owner of the Property. No merger of interest shall diminish Grantee's duty to uphold the public trust conveyed by this Easement.

12. AMENDMENT. This Easement may be amended only by mutual written consent after a public hearing before Grantor's City Council and a public hearing before Grantee's governing body. No amendment will be valid except upon the concurring vote of eighty percent (**80%**) of the members of Grantor's City Council and a majority of Grantee's governing body.

13. GOVERNMENTAL IMMUNITY. Grantor and Grantee are governmental entities under the Governmental Immunity Act of Utah, *Utah Code Ann.* § 63G-7-101, *et seq.* (the "***Governmental Immunity Act***"). Consistent with the Governmental Immunity Act, each party will be responsible for the wrongful or negligent acts or omissions of its own elected or appointed officials, employees, agents, and volunteers. Neither party waives any defense or any limit of liability available under the Governmental Immunity Act. Each party will notify the other party within thirty (30) days after receiving a notice of claim under the Governmental Immunity Act for which either party may have an obligation to defend, indemnify, and hold harmless the other party. If a party is served with a summons or complaint for which the other party may have an obligation to defend, indemnify, and hold harmless, it will notify the other party at least fourteen (14) days before a response to the summons or complaint is due.

14. MISCELLANEOUS PROVISIONS.

A. Assignment. Neither party will assign any rights or delegate any obligations under this Agreement without the other party's prior written consent, which will not be unreasonably withheld. Notwithstanding the foregoing, as a condition of Grantor's consent, (i) the transferee must be qualified to hold a conservation easement under Utah law; and (ii) the transferee must agree in writing to be bound by and carry out the obligations of Grantee under this Easement.

B. Covenants Run with the Land. The covenants contained in this Easement touch and concern real property and run with the land. This Easement will be binding upon the parties' respective successors, permitted assigns, agents, and legal representatives. Either party may record this Easement.

C. Severability. The provisions of this Easement are severable, and the invalidity or unenforceability of any provision of this Easement will not affect the validity or enforceability of the remaining provisions.

d. Captions. The section and paragraph headings contained in this Easement are for the purpose of reference only and will not limit or otherwise affect the construction of any provision of this Easement.

e. Entire Agreement; Modification; Waiver. This Easement constitutes the entire agreement and understanding of the parties with respect to its subject matter, and supersedes all previous or contemporaneous representations or agreements of the parties in that regard. Subject to other provisions of this Easement, no modification of this Easement will be valid or binding unless made in writing and signed by both parties. Any waiver of any provision of this Easement must be in writing and must be signed by the party waiving the provision.

f. No Third-Party Beneficiaries. This Easement is made for the exclusive benefit of the parties and their respective heirs, successors, and assigns. No other person or entity, including residents of Grantor and Grantee, will have any interest under this Easement or be classified as a third-party beneficiary. Neither party will be liable to any claimant for any obligation of the other party under this Easement or otherwise.

g. Time of Essence. Time is of the essence in the performance of all obligations under this Easement.

h. Governing Law. THIS EASEMENT WILL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF UTAH, EXCEPT AS SUCH LAWS MAY BE PREEMPTED OR SUPERSEDED BY THE LAWS OF THE UNITED STATES. THE PARTIES HEREBY CONSENT TO THE JURISDICTION OF THE COURTS OF THE STATE OF UTAH, OR THE COURTS OF THE UNITED STATES OF AMERICA LOCATED IN THE STATE OF UTAH, AS THE CASE MAY BE, WITH VENUE IN UTAH COUNTY OR, FOR FEDERAL COURT, SALT LAKE CITY, UTAH, AS THE SOLE FORUM FOR ANY LITIGATION ARISING OUT OF THIS EASEMENT.

i. No Partnership. The transactions contemplated under this Easement do not constitute a partnership, joint venture or other association between the parties.

j. Notice. All notices required under this Easement must be in writing and will be deemed to have been sufficiently given or served when presented personally or when deposited in the United States Mail, by registered or certified mail or by email with a "read receipt" tracking option, addressed as follows:

TO GRANTOR: Alpine City
Attention: City Administrator
20 North Main Street
Alpine, Utah 84004
Email: ssorensen@alpinecity.org

TO GRANTEE: Utah County
Attn: County Attorney, Civil Division Chief
100 East Center Street
Provo, Utah 84606
Email: _____

Either party may designate a different address by written notice to the other party. Any notice given under this Easement will be deemed given as of the date delivered or mailed.

k. No Separate Legal Entity. No separate legal entity is created by this Easement.

l. Interlocal Cooperation Act Compliance. Each party represents and warrants that it has submitted this Easement to its authorized attorney for review and approval as to form, and has otherwise complied with the Interlocal Cooperation Act in connection with the execution of this Easement. A duly executed original or counterpart of this Easement will be filed with the keeper of records of each party in accordance with the Interlocal Cooperation Act.

m. Warranty of Authority. The persons signing this Easement on behalf of a party hereby warrant that they have the requisite authority to execute this Easement on the party's behalf, and the party has agreed to be and is bound hereby.

n. Exhibits. All exhibits to this Easement are incorporated in this Easement by reference.

o. Counterparts. This Easement may be executed in any number of counterparts, each of which will be deemed an original, and all which constitute one instrument.

[Signatures on following page.]

IN WITNESS WHEREOF, the parties have executed this Easement as of the Effective Date.

GRANTOR:

ALPINE CITY

_____
Carla Merrill, *Mayor*

ATTEST:

_____
Bonnie Cooper, *City Recorder*

STATE OF UTAH)
: ss
County of Utah)

The foregoing instrument was acknowledged before me on _____, 2023, by Carla Merrill and Bonnie Cooper in their capacity as Alpine City Mayor and Alpine City Recorder, respectively.

_____
Notary Public

APPROVED AS TO FORM AND LEGALITY:

BENNETT TUELLER JOHNSON & DEERE

_____
Stephen B. Doxey
Alpine City Attorney

GRANTEE:

UTAH COUNTY

_____
Amelia Powers Gardner, *Chair, Utah County Commission*

ATTEST:

_____
Aaron R. Davidson, *Utah County Clerk*

STATE OF UTAH)
: ss
County of Utah)

The foregoing instrument was acknowledged before me on _____, 2023, by Amelia Powers Gardner and Aaron R. Davidson in their capacity as Chair of the Utah County Commission and Utah County Clerk, respectively.

_____
Notary Public

APPROVED AS TO FORM AND LEGALITY:

Utah County Attorney

_____
_____, _____

EXHIBIT A

Legal Description of Property

EXHIBIT B

Property Map

WHEN RECORDED, RETURN TO: _____ **DRAFT September 8, 2023**

Formatted: Tab stops: 3.5", Left

Utah County Attorney
100 East Center Street, Suite 2100
Provo, Utah 84606

LAMBERT PARK
DEED OF TEMPORARY CONSERVATION EASEMENT

THIS DEED OF TEMPORARY CONSERVATION EASEMENT ("***Easement***") is made and granted as of _____, 2023, (the "***Effective Date***") by ALPINE CITY ("***Grantor***"), having an address of 20 North Main Street, Alpine, Utah 84004, to UTAH COUNTY ("***Grantee***"), having an address of 100 East Center Street, Provo, Utah 84606, to be held and enforced for the benefit of the public in accordance with the terms and for the purposes set forth in this Easement.

RECITALS:

A. Grantor owns five parcels of real property, located in Alpine City, State of Utah, commonly known as Lambert Park, as described in the legal description attached as **Exhibit A** and as depicted in the property map attached as **Exhibit B** (collectively, the "***Property***").

B. The Property provides a significant public benefit, both to residents of Alpine City and to others who use the Property, including residents of Utah County living outside of Alpine City.

C. Grantor has the right, as owner of the Property, to protect, preserve, and maintain the Property predominantly in a natural, scenic, and open condition, and for recreational, agricultural, cultural, historical, and educational use to benefit the public, including the residents of Alpine City (collectively, the "***Public Purposes***").

D. The Utah Land Conservation Easement Act, *Utah Code Ann.* § 57-18-1 *et seq.* (the "***Conservation Easement Act***"), authorizes Grantor to grant this Easement to further the Public Purposes. Grantor finds that it is in the best interest of the health, safety, and welfare of the residents of Alpine City to do so. Grantor's city council (the "***City Council***") has duly adopted a resolution approving and authorizing Grantor's conveyance, execution, and recordation of this Easement.

E. Under Section 57-18-3 of the Conservation Easement Act, Grantee, as a governmental entity, is qualified to acquire and hold a conservation easement to help Grantor achieve the Public Purposes.

F. Grantee's legislative body has duly adopted a resolution approving Grantee's acceptance, execution, and recordation of this Easement.

G. This Easement constitutes a public charitable trust to be held and enforced by Grantee for the benefit of the public, including the residents of Alpine City. The parties acknowledge that Grantor is also entitled to enforce this Easement under the Conservation Easement Act.

H. Grantor finds that Grantee's agreement to hold and enforce this Easement to advance the Public Purposes constitutes adequate consideration for the grant of this Easement.

I. The parties desire that this Easement be construed to further the Public Purposes.

J. The Parties are authorized to enter into this Easement under the Conservation Easement Act and the Interlocal Cooperation Act, *Utah Code Ann.* § 11-13-101, *et seq*. (the "***Interlocal Cooperation Act***").

NOW, THEREFORE, for valuable consideration, including the mutual covenants set forth below, the receipt and sufficiency of which are acknowledged, the parties agree as follows:

1. GRANT OF TEMPORARY CONSERVATION EASEMENT. Grantor hereby grants and conveys to Grantee and its successors in interest a TEMPORARY CONSERVATION EASEMENT under the Conservation Easement Act, to be held and enforced for the benefit of the public, including the residents of Alpine City, in accordance with the terms of this Easement. This Easement is granted over and across the entire Property to advance the Public Purposes. Any mortgage, lien or other encumbrance against the Property, other than an encumbrance of record existing on the Effective Date or an encumbrance determined by an appropriate court to have been in existence on the Effective Date, shall be subordinate to all rights granted under this Easement.

2. PUBLIC PURPOSES.

A. Exclusive Use. During the term of this Easement, the Property shall be used exclusively for the Public Purposes. The parties agree that the Public Purposes include the protection, preservation, and maintenance of the Property predominantly in a natural, scenic, and open condition, and for recreational, agricultural, cultural, historical, and educational use for the public benefit. The Public Purposes also allow for the construction and maintenance of critical infrastructure, including public utilities, as well as improvement of the Property, for the public benefit in accordance with this Easement.

B. Lawful Existing Uses. Grantor, its successors, and assigns shall be permitted to use, maintain, and preserve the Property in substantially the manner in which it has been used, maintained, and preserved historically. All lawful uses of the Property as of the Effective Date are hereby permitted and declared to be consistent with the Public Purposes, subject to any restriction imposed by Grantor in accordance with this Easement.

C. Moyle Drive Extension. The parties acknowledge that an unpaved extension of Moyle Drive crosses the Property to the terminus of Box Elder Way (the "***Moyle Drive Extension***"). The Moyle Drive Extension may be used only for maintenance and emergency purposes and shall be maintained in an unpaved condition substantially as it exists on the Effective Date, except as otherwise provided in this Easement or by order of a court of

competent jurisdiction.

D. Future Uses. Future uses and enhancements of the Property shall be permitted if (i) they would be consistent with and have no material adverse impact on the Public Purposes, and (ii) they are specifically allowed under the Management Plan (as defined below).

3. PROHIBITED ACTIVITIES ON PROPERTY. Subject to lawful existing uses of the Property, this Easement prohibits any activity on the Property that has or would have a material adverse impact on the Public Purposes. This Easement specifically prohibits the following:

A. Development Activities. Residential, commercial, or industrial development of any portion of the Property is prohibited. This includes actual or *de facto* subdivision of any portion of the Property and any construction on the Property, other than as specifically permitted in this Easement for the Public Purposes. Grantor may not approve any such development during the term of this Easement, except by prior written consent of the parties in accordance with this Easement and only if consistent with the Public Purposes.

B. Transfer of Development Rights. Proffer or dedication of any portion of the Property as open space in or as part of any residential, commercial, or industrial development is prohibited. Proffer or dedication of any portion of the Property for the purpose of fulfilling density requirements to obtain approvals for any zoning, subdivision, site plan, or building permit is prohibited. Transfer of any development rights that have been encumbered or extinguished by this Easement to any other property pursuant to a transferable development rights scheme, cluster development arrangement, or otherwise, is prohibited.

4. TERM OF EASEMENT. This Easement will remain in effect for a term of ten (10) years after the Effective Date (the "***Initial Term***"). This Easement will automatically renew for up to five renewal terms of eight (8) years each (each, a "***Renewal Term***") unless Grantor, upon the vote of at least eighty percent (**80%**) of the members of the City Council after a public hearing, or Grantee, by unanimous vote of its governing body after a public hearing, gives written notice of its intent not to renew this Easement. Such notice must be given at least one (1) year prior to expiration of the Initial Term or any applicable Renewal Term. Upon the expiration or sooner termination of this Easement, the rights and obligations of the parties, except for any rights or obligations which expressly or by their context survive this Easement (such as indemnity rights and obligations), will cease and the Property will no longer be encumbered by this Easement.

5. RIGHTS AND OBLIGATIONS OF GRANTOR.

A. Maintenance and Management. Grantor expressly reserves and retains all rights associated with the ownership of the Property, subject to any restrictions imposed under this Easement. Grantor retains the right and responsibility to maintain and manage the Property for the Public Purposes. Subject to the terms of this Easement and the Management Plan (as defined below), Grantor's exclusive authority over the Property includes the following:

(1) *Water Resources*. Grantor owns or is authorized to use and maintain water resources and water-related infrastructure, including springs, water tanks, water storage ponds, ditches, and pipelines, as part of Grantor's public responsibility as a municipality. Grantor may develop, add to, enhance, install, maintain, repair, relocate, and replace such existing water

resources and infrastructure. The parties acknowledge that this Easement does not impair any existing rights of Alpine Irrigation Company, its successors, or assigns to use and maintain its existing water resources and infrastructure on the Property, or any rights or obligations of Grantor with respect to such resources and infrastructure.

(2) *Public Access, Trails, and Trailheads*. Grantor has the right to identify, maintain, reroute, relocate, improve, and construct recreational and educational trails and trailhead parking areas on the Property for the benefit of the public, including to provide access for those with disabilities. Grantor may temporarily or permanently close trails as necessary for public safety, maintenance, trail restoration, or otherwise, consistent with the Public Purposes.

(3) *Fire Suppression*. Grantor retains the right to remove brush and vegetation and take other measures as necessary to minimize the risk of wildfire, or to suppress wildfires, on or adjacent to the Property. Grantor reserves the right to restrict target shooting, hunting, or any firearm discharge or fireworks on the Property.

(4) *Utilities*. Notwithstanding any provision of this Easement to the contrary, Grantor may maintain, improve, repair, replace or relocate existing utilities, including the existing cell tower, as long as the Property is restored, as much as reasonably practicable, to its original undisturbed nature. Grantor may allow for co-location on the existing cell tower, but no new cell towers will be permitted on the Property unless otherwise provided in the Management Plan (as defined below). Grantor reserves the right to install, construct, maintain, repair, and replace new underground utilities as long as the Property is restored, as much as reasonably practicable, to its original undisturbed nature.

(5) *Park Facilities and Public Gathering Areas*. Grantor retains the right to construct and improve existing park facilities, bathroom facilities, emergency aid facilities, landscaping, picnic areas, pavilions, boweries, and gathering areas on the Property. Grantor may install other park improvements, such as bridges, boardwalks, culverts, and separated street crossings, for the public use and enjoyment so long as they are consistent with the Public Purposes.

(6) *Fencing*. Grantor may construct new fencing, replace existing fencing, and install gates for the purpose of defining Property boundaries, delineating specific uses, or restricting unauthorized access across the Property consistent with the Public Purposes.

(7) *Roads*. Grantor may maintain and allow the use of existing maintenance roads (including the road to the existing cell tower), emergency access roads, the rodeo grounds road, and other roads on the Property (paved or unpaved) consistent with their historical maintenance and use. Except as otherwise provided in this Easement, Grantor may construct new roads only as necessary to provide access to trailhead parking areas or to maintain critical infrastructure consistent with the Public Purposes. Grantor may reroute or improve the portion of Box Elder Drive that crosses the Property and may improve the portion of Grove Drive that crosses the Property as reasonably necessary to maintain or enhance public safety. Grantor retains the right to adopt and enforce policies prohibiting or restricting motorized vehicles in designated areas of the Property.

(8) *Rodeo Grounds*. Grantor reserves the right to use and maintain the portion of the Property known as the "rodeo grounds" and associated roads and parking areas for public

events.

(9) *Signs*. Grantor may place signs on the Property, except for commercial, political, or other off-premise signs or billboards, as long as the signs do not materially interfere with the Public Purposes.

(10) *Public Safety*. Grantor retains the right to conduct and restrict activities on the Property as reasonably necessary to preserve the public health, safety, and welfare, including for purposes of fire suppression and prevention; flood control and prevention; response to avalanche, earth movement, and other circumstances beyond Grantor's control; and preventing similar threats or injury to persons or property. Grantor may adopt and enforce rules regulating hours of use or activities on the Property, including rules governing the interaction among pedestrian, equestrian, bicycle, and other uses, in order to promote public safety.

B. Management Plan. The parties acknowledge that Grantor has adopted a Lambert Park Management Plan for the ongoing maintenance and management of the Property (the "***Management Plan***"). The Management Plan provides for the adoption and enforcement of rules and regulations for the use of the Property and provides plans for the maintenance of and improvements to the Property. Any amendment or other modification of the Management Plan will be permitted only if it is consistent with the Public Purposes and receives the affirmative vote of at least eighty percent (**80%**) of the members of the City Council. Notwithstanding the foregoing, the unanimous vote of all members of the City Council is required for any amendment or modification that would allow the addition of a paved vehicle roadway, pavement of an existing unpaved vehicle roadway (such as the Moyle Drive Extension), the addition or expansion of a paved parking area, or the disposition of any parcel of land within the Property.

C. Indemnity. Grantor will defend, indemnify, and hold harmless Grantee, its elected and appointed officials, employees, agents, and volunteers (collectively, the "***Grantee Parties***") from and against any claim, demand, damage, liability, loss, or cost (including reasonable attorney fees) (collectively, "***Claim***") to the extent arising out of or resulting from (i) the acts or omissions of Grantor, its elected and appointed officials, employees, agents, and volunteers (collectively, the "***Grantor Parties***") related to this Easement or the Property; (ii) Grantee's enforcement of any breach, or threatened breach, of this Easement; (iii) the presence or release of any toxic or hazardous material or substance on the Property, except to the extent the presence or release was directly caused by Grantee; or (iv) any Claim made by a third party related to this Easement or the Property. Grantee will be entitled to select counsel and control the defense and settlement of the Claim.

D. Summary of Voting and Public Hearing Requirements. Grantor will comply with the voting and public hearing requirements of this Easement, which are summarized below:

Action	**Vote of City Council**	**Public Hearing**
Amendment/Waiver of Easement Provision	80%	Yes
Non-renewal of Easement	80%	Yes
Amendment of Management Plan	80%	Yes

Amendment of Management Plan Allowing Paved Roadway, Additional Paved Parking, or Disposition of Property	100%	Yes

To the extent this summary conflicts with the specific voting requirements in the body of this Agreement, such specific voting requirements shall control.

E. Administrative Fee. In consideration of Grantee's agreement to hold and enforce this Easement, Grantor will pay Grantee an administrative fee of FIVE THOUSAND AND NO/100 DOLLARS (**$5,000.00**) upon execution of this Easement.

F. Enforcement Reserve. Grantor will deposit FIVE THOUSAND AND NO/100 DOLLARS (**$5,000.00**) with Grantee upon the commencement of each Renewal Term, if any. Such deposits, if any, will be used as a reserve (the "***Enforcement Reserve***") against Grantee's costs of enforcing this Easement. Grantee may draw upon the Enforcement Reserve as necessary to reimburse Grantee's costs of enforcement in the event of a breach or threatened breach of this Easement. Upon the expiration or sooner termination of this Easement, Grantee will return to Grantor any unused balance of the Enforcement Reserve.

6. RIGHTS AND OBLIGATIONS OF GRANTEE.

A. Enforcement. Grantee shall have the right and responsibility to enforce this Easement through appropriate legal proceedings in the event of a default or threatened default by Grantor or any act of a third party that has or would have a material adverse impact on the Public Purposes.

B. Inspection. Grantee shall have the right to enter upon the Property at reasonable times and in a reasonable manner to monitor Grantor's compliance with and otherwise enforce the terms of this Easement. In the case of an emergency, as determined by Grantee, Grantee shall notify Grantor prior to entering onto the Property, if possible, or as soon thereafter as is reasonably practical.

C. Indemnity. Grantee will indemnify and hold harmless Grantor Parties from and against any Claim to the extent arising out of or resulting from Grantee's unwarranted enforcement of any violation, or threatened violation, of this Easement, as determined by a court of competent jurisdiction. Grantor will be entitled to select counsel and control the defense and settlement of any such Claim.

D. Voting and Public Hearing Requirements. Any amendment to, waiver of, or consent given under this Easement that would have a material adverse impact on the Public Purposes will require a public hearing and the concurring vote of a majority of the members of Grantee's governing body. Any notice of non-renewal of this Easement will require a public hearing and the unanimous vote of Grantee's governing body.

7. DEFAULT. Either party will be in default if the party substantially fails to perform its obligations under this Easement and, after sixty (60) days' written notice from the non-defaulting party of such failure, the party has not cured the failure; or, if the failure is not capable of being cured within such time, has not commenced to cure the failure within such time and diligently completed the cure within a reasonable time thereafter, as determined by non-

defaulting party.

8. REMEDIES. In the event of either party's default, the other party may pursue any remedy allowed under this Easement, at law, or in equity. In the event of a threatened default by Grantor or the act of a third party that has or would have a material adverse impact on the Public Purposes, Grantee will be specifically entitled to pursue temporary, preliminary, and permanent injunctive relief to prevent the default and restore the Property, as much as reasonably practicable, to its original condition. The parties' respective remedies under this Easement, at law, or in equity are cumulative.

9. SUPERIORITY OF EASEMENT AND RESTRICTION ON TRANSFER. Any conveyance, lease, mortgage, trust deed, lien, judgment, encumbrance, or other interest executed or entered against the Property after the Effective Date (collectively, an "***Encumbrance***") shall be subordinate to this Easement and shall not entitle the holder of the Encumbrance to violate the terms of this Easement or otherwise create a material adverse impact on the Public Purposes. Further, any such Encumbrance (other than a valid judgment of a court of competent jurisdiction) shall be prohibited without the consent of Grantor, which consent shall not be unreasonably withheld.

10. EXTINGUISHMENT. This Easement may be extinguished in whole or in part (whether through release, termination, eminent domain, abandonment, swap, exchange, reconfiguration, or otherwise) only (A) through a judicial proceeding in a court of competent jurisdiction, and (B) upon a finding by the court that a subsequent unexpected change in conditions has made impossible or impractical the continued use of the Property (or the portion thereof to be removed from this Easement) for conservation purposes. Any removal of land from this Easement constitutes an extinguishment regardless of how such removal might be characterized. In the event of an extinguishment of this Easement, the Easement shall revert to Grantor.

11. MERGER. The Parties intend that this Easement will not merge even in the event Grantee becomes the fee title owner of the Property. No merger of interest shall diminish Grantee's duty to uphold the public trust conveyed by this Easement.

12. AMENDMENT. This Easement may be amended only by mutual written consent after a public hearing before Grantor's City Council and a public hearing before Grantee's governing body. No amendment will be valid except upon the concurring vote of eighty percent (**80%**) of the members of Grantor's City Council and a majority of Grantee's governing body.

13. GOVERNMENTAL IMMUNITY. Grantor and Grantee are governmental entities under the Governmental Immunity Act of Utah, *Utah Code Ann.* § 63G-7-101, *et seq.* (the "***Governmental Immunity Act***"). Consistent with the Governmental Immunity Act, each party will be responsible for the wrongful or negligent acts or omissions of its own elected or appointed officials, employees, agents, and volunteers. Neither party waives any defense or any limit of liability available under the Governmental Immunity Act. Each party will notify the other party within thirty (30) days after receiving a notice of claim under the Governmental Immunity Act for which either party may have an obligation to defend, indemnify, and hold harmless the other party. If a party is served with a summons or complaint for which the other party may have an obligation to defend, indemnify, and hold harmless, it will notify the other party at least fourteen (14) days before a response to the summons or complaint is due.

14. MISCELLANEOUS PROVISIONS.

A. Assignment. Neither party will assign any rights or delegate any obligations under this Agreement without the other party's prior written consent, which will not be unreasonably withheld. Notwithstanding the foregoing, as a condition of Grantor's consent, (i) the transferee must be qualified to hold a conservation easement under Utah law; and (ii) the transferee must agree in writing to be bound by and carry out the obligations of Grantee under this Easement.

B. Covenants Run with the Land. The covenants contained in this Easement touch and concern real property and run with the land. This Easement will be binding upon the parties' respective successors, permitted assigns, agents, and legal representatives. Either party may record this Easement.

C. Severability. The provisions of this Easement are severable, and the invalidity or unenforceability of any provision of this Easement will not affect the validity or enforceability of the remaining provisions.

d. Captions. The section and paragraph headings contained in this Easement are for the purpose of reference only and will not limit or otherwise affect the construction of any provision of this Easement.

e. Entire Agreement; Modification; Waiver. This Easement constitutes the entire agreement and understanding of the parties with respect to its subject matter, and supersedes all previous or contemporaneous representations or agreements of the parties in that regard. Subject to other provisions of this Easement, no modification of this Easement will be valid or binding unless made in writing and signed by both parties. Any waiver of any provision of this Easement must be in writing and must be signed by the party waiving the provision.

f. No Third-Party Beneficiaries. This Easement is made for the exclusive benefit of the parties and their respective heirs, successors, and assigns. No other person or entity, including residents of Grantor and Grantee, will have any interest under this Easement or be classified as a third-party beneficiary. Neither party will be liable to any claimant for any obligation of the other party under this Easement or otherwise.

g. Time of Essence. Time is of the essence in the performance of all obligations under this Easement.

h. Governing Law. THIS EASEMENT WILL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF UTAH, EXCEPT AS SUCH LAWS MAY BE PREEMPTED OR SUPERSEDED BY THE LAWS OF THE UNITED STATES. THE PARTIES HEREBY CONSENT TO THE JURISDICTION OF THE COURTS OF THE STATE OF UTAH, OR THE COURTS OF THE UNITED STATES OF AMERICA LOCATED IN THE STATE OF UTAH, AS THE CASE MAY BE, WITH VENUE IN UTAH COUNTY OR, FOR FEDERAL COURT, SALT LAKE CITY, UTAH, AS THE SOLE FORUM FOR ANY LITIGATION ARISING OUT OF THIS EASEMENT.

i. No Partnership. The transactions contemplated under this Easement do not constitute a partnership, joint venture or other association between the parties.

j. Notice. All notices required under this Easement must be in writing and will be deemed to have been sufficiently given or served when presented personally or when deposited in the United States Mail, by registered or certified mail or by email with a "read receipt" tracking option, addressed as follows:

TO GRANTOR: Alpine City
Attention: City Administrator
20 North Main Street
Alpine, Utah 84004
Email: ssorensen@alpinecity.org

TO GRANTEE: Utah County
Attn: County Attorney, Civil Division Chief
100 East Center Street
Provo, Utah 84606
Email: _____

Either party may designate a different address by written notice to the other party. Any notice given under this Easement will be deemed given as of the date delivered or mailed.

k. No Separate Legal Entity. No separate legal entity is created by this Easement.

l. Interlocal Cooperation Act Compliance. Each party represents and warrants that it has submitted this Easement to its authorized attorney for review and approval as to form, and has otherwise complied with the Interlocal Cooperation Act in connection with the execution of this Easement. A duly executed original or counterpart of this Easement will be filed with the keeper of records of each party in accordance with the Interlocal Cooperation Act.

m. Warranty of Authority. The persons signing this Easement on behalf of a party hereby warrant that they have the requisite authority to execute this Easement on the party's behalf, and the party has agreed to be and is bound hereby.

n. Exhibits. All exhibits to this Easement are incorporated in this Easement by reference.

o. Counterparts. This Easement may be executed in any number of counterparts, each of which will be deemed an original, and all which constitute one instrument.

[Signatures on following page.]

IN WITNESS WHEREOF, the parties have executed this Easement as of the Effective Date.

GRANTOR:

ALPINE CITY

_____
Carla Merrill, *Mayor*

ATTEST:

_____
Bonnie Cooper, *City Recorder*

STATE OF UTAH)
: ss
County of Utah)

The foregoing instrument was acknowledged before me on _____, 2023, by Carla Merrill and Bonnie Cooper in their capacity as Alpine City Mayor and Alpine City Recorder, respectively.

_____
Notary Public

APPROVED AS TO FORM AND LEGALITY:

BENNETT TUELLER JOHNSON & DEERE

_____
Stephen B. Doxey
Alpine City Attorney

GRANTEE:

UTAH COUNTY

_____
Amelia Powers Gardner, *Chair, Utah County Commission*

ATTEST:

_____
Aaron R. Davidson, *Utah County Clerk*

STATE OF UTAH)
: ss
County of Utah)

The foregoing instrument was acknowledged before me on _____, 2023, by Amelia Powers Gardner and Aaron R. Davidson in their capacity as Chair of the Utah County Commission and Utah County Clerk, respectively.

_____
Notary Public

APPROVED AS TO FORM AND LEGALITY:

Utah County Attorney

_____
_____, _____

EXHIBIT A

Legal Description of Property

EXHIBIT B

Property Map

ALPINE CITY

RESOLUTION NO. R2023-30
A RESOLUTION APPROVING THE LAMBERT PARK DEED OF TEMPORARY CONSERVATION EASEMENT AND AUTHORIZING THE MAYOR TO EXECUTE, DELIVER, AND RECORD THE CONSERVATION EASEMENT SUBJECT TO UTAH COUNTY'S APPROVAL AND EXECUTION

WHEREAS, Lambert Park is an invaluable asset of Alpine City (the "***City***") that provides significant public benefit, both to residents of the City and to others who use the Park;

WHEREAS, as owner of the Park, the City has the right and responsibility to manage the Park, including the right to protect, preserve, and maintain the Park predominantly in a natural, scenic, and open condition, and for recreational, agricultural, cultural, historical, and educational use to benefit the public (collectively, the "***Public Purposes***");

WHEREAS, the City, through its duly appointed Lambert Park Preservation Committee, Planning Commission, and City Council, has studied extensively various options for preserving and maintaining Lambert Park consistent with the Public Purposes;

WHEREAS, the City has held numerous public meetings and public hearings to consider such options, and has received abundant public input on the options considered;

WHEREAS, the Utah Land Conservation Easement Act, *Utah Code Ann.* § 57-18-1 *et seq.* (the "***Conservation Easement Act***"), authorizes the City to grant to another governmental entity a conservation easement over and across the Park to further the Public Purposes;

WHEREAS, the Planning Commission, after public hearing, has recommended the conveyance to Utah County of a deed of temporary conservation easement over and across Lambert Park in the form of the attached **Exhibit A** (the "***Conservation Easement***");

WHEREAS, the City Council received public input on the Planning Commission's recommendation at a public hearing during its meeting on September 12, 2023;

WHEREAS, the City Council finds that it is in the best interest of the health, safety, and welfare of the City and its residents to approve and authorize the conveyance, execution, and recordation of the Conservation Easement, subject to Utah County's approval and execution of the same;

NOW THEREFORE, BE IT RESOLVED by the City Council of Alpine City:

1. The foregoing recitals are true and correct.

2. The Lambert Park Deed of Temporary Conservation Easement in the form attached as **Exhibit A** is hereby approved.

3. The Mayor is authorized to execute, deliver, and record the Conservation Easement, subject to Utah County's approval and execution of the Conservation Easement.

PASSED AND APPROVED this 26th day of September, 2023.

By:_____
Carla Merrill, *Mayor*

[SEAL]

VOTING:

Jessica Smuin	Yea ____Nay ____
Lon Lott	Yea ____Nay ____
Jason Thelin	Yea ____Nay ____
Kelli Law	Yea ____Nay ____
Greg Gordon	Yea ____Nay ____

ATTEST:

_____
Bonnie Cooper, *City Recorder*

EXHIBIT A

Lambert Park Deed of Temporary Conservation Easement

ALPINE CITY COUNCIL AGENDA

SUBJECT: Extension of Existing Non-Conforming Shed.

FOR CONSIDERATION ON: September 26th, 2023

PETITIONER: Justin Spaulding

ACTION REQUESTED BY PETITIONER: Approval of the Expansion of a Legal Non-Conforming Shed at 45 E 100 N.

BACKGROUND INFORMATION:
Justin Spaulding has submitted an application to expand his existing shed located at 45 E 100 N. The shed is considered legal non-conforming meaning when it was originally constructed it met the code requirements at that time. Due to changes in the code, if it was built today, it would be considered non-conforming because it does not meet the side setback standards of at least five feet from the property line. Currently, it ranges from two to three feet to the east property line. This expansion will be used for a home office.
The applicant is seeking approval from the city council to expand the shed going West on the property. *Alpine Development Code 3.22.070 Extension (Enlargement) and Reconstruction of Non-Conforming Buildings; Conditions* allow the expansion of non-conforming structures after approval by the City Council with the recommendation of the Planning Commission.
The Planning Commission reviewed this application during their September 19th meeting.

ALPINE CITY CODE
Alpine Development Code 3.07.080 Special Provisions #12
This section regulates the setback requirements and possible exceptions for accessory structures within the Business-Commercial zone. The following setbacks currently apply.

a) Setback from the main building. Accessory Structures shall be set back not less than five (5) feet from the main building.
b) Front Setback. Accessory buildings shall be set back not less than forty (40) feet from the front property line.
c) Interior Lot Line. Accessory buildings shall be set back no less than ten (10) feet from the rear lot line and five (5) feet from the side lot line, except that no minimum rear or side setback shall be required when all the following conditions are met….

Because of the height of the shed, 14’8.5” it does not meet the requirements for an exception to this setback requirement.

Alpine Development Code 3.22.070 Extension (Enlargement) And Reconstruction of Non-Conforming Buildings; Conditions;
This section allows for non-conforming structures to be approved after review by the City Council and Planning Commission. The following standards need to be met for approval to be granted, there can also be conditions associated with the approval if deemed necessary:

1. The proposed extension or replacement shall be located entirely on the same lot or parcel as the present non-conforming structure and will conform with all current setback and location requirements.
2. The applicant shall submit a detail site plan showing the location of existing and proposed structures on the site and in the vicinity, existing lot boundaries, roads, driveways, parking areas, utilities and other significant features on the site and in the immediate vicinity.
3. A finding made by a majority vote of the Council that:

a) The proposed enlargement or extension will not significantly alter the character of the building or use or its impact upon the area.
b) The building or use, if extended, will not have the effect of diminishing the value of property or the quality of living environment of adjacent properties.
c) The proposed enlargement will not significantly increase the number of vehicles or pedestrians, or result in the establishment or increase of a safety hazard to the area.
d) The proposed enlargement will not result in the establishment of a condition incompatible with the neighborhood area and the stated objective of the zone in which it is located.

STAFF RECOMMENDATION:
Because this expansion of a legal non-conforming structure does not further violate setback standards and appears to meet the requirements in the referenced code, staff recommends that the Planning Commission recommend approval to the city council with the following conditions as allowed in Alpine Development Code 3.22.070

1. The applicant submits an updated site plan showing the proposed addition will be at least 5 feet away from the main building as required in Alpine Development Code 3.07.080 #12 (a).
2. The applicant sign an agreement with the city indicating this structure will not be used as an accessory apartment that will be recorded against the property with the County Recorder. The city uses such an agreement when detached structures are submitted that have shown or appear could easily be converted to an apartment.

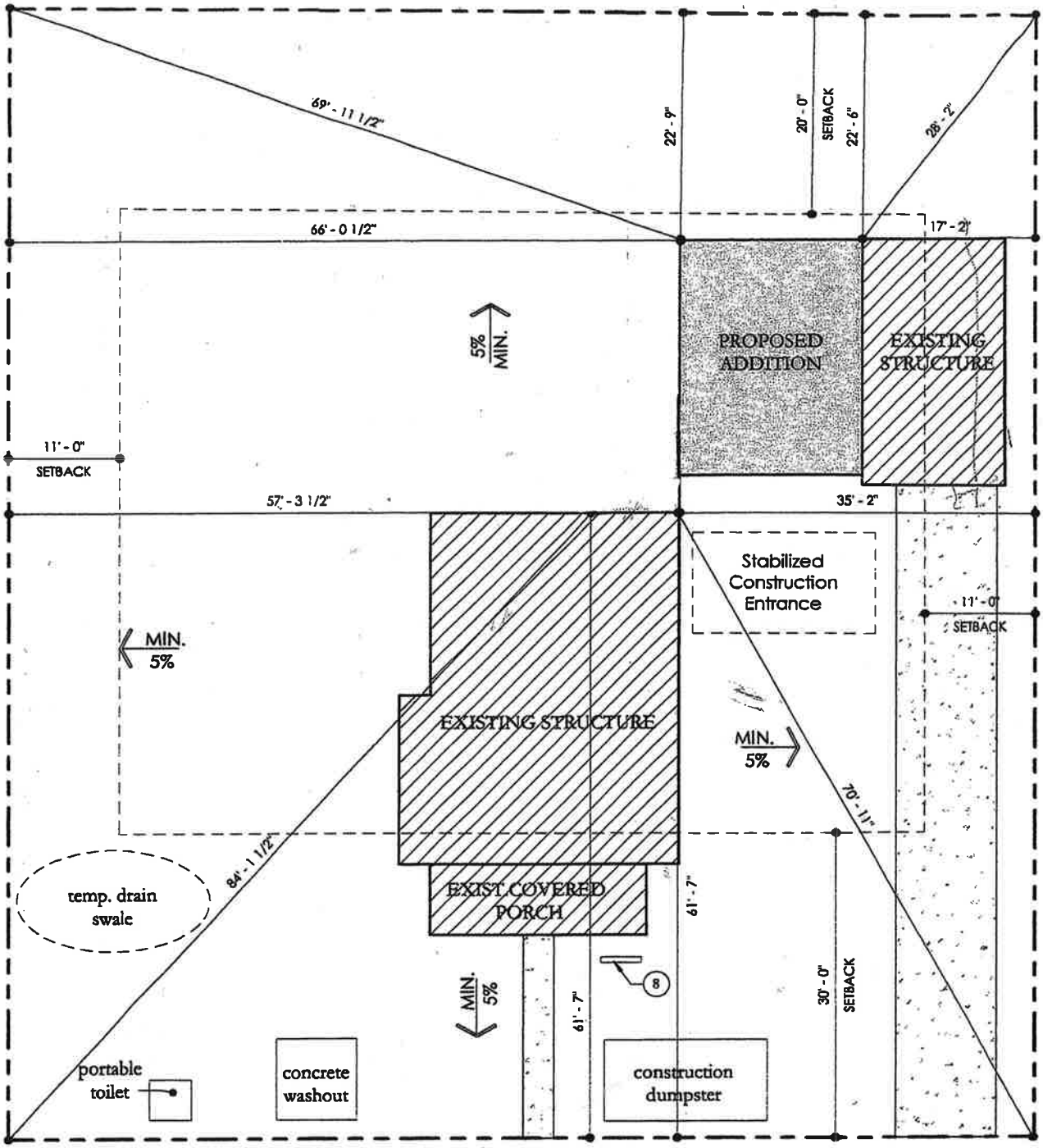
SAMPLE MOTION TO APPROVE:
I move to recommend approving the expansion of the legal non-conforming structure at 45 E 100 N as proposed.

SAMPLE MOTION TO APPROVE WITH CONDITIONS:
I move to recommend approving the expansion of the legal non-conforming structure at 45 E 100 N as proposed with the following conditions/changes:

- **insert finding**

SAMPLE MOTION TO TABLE/DENY:
I move that the expansion of the legal non-conforming structure at 45 E 100 N as proposed be tabled/denied based on the following:

- **insert finding**


69' - 11 1/2"
22' - 9"
20' - 0"
SETBACK
22' - 6"
28' - 2"
66' - 0 1/2"
17' - 2"
5%
MIN.
PROPOSED ADDITION
EXISTING STRUCTURE
11' - 0"
SETBACK
57' - 3 1/2"
35' - 2"
Stabilized Construction Entrance
11' - 0"
SETBACK
MIN.
5%
EXISTING STRUCTURE
MIN.
5%
70' - 11"
84' - 1 1/2"
temp. drain swale
EXIST. COVERED PORCH
61' - 7"
8
MIN.
5%
61' - 7"
30' - 0"
SETBACK
portable toilet
concrete washout
construction dumpster



Utah County Parcel Map

Layout1

1 inch equals 94 feet

Date: 9/15/2023

This cadastral map is generated from Utah County Recorder data. It is for reference only and no liability is assumed for any inaccuracies, incorrect data or variations with an actual survey.

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Utah County

ALPINE CITY COUNCIL AGENDA

SUBJECT: **Resolution R2023-32: A Resolution Ratifying A Real Estate Purchase Contract for the Purchase of Real Property Located at 124 East 100 South, Alpine, Utah, and Approving the Purchase and Authorizing the Mayor to Execute the Closing Documents**

FOR CONSIDERATION ON: **September 26, 2023**

PETITIONER: **City Staff**

ACTION REQUESTED BY PETITIONER: **Review and consider approval of Resolution R2023-32 authorizing the Purchase of Specific Property at 124 East 100 South.**

BACKGROUND INFORMATION:

The City is under contract to purchase a piece of property. The City Council will consider approval of Ordinance R2023-32, ratifying a real estate purchase contract for the purchase of the property located at 124 East 100 South, Alpine, Utah, and approving the purchase and authorizing the Mayor to execute closing documents.

STAFF RECOMMENDATION:
Review and approve Resolution R2023-32 ratifying a real estate purchase contract for the purchase of real property located at 124 East 100 South, Alpine, Utah, and approving the purchase and authorizing the Mayor to execute closing documents.

SAMPLE MOTION TO APPROVE:
I move to approve Resolution R2023-32 ratifying a real estate purchase contract for the purchase of real property located at 124 East 100 South, Alpine, Utah, and approving the purchase and authorizing the Mayor to execute closing documents.

SAMPLE MOTION TO APPROVE WITH CONDITIONS:
I move to approve Resolution R2023-32 ratifying a real estate purchase contract for the purchase of real property located at 124 East 100 South, Alpine, Utah, and approving the purchase and authorizing the Mayor to execute closing documents with the following conditions/changes:

- **insert finding**

SAMPLE MOTION TO TABLE/DENY:
I move to table/deny Resolution R2023-32 based on the following:

- **insert finding**

ALPINE CITY

RESOLUTION NO. R2023-32
A RESOLUTION RATIFYING A REAL ESTATE PURCHASE CONTRACT FOR THE PURCHASE OF REAL PROPERTY LOCATED AT 124 EAST 100 SOUTH, ALPINE, UTAH; APPROVING THE PURCHASE; AND AUTHORIZING THE MAYOR TO EXECUTE THE CLOSING DOCUMENTS

WHEREAS, Alpine City (the "***City***") entered into a Real Estate Purchase Contract dated August 24, 2023, a copy of which is attached as **Exhibit A** (the "***REPC***"), for the purchase of real property located at 124 East 100 South, Alpine, Utah 84004 (the "***Property***");

WHEREAS, in compliance with Section 8.02.020 of the Alpine Municipal Code and *Utah Code Ann.* § 10-8-2, the City Council has determined to complete the purchase of the Property pursuant to the REPC for the City's benefit, concluding that the purchase is in the public interest and complies with applicable law;

WHEREAS, the City Council finds that the purchase of the Property will provide for the safety, health, prosperity, moral well-being, peace, order, comfort, or convenience of the City's residents;

NOW THEREFORE, BE IT RESOLVED by the City Council of Alpine City:

1. The foregoing recitals are true and correct.

2. The REPC in the form attached as **Exhibit A** is hereby approved and ratified.

3. The purchase of the Property on the terms provided in the REPC is hereby approved.

4. The Mayor is authorized to execute and deliver all documents, and take all actions, required to complete the purchase of the Property on the terms provided in the REPC.

[Signatures on following page.]

PASSED AND APPROVED this 26th day of September, 2023.

By:_____
Carla Merrill, *Mayor*

[SEAL]

VOTING:

Jessica Smuin	Yea ___ Nay ___
Lon Lott	Yea ___ Nay ___
Jason Thelin	Yea ___ Nay ___
Kelli Law	Yea ___ Nay ___
Greg Gordon	Yea ___ Nay ___

ATTEST:

_____
Bonnie Cooper, *City Recorder*

EXHIBIT A

Real Estate Purchase Contract

REAL ESTATE PURCHASE CONTRACT

This is a legally binding Real Estate Purchase Contract ("REPC"). Utah law requires real estate licensees to use this form. Buyer and Seller, however, may agree to alter or delete its provisions or to use a different form. If you desire legal or tax advice, consult your attorney or tax advisor.

EARNEST MONEY DEPOSIT

On this 24th day of August, 2023 ("Offer Reference Date") Alpine City ("Buyer") offers to purchase from John McGilvary ("Seller") the Property described below and **agrees to deliver no later than four (4) calendar days after Acceptance (as defined in Section 23),** an Earnest Money Deposit in the amount of $7000 in the form of Check/Wire. After Acceptance of the REPC by Buyer and Seller, and receipt of the Earnest Money by the Brokerage, the Brokerage shall have four (4) calendar days in which to deposit the Earnest Money into the Brokerage Real Estate Trust Account.

OFFER TO PURCHASE

1. **PROPERTY:** 124 E 100 S, Alpine, Utah County, UT 84004
City of Alpine, County of Utah, State of Utah, Zip 84004 Tax ID No. 02-001-0008 (the "Property"). Any reference below to the term "Property" shall include the Property described above, together with the Included Items and water rights/water shares, if any, referenced in Sections 1.1, 1.2 and 1.4.

1.1 Included Items. Unless excluded herein, this sale includes the following items if presently owned and in place on the Property: plumbing, heating, air conditioning fixtures and equipment; solar panels; ovens, ranges and hoods; cook tops; dishwashers; ceiling fans; water heaters; water softeners; light fixtures and bulbs; bathroom fixtures and bathroom mirrors; all window coverings including curtains, draperies, rods, window blinds and shutters; window and door screens; storm doors and windows; awnings; satellite dishes; all installed TV mounting brackets; all wall and ceiling mounted speakers; affixed carpets; automatic garage door openers and accompanying transmitters; security system; fencing and any landscaping.

1.2 Other Included Items. The following items that are presently owned and in place on the Property have been left for the convenience of the parties and are also included in this sale **(check applicable box): [ ] washers [ ] dryers [X] refrigerators [ ] microwave ovens**
[ ] other (specify) _____

The above checked items shall be conveyed to Buyer under separate bill of sale with warranties as to title. In addition to any boxes checked in this Section 1.2 above, there **[ ] ARE [ ] ARE NOT** additional items of personal property Buyer intends to acquire from Seller at Closing by separate written agreement.

1.3 Excluded Items. The following items are excluded from this sale: _____

1.4 Water Service. The Purchase Price for the Property shall include all water rights/water shares, if any, that are the legal source for Seller's current culinary water service and irrigation water service, if any, to the Property. The water rights/water shares will be conveyed or otherwise transferred to Buyer at Closing by applicable deed or legal instruments. The following water rights/water shares, if applicable, are specifically excluded from this sale: _____

2. **PURCHASE PRICE.**

2.1 Payment of Purchase Price. The Purchase Price for the Property is $760000. Except as provided in this Section, the Purchase Price shall be paid as provided in Sections 2.1(a) through 2.1(e) below. Any amounts shown in Sections 2.1(c) and 2.1(e) may be adjusted as deemed necessary by Buyer and the Lender (the "Lender").

$7000	**(a) Earnest Money Deposit.** Under certain conditions described in the REPC, this deposit may become totally non-refundable.
$	**(b) Additional Earnest Money Deposit** (see Section 8.4 if applicable)
$	**(c) New Loan.** Buyer may apply for mortgage loan financing (the "Loan") on terms acceptable to Buyer: If an FHA/VA loan applies, see attached FHA/VA Loan Addendum.
$	**(d) Seller Financing** (see attached Seller Financing Addendum)
$753000	**(e) Balance of Purchase Price in Cash at Settlement**
$760000	**PURCHASE PRICE. Total of lines (a) through (e)**

2.2 Sale of Buyer's Property. Buyer's ability to purchase the Property, to obtain the Loan referenced in Section 2.1(c) above, and/or any portion of the cash referenced in Section 2.1(e) above **[ ] IS [X] IS NOT** conditioned upon the sale of real estate owned by Buyer. If checked in the affirmative, the terms of the attached subject to sale of Buyer's property addendum apply.

3. **SETTLEMENT AND CLOSING.**

3.1 Settlement. Settlement shall take place no later than the Settlement Deadline referenced in Section 24(d), or as otherwise mutually agreed by Buyer and Seller in writing. "Settlement" shall occur only when all of the following have been completed: (a) Buyer and Seller have signed and delivered to each other or to the escrow/closing office all documents required by the REPC, by the Lender, by the

Buyer's Initials SS DS 8/24/2023 | 2:38 PM MDT Date _____ Seller's Initials _____ Date _____

title insurance and escrow/closing offices, by written escrow instructions (including any split closing instructions, if applicable), or by applicable law; (b) any monies required to be paid by Buyer or Seller under these documents (except for the proceeds of any Loan) have been delivered by Buyer or Seller to the other party, or to the escrow/closing office, in the form of cash, wire transfer, cashier's check, or other form acceptable to the escrow/closing office.

3.2 Closing. For purposes of the REPC, "Closing" means that: (a) Settlement has been completed; (b) the proceeds of any new Loan have been delivered by the Lender to Seller or to the escrow/closing office; and (c) the applicable Closing documents have been recorded in the office of the county recorder ("Recording"). The actions described in 3.2 (b) and (c) shall be completed no later than four calendar days after Settlement.

3.3 Possession. Except as provided in Section 6.1(a) and (b), Seller shall deliver physical possession of the Property to Buyer as follows: **[ ] Upon Recording; [ ] ____ Hours after Recording; [X]** 30 **Calendar Days after Recording.** Any contracted rental of the Property prior to or after Closing, between Buyer and Seller, shall be by separate written agreement. Seller and Buyer shall each be responsible for any insurance coverage each party deems necessary for the Property including any personal property and belongings. The provisions of this Section 3.3 shall survive Closing.

4. PRORATIONS / ASSESSMENTS / OTHER PAYMENT OBLIGATIONS.

4.1 Prorations. All prorations, including, but not limited to, homeowner's association dues, property taxes for the current year, rents, and interest on assumed obligations, if any, shall be made as of the Settlement Deadline referenced in Section 24(d), unless otherwise agreed to in writing by the parties. Such writing could include the settlement statement. The provisions of this Section 4.1 shall survive Closing.

4.2 Special Assessments. Any assessments for capital improvements as approved by the homeowner's association ("HOA") (pursuant to HOA governing documents) or as assessed by a municipality or special improvement district, prior to the Settlement Deadline shall be paid for by: **[X] Seller [ ] Buyer [ ] Split Equally Between Buyer and Seller [ ] Other (explain)** _____.

The provisions of this Section 4.2 shall survive Closing.

4.3 Fees/Costs/Payment Obligations.

(a) Escrow Fees. Unless otherwise agreed to in writing, Seller and Buyer shall each pay their respective fees charged by the escrow/closing office for its services in the settlement/closing process. The provisions of this Section 4.3(a) shall survive Closing.

(b) Rental Deposits/Prepaid Rents. Rental deposits (including, but not limited to, security deposits, cleaning deposits and prepaid rents) for long term lease or rental agreements, as defined in Section 6.1(a), and short-term rental bookings, as defined in Section 6.1(b), not expiring prior to Closing, shall be paid or credited by Seller to Buyer at Settlement. The provisions of this Section 4.3(b) shall survive Closing.

(c) HOA/Other Entity Fees Due Upon Change of Ownership. Some HOA's, special improvement districts and/or other specially planned areas, under their governing documents charge a fee that is due to such entity as a result of the transfer of title to the Property from Seller to Buyer. Such fees are sometimes referred to as transfer fees, community enhancement fees, HOA reinvestment fees, etc. (collectively referred to in this section as "change of ownership fees"). Regardless of how the change of ownership fee is titled in the applicable governing documents, if a change of ownership fee is due upon the transfer of title to the Property from Seller to Buyer, that change of ownership fee shall, at Settlement, be paid for by: **[ ] Seller [ ] Buyer [ ] Split Equally Between Buyer and Seller [ ] Other (explain)** _____. The provisions of this Section 4.3(c) shall survive Closing.

(d) Utility Services. Buyer agrees to be responsible for all utilities and other services provided to the Property after the Settlement Deadline. The provisions of this Section 4.3(d) shall survive Closing.

(e) Sales Proceeds Withholding. The escrow/closing office is authorized and directed to withhold from Seller's proceeds at Closing, sufficient funds to pay off on Seller's behalf all mortgages, trust deeds, judgments, mechanic's liens, tax liens and warrants. The provisions of this Section 4.3(e) shall survive Closing.

5. CONFIRMATION OF AGENCY DISCLOSURE. Buyer and Seller acknowledge prior written receipt of agency disclosure provided by their respective agent that has disclosed the agency relationships confirmed below. At the signing of the REPC:

Seller's Agent(s) Ned Chidester, represent(s) **[ ] Seller [X] both Buyer and Seller as Limited Agent(s);**

Seller's Agent(s) Utah Real Estate License Number(s): 5484690

Seller's Brokerage Berkshire Hathaway HomeServices Elite Real Estate represents **[ ] Seller [X] both Buyer and Seller as Limited Agent;**

Seller's Brokerage Utah Real Estate License Number: 9786611

Buyer's Agent(s) Ned Chidester, represent(s) **[ ] Buyer [X] both Buyer and Seller as Limited Agent(s);**

Buyer's Agent(s) Utah Real Estate License Number(s): 5484690-AB00

Buyer's Brokerage Berkshire Hathaway HomeServices Elite Real Estate represents **[ ] Buyer [X] both Buyer and Seller as a Limited Agent.**

Buyer's Brokerage Utah Real Estate License Number: 9786611

6. TITLE & TITLE INSURANCE.

6.1 Title to Property. Seller represents that Seller has fee title to the Property and will convey marketable title to the Property to Buyer at Closing by general warranty deed. Buyer does agree to accept title to the Property subject to the contents of the Commitment for Title Insurance (the "Commitment") provided by Seller under Section 7, and as reviewed and approved by Buyer under Section 8.

(a) Long-Term Lease or Rental Agreements. Buyer agrees to accept title to the Property subject to any long-term tenant lease or rental agreements (meaning for periods of thirty (30) or more consecutive days) affecting the Property not expiring prior to Closing. Buyer also agrees to accept title to the Property subject to any existing rental and property management agreements affecting the Property not expiring prior to Closing. The provisions of this Section 6.1(a) shall survive Closing.

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(b) Short-Term Rental Bookings. Buyer agrees to accept title to the Property subject to any short-term rental bookings (meaning for periods of less than thirty (30) consecutive days) affecting the Property not expiring prior to Closing. The provisions of this Section 6.1(b) shall survive Closing.

6.2 Title Insurance. At Settlement, Seller agrees to pay for and cause to be issued in favor of Buyer, through the title insurance agency that issued the Commitment (the "Issuing Agent"), the most current version of the *ALTA Homeowner's Policy of Title Insurance* (the "*Homeowner's Policy*"). If the *Homeowner's Policy* is not available through the Issuing Agent, Buyer and Seller further agree as follows: (a) Seller agrees to pay for the *Homeowner's Policy* if available through any other title insurance agency selected by Buyer; (b) if the *Homeowner's Policy* is not available either through the Issuing Agent or any other title insurance agency, then Seller agrees to pay for, and Buyer agrees to accept, the most current available version of an *ALTA Owner's Policy of Title Insurance* ("*Owner's Policy*") available through the Issuing Agent.

7. SELLER DISCLOSURES. No later than the Seller Disclosure Deadline referenced in Section 24(a), Seller shall provide to Buyer the following documents in hard copy or electronic format which are collectively referred to as the "Seller Disclosures":

(a) a written Seller property condition disclosure for the Property, completed, signed and dated by Seller as provided in Section 10.3;
(b) a *Lead-Based Paint Disclosure & Acknowledgement* for the Property, completed, signed and dated by Seller (only if the Property was built prior to 1978);
(c) a Commitment for Title Insurance as referenced in Section 6.1;
(d) a copy of any restrictive covenants (CC&R's), rules and regulations affecting the Property;
(e) a copy of the most recent minutes, budget and financial statement for the homeowners' association, if any;
(f) a copy of any long-term tenant lease or rental agreements affecting the Property not expiring prior to Closing;
(g) a copy of any short-term rental booking schedule (as of the Seller Disclosure Deadline) for guest use of the Property after Closing;
(h) a copy of any existing property management agreements affecting the Property;
(i) evidence of any water rights and/or water shares referenced in Section 1.4;
(j) written notice of any claims and/or conditions known to Seller relating to environmental problems and building or zoning code violations;
(k) In general, the sale or other disposition of a U.S. real property interest by a foreign person is subject to income tax withholding under the *Foreign Investment in Real Property Tax Act of 1980* (FIRPTA). A "foreign person" includes a non-resident alien individual, foreign corporation, partnership, trust or estate. If FIRPTA applies to Seller, Seller is advised that Buyer or other qualified substitute may be legally required to withhold this tax at Closing. In order to avoid closing delays, if Seller is a foreign person under FIRPTA, Seller shall advise Buyer in writing; and
(l) Other (specify) _____

8. BUYER'S CONDITIONS OF PURCHASE.

8.1 DUE DILIGENCE CONDITION. Buyer's obligation to purchase the Property: **[X] IS [ ] IS NOT** conditioned upon Buyer's Due Diligence as defined in this Section 8.1(a) below. This condition is referred to as the "Due Diligence Condition." If checked in the affirmative, Sections 8.1(a) through 8.1(c) apply; otherwise they do not.

(a) Due Diligence Items. Buyer's Due Diligence shall consist of Buyer's review and approval of the contents of the Seller Disclosures referenced in Section 7, and any other tests, evaluations and verifications of the Property deemed necessary or appropriate by Buyer, such as: the physical condition of the Property; the existence of any hazardous substances, environmental issues or geologic conditions; the square footage or acreage of the land and/or improvements; the condition of the roof, walls, and foundation; the condition of the plumbing, electrical, mechanical, heating and air conditioning systems and fixtures; the condition of all appliances; the costs and availability of homeowners' insurance and flood insurance, if applicable; water source, availability and quality; the location of property lines; regulatory use restrictions or violations; fees for services such as HOA dues, municipal services, and utility costs; convicted sex offenders residing in proximity to the Property; and any other matters deemed material to Buyer in making a decision to purchase the Property. Unless otherwise provided in the REPC, all of Buyer's Due Diligence shall be paid for by Buyer and shall be conducted by individuals or entities of Buyer's choice. Seller agrees to cooperate with Buyer's Due Diligence. Buyer agrees to pay for any damage to the Property resulting from any such inspections or tests during the Due Diligence.

(b) Buyer's Right to Cancel or Resolve Objections. If Buyer determines, in Buyer's sole discretion, that the results of the Due Diligence are unacceptable, Buyer may either: (i) no later than the Due Diligence Deadline referenced in Section 24(b), cancel the REPC by providing written notice to Seller, whereupon the Earnest Money Deposit shall be released to Buyer without the requirement of further written authorization from Seller; or (ii) no later than the Due Diligence Deadline referenced in Section 24(b), resolve in writing with Seller any objections Buyer has arising from Buyer's Due Diligence.

(c) Failure to Cancel or Resolve Objections. If Buyer fails to cancel the REPC or fails to resolve in writing with Seller any objections Buyer has arising from Buyer's Due Diligence, as provided in Section 8.1(b), Buyer shall be deemed to have waived the Due Diligence Condition, and except as provided in Sections 8.2(a) and 8.3(b)(i), the Earnest Money Deposit shall become non-refundable.

8.2 APPRAISAL CONDITION. Buyer's obligation to purchase the Property: **[ ] IS [X] IS NOT** conditioned upon the Property appraising for not less than the Purchase Price. This condition is referred to as the "Appraisal Condition." If checked in the affirmative, Sections 8.2(a) and 8.2(b) apply; otherwise they do not.

(a) Buyer's Right to Cancel. If after completion of an appraisal by a licensed appraiser, Buyer receives written notice from the Lender or the appraiser that the Property has appraised for less than the Purchase Price (a "Notice of Appraised Value"), Buyer may cancel the REPC by providing written notice to Seller (with a copy of the Notice of Appraised Value) no later than the Financing & Appraisal Deadline referenced in Section 24(c); whereupon the Earnest Money Deposit shall be released to Buyer without the requirement of further written authorization from Seller.

(b) Failure to Cancel. If the REPC is not cancelled as provided in this section 8.2, Buyer shall be deemed to have waived the Appraisal Condition, and except as provided in Sections 8.1(b) and 8.3(b)(i), the Earnest Money Deposit shall become non-refundable.

8.3 FINANCING CONDITION. (Check Applicable Box)

(a) [X] No Financing Required. Buyer's obligation to purchase the Property **IS NOT** conditioned upon Buyer obtaining financing. If checked, Section 8.3(b) below does NOT apply.

Buyer's Initials DS SS Date 8/24/2023 | 2:38 PM MDT Seller's Initials _____ Date _____

(b) [ ] **Financing Required.** Buyer's obligation to purchase the Property **IS** conditioned upon Buyer obtaining the Loan referenced in Section 2.1(c). This Condition is referred to as the "Financing Condition." If checked, Sections 8.3(b)(i), (ii) and (iii) apply; otherwise they do not. If the REPC is not cancelled by Buyer as provided in Sections 8.1(b) or 8.2(a), then Buyer agrees to work diligently and in good faith to obtain the Loan.

(i) **Buyer's Right to Cancel Before the Financing & Appraisal Deadline.** If Buyer, in Buyer's sole discretion, is not satisfied with the terms and conditions of the Loan, Buyer may, after the Due Diligence Deadline referenced in Section 24(b), if applicable, cancel the REPC by providing written notice to Seller no later than the Financing & Appraisal Deadline referenced in Section 24(c); whereupon $_____ of Buyer's Earnest Money Deposit shall be released to Seller without the requirement of further written authorization from Buyer, and the remainder of Buyer's Earnest Money Deposit shall be released to Buyer without further written authorization from Seller.

(ii) **Buyer's Right to Cancel After the Financing & Appraisal Deadline.** If after expiration of the Financing & Appraisal Deadline referenced in Section 24(c), Buyer fails to obtain the Loan, meaning that the proceeds of the Loan have not been delivered by the Lender to the escrow/closing office as required under Section 3.2, then Buyer shall not be obligated to purchase the Property and Buyer or Seller may cancel the REPC by providing written notice to the other party.

(iii) **Earnest Money Deposit(s) Released to Seller.** If the REPC is cancelled as provided in Section 8.3(b)(ii), Buyer agrees that all of Buyer's Earnest Money Deposit, or Deposits, if applicable (see Section 8.4 below), shall be released to Seller without the requirement of further written authorization from Buyer. Seller agrees to accept, as Seller's exclusive remedy, the Earnest Money Deposit, or Deposits, if applicable, as liquidated damages. Buyer and Seller agree that liquidated damages would be difficult and impractical to calculate, and the Earnest Money Deposit, or Deposits, if applicable, is a fair and reasonable estimate of Seller's damages in the event Buyer fails to obtain the Loan.

8.4 **ADDITIONAL EARNEST MONEY DEPOSIT.** If the REPC has not been previously canceled by Buyer as provided in Sections 8.1, 8.2 or 8.3, as applicable, then no later than the Due Diligence Deadline, or the Financing & Appraisal Deadline, whichever is later, Buyer: [ ] **WILL** [ ] **WILL NOT** deliver to the Buyer's Brokerage, an Additional Earnest Money Deposit in the amount of $_____. The Earnest Money Deposit and the Additional Earnest Money Deposit, if applicable, are sometimes referred to herein as the "Deposits". The Earnest Money Deposit, or Deposits, if applicable, shall be credited toward the Purchase Price at Closing.

9. ADDENDA. There [X] **ARE** [ ] **ARE NOT** addenda to the REPC containing additional terms. If there are, the terms of the following addenda are incorporated into the REPC by this reference: [ ] **Addendum No.** _____ [ ] **Seller Financing Addendum** [ ] **FHA/VA Loan Addendum** [X] **Other (specify)** Lead Paint.

10. HOME WARRANTY PLAN / AS-IS CONDITION OF PROPERTY.

10.1 **Home Warranty Plan.** A one-year Home Warranty Plan [ ] **WILL** [X] **WILL NOT** be included in this transaction. If included, the Home Warranty Plan shall be ordered by [ ] **Buyer** [ ] **Seller** and shall be issued by a company selected by [ ] **Buyer** [ ] **Seller**. The cost of the Home Warranty Plan shall not exceed $_____ and shall be paid for at Settlement by [ ] **Buyer** [ ] **Seller**.

10.2 **Condition of Property/Buyer Acknowledgements.** Buyer acknowledges and agrees that in reference to the physical condition of the Property: (a) Buyer is purchasing the Property in its "As-Is" condition without expressed or implied warranties of any kind; (b) Buyer shall have, during Buyer's Due Diligence as referenced in Section 8.1, an opportunity to completely inspect and evaluate the condition of the Property; and (c) if based on the Buyer's Due Diligence, Buyer elects to proceed with the purchase of the Property, Buyer is relying wholly on Buyer's own judgment and that of any contractors or inspectors engaged by Buyer to review, evaluate and inspect the Property. The provisions of Section 10.2 shall survive Closing.

10.3 **Condition of Property/Seller Acknowledgements.** Seller acknowledges and agrees that in reference to the physical condition of the Property, Seller agrees to: (a) disclose in writing to Buyer defects in the Property known to Seller that materially affect the value of the Property that cannot be discovered by a reasonable inspection by an ordinary prudent Buyer; (b) carefully review, complete, and provide to Buyer a written Seller property condition disclosure as stated in Section 7(a); (c) deliver the Property to Buyer in substantially the same general condition as it was on the date of Acceptance, as defined in Section 23, ordinary wear and tear excepted; (d) deliver the Property to Buyer in broom-clean condition and free of debris and personal belongings; and (e) repair any Seller or tenant moving-related damage to the Property at Seller's expense. The provisions of Section 10.3 shall survive Closing.

11. FINAL PRE-SETTLEMENT WALK-THROUGH INSPECTION. No earlier than seven (7) calendar days prior to Settlement, and upon reasonable notice and at a reasonable time, Buyer may conduct a final pre-Settlement walk-through inspection of the Property to determine only that the Property is "as represented," meaning that the items referenced in Sections 1.1, 1.2 and 8.1(b)(ii) ("the items") are respectively present, repaired or corrected as agreed. The failure to conduct a walk-through inspection or to claim that an item is not as represented shall not constitute a waiver by Buyer of the right to receive, on the date of possession, the items as represented.

12. CHANGES DURING TRANSACTION. Seller agrees that except as provided in Section 12.5 below, from the date of Acceptance until the date of Closing the following additional items apply:

12.1 **Alterations/Improvements to the Property.** No substantial alterations or improvements to the Property shall be made or undertaken without prior written consent of Buyer.

12.2 **Financial Encumbrances/Changes to Legal Title.** No further financial encumbrances to the Property shall be made, and no changes in the legal title to the Property shall be made without the prior written consent of Buyer.

12.3 **Property Management Agreements.** No changes to any existing property management agreements shall be made and no new property management agreements may be entered into without the prior written consent of Buyer.

12.4 **Long-Term Lease or Rental Agreements.** No changes to any existing tenant lease or rental agreements shall be made and no new long-term lease or rental agreements, as defined in Section 6.1(a), may be entered into without the prior written consent of Buyer.

12.5 **Short-Term Rental Bookings.** If the Property is made available for short-term rental bookings as defined in Section 6.1(b), Seller **MAY NOT** after the Seller Disclosure Deadline continue to accept short-term rental bookings for guest use of the property without the prior written consent of Buyer.

Buyer's Initials SS DS Date 8/24/2023 | 2:38 PM MDT Seller's Initials _____ Date _____

13. AUTHORITY OF SIGNERS. If Buyer or Seller is a corporation, partnership, trust, estate, limited liability company or other entity, the person signing the REPC on its behalf warrants his or her authority to do so and to bind Buyer and Seller.

14. COMPLETE CONTRACT. The REPC together with its addenda, any attached exhibits, and Seller Disclosures (collectively referred to as the "REPC"), constitutes the entire contract between the parties and supersedes and replaces any and all prior negotiations, representations, warranties, understandings or contracts between the parties whether verbal or otherwise. The REPC cannot be changed except by written agreement of the parties.

15. MEDIATION. Any dispute relating to the REPC arising prior to or after Closing:**[ ] SHALL [X] MAY AT THE OPTION OF THE PARTIES** first be submitted to mediation. Mediation is a process in which the parties meet with an impartial person who helps to resolve the dispute informally and confidentially. Mediators cannot impose binding decisions. The parties to the dispute must agree before any settlement is binding. The parties will jointly appoint an acceptable mediator and share equally in the cost of such mediation. If mediation fails, the other procedures and remedies available under the REPC shall apply. Nothing in this Section 15 prohibits any party from seeking emergency legal or equitable relief, pending mediation. The provisions of this Section 15 shall survive Closing.

16. DEFAULT.

16.1 Buyer Default. If Buyer defaults, Seller may elect one of the following remedies: (a) cancel the REPC and retain the Earnest Money Deposit, or Deposits, if applicable, as liquidated damages; (b) maintain the Earnest Money Deposit, or Deposits, if applicable, in trust and sue Buyer to specifically enforce the REPC; or (c) return the Earnest Money Deposit, or Deposits, if applicable, to Buyer and pursue any other remedies available at law.

16.2 Seller Default. If Seller defaults, Buyer may elect one of the following remedies: (a) cancel the REPC, and in addition to the return of the Earnest Money Deposit, or Deposits, if applicable, Buyer may elect to accept from Seller, as liquidated damages, a sum equal to the Earnest Money Deposit, or Deposits, if applicable; or (b) maintain the Earnest Money Deposit, or Deposits, if applicable, in trust and sue Seller to specifically enforce the REPC; or (c) accept a return of the Earnest Money Deposit, or Deposits, if applicable, and pursue any other remedies available at law. If Buyer elects to accept liquidated damages, Seller agrees to pay the liquidated damages to Buyer upon demand.

17. ATTORNEY FEES AND COSTS/GOVERNING LAW. In the event of litigation or binding arbitration arising out of the transaction contemplated by the REPC, the prevailing party shall be entitled to costs and reasonable attorney fees. However, attorney fees shall not be awarded for participation in mediation under Section 15. This contract shall be governed by and construed in accordance with the laws of the State of Utah. The provisions of this Section 17 shall survive Closing.

18. NOTICES. Except as provided in Section 23, all notices required under the REPC must be: (a) in writing; (b) signed by the Buyer or Seller giving notice; and (c) received by the Buyer or the Seller, or their respective agent, or by the brokerage firm representing the Buyer or Seller, no later than the applicable date referenced in the REPC.

19. NO ASSIGNMENT. The REPC and the rights and obligations of Buyer hereunder, are personal to Buyer. The REPC may not be assigned by Buyer without the prior written consent of Seller. Provided, however, the transfer of Buyer's interest in the REPC to any business entity in which Buyer holds a legal interest, including, but not limited to, a family partnership, family trust, limited liability company, partnership, or corporation (collectively referred to as a "Permissible Transfer"), shall not be treated as an assignment by Buyer that requires Seller's prior written consent. Furthermore, the inclusion of "and/or assigns" or similar language on the line identifying Buyer on the first page of the REPC shall constitute Seller's written consent only to a Permissible Transfer.

20. INSURANCE & RISK OF LOSS.

20.1 Insurance Coverage. As of Closing, Buyer shall be responsible to obtain casualty and liability insurance coverage on the Property in amounts acceptable to Buyer and Buyer's Lender, if applicable.

20.2 Risk of Loss. If prior to Closing, any part of the Property is damaged or destroyed by fire, vandalism, flood, earthquake, or act of God, the risk of such loss or damage shall be borne by Seller; provided however, that if the cost of repairing such loss or damage would exceed ten percent (10%) of the Purchase Price referenced in Section 2, either Seller or Buyer may elect to cancel the REPC by providing written notice to the other party, in which instance the Earnest Money Deposit, or Deposits, if applicable, shall be returned to Buyer.

21. TIME IS OF THE ESSENCE. Time is of the essence regarding the dates set forth in the REPC. Extensions must be agreed to in writing by all parties. Unless otherwise explicitly stated in the REPC: (a) performance under each Section of the REPC which references a date shall absolutely be required by 5:00 PM Mountain Time on the stated date; and (b) the term "days" and "calendar days" shall mean calendar days and shall be counted beginning on the day following the event which triggers the timing requirement (e.g. Acceptance). Performance dates and times referenced herein shall not be binding upon title companies, lenders, appraisers and others not parties to the REPC, except as otherwise agreed to in writing by such non-party.

22. ELECTRONIC TRANSMISSION AND COUNTERPARTS. The REPC may be executed in counterparts. Signatures on any of the Documents, whether executed physically or by use of electronic signatures, shall be deemed original signatures and shall have the same legal effect as original signatures.

23. ACCEPTANCE. "Acceptance" occurs **only** when **all** of the following have occurred: (a) Seller or Buyer has signed the offer or counteroffer where noted to indicate acceptance; and (b) Seller or Buyer or their agent has communicated to the other party or to the other party's agent that the offer or counteroffer has been signed as required.

Buyer's Initials SS Date 8/24/2023 | 2:38 PM MDT Seller's Initials _____ Date _____

24. **CONTRACT DEADLINES.** Buyer and Seller agree that the following deadlines shall apply to the REPC:

(a) Seller Disclosure Deadline	August 29, 2023	(Date)
(b) Due Diligence Deadline	September 14, 2023	(Date)
(c) Financing & Appraisal Deadline		(Date)
(d) Settlement Deadline	September 25, 2023	(Date)

25. **OFFER AND TIME FOR ACCEPTANCE.** Buyer offers to purchase the Property on the above terms and conditions. If Seller does not accept this offer by: 5 : 00 **[ ] AM [X] PM** Mountain Time on August 28, 2023 (Date), this offer shall lapse; and the Brokerage shall return any Earnest Money Deposit to Buyer.

DocuSigned by:
Shane Sorensen
A20D0854907B4A0...

(Buyer's Signature)	8/24/2023 | 2:38 PM MDT (Date)	(Buyer's Signature)	(Date)

ACCEPTANCE/COUNTEROFFER/REJECTION

CHECK ONE:

[ ] ACCEPTANCE OF OFFER TO PURCHASE: Seller Accepts the foregoing offer on the terms and conditions specified above.

[ ] COUNTEROFFER: Seller presents for Buyer's Acceptance the terms of Buyer's offer subject to the exceptions or modifications as specified in the attached ADDENDUM NO. _____.

[ ] REJECTION: Seller rejects the foregoing offer.

(Seller's Signature)	(Date)	(Time)	(Seller's Signature)	(Date)	(Time)

THIS FORM APPROVED BY THE UTAH REAL ESTATE COMMISSION AND THE OFFICE OF THE UTAH ATTORNEY GENERAL, EFFECTIVE SEPTEMBER 1, 2017. AS OF JANUARY 1, 2018, IT WILL REPLACE AND SUPERSEDE THE PREVIOUSLY APPROVED VERSION OF THIS FORM.

Buyer's Initials DS SS Date 8/24/2023 | 2:38 PM MDT Seller's Initials _____ Date _____

ALPINE CITY COUNCIL AGENDA

SUBJECT: Resolution No. R2023-20 Construction Standards Specifications and Details Amendment

FOR CONSIDERATION ON: September 26, 2023

PETITIONER: Staff

ACTION REQUESTED BY PETITIONER: Review and approve the proposed updates

REVIEW TYPE: Legislative

BACKGROUND INFORMATION:

The Construction Standards Specifications and Details need to be updated. Included in the updates is the requirement for developers to install empty conduits for future uses, such as high-speed internet. See attached memo for a full list of changes.

The Planning Commission reviewed these changes during their July 18th meeting. They passed the resolution unanimously after clarifying questions regarding:

- the street cut moratorium (no cuts on brand new streets for five years) and the process of a street cut in case of an emergency as approved by the city engineer.
- Future conduit for fiber and if an internet service provider would need to be involved in order to have the extra conduit. No provider is needed this is more for future uses.
- Lessening the slope for lawn areas for city-maintained areas.
- Compliance with drinking water standards to mirror state requirements.

STAFF RECOMMENDATION:
Approve Resolution No. R2023-20 as proposed.

SAMPLE MOTION TO APPROVE:
I motion that Resolution No. R2023-20 be approved as proposed.

SAMPLE MOTION TO APPROVE WITH CONDITIONS:
I motion that Resolution No. R2023-20 be approved with the following conditions/changes:

- ***Insert Finding***

SAMPLE MOTION TO TABLE/DENY:
I motion that Resolution No. R2023-20 be tabled/denied based on the following:

Memo

To: **Alpine City Planning Commission and City Council**

From: **Jed Muhlestein, P.E., City Engineer**

Date: **September 8, 2023**
Subject: **Updates to Construction Standards Specifications and Details**

This memo is written to highlight the proposed changes to the Alpine City Construction Standard Specifications and Details. The most recent version was adopted October 13, 2020. Changes being proposed are paraphrased below, with a reference to the proposed change.

Construction Standard Specifications

1. Developers are now required to install spare conduit for future fiber communications within new developments.
    a. Section 700
2. Utah Division of Drinking Water (UDDW) and APWA specifications differ in certain locations. UDDW specifications override APWA and the city is required to show UDDW that city standards meet or exceed UDDW. This is noted in 100.010.K and a new section is included as section 1050 to highlight the differences.
    a. Section(s) 1050, 100.010.K
3. General clarifications or typo corrections were made in these sections:
    a. 200.030.F, 200.040, 250.080, 350.030.B, 400.030.A, 400.050.B, 400.060.B, 450.050.B, 500.010.D, 500.010.E, 500.030.A, 550.010.D, 600.030.A.3, 600.040, 850.010.D, 950.050.B
4. Clarified the scheduling End of Construction Inspections and payment for installed infrastructure.
    a. 250.010.M
5. Adjusted paving dates to match APWA standards and simplified the cold weather requirements.
    a. 250.080.G
6. Added Moratorium Standards for cutting newly constructed streets.
    a. 250.080.H
7. Removed the option to provide “Letters of Credit” as a form of bonding for developments.
    a. 300.030
8. Added clarity on extents of trench patching
    a. 350.010.C.8
9. Expanded allowed types of road base materials to 1” and 1.5”. Only 3/4” was allowed previously.
    a. 350.040.D

10. Clarified that precast concrete structures must come from a UDOT certified plant.
    a. 300.060.A.3.a & 300.070.B
11. Added section "Working around Existing Utilities"
    a. 350.080
12. Included prohibition of cross connections to align with current ordinance.
    a. 400.010.I, 450.010.H
13. Added section to clarify that if a lot has a working sewer lateral, they are not allowed to cut the street to install another without approval from the City Engineer.
    a. 500.030.C
14. To protect newly installed curb and gutter, it is clarified that the placement of roadbase cannot occur for at least 3 days after curb and gutter is installed.
    a. 600.010.B, 600.020.C
15. Reduced maximum grade for lawn areas, which the city will end up maintaining, from 4:1 to 6:1 grades.
    a. 900.020.C

Construction Details

1. Several standard details were updated due to changes in the standard specifications or for clarification, these details are:
    a. 1-5, 8, 17, 19, 20, 23-27, 34
2. Five new details were added:
    a. Detail 35: Roadway Tree Trimming
    b. Detail 36: Parking Dimensions
        i. This detail correlates to DCA 3.24.020.6
    c. Detail 37: 2-Inch Pressurized Irrigation Drain
    d. Detail 38: Irrigation Inlet (Typical)
    e. Detail 39: Trenching Under Cast Iron Pipe

Attachments:

- Proposed Construction Standard Specifications and Details
    - Red-Lined Version (171 pages)
- Proposed Construction Standard Specifications and Details
    - Clean Version for adoption (170 pages)

PROPOSED CONSTRUCTION STANDARD SPECIFICATIONS AND DETAILS

(Red-lined version)

Alpine City Engineering
20 North Main • Alpine, Utah 84004

Jed Muhlestein

Alpine City Engineer

CONSTRUCTION STANDARD SPECIFICATIONS AND DETAILS

~~*Adopted October 13, 2020*~~*Adopted September 26, 2023*

ALPINE CITY CONSTRUCTION STANDARDS

Section 100. General Provisions.
Section 200. Improvement and Design Requirements.
Section 250. Inspection and Testing.
Section 300. Contractor Requirements.
Section 350. Earthwork and Trenches.
Section 400. Drinking Water.
Section 450. Pressurized Irrigation.
Section 500. Sanitary Sewer
Section 550. Storm, Land and Groundwater Drains.
Section 600. Streets and Pavements.
Section 650. Portland Cement Concrete and Masonry Work.
Section 700. ~~Reserved~~Conduit.
Section 750. Reserved.
Section 850. Surface Irrigation Systems.
Section 900. Landscaping.
Section 950. Irrigation Sprinkler Systems.
Section 1000. Standard Details
Section 1050. Division of Drinking Water Rules

Section 100. General Provisions.

SECTION INDEX

100.010. Improvement Requirements.
- A. General.
- B. Improvements Made Before Recording.
- C. Variations, Substitutions, Exceptions and Changes.
- D. Protection of Existing Improvements.
- E. Maintaining Existing Road Surfaces.
- F. New Materials.
- G. City Furnished Products.
- H. Product Delivery and Handling.
- I. Product Storage and Protection.
- J. Building Permits.
- K. Other Specifications and Standards.

100.020. Definitions.

100.010. Improvement Requirements.

A. General. This policy defines the general requirements for improvements to be built by the Developer, sub-divider, owner, or Contractor for all types of construction, (to include residential, commercial, industrial, institutional, governmental and professional office). All improvements which are in areas that are or will become public rights-of-way and/or easements, or that will be under the responsibility of a homeowner's association shall meet the requirements of these specifications.

The improvements shall include all street improvements in front of all lots and along all dedicated streets to a connection with existing improvements of the same kind and to the boundaries of the development. Layout must provide for future extension to adjacent development and to be compatible with the contour of the ground for proper drainage. All drinking water, sanitary sewer, pressurized irrigation, electric, communication, storm, land or groundwater drains and any other buried utilities or conduits shall be installed to the boundary lines of the Subdivision or development.

B. Improvements Made Before Recording. No improvements shall be commenced until a final plat is approved and inspection fees paid.

C. Variations, Substitutions, Exceptions and Changes. Any variation, substitution or exception from the standards in this policy must be authorized in writing by the City Engineer or his/her designee. Product options and substitutions must meet the requirements of APWA 01 25 00 (Product Options and Substitutions). Any item of construction not covered in these standards must have plans and specifications approved by the City Engineer or his/her designee. Requests for changes to the Construction Standards shall be made in writing to the City Engineer. These requests will be reviewed during revision process conducted in conjunction with the APWA revisions.

D. Protection of Existing Improvements. The Contractor shall be responsible for the protection of any existing improvements on public or private property at the start of work or placed there during the progress of the work. Existing improvements shall include but are not limited to permanent surfacing, curbs, ditches, driveways, culverts, fences, walls and landscaping. Any surface improvements damaged as a result of construction shall be restored or replaced to an equal or better condition than before. This shall be accomplished in a timely manner.

E. Maintaining Existing Road Surfaces. The Contractor shall be responsible for maintaining existing road surfaces suitable for travel by the public. The Contractor shall be responsible for all dust and mud control and all claims and damages resulting from failure to maintain the construction area.

F. New Materials. Only new materials may be used during construction unless otherwise authorized by the City Engineer or his/her designee. In such a case where used materials are proposed, only materials of similar use may be installed in a new system with the same use. Example: Only previously used storm drain pipe can be evaluated for use in a new storm drain system or only previously used culinary main line may be evaluated for use in a new culinary system. If approved, the used materials must meet all applicable standards, thoroughly cleaned, and be restored to their original condition prior to installation.

G. City Furnished Products. If the City furnishes any products the Contractor shall conform to requirements and specifications of APWA 01 64 00 (Owner-furnished Products).

H. Product Delivery and Handling. The Contractor shall conform to requirements and specifications of APWA 01 65 00 (Product Delivery and Handling).

I. Product Storage and Protection. The Contractor shall conform to requirements and specifications of APWA 01 66 00 (Product Storage and Protection).

J. Building Permits. The City may issue a building permit upon application, in compliance with all laws, ordinances, rules, and regulations. No building permit will be issued until all the improvements essential to meet the building code and fire code are installed, accepted, and in service and all building permit and impact fees are paid.

When asphalt pavement plants are closed for the winter, building permits may be issued before paving if there is eight inches of compacted road base in all areas to be paved and adequate fire protection is available.

The City Engineer or his/her designee is hereby designated as the responsible official to accept the improvements.

K. Other Specifications and Standards. City standards and ordinances shall supersede all other Standards whenever they conflict. Alpine City hereby adopts 2017 APWA (American Public Works Association). If not covered in these specifications and details, 2017 APWA specifications shall be used. Utah Division of Drinking Water has some standards that override 2017 APWA specifications. An addendum to the 2017 APWA specifications has been prepared to highlight the differences and is included as part of these standards as section 1050.

100.020. Definitions.

A. AASHTO. The American Association of State Highway and Transportation Officials, is a standards setting body which publishes specifications, test protocols and guidelines which are used in highway design and construction throughout the United States.

B. APWA. The Utah Section, American Public Works Association Manual of Standard Specifications, latest edition with all approved supplements. These standard specifications can be obtained at http://utah.apwa.net/. When sections of the APWA manual are referred to in these standards, the Contractor shall also adhere to the requirements and specifications of all related sections referred to by the section of the APWA manual.

C. AWWA. The American Water Works Association Standards, latest edition.

D. City. The City of Alpine, Utah.

E. City Engineer. The person appointed by the City to be the City Engineer.

F. City Planner. The person appointed by the City to be the City Planner.

G. Civil Engineer. A person licensed with the State of Utah to practice as a professional engineer.

H. County. Utah County, Utah.

I. Construction Plans. Construction plans include drawings showing all required improvements for a development showing their location, size, grade, and elevations.

J. Customer. A person or company receiving service from any City utilities

K. Contractor. A person or company hired by the City or a Developer to perform construction in or for the City, having appropriate state licenses to perform said work.

L. Council or City Council. The governing body of the City.

M. Cul-de-sac. A permanent dead-end street.

N. Developer. Person, persons, partnership or corporation developing residential, commercial or industrial property.

O. Development Code. The Alpine City Development Code as currently adopted by the City Council.

P. Final Plat. An original recordable plat drawn on mylar in a form approved by the City and County, showing all lots, streets, utility easements, etc.

Q. Flood Plain. That area designated on the most recent Flood Insurance Rate Map for the City of Alpine, prepared by the Federal Emergency Management Agency, as a flood plain as amended.

R. General Plan. The general plan document as approved by the City Council.

S. Improved Lot. A lot which has all the improvements required in the Alpine City Development Code.

T. Improvements. Includes roads, streets, curb, gutters, sidewalks, grading, landscaping, water and sanitary sewer systems, irrigation systems, drainage systems, power and communication systems, fences, public facilities, trees or other requirements by this Section or by the City.

U. Land Surveyor. A person licensed with the State of Utah to practice as a licensed land surveyor.

V. Lot. A parcel or tract of land within a subdivision which is or may be occupied by a building or structure and the accessory buildings, structures or uses customarily incident thereto, including such open spaces as are arranged and designed to be used in connection with the building according to the zone within which the lot is located.

W. LID. Low Impact Development is an approach to land development that works with nature to manage storm water as close to its source as possible. LID employs principles such as preserving and creating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treats storm water as a resource rather than a waste product.

X. MUTCD. The Manual on Uniform Traffic Control Devices defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic.

Y. NEC. The National Electrical Code is a United States standard for the safe installation of electrical wiring and equipment.

Z. NESC. The National Electrical Safety Code establishes rules which govern: a) methods of grounding; b) installation and maintenance of electric-supply stations and equipment, of overhead supply and communication lines, and of underground and electric-supply and communications lines; and c) operation of electric-supply and communication lines and equipment.

AA. Offsite Facilities. Facilities outside of the boundaries of the subdivision or development site which are designated and located to serve the needs of the subdivision or development or adjacent property, usually lying between a development and existing facilities.

BB. Onsite Facilities. Facilities installed within or on the perimeter of the subdivision or development site.

CC. OSHA. The Occupational Safety and Health Administration is the main federal agency charged with the enforcement of safety and health legislation.

DD. Parcel of Land. A contiguous area of land in the possession or ownership of one person with one tax identification number.

EE. Planning Commission. The Planning Commission of Alpine City.

FF. Preliminary Plat. A map or plat of a proposed subdivision or development with accompanying supplementary documents.

GG. Public Utility Easements. The easements required to place public utilities across any privately owned property.

HH. ROW. A public Right of Way is a strip of land that is granted, through an easement or other mechanism, for transportation purposes, such as for a trail, driveway, rail line or highway. A right-of-way is reserved for the purposes of maintenance or expansion of existing services with the right-of-way.

II. Site Plan. A plan for a commercial, industrial, institutional, governmental or planned residential development in the City.

JJ. Streets. A thoroughfare which has been dedicated and accepted by the City Council, which the City has acquired by prescriptive right or which the City owns, or is offered for dedication on an approved recorded final plat. For further explanation see the streets section.

KK. Subdivision. Any parcel of land that is divided, re-subdivided or proposed to be divided into two or more lots, parcels, sites, units, plots, or other division of land for the purpose, whether immediate or future, for offer, sale, lease, or development either on the installment plan or upon any and all other plans, terms,

and conditions. A subdivision includes (1) the division or development of land whether by deed, metes and bounds description, devise and testacia, lease, map, plat, or other recorded instrument; and (2) divisions of land for all land for all residential and nonresidential uses, including land used or to be used for commercial, agricultural, and industrial purposes.

LL. Utilities. Includes drinking water lines; irrigation lines; sanitary sewer; storm, land and groundwater drains; gas lines; electric power lines; cable television and telephone lines; underground conduits; and junction boxes and all appurtenances to the above.

Section 200. Improvement and Design Requirements.

SECTION INDEX

200.010. General.
- A. Easement.
- B. Traffic Control.
- C. Survey.
- D. Temporary Controls.
- E. Landfill, Construction Debris, or Garbage.

200.015. Specialized Engineering.
- A. General
- B. Geotechnical Engineering

200.020. Construction Plans.
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- B. Plan Sheets.
- C. Electric and Communication Plans.
- D. Street, Parking Lot and Driveway Plans.
- E. Sanitary Sewer, Storm, Land and Groundwater Drain Plans.
- F. Drinking Water and Pressurized Irrigation Plans.
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- H. Irrigation Canal and Pipe Plans.

200.030. Street Improvements.
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- C. Cul-de-sacs.
- D. Curbs, Gutters, and Sidewalks.
- E. Partial-Streets Widths.
- F. Driveway and Intersection Location.
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- J. Allowable Grades.
- K. Stamped Concrete or Pavers.
- L. Precast Concrete or Block Walls.
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200.040. Utility Improvements.
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- B. Communication.
- C. Electric.
- D. Pressurized Irrigation.
- E. Sanitary Sewer.
- F. Storm Drain.
- G. Drinking Water.

200.010. General.

A. Easements. Developer shall provide easements for all utility extensions through private property. Developer shall also provide a 10 foot public utility easement along public right-of-ways or streets, along all exterior property boundaries of the development, and 5 foot public utility easements along all interior property lines of the development. If setbacks are less than 10 feet then public utility easements shall be the extent of the setback.

B. Traffic Control. A traffic control plan shall be submitted to the City prior to construction in or along public streets. All traffic control shall comply with APWA 01 55 26 (Traffic Control) and the MUTCD.

C. Survey. The alignment of the side property lines for each lot in a subdivision shall be marked in the top back of curb with a lot line witness marker that meets the requirements and specifications of APWA 31 05 10 (Boundary Markers and Survey Monuments). Developer shall provide survey bench marks and monuments as required by the City Engineer or his/her designee.

All property corners shall be marked with a rebar corner marker that meets the requirements and specifications of APWA 31 05 10 (Boundary Markers and Survey Monuments). Corners must be marked before acceptance of a subdivision's improvements by the City. The rebar must be offset 2 to 4 inches by a steel tee post four feet out of the ground on the property line alignment.

D. Temporary Controls. Temporary controls such as noise, dust, mud, surface water, ground water, pollution and erosion controls shall be made. Controls shall meet the requirements and specifications of APWA 01 57 00 (Temporary Controls). The pumping of groundwater across sidewalks, into gutters or into the sanitary sewer system is prohibited.

E. Landfill, Construction Debris or Garbage. No buildings, paved parking lots, paved roads, curb, gutter, or sidewalks are allowed to be located over landfills, construction debris, or garbage.

200.015. Specialized Engineering.

A. General. Any specialized engineering beyond the expertise of city staff such as, but not limited to, geotechnical, traffic, environmental, hillside, floodplain, bank stabilization and erosion control will require the review of qualified consultants. All review costs shall be paid by the property owner/developer.

B. Geotechnical Engineering. All Major subdivisions, as outlined in the Development Code, shall be required to submit a site specific geotechnical report. The geotechnical report shall include sufficient subsurface exploration, laboratory testing and geotechnical engineering analysis to render design level geotechnical recommendations and opinions regarding slope stability and required mitigation to protect planned or future development above and below the slope(s) from earth deformations and other adverse soil or geologic conditions.

All work completed in connection with the site specific geotechnical report shall be performed by an experienced geotechnical engineering firm and under the direct supervision and direction of a professional geotechnical engineer properly licensed in the state of Utah.

The scope of work described below is considered the minimum requirement for the geotechnical investigation. The geotechnical firm (Consultant) shall use their experience and engineering judgment in conjunction with the minimum requirements outlined below to develop an appropriate site-specific geotechnical scope of work and report.

1. Field Explorations. Prior to commencing field explorations the geotechnical engineer shall review available geologic maps, aerial photographs and other pertinent literature to develop an understanding of the site and its geologic setting.

   Locate utilities within areas of explorations by notifying the appropriate local one-call state utility locate service. Independent private utility locates may be required for utilities not identified by the local one-call service. Complete subsurface explorations, as many as needed to obtain a representative sample of all soil conditions for the entire site, but specifically shall be obtained for proposed roadway locations and residential building.

   Boring (s) shall be located within close proximity to slope crests so as to render a representative soil profile of the slope for analysis. The boring(s) shall extend to a minimum depth of 15 feet

below the tow of the slope. For example, if a 30-foot tall slope is being evaluated the boring shall extend at least 45 feet below the top of the slope. Borings shall extend through existing fill materials so that at least one sample is collected in native soil. Adjust boring depths for anticipated site development cuts and fills and for known soil conditions.

The geotechnical shall consider past property use and location. Additional soil borings shall be planned for sites located in areas that are known or suspected to have had previous slope deformations or seeps, springs or other adverse features. Special attentions shall be given to identifying, to the extent practical, the presence and extent of existing fill.

Collect a minimum of four (4) soil samples in the upper ten (10) feet of the profile and at intervals of five (5) feet thereafter. Adjust sampling intervals to include major changes in soil layering. Collect a sufficient number of undisturbed samples in fine-grained soils to properly assess strength and consolidation properties. Perform split barrel sampling in granular soils. Field blow counts should be corrected for energy and depth and presented as Standard Penetration Test (SPT) blow counts on the soil boring logs.

Field classify encountered soil in accordance with the American Standard for Testing and Materials (ASTM) and Unified Classification System (USCS).

Borings encountering bedrock shall be extended a minimum of 5 feet into the bedrock. Rock coring equipment shall be used where practical to aid in assessing rock properties. Where cores are collected, Rock Quality Designator (RQD) values should be presented on the boring logs.

2. Laboratory Testing. Samples collected in the field shall be properly packaged to avoid disturbance or freezing and transported to an accredited geotechnical and materials testing laboratory for further observation and testing. Laboratory testing shall be performed under the direction of a Utah licensed professional geotechnical engineer and in accordance with appropriate ASTM standards. At a minimum laboratory testing shall include the following:

    a. Sieve analysis – determine grain size distribution and percent fines (minus 200 sieve)
    b. Atterberg tests – classification, indexing, shrinkage and expansiveness
    c. In-place density
    d. Natural moisture content
    e. Shear strength – Direct Shear and/or Triaxial Shear

Additional laboratory testing may be required to address site conditions and provide necessary engineering properties for analysis. The geotechnical engineer shall use his professional judgment and local experience to determine an appropriate scope for laboratory testing.

Laboratory test results shall be presented in the Geotechnical Report, on individual summary sheets in the report appendix or on the boring logs.

3. Geotechnical Report Requirements. The results of the field and laboratory programs shall be evaluated by a Utah registered professional geotechnical engineer. Based on the results of their evaluation, an engineering report shall be prepared that details the results of the testing performed, provides logs of the borings and a diagram of the site/boring layout and provides geotechnical recommendations and information regarding following:

    a. General suitability of the site for the planned development
    b. Recommended precautions and limitations
    c. Subsurface exploration procedures
    d. Soil and rock conditions encountered
    e. Groundwater depth during and after drilling
    f. Geologic setting
    g. Geologic hazards (ie – fault, slide, rock fall, etc.)
    h. Slope stability including provisions, recommendations and designs to mitigate the effects of unstable slopes and other geologic hazards that may adversely impact planned developments above and below the slope(s)
    i. Special design and construction provisions for footings or foundations near steep slopes, including type and depth of foundation system and set back distance from slopes
    j. Surface water runoff control and drainage

k. Subsurface drainage
l. Site grading and earthwork requirements, as appropriate

Detailed individual boring logs and graphical cross sections summarizing soil / rock profiles and slope stability analysis and results shall be included in the geotechnical report. The logs shall contain sufficient detail to render a clear description of the soil stratigraphy, soil descriptions and classifications, SPT blow counts, sample locations and depths, ground water depths and appropriate laboratory test results. Individual boring logs shall include a description of the boring location, exploration equipment used, relative or actual elevation, date of exploration and other pertinent information relative to the field exploration. The cross sections shall contain sufficient detail to render a clear description of the slope stability analysis results and any mitigation measures required. The cross sections shall contain soil profile data and a summary of engineering properties and parameters used in the analysis for each significant soil / rock layer.

The final geotechnical report shall bear the geotechnical engineer's stamp and seal. One (1) electronically submitted PDF copy of the report shall be delivered to the City of Alpine within sufficient time for review and comment. The City will have the report reviewed by its own geotechnical engineer. The cost of that review will be borne by the applicant.

200.020. Construction Plans.

A. General. The following instructions are for the purpose of standardizing the preparation of construction plans to obtain uniformity in appearance, clarity, size, and style. Plans and designs shall meet the standards defined in the specifications and drawings hereinafter outlined. All drawings and/or prints shall be clear and legible and conform to good engineering and drafting room practice.

Include the following in construction plans for all developments:

1. A copy of the proposed final plat or site plan;
2. A plan view of the entire project showing all utilities, roads, and appurtenances;
3. Plan and profiles of all storm, land and groundwater drains, sanitary sewer, curb, gutter, and irrigation;
4. Detail drawings of street cross sections according to the standard drawings and other detail drawings only for items not found in the City standard drawings. Detail drawings shall be to scale and completely dimensioned and described. All items shall be designed in accordance with minimum requirements established by the City Construction Standards;
5. Complete plans for all off-site work to be done in conjunction with the project;
6. A stamp and signature of a Civil Engineer licensed in the state of Utah on each plan sheet, detail drawing, and design sheet;
7. Engineer's take off quantities and cost estimate for all construction work related to the project;

B. Plan Sheets. Include the following on each plan sheet:

1. North Arrow;
2. A standard engineering scale between 1 inch equals 10 feet and 60 feet. A scale of 1 inch equals 100 feet may be used on the plan view of the entire project if necessary to fit project on one sheet;
3. Title block along right side of sheet with title of drawing in lower right corner. Include in title block:
    a. Name of subdivision and plat or site plan;
    b. Name of city;
    c. Specific type of drawing (construction drawings, plan view, plan and profiles, off-site construction, detail drawings);
    d. Name of engineer, surveyor, or firm preparing drawings;
    e. Drawing number of total number of drawings;
4. Also include the following with profile drawings:
    a. Vertical scale of 1 inch equals 1, 2, 3, 4, 5, or 6 feet;
    b. Reference to the vertical datum. The 1929 or 1988 North American Vertical Datum (NAVD29 or NAVD88) shall be used for all elevation data;
    c. Benchmark location and elevation for checking construction;
    d. Stationing aligned from plan view with the profile view;
    e. Existing ground, ditch, and utility lines;
    f. A sheet index on each sheet showing profiled area in relation to the overall project.

C. Electric and Communication Plans. Construction plans must include the location of all existing poles, transformers, secondary junction boxes, gas lines, sectionalizers, overhead electrical wire and overhead

communication cable. Developers will be required to work separately with owners of these companies to obtain the necessary approvals from them.

D. Street, Parking Lot, and Driveway Plans. Include the following for curb, gutter, storm, land and groundwater drains, drainage structures, sidewalks, and street surfacing plans:
   1. Plan and profile for top back of curb for each side of the street. Label profile line as top back of curb for both sides of street if it is the same;
   2. Stationing and top back of curb elevations with curve data for curb returns;
   3. Flow direction and type of cross drainage structures at intersections with adequate flow line elevations;
   4. Type of curb and gutter if other than the standard twenty-four inch curb and gutter in the standard drawings;
   5. Location and width of driveways;
   6. Street cross sections with all proposed and existing utilities and base sections as per soils report and Construction and Development Standards;

E. Sanitary Sewer, Storm, Land and Groundwater Drain Plans. Include the following for sanitary sewer, storm, land and groundwater drain plans:
   1. Plan and profile of all new and existing mains and manholes;
   2. Box and manhole size, location, and elevations of flow lines and rim;
   3. Location, size, grade, and type of pipe of new and existing mains;
   4. Location of each lateral with distance stubbed back into property clearly drawn and dimensioned;
   5. Storm water calculations per the Alpine City Storm Water Drainage Design Manual and Appendicies;
   6. Storm inlet boxes shall be located on street corners and or property lines.

F. Drinking Water and Pressurized Irrigation Plans. Include the following for drinking water and pressurized irrigation plans:
   1. Location, size, and type of pipe of new and existing water mains;
   2. Location of valves, fittings, hydrants, boxes, meters, and appurtenances;
   3. Minimum cover;
   4. Location of each lateral with distance stubbed back into property clearly drawn and dimensioned;
   5. Looping of the drinking waterline will be required at the discretion of the City Engineer or his/her designee to provide adequate fire flows and redundancy.

G. Landscaping Plans. For landscaping that will be maintained by the City, developments with landscaping restrictions (Three Falls, Summit Pointe, etc.), or a homeowner's association submit one copy of the landscaping plans including all irrigation system layouts, details, legends, and drawings. These project plans shall meet the requirements of the Section 900. Landscaping and Section 950. Irrigation Sprinkler Systems, as well as the specific requirements of the development in which they are located.

H. Irrigation Canal and Pipe Plans. Plans that affect canals or irrigation pipes must be stamped approved by those responsible for their maintenance before they will be approved by the City.

200.030. Street Improvements.

A. General. The Developer shall construct all streets and appurtenances required for the development as specified by the City Council in accordance with the City Construction and Development Standards and/or other codes adopted by the City. The design and all street work shall be done as directed and under the supervision of the City Engineer or his/her designee.

B. Access. Access requirements shall be in accordance with the Development Code.

C. Cul-de-sacs. The maximum length of a cul-de-sac is 450 feet measured from the nearest right-of-way line of the adjoining street to the center of the cul-de-sac. The minimum radius of the cul-de-sac is 60 feet at the property line.

D. Curbs, Gutters and Sidewalks. Curbs, gutters, and sidewalks shall be built along all public streets according to the standard drawings. All curbs, gutters, and sidewalks shall connect to existing curbs, gutters, and sidewalks within a reasonable area as determined by the City Engineer or his/her designee.

E. Partial-Streets Widths. Per Alpine City Development Code

F. Driveway and Intersection Location. Driveways and street intersection locations shall be designed according to Alpine City Transportation Master Plan. No driveway shall be constructed within 40 feet from an adjoining street. The distance is measured from the adjoining street's Top Back Curb (TBC) to the edge of driveway for access.

Curb cuts shall only be allowed for driveways. Driveways shall be a minimum of 3 feet away from any ~~above grade~~ utility fixture (including, but not limited to, power pole, fire hydrant, mailbox, phone/cable box, electric box, etc.) or utility box (culinary meter, pressurized irrigation meter, etc.) and curb cuts for driveways must be a minimum of 6-inches away from the property line. All accesses and streets onto arterials must be approved by the City Engineer or his/her designee.

G. Parking. Per Alpine City Development Code.

H. Reverse or Double Frontage Lots. Per Alpine City Development Code

I. Temporary Turn-Arounds. Per Alpine City Development Code.

J. Allowable Grades. Per Alpine City Development Code

K. Stamped Concrete or Pavers. Alpine City does not allow colored/stamped concrete or pavers on city owned concrete flatwork unless recommended by the Planning Commission and approved by the City Council.

L. Precast Concrete or Block Walls. The design of all walls greater than four feet of exposed height must be approved through the Building Department. Design must be stamped and signed by a licensed professional civil engineer registered in the state of Utah.

M. Pedestrian Ramps. Pedestrian ramps shall be placed at all corners of intersections and at all other locations of regular pedestrian traffic across roads as determined by the City Engineer or his/her designee. All ramps shall conform to the requirements of the Americans with Disabilities Act and City standards.

N. Horizontal and Vertical Curve. Per Alpine City Development Code

200.040. Utility Improvements.

A. General. It shall be the responsibility of the Developer to connect to existing utilities or improvements wherever they are located and extend those improvements to and through the development. Workmanship and details of construction shall be in accordance with the City Construction Standards and/or other codes adopted by the City. All work shall be done under the supervision of the City Engineer or his/her designee.

B. Communication. Communication lines shall be underground except when the City Engineer or his/her designee feels that such underground lines are not in the best interest of the City.

C. Electric. Electrical lines shall be underground except when the City Engineer or his/her designee feels that such underground lines are not in the best interest of the City. Lines shall be located opposite of water and pressurized irrigation lines.

D. Pressurized Irrigation. The Developer shall connect the development with the city pressurized irrigation system with all appurtenances and shall make such pressurized irrigation available to each lot or unit within the development. Adequacy of supply and sizes of pressurized irrigation mains shall be established by the City Engineer or his/her designee. Meter boxes shall be located per Alpine City Standard Details.

E. Sanitary Sewer. The Developer shall provide each lot with a sanitary sewer system in accordance with the ordinances of the City. All measures should be taken to utilize a gravity sewer system before the City will consider a pumped system. All said work shall be done as directed and under the supervision of the City Engineer or his/her designee.

F. Storm Drain. The Developer shall provide on-site storm drainage facilities according to the storm water Drainage Design manual and in accordance with the ordinances of the City. Storm drainage systems shall incorporate Low Impact Development (LID) systems. The maximum allowable storm water discharge from any commercial and industrial development will be limited to 0.07 cfs/acre of development. Individual lots shall retain the ~~90Th~~ 80Th Percentile Storm.

G. Drinking Water. The Developer shall connect the development with the city drinking water system with all appurtenances and shall make such drinking water is available to each lot or unit within the development. Adequacy of supply and sizes of drinking water mains shall be established by the City Engineer or his/her designee. Pipes shall be located opposite from electrical lines. Looping of the drinking waterline will be required at the discretion of the City Engineer or his/her designee to provide adequate fire flows and redundancy. Meter locations shall be per Alpine City Standard Details.

Section 250. Inspection and Testing.

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250.010. General.

A. Quality Assurance. The following work shall be subject to the inspection and testing requirements of this Section:

1. Work on existing or proposed City property;
2. Work on property that will be owned by a property owners association;
3. Work on existing or proposed streets, easements, or right-of-ways;
4. Work on existing or proposed City utilities.

The Contractor must ensure that all inspection and testing required by these standards is preformed and accepted by the City Engineer or his/her designee. The Contractor must also ensure that any additional inspection and testing required by the City or a testing company is performed and accepted by the City. In projects other than those bid out by the City, the Developer is ultimately responsible for the work of the Contractor.

B. Submittals. Contractor shall turn in submittals for all testing not performed by the City.

1. *Field Test Report.* Contractor must submit original field test report immediately to City whenever possible. Reports may not be submitted later than the end of the current day.
2. *Laboratory Test Report*. Submit original report to the City within 48 hours after test results are determined.

Material and Equipment Specifications. One copy of the manufacturer's specifications and manuals for equipment and materials used must be submitted to the City 7 days before the pre-construction meeting.

C. Preconstruction Meeting. The Contractor must schedule a preconstruction meeting with the City's engineering department before any work on a new development or City project may begin.

The Contractor, Developer, project engineer, and all sub-contractors must be present at the preconstruction meeting. Any sub-contractor not attending the preconstruction meeting must schedule an additional preconstruction meeting with the City before beginning work. Work must begin within 4 weeks of the preconstruction meeting or a new preconstruction meeting must be scheduled by the Contractor at the discretion of the City Engineer.

D. Inspection and Testing Notification. The City may contract with a private company to conduct any inspections or testing specified to be performed by the City. All inspections and tests must be scheduled with the City or company contracted by the City a minimum of 1 full business day before needed. Requests for inspection on work requiring continuous inspection shall be made 3 full business days prior to commencing the work.

E. Testing and Sampling. The City Engineer or City Inspector may require that sampling be performed in their presence, in which case the Developer or Contractor shall be notified of this requirement in writing at the time the building permit is issued, or at the preconstruction meeting, or when construction drawings are released by the City for construction, as applicable.

Each sample or test shall be accompanied by the following written data, which shall be reported to the City with test results:

1. Name of Project.
2. Name of Developer/Contractor.
3. Project Street Address.
4. Appropriate Test Name.
5. Date of Sampling.
6. Sample Number (if more than one sample per day).
7. Name of technician who performed the testing.
8. Location of sample.

F. Testing Agency. All materials testing, whether in a laboratory or in the field, shall be conducted by a testing agency approved by the City Engineer or his/her designee.

G. Work without Required Inspection and Testing. Any work performed without required inspection or testing will give the City the option to call the bond covering that portion of the improvements in violation, or, require the removal and replacement of the un-inspected work. For City projects, the City Engineer may also accept the work at a reduced price if the lowest pay factor is applied.

H. Inspection and Testing Fees. Inspection fees and/or connection fees shall be paid and permits required shall be obtained prior to commencement of construction.

I. Sub-standard Work and Pay Factors. If any inspection or test indicates that work does not meet City standards the City Engineer ~~may~~ will require that the work be redone for new development.

For City contracted work, ~~I~~if the sub-standard work has a pay factor option in the standards, the City Engineer may or may not accept the work at a reduced price upon condition that the pay factors outlined in the City standards apply. Payment reduction amounts shall ~~either be assessed to the developer as a fee based upon bond estimates for the work, or~~ be applied against payments to Contractors ~~for City contracts~~. When any work is done to a lower standard than allowed for in the pay factor tables the work shall be redone until it meets City standards.

J. Weekly Progress Meetings. At the pre-construction meeting it will be determined if weekly construction meetings are required. The City Engineer or his/her designee, City inspectors, the Contractor, and sub-contractors shall be in attendance.

K. Road Construction. Road construction may not commence until all underground utilities (both City and privately owned) are installed and pass all the inspections and tests required by these standards.

L. As-Built Survey. The Contractor shall notify the City to survey all underground utilities either installed or uncovered in the course of construction. Contractor shall give the City 24 hour's notice to survey utilities.

M. Acceptance and Payment of Improvements. Inspections made by the City or a company hired by the City to determine compliance with the specifications do not imply final acceptance of the work. The City requires the completion of all facilities before any are paid for and accepted for maintenance. The following inspections must be scheduled and passed before final acceptance and payment of any improvements:

1. *End of Construction Inspection.* The Contractor must notify the city at least 3 days prior of the need for an End of Construction Inspection. Upon notification, ~~T~~the Contractor and City will schedule ~~must schedule with the City~~ an end of construction inspection, not to occur within 3 business days of the City being noticed and, once all the improvements in a development or project are completed according to the Construction and Development Standards. Re-inspections of an End of Construction Inspection require the same 3-day notification and scheduling procedure.
2. *Final Acceptance Inspection.* One year after the Contractor or Developer passes the end of construction inspection, he or she must schedule a final acceptance inspection 1 month prior to the expiration date of the warranty period.

If the Contractor or Developer does not pass one of these inspections a punch list of work items necessary to pass the inspection will be given to the Contractor or Developer within 2 business days of the inspection. The Contractor or Developer must reschedule inspections with the City until the project or development passes the inspection.

All improvements shall be free from defects, damage, or debris at the time of these inspections. The Contractor or Developer shall not be responsible for debris or damage not caused as a result of his or her work or quality of work.

Any faulty or defective work shall be corrected by the Contractor within 30 days of the failed inspection or according to the contract the City has with the Contractor.

If the Contractor or Developer fails to do so, the City Engineer or his/her designee shall have such repairs made, and the cost of such repairs shall be paid by the Developer together with 25% in addition thereto for stipulated damages for such failure on the part of the Developer to make the repairs.

At the discretion of the City Engineer or his/her designee, full payment for constructed infrastructure will not come until after all listed inspections and testing have been completed with passing results. Example: Culinary water main and services installation will not be paid in full until the Main Line Inspection, Drinking Water Service Inspection, High Chlorine Test, and Bacteria tests have been inspected and passed. Partial Payments are acceptable for items that meet this requirement.

250.020. Earthwork.

A. Compaction and Moisture Content Tests. The Contractor will test all sub-grade and fill material for compaction and moisture content and will provide these tests to the city within 48 hours of testing. Test locations shall be determined by the City.
   1. *Trenches.* Tests will generally be taken 1 per 200 lineal foot of trench per 8 inch lift.
   2. *Streets.* Tests will generally be taken 3 per 200 lineal foot of street per 8 inch lift.
   3. *Other Cuts and Fills.* Tests will generally be taken 1 per 2,000 square feet of compacted area.

B. Red-head Inspection. The project engineer must provide red-heads for all grade work when brought to within 3 inches of finish grade. The City must inspect and accept finished grading to the engineered red-heads.

C. Proof Roll Inspection. Prior to placing fill material for roadbed backfills, proof roll sub-grade using gross weight of 18,000 pounds per tandem axle, with a tire pressure at least 90 psi, unless otherwise specified by the soils report. Contractor shall proof roll under the supervision of the City according to the following conditions:
   1. *Passes.* All proof roll passes will traverse the sub-grade parallel to the roadbed centerline. All subsequent passes will be offset half the vehicle width until the entire sub-grade is tested.
   2. *Mitigation.* The City will analyze, determine, designate, and measure the areas, if any, requiring additional compaction or reconstruction.
   3. *Sub-grade Protection.* Once sub-grade passes the proof rolling test, protect the surface from construction operations and traffic damage. Repair all cuts, ruts, and breaks. Keep surface in a satisfactory condition until geotextile fabric or base course has been placed.

D. Thickness Test. Material thickness tests will be conducted by the City when the City Engineer or his/her designee considers it necessary. The total depth shall be reasonably close to that shown on the typical section. Depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/4" below the specified thickness and no individual hole shall be more than 3/4" below the specified thickness.

250.030. Landscaping and Irrigation Sprinkler Systems.

A. Plant Material Inspection. All plant materials are to be inspected and approved by the City at the time of delivery on site. This approval does not constitute final acceptance of any plant material by the City Parks Department Representative. All plant materials will be inspected again at time of final inspection and once again at the end of the warranty period. Any plant found to be unacceptable at any of these inspections shall be immediately removed and replaced.

B. Sprinkler System Assembly Inspection. An on-site inspection shall be conducted by the City after the entire sprinkler system is assembled and prior to backfilling the trenches. During this inspection all fittings, bends, sweeps, valves, sprinkler heads and any other appurtenance on the system shall be surveyed by the City.

C. Fall Sprinkler Winterizing Test. In the fall of the year during the installation and guarantee period, the Contractor shall meet with the City on the project site. The Contractor shall winterize the system by draining all the water and doing everything necessary to insure the protection of the system until spring. Blowing out the lines by compression shall be permitted during the 1 year guarantee. The individuals involved from both parties shall exchange all information necessary for the eventual takeover of the system by the Alpine City Maintenance Personnel.

D. Spring Sprinkler Energizing Test. The Contractor with the City Maintenance Personnel in attendance shall energize the sprinkler irrigation system the spring following the fall winterizing test. Contractor shall repair all defects found as a result of winter damage, improper installation, improper maintenance, defective materials or inadequate sprinkler drainage.

E. Final Acceptance Inspection. At the end of the guarantee period, all landscaping and irrigation sprinkler systems must then be inspected and tested by the City. As-built drawings shall be furnished to the City at the time of the final inspection.

Irrigation sprinkler systems must operate in a satisfactory manner, with a full uniform coverage of the areas that are indicated to be sprinkled. Sprinkler heads shall be adjusted to proper level.

Landscape and irrigation sprinkler systems will not be inspected for acceptance in parts. Where inspected work does not comply with requirements, Contractor shall replace rejected work and continue specified

maintenance until reinspected by the City and found to be acceptable. Remove rejected plants and materials promptly from the project site.

250.040. Portland Cement Concrete Work.

A. General. All materials and processes involved in concrete work shall be subject to inspection and testing as detailed in the various paragraphs of this section and in general compliance with ASTM E105-54T. Results of tests performed by laboratories approved by the City to the satisfaction of the City Engineer or his/her designee shall be accepted by the supplier as a basis for acceptance or rejection of any and all materials.

The latest appropriate ASTM tests and methods shall be considered to be standard, and will include but not be limited to concrete, cement, aggregates additives, curing compounds, parting compounds and jointing materials. A copy of all batch tickets for concrete placed shall be submitted to the City.

B. Slump, Temperature and Air Entrainment Test. The Contractor shall test slump, temperature, and air entrainment on every fifty cubic yards or less of concrete placed each day. Tests shall be taken after ½ to 1 yard has been poured from the mixer. Once a sample is taken the concrete pour shall be stopped until tests show that the concrete meets City standards. Concrete that does not meet mix design requirements for slump, temperature, and air entrainment shall not be used. Any that may already have been poured shall be removed before hardening.

C. Compression Test. The Contractor shall test compression on every fifty cubic yards or less of concrete placed each day according to ASTM C143, C231. C1064, C172, and C31. Three cylinder specimens shall be taken for each test, one shall be broken at 7 days, one at 28 days and the third held for 45 days after submittal in case further testing is required.

Specimens shall attain the specified strength at 28 days. One lot is 1 day's production. A lot with sub-standard compressive strength may be accepted at reduced price if the appropriate pay factor is applied to the whole lot. The following table outlines the pay factors for sub-standard Portland cement concrete strength:

PORTLAND CEMENT CONCRETE
COMPRESSIVE STRENGTH PAY FACTORS

Pay Factor	Tolerance (psi below 28 day specified strength)
0.98	1 to 100
0.94	101 to 200
0.88	201 to 300
0.80	301 to 400
0.50	401 to 500
Replace	More than 500

These pay factors may not be applied toward concrete in structures.

D. Forms and String Line Inspection. The City shall inspect all forms and string lines before concrete may be placed.

E. Gutter Drainage Inspection. The City shall inspect all gutters for drainage prior to paving. Water shall be let into all gutters and any gutters with standing water in excess of 1/4 inch after runoff shall be replaced. Contractor must supply water truck for gutter drainage inspection.

F. Thickness Test. The City shall determine the number, if any, and location of core tests necessary to ensure the proper thickness of Portland cement concrete. Tests shall be taken at equal intervals in a test area. A test area shall be defined as a total area placed at the same time and by the same process. The average thickness shall then be determined from all the cores taken. Tests shall be taken and verified by a certified testing lab, paid for by the Contractor.

When the average thickness is more than 0.25 inches below the specified thickness, a minimum of 1 core per 1,500 square feet of pavement shall be taken. Work with sub-standard thickness may be accepted at reduced price if the appropriate pay factor for the lowest tested thickness is applied to all of the sub-standard work. The following table outlines the pay factors for sub-standard Portland cement concrete thickness:

PORTLAND CEMENT CONCRETE
THICKNESS PAY FACTORS

Pay Factor	Tolerance (inches below specified thickness)
1.00	0.00 to 0.25
0.90	0.26 to 0.50
0.70	0.51 to 0.75
0.50	0.76 to 1.00
Replace	More than 1.00

G. Curing Inspection. The City shall inspect the curing of all Portland cement concrete work within 24 hours of pouring the concrete.

250.050. Pressurized Irrigation.

A. General. The inspections and tests in this section are required for all pressurized irrigation construction in the City boundaries and on all construction relating to the City pressurized irrigation system outside the city boundaries.

B. Main Line Inspection. The City must inspect all pressurized irrigation main line installation on an ongoing basis. Inspection notification must be given before any construction of the main line may begin. All crosses, tees, bends, valves, and drains must be inspected and surveyed by the City before they are backfilled.

C. Pressurized Irrigation Service Inspection. The City must inspect all pressurized irrigation services before service trenches are backfilled. The City must be able to survey services at the main during the inspection.

D. Pressure Test. The Contractor must pressure test all pressurized irrigation systems, system extensions and service laterals to the setter in the presence of the City Engineer or his/her designee or have tests documented and submitted by a certified testing company approved by the City. Pressure tests must meet the requirements and specifications of APWA 33 08 00 (Commissioning of Water Utilities). Provide a 210 psi test pressure for 2 hours unless specified otherwise. The pressure of 210 psi must be provided at the highest point in the section of pipe being tested unless elevations are such that this would create pressures over 250 psi at the lowest point in the section of pipe tested. In such a case, consultation with the City Engineer is required and AWWA standards will be considered.

E. Leakage Test. For test lengths of pipe greater than 1,500 feet, a leakage allowance may be considered. There will be no allowance for leakage on test sections less than 1,500 feet. When allowed, leakage tests shall be conducted concurrently with the pressure tests. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$Q \equiv \frac{LD * \sqrt{P}}{133{,}200}$$

In which Q is the allowable leakage, in gallons per hour; L is the length of pipeline tested in feet; P is the average test pressure, in pounds per square inch (gage) and D is the nominal diameter of the pipe in inches.

If any test of pipe laid discloses leakage greater than specified, the Contractor shall, at their own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

250.060. Sanitary Sewer.

A. General. The inspections and tests in this section are required for all sanitary sewer construction in the City boundaries and on all construction relating to the City sanitary sewer system outside the city boundaries.

B. Main Line Inspection. The City must inspect all sanitary sewer main line installation on an ongoing basis. Inspection notification must be given before any construction of the main may begin.

C. Service Inspection. The City must inspect all sanitary sewer services before service trenches are backfilled. The City must be able to survey services at each end during the inspection.

D. Air Pressure Test. Contractor shall conduct a low pressure air test by the following method under the direction of the City Engineer or his/her designee with equipment equal to Cherne Industrial, Inc., or provide proof that test was conducted by a certified testing company. Sanitary sewer pipes with inside diameters of 30 inches or larger shall be leak tested according to manufacturer's specifications.

All wyes, tees, or ends of lateral stubs shall be suitably capped and braced to withstand the internal test pressures. Caps shall be easily removable for future lateral connections or extensions. After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs.

Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psi-G greater than the average back pressure of any ground water that may be over the pipe. At least 2 minutes shall be allowed for the air pressure to stabilize.

The portion of line being tested shall be accepted if the portion under test does not lose air at a rate greater than 0.003 cubic feet per minute per square foot of internal pipe surface or 2.0 cubic feet per minute minimum when tested at an average 3.0 psi-G greater than any back pressure exerted by ground water that may be over the pipe at the time of the test.

The pipe and joints shall also be considered acceptable when the time required in minutes for pressure to decrease from 3.5 To 2.5 psi-G (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

PRESSURE REDUCTION TIME LIMITS

Pipe Diameter (inches)	Time (minutes)
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

If the installation fails to meet this requirement, the Contractor shall determine at his/her own expense the source of leakage. He shall repair or replace all defective materials and/or workmanship. All sanitary sewer mains shall be tested, cleaned and accepted by Alpine City before laying the street surface.

E. Video Inspection. Contractor shall clean and provide the City with video inspection of all sanitary sewer main lines **prior to paving**. The City must approve video inspection company.

Cleaning shall be done using a high pressure jet cleaning machine, producing a minimum of 800 psi. Waste water and debris shall not be permitted to enter the City sanitary sewer system, but shall be removed at the lowest manhole of the extension.

Video Inspection shall be done by the Contractor. A digital video disk (DVD or thumb drive) of video inspection and log report shall be submitted by the inspection company to the City Engineer or his/her designee.

Main line determined to be defective by the City Engineer or his/her designee shall be remedied by the Contractor. Contractor shall then clean and video inspect the main lines again.

F. Deflection Test. Contractor shall perform a displacement test on all sewer lines after video inspection. Deflections tests must be conducted in the presence of the City Engineer or his/her designee or be documented and submitted by a certified testing company approved by the City. In no case shall pipe be accepted that has a deflection of more than 5% after it has been backfilled. The Mandrel must be pulled by hand or air. A pipe deflection test shall be required of the Developer/Contractor after backfilling and compaction of the trench.

250.070. Storm, Land and Groundwater Drains.

A. General. The inspections and tests in this section are required for all storm, land and groundwater drain construction in the City boundaries and on all construction relating to the City storm, land and groundwater drain system outside the city boundaries.

B. Main Line Inspection. The City must inspect all storm, land and groundwater drain main lines during installation on an ongoing basis. Inspection notification must be given before any construction of the pipe may begin. All groundwater drains shall be pre-approved by the City Engineer or his/her designee.

C. Air Pressure Test. Contractor shall conduct a low pressure air test for all sealed drains by the following method under the direction of the City Engineer or his/her designee with equipment equal to Cherne Industrial, Inc., or provide proof that test was conducted by a certified testing company. Storm drain pipes with inside diameters of 30 inches or larger shall be leak tested according to manufacturer's specifications. Air pressure tests shall be completed prior to paving.

All wyes, tees, or ends of lateral stubs shall be suitably capped and braced to withstand the internal test pressures. Caps shall be easily removable for future lateral connections or extensions. After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs.

Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psi-G greater than the average back pressure of any ground water that may be over the pipe. At least 2 minutes shall be allowed for the air pressure to stabilize.

The portion of line being tested shall be accepted if the portion under test does not lose air at a rate greater than 0.003 cubic feet per minute per square foot of internal pipe surface or 2.0 cubic feet per minute minimum when tested at an average 3.0 psi-G greater than any back pressure exerted by ground water that may be over the pipe at the time of the test.

The pipe and joints shall also be considered acceptable when the time required in minutes for pressure to decrease from 3.5 To 2.5 psi-G (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

PRESSURE REDUCTION TIME LIMITS

Pipe Diameter (inches)	Time (minutes)
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.8
21	10.0
24	11.5

If the installation fails to meet this requirement, the Contractor shall determine at his/her own expense the source of leakage. He shall repair or replace all defective materials and/or workmanship. All storm drain lines shall be tested, cleaned and accepted by Alpine City before laying the street surface.

D. Video Inspection. Contractor shall clean and then video inspect all storm, land and groundwater drain lines **prior to paving**. The City must approve video inspection company.

Cleaning shall be done using a high pressure jet cleaning machine, producing a minimum of 800 psi. Debris shall not be permitted to enter the City storm drain system.

Video inspection shall clearly show any debris, broken pipe, misaligned pipe, displaced pipe and defective joints for all sections of the main line. All defects and their location shall be detailed on a separate video log report. A digital video disk (DVD or thumb drive) of video inspection and log report shall be submitted by the inspection company to the City Engineer or his/her designee.

Log reports shall be submitted on the City video form or an approved equivalent. Log reports must be submitted with an 11x17 copy of the plans. All manholes in the log report must reference the labeled manholes numbers on the plans. Each manhole must also have a street address clearly shown on the log report.

E. Deflection Test. Contractor shall perform a displacement test on all non-concrete storm drain lines after video inspection. Deflections tests must be conducted in the presence of the City Engineer or his/her designee or be documented and submitted by a certified testing company approved by the City. In no case shall pipe be accepted that has a deflection of more than 5% after it has been backfilled. The Mandrel must be pulled by hand or air. A pipe deflection test shall be required of the Developer/Contractor after backfilling and compaction of the trench.

250.080. Streets.

A. Asphalt Pavement Material Tests. Material tests will be conducted by the ~~Contractor~~ Developer for development projects and by the City for City contracts. Tests are taken ~~when the City Engineer or his/her designee considers it necessary.~~once per day or once per every 500 tons of material placed. Sampling and testing per APWA 32 12 05.

B. Compaction Tests. The Contractor will test all bituminous pavement for compaction and moisture content. Test locations shall be determined by the City but will generally be taken 3 per 200 lineal foot of street or 1 per 2,000 square foot of paved area. Pay factors as per APWA 32 12 16 (Plant-Mix ~~Asphalt Bituminious~~Bituminous Paving) shall apply.

C. Grading Inspection. The sub-grade, sub-base, and road base shall all be graded to an engineered red-head and accepted by Alpine City. Red-heads shall be placed every 50 feet at the crown of the road. If the distance between red-heads and edge of pavement exceeds 25 feet additional redheads shall be installed half way between the crown and edge of pavement. Red-heads shall also be placed every 50 feet at the edge of pavement where there is no curb and gutter.

D. Thickness Test. Material depth tests will be conducted by the City when the City Engineer or his/her designee considers it necessary. The total depth shall be reasonably close to that shown on the typical section.

For City projects, depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/4" below the specified thickness and no individual hole shall be more than 1/2" below the specified thickness. Work with sub-standard thickness may be accepted at reduced price if the appropriate pay factor for the lowest tested thickness is applied to all of the sub-standard work. The following table outlines the pay factors for sub-standard asphalt pavement thickness:

PAVEMENT DEPTH PAY FACTORS FOR CITY PROJECTS

Pay Factor	Tolerance (inches below specified thickness)
0.95	0.00 to 0.25
0.90	0.26 to 0.50
Replace	More than 0.5

For new development, the City will accept nothing less than what the plans call for. Depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/8" below the specified thickness and no individual hole shall be more than 1/4" below the specified thickness. Work with sub-standard thickness will be rejected, removed, and replaced.

E. Profile Tolerance Inspection. Profile tolerance inspections may be required by the City any time within a year of paving. Collector and arterial streets shall meet the "Tolerances" requirements of APWA 32 12 16 (Plant-Mix Asphalt Paving). For local streets profiling, the maximum vertical distance from the pavement surface to a straight edge is:

a. 1/4-inch in 10-feet parallel to centerline.
b. 3/8-inch in 10-feet perpendicular to centerline except at cross section grade breaks.

~~F.~~ Asphalt Concrete Temperature Test. This test shall be conducted on the first three loads of asphalt concrete installed, and on one in four of all future loads as required by the City. Testing shall be conducted according to the requirements and specifications of APWA 32 12 16 (Plant-Mix Asphalt Concrete Paving). Temperature gauge shall be allowed to stabilize for 1 minute before taking reading if using probe type. If using infra-red "gun" type, reading shall consist of an average of a minimum of 3 readings, where reading is taken immediately after displacing a minimum of 2 inches of material from the surface being tested and the "gun" is within 18" of the surface being tested.

F.

G. Asphalt Paving Limitations.

A. Paving between April 15th to October 15th to follow APWA 32 12 16.13 (must have 50 degrees and rising temperature in the shade and on the roadway surface).

~~A.~~B. Paving between November 15th and March 1st is not allowed.

~~B.~~ In the event the City Engineer approves a paving plan proposed between ~~November~~ October 15th and ~~April 1st~~November 15th or between March 1st and April 15th, and if temperatures never rise above 60 degrees during the paving process, an overlay in the spring will be required as outlined in the table below. Do not place HMA on frozen base or during adverse climatic conditions such as precipitation or when roadway surface is icy or wet. Use a release agent that does not dissolve asphalt and is acceptable to the City Engineer or his/her designee for all equipment and hand tools used to mix, haul, and pace the HMA. Placement of HMA between ~~November~~ October 15th and ~~April 1st~~November 15th or between March 1st and April 15th ~~will~~ may be allowed when the air temperature in the shade and the roadway surface temperature are above 45 degrees Fahrenheit and rising. Paving that occurs between ~~the dates below~~October 15th and November 15th or between March 1st and April 15th, which requires a spring overlay, shall be finished 1.5 inches below lip of curb to accept the required 2-inch overlay in the spring. Paving cannot occur when rain is present.

~~C.~~

~~D.~~C. PAVEMENT DEPTH AFTER ~~NOVEMBER~~ OCTOBER 15TH / BEFORE ~~APRIL 15~~NOVEMBER 15th~~1ST~~

OR AFTER MARCH 1ST / BEFORE APRIL 15th

TEMPERATURES ARE BETWEEN **45-~~50~~ 60 DEGREES** FAHRENHEIT*

Street	Typical	Base Asphalt	Spring Overlay	Total Asphalt

Local / Secondary Access / Parking Lots / Driveway	3”	3”	2”	5”
Collector / Arterial	4”	3”	2”	5”

*See 2017 APWA 32-12-16.13. If temperatures are between 45-50 degrees, the minimum lift to be placed at a time must be 3 inches to retain heat and obtain compaction. 50-59 degrees, 2 inches minimum lift. 60-69, 1.5 inches minimum lift.

~~PAVEMENT DEPTH AFTER NOVEMBER~~ OCTOBER ~~15TH / BEFORE APRIL 15th 1ST~~
~~TEMPERATURES ARE BETWEEN **50-60 DEGREES** FAHRENHEIT*~~

~~Street~~	~~Typical~~	~~Base Asphalt~~	~~Spring Overlay~~	~~Total Asphalt~~
~~Local / Secondary Access / Parking Lots / Driveway~~	~~3”~~	~~2.5”~~	~~2”~~	~~4.5”~~
~~Collector / Arterial~~	~~4”~~	~~3”~~	~~2”~~	~~5”~~

PAVEMENT DEPTH AFTER OCTOBER 15TH / BEFORE NOVEMBER 15th
OR AFTER MARCH 1ST / BEFORE APRIL 15th
~~PAVEMENT DEPTH AFTER NOVEMBER~~ OCTOBER ~~15TH / BEFORE APRIL 15th 1ST~~
TEMPERATURES ARE ABOVE **60 DEGREES** FAHRENHEIT*

Street	Typical	Base Asphalt	Spring Overlay	Total Asphalt
Local / Secondary Access / Parking Lots / Driveway	3”	3”	n/a	3”
Collector / Arterial	4”	3”	n/a	4”

*See 2017 APWA 32-12-16.13. If temperatures are between 45-50 degrees, the minimum lift to be placed at a time must be 3 inches to retain heat and obtain compaction. 50-59 degrees, 2 inches minimum lift. 60-69, 1.5 inches minimum lift.

H. Pavement Cut Moratorium Standard. Alpine City enforces a pavement cut moratorium on all newly paved, reconstructed, or otherwise maintained streets as defined below:
   a. New or reconstructed streets. New streets shall not be cut within five (5) years from the date of construction.
   b. Overlaid streets. Overlaid streets shall not be cut for a period of three (3) years from the date of construction.
   c. Chip sealed, high density mineral bonded, slurry/micro surfaced streets. Streets that have been recently surfaced with any of the afore mentioned road maintenance strategies (or any other similar type of construction that covers the entire surface of the street) shall not be cut for a period of three (3) years from the date of construction.
   d. Exceptions. In case of emergencies (i.e. – watermain breaks, etc.), and at the approval of the City Engineer or his/her designee, certain circumstances may require asphalt removal during a moratorium. Any removal of asphalt during a moratorium will require a trench patch per APWA Plan 255, with the exception that the top 2-inch overlay shall extend fifty (50) feet on either side of the trench and must be paved with approved lay-down paving equipment. This patch shall span across the entire width of the roadway. If the road has a chip seal coat, high density mineral bond

layer, or any other surface coat as defined in item C, that surfacing shall be reapplied ~~by~~at the developer's or contractor's expense to make the road appear and function as if it was never cut.

250.090. Drinking Water.

A. General. The inspections and tests in this section are required for all drinking water construction in the City boundaries and on all construction relating to the City drinking water system outside the city boundaries.

B. Main Line Inspection. The City must inspect all drinking water main line installations on an ongoing basis. Inspection notification must be given before any construction of main line may begin. All crosses, tees, bends, valves and hydrants must be inspected and surveyed by the City before they are backfilled.

C. Drinking Water Service Inspection. The City must inspect all drinking water services before service trenches are backfilled. The City must be able to survey services at the main during the inspection.

$$Q \equiv \frac{LD * \sqrt{P}}{133{,}200}$$

D. High Chlorine Test. High Chlorine tests shall meet the requirements and specifications of APWA 33 13 00 (Disinfection). The Contractor must conduct a high chlorine test at every hydrant on a new drinking water main installation. If a hydrant does not exist on the test section, tests must be taken at the end of each line. The chlorine residual shall be at least 25 mg/L.

E. Pressure Test. Pressure test must be conducted after the successful completion of the bacteria test. The Contractor must pressure test all drinking water systems, system extensions and service laterals to the setter in the presence of the City Engineer or his/her designee or have tests documented and submitted by a certified testing company approved by the City. Pressure tests must meet the requirements and specifications of APWA 33 08 00 (Commissioning of Water Utilities). Provide a 210 psi test pressure for 2 hours unless specified otherwise. The pressure of 210 psi must be provided at the highest point in the section of pipe being tested unless elevations are such that this would create pressures over 250 psi at the lowest point in the section of pipe tested. In such a case, consultation with the City Engineer is required and AWWA standards will be considered.

F. Leakage Test. For test lengths of pipe greater than 1,500 feet, a leakage allowance may be considered. There will be no allowance for leakage on test sections less than 1,500 feet. When allowed, leakage tests shall be conducted concurrently with the pressure tests. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

In which Q is the allowable leakage, in gallons per hour; L is the length of pipeline tested in feet; P is the average test pressure, in pounds per square inch (gage) and D is the nominal diameter of the pipe in inches.

If any test of pipe laid discloses leakage greater than specified, the Contractor shall, at their own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

G. Bacteria Test. Bacteria tests shall meet the requirements and specifications of APWA 33 13 00 (Disinfection). Tests may only be scheduled at certain regular times set by the City. The Contractor shall be present and open all hydrants or other locations to be tested from. The City shall submit samples to a certified lab to be tested according to state drinking water regulations.

If any sample point fails on the first test, the line will be flushed and re-tested at all sample points. If any sample point fails a second time, the complete line will be re-disinfected and re-tested at all sample points. If any samples come back marked “presence”, which means coliform bacteria is present, the line will be re-disinfected and re-tested at all sample sites. Contractor is responsible to pay for all bacteria tests and retests.

Drinking water services will not be installed until bacteria sample results have been approved by the City Engineer or his/her designee. All testing lab fees shall be paid for by the Contractor.

Section 300. Contractor Requirements.

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300.010. General.

A. Contractors Working for a Developer. Contractors and Sub-Contractors working for a Developer must prequalify before doing any work in existing or proposed City property, streets, easements, or right-of-way and for any work on existing or proposed City utilities. To prequalify the following must be on file in the City Engineer's office:

1. A current Contractor's license specified for project type according to Utah State Code;
2. Insurance information;
3. Contractor information sheet;
4. Project Bond;
5. Excavation Permit;
6. UDOT Permit for construction in state right-of-way; and

Failure to pre-qualify before doing any construction shall constitute grounds for legal action.

B. Contractors Working for the City. Bids for City projects will only be awarded to the lowest responsible bidder with current contractor's license specified for the project type according to the Utah State Code. The City's contractor qualifications and experience forms shall be completely filled out and submitted with bid. Failure to do so is basis to reject the bid. Alpine City reserves the right to determine a non-responsible bidder based upon these forms or any other research conducted by the city.

C. Status Verification System. Contractor agrees that it, and its subcontractors, will register with and use a Status Verification System to verify the federal employment authorization status of all employees hired after July 1, 2009. Contractor, and its subcontractors, will comply, in all respects, with Utah Code Annotated §63g-11-103, as it may be amended from time to time.

300.020. Insurance.

A. General. A Contractor must acquire the insurance stipulated in this section to prequalify to do construction work. The city must receive and accept proof of the insurance before any work may begin. The submittal of said evidence to the City shall not relieve or decrease the liability of the Contractor hereunder.

B. Workers' Compensation. Contractor shall obtain workers compensation insurance as required by State law.

C. Commercial General Liability Insurance. The following commercial general liability insurance must be obtained and submitted on ISO Form CG 00 01 (11/85) or equivalent, occurrence policy, with limits not less than:

1.	General Aggregate	$1,000,000
2.	Products - Comp/OPS Aggregate	$1,000,000
3.	Personal and Advertising Injury	$ 500,000
4.	Each Occurrence	$ 500,000
5.	Fire Damage (any one fire)	$ 50,000
6.	Medical Expense (any one person)	$ 5,000

Also include the follow endorsements or their equivalents attached thereto:

1. ISO Form CG 25 03 (11/85), Amendment of Limits of Insurance (Designated Project or Premises), describing the subject contract and specifying limits as shown above.
2. ISO Form CG 20 10 (11/85), Additional Insured -- Alpine City, Lessees, or Contractors (Form B), naming the City as additional insured and containing the following statement, "This Endorsement Also Constitutes Primary Coverage in the Event of any Occurrence, Claim, or Suit".

D. Automobile Liability Insurance. Contractor shall obtain automobile liability insurance with limits of not less than $500,000 Combined Single Limit per accident. Coverage shall apply to any auto.

300.030. Bonding.

A. General. The owners and/or developers of property shall deposit security with the City prior to recording the final plat to guarantee proper installation of all required improvements in accordance with the plans, specifications, time limitations, and conditions relating thereto as meets with the approval of the City Council or such personnel as the City Council shall designate. Security shall be in the form of cash, ~~an irrevocable letter of credit,~~ surety bond, financial institution bond, or an escrow bond. The amount of the security shall be 110% of the City's estimated costs of the improvements plus the estimated asphalt preservation coat costs.

~~Irrevocable letters of credit or e~~Escrow bonds shall be executed by financial institutions acceptable to the City and authorized to conduct business in the State of Utah, and must be in the form approved by the City. The bond, ~~or letter of credit~~ as required by this section, must be posted prior to recording. Upon completion of the punch list for the end of construction inspection, the security, less 10%, shall be released to the Developer. Ten percent (10%) of the security amount shall be held for a period of one (1) year following final inspection and acceptance to warrant improvements for this time period. The ten percent retained shall be the amount required as the minimum security.

The amount estimated for the asphalt preservation coat shall be deposited to the City in the form of cash and held in escrow prior to recording. These funds will be held until used for the asphalt preservation coat for the applicable development either by the developer or City (see 600.020).

300.040. Excavation Permits. (aka – Street Cut Permit)

A. General. Contractors are required to qualify before obtaining an excavation permit to do construction work unless a project is already approved, bonded and insured. The permit must be approved 48 hours prior to construction. The permitee is given a copy of the permit and plan after the City Engineer or his/her designee has approved and signed them.

The City may stipulate time limits for completion of work and suspend permits for non-compliance. A copy of the excavation permit shall be on site during construction.
For fees related to Excavation Permits, please refer to the Alpine City Consolidated Fee Schedule.

B. Contractors. Contractors are required to submit the following information to obtain an excavation permit:
   1. Copy of Contractors license;
   2. Certificate of Insurance;
   3. License and permit bond;
   4. Detailed drawing of proposed work and traffic control.

C. Property Owners. Individual property owners doing his/her own work for drive approaches and other similar, minor concrete work in the City right-of-way are required to submit the following information to obtain an excavation permit:
   1. Proof of homeowners or similar insurance;
   2. Detailed drawings of the proposed work, including safety, barricades, traffic and pedestrian control.

Any cuts or changes to the curb shall be performed by a licensed contractor who has obtained an excavation permit or building permit.

300.050. Inspection Fee.

A. General. For bonded developments, an inspection fee will be collected. The fee will be for city costs relating to the construction. These costs include but are not limited to survey, inspection, testing and administration. The fee will be estimated based upon previous projects. Portions of the fee not used shall be refunded to the Developer after the punch list of the final acceptance inspection is completed.

If City costs relating to inspection exceed the inspection fee, these costs will be paid for by the developer or they will be deducted from the 10% warranty portion of the bond.

300.060. Materials Submittals.

A. General. Contractors are required to provide materials submittals for all materials to be used to the City for review and approval.
   1. For pre-manufactured items, documentation must be submitted a minimum of 2 weeks before installation and must include sufficient information, including shop drawings, if applicable, to establish models, colors, sizes, installation requirements, etc. that will be used.
   2. For on-site manufactured items, such as asphalt, concrete or base courses, submit mix designs, hot/cold weather installation plans, and materials certifications a minimum of 5 working days prior to planned installation.
   3. Submittals for the following, at a minimum, should be submitted:
      a. All pre-~~manuctured~~manufactured items meeting city standards such as light fixtures, electrical components, utility fixtures and piping, precast concrete structures, landscaping, etc.
      b. Hot Mix Asphalt Mix Designs
      c. Portland Cement Concrete Mix Designs
      d. Treated Base Course Mix Designs
      e. Untreated Base Course Job Mix Formulas

f. Tack and Prime Coats
g. Concrete Curing Compounds

4. Submit copies of all Quality Control testing and inspection reports within 48 hours of placement of materials.

300.070. Quality Control.

A. General. Perform Quality Control work in accordance with applicable materials sections of the APWA Standard Specifications unless otherwise directed.

The contractor is responsible for performing quality control work sufficient to meet requirements of APWA Standard Specifications and to demonstrate compliance with acceptance criteria. The City will perform assurance functions at their discretion and inform the contractor of acceptance or rejection.

B. Materials Production. Use UDOT certified facilities for asphalt, ~~and~~ Portland cement concrete, and precast concrete pipe and structures. Lists of UDOT certified facilities can be found at: https://udot.utah.gov/connect/business/materials-qualified-suppliers/

1. Submit verification of UDOT certified ~~P~~plant ~~C~~certifications with mix designs.
~~1.~~2. Submit verification of UDOT certified plant for construction of precast concrete pipe and structures

C. Testing and Inspection. Use UDOT certified laboratories and personnel.

1. Submit names, certificate levels and years of experience of testing agency's Field Technician that are assigned to work. Laboratory must comply with ASTM Standards. Use AMRL certified laboratory and WAQTC/UDOT TTQP certified technicians.
2. Submit verification of lab and personnel with mix designs.

Section 350. Earthwork and Trenches.

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350.010. Excavation.

A. General. Excavation shall meet the requirements and specifications of APWA 31 23 16 (Excavation) unless otherwise indicated.

B. Safety. All construction shall be done in accordance with the provisions of the Utah State Industrial Commission, OSHA regulations and APWA 31 23 16 (Excavation). No trenches deeper than 4 feet shall be left open at any time unless construction is in process. When construction is in process only 200 feet of trench may be open at one time and must be completely backfilled before proceeding. No trenches shall be left open at any time unless guarded with adequate barricades, warning lamps and signs.

Any injury or damage resulting from lack of adequate bracing and shoring shall be the responsibility of the Developer/Contractor and the Developer/Contractor shall, at his/her own expense, effect all necessary repairs or reconstruction resulting from such damage. No inspections will be done in unsafe trenches and will be the cause for immediate shutdown at the project until the trench is deemed to be safe by the City Engineer or his/her designee.

C. In Gravel and Paved Surface Areas. Where any excavation occurs in a gravel or paved surface area such as a road, driveway or parking area, the surface shall be restored according to the requirements and specifications of APWA 33 05 25 (Pavement Restoration, requires t-patching on trenches) and the following conditions:

1. *Base.* Only Engineered Fill (Section 350.040.C) may be used as backfill or sub-base material under gravel and paved surfaces. A minimum of 8 inches of untreated base course shall be placed over backfill or sub-base. All fill material shall be placed and compacted to City standards. Flowable fill shall not be allowed for backfill unless authorized by the City.
2. *Surface Maintenance.* The surface shall be maintained by blading, sprinkling, rolling, adding gravel, etc., to maintain a safe uniform surface satisfactory to the City.
3. *Cutting of Pavement.* Before any excavation in a paved area, the surface along the entire excavation shall be cut to provide a vertical joint in the surface. Cut shall be made 6 inches from the edge of excavation in straight lines parallel or perpendicular to the trench or edge of pavement. A pavement saw shall be used for all pavement cutting. If excavation damages the cut pavement, pavement shall be cut again before t-patching. A roto-milled edge shall be acceptable as a cut.
4. *Time Limitation.* All road cuts shall be repaired within 2 working days of excavation unless otherwise authorized by the City Engineer or his/her designee.
5. *Cold Weather Patching.* Trenches cut during winter months or when roadbed temperatures and temperatures in the shade are less than 40 degrees (APWA 33 05 25) or when asphalt plants are not operating, shall be patched the same day of the cut with a good quality cold mix according to the requirements and specifications of APWA 32 12 17 (Cold-Mix Asphalt Paving). These trenches shall be maintained until asphalt plants open. When asphalt plants open, the temporary cold patch shall be removed and a new t-patch (per APWA Plan 255) of hot mix asphalt shall be placed. All cold mix patches shall be replaced with hot mix patches within 30 days of the opening of the hot mix plant.
6. *Adjust Incidental Structures to Grade.* Adjust incidental structures to grade according to APWA 33 05 14 (Utility Grade Adjustment). City standard concrete collars around valves and manholes shall be installed within 1 year from the time that pavement is placed or at the time of an overlay.
7. *Residential vs Non-residential streets.* APWA 33 05 25 mentions "*Match existing pavement thickness plus 1 inch, but not less than four (4) inches. Maximum thickness is six (6) inches in residential areas and eight (8) inches in non-residential areas."* Residential areas are to be defined as Local, Secondary Access, or Parking Lots per the most currently adopted Alpine City Transportation Master Plan. Non-residential is to be defined as Collector or Arterial Class streets per the most currently adopted Alpine City Transportation Master Plan.
~~7.~~8. *Extents of Pavement Replacement.* APWA Detail 255 calls for six (6) feet of t-patch beyond the edges of the trench, this includes the ends of the trench as well as the sides. If the t-patch is within three (3) feet of an existing curb, the patch shall extend to the curb. If the t-patch is within three (3) feet of any other edge of pavement or patch, the patch shall extend to the edge of pavement or patch. It will not be allowed to leave any existing or new section of pavement less than three (3) feet wide. Trenches perpendicular to the roadway that extend past the centerline of the roadway will require a t-patch that covers the entire roadway width. When multiple trenches are present, the t-patch width will be determined by the outer trench locations and shall extend the full width of the pavement if any of the trenches cross the centerline.

D. In Areas with Concrete. When damaged, existing concrete improvements shall be removed and replaced to the next joint or scoring line beyond the damaged or broken sections. In the event that joints or scoring lines

do not exist or are three or more feet from the removed or damaged section, the damaged portions shall be removed and reconstructed to neat, plane faces. All concrete work shall meet the requirements and specifications of Section 650. Portland Cement Concrete Work and APWA 33 05 25 (Pavement Restoration).

E. Rock Excavations. Rock excavations shall meet the requirements and specifications of APWA 31 23 17 (Rock Removal).

F. Site Clearing and the Disposal of Excess Materials. Site clearing shall be conducted according to APWA 31 11 00 (Site Clearing). All excavation material, which is not required for construction or is unsuitable for fill material, shall be immediately disposed of by the Contractor. All roads, sidewalks, curbs, gutters and ditches shall be kept clean of excavated material except as outlined in Title 14.08.05 (Clean Streets) of the Alpine City Municipal Code.

All demolition work shall meet the requirements and specifications of APWA 02 41 13 (Selective Site Demolition), APWA 02 41 14 (Pavement Removal) and APWA 02 41 15 (Pavement Pulverizing).

Removal and disposal of Asbestos Cement Pipe shall be per the Utah Department of Environmental Quality (DEQ) Division of Air Quality (DAQ) guidance document, *How to Handle Non-friable Asbestos Cement Pipe, A Guide for Meeting Utah Department of Environmental Quality/Division of Air Quality Rule*s ("Guidance").

350.020. Sub-surface Pipe Installation.

A. General. Pipes, conduits or casings, 4 inches in diameter or less, may be bored, jacked, augured or jetted under sidewalk, curb, gutter if authorized by the City Engineer or his/her designee. The resulting hole diameter shall not exceed 1 inch plus the outside diameter of the pipe or sleeve installed.

B. Boring or Jacking. Boring or jacking work shall meet the requirements and specifications of APWA 33 05 23 (Trenchless Utility Installation).

C. Tunneling. Where sidewalk, curb, and gutter exists, excavation may be made by tunneling provided the following requirements are met:

1. Excavation shall be vertical and as near to the curb or sidewalk as possible;
2. The length of the tunnel shall not exceed the width of the sidewalk, curb, and gutter;
3. Where a separate sidewalk and curb exist, an excavation shall be made between the sidewalk and the curb;
4. At least three feet of undisturbed earth shall be left under the sidewalk or curb; and
5. Where the sidewalk has been tunneled, the hole shall be filled from each end with flowable fill. Where the excavation cannot meet these requirements, a section of sidewalk, curb, or gutter, from joint to joint shall be removed and replaced.

350.030. Sub-grade.

A. Preparation. All sub-grade shall be shaped and compacted in reasonably close conformity with lines, grades and typical cross section as established by the City Engineer or his/her designee. All grading shall be based on an engineered survey, accepted by Alpine City.

In trenches and cut or fill areas the subgrade shall be scarified to a depth of 8 inches and compacted according to the compaction standards of this chapter. No rocks larger than 4 inches in diameter, organic material, soft clay, spongy material, or other deleterious material will be permitted in this scarified sub-grade layer.

B. Soft and Yielding Areas. Soft and yielding areas which do not compact to City standards shall be removed and replaced with enough compacted engineered fill to bridge the area. Trenches excavated within 10 feet of the lip of gutter shall be removed and replaced as part of the trench asphalt pavement repair, or otherwise ~~approved by the City Engineer.~~approved by the City Engineer and/or his/her designee.

C. Trenches. When the sub-grade material does not afford a sufficiently solid foundation to support the pipe and superimposed load, the trench shall be over-excavated to a sufficient depth and backfilled with enough compacted fill as approved by the City to bridge the area.

D. Roads. Road sub-grades shall be shaped and graded to within a tolerance of 0.15 feet of design grade. Drainage shall be maintained at all times.

E. Structures. Sub-grade material for all concrete structures, regardless of type or location, shall be firm, dense, thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workmen engaged in sub-grade surfacing, laying reinforcing steel, and depositing concrete.

Coarse gravel or crushed stone may be used for subsoil reinforcement if results are satisfactory to the City Engineer or his/her designee. Such material shall be applied in layers, not exceeding 6 inches in thickness, each layer being embedded in the sub-soil by thorough tamping. All excess soil shall be removed to compensate for the displacement of the gravel or crushed stone and the finished elevation of any subsoil reinforced in this manner and shall not be above the specified sub-grade.

The City Engineer may require a soil analysis and design for any area.

350.040. Fill Material.

A. General. All fill material shall be placed on sub-grade prepared according to the specifications of this chapter. All fill material shall be compacted according to the specifications of this chapter.

Only engineered fill or untreated base course may be used as fill material under and within a foot of streets, future street areas, driveways, and concrete unless otherwise specified. All fill material under and within a foot of electrical and communications boxes shall be untreated base course. In other areas native excavated material may normally be used unless such material cannot be properly compacted according to specifications in this chapter. All fill material, including native fill material, must be free from debris, organic material, and rocks larger than 4 inches in diameter and have a liquid limit not to exceed 35 and plastic limit not to exceed 15.

B. Bedding Material. Use APWA No. 4 sewer rock for gravity pipe bedding material. Use sand as a bedding material for pressure pipe and electrical and communication conduit. Bedding sand must compact sufficiently to support the pipe and shall meet the following gradation:

SAND GRADATION

Sieve/Screen Size	% Passing
No. 4	100
No. 200	10 to 20

C. Engineered Fill. Engineered fill shall be used for all imported material unless otherwise specified. Engineered fill shall be granular and well graded meeting the following gradation:

ENGINEERED FILL GRADATION

Sieve/Screen Size	% Passing
4"	100
¾"	70 to 100
No. 200	0 to 15

On that portion of the aggregate passing the No. 40 sieve, the liquid limit shall not exceed 30, nor shall the plasticity index exceed 15 when tested in accordance with AASHTO T89 and T90. Imported material under city streets shall have a minimum CBR of 25.

Reclaimed asphalt pavement (RAP) may NOT be used as engineered fill.

D. Untreated Base Course. All untreated base course shall meet the requirements and specifications of APWA 32 11 23 (Crushed Aggregate Base) ~~Grade 3/4~~ for untreated base course. The use of slag as an untreated base course shall not be permitted.

E. Cement Treated Fill. Cement treated fill shall meet the requirements and specifications of APWA 31 05 15 (Cement Treated Fill). Cement treated fill includes following fill materials:
   1. Controlled low-strength material (CLSM) (flowable fill),
   2. Lime treated fill,
   3. Asphalt treated fill.

F. Defective Fill. Fill not conforming to the requirements of this specification shall be reworked to the requirements or removed and replaced with acceptable fill.

350.050. Slopes, Embankments, Fills and Open Channels.

A. Preparation. Unsuitable materials that occur in the foundation for slopes, embankments, and fills shall be removed by clearing, stripping, and/or grubbing. Where suitable materials occur, after stripping, the foundation shall be scarified to a depth of not less than 8 inches. All materials in slopes, embankments, and fills, including the scarified foundation layer, shall be placed, moistened, and compacted according to the compaction standards in this chapter.

B. Material. When the slope, embankment, or fill exceeds the amount of excavation, sufficient additional material shall be obtained from borrow pits provided by the Contractor. All material proposed to be imported shall be subject to the review and approval of the City Engineer or his/her designee prior any hauling operations.

   The materials used for slope, embankment and fill construction shall be free from sod, grass, trash, rocks larger than 6 inches in diameter and all other material unsuitable for construction of compacted fills.

C. Grading. Grading of completed slope, embankment, or fill shall bring the surfaces to a smooth, uniform condition with final grades being within 0.1 foot of the design grade. All grading shall be done to an engineered red-head.

D. Slope Safety. All slope construction shall be in accordance with all City, State and Federal regulations. Plans and Specifications for structures must be approved by the City if the excavation is greater than five (5) feet. Cut slopes greater than 3:1 may be allowed per geotechnical report recommendation and approval of the City Engineer. Under no circumstance will a permanent slope steeper than 2:1 be allowed without a retaining structure unless otherwise approved in writing by the City Engineer or his/her designee. The width of the excavation shall be increased if necessary to provide space for sheeting, bracing, shoring and/or other supporting installations. Unsafe slopes will be the cause for immediate shutdown of the project.

E. Erosion and Sedimentation Control. Erosion and sedimentation control shall meet the requirements and specifications of APWA 31 25 00 (Erosion and Sedimentation Control).

F. Gabions. Gabions shall meet the requirements and specifications of APWA 31 36 00 (Gabions)

G. Rip Rap and Rock Lining. Rip rap and rock lining work shall meet the requirements and specifications of APWA 31 37 00 (Riprap or Rock Lining).

350.060. Installation and Compaction of Earth Materials.

A. General. The installation of all fill material shall meet the requirements and specifications of APWA 33 05 20 (Backfilling Trenches), APWA 31 23 23 (Backfilling Structures), APWA 32 05 10 (Backfilling Roadways) and APWA 31 23 26 (Compaction). Fill material outside of pavement areas, as defined by APWA 32 05 10 (Backfilling Roadways), and more than 24 inches from any utility box shall be compacted to not less than 90% of the maximum dry density.

B. Streets. Sub-base and road-base shall be graded to an engineered red head. Loose rock, roots, brush, and other materials that may be encountered in shaping the sub-base must be removed.

C. Soft and Yielding Spots. Any soft and yielding spots in the fill or sub-grade which do not compact to the specified density shall be removed and replaced with Engineered Fill installed and compacted to City standards.

D. Backfill in Trenches. Backfill shall be carefully placed around and over pipes and shall not be permitted to fall directly on a pipe from such a height or in such a manner as to cause damage.

E. Pipe Zone. The pipe zone includes the full width of trench from 3 inches below the pipe to 6 inches above the pipe for all pipes except for large reinforced concrete pipe (RCP). Large RCP includes RCP with internal diameters larger than 24 inches. The pipe zone for large RCP shall include the full width of trench from 6 inches below the pipe to 6 inches above the pipe. The pipe zone shall extend horizontally a minimum of 6 inches from either side of the pipe except for electrical and communication conduit. Electrical and communication conduit may be placed against the sides of trenches. Trenches shall be wide enough to compact fill material according to the specifications in this chapter.

The pipe zone for all pipes shall be filled with compacted bedding material. Pipe zone materials shall be placed and compacted under and around the pipe in horizontal layers not to exceed 8 inches and tamped by hand or pneumatic tampers.

350.070. Geotextiles, Geogrids and Geocomposites.

A. General. All geotextile work shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles). Geogrid and geocomposite work shall meet the requirements and specifications of APWA 31 05 21 (Geogrids/Geocomposites). Geotextile, geogrid and geocomposite work includes but is not limited to the following geotextile applications:

1. Stabilization-separation,
2. Silt fence,
3. Erosion control,
4. Roadway pavements,
5. Drainage,
6. Weed barrier
7. Granular base reinforcement,
8. Asphalt concrete reinforcement, and
9. Soil reinforcement.

350.080. Working around Existing Utilities.

A. Purpose & Scope: The purpose of this specification is to provide guidance and requirements for the excavation and trenching work in the vicinity of existing utilities. This specification applies to all excavation and trenching work within the project site that involves digging or disturbing the soil within the vicinity of existing utilities, including but not limited to gas, water, sewage, communication, and power lines.

B. Regulations and Permits: The contractor shall obtain all necessary permits and comply with all applicable regulations and guidelines from local, state, and federal agencies regarding excavation and trenching work.

C. Utility Identification: Prior to excavation, the contractor shall verify the location and depth of all existing utilities within the work area using the most current and accurate information available. The contractor shall call Blue Stakes, who will visually mark the location of each utility using colored flags, paint, or other suitable markers.

D. Safety Precautions: The contractor shall implement and maintain all necessary safety precautions to protect workers, equipment, utilities, and the public from harm during excavation and trench work. This may include barricading the work area, providing and installing a traffic plan, providing proper ventilation, using proper excavation techniques, and following confined space procedures.

E. Excavation Techniques: The contractor shall use hand tools or vacuum excavation equipment to expose the existing utility to the depth required by the project design. The excavation shall be done carefully and gradually to avoid damaging the utility.

F. Backfill and Compaction: The contractor shall backfill the excavation with suitable material as specified in the project design, taking care to avoid damaging the utility. The backfill shall be compacted in layers per section 350.060 (Installation and Compaction of Earth Materials).

G. Restoration: The contractor shall restore the work area to its original condition as specified in the project design, including replacing any disturbed pavement, landscaping, or other features.

H. Inspection and Testing: The contractor shall allow the utility owner or its representative to inspect and test the utility before and after excavation to ensure that it remains in good working condition.

I. Record Keeping: The contractor shall maintain detailed records of all excavation and trenching work, including the location and depth of utilities, excavation techniques used, backfill material and compaction,

and restoration activities.

J. Quality Control: The contractor shall implement a quality control program to ensure that all excavation and trenching work meets the requirements of this specification and the project design.

K. Submittals: The contractor shall submit all required submittals, including permits, utility location information, excavation and backfill materials, and compaction test results, to the project owner or engineer for review and approval prior to commencing work.

L. Deviations: Any deviations from this specification or the project design shall be documented and approved by the project owner or engineer prior to proceeding with the work.

~~A.~~M. Cast Iron Pipe: Special care shall be taken when working around Cast Iron Pipe (CIP). CIP can be susceptible to cracking or breaking when under excavated. If CIP is encountered in a trench the exposed section of CIP shall be removed and replaced with Ductile Iron Pipe (DIP). Sleeves shall be used to connect the new piece of DIP to the existing CIP. See Standard Detail 39.

Section 400. Drinking Water.

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400.010. General.

A. Specifications. These specifications cover the installation of drinking water lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to water.

B. Pipe. PVC or polyethylene pipe shall be used for all culinary drinking water mains unless otherwise authorized by the City Engineer or his/her designee. Polyethylene pipe shall be used for the service lateral in ~~conjuction~~conjunction with PVC main lines. Where ductile main line exists, copper pipe is to be used for the service lateral. Special precautions shall be taken in areas of contamination. Pipe and joint materials which are not susceptible to contamination, such as permeation by organic compounds, shall be used. Non-permeable materials shall be used for all portions of the ~~sytem~~system including water mains, ~~sercice~~service connections, and hydrant leads. The Division of Drinking Water shall be contacted to establish specific design requirements in areas of contamination or potential contamination such as sewer treatment plants, septic systems, or industrial sites.

C. Size. The City Engineer or his/her designee must approve the sizes of all proposed drinking water lines. It is required to have the design hydraulically modeled by the City's designated Hydraulic Engineer, the Hydraulic Engineer must confirm that the design meets Utah Division of Drinking Water Standards. The minimum size of drinking water pipe is 8 inch diameter for main lines and 1 inch diameter for services unless otherwise authorized by the City Engineer or his/her designee.

D. Location. Drinking water mains shall be located on either the north or east sides of a street 4 feet from the edge of curb. All drinking water appurtenances shall conform to the minimum separation standards from sanitary sewer systems as outlined in Utah Code R309-550-7 and R309-550-12. See standard drawings for utility locations.

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards. They shall be approved by the City Engineer or his/her designee.

F. Dead Ends. To provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins whenever practical. Where dead-end mains occur, they shall be provided with a fire ~~hyardant~~hydrant or with an approved flushing hydrant or blow-off for flushing purposes. See section 400.070 for flushing specifications.

G. Drains. No drain within the culinary water system or other such appurtenances to the distribution system can be connected to the sanitary sewer or storm drain system. Where drains cannot be drained to daylight, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

H. Surface Water Crossings. Surface water crossings, whether over or under water, require Division of Drinking Water approval and shall conform to Utah Code R309-550-8 (8).

~~H.~~I. Cross Connections Prohibited. Per Alpine City Municipal Code 14.06, "It shall be unlawful for any person to connect any part of the Secondary Irrigation System to any part of any culinary water system so as to create a potential cross-connection whereby irrigation water could be introduced into any system that provides culinary water. The use of swing connections will not be permitted."

400.020. Installation.

A. General. Drinking water distribution and transmission systems shall be installed according to the Utah State-adopted plumbing code as well as the requirements and specifications of APWA 33 11 00, 33 05 05, 33 05 06, 33 05 07, AWWA M23; 2003, and AWWA M55; 2006. (Water Distribution and Transmission).

B. Pipe Cleanliness. All foreign matter or dirt shall be removed from the inside of the pipe before it is placed and it shall be kept clean during and after laying. No debris, tools, or other materials shall be placed in the pipe during laying operations. When laying of pipe is not in progress, the pipe shall be closed by a water-tight plug.

C. Identification Tape. All drinking water mains shall be installed with identification tape that meets the requirements and specifications of APWA 33 05 20 (Backfilling Trenches). Tape shall be buried 12 inches above the pipe.

D. Lateral Displacement. All pipes shall be protected from lateral displacement resulting from impact or unbalanced loading during backfilling operations.

E. Restraining. Either thrust blocks or mechanical restraining devices shall be used for all tees, valves, plugs, caps and bends. Restraining shall be accomplished according to the most recent APWA standards.

F. Connections to Existing Drinking Water Lines. The Contractor will be responsible to verify actual size, type of material and location of existing utilities in the field. The fittings and materials required for construction must be approved by the City Engineer or his/her designee.

Where fitting sizes, such as tees and crosses, are shown on the plans, those sizes will be used. However, no attempt has been made to show all needed fittings or materials.

Tapping tees may only be installed when authorized by the City Engineer or his/her designee and when the existing main is at least one size larger than the proposed intersecting line.

G. Bedding. A continuous and uniform bedding shall be provided in the trench for all buried pipe. Stones larger than 3/4" for plastic pipe or 2-inch minus for ductile iron pipe shall be removed for a depth of at least 6 inches below the bottom of the pipe. Bedding materials shall otherwise be installed per APWA standards

400.030. Pipe and Fittings.

A. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the standards and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe), AWWA C900 and C905. Only blue ~~or white~~, ~~S~~DR-18 pressure class 150 psi or higher rated PVC pipe may be used for drinking water mains.

B. Ductile Iron Pipe. Ductile iron pipe shall meet the standards and specifications of APWA 33 05 05 (Ductile Iron Pipe). Only a pressure class of 150 psi or larger may be used. A tubular black polyethylene encasement must be installed according to AWWA C105 over all ductile iron pipe and fittings. Flanges, when required, shall meet the requirements and specifications of AWWA C115.

C. Polyethylene Pipe. Polyethylene pipe shall meet the standards and specifications of APWA 33 05 06 (Polyethylene Pipe) and AWWA C906 which includes NSF-61 certification.

D. Steel Pipe - Lined and Coated. Steel pipe shall meet the standards and specifications of APWA 33 05 09 (Steel Pipe - Lined and Coated).

E. Copper Tubing. Copper tubing shall be "soft annealed" and shall conform to the standards for "Type K," prescribed in ANSI/AWWA C800-89 Section A.2 for "Copper Water Tubing" and to ASTM, designation B42 and B88-99, and current revisions thereof. It shall be free from grooving cracks, indentations, flaws or other defects. At intervals of not greater than one and one-half feet, the tubing shall bear clear, permanent markings indicating the type and manufacturer.

F. Fittings. Use Ductile Iron fittings that conform to the provisions of ANSI/AWWA C110/A21.10 or C153/A21.53 unless otherwise recommended by the manufacturer and authorized by the City Engineer or his/her designee. All PVC pipe being inserted into fittings shall have the bevel end removed. All the bolts and nuts of all fittings shall be greased. All fittings shall have an 8 mil vinyl wrap plastic cover.

Minimum pressure Class will be 250 for pipes larger than 12 inch diameter. Pipes of 12 inch diameter and smaller shall be pressure Class 350.

FLOW REQUIREMENTS FOR FLUSHING

Pipe Diameter	Flow in Gallons Per Minute
4 inch	100
6 inch	220
8 inch	390
10 inch	610
12 inch	880
16 inch	1,567

18 inch	1,980
20 inch	2,450
24 inch	3,525
30 inch	5,507

400.040. Valves and Couplings.

A. General. All valves shall meet the requirements of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves).

B. Resilient Seated Gate Valve. All valves on 4 inch to 12 inch drinking water mains shall be resilient seated gate valves. Valves shall also be of iron body have non-rising bronze stems and meet the following specifications:

1. Mechanical Joint. When valves are Mechanical Joint, they shall be furnished with all necessary glands, followers, and bolts and nuts to complete installation.
2. Valve Stems. Bronze valve stems shall be interchangeable with stems of the double disc valves of the same size, direction of opening and manufacture.

C. Butterfly Valve. All valves 14 inches and larger shall be butterfly valves which meet the requirements and specifications of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves) and the following specifications:

1. General. Valve bodies shall be cast iron, ASTM A-126 Class B. Body ends shall be flanged with facing and drilling in accordance with ANSI B16.1, Class 125; or mechanical joint in accordance with AWWA C111. All mechanical joint end valves shall be furnished complete with joint accessories (bolts, nuts, gaskets, and glands). All valves shall conform to AWWA Standard C-504, Table 3, Laying Lengths for Flanged Valves and Minimum Body Shell Thickness for all Body Types.
2. Disc. Valve disc shall be ductile iron ASTM A-536, grade 65-45-12. Valve disc shall be of the offset design providing 360 degree uninterrupted seating.
3. Shaft Bearings. Shaft bearings shall be contained in the integral hubs of the valve body and shall be self-lubricated sleeve type.
4. Coating. All valves shall be coated with epoxy in conformance to AWWA Standard C-550, latest revision. Interior wetted ferrous surfaces shall be coated a nominal 10 mils thick for long life; and body exterior shall have a minimum of 3 to 4 mils coating thickness in order to provide superior base for field-applied finish coats.

D. Valve Boxes. Valves shall be bolted to the cross in the intersection of streets as a cluster valve set. Earth fill shall be carefully tamped around the valve box to a distance of 4 feet on all sides of the box, or to the undisturbed trench face if less than 4 feet.

All top of valve boxes located in streets shall be installed 1/2 inch below grade. When an overlay is required, the pavement surrounding the valve box shall be neatly cut to form a 30 inch round opening with the valve box centered, and a concrete collar shall be cast around the box 1/2 inch below grade and the valve box set 1/2 inch below grade. Valve boxes in off-road areas shall extend 6 inches above grade. Lid detail shall be similar to Comco C-6517.

E. Couplings. Couplings shall be equal to the product of Smith-Blair or Dresser with cast iron couplings being used on all cast iron and PVC pipe. Couplings shall be of the straight, transition, or reducing style as required by the specific installation. All steel fittings and bolts shall be coated with a non-oxide coating and wrapped with polyethylene.

F. Pressure Regulation Valves. Pressure regulation valves (PRV) which are required in a development when static pressures exceed 150 psi and shall be designed by the Developers engineer, the design shall be submitted to the City Engineer or his/her designee for review and approval prior to starting construction. All PRV's shall be Cla-Val with a 4" bypass or approved by the City Engineer, be placed in a concrete vault, have isolation valves on each side, and have telemetry included.

G. Tapping Valves. Tapping valves may only be used when approved by the City Engineer or his/her designee. Tapping saddles with an "O" ring may be used if the drinking water main line to be tapped is larger than the new drinking water main line. Where the tap is the same size as the existing main, cast iron or stainless steel tapping sleeves shall be used, which encase the full perimeter of the pipe. The valve shall

be a tapping valve with a guide lip on the flanged side. The opposite side of the valve shall have a mechanical joint connection.

H. Air, Vacuum and Release Valves. Combination air, vacuum and release valves shall be installed according to the standard drawings at high points in the system as required by the City Engineer or his/her designee.

I. Isolation Valves. A sufficient number of valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves shall be located at every roadway intersection or block on all segments of pipe. Where a proposed system may serve widely scattered customers and where future development is not expected, the valve spacing shall not exceed two thousand (2,000) feet.

J. Backflow Assemblies. Installation of backflow assembly shall conform to City ordinances and the State-adopted plumbing code. Alpine City has strict guidelines regarding cross connections. In the event a cross connection is allowed, a reduced pressure zone (RPZ) backflow assembly is the only allowed style of backflow prevention assembly. A RPZ may be required in other circumstances, each situation will be evaluated on an individual basis.

400.050. Fire Hydrants.

A. General. Fire hydrants shall meet the requirements and specifications of APWA 33 12 19 (Hydrants). All fire hydrants shall be Mueller Super Centurion 250 or approved equivalent and red in color. They shall have a 5 ¼ inch barrel diameter and 6-inch mechanical joint connection. The 6-inch gate valve will be mechanical joint by flange connected to the tee joint at the main line in the street. Hydrants shall be frost proof. The threads shall be National Standard Fire Hose Thread. Spacing of fire hydrants shall be according to the Uniform Fire Code but more specifically, hydrants are required to be located within 250' of any structure, typically located on property lines. The fire flow level of service Alpine City has established is 1,750 gpm for 2 hours at every hydrant, this will be verified when the proposed plan is submitted and reviewed by the City's designated Hydraulic Engineer.

B. Placement and Location. In general, fire hydrants should be located on property lines to minimize conflicts with driveways. Fire hydrant location to be approved by the City Engineer or his/her designee. Fire hydrants shall be set vertical and held in place by adequate concrete blocking which shall be left in the trench. Hydrants shall be set at a height that will allow 2 inches minimum and 7 inches maximum exposed between the finished ground and the sidewalk flange. A gravel filled drip area shall be provided. Hydrant drains shall not be connected to or located within 10 feet of sanitary sewers. Where possible hydrant drain shall not be located within 10 feet of storm drains. Fire hydrants require 3 feet of clear space around them for operational purposes. See standard drawing for fire hydrants.

The relocation of fire hydrants shall meet the requirements and specifications of APWA 33 11 11 (Relocate Water Meters and Fire Hydrants) and related sections.

400.060. Meters and Services.

A. General. Alpine City owns and maintains the water system up to and including the water meter. Between the water meter and home is the responsibility of the homeowner. See Standard Drawings for drinking water services. The minimum size of new drinking water service lines is 1 inch, while the standard meter size is 3/4 -inch. All drinking water services shall have dual check valves. Drinking water services shall extend 20 feet beyond the back of curb and shall be capped until connected to a building. Meter and service line installation shall conform to the State-adopted plumbing code and conform to the standard meter installation detail as noted in the Alpine City Standard Details.

B. Placement and Location. All meter boxes shall have their location and grade staked prior to installation. No meter boxes shall be set in sidewalks, driveways, or encased in concrete in any way. Service taps shall be a minimum of 36 inches apart. No taps will be allowed within 36 inches of the end of the pipe. All meter boxes require 3 feet of clear space around them for operational purposes. Meter lid height to be set 0.1' above curb (must be within 0.1' of this requirement).

Service laterals shall extend perpendicular from the main to the meter box. If a meter must be coordination with the City Engineer is required. When a new service line is installed the old corporation stop shall be shut off at the main and the old service line cut two feet from the main.

Drinking water service lines shall meet the separation from sanitary sewer requirements in this Section. Drinking water services shall extend 20 feet beyond the back of curb and capped until connected to a building.

The relocations of drinking water meters shall meet the requirements and specifications of APWA 33 11 11 (Relocate Water Meters and Fire Hydrants) and related sections. Services 3/4 – 2 inch shall be copper tubing shall be "soft annealed" and shall conform to the standards for "Type K," prescribed in ANSI/AWWA C800-89 Section A.2 for "Copper Water Tubing" and to ASTM, designation B42 and B88-99, and current revisions thereof. Pipe damaged by scratches, cuts, kinks, or buckled areas shall not be installed. PVC, as mentioned in section 400.010 (B) shall be used in conjunction with PVC mains where corrosive soils exist and shall conform to the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe), only CTS SDR9 200 psi blue polyethylene pipe shall be used for service lines. Deflection in joints shall meet manufacturer's specifications and shall be approved by the City Engineer or his/her designee or shall be replaced with the proper fitting.

C. Meters. The standard meter size is 3/4-inch. All meters shall be paid for by the Contractor and supplied by the City. Meter boxes shall be in good repair. They shall not be set at an angle, crushed, or dented. The inside of boxes must be free from obstructions such as dirt, rocks or debris.

400.070. Flushing.

A. General. All drinking water lines shall be flushed after the high chlorine test and prior to the pressure test. See Section 250. Testing and Inspection for testing information. Flushing shall be accomplished through hydrants and at the end each line. No flushing device shall be directly connected to a sewer or storm drain.

B. Velocity. The Contractor shall install a tap sufficient in size to provide for 2½ foot per second flushing velocity in the line. The following is the flow quantity required to provide a 2½ foot per second flushing velocity.

FLOW REQUIREMENTS FOR FLUSHING

Pipe Diameter in Inches	Flow in Gallons per Minute
4 inch	100
6 inch	220
8 inch	390
10 inch	610
12 inch	880
16 inch	1,567
18 inch	1,980
20 inch	2,450
24 inch	3,525
30 inch	5,507

400.080. Disinfection of Drinking Water Lines.

A. Cleaning. The pipe shall be clean prior to disinfection. If in the opinion of the City, contamination is such that it cannot be removed by flushing, the pipe shall be cleaned by mechanical means and then swabbed with a 1% hypochlorite disinfection solution.

B. Methods. All drinking water pipeline shall be disinfected as outlined in AWWA C651 by one of the following methods:

1. *Tablet Method.* The tablet method shall consist of placing calcium hypochlorite tablets at the specified rate in the main during construction at the upstream end of each section of pipe. The tablet shall be attached with an adhesive, such as Permatex No. 1 or equivalent as approved by the City Engineer or his/her designee. The line shall then be filled slowly (velocities less than 1 ft/sec), expelling all air pockets and maintaining the disinfection solution in the line for at least 24

hours, 48 hours if the water temperature is less than 41º F. The disinfection solution shall have a concentration of at least 25 mg/l of available chlorine.

2. *Continuous Feed Method.* The continuous feed shall be done exactly as outlined in AWWA C651 and shall have a twenty-five mg/l available Chlorine after 24 hours.

Under both methods the Contractor shall not be allowed to flush the line until the chlorine residual test has been passed by the City. If necessary drinking water lines shall be re-chlorinated until satisfactory bacteriological testing is obtained. See Section 250. Testing and Inspection for testing information.

Section 450. Pressurized Irrigation.

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450.010. General.

A. Specifications. These specifications cover the installation of pressurized irrigation lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to pressurized irrigation.

B. Pipe. Polyvinyl Chloride (PVC) pipe shall be used for all pressurized irrigation mains 12 inches in diameter and smaller unless otherwise authorized by the City Engineer or his/her designee. Ductile iron, PVC, or polyethylene pipe shall be used for pressurized irrigation mains larger than 12 inches in diameter as approved by the City Engineer or his/her designee. Only PVC or polyethylene pipe may be used in corrosive soils.

C. Size. The City Engineer or his/her designee must approve the sizes of all proposed pressurized irrigation lines. The minimum size of pressurized irrigation pipe in thru streets is 6 inch diameter for main lines, 4 inch diameter for cul-de-sacs unless otherwise specified in the Pressurized Irrigation System Master Plan. 1 inch diameter for services are required for each lot. A dual service shall be 1½" to the service tee.

D. Location. Pressurized irrigation mains shall be located on either the south or west sides of a street 3 feet from the edge of curb. See standard drawings for utility locations.

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

Tapping tees may only be installed when authorized by the City Engineer or his/her designee and when the existing main is at least one size smaller than the proposed main.

F. Cross Connections Prohibited. Per Alpine City Municipal Code 14.06, "It shall be unlawful for any person to connect any part of the Secondary Irrigation System to any part of any culinary water system so as to create a potential cross-connection whereby irrigation water could be introduced into any system that provides culinary water. The use of swing connections will not be permitted."

450.020. Installation.

A. General. Pressurized irrigation distribution and transmission systems shall be installed according to the requirements and specifications of APWA 33 11 00 (Water Distribution and Transmission). PVC pipe shall also be installed according to the requirements and specifications of AWWA C605.

B. Pipe Cleanliness. All foreign matter or dirt shall be removed from the inside of the pipe before it is placed and it shall be kept clean during and after laying. No debris, tools, or other materials shall be placed in the pipe during laying operations. When laying of pipe is not in progress, the pipe shall be closed by a water-tight plug.

C. Minimum Cover. All pressurized irrigation mains shall have a minimum cover of 2 feet to the top of the pipe.

D. Identification Tape. All pressurized irrigation mains shall be installed with identification tape that meets the requirements and specifications of APWA 33 05 20 (Backfilling Trenches). Tape shall be buried 12 inches above the pipe.

E. Lateral Displacement. All pipes shall be protected from lateral displacement resulting from impact or unbalanced loading during backfilling operations.

F. Restraining. Either thrust blocks or mechanical restraining devices shall be used for all tees, valves, plugs, caps and bends. Restraining shall be accomplished according to the standard drawings.

G. Connections to Existing Pressurized Irrigation Lines. The Contractor will be responsible to verify actual size, type of material and location of existing utilities in the field. The fittings and materials required for construction must be approved by the City Engineer or his/her designee.

Where fitting sizes, such as tees and crosses, are shown on the plans, those sizes will be used. However, no attempt has been made to show all needed fittings or materials.

450.030. Pipe and Fittings.

A. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe) and AWWA C900 and C905. Only purple, SDR-18 pressure class 150 psi pipe may be used for pressurized irrigation mains.

B. Ductile Iron Pipe. Ductile iron pipe shall meet the standards and specifications of APWA 33 05 05 (Ductile Iron Pipe). Only a pressure class of 150 psi or larger may be used. A tubular purple polyethylene encasement must be installed according to AWWA C105 over all ductile iron pipe and fittings. Flanges, when required, shall meet the requirements and specifications of AWWA C115. Ductile iron may be directed tapped for the use of corporation stops.

C. Polyethylene Pipe. Polyethylene pipe shall meet the standards and specifications of APWA 33 05 06 (Polyethylene Pipe).

D. Steel Pipe - Lined and Coated. Steel pipe shall meet the standards and specifications of APWA 33 05 09 (Steel Pipe - Lined and Coated).

E. Fittings. Use Ductile Iron fittings that conform to the provisions of ANSI/AWWA C110/A21.10 or C153/A21.53 unless otherwise recommended by the manufacturer and authorized by the City Engineer or his/her designee. All PVC pipe being inserted into fittings shall have the bevel end removed. All the bolts and nuts of all fittings shall be greased. All fittings shall have an 8 mil vinyl wrap plastic cover.

450.040. Valves and Couplings.

A. General. All valves shall meet the requirements of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves).

B. Resilient Seated Gate Valve. All valves on 4 inch to 12 inch water mains shall be resilient seated gate valves. Valves shall also be of iron body have non-rising bronze stems and meet the following specifications:

1. *Mechanical Joint.* When valves are Mechanical Joint, they shall be furnished with all necessary glands, followers, and bolts and nuts to complete installation.
2. *Valve Stems.* Bronze valve stems shall be interchangeable with stems of the double disc valves of the same size, direction of opening and manufacture.

C. Butterfly Valve. All valves 14 inches and larger shall be butterfly valves which meet the requirements and specifications of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves) and the following specifications:

1. *General.* Valve bodies shall be cast iron, ASTM A-126 Class B. Body ends shall be flanged with facing and drilling in accordance with ANSI B16.1, Class 125; or mechanical joint in accordance with AWWA C111. All mechanical joint end valves shall be furnished complete with joint accessories (bolts, nuts, gaskets, and glands). All valves shall conform to AWWA Standard C-504, Table 3, Laying Lengths for Flanged Valves and Minimum Body Shell Thickness for all Body Types.
2. *Disc.* Valve disc shall be ductile iron ASTM A-536, grade 65-45-12. Valve disc shall be of the offset design providing 360 degree uninterrupted seating.
3. *Shaft Bearings.* Shaft bearings shall be contained in the integral hubs of the valve body and shall be self-lubricated sleeve type.
4. *Coating.* All valves shall be coated with epoxy in conformance to AWWA Standard C-550, latest revision. Interior wetted ferrous surfaces shall be coated a nominal 10 mils thick for long life; and body exterior shall have a minimum of 3 to 4 mils coating thickness in order to provide superior base for field-applied finish coats.

D. Valve Boxes. All buried valves shall be installed complete with two-piece, cast iron, slip type, 5-1/4-inch shaft valve box with drop lid. The lid shall have the word "IRRIGATION" or “DRAIN” according to the standard drawing cast in the metal.

Valves and valve boxes shall be installed where shown on the drawings. Valves and valve boxes shall be set plumb. Valve boxes shall be centered directly over the valve. Valves shall be aligned with property lines where possible. Earth fill shall be carefully tamped around the valve box to a distance of 4 feet on all sides of the box, or to the undisturbed trench face if less than 4 feet. Valves shall have the interiors cleaned of all foreign matter before installation.

All top of valve boxes located in streets shall be installed 1/2 inch below grade. The pavement surrounding the valve box shall be neatly cut to form a 30 inch round opening with the valve box centered, and a concrete collar shall be cast around the box. Valve boxes in off-road areas shall extend 6 inches above grade unless otherwise specified by the City Engineer or his/her ~~desginee~~designee. Lid detail shall be similar to Comco C-6517.

E. Couplings. Couplings shall be equal to the product of Smith-Blair or Dresser with cast iron couplings being used on all cast iron and PVC pipe. Couplings shall be of the straight, transition, or reducing style as required by the specific installation. All steel fittings and bolts shall be coated with a non-oxide coating and wrapped with polyethylene.

F. Pressure Regulation Valves. Pressure regulation valves (PRV) which are required in a development shall be designed by the Developers engineer and the design shall be submitted to the City Engineer or his/her designee for review and approval prior to starting construction. All PRV's shall be Cla-Val with a 4" bypass or as specified by design, be placed in a concrete vault and have telemetry included.

G. Tapping Valves. Tapping valves may only be used when approved by the City Engineer or his/her designee. Tapping saddles with an "O" ring may be used if the water main line to be tapped is larger than the new water main line. Where the tap is the same size as the existing main, cast iron or stainless steel tapping sleeves shall be used, which encase the full perimeter of the pipe. The valve shall be a tapping valve with a guide lip on the flanged side. The opposite side of the valve shall have a mechanical joint connection.

H. Air, Vacuum and Release Valves. Combination air, vacuum and release valves shall be installed according to the standard drawings at high points in the system as required by the City.

450.050. Meters, Boxes and Services.

A. General. See the standard drawings for pressurized irrigation services. The minimum size of new pressurized irrigation service lines is 1 inch for single service and 1 ½" for dual service.

B. Placement and Location. All meters and boxes shall have their location and grade staked prior to installation. No meters or boxes shall be set in sidewalks or driveways. Meters and boxes are to be set 5 feet uphill from the water meter, 1 foot behind the sidewalk or 10 feet behind the curb.~~-~~ For new development, box to be set within +/- 0.1' sidewalk elevation. Service taps shall be a minimum of 36 inches apart. No taps will be allowed within 36 inches of the end of the pipe.

Service laterals shall extend perpendicular from the main to the meter or box. For dual pressurized irrigation services, laterals shall extend perpendicular from the main to the tee.

If a meter must be moved coordination with the City Engineer is required. When a new service line is installed the old corporation stop shall be shut off at the main and the old service line cut two feet from the main.

C. Meters and Boxes. All meters shall be paid for by the developer and ordered by the City. Meter boxes and pressurized irrigation boxes shall be in good repair. They shall not be set at an angle, crushed, or dented. The inside of boxes must be free from obstructions such as dirt, rocks or debris. Meters shall be installed by the Developer or Contractor.

D. Polyethylene Pipe. Only CTS SDR9 200 psi purple polyethylene pipe shall be used for pressurized irrigation service lines. Pipe damaged by scratches, cuts, kinks or buckled areas shall not be installed.

The bottom of trench shall be flat with no hollows, no lumps and no rock. If these conditions do not occur pipe must be bedded in coarse sand. No rocks shall be allowed within six inches of pipe.

Pipe shall be cut with either a wheel or scissor type tubing cutter with a blade specifically designed for plastic. Cuts shall be square and clean. Cutter manufacturer instructions shall be followed when cutting pipe. All connections shall have stainless steel stiffeners.

There shall be no unnecessary bending of pipe. Taps shall be exactly horizontal to the pressurized irrigation main. If bending cannot be avoided maximum bending radius shall be 25 times the pipe diameter as measured in inches (i.e.: a 16 inch pipe cannot bend on a curvature having a radius less than 16 x 25= 400 feet). There shall be no bending within 3 feet of a fixed point and no "S" shape curves.

450.060. Flushing.

A. General. All pressurized irrigation lines shall be flushed before placed in service. Flushing shall be accomplished through the end of each line.

B. Velocity. The Contractor shall install a tap sufficient in size to provide for 2 ½ feet per second flushing velocity in the line. The following is the flow quantity required to provide a 2 ½ foot per second flushing velocity.

FLOW REQUIREMENTS FOR FLUSHING

Pipe Diameter	Flow in Gallons Per Minute
4 inch	100
6 inch	220
8 inch	390
10 inch	610
12 inch	880
16 inch	1,567
18 inch	1,980
20 inch	2,450
24 inch	3,525
30 inch	5,507

Section 500. Sanitary Sewer.

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- A. General.
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500.010. General.

A. Specifications. Sanitary sewer facilities shall meet the requirements and specifications of APWA 33 31 00 (Sanitary Sewerage Systems). These specifications cover the installation of sanitary sewer lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to sanitary sewers.

B. Pipe. All sanitary sewer pipe 18 inches in diameter and larger shall be ADS Sanitite HP pipe or approved equivalent unless otherwise approved by City Engineer or his/her designee. All other sanitary sewer pipe shall be constructed with polyvinyl chloride (PVC) pipe.

C. Size. The City Engineer or his/her designee must approve the sizes of all proposed sanitary sewer lines. Minimum size of pipe is 8 inch diameter for main lines and 4 inch diameter for services.

D. Location. Sanitary Sewer mains shall be located on either the south or west sides of a street 7 feet from the centerline. A maximum of 400 feet of pipe shall be allowed between manholes unless otherwise ~~approved by the City Engineer.~~approved by the City Engineer and/or his/her designee.

E. Minimum Slopes. Slopes shall be designed to have a 2 foot per second velocity unless otherwise ~~approved by the City Engineer.~~approved by the City Engineer and/or his/her designee. The following table lists minimum slopes for sanitary sewer for each size of pipe:

MINIMUM SANITARY SEWER SLOPES

Pipe Diameter (inches)	Minimum Slope (%)
4	2.000
6	1.000
8	0.334
10	0.248
12	0.194
14	0.158
15	0.144
16	0.132
18	0.113
21	0.092
24	0.077
27	0.066
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

F. Sanitary Sewer Lift Stations. Sanitary sewer lifts stations require prior approval. All possible options for a gravity flow system shall be considered prior to requesting approval of a sanitary sewer lift station or equivalent system. Sanitary sewer lift stations or equivalent systems which are approved to be used in a development shall be designed by the Developer's engineer; the design shall be submitted to the City Engineer or his/her designee for review prior to Preliminary Approval of the development. Lift stations will be the wet well / dry well type, will have standby power, proper ventilation, telemetry, and will be designed for large areas, not individual subdivisions.

G. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

500.020. Pipe and Fittings.

A. General. ADS Sanitite HP pipe or approved equivalent shall be used for all sanitary sewer lines larger than 18 inches in diameter. All other sanitary sewer lines shall be constructed with polyvinyl chloride (PVC) pipe.

Pipe buried more than 12 feet deep shall require manufacturing and engineering specifications to be submitted to the City Engineer or his/her designee for written approval.

B. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe) and shall have a minimum rating of SDR-35.

C. ADS Sanitite HP Pipe. Sanitite HP pipe with sizes up to 30 inches shall meet the requirements and specifications of ASTM F2732. Sanitite HP pipe with sizes over 30 inches shall meet the requirements of ASTM F2764.

500.030. Services.

~~A.~~ General. All sanitary sewer services shall be connected to existing sanitary sewer mains by use of an Inline Y or approved equivalent Insert-a-Tee type connection, and shall be ~~approved by the City Engineer.~~approved by the City Engineer and/or his/her designee. Sewer services shall extend 10 feet beyond the back of sidewalk and plugged until connected to a building. The minimum cover of sewer laterals is at 3' 6" at the property line.

A.

~~B.~~

B. Clean-outs. Clean-outs, per City details, shall be installed every 100 feet on all service lines.

~~C.~~ Replacement of service lines. When an existing lot/parcel has a working sewer service, a Street Cut Permit will not be issued for a new service line without approval from the City Engineer.

C. Section 550 Storm, Land and Groundwater Drains.

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- B. Retention Basins.
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550.050. Low Impact Development.
- A. General.

550.010. General.

A. Specifications. Storm, land and groundwater drain facilities shall meet the requirements and specifications of APWA 33 41 00 (Storm Drainage Systems). These specifications cover the installation of storm, land and groundwater lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to storm, land and groundwater drains. Land and groundwater drains shall be approved by the City Engineer and shall be installed lower in elevation than the sewer mainline.

B. Size. The City Engineer or his/her designee must approve the sizes of all proposed drain lines. The minimum size of pipe is 15" diameter for all lines, both mains and laterals.

C. Location. Drain lines shall be located along the centerline of the street, typically below water mains to reduce conflicts. Unless approved otherwise, a maximum of 400 feet of pipe shall be allowed between manholes.

D. Minimum Slopes. Slopes shall be designed to have a 2 foot per second velocity unless otherwise ~~approved by the City Engineer.~~approved by the City Engineer and/or his/her designee. The following table lists minimum slopes for drain lines for each size of pipe:

MINIMUM DRAIN LINE SLOPES

Pipe Diameter (inches)	Minimum Slope (%)
12	0.194
14	0.158
15	0.144
16	0.132
18	0.113
21	0.092
24	0.077
27	0.066
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

F. Groundwater Drains. All plans for groundwater drains must be designed and stamped by a licensed professional civil engineer in the State of Utah. Only rigid pipe may be used.

550.020. Pipe and Fittings.

A. General. Reinforced concrete pipe shall be used for all lines with less than 2 feet of cover or more than 8 feet of cover. Corrugated metal pipe (CMP) may only be used when authorized by the City Engineer or his/her designee.

B. Concrete Pipe. Concrete pipe shall meet the requirements and specifications of APWA 33 05 02 (Concrete Pipe and Culvert). Reinforced concrete pipe (RCP) shall be Class III. Only new pipe may be used unless otherwise authorized by the City Engineer or his/her designee.

C. Polyethylene Pipe. Polyethylene pipe shall meet the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe) Type S for storm drains and Type SP for land or groundwater drains.

D. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe).

E. Corrugated Metal Pipe (CMP). CMP shall meet the requirements and specifications of APWA 33 05 04 (Corrugated Metal Pipe).

550.030. Sumps, and Appurtenances.

A. Connecting to Existing Drain Lines. Manholes and sumps used to connect proposed storm drain to existing storm drain shall be plumb and centered on the existing storm drain. The new pipe shall be placed against the existing pipe at the elevation designated by the project engineer and the base poured as specified above. Care shall be taken not to disturb the alignment of the existing storm drain during the excavation procedure. Any damage to the existing storm drain shall be repaired.

B. Sumps. Sumps may only be constructed of reinforced concrete, precast sections and shall meet the requirements of ASTM C478-73. Sumps shall have eccentric lids to ensure adjustments in alignment.

C. Inlet and Clean Out Structures. Surface water must enter the City storm drain system through standard City inlet boxes. In no case may water inlet directly into storm manholes, clean-outs, or sumps. Inlets and clean out structures shall not exceed 400 ft spacing unless approved otherwise by the City Engineer.

All inlet and clean out structures shall be reinforced concrete boxes. They may be precast or cast-in-place. Grate and Frame Material. All castings shall be of ASTM A-48, Class 35 iron free from blowholes and shrinkage defects. Castings shall be free from fins and burrs and shall be shot-blasted to remove sand and other foreign matter. Freedom from cracks and defects shall be ascertained by the engineer prior to installation.

D. Headwalls. A headwall shall be installed at all ditch to pipe transitions. Headwall designs must be stamped by a licensed professional civil engineer in the State of Utah and approved by the City Engineer or his/her designee.

550.040. Retention/Detention Basins.

A. General. Basin designs shall be designed with the following side slopes:

Basin Finish	Min. Side Slope
Non-landscaped	3:1
Landscaped	4:1

B. Retention Basins. All retention basins shall have a freeboard of 12 inches. Design of retention basins shall be according to the Storm Water Drainage Design Manual. All retention basins shall have a series of interconnected sumps connected to curb inlet boxes or storm drain main lines.

All retention basins shall be constructed for drainage areas designated in the Storm Drain Master Plan. Basins for smaller areas may be allowed only with prior written approval of the City Engineer or his/her designee.

C. Detention Basins. All detention basins shall have 12 inches of freeboard. Design of detention basins shall be according to the Storm Water Drainage Design Manual. Detention basins may be constructed in landscape or parking areas. Each detention basin shall incorporate LID storm drain principles and have an overflow to the City storm drain system.

550.050. Low Impact Development.

General. All new development and roadways shall incorporate LID storm drain in the form of bioretention swales, underground retention cells and other methods as approved by the City Engineer or his/her designee. LID systems shall be designed in accordance with the Stormwater Design Manual.

Section 600. Streets and Pavements.

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600.010. General.

A. Street Designations. Street designations include: local streets, secondary access, collector streets and arterial streets. Designations shall be assigned by the City in compliance with the Alpine City Transportation Master Plan.

B. Time Limitation after Curb and Gutter is Placed. Road base shall be placed between 7 to 30 days of placement of curb and gutter. Pavement shall be placed ~~at least 7 days after and~~ before 45 days after the placement of curb and gutter unless an extension is granted by the City Engineer or his/her designee. If an extension is granted by the City Engineer or his/her designee, and to protect the curb and gutter, the road base shall be graded to the lip of curb elevation extending at least three (3) feet into the roadway at that same elevation until paving can occur; at which point, it shall be re-graded for paving.

C. Geotextiles, Geogrids and Geocomposites. All geotextile work shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles) and APWA 32 12 16 (Plant-Mix Asphalt Paving). Geogrid and geocomposite work shall meet the requirements and specifications of APWA 31 05 21 (Geogrids/Geoomposites) and APWA 32 12 16 (Plant-Mix Asphalt Paving).

D. Pavers. Pavers and installation shall meet the requirements and specifications of APWA 32 14 13 (Precast Concrete Unit Paving) and APWA 32 14 16 (Brick Unit Paving).

E. Painted Traffic Lines and Markings. Painted traffic lines and markings shall meet the requirements and specifications of APWA 32 17 23 (Pavement Markings) and the MUTCD.

F. Traffic Barriers. Vehicle barriers shall meet the requirements and specifications of APWA 34 71 13 (Vehicle Barriers) and the MUTCD.

G. Vehicle Delineators. Vehicle delineators shall meet the requirements and specifications of APWA 34 71 19 (Vehicle Delineators) and the MUTCD.

600.020. Street Section.

A. Soils Investigation. A soils investigation shall be performed for all new roads and those roads for which work will be performed. The results of this investigation and a design of the road cross section shall be submitted to and accepted by the City Engineer or his/her designee.

The following guidelines shall be used as a minimum requirement for street cross sections. They should be used unless the soils investigation indicates they are not adequate. Any variations from these standards must be approved by the City Engineer or his/her designee.

B. Pavement Section. All roads shall be paved with asphalt concrete according to City standards unless authorized by the City Engineer or his/her designee. The following table shall be used for minimum asphalt pavement surfacing depths:

ASPHALT PAVEMENT COURSE THICKNESS

Application	Minimum Pavement
Parking Lots and Driveways	3 inch
Local Streets	3 inch + preservation coat after 1 year
Secondary Access Roads	3 inch + preservation coat after 1 year (if pavement is required)
Collector/Arterial Streets	4 inch + preservation coat after 1 year

Streets shall have an approved preservation coat installed 1 year after the end of construction inspection, pending amenable conditions for installation. At the City's discretion, the contractor may arrange to have the City install the preservation coat at the Contractor's expense. The funds for a preservation coat shall be provided in escrow prior to recording the subdivision plat.

C. Road-base Section. All roads shall have a minimum 8 inches of road-base under the pavement section. Road-base shall be an untreated base course installed according to City standards. See Section 350. Earthwork and Trenching. Road-base shall be finished to a smooth uniform line and grade and shall extend

a minimum of 12" beyond the pavement surface for placements without curb and gutter. For placements with curb and gutter it shall extend 12" beyond the back of curb. Road-base shall not be placed and compacted against new curb for a minimum of seven (7) days after curb is poured.

D. Sub-base Section. All sub-base shall be an engineered fill that meets and is installed according to City standards. See Section 350. Earthwork and Trenching. Sub-base shall be finished to a smooth uniform line and grade and shall extend a minimum of 12" beyond the pavement surface for placements without curb and gutter. For placements with curb and gutter it shall extend 12" beyond the back of curb. The thicker section shall be used in the case where CBR may be in conflict. The following table shall be used for minimum sub-base course thicknesses for the following California Bearing Ratio (CBR) values of sub-grade:

PARKING LOTS AND DRIVEWAYS
MINIMUM SUB-BASE COURSE THICKNESSES

Sub-grade CBR	Minimum Sub-base Thickness (inches)
Less than 2	12
2.1 to 8.0	8
More than 8	No Sub-base Required

LOCAL STREET / SECONDARY ACCESS
MINIMUM SUB-BASE COURSE THICKNESS

Sub-grade CBR	Minimum Sub-base Thickness (inches)
Less than 2	15
2.1 to 3.0	12
3.1 to 10.0	8
More than 10	No Sub-base Required

COLLECTOR / ARTERIAL STREET
MINIMUM SUB- BASE COURSE THICKNESS

Sub-grade CBR	Minimum Sub-base Thickness (inches)
Less than 2.0	18
2.1 to 3.0	15
3.1 to 5.0	12
5.1 to 15.0	8
More than 15	No Sub-base Required

E. Grading. The sub-grade, sub-base, and road base shall all be graded to an engineered red-head and accepted by the City. Red-heads shall be placed every 50 feet at the crown of the road. If the distance between red-heads and edge of pavement exceeds 25 feet additional redheads shall be installed halfway between the crown and edge of pavement.

600.030. Trail Section.

A. General. A pavement and soils investigation shall be performed for Class A and B trails. The results of this investigation and a design of the trail section shall be submitted to and accepted by the City Engineer or his/her designee.

The following guidelines shall be used as a minimum requirement for Class A thru D trail cross sections. They should be used unless the soils investigation indicates they are not adequate. Any variations from these standards must be approved by the City Engineer or his/her designee. All trail materials shall be placed according to City standards.

1. *Engineered Fill.* Compacted engineered fill shall be placed in all areas where fills are required to meet grade or the requirements of the soils investigation.

2. *Untreated Base Course.* 6 inches of compacted untreated base course shall be placed under the surface course of Class A thru D trails.
3. *Bituminous Surface Course.* A minimum of ~~2~~ 3 inches of APWA DM-1/2, PG 58-28, 50 Blow or SP-3/8, PG58-28, 75Nd bituminous surface course shall be placed across 8 feet of the trail section.
   a. A maximum of 15% RAP or 15% Recycled Binder Replacement, whichever is less, will be allowed.

B. Survey. Both sides of a trail shall be laid out by a survey and approved by the City before construction. Lath shall be placed at 100 foot intervals and at bends and obstacles the trail comes near.

C. Weed Abatement. All weeds shall be sprayed and killed with Roundup or an approved equivalent one week before any work may be performed, and within 3 weeks of the placement of untreated base course.

D. Geotextile Fence. An APWA 31 05 19 (Geotextiles) silt fence shall be installed along the limits of the trail construction at hillsides, river embankments, or by or through City Open Space.

E. Sub-grade. The sub-grade shall be grubbed of all trees, bushes and other organic matter. Sub-grade shall be graded to meet the following ADA requirements for walkways when required on ADA accessible pathways:
   1. *Maximum Slope.* Sub-grade shall not have a slope greater than 8.33%.
   2. *Maximum Run for Steep Slopes.* For slopes between 5.00% and 6.25% the maximum run shall be 40 feet. For slopes between 6.25% and 8.33% the maximum run shall be 30 feet.

F. Weed Barrier. Weed barrier geotextile shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles).

G. Trail Markings. Trail lanes shall be delineated by a center single dashed yellow line. Painted traffic lines and markings shall meet the requirements and specifications of APWA 32 17 23 (Pavement Markings) and the MUTCD.

H. Clean-up. Upon completion of the trail section all windrows, survey and construction debris shall be removed from along the edges of the trail.

600.040. Bituminous Surface Course.

A. Bituminous Concrete Material Specification~~Paving Asphalts~~. Bituminous Concrete material (aka: ~~Paving~~ asphalt material) ~~s~~ shall meet the requirements and specifications of APWA 32 12 ~~03~~ 05 (~~Paving Asphalts~~Bituminous Concrete). ~~Recycled Asphalt Pavement (RAP) or Recycled Asphalt Binder (RAB) content may not exceed 15% in any mix design.~~

For all streets, parking lots, trails, and repairs; use APWA DM-1/2, PG 58-28, 50 Blow or SP-3/8 PG58-28, 75Nd. Recycled Asphalt Pavement (RAP) or Recycled Asphalt Binder (RAB) content may not exceed 15% in any mix design.

~~For all new construction, paving shall not occur until gas and power utilities are installed. Other dry utility crossings shall be installed and approved by the dry utility company representative and the City Engineer or his/her designee. Crossings shall be surveyed and included on the asbuilt drawings.~~

~~Required testing for culinary water, pressurized irrigation, sewer, and storm drain shall be completed and approved by the City Engineer or his/her designee prior to paving.~~

~~For all streets, parking lots, trails, and repairs; use 1/2" 50 Blow PG 58-28 mix design.~~

~~For paving limitations, see Asphalt Paving Limitations, Section 250.~~

B. Bituminous Concrete Placement.~~Asphalt Concrete.~~ ~~Asphalt concrete shall meet the specifications and requirements of APWA 32 12 05 (Asphalt Concrete),~~Placement of bituminous concrete (asphalt) shall meet the requirements of ~~-~~APWA 32 12 16.13 (Plant-Mix Asphalt Paving) and APWA 32 12 17 (Cold-Mix Asphalt Paving).

For all new construction, paving shall not occur until gas and power utilities are installed. Other dry utility crossings shall be installed and approved by the dry utility company representative and the City Engineer or his/her designee. Crossings shall be surveyed and included on the asbuilt drawings.

Required testing for culinary water, pressurized irrigation, sewer, and storm drain shall be completed and approved by the City Engineer or his/her designee prior to paving.

For paving limitations, see Asphalt Paving Limitations, Section 250.

Cold-mix asphalt concrete shall only be installed when allowed by the City Engineer or his/her designee. All cold-mix asphalt concrete shall be replaced with hot-mix within 30 days of when it becomes available.

C. Prime Coat. Prime coat only as required by the plans or the City. Prime coat shall meet the requirements and specifications of APWA 32 12 13 (Prime Coat).

D. Tack Coat. Install tack coat as required and according to APWA 32 12 ~~14~~ 13 (Tack Coat). Use CSS-1 or CSS-1h tack emulsion diluted 2:1 (concentrate to water).

E. Thin Overlays and Patches. Use binder and ~~bitminuous~~bituminous concrete as defined in Article A based on paver or hand applications. Apply tack coat to all horizontal and vertical surfaces sufficient to achieve minimum 95% coverage prior to placement of overlay or patch.

F. Slurry Seal. Slurry seals shall meet the requirements and specifications of APWA 32 01 13 (Slurry Seal). The type of slurry seal applied to a City street shall be approved and specified by the City Engineer.

G. Chip Seal. Chip seals shall meet the requirements and specifications of APWA 32 01 13 (Chip Seal).

H. Micro-Surfacing. Micro-surfacing shall meet the requirements and specifications of APWA 32 01 15 (Micro-Surface Seal).

I. Pavement Crack Seal. Pavement crack seals shall meet the requirements and specifications of APWA 32 01 17 (Pavement Crack Seal).

J. High Density Mineral Bond Seal. High ~~densit~~density mineral bond seals shall meet the requirements and specifications of 2017 APWA 32 01 13 (High Density Mineral Bond Seal).

Section 650. Portland Cement Concrete and Masonry Work.

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650.010. General.

A. Specifications. These specifications cover the installation of concrete work including but not limited to curbs, gutters, sidewalks, boxes, and thrust blocks. All concrete work shall meet the requirements and specifications of APWA Division 03 Concrete and related sections. Concrete driveway, sidewalk, curb and gutter work shall meet the requirements and specifications of APWA 32 16 13 (Driveway, Sidewalk, Curb, Gutter). See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. Also, see standard drawings related to concrete work.

All concrete work shall be constructed where indicated on the plans or as directed by the project engineer and shall conform in all respects to the specified lines, grades, and dimensions and City standards.

B. Allowable Grades. The minimum grade allowed for any gutter is 0.50%. See Alpine City Development Code for maximum allowable grades of City streets.

C. American Disabilities Act (ADA) Requirements. All pedestrian facilities will conform to the current federal ADA standards.

D. Combination Curb, Gutter, and Sidewalk. Combination curb, gutter, and sidewalk will not be allowed unless authorized by the City Engineer or his/her designee.

E. Cold Weather Concrete. Concrete shall not be placed when a descending air temperature in the shade and away from artificial heat falls below 35ºF. Concrete shall not be poured on frozen ground. Where temperatures are projected to descend below 32ºF within 72 hours after placement, concrete shall be covered or otherwise protected against freezing. No calcium based add mixtures may be used. Any other add mixtures must be approved by the City Engineer or his/her designee.

If concrete is not protected by insulation blankets for 72 hours following installation and the temperature drops below 45 degrees a pay factor of 0.50 shall apply.

Per APWA Division 03, concrete placed between October 1 and March 1 requires an increase in mix design strength by 1 class, i.e. Class 3000 becomes Class 4000, Class 4000 becomes Class 5000, etc.

F. Debris in Gutters. Once curb and gutter and surface course is in place they shall be kept as clean as possible. Dirt and gravel shall not be placed in gutter or on street. Gutter shall flow freely at all times.

G. Sidewalk. Sidewalk shall be 5 inches thick with 6 inches of compacted road base. To protect the structural integrity of new sidewalk, all dry utilities shall be installed prior to installing sidewalk. When equipment is required to cross over sidewalk, bridging must be provided to protect concrete.

H. Drive Approaches. All City owned drive approaches shall be 5 inches thick with 6 inches of compacted road base. Commercially owned drive approaches are recommended to be 6 inches thick.

I. Protection of Wet Concrete. The Contractor shall be responsible to protect wet concrete. Any concrete that is vandalized before setting up shall be replaced at the contractor's expense.

J. Repair. When authorized by the City Engineer or his/her designee, Contractor may repair concrete damage with Concrete Solution's Ultra Surface Concrete Polymer installed to manufacturer's specifications or an equivalent that is approved by the City Engineer or his/her designee. Repair of concrete sidewalk shall include the entire panel that was damaged with a minimum of five (5) foot length panel replaced.

650.020. Installation.

A. Cutting Pavement. When replacing gutter, the pavement shall be cut along the entire excavation to provide a vertical joint in the surface. Cut shall be a minimum of 12 inches from lip of gutter. A pavement saw shall be used for all pavement cutting. If excavation damages the cut pavement, pavement shall be cut again before patching. All road cuts shall be repaired within 2 working days.

B. Forms and Joints. When pouring concrete along a curve, flexible forms with enough stakes to hold the forms at an even curve shall be used.

Curb and gutter contraction joints shall be constructed every 10 feet by using steel templates 1/8 inch in thickness. Sidewalk contraction joints shall meet APWA requirements with the minimum distance between joints being 5 feet.

C. Base Material. A minimum of 6 inches of untreated base course shall be installed under all concrete and shall extend out 1 foot in all directions from concrete unless otherwise specified. Untreated base course shall be compacted and installed according to City standards. See Section 350. Earthwork and Trenches.

D. Mixing and Conveying. Concrete transported in a truck mixer, agitator, or other transportation device shall be discharged at the job and placed in its final position in the forms within 1 hour after the introduction of the mixing water to the cement and the aggregate, or the cement to the aggregate, except that in hot weather or under other conditions contributing to quick stiffening of the concrete, the maximum allowable time may be reduced by the City Engineer or his/her designee. The maximum volume of mixed concrete transported in an agitator shall be in accordance with the specified rating. During adverse weather conditions the City Engineer or his/her designee may deem it necessary for the use of a concrete pump truck.

E. Finishing. As soon as the concrete has set sufficiently to retain its shape without support of the face form, the clamps, spreaders and face forms shall be removed. While the concrete is still green, the surface shall be thoroughly floated with a magnesium or moist wooden float to provide an even smooth surface, then broomed lightly.

F. Curing. As soon as possible after final finishing, the finished surface shall be coated with a curing compound. The compound shall be an ASTM C-1315 Type 2 curing compound that meets the APWA 03 39 00 (Concrete Curing) specifications. The compound shall be applied in accordance with the manufacturer's recommendations. During the months of October through February exposed concrete shall be covered with an insulated curing blanket that meets the ACI 306 specification for 3 days when temperatures remain at 15 degrees Fahrenheit or higher and for 7 days for temperatures below 15 degrees Fahrenheit. Insulated curing blankets shall only be removed during the warmest parts of the day. The curing compound shall then be applied within 24 hours of the blankets being removed.

650.030. Materials.

A. Coarse Aggregate. A coarse aggregate shall consist of hard durable particles of a mixture of crushed and natural gravel possessing at least 50% of broken surface area. The coarse aggregate shall be free from substances which are chemically active relative to hydrated cement and shall be subject to particularly the following:

1. Loss on abrasion by Los Angeles Abrasion Test not more than 40% by weight.
2. Loss on exposure to 5 cycles of sodium sulfate soundness test, not more than 8% by weight.
3. Deleterious substances shall not exceed the values in the following table:

PORTLAND CEMENT CONCRETE
COURSE AGGREGATE DELETERIOUS SUBSTANCES

Substance	Maximum % by Weight
Soft Fragments	3.0
Coal Lumps	1.0
Clay Lumps	0.5
Material passing 39 100 Sieve	1.5
Organic Material	0.1
Total for All of the Above	3.0

The maximum size of aggregate to be used shall not exceed 1 1/2 inches in terms of this size definition contained in ASTM Standards except that the maximum size shall not exceed 1/4 of the least dimension of the finished concrete in which the aggregate is to be used.

Coarse aggregate shall be uniformly graded within the following range:

PORTLAND CEMENT CONCRETE
COARSE AGGREGATE GRADATION

Sieve Size	Minimum Retained (%)	Maximum Retained (%)
1 1/2 inch	0	10
3/4 inch	30	70
1/4 inch	75	100
No. 4	95	100

B. Fine Aggregate. Fine aggregate shall consist of clean, hard durable particles of natural sands, subject to the following limitations:
   1. Organic Calorimetric Test using sodium hydroxide shall result in a color not darker than Number 2 in the acceptance range.
   2. Loss on exposure to 5 cycles of the sodium sulfate soundness tests shall not exceed 8% by weight.
   3. Deleterious substances shall not exceed the values in the following table:

PORTLAND CEMENT CONCRETE
FINE AGGREGATE DELETERIOUS SUBSTANCES

Substance	Maximum % by Weight
Soft Fragments	3.0
Coal Lumps	1.0
Material passing 39 100 Sieve	3.0
Micaceous or Flaky Particles	3.0
Total for All of the Above	5.0

Fine aggregate shall be uniformly graded within the following range:

PORTLAND CEMENT CONCRETE
FINE AGGREGATE GRADATION

Sieve Size	Minimum Retained (%)	Maximum Retained (%)
No. 4	0	5
No. 8	0	20
No. 16	20	50
No. 30	50	75
No. 50	75	90
No. 100	95	100

C. Cement. All cement used shall be Type II unless otherwise allowed by the City Engineer or his/her designee. All cement and dry additives shall be stored in damp-proof conditions. Shipments of cement shall be marked and stored in such a manner as to provide positive identification. The supplier shall keep and have available for inspection at all times an accurate record of supplies and use of cement of the various types and shipments. No cement shall be used which has been subject to dampness or exposure.

D. Water. Water used for concrete shall be potable and free from excess salts, organic material, or other deleterious substances. Addition of water to the mixed concrete after specified workability has been obtained will not be allowed, nor shall any concrete be re-tempered or re-mixed.

650.040. Concrete Mixes.

A. Mix Design. Concrete mix designs shall meet the following requirements:

PORTLAND CEMENT CONCRETEMIX DESIGN REQUIREMENTS

Property	Standard Requirement	Thrust Block Material
Cement Content	6.5 Bags per Cubic Yard (Minimum)	3.5 Bags per Cubic Yard (Minimum)
28 Day Compressive Strength	4000 psi (Minimum)*	2000 psi (Minimum)*
Slump Range	1 to 3 inches	1 to 6 inches
Flatwork Slump Range	3 to 4 inches	NA
Air Content	5% to 7%	NA

* Per APWA 03 30 04, increase cement content in the mix design by 1 class between **October 1 and March 1**, i.e. Class 4000 becomes Class 5000.

B. Proportioning. The supplier shall determine proportions by weight of aggregates, cement, additives, and water required to comply with strength, workability, and other requirements detailed herein. Such proportions shall be submitted to the City Engineer or his/her designee in three copies annually along with the following tests on materials and shall be subject to his/her approval.

1. Coarse aggregate
    a. Source
    b. Deleterious substances
    c. Los Angeles Abrasion Test
    d. Sodium Sulfate Soundness Test
    e. Sieve
2. Fine aggregate
    a. Source
    b. Deleterious substances
    c. Calorimetric Test for Organics
    d. Sodium Sulfate Soundness Test
    e. Sieve and fineness modulus
3. Cement
    a. Type
    b. Supplier
    c. Analysis

Upon approval, all concrete shall be prepared in terms of the proportions so approved unless variation becomes necessary by reason of materials or conditions to achieve the requirements of these specifications, in which case such variation shall be approved in writing by the City Engineer or his/her designee. Approval by the engineer of mix proportions shall not relieve the supplier from the responsibility for obtaining the concrete strengths specified or complying will all other provisions of this specification.

C. Control. Measurements of materials except water shall be by weight. Equipment used shall be capable of controlling weight within 1% of each ingredient. Water may be measured either by volume or weight provided that an accuracy of 1% is maintained. Cement may be assumed to weigh 94 pounds per sack but proportioning aggregates for fractional sacks of cement will not be permitted unless the fractional amount is weighed for each batch.

D. Water Adjustments. Compensation for the water contained in the aggregates shall be made at least once daily or as often as inspection of the concrete may indicate that variation from this cause has occurred. The Pycnometer Method of assessing water in aggregate may be used for its determination for the purposes of this paragraph.

650.050. Masonry.

A. General. All masonry work shall meet the requirements and specifications of APWA Division 04 Masonry and related sections.

Section 700. Conduit

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B. Materials
C. Location
D. Magnetic

700.030. Installation

A. Cutting
B. Dewatering
C. Laying
D. Bedding

700.010. General.

A. This Division covers furnishing and installing telecommunications conduit.

700.020. Utility Conduit.

A. Responsibility to install. Developers shall be responsible to install utility conduits for placement of public utilities and street lighting: Two – two-inch (2") (initially empty) communications conduits shall be installed parallel and congruent to all primary and secondary power conduits such that communication lines can serve all lots individually. Communications service boxes labeled "Communications" shall be installed above the communications conduits directly adjacent to all power boxes (i.e.: ground sleeves, transformers, etc.).

B. Materials. The conduit and junction/pull boxes shall be of the material specified by each utility company. Junction/pull box locations shall be specified by the utility company.

C. Location. Conduits shall be installed at locations established by utility company engineers and approved by the City, outside of the roadway (~~–~~see Standard Detail 1). Excavation shall be at depth and standards of utility companies. Conduits shall have bends attached to each end and placed vertically out of the ground for location verification. Conduits ~~within~~crossing street rights-of-way shall have a minimum of 18" cover below finished street grade. Conduit clusters shall be installed at all intersections. The cluster shall consist of four (4) 4 inch conduits and one 6 inch conduit spaced 3' away.

D. Magnetic Locator Tape. All utility conduits shall include a 3" magnetic locator tape installed in the pipeline trench approximately 12" below the ground surface, with appropriate cautionary wording printing on the tape to identify the type of utility present.

700.030. Installation.

A. Cutting. Cutting of conduit for closure pieces or for other reasons shall be done in a neat and workmanlike manner by a method recommended by the manufacturer.

B. Dewatering of Trench. Where water is encountered in the trench, it shall be removed during conduit laying operations and the trench so maintained until the ends of the conduits are sealed. See "Temporary Controls" in Section 200.010.

C. Laying of Conduit. The conduit shall be inspected for defects before installation. Any defects shall be repaired or the conduit shall be replaced, whichever is deemed necessary by the Engineer or his/her designee. All conduits shall be laid and maintained to the required lines and grades. The Contractor shall be responsible to install the conduit line to the alignment set by the Engineer or as shown on the Drawings. The Contractor shall take the necessary precautions such that foreign materials do not enter into the conduit. No debris, tools, or other materials shall be placed in the conduit during laying operations. When laying of conduit is not in progress, the conduit shall be closed by a watertight plug. Maximum vertical or horizontal deflections of conduit are not to exceed a ratio of 10:1 along its length (e.g. no more than 4" deflection per 40" length.) Install all conduit bends to have a radius that is: 1. Not less than 10 times the inside diameter of the conduit. 2. Not less than the minimum bend radius called out on the plans. At no time shall the conduit be deformed to make a bend. The minimum separation between conduits shall be 3". The minimum separation between the conduit and trench wall shall be 1.5". Once bend locations have been verified to meet the Utility Company requirements, junction/pull boxes shall be installed at each bend location.

D. Bedding. All conduits shall be protected from lateral displacement and possible damage resulting from impact or unbalanced loading during backfilling operations by being adequately bedded. In the event trench materials are not, in the judgment of the Engineer or his/her designee, satisfactory for conduit bedding, imported granular bedding will be required. See "Bedding Material" in Section 350.040.

Section 850. Surface Irrigation Systems.

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- B. Concrete Pipe.
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- D. Corrugated Metal Pipe.

850.010. General.

A. Specifications. Piped irrigation facilities shall be required per Alpine City Development Code. Facilities shall meet the requirements and specifications of APWA 33 41 00 (Storm Drainage Systems). These specifications cover the installation of storm/irrigation lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to storm/irrigation lines.

B. Size. The City Engineer or his/her designee must approve the sizes of all proposed drain lines. The minimum size shall be determined based on ~~Alpine~~Alpine Irrigation Company and Alpine City needs.

C. Location. Piped irrigation systems shall be located as close to the original ditch system as possible. Variations in location must be approved by the City Engineer or his designee and the Alpine Irrigation Company. A maximum of 400 feet of pipe shall be allowed between manholes.

D. Minimum Slopes. Slopes shall be designed to have a 2 foot per second velocity unless otherwise ~~approved by the City Engineer.~~approved by the City Engineer and/or his/her designee. The following table lists minimum slopes for irrigation lines for each size of pipe:

MINIMUM IRRIGATION PIPE SLOPES

Pipe Diameter (inches)	Minimum Slope (%)
24	0.077
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

850.020. Pipe and Fittings.

A. General. Reinforced concrete pipe shall be used for all lines with less than 2 feet of cover or more than 8 feet of cover. Corrugated metal pipe (CMP) may only be used when authorized by the City Engineer or his/her designee.

B. Concrete Pipe. Concrete pipe shall meet the requirements and specifications of APWA 33 05 02 (Concrete Pipe and Culvert). Reinforced concrete pipe (RCP) shall be Class III. Only new pipe may be used unless otherwise authorized by the City Engineer or his/her designee.

C. Polyethylene Pipe. Polyethylene pipe shall meet the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe) Type S for storm drains and Type SP for land or groundwater drains.

D. Corrugated Metal Pipe (CMP). CMP shall meet the requirements and specifications of APWA 33 05 04 (Corrugated Metal Pipe).

Section 900. Landscaping.

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900.010. General.
- A. Specifications.
- B. Appurtenances.
- C. As-Built Drawings.
- D. Government Regulations.
- E. Source.
- F. Fences and Walls.
- G. Tree Grates.
- H. Vegetation Control.

900.020. Lawns and Grasses.
- A. General.
- B. Grading.

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- A. General.

900.040. Trees.
- A. General.
- B. Tree Sizes.
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900.010. General.

A. Specifications. These specifications are for landscape work completed on public property or private property that will become public property.

B. Appurtenances. Any minor items of labor or materials not specifically noted on the drawings or specifications; but obviously necessary for the proper completion of the work, are to be considered as incidental to and are to be included in the contract.

C. As-Built Drawings. The contractor must furnish as-build drawings to the City. These drawings should be updated whenever a change from the design is made to assure accuracy. The drawings must show a record of all departures from the contract drawings that occur during construction. These shall be kept on a clean set of prints of the contract drawings.

The Project Manager/Owner will review the "as-built drawings" to verify that changes are being recorded as construction occurs. These drawings and maintenance manuals must be submitted at the time of final inspection or in accordance to the general conditions.

D. Government Regulations. Ship landscape materials with certificates of inspection as required by governmental authorities. Comply with governing regulations applicable to landscape materials.

E. Source. Provide trees and shrubs, and other plants grown in a recognized nursery in accordance with good horticultural practice. Provide healthy, vigorous stock grown under climatic conditions similar to the locality of the project and free of disease, insects, eggs, larvae, and defects such as knots, sun-scale, injuries, abrasions, or disagreement.

Plant Materials and other landscape items will be evaluated according to compliance with drawings, schedules, and specifications; as well as overall aesthetic quality, grower or supplier reputation, physical inspection, and American Association of Nurseryman Standards (AANS). Select plants that will not be adversely affected by the existing soil chemistry at the planting location.

The source or supplier for all plant materials shall be furnished to the City prior to the delivery of any plant materials on site or stored elsewhere.

F. Fences and Walls. All fences and walls must be approved by the City. Chain link and field wire fencing shall meet the requirements and specifications of APWA 32 31 13 (Chain Link Fences and Gates) and APWA 32 31 16 (Welded Wire Fences and Gates) respectively. The relocation of fences and gates shall meet the requirements and specifications of APWA 32 01 10 (Relocate Fences and Gates) and related sections.

G. Tree Grates. Only 4 foot square D&L O-8644 or approved equivalent grates shall be used. Grates shall be set to grade with the top back of curb and sidewalk. Grates shall be set in metal frame manufactured specifically for grate. Frame shall be set in concrete extending a minimum of 6 inches from sides of frame. Concrete shall be installed to City standards for Portland Cement Concrete.

H. Vegetation Control. Vegetation control shall meet the requirements and specifications of APWA 31 31 19 (Vegetation Control).

900.020. Lawns and Grasses.

A. General. Lawns and grasses shall meet the requirements and specifications of APWA 32 92 00 (Turf and Grasses).

B. Grading. Till soil to a depth of 4 inches and remove rocks and debris over 1 inch in diameter. The elevation of top soil relative to walks, hard surfaces or edges shall be:

1. *Seeded Areas.* 1/2 inches below.
2. *Sodded Areas.* 1 1/2 inches below.

C. Slopes. For lawn and grassed areas, which will be maintained by lawnmowing equipment, the maximum grade shall be 6:1 (6 horizontal to 1 vertical).

900.030. Ground Cover.

A. General. Ground cover shall meet the requirements and specifications of APWA 32 93 13 (Ground Cover) and APWA 32 01 90 (Plant Maintenance). Install according to APWA plan number 683.

900.040. Trees.

A. General. Tree and work relating to trees shall meet the requirements and specifications of APWA 32 93 43 (Tree), APWA 32 01 91 (Tree Root Cutting), APWA 32 01 93 (Pruning Trees) and 32 01 90 (Plant Maintenance). Install according to APWA plan number 681. Use 6 foot posts for any tree staking. Trees may be planted without a certified arborist when authorized by the City Engineer or his/her designee.

B. Tree Sizes. Follow Alpine City Tree Guidebook

C. Labels. Label at least one plant of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.

Section 950. Irrigation Sprinkler Systems.

SECTION INDEX

950.010. General.
- A. Specifications.
- B. Appurtenances.
- C. Pressure Verification.
- D. Plan Modifications.
- E. As-Built Drawings.
- F. Final Inspection.

950.020. Pipe and Fittings.
- A. Pipe.
- B. Main Line Fittings.
- C. Circuit Pipe Fittings.
- D. Sleeves.

950.030. Sprinkler Heads.
- A. General.
- B. Spray Heads.
- C. Rotary Heads.

950.040. Controller, Valves and Flow Meters.
- A. Controller.
- B. Manual Main Line Isolation Valve.
- C. Manual Circuit Isolation Valve.
- D. Automatic Valves.
- E. Master Valves and Flow Meters.
- F. Automatic Drain Valves.
- G. Back Flow Preventer.
- H. Stop and Waste Valves.
- I. Quick Coupler Valves.
- J. Valve Boxes.
- K. Control Wire.

950.050. Installation.
- A. Schedule.
- B. Depth and Location.
- C. Trench Backfill Material.
- D. Thrust Blocks.
- E. Flushing.
- F. Gluing.
- G. Marking Zones.

950.010. General.

A. Specifications. These specifications are for landscape work completed on private property that will become public property. All underground irrigation systems shall meet the requirements and specifications of APWA 32 84 23 (Underground Irrigation Systems).

B. Appurtenances. Any minor items of labor or materials not specifically noted on the drawings or specifications; but obviously necessary for the proper completion of the work, are to be considered as incidental to and are to be included in the contract.

C. Pressure Verification. The Contractor, prior to installing the system, must verify existing water pressure. If there is a failure to obtain the needed pressure or if an excess of pressure exists for normal operation, the Contractor shall contact the City for any adjustments to the system. Failure to report any discrepancies in pressure due to whatever reason, and installation done prior to notification of City Parks Department shall be done at the expense of the Contractor.

D. Plan Modifications. The plans show the general arrangement of all piping. Should local conditions necessitate the rearrangement of some, or if piping can be run to better advantage, the contractor, before proceeding with the work, shall prepare and submit drawings of such to the office of the Alpine City Parks Department Representative and obtain written approval before commencing work shown by these drawings.

E. As-Built Drawings. Before the final inspection is complete, the contractor must furnish as-build drawings. These drawings should be updated on a daily basis to assure accuracy. The drawings must show the location of all valves, pipe, heads, controller control lines, and drain valves used on the job. These drawings and maintenance manuals must be submitted at the time of final inspection or in accordance to the general conditions.

F. Final Inspection. The Contractor shall operate, maintain, and guarantee the irrigation sprinkler system until all landscaping on the project is approved by the Alpine City Parks Department at a final inspection. Contractor shall submit manufacturer's technical product maintenance data and installation instructions for irrigation sprinkler system materials and products to the City before final inspection.

950.020. Pipe and Fittings.

A. Pipe. Use solvent weld schedule 40 PVC for main line pipe 3 inches in diameter and smaller. Use Class 200 PVC for main line pipe larger than 3 inches in diameter.

B. Main Line Fittings. Use solvent weld schedule 40 PVC fittings for pipe smaller than 3 inches in diameter. All fittings for pipe 3 inch and larger pipe shall be ductile iron, grade 65-45-12 in accordance with ASTM A-536.

Fittings shall have deep bell push on joints with gaskets meeting ASTM F977. Fittings shall be Harco Deep Bell as manufactured by the Hanington Corporation of Lynchburg, VA or approved equivalent. Transition gaskets are not allowed.

C. Circuit Pipe Fittings. Use solvent weld schedule 40 PVC fittings.

D. Sleeves. Pipe and control wiring and tubing under walks, roads and other hard surfaces shall be installed in solvent weld Class 40 PVC sleeves of adequate size. Sleeves for pipes shall be a minimum of 3 inches in diameter or one and a half times the size of the pipes whichever is greater. Sleeves shall be straight and level or less than 2% grade. All wiring shall be placed in its own conduit. Wire conduit may be ran inside of sprinkler pipe sleeves. Conduit for control wires shall have minimum inside diameters according to the following chart:

MINIMUM SLEEVE CONDUIT SIZES

Number of Wires	Conduit I.D.
1 to 7	1 inch
8 to 11	1 ½ inch
12 to 22	2 inch
23 to 31	2 ½ inch
32 to 36	3 inch

950.030. Sprinkler Heads.

A. General. Install according to APWA plan number 621 and 622, but do not install PVC elbow and riser.

B. Spray Heads. All spray type sprinkler heads shall be Rainbird "1804" PRS (pressure reducing spray) series or approved equivalent. All lawn spray heads shall be installed on swing pipe with two spiral barbed ells.

C. Rotary Heads. All rotary type sprinkler heads shall be Rainbird Falcon 6500 or RS5000 series or approved equivalent. All stream rotary and impact heads capable of distributing 10 gallons per minute or more shall be installed on pre-assembled swing joint by Spears or an approved equivalent.

950.040. Controller, Valves and Flow Meters.

A. Controller. Controller and pedestal shall be the same type as those used in the City central control system. The controller shall be as described in the irrigation legend on the drawings.

B. Manual Main Line Isolation Valve. See standard drawing for pressure pipe main line valves.

C. Manual Circuit Isolation Valve. Brass ball valve with handle.

D. Automatic Valves. Automatic valves shall be Rainbird PEB electric remote control valves or an approved equivalent. A manual circuit isolation valve shall be installed on the supply side of each automatic valve. Install according to APWA plan number 633, but do not install schedule 80 PVC union.

E. Master Valves and Flow Meters. Master valves and flow meters must be installed on main supply line and/or according to design and must be compatible with the City central control system.

F. Automatic Drain Valves. Install according to APWA plan number 632.

G. Back Flow Preventer. Shall be required on connections to the drinking water system. See section 400.040, Backflow Assemblies.

H. Stop and Waste Valves. Stop and waste valves shall be Mueller H - 10288 Oraseal or an approved equivalent. Stop and Waste valve shall be of manual type for operation by handle key. Stop and waste valves shall be installed in a typical water meter can, see Standard Details.

I. Quick Coupler Valves. Quick coupler valves shall be installed with brass riser and pre-manufactured swing joint. At least 2 quick coupler valves shall be installed, one at each end of main line. Valves shall be 1 inch standard.

J. Valve Boxes. Valves shall be located in lawn or planted areas. Avoid locating valves in areas of high pedestrian and vehicular circulation. Valve boxes shall be at finished grade with valve stems 4 inches minimum and 12 inches maximum below top of box and with 3 inches of pea gravel or 3/4 inch minus crushed gravel under the valve. Valve boxes shall be rectangular, heavy duty and green in color. Valve boxes for automatic valves shall be large enough to enclose manual circuit isolation valve and automatic valve.

K. Control Wire. Install wire according to APWA plan number 651. Add two extra blue control wires per controller to the longest run for emergency use and mark it in the control box as an extra wire. A two-wire system may be required.

950.050. Installation.

A. Schedule. Contractor shall submit a construction schedule of anticipated work time to facilitate timely visits for review of work. Schedule must be submitted to the City before any landscaping may begin

B. Depth and Location. Lines bordering curbs or sidewalks shall be 6 inches away to allow for maintenance and access to the lines. Control wires must be buried in appropriately sized conduit for the job (determined by design), one (1) inch minimum, at least 12 inches below finished grade and bundled with a plastic tape every 20 feet.

C. Trench Backfill Material. All trenches shall be backfilled in 12 inch lifts and tamped sufficiently to insure no settling of the surface. No rocks larger than 1 inch shall be allowed within 3 inches of the pipe. The Contractor, in placing the irrigation lines, and appurtenances, may uncover material not suitable for finished grading. This material shall be removed from the site. After the installation of the lines, the finished grading shall be smoothed over and restored to its original condition, using additional topsoil where necessary.

D. Thrust Blocks. All mainlines greater than 2 inches in size shall be installed with thrust blocks wherever a change of direction occurs. Thrust blocks shall be installed as follows:
   1. Bearing area of concrete thrust-block based on 200-PSI pressure and safe soil bearing load of 2,000 pounds per square foot.
   2. Concrete blocking shall be cast in place and have a minimum of 1/4 square foot bearing against the fittings.
   3. Block shall bear against fittings only and shall be clear of joints.
   4. Contractor shall install block adequate to withstand full test pressure as well as to continuously withstand operation pressure under all conditions of service.

E. Flushing. When the pipe lines are connected and the sprinkler risers in place but before any heads are installed, the control valves shall be opened and flushed with a full head of water to clean out the system.

F. Gluing. Gluing of PVC pipes shall be done with gray “Weld-on 711” and “Weld-on P70” primer.

G. Marking Zones. Valves must be tagged with labels indicating which zone they operate.

Section 1000. Standard Details

ALPINE
1850

Changes Redlined

Jed Muhlestein

Alpine City Engineer

CONSTRUCTION DETAILS

Adopted June ~~27, 2023~~
July 25, 2023

September 26, 2023

ALPINE CITY STANDARD DETAILS

ALPINE CITY ADOPTS 2017 APWA STANDARD SPECIFICATIONS AND DETAILS. FOR CITY SPECIFIC DETAILS, PLEASE SEE THE FOLLOWING:

STREETS

1. Street Cross-Sections
2. Alternate Street Cross-Sections
3. Street Cross-Sections Unequal Elevations
4. Sidewalk, Curb & Gutter, Waterway
5. Class A & B Trail Cross-Sections
6. Class C, D, & E Trail Cross-Sections
7. Cul-de-sac Detail
8. Knuckle Detail
9. Standard Setbacks
10. Temporary Turn-a-round

Details with a mark by them indicate a change has been made. Changes are circled on the details.

UTILITIES

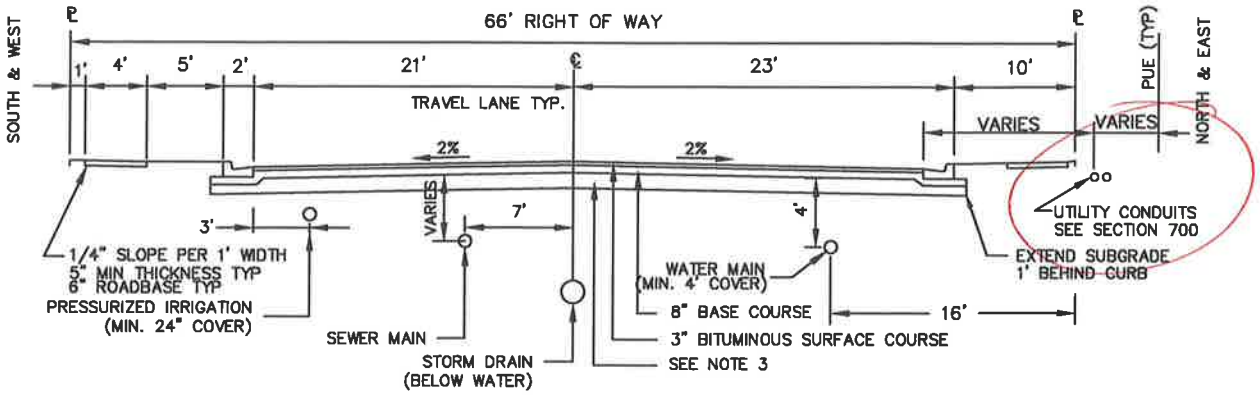
11. Standard Street Intersection and Utility Location
12. Standard Lot Utility Locations
13. Utility Conflict
14. City Utilities in Common Trench
15. Ditch Crossing
16. Manhole Ring & Cover (typical)
17. Sewer Manhole & Service Connection (typical)
18. Storm Drain Sump (typical)
19. Sump Disposal & Snout (typical)
20. Curb Face Drop Inlet Box (typical)
21. Dipstone Outlet
22. Flush Valve (typical)
23. Fire Hydrant
24. Pressurized Irrigation Service
25. Pressurized Irrigation Service w/ PRV
26. Pressurized Irrigation Airvac
27. Water Connection & Valve Box Details
28. Temporary Sewer Main Cleanout

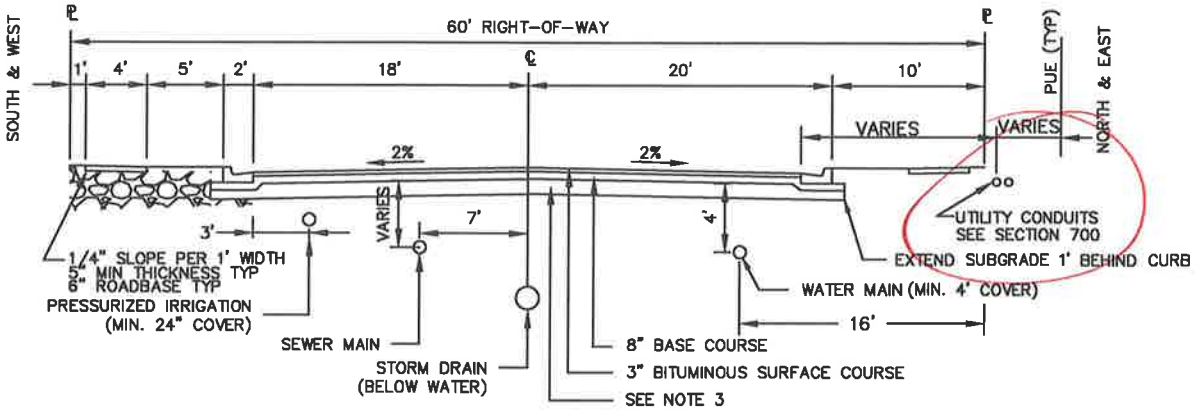
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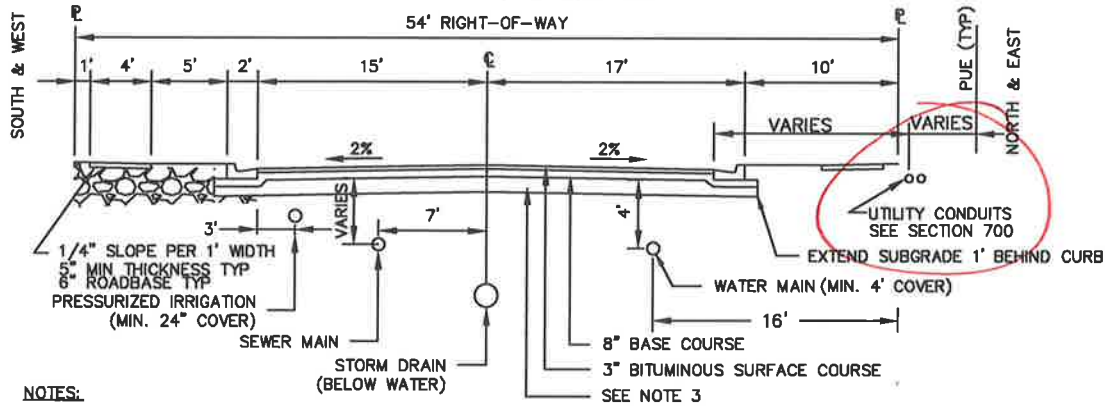
29. Public Open Space Fencing
30. Fencing Regulations
31. Street Lights

32. Sight Triangle
33. Standard Seed Mixtures
34. Irrigation Company Ditches
35. Roadway Tree Trimming
36. Parking Dimensions
37. 2-Inch Pressurized Irrigation Drain
38. Irrigation Inlet (typical)
39. Trenching Under Cast Iron Pipe

New Details







NOTES:

1. WATER VALVES AND 5-INCH VALVE OPENING MUELLER FIRE HYDRANTS SHALL BE LOCATED AS APPROVED.
2. NO WATER LINE SMALLER THAN 8-INCH DIA. SHALL BE INSTALLED WITHOUT APPROVAL OF CITY COUNCIL.
3. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS
4. CULINARY WATER MAINS SHALL BE ON THE NORTH AND EAST SIDES OF THE STREET.
   PRESSURIZED IRRIGATION AND SEWER LINES SHALL BE ON THE SOUTH AND WEST SIDES OF THE STREET.

STREET CROSS-SECTIONS & UTILITY LOCATIONS

N.T.S.

STATEMENT OF USE

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN ALPINE CITY. DEVEATION FROM THIS DOCUMENT REQUIRES APPROVAL OF ALPINE CITY, ALPINE CITY CORPRTATION CAN NOT BE HELD LIABLE FOR MISSUSE OR CHANGES REGARDING THIS DOCUMENT.

REVISION

NO.		BY	APPR	DATE

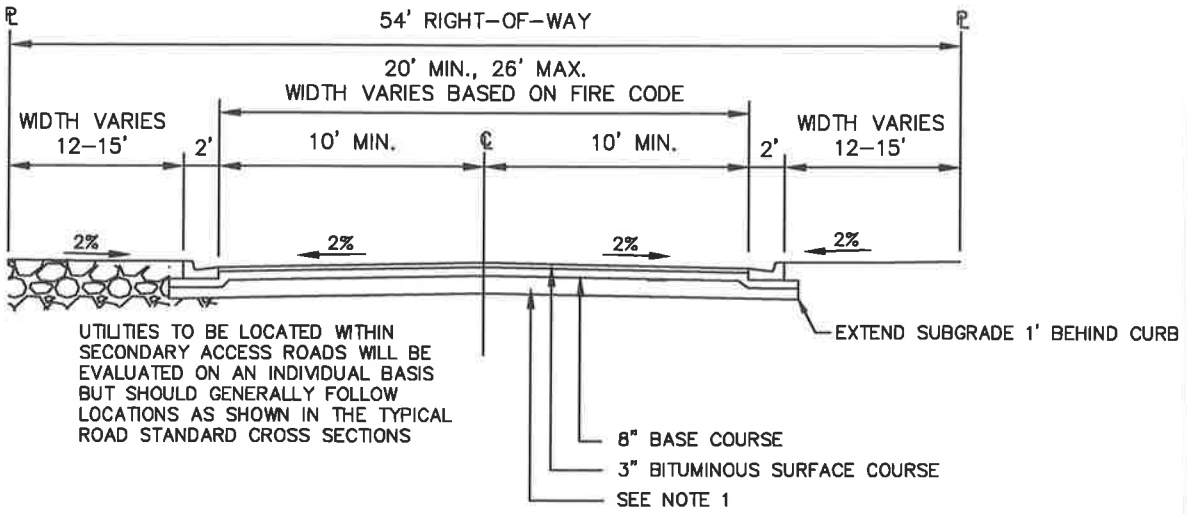
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STREET CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

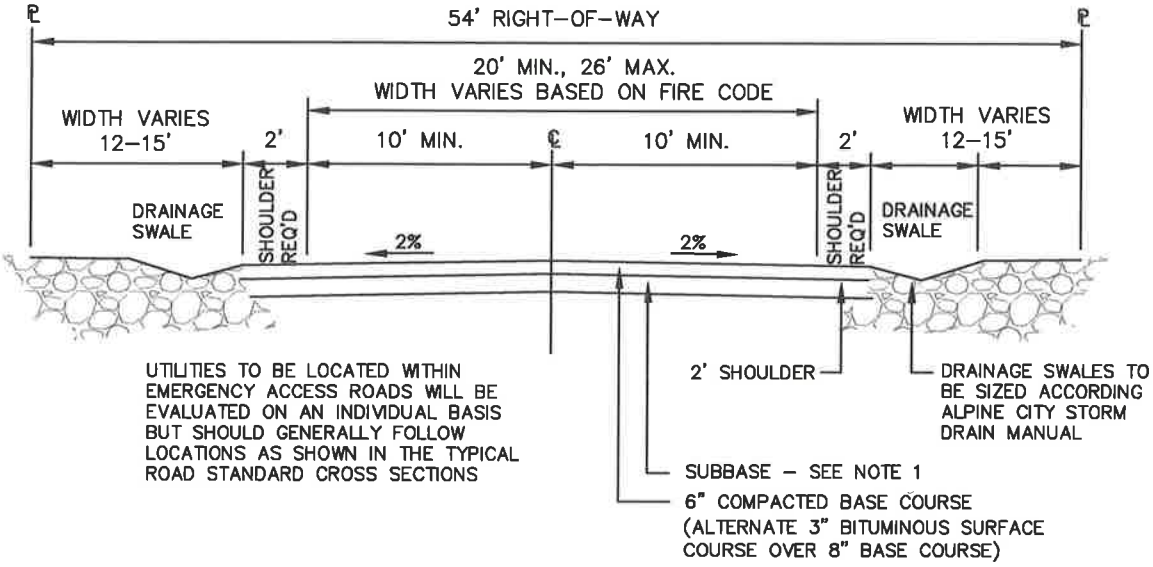
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DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05



NOTES:

1. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS
2. FIRE CODE REQUIRES AN "ALL WEATHER" SURFACE FOR SECONDARY ACCESS ROUTES. IT IS AT THE DISCRETION OF THE CITY COUNCIL WHETHER SECONDARY ACCESS ROADS WILL BE ASPHALT OR GRAVEL. SEE GRAVEL OPTION BELOW.

SECONDARY ACCESS



NOTES:

1. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS
2. CURB AND GUTTER MAY OR MAY NOT BE REQUIRED AT THE DISCRETION OF THE CITY COUNCIL

SECONDARY ACCESS OPTION

STREET CROSS-SECTIONS

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NO.		BY	APPR.	DATE

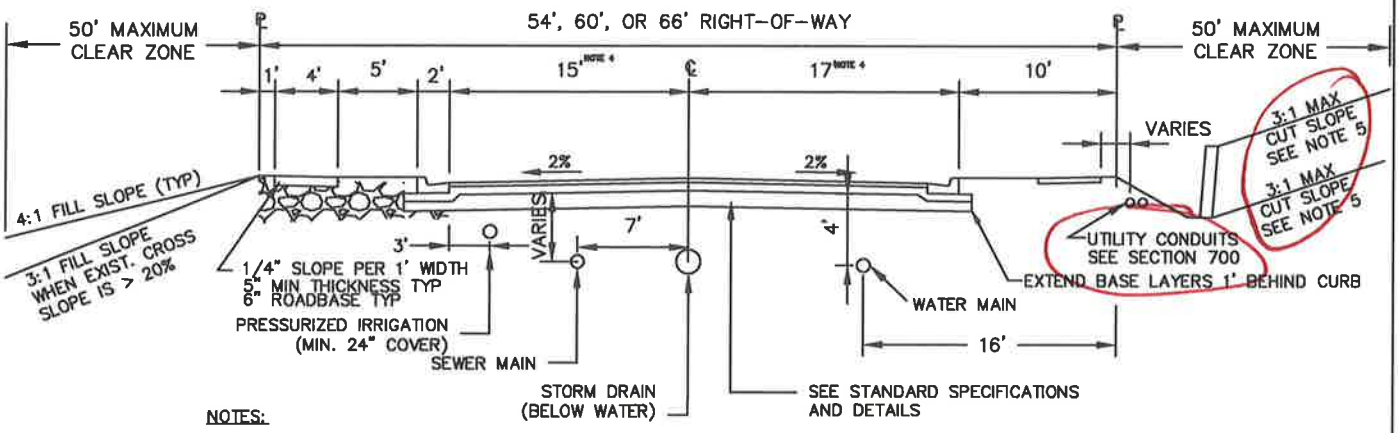
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ALPINE
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ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STREET CROSS-SECTIONS

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DESIGN BY:	
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NOTES:

1. CLEAR ZONE DEFINES THE MAXIMUM HORIZONTAL DISTANCE PERPENDICULAR TO ROAD THAT CAN BE DISTURBED TO CONSTRUCT STREET SECTION.
2. ENGINEERED RETAINING WALLS ARE ALLOWED PER DEVELOPMENT CODE SECTION 3.32
3. BORROW DITCH AND CROSS DRAIN PIPES SHALL BE DESIGNED SUCH THAT SILTS AND MATERIAL WILL NOT ENTER STREET CROSS SECTION. POND ON CUT SIDE OF ROAD, AND / OR DRAIN TO APPROPRIATE COLLECTION / DETENTION SYSTEM ON FILL SIDE OF ROAD. REFER TO ALPINE CITY STORM DRAIN DESIGN MANUAL.
4. WIDTH VARIES PER RIGHT OF WAY, SEE STANDARD DETAILS.
5. CUT SLOPES GREATER THAN 3:1 (UP TO 2:1) MAY BE ALLOWED PER GEOTECHNICAL REPORT RECOMMENDATION. CUT SLOPES STEEPER THAN 2:1 MUST BE ACCOMPANIED BY A RETAINING WALL UNLESS APPROVED OTHERWISE IN WRITING BY THE CITY ENGINEER OR HIS/HER DESIGNEE (350.050.D).

STREET CROSS-SECTIONS WITH REQUIRED CUT AND FILL SLOPES

N.T.S.

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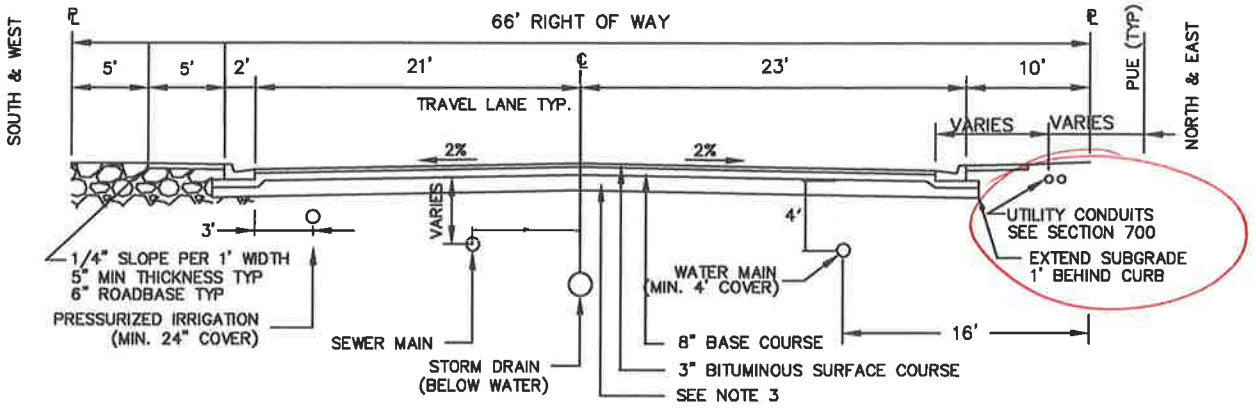
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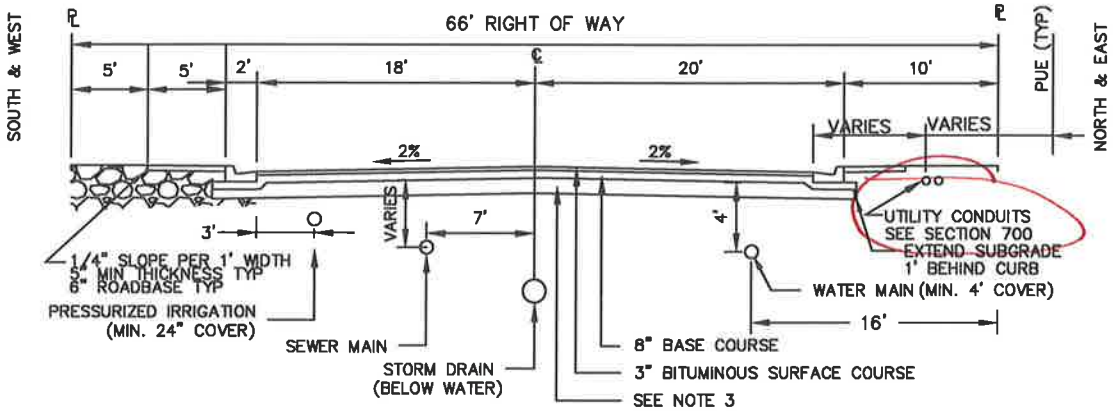
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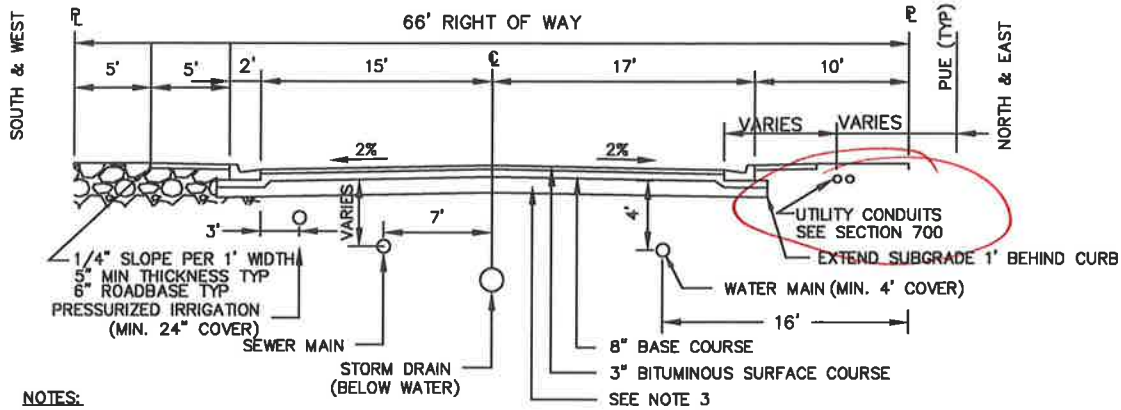
STREET CROSS-SECTIONS

ALPINE CITY
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ALPINE, UT 84004

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NOTES:

1. WATER VALVES AND 5-INCH VALVE OPENING MUELLER FIRE HYDRANTS SHALL BE LOCATED AS APPROVED.
2. NO WATER LINE SMALLER THAN 8-INCH DIA. SHALL BE INSTALLED WITHOUT APPROVAL OF CITY COUNCIL.
3. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS.
4. CULINARY WATER MAINS SHALL BE ON THE NORTH AND EAST SIDES OF THE STREET. PRESSURIZED IRRIGATION AND SEWER LINES SHALL BE ON THE SOUTH AND WEST SIDES OF THE STREET.
5. USE OF ALTERNATE STREET CROSS-SECTIONS REQUIRES APPROVAL BY ALPINE CITY.

ALTERNATE STREET CROSS-SECTIONS & UTILITY LOCATIONS

N.T.S.

STATEMENT OF USE

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REVISION

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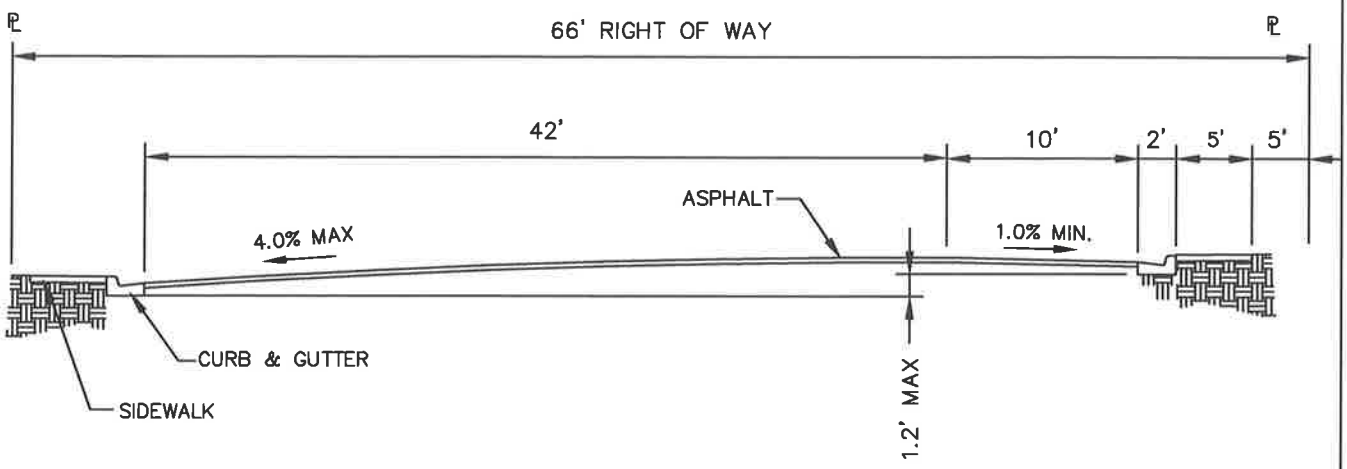
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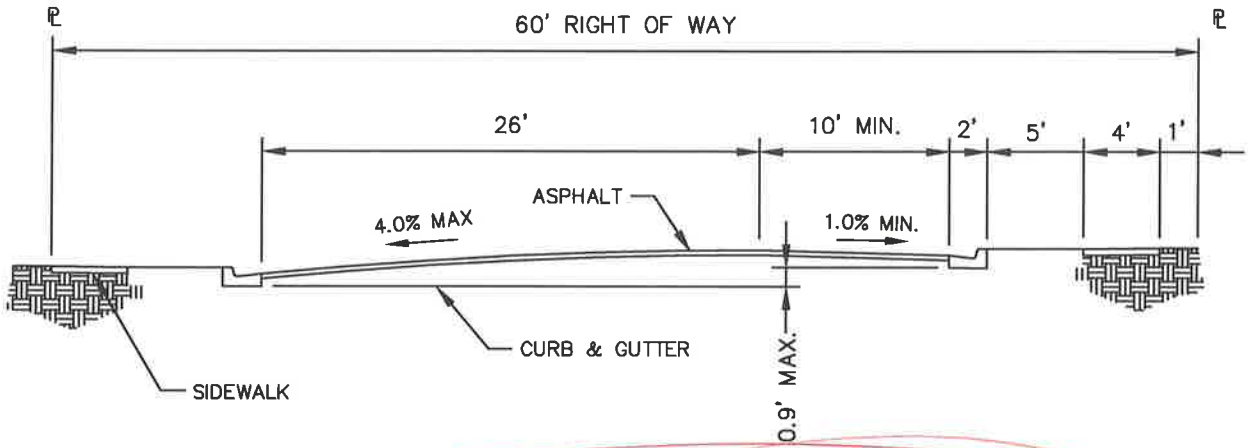
ALTERNATE STREET CROSS-SECTIONS

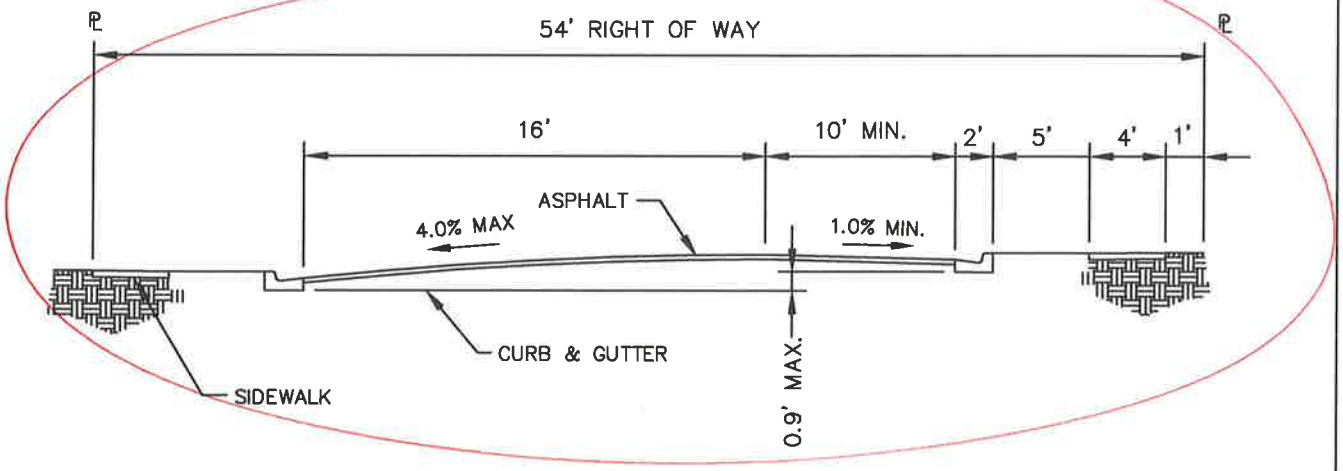
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ADOPTED DATE:	2015







STREET CROSS-SECTIONS

(CURBS AT UNEQUAL ELEVATIONS)

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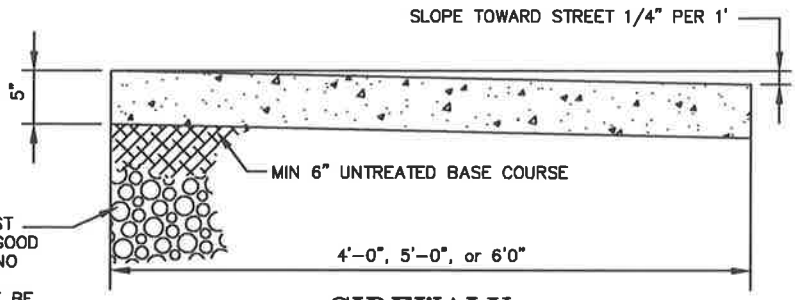
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STREET CROSS-SECTIONS
UNEQUAL ELEVATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

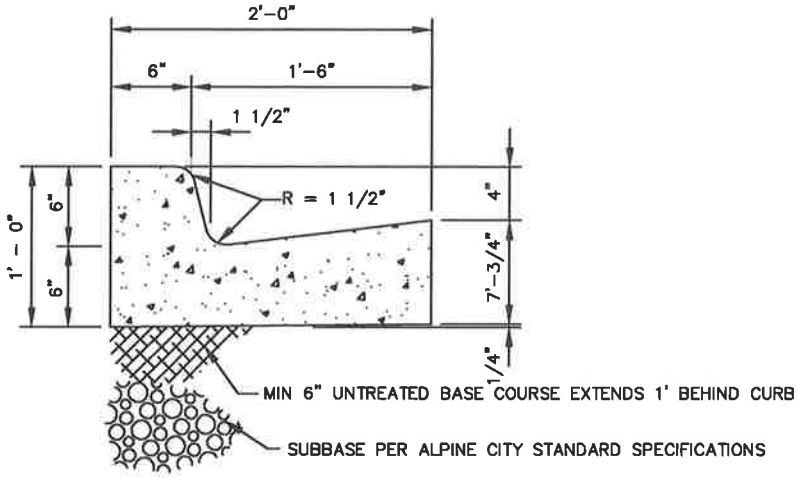
STANDARD DRAWING NUMBER:	3
PLOT SCALE:	N.T.S
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



SIDEWWALK SUBBASE MUST GENERALLY CONSIST OF GOOD SOLID GROUND. UNDER NO CIRCUMSTANCES SHALL SIDEWALK AND ROADBASE BE PLACED ON COLLAPSIBLE SOILS, TOPSOIL, NON-ENGINEERED FILLS, LOOSE OR DISTURBED SOILS, SOD, RUBBISH, CONSTRUCTION DEBRIS, FROZEN GROUND, DELETERIOUS MATERIALS, OR WITHIN PONDED WATER. IF SIDEWALK IS PLACED ON FILL, THE FILL MUST BE ENGINEERED FILL, COMPACTED AND TESTED, PER ALPINE CITY STANDARD SPECIFICATIONS.

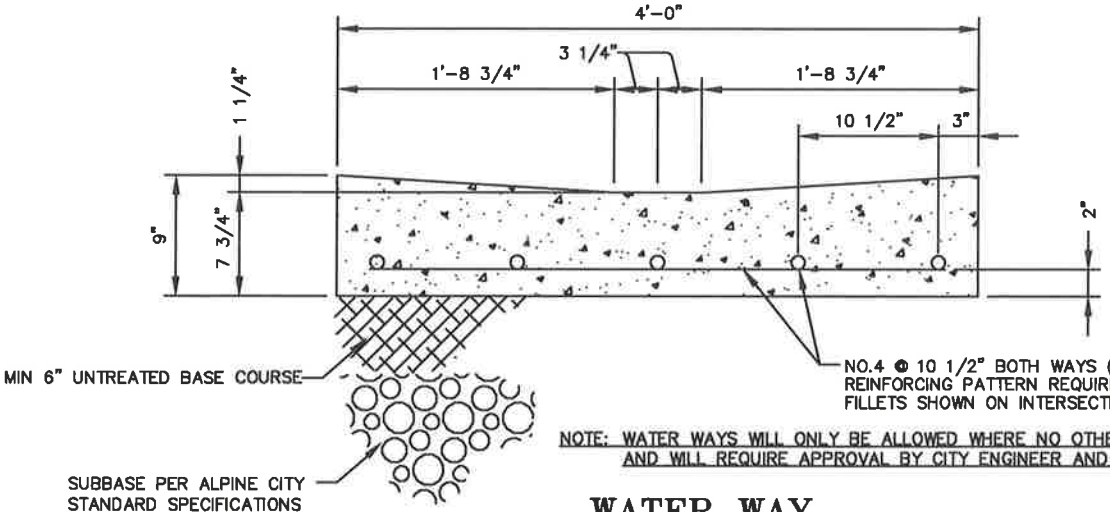
SIDEWALK

NTS



HIGH BACK CURB & GUTTER

NTS



NOTE: WATER WAYS WILL ONLY BE ALLOWED WHERE NO OTHER ALTERNATIVE IS POSSIBLE AND WILL REQUIRE APPROVAL BY CITY ENGINEER AND PUBLIC WORKS DIRECTOR

WATER WAY

NTS

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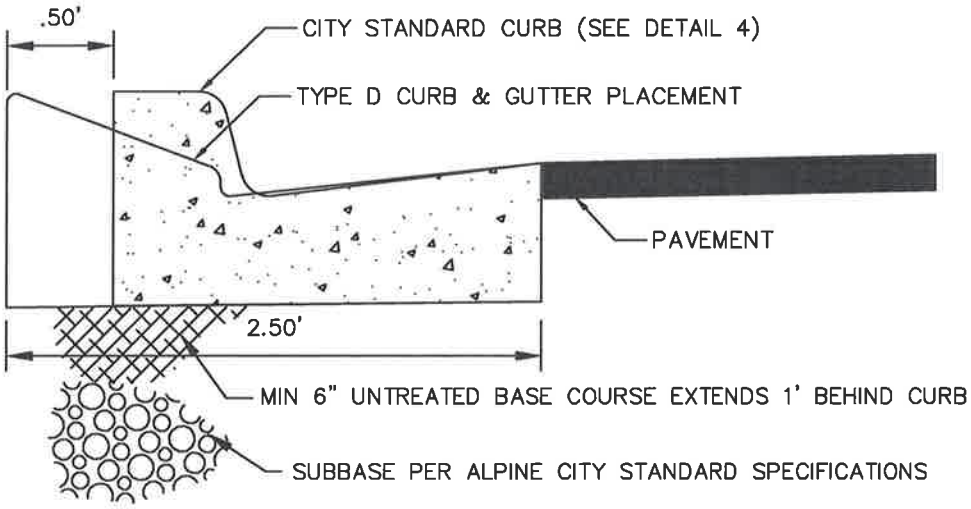
CAD FILE:

SIDEWALK, CURB & GUTTER, WATER WAY

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	4
PLOT SCALE:	N.T.S.
DRAWN BY:	WIM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTE:
ON A CASE-BY-CASE BASIS TYPE D CURB & GUTTER MAY BE APPROPRIATE. IF APPROVED BY THE CITY ENGINEER AND/OR BY HIS/HER DESIGNEE, TYPE D CURB MUST BE PLACE SUCH THAT THE FRONT FACE ALIGNS WITH THE ASPHALT EDGE AND EXISTING CURB AND GUTTER.



OPTION: TYPE D CURB & GUTTER PLACEMENT

NTS

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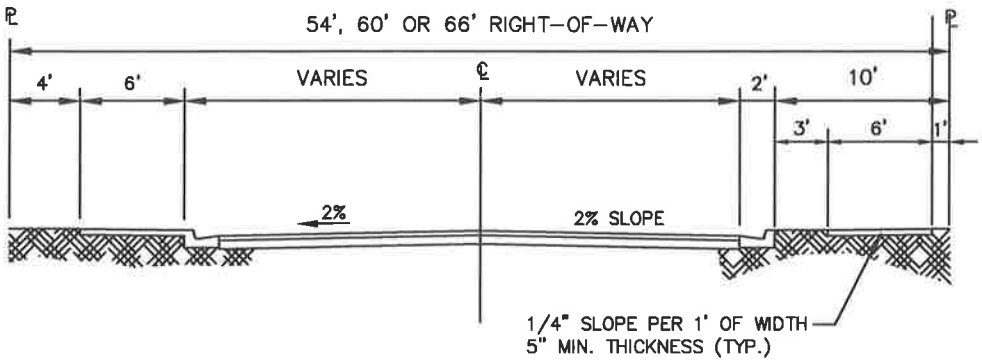
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TYPE D CURB & GUTTER PLACEMENT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE:

STANDARD DRAWING NUMBER:	4a
PLOT SCALE:	NTS
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

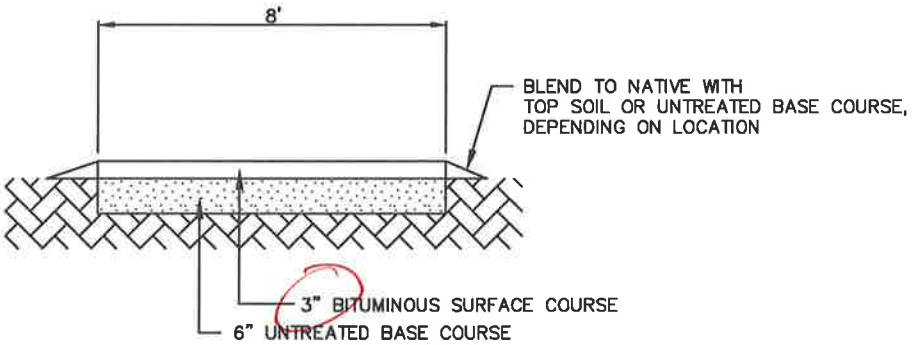


NOTES:

1. ALPINE CITY RESERVES THE RIGHT TO DETERMINE WHETHER THE COMBINATION OR PLANTER STRIP OPTION WILL BE CONSTRUCTED ON A CASE-BY-CASE BASIS.
2. IN SOME CASES, A 5' SIDEWALK WILL BE SUBSTITUTED. IF THE 5' SIDEWALK IS CONSTRUCTED, THE PLANTER STRIP WIDTH WILL BE INCREASED TO 4'.
3. ALL DEVELOPER BUILT TRAILS (NEW OR REFURBISHED) MUST BE BUILT TO INDUSTRY RECOGNIZED STANDARDS AND BE APPROVED BY THE ALPINE CITY TRAIL COMMITTEE. IF TRAILS ARE BUILT ON FILL, THE FILL MUST BE ENGINEERED FILL, COMPACTED AND TESTED, PER ALPINE CITY STANDARD SPECIFICATIONS.

CLASS A (6' SIDEWALK) TRAIL CROSS-SECTION

N.T.S.



CLASS B (ASPHALT) TRAIL CROSS-SECTION

N.T.S.

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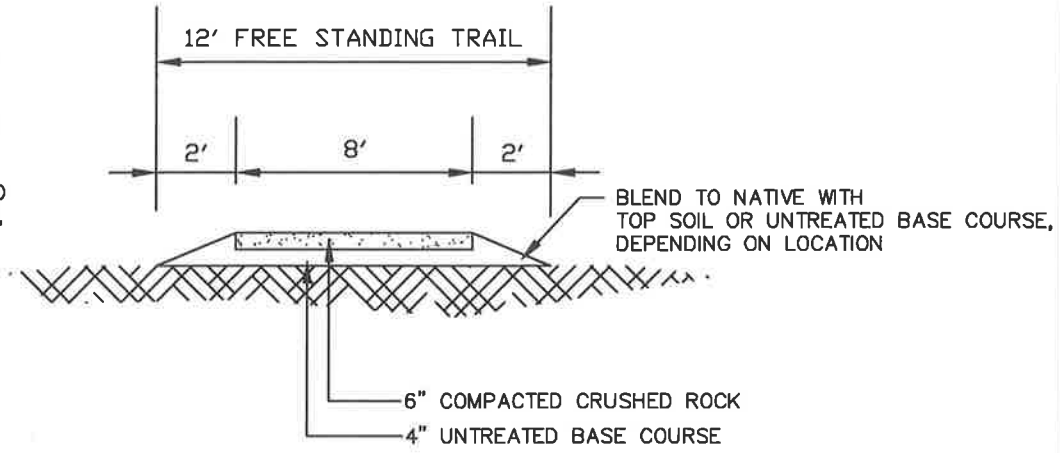
CAD FILE:

CLASS A & B TRAIL CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

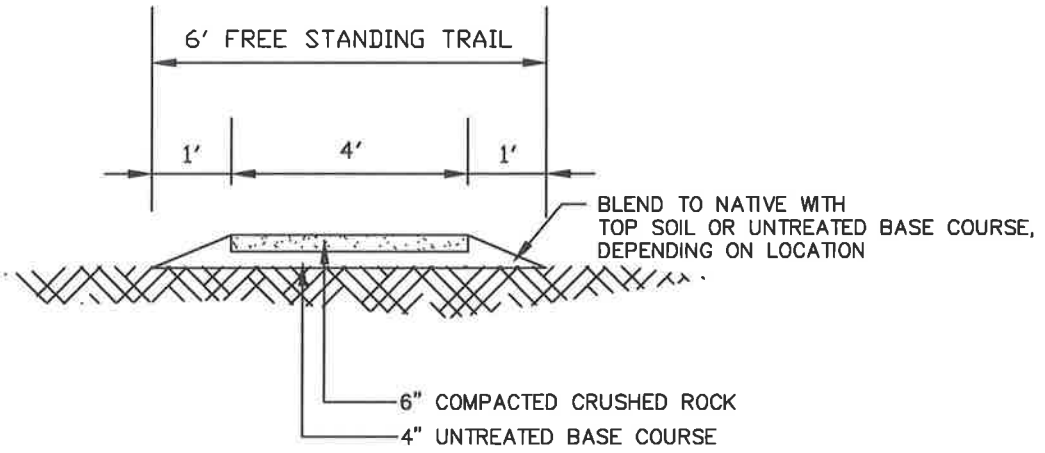
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PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTE:
ALL DEVELOPER BUILT TRAILS (NEW OR REFURBISHED) MUST BE BUILT TO INDUSTRY RECOGNIZED STANDARDS AND BE APPROVED BY THE ALPINE CITY TRAIL COMMITTEE. IF TRAILS ARE PLACED ON FILL, THE FILL MUST BE ENGINEERED FILL, COMPACTED AND TESTED, PER ALPINE CITY STANDARD SPECIFICATIONS.



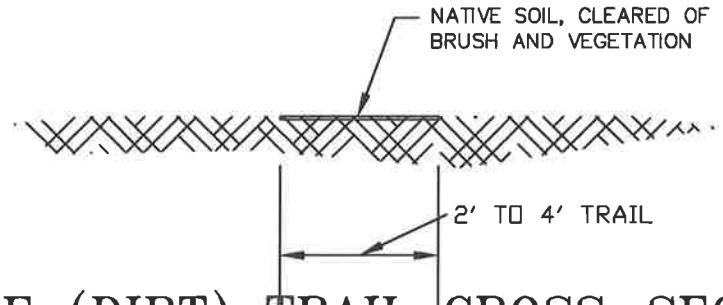
CLASS C 8' CRUSHED ROCK TRAIL CROSS-SECTION

N.T.S.



CLASS D 4' CRUSHED ROCK TRAIL CROSS-SECTION

N.T.S.



CLASS E (DIRT) TRAIL CROSS-SECTION

N.T.S.

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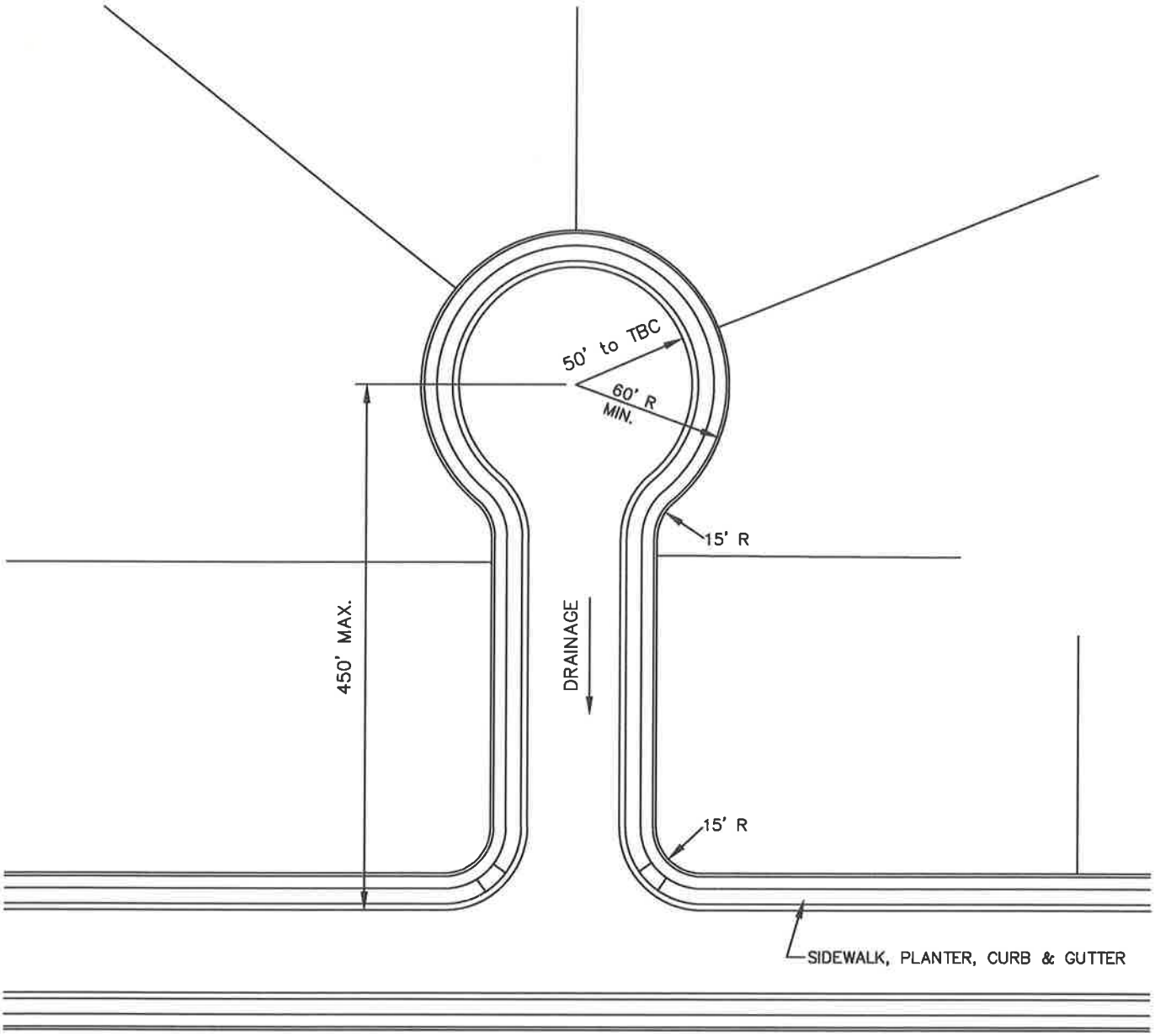
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CAD FILE:

CLASS C, D, & E TRAIL CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	6
PLOT SCALE	N.T.S
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CHECKED BY	
ADOPTED DATE	10/13/05



CUL–DE–SAC DETAIL

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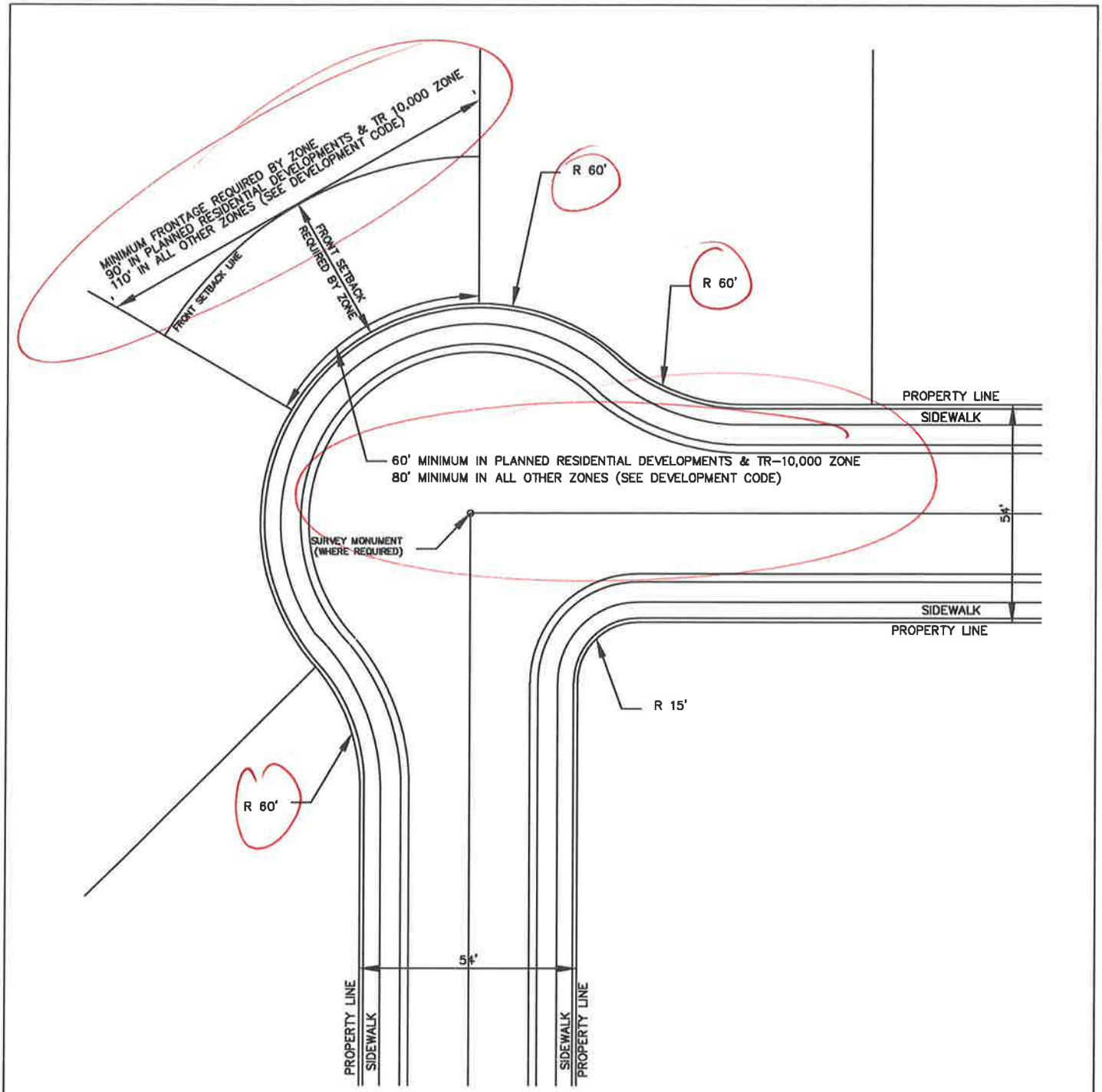
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CAD FILE: B:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC AND DETAILS – PROPOSED\CITY DETAILS\7 CUL-DE-SAC DETAIL

CUL-DE-SAC DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	7
PLOT SCALE	NTS
DRAWN BY	BDB
DESIGN BY	
CHECKED BY	
ADOPTED DATE	10/13/05



KNUCKLE DETAIL

N.T.S.

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CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC AND DETAILS – PROPOSED\CITY DETAILS\8 KNUCKLE DETAIL_RECOVER

KNUCKLE DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	8
PLOT SCALE	N.T.S
DRAWN BY	BDB
DESIGN BY	
CHECKED BY	
ADOPTED DATE	10/11/05

FRONT, REAR, AND SIDE YARDS

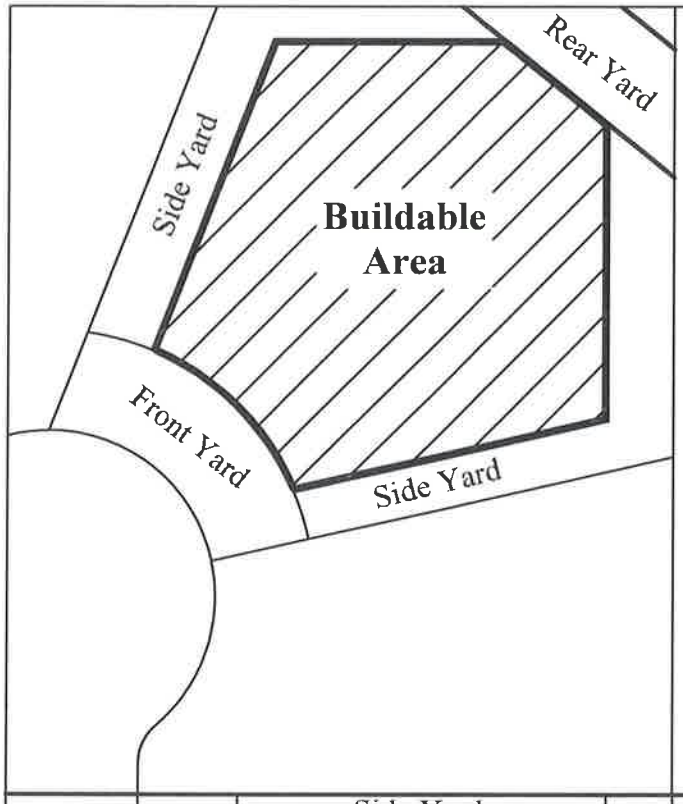


Figure A:
Cul-de-Sac
or
Irregular Shaped
Lot

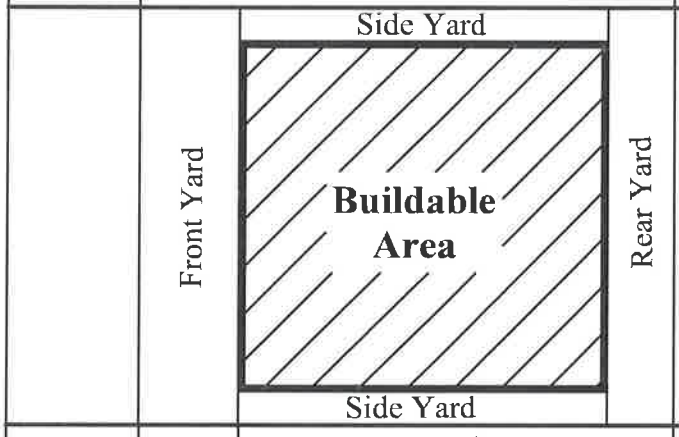


Figure B:
Interior Lot
(Typical)

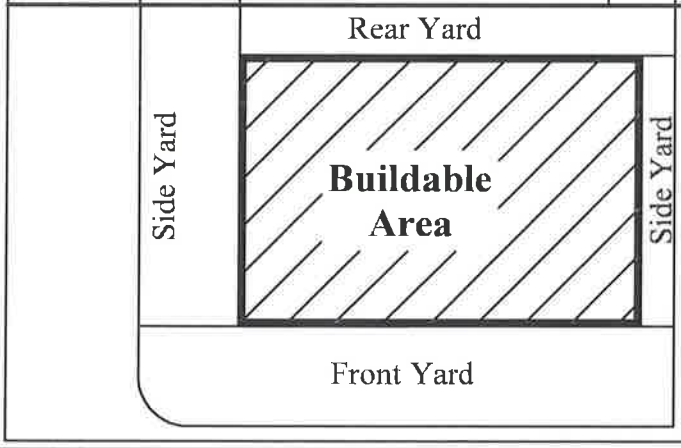


Figure C:
Corner Lot
(Typical)

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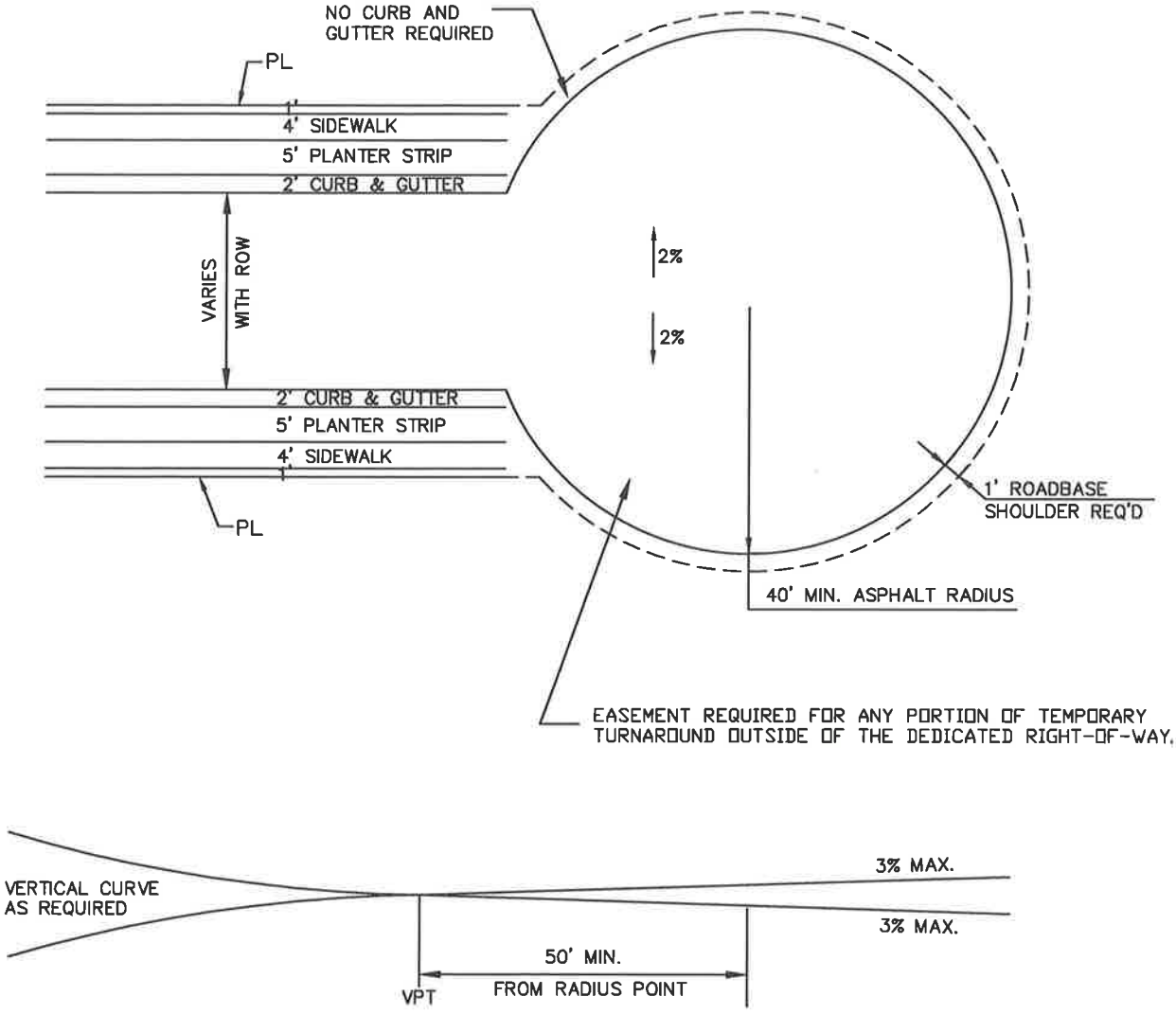
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Standard Setbacks

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER	9
PLOT SCALE	N.T.S
DRAWN BY	WJM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	4/14/04



GENERAL CONSTRUCTION NOTES:

1. SUBGRADE SHALL CONFORM TO CITY CONSTRUCTION STANDARDS, SEE STREET CROSS SECTION DETAIL 1.
2. 8" MIN. CRUSHED GRAVEL BASE COURSE.
3. 3" MIN. COMPACTED PLANT MIX ASPHALT SURFACING.

TEMPORARY TURNAROUND

NTS

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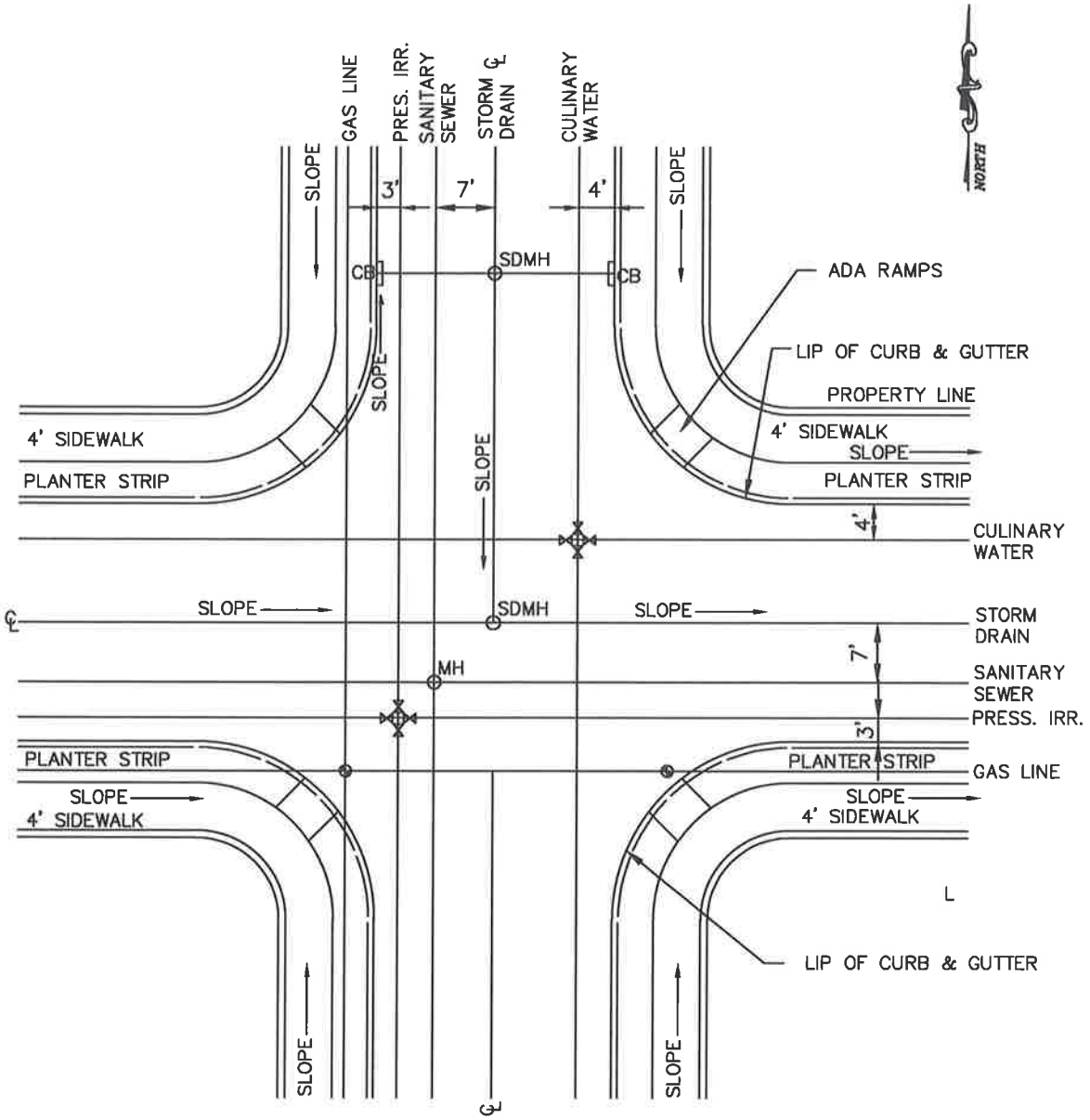
ALPINE 1850

CAD FILE:

TEMPORARY TURNAROUND

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	10
PLOT SCALE	N.T.S
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CHECKED BY:	
ADOPTED DATE	10/18/05



STANDARD STREET INTERSECTION AND UTILITY LOCATION

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CAD FILE:

STANDARD STREET INTERSECTION AND UTILITY LOCATION

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	11
PLOT SCALE:	N.T.S
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05

NOTE: THE STANDARD LOCATIONS ARE SHOWN FOR SERVICE LATERALS, ADJUSTMENTS LATERALLY CAN BE MADE UNDER CERTAIN CIRCUMSTANCES, CITY ENGINEER APPROVAL REQUIRED.

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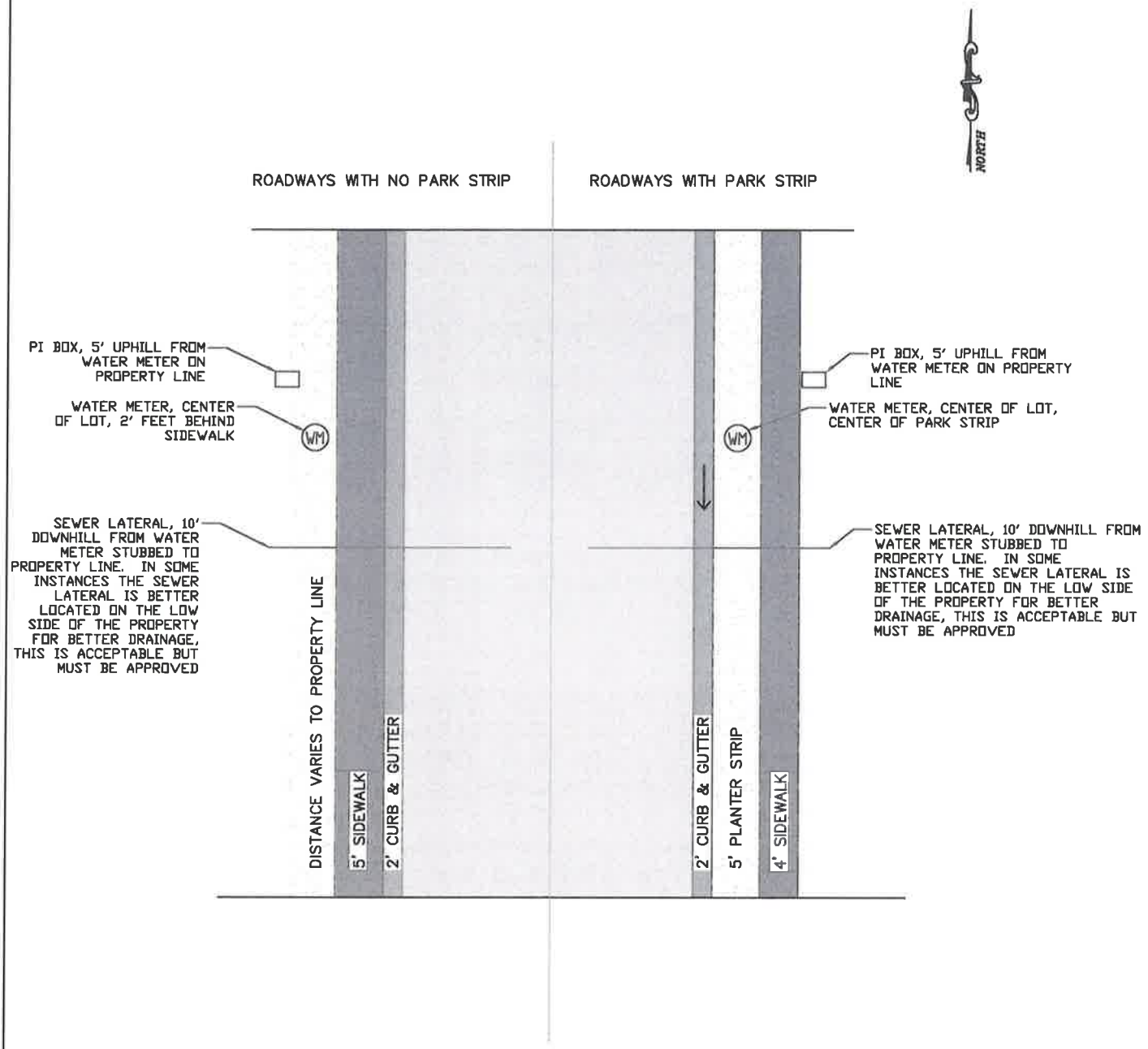
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STANDARD UTILITY SERVICE LOCATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 12a

PLOT SCALE	N.T.S
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CHECKED BY	
ADOPTED DATE	10-13-05



STANDARD LOT UTILITY LOCATIONS

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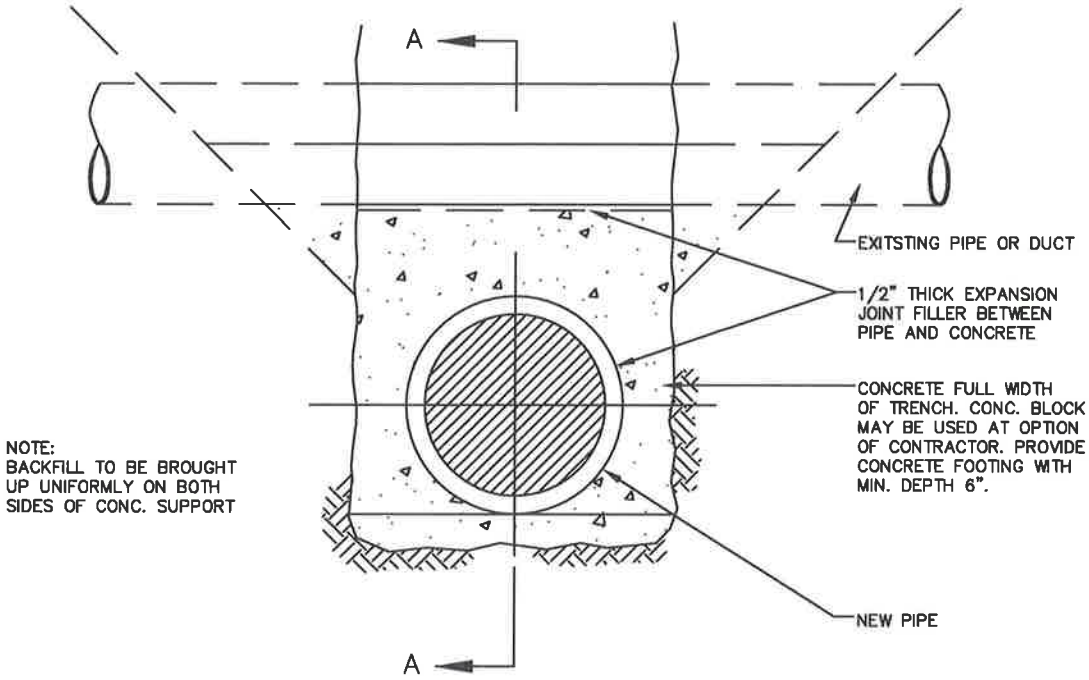
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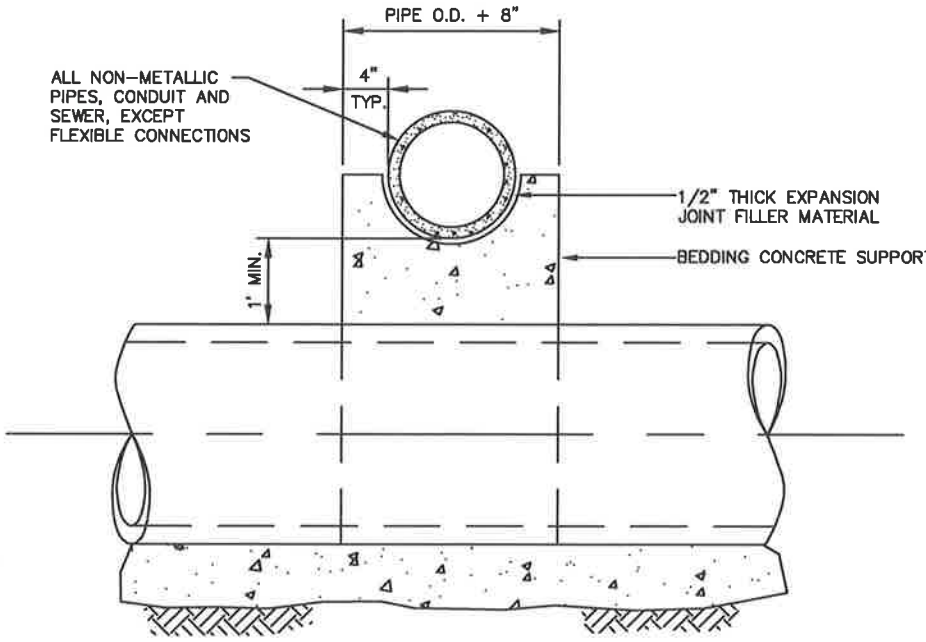
STANDARD LOT UTILITY LOCATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 12

PLOT SCALE	N.T.S
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ADOPTED DATE	10-13-05





SECTION A-A

UTILITY CONFLICT

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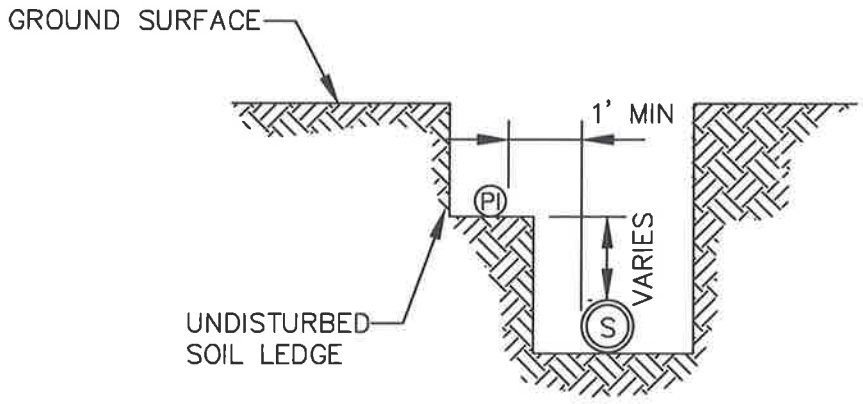
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UTILITY CONFLICT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER:	13
PLOT SCALE:	N.T.S
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



NOTE:
ALL PLUMBING PRACTICES SHALL CONFORM TO THE PLUMBING CODE ADOPTED BY ALPINE CITY

SEWER & PI LATERALS IN COMMON TRENCH

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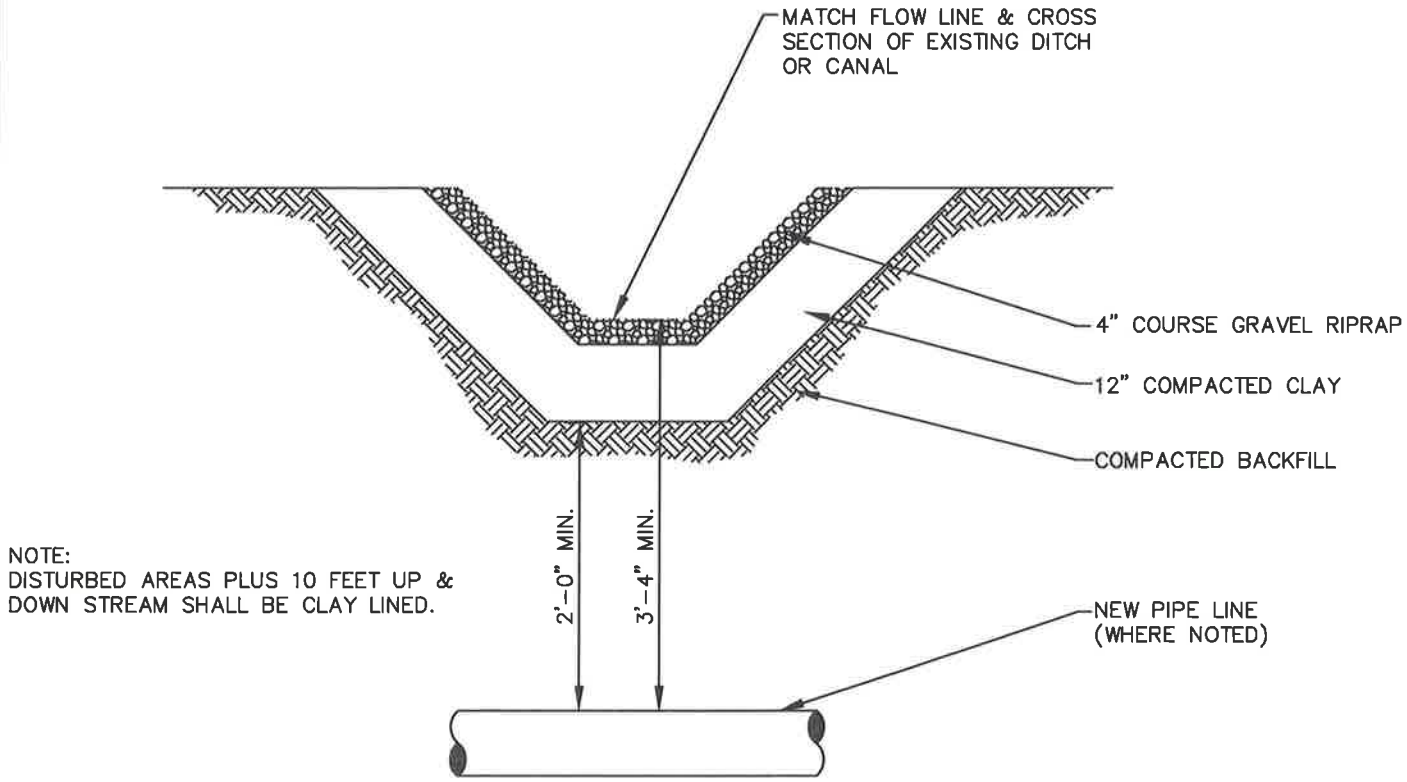
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CITY UTILITY LATERALS IN SAME TRENCH

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	14
PLOT SCALE	N.T.S
DRAWN BY	WIM
DESIGN BY	
CHECKED BY:	
ADOPTED DATE	4/14/04



NOTE:
DISTURBED AREAS PLUS 10 FEET UP & DOWN STREAM SHALL BE CLAY LINED.

DITCH CROSSING

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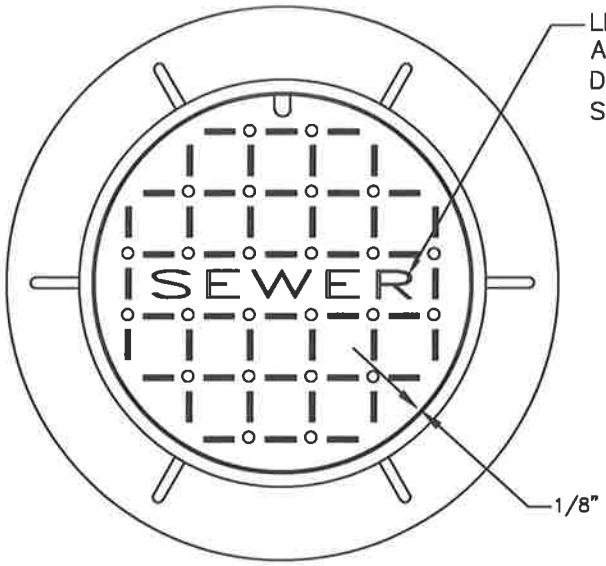
ALPINE 1850

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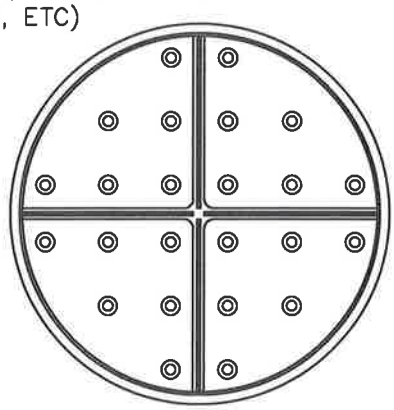
DITCH CROSSING

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

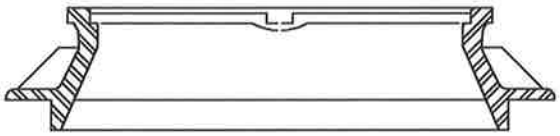
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PLOT SCALE	N.T.S
DRAWN BY	WIM
DESIGN BY	
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ADOPTED DATE	4/14/04



PLAN OF COVER AND RING

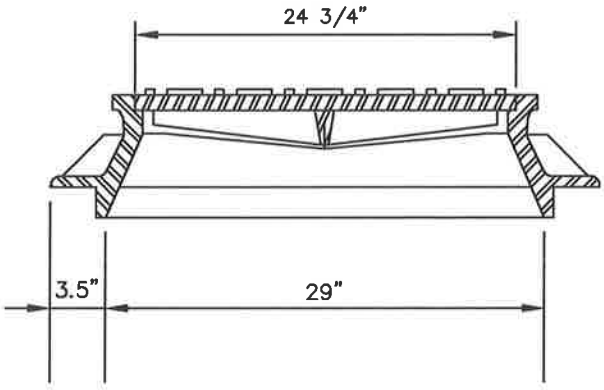


BOTTOM VIEW OF COVER



SECTIONS

D&L A-1180 OR APPROVED EQUAL



HEAVY DUTY, 400 LB. MINIMUM, MANHOLE RING AND COVER

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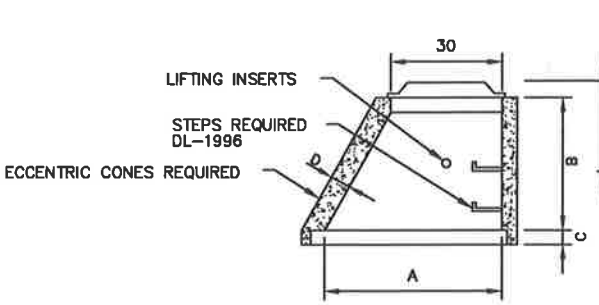
ALPINE 1850

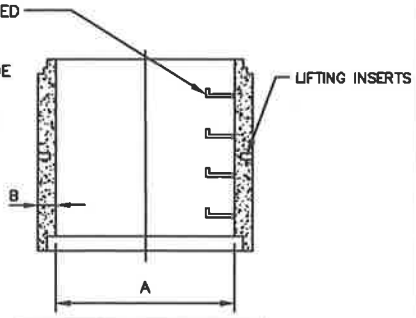
CAD FILE:

MANHOLE RING & COVER (typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	16
PLOT SCALE	N.T.S
DRAWN BY	WJM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	4/14/04





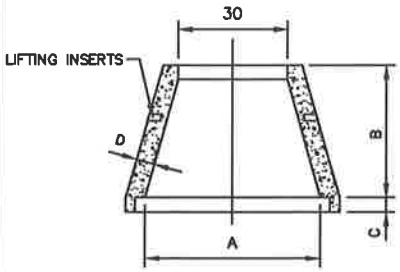
SIZE A (INCHES)	HEIGHT B (INCHES)	FLANGE C (INCHES)	WALL D (INCHES)	WEIGHT (LBS. EA.)
48	36	4	5	2720
60	39	6	6	4300

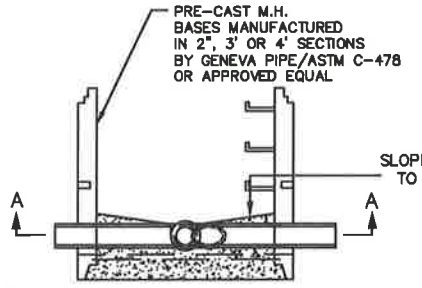
USE 5' DIA. MIN. FOR ALL PIPE 14" & LARGER USE 4' MIN. DIA. FOR ALL PIPE UP TO AND INCLUDING 12" DIA. UNLESS 3 OR ENTER THE MANHOLE. FOR ALL MANHOLES 15' OR DEPTH FROM RIM TO INV., USE 5' DIA. MANHOLE.

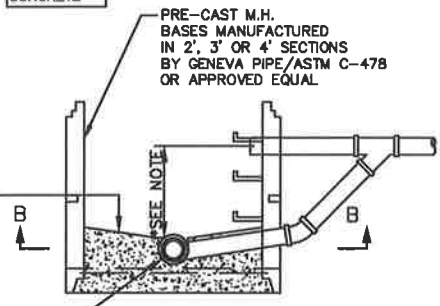
SIZE A (INCHES)	WALL B (INCHES)	WEIGHT (LBS. EA.)
48	5	900
60	6	1380

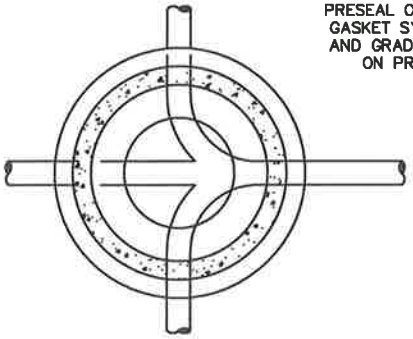
DROP PIPE INSTALLED IN CONCRETE

*NOTE: MINIMUM AS DIRECTED BY CITY ENGINEER





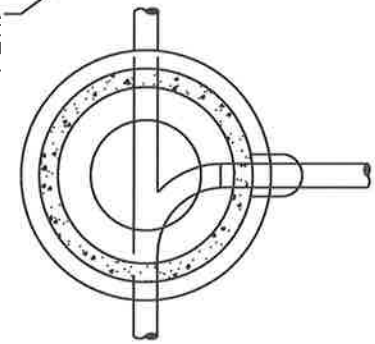




SECTION A-A

TYPICAL JUNCTION MANHOLE

N.T.S.



SECTION B-B

TYPICAL DROP MANHOLE

N.T.S.

NOTE: USE OF DROP MANHOLES REQUIRES APPROVAL OF CITY ENGINEER AND PUBLIC WORKS DIRECTOR. FOR ALL OTHER SPECIFICATIONS, SEE APWA.

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NO		BY	APRV	DATE

ALPINE 1850

SEWER MANHOLE (TYPICAL)

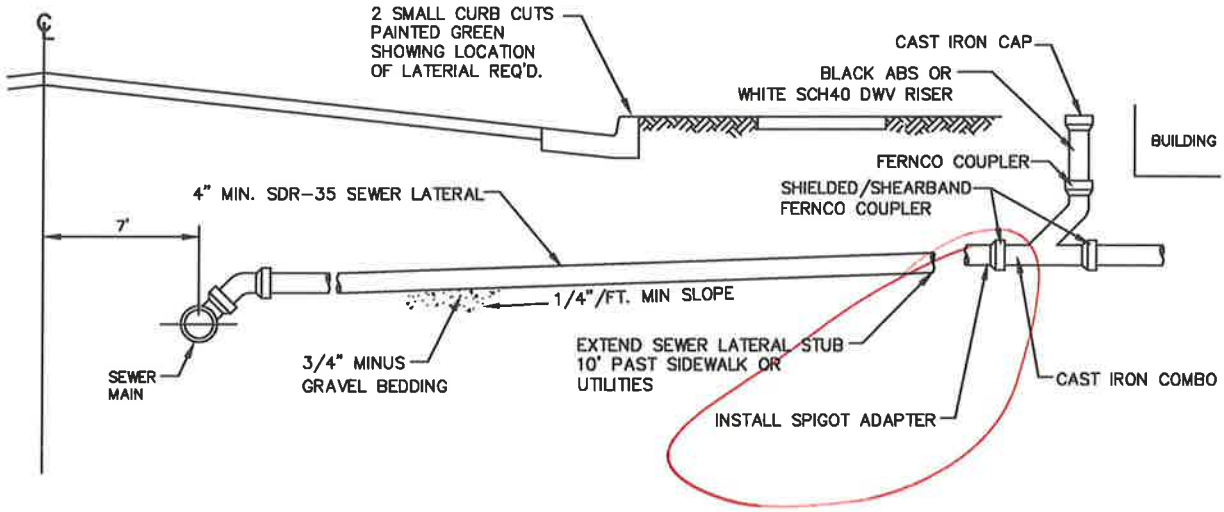
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: D:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC AND DETAILS - PROPOSED\CITY DETAILS\17 SEWER TYPICAL MANHOLES

STANDARD DRAWING NUMBER:	17
PLOT SCALE:	N.T.S
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/16/04

NOTES:

1. A CLEANOUT IS REQUIRED NEXT TO THE BUILDING.
2. ADDITIONAL CLEANOUTS REQUIRED BETWEEN THE BUILDING AND SEWER MAIN AT MAXIMUM 100 FOOT INTERVALS.
3. THE COMBO SHALL CONSIST OF CAST IRON, ABS MATERIAL (OR WHITE SCH40 DWV) FOR RISER.
4. FERNCO COUPLERS (AS SHOWN) SHALL BE USED WHEN CONNECTING CAST IRON TO RISER OR SDR-35 LATERAL PIPE.
5. ALL CLEANOUTS SHALL HAVE CAST IRON CAPS.
6. ALL SEWER LATERALS SHALL BE SDR-35 PIPE, BEING LAID WITH THE BELL END OF THE PIPE IN THE UP HILL DIRECTION.
7. ALL SEWER LATERALS SHALL BE BEDDED WITH 3/4" MINUS GRAVEL.
8. BACKFILL MATERIAL SHALL BE ENGINEERED FILL WITHIN CITY RIGHT OF WAYS, AS CLASSIFIED IN ALPINE CITY STANDARDS AND SPECIFICATIONS.
9. BACKFILL MATERIAL AROUND PIPE SHALL BE COMPACTED TO 95% OF DENSITY AS MEASURED BY AASHTO T-99.
10. SEWER LATERAL MUST BE INSPECTED BY AN AUTHORIZED REPRESENTATIVE OF THE CITY PRIOR TO BACKFILLING TRENCH.
11. A TIE SKETCH SHOWING THE LOCATION OF ALL SEWER LATERALS MUST BE SUBMITTED TO THE CITY.
12. THE CITY SHALL BE NOTIFIED 24 HOURS PRIOR TO WHEN A SEWER LATERAL INSPECTION IS NEEDED.
13. ALL APPROPRIATE EXCAVATION PERMITS MUST BE OBTAINED FROM THE CITY AND OTHER AGENCY PRIOR TO ANY EXCAVATION.
14. ALL APPROPRIATE IMPACT FEES MUST BE PAID PRIOR TO CONNECTING TO THE SEWER.
15. MARK END OF LATERAL STUB WITH 2x4 POST PAINTED GREEN. ALL OTHER MARKERS MUST BE PRE-APPROVED PRIOR TO USE.



TYPICAL SEWER SERVICE CONN.

N.T.S.

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NO.		BY	APRL	DATE

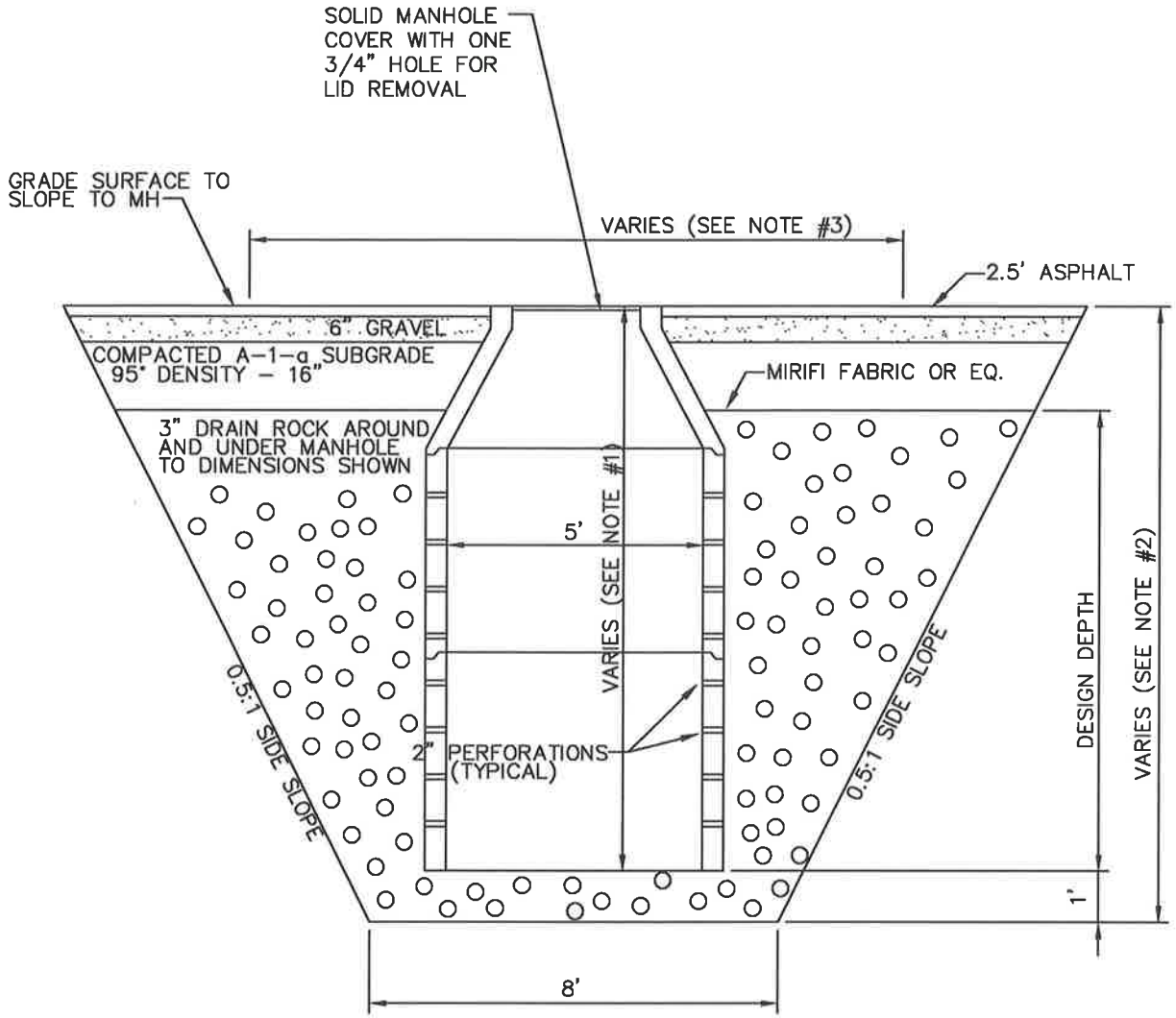
ALPINE 1850

TYPICAL SEWER SERVICE CONN.

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC AND DETAILS -- PROPOSED\CITY DETAILS\17A SEWER CONNECTION

STANDARD DRAWING NUMBER:	17a
PLOT SCALE:	NTS
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/04/04



NOTES:
#1. DESIGN DEPTH + 2'
#2. DESIGN DEPTH + 3'
#3. DESIGN DEPTH + 11'

STORM DRAINAGE SUMP

N.T.S.

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NO		BY	APRL	DATE

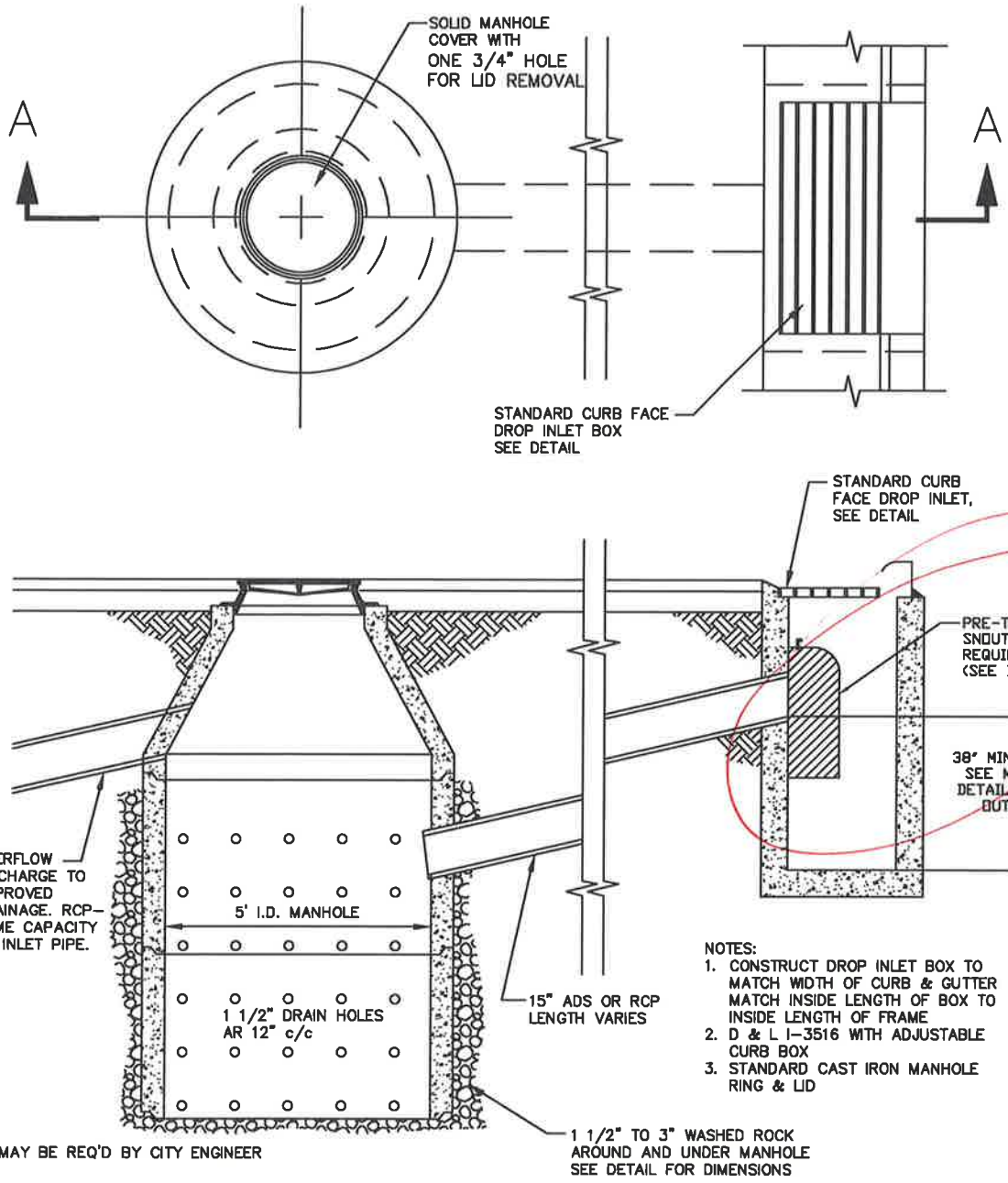
ALPINE 1850

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC AND DETAILS - PROPOSED\CITY DETAILS\18 STMSUMP

TYPICAL STORM DRAINAGE SUMP

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	18
PLOT SCALE	N.T.S
DRAWN BY	WIM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	4/14/04



SECTION A-A

SUMP DISPOSAL

N.T.S.

NOTE: ONLY ALLOWED IN CERTAIN CIRCUMSTANCES. PRE-TREATMENT REQ'D

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REVISION

NO.		BY	APRD.	DATE

ALPINE 1850

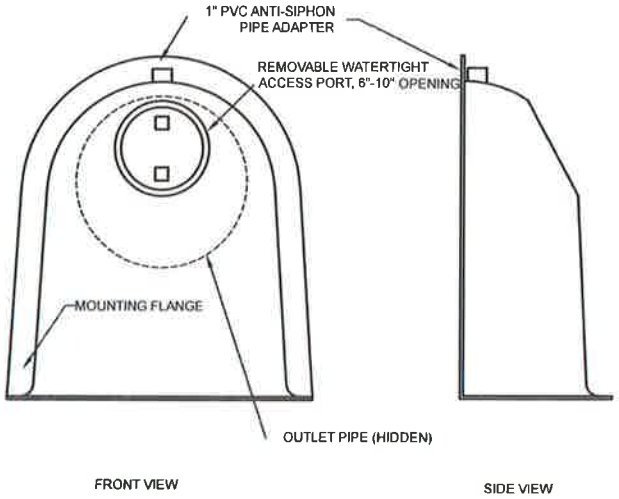
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SUMP DISPOSAL (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

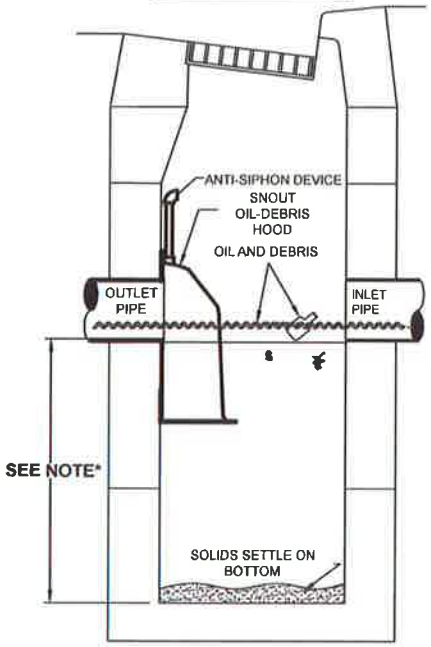
STANDARD DRAWING NUMBER	19
PLOT SCALE	N.T.S
DRAWN BY	WJM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	4/14/04

CONFIGURATION DETAIL



SNOUT OIL-WATER-DEBRIS SEPARATOR

TYPICAL INSTALLATION



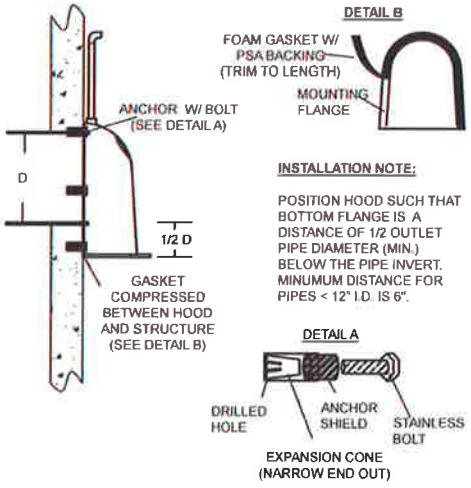
*NOTE- SUMP DEPTH OF 38" MIN. FOR UP TO 12" ID PIPE OUTLET. FOR PIPES 15" ID AND ABOVE SUMP DEPTH OF 2.5 TO 3 TIMES PIPE ID RECOMMENDED (E.G. 5' DEEP for 24" PIPE)

NOTES:

1. ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY:
   BEST MANAGEMENT PRODUCTS, INC.
   9 MATHEWS DRIVE, UNIT A1-A2.
   EAST HADDAM, CT 06423
   TOLL FREE: (800) 504-8008 OR (888) 434-0277, FAX: (877) 434-3197
   WEB SITE: www.bmpinc.com
   OR PRE-APPROVED EQUAL
2. ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
3. ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT PIPE AND ELBOW AS DRAWN. (SEE CONFIGURATION DETAIL)
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION (SNOUT SIZE ALWAYS LARGER THAN PIPE SIZE).
5. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A MINIMUM DISTANCE EQUAL TO 1/2 THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES <12" I.D.
6. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 12" ACCORDING TO STRUCTURE CONFIGURATION.
7. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL AND PIPE SHALL BE FINISHED FLUSH TO WALL.
8. ALL STRUCTURE JOINTS SHALL BE WATERTIGHT.
9. THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH ⅜" STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER. (SEE INSTALLATION DETAIL)
10. INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT.
    INSTALLATION KIT SHALL INCLUDE:
    A. INSTALLATION INSTRUCTIONS
    B. PVC ANTI-SIPHON VENT PIPE AND ADAPTER
    C. OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
    D. 3/8" STAINLESS STEEL BOLTS
    E. ANCHOR SHIELDS

US Patent # 6126817, 7951294, 7857966, 8512556
Canada Patent # 2285146, 2690156, 2690156 others pending

INSTALLATION DETAIL



HOOD SPECIFICATION FOR CATCH BASINS AND WATER QUALITY STRUCTURES

DESCRIPTION	DATE	SCALE
OIL- DEBRIS HOOD SPECIFICATION AND INSTALLATION (TYPICAL)	09/08/18	NONE
	DRAWING NUMBER	SP-SN

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REVISION

NO.		BY	APPR.	DATE

ALPINE 1850

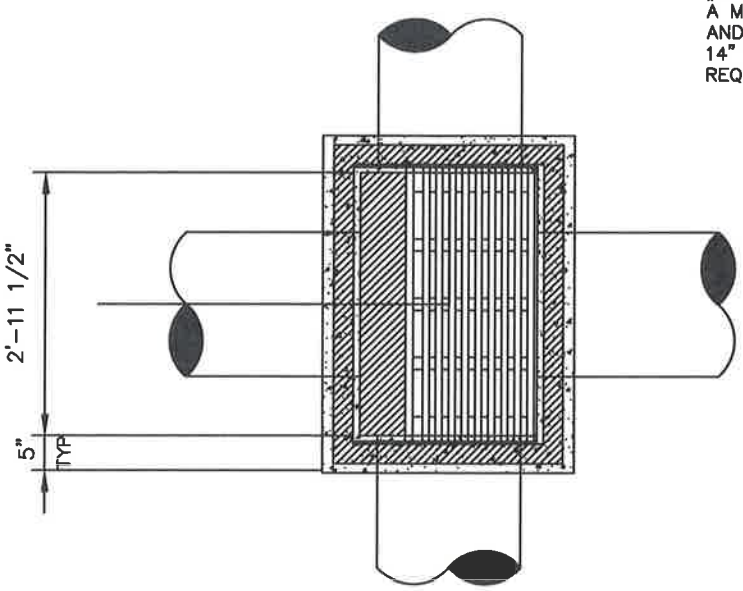
SNOUT DETAIL (Typical)

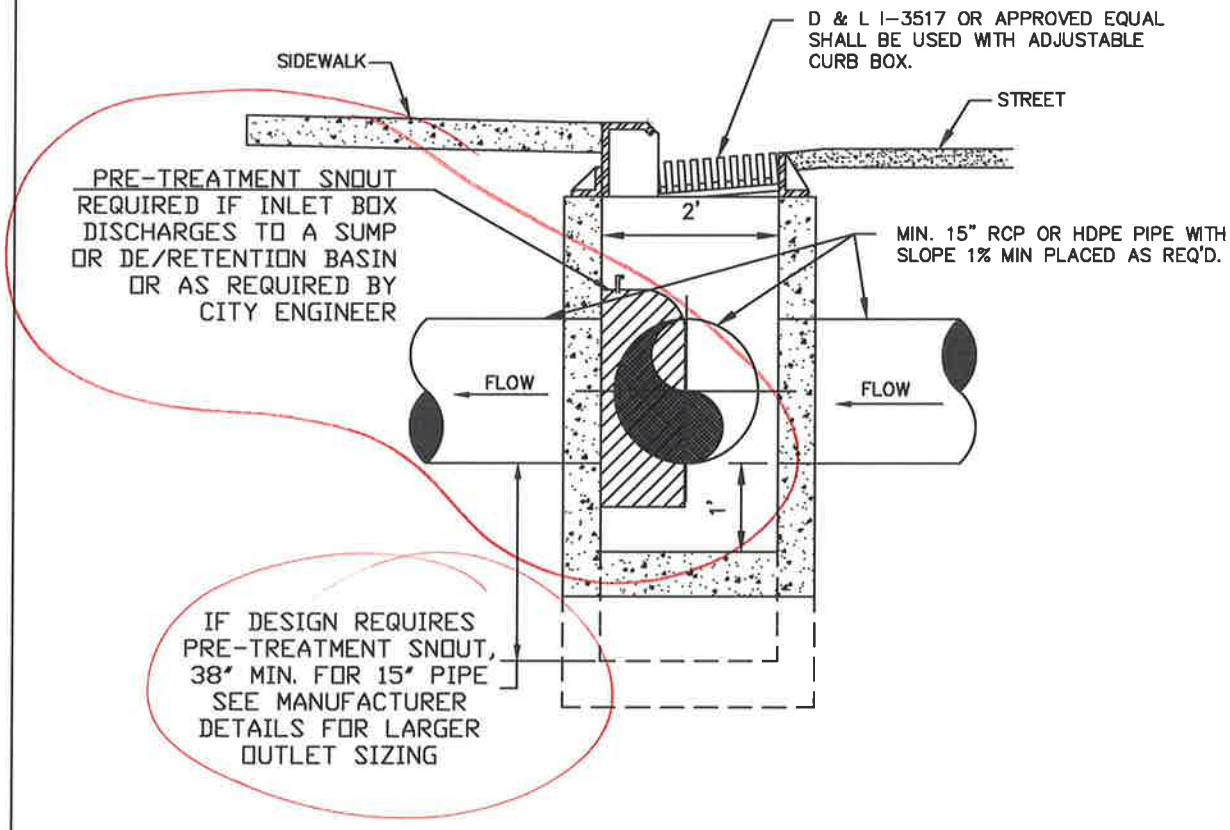
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER	19a
PLOT SCALE	N.T.S
DRAWN BY	WIM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	4/14/94

NOTE:
#4 REBAR SPACED AT
A MINIMUM OF 12" O.C. HORIZ.
AND 8" O.C. VERTICAL.
14" OVERLAP OR REBAR
REQUIRED.





CURB FACE DROP INLET BOX

N.T.S.

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NO.		BY	APRI	DATE

ALPINE 1850

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CURB FACE DROP INLET BOX (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	20
PLOT SCALE	NTS
DRAWN BY	WIM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	4/14/04

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NO.	REVISION	BY	APPR.	DATE

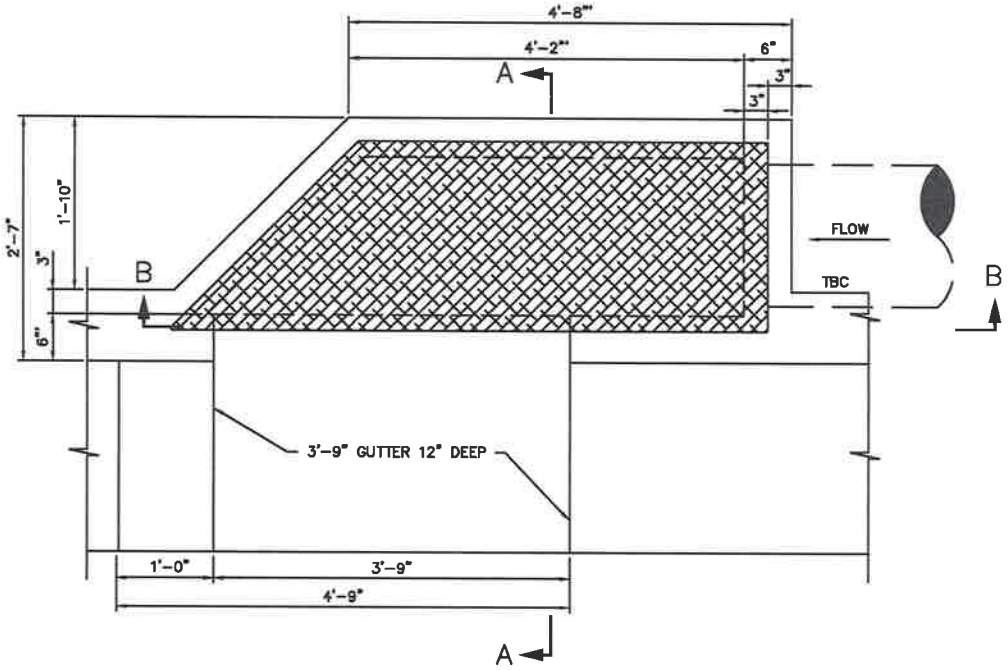
ALPINE 1850

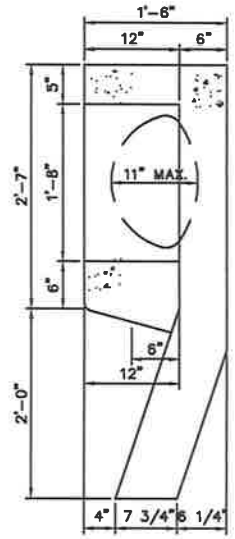
DIPSTONE OUTLET

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

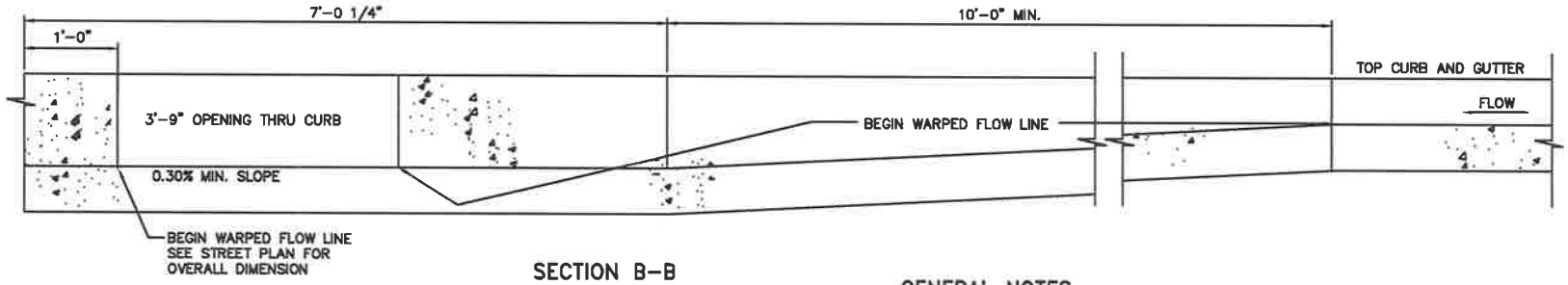
PLOT SCALE	N T S
DRAWN BY	WJM
DESIGN BY	
CHECKED BY:	
ADOPTED DATE	4/14/04

STANDARD DRAWING NUMBER **21**





SECTION A-A



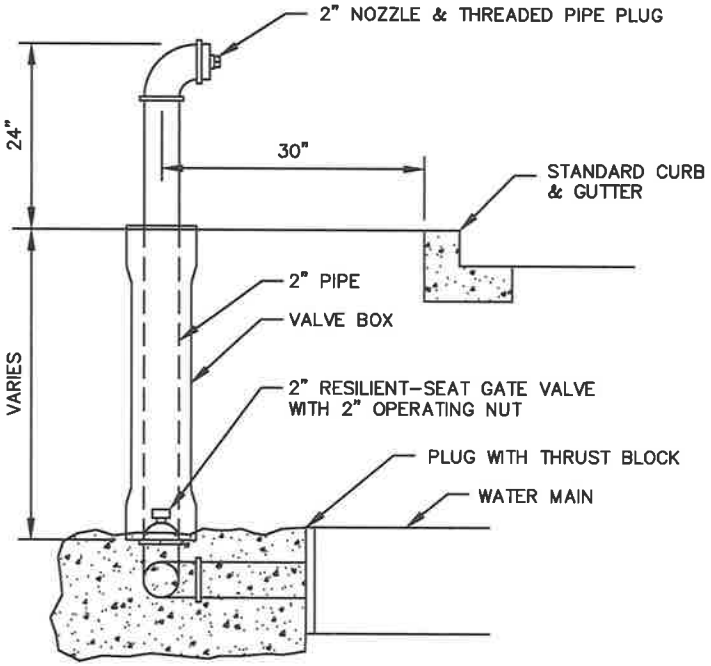
SECTION B-B

DIPSTONE OUTLET

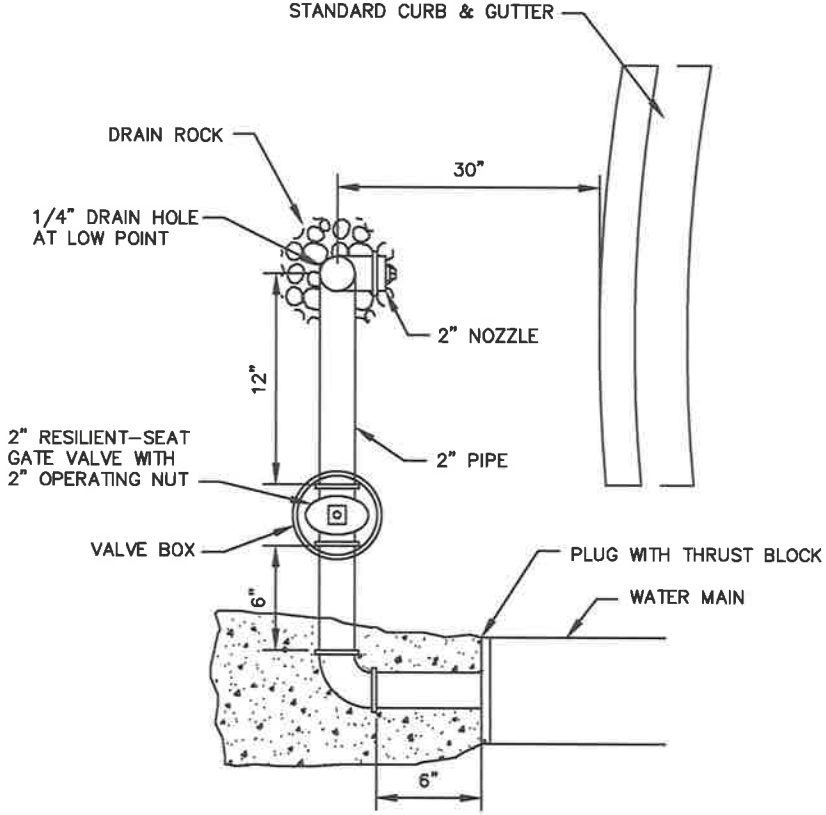
N.T.S.

GENERAL NOTES

1. ALL MATERIALS, CONSTRUCTION, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH ALPINE CITY SPECIFICATIONS AND AS DIRECTED BY THE ALPINE CITY ENGINEER OR HIS REPRESENT.
2. ALL CONCRETE TO BE 4000 P.S.I. @ 28 DAYS.
3. UNDER CONDITIONS WHERE PIPE SIZE, PIPE TYPE, OR EARTH COVER IS CRITICAL USE MODIFIED OUTLET BOX.
4. 1/4" PLATE SHALL BE PLACED ON THE OULET AS A COVER. THE PLAT SHALL BE PAINTED GREY



PROFILE



PLAN VIEW

FLUSH VALVE

N.T.S.

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NO	REVISION	BY	APP'D	DATE

ALPINE 1850

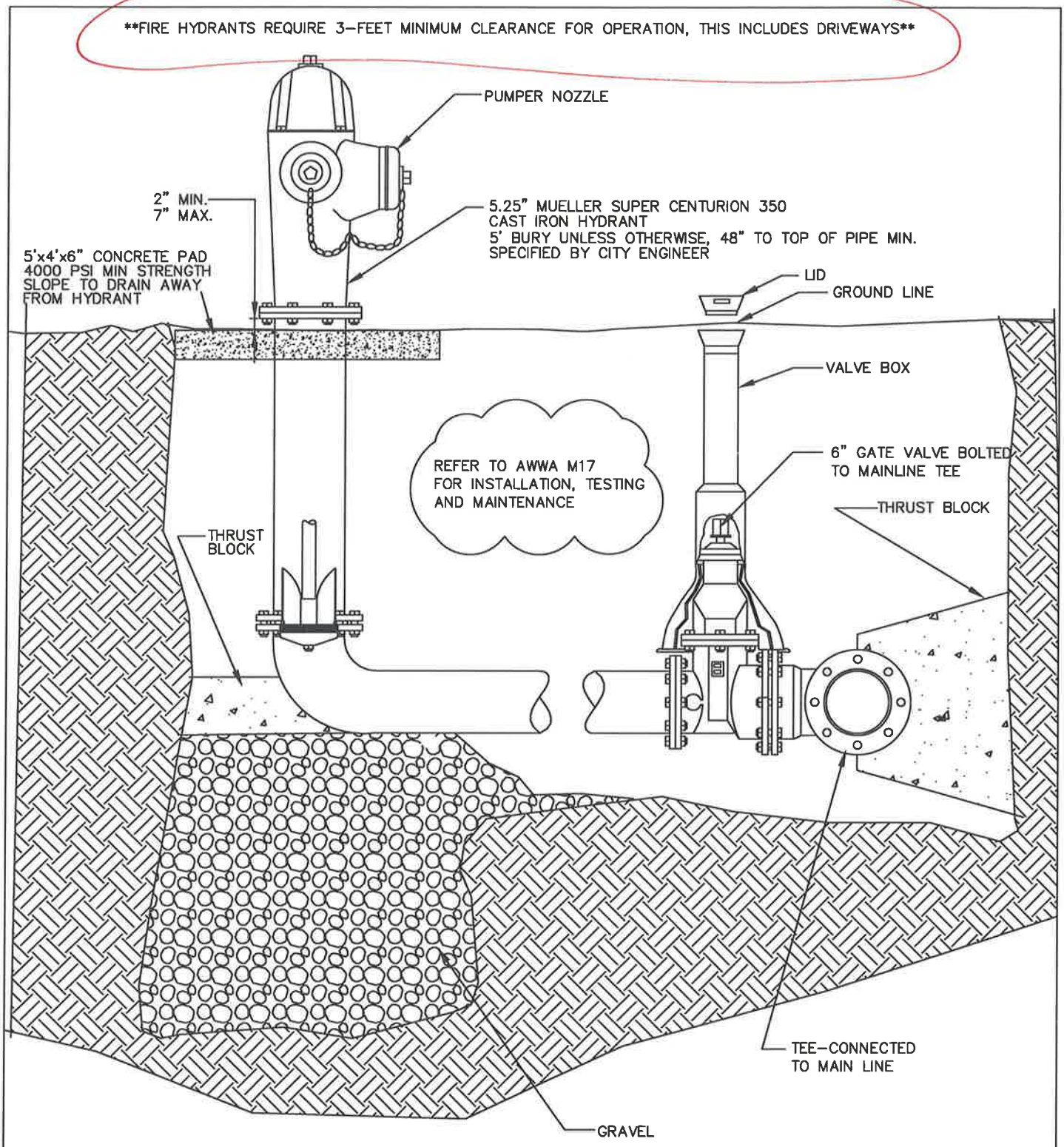
CAD FILE: G:\ENGINEERING\CODES & STANDARD SPECIFICATIONS AND DRAWINGS\2013 CITY SPEC AND DETAILS - PROPOSED\CITY DETAILS\22 FLUSH VAL

FLUSH VALVE (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 22

PLOT SCALE	N.T.S
DRAWN BY	WIM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	4/14/04



STANDARD FIRE HYDRANT DETAIL

N.T.S.

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REVISION

NO		BY	APRV	DATE

ALPINE
1850

TYPICAL FIRE HYDRANT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE:

STANDARD DRAWING NUMBER	23
PLOT SCALE	N.T.S
DRAWN BY	WJM
DESIGN BY	
CHECKED BY:	
ADOPTED DATE	4-14-04

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NO	BY (INIT)	DATE

REVISION

ALPINE 1850

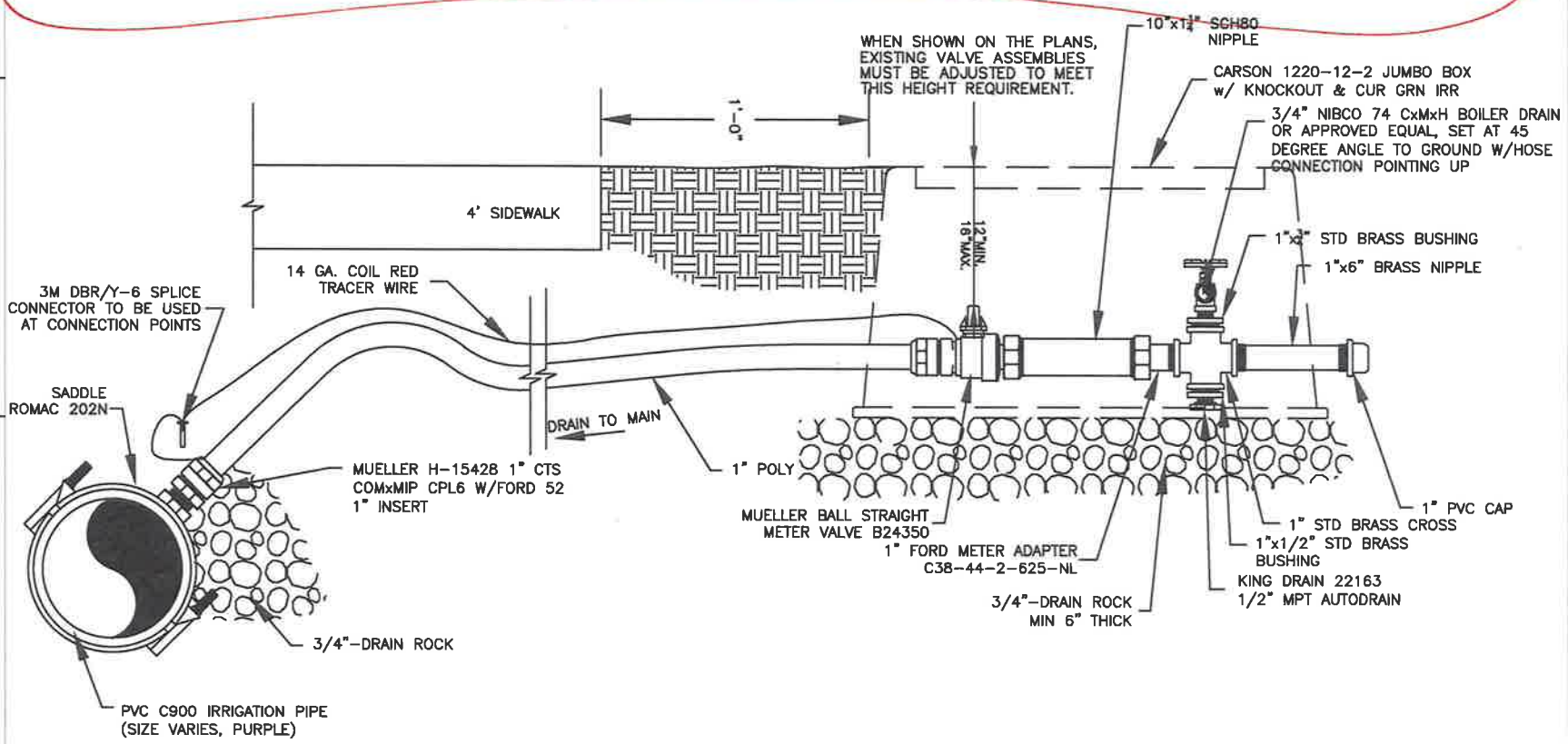
Pressurized Irrigation Distribution System

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

DESIGNED BY	
CHECKED BY	
DRAWN BY	BDB
PROJECT	N/A
ADOPTED DATE	8/10/05

STANDARD DRAWING NUMBER 24

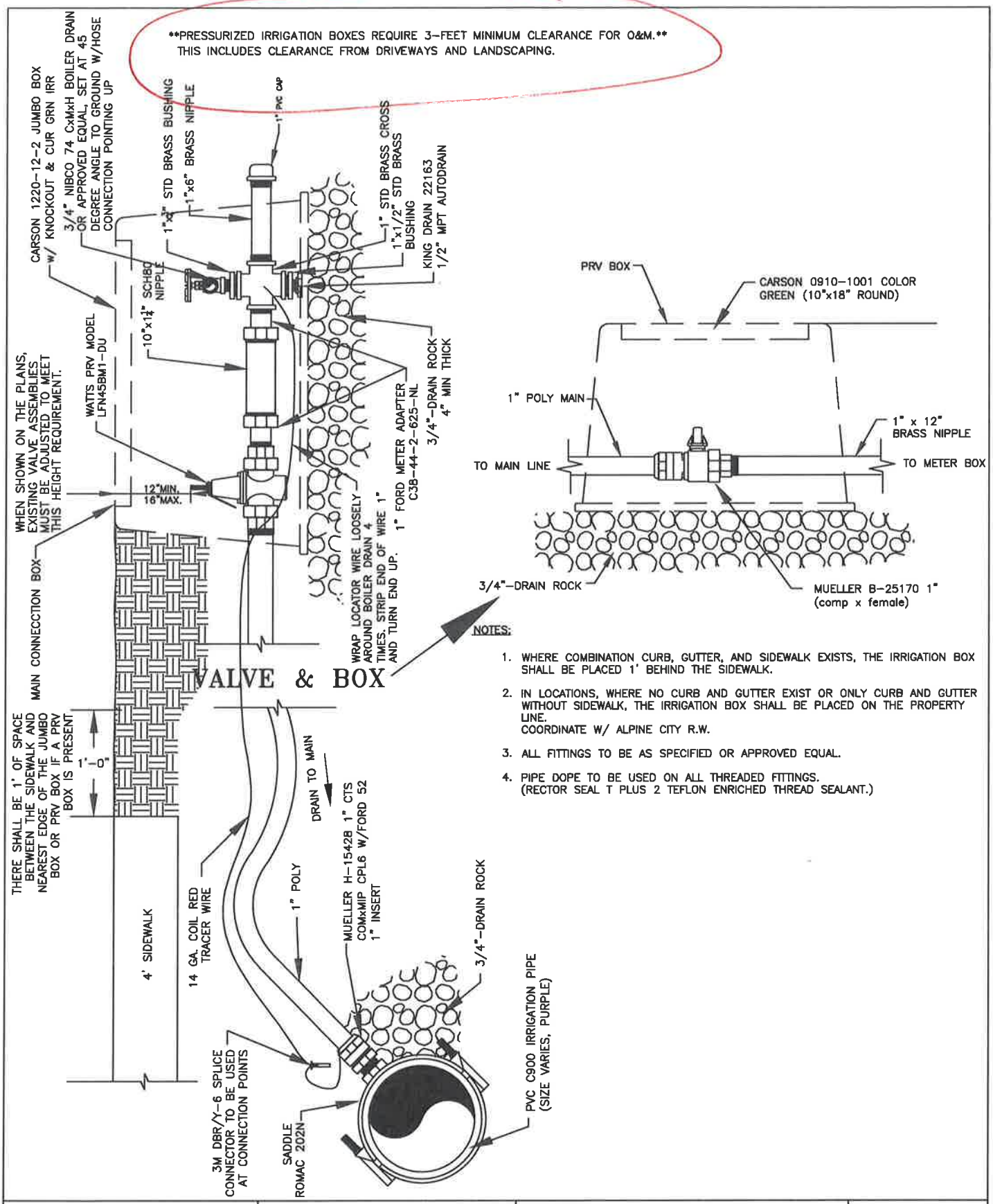
PRESSURIZED IRRIGATION BOXES REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.



NOTES:

1. WHERE COMBINATION CURB, GUTTER, AND SIDEWALK EXISTS, THE IRRIGATION BOX SHALL BE PLACED 1' BEHIND THE SIDEWALK.
   IN LOCATIONS, WHERE NO CURB AND GUTTER EXIST OR ONLY CURB AND GUTTER WITHOUT SIDEWALK, THE IRRIGATION BOX SHALL BE PLACED ON THE PROPERTY LINE.

PRESSURIZED IRRIGATION BOXES REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M.
THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.



NOTES:

1. WHERE COMBINATION CURB, GUTTER, AND SIDEWALK EXISTS, THE IRRIGATION BOX SHALL BE PLACED 1' BEHIND THE SIDEWALK.
2. IN LOCATIONS, WHERE NO CURB AND GUTTER EXIST OR ONLY CURB AND GUTTER WITHOUT SIDEWALK, THE IRRIGATION BOX SHALL BE PLACED ON THE PROPERTY LINE.
   COORDINATE W/ ALPINE CITY R.W.
3. ALL FITTINGS TO BE AS SPECIFIED OR APPROVED EQUAL.
4. PIPE DOPE TO BE USED ON ALL THREADED FITTINGS.
   (RECTOR SEAL T PLUS 2 TEFLON ENRICHED THREAD SEALANT.)

STATEMENT OF USE

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NO		BY	APRV	DATE

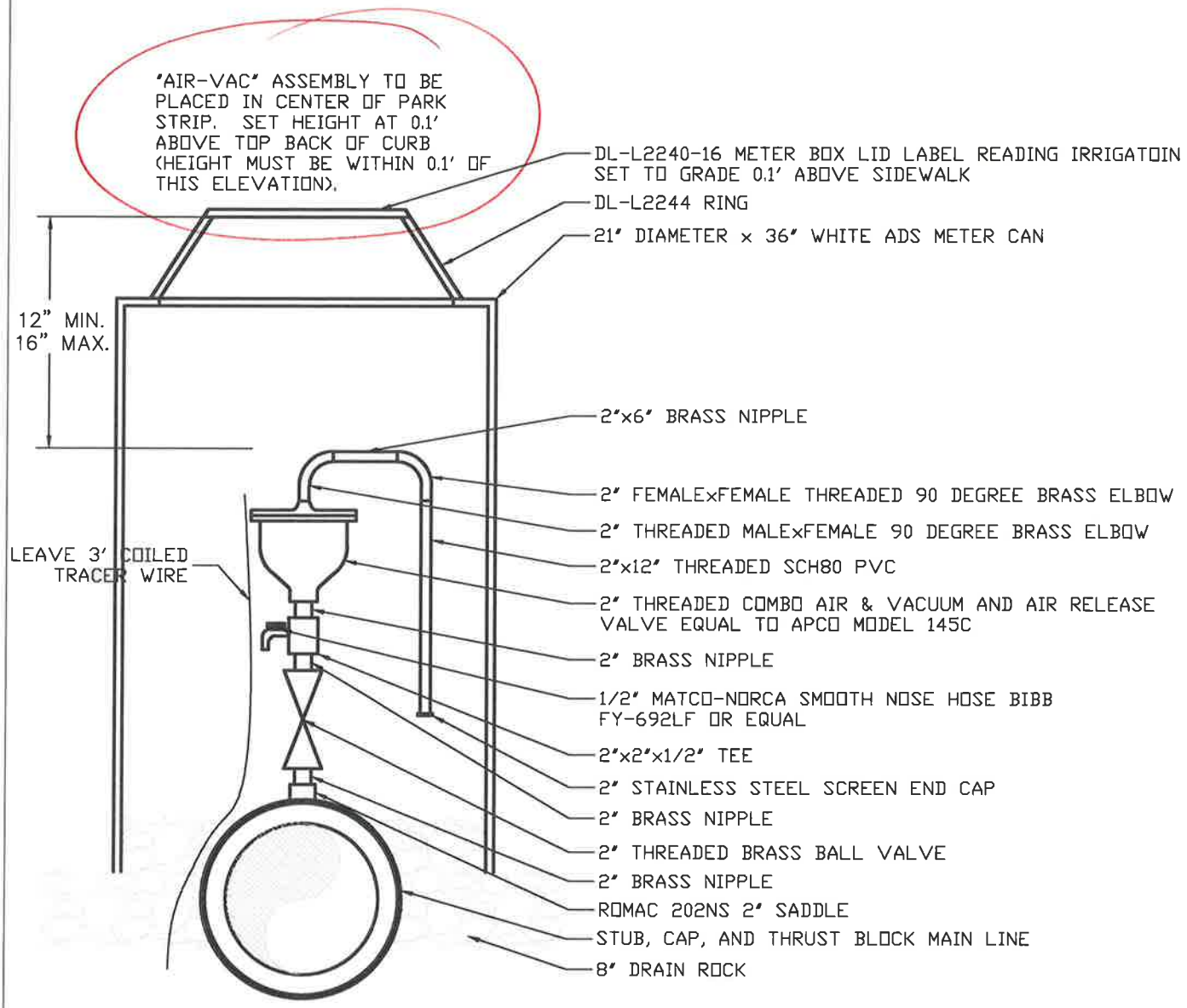
ALPINE
1850

Pressurized Irrigation System w/PRV

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: G:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2013 CITY SPEC AND DETAILS - PROPOSED\CITY DETAILS\25 PI CONNECTION AND PRV

STANDARD DRAWING NUMBER:	25
PLOT SCALE:	N.T.S.
DRAWN BY:	B.D.G.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	8/10/05



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REVISION

NO		BY	APPR	DATE

ALPINE 1850

SECONDARY WATER AIR-VAC ASSEMBLY

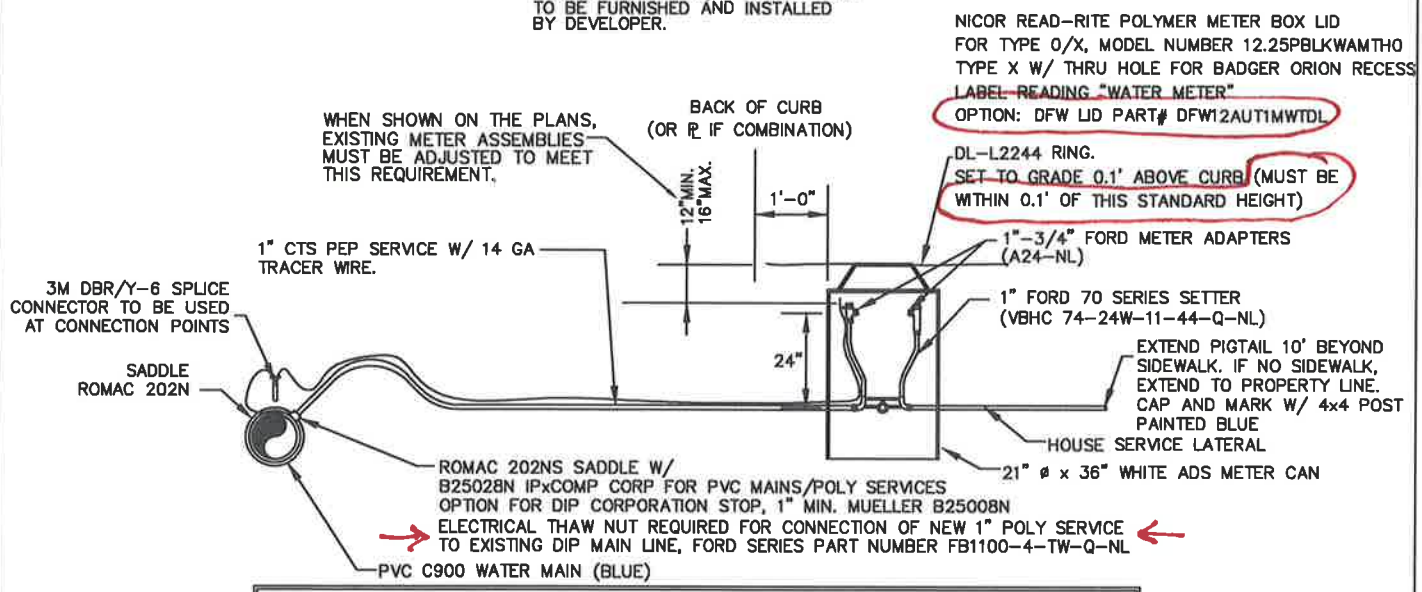
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: I:\ENGINEERING\DOCS & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\DOCS CITY SPEC AND DETAILS - PROPOSED\TH DETAILS\26 AIRVAC

STANDARD DRAWING NUMBER	26
PLOT SCALE	NTS
DRAWN BY	WIM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	12/7/18

CULINARY WATER METERS REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.

NOTE: METER BOX, COVER, COPPERSETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER.

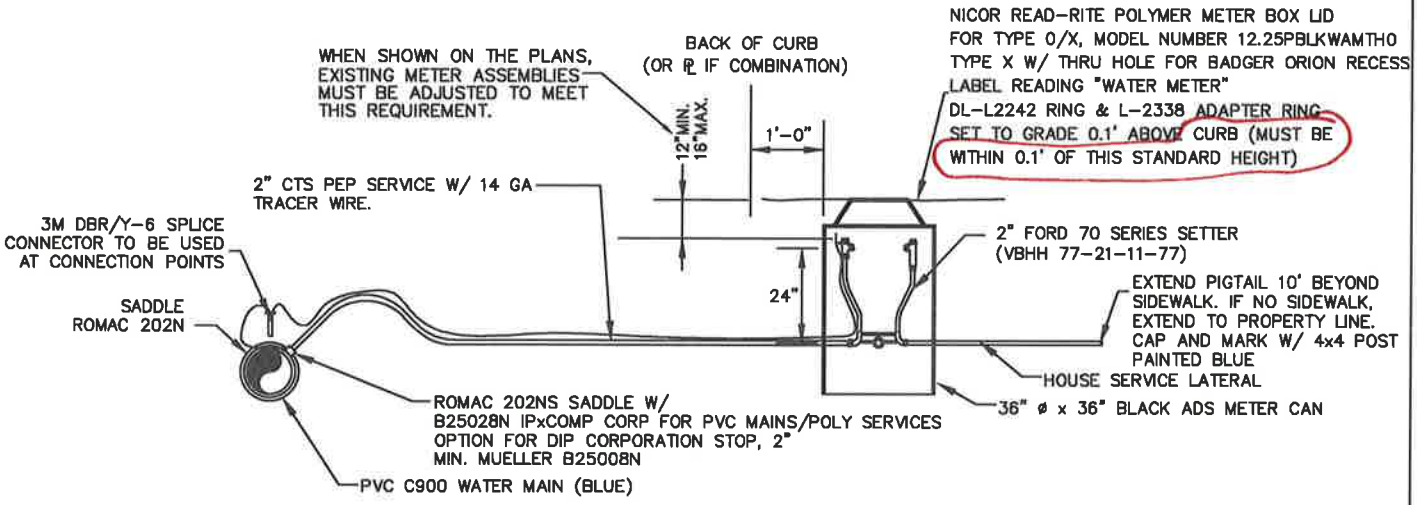


NOTE: 1" SERVICES ARE STANDARD FOR ALL NEW DEVELOPMENT, AS SHOWN. REPLACEMENT PARTS FOR EXISTING 3/4" SERVICES CONSISTS OF: 3/4" FORD SERIES SETTER - VBHC72-24W-11-33-NL CORPS ARE THE SAME PART NUMBERS, SPECIFIED AS 3/4" INSTEAD OF 1"

3/4" & 1" WATER SERVICE CONNECTIONS

N.T.S.

NOTE: METER BOX, COVER, COPPERSETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER.



NOTE: FOR 1.5" SERVICES: ALL PARTS SHOWN ABOVE ARE THE SAME EXCEPT THE SERVICE LINE AND SETTER, WHICH WOULD BOTH BE CHANGED TO 1.5"

1.5" & 2" WATER SERVICE CONNECTIONS

N.T.S.

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NO		BY	APRL	DATE

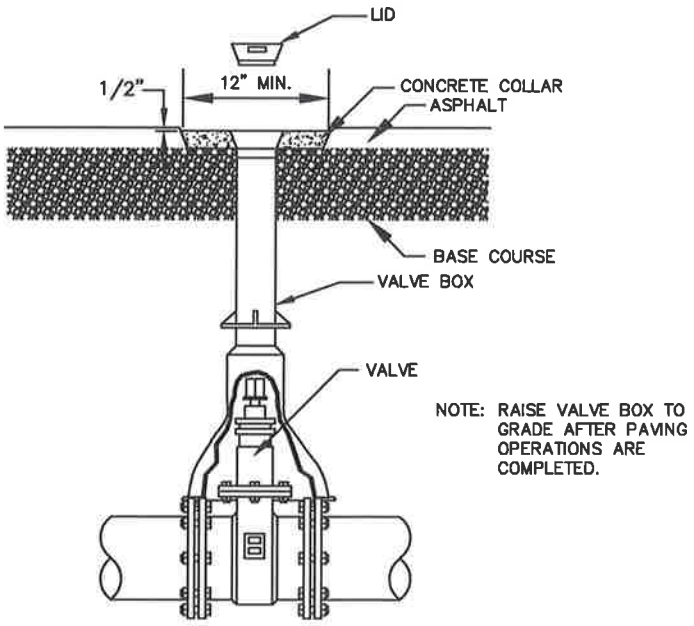
ALPINE 1850

CAD FILE: A:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND ENGINEERING\ALPINE CITY SPEC AND DETAILS - PROPOSED\CITY DETAILS\07 WATER SERVICE

WATER SERVICE CONNECTION DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	27
PLOT SCALE:	N.T.S
DRAWN BY:	WIM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



VALVE BOX COLLAR DETAIL

N.T.S.

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NO.		BY	APRI	DATE

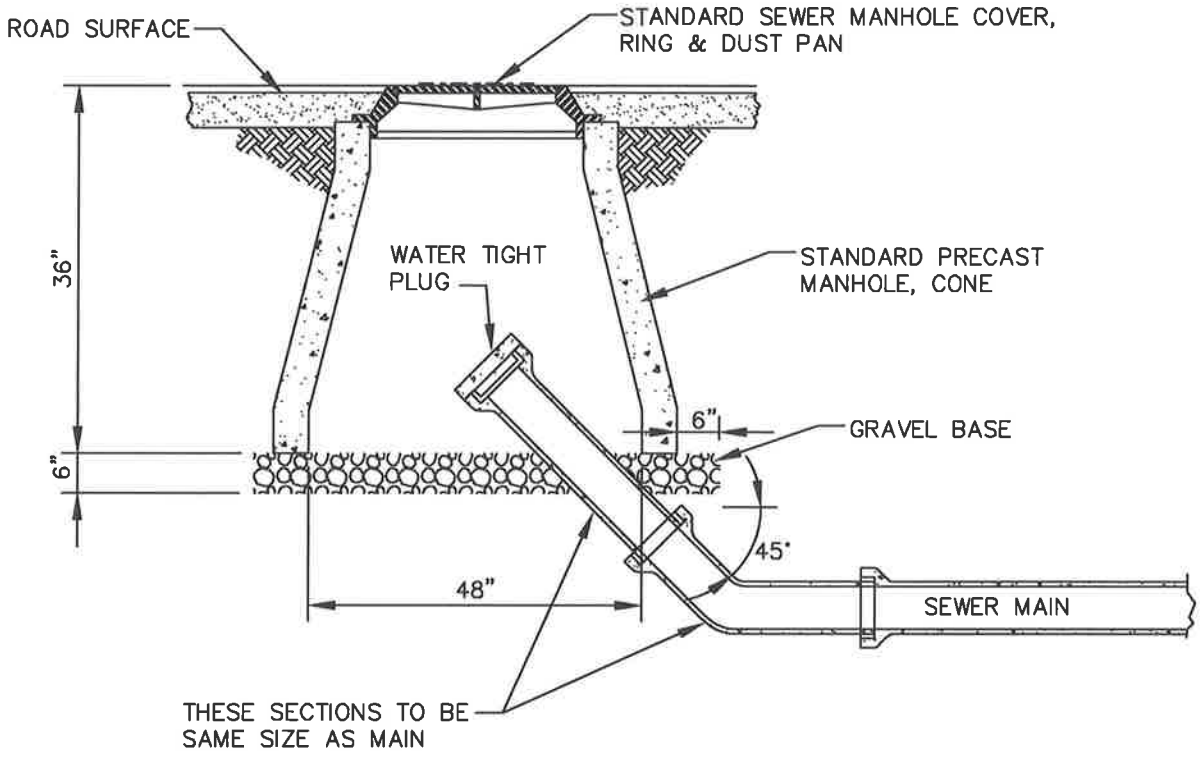
ALPINE 1850

CAD FILE: S:\ENGINEERING\DOCS & STANDARD SPECS\STANDARD SPECIFICATIONS AND ENGINEERING\2003 CITY SPEC AND DETAILS - PROPOSED\CITY DETAILS\27A VALVE BOX

VALVE BOX DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	27a
PLOT SCALE	N.T.S
DRAWN BY	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE	4/14/04



TEMPORARY SEWER MAIN CLEANOUT

N.T.S.

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REVISION

NO.		BY	APRI	DATE

ALPINE 1850

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TEMPORARY SEWER MAIN CLEANOUT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

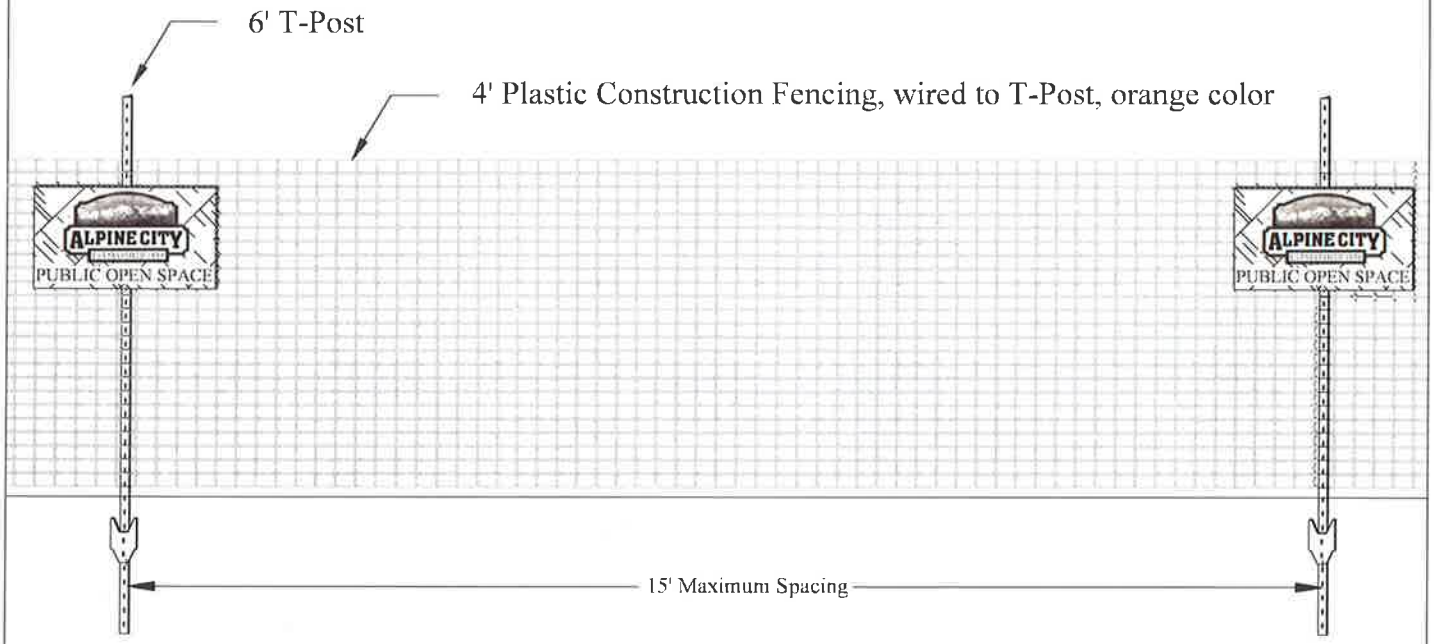
STANDARD DRAWING NUMBER:	28
PLOT SCALE	N.T.S
DRAWN BY	WJM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	4/14/04

ALPINE CITY
ESTABLISHED 1850

PUBLIC OPEN SPACE

SIGN SPECIFICATIONS

- SIGN TO BE 18"x24"
- PRINTED WITH BLACK LETTERS, WHITE BACKGROUND
- LAMINATED AND STAPLED TO PLYWOOD
- WIRED TO T-POSTS
- SPACED ONE PER JOB SITE IN A VISIBLE LOCATION IF MORE THAN 300' OF FENCING REQ'D, ONE SIGN TO BE PLACED EVERY 300'



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REVISION

NO.		BY	APRL	DATE

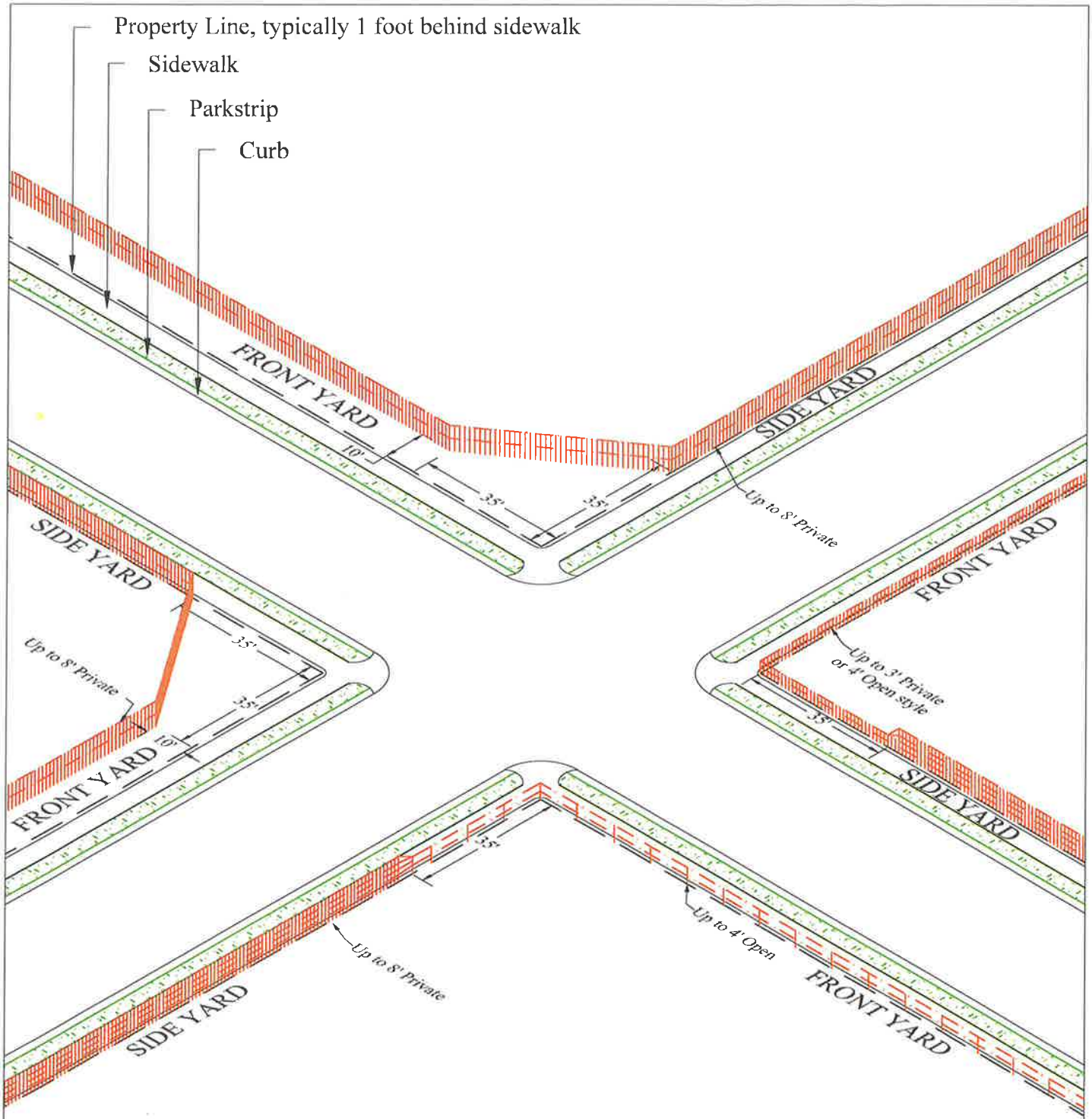
ALPINE
1850

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC AND DETAILS - PROPOSED\CITY DETAILS\29 PUBLIC OPEN SPACE FENCING

PUBLIC OPEN SPACE FENCING

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	29
PLOT SCALE	N.T.S
DRAWN BY	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE	4/14/04



NOTE: SEE DEVELOPMENT CODE SECTION 3.21.6
ALL PARTS OF THE FENCE TO BE PLACED NO CLOSER THAN 1 FOOT BEHIND SIDEWALK (OR ON PROPERTY LINES) WITH HEIGHTS AS SHOWN. FREE BUILDING PERMIT REQUIRED.

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REVISION

NO.		BY	APRL	DATE

ALPINE
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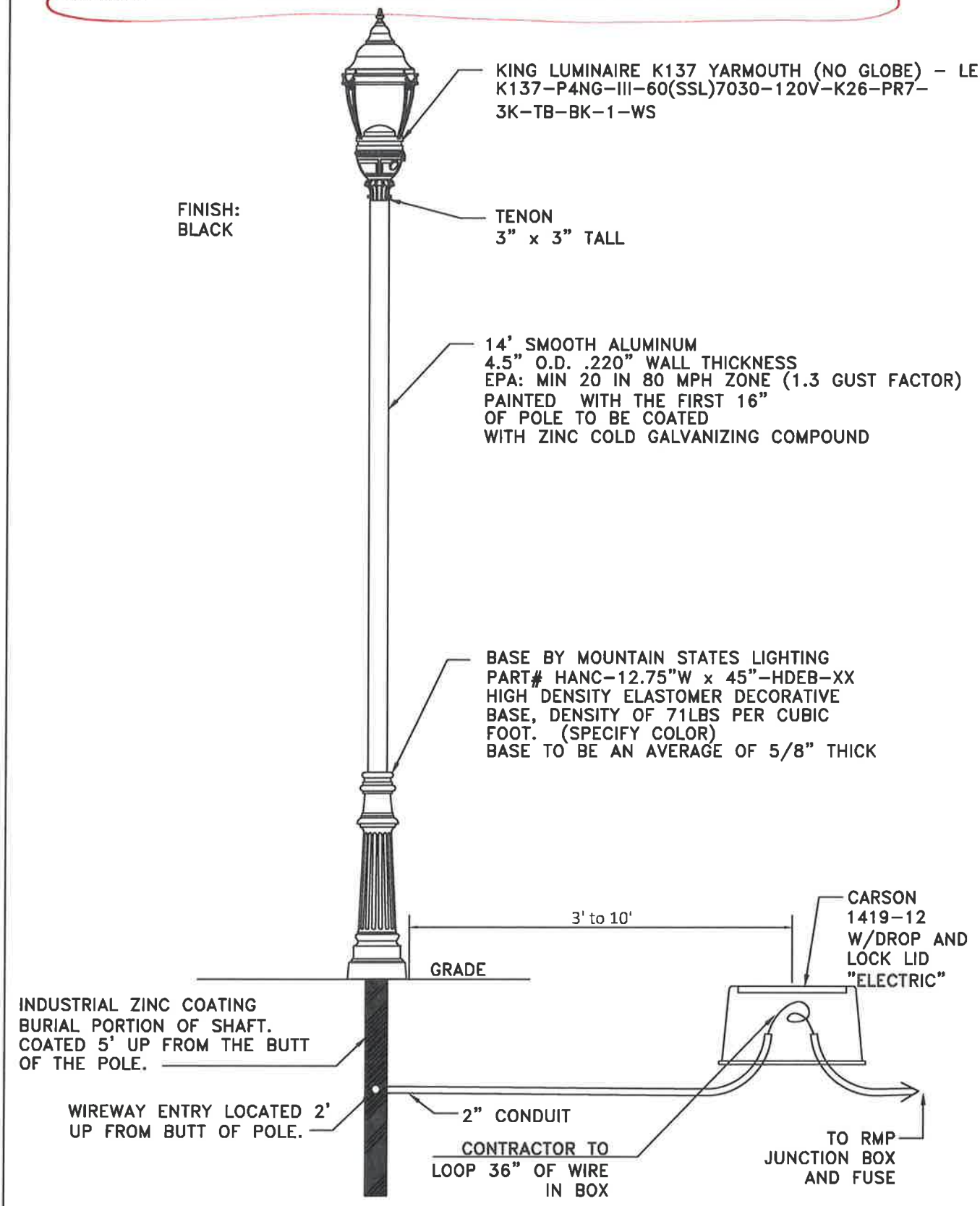
FENCING REGULATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: G:\ENGINEERING\CODES & STANDARD SPECIFICATIONS AND DRAWINGS\2021 CITY SPEC AND DETAILS - PROPOSED\30 FENCING REGULATIONS

STANDARD DRAWING NUMBER:	30
PLOT SCALE	N.T.S
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE	4/14/04

STREETLIGHTS REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.



STATEMENT OF USE

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NO.		BY	APPR.	DATE

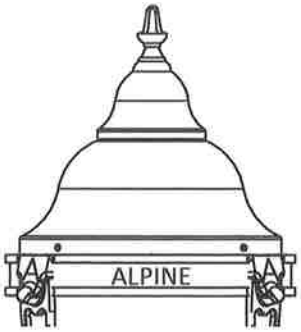
ALPINE
1850

RESIDENTIAL STREET LIGHT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: S:\[illegible]

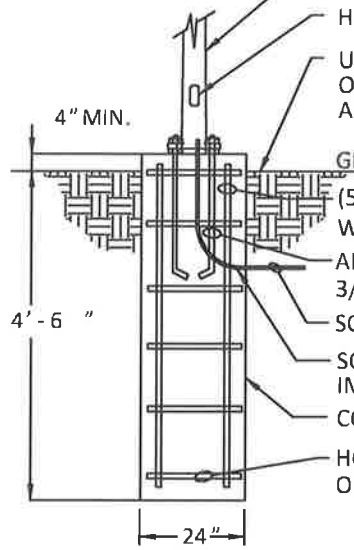
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PLOT SCALE	NTS
DRAWN BY	WJM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	DRAFT



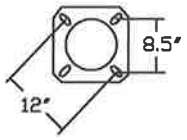
ENLARGED FIXTURE TOP

NOTE!!
IF DEPTH CANNOT BE MET MASS MUST BE EQUIVALENT TO MASS SHOWN

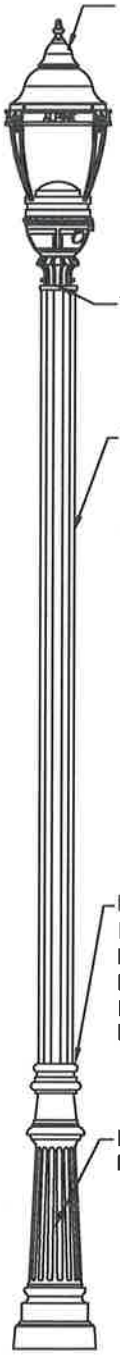
FINISH; BLACK



CONCRETE BASE DETAIL



ANCHOR BASE DETAIL
12"BOLT CIRCLE
ANCHOR BOLTS: 3/4"x 18"



KING LUMINAIRE K137 YARMOUTH (NO GLOBE) - LED
K137-P4NG-III-100(SSL)7030-120V-K26-PR7-3K-TB-BK-1-WS

TENON 3"X3" TALL

14' EXTRUDED FLUTED ALUMINUM
5.0" O.D. .250" WALL THICKNESS
EPA MIN 20 IN 80 MPH ZONE (1.3 GUST FACTOR)
PAINTED WITH THE FIRST 16"
OF POLE TO BE COATED
WITH ZINC COLD GALVANIZING COMPOUND

BASE BY MOUNTAIN STATES
PART# HANC-12.75"W x 45"-HDEB-BK
HIGH DENSITY ELASTOMER DECORATIVE
BASE, DENSITY OF 71LBS PER CUBIC
DENSITY: 71LBS PER CUBIC FOOT.
BASE TO BE AN AVERAGE OF 5/8" THICK

HANDHOLE LOCATED 12" ABOVE GRADE
BEHIND TWO-PIECE DECORATIVE BASE.

** SEE DETAIL 31 **
FOR REQUIRED
JUNCTION BOX
AT BASE

STREETLIGHTS REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.

STATEMENT OF USE

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REVISION

NO		BY	APRD	DATE

ALPINE
1850

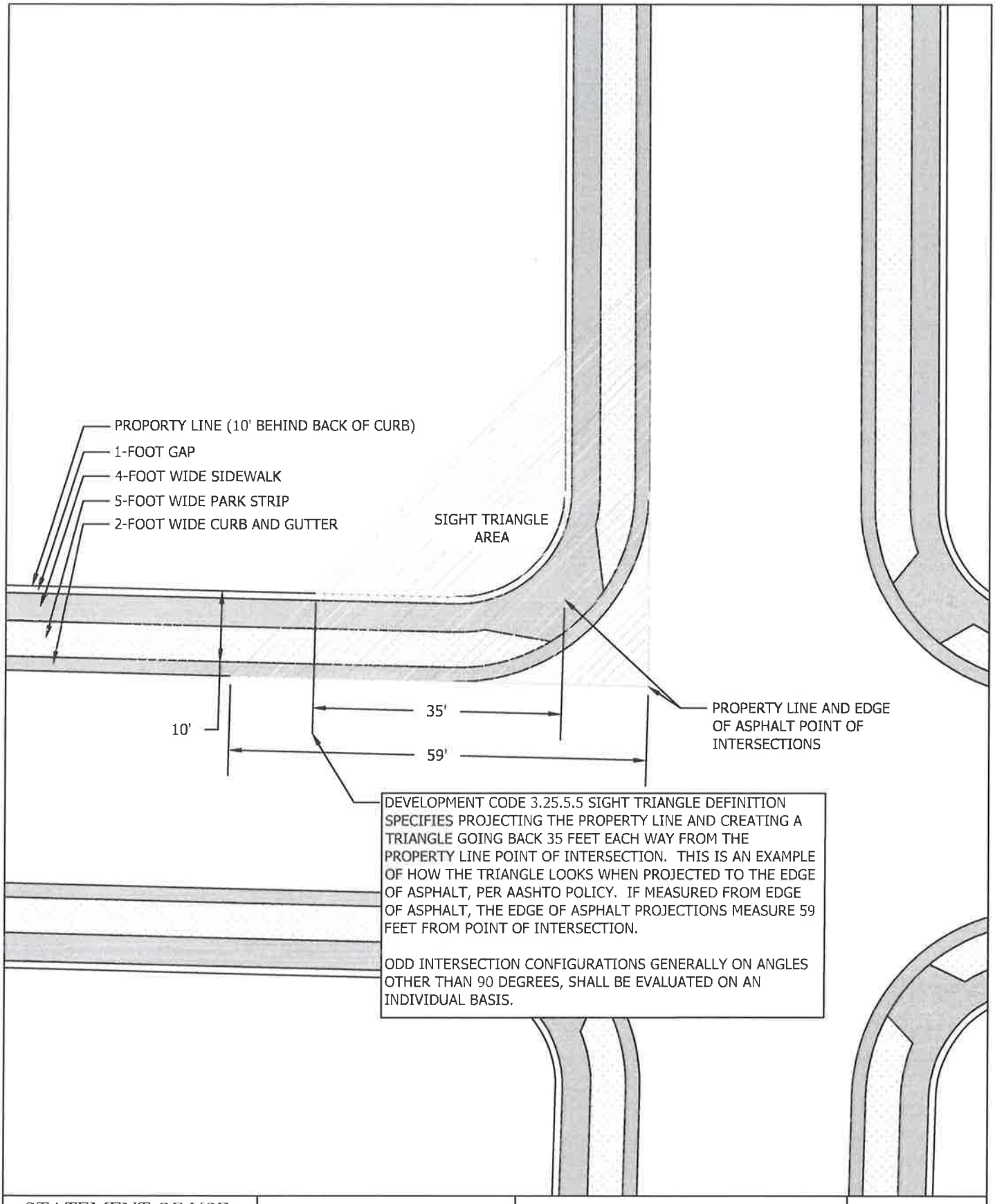
DOWNTOWN STREET LIGHT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: B:\[illegible]

STANDARD DRAWING NUMBER 31a

PLOT SCALE	N.T.S
DRAWN BY	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE	12/7/18



DEVELOPMENT CODE 3.25.5.5 SIGHT TRIANGLE DEFINITION SPECIFIES PROJECTING THE PROPERTY LINE AND CREATING A TRIANGLE GOING BACK 35 FEET EACH WAY FROM THE PROPERTY LINE POINT OF INTERSECTION. THIS IS AN EXAMPLE OF HOW THE TRIANGLE LOOKS WHEN PROJECTED TO THE EDGE OF ASPHALT, PER AASHTO POLICY. IF MEASURED FROM EDGE OF ASPHALT, THE EDGE OF ASPHALT PROJECTIONS MEASURE 59 FEET FROM POINT OF INTERSECTION.

ODD INTERSECTION CONFIGURATIONS GENERALLY ON ANGLES OTHER THAN 90 DEGREES, SHALL BE EVALUATED ON AN INDIVIDUAL BASIS.

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NO.		BY	APPD	DATE

ALPINE 1850

CAD FILE:

SIGHT TRIANGLE

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	32
PLOT SCALE	NTS
DRAWN BY	JM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	10/1/11

PASTURE GRASS MIX

20 lbs CABIN BLEND and 5 lbs ROCKY MOUNTAIN WILDFLOWER mix per acre

CABIN BLEND	
SPECIES	**% BY WEIGHT**
MOUNTAIN BROME	30
SLENDER WHEATGRASS	25
SANDBERG BLUEGRASS	5
BIG BLUEGRASS	5
SHEEP FESCUE	5
WESTERN WHEATGRASS	20
BEARDLESS BLUEBUNCH WHEATGRASS	10

ROCKY MOUNTAIN WILDFLOWER MIX	
SPECIES	**% BY WEIGHT**
BLUE FLAX	9
PURPLE CONEFLOWER	10
BLACKEYED SUSAN	2
CALIFORNIA POPPY	1
WALLFLOWER	6
FIREWHEEL	7
WILD LUPINE	10
LANCE-LEAVED COREOPSIS	8
PRAIRIE CONEFLOWER	2
MEXICAN HAT	2
FLANDERS POPPY	2
YELLLOW COSMOS	5
BACHELOR BUTTON	6
PLAINS COREOPSIS	2
MOUNTAIN PHLOX	1
ROCKY MOUNTAIN IRIS	3
MOUNTAIN LUPINE	6
SHOWY GLODENEYE	3
BLANKET FLOWER	6

WETLANDS/STREAM BANK GRASS MIX

15 LBS PER ACRE

WETLAND/STREAMBANK MIX	
SPECIES	**% BY WEIGHT**
INLAND SALTGRASS	13.3
WESTERN WHEATGRASS	13.3
STREAMBANK WHEATGRASS	13.3
NEBRASKA SEDGE	20
BLUEJOINT REEDGRASS	1.67
BEAKED SEDGE	20
BALTIC RUSH	1.67
MEADOW SEDGE	16.67

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REVISION

NO		BY	APR	DATE

ALPINE 1850

CAD FILE: C:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2018 CITY SPEC AND DETAILS - PROPOSED\07 DETAILS\33 SEED MIXTURES

STANDARD SEED MIXTURES

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

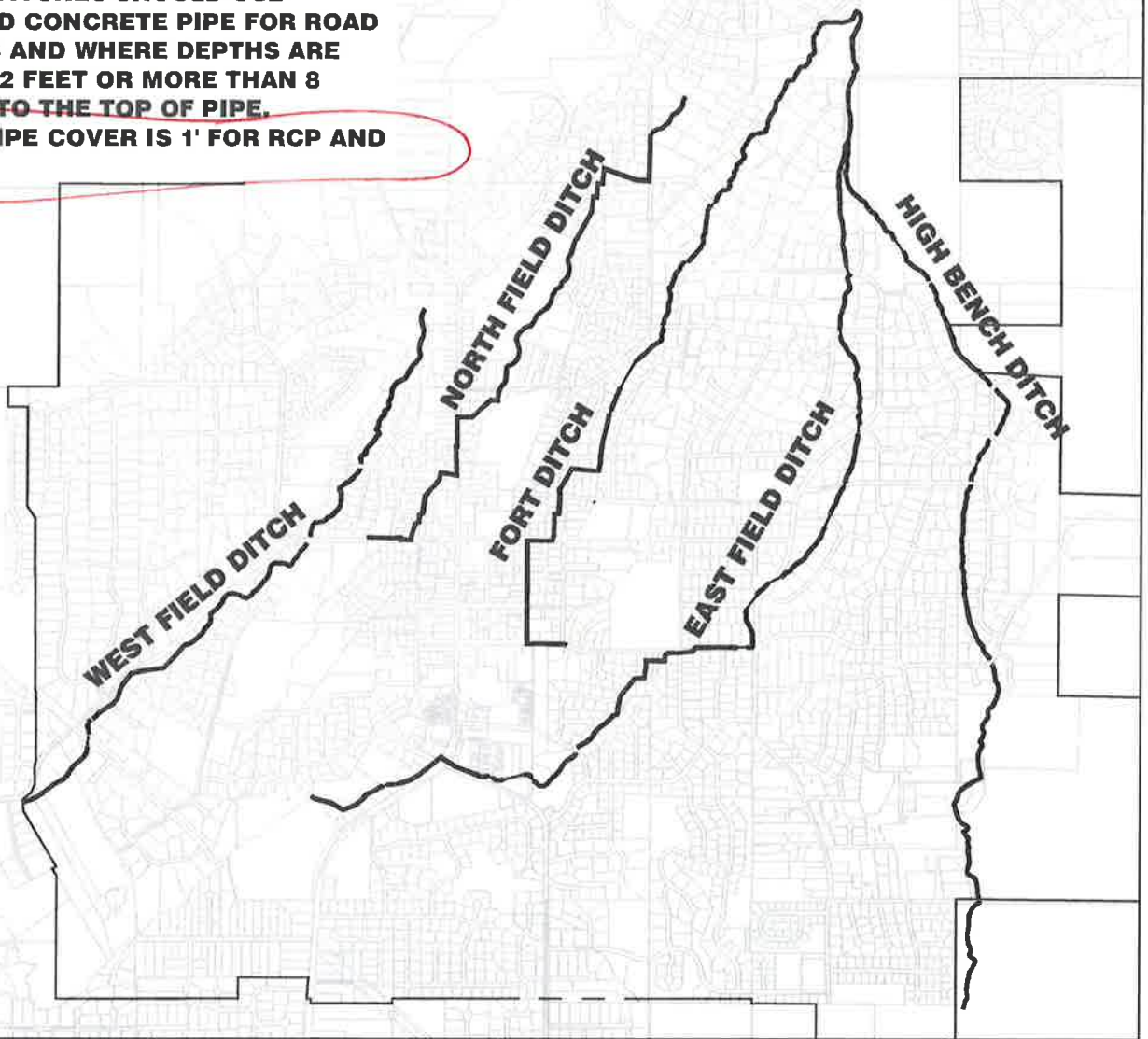
STANDARD DRAWING NUMBER	33
PLOT SCALE:	N.T.S
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/7/18

PER DEVELOPMENT CODE 4.07.190, ALL IRRIGATION COMPANY DITCHES ARE REQUIRED TO BE PIPED UNDERGROUND AS PART OF DEVELOPMENT.

THE MINIMUM PIPE SIZE FOR IRRIGATION CO. NEEDS IS AS FOLLOWS:
WEST FIELD DITCH - 36 INCHES
NORTH FIELD DITCH - 30 INCHES
FORT DITCH - 30 INCHES
EAST FIELD DITCH - 36 INCHES
HIGH BENCH DITCH - 30 INCHES

THE SIZING OF PIPES FOR ALL DITCHES MUST ALSO CONSIDER THE NEEDS OF THE CITY. COORDINATION WITH ALPINE CITY IS REQUIRED.

ALL PIPED DITCHES SHOULD USE REINFORCED CONCRETE PIPE FOR ROAD CROSSINGS AND WHERE DEPTHS ARE LESS THAN 2 FEET OR MORE THAN 8 FEET DEEP TO THE TOP OF PIPE.
MINIMUM PIPE COVER IS 1' FOR RCP AND 2' FOR ADS.



STATEMENT OF USE

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REVISION

NO		BY	APR	DATE

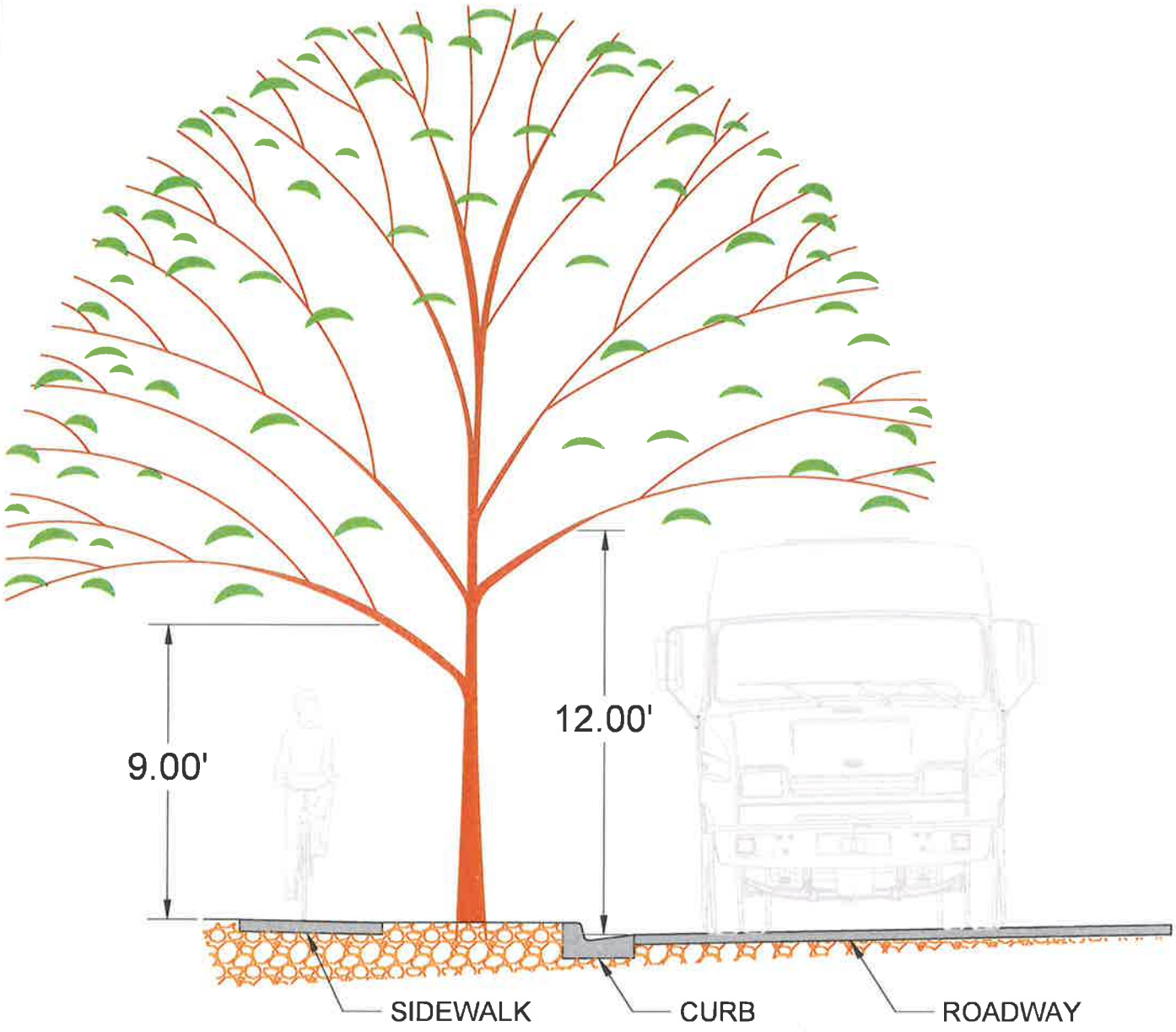
ALPINE
1850

IRRIGATION CO. DITCHES

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE:

STANDARD DRAWING NUMBER:	34
PLOT SCALE:	NTS
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/2/18



Roadway and Sidewalk Tree Trimming Guide

Branches of trees near roadways or sidewalks shall be trimmed to a minimum height of 12' above the edge of asphalt/lip of curb and 9' above the sidewalk as shown

STATEMENT OF USE

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REVISION

NO.		BY	APRL	DATE

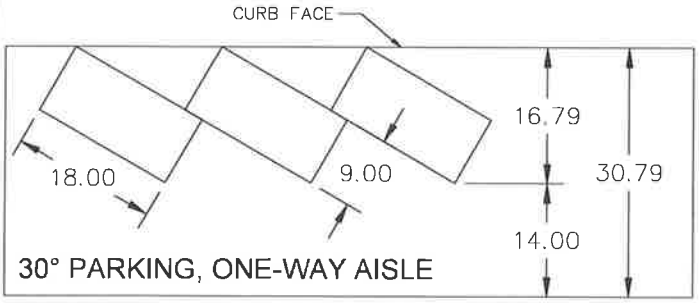
ALPINE 1850

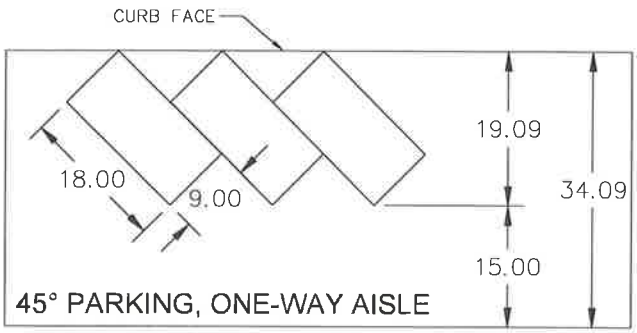
ROADWAY TREE TRIMMING

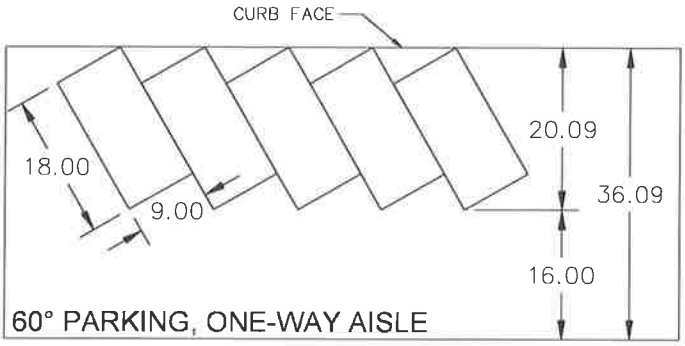
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

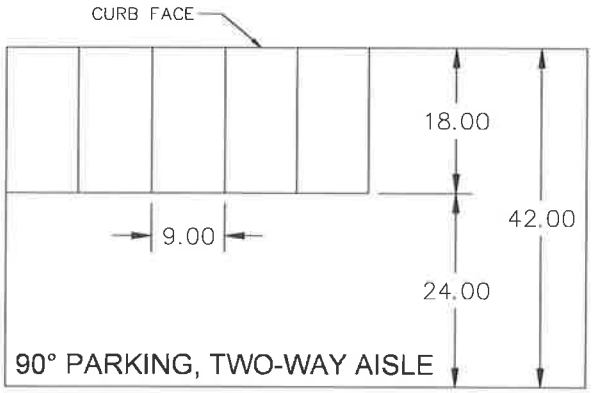
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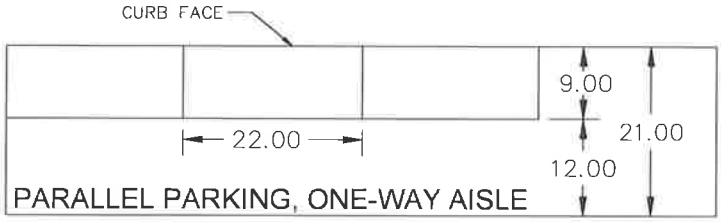
STANDARD DRAWING NUMBER:	35
PLOT SCALE:	NTS
DRAWN BY:	J M
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	11/13/2018

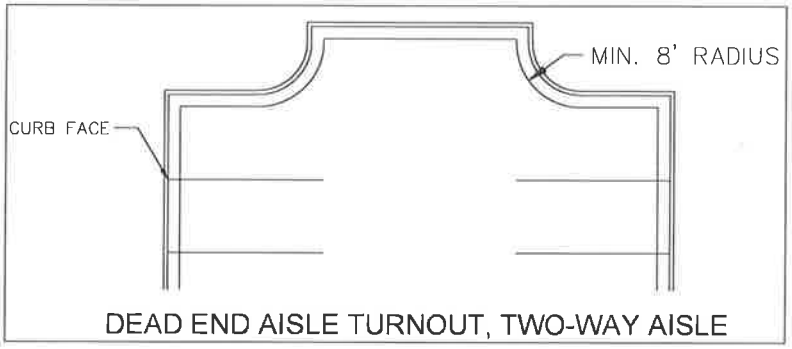












STATEMENT OF USE

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REVISION

NO.		BY	APP.	DATE

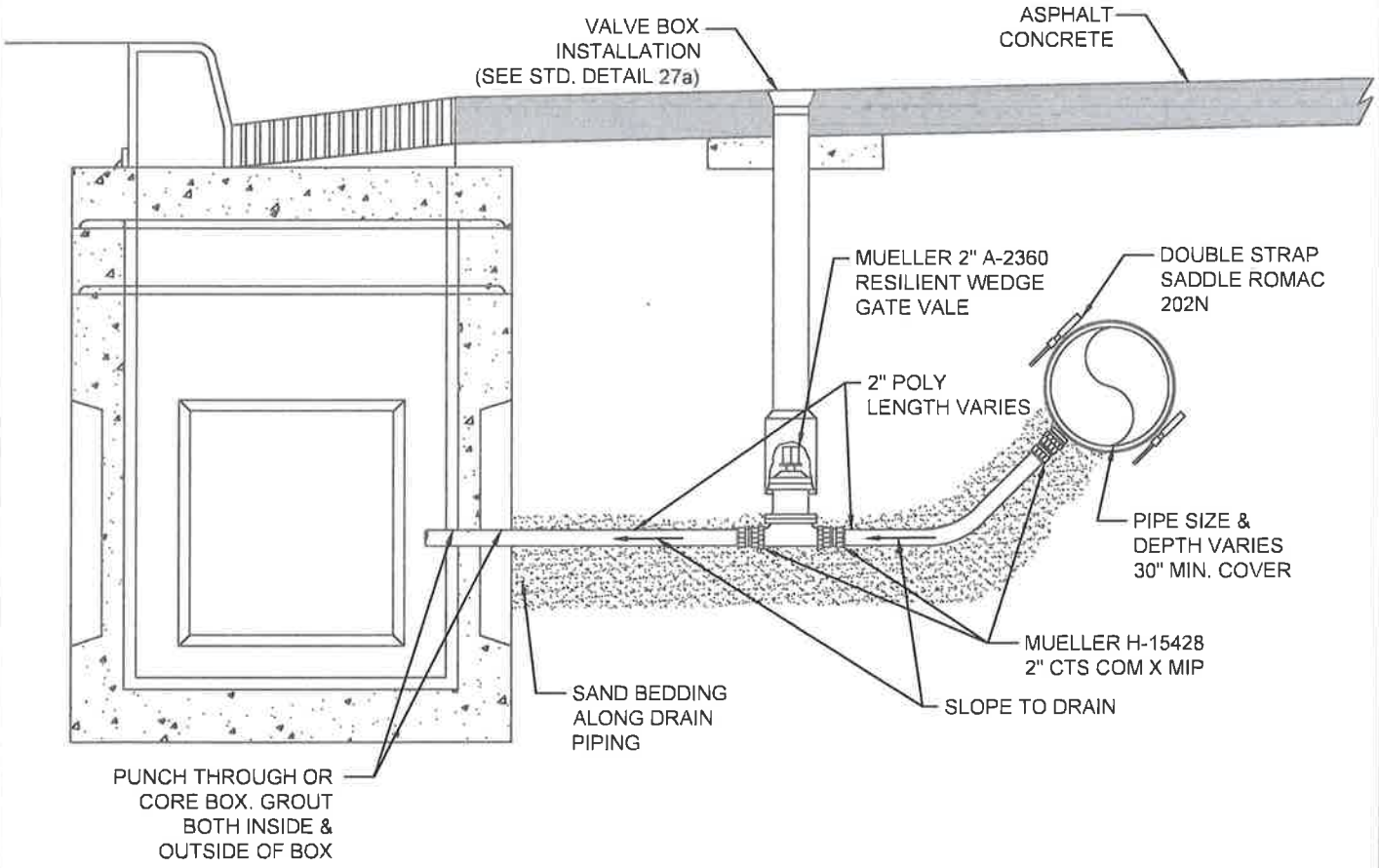
ALPINE
1850

PARKING DIMENSIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: I:\ENGINEERING\STANDARDS & SPECIFICATIONS AND DRAWINGS\2013 STD SPEC AND DETAILS - PROPOSED\CITY DETAILS\08 PARKING DRAWINGS 2.24 EXHIBIT EXPORTED TO 18 FT STALLS

STANDARD DRAWING NUMBER:	36
PLOT SCALE:	N.T.S.
DRAWN BY:	LM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	11/13/2018



NOTES:

1. PROPOSED DRAIN LINE CAN TIE INTO CATCH BASIN BOX (SHOWN) OR SUMP MANHOLE (NOT SHOWN) OR BOX CULVERT (NOT SHOWN)
2. ALL COMPRESSION FITTINGS SHALL INCLUDE A MUELLER 2" CTS PE LINER PART NO. 506141

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REVISION

NO.		BY	APP.	DATE

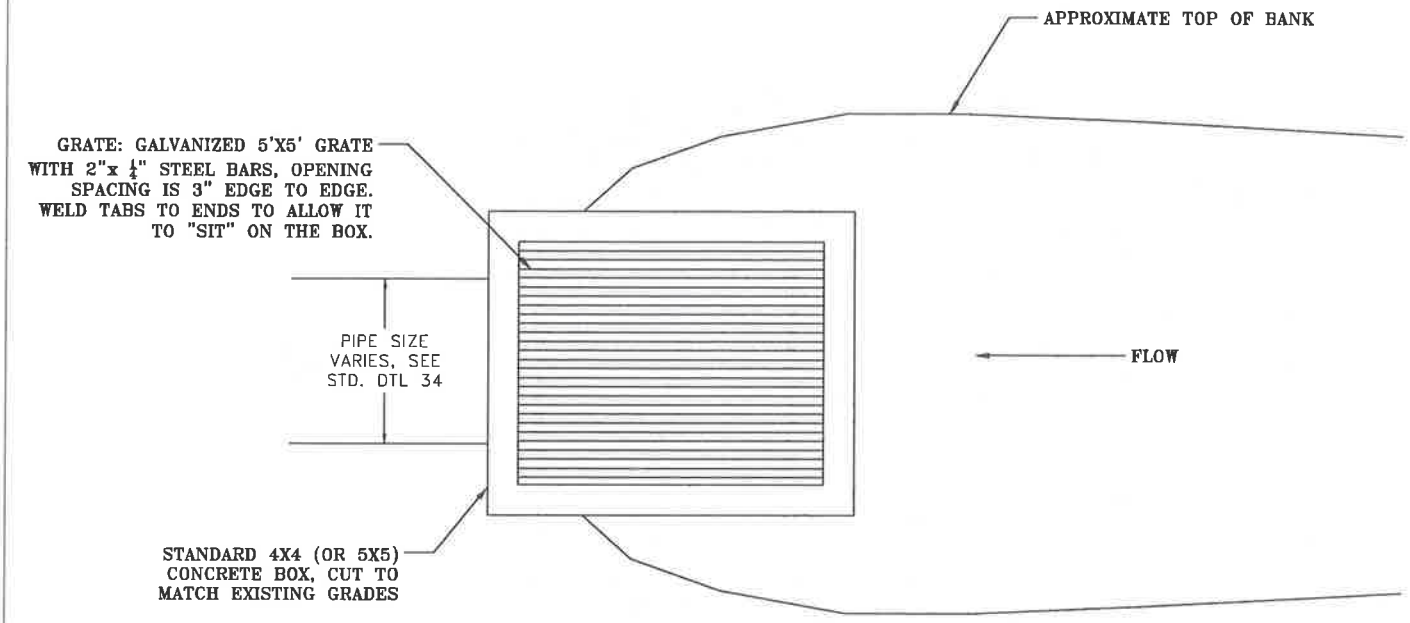
ALPINE 1850

2-INCH PRESSURIZED IRRIGATION DRAIN

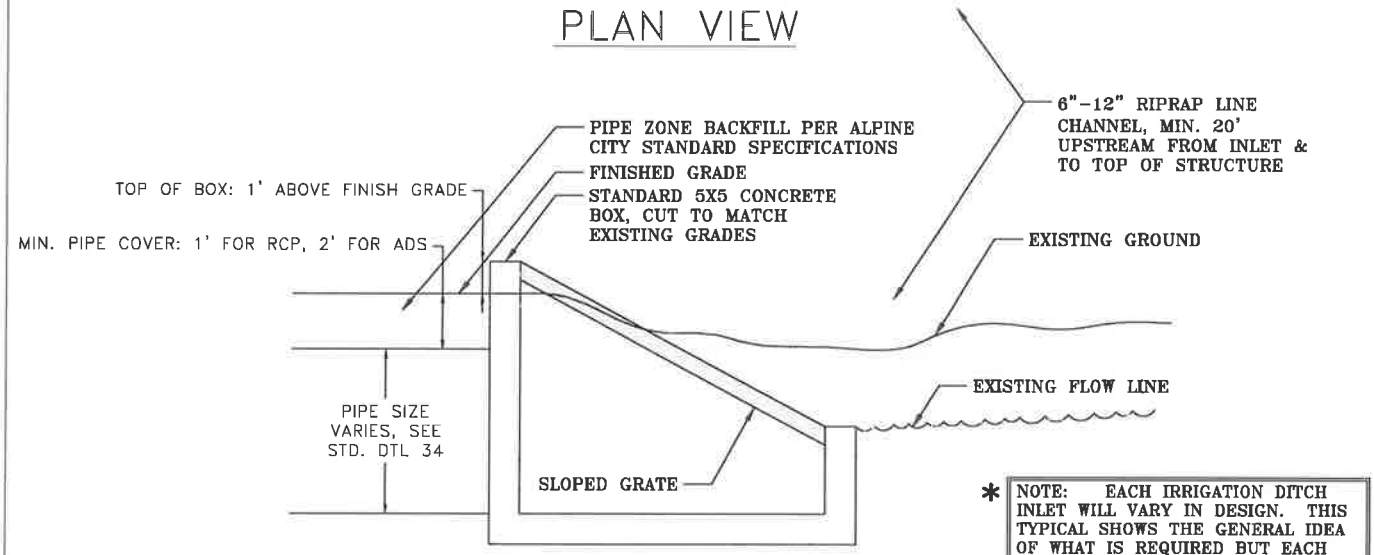
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: [illegible]

STANDARD DRAWING NUMBER:	37
PLOT SCALE:	N.T.S.
DRAWN BY:	J.M.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	



PLAN VIEW



PROFILE

* NOTE: EACH IRRIGATION DITCH INLET WILL VARY IN DESIGN. THIS TYPICAL SHOWS THE GENERAL IDEA OF WHAT IS REQUIRED BUT EACH DESIGN WILL BE DIFFERENT BASED ON ELEVATIONS, MINIMUM DITCH PIPE SIZE REQUIREMENTS (DTL 34), AND OTHER VARIABLES. CITY STAFF WILL WORK WITH THE DESIGN ENGINEER IN EACH SCENARIO.

IRRIGATION DITCH INLET (TYPICAL)*

N.T.S.

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REVISION

NO		BY	APPD	DATE

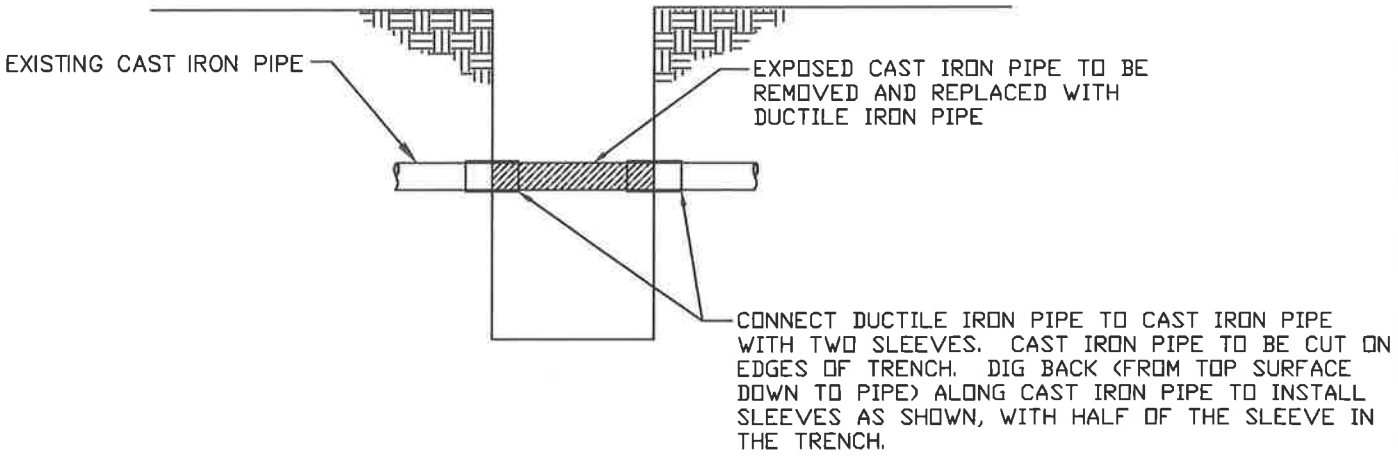
ALPINE 1850

CAD FILE:

IRRIGATION INLET (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER	38
PLOT SCALE	N.T.S
DRAWN BY	WDM
DESIGN BY	
CHECKED BY	
ADOPTED DATE	4-14-04



TRENCHING UNDER C.I.P.

N.T.S.

STATEMENT OF USE

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REVISION

NO		BY	APRV	DATE

ALPINE 1850

TRENCHING UNDER CAST IRON PIPE

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC AND DETAILS -- PROPOSED\CITY DETAILS\39 TRENCHING UNDER CIP

STANDARD DRAWING NUMBER: 39

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4-14-04

Section 1050. Division of Drinking Water Rules

Sections of 2017 APWA specifications have been noted where they differ from Utah Division of Drinking Water Standards and are included herewith as part of these standards.

Trench backfill

1. GENERAL

A. The drawing applies to backfilling a trench (and embankment) above the pipe zone.

2. PRODUCTS

A. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 3-inches.

B. Flowable Fill: APWA Section 31 05 15. Target is 60 psi in 28 days with 90 psi maximum in 28 days, It must flow easily requiring no vibration for consolidation.

3. EXECUTION

A. Trench Backfill Above the Pipe Zone: Follow requirement indicated in APWA Section 33 05 20 and the following provisions. See Standard Plan 382 for backfilling the pipe zone.
   1) DO NOT USE sewer rock, pea gravel, or recycled RAP aggregate as trench backfill.
   2) Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a standard proctor density, APWA Section 31 23 26.
   3) Water jetting is NOT allowed.

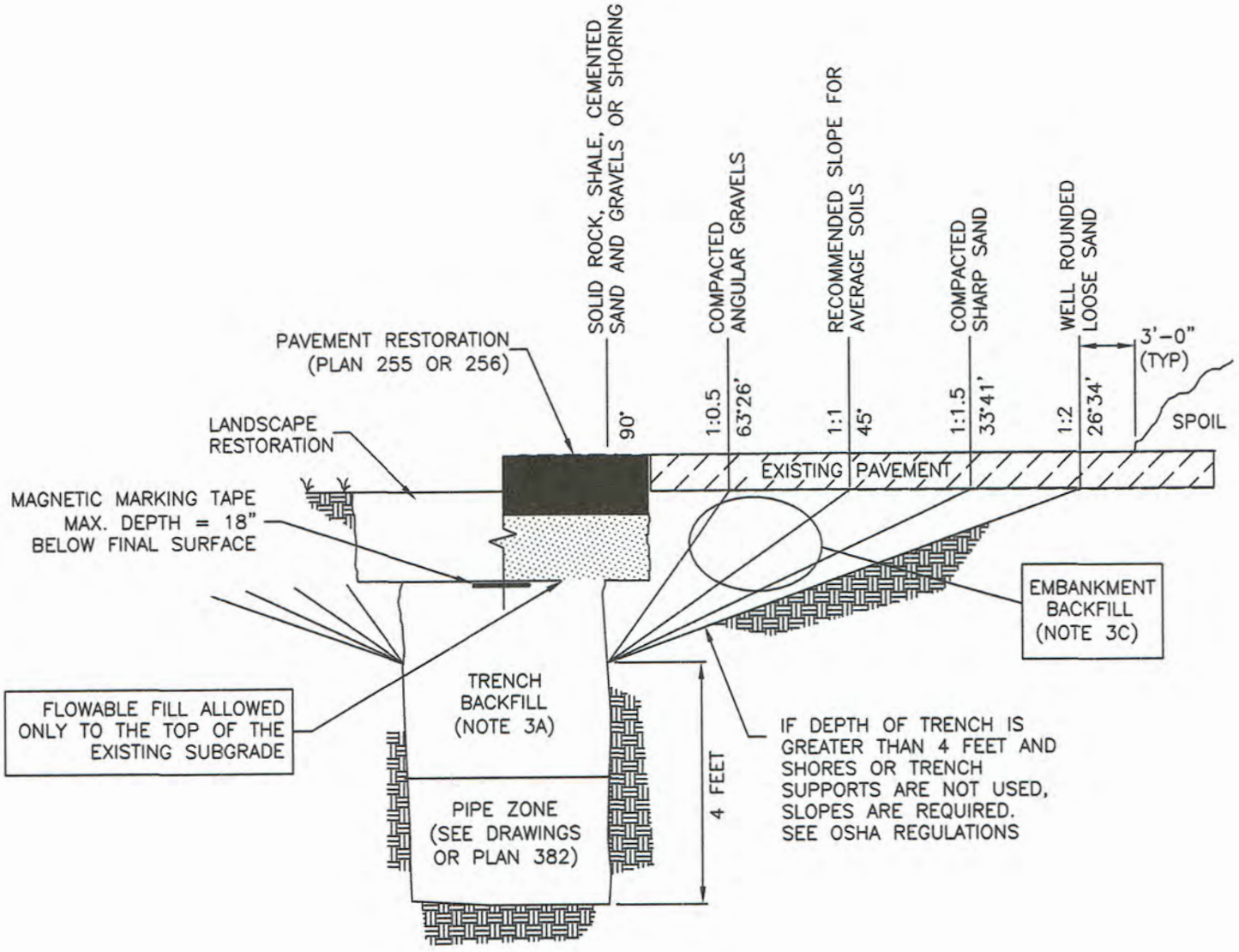
B. Flowable Fill: If controlled low strength material is placed in the trench. Cure the material before placing surface restorations.

C. Embankment Backfill: When trench sides are sloped proceed as follows.
   1) Maximum lift thickness is 8-inches before compaction.
   2) Compact per APWA Section 31 23 26 to 95 percent or greater relative to a standard proctor density.
   3) Submission of quality control compaction test result data may be requested by ENGINEER at any time. Provide results of tests immediately upon request.

D. Surface Restoration:
   1) Landscaped Surface: Follow APWA Section 32 92 00 (turf or grass) or APWA Section 32 93 13 (ground cover) requirements. Rake to match existing grade. Replace vegetation to match pre-construction conditions.
   2) Paved Surface: Follow APWA Section 33 05 25 (bituminous pavement surfacing), or APWA Section 33 05 25 (concrete pavement surfacing). Do not install surfacing until compaction density is acceptable to ENGINEER. .

APWA directs users to the Storm Drain section for Pipe Zone specifications. These same standards apply to culinary which must meet R390-550-8

NARRATIVE: THIS PLAN SHOWS VARIOUS SLOPES RECOMMENDED FOR VARIOUS TYPES OF SLOPE STABILITY PROBLEMS. THE VERTICAL TEXT INDICATES VARIOUS MATERIALS THAT MAY BE ENCOUNTERED. THE SERVICES OF A PROFESSIONAL SOILS ENGINEER SHOULD BE USED TO VERIFY SLOPE STABILITY.



APWA directs users to the Storm Drain section for Pipe Zone specifications. Pipe Zone for culinary is 6-inch, see R309-550-8(2)

APWA directs users to the Storm Drain section for Pipe Zone specifications. These same standards apply to culinary which must meet R390-550-8

Pipe zone backfill

1. GENERAL

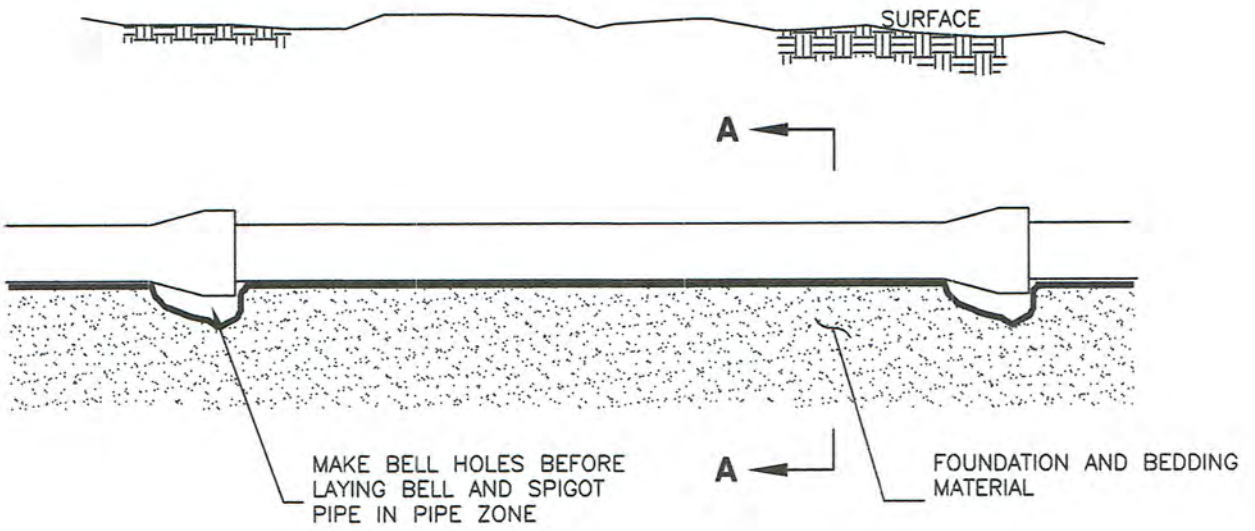
A. Install the pipe in the center of the trench or no closer than 6-inches from the wall of the pipe to the wall of the trench.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Concrete: APWA Section 03 30 04.
D. Flowable Fill: Target is 60 psi in 28 days with 90 psi maximum in 28 days, APWA Section 31 05 15. It must flow easily requiring no vibration for consolidation.
E. Stabilization-Separation Geotextile: Moderate or high at CONTRACTOR's choice, APWA Section 31 05 19.

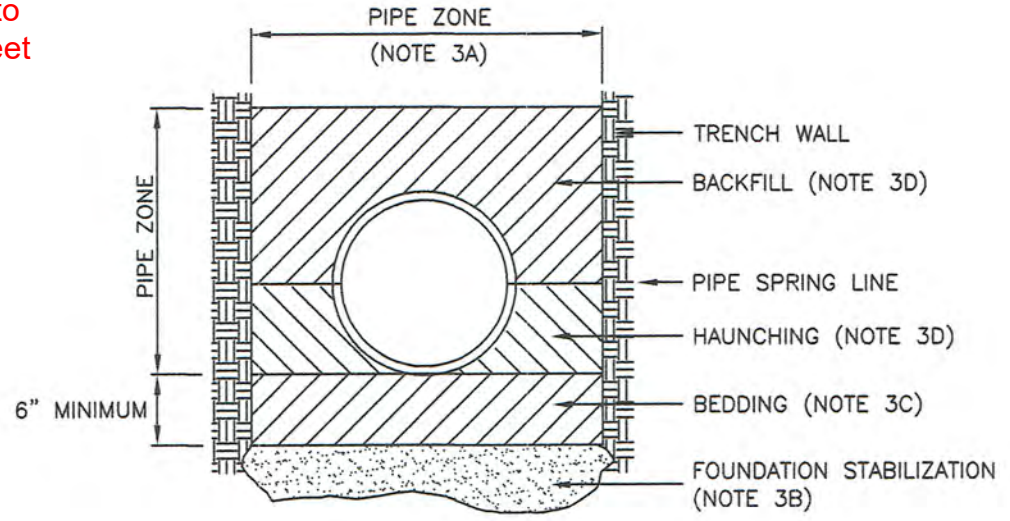
3. EXECUTION

A. Excavate the Pipe Zone: Width is measured at the pipe spring line and includes any necessary sheathing. Provide width recommended by pipe manufacturer. Follow manufacturer's recommendations when using trench boxes.
B. Foundation Stabilization: Get ENGINEER's permission before installing common fill. Vibrate to stabilize. Installation of stabilization-separation geotextile will be required to separate backfill material and native subgrade materials if common fill cannot provide a working surface or prevent soils migration.
C. Bedding: Follow APWA Section 33 05 20 requirements and the following provisions.
    1) Furnish untreated base course material unless specified otherwise by pipe manufacturer.
    2) Maximum lift thickness is 8-inches.
    3) Bedding immediately under the pipe should not be compacted, but loosely placed.
    4) Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
    5) When using concrete, provide at least Class 2,000, APWA Section 03 30 04.
D. Pipe Zone: DO NOT USE sewer rock, pea gravel, or recycled RAP aggregate in the pipe zone. Water jetting is NOT allowed.
    1) Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26 unless pipe manufacturer requires more stringent installation.
    2) Submission of quality control compaction test result data developed for the haunch zone may be requested by ENGINEER at any time. CONTRACTOR is to provide results of tests immediately upon request.
E. Flowable Fill (when required and if allowed by pipe manufacturer):
    1) Place the controlled low strength material, APWA Section 31 05 15.
    2) Prevent pipe flotation by installing in lifts and providing pipe restraints as required by pipe manufacturer.
    3) Reset pipe to line and grade if pipe "floats" out of position.



ELEVATION VIEW

APWA directs users to the Storm Drain section for Pipe Zone specifications. These same standards apply to culinary which must meet R390-550-8(2)



SECTION A-A

INSTALLATION

CONCRETE PIPE: FOLLOW ASTM C 1479
"STANDARD PRACTICE FOR INSTALLATION OF PRECAST CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE USING STANDARD INSTALLATIONS.

PLASTIC PIPE: FOLLOW ASTM D 2321
"STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS"

CORRUGATED METAL PIPE: FOLLOW ASTM A 798
"STANDARD PRACTICE FOR INSTALLING FACOTRY-MADE CORRUGATED STEEL PIPE FOR SEWERS AND OTHER APPLICATIONS.

VITRIFIED CLAY PIPE: FOLLOW ASTM C 12.
"STANDARD RECOMMENDED PRACTICE FOR INSTALLING VITRIFIED CLAY PIPE LINES.

Fire hydrant with valve

1. GENERAL

A. Before backfilling, secure inspection of installation by ENGINEER.
B. Additional requirements are specified in APWA Section 33 11 00.

2. PRODUCTS

A. Hydrant: Dry barrel, AWWA C502.
B. Thrust Bocks: Concrete Class 4000, APWA Section 03 30 04.
C. Reinforcement: Deformed, 60 ksi yield grade steel, ASTM A615.
D. Backfill: APWA Section 31 05 13. Maximum particle size 2-inches.
   1) Sewer Rock: ASTM Size No. 3 (2" to 1") or larger.
   2) Other Type of Common Fill: CONTRACTOR's choice,.
E. Geotextile: Stabilization-separation fabric, APWA Section 31 05 19.

3. EXECUTION

A. Installation:
   1) Provide at least 1 cubic yard of sewer rock around drain hole at base of hydrant spool. Wrap geotextile around sewer rock and tape geotextile to hydrant spool to prevent silting of sewer rock.
   2) Paint fire hydrant to agency's fire hydrant paint code.
   3) Apply non-oxide grease to all buried metal surfaces. Wrap with polyethylene sheet and tape wrap.
   4) Notify fire department as soon as hydrant is placed in service.
B. Thrust Blocks:
   1) Before pouring concrete, wrap pipe system with polyethylene sheet to prevent bonding of concrete to pipe system.
   2) Not required for flange or welded pipe systems.
C. Backfill: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

Utah Division of Drinking Water Rules
R309-550-5. Water Main Design
(5) Fire Protection.
d) Fire hydrant laterals shall be a minimum of 6 inches in diameter

R309-550-6. Component Materials and Design
(5) Fire Hydrants.
a) Hydrant drains shall not be connected to, or located within, 10 feet of sanitary sewers. Where possible, hydrant drains shall not be located within 10 feet of storm drains.
b) Auxiliary valves shall be installed in all hydrant leads.
c) Hydrant drains shall be installed with a gravel packet or dry well unless the natural soils will provide adequate drainage.

3/4" and 1" meter

1. GENERAL

A. In street surfaces or other vehicular traffic areas (like driveway approaches), Install the same type of meter box as required for 1 1/2" and 2" service meters. See Plan 522.

B. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.

B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.

C. Castings: Grey iron class 35 minimum per ASTM A48, coated with asphalt based paint or better.

3. EXECUTION

A. Meter Placement:

1) All meters are to be installed in the park strip or within 7 feet of the property line (street side).

2) Do not install meters under driveway approaches, sidewalks, or curb and gutter.

B. Meter Box: Set box so grade of the frame and cover matches the grade of the surrounding surface.

C. Pipe Outside of Right-of-Way: Coordinate with utility agency or adjacent property owner for type of pipe to be used outside of right-of-way.

D. Inspection: Before backfilling around meter box, secure inspection of installation by ENGINEER.

E. Base Course and Backfill Placement: Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26. Maximum lift thickness before compaction is 8-inches.

Utah Division of Drinking Water Rules
R309-550-11. Service Connections and Plumbing
(4) Service Lines.

a) Service Lines shall be capped until connected for service.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

1 1/2" and 2" meter

1. GENERAL

A. Turbine meters are required on all systems used exclusively for irrigation or fire protection.
B. Where domestic use is applicable, use a standard meter.
C. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Castings: Grey iron class 35 minimum per ASTM A48, coated with asphalt based paint or better.

3. EXECUTION

A. Meter Placement:
   1) All meters are to be installed in the park strip or within 7 feet of the property line (street side).
   2) Do not install meters under driveway approaches, sidewalks, or curb and gutter.
   3) In new construction, install meter at center of lot or per agency requirements.
B. Meter Box: Set box so grade of the frame and cover matches the grade of the surrounding surface.
. C. Bypass Valve: Lock in off position.
D. Blocking: Use clay brick or concrete block.
E. Concrete Box:
   1) Center frame and cover over water meter.
   2) Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.
F. Pipe Outside of Right-of-Way: Coordinate with utility agency or adjacent property owner for type of pipe to be used outside of right-of-way.
G. Base Course and Backfill Placement: Maximum lift thickness before compaction is 8-inches. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

Utah Division of Drinking Water Rules
R309-550-11. Service Connections and Plumbing
(4) Service Lines.
a) Service Lines shall be capped until connected for service.

R309-550-6. Component Materials and Design.
(7) Chamber Designs
a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.
b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

3" and 4" Compound meter with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2 PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

6" Compound meter with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2 PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

8" Compound meter with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2. PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

10" Turbo meter with 6" turbo meter and 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2 PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

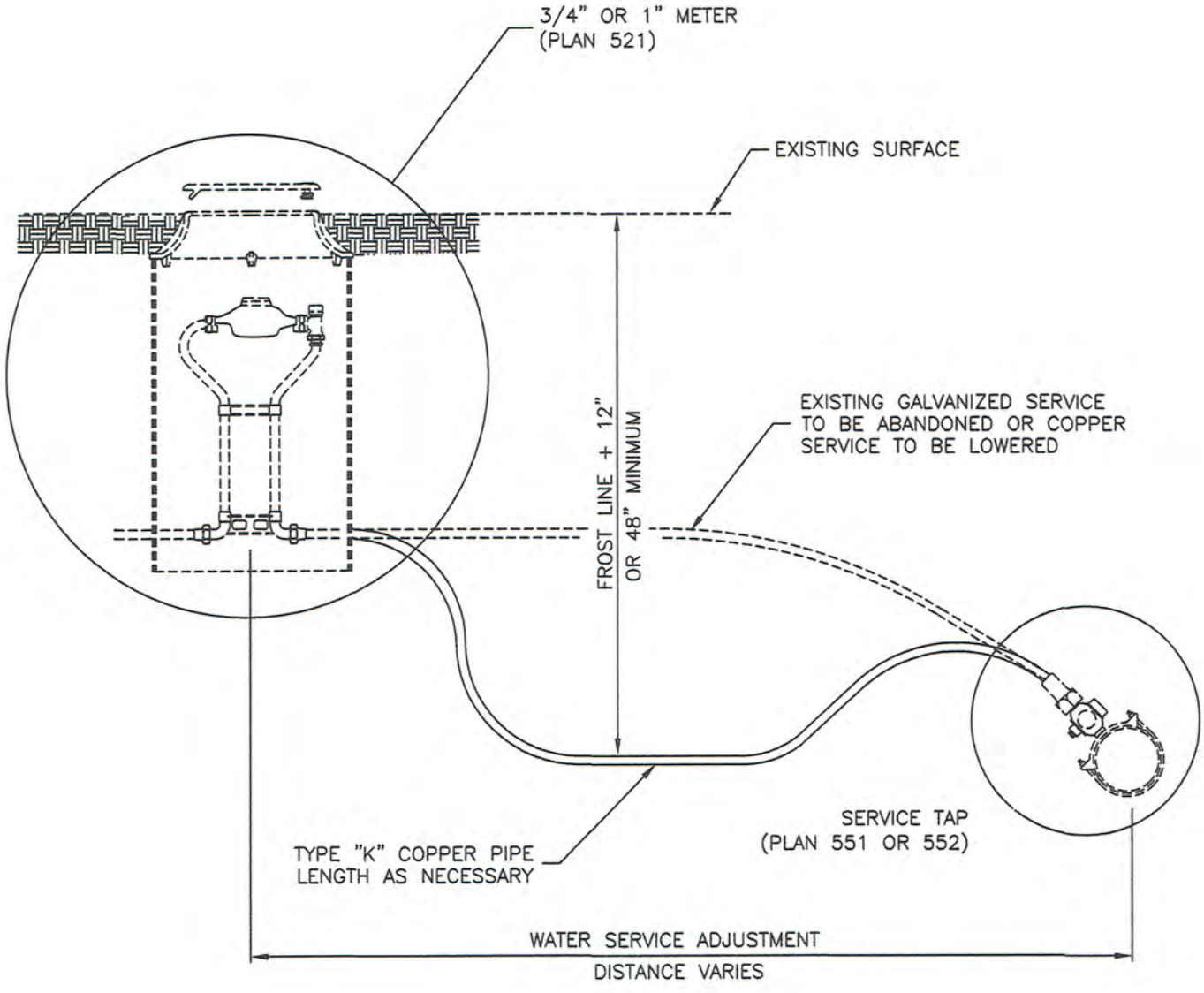
(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

Utah Division of Drinking Water Rules
R309-550-11. Service Connections and Plumbing
(4) Service Lines.

a) Service Lines shall be capped until connected for service.



Water main line loop

1. GENERAL

A. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Piping: Match existing pipe, fittings, coupling sizes and materials.
C. Thrust Bocks: Concrete Class 4000, APWA Section 03 30 04.
D. Reinforcement: Deformed, 60 ksi yield grade steel, ASTM A 615.
E. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
F. Grease: Non-oxide poly-FM.
G. Couplings: Brass.

3. EXECUTION

A. Thrust Blocks: Not required for flanged or welded pipe systems. Before pouring thrust block concrete, wrap pipe system in plastic sheet to prevent bonding of concrete to pipe system.
B. Fittings: Use copper to copper flare fittings or copper to iron pack joint coupling with locking split clamp on iron pipe side and flare on copper side.
C. Grease: Apply grease to all buried metal surfaces. Wrap with polyethylene sheet and tape wrap.
D. Steel Spool: Weld in place and provide slip on flange except when fitting in pipe system could move. Epoxy line per AWWA C210, C213, and coated per AWWA C208, or C214.
E. Location: Loop water mains over top of sewer lines.
F. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

(1) Basic Separation Standards.

(a) The horizontal distance between water lines and sanitary sewer lines shall be at least10 feet. Where a water main and a sewer line must cross, the water main shall be at least 18 inches **above** the sewer line. Separation distances shall be measured edge-to-edge (i.e., from the nearest edges of the facilities).

(b) Water mains and sewer lines shall not be installed in the same trench.

(c) Where local conditions make it impossible to install water or sewer lines at separation distances required by subsection (a), the sewer pipes are in good condition, and there is not high groundwater in the area, it may be acceptable if the design includes a minimum horizontal separation of 6 feet and a minimum vertical clearance of 18 inches with the waterline being above. In order to determine whether the design is acceptable, **the following information shall be submitted as part of the plans for review:**

(i) reason for not meeting the minimum separation standard;
(ii) location where the water and sewer line separation is not being met;
(iii) horizontal and vertical clearance that will be achieved;
(iv) sewer line information including pipe material, condition, size, age, type of joints, thickness or pressure class, whether the pipe is pressurized or not, etc.;
(v) water line information including pipe material, condition, size, age, type of joints, thickness or pressure class, etc.;
(vi) ground water and soil conditions; and,
(vii) any mitigation efforts.

(d) If the basic separation standards as outlined in subsections (a) though (c) above cannot be met, an exception to the rule can be applied for with additional mitigation measures to protect public health, in accordance with R309-105-6(2)(b).

STYLE A

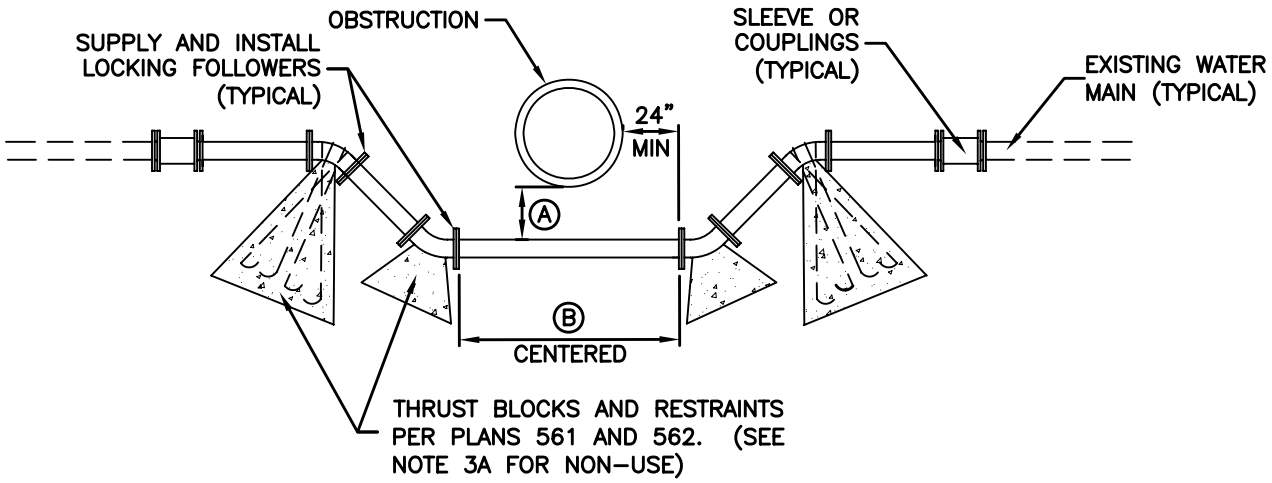


TABLE OF DIMENSIONS		
OBSTRUCTION	Ⓐ	Ⓑ
SEWER	18" MIN	20' MIN
OTHER	12" MIN	O.D. + 48"

Not allowed under sewer w/o an exception granted from UDDW R309-550-7(1)(d)

Water main line loop

1. GENERAL

A. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Piping: Match existing pipe, fittings, coupling sizes and materials.
C. Thrust Bocks: Concrete Class 4000, APWA Section 03 30 04.
D. Reinforcement: Deformed, 60 ksi yield grade steel, ASTM A 615.
E. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
F. Grease: Non-oxide poly-FM.

3. EXECUTION

A. Thrust Blocks: Not required for flange or welded pipe systems. Before pouring thrust block concrete, wrap pipe system with plastic sheet to prevent bonding of concrete to pipe system.
B. Fittings: Use copper to copper flare fittings or copper to iron pack joint coupling with locking split clamp on iron pipe side and flare on copper side. All couplings to be brass.
C. Grease: Apply grease to all buried metal surfaces. Wrap with polyethylene sheet and tape wrap.
D. Steel Spool: Weld in place and provide slip on flange except when fitting in pipe system could move. Epoxy line per AWWA C210, C213, and coated per AWWA C208, or C214.
E. Location: Loop water mains over top of sewer lines.
F. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

(1) Basic Separation Standards.

(a) The horizontal distance between water lines and sanitary sewer lines shall be at least10 feet. Where a water main and a sewer line must cross, the water main shall be at least 18 inches **above** the sewer line. Separation distances shall be measured edge-to-edge (i.e., from the nearest edges of the facilities).

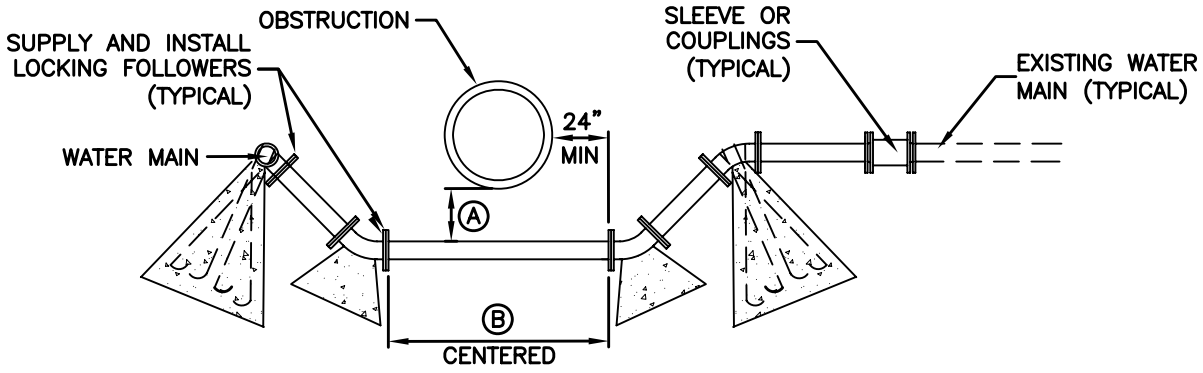
(b) Water mains and sewer lines shall not be installed in the same trench.

(c) Where local conditions make it impossible to install water or sewer lines at separation distances required by subsection (a), the sewer pipes are in good condition, and there is not high groundwater in the area, it may be acceptable if the design includes a minimum horizontal separation of 6 feet and a minimum vertical clearance of 18 inches with the waterline being above. In order to determine whether the design is acceptable, **the following information shall be submitted as part of the plans for review:**

(i) reason for not meeting the minimum separation standard;
(ii) location where the water and sewer line separation is not being met;
(iii) horizontal and vertical clearance that will be achieved;
(iv) sewer line information including pipe material, condition, size, age, type of joints, thickness or pressure class, whether the pipe is pressurized or not, etc.;
(v) water line information including pipe material, condition, size, age, type of joints, thickness or pressure class, etc.;
(vi) ground water and soil conditions; and,
(vii) any mitigation efforts.

(d) If the basic separation standards as outlined in subsections (a) though (c) above cannot be met, an exception to the rule can be applied for with additional mitigation measures to protect public health, in accordance with R309-105-6(2)(b).

STYLE B AND C

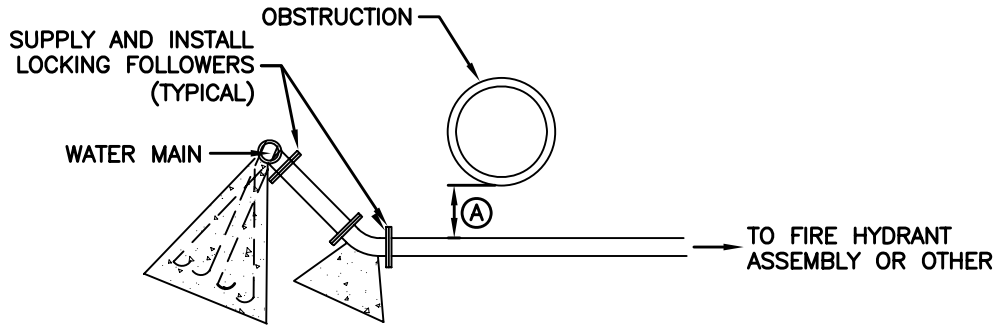


THRUST BLOCKS AND RESTRAINTS PER PLANS 561 AND 562. (SEE NOTE 3A FOR NON-USE)

Not allowed under sewer w/o exception granted from UDDW R309-550-7(1)(d)

TABLE OF DIMENSIONS		
OBSTRUCTION	Ⓐ	Ⓑ
SEWER	18" MIN	20' MIN
OTHER	12" MIN	O.D. + 48"

STYLE B



THRUST BLOCKS AND RESTRAINTS PER PLANS 561 AND 562. (SEE NOTE 3A FOR NON-USE)

Not allowed under sewer w/ o excepton granted from UDDW R309-550-7(1)(d)

TABLE OF DIMENSIONS	
OBSTRUCTION	Ⓐ
SEWER	18" MIN
OTHER	12" MIN

STYLE C

Water main line loop

3/4" and 1" Service taps

1. GENERAL

A. Before backfilling around taps, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Tape: Teflon tape is required on all taps.

3. EXECUTION

A. Tapping: Place taps a minimum of 36-inches apart. Use a tapping tool which is sized corresponding to the size of the service line to be installed. No taps within 36-inches of end of pipe.
B. PVC or AC Pipe: A service saddle clamp is required on all PVC and AC pipe taps unless specified otherwise.
C. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

R309-550-11. Service Connections and Plumbing

(4) Service Lines.

(a) Service lines shall be capped until connected for service.

1 1/2" and 2" Service taps

1. GENERAL

A. Before backfilling around taps, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Tape: Teflon tape is required on all taps.

3. EXECUTION

A. Tapping: Place taps a minimum of 36-inches apart. Use a tapping tool that is sized corresponding to the size of the service line to be installed. No taps within 36-inches of end of pipe.
B. PVC or AC Pipe: A service saddle clamp is required on all PVC and AC pipe taps unless specified otherwise.
C. Backfill: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
D. Blocks: Clay brick or concrete block required under valve box to assure a 1" or greater space between the box and the corporation stop and pipe assembly.

R309-550-11. Service Connections and Plumbing

(4) Service Lines.

(a) Service lines shall be capped until connected for service.

Detector check valve with 3/4" bypass meter

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2. PRODUCTS

A. Blocking: Clay brick or concrete block.
B. Small Fittings: Brass. Do not use galvanized materials.
C. Grade Ring: 6-inch concrete grade ring required in roadways, Plan 361.
D. Spools: Length of flange x plain end spool vary.

SPOOLS	
Pipe Size	Pipe Length
6"	10"
8"	8 1/4"
10"	6"

3. EXECUTION

A. Install control valve with valve box adjacent to main.
B. Concrete Box: Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal. Center frame and cover over water meter.
C. Valve Option: The valve in the box (item B legend) closest to the main, and the top section of the valve box (item J legend) may be eliminated at the discretion of the ENGINEER.

R309-550-6. Component Materials and Design.

(7) Chamber Drainage

(a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

(b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

6" Pressure reducing valve with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2. PRODUCTS

A. Small Fillings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Taps: Provide two 3/4" I.P. taps with plugs for pressure gages.
D. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Center frame and cover over water meter.
B. Apply tape wrap to the exterior of all galvanized pipe per AWWA C209.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Drainage

(a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

(b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

Air release assembly

1. GENERAL

A. This drawing detail is applicable to water main piping less than 16-inches diameter.
B. PCCP, steel, MLAC and other water main pipe materials will require special detail or design drawings. Submit the design and detail drawings and materials to the ENGINEER for review before installation.
C. Installation in areas of high ground water or potential for water entering the vent pipe will require a special design to be provided by the ENGINEER.
D. Before backfilling around the assembly, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.
C. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
D. Concrete: Class 4000, APWA Section 03 30 04.
E. Manhole: Riser, ASTM C 478.
F. Reinforcement: Deformed, steel, ASTM A 615. Give bars an epoxy coating at least 15 mils thick. Minimum stress yield strength of steel tie-down bars is 70,000 ksi.
G. Small Fittings: Brass. Do not use galvanized materials.
H. PVC Pipe and Fittings: Schedule 40, APWA Section 33 05 07.
I. Water Tight Wall Seal: Waterproof, compressible.

3. EXECUTION

A. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
B. Apply tape wrap to the exterior of all buried steel pipe per AWWA C209.
C. Concrete Placement: APWA Section 03 30 10. Provide 1/2-inch radius edges. Apply a broom finish. Apply a curing agent.
D. Service saddle is required on all PVC and AC pipe taps unless specified otherwise. Ductile iron and cast iron pipe may be direct tapped.
E. Seal manhole joints water-tight and ground flush with interior wall.
F. Follow applicable AWWA and NSF standards when connecting piping.
G. If diameter of air relief valve is greater than 2-inches, provide piping to match its diameter from water main connection to open to air.

R309-550-6. Component Materials and Design.

(7) Chamber Drainage

(a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

(b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

R309-550-6. Component Materials and Design.

(6) Air Relief Valves and Blow-offs.

(a) At high points in water mains where air can accumulate, provisions shall be made to remove air by means of hydrants or air relief valves.

(b) The open end of the air relief vent pipe from automatic valves shall be provided with a #14 mesh, non-corrodible screen and a downward elbow, and where possible, be extended to at least one foot above grade. Alternatively, the open end of the pipe may be extended to as little as one foot above the top of the pipe if the valve's chamber is not subject to flooding, or if it meets the requirements of (7) Chamber Drainage.

(c) Blow-offs or air relief valves shall not be connected directly to a sewer.

(d) Adequate number of hydrants or blow-offs shall be provided to allow periodic flushing and cleaning of water lines.

(e) The air relief valve shall be installed in a manner to prevent it from freezing. A shut-off valve shall be provided to permit servicing of an air relief valve.

Pressurized irrigation water and potable water interface

1. GENERAL

A. There may be up to 20 psi loss of head through the reduced pressure backflow preventer (RPBP) device. This is normal and the agency should expect a decrease in area coverage. Agency should design or modify the system for the lower pressure.

2. PRODUCTS

A. Piping Materials.
   1) All above ground parts are to be copper or galvanized iron only.
   2) Below ground parts on the non-potable water system may be made of PVC or polyethylene at the agency's discretion.

B. Cam Lock Fittings: Provide 3/4" long male insert attached to the flexible hose.

3. EXECUTION

A. Separate Systems: Connect hose to only one system at a time. The other system is to remain separate. Do not direct connect potable and non-potable water systems with or without backflow prevention devices.

B. Stop and Waste Valve: Locate the valve in an area where subsurface ground water will not accumulate, or attach a drain pipe to the drain hole and drain to daylight with a non-corrodible #14 mesh screen over the end.

C. Testing: The RPBP device requires testing within 10 days of initial installation by a licensed backflow device tester and annually thereafter or more frequently at agency's option and expense.

D. Backflow Preventer: Install the RPBP device above ground per the plumbing code. It must not be susceptible to flooding and must be accessible at all times for testing, repair, inspection, etc.

E. Stand Pipes: Provide draining and freeze protection.

F. Galvanized Pipe: Apply tape wrap to the exterior of all galvanized pipe per AWWA C209.

Should be evaluated by UDDW Cross Connection Control Manager prior to instillation

SECTION 33 05 05

DUCTILE IRON PIPE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Ductile iron pipe, couplings, fittings, and joint materials.

1.2 REFERENCES

A. **AWWA Standards**:

- C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
- C110 Ductile-Iron and Gray Iron Fittings, 3 In. Through 48 In., for Water and Other Liquids.
- C111 Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
- C115 Flanged Ductile-Iron and Gray Iron Pipe with Threaded Flanges.
- C151 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
- C600 Installation of Ductile-Iron Water Mains and Their Appurtenances.

For culinary:

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 2 PRODUCTS

2.1 PIPE AND FITTINGS

A. Buried Applications:

1. Class 52 or pressure class 350 psi ductile iron pipe, AWWA C151 with push-on joints, AWWA C111.
2. Cement lining for all pipe and fittings, AWWA C104.
3. Class 250 fittings with AWWA C110 joints.
4. Coupler with mechanical joint fittings, AWWA C104, C110, and C111.
5. Rubber gasket slip-on pipe joints, AWWA C111 with gasket lubricant.

SECTION 33 05 06

POLYETHYLENE PIPE

For culinary

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Polyethylene pipe, couplings, fittings and joint materials.

1.2 REFERENCES

A. **AASHTO Standards**:

- M 252 Corrugated Polyethylene Drainage Pipe.
- M-294 Corrugated Polyethylene Drainage Pipe 300-1200 mm Diameter.
- MP7-97 Corrugated Polyethylene Pipe – 1350 and 1500 mm Diameter.

B. **ASME Standards**:

- B1.1 Unified Inch Screw Threads (UN and UNR Thread Form), Supplement.

C. **ASTM Standards**:

- A 307 Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
- D 2239 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter.
- D 2321 Underground Installation of Flexible Thermoplastic Sewer Pipe.
- D 2657 Heat Joining of Thermoplastic Pipe and Fittings.
- D 2774 Underground Installation of Thermoplastic Pressure Piping.
- D 3261 Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
- D 3350 Polyethylene Plastics Pipe and Fittings Materials.
- F 477 Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- F 1055 Electofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing.

SECTION 33 05 07

POLYVINYL CHLORIDE PIPE

for Culinary

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Polyvinyl chloride pipe, couplings, fittings and joint materials.

1.2 REFERENCES

A. **ASTM Standards**:

D 1784 Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

D 2241 Poly (Vinyl Chloride) (PVC) Pressure Rated Pipe (SDR - Series).

D 2321 Underground Installation of Flexible Thermoplastic Sewer Pipe.

D 2412 Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

D 2564 Solvent Cement for Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

D 2729 Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

D 2774 Underground Installation of Thermoplastic Pressure Piping.

D 2855 Making Solvent Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.

D 3034 Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

D 3139 Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.

D 3212 Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

F 656 Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

F 679 Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

F 949 Poly(vinyl Chloride) (PVC) Corrugated sewer Pipe with a Smooth Interior and Fittings.

SECTION 33 05 09

STEEL PIPE - LINED AND COATED

For culinary

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Cement mortar lined and coated steel pipe, couplings, fittings, and joint materials in sizes four (4) inches through 120 inches.

1.2 REFERENCES

A. **ASTM Standards**:

A 82	Steel Wire, Plain, for Concrete Reinforcement.
A 283	Low and Intermediate Tensile Strength Carbon Steel Plates.
A 370	Mechanical Testing of Steel Products.
A 569	Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip, Commercial Quality.
A 570	Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.
C 33	Concrete Aggregates.
C 150	Portland Cement.

R309-550-8. Installation of Water Mains.

(1) Standards.

The specifications shall incorporate the provisions of the manufacturer's recommended installation procedures or the following applicable standards:

(d) For Steel pipe, AWWA Standard C604-11, Installation of Buried Steel Water Pipe- 4 inch and Larger

B. **AWWA Standards**:

C200	Steel Water Pipe 6 In. and Larger.
C205	Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 In. and Larger - Shop Applied.
C208	Fabricated Steel Water Pipe Fittings.
C303	Reinforced Concrete Pressure Pipe, Steel Cylinder Type, Pre-Tensioned, for Water and Other Liquids.

1.3 SUBMITTALS

A. Design Summary: Before any fabrication, submit a design summary for each size and class of pipe and line layout drawings or line schedules that show the location of each section of pipe and each special fitting to be furnished.

B. Shop Drawings of special fitting and outlets.

3.1 PREPARATION

A. Implement the traffic control plan requirements, Section 01 55 26.

B. Identify required line, levels, contours, and datum.

C. Stake and flag locations of underground utilities.

D. Verify:

1. Backfill material meets gradation requirements.
2. Foundation walls are braced to support surcharge forces imposed by backfilling operations, areas to be backfilled are free of debris, snow, ice or water.
3. Trench bottom is not frozen.

E. If ground water is in the intended backfill zone, dewater.

3.2 SUBGRADE

A. Protect subgrade from desiccation, flooding, and freezing.

B. Before backfilling over Subgrade, get ENGINEER's review of Subgrade surface preparations.

C. If Subgrade is not readily compactable, get ENGINEER's permission to stabilize the subgrade:

1. Excavation for Subgrade stabilization is incidental work, Section 31 23 16.
2. Place geotextile fabric. Place acceptable fill in lifts. Compact.

3.3 PROTECTION

A. During installation or repair, plug end of pipe or fitting except when installing next section of pipe or fitting.

B. Movement of construction machinery over Work at any stage of construction is solely at CONTRACTOR's risk.

3.4 GENERAL BACKFILLING REQUIREMENTS

A. Avoid injuring and displacement of conduit, pipe and structures while compacting soil or operating equipment next to pipeline.

R309-550-8. Installation of Water Mains.

(2) Bedding.

A continuous and uniform bedding shall be provided in the trench for all buried pipe. Stones larger than the backfill materials described below shall be removed for a depth of at least 6 inches below the bottom of the pipe.

B. Place geotextile fabrics; Section 31 05 19.

C. Do not damage corrosion protection on pipe.

D. Repair or replace damaged pipe at no additional cost to OWNER.

E. Withdraw sheathing, shoring, piles, and similar supports as backfilling progresses. Backfill and compact all holes left by removals.

F. Provide sufficient water quality facilities to protect downstream fish and wildlife, and to meet State water quality requirements.

G. Water settling of trench backfill is not permitted. "Jetting" of trench backfill is prohibited.

3.5 PIPE ZONE

A. Maintain uniform foundation along barrel of pipe with sufficient relief for joint connections.

B. Use backfill materials meeting pipe manufacturer's recommendations.

1.3 PERFORMANCE REQUIREMENTS

A. Depth of Cover:

1. Minimum as indicated in local building code from top of pipe to ground surface. 72 inches maximum unless ENGINEER authorizes otherwise.
2. If less cover, provide additional protection to withstand frost and external loads.

B. Remove any section of pipe already placed that is found to be defective or damaged. Relay or replace without additional cost to OWNER.

1.4 SUBMITTALS

A. Product data: Submit manufacturer's technical product data and installation instructions.

B. Commissioning: Submit testing data indicated in Section 33 08 00.

C. Record Documents, Section 01 78 39: Include details of underground structures, connections, thrust blocks and anchors. Show interface and spatial relationship between piping and adjacent structures.

D. Operating and Maintenance: Submit data, Section 01 78 23. Include maintenance data, parts list, product data and Shop Drawings.

1.5 SITE CONDITIONS

A. Minimize neighborhood traffic interruptions. Barricade stockpiles.

B. Secure acceptance of pipeline lateral tie-in work.

C. Repair public and private facilities damaged by CONTRACTOR.

D. Do not operate any currently active water valve until its owner and water company's permission is secured.

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 2 PRODUCTS

2.1 PIPES AND FITTINGS

A. Provide piping materials and factory fabricated piping products of sizes, types, pressure ratings, and capacities indicated. Use only NSF approved products in drinking water systems. All such products shall be appropriately stamped with the NSF logo. Just NSF isn't sufficient, NSF 61

B. Where not indicated, provide proper selection as determined by installer and acceptable to ENGINEER to comply with installation requirements.

C. Provide sizes and types of equipment connections for fittings of material that matches pipe material used in the piping system. Where more than one type of material or product option is indicated, selection is installer's choice.

D. Provide pipe fittings and accessories of same material and weight or class as pipe, with joining method indicated or recommended by manufacturer.

2.2 VALVES

2.8 ACCESSORIES

A. Bolts, Nuts, Washers: Steel, Section 05 05 23.

B. Anchorages: Provide anchorages for tees, wyes, crosses, plugs, caps, bends, valves, and hydrants. After installation, apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of ferrous anchorages.

C. Corporation Stops: All bronze, straight threads, full port, ball valve.

D. Hydrant and Valve: Dry barrel, Section 33 12 19.

E. Water Meter and Valve: Section 33 12 19.

F. Grease: Non-oxide food grade required where in contact with potable water. Non-oxide poly-fm for all exposed buried metal surfaces for bolts, nuts, washers, restraints, etc.

G. Polyethylene Sheet: Six (6) mil thick minimum.

H. Joint Restraints: Acceptable to ENGINEER prior to installation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify trench excavation is ready to receive work, and dimensions, and elevations are as required.

B. Commencing installation means acceptance of existing conditions.

3.2 PREPARATION

A. Excavation, Section 31 23 16. Hand trim to required elevations. Correct over excavations.

B. Remove stones or other hard matter that manufacturer stipulates may damage pipe during embedment or impede backfilling or compaction.

C. Examine areas and conditions under which materials and products are to be installed. Do not proceed with system installation until unsatisfactory conditions have been corrected in manner acceptable to system installer.

D. Clearly identify and promptly set aside defective or damaged pipe.

E. Use pipe cutting tool acceptable to pipe manufacturer.

3.3 LAYOUT

A. Comply with Utah administrative rules R309-550. As a minimum locate potable water pipe at least 18 inches vertical and 10 feet horizontal edge to edge between water and sewer lines. Place water lines above sewer line. Requires UDDW Approval

B. Where potable water pipe crosses under gravity-flow sewer lines, fully encase sewer pipe in concrete for a distance at least 10 feet each side of the crossing:

1. Do not locate any joint in the water line within 36 inches of the crossing.

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

(1) Basic Separation Standards.

(a) The horizontal distance between water lines and sanitary sewer lines shall be at least10 feet. Where a water main and a sewer line must cross, the water main shall be at least 18 inches **above** the sewer line. Separation distances shall be measured edge-to-edge (i.e., from the nearest edges of the facilities).

(b) Water mains and sewer lines shall not be installed in the same trench.

(c) Where local conditions make it impossible to install water or sewer lines at separation distances required by subsection (a), the sewer pipes are in good condition, and there is not high groundwater in the area, it may be acceptable if the design includes a minimum horizontal separation of 6 feet and a minimum vertical clearance of 18 inches with the waterline being above. In order to determine whether the design is acceptable, **the following information shall be submitted as part of the plans for review:**

(i) reason for not meeting the minimum separation standard;
(ii) location where the water and sewer line separation is not being met;
(iii) horizontal and vertical clearance that will be achieved;
(iv) sewer line information including pipe material, condition, size, age, type of joints, thickness or pressure class, whether the pipe is pressurized or not, etc.;
(v) water line information including pipe material, condition, size, age, type of joints, thickness or pressure class, etc.;
(vi) ground water and soil conditions; and,
(vii) any mitigation efforts.

(d) If the basic separation standards as outlined in subsections (a) though (c) above cannot be met, an exception to the rule can be applied for with additional mitigation measures to protect public health, in accordance with R309-105-6(2)(b).

SECTION 33 12 16
WATER VALVES

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Gate, butterfly, plug, check, pressure reducing, pressure relief, control valves and their installation.

1.2 REFERENCES

A. **AWWA Standards**:

C111 Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.

C504 Rubber-Seated Butterfly Valves.

C508 Swing-Check Valves for Waterworks Service, 2 In. Through 24 In. NPS.

C509 Resilient-Seated Gate Valves for Water and Sewerage Systems.

C550 Protective Interior Coatings for Valves and Hydrants.

C600 Installation of Ductile-Iron Water Mains and Their Appurtenances.

1.3 SUBMITTALS

A. Provide technical information for evaluating quality of valve. As a minimum include dimensions, weights, materials lists and operation charts.

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 2 PRODUCTS

2.1 VALVES - GENERAL

A. Underground:

1. Less than three (3) inches: Screwed ends.
2. 3 inches and larger: Flanged or mechanical joint ends. Non-rising stem. Two inches square operating nut. Low alloy steel bolts, AWWA C111.

1.5 **JOB CONDITIONS**

A. Notify appropriate fire department as soon as hydrant is removed or placed in service.

PART 2 PRODUCTS

R309-550-5. Water Main Design.

(5) Fire Protection.

d) Fire hydrant laterals shall be a minimum of 6 inches in diameter.

2.1 **DRY-BARREL FIRE HYDRANT**

A. AWWA C502.

B. Cast iron compression type, opening against pressure and closing with pressure, base valve design, 150 psi working pressure, with 1/4 inch diameter minimum tapping and bronze plug in standpipe:

1. Size: 5-1/4 inch valve opening.
2. Direction to Open Hydrant: Counterclockwise.
3. Size and Shape of Operating and Cap Nuts: Pentagon. 1-1/2 inch point to flat.
4. Hose Nozzles: Two 2-1/2 inch national standard thread, cap, gasket and chain.
5. Pumper Nozzle: One 4-1/2 inch national standard thread, cap, gasket and chain.
6. Depth of Burial: 48 inches or consistent with main depth.
7. Connection to Main: Six (6) inches flanges or mechanical joint.
8. Pressure: 150 psi working pressure and 300 psi hydrostatic pressure.
9. Inlet Bottom Connection: Six (6) inches mechanical joint or flanged in accordance with AWWA C110 and AWWA C111, designed to allow separation at the sidewalk or ground level when hydrant is sheared off.
10. Automatic Drain: Opens as the hydrant is closed.

2.2 **PIPE AND FITTINGS**

A. Ductile Iron: Section 33 05 05. Standard drilling with joints per AWWA C110.

B. PVC: Section 33 05 07.

C. Steel: Section 33 05 09. Standard drilling, 150 lb.

D. Spool: Schedule 40 steel, epoxy lined, exterior wrapped with minimum six (6) mil thick polyethylene sheet and tape wrap, AWWA C210 or C213 and C209 or C214 with two welded in place 150 lb. steel ANSI B 16.5 slip on flanges.

2.3 **VALVES**

A. Gate Valve: Section 33 12 19.

B. If indicated, furnish an auxiliary six (6) inch diameter valve with end connections as required.

2.3 **SERVICE LINE, VALVES, AND FITTINGS**

A. Service Pipe: Copper, Section 33 05 03 or smooth wall polyethylene, Section 33 05 06. The service pipe between main and meter and to a point not less than 1 foot from the public way side of the property line cannot exceed the meter size.

B. Service Valves and Fittings: AWWA C800.

C. Meter Setters: Brass, with angle fittings, saddle nuts and gaskets.

D. Corporation Stops and Angle Valves: Invert key design.

E. Bypasses: Not allowed on any service installation without approval of ENGINEER.

2.4 **METER BOXES**

A. Meters to 1" Service: Plastic or asphalt-dipped corrugated metal. Fiber meter boxes not acceptable.

B. Meters 1-1/2" and Larger: Reinforced concrete with a minimum clearance of 12" from each side of meter plumbing.

C. Cover: Ductile or cast iron with utility inscription

PART 3 EXECUTION

3.1 **INSTALLATION**

A. Install meter box, meter setters, valves, etc. at indicated locations. If not indicated, install in street right-of-way parking strip or at a location approved by ENGINEER.

B. Install meter setters level and horizontal. Provide suitable pipe lengths to prevent stress.

C. DO NOT operate utility agency's main line valves. Contact agency if valves are to be operated. If required by water utility agency notify affected water users, Section 01 31 13.

D. OWNER Supplied Meters: Installed by CONTRACTOR unless indicated otherwise.

END OF SECTION

R309-550-11. Service Connections and Plumbing

(4) Service Lines.

(a) Service lines shall be capped until connected for service.

SECTION 33 13 00
DISINFECTION

PART 1 GENERAL

1.1 **SECTION INCLUDES**
- A. Disinfection of potable water system.
- B. Test and report results.

1.2 **REFERENCES**
- A. **AWWA Standards**:
  - A100 Water Wells.
  - B300 Hypochlorites.
  - B301 Liquid Chlorine.
  - C651 Disinfecting Water Mains.
  - C652 Disinfection of Water-Storage Facilities.
- B. **State of Utah Standards**:

  Public Drinking Water Regulations, ~~Part 2, Section 12~~ R309-520: Facility Design and Operation: Disinfection.

1.3 **DEFINITIONS**
- A. **Disinfectant Residual**: The quantity of disinfectant in treated water.
- B. **ppm**: Parts per million.

1.4 **SUBMITTALS**
- A. CONTRACTOR's evidence of experience in disinfection.
- B. Bacteriological laboratory's certification.
- C. Disinfection Report: Three (3) copies containing:
  1. Date issued.
  2. Project name and location.
  3. Treatment contractor's name, address and phone number.
  4. Type and form of disinfectant used.
  5. Time and date of disinfectant injection started.
  6. Time and date of disinfectant injection completed.
  7. Test locations.
  8. Initial and follow-up disinfectant residuals in ppm for each outlet tested.
  9. Time and date of flushing start.
  10. Time and date of flushing completion.
  11. Disinfectant residual after flushing in ppm for each outlet tested.
  12. Flush water disposal location and acceptance by local agency.

PART 3 EXECUTION

3.1 PREPARATION

A. Provide necessary signs, barricades, and notices to prevent accidental exposure to disinfecting materials, consuming disinfecting water, or disturbing system being disinfected.

B. Make sure potable water system is complete, clean, and that the system to be disinfected is not connected to an existing system.

3.2 DISINFECTION OF WATER LINES

A. Use one method defined under AWWA C651 that is acceptable to ENGINEER.

B. After pressure testing per Section 33 08 00, flush system through hydrants or if a hydrant does not exist, install a tap of sufficient size to provide 2.5 feet per second flushing velocity in the line.

C. Starting at outlet closest to water source, bleed water from each outlet until chlorine residual reaches outlet. Repeat process at each outlet throughout system.

D. Collect a bacteriological water sample at end of line to be tested. If sample fails bacteriological test, flush system and retest. Continue flushing and retesting until a good sample is obtained.

E. If flushing does not produce a passing bacteriological test disperse disinfectant throughout system to obtain 10 to 25 ppm of free chlorine residual.

F. Flush the chlorinated water from the main until chlorine measurements show concentration in the water leaving the main is no higher than that generally prevailing in the system or is acceptable for domestic use.

G. After a passing bacteriological test sample is obtained, let the system relax for 24 hours. Flush and collect a subsequent bacteriological sample for testing. If the subsequent test passes then water line is acceptable.

R309-515-6. Ground Water - Wells

(11) Well Disinfection.

Every new, modified, or reconditioned well including pumping equipment shall be disinfected before being placed into service for drinking water use. These shall be disinfected according to AWWA Standards C654-03 and A100-06 as modified to incorporate the following as a minimum standard:

3.3 DISINFECTION OF CULINARY WELLS

A. Use one method defined under AWWA A100 that is acceptable to ENGINEER.

B. Do not start disinfection until well is thoroughly cleaned.

C. Use a disinfecting solution containing a minimum of 50 ppm residual chlorine.

D. Flush system after disinfection.

SECTION 33 16 13

WELDED STEEL WATER TANK

R309-545-20. *Tank Standards*

(2) NSF International Standards.

(a) NSF 60, Drinking Water Treatment Chemicals - Health Effects.

(b) NSF 61, Drinking Water System Components - Health Effects.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. On grade welded steel water storage tank.

B. Foundation and ring wall construction.

C. Testing requirements.

1.2 REFERENCES

A. **ASME Standards**:

Boiler and Pressure Vessel Code.

B. **AWWA Standards**:

D100 Welded Steel Tanks for Water Storage.

1.3 QUALITY ASSURANCE

A. Workmanship, Section 01 43 00.

B. Welder Certification:

1. Use only welders qualified in all positions by ASME Boiler and Pressure Vessel Code.
2. Maintain a record of welds and welders employed on each joint.
3. Provide a welding supervisor independent of the tank erection foreman's jurisdiction.

1.4 SUBMITTALS

A. List of five (5) tanks, including name of owner, size, location, and year completed.

B. Certification of welders who will be performing welding.

C. Within 30 days after award of contract, furnish two (2) sets of design calculations and four (4) sets of detail drawings of the tank. Furnish drawings prepared by a licensed design professional.

PART 2 PRODUCTS

2.1 GENERAL

A. Furnish a steel tank that is fabricated and erected per AWWA D100 and governing Laws and Regulations.

B. Furnish the tank per Appendix C of AWWA D100. Use a design temperature based on a low one (1) day mean temperature of -10 deg F if not indicated elsewhere.

2.2 TANK ACCESSORIES

A. General: Furnish and install all tank accessories as indicated and as applicable below.

B. Ladder: One fixed ladder with safety cable on the exterior of the tank conforming to OSHA. Extend ladder eight (8) feet above ground surfaces to roof.

C. Shell Manholes: Two 24 inches diameter shell manholes equipped with davits or hinges located near base of tank. Furnish one manhole with a bolting flange for an exhaust fan for ventilation as indicated in AWWA D100.

R309-545-14. Access Openings.

Drinking water storage tanks shall be designed with reasonably convenient access to the interior for cleaning and maintenance.

(1) Height.

There shall be at least one opening above the level of the overflow, which shall be framed at least 4 inches above the surface of the roof at the opening; or if on a buried tank, shall be elevated at least 18 inches above any earthen cover over the tank. The frame shall be securely fastened and sealed to the tank roof to prevent any liquid contaminant entering the tank. Concrete drinking water storage tanks shall have raised curbs around access openings, formed and poured continuous with the pouring of the roof, and sloped to direct water away from the frame.

(2) Shoebox Lid.

The frame of any access opening shall be provided with a close-fitting, solid shoebox-type cover that extends down around the frame at least 2 inches and is furnished with a gasket(s) between the lid and frame. The horizontal surface of the tank lid shall not have any openings, cracks, or penetrations, such as a lock, key hole, or bolted handle that would allow contaminants to enter the tank.

(3) Locking Device.

The lid to any access opening shall have a locking device.

UDDW does not require "mushroom" vents

D. Vent: Mushroom vent of adequate size to handle pressure differential cause by water entering or leaving the tank at the maximum rate indicated. Do not consider the open area of overflow as venting area. Provide a special screened vent to ensure fail-safe operation if screen frosts over or is otherwise clogged. Furnish a vent that is easily dismantled to remove screens for cleaning.

R309-545-15. Venting.

Drinking water storage tanks shall be vented. The air venting capacity shall exceed the water inflow and the water outflow of the tank. Overflows shall not be considered or used as vents.

Vents provided on drinking water storage tanks shall:

(1) Inverted Vent.

Be downturned a minimum of 2 inches below any opening and shielded to prevent the entrance of contaminants.

(2) Open Venting.

On buried structures, the end of the vent discharge shall be a minimum of 24 inches above the earthen covering.

Guidance: In areas of heavy snowfall, it is recommended that the vent discharge be raised.

(3) Blockage.

Be located and sized to avoid blockage during winter conditions.

(4) Screen.

Be fitted with No. 14 mesh or finer non-corrodible screen.

(5) Screen Protector.

Vents that are 6-inch diameter or greater shall be fitted with additional heavy gage screen or substantial covering, which will protect the No. 14 mesh screen against vandalism or damage.

E. Roof Manholes: One 36 inch rainproof roof hatch with hinges and hasp for locking per AWWA D100 and a 24 inch diameter roof manhole with a removable cover.

R309-545-14. Access Openings.

Drinking water storage tanks shall be designed with reasonably convenient access to the interior for cleaning and maintenance.

(1) Height.

There shall be at least one opening above the level of the overflow, which shall be framed at least 4 inches above the surface of the roof at the opening; or if on a buried tank, shall be elevated at least 18 inches above any earthen cover over the tank. The frame shall be securely fastened and sealed to the tank roof to prevent any liquid contaminant entering the tank. Concrete drinking water storage tanks shall have raised curbs around access openings, formed and poured continuous with the pouring of the roof, and sloped to direct water away from the frame.

(2) Shoebox Lid.

The frame of any access opening shall be provided with a close-fitting, solid shoebox-type cover that extends down around the frame at least 2 inches and is furnished with a gasket(s) between the lid and frame. The horizontal surface of the tank lid shall not have any openings, cracks, or penetrations, such as a lock, key hole, or bolted handle that would allow contaminants to enter the tank.

(3) Locking Device.

The lid to any access opening shall have a locking device.

F. Overflow: Provide tank overflow. Equip overflow with an anti-vortex entrance. Extend overflow down outside of tank.

R309-545-13. Tank Overflow.

All water storage tanks shall be provided with an overflow that discharges at an elevation between 12 and 24 inches above the ground surface or the rim of the receiving basin. The discharge shall be directed away from the tank and shall not cause erosion.

(1) Diameter.

Overflow pipes shall be of sufficient capacity to permit waste of water in excess of the filling rate.

(2) Slope.

Overflow pipes shall be sloped for complete drainage.

(3) Screen.

Overflow pipes shall be screened with No. 4 mesh non-corrodible screen installed at a location least susceptible to damage by vandalism.

(4) Visible Discharge.

Overflow pipes shall be located so that any discharge is visible.

(5) Cross Connections.

Overflow pipes shall not be connected to, or discharge into, any sanitary sewer system.

G. Inlet Nozzle: Equip with a 125 psi working pressure flange connection.

H. Bottom Drain: Weld drain to tank bottom and make required connections.

I. Outlet Nozzle: Equip with a 125 psi working pressure flange connection.

R309-545-10. Internal Features.

The following shall apply to internal features of drinking water storage tanks:

(1) Drains.

(a) A means shall be provided for the draining of drinking water storage tanks.

(b) Where possible, the drain shall be separate from the outlet pipeline. If a tank drain line is provided, it shall be sloped for complete drainage.

(c) The drain shall not discharge to a sanitary sewer.

(d) If local authority allows discharge to a storm drain, the drain discharge shall have a physical clearance of at least 12 inches between the discharge end of the pipe and the overflow rim of the receiving basin.

(3) Inlet and Outlet.

(a) To minimize potential sediment in the flow from the tank, the outlet pipes from all tanks shall be located in a manner to provide a silt trap prior to discharge into the distribution system.

(b) Inlet and outlet pipes shall be configured to provide mixing and circulation.

(4) Tank Floor.

The floor of the storage tank shall be sloped to permit complete drainage of the structure.

PROPOSED CONSTRUCTION STANDARD SPECIFICATIONS AND DETAILS

(Clean version)

Alpine City Engineering
20 North Main • Alpine, Utah 84004



Jed Muhlestein

Alpine City Engineer

CONSTRUCTION STANDARD SPECIFICATIONS AND DETAILS

Adopted September 26, 2023

ALPINE CITY CONSTRUCTION STANDARDS

Section 100. General Provisions.
Section 200. Improvement and Design Requirements.
Section 250. Inspection and Testing.
Section 300. Contractor Requirements.
Section 350. Earthwork and Trenches.
Section 400. Drinking Water.
Section 450. Pressurized Irrigation.
Section 500. Sanitary Sewer
Section 550. Storm, Land and Groundwater Drains.
Section 600. Streets and Pavements.
Section 650. Portland Cement Concrete and Masonry Work.
Section 700. Conduit.
Section 750. Reserved.
Section 850. Surface Irrigation Systems.
Section 900. Landscaping.
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Section 100. General Provisions.

SECTION INDEX

100.010. Improvement Requirements.
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- B. Improvements Made Before Recording.
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- E. Maintaining Existing Road Surfaces.
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- K. Other Specifications and Standards.

100.020. Definitions.

100.010. Improvement Requirements.

A. General. This policy defines the general requirements for improvements to be built by the Developer, sub-divider, owner, or Contractor for all types of construction, (to include residential, commercial, industrial, institutional, governmental and professional office). All improvements which are in areas that are or will become public rights-of-way and/or easements, or that will be under the responsibility of a homeowner's association shall meet the requirements of these specifications.

The improvements shall include all street improvements in front of all lots and along all dedicated streets to a connection with existing improvements of the same kind and to the boundaries of the development. Layout must provide for future extension to adjacent development and to be compatible with the contour of the ground for proper drainage. All drinking water, sanitary sewer, pressurized irrigation, electric, communication, storm, land or groundwater drains and any other buried utilities or conduits shall be installed to the boundary lines of the Subdivision or development.

B. Improvements Made Before Recording. No improvements shall be commenced until a final plat is approved and inspection fees paid.

C. Variations, Substitutions, Exceptions and Changes. Any variation, substitution or exception from the standards in this policy must be authorized in writing by the City Engineer or his/her designee. Product options and substitutions must meet the requirements of APWA 01 25 00 (Product Options and Substitutions). Any item of construction not covered in these standards must have plans and specifications approved by the City Engineer or his/her designee. Requests for changes to the Construction Standards shall be made in writing to the City Engineer. These requests will be reviewed during revision process conducted in conjunction with the APWA revisions.

D. Protection of Existing Improvements. The Contractor shall be responsible for the protection of any existing improvements on public or private property at the start of work or placed there during the progress of the work. Existing improvements shall include but are not limited to permanent surfacing, curbs, ditches, driveways, culverts, fences, walls and landscaping. Any surface improvements damaged as a result of construction shall be restored or replaced to an equal or better condition than before. This shall be accomplished in a timely manner.

E. Maintaining Existing Road Surfaces. The Contractor shall be responsible for maintaining existing road surfaces suitable for travel by the public. The Contractor shall be responsible for all dust and mud control and all claims and damages resulting from failure to maintain the construction area.

F. New Materials. Only new materials may be used during construction unless otherwise authorized by the City Engineer or his/her designee. In such a case where used materials are proposed, only materials of similar use may be installed in a new system with the same use. Example: Only previously used storm drain pipe can be evaluated for use in a new storm drain system or only previously used culinary main line may be evaluated for use in a new culinary system. If approved, the used materials must meet all applicable standards, thoroughly cleaned, and be restored to their original condition prior to installation.

G. City Furnished Products. If the City furnishes any products the Contractor shall conform to requirements and specifications of APWA 01 64 00 (Owner-furnished Products).

H. Product Delivery and Handling. The Contractor shall conform to requirements and specifications of APWA 01 65 00 (Product Delivery and Handling).

I. Product Storage and Protection. The Contractor shall conform to requirements and specifications of APWA 01 66 00 (Product Storage and Protection).

J. Building Permits. The City may issue a building permit upon application, in compliance with all laws, ordinances, rules, and regulations. No building permit will be issued until all the improvements essential to meet the building code and fire code are installed, accepted, and in service and all building permit and impact fees are paid.

When asphalt pavement plants are closed for the winter, building permits may be issued before paving if there is eight inches of compacted road base in all areas to be paved and adequate fire protection is available.

The City Engineer or his/her designee is hereby designated as the responsible official to accept the improvements.

K. Other Specifications and Standards. City standards and ordinances shall supersede all other Standards whenever they conflict. Alpine City hereby adopts 2017 APWA (American Public Works Association). If not covered in these specifications and details, 2017 APWA specifications shall be used. Utah Division of Drinking Water has some standards that override 2017 APWA specifications. An addendum to the 2017 APWA specifications has been prepared to highlight the differences and is included as part of these standards as section 1050.

100.020. Definitions.

A. AASHTO. The American Association of State Highway and Transportation Officials, is a standards setting body which publishes specifications, test protocols and guidelines which are used in highway design and construction throughout the United States.

B. APWA. The Utah Section, American Public Works Association Manual of Standard Specifications, latest edition with all approved supplements. These standard specifications can be obtained at http://utah.apwa.net/. When sections of the APWA manual are referred to in these standards, the Contractor shall also adhere to the requirements and specifications of all related sections referred to by the section of the APWA manual.

C. AWWA. The American Water Works Association Standards, latest edition.

D. City. The City of Alpine, Utah.

E. City Engineer. The person appointed by the City to be the City Engineer.

F. City Planner. The person appointed by the City to be the City Planner.

G. Civil Engineer. A person licensed with the State of Utah to practice as a professional engineer.

H. County. Utah County, Utah.

I. Construction Plans. Construction plans include drawings showing all required improvements for a development showing their location, size, grade, and elevations.

J. Customer. A person or company receiving service from any City utilities

K. Contractor. A person or company hired by the City or a Developer to perform construction in or for the City, having appropriate state licenses to perform said work.

L. Council or City Council. The governing body of the City.

M. Cul-de-sac. A permanent dead-end street.

N. Developer. Person, persons, partnership or corporation developing residential, commercial or industrial property.

O. Development Code. The Alpine City Development Code as currently adopted by the City Council.

P. Final Plat. An original recordable plat drawn on mylar in a form approved by the City and County, showing all lots, streets, utility easements, etc.

Q. Flood Plain. That area designated on the most recent Flood Insurance Rate Map for the City of Alpine, prepared by the Federal Emergency Management Agency, as a flood plain as amended.

R. General Plan. The general plan document as approved by the City Council.

S. Improved Lot. A lot which has all the improvements required in the Alpine City Development Code.

T. Improvements. Includes roads, streets, curb, gutters, sidewalks, grading, landscaping, water and sanitary sewer systems, irrigation systems, drainage systems, power and communication systems, fences, public facilities, trees or other requirements by this Section or by the City.

U. Land Surveyor. A person licensed with the State of Utah to practice as a licensed land surveyor.

V. Lot. A parcel or tract of land within a subdivision which is or may be occupied by a building or structure and the accessory buildings, structures or uses customarily incident thereto, including such open spaces as are arranged and designed to be used in connection with the building according to the zone within which the lot is located.

W. LID. Low Impact Development is an approach to land development that works with nature to manage storm water as close to its source as possible. LID employs principles such as preserving and creating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treats storm water as a resource rather than a waste product.

X. MUTCD. The Manual on Uniform Traffic Control Devices defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic.

Y. NEC. The National Electrical Code is a United States standard for the safe installation of electrical wiring and equipment.

Z. NESC. The National Electrical Safety Code establishes rules which govern: a) methods of grounding; b) installation and maintenance of electric-supply stations and equipment, of overhead supply and communication lines, and of underground and electric-supply and communications lines; and c) operation of electric-supply and communication lines and equipment.

AA. Offsite Facilities. Facilities outside of the boundaries of the subdivision or development site which are designated and located to serve the needs of the subdivision or development or adjacent property, usually lying between a development and existing facilities.

BB. Onsite Facilities. Facilities installed within or on the perimeter of the subdivision or development site.

CC. OSHA. The Occupational Safety and Health Administration is the main federal agency charged with the enforcement of safety and health legislation.

DD. Parcel of Land. A contiguous area of land in the possession or ownership of one person with one tax identification number.

EE. Planning Commission. The Planning Commission of Alpine City.

FF. Preliminary Plat. A map or plat of a proposed subdivision or development with accompanying supplementary documents.

GG. Public Utility Easements. The easements required to place public utilities across any privately owned property.

HH. ROW. A public Right of Way is a strip of land that is granted, through an easement or other mechanism, for transportation purposes, such as for a trail, driveway, rail line or highway. A right-of-way is reserved for the purposes of maintenance or expansion of existing services with the right-of-way.

II. Site Plan. A plan for a commercial, industrial, institutional, governmental or planned residential development in the City.

JJ. Streets. A thoroughfare which has been dedicated and accepted by the City Council, which the City has acquired by prescriptive right or which the City owns, or is offered for dedication on an approved recorded final plat. For further explanation see the streets section.

KK. Subdivision. Any parcel of land that is divided, re-subdivided or proposed to be divided into two or more lots, parcels, sites, units, plots, or other division of land for the purpose, whether immediate or future, for offer, sale, lease, or development either on the installment plan or upon any and all other plans, terms,

and conditions. A subdivision includes (1) the division or development of land whether by deed, metes and bounds description, devise and testacia, lease, map, plat, or other recorded instrument; and (2) divisions of land for all land for all residential and nonresidential uses, including land used or to be used for commercial, agricultural, and industrial purposes.

LL. Utilities. Includes drinking water lines; irrigation lines; sanitary sewer; storm, land and groundwater drains; gas lines; electric power lines; cable television and telephone lines; underground conduits; and junction boxes and all appurtenances to the above.

Section 200. Improvement and Design Requirements.

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200.010. General.

A. Easements. Developer shall provide easements for all utility extensions through private property. Developer shall also provide a 10 foot public utility easement along public right-of-ways or streets, along all exterior property boundaries of the development, and 5 foot public utility easements along all interior property lines of the development. If setbacks are less than 10 feet then public utility easements shall be the extent of the setback.

B. Traffic Control. A traffic control plan shall be submitted to the City prior to construction in or along public streets. All traffic control shall comply with APWA 01 55 26 (Traffic Control) and the MUTCD.

C. Survey. The alignment of the side property lines for each lot in a subdivision shall be marked in the top back of curb with a lot line witness marker that meets the requirements and specifications of APWA 31 05 10 (Boundary Markers and Survey Monuments). Developer shall provide survey bench marks and monuments as required by the City Engineer or his/her designee.

All property corners shall be marked with a rebar corner marker that meets the requirements and specifications of APWA 31 05 10 (Boundary Markers and Survey Monuments). Corners must be marked before acceptance of a subdivision's improvements by the City. The rebar must be offset 2 to 4 inches by a steel tee post four feet out of the ground on the property line alignment.

D. Temporary Controls. Temporary controls such as noise, dust, mud, surface water, ground water, pollution and erosion controls shall be made. Controls shall meet the requirements and specifications of APWA 01 57 00 (Temporary Controls). The pumping of groundwater across sidewalks, into gutters or into the sanitary sewer system is prohibited.

E. Landfill, Construction Debris or Garbage. No buildings, paved parking lots, paved roads, curb, gutter, or sidewalks are allowed to be located over landfills, construction debris, or garbage.

200.015. Specialized Engineering.

A. General. Any specialized engineering beyond the expertise of city staff such as, but not limited to, geotechnical, traffic, environmental, hillside, floodplain, bank stabilization and erosion control will require the review of qualified consultants. All review costs shall be paid by the property owner/developer.

B. Geotechnical Engineering. All Major subdivisions, as outlined in the Development Code, shall be required to submit a site specific geotechnical report. The geotechnical report shall include sufficient subsurface exploration, laboratory testing and geotechnical engineering analysis to render design level geotechnical recommendations and opinions regarding slope stability and required mitigation to protect planned or future development above and below the slope(s) from earth deformations and other adverse soil or geologic conditions.

All work completed in connection with the site specific geotechnical report shall be performed by an experienced geotechnical engineering firm and under the direct supervision and direction of a professional geotechnical engineer properly licensed in the state of Utah.

The scope of work described below is considered the minimum requirement for the geotechnical investigation. The geotechnical firm (Consultant) shall use their experience and engineering judgment in conjunction with the minimum requirements outlined below to develop an appropriate site-specific geotechnical scope of work and report.

1. Field Explorations. Prior to commencing field explorations the geotechnical engineer shall review available geologic maps, aerial photographs and other pertinent literature to develop an understanding of the site and its geologic setting.

   Locate utilities within areas of explorations by notifying the appropriate local one-call state utility locate service. Independent private utility locates may be required for utilities not identified by the local one-call service. Complete subsurface explorations, as many as needed to obtain a representative sample of all soil conditions for the entire site, but specifically shall be obtained for proposed roadway locations and residential building.

   Boring (s) shall be located within close proximity to slope crests so as to render a representative soil profile of the slope for analysis. The boring(s) shall extend to a minimum depth of 15 feet

below the tow of the slope. For example, if a 30-foot tall slope is being evaluated the boring shall extend at least 45 feet below the top of the slope. Borings shall extend through existing fill materials so that at least one sample is collected in native soil. Adjust boring depths for anticipated site development cuts and fills and for known soil conditions.

The geotechnical shall consider past property use and location. Additional soil borings shall be planned for sites located in areas that are known or suspected to have had previous slope deformations or seeps, springs or other adverse features. Special attentions shall be given to identifying, to the extent practical, the presence and extent of existing fill.

Collect a minimum of four (4) soil samples in the upper ten (10) feet of the profile and at intervals of five (5) feet thereafter. Adjust sampling intervals to include major changes in soil layering. Collect a sufficient number of undisturbed samples in fine-grained soils to properly assess strength and consolidation properties. Perform split barrel sampling in granular soils. Field blow counts should be corrected for energy and depth and presented as Standard Penetration Test (SPT) blow counts on the soil boring logs.

Field classify encountered soil in accordance with the American Standard for Testing and Materials (ASTM) and Unified Classification System (USCS).

Borings encountering bedrock shall be extended a minimum of 5 feet into the bedrock. Rock coring equipment shall be used where practical to aid in assessing rock properties. Where cores are collected, Rock Quality Designator (RQD) values should be presented on the boring logs.

2. Laboratory Testing. Samples collected in the field shall be properly packaged to avoid disturbance or freezing and transported to an accredited geotechnical and materials testing laboratory for further observation and testing. Laboratory testing shall be performed under the direction of a Utah licensed professional geotechnical engineer and in accordance with appropriate ASTM standards. At a minimum laboratory testing shall include the following:

    a. Sieve analysis – determine grain size distribution and percent fines (minus 200 sieve)
    b. Atterberg tests – classification, indexing, shrinkage and expansiveness
    c. In-place density
    d. Natural moisture content
    e. Shear strength – Direct Shear and/or Triaxial Shear

    Additional laboratory testing may be required to address site conditions and provide necessary engineering properties for analysis. The geotechnical engineer shall use his professional judgment and local experience to determine an appropriate scope for laboratory testing.

    Laboratory test results shall be presented in the Geotechnical Report, on individual summary sheets in the report appendix or on the boring logs.

3. Geotechnical Report Requirements. The results of the field and laboratory programs shall be evaluated by a Utah registered professional geotechnical engineer. Based on the results of their evaluation, an engineering report shall be prepared that details the results of the testing performed, provides logs of the borings and a diagram of the site/boring layout and provides geotechnical recommendations and information regarding following:

    a. General suitability of the site for the planned development
    b. Recommended precautions and limitations
    c. Subsurface exploration procedures
    d. Soil and rock conditions encountered
    e. Groundwater depth during and after drilling
    f. Geologic setting
    g. Geologic hazards (ie – fault, slide, rock fall, etc.)
    h. Slope stability including provisions, recommendations and designs to mitigate the effects of unstable slopes and other geologic hazards that may adversely impact planned developments above and below the slope(s)
    i. Special design and construction provisions for footings or foundations near steep slopes, including type and depth of foundation system and set back distance from slopes
    j. Surface water runoff control and drainage

k. Subsurface drainage
l. Site grading and earthwork requirements, as appropriate

Detailed individual boring logs and graphical cross sections summarizing soil / rock profiles and slope stability analysis and results shall be included in the geotechnical report. The logs shall contain sufficient detail to render a clear description of the soil stratigraphy, soil descriptions and classifications, SPT blow counts, sample locations and depths, ground water depths and appropriate laboratory test results. Individual boring logs shall include a description of the boring location, exploration equipment used, relative or actual elevation, date of exploration and other pertinent information relative to the field exploration. The cross sections shall contain sufficient detail to render a clear description of the slope stability analysis results and any mitigation measures required. The cross sections shall contain soil profile data and a summary of engineering properties and parameters used in the analysis for each significant soil / rock layer.

The final geotechnical report shall bear the geotechnical engineer's stamp and seal. One (1) electronically submitted PDF copy of the report shall be delivered to the City of Alpine within sufficient time for review and comment. The City will have the report reviewed by its own geotechnical engineer. The cost of that review will be borne by the applicant.

200.020. Construction Plans.

A. General. The following instructions are for the purpose of standardizing the preparation of construction plans to obtain uniformity in appearance, clarity, size, and style. Plans and designs shall meet the standards defined in the specifications and drawings hereinafter outlined. All drawings and/or prints shall be clear and legible and conform to good engineering and drafting room practice.

Include the following in construction plans for all developments:

1. A copy of the proposed final plat or site plan;
2. A plan view of the entire project showing all utilities, roads, and appurtenances;
3. Plan and profiles of all storm, land and groundwater drains, sanitary sewer, curb, gutter, and irrigation;
4. Detail drawings of street cross sections according to the standard drawings and other detail drawings only for items not found in the City standard drawings. Detail drawings shall be to scale and completely dimensioned and described. All items shall be designed in accordance with minimum requirements established by the City Construction Standards;
5. Complete plans for all off-site work to be done in conjunction with the project;
6. A stamp and signature of a Civil Engineer licensed in the state of Utah on each plan sheet, detail drawing, and design sheet;
7. Engineer's take off quantities and cost estimate for all construction work related to the project;

B. Plan Sheets. Include the following on each plan sheet:

1. North Arrow;
2. A standard engineering scale between 1 inch equals 10 feet and 60 feet. A scale of 1 inch equals 100 feet may be used on the plan view of the entire project if necessary to fit project on one sheet;
3. Title block along right side of sheet with title of drawing in lower right corner. Include in title block:
    a. Name of subdivision and plat or site plan;
    b. Name of city;
    c. Specific type of drawing (construction drawings, plan view, plan and profiles, off-site construction, detail drawings);
    d. Name of engineer, surveyor, or firm preparing drawings;
    e. Drawing number of total number of drawings;
4. Also include the following with profile drawings:
    a. Vertical scale of 1 inch equals 1, 2, 3, 4, 5, or 6 feet;
    b. Reference to the vertical datum. The 1929 or 1988 North American Vertical Datum (NAVD29 or NAVD88) shall be used for all elevation data;
    c. Benchmark location and elevation for checking construction;
    d. Stationing aligned from plan view with the profile view;
    e. Existing ground, ditch, and utility lines;
    f. A sheet index on each sheet showing profiled area in relation to the overall project.

C. Electric and Communication Plans. Construction plans must include the location of all existing poles, transformers, secondary junction boxes, gas lines, sectionalizers, overhead electrical wire and overhead

communication cable. Developers will be required to work separately with owners of these companies to obtain the necessary approvals from them.

D. Street, Parking Lot, and Driveway Plans. Include the following for curb, gutter, storm, land and groundwater drains, drainage structures, sidewalks, and street surfacing plans:
   1. Plan and profile for top back of curb for each side of the street. Label profile line as top back of curb for both sides of street if it is the same;
   2. Stationing and top back of curb elevations with curve data for curb returns;
   3. Flow direction and type of cross drainage structures at intersections with adequate flow line elevations;
   4. Type of curb and gutter if other than the standard twenty-four inch curb and gutter in the standard drawings;
   5. Location and width of driveways;
   6. Street cross sections with all proposed and existing utilities and base sections as per soils report and Construction and Development Standards;

E. Sanitary Sewer, Storm, Land and Groundwater Drain Plans. Include the following for sanitary sewer, storm, land and groundwater drain plans:
   1. Plan and profile of all new and existing mains and manholes;
   2. Box and manhole size, location, and elevations of flow lines and rim;
   3. Location, size, grade, and type of pipe of new and existing mains;
   4. Location of each lateral with distance stubbed back into property clearly drawn and dimensioned;
   5. Storm water calculations per the Alpine City Storm Water Drainage Design Manual and Appendicies;
   6. Storm inlet boxes shall be located on street corners and or property lines.

F. Drinking Water and Pressurized Irrigation Plans. Include the following for drinking water and pressurized irrigation plans:
   1. Location, size, and type of pipe of new and existing water mains;
   2. Location of valves, fittings, hydrants, boxes, meters, and appurtenances;
   3. Minimum cover;
   4. Location of each lateral with distance stubbed back into property clearly drawn and dimensioned;
   5. Looping of the drinking waterline will be required at the discretion of the City Engineer or his/her designee to provide adequate fire flows and redundancy.

G. Landscaping Plans. For landscaping that will be maintained by the City, developments with landscaping restrictions (Three Falls, Summit Pointe, etc.), or a homeowner's association submit one copy of the landscaping plans including all irrigation system layouts, details, legends, and drawings. These project plans shall meet the requirements of the Section 900. Landscaping and Section 950. Irrigation Sprinkler Systems, as well as the specific requirements of the development in which they are located.

H. Irrigation Canal and Pipe Plans. Plans that affect canals or irrigation pipes must be stamped approved by those responsible for their maintenance before they will be approved by the City.

200.030. Street Improvements.

A. General. The Developer shall construct all streets and appurtenances required for the development as specified by the City Council in accordance with the City Construction and Development Standards and/or other codes adopted by the City. The design and all street work shall be done as directed and under the supervision of the City Engineer or his/her designee.

B. Access. Access requirements shall be in accordance with the Development Code.

C. Cul-de-sacs. The maximum length of a cul-de-sac is 450 feet measured from the nearest right-of-way line of the adjoining street to the center of the cul-de-sac. The minimum radius of the cul-de-sac is 60 feet at the property line.

D. Curbs, Gutters and Sidewalks. Curbs, gutters, and sidewalks shall be built along all public streets according to the standard drawings. All curbs, gutters, and sidewalks shall connect to existing curbs, gutters, and sidewalks within a reasonable area as determined by the City Engineer or his/her designee.

E. Partial-Streets Widths. Per Alpine City Development Code

F. Driveway and Intersection Location. Driveways and street intersection locations shall be designed according to Alpine City Transportation Master Plan. No driveway shall be constructed within 40 feet from an adjoining street. The distance is measured from the adjoining street's Top Back Curb (TBC) to the edge of driveway for access.

Curb cuts shall only be allowed for driveways. Driveways shall be a minimum of 3 feet away from any utility fixture (including, but not limited to, power pole, fire hydrant, mailbox, phone/cable box, electric box, etc.) or utility box (culinary meter, pressurized irrigation meter, etc.) and curb cuts for driveways must be a minimum of 6-inches away from the property line. All accesses and streets onto arterials must be approved by the City Engineer or his/her designee.

G. Parking. Per Alpine City Development Code.

H. Reverse or Double Frontage Lots. Per Alpine City Development Code

I. Temporary Turn-Arounds. Per Alpine City Development Code.

J. Allowable Grades. Per Alpine City Development Code

K. Stamped Concrete or Pavers. Alpine City does not allow colored/stamped concrete or pavers on city owned concrete flatwork unless recommended by the Planning Commission and approved by the City Council.

L. Precast Concrete or Block Walls. The design of all walls greater than four feet of exposed height must be approved through the Building Department. Design must be stamped and signed by a licensed professional civil engineer registered in the state of Utah.

M. Pedestrian Ramps. Pedestrian ramps shall be placed at all corners of intersections and at all other locations of regular pedestrian traffic across roads as determined by the City Engineer or his/her designee. All ramps shall conform to the requirements of the Americans with Disabilities Act and City standards.

N. Horizontal and Vertical Curve. Per Alpine City Development Code

200.040. Utility Improvements.

A. General. It shall be the responsibility of the Developer to connect to existing utilities or improvements wherever they are located and extend those improvements to and through the development. Workmanship and details of construction shall be in accordance with the City Construction Standards and/or other codes adopted by the City. All work shall be done under the supervision of the City Engineer or his/her designee.

B. Communication. Communication lines shall be underground except when the City Engineer or his/her designee feels that such underground lines are not in the best interest of the City.

C. Electric. Electrical lines shall be underground except when the City Engineer or his/her designee feels that such underground lines are not in the best interest of the City. Lines shall be located opposite of water and pressurized irrigation lines.

D. Pressurized Irrigation. The Developer shall connect the development with the city pressurized irrigation system with all appurtenances and shall make such pressurized irrigation available to each lot or unit within the development. Adequacy of supply and sizes of pressurized irrigation mains shall be established by the City Engineer or his/her designee. Meter boxes shall be located per Alpine City Standard Details.

E. Sanitary Sewer. The Developer shall provide each lot with a sanitary sewer system in accordance with the ordinances of the City. All measures should be taken to utilize a gravity sewer system before the City will consider a pumped system. All said work shall be done as directed and under the supervision of the City Engineer or his/her designee.

F. Storm Drain. The Developer shall provide on-site storm drainage facilities according to the storm water Drainage Design manual and in accordance with the ordinances of the City. Storm drainage systems shall incorporate Low Impact Development (LID) systems. The maximum allowable storm water discharge from any commercial and industrial development will be limited to 0.07 cfs/acre of development. Individual lots shall retain the 80^{Th} Percentile Storm.

G. Drinking Water. The Developer shall connect the development with the city drinking water system with all appurtenances and shall make such drinking water is available to each lot or unit within the development. Adequacy of supply and sizes of drinking water mains shall be established by the City Engineer or his/her designee. Pipes shall be located opposite from electrical lines. Looping of the drinking waterline will be required at the discretion of the City Engineer or his/her designee to provide adequate fire flows and redundancy. Meter locations shall be per Alpine City Standard Details.

Section 250. Inspection and Testing.

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250.010. General.

A. Quality Assurance. The following work shall be subject to the inspection and testing requirements of this Section:

1. Work on existing or proposed City property;
2. Work on property that will be owned by a property owners association;
3. Work on existing or proposed streets, easements, or right-of-ways;
4. Work on existing or proposed City utilities.

The Contractor must ensure that all inspection and testing required by these standards is preformed and accepted by the City Engineer or his/her designee. The Contractor must also ensure that any additional inspection and testing required by the City or a testing company is performed and accepted by the City. In projects other than those bid out by the City, the Developer is ultimately responsible for the work of the Contractor.

B. Submittals. Contractor shall turn in submittals for all testing not performed by the City.

1. *Field Test Report.* Contractor must submit original field test report immediately to City whenever possible. Reports may not be submitted later than the end of the current day.
2. *Laboratory Test Report*. Submit original report to the City within 48 hours after test results are determined.

Material and Equipment Specifications. One copy of the manufacturer's specifications and manuals for equipment and materials used must be submitted to the City 7 days before the pre-construction meeting.

C. Preconstruction Meeting. The Contractor must schedule a preconstruction meeting with the City's engineering department before any work on a new development or City project may begin.

The Contractor, Developer, project engineer, and all sub-contractors must be present at the preconstruction meeting. Any sub-contractor not attending the preconstruction meeting must schedule an additional preconstruction meeting with the City before beginning work. Work must begin within 4 weeks of the preconstruction meeting or a new preconstruction meeting must be scheduled by the Contractor at the discretion of the City Engineer.

D. Inspection and Testing Notification. The City may contract with a private company to conduct any inspections or testing specified to be performed by the City. All inspections and tests must be scheduled with the City or company contracted by the City a minimum of 1 full business day before needed. Requests for inspection on work requiring continuous inspection shall be made 3 full business days prior to commencing the work.

E. Testing and Sampling. The City Engineer or City Inspector may require that sampling be performed in their presence, in which case the Developer or Contractor shall be notified of this requirement in writing at the time the building permit is issued, or at the preconstruction meeting, or when construction drawings are released by the City for construction, as applicable.

Each sample or test shall be accompanied by the following written data, which shall be reported to the City with test results:

1. Name of Project.
2. Name of Developer/Contractor.
3. Project Street Address.
4. Appropriate Test Name.
5. Date of Sampling.
6. Sample Number (if more than one sample per day).
7. Name of technician who performed the testing.
8. Location of sample.

F. Testing Agency. All materials testing, whether in a laboratory or in the field, shall be conducted by a testing agency approved by the City Engineer or his/her designee.

G. Work without Required Inspection and Testing. Any work performed without required inspection or testing will give the City the option to call the bond covering that portion of the improvements in violation, or, require the removal and replacement of the un-inspected work. For City projects, the City Engineer may also accept the work at a reduced price if the lowest pay factor is applied.

H. Inspection and Testing Fees. Inspection fees and/or connection fees shall be paid and permits required shall be obtained prior to commencement of construction.

I. Sub-standard Work and Pay Factors. If any inspection or test indicates that work does not meet City standards the City Engineer will require that the work be redone for new development.

For City contracted work, if the sub-standard work has a pay factor option in the standards, the City Engineer may or may not accept the work at a reduced price upon condition that the pay factors outlined in the City standards apply. Payment reduction amounts shall be applied against payments to Contractors. When any work is done to a lower standard than allowed for in the pay factor tables the work shall be redone until it meets City standards.

J. Weekly Progress Meetings. At the pre-construction meeting it will be determined if weekly construction meetings are required. The City Engineer or his/her designee, City inspectors, the Contractor, and sub-contractors shall be in attendance.

K. Road Construction. Road construction may not commence until all underground utilities (both City and privately owned) are installed and pass all the inspections and tests required by these standards.

L. As-Built Survey. The Contractor shall notify the City to survey all underground utilities either installed or uncovered in the course of construction. Contractor shall give the City 24 hour's notice to survey utilities.

M. Acceptance and Payment of Improvements. Inspections made by the City or a company hired by the City to determine compliance with the specifications do not imply final acceptance of the work. The City requires the completion of all facilities before any are paid for and accepted for maintenance. The following inspections must be scheduled and passed before final acceptance and payment of any improvements:

1. *End of Construction Inspection.* The Contractor must notify the city at least 3 days prior of the need for an End of Construction Inspection. Upon notification, the Contractor and City will schedule an end of construction inspection, not to occur within 3 business days of the City being noticed and, once all the improvements in a development or project are completed according to the Construction and Development Standards Re-inspections of an End of Construction Inspection require the same 3-day notification and scheduling procedure.
2. *Final Acceptance Inspection.* One year after the Contractor or Developer passes the end of construction inspection, he or she must schedule a final acceptance inspection 1 month prior to the expiration date of the warranty period.

If the Contractor or Developer does not pass one of these inspections a punch list of work items necessary to pass the inspection will be given to the Contractor or Developer within 2 business days of the inspection. The Contractor or Developer must reschedule inspections with the City until the project or development passes the inspection.

All improvements shall be free from defects, damage, or debris at the time of these inspections. The Contractor or Developer shall not be responsible for debris or damage not caused as a result of his or her work or quality of work.

Any faulty or defective work shall be corrected by the Contractor within 30 days of the failed inspection or according to the contract the City has with the Contractor.

If the Contractor or Developer fails to do so, the City Engineer or his/her designee shall have such repairs made, and the cost of such repairs shall be paid by the Developer together with 25% in addition thereto for stipulated damages for such failure on the part of the Developer to make the repairs.

At the discretion of the City Engineer or his/her designee, full payment for constructed infrastructure will not come until after all listed inspections and testing have been completed with passing results. Example: Culinary water main and services installation will not be paid in full until the Main Line Inspection, Drinking Water Service Inspection, High Chlorine Test, and Bacteria tests have been inspected and passed. Partial Payments are acceptable for items that meet this requirement.

250.020. Earthwork.

A. Compaction and Moisture Content Tests. The Contractor will test all sub-grade and fill material for compaction and moisture content and will provide these tests to the city within 48 hours of testing. Test locations shall be determined by the City.

1. *Trenches.* Tests will generally be taken 1 per 200 lineal foot of trench per 8 inch lift.
2. *Streets.* Tests will generally be taken 3 per 200 lineal foot of street per 8 inch lift.
3. *Other Cuts and Fills.* Tests will generally be taken 1 per 2,000 square feet of compacted area.

B. Red-head Inspection. The project engineer must provide red-heads for all grade work when brought to within 3 inches of finish grade. The City must inspect and accept finished grading to the engineered red-heads.

C. Proof Roll Inspection. Prior to placing fill material for roadbed backfills, proof roll sub-grade using gross weight of 18,000 pounds per tandem axle, with a tire pressure at least 90 psi, unless otherwise specified by the soils report. Contractor shall proof roll under the supervision of the City according to the following conditions:
   1. *Passes.* All proof roll passes will traverse the sub-grade parallel to the roadbed centerline. All subsequent passes will be offset half the vehicle width until the entire sub-grade is tested.
   2. *Mitigation.* The City will analyze, determine, designate, and measure the areas, if any, requiring additional compaction or reconstruction.
   3. *Sub-grade Protection.* Once sub-grade passes the proof rolling test, protect the surface from construction operations and traffic damage. Repair all cuts, ruts, and breaks. Keep surface in a satisfactory condition until geotextile fabric or base course has been placed.

D. Thickness Test. Material thickness tests will be conducted by the City when the City Engineer or his/her designee considers it necessary. The total depth shall be reasonably close to that shown on the typical section. Depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/4" below the specified thickness and no individual hole shall be more than 3/4" below the specified thickness.

250.030. Landscaping and Irrigation Sprinkler Systems.

A. Plant Material Inspection. All plant materials are to be inspected and approved by the City at the time of delivery on site. This approval does not constitute final acceptance of any plant material by the City Parks Department Representative. All plant materials will be inspected again at time of final inspection and once again at the end of the warranty period. Any plant found to be unacceptable at any of these inspections shall be immediately removed and replaced.

B. Sprinkler System Assembly Inspection. An on-site inspection shall be conducted by the City after the entire sprinkler system is assembled and prior to backfilling the trenches. During this inspection all fittings, bends, sweeps, valves, sprinkler heads and any other appurtenance on the system shall be surveyed by the City.

C. Fall Sprinkler Winterizing Test. In the fall of the year during the installation and guarantee period, the Contractor shall meet with the City on the project site. The Contractor shall winterize the system by draining all the water and doing everything necessary to insure the protection of the system until spring. Blowing out the lines by compression shall be permitted during the 1 year guarantee. The individuals involved from both parties shall exchange all information necessary for the eventual takeover of the system by the Alpine City Maintenance Personnel.

D. Spring Sprinkler Energizing Test. The Contractor with the City Maintenance Personnel in attendance shall energize the sprinkler irrigation system the spring following the fall winterizing test. Contractor shall repair all defects found as a result of winter damage, improper installation, improper maintenance, defective materials or inadequate sprinkler drainage.

E. Final Acceptance Inspection. At the end of the guarantee period, all landscaping and irrigation sprinkler systems must then be inspected and tested by the City. As-built drawings shall be furnished to the City at the time of the final inspection.

Irrigation sprinkler systems must operate in a satisfactory manner, with a full uniform coverage of the areas that are indicated to be sprinkled. Sprinkler heads shall be adjusted to proper level.

Landscape and irrigation sprinkler systems will not be inspected for acceptance in parts. Where inspected work does not comply with requirements, Contractor shall replace rejected work and continue specified maintenance until reinspected by the City and found to be acceptable. Remove rejected plants and materials promptly from the project site.

250.040. Portland Cement Concrete Work.

A. General. All materials and processes involved in concrete work shall be subject to inspection and testing as detailed in the various paragraphs of this section and in general compliance with ASTM E105-54T. Results of tests performed by laboratories approved by the City to the satisfaction of the City Engineer or his/her designee shall be accepted by the supplier as a basis for acceptance or rejection of any and all materials.

The latest appropriate ASTM tests and methods shall be considered to be standard, and will include but not be limited to concrete, cement, aggregates additives, curing compounds, parting compounds and jointing materials. A copy of all batch tickets for concrete placed shall be submitted to the City.

B. Slump, Temperature and Air Entrainment Test. The Contractor shall test slump, temperature, and air entrainment on every fifty cubic yards or less of concrete placed each day. Tests shall be taken after ½ to 1 yard has been poured from the mixer. Once a sample is taken the concrete pour shall be stopped until tests show that the concrete meets City standards. Concrete that does not meet mix design requirements for slump, temperature, and air entrainment shall not be used. Any that may already have been poured shall be removed before hardening.

C. Compression Test. The Contractor shall test compression on every fifty cubic yards or less of concrete placed each day according to ASTM C143, C231. C1064, C172, and C31. Three cylinder specimens shall be taken for each test, one shall be broken at 7 days, one at 28 days and the third held for 45 days after submittal in case further testing is required.

Specimens shall attain the specified strength at 28 days. One lot is 1 day's production. A lot with sub-standard compressive strength may be accepted at reduced price if the appropriate pay factor is applied to the whole lot. The following table outlines the pay factors for sub-standard Portland cement concrete strength:

PORTLAND CEMENT CONCRETE
COMPRESSIVE STRENGTH PAY FACTORS

Pay Factor	Tolerance (psi below 28 day specified strength)
0.98	1 to 100
0.94	101 to 200
0.88	201 to 300
0.80	301 to 400
0.50	401 to 500
Replace	More than 500

These pay factors may not be applied toward concrete in structures.

D. Forms and String Line Inspection. The City shall inspect all forms and string lines before concrete may be placed.

E. Gutter Drainage Inspection. The City shall inspect all gutters for drainage prior to paving. Water shall be let into all gutters and any gutters with standing water in excess of 1/4 inch after runoff shall be replaced. Contractor must supply water truck for gutter drainage inspection.

F. Thickness Test. The City shall determine the number, if any, and location of core tests necessary to ensure the proper thickness of Portland cement concrete. Tests shall be taken at equal intervals in a test area. A test area shall be defined as a total area placed at the same time and by the same process. The average thickness shall then be determined from all the cores taken. Tests shall be taken and verified by a certified testing lab, paid for by the Contractor.

When the average thickness is more than 0.25 inches below the specified thickness, a minimum of 1 core per 1,500 square feet of pavement shall be taken. Work with sub-standard thickness may be accepted at reduced price if the appropriate pay factor for the lowest tested thickness is applied to all of the sub-standard work. The following table outlines the pay factors for sub-standard Portland cement concrete thickness:

PORTLAND CEMENT CONCRETE
THICKNESS PAY FACTORS

Pay Factor	Tolerance (inches below specified thickness)
1.00	0.00 to 0.25
0.90	0.26 to 0.50
0.70	0.51 to 0.75
0.50	0.76 to 1.00
Replace	More than 1.00

G. Curing Inspection. The City shall inspect the curing of all Portland cement concrete work within 24 hours of pouring the concrete.

250.050. Pressurized Irrigation.

A. General. The inspections and tests in this section are required for all pressurized irrigation construction in the City boundaries and on all construction relating to the City pressurized irrigation system outside the city boundaries.

B. Main Line Inspection. The City must inspect all pressurized irrigation main line installation on an ongoing basis. Inspection notification must be given before any construction of the main line may begin. All crosses, tees, bends, valves, and drains must be inspected and surveyed by the City before they are backfilled.

C. Pressurized Irrigation Service Inspection. The City must inspect all pressurized irrigation services before service trenches are backfilled. The City must be able to survey services at the main during the inspection.

D. Pressure Test. The Contractor must pressure test all pressurized irrigation systems, system extensions and service laterals to the setter in the presence of the City Engineer or his/her designee or have tests documented and submitted by a certified testing company approved by the City. Pressure tests must meet the requirements and specifications of APWA 33 08 00 (Commissioning of Water Utilities). Provide a 210 psi test pressure for 2 hours unless specified otherwise. The pressure of 210 psi must be provided at the highest point in the section of pipe being tested unless elevations are such that this would create pressures over 250 psi at the lowest point in the section of pipe tested. In such a case, consultation with the City Engineer is required and AWWA standards will be considered.

E. Leakage Test. For test lengths of pipe greater than 1,500 feet, a leakage allowance may be considered. There will be no allowance for leakage on test sections less than 1,500 feet. When allowed, leakage tests shall be conducted concurrently with the pressure tests. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$Q \equiv \frac{LD * \sqrt{P}}{133{,}200}$$

In which Q is the allowable leakage, in gallons per hour; L is the length of pipeline tested in feet; P is the average test pressure, in pounds per square inch (gage) and D is the nominal diameter of the pipe in inches.

If any test of pipe laid discloses leakage greater than specified, the Contractor shall, at their own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

250.060. Sanitary Sewer.

A. General. The inspections and tests in this section are required for all sanitary sewer construction in the City boundaries and on all construction relating to the City sanitary sewer system outside the city boundaries.

B. Main Line Inspection. The City must inspect all sanitary sewer main line installation on an ongoing basis. Inspection notification must be given before any construction of the main may begin.

C. Service Inspection. The City must inspect all sanitary sewer services before service trenches are backfilled. The City must be able to survey services at each end during the inspection.

D. Air Pressure Test. Contractor shall conduct a low pressure air test by the following method under the direction of the City Engineer or his/her designee with equipment equal to Cherne Industrial, Inc., or provide proof that test was conducted by a certified testing company. Sanitary sewer pipes with inside diameters of 30 inches or larger shall be leak tested according to manufacturer's specifications.

All wyes, tees, or ends of lateral stubs shall be suitably capped and braced to withstand the internal test pressures. Caps shall be easily removable for future lateral connections or extensions. After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs.

Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psi-G greater than the average back pressure of any ground water that may be over the pipe. At least 2 minutes shall be allowed for the air pressure to stabilize.

The portion of line being tested shall be accepted if the portion under test does not lose air at a rate greater than 0.003 cubic feet per minute per square foot of internal pipe surface or 2.0 cubic feet per minute minimum when tested at an average 3.0 psi-G greater than any back pressure exerted by ground water that may be over the pipe at the time of the test.

The pipe and joints shall also be considered acceptable when the time required in minutes for pressure to decrease from 3.5 To 2.5 psi-G (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

PRESSURE REDUCTION TIME LIMITS

Pipe Diameter (inches)	Time (minutes)
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

If the installation fails to meet this requirement, the Contractor shall determine at his/her own expense the source of leakage. He shall repair or replace all defective materials and/or workmanship. All sanitary sewer mains shall be tested, cleaned and accepted by Alpine City before laying the street surface.

E. Video Inspection. Contractor shall clean and provide the City with video inspection of all sanitary sewer main lines **prior to paving**. The City must approve video inspection company.

Cleaning shall be done using a high pressure jet cleaning machine, producing a minimum of 800 psi. Waste water and debris shall not be permitted to enter the City sanitary sewer system, but shall be removed at the lowest manhole of the extension.

Video Inspection shall be done by the Contractor. A digital video disk (DVD or thumb drive) of video inspection and log report shall be submitted by the inspection company to the City Engineer or his/her designee.

Main line determined to be defective by the City Engineer or his/her designee shall be remedied by the Contractor. Contractor shall then clean and video inspect the main lines again.

F. Deflection Test. Contractor shall perform a displacement test on all sewer lines after video inspection. Deflections tests must be conducted in the presence of the City Engineer or his/her designee or be documented and submitted by a certified testing company approved by the City. In no case shall pipe be accepted that has a deflection of more than 5% after it has been backfilled. The Mandrel must be pulled by hand or air. A pipe deflection test shall be required of the Developer/Contractor after backfilling and compaction of the trench.

250.070. Storm, Land and Groundwater Drains.

A. General. The inspections and tests in this section are required for all storm, land and groundwater drain construction in the City boundaries and on all construction relating to the City storm, land and groundwater drain system outside the city boundaries.

B. Main Line Inspection. The City must inspect all storm, land and groundwater drain main lines during installation on an ongoing basis. Inspection notification must be given before any construction of the pipe may begin. All groundwater drains shall be pre-approved by the City Engineer or his/her designee.

C. Air Pressure Test. Contractor shall conduct a low pressure air test for all sealed drains by the following method under the direction of the City Engineer or his/her designee with equipment equal to Cherne Industrial, Inc., or provide proof that test was conducted by a certified testing company. Storm drain pipes with inside diameters of 30 inches or larger shall be leak tested according to manufacturer's specifications. Air pressure tests shall be completed prior to paving.

All wyes, tees, or ends of lateral stubs shall be suitably capped and braced to withstand the internal test pressures. Caps shall be easily removable for future lateral connections or extensions. After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs.

Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psi-G greater than the average back pressure of any ground water that may be over the pipe. At least 2 minutes shall be allowed for the air pressure to stabilize.

The portion of line being tested shall be accepted if the portion under test does not lose air at a rate greater than 0.003 cubic feet per minute per square foot of internal pipe surface or 2.0 cubic feet per minute minimum when tested at an average 3.0 psi-G greater than any back pressure exerted by ground water that may be over the pipe at the time of the test.

The pipe and joints shall also be considered acceptable when the time required in minutes for pressure to decrease from 3.5 To 2.5 psi-G (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

PRESSURE REDUCTION TIME LIMITS

Pipe Diameter (inches)	Time (minutes)
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5

18	8.8
21	10.0
24	11.5

If the installation fails to meet this requirement, the Contractor shall determine at his/her own expense the source of leakage. He shall repair or replace all defective materials and/or workmanship. All storm drain lines shall be tested, cleaned and accepted by Alpine City before laying the street surface.

D. Video Inspection. Contractor shall clean and then video inspect all storm, land and groundwater drain lines **prior to paving**. The City must approve video inspection company.

Cleaning shall be done using a high pressure jet cleaning machine, producing a minimum of 800 psi. Debris shall not be permitted to enter the City storm drain system.

Video inspection shall clearly show any debris, broken pipe, misaligned pipe, displaced pipe and defective joints for all sections of the main line. All defects and their location shall be detailed on a separate video log report. A digital video disk (DVD or thumb drive) of video inspection and log report shall be submitted by the inspection company to the City Engineer or his/her designee.

Log reports shall be submitted on the City video form or an approved equivalent. Log reports must be submitted with an 11x17 copy of the plans. All manholes in the log report must reference the labeled manholes numbers on the plans. Each manhole must also have a street address clearly shown on the log report.

E. Deflection Test. Contractor shall perform a displacement test on all non-concrete storm drain lines after video inspection. Deflections tests must be conducted in the presence of the City Engineer or his/her designee or be documented and submitted by a certified testing company approved by the City. In no case shall pipe be accepted that has a deflection of more than 5% after it has been backfilled. The Mandrel must be pulled by hand or air. A pipe deflection test shall be required of the Developer/Contractor after backfilling and compaction of the trench.

250.080. Streets.

A. Asphalt Pavement Material Tests. Material tests will be conducted by the Developer for development projects and by the City for City contracts. Tests are taken once per day or once per every 500 tons of material placed. Sampling and testing per APWA 32 12 05.

B. Compaction Tests. The Contractor will test all bituminous pavement for compaction and moisture content. Test locations shall be determined by the City but will generally be taken 3 per 200 lineal foot of street or 1 per 2,000 square foot of paved area. Pay factors as per APWA 32 12 16 (Plant-Mix Bituminous Paving) shall apply.

C. Grading Inspection. The sub-grade, sub-base, and road base shall all be graded to an engineered red-head and accepted by Alpine City. Red-heads shall be placed every 50 feet at the crown of the road. If the distance between red-heads and edge of pavement exceeds 25 feet additional redheads shall be installed half way between the crown and edge of pavement. Red-heads shall also be placed every 50 feet at the edge of pavement where there is no curb and gutter.

D. Thickness Test. Material depth tests will be conducted by the City when the City Engineer or his/her designee considers it necessary. The total depth shall be reasonably close to that shown on the typical section.

For City projects, depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/4" below the specified thickness and no individual hole shall be more than 1/2" below the specified thickness. Work with sub-standard thickness may be accepted at reduced price if the appropriate pay factor for the lowest tested thickness is applied to all of the sub-standard work. The following table outlines the pay factors for sub-standard asphalt pavement thickness:

PAVEMENT DEPTH PAY FACTORS FOR CITY PROJECTS

Pay Factor	Tolerance (inches below specified thickness)
0.95	0.00 to 0.25
0.90	0.26 to 0.50
Replace	More than 0.5

For new development, the City will accept nothing less than what the plans call for. Depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/8" below the specified thickness and no individual hole shall be more than 1/4" below the specified thickness. Work with sub-standard thickness will be rejected, removed, and replaced.

E. Profile Tolerance Inspection. Profile tolerance inspections may be required by the City any time within a year of paving. Collector and arterial streets shall meet the "Tolerances" requirements of APWA 32 12 16 (Plant-Mix Asphalt Paving). For local streets profiling, the maximum vertical distance from the pavement surface to a straight edge is:
   a. 1/4-inch in 10-feet parallel to centerline.
   b. 3/8-inch in 10-feet perpendicular to centerline except at cross section grade breaks.

F. Asphalt Concrete Temperature Test. This test shall be conducted on the first three loads of asphalt concrete installed, and on one in four of all future loads as required by the City. Testing shall be conducted according to the requirements and specifications of APWA 32 12 16 (Plant-Mix Asphalt Concrete Paving). Temperature gauge shall be allowed to stabilize for 1 minute before taking reading if using probe type. If using infra-red "gun" type, reading shall consist of an average of a minimum of 3 readings, where reading is taken immediately after displacing a minimum of 2 inches of material from the surface being tested and the "gun" is within 18" of the surface being tested.

G. Asphalt Paving Limitations.
   A. Paving between April 15th to October 15th to follow APWA 32 12 16.13 (must have 50 degrees and rising temperature in the shade and on the roadway surface).
   B. Paving between November 15th and March 1st is not allowed.
   C. In the event the City Engineer approves a paving plan proposed between October 15th and November 15th or between March 1st and April 15th, and if temperatures never rise above 60 degrees during the paving process, an overlay in the spring will be required as outlined in the table below. Do not place HMA on frozen base or during adverse climatic conditions such as precipitation or when roadway surface is icy or wet. Use a release agent that does not dissolve asphalt and is acceptable to the City Engineer or his/her designee for all equipment and hand tools used to mix, haul, and pace the HMA. Placement of HMA between October 15th and November 15th or between March 1st and April 15th may be allowed when the air temperature in the shade and the roadway surface temperature are above 45 degrees Fahrenheit and rising. Paving that occurs between October 15th and November 15th or between March 1st and April 15th, which requires a spring overlay, shall be finished 1.5 inches below lip of curb to accept the required 2-inch overlay in the spring. Paving cannot occur when rain is present.

PAVEMENT DEPTH AFTER OCTOBER 15TH / BEFORE NOVEMBER 15th
OR AFTER MARCH 1ST / BEFORE APRIL 15th
TEMPERATURES ARE BETWEEN **45-60 DEGREES** FAHRENHEIT*

Street	Typical	Base Asphalt	Spring Overlay	Total Asphalt
Local / Secondary Access / Parking Lots / Driveway	3"	3"	2"	5"
Collector / Arterial	4"	3"	2"	5"

*See 2017 APWA 32-12-16.13. If temperatures are between 45-50 degrees, the minimum lift to be placed at a time must be 3 inches to retain heat and obtain compaction. 50-59 degrees, 2 inches minimum lift. 60-69, 1.5 inches minimum lift.

PAVEMENT DEPTH AFTER OCTOBER 15TH / BEFORE NOVEMBER 15th
OR AFTER MARCH 1ST / BEFORE APRIL 15th
TEMPERATURES ARE ABOVE **60 DEGREES** FAHRENHEIT*

Street	Typical	Base Asphalt	Spring Overlay	Total Asphalt
Local / Secondary Access / Parking Lots / Driveway	3”	3”	n/a	3”
Collector / Arterial	4”	3”	n/a	4”

*See 2017 APWA 32-12-16.13. If temperatures are between 45-50 degrees, the minimum lift to be placed at a time must be 3 inches to retain heat and obtain compaction. 50-59 degrees, 2 inches minimum lift. 60-69, 1.5 inches minimum lift.

H. Pavement Cut Moratorium Standard. Alpine City enforces a pavement cut moratorium on all newly paved, reconstructed, or otherwise maintained streets as defined below:
   a. New or reconstructed streets. New streets shall not be cut within five (5) years from the date of construction.
   b. Overlaid streets. Overlaid streets shall not be cut for a period of three (3) years from the date of construction.
   c. Chip sealed, high density mineral bonded, slurry/micro surfaced streets. Streets that have been recently surfaced with any of the afore mentioned road maintenance strategies (or any other similar type of construction that covers the entire surface of the street) shall not be cut for a period of three (3) years from the date of construction.
   d. Exceptions. In case of emergencies (i.e. – watermain breaks, etc.), and at the approval of the City Engineer or his/her designee, certain circumstances may require asphalt removal during a moratorium. Any removal of asphalt during a moratorium will require a trench patch per APWA Plan 255, with the exception that the top 2-inch overlay shall extend fifty (50) feet on either side of the trench and must be paved with approved lay-down paving equipment. This patch shall span across the entire width of the roadway. If the road has a chip seal coat, high density mineral bond layer, or any other surface coat as defined in item C, that surfacing shall be reapplied at the developer’s or contractor’s expense to make the road appear and function as if it was never cut.

250.090. Drinking Water.

A. General. The inspections and tests in this section are required for all drinking water construction in the City boundaries and on all construction relating to the City drinking water system outside the city boundaries.

B. Main Line Inspection. The City must inspect all drinking water main line installations on an ongoing basis. Inspection notification must be given before any construction of main line may begin. All crosses, tees, bends, valves and hydrants must be inspected and surveyed by the City before they are backfilled.

C. Drinking Water Service Inspection. The City must inspect all drinking water services before service trenches are backfilled. The City must be able to survey services at the main during the inspection.

D. High Chlorine Test. High Chlorine tests shall meet the requirements and specifications of APWA 33 13 00 (Disinfection). The Contractor must conduct a high chlorine test at every hydrant on a new drinking water main installation. If a hydrant does not exist on the test section, tests must be taken at the end of each line. The chlorine residual shall be at least 25 mg/L.

E. Pressure Test. Pressure test must be conducted after the successful completion of the bacteria test. The Contractor must pressure test all drinking water systems, system extensions and service laterals to the setter in the presence of the City Engineer or his/her designee or have tests documented and submitted by a certified testing company approved by the City. Pressure tests must meet the requirements and specifications of APWA 33 08 00 (Commissioning of Water Utilities). Provide a 210 psi test pressure for 2 hours unless specified otherwise. The pressure of 210 psi must be provided at the highest point in the section of pipe being tested unless elevations are such that this would create pressures over 250 psi at the

lowest point in the section of pipe tested. In such a case, consultation with the City Engineer is required and AWWA standards will be considered.

F. Leakage Test. For test lengths of pipe greater than 1,500 feet, a leakage allowance may be considered. There will be no allowance for leakage on test sections less than 1,500 feet. When allowed, leakage tests shall be conducted concurrently with the pressure tests. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$Q \equiv \frac{LD * \sqrt{P}}{133{,}200}$$

In which Q is the allowable leakage, in gallons per hour; L is the length of pipeline tested in feet; P is the average test pressure, in pounds per square inch (gage) and D is the nominal diameter of the pipe in inches.

If any test of pipe laid discloses leakage greater than specified, the Contractor shall, at their own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

G. Bacteria Test. Bacteria tests shall meet the requirements and specifications of APWA 33 13 00 (Disinfection). Tests may only be scheduled at certain regular times set by the City. The Contractor shall be present and open all hydrants or other locations to be tested from. The City shall submit samples to a certified lab to be tested according to state drinking water regulations.

If any sample point fails on the first test, the line will be flushed and re-tested at all sample points. If any sample point fails a second time, the complete line will be re-disinfected and re-tested at all sample points. If any samples come back marked “presence”, which means coliform bacteria is present, the line will be re-disinfected and re-tested at all sample sites. Contractor is responsible to pay for all bacteria tests and retests.

Drinking water services will not be installed until bacteria sample results have been approved by the City Engineer or his/her designee. All testing lab fees shall be paid for by the Contractor.

Section 300. Contractor Requirements.

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300.010. General.

A. Contractors Working for a Developer. Contractors and Sub-Contractors working for a Developer must prequalify before doing any work in existing or proposed City property, streets, easements, or right-of-way and for any work on existing or proposed City utilities. To prequalify the following must be on file in the City Engineer's office:

1. A current Contractor's license specified for project type according to Utah State Code;
2. Insurance information;
3. Contractor information sheet;
4. Project Bond;
5. Excavation Permit;
6. UDOT Permit for construction in state right-of-way; and

Failure to pre-qualify before doing any construction shall constitute grounds for legal action.

B. Contractors Working for the City. Bids for City projects will only be awarded to the lowest responsible bidder with current contractor's license specified for the project type according to the Utah State Code. The City's contractor qualifications and experience forms shall be completely filled out and submitted with bid. Failure to do so is basis to reject the bid. Alpine City reserves the right to determine a non-responsible bidder based upon these forms or any other research conducted by the city.

C. Status Verification System. Contractor agrees that it, and its subcontractors, will register with and use a Status Verification System to verify the federal employment authorization status of all employees hired after July 1, 2009. Contractor, and its subcontractors, will comply, in all respects, with Utah Code Annotated §63g-11-103, as it may be amended from time to time.

300.020. Insurance.

A. General. A Contractor must acquire the insurance stipulated in this section to prequalify to do construction work. The city must receive and accept proof of the insurance before any work may begin. The submittal of said evidence to the City shall not relieve or decrease the liability of the Contractor hereunder.

B. Workers' Compensation. Contractor shall obtain workers compensation insurance as required by State law.

C. Commercial General Liability Insurance. The following commercial general liability insurance must be obtained and submitted on ISO Form CG 00 01 (11/85) or equivalent, occurrence policy, with limits not less than:

1.	General Aggregate	$1,000,000
2.	Products - Comp/OPS Aggregate	$1,000,000
3.	Personal and Advertising Injury	$ 500,000
4.	Each Occurrence	$ 500,000
5.	Fire Damage (any one fire)	$ 50,000
6.	Medical Expense (any one person)	$ 5,000

Also include the follow endorsements or their equivalents attached thereto:

1. ISO Form CG 25 03 (11/85), Amendment of Limits of Insurance (Designated Project or Premises), describing the subject contract and specifying limits as shown above.
2. ISO Form CG 20 10 (11/85), Additional Insured -- Alpine City, Lessees, or Contractors (Form B), naming the City as additional insured and containing the following statement, "This Endorsement Also Constitutes Primary Coverage in the Event of any Occurrence, Claim, or Suit".

D. Automobile Liability Insurance. Contractor shall obtain automobile liability insurance with limits of not less than $500,000 Combined Single Limit per accident. Coverage shall apply to any auto.

300.030. Bonding.

A. General. The owners and/or developers of property shall deposit security with the City prior to recording the final plat to guarantee proper installation of all required improvements in accordance with the plans, specifications, time limitations, and conditions relating thereto as meets with the approval of the City Council or such personnel as the City Council shall designate. Security shall be in the form of cash, surety bond, financial institution bond, or an escrow bond. The amount of the security shall be 110% of the City's estimated costs of the improvements plus the estimated asphalt preservation coat costs.

Escrow bonds shall be executed by financial institutions acceptable to the City and authorized to conduct business in the State of Utah, and must be in the form approved by the City. The bond, as required by this section, must be posted prior to recording. Upon completion of the punch list for the end of construction inspection, the security, less 10%, shall be released to the Developer. Ten percent (10%) of the security amount shall be held for a period of one (1) year following final inspection and acceptance to warrant improvements for this time period. The ten percent retained shall be the amount required as the minimum security.

The amount estimated for the asphalt preservation coat shall be deposited to the City in the form of cash and held in escrow prior to recording. These funds will be held until used for the asphalt preservation coat for the applicable development either by the developer or City (see 600.020).

300.040. Excavation Permits. (aka – Street Cut Permit)

A. General. Contractors are required to qualify before obtaining an excavation permit to do construction work unless a project is already approved, bonded and insured. The permit must be approved 48 hours prior to construction. The permitee is given a copy of the permit and plan after the City Engineer or his/her designee has approved and signed them.

The City may stipulate time limits for completion of work and suspend permits for non-compliance. A copy of the excavation permit shall be on site during construction.
For fees related to Excavation Permits, please refer to the Alpine City Consolidated Fee Schedule.

B. Contractors. Contractors are required to submit the following information to obtain an excavation permit:
   1. Copy of Contractors license;
   2. Certificate of Insurance;
   3. License and permit bond;
   4. Detailed drawing of proposed work and traffic control.

C. Property Owners. Individual property owners doing his/her own work for drive approaches and other similar, minor concrete work in the City right-of-way are required to submit the following information to obtain an excavation permit:
   1. Proof of homeowners or similar insurance;
   2. Detailed drawings of the proposed work, including safety, barricades, traffic and pedestrian control.

Any cuts or changes to the curb shall be performed by a licensed contractor who has obtained an excavation permit or building permit.

300.050. Inspection Fee.

A. General. For bonded developments, an inspection fee will be collected. The fee will be for city costs relating to the construction. These costs include but are not limited to survey, inspection, testing and administration. The fee will be estimated based upon previous projects. Portions of the fee not used shall be refunded to the Developer after the punch list of the final acceptance inspection is completed.

If City costs relating to inspection exceed the inspection fee, these costs will be paid for by the developer or they will be deducted from the 10% warranty portion of the bond.

300.060. Materials Submittals.

A. General. Contractors are required to provide materials submittals for all materials to be used to the City for review and approval.
   1. For pre-manufactured items, documentation must be submitted a minimum of 2 weeks before installation and must include sufficient information, including shop drawings, if applicable, to establish models, colors, sizes, installation requirements, etc. that will be used.
   2. For on-site manufactured items, such as asphalt, concrete or base courses, submit mix designs, hot/cold weather installation plans, and materials certifications a minimum of 5 working days prior to planned installation.
   3. Submittals for the following, at a minimum, should be submitted:
      a. All pre-manufactured items meeting city standards such as light fixtures, electrical components, utility fixtures and piping, precast concrete structures, landscaping, etc.
      b. Hot Mix Asphalt Mix Designs
      c. Portland Cement Concrete Mix Designs
      d. Treated Base Course Mix Designs
      e. Untreated Base Course Job Mix Formulas

f. Tack and Prime Coats
g. Concrete Curing Compounds

4. Submit copies of all Quality Control testing and inspection reports within 48 hours of placement of materials.

300.070. Quality Control.

A. General. Perform Quality Control work in accordance with applicable materials sections of the APWA Standard Specifications unless otherwise directed.

The contractor is responsible for performing quality control work sufficient to meet requirements of APWA Standard Specifications and to demonstrate compliance with acceptance criteria. The City will perform assurance functions at their discretion and inform the contractor of acceptance or rejection.

B. Materials Production. Use UDOT certified facilities for asphalt, Portland cement concrete, and precast concrete pipe and structures. Lists of UDOT certified facilities can be found at: https://udot.utah.gov/connect/business/materials-qualified-suppliers/

1. Submit verification of UDOT certified plant certifications with mix designs.
2. Submit verification of UDOT certified plant for construction of precast concrete pipe and structures

C. Testing and Inspection. Use UDOT certified laboratories and personnel.

1. Submit names, certificate levels and years of experience of testing agency's Field Technician that are assigned to work. Laboratory must comply with ASTM Standards. Use AMRL certified laboratory and WAQTC/UDOT TTQP certified technicians.
2. Submit verification of lab and personnel with mix designs.

Section 350. Earthwork and Trenches.

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350.010. Excavation.

A. General. Excavation shall meet the requirements and specifications of APWA 31 23 16 (Excavation) unless otherwise indicated.

B. Safety. All construction shall be done in accordance with the provisions of the Utah State Industrial Commission, OSHA regulations and APWA 31 23 16 (Excavation). No trenches deeper than 4 feet shall be left open at any time unless construction is in process. When construction is in process only 200 feet of trench may be open at one time and must be completely backfilled before proceeding. No trenches shall be left open at any time unless guarded with adequate barricades, warning lamps and signs.

Any injury or damage resulting from lack of adequate bracing and shoring shall be the responsibility of the Developer/Contractor and the Developer/Contractor shall, at his/her own expense, effect all necessary repairs or reconstruction resulting from such damage. No inspections will be done in unsafe trenches and will be the cause for immediate shutdown at the project until the trench is deemed to be safe by the City Engineer or his/her designee.

C. In Gravel and Paved Surface Areas. Where any excavation occurs in a gravel or paved surface area such as a road, driveway or parking area, the surface shall be restored according to the requirements and specifications of APWA 33 05 25 (Pavement Restoration, requires t-patching on trenches) and the following conditions:

1. *Base.* Only Engineered Fill (Section 350.040.C) may be used as backfill or sub-base material under gravel and paved surfaces. A minimum of 8 inches of untreated base course shall be placed over backfill or sub-base. All fill material shall be placed and compacted to City standards. Flowable fill shall not be allowed for backfill unless authorized by the City.
2. *Surface Maintenance.* The surface shall be maintained by blading, sprinkling, rolling, adding gravel, etc., to maintain a safe uniform surface satisfactory to the City.
3. *Cutting of Pavement.* Before any excavation in a paved area, the surface along the entire excavation shall be cut to provide a vertical joint in the surface. Cut shall be made 6 inches from the edge of excavation in straight lines parallel or perpendicular to the trench or edge of pavement. A pavement saw shall be used for all pavement cutting. If excavation damages the cut pavement, pavement shall be cut again before t-patching. A roto-milled edge shall be acceptable as a cut.
4. *Time Limitation.* All road cuts shall be repaired within 2 working days of excavation unless otherwise authorized by the City Engineer or his/her designee.
5. *Cold Weather Patching.* Trenches cut during winter months or when roadbed temperatures and temperatures in the shade are less than 40 degrees (APWA 33 05 25) or when asphalt plants are not operating, shall be patched the same day of the cut with a good quality cold mix according to the requirements and specifications of APWA 32 12 17 (Cold-Mix Asphalt Paving). These trenches shall be maintained until asphalt plants open. When asphalt plants open, the temporary cold patch shall be removed and a new t-patch (per APWA Plan 255) of hot mix asphalt shall be placed. All cold mix patches shall be replaced with hot mix patches within 30 days of the opening of the hot mix plant.
6. *Adjust Incidental Structures to Grade.* Adjust incidental structures to grade according to APWA 33 05 14 (Utility Grade Adjustment). City standard concrete collars around valves and manholes shall be installed within 1 year from the time that pavement is placed or at the time of an overlay.
7. *Residential vs Non-residential streets.* APWA 33 05 25 mentions "*Match existing pavement thickness plus 1 inch, but not less than four (4) inches. Maximum thickness is six (6) inches in residential areas and eight (8) inches in non-residential areas."* Residential areas are to be defined as Local, Secondary Access, or Parking Lots per the most currently adopted Alpine City Transportation Master Plan. Non-residential is to be defined as Collector or Arterial Class streets per the most currently adopted Alpine City Transportation Master Plan.
8. *Extents of Pavement Replacement.* APWA Detail 255 calls for six (6) feet of t-patch beyond the edges of the trench, this includes the ends of the trench as well as the sides. If the t-patch is within three (3) feet of an existing curb, the patch shall extend to the curb. If the t-patch is within three (3) feet of any other edge of pavement or patch, the patch shall extend to the edge of pavement or patch. It will not be allowed to leave any existing or new section of pavement less than three (3) feet wide. Trenches perpendicular to the roadway that extend past the centerline of the roadway will require a t-patch that covers the entire roadway width. When multiple trenches are present, the t-patch width will be determined by the outer trench locations and shall extend the full width of the pavement if any of the trenches cross the centerline.

D. In Areas with Concrete. When damaged, existing concrete improvements shall be removed and replaced to the next joint or scoring line beyond the damaged or broken sections. In the event that joints or scoring lines

do not exist or are three or more feet from the removed or damaged section, the damaged portions shall be removed and reconstructed to neat, plane faces. All concrete work shall meet the requirements and specifications of Section 650. Portland Cement Concrete Work and APWA 33 05 25 (Pavement Restoration).

E. Rock Excavations. Rock excavations shall meet the requirements and specifications of APWA 31 23 17 (Rock Removal).

F. Site Clearing and the Disposal of Excess Materials. Site clearing shall be conducted according to APWA 31 11 00 (Site Clearing). All excavation material, which is not required for construction or is unsuitable for fill material, shall be immediately disposed of by the Contractor. All roads, sidewalks, curbs, gutters and ditches shall be kept clean of excavated material except as outlined in Title 14.08.05 (Clean Streets) of the Alpine City Municipal Code.

All demolition work shall meet the requirements and specifications of APWA 02 41 13 (Selective Site Demolition), APWA 02 41 14 (Pavement Removal) and APWA 02 41 15 (Pavement Pulverizing).

Removal and disposal of Asbestos Cement Pipe shall be per the Utah Department of Environmental Quality (DEQ) Division of Air Quality (DAQ) guidance document, *How to Handle Non-friable Asbestos Cement Pipe, A Guide for Meeting Utah Department of Environmental Quality/Division of Air Quality Rule*s ("Guidance").

350.020. Sub-surface Pipe Installation.

A. General. Pipes, conduits or casings, 4 inches in diameter or less, may be bored, jacked, augured or jetted under sidewalk, curb, gutter if authorized by the City Engineer or his/her designee. The resulting hole diameter shall not exceed 1 inch plus the outside diameter of the pipe or sleeve installed.

B. Boring or Jacking. Boring or jacking work shall meet the requirements and specifications of APWA 33 05 23 (Trenchless Utility Installation).

C. Tunneling. Where sidewalk, curb, and gutter exists, excavation may be made by tunneling provided the following requirements are met:

1. Excavation shall be vertical and as near to the curb or sidewalk as possible;
2. The length of the tunnel shall not exceed the width of the sidewalk, curb, and gutter;
3. Where a separate sidewalk and curb exist, an excavation shall be made between the sidewalk and the curb;
4. At least three feet of undisturbed earth shall be left under the sidewalk or curb; and
5. Where the sidewalk has been tunneled, the hole shall be filled from each end with flowable fill. Where the excavation cannot meet these requirements, a section of sidewalk, curb, or gutter, from joint to joint shall be removed and replaced.

350.030. Sub-grade.

A. Preparation. All sub-grade shall be shaped and compacted in reasonably close conformity with lines, grades and typical cross section as established by the City Engineer or his/her designee. All grading shall be based on an engineered survey, accepted by Alpine City.

In trenches and cut or fill areas the subgrade shall be scarified to a depth of 8 inches and compacted according to the compaction standards of this chapter. No rocks larger than 4 inches in diameter, organic material, soft clay, spongy material, or other deleterious material will be permitted in this scarified sub-grade layer.

B. Soft and Yielding Areas. Soft and yielding areas which do not compact to City standards shall be removed and replaced with enough compacted engineered fill to bridge the area. Trenches excavated within 10 feet of the lip of gutter shall be removed and replaced as part of the trench asphalt pavement repair, or otherwise approved by the City Engineer and/or his/her designee.

C. Trenches. When the sub-grade material does not afford a sufficiently solid foundation to support the pipe and superimposed load, the trench shall be over-excavated to a sufficient depth and backfilled with enough compacted fill as approved by the City to bridge the area.

D. Roads. Road sub-grades shall be shaped and graded to within a tolerance of 0.15 feet of design grade. Drainage shall be maintained at all times.

E. Structures. Sub-grade material for all concrete structures, regardless of type or location, shall be firm, dense, thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workmen engaged in sub-grade surfacing, laying reinforcing steel, and depositing concrete.

Coarse gravel or crushed stone may be used for subsoil reinforcement if results are satisfactory to the City Engineer or his/her designee. Such material shall be applied in layers, not exceeding 6 inches in thickness, each layer being embedded in the sub-soil by thorough tamping. All excess soil shall be removed to compensate for the displacement of the gravel or crushed stone and the finished elevation of any subsoil reinforced in this manner and shall not be above the specified sub-grade.

The City Engineer may require a soil analysis and design for any area.

350.040. Fill Material.

A. General. All fill material shall be placed on sub-grade prepared according to the specifications of this chapter. All fill material shall be compacted according to the specifications of this chapter.

Only engineered fill or untreated base course may be used as fill material under and within a foot of streets, future street areas, driveways, and concrete unless otherwise specified. All fill material under and within a foot of electrical and communications boxes shall be untreated base course. In other areas native excavated material may normally be used unless such material cannot be properly compacted according to specifications in this chapter. All fill material, including native fill material, must be free from debris, organic material, and rocks larger than 4 inches in diameter and have a liquid limit not to exceed 35 and plastic limit not to exceed 15.

B. Bedding Material. Use APWA No. 4 sewer rock for gravity pipe bedding material. Use sand as a bedding material for pressure pipe and electrical and communication conduit. Bedding sand must compact sufficiently to support the pipe and shall meet the following gradation:

SAND GRADATION

Sieve/Screen Size	% Passing
No. 4	100
No. 200	10 to 20

C. Engineered Fill. Engineered fill shall be used for all imported material unless otherwise specified. Engineered fill shall be granular and well graded meeting the following gradation:

ENGINEERED FILL GRADATION

Sieve/Screen Size	% Passing
4"	100
¾"	70 to 100
No. 200	0 to 15

On that portion of the aggregate passing the No. 40 sieve, the liquid limit shall not exceed 30, nor shall the plasticity index exceed 15 when tested in accordance with AASHTO T89 and T90. Imported material under city streets shall have a minimum CBR of 25.

Reclaimed asphalt pavement (RAP) may NOT be used as engineered fill.

D. Untreated Base Course. All untreated base course shall meet the requirements and specifications of APWA 32 11 23 (Crushed Aggregate Base) for untreated base course. The use of slag as an untreated base course shall not be permitted.

E. Cement Treated Fill. Cement treated fill shall meet the requirements and specifications of APWA 31 05 15 (Cement Treated Fill). Cement treated fill includes following fill materials:
   1. Controlled low-strength material (CLSM) (flowable fill),
   2. Lime treated fill,
   3. Asphalt treated fill.

F. Defective Fill. Fill not conforming to the requirements of this specification shall be reworked to the requirements or removed and replaced with acceptable fill.

350.050. Slopes, Embankments, Fills and Open Channels.

A. Preparation. Unsuitable materials that occur in the foundation for slopes, embankments, and fills shall be removed by clearing, stripping, and/or grubbing. Where suitable materials occur, after stripping, the foundation shall be scarified to a depth of not less than 8 inches. All materials in slopes, embankments, and fills, including the scarified foundation layer, shall be placed, moistened, and compacted according to the compaction standards in this chapter.

B. Material. When the slope, embankment, or fill exceeds the amount of excavation, sufficient additional material shall be obtained from borrow pits provided by the Contractor. All material proposed to be imported shall be subject to the review and approval of the City Engineer or his/her designee prior any hauling operations.

   The materials used for slope, embankment and fill construction shall be free from sod, grass, trash, rocks larger than 6 inches in diameter and all other material unsuitable for construction of compacted fills.

C. Grading. Grading of completed slope, embankment, or fill shall bring the surfaces to a smooth, uniform condition with final grades being within 0.1 foot of the design grade. All grading shall be done to an engineered red-head.

D. Slope Safety. All slope construction shall be in accordance with all City, State and Federal regulations. Plans and Specifications for structures must be approved by the City if the excavation is greater than five (5) feet. Cut slopes greater than 3:1 may be allowed per geotechnical report recommendation and approval of the City Engineer. Under no circumstance will a permanent slope steeper than 2:1 be allowed without a retaining structure unless otherwise approved in writing by the City Engineer or his/her designee. The width of the excavation shall be increased if necessary to provide space for sheeting, bracing, shoring and/or other supporting installations. Unsafe slopes will be the cause for immediate shutdown of the project.

E. Erosion and Sedimentation Control. Erosion and sedimentation control shall meet the requirements and specifications of APWA 31 25 00 (Erosion and Sedimentation Control).

F. Gabions. Gabions shall meet the requirements and specifications of APWA 31 36 00 (Gabions)

G. Rip Rap and Rock Lining. Rip rap and rock lining work shall meet the requirements and specifications of APWA 31 37 00 (Riprap or Rock Lining).

350.060. Installation and Compaction of Earth Materials.

A. General. The installation of all fill material shall meet the requirements and specifications of APWA 33 05 20 (Backfilling Trenches), APWA 31 23 23 (Backfilling Structures), APWA 32 05 10 (Backfilling Roadways) and APWA 31 23 26 (Compaction). Fill material outside of pavement areas, as defined by APWA 32 05 10 (Backfilling Roadways), and more than 24 inches from any utility box shall be compacted to not less than 90% of the maximum dry density.

B. Streets. Sub-base and road-base shall be graded to an engineered red head. Loose rock, roots, brush, and other materials that may be encountered in shaping the sub-base must be removed.

C. Soft and Yielding Spots. Any soft and yielding spots in the fill or sub-grade which do not compact to the specified density shall be removed and replaced with Engineered Fill installed and compacted to City standards.

D. Backfill in Trenches. Backfill shall be carefully placed around and over pipes and shall not be permitted to fall directly on a pipe from such a height or in such a manner as to cause damage.

E. Pipe Zone. The pipe zone includes the full width of trench from 3 inches below the pipe to 6 inches above the pipe for all pipes except for large reinforced concrete pipe (RCP). Large RCP includes RCP with internal diameters larger than 24 inches. The pipe zone for large RCP shall include the full width of trench from 6 inches below the pipe to 6 inches above the pipe. The pipe zone shall extend horizontally a minimum of 6 inches from either side of the pipe except for electrical and communication conduit. Electrical and communication conduit may be placed against the sides of trenches. Trenches shall be wide enough to compact fill material according to the specifications in this chapter.

The pipe zone for all pipes shall be filled with compacted bedding material. Pipe zone materials shall be placed and compacted under and around the pipe in horizontal layers not to exceed 8 inches and tamped by hand or pneumatic tampers.

350.070. Geotextiles, Geogrids and Geocomposites.

A. General. All geotextile work shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles). Geogrid and geocomposite work shall meet the requirements and specifications of APWA 31 05 21 (Geogrids/Geocomposites). Geotextile, geogrid and geocomposite work includes but is not limited to the following geotextile applications:

1. Stabilization-separation,
2. Silt fence,
3. Erosion control,
4. Roadway pavements,
5. Drainage,
6. Weed barrier
7. Granular base reinforcement,
8. Asphalt concrete reinforcement, and
9. Soil reinforcement.

350.080. Working around Existing Utilities.

A. Purpose & Scope: The purpose of this specification is to provide guidance and requirements for the excavation and trenching work in the vicinity of existing utilities. This specification applies to all excavation and trenching work within the project site that involves digging or disturbing the soil within the vicinity of existing utilities, including but not limited to gas, water, sewage, communication, and power lines.

B. Regulations and Permits: The contractor shall obtain all necessary permits and comply with all applicable regulations and guidelines from local, state, and federal agencies regarding excavation and trenching work.

C. Utility Identification: Prior to excavation, the contractor shall verify the location and depth of all existing utilities within the work area using the most current and accurate information available. The contractor shall call Blue Stakes, who will visually mark the location of each utility using colored flags, paint, or other suitable markers.

D. Safety Precautions: The contractor shall implement and maintain all necessary safety precautions to protect workers, equipment, utilities, and the public from harm during excavation and trench work. This may include barricading the work area, providing and installing a traffic plan, providing proper ventilation, using proper excavation techniques, and following confined space procedures.

E. Excavation Techniques: The contractor shall use hand tools or vacuum excavation equipment to expose the existing utility to the depth required by the project design. The excavation shall be done carefully and gradually to avoid damaging the utility.

F. Backfill and Compaction: The contractor shall backfill the excavation with suitable material as specified in the project design, taking care to avoid damaging the utility. The backfill shall be compacted in layers per section 350.060 (Installation and Compaction of Earth Materials).

G. Restoration: The contractor shall restore the work area to its original condition as specified in the project design, including replacing any disturbed pavement, landscaping, or other features.

H. Inspection and Testing: The contractor shall allow the utility owner or its representative to inspect and test the utility before and after excavation to ensure that it remains in good working condition.

I. Record Keeping: The contractor shall maintain detailed records of all excavation and trenching work, including the location and depth of utilities, excavation techniques used, backfill material and compaction,

and restoration activities.

J. Quality Control: The contractor shall implement a quality control program to ensure that all excavation and trenching work meets the requirements of this specification and the project design.

K. Submittals: The contractor shall submit all required submittals, including permits, utility location information, excavation and backfill materials, and compaction test results, to the project owner or engineer for review and approval prior to commencing work.

L. Deviations: Any deviations from this specification or the project design shall be documented and approved by the project owner or engineer prior to proceeding with the work.

M. Cast Iron Pipe: Special care shall be taken when working around Cast Iron Pipe (CIP). CIP can be susceptible to cracking or breaking when under excavated. If CIP is encountered in a trench the exposed section of CIP shall be removed and replaced with Ductile Iron Pipe (DIP). Sleeves shall be used to connect the new piece of DIP to the existing CIP. See Standard Detail 39.

Section 400. Drinking Water.

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400.010. General.

A. Specifications. These specifications cover the installation of drinking water lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to water.

B. Pipe. PVC or polyethylene pipe shall be used for all culinary drinking water mains unless otherwise authorized by the City Engineer or his/her designee. Polyethylene pipe shall be used for the service lateral in conjunction with PVC main lines. Where ductile main line exists, copper pipe is to be used for the service lateral. Special precautions shall be taken in areas of contamination. Pipe and joint materials which are not susceptible to contamination, such as permeation by organic compounds, shall be used. Non-permeable materials shall be used for all portions of the system including water mains, service connections, and hydrant leads. The Division of Drinking Water shall be contacted to establish specific design requirements in areas of contamination or potential contamination such as sewer treatment plants, septic systems, or industrial sites.

C. Size. The City Engineer or his/her designee must approve the sizes of all proposed drinking water lines. It is required to have the design hydraulically modeled by the City's designated Hydraulic Engineer, the Hydraulic Engineer must confirm that the design meets Utah Division of Drinking Water Standards. The minimum size of drinking water pipe is 8 inch diameter for main lines and 1 inch diameter for services unless otherwise authorized by the City Engineer or his/her designee.

D. Location. Drinking water mains shall be located on either the north or east sides of a street 4 feet from the edge of curb. All drinking water appurtenances shall conform to the minimum separation standards from sanitary sewer systems as outlined in Utah Code R309-550-7 and R309-550-12. See standard drawings for utility locations.

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards. They shall be approved by the City Engineer or his/her designee.

F. Dead Ends. To provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins whenever practical. Where dead-end mains occur, they shall be provided with a fire hydrant or with an approved flushing hydrant or blow-off for flushing purposes. See section 400.070 for flushing specifications.

G. Drains. No drain within the culinary water system or other such appurtenances to the distribution system can be connected to the sanitary sewer or storm drain system. Where drains cannot be drained to daylight, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

H. Surface Water Crossings. Surface water crossings, whether over or under water, require Division of Drinking Water approval and shall conform to Utah Code R309-550-8 (8).

I. Cross Connections Prohibited. Per Alpine City Municipal Code 14.06, "It shall be unlawful for any person to connect any part of the Secondary Irrigation System to any part of any culinary water system so as to create a potential cross-connection whereby irrigation water could be introduced into any system that provides culinary water. The use of swing connections will not be permitted."

400.020. Installation.

A. General. Drinking water distribution and transmission systems shall be installed according to the Utah State-adopted plumbing code as well as the requirements and specifications of APWA 33 11 00, 33 05 05, 33 05 06, 33 05 07, AWWA M23; 2003, and AWWA M55; 2006. (Water Distribution and Transmission).

B. Pipe Cleanliness. All foreign matter or dirt shall be removed from the inside of the pipe before it is placed and it shall be kept clean during and after laying. No debris, tools, or other materials shall be placed in the pipe during laying operations. When laying of pipe is not in progress, the pipe shall be closed by a water-tight plug.

C. Identification Tape. All drinking water mains shall be installed with identification tape that meets the requirements and specifications of APWA 33 05 20 (Backfilling Trenches). Tape shall be buried 12 inches above the pipe.

D. Lateral Displacement. All pipes shall be protected from lateral displacement resulting from impact or unbalanced loading during backfilling operations.

E. Restraining. Either thrust blocks or mechanical restraining devices shall be used for all tees, valves, plugs, caps and bends. Restraining shall be accomplished according to the most recent APWA standards.

F. Connections to Existing Drinking Water Lines. The Contractor will be responsible to verify actual size, type of material and location of existing utilities in the field. The fittings and materials required for construction must be approved by the City Engineer or his/her designee.

Where fitting sizes, such as tees and crosses, are shown on the plans, those sizes will be used. However, no attempt has been made to show all needed fittings or materials.

Tapping tees may only be installed when authorized by the City Engineer or his/her designee and when the existing main is at least one size larger than the proposed intersecting line.

G. Bedding. A continuous and uniform bedding shall be provided in the trench for all buried pipe. Stones larger than 3/4" for plastic pipe or 2-inch minus for ductile iron pipe shall be removed for a depth of at least 6 inches below the bottom of the pipe. Bedding materials shall otherwise be installed per APWA standards

400.030. Pipe and Fittings.

A. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the standards and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe), AWWA C900 and C905. Only blue, DR-18 pressure class 150 psi or higher rated PVC pipe may be used for drinking water mains.

B. Ductile Iron Pipe. Ductile iron pipe shall meet the standards and specifications of APWA 33 05 05 (Ductile Iron Pipe). Only a pressure class of 150 psi or larger may be used. A tubular black polyethylene encasement must be installed according to AWWA C105 over all ductile iron pipe and fittings. Flanges, when required, shall meet the requirements and specifications of AWWA C115.

C. Polyethylene Pipe. Polyethylene pipe shall meet the standards and specifications of APWA 33 05 06 (Polyethylene Pipe) and AWWA C906 which includes NSF-61 certification.

D. Steel Pipe - Lined and Coated. Steel pipe shall meet the standards and specifications of APWA 33 05 09 (Steel Pipe - Lined and Coated).

E. Copper Tubing. Copper tubing shall be "soft annealed" and shall conform to the standards for "Type K," prescribed in ANSI/AWWA C800-89 Section A.2 for "Copper Water Tubing" and to ASTM, designation B42 and B88-99, and current revisions thereof. It shall be free from grooving cracks, indentations, flaws or other defects. At intervals of not greater than one and one-half feet, the tubing shall bear clear, permanent markings indicating the type and manufacturer.

F. Fittings. Use Ductile Iron fittings that conform to the provisions of ANSI/AWWA C110/A21.10 or C153/A21.53 unless otherwise recommended by the manufacturer and authorized by the City Engineer or his/her designee. All PVC pipe being inserted into fittings shall have the bevel end removed. All the bolts and nuts of all fittings shall be greased. All fittings shall have an 8 mil vinyl wrap plastic cover.

Minimum pressure Class will be 250 for pipes larger than 12 inch diameter. Pipes of 12 inch diameter and smaller shall be pressure Class 350.

FLOW REQUIREMENTS FOR FLUSHING

Pipe Diameter	Flow in Gallons Per Minute
4 inch	100
6 inch	220
8 inch	390
10 inch	610
12 inch	880
16 inch	1,567

18 inch	1,980
20 inch	2,450
24 inch	3,525
30 inch	5,507

400.040. Valves and Couplings.

A. General. All valves shall meet the requirements of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves).

B. Resilient Seated Gate Valve. All valves on 4 inch to 12 inch drinking water mains shall be resilient seated gate valves. Valves shall also be of iron body have non-rising bronze stems and meet the following specifications:
   1. Mechanical Joint. When valves are Mechanical Joint, they shall be furnished with all necessary glands, followers, and bolts and nuts to complete installation.
   2. Valve Stems. Bronze valve stems shall be interchangeable with stems of the double disc valves of the same size, direction of opening and manufacture.

C. Butterfly Valve. All valves 14 inches and larger shall be butterfly valves which meet the requirements and specifications of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves) and the following specifications:
   1. General. Valve bodies shall be cast iron, ASTM A-126 Class B. Body ends shall be flanged with facing and drilling in accordance with ANSI B16.1, Class 125; or mechanical joint in accordance with AWWA C111. All mechanical joint end valves shall be furnished complete with joint accessories (bolts, nuts, gaskets, and glands). All valves shall conform to AWWA Standard C-504, Table 3, Laying Lengths for Flanged Valves and Minimum Body Shell Thickness for all Body Types.
   2. Disc. Valve disc shall be ductile iron ASTM A-536, grade 65-45-12. Valve disc shall be of the offset design providing 360 degree uninterrupted seating.
   3. Shaft Bearings. Shaft bearings shall be contained in the integral hubs of the valve body and shall be self-lubricated sleeve type.
   4. Coating. All valves shall be coated with epoxy in conformance to AWWA Standard C-550, latest revision. Interior wetted ferrous surfaces shall be coated a nominal 10 mils thick for long life; and body exterior shall have a minimum of 3 to 4 mils coating thickness in order to provide superior base for field-applied finish coats.

D. Valve Boxes. Valves shall be bolted to the cross in the intersection of streets as a cluster valve set. Earth fill shall be carefully tamped around the valve box to a distance of 4 feet on all sides of the box, or to the undisturbed trench face if less than 4 feet.

   All top of valve boxes located in streets shall be installed 1/2 inch below grade. When an overlay is required, the pavement surrounding the valve box shall be neatly cut to form a 30 inch round opening with the valve box centered, and a concrete collar shall be cast around the box 1/2 inch below grade and the valve box set 1/2 inch below grade. Valve boxes in off-road areas shall extend 6 inches above grade. Lid detail shall be similar to Comco C-6517.

E. Couplings. Couplings shall be equal to the product of Smith-Blair or Dresser with cast iron couplings being used on all cast iron and PVC pipe. Couplings shall be of the straight, transition, or reducing style as required by the specific installation. All steel fittings and bolts shall be coated with a non-oxide coating and wrapped with polyethylene.

F. Pressure Regulation Valves. Pressure regulation valves (PRV) which are required in a development when static pressures exceed 150 psi and shall be designed by the Developers engineer, the design shall be submitted to the City Engineer or his/her designee for review and approval prior to starting construction. All PRV's shall be Cla-Val with a 4" bypass or approved by the City Engineer, be placed in a concrete vault, have isolation valves on each side, and have telemetry included.

G. Tapping Valves. Tapping valves may only be used when approved by the City Engineer or his/her designee. Tapping saddles with an "O" ring may be used if the drinking water main line to be tapped is larger than the new drinking water main line. Where the tap is the same size as the existing main, cast iron or stainless steel tapping sleeves shall be used, which encase the full perimeter of the pipe. The valve shall

be a tapping valve with a guide lip on the flanged side. The opposite side of the valve shall have a mechanical joint connection.

H. Air, Vacuum and Release Valves. Combination air, vacuum and release valves shall be installed according to the standard drawings at high points in the system as required by the City Engineer or his/her designee.

I. Isolation Valves. A sufficient number of valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves shall be located at every roadway intersection or block on all segments of pipe. Where a proposed system may serve widely scattered customers and where future development is not expected, the valve spacing shall not exceed two thousand (2,000) feet.

J. Backflow Assemblies. Installation of backflow assembly shall conform to City ordinances and the State-adopted plumbing code. Alpine City has strict guidelines regarding cross connections. In the event a cross connection is allowed, a reduced pressure zone (RPZ) backflow assembly is the only allowed style of backflow prevention assembly. A RPZ may be required in other circumstances, each situation will be evaluated on an individual basis.

400.050. Fire Hydrants.

A. General. Fire hydrants shall meet the requirements and specifications of APWA 33 12 19 (Hydrants). All fire hydrants shall be Mueller Super Centurion 250 or approved equivalent and red in color. They shall have a 5 ¼ inch barrel diameter and 6-inch mechanical joint connection. The 6-inch gate valve will be mechanical joint by flange connected to the tee joint at the main line in the street. Hydrants shall be frost proof. The threads shall be National Standard Fire Hose Thread. Spacing of fire hydrants shall be according to the Uniform Fire Code but more specifically, hydrants are required to be located within 250' of any structure, typically located on property lines. The fire flow level of service Alpine City has established is 1,750 gpm for 2 hours at every hydrant, this will be verified when the proposed plan is submitted and reviewed by the City's designated Hydraulic Engineer.

B. Placement and Location. In general, fire hydrants should be located on property lines to minimize conflicts with driveways. Fire hydrant location to be approved by the City Engineer or his/her designee. Fire hydrants shall be set vertical and held in place by adequate concrete blocking which shall be left in the trench. Hydrants shall be set at a height that will allow 2 inches minimum and 7 inches maximum exposed between the finished ground and the sidewalk flange. A gravel filled drip area shall be provided. Hydrant drains shall not be connected to or located within 10 feet of sanitary sewers. Where possible hydrant drain shall not be located within 10 feet of storm drains. Fire hydrants require 3 feet of clear space around them for operational purposes. See standard drawing for fire hydrants.

The relocation of fire hydrants shall meet the requirements and specifications of APWA 33 11 11 (Relocate Water Meters and Fire Hydrants) and related sections.

400.060. Meters and Services.

A. General. Alpine City owns and maintains the water system up to and including the water meter. Between the water meter and home is the responsibility of the homeowner. See Standard Drawings for drinking water services. The minimum size of new drinking water service lines is 1 inch, while the standard meter size is 3/4 -inch. All drinking water services shall have dual check valves. Drinking water services shall extend 20 feet beyond the back of curb and shall be capped until connected to a building. Meter and service line installation shall conform to the State-adopted plumbing code and conform to the standard meter installation detail as noted in the Alpine City Standard Details.

B. Placement and Location. All meter boxes shall have their location and grade staked prior to installation. No meter boxes shall be set in sidewalks, driveways, or encased in concrete in any way. Service taps shall be a minimum of 36 inches apart. No taps will be allowed within 36 inches of the end of the pipe. All meter boxes require 3 feet of clear space around them for operational purposes. Meter lid height to be set 0.1' above curb (must be within 0.1' of this requirement).

Service laterals shall extend perpendicular from the main to the meter box. If a meter must be coordination with the City Engineer is required. When a new service line is installed the old corporation stop shall be shut off at the main and the old service line cut two feet from the main.

Drinking water service lines shall meet the separation from sanitary sewer requirements in this Section. Drinking water services shall extend 20 feet beyond the back of curb and capped until connected to a building.

The relocations of drinking water meters shall meet the requirements and specifications of APWA 33 11 11 (Relocate Water Meters and Fire Hydrants) and related sections. Services 3/4 – 2 inch shall be copper tubing shall be "soft annealed" and shall conform to the standards for "Type K," prescribed in ANSI/AWWA C800-89 Section A.2 for "Copper Water Tubing" and to ASTM, designation B42 and B88-99, and current revisions thereof. Pipe damaged by scratches, cuts, kinks, or buckled areas shall not be installed. PVC, as mentioned in section 400.010 (B) shall be used in conjunction with PVC mains where corrosive soils exist and shall conform to the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe), only CTS SDR9 200 psi blue polyethylene pipe shall be used for service lines. Deflection in joints shall meet manufacturer's specifications and shall be approved by the City Engineer or his/her designee or shall be replaced with the proper fitting.

C. Meters. The standard meter size is 3/4-inch. All meters shall be paid for by the Contractor and supplied by the City. Meter boxes shall be in good repair. They shall not be set at an angle, crushed, or dented. The inside of boxes must be free from obstructions such as dirt, rocks or debris.

400.070. Flushing.

A. General. All drinking water lines shall be flushed after the high chlorine test and prior to the pressure test. See Section 250. Testing and Inspection for testing information. Flushing shall be accomplished through hydrants and at the end each line. No flushing device shall be directly connected to a sewer or storm drain.

B. Velocity. The Contractor shall install a tap sufficient in size to provide for 2½ foot per second flushing velocity in the line. The following is the flow quantity required to provide a 2½ foot per second flushing velocity.

FLOW REQUIREMENTS FOR FLUSHING

Pipe Diameter in Inches	Flow in Gallons per Minute
4 inch	100
6 inch	220
8 inch	390
10 inch	610
12 inch	880
16 inch	1,567
18 inch	1,980
20 inch	2,450
24 inch	3,525
30 inch	5,507

400.080. Disinfection of Drinking Water Lines.

A. Cleaning. The pipe shall be clean prior to disinfection. If in the opinion of the City, contamination is such that it cannot be removed by flushing, the pipe shall be cleaned by mechanical means and then swabbed with a 1% hypochlorite disinfection solution.

B. Methods. All drinking water pipeline shall be disinfected as outlined in AWWA C651 by one of the following methods:

1. *Tablet Method.* The tablet method shall consist of placing calcium hypochlorite tablets at the specified rate in the main during construction at the upstream end of each section of pipe. The tablet shall be attached with an adhesive, such as Permatex No. 1 or equivalent as approved by the City Engineer or his/her designee. The line shall then be filled slowly (velocities less than 1 ft/sec), expelling all air pockets and maintaining the disinfection solution in the line for at least 24

hours, 48 hours if the water temperature is less than 41º F. The disinfection solution shall have a concentration of at least 25 mg/l of available chlorine.

2. *Continuous Feed Method.* The continuous feed shall be done exactly as outlined in AWWA C651 and shall have a twenty-five mg/l available Chlorine after 24 hours.

Under both methods the Contractor shall not be allowed to flush the line until the chlorine residual test has been passed by the City. If necessary drinking water lines shall be re-chlorinated until satisfactory bacteriological testing is obtained. See Section 250. Testing and Inspection for testing information.

Section 450. Pressurized Irrigation.

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450.010. General.

A. Specifications. These specifications cover the installation of pressurized irrigation lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to pressurized irrigation.

B. Pipe. Polyvinyl Chloride (PVC) pipe shall be used for all pressurized irrigation mains 12 inches in diameter and smaller unless otherwise authorized by the City Engineer or his/her designee. Ductile iron, PVC, or polyethylene pipe shall be used for pressurized irrigation mains larger than 12 inches in diameter as approved by the City Engineer or his/her designee. Only PVC or polyethylene pipe may be used in corrosive soils.

C. Size. The City Engineer or his/her designee must approve the sizes of all proposed pressurized irrigation lines. The minimum size of pressurized irrigation pipe in thru streets is 6 inch diameter for main lines, 4 inch diameter for cul-de-sacs unless otherwise specified in the Pressurized Irrigation System Master Plan. 1 inch diameter for services are required for each lot. A dual service shall be 1½" to the service tee.

D. Location. Pressurized irrigation mains shall be located on either the south or west sides of a street 3 feet from the edge of curb. See standard drawings for utility locations.

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

Tapping tees may only be installed when authorized by the City Engineer or his/her designee and when the existing main is at least one size smaller than the proposed main.

F. Cross Connections Prohibited. Per Alpine City Municipal Code 14.06, "It shall be unlawful for any person to connect any part of the Secondary Irrigation System to any part of any culinary water system so as to create a potential cross-connection whereby irrigation water could be introduced into any system that provides culinary water. The use of swing connections will not be permitted."

450.020. Installation.

A. General. Pressurized irrigation distribution and transmission systems shall be installed according to the requirements and specifications of APWA 33 11 00 (Water Distribution and Transmission). PVC pipe shall also be installed according to the requirements and specifications of AWWA C605.

B. Pipe Cleanliness. All foreign matter or dirt shall be removed from the inside of the pipe before it is placed and it shall be kept clean during and after laying. No debris, tools, or other materials shall be placed in the pipe during laying operations. When laying of pipe is not in progress, the pipe shall be closed by a water-tight plug.

C. Minimum Cover. All pressurized irrigation mains shall have a minimum cover of 2 feet to the top of the pipe.

D. Identification Tape. All pressurized irrigation mains shall be installed with identification tape that meets the requirements and specifications of APWA 33 05 20 (Backfilling Trenches). Tape shall be buried 12 inches above the pipe.

E. Lateral Displacement. All pipes shall be protected from lateral displacement resulting from impact or unbalanced loading during backfilling operations.

F. Restraining. Either thrust blocks or mechanical restraining devices shall be used for all tees, valves, plugs, caps and bends. Restraining shall be accomplished according to the standard drawings.

G. Connections to Existing Pressurized Irrigation Lines. The Contractor will be responsible to verify actual size, type of material and location of existing utilities in the field. The fittings and materials required for construction must be approved by the City Engineer or his/her designee.

Where fitting sizes, such as tees and crosses, are shown on the plans, those sizes will be used. However, no attempt has been made to show all needed fittings or materials.

450.030. Pipe and Fittings.

A. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe) and AWWA C900 and C905. Only purple, SDR-18 pressure class 150 psi pipe may be used for pressurized irrigation mains.

B. Ductile Iron Pipe. Ductile iron pipe shall meet the standards and specifications of APWA 33 05 05 (Ductile Iron Pipe). Only a pressure class of 150 psi or larger may be used. A tubular purple polyethylene encasement must be installed according to AWWA C105 over all ductile iron pipe and fittings. Flanges, when required, shall meet the requirements and specifications of AWWA C115. Ductile iron may be directed tapped for the use of corporation stops.

C. Polyethylene Pipe. Polyethylene pipe shall meet the standards and specifications of APWA 33 05 06 (Polyethylene Pipe).

D. Steel Pipe - Lined and Coated. Steel pipe shall meet the standards and specifications of APWA 33 05 09 (Steel Pipe - Lined and Coated).

E. Fittings. Use Ductile Iron fittings that conform to the provisions of ANSI/AWWA C110/A21.10 or C153/A21.53 unless otherwise recommended by the manufacturer and authorized by the City Engineer or his/her designee. All PVC pipe being inserted into fittings shall have the bevel end removed. All the bolts and nuts of all fittings shall be greased. All fittings shall have an 8 mil vinyl wrap plastic cover.

450.040. Valves and Couplings.

A. General. All valves shall meet the requirements of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves).

B. Resilient Seated Gate Valve. All valves on 4 inch to 12 inch water mains shall be resilient seated gate valves. Valves shall also be of iron body have non-rising bronze stems and meet the following specifications:

1. *Mechanical Joint.* When valves are Mechanical Joint, they shall be furnished with all necessary glands, followers, and bolts and nuts to complete installation.
2. *Valve Stems.* Bronze valve stems shall be interchangeable with stems of the double disc valves of the same size, direction of opening and manufacture.

C. Butterfly Valve. All valves 14 inches and larger shall be butterfly valves which meet the requirements and specifications of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves) and the following specifications:

1. *General.* Valve bodies shall be cast iron, ASTM A-126 Class B. Body ends shall be flanged with facing and drilling in accordance with ANSI B16.1, Class 125; or mechanical joint in accordance with AWWA C111. All mechanical joint end valves shall be furnished complete with joint accessories (bolts, nuts, gaskets, and glands). All valves shall conform to AWWA Standard C-504, Table 3, Laying Lengths for Flanged Valves and Minimum Body Shell Thickness for all Body Types.
2. *Disc.* Valve disc shall be ductile iron ASTM A-536, grade 65-45-12. Valve disc shall be of the offset design providing 360 degree uninterrupted seating.
3. *Shaft Bearings.* Shaft bearings shall be contained in the integral hubs of the valve body and shall be self-lubricated sleeve type.
4. *Coating.* All valves shall be coated with epoxy in conformance to AWWA Standard C-550, latest revision. Interior wetted ferrous surfaces shall be coated a nominal 10 mils thick for long life; and body exterior shall have a minimum of 3 to 4 mils coating thickness in order to provide superior base for field-applied finish coats.

D. Valve Boxes. All buried valves shall be installed complete with two-piece, cast iron, slip type, 5-1/4-inch shaft valve box with drop lid. The lid shall have the word "IRRIGATION" or “DRAIN” according to the standard drawing cast in the metal.

Valves and valve boxes shall be installed where shown on the drawings. Valves and valve boxes shall be set plumb. Valve boxes shall be centered directly over the valve. Valves shall be aligned with property lines where possible. Earth fill shall be carefully tamped around the valve box to a distance of 4 feet on all sides of the box, or to the undisturbed trench face if less than 4 feet. Valves shall have the interiors cleaned of all foreign matter before installation.

All top of valve boxes located in streets shall be installed 1/2 inch below grade. The pavement surrounding the valve box shall be neatly cut to form a 30 inch round opening with the valve box centered, and a concrete collar shall be cast around the box. Valve boxes in off-road areas shall extend 6 inches above grade unless otherwise specified by the City Engineer or his/her designee. Lid detail shall be similar to Comco C-6517.

E. Couplings. Couplings shall be equal to the product of Smith-Blair or Dresser with cast iron couplings being used on all cast iron and PVC pipe. Couplings shall be of the straight, transition, or reducing style as required by the specific installation. All steel fittings and bolts shall be coated with a non-oxide coating and wrapped with polyethylene.

F. Pressure Regulation Valves. Pressure regulation valves (PRV) which are required in a development shall be designed by the Developers engineer and the design shall be submitted to the City Engineer or his/her designee for review and approval prior to starting construction. All PRV's shall be Cla-Val with a 4" bypass or as specified by design, be placed in a concrete vault and have telemetry included.

G. Tapping Valves. Tapping valves may only be used when approved by the City Engineer or his/her designee. Tapping saddles with an "O" ring may be used if the water main line to be tapped is larger than the new water main line. Where the tap is the same size as the existing main, cast iron or stainless steel tapping sleeves shall be used, which encase the full perimeter of the pipe. The valve shall be a tapping valve with a guide lip on the flanged side. The opposite side of the valve shall have a mechanical joint connection.

H. Air, Vacuum and Release Valves. Combination air, vacuum and release valves shall be installed according to the standard drawings at high points in the system as required by the City.

450.050. Meters, Boxes and Services.

A. General. See the standard drawings for pressurized irrigation services. The minimum size of new pressurized irrigation service lines is 1 inch for single service and 1 ½" for dual service.

B. Placement and Location. All meters and boxes shall have their location and grade staked prior to installation. No meters or boxes shall be set in sidewalks or driveways. Meters and boxes are to be set 5 feet uphill from the water meter, 1 foot behind the sidewalk or 10 feet behind the curb. For new development, box to be set within +/- 0.1' sidewalk elevation. Service taps shall be a minimum of 36 inches apart. No taps will be allowed within 36 inches of the end of the pipe.

Service laterals shall extend perpendicular from the main to the meter or box. For dual pressurized irrigation services, laterals shall extend perpendicular from the main to the tee.

If a meter must be moved coordination with the City Engineer is required. When a new service line is installed the old corporation stop shall be shut off at the main and the old service line cut two feet from the main.

C. Meters and Boxes. All meters shall be paid for by the developer and ordered by the City. Meter boxes and pressurized irrigation boxes shall be in good repair. They shall not be set at an angle, crushed, or dented. The inside of boxes must be free from obstructions such as dirt, rocks or debris. Meters shall be installed by the Developer or Contractor.

D. Polyethylene Pipe. Only CTS SDR9 200 psi purple polyethylene pipe shall be used for pressurized irrigation service lines. Pipe damaged by scratches, cuts, kinks or buckled areas shall not be installed.

The bottom of trench shall be flat with no hollows, no lumps and no rock. If these conditions do not occur pipe must be bedded in coarse sand. No rocks shall be allowed within six inches of pipe.

Pipe shall be cut with either a wheel or scissor type tubing cutter with a blade specifically designed for plastic. Cuts shall be square and clean. Cutter manufacturer instructions shall be followed when cutting pipe. All connections shall have stainless steel stiffeners.

There shall be no unnecessary bending of pipe. Taps shall be exactly horizontal to the pressurized irrigation main. If bending cannot be avoided maximum bending radius shall be 25 times the pipe diameter as measured in inches (i.e.: a 16 inch pipe cannot bend on a curvature having a radius less than 16 x 25= 400 feet). There shall be no bending within 3 feet of a fixed point and no "S" shape curves.

450.060. Flushing.

A. General. All pressurized irrigation lines shall be flushed before placed in service. Flushing shall be accomplished through the end of each line.

B. Velocity. The Contractor shall install a tap sufficient in size to provide for 2 ½ feet per second flushing velocity in the line. The following is the flow quantity required to provide a 2 ½ foot per second flushing velocity.

FLOW REQUIREMENTS FOR FLUSHING

Pipe Diameter	Flow in Gallons Per Minute
4 inch	100
6 inch	220
8 inch	390
10 inch	610
12 inch	880
16 inch	1,567
18 inch	1,980
20 inch	2,450
24 inch	3,525
30 inch	5,507

Section 500. Sanitary Sewer.

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500.020. Pipe and Fittings.
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500.030. Services.
- A. General.
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500.010. General.

A. Specifications. Sanitary sewer facilities shall meet the requirements and specifications of APWA 33 31 00 (Sanitary Sewerage Systems). These specifications cover the installation of sanitary sewer lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to sanitary sewers.

B. Pipe. All sanitary sewer pipe 18 inches in diameter and larger shall be ADS Sanitite HP pipe or approved equivalent unless otherwise approved by City Engineer or his/her designee. All other sanitary sewer pipe shall be constructed with polyvinyl chloride (PVC) pipe.

C. Size. The City Engineer or his/her designee must approve the sizes of all proposed sanitary sewer lines. Minimum size of pipe is 8 inch diameter for main lines and 4 inch diameter for services.

D. Location. Sanitary Sewer mains shall be located on either the south or west sides of a street 7 feet from the centerline. A maximum of 400 feet of pipe shall be allowed between manholes unless otherwise approved by the City Engineer and/or his/her designee.

E. Minimum Slopes. Slopes shall be designed to have a 2 foot per second velocity unless otherwise approved by the City Engineer and/or his/her designee. The following table lists minimum slopes for sanitary sewer for each size of pipe:

MINIMUM SANITARY SEWER SLOPES

Pipe Diameter (inches)	Minimum Slope (%)
4	2.000
6	1.000
8	0.334
10	0.248
12	0.194
14	0.158
15	0.144
16	0.132
18	0.113
21	0.092
24	0.077
27	0.066
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

F. Sanitary Sewer Lift Stations. Sanitary sewer lifts stations require prior approval. All possible options for a gravity flow system shall be considered prior to requesting approval of a sanitary sewer lift station or equivalent system. Sanitary sewer lift stations or equivalent systems which are approved to be used in a development shall be designed by the Developer's engineer; the design shall be submitted to the City Engineer or his/her designee for review prior to Preliminary Approval of the development. Lift stations will be the wet well / dry well type, will have standby power, proper ventilation, telemetry, and will be designed for large areas, not individual subdivisions.

G. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

500.020. Pipe and Fittings.

A. General. ADS Sanitite HP pipe or approved equivalent shall be used for all sanitary sewer lines larger than 18 inches in diameter. All other sanitary sewer lines shall be constructed with polyvinyl chloride (PVC) pipe.

Pipe buried more than 12 feet deep shall require manufacturing and engineering specifications to be submitted to the City Engineer or his/her designee for written approval.

B. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe) and shall have a minimum rating of SDR-35.

C. ADS Sanitite HP Pipe. Sanitite HP pipe with sizes up to 30 inches shall meet the requirements and specifications of ASTM F2732. Sanitite HP pipe with sizes over 30 inches shall meet the requirements of ASTM F2764.

500.030. Services.

A. General. All sanitary sewer services shall be connected to existing sanitary sewer mains by use of an Inline Y or approved equivalent Insert-a-Tee type connection, and shall be approved by the City Engineer and/or his/her designee. Sewer services shall extend 10 feet beyond the back of sidewalk and plugged until connected to a building. The minimum cover of sewer laterals is at 3' 6" at the property line.

B. Clean-outs. Clean-outs, per City details, shall be installed every 100 feet on all service lines.

C. Replacement of service lines. When an existing lot/parcel has a working sewer service, a Street Cut Permit will not be issued for a new service line without approval from the City Engineer.

Section 550 Storm, Land and Groundwater Drains.

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550.010. General.

A. Specifications. Storm, land and groundwater drain facilities shall meet the requirements and specifications of APWA 33 41 00 (Storm Drainage Systems). These specifications cover the installation of storm, land and groundwater lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to storm, land and groundwater drains. Land and groundwater drains shall be approved by the City Engineer and shall be installed lower in elevation than the sewer mainline.

B. Size. The City Engineer or his/her designee must approve the sizes of all proposed drain lines. The minimum size of pipe is 15" diameter for all lines, both mains and laterals.

C. Location. Drain lines shall be located along the centerline of the street, typically below water mains to reduce conflicts. Unless approved otherwise, a maximum of 400 feet of pipe shall be allowed between manholes.

D. Minimum Slopes. Slopes shall be designed to have a 2 foot per second velocity unless otherwise approved by the City Engineer and/or his/her designee. The following table lists minimum slopes for drain lines for each size of pipe:

MINIMUM DRAIN LINE SLOPES

Pipe Diameter (inches)	Minimum Slope (%)
12	0.194
14	0.158
15	0.144
16	0.132
18	0.113
21	0.092
24	0.077
27	0.066
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

F. Groundwater Drains. All plans for groundwater drains must be designed and stamped by a licensed professional civil engineer in the State of Utah. Only rigid pipe may be used.

550.020. Pipe and Fittings.

A. General. Reinforced concrete pipe shall be used for all lines with less than 2 feet of cover or more than 8 feet of cover. Corrugated metal pipe (CMP) may only be used when authorized by the City Engineer or his/her designee.

B. Concrete Pipe. Concrete pipe shall meet the requirements and specifications of APWA 33 05 02 (Concrete Pipe and Culvert). Reinforced concrete pipe (RCP) shall be Class III. Only new pipe may be used unless otherwise authorized by the City Engineer or his/her designee.

C. Polyethylene Pipe. Polyethylene pipe shall meet the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe) Type S for storm drains and Type SP for land or groundwater drains.

D. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe).

E. Corrugated Metal Pipe (CMP). CMP shall meet the requirements and specifications of APWA 33 05 04 (Corrugated Metal Pipe).

550.030. Sumps, and Appurtenances.

A. Connecting to Existing Drain Lines. Manholes and sumps used to connect proposed storm drain to existing storm drain shall be plumb and centered on the existing storm drain. The new pipe shall be placed against the existing pipe at the elevation designated by the project engineer and the base poured as specified above. Care shall be taken not to disturb the alignment of the existing storm drain during the excavation procedure. Any damage to the existing storm drain shall be repaired.

B. Sumps. Sumps may only be constructed of reinforced concrete, precast sections and shall meet the requirements of ASTM C478-73. Sumps shall have eccentric lids to ensure adjustments in alignment.

C. Inlet and Clean Out Structures. Surface water must enter the City storm drain system through standard City inlet boxes. In no case may water inlet directly into storm manholes, clean-outs, or sumps. Inlets and clean out structures shall not exceed 400 ft spacing unless approved otherwise by the City Engineer.

All inlet and clean out structures shall be reinforced concrete boxes. They may be precast or cast-in-place. Grate and Frame Material. All castings shall be of ASTM A-48, Class 35 iron free from blowholes and shrinkage defects. Castings shall be free from fins and burrs and shall be shot-blasted to remove sand and other foreign matter. Freedom from cracks and defects shall be ascertained by the engineer prior to installation.

D. Headwalls. A headwall shall be installed at all ditch to pipe transitions. Headwall designs must be stamped by a licensed professional civil engineer in the State of Utah and approved by the City Engineer or his/her designee.

550.040. Retention/Detention Basins.

A. General. Basin designs shall be designed with the following side slopes:

Basin Finish	Min. Side Slope
Non-landscaped	3:1
Landscaped	4:1

B. Retention Basins. All retention basins shall have a freeboard of 12 inches. Design of retention basins shall be according to the Storm Water Drainage Design Manual. All retention basins shall have a series of interconnected sumps connected to curb inlet boxes or storm drain main lines.

All retention basins shall be constructed for drainage areas designated in the Storm Drain Master Plan. Basins for smaller areas may be allowed only with prior written approval of the City Engineer or his/her designee.

C. Detention Basins. All detention basins shall have 12 inches of freeboard. Design of detention basins shall be according to the Storm Water Drainage Design Manual. Detention basins may be constructed in landscape or parking areas. Each detention basin shall incorporate LID storm drain principles and have an overflow to the City storm drain system.

550.050. Low Impact Development.

General. All new development and roadways shall incorporate LID storm drain in the form of bioretention swales, underground retention cells and other methods as approved by the City Engineer or his/her designee. LID systems shall be designed in accordance with the Stormwater Design Manual.

Section 600. Streets and Pavements.

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600.010. General.

A. Street Designations. Street designations include: local streets, secondary access, collector streets and arterial streets. Designations shall be assigned by the City in compliance with the Alpine City Transportation Master Plan.

B. Time Limitation after Curb and Gutter is Placed. Road base shall be placed between 7 to 30 days of placement of curb and gutter. Pavement shall be placed before 45 days after the placement of curb and gutter unless an extension is granted by the City Engineer or his/her designee. If an extension is granted by the City Engineer or his/her designee, and to protect the curb and gutter, the road base shall be graded to the lip of curb elevation extending at least three (3) feet into the roadway at that same elevation until paving can occur; at which point, it shall be re-graded for paving.

C. Geotextiles, Geogrids and Geocomposites. All geotextile work shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles) and APWA 32 12 16 (Plant-Mix Asphalt Paving). Geogrid and geocomposite work shall meet the requirements and specifications of APWA 31 05 21 (Geogrids/Geoomposites) and APWA 32 12 16 (Plant-Mix Asphalt Paving).

D. Pavers. Pavers and installation shall meet the requirements and specifications of APWA 32 14 13 (Precast Concrete Unit Paving) and APWA 32 14 16 (Brick Unit Paving).

E. Painted Traffic Lines and Markings. Painted traffic lines and markings shall meet the requirements and specifications of APWA 32 17 23 (Pavement Markings) and the MUTCD.

F. Traffic Barriers. Vehicle barriers shall meet the requirements and specifications of APWA 34 71 13 (Vehicle Barriers) and the MUTCD.

G. Vehicle Delineators. Vehicle delineators shall meet the requirements and specifications of APWA 34 71 19 (Vehicle Delineators) and the MUTCD.

600.020. Street Section.

A. Soils Investigation. A soils investigation shall be performed for all new roads and those roads for which work will be performed. The results of this investigation and a design of the road cross section shall be submitted to and accepted by the City Engineer or his/her designee.

The following guidelines shall be used as a minimum requirement for street cross sections. They should be used unless the soils investigation indicates they are not adequate. Any variations from these standards must be approved by the City Engineer or his/her designee.

B. Pavement Section. All roads shall be paved with asphalt concrete according to City standards unless authorized by the City Engineer or his/her designee. The following table shall be used for minimum asphalt pavement surfacing depths:

ASPHALT PAVEMENT COURSE THICKNESS

Application	Minimum Pavement
Parking Lots and Driveways	3 inch
Local Streets	3 inch + preservation coat after 1 year
Secondary Access Roads	3 inch + preservation coat after 1 year (if pavement is required)
Collector/Arterial Streets	4 inch + preservation coat after 1 year

Streets shall have an approved preservation coat installed 1 year after the end of construction inspection, pending amenable conditions for installation. At the City's discretion, the contractor may arrange to have the City install the preservation coat at the Contractor's expense. The funds for a preservation coat shall be provided in escrow prior to recording the subdivision plat.

C. Road-base Section. All roads shall have a minimum 8 inches of road-base under the pavement section. Road-base shall be an untreated base course installed according to City standards. See Section 350. Earthwork and Trenching. Road-base shall be finished to a smooth uniform line and grade and shall extend

a minimum of 12" beyond the pavement surface for placements without curb and gutter. For placements with curb and gutter it shall extend 12" beyond the back of curb. Road-base shall not be placed and compacted against new curb for a minimum of seven (7) days after curb is poured.

D. Sub-base Section. All sub-base shall be an engineered fill that meets and is installed according to City standards. See Section 350. Earthwork and Trenching. Sub-base shall be finished to a smooth uniform line and grade and shall extend a minimum of 12" beyond the pavement surface for placements without curb and gutter. For placements with curb and gutter it shall extend 12" beyond the back of curb. The thicker section shall be used in the case where CBR may be in conflict. The following table shall be used for minimum sub-base course thicknesses for the following California Bearing Ratio (CBR) values of sub-grade:

PARKING LOTS AND DRIVEWAYS
MINIMUM SUB-BASE COURSE THICKNESSES

Sub-grade CBR	Minimum Sub-base Thickness (inches)
Less than 2	12
2.1 to 8.0	8
More than 8	No Sub-base Required

LOCAL STREET / SECONDARY ACCESS
MINIMUM SUB-BASE COURSE THICKNESS

Sub-grade CBR	Minimum Sub-base Thickness (inches)
Less than 2	15
2.1 to 3.0	12
3.1 to 10.0	8
More than 10	No Sub-base Required

COLLECTOR / ARTERIAL STREET
MINIMUM SUB- BASE COURSE THICKNESS

Sub-grade CBR	Minimum Sub-base Thickness (inches)
Less than 2.0	18
2.1 to 3.0	15
3.1 to 5.0	12
5.1 to 15.0	8
More than 15	No Sub-base Required

E. Grading. The sub-grade, sub-base, and road base shall all be graded to an engineered red-head and accepted by the City. Red-heads shall be placed every 50 feet at the crown of the road. If the distance between red-heads and edge of pavement exceeds 25 feet additional redheads shall be installed halfway between the crown and edge of pavement.

600.030. Trail Section.

A. General. A pavement and soils investigation shall be performed for Class A and B trails. The results of this investigation and a design of the trail section shall be submitted to and accepted by the City Engineer or his/her designee.

The following guidelines shall be used as a minimum requirement for Class A thru D trail cross sections. They should be used unless the soils investigation indicates they are not adequate. Any variations from these standards must be approved by the City Engineer or his/her designee. All trail materials shall be placed according to City standards.

1. *Engineered Fill.* Compacted engineered fill shall be placed in all areas where fills are required to meet grade or the requirements of the soils investigation.

2. *Untreated Base Course.* 6 inches of compacted untreated base course shall be placed under the surface course of Class A thru D trails.
3. *Bituminous Surface Course.* A minimum of 3 inches of APWA DM-1/2, PG 58-28, 50 Blow or SP-3/8, PG58-28, 75Nd bituminous surface course shall be placed across 8 feet of the trail section.
   a. A maximum of 15% RAP or 15% Recycled Binder Replacement, whichever is less, will be allowed.

B. Survey. Both sides of a trail shall be laid out by a survey and approved by the City before construction. Lath shall be placed at 100 foot intervals and at bends and obstacles the trail comes near.

C. Weed Abatement. All weeds shall be sprayed and killed with Roundup or an approved equivalent one week before any work may be performed, and within 3 weeks of the placement of untreated base course.

D. Geotextile Fence. An APWA 31 05 19 (Geotextiles) silt fence shall be installed along the limits of the trail construction at hillsides, river embankments, or by or through City Open Space.

E. Sub-grade. The sub-grade shall be grubbed of all trees, bushes and other organic matter. Sub-grade shall be graded to meet the following ADA requirements for walkways when required on ADA accessible pathways:
   1. *Maximum Slope.* Sub-grade shall not have a slope greater than 8.33%.
   2. *Maximum Run for Steep Slopes.* For slopes between 5.00% and 6.25% the maximum run shall be 40 feet. For slopes between 6.25% and 8.33% the maximum run shall be 30 feet.

F. Weed Barrier. Weed barrier geotextile shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles).

G. Trail Markings. Trail lanes shall be delineated by a center single dashed yellow line. Painted traffic lines and markings shall meet the requirements and specifications of APWA 32 17 23 (Pavement Markings) and the MUTCD.

H. Clean-up. Upon completion of the trail section all windrows, survey and construction debris shall be removed from along the edges of the trail.

600.040. Bituminous Surface Course.

A. Bituminous Concrete Material Specification. Bituminous Concrete material (aka: asphalt material) shall meet the requirements and specifications of APWA 32 12 05 (Bituminous Concrete).

For all streets, parking lots, trails, and repairs; use APWA DM-1/2, PG 58-28, 50 Blow or SP-3/8 PG58-28, 75Nd. Recycled Asphalt Pavement (RAP) or Recycled Asphalt Binder (RAB) content may not exceed 15% in any mix design.

B. Bituminous Concrete Placement. Placement of bituminous concrete (asphalt) shall meet the requirements of APWA 32 12 16.13 (Plant-Mix Asphalt Paving) and APWA 32 12 17 (Cold-Mix Asphalt Paving).

For all new construction, paving shall not occur until gas and power utilities are installed. Other dry utility crossings shall be installed and approved by the dry utility company representative and the City Engineer or his/her designee. Crossings shall be surveyed and included on the asbuilt drawings.

Required testing for culinary water, pressurized irrigation, sewer, and storm drain shall be completed and approved by the City Engineer or his/her designee prior to paving.

For paving limitations, see Asphalt Paving Limitations, Section 250.

Cold-mix asphalt concrete shall only be installed when allowed by the City Engineer or his/her designee. All cold-mix asphalt concrete shall be replaced with hot-mix within 30 days of when it becomes available.

C. Prime Coat. Prime coat only as required by the plans or the City. Prime coat shall meet the requirements and specifications of APWA 32 12 13 (Prime Coat).

D. Tack Coat. Install tack coat as required and according to APWA 32 12 13 (Tack Coat). Use CSS-1 or CSS-1h tack emulsion diluted 2:1 (concentrate to water).

E. Thin Overlays and Patches. Use binder and bituminous concrete as defined in Article A based on paver or hand applications. Apply tack coat to all horizontal and vertical surfaces sufficient to achieve minimum 95% coverage prior to placement of overlay or patch.

F. Slurry Seal. Slurry seals shall meet the requirements and specifications of APWA 32 01 13 (Slurry Seal). The type of slurry seal applied to a City street shall be approved and specified by the City Engineer.

G. Chip Seal. Chip seals shall meet the requirements and specifications of APWA 32 01 13 (Chip Seal).

H. Micro-Surfacing. Micro-surfacing shall meet the requirements and specifications of APWA 32 01 15 (Micro-Surface Seal).

I. Pavement Crack Seal. Pavement crack seals shall meet the requirements and specifications of APWA 32 01 17 (Pavement Crack Seal).

J. High Density Mineral Bond Seal. High density mineral bond seals shall meet the requirements and specifications of 2017 APWA 32 01 13 (High Density Mineral Bond Seal).

Section 650. Portland Cement Concrete and Masonry Work.

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650.010. General.

A. Specifications. These specifications cover the installation of concrete work including but not limited to curbs, gutters, sidewalks, boxes, and thrust blocks. All concrete work shall meet the requirements and specifications of APWA Division 03 Concrete and related sections. Concrete driveway, sidewalk, curb and gutter work shall meet the requirements and specifications of APWA 32 16 13 (Driveway, Sidewalk, Curb, Gutter). See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. Also, see standard drawings related to concrete work.

All concrete work shall be constructed where indicated on the plans or as directed by the project engineer and shall conform in all respects to the specified lines, grades, and dimensions and City standards.

B. Allowable Grades. The minimum grade allowed for any gutter is 0.50%. See Alpine City Development Code for maximum allowable grades of City streets.

C. American Disabilities Act (ADA) Requirements. All pedestrian facilities will conform to the current federal ADA standards.

D. Combination Curb, Gutter, and Sidewalk. Combination curb, gutter, and sidewalk will not be allowed unless authorized by the City Engineer or his/her designee.

E. Cold Weather Concrete. Concrete shall not be placed when a descending air temperature in the shade and away from artificial heat falls below 35ºF. Concrete shall not be poured on frozen ground. Where temperatures are projected to descend below 32ºF within 72 hours after placement, concrete shall be covered or otherwise protected against freezing. No calcium based add mixtures may be used. Any other add mixtures must be approved by the City Engineer or his/her designee.

If concrete is not protected by insulation blankets for 72 hours following installation and the temperature drops below 45 degrees a pay factor of 0.50 shall apply.

Per APWA Division 03, concrete placed between October 1 and March 1 requires an increase in mix design strength by 1 class, i.e. Class 3000 becomes Class 4000, Class 4000 becomes Class 5000, etc.

F. Debris in Gutters. Once curb and gutter and surface course is in place they shall be kept as clean as possible. Dirt and gravel shall not be placed in gutter or on street. Gutter shall flow freely at all times.

G. Sidewalk. Sidewalk shall be 5 inches thick with 6 inches of compacted road base. To protect the structural integrity of new sidewalk, all dry utilities shall be installed prior to installing sidewalk. When equipment is required to cross over sidewalk, bridging must be provided to protect concrete.

H. Drive Approaches. All City owned drive approaches shall be 5 inches thick with 6 inches of compacted road base. Commercially owned drive approaches are recommended to be 6 inches thick.

I. Protection of Wet Concrete. The Contractor shall be responsible to protect wet concrete. Any concrete that is vandalized before setting up shall be replaced at the contractor's expense.

J. Repair. When authorized by the City Engineer or his/her designee, Contractor may repair concrete damage with Concrete Solution's Ultra Surface Concrete Polymer installed to manufacturer's specifications or an equivalent that is approved by the City Engineer or his/her designee. Repair of concrete sidewalk shall include the entire panel that was damaged with a minimum of five (5) foot length panel replaced.

650.020. Installation.

A. Cutting Pavement. When replacing gutter, the pavement shall be cut along the entire excavation to provide a vertical joint in the surface. Cut shall be a minimum of 12 inches from lip of gutter. A pavement saw shall be used for all pavement cutting. If excavation damages the cut pavement, pavement shall be cut again before patching. All road cuts shall be repaired within 2 working days.

B. Forms and Joints. When pouring concrete along a curve, flexible forms with enough stakes to hold the forms at an even curve shall be used.

Curb and gutter contraction joints shall be constructed every 10 feet by using steel templates 1/8 inch in thickness. Sidewalk contraction joints shall meet APWA requirements with the minimum distance between joints being 5 feet.

C. Base Material. A minimum of 6 inches of untreated base course shall be installed under all concrete and shall extend out 1 foot in all directions from concrete unless otherwise specified. Untreated base course shall be compacted and installed according to City standards. See Section 350. Earthwork and Trenches.

D. Mixing and Conveying. Concrete transported in a truck mixer, agitator, or other transportation device shall be discharged at the job and placed in its final position in the forms within 1 hour after the introduction of the mixing water to the cement and the aggregate, or the cement to the aggregate, except that in hot weather or under other conditions contributing to quick stiffening of the concrete, the maximum allowable time may be reduced by the City Engineer or his/her designee. The maximum volume of mixed concrete transported in an agitator shall be in accordance with the specified rating. During adverse weather conditions the City Engineer or his/her designee may deem it necessary for the use of a concrete pump truck.

E. Finishing. As soon as the concrete has set sufficiently to retain its shape without support of the face form, the clamps, spreaders and face forms shall be removed. While the concrete is still green, the surface shall be thoroughly floated with a magnesium or moist wooden float to provide an even smooth surface, then broomed lightly.

F. Curing. As soon as possible after final finishing, the finished surface shall be coated with a curing compound. The compound shall be an ASTM C-1315 Type 2 curing compound that meets the APWA 03 39 00 (Concrete Curing) specifications. The compound shall be applied in accordance with the manufacturer's recommendations. During the months of October through February exposed concrete shall be covered with an insulated curing blanket that meets the ACI 306 specification for 3 days when temperatures remain at 15 degrees Fahrenheit or higher and for 7 days for temperatures below 15 degrees Fahrenheit. Insulated curing blankets shall only be removed during the warmest parts of the day. The curing compound shall then be applied within 24 hours of the blankets being removed.

650.030. Materials.

A. Coarse Aggregate. A coarse aggregate shall consist of hard durable particles of a mixture of crushed and natural gravel possessing at least 50% of broken surface area. The coarse aggregate shall be free from substances which are chemically active relative to hydrated cement and shall be subject to particularly the following:

1. Loss on abrasion by Los Angeles Abrasion Test not more than 40% by weight.
2. Loss on exposure to 5 cycles of sodium sulfate soundness test, not more than 8% by weight.
3. Deleterious substances shall not exceed the values in the following table:

PORTLAND CEMENT CONCRETE
COURSE AGGREGATE DELETERIOUS SUBSTANCES

Substance	Maximum % by Weight
Soft Fragments	3.0
Coal Lumps	1.0
Clay Lumps	0.5
Material passing 39 100 Sieve	1.5
Organic Material	0.1
Total for All of the Above	3.0

The maximum size of aggregate to be used shall not exceed 1 1/2 inches in terms of this size definition contained in ASTM Standards except that the maximum size shall not exceed 1/4 of the least dimension of the finished concrete in which the aggregate is to be used.

Coarse aggregate shall be uniformly graded within the following range:

PORTLAND CEMENT CONCRETE
COARSE AGGREGATE GRADATION

Sieve Size	Minimum Retained (%)	Maximum Retained (%)
1 1/2 inch	0	10
3/4 inch	30	70
1/4 inch	75	100
No. 4	95	100

B. Fine Aggregate. Fine aggregate shall consist of clean, hard durable particles of natural sands, subject to the following limitations:
   1. Organic Calorimetric Test using sodium hydroxide shall result in a color not darker than Number 2 in the acceptance range.
   2. Loss on exposure to 5 cycles of the sodium sulfate soundness tests shall not exceed 8% by weight.
   3. Deleterious substances shall not exceed the values in the following table:

PORTLAND CEMENT CONCRETE
FINE AGGREGATE DELETERIOUS SUBSTANCES

Substance	Maximum % by Weight
Soft Fragments	3.0
Coal Lumps	1.0
Material passing 39 100 Sieve	3.0
Micaceous or Flaky Particles	3.0
Total for All of the Above	5.0

Fine aggregate shall be uniformly graded within the following range:

PORTLAND CEMENT CONCRETE
FINE AGGREGATE GRADATION

Sieve Size	Minimum Retained (%)	Maximum Retained (%)
No. 4	0	5
No. 8	0	20
No. 16	20	50
No. 30	50	75
No. 50	75	90
No. 100	95	100

C. Cement. All cement used shall be Type II unless otherwise allowed by the City Engineer or his/her designee. All cement and dry additives shall be stored in damp-proof conditions. Shipments of cement shall be marked and stored in such a manner as to provide positive identification. The supplier shall keep and have available for inspection at all times an accurate record of supplies and use of cement of the various types and shipments. No cement shall be used which has been subject to dampness or exposure.

D. Water. Water used for concrete shall be potable and free from excess salts, organic material, or other deleterious substances. Addition of water to the mixed concrete after specified workability has been obtained will not be allowed, nor shall any concrete be re-tempered or re-mixed.

650.040. Concrete Mixes.

A. Mix Design. Concrete mix designs shall meet the following requirements:

PORTLAND CEMENT CONCRETEMIX DESIGN REQUIREMENTS

Property	Standard Requirement	Thrust Block Material
Cement Content	6.5 Bags per Cubic Yard (Minimum)	3.5 Bags per Cubic Yard (Minimum)
28 Day Compressive Strength	4000 psi (Minimum)*	2000 psi (Minimum)*
Slump Range	1 to 3 inches	1 to 6 inches
Flatwork Slump Range	3 to 4 inches	NA
Air Content	5% to 7%	NA

* Per APWA 03 30 04, increase cement content in the mix design by 1 class between **October 1 and March 1**, i.e. Class 4000 becomes Class 5000.

B. Proportioning. The supplier shall determine proportions by weight of aggregates, cement, additives, and water required to comply with strength, workability, and other requirements detailed herein. Such proportions shall be submitted to the City Engineer or his/her designee in three copies annually along with the following tests on materials and shall be subject to his/her approval.

1. Coarse aggregate
    a. Source
    b. Deleterious substances
    c. Los Angeles Abrasion Test
    d. Sodium Sulfate Soundness Test
    e. Sieve
2. Fine aggregate
    a. Source
    b. Deleterious substances
    c. Calorimetric Test for Organics
    d. Sodium Sulfate Soundness Test
    e. Sieve and fineness modulus
3. Cement
    a. Type
    b. Supplier
    c. Analysis

Upon approval, all concrete shall be prepared in terms of the proportions so approved unless variation becomes necessary by reason of materials or conditions to achieve the requirements of these specifications, in which case such variation shall be approved in writing by the City Engineer or his/her designee. Approval by the engineer of mix proportions shall not relieve the supplier from the responsibility for obtaining the concrete strengths specified or complying will all other provisions of this specification.

C. Control. Measurements of materials except water shall be by weight. Equipment used shall be capable of controlling weight within 1% of each ingredient. Water may be measured either by volume or weight provided that an accuracy of 1% is maintained. Cement may be assumed to weigh 94 pounds per sack but proportioning aggregates for fractional sacks of cement will not be permitted unless the fractional amount is weighed for each batch.

D. Water Adjustments. Compensation for the water contained in the aggregates shall be made at least once daily or as often as inspection of the concrete may indicate that variation from this cause has occurred. The Pycnometer Method of assessing water in aggregate may be used for its determination for the purposes of this paragraph.

650.050. Masonry.

A. General. All masonry work shall meet the requirements and specifications of APWA Division 04 Masonry and related sections.

Section 700. Conduit

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C. Location
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700.030. Installation

A. Cutting
B. Dewatering
C. Laying
D. Bedding

700.010. General.

A. This Division covers furnishing and installing telecommunications conduit.

700.020. Utility Conduit.

A. Responsibility to install. Developers shall be responsible to install utility conduits for placement of public utilities and street lighting: Two – two-inch (2") (initially empty) communications conduits shall be installed parallel and congruent to all primary and secondary power conduits such that communication lines can serve all lots individually. Communications service boxes labeled "Communications" shall be installed above the communications conduits directly adjacent to all power boxes (i.e.: ground sleeves, transformers, etc.).

B. Materials. The conduit and junction/pull boxes shall be of the material specified by each utility company. Junction/pull box locations shall be specified by the utility company.

C. Location. Conduits shall be installed at locations established by utility company engineers and approved by the City, outside of the roadway (see Standard Detail 1). Excavation shall be at depth and standards of utility companies. Conduits shall have bends attached to each end and placed vertically out of the ground for location verification. Conduits crossing street rights-of-way shall have a minimum of 18" cover below finished street grade. Conduit clusters shall be installed at all intersections. The cluster shall consist of four (4) 4 inch conduits and one 6 inch conduit spaced 3' away.

D. Magnetic Locator Tape. All utility conduits shall include a 3" magnetic locator tape installed in the pipeline trench approximately 12" below the ground surface, with appropriate cautionary wording printing on the tape to identify the type of utility present.

700.030. Installation.

A. Cutting. Cutting of conduit for closure pieces or for other reasons shall be done in a neat and workmanlike manner by a method recommended by the manufacturer.

B. Dewatering of Trench. Where water is encountered in the trench, it shall be removed during conduit laying operations and the trench so maintained until the ends of the conduits are sealed. See "Temporary Controls" in Section 200.010.

C. Laying of Conduit. The conduit shall be inspected for defects before installation. Any defects shall be repaired or the conduit shall be replaced, whichever is deemed necessary by the Engineer or his/her designee. All conduits shall be laid and maintained to the required lines and grades. The Contractor shall be responsible to install the conduit line to the alignment set by the Engineer or as shown on the Drawings. The Contractor shall take the necessary precautions such that foreign materials do not enter into the conduit. No debris, tools, or other materials shall be placed in the conduit during laying operations. When laying of conduit is not in progress, the conduit shall be closed by a watertight plug. Maximum vertical or horizontal deflections of conduit are not to exceed a ratio of 10:1 along its length (e.g. no more than 4" deflection per 40" length.) Install all conduit bends to have a radius that is: 1. Not less than 10 times the inside diameter of the conduit. 2. Not less than the minimum bend radius called out on the plans. At no time shall the conduit be deformed to make a bend. The minimum separation between conduits shall be 3". The minimum separation between the conduit and trench wall shall be 1.5". Once bend locations have been verified to meet the Utility Company requirements, junction/pull boxes shall be installed at each bend location.

D. Bedding. All conduits shall be protected from lateral displacement and possible damage resulting from impact or unbalanced loading during backfilling operations by being adequately bedded. In the event trench materials are not, in the judgment of the Engineer or his/her designee, satisfactory for conduit bedding, imported granular bedding will be required. See "Bedding Material" in Section 350.040.

Section 850. Surface Irrigation Systems.

SECTION INDEX

850.010. General.
- A. Specifications.
- B. Size.
- C. Location.
- D. Minimum Slopes.
- E. Unusual Piping and Plumbing.

850.020. Pipe and Fittings.
- A. General.
- B. Concrete Pipe.
- C. Polyethylene Pipe.
- D. Corrugated Metal Pipe.

850.010. General.

A. Specifications. Piped irrigation facilities shall be required per Alpine City Development Code. Facilities shall meet the requirements and specifications of APWA 33 41 00 (Storm Drainage Systems). These specifications cover the installation of storm/irrigation lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to storm/irrigation lines.

B. Size. The City Engineer or his/her designee must approve the sizes of all proposed drain lines. The minimum size shall be determined based on Alpine Irrigation Company and Alpine City needs.

C. Location. Piped irrigation systems shall be located as close to the original ditch system as possible. Variations in location must be approved by the City Engineer or his designee and the Alpine Irrigation Company. A maximum of 400 feet of pipe shall be allowed between manholes.

D. Minimum Slopes. Slopes shall be designed to have a 2 foot per second velocity unless otherwise approved by the City Engineer and/or his/her designee. The following table lists minimum slopes for irrigation lines for each size of pipe:

MINIMUM IRRIGATION PIPE SLOPES

Pipe Diameter (inches)	Minimum Slope (%)
24	0.077
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

850.020. Pipe and Fittings.

A. General. Reinforced concrete pipe shall be used for all lines with less than 2 feet of cover or more than 8 feet of cover. Corrugated metal pipe (CMP) may only be used when authorized by the City Engineer or his/her designee.

B. Concrete Pipe. Concrete pipe shall meet the requirements and specifications of APWA 33 05 02 (Concrete Pipe and Culvert). Reinforced concrete pipe (RCP) shall be Class III. Only new pipe may be used unless otherwise authorized by the City Engineer or his/her designee.

C. Polyethylene Pipe. Polyethylene pipe shall meet the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe) Type S for storm drains and Type SP for land or groundwater drains.

D. Corrugated Metal Pipe (CMP). CMP shall meet the requirements and specifications of APWA 33 05 04 (Corrugated Metal Pipe).

Section 900. Landscaping.

SECTION INDEX

900.010. General.
- A. Specifications.
- B. Appurtenances.
- C. As-Built Drawings.
- D. Government Regulations.
- E. Source.
- F. Fences and Walls.
- G. Tree Grates.
- H. Vegetation Control.

900.020. Lawns and Grasses.
- A. General.
- B. Grading.

900.030. Ground Cover.
- A. General.

900.040. Trees.
- A. General.
- B. Tree Sizes.
- C. Labels.

900.010. General.

A. Specifications. These specifications are for landscape work completed on public property or private property that will become public property.

B. Appurtenances. Any minor items of labor or materials not specifically noted on the drawings or specifications; but obviously necessary for the proper completion of the work, are to be considered as incidental to and are to be included in the contract.

C. As-Built Drawings. The contractor must furnish as-build drawings to the City. These drawings should be updated whenever a change from the design is made to assure accuracy. The drawings must show a record of all departures from the contract drawings that occur during construction. These shall be kept on a clean set of prints of the contract drawings.

The Project Manager/Owner will review the "as-built drawings" to verify that changes are being recorded as construction occurs. These drawings and maintenance manuals must be submitted at the time of final inspection or in accordance to the general conditions.

D. Government Regulations. Ship landscape materials with certificates of inspection as required by governmental authorities. Comply with governing regulations applicable to landscape materials.

E. Source. Provide trees and shrubs, and other plants grown in a recognized nursery in accordance with good horticultural practice. Provide healthy, vigorous stock grown under climatic conditions similar to the locality of the project and free of disease, insects, eggs, larvae, and defects such as knots, sun-scale, injuries, abrasions, or disagreement.

Plant Materials and other landscape items will be evaluated according to compliance with drawings, schedules, and specifications; as well as overall aesthetic quality, grower or supplier reputation, physical inspection, and American Association of Nurseryman Standards (AANS). Select plants that will not be adversely affected by the existing soil chemistry at the planting location.

The source or supplier for all plant materials shall be furnished to the City prior to the delivery of any plant materials on site or stored elsewhere.

F. Fences and Walls. All fences and walls must be approved by the City. Chain link and field wire fencing shall meet the requirements and specifications of APWA 32 31 13 (Chain Link Fences and Gates) and APWA 32 31 16 (Welded Wire Fences and Gates) respectively. The relocation of fences and gates shall meet the requirements and specifications of APWA 32 01 10 (Relocate Fences and Gates) and related sections.

G. Tree Grates. Only 4 foot square D&L O-8644 or approved equivalent grates shall be used. Grates shall be set to grade with the top back of curb and sidewalk. Grates shall be set in metal frame manufactured specifically for grate. Frame shall be set in concrete extending a minimum of 6 inches from sides of frame. Concrete shall be installed to City standards for Portland Cement Concrete.

H. Vegetation Control. Vegetation control shall meet the requirements and specifications of APWA 31 31 19 (Vegetation Control).

900.020. Lawns and Grasses.

A. General. Lawns and grasses shall meet the requirements and specifications of APWA 32 92 00 (Turf and Grasses).

B. Grading. Till soil to a depth of 4 inches and remove rocks and debris over 1 inch in diameter. The elevation of top soil relative to walks, hard surfaces or edges shall be:

1. *Seeded Areas.* 1/2 inches below.
2. *Sodded Areas.* 1 1/2 inches below.

C. Slopes. For lawn and grassed areas, which will be maintained by lawnmowing equipment, the maximum grade shall be 6:1 (6 horizontal to 1 vertical).

900.030. Ground Cover.

A. General. Ground cover shall meet the requirements and specifications of APWA 32 93 13 (Ground Cover) and APWA 32 01 90 (Plant Maintenance). Install according to APWA plan number 683.

900.040. Trees.

A. General. Tree and work relating to trees shall meet the requirements and specifications of APWA 32 93 43 (Tree), APWA 32 01 91 (Tree Root Cutting), APWA 32 01 93 (Pruning Trees) and 32 01 90 (Plant Maintenance). Install according to APWA plan number 681. Use 6 foot posts for any tree staking. Trees may be planted without a certified arborist when authorized by the City Engineer or his/her designee.

B. Tree Sizes. Follow Alpine City Tree Guidebook

C. Labels. Label at least one plant of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.

Section 950. Irrigation Sprinkler Systems.

SECTION INDEX

950.010. General.
- A. Specifications.
- B. Appurtenances.
- C. Pressure Verification.
- D. Plan Modifications.
- E. As-Built Drawings.
- F. Final Inspection.

950.020. Pipe and Fittings.
- A. Pipe.
- B. Main Line Fittings.
- C. Circuit Pipe Fittings.
- D. Sleeves.

950.030. Sprinkler Heads.
- A. General.
- B. Spray Heads.
- C. Rotary Heads.

950.040. Controller, Valves and Flow Meters.
- A. Controller.
- B. Manual Main Line Isolation Valve.
- C. Manual Circuit Isolation Valve.
- D. Automatic Valves.
- E. Master Valves and Flow Meters.
- F. Automatic Drain Valves.
- G. Back Flow Preventer.
- H. Stop and Waste Valves.
- I. Quick Coupler Valves.
- J. Valve Boxes.
- K. Control Wire.

950.050. Installation.
- A. Schedule.
- B. Depth and Location.
- C. Trench Backfill Material.
- D. Thrust Blocks.
- E. Flushing.
- F. Gluing.
- G. Marking Zones.

950.010. General.

A. Specifications. These specifications are for landscape work completed on private property that will become public property. All underground irrigation systems shall meet the requirements and specifications of APWA 32 84 23 (Underground Irrigation Systems).

B. Appurtenances. Any minor items of labor or materials not specifically noted on the drawings or specifications; but obviously necessary for the proper completion of the work, are to be considered as incidental to and are to be included in the contract.

C. Pressure Verification. The Contractor, prior to installing the system, must verify existing water pressure. If there is a failure to obtain the needed pressure or if an excess of pressure exists for normal operation, the Contractor shall contact the City for any adjustments to the system. Failure to report any discrepancies in pressure due to whatever reason, and installation done prior to notification of City Parks Department shall be done at the expense of the Contractor.

D. Plan Modifications. The plans show the general arrangement of all piping. Should local conditions necessitate the rearrangement of some, or if piping can be run to better advantage, the contractor, before proceeding with the work, shall prepare and submit drawings of such to the office of the Alpine City Parks Department Representative and obtain written approval before commencing work shown by these drawings.

E. As-Built Drawings. Before the final inspection is complete, the contractor must furnish as-build drawings. These drawings should be updated on a daily basis to assure accuracy. The drawings must show the location of all valves, pipe, heads, controller control lines, and drain valves used on the job. These drawings and maintenance manuals must be submitted at the time of final inspection or in accordance to the general conditions.

F. Final Inspection. The Contractor shall operate, maintain, and guarantee the irrigation sprinkler system until all landscaping on the project is approved by the Alpine City Parks Department at a final inspection. Contractor shall submit manufacturer's technical product maintenance data and installation instructions for irrigation sprinkler system materials and products to the City before final inspection.

950.020. Pipe and Fittings.

A. Pipe. Use solvent weld schedule 40 PVC for main line pipe 3 inches in diameter and smaller. Use Class 200 PVC for main line pipe larger than 3 inches in diameter.

B. Main Line Fittings. Use solvent weld schedule 40 PVC fittings for pipe smaller than 3 inches in diameter. All fittings for pipe 3 inch and larger pipe shall be ductile iron, grade 65-45-12 in accordance with ASTM A-536.

Fittings shall have deep bell push on joints with gaskets meeting ASTM F977. Fittings shall be Harco Deep Bell as manufactured by the Hanington Corporation of Lynchburg, VA or approved equivalent. Transition gaskets are not allowed.

C. Circuit Pipe Fittings. Use solvent weld schedule 40 PVC fittings.

D. Sleeves. Pipe and control wiring and tubing under walks, roads and other hard surfaces shall be installed in solvent weld Class 40 PVC sleeves of adequate size. Sleeves for pipes shall be a minimum of 3 inches in diameter or one and a half times the size of the pipes whichever is greater. Sleeves shall be straight and level or less than 2% grade. All wiring shall be placed in its own conduit. Wire conduit may be ran inside of sprinkler pipe sleeves. Conduit for control wires shall have minimum inside diameters according to the following chart:

MINIMUM SLEEVE CONDUIT SIZES

Number of Wires	Conduit I.D.
1 to 7	1 inch
8 to 11	1 ½ inch
12 to 22	2 inch
23 to 31	2 ½ inch
32 to 36	3 inch

950.030. Sprinkler Heads.

A. General. Install according to APWA plan number 621 and 622, but do not install PVC elbow and riser.

B. Spray Heads. All spray type sprinkler heads shall be Rainbird “1804” PRS (pressure reducing spray) series or approved equivalent. All lawn spray heads shall be installed on swing pipe with two spiral barbed ells.

C. Rotary Heads. All rotary type sprinkler heads shall be Rainbird Falcon 6500 or RS5000 series or approved equivalent. All stream rotary and impact heads capable of distributing 10 gallons per minute or more shall be installed on pre-assembled swing joint by Spears or an approved equivalent.

950.040. Controller, Valves and Flow Meters.

A. Controller. Controller and pedestal shall be the same type as those used in the City central control system. The controller shall be as described in the irrigation legend on the drawings.

B. Manual Main Line Isolation Valve. See standard drawing for pressure pipe main line valves.

C. Manual Circuit Isolation Valve. Brass ball valve with handle.

D. Automatic Valves. Automatic valves shall be Rainbird PEB electric remote control valves or an approved equivalent. A manual circuit isolation valve shall be installed on the supply side of each automatic valve. Install according to APWA plan number 633, but do not install schedule 80 PVC union.

E. Master Valves and Flow Meters. Master valves and flow meters must be installed on main supply line and/or according to design and must be compatible with the City central control system.

F. Automatic Drain Valves. Install according to APWA plan number 632.

G. Back Flow Preventer. Shall be required on connections to the drinking water system. See section 400.040, Backflow Assemblies.

H. Stop and Waste Valves. Stop and waste valves shall be Mueller H - 10288 Oraseal or an approved equivalent. Stop and Waste valve shall be of manual type for operation by handle key. Stop and waste valves shall be installed in a typical water meter can, see Standard Details.

I. Quick Coupler Valves. Quick coupler valves shall be installed with brass riser and pre-manufactured swing joint. At least 2 quick coupler valves shall be installed, one at each end of main line. Valves shall be 1 inch standard.

J. Valve Boxes. Valves shall be located in lawn or planted areas. Avoid locating valves in areas of high pedestrian and vehicular circulation. Valve boxes shall be at finished grade with valve stems 4 inches minimum and 12 inches maximum below top of box and with 3 inches of pea gravel or 3/4 inch minus crushed gravel under the valve. Valve boxes shall be rectangular, heavy duty and green in color. Valve boxes for automatic valves shall be large enough to enclose manual circuit isolation valve and automatic valve.

K. Control Wire. Install wire according to APWA plan number 651. Add two extra blue control wires per controller to the longest run for emergency use and mark it in the control box as an extra wire. A two-wire system may be required.

950.050. Installation.

A. Schedule. Contractor shall submit a construction schedule of anticipated work time to facilitate timely visits for review of work. Schedule must be submitted to the City before any landscaping may begin

B. Depth and Location. Lines bordering curbs or sidewalks shall be 6 inches away to allow for maintenance and access to the lines. Control wires must be buried in appropriately sized conduit for the job (determined by design), one (1) inch minimum, at least 12 inches below finished grade and bundled with a plastic tape every 20 feet.

C. Trench Backfill Material. All trenches shall be backfilled in 12 inch lifts and tamped sufficiently to insure no settling of the surface. No rocks larger than 1 inch shall be allowed within 3 inches of the pipe. The Contractor, in placing the irrigation lines, and appurtenances, may uncover material not suitable for finished grading. This material shall be removed from the site. After the installation of the lines, the finished grading shall be smoothed over and restored to its original condition, using additional topsoil where necessary.

D. Thrust Blocks. All mainlines greater than 2 inches in size shall be installed with thrust blocks wherever a change of direction occurs. Thrust blocks shall be installed as follows:
   1. Bearing area of concrete thrust-block based on 200-PSI pressure and safe soil bearing load of 2,000 pounds per square foot.
   2. Concrete blocking shall be cast in place and have a minimum of 1/4 square foot bearing against the fittings.
   3. Block shall bear against fittings only and shall be clear of joints.
   4. Contractor shall install block adequate to withstand full test pressure as well as to continuously withstand operation pressure under all conditions of service.

E. Flushing. When the pipe lines are connected and the sprinkler risers in place but before any heads are installed, the control valves shall be opened and flushed with a full head of water to clean out the system.

F. Gluing. Gluing of PVC pipes shall be done with gray “Weld-on 711” and “Weld-on P70” primer.

G. Marking Zones. Valves must be tagged with labels indicating which zone they operate.

Section 1000. Standard Details

ALPINE

1850



Jed Muhlestein

Alpine City Engineer

CONSTRUCTION DETAILS

Adopted September 26, 2023

ALPINE CITY STANDARD DETAILS

ALPINE CITY ADOPTS 2017 APWA STANDARD SPECIFICATIONS AND DETAILS. FOR CITY SPECIFIC DETAILS, PLEASE SEE THE FOLLOWING:

STREETS

1. Street Cross-Sections
2. Alternate Street Cross-Sections
3. Street Cross-Sections Unequal Elevations
4. Sidewalk, Curb & Gutter, Waterway
5. Class A & B Trail Cross-Sections
6. Class C, D, & E Trail Cross-Sections
7. Cul-de-sac Detail
8. Knuckle Detail
9. Standard Setbacks
10. Temporary Turn-a-round

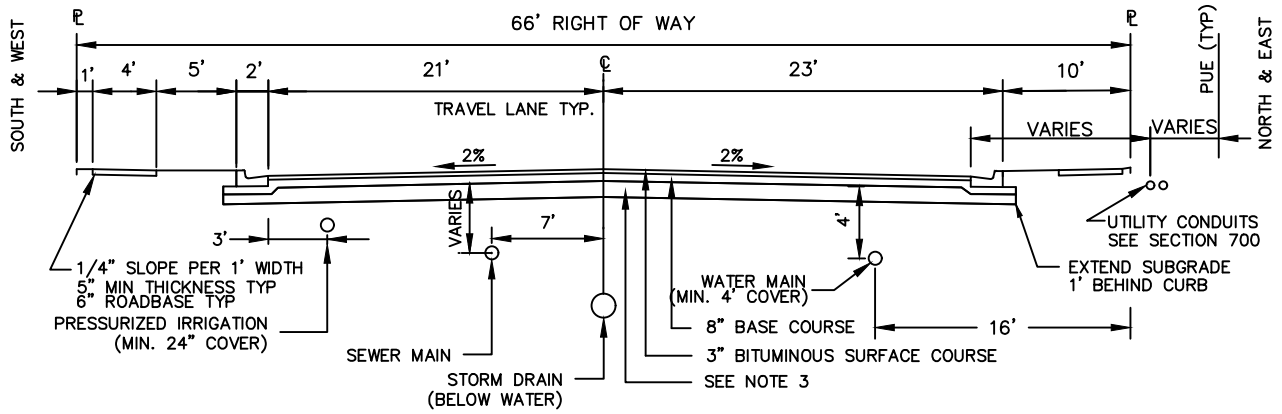
UTILITIES

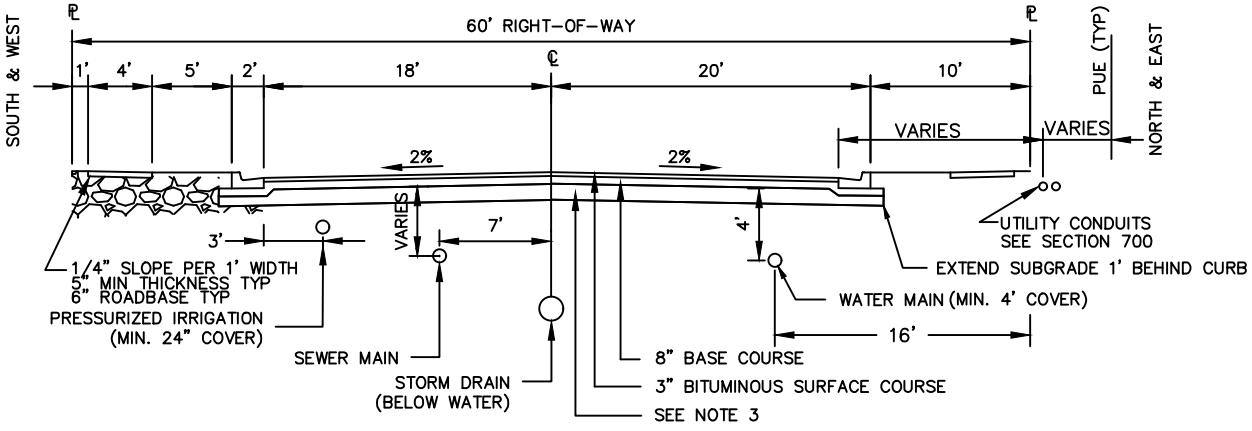
11. Standard Street Intersection and Utility Location
12. Standard Lot Utility Locations
13. Utility Conflict
14. City Utilities in Common Trench
15. Ditch Crossing
16. Manhole Ring & Cover (typical)
17. Sewer Manhole & Service Connection (typical)
18. Storm Drain Sump (typical)
19. Sump Disposal & Snout (typical)
20. Curb Face Drop Inlet Box (typical)
21. Dipstone Outlet
22. Flush Valve (typical)
23. Fire Hydrant
24. Pressurized Irrigation Service
25. Pressurized Irrigation Service w/ PRV
26. Pressurized Irrigation Airvac
27. Water Connection & Valve Box Details
28. Temporary Sewer Main Cleanout

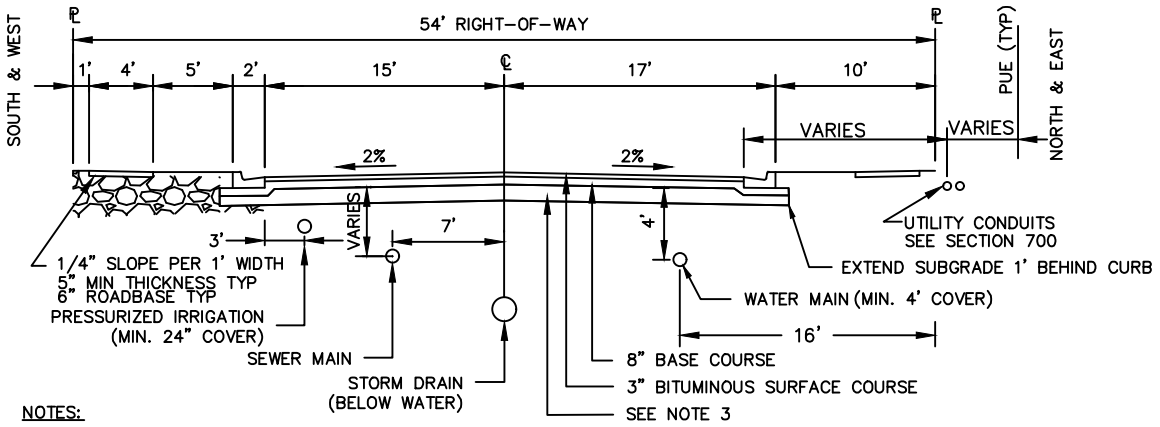
MISC

29. Public Open Space Fencing
30. Fencing Regulations
31. Street Lights

32. Sight Triangle
33. Standard Seed Mixtures
34. Irrigation Company Ditches
35. Roadway Tree Trimming
36. Parking Dimensions
37. 2-Inch Pressurized Irrigation Drain
38. Irrigation Inlet (typical)
39. Trenching Under Cast Iron Pipe







NOTES:

1. WATER VALVES AND 5-INCH VALVE OPENING MUELLER FIRE HYDRANTS SHALL BE LOCATED AS APPROVED.
2. NO WATER LINE SMALLER THAN 8-INCH DIA. SHALL BE INSTALLED WITHOUT APPROVAL OF CITY COUNCIL.
3. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS
4. CULINARY WATER MAINS SHALL BE ON THE NORTH AND EAST SIDES OF THE STREET. PRESSURIZED IRRIGATION AND SEWER LINES SHALL BE ON THE SOUTH AND WEST SIDES OF THE STREET.

STREET CROSS-SECTIONS & UTILITY LOCATIONS

N.T.S.

STATEMENT OF USE

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN ALPINE CITY. DEVEATION FROM THIS DOCUMENT REQUIRES APPROVAL OF ALPINE CITY, ALPINE CITY CORPRTATION CAN NOT BE HELD LIABLE FOR MISSUSE OR CHANGES REGARDING THIS DOCUMENT.

REVISION

NO.		BY	APRL.	DATE

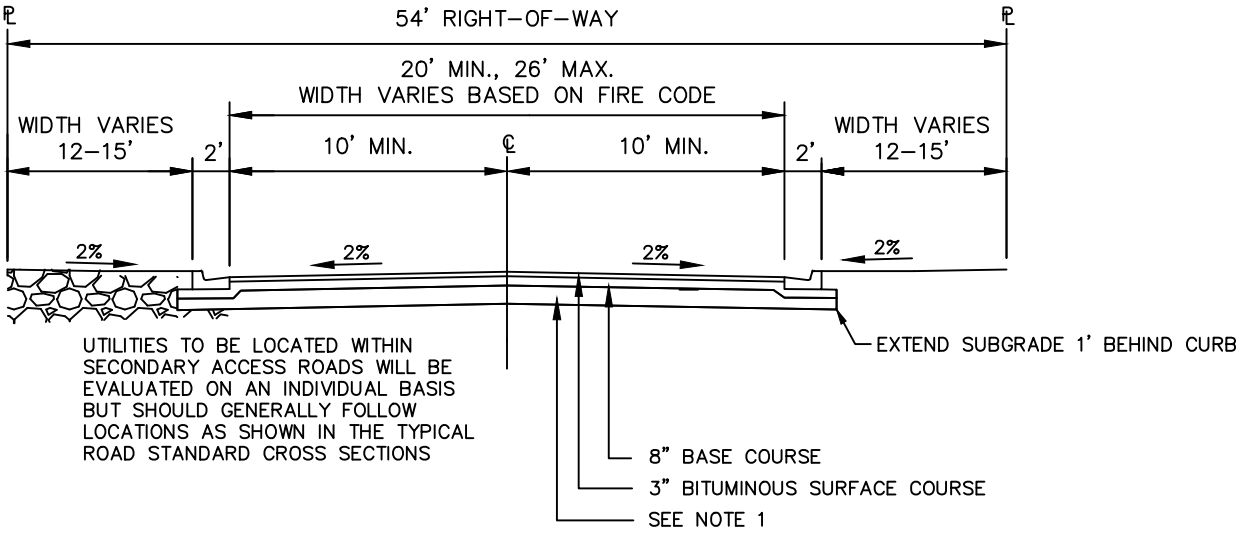
ALPINE 1850

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STREET CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

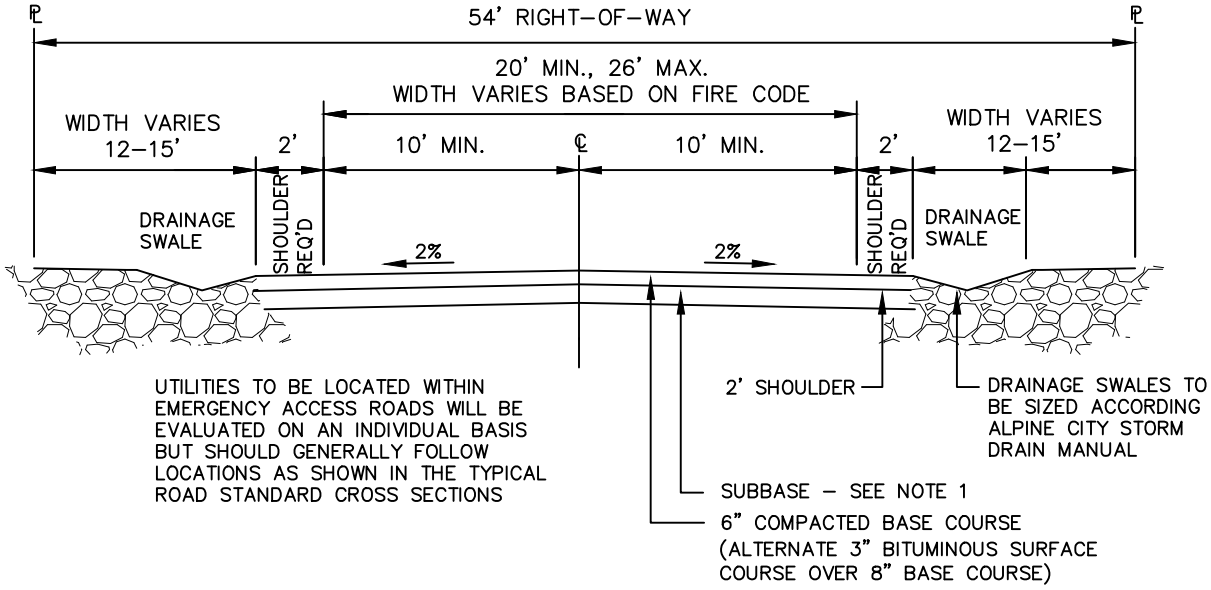
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PLOT SCALE:	N.T.S.
DRAWN BY:	B.D.B.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05



NOTES:

1. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS
2. FIRE CODE REQUIRES AN "ALL WEATHER" SURFACE FOR SECONDARY ACCESS ROUTES. IT IS AT THE DISCRETION OF THE CITY COUNCIL WHETHER SECONDARY ACCESS ROADS WILL BE ASPHALT OR GRAVEL. SEE GRAVEL OPTION BELOW.

SECONDARY ACCESS



NOTES:

1. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS
2. CURB AND GUTTER MAY OR MAY NOT BE REQUIRED AT THE DISCRETION OF THE CITY COUNCIL

SECONDARY ACCESS OPTION

STREET CROSS-SECTIONS

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

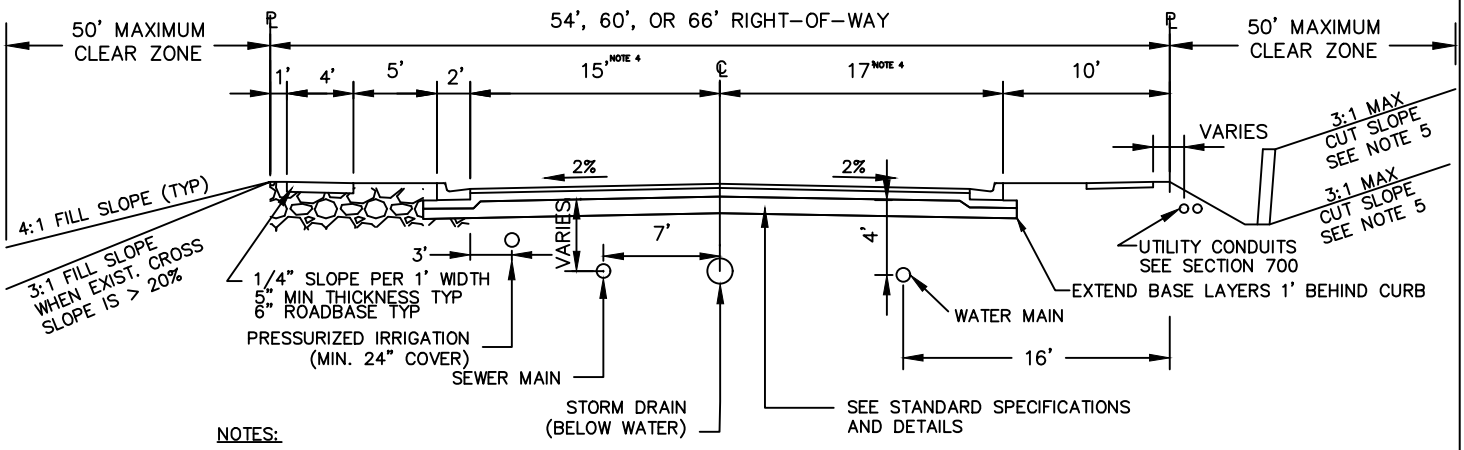
STREET CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 1A

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DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05

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NOTES:

1. CLEAR ZONE DEFINES THE MAXIMUM HORIZONTAL DISTANCE PERPENDICULAR TO ROAD THAT CAN BE DISTURBED TO CONSTRUCT STREET SECTION.
2. ENGINEERED RETAINING WALLS ARE ALLOWED PER DEVELOPMENT CODE SECTION 3.32
3. BORROW DITCH AND CROSS DRAIN PIPES SHALL BE DESIGNED SUCH THAT SILTS AND MATERIAL WILL NOT ENTER STREET CROSS SECTION. POND ON CUT SIDE OF ROAD, AND / OR DRAIN TO APPROPRIATE COLLECTION / DETENTION SYSTEM ON FILL SIDE OF ROAD. REFER TO ALPINE CITY STORM DRAIN DESIGN MANUAL.
4. WIDTH VARIES PER RIGHT OF WAY, SEE STANDARD DETAILS.
5. CUT SLOPES GREATER THAN 3:1 (UP TO 2:1) MAY BE ALLOWED PER GEOTECHNICAL REPORT RECOMMENDATION. CUT SLOPES STEEPER THAN 2:1 MUST BE ACCOMPANIED BY A RETAINING WALL UNLESS APPROVED OTHERWISE IN WRITING BY THE CITY ENGINEER OR HIS/HER DESIGNEE (350.050.D).

STREET CROSS-SECTIONS WITH REQUIRED CUT AND FILL SLOPES

N.T.S.

STATEMENT OF USE

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

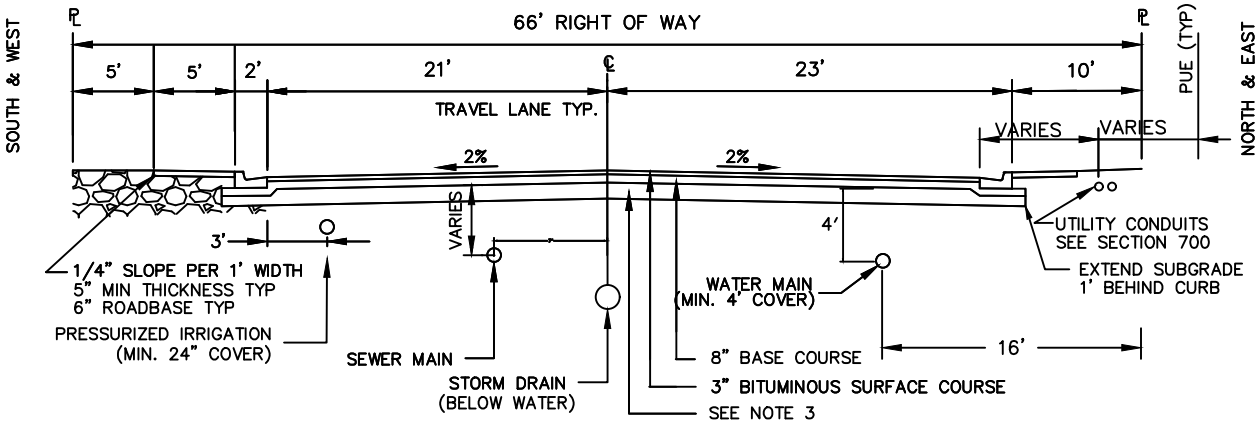
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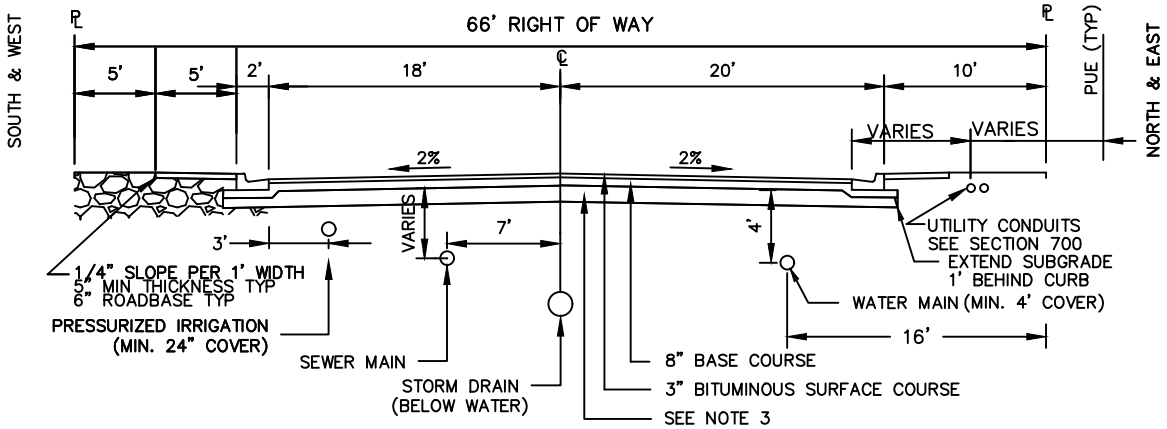
STREET CROSS-SECTIONS

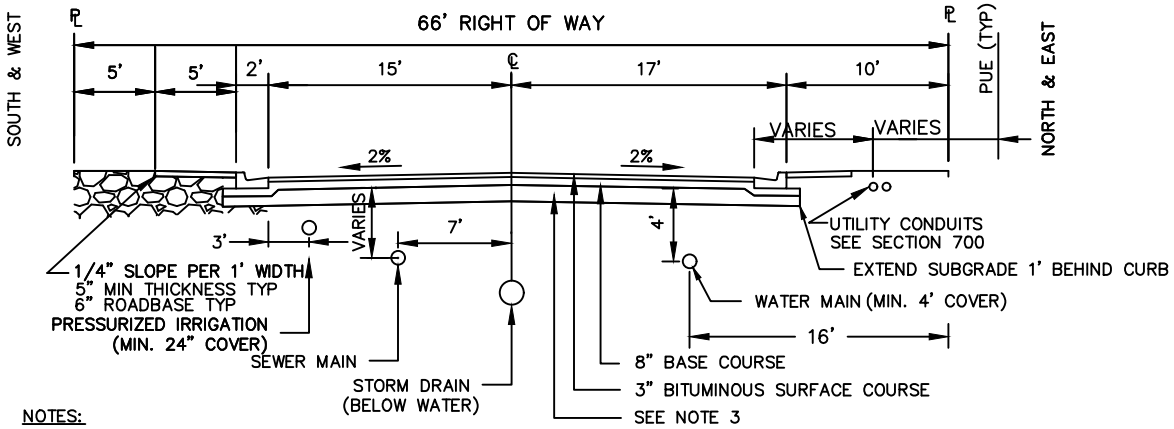
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05







NOTES:

1. WATER VALVES AND 5–INCH VALVE OPENING MUELLER FIRE HYDRANTS SHALL BE LOCATED AS APPROVED.
2. NO WATER LINE SMALLER THAN 8–INCH DIA. SHALL BE INSTALLED WITHOUT APPROVAL OF CITY COUNCIL.
3. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS.
4. CULINARY WATER MAINS SHALL BE ON THE NORTH AND EAST SIDES OF THE STREET. PRESSURIZED IRRIGATION AND SEWER LINES SHALL BE ON THE SOUTH AND WEST SIDES OF THE STREET.
5. USE OF ALTERNATE STREET CROSS–SECTIONS REQUIRES APPROVAL BY ALPINE CITY.

ALTERNATE STREET CROSS–SECTIONS & UTILITY LOCATIONS

N.T.S.

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

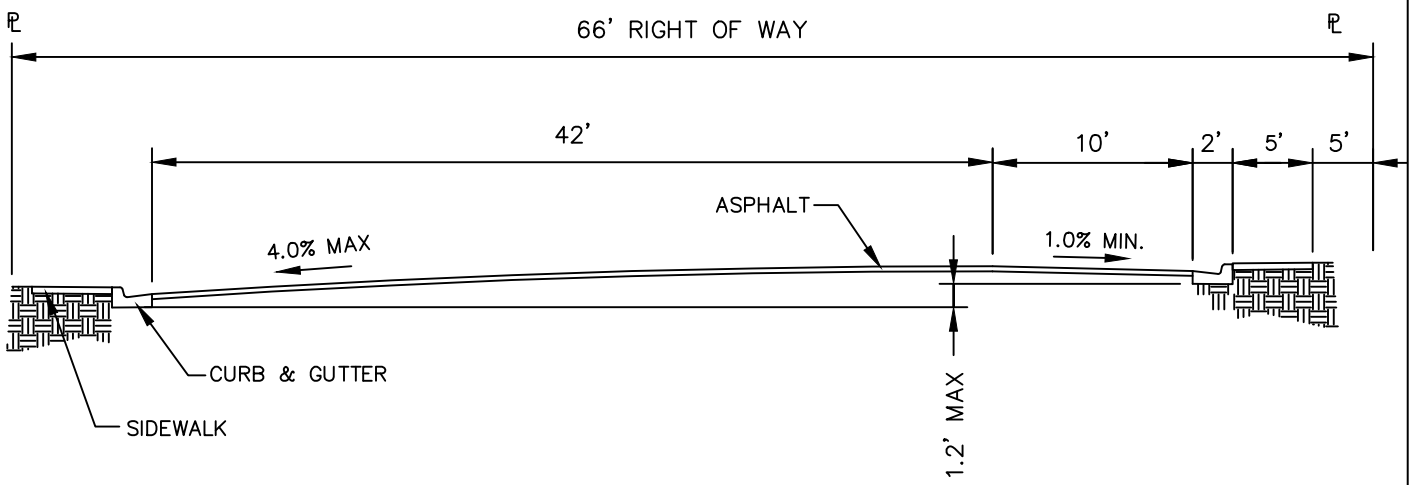
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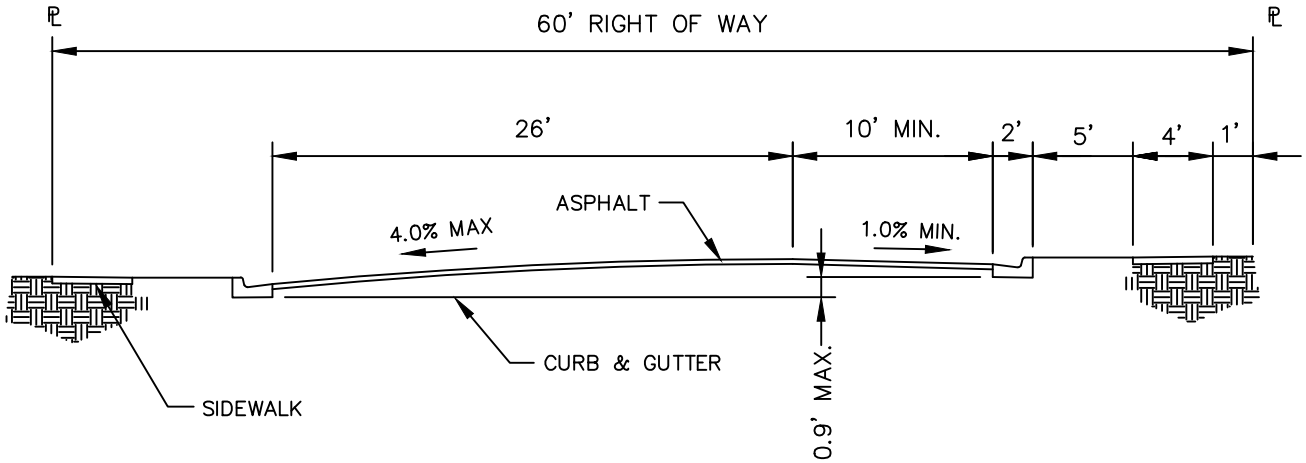
ALTERNATE STREET CROSS-SECTIONS

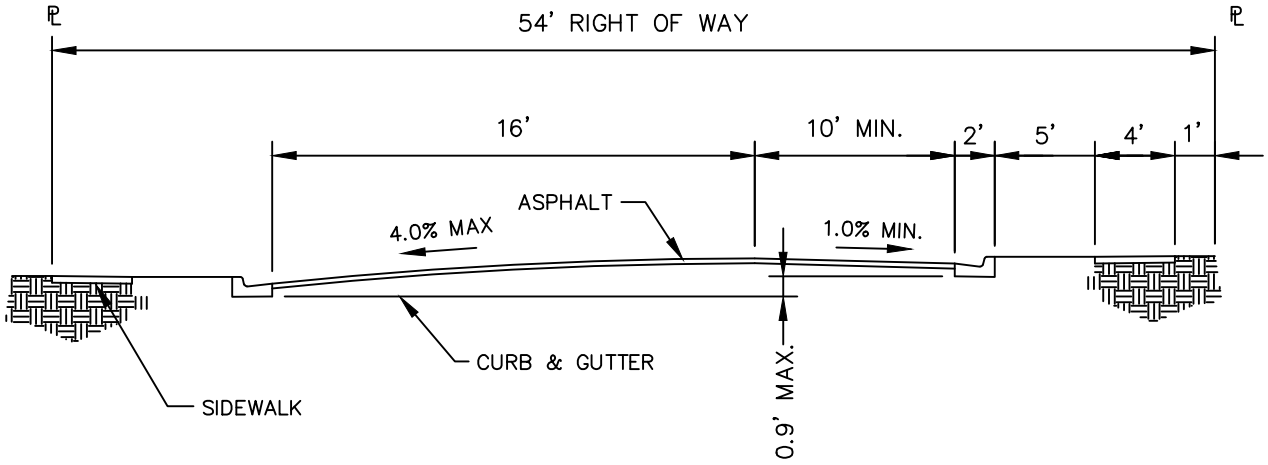
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 2

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	2015







STREET CROSS-SECTIONS

(CURBS AT UNEQUAL ELEVATIONS)

N.T.S.

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NO.		BY	APRL.	DATE

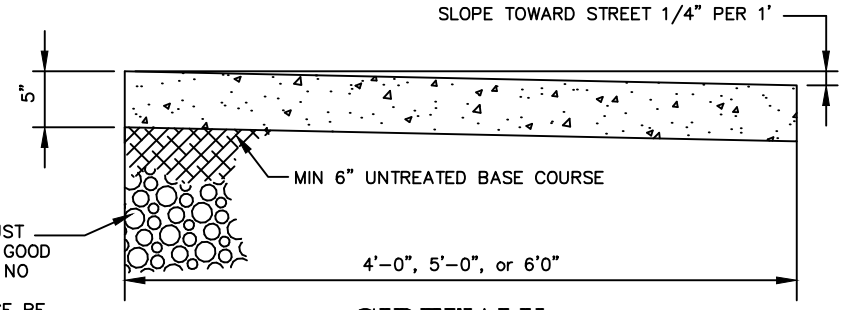
ALPINE 1850

STREET CROSS-SECTIONS
UNEQUAL ELEVATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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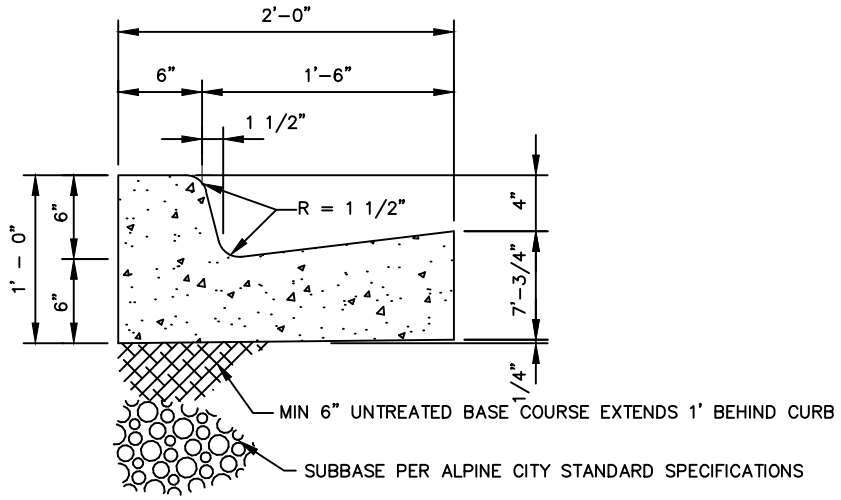
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PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



SIDEWWALK SUBBASE MUST GENERALLY CONSIST OF GOOD SOLID GROUND. UNDER NO CIRCUMSTANCES SHALL SIDEWALK AND ROADBASE BE PLACED ON COLLAPSIBLE SOILS, TOPSOIL, NON-ENGINEERED FILLS, LOOSE OR DISTURBED SOILS, SOD, RUBBISH, CONSTRUCTION DEBRIS, FROZEN GROUND, DELETERIOUS MATERIALS, OR WITHIN PONDED WATER. IF SIDEWALK IS PLACED ON FILL, THE FILL MUST BE ENGINEERED FILL, COMPACTED AND TESTED, PER ALPINE CITY STANDARD SPECIFICATIONS.

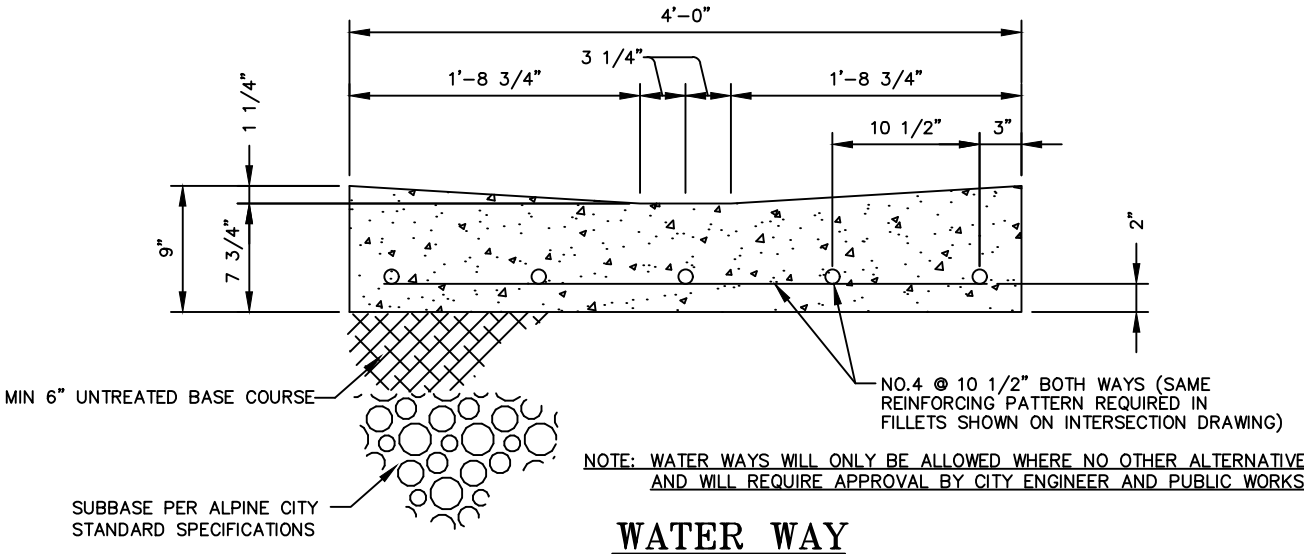
SIDEWALK

NTS



HIGH BACK CURB & GUTTER

NTS



NOTE: WATER WAYS WILL ONLY BE ALLOWED WHERE NO OTHER ALTERNATIVE IS POSSIBLE AND WILL REQUIRE APPROVAL BY CITY ENGINEER AND PUBLIC WORKS DIRECTOR

WATER WAY

NTS

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REVISION

NO.		BY	APRL. DATE

ALPINE 1850

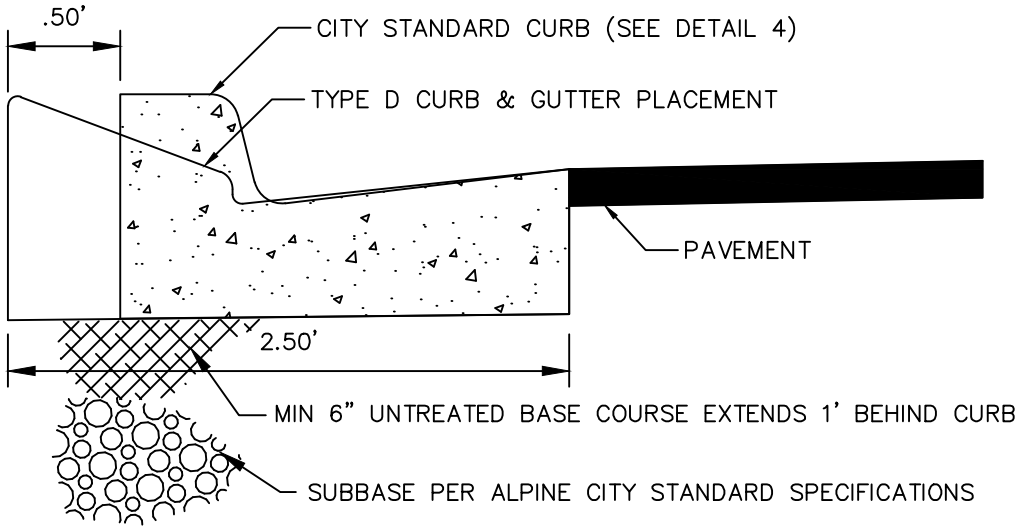
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SIDEWALK, CURB & GUTTER, WATER WAY

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	4
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTE:
ON A CASE-BY-CASE BASIS TYPE D CURB & GUTTER MAY BE APPROPRIATE. IF APPROVED BY THE CITY ENGINEER AND/OR BY HIS/HER DESIGNEE, TYPE D CURB MUST BE PLACE SUCH THAT THE FRONT FACE ALIGNS WITH THE ASPHALT EDGE AND EXISTING CURB AND GUTTER.



OPTION: TYPE D CURB & GUTTER PLACEMENT

NTS

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NO.		BY	APRL.	DATE

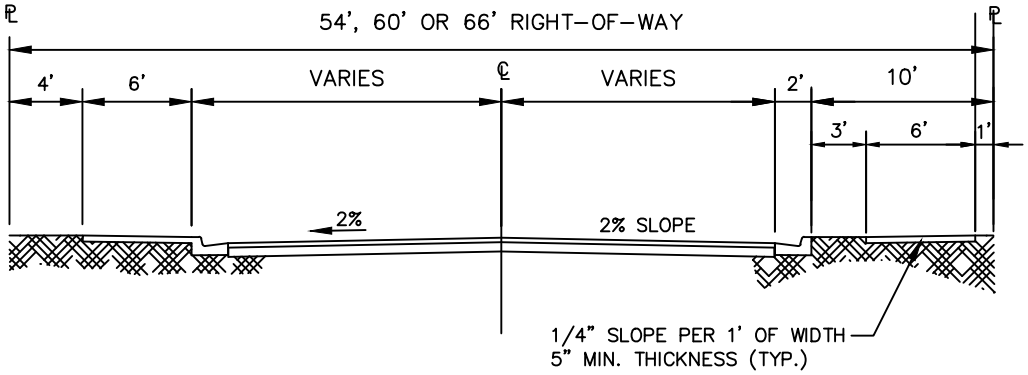
ALPINE 1850

CAD FILE: D:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\4A TYPE D OPT CURB

TYPE D CURB & GUTTER PLACEMENT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	4a
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

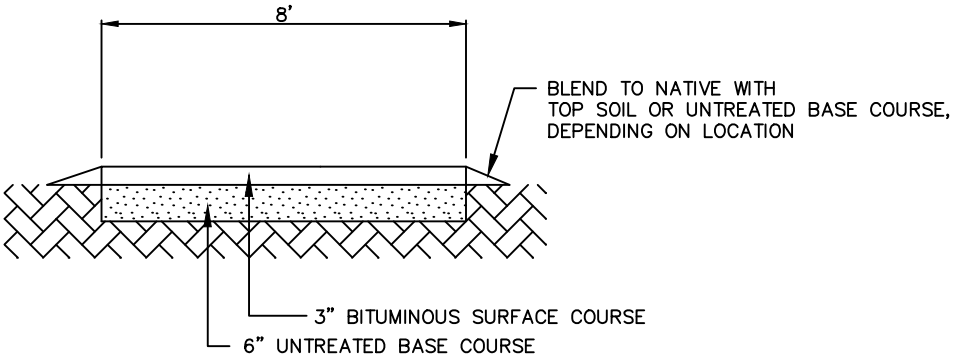


NOTES:

1. ALPINE CITY RESERVES THE RIGHT TO DETERMINE WHETHER THE COMBINATION OR PLANTER STRIP OPTION WILL BE CONSTRUCTED ON A CASE–BY–CASE BASIS.
2. IN SOME CASES, A 5' SIDEWALK WILL BE SUBSTITUTED. IF THE 5' SIDEWALK IS CONSTRUCTED, THE PLANTER STRIP WIDTH WILL BE INCREASED TO 4'.
3. ALL DEVELOPER BUILT TRAILS (NEW OR REFURBISHED) MUST BE BUILT TO INDUSTRY RECOGNIZED STANDARDS AND BE APPROVED BY THE ALPINE CITY TRAIL COMMITTEE. IF TRAILS ARE BUILT ON FILL, THE FILL MUST BE ENGINEERED FILL, COMPACTED AND TESTED, PER ALPINE CITY STANDARD SPECIFICATIONS.

CLASS A (6' SIDEWALK) TRAIL CROSS–SECTION

N.T.S.



CLASS B (ASPHALT) TRAIL CROSS–SECTION

N.T.S.

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NO.		BY	APRL.	DATE

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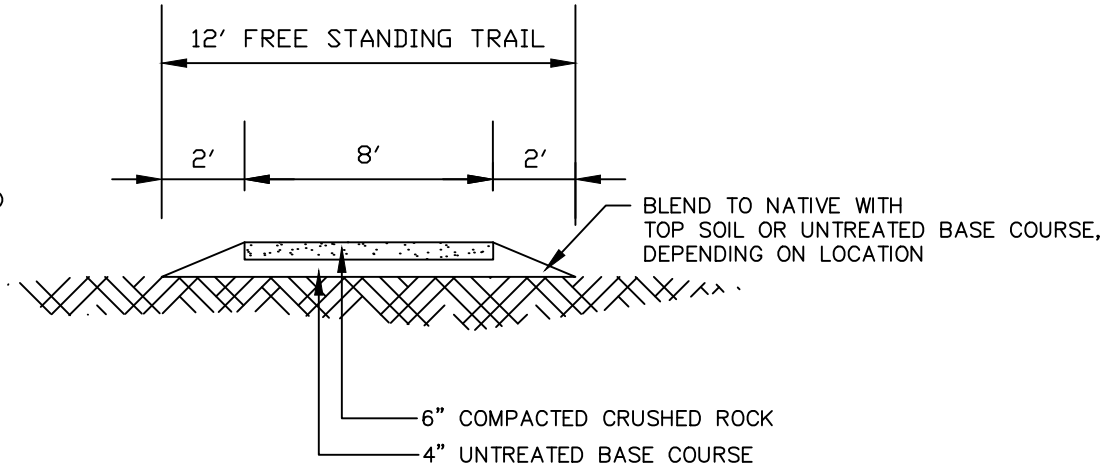
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CLASS A & B TRAIL CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

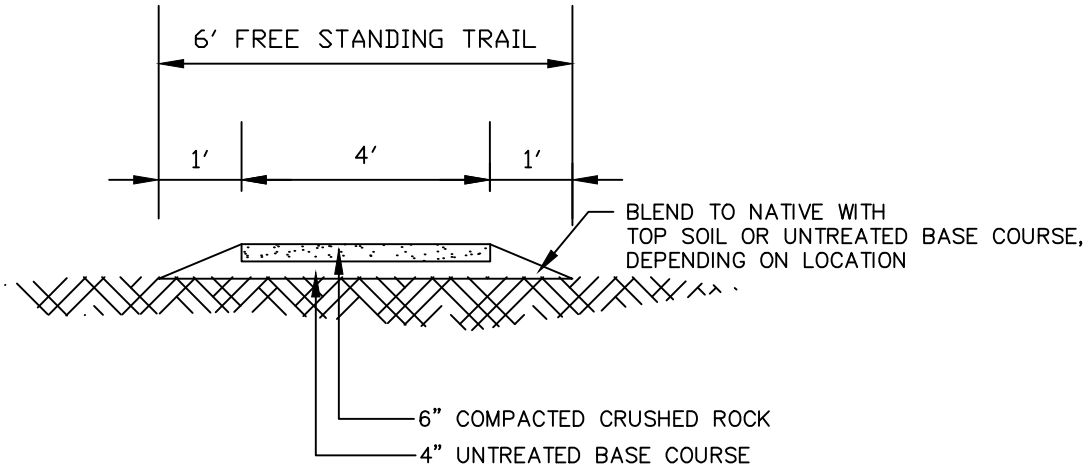
STANDARD DRAWING NUMBER:	5
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTE:
ALL DEVELOPER BUILT TRAILS (NEW OR REFURBISHED) MUST BE BUILT TO INDUSTRY RECOGNIZED STANDARDS AND BE APPROVED BY THE ALPINE CITY TRAIL COMMITTEE. IF TRAILS ARE PLACED ON FILL, THE FILL MUST BE ENGINEERED FILL, COMPACTED AND TESTED, PER ALPINE CITY STANDARD SPECIFICATIONS.



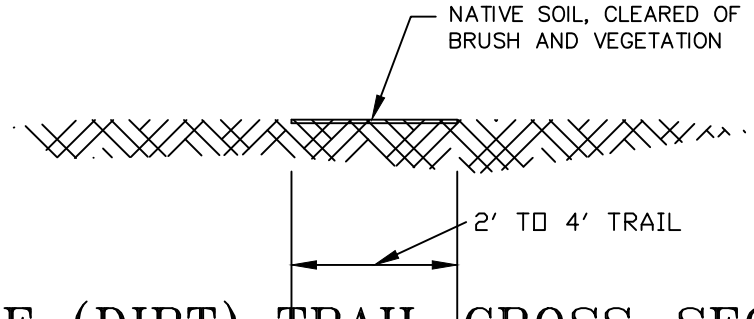
CLASS C 8' CRUSHED ROCK TRAIL CROSS-SECTION

N.T.S.



CLASS D 4' CRUSHED ROCK TRAIL CROSS-SECTION

N.T.S.



CLASS E (DIRT) TRAIL CROSS-SECTION

N.T.S.

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REVISION

NO.		BY	APRL.	DATE

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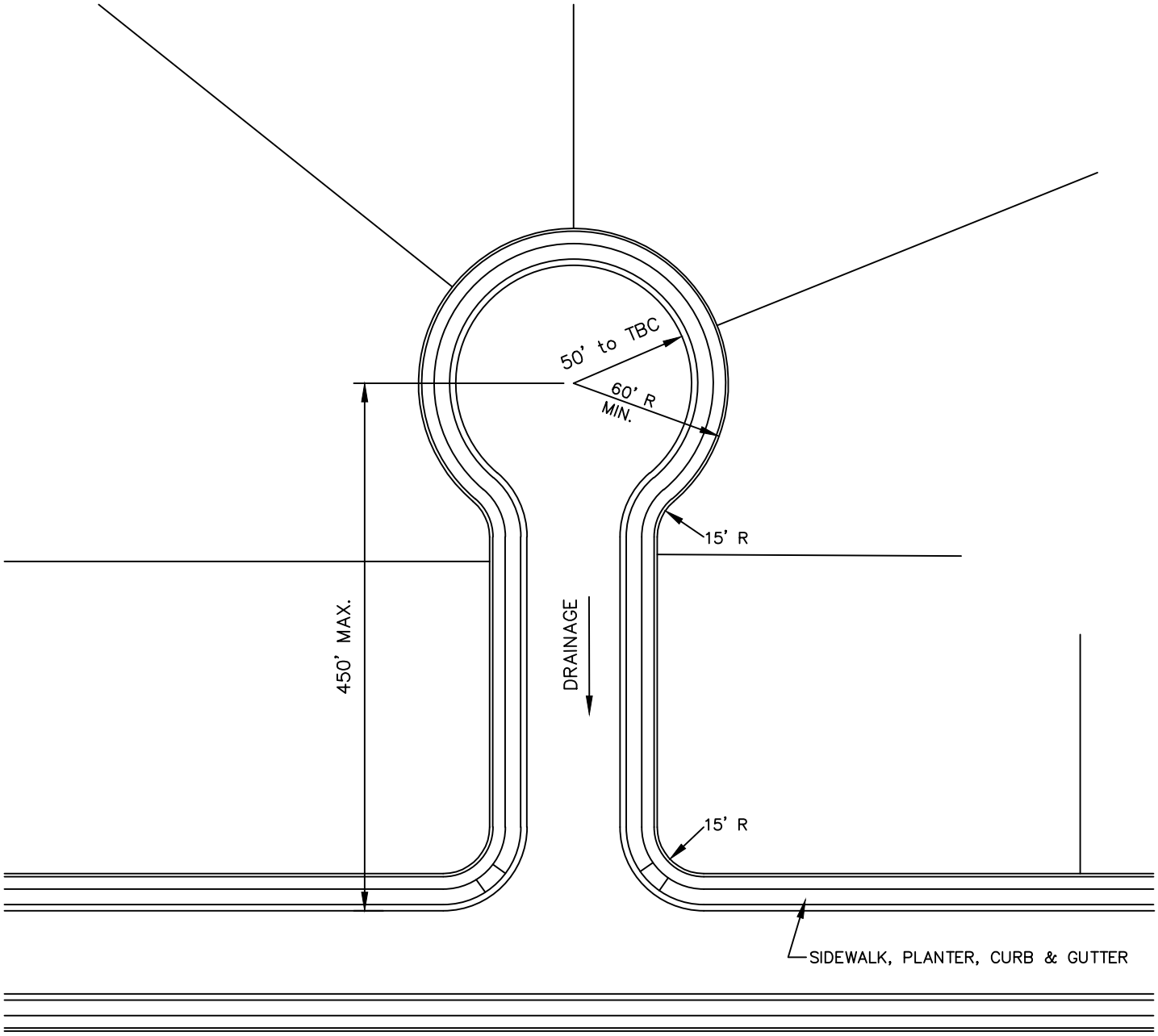
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CLASS C, D, & E TRAIL CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 6

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05



CUL-DE-SAC DETAIL

N.T.S.

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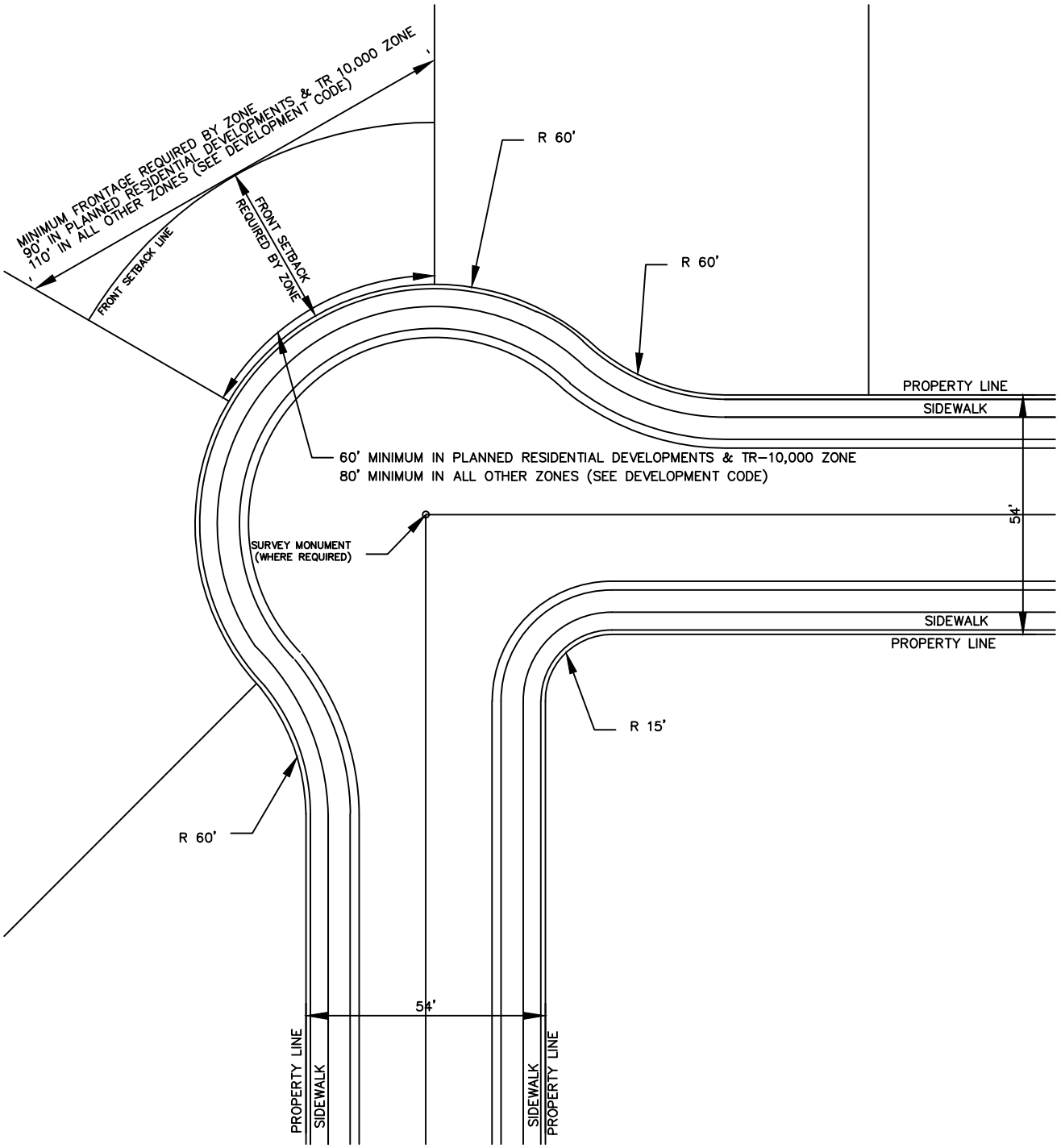
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CUL-DE-SAC DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 7

PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05



KNUCKLE DETAIL

N.T.S.

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NO.		BY	APRL	DATE

ALPINE 1850

KNUCKLE DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\8 KNUCKLE DETAIL

STANDARD DRAWING NUMBER: 8

PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/11/05

FRONT, REAR, AND SIDE YARDS

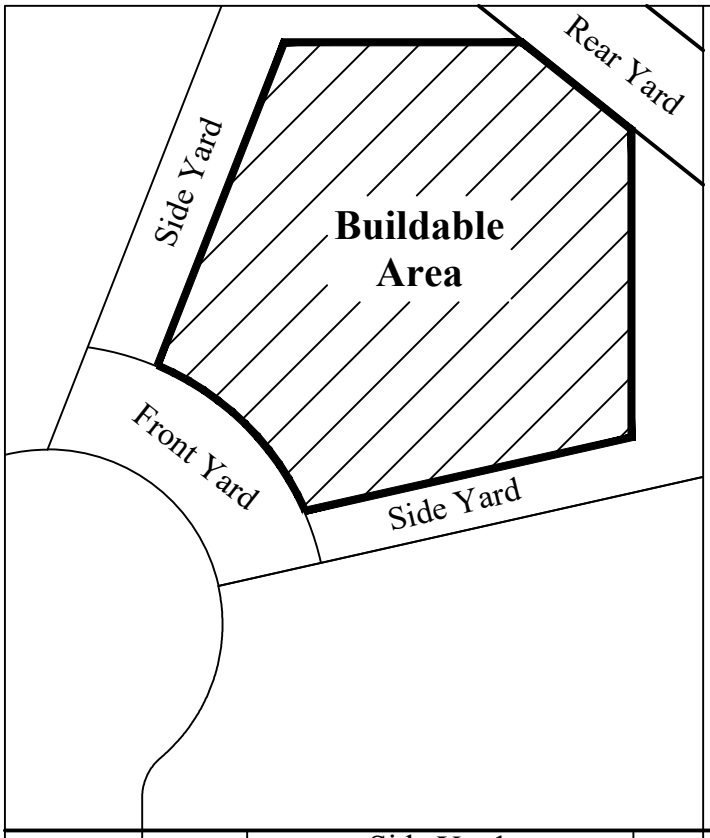


Figure A:
Cul-de-Sac
or
Irregular Shaped
Lot

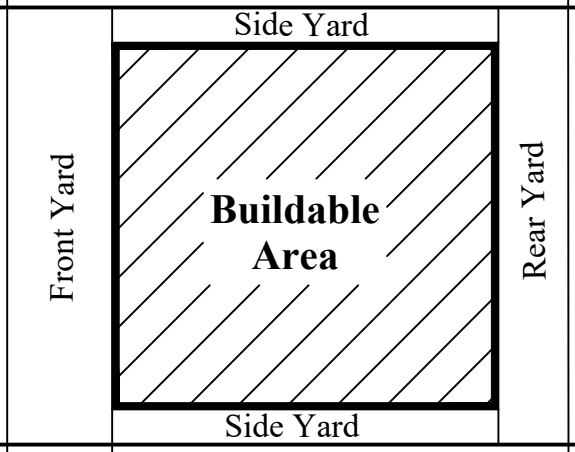


Figure B:
Interior Lot
(Typical)

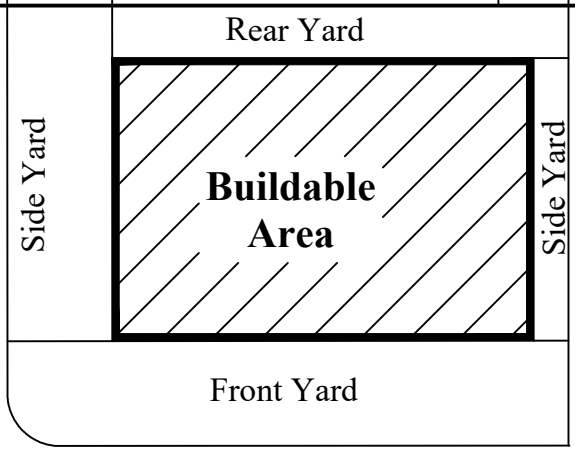


Figure C:
Corner Lot
(Typical)

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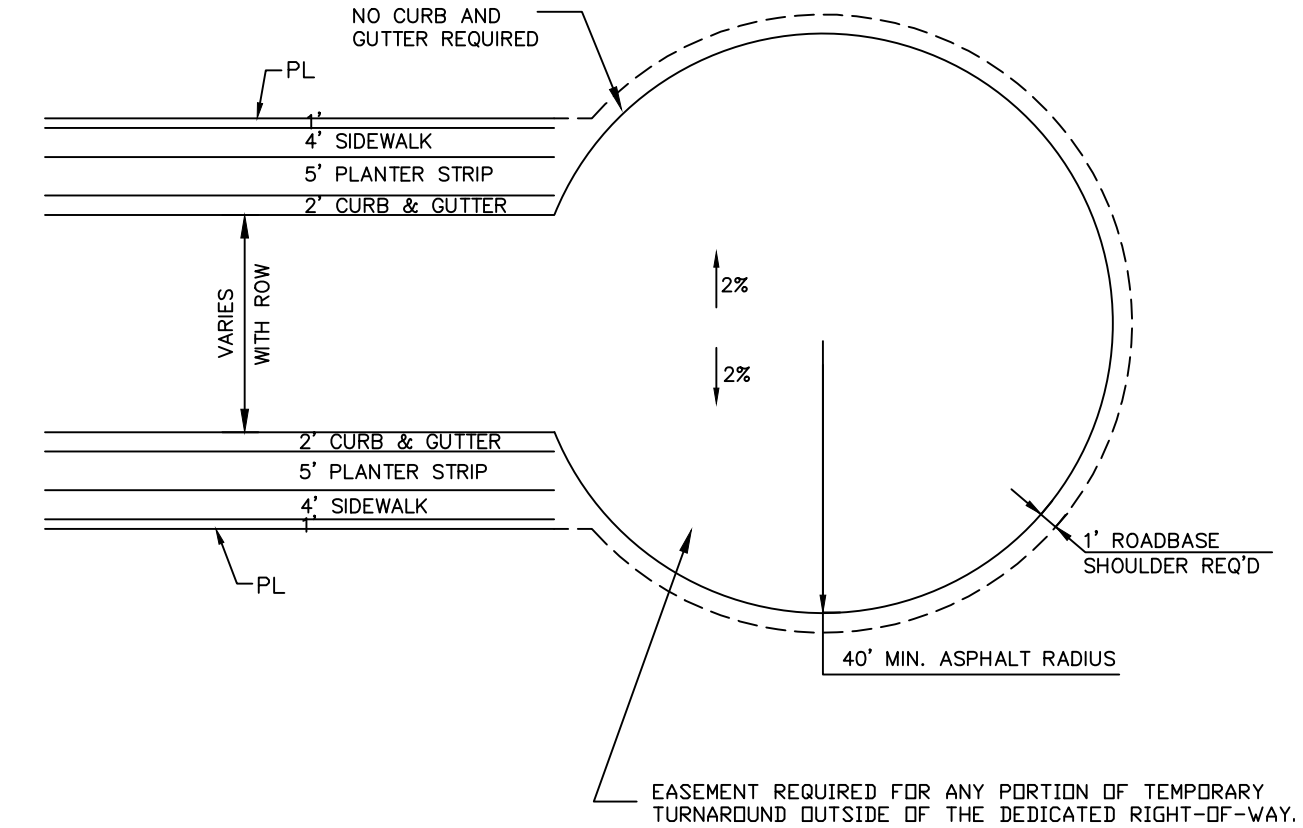
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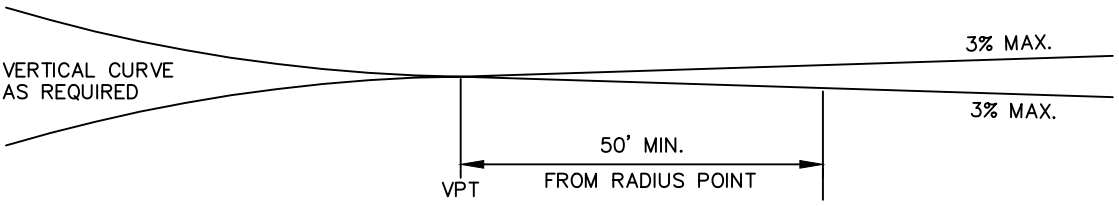
Standard Setbacks

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 9

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04





GENERAL CONSTRUCTION NOTES:

1. SUBGRADE SHALL CONFORM TO CITY CONSTRUCTION STANDARDS, SEE STREET CROSS SECTION DETAIL 1.
2. 8" MIN. CRUSHED GRAVEL BASE COURSE.
3. 3" MIN. COMPACTED PLANT MIX ASPHALT SURFACING.

TEMPORARY TURNAROUND

NTS

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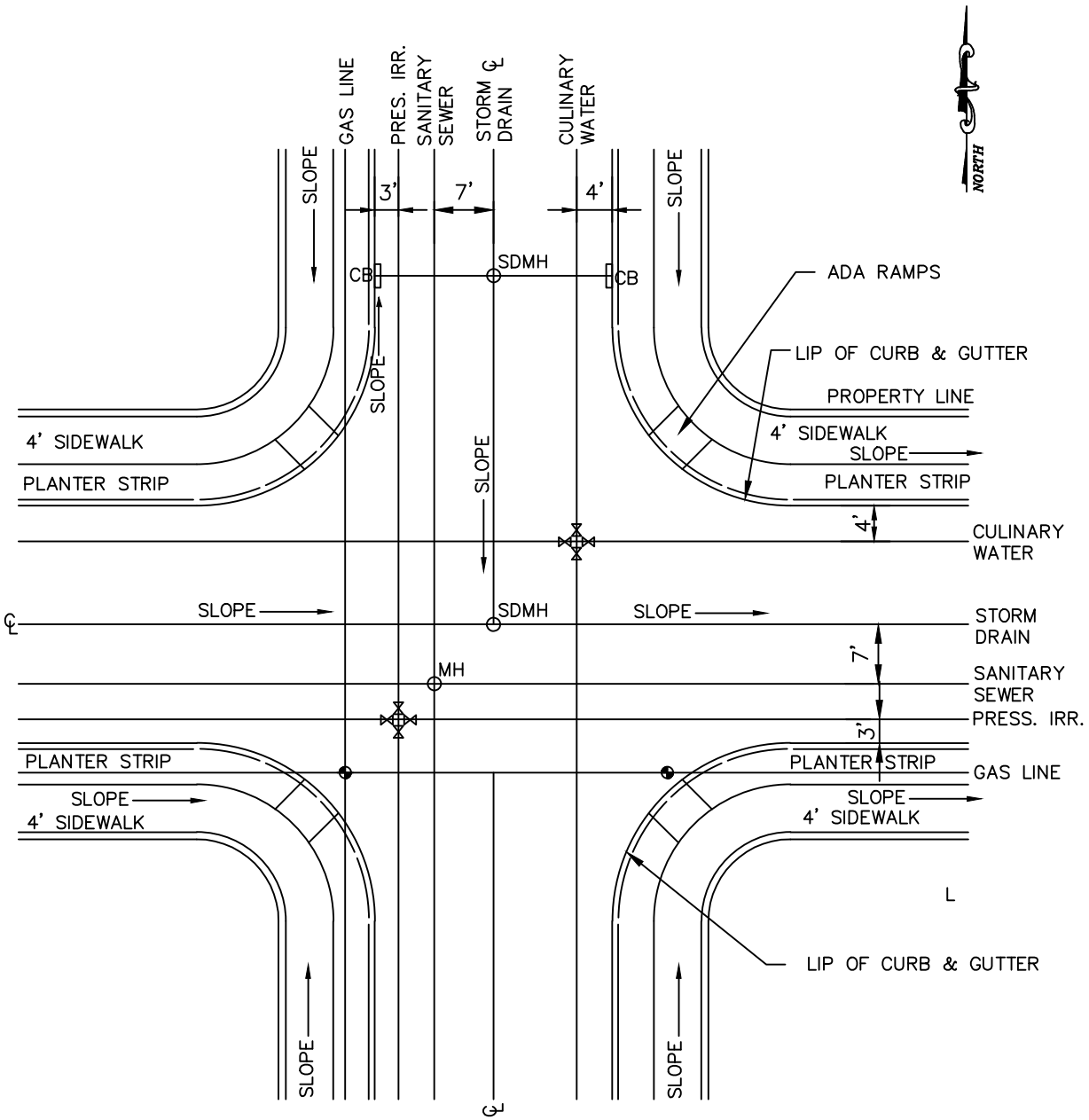
ALPINE 1850

TEMPORARY TURNAROUND

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER:	10
PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/18/05



STANDARD STREET INTERSECTION AND UTILITY LOCATION

N.T.S.

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NO.		BY	APRL.	DATE

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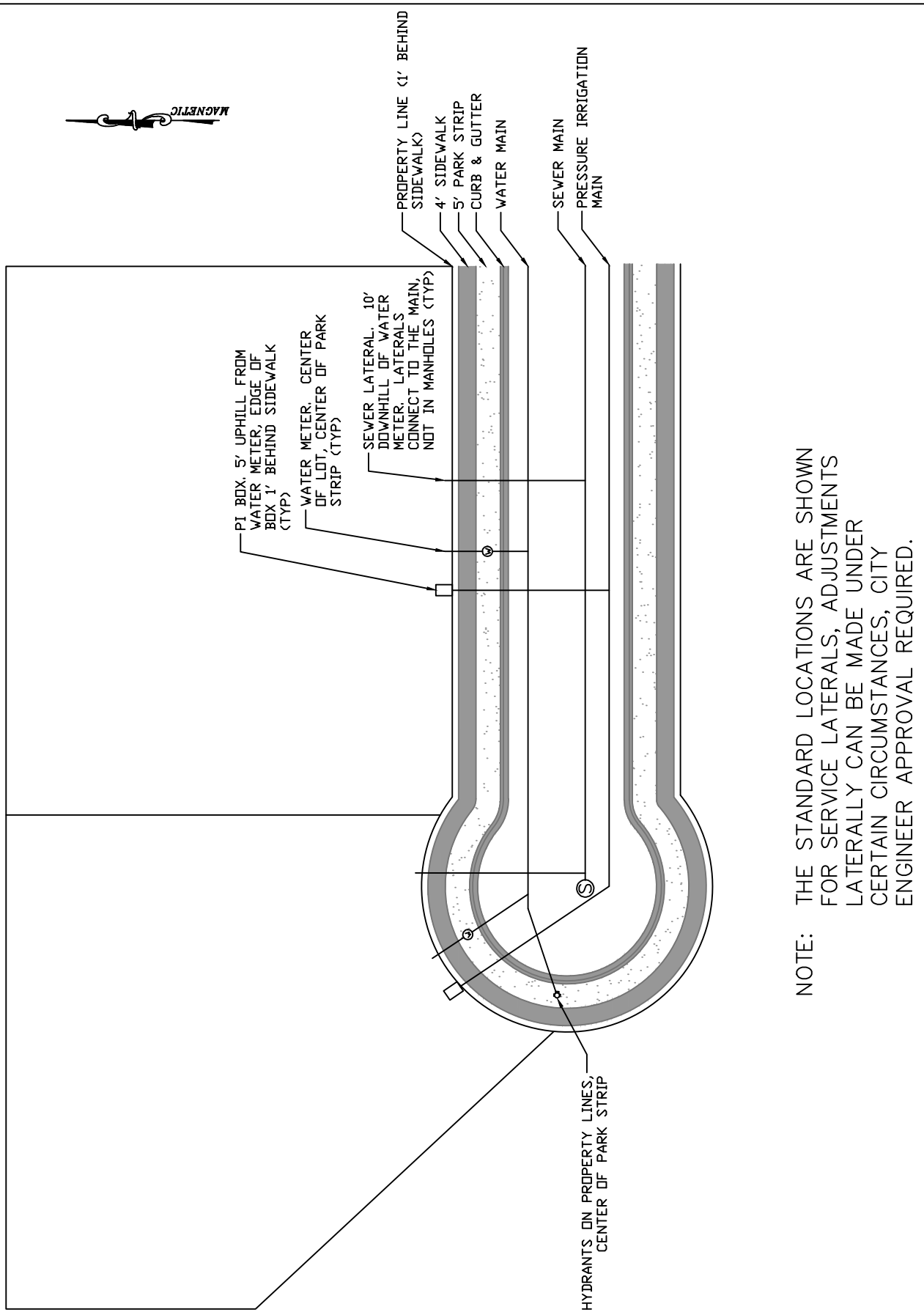
STANDARD STREET INTERSECTION AND UTILITY LOCATION

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\11 INTERSECTION AND UTILITY LOCATION

STANDARD DRAWING NUMBER: 11

PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05



NOTE: THE STANDARD LOCATIONS ARE SHOWN FOR SERVICE LATERALS, ADJUSTMENTS LATERALLY CAN BE MADE UNDER CERTAIN CIRCUMSTANCES, CITY ENGINEER APPROVAL REQUIRED.

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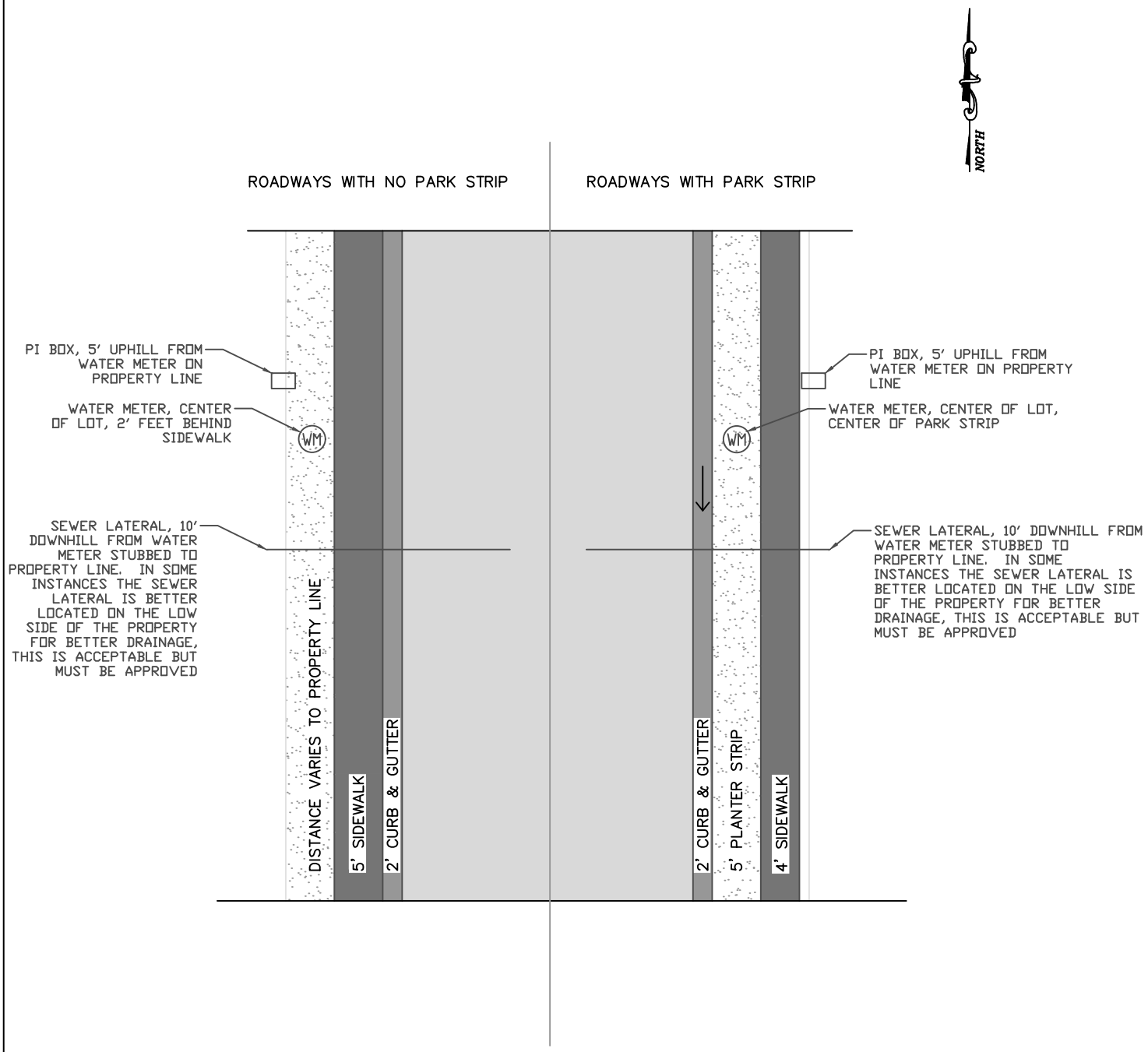
STANDARD UTILITY SERVICE LOCATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: D:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\12 ALT TYPICAL UTILITY SERVICE LOCATIONS

STANDARD DRAWING NUMBER: 12a

PLOT SCALE:	N.T.S.
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CHECKED BY:	
ADOPTED DATE:	10/13/05



STANDARD LOT UTILITY LOCATIONS

N.T.S.

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

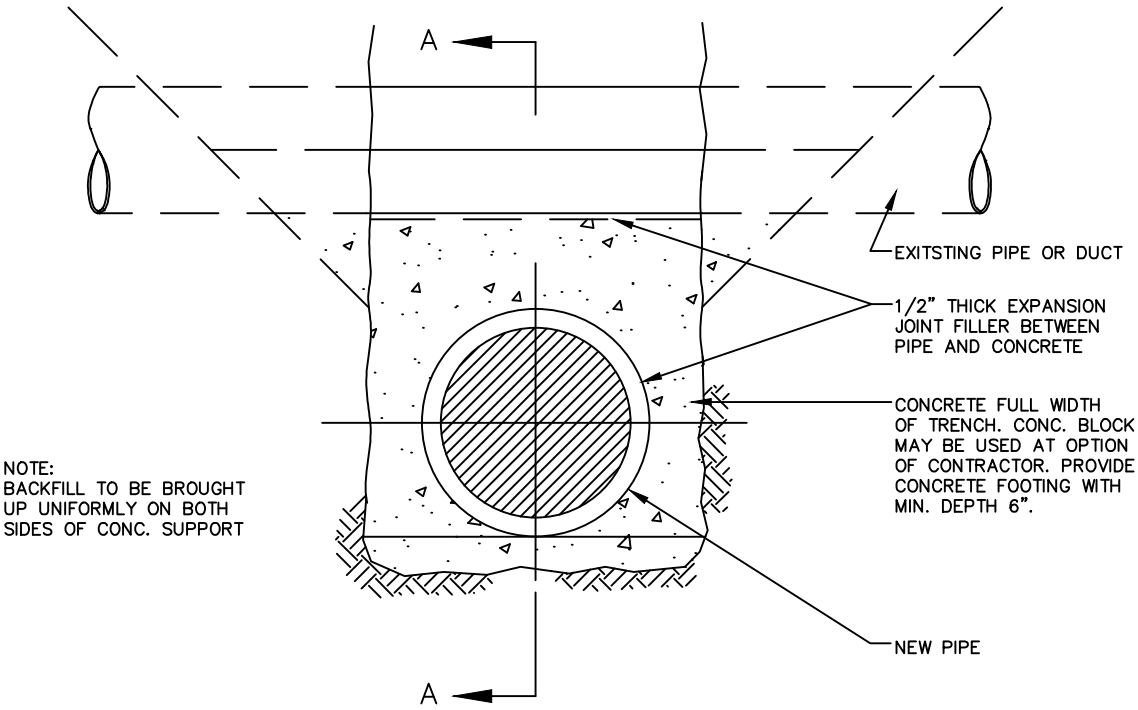
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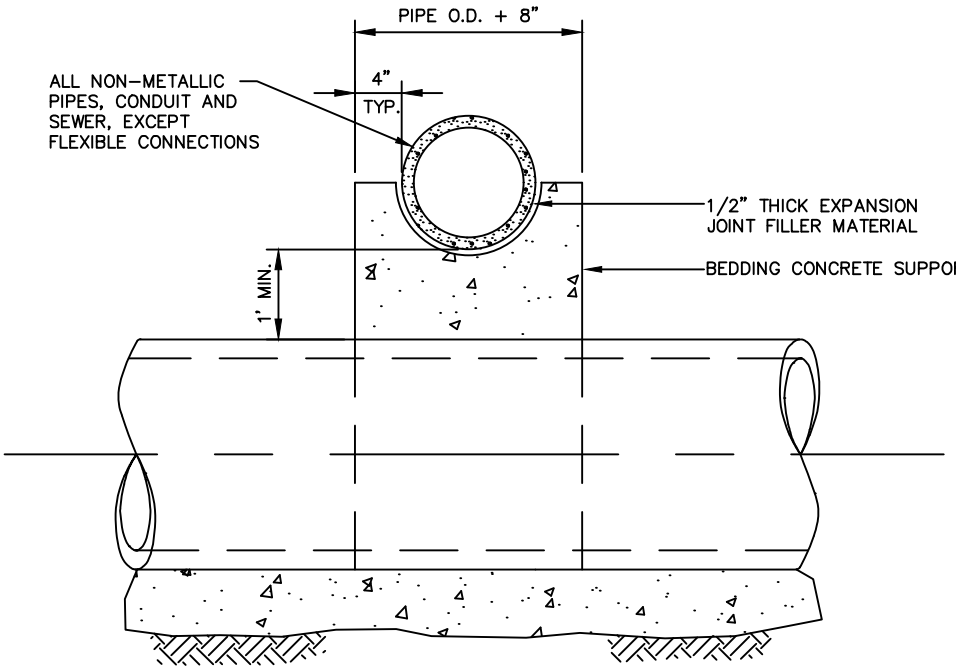
STANDARD LOT UTILITY LOCATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 12

PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
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ADOPTED DATE:	10/13/05





SECTION A-A

UTILITY CONFLICT

N.T.S.

STATEMENT OF USE

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

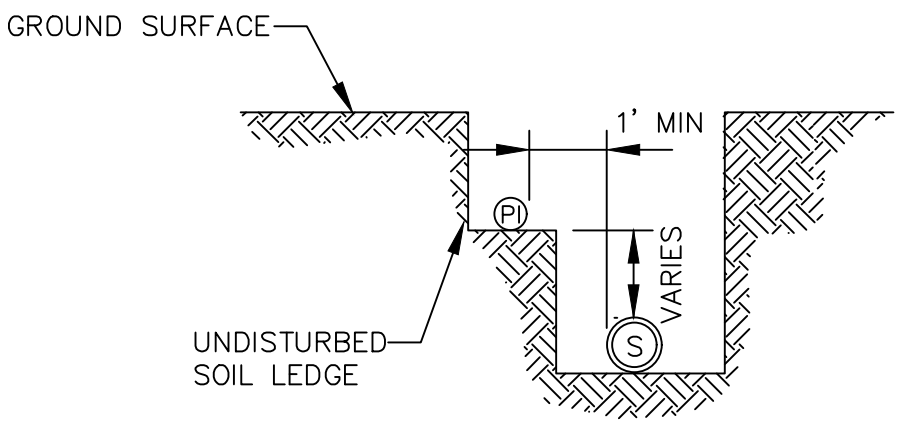
UTILITY CONFLICT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\13 UTILCF

STANDARD DRAWING NUMBER: 13

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



NOTE:
ALL PLUMBING PRACTICES SHALL CONFORM TO THE PLUMBING CODE ADOPTED BY ALPINE CITY

SEWER & PI LATERALS IN COMMON TRENCH

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ALPINE 1850

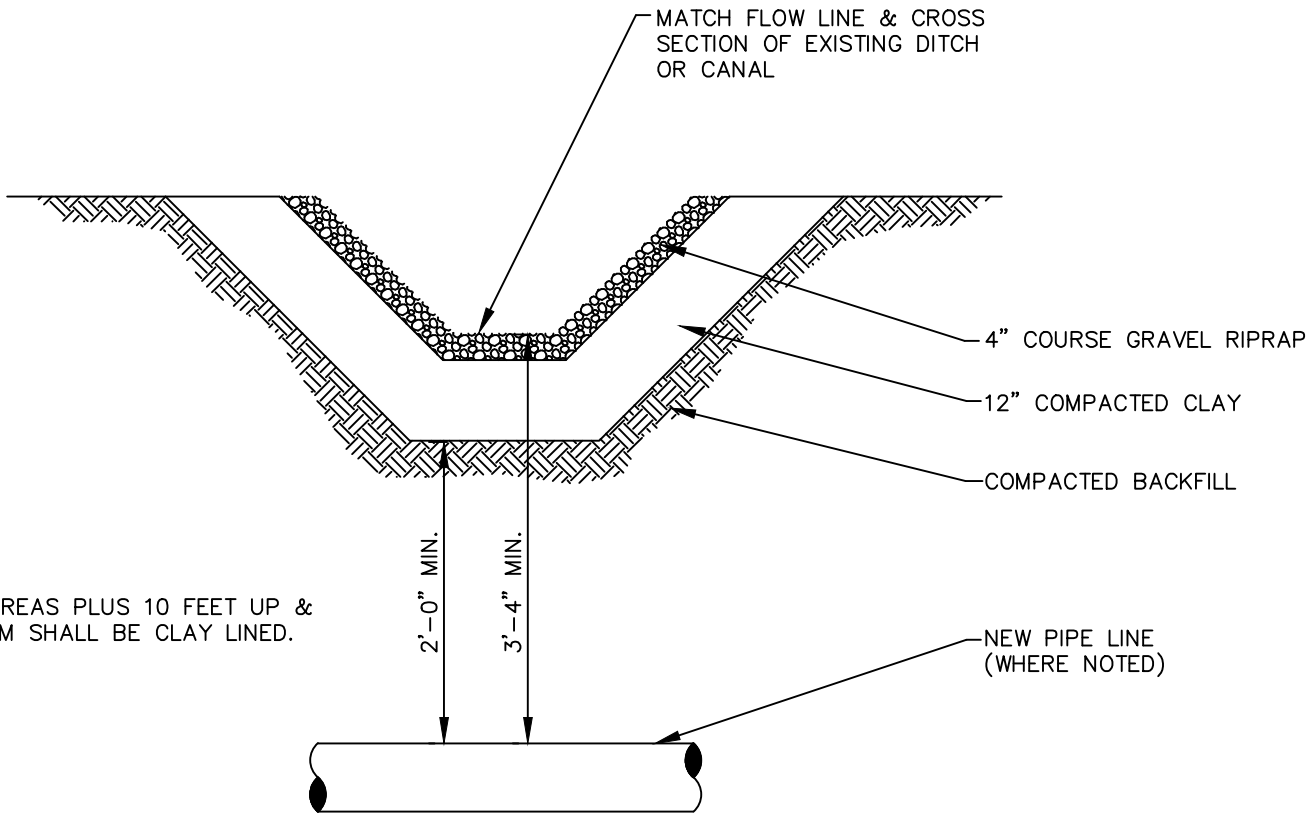
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CITY UTILITY LATERALS IN SAME TRENCH

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 14

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



NOTE:
DISTURBED AREAS PLUS 10 FEET UP & DOWN STREAM SHALL BE CLAY LINED.

DITCH CROSSING

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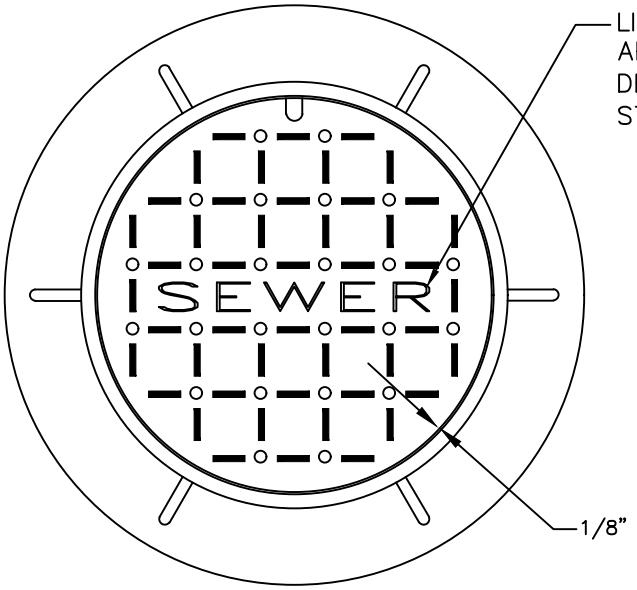
ALPINE 1850

DITCH CROSSING

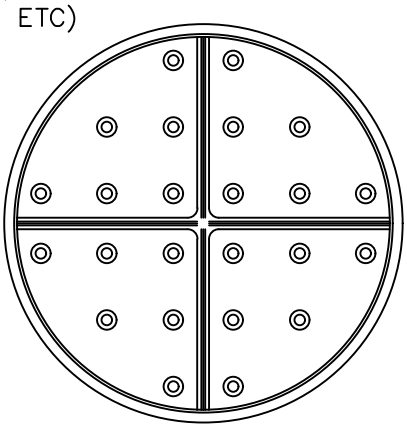
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20 NORTH MAIN
ALPINE, UT 84004

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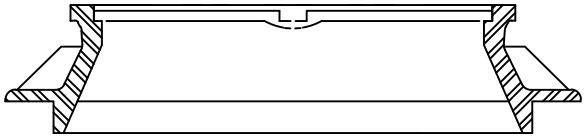
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PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



PLAN OF COVER AND RING

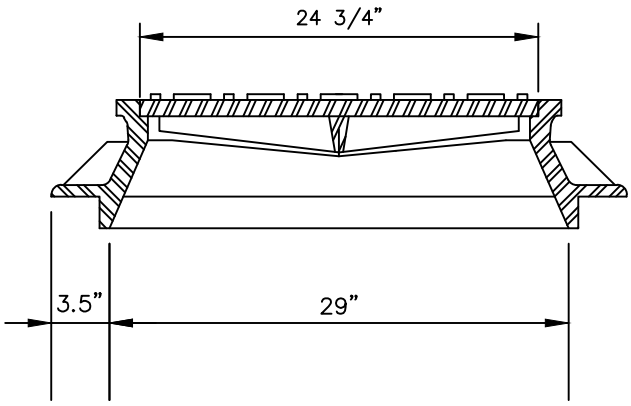


BOTTOM VIEW OF COVER



SECTIONS

D&L A-1180 OR APPROVED EQUAL



HEAVY DUTY, 400 LB. MINIMUM, MANHOLE RING AND COVER

N.T.S.

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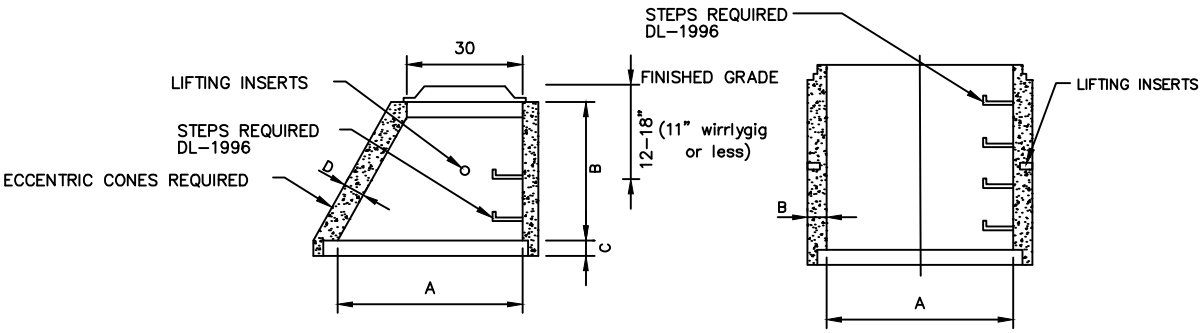
ALPINE 1850

CAD FILE: G:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\16 TYPICAL MANHOLE RING & COVER

MANHOLE RING & COVER (typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	16
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



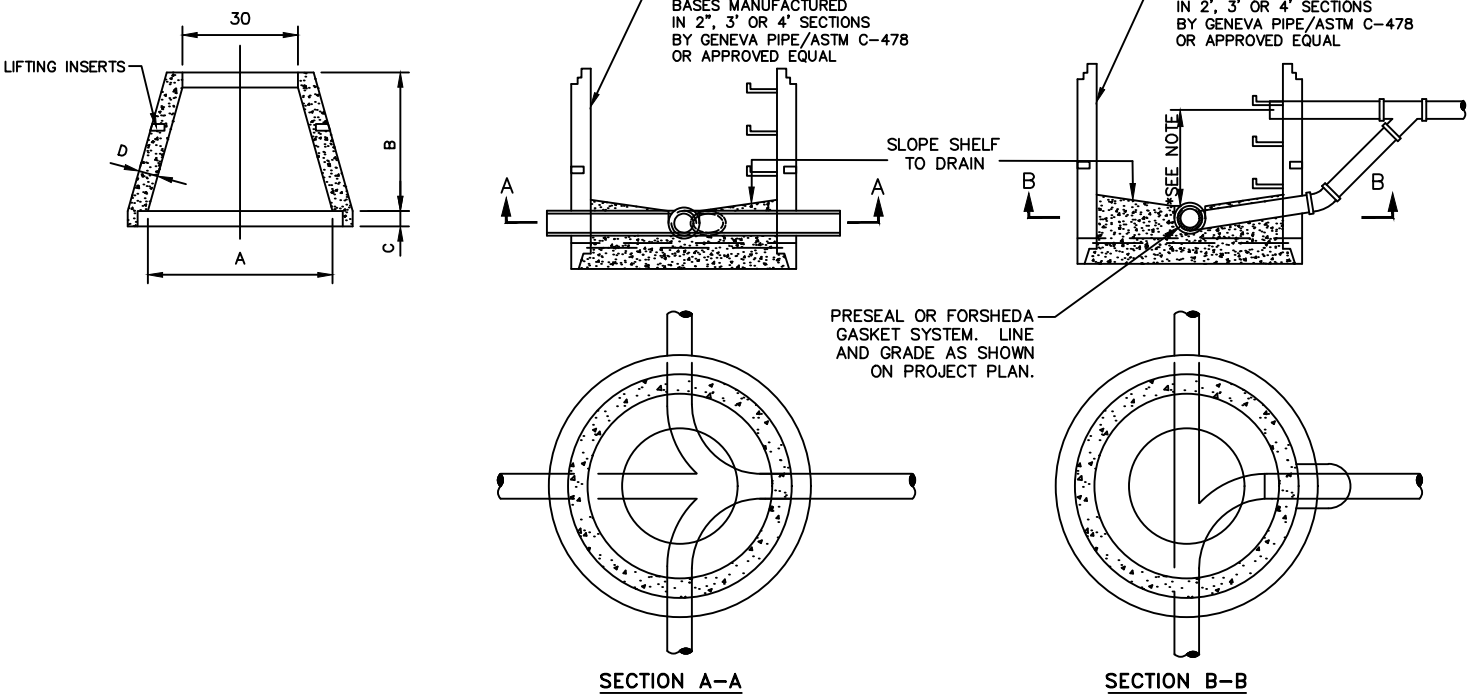
SIZE A (INCHES)	HEIGHT B (INCHES)	FLANGE C (INCHES)	WALL D (INCHES)	WEIGHT (LBS. EA.)
48	36	4	5	2720
60	39	6	6	4300

USE 5' DIA. MIN. FOR ALL PIPE 14" & LARGER USE 4' MIN. DIA. FOR ALL PIPE UP TO AND INCLUDING 12" DIA. UNLESS 3 OR ENTER THE MANHOLE. FOR ALL MANHOLES 15' OR DEPTH FROM RIM TO INV., USE 5' DIA. MANHOLE.

SIZE A (INCHES)	WALL B (INCHES)	WEIGHT (LBS. EA.)
48	5	900
60	6	1380

DROP PIPE INSTALLED IN CONCRETE

*NOTE:
MINIMUM AS DIRECTED BY CITY ENGINEER



SECTION A-A

SECTION B-B

TYPICAL JUNCTION MANHOLE

N.T.S.

TYPICAL DROP MANHOLE

N.T.S.

NOTE: USE OF DROP MANHOLES REQUIRES APPROVAL OF CITY ENGINEER AND PUBLIC WORKS DIRECTOR. FOR ALL OTHER SPECIFICATIONS, SEE APWA.

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NO.		BY	APRL.	DATE

ALPINE 1850

SEWER MANHOLE (TYPICAL)

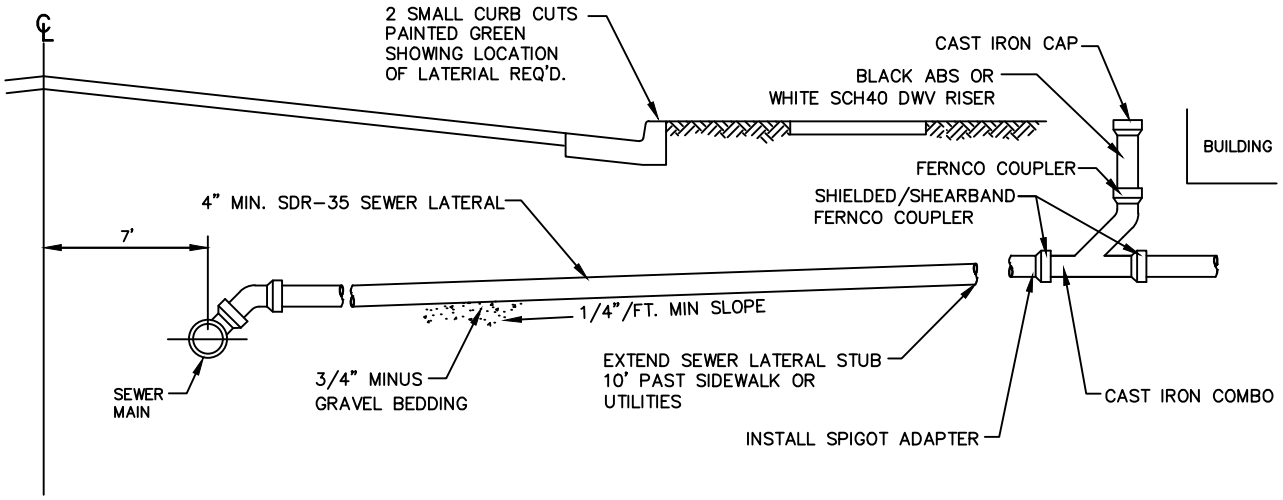
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ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\17 SEWER TYPICAL MANHOLES

STANDARD DRAWING NUMBER:	17
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTES:

1. A CLEANOUT IS REQUIRED NEXT TO THE BUILDING.
2. ADDITIONAL CLEANOUTS REQUIRED BETWEEN THE BUILDING AND SEWER MAIN AT MAXIMUM 100 FOOT INTERVALS.
3. THE COMBO SHALL CONSIST OF CAST IRON, ABS MATERIAL (OR WHITE SCH40 DWV) FOR RISER.
4. FERNCO COUPLERS (AS SHOWN) SHALL BE USED WHEN CONNECTING CAST IRON TO RISER OR SDR-35 LATERAL PIPE.
5. ALL CLEANOUTS SHALL HAVE CAST IRON CAPS.
6. ALL SEWER LATERALS SHALL BE SDR-35 PIPE, BEING LAID WITH THE BELL END OF THE PIPE IN THE UP HILL DIRECTION.
7. ALL SEWER LATERALS SHALL BE BEDDED WITH 3/4" MINUS GRAVEL.
8. BACKFILL MATERIAL SHALL BE ENGINEERED FILL WITHIN CITY RIGHT OF WAYS, AS CLASSIFIED IN ALPINE CITY STANDARDS AND SPECIFICATIONS.
9. BACKFILL MATERIAL AROUND PIPE SHALL BE COMPACTED TO 95% OF DENSITY AS MEASURED BY AASHTO T-99.
10. SEWER LATERAL MUST BE INSPECTED BY AN AUTHORIZED REPRESENTATIVE OF THE CITY PRIOR TO BACKFILLING TRENCH.
11. A TIE SKETCH SHOWING THE LOCATION OF ALL SEWER LATERALS MUST BE SUBMITTED TO THE CITY.
12. THE CITY SHALL BE NOTIFIED 24 HOURS PRIOR TO WHEN A SEWER LATERAL INSPECTION IS NEEDED.
13. ALL APPROPRIATE EXCAVATION PERMITS MUST BE OBTAINED FROM THE CITY AND OTHER AGENCY PRIOR TO ANY EXCAVATION.
14. ALL APPROPRIATE IMPACT FEES MUST BE PAID PRIOR TO CONNECTING TO THE SEWER.
15. MARK END OF LATERAL STUB WITH 2x4 POST PAINTED GREEN. ALL OTHER MARKERS MUST BE PRE-APPROVED PRIOR TO USE.



TYPICAL SEWER SERVICE CONN.

N.T.S.

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NO.		BY	APRL.	DATE

ALPINE 1850

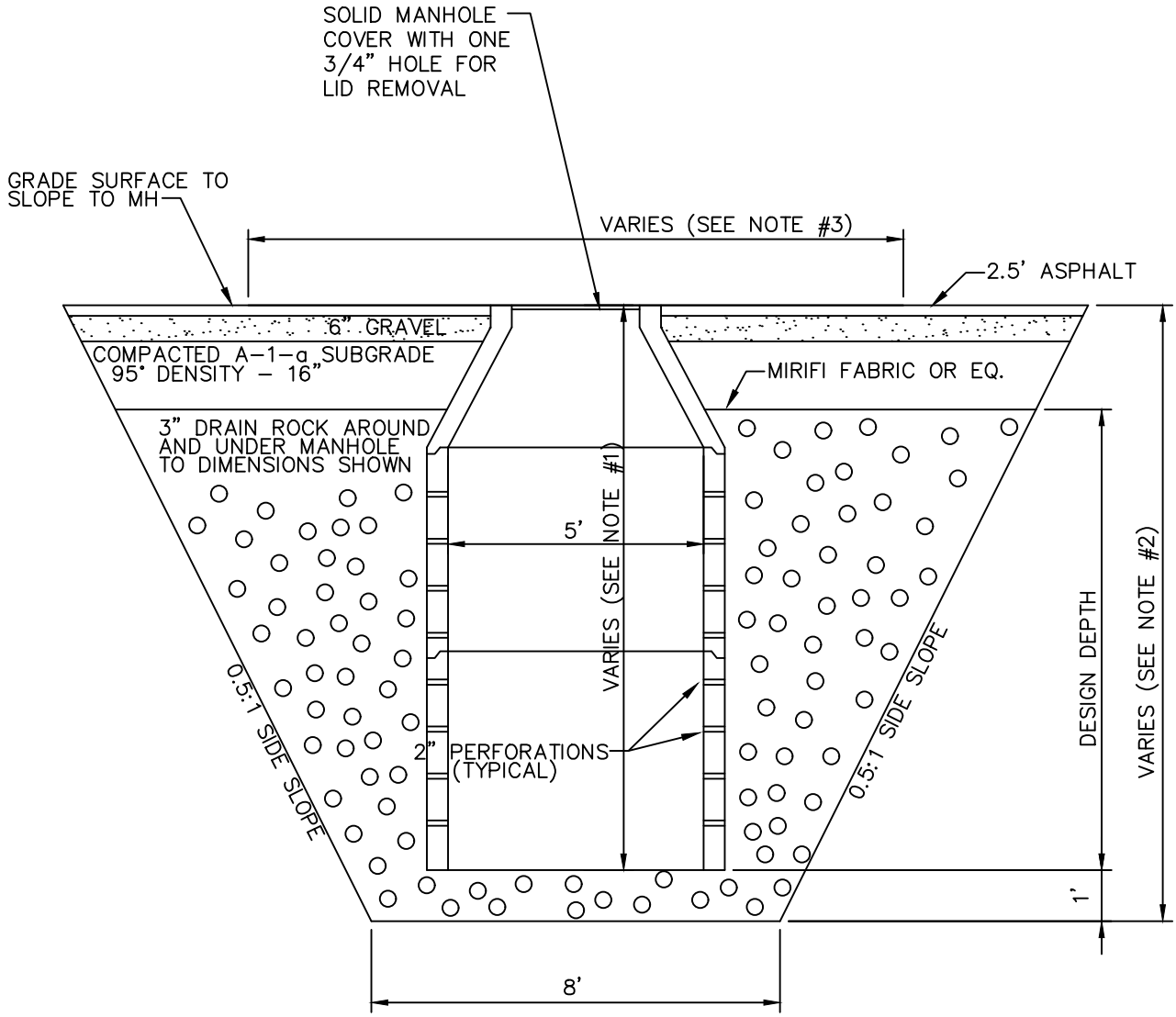
TYPICAL SEWER SERVICE CONN.

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER: 17a

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



NOTES:
#1. DESIGN DEPTH + 2'
#2. DESIGN DEPTH + 3'
#3. DESIGN DEPTH + 11'

STORM DRAINAGE SUMP

N.T.S.

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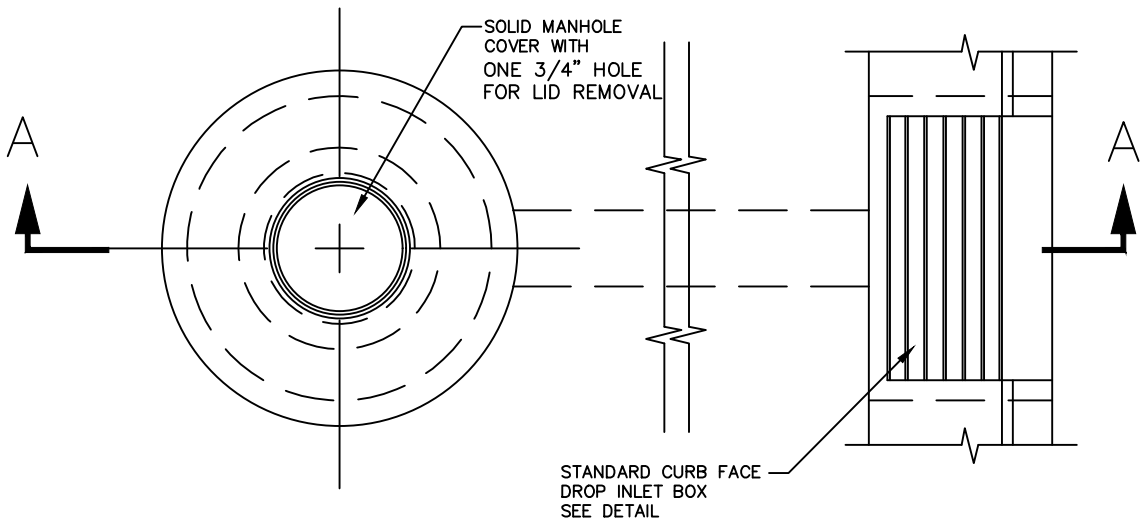
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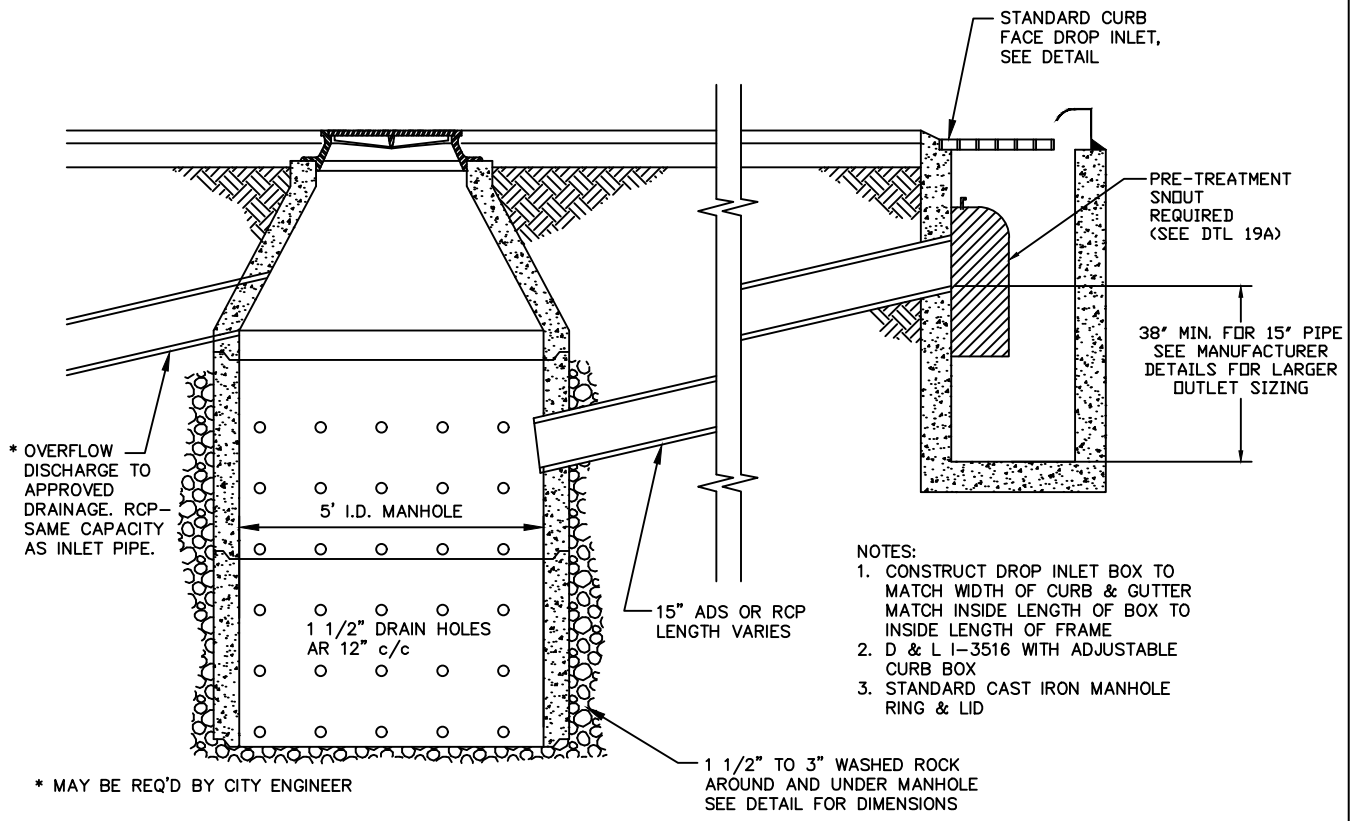
TYPICAL STORM DRAINAGE SUMP

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 18

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04





SECTION A-A

SUMP DISPOSAL

N.T.S.

NOTE: ONLY ALLOWED IN CERTAIN CIRCUMSTANCES. PRE-TREATMENT REQ'D

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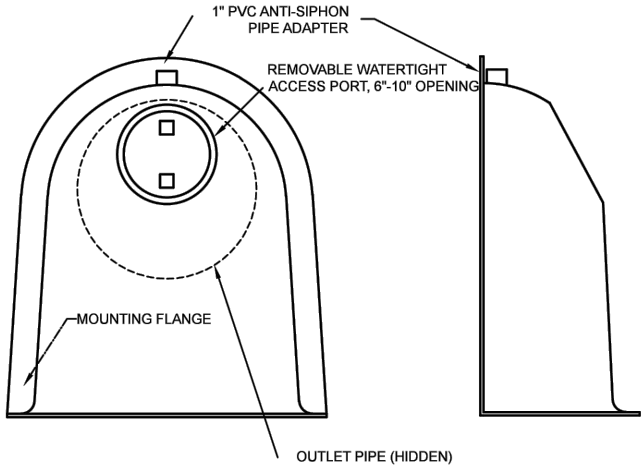
SUMP DISPOSAL (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 19

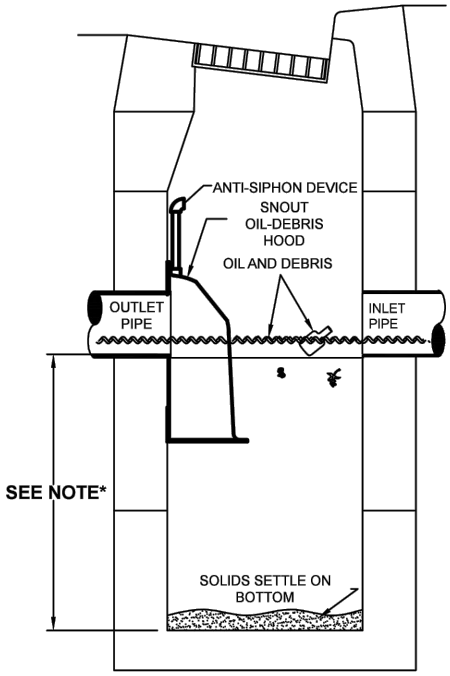
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

CONFIGURATION DETAIL



SNOUT OIL-WATER-DEBRIS SEPARATOR

TYPICAL INSTALLATION



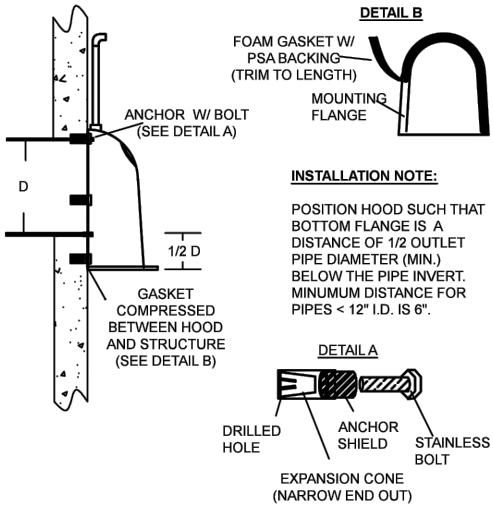
*NOTE- SUMP DEPTH OF 38" MIN. FOR UP TO 12" ID PIPE. OUTLET. FOR PIPES 15" ID AND ABOVE SUMP DEPTH OF 2.5 TO 3 TIMES PIPE ID RECOMMENDED (E.G. 5' DEEP for 24" PIPE)

NOTES:

1. ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY:
   BEST MANAGEMENT PRODUCTS, INC.
   9 MATHEWS DRIVE, UNIT A1-A2.
   EAST HADDAM, CT 06423
   TOLL FREE: (800) 504-8008 OR (888) 434-0277, FAX: (877) 434-3197
   WEB SITE: www.bmpinc.com
   OR PRE-APPROVED EQUAL
2. ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
3. ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT PIPE AND ELBOW AS DRAWN. (SEE CONFIGURATION DETAIL)
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION (SNOUT SIZE ALWAYS LARGER THAN PIPE SIZE).
5. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A MINIMUM DISTANCE EQUAL TO 1/2 THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES <12" I.D.
6. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 12" ACCORDING TO STRUCTURE CONFIGURATION.
7. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL AND PIPE SHALL BE FINISHED FLUSH TO WALL.
8. ALL STRUCTURE JOINTS SHALL BE WATERTIGHT.
9. THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH $\frac{3}{8}$" STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER. (SEE INSTALLATION DETAIL)
10. INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT.
    INSTALLATION KIT SHALL INCLUDE:
    A. INSTALLATION INSTRUCTIONS
    B. PVC ANTI-SIPHON VENT PIPE AND ADAPTER
    C. OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
    D. 3/8" STAINLESS STEEL BOLTS
    E. ANCHOR SHIELDS

US Patent # 6126817, 7951294, 7857966, 8512556
Canada Patent # 2285146, 2690156, 2690156 others pending

INSTALLATION DETAIL



HOOD SPECIFICATION FOR CATCH BASINS AND WATER QUALITY STRUCTURES

DESCRIPTION	DATE	SCALE
OIL- DEBRIS HOOD SPECIFICATION AND INSTALLATION (TYPICAL)	09/08/18	NONE
	DRAWING NUMBER	SP-SN

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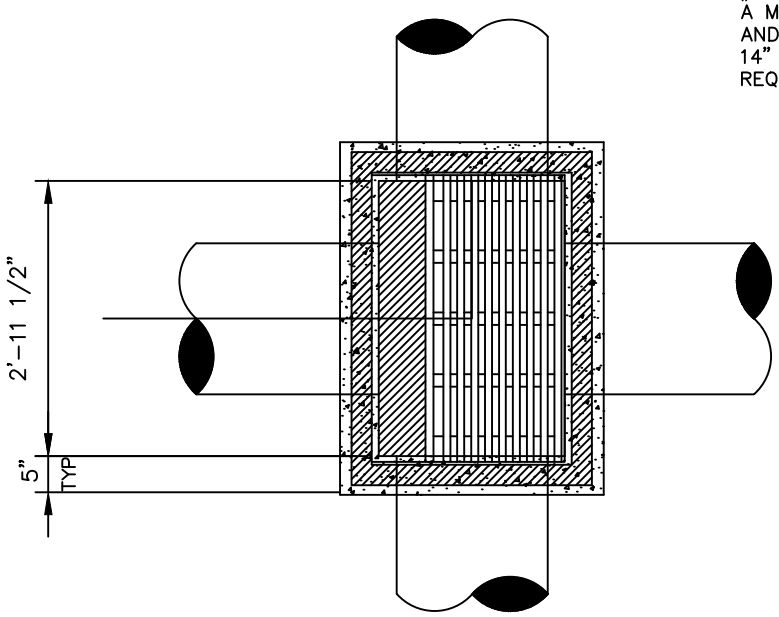
SNOUT DETAIL (Typical)

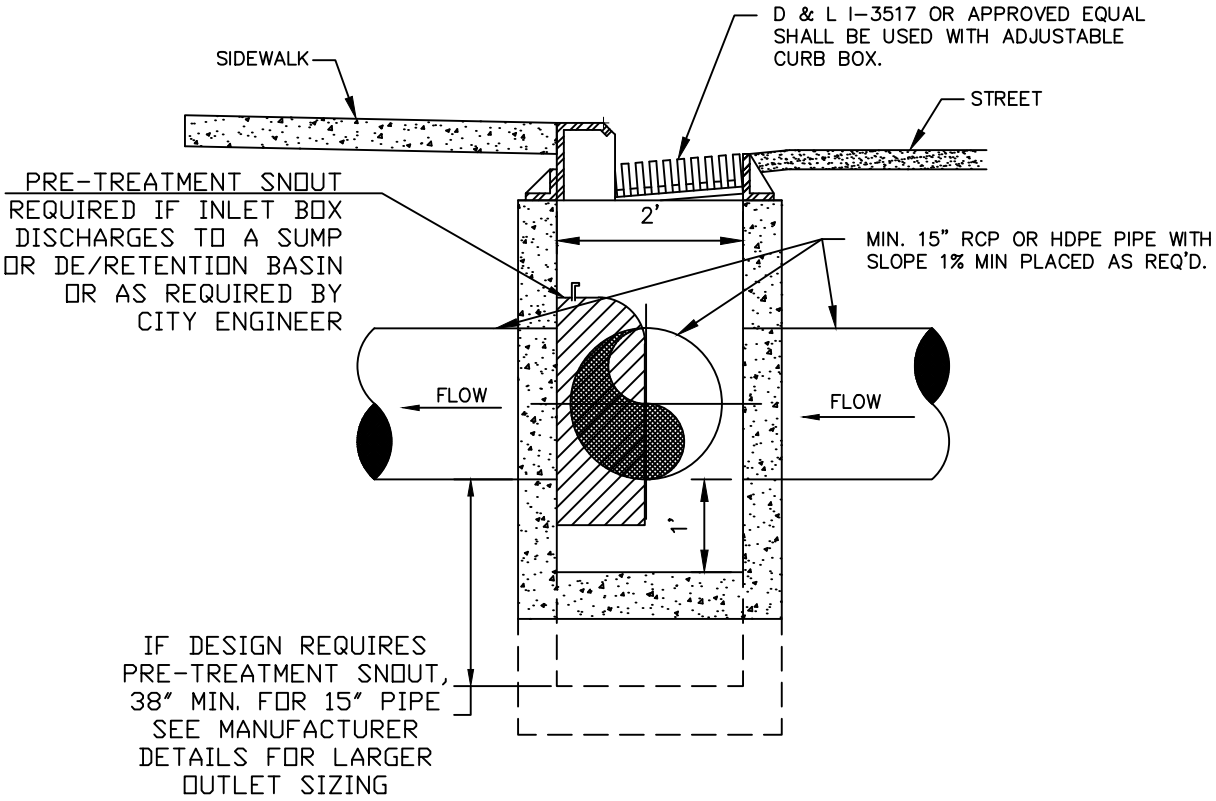
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 19a

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTE:
#4 REBAR SPACED AT
A MINIMUM OF 12" O.C. HORIZ.
AND 8" O.C. VERTICAL.
14" OVERLAP OR REBAR
REQUIRED.





CURB FACE DROP INLET BOX

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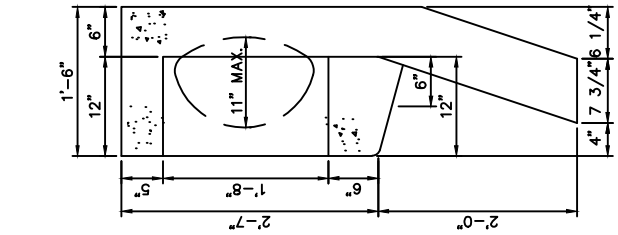
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CURB FACE DROP INLET BOX (Typical)

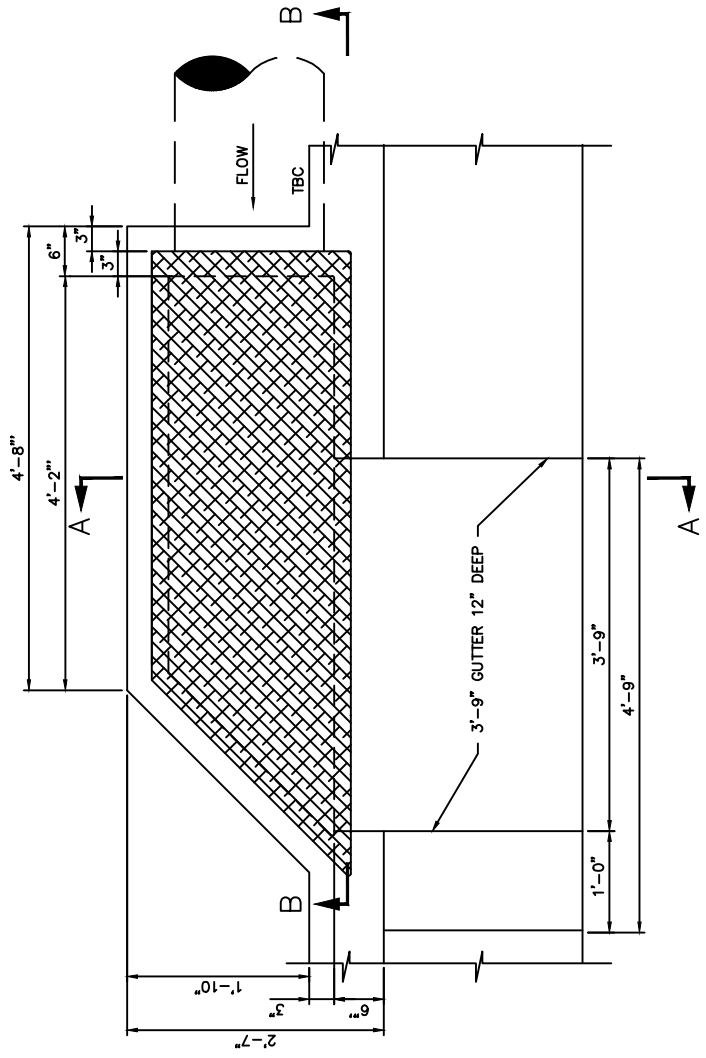
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20 NORTH MAIN
ALPINE, UT 84004

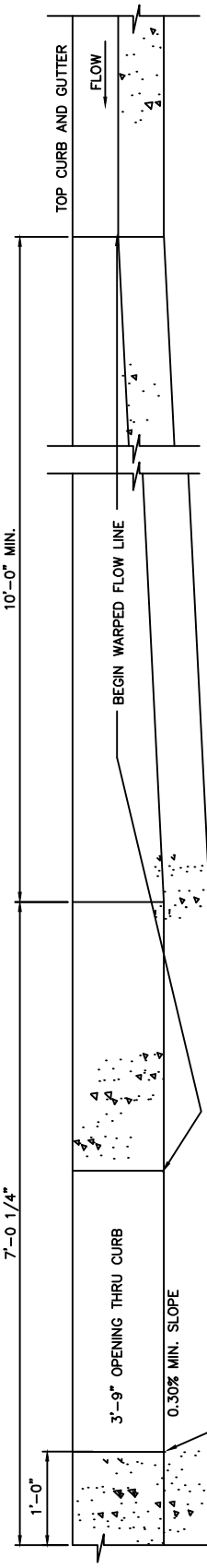
STANDARD DRAWING NUMBER: 20

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



SECTION A-A





SECTION B-B

GENERAL NOTES

1. ALL MATERIALS, CONSTRUCTION, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH ALPINE CITY SPECIFICATIONS AND AS DIRECTED BY THE ALPINE CITY ENGINEER OR HIS REPRESENT.
2. ALL CONCRETE TO BE 4000 P.S.I. @ 28 DAYS.
3. UNDER CONDITIONS WHERE PIPE SIZE, PIPE TYPE, OR EARTH COVER IS CRITICAL USE MODIFIED OUTLET BOX.
4. 1/4" PLATE SHALL BE PLACED ON THE OULET AS A COVER. THE PLAT SHALL BE PAINTED GREY

DIPSTONE OUTLET

N.T.S.

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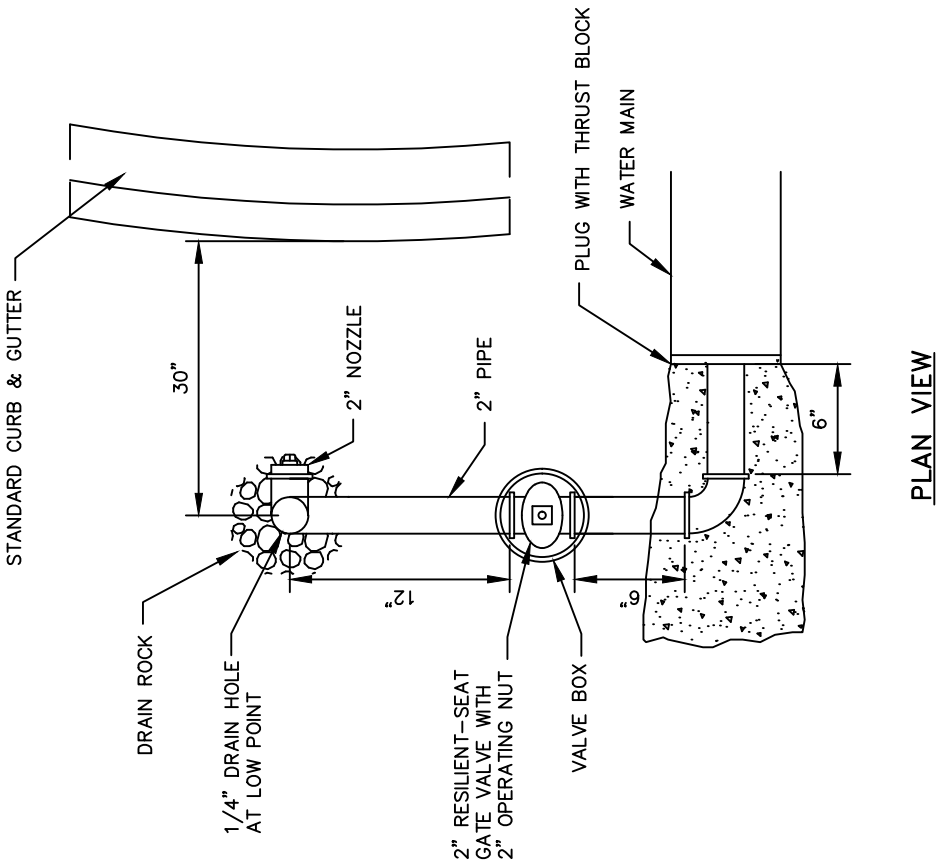
ALPINE 1850

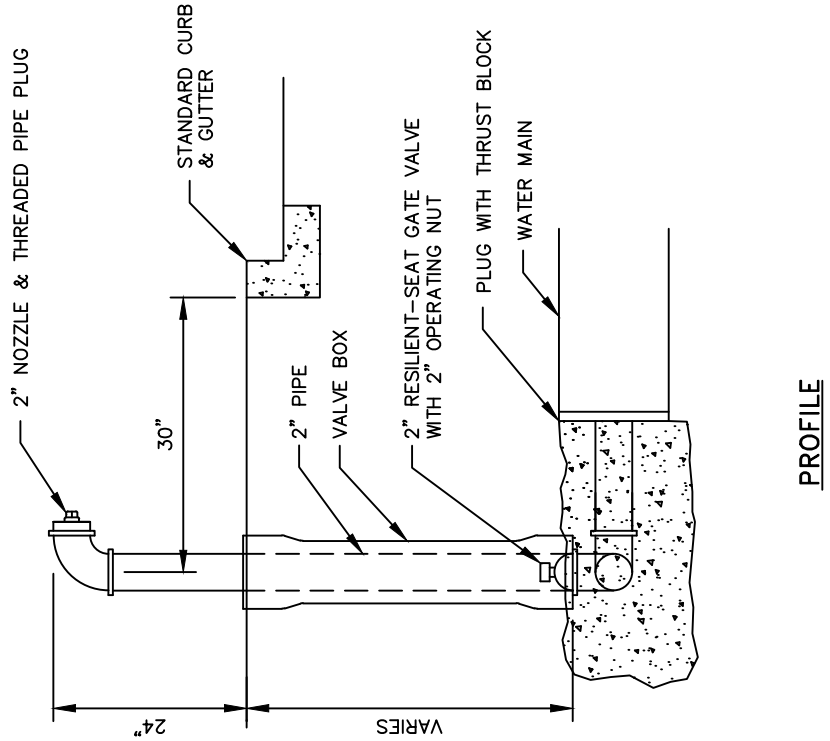
DIPSTONE OUTLET

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\21 DIPSTONE OUTLET

STANDARD DRAWING NUMBER:	21
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04





FLUSH VALVE

N.T.S.

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

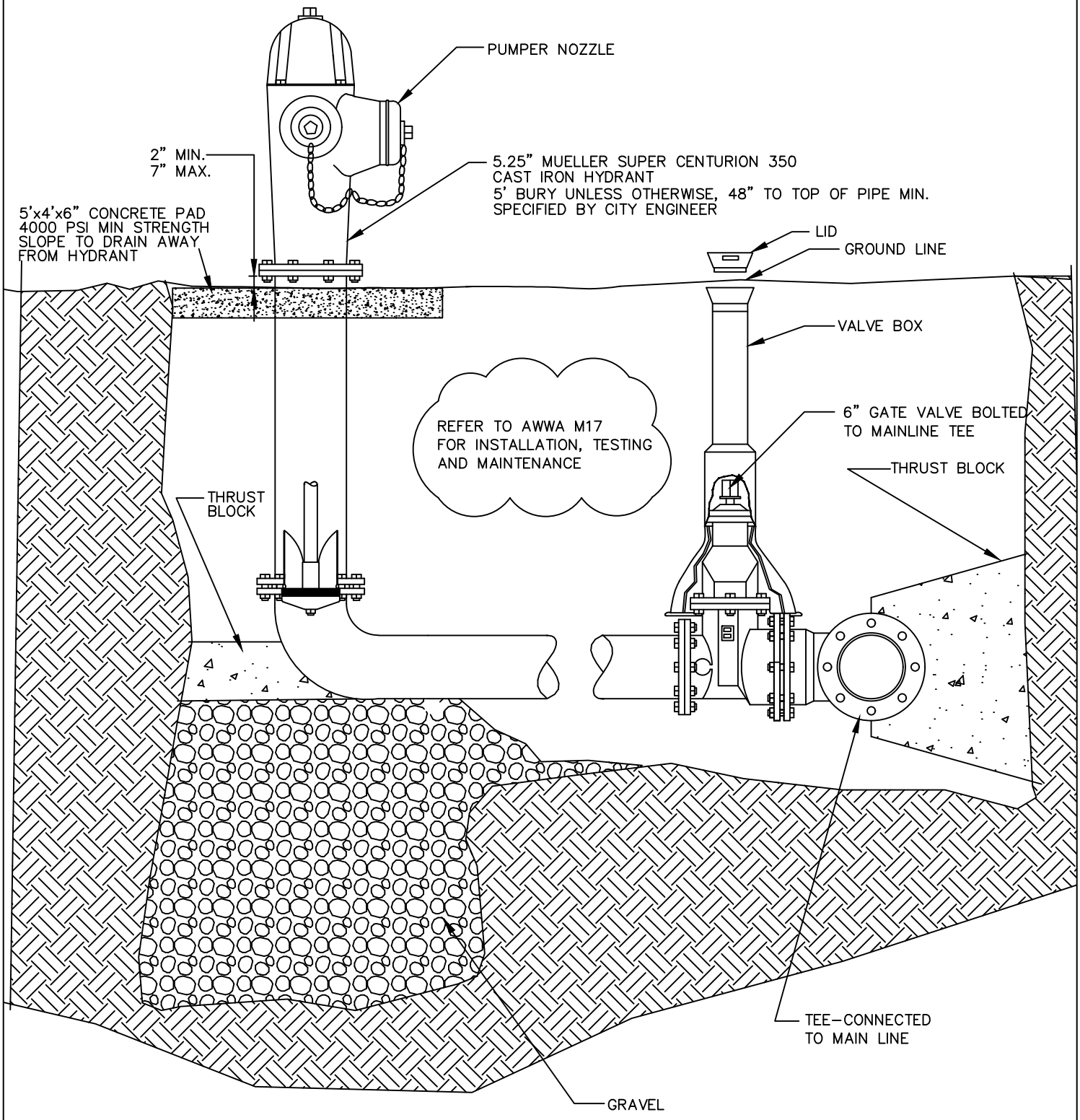
FLUSH VALVE (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\22 FLUSHVAL

STANDARD DRAWING NUMBER:	22
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

FIRE HYDRANTS REQUIRE 3–FEET MINIMUM CLEARANCE FOR OPERATION, THIS INCLUDES DRIVEWAYS



STANDARD FIRE HYDRANT DETAIL

N.T.S.

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CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\23 FHYD

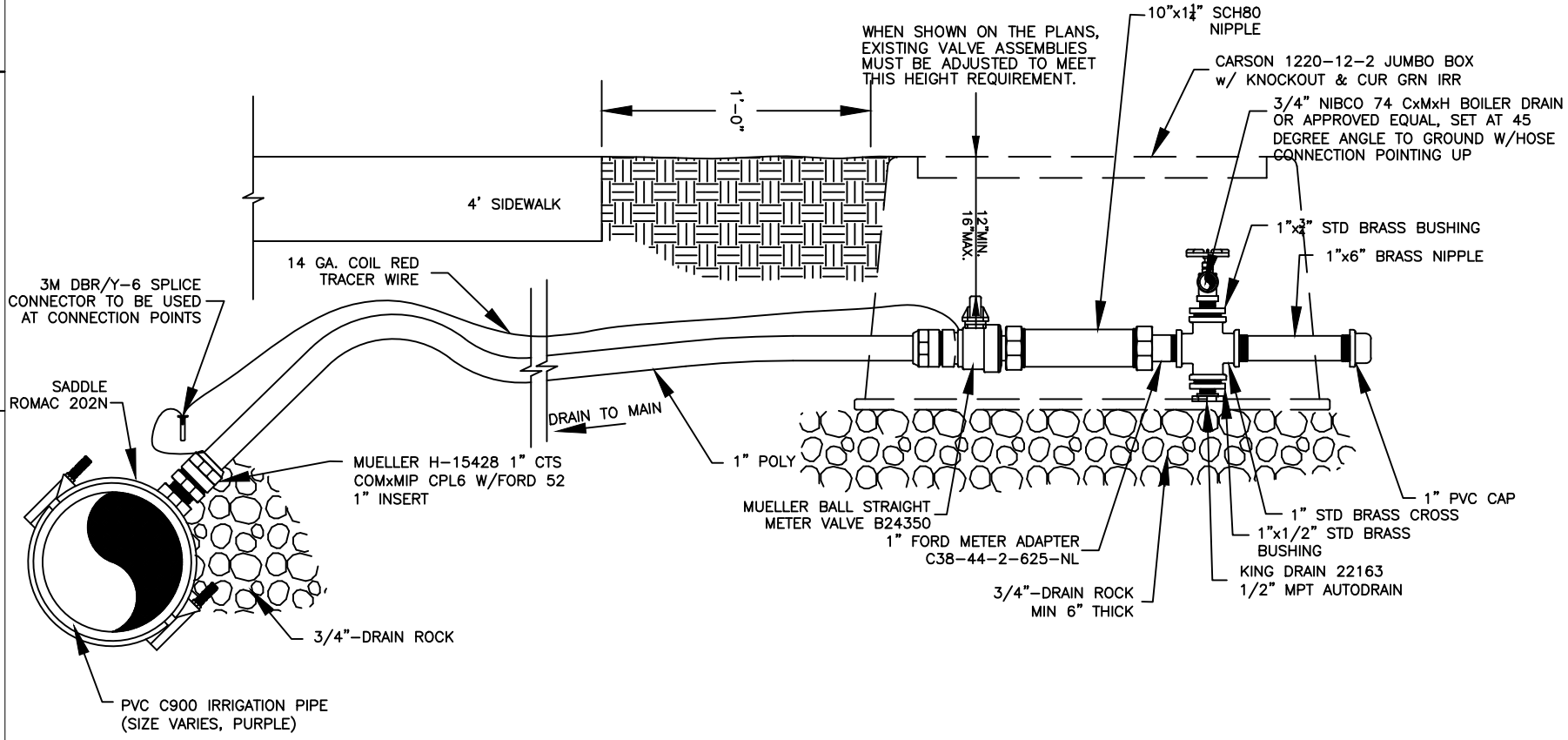
TYPICAL FIRE HYDRANT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 23

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

PRESSURIZED IRRIGATION BOXES REQUIRE 3–FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.



NOTES:

1. WHERE COMBINATION CURB, GUTTER, AND SIDEWALK EXISTS, THE IRRIGATION BOX SHALL BE PLACED 1' BEHIND THE SIDEWALK.
   IN LOCATIONS, WHERE NO CURB AND GUTTER EXIST OR ONLY CURB AND GUTTER WITHOUT SIDEWALK, THE IRRIGATION BOX SHALL BE PLACED ON THE PROPERTY LINE.

Pressurized Irrigation Distribution System

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 24

PLOT SCALE: N.T.S.
DRAWN BY: B.D.B.
DESIGN BY:
CHECKED BY:
ADOPTED DATE: 8/10/05

ALPINE 1850

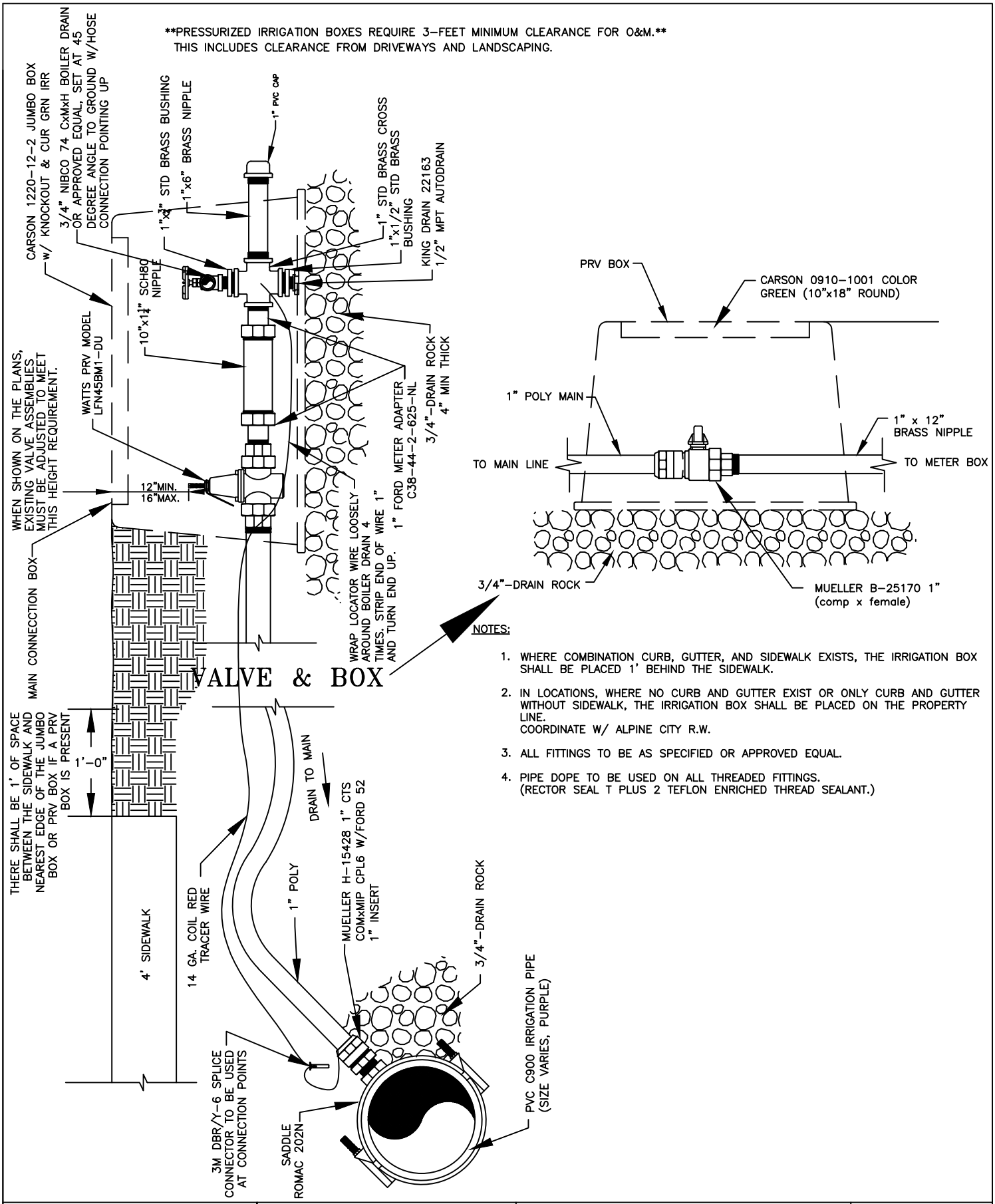
CAD FILE: E:\ENGINEERING\CODES & STANDARDS\SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2005 CITY SPEC & DETAILS\DETAILS\PI CONNECTION

NO.	REVISION	BY	DATE

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PRESSURIZED IRRIGATION BOXES REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M.
THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.



NOTES:

1. WHERE COMBINATION CURB, GUTTER, AND SIDEWALK EXISTS, THE IRRIGATION BOX SHALL BE PLACED 1' BEHIND THE SIDEWALK.
2. IN LOCATIONS, WHERE NO CURB AND GUTTER EXIST OR ONLY CURB AND GUTTER WITHOUT SIDEWALK, THE IRRIGATION BOX SHALL BE PLACED ON THE PROPERTY LINE.
   COORDINATE W/ ALPINE CITY R.W.
3. ALL FITTINGS TO BE AS SPECIFIED OR APPROVED EQUAL.
4. PIPE DOPE TO BE USED ON ALL THREADED FITTINGS.
   (RECTOR SEAL T PLUS 2 TEFLON ENRICHED THREAD SEALANT.)

STATEMENT OF USE

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NO.		BY	APRL	DATE

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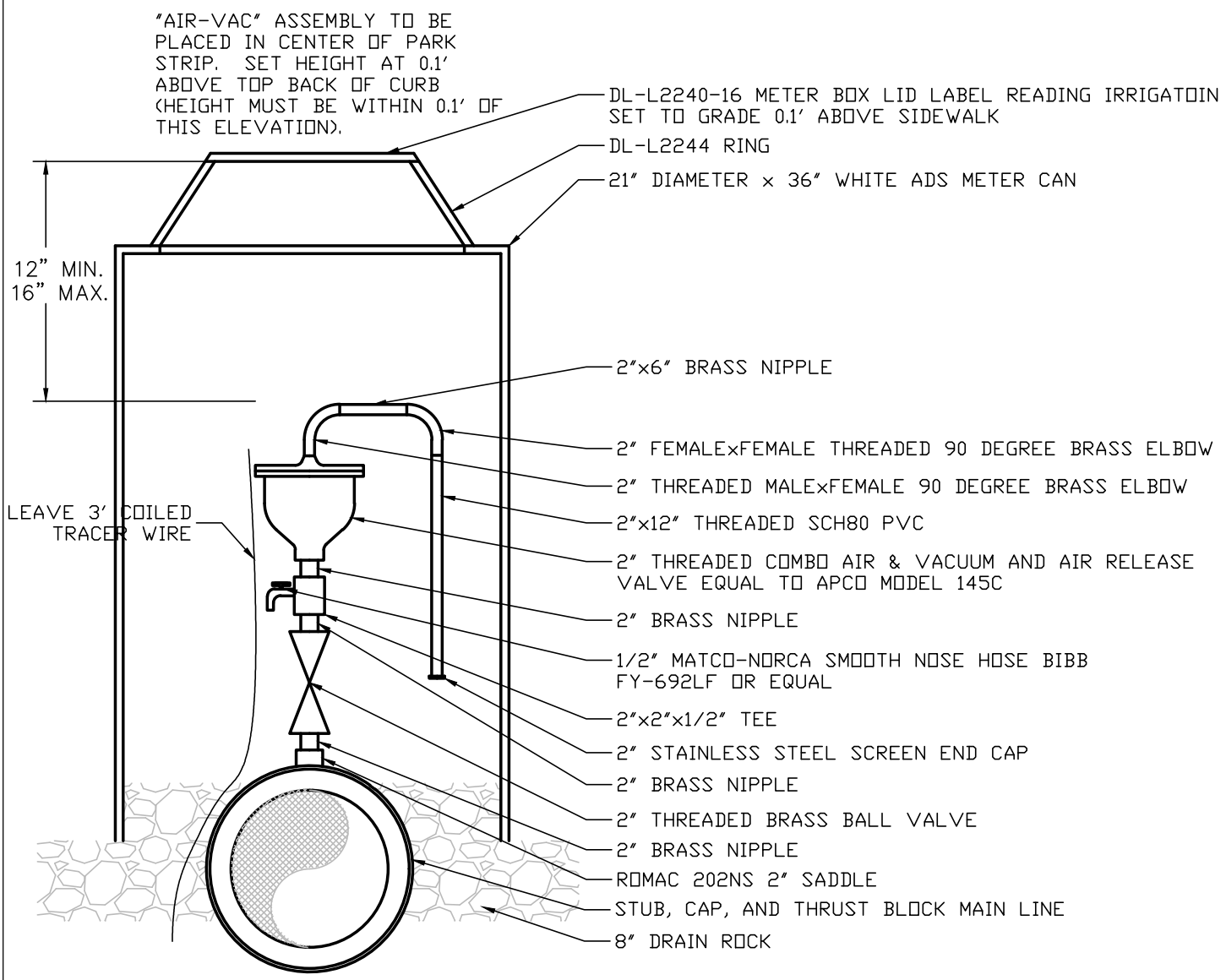
Pressurized Irrigation System w/PRV

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\25 PI CONNECTION AND PRV

STANDARD DRAWING NUMBER: 25

PLOT SCALE:	N.T.S.
DRAWN BY:	B.D.B.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	8/10/05



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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

SECONDARY WATER AIR-VAC ASSEMBLY

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

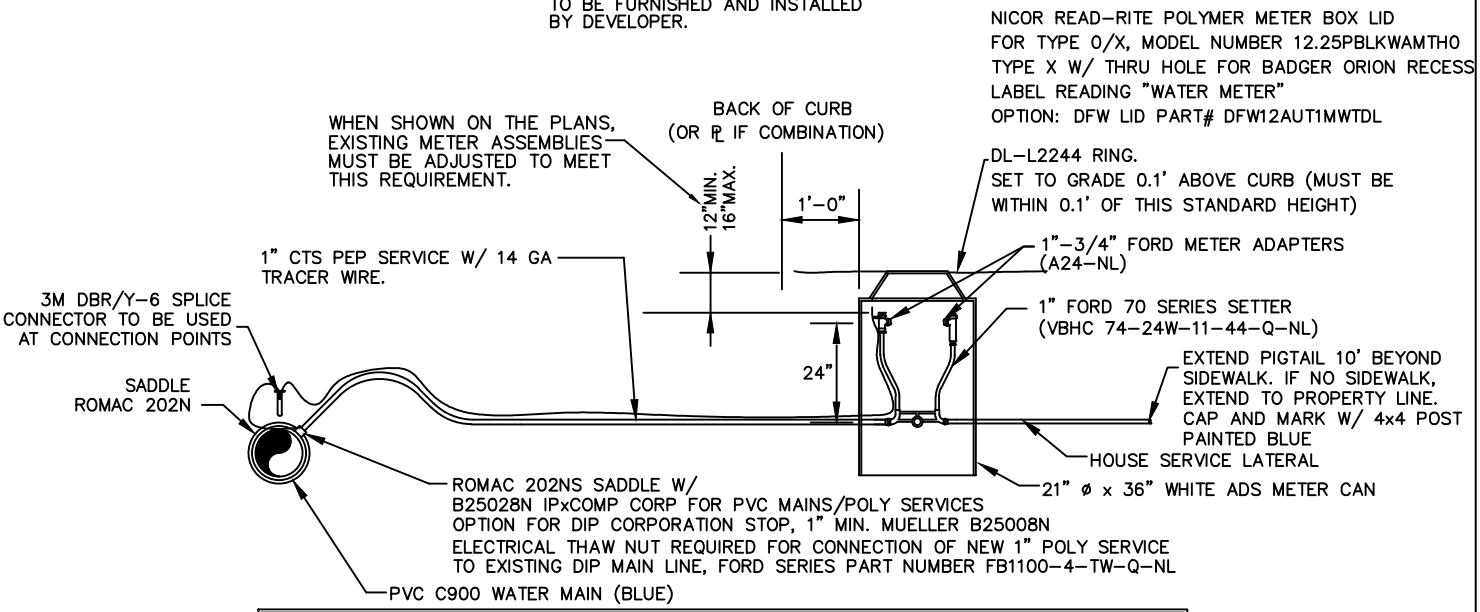
CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\26 PI AIRVAC

STANDARD DRAWING NUMBER: 26

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/7/18

CULINARY WATER METERS REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.

NOTE: METER BOX, COVER, COPPERSETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER.

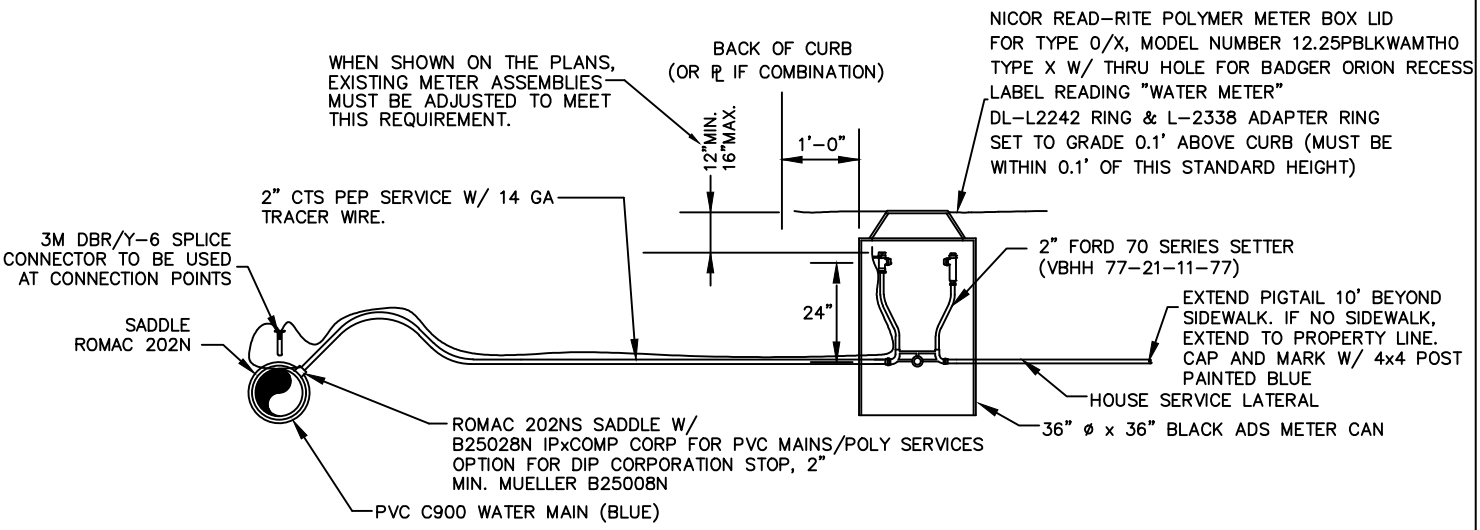


NOTE: 1" SERVICES ARE STANDARD FOR ALL NEW DEVELOPMENT, AS SHOWN.
REPLACEMENT PARTS FOR EXISTING 3/4" SERVICES CONSISTS OF:
3/4" FORD SERIES SETTER - VBHC72-24W-11-33-NL
CORPS ARE THE SAME PART NUMBERS, SPECIFIED AS 3/4" INSTEAD OF 1"

3/4" & 1" WATER SERVICE CONNECTIONS

N.T.S.

NOTE: METER BOX, COVER, COPPERSETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER.



NOTE: FOR 1.5" SERVICES: ALL PARTS SHOWN ABOVE ARE THE SAME EXCEPT THE SERVICE LINE AND SETTER, WHICH WOULD BOTH BE CHANGED TO 1.5"

1.5" & 2" WATER SERVICE CONNECTIONS

N.T.S.

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NO.		BY	APRL.	DATE

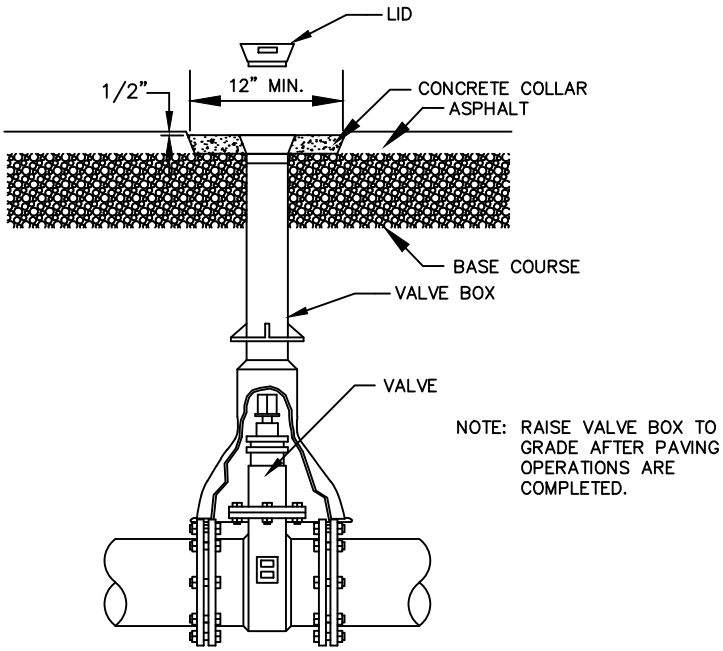
ALPINE 1850

WATER SERVICE CONNECTION DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\27 WATER SERVICES

STANDARD DRAWING NUMBER:	27
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



VALVE BOX COLLAR DETAIL

N.T.S.

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NO.		BY	APRL.	DATE

ALPINE 1850

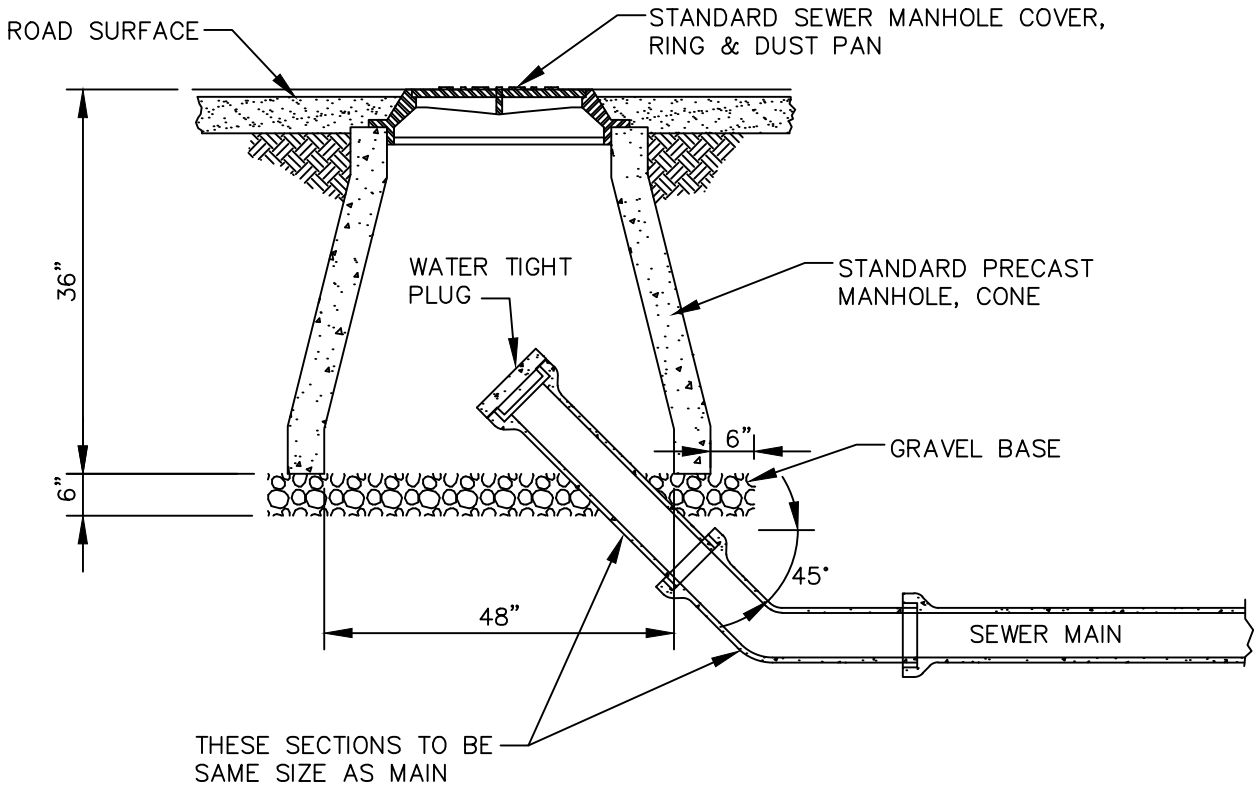
CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\27A VALVE BOX

VALVE BOX DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 27a

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



TEMPORARY SEWER MAIN CLEANOUT

N.T.S.

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\28 SEWCNOUT

TEMPORARY SEWER MAIN CLEANOUT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

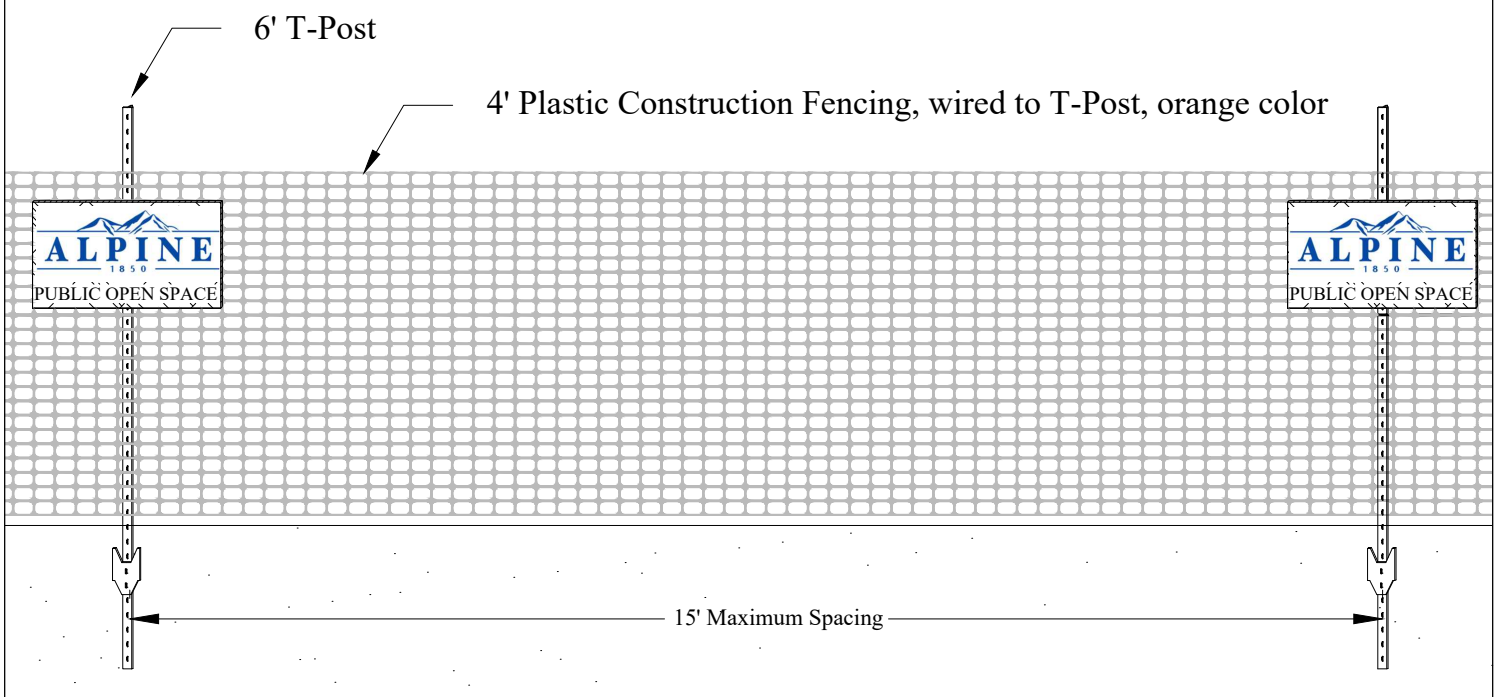
STANDARD DRAWING NUMBER: 28

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



SIGN SPECIFICATIONS

- SIGN TO BE 18"x24"
- PRINTED WITH BLACK LETTERS, WHITE BACKGROUND
- LAMINATED AND STAPLED TO PLYWOOD
- WIRED TO T-POSTS
- SPACED ONE PER JOB SITE IN A VISIBLE LOCATION IF MORE THAN 300' OF FENCING REQ'D, ONE SIGN TO BE PLACED EVERY 300'



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NO.		BY	APRL.	DATE

ALPINE
1850

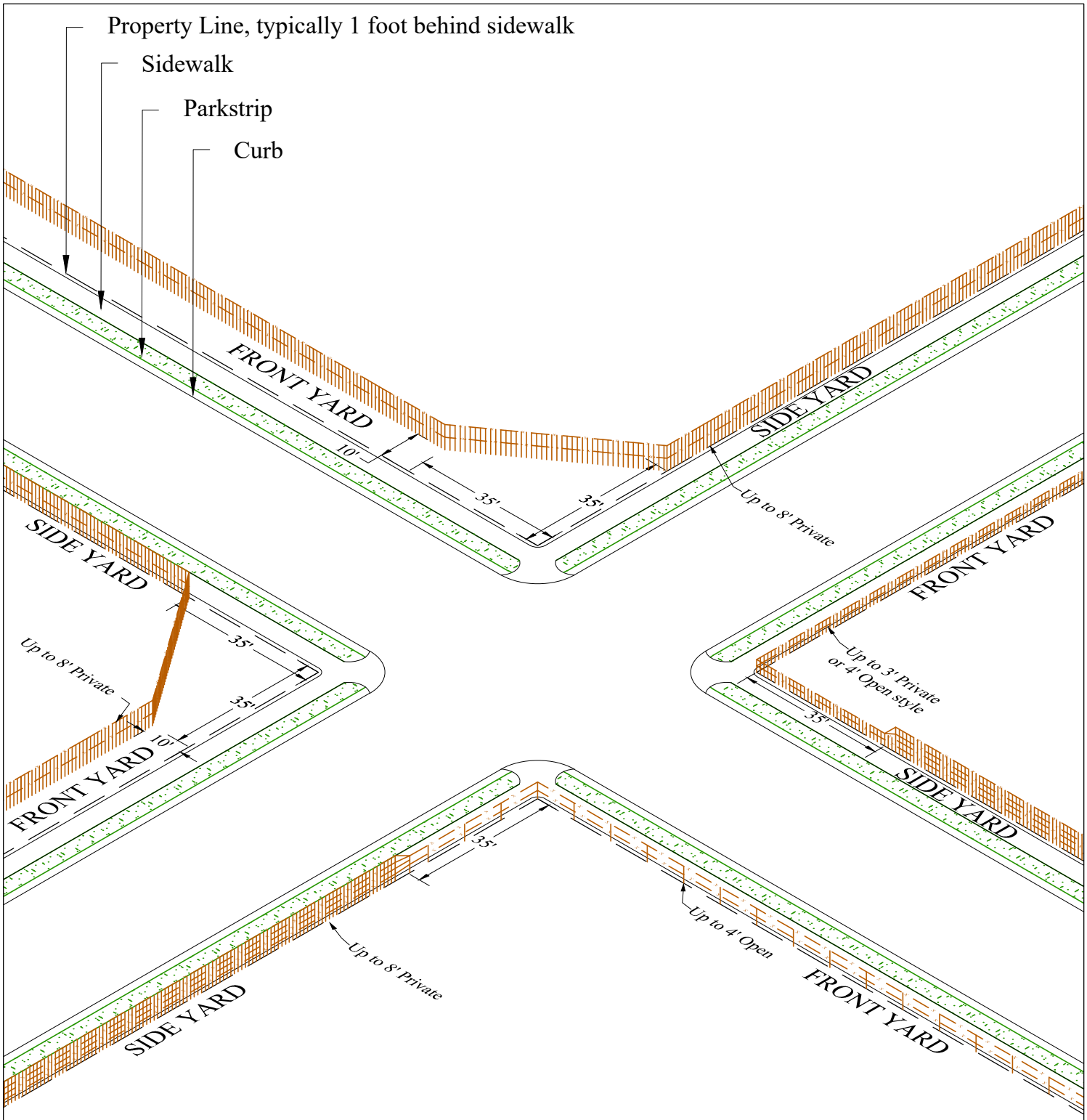
PUBLIC OPEN SPACE FENCING

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\29 PUBLIC OPEN SPACE FENCING

STANDARD DRAWING NUMBER: 29

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



NOTE: SEE DEVELOPMENT CODE SECTION 3.21.060
ALL PARTS OF THE FENCE TO BE PLACED NO CLOSER THAN 1 FOOT BEHIND SIDEWALK (OR ON PROPERTY LINES) WITH HEIGHTS AS SHOWN. FREE FENCE PERMIT REQUIRED.

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NO.		BY	APRL.	DATE

ALPINE 1850

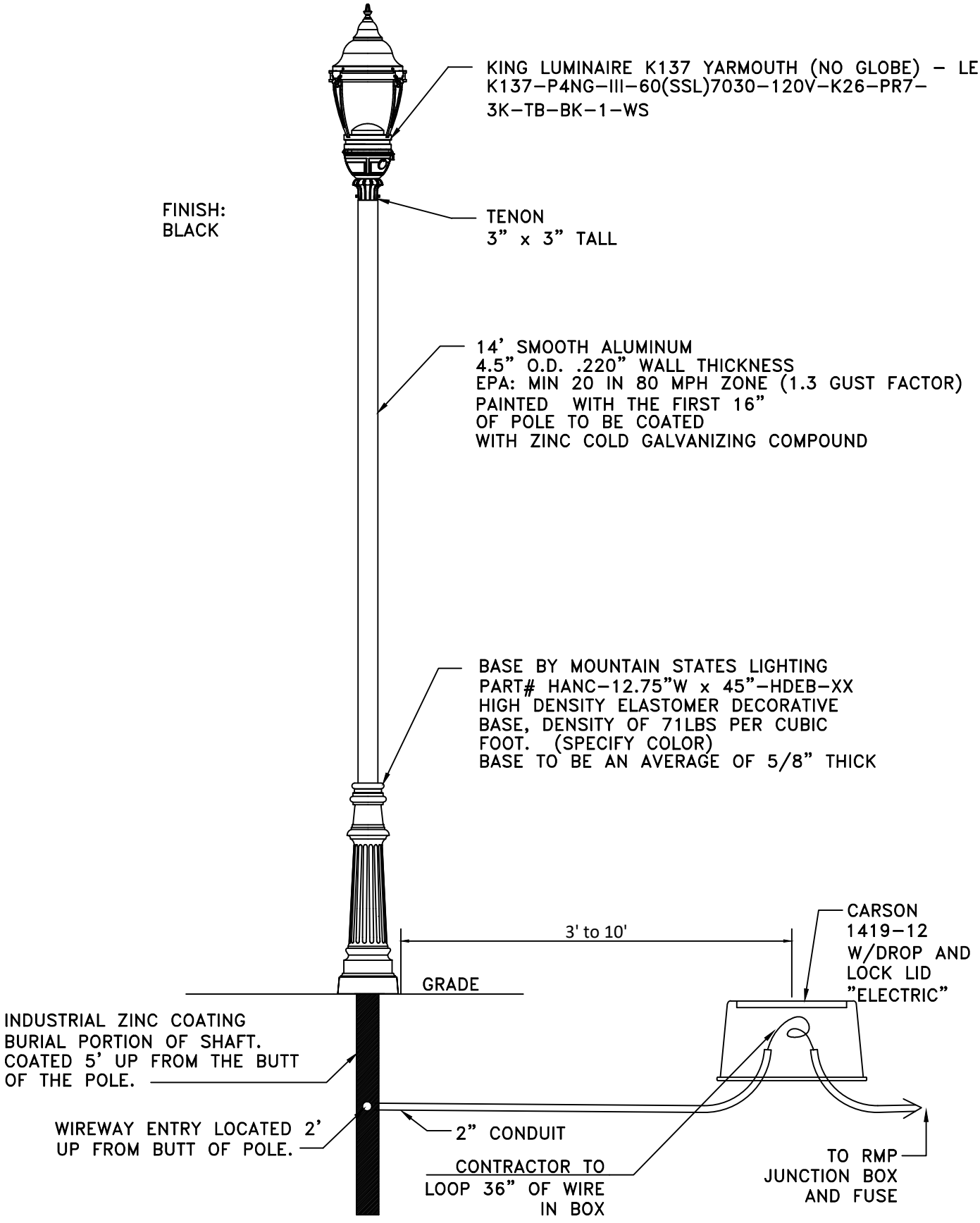
FENCING REGULATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\30 FENCING REGULATIONS

STANDARD DRAWING NUMBER:	30
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

STREETLIGHTS REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.



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REVISION

NO.		BY	APRL	DATE

ALPINE 1850

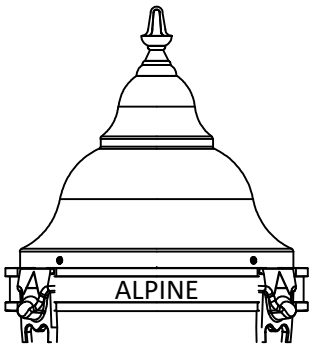
RESIDENTIAL STREET LIGHT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\31 STREET LIGHT - RESIDENTIAL POLE ASSEMBLY

STANDARD DRAWING NUMBER: 31

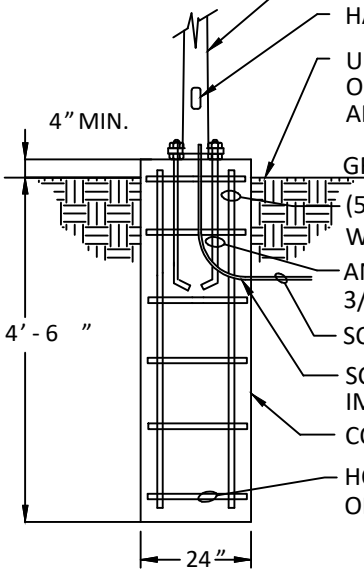
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	DRAFT



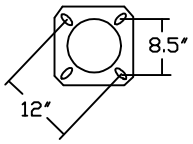
ENLARGED FIXTURE TOP

NOTE!!
IF DEPTH CANNOT BE MET MASS MUST BE EQUIVALENT TO MASS SHOWN

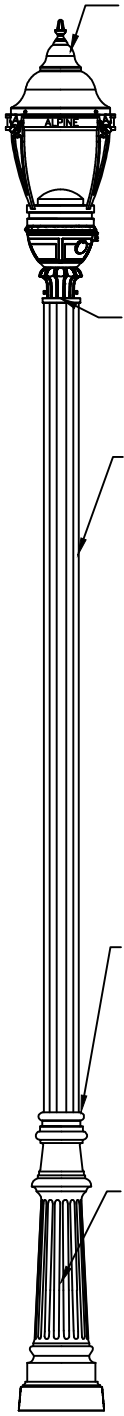
FINISH;
BLACK



CONCRETE BASE DETAIL



ANCHOR BASE DETAIL
12"BOLT CIRCLE
ANCHOR BOLTS: 3/4"x 18"



KING LUMINAIRE K137 YARMOUTH (NO GLOBE) - LED
K137-P4NG-III-100(SSL)7030-120V-K26-PR7-
3K-TB-BK-1-WS

TENON 3"X3" TALL

14' EXTRUDED FLUTED ALUMINUM
5.0" O.D. .250" WALL THICKNESS
EPA MIN 20 IN 80 MPH ZONE (1.3 GUST FACTOR)
PAINTED WITH THE FIRST 16"
OF POLE TO BE COATED
WITH ZINC COLD GALVANIZING COMPOUND

BASE BY MOUNTAIN STATES
PART# HANC-12.75"W x 45"-HDEB-BK
HIGH DENSITY ELASTOMER DECORATIVE
BASE, DENSITY OF 71LBS PER CUBIC
DENSITY: 71LBS PER CUBIC FOOT.
BASE TO BE AN AVERAGE OF 5/8" THICK

HANDHOLE LOCATED 12" ABOVE GRADE
BEHIND TWO-PIECE DECORATIVE BASE.

** SEE DETAIL 31 **
FOR REQUIRED
JUNCTION BOX
AT BASE

STREETLIGHTS REQUIRE 3–FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.

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NO.		BY	APRL	DATE

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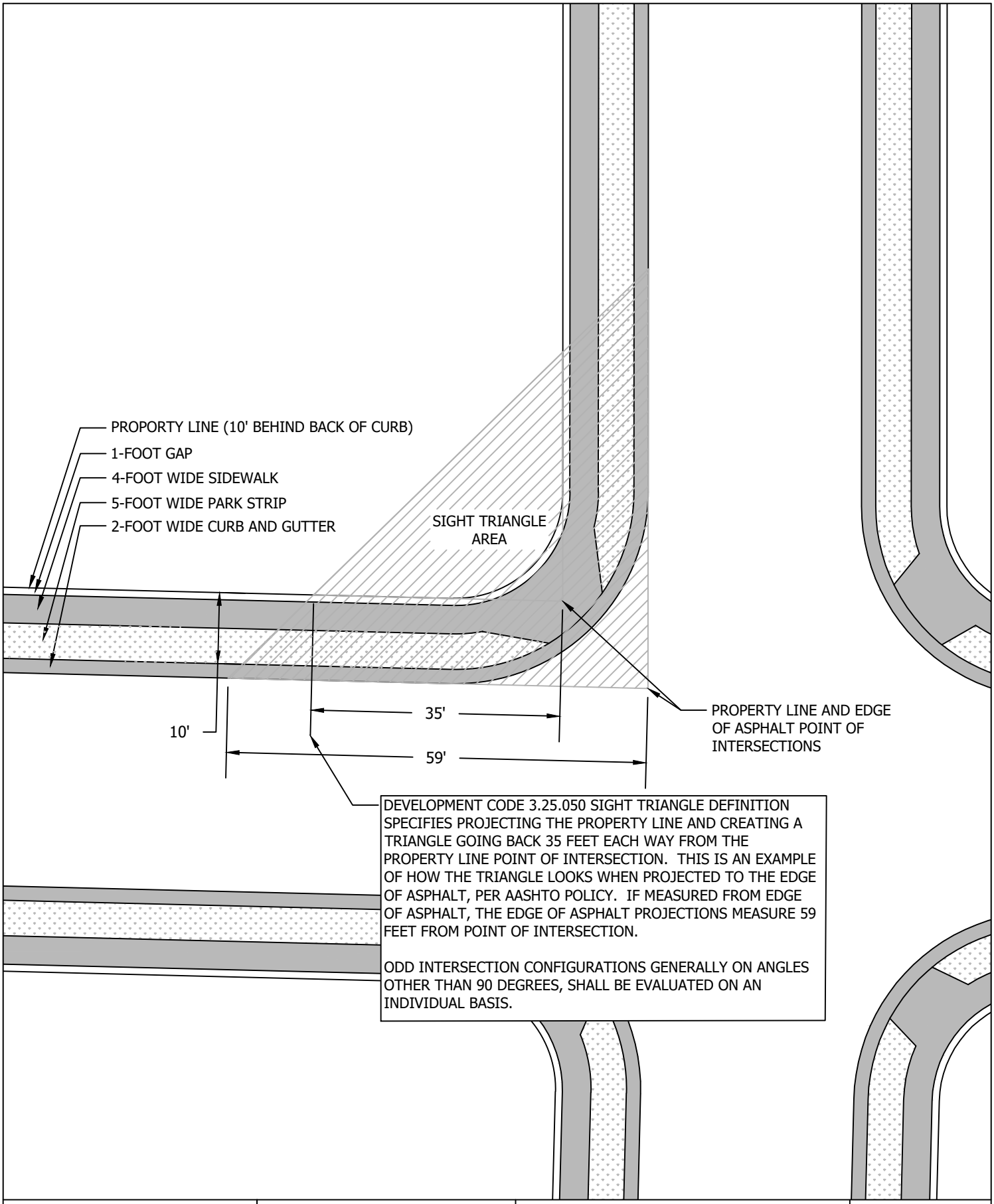
DOWNTOWN STREET LIGHT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\31A STREET LIGHT – DOWNTOWN BOLT DOWN

STANDARD DRAWING NUMBER: 31a

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/7/18



DEVELOPMENT CODE 3.25.050 SIGHT TRIANGLE DEFINITION SPECIFIES PROJECTING THE PROPERTY LINE AND CREATING A TRIANGLE GOING BACK 35 FEET EACH WAY FROM THE PROPERTY LINE POINT OF INTERSECTION. THIS IS AN EXAMPLE OF HOW THE TRIANGLE LOOKS WHEN PROJECTED TO THE EDGE OF ASPHALT, PER AASHTO POLICY. IF MEASURED FROM EDGE OF ASPHALT, THE EDGE OF ASPHALT PROJECTIONS MEASURE 59 FEET FROM POINT OF INTERSECTION.

ODD INTERSECTION CONFIGURATIONS GENERALLY ON ANGLES OTHER THAN 90 DEGREES, SHALL BE EVALUATED ON AN INDIVIDUAL BASIS.

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NO.		BY	APRL	DATE

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SIGHT TRIANGLE

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\32 SIGHT TRIANGLE

STANDARD DRAWING NUMBER:	32
PLOT SCALE:	N.T.S.
DRAWN BY:	J.M.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/11

PASTURE GRASS MIX

20 lbs CABIN BLEND and 5 lbs ROCKY MOUNTAIN WILDFLOWER mix per acre

CABIN BLEND	
SPECIES	**% BY WEIGHT**
MOUNTAIN BROME	30
SLENDER WHEATGRASS	25
SANDBERG BLUEGRASS	5
BIG BLUEGRASS	5
SHEEP FESCUE	5
WESTERN WHEATGRASS	20
BEARDLESS BLUEBUNCH WHEATGRASS	10

ROCKY MOUNTAIN WILDFLOWER MIX	
SPECIES	**% BY WEIGHT**
BLUE FLAX	9
PURPLE CONEFLOWER	10
BLACKEYED SUSAN	2
CALIFORNIA POPPY	1
WALLFLOWER	6
FIREWHEEL	7
WILD LUPINE	10
LANCE-LEAVED COREOPSIS	8
PRAIRIE CONEFLOWER	2
MEXICAN HAT	2
FLANDERS POPPY	2
YELLLOW COSMOS	5
BACHELOR BUTTON	6
PLAINS COREOPSIS	2
MOUNTAIN PHLOX	1
ROCKY MOUNTAIN IRIS	3
MOUNTAIN LUPINE	6
SHOWY GLODENEYE	3
BLANKET FLOWER	6

WETLANDS/STREAM BANK GRASS MIX
15 LBS PER ACRE

WETLAND/STREAMBANK MIX	
SPECIES	**% BY WEIGHT**
INLAND SALTGRASS	13.3
WESTERN WHEATGRASS	13.3
STREAMBANK WHEATGRASS	13.3
NEBRASKA SEDGE	20
BLUEJOINT REEDGRASS	1.67
BEAKED SEDGE	20
BALTIC RUSH	1.67
MEADOW SEDGE	16.67

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ALPINE 1850

STANDARD SEED MIXTURES

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\33 SEED MIXTURES

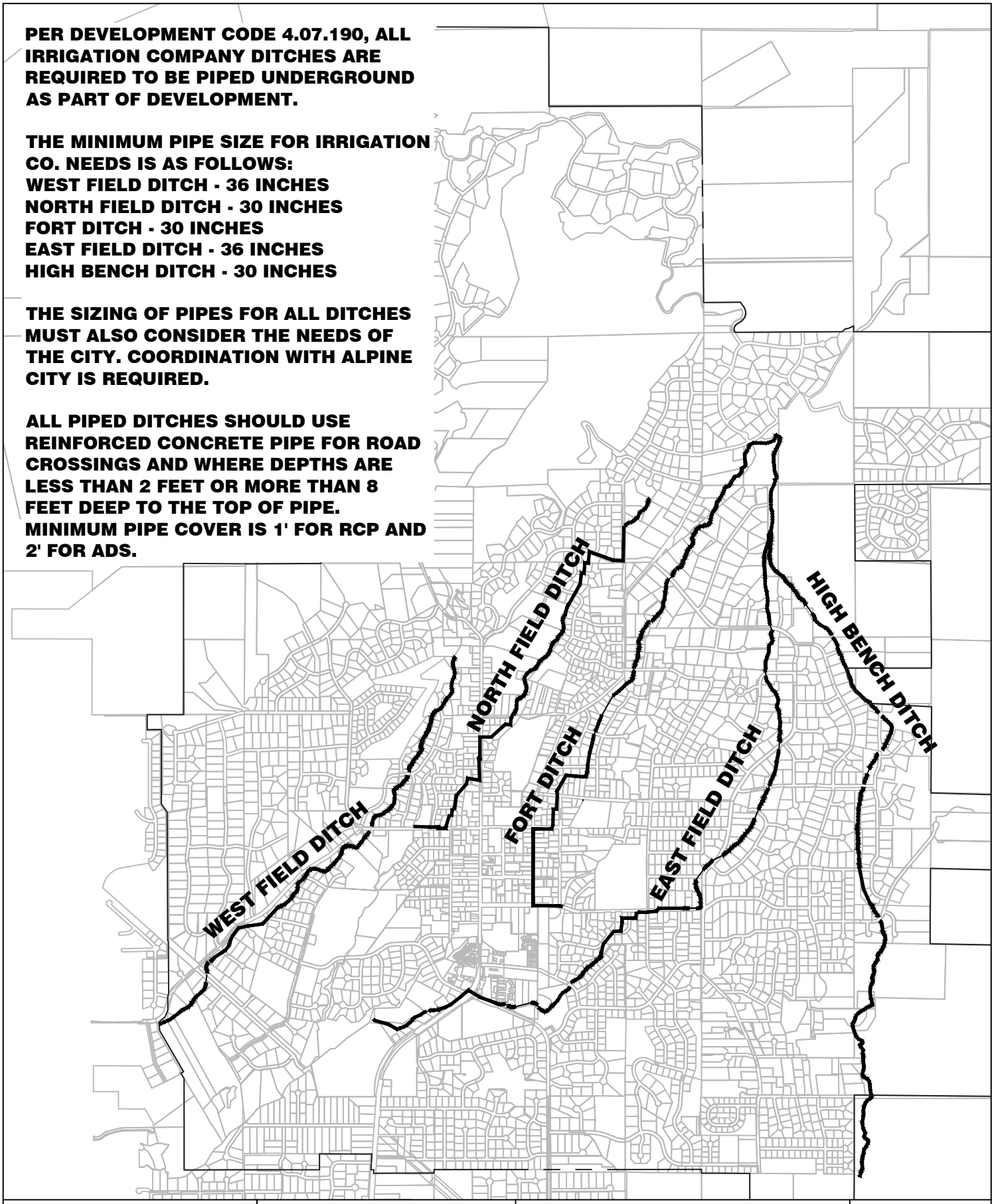
STANDARD DRAWING NUMBER:	33
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/7/18

PER DEVELOPMENT CODE 4.07.190, ALL IRRIGATION COMPANY DITCHES ARE REQUIRED TO BE PIPED UNDERGROUND AS PART OF DEVELOPMENT.

THE MINIMUM PIPE SIZE FOR IRRIGATION CO. NEEDS IS AS FOLLOWS:
WEST FIELD DITCH - 36 INCHES
NORTH FIELD DITCH - 30 INCHES
FORT DITCH - 30 INCHES
EAST FIELD DITCH - 36 INCHES
HIGH BENCH DITCH - 30 INCHES

THE SIZING OF PIPES FOR ALL DITCHES MUST ALSO CONSIDER THE NEEDS OF THE CITY. COORDINATION WITH ALPINE CITY IS REQUIRED.

ALL PIPED DITCHES SHOULD USE REINFORCED CONCRETE PIPE FOR ROAD CROSSINGS AND WHERE DEPTHS ARE LESS THAN 2 FEET OR MORE THAN 8 FEET DEEP TO THE TOP OF PIPE. MINIMUM PIPE COVER IS 1' FOR RCP AND 2' FOR ADS.



STATEMENT OF USE

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NO.		BY	APRL	DATE

ALPINE 1850

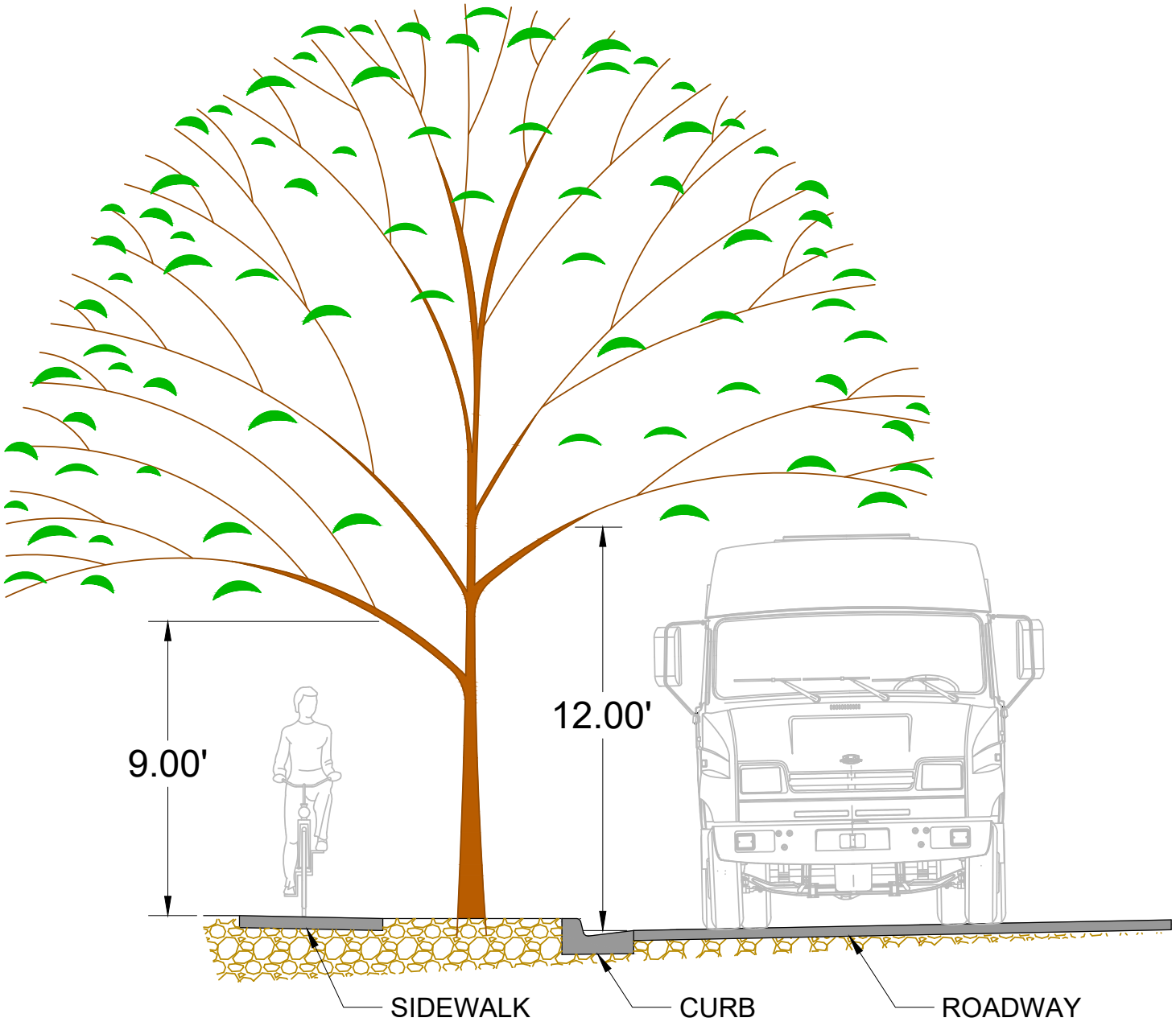
IRRIGATION CO. DITCHES

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\34 IRRIGATION COMPANY DITCHES

STANDARD DRAWING NUMBER: 34

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/7/18



Roadway and Sidewalk Tree Trimming Guide

Branches of trees near roadways or sidewalks shall be trimmed to a minimum height of 12' above the edge of asphalt/lip of curb and 9' above the sidewalk as shown

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NO.		BY	APRL. DATE

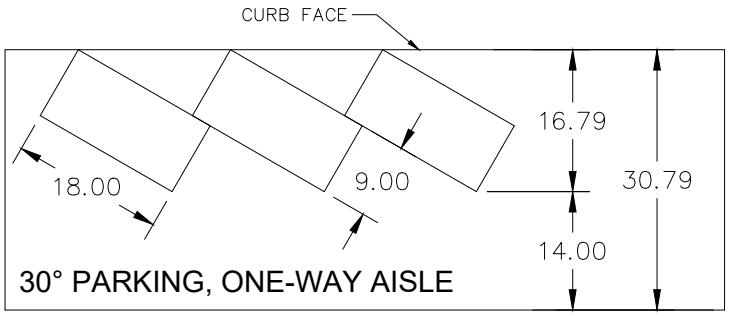
ALPINE 1850

ROADWAY TREE TRIMMING

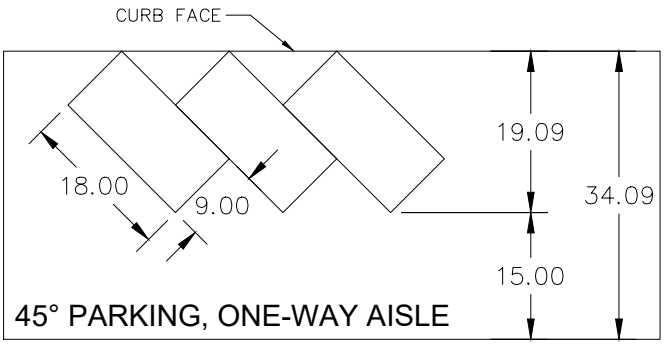
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20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\35 TREE TRIMMING

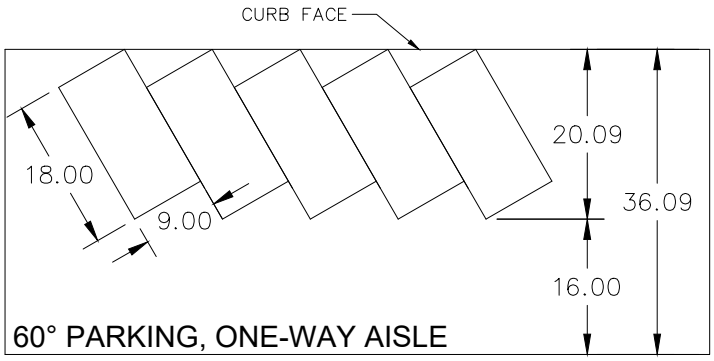
STANDARD DRAWING NUMBER:	35
PLOT SCALE:	N.T.S.
DRAWN BY:	J.M.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	11/13/2018



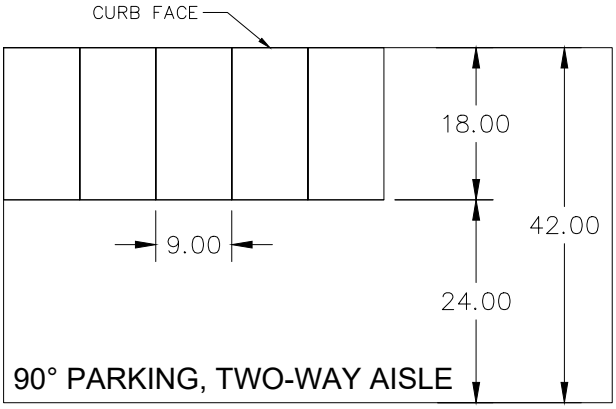
30° PARKING, ONE-WAY AISLE



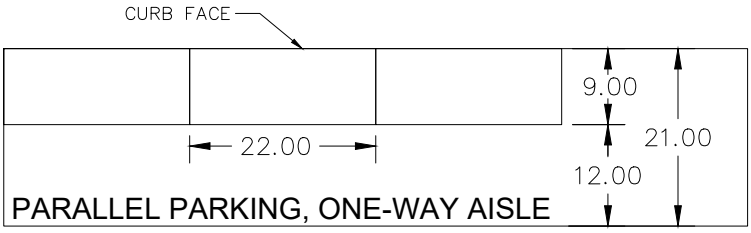
45° PARKING, ONE-WAY AISLE



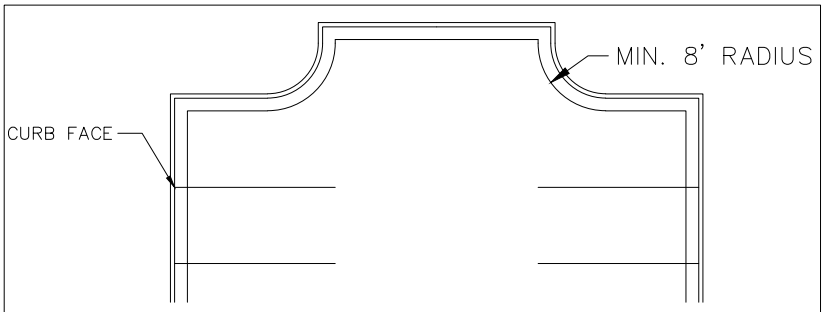
60° PARKING, ONE-WAY AISLE



90° PARKING, TWO-WAY AISLE



PARALLEL PARKING, ONE-WAY AISLE



DEAD END AISLE TURNOUT, TWO-WAY AISLE

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NO.		BY	APRL. DATE

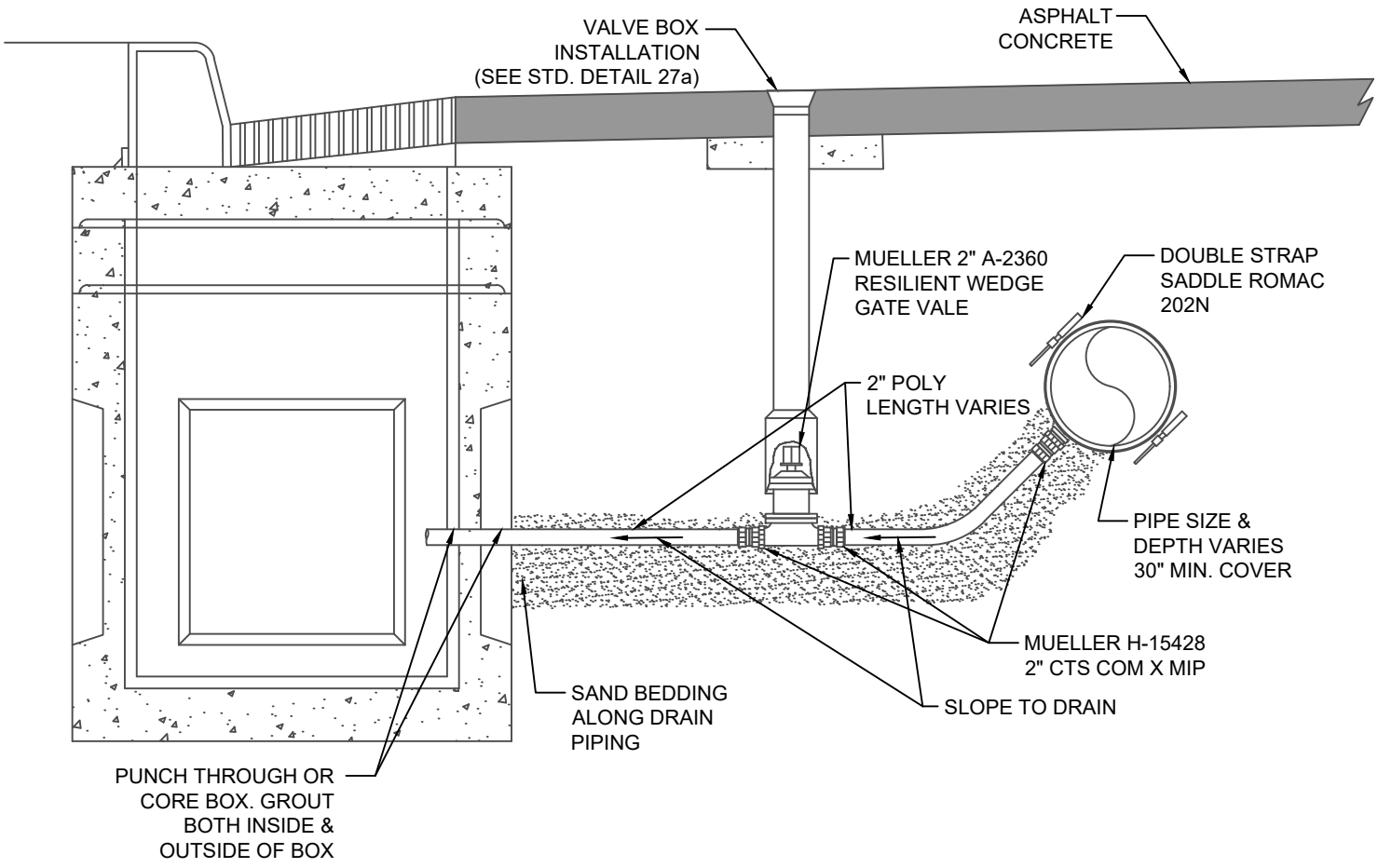
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PARKING DIMENSIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\36 PARKING DIAGRAMS 3.24 EXHIBIT (UPDATED TO 18 FT STALLS)

STANDARD DRAWING NUMBER:	36
PLOT SCALE:	N.T.S.
DRAWN BY:	J.M.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	11/13/2018



NOTES:

1. PROPOSED DRAIN LINE CAN TIE INTO CATCH BASIN BOX (SHOWN) OR SUMP MANHOLE (NOT SHOWN) OR BOX CULVERT (NOT SHOWN)
2. ALL COMPRESSION FITTINGS SHALL INCLUDE A MUELLER 2" CTS PE LINER PART NO. 506141

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NO.		BY	APRL.	DATE

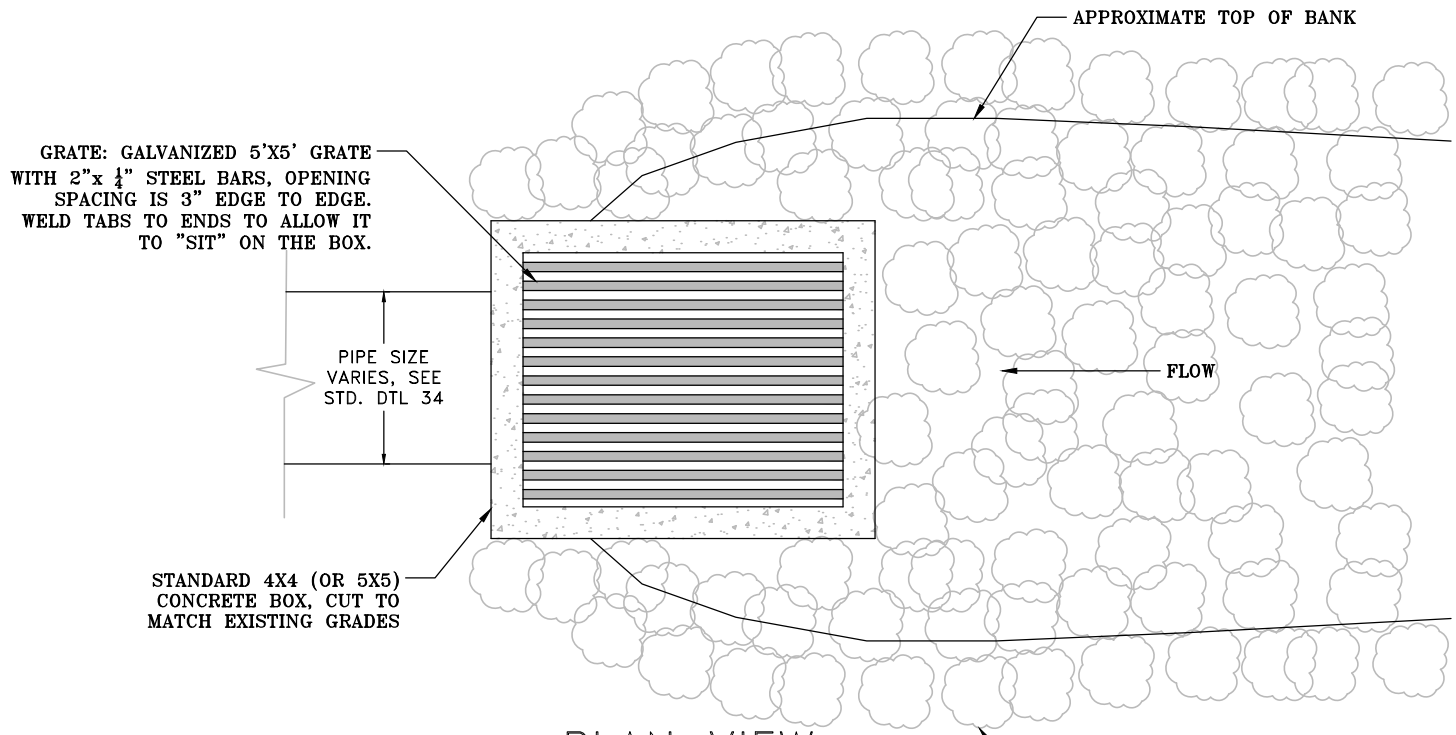
ALPINE 1850

2-INCH PRESSURIZED IRRIGATION DRAIN

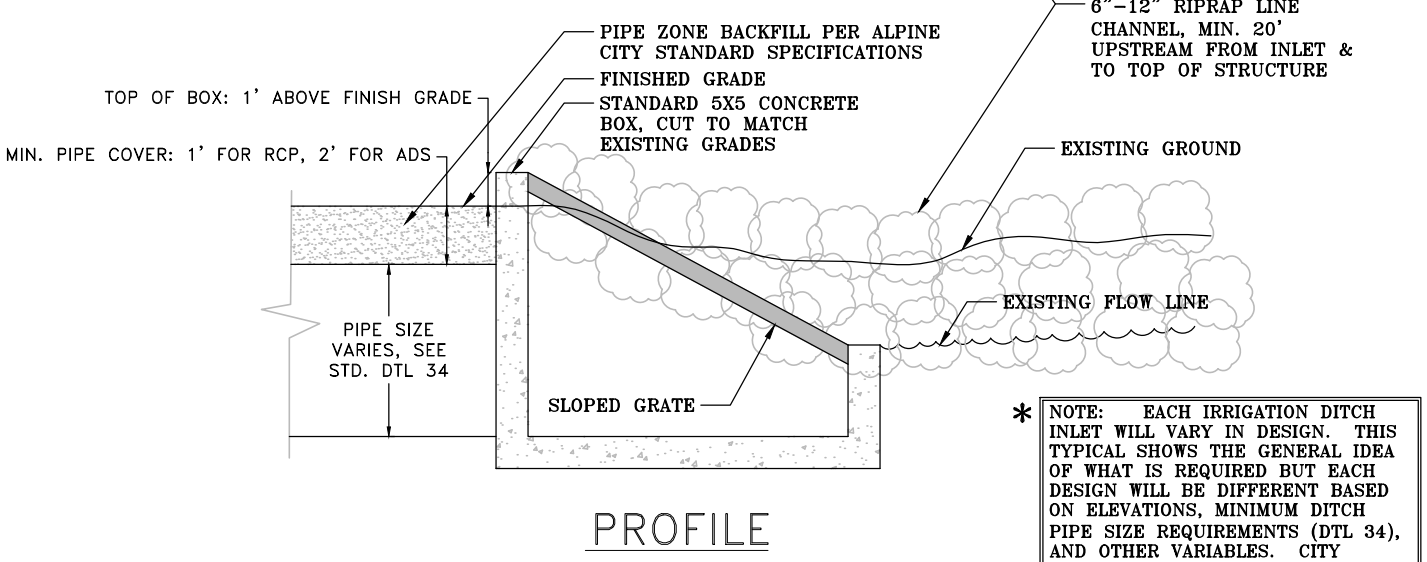
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: G:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\37 2-INCH DRAIN DETAIL

STANDARD DRAWING NUMBER:	37
PLOT SCALE:	N.T.S.
DRAWN BY:	J.M.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	-



PLAN VIEW



PROFILE

* NOTE: EACH IRRIGATION DITCH INLET WILL VARY IN DESIGN. THIS TYPICAL SHOWS THE GENERAL IDEA OF WHAT IS REQUIRED BUT EACH DESIGN WILL BE DIFFERENT BASED ON ELEVATIONS, MINIMUM DITCH PIPE SIZE REQUIREMENTS (DTL 34), AND OTHER VARIABLES. CITY STAFF WILL WORK WITH THE DESIGN ENGINEER IN EACH SCENARIO.

IRRIGATION DITCH INLET (TYPICAL)*

N.T.S.

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NO.		BY	APRL.	DATE

ALPINE 1850

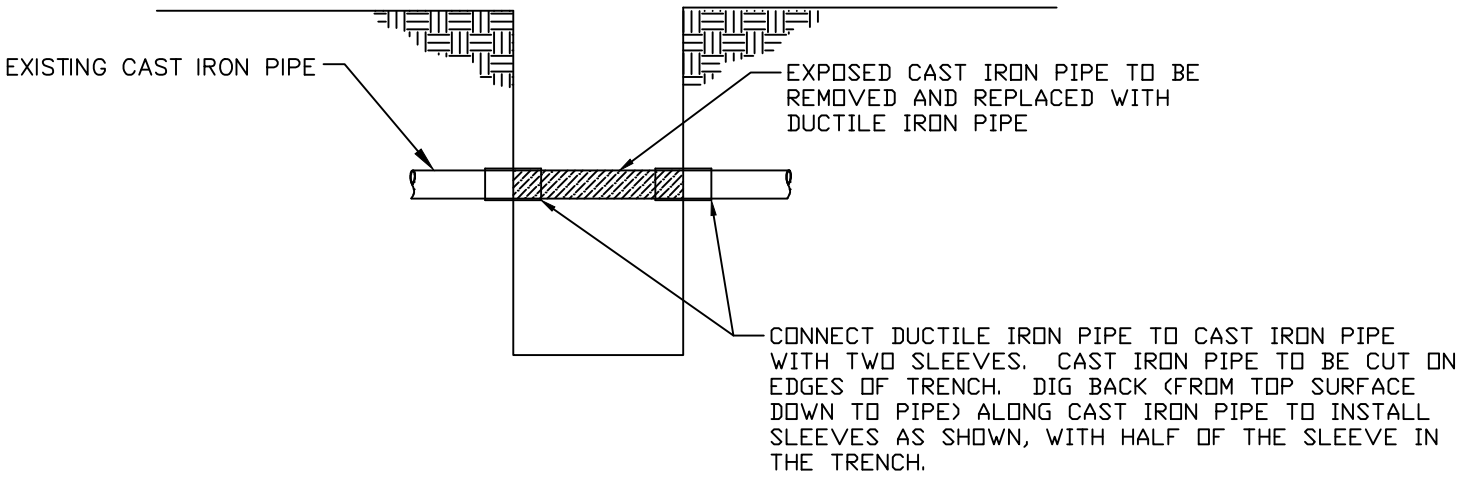
IRRIGATION INLET (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 38

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\38 IRRIGATION INLET



TRENCHING UNDER C.I.P.

N.T.S.

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

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TRENCHING UNDER CAST IRON PIPE

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 39

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

Section 1050. Division of Drinking Water Rules

Sections of 2017 APWA specifications have been noted where they differ from Utah Division of Drinking Water Standards and are included herewith as part of these standards.

Trench backfill

1. GENERAL

A. The drawing applies to backfilling a trench (and embankment) above the pipe zone.

2. PRODUCTS

A. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 3-inches.

B. Flowable Fill: APWA Section 31 05 15. Target is 60 psi in 28 days with 90 psi maximum in 28 days, It must flow easily requiring no vibration for consolidation.

3. EXECUTION

A. Trench Backfill Above the Pipe Zone: Follow requirement indicated in APWA Section 33 05 20 and the following provisions. See Standard Plan 382 for backfilling the pipe zone.
   1) DO NOT USE sewer rock, pea gravel, or recycled RAP aggregate as trench backfill.
   2) Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a standard proctor density, APWA Section 31 23 26.
   3) Water jetting is NOT allowed.

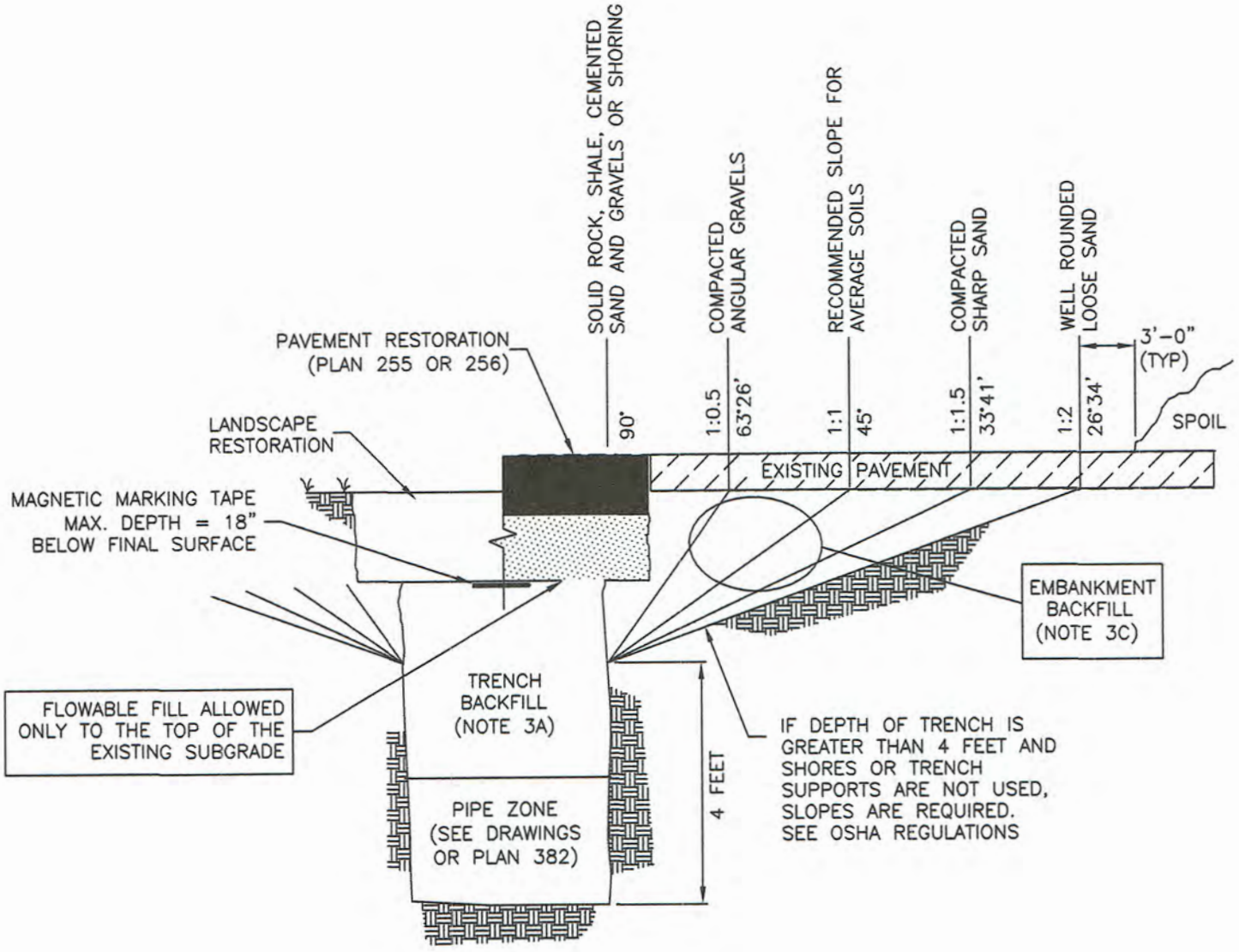
B. Flowable Fill: If controlled low strength material is placed in the trench. Cure the material before placing surface restorations.

C. Embankment Backfill: When trench sides are sloped proceed as follows.
   1) Maximum lift thickness is 8-inches before compaction.
   2) Compact per APWA Section 31 23 26 to 95 percent or greater relative to a standard proctor density.
   3) Submission of quality control compaction test result data may be requested by ENGINEER at any time. Provide results of tests immediately upon request.

D. Surface Restoration:
   1) Landscaped Surface: Follow APWA Section 32 92 00 (turf or grass) or APWA Section 32 93 13 (ground cover) requirements. Rake to match existing grade. Replace vegetation to match pre-construction conditions.
   2) Paved Surface: Follow APWA Section 33 05 25 (bituminous pavement surfacing), or APWA Section 33 05 25 (concrete pavement surfacing). Do not install surfacing until compaction density is acceptable to ENGINEER. .

APWA directs users to the Storm Drain section for Pipe Zone specifications. These same standards apply to culinary which must meet R390-550-8

NARRATIVE: THIS PLAN SHOWS VARIOUS SLOPES RECOMMENDED FOR VARIOUS TYPES OF SLOPE STABILITY PROBLEMS. THE VERTICAL TEXT INDICATES VARIOUS MATERIALS THAT MAY BE ENCOUNTERED. THE SERVICES OF A PROFESSIONAL SOILS ENGINEER SHOULD BE USED TO VERIFY SLOPE STABILITY.



APWA directs users to the Storm Drain section for Pipe Zone specifications. Pipe Zone for culinary is 6-inch, see R309-550-8(2)

APWA directs users to the Storm Drain section for Pipe Zone specifications. These same standards apply to culinary which must meet R390-550-8

Pipe zone backfill

1. GENERAL

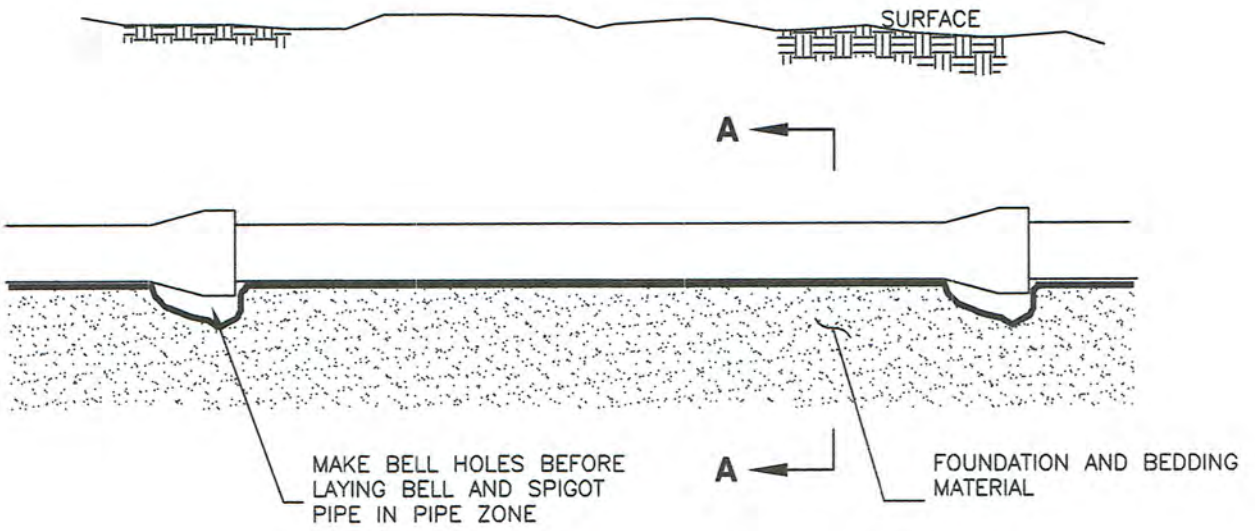
A. Install the pipe in the center of the trench or no closer than 6-inches from the wall of the pipe to the wall of the trench.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Concrete: APWA Section 03 30 04.
D. Flowable Fill: Target is 60 psi in 28 days with 90 psi maximum in 28 days, APWA Section 31 05 15. It must flow easily requiring no vibration for consolidation.
E. Stabilization-Separation Geotextile: Moderate or high at CONTRACTOR's choice, APWA Section 31 05 19.

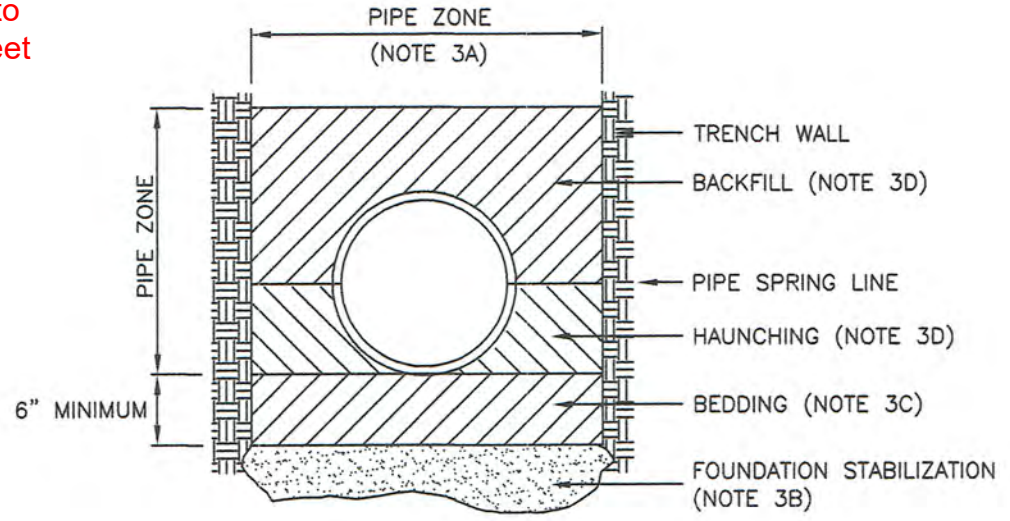
3. EXECUTION

A. Excavate the Pipe Zone: Width is measured at the pipe spring line and includes any necessary sheathing. Provide width recommended by pipe manufacturer. Follow manufacturer's recommendations when using trench boxes.
B. Foundation Stabilization: Get ENGINEER's permission before installing common fill. Vibrate to stabilize. Installation of stabilization-separation geotextile will be required to separate backfill material and native subgrade materials if common fill cannot provide a working surface or prevent soils migration.
C. Bedding: Follow APWA Section 33 05 20 requirements and the following provisions.
    1) Furnish untreated base course material unless specified otherwise by pipe manufacturer.
    2) Maximum lift thickness is 8-inches.
    3) Bedding immediately under the pipe should not be compacted, but loosely placed.
    4) Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
    5) When using concrete, provide at least Class 2,000, APWA Section 03 30 04.
D. Pipe Zone: DO NOT USE sewer rock, pea gravel, or recycled RAP aggregate in the pipe zone. Water jetting is NOT allowed.
    1) Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26 unless pipe manufacturer requires more stringent installation.
    2) Submission of quality control compaction test result data developed for the haunch zone may be requested by ENGINEER at any time. CONTRACTOR is to provide results of tests immediately upon request.
E. Flowable Fill (when required and if allowed by pipe manufacturer):
    1) Place the controlled low strength material, APWA Section 31 05 15.
    2) Prevent pipe flotation by installing in lifts and providing pipe restraints as required by pipe manufacturer.
    3) Reset pipe to line and grade if pipe "floats" out of position.



ELEVATION VIEW

APWA directs users to the Storm Drain section for Pipe Zone specifications. These same standards apply to culinary which must meet R390-550-8(2)



SECTION A-A

INSTALLATION

CONCRETE PIPE: FOLLOW ASTM C 1479
"STANDARD PRACTICE FOR INSTALLATION OF PRECAST CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE USING STANDARD INSTALLATIONS.

PLASTIC PIPE: FOLLOW ASTM D 2321
"STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS"

CORRUGATED METAL PIPE: FOLLOW ASTM A 798
"STANDARD PRACTICE FOR INSTALLING FACOTRY-MADE CORRUGATED STEEL PIPE FOR SEWERS AND OTHER APPLICATIONS.

VITRIFIED CLAY PIPE: FOLLOW ASTM C 12.
"STANDARD RECOMMENDED PRACTICE FOR INSTALLING VITRIFIED CLAY PIPE LINES.

Fire hydrant with valve

1. GENERAL

A. Before backfilling, secure inspection of installation by ENGINEER.
B. Additional requirements are specified in APWA Section 33 11 00.

2. PRODUCTS

A. Hydrant: Dry barrel, AWWA C502.
B. Thrust Bocks: Concrete Class 4000, APWA Section 03 30 04.
C. Reinforcement: Deformed, 60 ksi yield grade steel, ASTM A615.
D. Backfill: APWA Section 31 05 13. Maximum particle size 2-inches.
   1) Sewer Rock: ASTM Size No. 3 (2" to 1") or larger.
   2) Other Type of Common Fill: CONTRACTOR's choice,.
E. Geotextile: Stabilization-separation fabric, APWA Section 31 05 19.

3. EXECUTION

A. Installation:
   1) Provide at least 1 cubic yard of sewer rock around drain hole at base of hydrant spool. Wrap geotextile around sewer rock and tape geotextile to hydrant spool to prevent silting of sewer rock.
   2) Paint fire hydrant to agency's fire hydrant paint code.
   3) Apply non-oxide grease to all buried metal surfaces. Wrap with polyethylene sheet and tape wrap.
   4) Notify fire department as soon as hydrant is placed in service.
B. Thrust Blocks:
   1) Before pouring concrete, wrap pipe system with polyethylene sheet to prevent bonding of concrete to pipe system.
   2) Not required for flange or welded pipe systems.
C. Backfill: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

Utah Division of Drinking Water Rules
R309-550-5. Water Main Design
(5) Fire Protection.
d) Fire hydrant laterals shall be a minimum of 6 inches in diameter

R309-550-6. Component Materials and Design
(5) Fire Hydrants.
a) Hydrant drains shall not be connected to, or located within, 10 feet of sanitary sewers. Where possible, hydrant drains shall not be located within 10 feet of storm drains.
b) Auxiliary valves shall be installed in all hydrant leads.
c) Hydrant drains shall be installed with a gravel packet or dry well unless the natural soils will provide adequate drainage.

3/4" and 1" meter

1. GENERAL

A. In street surfaces or other vehicular traffic areas (like driveway approaches), Install the same type of meter box as required for 1 1/2" and 2" service meters. See Plan 522.

B. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.

B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.

C. Castings: Grey iron class 35 minimum per ASTM A48, coated with asphalt based paint or better.

3. EXECUTION

A. Meter Placement:

1) All meters are to be installed in the park strip or within 7 feet of the property line (street side).

2) Do not install meters under driveway approaches, sidewalks, or curb and gutter.

B. Meter Box: Set box so grade of the frame and cover matches the grade of the surrounding surface.

C. Pipe Outside of Right-of-Way: Coordinate with utility agency or adjacent property owner for type of pipe to be used outside of right-of-way.

D. Inspection: Before backfilling around meter box, secure inspection of installation by ENGINEER.

E. Base Course and Backfill Placement: Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26. Maximum lift thickness before compaction is 8-inches.

Utah Division of Drinking Water Rules
R309-550-11. Service Connections and Plumbing
(4) Service Lines.

a) Service Lines shall be capped until connected for service.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

1 1/2" and 2" meter

1. GENERAL

A. Turbine meters are required on all systems used exclusively for irrigation or fire protection.
B. Where domestic use is applicable, use a standard meter.
C. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Castings: Grey iron class 35 minimum per ASTM A48, coated with asphalt based paint or better.

3. EXECUTION

A. Meter Placement:
   1) All meters are to be installed in the park strip or within 7 feet of the property line (street side).
   2) Do not install meters under driveway approaches, sidewalks, or curb and gutter.
   3) In new construction, install meter at center of lot or per agency requirements.
B. Meter Box: Set box so grade of the frame and cover matches the grade of the surrounding surface.
. C. Bypass Valve: Lock in off position.
D. Blocking: Use clay brick or concrete block.
E. Concrete Box:
   1) Center frame and cover over water meter.
   2) Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.
F. Pipe Outside of Right-of-Way: Coordinate with utility agency or adjacent property owner for type of pipe to be used outside of right-of-way.
G. Base Course and Backfill Placement: Maximum lift thickness before compaction is 8-inches. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

Utah Division of Drinking Water Rules
R309-550-11. Service Connections and Plumbing
(4) Service Lines.
a) Service Lines shall be capped until connected for service.

R309-550-6. Component Materials and Design.
(7) Chamber Designs
a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.
b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

3" and 4" Compound meter with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2 PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

6" Compound meter with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2 PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

8" Compound meter with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2. PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

10" Turbo meter with 6" turbo meter and 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2 PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

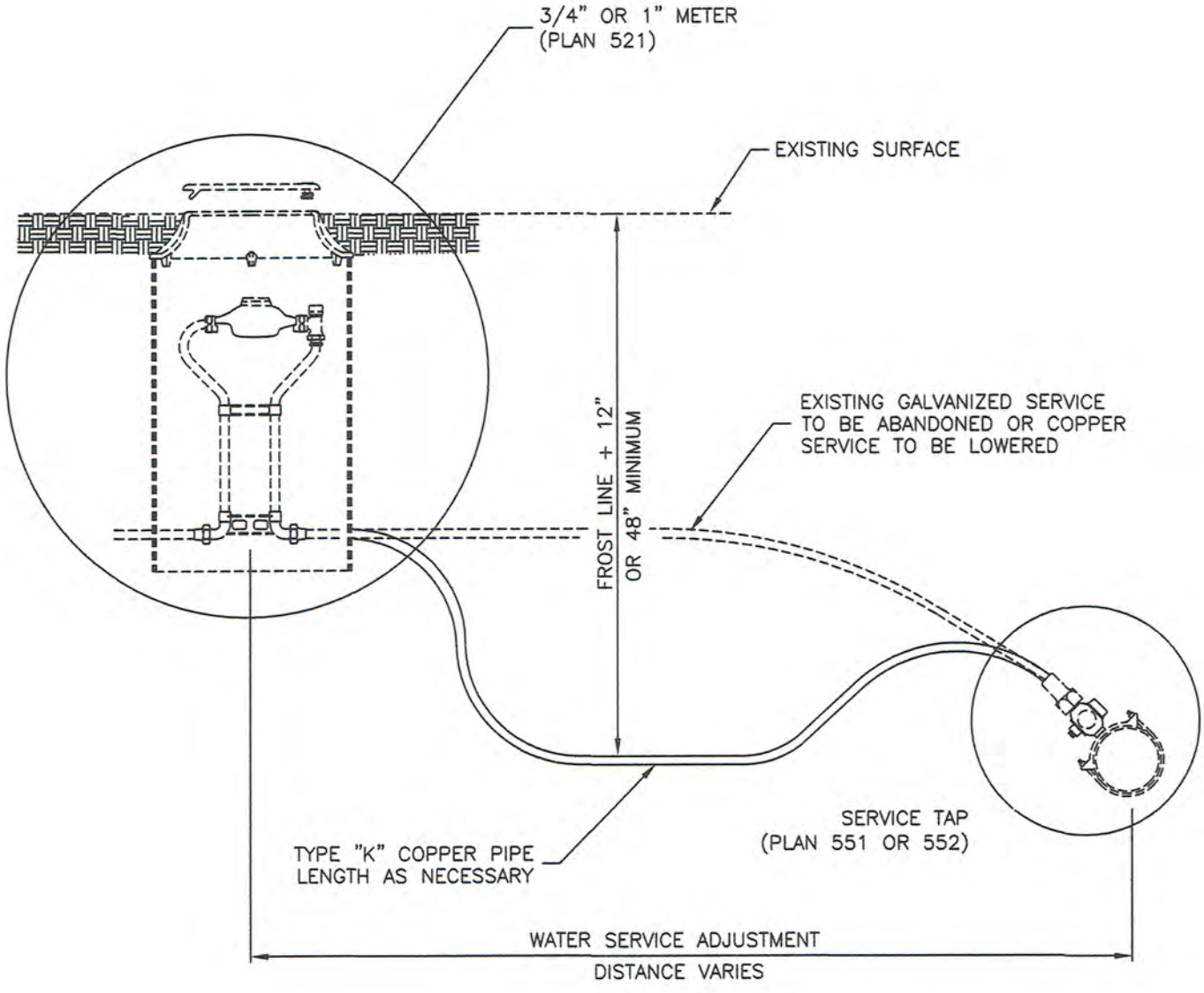
(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

Utah Division of Drinking Water Rules
R309-550-11. Service Connections and Plumbing
(4) Service Lines.

a) Service Lines shall be capped until connected for service.



Water main line loop

1. GENERAL

A. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Piping: Match existing pipe, fittings, coupling sizes and materials.
C. Thrust Bocks: Concrete Class 4000, APWA Section 03 30 04.
D. Reinforcement: Deformed, 60 ksi yield grade steel, ASTM A 615.
E. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
F. Grease: Non-oxide poly-FM.
G. Couplings: Brass.

3. EXECUTION

A. Thrust Blocks: Not required for flanged or welded pipe systems. Before pouring thrust block concrete, wrap pipe system in plastic sheet to prevent bonding of concrete to pipe system.
B. Fittings: Use copper to copper flare fittings or copper to iron pack joint coupling with locking split clamp on iron pipe side and flare on copper side.
C. Grease: Apply grease to all buried metal surfaces. Wrap with polyethylene sheet and tape wrap.
D. Steel Spool: Weld in place and provide slip on flange except when fitting in pipe system could move. Epoxy line per AWWA C210, C213, and coated per AWWA C208, or C214.
E. Location: Loop water mains over top of sewer lines.
F. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

(1) Basic Separation Standards.

(a) The horizontal distance between water lines and sanitary sewer lines shall be at least10 feet. Where a water main and a sewer line must cross, the water main shall be at least 18 inches **above** the sewer line. Separation distances shall be measured edge-to-edge (i.e., from the nearest edges of the facilities).

(b) Water mains and sewer lines shall not be installed in the same trench.

(c) Where local conditions make it impossible to install water or sewer lines at separation distances required by subsection (a), the sewer pipes are in good condition, and there is not high groundwater in the area, it may be acceptable if the design includes a minimum horizontal separation of 6 feet and a minimum vertical clearance of 18 inches with the waterline being above. In order to determine whether the design is acceptable, **the following information shall be submitted as part of the plans for review:**

(i) reason for not meeting the minimum separation standard;
(ii) location where the water and sewer line separation is not being met;
(iii) horizontal and vertical clearance that will be achieved;
(iv) sewer line information including pipe material, condition, size, age, type of joints, thickness or pressure class, whether the pipe is pressurized or not, etc.;
(v) water line information including pipe material, condition, size, age, type of joints, thickness or pressure class, etc.;
(vi) ground water and soil conditions; and,
(vii) any mitigation efforts.

(d) If the basic separation standards as outlined in subsections (a) though (c) above cannot be met, an exception to the rule can be applied for with additional mitigation measures to protect public health, in accordance with R309-105-6(2)(b).

STYLE A

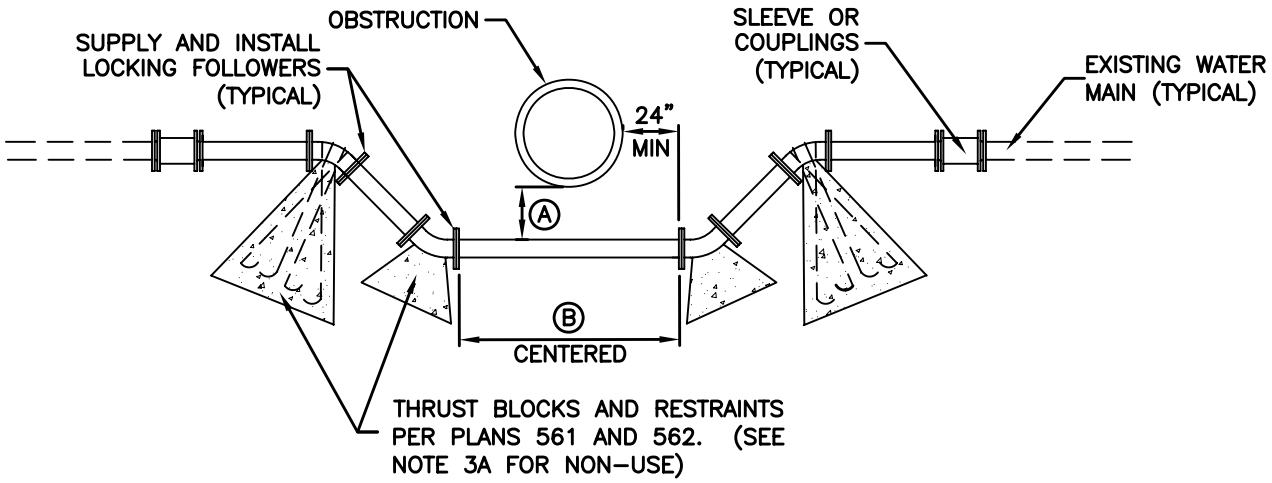


TABLE OF DIMENSIONS		
OBSTRUCTION	Ⓐ	Ⓑ
SEWER	18" MIN	20' MIN
OTHER	12" MIN	O.D. + 48"

Not allowed under sewer w/o an exception granted from UDDW R309-550-7(1)(d)

Water main line loop

1. GENERAL

A. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Piping: Match existing pipe, fittings, coupling sizes and materials.
C. Thrust Bocks: Concrete Class 4000, APWA Section 03 30 04.
D. Reinforcement: Deformed, 60 ksi yield grade steel, ASTM A 615.
E. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
F. Grease: Non-oxide poly-FM.

3. EXECUTION

A. Thrust Blocks: Not required for flange or welded pipe systems. Before pouring thrust block concrete, wrap pipe system with plastic sheet to prevent bonding of concrete to pipe system.
B. Fittings: Use copper to copper flare fittings or copper to iron pack joint coupling with locking split clamp on iron pipe side and flare on copper side. All couplings to be brass.
C. Grease: Apply grease to all buried metal surfaces. Wrap with polyethylene sheet and tape wrap.
D. Steel Spool: Weld in place and provide slip on flange except when fitting in pipe system could move. Epoxy line per AWWA C210, C213, and coated per AWWA C208, or C214.
E. Location: Loop water mains over top of sewer lines.
F. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

(1) Basic Separation Standards.

(a) The horizontal distance between water lines and sanitary sewer lines shall be at least10 feet. Where a water main and a sewer line must cross, the water main shall be at least 18 inches **above** the sewer line. Separation distances shall be measured edge-to-edge (i.e., from the nearest edges of the facilities).

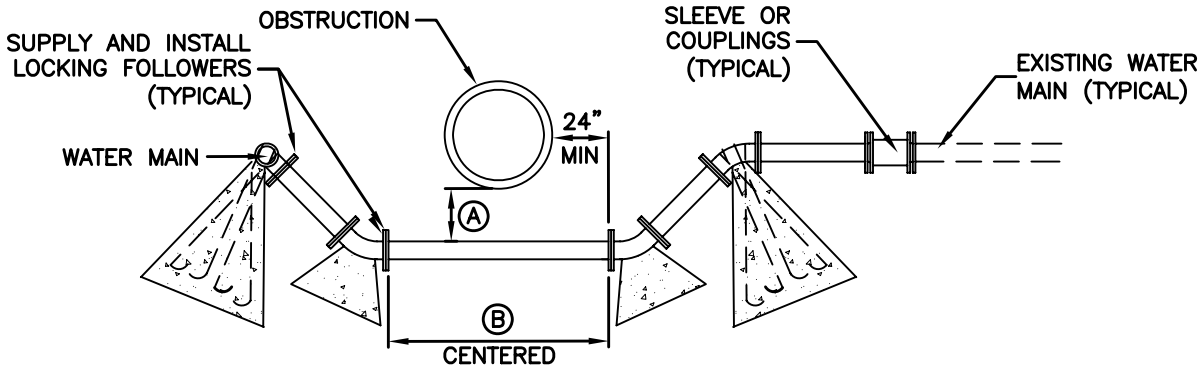
(b) Water mains and sewer lines shall not be installed in the same trench.

(c) Where local conditions make it impossible to install water or sewer lines at separation distances required by subsection (a), the sewer pipes are in good condition, and there is not high groundwater in the area, it may be acceptable if the design includes a minimum horizontal separation of 6 feet and a minimum vertical clearance of 18 inches with the waterline being above. In order to determine whether the design is acceptable, **the following information shall be submitted as part of the plans for review:**

(i) reason for not meeting the minimum separation standard;
(ii) location where the water and sewer line separation is not being met;
(iii) horizontal and vertical clearance that will be achieved;
(iv) sewer line information including pipe material, condition, size, age, type of joints, thickness or pressure class, whether the pipe is pressurized or not, etc.;
(v) water line information including pipe material, condition, size, age, type of joints, thickness or pressure class, etc.;
(vi) ground water and soil conditions; and,
(vii) any mitigation efforts.

(d) If the basic separation standards as outlined in subsections (a) though (c) above cannot be met, an exception to the rule can be applied for with additional mitigation measures to protect public health, in accordance with R309-105-6(2)(b).

STYLE B AND C

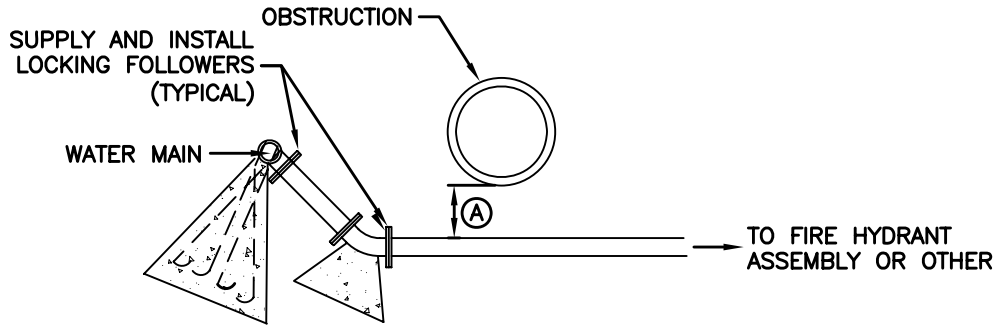


THRUST BLOCKS AND RESTRAINTS PER PLANS 561 AND 562. (SEE NOTE 3A FOR NON-USE)

Not allowed under sewer w/o exception granted from UDDW R309-550-7(1)(d)

TABLE OF DIMENSIONS		
OBSTRUCTION	Ⓐ	Ⓑ
SEWER	18" MIN	20' MIN
OTHER	12" MIN	O.D. + 48"

STYLE B



THRUST BLOCKS AND RESTRAINTS PER PLANS 561 AND 562. (SEE NOTE 3A FOR NON-USE)

Not allowed under sewer w/ o excepton granted from UDDW R309-550-7(1)(d)

TABLE OF DIMENSIONS	
OBSTRUCTION	Ⓐ
SEWER	18" MIN
OTHER	12" MIN

STYLE C

Water main line loop

3/4" and 1" Service taps

1. GENERAL

A. Before backfilling around taps, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Tape: Teflon tape is required on all taps.

3. EXECUTION

A. Tapping: Place taps a minimum of 36-inches apart. Use a tapping tool which is sized corresponding to the size of the service line to be installed. No taps within 36-inches of end of pipe.
B. PVC or AC Pipe: A service saddle clamp is required on all PVC and AC pipe taps unless specified otherwise.
C. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

R309-550-11. Service Connections and Plumbing

(4) Service Lines.

(a) Service lines shall be capped until connected for service.

1 1/2" and 2" Service taps

1. GENERAL

A. Before backfilling around taps, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Tape: Teflon tape is required on all taps.

3. EXECUTION

A. Tapping: Place taps a minimum of 36-inches apart. Use a tapping tool that is sized corresponding to the size of the service line to be installed. No taps within 36-inches of end of pipe.
B. PVC or AC Pipe: A service saddle clamp is required on all PVC and AC pipe taps unless specified otherwise.
C. Backfill: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
D. Blocks: Clay brick or concrete block required under valve box to assure a 1" or greater space between the box and the corporation stop and pipe assembly.

R309-550-11. Service Connections and Plumbing

(4) Service Lines.

(a) Service lines shall be capped until connected for service.

Detector check valve with 3/4" bypass meter

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2. PRODUCTS

A. Blocking: Clay brick or concrete block.
B. Small Fittings: Brass. Do not use galvanized materials.
C. Grade Ring: 6-inch concrete grade ring required in roadways, Plan 361.
D. Spools: Length of flange x plain end spool vary.

SPOOLS	
Pipe Size	Pipe Length
6"	10"
8"	8 1/4"
10"	6"

3. EXECUTION

A. Install control valve with valve box adjacent to main.
B. Concrete Box: Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal. Center frame and cover over water meter.
C. Valve Option: The valve in the box (item B legend) closest to the main, and the top section of the valve box (item J legend) may be eliminated at the discretion of the ENGINEER.

R309-550-6. Component Materials and Design.

(7) Chamber Drainage

(a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

(b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

6" Pressure reducing valve with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2. PRODUCTS

A. Small Fillings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Taps: Provide two 3/4" I.P. taps with plugs for pressure gages.
D. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Center frame and cover over water meter.
B. Apply tape wrap to the exterior of all galvanized pipe per AWWA C209.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Drainage

(a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

(b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

Air release assembly

1. GENERAL

A. This drawing detail is applicable to water main piping less than 16-inches diameter.
B. PCCP, steel, MLAC and other water main pipe materials will require special detail or design drawings. Submit the design and detail drawings and materials to the ENGINEER for review before installation.
C. Installation in areas of high ground water or potential for water entering the vent pipe will require a special design to be provided by the ENGINEER.
D. Before backfilling around the assembly, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.
C. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
D. Concrete: Class 4000, APWA Section 03 30 04.
E. Manhole: Riser, ASTM C 478.
F. Reinforcement: Deformed, steel, ASTM A 615. Give bars an epoxy coating at least 15 mils thick. Minimum stress yield strength of steel tie-down bars is 70,000 ksi.
G. Small Fittings: Brass. Do not use galvanized materials.
H. PVC Pipe and Fittings: Schedule 40, APWA Section 33 05 07.
I. Water Tight Wall Seal: Waterproof, compressible.

3. EXECUTION

A. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
B. Apply tape wrap to the exterior of all buried steel pipe per AWWA C209.
C. Concrete Placement: APWA Section 03 30 10. Provide 1/2-inch radius edges. Apply a broom finish. Apply a curing agent.
D. Service saddle is required on all PVC and AC pipe taps unless specified otherwise. Ductile iron and cast iron pipe may be direct tapped.
E. Seal manhole joints water-tight and ground flush with interior wall.
F. Follow applicable AWWA and NSF standards when connecting piping.
G. If diameter of air relief valve is greater than 2-inches, provide piping to match its diameter from water main connection to open to air.

R309-550-6. Component Materials and Design.

(7) Chamber Drainage

(a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

(b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

R309-550-6. Component Materials and Design.

(6) Air Relief Valves and Blow-offs.

(a) At high points in water mains where air can accumulate, provisions shall be made to remove air by means of hydrants or air relief valves.

(b) The open end of the air relief vent pipe from automatic valves shall be provided with a #14 mesh, non-corrodible screen and a downward elbow, and where possible, be extended to at least one foot above grade. Alternatively, the open end of the pipe may be extended to as little as one foot above the top of the pipe if the valve's chamber is not subject to flooding, or if it meets the requirements of (7) Chamber Drainage.

(c) Blow-offs or air relief valves shall not be connected directly to a sewer.

(d) Adequate number of hydrants or blow-offs shall be provided to allow periodic flushing and cleaning of water lines.

(e) The air relief valve shall be installed in a manner to prevent it from freezing. A shut-off valve shall be provided to permit servicing of an air relief valve.

Pressurized irrigation water and potable water interface

1. GENERAL

A. There may be up to 20 psi loss of head through the reduced pressure backflow preventer (RPBP) device. This is normal and the agency should expect a decrease in area coverage. Agency should design or modify the system for the lower pressure.

2. PRODUCTS

A. Piping Materials.
   1) All above ground parts are to be copper or galvanized iron only.
   2) Below ground parts on the non-potable water system may be made of PVC or polyethylene at the agency's discretion.

B. Cam Lock Fittings: Provide 3/4" long male insert attached to the flexible hose.

3. EXECUTION

A. Separate Systems: Connect hose to only one system at a time. The other system is to remain separate. Do not direct connect potable and non-potable water systems with or without backflow prevention devices.

B. Stop and Waste Valve: Locate the valve in an area where subsurface ground water will not accumulate, or attach a drain pipe to the drain hole and drain to daylight with a non-corrodible #14 mesh screen over the end.

C. Testing: The RPBP device requires testing within 10 days of initial installation by a licensed backflow device tester and annually thereafter or more frequently at agency's option and expense.

D. Backflow Preventer: Install the RPBP device above ground per the plumbing code. It must not be susceptible to flooding and must be accessible at all times for testing, repair, inspection, etc.

E. Stand Pipes: Provide draining and freeze protection.

F. Galvanized Pipe: Apply tape wrap to the exterior of all galvanized pipe per AWWA C209.

Should be evaluated by UDDW Cross Connection Control Manager prior to instillation

SECTION 33 05 05

DUCTILE IRON PIPE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Ductile iron pipe, couplings, fittings, and joint materials.

1.2 REFERENCES

A. **AWWA Standards**:

- C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
- C110 Ductile-Iron and Gray Iron Fittings, 3 In. Through 48 In., for Water and Other Liquids.
- C111 Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
- C115 Flanged Ductile-Iron and Gray Iron Pipe with Threaded Flanges.
- C151 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
- C600 Installation of Ductile-Iron Water Mains and Their Appurtenances.

For culinary:

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 2 PRODUCTS

2.1 PIPE AND FITTINGS

A. Buried Applications:

1. Class 52 or pressure class 350 psi ductile iron pipe, AWWA C151 with push-on joints, AWWA C111.
2. Cement lining for all pipe and fittings, AWWA C104.
3. Class 250 fittings with AWWA C110 joints.
4. Coupler with mechanical joint fittings, AWWA C104, C110, and C111.
5. Rubber gasket slip-on pipe joints, AWWA C111 with gasket lubricant.

SECTION 33 05 06

POLYETHYLENE PIPE

For culinary

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Polyethylene pipe, couplings, fittings and joint materials.

1.2 REFERENCES

A. **AASHTO Standards**:

- M 252 Corrugated Polyethylene Drainage Pipe.
- M-294 Corrugated Polyethylene Drainage Pipe 300-1200 mm Diameter.
- MP7-97 Corrugated Polyethylene Pipe – 1350 and 1500 mm Diameter.

B. **ASME Standards**:

- B1.1 Unified Inch Screw Threads (UN and UNR Thread Form), Supplement.

C. **ASTM Standards**:

- A 307 Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
- D 2239 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter.
- D 2321 Underground Installation of Flexible Thermoplastic Sewer Pipe.
- D 2657 Heat Joining of Thermoplastic Pipe and Fittings.
- D 2774 Underground Installation of Thermoplastic Pressure Piping.
- D 3261 Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
- D 3350 Polyethylene Plastics Pipe and Fittings Materials.
- F 477 Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- F 1055 Electofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing.

SECTION 33 05 07

POLYVINYL CHLORIDE PIPE

for Culinary

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Polyvinyl chloride pipe, couplings, fittings and joint materials.

1.2 REFERENCES

A. **ASTM Standards**:

D 1784 Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

D 2241 Poly (Vinyl Chloride) (PVC) Pressure Rated Pipe (SDR - Series).

D 2321 Underground Installation of Flexible Thermoplastic Sewer Pipe.

D 2412 Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

D 2564 Solvent Cement for Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

D 2729 Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

D 2774 Underground Installation of Thermoplastic Pressure Piping.

D 2855 Making Solvent Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.

D 3034 Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

D 3139 Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.

D 3212 Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

F 656 Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

F 679 Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

F 949 Poly(vinyl Chloride) (PVC) Corrugated sewer Pipe with a Smooth Interior and Fittings.

SECTION 33 05 09

STEEL PIPE - LINED AND COATED

For culinary

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Cement mortar lined and coated steel pipe, couplings, fittings, and joint materials in sizes four (4) inches through 120 inches.

1.2 REFERENCES

A. **ASTM Standards**:

A 82	Steel Wire, Plain, for Concrete Reinforcement.
A 283	Low and Intermediate Tensile Strength Carbon Steel Plates.
A 370	Mechanical Testing of Steel Products.
A 569	Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip, Commercial Quality.
A 570	Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.
C 33	Concrete Aggregates.
C 150	Portland Cement.

R309-550-8. Installation of Water Mains.

(1) Standards.

The specifications shall incorporate the provisions of the manufacturer's recommended installation procedures or the following applicable standards:

(d) For Steel pipe, AWWA Standard C604-11, Installation of Buried Steel Water Pipe- 4 inch and Larger

B. **AWWA Standards**:

C200	Steel Water Pipe 6 In. and Larger.
C205	Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 In. and Larger - Shop Applied.
C208	Fabricated Steel Water Pipe Fittings.
C303	Reinforced Concrete Pressure Pipe, Steel Cylinder Type, Pre-Tensioned, for Water and Other Liquids.

1.3 SUBMITTALS

A. Design Summary: Before any fabrication, submit a design summary for each size and class of pipe and line layout drawings or line schedules that show the location of each section of pipe and each special fitting to be furnished.

B. Shop Drawings of special fitting and outlets.

3.1 PREPARATION

A. Implement the traffic control plan requirements, Section 01 55 26.

B. Identify required line, levels, contours, and datum.

C. Stake and flag locations of underground utilities.

D. Verify:

1. Backfill material meets gradation requirements.
2. Foundation walls are braced to support surcharge forces imposed by backfilling operations, areas to be backfilled are free of debris, snow, ice or water.
3. Trench bottom is not frozen.

E. If ground water is in the intended backfill zone, dewater.

3.2 SUBGRADE

A. Protect subgrade from desiccation, flooding, and freezing.

B. Before backfilling over Subgrade, get ENGINEER's review of Subgrade surface preparations.

C. If Subgrade is not readily compactable, get ENGINEER's permission to stabilize the subgrade:

1. Excavation for Subgrade stabilization is incidental work, Section 31 23 16.
2. Place geotextile fabric. Place acceptable fill in lifts. Compact.

3.3 PROTECTION

A. During installation or repair, plug end of pipe or fitting except when installing next section of pipe or fitting.

B. Movement of construction machinery over Work at any stage of construction is solely at CONTRACTOR's risk.

3.4 GENERAL BACKFILLING REQUIREMENTS

A. Avoid injuring and displacement of conduit, pipe and structures while compacting soil or operating equipment next to pipeline.

R309-550-8. Installation of Water Mains.

(2) Bedding.

A continuous and uniform bedding shall be provided in the trench for all buried pipe. Stones larger than the backfill materials described below shall be removed for a depth of at least 6 inches below the bottom of the pipe.

B. Place geotextile fabrics; Section 31 05 19.

C. Do not damage corrosion protection on pipe.

D. Repair or replace damaged pipe at no additional cost to OWNER.

E. Withdraw sheathing, shoring, piles, and similar supports as backfilling progresses. Backfill and compact all holes left by removals.

F. Provide sufficient water quality facilities to protect downstream fish and wildlife, and to meet State water quality requirements.

G. Water settling of trench backfill is not permitted. "Jetting" of trench backfill is prohibited.

3.5 PIPE ZONE

A. Maintain uniform foundation along barrel of pipe with sufficient relief for joint connections.

B. Use backfill materials meeting pipe manufacturer's recommendations.

1.3 PERFORMANCE REQUIREMENTS

A. Depth of Cover:

1. Minimum as indicated in local building code from top of pipe to ground surface. 72 inches maximum unless ENGINEER authorizes otherwise.
2. If less cover, provide additional protection to withstand frost and external loads.

B. Remove any section of pipe already placed that is found to be defective or damaged. Relay or replace without additional cost to OWNER.

1.4 SUBMITTALS

A. Product data: Submit manufacturer's technical product data and installation instructions.

B. Commissioning: Submit testing data indicated in Section 33 08 00.

C. Record Documents, Section 01 78 39: Include details of underground structures, connections, thrust blocks and anchors. Show interface and spatial relationship between piping and adjacent structures.

D. Operating and Maintenance: Submit data, Section 01 78 23. Include maintenance data, parts list, product data and Shop Drawings.

1.5 SITE CONDITIONS

A. Minimize neighborhood traffic interruptions. Barricade stockpiles.

B. Secure acceptance of pipeline lateral tie-in work.

C. Repair public and private facilities damaged by CONTRACTOR.

D. Do not operate any currently active water valve until its owner and water company's permission is secured.

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 2 PRODUCTS

2.1 PIPES AND FITTINGS

A. Provide piping materials and factory fabricated piping products of sizes, types, pressure ratings, and capacities indicated. Use only NSF approved products in drinking water systems. All such products shall be appropriately stamped with the NSF logo. Just NSF isn't sufficient, NSF 61

B. Where not indicated, provide proper selection as determined by installer and acceptable to ENGINEER to comply with installation requirements.

C. Provide sizes and types of equipment connections for fittings of material that matches pipe material used in the piping system. Where more than one type of material or product option is indicated, selection is installer's choice.

D. Provide pipe fittings and accessories of same material and weight or class as pipe, with joining method indicated or recommended by manufacturer.

2.2 VALVES

2.8 ACCESSORIES

A. Bolts, Nuts, Washers: Steel, Section 05 05 23.

B. Anchorages: Provide anchorages for tees, wyes, crosses, plugs, caps, bends, valves, and hydrants. After installation, apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of ferrous anchorages.

C. Corporation Stops: All bronze, straight threads, full port, ball valve.

D. Hydrant and Valve: Dry barrel, Section 33 12 19.

E. Water Meter and Valve: Section 33 12 19.

F. Grease: Non-oxide food grade required where in contact with potable water. Non-oxide poly-fm for all exposed buried metal surfaces for bolts, nuts, washers, restraints, etc.

G. Polyethylene Sheet: Six (6) mil thick minimum.

H. Joint Restraints: Acceptable to ENGINEER prior to installation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify trench excavation is ready to receive work, and dimensions, and elevations are as required.

B. Commencing installation means acceptance of existing conditions.

3.2 PREPARATION

A. Excavation, Section 31 23 16. Hand trim to required elevations. Correct over excavations.

B. Remove stones or other hard matter that manufacturer stipulates may damage pipe during embedment or impede backfilling or compaction.

C. Examine areas and conditions under which materials and products are to be installed. Do not proceed with system installation until unsatisfactory conditions have been corrected in manner acceptable to system installer.

D. Clearly identify and promptly set aside defective or damaged pipe.

E. Use pipe cutting tool acceptable to pipe manufacturer.

3.3 LAYOUT

A. Comply with Utah administrative rules R309-550. As a minimum locate potable water pipe at least 18 inches vertical and 10 feet horizontal edge to edge between water and sewer lines. Place water lines above sewer line. Requires UDDW Approval

B. Where potable water pipe crosses under gravity-flow sewer lines, fully encase sewer pipe in concrete for a distance at least 10 feet each side of the crossing:

1. Do not locate any joint in the water line within 36 inches of the crossing.

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

(1) Basic Separation Standards.

(a) The horizontal distance between water lines and sanitary sewer lines shall be at least10 feet. Where a water main and a sewer line must cross, the water main shall be at least 18 inches **above** the sewer line. Separation distances shall be measured edge-to-edge (i.e., from the nearest edges of the facilities).

(b) Water mains and sewer lines shall not be installed in the same trench.

(c) Where local conditions make it impossible to install water or sewer lines at separation distances required by subsection (a), the sewer pipes are in good condition, and there is not high groundwater in the area, it may be acceptable if the design includes a minimum horizontal separation of 6 feet and a minimum vertical clearance of 18 inches with the waterline being above. In order to determine whether the design is acceptable, **the following information shall be submitted as part of the plans for review:**

(i) reason for not meeting the minimum separation standard;
(ii) location where the water and sewer line separation is not being met;
(iii) horizontal and vertical clearance that will be achieved;
(iv) sewer line information including pipe material, condition, size, age, type of joints, thickness or pressure class, whether the pipe is pressurized or not, etc.;
(v) water line information including pipe material, condition, size, age, type of joints, thickness or pressure class, etc.;
(vi) ground water and soil conditions; and,
(vii) any mitigation efforts.

(d) If the basic separation standards as outlined in subsections (a) though (c) above cannot be met, an exception to the rule can be applied for with additional mitigation measures to protect public health, in accordance with R309-105-6(2)(b).

SECTION 33 12 16
WATER VALVES

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Gate, butterfly, plug, check, pressure reducing, pressure relief, control valves and their installation.

1.2 REFERENCES

A. **AWWA Standards**:

C111 Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.

C504 Rubber-Seated Butterfly Valves.

C508 Swing-Check Valves for Waterworks Service, 2 In. Through 24 In. NPS.

C509 Resilient-Seated Gate Valves for Water and Sewerage Systems.

C550 Protective Interior Coatings for Valves and Hydrants.

C600 Installation of Ductile-Iron Water Mains and Their Appurtenances.

1.3 SUBMITTALS

A. Provide technical information for evaluating quality of valve. As a minimum include dimensions, weights, materials lists and operation charts.

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 2 PRODUCTS

2.1 VALVES - GENERAL

A. Underground:

1. Less than three (3) inches: Screwed ends.
2. 3 inches and larger: Flanged or mechanical joint ends. Non-rising stem. Two inches square operating nut. Low alloy steel bolts, AWWA C111.

1.5 **JOB CONDITIONS**

A. Notify appropriate fire department as soon as hydrant is removed or placed in service.

PART 2 PRODUCTS

R309-550-5. Water Main Design.

(5) Fire Protection.

d) Fire hydrant laterals shall be a minimum of 6 inches in diameter.

2.1 **DRY-BARREL FIRE HYDRANT**

A. AWWA C502.

B. Cast iron compression type, opening against pressure and closing with pressure, base valve design, 150 psi working pressure, with 1/4 inch diameter minimum tapping and bronze plug in standpipe:

1. Size: 5-1/4 inch valve opening.
2. Direction to Open Hydrant: Counterclockwise.
3. Size and Shape of Operating and Cap Nuts: Pentagon. 1-1/2 inch point to flat.
4. Hose Nozzles: Two 2-1/2 inch national standard thread, cap, gasket and chain.
5. Pumper Nozzle: One 4-1/2 inch national standard thread, cap, gasket and chain.
6. Depth of Burial: 48 inches or consistent with main depth.
7. Connection to Main: Six (6) inches flanges or mechanical joint.
8. Pressure: 150 psi working pressure and 300 psi hydrostatic pressure.
9. Inlet Bottom Connection: Six (6) inches mechanical joint or flanged in accordance with AWWA C110 and AWWA C111, designed to allow separation at the sidewalk or ground level when hydrant is sheared off.
10. Automatic Drain: Opens as the hydrant is closed.

2.2 **PIPE AND FITTINGS**

A. Ductile Iron: Section 33 05 05. Standard drilling with joints per AWWA C110.

B. PVC: Section 33 05 07.

C. Steel: Section 33 05 09. Standard drilling, 150 lb.

D. Spool: Schedule 40 steel, epoxy lined, exterior wrapped with minimum six (6) mil thick polyethylene sheet and tape wrap, AWWA C210 or C213 and C209 or C214 with two welded in place 150 lb. steel ANSI B 16.5 slip on flanges.

2.3 **VALVES**

A. Gate Valve: Section 33 12 19.

B. If indicated, furnish an auxiliary six (6) inch diameter valve with end connections as required.

2.3 **SERVICE LINE, VALVES, AND FITTINGS**

A. Service Pipe: Copper, Section 33 05 03 or smooth wall polyethylene, Section 33 05 06. The service pipe between main and meter and to a point not less than 1 foot from the public way side of the property line cannot exceed the meter size.

B. Service Valves and Fittings: AWWA C800.

C. Meter Setters: Brass, with angle fittings, saddle nuts and gaskets.

D. Corporation Stops and Angle Valves: Invert key design.

E. Bypasses: Not allowed on any service installation without approval of ENGINEER.

2.4 **METER BOXES**

A. Meters to 1" Service: Plastic or asphalt-dipped corrugated metal. Fiber meter boxes not acceptable.

B. Meters 1-1/2" and Larger: Reinforced concrete with a minimum clearance of 12" from each side of meter plumbing.

C. Cover: Ductile or cast iron with utility inscription

PART 3 EXECUTION

3.1 **INSTALLATION**

A. Install meter box, meter setters, valves, etc. at indicated locations. If not indicated, install in street right-of-way parking strip or at a location approved by ENGINEER.

B. Install meter setters level and horizontal. Provide suitable pipe lengths to prevent stress.

C. DO NOT operate utility agency's main line valves. Contact agency if valves are to be operated. If required by water utility agency notify affected water users, Section 01 31 13.

D. OWNER Supplied Meters: Installed by CONTRACTOR unless indicated otherwise.

END OF SECTION

R309-550-11. Service Connections and Plumbing

(4) Service Lines.

(a) Service lines shall be capped until connected for service.

SECTION 33 13 00
DISINFECTION

PART 1 GENERAL

1.1 **SECTION INCLUDES**
- A. Disinfection of potable water system.
- B. Test and report results.

1.2 **REFERENCES**
- A. **AWWA Standards**:
  - A100 Water Wells.
  - B300 Hypochlorites.
  - B301 Liquid Chlorine.
  - C651 Disinfecting Water Mains.
  - C652 Disinfection of Water-Storage Facilities.
- B. **State of Utah Standards**:

  Public Drinking Water Regulations, ~~Part 2, Section 12~~ R309-520: Facility Design and Operation: Disinfection.

1.3 **DEFINITIONS**
- A. **Disinfectant Residual**: The quantity of disinfectant in treated water.
- B. **ppm**: Parts per million.

1.4 **SUBMITTALS**
- A. CONTRACTOR's evidence of experience in disinfection.
- B. Bacteriological laboratory's certification.
- C. Disinfection Report: Three (3) copies containing:
  1. Date issued.
  2. Project name and location.
  3. Treatment contractor's name, address and phone number.
  4. Type and form of disinfectant used.
  5. Time and date of disinfectant injection started.
  6. Time and date of disinfectant injection completed.
  7. Test locations.
  8. Initial and follow-up disinfectant residuals in ppm for each outlet tested.
  9. Time and date of flushing start.
  10. Time and date of flushing completion.
  11. Disinfectant residual after flushing in ppm for each outlet tested.
  12. Flush water disposal location and acceptance by local agency.

PART 3 EXECUTION

3.1 PREPARATION

A. Provide necessary signs, barricades, and notices to prevent accidental exposure to disinfecting materials, consuming disinfecting water, or disturbing system being disinfected.

B. Make sure potable water system is complete, clean, and that the system to be disinfected is not connected to an existing system.

3.2 DISINFECTION OF WATER LINES

A. Use one method defined under AWWA C651 that is acceptable to ENGINEER.

B. After pressure testing per Section 33 08 00, flush system through hydrants or if a hydrant does not exist, install a tap of sufficient size to provide 2.5 feet per second flushing velocity in the line.

C. Starting at outlet closest to water source, bleed water from each outlet until chlorine residual reaches outlet. Repeat process at each outlet throughout system.

D. Collect a bacteriological water sample at end of line to be tested. If sample fails bacteriological test, flush system and retest. Continue flushing and retesting until a good sample is obtained.

E. If flushing does not produce a passing bacteriological test disperse disinfectant throughout system to obtain 10 to 25 ppm of free chlorine residual.

F. Flush the chlorinated water from the main until chlorine measurements show concentration in the water leaving the main is no higher than that generally prevailing in the system or is acceptable for domestic use.

G. After a passing bacteriological test sample is obtained, let the system relax for 24 hours. Flush and collect a subsequent bacteriological sample for testing. If the subsequent test passes then water line is acceptable.

R309-515-6. Ground Water - Wells

(11) Well Disinfection.

Every new, modified, or reconditioned well including pumping equipment shall be disinfected before being placed into service for drinking water use. These shall be disinfected according to AWWA Standards C654-03 and A100-06 as modified to incorporate the following as a minimum standard:

3.3 DISINFECTION OF CULINARY WELLS

A. Use one method defined under AWWA A100 that is acceptable to ENGINEER.

B. Do not start disinfection until well is thoroughly cleaned.

C. Use a disinfecting solution containing a minimum of 50 ppm residual chlorine.

D. Flush system after disinfection.

SECTION 33 16 13

WELDED STEEL WATER TANK

R309-545-20. *Tank Standards*

(2) NSF International Standards.

(a) NSF 60, Drinking Water Treatment Chemicals - Health Effects.

(b) NSF 61, Drinking Water System Components - Health Effects.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. On grade welded steel water storage tank.

B. Foundation and ring wall construction.

C. Testing requirements.

1.2 REFERENCES

A. **ASME Standards**:

Boiler and Pressure Vessel Code.

B. **AWWA Standards**:

D100 Welded Steel Tanks for Water Storage.

1.3 QUALITY ASSURANCE

A. Workmanship, Section 01 43 00.

B. Welder Certification:

1. Use only welders qualified in all positions by ASME Boiler and Pressure Vessel Code.
2. Maintain a record of welds and welders employed on each joint.
3. Provide a welding supervisor independent of the tank erection foreman's jurisdiction.

1.4 SUBMITTALS

A. List of five (5) tanks, including name of owner, size, location, and year completed.

B. Certification of welders who will be performing welding.

C. Within 30 days after award of contract, furnish two (2) sets of design calculations and four (4) sets of detail drawings of the tank. Furnish drawings prepared by a licensed design professional.

PART 2 PRODUCTS

2.1 GENERAL

A. Furnish a steel tank that is fabricated and erected per AWWA D100 and governing Laws and Regulations.

B. Furnish the tank per Appendix C of AWWA D100. Use a design temperature based on a low one (1) day mean temperature of -10 deg F if not indicated elsewhere.

2.2 TANK ACCESSORIES

A. General: Furnish and install all tank accessories as indicated and as applicable below.

B. Ladder: One fixed ladder with safety cable on the exterior of the tank conforming to OSHA. Extend ladder eight (8) feet above ground surfaces to roof.

C. Shell Manholes: Two 24 inches diameter shell manholes equipped with davits or hinges located near base of tank. Furnish one manhole with a bolting flange for an exhaust fan for ventilation as indicated in AWWA D100.

R309-545-14. Access Openings.

Drinking water storage tanks shall be designed with reasonably convenient access to the interior for cleaning and maintenance.

(1) Height.

There shall be at least one opening above the level of the overflow, which shall be framed at least 4 inches above the surface of the roof at the opening; or if on a buried tank, shall be elevated at least 18 inches above any earthen cover over the tank. The frame shall be securely fastened and sealed to the tank roof to prevent any liquid contaminant entering the tank. Concrete drinking water storage tanks shall have raised curbs around access openings, formed and poured continuous with the pouring of the roof, and sloped to direct water away from the frame.

(2) Shoebox Lid.

The frame of any access opening shall be provided with a close-fitting, solid shoebox-type cover that extends down around the frame at least 2 inches and is furnished with a gasket(s) between the lid and frame. The horizontal surface of the tank lid shall not have any openings, cracks, or penetrations, such as a lock, key hole, or bolted handle that would allow contaminants to enter the tank.

(3) Locking Device.

The lid to any access opening shall have a locking device.

UDDW does not require "mushroom" vents

D. Vent: Mushroom vent of adequate size to handle pressure differential cause by water entering or leaving the tank at the maximum rate indicated. Do not consider the open area of overflow as venting area. Provide a special screened vent to ensure fail-safe operation if screen frosts over or is otherwise clogged. Furnish a vent that is easily dismantled to remove screens for cleaning.

R309-545-15. Venting.

Drinking water storage tanks shall be vented. The air venting capacity shall exceed the water inflow and the water outflow of the tank. Overflows shall not be considered or used as vents.

Vents provided on drinking water storage tanks shall:

(1) Inverted Vent.

Be downturned a minimum of 2 inches below any opening and shielded to prevent the entrance of contaminants.

(2) Open Venting.

On buried structures, the end of the vent discharge shall be a minimum of 24 inches above the earthen covering.

Guidance: In areas of heavy snowfall, it is recommended that the vent discharge be raised.

(3) Blockage.

Be located and sized to avoid blockage during winter conditions.

(4) Screen.

Be fitted with No. 14 mesh or finer non-corrodible screen.

(5) Screen Protector.

Vents that are 6-inch diameter or greater shall be fitted with additional heavy gage screen or substantial covering, which will protect the No. 14 mesh screen against vandalism or damage.

E. Roof Manholes: One 36 inch rainproof roof hatch with hinges and hasp for locking per AWWA D100 and a 24 inch diameter roof manhole with a removable cover.

R309-545-14. Access Openings.

Drinking water storage tanks shall be designed with reasonably convenient access to the interior for cleaning and maintenance.

(1) Height.

There shall be at least one opening above the level of the overflow, which shall be framed at least 4 inches above the surface of the roof at the opening; or if on a buried tank, shall be elevated at least 18 inches above any earthen cover over the tank. The frame shall be securely fastened and sealed to the tank roof to prevent any liquid contaminant entering the tank. Concrete drinking water storage tanks shall have raised curbs around access openings, formed and poured continuous with the pouring of the roof, and sloped to direct water away from the frame.

(2) Shoebox Lid.

The frame of any access opening shall be provided with a close-fitting, solid shoebox-type cover that extends down around the frame at least 2 inches and is furnished with a gasket(s) between the lid and frame. The horizontal surface of the tank lid shall not have any openings, cracks, or penetrations, such as a lock, key hole, or bolted handle that would allow contaminants to enter the tank.

(3) Locking Device.

The lid to any access opening shall have a locking device.

F. Overflow: Provide tank overflow. Equip overflow with an anti-vortex entrance. Extend overflow down outside of tank.

R309-545-13. Tank Overflow.

All water storage tanks shall be provided with an overflow that discharges at an elevation between 12 and 24 inches above the ground surface or the rim of the receiving basin. The discharge shall be directed away from the tank and shall not cause erosion.

(1) Diameter.

Overflow pipes shall be of sufficient capacity to permit waste of water in excess of the filling rate.

(2) Slope.

Overflow pipes shall be sloped for complete drainage.

(3) Screen.

Overflow pipes shall be screened with No. 4 mesh non-corrodible screen installed at a location least susceptible to damage by vandalism.

(4) Visible Discharge.

Overflow pipes shall be located so that any discharge is visible.

(5) Cross Connections.

Overflow pipes shall not be connected to, or discharge into, any sanitary sewer system.

G. Inlet Nozzle: Equip with a 125 psi working pressure flange connection.

H. Bottom Drain: Weld drain to tank bottom and make required connections.

I. Outlet Nozzle: Equip with a 125 psi working pressure flange connection.

R309-545-10. Internal Features.

The following shall apply to internal features of drinking water storage tanks:

(1) Drains.

(a) A means shall be provided for the draining of drinking water storage tanks.

(b) Where possible, the drain shall be separate from the outlet pipeline. If a tank drain line is provided, it shall be sloped for complete drainage.

(c) The drain shall not discharge to a sanitary sewer.

(d) If local authority allows discharge to a storm drain, the drain discharge shall have a physical clearance of at least 12 inches between the discharge end of the pipe and the overflow rim of the receiving basin.

(3) Inlet and Outlet.

(a) To minimize potential sediment in the flow from the tank, the outlet pipes from all tanks shall be located in a manner to provide a silt trap prior to discharge into the distribution system.

(b) Inlet and outlet pipes shall be configured to provide mixing and circulation.

(4) Tank Floor.

The floor of the storage tank shall be sloped to permit complete drainage of the structure.



Jed Muhlestein

Alpine City Engineer

CONSTRUCTION STANDARD SPECIFICATIONS AND DETAILS

Adopted September 26, 2023

ALPINE CITY CONSTRUCTION STANDARDS

Section 100. General Provisions.
Section 200. Improvement and Design Requirements.
Section 250. Inspection and Testing.
Section 300. Contractor Requirements.
Section 350. Earthwork and Trenches.
Section 400. Drinking Water.
Section 450. Pressurized Irrigation.
Section 500. Sanitary Sewer
Section 550. Storm, Land and Groundwater Drains.
Section 600. Streets and Pavements.
Section 650. Portland Cement Concrete and Masonry Work.
Section 700. Conduit.
Section 750. Reserved.
Section 850. Surface Irrigation Systems.
Section 900. Landscaping.
Section 950. Irrigation Sprinkler Systems.
Section 1000. Standard Details
Section 1050. Division of Drinking Water Rules

Section 100. General Provisions.

SECTION INDEX

100.010. Improvement Requirements.
- A. General.
- B. Improvements Made Before Recording.
- C. Variations, Substitutions, Exceptions and Changes.
- D. Protection of Existing Improvements.
- E. Maintaining Existing Road Surfaces.
- F. New Materials.
- G. City Furnished Products.
- H. Product Delivery and Handling.
- I. Product Storage and Protection.
- J. Building Permits.
- K. Other Specifications and Standards.

100.020. Definitions.

100.010. Improvement Requirements.

A. General. This policy defines the general requirements for improvements to be built by the Developer, sub-divider, owner, or Contractor for all types of construction, (to include residential, commercial, industrial, institutional, governmental and professional office). All improvements which are in areas that are or will become public rights-of-way and/or easements, or that will be under the responsibility of a homeowner's association shall meet the requirements of these specifications.

The improvements shall include all street improvements in front of all lots and along all dedicated streets to a connection with existing improvements of the same kind and to the boundaries of the development. Layout must provide for future extension to adjacent development and to be compatible with the contour of the ground for proper drainage. All drinking water, sanitary sewer, pressurized irrigation, electric, communication, storm, land or groundwater drains and any other buried utilities or conduits shall be installed to the boundary lines of the Subdivision or development.

B. Improvements Made Before Recording. No improvements shall be commenced until a final plat is approved and inspection fees paid.

C. Variations, Substitutions, Exceptions and Changes. Any variation, substitution or exception from the standards in this policy must be authorized in writing by the City Engineer or his/her designee. Product options and substitutions must meet the requirements of APWA 01 25 00 (Product Options and Substitutions). Any item of construction not covered in these standards must have plans and specifications approved by the City Engineer or his/her designee. Requests for changes to the Construction Standards shall be made in writing to the City Engineer. These requests will be reviewed during revision process conducted in conjunction with the APWA revisions.

D. Protection of Existing Improvements. The Contractor shall be responsible for the protection of any existing improvements on public or private property at the start of work or placed there during the progress of the work. Existing improvements shall include but are not limited to permanent surfacing, curbs, ditches, driveways, culverts, fences, walls and landscaping. Any surface improvements damaged as a result of construction shall be restored or replaced to an equal or better condition than before. This shall be accomplished in a timely manner.

E. Maintaining Existing Road Surfaces. The Contractor shall be responsible for maintaining existing road surfaces suitable for travel by the public. The Contractor shall be responsible for all dust and mud control and all claims and damages resulting from failure to maintain the construction area.

F. New Materials. Only new materials may be used during construction unless otherwise authorized by the City Engineer or his/her designee. In such a case where used materials are proposed, only materials of similar use may be installed in a new system with the same use. Example: Only previously used storm drain pipe can be evaluated for use in a new storm drain system or only previously used culinary main line may be evaluated for use in a new culinary system. If approved, the used materials must meet all applicable standards, thoroughly cleaned, and be restored to their original condition prior to installation.

G. City Furnished Products. If the City furnishes any products the Contractor shall conform to requirements and specifications of APWA 01 64 00 (Owner-furnished Products).

H. Product Delivery and Handling. The Contractor shall conform to requirements and specifications of APWA 01 65 00 (Product Delivery and Handling).

I. Product Storage and Protection. The Contractor shall conform to requirements and specifications of APWA 01 66 00 (Product Storage and Protection).

J. Building Permits. The City may issue a building permit upon application, in compliance with all laws, ordinances, rules, and regulations. No building permit will be issued until all the improvements essential to meet the building code and fire code are installed, accepted, and in service and all building permit and impact fees are paid.

When asphalt pavement plants are closed for the winter, building permits may be issued before paving if there is eight inches of compacted road base in all areas to be paved and adequate fire protection is available.

The City Engineer or his/her designee is hereby designated as the responsible official to accept the improvements.

K. Other Specifications and Standards. City standards and ordinances shall supersede all other Standards whenever they conflict. Alpine City hereby adopts 2017 APWA (American Public Works Association). If not covered in these specifications and details, 2017 APWA specifications shall be used. Utah Division of Drinking Water has some standards that override 2017 APWA specifications. An addendum to the 2017 APWA specifications has been prepared to highlight the differences and is included as part of these standards as section 1050.

100.020. Definitions.

A. AASHTO. The American Association of State Highway and Transportation Officials, is a standards setting body which publishes specifications, test protocols and guidelines which are used in highway design and construction throughout the United States.

B. APWA. The Utah Section, American Public Works Association Manual of Standard Specifications, latest edition with all approved supplements. These standard specifications can be obtained at http://utah.apwa.net/. When sections of the APWA manual are referred to in these standards, the Contractor shall also adhere to the requirements and specifications of all related sections referred to by the section of the APWA manual.

C. AWWA. The American Water Works Association Standards, latest edition.

D. City. The City of Alpine, Utah.

E. City Engineer. The person appointed by the City to be the City Engineer.

F. City Planner. The person appointed by the City to be the City Planner.

G. Civil Engineer. A person licensed with the State of Utah to practice as a professional engineer.

H. County. Utah County, Utah.

I. Construction Plans. Construction plans include drawings showing all required improvements for a development showing their location, size, grade, and elevations.

J. Customer. A person or company receiving service from any City utilities

K. Contractor. A person or company hired by the City or a Developer to perform construction in or for the City, having appropriate state licenses to perform said work.

L. Council or City Council. The governing body of the City.

M. Cul-de-sac. A permanent dead-end street.

N. Developer. Person, persons, partnership or corporation developing residential, commercial or industrial property.

O. Development Code. The Alpine City Development Code as currently adopted by the City Council.

P. Final Plat. An original recordable plat drawn on mylar in a form approved by the City and County, showing all lots, streets, utility easements, etc.

Q. Flood Plain. That area designated on the most recent Flood Insurance Rate Map for the City of Alpine, prepared by the Federal Emergency Management Agency, as a flood plain as amended.

R. General Plan. The general plan document as approved by the City Council.

S. Improved Lot. A lot which has all the improvements required in the Alpine City Development Code.

T. Improvements. Includes roads, streets, curb, gutters, sidewalks, grading, landscaping, water and sanitary sewer systems, irrigation systems, drainage systems, power and communication systems, fences, public facilities, trees or other requirements by this Section or by the City.

U. Land Surveyor. A person licensed with the State of Utah to practice as a licensed land surveyor.

V. Lot. A parcel or tract of land within a subdivision which is or may be occupied by a building or structure and the accessory buildings, structures or uses customarily incident thereto, including such open spaces as are arranged and designed to be used in connection with the building according to the zone within which the lot is located.

W. LID. Low Impact Development is an approach to land development that works with nature to manage storm water as close to its source as possible. LID employs principles such as preserving and creating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treats storm water as a resource rather than a waste product.

X. MUTCD. The Manual on Uniform Traffic Control Devices defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic.

Y. NEC. The National Electrical Code is a United States standard for the safe installation of electrical wiring and equipment.

Z. NESC. The National Electrical Safety Code establishes rules which govern: a) methods of grounding; b) installation and maintenance of electric-supply stations and equipment, of overhead supply and communication lines, and of underground and electric-supply and communications lines; and c) operation of electric-supply and communication lines and equipment.

AA. Offsite Facilities. Facilities outside of the boundaries of the subdivision or development site which are designated and located to serve the needs of the subdivision or development or adjacent property, usually lying between a development and existing facilities.

BB. Onsite Facilities. Facilities installed within or on the perimeter of the subdivision or development site.

CC. OSHA. The Occupational Safety and Health Administration is the main federal agency charged with the enforcement of safety and health legislation.

DD. Parcel of Land. A contiguous area of land in the possession or ownership of one person with one tax identification number.

EE. Planning Commission. The Planning Commission of Alpine City.

FF. Preliminary Plat. A map or plat of a proposed subdivision or development with accompanying supplementary documents.

GG. Public Utility Easements. The easements required to place public utilities across any privately owned property.

HH. ROW. A public Right of Way is a strip of land that is granted, through an easement or other mechanism, for transportation purposes, such as for a trail, driveway, rail line or highway. A right-of-way is reserved for the purposes of maintenance or expansion of existing services with the right-of-way.

II. Site Plan. A plan for a commercial, industrial, institutional, governmental or planned residential development in the City.

JJ. Streets. A thoroughfare which has been dedicated and accepted by the City Council, which the City has acquired by prescriptive right or which the City owns, or is offered for dedication on an approved recorded final plat. For further explanation see the streets section.

KK. Subdivision. Any parcel of land that is divided, re-subdivided or proposed to be divided into two or more lots, parcels, sites, units, plots, or other division of land for the purpose, whether immediate or future, for offer, sale, lease, or development either on the installment plan or upon any and all other plans, terms,

and conditions. A subdivision includes (1) the division or development of land whether by deed, metes and bounds description, devise and testacia, lease, map, plat, or other recorded instrument; and (2) divisions of land for all land for all residential and nonresidential uses, including land used or to be used for commercial, agricultural, and industrial purposes.

LL. Utilities. Includes drinking water lines; irrigation lines; sanitary sewer; storm, land and groundwater drains; gas lines; electric power lines; cable television and telephone lines; underground conduits; and junction boxes and all appurtenances to the above.

Section 200. Improvement and Design Requirements.

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200.010. General.

A. Easements. Developer shall provide easements for all utility extensions through private property. Developer shall also provide a 10 foot public utility easement along public right-of-ways or streets, along all exterior property boundaries of the development, and 5 foot public utility easements along all interior property lines of the development. If setbacks are less than 10 feet then public utility easements shall be the extent of the setback.

B. Traffic Control. A traffic control plan shall be submitted to the City prior to construction in or along public streets. All traffic control shall comply with APWA 01 55 26 (Traffic Control) and the MUTCD.

C. Survey. The alignment of the side property lines for each lot in a subdivision shall be marked in the top back of curb with a lot line witness marker that meets the requirements and specifications of APWA 31 05 10 (Boundary Markers and Survey Monuments). Developer shall provide survey bench marks and monuments as required by the City Engineer or his/her designee.

All property corners shall be marked with a rebar corner marker that meets the requirements and specifications of APWA 31 05 10 (Boundary Markers and Survey Monuments). Corners must be marked before acceptance of a subdivision's improvements by the City. The rebar must be offset 2 to 4 inches by a steel tee post four feet out of the ground on the property line alignment.

D. Temporary Controls. Temporary controls such as noise, dust, mud, surface water, ground water, pollution and erosion controls shall be made. Controls shall meet the requirements and specifications of APWA 01 57 00 (Temporary Controls). The pumping of groundwater across sidewalks, into gutters or into the sanitary sewer system is prohibited.

E. Landfill, Construction Debris or Garbage. No buildings, paved parking lots, paved roads, curb, gutter, or sidewalks are allowed to be located over landfills, construction debris, or garbage.

200.015. Specialized Engineering.

A. General. Any specialized engineering beyond the expertise of city staff such as, but not limited to, geotechnical, traffic, environmental, hillside, floodplain, bank stabilization and erosion control will require the review of qualified consultants. All review costs shall be paid by the property owner/developer.

B. Geotechnical Engineering. All Major subdivisions, as outlined in the Development Code, shall be required to submit a site specific geotechnical report. The geotechnical report shall include sufficient subsurface exploration, laboratory testing and geotechnical engineering analysis to render design level geotechnical recommendations and opinions regarding slope stability and required mitigation to protect planned or future development above and below the slope(s) from earth deformations and other adverse soil or geologic conditions.

All work completed in connection with the site specific geotechnical report shall be performed by an experienced geotechnical engineering firm and under the direct supervision and direction of a professional geotechnical engineer properly licensed in the state of Utah.

The scope of work described below is considered the minimum requirement for the geotechnical investigation. The geotechnical firm (Consultant) shall use their experience and engineering judgment in conjunction with the minimum requirements outlined below to develop an appropriate site-specific geotechnical scope of work and report.

1. Field Explorations. Prior to commencing field explorations the geotechnical engineer shall review available geologic maps, aerial photographs and other pertinent literature to develop an understanding of the site and its geologic setting.

   Locate utilities within areas of explorations by notifying the appropriate local one-call state utility locate service. Independent private utility locates may be required for utilities not identified by the local one-call service. Complete subsurface explorations, as many as needed to obtain a representative sample of all soil conditions for the entire site, but specifically shall be obtained for proposed roadway locations and residential building.

   Boring (s) shall be located within close proximity to slope crests so as to render a representative soil profile of the slope for analysis. The boring(s) shall extend to a minimum depth of 15 feet

below the tow of the slope. For example, if a 30-foot tall slope is being evaluated the boring shall extend at least 45 feet below the top of the slope. Borings shall extend through existing fill materials so that at least one sample is collected in native soil. Adjust boring depths for anticipated site development cuts and fills and for known soil conditions.

The geotechnical shall consider past property use and location. Additional soil borings shall be planned for sites located in areas that are known or suspected to have had previous slope deformations or seeps, springs or other adverse features. Special attentions shall be given to identifying, to the extent practical, the presence and extent of existing fill.

Collect a minimum of four (4) soil samples in the upper ten (10) feet of the profile and at intervals of five (5) feet thereafter. Adjust sampling intervals to include major changes in soil layering. Collect a sufficient number of undisturbed samples in fine-grained soils to properly assess strength and consolidation properties. Perform split barrel sampling in granular soils. Field blow counts should be corrected for energy and depth and presented as Standard Penetration Test (SPT) blow counts on the soil boring logs.

Field classify encountered soil in accordance with the American Standard for Testing and Materials (ASTM) and Unified Classification System (USCS).

Borings encountering bedrock shall be extended a minimum of 5 feet into the bedrock. Rock coring equipment shall be used where practical to aid in assessing rock properties. Where cores are collected, Rock Quality Designator (RQD) values should be presented on the boring logs.

2. Laboratory Testing. Samples collected in the field shall be properly packaged to avoid disturbance or freezing and transported to an accredited geotechnical and materials testing laboratory for further observation and testing. Laboratory testing shall be performed under the direction of a Utah licensed professional geotechnical engineer and in accordance with appropriate ASTM standards. At a minimum laboratory testing shall include the following:

    a. Sieve analysis – determine grain size distribution and percent fines (minus 200 sieve)
    b. Atterberg tests – classification, indexing, shrinkage and expansiveness
    c. In-place density
    d. Natural moisture content
    e. Shear strength – Direct Shear and/or Triaxial Shear

    Additional laboratory testing may be required to address site conditions and provide necessary engineering properties for analysis. The geotechnical engineer shall use his professional judgment and local experience to determine an appropriate scope for laboratory testing.

    Laboratory test results shall be presented in the Geotechnical Report, on individual summary sheets in the report appendix or on the boring logs.

3. Geotechnical Report Requirements. The results of the field and laboratory programs shall be evaluated by a Utah registered professional geotechnical engineer. Based on the results of their evaluation, an engineering report shall be prepared that details the results of the testing performed, provides logs of the borings and a diagram of the site/boring layout and provides geotechnical recommendations and information regarding following:

    a. General suitability of the site for the planned development
    b. Recommended precautions and limitations
    c. Subsurface exploration procedures
    d. Soil and rock conditions encountered
    e. Groundwater depth during and after drilling
    f. Geologic setting
    g. Geologic hazards (ie – fault, slide, rock fall, etc.)
    h. Slope stability including provisions, recommendations and designs to mitigate the effects of unstable slopes and other geologic hazards that may adversely impact planned developments above and below the slope(s)
    i. Special design and construction provisions for footings or foundations near steep slopes, including type and depth of foundation system and set back distance from slopes
    j. Surface water runoff control and drainage

k. Subsurface drainage
l. Site grading and earthwork requirements, as appropriate

Detailed individual boring logs and graphical cross sections summarizing soil / rock profiles and slope stability analysis and results shall be included in the geotechnical report. The logs shall contain sufficient detail to render a clear description of the soil stratigraphy, soil descriptions and classifications, SPT blow counts, sample locations and depths, ground water depths and appropriate laboratory test results. Individual boring logs shall include a description of the boring location, exploration equipment used, relative or actual elevation, date of exploration and other pertinent information relative to the field exploration. The cross sections shall contain sufficient detail to render a clear description of the slope stability analysis results and any mitigation measures required. The cross sections shall contain soil profile data and a summary of engineering properties and parameters used in the analysis for each significant soil / rock layer.

The final geotechnical report shall bear the geotechnical engineer's stamp and seal. One (1) electronically submitted PDF copy of the report shall be delivered to the City of Alpine within sufficient time for review and comment. The City will have the report reviewed by its own geotechnical engineer. The cost of that review will be borne by the applicant.

200.020. Construction Plans.

A. General. The following instructions are for the purpose of standardizing the preparation of construction plans to obtain uniformity in appearance, clarity, size, and style. Plans and designs shall meet the standards defined in the specifications and drawings hereinafter outlined. All drawings and/or prints shall be clear and legible and conform to good engineering and drafting room practice.

Include the following in construction plans for all developments:

1. A copy of the proposed final plat or site plan;
2. A plan view of the entire project showing all utilities, roads, and appurtenances;
3. Plan and profiles of all storm, land and groundwater drains, sanitary sewer, curb, gutter, and irrigation;
4. Detail drawings of street cross sections according to the standard drawings and other detail drawings only for items not found in the City standard drawings. Detail drawings shall be to scale and completely dimensioned and described. All items shall be designed in accordance with minimum requirements established by the City Construction Standards;
5. Complete plans for all off-site work to be done in conjunction with the project;
6. A stamp and signature of a Civil Engineer licensed in the state of Utah on each plan sheet, detail drawing, and design sheet;
7. Engineer's take off quantities and cost estimate for all construction work related to the project;

B. Plan Sheets. Include the following on each plan sheet:

1. North Arrow;
2. A standard engineering scale between 1 inch equals 10 feet and 60 feet. A scale of 1 inch equals 100 feet may be used on the plan view of the entire project if necessary to fit project on one sheet;
3. Title block along right side of sheet with title of drawing in lower right corner. Include in title block:
    a. Name of subdivision and plat or site plan;
    b. Name of city;
    c. Specific type of drawing (construction drawings, plan view, plan and profiles, off-site construction, detail drawings);
    d. Name of engineer, surveyor, or firm preparing drawings;
    e. Drawing number of total number of drawings;
4. Also include the following with profile drawings:
    a. Vertical scale of 1 inch equals 1, 2, 3, 4, 5, or 6 feet;
    b. Reference to the vertical datum. The 1929 or 1988 North American Vertical Datum (NAVD29 or NAVD88) shall be used for all elevation data;
    c. Benchmark location and elevation for checking construction;
    d. Stationing aligned from plan view with the profile view;
    e. Existing ground, ditch, and utility lines;
    f. A sheet index on each sheet showing profiled area in relation to the overall project.

C. Electric and Communication Plans. Construction plans must include the location of all existing poles, transformers, secondary junction boxes, gas lines, sectionalizers, overhead electrical wire and overhead

communication cable. Developers will be required to work separately with owners of these companies to obtain the necessary approvals from them.

D. Street, Parking Lot, and Driveway Plans. Include the following for curb, gutter, storm, land and groundwater drains, drainage structures, sidewalks, and street surfacing plans:
   1. Plan and profile for top back of curb for each side of the street. Label profile line as top back of curb for both sides of street if it is the same;
   2. Stationing and top back of curb elevations with curve data for curb returns;
   3. Flow direction and type of cross drainage structures at intersections with adequate flow line elevations;
   4. Type of curb and gutter if other than the standard twenty-four inch curb and gutter in the standard drawings;
   5. Location and width of driveways;
   6. Street cross sections with all proposed and existing utilities and base sections as per soils report and Construction and Development Standards;

E. Sanitary Sewer, Storm, Land and Groundwater Drain Plans. Include the following for sanitary sewer, storm, land and groundwater drain plans:
   1. Plan and profile of all new and existing mains and manholes;
   2. Box and manhole size, location, and elevations of flow lines and rim;
   3. Location, size, grade, and type of pipe of new and existing mains;
   4. Location of each lateral with distance stubbed back into property clearly drawn and dimensioned;
   5. Storm water calculations per the Alpine City Storm Water Drainage Design Manual and Appendicies;
   6. Storm inlet boxes shall be located on street corners and or property lines.

F. Drinking Water and Pressurized Irrigation Plans. Include the following for drinking water and pressurized irrigation plans:
   1. Location, size, and type of pipe of new and existing water mains;
   2. Location of valves, fittings, hydrants, boxes, meters, and appurtenances;
   3. Minimum cover;
   4. Location of each lateral with distance stubbed back into property clearly drawn and dimensioned;
   5. Looping of the drinking waterline will be required at the discretion of the City Engineer or his/her designee to provide adequate fire flows and redundancy.

G. Landscaping Plans. For landscaping that will be maintained by the City, developments with landscaping restrictions (Three Falls, Summit Pointe, etc.), or a homeowner's association submit one copy of the landscaping plans including all irrigation system layouts, details, legends, and drawings. These project plans shall meet the requirements of the Section 900. Landscaping and Section 950. Irrigation Sprinkler Systems, as well as the specific requirements of the development in which they are located.

H. Irrigation Canal and Pipe Plans. Plans that affect canals or irrigation pipes must be stamped approved by those responsible for their maintenance before they will be approved by the City.

200.030. Street Improvements.

A. General. The Developer shall construct all streets and appurtenances required for the development as specified by the City Council in accordance with the City Construction and Development Standards and/or other codes adopted by the City. The design and all street work shall be done as directed and under the supervision of the City Engineer or his/her designee.

B. Access. Access requirements shall be in accordance with the Development Code.

C. Cul-de-sacs. The maximum length of a cul-de-sac is 450 feet measured from the nearest right-of-way line of the adjoining street to the center of the cul-de-sac. The minimum radius of the cul-de-sac is 60 feet at the property line.

D. Curbs, Gutters and Sidewalks. Curbs, gutters, and sidewalks shall be built along all public streets according to the standard drawings. All curbs, gutters, and sidewalks shall connect to existing curbs, gutters, and sidewalks within a reasonable area as determined by the City Engineer or his/her designee.

E. Partial-Streets Widths. Per Alpine City Development Code

F. Driveway and Intersection Location. Driveways and street intersection locations shall be designed according to Alpine City Transportation Master Plan. No driveway shall be constructed within 40 feet from an adjoining street. The distance is measured from the adjoining street's Top Back Curb (TBC) to the edge of driveway for access.

Curb cuts shall only be allowed for driveways. Driveways shall be a minimum of 3 feet away from any utility fixture (including, but not limited to, power pole, fire hydrant, mailbox, phone/cable box, electric box, etc.) or utility box (culinary meter, pressurized irrigation meter, etc.) and curb cuts for driveways must be a minimum of 6-inches away from the property line. All accesses and streets onto arterials must be approved by the City Engineer or his/her designee.

G. Parking. Per Alpine City Development Code.

H. Reverse or Double Frontage Lots. Per Alpine City Development Code

I. Temporary Turn-Arounds. Per Alpine City Development Code.

J. Allowable Grades. Per Alpine City Development Code

K. Stamped Concrete or Pavers. Alpine City does not allow colored/stamped concrete or pavers on city owned concrete flatwork unless recommended by the Planning Commission and approved by the City Council.

L. Precast Concrete or Block Walls. The design of all walls greater than four feet of exposed height must be approved through the Building Department. Design must be stamped and signed by a licensed professional civil engineer registered in the state of Utah.

M. Pedestrian Ramps. Pedestrian ramps shall be placed at all corners of intersections and at all other locations of regular pedestrian traffic across roads as determined by the City Engineer or his/her designee. All ramps shall conform to the requirements of the Americans with Disabilities Act and City standards.

N. Horizontal and Vertical Curve. Per Alpine City Development Code

200.040. Utility Improvements.

A. General. It shall be the responsibility of the Developer to connect to existing utilities or improvements wherever they are located and extend those improvements to and through the development. Workmanship and details of construction shall be in accordance with the City Construction Standards and/or other codes adopted by the City. All work shall be done under the supervision of the City Engineer or his/her designee.

B. Communication. Communication lines shall be underground except when the City Engineer or his/her designee feels that such underground lines are not in the best interest of the City.

C. Electric. Electrical lines shall be underground except when the City Engineer or his/her designee feels that such underground lines are not in the best interest of the City. Lines shall be located opposite of water and pressurized irrigation lines.

D. Pressurized Irrigation. The Developer shall connect the development with the city pressurized irrigation system with all appurtenances and shall make such pressurized irrigation available to each lot or unit within the development. Adequacy of supply and sizes of pressurized irrigation mains shall be established by the City Engineer or his/her designee. Meter boxes shall be located per Alpine City Standard Details.

E. Sanitary Sewer. The Developer shall provide each lot with a sanitary sewer system in accordance with the ordinances of the City. All measures should be taken to utilize a gravity sewer system before the City will consider a pumped system. All said work shall be done as directed and under the supervision of the City Engineer or his/her designee.

F. Storm Drain. The Developer shall provide on-site storm drainage facilities according to the storm water Drainage Design manual and in accordance with the ordinances of the City. Storm drainage systems shall incorporate Low Impact Development (LID) systems. The maximum allowable storm water discharge from any commercial and industrial development will be limited to 0.07 cfs/acre of development. Individual lots shall retain the 80^{Th} Percentile Storm.

G. Drinking Water. The Developer shall connect the development with the city drinking water system with all appurtenances and shall make such drinking water is available to each lot or unit within the development. Adequacy of supply and sizes of drinking water mains shall be established by the City Engineer or his/her designee. Pipes shall be located opposite from electrical lines. Looping of the drinking waterline will be required at the discretion of the City Engineer or his/her designee to provide adequate fire flows and redundancy. Meter locations shall be per Alpine City Standard Details.

Section 250. Inspection and Testing.

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250.010. General.

A. Quality Assurance. The following work shall be subject to the inspection and testing requirements of this Section:

1. Work on existing or proposed City property;
2. Work on property that will be owned by a property owners association;
3. Work on existing or proposed streets, easements, or right-of-ways;
4. Work on existing or proposed City utilities.

The Contractor must ensure that all inspection and testing required by these standards is preformed and accepted by the City Engineer or his/her designee. The Contractor must also ensure that any additional inspection and testing required by the City or a testing company is performed and accepted by the City. In projects other than those bid out by the City, the Developer is ultimately responsible for the work of the Contractor.

B. Submittals. Contractor shall turn in submittals for all testing not performed by the City.

1. *Field Test Report.* Contractor must submit original field test report immediately to City whenever possible. Reports may not be submitted later than the end of the current day.
2. *Laboratory Test Report*. Submit original report to the City within 48 hours after test results are determined.

Material and Equipment Specifications. One copy of the manufacturer's specifications and manuals for equipment and materials used must be submitted to the City 7 days before the pre-construction meeting.

C. Preconstruction Meeting. The Contractor must schedule a preconstruction meeting with the City's engineering department before any work on a new development or City project may begin.

The Contractor, Developer, project engineer, and all sub-contractors must be present at the preconstruction meeting. Any sub-contractor not attending the preconstruction meeting must schedule an additional preconstruction meeting with the City before beginning work. Work must begin within 4 weeks of the preconstruction meeting or a new preconstruction meeting must be scheduled by the Contractor at the discretion of the City Engineer.

D. Inspection and Testing Notification. The City may contract with a private company to conduct any inspections or testing specified to be performed by the City. All inspections and tests must be scheduled with the City or company contracted by the City a minimum of 1 full business day before needed. Requests for inspection on work requiring continuous inspection shall be made 3 full business days prior to commencing the work.

E. Testing and Sampling. The City Engineer or City Inspector may require that sampling be performed in their presence, in which case the Developer or Contractor shall be notified of this requirement in writing at the time the building permit is issued, or at the preconstruction meeting, or when construction drawings are released by the City for construction, as applicable.

Each sample or test shall be accompanied by the following written data, which shall be reported to the City with test results:

1. Name of Project.
2. Name of Developer/Contractor.
3. Project Street Address.
4. Appropriate Test Name.
5. Date of Sampling.
6. Sample Number (if more than one sample per day).
7. Name of technician who performed the testing.
8. Location of sample.

F. Testing Agency. All materials testing, whether in a laboratory or in the field, shall be conducted by a testing agency approved by the City Engineer or his/her designee.

G. Work without Required Inspection and Testing. Any work performed without required inspection or testing will give the City the option to call the bond covering that portion of the improvements in violation, or, require the removal and replacement of the un-inspected work. For City projects, the City Engineer may also accept the work at a reduced price if the lowest pay factor is applied.

H. Inspection and Testing Fees. Inspection fees and/or connection fees shall be paid and permits required shall be obtained prior to commencement of construction.

I. Sub-standard Work and Pay Factors. If any inspection or test indicates that work does not meet City standards the City Engineer will require that the work be redone for new development.

For City contracted work, if the sub-standard work has a pay factor option in the standards, the City Engineer may or may not accept the work at a reduced price upon condition that the pay factors outlined in the City standards apply. Payment reduction amounts shall be applied against payments to Contractors. When any work is done to a lower standard than allowed for in the pay factor tables the work shall be redone until it meets City standards.

J. Weekly Progress Meetings. At the pre-construction meeting it will be determined if weekly construction meetings are required. The City Engineer or his/her designee, City inspectors, the Contractor, and sub-contractors shall be in attendance.

K. Road Construction. Road construction may not commence until all underground utilities (both City and privately owned) are installed and pass all the inspections and tests required by these standards.

L. As-Built Survey. The Contractor shall notify the City to survey all underground utilities either installed or uncovered in the course of construction. Contractor shall give the City 24 hour's notice to survey utilities.

M. Acceptance and Payment of Improvements. Inspections made by the City or a company hired by the City to determine compliance with the specifications do not imply final acceptance of the work. The City requires the completion of all facilities before any are paid for and accepted for maintenance. The following inspections must be scheduled and passed before final acceptance and payment of any improvements:

1. *End of Construction Inspection.* The Contractor must notify the city at least 3 days prior of the need for an End of Construction Inspection. Upon notification, the Contractor and City will schedule an end of construction inspection, not to occur within 3 business days of the City being noticed and, once all the improvements in a development or project are completed according to the Construction and Development Standards Re-inspections of an End of Construction Inspection require the same 3-day notification and scheduling procedure.
2. *Final Acceptance Inspection.* One year after the Contractor or Developer passes the end of construction inspection, he or she must schedule a final acceptance inspection 1 month prior to the expiration date of the warranty period.

If the Contractor or Developer does not pass one of these inspections a punch list of work items necessary to pass the inspection will be given to the Contractor or Developer within 2 business days of the inspection. The Contractor or Developer must reschedule inspections with the City until the project or development passes the inspection.

All improvements shall be free from defects, damage, or debris at the time of these inspections. The Contractor or Developer shall not be responsible for debris or damage not caused as a result of his or her work or quality of work.

Any faulty or defective work shall be corrected by the Contractor within 30 days of the failed inspection or according to the contract the City has with the Contractor.

If the Contractor or Developer fails to do so, the City Engineer or his/her designee shall have such repairs made, and the cost of such repairs shall be paid by the Developer together with 25% in addition thereto for stipulated damages for such failure on the part of the Developer to make the repairs.

At the discretion of the City Engineer or his/her designee, full payment for constructed infrastructure will not come until after all listed inspections and testing have been completed with passing results. Example: Culinary water main and services installation will not be paid in full until the Main Line Inspection, Drinking Water Service Inspection, High Chlorine Test, and Bacteria tests have been inspected and passed. Partial Payments are acceptable for items that meet this requirement.

250.020. Earthwork.

A. Compaction and Moisture Content Tests. The Contractor will test all sub-grade and fill material for compaction and moisture content and will provide these tests to the city within 48 hours of testing. Test locations shall be determined by the City.

1. *Trenches.* Tests will generally be taken 1 per 200 lineal foot of trench per 8 inch lift.
2. *Streets.* Tests will generally be taken 3 per 200 lineal foot of street per 8 inch lift.
3. *Other Cuts and Fills.* Tests will generally be taken 1 per 2,000 square feet of compacted area.

B. Red-head Inspection. The project engineer must provide red-heads for all grade work when brought to within 3 inches of finish grade. The City must inspect and accept finished grading to the engineered red-heads.

C. Proof Roll Inspection. Prior to placing fill material for roadbed backfills, proof roll sub-grade using gross weight of 18,000 pounds per tandem axle, with a tire pressure at least 90 psi, unless otherwise specified by the soils report. Contractor shall proof roll under the supervision of the City according to the following conditions:
   1. *Passes.* All proof roll passes will traverse the sub-grade parallel to the roadbed centerline. All subsequent passes will be offset half the vehicle width until the entire sub-grade is tested.
   2. *Mitigation.* The City will analyze, determine, designate, and measure the areas, if any, requiring additional compaction or reconstruction.
   3. *Sub-grade Protection.* Once sub-grade passes the proof rolling test, protect the surface from construction operations and traffic damage. Repair all cuts, ruts, and breaks. Keep surface in a satisfactory condition until geotextile fabric or base course has been placed.

D. Thickness Test. Material thickness tests will be conducted by the City when the City Engineer or his/her designee considers it necessary. The total depth shall be reasonably close to that shown on the typical section. Depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/4" below the specified thickness and no individual hole shall be more than 3/4" below the specified thickness.

250.030. Landscaping and Irrigation Sprinkler Systems.

A. Plant Material Inspection. All plant materials are to be inspected and approved by the City at the time of delivery on site. This approval does not constitute final acceptance of any plant material by the City Parks Department Representative. All plant materials will be inspected again at time of final inspection and once again at the end of the warranty period. Any plant found to be unacceptable at any of these inspections shall be immediately removed and replaced.

B. Sprinkler System Assembly Inspection. An on-site inspection shall be conducted by the City after the entire sprinkler system is assembled and prior to backfilling the trenches. During this inspection all fittings, bends, sweeps, valves, sprinkler heads and any other appurtenance on the system shall be surveyed by the City.

C. Fall Sprinkler Winterizing Test. In the fall of the year during the installation and guarantee period, the Contractor shall meet with the City on the project site. The Contractor shall winterize the system by draining all the water and doing everything necessary to insure the protection of the system until spring. Blowing out the lines by compression shall be permitted during the 1 year guarantee. The individuals involved from both parties shall exchange all information necessary for the eventual takeover of the system by the Alpine City Maintenance Personnel.

D. Spring Sprinkler Energizing Test. The Contractor with the City Maintenance Personnel in attendance shall energize the sprinkler irrigation system the spring following the fall winterizing test. Contractor shall repair all defects found as a result of winter damage, improper installation, improper maintenance, defective materials or inadequate sprinkler drainage.

E. Final Acceptance Inspection. At the end of the guarantee period, all landscaping and irrigation sprinkler systems must then be inspected and tested by the City. As-built drawings shall be furnished to the City at the time of the final inspection.

Irrigation sprinkler systems must operate in a satisfactory manner, with a full uniform coverage of the areas that are indicated to be sprinkled. Sprinkler heads shall be adjusted to proper level.

Landscape and irrigation sprinkler systems will not be inspected for acceptance in parts. Where inspected work does not comply with requirements, Contractor shall replace rejected work and continue specified maintenance until reinspected by the City and found to be acceptable. Remove rejected plants and materials promptly from the project site.

250.040. Portland Cement Concrete Work.

A. General. All materials and processes involved in concrete work shall be subject to inspection and testing as detailed in the various paragraphs of this section and in general compliance with ASTM E105-54T. Results of tests performed by laboratories approved by the City to the satisfaction of the City Engineer or his/her designee shall be accepted by the supplier as a basis for acceptance or rejection of any and all materials.

The latest appropriate ASTM tests and methods shall be considered to be standard, and will include but not be limited to concrete, cement, aggregates additives, curing compounds, parting compounds and jointing materials. A copy of all batch tickets for concrete placed shall be submitted to the City.

B. Slump, Temperature and Air Entrainment Test. The Contractor shall test slump, temperature, and air entrainment on every fifty cubic yards or less of concrete placed each day. Tests shall be taken after ½ to 1 yard has been poured from the mixer. Once a sample is taken the concrete pour shall be stopped until tests show that the concrete meets City standards. Concrete that does not meet mix design requirements for slump, temperature, and air entrainment shall not be used. Any that may already have been poured shall be removed before hardening.

C. Compression Test. The Contractor shall test compression on every fifty cubic yards or less of concrete placed each day according to ASTM C143, C231. C1064, C172, and C31. Three cylinder specimens shall be taken for each test, one shall be broken at 7 days, one at 28 days and the third held for 45 days after submittal in case further testing is required.

Specimens shall attain the specified strength at 28 days. One lot is 1 day's production. A lot with sub-standard compressive strength may be accepted at reduced price if the appropriate pay factor is applied to the whole lot. The following table outlines the pay factors for sub-standard Portland cement concrete strength:

PORTLAND CEMENT CONCRETE
COMPRESSIVE STRENGTH PAY FACTORS

Pay Factor	Tolerance (psi below 28 day specified strength)
0.98	1 to 100
0.94	101 to 200
0.88	201 to 300
0.80	301 to 400
0.50	401 to 500
Replace	More than 500

These pay factors may not be applied toward concrete in structures.

D. Forms and String Line Inspection. The City shall inspect all forms and string lines before concrete may be placed.

E. Gutter Drainage Inspection. The City shall inspect all gutters for drainage prior to paving. Water shall be let into all gutters and any gutters with standing water in excess of 1/4 inch after runoff shall be replaced. Contractor must supply water truck for gutter drainage inspection.

F. Thickness Test. The City shall determine the number, if any, and location of core tests necessary to ensure the proper thickness of Portland cement concrete. Tests shall be taken at equal intervals in a test area. A test area shall be defined as a total area placed at the same time and by the same process. The average thickness shall then be determined from all the cores taken. Tests shall be taken and verified by a certified testing lab, paid for by the Contractor.

When the average thickness is more than 0.25 inches below the specified thickness, a minimum of 1 core per 1,500 square feet of pavement shall be taken. Work with sub-standard thickness may be accepted at reduced price if the appropriate pay factor for the lowest tested thickness is applied to all of the sub-standard work. The following table outlines the pay factors for sub-standard Portland cement concrete thickness:

PORTLAND CEMENT CONCRETE
THICKNESS PAY FACTORS

Pay Factor	Tolerance (inches below specified thickness)
1.00	0.00 to 0.25
0.90	0.26 to 0.50
0.70	0.51 to 0.75
0.50	0.76 to 1.00
Replace	More than 1.00

G. Curing Inspection. The City shall inspect the curing of all Portland cement concrete work within 24 hours of pouring the concrete.

250.050. Pressurized Irrigation.

A. General. The inspections and tests in this section are required for all pressurized irrigation construction in the City boundaries and on all construction relating to the City pressurized irrigation system outside the city boundaries.

B. Main Line Inspection. The City must inspect all pressurized irrigation main line installation on an ongoing basis. Inspection notification must be given before any construction of the main line may begin. All crosses, tees, bends, valves, and drains must be inspected and surveyed by the City before they are backfilled.

C. Pressurized Irrigation Service Inspection. The City must inspect all pressurized irrigation services before service trenches are backfilled. The City must be able to survey services at the main during the inspection.

D. Pressure Test. The Contractor must pressure test all pressurized irrigation systems, system extensions and service laterals to the setter in the presence of the City Engineer or his/her designee or have tests documented and submitted by a certified testing company approved by the City. Pressure tests must meet the requirements and specifications of APWA 33 08 00 (Commissioning of Water Utilities). Provide a 210 psi test pressure for 2 hours unless specified otherwise. The pressure of 210 psi must be provided at the highest point in the section of pipe being tested unless elevations are such that this would create pressures over 250 psi at the lowest point in the section of pipe tested. In such a case, consultation with the City Engineer is required and AWWA standards will be considered.

E. Leakage Test. For test lengths of pipe greater than 1,500 feet, a leakage allowance may be considered. There will be no allowance for leakage on test sections less than 1,500 feet. When allowed, leakage tests shall be conducted concurrently with the pressure tests. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$Q \equiv \frac{LD * \sqrt{P}}{133{,}200}$$

In which Q is the allowable leakage, in gallons per hour; L is the length of pipeline tested in feet; P is the average test pressure, in pounds per square inch (gage) and D is the nominal diameter of the pipe in inches.

If any test of pipe laid discloses leakage greater than specified, the Contractor shall, at their own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

250.060. Sanitary Sewer.

A. General. The inspections and tests in this section are required for all sanitary sewer construction in the City boundaries and on all construction relating to the City sanitary sewer system outside the city boundaries.

B. Main Line Inspection. The City must inspect all sanitary sewer main line installation on an ongoing basis. Inspection notification must be given before any construction of the main may begin.

C. Service Inspection. The City must inspect all sanitary sewer services before service trenches are backfilled. The City must be able to survey services at each end during the inspection.

D. Air Pressure Test. Contractor shall conduct a low pressure air test by the following method under the direction of the City Engineer or his/her designee with equipment equal to Cherne Industrial, Inc., or provide proof that test was conducted by a certified testing company. Sanitary sewer pipes with inside diameters of 30 inches or larger shall be leak tested according to manufacturer's specifications.

All wyes, tees, or ends of lateral stubs shall be suitably capped and braced to withstand the internal test pressures. Caps shall be easily removable for future lateral connections or extensions. After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs.

Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psi-G greater than the average back pressure of any ground water that may be over the pipe. At least 2 minutes shall be allowed for the air pressure to stabilize.

The portion of line being tested shall be accepted if the portion under test does not lose air at a rate greater than 0.003 cubic feet per minute per square foot of internal pipe surface or 2.0 cubic feet per minute minimum when tested at an average 3.0 psi-G greater than any back pressure exerted by ground water that may be over the pipe at the time of the test.

The pipe and joints shall also be considered acceptable when the time required in minutes for pressure to decrease from 3.5 To 2.5 psi-G (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

PRESSURE REDUCTION TIME LIMITS

Pipe Diameter (inches)	Time (minutes)
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

If the installation fails to meet this requirement, the Contractor shall determine at his/her own expense the source of leakage. He shall repair or replace all defective materials and/or workmanship. All sanitary sewer mains shall be tested, cleaned and accepted by Alpine City before laying the street surface.

E. Video Inspection. Contractor shall clean and provide the City with video inspection of all sanitary sewer main lines **prior to paving**. The City must approve video inspection company.

Cleaning shall be done using a high pressure jet cleaning machine, producing a minimum of 800 psi. Waste water and debris shall not be permitted to enter the City sanitary sewer system, but shall be removed at the lowest manhole of the extension.

Video Inspection shall be done by the Contractor. A digital video disk (DVD or thumb drive) of video inspection and log report shall be submitted by the inspection company to the City Engineer or his/her designee.

Main line determined to be defective by the City Engineer or his/her designee shall be remedied by the Contractor. Contractor shall then clean and video inspect the main lines again.

F. Deflection Test. Contractor shall perform a displacement test on all sewer lines after video inspection. Deflections tests must be conducted in the presence of the City Engineer or his/her designee or be documented and submitted by a certified testing company approved by the City. In no case shall pipe be accepted that has a deflection of more than 5% after it has been backfilled. The Mandrel must be pulled by hand or air. A pipe deflection test shall be required of the Developer/Contractor after backfilling and compaction of the trench.

250.070. Storm, Land and Groundwater Drains.

A. General. The inspections and tests in this section are required for all storm, land and groundwater drain construction in the City boundaries and on all construction relating to the City storm, land and groundwater drain system outside the city boundaries.

B. Main Line Inspection. The City must inspect all storm, land and groundwater drain main lines during installation on an ongoing basis. Inspection notification must be given before any construction of the pipe may begin. All groundwater drains shall be pre-approved by the City Engineer or his/her designee.

C. Air Pressure Test. Contractor shall conduct a low pressure air test for all sealed drains by the following method under the direction of the City Engineer or his/her designee with equipment equal to Cherne Industrial, Inc., or provide proof that test was conducted by a certified testing company. Storm drain pipes with inside diameters of 30 inches or larger shall be leak tested according to manufacturer's specifications. Air pressure tests shall be completed prior to paving.

All wyes, tees, or ends of lateral stubs shall be suitably capped and braced to withstand the internal test pressures. Caps shall be easily removable for future lateral connections or extensions. After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs.

Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psi-G greater than the average back pressure of any ground water that may be over the pipe. At least 2 minutes shall be allowed for the air pressure to stabilize.

The portion of line being tested shall be accepted if the portion under test does not lose air at a rate greater than 0.003 cubic feet per minute per square foot of internal pipe surface or 2.0 cubic feet per minute minimum when tested at an average 3.0 psi-G greater than any back pressure exerted by ground water that may be over the pipe at the time of the test.

The pipe and joints shall also be considered acceptable when the time required in minutes for pressure to decrease from 3.5 To 2.5 psi-G (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

PRESSURE REDUCTION TIME LIMITS

Pipe Diameter (inches)	Time (minutes)
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5

18	8.8
21	10.0
24	11.5

If the installation fails to meet this requirement, the Contractor shall determine at his/her own expense the source of leakage. He shall repair or replace all defective materials and/or workmanship. All storm drain lines shall be tested, cleaned and accepted by Alpine City before laying the street surface.

D. Video Inspection. Contractor shall clean and then video inspect all storm, land and groundwater drain lines **prior to paving**. The City must approve video inspection company.

Cleaning shall be done using a high pressure jet cleaning machine, producing a minimum of 800 psi. Debris shall not be permitted to enter the City storm drain system.

Video inspection shall clearly show any debris, broken pipe, misaligned pipe, displaced pipe and defective joints for all sections of the main line. All defects and their location shall be detailed on a separate video log report. A digital video disk (DVD or thumb drive) of video inspection and log report shall be submitted by the inspection company to the City Engineer or his/her designee.

Log reports shall be submitted on the City video form or an approved equivalent. Log reports must be submitted with an 11x17 copy of the plans. All manholes in the log report must reference the labeled manholes numbers on the plans. Each manhole must also have a street address clearly shown on the log report.

E. Deflection Test. Contractor shall perform a displacement test on all non-concrete storm drain lines after video inspection. Deflections tests must be conducted in the presence of the City Engineer or his/her designee or be documented and submitted by a certified testing company approved by the City. In no case shall pipe be accepted that has a deflection of more than 5% after it has been backfilled. The Mandrel must be pulled by hand or air. A pipe deflection test shall be required of the Developer/Contractor after backfilling and compaction of the trench.

250.080. Streets.

A. Asphalt Pavement Material Tests. Material tests will be conducted by the Developer for development projects and by the City for City contracts. Tests are taken once per day or once per every 500 tons of material placed. Sampling and testing per APWA 32 12 05.

B. Compaction Tests. The Contractor will test all bituminous pavement for compaction and moisture content. Test locations shall be determined by the City but will generally be taken 3 per 200 lineal foot of street or 1 per 2,000 square foot of paved area. Pay factors as per APWA 32 12 16 (Plant-Mix Bituminous Paving) shall apply.

C. Grading Inspection. The sub-grade, sub-base, and road base shall all be graded to an engineered red-head and accepted by Alpine City. Red-heads shall be placed every 50 feet at the crown of the road. If the distance between red-heads and edge of pavement exceeds 25 feet additional redheads shall be installed half way between the crown and edge of pavement. Red-heads shall also be placed every 50 feet at the edge of pavement where there is no curb and gutter.

D. Thickness Test. Material depth tests will be conducted by the City when the City Engineer or his/her designee considers it necessary. The total depth shall be reasonably close to that shown on the typical section.

For City projects, depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/4" below the specified thickness and no individual hole shall be more than 1/2" below the specified thickness. Work with sub-standard thickness may be accepted at reduced price if the appropriate pay factor for the lowest tested thickness is applied to all of the sub-standard work. The following table outlines the pay factors for sub-standard asphalt pavement thickness:

PAVEMENT DEPTH PAY FACTORS FOR CITY PROJECTS

Pay Factor	Tolerance (inches below specified thickness)
0.95	0.00 to 0.25
0.90	0.26 to 0.50
Replace	More than 0.5

For new development, the City will accept nothing less than what the plans call for. Depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/8" below the specified thickness and no individual hole shall be more than 1/4" below the specified thickness. Work with sub-standard thickness will be rejected, removed, and replaced.

E. Profile Tolerance Inspection. Profile tolerance inspections may be required by the City any time within a year of paving. Collector and arterial streets shall meet the "Tolerances" requirements of APWA 32 12 16 (Plant-Mix Asphalt Paving). For local streets profiling, the maximum vertical distance from the pavement surface to a straight edge is:
   a. 1/4-inch in 10-feet parallel to centerline.
   b. 3/8-inch in 10-feet perpendicular to centerline except at cross section grade breaks.

F. Asphalt Concrete Temperature Test. This test shall be conducted on the first three loads of asphalt concrete installed, and on one in four of all future loads as required by the City. Testing shall be conducted according to the requirements and specifications of APWA 32 12 16 (Plant-Mix Asphalt Concrete Paving). Temperature gauge shall be allowed to stabilize for 1 minute before taking reading if using probe type. If using infra-red "gun" type, reading shall consist of an average of a minimum of 3 readings, where reading is taken immediately after displacing a minimum of 2 inches of material from the surface being tested and the "gun" is within 18" of the surface being tested.

G. Asphalt Paving Limitations.
   A. Paving between April 15th to October 15th to follow APWA 32 12 16.13 (must have 50 degrees and rising temperature in the shade and on the roadway surface).
   B. Paving between November 15th and March 1st is not allowed.
   C. In the event the City Engineer approves a paving plan proposed between October 15th and November 15th or between March 1st and April 15th, and if temperatures never rise above 60 degrees during the paving process, an overlay in the spring will be required as outlined in the table below. Do not place HMA on frozen base or during adverse climatic conditions such as precipitation or when roadway surface is icy or wet. Use a release agent that does not dissolve asphalt and is acceptable to the City Engineer or his/her designee for all equipment and hand tools used to mix, haul, and pace the HMA. Placement of HMA between October 15th and November 15th or between March 1st and April 15th may be allowed when the air temperature in the shade and the roadway surface temperature are above 45 degrees Fahrenheit and rising. Paving that occurs between October 15th and November 15th or between March 1st and April 15th, which requires a spring overlay, shall be finished 1.5 inches below lip of curb to accept the required 2-inch overlay in the spring. Paving cannot occur when rain is present.

PAVEMENT DEPTH AFTER OCTOBER 15TH / BEFORE NOVEMBER 15th
OR AFTER MARCH 1ST / BEFORE APRIL 15th
TEMPERATURES ARE BETWEEN **45-60 DEGREES** FAHRENHEIT*

Street	Typical	Base Asphalt	Spring Overlay	Total Asphalt
Local / Secondary Access / Parking Lots / Driveway	3"	3"	2"	5"
Collector / Arterial	4"	3"	2"	5"

*See 2017 APWA 32-12-16.13. If temperatures are between 45-50 degrees, the minimum lift to be placed at a time must be 3 inches to retain heat and obtain compaction. 50-59 degrees, 2 inches minimum lift. 60-69, 1.5 inches minimum lift.

PAVEMENT DEPTH AFTER OCTOBER 15TH / BEFORE NOVEMBER 15th
OR AFTER MARCH 1ST / BEFORE APRIL 15th
TEMPERATURES ARE ABOVE **60 DEGREES** FAHRENHEIT*

Street	Typical	Base Asphalt	Spring Overlay	Total Asphalt
Local / Secondary Access / Parking Lots / Driveway	3”	3”	n/a	3”
Collector / Arterial	4”	3”	n/a	4”

*See 2017 APWA 32-12-16.13. If temperatures are between 45-50 degrees, the minimum lift to be placed at a time must be 3 inches to retain heat and obtain compaction. 50-59 degrees, 2 inches minimum lift. 60-69, 1.5 inches minimum lift.

H. Pavement Cut Moratorium Standard. Alpine City enforces a pavement cut moratorium on all newly paved, reconstructed, or otherwise maintained streets as defined below:
   a. New or reconstructed streets. New streets shall not be cut within five (5) years from the date of construction.
   b. Overlaid streets. Overlaid streets shall not be cut for a period of three (3) years from the date of construction.
   c. Chip sealed, high density mineral bonded, slurry/micro surfaced streets. Streets that have been recently surfaced with any of the afore mentioned road maintenance strategies (or any other similar type of construction that covers the entire surface of the street) shall not be cut for a period of three (3) years from the date of construction.
   d. Exceptions. In case of emergencies (i.e. – watermain breaks, etc.), and at the approval of the City Engineer or his/her designee, certain circumstances may require asphalt removal during a moratorium. Any removal of asphalt during a moratorium will require a trench patch per APWA Plan 255, with the exception that the top 2-inch overlay shall extend fifty (50) feet on either side of the trench and must be paved with approved lay-down paving equipment. This patch shall span across the entire width of the roadway. If the road has a chip seal coat, high density mineral bond layer, or any other surface coat as defined in item C, that surfacing shall be reapplied at the developer’s or contractor’s expense to make the road appear and function as if it was never cut.

250.090. Drinking Water.

A. General. The inspections and tests in this section are required for all drinking water construction in the City boundaries and on all construction relating to the City drinking water system outside the city boundaries.

B. Main Line Inspection. The City must inspect all drinking water main line installations on an ongoing basis. Inspection notification must be given before any construction of main line may begin. All crosses, tees, bends, valves and hydrants must be inspected and surveyed by the City before they are backfilled.

C. Drinking Water Service Inspection. The City must inspect all drinking water services before service trenches are backfilled. The City must be able to survey services at the main during the inspection.

D. High Chlorine Test. High Chlorine tests shall meet the requirements and specifications of APWA 33 13 00 (Disinfection). The Contractor must conduct a high chlorine test at every hydrant on a new drinking water main installation. If a hydrant does not exist on the test section, tests must be taken at the end of each line. The chlorine residual shall be at least 25 mg/L.

E. Pressure Test. Pressure test must be conducted after the successful completion of the bacteria test. The Contractor must pressure test all drinking water systems, system extensions and service laterals to the setter in the presence of the City Engineer or his/her designee or have tests documented and submitted by a certified testing company approved by the City. Pressure tests must meet the requirements and specifications of APWA 33 08 00 (Commissioning of Water Utilities). Provide a 210 psi test pressure for 2 hours unless specified otherwise. The pressure of 210 psi must be provided at the highest point in the section of pipe being tested unless elevations are such that this would create pressures over 250 psi at the

lowest point in the section of pipe tested. In such a case, consultation with the City Engineer is required and AWWA standards will be considered.

F. Leakage Test. For test lengths of pipe greater than 1,500 feet, a leakage allowance may be considered. There will be no allowance for leakage on test sections less than 1,500 feet. When allowed, leakage tests shall be conducted concurrently with the pressure tests. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$Q \equiv \frac{LD * \sqrt{P}}{133{,}200}$$

In which Q is the allowable leakage, in gallons per hour; L is the length of pipeline tested in feet; P is the average test pressure, in pounds per square inch (gage) and D is the nominal diameter of the pipe in inches.

If any test of pipe laid discloses leakage greater than specified, the Contractor shall, at their own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

G. Bacteria Test. Bacteria tests shall meet the requirements and specifications of APWA 33 13 00 (Disinfection). Tests may only be scheduled at certain regular times set by the City. The Contractor shall be present and open all hydrants or other locations to be tested from. The City shall submit samples to a certified lab to be tested according to state drinking water regulations.

If any sample point fails on the first test, the line will be flushed and re-tested at all sample points. If any sample point fails a second time, the complete line will be re-disinfected and re-tested at all sample points. If any samples come back marked “presence”, which means coliform bacteria is present, the line will be re-disinfected and re-tested at all sample sites. Contractor is responsible to pay for all bacteria tests and retests.

Drinking water services will not be installed until bacteria sample results have been approved by the City Engineer or his/her designee. All testing lab fees shall be paid for by the Contractor.

Section 300. Contractor Requirements.

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300.010. General.

A. Contractors Working for a Developer. Contractors and Sub-Contractors working for a Developer must prequalify before doing any work in existing or proposed City property, streets, easements, or right-of-way and for any work on existing or proposed City utilities. To prequalify the following must be on file in the City Engineer's office:

1. A current Contractor's license specified for project type according to Utah State Code;
2. Insurance information;
3. Contractor information sheet;
4. Project Bond;
5. Excavation Permit;
6. UDOT Permit for construction in state right-of-way; and

Failure to pre-qualify before doing any construction shall constitute grounds for legal action.

B. Contractors Working for the City. Bids for City projects will only be awarded to the lowest responsible bidder with current contractor's license specified for the project type according to the Utah State Code. The City's contractor qualifications and experience forms shall be completely filled out and submitted with bid. Failure to do so is basis to reject the bid. Alpine City reserves the right to determine a non-responsible bidder based upon these forms or any other research conducted by the city.

C. Status Verification System. Contractor agrees that it, and its subcontractors, will register with and use a Status Verification System to verify the federal employment authorization status of all employees hired after July 1, 2009. Contractor, and its subcontractors, will comply, in all respects, with Utah Code Annotated §63g-11-103, as it may be amended from time to time.

300.020. Insurance.

A. General. A Contractor must acquire the insurance stipulated in this section to prequalify to do construction work. The city must receive and accept proof of the insurance before any work may begin. The submittal of said evidence to the City shall not relieve or decrease the liability of the Contractor hereunder.

B. Workers' Compensation. Contractor shall obtain workers compensation insurance as required by State law.

C. Commercial General Liability Insurance. The following commercial general liability insurance must be obtained and submitted on ISO Form CG 00 01 (11/85) or equivalent, occurrence policy, with limits not less than:

1.	General Aggregate	$1,000,000
2.	Products - Comp/OPS Aggregate	$1,000,000
3.	Personal and Advertising Injury	$ 500,000
4.	Each Occurrence	$ 500,000
5.	Fire Damage (any one fire)	$ 50,000
6.	Medical Expense (any one person)	$ 5,000

Also include the follow endorsements or their equivalents attached thereto:

1. ISO Form CG 25 03 (11/85), Amendment of Limits of Insurance (Designated Project or Premises), describing the subject contract and specifying limits as shown above.
2. ISO Form CG 20 10 (11/85), Additional Insured -- Alpine City, Lessees, or Contractors (Form B), naming the City as additional insured and containing the following statement, "This Endorsement Also Constitutes Primary Coverage in the Event of any Occurrence, Claim, or Suit".

D. Automobile Liability Insurance. Contractor shall obtain automobile liability insurance with limits of not less than $500,000 Combined Single Limit per accident. Coverage shall apply to any auto.

300.030. Bonding.

A. General. The owners and/or developers of property shall deposit security with the City prior to recording the final plat to guarantee proper installation of all required improvements in accordance with the plans, specifications, time limitations, and conditions relating thereto as meets with the approval of the City Council or such personnel as the City Council shall designate. Security shall be in the form of cash, surety bond, financial institution bond, or an escrow bond. The amount of the security shall be 110% of the City's estimated costs of the improvements plus the estimated asphalt preservation coat costs.

Escrow bonds shall be executed by financial institutions acceptable to the City and authorized to conduct business in the State of Utah, and must be in the form approved by the City. The bond, as required by this section, must be posted prior to recording. Upon completion of the punch list for the end of construction inspection, the security, less 10%, shall be released to the Developer. Ten percent (10%) of the security amount shall be held for a period of one (1) year following final inspection and acceptance to warrant improvements for this time period. The ten percent retained shall be the amount required as the minimum security.

The amount estimated for the asphalt preservation coat shall be deposited to the City in the form of cash and held in escrow prior to recording. These funds will be held until used for the asphalt preservation coat for the applicable development either by the developer or City (see 600.020).

300.040. Excavation Permits. (aka – Street Cut Permit)

A. General. Contractors are required to qualify before obtaining an excavation permit to do construction work unless a project is already approved, bonded and insured. The permit must be approved 48 hours prior to construction. The permitee is given a copy of the permit and plan after the City Engineer or his/her designee has approved and signed them.

The City may stipulate time limits for completion of work and suspend permits for non-compliance. A copy of the excavation permit shall be on site during construction.
For fees related to Excavation Permits, please refer to the Alpine City Consolidated Fee Schedule.

B. Contractors. Contractors are required to submit the following information to obtain an excavation permit:
   1. Copy of Contractors license;
   2. Certificate of Insurance;
   3. License and permit bond;
   4. Detailed drawing of proposed work and traffic control.

C. Property Owners. Individual property owners doing his/her own work for drive approaches and other similar, minor concrete work in the City right-of-way are required to submit the following information to obtain an excavation permit:
   1. Proof of homeowners or similar insurance;
   2. Detailed drawings of the proposed work, including safety, barricades, traffic and pedestrian control.

Any cuts or changes to the curb shall be performed by a licensed contractor who has obtained an excavation permit or building permit.

300.050. Inspection Fee.

A. General. For bonded developments, an inspection fee will be collected. The fee will be for city costs relating to the construction. These costs include but are not limited to survey, inspection, testing and administration. The fee will be estimated based upon previous projects. Portions of the fee not used shall be refunded to the Developer after the punch list of the final acceptance inspection is completed.

If City costs relating to inspection exceed the inspection fee, these costs will be paid for by the developer or they will be deducted from the 10% warranty portion of the bond.

300.060. Materials Submittals.

A. General. Contractors are required to provide materials submittals for all materials to be used to the City for review and approval.
   1. For pre-manufactured items, documentation must be submitted a minimum of 2 weeks before installation and must include sufficient information, including shop drawings, if applicable, to establish models, colors, sizes, installation requirements, etc. that will be used.
   2. For on-site manufactured items, such as asphalt, concrete or base courses, submit mix designs, hot/cold weather installation plans, and materials certifications a minimum of 5 working days prior to planned installation.
   3. Submittals for the following, at a minimum, should be submitted:
      a. All pre-manufactured items meeting city standards such as light fixtures, electrical components, utility fixtures and piping, precast concrete structures, landscaping, etc.
      b. Hot Mix Asphalt Mix Designs
      c. Portland Cement Concrete Mix Designs
      d. Treated Base Course Mix Designs
      e. Untreated Base Course Job Mix Formulas

f. Tack and Prime Coats
g. Concrete Curing Compounds

4. Submit copies of all Quality Control testing and inspection reports within 48 hours of placement of materials.

300.070. Quality Control.

A. General. Perform Quality Control work in accordance with applicable materials sections of the APWA Standard Specifications unless otherwise directed.

The contractor is responsible for performing quality control work sufficient to meet requirements of APWA Standard Specifications and to demonstrate compliance with acceptance criteria. The City will perform assurance functions at their discretion and inform the contractor of acceptance or rejection.

B. Materials Production. Use UDOT certified facilities for asphalt, Portland cement concrete, and precast concrete pipe and structures. Lists of UDOT certified facilities can be found at: https://udot.utah.gov/connect/business/materials-qualified-suppliers/

1. Submit verification of UDOT certified plant certifications with mix designs.
2. Submit verification of UDOT certified plant for construction of precast concrete pipe and structures

C. Testing and Inspection. Use UDOT certified laboratories and personnel.

1. Submit names, certificate levels and years of experience of testing agency's Field Technician that are assigned to work. Laboratory must comply with ASTM Standards. Use AMRL certified laboratory and WAQTC/UDOT TTQP certified technicians.
2. Submit verification of lab and personnel with mix designs.

Section 350. Earthwork and Trenches.

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350.010. Excavation.

A. General. Excavation shall meet the requirements and specifications of APWA 31 23 16 (Excavation) unless otherwise indicated.

B. Safety. All construction shall be done in accordance with the provisions of the Utah State Industrial Commission, OSHA regulations and APWA 31 23 16 (Excavation). No trenches deeper than 4 feet shall be left open at any time unless construction is in process. When construction is in process only 200 feet of trench may be open at one time and must be completely backfilled before proceeding. No trenches shall be left open at any time unless guarded with adequate barricades, warning lamps and signs.

Any injury or damage resulting from lack of adequate bracing and shoring shall be the responsibility of the Developer/Contractor and the Developer/Contractor shall, at his/her own expense, effect all necessary repairs or reconstruction resulting from such damage. No inspections will be done in unsafe trenches and will be the cause for immediate shutdown at the project until the trench is deemed to be safe by the City Engineer or his/her designee.

C. In Gravel and Paved Surface Areas. Where any excavation occurs in a gravel or paved surface area such as a road, driveway or parking area, the surface shall be restored according to the requirements and specifications of APWA 33 05 25 (Pavement Restoration, requires t-patching on trenches) and the following conditions:

1. *Base.* Only Engineered Fill (Section 350.040.C) may be used as backfill or sub-base material under gravel and paved surfaces. A minimum of 8 inches of untreated base course shall be placed over backfill or sub-base. All fill material shall be placed and compacted to City standards. Flowable fill shall not be allowed for backfill unless authorized by the City.
2. *Surface Maintenance.* The surface shall be maintained by blading, sprinkling, rolling, adding gravel, etc., to maintain a safe uniform surface satisfactory to the City.
3. *Cutting of Pavement.* Before any excavation in a paved area, the surface along the entire excavation shall be cut to provide a vertical joint in the surface. Cut shall be made 6 inches from the edge of excavation in straight lines parallel or perpendicular to the trench or edge of pavement. A pavement saw shall be used for all pavement cutting. If excavation damages the cut pavement, pavement shall be cut again before t-patching. A roto-milled edge shall be acceptable as a cut.
4. *Time Limitation.* All road cuts shall be repaired within 2 working days of excavation unless otherwise authorized by the City Engineer or his/her designee.
5. *Cold Weather Patching.* Trenches cut during winter months or when roadbed temperatures and temperatures in the shade are less than 40 degrees (APWA 33 05 25) or when asphalt plants are not operating, shall be patched the same day of the cut with a good quality cold mix according to the requirements and specifications of APWA 32 12 17 (Cold-Mix Asphalt Paving). These trenches shall be maintained until asphalt plants open. When asphalt plants open, the temporary cold patch shall be removed and a new t-patch (per APWA Plan 255) of hot mix asphalt shall be placed. All cold mix patches shall be replaced with hot mix patches within 30 days of the opening of the hot mix plant.
6. *Adjust Incidental Structures to Grade.* Adjust incidental structures to grade according to APWA 33 05 14 (Utility Grade Adjustment). City standard concrete collars around valves and manholes shall be installed within 1 year from the time that pavement is placed or at the time of an overlay.
7. *Residential vs Non-residential streets.* APWA 33 05 25 mentions "*Match existing pavement thickness plus 1 inch, but not less than four (4) inches. Maximum thickness is six (6) inches in residential areas and eight (8) inches in non-residential areas."* Residential areas are to be defined as Local, Secondary Access, or Parking Lots per the most currently adopted Alpine City Transportation Master Plan. Non-residential is to be defined as Collector or Arterial Class streets per the most currently adopted Alpine City Transportation Master Plan.
8. *Extents of Pavement Replacement.* APWA Detail 255 calls for six (6) feet of t-patch beyond the edges of the trench, this includes the ends of the trench as well as the sides. If the t-patch is within three (3) feet of an existing curb, the patch shall extend to the curb. If the t-patch is within three (3) feet of any other edge of pavement or patch, the patch shall extend to the edge of pavement or patch. It will not be allowed to leave any existing or new section of pavement less than three (3) feet wide. Trenches perpendicular to the roadway that extend past the centerline of the roadway will require a t-patch that covers the entire roadway width. When multiple trenches are present, the t-patch width will be determined by the outer trench locations and shall extend the full width of the pavement if any of the trenches cross the centerline.

D. In Areas with Concrete. When damaged, existing concrete improvements shall be removed and replaced to the next joint or scoring line beyond the damaged or broken sections. In the event that joints or scoring lines

do not exist or are three or more feet from the removed or damaged section, the damaged portions shall be removed and reconstructed to neat, plane faces. All concrete work shall meet the requirements and specifications of Section 650. Portland Cement Concrete Work and APWA 33 05 25 (Pavement Restoration).

E. Rock Excavations. Rock excavations shall meet the requirements and specifications of APWA 31 23 17 (Rock Removal).

F. Site Clearing and the Disposal of Excess Materials. Site clearing shall be conducted according to APWA 31 11 00 (Site Clearing). All excavation material, which is not required for construction or is unsuitable for fill material, shall be immediately disposed of by the Contractor. All roads, sidewalks, curbs, gutters and ditches shall be kept clean of excavated material except as outlined in Title 14.08.05 (Clean Streets) of the Alpine City Municipal Code.

All demolition work shall meet the requirements and specifications of APWA 02 41 13 (Selective Site Demolition), APWA 02 41 14 (Pavement Removal) and APWA 02 41 15 (Pavement Pulverizing).

Removal and disposal of Asbestos Cement Pipe shall be per the Utah Department of Environmental Quality (DEQ) Division of Air Quality (DAQ) guidance document, *How to Handle Non-friable Asbestos Cement Pipe, A Guide for Meeting Utah Department of Environmental Quality/Division of Air Quality Rule*s ("Guidance").

350.020. Sub-surface Pipe Installation.

A. General. Pipes, conduits or casings, 4 inches in diameter or less, may be bored, jacked, augured or jetted under sidewalk, curb, gutter if authorized by the City Engineer or his/her designee. The resulting hole diameter shall not exceed 1 inch plus the outside diameter of the pipe or sleeve installed.

B. Boring or Jacking. Boring or jacking work shall meet the requirements and specifications of APWA 33 05 23 (Trenchless Utility Installation).

C. Tunneling. Where sidewalk, curb, and gutter exists, excavation may be made by tunneling provided the following requirements are met:

1. Excavation shall be vertical and as near to the curb or sidewalk as possible;
2. The length of the tunnel shall not exceed the width of the sidewalk, curb, and gutter;
3. Where a separate sidewalk and curb exist, an excavation shall be made between the sidewalk and the curb;
4. At least three feet of undisturbed earth shall be left under the sidewalk or curb; and
5. Where the sidewalk has been tunneled, the hole shall be filled from each end with flowable fill. Where the excavation cannot meet these requirements, a section of sidewalk, curb, or gutter, from joint to joint shall be removed and replaced.

350.030. Sub-grade.

A. Preparation. All sub-grade shall be shaped and compacted in reasonably close conformity with lines, grades and typical cross section as established by the City Engineer or his/her designee. All grading shall be based on an engineered survey, accepted by Alpine City.

In trenches and cut or fill areas the subgrade shall be scarified to a depth of 8 inches and compacted according to the compaction standards of this chapter. No rocks larger than 4 inches in diameter, organic material, soft clay, spongy material, or other deleterious material will be permitted in this scarified sub-grade layer.

B. Soft and Yielding Areas. Soft and yielding areas which do not compact to City standards shall be removed and replaced with enough compacted engineered fill to bridge the area. Trenches excavated within 10 feet of the lip of gutter shall be removed and replaced as part of the trench asphalt pavement repair, or otherwise approved by the City Engineer and/or his/her designee.

C. Trenches. When the sub-grade material does not afford a sufficiently solid foundation to support the pipe and superimposed load, the trench shall be over-excavated to a sufficient depth and backfilled with enough compacted fill as approved by the City to bridge the area.

D. Roads. Road sub-grades shall be shaped and graded to within a tolerance of 0.15 feet of design grade. Drainage shall be maintained at all times.

E. Structures. Sub-grade material for all concrete structures, regardless of type or location, shall be firm, dense, thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workmen engaged in sub-grade surfacing, laying reinforcing steel, and depositing concrete.

Coarse gravel or crushed stone may be used for subsoil reinforcement if results are satisfactory to the City Engineer or his/her designee. Such material shall be applied in layers, not exceeding 6 inches in thickness, each layer being embedded in the sub-soil by thorough tamping. All excess soil shall be removed to compensate for the displacement of the gravel or crushed stone and the finished elevation of any subsoil reinforced in this manner and shall not be above the specified sub-grade.

The City Engineer may require a soil analysis and design for any area.

350.040. Fill Material.

A. General. All fill material shall be placed on sub-grade prepared according to the specifications of this chapter. All fill material shall be compacted according to the specifications of this chapter.

Only engineered fill or untreated base course may be used as fill material under and within a foot of streets, future street areas, driveways, and concrete unless otherwise specified. All fill material under and within a foot of electrical and communications boxes shall be untreated base course. In other areas native excavated material may normally be used unless such material cannot be properly compacted according to specifications in this chapter. All fill material, including native fill material, must be free from debris, organic material, and rocks larger than 4 inches in diameter and have a liquid limit not to exceed 35 and plastic limit not to exceed 15.

B. Bedding Material. Use APWA No. 4 sewer rock for gravity pipe bedding material. Use sand as a bedding material for pressure pipe and electrical and communication conduit. Bedding sand must compact sufficiently to support the pipe and shall meet the following gradation:

SAND GRADATION

Sieve/Screen Size	% Passing
No. 4	100
No. 200	10 to 20

C. Engineered Fill. Engineered fill shall be used for all imported material unless otherwise specified. Engineered fill shall be granular and well graded meeting the following gradation:

ENGINEERED FILL GRADATION

Sieve/Screen Size	% Passing
4"	100
¾"	70 to 100
No. 200	0 to 15

On that portion of the aggregate passing the No. 40 sieve, the liquid limit shall not exceed 30, nor shall the plasticity index exceed 15 when tested in accordance with AASHTO T89 and T90. Imported material under city streets shall have a minimum CBR of 25.

Reclaimed asphalt pavement (RAP) may NOT be used as engineered fill.

D. Untreated Base Course. All untreated base course shall meet the requirements and specifications of APWA 32 11 23 (Crushed Aggregate Base) for untreated base course. The use of slag as an untreated base course shall not be permitted.

E. Cement Treated Fill. Cement treated fill shall meet the requirements and specifications of APWA 31 05 15 (Cement Treated Fill). Cement treated fill includes following fill materials:
   1. Controlled low-strength material (CLSM) (flowable fill),
   2. Lime treated fill,
   3. Asphalt treated fill.

F. Defective Fill. Fill not conforming to the requirements of this specification shall be reworked to the requirements or removed and replaced with acceptable fill.

350.050. Slopes, Embankments, Fills and Open Channels.

A. Preparation. Unsuitable materials that occur in the foundation for slopes, embankments, and fills shall be removed by clearing, stripping, and/or grubbing. Where suitable materials occur, after stripping, the foundation shall be scarified to a depth of not less than 8 inches. All materials in slopes, embankments, and fills, including the scarified foundation layer, shall be placed, moistened, and compacted according to the compaction standards in this chapter.

B. Material. When the slope, embankment, or fill exceeds the amount of excavation, sufficient additional material shall be obtained from borrow pits provided by the Contractor. All material proposed to be imported shall be subject to the review and approval of the City Engineer or his/her designee prior any hauling operations.

   The materials used for slope, embankment and fill construction shall be free from sod, grass, trash, rocks larger than 6 inches in diameter and all other material unsuitable for construction of compacted fills.

C. Grading. Grading of completed slope, embankment, or fill shall bring the surfaces to a smooth, uniform condition with final grades being within 0.1 foot of the design grade. All grading shall be done to an engineered red-head.

D. Slope Safety. All slope construction shall be in accordance with all City, State and Federal regulations. Plans and Specifications for structures must be approved by the City if the excavation is greater than five (5) feet. Cut slopes greater than 3:1 may be allowed per geotechnical report recommendation and approval of the City Engineer. Under no circumstance will a permanent slope steeper than 2:1 be allowed without a retaining structure unless otherwise approved in writing by the City Engineer or his/her designee. The width of the excavation shall be increased if necessary to provide space for sheeting, bracing, shoring and/or other supporting installations. Unsafe slopes will be the cause for immediate shutdown of the project.

E. Erosion and Sedimentation Control. Erosion and sedimentation control shall meet the requirements and specifications of APWA 31 25 00 (Erosion and Sedimentation Control).

F. Gabions. Gabions shall meet the requirements and specifications of APWA 31 36 00 (Gabions)

G. Rip Rap and Rock Lining. Rip rap and rock lining work shall meet the requirements and specifications of APWA 31 37 00 (Riprap or Rock Lining).

350.060. Installation and Compaction of Earth Materials.

A. General. The installation of all fill material shall meet the requirements and specifications of APWA 33 05 20 (Backfilling Trenches), APWA 31 23 23 (Backfilling Structures), APWA 32 05 10 (Backfilling Roadways) and APWA 31 23 26 (Compaction). Fill material outside of pavement areas, as defined by APWA 32 05 10 (Backfilling Roadways), and more than 24 inches from any utility box shall be compacted to not less than 90% of the maximum dry density.

B. Streets. Sub-base and road-base shall be graded to an engineered red head. Loose rock, roots, brush, and other materials that may be encountered in shaping the sub-base must be removed.

C. Soft and Yielding Spots. Any soft and yielding spots in the fill or sub-grade which do not compact to the specified density shall be removed and replaced with Engineered Fill installed and compacted to City standards.

D. Backfill in Trenches. Backfill shall be carefully placed around and over pipes and shall not be permitted to fall directly on a pipe from such a height or in such a manner as to cause damage.

E. Pipe Zone. The pipe zone includes the full width of trench from 3 inches below the pipe to 6 inches above the pipe for all pipes except for large reinforced concrete pipe (RCP). Large RCP includes RCP with internal diameters larger than 24 inches. The pipe zone for large RCP shall include the full width of trench from 6 inches below the pipe to 6 inches above the pipe. The pipe zone shall extend horizontally a minimum of 6 inches from either side of the pipe except for electrical and communication conduit. Electrical and communication conduit may be placed against the sides of trenches. Trenches shall be wide enough to compact fill material according to the specifications in this chapter.

The pipe zone for all pipes shall be filled with compacted bedding material. Pipe zone materials shall be placed and compacted under and around the pipe in horizontal layers not to exceed 8 inches and tamped by hand or pneumatic tampers.

350.070. Geotextiles, Geogrids and Geocomposites.

A. General. All geotextile work shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles). Geogrid and geocomposite work shall meet the requirements and specifications of APWA 31 05 21 (Geogrids/Geocomposites). Geotextile, geogrid and geocomposite work includes but is not limited to the following geotextile applications:

1. Stabilization-separation,
2. Silt fence,
3. Erosion control,
4. Roadway pavements,
5. Drainage,
6. Weed barrier
7. Granular base reinforcement,
8. Asphalt concrete reinforcement, and
9. Soil reinforcement.

350.080. Working around Existing Utilities.

A. Purpose & Scope: The purpose of this specification is to provide guidance and requirements for the excavation and trenching work in the vicinity of existing utilities. This specification applies to all excavation and trenching work within the project site that involves digging or disturbing the soil within the vicinity of existing utilities, including but not limited to gas, water, sewage, communication, and power lines.

B. Regulations and Permits: The contractor shall obtain all necessary permits and comply with all applicable regulations and guidelines from local, state, and federal agencies regarding excavation and trenching work.

C. Utility Identification: Prior to excavation, the contractor shall verify the location and depth of all existing utilities within the work area using the most current and accurate information available. The contractor shall call Blue Stakes, who will visually mark the location of each utility using colored flags, paint, or other suitable markers.

D. Safety Precautions: The contractor shall implement and maintain all necessary safety precautions to protect workers, equipment, utilities, and the public from harm during excavation and trench work. This may include barricading the work area, providing and installing a traffic plan, providing proper ventilation, using proper excavation techniques, and following confined space procedures.

E. Excavation Techniques: The contractor shall use hand tools or vacuum excavation equipment to expose the existing utility to the depth required by the project design. The excavation shall be done carefully and gradually to avoid damaging the utility.

F. Backfill and Compaction: The contractor shall backfill the excavation with suitable material as specified in the project design, taking care to avoid damaging the utility. The backfill shall be compacted in layers per section 350.060 (Installation and Compaction of Earth Materials).

G. Restoration: The contractor shall restore the work area to its original condition as specified in the project design, including replacing any disturbed pavement, landscaping, or other features.

H. Inspection and Testing: The contractor shall allow the utility owner or its representative to inspect and test the utility before and after excavation to ensure that it remains in good working condition.

I. Record Keeping: The contractor shall maintain detailed records of all excavation and trenching work, including the location and depth of utilities, excavation techniques used, backfill material and compaction,

and restoration activities.

J. Quality Control: The contractor shall implement a quality control program to ensure that all excavation and trenching work meets the requirements of this specification and the project design.

K. Submittals: The contractor shall submit all required submittals, including permits, utility location information, excavation and backfill materials, and compaction test results, to the project owner or engineer for review and approval prior to commencing work.

L. Deviations: Any deviations from this specification or the project design shall be documented and approved by the project owner or engineer prior to proceeding with the work.

M. Cast Iron Pipe: Special care shall be taken when working around Cast Iron Pipe (CIP). CIP can be susceptible to cracking or breaking when under excavated. If CIP is encountered in a trench the exposed section of CIP shall be removed and replaced with Ductile Iron Pipe (DIP). Sleeves shall be used to connect the new piece of DIP to the existing CIP. See Standard Detail 39.

Section 400. Drinking Water.

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400.010. General.

A. Specifications. These specifications cover the installation of drinking water lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to water.

B. Pipe. PVC or polyethylene pipe shall be used for all culinary drinking water mains unless otherwise authorized by the City Engineer or his/her designee. Polyethylene pipe shall be used for the service lateral in conjunction with PVC main lines. Where ductile main line exists, copper pipe is to be used for the service lateral. Special precautions shall be taken in areas of contamination. Pipe and joint materials which are not susceptible to contamination, such as permeation by organic compounds, shall be used. Non-permeable materials shall be used for all portions of the system including water mains, service connections, and hydrant leads. The Division of Drinking Water shall be contacted to establish specific design requirements in areas of contamination or potential contamination such as sewer treatment plants, septic systems, or industrial sites.

C. Size. The City Engineer or his/her designee must approve the sizes of all proposed drinking water lines. It is required to have the design hydraulically modeled by the City's designated Hydraulic Engineer, the Hydraulic Engineer must confirm that the design meets Utah Division of Drinking Water Standards. The minimum size of drinking water pipe is 8 inch diameter for main lines and 1 inch diameter for services unless otherwise authorized by the City Engineer or his/her designee.

D. Location. Drinking water mains shall be located on either the north or east sides of a street 4 feet from the edge of curb. All drinking water appurtenances shall conform to the minimum separation standards from sanitary sewer systems as outlined in Utah Code R309-550-7 and R309-550-12. See standard drawings for utility locations.

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards. They shall be approved by the City Engineer or his/her designee.

F. Dead Ends. To provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins whenever practical. Where dead-end mains occur, they shall be provided with a fire hydrant or with an approved flushing hydrant or blow-off for flushing purposes. See section 400.070 for flushing specifications.

G. Drains. No drain within the culinary water system or other such appurtenances to the distribution system can be connected to the sanitary sewer or storm drain system. Where drains cannot be drained to daylight, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

H. Surface Water Crossings. Surface water crossings, whether over or under water, require Division of Drinking Water approval and shall conform to Utah Code R309-550-8 (8).

I. Cross Connections Prohibited. Per Alpine City Municipal Code 14.06, "It shall be unlawful for any person to connect any part of the Secondary Irrigation System to any part of any culinary water system so as to create a potential cross-connection whereby irrigation water could be introduced into any system that provides culinary water. The use of swing connections will not be permitted."

400.020. Installation.

A. General. Drinking water distribution and transmission systems shall be installed according to the Utah State-adopted plumbing code as well as the requirements and specifications of APWA 33 11 00, 33 05 05, 33 05 06, 33 05 07, AWWA M23; 2003, and AWWA M55; 2006. (Water Distribution and Transmission).

B. Pipe Cleanliness. All foreign matter or dirt shall be removed from the inside of the pipe before it is placed and it shall be kept clean during and after laying. No debris, tools, or other materials shall be placed in the pipe during laying operations. When laying of pipe is not in progress, the pipe shall be closed by a water-tight plug.

C. Identification Tape. All drinking water mains shall be installed with identification tape that meets the requirements and specifications of APWA 33 05 20 (Backfilling Trenches). Tape shall be buried 12 inches above the pipe.

D. Lateral Displacement. All pipes shall be protected from lateral displacement resulting from impact or unbalanced loading during backfilling operations.

E. Restraining. Either thrust blocks or mechanical restraining devices shall be used for all tees, valves, plugs, caps and bends. Restraining shall be accomplished according to the most recent APWA standards.

F. Connections to Existing Drinking Water Lines. The Contractor will be responsible to verify actual size, type of material and location of existing utilities in the field. The fittings and materials required for construction must be approved by the City Engineer or his/her designee.

Where fitting sizes, such as tees and crosses, are shown on the plans, those sizes will be used. However, no attempt has been made to show all needed fittings or materials.

Tapping tees may only be installed when authorized by the City Engineer or his/her designee and when the existing main is at least one size larger than the proposed intersecting line.

G. Bedding. A continuous and uniform bedding shall be provided in the trench for all buried pipe. Stones larger than 3/4" for plastic pipe or 2-inch minus for ductile iron pipe shall be removed for a depth of at least 6 inches below the bottom of the pipe. Bedding materials shall otherwise be installed per APWA standards

400.030. Pipe and Fittings.

A. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the standards and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe), AWWA C900 and C905. Only blue, DR-18 pressure class 150 psi or higher rated PVC pipe may be used for drinking water mains.

B. Ductile Iron Pipe. Ductile iron pipe shall meet the standards and specifications of APWA 33 05 05 (Ductile Iron Pipe). Only a pressure class of 150 psi or larger may be used. A tubular black polyethylene encasement must be installed according to AWWA C105 over all ductile iron pipe and fittings. Flanges, when required, shall meet the requirements and specifications of AWWA C115.

C. Polyethylene Pipe. Polyethylene pipe shall meet the standards and specifications of APWA 33 05 06 (Polyethylene Pipe) and AWWA C906 which includes NSF-61 certification.

D. Steel Pipe - Lined and Coated. Steel pipe shall meet the standards and specifications of APWA 33 05 09 (Steel Pipe - Lined and Coated).

E. Copper Tubing. Copper tubing shall be "soft annealed" and shall conform to the standards for "Type K," prescribed in ANSI/AWWA C800-89 Section A.2 for "Copper Water Tubing" and to ASTM, designation B42 and B88-99, and current revisions thereof. It shall be free from grooving cracks, indentations, flaws or other defects. At intervals of not greater than one and one-half feet, the tubing shall bear clear, permanent markings indicating the type and manufacturer.

F. Fittings. Use Ductile Iron fittings that conform to the provisions of ANSI/AWWA C110/A21.10 or C153/A21.53 unless otherwise recommended by the manufacturer and authorized by the City Engineer or his/her designee. All PVC pipe being inserted into fittings shall have the bevel end removed. All the bolts and nuts of all fittings shall be greased. All fittings shall have an 8 mil vinyl wrap plastic cover.

Minimum pressure Class will be 250 for pipes larger than 12 inch diameter. Pipes of 12 inch diameter and smaller shall be pressure Class 350.

FLOW REQUIREMENTS FOR FLUSHING

Pipe Diameter	Flow in Gallons Per Minute
4 inch	100
6 inch	220
8 inch	390
10 inch	610
12 inch	880
16 inch	1,567

18 inch	1,980
20 inch	2,450
24 inch	3,525
30 inch	5,507

400.040. Valves and Couplings.

A. General. All valves shall meet the requirements of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves).

B. Resilient Seated Gate Valve. All valves on 4 inch to 12 inch drinking water mains shall be resilient seated gate valves. Valves shall also be of iron body have non-rising bronze stems and meet the following specifications:
   1. Mechanical Joint. When valves are Mechanical Joint, they shall be furnished with all necessary glands, followers, and bolts and nuts to complete installation.
   2. Valve Stems. Bronze valve stems shall be interchangeable with stems of the double disc valves of the same size, direction of opening and manufacture.

C. Butterfly Valve. All valves 14 inches and larger shall be butterfly valves which meet the requirements and specifications of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves) and the following specifications:
   1. General. Valve bodies shall be cast iron, ASTM A-126 Class B. Body ends shall be flanged with facing and drilling in accordance with ANSI B16.1, Class 125; or mechanical joint in accordance with AWWA C111. All mechanical joint end valves shall be furnished complete with joint accessories (bolts, nuts, gaskets, and glands). All valves shall conform to AWWA Standard C-504, Table 3, Laying Lengths for Flanged Valves and Minimum Body Shell Thickness for all Body Types.
   2. Disc. Valve disc shall be ductile iron ASTM A-536, grade 65-45-12. Valve disc shall be of the offset design providing 360 degree uninterrupted seating.
   3. Shaft Bearings. Shaft bearings shall be contained in the integral hubs of the valve body and shall be self-lubricated sleeve type.
   4. Coating. All valves shall be coated with epoxy in conformance to AWWA Standard C-550, latest revision. Interior wetted ferrous surfaces shall be coated a nominal 10 mils thick for long life; and body exterior shall have a minimum of 3 to 4 mils coating thickness in order to provide superior base for field-applied finish coats.

D. Valve Boxes. Valves shall be bolted to the cross in the intersection of streets as a cluster valve set. Earth fill shall be carefully tamped around the valve box to a distance of 4 feet on all sides of the box, or to the undisturbed trench face if less than 4 feet.

   All top of valve boxes located in streets shall be installed 1/2 inch below grade. When an overlay is required, the pavement surrounding the valve box shall be neatly cut to form a 30 inch round opening with the valve box centered, and a concrete collar shall be cast around the box 1/2 inch below grade and the valve box set 1/2 inch below grade. Valve boxes in off-road areas shall extend 6 inches above grade. Lid detail shall be similar to Comco C-6517.

E. Couplings. Couplings shall be equal to the product of Smith-Blair or Dresser with cast iron couplings being used on all cast iron and PVC pipe. Couplings shall be of the straight, transition, or reducing style as required by the specific installation. All steel fittings and bolts shall be coated with a non-oxide coating and wrapped with polyethylene.

F. Pressure Regulation Valves. Pressure regulation valves (PRV) which are required in a development when static pressures exceed 150 psi and shall be designed by the Developers engineer, the design shall be submitted to the City Engineer or his/her designee for review and approval prior to starting construction. All PRV's shall be Cla-Val with a 4" bypass or approved by the City Engineer, be placed in a concrete vault, have isolation valves on each side, and have telemetry included.

G. Tapping Valves. Tapping valves may only be used when approved by the City Engineer or his/her designee. Tapping saddles with an "O" ring may be used if the drinking water main line to be tapped is larger than the new drinking water main line. Where the tap is the same size as the existing main, cast iron or stainless steel tapping sleeves shall be used, which encase the full perimeter of the pipe. The valve shall

be a tapping valve with a guide lip on the flanged side. The opposite side of the valve shall have a mechanical joint connection.

H. Air, Vacuum and Release Valves. Combination air, vacuum and release valves shall be installed according to the standard drawings at high points in the system as required by the City Engineer or his/her designee.

I. Isolation Valves. A sufficient number of valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves shall be located at every roadway intersection or block on all segments of pipe. Where a proposed system may serve widely scattered customers and where future development is not expected, the valve spacing shall not exceed two thousand (2,000) feet.

J. Backflow Assemblies. Installation of backflow assembly shall conform to City ordinances and the State-adopted plumbing code. Alpine City has strict guidelines regarding cross connections. In the event a cross connection is allowed, a reduced pressure zone (RPZ) backflow assembly is the only allowed style of backflow prevention assembly. A RPZ may be required in other circumstances, each situation will be evaluated on an individual basis.

400.050. Fire Hydrants.

A. General. Fire hydrants shall meet the requirements and specifications of APWA 33 12 19 (Hydrants). All fire hydrants shall be Mueller Super Centurion 250 or approved equivalent and red in color. They shall have a 5 ¼ inch barrel diameter and 6-inch mechanical joint connection. The 6-inch gate valve will be mechanical joint by flange connected to the tee joint at the main line in the street. Hydrants shall be frost proof. The threads shall be National Standard Fire Hose Thread. Spacing of fire hydrants shall be according to the Uniform Fire Code but more specifically, hydrants are required to be located within 250' of any structure, typically located on property lines. The fire flow level of service Alpine City has established is 1,750 gpm for 2 hours at every hydrant, this will be verified when the proposed plan is submitted and reviewed by the City's designated Hydraulic Engineer.

B. Placement and Location. In general, fire hydrants should be located on property lines to minimize conflicts with driveways. Fire hydrant location to be approved by the City Engineer or his/her designee. Fire hydrants shall be set vertical and held in place by adequate concrete blocking which shall be left in the trench. Hydrants shall be set at a height that will allow 2 inches minimum and 7 inches maximum exposed between the finished ground and the sidewalk flange. A gravel filled drip area shall be provided. Hydrant drains shall not be connected to or located within 10 feet of sanitary sewers. Where possible hydrant drain shall not be located within 10 feet of storm drains. Fire hydrants require 3 feet of clear space around them for operational purposes. See standard drawing for fire hydrants.

The relocation of fire hydrants shall meet the requirements and specifications of APWA 33 11 11 (Relocate Water Meters and Fire Hydrants) and related sections.

400.060. Meters and Services.

A. General. Alpine City owns and maintains the water system up to and including the water meter. Between the water meter and home is the responsibility of the homeowner. See Standard Drawings for drinking water services. The minimum size of new drinking water service lines is 1 inch, while the standard meter size is 3/4 -inch. All drinking water services shall have dual check valves. Drinking water services shall extend 20 feet beyond the back of curb and shall be capped until connected to a building. Meter and service line installation shall conform to the State-adopted plumbing code and conform to the standard meter installation detail as noted in the Alpine City Standard Details.

B. Placement and Location. All meter boxes shall have their location and grade staked prior to installation. No meter boxes shall be set in sidewalks, driveways, or encased in concrete in any way. Service taps shall be a minimum of 36 inches apart. No taps will be allowed within 36 inches of the end of the pipe. All meter boxes require 3 feet of clear space around them for operational purposes. Meter lid height to be set 0.1' above curb (must be within 0.1' of this requirement).

Service laterals shall extend perpendicular from the main to the meter box. If a meter must be coordination with the City Engineer is required. When a new service line is installed the old corporation stop shall be shut off at the main and the old service line cut two feet from the main.

Drinking water service lines shall meet the separation from sanitary sewer requirements in this Section. Drinking water services shall extend 20 feet beyond the back of curb and capped until connected to a building.

The relocations of drinking water meters shall meet the requirements and specifications of APWA 33 11 11 (Relocate Water Meters and Fire Hydrants) and related sections. Services 3/4 – 2 inch shall be copper tubing shall be "soft annealed" and shall conform to the standards for "Type K," prescribed in ANSI/AWWA C800-89 Section A.2 for "Copper Water Tubing" and to ASTM, designation B42 and B88-99, and current revisions thereof. Pipe damaged by scratches, cuts, kinks, or buckled areas shall not be installed. PVC, as mentioned in section 400.010 (B) shall be used in conjunction with PVC mains where corrosive soils exist and shall conform to the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe), only CTS SDR9 200 psi blue polyethylene pipe shall be used for service lines. Deflection in joints shall meet manufacturer's specifications and shall be approved by the City Engineer or his/her designee or shall be replaced with the proper fitting.

C. Meters. The standard meter size is 3/4-inch. All meters shall be paid for by the Contractor and supplied by the City. Meter boxes shall be in good repair. They shall not be set at an angle, crushed, or dented. The inside of boxes must be free from obstructions such as dirt, rocks or debris.

400.070. Flushing.

A. General. All drinking water lines shall be flushed after the high chlorine test and prior to the pressure test. See Section 250. Testing and Inspection for testing information. Flushing shall be accomplished through hydrants and at the end each line. No flushing device shall be directly connected to a sewer or storm drain.

B. Velocity. The Contractor shall install a tap sufficient in size to provide for 2½ foot per second flushing velocity in the line. The following is the flow quantity required to provide a 2½ foot per second flushing velocity.

FLOW REQUIREMENTS FOR FLUSHING

Pipe Diameter in Inches	Flow in Gallons per Minute
4 inch	100
6 inch	220
8 inch	390
10 inch	610
12 inch	880
16 inch	1,567
18 inch	1,980
20 inch	2,450
24 inch	3,525
30 inch	5,507

400.080. Disinfection of Drinking Water Lines.

A. Cleaning. The pipe shall be clean prior to disinfection. If in the opinion of the City, contamination is such that it cannot be removed by flushing, the pipe shall be cleaned by mechanical means and then swabbed with a 1% hypochlorite disinfection solution.

B. Methods. All drinking water pipeline shall be disinfected as outlined in AWWA C651 by one of the following methods:

1. *Tablet Method.* The tablet method shall consist of placing calcium hypochlorite tablets at the specified rate in the main during construction at the upstream end of each section of pipe. The tablet shall be attached with an adhesive, such as Permatex No. 1 or equivalent as approved by the City Engineer or his/her designee. The line shall then be filled slowly (velocities less than 1 ft/sec), expelling all air pockets and maintaining the disinfection solution in the line for at least 24

hours, 48 hours if the water temperature is less than 41º F. The disinfection solution shall have a concentration of at least 25 mg/l of available chlorine.

2. *Continuous Feed Method.* The continuous feed shall be done exactly as outlined in AWWA C651 and shall have a twenty-five mg/l available Chlorine after 24 hours.

Under both methods the Contractor shall not be allowed to flush the line until the chlorine residual test has been passed by the City. If necessary drinking water lines shall be re-chlorinated until satisfactory bacteriological testing is obtained. See Section 250. Testing and Inspection for testing information.

Section 450. Pressurized Irrigation.

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450.010. General.

A. Specifications. These specifications cover the installation of pressurized irrigation lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to pressurized irrigation.

B. Pipe. Polyvinyl Chloride (PVC) pipe shall be used for all pressurized irrigation mains 12 inches in diameter and smaller unless otherwise authorized by the City Engineer or his/her designee. Ductile iron, PVC, or polyethylene pipe shall be used for pressurized irrigation mains larger than 12 inches in diameter as approved by the City Engineer or his/her designee. Only PVC or polyethylene pipe may be used in corrosive soils.

C. Size. The City Engineer or his/her designee must approve the sizes of all proposed pressurized irrigation lines. The minimum size of pressurized irrigation pipe in thru streets is 6 inch diameter for main lines, 4 inch diameter for cul-de-sacs unless otherwise specified in the Pressurized Irrigation System Master Plan. 1 inch diameter for services are required for each lot. A dual service shall be 1½" to the service tee.

D. Location. Pressurized irrigation mains shall be located on either the south or west sides of a street 3 feet from the edge of curb. See standard drawings for utility locations.

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

Tapping tees may only be installed when authorized by the City Engineer or his/her designee and when the existing main is at least one size smaller than the proposed main.

F. Cross Connections Prohibited. Per Alpine City Municipal Code 14.06, "It shall be unlawful for any person to connect any part of the Secondary Irrigation System to any part of any culinary water system so as to create a potential cross-connection whereby irrigation water could be introduced into any system that provides culinary water. The use of swing connections will not be permitted."

450.020. Installation.

A. General. Pressurized irrigation distribution and transmission systems shall be installed according to the requirements and specifications of APWA 33 11 00 (Water Distribution and Transmission). PVC pipe shall also be installed according to the requirements and specifications of AWWA C605.

B. Pipe Cleanliness. All foreign matter or dirt shall be removed from the inside of the pipe before it is placed and it shall be kept clean during and after laying. No debris, tools, or other materials shall be placed in the pipe during laying operations. When laying of pipe is not in progress, the pipe shall be closed by a water-tight plug.

C. Minimum Cover. All pressurized irrigation mains shall have a minimum cover of 2 feet to the top of the pipe.

D. Identification Tape. All pressurized irrigation mains shall be installed with identification tape that meets the requirements and specifications of APWA 33 05 20 (Backfilling Trenches). Tape shall be buried 12 inches above the pipe.

E. Lateral Displacement. All pipes shall be protected from lateral displacement resulting from impact or unbalanced loading during backfilling operations.

F. Restraining. Either thrust blocks or mechanical restraining devices shall be used for all tees, valves, plugs, caps and bends. Restraining shall be accomplished according to the standard drawings.

G. Connections to Existing Pressurized Irrigation Lines. The Contractor will be responsible to verify actual size, type of material and location of existing utilities in the field. The fittings and materials required for construction must be approved by the City Engineer or his/her designee.

Where fitting sizes, such as tees and crosses, are shown on the plans, those sizes will be used. However, no attempt has been made to show all needed fittings or materials.

450.030. Pipe and Fittings.

A. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe) and AWWA C900 and C905. Only purple, SDR-18 pressure class 150 psi pipe may be used for pressurized irrigation mains.

B. Ductile Iron Pipe. Ductile iron pipe shall meet the standards and specifications of APWA 33 05 05 (Ductile Iron Pipe). Only a pressure class of 150 psi or larger may be used. A tubular purple polyethylene encasement must be installed according to AWWA C105 over all ductile iron pipe and fittings. Flanges, when required, shall meet the requirements and specifications of AWWA C115. Ductile iron may be directed tapped for the use of corporation stops.

C. Polyethylene Pipe. Polyethylene pipe shall meet the standards and specifications of APWA 33 05 06 (Polyethylene Pipe).

D. Steel Pipe - Lined and Coated. Steel pipe shall meet the standards and specifications of APWA 33 05 09 (Steel Pipe - Lined and Coated).

E. Fittings. Use Ductile Iron fittings that conform to the provisions of ANSI/AWWA C110/A21.10 or C153/A21.53 unless otherwise recommended by the manufacturer and authorized by the City Engineer or his/her designee. All PVC pipe being inserted into fittings shall have the bevel end removed. All the bolts and nuts of all fittings shall be greased. All fittings shall have an 8 mil vinyl wrap plastic cover.

450.040. Valves and Couplings.

A. General. All valves shall meet the requirements of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves).

B. Resilient Seated Gate Valve. All valves on 4 inch to 12 inch water mains shall be resilient seated gate valves. Valves shall also be of iron body have non-rising bronze stems and meet the following specifications:

1. *Mechanical Joint.* When valves are Mechanical Joint, they shall be furnished with all necessary glands, followers, and bolts and nuts to complete installation.
2. *Valve Stems.* Bronze valve stems shall be interchangeable with stems of the double disc valves of the same size, direction of opening and manufacture.

C. Butterfly Valve. All valves 14 inches and larger shall be butterfly valves which meet the requirements and specifications of APWA 33 11 00 (Water Distribution and Transmission) and APWA 33 12 16 (Water Valves) and the following specifications:

1. *General.* Valve bodies shall be cast iron, ASTM A-126 Class B. Body ends shall be flanged with facing and drilling in accordance with ANSI B16.1, Class 125; or mechanical joint in accordance with AWWA C111. All mechanical joint end valves shall be furnished complete with joint accessories (bolts, nuts, gaskets, and glands). All valves shall conform to AWWA Standard C-504, Table 3, Laying Lengths for Flanged Valves and Minimum Body Shell Thickness for all Body Types.
2. *Disc.* Valve disc shall be ductile iron ASTM A-536, grade 65-45-12. Valve disc shall be of the offset design providing 360 degree uninterrupted seating.
3. *Shaft Bearings.* Shaft bearings shall be contained in the integral hubs of the valve body and shall be self-lubricated sleeve type.
4. *Coating.* All valves shall be coated with epoxy in conformance to AWWA Standard C-550, latest revision. Interior wetted ferrous surfaces shall be coated a nominal 10 mils thick for long life; and body exterior shall have a minimum of 3 to 4 mils coating thickness in order to provide superior base for field-applied finish coats.

D. Valve Boxes. All buried valves shall be installed complete with two-piece, cast iron, slip type, 5-1/4-inch shaft valve box with drop lid. The lid shall have the word "IRRIGATION" or “DRAIN” according to the standard drawing cast in the metal.

Valves and valve boxes shall be installed where shown on the drawings. Valves and valve boxes shall be set plumb. Valve boxes shall be centered directly over the valve. Valves shall be aligned with property lines where possible. Earth fill shall be carefully tamped around the valve box to a distance of 4 feet on all sides of the box, or to the undisturbed trench face if less than 4 feet. Valves shall have the interiors cleaned of all foreign matter before installation.

All top of valve boxes located in streets shall be installed 1/2 inch below grade. The pavement surrounding the valve box shall be neatly cut to form a 30 inch round opening with the valve box centered, and a concrete collar shall be cast around the box. Valve boxes in off-road areas shall extend 6 inches above grade unless otherwise specified by the City Engineer or his/her designee. Lid detail shall be similar to Comco C-6517.

E. Couplings. Couplings shall be equal to the product of Smith-Blair or Dresser with cast iron couplings being used on all cast iron and PVC pipe. Couplings shall be of the straight, transition, or reducing style as required by the specific installation. All steel fittings and bolts shall be coated with a non-oxide coating and wrapped with polyethylene.

F. Pressure Regulation Valves. Pressure regulation valves (PRV) which are required in a development shall be designed by the Developers engineer and the design shall be submitted to the City Engineer or his/her designee for review and approval prior to starting construction. All PRV's shall be Cla-Val with a 4" bypass or as specified by design, be placed in a concrete vault and have telemetry included.

G. Tapping Valves. Tapping valves may only be used when approved by the City Engineer or his/her designee. Tapping saddles with an "O" ring may be used if the water main line to be tapped is larger than the new water main line. Where the tap is the same size as the existing main, cast iron or stainless steel tapping sleeves shall be used, which encase the full perimeter of the pipe. The valve shall be a tapping valve with a guide lip on the flanged side. The opposite side of the valve shall have a mechanical joint connection.

H. Air, Vacuum and Release Valves. Combination air, vacuum and release valves shall be installed according to the standard drawings at high points in the system as required by the City.

450.050. Meters, Boxes and Services.

A. General. See the standard drawings for pressurized irrigation services. The minimum size of new pressurized irrigation service lines is 1 inch for single service and 1 ½" for dual service.

B. Placement and Location. All meters and boxes shall have their location and grade staked prior to installation. No meters or boxes shall be set in sidewalks or driveways. Meters and boxes are to be set 5 feet uphill from the water meter, 1 foot behind the sidewalk or 10 feet behind the curb. For new development, box to be set within +/- 0.1' sidewalk elevation. Service taps shall be a minimum of 36 inches apart. No taps will be allowed within 36 inches of the end of the pipe.

Service laterals shall extend perpendicular from the main to the meter or box. For dual pressurized irrigation services, laterals shall extend perpendicular from the main to the tee.

If a meter must be moved coordination with the City Engineer is required. When a new service line is installed the old corporation stop shall be shut off at the main and the old service line cut two feet from the main.

C. Meters and Boxes. All meters shall be paid for by the developer and ordered by the City. Meter boxes and pressurized irrigation boxes shall be in good repair. They shall not be set at an angle, crushed, or dented. The inside of boxes must be free from obstructions such as dirt, rocks or debris. Meters shall be installed by the Developer or Contractor.

D. Polyethylene Pipe. Only CTS SDR9 200 psi purple polyethylene pipe shall be used for pressurized irrigation service lines. Pipe damaged by scratches, cuts, kinks or buckled areas shall not be installed.

The bottom of trench shall be flat with no hollows, no lumps and no rock. If these conditions do not occur pipe must be bedded in coarse sand. No rocks shall be allowed within six inches of pipe.

Pipe shall be cut with either a wheel or scissor type tubing cutter with a blade specifically designed for plastic. Cuts shall be square and clean. Cutter manufacturer instructions shall be followed when cutting pipe. All connections shall have stainless steel stiffeners.

There shall be no unnecessary bending of pipe. Taps shall be exactly horizontal to the pressurized irrigation main. If bending cannot be avoided maximum bending radius shall be 25 times the pipe diameter as measured in inches (i.e.: a 16 inch pipe cannot bend on a curvature having a radius less than 16 x 25= 400 feet). There shall be no bending within 3 feet of a fixed point and no "S" shape curves.

450.060. Flushing.

A. General. All pressurized irrigation lines shall be flushed before placed in service. Flushing shall be accomplished through the end of each line.

B. Velocity. The Contractor shall install a tap sufficient in size to provide for 2 ½ feet per second flushing velocity in the line. The following is the flow quantity required to provide a 2 ½ foot per second flushing velocity.

FLOW REQUIREMENTS FOR FLUSHING

Pipe Diameter	Flow in Gallons Per Minute
4 inch	100
6 inch	220
8 inch	390
10 inch	610
12 inch	880
16 inch	1,567
18 inch	1,980
20 inch	2,450
24 inch	3,525
30 inch	5,507

Section 500. Sanitary Sewer.

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- B. Pipe.
- C. Size.
- D. Locations.
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- F. Sanitary Sewer Lift Stations.
- G. Unusual Piping and Plumbing.

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500.030. Services.
- A. General.
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500.010. General.

A. Specifications. Sanitary sewer facilities shall meet the requirements and specifications of APWA 33 31 00 (Sanitary Sewerage Systems). These specifications cover the installation of sanitary sewer lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to sanitary sewers.

B. Pipe. All sanitary sewer pipe 18 inches in diameter and larger shall be ADS Sanitite HP pipe or approved equivalent unless otherwise approved by City Engineer or his/her designee. All other sanitary sewer pipe shall be constructed with polyvinyl chloride (PVC) pipe.

C. Size. The City Engineer or his/her designee must approve the sizes of all proposed sanitary sewer lines. Minimum size of pipe is 8 inch diameter for main lines and 4 inch diameter for services.

D. Location. Sanitary Sewer mains shall be located on either the south or west sides of a street 7 feet from the centerline. A maximum of 400 feet of pipe shall be allowed between manholes unless otherwise approved by the City Engineer and/or his/her designee.

E. Minimum Slopes. Slopes shall be designed to have a 2 foot per second velocity unless otherwise approved by the City Engineer and/or his/her designee. The following table lists minimum slopes for sanitary sewer for each size of pipe:

MINIMUM SANITARY SEWER SLOPES

Pipe Diameter (inches)	Minimum Slope (%)
4	2.000
6	1.000
8	0.334
10	0.248
12	0.194
14	0.158
15	0.144
16	0.132
18	0.113
21	0.092
24	0.077
27	0.066
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

F. Sanitary Sewer Lift Stations. Sanitary sewer lifts stations require prior approval. All possible options for a gravity flow system shall be considered prior to requesting approval of a sanitary sewer lift station or equivalent system. Sanitary sewer lift stations or equivalent systems which are approved to be used in a development shall be designed by the Developer's engineer; the design shall be submitted to the City Engineer or his/her designee for review prior to Preliminary Approval of the development. Lift stations will be the wet well / dry well type, will have standby power, proper ventilation, telemetry, and will be designed for large areas, not individual subdivisions.

G. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

500.020. Pipe and Fittings.

A. General. ADS Sanitite HP pipe or approved equivalent shall be used for all sanitary sewer lines larger than 18 inches in diameter. All other sanitary sewer lines shall be constructed with polyvinyl chloride (PVC) pipe.

Pipe buried more than 12 feet deep shall require manufacturing and engineering specifications to be submitted to the City Engineer or his/her designee for written approval.

B. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe) and shall have a minimum rating of SDR-35.

C. ADS Sanitite HP Pipe. Sanitite HP pipe with sizes up to 30 inches shall meet the requirements and specifications of ASTM F2732. Sanitite HP pipe with sizes over 30 inches shall meet the requirements of ASTM F2764.

500.030. Services.

A. General. All sanitary sewer services shall be connected to existing sanitary sewer mains by use of an Inline Y or approved equivalent Insert-a-Tee type connection, and shall be approved by the City Engineer and/or his/her designee. Sewer services shall extend 10 feet beyond the back of sidewalk and plugged until connected to a building. The minimum cover of sewer laterals is at 3' 6" at the property line.

B. Clean-outs. Clean-outs, per City details, shall be installed every 100 feet on all service lines.

C. Replacement of service lines. When an existing lot/parcel has a working sewer service, a Street Cut Permit will not be issued for a new service line without approval from the City Engineer.

Section 550 Storm, Land and Groundwater Drains.

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- B. Retention Basins.
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- A. General.

550.010. General.

A. Specifications. Storm, land and groundwater drain facilities shall meet the requirements and specifications of APWA 33 41 00 (Storm Drainage Systems). These specifications cover the installation of storm, land and groundwater lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to storm, land and groundwater drains. Land and groundwater drains shall be approved by the City Engineer and shall be installed lower in elevation than the sewer mainline.

B. Size. The City Engineer or his/her designee must approve the sizes of all proposed drain lines. The minimum size of pipe is 15" diameter for all lines, both mains and laterals.

C. Location. Drain lines shall be located along the centerline of the street, typically below water mains to reduce conflicts. Unless approved otherwise, a maximum of 400 feet of pipe shall be allowed between manholes.

D. Minimum Slopes. Slopes shall be designed to have a 2 foot per second velocity unless otherwise approved by the City Engineer and/or his/her designee. The following table lists minimum slopes for drain lines for each size of pipe:

MINIMUM DRAIN LINE SLOPES

Pipe Diameter (inches)	Minimum Slope (%)
12	0.194
14	0.158
15	0.144
16	0.132
18	0.113
21	0.092
24	0.077
27	0.066
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

F. Groundwater Drains. All plans for groundwater drains must be designed and stamped by a licensed professional civil engineer in the State of Utah. Only rigid pipe may be used.

550.020. Pipe and Fittings.

A. General. Reinforced concrete pipe shall be used for all lines with less than 2 feet of cover or more than 8 feet of cover. Corrugated metal pipe (CMP) may only be used when authorized by the City Engineer or his/her designee.

B. Concrete Pipe. Concrete pipe shall meet the requirements and specifications of APWA 33 05 02 (Concrete Pipe and Culvert). Reinforced concrete pipe (RCP) shall be Class III. Only new pipe may be used unless otherwise authorized by the City Engineer or his/her designee.

C. Polyethylene Pipe. Polyethylene pipe shall meet the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe) Type S for storm drains and Type SP for land or groundwater drains.

D. Polyvinyl Chloride Pipe (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe).

E. Corrugated Metal Pipe (CMP). CMP shall meet the requirements and specifications of APWA 33 05 04 (Corrugated Metal Pipe).

550.030. Sumps, and Appurtenances.

A. Connecting to Existing Drain Lines. Manholes and sumps used to connect proposed storm drain to existing storm drain shall be plumb and centered on the existing storm drain. The new pipe shall be placed against the existing pipe at the elevation designated by the project engineer and the base poured as specified above. Care shall be taken not to disturb the alignment of the existing storm drain during the excavation procedure. Any damage to the existing storm drain shall be repaired.

B. Sumps. Sumps may only be constructed of reinforced concrete, precast sections and shall meet the requirements of ASTM C478-73. Sumps shall have eccentric lids to ensure adjustments in alignment.

C. Inlet and Clean Out Structures. Surface water must enter the City storm drain system through standard City inlet boxes. In no case may water inlet directly into storm manholes, clean-outs, or sumps. Inlets and clean out structures shall not exceed 400 ft spacing unless approved otherwise by the City Engineer.

All inlet and clean out structures shall be reinforced concrete boxes. They may be precast or cast-in-place. Grate and Frame Material. All castings shall be of ASTM A-48, Class 35 iron free from blowholes and shrinkage defects. Castings shall be free from fins and burrs and shall be shot-blasted to remove sand and other foreign matter. Freedom from cracks and defects shall be ascertained by the engineer prior to installation.

D. Headwalls. A headwall shall be installed at all ditch to pipe transitions. Headwall designs must be stamped by a licensed professional civil engineer in the State of Utah and approved by the City Engineer or his/her designee.

550.040. Retention/Detention Basins.

A. General. Basin designs shall be designed with the following side slopes:

Basin Finish	Min. Side Slope
Non-landscaped	3:1
Landscaped	4:1

B. Retention Basins. All retention basins shall have a freeboard of 12 inches. Design of retention basins shall be according to the Storm Water Drainage Design Manual. All retention basins shall have a series of interconnected sumps connected to curb inlet boxes or storm drain main lines.

All retention basins shall be constructed for drainage areas designated in the Storm Drain Master Plan. Basins for smaller areas may be allowed only with prior written approval of the City Engineer or his/her designee.

C. Detention Basins. All detention basins shall have 12 inches of freeboard. Design of detention basins shall be according to the Storm Water Drainage Design Manual. Detention basins may be constructed in landscape or parking areas. Each detention basin shall incorporate LID storm drain principles and have an overflow to the City storm drain system.

550.050. Low Impact Development.

General. All new development and roadways shall incorporate LID storm drain in the form of bioretention swales, underground retention cells and other methods as approved by the City Engineer or his/her designee. LID systems shall be designed in accordance with the Stormwater Design Manual.

Section 600. Streets and Pavements.

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600.010. General.

A. Street Designations. Street designations include: local streets, secondary access, collector streets and arterial streets. Designations shall be assigned by the City in compliance with the Alpine City Transportation Master Plan.

B. Time Limitation after Curb and Gutter is Placed. Road base shall be placed between 7 to 30 days of placement of curb and gutter. Pavement shall be placed before 45 days after the placement of curb and gutter unless an extension is granted by the City Engineer or his/her designee. If an extension is granted by the City Engineer or his/her designee, and to protect the curb and gutter, the road base shall be graded to the lip of curb elevation extending at least three (3) feet into the roadway at that same elevation until paving can occur; at which point, it shall be re-graded for paving.

C. Geotextiles, Geogrids and Geocomposites. All geotextile work shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles) and APWA 32 12 16 (Plant-Mix Asphalt Paving). Geogrid and geocomposite work shall meet the requirements and specifications of APWA 31 05 21 (Geogrids/Geoomposites) and APWA 32 12 16 (Plant-Mix Asphalt Paving).

D. Pavers. Pavers and installation shall meet the requirements and specifications of APWA 32 14 13 (Precast Concrete Unit Paving) and APWA 32 14 16 (Brick Unit Paving).

E. Painted Traffic Lines and Markings. Painted traffic lines and markings shall meet the requirements and specifications of APWA 32 17 23 (Pavement Markings) and the MUTCD.

F. Traffic Barriers. Vehicle barriers shall meet the requirements and specifications of APWA 34 71 13 (Vehicle Barriers) and the MUTCD.

G. Vehicle Delineators. Vehicle delineators shall meet the requirements and specifications of APWA 34 71 19 (Vehicle Delineators) and the MUTCD.

600.020. Street Section.

A. Soils Investigation. A soils investigation shall be performed for all new roads and those roads for which work will be performed. The results of this investigation and a design of the road cross section shall be submitted to and accepted by the City Engineer or his/her designee.

The following guidelines shall be used as a minimum requirement for street cross sections. They should be used unless the soils investigation indicates they are not adequate. Any variations from these standards must be approved by the City Engineer or his/her designee.

B. Pavement Section. All roads shall be paved with asphalt concrete according to City standards unless authorized by the City Engineer or his/her designee. The following table shall be used for minimum asphalt pavement surfacing depths:

ASPHALT PAVEMENT COURSE THICKNESS

Application	Minimum Pavement
Parking Lots and Driveways	3 inch
Local Streets	3 inch + preservation coat after 1 year
Secondary Access Roads	3 inch + preservation coat after 1 year (if pavement is required)
Collector/Arterial Streets	4 inch + preservation coat after 1 year

Streets shall have an approved preservation coat installed 1 year after the end of construction inspection, pending amenable conditions for installation. At the City's discretion, the contractor may arrange to have the City install the preservation coat at the Contractor's expense. The funds for a preservation coat shall be provided in escrow prior to recording the subdivision plat.

C. Road-base Section. All roads shall have a minimum 8 inches of road-base under the pavement section. Road-base shall be an untreated base course installed according to City standards. See Section 350. Earthwork and Trenching. Road-base shall be finished to a smooth uniform line and grade and shall extend

a minimum of 12" beyond the pavement surface for placements without curb and gutter. For placements with curb and gutter it shall extend 12" beyond the back of curb. Road-base shall not be placed and compacted against new curb for a minimum of seven (7) days after curb is poured.

D. Sub-base Section. All sub-base shall be an engineered fill that meets and is installed according to City standards. See Section 350. Earthwork and Trenching. Sub-base shall be finished to a smooth uniform line and grade and shall extend a minimum of 12" beyond the pavement surface for placements without curb and gutter. For placements with curb and gutter it shall extend 12" beyond the back of curb. The thicker section shall be used in the case where CBR may be in conflict. The following table shall be used for minimum sub-base course thicknesses for the following California Bearing Ratio (CBR) values of sub-grade:

PARKING LOTS AND DRIVEWAYS
MINIMUM SUB-BASE COURSE THICKNESSES

Sub-grade CBR	Minimum Sub-base Thickness (inches)
Less than 2	12
2.1 to 8.0	8
More than 8	No Sub-base Required

LOCAL STREET / SECONDARY ACCESS
MINIMUM SUB-BASE COURSE THICKNESS

Sub-grade CBR	Minimum Sub-base Thickness (inches)
Less than 2	15
2.1 to 3.0	12
3.1 to 10.0	8
More than 10	No Sub-base Required

COLLECTOR / ARTERIAL STREET
MINIMUM SUB- BASE COURSE THICKNESS

Sub-grade CBR	Minimum Sub-base Thickness (inches)
Less than 2.0	18
2.1 to 3.0	15
3.1 to 5.0	12
5.1 to 15.0	8
More than 15	No Sub-base Required

E. Grading. The sub-grade, sub-base, and road base shall all be graded to an engineered red-head and accepted by the City. Red-heads shall be placed every 50 feet at the crown of the road. If the distance between red-heads and edge of pavement exceeds 25 feet additional redheads shall be installed halfway between the crown and edge of pavement.

600.030. Trail Section.

A. General. A pavement and soils investigation shall be performed for Class A and B trails. The results of this investigation and a design of the trail section shall be submitted to and accepted by the City Engineer or his/her designee.

The following guidelines shall be used as a minimum requirement for Class A thru D trail cross sections. They should be used unless the soils investigation indicates they are not adequate. Any variations from these standards must be approved by the City Engineer or his/her designee. All trail materials shall be placed according to City standards.

1. *Engineered Fill.* Compacted engineered fill shall be placed in all areas where fills are required to meet grade or the requirements of the soils investigation.

2. *Untreated Base Course.* 6 inches of compacted untreated base course shall be placed under the surface course of Class A thru D trails.
3. *Bituminous Surface Course.* A minimum of 3 inches of APWA DM-1/2, PG 58-28, 50 Blow or SP-3/8, PG58-28, 75Nd bituminous surface course shall be placed across 8 feet of the trail section.
   a. A maximum of 15% RAP or 15% Recycled Binder Replacement, whichever is less, will be allowed.

B. Survey. Both sides of a trail shall be laid out by a survey and approved by the City before construction. Lath shall be placed at 100 foot intervals and at bends and obstacles the trail comes near.

C. Weed Abatement. All weeds shall be sprayed and killed with Roundup or an approved equivalent one week before any work may be performed, and within 3 weeks of the placement of untreated base course.

D. Geotextile Fence. An APWA 31 05 19 (Geotextiles) silt fence shall be installed along the limits of the trail construction at hillsides, river embankments, or by or through City Open Space.

E. Sub-grade. The sub-grade shall be grubbed of all trees, bushes and other organic matter. Sub-grade shall be graded to meet the following ADA requirements for walkways when required on ADA accessible pathways:
   1. *Maximum Slope.* Sub-grade shall not have a slope greater than 8.33%.
   2. *Maximum Run for Steep Slopes.* For slopes between 5.00% and 6.25% the maximum run shall be 40 feet. For slopes between 6.25% and 8.33% the maximum run shall be 30 feet.

F. Weed Barrier. Weed barrier geotextile shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles).

G. Trail Markings. Trail lanes shall be delineated by a center single dashed yellow line. Painted traffic lines and markings shall meet the requirements and specifications of APWA 32 17 23 (Pavement Markings) and the MUTCD.

H. Clean-up. Upon completion of the trail section all windrows, survey and construction debris shall be removed from along the edges of the trail.

600.040. Bituminous Surface Course.

A. Bituminous Concrete Material Specification. Bituminous Concrete material (aka: asphalt material) shall meet the requirements and specifications of APWA 32 12 05 (Bituminous Concrete).

For all streets, parking lots, trails, and repairs; use APWA DM-1/2, PG 58-28, 50 Blow or SP-3/8 PG58-28, 75Nd. Recycled Asphalt Pavement (RAP) or Recycled Asphalt Binder (RAB) content may not exceed 15% in any mix design.

B. Bituminous Concrete Placement. Placement of bituminous concrete (asphalt) shall meet the requirements of APWA 32 12 16.13 (Plant-Mix Asphalt Paving) and APWA 32 12 17 (Cold-Mix Asphalt Paving).

For all new construction, paving shall not occur until gas and power utilities are installed. Other dry utility crossings shall be installed and approved by the dry utility company representative and the City Engineer or his/her designee. Crossings shall be surveyed and included on the asbuilt drawings.

Required testing for culinary water, pressurized irrigation, sewer, and storm drain shall be completed and approved by the City Engineer or his/her designee prior to paving.

For paving limitations, see Asphalt Paving Limitations, Section 250.

Cold-mix asphalt concrete shall only be installed when allowed by the City Engineer or his/her designee. All cold-mix asphalt concrete shall be replaced with hot-mix within 30 days of when it becomes available.

C. Prime Coat. Prime coat only as required by the plans or the City. Prime coat shall meet the requirements and specifications of APWA 32 12 13 (Prime Coat).

D. Tack Coat. Install tack coat as required and according to APWA 32 12 13 (Tack Coat). Use CSS-1 or CSS-1h tack emulsion diluted 2:1 (concentrate to water).

E. Thin Overlays and Patches. Use binder and bituminous concrete as defined in Article A based on paver or hand applications. Apply tack coat to all horizontal and vertical surfaces sufficient to achieve minimum 95% coverage prior to placement of overlay or patch.

F. Slurry Seal. Slurry seals shall meet the requirements and specifications of APWA 32 01 13 (Slurry Seal). The type of slurry seal applied to a City street shall be approved and specified by the City Engineer.

G. Chip Seal. Chip seals shall meet the requirements and specifications of APWA 32 01 13 (Chip Seal).

H. Micro-Surfacing. Micro-surfacing shall meet the requirements and specifications of APWA 32 01 15 (Micro-Surface Seal).

I. Pavement Crack Seal. Pavement crack seals shall meet the requirements and specifications of APWA 32 01 17 (Pavement Crack Seal).

J. High Density Mineral Bond Seal. High density mineral bond seals shall meet the requirements and specifications of 2017 APWA 32 01 13 (High Density Mineral Bond Seal).

Section 650. Portland Cement Concrete and Masonry Work.

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650.010. General.

A. Specifications. These specifications cover the installation of concrete work including but not limited to curbs, gutters, sidewalks, boxes, and thrust blocks. All concrete work shall meet the requirements and specifications of APWA Division 03 Concrete and related sections. Concrete driveway, sidewalk, curb and gutter work shall meet the requirements and specifications of APWA 32 16 13 (Driveway, Sidewalk, Curb, Gutter). See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. Also, see standard drawings related to concrete work.

All concrete work shall be constructed where indicated on the plans or as directed by the project engineer and shall conform in all respects to the specified lines, grades, and dimensions and City standards.

B. Allowable Grades. The minimum grade allowed for any gutter is 0.50%. See Alpine City Development Code for maximum allowable grades of City streets.

C. American Disabilities Act (ADA) Requirements. All pedestrian facilities will conform to the current federal ADA standards.

D. Combination Curb, Gutter, and Sidewalk. Combination curb, gutter, and sidewalk will not be allowed unless authorized by the City Engineer or his/her designee.

E. Cold Weather Concrete. Concrete shall not be placed when a descending air temperature in the shade and away from artificial heat falls below 35ºF. Concrete shall not be poured on frozen ground. Where temperatures are projected to descend below 32ºF within 72 hours after placement, concrete shall be covered or otherwise protected against freezing. No calcium based add mixtures may be used. Any other add mixtures must be approved by the City Engineer or his/her designee.

If concrete is not protected by insulation blankets for 72 hours following installation and the temperature drops below 45 degrees a pay factor of 0.50 shall apply.

Per APWA Division 03, concrete placed between October 1 and March 1 requires an increase in mix design strength by 1 class, i.e. Class 3000 becomes Class 4000, Class 4000 becomes Class 5000, etc.

F. Debris in Gutters. Once curb and gutter and surface course is in place they shall be kept as clean as possible. Dirt and gravel shall not be placed in gutter or on street. Gutter shall flow freely at all times.

G. Sidewalk. Sidewalk shall be 5 inches thick with 6 inches of compacted road base. To protect the structural integrity of new sidewalk, all dry utilities shall be installed prior to installing sidewalk. When equipment is required to cross over sidewalk, bridging must be provided to protect concrete.

H. Drive Approaches. All City owned drive approaches shall be 5 inches thick with 6 inches of compacted road base. Commercially owned drive approaches are recommended to be 6 inches thick.

I. Protection of Wet Concrete. The Contractor shall be responsible to protect wet concrete. Any concrete that is vandalized before setting up shall be replaced at the contractor's expense.

J. Repair. When authorized by the City Engineer or his/her designee, Contractor may repair concrete damage with Concrete Solution's Ultra Surface Concrete Polymer installed to manufacturer's specifications or an equivalent that is approved by the City Engineer or his/her designee. Repair of concrete sidewalk shall include the entire panel that was damaged with a minimum of five (5) foot length panel replaced.

650.020. Installation.

A. Cutting Pavement. When replacing gutter, the pavement shall be cut along the entire excavation to provide a vertical joint in the surface. Cut shall be a minimum of 12 inches from lip of gutter. A pavement saw shall be used for all pavement cutting. If excavation damages the cut pavement, pavement shall be cut again before patching. All road cuts shall be repaired within 2 working days.

B. Forms and Joints. When pouring concrete along a curve, flexible forms with enough stakes to hold the forms at an even curve shall be used.

Curb and gutter contraction joints shall be constructed every 10 feet by using steel templates 1/8 inch in thickness. Sidewalk contraction joints shall meet APWA requirements with the minimum distance between joints being 5 feet.

C. Base Material. A minimum of 6 inches of untreated base course shall be installed under all concrete and shall extend out 1 foot in all directions from concrete unless otherwise specified. Untreated base course shall be compacted and installed according to City standards. See Section 350. Earthwork and Trenches.

D. Mixing and Conveying. Concrete transported in a truck mixer, agitator, or other transportation device shall be discharged at the job and placed in its final position in the forms within 1 hour after the introduction of the mixing water to the cement and the aggregate, or the cement to the aggregate, except that in hot weather or under other conditions contributing to quick stiffening of the concrete, the maximum allowable time may be reduced by the City Engineer or his/her designee. The maximum volume of mixed concrete transported in an agitator shall be in accordance with the specified rating. During adverse weather conditions the City Engineer or his/her designee may deem it necessary for the use of a concrete pump truck.

E. Finishing. As soon as the concrete has set sufficiently to retain its shape without support of the face form, the clamps, spreaders and face forms shall be removed. While the concrete is still green, the surface shall be thoroughly floated with a magnesium or moist wooden float to provide an even smooth surface, then broomed lightly.

F. Curing. As soon as possible after final finishing, the finished surface shall be coated with a curing compound. The compound shall be an ASTM C-1315 Type 2 curing compound that meets the APWA 03 39 00 (Concrete Curing) specifications. The compound shall be applied in accordance with the manufacturer's recommendations. During the months of October through February exposed concrete shall be covered with an insulated curing blanket that meets the ACI 306 specification for 3 days when temperatures remain at 15 degrees Fahrenheit or higher and for 7 days for temperatures below 15 degrees Fahrenheit. Insulated curing blankets shall only be removed during the warmest parts of the day. The curing compound shall then be applied within 24 hours of the blankets being removed.

650.030. Materials.

A. Coarse Aggregate. A coarse aggregate shall consist of hard durable particles of a mixture of crushed and natural gravel possessing at least 50% of broken surface area. The coarse aggregate shall be free from substances which are chemically active relative to hydrated cement and shall be subject to particularly the following:

1. Loss on abrasion by Los Angeles Abrasion Test not more than 40% by weight.
2. Loss on exposure to 5 cycles of sodium sulfate soundness test, not more than 8% by weight.
3. Deleterious substances shall not exceed the values in the following table:

PORTLAND CEMENT CONCRETE
COURSE AGGREGATE DELETERIOUS SUBSTANCES

Substance	Maximum % by Weight
Soft Fragments	3.0
Coal Lumps	1.0
Clay Lumps	0.5
Material passing 39 100 Sieve	1.5
Organic Material	0.1
Total for All of the Above	3.0

The maximum size of aggregate to be used shall not exceed 1 1/2 inches in terms of this size definition contained in ASTM Standards except that the maximum size shall not exceed 1/4 of the least dimension of the finished concrete in which the aggregate is to be used.

Coarse aggregate shall be uniformly graded within the following range:

PORTLAND CEMENT CONCRETE
COARSE AGGREGATE GRADATION

Sieve Size	Minimum Retained (%)	Maximum Retained (%)
1 1/2 inch	0	10
3/4 inch	30	70
1/4 inch	75	100
No. 4	95	100

B. Fine Aggregate. Fine aggregate shall consist of clean, hard durable particles of natural sands, subject to the following limitations:
   1. Organic Calorimetric Test using sodium hydroxide shall result in a color not darker than Number 2 in the acceptance range.
   2. Loss on exposure to 5 cycles of the sodium sulfate soundness tests shall not exceed 8% by weight.
   3. Deleterious substances shall not exceed the values in the following table:

PORTLAND CEMENT CONCRETE
FINE AGGREGATE DELETERIOUS SUBSTANCES

Substance	Maximum % by Weight
Soft Fragments	3.0
Coal Lumps	1.0
Material passing 39 100 Sieve	3.0
Micaceous or Flaky Particles	3.0
Total for All of the Above	5.0

Fine aggregate shall be uniformly graded within the following range:

PORTLAND CEMENT CONCRETE
FINE AGGREGATE GRADATION

Sieve Size	Minimum Retained (%)	Maximum Retained (%)
No. 4	0	5
No. 8	0	20
No. 16	20	50
No. 30	50	75
No. 50	75	90
No. 100	95	100

C. Cement. All cement used shall be Type II unless otherwise allowed by the City Engineer or his/her designee. All cement and dry additives shall be stored in damp-proof conditions. Shipments of cement shall be marked and stored in such a manner as to provide positive identification. The supplier shall keep and have available for inspection at all times an accurate record of supplies and use of cement of the various types and shipments. No cement shall be used which has been subject to dampness or exposure.

D. Water. Water used for concrete shall be potable and free from excess salts, organic material, or other deleterious substances. Addition of water to the mixed concrete after specified workability has been obtained will not be allowed, nor shall any concrete be re-tempered or re-mixed.

650.040. Concrete Mixes.

A. Mix Design. Concrete mix designs shall meet the following requirements:

PORTLAND CEMENT CONCRETEMIX DESIGN REQUIREMENTS

Property	Standard Requirement	Thrust Block Material
Cement Content	6.5 Bags per Cubic Yard (Minimum)	3.5 Bags per Cubic Yard (Minimum)
28 Day Compressive Strength	4000 psi (Minimum)*	2000 psi (Minimum)*
Slump Range	1 to 3 inches	1 to 6 inches
Flatwork Slump Range	3 to 4 inches	NA
Air Content	5% to 7%	NA

* Per APWA 03 30 04, increase cement content in the mix design by 1 class between **October 1 and March 1**, i.e. Class 4000 becomes Class 5000.

B. Proportioning. The supplier shall determine proportions by weight of aggregates, cement, additives, and water required to comply with strength, workability, and other requirements detailed herein. Such proportions shall be submitted to the City Engineer or his/her designee in three copies annually along with the following tests on materials and shall be subject to his/her approval.

1. Coarse aggregate
    a. Source
    b. Deleterious substances
    c. Los Angeles Abrasion Test
    d. Sodium Sulfate Soundness Test
    e. Sieve
2. Fine aggregate
    a. Source
    b. Deleterious substances
    c. Calorimetric Test for Organics
    d. Sodium Sulfate Soundness Test
    e. Sieve and fineness modulus
3. Cement
    a. Type
    b. Supplier
    c. Analysis

Upon approval, all concrete shall be prepared in terms of the proportions so approved unless variation becomes necessary by reason of materials or conditions to achieve the requirements of these specifications, in which case such variation shall be approved in writing by the City Engineer or his/her designee. Approval by the engineer of mix proportions shall not relieve the supplier from the responsibility for obtaining the concrete strengths specified or complying will all other provisions of this specification.

C. Control. Measurements of materials except water shall be by weight. Equipment used shall be capable of controlling weight within 1% of each ingredient. Water may be measured either by volume or weight provided that an accuracy of 1% is maintained. Cement may be assumed to weigh 94 pounds per sack but proportioning aggregates for fractional sacks of cement will not be permitted unless the fractional amount is weighed for each batch.

D. Water Adjustments. Compensation for the water contained in the aggregates shall be made at least once daily or as often as inspection of the concrete may indicate that variation from this cause has occurred. The Pycnometer Method of assessing water in aggregate may be used for its determination for the purposes of this paragraph.

650.050. Masonry.

A. General. All masonry work shall meet the requirements and specifications of APWA Division 04 Masonry and related sections.

Section 700. Conduit

SECTION INDEX

700.010. General.
700.020. Utility Conduit

A. Responsibility to install
B. Materials
C. Location
D. Magnetic

700.030. Installation

A. Cutting
B. Dewatering
C. Laying
D. Bedding

700.010. General.

A. This Division covers furnishing and installing telecommunications conduit.

700.020. Utility Conduit.

A. Responsibility to install. Developers shall be responsible to install utility conduits for placement of public utilities and street lighting: Two – two-inch (2") (initially empty) communications conduits shall be installed parallel and congruent to all primary and secondary power conduits such that communication lines can serve all lots individually. Communications service boxes labeled "Communications" shall be installed above the communications conduits directly adjacent to all power boxes (i.e.: ground sleeves, transformers, etc.).

B. Materials. The conduit and junction/pull boxes shall be of the material specified by each utility company. Junction/pull box locations shall be specified by the utility company.

C. Location. Conduits shall be installed at locations established by utility company engineers and approved by the City, outside of the roadway (see Standard Detail 1). Excavation shall be at depth and standards of utility companies. Conduits shall have bends attached to each end and placed vertically out of the ground for location verification. Conduits crossing street rights-of-way shall have a minimum of 18" cover below finished street grade. Conduit clusters shall be installed at all intersections. The cluster shall consist of four (4) 4 inch conduits and one 6 inch conduit spaced 3' away.

D. Magnetic Locator Tape. All utility conduits shall include a 3" magnetic locator tape installed in the pipeline trench approximately 12" below the ground surface, with appropriate cautionary wording printing on the tape to identify the type of utility present.

700.030. Installation.

A. Cutting. Cutting of conduit for closure pieces or for other reasons shall be done in a neat and workmanlike manner by a method recommended by the manufacturer.

B. Dewatering of Trench. Where water is encountered in the trench, it shall be removed during conduit laying operations and the trench so maintained until the ends of the conduits are sealed. See "Temporary Controls" in Section 200.010.

C. Laying of Conduit. The conduit shall be inspected for defects before installation. Any defects shall be repaired or the conduit shall be replaced, whichever is deemed necessary by the Engineer or his/her designee. All conduits shall be laid and maintained to the required lines and grades. The Contractor shall be responsible to install the conduit line to the alignment set by the Engineer or as shown on the Drawings. The Contractor shall take the necessary precautions such that foreign materials do not enter into the conduit. No debris, tools, or other materials shall be placed in the conduit during laying operations. When laying of conduit is not in progress, the conduit shall be closed by a watertight plug. Maximum vertical or horizontal deflections of conduit are not to exceed a ratio of 10:1 along its length (e.g. no more than 4" deflection per 40" length.) Install all conduit bends to have a radius that is: 1. Not less than 10 times the inside diameter of the conduit. 2. Not less than the minimum bend radius called out on the plans. At no time shall the conduit be deformed to make a bend. The minimum separation between conduits shall be 3". The minimum separation between the conduit and trench wall shall be 1.5". Once bend locations have been verified to meet the Utility Company requirements, junction/pull boxes shall be installed at each bend location.

D. Bedding. All conduits shall be protected from lateral displacement and possible damage resulting from impact or unbalanced loading during backfilling operations by being adequately bedded. In the event trench materials are not, in the judgment of the Engineer or his/her designee, satisfactory for conduit bedding, imported granular bedding will be required. See "Bedding Material" in Section 350.040.

Section 850. Surface Irrigation Systems.

SECTION INDEX

850.010. General.
- A. Specifications.
- B. Size.
- C. Location.
- D. Minimum Slopes.
- E. Unusual Piping and Plumbing.

850.020. Pipe and Fittings.
- A. General.
- B. Concrete Pipe.
- C. Polyethylene Pipe.
- D. Corrugated Metal Pipe.

850.010. General.

A. Specifications. Piped irrigation facilities shall be required per Alpine City Development Code. Facilities shall meet the requirements and specifications of APWA 33 41 00 (Storm Drainage Systems). These specifications cover the installation of storm/irrigation lines. See Section 200 for improvement and design requirements, Section 250 for inspection and testing requirements, and Section 350 for earthwork and trench requirements. See standard drawings related to storm/irrigation lines.

B. Size. The City Engineer or his/her designee must approve the sizes of all proposed drain lines. The minimum size shall be determined based on Alpine Irrigation Company and Alpine City needs.

C. Location. Piped irrigation systems shall be located as close to the original ditch system as possible. Variations in location must be approved by the City Engineer or his designee and the Alpine Irrigation Company. A maximum of 400 feet of pipe shall be allowed between manholes.

D. Minimum Slopes. Slopes shall be designed to have a 2 foot per second velocity unless otherwise approved by the City Engineer and/or his/her designee. The following table lists minimum slopes for irrigation lines for each size of pipe:

MINIMUM IRRIGATION PIPE SLOPES

Pipe Diameter (inches)	Minimum Slope (%)
24	0.077
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

E. Unusual Piping and Plumbing. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

850.020. Pipe and Fittings.

A. General. Reinforced concrete pipe shall be used for all lines with less than 2 feet of cover or more than 8 feet of cover. Corrugated metal pipe (CMP) may only be used when authorized by the City Engineer or his/her designee.

B. Concrete Pipe. Concrete pipe shall meet the requirements and specifications of APWA 33 05 02 (Concrete Pipe and Culvert). Reinforced concrete pipe (RCP) shall be Class III. Only new pipe may be used unless otherwise authorized by the City Engineer or his/her designee.

C. Polyethylene Pipe. Polyethylene pipe shall meet the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe) Type S for storm drains and Type SP for land or groundwater drains.

D. Corrugated Metal Pipe (CMP). CMP shall meet the requirements and specifications of APWA 33 05 04 (Corrugated Metal Pipe).

Section 900. Landscaping.

SECTION INDEX

900.010. General.
- A. Specifications.
- B. Appurtenances.
- C. As-Built Drawings.
- D. Government Regulations.
- E. Source.
- F. Fences and Walls.
- G. Tree Grates.
- H. Vegetation Control.

900.020. Lawns and Grasses.
- A. General.
- B. Grading.

900.030. Ground Cover.
- A. General.

900.040. Trees.
- A. General.
- B. Tree Sizes.
- C. Labels.

900.010. General.

A. Specifications. These specifications are for landscape work completed on public property or private property that will become public property.

B. Appurtenances. Any minor items of labor or materials not specifically noted on the drawings or specifications; but obviously necessary for the proper completion of the work, are to be considered as incidental to and are to be included in the contract.

C. As-Built Drawings. The contractor must furnish as-build drawings to the City. These drawings should be updated whenever a change from the design is made to assure accuracy. The drawings must show a record of all departures from the contract drawings that occur during construction. These shall be kept on a clean set of prints of the contract drawings.

The Project Manager/Owner will review the "as-built drawings" to verify that changes are being recorded as construction occurs. These drawings and maintenance manuals must be submitted at the time of final inspection or in accordance to the general conditions.

D. Government Regulations. Ship landscape materials with certificates of inspection as required by governmental authorities. Comply with governing regulations applicable to landscape materials.

E. Source. Provide trees and shrubs, and other plants grown in a recognized nursery in accordance with good horticultural practice. Provide healthy, vigorous stock grown under climatic conditions similar to the locality of the project and free of disease, insects, eggs, larvae, and defects such as knots, sun-scale, injuries, abrasions, or disagreement.

Plant Materials and other landscape items will be evaluated according to compliance with drawings, schedules, and specifications; as well as overall aesthetic quality, grower or supplier reputation, physical inspection, and American Association of Nurseryman Standards (AANS). Select plants that will not be adversely affected by the existing soil chemistry at the planting location.

The source or supplier for all plant materials shall be furnished to the City prior to the delivery of any plant materials on site or stored elsewhere.

F. Fences and Walls. All fences and walls must be approved by the City. Chain link and field wire fencing shall meet the requirements and specifications of APWA 32 31 13 (Chain Link Fences and Gates) and APWA 32 31 16 (Welded Wire Fences and Gates) respectively. The relocation of fences and gates shall meet the requirements and specifications of APWA 32 01 10 (Relocate Fences and Gates) and related sections.

G. Tree Grates. Only 4 foot square D&L O-8644 or approved equivalent grates shall be used. Grates shall be set to grade with the top back of curb and sidewalk. Grates shall be set in metal frame manufactured specifically for grate. Frame shall be set in concrete extending a minimum of 6 inches from sides of frame. Concrete shall be installed to City standards for Portland Cement Concrete.

H. Vegetation Control. Vegetation control shall meet the requirements and specifications of APWA 31 31 19 (Vegetation Control).

900.020. Lawns and Grasses.

A. General. Lawns and grasses shall meet the requirements and specifications of APWA 32 92 00 (Turf and Grasses).

B. Grading. Till soil to a depth of 4 inches and remove rocks and debris over 1 inch in diameter. The elevation of top soil relative to walks, hard surfaces or edges shall be:

1. *Seeded Areas.* 1/2 inches below.
2. *Sodded Areas.* 1 1/2 inches below.

C. Slopes. For lawn and grassed areas, which will be maintained by lawnmowing equipment, the maximum grade shall be 6:1 (6 horizontal to 1 vertical).

900.030. Ground Cover.

A. General. Ground cover shall meet the requirements and specifications of APWA 32 93 13 (Ground Cover) and APWA 32 01 90 (Plant Maintenance). Install according to APWA plan number 683.

900.040. Trees.

A. General. Tree and work relating to trees shall meet the requirements and specifications of APWA 32 93 43 (Tree), APWA 32 01 91 (Tree Root Cutting), APWA 32 01 93 (Pruning Trees) and 32 01 90 (Plant Maintenance). Install according to APWA plan number 681. Use 6 foot posts for any tree staking. Trees may be planted without a certified arborist when authorized by the City Engineer or his/her designee.

B. Tree Sizes. Follow Alpine City Tree Guidebook

C. Labels. Label at least one plant of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.

Section 950. Irrigation Sprinkler Systems.

SECTION INDEX

950.010. General.
- A. Specifications.
- B. Appurtenances.
- C. Pressure Verification.
- D. Plan Modifications.
- E. As-Built Drawings.
- F. Final Inspection.

950.020. Pipe and Fittings.
- A. Pipe.
- B. Main Line Fittings.
- C. Circuit Pipe Fittings.
- D. Sleeves.

950.030. Sprinkler Heads.
- A. General.
- B. Spray Heads.
- C. Rotary Heads.

950.040. Controller, Valves and Flow Meters.
- A. Controller.
- B. Manual Main Line Isolation Valve.
- C. Manual Circuit Isolation Valve.
- D. Automatic Valves.
- E. Master Valves and Flow Meters.
- F. Automatic Drain Valves.
- G. Back Flow Preventer.
- H. Stop and Waste Valves.
- I. Quick Coupler Valves.
- J. Valve Boxes.
- K. Control Wire.

950.050. Installation.
- A. Schedule.
- B. Depth and Location.
- C. Trench Backfill Material.
- D. Thrust Blocks.
- E. Flushing.
- F. Gluing.
- G. Marking Zones.

950.010. General.

A. Specifications. These specifications are for landscape work completed on private property that will become public property. All underground irrigation systems shall meet the requirements and specifications of APWA 32 84 23 (Underground Irrigation Systems).

B. Appurtenances. Any minor items of labor or materials not specifically noted on the drawings or specifications; but obviously necessary for the proper completion of the work, are to be considered as incidental to and are to be included in the contract.

C. Pressure Verification. The Contractor, prior to installing the system, must verify existing water pressure. If there is a failure to obtain the needed pressure or if an excess of pressure exists for normal operation, the Contractor shall contact the City for any adjustments to the system. Failure to report any discrepancies in pressure due to whatever reason, and installation done prior to notification of City Parks Department shall be done at the expense of the Contractor.

D. Plan Modifications. The plans show the general arrangement of all piping. Should local conditions necessitate the rearrangement of some, or if piping can be run to better advantage, the contractor, before proceeding with the work, shall prepare and submit drawings of such to the office of the Alpine City Parks Department Representative and obtain written approval before commencing work shown by these drawings.

E. As-Built Drawings. Before the final inspection is complete, the contractor must furnish as-build drawings. These drawings should be updated on a daily basis to assure accuracy. The drawings must show the location of all valves, pipe, heads, controller control lines, and drain valves used on the job. These drawings and maintenance manuals must be submitted at the time of final inspection or in accordance to the general conditions.

F. Final Inspection. The Contractor shall operate, maintain, and guarantee the irrigation sprinkler system until all landscaping on the project is approved by the Alpine City Parks Department at a final inspection. Contractor shall submit manufacturer's technical product maintenance data and installation instructions for irrigation sprinkler system materials and products to the City before final inspection.

950.020. Pipe and Fittings.

A. Pipe. Use solvent weld schedule 40 PVC for main line pipe 3 inches in diameter and smaller. Use Class 200 PVC for main line pipe larger than 3 inches in diameter.

B. Main Line Fittings. Use solvent weld schedule 40 PVC fittings for pipe smaller than 3 inches in diameter. All fittings for pipe 3 inch and larger pipe shall be ductile iron, grade 65-45-12 in accordance with ASTM A-536.

Fittings shall have deep bell push on joints with gaskets meeting ASTM F977. Fittings shall be Harco Deep Bell as manufactured by the Hanington Corporation of Lynchburg, VA or approved equivalent. Transition gaskets are not allowed.

C. Circuit Pipe Fittings. Use solvent weld schedule 40 PVC fittings.

D. Sleeves. Pipe and control wiring and tubing under walks, roads and other hard surfaces shall be installed in solvent weld Class 40 PVC sleeves of adequate size. Sleeves for pipes shall be a minimum of 3 inches in diameter or one and a half times the size of the pipes whichever is greater. Sleeves shall be straight and level or less than 2% grade. All wiring shall be placed in its own conduit. Wire conduit may be ran inside of sprinkler pipe sleeves. Conduit for control wires shall have minimum inside diameters according to the following chart:

MINIMUM SLEEVE CONDUIT SIZES

Number of Wires	Conduit I.D.
1 to 7	1 inch
8 to 11	1 ½ inch
12 to 22	2 inch
23 to 31	2 ½ inch
32 to 36	3 inch

950.030. Sprinkler Heads.

A. General. Install according to APWA plan number 621 and 622, but do not install PVC elbow and riser.

B. Spray Heads. All spray type sprinkler heads shall be Rainbird “1804” PRS (pressure reducing spray) series or approved equivalent. All lawn spray heads shall be installed on swing pipe with two spiral barbed ells.

C. Rotary Heads. All rotary type sprinkler heads shall be Rainbird Falcon 6500 or RS5000 series or approved equivalent. All stream rotary and impact heads capable of distributing 10 gallons per minute or more shall be installed on pre-assembled swing joint by Spears or an approved equivalent.

950.040. Controller, Valves and Flow Meters.

A. Controller. Controller and pedestal shall be the same type as those used in the City central control system. The controller shall be as described in the irrigation legend on the drawings.

B. Manual Main Line Isolation Valve. See standard drawing for pressure pipe main line valves.

C. Manual Circuit Isolation Valve. Brass ball valve with handle.

D. Automatic Valves. Automatic valves shall be Rainbird PEB electric remote control valves or an approved equivalent. A manual circuit isolation valve shall be installed on the supply side of each automatic valve. Install according to APWA plan number 633, but do not install schedule 80 PVC union.

E. Master Valves and Flow Meters. Master valves and flow meters must be installed on main supply line and/or according to design and must be compatible with the City central control system.

F. Automatic Drain Valves. Install according to APWA plan number 632.

G. Back Flow Preventer. Shall be required on connections to the drinking water system. See section 400.040, Backflow Assemblies.

H. Stop and Waste Valves. Stop and waste valves shall be Mueller H - 10288 Oraseal or an approved equivalent. Stop and Waste valve shall be of manual type for operation by handle key. Stop and waste valves shall be installed in a typical water meter can, see Standard Details.

I. Quick Coupler Valves. Quick coupler valves shall be installed with brass riser and pre-manufactured swing joint. At least 2 quick coupler valves shall be installed, one at each end of main line. Valves shall be 1 inch standard.

J. Valve Boxes. Valves shall be located in lawn or planted areas. Avoid locating valves in areas of high pedestrian and vehicular circulation. Valve boxes shall be at finished grade with valve stems 4 inches minimum and 12 inches maximum below top of box and with 3 inches of pea gravel or 3/4 inch minus crushed gravel under the valve. Valve boxes shall be rectangular, heavy duty and green in color. Valve boxes for automatic valves shall be large enough to enclose manual circuit isolation valve and automatic valve.

K. Control Wire. Install wire according to APWA plan number 651. Add two extra blue control wires per controller to the longest run for emergency use and mark it in the control box as an extra wire. A two-wire system may be required.

950.050. Installation.

A. Schedule. Contractor shall submit a construction schedule of anticipated work time to facilitate timely visits for review of work. Schedule must be submitted to the City before any landscaping may begin

B. Depth and Location. Lines bordering curbs or sidewalks shall be 6 inches away to allow for maintenance and access to the lines. Control wires must be buried in appropriately sized conduit for the job (determined by design), one (1) inch minimum, at least 12 inches below finished grade and bundled with a plastic tape every 20 feet.

C. Trench Backfill Material. All trenches shall be backfilled in 12 inch lifts and tamped sufficiently to insure no settling of the surface. No rocks larger than 1 inch shall be allowed within 3 inches of the pipe. The Contractor, in placing the irrigation lines, and appurtenances, may uncover material not suitable for finished grading. This material shall be removed from the site. After the installation of the lines, the finished grading shall be smoothed over and restored to its original condition, using additional topsoil where necessary.

D. Thrust Blocks. All mainlines greater than 2 inches in size shall be installed with thrust blocks wherever a change of direction occurs. Thrust blocks shall be installed as follows:
   1. Bearing area of concrete thrust-block based on 200-PSI pressure and safe soil bearing load of 2,000 pounds per square foot.
   2. Concrete blocking shall be cast in place and have a minimum of 1/4 square foot bearing against the fittings.
   3. Block shall bear against fittings only and shall be clear of joints.
   4. Contractor shall install block adequate to withstand full test pressure as well as to continuously withstand operation pressure under all conditions of service.

E. Flushing. When the pipe lines are connected and the sprinkler risers in place but before any heads are installed, the control valves shall be opened and flushed with a full head of water to clean out the system.

F. Gluing. Gluing of PVC pipes shall be done with gray “Weld-on 711” and “Weld-on P70” primer.

G. Marking Zones. Valves must be tagged with labels indicating which zone they operate.

Section 1000. Standard Details

ALPINE

1850



Jed Muhlestein

Alpine City Engineer

CONSTRUCTION DETAILS

Adopted September 26, 2023

ALPINE CITY STANDARD DETAILS

ALPINE CITY ADOPTS 2017 APWA STANDARD SPECIFICATIONS AND DETAILS. FOR CITY SPECIFIC DETAILS, PLEASE SEE THE FOLLOWING:

STREETS

1. Street Cross-Sections
2. Alternate Street Cross-Sections
3. Street Cross-Sections Unequal Elevations
4. Sidewalk, Curb & Gutter, Waterway
5. Class A & B Trail Cross-Sections
6. Class C, D, & E Trail Cross-Sections
7. Cul-de-sac Detail
8. Knuckle Detail
9. Standard Setbacks
10. Temporary Turn-a-round

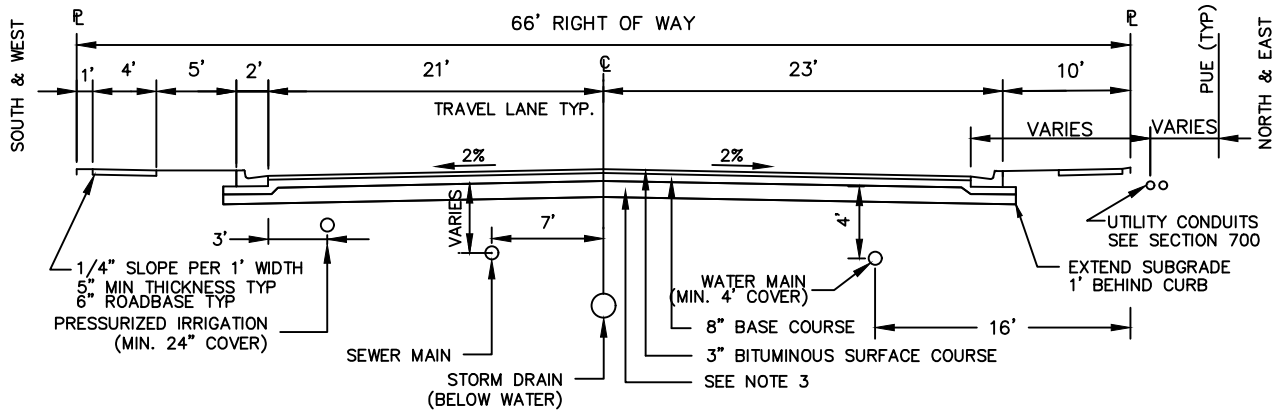
UTILITIES

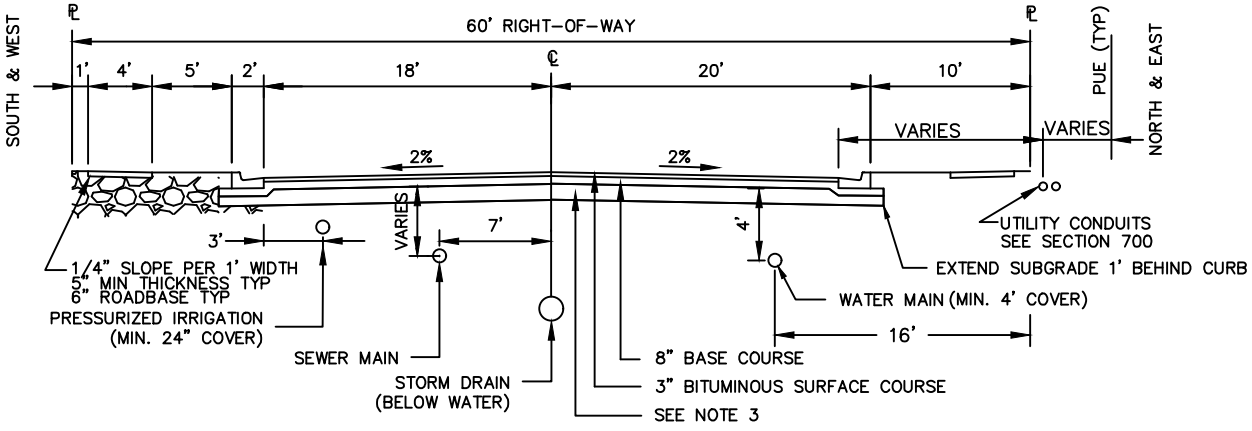
11. Standard Street Intersection and Utility Location
12. Standard Lot Utility Locations
13. Utility Conflict
14. City Utilities in Common Trench
15. Ditch Crossing
16. Manhole Ring & Cover (typical)
17. Sewer Manhole & Service Connection (typical)
18. Storm Drain Sump (typical)
19. Sump Disposal & Snout (typical)
20. Curb Face Drop Inlet Box (typical)
21. Dipstone Outlet
22. Flush Valve (typical)
23. Fire Hydrant
24. Pressurized Irrigation Service
25. Pressurized Irrigation Service w/ PRV
26. Pressurized Irrigation Airvac
27. Water Connection & Valve Box Details
28. Temporary Sewer Main Cleanout

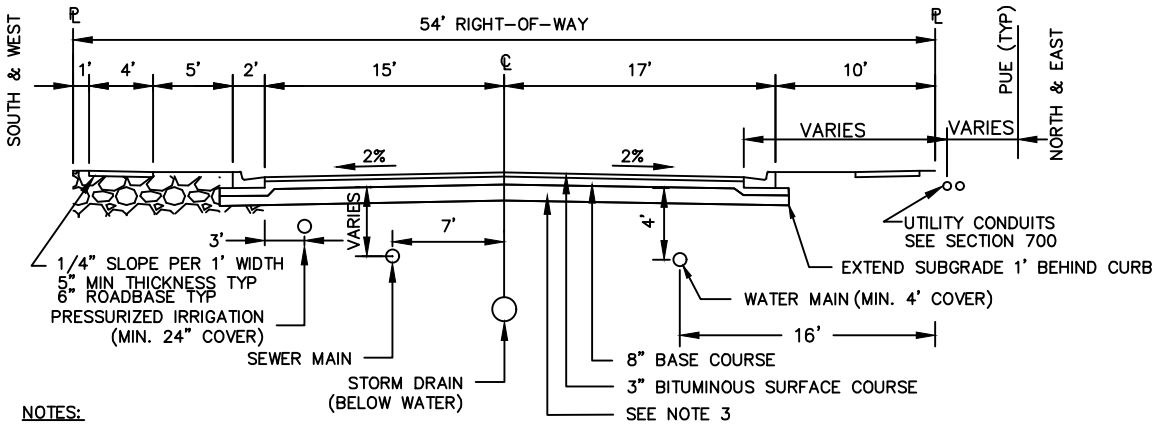
MISC

29. Public Open Space Fencing
30. Fencing Regulations
31. Street Lights

32. Sight Triangle
33. Standard Seed Mixtures
34. Irrigation Company Ditches
35. Roadway Tree Trimming
36. Parking Dimensions
37. 2-Inch Pressurized Irrigation Drain
38. Irrigation Inlet (typical)
39. Trenching Under Cast Iron Pipe







NOTES:

1. WATER VALVES AND 5-INCH VALVE OPENING MUELLER FIRE HYDRANTS SHALL BE LOCATED AS APPROVED.
2. NO WATER LINE SMALLER THAN 8-INCH DIA. SHALL BE INSTALLED WITHOUT APPROVAL OF CITY COUNCIL.
3. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS
4. CULINARY WATER MAINS SHALL BE ON THE NORTH AND EAST SIDES OF THE STREET. PRESSURIZED IRRIGATION AND SEWER LINES SHALL BE ON THE SOUTH AND WEST SIDES OF THE STREET.

STREET CROSS-SECTIONS & UTILITY LOCATIONS

N.T.S.

STATEMENT OF USE

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REVISION

NO.		BY	APRL.	DATE

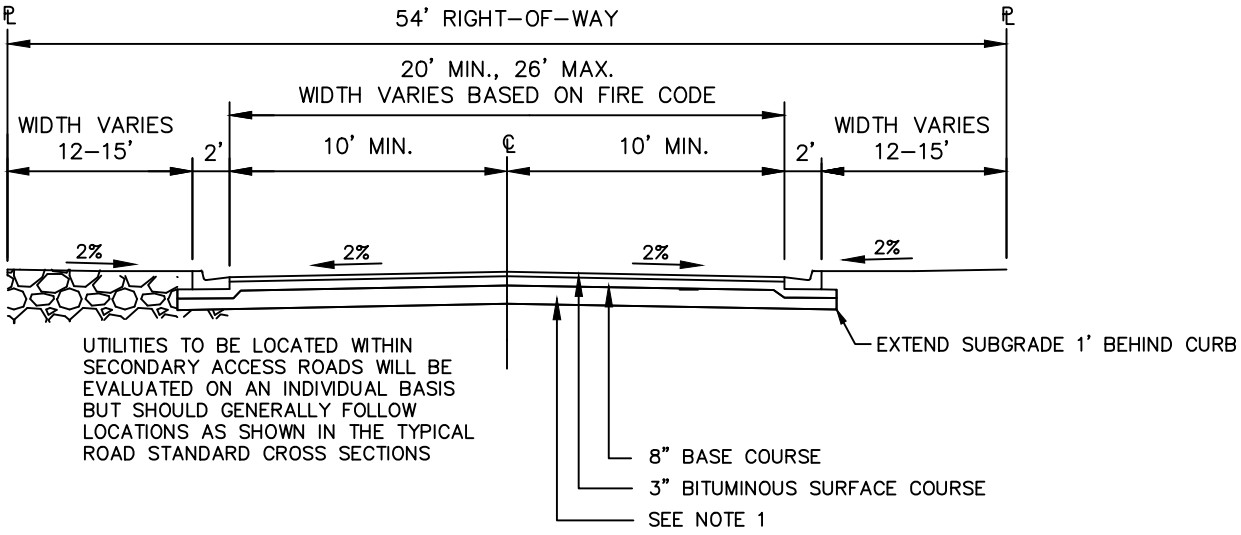
ALPINE 1850

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STREET CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

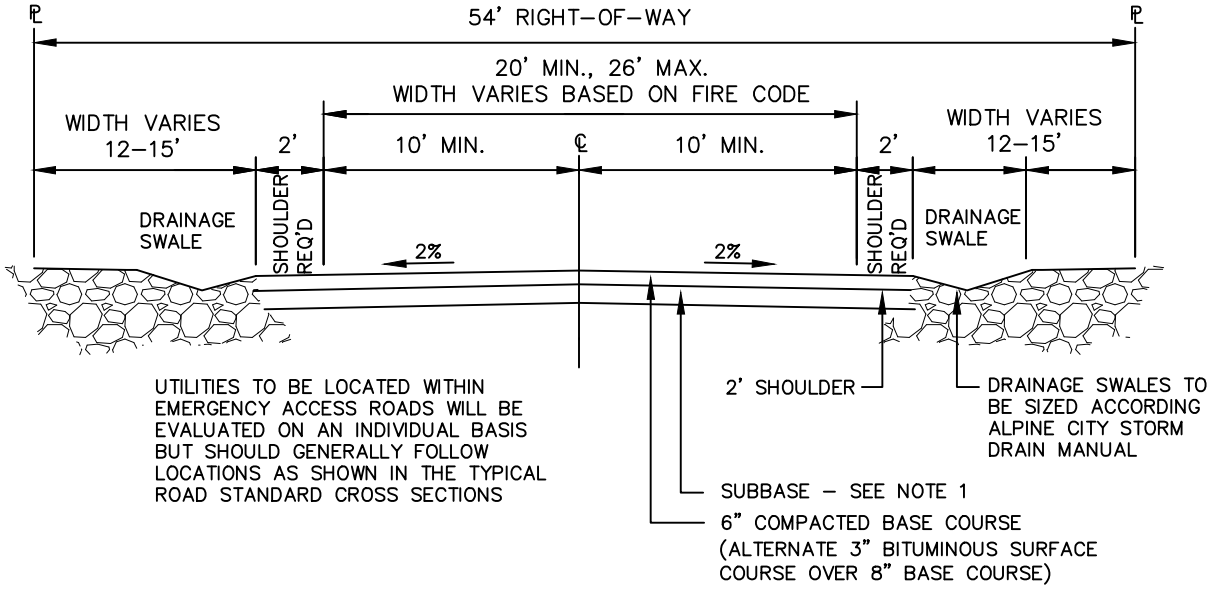
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PLOT SCALE:	N.T.S.
DRAWN BY:	B.D.B.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05



NOTES:

1. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS
2. FIRE CODE REQUIRES AN "ALL WEATHER" SURFACE FOR SECONDARY ACCESS ROUTES. IT IS AT THE DISCRETION OF THE CITY COUNCIL WHETHER SECONDARY ACCESS ROADS WILL BE ASPHALT OR GRAVEL. SEE GRAVEL OPTION BELOW.

SECONDARY ACCESS



NOTES:

1. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS
2. CURB AND GUTTER MAY OR MAY NOT BE REQUIRED AT THE DISCRETION OF THE CITY COUNCIL

SECONDARY ACCESS OPTION

STREET CROSS-SECTIONS

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NO.		BY	APRL.	DATE

ALPINE 1850

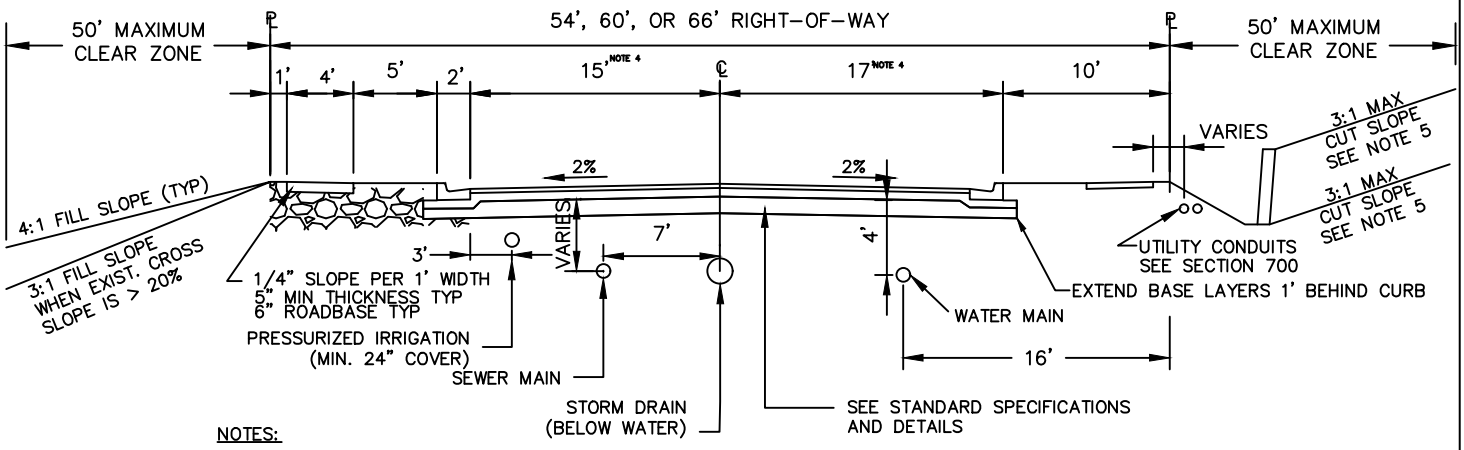
STREET CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 1A

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NOTES:

1. CLEAR ZONE DEFINES THE MAXIMUM HORIZONTAL DISTANCE PERPENDICULAR TO ROAD THAT CAN BE DISTURBED TO CONSTRUCT STREET SECTION.
2. ENGINEERED RETAINING WALLS ARE ALLOWED PER DEVELOPMENT CODE SECTION 3.32
3. BORROW DITCH AND CROSS DRAIN PIPES SHALL BE DESIGNED SUCH THAT SILTS AND MATERIAL WILL NOT ENTER STREET CROSS SECTION. POND ON CUT SIDE OF ROAD, AND / OR DRAIN TO APPROPRIATE COLLECTION / DETENTION SYSTEM ON FILL SIDE OF ROAD. REFER TO ALPINE CITY STORM DRAIN DESIGN MANUAL.
4. WIDTH VARIES PER RIGHT OF WAY, SEE STANDARD DETAILS.
5. CUT SLOPES GREATER THAN 3:1 (UP TO 2:1) MAY BE ALLOWED PER GEOTECHNICAL REPORT RECOMMENDATION. CUT SLOPES STEEPER THAN 2:1 MUST BE ACCOMPANIED BY A RETAINING WALL UNLESS APPROVED OTHERWISE IN WRITING BY THE CITY ENGINEER OR HIS/HER DESIGNEE (350.050.D).

STREET CROSS-SECTIONS WITH REQUIRED CUT AND FILL SLOPES

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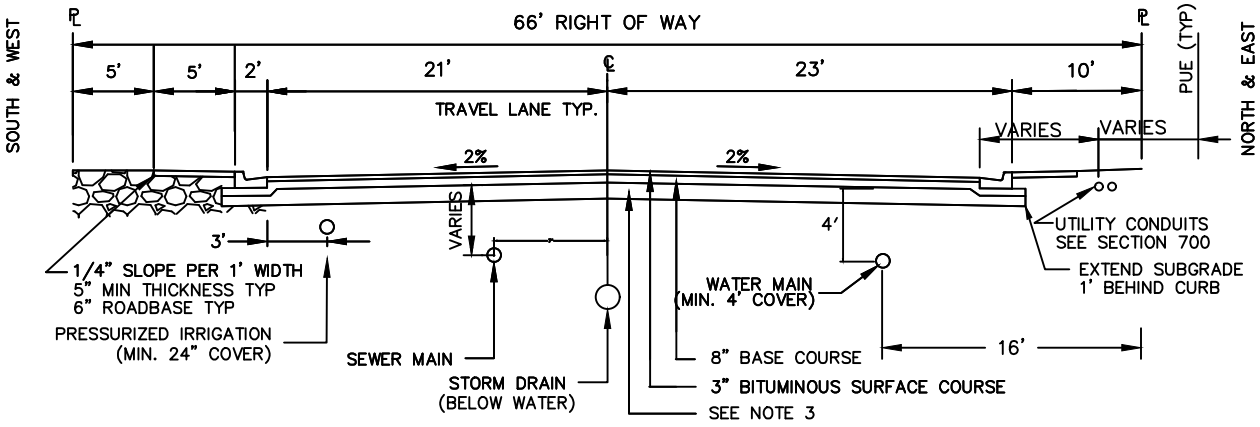
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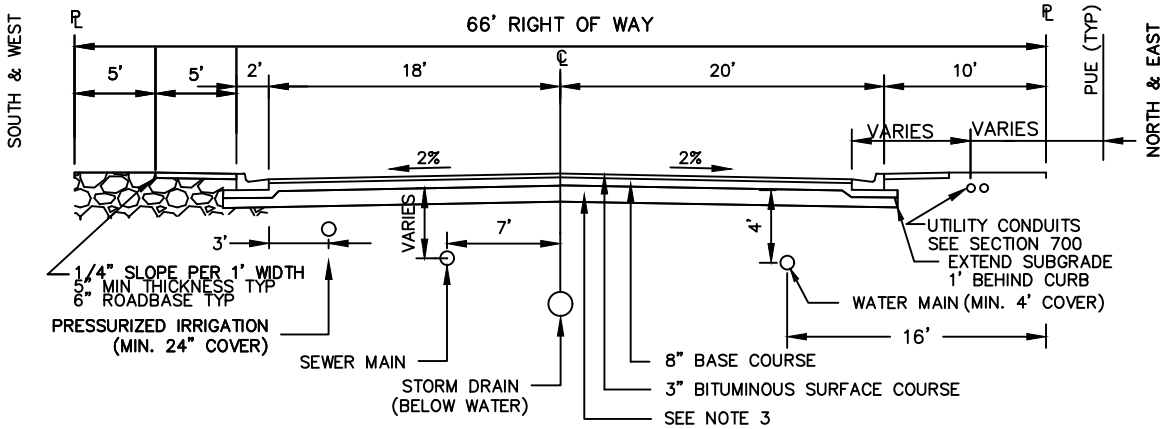
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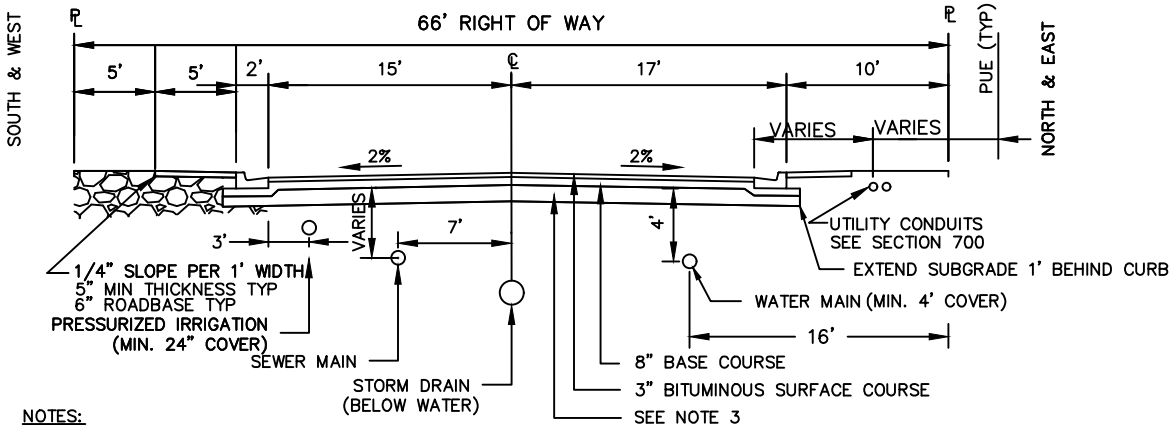
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 1b

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05







NOTES:

1. WATER VALVES AND 5–INCH VALVE OPENING MUELLER FIRE HYDRANTS SHALL BE LOCATED AS APPROVED.
2. NO WATER LINE SMALLER THAN 8–INCH DIA. SHALL BE INSTALLED WITHOUT APPROVAL OF CITY COUNCIL.
3. SUBGRADE DEPTHS VARY DEPENDING ON CBR VALUE OF THE AREA, SEE ALPINE CITY STANDARD SPECIFICATIONS.
4. CULINARY WATER MAINS SHALL BE ON THE NORTH AND EAST SIDES OF THE STREET. PRESSURIZED IRRIGATION AND SEWER LINES SHALL BE ON THE SOUTH AND WEST SIDES OF THE STREET.
5. USE OF ALTERNATE STREET CROSS–SECTIONS REQUIRES APPROVAL BY ALPINE CITY.

ALTERNATE STREET CROSS–SECTIONS & UTILITY LOCATIONS

N.T.S.

STATEMENT OF USE

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REVISION

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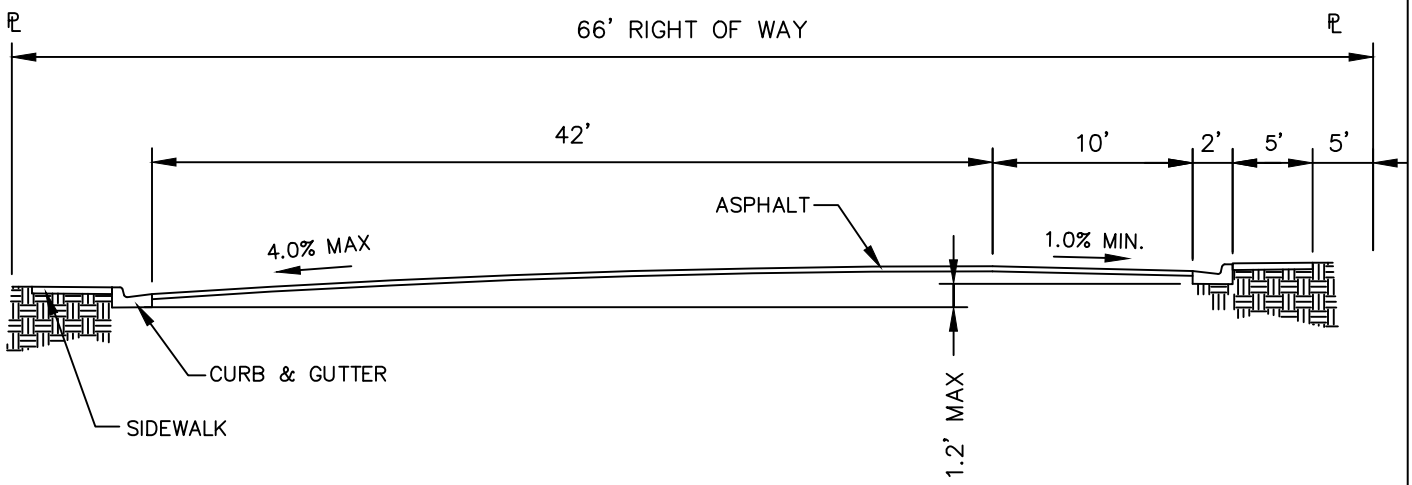
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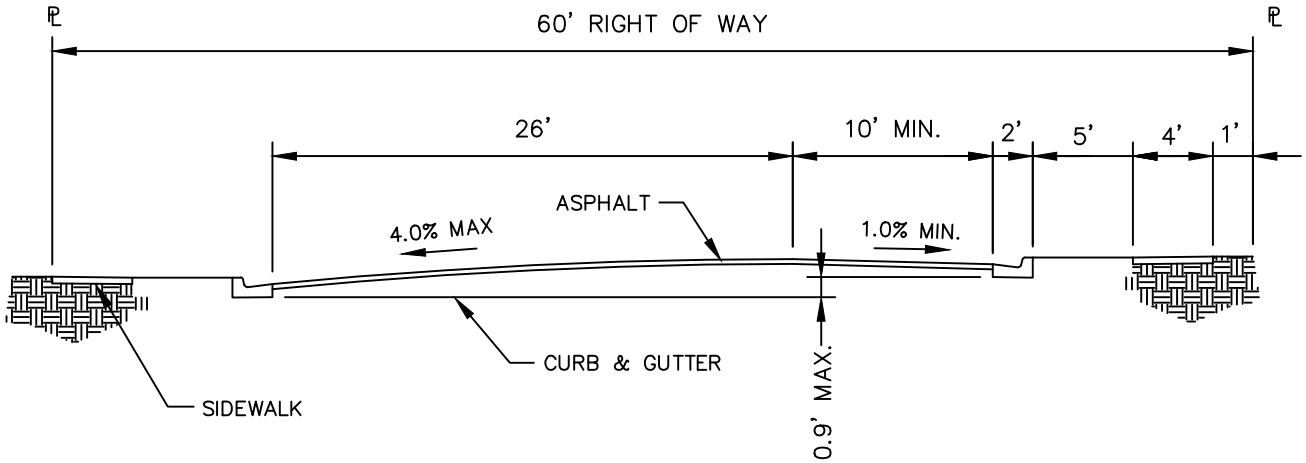
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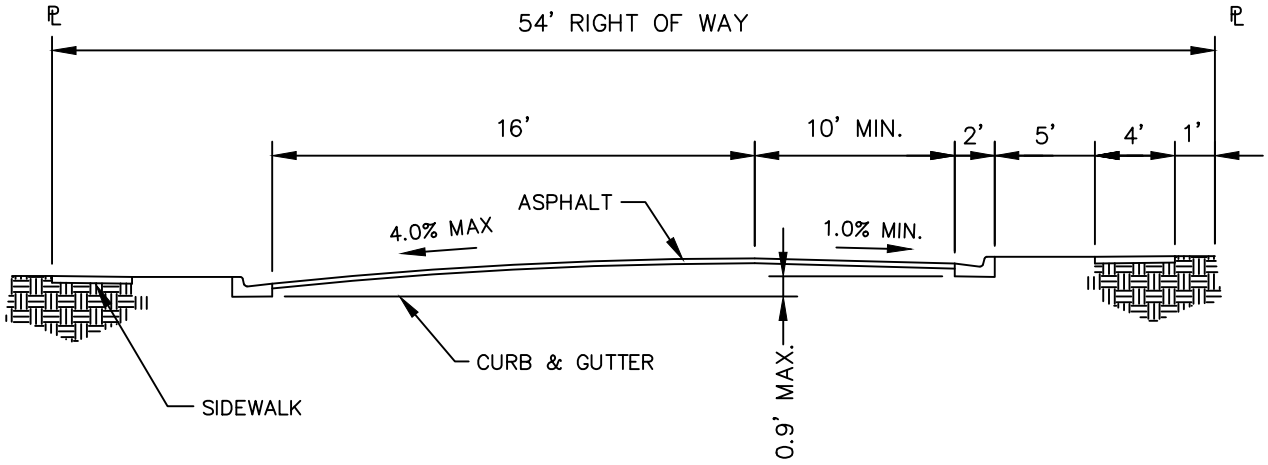
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 2

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	2015







STREET CROSS-SECTIONS

(CURBS AT UNEQUAL ELEVATIONS)

N.T.S.

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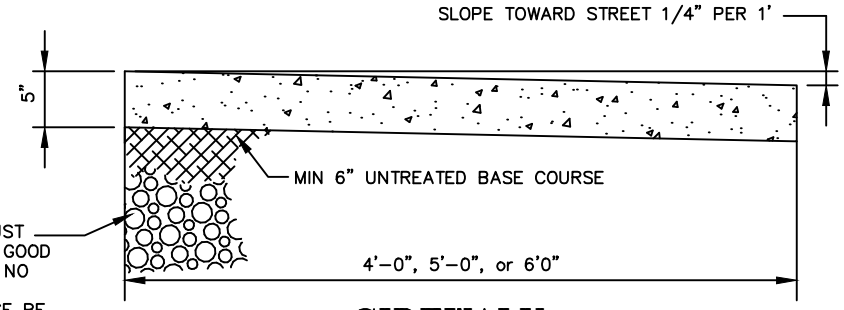
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STREET CROSS-SECTIONS
UNEQUAL ELEVATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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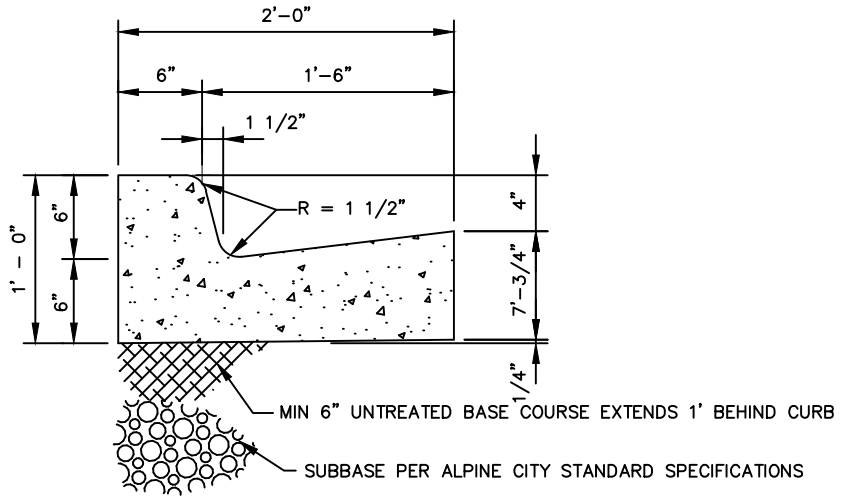
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PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



SIDEWWALK SUBBASE MUST GENERALLY CONSIST OF GOOD SOLID GROUND. UNDER NO CIRCUMSTANCES SHALL SIDEWALK AND ROADBASE BE PLACED ON COLLAPSIBLE SOILS, TOPSOIL, NON-ENGINEERED FILLS, LOOSE OR DISTURBED SOILS, SOD, RUBBISH, CONSTRUCTION DEBRIS, FROZEN GROUND, DELETERIOUS MATERIALS, OR WITHIN PONDED WATER. IF SIDEWALK IS PLACED ON FILL, THE FILL MUST BE ENGINEERED FILL, COMPACTED AND TESTED, PER ALPINE CITY STANDARD SPECIFICATIONS.

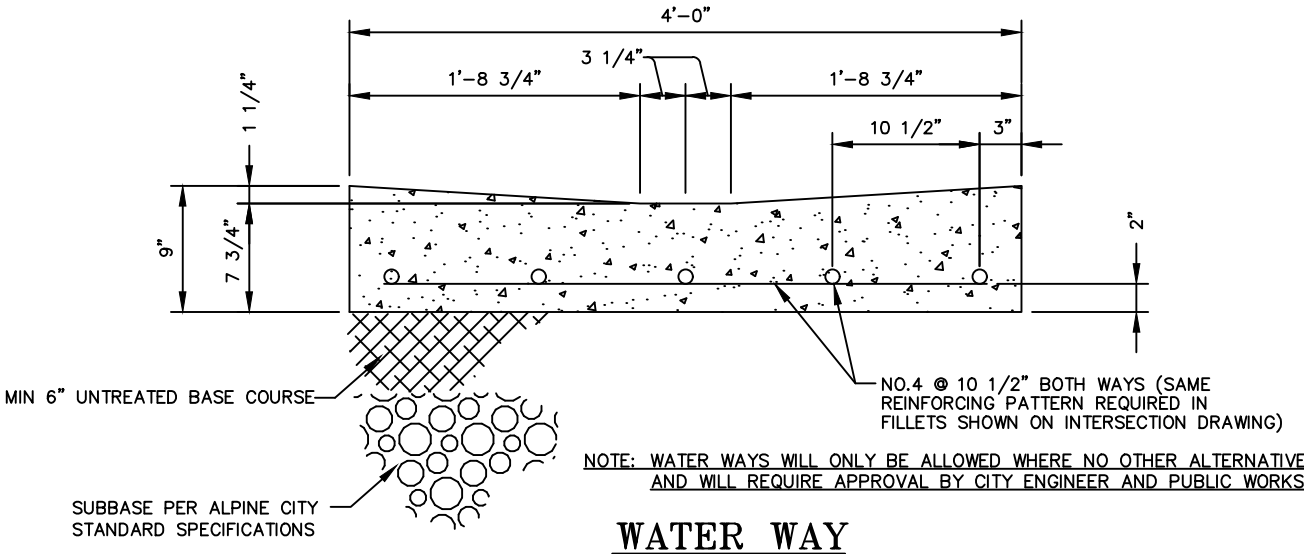
SIDEWALK

NTS



HIGH BACK CURB & GUTTER

NTS



NOTE: WATER WAYS WILL ONLY BE ALLOWED WHERE NO OTHER ALTERNATIVE IS POSSIBLE AND WILL REQUIRE APPROVAL BY CITY ENGINEER AND PUBLIC WORKS DIRECTOR

WATER WAY

NTS

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REVISION

NO.		BY	APRL. DATE

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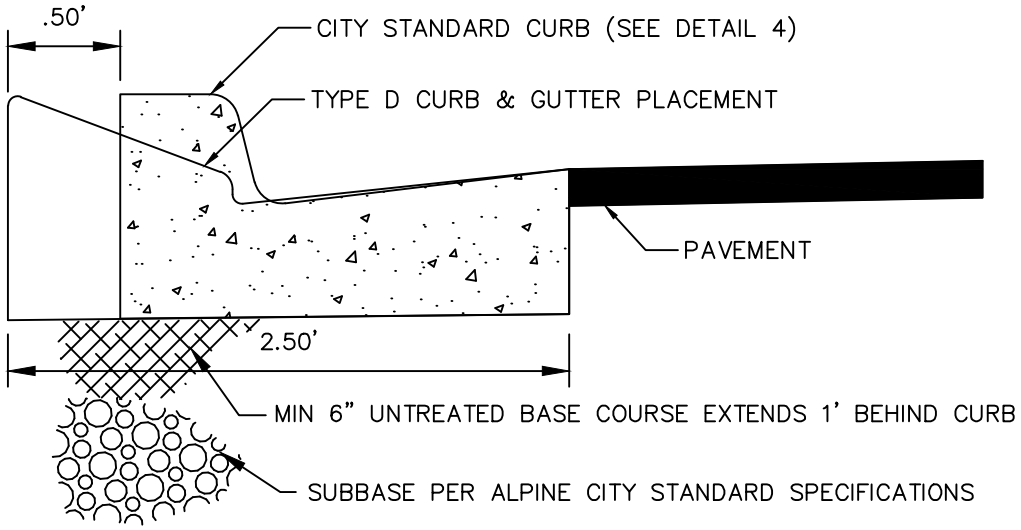
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SIDEWALK, CURB & GUTTER, WATER WAY

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	4
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTE:
ON A CASE-BY-CASE BASIS TYPE D CURB & GUTTER MAY BE APPROPRIATE. IF APPROVED BY THE CITY ENGINEER AND/OR BY HIS/HER DESIGNEE, TYPE D CURB MUST BE PLACE SUCH THAT THE FRONT FACE ALIGNS WITH THE ASPHALT EDGE AND EXISTING CURB AND GUTTER.



OPTION: TYPE D CURB & GUTTER PLACEMENT

NTS

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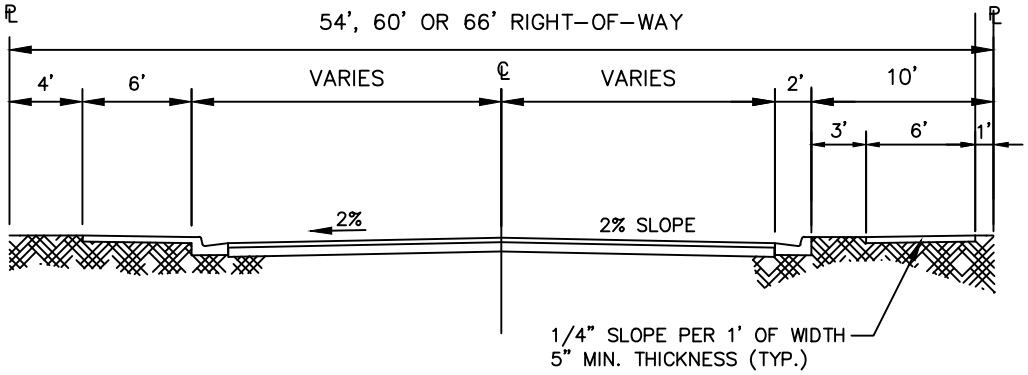
ALPINE 1850

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TYPE D CURB & GUTTER PLACEMENT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	4a
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
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ADOPTED DATE:	4/14/04

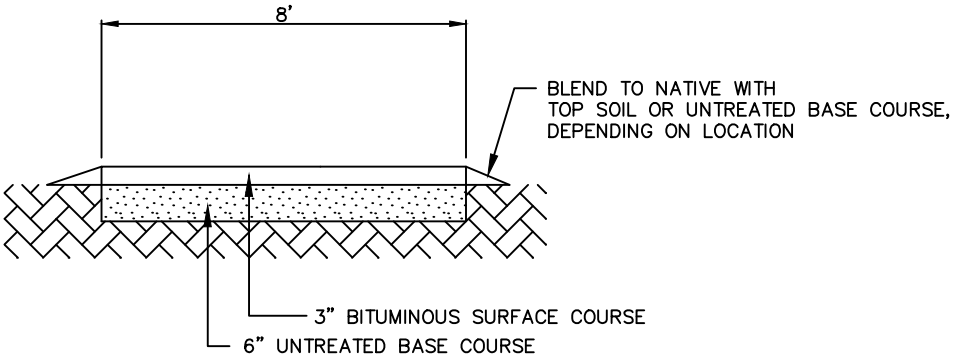


NOTES:

1. ALPINE CITY RESERVES THE RIGHT TO DETERMINE WHETHER THE COMBINATION OR PLANTER STRIP OPTION WILL BE CONSTRUCTED ON A CASE–BY–CASE BASIS.
2. IN SOME CASES, A 5' SIDEWALK WILL BE SUBSTITUTED. IF THE 5' SIDEWALK IS CONSTRUCTED, THE PLANTER STRIP WIDTH WILL BE INCREASED TO 4'.
3. ALL DEVELOPER BUILT TRAILS (NEW OR REFURBISHED) MUST BE BUILT TO INDUSTRY RECOGNIZED STANDARDS AND BE APPROVED BY THE ALPINE CITY TRAIL COMMITTEE. IF TRAILS ARE BUILT ON FILL, THE FILL MUST BE ENGINEERED FILL, COMPACTED AND TESTED, PER ALPINE CITY STANDARD SPECIFICATIONS.

CLASS A (6' SIDEWALK) TRAIL CROSS–SECTION

N.T.S.



CLASS B (ASPHALT) TRAIL CROSS–SECTION

N.T.S.

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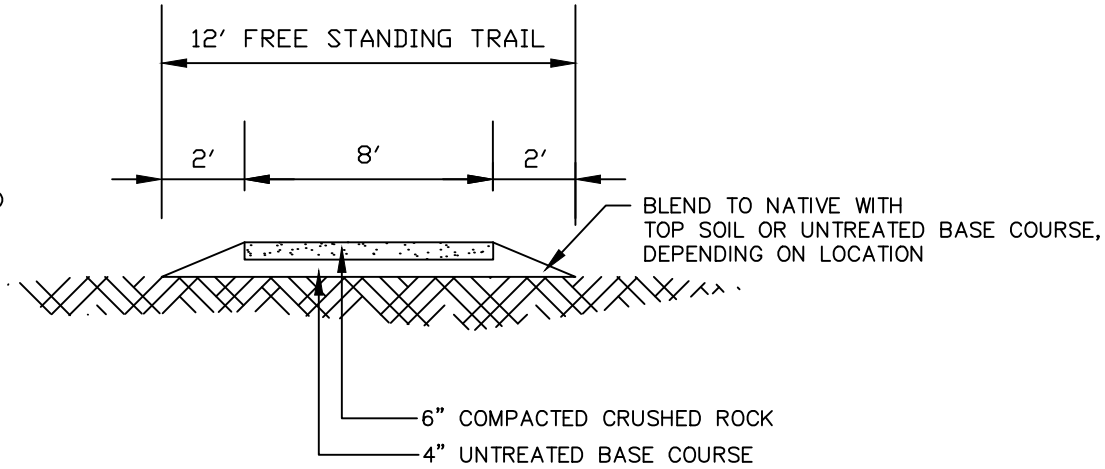
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CLASS A & B TRAIL CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

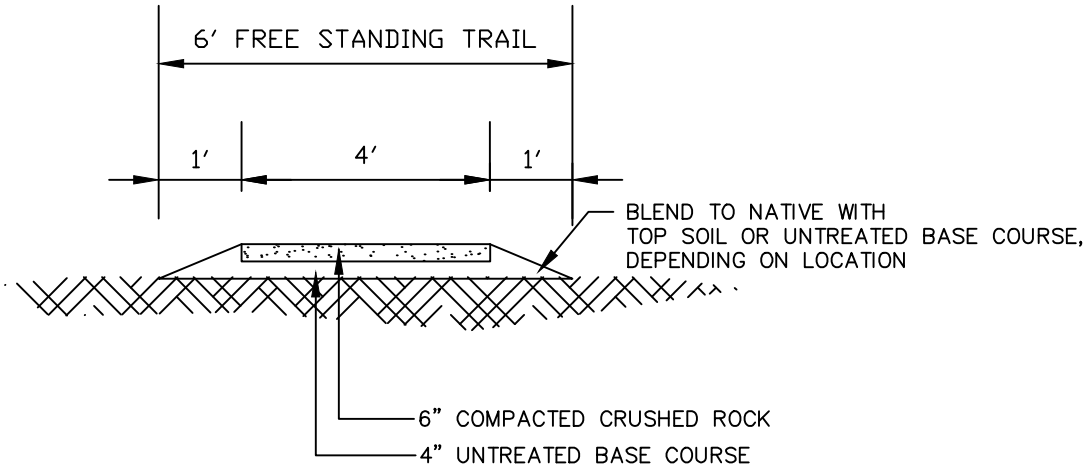
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DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTE:
ALL DEVELOPER BUILT TRAILS (NEW OR REFURBISHED) MUST BE BUILT TO INDUSTRY RECOGNIZED STANDARDS AND BE APPROVED BY THE ALPINE CITY TRAIL COMMITTEE. IF TRAILS ARE PLACED ON FILL, THE FILL MUST BE ENGINEERED FILL, COMPACTED AND TESTED, PER ALPINE CITY STANDARD SPECIFICATIONS.



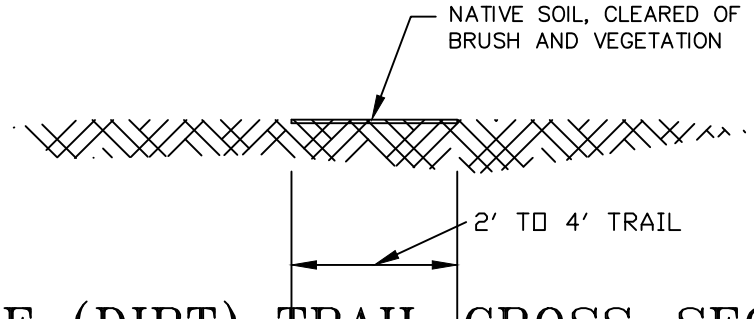
CLASS C 8' CRUSHED ROCK TRAIL CROSS-SECTION

N.T.S.



CLASS D 4' CRUSHED ROCK TRAIL CROSS-SECTION

N.T.S.



CLASS E (DIRT) TRAIL CROSS-SECTION

N.T.S.

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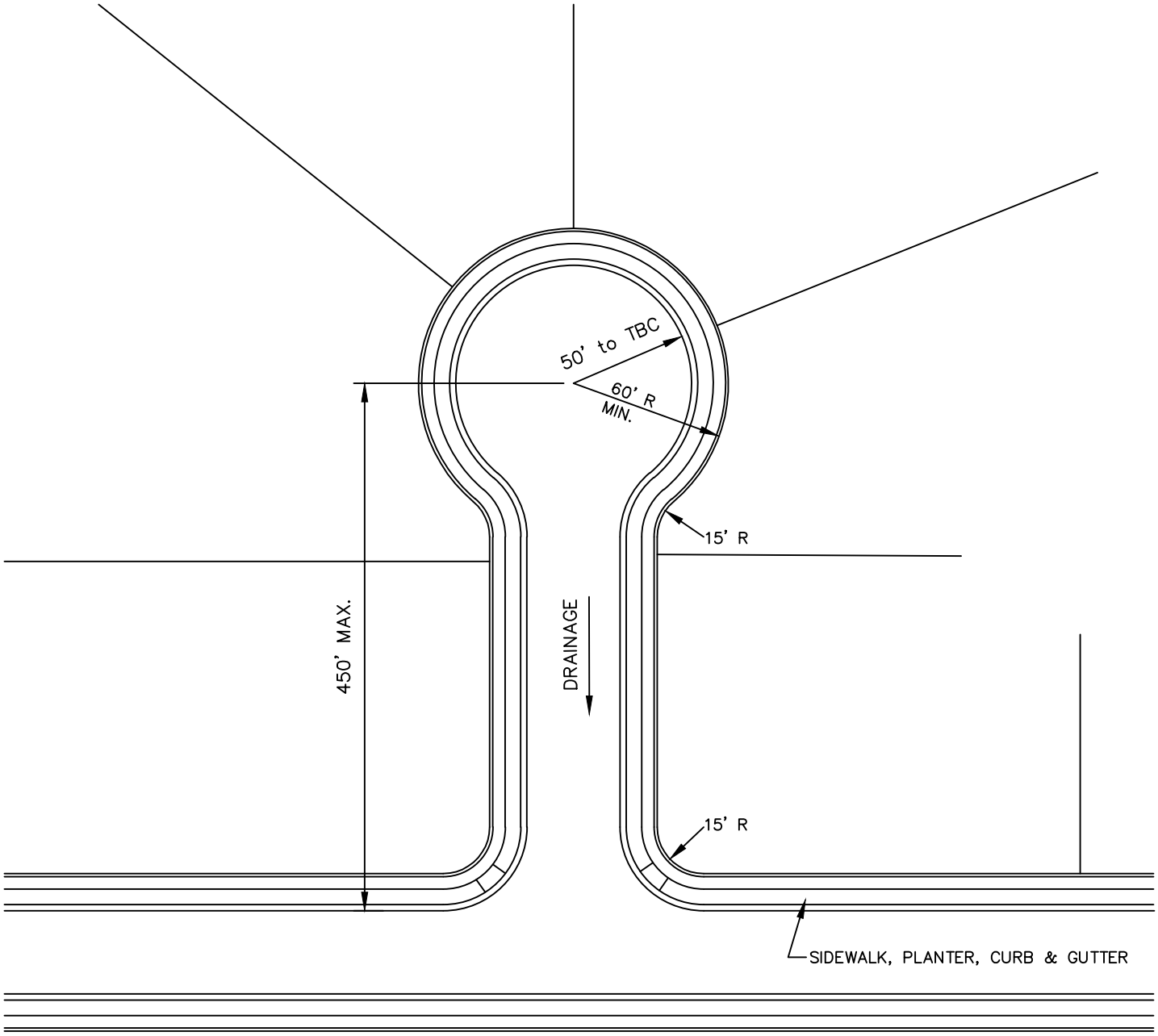
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CLASS C, D, & E TRAIL CROSS-SECTIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 6

PLOT SCALE:	N.T.S.
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CUL-DE-SAC DETAIL

N.T.S.

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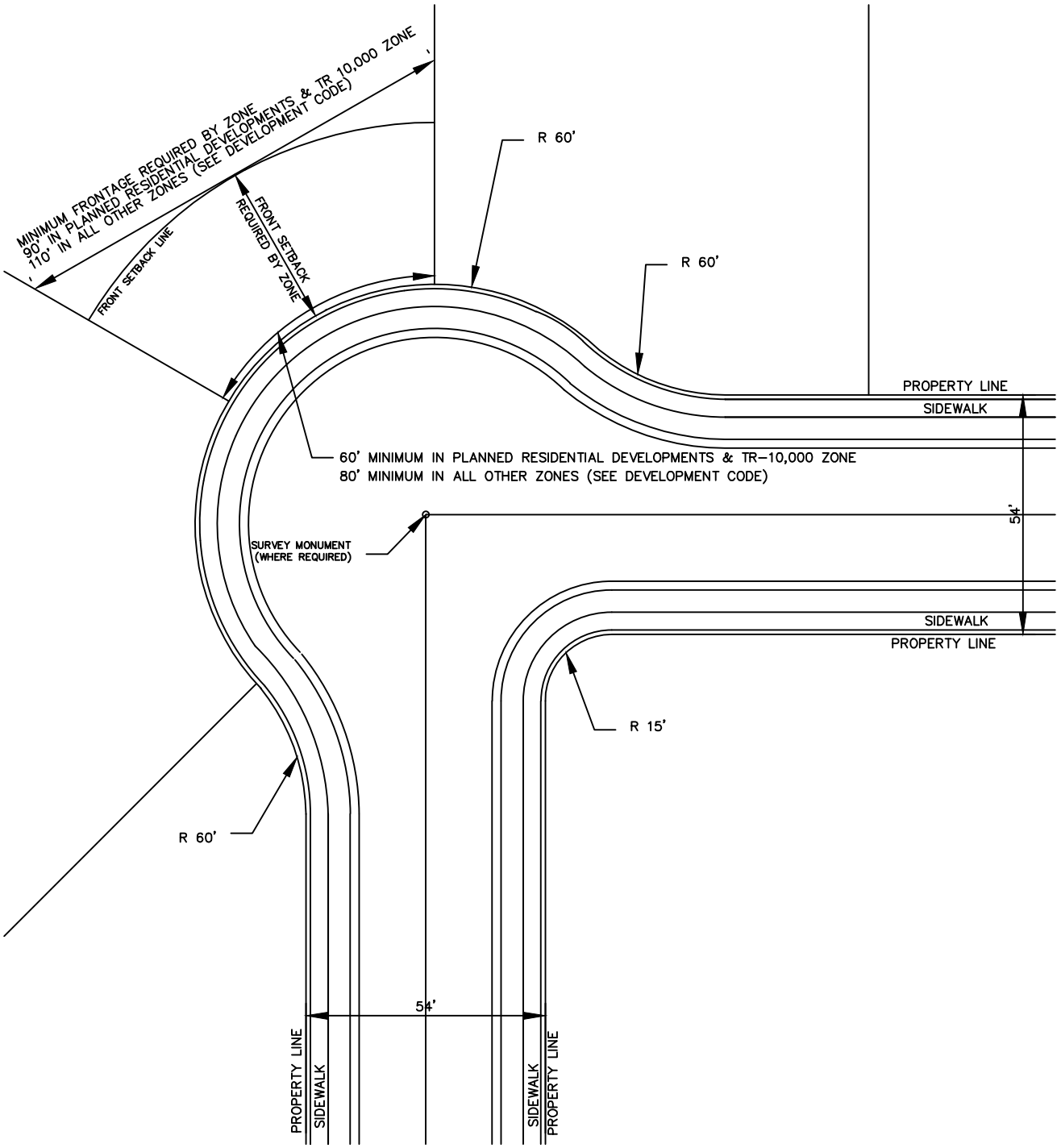
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CUL-DE-SAC DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 7

PLOT SCALE:	N.T.S.
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ADOPTED DATE:	10/13/05



KNUCKLE DETAIL

N.T.S.

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ALPINE 1850

KNUCKLE DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER: 8

PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/11/05

FRONT, REAR, AND SIDE YARDS

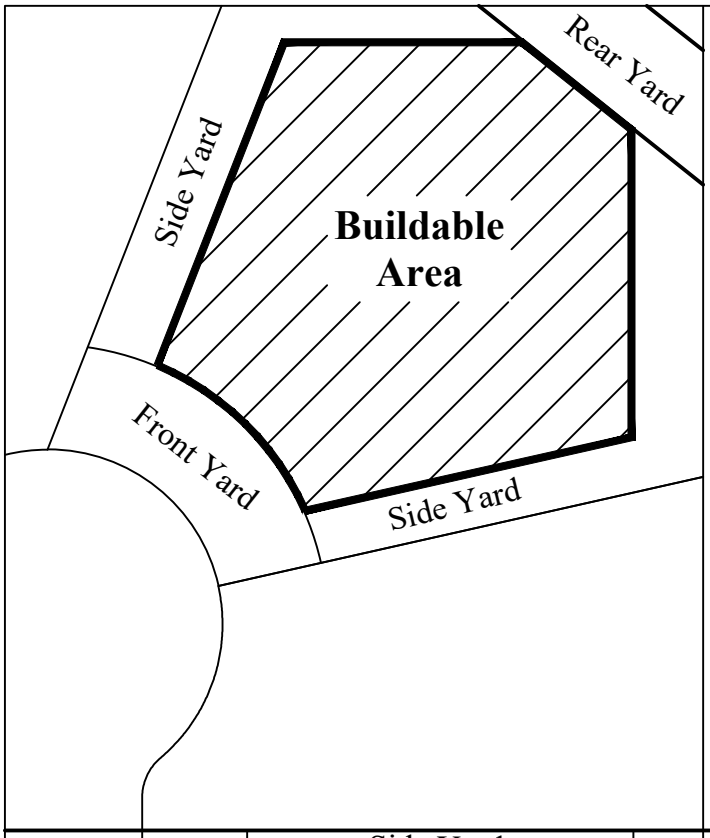


Figure A:
Cul-de-Sac
or
Irregular Shaped
Lot

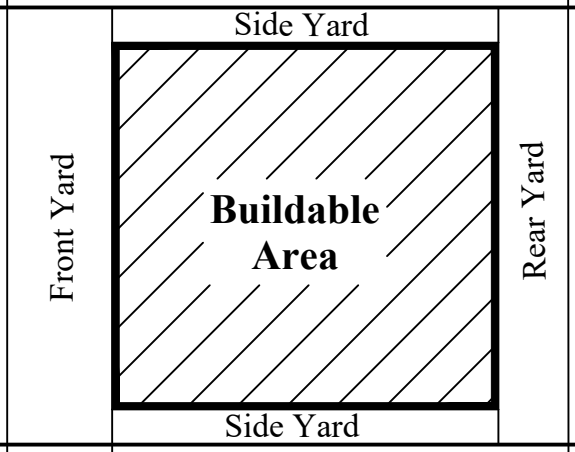


Figure B:
Interior Lot
(Typical)

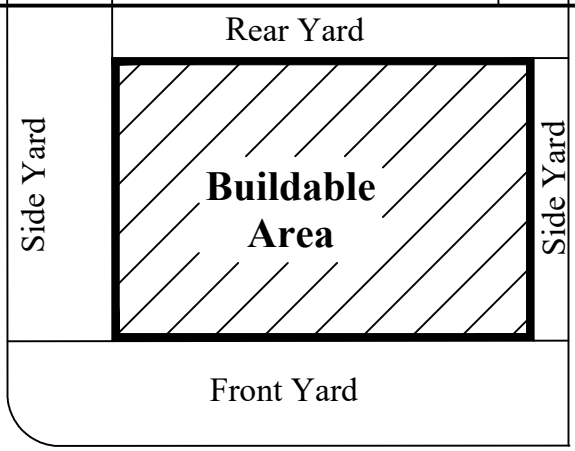


Figure C:
Corner Lot
(Typical)

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

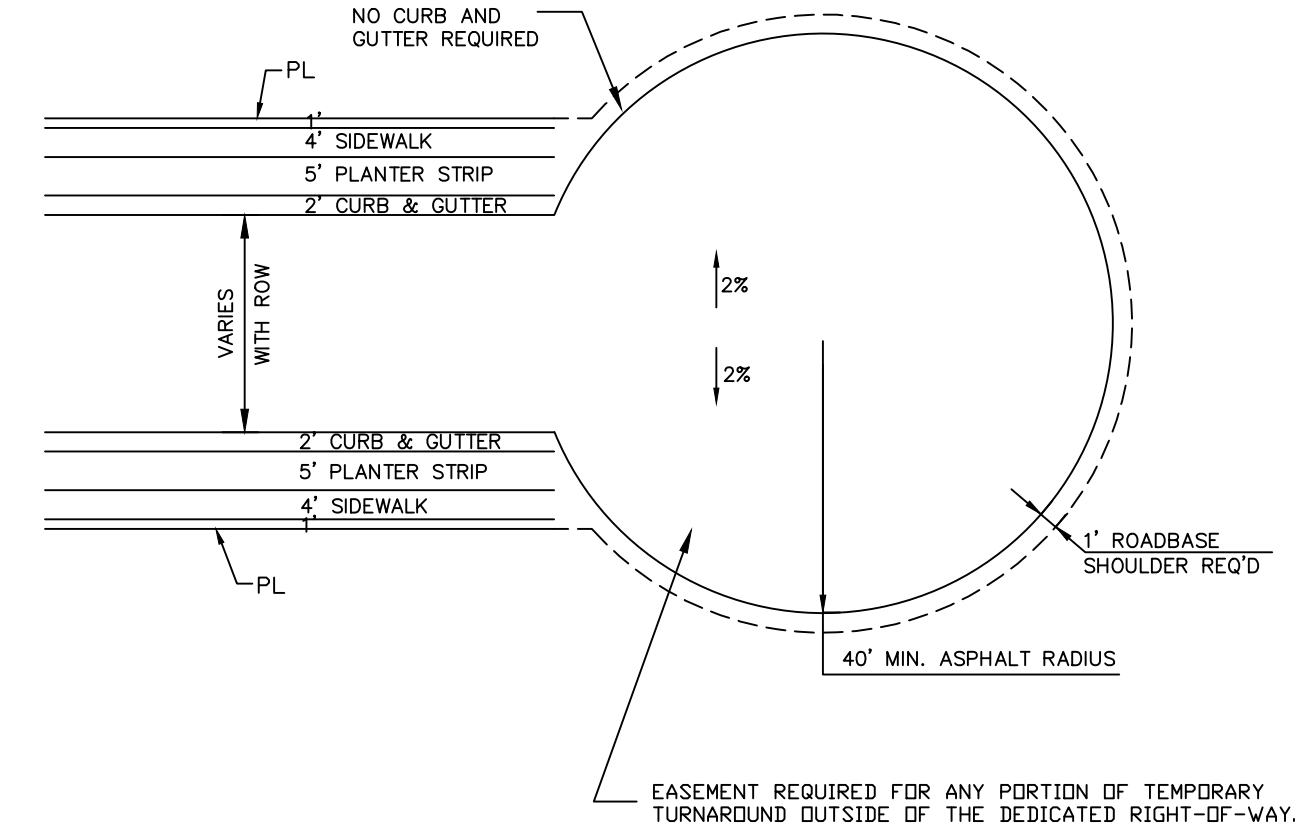
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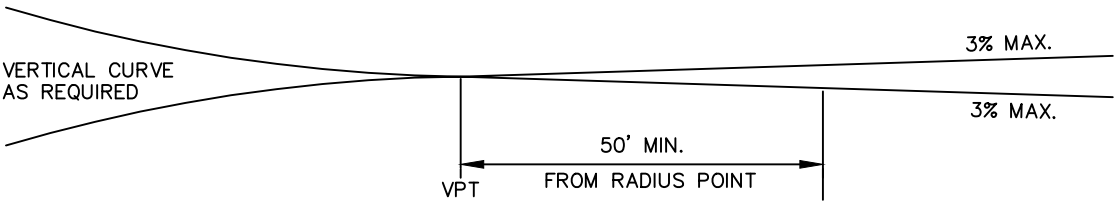
Standard Setbacks

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 9

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04





GENERAL CONSTRUCTION NOTES:

1. SUBGRADE SHALL CONFORM TO CITY CONSTRUCTION STANDARDS, SEE STREET CROSS SECTION DETAIL 1.
2. 8" MIN. CRUSHED GRAVEL BASE COURSE.
3. 3" MIN. COMPACTED PLANT MIX ASPHALT SURFACING.

TEMPORARY TURNAROUND

NTS

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NO.		BY	APRL	DATE

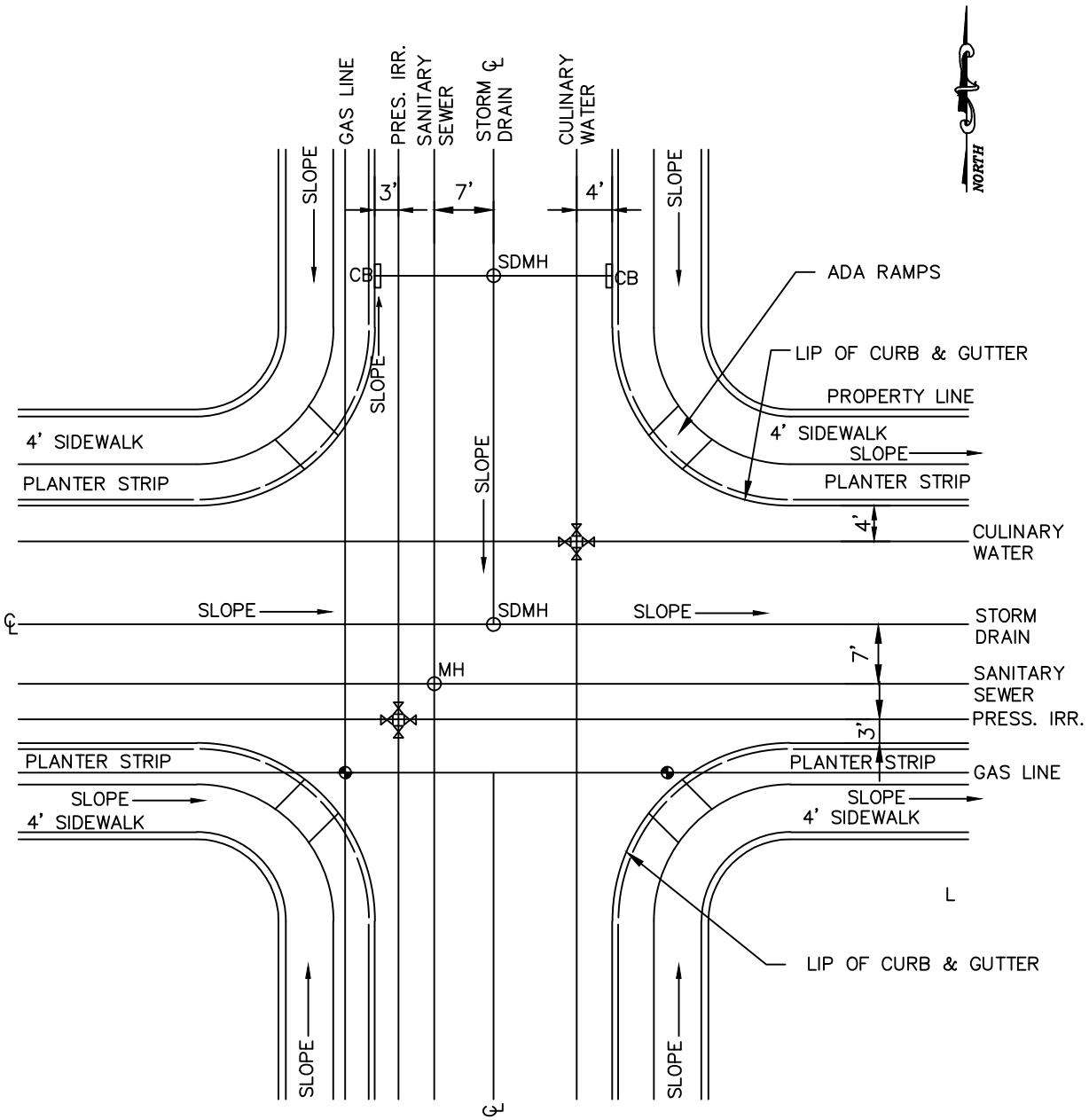
ALPINE 1850

TEMPORARY TURNAROUND

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\10 TEMPORARY TURNAROUND

STANDARD DRAWING NUMBER:	10
PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/18/05



STANDARD STREET INTERSECTION AND UTILITY LOCATION

N.T.S.

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NO.		BY	APRL.	DATE

ALPINE 1850

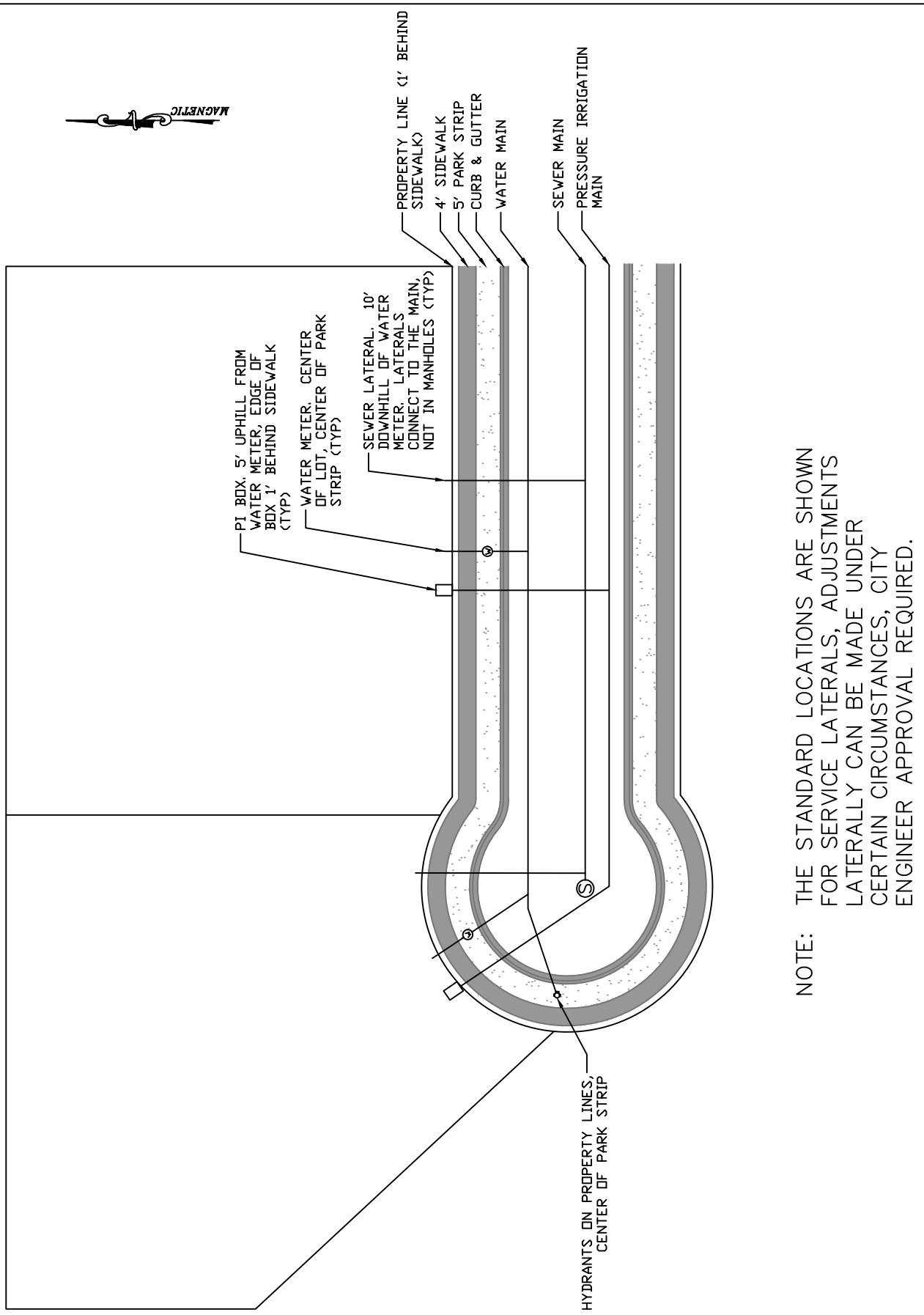
STANDARD STREET INTERSECTION AND UTILITY LOCATION

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\11 INTERSECTION AND UTILITY LOCATION

STANDARD DRAWING NUMBER: 11

PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05



NOTE: THE STANDARD LOCATIONS ARE SHOWN FOR SERVICE LATERALS, ADJUSTMENTS LATERALLY CAN BE MADE UNDER CERTAIN CIRCUMSTANCES, CITY ENGINEER APPROVAL REQUIRED.

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NO.		BY	APRL.	DATE

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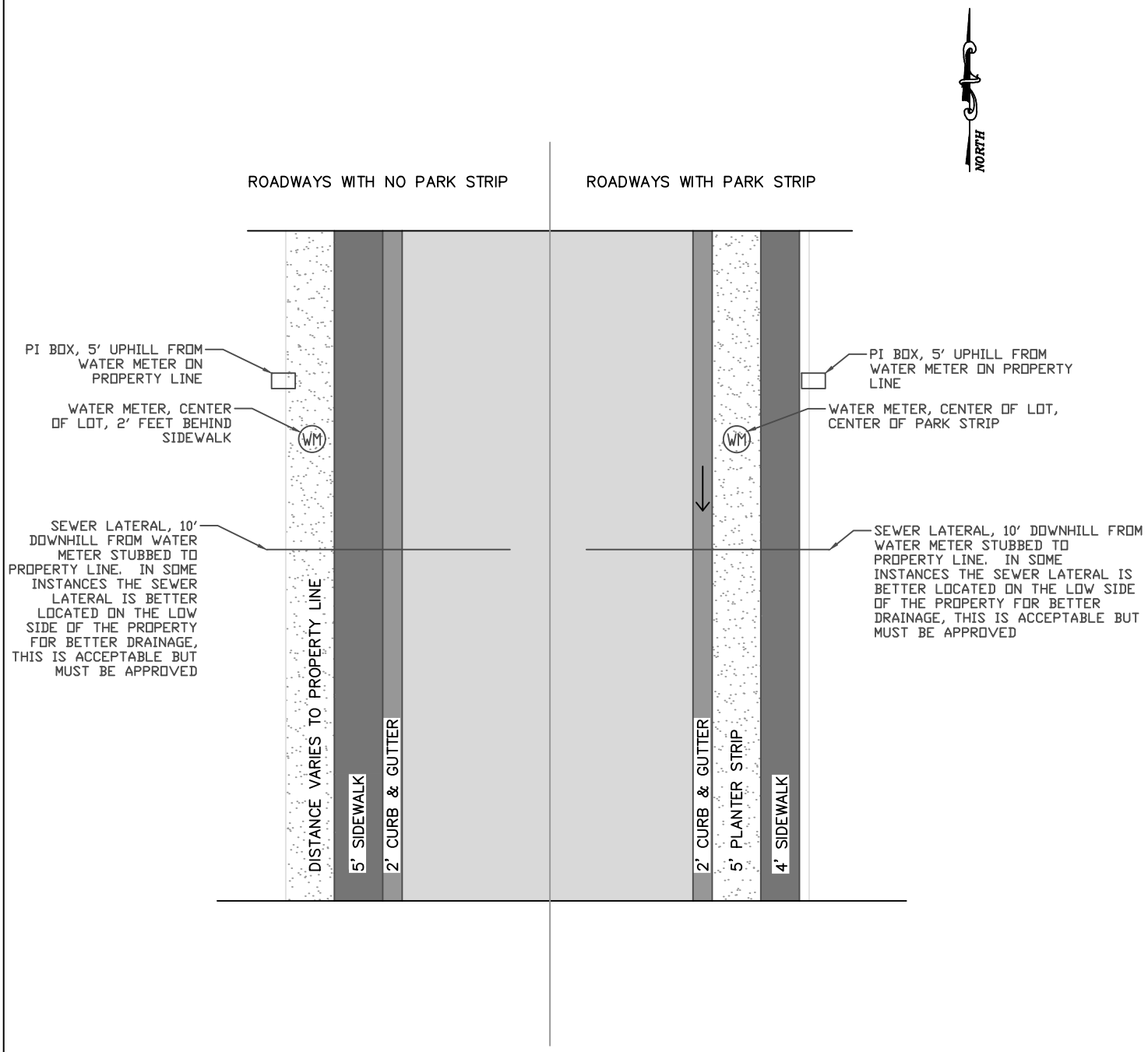
STANDARD UTILITY SERVICE LOCATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: D:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\12 ALT TYPICAL UTILITY SERVICE LOCATIONS

STANDARD DRAWING NUMBER: 12a

PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05



STANDARD LOT UTILITY LOCATIONS

N.T.S.

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

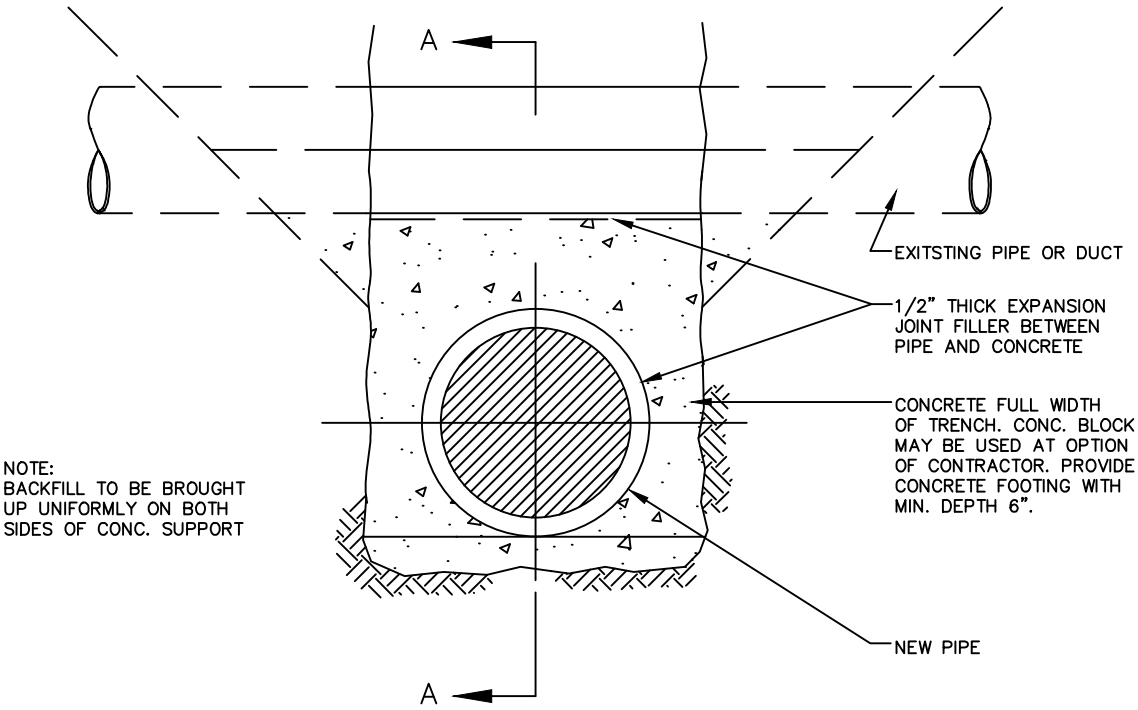
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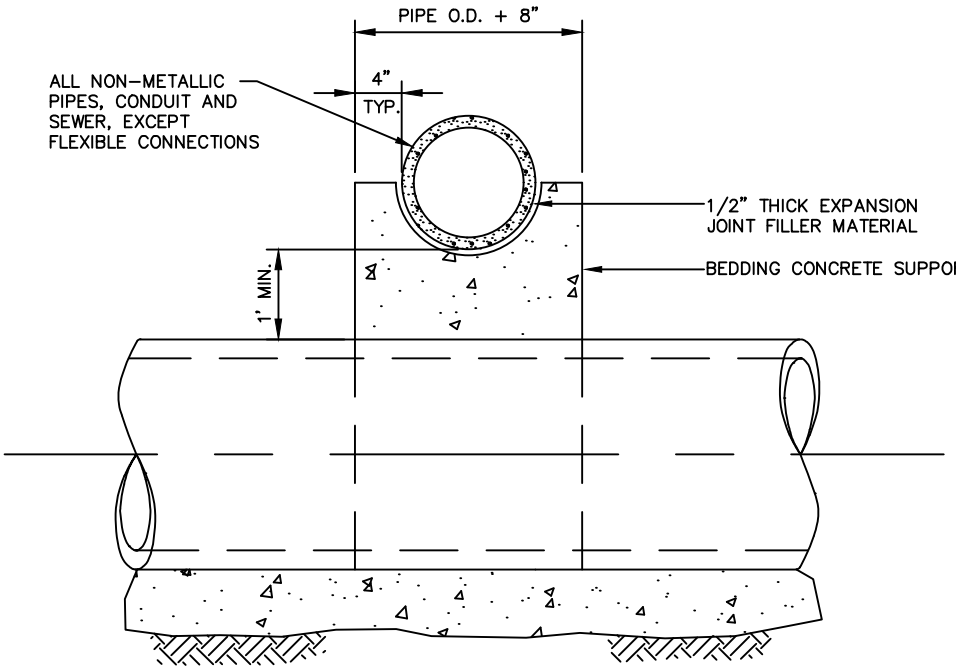
STANDARD LOT UTILITY LOCATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 12

PLOT SCALE:	N.T.S.
DRAWN BY:	BDB
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/05





SECTION A-A

UTILITY CONFLICT

N.T.S.

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NO.		BY	APRL.	DATE

ALPINE 1850

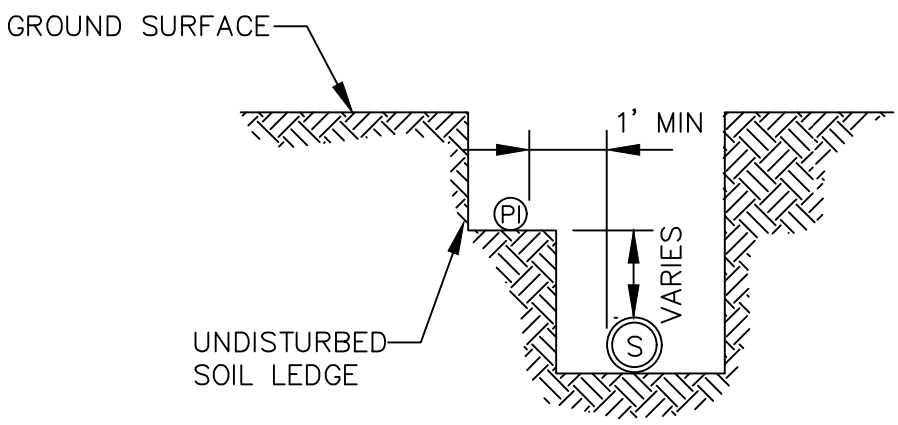
UTILITY CONFLICT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\13 UTILCF

STANDARD DRAWING NUMBER: 13

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



NOTE:
ALL PLUMBING PRACTICES SHALL CONFORM TO THE PLUMBING CODE ADOPTED BY ALPINE CITY

SEWER & PI LATERALS IN COMMON TRENCH

N.T.S.

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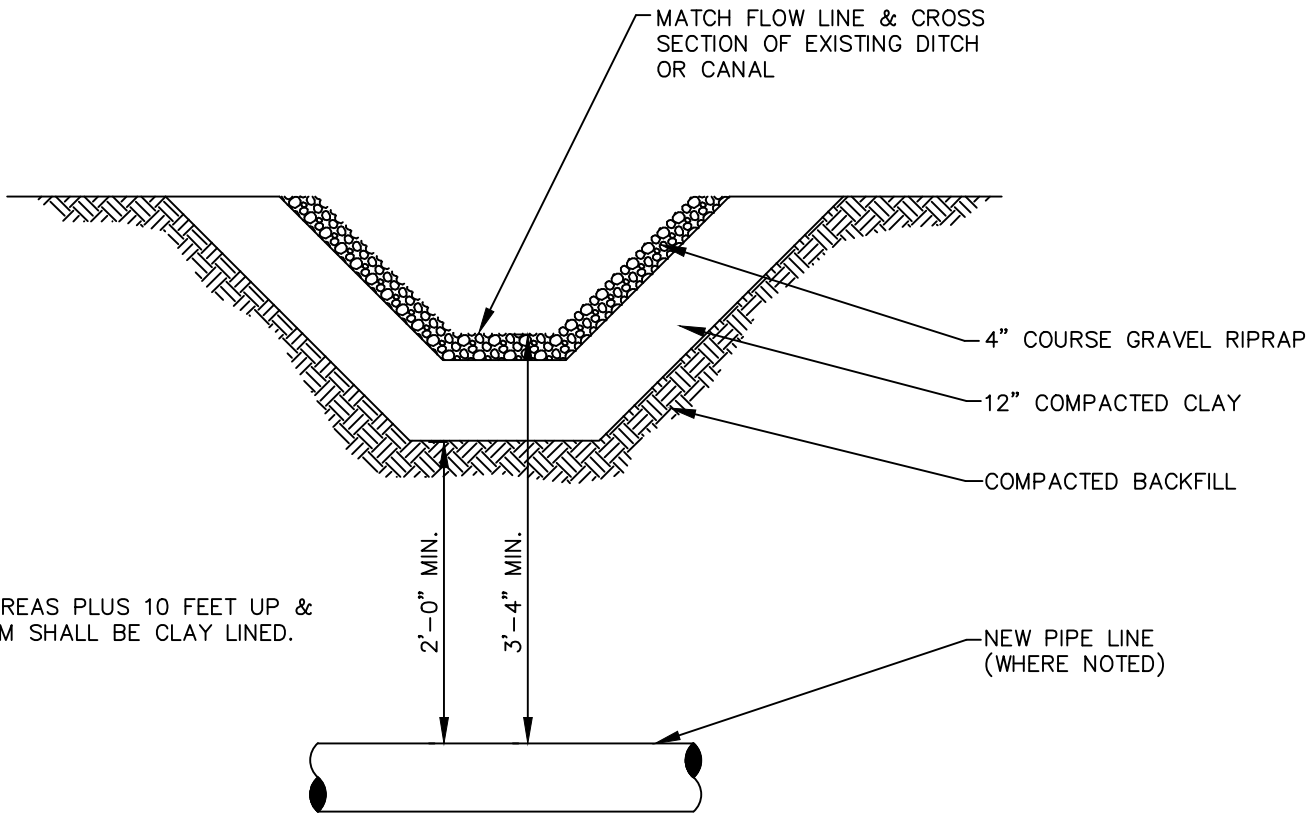
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CITY UTILITY LATERALS IN SAME TRENCH

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 14

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



NOTE:
DISTURBED AREAS PLUS 10 FEET UP & DOWN STREAM SHALL BE CLAY LINED.

DITCH CROSSING

N.T.S.

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NO.		BY	APRL.	DATE

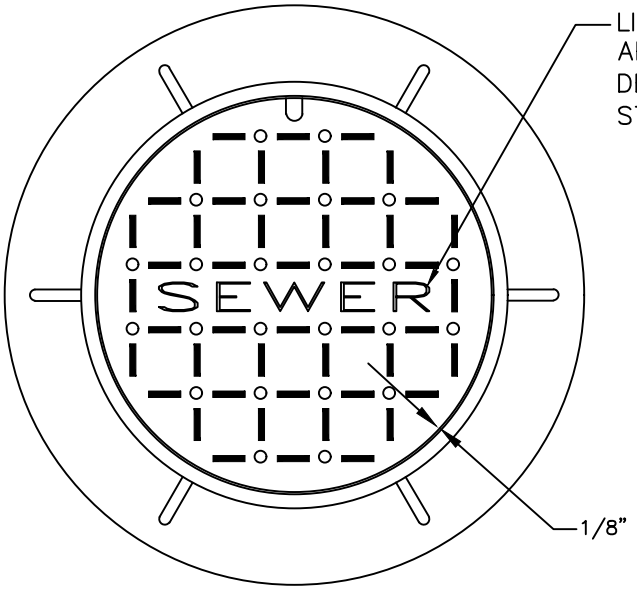
ALPINE 1850

DITCH CROSSING

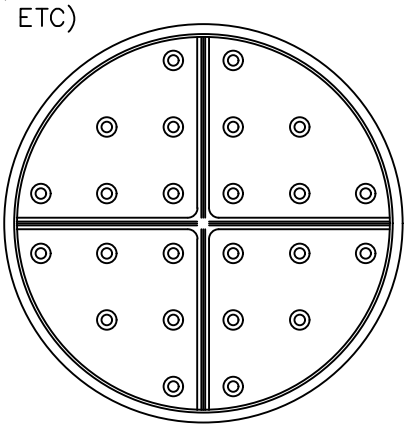
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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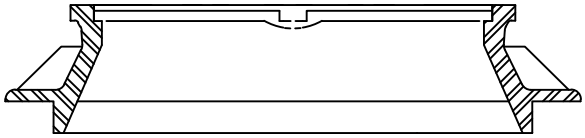
STANDARD DRAWING NUMBER:	15
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



PLAN OF COVER AND RING

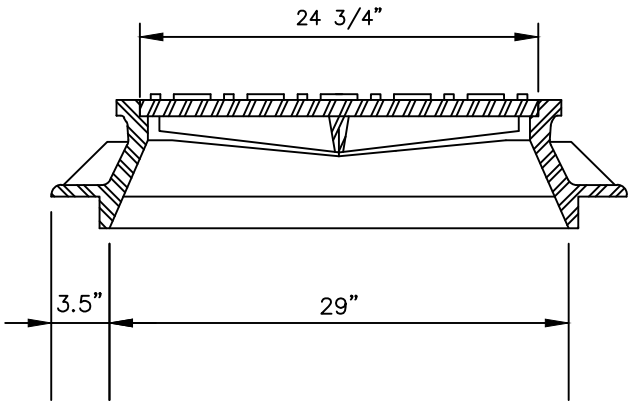


BOTTOM VIEW OF COVER



SECTIONS

D&L A-1180 OR APPROVED EQUAL



HEAVY DUTY, 400 LB. MINIMUM, MANHOLE RING AND COVER

N.T.S.

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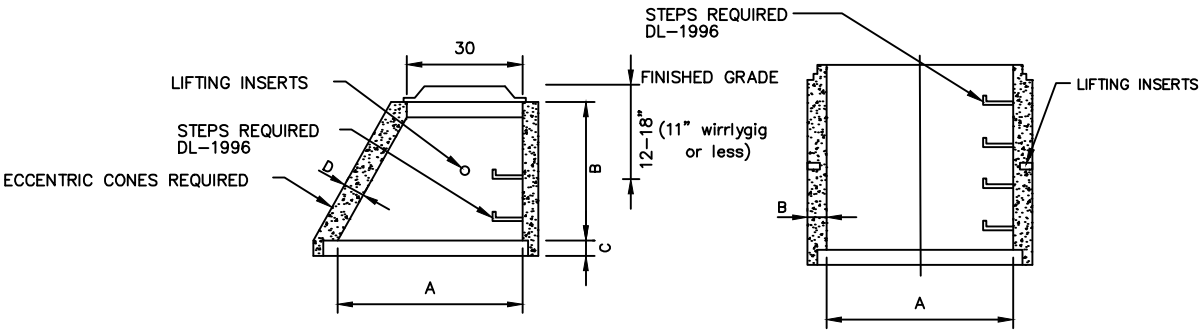
ALPINE 1850

CAD FILE: G:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\16 TYPICAL MANHOLE RING & COVER

MANHOLE RING & COVER (typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER:	16
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



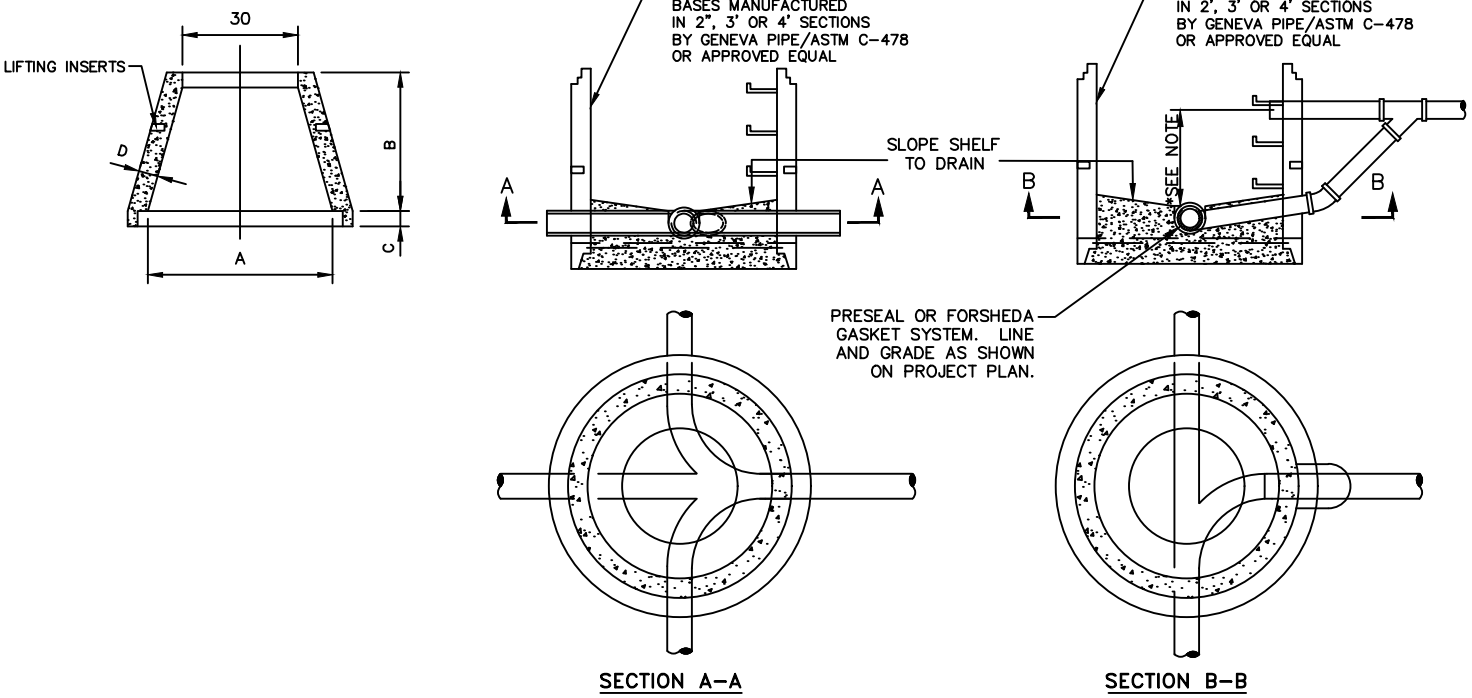
SIZE A (INCHES)	HEIGHT B (INCHES)	FLANGE C (INCHES)	WALL D (INCHES)	WEIGHT (LBS. EA.)
48	36	4	5	2720
60	39	6	6	4300

USE 5' DIA. MIN. FOR ALL PIPE 14" & LARGER USE 4' MIN. DIA. FOR ALL PIPE UP TO AND INCLUDING 12" DIA. UNLESS 3 OR ENTER THE MANHOLE. FOR ALL MANHOLES 15' OR DEPTH FROM RIM TO INV., USE 5' DIA. MANHOLE.

SIZE A (INCHES)	WALL B (INCHES)	WEIGHT (LBS. EA.)
48	5	900
60	6	1380

DROP PIPE INSTALLED IN CONCRETE

*NOTE:
MINIMUM AS DIRECTED BY CITY ENGINEER



SECTION A-A

SECTION B-B

TYPICAL JUNCTION MANHOLE

N.T.S.

TYPICAL DROP MANHOLE

N.T.S.

NOTE: USE OF DROP MANHOLES REQUIRES APPROVAL OF CITY ENGINEER AND PUBLIC WORKS DIRECTOR. FOR ALL OTHER SPECIFICATIONS, SEE APWA.

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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

SEWER MANHOLE (TYPICAL)

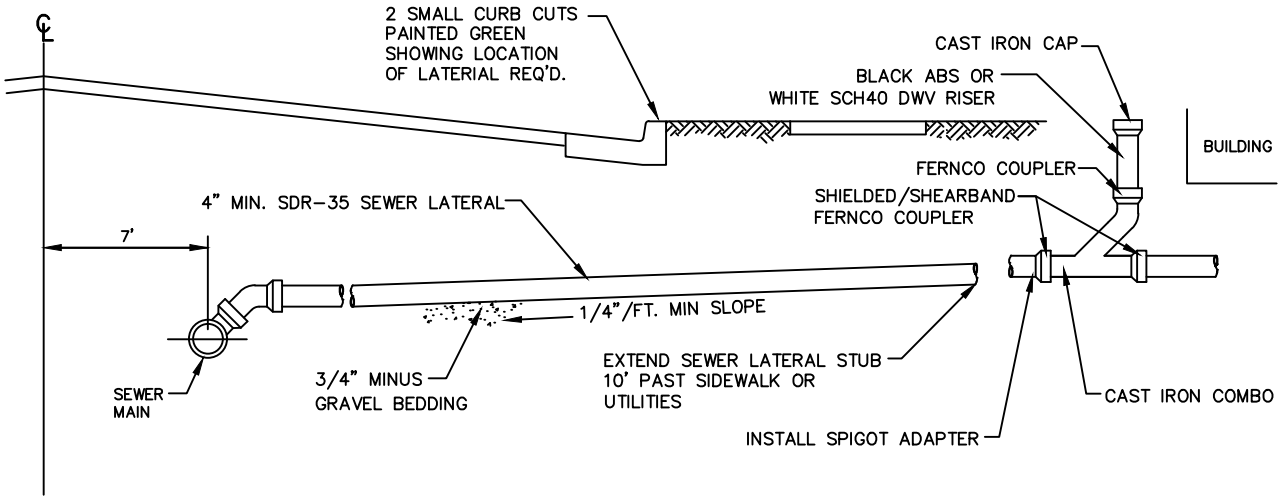
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\17 SEWER TYPICAL MANHOLES

STANDARD DRAWING NUMBER:	17
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTES:

1. A CLEANOUT IS REQUIRED NEXT TO THE BUILDING.
2. ADDITIONAL CLEANOUTS REQUIRED BETWEEN THE BUILDING AND SEWER MAIN AT MAXIMUM 100 FOOT INTERVALS.
3. THE COMBO SHALL CONSIST OF CAST IRON, ABS MATERIAL (OR WHITE SCH40 DWV) FOR RISER.
4. FERNCO COUPLERS (AS SHOWN) SHALL BE USED WHEN CONNECTING CAST IRON TO RISER OR SDR-35 LATERAL PIPE.
5. ALL CLEANOUTS SHALL HAVE CAST IRON CAPS.
6. ALL SEWER LATERALS SHALL BE SDR-35 PIPE, BEING LAID WITH THE BELL END OF THE PIPE IN THE UP HILL DIRECTION.
7. ALL SEWER LATERALS SHALL BE BEDDED WITH 3/4" MINUS GRAVEL.
8. BACKFILL MATERIAL SHALL BE ENGINEERED FILL WITHIN CITY RIGHT OF WAYS, AS CLASSIFIED IN ALPINE CITY STANDARDS AND SPECIFICATIONS.
9. BACKFILL MATERIAL AROUND PIPE SHALL BE COMPACTED TO 95% OF DENSITY AS MEASURED BY AASHTO T-99.
10. SEWER LATERAL MUST BE INSPECTED BY AN AUTHORIZED REPRESENTATIVE OF THE CITY PRIOR TO BACKFILLING TRENCH.
11. A TIE SKETCH SHOWING THE LOCATION OF ALL SEWER LATERALS MUST BE SUBMITTED TO THE CITY.
12. THE CITY SHALL BE NOTIFIED 24 HOURS PRIOR TO WHEN A SEWER LATERAL INSPECTION IS NEEDED.
13. ALL APPROPRIATE EXCAVATION PERMITS MUST BE OBTAINED FROM THE CITY AND OTHER AGENCY PRIOR TO ANY EXCAVATION.
14. ALL APPROPRIATE IMPACT FEES MUST BE PAID PRIOR TO CONNECTING TO THE SEWER.
15. MARK END OF LATERAL STUB WITH 2x4 POST PAINTED GREEN. ALL OTHER MARKERS MUST BE PRE-APPROVED PRIOR TO USE.



TYPICAL SEWER SERVICE CONN.

N.T.S.

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ALPINE 1850

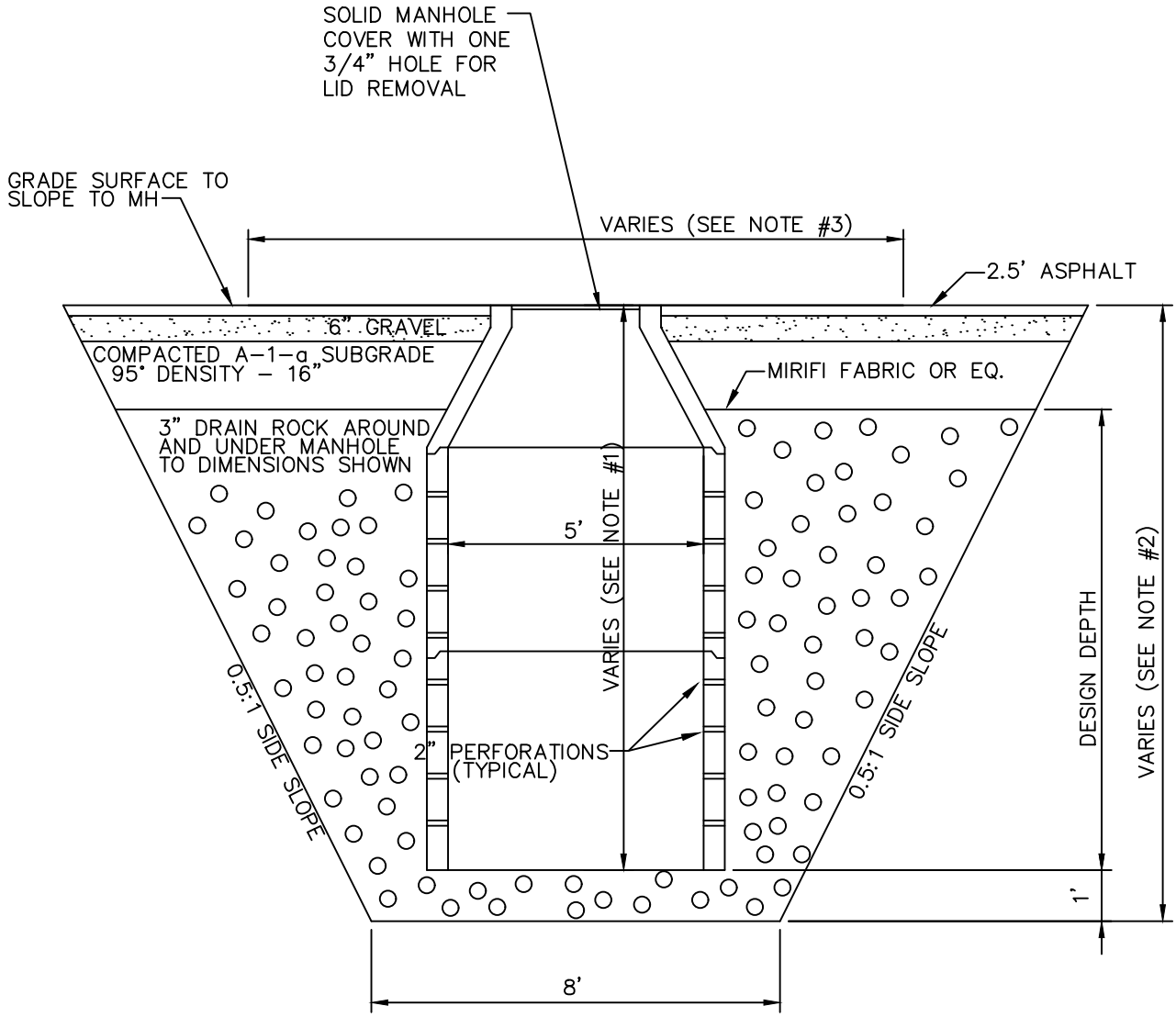
TYPICAL SEWER SERVICE CONN.

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER: 17a

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



NOTES:
#1. DESIGN DEPTH + 2'
#2. DESIGN DEPTH + 3'
#3. DESIGN DEPTH + 11'

STORM DRAINAGE SUMP

N.T.S.

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ALPINE 1850

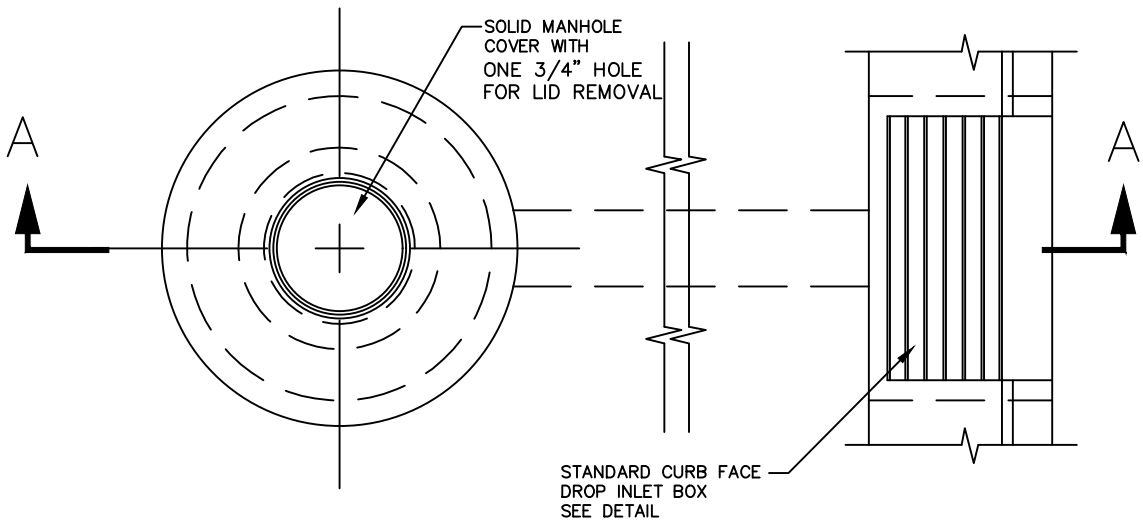
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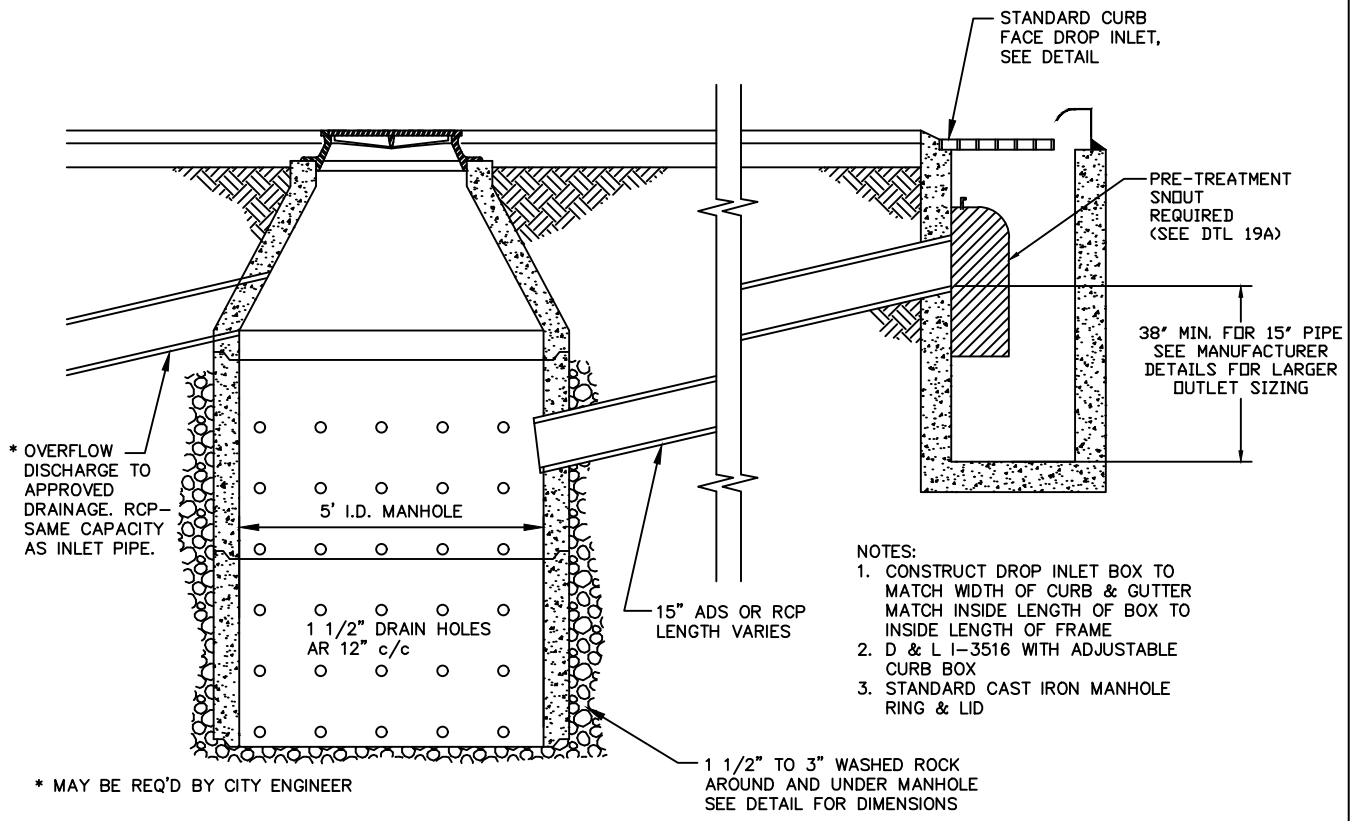
TYPICAL STORM DRAINAGE SUMP

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 18

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04





SECTION A-A

SUMP DISPOSAL

N.T.S.

NOTE: ONLY ALLOWED IN CERTAIN CIRCUMSTANCES. PRE-TREATMENT REQ'D

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NO.		BY	APRL. DATE

ALPINE 1850

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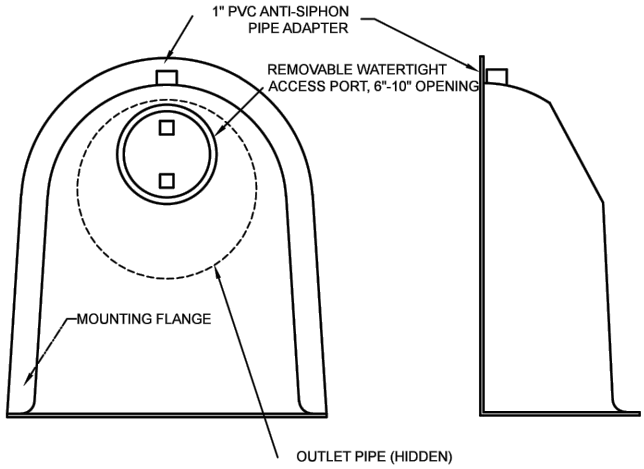
SUMP DISPOSAL (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 19

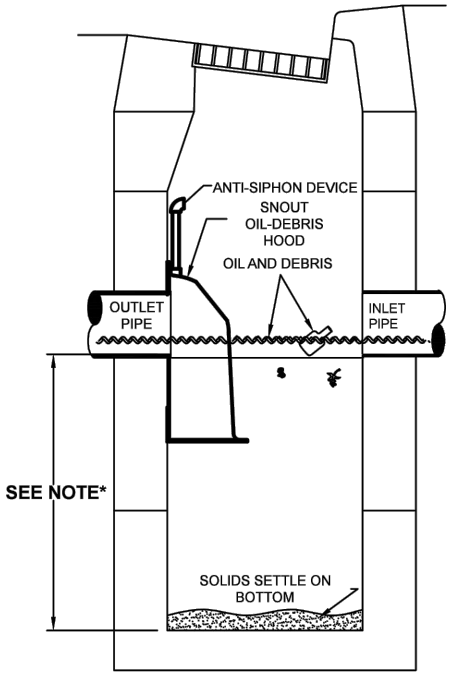
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

CONFIGURATION DETAIL



SNOUT OIL-WATER-DEBRIS SEPARATOR

TYPICAL INSTALLATION



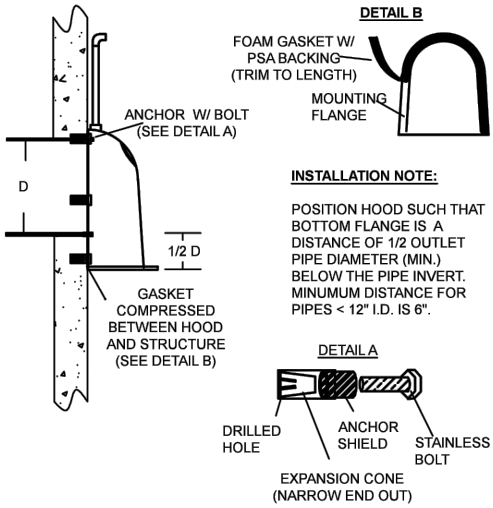
*NOTE- SUMP DEPTH OF 38" MIN. FOR UP TO 12" ID PIPE. OUTLET. FOR PIPES 15" ID AND ABOVE SUMP DEPTH OF 2.5 TO 3 TIMES PIPE ID RECOMMENDED (E.G. 5' DEEP for 24" PIPE)

NOTES:

1. ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY:
   BEST MANAGEMENT PRODUCTS, INC.
   9 MATHEWS DRIVE, UNIT A1-A2.
   EAST HADDAM, CT 06423
   TOLL FREE: (800) 504-8008 OR (888) 434-0277, FAX: (877) 434-3197
   WEB SITE: www.bmpinc.com
   OR PRE-APPROVED EQUAL
2. ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
3. ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT PIPE AND ELBOW AS DRAWN. (SEE CONFIGURATION DETAIL)
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION (SNOUT SIZE ALWAYS LARGER THAN PIPE SIZE).
5. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A MINIMUM DISTANCE EQUAL TO 1/2 THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES <12" I.D.
6. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 12" ACCORDING TO STRUCTURE CONFIGURATION.
7. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL AND PIPE SHALL BE FINISHED FLUSH TO WALL.
8. ALL STRUCTURE JOINTS SHALL BE WATERTIGHT.
9. THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH $\frac{3}{8}$" STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER. (SEE INSTALLATION DETAIL)
10. INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT.
    INSTALLATION KIT SHALL INCLUDE:
    A. INSTALLATION INSTRUCTIONS
    B. PVC ANTI-SIPHON VENT PIPE AND ADAPTER
    C. OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
    D. 3/8" STAINLESS STEEL BOLTS
    E. ANCHOR SHIELDS

US Patent # 6126817, 7951294, 7857966, 8512556
Canada Patent # 2285146, 2690156, 2690156 others pending

INSTALLATION DETAIL



HOOD SPECIFICATION FOR CATCH BASINS AND WATER QUALITY STRUCTURES

DESCRIPTION	DATE	SCALE
OIL- DEBRIS HOOD SPECIFICATION AND INSTALLATION (TYPICAL)	09/08/18	NONE
	DRAWING NUMBER	SP-SN

STATEMENT OF USE

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REVISION

NO.		BY	APRL. DATE

ALPINE 1850

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\19A SNOUT

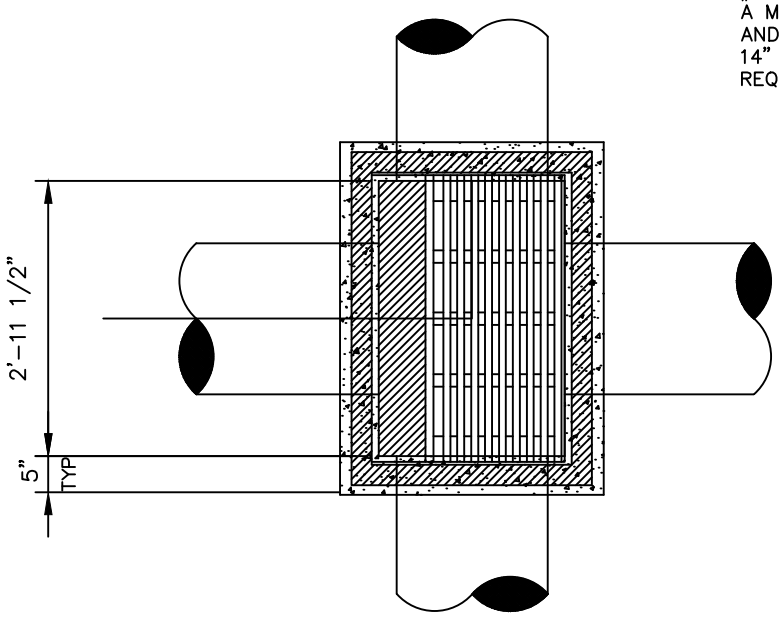
SNOUT DETAIL (Typical)

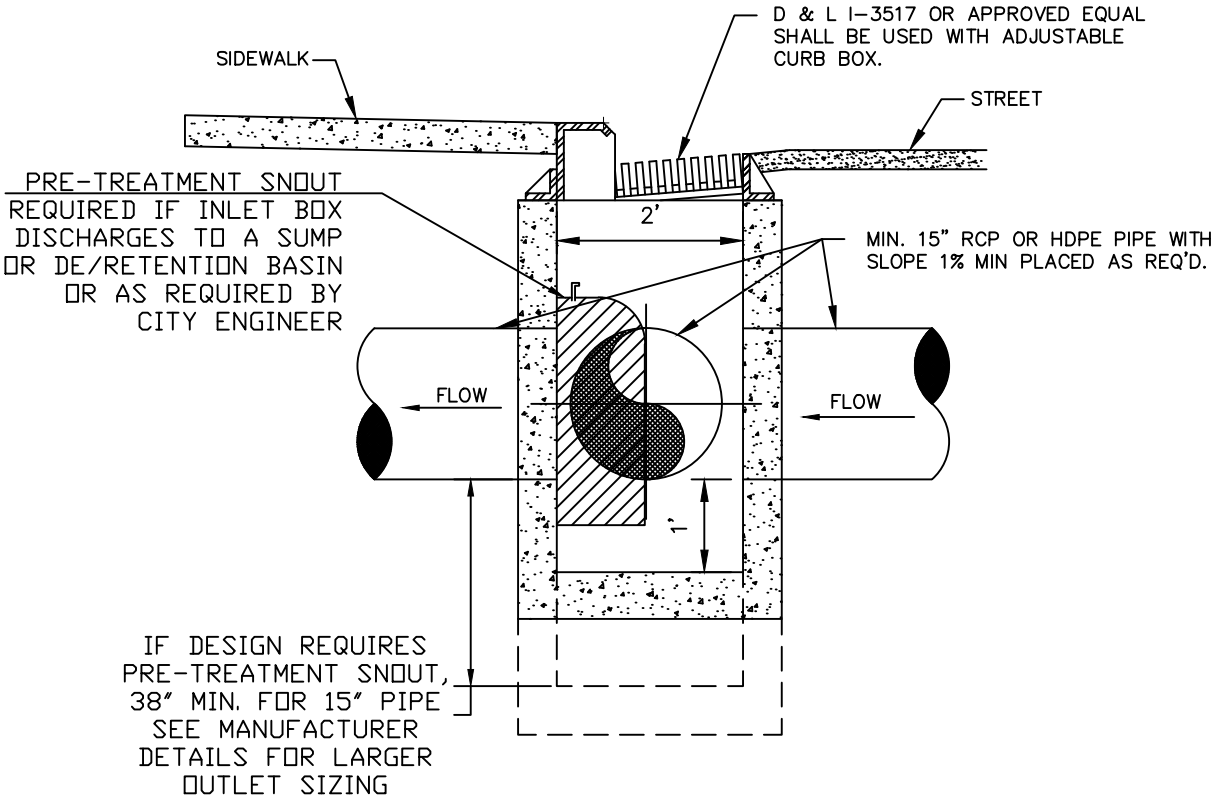
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 19a

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

NOTE:
#4 REBAR SPACED AT
A MINIMUM OF 12" O.C. HORIZ.
AND 8" O.C. VERTICAL.
14" OVERLAP OR REBAR
REQUIRED.





CURB FACE DROP INLET BOX

N.T.S.

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NO.		BY	APRL.	DATE

ALPINE 1850

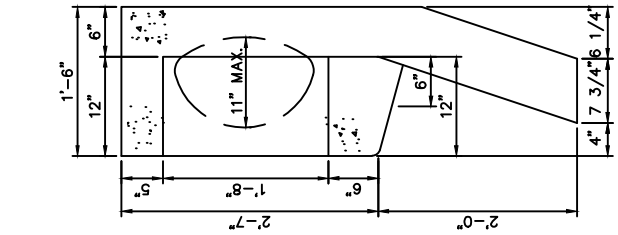
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CURB FACE DROP INLET BOX (Typical)

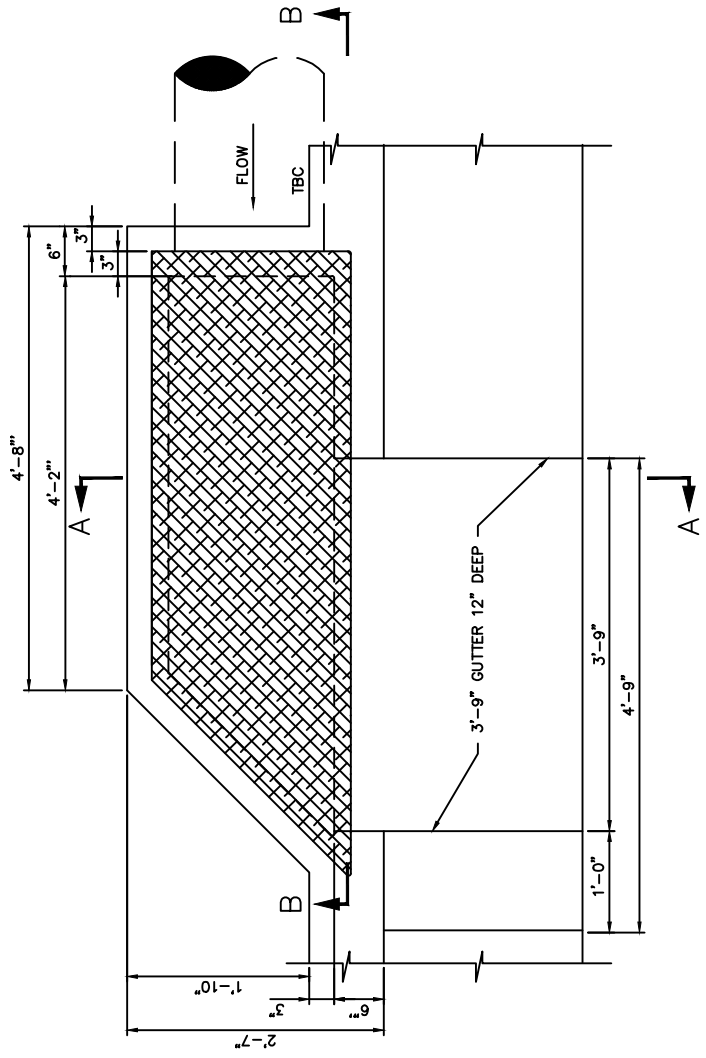
ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

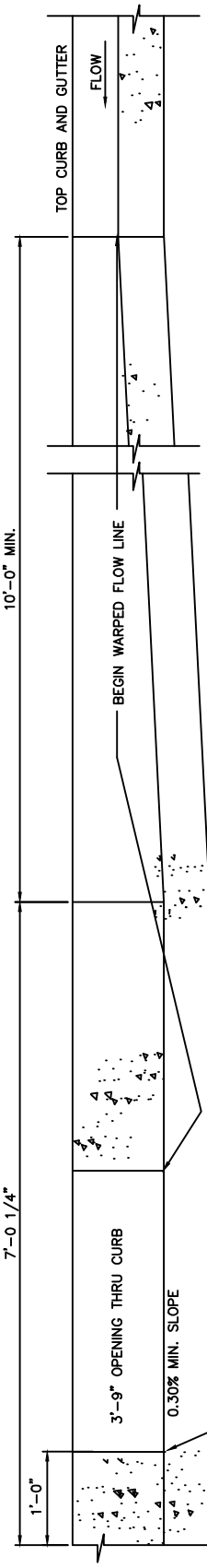
STANDARD DRAWING NUMBER: 20

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



SECTION A-A





SECTION B-B

GENERAL NOTES

1. ALL MATERIALS, CONSTRUCTION, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH ALPINE CITY SPECIFICATIONS AND AS DIRECTED BY THE ALPINE CITY ENGINEER OR HIS REPRESENT.
2. ALL CONCRETE TO BE 4000 P.S.I. @ 28 DAYS.
3. UNDER CONDITIONS WHERE PIPE SIZE, PIPE TYPE, OR EARTH COVER IS CRITICAL USE MODIFIED OUTLET BOX.
4. 1/4" PLATE SHALL BE PLACED ON THE OULET AS A COVER. THE PLAT SHALL BE PAINTED GREY

DIPSTONE OUTLET

N.T.S.

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REVISION

NO.		BY	APRL. DATE

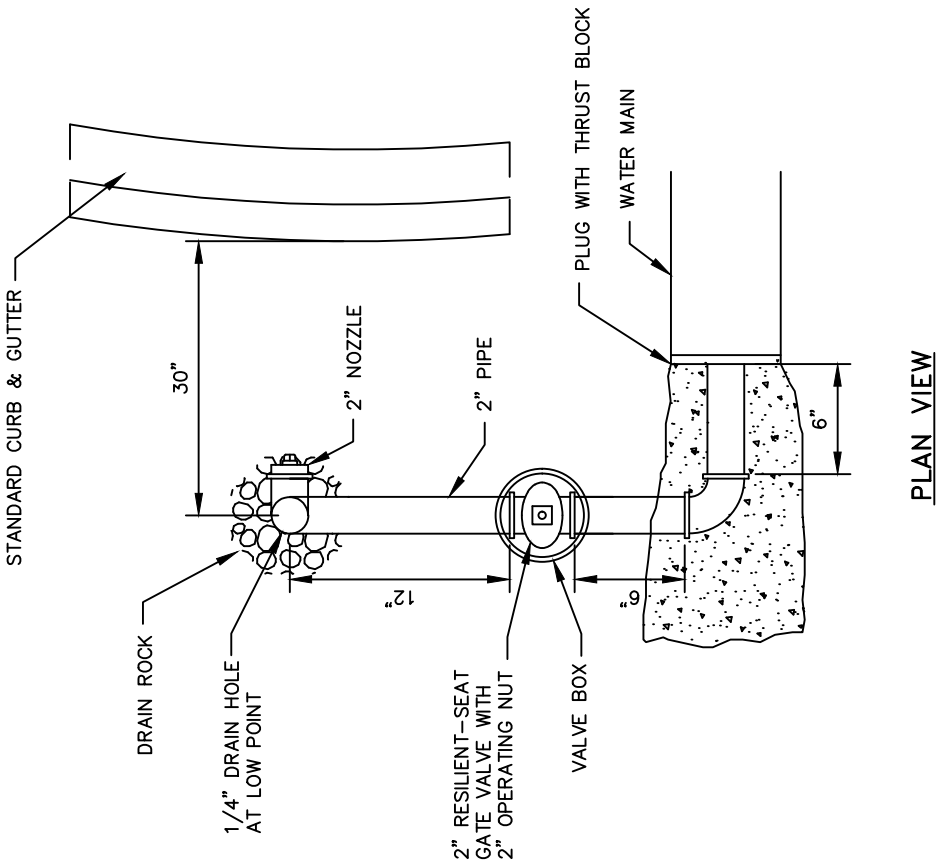
ALPINE 1850

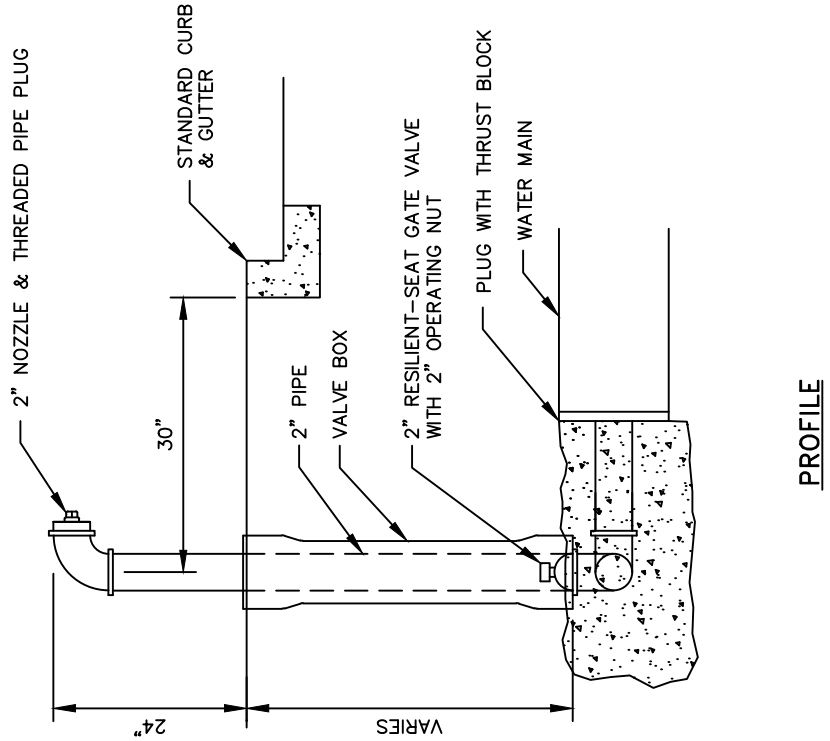
DIPSTONE OUTLET

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\21 DIPSTONE OUTLET

STANDARD DRAWING NUMBER:	21
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04





FLUSH VALVE

N.T.S.

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NO.		BY	APRL.	DATE

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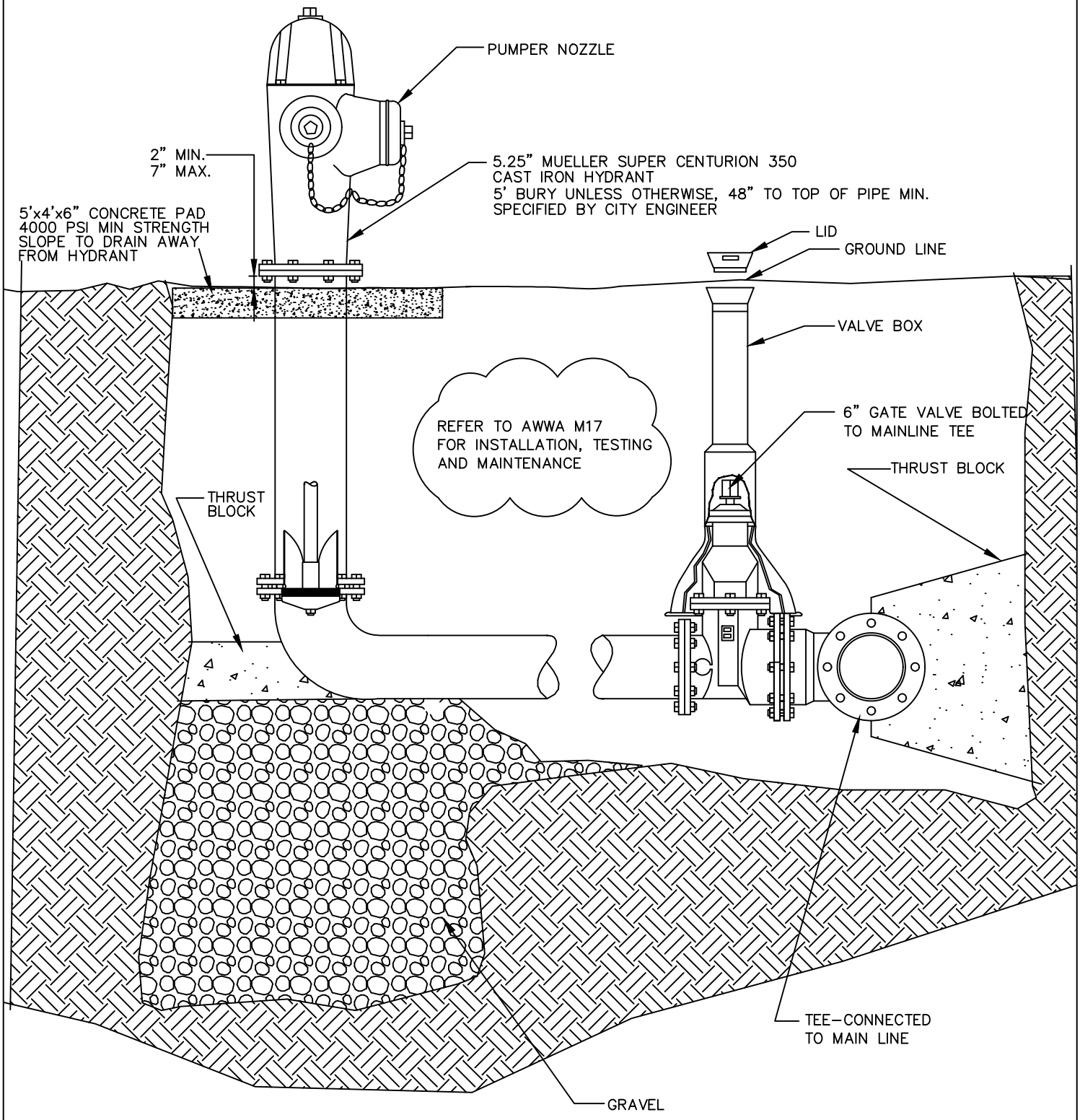
FLUSH VALVE (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\22 FLUSHVAL

STANDARD DRAWING NUMBER:	22
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

FIRE HYDRANTS REQUIRE 3–FEET MINIMUM CLEARANCE FOR OPERATION, THIS INCLUDES DRIVEWAYS



STANDARD FIRE HYDRANT DETAIL

N.T.S.

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ALPINE 1850

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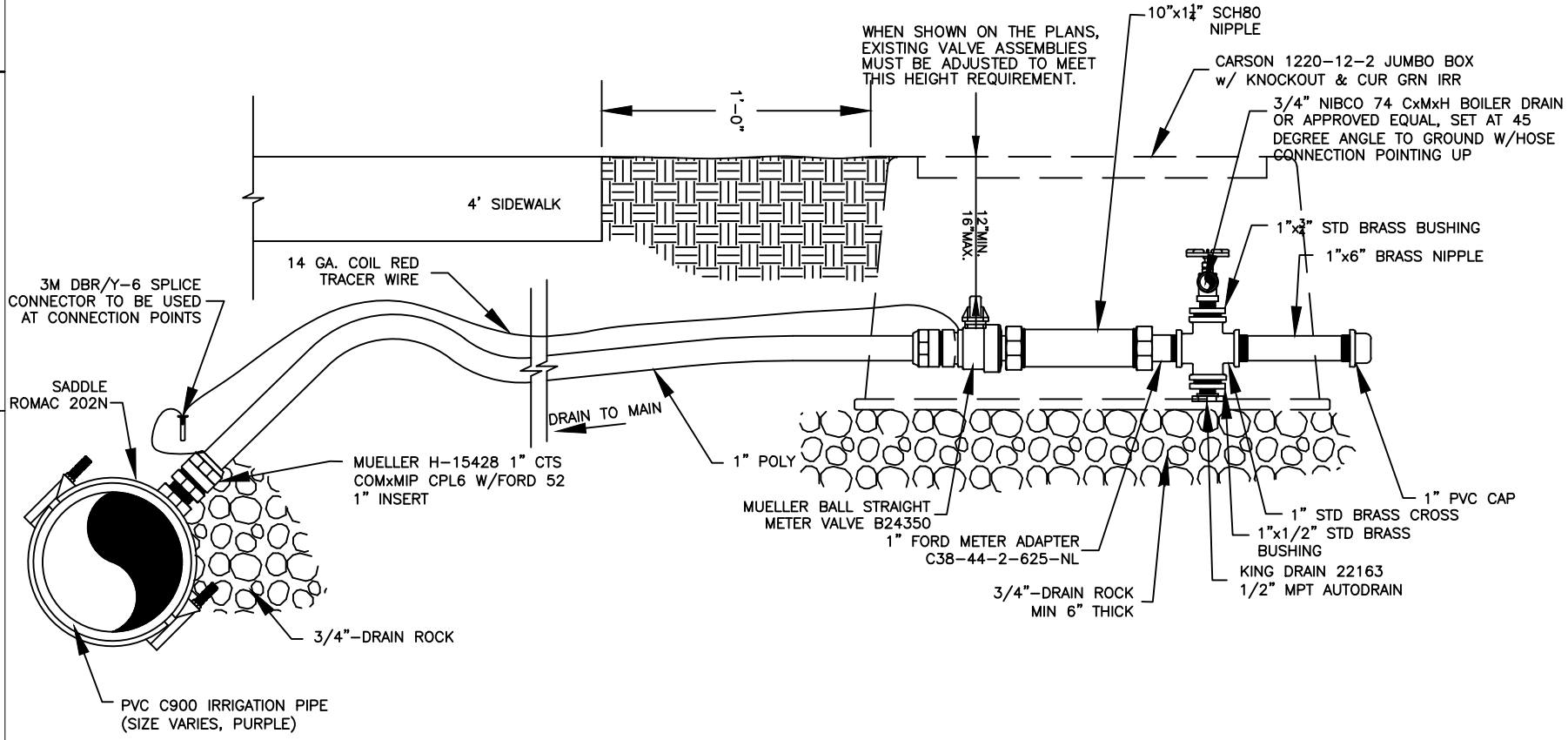
TYPICAL FIRE HYDRANT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 23

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

PRESSURIZED IRRIGATION BOXES REQUIRE 3–FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.



NOTES:

1. WHERE COMBINATION CURB, GUTTER, AND SIDEWALK EXISTS, THE IRRIGATION BOX SHALL BE PLACED 1' BEHIND THE SIDEWALK.
   IN LOCATIONS, WHERE NO CURB AND GUTTER EXIST OR ONLY CURB AND GUTTER WITHOUT SIDEWALK, THE IRRIGATION BOX SHALL BE PLACED ON THE PROPERTY LINE.

Pressurized Irrigation Distribution System

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 24

PLOT SCALE: N.T.S.
DRAWN BY: B.D.B.
DESIGN BY:
CHECKED BY:
ADOPTED DATE: 8/10/05

ALPINE 1850

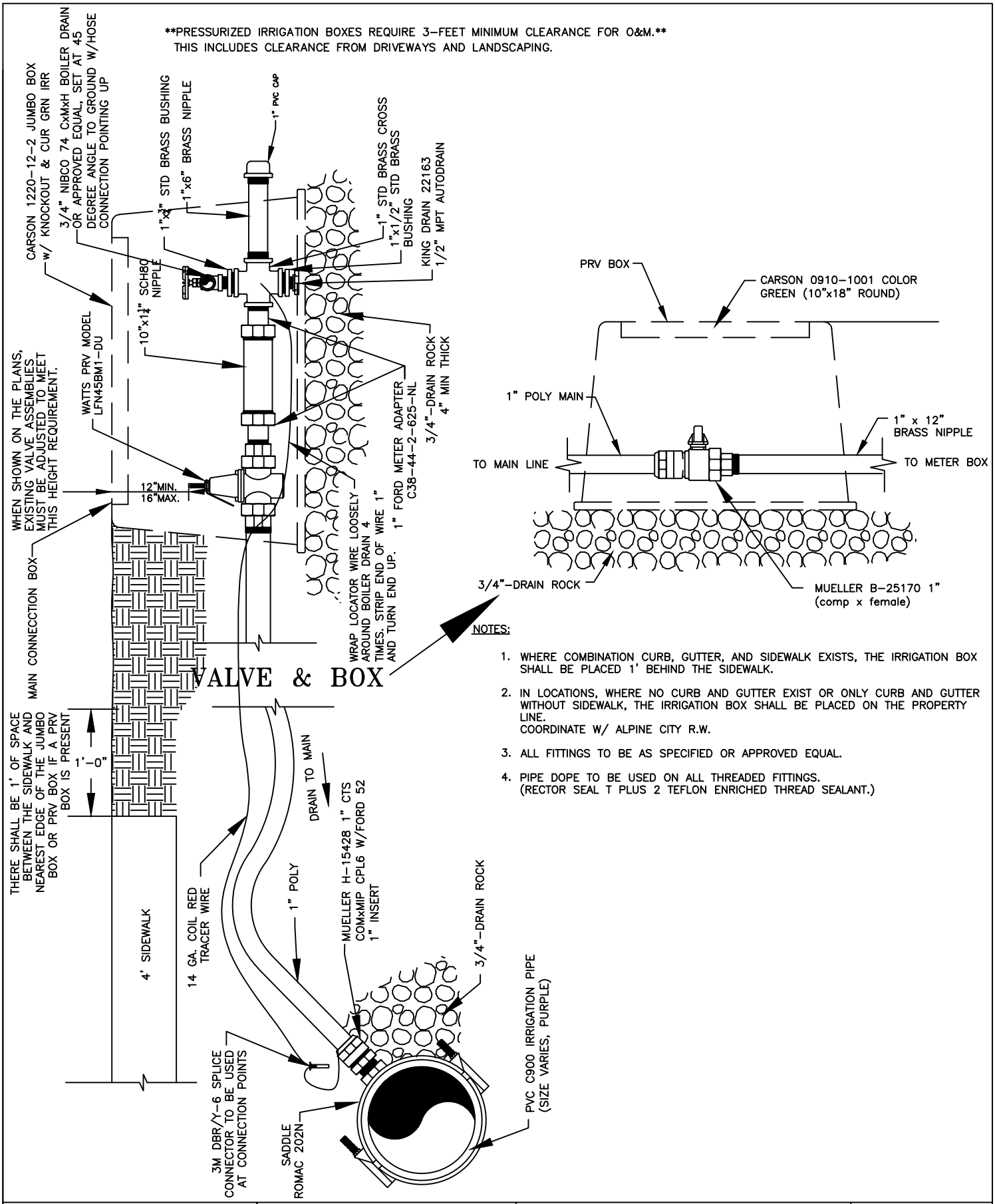
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NO.	REVISION	BY	DATE

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PRESSURIZED IRRIGATION BOXES REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M.
THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.



NOTES:

1. WHERE COMBINATION CURB, GUTTER, AND SIDEWALK EXISTS, THE IRRIGATION BOX SHALL BE PLACED 1' BEHIND THE SIDEWALK.
2. IN LOCATIONS, WHERE NO CURB AND GUTTER EXIST OR ONLY CURB AND GUTTER WITHOUT SIDEWALK, THE IRRIGATION BOX SHALL BE PLACED ON THE PROPERTY LINE.
   COORDINATE W/ ALPINE CITY R.W.
3. ALL FITTINGS TO BE AS SPECIFIED OR APPROVED EQUAL.
4. PIPE DOPE TO BE USED ON ALL THREADED FITTINGS.
   (RECTOR SEAL T PLUS 2 TEFLON ENRICHED THREAD SEALANT.)

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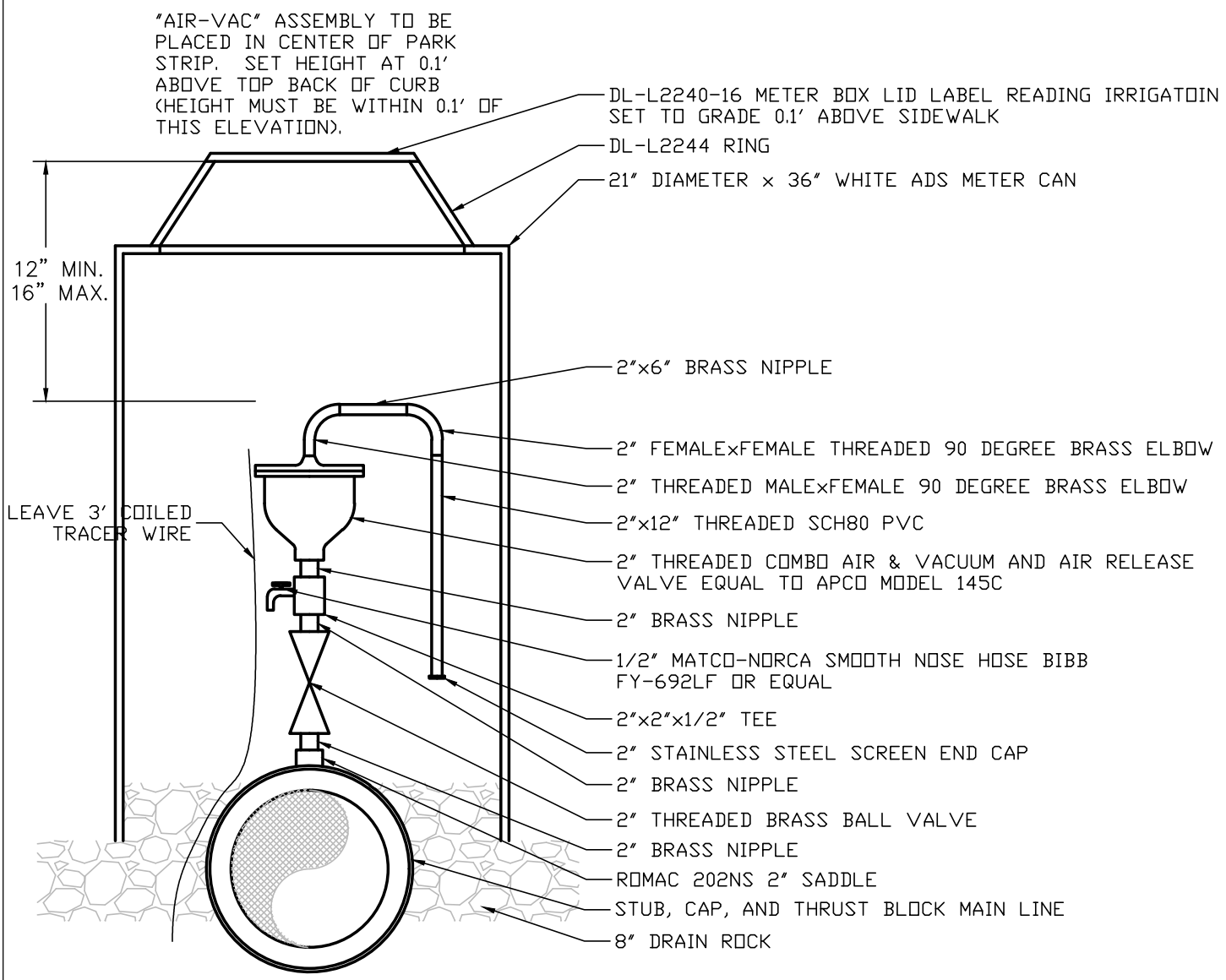
Pressurized Irrigation System w/PRV

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER: 25

PLOT SCALE:	N.T.S.
DRAWN BY:	B.D.B.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	8/10/05



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REVISION

NO.		BY	APRL.	DATE

ALPINE 1850

SECONDARY WATER AIR-VAC ASSEMBLY

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

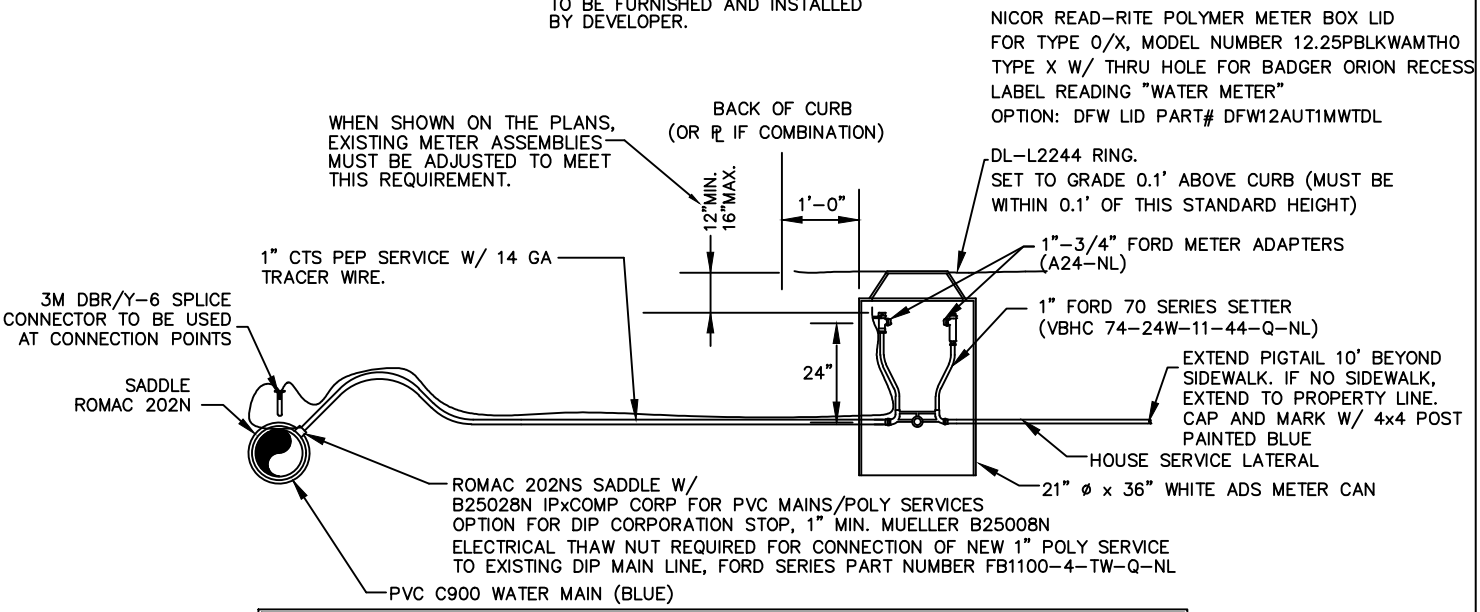
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STANDARD DRAWING NUMBER: 26

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/7/18

CULINARY WATER METERS REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.

NOTE: METER BOX, COVER, COPPERSETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER.

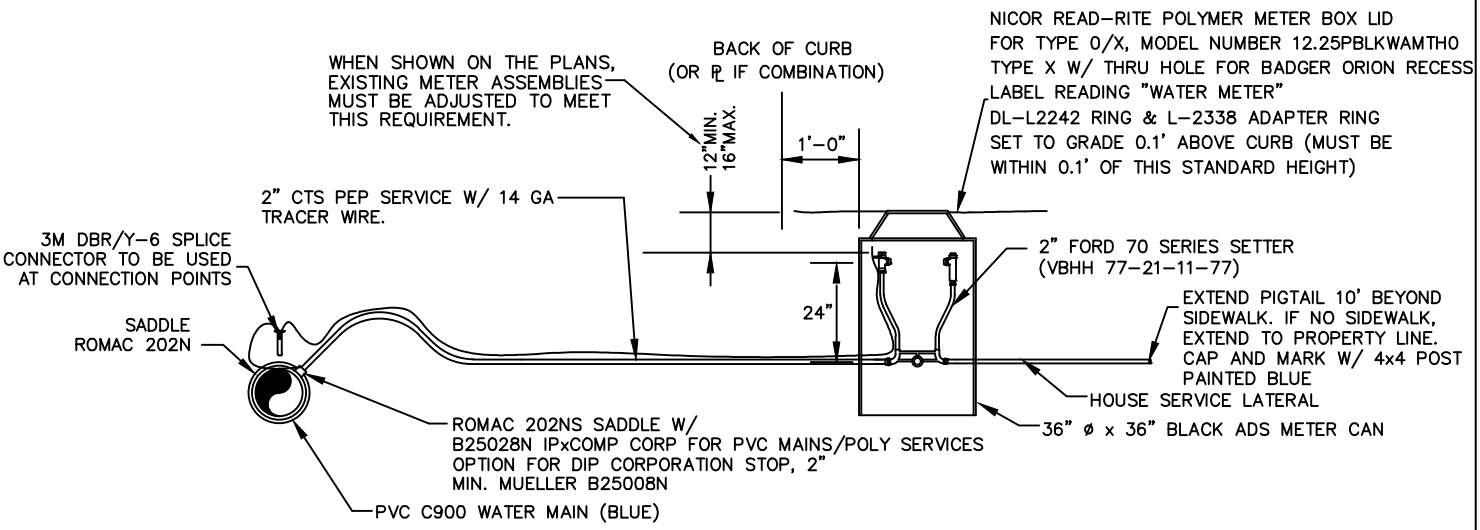


NOTE: 1" SERVICES ARE STANDARD FOR ALL NEW DEVELOPMENT, AS SHOWN.
REPLACEMENT PARTS FOR EXISTING 3/4" SERVICES CONSISTS OF:
3/4" FORD SERIES SETTER - VBHC72-24W-11-33-NL
CORPS ARE THE SAME PART NUMBERS, SPECIFIED AS 3/4" INSTEAD OF 1"

3/4" & 1" WATER SERVICE CONNECTIONS

N.T.S.

NOTE: METER BOX, COVER, COPPERSETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER.



NOTE: FOR 1.5" SERVICES: ALL PARTS SHOWN ABOVE ARE THE SAME EXCEPT THE SERVICE LINE AND SETTER, WHICH WOULD BOTH BE CHANGED TO 1.5"

1.5" & 2" WATER SERVICE CONNECTIONS

N.T.S.

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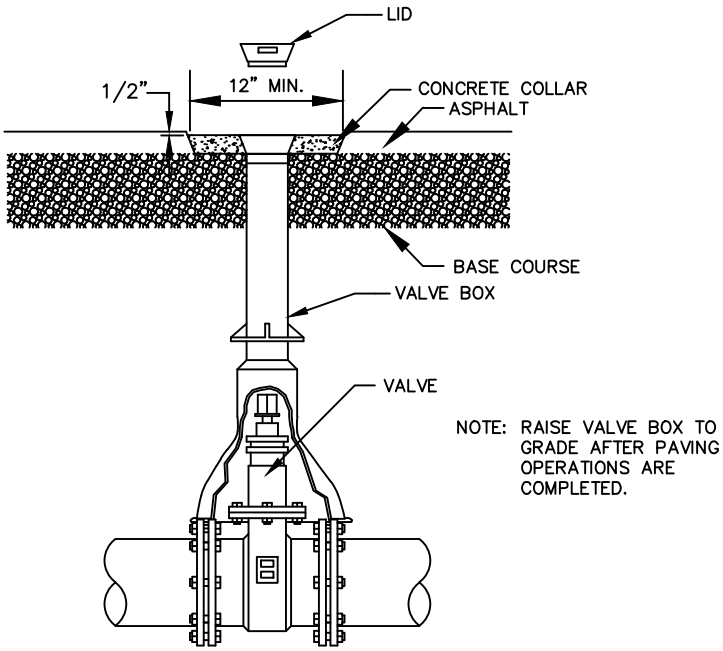
ALPINE 1850

WATER SERVICE CONNECTION DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER:	27
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



VALVE BOX COLLAR DETAIL

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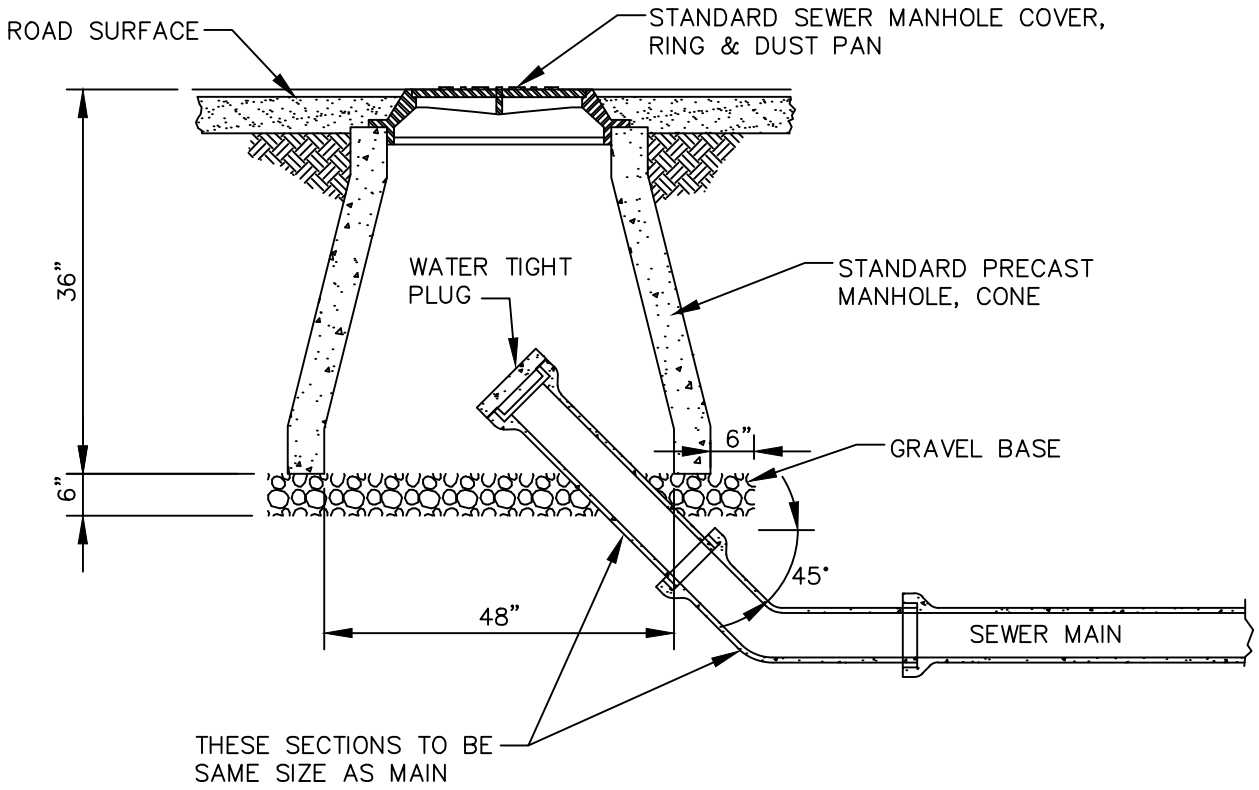
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VALVE BOX DETAIL

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 27a

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



TEMPORARY SEWER MAIN CLEANOUT

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NO.		BY	APRL.	DATE

ALPINE 1850

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TEMPORARY SEWER MAIN CLEANOUT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

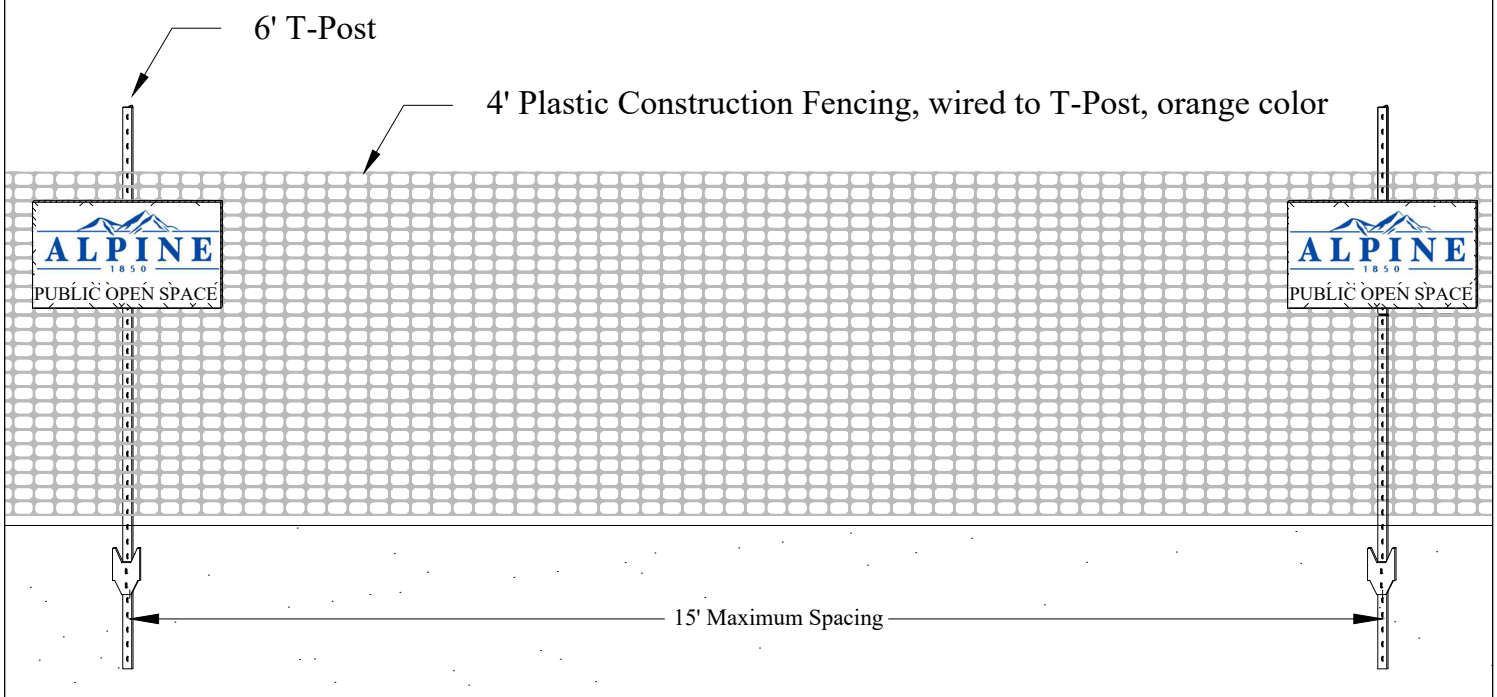
STANDARD DRAWING NUMBER: 28

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



SIGN SPECIFICATIONS

- SIGN TO BE 18"x24"
- PRINTED WITH BLACK LETTERS, WHITE BACKGROUND
- LAMINATED AND STAPLED TO PLYWOOD
- WIRED TO T-POSTS
- SPACED ONE PER JOB SITE IN A VISIBLE LOCATION IF MORE THAN 300' OF FENCING REQ'D, ONE SIGN TO BE PLACED EVERY 300'



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ALPINE
1850

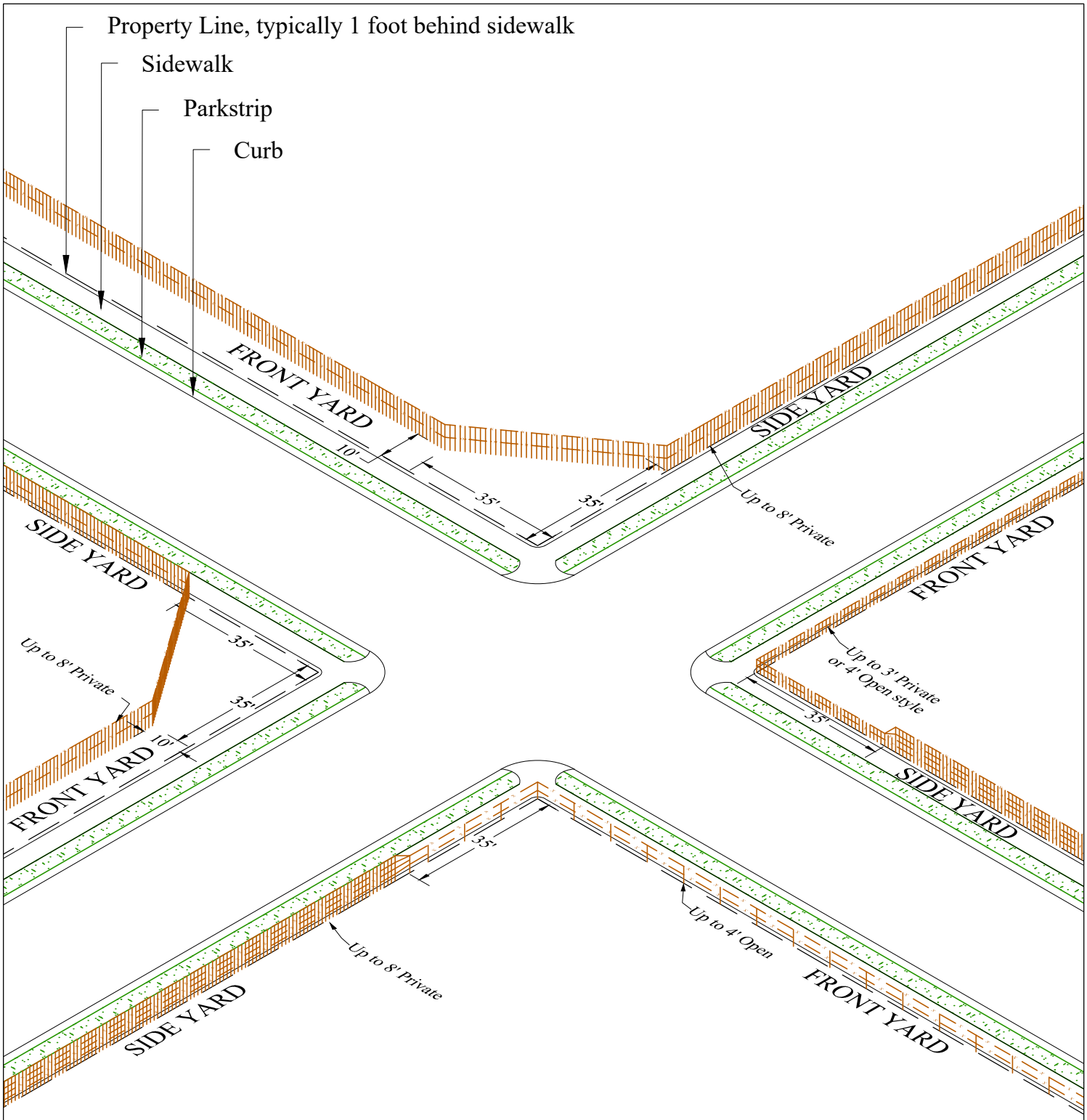
PUBLIC OPEN SPACE FENCING

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\29 PUBLIC OPEN SPACE FENCING

STANDARD DRAWING NUMBER: 29

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04



NOTE: SEE DEVELOPMENT CODE SECTION 3.21.060
ALL PARTS OF THE FENCE TO BE PLACED NO CLOSER THAN 1 FOOT BEHIND SIDEWALK (OR ON PROPERTY LINES) WITH HEIGHTS AS SHOWN. FREE FENCE PERMIT REQUIRED.

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NO.		BY	APRL.	DATE

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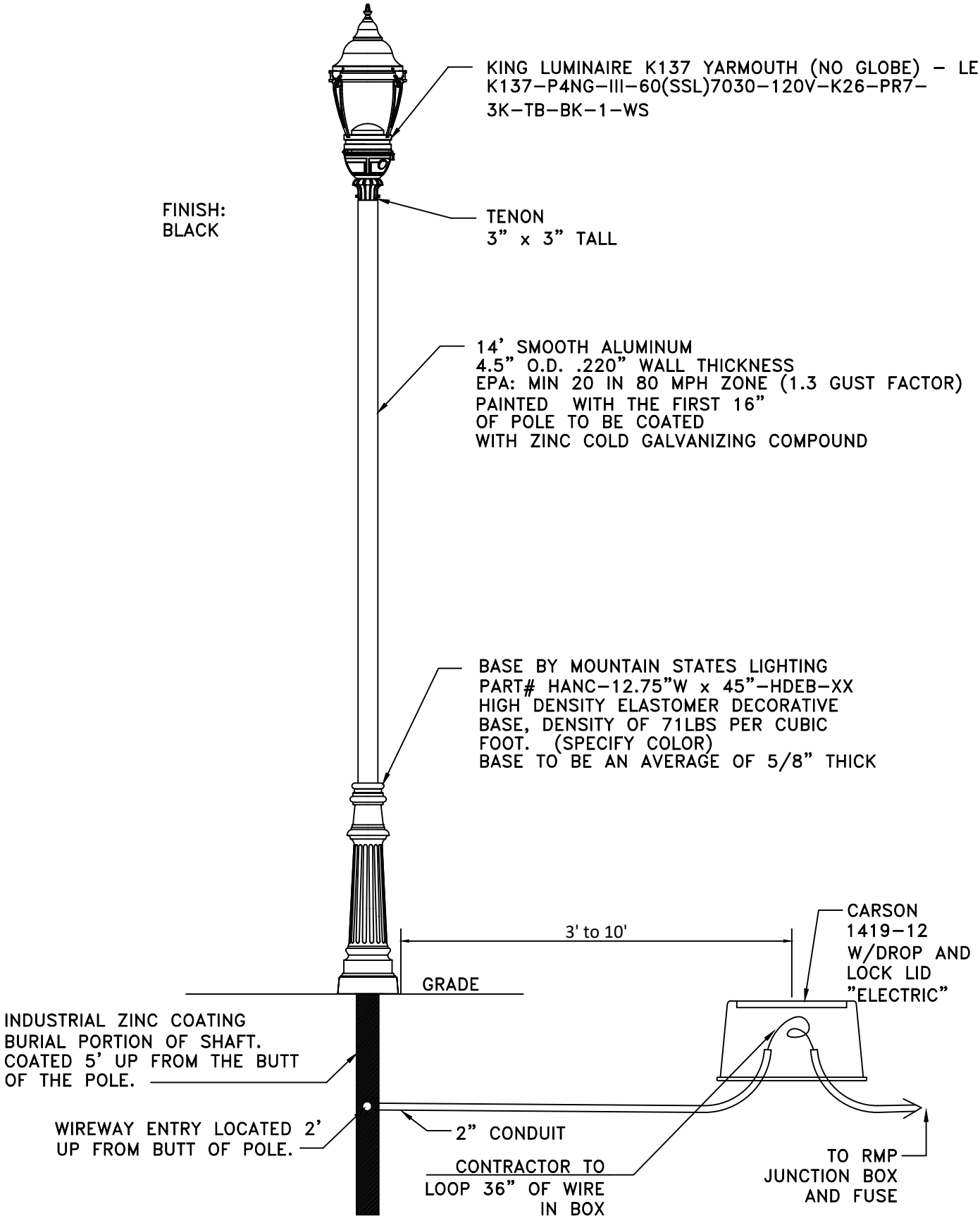
FENCING REGULATIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\30 FENCING REGULATIONS

STANDARD DRAWING NUMBER:	30
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

STREETLIGHTS REQUIRE 3-FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.



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REVISION

NO.		BY	APRL	DATE

ALPINE 1850

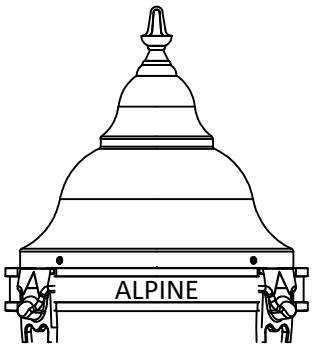
RESIDENTIAL STREET LIGHT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\31 STREET LIGHT - RESIDENTIAL POLE ASSEMBLY

STANDARD DRAWING NUMBER: 31

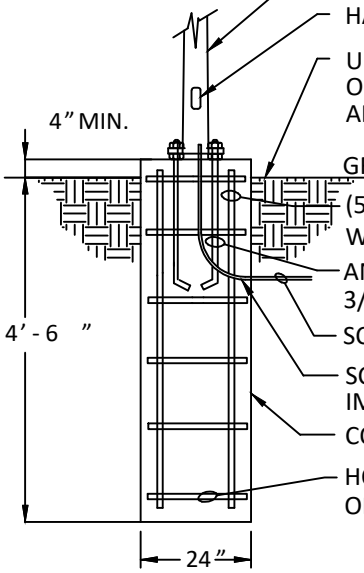
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	DRAFT



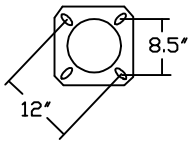
ENLARGED FIXTURE TOP

NOTE!!
IF DEPTH CANNOT BE MET MASS MUST BE EQUIVALENT TO MASS SHOWN

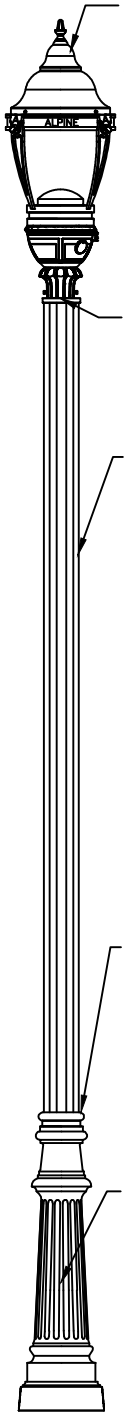
FINISH;
BLACK



CONCRETE BASE DETAIL



ANCHOR BASE DETAIL
12"BOLT CIRCLE
ANCHOR BOLTS: 3/4"x 18"



KING LUMINAIRE K137 YARMOUTH (NO GLOBE) - LED
K137-P4NG-III-100(SSL)7030-120V-K26-PR7-
3K-TB-BK-1-WS

TENON 3"X3" TALL

14' EXTRUDED FLUTED ALUMINUM
5.0" O.D. .250" WALL THICKNESS
EPA MIN 20 IN 80 MPH ZONE (1.3 GUST FACTOR)
PAINTED WITH THE FIRST 16"
OF POLE TO BE COATED
WITH ZINC COLD GALVANIZING COMPOUND

BASE BY MOUNTAIN STATES
PART# HANC-12.75"W x 45"-HDEB-BK
HIGH DENSITY ELASTOMER DECORATIVE
BASE, DENSITY OF 71LBS PER CUBIC
DENSITY: 71LBS PER CUBIC FOOT.
BASE TO BE AN AVERAGE OF 5/8" THICK

HANDHOLE LOCATED 12" ABOVE GRADE
BEHIND TWO-PIECE DECORATIVE BASE.

** SEE DETAIL 31 **
FOR REQUIRED
JUNCTION BOX
AT BASE

STREETLIGHTS REQUIRE 3–FEET MINIMUM CLEARANCE FOR O&M. THIS INCLUDES CLEARANCE FROM DRIVEWAYS AND LANDSCAPING.

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NO.		BY	APRL	DATE

ALPINE 1850

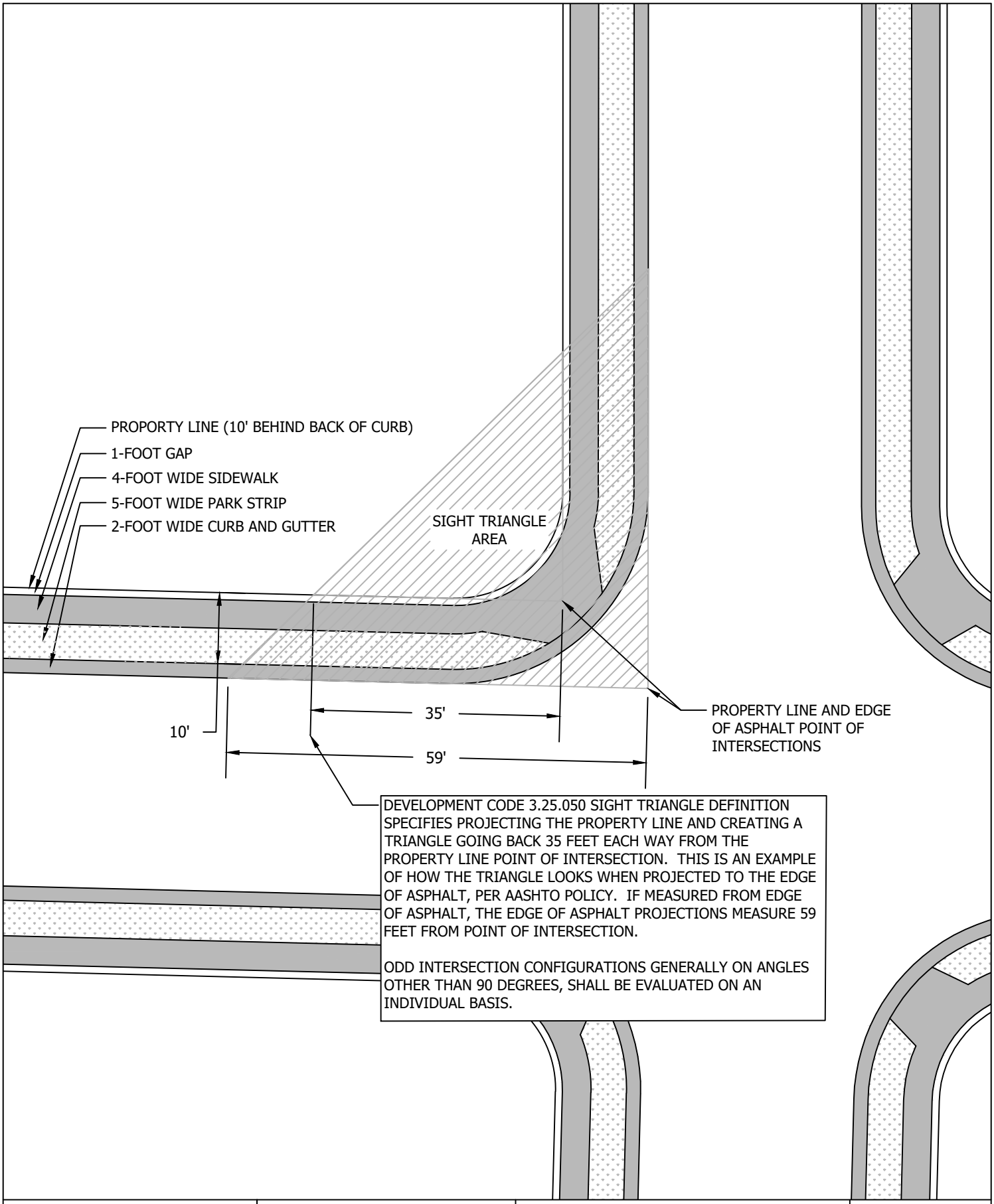
DOWNTOWN STREET LIGHT

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\31A STREET LIGHT – DOWNTOWN BOLT DOWN

STANDARD DRAWING NUMBER: 31a

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/7/18



DEVELOPMENT CODE 3.25.050 SIGHT TRIANGLE DEFINITION SPECIFIES PROJECTING THE PROPERTY LINE AND CREATING A TRIANGLE GOING BACK 35 FEET EACH WAY FROM THE PROPERTY LINE POINT OF INTERSECTION. THIS IS AN EXAMPLE OF HOW THE TRIANGLE LOOKS WHEN PROJECTED TO THE EDGE OF ASPHALT, PER AASHTO POLICY. IF MEASURED FROM EDGE OF ASPHALT, THE EDGE OF ASPHALT PROJECTIONS MEASURE 59 FEET FROM POINT OF INTERSECTION.

ODD INTERSECTION CONFIGURATIONS GENERALLY ON ANGLES OTHER THAN 90 DEGREES, SHALL BE EVALUATED ON AN INDIVIDUAL BASIS.

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SIGHT TRIANGLE

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\32 SIGHT TRIANGLE

STANDARD DRAWING NUMBER:	32
PLOT SCALE:	N.T.S.
DRAWN BY:	J.M.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	10/13/11

PASTURE GRASS MIX

20 lbs CABIN BLEND and 5 lbs ROCKY MOUNTAIN WILDFLOWER mix per acre

CABIN BLEND	
SPECIES	**% BY WEIGHT**
MOUNTAIN BROME	30
SLENDER WHEATGRASS	25
SANDBERG BLUEGRASS	5
BIG BLUEGRASS	5
SHEEP FESCUE	5
WESTERN WHEATGRASS	20
BEARDLESS BLUEBUNCH WHEATGRASS	10

ROCKY MOUNTAIN WILDFLOWER MIX	
SPECIES	**% BY WEIGHT**
BLUE FLAX	9
PURPLE CONEFLOWER	10
BLACKEYED SUSAN	2
CALIFORNIA POPPY	1
WALLFLOWER	6
FIREWHEEL	7
WILD LUPINE	10
LANCE-LEAVED COREOPSIS	8
PRAIRIE CONEFLOWER	2
MEXICAN HAT	2
FLANDERS POPPY	2
YELLLOW COSMOS	5
BACHELOR BUTTON	6
PLAINS COREOPSIS	2
MOUNTAIN PHLOX	1
ROCKY MOUNTAIN IRIS	3
MOUNTAIN LUPINE	6
SHOWY GLODENEYE	3
BLANKET FLOWER	6

WETLANDS/STREAM BANK GRASS MIX
15 LBS PER ACRE

WETLAND/STREAMBANK MIX	
SPECIES	**% BY WEIGHT**
INLAND SALTGRASS	13.3
WESTERN WHEATGRASS	13.3
STREAMBANK WHEATGRASS	13.3
NEBRASKA SEDGE	20
BLUEJOINT REEDGRASS	1.67
BEAKED SEDGE	20
BALTIC RUSH	1.67
MEADOW SEDGE	16.67

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STANDARD SEED MIXTURES

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20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\33 SEED MIXTURES

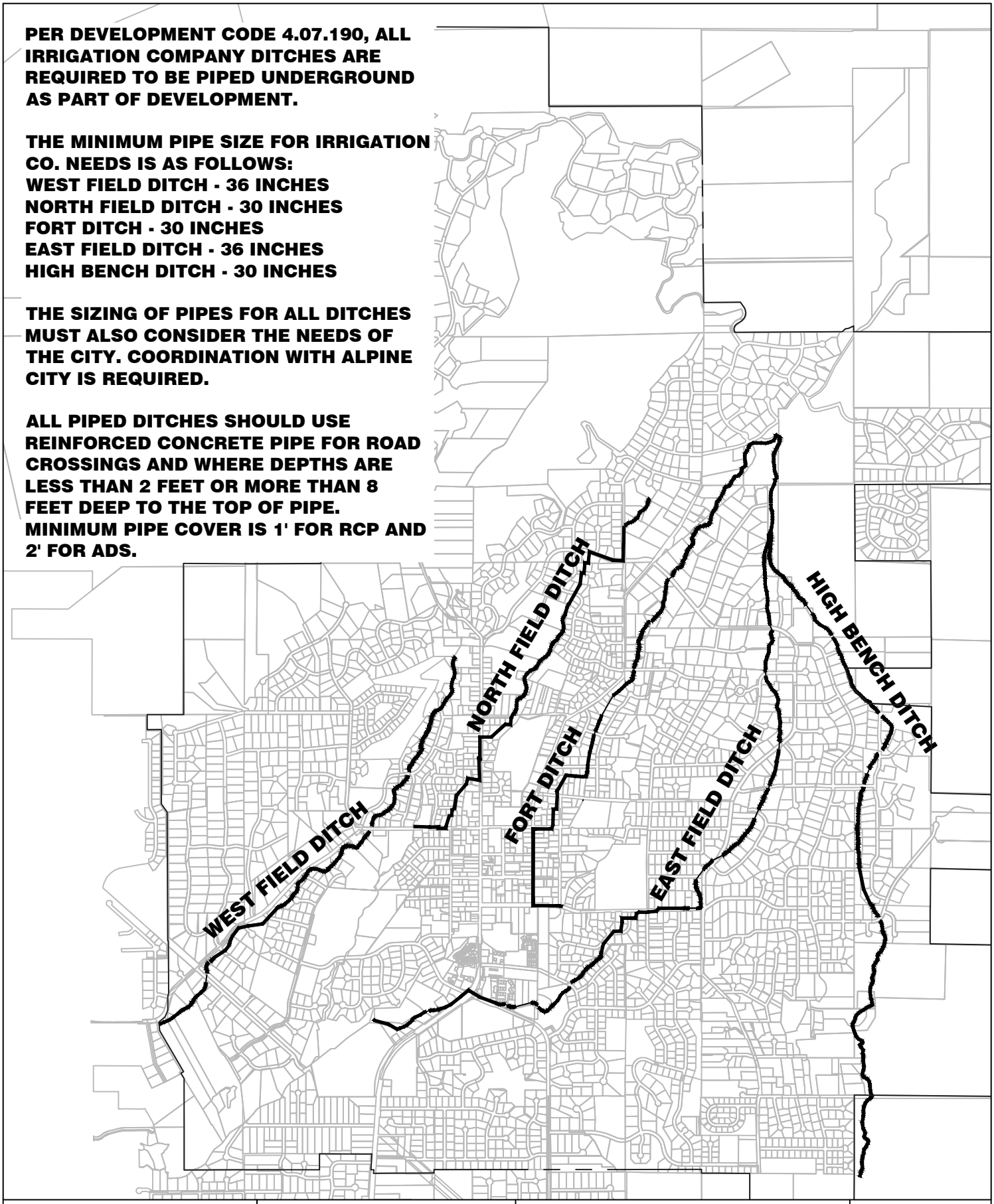
STANDARD DRAWING NUMBER:	33
PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/7/18

PER DEVELOPMENT CODE 4.07.190, ALL IRRIGATION COMPANY DITCHES ARE REQUIRED TO BE PIPED UNDERGROUND AS PART OF DEVELOPMENT.

THE MINIMUM PIPE SIZE FOR IRRIGATION CO. NEEDS IS AS FOLLOWS:
WEST FIELD DITCH - 36 INCHES
NORTH FIELD DITCH - 30 INCHES
FORT DITCH - 30 INCHES
EAST FIELD DITCH - 36 INCHES
HIGH BENCH DITCH - 30 INCHES

THE SIZING OF PIPES FOR ALL DITCHES MUST ALSO CONSIDER THE NEEDS OF THE CITY. COORDINATION WITH ALPINE CITY IS REQUIRED.

ALL PIPED DITCHES SHOULD USE REINFORCED CONCRETE PIPE FOR ROAD CROSSINGS AND WHERE DEPTHS ARE LESS THAN 2 FEET OR MORE THAN 8 FEET DEEP TO THE TOP OF PIPE. MINIMUM PIPE COVER IS 1' FOR RCP AND 2' FOR ADS.



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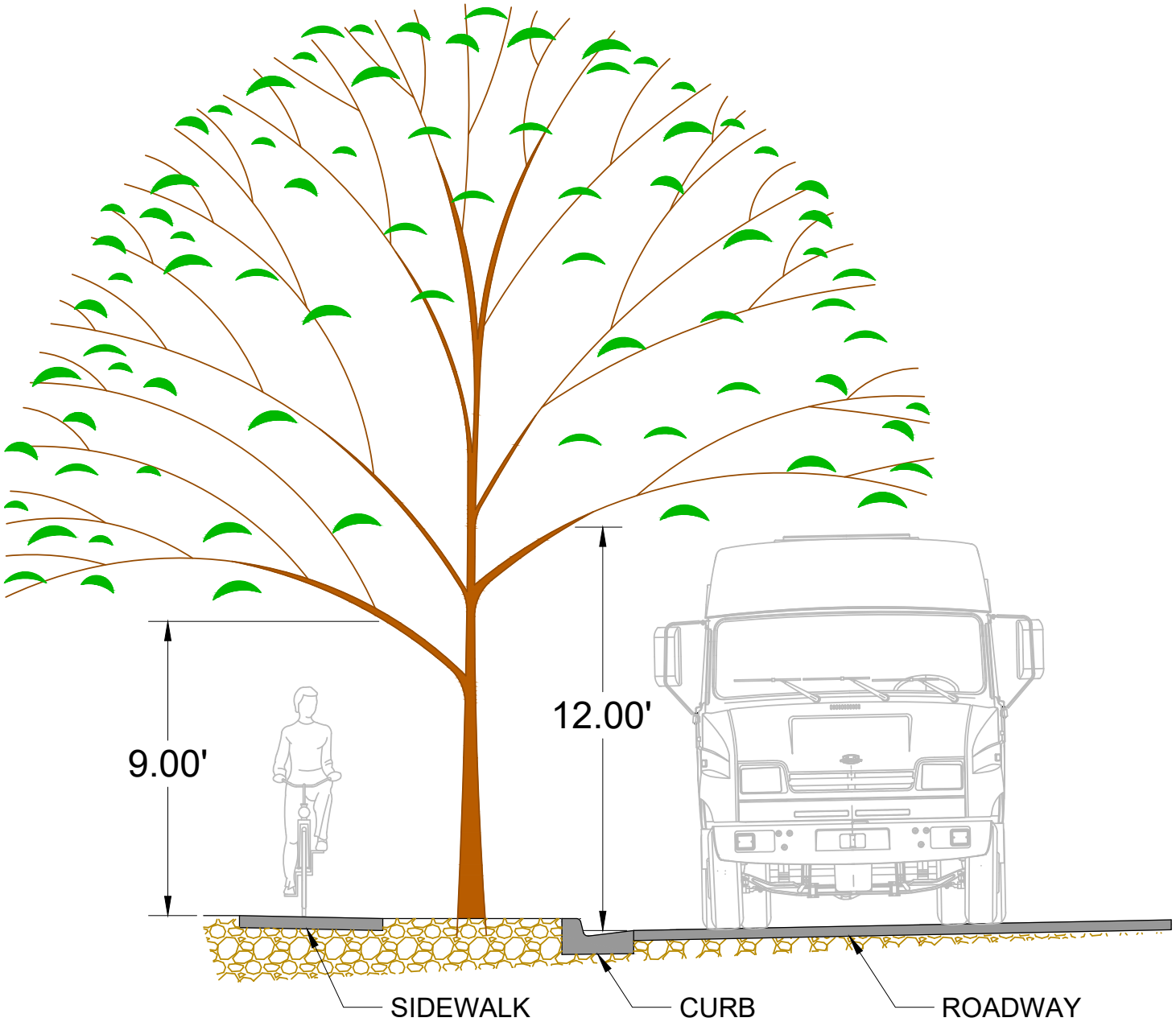
IRRIGATION CO. DITCHES

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\34 IRRIGATION COMPANY DITCHES

STANDARD DRAWING NUMBER: 34

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	12/7/18



Roadway and Sidewalk Tree Trimming Guide

Branches of trees near roadways or sidewalks shall be trimmed to a minimum height of 12' above the edge of asphalt/lip of curb and 9' above the sidewalk as shown

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NO.		BY	APRL. DATE

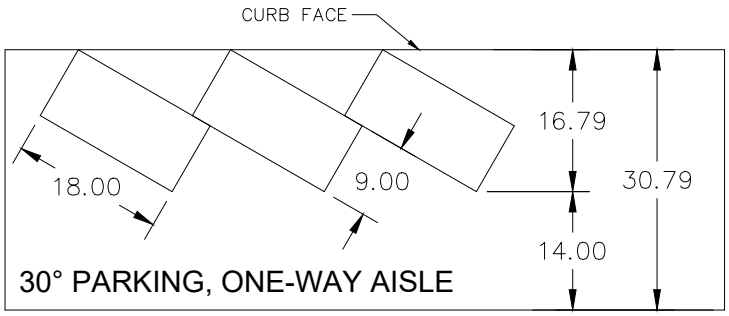
ALPINE 1850

ROADWAY TREE TRIMMING

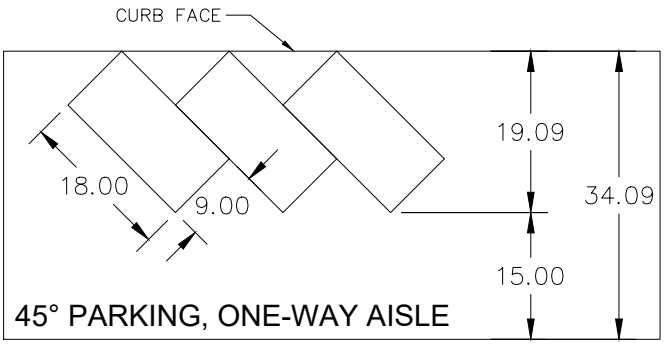
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20 NORTH MAIN
ALPINE, UT 84004

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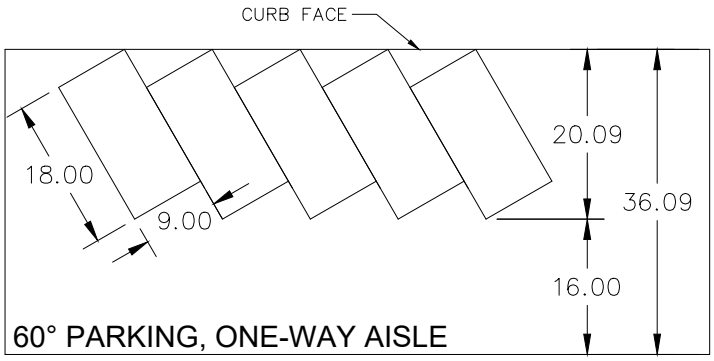
STANDARD DRAWING NUMBER:	35
PLOT SCALE:	N.T.S.
DRAWN BY:	J.M.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	11/13/2018



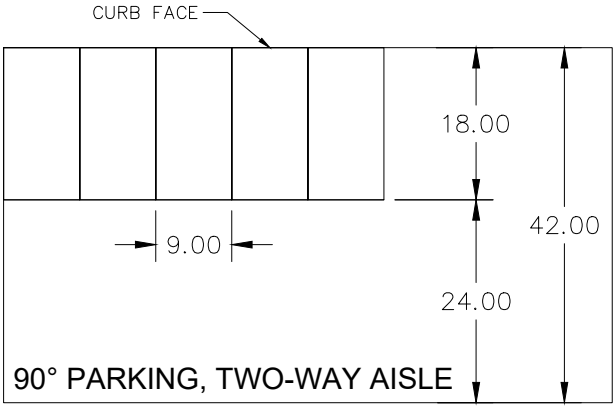
30° PARKING, ONE-WAY AISLE



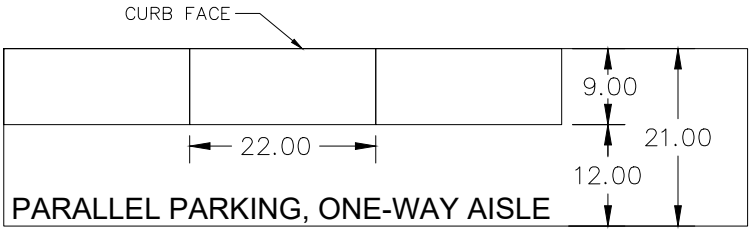
45° PARKING, ONE-WAY AISLE



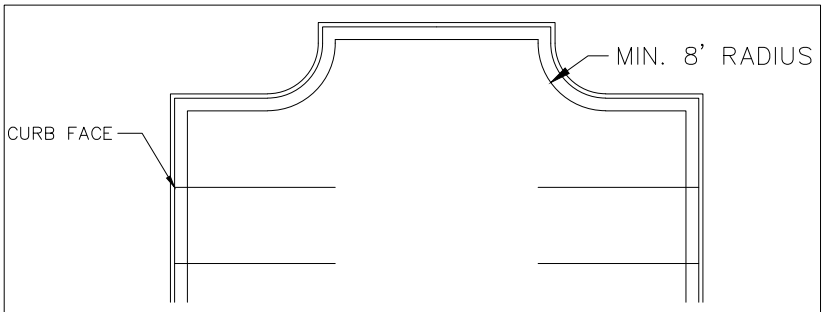
60° PARKING, ONE-WAY AISLE



90° PARKING, TWO-WAY AISLE



PARALLEL PARKING, ONE-WAY AISLE



DEAD END AISLE TURNOUT, TWO-WAY AISLE

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NO.		BY	APRL. DATE

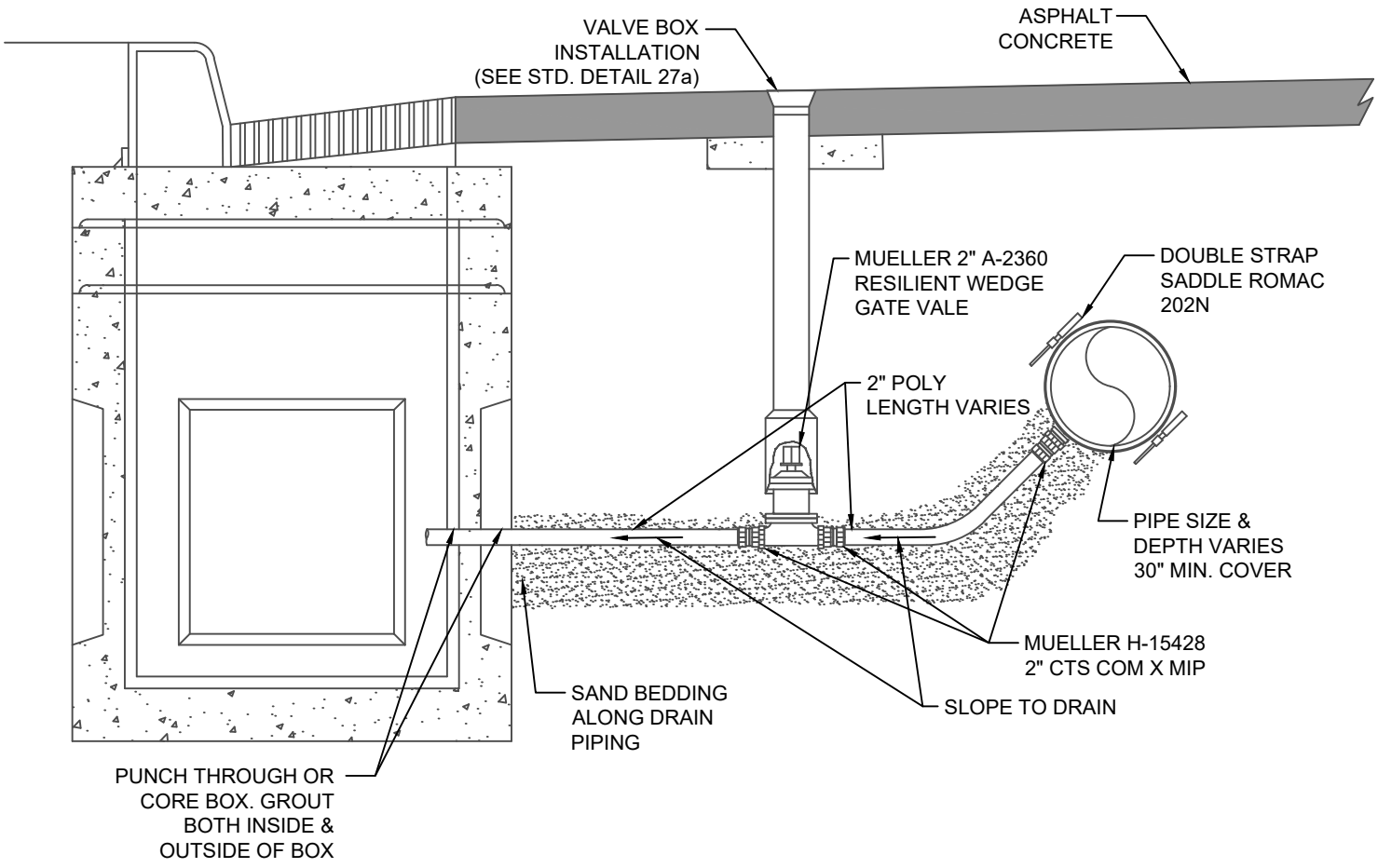
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PARKING DIMENSIONS

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

CAD FILE: E:\ENGINEERING\CODES & STANDARD SPECS\STANDARD SPECIFICATIONS AND DRAWINGS\2023 CITY SPEC & DETAILS_DETAILS\36 PARKING DIAGRAMS 3.24 EXHIBIT (UPDATED TO 18 FT STALLS)

STANDARD DRAWING NUMBER:	36
PLOT SCALE:	N.T.S.
DRAWN BY:	J.M.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	11/13/2018



NOTES:

1. PROPOSED DRAIN LINE CAN TIE INTO CATCH BASIN BOX (SHOWN) OR SUMP MANHOLE (NOT SHOWN) OR BOX CULVERT (NOT SHOWN)
2. ALL COMPRESSION FITTINGS SHALL INCLUDE A MUELLER 2" CTS PE LINER PART NO. 506141

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NO.		BY	APRL.	DATE

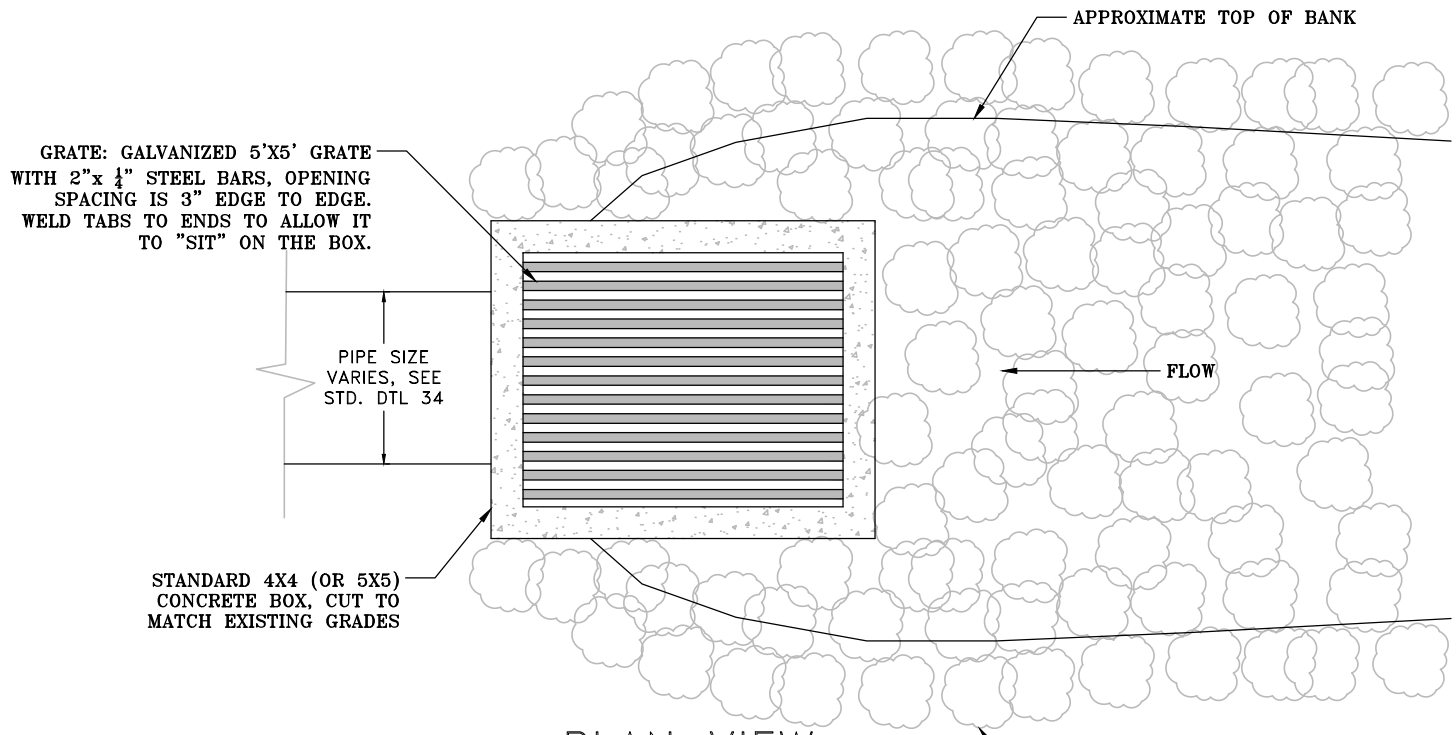
ALPINE 1850

2-INCH PRESSURIZED IRRIGATION DRAIN

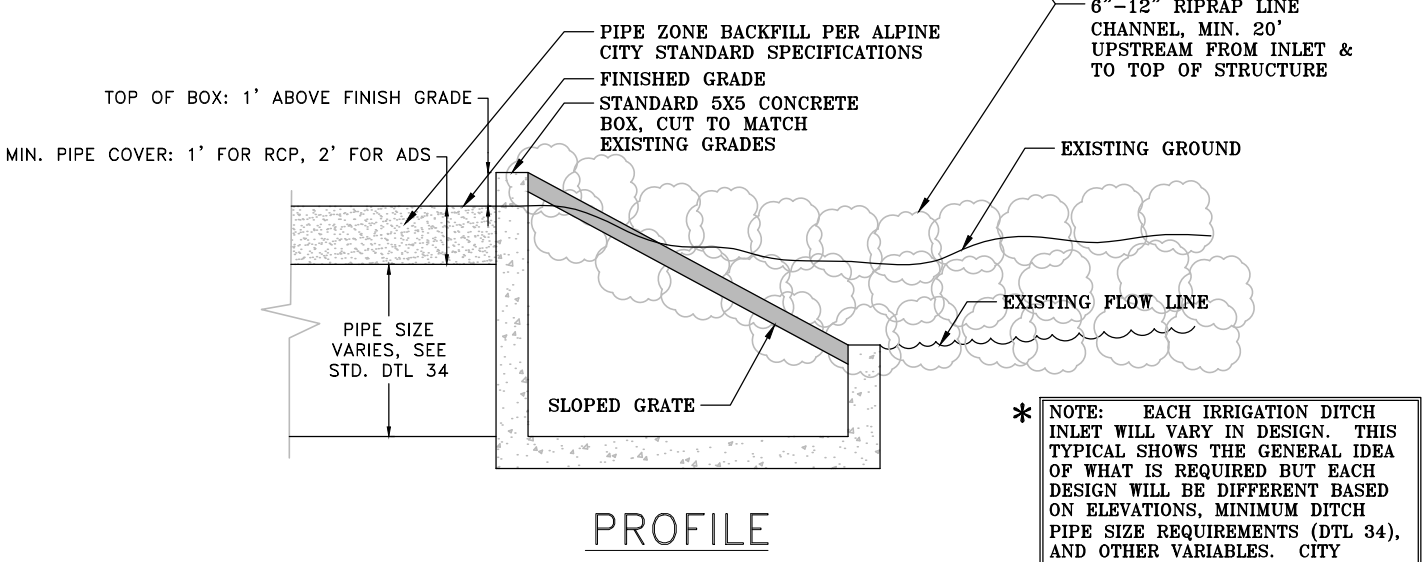
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20 NORTH MAIN
ALPINE, UT 84004

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STANDARD DRAWING NUMBER:	37
PLOT SCALE:	N.T.S.
DRAWN BY:	J.M.
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	-



PLAN VIEW



PROFILE

* NOTE: EACH IRRIGATION DITCH INLET WILL VARY IN DESIGN. THIS TYPICAL SHOWS THE GENERAL IDEA OF WHAT IS REQUIRED BUT EACH DESIGN WILL BE DIFFERENT BASED ON ELEVATIONS, MINIMUM DITCH PIPE SIZE REQUIREMENTS (DTL 34), AND OTHER VARIABLES. CITY STAFF WILL WORK WITH THE DESIGN ENGINEER IN EACH SCENARIO.

IRRIGATION DITCH INLET (TYPICAL)*

N.T.S.

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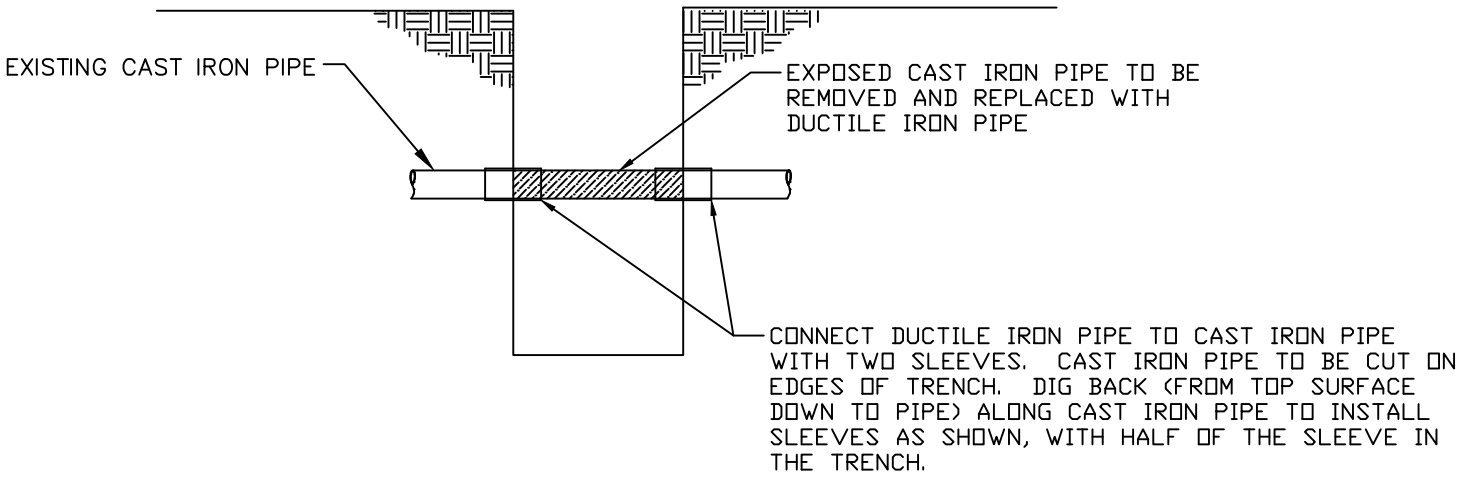
IRRIGATION INLET (Typical)

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 38

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

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TRENCHING UNDER C.I.P.

N.T.S.

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TRENCHING UNDER CAST IRON PIPE

ALPINE CITY
20 NORTH MAIN
ALPINE, UT 84004

STANDARD DRAWING NUMBER: 39

PLOT SCALE:	N.T.S.
DRAWN BY:	WJM
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	4/14/04

Section 1050. Division of Drinking Water Rules

Sections of 2017 APWA specifications have been noted where they differ from Utah Division of Drinking Water Standards and are included herewith as part of these standards.

Trench backfill

1. GENERAL

A. The drawing applies to backfilling a trench (and embankment) above the pipe zone.

2. PRODUCTS

A. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 3-inches.

B. Flowable Fill: APWA Section 31 05 15. Target is 60 psi in 28 days with 90 psi maximum in 28 days, It must flow easily requiring no vibration for consolidation.

3. EXECUTION

A. Trench Backfill Above the Pipe Zone: Follow requirement indicated in APWA Section 33 05 20 and the following provisions. See Standard Plan 382 for backfilling the pipe zone.
   1) DO NOT USE sewer rock, pea gravel, or recycled RAP aggregate as trench backfill.
   2) Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a standard proctor density, APWA Section 31 23 26.
   3) Water jetting is NOT allowed.

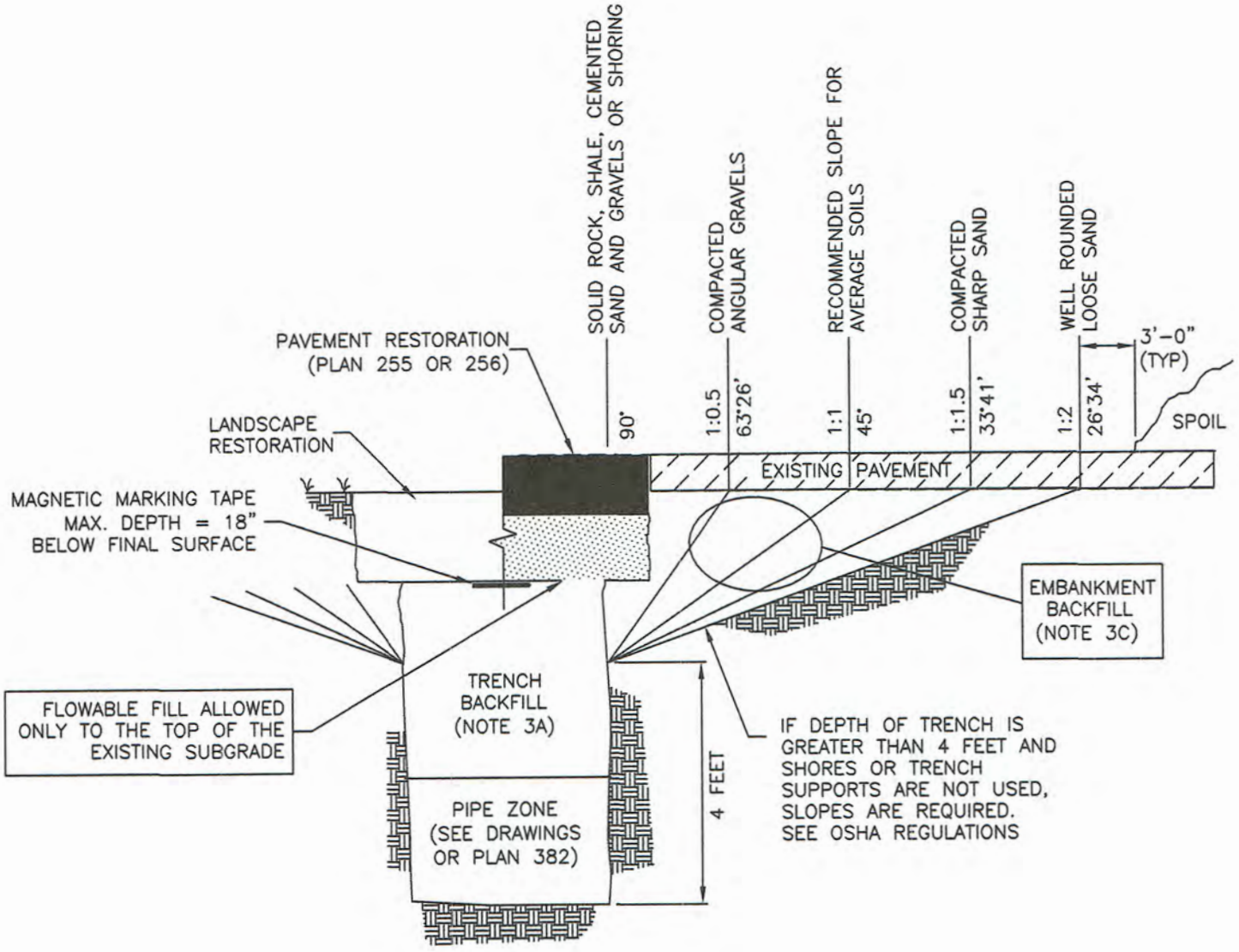
B. Flowable Fill: If controlled low strength material is placed in the trench. Cure the material before placing surface restorations.

C. Embankment Backfill: When trench sides are sloped proceed as follows.
   1) Maximum lift thickness is 8-inches before compaction.
   2) Compact per APWA Section 31 23 26 to 95 percent or greater relative to a standard proctor density.
   3) Submission of quality control compaction test result data may be requested by ENGINEER at any time. Provide results of tests immediately upon request.

D. Surface Restoration:
   1) Landscaped Surface: Follow APWA Section 32 92 00 (turf or grass) or APWA Section 32 93 13 (ground cover) requirements. Rake to match existing grade. Replace vegetation to match pre-construction conditions.
   2) Paved Surface: Follow APWA Section 33 05 25 (bituminous pavement surfacing), or APWA Section 33 05 25 (concrete pavement surfacing). Do not install surfacing until compaction density is acceptable to ENGINEER. .

APWA directs users to the Storm Drain section for Pipe Zone specifications. These same standards apply to culinary which must meet R390-550-8

NARRATIVE: THIS PLAN SHOWS VARIOUS SLOPES RECOMMENDED FOR VARIOUS TYPES OF SLOPE STABILITY PROBLEMS. THE VERTICAL TEXT INDICATES VARIOUS MATERIALS THAT MAY BE ENCOUNTERED. THE SERVICES OF A PROFESSIONAL SOILS ENGINEER SHOULD BE USED TO VERIFY SLOPE STABILITY.



APWA directs users to the Storm Drain section for Pipe Zone specifications. Pipe Zone for culinary is 6-inch, see R309-550-8(2)

APWA directs users to the Storm Drain section for Pipe Zone specifications. These same standards apply to culinary which must meet R390-550-8

Pipe zone backfill

1. GENERAL

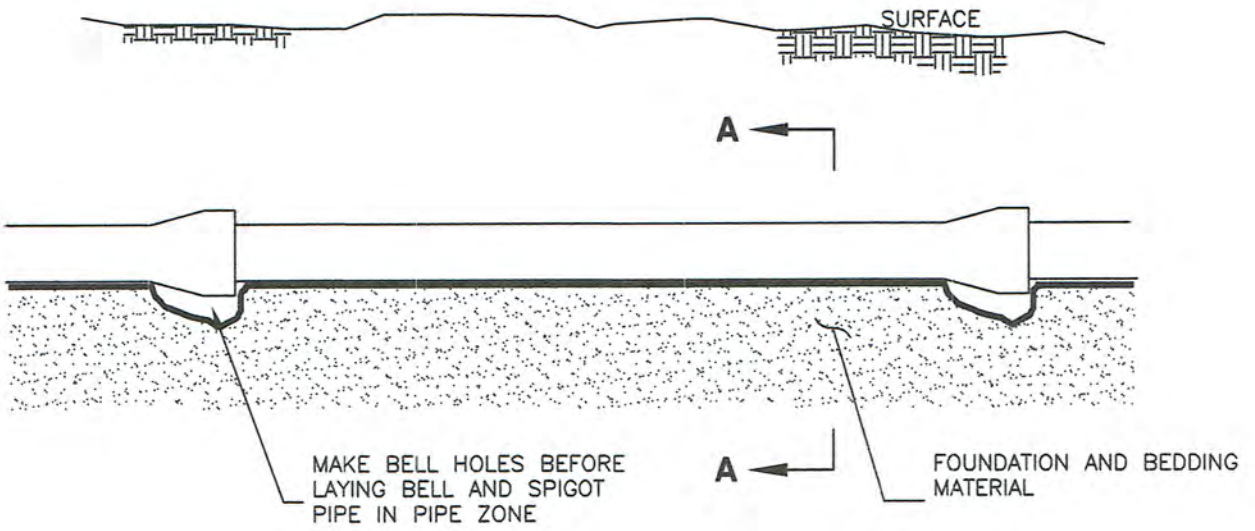
A. Install the pipe in the center of the trench or no closer than 6-inches from the wall of the pipe to the wall of the trench.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Concrete: APWA Section 03 30 04.
D. Flowable Fill: Target is 60 psi in 28 days with 90 psi maximum in 28 days, APWA Section 31 05 15. It must flow easily requiring no vibration for consolidation.
E. Stabilization-Separation Geotextile: Moderate or high at CONTRACTOR's choice, APWA Section 31 05 19.

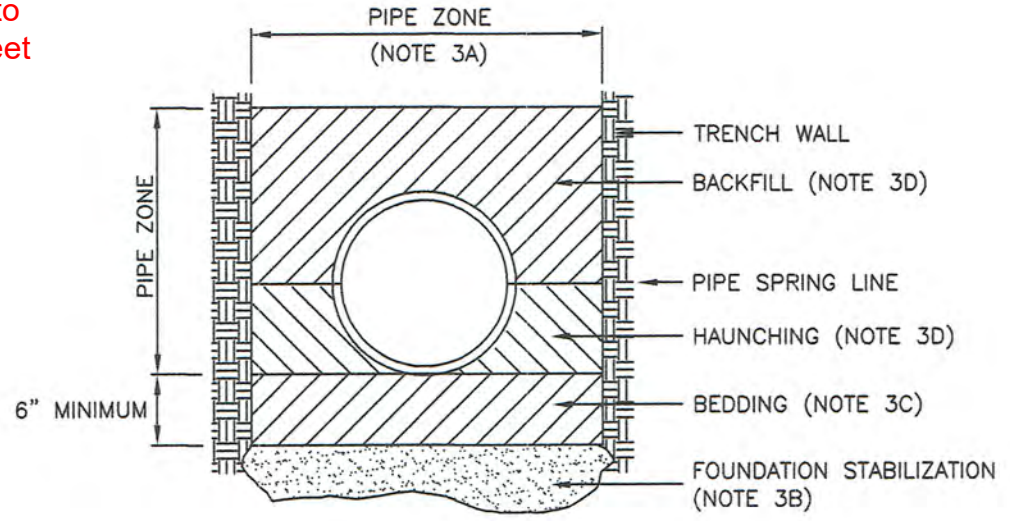
3. EXECUTION

A. Excavate the Pipe Zone: Width is measured at the pipe spring line and includes any necessary sheathing. Provide width recommended by pipe manufacturer. Follow manufacturer's recommendations when using trench boxes.
B. Foundation Stabilization: Get ENGINEER's permission before installing common fill. Vibrate to stabilize. Installation of stabilization-separation geotextile will be required to separate backfill material and native subgrade materials if common fill cannot provide a working surface or prevent soils migration.
C. Bedding: Follow APWA Section 33 05 20 requirements and the following provisions.
    1) Furnish untreated base course material unless specified otherwise by pipe manufacturer.
    2) Maximum lift thickness is 8-inches.
    3) Bedding immediately under the pipe should not be compacted, but loosely placed.
    4) Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
    5) When using concrete, provide at least Class 2,000, APWA Section 03 30 04.
D. Pipe Zone: DO NOT USE sewer rock, pea gravel, or recycled RAP aggregate in the pipe zone. Water jetting is NOT allowed.
    1) Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26 unless pipe manufacturer requires more stringent installation.
    2) Submission of quality control compaction test result data developed for the haunch zone may be requested by ENGINEER at any time. CONTRACTOR is to provide results of tests immediately upon request.
E. Flowable Fill (when required and if allowed by pipe manufacturer):
    1) Place the controlled low strength material, APWA Section 31 05 15.
    2) Prevent pipe flotation by installing in lifts and providing pipe restraints as required by pipe manufacturer.
    3) Reset pipe to line and grade if pipe "floats" out of position.



ELEVATION VIEW

APWA directs users to the Storm Drain section for Pipe Zone specifications. These same standards apply to culinary which must meet R390-550-8(2)



SECTION A-A

INSTALLATION

CONCRETE PIPE: FOLLOW ASTM C 1479
"STANDARD PRACTICE FOR INSTALLATION OF PRECAST CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE USING STANDARD INSTALLATIONS.

PLASTIC PIPE: FOLLOW ASTM D 2321
"STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS"

CORRUGATED METAL PIPE: FOLLOW ASTM A 798
"STANDARD PRACTICE FOR INSTALLING FACOTRY-MADE CORRUGATED STEEL PIPE FOR SEWERS AND OTHER APPLICATIONS.

VITRIFIED CLAY PIPE: FOLLOW ASTM C 12.
"STANDARD RECOMMENDED PRACTICE FOR INSTALLING VITRIFIED CLAY PIPE LINES.

Fire hydrant with valve

1. GENERAL

A. Before backfilling, secure inspection of installation by ENGINEER.
B. Additional requirements are specified in APWA Section 33 11 00.

2. PRODUCTS

A. Hydrant: Dry barrel, AWWA C502.
B. Thrust Bocks: Concrete Class 4000, APWA Section 03 30 04.
C. Reinforcement: Deformed, 60 ksi yield grade steel, ASTM A615.
D. Backfill: APWA Section 31 05 13. Maximum particle size 2-inches.
   1) Sewer Rock: ASTM Size No. 3 (2" to 1") or larger.
   2) Other Type of Common Fill: CONTRACTOR's choice,.
E. Geotextile: Stabilization-separation fabric, APWA Section 31 05 19.

3. EXECUTION

A. Installation:
   1) Provide at least 1 cubic yard of sewer rock around drain hole at base of hydrant spool. Wrap geotextile around sewer rock and tape geotextile to hydrant spool to prevent silting of sewer rock.
   2) Paint fire hydrant to agency's fire hydrant paint code.
   3) Apply non-oxide grease to all buried metal surfaces. Wrap with polyethylene sheet and tape wrap.
   4) Notify fire department as soon as hydrant is placed in service.
B. Thrust Blocks:
   1) Before pouring concrete, wrap pipe system with polyethylene sheet to prevent bonding of concrete to pipe system.
   2) Not required for flange or welded pipe systems.
C. Backfill: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

Utah Division of Drinking Water Rules
R309-550-5. Water Main Design
(5) Fire Protection.
d) Fire hydrant laterals shall be a minimum of 6 inches in diameter

R309-550-6. Component Materials and Design
(5) Fire Hydrants.
a) Hydrant drains shall not be connected to, or located within, 10 feet of sanitary sewers. Where possible, hydrant drains shall not be located within 10 feet of storm drains.
b) Auxiliary valves shall be installed in all hydrant leads.
c) Hydrant drains shall be installed with a gravel packet or dry well unless the natural soils will provide adequate drainage.

3/4" and 1" meter

1. GENERAL

A. In street surfaces or other vehicular traffic areas (like driveway approaches), Install the same type of meter box as required for 1 1/2" and 2" service meters. See Plan 522.

B. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.

B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.

C. Castings: Grey iron class 35 minimum per ASTM A48, coated with asphalt based paint or better.

3. EXECUTION

A. Meter Placement:

1) All meters are to be installed in the park strip or within 7 feet of the property line (street side).

2) Do not install meters under driveway approaches, sidewalks, or curb and gutter.

B. Meter Box: Set box so grade of the frame and cover matches the grade of the surrounding surface.

C. Pipe Outside of Right-of-Way: Coordinate with utility agency or adjacent property owner for type of pipe to be used outside of right-of-way.

D. Inspection: Before backfilling around meter box, secure inspection of installation by ENGINEER.

E. Base Course and Backfill Placement: Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26. Maximum lift thickness before compaction is 8-inches.

Utah Division of Drinking Water Rules
R309-550-11. Service Connections and Plumbing
(4) Service Lines.

a) Service Lines shall be capped until connected for service.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

1 1/2" and 2" meter

1. GENERAL

A. Turbine meters are required on all systems used exclusively for irrigation or fire protection.
B. Where domestic use is applicable, use a standard meter.
C. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Castings: Grey iron class 35 minimum per ASTM A48, coated with asphalt based paint or better.

3. EXECUTION

A. Meter Placement:
   1) All meters are to be installed in the park strip or within 7 feet of the property line (street side).
   2) Do not install meters under driveway approaches, sidewalks, or curb and gutter.
   3) In new construction, install meter at center of lot or per agency requirements.
B. Meter Box: Set box so grade of the frame and cover matches the grade of the surrounding surface.
. C. Bypass Valve: Lock in off position.
D. Blocking: Use clay brick or concrete block.
E. Concrete Box:
   1) Center frame and cover over water meter.
   2) Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.
F. Pipe Outside of Right-of-Way: Coordinate with utility agency or adjacent property owner for type of pipe to be used outside of right-of-way.
G. Base Course and Backfill Placement: Maximum lift thickness before compaction is 8-inches. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

Utah Division of Drinking Water Rules
R309-550-11. Service Connections and Plumbing
(4) Service Lines.
a) Service Lines shall be capped until connected for service.

R309-550-6. Component Materials and Design.
(7) Chamber Designs
a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.
b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

3" and 4" Compound meter with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2 PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

6" Compound meter with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2 PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

8" Compound meter with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2. PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

10" Turbo meter with 6" turbo meter and 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2 PRODUCTS

A. Small Fittings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Control Valve: Install valve with valve box adjacent to main.
B. Center frame and cover over water meter.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

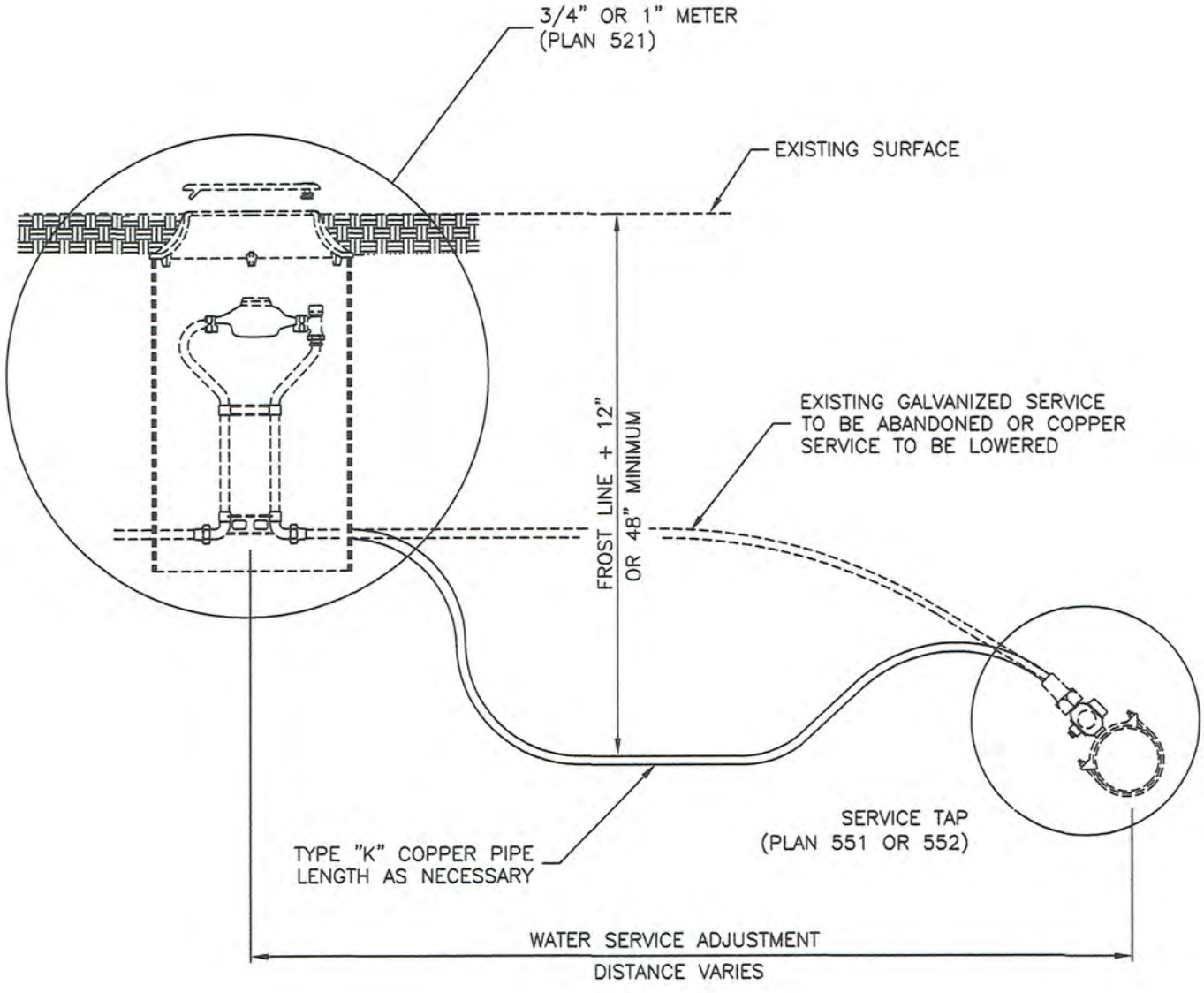
(7) Chamber Designs

a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

Utah Division of Drinking Water Rules
R309-550-11. Service Connections and Plumbing
(4) Service Lines.

a) Service Lines shall be capped until connected for service.



Water main line loop

1. GENERAL

A. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Piping: Match existing pipe, fittings, coupling sizes and materials.
C. Thrust Bocks: Concrete Class 4000, APWA Section 03 30 04.
D. Reinforcement: Deformed, 60 ksi yield grade steel, ASTM A 615.
E. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
F. Grease: Non-oxide poly-FM.
G. Couplings: Brass.

3. EXECUTION

A. Thrust Blocks: Not required for flanged or welded pipe systems. Before pouring thrust block concrete, wrap pipe system in plastic sheet to prevent bonding of concrete to pipe system.
B. Fittings: Use copper to copper flare fittings or copper to iron pack joint coupling with locking split clamp on iron pipe side and flare on copper side.
C. Grease: Apply grease to all buried metal surfaces. Wrap with polyethylene sheet and tape wrap.
D. Steel Spool: Weld in place and provide slip on flange except when fitting in pipe system could move. Epoxy line per AWWA C210, C213, and coated per AWWA C208, or C214.
E. Location: Loop water mains over top of sewer lines.
F. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

(1) Basic Separation Standards.

(a) The horizontal distance between water lines and sanitary sewer lines shall be at least10 feet. Where a water main and a sewer line must cross, the water main shall be at least 18 inches **above** the sewer line. Separation distances shall be measured edge-to-edge (i.e., from the nearest edges of the facilities).

(b) Water mains and sewer lines shall not be installed in the same trench.

(c) Where local conditions make it impossible to install water or sewer lines at separation distances required by subsection (a), the sewer pipes are in good condition, and there is not high groundwater in the area, it may be acceptable if the design includes a minimum horizontal separation of 6 feet and a minimum vertical clearance of 18 inches with the waterline being above. In order to determine whether the design is acceptable, **the following information shall be submitted as part of the plans for review:**

(i) reason for not meeting the minimum separation standard;
(ii) location where the water and sewer line separation is not being met;
(iii) horizontal and vertical clearance that will be achieved;
(iv) sewer line information including pipe material, condition, size, age, type of joints, thickness or pressure class, whether the pipe is pressurized or not, etc.;
(v) water line information including pipe material, condition, size, age, type of joints, thickness or pressure class, etc.;
(vi) ground water and soil conditions; and,
(vii) any mitigation efforts.

(d) If the basic separation standards as outlined in subsections (a) though (c) above cannot be met, an exception to the rule can be applied for with additional mitigation measures to protect public health, in accordance with R309-105-6(2)(b).

STYLE A

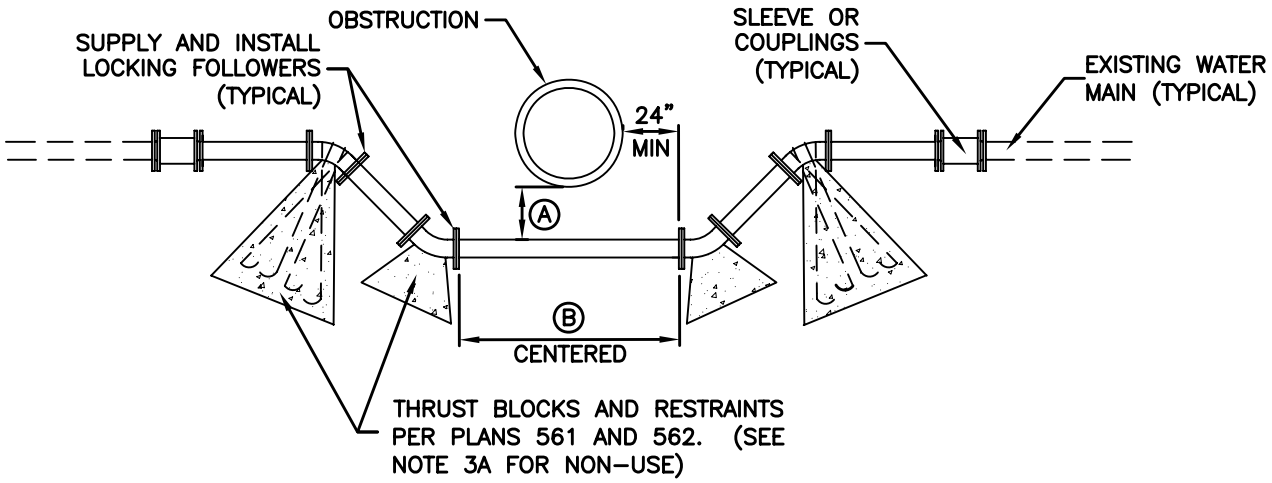


TABLE OF DIMENSIONS		
OBSTRUCTION	Ⓐ	Ⓑ
SEWER	18" MIN	20' MIN
OTHER	12" MIN	O.D. + 48"

Not allowed under sewer w/o an exception granted from UDDW R309-550-7(1)(d)

Water main line loop

1. GENERAL

A. Before backfilling, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Piping: Match existing pipe, fittings, coupling sizes and materials.
C. Thrust Bocks: Concrete Class 4000, APWA Section 03 30 04.
D. Reinforcement: Deformed, 60 ksi yield grade steel, ASTM A 615.
E. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
F. Grease: Non-oxide poly-FM.

3. EXECUTION

A. Thrust Blocks: Not required for flange or welded pipe systems. Before pouring thrust block concrete, wrap pipe system with plastic sheet to prevent bonding of concrete to pipe system.
B. Fittings: Use copper to copper flare fittings or copper to iron pack joint coupling with locking split clamp on iron pipe side and flare on copper side. All couplings to be brass.
C. Grease: Apply grease to all buried metal surfaces. Wrap with polyethylene sheet and tape wrap.
D. Steel Spool: Weld in place and provide slip on flange except when fitting in pipe system could move. Epoxy line per AWWA C210, C213, and coated per AWWA C208, or C214.
E. Location: Loop water mains over top of sewer lines.
F. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

(1) Basic Separation Standards.

(a) The horizontal distance between water lines and sanitary sewer lines shall be at least10 feet. Where a water main and a sewer line must cross, the water main shall be at least 18 inches **above** the sewer line. Separation distances shall be measured edge-to-edge (i.e., from the nearest edges of the facilities).

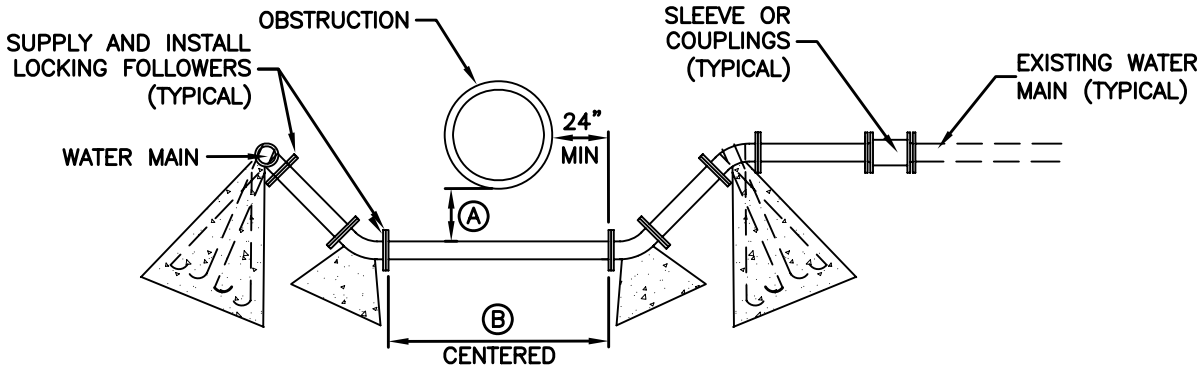
(b) Water mains and sewer lines shall not be installed in the same trench.

(c) Where local conditions make it impossible to install water or sewer lines at separation distances required by subsection (a), the sewer pipes are in good condition, and there is not high groundwater in the area, it may be acceptable if the design includes a minimum horizontal separation of 6 feet and a minimum vertical clearance of 18 inches with the waterline being above. In order to determine whether the design is acceptable, **the following information shall be submitted as part of the plans for review:**

(i) reason for not meeting the minimum separation standard;
(ii) location where the water and sewer line separation is not being met;
(iii) horizontal and vertical clearance that will be achieved;
(iv) sewer line information including pipe material, condition, size, age, type of joints, thickness or pressure class, whether the pipe is pressurized or not, etc.;
(v) water line information including pipe material, condition, size, age, type of joints, thickness or pressure class, etc.;
(vi) ground water and soil conditions; and,
(vii) any mitigation efforts.

(d) If the basic separation standards as outlined in subsections (a) though (c) above cannot be met, an exception to the rule can be applied for with additional mitigation measures to protect public health, in accordance with R309-105-6(2)(b).

STYLE B AND C

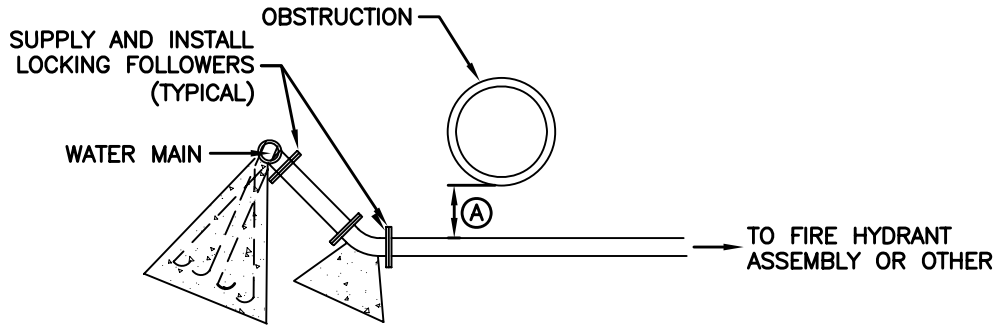


THRUST BLOCKS AND RESTRAINTS PER PLANS 561 AND 562. (SEE NOTE 3A FOR NON-USE)

Not allowed under sewer w/o exception granted from UDDW R309-550-7(1)(d)

TABLE OF DIMENSIONS		
OBSTRUCTION	Ⓐ	Ⓑ
SEWER	18" MIN	20' MIN
OTHER	12" MIN	O.D. + 48"

STYLE B



THRUST BLOCKS AND RESTRAINTS PER PLANS 561 AND 562. (SEE NOTE 3A FOR NON-USE)

Not allowed under sewer w/ o excepton granted from UDDW R309-550-7(1)(d)

TABLE OF DIMENSIONS	
OBSTRUCTION	Ⓐ
SEWER	18" MIN
OTHER	12" MIN

STYLE C

Water main line loop

3/4" and 1" Service taps

1. GENERAL

A. Before backfilling around taps, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Tape: Teflon tape is required on all taps.

3. EXECUTION

A. Tapping: Place taps a minimum of 36-inches apart. Use a tapping tool which is sized corresponding to the size of the service line to be installed. No taps within 36-inches of end of pipe.
B. PVC or AC Pipe: A service saddle clamp is required on all PVC and AC pipe taps unless specified otherwise.
C. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.

R309-550-11. Service Connections and Plumbing

(4) Service Lines.

(a) Service lines shall be capped until connected for service.

1 1/2" and 2" Service taps

1. GENERAL

A. Before backfilling around taps, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
C. Tape: Teflon tape is required on all taps.

3. EXECUTION

A. Tapping: Place taps a minimum of 36-inches apart. Use a tapping tool that is sized corresponding to the size of the service line to be installed. No taps within 36-inches of end of pipe.
B. PVC or AC Pipe: A service saddle clamp is required on all PVC and AC pipe taps unless specified otherwise.
C. Backfill: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
D. Blocks: Clay brick or concrete block required under valve box to assure a 1" or greater space between the box and the corporation stop and pipe assembly.

R309-550-11. Service Connections and Plumbing

(4) Service Lines.

(a) Service lines shall be capped until connected for service.

Detector check valve with 3/4" bypass meter

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2. PRODUCTS

A. Blocking: Clay brick or concrete block.
B. Small Fittings: Brass. Do not use galvanized materials.
C. Grade Ring: 6-inch concrete grade ring required in roadways, Plan 361.
D. Spools: Length of flange x plain end spool vary.

SPOOLS	
Pipe Size	Pipe Length
6"	10"
8"	8 1/4"
10"	6"

3. EXECUTION

A. Install control valve with valve box adjacent to main.
B. Concrete Box: Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal. Center frame and cover over water meter.
C. Valve Option: The valve in the box (item B legend) closest to the main, and the top section of the valve box (item J legend) may be eliminated at the discretion of the ENGINEER.

R309-550-6. Component Materials and Design.

(7) Chamber Drainage

(a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

(b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

6" Pressure reducing valve with 2" bypass

1. GENERAL

A. Configuration may be changed at ENGINEER's discretion.
B. Additional requirements are specified in APWA Section 33 12 16.

2. PRODUCTS

A. Small Fillings: Brass. Do not use galvanized materials.
B. Blocking: Clay brick or concrete block.
C. Taps: Provide two 3/4" I.P. taps with plugs for pressure gages.
D. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.

3. EXECUTION

A. Center frame and cover over water meter.
B. Apply tape wrap to the exterior of all galvanized pipe per AWWA C209.
C. Allow 1-inch clearance around waterline where water line passes through concrete box wall. Seal opening with compressible seal.

R309-550-6. Component Materials and Design.

(7) Chamber Drainage

(a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

(b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

Air release assembly

1. GENERAL

A. This drawing detail is applicable to water main piping less than 16-inches diameter.
B. PCCP, steel, MLAC and other water main pipe materials will require special detail or design drawings. Submit the design and detail drawings and materials to the ENGINEER for review before installation.
C. Installation in areas of high ground water or potential for water entering the vent pipe will require a special design to be provided by the ENGINEER.
D. Before backfilling around the assembly, secure inspection of installation by ENGINEER.

2. PRODUCTS

A. Base Course: Untreated base course, APWA Section 32 11 23. Do not use gravel as a base course without ENGINEER's permission.
B. Drain Gravel: Sewer rock, ASTM size no. 3 (2" to 1") or equal, APWA Section 31 05 13.
C. Backfill: Common fill, APWA Section 31 05 13. Maximum particle size 2-inches.
D. Concrete: Class 4000, APWA Section 03 30 04.
E. Manhole: Riser, ASTM C 478.
F. Reinforcement: Deformed, steel, ASTM A 615. Give bars an epoxy coating at least 15 mils thick. Minimum stress yield strength of steel tie-down bars is 70,000 ksi.
G. Small Fittings: Brass. Do not use galvanized materials.
H. PVC Pipe and Fittings: Schedule 40, APWA Section 33 05 07.
I. Water Tight Wall Seal: Waterproof, compressible.

3. EXECUTION

A. Base Course and Backfill Placement: Maximum lift thickness is 8-inches before compaction. Compaction is 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
B. Apply tape wrap to the exterior of all buried steel pipe per AWWA C209.
C. Concrete Placement: APWA Section 03 30 10. Provide 1/2-inch radius edges. Apply a broom finish. Apply a curing agent.
D. Service saddle is required on all PVC and AC pipe taps unless specified otherwise. Ductile iron and cast iron pipe may be direct tapped.
E. Seal manhole joints water-tight and ground flush with interior wall.
F. Follow applicable AWWA and NSF standards when connecting piping.
G. If diameter of air relief valve is greater than 2-inches, provide piping to match its diameter from water main connection to open to air.

R309-550-6. Component Materials and Design.

(7) Chamber Drainage

(a) Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer.

(b) Chambers shall be provided with a drain to daylight, if possible. Where this is not possible, underground gravel-filled absorption pits may be used if the site is not subject to flooding and conditions will assure adequate drainage. Sump pumps may also be considered if a drain to daylight or absorption pit is not feasible.

R309-550-6. Component Materials and Design.

(6) Air Relief Valves and Blow-offs.

(a) At high points in water mains where air can accumulate, provisions shall be made to remove air by means of hydrants or air relief valves.

(b) The open end of the air relief vent pipe from automatic valves shall be provided with a #14 mesh, non-corrodible screen and a downward elbow, and where possible, be extended to at least one foot above grade. Alternatively, the open end of the pipe may be extended to as little as one foot above the top of the pipe if the valve's chamber is not subject to flooding, or if it meets the requirements of (7) Chamber Drainage.

(c) Blow-offs or air relief valves shall not be connected directly to a sewer.

(d) Adequate number of hydrants or blow-offs shall be provided to allow periodic flushing and cleaning of water lines.

(e) The air relief valve shall be installed in a manner to prevent it from freezing. A shut-off valve shall be provided to permit servicing of an air relief valve.

Pressurized irrigation water and potable water interface

1. GENERAL

A. There may be up to 20 psi loss of head through the reduced pressure backflow preventer (RPBP) device. This is normal and the agency should expect a decrease in area coverage. Agency should design or modify the system for the lower pressure.

2. PRODUCTS

A. Piping Materials.
   1) All above ground parts are to be copper or galvanized iron only.
   2) Below ground parts on the non-potable water system may be made of PVC or polyethylene at the agency's discretion.

B. Cam Lock Fittings: Provide 3/4" long male insert attached to the flexible hose.

3. EXECUTION

A. Separate Systems: Connect hose to only one system at a time. The other system is to remain separate. Do not direct connect potable and non-potable water systems with or without backflow prevention devices.

B. Stop and Waste Valve: Locate the valve in an area where subsurface ground water will not accumulate, or attach a drain pipe to the drain hole and drain to daylight with a non-corrodible #14 mesh screen over the end.

C. Testing: The RPBP device requires testing within 10 days of initial installation by a licensed backflow device tester and annually thereafter or more frequently at agency's option and expense.

D. Backflow Preventer: Install the RPBP device above ground per the plumbing code. It must not be susceptible to flooding and must be accessible at all times for testing, repair, inspection, etc.

E. Stand Pipes: Provide draining and freeze protection.

F. Galvanized Pipe: Apply tape wrap to the exterior of all galvanized pipe per AWWA C209.

Should be evaluated by UDDW Cross Connection Control Manager prior to instillation

SECTION 33 05 05

DUCTILE IRON PIPE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Ductile iron pipe, couplings, fittings, and joint materials.

1.2 REFERENCES

A. **AWWA Standards**:

- C104 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
- C110 Ductile-Iron and Gray Iron Fittings, 3 In. Through 48 In., for Water and Other Liquids.
- C111 Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
- C115 Flanged Ductile-Iron and Gray Iron Pipe with Threaded Flanges.
- C151 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
- C600 Installation of Ductile-Iron Water Mains and Their Appurtenances.

For culinary:

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 2 PRODUCTS

2.1 PIPE AND FITTINGS

A. Buried Applications:

1. Class 52 or pressure class 350 psi ductile iron pipe, AWWA C151 with push-on joints, AWWA C111.
2. Cement lining for all pipe and fittings, AWWA C104.
3. Class 250 fittings with AWWA C110 joints.
4. Coupler with mechanical joint fittings, AWWA C104, C110, and C111.
5. Rubber gasket slip-on pipe joints, AWWA C111 with gasket lubricant.

SECTION 33 05 06

POLYETHYLENE PIPE

For culinary

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Polyethylene pipe, couplings, fittings and joint materials.

1.2 REFERENCES

A. **AASHTO Standards**:

- M 252 Corrugated Polyethylene Drainage Pipe.
- M-294 Corrugated Polyethylene Drainage Pipe 300-1200 mm Diameter.
- MP7-97 Corrugated Polyethylene Pipe – 1350 and 1500 mm Diameter.

B. **ASME Standards**:

- B1.1 Unified Inch Screw Threads (UN and UNR Thread Form), Supplement.

C. **ASTM Standards**:

- A 307 Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
- D 2239 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter.
- D 2321 Underground Installation of Flexible Thermoplastic Sewer Pipe.
- D 2657 Heat Joining of Thermoplastic Pipe and Fittings.
- D 2774 Underground Installation of Thermoplastic Pressure Piping.
- D 3261 Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
- D 3350 Polyethylene Plastics Pipe and Fittings Materials.
- F 477 Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- F 1055 Electofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing.

SECTION 33 05 07

POLYVINYL CHLORIDE PIPE

for Culinary

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Polyvinyl chloride pipe, couplings, fittings and joint materials.

1.2 REFERENCES

A. **ASTM Standards**:

D 1784 Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

D 2241 Poly (Vinyl Chloride) (PVC) Pressure Rated Pipe (SDR - Series).

D 2321 Underground Installation of Flexible Thermoplastic Sewer Pipe.

D 2412 Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.

D 2564 Solvent Cement for Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

D 2729 Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

D 2774 Underground Installation of Thermoplastic Pressure Piping.

D 2855 Making Solvent Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.

D 3034 Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

D 3139 Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.

D 3212 Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

F 656 Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

F 679 Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

F 949 Poly(vinyl Chloride) (PVC) Corrugated sewer Pipe with a Smooth Interior and Fittings.

SECTION 33 05 09

STEEL PIPE - LINED AND COATED

For culinary

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Cement mortar lined and coated steel pipe, couplings, fittings, and joint materials in sizes four (4) inches through 120 inches.

1.2 REFERENCES

A. **ASTM Standards**:

A 82	Steel Wire, Plain, for Concrete Reinforcement.
A 283	Low and Intermediate Tensile Strength Carbon Steel Plates.
A 370	Mechanical Testing of Steel Products.
A 569	Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip, Commercial Quality.
A 570	Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.
C 33	Concrete Aggregates.
C 150	Portland Cement.

R309-550-8. Installation of Water Mains.

(1) Standards.

The specifications shall incorporate the provisions of the manufacturer's recommended installation procedures or the following applicable standards:

(d) For Steel pipe, AWWA Standard C604-11, Installation of Buried Steel Water Pipe- 4 inch and Larger

B. **AWWA Standards**:

C200	Steel Water Pipe 6 In. and Larger.
C205	Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 In. and Larger - Shop Applied.
C208	Fabricated Steel Water Pipe Fittings.
C303	Reinforced Concrete Pressure Pipe, Steel Cylinder Type, Pre-Tensioned, for Water and Other Liquids.

1.3 SUBMITTALS

A. Design Summary: Before any fabrication, submit a design summary for each size and class of pipe and line layout drawings or line schedules that show the location of each section of pipe and each special fitting to be furnished.

B. Shop Drawings of special fitting and outlets.

3.1 PREPARATION

A. Implement the traffic control plan requirements, Section 01 55 26.

B. Identify required line, levels, contours, and datum.

C. Stake and flag locations of underground utilities.

D. Verify:

1. Backfill material meets gradation requirements.
2. Foundation walls are braced to support surcharge forces imposed by backfilling operations, areas to be backfilled are free of debris, snow, ice or water.
3. Trench bottom is not frozen.

E. If ground water is in the intended backfill zone, dewater.

3.2 SUBGRADE

A. Protect subgrade from desiccation, flooding, and freezing.

B. Before backfilling over Subgrade, get ENGINEER's review of Subgrade surface preparations.

C. If Subgrade is not readily compactable, get ENGINEER's permission to stabilize the subgrade:

1. Excavation for Subgrade stabilization is incidental work, Section 31 23 16.
2. Place geotextile fabric. Place acceptable fill in lifts. Compact.

3.3 PROTECTION

A. During installation or repair, plug end of pipe or fitting except when installing next section of pipe or fitting.

B. Movement of construction machinery over Work at any stage of construction is solely at CONTRACTOR's risk.

3.4 GENERAL BACKFILLING REQUIREMENTS

A. Avoid injuring and displacement of conduit, pipe and structures while compacting soil or operating equipment next to pipeline.

R309-550-8. Installation of Water Mains.

(2) Bedding.

A continuous and uniform bedding shall be provided in the trench for all buried pipe. Stones larger than the backfill materials described below shall be removed for a depth of at least 6 inches below the bottom of the pipe.

B. Place geotextile fabrics; Section 31 05 19.

C. Do not damage corrosion protection on pipe.

D. Repair or replace damaged pipe at no additional cost to OWNER.

E. Withdraw sheathing, shoring, piles, and similar supports as backfilling progresses. Backfill and compact all holes left by removals.

F. Provide sufficient water quality facilities to protect downstream fish and wildlife, and to meet State water quality requirements.

G. Water settling of trench backfill is not permitted. "Jetting" of trench backfill is prohibited.

3.5 PIPE ZONE

A. Maintain uniform foundation along barrel of pipe with sufficient relief for joint connections.

B. Use backfill materials meeting pipe manufacturer's recommendations.

1.3 PERFORMANCE REQUIREMENTS

A. Depth of Cover:

1. Minimum as indicated in local building code from top of pipe to ground surface. 72 inches maximum unless ENGINEER authorizes otherwise.
2. If less cover, provide additional protection to withstand frost and external loads.

B. Remove any section of pipe already placed that is found to be defective or damaged. Relay or replace without additional cost to OWNER.

1.4 SUBMITTALS

A. Product data: Submit manufacturer's technical product data and installation instructions.

B. Commissioning: Submit testing data indicated in Section 33 08 00.

C. Record Documents, Section 01 78 39: Include details of underground structures, connections, thrust blocks and anchors. Show interface and spatial relationship between piping and adjacent structures.

D. Operating and Maintenance: Submit data, Section 01 78 23. Include maintenance data, parts list, product data and Shop Drawings.

1.5 SITE CONDITIONS

A. Minimize neighborhood traffic interruptions. Barricade stockpiles.

B. Secure acceptance of pipeline lateral tie-in work.

C. Repair public and private facilities damaged by CONTRACTOR.

D. Do not operate any currently active water valve until its owner and water company's permission is secured.

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 2 PRODUCTS

2.1 PIPES AND FITTINGS

A. Provide piping materials and factory fabricated piping products of sizes, types, pressure ratings, and capacities indicated. Use only NSF approved products in drinking water systems. All such products shall be appropriately stamped with the NSF logo. Just NSF isn't sufficient, NSF 61

B. Where not indicated, provide proper selection as determined by installer and acceptable to ENGINEER to comply with installation requirements.

C. Provide sizes and types of equipment connections for fittings of material that matches pipe material used in the piping system. Where more than one type of material or product option is indicated, selection is installer's choice.

D. Provide pipe fittings and accessories of same material and weight or class as pipe, with joining method indicated or recommended by manufacturer.

2.2 VALVES

2.8 ACCESSORIES

A. Bolts, Nuts, Washers: Steel, Section 05 05 23.

B. Anchorages: Provide anchorages for tees, wyes, crosses, plugs, caps, bends, valves, and hydrants. After installation, apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of ferrous anchorages.

C. Corporation Stops: All bronze, straight threads, full port, ball valve.

D. Hydrant and Valve: Dry barrel, Section 33 12 19.

E. Water Meter and Valve: Section 33 12 19.

F. Grease: Non-oxide food grade required where in contact with potable water. Non-oxide poly-fm for all exposed buried metal surfaces for bolts, nuts, washers, restraints, etc.

G. Polyethylene Sheet: Six (6) mil thick minimum.

H. Joint Restraints: Acceptable to ENGINEER prior to installation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify trench excavation is ready to receive work, and dimensions, and elevations are as required.

B. Commencing installation means acceptance of existing conditions.

3.2 PREPARATION

A. Excavation, Section 31 23 16. Hand trim to required elevations. Correct over excavations.

B. Remove stones or other hard matter that manufacturer stipulates may damage pipe during embedment or impede backfilling or compaction.

C. Examine areas and conditions under which materials and products are to be installed. Do not proceed with system installation until unsatisfactory conditions have been corrected in manner acceptable to system installer.

D. Clearly identify and promptly set aside defective or damaged pipe.

E. Use pipe cutting tool acceptable to pipe manufacturer.

3.3 LAYOUT

A. Comply with Utah administrative rules R309-550. As a minimum locate potable water pipe at least 18 inches vertical and 10 feet horizontal edge to edge between water and sewer lines. Place water lines above sewer line. Requires UDDW Approval

B. Where potable water pipe crosses under gravity-flow sewer lines, fully encase sewer pipe in concrete for a distance at least 10 feet each side of the crossing:

1. Do not locate any joint in the water line within 36 inches of the crossing.

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

(1) Basic Separation Standards.

(a) The horizontal distance between water lines and sanitary sewer lines shall be at least10 feet. Where a water main and a sewer line must cross, the water main shall be at least 18 inches **above** the sewer line. Separation distances shall be measured edge-to-edge (i.e., from the nearest edges of the facilities).

(b) Water mains and sewer lines shall not be installed in the same trench.

(c) Where local conditions make it impossible to install water or sewer lines at separation distances required by subsection (a), the sewer pipes are in good condition, and there is not high groundwater in the area, it may be acceptable if the design includes a minimum horizontal separation of 6 feet and a minimum vertical clearance of 18 inches with the waterline being above. In order to determine whether the design is acceptable, **the following information shall be submitted as part of the plans for review:**

(i) reason for not meeting the minimum separation standard;
(ii) location where the water and sewer line separation is not being met;
(iii) horizontal and vertical clearance that will be achieved;
(iv) sewer line information including pipe material, condition, size, age, type of joints, thickness or pressure class, whether the pipe is pressurized or not, etc.;
(v) water line information including pipe material, condition, size, age, type of joints, thickness or pressure class, etc.;
(vi) ground water and soil conditions; and,
(vii) any mitigation efforts.

(d) If the basic separation standards as outlined in subsections (a) though (c) above cannot be met, an exception to the rule can be applied for with additional mitigation measures to protect public health, in accordance with R309-105-6(2)(b).

SECTION 33 12 16
WATER VALVES

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Gate, butterfly, plug, check, pressure reducing, pressure relief, control valves and their installation.

1.2 REFERENCES

A. **AWWA Standards**:

C111 Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.

C504 Rubber-Seated Butterfly Valves.

C508 Swing-Check Valves for Waterworks Service, 2 In. Through 24 In. NPS.

C509 Resilient-Seated Gate Valves for Water and Sewerage Systems.

C550 Protective Interior Coatings for Valves and Hydrants.

C600 Installation of Ductile-Iron Water Mains and Their Appurtenances.

1.3 SUBMITTALS

A. Provide technical information for evaluating quality of valve. As a minimum include dimensions, weights, materials lists and operation charts.

R309-550-6. Component Materials and Design.

(1) ANSI/NSF Standard for Health Effects.

All materials that may come in contact with drinking water, including pipes, gaskets, lubricants and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components - Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

(3) Standards for Mechanical Properties.

Pipe, joints, fittings, valves, and fire hydrants shall conform to ANSI/NSF Standard 61, and applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

PART 2 PRODUCTS

2.1 VALVES - GENERAL

A. Underground:

1. Less than three (3) inches: Screwed ends.
2. 3 inches and larger: Flanged or mechanical joint ends. Non-rising stem. Two inches square operating nut. Low alloy steel bolts, AWWA C111.

1.5 **JOB CONDITIONS**

A. Notify appropriate fire department as soon as hydrant is removed or placed in service.

PART 2 PRODUCTS

R309-550-5. Water Main Design.

(5) Fire Protection.

d) Fire hydrant laterals shall be a minimum of 6 inches in diameter.

2.1 **DRY-BARREL FIRE HYDRANT**

A. AWWA C502.

B. Cast iron compression type, opening against pressure and closing with pressure, base valve design, 150 psi working pressure, with 1/4 inch diameter minimum tapping and bronze plug in standpipe:

1. Size: 5-1/4 inch valve opening.
2. Direction to Open Hydrant: Counterclockwise.
3. Size and Shape of Operating and Cap Nuts: Pentagon. 1-1/2 inch point to flat.
4. Hose Nozzles: Two 2-1/2 inch national standard thread, cap, gasket and chain.
5. Pumper Nozzle: One 4-1/2 inch national standard thread, cap, gasket and chain.
6. Depth of Burial: 48 inches or consistent with main depth.
7. Connection to Main: Six (6) inches flanges or mechanical joint.
8. Pressure: 150 psi working pressure and 300 psi hydrostatic pressure.
9. Inlet Bottom Connection: Six (6) inches mechanical joint or flanged in accordance with AWWA C110 and AWWA C111, designed to allow separation at the sidewalk or ground level when hydrant is sheared off.
10. Automatic Drain: Opens as the hydrant is closed.

2.2 **PIPE AND FITTINGS**

A. Ductile Iron: Section 33 05 05. Standard drilling with joints per AWWA C110.

B. PVC: Section 33 05 07.

C. Steel: Section 33 05 09. Standard drilling, 150 lb.

D. Spool: Schedule 40 steel, epoxy lined, exterior wrapped with minimum six (6) mil thick polyethylene sheet and tape wrap, AWWA C210 or C213 and C209 or C214 with two welded in place 150 lb. steel ANSI B 16.5 slip on flanges.

2.3 **VALVES**

A. Gate Valve: Section 33 12 19.

B. If indicated, furnish an auxiliary six (6) inch diameter valve with end connections as required.

2.3 **SERVICE LINE, VALVES, AND FITTINGS**

A. Service Pipe: Copper, Section 33 05 03 or smooth wall polyethylene, Section 33 05 06. The service pipe between main and meter and to a point not less than 1 foot from the public way side of the property line cannot exceed the meter size.

B. Service Valves and Fittings: AWWA C800.

C. Meter Setters: Brass, with angle fittings, saddle nuts and gaskets.

D. Corporation Stops and Angle Valves: Invert key design.

E. Bypasses: Not allowed on any service installation without approval of ENGINEER.

2.4 **METER BOXES**

A. Meters to 1" Service: Plastic or asphalt-dipped corrugated metal. Fiber meter boxes not acceptable.

B. Meters 1-1/2" and Larger: Reinforced concrete with a minimum clearance of 12" from each side of meter plumbing.

C. Cover: Ductile or cast iron with utility inscription

PART 3 EXECUTION

3.1 **INSTALLATION**

A. Install meter box, meter setters, valves, etc. at indicated locations. If not indicated, install in street right-of-way parking strip or at a location approved by ENGINEER.

B. Install meter setters level and horizontal. Provide suitable pipe lengths to prevent stress.

C. DO NOT operate utility agency's main line valves. Contact agency if valves are to be operated. If required by water utility agency notify affected water users, Section 01 31 13.

D. OWNER Supplied Meters: Installed by CONTRACTOR unless indicated otherwise.

END OF SECTION

R309-550-11. Service Connections and Plumbing

(4) Service Lines.

(a) Service lines shall be capped until connected for service.

SECTION 33 13 00
DISINFECTION

PART 1 GENERAL

1.1 **SECTION INCLUDES**
- A. Disinfection of potable water system.
- B. Test and report results.

1.2 **REFERENCES**
- A. **AWWA Standards**:
  - A100 Water Wells.
  - B300 Hypochlorites.
  - B301 Liquid Chlorine.
  - C651 Disinfecting Water Mains.
  - C652 Disinfection of Water-Storage Facilities.
- B. **State of Utah Standards**:

  Public Drinking Water Regulations, ~~Part 2, Section 12~~ R309-520: Facility Design and Operation: Disinfection.

1.3 **DEFINITIONS**
- A. **Disinfectant Residual**: The quantity of disinfectant in treated water.
- B. **ppm**: Parts per million.

1.4 **SUBMITTALS**
- A. CONTRACTOR's evidence of experience in disinfection.
- B. Bacteriological laboratory's certification.
- C. Disinfection Report: Three (3) copies containing:
  1. Date issued.
  2. Project name and location.
  3. Treatment contractor's name, address and phone number.
  4. Type and form of disinfectant used.
  5. Time and date of disinfectant injection started.
  6. Time and date of disinfectant injection completed.
  7. Test locations.
  8. Initial and follow-up disinfectant residuals in ppm for each outlet tested.
  9. Time and date of flushing start.
  10. Time and date of flushing completion.
  11. Disinfectant residual after flushing in ppm for each outlet tested.
  12. Flush water disposal location and acceptance by local agency.

PART 3 EXECUTION

3.1 PREPARATION

A. Provide necessary signs, barricades, and notices to prevent accidental exposure to disinfecting materials, consuming disinfecting water, or disturbing system being disinfected.

B. Make sure potable water system is complete, clean, and that the system to be disinfected is not connected to an existing system.

3.2 DISINFECTION OF WATER LINES

A. Use one method defined under AWWA C651 that is acceptable to ENGINEER.

B. After pressure testing per Section 33 08 00, flush system through hydrants or if a hydrant does not exist, install a tap of sufficient size to provide 2.5 feet per second flushing velocity in the line.

C. Starting at outlet closest to water source, bleed water from each outlet until chlorine residual reaches outlet. Repeat process at each outlet throughout system.

D. Collect a bacteriological water sample at end of line to be tested. If sample fails bacteriological test, flush system and retest. Continue flushing and retesting until a good sample is obtained.

E. If flushing does not produce a passing bacteriological test disperse disinfectant throughout system to obtain 10 to 25 ppm of free chlorine residual.

F. Flush the chlorinated water from the main until chlorine measurements show concentration in the water leaving the main is no higher than that generally prevailing in the system or is acceptable for domestic use.

G. After a passing bacteriological test sample is obtained, let the system relax for 24 hours. Flush and collect a subsequent bacteriological sample for testing. If the subsequent test passes then water line is acceptable.

R309-515-6. Ground Water - Wells

(11) Well Disinfection.

Every new, modified, or reconditioned well including pumping equipment shall be disinfected before being placed into service for drinking water use. These shall be disinfected according to AWWA Standards C654-03 and A100-06 as modified to incorporate the following as a minimum standard:

3.3 DISINFECTION OF CULINARY WELLS

A. Use one method defined under AWWA A100 that is acceptable to ENGINEER.

B. Do not start disinfection until well is thoroughly cleaned.

C. Use a disinfecting solution containing a minimum of 50 ppm residual chlorine.

D. Flush system after disinfection.

SECTION 33 16 13

WELDED STEEL WATER TANK

R309-545-20. *Tank Standards*

(2) NSF International Standards.

(a) NSF 60, Drinking Water Treatment Chemicals - Health Effects.

(b) NSF 61, Drinking Water System Components - Health Effects.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. On grade welded steel water storage tank.

B. Foundation and ring wall construction.

C. Testing requirements.

1.2 REFERENCES

A. **ASME Standards**:

Boiler and Pressure Vessel Code.

B. **AWWA Standards**:

D100 Welded Steel Tanks for Water Storage.

1.3 QUALITY ASSURANCE

A. Workmanship, Section 01 43 00.

B. Welder Certification:

1. Use only welders qualified in all positions by ASME Boiler and Pressure Vessel Code.
2. Maintain a record of welds and welders employed on each joint.
3. Provide a welding supervisor independent of the tank erection foreman's jurisdiction.

1.4 SUBMITTALS

A. List of five (5) tanks, including name of owner, size, location, and year completed.

B. Certification of welders who will be performing welding.

C. Within 30 days after award of contract, furnish two (2) sets of design calculations and four (4) sets of detail drawings of the tank. Furnish drawings prepared by a licensed design professional.

PART 2 PRODUCTS

2.1 GENERAL

A. Furnish a steel tank that is fabricated and erected per AWWA D100 and governing Laws and Regulations.

B. Furnish the tank per Appendix C of AWWA D100. Use a design temperature based on a low one (1) day mean temperature of -10 deg F if not indicated elsewhere.

2.2 TANK ACCESSORIES

A. General: Furnish and install all tank accessories as indicated and as applicable below.

B. Ladder: One fixed ladder with safety cable on the exterior of the tank conforming to OSHA. Extend ladder eight (8) feet above ground surfaces to roof.

C. Shell Manholes: Two 24 inches diameter shell manholes equipped with davits or hinges located near base of tank. Furnish one manhole with a bolting flange for an exhaust fan for ventilation as indicated in AWWA D100.

R309-545-14. Access Openings.

Drinking water storage tanks shall be designed with reasonably convenient access to the interior for cleaning and maintenance.

(1) Height.

There shall be at least one opening above the level of the overflow, which shall be framed at least 4 inches above the surface of the roof at the opening; or if on a buried tank, shall be elevated at least 18 inches above any earthen cover over the tank. The frame shall be securely fastened and sealed to the tank roof to prevent any liquid contaminant entering the tank. Concrete drinking water storage tanks shall have raised curbs around access openings, formed and poured continuous with the pouring of the roof, and sloped to direct water away from the frame.

(2) Shoebox Lid.

The frame of any access opening shall be provided with a close-fitting, solid shoebox-type cover that extends down around the frame at least 2 inches and is furnished with a gasket(s) between the lid and frame. The horizontal surface of the tank lid shall not have any openings, cracks, or penetrations, such as a lock, key hole, or bolted handle that would allow contaminants to enter the tank.

(3) Locking Device.

The lid to any access opening shall have a locking device.

UDDW does not require "mushroom" vents

D. Vent: Mushroom vent of adequate size to handle pressure differential cause by water entering or leaving the tank at the maximum rate indicated. Do not consider the open area of overflow as venting area. Provide a special screened vent to ensure fail-safe operation if screen frosts over or is otherwise clogged. Furnish a vent that is easily dismantled to remove screens for cleaning.

R309-545-15. Venting.

Drinking water storage tanks shall be vented. The air venting capacity shall exceed the water inflow and the water outflow of the tank. Overflows shall not be considered or used as vents.

Vents provided on drinking water storage tanks shall:

(1) Inverted Vent.

Be downturned a minimum of 2 inches below any opening and shielded to prevent the entrance of contaminants.

(2) Open Venting.

On buried structures, the end of the vent discharge shall be a minimum of 24 inches above the earthen covering.

Guidance: In areas of heavy snowfall, it is recommended that the vent discharge be raised.

(3) Blockage.

Be located and sized to avoid blockage during winter conditions.

(4) Screen.

Be fitted with No. 14 mesh or finer non-corrodible screen.

(5) Screen Protector.

Vents that are 6-inch diameter or greater shall be fitted with additional heavy gage screen or substantial covering, which will protect the No. 14 mesh screen against vandalism or damage.

E. Roof Manholes: One 36 inch rainproof roof hatch with hinges and hasp for locking per AWWA D100 and a 24 inch diameter roof manhole with a removable cover.

R309-545-14. Access Openings.

Drinking water storage tanks shall be designed with reasonably convenient access to the interior for cleaning and maintenance.

(1) Height.

There shall be at least one opening above the level of the overflow, which shall be framed at least 4 inches above the surface of the roof at the opening; or if on a buried tank, shall be elevated at least 18 inches above any earthen cover over the tank. The frame shall be securely fastened and sealed to the tank roof to prevent any liquid contaminant entering the tank. Concrete drinking water storage tanks shall have raised curbs around access openings, formed and poured continuous with the pouring of the roof, and sloped to direct water away from the frame.

(2) Shoebox Lid.

The frame of any access opening shall be provided with a close-fitting, solid shoebox-type cover that extends down around the frame at least 2 inches and is furnished with a gasket(s) between the lid and frame. The horizontal surface of the tank lid shall not have any openings, cracks, or penetrations, such as a lock, key hole, or bolted handle that would allow contaminants to enter the tank.

(3) Locking Device.

The lid to any access opening shall have a locking device.

F. Overflow: Provide tank overflow. Equip overflow with an anti-vortex entrance. Extend overflow down outside of tank.

R309-545-13. Tank Overflow.

All water storage tanks shall be provided with an overflow that discharges at an elevation between 12 and 24 inches above the ground surface or the rim of the receiving basin. The discharge shall be directed away from the tank and shall not cause erosion.

(1) Diameter.

Overflow pipes shall be of sufficient capacity to permit waste of water in excess of the filling rate.

(2) Slope.

Overflow pipes shall be sloped for complete drainage.

(3) Screen.

Overflow pipes shall be screened with No. 4 mesh non-corrodible screen installed at a location least susceptible to damage by vandalism.

(4) Visible Discharge.

Overflow pipes shall be located so that any discharge is visible.

(5) Cross Connections.

Overflow pipes shall not be connected to, or discharge into, any sanitary sewer system.

G. Inlet Nozzle: Equip with a 125 psi working pressure flange connection.

H. Bottom Drain: Weld drain to tank bottom and make required connections.

I. Outlet Nozzle: Equip with a 125 psi working pressure flange connection.

R309-545-10. Internal Features.

The following shall apply to internal features of drinking water storage tanks:

(1) Drains.

(a) A means shall be provided for the draining of drinking water storage tanks.

(b) Where possible, the drain shall be separate from the outlet pipeline. If a tank drain line is provided, it shall be sloped for complete drainage.

(c) The drain shall not discharge to a sanitary sewer.

(d) If local authority allows discharge to a storm drain, the drain discharge shall have a physical clearance of at least 12 inches between the discharge end of the pipe and the overflow rim of the receiving basin.

(3) Inlet and Outlet.

(a) To minimize potential sediment in the flow from the tank, the outlet pipes from all tanks shall be located in a manner to provide a silt trap prior to discharge into the distribution system.

(b) Inlet and outlet pipes shall be configured to provide mixing and circulation.

(4) Tank Floor.

The floor of the storage tank shall be sloped to permit complete drainage of the structure.

RESOLUTION NO. R2023-20

A RESOLUTION AMENDING CONSTRUCTION STANDARD SPECIFICATIONS AND DETAILS FOR THE CITY OF ALPINE

WHEREAS, the Planning Commission of Alpine City, after a public hearing, has recommended the adoption of updated Construction Standard Specifications and Details; and

WHEREAS, consistent with the Planning Commission's recommendation, the City Council deems it to be in the best interest of the City and the health, safety and welfare of its residents to adopt amended Construction Standard Specifications and Details as set forth in the attached **Exhibit A**;

THEREFORE, be it resolved by the City Council of the City of Alpine that the amended Construction Standard Specifications and Details as set forth in **Exhibit A** are hereby adopted as the Construction Standard Specifications and Details of the City of Alpine.

This resolution shall become effective immediately upon its passage.

Dated this 26th day of September, 2023.

By:_____
Carla Merrill, Mayor

[SEAL]

VOTING:

Jessica Smuin	Yea ___ Nay ___
Lon Lott	Yea ___ Nay ___
Kelli Law	Yea ___ Nay ___
Jason Thelin	Yea ___ Nay ___
Greg Gordon	Yea ___ Nay ___

ATTEST:

_____
Bonnie Cooper, City Recorder

DEPOSITED in the office of the City Recorder this 26th day of September, 2023.

RECORDED this 26th day of September, 2023.

ALPINE CITY COUNCIL AGENDA

SUBJECT: **Approval of Water Reuse Application with Timpanogas Special Service District**

FOR CONSIDERATION ON: **September 26, 2023**

PETITIONER: **City Staff**

ACTION REQUESTED BY PETITIONER: **Review and approve the reuse application with TSSD.**

BACKGROUND INFORMATION:

The possibility of reusing sewer effluent water in pressurized irrigation systems from the Timpanogas Special Service District (TSSD) plant has been a topic of discussion for many years. Some cities in other parts of the State have already implemented this practice. The timing to submit an application to the Division of Water Rights for reuse became important when the Legislature made some changes to state law in the last session. TSSD had been working over the summer to be able to submit applications prior to the November 1 deadline.

The reuse of sewer effluent is probably something that is more in the long range plan, but it requires some work now to have the option. The issue for Alpine is that we are several miles away from the plant so getting water back for use in our system would be very expensive. For American Fork City to reuse the water is more realistic. Since Alpine City now has access to water through the aqueduct (CUP water), the doors are also open to other possibilities. If Alpine's application is approved for reuse, the city could exchange water with American Fork City where they would use our portion of the reuse water from the plant and we would take some of their water through the aqueduct in the same manner that we receive CUP water.

City staff feels that this is an opportunity that should be acted upon, even though all of the details are not available at this time. There is no harm in filing the application. If at some point in the future the city determines that this program does not work for the City, the application can either be withdrawn or allowed to lapse. The city only has a short window to apply for the option to have reuse water.

STAFF RECOMMENDATION:
Review and approve the reuse application with Timpanogas Special Service District.

SAMPLE MOTION TO APPROVE:
I move to approve the filing of the reuse application with the Timpanogas Special Service District.

SAMPLE MOTION TO APPROVE WITH CONDITIONS:
I move to approve the filing of the reuse application with the Timpanogas Special Service District with the following conditions/changes:

- **insert finding**

SAMPLE MOTION TO TABLE/DENY:
I move to table/deny the request to file a reuse application based on the following:

- **insert finding**

APPLICATION FOR SEWAGE EFFLUENT REUSE

STATE OF UTAH

DIVISION OF WATER RIGHTS

Rec. by _____

Fee Amt. $ 750.00

Receipt # _____

For the purpose of securing approval for the reuse of domestic wastewater as required by Section 73-3c-302, Utah Code, the following application is submitted to the Utah State Engineer.

REUSE NOTICE NUMBER: FILING DATE:

(From: shanawalt@rqn.com - 4641957)

1. APPLICANT INFORMATION:

Name: **Timpanogos Special Service District**
Address: **C/O Jeffrey W. Appel**
36 State St #1400
Salt Lake City, UT 84111
jappel@rqn.com

Name: **City of Alpine**
Address: **C/O Shane Sorenson**
20 North Main
Alpine, UT 84004

2. WATER RIGHTS OF WATER PROPOSED FOR REUSE: SEE ATTACHED

Water Right	Diversion (acre-feet)	Depletion (acre-feet)	Irrigation (acres)	Stock (ELUs)	Domestic (EDUs)	Municipal (acre-feet)	Mining (acre-feet)	Power (acre-feet)	Other (acre-feet)

3. QUANTITY OF WATER OR FLOW TO BE REUSED:

Quantity of Water: **11,530.391 acre-feet**

County: **Utah** Common Description: **Timpanogos Special Service District**

4. POINT(S) OF DISCHARGE: SEE ATTACHED

5. LOCATION OF PUBLICLY OWNED TREATMENT WORKS: SEE ATTACHED

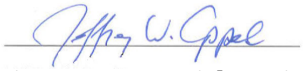
6. PLACE, PURPOSE, AND EXTENT OF THE PROPOSED WATER USE:

The place of use is within the boundaries of Alpine or American Fork City. The purpose is to augment the secondary irrigation water supply with a drought resistant water source.

7. SIGNATURES:

We, the undersigned, hereby represent that we are a Public Agency, and are entitled to make application for the Sewage Effluent Reuse of water. We assert that we have complied with the requirements and supplied the necessary information and documents as required by Section 73-3c of Utah Code Annotated 1953 (as amended).
We, the undersigned, hereby acknowledge that even though we may have been assisted in the preparation of the above-numbered application, through the courtesy of the employees of the Utah Division of Water Rights, all responsibility for the accuracy of the information contained herein, at the time of of filing, rests with the applicant(s). Therefore, the undersigned, assert that they have read this statement, and assert that, at the time of filing, each and all items contained herein are true to the best of the undersigned's knowledge and belief.

Timpanogos Special Service District
C/O Jeffrey W. Appel
36 State St #1400
Salt Lake City, UT 84111



Timpanogos Special Service District
(If a Corporation, give title of officer signing)

City of Alpine
C/O Shane Sorenson
20 North Main
Alpine, UT 84004

Alpine
(If a Corporation, give title of officer signing)

ATTACHMENT A

ALPINE REUSE APPLICATION

2. ALPINE WATER RIGHTS

Water Rights owned by Alpine to be used for the wastewater reuse project are listed below:

Change Application	Water Right	Diversion (acre-feet)	Depletion (acre-feet)	Use
	55-740	868.76		Municipal
a10461	55-1094	321.88	182.318	Municipal
a15272	55-5597	1,498.61		Municipal
	55-6943	1,447.93		Municipal
a24440	55-8359	60.385	32.7	Municipal
a26110	55-9633	67.76	28.73	Municipal
a28317	55-1143	2.8	2.8	Municipal
a25243	55-4708	1,976.43		Municipal
a35096	55-5369	380.0	214.70	Municipal
a24466	55-5995	288.0	146.88	Municipal
a19531	55-6463	35.63	17.82	Municipal
a28978	55-6471	31.69	15.97	Municipal
a24456	55-6645	44.0	23.65	Municipal
a28471	55-8938	118.95	60.82	Municipal
a28311	55-9064	46.736	26.385	Municipal
a23874	55-9089 55-9090 55-9091 55-9092 55-9093	80.0	42.4	Municipal
a28469	55-9563	148.7	76.209	Municipal
	55-9650	4,112.13		Municipal
Total		**11,530.391**		

4. POINT(S) OF DISCHARGE

The point(s) of discharge will be the place(s) of use for the secondary water system in Alpine or American Fork City, which has not yet been determined.

5. LOCATION OF PUBLICLY OWNED TREATMENT WORKS

40°20’45.78” N (40.346050° N), 111°46’46.76” W (111.7796560° W)

7. DEPLETION EVALUATION

An evaluation of the known depletion is found in the chart above.

8. ADDITIONAL REMARKS

The intent is for this Reuse Water to be delivered to American Fork City from TSSD property in a pipeline constructed by that City. It will be used within that City. A like quantity of American Fork City's water rights will be supplied to Alpine by delivery from American Fork City.

DRAFT FOR USE IN FILING REUSE APPLICATION ONLY

REUSE WATER INTERLOCAL COOPERATION AGREEMENT

This Agreement is made and entered into by and between the City of American Fork, a municipal corporation, located in Utah County, Utah (hereinafter "American Fork"), the City of Highland, a municipal corporation, located in Utah County, Utah (hereinafter "Highland"), the City of Cedar Hills, a municipal corporation, located in Utah County, Utah (hereinafter "Cedar Hills"), the City of Pleasant Grove, a municipal corporation, located in Utah County, Utah (hereinafter "Pleasant Grove"), the City of Alpine, a municipal corporation, located in Utah County, Utah (hereinafter "Alpine"), (collectively the "Cities"), and the Timpanogos Special Service District, a political subdivision of the State of Utah, located in Utah County, Utah (hereinafter "TSSD"), effective as of the latter of the dates appearing by the signatures of the Mayors of the Cities and the Chairman of the Board of Trustees of TSSD. All are collectively referred to as "the Parties."

RECITALS

1. TSSD owns and operates sewage collection and treatment facilities serving northern Utah County which qualify as publicly owned treatment works or "POTW" as defined by Utah Code Ann. § 19-5-102.

2. The sewage treated by TSSD's POTW originates in several municipalities, including the Cities.

3. The legislative authority of the TSSD consists of a Board of Trustees, one member of which is appointed by each City.

4. The legislative authority of the City consists of a City Council and/or Mayor.

5. All sewage generated within the Cities is collected and treated by TSSD.

6. In 2006, the Legislature adopted, and the Governor signed, the Wastewater Reuse Act into law, which is located in Chapter 3c of Title 73 of the Utah Code. The Wastewater Reuse Act specifically recognizes TSSD's ability to operate a project for the reuse of domestic wastewater.

7. Water reuse projects must satisfy rules promulgated by the Utah Department of Environmental Quality through the Utah Water Quality Board and the Utah State Division of Water Rights (the State Engineer's office) which administers water rights in Utah.

8. The Cities operate municipal water systems and hold water rights as reflected in Exhibit A hereto, which water rights will constitute the pool from which reuse water may be drawn upon approval by the Utah Division of Water Quality ("DWQ") and the Utah State Engineer ("State Engineer").

9. The Cities and TSSD desire to enter into this Reuse Water Interlocal Cooperation Agreement authorizing TSSD to facilitate the delivery of the reuse water available under each water right owned by the Cities that has been identified for use in this water reuse project. *See*

Exhibit A. TSSD's use of the water rights in Exhibit A for this water reuse project shall be consistent with the underlying water right.

10. The intent and purpose of the treatment and reuse of sewage effluent is to enable the Cities to more fully utilize its water resources for the benefit of the community as a whole.

11. The intent of this Reuse Water Interlocal Cooperation Agreement is to facilitate the treatment and distribution of the reuse water for the benefit of the Cities residents as economically as possible.

NOW, THEREFORE, in consideration of the foregoing, and the mutual promises, covenants and conditions hereinafter set forth, the Cities and TSSD agree as follows:

AGREEMENT

1. Duration of Agreement. The term of this Agreement shall be 50 years from its effective date. To the extent allowed by law, this Agreement shall remain in effect after the expiration of the term unless any party gives the other party 12 months' written notice of its intention to terminate this Agreement. Such notice may not be given earlier than 13 months prior to the end of the 50 year term or later than four months prior to the end of the 50 year term. The parties further agree that this Agreement may be terminated or modified during its term only with the written consent of all parties.

2. No Interlocal Entity/Administration. This Agreement shall not create any separate legal or administrative entity or body, and there shall be no joint acquisition or ownership of property and, except as provided in paragraph 6, it will not be necessary to dispose of property on the termination of this Agreement. Rather, this Agreement is intended to appoint and empower TSSD to act as the Cities' exclusive agent in water rights matters respecting the reuse of sewage effluent collected within the Cities which is discharged from TSSD's regional POTW and made available to City at TSSD as provided below. The cooperative undertaking of the parties under which TSSD shall act as the Cities' exclusive agent shall be administered by the General Manager of TSSD, as from time to time constituted. Subject to the foregoing, each party shall be responsible for its respective properties and operations.

3. Agency. The Cities hereby irrevocably (except as otherwise stated in this Agreement) appoint and empower TSSD to act as the Cities' exclusive agent for the purposes of allowing reuse of sewage effluent discharged from TSSD's regional POTW including, but not limited to, processing change applications and other approvals before the Division of Water Rights and in all matters before the Department of Environmental Quality and the Water Quality Board to the maximum extent allowed under Chapter 3c of Title 73 of the Utah Code. In this regard, the parties recognize and agree that, after having received required approvals, TSSD will incur substantial costs to install facilities necessary to treat the effluent to an acceptable class standard and to make it available for secondary reuse. Consequently, the agency and other rights granted to TSSD under this Agreement are coupled with an interest. The agency stated in this Agreement is intended to encompass all of the water rights identified in Exhibit A, attached hereto and incorporated herein by this reference, in addition to such other and additional water rights as the Cities may hold from time to time. TSSD agrees to make the proportionate share of water allowed by the State Engineer and DWQ available to Cities at TSSD's plant, after which

the Cities shall be responsible for its ultimate delivery to the places of use allowed by the State Engineer and DWQ. Cities are only entitled to water based on its water rights, or as use is otherwise acquired from another Cities served by TSSD.

4. Water Rights. In entering into this Agreement, the Cities specifically authorize and empower TSSD, as the Cities' agent, to treat and deliver effluent reuse water from the TSSD plant to the Cities in which the Cities hold water rights as TSSD, in its sole discretion, deems desirable. In doing so, however, the Cities in no way relinquish any right, title, or interest in or to their water rights and the parties recognize the continuing right and ownership of the Cities in and to their water rights. The parties specifically acknowledge and agree that use by TSSD of all or any part of the effluent contributed by the Cities shall be deemed a use for the benefit of the Cities so far as preserving the Cities' water rights from forfeiture or abandonment is concerned.

5. Secondary Reuse. TSSD agrees to use reasonable efforts to allocate the use water in a reasonable and economic manner for the general benefit of the Members of TSSD or owners of water rights from which TSSD reuse water is derived.

6. Reuse by City. Should any of the Cities decide to operate a secondary water system and desire to reuse its own treated effluent, that Cities may do so provided that such reuse will not cause TSSD, or any distributor of the reuse water under contract with TSSD, to breach or default under any agreement entered into by TSSD or the contracting distributor with a third party and further provided that City pays the entire cost of the same, both capital and operational, including reimbursing to TSSD all costs associated with additional treatment required to bring the effluent up to a standard that will allow its intended use in a secondary system, including prorated capital costs as well as administration, operation, and maintenance costs. The parties acknowledge that a separate written agreement between the Cities and TSSD establishing terms and parameters will be required for the Cities to utilize, in the Cities secondary water system, effluent treated by TSSD.

7. Description of Delivery System and the Delivery. Direct delivery of effluent reuse water shall be provided for the TSSD plant to American Fork City by American Fork City and that effluent reuse water shall be used to supply American Fork City under its own Reuse Applications, as well as the Reuse Application filed to facilitate the exchange of the effluent reuse water to which each other City is entitled under its Reuse Application. Those exchanges shall be authorized by other Agreements and the Applications to the extent required and the Parties agree to do whatever is necessary to facilitate those Agreements and any Applications required to be filed by the State Engineer and/or DWQ.

8. Third-Party Contracts. Notwithstanding the term of the Agreement as specified in paragraph 1 above, the parties recognize that neither the expiration of this Agreement nor any renegotiation of the terms and provisions hereof shall affect the term, existence, or validity of any third-party contract for the distribution or use of effluent covered by this Agreement, or any portion thereof, theretofore executed by TSSD pursuant to the authority granted hereunder.

9. Expenses and Liability. All necessary facilities for the treatment and delivery of treated effluent for secondary reuse shall, unless otherwise agreed in writing by TSSD, be

installed, owned, maintained, and operated by TSSD. TSSD's Board of Trustees shall establish an annual budget and TSSD shall solely be responsible for all costs and expenses associated with secondary reuse activities undertaken by TSSD pursuant to the authority of this Agreement and shall assume all risks and liabilities in connection with treated sewage effluent reuse and shall solely establish rates and charges for the sale, rental or other disposition of said effluent.

10. TSSD's Discretion. Anything in this Agreement to the contrary notwithstanding, TSSD shall not be obligated to undertake secondary water reuse using treated effluent if, in TSSD's judgment, it is not economic or otherwise practical or advisable to do so.

11. Compliance with Laws. This Agreement is made and entered into subject to the provisions of applicable State of Utah and federal laws and regulations, which shall control the enforcement of this Agreement. TSSD may promulgate and implement rules and regulations which shall be applicable to the reuse of effluent treated by TSSD.

12. Assignment. Without the prior written consent of the other parties, neither this Agreement nor any interest herein nor any claim arising hereunder shall be transferred or assigned by any party, except to a successor governmental entity with which any party is consolidated or merged or replaced. Subject to the foregoing, this Agreement shall bind and inure to the benefit of the successors and assigns of the parties hereto.

13. Resolution Required. This Agreement shall not be effective until approved by a resolution of the governing body of each party. The individuals signing this Agreement on behalf of the Cities represent and warrant, through their signatures, that the execution of this Agreement has been approved by a resolution duly adopted by the governing authority of each City. Similarly, the individuals signing this Agreement on behalf of TSSD represent and warrant, through their signatures, that the execution of this Agreement has been approved by a resolution duly adopted by the governing authority of TSSD. Each party agrees that a signed copy of this Agreement will be filed with the keeper of public records of the said party.

14. Approval by Authorized Attorneys. As required by Utah Code Ann. § 11-13-202.5, and as a condition precedent to this Agreement's entry into force, it shall be submitted to an authorized attorney for each party who shall approve the Agreement as being "as to proper form and compliance with applicable [Utah] law."

15. Default. Other than as expressly provided in this Agreement, no breach of this Agreement shall entitle any party to unilaterally cancel, rescind, or terminate this Agreement; but such limitation shall not affect in any manner any other rights or remedies which any party may have by reason of any such breach. Any dispute may, with the concurrence of the parties, be submitted to binding arbitration in accordance with rules and procedures approved by both parties.

16. Separate Facilities. Nothing contained in this Agreement, or otherwise, shall constitute the parties as partners or joint venturers. Except as otherwise specifically provided herein, each party shall, at its own risk and expense, install, own, maintain, operate, and dispose of the pipelines, improvements, and other property, real and personal, necessary to provide the

service being provided by that party. Except as otherwise specifically provided in this Agreement, impact fees, service charges, and other fees and charges assessed by any party shall, subject to applicable law, be in the sole discretion of the serving party and the ordinances and rules and regulations of the said serving party shall be operative on that party's customers wherever located.

17. Additional Documents. Each party agrees to execute such other and further documents and instruments as may be reasonably necessary or proper to consummate the transactions contemplated by this Agreement and to implement the intent of the parties as expressed herein.

18. Headings, Tense, Construction. The paragraph headings of this Agreement are for purposes of reference only and shall not limit or define the meaning hereof. The singular tense herein shall include the plural and any gender shall include all other genders. This Agreement shall be construed only by the contents hereof and there shall be no presumption or construction in favor of or against any party.

19. Severability. Whenever possible, each provision of this Agreement shall be interpreted in such manner as to be valid under applicable law; but if any provision of this Agreement shall be held invalid or prohibited under applicable law, such provision shall be ineffective to the extent of such invalidity or prohibition without invalidating the remainder of such provision or the remaining provisions of this Agreement. Notwithstanding the foregoing, however, should such invalidity of any provision of this Agreement frustrate the intent and purpose of the parties, as expressed herein, such invalidity shall cause this Agreement to be terminated, with the parties, to the extent possible, to be restored to the "status quo" as though this Agreement had not been signed.

20. Waiver and Modification. No failure on the part of any party at any time to require the performance of the other of any term of this Agreement shall in any way affect such party's right to enforce its terms, nor shall any waiver by any party of any term hereof be taken or held to be a waiver of any other term, or of any breach hereof. Except as otherwise specifically stated, no right under this Agreement may be waived and no modification or amendment of this Agreement may be made except by a written Agreement executed by the party or parties against whom such enforcement of a waiver, modification or amendment is sought.

21. Time. Time shall be and is of the essence on this Agreement.

22. Entire Agreement. The parties agree that this document contains the entire agreement and understanding between them and constitutes their entire agreement with respect to the specific issued contained herein and supersedes any and all prior oral representations and agreements.

IN WITNESS WHEREOF, the parties have signed this Reuse Water Interlocal Cooperation Agreement effective the day and year first above written pursuant to authority

granted by resolutions duly passed and adopted by the Cities and TSSD, respectively.

CITY OF AMERICAN FORK,
a municipal corporation.

Date: _____ By: _____

_____, Mayor

ATTEST:

_____

City Recorder

APPROVED AS TO PROPER FORM
and compatibility with the laws of Utah
in accordance with Utah Code Ann. § 11-13-9:

_____

[Attorney Name]

Counsel for City of American Fork

TIMPANOGOS SPECIAL SERVICE DISTRICT,
a Utah body politic.

Date: _____ By: _____

_____, Chairman, Board of Trustees

ATTEST:

_____

Clerk

APPROVED AS TO PROPER FORM
and compatibility with the laws of Utah
in accordance with Utah Code Ann. § 11-13-9:

_____

Jeffrey W. Appel

Legal Counsel for Timpanogos Special Service District

CITY OF HIGHLAND,
a municipal corporation.

Date: _____ By: _____

_____, Mayor

ATTEST:

_____

City Recorder

APPROVED AS TO PROPER FORM
and compatibility with the laws of Utah
in accordance with Utah Code Ann. § 11-13-9:

_____

[Attorney Name]

Counsel for City of Highland

CITY OF CEDAR HILLS,
a municipal corporation.

Date: _____ By: _____

_____, Mayor

ATTEST:

_____

City Recorder

APPROVED AS TO PROPER FORM
and compatibility with the laws of Utah
in accordance with Utah Code Ann. § 11-13-9:

_____

[Attorney Name]

Counsel for City of Cedar Hills

CITY OF PLEASANT GROVE,
a municipal corporation.

Date: _____ By: _____

_____, Mayor

ATTEST:

_____

City Recorder

APPROVED AS TO PROPER FORM
and compatibility with the laws of Utah
in accordance with Utah Code Ann. § 11-13-9:

_____

[Attorney Name]

Counsel for City of Pleasant Grove

CITY OF ALPINE,
a municipal corporation.

Date: _____ By: _____

_____, Mayor

ATTEST:

_____

City Recorder

APPROVED AS TO PROPER FORM
and compatibility with the laws of Utah
in accordance with Utah Code Ann. § 11-13-9:

_____

[Attorney Name]

Counsel for City of Alpine

Notary Public – City of American Fork

____

____

On the _____ day of _____, 2023, personally appeared before me _____ and _____, who, being by me duly sworn, did say, each for himself/herself, that they are the Mayor and the Recorder, respectively, of the City of American Fork ("American Fork"), and that the foregoing instrument was signed on behalf of American Fork by authority of a resolution of the City Council, and said _____ and _____ each duly acknowledged to me that American Fork executed the same and that the seal, if affixed, is the seal of American Fork.

_____

Notary Public

Notary Public – Timpanogos Special Service District

____

____

On the _____ day of _____, 2023, personally appeared before me _____ and _____, who, being by me duly sworn, did say, each for himself/herself, that they are the Chairman of the Board of Trustees and the Clerk, respectively, of the Timpanogos Special Service District ("TSSD"), and that the foregoing instrument was signed on behalf of the TSSD by authority of a resolution of the Board of Trustees of the TSSD, and said _____ and _____ each duly acknowledged to me that the TSSD executed the same and that the seal, if affixed, is the seal of the TSSD.

_____

Notary Public

Notary Public – City of Highland

____

____

On the _____ day of _____, 2023, personally appeared before me _____ and _____, who, being by me duly sworn, did say, each for himself/herself, that they are the Mayor and the Recorder, respectively, of the City of Highland ("Highland City"), and that the foregoing instrument was signed on behalf of Highland City by authority of a resolution of the City Council, and said _____ and _____ each duly acknowledged to me that Highland City executed the same and that the seal, if affixed, is the seal of Highland City.

_____

Notary Public

Notary Public – City of Cedar Hills

____

____

On the _____ day of _____, 2023, personally appeared before me _____ and _____, who, being by me duly sworn, did say, each for himself/herself, that they are the Mayor and the Recorder, respectively, of the City of Cedar Hills ("Cedar Hills"), and that the foregoing instrument was signed on behalf of Cedar Hills by authority of a resolution of the City Council, and said _____ and _____ each duly acknowledged to me that Cedar Hills executed the same and that the seal, if affixed, is the seal of Cedar Hills.

_____

Notary Public

Notary Public – City of Pleasant Grove

____

____

On the _____ day of _____, 2023, personally appeared before me _____ and _____, who, being by me duly sworn, did say, each for himself/herself, that they are the Mayor and the Recorder, respectively, of the City of Pleasant Grove ("Pleasant Grove"), and that the foregoing instrument was signed on behalf of Pleasant Grove by authority of a resolution of the City Council, and said _____ and _____ each duly acknowledged to me that Pleasant Grove executed the same and that the seal, if affixed, is the seal of Pleasant Grove.

_____

Notary Public

Notary Public – City of Alpine

____

____

On the _____ day of _____, 2023, personally appeared before me _____ and _____, who, being by me duly sworn, did say, each for himself/herself, that they are the Mayor and the Recorder, respectively, of the City of Alpine ("Alpine"), and that the foregoing instrument was signed on behalf of Alpine by authority of a resolution of the City Council, and said _____ and _____ each duly acknowledged to me that Alpine executed the same and that the seal, if affixed, is the seal of Alpine.

_____

Notary Public

EXHIBIT A

WATER RIGHTS

Water Rights owned by **American Fork** to be used for the wastewater reuse project are listed below:

Water Rights owned by **Highland** to be used for the wastewater reuse project are listed below:

Water Rights owned by **Cedar Hills** to be used for the wastewater reuse project are listed below:

Water Rights owned by **Pleasant Grove** to be used for the wastewater reuse project are listed below:

Water Rights owned by **Alpine** to be used for the wastewater reuse project are listed below:

ALPINE CITY

RESOLUTION NO. R2023-31
A RESOLUTION APPROVING AN EMPLOYMENT AGREEMENT FOR THE CITY ADMINISTRATOR AND AUTHORIZING THE MAYOR TO EXECUTE AND DELIVER THE EMPLOYMENT AGREEMENT

WHEREAS, Alpine City (the "***City***") has employed Shane Sorensen as its City Administrator since November 2016;

WHEREAS, by statute, the City Administrator serves at the pleasure of the City Council as an employee at will;

WHEREAS, Mr. Sorensen has proposed a written employment agreement, in the form attached as **Exhibit A** (the "***Employment Agreement***"), that clarifies the terms of his employment and preserves his at-will employment status, but provides for a severance payment in the event of his termination without cause;

WHEREAS, the City Council finds it is in the best interest of the health, safety, and welfare of the City and its residents to enter into the Employment Agreement with Mr. Sorensen;

NOW THEREFORE, BE IT RESOLVED by the City Council of Alpine City that the City enter into the Employment Agreement with Mr. Sorensen in the form of the attached **Exhibit A**, and that the Mayor is authorized to execute and deliver the Employment Agreement on behalf of the City.

PASSED AND APPROVED this 26th day of September, 2023.

By:_____
Carla Merrill, *Mayor*

[SEAL]

VOTING:

Jessica Smuin	Yea ___ Nay ___
Lon Lott	Yea ___ Nay ___
Jason Thelin	Yea ___ Nay ___
Kelli Law	Yea ___ Nay ___
Greg Gordon	Yea ___ Nay ___

ATTEST:

_____
Bonnie Cooper, *City Recorder*

EXHIBIT A

City Administrator Employment Agreement

ALPINE CITY
EMPLOYMENT AGREEMENT
City Administrator

THIS EMPLOYMENT AGREEMENT is entered into effective September 26, 2023, between Alpine City ("City"), acting through the Alpine City Council ("Council"), and Shane L. Sorensen ("Sorensen" or the "City Administrator").

RECITALS

A. Sorensen has been a City employee since August 1st, 2000, and has served as City Administrator since November 2016.

B. As City Administrator, Sorensen serves as an at-will employee at the pleasure of the Council. The parties desire to enter into an agreement memorializing the terms and conditions of Sorensen's continuing employment as City Administrator subject, in all cases, to applicable law. The Council has duly passed a resolution approving such employment according to the terms of this Agreement.

NOW, THEREFORE, in consideration of the promises, covenants, and conditions contained herein, and other good and valuable consideration, receipt and sufficiency of which are hereby acknowledged, the City and Sorensen agree as follows:

TERMS

1. APPOINTMENT. The Council acknowledges and ratifies Sorensen's appointment as City Administrator, and Sorensen accepts his appointment as City Administrator. Sorensen agrees to perform the functions and duties of City Administrator under and in compliance with Utah state law, City code, City policy, and this Agreement, and to faithfully administer, manage, and oversee the functions of the City and other duties that may be assigned to him.

2. TERM. Sorensen shall serve at the Council's pleasure, and nothing in this Agreement shall prevent, limit, or otherwise interfere with the Council's right to terminate Sorensen's employment at any time, with or without cause, subject to this Agreement and applicable City ordinances. Likewise, nothing herein shall prevent, limit, or otherwise interfere with Sorensen's right to resign at any time as provided below. Subject to the foregoing, this Agreement shall continue in effect until it is terminated by either party.

3. EMPLOYMENT STATUS AND CONDITIONS.

(a) The City Administrator shall be considered a full-time "exempt" City employee who serves "at-will," subject to termination with or without cause as set forth herein and in applicable City code.

(b) Throughout the duration of this Agreement, Sorensen shall devote his full time, attention, and best efforts to the City's business and affairs. The employment provided for by this Agreement shall be Sorensen's primary employment. Recognizing that certain outside consulting or teaching opportunities provide indirect benefits to the City and the community, Sorensen may elect to accept limited teaching, consulting or other business opportunities with the understanding that such arrangements must neither constitute interference with nor a conflict of interest with his responsibilities under this Agreement; provided, that any such opportunities are subject to the consent of the City's mayor.

(c) It is recognized that the City Administrator must devote a great deal of time outside of normal office hours on business for the City. The City intends that reasonable time off be permitted to Sorensen, such as is customary for exempt employees, so long as the time off does not interfere with the normal conduct of the position of City Administrator.

(d) Sorensen agrees to follow the ethics rules, regulations, and laws of the State of Utah and Alpine City (collectively, "Code"). Consistent with the standards outlined in the Code, Sorensen shall not endorse candidates, make financial contributions, sign or circulate petitions, or participate in fundraising activities for individuals seeking or holding elected office, nor seek or accept any personal enrichment or profit derived from confidential information or misuse of public time. The City shall support Sorensen in keeping these commitments by refraining from any order, direction or request that would require Sorensen to violate the Code. Neither the Council or any individual member thereof shall request Sorensen to endorse any candidate, make any financial contribution, sign or circulate any petition, or participate in any fundraising activity for individuals seeking or holding public office, nor to handle any matter of personnel on a basis other than fairness, impartiality, and merit. Sorensen's refusal to comply with a directive that violates the Code shall in no event serve as a termination for cause.

(e) The duties of the City Administrator are outlined in Section 3.18.280 of the Alpine Municipal Code, as amended. A Code change that materially and adversely alters these duties, or a change in the form of government of Alpine City, may, at the request of the City Administrator, trigger the termination without cause and severance pay portion of this Agreement. The City Administrator shall issue such request within 90 days of the effective date of any such change or the right to make such request shall be waived.

(f) City agrees to promptly communicate and provide the City Administrator a reasonable opportunity to cure all substantive criticisms, complaints, and suggestions with respect to his performance of services pursuant to this Agreement.

4. BASE ANNUAL SALARY AND ADJUSTMENTS:

(a) Sorensen's base annual salary shall be $159,681 for fiscal year FY2024.

(b) Sorensen shall be eligible for annual raises, bonuses, and increases as approved in the City budget.

5. OTHER BENEFITS AND COMPENSATION:

(a) Sorensen's benefit package and leave accrual shall be as outlined in the City's Personnel Policy Manual, which may change from time to time at the Council's discretion. The City Administrator may use accrued leave time as he sees fit for family or personal needs.

(b) Sorensen shall be provided with a City-owned vehicle appropriate for his duties and responsibilities. The use of said vehicle shall be according to the policies outlined in the City's Personnel Policy Manual.

(c) The City agrees to provide equipment for the use of the City Administrator to perform his duties. Such equipment includes, but is not limited to, a laptop computer, and any other equipment necessary to carry out essential job functions. Upon the City Administrator's resignation or termination, such property, including electronic files and information, shall be retained by the City in accordance with City policy.

6. PROFESSIONAL DEVELOPMENT. The City shall pay the professional dues for Sorensen's professional memberships and for seminars, conferences, and committee meetings as approved in the City's annual budget or as are separately authorized from time to time.

7. TERMINATION. This Agreement, and Sorensen's employment, may be terminated at any time, with or without cause, as set forth below:

a. FOR CAUSE. The Council may terminate Sorensen's employment For Cause. "For Cause" shall only mean termination due to: (i) the commission of any crime of moral turpitude that occurs in the conduct by Sorensen of his duties hereunder or that was enabled by the abuse of such duties, or the indictment or conviction of any felony; (ii) a failure to carry out the material duties or responsibilities of the City Administrator,

which failure causes material harm, costs, liability, or risk to the City, provided that, if such failure is capable of cure, Sorensen has failed to cure after reasonable written notice of the failure from the City; (iii) the violation of any substantive City policy, rule or regulation which would subject any other full-time employee to immediate termination; or (iv) the commission of an act of moral turpitude. For purposes of this Agreement, moral turpitude means an act or behavior that gravely violates the widely accepted moral standard of the community and substantially and directly reflects negatively on the City. In the event of a dispute over whether the City terminated Sorensen's employment For Cause, the City shall bear the burden of proof of establishing its termination of Sorensen was For Cause. No severance will be paid if Sorensen is terminated For Cause.

b. WITHOUT CAUSE. Any termination by the Council of Sorensen's employment for a reason other than "for cause" shall be considered "without cause."

c. SEVERANCE PAY. Upon termination without cause, City shall pay Sorensen a severance as set forth below ("Severance Pay"), which shall, at the option of the City, be paid as a lump sum or according to the City's normal payroll process:

i. Sorensen shall be paid any unpaid balances of his salary and benefits, including vacation time, due and accrued pursuant to City policy, as of the date of his termination.

ii. Sorensen shall be paid twelve months of his base salary.

iii. The City shall pay the premium for Sorensen's COBRA insurance coverage for, or shall otherwise cover the cost of continuing, all medical benefits, including dental, for twelve months. This obligation shall terminate upon Sorensen obtaining new insurance or coverage, which he shall immediately notify the City thereof.

iv. Severance Pay does not include any car allowance, professional development and professional dues allowance, travel and equipment allowance, sick leave, or other non-salary allowance, benefit or compensation Sorensen may have received from outside entities, and it shall not be construed as compensation. **SEVERANCE PAY SHALL CONSTITUTE FULL AND COMPLETE PAYMENT AND SATISFACTION OF ANY CLAIM THAT SORENSEN MAY HAVE OR ASSERT AGAINST THE CITY, UNDER THIS AGREEMENT OR OTHERWISE. UPON TERMINATION, SORENSEN AGREES TO WAIVE ANY SUCH CLAIM AS A CONDITION OF RECEIVING SEVERANCE PAY IN ACCORDANCE WITH APPLICABLE LAW.**

d. RESIGNATION. Nothing in this Agreement shall prevent, limit, or otherwise interfere with the right of the City Administrator to resign at any time from his position with the City. The City Administrator agrees to give thirty (30) days advance notice of such intended resignation to the Council. In the event of such resignation, no

Severance Pay shall be due and owing from the City, other than any unpaid compensation through the date of termination.

8. INDEMNIFICATION. Except as provided in the next sentence, the City shall defend, save harmless, and indemnify the City Administrator against any tort, professional liability claim, or other legal action or claim arising out of an alleged act or omission occurring in the performance of duties as City Administrator. The City Administrator will defend, save harmless, and indemnify the City and its elected and appointed officials, agents, and volunteers from any such claims arising from the City Administrator's intentional and/or grossly negligent acts or omissions. The City shall provide necessary insurance to cover the City Administrator, including errors and omissions coverage, as are required to give full effect of this indemnification covenant.

9. SEVERABILITY. The unenforceability or invalidity of any one or more provisions hereof shall not render any other provisions herein unenforceable or invalid and each term, covenant and condition hereof shall be enforced to the fullest extent permitted by law.

10. INTERPRETATION AND ENFORCEMENT. The laws of the State of Utah shall govern the validity, construction, performance and enforcement of this Agreement.

Alpine City: **Attest**

_____ _____

By Its Mayor: Carla Merrill
DATE:

Shane L. Sorensen:

_____ _____

DATE: Shane L. Sorensen