AGENDA – Planning Commission Meeting

Planning Commissioner Reed Ryan, Chair
Planning Commissioner Ken Kilgore, Vice Chair
Planning Commissioner Scott A. Hill
Planning Commissioner Jack K. Mangum
Planning Commissioner Virginia Rae Mann
Planning Commissioner Rachel Sprosty Burns
Planning Commissioner Doug Willden

CITY OF SARATOGA SPRINGS
Thursday, May 16, 2024 @ 6:00 pm
City of Saratoga Springs Council Chambers
1307 North Commerce Drive, Suite 200, Saratoga Springs, UT 84045

CALL TO ORDER

1. Pledge of Allegiance.
2. Roll Call
3. Public Input: time has been set aside for any person to express ideas, concerns, comments, questions, or issues that are not listed as a public hearing on the agenda. Comments are limited to three minutes.

PUBLIC HEARINGS

The Commission will accept public comment and may make a recommendation to the City Council for the following items:

1. Wildflower Village Plan 8, located West of Mountain View Corridor and Wild Blossom Blvd. BJ Ryan with Lennar Homes as applicant.
2. Jacobs Ranch Marketplace Rezone from Residential Single-Family to Regional Commercial, General Plan Amendment Land Use Map from Low Density Residential to Regional Commercial, and accompanying Concept Plan. Located at approximately 1900 South Redwood Road. Bill Gaskill as applicant.
3. Amendments to Title 19 Land Development Code of the City of Saratoga Springs, Chapter 19.06 – Landscaping and Fencing. The proposed change would add requirements applicable to all retaining walls constructed within the City, regardless of slope. City Initiated.
4. Updates to the Standard Technical Specifications and Drawings Manual for the City of Saratoga Springs. City Initiated.

BUSINESS ITEMS

The Commission will discuss (without public comment) and may either make a recommendation to the City Council, or approve the following items as needed:

1. Jack In the Box Site Plan, located at 1303 N Redwood Road. Karen Wallace and Sherri Miller with Magellan Architects as applicants.
2. Approval of Minutes: April 25, 2024.

REPORTS

1. Commissioner's Comments.
2. Director's Report.

CLOSED SESSION

Possible motion to enter into closed session for the purchase, exchange, or lease of property; pending or reasonably imminent litigation; the character, professional competence, or the physical or mental health of an individual; or the deployment of security personnel, devices, or systems.

ADJOURNMENT

Supporting materials are available for inspection on the City Website www.saratogasprings-ut.gov Questions and comments to Staff and/or Commissioners may be submitted to comments@saratogasprings-ut.gov Meetings are streamed live at https://www.youtube.com/c/CityofSaratogaSprings

PLEASE NOTE: The order of items may be subject to change with the order of the planning commission chair. One or more members of the Commission may participate electronically via video or telephonic conferencing in this meeting.

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify the City Recorder at 801.766.9793 at least two days prior to the meeting.

SARATOGA SPRINGS PLANNING

Planning Commission Staff Report

Village Plan
Wildflower Village Plan 8
Thursday, May 16, 2024
Public Hearing

Report Date:	May 1, 2024
Applicant:	BJ Ryan, Lennar Homes
Owner:	WF 2 Utah, LLC
Location:	West of Mountain View Corridor and Wild Blossom Blvd
Major Street Access:	Wild Blossom Boulevard, Mountain View Corridor
Parcel Number(s) & Size:	58:022:0160; 58:022:0159; approximately 64.04 acres
Land Use Designation:	Planned Community
Parcel Zoning:	Planned Community
Parcel General Plan:	Planned Community
Adjacent Zoning:	Planned Community, Eagle Mountain City
Current Use of Parcel:	Vacant
Adjacent Uses:	Residential (Wildflower Village Plan 7), vacant, HadCo operations
Previous Approvals:	4/14/20 – Wildflower CP Amendment approved
Type of Action:	Legislative
Land Use Authority:	City Council
Author:	Tippe Morlan, AICP, Senior Planner

A. Executive Summary:

The applicant requests approval of the Wildflower Village Plan 8 (VP 8), pursuant to Section 19.26 of the City Code. VP 8 consists of approximately 64.04 acres and 274 equivalent residential units (ERUs) entirely within the PC zone subject to the Wildflower Community Plan (CP).

Recommendation: Staff recommends the Planning Commission conduct a public hearing, take public input, review and discuss the proposal, and choose from the options in Section I of this report. Options include forwarding a recommendation for approval with conditions, a recommendation for denial, or continuation of the item.

B. Background:

February 24, 2015 – The original Wildflower Community Plan, Master Development Agreement,

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General Plan Amendment, and Rezone was approved conditionally by the City Council subject to a Master Development Agreement. This approval was for 1468 equivalent residential units (ERUs) with a maximum of 442 units of multi-family housing limited to approximately 53 acres on the west side of the future Mountain View Corridor. The Wildflower property was rezoned to Planned Community with this approval.

April 14, 2020 – The City Council approved a major amendment to the Wildflower Community Plan incorporating The Springs into the Wildflower community, amending and restating all standards within the CP with a total of 3,238 ERUs. The Master Development Agreement was also amended, including an allowance of 14 added units in exchange for 20 acres for a cemetery (not to be counted toward open space). Hillside standards were approved and added on August 18, 2020 as a condition of this approval.

July 6, 2021 – The City Council approved the second amendment to the CP, clarifying standards for condominiums and townhomes (Type 4 units).

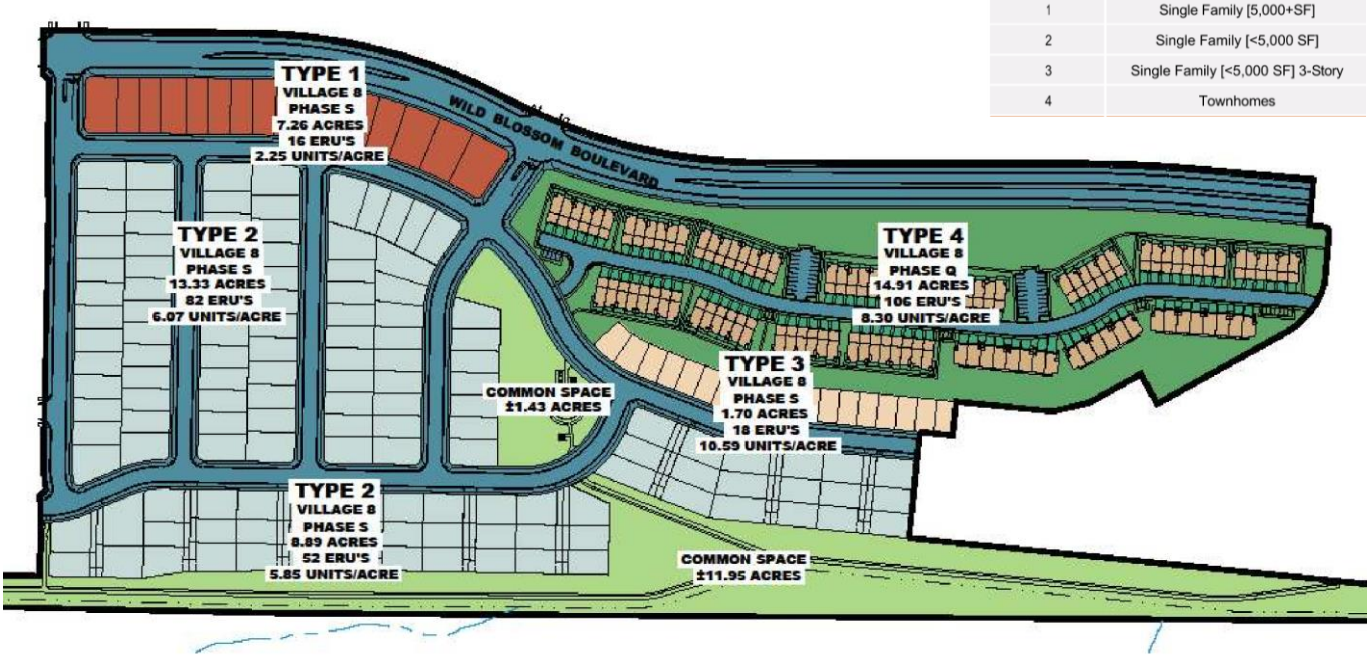
October 18, 2022 – The City Council approved the third amendment to the CP, updating driveway and setback standards for townhomes (Type 4), differentiating Type 2 and Type 3 single-family standards, and identifying utility locations in substandard roadways.

C. Specific Request:

The applicant is requesting approval of Wildflower Village Plan 8, subject to the requirements of the approved Community Plan and Section 19.26 of the City Code, which governs the Planned Community (PC) zone. VP 8 consists of 274 ERUs, broken down into 168 single-family homes and 106 townhome units. This area includes 20.51 acres of open space, including a pocket park and a small portion of the Village 7 Dog Park, which is included to ensure that this Village has a minimum of 30% open space.

Area	Type	Description	Land Use	Acres	ERUs in VP8	ERUs/ Gross Acre
Violet	Type 4	Front- and Rear-Load Townhomes	Lots/ROW	14.08	106	6.37
			Open Space	2 .56		
			Total	16.64		
Gardenia	Types 1, 2 & 3	Single-Family Homes	Lots/ROW	29.51	168	5.43
			Open Space	1.43		
			Total	30.94		
		General Open Space		16.52		
		Total Open Space		20.51		
		Total Residential		43 .53		
		Grand Total		64 .04	278	

Type	Description
1	Single Family [5,000+SF]
2	Single Family [<5,000 SF]
3	Single Family [<5,000 SF] 3-Story
4	Townhomes



D. Process:

Pursuant to Section 19.13 of the Saratoga Springs Code, the City Council is the Land Use Authority for village plans and for major community plan amendments, including changes to development standards, following a recommendation from the Planning Commission. A public hearing is also required at Planning Commission for these items.

City Code Section 19.26.09: Village Plan Approval states:
Subsequent to the approval of a Community Plan, further development of any phase within a Planned Community Zone District shall require approval of a Village Plan. A Village Plan is a preliminary approval prior to subdivision or site plan approval and is intended to commit and provide detailed standards to assure compliance with the guiding principles and intent of the Community Plan and to further commit land uses, supporting infrastructure, and design principles. The Planning Commission shall review each Village Plan application in accordance with the provisions of Chapter 19.17 and certify its recommendation to the City Council.

E. Community Review:

This item has been noticed as a public hearing, and mailed notices were sent to all property owners within 300 feet on May 2, 2024. As of the date of this staff report, no public comment has been received by the City.

G. General Plan:

The General Plan designation for this property is Planned Community on the Land Use Map. This designation is described as follows:

Planned Community (PC): Areas designated for a mixture of residential and commercial land uses with a cohesive design and a development plan

Staff conclusion: ***Consistent.*** The overall Wildflower community exceeds 500 acres in size, meeting the qualifications under the PC zone and Land Use designation. The Wildflower CP has identified regulations for the development of the property. There is no minimum size for VPs within a CP. VP 8 is subject to the CP and is consistent with the proposed CP standards.

H. Code Criteria:

19.26.09 Village Plan Approval.

Subsequent to the approval of a Community Plan, further development of any phase within a Planned Community Zone District shall require approval of a Village Plan. A Village Plan is a preliminary approval prior to subdivision or site plan approval and is intended to commit and provide detailed standards to assure compliance with the guiding principles and intent of the Community Plan and to further commit land uses, supporting infrastructure, and design principles. The Planning Commission shall review each Village Plan application in accordance with the provisions of Chapter 19.17 and certify its recommendation to the City Council. Before certifying a recommendation of approval, or approval with conditions, the Planning Commission must find that the Village Plan:

a) is consistent with the adopted Community Plan;

Staff finding: ***Complies****, The proposed Village Plan is consistent with allowed densities, uses, and standards in the proposed amended Community Plan.*

b) does not exceed the total number of equivalent residential units dictated in the adopted Community Plan;

Staff finding: ***Complies****, The proposed ERUs are less than what is allowed for VP 8 in the approved CP.*

c) for an individual phase, does not exceed the total number of equivalent residential units dictated in the adopted Community Plan unless transferred per the provisions of the Community Plan;

Staff finding: ***Complies****, The proposed ERUs are less than what is allowed for VP 8 in the approved CP.*

d) is consistent with the utility, infrastructure, and circulation plans of the Community Plan; includes adequately sized utilities, services, and roadway networks to meet demands; and mitigates the fair-share of off-site impacts;

Staff finding: ***Complies.***

e) properly integrates utility, infrastructure, open spaces, pedestrian and bicycle systems, and amenities with adjacent properties;

Staff finding: ***Complies.*** *Utility plans, open space plans, pedestrian and bicycle plans, and amenity plans have been provided.*

f) contains the required elements as dictated in Section 19.26.10; and
*Staff finding: **Complies.** See analysis below.*

g) meets the minimum required space in adopted Community Plan, and adopted District Area Plan if applicable.
*Staff finding: **Complies.** This Village Plan exceeds the 30 percent open space requirement with 20.51 acres of common open space, comprising 32 percent of VP 8.*

19.26.10 – Contents of a Village Plan.
The required contents of a Village Plan are summarized below:

1. Legal Description - ***Provided***
2. Detailed Use Map - ***Provided***
3. Detailed Buildout Allocation – ***Provided***
4. Detailed Development Standards – ***Provided***
5. Design Guidelines – ***Provided***
6. Owners' / Governing Associations - ***Provided***
7. Phasing Plan - ***Provided***
8. Lotting Map - ***Provided***
9. Landscaping Plan – ***Provided***
10. Utility Plan - ***Provided***
11. Vehicular Plan - ***Provided***
12. Pedestrian and Bicycle Plan – ***Provided***
13. Additional Detailed Plans. Other elements as necessary (grading plans, storm water drainage plans, wildlife mitigation plans, open space management plans, sensitive lands protection plans, hazardous materials remediation plans, and fire protection plans) - ***Provided***
14. Site Characteristics - ***Provided***
15. Findings Statement – ***Provided***
16. Mitigation Plans. (Protection and mitigation of significant environmental issues) - ***Provided***
17. Offsite Utilities – ***Provided in the Master Utility Plan approved with the CP***
18. Development Agreement – ***Requirement met through CP Development Agreement***

Staff review of VP Contents

- See attached Planning Review Checklist (Exhibit B).

I. Recommendation and Alternatives:

<u>Option 1: Positive Recommendation</u>
"I move that the Planning Commission forward a ***positive*** recommendation to the City Council for Wildflower Village Plan 8, located at approximately West of Mountain View Corridor and Wild Blossom Boulevard, based on the following findings and subject to the following conditions:

Findings:

1. The application complies with the Land Development Code, as articulated in Section H of the staff report, which is incorporated by reference herein.
2. The application is consistent with the General Plan, as articulated in Section G of the staff report, which section is incorporated by reference herein.
3. The application is consistent with the Wildflower Community Plan.

Conditions:

1. All requirements of the City Engineer shall be met.
2. All requirements of the Fire Chief shall be met.
3. All requirements of the Public Works and Parks departments shall be met.
4. All other Code requirements shall be met.
5. Any other conditions or changes as articulated by the Planning Commission:
    a. _____.

Option 2 - Continuance

"I move to ***continue*** Wildflower Village Plan 8 to the [May 30, 2024] meeting, with direction to the applicant and Staff on information and / or changes needed to render a decision, as follows:

1. _____
2. _____

Option 3 – Denial

"I move that the Planning Commission forward a recommendation of ***denial*** to the City Council for Wildflower Village Plan 8 based on the following findings:

1. The Wildflower village plan is not consistent with the General Plan, as articulated by the Planning Commission:_____, and/or,
2. The Wildflower village plan is not consistent with Sections [XX.XX] of the Code, as articulated by the Planning Commission: _____.

Exhibits:

Exhibit A: Engineering Report
Exhibit B: Planning Review Checklist
Exhibit C: Village Plan 8
For reference, the current approved Community Plan can be found on the City website at this link.

Exhibit A

Staff Report

Author: Jeff Pearson, Civil Engineer
Subject: Wildflower — Village Plan 8
Date: April 25, 2024
Type of Item: Village Plan

SARATOGA SPRINGS

Description:

A. Topic: The Applicant has submitted a Village Plan Application. Staff has reviewed the submittal and provides the following recommendations.

B. Background:

Applicant:	*William Ryan — Lennar*
Request:	*Village Plan Approval*
Location:	*South of Wild Blossom Blvd*
Acreage:	*66.04 ac*

C. Recommendation: Staff recommends the approval of village plan subject to the following conditions:

1. All review comments and redlines provided by the City Engineer are to be complied with and implemented into the Village Plan.

2. The recommendations from the applicant's traffic impact study shall be implemented.

3. The City has insufficient information at this time to determine what project and system improvements will be necessary to service the developer's property. As a result, this approval does not reserve utility system capacity. Prior to, concurrent with, or subsequent to final plat approval, the developer will be required to install all required infrastructure to service the property. In addition to all required project improvements, the developer may also be required to install any and all system improvements, subject to required impact fee credits.

4. This village plan is conceptual in nature. In case of changing circumstances or additional insight, this plan shall be amended as necessary.

5. The existing drainage channel that runs from Camp Williams to the west, and east through the project will be improved to handle pass through flows from Camp Williams as well as emergency overflows from the Wildflower storm drain system in excess of the 100-yr event. While sags must be avoided by all means necessary, where not possible, overflows shall be directed to the open channel or a detention facility.

6. The City Ordinance pertaining to secondary means of access shall be adhered to as detailed in Section 12.06 of Title 19 when the total number of units served by a single access exceeds 50 residential units.

7. All backbone utilities both onsite and offsite that are necessary for the full function of the subdivision infrastructure (water, irrigation, sewer, storm drain and transportation) need to be completed or bonded for prior to recording any plats in Village 8. To be eligible for building permits, the water system would need to be fully functional, and the remaining utility improvements would be tied to occupancy.

Exhibit B

SARATOGA SPRINGS PLANNING

APPLICATION REVIEW CHECKLIST

Application Information

Date Received:	2/14/2023; 10/2/23; 2/28/24
Date of Review:	**3/1/2023; 10/18/23; 3/11/24**
Project Name:	Wildflower Village Plan 8
Project Request / Type:	Village Plan
Meeting Type:	Public Hearing
Applicant:	BJ Ryan, Lennar Homes
Owner:	WF 2 Utah, LLC
Location:	West of Mountain View Corridor and Wild Blossom Blvd
Major Street Access:	Mountain View Corridor
Parcel Number(s) and size:	58:022:0160; 58:022:0159; approximately **98.84 acres**
Land Use Designation:	Planned Community Residential
Parcel Zoning:	Planned Community
Adjacent Zoning:	Planned Community, Industrial, Agricultural
Current Use:	Undeveloped
Adjacent Uses:	Residential (approved Wildflower townhomes), vacant, Hadco operations
Previous Meetings:	N/A
Previous Approvals:	2/24/2015 – Wildflower Community Plan, Master Development Agreement, General Plan Amendment, and Rezone approved 4/21/2015 – Springs Annexation, General Plan Amendment, and Rezone approved 4/14/2020 – Wildflower Community Plan Amendment approved
Type of Action:	Legislative
Land Use Authority:	City Council
Future Routing:	Planning Commission, City Council
Planner:	Tippe Morlan, AICP, Senior/Long Range Planner

Section 19.13 – Application Submittal

- Application Complete: **Yes.**
- Rezone Required: **No.**
- General Plan Amendment required: **No.**
- Additional Related Application(s) required: **No.**

Section 19.13.04 – Process

- DRC: August 31, 2020
- PC: TBD
- CC: TBD

General Review

Building Department
- TBD at plat/site plan review

Fire Department
- Residential:
  - Fire flows shall be met for this development and future development in the area.
  - Hydrants shall not exceed 500' spacing in R3-6 and lower areas.
  - Higher than R3-6, hydrants shall not exceed 300' spacing.
  - All three story structures above grade shall be fire sprinkled and meet NFPA 13 requirements where required.
  - All access roads shall support 26' of un-obstructed drive isle with parking on the streets.
  - The 59' road cross-section shall be used if applicable. If the streets are not able to support such movement, fire lane signage shall be posted by the developer.
  - All cul-de-sacs shall meet our current standard and shall have hydrants in them. All cul-de-sacs shall be a minimum of 96' in diameter from curb face to curb face and have a hydrant located within the cul-de-sac.
  - Third party review required for sprinkler systems
  - Dimension street and cul-de-sac widths on plat
  - Turnarounds on cul-de-sacs and dead-ends more than 150' in length

GIS / Addressing
- TBD with Plat applications

Additional Recommendations:
- Planning on Lot Numbering:
  - Please use 4 digit lot numbers starting with 2. I.e. Lot 7356 would be Lot 56 within Village 7, Phase 3.
  - Make sure Lot numbering for this Village Plan does not duplicate other Wildflower lots

Code Review

- 19.04, Land Use Zones
  - Zone: PC
  - Use: Multi-family residential
- Lot Size Reductions: None
- Setback Exceptions: See CP, to be enforced at plat applications
- Density: 488 ERUs

19.26 Planned Community Zone		
Village Plan Review		
Regulation	**Compliance**	**Findings**
Description. A legal description of the Village Plan area.	**Complies.**	*Page 2-01*
Detailed Use Map. A list of all permitted and conditional uses and a map depicting the proposed land uses by type for all property within the Village Plan Area, and demonstrating appropriate buffering from neighboring land uses, including uses within and outside of the Planned Community District.	**Complies.**	*Page 3-02*
Detailed Buildout Allocation. An allocation of all acreage within the Village Plan area by land use type and geographic subarea, parcel, or phase with maximum buildout levels calculated based on the City's	**Complies.**	*Page 4-01*

measure of equivalent residential units, including residential and non-residential density allocations and projections of future population and employment levels.		
Development Standards. Detailed development standards for each land use type including specific provisions governing height, setbacks, parking requirements, parking lot locations, and minimum private open space.	**Complies.**	*Page 5-01, Residential Standards established in CP*
Design Guidelines. Detailed design guidelines for each land use type including specific provisions governing density and floor area ratios.	**Complies.**	*Page 5-01, Design Standards established in CP*
Associations. If not previously established pursuant to Subsection 19.26.03.2.d., details regarding the creation of an owners' association, master association, design review committee, or other governing body to review, approve, and enforce architectural requirements and restrictions and common area maintenance obligations.	**Complies.**	*WDRC*
Phasing Plan. A conceptual phasing and maintenance plan for development of all uses and supporting infrastructure and open space within the Village Plan Area.	**Complies.**	*Page 6-01*
Lotting Map. A conceptual plat map depicting conceptual lotting patterns.	**Complies.**	*Page 3-02*
Landscaping Plan. A landscaping plan and plant palette including a legend which includes height, caliper, and numbers of all plant materials and is consistent with the Community Plan.	**Complies.**	*Pages 7-01 to 7-11*
Utility Plan. Utility and infrastructure plan that is consistent and links seamlessly with the communitywide systems outlined in the Community Plan.	**Complies.**	*Section 8*
Vehicular Plan. Vehicular circulation and mobility plan that is consistent and links seamlessly with the community-wide systems outlined in the Community Plan.	**Complies.**	*Page 9-01*
Pedestrian Plan. Pedestrian and bicycle mobility plan that is consistent and links seamlessly with the community-wide systems outlined in the Community Plan.	**Complies.**	*Page 10-01*
Density Transfers. Detailed transfer of density and non-residential square footage provisions.	**Complies.**	
Additional Detailed Plans. Other elements as necessary to detail plans and direction contained in the Community Plan, such as grading plans, storm water drainage plans, wildlife mitigation plans, open space management plans, sensitive lands protection plans, hazardous materials remediation plans, and fire protection plans.	**Complies.**	*See Hillside Standards adopted in CP*
Site Characteristics. A description of existing physical characteristics of the site including any sensitive lands, waterways, geological information, fault lines, general soils data, and contour data.	**Complies.**	*Page 13-01*
Findings. A statement explaining the reasons that justify approval of a Village Plan in relation to the findings required by the Planned Community District.	**Complies.**	*Page 1-01*
Mitigation Plans. Plans describing the protection and mitigation of significant environmental issues, such as wetlands, historical sites, and endangered plants, identified in the Community Plan.	**N/A.**	*See Hillside Standards adopted in CP*
Offsite Utilities. An estimate of the cost to provide off-site utilities and other public infrastructure facilities to the site.	Item.	*Work with Engineering*

Fiscal Impact	
Regulation	**Findings**
Is there any City maintained open space?	*No.*
What is the anticipated cost to the City?	*N/A*
When will City maintenance begin?	*N/A*

Exhibit C

VILLAGE PLAN AREA 8

April 5, 2024

DRAFT

WILDFLOWER

AT SARATOGA SPRINGS

A DAI Community

VILLAGE PLAN

Prepared By

Lennar Homes

DAI

LEI Engineers & Surveyors

Landmark Design

Hales Engineering

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01 Executive Summary

Findings for Village Plan 8

Village Plan Area 8 is a 64.04-acre area within the 1,202-acre Wildflower Amended and Restated Community Plan (ARCP) located in Saratoga Springs, Utah. The Wildflower Village Plan Area 8 is compliant with all PC Zone Requirements for Village Plans as defined in *Section 19.26.09 of the Saratoga Springs Municipal Code*. We find that Village Plan Area 8:

a. Is consistent with the adopted Wildflower ARCP; Village Plan Area 8 adheres to the development standards, thoroughfare types, and open spaces types and requirements established in the Wildflower ARCP.

b. Does not exceed the total number of Equivalent Residential Units (ERUs) dictated in the adopted Wildflower ARCP;

- The number of potential ERUs established in the Wildflower ARCP for Village Plan Area 8 is 304. Village Plan Area 8 is 274 ERUs and is comprised of two neighborhoods. The density transfer is under 15%, which is the maximum percentage allowed in the Wildflower ARCP See ARCP for density transfer table.

c. Is consistent with the utility, infrastructure, and circulation plans of the Wildflower ARCP and Master Utility Plan; includes adequately sized utilities, services, and roadway networks to meet demands; and mitigates the fair-share of off-site impacts;

d. Properly integrates utility, infrastructure, open spaces, pedestrian and bicycle systems, and amenities with adjacent properties;

- Wildflower has been designed to accommodate significant infrastructure elements that are important to the City within the structure of the property. Wildflower was designed to maximize pedestrian, bike, and other mobility options. Open space is highly integrated to provide direct and easy access to residents.

Contains the required elements as required in ***Section 19.26.10 of the Saratoga Springs Municipal Code.***

02 Legal Description

Legal Description Prepared by LEI

LEI
ENGINEERS
SURVEYORS
PLANNERS

LEGAL DESCRIPTIONS
PREPARED FOR
DAI
Job No. 13-0902
(November 11, 2021)

VILLAGE 8 LEGAL DESCRIPTION

A portion of the Southeast Quarter and the Southwest Quarter of Section 9 and the Southeast Quarter of Section 8, Township 5 South, Range 1 West, Salt Lake Base and Meridian, described as follows:

Beginning at a BLM aluminum pipe and cap monument marking the Center South 1/16 Corner of Section 9, being located S00°20'24"W along the Section Line 1329.20 feet and N89°45'47"W 2668.09 feet from the East Quarter Corner of Section 9, Township 5 South, Range 1 West, Salt Lake Base and Meridian; thence N89°36'37"W along the South line of the North Half of the Southwest Quarter of said Section 9, (defined in Deed Entry No. 43758:2011 in the official records of the Utah County Recorder) 2634.36 feet to the Southeast corner of the North Half of the Southeast Quarter of Section 8, Township 5 South, Range 1 West, Salt Lake Base and Meridian; thence N88°46'35"W along said South line (defined in Deed Entry No. 28603:2015 in the official records of the Utah County Recorder) 2079.85 feet; thence N01°13'37"E 37.44 feet; thence along the arc of a 1052.50 foot radius curve to the right 66.36 feet through a central angle of 03°36'46" (chord: N03°02'00"E 66.35 feet); thence S78°02'22"E 217.68 feet; thence S88°52'21"E 1344.00 feet; thence N01°07'39"E 110.00 feet; thence N01°42'09"W 59.07 feet; thence along the arc of a 12.00 foot radius non-tangent curve to the left 21.53 feet through a central angle of 102°47'04" (chord: N39°44'07"E 18.75 feet) to a point of reverse curve; thence along the arc of a 229.50 foot radius curve to the right 51.21 feet through a central angle of 12°47'04" (chord: N05°15'53"W 51.10 feet); thence N01°07'39"E 520.59 feet; thence N01°09'47"W 100.08 feet; thence N01°07'39"E 161.92 feet; thence along the arc of a 12.00 foot radius curve to the left 18.94 feet through a central angle of 90°25'23" (chord: N44°05'03"W 17.03 feet); thence N00°42'16"E 95.00 feet; thence S89°17'44"E 427.79 feet; thence along the arc of a 1147.50 foot radius curve to the right 544.11 feet through a central angle of 27°10'05" (chord: S75°42'42"E 539.03 feet) to a point of reverse curve; thence along the arc of a 1152.50 foot radius curve to the left 558.29 feet through a central angle of 27°45'17" (chord: S76°00'18"E 552.84 feet); thence S89°52'56"E 627.93 feet; thence along the arc of a 3047.50 foot radius curve to the right 275.00 feet through a central angle of 05°10'13" (chord: S87°17'50"E 274.91 feet); thence S84°42'44"E 228.48 feet; thence S05°17'16"W 95.00 feet; thence S84°42'44"E 30.00 feet; thence along the arc of a 12.00 foot radius curve to the right 18.85 feet through a central angle of 90°00'00" (chord: S39°42'44"E 16.97 feet); thence S05°17'16"W 98.27 feet; thence along the arc of a 80.00 foot radius curve to the right 23.87 feet through a central angle of 17°05'54" (chord: S13°50'14"W 23.79 feet); thence along the arc of a 170.50 foot radius curve to the right 114.84 feet through a central angle of 38°35'25" (chord: S41°40'53"W 112.68 feet); thence S60°58'36"W 302.64 feet; thence N29°01'24"W 70.00 feet; thence S60°58'36"W 120.00 feet; thence S76°37'15"W 78.73 feet; thence N84°16'30"W 199.84 feet; thence S05°43'30"W 70.00 feet; thence N84°16'21"W 68.75 feet; thence S05°43'39"W 219.00 feet; thence S84°16'21"E 961.15 feet; thence N60°58'36"E 460.06 feet; thence S00°33'34"E along the Quarter Section Line 300.13 feet to the point of beginning.

Contains: ±59.47 Acres
2,590,681 Sq. Ft.

Corporate Office: 3302 N. Main Street • Spanish Fork, UT 84660 T 801.798.0555 F 801.798.9393
Salt Lake Office: 1441 South 960 West • Bluffdale, UT 84065 T 801.495.2844 F 801.495.2847
Boise Office: 2040 S. Eagle Road • Meridian, ID 83642 T 208.846.9600

- Civil Engineering
- Structural Engineering
- Surveying
- Land Planning
- Landscape Architecture

www.lei-eng.com

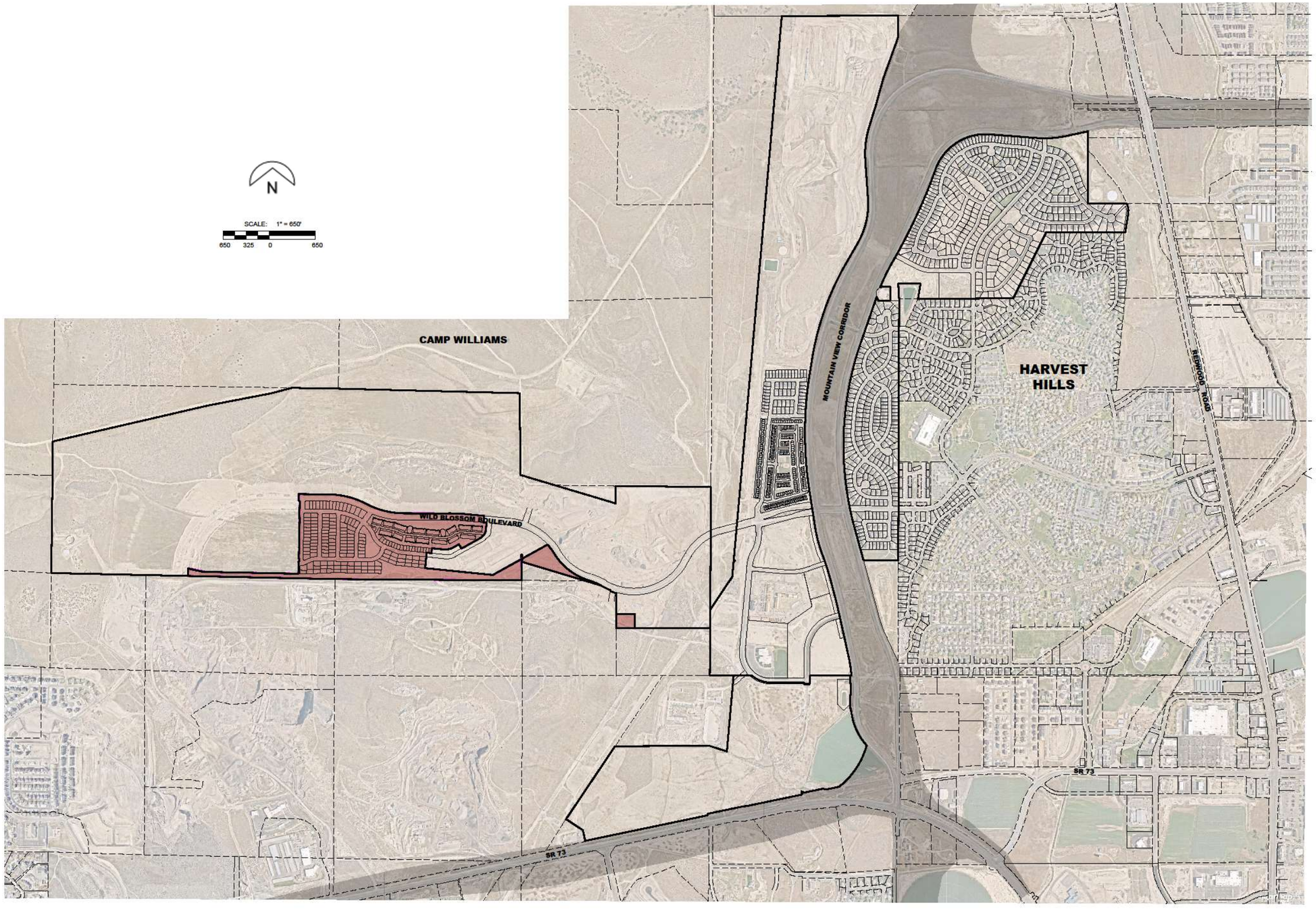
Together with the Following Described Parcels:

Beginning at a point on the south line of Belle Spring Mine No. 1 as defined on that dependent resurvey conducted under the direction of the Bureau of Land Management, the official plat thereof being on file in the office of the Bureau of Land Management dated September 17, 2002, said point being located S00°20'24"W along the Section Line 1390.15 feet and West 1546.04 feet from the East Quarter Corner of Section 9, Township 5 South, Range 1 West, Salt Lake Base and Meridian; thence along the boundary of Belle Spring Mine No. 1 the following two (2) courses: N73°21'20"W 1157.00 feet to a BLM aluminum pipe and cap monument marking Corner No. 2 of Belle Spring Mine No. 1; thence N00°17'40"E 49.76 feet; thence N60°58'36"E 403.64 feet; thence along the arc of a 873.50 foot radius non-tangent curve to the right 164.52 feet through a central angle of 10°47'29" (chord: S37°03'17"E 164.28 feet) to a point of reverse curve; thence along the arc of a 865.50 foot radius curve to the left 621.09 feet through a central angle of 41°06'57" (chord: S52°13'01"E 607.85 feet) to a point of reverse curve; thence along the arc of a 1004.50 foot radius curve to the right 190.94 feet through a central angle of 10°53'28" (chord: S67°19'45"E 190.65 feet) to the point of beginning.

Contains: ±3.35 Acres
145,867 Sq. Ft.

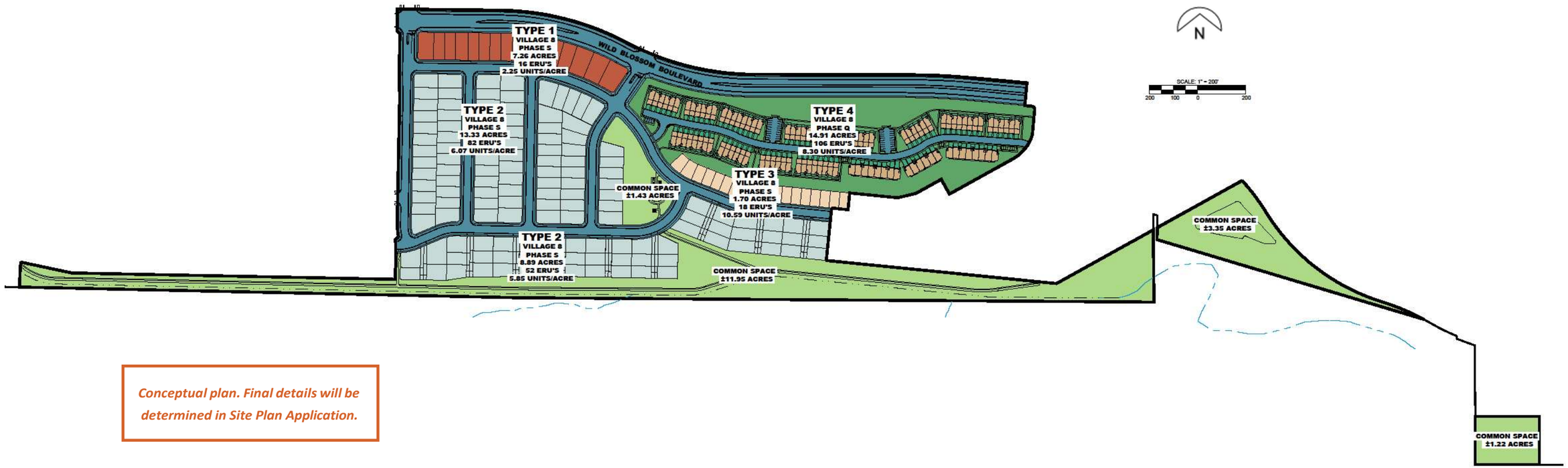
Beginning at a point on the South line of the North Half of the Southeast Quarter of the Southeast Quarter of Section 9, said point being located S00°20'24"W along the Section Line 1993.85 feet and N89°59'41"W 1062.49 feet from the East Quarter Corner of Section 9, Township 5 South, Range 1 West, Salt Lake Base and Meridian; thence N89°59'41"W along the South line of said North Half 266.23 feet to a BLM aluminum pipe and cap monument marking the Southwest corner of said North Half; thence N00°06'28"W along the West line of said North Half 199.88 feet; thence N89°53'32"E 266.62 feet; thence S00°00'19"W 200.41 feet to the point of beginning.

Contains: ±1.22 Acres
53,323 Sq. Ft.


N
SCALE: 1" = 650'
650 325 0 650
CAMP WILLIAMS
WILD BLOSSOM BOULEVARD
MOUNTAIN VIEW CORRIDOR
HARVEST HILLS
REDWOOD ROAD
SR 73
SR 73

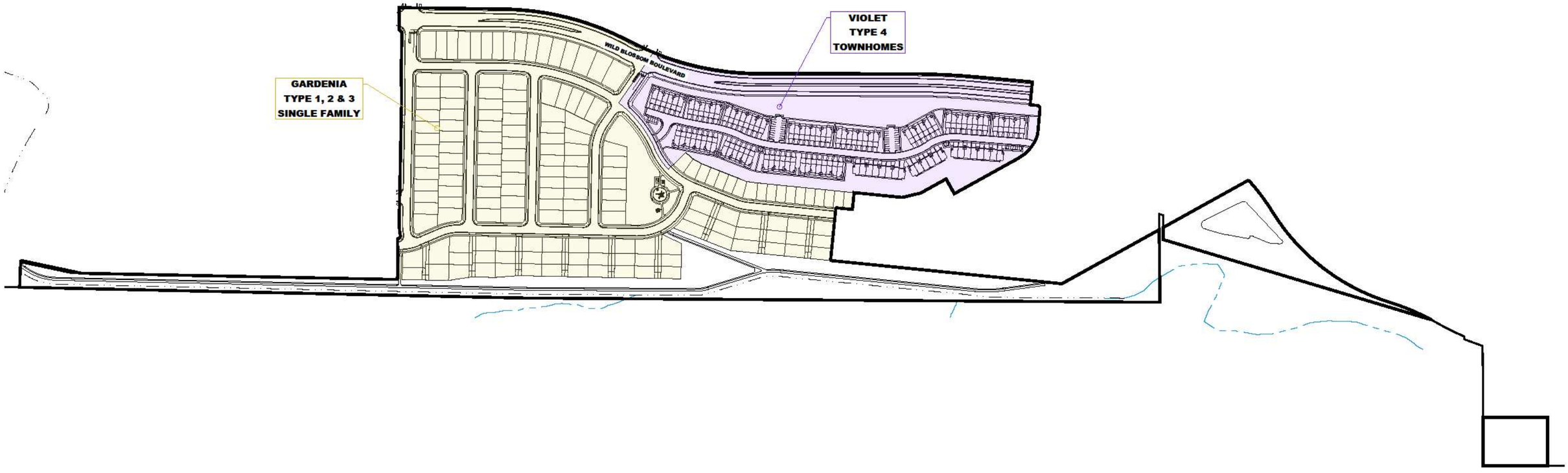
RESIDENTIAL LEGEND		
LAND USE	**AREA***	**ERUs***
TYPE 1	±7.26 ACRES	16
TYPE 2	±22.22 ACRES	134
TYPE 3	±1.70 ACRES	18
TYPE 4	±14.91 ACRES	106
OPEN SPACE	±17.95 ACRES	
TOTAL	±64.04 ACRES	274

*ALL AREAS SHOWN ARE APPROXIMATE, AREAS TO BE DETERMINED AT FINAL DESIGN.



Conceptual plan. Final details will be determined in Site Plan Application.

Conceptual plan. Final details will be determined in Site Plan Application.



Buildout Allocation

Detailed Allocation of All Acreage

The following information details the allocation of all acreage within Village Plan Area 8. Refer to the Detailed Use Exhibit on page 3.01, Open Space Tabulation Exhibit on page 11.07, and Lotting Map Exhibit on page 3.02.

Area	Type	Description	Land Use	Acres	ERUs in VP8	ERUs/ Gross Acre
Violet	Type 4	Front- and Rear-Load Townhomes	Lots/ROW	14.08	106	6.37
			Open Space	2.56		
			Total	16.64		
Gardenia	Types 1, 2 & 3	Single-Family Homes	Lots/ROW	29.51	168	5.43
			Open Space	1.43		
			Total	30.94		
		General Open Space		16.52		
		Total Open Space		20.51		
		Total Residential		43.53		
		Grand Total		64.04	278	

There are 20.51 acres of open space. Refer to Open Space Tabulation Exhibit on page 11.07.

- 274 ERUs are assigned to Village Plan 8.
- All areas shown are approximate, areas to be determined at final design.
- Refer to the Lotting Map Exhibit for Neighborhood Breakdown on page 3.02.
- 52 Single family lots with shared driveways.

04 Development Standards & Design Guidelines

Type 1, 2 and 3

Village Plan 8 development standards for Type 1, 2 and 3 are consistent with standards established for the community. In addition, all building and landscape designs adhere to the design guidelines established in the Wildflower ARCP and as permitted herein.

Type 4

Village Plan 8 development standards for Type 4 are consistent with standards established for the community. In addition, all building and landscape designs adhere to the design guidelines established in the Wildflower ARCP and as permitted herein.

Type 4 plans adhere to *Saratoga City Code Section 19.16.04* which states "No building shall be closer than 5 feet from any private road, driveway or parking space. The intent of this requirement is to provide for building foundation landscaping and to provide protection to the building." City code doesn't define *Parking Space*. The closest definition is for *Off-street Parking* which is defined as the space within a building, lot, or parking lot, but not within any portion of any public street right-of-way, for the temporary parking of one vehicle. We interpret this definition as the measurement of 5' feet from the foundation of a building to the space designated as parking of one vehicle or measured from the foundation to the right-of-way line as designated in the street cross section. The private 26' right-of-way in the ARCP designates the right-of-way line as back of curb.

Master Homeowners Associations

In accordance with City Code *Section 19.26.03,2,d of the Planned Community Zone* ordinance, a Master Homeowners Association (HOA) has been established to review, approve, and enforce architectural requirements and restrictions, as well as address common area maintenance obligations as outlined in the Wildflower ARCP. Additional HOAs may be created based on end builder preferences. Master Homeowners Association will still be in affect over all parts of Wildflower. All sub HOAs shall be obligated to follow all Master Homeowners Association and WDRC regulations.

Wildflower Design Review Committee (WDRC)

All builders are required to submit exterior elevations, materials, colors, and landscaping plans for a Design Review Process by the Wildflower Development Review Committee (WDRC). The WDRC must review and approve all residential site plans and building permits prior to City submittal as outlined in the Wildflower ARCP.

Type 1, 2, and 3 Single-Family Homes

Color is a critical element for creating the ambiance of the overall community. A well-designed color palette should be based on natural elements. Appropriate use of color will bring unity to each neighborhood and help establish a sense of community.

All exterior colors shall be compatible with the architectural style of each dwelling. Bright, artificial colors such as pastels, neons, fluorescents, etc. shall not be allowed.

Each builder must present exterior paint color groupings to the WDRC for approval before construction begins in a neighborhood. Each individual color must be grouped with other colors that are similar in hue and tone. Color groupings make it easier to track and regulate product mix rules, so that homes next to each other do not look the same or too similar to the home next door or right across the street. Each lot must have a home design and elevation combination that is different from homes located next door and directly across the street.

Since grouping similar colors together is subjective, the following diagram offers an example of color groupings that are acceptable at Wildflower.

Type 4 Multi-Family Homes

The surrounding community and architectural style within Wildflower will have a big impact on color choices. Exterior building colors on multi-family residences shall be compatible within individual neighborhoods and to adjacent buildings. Therefore, the same rules that apply to single-family homes also apply to townhomes. Enriched earth tones and cool colors are encouraged, while bright, fluorescent, or neon shades are not allowed.

Multi-family residences can be overwhelming in size. A compatible color palette with a minimum of two and up to four different combinations per neighborhood is suggested so that buildings next to each other are a slightly different color scheme. The right colors can give balance, scale, and visual relief to an otherwise intimidating building. The following colors are example color palettes that can be used together within a single townhome community.

Scheme 1

Front Door	Trim	Body Color 1	Body Color 2	Body Color 3	Garage Door	Soffit/Fascia	Roofing
Sherwin Williams Grizzle Gray	Hardie Arctic White	Hardie Iron Gray	Hardie Aged Pewter	Hardie Pearl Gray	Wayne Dalton White	Mastic White	CertainTeed Moire Black

Scheme 2

Front Door	Trim	Body Color 1	Body Color 2	Body Color 3	Garage Door	Soffit/Fascia	Roofing
Sherwin Williams Grizzle Gray	Hardie Arctic White	Hardie Arctic White	Hardie Aged Pewter	Hardie Pearl Gray	Wayne Dalton White	Mastic White	CertainTeed Moire Black

Scheme 3

Front Door	Trim	Body Color 1	Body Color 2	Body Color 3	Garage Door	Soffit/Fascia	Roofing
Sherwin Williams Grizzle Gray	Hardie Arctic White	Hardie Dried Eucalyptus	Hardie Aged Pweter	Hardie Pearl Gray	Wayne Dalton White	Mastic White	CertainTeed Moire Black

Stylistic Appropriateness

The colors used at Wildflower should reflect the architectural styles being offered at Wildflower. Fewer colors on individual buildings are typically more appropriate than incorporating a large variety of colors. This keeps homes from distracting from the overall ambiance of the community.

Community Cohesiveness

The relationship of colors between neighboring homes is critical when selecting the overall palette for a group of homes or buildings within a townhome community. A sense of flow is created by balancing building elements, which have similar tones across many buildings, yet incorporate a variety of color elements, making each home unique.

Main Body and Trim

A sense of flow is created by requiring similar color tones on building elements such as trim, soffits, fascia, and garage doors throughout the community. Uniqueness may be expressed by incorporating a larger variety of colors on the main body of the home.

Roofing Colors and Materials

It is especially important to consider the value of even slight color variations that can be found within materials such as roofing shingles. These added variations can encourage even more diversity and architectural interest within each neighborhood, as well as throughout the community.

Exterior Guidelines for Single-Family Homes and Townhomes

1. Exterior recessed lighting shall be centered directly above each pillar/column on front facade with photo cell or Smart Home integration set to turn on 1/2 hour after sunset and turn off 1/2 hour before sunrise.*
2. 12-inch minimum roof overhangs for roof pitches 6/12 and steeper and 18-inch minimum overhangs for roof pitches under 6/12 are required.*
3. A single column must be at least 8 inches wide or 2 posts creating a single column must be a minimum of 14 inches wide.*
4. 20% masonry, stone or brick, is required on front elevation. 100% composite siding may replace masonry requirements. Stucco is not allowed in the community.
5. Large, unbroken wall planes and windowless elevations are not allowed. Buildings should be interesting from all angles on all sides. At a minimum, elevations facing the street, on a corner, or adjacent to open space shall have at least one window on each above-grade level. All designs

are subject to approval by the WDRC, and builders may be required to add additional windows as needed to satisfy this requirement.

6. Minimum 6-inch fascia is required.

7. All *front elevation* colors, materials, and siding details (stone, board and batten, shake, and lap siding, etc.) shall extend a minimum of 24 inches from front of house onto sides of home (see EXHIBIT 1a). Areas of front of house that protrude from the front elevation to create depth, have additional guidelines for wrapping materials and colors:

   - If the distance from the *front of house* to the inside corner of the wall is 5 feet or less, the colors, materials, and siding details (stone, board and batten, shake, and lap siding, etc.) shall wrap the entire distance of the wall, extending to the inside corner where the two walls intersect (see EXHIBIT 1b). Also, *front of house* materials and siding details shall wrap the entire distance of wall on additional facades adjacent to or visible from major arterials.

   - If the distance from the *front of house* to the inside corner of the wall is greater than 5 feet, the colors, materials, and siding details (stone, board and batten, shake, and lap siding, etc.) shall extend a minimum of 24 inches from front of house onto the side wall (see EXHIBIT 1c).

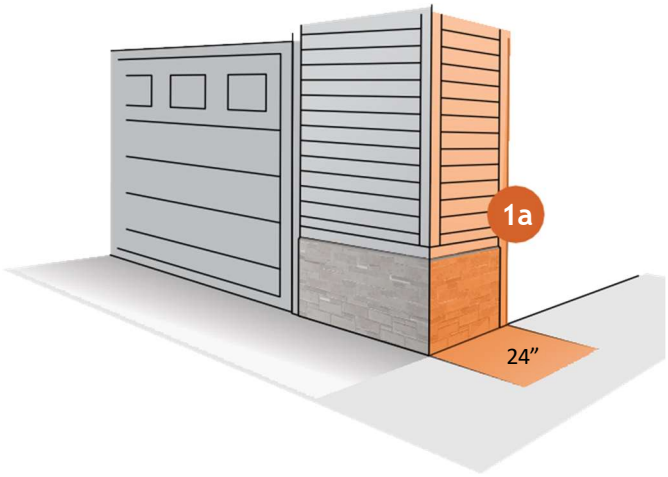
8. Covered front porches are required.

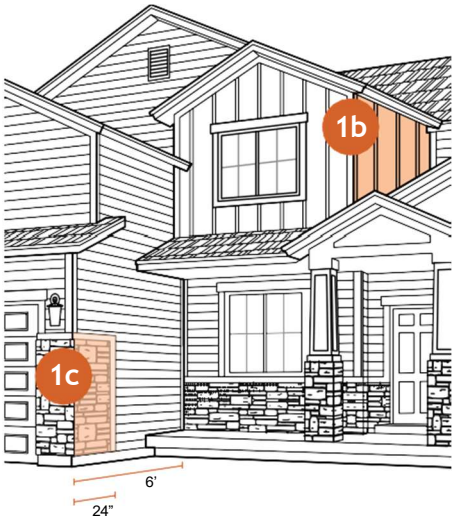
9. Garages shall be set back or project a minimum of 24 inches and shall not exceed more than 13 feet from the main building face or front porch.*

10. All visible decking material and exterior staircases shall be constructed of maintenance-free materials. Decks and staircases with exposed natural wood are not allowed. Natural wood posts may be used if wrapped with a vinyl sleeve or composite material.

** These items do not apply to multi-family buildings.*

EXHIBIT 1





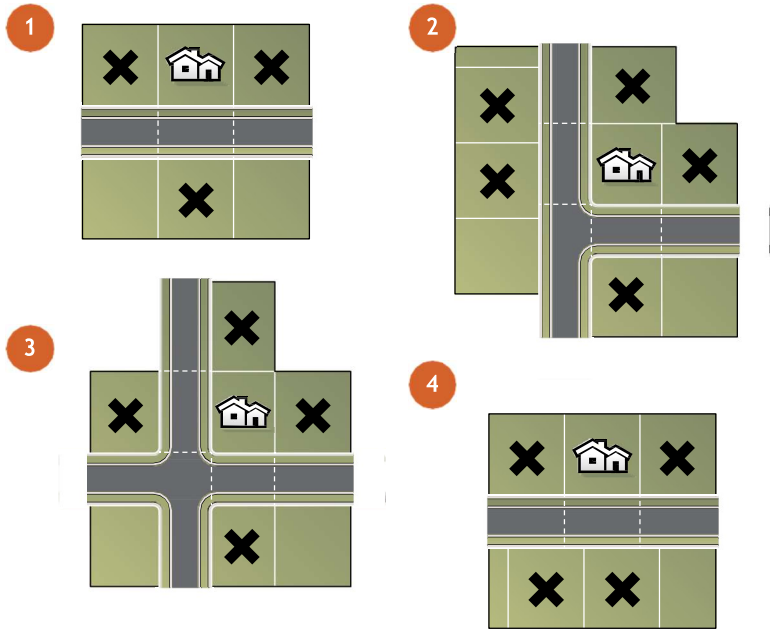
Limitation on Repetition of Single-Family Elevations and Color

To ensure the desired theme and architectural character for Wildflower is realized, and to ensure the Community is enriched by variety in its architecture, careful attention will be paid to the mix of homes within each neighborhood. The following guidelines shall be followed for the production of single-family homes, or where individual floor plans are offered on a repeating basis within a parcel or plat:

- A minimum of 5 unique floor plans will be required for builders who own 25 lots or less in one neighborhood. One additional plan will be required for each additional 15 lots.
- A minimum of 2 distinctly different elevations and different color palettes shall be offered for each floor plan. Reverse elevation/floor plans shall not count as a different elevation.
- To ensure Wildflower has a diverse mix of home designs and elevations interspersed throughout each neighborhood, several guidelines have been established to help select home designs and color schemes for each building lot.
- Each lot must have a home design and elevation combination that is different from homes located next door and directly across the street.
- The main exterior paint color must be chosen from a different color grouping than the adjacent homes or home(s) located directly across the street. Each color grouping consists of a number of exterior paint options that are similar in hue or tone.
- The WDRC reserves the ability to approve or disapprove each color or color grouping.

Example of Design and Color Diversity for Single-Family Homes

In the examples below, the lots identified with an **X** may not have the same elevation and home design combination or use an exterior color from the same color grouping as the subject home represented with a icon (see EXHIBIT 2 below).



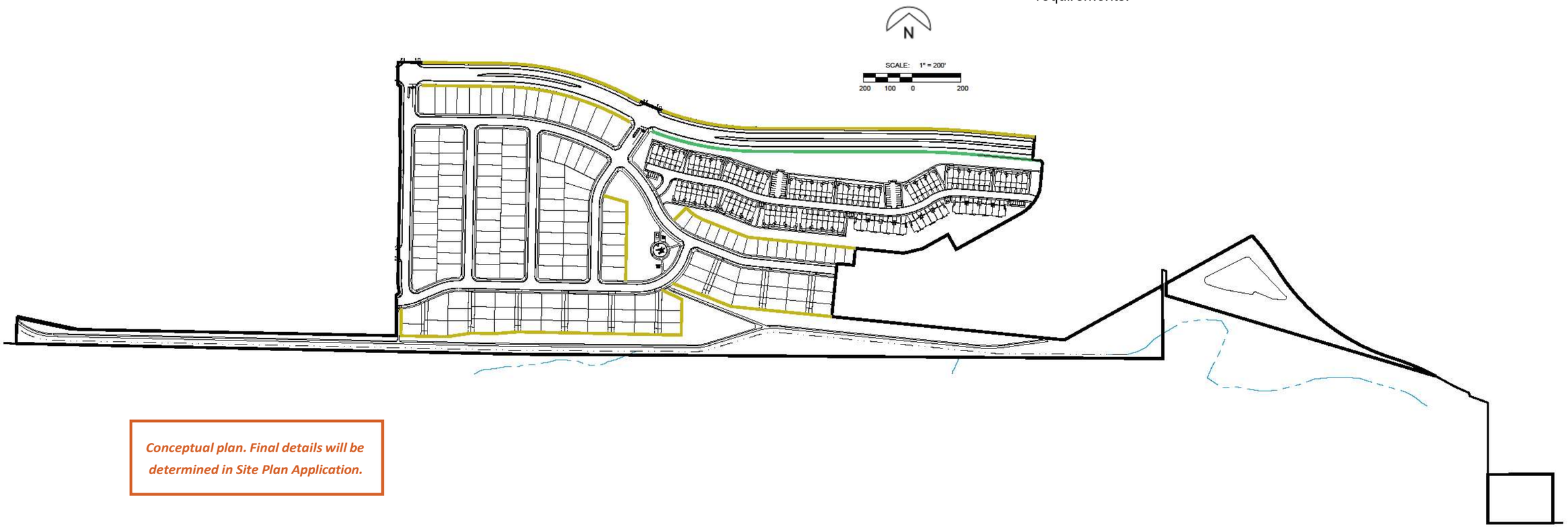
Type 4 Elevation Examples

The following are examples of townhome elevations in Wildflower.

LEGEND

6' VINYL PRIVACY FENCE

4' FORTRESS FENCE



Notes

1. Required fences adjacent to lots are a requirement of the builder, not the developer, and shall be installed prior to receiving certificate of occupancy.
2. If certificate of occupancy is issued between November and March, fencing to be installed by end of June.
3. The Fencing of individual homesites, if not shown as required fencing, shall be 6' white vinyl or gray concrete / composite type privacy fencing. If semi-privacy is required by the city, 6' white vinyl semi-privacy fencing shall be used.
4. All fencing will take into account the City site triangle code requirements.

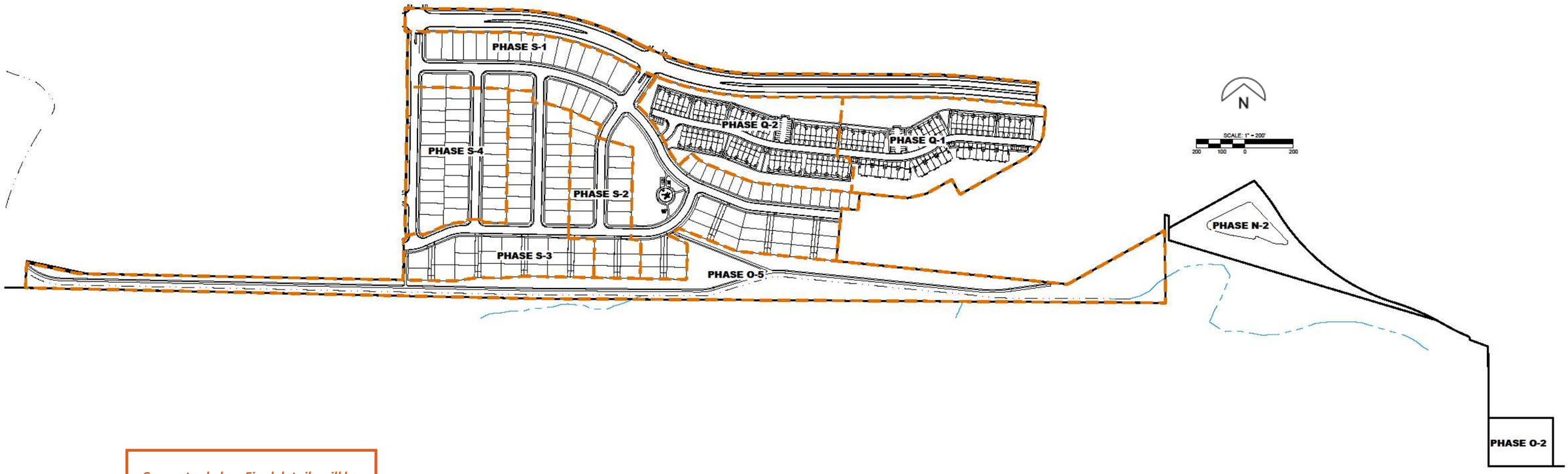
Conceptual plan. Final details will be determined in Site Plan Application.

Wildflower Village Plan Area 8 will be developed in multiple phases along with proportionate open space. The plats will be presented and approved through the site plan or standard subdivision platting process.

Note

Phases may be built out of order and boundary lines may change.

Phases that depend on future improvements are not allowed.



Conceptual plan. Final details will be determined in Site Plan Application.

PLANT SCHEDULE

TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	MSS	9	MALUS X 'SPRING SNOW'	SPRING SNOW CRAB APPLE	2" CAL.
	PNO	3	PINUS NIGRA 'OREGON GREEN'	OREGON GREEN PINE	6'
	TCG	6	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	2" CAL.
	TTS	6	TILIA TOMENTOSA 'STERLING'	STERLING SILVER LINDEN	2" CAL.
	UTR	4	ULMUS X 'TRIUMPH'	TRIUMPH ELM (DT)	2" CAL.
	ZSV	6	ZELKOVA SERRATA 'VILLAGE GREEN'	SAWLEAF ZELKOVA (DT)	2" CAL.
	ZSB	7	ZELKOVA SERRATA 'BURGUNDY VASE'	BURGUNDY VASE ZELKOVA (DT)	2" CAL.

SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT
FF	FF	3	FORSYTHIA X 'FIESTA'	FIESTA FORSYTHIA (DT)	5 GAL
PB	PB	9	PRUNUS BESSEYI 'PAWNEE BUTTES'	SAND CHERRY (DT)	5 GAL

GRASSES	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT
CA	CA	27	CALAMAGROSTIS X ACUTIFLORA 'AVALANCHE'	FEATHER REED GRASS (DT)	1 GAL
F	F	3	FESTUCA MAIREI	ATLAS FESCUE (DT)	1 GAL

GROUND COVERS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT
	TURF 1	61,721 SF	TURF SOD	DROUGHT TOLERANT BLUEGRASS BLEND	SOD

In the case that a tree species is not available, the Developer reserves the right to exchange the tree species with a comparable alternative and/or modify the location, as needed.

Conceptual plan. Final details will be determined in Site Plan Application.

LEI
- A Utah Corporation -
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LISA M. BENSON
5198020
LICENSED LANDSCAPE ARCHITECT
STATE OF UTAH

WILDFLOWER - VILLAGE 8
AMBER FIELDS PARK
CITY OF SARATOGA SPRINGS, UTAH COUNTY, UTAH

PARK OVERVIEW

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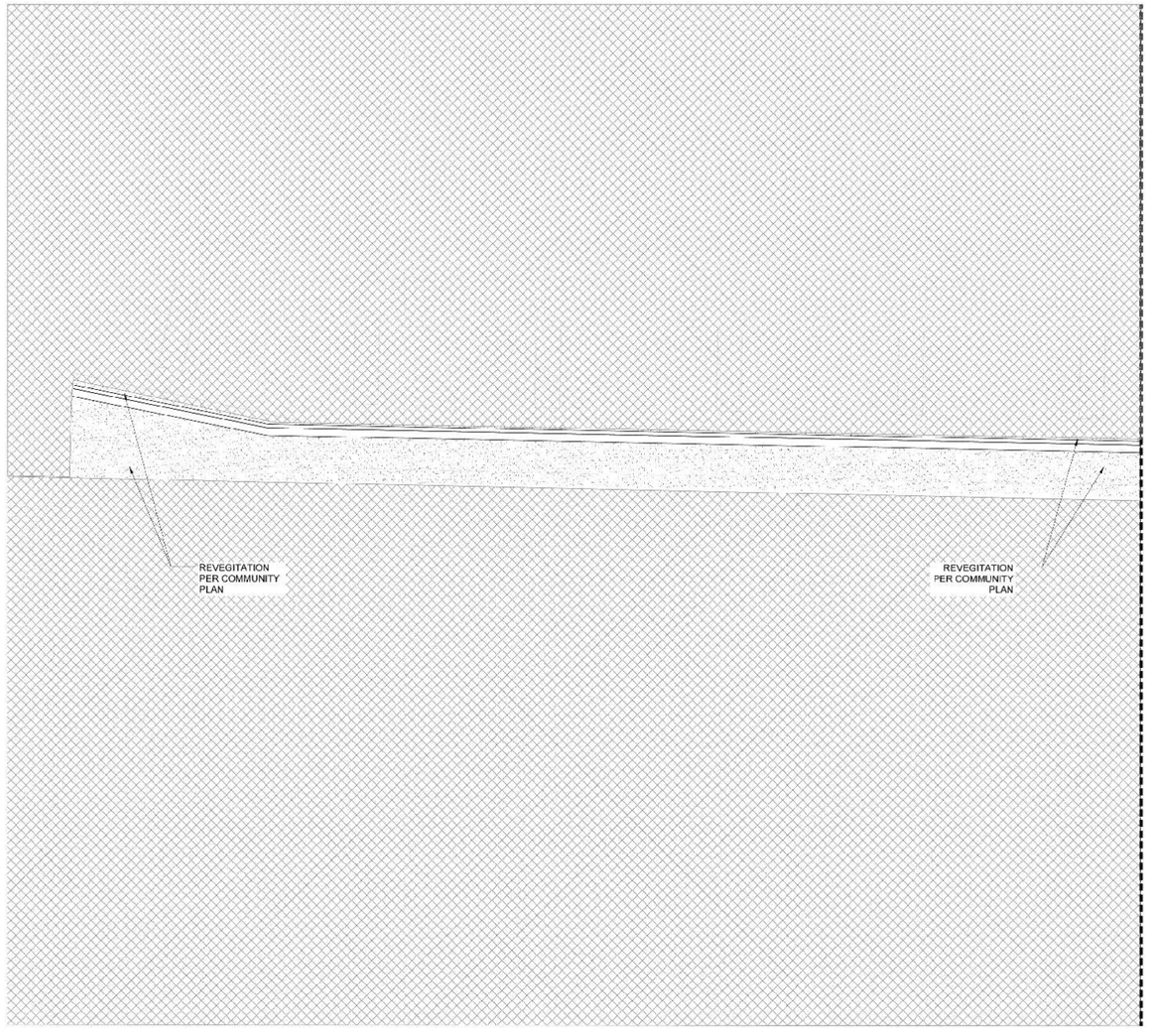
LANDMARK DESIGN
LANDSCAPE ARCHITECTURE & PLANNING
Artspace Solar Gardens
850 South 400 West - Studio 104
Salt Lake City, Utah 84101
(801) 474-3300

LEI PROJECT #
2013-0902
DRAWN BY:
HH
CHECKED BY:
LB
SCALE:
DATE:
09/07/2021
SHEET
LP-0



MATCH LINE - SEE SPRINGS SOUTH OPEN SPACE - SHEET LP-2

REVEGETATION SEED SCHEDULE

Custom Revegetation Seed Mix (591,000 SF)
68% Wildflower Seed Mix
30% Sheep Fescue (Festuca ovina)
2% Sagebrush (Artemisia tridentata)

*100% OF GREAT BASIN WESTERN WILDFLOWER SEED MIX, SHEEP FESCUE, AND SAGEBRUSH ARE DROUGHT TOLERANT.

NOTES FOR SEED MIXES:
CONTACT GRANITE SEED COMPANY: 801-768-4422
APPLY AT 1-2 LBS. PER 1,000 SQ. FT.

EXACT SEED MIX COMPOSITION TO BE DETERMINED BY GRANITE SEED COMPANY.

SEE RESTORING NATIVE AREA SUPPLEMENTAL SPECIFICATIONS (02727).

GREAT BASIN WESTERN WILDFLOWER SEED MIX** (GRANITE SEED COMPANY)

PERCENT	SPECIES
14.80	LUPINE, PERENNIAL
12.95	BLANKETFLOWER
11.10	CANDYTUFT, ANNUAL
11.10	POPPY, CALIFORNIA
7.40	CORNFLOWER, DWARF BLUE
7.40	FLAX, BLUE
7.40	POPPY RED CORN
3.70	INDIAN BLANKET
3.70	PENSTEMON, ROCKY MOUNTAIN
3.70	GREENTHREAD
2.77	EVENING PRIMROSE, DWARF
1.85	CLARKIA
1.85	GILIA, GLOBE
1.85	ASTER, PRAIRIE
1.85	PENSTEMON, PALMER
1.85	CONEFLOWER, PRAIRIE
1.22	GOLDENEYE, SHOWY
0.92	CLARKIA, DEERHORN
0.74	COREOPSIS, PLAINS

**PLEASE NOTE THAT EXACT MIX MAY CHANGE DEPENDING ON ANNUAL SEED HARVEST RATES AND AVAILABILITY.

AREA OUTSIDE OF CURRENT PLAT

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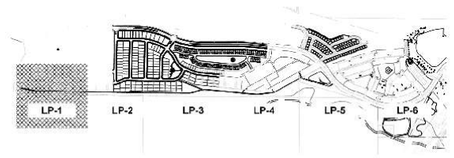
Exact trail location determined in the field.



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WILDFLOWER - VILLAGE 8
SPRINGS SOUTH OPEN SPACE
CITY OF SARATOGA SPRINGS, UTAH COUNTY, UTAH

PLANTING PLAN

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SHEET: LP-1

REVEGETATION SEED SCHEDULE

Custom Revegetation Seed Mix (591,000 SF)
68% Wildflower Seed Mix
30% Sheep Fescue (Festuca ovina)
2% Sagebrush (Artemisia tridentata)

*100% OF GREAT BASIN WESTERN WILDFLOWER SEED MIX, SHEEP FESCUE, AND SAGEBRUSH ARE DROUGHT TOLERANT.

NOTES FOR SEED MIXES:
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APPLY AT 1-2 LBS. PER 1,000 SQ. FT.

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SEE RESTORING NATIVE AREA SUPPLEMENTAL SPECIFICATIONS (02727).

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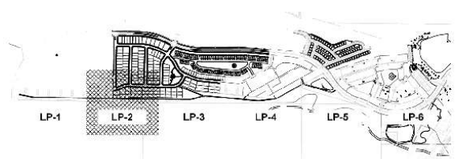

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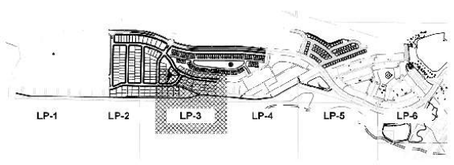

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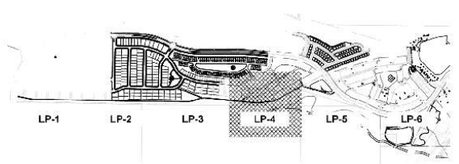

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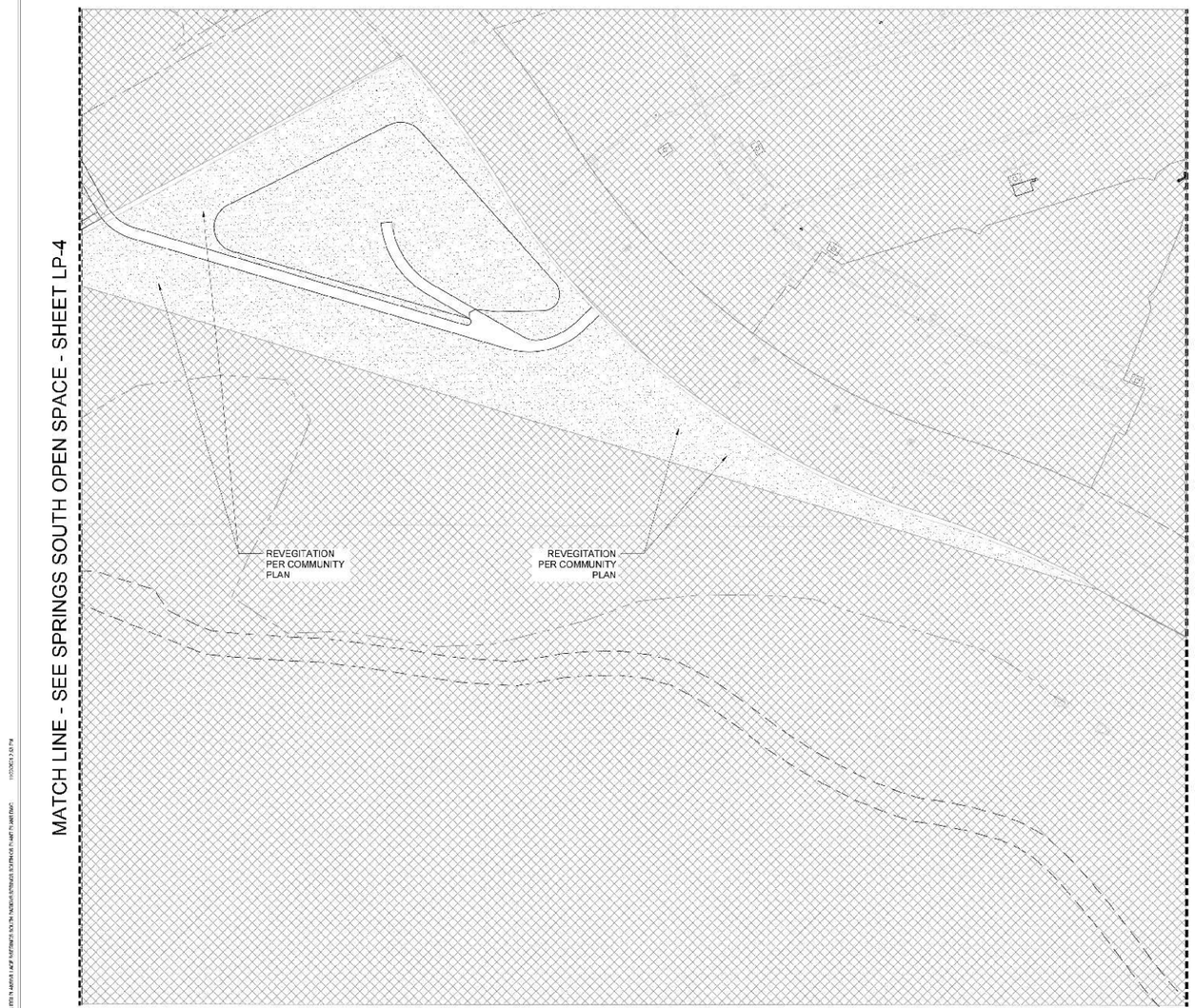

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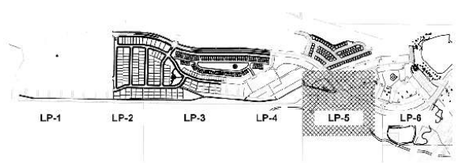

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No. 5196020
LICENSED LANDSCAPE ARCHITECT

WILDFLOWER - VILLAGE 8
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CITY OF SARATOGA SPRINGS, UTAH COUNTY, UTAH

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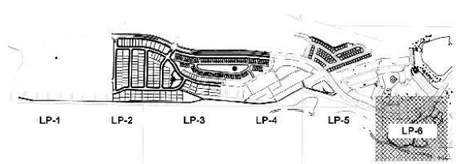

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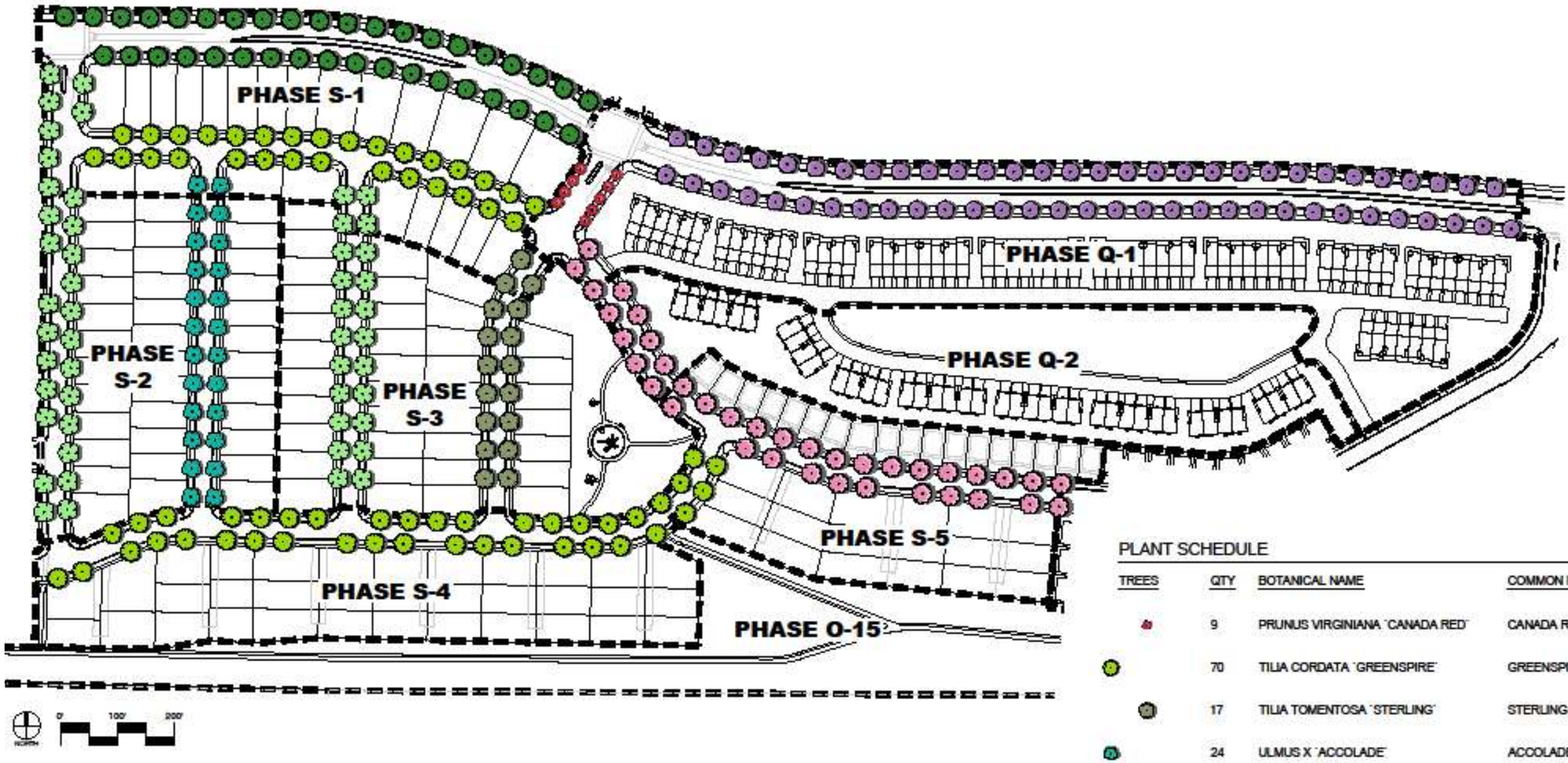


PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	9	PRUNUS VIRGINIANA 'CANADA RED'	CANADA RED CHOKECHERRY (DT)	2" CAL.
	70	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN (DT)	2" CAL.
	17	TILIA TOMENTOSA 'STERLING'	STERLING SILVER LINDEN (DT)	2" CAL.
	24	ULMUS X 'ACCOLADE'	ACCOLADE ELM (DT)	2" CAL.
	38	ULMUS X 'TRIUMPH'	TRIUMPH ELM (DT)	2" CAL.
	50	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE SAWLEAF ZELKOVA (DT)	2" CAL.
	61	ZELKOVA SERRATA 'VILLAGE GREEN'	SAWLEAF ZELKOVA (DT)	2" CAL.
	37	ZELKOVA SERRATA 'BURGUNDY VASE'	BURGUNDY VASE ZELKOVA (DT)	2" CAL.

(DT) WATERWISE/DROUGHT TOLERANT

Conceptual plan. Final details will be determined in Site Plan Application.

In the case that a tree species is not available, the Developer reserves the right to exchange the tree species with a comparable alternative and/or modify the location, as needed.

Plant Use Detail Exhibit

STREET TREES

Canada Red Chokecherry

Greenspire Linden

Silver Linden

Accolade Elm

Triumph Elm

Green Vase Zelkova

Village Green Zelkova

Burgundy Vase Zelkova

LANDSCAPE TREES

Spring Snow Crabapple

Austrian Pine

Greenspire Linden

Silver Linden

Triumph Elm

Village Green Zelkova

Burgundy Vase Zelkova

SHRUBS, GRASS, AND PERENNIAL MIX

Fiesta Forsythia

Pawnee Buttes Sandcherry

Avalanche Feather Reed Grass

Atlas Fescue

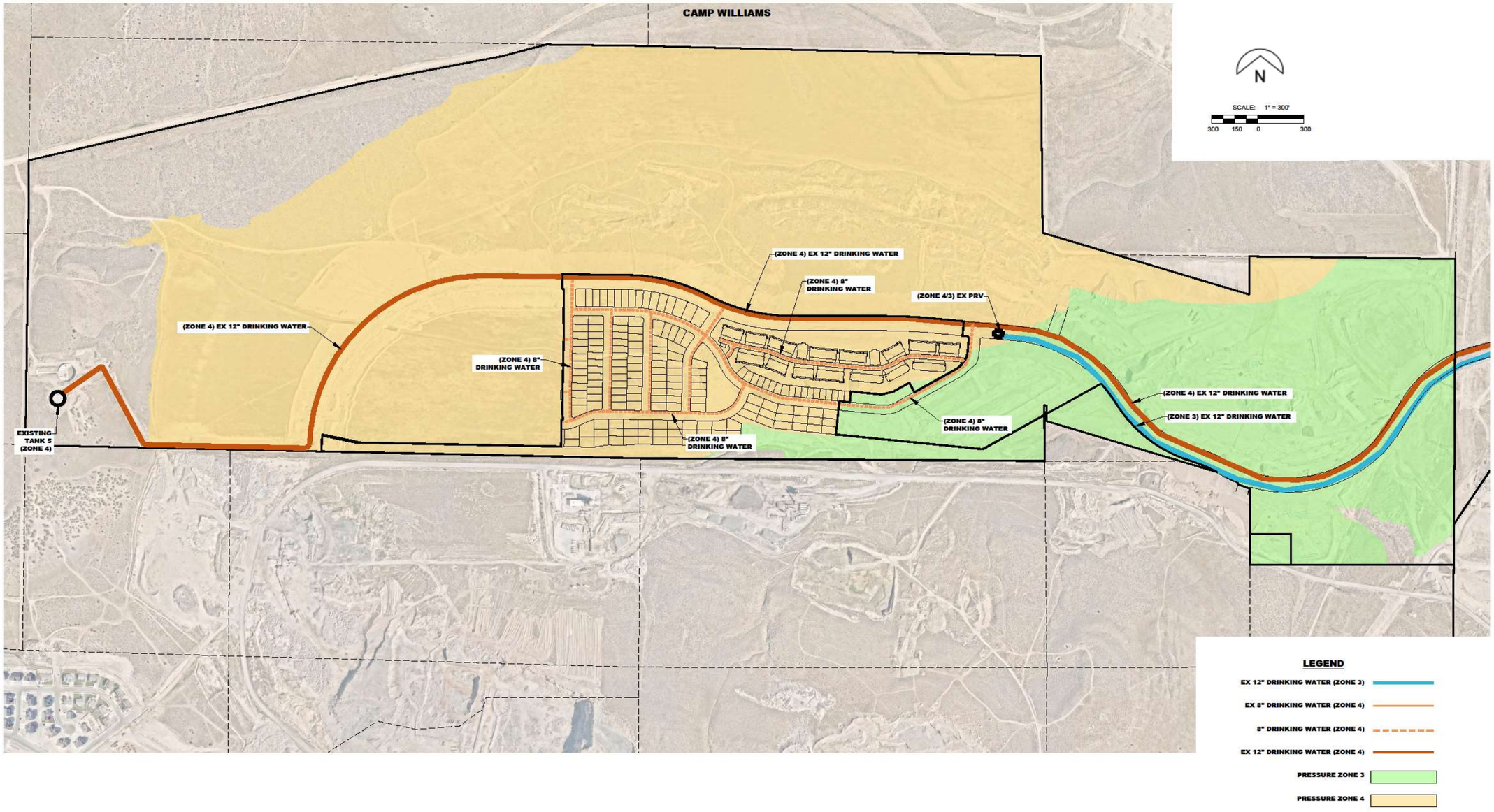
In the case that a plant species is not available, the Developer reserves the right to change or update the plant schedule as needed with a comparable alternative.

07 Utility Plans

The following utility plan diagrams provide master utilities that will serve Wildflower Village Plan Area 8 .

- Culinary Water Plan
- Secondary Water Plan
- Sewer Plan
- Storm Drain

Utilities shown are for the development of Village Plan 8. See approved Wildflower Master Utility Plan s for overall utility design



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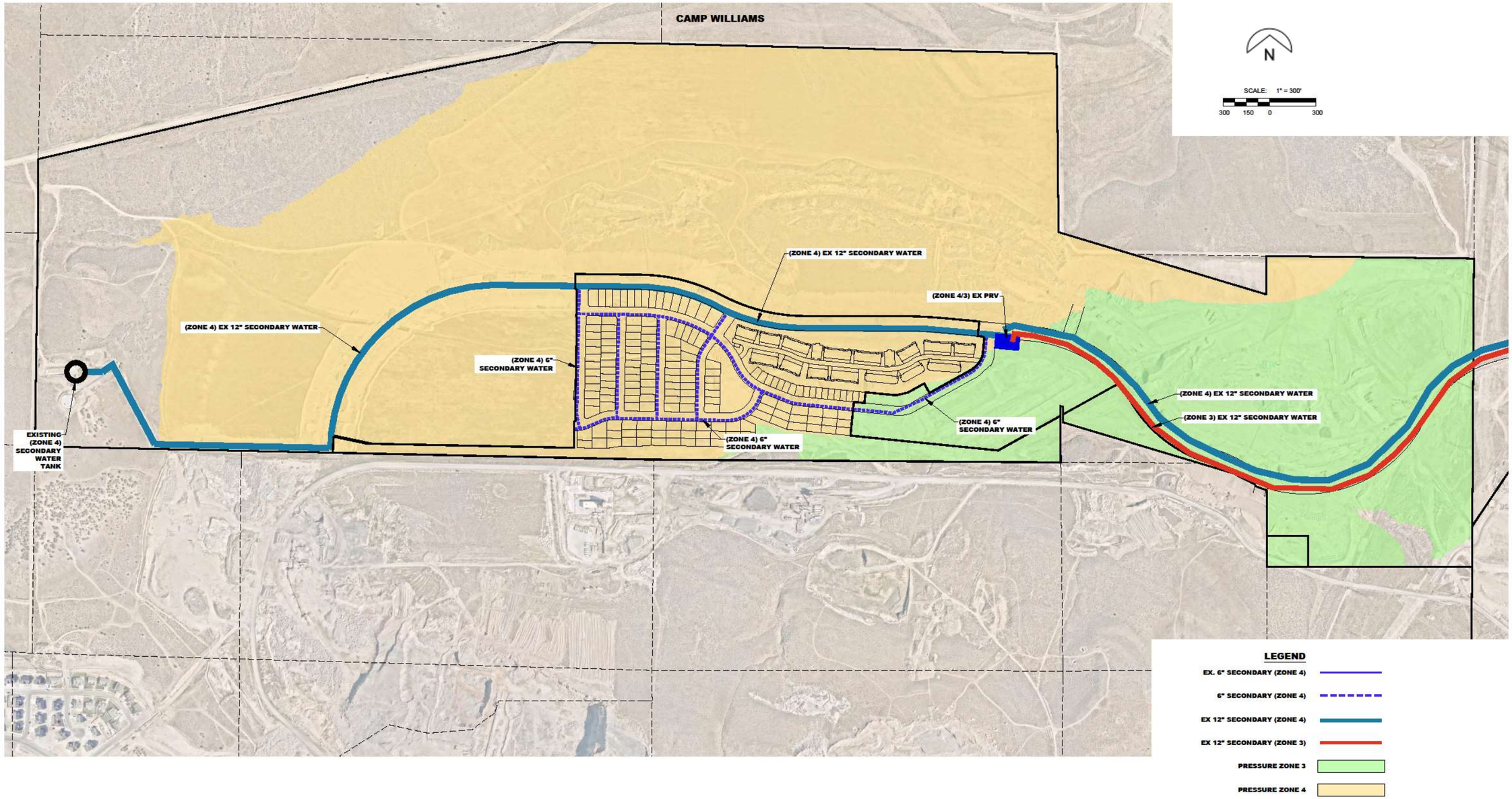

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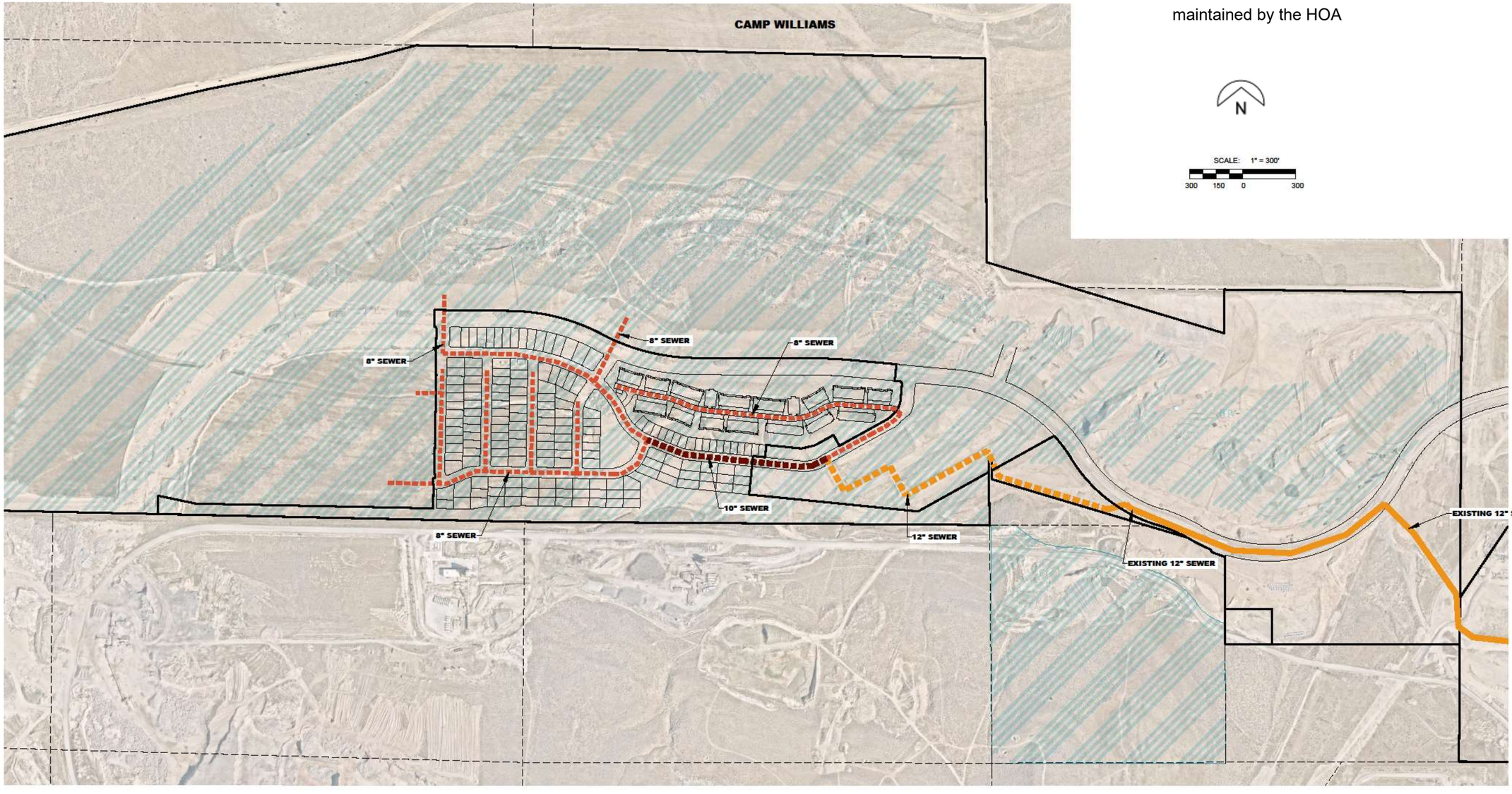

Notes

1. There is limited capacity in the Posey lift station. Additional development upstream of the Posey lift station will not be possible until improvements are completed from the city's sewer master plan.
2. Sewer in private streets to be privately owned and maintained by the HOA

N

SCALE: 1" = 300'

300 150 0 300

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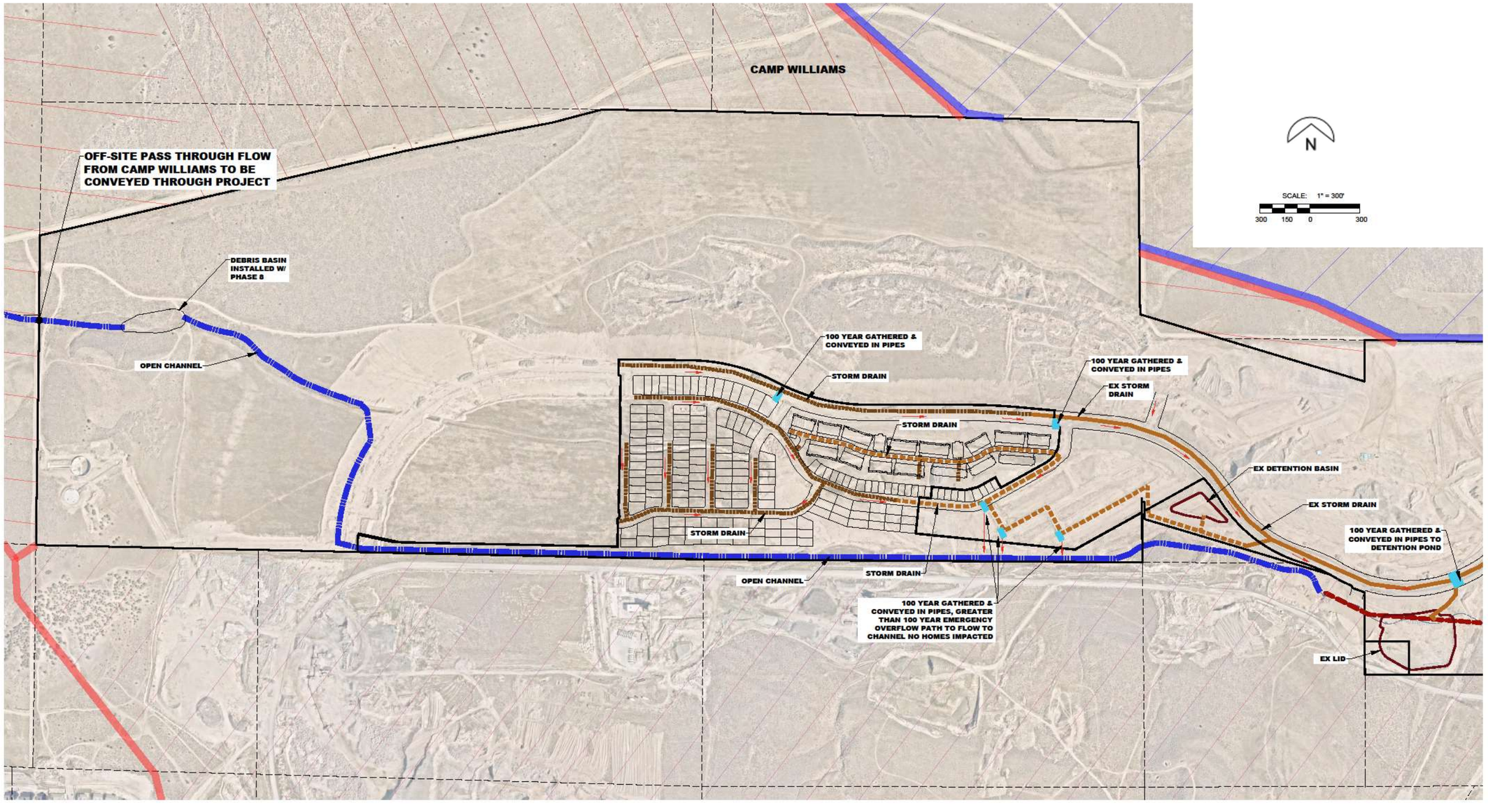
Note

1. Storm Drain in private streets to be privately owned and maintained by the HOA.

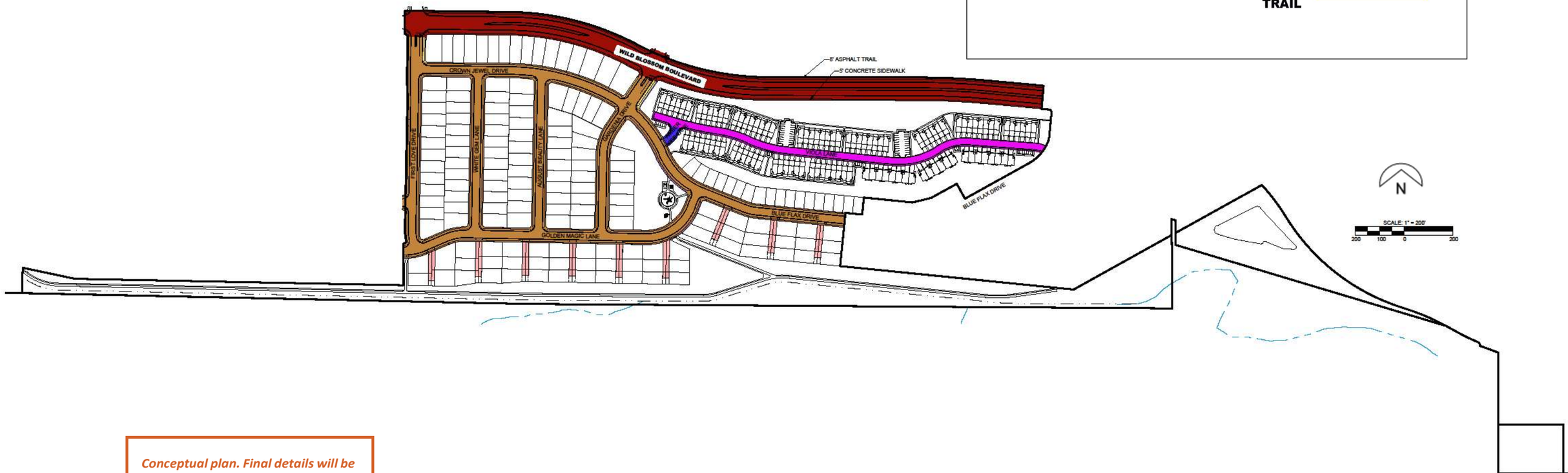


Note

1. Roadway cross-sections are detailed in the Wildflower ARCP.
2. Single Family Lots will not front Wild Blossom Boulevard. No access allowed.

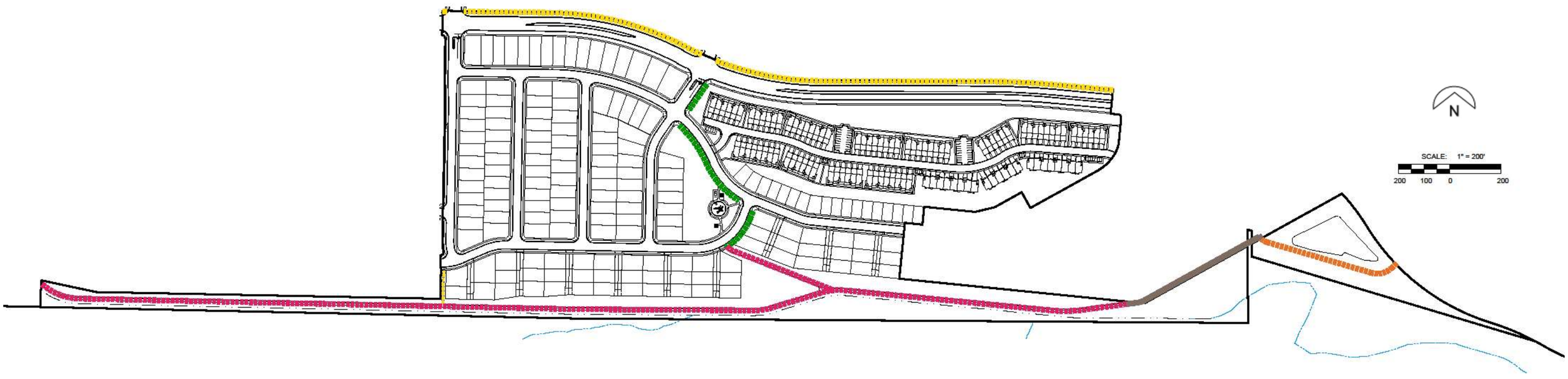
TRANSPORTATION LEGEND

- **95' MINOR ARTERIAL (THREE-LANE ARTERIAL)**
- **59' LOCAL ROAD**
- **36' PRIVATE-22' ASPHALT W/ 2' MODIFIED C&G W/ SIDEWALK BOTH SIDES**
- **31' PRIVATE-22' ASPHALT W/ 2' MODIFIED C&G W/ SIDEWALK ON ONE SIDE**
- **26' PRIVATE-6 PACK & REAR LOAD V-DRAIN SHARED DRIVE**
- **ADDITIONAL RIGHT-OF-WAY FOR TURN LANES & TRAIL**



Conceptual plan. Final details will be determined in Site Plan Application.

8' ASPHALT TRAIL
8' ASPHALT & 4' SOFT SURFACE TRAIL
8' CONCRETE TRAIL
12' ASPHALT TRAIL/UTILITY ACCESS ROAD & 4' SOFT SURFACE TRAIL
TRAILS INSTALLED W/ PHASE 7



N

SCALE: 1" = 200'
200 100 0 200

Conceptual plan. Final details will be determined in Site Plan Application.

Exact trail location determined in the field.

10 Density Transfers

The density stated in the Wildflower 2020 ARCP for Village Plan Area 8 is 304, and the Amended density submitted in the 2024 ARCP is 274. The density transfer is under 15%, which is the maximum percentage allowed in the Wildflower ARCP.

VILLAGE PLAN 8 DENSITY TRANSFERS					
Type	**Description**	**Proposed ERUs**	**Previously Approved ERUs**	**ERU Change**	**Percentage Change**
1	Single Family [5,000+SF]	16	16	0	0%
2	Single Family [<5,000 SF]	134	117	+17	+7%
3	Single Family [<5,000 SF] 3-Story	18	46	-28	-43%
4	Townhomes	106	125	-46	-19%
Total		**274**	**304**	**-57**	**-10%**

11 Additional Detailed Plans

The following elements have been included to detail plans and direction contained in the Wildflower ARCP for Village Plan Area 8:

- Signage Key Exhibit
- Signage Plan Exhibit
- Temporary Signage Plan
- Grading Plan
- Open Space Management
- Traffic Study

Signage Key Exhibit

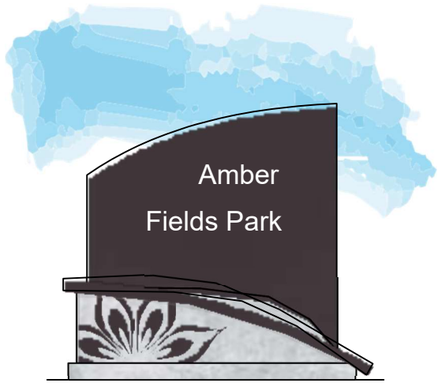
All designs are conceptual. All lighting will conform to guidelines outlined in the recorded Wildflower ARCP.

* Optional Secondary Entrance Feature (neighborhood - 1 or 2 sided) 8'8"W x 4'7H

Provided by Builder

Lit with hooded spotlight in compliance with City Code 19.11.05 14d

- OPTIONAL locations for builder-funded entrance features
- Developer will coordinate with subs for production and installation including landscaping and utilities



* Park Signage (1 or 2 sided) 5'W x 4.25'H

Provided by Developer

Lit with hooded spotlight in compliance with City Code 19.11.05 14d

- Park is Amber Fields Park

* Secondary Entrance Feature (development - 1 or 2 sided) 8'8"W x 4'7H

Provided by Developer

Lit with hooded spotlight in compliance with City Code 19.11.05 14d

* Permanent Directional Signage (2 sided) 5'W x 4.25'H

Provided by Developer

Lit with hooded spotlight in compliance with City Code 19.11.05 14d

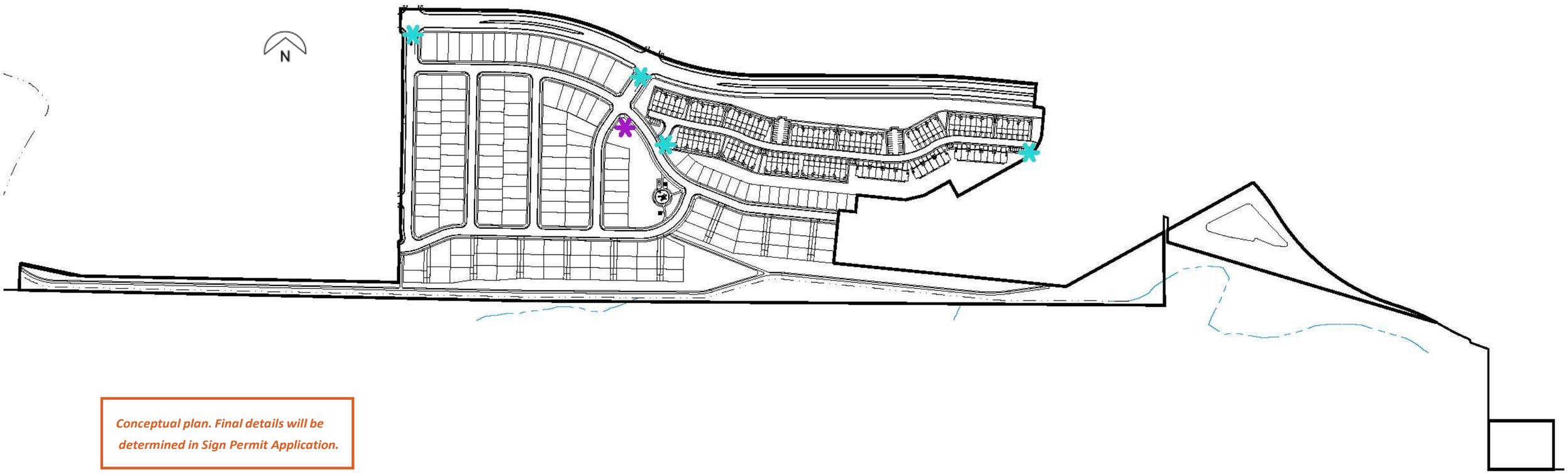
- Permanent directional signage will be located in easements or open space
- Wayfinding signage for parks, trailheads, etc.

Notes

1. Locations shown represent the approximate vicinity of signs. Locations will be refined at sign permit application. All entrance features will be placed in common areas or signage easements.
2. These features shall not conflict with traffic control signaling or traffic control devices.
3. Sight triangle will be adhered to according to the standards set by the American Association of State Highway and Transportation Officials (AASHTO).
4. All illuminated signs located within one-half (1/2) mile of Camp Williams shall be positioned in such a manner and contain shielding devices as to significantly reduce spillover light affecting the military installation and operations. In no instance shall signs within 1/2 mile be positioned facing parallel to the adjacent boundaries of Camp Williams.

* Optional Secondary Entrance Feature (Development)

* Park Signage



Conceptual plan. Final details will be determined in Sign Permit Application.

Temporary Signage Plan Exhibit

Conceptual final detail will be determined in Sign Permit Application.

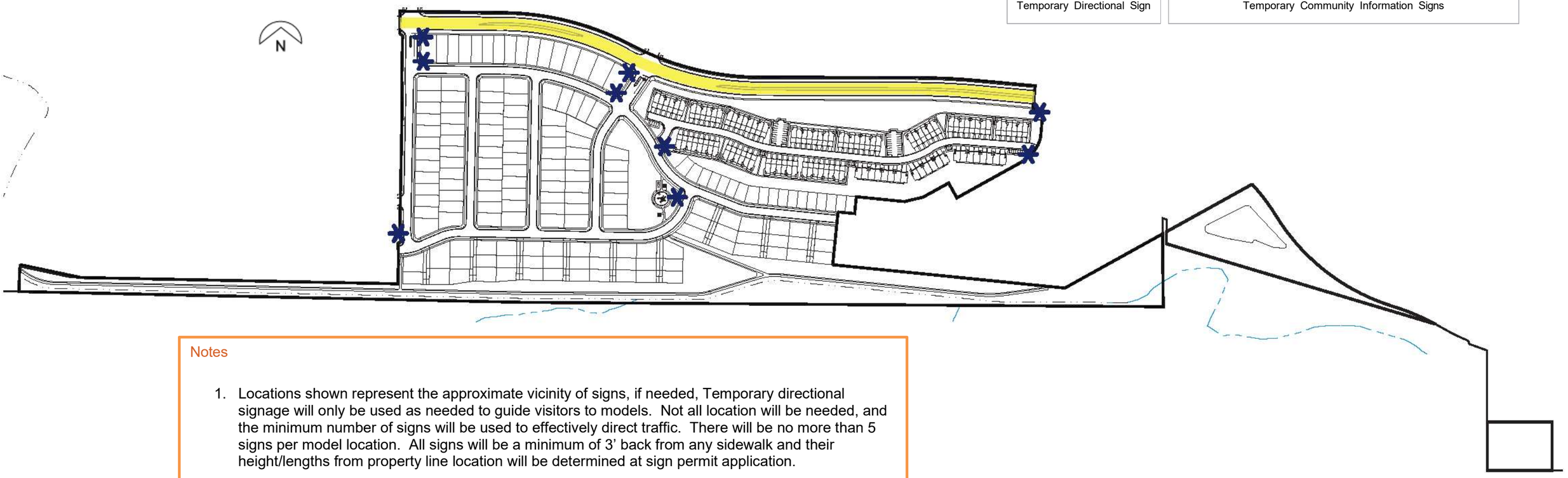
Temporary directional signage (*) may be installed where indicated, as needed to direct traffic to builder model home(s). The areas highlighted in yellow ( ) along Wild Blossom Blvd may require up to 4 branded temporary community information signs during active development. The design and message may vary, but the purpose is to provide information about the Wildflower community. Sign faces shall not exceed 96 sf and height of sign will not exceed 12 feet from grade. Temporary community information signage shall be at least 200 feet from any other temporary sign.

Builder-branded, model home signage located on the model property or general yard area where the model is located may not exceed a total of 32 sf per model. Sign permits, production, and installation of builder signage shall be the responsibility of builder.

*

EXAMPLE
Temporary Directional Sign

EXAMPLE
Temporary Community Information Signs



Notes

1. Locations shown represent the approximate vicinity of signs, if needed, Temporary directional signage will only be used as needed to guide visitors to models. Not all location will be needed, and the minimum number of signs will be used to effectively direct traffic. There will be no more than 5 signs per model location. All signs will be a minimum of 3' back from any sidewalk and their height/lengths from property line location will be determined at sign permit application.
2. Signs shall not conflict with traffic control signaling or traffic control devices.
3. Sight triangle will be adhered to according to the standards set by the American Association of State Highway and Transportation Officials. (AASHTO).
4. Temporary signs will be installed on builder-owned lots or open space, not on privately owned lots.

Temporary Community Information Sign

* Temporary Directional Sign

Village Parkway
Village Parkway
Village Parkway

Open Space Management Plan

The total acreage within Village Plan 8 is approximately 64.04 acres. The open space provided is 20.51 acres, which is approximately 30% of the total acreage.

Equivalent Acres Required	Equivalent Acres Provided	Minimum # Amenity Points Required	Minimum # Amenity Points Provided	# Amenity Points Above Required
7.6	4.7	304	508.9	204.9

EQUIVALENT ACRES REQUIRED **7.6**		EQUIVALENT ACRES PROVIDED **4.7**	
Category	**Multiplier**	**Quantity**	**Points**
Trail, paved (1000 LF)	B	10.6	437.8
Playground Structure, 1 platform (250 SF)	C	1.0	25.0
Pavilion 12 x 12	D	1.0	4.7
Trail, Soft Surface (per 1,000 LF)	D	4.7	39.0
Picnic Table 6'	E	2.0	1.6
Bench	E	2.0	0.8
Additional EA Above Requirement			**0.0**
Maximum Allowed Additional EA Points			**152.0**
Additional EA Points Applied			**0.0**
Total Amenity Points			**508.9**

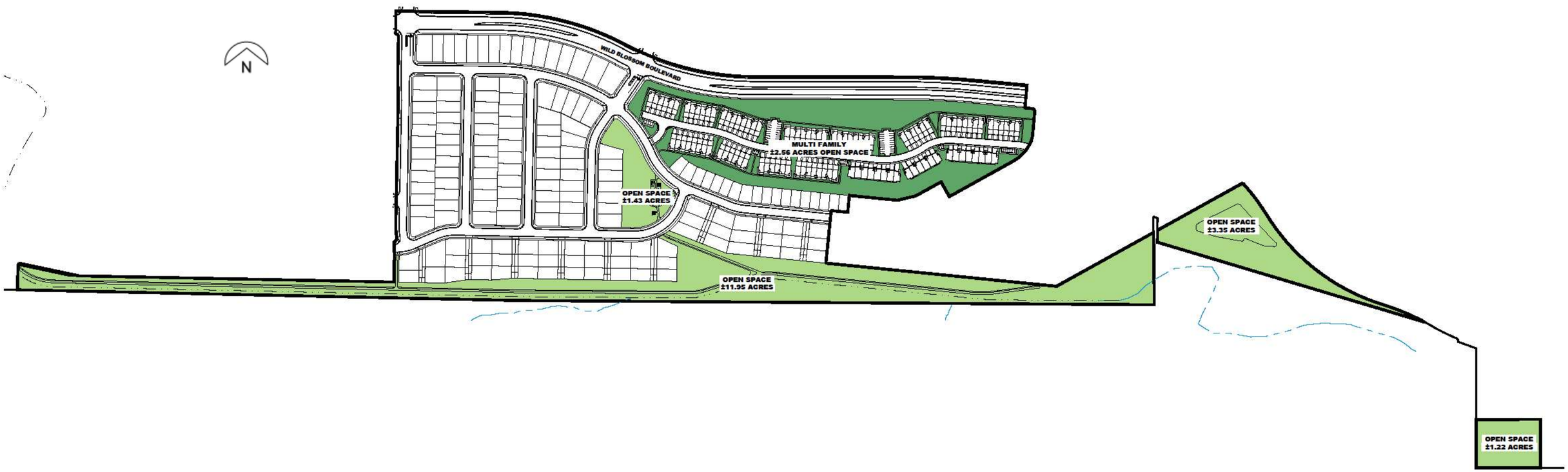
General open space is managed by the Master HOA, and Type 4 open space is managed by a sub-HOA.

The amenity details for the Violet Type 4 townhome neighborhood will be determined at Site Plan and/or Plat submittal.

Open Space Tabulation Exhibit

LEGEND		
	OPEN SPACE PUBLIC	±17.95 AC
	OPEN SPACE (TYPE 4)	±2.56 AC

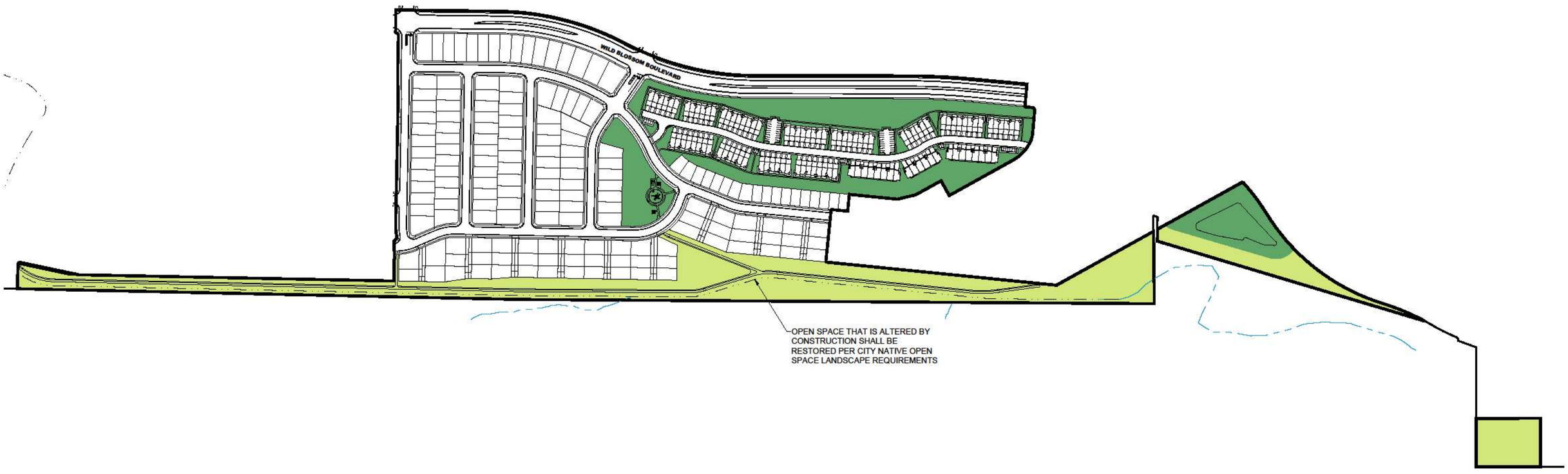
*OPEN SPACE WITHIN TOWNHOME AREA IS GRATER THAN 20% OF TOWNHOME AREA



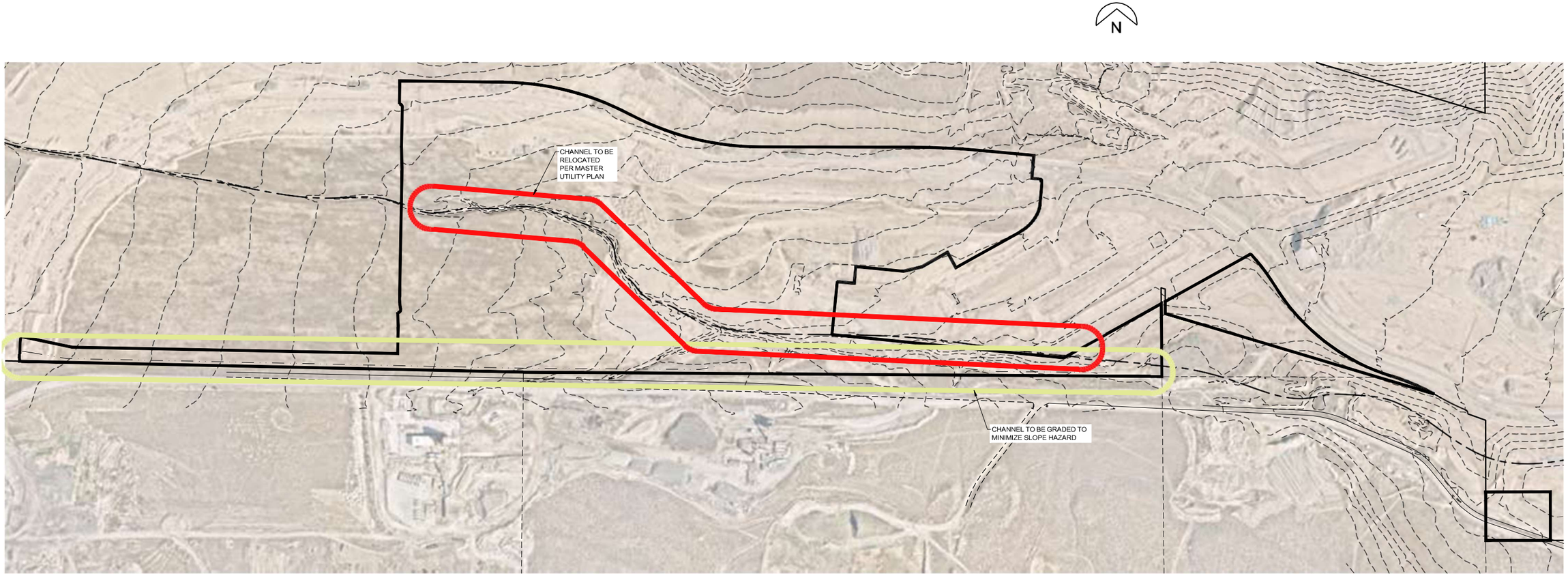
Conceptual plan. Final details will be determined in Site Plan Application.

LEGEND

- IMPROVED OPEN SPACE
- NATIVE OPEN SPACE WITH PUBLIC ACCESS TO TRAILS



Conceptual plan. Final details will be determined in Site Plan Application.

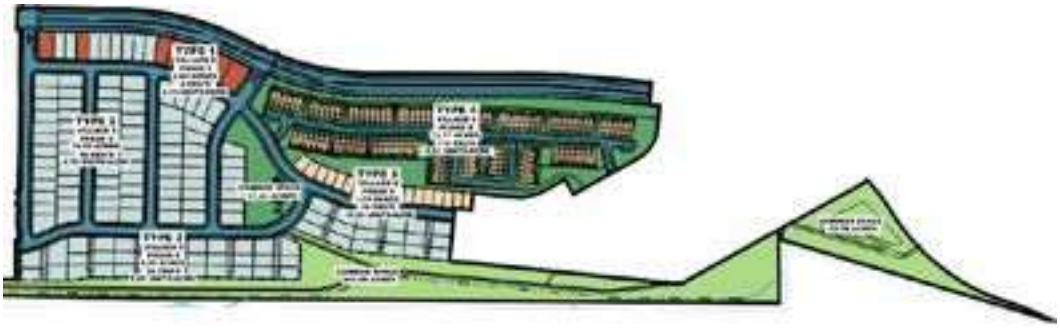


Conceptual plan. Final details will be determined in Site Plan Application.

HALES ENGINEERING
innovative transportation solutions

Wildflower Village 8

Traffic Impact Study



Saratoga Springs, Utah

May 11, 2023

UT21-2063

LICENSED PROFESSIONAL ENGINEER
NO. 12890754
Jordi J. Berrett
05/11/2023
STATE OF UTAH

1220 North 500 West, Ste. 202 Lehi, UT 84043 p 801.766.4343
www.halesengineering.com

EXECUTIVE SUMMARY

This study addresses the traffic impacts associated with the proposed Wildflower Village 8 development located in Saratoga Springs, Utah. The development is located west of Mountain View Corridor, with access onto Wild Blossom Boulevard.

The purpose of this traffic impact study is to analyze traffic operations at key intersections for existing (2023), and future (2028) conditions, with and without the proposed project, and to recommend mitigation measures as needed. The evening peak hour level of service (LOS) results are shown in Table ES-1. A site plan of the project is provided in Appendix A.

Table ES-1: Evening Peak Hour Level of Service Results

	Intersection	Level of Service			
		Existing (2023)		Future (2028)	
		BG	PP	BG	PP
1	Wild Blossom Boulevard / NB MVC (S.R. 145)	B	B	C	C
2	Wild Blossom Boulevard / SB MVC (S.R. 145)	B	B	F	F
3	Chianti Street / Wild Blossom Boulevard	A	A	A	B
4	West Road / Wild Blossom Boulevard	a	a	a	a
5	East Access / Wild Blossom Boulevard	a	a	a	a
6	Central Access / Wild Blossom Boulevard	a	a	-	a
7	West Access / Wild Blossom Boulevard	a	a	-	a

1. Intersection LOS values represent the overall intersection average for roundabout, signalized, and all-way stop-controlled (AWSC) intersections (uppercase letter) and the worst movement for all other unsignalized intersections (low ercase letter)

2. BG = Background (without project traffic), PP = Plus Project (with project traffic)

Source: Hales Engineering, May 2023

SUMMARY OF KEY FINDINGS & RECOMMENDATIONS

Project Conditions

- The development will consist of residential townhomes and single-family detached units.
- The project is anticipated to generate approximately 2,416 weekday daily trips, including 172 trips in the morning peak hour, and 226 trips in the evening peak hour
- Based on projected volumes, westbound left-turn pockets are recommended at the following intersections:
  - o East Access / Wild Blossom Boulevard
  - o Central Access / Wild Blossom Boulevard

2023	Background	Plus Project
Assumptions	• **Wild Blossom Blvd / NB MVC (S.R. 145) and Wild Blossom Blvd / SB MVC (S.R. 145):** improvements assumed as the mitigation measures identified in previous Wildflower Village TIS reports	• None
Findings	• Acceptable LOS	• Acceptable LOS
2028	**Background**	**Plus Project**
Assumptions	• West Road – Connects southward to S.R. 73	• None
Findings	• Poor LOS at the Wild Blossom Boulevard / SB MVC (S.R. 145) intersection	• Poor LOS at the Wild Blossom Boulevard / SB MVC (S.R. 145) intersection
Mitigations	• None, it is anticipated that LOS will improve with the completion of the MVC Freeway	• None, it is anticipated that LOS will improve with the completion of the MVC Freeway

12 Site Characteristics

Village Plan 8 is located in the southwest region of the Wildflower Development, which is also referred to as The Springs. The Village is also situated south of Camp Williams and is south of the extension of Wild Blossom Boulevard. Much of the Village site was used historically for farming operations. An off-site storm drainage channel from Camp Williams cuts through the Village. This channel will be relocated to a safe and controlled by an open channel at the south of the Village and connect into previously approved improvements within Village 7. Village Plan 8 is located within the zone 4 water service area for both drinking and secondary water. Improvements for zone 4 are currently under design or construction and will be available for service within Village 8 prior to any plat recordation. Sewer mains necessary for Village 8 service were installed with previous Villages or off-site improvements. All other site characteristics were included in the approved Wildflower ARCP.

13 Master Development Agreement

This Village Plan is subordinate to the Master Development Agreement, Wildflower ARCP, and Master Utility Plan, which are approved and recorded by the City.

SARATOGA SPRINGS PLANNING

PLANNING COMMISSION
Staff Report

REZONE/GENERAL PLAN AMENDMENT/CONCEPT PLAN
JACOBS RANCH MARKETPLACE
MAY 16, 2024
PUBLIC HEARING

Report Date:	May 10, 2024
Applicant:	Bill Gaskill
Owner:	Jacob Hills Ranch LLC & Calvin K Jacob
Location:	Approx. 1900 S. Redwood Road
Major Street Access:	Redwood Road
Parcel Number(s) & Size:	Commercial Site Area = 28.538 acres from portions of: 59:002:0186/11.25 acres 59:002:0195/79.28 acres 59:002:0171/33.72 acres 59:002:0172/32.56 acres
Land Use Designation:	Low Density Residential
Requested Land Use:	Regional Commercial (RC)
Parcel Zoning:	R1-10
Requested Zoning:	Regional Commercial (RC) for ~14 acres
Adjacent Zoning:	Regional Commercial/Neighborhood Commercial/R1-10
Current Use of Parcel:	Vacant
Adjacent Uses:	Fire Station, Gas Station, Golf Course
Previous Meetings:	N/A
Previous Approvals:	N/A
Type of Action:	Legislative
Land Use Authority:	City Council
Future Routing:	N/A
Planner:	Austin Roy, Senior Planner

A. Executive Summary:

Applicant is requesting to rezone the property from R1-10 to RC and change the land use from Low Density Residential to RC. The proposed rezone would allow for a commercial development which would consist of 16 lots featuring a combination of retail, restaurant, grocery, hardware, office, financial institution and fueling station. Based on the proposed uses, 827 parking stalls are required, and 1,074 are being proposed.

Austin Roy, Senior Planner
aroy@saratogaspringscity.com
1307 North Commerce Drive, Suite 200 • Saratoga Springs, Utah 84045
801-766-9793 x107 • 801-766-9794 fax

The proposed commercial project would connect into future low density residential, R1-10. However, the applicant would only be developing the commercial portion.

Recommendation:
Staff recommends that the Planning Commission conduct a public hearing on the proposed rezone and General Plan Amendment for Jacobs Ranch Marketplace, take public comment, review and discuss the proposal, and choose from the options in Section H of this report. Options include a positive recommendation with or without conditions, a negative recommendation, or continuation.

B. **Background:** Approximately half of the proposed project is already zoned RC. The applicant believes for the project to be viable the remaining half should be rezoned RC as well to allow the development as proposed.

C. **Specific Request:** It is proposed that approximately 14 acres be rezoned from R1-10 to RC. The proposed development is 28.54 acres, with 16 lots ranging from 5.70 acres in size to 0.93. The development would primarily be accessed off of Redwood Road. The proposal would require a change of zone, and an amendment to the Land Use Map of the General Plan.

D. **Process:** Code Section 19.3 and 19.17 outlines the process for a change of zone and Amendment to the General Plan.

Rezone and General Plan Amendment
Code Section 19.13.04 outlines the process for a Rezone and General Plan Amendments. A public hearing is required with the Planning Commission who then make a recommendation to the City Council. The City Council makes the final decision to either approve with or without conditions, continue, or deny the request.

Section 19.17.03 outlines the process criteria for Planning Commission and City Council Review:

1. The Planning Commission shall review the petition and make its recommendations to the City Council within thirty days of the receipt of the petition.
   Complies. *The application will be reviewed by the Planning Commission and receive a recommendation prior to review by the City council.*

2. The Planning Commission shall recommend adoption of proposed amendments only where it finds the proposed amendment furthers the purpose of the Saratoga Springs Land Use Element of the General Plan and this Title.
   Complies. *Please see Sections G and H of this report.*

3. The Planning Commission shall provide the notice and hold a public hearing as required by the Utah Code and Chapter 19.13. For an application which concerns a specific parcel of property, the City shall provide the notice required by the Utah Code and Chapter 196.13 for a public hearing.

Complies. *Please see Section D of this report.*

Concept Plan

Section 19.17.02 states "Petitions for changes to the City's Zoning Map for all land use zones may be accompanied by an application for Concept Plan Review or Master Development Agreement approval pursuant to Chapter 19.13 of this Code."

Per Chapter 19.13 of the Land Development Code, the process for a Concept Plan includes an informal review of the Concept Plan by both the Planning Commission and the City Council. The review shall be for comment only and is non-binding.

E. Community Review:

Public Hearing: This has been noticed as a public hearing pursuant to City and State statutes, which requires posting notice on the Utah public notice website and the City's website and in City Hall, and, except for code amendments, mailing notices to property owners whose land is directly affected by the request and property owners within 300 feet of the subject property at least 10 calendar days prior to the public hearing.

Public Comment: As of the date of this report, no public input has been received.

F. General Plan: The General Plan shows half of the proposed project designated as R1-10 on the Future Land Use Map.

Staff conclusion: Any change to the Future Land Use Map is subject to approval of the City Council. If the City Council approves the requested amendment then the requested rezone will be consistent with the General Plan.

G. Code Criteria:

Concept Plan

A concept plan has been submitted with the request for a rezone and General Plan Amendment and is included with this staff report. The concept plan is meant to help understand the intent of the applicant's request and their future development plans. The attached concept plan review is non-binding and does not address all concerns or requirements of the Land Development Code. The items marked "can comply" or "does not comply" shall be incorporated into the site plan application. It's common for the concept plan review to have a significant amount of redlines as this is a non-binding informal review and staff typically completes one review, rather than multiple reviews at this stage of the process.

19.17.04. Gradual Transition of Uses and Density.

It is the policy of the City Council, through exercising its zoning authority, to: (a) transition high intensity uses to help prevent the impacts of high density uses on low density areas; and (b) to

limit inconsistent uses being located on adjacent parcels. The City Council may implement this policy using its zoning powers. Through amendments to the General Plan and the Zoning Map, the City Council intends to apply the following guidelines to implement this policy:

1. Residential lots, parcels, plats, or developments should not increase by more than 20% of density as compared to adjacent lots, zones, parcels, plats, or developments to enable a gradual change of density and uses. To appropriately transition, new lots should be equal to or larger than immediately adjacent existing platted lots.
2. Exceptions.
    a. The City should avoid allowing high intensity uses (e.g., commercial, industrial, multi-family structures, etc.) adjacent to lower intensity uses (e.g., single family, low density residential, etc.), however may allow these uses to be located adjacent to each other if appropriate transitions and buffers are in place. Appropriate buffers and transitions include a combination of roadways, landscaping, building orientation and facades, increased setbacks, open spaces, parks, and trails.
3. Despite these guidelines, the City Council recognizes that it will become necessary to allow high intensity next to low intensity uses in order to allow for the implementation of multiple zones in the City. The City Council should use their best efforts to limit inconsistent uses and zones being located on adjacent parcels and to mitigate inconsistent uses and zones through transitions and buffers.

Staff finding: up for discussion. *The site of the request is adjacent to residential uses. Findings for either approval or denial are included in the options in Section I of this report.*

Rezone and General Plan Amendment

A zoning map amendment (rezone) and General Plan Amendment are legislative decisions. The City Council has significant discretion when considering these changes. The criteria for a rezone and general plan amendment are outlined below and act as guidance in the decision making. Note that the criteria are non-binding

19.17.05. Consideration of General Plan, Ordinance, or Zoning Map Amendment.

The Planning Commission and City Council shall consider, but not be bound by, the following criteria when deciding whether to recommend or grant a General Plan, ordinance, or zoning map amendment:

1. the proposed change will conform to the Land Use Element and other provisions of the General Plan;
   Staff finding: Consistent if approved.

2. the proposed change will not decrease or otherwise adversely affect the health, safety, convenience, morals, or general welfare of the public;
   Staff finding: Up for discussion. *The current zone and the requested zone offer different uses, building heights, and setbacks. Findings for either approval or denial are included in Section I of this report.*

3. the proposed change will more fully carry out the general purposes and intent of this Title and any other ordinance of the City;

19.01.04. Purpose.

1. The purpose of this Title, and for which reason it is deemed necessary, and for which it is designed and enacted, is to preserve and promote the health, safety, morals, convenience, order, fiscal welfare, and the general welfare of the City, its present and future inhabitants, and the public generally, and in particular to:
    a. encourage and facilitate the orderly growth and expansion of the City;
    b. secure economy in governmental expenditures;
    c. provide adequate light, air, and privacy to meet the ordinary or common requirements of happy, convenient, and comfortable living of the municipality's inhabitants, and to foster a wholesome social environment;
    d. enhance the economic well-being of the municipality and its inhabitants;
    e. facilitate adequate provisions for transportation, water, sewer, schools, parks, recreation, storm drains, and other public requirements;
    f. prevent the overcrowding of land, the undue concentration of population, and promote environmentally friendly open space;
    g. stabilize and conserve property values;
    h. encourage the development of an attractive and beautiful community; and
    i. promote the development of the City of Saratoga Springs in accordance with the Land Use Element of the General Plan.

Staff finding: up for discussion. *19.04.09 states the purpose of each zone. The purpose of the RC is included below. The Planning Commission should evaluate this information and make a recommendation to the City Council.*

Regional Commercial:

The purpose of the Regional Commercial Land Use Zone is to allow, in appropriate areas, commercial businesses and shopping centers of a scale that will serve neighborhood, community-wide, and regional shopping needs. These regulations should preserve the existing quality and livability of the City while still assuring maximum efficiency of traffic circulation and convenience.

4. in balancing the interest of the petitioner with the interest of the public, community interests will be better served by making the proposed change; and
Staff finding: Up for discussion.

5. any other reason that, subject to legislative discretion of the City Council, could advance the general welfare.
Staff finding: Can comply. *Staff recommends a mutually agreed upon development agreement be approved and signed before a rezone and General Plan Amendment take effect, if the City Council approves this request.*

H. Recommendation and Alternatives:

Staff recommends that the Planning Commission conduct a public hearing, take public input, discuss the application, and choose from the following options.

Option 1 – Positive Recommendation

"I move that the Planning Commission forward a recommendation for approval of the requested Rezone and General Plan Amendment for Jacobs Ranch Marketplace, located at approx. 1900 S. Redwood Road, with the Findings and Conditions in the Staff Report."

Findings

1. The application is consistent with the General Plan, as articulated in Section F of the staff report, which section is incorporated by reference herein.
2. The application complies with the criteria in section 19.04 of the Land Development Code, as articulated in Section G of the staff report, which section is incorporated by reference herein.

Conditions:

1. All conditions of the City Engineer shall be met, including but not limited to those in the attached Engineering Staff Report.
2. All requirements of the Fire Chief shall be met.
3. The Jacobs Ranch Marketplace rezone is recommended as shown in the attachments to the Staff report.
4. All other Code requirements shall be met.
5. Any other conditions or changes as articulated by the Planning Commission: _____.

Option 2 – Continuance

"I move to **continue** the Rezone and General Plan Amendment for Jacobs Ranch Marketplace to another meeting on [DATE], with direction to the applicant and Staff on information and/or changes needed to render a decision, as follows:

1. _____
2. _____

Option 3 – Negative Recommendation

"I move that the Planning Commission forward a recommendation for denial of the requested Rezone and General Plan Amendment for Jacobs Ranch Marketplace, located at approx. 1900 S. Redwood Road with the Findings below:

1. The application is not consistent with the Future Land Use Map of the General Plan,
2. Other findings as stated by the Planning Commission: _____.

I. Exhibits:

1. City Engineer's Report
2. Location Map
3. Planning Review Checklist
4. Proposed Zoning
5. Concept Site Plan
6. Concept Building Elevation
7. Utility Plan

Exhibit 1: City Engineer's Report

Staff Report

Author: Ken Knight, Staff Engineer
Subject: Jacobs Ranch Marketplace – Concept Plan
Date: May 16, 2024
Type of Item: Concept Plan Review

SARATOGA SPRINGS

Description:

A. Topic: The applicant has submitted a concept plan application. Staff has reviewed the submittal and provides the following recommendations.

B. Background:

Applicant:	Bill Gaskill
Request:	*Concept Plan*
Location:	Approx. 1900 S. Redwood Road
Acreage:	*28.54 acres - 16 lot*

C. Recommendation: Staff recommends the applicant address and incorporate the following items into the development of their project and construction drawings.

1. The City has insufficient information at this time to determine what project and system improvements will be necessary to service the developer's property. As a result, this review does not reserve utility system capacity. Prior to, concurrent with, or subsequent to Final Plat Approval, the developer will be required to install all required infrastructure to service the property. In addition to all required project improvements, the developer may also be required to install any and all system improvements, subject to required impact fee credits.

Exhibit 2: Location Map

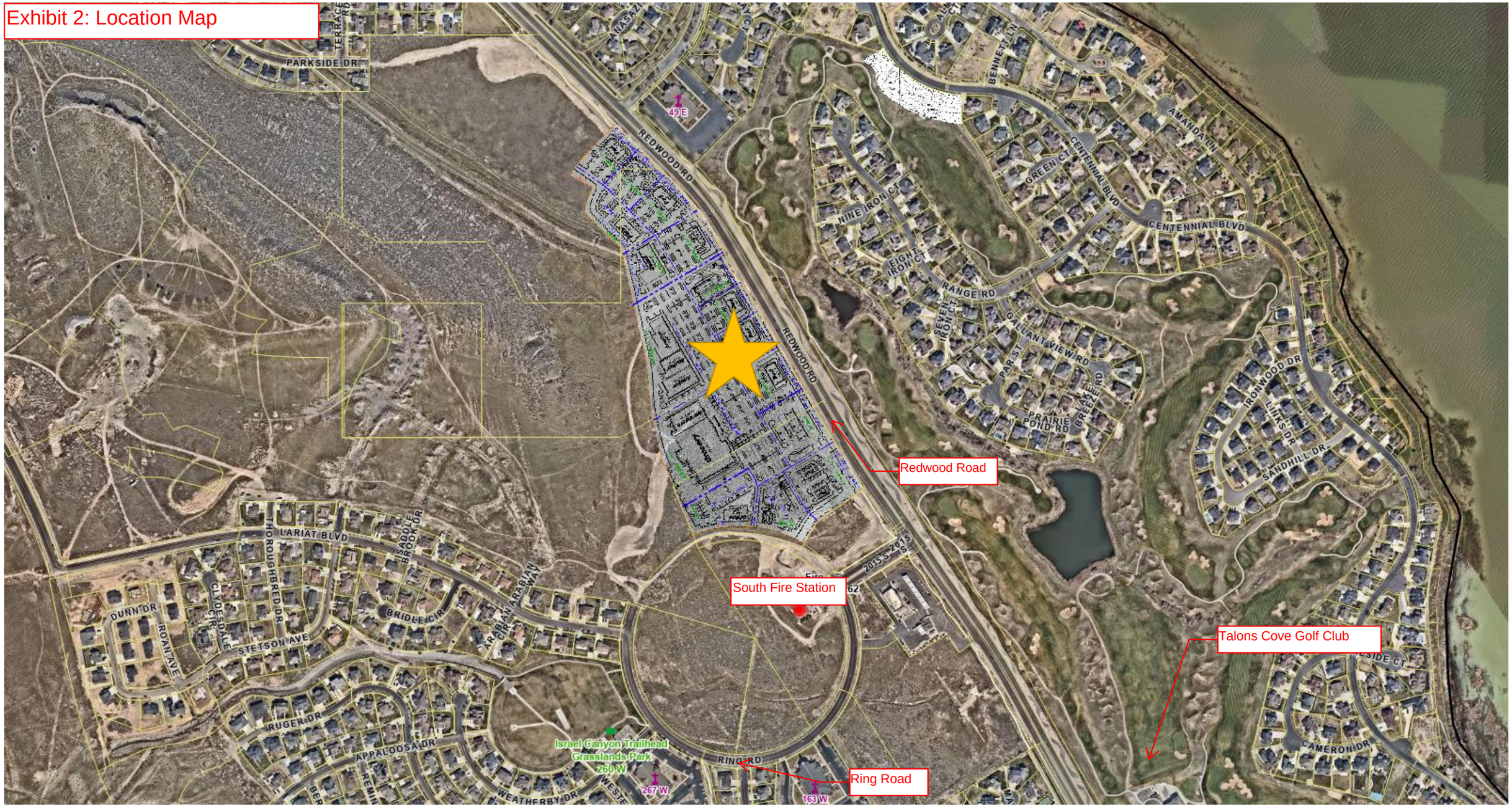


Exhibit 3: Planning Review Checklist

SARATOGA SPRINGS PLANNING

APPLICATION REVIEW CHECKLIST

Application Information

Date Received:	3/28/2024
Date of Review:	4/11/2024
Project Name:	Jacob Ranch Marketplace
Project Request / Type:	Rezone/GPA/Concept
Meeting Type:	Planning Commission/City Council
Applicant:	Bill Gaskill
Owner:	Jacob Hills Ranch LLC & Calvin K. Jacob Family Partners
Location:	Approx. 2000 S. Redwood Road
Major Street Access:	Redwood Road
Parcel Number(s) and size:	59:002:0186/11.25 AC 59:002:0195/79.28 AC 59:002:0171/33.72 AC 59:002:0172/32.56 AC Commercial Site Area = 28.538 AC
Current Land Use Designation:	RC, Low Density Residential
Proposed Land Use Designation:	RC
Current Parcel Zoning:	RC, R1-10
Proposed Parcel Zoning:	RC
Adjacent Zoning:	RC, NC, R1-10
Current Use:	Vacant
Adjacent Uses:	Fire Station, Gas Station, Golf Course
Previous Meetings:	N/A
Previous Approvals:	N/A
Type of Action:	Legislative
Land Use Authority:	City Council
Future Routing:	N/A
Planner:	Austin Roy/Senior Planner

Section 19.13 – Application Submittal

- Application Complete: Yes.
- Rezone Required: Yes.
- General Plan Amendment required: Yes.
- Additional Related Application(s) required: Preliminary Plat/Final Plat/Site Plan.

Section 19.13.04 – Process

- DRC: 02/20/24
- Neighborhood Meeting: Applicant to canvas properties within the boundary.
- PC: TBD
- CC: TBD

General Review

Building Department
- No comments.

Fire Department
- No comments.

GIS / Addressing
- No comments.

Additional Recommendations:
- Contact UDOT regarding proposed Redwood accesses.
- Capital Facility Plan and Impact Fees will be higher for restaurants with drive-thru.
- Possible signalized intersection will be required at intersection of Redwood Road and Centennial Blvd.
- Must show that remnant parcels can be developed.
- Private road north of proposed grocery is recommended to be a public road allowing east west access to site.
- Master planned trails run through site, should be included in plans.

Code Review

- 19.04, Land Use Zones
  - Zone: RC/R1-10
  - Use: RC/Low Density Residential

19.04.01 Requirements		Regional Commercial	
Category To Be Reviewed	**Regulation**	**Compliance**	**Findings**
Development Size (Minimum)	N/A		
Lot Size (Minimum)	30,000 sq. ft.	**Complies**	*40,682 sf*
Front/Corner Side Setback (Minimum)	10'	**Complies**	*> 10'*
Interior Side Setback (Minimum)	10' or height of building, whichever is greater, when adjacent to a residential zone	**Complies**	*> 10'*
Rear Setback (Minimum)	30' or height of building, whichever is greater, when adjacent to a residential zone	**Complies**	*> 30'*

Building Separation (Minimum)	N/A		
Lot Width (Minimum)	N/A		
Lot Frontage (Minimum)	N/A		
Building Height (Maximum)	50'	**Complies**	*< 50' shown in concept elevation.*
Lot coverage (Maximum)	50%	**Complies**	*< 50%*
Building Size (Minimum)	1,000 sq. ft.	**Complies**	*1,000 sf*
Building Size (Maximum)	N/A		

19.05 Supplemental Regulations		
Regulation	**Compliance**	**Findings**
Flood Plain: All buildings and structures intended for human occupancy shall be constructed at least (1) one foot above the base flood elevation of Zone A as defined on the FEMA Flood Insurance Map.	**N/A.**	
Water & Sewage: Each lot shall be connected to City water and sewer.	**Complies.**	*Connections shown for all bldgs.*
Transportation Master Plan: No building lot shall be created and no structure shall be erected within the location of a proposed street, road, highway, or right-of-way as shown on the City's currently-approved Transportation Master Plan.	**Complies.**	*Property ties into TMP roads.*
Property Access - All lots shall abut a dedicated public street or highway or a private roadway.	**Complies.**	*Access via Redwood and Ring Road.*
19.05.16. Special Standards and Considerations Governing Particular Uses. *See Code for details*		
Automobile refueling stations and car wash operations.	**Complies.**	*Setbacks and distances appear compatible.*
Automobile Repair, Minor:	**N/A.**	
Car Wash (full service).	**N/A.**	*No car wash proposed.*
Hotels.	**N/A.**	
Kennel, Private.	**N/A.**	
Storage, Self-Storage, or Mini-Storage Units.	**N/A.**	
Vehicle Storage.	**N/A.**	
Public and Private Utility Building or Facility and Public Building Sites.	**N/A.**	
Bars.	**N/A.**	

19.06 Landscaping and Fencing		
Landscape Plans		
Regulation	**Compliance**	**Findings**
Landscape Architect: Landscaped plans shall be prepared by a licensed landscape architect.	**Can Comply.**	*To be provided at Site Plan.*
Existing Conditions: Show the location and dimension of all existing and proposed structures, property lines, easements, parking lots, power lines, rights-of-way, ground signs, refuse areas, and lighting.	**Can Comply.**	
Planting Plan: Show location and planting details for all proposed vegetation and materials. Indicate the size of the plant material at maturation. All existing vegetation that will be removed or remain must be identified.	**Can Comply.**	

Plants: The name (both botanical and common name), quantity, and size of all proposed plants.	**Can Comply.**	
Topography: Existing and proposed grading of the site indicating contours at two-foot intervals.	**Can Comply.**	
Irrigation: Irrigation plans showing the system layout and details.	**Can Comply.**	
Fencing: Location, style, and details for proposed and existing fences and identification of the fencing materials.	**Can Comply.**	
Data Table: Table including the total number of each plant type, and total square footage and percentage of landscaped areas, domestic turf grasses, decorative rock, mulch, bark, and drought tolerant plant species.	**Can Comply.**	
Completion of Landscape Improvements: All required landscaping improvements shall be completed in accordance with the approved site plan, subdivision plat, landscape plan, irrigation plan, or other approval and shall be bonded for in accordance with Section 19.12.05.	**Can Comply.**	
Planting Standards		
Deciduous Trees: Minimum 2" in caliper.	**Can Comply.**	*To be provided at Site Plan.*
Evergreen Trees: Minimum 6' in height.	**Can Comply.**	
Tree Base Clearance: 3' diameter around every tree must be kept clear of turf and rock mulch. In parking lot islands and other narrow strips where turf two feet or less in width would otherwise occur, this clear area may be reduced to 2'.	**Can Comply.**	
Shrubs: 25% of required shrubs must be a minimum of 5 gallons in size at time of installation; all other required shrubs shall be a minimum of 1 gallon in size.	**Can Comply.**	
Turf: No landscaping shall be comprised of more than seventy percent turf, except within landscaped parks.	**Can Comply.**	
Artificial Turf : Shall require a building permit shall meet the following requirements with documentation provided by home owner or contractor: i. Artificial turf shall have a minimum eight-year "no-fade" warranty; ii. Multi-color blend needed to mimic real grass iii. Must be installed according to manufacturer's instructions; iv. Minimum pile height shall be 1.5 inches, minimum face/pile weight shall be at least 50 oz. per square yard, and water permeability shall be at least 19 inches per hour; v. Landscape plan shall provide for a minimum of 25 percent live vegetation coverage to comply with residential front and/or street side yard landscape standards; vi. Landscaping shall maintain a five-foot diameter around trees free from roc, debris, or artificial turf; vii. Rubber or inorganic infill is prohibited while organic infill is permitted; viii. The term "artificial turf" shall not be construed to include artificial trees, shrubs or bushes; and ix. Storm water runoff shall be maintained on-site.	**Can Comply.**	
Drought Tolerant Plants: 50% of all trees and shrubs shall be drought tolerant.	**Can Comply.**	
Rock Mulch: Rock mulch shall be two separate colors and separate sizes and must be contrasting in color from the pavement and other hard surfaces. All colors used must be earth tones.	**Can Comply.**	

Design Requirements		
Evergreens: Evergreens shall be incorporated into landscaped treatment of sites where screening and buffering are required.	**Can Comply.**	*To be provided at Site Plan.*
Softening of Walls and Fences: Plants shall be placed intermittently against long expanses of building walls, fences, and barriers to create a softening effect.	**Can Comply.**	
Planting and Shrub Beds: Planting and shrub beds are encouraged to be used in order to conserve water.	**Can Comply.**	
Water Conservation: Water-conserving sprinkler heads and rain sensors are required. Drip lines should be used for shrubs and trees.	**Can Comply.**	
Energy Conservation: Placement of plants shall be designed to reduce energy consumption. Deciduous trees are encouraged to be planted on the south and west sides of structures. Evergreens are encouraged to be planted on the north side of structures.	**Can Comply.**	
Placement: Whenever possible, landscaping shall be placed immediately adjacent to structures, particularly where proposed structures have large empty walls.	**Can Comply.**	
Trees and Power Poles: No trees shall be planted directly under or within 10' of power lines, poles, or utility structures unless: a. The Land Use Authority gives its approval. b. The Power Company or owner of the power line gives written consent. c. The maximum height or width at maturity of the tree species planted is less than 5' to any pole, line, or structure.	**Can Comply.**	
Preservation of Existing Vegetation		
Where possible and appropriate, existing native vegetation must be incorporated into the landscape treatment of the proposed site.	**N/A.**	
Tree Preservation: Existing mature evergreen trees of 16' in height or greater, and existing mature deciduous or decorative trees of more than 4" in caliper, shall be identified on the landscape plan and preserved if possible. If a mature tree is preserved, an area around the roots as wide as the existing canopy shall not be disturbed.	**N/A.**	
If preservation is not possible, the required number of trees shall be increased by double the number of such trees removed.	**N/A.**	
The replacement trees for evergreen trees shall be evergreens, and for deciduous shall be deciduous.	**N/A.**	
Deciduous trees smaller than four inches in caliper, or mature ornamental trees, that are removed shall be replaced on a one to one ratio.	**N/A.**	
Replacement trees shall be in addition to the minimum tree requirements of this Chapter, and shall comply with minimum sizes as outlined in the Chapter.	**N/A.**	
Planter Beds		
Weed Barrier: A high quality weed barrier or pre-emergent shall be used.	**Can Comply.**	*To be provided at Site Plan.*
Materials: High quality materials such as wood chips, wood mulch, ground cover, decorative rock, landscaping rocks, or similar materials shall be used, and materials must be heavy enough to not blow away in the wind.	**Can Comply.**	
Edging: Concrete edging must be used to separate planter and turf areas in all non-residential zones.	**Can Comply.**	
Drip Lines: Drip lines must be used in planter beds.	**Can Comply.**	
Fencing and Screening		

Front Yards: Fences exceeding 3’ in height shall not be erected in any front yard space of any residential lot.	**Can Comply.**	*To be provided at Site Plan.*
Clear Sight Triangle: All landscaping and fencing shall be limited to a height of not more than 3’ and the grade at such intersections shall not be bermed or raised and comply with AASHTO Standards.	**Can Comply.**	
Required Residential Fencing: Fencing in residential development shall be placed along property lines abutting open space, parks, canals, and trails. In addition, fencing may also be required adjacent to undeveloped properties.	**N/A.**	
Fences along open space, parks, canals, and trails shall be semi-private. Exception: privacy fencing is permitted for property lines abutting trail corridors that are not City maintained and are both adjacent to and visible from an arterial.	**N/A.**	
Fencing along arterial roads shall be of a consistent material and color within each development.	**N/A.**	
Fencing along open space, parks, and trails may be less than 6’ in height but shall not be less than 3’ in height, at the discretion of the property owner or HOA as applicable.	**N/A.**	
Screening at Boundaries of Residential Zones: For residential developments abutting active agricultural property or operations, a solid fence or wall shall be installed and maintained along the abutting property line.	**N/A.**	
Amount of Required Landscaping		
Portions of the property that are not developed with structures, rights of ways, or parking areas shall be required to be landscaped per the definition of Landscaping in Section 19.02 in all land use zones.	**Can Comply.**	*To be provided at Site Plan.*
Multi-family, common space not including parks, and nonresidential development in all zones shall be required to adhere to the minimum landscaped standards in 19.06.07 of the Land Development Code.	**N/A.**	
At least 50% of the landscaped area shall be covered with live vegetation at maturity, including shrubs, grasses, flowers, tree and shrub canopies and other live vegetation. The percentage may be reduced to 40% in areas where bark mulch, wood or plant fiber mulch, or rubber mulch is used instead of rock mulch.	**Can Comply.**	

Landscape Amount			
Category To Be Reviewed	**Regulation**	**Compliance**	**Findings**
Total Square Footage	1,243,127		
Required Landscaping	248,625	**Can Comply**	*To be provided at Site Plan.*
Required Deciduous Trees	84	**Can Comply**	
Required Evergreen Trees	82	**Can Comply**	
Required Shrubs	102	**Can Comply**	
Drought Tolerant Plants	135	**Can Comply**	

19.09 Off Street Parking		
General Provisions		
Regulation	**Compliance**	**Findings**

<table>
<tr><td>Materials: Parking areas shall consist of concrete, asphalt, or other impervious materials approved in the City’s adopted construction standards</td><td>Complies.</td><td>Shown on concept.</td></tr>
<tr><td>Parking Area Access: Common Access: Parking areas for one or more structures may have a common access so long as the requirements of all City ordinances, regulations, and standards are met. The determination of the locations for a common access shall be based upon the geometry, road alignment, and traffic volumes of the accessed road per the Standard Technical Specifications and Drawings.</td><td>Complies.</td><td>Shown on concept.</td></tr>
<tr><td>Sidewalk Crossing: All non-residential structures are required to provide parking areas where automobiles will not back across a sidewalk to gain access onto a public or private street.</td><td>Complies.</td><td>Shown on concept.</td></tr>
<tr><td>Cross Access: Adjacent non-residential development shall stub for cross-access. Developers must provide the City with documentation of cross-access easements with adjacent development.</td><td>Can Comply.</td><td>To be provided at Site Plan.</td></tr>
<tr><td>Lighting: Parking areas shall have adequate lighting to ensure the safe circulation of automobiles and pedestrians. Lighting shall be shielded and directed downward.</td><td>Can Comply.</td><td>To be provided at Site Plan.</td></tr>
<tr><td>Location of Parking Areas: Required off-street parking areas for non-residential uses shall be placed walking path of travel distance to the nearest customer entrance from the correlating non-residential use and individual tenant space as outlined in the table below. Unenclosed parking for residential areas shall not be provided in rear yards, unless said yard abuts an alley-type access or is fenced with privacy fencing.
<table>
<tr><th>Size of Non-Residential Use and Individual Tenant Space</th><th>Walking Path of Travel Distance to the Nearest Customer Entrances</th></tr>
<tr><td>Up to 1,500 square feet</td><td>150’</td></tr>
<tr><td>1,501 to 5,000 square feet</td><td>200’</td></tr>
<tr><td>5,001 to 10,000 square feet</td><td>250’</td></tr>
<tr><td>10,001 to 25,000 square feet</td><td>300’</td></tr>
<tr><td>25,001 to 50,000 square feet</td><td>350’</td></tr>
<tr><td>50,001 to 75,000 square feet</td><td>400’</td></tr>
<tr><td>75,001 to 100,000 square feet</td><td>450’</td></tr>
<tr><td>100,001 to 125,000 square feet</td><td>500’</td></tr>
<tr><td>Over 125,000 square feet</td><td>600’</td></tr>
</table>
a. Exception: To promote walkability, Mixed-Use and Mixed-Waterfront zones, and the Town Center Overlay (identified in the General Plan), shall be allowed to place parking garages and parking lots on the edge of shopping areas.
i. The walking path travel distance from a business’ main entrance shall not apply to these areas.</td><td>Complies.</td><td>Shown on concept.</td></tr>
<tr><td>Curb Cuts and Shared Parking: In most cases, shared parking areas shall share ingress and egress. This requirement may be waived when the City Engineer believes that shared accesses are not feasible. In reviewing the site plans for the shared parking areas, the City Engineer shall evaluate the need for limited access, appropriate number of curb cuts, shared driveways, or other facilities that will result in a safer, more efficient parking and circulation pattern.</td><td>Complies.</td><td>Shown on concept.</td></tr>
<tr><td>Parking plans shall show the following: the required number of stalls and aisles scaled to the correct dimensions; the correct number of ADA accessible parking spaces; storm water drainage capabilities; lighting; landscaping and irrigation; and pedestrian walkways.</td><td>Can Comply.</td><td>To be provided at Site Plan.</td></tr>
<tr><td>Provide accessible parking as required by Americans with Disabilities Act, see https://www.ada.gov/topics/parking/ https://adata.org/factsheet/parking</td><td>Can Comply.</td><td>To be provided at Site Plan.</td></tr>
<tr><td colspan="3">Parking Requirements and Shared Parking</td></tr>
</table>

Available on-street parking shall not be counted towards meeting the required parking stalls.	**Complies.**	*See table on concept.*
When a parking requirement is based upon square footage, the assessed parking shall be based upon gross square footage of the building or use unless otherwise specified in the requirement.	**Complies.**	*See table on concept.*
When parking requirements are based upon the number of employees, parking calculations shall use the largest number of employees who work at any one shift. Where shift changes may cause substantial overcrowding of parking facilities, additional stalls may be required.	**Complies.**	*See table on concept.*
When a development contains multiple uses, more than one parking requirement may be applied.	**Complies.**	*See table on concept.*
Tandem parking spaces will not be counted as parking spaces for non-residential uses except for stacking spaces where identified.	**N/A.**	
Any fraction obtained when calculating the parking requirement shall be rounded up to the next whole number to determine the required number of parking stalls.	**Complies.**	*See table on concept.*
Where no comparative land use standard for parking is found in Section 19.09.10, Required Minimum Parking, the Land Use Authority for the related development shall determine an appropriate requirement using the following criteria: (see code)		
Any information provided by the developer relative to trip generation, hours of operation, shared parking, peak demands, or other information relative to parking shall be considered when evaluating parking needs.	**N/A.**	
Parking Deviations. Parking requirements may deviate from the standards contained in Section 19.09.10, Required Minimum Parking, when the Land Use Authority determines that the deviation meets the intent of this Chapter. Reductions may not exceed 25% of the parking requirements and shall be based on the following criteria: 1. the intensity of the proposed use; 2. times of operation and use; 3. whether the hours or days of operation are staggered thereby reducing the need for the full amount of required parking; 4. whether there is shared parking agreement in accordance with Section 19.09.05.10 below; 5. the number of employees; 6. the number of customers and patrons; 7. trip generation; and 8. peak demands.	**N/A.**	
Shared Parking. Up to 25% of required parking may be shared with an adjacent use upon approval by the Land Use Authority. The developer must provide: a. an agreement granting shared parking or mutual access to the entire parking lot; and b. b. peak demand data by a professional traffic engineer showing that shared parking will accommodate the uses.	**N/A.**	
Guest Parking. Two-Family dwellings, Three-Family dwellings, Multi-Family dwellings, and dwellings above commercial. a. Guest parking shall be provided at a ratio of 0.25 stalls per unit. i. When a rear-load product is allowed in a village plan or neighborhood plan, and is accessed with aprons rather than driveways, guest parking shall be provided at a ratio of one stall per unit. b. Driveways shall not count towards the guest parking requirement.	**N/A.**	

c. Guest parking shall be located within two-hundred feet of the dwelling unit.		
Pedestrian Walkways and Accesses. Parking lots larger than 75,000 square feet shall provide raised or delineated pedestrian walkways. Walkways shall be a minimum of 10' wide and shall be placed through the center of the parking area and extend to the entrance of the building. Landscaped islands along the center walkway shall be placed at a minimum interval of every 30'. Landscaped islands are encouraged to be offset from one another to create a feeling of greater coverage. Pedestrian covered walkways may be substituted for tree-lined walkways. Where the developer desires to have a driveway access at the center of the parking area, a pedestrian access shall be placed on either side of the driveway.	**Complies.**	*Shown for anchor buildings.*
Landscaping in Parking Areas		
All parking areas (not including a driveway for an individual dwelling) for non-residential or multi-family residential uses that are adjacent to public streets shall have landscaped strips of not less than 10' in width placed between the sidewalk and the parking areas, containing a berm, hedge, or screen wall with a minimum height of 3' to minimize intrusion of lighting from headlights and other lighting on surrounding property. Trees, both deciduous and evergreen, shall be placed in the strip with spacing of no more than 30' between trees except in the clear sight triangle, and except where located beneath powerlines. The standards of section 19.06.06, Planting Standards and Design Requirements, shall apply for the minimum size of vegetation. Within regional parks this requirement may be met through the use of intermittent planter beds rather than a berm, hedge, or screen wall; trees or shrubs may be clustered in the planter beds where necessary to shield light spillage.	**Can Comply.**	*To be provided at Site Plan.*
All landscaped areas abutting any paved surface shall be curbed (not including a driveway for an individual dwelling). Boundary landscaping around the perimeter of the parking areas shall be separated by a concrete curb 6" higher than the parking surface.	**Can Comply.**	*To be provided at Site Plan.*
Clear Sight Triangles must be followed.	**Can Comply.**	*To be provided at Site Plan.*
All landscaped parking areas shall consist of trees, shrubs, and groundcover. Areas not occupied by structures, hard surfaces, vehicular driveways, or pedestrian walkways shall be landscaped and maintained. All landscaped areas shall have an irrigation system.	**Can Comply.**	*To be provided at Site Plan.*
On doubled rows of parking stalls, there shall be one 36' x 9' landscaped island on each end of the parking rows, plus one 36' x 9' landscaped island to be placed at a minimum of every twenty parking stalls. Each island on doubled parking rows shall include a minimum of two trees per planter.	**Complies.**	*Islands provided.*
On single rows of parking or where parking abuts a sidewalk, there shall be one 18' x 9' foot landscaped island a minimum of every ten stalls. Islands on a single parking row shall have a minimum of one tree per island. i. Exception: Landscaped islands are not required in single rows of parking that abut or are no farther than 6' from a landscaped area containing an equal or greater number of trees as would have been provided in islands, in addition to trees required for the landscaped area. Such trees shall be located within 9' of the edge of parking area, and shall have a canopy width that, at maturity, will extend into the parking area.	**Complies.**	*Islands provided.*

Landscaped islands at the ends of parking rows shall be placed and shaped in such a manner as to help direct traffic through the parking area.	**Can Comply.**	*To be provided at Site Plan.*
Required Minimum Parking		
See table in 19.09	**Complies.**	*Sufficient parking shown.*
Drive-thru Requirements		
Each stacking space shall accommodate one vehicle and be no less than 20 feet in length from the point of service.	**Can Comply.**	*To be provided at Site Plan.*
All drive-thru facilities must provide at a minimum 3 stacking spaces (60') per lane (up to 3 stacking spaces may count towards required parking).	**Can Comply.**	*To be provided at Site Plan.*
Bank or financial institution (including ATMs): minimum of 3 stacking spaces per lane. Food or beverage establishment: minimum of 5 stacking spaces.	**Can Comply.**	*To be provided at Site Plan.*
Entrances and exits of drive-thru lanes shall be clearly marked to designate the direction of traffic flow.	**Can Comply.**	*To be provided at Site Plan.*
A Final Traffic report shall be provided and approved to demonstrate how all queuing shall be contained within the property, business, or use and not affect the surrounding roads. Stacking shall be designed so that it does not have the potential to overflow onto the street or adjacent property, business, or use.	**Can Comply.**	*To be provided at Site Plan.*
Landscaping: A three foot (3') wide raised median or planter between the drive-thru aisle and the parking area shall be provided.	**Complies.**	*>or= 3'*
All drive-thru lanes adjacent to public streets shall have landscaped strips of not less than ten feet in width placed between the sidewalk and the drive-thru lanes that contain a berm, hedge, or screen wall with a minimum height of three feet to minimize intrusion of lighting from headlights and other lighting from surrounding properties.	**Complies.**	*Landscaping shown between Redwood Road.*
Gateway Overlay Parking		
Developments in the Gateway Overlay shall be designed with no parking between the Gateway Overlay arterial or collector streets and the street side of any buildings.	**N/A.**	

Dimensions for Parking Stalls & Aisle				
	Stall Width	Stall Length	Aisle Width (one-way traffic)	Aisle Width (two-way traffic)
90° Parking				
Required	9'	18'	24'	24'
Provided	9'	18'	24'	24'
60° Parking				
Required	9'	18'	25'	18'
Provided	N/A	N/A	N/A	N/A
45° Parking				
Required	9'	18'	25'	14'
Provided	N/A	N/A	N/A	N/A
Parallel				
Required	9'	20'	N/A	12'
Provided	N/A	N/A	N/A	N/A

19.11 Lighting		
General Standards		
Regulation	**Compliance**	**Findings**
Material: All Lighting Fixtures and assemblies shall be metal.	**Can Comply.**	*To be provided at Site Plan.*
Base: All lighting poles shall have a 16" decorative base.	**Can Comply.**	
Type: All lighting fixtures shall be of the full cutoff variety. Shoebox fixtures are prohibited.	**Can Comply.**	
Angle: Shall be directed downward.	**Can Comply.**	
Lamp: Bulbs may not exceed 4000k.	**Can Comply.**	
Drawings: Design and location of fixtures shall be specified on the plans.	**Can Comply.**	
Flags: The Unites States flag and the state flag shall be permitted to be illuminated from dusk till dawn. All other flags shall not be illuminated past 11:00 p.m. Flag lighting sources shall not exceed 10,000 lumens per flagpole. The light source shall have a beam spread no greater than necessary to illuminate the flag.	**Can Comply.**	
Prohibited Lighting: Searchlights, strobe lights and any laser source light or any similar high intensity light.	**Can Comply.**	
Descriptions: Descriptions of the illuminating devices, fixtures, lamp supports, and other devices. This description may include, but is not limited to, manufacturers' specifications, drawings, and sections.	**Can Comply.**	
Nonresidential Lighting		
All wall-mounted fixtures shall not be mounted above 16'. The exception shall be those instances where there is a second story access directly from the outdoors, and under-eave lighting. Wall-mounted lighting shall be only for the illumination of vertical surfaces such as building facades and signs, and shall not cast illumination beyond the surface being illuminated.	**Can Comply.**	*To be provided at Site Plan.*
Intermittent lighting must be of the "motion sensor" type that stays on for a period of time not to exceed 10 minutes and has a sensitivity setting that allows the lighting fixture to be activated only when motion is detected on the site.	**Can Comply.**	
All trespass lighting shall not exceed 1.0 foot-candles measured at the property line, except that trespass lighting into residential development shall not exceed 0.1 foot-candles measured at the property line.	**Can Comply.**	
Service station canopies must utilize canopy lights that are fully recessed into the canopy or are fully shielded by the canopy.	**Can Comply.**	
All freestanding lighting fixtures and assemblies shall be black. Regional Parks may include theme lighting fixtures in colors other than black. The color shall enhance the theme of the park and shall be approved during the site plan review process.	**Can Comply.**	
Pole design shall include an arm and bell shade. Regional Parks may include theme lighting fixtures that do not include an arm and bell shade. The design shall enhance the theme of the park and shall be approved during the site plan review process.	**Can Comply.**	
Parking lot poles shall be limited to a height of 16' when in or within 200' of a residential zone; all other locations shall have a height limit of 20'.	**Can Comply.**	
All lighting fixtures in surface parking lots and on the top decks of parking structures shall be fitted to render them full cutoff.	**Can Comply.**	

One hour after closing or by 11:00 pm, whichever is earlier, businesses must turn off at least 50% of building lighting and lighting fixtures in surface parking lots and on top decks of parking structures; however, those lighting fixtures turned off may be set to function utilizing a motion detector system. Lights may be turned back on one half hour prior to the first employee shift.	**Can Comply.**	
Business open for 24 hours must turn off 50% of their outdoor and parking lot lighting by 11:00 pm and must keep them off until one half hour before sunrise, however, those lighting fixtures turned off may be set to function utilizing a motion detector system.	**Can Comply.**	
Walkway Lighting		
Lighting of all pedestrian pathways is recommended.	**Can Comply.**	*To be provided at Site Plan.*
All pathway, walkway, and sidewalk lighting fixtures shall be mounted at a height not to exceed 10'. i. Themed walkway lighting within Regional Parks shall not exceed a height of 25'. Such lighting within 200' of residential development shall not exceed 16'.	**Can Comply.**	
Bollard lighting shall be limited to a height of 4'.	**Can Comply.**	
Lighting Plan		
Plans indicating the location and types of illuminating devices on the premises.	**Can Comply.**	*To be provided at Site Plan.*
Descriptions of the illuminating devices, fixtures, lamp supports, and other devices. This description may include, but is not limited to, manufacturers' specifications, drawings, and sections.	**Can Comply.**	
Photometric sheet showing measurement of light intensity across the site and onto adjacent property in terms of candela, lumens, and foot-candles.	**Can Comply.**	
Plans providing information required in the Technical Standards and Specifications Manual.	**Can Comply.**	

19.12 Subdivision		
Preliminary Plat Requirements		
Regulation	**Compliance**	**Findings**
Standard Plat Format followed.	**Can Comply.**	*Preliminary and Final Plat to be submitted at later date.*
Name and address of property owner and developer.	**Can Comply.**	
Name of land surveyor.	**Can Comply.**	
The location of proposed subdivision with respect to surrounding property and street.	**Can Comply.**	
The name of all adjoining property owners of record, or names of adjoining developments.	**Can Comply.**	
The names and location of ROW widths of adjoining streets and all facilities within 100' of the platted property.	**Can Comply.**	
Street and road layout with centerline bearing and distance labels, dimensions, and names of existing and future streets and roads, (with all new names cleared through the City GIS Department).	**Can Comply.**	
Subdivision name cleared with Utah County.	**Can Comply.**	
North arrow.	**Can Comply.**	

A tie to a permanent survey monument at a section corner.	**Can Comply.**	
The boundary lines of the project with bearings and distances and a legal description.	**Can Comply.**	
Layout and dimensions of proposed lots with lot area in square feet.	**Can Comply.**	
Location, dimensions, and labeling of roads, structures, irrigation features, drainage, parks, open space, trails, and recreational amenities.	**Can Comply.**	
Location of prominent natural features such as rock outcroppings, woodlands, steep slopes, etc.	**Can Comply.**	
Proposed road cross sections.	**Can Comply.**	
Proposed fencing.	**Can Comply.**	
Vicinity map.	**Can Comply.**	
All required signature blocks are on the plat.	**Can Comply.**	
Prepared by a professional engineer licensed in Utah.	**Can Comply.**	
Proposed methods for the protection or preservation of sensitive lands.	**Can Comply.**	
Location of any flood plains, wetlands, and other sensitive lands.	**Can Comply.**	
Location of 100-year high water marks of all lakes, rivers, and streams.	**Can Comply.**	
Projected Established Grade of all building lots.	**Can Comply.**	
A data table. 1. total project area; 2. total number of lots, dwellings, and buildings; 3. where buildings are included, square footage of proposed building footprints and, if multiple stories, square footage by floor; 4. for multi-family developments, the number of proposed garage parking spaces and number of proposed total parking spaces; 5. percentage of buildable land; 6. acreage of sensitive lands and percentage sensitive lands comprise of total project area and open space area; 7. area and percentage of open space or landscaping; 8. area to be dedicated as right-of-way (public and private); 9. net density of dwellings by acre (sensitive lands must be subtracted from base acreage).	**Can Comply.**	
Phasing Plan: Including a data table with the following Information for each phase: i. Subtotal area in square feet and acres; ii. number of lots or dwelling units; iii. open space area and percentage; iv. utility phasing plan; v. number of parking spaces; vi. recreational facilities to be provided; vii. overall plan showing existing, proposed, and remaining phases.	**Can Comply.**	
Final Plat Requirements		
Subdivision name and location.	**Can Comply.**	*Preliminary and Final Plat to be submitted at later date.*

Standard Plat Format followed.	**Can Comply.**	
Name and address of property owner and developer.	**Can Comply.**	
Name of land surveyor.	**Can Comply.**	
The location of proposed subdivision with respect to surrounding property and street.	**Can Comply.**	
The name of all adjoining property owners of record, or names of adjoining developments.	**Can Comply.**	
The names and location of ROW widths of adjoining streets and all facilities within 100' of the platted property.	**Can Comply.**	
North arrow.	**Can Comply.**	
A tie to a permanent survey monument at a section corner.	**Can Comply.**	
The boundary lines of the project with bearings and distances and a legal description with total project area in SF and acres.	**Can Comply.**	
Layout and dimensions of proposed lots with lot area in square feet and acres. Lot boundaries shall include dimensions and bearings.	**Can Comply.**	
Lot Numbers.	**Can Comply.**	
Location, dimensions, and labeling of roads, structures, irrigation features, drainage, parks, open space, trails, and recreational amenities.	**Can Comply.**	
Location of prominent natural features such as rock outcroppings, woodlands, steep slopes, etc.	**Can Comply.**	
Proposed road ROW widths.	**Can Comply.**	
Vicinity map.	**Can Comply.**	
All required signature blocks are on the plat.	**Can Comply.**	
Prepared by a professional engineer licensed in Utah.	**Can Comply.**	
Proposed methods for the protection or preservation of sensitive lands.	**Can Comply.**	
Fencing plans.	**Can Comply.**	
Location of any flood plains, wetlands, and other sensitive lands.	**Can Comply.**	
Flood plain boundaries as indicated by the Federal Emergency Management Agency as well as the location of 100-year high water marks of all lakes, rivers, and streams.	**Can Comply.**	
Existing and Proposed easements.	**Can Comply.**	
Street monument locations.	**Can Comply.**	
Lot and road addresses and addresses for each intersection. Road names shall be approved by the City GIS department before being added to the subdivision plat.	**Can Comply.**	
A data table. 1. total project area; 2. total number of lots, dwellings, and buildings;	**Can Comply.**	

3. where buildings are included, square footage of proposed building footprints and, if multiple stories, square footage by floor; 4. for multi-family developments, the number of proposed garage parking spaces and number of proposed total parking spaces; 5. percentage of buildable land; 6. acreage of sensitive lands and percentage sensitive lands comprise of total project area and open space area; 7. area and percentage of open space or landscaping; 8. area to be dedicated as right-of-way (public and private); 9. net density of dwellings by acre (sensitive lands must be subtracted from base acreage).		
Phasing Plan: Including a data table with the following Information for each phase: i. Subtotal area in square feet and acres; ii. number of lots or dwelling units; iii. open space area and percentage; iv. utility phasing plan; v. number of parking spaces; vi. recreational facilities to be provided; vii. overall plan showing existing, proposed, and remaining phases.	**Can Comply.**	
Developer shall ensure all rollback taxes are paid prior to recordation.		
Condominium Process		
Condominium projects shall receive Site Plan and Preliminary Plat approval.	**N/A.**	
A Declaration of Condominium and Condominium Plat shall be submitted.	**N/A.**	
The Condominium Plat shall follow the Final Plat requirements.	**N/A.**	
Subdivision Layout		
Layout: The subdivision layout should be generally consistent with the City's adopted Land Use Element of the General Plan, and shall conform to any land use ordinance, any capital facilities plan, any impact fee facilities plan, and the transportation master plan.	**Complies.**	*Compatible with City plans.*
Trails Master Plan: Shows required trails	**Complies.**	*Trails shown.*
Block Length: The maximum length of blocks shall be 1,000'. In blocks over 800' in length, a dedicated public walkway through the block at approximately the center of the block will be required.	**Can Comply.**	*Preliminary and Final Plat to be submitted at later date.*
Such a walkway shall not be less than 15' in width unless otherwise approved by the City in accordance with other applicable standards approved by the City Council.	**Can Comply.**	*Preliminary and Final Plat to be submitted at later date.*
Connectivity: The City shall require the use of connecting streets, pedestrian walkways, trails, and other methods for providing logical connections and linkages between neighborhoods.	**Complies.**	*Pedestrian connections shown.*
Mailboxes: Group mailboxes shall be accessed only from a local street, and shall not be placed on a collector or arterial street, unless a bulbout is provided with space for a minimum of three vehicles to park outside the lane of travel and shoulder.	**N/A.**	
Private Roads: Private roads may be constructed as approved as part of the Preliminary Plat approval and so long as such roads meet the same standards identified in the Saratoga Springs Standard Street Improvement Details.	**Can Comply.**	*Preliminary and Final Plat to be submitted at later date.*
Access: Where the vehicular access into a subdivision intersects an arterial road as defined in the Transportation Master Plan, driveways	**Can Comply.**	*To be verified at Site Plan.*

shall not be placed on the intersecting road within 100' of the arterial connection.		
Two separate means of vehicular access onto a collector or arterial road shall be required to be constructed to City road standards when the total number of equivalent residential units (including adjacent developments and neighborhoods) served by a single means of access will exceed thirty. **Exception:** Where no point of second access is available within 500' and where all units are provided with an approved sprinkler system, a second access shall not be required until the number of units reaches double the above limits.	**N/A.**	
Where two means of access are required, the points of access shall be placed a minimum of 500' apart, measured along the center of the driving lane from center of right-of-way to center of right-of-way. The City Fire Chief may require a greater distance than 500 feet if: 1. an essential link exists between a legitimate governmental interest and the requirement; and 2. the requirement is roughly proportionate, both in nature and extent, to the impact of the proposed development.	**N/A.**	
Driveway and Driveway Approaches: **Construction:** single driveways in the A, RA, and RR zones that are constructed of road base or gravel shall include a concrete apron at the entrance to the garage and at the intersection with the street, each a minimum of five feet in depth. Single driveways in all other zones, and shared driveways in all zones, shall be constructed of concrete or asphalt.	**N/A.**	
Shared Driveways: Shared driveways shall be a minimum of 26' in width and shall direct all runoff to a public or private drainage system. All dwellings on shared driveways shall provide enclosed garages or other covered parking. Shared driveways accessing more than four dwellings shall also provide a minimum of 25' of parking space between the garage and shared driveway. Shared driveways with four or fewer dwellings, if not providing a minimum of 20' of parking space, shall install a remote garage door opener prior to issuance of Certificate of Occupancy. All requirements of the Fire Code shall also be met.	**N/A.**	
1. Shared Driveways may be used for clustered single-family lots. a. When there are more than two units sharing a driveway, the maximum length shall be 150 feet. b. The maximum amount of units accessing a shared driveway shall be six. 2. Shared driveways may be used for two-family, three-family, and multi-family units. a. The maximum length shall be 150 feet. b. The maximum amount of units accessing a shared driveway shall be ten. 3. Number of Driveway Approaches: Only one driveway approach is allowed per property frontage. A circular driveway is considered one driveway approach if installed in accordance with the provisions of this section. a. Corner lots may have one driveway approach per street frontage. b. Circular driveways must have at least 15' between the two closest edges of the driveway approach at the property line and meet all other conditions of this code.	**N/A.**	

4. Driveway Approach widths: Residential driveway aprons shall not exceed 30 feet in width, except as follows. a. Driveway aprons may be increased up to 45-ft in width if the home has a 3 car garage and/or parking pad and the combined width of all drive approaches on a single frontage does not consume more than 60% of the total property frontage and all other conditions of the section are met.		
iii. Driveway Widths: 1. Driveways shall be a minimum of twenty feet deep and eight feet wide for a single-wide driveway and sixteen feet wide for a double-wide driveway. 2. Rear-load alley product, as approved as part of a Community Plan, Village Plan, or Neighborhood Plan, may have an apron in lieu of a driveway approach for access to the garage from the alley. The apron shall be a minimum of five feet deep and shall not count towards required parking.	**N/A.**	
iv. Driveway Approach Locations: Driveway approaches shall be a minimum of 5' from any property line where water meters are located, except for corner lots as specified below. 1. For corner lots, or where the vehicular access into a subdivision intersects a collector or arterial road as defined in the Transportation Master Plan, the minimum driveway approach distance, as measured from the edge of the right of way to the nearest edge or driveway surface shall be as follows: Local = 15 feet; Collector = 40 feet, Arterials = 100 feet. 2. Residential lots or parcels shall not be allowed to have access ways onto arterial roads such as Redwood Road, Crossroads Boulevard, Pioneer Crossing, and Pony Express. Exceptions may be made for large lots (at least 1 acre in size) or for lots where the home is set back over 150 feet from the arterial roadway. Approval by UDOT may be required.	**N/A.**	
v. The City may reject any permit or proposal for a driveway approach where staff has determined the proposed location would be dangerous or where it conflicts with any permanent improvements, existing or master planned utilities, or waterways.	**N/A.**	
Lot Design		
All subdivisions shall result in the creation of lots that are developable and capable of being built upon. A subdivision shall not create lots that would make improvement impractical due to size, shape, steepness of terrain, location of watercourses, sanitary sewer problems, driveway grades, or other physical constraints and considerations.	**Complies.**	*Lots appear compatible.*
All lots or parcels created by the subdivision shall have frontage on a street or road that meets the City's ordinances, regulations, and standards for public roads.	**Complies.**	*Access shown.*
Flag lots may be approved with less frontage when the Planning Commission determines that the creation of such a lot would result in an improved design or better physical layout for the lot based on the following criteria: i. For subdivisions with 20 or less lots: no more than 10% (rounding down) of the total lots are allowed to be flag lots; ii. For subdivisions with 50 or less lots: no more than 7.5% (rounding down) of the total lots are allowed to be flag lots; and iii. For subdivision with more than 50 lots: no more than 5% (rounding down) of the total lots are allowed to be flag lots.	**N/A.**	

Land dedicated as public roads and rights-of-way shall be separate and distinct from land included in lots adjacent to public roads and rights-of-way. In no case may land dedicated for public roads and rights-of-way be included in the area calculation of any lots, except for non-conforming lots.	**Complies.**	*No public roads on site.*
Side property lines shall be at approximately right angles to the street line or radial to the street line.	**Complies.**	*Right angles used.*
Corner lots for residential use shall be 10% larger than the required minimum lot.	**N/A.**	
No lot shall be created that is divided by a municipal or county boundary line.	**Complies.**	*No municipal boundaries.*
Remnants of property shall not be left in the subdivision that do not conform to lot requirements or are not required or suitable for common open space, private utilities, public purposes, or other purpose approved by the Land Use Authority.	**Complies.**	*No remnants proposed.*
Double access lots are not permitted with the exception of corner lots.	**N/A.**	
Driveways for residential lots or parcels shall not be allowed to have access on major arterials. **Exception:** Exceptions may be made for large lots (at least 1 acre in size) or for lots where the home is set back over 150' from the arterial roadway. Approval by UDOT may be required.	**N/A.**	
All subdivisions along arterial roadways shall conform to the City's requirements and adopted street cross-section including pedestrian walkways, park strips, landscaping, and fencing.	**Can Comply.**	*To be verified at preliminary.*
Minor Subdivision Requirements		
A Minor Subdivision is a one-time process. To ensure adequate infrastructure, lots contained in an existing recorded subdivision plat are not eligible to apply for a Minor Subdivision.	**N/A.**	
The minimum lot size for lots created through a Minor Subdivision shall be one acre, or the minimum allowed by the zone, whichever is greater.	**N/A.**	
A Minor Subdivision may subdivide a parcel into a maximum of four parcels.	**N/A.**	
Lots created through a Minor Subdivision may not be buildable until all other applicable state and local requirements are met.	**N/A.**	
Application includes an updated Preliminary Title Report. i. The Title Report must also demonstrate that the proposed minor subdivision has not been involved in any prior minor subdivision.	**N/A.**	
Minor Subdivision Plats shall conform to all of the requirements for Final Subdivision Plats layouts as provided in section 19.12.03.	**N/A.**	

19.13 Process	
Regulation	**Findings**
Neighborhood Meeting. Required?	Yes. Parcels are adjacent to developed residential properties.
Notice/Land Use Authority.	*City Council*
Master Development Agreement. A Master Development Agreement shall be required of any development that is in excess of twenty acres in size if non-residential or mixed-use or developments in excess of 160 acres in size if residential. A Master Development Agreement may also be required pursuant to this Title 19 including Chapter 19.26 or may be desirable or necessary pursuant to the exercise of the City	*TBD*

Council's legislative discretion in the fact scenarios listed in Section 19.13.08.	
Phasing Improvements.	*TBD*
Payment of Lieu of Open Space.	Amount of $: N/A.
Piping of Canals	For residential projects, piping of canals per canal company specifications if a canal or canal easement that area is adjacent to or within the area of the proposed residential project, unless the canal company or Bureau of Reclamation does not allow piping. Non-residential projects shall install secure fencing adjacent to canal easements or canals per canal company specifications to prevent entry from the non-residential project onto the canal or canal easement.
Burial of Overhead Utility Lines	See Section 19.13.10

Concept Plan Application Requirements		
Regulation	**Compliance**	**Findings**
A completed application and affidavit, form, and application fee.	**Complies.**	*Submitted.*
Plat/Parcel Map of the area available at the Utah County Surveyor's Office.	**Complies.**	*Submitted.*
Proposed changes to existing zone boundaries, if such will be needed	**Complies.**	*Zoning proposed changes provided.*
Conceptual elevations and floor plans, if available	**Complies.**	*A conceptual elevation was provided for multi-tenant bldg.*
Drawn to a scale of not more than 1" = 100'	**Complies.**	*1"=100'*
Proposed name of subdivision, cleared with the County Recorder to ensure the name is not already in use	**Complies.**	*A recorded subdivision.*
Name of property if no subdivision name has been chosen. This is commonly the name in which the property is locally known	**N/A.**	
Locations and widths of existing and proposed streets and right-of-ways	**Complies.**	*ROW shown.*
Road centerline date including bearing, distance, and curve radius	**N/A.**	*Not altering ROW in Redwood Road.*
Configuration of proposed lots with minimum and average lot sizes	**Complies.**	*Table included on phase 2 drawing.*
Approximate locations, dimensions, and area of all parcels of land proposed to be set aside for park or playground use or other public use, including acreages, locations, and percentages of each and conceptual plan of proposed recreational amenities	**Complies.**	*No open space proposed.*
Those portions of property that qualify as sensitive lands per Section 19.02.02., including acreages, locations, types, and percentages of total project area and of open space	**N/A.**	
Total acreage of the entire tract proposed for subdivision	**Complies.**	*Show on conceptual site plan.*
General topography shown with 1'or 2' contours and slope arrows with labels	**Complies.**	*ALTA survey provided.*
North arrow, scale, and date of drawing	**Complies.**	*Shown.*
Property boundary with dimensions	**Complies.**	*Shown on phase 2 drawing.*
Data table including total number of lots, dwellings, and buildings, square footage of proposed buildings by floor, number of proposed garage City of Saratoga Springs Municipal Code Land Development Code - Title 19.13 Page | 10 parking spaces, number of proposed surface parking spaces, number of required and proposed ADA compliant parking spaces, percentage of buildable land, percentage and amount of open space or landscaping, and net density of dwellings by acre	**Complies.**	*Shown on phase 2 drawing.*
Existing conditions and features within and adjacent to the project area including roads, structures, drainages, wells, septic systems, buildings, and utilities	**Complies.**	*Survey provided.*
Conceptual utility schematic with existing and proposed utility alignments and sizes sufficient to show how property will be served	**Complies.**	*Phase 2 utility concept provided.*

including drainage, sewer, culinary and secondary water connections and any other existing or proposed utilities needed to service the proposed development or that will need to be removed or relocated as part of the project		
A schematic drawing of the proposed project that depicts the existing proposed transportation corridors within two miles, and the general relationship of the proposed project to the Transportation and Land Use Element of the General Plan and the surrounding area	**Complies.**	*Shown.*
Trails Master Plan: Shows required trails	**Complies.**	*Trails shown.*

19.14 Site Plan Review		
Regulation	**Compliance**	**Findings**
Approval Required: Site Plan approval shall be required for all developments which contain the following uses, together with any others for which it is required elsewhere in these Ordinances: 1. Any industrial use; 2. Any commercial use; 3. Any institutional use; 4. Two-Family Structures and Three-Family Structures; and 5. A multi-family residential development.	**Can Comply.**	*To be provided at Site Plan.*
Site Plan Standards: The entire parcel area shall be built upon, landscaped, or paved in accordance with the zone's open space and parking requirements.	**Can Comply.**	
Utilities: All utility lines shall be underground in designated easements. No pipe, conduit, cable, water line, gas, sewage, drainage, steam, electrical, or any other energy or service shall be installed or maintained upon any lot outside of any building above the surface of the ground except during construction. a. Transformers shall be grouped with other utility meters where possible and screened with vegetation or fencing. b. Each contractor and owner or developer shall be responsible to know the whereabouts of all underground utilities. Protection of such utilities shall also be their responsibility. c. Prior to construction, contact must be made with Blue Stakes and any other utility company, public or private, not participating in Blue Stakes in the area to identify underground utility lines. d. Exception: electric power transmission lines of 46kV or above are not required to be placed underground.	**Can Comply.**	
Grading and Drainage: Drainage from any lot must follow current City requirements to show on site retention and a maximum allowable discharge of 0.2 cubic feet per second (cfs) per acre. Drainage shall not be allowed to flow upon adjoining lots unless the owner of the lot upon which the water flows has granted an easement for such purpose. The Planning Commission must approve a Site Plan with grading, drainage, and clearing plans before any such activities may begin. Lot grading shall be kept to a minimum. Roads and development shall be designed for preservation of natural grade except as otherwise approved by the City Engineer based on standards and specifications.	**Can Comply.**	
Secondary Water System and Dedication of Water Shares: The applicant shall comply with the City's adopted Water Utility Ordinance and other adopted standards, regulations, and ordinances and shall dedicate to the City the amount of water specified in those adopted standards, regulations, and ordinances upon approval of the Site Plan.	**Can Comply.**	

Piping of Irrigation Ditches: All existing irrigation canals and ditches which are located on the site or straddle a site property line shall be piped with a sufficient size pipe and shall be approved by the City Engineer.	**Can Comply.**	
Preliminary Plat With Attached Units: When the proposed Site Plan includes attached units, the Site Plan submittal shall include a preliminary subdivision plat. Said plat shall include an ALTA survey of the property recorded with the Utah County Surveyor pursuant to the Utah Code, the proposed building locations, proposed floor plans and proposed elevations identifying each building in the development. Approval of the proposed Site Plan may occur simultaneously with the approval of the proposed preliminary plat.	**Can Comply.**	
Nuisances: All commercial uses shall be free from objectionable odors, noises, hazards, or other nuisances.	**Can Comply.**	
Residential Conversions: No existing residential dwelling or residential lot in any commercial or residential zone may be used or converted into a commercial use unless all of the standards set forth herein are met, including parking regulations, setbacks, landscaping, and architectural design.	**N/A.**	
Ownership Affidavit: A statement of ownership and control of the subject property and a statement describing the nature of the intended use.	**Can Comply.**	
Vicinity Map: A general location map indicating the approximate location of the subject parcel.	**Can Comply.**	
Context plan: A context plan shall include the existing features within 200 feet of the proposed Site Plan property line. Existing features include, but are not limited to, buildings, ingress and egress points, landscaping areas, pedestrian paths, and property names.	**Can Comply.**	
Site Analysis: A site analysis is a plan view drawing demonstrating land constraints and existing features. Existing features may consist of the presence of boulders, existing man-made features, significant trees, canals or ditches, access points or public rights-of-way, and existing conditions within 200 feet of the property line.	**Complies.**	*Survey provided.*
Survey: A survey prepared and stamped by a Utah registered land surveyor listing the metes and bounds legal description and the gross acreage within the subject parcel.	**Complies.**	*Provided.*
Compliance statement: A statement indicating how the proposed development complies with the City's adopted Land Use Element of the General Plan.	**Can Comply.**	
Final Construction Drawings containing, at a minimum, all items specified in the City's "Standard Technical Specification and Drawings" manual. Applicant shall provide three full-size 24" x 36" copies and five 11 x 17 inch reductions as required on the application form, along with digital copies as outlined below. Additional copies may be required prior to adding the application to the Planning Commission agenda. Final Construction Drawings for a Site Plan is hereby required and shall be prepared and stamped by licensed or certified professionals including architects, landscape architects, land planners, engineers, surveyors, transportation engineers, or other professionals deemed necessary by the Planning Director. The City may require plans prepared by any or all of the above-noted professionals. A Site Plan application shall also contain the following : i. locations, dimensions, floor plans, uses and heights of all proposed buildings and structures, including overhangs,	**Can Comply.**	

porches, stairwells, and balconies, and the locations of all structures on adjoining properties; ii. access points, provisions for vehicular and pedestrian circulation on and off site, interconnection to adjacent sites, dimensions of such access and circulation, and pedestrian paths within 200 feet of the property boundary; iii. acceleration and deceleration lanes, and dimensions thereof, if required; iv. off-street parking and loading areas complying with the City's off-street parking requirements contained in Chapter 19.09 of this Title; v. proposed outdoor display areas; vi. screening and buffering provisions, including types and heights of existing and proposed buffering and fencing elements; vii. location and treatment of refuse collection areas, storage areas, mechanical equipment, and external structures; viii. location, type, and size of all business and on-site circulation signage; ix. tabulation of square footage devoted to various land uses, ground coverage by structures, and other impervious surfaces; x. type of construction of all structures, presence or absence of fire sprinkling, and location of existing and proposed fire hydrants; xi. Established Grade of building area.		
Final Hydraulic and Hydrological storm drainage report and calculations. location of all existing and proposed secondary irrigation systems, both on site and on adjacent properties, including ditches, pipes, and culverts;	**Can Comply.**	
Final Traffic report: Said report shall comply with the standards outlined in the City's adopted Transportation Master Plan and shall include, but not be limited to, the following: i. an analysis of the average daily trips generated by the proposed project; ii. an analysis of the distribution of trips on City street systems; iii. a description of the type of traffic generated; and iv. recommendations on what mitigation measures should be implemented with the project to maintain a level of service for existing and proposed residents acceptable to the City.	**Can Comply.**	
Data table including: i. total project area ii. total number of lots, dwellings, and buildings iii. square footage of proposed building footprints and, if multiple stories, square footage by floor iv. number of proposed garage parking spaces v. number of proposed surface parking spaces vi. percentage of buildable land vii. acreage of sensitive lands and what percent sensitive lands comprise of total project area and of open space area viii. area and percentage of open space or landscaping ix. area to be dedicated as right-of-way (public and private) x. net density of dwellings by acre (sensitive lands must be subtracted from base acreage). xi. number of off-street parking spaces (e.g., number of proposed garage parking spaces, number of proposed surface parking spaces, etc.)	**Can Comply.**	

Landscaping Plan: A landscaping plan, prepared and stamped by a licensed landscape architect, indicating the location, spacing, types, and sizes of landscaping elements and existing trees, and showing compliance with the City's off-street parking requirements, the City's design guidelines and policies, and the requirements of the appropriate zone.	**Can Comply.**	
Lighting Plan: A lighting plan indicating the illumination of all interior areas and immediately adjoining streets showing the location, candle power, and type of lighting proposed, and in conformance with the City's lighting standards. An individual photometric plan is also required.	**Can Comply.**	
Elevations: The elevations of all proposed buildings, fences, and other structures viewed from all sides indicating height of structures, the average finished grade of the site at the foundation area of all structures, percentage of building materials proposed, and color of all materials. A board showing building colors and materials is required.	**Can Comply.**	
Signage Plan: An overall signage plan shall be approved during the Site Plan approval process. All information to be provided for the sign approval shall be submitted concurrent with Site Plan application materials, consistent with the requirements in Section 19.18.	**Can Comply.**	
Fee: A fee set by resolution of the City Council shall accompany the application for any Site Plan review.	**Can Comply.**	
Public Notice and Hearing: All site plans shall comply with the noticing and public hearing requirements of Section 19.13, and applicants shall pay the cost to post and mail required notice to property owners.	**Can Comply.**	
Development or Bond Agreement: A development agreement and bond agreement shall be required based on the conditions, requirements, findings, and recommendations made by the City Council. The development agreement and bond agreement shall also be based on requirements of the City Code and legal requirements as specified by the City Attorney. The City Council may determine that a development agreement is not required, but in all cases a bond agreement shall be required. A development agreement is not required when conditions, requirements, findings, and recommendations are all consistent with Title 19 requirements unless the City Council, in exercising its legislative authority pursuant to Utah Code § 10-9a-102, determines that a development agreement is necessary to further the public health, safety, or welfare or any other legitimate purpose outlined in Utah Code § 10-9a-102(1).	**Can Comply.**	
Considerations Relating to Traffic Safety and Traffic Congestion: i. the effect of the site development plan on traffic conditions on adjacent street systems; ii. the layout of site with respect to location and dimensions of vehicular and pedestrian entrances, exits, driveways, and walkways; iii. the arrangement and adequacy of off-street parking facilities to prevent traffic congestion and compliance with the provisions of Chapter 19.09, off-street parking requirements; iv. the location, arrangement, and dimensions of truck loading and unloading facilities; v. the circulation patterns within the boundaries of the development; and vi. the surfacing and lighting of off-street parking facilities.	**Can Comply.**	
Considerations Relating to Outdoor Advertising: Outdoor advertising shall comply with the provisions of Chapter 19.18.	**Can Comply.**	

Consideration Relating to Landscaping: i. the location, height, and materials of walls, fences, hedges, and screen plantings to ensure harmony with adjacent development, to provide buffer areas, or to conceal storage areas, utility installations, or other unsightly development; ii. the requirements of Chapter 19.06; iii. the planting of ground cover or other surfaces to prevent dust and erosion; and iv. the unnecessary destruction of existing healthy trees.	**Can Comply.**	
Considerations Relating to Buildings and Site Layout: i. the general silhouette and mass, including location on the site, elevations, and relation to natural plan coverage, all in relationship to the character of the neighborhood; ii. the exterior design in relation to adjoining structures in height, bulk, and area openings, breaks in facade facing the street, line and pitch of roofs, and the arrangement of structures on the parcel; iii. compliance with the City's Architectural design standards.	**Can Comply.**	
The effect of the site development plan on the adequacy of the storm and surface water drainage.	**Can Comply.**	
Adequate water pressure and fire flow must be provided on the site as required by the applicable fire code.	**Can Comply.**	
The proposed project shall comply with the City's adopted Land Use Element of the General Plan, Land Use Ordinance, land development regulations, architectural guidelines, and all other adopted ordinances, regulations, policies, and standards.	**Can Comply.**	
Trails Master Plan: Shows required trails	**Can Comply.**	

19.16 Site and Architectural Design Standards

General Site Design Standards

Regulation	Compliance	Findings
Pedestrian Connectivity: All buildings and sites shall be designed to be pedestrian friendly by the use of connecting walkways.	**Complies.**	*Pedestrian connections shown throughout site.*
Safe pedestrian connections shall be made between buildings within a development, to any streets adjacent to the property, to any pedestrian facilities that connect with the property, when feasible between developments, and from buildings to the public sidewalk to minimize the need to walk within the parking lot among cars.	**Complies.**	*Pedestrian connections shown throughout site.*
All pedestrian connections shall be shown on the related site plan or plat.	**Complies.**	*Pedestrian connections shown throughout site.*
Parking Areas: On-site parking shall be located primarily to the sides or rear of the building. Variations may be approved by the Land Use Authority, subject to the following criteria: i. The use is a big box with outparcels helping to screen parking, or ii. At least 50% of the parking is located to the side or rear of the building, or iii. A safety issue is created by locating parking to the side or rear as verified and documented by the Saratoga Springs Police Department. For example, the parking will be entirely concealed from view by existing walls or buildings, or iv. That portion of development that lies within the Waterfront Buffer Overlay, or	**Complies.**	*Parking located behind buildings as visible from nearest public ROW.*

v. The development is Office, Warehouse/Flex space and when loading docks are not adjacent to a public right-of-way. Exception: when a lot with Office, Warehouse/Flex space is adjacent to more than one public street, loading docks may face the lower classification of the streets.		
Parking lots shall be designed with a hierarchy of circulation: major access drives with no parking; major circulation drives with little or no parking; and then parking aisles for direct access to parking spaces.	**Complies.**	*Circulation drives appear compatible.*
Parking lots adjacent to, and visible from, public streets shall be screened from view through the use of earth berms, screen walls, landscape hedges or combinations thereof with a minimum height of 3' as measured from the parking surface. Within regional parks this requirement may be met through the use of intermittent planter beds rather than a berm, hedge, or screen wall; trees and shrubs may be clustered in the planter beds where necessary to avoid light spillage.	**Can Comply.**	*To be provided at Site Plan.*
Acceleration and Deceleration Lanes: Acceleration and deceleration lanes shall be required on major arterials when deemed necessary by the City Engineer.	**Can Comply.**	*TBD*
Parking Structures: Parking structures shall be architecturally consistent with the project buildings, including the use of the same primary finish materials as the exterior of the adjacent or adjoining buildings.	**N/A.**	
When placement of parking structures along site frontages is necessary, visual mitigation such as landscape buffers, upper-level setbacks, or additional architectural treatment shall be used.	**N/A.**	
The view of a parking structure from a public street shall be minimized by placing its shortest dimension along the street edge.	**N/A.**	
The top deck of parking structures shall include screen walls, periphery landscape islands, or similar features where visible from public view in order to soften the appearance of the top of the parking structure and screen the view of cars on the top deck of the structure.	**N/A.**	
All top deck lighting shall be screened and directed downward to avoid light spill onto the street below and shall consist of only bollards or building lighting. Light poles are prohibited.	**N/A.**	
Trash Enclosures, Storage Areas, and External Structures: Landscaping, fencing, berms, or other devices integral to overall site and building design shall screen trash enclosures, storage areas, and other external structures.	**Can Comply.**	*To be provided at Site Plan.*
Service yards, refuse and waste-removal areas, loading docks, truck parking areas and other utility areas shall be screened from view by the use of a combination of walls, fences, and dense planting. Screening shall block views to these areas from on-site as well as from public rights of way and adjacent properties.	**Can Comply.**	
All trash dumpsters shall be provided with solid enclosures. a. Enclosures shall be composed of 6' high solid masonry or decorative precast concrete walls, with opaque gates and self-latching mechanisms to keep gates closed when not in use. Bollards are required at the front of the masonry walls to protect the enclosure from trash collection vehicles. Gates shall be made of opaque metal for durability. Chain-link gates with or without opaque slats are not acceptable. Colors and materials shall be consistent with the main building or use.	**Can Comply.**	
Where trash enclosures, storage areas, or other external structures are adjacent to parking areas, a 3' landscaped buffer shall be provided that does not impede access into and out of vehicles.	**Can Comply.**	

These areas shall be well maintained and oriented away from public view. The consolidation of trash areas between buildings is encouraged. The use of modern disposal and recycling techniques is encouraged. This section shall not apply to community or public recycling bins or drop boxes; however, the location shall be determined by city Staff in accordance with the standards herein.	**Can Comply.**	
Utility Boxes: Dense vegetative buffers which include an evergreen variety of plant materials shall be placed where appropriate to screen all utility boxes and pedestals in order to remain attractive during the winter months.	**Can Comply.**	
Site Design Standards: Non-Residential Development		
Shopping Cart Corrals: Shopping cart corrals are required for big box or mid box retail uses. Roof covers are recommended as the local climate includes wind, rain, and winter snow conditions. If roof covers are utilized they shall blend in with the established building design.	**Can Comply.**	*To be provided at Site Plan.*
The shopping cart corral rail finish shall match or compliment the exterior finishes of the main building through the use of two out of three of the same exterior colors and finishes.	**Can Comply.**	
Uses Within Buildings: All uses established in any commercial, office warehouse, business park, or industrial zone shall be conducted entirely within a fully enclosed approved building except those uses deemed by the City Council to be customarily and appropriately conducted in the open. Uses which qualify for this exception include vegetation nurseries, home improvement centers with lumber, outdoor cafes, outdoor retail display, car wash vacuums, auto dealerships, and similar uses.	**Can Comply.**	
Outdoor Display: All retail product displays shall be located under the buildings' permanent roof structure or on designated display pads within front landscape areas.	**Can Comply.**	
All display areas shall be clearly defined on the approved Site Plan and designated on the site with a contrasting colored, painted, or striped surface.	**Can Comply.**	
Display areas shall not block building entries or exits, pedestrian walks, or parking spaces in front of the building. Outdoor display areas shall not spill into walkways or any drive aisle adjacent to a building.	**Can Comply.**	
Seasonal uses outside of these areas may be approved through the Temporary Use process.	**Can Comply.**	
Outdoor Storage Standards: Outdoor storage areas shall be located to minimize views from adjacent public rights-of-way, residential development or zones, and adjacent developments. They shall be located behind or to the side of buildings.	**Can Comply.**	
Outdoor storage shall be screened from public view. Screening shall consist of a solid wall, excluding CMU blocks. Screening shall be a minimum of 6 feet high and may reach a maximum height of 20 feet subject to approval by the Land Use Authority. A building permit is required for all fencing or walls higher than 7 feet. Chain link fencing is prohibited.	**Can Comply.**	
The method of screening shall be architecturally integrated with the adjacent building in terms of materials and colors.	**Can Comply.**	
A landscape strip with a minimum width of five feet shall be installed next to the screening fence or wall when the storage area is adjacent to or visible from a public right-of-way.	**Can Comply.**	
Outdoor storage materials must be stored in an orderly manner such that fire codes are met and access to all areas of the yard is possible (e.g. access lanes).	**Can Comply.**	

The outdoor storage materials may not extend above the height of the fence or wall.	**Can Comply.**	
Access Requirements: a. Each roadway shall not be more than 40' in width, measured at right angles to the center line of the driveway except as increased by permissible curb return radii; and b. the entire flare of any return radii shall fall within the right-of-way.	**Can Comply.**	
Off-Street Truck Loading Space: Every structure involving the receipt or distribution by vehicles of materials or merchandise shall provide and maintain on the building's lot adequate space for standing, loading, and unloading of the vehicles in order to avoid undue interference with public use of streets, alleys, required parking stalls, or accessible stalls.	**Can Comply.**	
Screening of Storage & Loading Areas: To alleviate the unsightly appearance of loading facilities, these areas shall not be located on the side(s) of the building facing the public street(s). Such facilities shall be located interior to the site.	**Complies.**	*Trash enclosures shown.*
Screening for storage and loading areas shall be composed of 6' high solid masonry or architectural precast concrete walls with opaque gates and self-latching mechanisms, to keep gates closed when not in use. Bollards are required at the front of the masonry walls to protect the enclosure from trash collection vehicles.	**Can Comply.**	*To be provided at Site Plan.*
Gates shall be made of opaque metal for durability. Chain-link gates with opaque slats are prohibited.	**Can Comply.**	
The method of screening shall be architecturally integrated with the adjacent building in terms of materials and colors.	**Can Comply.**	
Trash areas shall be designed to include the screening of large items (e.g. skids and pallets) as well as the trash bin(s) that are needed for the business (unless storage is otherwise accommodated behind required screened storage areas).	**Can Comply.**	
Buffers: A wall and landscaping, fencing, or landscaping of acceptable design shall effectively screen the borders of any commercial or industrial lot which abuts an existing agricultural or platted residential use. Such a wall, fence, or landscaping shall be at least 6' in height, unless a wall or fence of a different height is required by the Land Use Authority as part of a site Plan review.	**Can Comply.**	
No chain-link or wood fences are permitted as buffering or screening between commercial and residential. Masonry and solid vinyl are suggested types of fences, and as circumstances require, one or the other may be required.	**Can Comply.**	
Unless otherwise required by this Title, walls or fences used as a buffer or screen shall not be less than 6' in height.	**Can Comply.**	
Parking Lot Buffers: There shall be a minimum of 10' of landscaping between parking areas and side and rear property lines adjacent to agricultural and residential land uses.	**Can Comply.**	
Building Buffer: No building shall be closer than 5' from any private road, driveway, or parking space. The intent of this requirement is to provide for building foundation landscaping and to provide protection to the building. Exceptions may be made for any part of the building that may contain an approved drive-up window.	**Can Comply.**	
Interconnection: All parking and other vehicular use areas shall be interconnected with adjacent non-residential properties in order to allow maximum off-street vehicular circulation.	**Can Comply.**	
General Architectural Design Standards		

General standards do not apply one-family and two-family dwellings unless governed under a DA.		
Building Articulation: Building elevations exceeding 40' in length shall incorporate a minimum of one horizontal elevation shift or combination of vertical and horizontal elevation shifts, stepping portions of the elevation to create shadow lines and changes in volumetric spaces of at least five feet, and a minimum of two of the following, all spaced at intervals of 20' to 50' of horizontal width: i. A combination of vertical and horizontal elevation shifts that together equal at least 5'. ii. Addition of horizontal and vertical divisions by use of textures or materials. iii. Primary material change. iv. Addition of projections such as balconies, cornices, covered entrances, porte-cocheres, trellis', pergolas, arcades, and colonnades. Such trellis' and awnings extend outward from the underlying wall surface at least 36". v. Variation in the rooflines by use of dormer windows, overhangs, arches, stepped roofs, gables or other similar devices.	**Can Comply.**	*To be provided at Site Plan.*
Roof Treatment: Sloped roofs shall provide articulation and variations in order to break up the massiveness of the roof. Sloped roofs shall include eaves which are proportional to the roofs slope and scale of the building.	**Can Comply.**	
Flat roofs shall be screened with parapets on all sides of the building. If no roof top equipment exists or is proposed, the parapet shall be a minimum of 12" in height above the roof.	**Can Comply.**	
All roofs on three-family and multi-family dwellings shall have a minimum pitch of 3/12 (25% slope). To provide architectural enhancement, residential structures are encouraged to have multiple pitch variations.	**Can Comply.**	
Roof mounted equipment shall not be visible from adjacent public and private streets as well as from adjacent properties, unless grade differences make visibility unavoidable.	**Can Comply.**	
Screening shall be solid and shall be consistent with the material and color of exterior finishes of the building through the use of at least two out of three of the exterior finishes of the building.	**Can Comply.**	
Windows: Windows, other than rectangular windows, may be used as accents and trim. Untreated aluminum or metal window frames are prohibited.	**Can Comply.**	
Awnings, Canopies, Trellises, Pergolas, and Similar Features: All such features must be attached to a vertical wall.	**Can Comply.**	
All such features shall project at least 4' from the building when located over a pedestrian traffic area and no less than 2' otherwise.	**Can Comply.**	
All such features shall maintain a minimum clearance above sidewalk grade of 8' to the bottom of the framework when located over a pedestrian traffic area.	**Can Comply.**	
Backlighting is not permitted.	**Can Comply.**	
Mechanical Equipment: All mechanical equipment shall be located or screened and other measures shall be taken so as to shield visibility of such equipment from any public or private streets.	**Can Comply.**	
Wing walls, screens, or other enclosures shall be shall be integrated into the building and landscaping of the site, whether located on the ground or roof.	**Can Comply.**	
Rooftops of buildings shall be free of any mechanical equipment unless completely screened from all horizontal points of view.	**Can Comply.**	

Screening materials shall conform to the color scheme and materials of the primary building.	**Can Comply.**	
Non-Residential Architectural Design Standards		
Four Sided Architecture: All sides of a building that are open to public view (including views from adjacent residential dwellings or probable location of residential dwellings) shall receive equal architectural design consideration as the building front.	**Can Comply.**	*To be provided at Site Plan.*
Color and Materials: Exterior Building Materials shall be considered any materials that make up the exterior envelope of the building and shall be limited to no more than four and no less than two types of materials per building, window and door openings excluded.	**Can Comply.**	
Color of exterior building materials (excluding accent colors) shall be limited to no more than four and no less than two major colors per development.	**Can Comply.**	
Bright colors, such as neon or fluorescent colors, bright orange or yellow, and primary colors, are only permitted as accent colors.	**Can Comply.**	
No more than 75% of any building elevation shall consist of any one material or color. i. No more than 50% of any building elevation shall consist of CMU, except in the Office Warehouse and Industrial zones, or ii. Office, Warehouse, Flex buildings in approved zones that utilize concrete tilt up construction are exempt from the maximum 75% of one material per elevation requirement but must follow all other architectural standards.	**Can Comply.**	
Prohibited Materials: Tiles. Full veneer brick and tiles exceeding ½" in thickness is permitted, however veneer tile is prohibited. Stucco stone patterns and stucco brick patterns. Wood as a primary exterior finish material. Plain, grey, unfinished CMU block except as an accent material.	**Can Comply.**	
Stairways: All stairways to upper levels shall be located within the building unless otherwise approved by the Land Use Authority for secondary access to outdoor patio decks or other usable outdoor area.	**Can Comply.**	
Roof Drains: All roof drains, conduit and piping, maintenance stairs and ladders, and other related services shall be located on the interior of the building.	**Can Comply.**	
Electrical Panels: To the extent possible, all electric panels and communication equipment should be located in an interior equipment room.	**Can Comply.**	
Street Orientation: All Retail or Commercial buildings shall have expansive windows, balconies, terraces, or other design features oriented to the street or adjacent public spaces.	**Can Comply.**	
At least 35 percent of the first floor elevation(s) of a building that is viewed from a public street shall include windows, and/or glass doors to minimize the expanse of blank walls and encourage a pedestrian friendly atmosphere. For purposes of determining the glass area, the first floor shall be the first 10 feet from the finished floor. This standard does not apply to a single-story retail building of 50,000 square feet or greater provided a single primary tenant occupies the entire building square footage and additional architectural elements are used in City of Saratoga Springs Municipal Code Land Development Code - Title 19.16 Page | 9 place of windows and/or glass doors to include awnings or canopies, and must include roof line changes and horizontal articulation.	**Can Comply.**	
Metal Buildings: Metal buildings are only permitted in the Agricultural, Residential Agricultural, Rural Residential, Office Warehouse and Industrial Zones.	**Can Comply.**	

All metal buildings shall be designed to have an exterior appearance of conventionally built structures. Stock, “off the shelf” metal buildings are prohibited.	**Can Comply.**	
Metal buildings in the Agricultural, Residential Agricultural, and Rural Residential zones shall only be used for agriculture as defined in Section 19.02.02 of the City Code.	**Can Comply.**	

19.18 Signs		
Regulation	**Compliance**	**Findings**
Site Plans require signage information (if tenant known, show location potential location size)	**Can Comply.**	*To be provided at Site Plan.*
Monument sign location and details	**Can Comply.**	
Wall signs and potential locations and details	**Can Comply.**	

Fiscal Impact	
Regulation	**Findings**
Is there any City maintained open space?	*None.*
What is the anticipated cost to the City?	*None.*
When will City maintenance begin?	*N/A.*

Exhibit 4: Proposed Zoning

Zone: NC

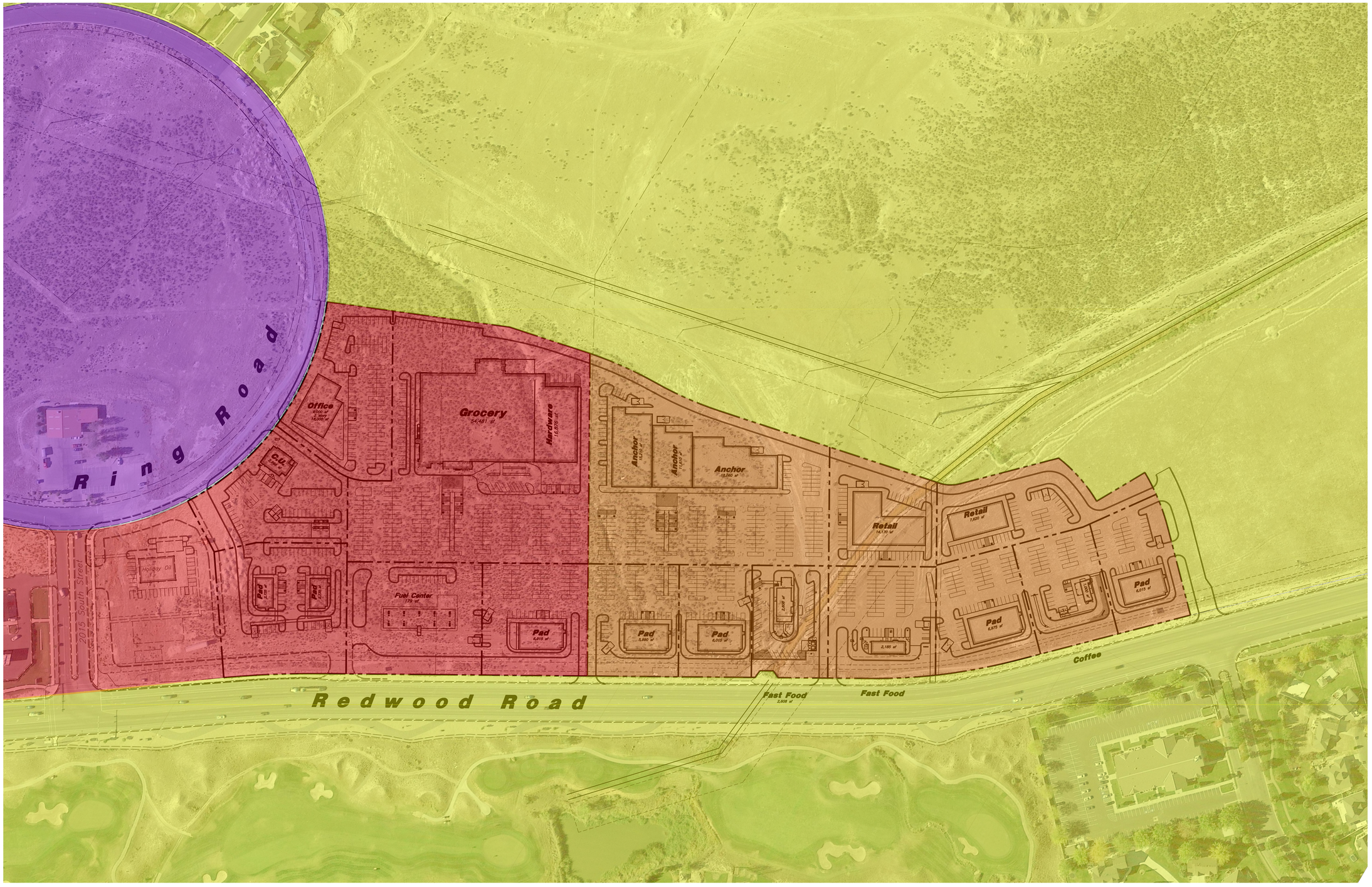
Zone: R1-10

Zone: RC

Exist. Zone: R1-10
Rezone: RC (14.74 ac.)

Scale: 1" = 100'

100' 0 100' 200'



REV	DATE	DESCRIPTION

Designed by: SY
Drafted by: KF
Client Name:
Dakota Pacific

23-049 SP

2010 North Redwood Road, Salt Lake City, Utah 84116
(801) 521-8529 - AWAengineering.net

Overall Conceptual Site Plan

Jacob's Ranch Saratoga Springs

Approximate 1500 South Redwood Road
Saratoga Springs, Utah

22 Mar, 2024

SHEET NO.
C1.0

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Exhibit 5: Concept Site Plan

Lot Areas

Lot 1 = 71,932 s.f. (1.65 ac.)
Lot 2 = 248,484 s.f. (5.70 ac.)
Lot 3 = 192,518 s.f. (4.42 ac.)
Lot 4 = 54,405 s.f. (1.25 ac.)
Lot 5 = 62,526 s.f. (1.44 ac.)
Lot 6 = 44258 s.f. (1.02 ac.)
Lot 7 = 44,628 s.f. (1.02 ac.)
Lot 8 = 50,845 s.f. (1.17 ac.)
Lot 9 = 59,595 s.f. (1.37 ac.)
Lot 10 = 41,970 s.f. (0.96 ac.)
Lot 11 = 40,685 s.f. (0.93 ac.)
Lot 12 = 50,753 s.f. (1.17 ac.)
Lot 13 = 58,875 s.f. (1.35 ac.)
Lot 14 = 75,500 s.f. (1.73 ac.)
Lot 15 = 82,891 s.f. (1.90 ac.)
Lot 16 = 63,250 s.f. (1.45 ac.)

Overall Site Data Table

Total Area = 1,243,252 s.f. (28.54 ac.)
Landscape Area Provided = 248,396 s.f. (5.70 ac.) (20.0%)
Total Building Area = 192,445 s.f. (4.42 ac.) (15.5%)
Retail = 101,223 s.f. (2.32 ac.)
Restaurant, Takeout = 7,720 s.f. (0.18 ac.)
Grocery Store = 54,481 s.f. (1.25 ac.)
Hardware Store = 16,876 s.f. (0.39 ac.)
Financial Institution = 2,966 s.f. (0.07 ac.)
Office (2 Story) = 9,000 s.f. (0.21 ac.)
Fueling Station = 179 s.f. (0.004 ac.)

Required Parking

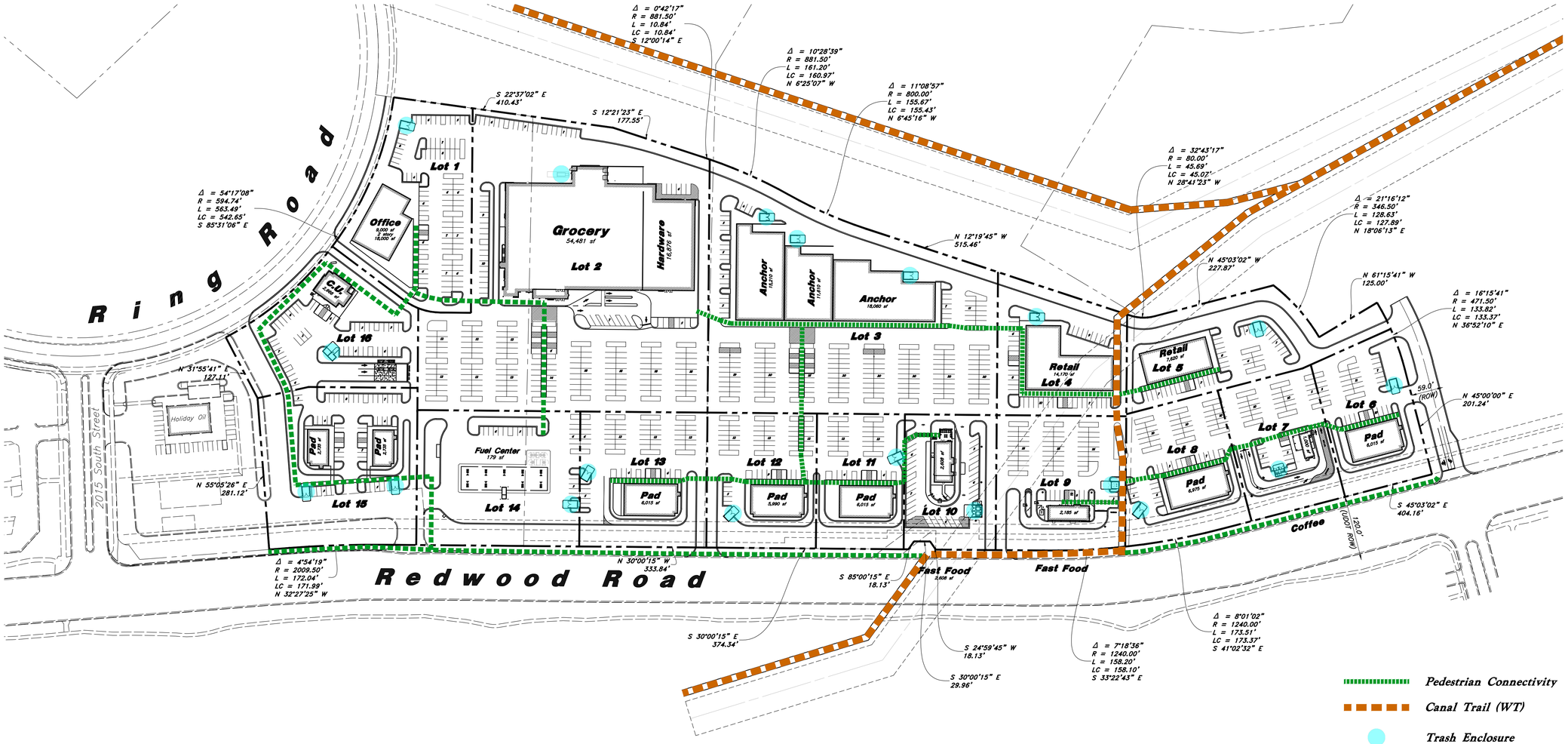
Retail (95,420 s.f.) 1/250 s.f. = 382 stalls
Restaurant, Takeout (12,580) 1/200 s.f. = 63 stalls
Grocery Store (54,481 s.f.) 1/250 s.f. = 218 stalls
Hardware Store (16,876 s.f.) 1/250 s.f. = 68 stalls
Financial Institution (2,966 s.f.) 1/500 s.f. = 6 stalls
Office (2 Story) (18,000 s.f.) 1/250 s.f. = 72 stalls
Fueling Station = 18 stalls
Total Parking Required = 827 stalls
Total Accessible Stalls Required = 46 stalls

Provided Parking

Total Garage Parking Provided = 0 stalls
Total Surface Parking Provided = 1,074 stalls
Total Accessible Stalls Provided = 46 stalls

Scale: 1" = 100'

100' 0 100' 200'



REV	DATE	DESCRIPTION

Designed by: SY
Drafted by: KF
Client Name:
Dakota Pacific

23-049 SP

2010 North Redwood Road, Salt Lake City, Utah 84116
(801) 521-8529 - AWAengineering.net

Overall Conceptual Site Plan

Jacob's Ranch Saratoga Springs

Approximate 1500 South Redwood Road
Saratoga Springs, Utah

22 Mar, 2024

SHEET NO.
1

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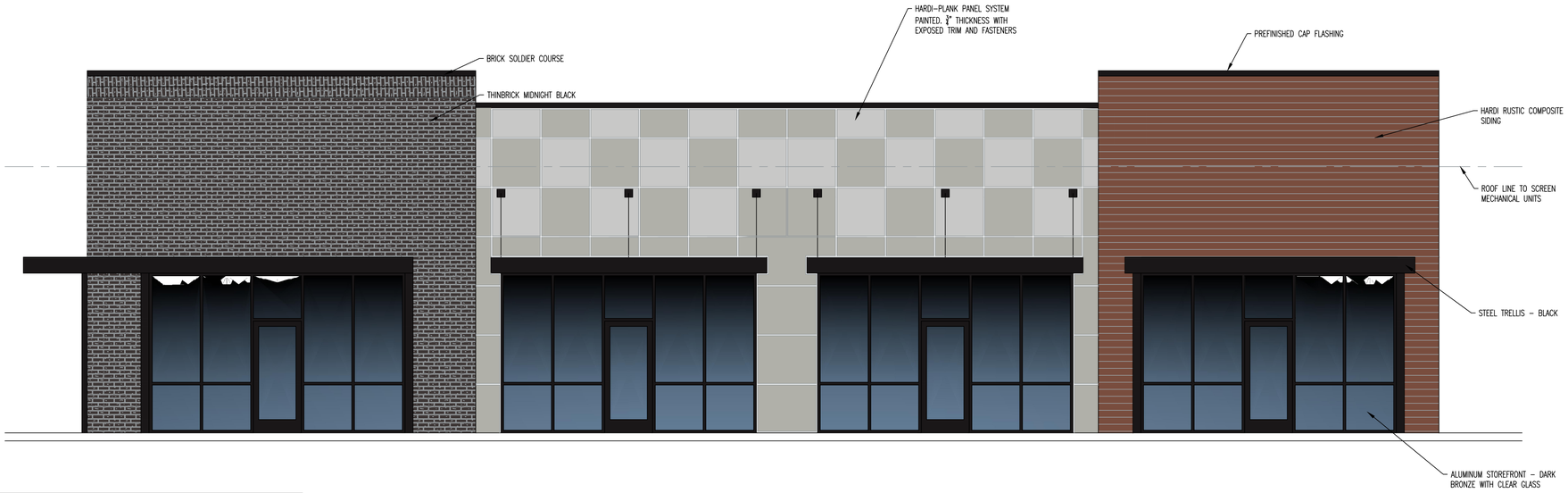
Exhibit 6: Concept Building Elevation



FRONT ELEVATION

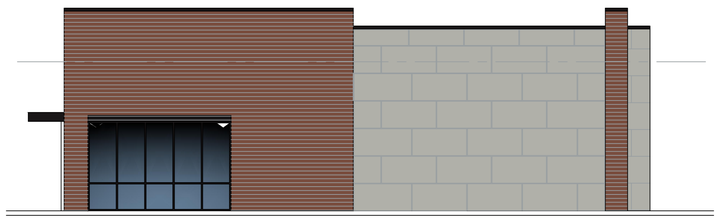
SCALE: 1/4" = 1'-0"

MATERIAL LEGEND:

HATCH	DESCRIPTION/MATERIAL	COLOR	SQ. FTG.	%SQ. FTG.	REMARKS
	FRONT ELEVATION - TOTAL = 1852 SF				
	ALUM STOREFRONT	DARK BRONZE	640 SF	35%	
	FRONT ELEVATIONS LESS STOREFRONT = 1212 SF				
	THIN BRICK	MIDNIGHT BLACK	353 SF	29%	PERCENT OF FACADE LESS STOREFRONT
	HARDIE PANEL	GRAY	439 SF	36%	PERCENT OF FACADE LESS STOREFRONT
	HARDIE RUSTIC SERIES	NATURAL WOOD	288 SF	24%	PERCENT OF FACADE LESS STOREFRONT
	METAL TRIMS & AWNINGS	BLACK POWDER COAT	132 SF	11%	PERCENT OF FACADE LESS STOREFRONT
	RIGHT SIDE ELEVATION - TOTAL = 1430 SF				
	ALUM STOREFRONT	DARK BRONZE	160 SF	11%	
	RIGHT SIDE ELEVATION LESS STREFRONT = 1270 SF				
	HARDIE PANEL	GRAY	621 SF	49%	PERCENT OF FACADE LESS STOREFRONT
	HARDIE RUSTIC SERIES	NATURAL WOOD	607 SF	48%	PERCENT OF FACADE LESS STOREFRONT
	METAL TRIMS & AWNINGS	BLACK POWDER COAT	42 SF	3%	PERCENT OF FACADE LESS STOREFRONT
	LEFT SIDE ELEVATION - TOTAL = 1426 SF				
	ALUM STOREFRONT	DARK BRONZE	160 SF	11%	
	LEFT SIDE ELEVATION LESS STOREFRONT = 1266 SF				
	THIN BRICK	MIDNIGHT BLACK	532 SF	42%	PERCENT OF FACADE LESS STOREFRONT
	HARDIE PANEL SERIES	GRAY	673 SF	53%	PERCENT OF FACADE LESS STOREFRONT
	METAL TRIMS & AWNINGS	BLACK POWDER COAT	61 SF	5%	PERCENT OF FACADE LESS STOREFRONT
	REAR ELEVATION - TOTAL = 1865 SF				
	ALUM STOREFRONT	DARK BRONZE	112 SF	6%	
	REAR ELEVATION LESS STOREFRONT = 1753 SF				
	THIN BRICK	MIDNIGHT BLACK	50 SF	3%	PERCENT OF FACADE LESS STOREFRONT
	HARDIE PANEL	GRAY	774 SF	44%	PERCENT OF FACADE LESS STOREFRONT
	HARDIE RUSTIC SERIES	NATURAL WOOD	869 SF	50%	PERCENT OF FACADE LESS STOREFRONT
	METAL TRIMS & AWNINGS	BLACK POWDER COAT	60 SF	4%	PERCENT OF FACADE LESS STOREFRONT

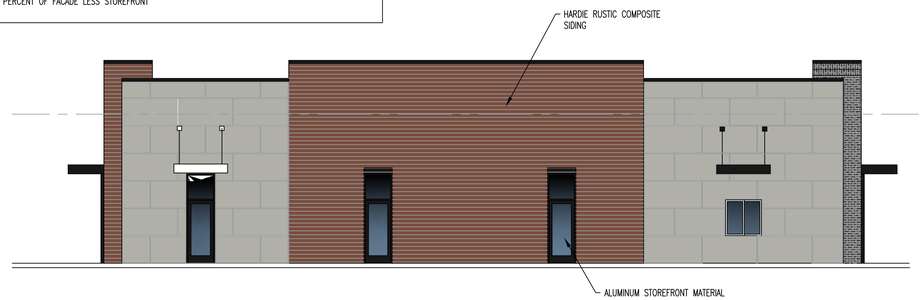
TOTALS:

BUILDING	6573 SF
STOREFRONT:	1072 SF = 16% OF TOTAL
BUILDING LESS STOREFRONT	5501 SF
THIN BRICK	935 SF = 17% PERCENT OF FACADE LESS STOREFRONT
HARDIE PANEL SYSTEM	2507 SF = 46% PERCENT OF FACADE LESS STOREFRONT
HARDIE RUSTIC SERIES	1764 SF = 32% PERCENT OF FACADE LESS STOREFRONT
MEATL TRIMS & AWNINGS	295 SF = 5% PERCENT OF FACADE LESS STOREFRONT



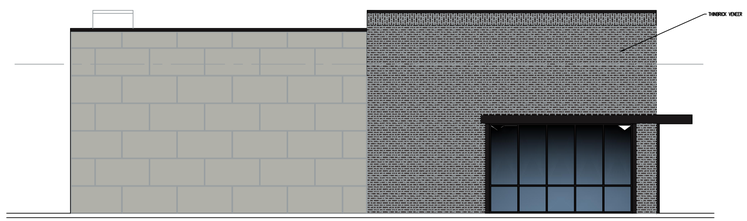
SIDE ELEVATION

SCALE: 1/8" = 1'-0"



REAR ELEVATION

SCALE: 1/8" = 1'-0"



SIDE ELEVATION

SCALE: 1/8" = 1'-0"

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VDG VINCENT DESIGN GROUP, INC.
ARCHITECTS AND PLANNERS
401 EAST 1700 SOUTH, SALT LAKE CITY, UTAH - (801-484-2046

PROPOSED NEW STRIP BUILDING:
JACOB RANCH MARKETPLACE

SARATOGA SPRINGS, UTAH

PROPOSED ELEVATIONS

ARCH. PROJECT NO:	XX-XXX
DATE:	1/15/20
DRAWN BY:	BRENT
CHECKED BY:	
DESIGNED BY:	

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DATE	REVISION

SHEET TITLE

A-2.00

ARCHITECTURAL 1 of 1

Exhibit 7: Utility Plan

Scale: 1" = 100'

100' 0 100' 200'

Ring Road

Redwood Road

Office

Grocery

Hardware

Anchor

Anchor

Anchor

Retail

Retail

Pad

Pad

Pad

Pad

Pad

Pad

Pad

Pad

Holiday Oil

Maverik

Coffee

Fast Food

Fast Food

59.0' (ROW)

120.0' (UDOT ROW)

Exist. Storm Water Line	Proposed Storm Water Line
Exist. Sanitary Sewer Line	Proposed Sanitary Sewer Line
Exist. Water Line	Proposed Water Line
Exist. Irrigation Line	Proposed Secondary Water Line

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REV	DATE	DESCRIPTION

Designed by: SY
Drafted by: KF
Client Name:
Dakota Pacific
23-049 CSP UT

2010 North Redwood Road, Salt Lake City, Utah 84116
(801) 521-8529 - AWAengineering.net

Overall Conceptual Utility Plan

Jacob's Ranch Saratoga Springs
Approximate 1500 South Redwood Road
Saratoga Springs, Utah

22 Mar, 2024

SHEET NO.
1

W:\23-049 Jacob's Ranch Commercial\dwgs\23-049 CSP UT.dwg, 3/22/2024 7:39:24 AM, 1:1

SARATOGA SPRINGS PLANNING

PLANNING COMMISSION
Staff Report

Code Amendment
Amending Section 19.06
May 16, 2024
PUBLIC HEARING

Report Date:	May 8, 2024
Applicant:	City Initiated
Previous Meetings:	N/A
Type of Action:	Legislative
Land Use Authority:	City Council
Planner:	Tippe Morlan, AICP, Senior Planner

A. Executive Summary:

Staff have identified the need to propose a code change would add requirements applicable to all retaining walls constructed within the City, regardless of slope.

Recommendation:
Staff recommends that the Planning Commission conduct a public hearing on the proposed code amendment, take public comment, review and discuss the proposal, and choose from the options in Section G of this report. Options include a positive recommendation with or without conditions, a negative recommendation, or continuation.

B. Specific Request:

The attached changes are specific to Chapter 19.06 of the Land Development Code and include adding requirements for all retaining walls constructed within the City, regardless of slope.

C. Process:

Section 19.17.03 outlines the process criteria for Planning Commission and City Council Review:

1. The Planning Commission shall review the petition and make its recommendations to the City Council within thirty days of the receipt of the petition.
   ***Complies**. This is a City-initiated application will be reviewed by the Planning Commission and receive a recommendation prior to review by the City council.*

2. The Planning Commission shall recommend adoption of proposed amendments only where it finds the proposed amendment furthers the purpose of the Saratoga Springs Land Use Element of the General Plan and this Title.

Tippe Morlan, AICP, Senior Planner
tmorlan@saratogaspringscity.com
1307 North Commerce Drive, Suite 200 • Saratoga Springs, Utah 84045
801-766-9793 x106 • 801-766-9794 fax

Complies. *Please see Sections E and F of this report.*

3. The Planning Commission shall provide the notice and hold a public hearing as required by the Utah Code and Chapter 19.13. For an application which concerns a specific parcel of property, the City shall provide the notice required by the Utah Code and Chapter 196.13 for a public hearing.

   Complies. *Please see Section D of this report.*

D. Community Review:

Public Hearing: This has been noticed as a public hearing pursuant to City and State statutes, which requires posting notice on the Utah public notice website and the City's website and in City Hall, and, except for code amendments, mailing notices to property owners whose land is directly affected by the request and property owners within 300 feet of the subject property at least 10 calendar days prior to the public hearing.

Public Comment: As of the date of this report, no public input has been received.

E. General Plan:

Natural Hazards Element Goal

The Natural Hazards Element of the General Plan stats that it is the goal of the City to "continue to implement best practices to protect life and property within Saratoga Springs."

Staff conclusion: Consistent. *The proposed changes will continue to further the efforts of the City to "implement best practices to protect life and property" throughout the City.*

F. Code Criteria:

Code amendments are a legislative decision and grant the City Council significant discretion when considering changes to the Code.

The criteria for an ordinance are outlined below and act as guidance to the Council and to the Commission in making a recommendation. Note that the criteria are not binding.

19.17.05 Consideration of General Plan, Ordinance, or Zoning Map Amendment

The Planning Commission and City Council shall consider, but not be bound by, the following criteria of Section 19.17.05 when deciding whether to recommend or grant a general plan, ordinance, or zoning map amendment:

1. The proposed change will conform to the Land Use Element and other provisions of the General Plan;

   Consistent*. See Section E of this report.*

2. the proposed change will not decrease nor otherwise adversely affect the health, safety, convenience, morals, or general welfare of the public;

Consistent. *The amendments will not adversely affect the health and welfare of the general public.*

3. the proposed change will more fully carry out the general purposes and intent of this Title and any other ordinance of the City; and

19.01.04. Purpose. This section identifies the purpose of Title 19.

1. The purpose of this Title, and for which reason it is deemed necessary, and for which it is designed and enacted, is to preserve and promote the health, safety, morals, convenience, order, fiscal welfare, and the general welfare of the City, its present and future inhabitants, and the public generally, and in particular to:
    a. encourage and facilitate the orderly growth and expansion of the City;
    b. secure economy in governmental expenditures;
    c. provide adequate light, air, and privacy to meet the ordinary or common requirements of happy, convenient, and comfortable living of the municipality's inhabitants, and to foster a wholesome social environment;
    d. enhance the economic well-being of the municipality and its inhabitants;
    e. facilitate adequate provisions for transportation, water, sewer, schools, parks, recreation, storm drains, and other public requirements;
    f. prevent the overcrowding of land, the undue concentration of population, and promote environmentally friendly open space;
    g. stabilize and conserve property values;
    h. encourage the development of an attractive and beautiful community; and
    i. promote the development of the City of Saratoga Springs in accordance with the Land Use Element of the General Plan.

Consistent. *The proposed amendments will provide a streamlined development review process both benefiting the City, developers, and the public.*

4. in balancing the interest of the petitioner with the interest of the public, community interests will be better served by making the proposed change.

    Consistent. *The amendments will provide additional clarity and effectiveness of the Code and better enhance the consistency in development review.*

5. any other reason that, subject to the legislative discretion of the City Council, could advance the general welfare.

G. Recommendation and Alternatives:

Staff recommends that the Planning Commission conduct a public hearing, take public input, discuss the application, and choose from the following options.

Option 1 – Positive Recommendation

"I move that the Planning Commission forward a recommendation for approval of the proposed code amendment to Title 19, with the Findings and Conditions in the staff report."

Findings

1. The application is consistent with the General Plan, as articulated in Section E of the staff report, which section is incorporated by reference herein.
2. The application complies with the criteria in section 19.17.05 of the Land Development Code, as articulated in Section F of the staff report, which section is incorporated by reference herein.

Conditions:

1. Any conditions or changes as articulated by the Planning Commission:
   _____

Option 2 – Continuance

"I move to **continue** the proposed code amendment to a future meeting, with direction to Staff on information and/or changes needed to render a decision, as follows:"

1. _____

Option 3 – Negative Recommendation

"I move that the Planning Commission forward a recommendation for denial of the proposed code amendment to Title 19, with the Findings and Conditions in the staff report."

1. The application is not consistent with the General Plan:
   _____, and/or,
2. The application is not consistent with Section {XX.XX] of the Code:
   _____, and/or

H. Exhibits:

1. Proposed Code Amendment

EXHIBIT 1

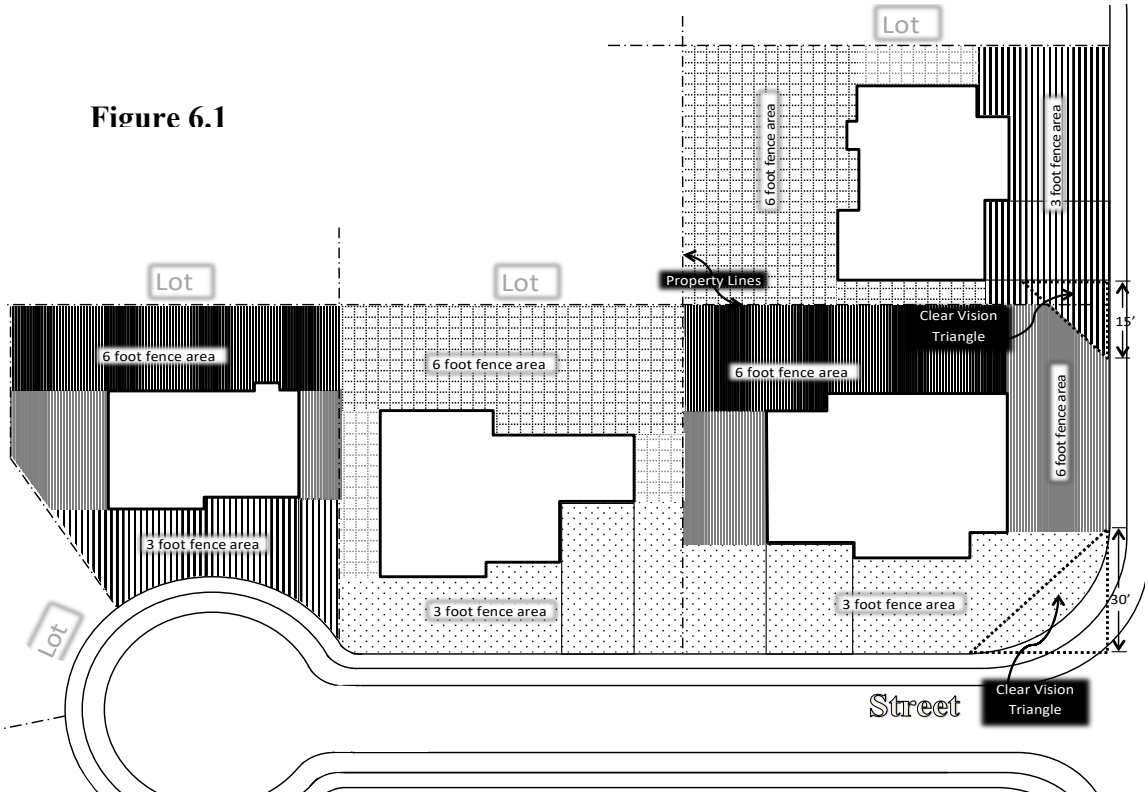
Chapter 19.06. Landscaping and Fencing.

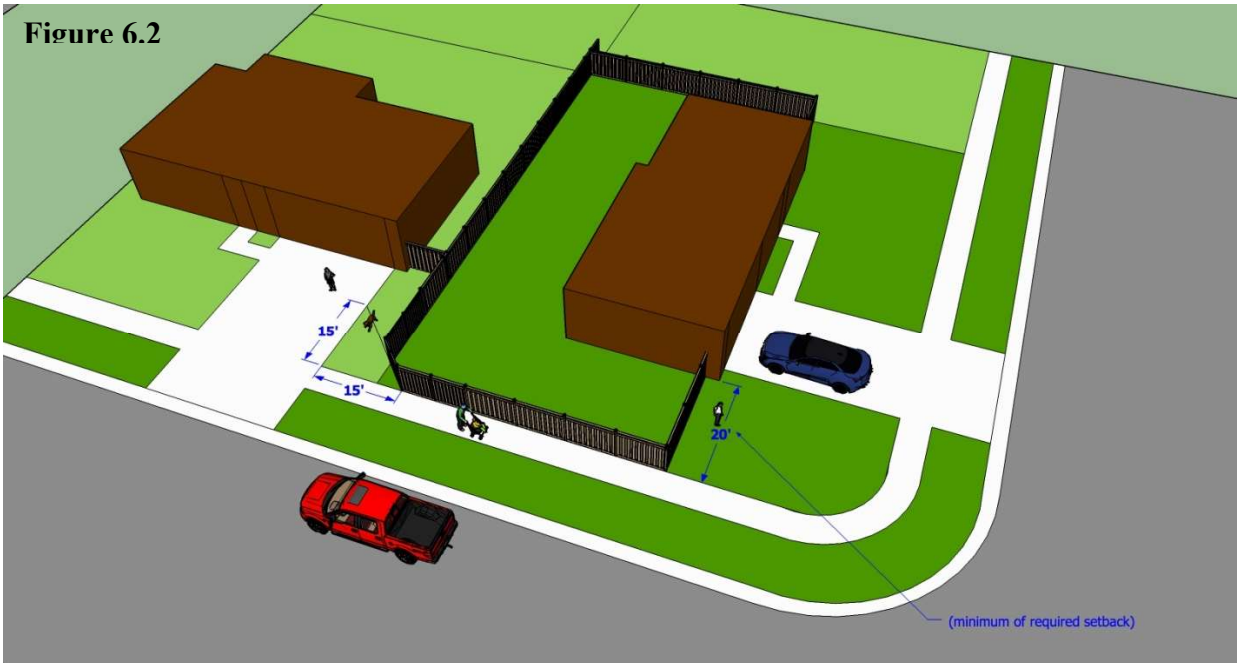
19.06.09. Screening and Fencing Requirements and Restrictions.

This Section outlines provisions that govern the heights of screening and fencing.

1. **Front yards:** fences exceeding three feet in height shall not be erected in any front yard space of any residential lot.
2. **Street side yards:** fencing in street side yards adjacent to a driveway shall not exceed three feet for a distance of fifteen feet back from the intersection of driveway and sidewalk, or driveway and property line where no sidewalk exists as shown in the drawing below. Fencing shall also comply with all other clear sight triangle requirements as stated in 19.06. See Figures 6.1 and 6.2 below:

Figure 6.1





3. **Retaining walls:** for construction of all retaining walls four feet or taller in height, a building permit must be obtained. Prior to construction of retaining walls, Chapter 18 of the City Code shall be consulted to determine if a grading permit is also required. Where there is a difference in elevation on opposite sides of the fence, the height of the fence shall be measured from the highest elevation. Retaining walls shall follow all applicable regulations outlined in Chapter 19.10 of the City Code, regardless of slope.

~~3.~~4. **Height:** Approval of fences over six feet in height will be determined on a case-by-case basis by the City Council for all new developments if fencing is proposed during the subdivision review process, or by the Planning Director for all developments that have received final approval; however, in no case will a fence be allowed to exceed eight feet in height. The following criteria shall be applied in making this determination:

a. compatibility with fences of surrounding uses;
b. quality of proposed materials;
c. aesthetics of proposed materials;
d. requirements of applicable development agreements;
e. intensity of existing surrounding uses; and
f. applicable conditions of approval.

~~4.~~5. **Prohibited fencing:**

a. No barbed wire, chain link, razor, or wire (agricultural, electric, chicken wire, mesh wire, hog fencing, etc.) fences shall be allowed. This does not apply to chain link or wire fences if the fence: (1) is not being used to delineate lot boundaries; and (2) is being used for Agricultural uses or otherwise for the keeping of animals; and (3) does not occupy more than 50% of any residential yard; or (4) is for back stops, sports fields, or sport court fencing within a public or private park.
b. No fencing that parallels existing fencing shall be permitted within an existing fenced yard. Exceptions: interior fencing to enclose chickens, bees, or other livestock as otherwise specifically permitted under this Code, and any fencing of three feet or less in height within an existing fenced yard.

~~5.~~6. **Double frontages:** where lots have frontages onto more than one street, that area designated by the property owner as the rear yard may have a solid or view obstructing fence, wall, or hedge not exceeding six feet in height. Where the double frontage lot is also a corner lot (three frontages), clear sight across corner property shall be required and enforced. See Section 19.06.11, Clear Sight Triangles.

~~6.~~7. **Non-residential and Multi-family:** fencing and other screening materials for multi-family, residential, commercial, or industrial projects must receive approval by the Land Use Authority through the Site Plan review process. See Chapter 19.13 for Site Plan review requirements. In addition, the following criteria shall be applied:

a. compatibility with fences of surrounding uses;
b. quality of proposed materials;
c. aesthetics of proposed materials;
d. requirements of applicable development agreements;
e. intensity of existing surrounding uses; and
f. applicable conditions of approval.

~~7.~~8. **Required residential fencing:** fencing in residential development shall be placed along property lines abutting open space, parks, canals, and trails. In addition, fencing may also be required adjacent to undeveloped properties.

a. In an effort to promote safety for citizens and security for homeowners, fences along open space, parks, canals, and trails shall be semi-private. Exception: privacy fencing is permitted for property lines abutting trail corridors that are not City maintained and are both adjacent to and visible from an arterial.
b. Fencing along arterial roads shall be of a consistent material and color within each development.
c. Fencing along open space, parks, and trails may be less than six feet in height but shall not be less than three feet in height, at the discretion of the property owner or HOA as applicable.

(Ord. 18-30, Ord. 17-26, Ord. 16-20, Ord. 16-17, Ord. 15-29, Ord. 15-17, Ord. 14-23-1, Ord. 13-16, Ord. 12-9, Ord. 11-9)

Staff Report

Author: Daniel McRae, Assistant City Engineer
Subject: Revisions to the City's Standard Specifications
Date: May 16, 2024
Type of Item: Legislative Recommendation

SARATOGA SPRINGS

A. Summary: The Engineering Department and Public Works Department keep a running list of minor and major changes that are needed to provide additional clarity and effectiveness, to remove inconsistencies, to reflect new "best practices" in the Engineering and Public Works fields, and to address changes in the community's needs with the goal of adopting revisions every so often to keep the Standard Specifications current. Some key changes for review and approval in the updated Standard Specifications include:

- Local road pavement width increases 3ft from 29ft to 32ft. This also increases the local road right-of-way by the same 3ft from 59ft to 62ft (see standard drawing ST-8).
- An empty conduit bank of four 2inch conduits is added to one side of all the public roadways (see standard drawings ST-40, and ST-9A through ST-13).
- Half-Width Road is added to the definitions.
- The sewer specification clarifies the sewer vertical separation distance is 18 inches minimum from other public utilities and is to be vertically 18 inches minimum below drinking water (see standard specification 00200/Part 2/6/9/b).
- The Low Impact Development (LID) section of the storm drain specifications now includes a Best Management Practice (BMP) flow chart to clarify the conditions and options available for residential and commercial LID (see standard specification 00520/Part 3/C).
- The storm drain specification clarifies that detention/retention basins must be sized for the volume that is required to be retained in addition to the volume that is required to be detained (see standard specification 00500/Part 3/H/1/b).
- Alternative thrust restraint standard drawings have been added and are required, instead of concrete thrust blocks, when under paved surfaces of public roads (see standard drawings DW-2C, DW-2D, note 1 & 2 of DW-2, and note 1 of DW-3).
- Sampling station drinking water standard drawings have been added to show the design and location, and to require at least one sampling station in every

residential development (see standard drawings DW-14, DW-14A, and DW-14B).

- Air vacuum relief valve standard drawings have been revised to show required locations in public, private, and rural roadways (see standard drawings PI-8A through PI-8G).
- A specification was added for both "Restoring Native Area" and "Hydroseeding" (see standard specifications 02727 and 02728).

B. Funding Source: Not applicable.

C. Review: The proposed revisions have been reviewed by staff and have been found to be acceptable and in legal form.

D. Recommendation and Alternatives: Staff recommends that the Planning Commission forward a positive recommendation to the City Council regarding the proposed revisions, with the following proposed motion:

Positive Recommendation

"I move to forward a positive recommendation to the City Council regarding these proposed revisions to the City's Standard Specifications."

Alternative Recommendation with Modifications

"I move to forward a positive recommendation to the City Council regarding these proposed revisions to the City's Standard Specifications with the following modifications:"

1. _____
2. _____
3. _____

Negative Recommendation

"I move to keep the City's Standard Specifications unchanged."

E. Attachments:

1. Proposed revisions to the City's Standard Specifications

~~STANDARD~~

STANDARD TECHNICAL SPECIFICATIONS AND DRAWINGS ~~FOR~~

CITY OF SARATOGA SPRINGS, UTAH

UPDATED

MAY~~AUGUST,~~ 2024~~3~~

CITY OF SARATOGA SPRINGS —ENGINEERING DEPARTMENT
1307 N. Commerce Drive, Suite 200
Saratoga Springs, Utah 84045
Phone: (801) 766-9793
Fax: (801) 766-9794

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Format changed here to increase clarity in finding the appropriate section...all of these sections used to be under Specification 00500, but now they each have their own number as shown here.

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DEFINITIONS

ACCEPTABLE EQUAL or ACCEPTED EQUAL: In order to establish a basis of quality and specificity for some items mentioned in the Work, certain processes, types of machinery and equipment, brands, or kind of material may be mentioned on the Accepted Plans by designating a manufacturer by name and referring to ~~his~~ their brand or model numbers. Such mention is not intended to exclude Materials wherever in the Specifications a manufacturer's name, brand or model is mentioned, it is to be understood that the phrase "acceptable equal" is assumed to follow thereafter whether or not it does in fact follow.

ADDENDA: Written or graphic documents issued and signed or initialed by the Engineer, that clarify, correct or change the Contract Documents.

AGREEMENT: The duly executed written agreement between two parties. Other Contract Documents may be attached to or referred to in the Agreement and made a part thereof as provided therein. The Agreement shall include those documents specifically referred to in the signed document between the parties.

ACCEPTANCE: Acceptance by the City that documents stamped “Accepted” are in general compliance with the City’s preparation requirements of those documents. It is not an acceptance of responsibility or liability for the completeness and accuracy of those documents. Responsibility and liability for engineering documents resides with the licensed professionals and the professional firms who prepare them.

APPROVED EQUAL: Equipment or material which, in the opinion of the City’s Representative, is equal in quality, durability, appearance, strength, design, performance, physical dimensions, and arrangement to the equipment or material specified, and will function adequately in accordance with the general design.AS-BUILT DRAWINGS: Drawings which show the Project as actually constructed, and which include any and all changes made to the construction plans before and during construction.

BEST MANAGEMENT PRACTICE (BMP): One of potentially several acceptable practices that could be implemented to protect water quality and promote soil conservation.

CHANGE ORDER: A document, which is signed by authorized representatives of the Contractor and the City and which authorizes an addition, deletion or revision in the Work, or an adjustment in the sum due the Contractor, or the Project completion time, issued on or after the date of the Agreement.

CITY INSPECTOR: The authorized representative of the City or Engineer assigned to make detailed inspections of the Work performed, or of materials furnished by the Contractor.

CITY/OWNER: Wherever, in the Contract Documents the word "City" or "Owner" appears, it shall be interpreted to mean "City of Saratoga Springs", unless otherwise denoted.

CONSTRUCTION ACTIVITIES: Clearing, dredging, excavating, and grading of land and other activities associated with buildings, structures or other types of real property such as utilities, bridges, dams and roads. Includes mobilization/demobilization and any other activity that occurs on site.

CONTAMINATION. The intentional or negligent placement or release upon real property of Hazardous Materials; the presence of an unwanted constituent, contaminant or impurity in a material.

CONTRACT DOCUMENTS: The written agreement between the City and the Contractor by which the Contractor agrees to perform the Work and furnish the labor, materials, tools, and equipment in the performance of the Work. The Contract Documents shall include, but not be limited to (unless the context clearly indicates otherwise), the Saratoga Springs City Specifications, Notice to Contractors, Request for Bids, the Contractor's Bid, Accepted Plans and Specifications, Special Conditions and Contract Bonds, and attached Exhibits; also any and all supplemental agreements amending or extending the Work contemplated. Supplemental agreements are written agreements covering alterations, amendments or extensions to the contract, and include contract Change Orders.

CONTRACTOR: The Contractor is the individual, person, or organization responsible for doing the Work. The Contractor is further defined as the individual, firm, co-partnership or corporation, and his, or its heirs, executors, administrators, successors and assigns, or the lawful agent of any such individual firm, partnership, or corporation, or its surety under the contract bond, which constitutes one of the principals to the contract and undertaking to perform the Work herein specified. Where any pronoun is used as referring to the word "Contractor" it shall mean the Contractor as defined above.

DATE OF PROJECT: The date of final Acceptance.

DAYS: Unless otherwise designated, days as used in the Specifications will be understood to mean calendar days including weekends and holidays.

DRAWINGS: The drawings, profiles section and details, or accurate reproductions thereof, accepted by the Engineer, which show the location, character, dimensions and details of the Work.

EMERGENCY: Any unforeseen circumstance or occurrence for which adequate preparations could not reasonably have been made to prevent such occurrence or circumstance, the occurrence of which constitutes a clear and immediate danger to persons and/or property, or which causes a substantial interruption of utility services, or any act of God, war, insurrection, invasion, tumult, riot, or public disaster, or imminent danger of any of these, civil commotion, conflagration, or other similar occurrence resulting in a clear and immediate danger to persons and/or property.

ENGINEER: The City Engineer, or his or her representative.

FINAL ACCEPTANCE OF PUBLIC INFRASTRUCTURE: The date specified in writing by the Engineer when all work, including all punch list work designated by the Engineer, is complete and accepted by the City after the completion of the warranty period following the Project Acceptance for Maintenance.

HALF-WIDTH ROAD: Any public or private street right-of-way or easement which is less than the full required width for the road's functional classifications (ie local, collector, arterial, etc.), and which is established so that the additional half-width right-of-way or easement may be provided at a later date to complete a full-width roadway. The pavement width of a Half-Width Road shall equal at least 29 feet, or 50 percent of the required pavement width for the road's functional classification in accordance with the City Standard Specifications, whichever is greater. In addition to the required pavement, the Half-Width Road improvements shall include, at a minimum, the curb, gutter, sidewalk, park strip, landscaping, street lighting, and appurtenant utilities along the frontage of the property being developed. Half-Width Roads are allowed instead of the full cross section when development activity occurs only on one side of the street. In all other cases, the full cross section is required when development activity occurs.

HAZARDOUS MATERIALS: (a) Any substances defined, regulated or listed (directly or by reference) as "hazardous substances," "hazardous materials," "hazardous wastes," "toxic waste," "pollutant," "contaminant" or "toxic substances" or similarly identified as hazardous to human health or the environment, in or pursuant to any of the following statutes: (i) the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §9601 et seq. ("CERCLA"); (ii) the

DIVISION 00

DESIGN STANDARDS

SECTION 00100

GENERAL DESIGN STANDARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

1. Codes and Standards
2. Design Standards
3. Construction Drawing Requirements

1.2 RELATED SECTIONS

A. Section 00620 - Documentation

1.3 SUBMITTALS

A. Construction Drawings

1. Submitted Construction Drawings shall be in PDF format with 11 inch x 17 inch page size.

~~1.~~2. One PDF copy of Construction Drawings shall be submitted to the City Engineer for preliminary review.

~~2.~~3. ~~Two copies~~One PDF copy of Construction Drawings shall be submitted to the City Engineer for final acceptance with exhibit illustrating incumbent property. Requirements for Construction Drawings can be found in section 00900.

~~0. Five full size copies of Construction Drawings shall be submitted to the City Engineer before the start of construction. These drawings shall be stamped "accepted" by the City Engineer and distributed as required.~~

~~C.~~B. Easements and Land Acquisition

1. All easements and land acquisitions shall be submitted on the City's standard easement form and shall be included on the recorded subdivision plat.
2. All easements shall be accompanied by an exhibit illustrating encumbered property that is stamped, signed, and dated by a Utah-licensed professional land surveyor.
3. One copy of all necessary easement forms shall be submitted to the City Engineer for review.
4. One signed copy of all necessary easement forms, including exhibits, shall be submitted to the City Engineer for acceptance and recordation.
5. All necessary permits shall be submitted to the City Engineer for acceptance. Required permits include, but are not limited to: State and County utility line permits, canal crossing permits, railroad crossing permits, UPDES permits, Army Corp. of Engineer permits, encroachment, excavation, and grading permits, etc.
6. All necessary permits and easements must be submitted prior to acceptance being granted by the City.
7. Right-of-entry easements shall be provided for all storm drains, storm water devices, and grease traps.

~~7.~~

1.4 CITY ENGINEER'S AUTHORITY

A. The City Engineer has authority to provide a substantive review of submitted Construction Drawings.

B. The City Engineer shall provide feedback pursuant to his/her substantive review of the Construction Drawings.

C. Changes to address the City Engineer's feedback shall be made to Construction Drawings and returned to the City Engineer for City acceptance of the Construction Drawings for Construction. Requirements for Construction Drawings can be found in Part 2.3 of this section.

D. The City Engineer shall have additional authority such as is stated in these Standard Specifications.

PART 2 EXECUTION

2.1 CODES AND STANDARDS

A. Design for each category shall be based on the following Codes and Standards:

1. Sanitary Sewer Systems.
    a. ASCE Manual and Reports on Engineering Practice No. 60, Gravity Sanitary Sewer Design & Construction;
    b. Utah State Department of Health Code of Waste Disposal Regulations;
    c. Utah Division of Water Quality Administrative Rules for Design Requirements for Wastewater Collection, Treatment and Disposal Systems;
    d. Currently Adopted Plumbing Code; and
    e. Current Adopted National Electrical Code.
2. Drinking and Secondary Water Systems.
    a. State of Utah Administrative Rules for Public Drinking Water Systems;
    b. Currently Adopted Plumbing Code; and
    c. Current Adopted National Electrical Code.
3. Storm Drainage Systems.
    a. City's Standard Specifications, Storm Water Management Plan, and the Storm Water Regulations of the City Code.
    b. All work not specifically-described in the City's Standard Specifications, Storm Water Management Plan, and the Storm Water Regulations of the City Code shall conform to the Mile High Flood District Urban Storm Drainage Criteria Manual.
4. Transportation System
    a. Guidelines, procedures and design criteria as defined by AASHTO, ITE, MUTCD, and ADA.

B. All Work not specifically-described in these Standard Specifications shall conform to the APWA "Manual of STANDARD SPECIFICATIONS" and APWA "Manual of STANDARD PLANS" as published by the Utah Chapter of the American Public Works Association. The latest edition at the time of the work shall be used.

C. All Work not specifically-described in these design Standard Specifications, the APWA "Manual of STANDARD SPECIFICATIONS", or APWA "Manual of STANDARD PLANS" shall conform to recognized and generally-accepted good engineering practices.

2.2 DESIGN STANDARDS

A. Infrastructure designs shall conform to the most recent City of Saratoga Springs current Capital Facilities and Master Plans; and to these Standard Specifications.

1. These Standard Specifications are design guidelines. They do not relieve the developer's engineer from being responsible for examining and understanding local project conditions, confirming the correlation of all design standards with the techniques of construction, coordination of the standards with that of all other industry standards, and for the complete and satisfactory design of the project.

SECTION 00200

SEWER DESIGN STANDARDS

PART 1 GENERAL:

A. The impact of any proposed sewer system~~,~~ on the existing sewer systems level of service~~,~~ will be reviewed by the City Engineer. ~~-~~The developer shall install any offsite improvements necessary to mitigate negative impacts to the ~~level of service to~~ existing sewer systems' level of service and as required to provide~~ing adequate~~ sewer service to their development. ~~The developer may be required to add additional off-site sewer systems in order to provide adequate sewer service to his development.~~

1. Areas that will be serviced through the proposed development will be considered and the method of service to those areas will be determined by the City Engineer. Increased system size may be required by the City Engineer for future development.
2. Sewer lift stations are prohibited. Because the operation of a sewer lift station is a significant, long-term cost for the City and will affect the City budget long term, any exceptions to this prohibition must be specifically authorized by the City Council pursuant to its legislative discretion.

B. Sewer mains shall be located as indicated on the City's Standard Specifications and shall be located in ROW or dedicated open spaces. In ~~the~~ locations where the sewer leaves the public right-of-way, a twenty-foot wide ~~sanitary sewer~~utility ~~-~~ easement to the City ~~will be~~is required. This easement shall be centered on the sewer line. Utility ~~Sewer e~~easements for sewer shall extend 10~~ten~~ feet beyond dead end manholes.

1. Easements shall be shown on the p~~P~~lat or, if outside plat boundaries, recorded using an easement form~~s~~ acceptable to the City Attorney ~~granting the easements to the City.~~; T~~t~~he offsite easement, ~~and~~ entry number, and grantee name shall be shown and referenced on the plat.

~~. Show easements on the development plat and on the City's Standard Easement forms, which grant the easements to the City. Easements must be executed and returned to the City Office prior to acceptance being granted.~~

~~. Sewer Mains shall be located as indicated on the City's Standard Specifications and shall be located in ROW or dedicated open spaces.~~

~~PART 4~~PART 2 DESIGN REQUIREMENTS:

A. TRUNKLINES

1. **Minimum Pipe Size.** The minimum size of sewer main line shall be 8 ~~-~~inch diameter.
2. **Maximum Capacity.** All sewer pipes shall be sized to a maximum 80% capacity. Maximum capacities for each sewer pipe size are shown in Table 1.
3. **Minimum Velocity.** Sewer lines shall be designed to maintain a minimum velocity of 2~~two~~ feet per second (2 fps). The minimum flows allowed in each sewer pipe size required to meet this requirement are shown in Table 1.

4. **Peaking Factors.** The design flow shall be calculated based on equivalent residential connections in addition to a peaking factor depending on the size of sewer pipe. For 8-inch pipe, the peaking factor shall be 4.0. For pipe larger than 8-inches but less or equal to 15-inches, the peaking factor shall be 2.5. For all pipe larger than 15-inches, the peaking factor shall be 2.0.

5. **Minimum Slope.** The minimum sewer slopes are shown in Table 1.

Table 1. Minimum Pipe Slopes and Minimum/Maximum Capacities in Sewer Pipes

Pipe Size (in)	Flow at Maximum Allowable Capacity (gpm)	Minimum Slopes (ft/ft)	Minimum Design Flow (gpm)	Minimum Upstream ERUs at Minimum Slope
8	251	0.00334	N/A	N/A
10	392	0.00248	245	590
12	564	0.00194	353	851
15	880	0.00144	553	1,333
18	1,268	0.00113	795	2,395
21	1,762	0.00092	1,082	3,260
24	2,254	0.00077	1,414	4,260
Over 24	Engineer's Recommendation			

6. **Depth.** The maximum sewer depth shall be 20.0 feet~~. under normal conditions~~. The minimum sewer depth shall be 13.0 feet~~. under normal conditions~~.

   a. The City Engineer may approve sewer depths less than 13 feet where supported by an engineering study that shows other options are infeasible. In areas of shallower sewer, the following note shall be added to the development plat: "Shallow Sewer Depths! Contractor shall verify sewer depths before excavating for basement. Home(s) with basement may not have sewer service available for basement."

   ~~. The City Engineer may increase the minimum sewer depth if required to meet overall system requirements.~~

~~8.~~7. **Cover.** A minimum of 3~~three~~ feet of cover shall be required over all sewer lines, where acceptable to the City Engineer.

~~9.~~8. **Extensions.** Sewer main lines shall be extended to property lines to service future Development and end with manhole. No plugged ends of sewer main lines will be allowed. Manholes shall~~must~~ be constructed at the ends of sewer lines.

~~10.~~9. **Utility Conflicts.**

   a. Where possible, sewer shall be located at 10-foot minimum horizontal distance from all other public utilities, including but not limited to storm drains~~,~~ and secondary water lines.

   b. Sewer shall be located a minimum of 18 inches below drinking water lines and a minimum of 18 inches vertical distance from all other public utilities, including but not limited to storm drains and secondary water lines.

~~. State approval is required before sewer mains or laterals can be constructed over the top of culinary lines.~~

~~D.~~B. MANHOLES

1. **Sizing.**
   a. The minimum size manhole shall be 4 ~~-~~foot diameter.
   b. 5 ~~-~~foot diameter manholes shall be used in the following situations:
      i. Where new sewer lines are connected to existing sewer lines.
      ii. At all intersections of three or more 8 ~~-~~inch or larger pipe lines.
      iii. Where the deflection angle of the pipe line exceeds 90 degrees.
      iv. When both items "ii~~b~~" and "iii~~c~~" are designed in the same manhole, a 6 ~~six-~~ foot manhole is required.

2. **Accessibility.** A 12-foot paved access road shall be constructed to all manholes and shall be capable of supporting H-20 loading. Where future development renders the vertical alignment of an access road uncertain, the pavement requirement can be postponed until the adjacent land develops. However, the developer shall be required to post a cash only bond with the City to guarantee completion of such pavement with an automatic escalation clause to account for inflation and cost increases.

3. **Spacing.**
   a. The maximum manhole span shall be 400 feet, as measured from center to center of manholes.
   b. When sewer line depth is between 20 feet~~'~~ and 29 feet~~'~~, decrease the manhole span to 350 feet~~'~~. When depths of 30 feet or greater~~greater than 30'~~ are encountered, decrease the span to 300 feet~~'~~.

4. **Drops.** Unless otherwise approved by the City Engineer, the minimum drops through manholes shall be as follows:
   a. Greater than 90° - 0.3 foot drop
   b. 75° - 90° manholes – 0.2 foot drop
   c. 25° - 74° manholes – 0.1 foot drop
   d. 0° - 24° manholes – the grade through the manhole shall be equal to the incoming pipe slopes with a maximum drop of 0.20 feet across the manhole.

5. **Pipes in Manholes.**
   a. *Variable Diameters.* Where pipes of different diameters melding laterals connect into a manhole, the inside top of the smaller pipe shall match the inside top of the larger pipe.
   b. *Steep Slopes with Moderate Deflection.* Where incoming slopes at manholes are greater than or equal to 5 percent and the deflection angle within the manhole is greater than or equal to 45 degrees but less than 90 degrees, a 5 ~~five-~~foot manhole with an extra deep trough is required.
   c. *Steep Slopes with Major Deflection.* Where incoming slopes at manholes are greater than or equal to 5 percent and the deflection angle within the manhole is greater than 90 degrees, a 6 ~~six-~~foot manhole with an extra deep trough is required

6. **Lining.** Force main discharge manholes and manholes in groundwater shall be epoxy lined or acceptable equal.

~~E.~~C. LATERALS

1. **Benching & Lateral Size.** The benching of the extra deep trough shall be located 25% higher than the diameter of the incoming pipe. The minimum lateral size shall be 4 -inch for residential connections; and 6 -inch for commercial and industrial connections.
2. **Minimum Slope.** Sewer lateral shall have a minimum slope of 2%.
3. **Tie-In Locations.** Sewer laterals shall tie directly into manholes wherever possible and practical.

~~3.~~

~~. Sewer laterals shall tie directly into manholes wherever possible and practicalin cul-de-sacs and at dead-end manholes.~~

~~. Sewer laterals may tie directly into manholes wherever possible and practical.~~

~~6.~~4. **Cleanouts & Bends.** Sewer laterals shall conform to the requirements of the Utah State Department of Health Code and the currently adopted plumbing code; with cleanouts at not more than 100 -foot spacing; and no more than two bends in excess of 45 degrees without a cleanout.

~~7.~~5. **Frequency.** Each building and/or unit of separate ownership shall require a separate sanitary sewer lateral.

~~8.~~6. **Grease Traps.** Grease traps shall be required on all commercial development where food service uses are anticipated.

a. Sampling manholes shall be installed downstream of all grease traps.
b. Sampling manhole & grease trap shall be constructed as per TSSD Standards & Specifications and it shall be accepted and inspected by the Timpanogos Special Service District.
c. Sampling manhole and grease trap must be inspected and maintained per the Utah Health Code and Utah County Health Department regulations.

SECTION 00300

DRINKING WATER DESIGN STANDARDS

PART 1 GENERAL:

~~PART 1~~

A. The State of Utah Administrative Rules for Public Drinking Water Systems, R309-510, provide minimum sizing requirements for drinking water facilities. All pipe and appurtenances shall be ANSI/NSF 61 certified.

B. The impact of any proposed water system on the existing water systems' level of service will be reviewed by the City Engineer. The developer shall install any offsite improvements necessary to mitigate negative impacts to ~~the~~ the~~level of service~~ ~~to~~ existing drinking water systems' level of service and as required to provide~~ing adequate~~ water service to their development. ~~The developer may be required to add additional off-site infrastructure in order to provide adequate water supply to his development.~~

1. Areas that will be supplied through the proposed development will be considered and the method of service to those areas will be determined and accepted by the City Engineer. Increased system size may be required for future development as outlined in the City's Drinking Water Master Plan and as dictated by the City's water modeling.
2. The City Engineer shall consider and accept the system storage requirements for each development.

C. Drinking water mains shall be located as indicated in the City's Standard Specifications and shall be located in ROW or dedicated open space. In the locations where the drinking water lines leave the public right-of way, a ten-foot wide utility easement to the City is~~will be~~ required. This easement shall be centered on the water line. Utility~~Water~~ easements for water shall extend 10 feet beyond dead ends and hydrants.

1. Easements shall be shown on the p~~P~~lat or, if outside plat boundaries, recorded using an easement form~~s~~ acceptable to the City Attorney. ~~granting the easements to the City;~~ T~~t~~he offsite easement, ~~and~~ entry number, and grantee name shall be shown and referenced on the plat.

D. Each building and/or unit of separate ownership shall require a separate water service line.

PART 2 DESIGN REQUIREMENTS:

A. PIPES

1. Water systems shall be sized as described in the City's Capital Facilities & Master Plans and shall be a minimum of 8 inches in public right-of-way.
2. The minimum fire flow shall be as per state standards. The fire flow may be increased as determined by the City Fire Marshal.
3. The construction drawings shall show pipe sizes, types, and classifications.
   a. All water system appurtenances shall be labeled
4. The cover over the top of drinking water lines shall be a minimum of 48 inches and a maximum of 72 inches.

5. Drinking water lines shall be located a minimum of 18 inches above sanitary sewer lines and a minimum of 18 inches vertical distance from all other public utilities, including but not limited to storm drains and secondary water lines.

6. The material for drinking water pipeline up to and including 18 inch shall be AWWA C900 DR 18. The material for pipelines larger than 18 inch shall be selected by the City Engineer.

7. Water lines shall be placed in the park strips as required by the Standard Specifications.

   a. Location shall be on the east side of north/south streets.

   b. Location shall be on the north side of east/west streets.

8. Fire Hydrants:

   a. Fire hydrants shall have a maximum spacing of 500 feet in residential areas; and a maximum spacing of 300 feet in commercial and industrial areas.

   b. Fire hydrants shall be placed at the end of cul-de-sac pipe lines, the end of dead end streets, and every 1,000 feet on offsite transmission lines. Temporary hydrants may not be considered as fire protection hydrants; but shall be used for flushing and maintaining lines.

   c. Fire hydrant spacing shall be accepted by the City Fire Chief; additional fire hydrants may be required by the City Fire Chief.

9. Where grade change will not allow conventional concrete thrust blocks, pipe restraint devices shall be designed and specified.

10. Concrete thrust blocks are not allowed within roadways at intersections. For example, between existing and future curb lines. Thrust restraint shall be designed in accordance with the Standard Specifications.

11. Water Service Connections shall include the corporation stop at the main line, CTS Poly service line to the meter yoke, an angle stop, back-flow angle valve, PVC meter box, and cast iron frame and cover, as shown on the City Standard Specifications.

12. Drinking water main lines shall be extended to property lines to service future development and shall end with blow-off or hydrant.

13. Permanent dead-end mains shall not exceed 600 feet in length.

14. The maximum allowable deflection of pipe joints shall be less than or equal to half of the manufacturer recommended maximum deflection.

B. PRESSURES & VELOCITIES

~~2.~~

~~3. Water systems shall be sized as described in the City's Capital Facilities & Master Plans and shall be a minimum of 8 inches" in public right-of-way.~~

~~4. The minimum fire flow shall be as per state standards. The fire flow may be increased as determined by the City Fire Marshal.~~

~~5.~~1. The minimum operating pressure in all parts of the system during peak day demand is to be 40 psi.

~~6.~~2. The maximum operating pressure is to be 100 psi. Higher pressures can be used with acceptance from the City Engineer, based on pipe strength, the presence and nature of service connections, and the potential for transient pressure surges in the subject area of the system.

~~7.~~3. Water systems shall be designed so that pressures conform to the pressure zones shown in the City's Capital Facilities Plan.

8.1. The construction drawings shall show pipe sizes, types, and classifications.

.a. All water system appurtenances shall be labeled

4. Individual home booster pumps are not allowed.

0.

0.1. The impact of any proposed water system on the existing water system will be reviewed by the City Engineer. The developer may be required to add additional off-site infrastructure in order to provide adequate water supply to his development.

.a. Areas that will be supplied through the proposed development will be considered and the method of service to those areas will be determined and accepted by the City Engineer. Increased system size may be required for future development as outline in the City's Drinking Water Master Plan and as dictated by the City's water modeling.

.a. The City Engineer shall consider and accept the system storage requirements for each development.

The minimum cover over the top of drinking water lines is to be 48 - 72 inches.shall be a minimum of 48 inches and a maximum of 72 inches.

0. Drinking water lines shall be located a minimum of 18 inches above sanitary sewer lines and a minimum of 18 inches vertical distance from all other public utilities, including but not limited to storm drains and secondary water lines.

C. Water lines up to and including 24 in diameter shall be AWWA C900 DR 18. Water lines larger than 24 in. shall be ductile iron Class 250. Pipeline pressure class and /or design ratio may need to be increased as directed by the City Engineer depending on hydraulic surge, depth of cover, or transient pressures.The material for drinking water pipeline up to 18 inch shall be AWWA C900 DR 18. The material for pipelines larger than 18 inch shall be selected by the City Engineer. VALVES & BLOW-OFFS

1.

2.1. Gate valves shall be installed on all waterlines regardless of size.Valves shall be gate valves. Valves 16 inch and larger may be installed rotated 90 degrees with a bevel gear actuator.

3.1. Water lines shall be placed in the park strips as required by the Standard Specifications.

.a. Location shall be on the east side of north/south streets.

.a. Location shall be on the north side of east/west streets.

6.2. Valve placement:

a. Valves shall be placed at the point of curvature of the curb and gutter radius sections.
b. Valves shall be placed at intervals not to exceed 800 feet.
c. At intersections, valves shall be placed on at least three branches of the system.
d. Valves shall be placed within 10 feet of the upstream and downstream ends of casing pipes.Valves shall be placed on both sides of casings in a location which will not interfere with future removal and replacement of the carrier pipe. Thrust restraint shall be addressed in the design.
e. Valve nut elevation shall not exceed 4 feet below finished grade without extension.
f. Valves shall be placed at connections to existing infrastructure.

3. Blow-offs shall be placed at the ends of water lines, at low points in the system, and at other locations as shown on the City's Standard Specifications. Alternatively, fire hydrants may be used to fulfill this requirement.

0.

0.1. Fire Hydrants:

.a. Fire hydrants shall have a maximum spacing of 500 feet in residential areas; and a maximum spacing of 300 feet in commercial and industrial areas.

.a. Fire hydrants shall be placed at the end of cul-de-sac pipe lines, the end of dead end streets, and every 1,000 feet on offsite transmission lines. Temporary hydrants may not be considered as fire protection hydrants; but shall be used for flushing and maintaining lines.

a. Fire hydrant spacing shall be accepted by the City Fire Chief; additional fire hydrants may be required by the City Fire Chief.

Where grade change will not allow conventional concrete thrust blocks, pipe restraint devices shall be designed and specified.

D. Concrete thrust blocks are not allowed within roadways at intersections. For example, between existing and future curb lines. Alternative thrust restraint shall be designed and specified.STATIONS

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2.1. Air-Vacuum Valve Stations:

a. Air-vacuum valve station venting shall be located in a landscaped area near the edge of the right-of-way (ROW).
b. Air-vacuum valve stations shall be placed at high points on transmission lines and at other locations as required for proper system operation.
c. Air-vacuum valve stations shall be constructed as indicated on the drawings.

3.1. Water Service Connections shall include the corporation stop at the main line, CTS Poly service line to the meter yoke, an angle stop, back flow angle valve, PVC meter box, and cast iron frame and cover, as shown on the City Standard Specifications.

4. In the locations where the water lines leave the public right-of way a ten-foot wide easement will be required. This easement shall be centered on the water line. Water easements shall extend ten 10 feet beyond dead ends and hydrants. Show easements on the development plat and on the City's Standard Easement forms, which grant the easements to the City. Easements must be executed and returned to the City Office prior to final acceptance being granted.

5. Each building and/or unit of separate ownership shall require a separate water service line.

6.2. PRESSURE REGULATING STATIONS shall be provided at all locations where there is a connection between pressure zones.shall be constructed, where requireddesigned in locations specified by City Engineer to provide water supply between pressure zones, as indicated on the City Standard Specifications.

a. The station plumbing shall consist of a main line and a by-pass line. The combined capacity of the main line and by-pass plumbing shall equal the capacity of the incoming pipe line. The main line will normally be one pipe size smaller than the incoming line and the by-pass line will be sized as required.
b. Plumbing will include pressure regulating valves on each line, isolation valves on each side of each regulating valve, and all appurtenant plumbing items, as indicated on the Standard Specifications.

0. Drinking water main lines shall be extended to property lines to service future development and shall end with blow-off or hydrant.

0. Permanent dead-end mains shall not exceed 600 feet in length.

0. The maximum allowable deflection of pipe joints shall be less than or equal to half of the manufacturer recommended maximum deflection.

SECTION 00400

SECONDARY WATER DESIGN STANDARDS

PART 1 GENERAL:

A. The impact of any proposed water system on the existing water systems level of service will be reviewed by the City Engineer. The developer shall install any offsite improvements necessary to mitigate negative impacts to the ~~the level of service to~~ existing secondary water systems' level of service and as required to provide~~ing adequate~~ water service to their development. ~~The developer may be required to add additional off-site infrastructure in order to provide adequate water supply to his development.~~

1. Areas that will be supplied through the proposed development will be considered and the method of service to those areas will be determined by the City Engineer. Increased system size may be required for future development as outlined in the City's Secondary Water Master Plan and as dictated by the City's water modeling.

2. The City Engineer shall consider and accept the system storage requirements for each development.

~~In the locations where the water lines leave the public right-of way a ten-foot wide easement will be required. This easement shall be centered on the water line. Water easements shall extend ten feet beyond dead ends.~~

B. ~~Easements shall be shown on the Plat or, if outside plat boundaries, recorded using an easement forms acceptable to the City Attorney granting the easements to the City; the offsite easement and entry number shall be shown and referenced on the plat.~~ Secondary water mains shall be located as indicated on the City's Standard Specifications and shall be located in ROW or dedicated open space. In the locations where the secondary water lines leave the public right-of way, a ten-foot wide utility easement to the City is required. This easement shall be centered on the water line. Utility easements for secondary water shall extend ten feet beyond dead ends.

1. Easements shall be shown on the plat or, if outside plat boundaries, recorded using an easement form acceptable to the City Attorney granting the easements to the City. The offsite easement, entry number, and grantee name shall be shown and referenced on the plat.

~~Secondary water main lines shall be extended to property lines to service future Development and end with blow-off.~~

C. Each building and/or unit of separate ownership shall require a separate water service line.

PART 2 DESIGN REQUIREMENTS:

A. PIPES

~~1.~~

1. Secondary Water systems shall be sized as described in the City's Capital Facilities Plan and shall be a minimum of 6~~"~~ inches in public right-of-way.

2. The cover over top of secondary water lines shall be a minimum of 36 inches and a maximum of 72 inches.

3. Secondary water lines shall maintain a minimum 18 inches vertical distance from all other public utilities, including but not limited to sanitary sewer, storm drain, and drinking water lines.

4. Secondary water lines shall be placed in the park strips as required by the City Standard Specifications.

   a. Location shall be on the west side of north/south streets.

   b. Location shall be on the south side of east/west streets.

   c. Location shall be on the opposite side of the street from drinking water lines.

5. The material for secondary water pipeline up to and including 18 inch shall be AWWA C900 DR 18. The material for pipelines larger than 18 inch shall be selected by the City Engineer.

6. Concrete thrust blocks are not allowed within roadways at intersections. For example, between existing and future curb lines. Thrust restraint shall be designed in accordance with the Standard Specifications.

7. Drains shall be installed at all low points on pressure irrigation lines.

8. Permanent dead-end mains shall not exceed 600 feet in length.

9. The maximum allowable deflection of pipe joints shall be less than or equal to half of the manufacturer recommended maximum deflection.

10. Water Service Connections shall be constructed as shown on the City Standard Specifications.

11. Secondary water main lines shall be extended to property lines to service future Development and end with blow-off.

B. PRESSURES & VELOCITIES

~~2.~~

~~3.~~1. The normal minimum operating pressure in all parts of the system during peak day demand shall be 30 psi.

~~4.~~2. The maximum operating pressure is to be 90 psi. Higher pressures can be used with acceptance from the City Engineer, based on pipe strength, the presence and nature of service connections, and the potential for transient pressure surges in the subject area of the system.

3. The system shall be designed for maximum pipe line flow velocities ~~will be~~to not exceed 6 feet per second.

C. VALVES & BLOW-OFFS

~~5.~~

~~6.~~1. ~~The impact of any proposed water system on the existing water system will be reviewed by the City Engineer. The developer may be required to add additional off-site infrastructure in order to provide adequate water supply to his development.~~

7.1. Areas that will be supplied through the proposed development will be considered and the method of service to those areas will be determined by the City Engineer. Increased system size may be required for future development as outlined in the City's Secondary Water Master Plan and as dictated by the City's water modeling.

8.1. The City Engineer shall consider and accept the system storage requirements for each development.

The minimum cover over top of secondary water lines is to be 36 – 72 inches.shall be a minimum of 36 inches and a maximum of 72 inches.

9. Secondary water lines shall maintain a minimum 18 inches vertical distance from all other public utilities, including but not limited to sanitary sewer, storm drain, and drinking water lines.

10. Secondary water lines shall be placed in the park strips as required by the City Standard Specifications.

. Location shall be on the west side of north/south streets.

. Location shall be on the south side of east/west streets.

. Location shall be on the opposite side of the street from drinking water lines.

14. The material for secondary water pipeline up to 18 inch shall be AWWA C900 DR 18. The material for pipelines larger than 18 inch shall be selected by the City Engineer.Water lines up to and including 24 inches in diameter shall be AWWA C900 DR 18 purple in color. Water lines larger than 24 in. shall be ductile iron Class 250. Pipeline pressure class and/or design ratio may need to be increased as directed by the City Engineer depending on hydraulic surge, depth of cover, or transient pressures.

15.1. Valve placement:

a. Valves shall be placed at the projection of the end of curb and gutter radius sections at the point of curvature.
b. Valves shall be placed at intervals not to exceed 800 feet.
c. At intersections, valves shall be placed on at least three branches of the system.
d. Valves shall be placed within 10 feet of the upstream and downstream ends of casing pipes.
e. Valves shall be placed at connections to existing infrastructure.

16.2. Blow-offs shall be placed at the ends of water lines at the low points in the system, and at other locations as shown on the City's Standard Specifications.

D. Water Service Connections shall be constructed as shown on the City Standard Specifications.STATIONS

17.

18. In the locations where the water lines leave the public right-of way a ten-foot wide easement will be required. This easement shall be centered on the water line. Water easements shall extend ten feet beyond dead ends. Show easements on the development plat and on the City's Standard Easement forms, which grant the easements to the City. Easements must be executed and returned to the City Office prior to acceptance being granted.

19. Each building and/or unit of separate ownership shall require a separate water service line.

20.1. PRESSURE REGULATING STATIONS shall be ~~constructed, where required~~designedprovided inat all locations ~~specified by City Engineer to provide wa~~ where there is a connection ~~ter supply~~ between pressure zones~~, as indicated on the City Standard Specifications~~.

a. The station plumbing shall consist of a main line and a by-pass line. The combined capacity of the main line and by-pass plumbing shall equal the capacity of the incoming pipe line. The main line will normally be one pipe size smaller than the incoming line and the by-pass line will be sized as required.

b. Plumbing will include pressure regulating valves on each line, isolation valves on each side of each regulating valve, and all appurtenant plumbing items, as indicated on the Standard Specifications

~~. Concrete thrust blocks are not allowed within roadways at intersections. For example, between existing and future curb lines. Alternative thrust restraint shall be designed and specified.~~

22.2. Air-Vacuum Valve Stations:

a. Air-vacuum valve station venting shall be located in a landscaped area near the edge of the right-of-way (ROW).

b. Air-vacuum valve stations shall be placed at high points on transmission lines and at other locations as required for proper system operation.

c. Air-vacuum valve stations shall be constructed as indicated on the drawings.

0. Drains shall be installed at all low points on pressure irrigation lines.

0. Secondary water main lines shall be extended to property lines to service future Development and end with blow-off.

0. Permanent dead-end mains shall not exceed 600 feet in length.

0. The maximum allowable deflection of pipe joints shall be less than or equal to half of the manufacturer recommended maximum deflection.

SECTION 00500

STORM DRAIN DESIGN STANDARDS

PART 1 GENERAL:

A. The ~~impact~~ impacts of any proposed storm drain system ~~on~~ to the existing drainage systems level of service will be reviewed by the City Engineer. The developer shall install any offsite improvements necessary to mitigate negative impacts ~~to the level of service~~ to the existing storm drain systems' level of service and as required to provide ~~The developer may be required to add additional off-site storm drain systems in order to provide adequate~~ storm drain~~age control~~ capacity for their development.

~~B.~~1. Areas that will be drained through the proposed development will be considered and the method of drainage for those areas will be determined by the City Engineer. Increased system size may be required by the City Engineer for future development.

~~C.~~A. ~~Public and private storm drainage shall not be commingled unless the private property owners choose to accept public storm drainage into their private infrastructure. In such a case the private property owner shall grant an easement to the City accepting that the drainage is the full responsibility of the property owner and execute an agreement with the City that is recorded on the property in the Utah County Recorder's office. This agreement shall release and indemnify the City from potential liabilities associated with the drainage and associated infrastructure, allow the City to enter the property to maintain, repair, or replace the improvements if necessary and bill the property owner, and provide for an automatic lien on the property in the event the property owner does not reimburse the City for its costs.~~

B. All drainage systems shall be capable of passing the storm runoff from a 100-year event without flooding buildings. Additionally, the capacity of all detention systems shall be sufficient to contain the anticipated runoff volume from the 100-year storm event. Undetained flows from 100-year storm events which are upstream of a detention basin and within the same drainage must be conveyed into that detention basin. Storm drain lines and inlets shall be upsized as necessary to ensure that 100-year flows are conveyed to the detention pond.

C. Storm drains shall be located as indicated on the City's Standard Specifications and shall be located in the ROW or dedicated open spaces. Storm drain lines shall be extended at developer's cost to property lines to accommodate future development and shall end at a manhole. In locations where the storm drain leaves the public ROW, a 20-foot wide ~~drainage~~utility ~~-~~easement to the City ~~will be~~is required. This easement shall be centered on the storm drain line. Utility easements for storm drain~~Drainage easements~~ shall extend 10 feet beyond dead end structures.

a. Easements shall be shown on the p~~P~~lat or, if outside plat boundaries, recorded using an easement form~~s~~ acceptable to the City Attorney ~~granting the easements to the City.~~; T~~t~~he offsite easement, ~~and~~ entry number, and grantee name shall be shown and referenced on the plat.

b. Public and private storm drainage shall not be commingled unless the private property owners choose to accept public storm drainage into their private infrastructure. In such a case the private property owner shall grant an easement to the City accepting that the drainage is the full responsibility of the property owner and execute an agreement with the City that is recorded on the property in the Utah County Recorder's office. This agreement shall release and indemnify the City from potential liabilities associated with the drainage and associated infrastructure, allow the City to enter the property to maintain, repair, or replace the improvements if necessary and bill the property owner, and provide for an

automatic lien on the property in the event the property owner does not reimburse the City for its costs.

~~PART 3~~PART 2 SUBMITTALS:

A. **Hydrology and Drainage Plan:** Prior to beginning design on any storm drain facilities, a hydrology and drainage plan and report shall be submitted and approved in accordance with Section 005~~3~~10.

B. **Low Impact Development (LID) Plan:** Redevelopment projects that disturb greater than or equal to one acre, including projects less than an acre that are part of a larger common plan of development or sale which collectively disturbs land greater than or equal to one acre must provide a site-specific and project specific LID plan in accordance with Section 005~~3~~20.

C. **Design Submittals:** Once the development has approved drainage and LID plans in place, regular design submittals following the Standard Specifications may proceed.

~~**Location.** Storm drains shall be located as indicated on the City's Standard Specifications and shall be located in the ROW or dedicated open spaces. Storm drain lines shall be extended at developer's cost to property lines to accommodate future development and shall end at a manhole. In locations where the storm drain leaves the public ROW, a 20-foot wide drainage easement will be required. This easement shall be centered on the drain line. Drainage easements shall extend 10 feet beyond dead end structures. Easements shall be shown on the development plat and on the City's Standard Easement forms, which grant the easements to the City. Easements must be executed and returned to the City prior to final acceptance being granted.~~

~~Public and private storm drainage shall not be commingled unless the private property owners choose to accept public storm drainage into their private infrastructure. In such a case the private property owner shall grant an easement to the City accepting that the drainage is the full responsibility of the property owner and execute an agreement with the City that is recorded on the property in the Utah County Recorder's office. This agreement shall release and indemnify the City from potential liabilities associated with the drainage and associated infrastructure, allow the City to enter the property to maintain, repair, or replace the improvements if necessary and bill the property owner, and provide for an automatic lien on the property in the event the property owner does not reimburse the City for its costs.~~

~~PART 4~~PART 3 DESIGN REQUIREMENTS:

A. CONDUITS

1. **Design Flow.** Storm drain lines shall be designed to convey the 10-year storm event. Design capacity of the pipe shall be based on full flow capacity without pressurization.
2. **Minimum Pipe Size.** All public storm drains shall be constructed with a minimum size of 15-inches in diameter.
3. **Pipe Material.** All storm drain pipes must be constructed with reinforced concrete pipes. Dual wall HDPE pipe (ADS N-12 or equal) may be allowed if one of the following requirements are met:
   a. The public storm drain pipe is being installed outside of any existing or future roadway and is in an area that will be permanently non-load bearing.

b. The pipe is acting as a transition from private to public storm drain infrastructure and the transition is located at a combo box such that ADS does not extend into the roadway.

The following table (Table 2) shall be utilized when choosing a Manning's "n":

Table 2. Values of Manning's Coefficient (n) for Channels and Pipes	
Conduit Material	Manning's n
Plastic pipe	0.012
Steel/cast iron pipe	0.013
Concrete pipe	0.013
Corrugated metal pipe	0.025
Concrete-lined channel	0.015
Excavated or Dredge Channels	
Earth channel - straight and uniform	0.025
Earth channel - winding, fairly uniform	0.03
Rock	0.04
Unmaintained	0.065
Natural Channel	
Fairly regular section	0.06
Irregular section with pools	0.07

4. **Minimum Cover.** Minimum cover shall be as per manufacturer's recommendation over all storm drain lines. In no case shall cover be less than 18 inches.

5. **Utility Conflicts:**

a. Storm Drain lines shall maintain a minimum 18 inches vertical distance from all other public utilities, including but not limited to sanitary sewer, secondary water, and drinking water lines.

~~4.~~

5.6. **Minimum and Maximum Slope / Velocity.** Storm drain lines shall be designed such that the maximum velocity does not exceed 20 ft/sec for a pipe flowing full and that the minimum velocity in the 10-year storm is at least 3 ft/sec. The minimum pipe slopes and corresponding minimum 10-year storm flow rates shall be per Table 3:

Table 3. Minimum Pipe Slopes in Concrete Storm Drains			
Pipe Size (in)	Full Pipe Flow (cfs)	Minimum Slopes (ft/ft)	Minimum 10-year Storm Event Flow (cfs)
15	3.7	0.0032	NA
18	5.3	0.0026	2.57
21	7.2	0.0021	3.54
24	9.4	0.0017	4.86
27	11.9	0.0015	5.87
30	14.7	0.0013	7.27
33	17.8	0.0011	9.34
36	21.2	0.0010	10.78
42	28.9	0.0008	15.05
48	37.7	0.0007	18.40
54	47.7	0.0006	23.19
60	58.9	0.0005	30.49
66	71.3	0.0005	30.62
72	84.8	0.0004	42.61

~~6.1.~~ ~~**Location.** Storm drains shall be located as indicated on the City's Standard Specifications and shall be located in the ROW or dedicated open spaces. Storm drain lines shall be extended at developer's cost to property lines to accommodate future development and shall end at a manhole. In locations where the storm drain leaves the public ROW, a 20-foot wide drainage easement will be required. This easement shall be centered on the drain line. Drainage easements shall extend 10 feet beyond dead-end structures. Easements shall be shown on the development plat and on the City's Standard Easement forms, which grant the easements to the City. Easements must be executed and returned to the City prior to final acceptance being granted.~~

7. **Configuration.** Where pipes of different diameters connect into a drainage structure, the inside top of the smaller pipe shall match the inside top of the larger pipe.

B. MANHOLES

1. **Location.** A manhole or cleanout structure shall be located at the upstream end of a storm drain conduit and at all changes in pipe size, horizontal alignment, slope, and material of the storm drain. A 12-foot paved access road shall be constructed to all manholes and shall be capable of supporting H-20 loading. Where future development renders the vertical alignment of an access road uncertain, the pavement requirement can be postponed until the land develops so long as the developer also owns the undeveloped land. However, the developer shall be required to post a cash only bond with the City to guarantee completion of such pavement with an automatic escalation clause to account for inflation and cost increases.
2. **Spacing.** Maximum spans between manholes or other junction structures shall be 400 feet from center to center.

3. **Size.** The minimum manhole size shall be 4-foot diameter. 5-foot diameter manholes shall be used in the following situations:
    a. At all intersections of three or more 8-inch or larger pipes
    b. Where the deflection angle of the pipeline exceeds 90 degrees
    c. When both items “a” and “b” are designed in the same manhole, a 6-foot manhole is required.
4. **Sump Manholes.** Sump manholes designed to infiltrate water are not permitted except in open spaces as part of an approved Low Impact Development Plan as outlined below.
5. **Testing.** Testing shall be required and shall conform to ASTM C 1244, Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test. If manhole fails test initially, developer shall make necessary repairs per the manufacturer’s recommendations. The manhole shall be re-tested until the satisfactory test is obtained. During the test, the developer shall:
    a. Plug all lift holes with a non-shrink grout
    b. Plug all pipes entering manhole and securely brace plugs during test; and
    c. Place a test head at inside top of cast iron frame; the seal shall be inflated in accordance with manufacturer’s recommendations.
6. **Configuration.** Storm drain structures shall be constructed as indicated in the Standard Specifications.

C. INLETS

1. **Location.** Inlet boxes shall be placed as follows:
    a. Spaced at no more than 400 feet apart to collect sheet flow of storm water.
    b. Located at the uphill end of curb returns, unless one is already needed on the downhill side due to slope constraints.
    c. On lot lines.
    ~~c.~~d. On sags.~~, where practical.~~
2. **Cleanout Boxes.** Cleanout boxes shall be located at every change in alignment or slope and at junctions with other lines.
3. **Restrictions.** Sufficient inlets shall be included to eliminate the need for waterways. Waterways are not allowed in public streets.
4. **Configuration.** Storm drain structures shall be constructed as indicated on the City Standard Specifications. Single gutter inlet boxes are not sufficient for structures which contain more than one pipe connection; in this case, a combination gutter inlet & cleanout box is required.

D. HYDRAULIC CAPACITY OF STREETS

1. **Design Flow.** Streets shall be designed to convey the 100-year storm discharge from upstream to downstream (i.e. avoid local street sags or low points).
2. **Cul-De-Sacs and Dead-End Streets.** Downhill-sloping cul-de-sacs and dead ends should be avoided. If unavoidable due to design constraints, means to safely convey runoff from design storm events across the site must be provided through a trapezoidal channel (designed for the 100-year event and conveyed to a detention basin or water body), which shall be shown on plat with appropriate drainage easements.

E. ENCLOSED/OPEN CHANNEL TRANSITIONS

1. **Location and Design.** Energy dissipation is required at all enclosed-to-open-channel and open-to-enclosed-channel transitions and shall be designed according to the Mile High Flood District Urban Storm Drainage Criteria Manual. See Volume 2 Chapter 9.3.2, “Energy Dissipation and Erosion Protection”. Specifically. See Chapter 9.3.2.3 “Rock Sizing for Riprap Apron”. Note that rock sizes referenced in the figures in the text are defined in the Open Channels Chapter in Section 8. Gradations are specified in Figure 8-34. Bedding requirements are also discussed in this section. The document can be found at the following link: https://mhfd.org/resources/criteria-manual/)

F. OPEN CHANNELS

1. **Location.** Land that lies within a drainage corridor or natural drainage course shall be left in its natural state whenever possible. The ability of the land to naturally channel, retain, and drain storm water shall be maintained and enhanced in ways that augment the existing natural system.

   No subdivision or site design will be permitted that would create a flood or flooding hazard to adjoining or nearby properties including public roads and property.

2. **Channel Section.** The banks of the open channel shall not exceed three (3) feet horizontal to one (1) foot vertical in gradient. The widths of the open channel shall be designed such that the freeboard requirements are met.

3. **Design Flow.** Open channels shall be designed to convey the 100-year storm discharge.

4. **Freeboard.** Minimum freeboard over the 100-year high water elevation shall be the lesser of 1.0 times the depth of the channel depth or 2 feet. In no case, however, shall the freeboard be less than 1 foot.

5. **Restrictions.** No fences or structures shall be constructed across the waterway that will reduce or restrict the flow of water.

6. **Erosion.** Drainage channels shall be designed to prevent erosion, according to Federal Highway Administration Hydraulic Engineering Circular (HEC) Number 15, “Design of Roadside Channels with Flexible Linings”.

7. **Material.** The banks of the waterway shall be protected with permanent vegetation. If vegetation will not function properly, rip-rap shall be used. The bed of the waterway shall be protected with turf, sod, or rip-rap. If turf or sod will not function properly, rip-rap shall be used. If the flow velocity in the waterway is such that erosion of the turn side wall will occur and said velocity cannot be decreased by velocity control structures, then rip-rap shall replace turf on the side walls.

8. **Slope.** The gradient of the waterway bed should not exceed a grade that will result in a velocity that will cause erosion of the banks of the waterway.

G. DETENTION BASINS AND ORIFICES

1. Release Rate and Volume Capacity.

   a. The capacity of all detention systems shall be sufficient to contain the anticipated runoff volume from the 100-year storm event, using the methods specified in this manual, over those portions of the gross aggregate area under design, with a maximum release determined based on the drainage area specified by the City and not to exceed 0.2 cfs/acre.

   b. Flood control detention is not required when there is a runoff route directly to Utah Lake or the Jordan River, excluding all tributary channels that might receive flow downstream of the subjected area. Direct runoff routes include public Right-of-Ways (typically a street) or piped. Overland flow routes must adhere to the specifications within this design manual, and treatment and LID requirements still

apply to these flows.

c. Volume that is required to be detained is not allowed to be decreased due to evaporation.

2. **Maintenance.** All ponds are to be maintained by the HOA or similar entity unless it is a regional pond which serves multiple developments and is identified as a system improvement in the City's Impact Fee Facilities Plan, or alternatively meets the definition of system improvement in Utah Code § 11-36a-102 and is legislatively adopted into the City's Impact Fee Facilities Plan.

3. **Freeboard.** All ponds, except for above-ground detention in private parking lots that spill to a street, shall have a minimum of 1' of freeboard above the 100-year high water elevation. However, above-ground detention ponds in private parking lots shall provide 1' of freeboard to the finished floor of habitable structures.

4. **Emergency Outlet / Overflows.** Any flows that exceed design standards and overtop embankments shall be on natural ground, sufficiently apart from the embankment to prevent erosion. If overtopping must occur at the embankment, a spillway shall be designed to prevent and control erosion.

5. **Location.** Detention ponds are not allowed within residential lots unless all the following requirements are met:

   a. The area contributing to the detention basin is not part of an HOA and the lot is not within an HOA.~~,~~

   b. The maximum number of units draining to the pond is 30,

   c. The detention pond is completely above ground (i.e. underground storage is not allowed),

   d. The pond is part of a single-phase subdivision,

   e. The pond's freeboard line location does not encroach into the public utility easement (PUE) or other easements and is set back 30 feet minimum from private lot structures with foundations, attached decks, driveways, patios, and porch walkways. ~~is set back from all significant structures (such as a home or porch) at least 30 feet,~~

   f. The pond is designed pursuant to the Standard Specifications (see details SD-08 and SD-09),

   g. All pipes to and from the detention pond are no longer than 30 feet and must be centered within a 20-foot wide utility~~access~~ easement to be dedicated to the City (see PART 1 GENERAL/C of this specification), and

   h. The Plat identifies that the property owner of the residential lot on which the detention pond is located is responsible to maintain all surface improvements (i.e. landscaping, paving, etc) per the accepted plans.

6. **Access.** All inlet/outlet structures shall be easily accessible. All inlet/outlet structures must be provided with access roads with a maximum slope of 15%. An exception is made if the distance to the inlet/outlet is within 10 feet of the back of sidewalk and/or the pond is less than 2,500 SF.

7. **Side Slopes.** Embankment slopes shall be no greater than 3:1 for both upstream and downstream slopes and must include erosion protection. 2:1 slopes are acceptable for downstream slopes if recommended by a licensed geotechnical engineer.

8. **Liner.** Underground storage systems that are not designed to infiltrate water into the ground shall be lined with a durable impermeable barrier. Geomembrane systems shall include a PVC or HDPE lines that is at least 140 mils thick with a needle-punched non-woven geotextile protective layer.

9. **Geotechnical.** The historic high water table is to be determined based on local ground water data (if available) and test pit(s) or boring(s). The data is to be used to evaluate any negative historic or potential impacts on the development through ground water infiltration. Identify any bedrock encountered and evaluate the potential impact bedrock may have from the infiltration of storm water runoff.
10. **Landscaping.** All ponds are to be landscaped in accordance with the City's Land Development Code~~.~~.
11. **Parking Lots.** Above ground detention ponds in private parking lots shall have a maximum ponded depth of 8 inches.
12. Outlet Design:
    a. Low-flow pipes are required in all detention ponds to convey flows from small storms.
    b. Orifice plates ~~must~~ shall be located in the outlet control box structure per standard drawings SD-8 and SD-9.~~such that they can be cleaned off when the pond is full.~~
    c. The minimum size of orifice opening shall be 4 square inches.
    d. Every effort shall be made by the engineer to limit head to 4 feet or less by increasing the size of the pond.
    e. Orifice plates with openings that are less area than a 15-inch diameter circle must have rectangular openings and be protected by a snout. Orifice plates with openings that are equal to or greater than 15-inches in diameter may be circular and do not require a snout.

H. RETENTION BASINS

1. **Volume Capacity:**
    a. The capacity of all retention systems must be such that the volume of the 100-year 24-hour storm event will be drained within 48 hours or less. This includes infiltrating the 80th percentile storm (see LID requirements below) and draining all additional volume of downstream facilities.
    b. Detention/retention combination ponds must be sized for the volume that is required to be retained in addition to the volume that is required to be detained and still meet all other detention/retention requirements.
    c. Volume that is required to be retained is allowed to be reduced due to evaporation so long as it follows LID requirements (see below).
2. **Freeboard.** All retention ponds, including retention/detention combination ponds, shall have a minimum of 1' of freeboard above the 100-year high water elevation.
3. **Emergency Outlet / Overflows.** Any flows that exceed design standards and overtop embankments shall be on natural ground, sufficiently apart from the embankment to prevent erosion. If overtopping must occur at the embankment, a spillway shall be designed to prevent and control erosion. Infiltration basins shall be designed to convey overflows to the public ROW or to a location that has been dedicated for drainage purposes and will protect adjacent property from flooding.
4. **Access / Location.** All inlet/outlet structures shall be easily accessible. All inlet/outlet structures must be provided with access roads with a maximum slope of 15%. An exception is made if the distance to the inlet/outlet is within 10 feet of the back of sidewalk and/or the pond is less than 2,500 SF.
5. **Side Slopes.** Embankment slopes shall be no greater than 3:1 for both upstream and downstream slopes and must include erosion protection. 2:1 slopes are acceptable for downstream slopes if recommended by a licensed geotechnical engineer.

6. **Landscaping.** All ponds are to be landscaped in accordance with the City's Land Development Code.

I. CULVERTS

1. **Design Flow.** Bridges and Culverts shall be designed to convey the 100-year storm event.
2. **Freeboard.** Minimum freeboard over the 100-year high water elevation shall be the lesser of 1.0 times the depth of the headwater or 2 feet. In no case, however, shall the freeboard be less than 1 foot.
3. **Backwater.** Backwater surface computations upstream of culverts shall be performed and shown to be non-damaging to upstream properties.
4. **Configuration.** Culverts shall be designed to have a single opening as multiple side-by-side culverts are susceptible to clogging. Headwalls and wingwalls are required for all conduits which are 42-inch in diameter or larger. Flared end sections are allowed for conduits less than 36-inch in diameter.
5. **Debris.** A culvert/bridge blockage factor of 50 percent shall be used for culverts/bridges placed in drainages with upstream debris producing potential as determined by the City.
6. **Grate.** Grates are required on all culverts 24-inches or larger.

J. TREATMENT DEVICES

1. **Design Flow.** Treatment systems shall be sized to treat 100 percent of the first flush (2-year storm event) and to bypass the maximum flow to the treatment device during a 100-year storm event with no washout of stored pollutants. If flows are controlled by a detention basin prior to treatment, the treatment system shall be sized to treat flows at applicable release rates from the detention basin based on the applicable storm event (2-year for treatment, 100-year for bypass).
2. **Treatment Requirements.** Treatment systems shall be designed to treat all of the flow from developed areas with no bypass into the City storm water system of the treatment design storm parameters. Treatment requirements are as follows:
   a. Treatment systems shall be designed to remove 80% of the total suspended solids (TSS) 110 microns or larger from the storm water.
   b. Treatment systems shall be designed to remove the discharges of oil that cause a film or sheen upon or cause discoloration of the surface water
   c. Treatment systems shall be designed to remove all floatables from the storm water.

3. **Allowable Products.** Only products that have been approved for pretreatment by the Washington Department of Ecology under general use level designation (GULD) or conditional use level designation (CULD) shall be allowed.

~~3.~~4. **Privately Maintained Treatment Devices**. Privately maintained treatment devices shall be located outside of the public right-of-way in common areas or other private property.

K. LOW IMPACT DEVELOPMENT (LID) IMPROVEMENTS

1. **Design Volume.** LID systems are required and must retain volume from at least the 80th percentile rainfall event (0.41 inches of rain for Saratoga Springs).
2. **Ownership.** LID systems shall be privately-owned-and-operated.

3. **Selection and Design.** The feasibility, selection and design of LID systems shall be in accordance with Section 00530~~3~~20.

~~4.~~ **Long-Term Report Requirements.** As part of design, provide a plan using the Utah Storm Water Advisory Committee template (as modified by the City of Saratoga Springs) that will ensure the long-term viability of the storm water infiltration facilities or other LID control measures.

4.

~~SE~~SECTION 00510

HYDROLOGY AND DRAINAGE PLAN

PART 1 DRAINAGE PLAN REQUIREMENTS:

A. A Hydrology and Drainage Plan is required for all multi-lot developments and single lot developments larger than 0.5 acres. The report shall contain the following information:

1. General description of the projection, including:
   a. Location (township, range, section, subdivision and lot).
   b. Existing site conditions including all existing drainage facilities, and any proposed modifications to drainage facilities.
   c. Off-site drainage features and characteristics upstream and downstream of the site and any known drainage problems.
   d. Proposed facilities that will be used to manage on-site and off-site storm water runoff associated with the development.
   e. Master planned drainage facilities and how the development and proposed drainage facilities conform to the storm drain master plan.
2. One or more drawings showing the following:
   a. Existing and proposed property lines.
   b. Existing and proposed topography (2-foot maximum contour interval) extending at least 100 feet beyond the site.
   c. Existing and proposed streets, easements, and rights-of-way.
   d. Existing drainage and irrigation facilities.
   e. FEMA floodplain and floodway (if applicable)
   f. Drainage basin boundaries and subbasin boundaries on a topographical map.
   g. Existing and proposed flow patterns and paths.
   h. Location of proposed drainage facilities including: major storm drain pipes, swales, channels, and retention and detention basins.
   i. Location of storm water treatment facilities.
   j. Location of drainage easements required.
   k. Other relevant drainage features
   l. Scale, north arrow, legend, title block showing project name, date, preparers name, seal and signature.
3. Drainage calculations, including:
   a. Design runoff calculations (see next section for approved hydrology computation methods):
      i. Methodology used
      ii. Summary of pertinent model inputs
      iii. Results for 2-year, 10-year, and 100-year events.
   b. Model results in sufficient detail for review of design elements, including:
      i. Peak flow rates in all major facilities
      ii. Hydrographs for all storage elements
      iii. 80th percentile storm runoff volume
   c. Description of compliance with applicable flood control requirements and FEMA requirements, if applicable.
4. The Conceptual Drainage Plan shall be submitted to the City for review and approval prior to the development of the detailed design drawings.

PART 2 HYDROLOGY:

A. DESIGN STORMS

1. **Rainfall Depth and Intensity.** For storm drain design, rainfall depth and intensity shall be defined as shown in Table 4.

Table 4. Precipitation Frequency Estimates with 90% Confidence Intervals (inches)

Duration	Average Recurrent Interval		
	2-yr	10-yr	100-yr
5-min	0.15	0.26	0.51
10-min	0.23	0.40	0.78
15-min	0.28	0.49	0.96
30-min	0.38	0.66	1.29
60-min	0.47	0.82	1.60
2-hr	0.57	0.92	1.73
3-hr	0.64	0.98	1.74
6-hr	0.81	1.16	1.84
12-hr	0.98	1.39	2.06
24-hr	1.10	1.51	2.11

2. **Distribution and Duration.** Cloudburst rainfall events in Utah typically have durations ranging from a few minutes to three hours. Storms producing widespread rainfall over longer periods are less common and typically associated with slower-moving tropical storm remnants. Table 5 shall be used for sizing drainage and storm water facilities. Design storms for various infrastructure are listed in their applicable sections below.

Table 5. Design Storm Distributions (inches)*			
Time (min)	Return Period		
	2-yr	10-yr	100-yr
0	0.0000	0.0000	0.0000
5	0.0073	0.0067	0.0058
10	0.0073	0.0067	0.0058
15	0.0073	0.0067	0.0058
20	0.0073	0.0067	0.0058
25	0.0073	0.0067	0.0058
30	0.0073	0.0067	0.0058
35	0.1342	0.2337	0.4560
40	0.1060	0.1845	0.3600
45	0.0739	0.1287	0.2512
50	0.0471	0.0820	0.1600
55	0.0283	0.0492	0.0960
60	0.0217	0.0377	0.0736
65	0.0160	0.0279	0.0544
70	0.0122	0.0213	0.0416
75	0.0094	0.0164	0.0320
80	0.0085	0.0148	0.0288
85	0.0075	0.0131	0.0256
90	0.0061	0.0107	0.0208

Table 5. Design Storm Distributions (inches)*			
Time (min)	Return Period		
	2-yr	10-yr	100-yr
95	0.0073	0.0067	0.0058
100	0.0073	0.0067	0.0058
105	0.0073	0.0067	0.0058
110	0.0073	0.0067	0.0058
115	0.0073	0.0067	0.0058
120	0.0073	0.0067	0.0058
125	0.0073	0.0067	0.0058
130	0.0073	0.0067	0.0058
135	0.0073	0.0067	0.0058
140	0.0073	0.0067	0.0058
145	0.0073	0.0067	0.0058
150	0.0073	0.0067	0.0058
155	0.0073	0.0067	0.0058
160	0.0073	0.0067	0.0058
165	0.0073	0.0067	0.0058
170	0.0073	0.0067	0.0058
175	0.0073	0.0067	0.0058
180	0.0073	0.0067	0.0058

*These design storms capture the critical elements of shorter-duration storms that often control in subbasins with short times of concentration.

B. DRAINAGE BASIN CHARACTERIZATION

1. **Soil Classification.** The hydrologic soil group classification for the drainage basin must be determined by using a site specific analysis or from a soil survey, such as the Natural Resources Conservation Service (NRCS) soil survey data.
2. **Land Use.** Existing land use shall be obtained from site survey or analysis of current aerial photography. Future land use shall be estimated based on proposed development or from the City's General Plan if future development plans are unknown.
3. **Physical Parameters.** Physical parameters of a drainage basin, such as drainage basin area, length, and slope, shall be obtained using a current topographic map and existing storm drain facilities. In areas of proposed development, physical parameters shall be obtained from the development concept.

C. RUNOFF COMPUTATIONAL METHODS

1. **Acceptable Methods.** There are two standard methods that are acceptable for estimating the peak runoff and volumetric runoff: the Federal Aviation Administration (FAA) method and a dynamic hydrograph simulation model. Table 6 indicates the requirements to be fulfilled in order to use each method.

Table 6. Runoff Computational Method Requirements	
Method	*Restrictions*
FAA	Catchment Area[1] < 50 Acres No in-series (cascading) detention basins are proposed
Hydrograph Simulation Model	No Restrictions

[1] Note that catchment area is specific to the storm drain element being sized or designed. E.g. If pipelines within a 20 acre development are being sized, required flows may be calculated using the FAA method. However, if the flows from the development discharge to a detention basin that serves 100 acres, a hydrograph simulation model would be required for calculating flows at the detention basin.

2. **FAA Method.**

a. Peak Runoff Equation. [Q=CIA] where,

i. Q = Instantaneous Peak Runoff (cfs)
ii. C = Runoff Coefficient (See Table 4)
iii. I = Average Intensity (inches/hour)
iv. A = Area (acres)

b. **Time of Concentration.** Defined as the time to peak discharge. Time of concentration shall be calculated using the method found in the Natural Resources Conservation Service Technical Release 55, June 1986 (TR-55). TR-55 contains a sample worksheet (Worksheet 3), which can be used to calculate the time of concentration. The minimum allowable time of concentration to be used in runoff calculations shall be 5 minutes. Careful consideration should be given to each subbasin, including separate consideration of subbasin portions (such as paved areas) that have the potential of producing a higher peak runoff than the whole basin.

~~3.~~

~~4.~~c. **Rainfall Intensity.** Rainfall intensity shall be calculated from the precipitation-frequency table (Table 1). The duration is assumed to equal the time of concentration. The required design storm frequency is also defined in the precipitation-frequency table.

~~5.~~d. **Runoff Coefficients.** The runoff coefficients in Table 7 shall be used.

Table 7. Runoff Coefficient for Rational Method			
Surface	2-yr	10-yr	100-yr
Landscaping	0.01	0.07	0.44
Roofs	0.74	0.78	0.84
Paved	0.84	0.86	0.89

~~6.~~e. **Restrictions.** This method is only allowed for catchments less than 50 acres.

f. **Runoff Computations.** Runoff computations for directly connected impervious areas (DCIA) shall be performed separately from areas that have pervious surfaces.

~~7.~~

~~D.~~3. **DYNAMIC HYDROGRAPH SIMULATION MODEL**

~~1.~~a. **Acceptable Software~~s~~.** Acceptable modeling softwares include the following:

~~a.~~i. AutoDesk® SSA (acceptable hydrology methods within AutoDesk® SSA include HEC-1, EPA, SWMM, and TR-55. If using TR-55, separate subbasins for pervious and impervious areas shall be created to be in compliance with the requirements described below. Use of other hydrology methods is not allowed);

~~b.~~ii. HEC-HMS;

~~c.~~iii. SWMM.

~~2.~~b. **Model Output Requirements.** Simulation models and their accompanying output files must be full and complete for all stormwater infrastructure with catchments greater than 50 acres, including pipe sizing. Result summaries must include, at a minimum, the standard outputs from the software for subbasins, nodes, links, and storage facilities. All major conveyance infrastructure must be modeled and submitted in result summaries. Result summaries must be accompanied by a corresponding figure which labels each of the aspects listed above. An electronic copy of the model must also be submitted.

~~3.~~c. **Input Categories.** There are four main input categories in a dynamic hydrograph simulation model, which are: design storm, loss method, transform method, and routing method. The design storms shall be obtained using the procedure described below. For the loss, transform, and routing methods, there are often multiple options that can be selected within a given model. Below is a description of the approved methods.

~~a.~~i. **Loss Method.** The NRCS Curve Number Loss Method shall be used. The primary input parameter for this method is the runoff Curve Number (CN). As described below, for developed areas, the percent of impervious area is also entered. The initial abstraction is typically left blank as the program will calculate the initial abstraction based on the CN.

(a). **CN for Pervious Areas.** Tables 2-2 a-d in TR-55 shall be used to determine CNs. A composite CN may be used to estimate runoff from areas with pervious surfaces.

~~i.~~

(b). **Modeling Impervious Areas.** The DCIA should be used when modeling developed areas. When modeling a developed subbasin to estimate storm water runoff, the pervious and impervious areas must be modeled using separate subbasins. Some methods, including TR-55, suggest that a composite CN can be selected that will account for impervious area. However, in western areas of the United States including Utah, those methods tend to underestimate the runoff potential for the impervious areas and may not be used. As described above, most dynamic hydrograph simulation models are capable of modeling DCIAs by simply entering a percentage of a subbasin that is DCIA. Other models/softwares may require that two separate subbasins be modeled, one for the pervious area, and one for the DCIA. Regardless of the model or method selected, the final results must be based on separate consideration of pervious and impervious drainages and may not use a composite CN for these two drainage types.

~~ii.~~

~~b.~~ii. **Transform Method.** The NRCS Unit Hydrograph Transform Method shall be used. This method requires the input of a single variable: lag time.

~~i.~~(a). **Lag Time for Natural Watersheds.** The U.S. Army Corps of Engineers' version of Snyder's equation shall be used to calculate the lag time for natural watersheds (USBR, 1989) as shown below:

$$\text{Lag Time} = C_t \left(\frac{LL_{ca}}{S^{0.5}}\right)^{0.33}$$

C_t = 1.6
L = Length, in miles, of the longest watercourse
L_{ca} = Length, in miles, along L to the centred of the basin
S = Overall drainage basin slope, in feet/mile.

~~ii.~~(b). **Lag Time of Urban Areas.** The lag time for small urban areas should be assumed to be equal to the time of concentration. TR-55 contains a sample worksheet (Worksheet 3) that can be used to calculate the time of concentration.

~~c.~~iii. **Routing Method.** The Muskingum-Cunge method shall be used for routing runoff hydrographs. This method uses "reaches" to connect subbasins. Examples of reaches in the real world include open channels and pipes. This method requires that the following parameters be input:

~~i.~~(a). Length – Total length of the reach element.
~~ii.~~(b). Slope – Average slope for the entire reach.
~~iii.~~(c). Invert – Optional. Typically, not used.
~~iv.~~(d). Cross Section Shape – Multiple cross sections are available to select from. Depending on the cross section chosen, additional information is required (i.e. diameter, side slope).
~~v.~~(e). Manning's "n" – Average value for the entire reach. Typical values for Manning's "n" used for storm drain conveyance facilities area shown in Table 2.

d. **Model Calibration.** Model calibration ~~may~~ shall be required by the applicant during the review process if data output is inconsistent with the Citywide model maintained by the City.

SECTION 00520

LOW IMPACT DEVELOPMENT (LID) PLAN

PART 1 LID PLAN REQUIREMENTS:

A. **General Requirement.** Redevelopment projects that disturb greater than or equal to one acre, including projects less than an acre that are part of a larger common plan of development or sale which collectively disturbs land greater than or equal to one acre must provide a site-specific and project specific LID Report aimed at net gain to onsite retention or a reduction to impervious surface to provide similar water quality benefits. If a redevelopment project increases the impervious surface by greater than 10 percent, the project shall manage rainfall on-site, and prevent the off-site discharge of the net increase in the volume associated with the precipitation from all rainfall events less than or equal to the 80th percentile rainfall event. This objective must be accomplished by the use of Low Impact Development (LID) practices which are outlined in this section.

B. **LID Report Requirements.** Submit an LID Report which includes the following information:

1. **Location Description.** The report must clearly identify the location of the development site by address. Latitude and Longitude coordinates are to be provided if an address is not available or applicable. The report must include an aerial image of the site showing property boundaries, adjacent developments or reference points including roads, and the locations of the infiltration site(s).
2. **Topography.** The report must describe the pre- and post- development site topography including vegetative types and land surface contours at a minimum of 1-foot intervals.
3. **Design Volume.** The report must identify the minimum allowable retention volume, which is 0.41 inches across the subject area.
4. **Calculations.** All calculations which are outlined in the Standard Specifications which relate to the chosen LID measure must be submitted.
5. **Qualifications.** The report shall include a summary and concluding statement from a qualified individual regarding the feasibility of on-site retention of storm water as required by the State General Permit via infiltration, rain harvesting, and evaporation. This individual is considered qualified if they are licensed in the state of Utah as a Professional Geologist or a Professional Engineer.
6. **Engineer's Certification.** "I hereby certify that this report for the [list LID control here, i.e. "onsite retention and infiltration of storm water"] of this development was prepared by me (or under my direct supervision) according to good engineering practices and applicable engineering standards. I understand that the City assumes no responsibility or liability whatsoever for the feasibility and long-term viability of the facilities addressed herein."

PART 2 ALLOWABLE LID CONTROL MEASURES

A. The following is a list of allowable LID control measures that can be used to meet retention requirement and LID requirements. The Utah Department of Water Quality (UDWQ) has provided design guidance for these controls that can be found in "A Guide to Low Impact Development within Utah" or at the following link: https://deq.utah.gov/water-quality/low-impact-development. The UDWQ design guidance shall be used if design guidance for the controls listed below is not included in this document.

1. **Groundwater Infiltration.** All infiltration systems must meet the requirements outlined in the City's Standard Specifications as outlined in this document. The following infiltration methods are allowed:

a. Infiltration Basins (See Fact Sheet ID-1 in the UDWQ LID manual for more information)
b. Infiltration Trenches (See Fact Sheet ID-2 in the UDWQ LID manual for more information)
c. Dry Wells (See Fact Sheet ID-3 in the UDWQ LID manual for more information)
d. Underground Infiltration Galleries (See Fact Sheet ID-4 in the UDWQ LID manual for more information)

2. **Bioretention.** Bioretention controls, including Rain Gardens, Bioretention Cells, Bioswales, Vegetated Strips, and Tree Box Filters, are allowable LID control measures. See fact sheets BR1 through BR5 in the UDWQ LID manual for more information.

3. **Rainwater Harvesting.** Rainwater harvesting is allowed in accordance with the requirements of Utah Code § 73-3-1.5. Depending on the volume of rainwater collected and stored for beneficial use, the new or redevelopment must register with and meet the requirements of the Utah Division of Water Rights to harvest rainwater, found on their website: http://waterrights.utah.gov/forms/rainwater.asp. See Fact Sheet HR-1 in the UDWQ LID manual for more information.

4. **Minimize Impervious Area.** Minimizing impervious area at developments reduces the flow volume into the City's System. Design guidance can be found on Fact Sheet SD-1 in the UDWQ LID manual.

5. **Control through other LID measures.** Other LID control measures outlined in the UDWQ LID manual are allowed to be used if shown to be feasible and to meet the intent of this section.

6. **Restrictions.** No LID control measure is allowed to be designed within park strips. Pervious surfaces are not permitted in public areas and must be approved by the City Engineer in order to be allowed in private developments. Class V underground injection wells, as defined by State Code, must be registered with the Utah Division of Water Quality and are not allowed in the City's Drinking Water Source Protection Zones 1.

PART 3 FEASIBILITY EVALUATION

A. **General.** An evaluation shall be completed to determine the feasibility of various LID control measures and develop a final LID solution. To assist in this evaluation, the City has prepared the "Saratoga Springs BMP Selection Flow Chart" attached at the end of this specification section. The LID Plan Report shall start at the top of the flow chart and document feasibility for each decision point until an appropriate LID solution is identified.

B. **Infiltration Feasibility.** The preferred LID solution for most applications will be infiltration. Correspondingly, all LID plans must address the feasibility of infiltration. To consider infiltration, a geotechnical study must be completed which includes the following:

1. Representative 20-foot borings identifying ground water level, soil types, and characteristics within any potential infiltration area at the following frequency:
   a. Two (2) borings for the first 10,000 ft^2.
   b. One (1) additional boring for each 10,000 ft^2 thereafter; not to exceed a maximum of 10 borings in a single infiltration facility.
   c. The number of borings may be reduced based on defined local geology by a licensed geologist to one additional boring for each 20,000 ft^2.
   d. Samples shall be taken at and below the proposed water/soil interface of the infiltration facility to sufficiently identify the Natural Resource Conservation Service (NRCS) soil group. These samples shall be analyzed by a certified laboratory. Additional samples shall be taken for any substantial changes in material at greater depths.

2. Allowed infiltration rates upon which the infiltration facility is to be designed will be determined based on the following:
    a. A determination of Saturated Infiltration Rate for each sample based on the Hydrologic Soil Group and Typical Soil Texture as shown in Table 8.
    b. The identification of the lowest Saturated Infiltration Rate among the samples.
    c. Hydraulic conductivity testing of in situ soils according to ASTM D5856 may be used in replacement of Table 8 if the developer believes in situ soil rates differ from what is shown in Table 8 as long as the City Engineer accepts the results.
3. The lowest saturated infiltration rate determined from Table 8 shall be reduced by a factor of 2.5. The lowest calculated infiltration rate shall be reduced by a factor of 1.5 if ASTM D5856 is used in replacement of Table 8.

Table 8. Saturated Hydraulic Conductivity Rate According to Soil Type

NRCS Hydrologic Soil Group	Typical Soil Texture	Saturated Infiltration Rate (mm/h)	Saturated Infiltration Rate (in/h)	Porosity	Field Capacity
A	Sand	200	8.0	0.437	0.062
A	Loamy Sand	50	2.0	0.437	0.105
B	Sandy Loam	25	1.0	0.453	0.190
B	Loam	12.7	0.5	0.463	0.232
C	Silt Loam	6.3	0.25	0.501	0.284
C	Sandy Clay Loam	3.8	0.15	0.398	0.244
D	Clay Loam & Silty Clay Loam	<2.3	<0.09	0.465	0.325
D	Clay	<1.3	<0.05	0.475	0.378

4. Infiltration will not be considered feasible (and will correspondingly not be allowed) if any of the following are true:
    a. The ground water table or bedrock is ≤ 20 feet from the bottom of the finished pond.
    b. Collapsible soils are encountered with a collapse potential greater than 2%
    c. The saturated infiltration rate shown in the Table 8 (after accounting for factor of safety) is ≤ 0.20 inches per hour.
    d. The infiltration basin will be classified as a medium or high hazard dam per State of Utah regulations.
    e. Contaminated groundwater is present at the infiltration basin

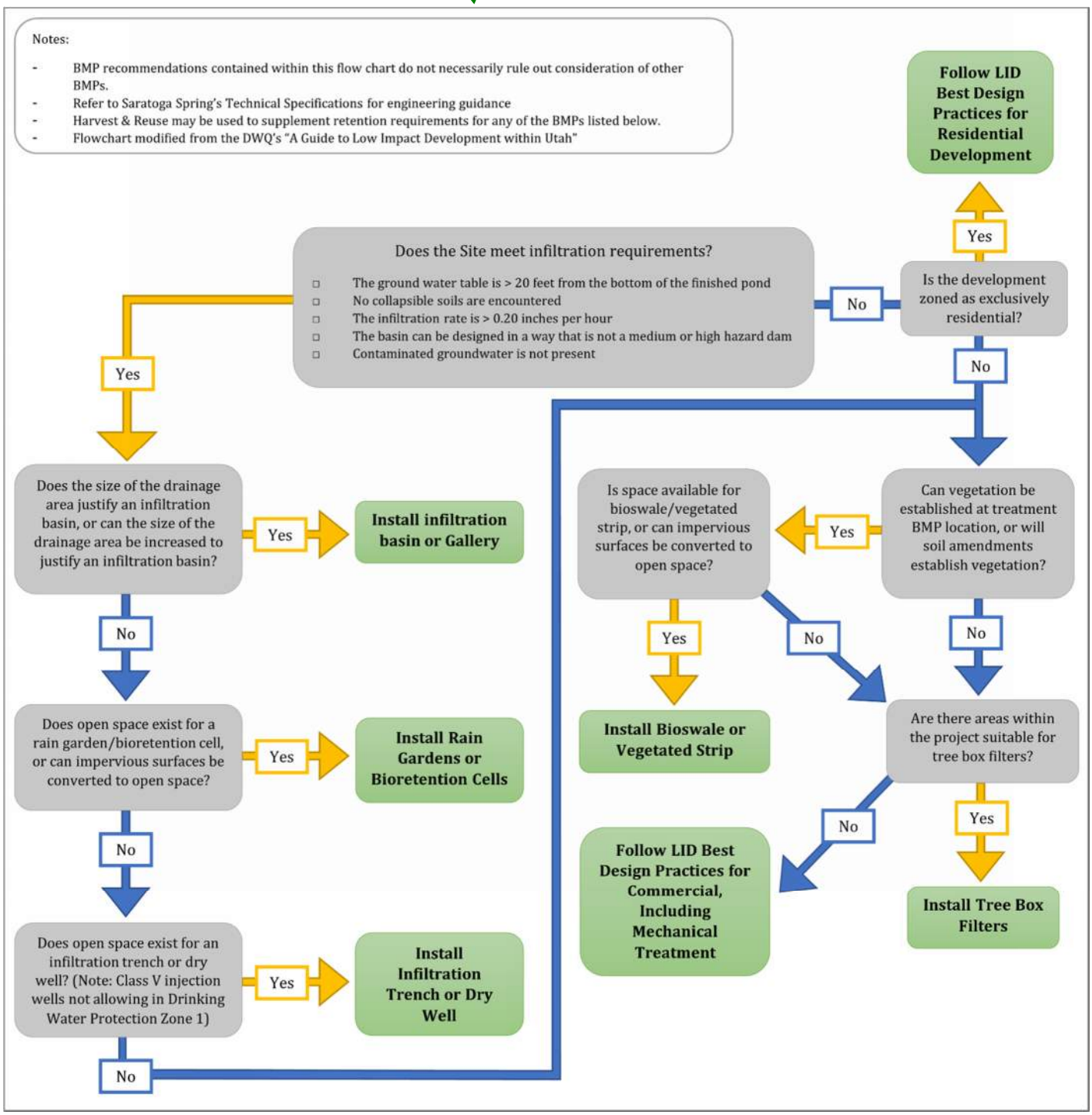
C. **LID Alternatives.** If infiltration of the 80th percentile storm is infeasible, consideration of other alternatives in the "Saratoga Springs BMP Selection Flow Chart" must be considered and addressed:

1. Based on the results of this evaluation, a rationale shall be provided for the use of alternative design criteria.

2. For bioretention, the engineer must evaluate and document the ability of these controls to practically and feasibly remove pollutants at the site.
3. For harvest and reuse, the Engineer must analyze and document the ability and feasibility of the development to practically capture, sort, and use rainwater on site.
4. The new or redevelopment project must document and quantify the LID control that will be used. The LID control measures selected should represent a reduction in runoff volume to the maximum extent reasonable if full retention of the 80th percentile storm is infeasible due to constraints such as high groundwater, soil conditions, slopes, accessibility, excessive costs, or others.

This BMP Selection flow chart is new for 2024

Saratoga Springs BMP Selection Flow Chart



SECTION 00600

STREET DESIGN STANDARDS

PART 1 GENERAL:

1. Streets systems, consisting of curb and gutter, sidewalks, ADA ramps, street pavement, and appurtenant items shall be designed as described below, as shown in Tables 9 - 13, and as shown in the Standard Specifications.

a. Table 9 shows the ROADWAY DESIGN STANDARDS; including right-of-way widths, pavement widths, street grades, and appurtenant design criteria.

b. Table 10 shows the access management standards for all roadway types.

c. Table 11 shows the subgrade protection layer required to be placed to protect subgrade soils. Prior to placement of any typical pavement section, a subgrade protection layer must be placed. Directions for this are outlined on Table 11.

d. Table 12 shows the typical pavement sections required for the different categories of traffic. Different options are provided for some of the sections.

e. Table 13 shows the Geosynthetic Requirements for Type 1 and 2 geogrids if those options are utilized.

2. Streets shall be constructed with asphaltic concrete, untreated base course, and granular borrow material for sub-base and/or subgrade protection, and a geotextile as required.

a. Thickness of each course shall be determined based on the subgrade and pavement classification. Table 9 outlines the design standards. Table 11 outlines the required subgrade protection based on the design CBR of the subgrade. Table 12 outlines the required pavement section based on classification of the roadway.

b. Thickness shall be increased beyond the Standard Specifications if recommended by a geotechnical engineer.

3. No new street pavement will be cut into for three years after acceptance of pavement.

4. Street light locations shall be at intersections and every 300 feet, placed on alternating sides of streets, or 600 feet on the same side of the street:

a. At every intersection, corner, and any bends greater than 30 degrees in the road. The spacing requirements shall be met accordingly once these areas are developed.

b. Shall be installed at property lines where attainable.

c. Shall be a minimum of 5 feet from any tree. Branches may need to be pruned as determined by the engineering inspector in the field at the time of installation

d. Shall not be installed within 5 feet from the edge of any driveway.

e. Any structure such as block walls, fences, retaining walls, etc., shall leave a minimum of eighteen (18) inches to the face of the street light pole on all sides.

f. Wherever there is an overhead utility that may conflict with the installation of the street light circuits and/or street light poles, those conflicts must be resolved between the developer and the utilities involved before the street light bases are constructed at no expense of the City or Rocky Mountain Power. The resolution must be approved by the City and Rocky Mountain Power.

5. Fiber optic/communication conduit is required on streets categorized as arterial and collector per Standard Specifications.

6. Type 2 slurry seal shall be placed on all streets upon completion of paving.

7. Because preference is given to pedestrians, a driveway approach is required for all private accesses (APWA Plan 225 for commercial accesses and private streets, and City Standard DWG ST-4A for single-family residential accesses) unless recommended otherwise by the City Engineer, based on site-specific considerations, such as:

a. Speed, slope, and width of the adjacent street
b. Width of the proposed access
c. Volume across the proposed access
d. Drainage.

8. Curb returns adjacent to ADA ramps shall have a maximum slope of 2% where possible. Where the base of the curb ramp or the edge of the flush landing must join an intersection of two streets with running grades greater than 2 percent, the base of the curb ramp or the edge of the flush landing may be warped to meet the street running grade. Every effort shall be made to minimize this grade by warping the street cross slope plus or minus 4% on both legs of the intersection.

9. The following table serves as a guide to design professionals by providing a summary of the City of Saratoga Springs Street Design Standards. These Standards are required unless specifically accepted otherwise by the City of Saratoga Springs City Council. In the absence of standards specified by the City, street design shall conform to the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) “A Policy on Geometric Design of Highways and Streets.” Other published professional standards, i.e. ITE, ASCE, may be considered at the sole discretion of the City Engineer.

TABLE ~~69~~

Roadway Design Standards				
DESIGN ELEMENT	**LOCAL (Class I)**	**COLLECTOR (Class II)**	**MINOR ARTERIAL (Class III)**	**MAJOR & PRINCIPLE ARTERIAL (Class IV)**
Posted Speed	**25mph**	**30mph**	**40mph**	**55mph**
Typical Section Elements				
ROW Width	~~59'~~62'	77'	95'	180'
Pavement Width	~~29'~~32'	44'	~~44'~~67'	82' or– 106'
Number of Lanes	2	3	~~3~~5	5 & 7
Side Cut/Fill Slopes	3:1 up to 5 feet high and 2:1 above 5 feet high			
20 Year ESAL Requirement	60,000	250,000	700,000	2,000,000
Vertical Design Elements				
Vehicle Design	Passenger, School Buses, Delivery trucks, dump Trucks	Passenger, School Buses, Delivery trucks, Dump/Concrete Trucks	Passenger, School Buses, Delivery Trucks, Dump / Concrete Trucks	Passenger, School Buses, Delivery Trucks, Dump/Concrete Trucks, Semi Loads
Minimum Centerline Grade	0.5%			
Maximum Centerline Grade	12%(a)*	8%	7%	5%
~~Maximum Centerline Grade Across Designated Crosswalks~~	~~5%~~	4[DM1]%		
Maximum Grade in Cul-de-Sacs	5%	Not Allowed		
Maximum Centerline Grade Break w/o Vertical Curve	1%	0.5%	0.25%	
Maximum TBC Grade Break w/o a Vertical Curve(b)**	2%	2%	2%	
Minimum Crest Vertical Curve "K" Value	19	Varies with design speed. Refer to AASHTO: A Policy on Geometric Design of Highways and Streets, Latest Edition		

Minimum Sag Vertical Curve "K" Value	37	Varies with design speed. Refer to AASHTO: A Policy on Geometric Design of Highways and Streets, Latest Edition
Minimum Length of a Vertical Curve	60'	3 times the design speed

TABLE 6 CONTINUED

Roadway Design Standards				
DESIGN ELEMENT	**LOCAL**	**COLLECTOR**	**MINOR ARTERIAL**	**MAJOR & PRINCIPLE ARTERIAL**
Posted Speed ~~Minimum Length of a Vertical Curve~~	**25mph** ~~60'~~	**30mph** ~~3 times the design speed~~	**40mph**	**55mph**
~~**Horizontal Design Elements**~~	-	-	-	-
Horizontal Design Elements				
Minimum Mid-Block Centerline Curve Radius	100'	Varies with design speed and superelevation. Refer to AASHTO: A Policy on Geometric Design of Highways and Streets, Latest Edition		
Maximum Superelevation Rate	2%	4%		
Intersections				
Intersection Sight Distance	Refer to AASHTO: A Policy on Geometric Design of Highways and Streets, Latest Edition			
~~Minimum Signalized Intersection Spacing~~	~~N/A~~	~~1,320'~~	~~2640'~~	~~2,640~~[DM2]~~'~~
Minimum Corner Curb Radius at TBC	25	25	35	40
Minimum Angle of Intersection	90º is desired. Where excessive physical constraints exist, the following minimum angles may be allowed if approved by City Engineer: local / local intersections 70º, collector / local or collector / collector intersections 80º, any intersection with City minor arterials or City major arterials 80º minimum. ~~60° 80°~~			
~~Minimum Offset Between Intersections~~	~~150'~~	~~Study Required~~[DM3]		
Maximum Centerline & Lane ~~Centerline~~ Offset Across Intersection	0' offset is desired. Where excessive physical constraints exist, up to 2' maximum offset may be allowed if approved by City Engineer.~~5'~~ ~~2'~~			
Curves and Centerline Angle Points in Intersection	Curves in an intersection and within 100 ft of the PC curb return of an intersection are discouraged. Centerline angle points are not allowed in intersections and are discouraged within 100 ft of the PC curb return of an intersection.			

Maximum Centerline Grade***(c) at Intersection	~~5%~~ ~~4%~~5% or 2%(d)	
~~Minimum Corner~~ [DM4] ~~Radius at TBC~~	~~25'~~	~~30'~~
Vertical Tie-In	Lower streets shall match the centerline crowns in an intersection. Higher streets shall tie in 10' off the centerline of local streets and at the edge of the outside travel lane of other streets.	

(a) *A maximum running slope of 1~~2~~5% is allowed in purely-residential areas. It must be shown how bus service is provided to areas with streets greater than 10%.

**(b) Maximum grade break of 2% along TBC with Minimum length of 25 feet between breaks.

***(c) Grade must extend to the PC/PT of the intersecting street.

(d) Per PROWAG R302.5.2.1 Where a *pedestrian access route* is contained within a *crosswalk* at an intersection approach with yield or stop control devices, the cross slope of the *pedestrian access route* shall be 1:48 (2.1%) maximum. Per PROWAG R302.5.2.2 Where a *pedestrian access route* is contained within a *crosswalk* at an uncontrolled approach or crosswalk with traffic signal PROWAG R302.5.2.3, the cross slope of the *pedestrian access route* shall be 1:20 (5.0%) maximum.

Table 7: City of Saratoga Springs Access Management Standards

Functional Classification	Minimum Driveway Spacing (feet)[1,2,3,4,9]			Public/Private Cross Street Unsignalized Intersection Spacing (feet)	Minimum Signal Spacing (feet)	Geometric Design of Driveway Access[6]					
						Residential Driveways			Commercial, Retail, or Multi-family Driveways		
	Upstream and Downstream (Desirable feet)	Opposing Upstream (feet)	Opposing Downstream (feet)			Approach Width (feet)[6]	Edge Clearance (feet)[7]	Curb Return Radius (feet)	Approach Width (feet)[6]	Edge Clearance (feet)[7]	Curb Return Radius (feet)
Principal Arterial/Freeway Interchange Areas	State of Utah Highway Access Management Standards Apply (see Tables 9 & 10)					State of Utah Highway Access Management Standards Apply (see Tables 9 & 10)					
Major Arterial w/o Median Barrier	350	175	160	660	2640	12 min 30 max	6 min	10 min 15 max	Two Way 25 min 40 max One Way 16 min 30 max	20 min	25 min 60 max
Major Arterial w/ Median Barrier	200	130	160	400	2640						
Minor Arterial w/o Median Barrier	200	115	105	660	1320						
Minor Arterial w/ Median Barrier	200	65	105	400	1320						
Collector w/o Median Barrier	150	105	90	250	1320						
Collector w/ Median Barrier	150	50	70	150	1320						
Local Collector w/o Median Barrier	85	105	90	250	1320						
Local Collector w/ Median Barrier	85	50	70	150	1320						
Local w/ or w/o Median Barrier	-	-	-	150[8]	N/A						

1. Driveway spacing is measured as shown in Figure 1.
2. Corner clearance requirements for access points should meet or exceed the minimum driveway spacing requirements.
3. For corner properties, access to public streets should be provided from the lesser (lowest functional classification) street.
4. Driveways in right-turn lane transition areas should be discouraged.
5. For the benefit of traffic safety and flow, access points may be required to be designed to prohibit certain types of turning movements.
6. Wider driveway widths may be permitted to accommodate additional turning and/or acceptance lanes.
7. Distance between side property line and edge nearest drive as measured along traveled way.
8. Local streets shall be at least 250 feet away from arterial streets unless the intersected street has a median - in which case, the spacing shall be at least 150 feet.
9. Distances for minimum driveway spacing apply from driveway to driveway and also from driveway to nearest adjacent road.

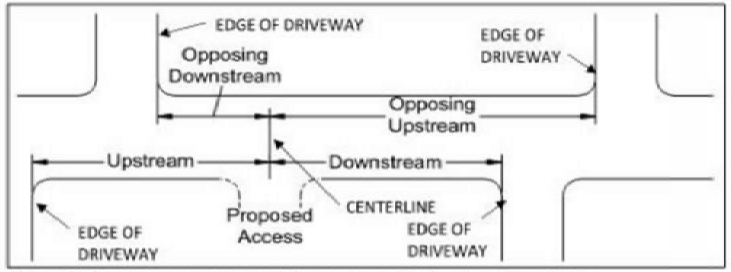


Figure 1: Measurements for Minimum Access Spacing Standards

Table 7: City of Saratoga Springs Access Management Standards

Functional Classification	Minimum Driveway Spacing (feet)[1,2,3,4]			Cross Street Unsignalized Intersection Spacing (feet)	Geometric Design of Driveway Access[6]						Minimum Signal Spacing (feet)
					Residential Driveways			Commercial, Retail, or Multi-family Driveways			
	Upstream and Downstream (Desirable feet)	Opposing Upstream (feet)	Opposing Downstream (feet)		Approach Width (feet)[6]	Edge Clearance (feet)[7]	Curb Return Radius (feet)	Approach Width (feet)[6]	Edge Clearance (feet)[7]	Curb Return Radius (feet)	
Principal Arterial/Freeway Interchange Areas	State of Utah Highway Access Management Standards Apply (see Tables 9 & 10)				State of Utah Highway Access Management Standards Apply (see Tables 9 & 10)						
Major Arterial w/o Median Barrier	350	175	160	660	12 min – 30 max	6 min	10 min – 15 max	Two Way: 25 min – 40 max; One Way: 16 min – 30 max	20 min	60 max	2640
Major Arterial w/ Median Barrier	200	130	160	400							2640
Minor Arterial w/o Median Barrier	200	115	105	660							1320
Minor Arterial w/ Median Barrier	200	65	105	400							1320
Collector w/o Median Barrier	150	105	90	250							1320
Collector w/ Median Barrier	150	50	70	150							
w/o Median Barrier	85	105	90	250							1320
Local Collector w/ Median Barrier	85	50	70	150							1320
Local w/ or w/o Median Barrier	-	-	-	150							N/A

1. Driveway spacing is measured as shown in Figure 1.
2. Corner clearance requirements for access points should meet or exceed the minimum driveway spacing requirements. Curb cuts on major arterials should be spaced at distances greater than 230 feet apart, measured from face of curb to face of curb, with the preferred distance being 300 feet.
3. For corner properties, access to public streets should be provided from the lesser (lowest functional classification) street.
4. Driveways in right-turn lane transition areas should be discouraged.
5. For the benefit of traffic safety and flow, access points may be required to be designed to prohibit certain types of turning movements.
6. Wider driveway widths may be permitted to accommodate additional turning and/or acceptance lanes.
7. Distance between side property line and edge nearest drive as measured along traveled way.

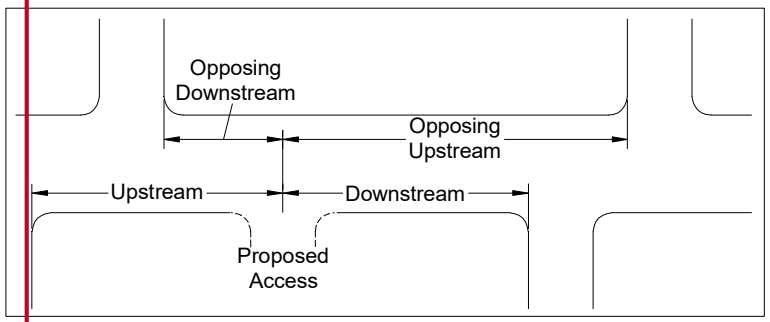


Figure 1: Measurements for Minimum Access Spacing Standards

~~TABLE 10~~

TABLE 8~~11~~

(Subgrade protection layer must be placed over the subgrade soils prior to placement of the pavement section. A design CBR must be determined by a geotechnical engineer. Based on this CBR value, the chart below provides how much Granular Borrow must be placed to adequately support the typical sections referenced in Table 12. If the in-situ CBRs of the subgrade are found to be softer than the design value, those values should be used.)

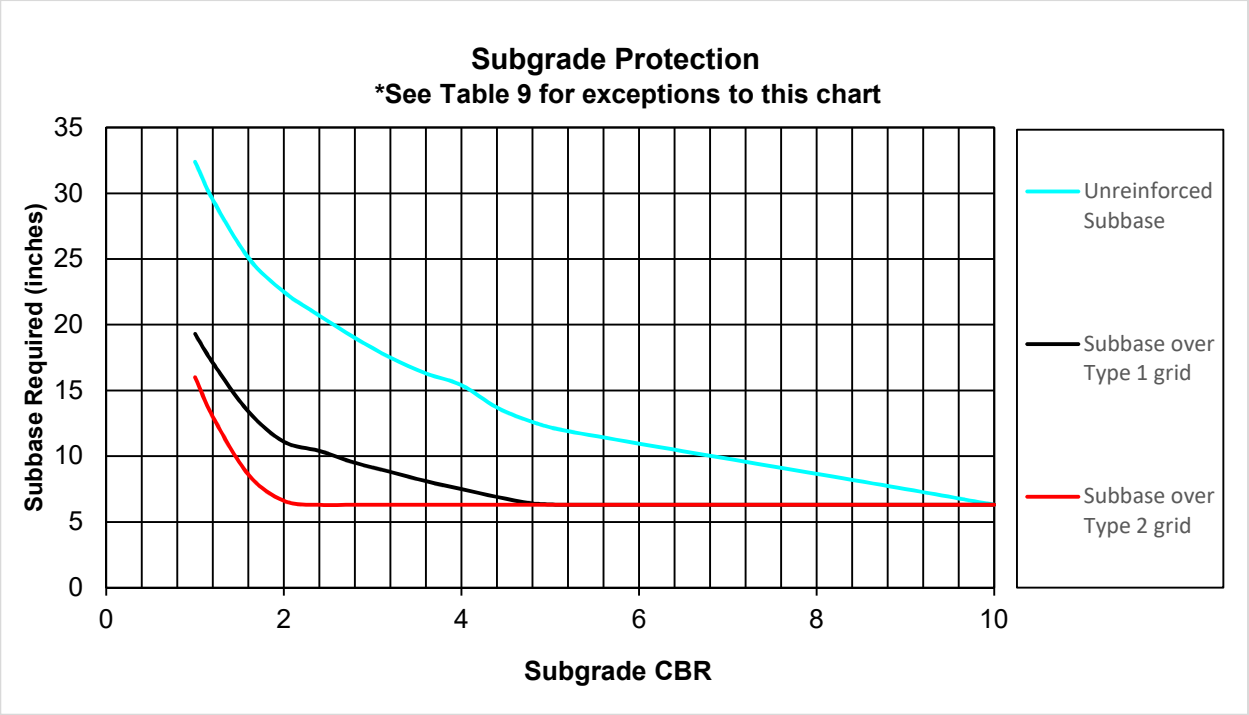


TABLE 9~~12~~

Minimum Pavement Sections Based on Classification

(The following section(s) must be placed on top of the subgrade protection layer outlined in Table 8)

Residential Typical Section (Class I)		
3" AC (Asphalt Concrete) 8" UTBC (Untreated Base Course) Properly-Prepared Subgrade (for CBR values greater than 7%, subgrade protection not required)		
Collector Typical Section Options (Class II)		
4" AC 8" UTBC Properly-Prepared Subgrade (for CBR values greater than 10%, subgrade protection not required)	3" AC 8" UTBC Type 1 Geogrid Properly-Prepared Subgrade (for CBR values greater than 6%, subgrade protection not required)	
Minor Arterial Typical Section Options (Class III)		
5" AC 8" UTBC Properly-Prepared Subgrade (for CBR values greater than 10%, subgrade protection not required)	4" AC 8" UTBC Type 1 Geogrid Properly-Prepared Subgrade (for CBR values greater than 7%, subgrade protection not required)	
Major & Principle Arterial Road Typical Section Options (Class IV)		
5" AC 6"UTBC 9" GB (Granular Borrow) (for CBR values greater than 9%, 9" GB is not required) Properly-Prepared Subgrade Protection Layer (for CBR values less than 30%, subgrade protection layer not required)	5" AC 8" UTBC Type 1 Geogrid Properly-Prepared Subgrade Protection Layer (for CBR values greater than 9%, subgrade protection layer not required)	4" AC 6" UTBC Type 1 Geogrid 9" GB (for CBR values greater than 7%, 9" GB not required) Properly-Prepared Subgrade (for CBR values greater than 19%, subgrade protection layer not required)

(a) Road classification and structural design must be submitted by a licensed and qualified engineer.
(b) Roadway structural design must take into consideration construction loads due to the construction of adjacent development phases.
(c) All traffic classifications require a 1/2" mix HMA design
(d) If collapsible soils are identified in the initial soils investigation or during construction, the subgrade soil shall be over-excavated and re-compacted a minimum of 18-inches or deeper unless otherwise directed by a licensed and qualified geotechnical engineer. This determination will be made on a case-by-case basis, depending on the facts and circumstances.

TABLE 1013

Structural Geogrids for Typical Pavement Sections					
Alternate products to Type 1 and Type 2 Geogrids used for subgrade protection will need to provide the full-scale calibration and validation of their methodology, as outlined by Giroud-Han. Alternate products to Type 1 geogrid used within a typical pavement section will need to provide full-scale Accelerated Pavement Testing, as outlined in NCHRP Report 512, validating their design methodology. Testing submitted for Type 1 geogrids must be performed on paved sections with at least 100,000 passes of a dual wheel tandem loading.					
Biaxial Type 1 Geogrid Quality Control Values					
Geogrid Properties	Test Method	MD	CMD		
Type of Geogrid		Punched and Drawn			
Rib Shape	Observation	Rectangular or Square			
Rib Thickness	Nominal Dimensions	Minimum 0.05 in			
Nominal Aperture Size	I.D. Callipered	1.0 to 1.5 inches			
Flexural Stiffness	ASTM D-5732-95	Minimum 750,000 mg-cm	NA		
Minimum True Initial Modulus in Use	ASTM 6637-01	Minimum 27,420 lb/ft	Minimum 44,550 lb/ft		
Junction Efficiency	GRI-GG2-87	93%			
Aperture Stability Modulus at 20 cm-kg	Kinney-01	0.65 m-N/deg	NA		
Resistance to Long Term Degradation	EPA 9090 Immersion Testing	100%			
Biaxial Type 2 Geogrid Quality Control Values					
Geogrid Properties	Test Method	MD	CMD		
Type of Geogrid		Punched and Drawn			
Rib Shape	Observation	Rectangular or Square			
Rib Thickness	Nominal Dimensions	Minimum 0.07 in			
Nominal Aperture Size	I.D. Callipered	1.0 to 1.5 inches			
Flexural Stiffness	ASTM D-5732-95	Minimum 2,000,000 mg-cm	NA		
Minimum True Initial Modulus in Use	ASTM 6637-01	Minimum 27,420 lb/ft	Minimum 44,550 lb/ft		
Junction Efficiency	GRI-GG2-87	93%			
Aperture Stability Modulus at 20 cm-kg	Kinney-01	0.75 m-N/deg	NA		
Resistance to Long Term Degradation	EPA 9090 Immersion Testing	100%			
Triaxial Type 1 Geogrid Quality Control Values					
Geogrid Properties	Test Method	Longitudinal	Diagonal	Transverse	General
Type of Geogrid					Punched and Drawn
Rib Pitch	Nominal Dimensions	1.6	1.6		
Mid-rib depth	Nominal Dimensions		0.05	0.05	

Mid-rib width	I.D. Callipered		0.04	0.04	
Rib Shape	ASTM D-5732-95				Rectangular
Aperture Shape	ASTM 6637-01				Triangular
Radial Stiffness	ASTM 6637-01				15,430 lb/ft @ 0.5% strain
Junction Efficiency	GRI-GG2-87				93%
Resistance to Long Term Degradation	EPA 9090 Immersion Testing				100%
Triaxial Type 2 Geogrid Quality Control Values					
Geogrid Properties	Test Method	Longitudinal	Diagonal	Transverse	General
Type of Geogrid					Punched and Drawn
Rib Pitch	Nominal Dimensions	1.6	1.6		
Mid-rib depth	Nominal Dimensions		0.07	0.06	
Mid-rib width	I.D. Callipered		0.04	0.05	
Rib Shape	ASTM D-5732-95				Rectangular
Aperture Shape	ASTM 6637-01				Triangular
Radial Stiffness	ASTM 6637-01				29,500 lb/ft @ 0.5% strain
Junction Efficiency	GRI-GG2-87				93%
Resistance to Long Term Degradation	EPA 9090 Immersion Testing				100%

B. SPECIAL SOILS DESIGN:

1. There are many areas within the City where collapsible soils exist. Where these collapsible soils exist within a proposed development, the soil's bearing capacities shall be determined by an accepted geotechnical engineer. The foundations for all facilities to be constructed on these soils shall be designed by the geotechnical engineer to support the facilities as required. These facilities shall include utility lines, roadways, structures and appurtenant items.
2. The City Engineer may designate areas where known collapsible soils exist. Soils reports done for a proposed development shall also be used to define if and where any areas of collapsible soils may exist. Where these areas exist, special care shall be taken with all construction, as described herein.

C. RESTORATION OF SURFACES:

1. All improved surfaces shall be restored to match original conditions, as acceptable to the City Engineer.
2. Paved surfaces shall be restored to the thickness plus 1"and types as required to match adjacent paved surfaces; conforming to the Standard Specifications.
3. Landscaped areas shall be restored to match adjacent areas, conforming to the City Standard Specifications and as acceptable to the City Engineer. Landscape materials shall conform to adjacent materials.

4. Cultivated areas shall be restored to match adjacent areas, conforming to the City Standard Specifications and as acceptable to the City Engineer. These areas shall be seeded with material conforming to adjacent materials.
5. All disturbed areas, not improved, shall be restored with native grasses to match adjacent areas, conforming to the City Standard Specifications and as acceptable to the City Engineer. These areas shall be seeded with material conforming to adjacent materials, as acceptable. Restored area shall achieve 70% plan coverage prior to acceptance.

SECTION 00700

ELECTRICAL DESIGN STANDARDS[DM5]

PART 1 GENERAL:

1. NOT USED

SECTION 00800

LANDSCAPING DESIGN STANDARDS

PART 1 GENERAL:

1. NOT USED. SEE THE FOLLOWING CITY STANDARD SPECIFICATION SECTIONS:
   a. 02724 AUTOMATIC SPRINKLING SYSTEM
   b. 02725 RESTORING WETLANDS AREAS
   c. 02726 LANDSCAPING
   d. 02727 RESTORING NATIVE AREA
   e. 02728 HYDROSEEDING
   f. 02752 CHIP SEAL COAT
   g. 02821 VINYL FENCING
   h. 02824 ORNAMENTAL IRON FENCING
   i. 02828 MISCELLANEOUS EQUIPMENT FOR PLAYGROUNDS AND OTHER AREAS

~~0.~~

SECTION 00900

CONSTRUCTION DRAWINGS

PART 1 GENERAL

A. Preliminary Construction Drawings shall include at a minimum, the following information:

1. Cover Sheet that includes:
    a. Project Name;
    b. Sheet index;
    c. Vicinity Map;
    d. Legend;
    e. Contact information for key contacts including developer, engineer, utility companies, and City;
    f. Data Table for Overall project and for each phase that lists in SF, Acers, and by percent of total;
        i. Total Area
        ii. Total Impervious Area
        iii. Total Lot or Building Pad Area
        iv. Total Landscape Area
        v. Total ROW area; and
        vi. Total Number of Lots
    g. City Standard notes:
        i. Contractor shall field verify locations and invert elevations of existing manholes and other utilities before staking or constructing any new sewer lines.
        ii. Contractor shall field verify locations and invert elevations of existing storm drain structures and other utilities before staking or constructing any new storm drain lines.
        iii. All construction shall comply with the Standard Technical Specifications and Drawings for the City of Saratoga Springs, Utah.
        iv. Existing Utilities have been noted to the best of Engineers knowledge, however it is owner's and contractor's responsibility to locate utilities in field and notify City Engineer and City if discrepancies exist prior to continuing any construction.
        v. Post-acceptance alterations to lighting plans or intended substitutions for accepted lighting equipment shall be submitted to the City for review and acceptance.
        vi. The City reserves the right to conduct post-installation inspections to verify compliance with the City's requirements and accepted Lighting Plan commitments, and if deemed appropriate by the City, to require remedial action at no expense to the City.
        vii. All exterior lighting shall meet IESNA full-cutoff criteria.
2. Existing/Demolition Plan Sheet that includes:
    a. Existing topography;
    b. All existing features in and adjacent to project including;
        i. Roads,
        ii. Sidewalks and curb and gutter,
        iii. Utilities both underground and overhead and existing pole locations,
        iv. Existing striping including lane configurations and crosswalk locations,

v. Existing Buildings,
vi. Wells and septic systems,
vii. Trees,
viii. Street Lights, and
ix. Utility pedestals and transformers.

(a). Plans for the removal or relocation of existing infrastructure as needed for project;
(b). Areas classified as sensitive lands including 100-yr flood plains, natural drainages, water bodies, rivers, wetlands, and 30% + slopes; and
(c). Existing easements or other encumbered areas.

3. Overall Site Plan Sheet that includes:
   a. Street names and widths;
   b. Subdivision lots with lot numbers, areas in SF and Acres, and boundary dimensions;
   c. Street centerline and ROW data;
   d. Hydrant Locations;
   e. Lighting locations;
   f. Roadway improvements (curb, gutter, sidewalk, drive approach, ADA ramps, monuments);
   g. Parking Layout (if applicable);
   h. Dimensioning and labeling of applicable items including setbacks, ROW's, spacing between structures, curb return radii, etc.; and
      i. Phasing of project including location of temporary turn-around's at phase boundaries.

4. Overall Grading and Drainage Plan Sheet that includes:
   a. Existing Contour Lines (in grey) at one-foot intervals except in areas exceeding 10% slopes, in which case two-foot contour intervals are required;
   b. Proposed Contours at one-foot intervals except in areas exceeding 10% slopes, in which case two-foot contour intervals are required, (proposed contours should tie back to existing at limits of grading);
   c. County or City benchmark elevation;
   d. Storm drain system showing pipe alignments, sizes, materials, slopes, junction boxes, inlets, and catch basins;
   e. Detention system including spillways and overflow structures;
   f. Location and type of storm water treatment device;
   g. Points of connection to existing system; and
   h. Slope Arrows and labels along gutters, swales, catch and fill slopes, parking areas, and lots.

5. Overall Utility Plan that includes:
   a. Sanitary Sewer system showing pipe alignments, sizes, materials, slopes, manholes, and laterals;
   b. Drinking and Secondary Water systems showing pipe alignments, sizes, materials, slopes, manholes, meters, and laterals;
   c. Location of meters and lateral for all open space areas;
   d. Locations of all water valves and fire hydrants;
   e. Locations and types of all pipe bends and fittings;
   f. Existing Utilities and plans for relocations as necessary;

g. Points of connection to existing structures and pipe lines shall be labeled; and
h. Existing and proposed easements as required by the Standard Specifications.

6. Storm Water Pollution Prevention Plan (SWPPP) for construction site activities:
   a. Be advised that a SWPPP is required to accompany final construction plans.
7. Landscaping and Irrigation Plan Sheet that includes:
   a. Landscaping plans;
   b. Planting Schedule;
   c. Irrigation Schematic;
   d. Metered Points of Connection;
   e. Fencing locations and types; and
   f. Conceptual Layout of Amenities within open spaces with labels and dimensions.
8. All sheets shall include
   a. Drawing scale for both vertical and horizontal;
   b. North arrow pointed towards the top of the sheet or to the left of the sheet;
   c. Match Lines if necessary to refer reader to adjacent drawings;
   d. All submitted Preliminary Construction Drawings shall be Standard D-size drawings (24" x 36"); and

B. Final Construction Drawings shall include all Preliminary Construction Drawing Items as well as, at a minimum, the additional following information:

1. Grading and Drainage Plan shall include:
   a. Size and shape of all structures;
   b. Rim elevation of all structures;
   c. Invert-in and invert-out elevations at all structures;
   d. Drain pipe size, type, and class;
   e. Location and complete details of detention basins and appurtenant structures;
   f. Storm water treatment system;
   g. Plan and profile views of all storm drain lines with stationing of all structures;
   h. Plan and profile views of all roadways with slope labels, vertical curves, and points of inflection;
   i. Profile views shall show existing and final surface profiles;
   j. Spot Elevations at 50' intervals along all TBC, Walls, PC, PT, Low Points, High Points, Ridge Lines, Connection to exiting, all transition locations;
   k. The locations of any utility conflicts;
   l. Data table with Cut/Fill quantities and Import/Export quantities;
   m. Phase boundaries and identification of what will be completed with each phase~~;~~ ~~and~~
   n. Grading details for all pedestrian ADA ramps in compliance with local and national standards.
   ~~n.~~o. Data table (broken up by phase if applicable) with quantities of each storm drain and site/road improvement item totaled by type and size including pipes, structures, fittings, and materials.
2. Sewer systems designs shall include:
   a. Size of all manholes;
   b. Rim elevation of all manholes;
   c. Invert-in and invert-out elevations at all manholes;

d. Sewer pipe size, type, and class;
e. Location and complete details of sewage lift stations or other structures;
f. Plan and profile views of all sanitary sewer lines with stationing of all structures and laterals;
g. Profile views shall show existing and final surface profiles;
h. The locations of any utility conflicts;
i. Phase boundaries and identification of what will be completed with each phase; and
j. Data table (broken up by phase if applicable) with quantities of each sewer improvement item totaled by type and size including pipes, structures, fittings, and materials.

3. Drinking and Secondary Water system designs shall include:
   a. Pipe line sizes, types and class;
   b. Locations and types of all valves and fire hydrants;
   c. Locations and types of all pipe line fittings including bends, tee's, crosses, and reducers;
   d. Air-vac and blow-off valve locations in both plan and profile views;
   e. Plan and profile views of all water lines with stationing of all structures and laterals;
   f. Profile views shall show existing and final surface profiles;
   g. The locations of any utility conflicts, and the location and design of all waterline looping;
   h. Phase boundaries and identification of what will be completed with each phase; and
      i. Data table (broken up by phase if applicable) with quantities of each drinking water and secondary improvement item totaled by type and size including pipes, structures, fittings, and materials.

4. Storm Water Pollution Prevention Plan for construction site activities:
   a. Use the Utah Division of Water Quality template.

5. Long-Term Storm Water Management Plan:
   a. Use the Utah Storm Water Advisory Committee template which has been modified for use by projects within the City of Saratoga Springs.

6. Construction Details sheets shall include all applicable City Standard or non-standard Details including:
   a. Typical Road Sections and pavement section designs;
   b. Sidewalks and Curb and Gutter;
   c. Sewer;
   d. Water;
   e. Storm Drain;
   f. Street Lights; and
   g. Any other relevant details.

7. Striping and Signage Plan Sheet with details shall include:
   a. Street Names;
   b. Traffic Control Signage locations and types with references to MUTCD designations;
   c. Pavement Marking locations and types with references to MUTCD and FHWA designations;

d. City Standard details for signage and striping;
e. Stationing of all signage and start and stop locations for striping;
f. Traffic calming locations and details; and
g. Phase boundaries and identification of what will be completed with each phase.

8. Lighting/Electrical Plan with details shall include:
   a. Lighting locations and types;
   b. Photometric plan for parking areas and open spaces;
   c. Lighting details;
   d. Phase boundaries and identification of what will be completed with each phase;
   e. Location of power sources, conduit, electrical master meters and utility boxes; and
   f. City Standard Notes for Lighting Plans including:
      i. Post-acceptance alterations to lighting plans or intended substitutions for accepted lighting equipment shall be submitted to the City for review.
      ii. The City reserves the right to conduct post-installation inspections to verify compliance with the City's requirements and accepted Lighting Plan commitments, and if deemed appropriate by the City, to require remedial action at no expense to the City.
      iii. All exterior lighting shall meet IESNA full-cutoff criteria.
      ~~iii.~~iv. One-line diagrams that include both proposed street lighting as well as modifications made to the existing lighting system shall be drawn and submitted to the City for approval before construction. Source connections for each circuit shall be identified and approved with power company. Voltage drops for each circuit shall be calculated, documented, and submitted with design. Voltage drops shall not exceed 5% loss as measured from utility connection to end of circuit, regardless of where utility connection is located or whom it was constructed by. The city reserves the right to require voltage drop testing after construction to verify compliance with voltage drop requirements.

9. All sheets shall include:
   a. All civil drawings shall be signed and stamped by a Utah licensed professional engineer.

10. Landscaping and Irrigation Plan Sheet shall include:
    a. Detailed landscaping plans with designations for all areas and what surface treatments they shall receive;
    b. Locations of all planting, designations for planning types and a comprehensive planting schedule;
    c. Planting and landscaping details;
    d. Detailed Irrigation design with the location of all valves, filters, and other appurtenances;
    e. Metered Points of Connection;
    f. Fencing locations, types and complete details for fences, posts, gates, and mow strips; and
    g. Complete design of all open spaces including trails, pavilions, play areas, and other amenities including labels, dimensions, manufacture, model numbers, and all applicable details and typical sections.

11. Revisions made to drawings during the plan review process shall be made using coded revision clouds. Where clouds overly complicate a drawing, a description of the changes shall be noted and the note shall be clouded. If no such clouds are provided on the revised drawings, the revised drawing shall not be accepted and the original drawing shall stand.

C. As-built drawings shall be provided electronically in pdf format containing construction drawings with all field changes and modifications, including but not limited to:

1. Street light alignment, location of conduit, power sources, and street lights;
2. Location of Fire Hydrants, drinking water, secondary water, and sewer laterals stubbed into each lot with dimensions reference to permanent surface improvements;
3. Landscaping and Irrigation improvements;
4. As-Builts shall comply with Section 01780;
5. As-Builts shall be stamped and signed by a professional engineer with signature block stating “I have field verified that these record drawings are complete and accurately represent what was constructed for this project.”;
6. Pond Certification form stamped and signed by a professional engineer;
7. As-built drawings should not include detail sheets or a SWPPP plan; and
8. As-built drawings shall include a topographic view of the site along with all detention basins.

D. Easements Requirements:

1. Residential Development: All on and offsite easements (for public and private improvements) must be recorded before construction can begin on any part of the project;
2. Non-Residential Development: All on and offsite easements (for public and private improvements) must be recorded before occupancy will be granted for any buildings; and
3. Miscellaneous Construction: All on and offsite easements (for public and private improvements) must be recorded before construction can begin on any part of the project.

E. Reimbursement Requirements:

1. Reimbursements for any infrastructure upsizing beyond the project improvement needs (system improvements) must be presented to the City Council at the preliminary plat or site plan process for authorization to have staff work on a reimbursement agreement with the developer/applicant;
2. Reimbursement agreements must be accepted by the City Council and executed by both parties before construction can begin on the project (both residential and non-residential);
3. If the developer/applicant wishes to begin construction before there is an agreement in place with the City, they must sign a waiver stating they accept the risk that they may not be reimbursed for any improvements installed, even if they are system improvements (also applies to system improvements installed by an applicant outside of the development process such as grading permits or encroachment permits).

END OF SECTION

SECTION 02112

TRENCHING FOR PIPE WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Excavating, backfilling and compacting for project pipe lines.

1.2 RELATED SECTIONS

A. Section 02115 - Structural Excavation: Excavating for miscellaneous structures.

B. Section 02116 - Fill and Backfill: Backfilling for project pipe lines and at structures.

1.3 REFERENCES

A. Use latest issue of the reference standards as of the date of the project.

B. AASHTO T 99 - Moisture-Density Relations of Soils Using a 5.5-lb (2.5 kg) Rammer and a 12-inch Drop.

C. AASHTO T 180 - Moisture-Density Relations of Soils Using a 10-lb (4.54 kg) Rammer and an 18-inch Drop.

D. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

E. ASTM D 698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

F. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

G. ASTM D 1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)).

H. ASTM D 2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

I. ASTM D 2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

J. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

K. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

L. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

M. Specification for Excavating on State Highways.

N. General Safety Orders Covering Utah Industries - Section 69, Trenches.

O. United States Department of Labor OSHA Publication 2085 - "Employer - Employee, Safe Practice for Excavation and Trenching Operations".

P. Utah Occupational Safety and Health Rules and Regulations - General Standard (UOSHA).

1.4 DEFINITIONS

A. Pipe Line Grades and Elevations: Indicated on drawings.

B. Trench Cross Sections: Indicated on standard trench detail drawings.

C. Subgrade Elevations: Bottom of road base in paved areas, as indicated on drawings.

D. Finish Grade Elevations: Top of pavement in paved areas, as indicated on drawings.

E. Ground Elevations: Indicated on the drawings.

1.5 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Samples: 10 pound sample of each type of fill (or amount requested by the testing laboratory); submit to testing laboratory.

C. Materials Sources: Submit name of imported materials source.

D. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.

E. Compaction Density Test Reports.

1.6 PROJECT CONDITIONS

A. Provide sufficient quantities of fill to meet project schedule and requirements. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where accepted by the City Engineer.

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

C. Verify that survey bench marks and intended elevations for the work match design drawings.

D. Protect plants, lawns, and other features to remain.

E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, curbs, and other improvements from excavating equipment and vehicular traffic.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. See Section 02116 - Fill and Backfill.

2.2 SOURCE QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. Where fill materials are specified by reference to a specific standard, testing of samples for compliance will be provided before delivery to site.

C. If tests indicate materials do not meet specified requirements, change material and retest.

D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain and protect from damage.

C. Notify utility company to remove and relocate utilities, where and as required.

D. Identify any areas of collapsible soils within trench areas, and inform the City Engineer of their locations.

3.2 TRENCHING

A. Excavate trenches as required to allow project pipe to be installed to line and grade as indicated on the drawings.

B. Notify City Engineer of unexpected subsurface conditions within 24 hours and discontinue affected Work in area until notified to resume work.

C. All trenching shall be done according to OSHA Standards and other applicable regulations.

D. Do not interfere with 45 degree bearing splay of adjacent foundations.

E. Excavate trenches to width, depth and cross section as indicated on the trench detail drawings.

F. Hand trim excavations. Remove loose matter.

G. Remove large stones over 4 inches in diameter and other hard matter which could damage piping or impede consistent backfilling or compaction.

H. Remove excavated material that is unsuitable for re-use on the project from site and dispose of in an acceptable manner.

I. When unsuitable material is encountered in trenches at subgrade elevations, excavate as

required to remove the unsuitable material and backfill areas with acceptable material as per section 02116.

J. Stockpile excavated material to be re-used in area designated on site.

K. Remove excess excavated material from site and dispose of in an acceptable manner.

L. Excavation beyond or below lines and grades indicated shall be refilled with acceptable material as per section 02116 and compacted, at the Contractor's expense.

M. During construction, provide and maintain sufficient means and devices to promptly remove and properly dispose of all water entering excavations or other parts of the work.

1. Dispose of water from work area in an acceptable manner, without damage to adjacent property.
2. No pipe, concrete footings, foundations or floors shall be installed in water.
3. Water shall not be allowed to rise over concrete until it has set for at least 24 hours.
4. Water shall not be allowed to rise against walls and supporting beams for a period of 14 days after completion of walls and beams.
5. Any damage to pipe work or concrete work caused by water shall be repaired by the Contractor, at ~~his~~ their expense.

N. The use of explosives will not be allowed; unless use has been specifically reviewed and accepted by the City Engineer. All blasting shall be done by a reputable contractor specializing in the use of explosives.

1. Comply with all laws, ordinances, and applicable safety code requirements and regulations relative to the handling, storage, and use of explosives and protection of life and property.
2. Contractor shall be fully responsible for all damage attributable to ~~his~~ their blasting operations.
3. Excessive blasting or over shooting will not be permitted.
4. Remove any material outside of authorized cross-section which may be shattered or loosened by blasting operation.

3.3 ~~S~~PREPARATION FOR PIPE LINE PLACEMENT

A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with bedding material, or stabilization material, or other acceptable material, as per section 02116.

B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

D. When bedding utilities in ground water, installation of stabilization-separation geotextile will be required to separate backfill material and native subgrade materials, if common fill cannot provide a working surface to prevent soils migration.

3.4 BACKFILLING

A. Install as per Section 02116 – Fill and Backfill

3.5 BEDDING AND FILL AT SPECIFIC LOCATIONS

A. Install as per Section 02116 – Fill and Backfill

3.6 TOLERANCES

A. Top Surface of Backfilling in unimproved areas: Plus or minus 1 inch from required elevations.

B. Top Surface of Backfilling in improved areas: Plus or minus 1/2 inch from required elevations.

3.7 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for general requirements for field inspection and testing.

B. Testing is to be done as per APWA Standards and Specification; test results must be sent to the City Engineer or Inspector within 24 hours after the tests are completed.

C. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.

1. Perform gradation testing in accordance with ASTM C136.

D. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor"), ASTM D 1557 ("modified Proctor"), or AASHTO T 180.

E. If tests indicate work does not meet specified requirements, remove work, replace and retest.

F. Frequency of density tests: one test per lift per 150 linear foot of trench.

G. Frequency of Gradation test: one test prior to first lot, then 25, or as necessary to verify the consistency of the material.

3.8 CLEAN-UP

A. Remove unused stockpiled materials; leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

C. All disturbed areas shall be restored with native grasses to match vegetation in adjacent areas, conforming to the City Standards. These areas shall be seeded with material conforming to adjacent materials, as acceptable. Restored area shall achieve 70% plant coverage, be free of erosions and invasive species prior to acceptance.

END OF SECTION

SECTION 02116

FILL AND BACKFILL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Backfilling and compacting for project pipe lines.

B. Filling, backfilling, and compacting for miscellaneous structures.

1.2 RELATED SECTIONS

A. Section 02112 - Trenching for Pipe Work: Excavating for project pipe lines.

B. Section 02115 - Structural Excavation: Excavating for structures.

1.3 REFERENCES

A. AASHTO M 145 - Standard Specification for Classification of Soils and Soil–Aggregate Mixtures for Highway Construction Purposes.

B. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 10-lb (4.54 kg) Rammer and an 18-in.(457 mm) Drop; American Association of State Highway and Transportation Officials.

C. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

D. ASTM D 698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

E. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

F. ASTM D 1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)).

G. ASTM D 1883 - Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils

H. ASTM D 2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

I. ASTM D 2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

J. ASTM D 2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

K. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

L. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

M. ASTM D 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

N. ASTM D 6913 - Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.

O. ASTM C 117 - Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing.

P. Use the latest issue of the above reference standards as of the date of the Project.

1.4 DEFINITIONS

A. Finish Grade Elevations: Indicated on drawings.

B. Subgrade Elevations: Indicated on drawings.

C. Pipe Invert Elevations: Indicated on drawings.

D. CBR – California Bearing Ratio

E. WAQTC – Western Alliance for Quality Transportation Construction. WAQTC Certification is implemented through UDOT or other State Highway Agency's Transportation Technician Qualification Program (TTQP).

F. Stratified Samples – Samples spread out evenly over an area or tonnage. For example, if planning four samples for 10,000 SF, take one sample from each 2,500 SF of the 10,000 SF area.

G. Commercial Source – Fill material meeting material requirements of this specification acquired from a qualified off-site source.

H. Off-site Source – An established operation that has been producing materials meeting state, county, municipal or APWA standards, under a documented quality control program, for a minimum of 3 years.

1.5 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Submit source documentation and mix design as per Article 2.2 Materials Sources: Submit name of imported materials source.

C. Aggregate Composition Test Reports: Results of laboratory tests on proposed and actual materials used.

D. Compaction Density Test Reports per Table 1 and Article 3.3.

E. Fill Quality Control Plan (FQCP) as per Article 1.6.E.1.

F. Fill Quality Control results as per Article 1.6.E.4.

1.6 QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for general requirements for field inspection and

testing.

B. Perform quality control testing as per Table 1.

Table 1: Sampling and Testing Frequencies			
	Roadway	Flatwork/Driveways	Backfill
Gradation[a] and Plastic Index; ASTM C136, AASHTO T 90	Every 500 Tons	1 per day or Every 500 Tons[c]	
Density[b], ASTM D 5195	Every 2500 SF	Every 150 LF or 2500 SF[c]	Every 150 LF
a. Report all sieves required for AASHTO Soil Classification and maximum particle size. b. Density target of 95% of Modified Proctor, ASTM D 1557. c. Use whichever frequency is greater.			

C. Submit test and inspection reports to the City in accordance with Section 01400.

D. If tests indicate work does not meet specified requirements, remove work, replace and retest.

E. Native/On-Site Produced Material Quality Control Requirements

1. Provide a Fill Quality Control Plan (FQCP) when excavating, using or producing fill material from on-site materials sources. This applies to crushed, blended or excavated native materials. Submit the FQCP to the City for review a minimum of 15 days prior to the commencement of the material processing operation.
    a. The FQCP shall be site specific and state how the Contractor proposes to control the materials, equipment, and operations for the material processing operation.
    b. The FQCP shall be signed and dated by the Contractor's representative at the time the FQCP is submitted to the Engineer.
    c. The FQCP shall be maintained to reflect the current status of the operations, and revisions shall be provided in writing and approved by the City prior to initiating any changes.
    d. At a minimum the FQCP shall contain the following information:
        i. Quality Control Organization, including name, telephone number, duties, and employer of all quality control personnel necessary to implement the FQCP. Laboratory shall comply with ASTM D3740 and APWA Section 01 45 00 requirements. Provide the minimum number of quality control personnel:
            (a). FQCP Field Manager - The person responsible for the execution of the FQCP and liaison with the City. Use a FQCP Field Manager with experience in the management of crushing/blending operations and an understanding of statistical control of materials.
            (b). Quality Control Technician - The person responsible for conducting quality control sampling, testing and inspection to implement the FQCP. There may be more than one Quality Control Technician. The Technician shall be a WAQTC Qualified Technician or directly supervised by a WAQTC Qualified Technician for duties performed. The field manager and quality control person may be the same person.
            (c). For projects with more than one on-site produced material, FQCP Field Manager or QCT must be on-site at all times to observe and document placement practices, and verify that on-site produced materials are placed in proper locations and constructed according to applicable City standard.

ii. Crushing, Blending and Handling practices

(a). Include the following, at minimum

(i) Practices to be employed, including equipment and procedures to be used, to produce a homogeneous material meeting specification requirements.

(ii) Approximate daily tonnage to be produced

(iii) Anticipated schedule for production

iii. Sampling and Testing locations and frequencies for each material to be produced or placed. Meet the following sampling and testing minimums:

(a). Source quality test results as required by Article 1.5 Submittals.

(b). Pre-crusher/pre-blend/on-site material

(i) 1 each, minimum, per source or stockpile, per day.
1 Gradation – ASTM C136
2 Plasticity Index

(c). Post-crusher/post-blend/native testing

(i) Perform the following tests, at minimum, for every 500 tons, or portion thereof, of material produced:
1 Washed Gradation – ASTM C117, ASTM C136
2 Moisture Content
3 Soil Classification, including Atterberg Limits

(ii) Use stratified samples over projected production run

(iii) Restart minimum requirements if any of the following occur:
1 Production run is stopped.
2 Changes are made to production process, including change in source, > 10% change in rate, change in equipment, or any other change that results in change in material produced.
3 If source or produced material stockpile is relocated.

iv. Tolerances and Actions

(a). Establish and document tolerances using control charts for action and suspension limits for controlling production operation. Use action limits for initiating minor changes to production process. Use suspension limits for halting production. Recommended Action and Suspension limits are included in Table 2. Modifications can be proposed with appropriate explanation and justification.

Table 2

Sieve	Action Limit	Suspension Limit
½" and Larger	6.7 - 9.5	> 9.5
3/8" Sieve	5.5 - 8.0	> 8.0
#4 Sieve	5.0 - 7.0	> 7.0
#16 Sieve	3.0 - 5.5	> 5.5
#200 Sieve	1.6 - 2.3	> 2.3
Values are deviations from target grading curve, expressed as percent of dry weight of sample.		

(i) Document all deviations outside of action or suspension limits and associated corrections made to production process.

(ii) Document where rejected materials are stockpiled

(b). Place produced materials in separate stockpiles by production run. Stockpiles should be separated horizontally by a distance equivalent to the stockpile height. Alternatively, a physical barrier acceptable to the City can be maintained between stockpiles.

(c). Rework or remove and replace products not produced under or conforming to the requirements of this section.

v. Disposal or use plan for material produced that does not meet requirements of this specification.

2. If the Contractor's Quality Control operation is not functioning to City standards, the City may withdraw permission to use on-site material.

3. The City may require the replacement of ineffective or unqualified equipment or Quality Control personnel. Operations may be required to stop until appropriate Quality Control operations are taken.

4. Submit On-Site Fill Quality Control test results and inspection documentation to the City or it representative at the completion of material processing operations each day. Documents should be electronically filed on a site available for the City to view.

1.7 ACCEPTANCE

A. The City will perform acceptance decisions for all projects. The City may accept the lot based on results of the quality control test results defined in Article 1.6.

1. A lot is equal to one day's production.

2. The City will reject the lot if the Contractor QC data is outside the limits of Table 1.

3. At the City's discretion, the City may perform acceptance testing in accordance with Table 1.

B. If tests indicate work does not meet specified requirements, remove work, replace and retest.

1.8 CITY QUALITY ASSURANCE

A. If the contractor fails to follow the approved FQCP, the City may require the employment of a third-party independent firm, chosen by the City, to control operations, at the contractor's expense.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. Granular Borrow: Imported borrow or soil excavated on-site; conforming to Type A-1-a of AASHTO Classification of Soils and Soil-Aggregate Mixtures.

1. Non-plastic (PI = 0), well graded as per Unified Soils Classification System (USCS) standards, 3-inch maximum

2. Free of debris and organic material

3. Do not use material that does not have determinable proctor value.

4. At least 50% of granular borrow material should have fractured faces per ASTM D5821.
5. Use Granular Borrow with a minimum laboratory CBR value of 30%, ASTM D 1883.

B. Common Borrow: Imported borrow or soil excavated on-site; conforming to Type A-4, or better, of AASHTO Classification of Soils and Soil-Aggregate Mixtures.

1. Free of rocks larger than 3 inches, organic matter and debris.
2. Do not use material that does not have determinable proctor value.

C. Concrete for Fill: Lean concrete.

1. Conforming to Flowable Fill, as per APWA Standard and Specifications section 31 05 15 (Cement Treated Flowable Fill).

D. ~~3/4~~1/2" Free Draining Gravel: Angular crushed, washed stone; washed, free of shale, clay, friable material and debris.

1. Graded in accordance with ASTM C 136, within the following limits:

a. 1 inch sieve: 100 percent passing.
b. ¾ inch sieve: 95 to 100 percent passing.
c. 3/8 inch sieve: 30 to 65 percent passing.
d. No. 4 sieve: 5 to 25 percent passing.
e. No. 8 sieve: 0 to 10 percent passing.
f. No. 16 sieve: 0 to 5 percent passing.
~~1.~~g. No. 200 sieve: 0 to 2 percent passing.

~~1 inch sieve: 100 percent passing.~~
~~3/4 inch sieve: 95 to 100 percent passing.~~
~~3/8 inch sieve: 30 to 65 percent passing.~~
~~No. 4 sieve: 5 to 25 percent passing.~~
~~No. 8 sieve: 0 to 10 percent passing.~~
~~No. 16: 0 to 5 percent passing.~~
~~No. 200 Sieve: 0 to 2 percent passing.~~

~~Z.~~E. 1" Free Draining Gravel: Free draining granular backfill material; natural or crushed aggregate.

1. Graded in accordance with ASTM C-136, within the following limits:

a. 1 ½ inch sieve: 100 percent passing.
b. 1 inch sieve: 95 to 100 percent passing.
c. ½ inch sieve: 25 to 60 percent passing.
d. No. 4 sieve: 0 to 10 percent passing.
~~1.~~e. No. 200 sieve: 0 to 2 percent passing.

~~a. 1½ inch sieve: 100 percent passing.~~
~~b. 1 inch sieve: 95 to 100 percent passing.~~
~~c. 1/2 inch sieve: 25 to 60 percent passing.~~
~~d. No. 4 sieve: 0 to 10 percent passing.~~
~~e. No. 200 Sieve: 0 to 2 percent passing.~~

~~UU.~~F. Sand: Non-plastic (PI = 0); free of silt, clay, loam, friable or soluble materials, and organic matter. Squeegee gravel is not acceptable.

1. Graded in accordance with ASTM C 136; within the following limits:

   a. 3/8 inch sieve: 100 percent passing.
   b. No. 4 sieve: 75 to 100 percent passing.
   c. No. 16 sieve: 0 to 100 percent passing.
   d. No. 40 sieve: 0 to 100 percent passing.
   e. No. 100 sieve: 4 to 70 percent passing.
   f. No. 200 sieve: 0 to 40 percent passing.

0.

   a. No. 4 sieve: 100 percent passing.
   b. No. 16 sieve: 0 to 100 percent passing.
   c. No. 40 sieve: 0 to 100 percent passing.
   d. No. 100 sieve: 4 to 70 percent passing.
   e. No. 200 sieve: 0 to 20 percent passing.

QQQ.G. Topsoil: Topsoil shall meet APWA standards & specifications (section 31 05 13).

2.2 SOURCE QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. Materials Sources: Submit name of imported or native materials source and Aggregate Composition Test Reports demonstrating compliance with Article 2.1.

1. Submit to the City at least 10 working days before placement.
2. Include, at minimum, the following:
   a. Soil Classification (AASHTO M-145)
   b. Target Gradation (Percent passing for standard sieve set from ASTM D 6913)
   c. Modified Proctor Value (AASHTO T-180)
   d. CBR Value, Compacted to 95% Modified Proctor, 10lb surcharge (ASTM D 1883)
   e. If tests indicate materials do not meet specified requirements, change material and retest.

C. If tests indicate materials do not meet specified requirements, change material and retest.

D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. Verify structural ability of unsupported walls to support imposed loads by the fill.

C. Proof roll until surface is verified as non-yielding by the City Inspector.

3.2 PREPARATION

A. Scarify subgrade surface to a depth of 6 inches to identify soft spots.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Granular Borrow.

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.3 FILLING

A. Fill to finish contours and elevations indicated using unfrozen materials.

B. Fill up to subgrade elevations where indicated;

1. In the ROW or other load-bearing foundation surfaces fill flush to required elevation, compacted to 95 percent of maximum dry density. AASHTO T-180 ("Modified Proctor")
    a. Lift Thickness:
        i. Minimum – 1.5 times the maximum aggregate size
        ii. Maximum – 12 inches loose, 8 inches compacted
2. Soil Fill: Place and compact material in equal continuous layers not exceeding Geotechnical Recommendations.

C. Employ a placement method that does not disturb or damage other work.

D. Do not fill over porous, wet, frozen, or spongy, or undocumented fill.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend project slopes into existing areas.

G. Reshape and re-compact fills subjected to vehicular traffic.

3.4 FILL AT SPECIFIC LOCATIONS

A. Fill within Right-of-Way up to subgrade elevation:

1. Use Common borrow with CBR greater than the native layer below.
2. Fill to finish grade elevations.

B. Structural backfill and pavement subbase:

1. Use Granular Borrow as per the Geotechnical/Pavement Engineer.
2. Fill up to subgrade elevations.
3. Foundation walls and footings, as per geotechnical Engineering Recommendations. Backfill simultaneously on each side of unsupported foundation walls until supports are in place

C. Bedding and Backfill for Pipe Lines in Trenches:

1. Pipe Bedding: ~~Within pipe zone - use the following:~~Shall follow City Standard Drawings for Trenches SS-1, DW-1, PI-1, and SD-1.

~~. Around and to one foot over PVC pressure pipe, use bedding sand.~~
~~. Around and to one foot over ductile iron pressure pipe, use bedding sand.~~
~~. Around and to one foot over PVC sewer pipe, use ¾" free draining gravel.~~
~~. Around and to the top of concrete drain pipe, use ¾" to 1" free draining gravel.~~

~~H.~~D. Trench Backfill: Shall follow City Standard Drawings for Trenches SS-1, DW-1, PI-1, and SD-1.~~Above pipe zone - use Granular Borrow.~~

~~0. Fill up to subgrade elevation or natural ground level.~~

~~J.~~E. At Landscaped Areas above subgrade/native elevation:

1. Use common borrow.
2. Fill up to 6 inches below finish grade elevations.

3.5 TOLERANCES

A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.

B. Top Surface of Filling Under Paved Areas: Plus or minus 1/2 inch from required elevations.

C. "Red Head" staking and "string test" required for finish grade verification.

3.6 PROJECT CONDITIONS

A. Provide sufficient quantities of fill to meet project schedule and requirements. When necessary, store materials on site in advance of need

B. When fill materials need to be stored on site, locate stockpiles where designated.

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

C. Verify that survey bench marks and intended elevations for the Work are as indicated.

3.7 CLEAN-UP

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

B. Leave borrow areas in a clean and neat condition, grade to prevent standing surface water.

C. All disturbed areas shall be restored with native grasses to match adjacent areas, conforming to the City Standards. These areas shall be seeded with material conforming to adjacent materials, conforming to the City Standards. Restored area shall achieve 70% plant coverage, free of erosion & invasive species, prior to acceptance.

END OF SECTION

SECTION 02235

SANITARY SEWER SYSTEM

1.1 PART 1 GENERAL

1.2 SECTION INCLUDES

A. Sanitary sewer piping, fittings and accessories.

B. Casing pipes and accessories.

C. Connection of project pipe to existing manholes.

D. Sewer Service Connections.

1.3 RELATED SECTIONS

A. Section 02112 - Trenching for Pipe Work: Excavating of trenches.

B. Section 02116 - Fill and Backfill: Pipe bedding and trench backfilling.

C. Section 02340 - Manholes and Covers.

D. Section 03300 - Cast-In-Place Concrete.

1.4 REFERENCES

A. ASTM D 2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

B. ASTM D 3034 - Standard Specification for Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings.

C. ASTM F 477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

D. ASTM F 679 - Standard Specification for Poly Vinyl Chloride (PVC) Large-Diameter Gravity Sewer Pipe and Fittings; 18-inch through 24-inch smooth solid wall sewer pipe.

E. Use the latest issue of the above reference standards as of the date of the Project.

1.5 DEFINITIONS

A. Pipe Bedding: Fill placed within the pipe zone, which is under, beside and directly over pipe, prior to subsequent backfill operations; see standard trench detail drawing.

1.6 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating pipe, pipe accessories, and fittings.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Project Record Documents:

1. Record location of pipe lines, connections, manholes, sewer laterals, and invert elevations.
2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.7 REGULATORY REQUIREMENTS

A. Conform to applicable code for materials and installation of the Work of this section.

1.8 PROJECT CONDITIONS

A. Coordinate the Work on sewer lines and connections to existing manholes with the City Engineer or City Inspector.

PART 2 PRODUCTS

2.1 SEWER PIPE MATERIALS

A. Plastic Pipe: ASTM D 3034, SDR 35, Type PSM, Poly Vinyl Chloride (PVC) material; inside nominal diameter of 4 inches through 15 inches, bell and spigot joint ends with gaskets.

B. Plastic Pipe: ASTM F 679, Poly Vinyl Chloride (PVC) material; inside nominal diameter of 18 inches through 24 inches, bell and spigot joint ends with gaskets.

C. Joint Seals for Plastic Pipe: ASTM C 477 rubber compression gaskets for positive seal.

D. Fittings: Same material as pipe, molded or formed to suit pipe size and end design, in required configurations.

1. Clean outs and clean out caps shall be cast iron in non-residential applications and as specified by International Pumping Code.

2.2 CASING PIPE MATERIALS

A. Welded Steel Pipe: AWWA C 200, steel water pipe; diameter as indicated.

B. Casing Insulators: fusion coated steel casing insulators with 12-inch wide band and 2-inch wide glass reinforced plastic runners; Model C12G-2, manufactured by Pipeline Seal and Insulator, Inc.

C. Casing End Seals: flexible S-shaped seals fabricated on synthetic rubber with stainless steel bands and clamps; Model S Pull-On End Seals, manufactured by Pipeline Seal and Insulator, Inc.

D. Casings under irrigation canals are subject to the applicable canal company’s regulations.

2.3 BEDDING AND COVER MATERIALS

A. Pipe Bedding Material: As specified in Section 02116.

B. Trench Backfill Material: As specified in Section 02116.

PART 3 EXECUTION

3.1 TRENCHING

A. See Section 02112 for trenching; Sections 02115 and 02116 for structural excavation and fill and backfill.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Backfill pipe zone with bedding material, tamp in place and compact; then complete backfilling of trench and compact.

3.2 INSTALLATION - SEWER PIPE

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on project plan and profile drawings.

B. Install pipe, fittings, and accessories in accordance with appropriate ASTM standards and manufacturer's instructions. Seal joints watertight.

C. Install pipe to alignment and slope gradients noted on project drawings; with maximum variation from design alignment of 0.25 foot and from design elevations of 0.10 foot. As-built pipe slope shall meet design slope within 10% error of design grade, except for pipes at minimum slopes.

3.3 INSTALLATION - CASING PIPES

A. See Sections 02115 and 02116 for structural excavation and fill and backfill; and for additional requirements.

B. Install casing pipes by ramming process where indicated.

C. Install casing pipes at the line and grade as required to allow carrier pipes to be installed within the casing pipes at the design line and grade, as indicated on the drawings.

D. Place casing insulators on carrier pipes to properly center and position carrier pipe inside the casing pipes; space insulators as recommended by the pipe manufacturer.

E. Carrier Pipe inside of casing shall have restrained joints.

F. Seal each end of casing with appropriate size flexible end seals; install according to manufacturer's instructions and recommendations.

G. Seal bore holes at each end, around periphery of casing, with grout, impervious clay or brick masonry.

H. Contractor shall be solely responsible for the accuracy, safety and adequacy of construction methods and procedures for installing casing pipes, and for any damage which may result from their failure. All operations of the Contractor for installation of casing pipes shall be subject to acceptance by the agency having jurisdiction over the item being crossed.

I. Contractor shall enter any agreement with, and furnish any and all indemnity and other bonds that may be required by, the agency listed above, for their protection against injury and

interference with flow of water caused by the operations of the Contractor.

J. Contractor shall secure required permission from the agency listed above before commencing with the installation of casing pipes and related work along and across the respective areas.

3.4 CONNECT PROJECT PIPE INTO EXISTING SEWER MANHOLE

A. See Sections 02115 and 02116 for structural excavation and fill and backfill.

B. Connection of project pipe into existing sewer manhole shall include:

1. All excavating required for the connection; and backfilling excavations after the connection is completed, and compacting backfill as required.
2. Removing existing and/or abandoned pipes where and if required.
3. Core-cutting hole through wall and base of existing manhole, where required, with appropriate size coring machine; and preparing hole for connection.
4. Installing new pipe in place and connecting to manhole wall with appropriate type flexible coupling, as recommended by the coupling manufacturer.
5. Reforming manhole floor and invert channel to provide smooth channel transitions to accommodate new connected pipes.
6. Sealing around new pipe with non shrink grout where it intersects manhole wall; make connection watertight.
7. Perform all other operations necessary to restore existing manhole to an acceptable condition to the City Inspector.

C. If existing manhole does not have steps, connection shall also include furnishing and installing new manhole steps. Steps shall be installed as described in Section 02340, Manholes.

D. Provide temporary facilities to divert existing sewer flows around work areas in a manner acceptable to the City Engineer.

3.5 SEWER SERVICE CONNECTIONS

A. Sewer service lines shall extend from a 4-inch or 6-inch wye branch placed in the sewer main, as indicated on the drawings.

1. Normally, a 22 1/2 degree or 45 degree bend, rotated so that proper alignment and grade is established, shall be installed in the main line wye branch.
2. In some instances, the bend may be omitted; and in some instances, two bends may be required.
3. Nose-on connections are not permitted.

B. All pipe and fittings shall be heavy wall PVC sewer pipe conforming to the specifications found elsewhere in this Section.

C. Installation:

1. Pipe and fittings for sewer service lines shall be installed as described herein.

2. 4-inch and 6-inch sewer laterals shall be installed at a minimum slope of 1/4-inch per foot, which is about a 2.0 percent grade.
3. Sewer service lines shall be installed at a uniform grade and alignment; and shall be free of low spots or adverse grades.

D. Cleaning and Testing.

1. Sewer service lines shall be cleaned, flushed and tested in accordance with applicable requirements of this Section. All testing documentation shall be furnished to the City prior to acceptance.
2. After flushing and testing have been completed, the end of the service line shall be plugged until the home or business is connected.

3.6 CONSTRUCTING COLLARS AROUND EXISTING MANHOLE COVERS

A. Construct collars around existing manhole covers after street pavement has been restored.

B. Collars shall be constructed according to City standards per City Standard Drawing SS-2.

3.7 FIELD QUALITY CONTROL

A. Clean and Flush new sewer pipe as follows.

1. Take every precaution to prevent dirt, grease, and all other foreign matter from entering each length of pipe before making connections in field.
2. After each section of piping is installed, it shall be thoroughly cleaned to remove rocks, dirt, and other foreign matter by washing, sweeping, scraping or other methods that will not harm lining of pipe.
3. For safety and to prevent rocks and other foreign matter from entering pipe, all open ends of pipe shall be plugged when workmen are not on the job or in the immediate area.
4. Flushing and testing shall be completed by the Contractor.
5. All temporary water connections for flushing and drainage shall be furnished, installed, and subsequently removed by the Contractor after completion of the operation.

B. Perform field inspection and testing in accordance with Section 01400 and 02112.

C. Pipe installation shall be inspected by the City Engineer or Inspector prior to backfilling of trench; backfilling will be done only after it is authorized by the City Engineer or City Inspector.

D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to City.

E. Test for Leakage: Test all pipe, fittings and other items for leakage, in presence of a City Inspector, after items have been cleaned. All joints, couplings, fittings shall be watertight.

1. Air Test: Low pressure air test may be performed. Section of pipe being tested shall be sealed; line under test shall be pressurized to approximately 3.5 psi; and pressure allowed to stabilize for a minimum of two minutes. During this period air shall be added if pressure drops below 3.5 psi. After this stabilization period, timing shall begin. The time of test, in minutes, shall be equal to the pipe diameter in inches. The maximum allowable pressure drop during specified time period shall be 1.0 psi.

F. Deflection Test, PVC Sewer Pipe: After PVC sewer pipe has been cleaned, perform deflection test on each section of pipe line between manholes. The maximum allowable pipe deflection, the reduction in vertical inside diameter, shall be 5 percent. Maximum allowable deflection shall be applied to the base inside diameters shown in Table 63, Base Inside Diameters For Deflection Measurements of ASTM D 3034 SDR35 PVC Sewer in the Uni-Bell "Handbook of PVC Pipe", to determine minimum permissible diameter, or other appropriate sources. Testing devices shall include deflectometer, calibrated television or photography, or properly sized mandrel or sewer ball.

G. Televise Sewer Lines. After pipe lines have been tested for leakage and deflection, the main sewer lines shall be televised, along with appropriate narrative, by company specializing in this type work. A digital copy of the video shall be provided to the City Engineer. Video shall be provided digitally and shall be in color by a camera capable of pan and tilt capabilities. Maximum speed shall be 20' per minute. Video shall be continuous with steady stream of water running in pipe. If the sewer line has a slope under 2%, televise before warranty and at the end of warranty.

3.8 PROTECTION

A. Protect pipe and bedding material from damage or displacement.

END OF SECTION

SECTION 02410

WATER DISTRIBUTION SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Pipe and fittings for project water lines, to include domestic water lines, fire water lines, and drinking water lines.

B. Valves, Fire hydrants, and appurtenant items.

1.2 RELATED SECTIONS

A. Section 02112 - Trenching for Pipe Work: Excavating, bedding, backfilling and compacting.

B. Section 02115 - Excavation: Excavating for structures and appurtenant items.

C. Section 02116 - Fill and Backfill: Bedding and backfilling.

D. Section 02415 - Disinfection of Water Distribution Systems: Disinfection of site service utility water piping.

E. Section 03300 - Cast-in-Place Concrete: Concrete for thrust restraints.

1.3 REFERENCES

A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; The American Society of Mechanical Engineers.

B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; The American Society of Mechanical Engineers.

C. ASTM B 88 - Standard Specification for Seamless Copper Water Tube.

D. ASTM D 3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.

E. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding; American Welding Society.

F. AWWA C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water; American Water Works Association (ANSI/AWWA C104/A21.4).

G. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; American Water Works Association (ANSI/AWWA C105/A21.5).

H. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; American Water Works Association (ANSI/AWWA C111/A21.11).

I. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast, for Water; American Water Works Association; (ANSI/AWWA C151/A21.51).

~~J. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; American Water Works~~

~~Association.~~

~~K.~~J. AWWA C502 - Dry Barrel Fire Hydrants; American Water Works Association (ANSI/AWWA C502/C502a).

~~L.~~K. AWWA C504 - Rubber Seated Butterfly Valves; American Water Works Association.

~~M.~~L. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 In. (50 mm) Through 24 In. (600 mm) NPS; American Water Works Association; (ANSI/AWWA C508/C508a).

~~N.~~M. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C509/C509a).

~~O.~~N. AWWA C515 - Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C515).

~~P.~~O. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances; American Water Works Association; (ANSI/AWWA C600).

~~Q.~~P. ASTM D2774 - Standard Recommended Practice for Underground Installation of Thermoplastic Pressure Piping.

~~R.~~Q. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 12 In., for Water Distribution; American Water Works Association; (ANSI/AWWA C900/C900a).

~~S.~~R. AWWA C200 - Steel Water Pipe casings, 6-inches and larger as needed.

~~T.~~S. Use the latest issue of the above reference standards as of the date of the Project.

1.4 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Project Record Documents: Record actual locations of all improvement including, pipe lines, valves, connections, thrust restraints, services and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Owner's requirements as described herein.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves in shipping containers with labeling in place.

PART 2 PRODUCTS

2.1 WATER PIPE

A. Ductile Iron Pipe: AWWA C151:

1. Fittings: Ductile iron, standard thickness.
2. Joints:
    a. Push-On Joints: AWWA C111, push-on type with rubber gasket.
    b. Mechanical Joints: AWWA C111, mechanical joint type with gasket, bolts, and nuts.
    c. Flange Joints: AWWA C110, flange type with gasket, bolts, and nuts.
3. Jackets: AWWA C105 polyethylene jacket with polyethylene tape.

B. Copper Tubing: ASTM B 88, Type K, annealed: Not allowed in right-of-ways.

1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
2. Joints: Compression connection or AWS A5.8, BCuP silver braze.

C. PVC Pipe: AWWA C900 DR-18 for lines up to and including 24 inches in diameter.

1. Fittings: AWWA C111, cast iron.
2. Joints: ASTM D 3139 compression gasket ring.

D. Polyethylene Pipe: ASTM D2737, C.T.S., 200 psi, SDR 9.

1. Joints: Mueller compression type couplings.

E. High Density Polyethylene Pipe: AWWA C906:

1. Material: PE 4710 High Density Polyethylene (HDPE) meeting ASTM D3350 cell classification of 445474C
2. Pressure Class 200. DR 11.
3. Fittings: AWWA C906, molded or fabricated: or mechanical joint ductile iron fittings.
4. Joints: Butt fusion.

~~E.~~F. Trace Wire: #14 gauge to be installed on all buried pipe. Provide continuity test to ensure proper installation.

~~F.~~G. Detector Tape: Blue plastic tape imprinted with “DRINKING WATER” in large letters, to be installed on all buried pipes.

2.2 CASING PIPE MATERIALS

~~2.2~~A. Jack And Bore Construction Method:

~~A.~~1. Welded Steel Pipe: AWWA C 200, steel water pipe; diameter as indicated.

~~B.~~2. Casing Insulators: Fusion coated steel casing insulators with 12-inch wide band and 2-inch wide glass reinforced plastic runners; Model C12G-2, manufactured by Pipeline Seal and Insulator, Inc.

~~C.~~3. Casing End Seals: Flexible S-shaped seals fabricated on synthetic rubber with stainless steel bands and clamps; Model S Pull-On End Seals, manufactured by Pipeline Seal and Insulator, Inc.

4. Casings under irrigation canals shall meet the more-stringent of either the City Standards or the canal company’s standards and regulations

B. Horizontal Directional Drilling Method:

1. High density polyethylene pipe, AWWA C906, PE 4710
2. Diameter Ratio (DR): 17 or 11
~~D.~~3. Joints: butt fused.

2.3 VALVES

A. Valves: Manufacturer's name and pressure rating marked on valve body.

1. Jackets: AWWA C105 polyethylene jacket with polyethylene tape.

~~B. Gate Valves Up To 3 Inches:~~

~~0. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, IPS ends, and handwheel.~~

~~0. Product: Powell U.S. Bronze Gate Valves.~~

~~0. Substitutions: See Section 01600 - Product Requirements.~~

~~F.~~B. Gate Valves ~~3 Inches and Over~~:

1. AWWA C500, iron body, bronze trim, non-rising stem with square nut, single wedge, mechanical joint or flanged ends as indicated, and cast iron valve box.
2. AWWA C509, iron body, bronze trim, non-rising stem with square nut, single wedge, resilient seat, mechanical joint or flanged ends as indicated, and cast iron valve box.
3. AWWA C515, ductile iron, bronze trim, non-rising stem with square operating nut, single ductile iron wedge, mechanical joint or flanged ends, as indicated, and cast iron valve box.
4. Product: ~~Clow,~~ Mueller Resilient Wedge~~,~~ or American Flow Control 2500 NRS RS.

C. Check Valves From 2 Inches to 24 Inches:

1. AWWA C508, iron body, bronze trim, 45 degree swing disc, renewable disc and seat, flanged ends.
~~4.~~2. Product: Valmatic Surge Buster Swing-Type Check Valve.

~~G. Butterfly Valves from 2 Inches to 24 Inches:~~

~~0. AWWA C504, iron body, bronze disc, resilient replacement seat, mechanical joint or flanged ends as indicated, manual worm gear operator, and cast iron valve box where required.~~

~~0. Underground manual operators shall be totally enclosed, factory grease packed and sealed, bronze worm gear operators with self-locking gearing; stops shall be provided to prevent over travel of valve disc.~~

~~0. Valve operator shall be geared to close valves slowly. Number of turns to close valve from full open position shall be: 32 turns for 10-inch and smaller valves, 52 turns for 12-inch thru 16-inch valves, and 76 turns for 18-inch thru 24-inch valves. Closing times for larger valves must first be accepted by the City Engineer.~~

~~0. Product: Mueller "Lineseal III" Butterfly Valve with appropriate type Pacific States Cast Iron Valve Box.~~

~~L.~~D. Corporation Stops: Shall be type for connecting to copper or polyethylene pipe; Mueller No. H- 15000.

~~M.~~E. Blow-Off Hydrants: shall be Non-Freeze Blow-Off Assembly.

2.4 HYDRANTS

A. Hydrants: AWWA C502, UL 246, dry barrel type.

1. Jackets: AWWA C105 polyethylene jacket with polyethylene tape.
2. Inside dimension: 7 inches minimum, with minimum 5 inches diameter valve seat opening.
3. Minimum net water area of barrel not less than 190 percent of valve opening.
4. 6 inch flanged inlet connection with accessories, gland bolts, and gaskets.
5. Product: Mueller "Super Centurion 250", Waterous “Pacer WB 67-250”,or Clow “Medallion” Fire Hydrants.

B. Hydrant Extensions: Fabricate with rod and coupling to increase barrel length, 1 extension maximum.

C. Hose and Streamer Connection: Two hose nozzles, 2 1/2-inch size, one pumper nozzle, 4 1/2 inch size.

D. Finish: Buried portion of hydrant shall be painted with two coats of CA50 coal tar enamel. Exposed portion shall be painted with Primer and two coats of enamel in red color conforming to the currently adopted Fire Code.

2.5 BEDDING AND COVER MATERIALS

A. Bedding: As specified in Sections 02112 and 02116.

B. Backfill: As specified in Sections 02112 and 02116.

2.6 ACCESSORIES

A. Service Saddles: shall be bronze, double-strap type; Mueller No. H-16134.

B. Concrete for concrete collars, slabs, and thrust restraints: Concrete type specified in Section 03300.

2.7 RESIDENTIAL WATER CONNECTIONS

A. Meter boxes, meter setters, meters, and appurtenant items shall be as indicated on the drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that water main and main line tee size, location, and invert are as indicated.

B. Verify bedding material and installation.

C. Verify trails lines continuity.

D. Verify thrust block installation and sizing.

3.2 PREPARATION

A. Cut pipe ends square, ream pipe ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or mechanical joints.

3.3 TRENCHING

A. See Section 02112 and Sections 02115 and 02116 for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide required square footage of thrust restraint bearing on subsoil as indicated on the drawings.

D. Backfill around sides and to top of pipe with backfill material, tamp in place and compact, then complete backfilling.

3.4 INSTALLATION - PIPE

A. Maintain separation of water main from sewer piping in accordance with State code.

B. Establish elevations of buried piping to ensure not less than four feet of cover over pipe; or as indicated on the drawings.

C. Install pipe to indicated elevation to within tolerance of one inch.

D. Install ductile iron piping and fittings to AWWA C600.

E. Install PVC pressure pipe and fittings to ASTM D2774.

F. Install pipe lines to line and grade indicated.

G. Install pipe to allow for expansion and contraction without stressing pipe or joints.

H. Install access fittings to permit disinfection of water system performed under Section 02415.

I. Install #14 trace wire and detector tap above all pipe; coordinate with Section 02112.

J. Do not drop pipe into trench. Pipe shall be lowered into the trench using mechanical equipment attached to the pipe with flexible straps attached in at least two ~~locaitons~~locations.

~~I.~~K. Keep exposed pipe ends closed when not actively working to prevent the contamination of the ~~the~~ interior of the pipe.

3.5 INSTALLATION - CASING PIPES

A. See Sections 02315 and 02316 for structural excavation and fill and backfill; and for

additional requirements.

B. Install casing pipes where indicated.

C. Install casing pipes at the line and grade as required to allow carrier pipes to be installed within the casing pipes at the design line and grade, as indicated on the drawings.

D. Place casing insulators on carrier pipes to properly center and position carrier pipe inside the casing pipes; space insulators as recommended by the pipe manufacturer.

E. Carrier Pipe inside of casing shall have restrain joints per City Engineer.

F. Seal each end of casing with appropriate size flexible end seals; install according to manufacturer's instructions and recommendations.

G. Seal bore holes at each end, around periphery of casing, with grout, impervious clay or brick masonry.

H. Contractor shall be solely responsible for the accuracy, safety and adequacy of construction methods and procedures for installing casing pipes, and for any damage which may result from their failure. All operations of the Contractor for installation of casing pipes shall be subject to acceptance by the agency having jurisdiction over the item being crossed.

I. Contractor shall enter any agreement with, and furnish any and all indemnity and other bonds that may be required by, the agency listed above, for their protection against injury and interference with flow of water caused by the operations of the Contractor.

J. Contractor shall secure required permission from the agency listed above before commencing with the installation of casing pipes and related work along and across the respective areas.

3.6 INSTALLATION - VALVES AND HYDRANTS

A. Set valves on concrete block.

B. Center and plumb valve box over valve operating nut. Set box cover flush with finished grade. Valve nut not to exceed 4’ in depth without valve nut extension.

C. Set hydrants plumb; locate pumper nozzle perpendicular to and facing roadway.

D. Set hydrants to grade, with bury mark at ground level and with nozzles at least 18 inches above ground level.

E. Locate hydrant control valve as indicated on the accepted drawings.

F. Provide a drainage pit, 24 inches square by 12 inches deep, filled with 1/2-inch washed gravel. Encase elbow of hydrant in gravel to 6 inches above drain opening

3.7 SERVICE CONNECTIONS

A. Provide water service as indicated in detail with meter box and meter yoke with double check valve.

3.8 CONNECTIONS TO EXISTING WATER LINES

A. Connection to existing water lines shall be made where and as indicated on the accepted drawings. The sizes of pipe, fittings, valves and appurtenant items required to make connection shall correspond to the sizes of existing pipe and of project pipe.

B. Excavate to existing pipe line at point of connection; determine actual conditions of existing pipe and all fittings and appurtenant items required to make the connection; and have all materials needed on site prior to any shut down or cutting into existing pipe lines.

C. Connection which involve cutting into existing pipe lines include: cutting and removing sections of existing pipe and fittings as required; cleaning and preparing ends of existing pipe as required for connection; furnishing and installing all new pipe, fittings and valves required to make the connection of project pipe to the existing pipe as indicated; and all appurtenant work required to complete the connection.

D. Connection into existing pipe lines under pressure include: furnishing and installing mechanical joint tapping sleeve of the appropriate size on the existing pipe at point of connection; furnishing and installing tapping valve, with valve box, on sleeve; tapping existing pipe with drilling machine and equipment, without interrupting flow in existing pipe line; and all appurtenant work required to complete the connection.

E. Connection to existing pipe line shall be made at such times and within the time limits and according to the directions as agreed to between the Contractor and the Owner.

F. Cut and plug existing pipe lines where indicated on the drawings. Excavate as required to locate existing pipe lines to be abandoned in place; cut the existing pipe, as required; and install permanent plug in end of pipe to be abandoned.

G. Follow AWWA C651 guidelines for cutting existing pipes.

3.9 RECONNECT EXISTING WATER SERVICE LINES

A. Reconnect existing water service lines where and as indicated on the accepted drawings. The sizes of pipe, fittings, saddles, corporation stops, and appurtenant items required to make reconnections shall correspond to the sizes of existing service lines and of project pipe.

B. Excavate as required to locate the existing service line; determine actual conditions of existing service line and all fitting and appurtenant items needed to make the reconnections; and have all materials needed on site prior to any shut down of existing service line.

C. After project pipe line has been thoroughly tested, disinfected and put into operation, disconnect existing water service lines from the existing water line. Excavate as required to expose the existing service line; cut the existing service line and remove back to main as required; and remove the existing corporation stop from the existing pipe and install a permanent plug in the tap in the existing water line which is to be abandoned.

D. Tap the project pipe line with the appropriate size tapping machine and install a double strap service saddle, with corporation stop, on the project pipe. New copper tubing sized polyethylene (blue) pipe shall be furnished and installed to make the connection from the end of the existing service line to the new corporation stop. The new CTS sized poly pipe tubing shall be connected to the end of the existing service line with the appropriate type coupling and to the new corporation stop. In all reconnections, at least five feet of new tubing shall be installed, as indicated. Insulating couplings or adapters shall be used to connect pipe of dissimilar material.

E. After the existing water service line has been disconnected from the existing water line, the reconnection work shall be pursued diligently so that the service line is reconnected to the project water line and put back into service in the shortest possible time.

3.10 REMOVING EXISTING FIRE HYDRANTS

A. Existing fire hydrant installations shall be removed and delivered to the Owner.

B. Excavate as required to locate the existing hydrant supply line and control valve; determine actual conditions of existing supply line and all fitting required to complete the removal; and have all material needed at the job site prior to any shut down or cutting into existing pipe.

C. After project pipe line has been thoroughly tested, disinfected and put into operation, cut the existing hydrant supply line and remove back to tee at main. Install a plug in the tee and secure with bolts as per manufacture recommendation. Remove the existing hydrant, control valve and valve box and deliver the material to the Owner.

D. After the hydrant installation has been completely removed and the existing pipe plugged, backfill the excavation to match adjacent ground surfaces; and compact material as described herein.

3.11 WATER METER RELOCATION

A. Contractor shall notify the water customer and the City 48 hours in advance before starting the water service meter relocation. Contractor will be responsible for obtaining all necessary permits from the City. Contractor shall verify size and type of materials required for the water service meter relocation before commencing work. The Contractor shall also be responsible for relocation, reconnection, and replacement of any damaged materials.

1. After existing meter box is moved, the resultant void shall be backfilled, compacted, and the surface restored.
2. The meter box, ring, and lid shall be installed to one inch above final grade.
3. The relocated service shall be located so the meter box is centered in the park strip and the meter shall be rotated from perpendicular to parallel to the street.
4. The water service meter setter shall be installed in the horizontal and up-right position and with the top of the angle stop eighteen (18) to twenty two (22) inches below the finish grade. (See Standard Details CW-5).
5. Length of water service CTS poly pipe extension shall be the minimum length necessary to install the water service meter setter in its new location.
6. Contractor shall replace any water service meter that is damaged or misplaced as a result of the Contractor's operation.
7. Place a compression coupler over the section of CTS poly pipe at the location where the pipe was crimped.
8. Extend the trace wire and splice using a grease nut.

B. Water services may need to be upgraded to current City Construction Standards.

3.12 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01400.

B. Pressure test water piping to 200 PSI for 2 hours.

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

D. Disinfection and bacteria testing per section 02415.

END OF SECTION

SECTION 02412

PRESSURE REDUCING VALVE STATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Pressure regulating valve (PRV) station; including reinforced concrete vault, pipe, fittings, valves, and appurtenant items.

1.2 RELATED SECTIONS

A. Section 02115 - Excavation: Excavating for structures and appurtenant items.

B. Section 02116 - Fill and Backfill: Bedding and backfilling.

C. Section 02410 - Water Distribution System: Pipe, fittings, valves and appurtenant items.

D. Section 02415 - Disinfection of Water Distribution Systems: Disinfection of station piping.

E. Section 03300 - Cast-in-Place Concrete: Concrete for concrete vault and thrust restraints.

1.3 REFERENCES

A. ASTM A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

B. ASTM C 858 - Standard Specification for Underground Precast Concrete Utility Structures.

C. AWWA C504 - Rubber Seated Butterfly Valves; American Water Works Association.

D. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C509/C509a).

E. AWWA C515 - Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C151).

F. Use the latest issue of the above reference standards as of the date of the Project.

1.4 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Project Record Documents: Record actual locations of pipe lines, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Owner's requirements as described herein.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves and appurtenant items in shipping containers with labeling in place.

PART 2 PRODUCTS

2.1 REINFORCED CONCRETE VAULT

A. Reinforced Concrete Vault. The reinforced concrete vault is shown on the drawings as constructed of poured-in-place concrete; but a precast reinforced concrete vault may be provided at the option of the Contractor.

1. The vault shall be sized to adequately accommodate all valves, pipe, fittings and appurtenant items to be enclosed in the vault.
2. Poured-in-Place Concrete. A poured-in-place reinforced concrete vault, of the size indicated on the construction drawings, may be constructed; which shall conform to applicable requirements of Section 03300.
3. Precast Concrete. A precast reinforced concrete vault of equal dimensional and strength characteristics, as determined by the City Engineer during shop drawing review, may be provided. Precast vault shall have wall thickness of 9-inch minimum, bottom slab thickness of 6-inch minimum, and top slab thickness of 9-inch minimum; designed for H-20 highway loading.
    a. Precast vault shall conform to ASTM C 858; and shall be as manufactured by Amcor-White, Inc., Dura-Crete.
4. Reinforcement. Reinforcing steel shall be as specified in Section 03300, using Grade 60 bar of the size(s) shown on the construction drawings.
5. Steps. Plastic encased steel steps shall be installed in station walls; spaced at 12-inches on center and centered under the access opening. Steps shall be copolymer poly-propylene- encased, 60,000 tensile strength steel, Model PSI-FF manhole steps, as manufactured by M. A. Industries, Inc.
    a. An aluminum ladder may be provided and permanently installed.

B. Access Doors: The access door leaf and channel frame, with strap anchors, shall be constructed of steel with hot-dip galvanized finish (ASTM 123); designed for H-20 highway loading. Doors shall be provided with 316 stainless steel hardware throughout; including all parts of the latch and lifting mechanism assemblies, hold open arms and guides, and all brackets, hinges, pins and fasteners. The doors shall have recessed has covered by a hinged lid flush with the surface of the door.

1. The access doors shall be Type J Access Doors as manufactured by The Bilco Company of the size indicated on the drawings. The manufacturer shall guarantee the door against defects in material and workmanship for a period of five years.

C. Proprietary Items. Provide proprietary items of the type, size and manufacture noted on the drawings or as required to complete the work.

D. Miscellaneous Metal Work. Furnish and erect miscellaneous metal work as required to complete the pressure regulating station, as described herein and as shown on the drawings.

1. Codes. Specifications for the Design, Fabrication and Erection of Structural Steel For Buildings of the American Institute of Steel Construction shall govern the work. Welding shall be done in accordance with applicable and most recent American Welding Society Standards.
2. Substitutions. Substitutions of sections or modifications of details, or both, and the reasons therefore shall be submitted for acceptance by the City Engineer.
3. Responsibility for Errors. The Contractor shall be responsible for all errors of detailing, fabrication, erection, and correct fitting of the miscellaneous metal work.
4. Materials. Material shall conform to their respective specifications as follows:
    a. Bolts and Nuts: ASTM Standard A-307
    b. Gray Iron Castings: A-48 Class 40 or Better
    c. Structural Steel: ASTM Standard A-36
    d. Washers: ASTM Standard B-27.2, Type B
    e. Miscellaneous Items: Miscellaneous items shall be as indicated on the drawings or as required.

E. Painting. All exposed pipe, valves, fittings, and metal work inside of the station shall be painted with either: four coats of alkyd paint, Painting System II (Steel Structural Painting Council - Specification No. 2); or four coats of phenolic paint, Painting System III (Steel Structural Painting Council - Specification No. 3). Painting shall include surface preparation, pretreatment, primer coat, inter-mediate coats, and finish coat, as specified; with total dry film thickness not less than 4.0 mils. Aluminum surfaces which will be in contact with concrete after erection shall be coated with bituminous mastic coating, SSPC- Paint 12, prior to erection.

~~. Contractor to set PRV settings in accordance with the plans, specifications, or city direction.~~

~~2.3~~2.2 VALVE STATION PLUMBING

A. Pipe and Fittings.

1. Ductile Iron Pipe: AWWA C151: See Section 02410. Exposed pipe and fittings shall not be coated with coal tar pitch varnish; but shall be painted as specified herein.
2. Copper Tubing: ASTM B 88, Type K, annealed: See Section 02410.
3. Galvanized Steel Pipe: ASTM A 53: Galvanized steel pipe shall be Schedule 80, seamless or welded pipe, with threaded ends. Fittings shall be 150 lb. galvanized malleable iron banded type, with screwed ends. Unions shall be galvanized railroad type with ground brass-to-iron seats.

B. Valves.

1. Manufacturer's name and pressure rating marked on valve body.
2. Gate Valves Up To 3 Inches:
    a. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, IPS ends, and handwheel.
    b. Product: Powell U.S. Bronze Gate Valves.
    c. Substitutions: See Section 01600 - Product Requirements.
3. Gate Valves 3 Inches and Over:
    a. AWWA C509, iron body, bronze trim, non-rising stem with square nut, single

wedge, resilient seat, flanged ends as indicated, and cast iron valve box.

b. AWWA C515, ductile iron, bronze trim, non-rising stem with square operating nut, single ductile iron wedge, mechanical joint or flanged ends as indicated, and cast iron valve box.

c. Product: Mueller Gate Valves or Resilient Seat Gate Valves, or American Flow Control Series 2500 Resilient Seat Gate Valves; with appropriate type Pacific States Cast Iron Valve Box, or accepted equal.

~~4. Butterfly Valves From 2 Inches to 24 Inches:~~

~~. AWWA C504, iron body, bronze disc, resilient replacement seat, flanged ends as indicated, and manual worm gear operator.~~

~~. Valve operator shall be geared to close valves slowly. Number of turns to close valve from full open position shall be: 32 turns for 10-inch and smaller valves, 52 turns for 12-inch thru 16-inch valves, and 76 turns for 18-inch thru 24-inch valves. Closing times for larger valves must first be accepted by the City Engineer.~~

~~. Product: Mueller "Lineseal III" Butterfly Valve with appropriate type manual worm gear operator.~~

~~8.~~4. Pressure Reducing Valves:

a. Valves shall have cast iron or stainless steel bodies, with bronze pilot and trim; designed to reduce a higher inlet pressure to a steady lower pressure downstream, regardless of flow rate.

b. Valves shall be hydraulically operated; capable of holding delivery pressure to within one or two psi of valve setting; and shall be adjustable, with downstream pressure range of 30 to 110 psi.

c. Pressure reducing valves shall be Clayton Model 90G-01AB Pressure Reducing Valves, as manufactured by Cla-Val Company.

d. Other type valves may be required for specific applications within the water system.

~~9.~~5. Strainers:

a. Strainers shall have cast iron bodies and covers, stainless steel strainer and stainless steel bolts.

b. End flanges shall be ANSI class 125 standard flanges

c. Stainless steel strainers shall have an area of two times the nominal inlet pipe opening.

d. Strainers shall be designed for easy access and in-line servicing of strainer element; and shall have drain plugs for periodic flushing

e. Strainer screens to be #4 mesh

~~10.~~6. Combination Air-Vacuum Release Valves.

a. Valves shall be designed to release large quantities of air from pipes during filling, admit large quantities of air into pipes during draining, and release small accumulations of air during normal operation of pipes.

b. Valves shall be equal in quality to "Heavy-Duty Combination Air Release Valves, No. 143C", as manufactured by Valve and Primer Corp. (APCO); and shall meet the provisions of these specifications.

~~11.~~7. Hose Gate Valves.

a. Hose gate valves shall be high grade brass with handwheel, inside screw ends, rising stem, screwed bonnet, taper wedge double disc. Valve shall be designed to operate at 200 psi water pressure.

b. Hose gate valves shall be equal to Powell U.S. Bronze Hose Gate Valve No. 527.

~~12.~~8. Pressure Relief Valves.

C. Miscellaneous Items.

1. Dismantling Joint. The dismantling joint shall be Romac DJ 400, with anchor studs as recommended by the manufacturer; for connecting ductile iron pipe to flanged valves, equipment and fittings.
2. Mechanical Couplings. The mechanical couplings shall be Dresser, Rockwell; for connecting the size and type of pipe shown on the drawings. Couplings exposed to soil shall be primed and coated with a 1/4-inch layer of coal tar or rust preventing wax compound.
3. Gauges. Gauges shall be as shown on the drawings and of the size and quality equal to or better than United States Gauge "A" Line, Figure No. 5000, or Ashcroft 1279. Gauges shall have a range of 0 to 350 psi.
4. Gauge Cocks. Gauge cocks shall be of high grade bronze with tee head; designed for 200 psi water pressure, and factory-tested to 300 psi; Crane Nos. 708, 712, 744.
5. Service Clamps: shall be bronze, double-strap type; Mueller No. H-16134, for up to 2 inch service lines.
6. Other Items. Other miscellaneous materials shall be as indicated on the drawings.

D. Hangers, Supports and Blocks.

1. Provide all hangers, supports, clamps, guides, sleeves, inserts, anchors and other such devices required for hanging or supporting pipe, preserving alignment, prevention of movement, passage of pipe through walls and floors, or securing pipe in any manner. The required number, location and detail of such items may or may not be indicated on the drawings; but, in any case, such work shall be provided as work incidental to furnishing and installing any type of pipe, fittings and appurtenances, and no extra payment will be made for this work.
   a. Piping shall be supported or suspended in such manner as to prevent sagging or over stressing of pipe, valves, fittings or connections; and so that no pipe, fittings, valves or other items transfer load or strain to equipment of any kind.
2. Supports.
   a. Concrete supports shall be installed under pipe and valves wherever shown on the drawings. Concrete supports shall be neatly constructed and finished. No supports shall be made until all pipe is in its final position.
   b. All other pipe supports shall be of the adjustable type of the style and size recommended by the manufacturer; and shall be located as indicated on the drawings. Floor flanges shall be of the size required to fit the pipe attached to the saddle support and as recommended by the manufacturer. Adjustable pipe supports shall be used as kick blocks for pipe in open locations.
3. Blocks. Concrete thrust blocks shall be used wherever shown on the drawings or where thrust is great enough to cause movement of the piping.

E. Miscellaneous. Miscellaneous appurtenant items shall be as indicated on the drawings or as required to complete the station.

~~2.4~~2.3 BEDDING AND BACKFILL MATERIALS

A. Bedding: As specified in Sections 02115 and 02116.

B. Backfill: As specified in Sections 02115 and 02116.

~~2.5~~2.4 ACCESSORIES

A. Concrete for Thrust Restraints: Concrete type specified in Section 03300.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that water main size, location, and invert are as indicated.

3.2 PREPARATION

A. Cut pipe ends square, ream pipe ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or mechanical joints.

3.3 EXCAVATING

See Section 02112 and Sections 02115 and 02116 for additional requirements.

A. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide required square foot of thrust restraint bearing on undisturbed subsoil as indicated on the drawings.

C. Backfill around sides and to top of pipe with backfill material, tamp in place and compact, then complete backfilling.

3.4 CONSTRUCTION - VALVE VAULT

A. Construct the vault for the pressure regulating station at the location indicated on the drawings; in accordance with the details shown on the construction drawings and as specified herein.

B. Earthwork shall be done in accordance with applicable requirements of Section 02115.

1. Foundation Material. Where native material encountered at the foundation depth is found to be unable to provide adequate structural support of the vault or is determined to be moisture sensitive, the unsuitable material shall be removed and replaced by the appropriate granular borrow material as per the accepted drawings or under the direction of a licensed geotechnical engineer.
2. Excess Material. Unsatisfactory and excess excavated materials shall be removed from the work site and disposed of in a legally acceptable manner.

C. Concrete Work. Comply with requirements of Section 03300, for placement, consolidation, finishing and protection of cast-in-place concrete.

D. Precast Concrete Vault. Precast concrete vault shall be installed level and plumb, in accordance with the manufacturer's written instructions and recommendations.

E. Access Door: Install according to manufacturer's written instructions and recommendations.

F. Miscellaneous Metal Work.

1. Miscellaneous metal work shall be fabricated and assembled in the shop to the greatest extent possible.
2. Miscellaneous metal work shall be erected in conformity with AISC Code of Standard Practice.

3.5 INSTALLATION - PLUMBING

A. All pipe, fittings, valves, equipment and appurtenant items, together with supports and anchors, shall be installed as specified herein and as indicated on the drawings; in conformity with currently adopted plumbing codes.

B. Equipment shall be installed as shown on the drawings, and in accordance with accepted manufacturer's written instructions.

C. Strainers shall be installed upstream of all pressure regulating valves.

D. All material and workmanship shall conform to applicable requirements of the currently adopted plumbing code.

E. Establish elevations of buried piping to ensure not less than four feet of cover over pipe.

F. Install pipe to indicated elevation to within tolerance of one inch.

G. Install ductile iron piping and fittings to AWWA C600.

H. Install pipe to allow for expansion and contraction without stressing pipe or joints.

I. Install access fittings to permit disinfection of water system performed under Section 02515.

J. Set valves on concrete block.

K. After plumbing system has been installed and completed, it shall be tested and disinfected as specified herein; including an operating test for acceptance of the work. Tests shall be performed in the presence of the City Engineer or ~~his~~ their authorized representative.

~~K.~~L. Pressure reducing valve settings shall be calibrated in the field by valve supplier's representative according to pressure settings provided by the City.

3.6 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with section 01400.

B. Pressure test water piping to 200 PSI for 2 hours (see section 02410).

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

END OF SECTION

SECTION 02414

WATER METER VAULT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Water meter stations, complete, including:

1. Reinforced concrete vault.
2. Pipe, fittings, valves, meter, and appurtenant items.

B. Station testing.

1.2 RELATED SECTIONS

A. Section 02115 - Excavation: Excavating for structures and appurtenant items.

B. Section 02116 - Fill and Backfill: Pipe bedding and excavation backfilling.

C. Section 02410 - Water Distribution System: Pipe, fittings, valves and appurtenant items.

D. Section 02415 - Disinfection of Water Distribution Systems: Disinfection of station piping.

E. Section 03300 - Cast-in-Place Concrete: Concrete for structures and thrust blocks.

1.3 REFERENCES

A. ASTM A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

B. ASTM A 234 - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.

C. ASTM C 858 - Standard Specification for Underground Precast Concrete Utility Structures.

D. AWWA C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water; American Water Works Association; (ANSI/AWWA C104/A21.4).

E. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; American Water Works Association; (ANSI/AWWA C105/A21.5).

F. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; American Water Works Association; (ANSI/AWWA C111/A21.11).

G. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast, for Water; American Water Works Association; (ANSI/AWWA C151/A21.51).

~~H. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; American Water Works Association.~~

~~I.~~H. AWWA C504 - Rubber Seated Butterfly Valves; American Water Works Association.

~~J.~~I. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 In. (50 mm) Through 24 In. (600 mm) NPS; American Water Works Association; (ANSI/AWWA C508/C508a).

~~K.~~J. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C509/C509a).

~~L.~~K. AWWA C515 - Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C515).

~~M.~~L. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances; American Water Works Association; (ANSI/AWWA C600).

~~N.~~M. Use the latest issue of the above reference standards as of the date of the Project.

1.4 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, meters, and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Project Record Documents: Record actual locations of pipe lines, valves, meters, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with City's requirements as described herein.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves, valves and appurtenant items in shipping containers with labeling in place.

PART 2 PRODUCTS

2.1 REINFORCED CONCRETE VAULT

A. Reinforced Concrete Vault. The reinforced concrete vault is shown on the drawings as constructed of poured-in-place concrete; but a precast reinforced concrete vault may be provided at the option of the Contractor.

1. Concrete work shall conform to applicable requirements of Section 03300.
2. Poured-in-Place Concrete. A poured-in-place reinforced concrete vault, of the size indicated on the drawings, may be constructed; which shall conform to applicable requirements of Section 03300.
    a. Poured-in-place concrete vault shall have wall thickness of 9-inch minimum, bottom slab thickness of 6-inch minimum, and top slab thickness of 9-inch minimum; designed for H-20 highway loading.
    b. Submit construction drawings of the vault for review by the City Engineer, before any work is begun. The drawings shall be stamped by a professional licensed structural engineer.

3. Precast Concrete. A precast reinforced concrete vault of equal dimensional and strength characteristics may be provided. Precast vault shall have wall thickness of 9-inch minimum, bottom slab thickness of 6-inch minimum, and top slab thickness of 9-inch minimum; designed for H-20 highway loading.

    a. Precast vault shall conform to ASTM C 858; and shall be as manufactured by Amcor-Old Castle or Dura-Crete.

4. Reinforcement. Reinforcing steel shall be as specified in Section 03300, using Grade 60 bar of the size(s) shown on the drawings.

5. Steps. Plastic encased steel steps shall be installed in station walls; spaced at 12-inches on center and centered under the access opening. Steps shall be copolymer poly-propylene- encased, 60,000 tensile strength steel, Model PSI-FF manhole steps, as manufactured by M. A. Industries, Inc.

B. Access Doors: The access door leaf and channel frame, with strap anchors, shall be constructed of steel with hot-dip galvanized finish (ASTM 123); designed for H-20 highway loading. Doors shall be provided with 316 stainless steel hardware throughout; including all parts of the latch and lifting mechanism assemblies, hold open arms and guides, and all brackets, hinges, pins and fasteners. The doors shall have recessed hasp covered by a hinged lid flush with the surface of the door.

    a. The access doors shall be Type J Access Doors as manufactured by The Bilco Company, of the size indicated on the drawings. The manufacturer shall guarantee the door against defects in material and workmanship for a period of five years.

C. Proprietary Items. Provide proprietary items of the type, size and manufacture noted on the drawings or as required to complete the work.

D. Miscellaneous Metal Work. Furnish and erect miscellaneous metal work as required to complete the pressure regulating station, as described herein and as shown on the drawings.

1. Codes. Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings of the American Institute of Steel Construction shall govern the work. Welding shall be done in accordance with AWS D1.1 of the American Welding Society Standards.

2. Substitutions. Substitutions of sections or modifications of details, or both, and the reasons therefore shall be submitted for acceptance by the City Engineer.

3. Responsibility for Errors. The Contractor shall be responsible for all errors of detailing, fabrication, erection, and correct fitting of the miscellaneous metal work.

4. Materials. Material shall conform to their respective specifications as follows:

    a. Bolts and Nuts: ASTM Standard A-307
    b. Gray Iron Castings: A-48 Class 40 or Better
    c. Structural Steel: ASTM Standard A-36
    d. Washers: ASTM Standard B-27.2, Type B
    e. Miscellaneous Items: Miscellaneous items shall be as indicated on the drawings or as required.

E. Painting. All exposed pipe, valves, fittings, and metal work inside of the station shall be painted with either: four coats of alkyd paint, Painting System II (Steel Structural Painting Council - Specification No. 2); or four coats of phenolic paint, Painting System III (Steel Structural Painting Council - Specification No. 3). Painting shall include surface preparation, pretreatment, primer coat, inter-mediate coats, and finish coat, as specified; with total dry film thickness not less than 4.0 mils. Aluminum surfaces which will be in contact with

concrete after erection shall be coated with bituminous mastic coating, SSPC-Paint 12, prior to erection.

2.2 METER STATION PLUMBING

A. Pipe and Fittings.

1. Ductile Iron Pipe: AWWA C151: See Section 02410. Exposed pipe and fittings shall not be coated with coal tar pitch varnish; but shall be painted as specified herein.
2. Copper Tubing: ASTM B 88, Type K, annealed: See Section 02410.
3. Galvanized Steel Pipe: ASTM A 53: Galvanized steel pipe shall be Schedule 80, seamless or welded pipe, with threaded ends. Fittings shall be 150 lb. galvanized malleable iron banded type, with screwed ends. Unions shall be galvanized railroad type with ground brass-to-iron seats.

B. Valves.

1. Manufacturer's name and pressure rating marked on valve body.

~~2. Gate Valves Up To 3 Inches:~~

~~. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, IPS ends, and handwheel.~~

~~. Product: Powell U.S. Bronze Gate Valves.~~

~~. Substitutions: See Section 01600 - Product Requirements.~~

~~6.~~2. ~~G~~Gate Valves ~~3 Inches and Over~~:

a. AWWA C509, iron body, bronze trim, non-rising stem with square nut, single wedge, resilient seat, flanged ends as indicated, and cast iron valve box.
b. AWWA C 515, ductile iron, bronze trim, non-rising stem with square operating nut, single ductile iron wedge, mechanical joint or flanged ends as indicated, and cast iron valve box.
c. Product: Mueller Resilient Wedge Gate Valve~~s or Resilient Seat Gate Valves~~, or American Flow Control Series 2500 Resilient Seat Gate Valves; with appropriate type Pacific States Cast Iron Valve Box.

~~7. Butterfly Valves From 2 Inches to 24 Inches:~~

~~. AWWA C504, iron body, bronze disc, resilient replacement seat, flanged ends as indicated, and manual worm gear operator.~~

~~. Valve operator shall be geared to close valves slowly. Number of turns to close valve from full open position shall be: 32 turns for 10-inch and smaller valves, 52 turns for 12-inch thru 16-inch valves, and 76 turns for 18-inch thru 24-inch valves. Closing times for larger valves must first be accepted by the City Engineer.~~

~~. Product: Mueller "Lineseal III" Butterfly Valve with appropriate type manual worm gear operator.~~

~~11.~~3. Combination Air-Vacuum Release Valves.

a. Valves shall be designed to release large quantities of air from pipes during filling, admit large quantities of air into pipes during draining, and release small accumulations of air during normal operation of pipes.
b. Valves shall be equal in quality to "Heavy-Duty Combination Air Release Valves, No. 143C", as manufactured by Valve and Primer Corp. (APCO); and shall meet the provisions of these specifications.

~~12.~~4. Strainers:

a. Strainers shall have cast iron bodies and covers, stainless steel strainer and stainless steel bolts.
b. End flanges shall be ANSI class 125 standard flanges
c. Stainless steel strainers shall have an area of two times the nominal inlet pipe opening.
d. Strainers shall be designed for easy access and in-line servicing of strainer element; and shall have drain plugs for periodic flushing.

C. Meters. Meters shall be of design, type, size and manufacturer as accepted by the City Engineer.

D. Miscellaneous Items.

1. Dismantling Joint. The dismantling joint shall be Romac DJ 400, for connecting ductile iron pipe to the flanged valves, equipment and other fittings.
2. Mechanical Couplings. The mechanical couplings shall be Dresser or Rockwell, for connecting the size and type of pipe shown on the drawings. Couplings exposed to soil shall be primed and coated with a 1/4-inch layer of coal tar or accepted rust preventing wax compound.
3. Gauges. Gauges shall be as shown on the drawings and of the size and quality equal to or better than United States Gauge "A" Line, Figure No. 5000. Gauges shall have a range of 0 to 350 psi.
4. Gauge Cocks. Gauge cocks shall be of high grade bronze with tee head; designed for 200 psi water pressure, and factory-tested to 300 psi; Crane Nos. 708, 712, 744.
5. Service Clamps: shall be bronze, double-strap type; Mueller No. H-16134.
6. Other Items. Other miscellaneous materials shall be as indicated on the drawings.

E. Hangers, Supports and Blocks.

1. Provide all hangers, supports, clamps, guides, sleeves, inserts, anchors and other such devices required for hanging or supporting pipe, preserving alignment, prevention of movement, passage of pipe through walls and floors, or securing pipe in any manner. The required number, location and detail of such items may or may not be indicated on the drawings; but, in any case, such work shall be provided as work incidental to furnishing and installing any type of pipe, fittings and appurtenances, and no extra payment will be made for this work.
   a. Piping shall be supported or suspended in such manner as to prevent sagging or over stressing of pipe, valves, fittings or connections; and so that no pipe, fittings, valves or other items transfer load or strain to equipment of any kind.
2. Supports.
   a. Concrete supports shall be installed under pipe and valves wherever shown on the drawings. Concrete supports shall be neatly constructed and finished, as indicated on the drawings. No supports shall be made until all pipe is in its final position.
   b. All other pipe supports shall be of the adjustable type of the style and size recommended by the manufacturer; and shall be located as indicated on the drawings. Floor flanges shall be of the size required to fit the pipe attached to the saddle support and as recommended by the manufacturer. Adjustable pipe supports shall be used as kick blocks for pipe in open locations.
3. Blocks. Concrete thrust blocks shall be used wherever shown on the drawings or where thrust is great enough to cause movement of the piping.

F. Miscellaneous. Miscellaneous appurtenant items shall be as indicated on the drawings or as required to complete the station.

2.3 BEDDING AND BACKFILL MATERIALS

A. Bedding: As specified in Sections 02115 and 02116.

B. Backfill: As specified in Sections 02115 and 02116.

2.4 ACCESSORIES

A. Concrete for Thrust Restraints: Concrete type specified in Section 03300.

PART 3 EXECUTION

3.1 GENERAL

A. The Contractor shall furnish all labor, materials and equipment as required to construct the water meter station, complete, as described herein, and as shown on the drawings.

B. All work shall be done according to the current adopted plumbing codes, and to manufacturer's written instructions and recommendations.

C. The Contractor shall test the station to assure proper operation.

3.2 EXAMINATION

A. Verify that design drawings conform to project conditions.

B. Verify that water main size, location, and invert are as indicated.

3.3 PREPARATION

A. Cut pipe ends square, ream pipe ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or mechanical joints.

3.4 EXCAVATING

A. Excavating for the meter station shall be done to ensure proper grades and alignment as shown on the drawings.

B. See Section 02112 and Sections 02115 and 02116 for additional requirements.

C. Hand trim excavation for accurate construction or placement of concrete vault to elevations indicated.

D. Backfill around structure with backfill material, tamp in place and compact to required densities.

3.5 CONSTRUCTION - VALVE VAULT

A. Construct the vault for the meter station at the location indicated on the drawings; in

accordance with the details shown on the drawings and as specified herein.

B. Earthwork shall be done in accordance with applicable requirements of Section 02115.

1. Foundation Material. Where native material encountered at the foundation depth is found to be unable to provide adequate structural support of the vault, or is determined to be moisture sensitive, the unsuitable material shall be removed and replaced by the appropriate granular borrow material as per the accepted drawings or under the direction of a licensed geotechnical engineer.
2. Excess Material. Unsatisfactory and excess excavated materials shall be removed from the work site and disposed of in a legally acceptable manner.

C. Concrete Work. Comply with requirements of Section 03300, for placement, consolidation, finishing and protection of cast-in-place concrete and reinforcement.

D. Precast Concrete Vault. Precast concrete vault shall be installed level and plumb, in accordance with the manufacturer's written instructions and recommendations.

E. Access Door: Install according to manufacturer’s written instructions and recommendations.

F. Miscellaneous Metal Work.

1. Miscellaneous metal work shall be fabricated and assembled in the shop to the greatest extent possible.
2. Miscellaneous metal work shall be erected in conformity with AISC Code of Standard Practice.

3.6 INSTALLATION - PLUMBING

A. All pipe, fittings, meters, valves, equipment and appurtenant items, together with supports and anchors, shall be installed as specified herein and as indicated on the drawings; in conformity with the currently adopted plumbing code.

B. Equipment shall be installed as shown on the drawings, and in accordance with accepted manufacturer's written instructions.

C. Strainers shall be installed upstream of all meters with a No. 4, 100 micron, screen.

D. All material and workmanship shall conform to applicable requirements of the currently adopted plumbing code.

E. Establish elevations of buried piping to ensure not less than four feet of cover over pipe; or as indicated on the drawings.

F. Install pipe to indicated elevation to within tolerance of one inches.

G. Install ductile iron piping and fittings to AWWA C600.

H. Install pipe to allow for expansion and contraction without stressing pipe or joints.

I. Install access fittings to permit disinfection of water system performed under Section 02415.

J. Set valves on concrete block.

K. After plumbing system has been installed and completed, it shall be tested and disinfected as specified herein; including an operating test for acceptance of the work. Tests shall be performed in the presence of the City Engineer or ~~his~~ their authorized representative.

3.7 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01400.

B. Pressure test water piping to 200 PSI for 2 hours (see section 02410).

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.8 OPERATIONAL TESTING

A. Provide City Engineer with seven days written notice of operational test of backflow preventer.

B. Test shall consist of the operation of the station for propose of checking operation and assuring of absence of leaks.

1. Repair pipe, fittings, valves, or connections which show evidence of leakage.

C. After all repairs or replacements have been made, repeat the above required test.

END OF SECTION

SECTION 02580

SECONDARY WATER SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Pipe and fittings for project water lines, to include secondary water lines.

B. Valves and appurtenant items.

C. Water Service Connections.

1.2 RELATED SECTIONS

A. Section 02112 - Trenching for Pipe Work: Excavating, bedding, backfilling and compacting.

B. Section 02115 - Excavation: Excavating for structures and appurtenant items.

C. Section 02116 - Fill and Backfill: Bedding and backfilling.

D. Section 02340 - Manholes and Covers.

E. Section 03300 - Cast-in-Place Concrete: Concrete for thrust restraints.

1.3 REFERENCES

A. ASTM D 3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.

B. ASTM D 3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.

C. AWWA C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water; American Water Works Association; (ANSI/AWWA C104/A21.4).

D. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; American Water Works Association; (ANSI/AWWA C105/A21.5).

E. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; American Water Works Association; (ANSI/AWWA C111/A21.11).

F. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast, for Water; American Water Works Association; (ANSI/AWWA C151/A21.51).

G. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; American Water Works Association.

H. AWWA C504 - Rubber Seated Butterfly Valves; American Water Works Association.

I. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 In. (50 mm) Through 24 In. (600 mm) NPS; American Water Works Association; (ANSI/AWWA C508/C508a).

J. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; American Water

Works Association; (ANSI/AWWA C509/C509a).

K. AWWA C515 - Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C515).

L. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances; American Water Works Association; (ANSI/AWWA C600).

M. ASTM D2774 - Standard Recommended Practice for Underground Installation of Thermoplastic Pressure Piping.

N. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 12 In., for Water Distribution; American Water Works Association; (ANSI/AWWA C900/C900a).

O. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 inch through 3 inch, for Water Service; American Water Works Association.

P. AWWA C906 - Polyethylene (PE) Pressure Pipe and Fittings, 4 inch through 63 inch, for Water Distribution; American Water Works Association.

Q. AWWA C200 - Steel Water Pipe Casing, 6-inches and larger as needed.

R. Use the latest issue of the above reference standards as of the date of the Project.

1.4 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Project Record Documents: Record actual locations of pipe lines, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with the City's requirements as described herein.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves in shipping containers with labeling in place.

PART 2 PRODUCTS

2.1 WATER PIPE

A. Ductile Iron Pipe: AWWA C151:

1. Fittings: Ductile iron, standard thickness.
2. Joints:
   a. Push-On Joints: AWWA C111, push-on type with rubber gasket.
   b. Mechanical Joints: AWWA C111, mechanical joint type with gasket, bolts, and

nuts.

c. Flange Joints: AWWA C110, flange type with gasket, bolts, and nuts.

3. Jackets: AWWA C105 polyethylene jacket with polyethelene tape; purple color.

B. PVC Pipe: AWWA C900, DR-18 for waterlines up to and including 24 inches in diameter:

1. Fittings: AWWA C111, cast iron.

C. Polyethylene Pipe: ASTM D 3035, for 200 psi pressure rating:

1. Fittings: AWWA C901, molded or fabricated.
2. Joints: Compression.

D. High Density Polyethylene Pipe: AWWA C906:

1. Material: PE 4710 High Density Polyethylene (HDPE) meeting ASTM D3350 cell classification of 445474C.
2. Pressure Class 200. DR 11
2.3. Fittings: AWWA C906, molded or fabricated; or mechanical joint ductile iron fittings.
3.4. Joints: Butt fusion.

E. Trace Wire: Number 14 gauge detectable conductor. Provide testing for continuity. Placed on all buried pipe.

F. Detector Tape: Purple plastic tape, imprinted with "PRESSURIZED IRRIGATION" in large letters. Placed on all buried pipe.

2.2 CASING PIPE MATERIALS

A. Jack and Bore Construction Method

A.1. Welded Steel Pipe: AWWA C 200, steel water pipe; diameter as indicated.

2. Casing Insulators: fusion coated steel casing insulators with 12-inch wide band and 2-inch wide glass reinforced plastic runners; Model C12G-2, manufactured by Pipeline Seal and Insulator, Inc.

3. Casing End Seals: flexible S-shaped seals fabricated on synthetic rubber with stainless steel bands and clamps; Model S Pull-On End Seals, manufactured by Pipeline Seal and Insulator, Inc.

B. Horizontal Directional Drilling Method:

1. High Density Polyethylene Pipe, AWWA C906, PE 4710

2. Diameter Ratio (DR): 17 or 11

B.3. Joints: Butt fused. Casing End Seals: flexible S-shaped seals fabricated on synthetic rubber with stainless steel bands and clamps; Model S Pull-On End Seals, manufactured by Pipeline Seal and Insulator, Inc. Casing Insulators: fusion coated steel casing insulators with 12-inch wide band and 2-inch wide glass reinforced plastic runners; Model C12G-2, manufactured by Pipeline Seal and Insulator, Inc.

~~. Casing End Seals: flexible S-shaped seals fabricated on synthetic rubber with stainless steel bands and clamps; Model S Pull-On End Seals, manufactured by Pipeline Seal and Insulator, Inc.~~

~~2.4~~2.3 VALVES

A. Valves: Manufacturer's name and pressure rating marked on valve body.

1. Jackets: AWWA C105 polyethylene jacket with polyethelene tape; purple color.

~~B. Gate Valves Up To 3 Inches:~~

~~0. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, IPS ends, and handwheel.~~

~~0. Product: Powell U.S. Bronze Gate Valves.~~

~~0. Substitutions: See Section 01600 - Product Requirements.~~

~~F.~~B. Gate Valves ~~3 Inches and Over~~:

1. AWWA C500, iron body, bronze trim, non-rising stem with square nut, single wedge, mechanical joint or flanged ends as indicated, and cast iron valve box.
2. AWWA C509, iron body, bronze trim, non-rising stem with square nut, single wedge, resilient seat, mechanical joint or flanged ends as indicated, and cast iron valve box.
3. AWWA C515, ductile iron, bronze trim, non-rising stem with square operating nut, single ductile iron wedge, mechanical joint or flanged ends as indicated, and cast iron valve box.
4. Product: Mueller Resilient Wedge Gate Valves ~~or Resilient Seat Gate Valves~~, or American Flow Control Series 2500 Resilient Seat Gate Valves; with appropriate type Pacific States Cast Iron Valve Box.

~~G.~~C. Ball Valves Up To 2 Inches:

1. Brass body, Teflon coated brass ball, rubber seats and stem seals, Tee stem pre-drilled for control rod, compression inlet end, compression outlet, with control rod, valve key, and extension box.

~~H.~~D. ~~Swing~~ Check Valves From 2 Inches to 24 Inches:

1. AWWA C508, iron body, bronze trim, 45 degree swing disc, renewable disc and seat, flanged ends.
2. Product: ~~Mueller~~ Valmatic Surge Buster Swing-Type Check Valve.

~~I. Butterfly Valves 12" and larger:~~

~~0. AWWA C504, iron body, bronze disc, resilient replacement seat, mechanical joint or flanged ends as indicated, manual worm gear operator, and cast iron valve box where required.~~

~~0. Underground manual operators shall be totally enclosed, factory grease packed and sealed, bronze worm gear operators with self-locking gearing; stops shall be provided to prevent over travel of valve disc.~~

0. Valve operator shall be geared to close valves slowly. Number of turns to close valve from full open position shall be: 32 turns for 10-inch and smaller valves, 52 turns for 12-inch thru 16-inch valves, and 76 turns for 18-inch thru 24-inch valves. Closing times for larger valves must first be accepted by the City Engineer.

0. Product: Mueller "Lineseal III" Butterfly Valve with appropriate type Pacific States Cast Iron Valve Box.

N.E. Corporation Stops: shall be type for connecting to copper or polyethylene pipe; Mueller No. H-15000, for up to 2-inch service line.

O.F. Air Release Valves: shall be combination air release valves; APCO Combination Air Release Valves, of size indicated on the drawings.

P.G. Blow-Off Hydrant: shall be Non-Freezing Blow-Off Assembly.

2.52.4 SECONDARY WATER CONNECTIONS

A. Secondary water connections shall be constructed as indicated on the drawings.

B. Connections shall include meter boxes, meters, valve boxes, stop & water valves, and all appurtenant items, as indicated on the drawings.

2.62.5 BEDDING AND COVER MATERIALS

A. Bedding: As specified in Sections 02112 and 02116.

B. Backfill: As specified in Sections 02112 and 02116.

2.72.6 ACCESSORIES

A. Service Clamps: shall be bronze, double-strap type; Mueller No. H-16134, for up to 2 inch service lines.

B. Concrete for Thrust Restraints: Concrete type specified in Section 03300.

C. Manhole and Cover: Refer to Section 02340.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that water main and main line tee size, location, and invert are as indicated.

3.2 PREPARATION

A. Cut pipe ends square, ream pipe ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or mechanical joints.

3.3 TRENCHING

A. See Section 02112 and Sections 02115 and 02116 for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide required area of thrust restraint bearing on subsoil as indicated on the drawings.

D. Backfill around sides and to top of pipe with backfill material, tamp in place and compact, then complete backfilling.

3.4 INSTALLATION - PIPE

A. Establish elevations of buried piping to ensure not less than 36 inches of cover over pipe; or as indicated on the drawings.

B. Install pipe to indicated elevation to within tolerance of one inch.

C. Install ductile iron piping and fittings to AWWA C600.

D. Install PVC pressure pipe and fittings to ASTM D2774.

E. Install pipe lines to line and grade indicated.

F. Install pipe to allow for expansion and contraction without stressing pipe or joints.

G. Slope water pipe and position drains at low points.

H. Install trace wire and detector tape above all pipe; coordinate with Section 02112.

3.5 INSTALLATION - CASING PIPES

A. See Sections 02115 and 02116 for structural excavation and fill and backfill; and for additional requirements.

B. Install casing pipes by jacking process where indicated.

C. Install casing pipes at the line and grade as required to allow carrier pipes to be installed within the casing pipes at the design line and grade, as indicated on the drawings.

D. Place casing insulators on carrier pipes to properly center and position carrier pipe inside the casing pipes; space insulators as recommended by the pipe manufacturer.

E. Carrier Pipe inside of casing shall have restrain joints.

F. Seal each end of casing with appropriate size flexible end seals; install according to manufacturer's instructions and recommendations.

G. Seal bore holes at each end, around periphery of casing, with grout, impervious clay or brick masonry.

H. Contractor shall be solely responsible for the accuracy, safety and adequacy of construction methods and procedures for installing casing pipes, and for any damage which may result from their failure. All operations of the Contractor for installation of casing pipes shall be subject to acceptance by the agency having jurisdiction over the item being crossed.

I. Contractor shall enter any agreement with, and furnish any and all indemnity and other bonds

that may be required by, the agency listed above, for their protection against injury and interference with flow of water caused by the operations of the Contractor.

J. Contractor shall secure required permission from the agency listed above before commencing with the installation of casing pipes and related work along and across the respective areas.

3.6 INSTALLATION - VALVES

A. Set valves on concrete block.

B. Center and plumb valve box over valve operating nut. Set box cover flush with finished grade.

3.7 INSTALLATION - AIR RELEASE STATIONS

A. Locate air release stations as indicated on the construction drawings.

B. Set air valve and piping plumb according to manufacturer's written instructions and recommendations; set vault plumb on solid foundation.

C. Set top of valve box to grade, with cover matching finish grade.

3.8 SERVICE CONNECTIONS

A. Provide water service lines, as indicated on the drawings. Residential service lines shall include stop & waste valves with valve boxes; meter boxes, valve and appurtenant items; and valve boxes with ball valve; and all appurtenant work. The Developer is to provide meter(s) for multi-family; institutional; and commercial service connections.

B. Water service lines shall extend to locations designated by the City Engineer, which will be near property lines of property being served and inside side-lot PUE, as indicated.

C. All pipe, fittings and valves shall conform to the specifications found elsewhere in this Section.

D. Pipe, fittings and valves shall be installed as described herein.

E. Service lines shall be installed at uniform grades and alignments; and shall be free of low spots or adverse grades.

F. Service lines shall be cleaned, flushed and tested in accordance with applicable requirements of these specifications.

3.9 CONNECTIONS TO EXISTING WATER LINES

A. Connection to existing water lines shall be made where and as indicated on the drawings. The sizes of pipe, fittings, valves and appurtenant items required to make connection shall correspond to the sizes of existing pipe and of project pipe.

B. Excavate to existing pipe line at point of connection; determine actual conditions of existing pipe and all fittings and appurtenant items required to make the connection; and have all materials needed on site prior to any shut down or cutting into existing pipe lines.

C. Connections that involve cutting into existing pipe lines include: cutting and removing sections of existing pipe and fittings as required; cleaning and preparing ends of existing pipe

as required for connection; furnishing and installing all new pipe, fittings and valves required to make the connection of project pipe to the existing pipe as indicated; and all appurtenant work required to complete the connection.

D. Connection into existing pipe lines under pressure include: furnishing and installing mechanical joint tapping sleeve of the appropriate size on the existing pipe at point of connection; furnishing and installing tapping valve, with valve box, on sleeve; tapping existing pipe with drilling machine and equipment, without interrupting flow in existing pipe line; and all appurtenant work required to complete the connection.

E. Connection to existing pipe line shall be made at such times and within the time limits and according to the directions as agreed to between the Contractor and the City Engineer or City Inspector.

F. Cut and plug existing pipe lines where indicated on the drawing. Excavate as required to locate existing pipe lines to be abandoned in place; cut the existing pipe, as required; and install permanent plug in end of pipe to be abandoned.

3.10 CONNECTIONS TO DRINKING WATER LINES

A. Connections of secondary water systems to drinking water systems shall be done as indicated on the drawings and as described in Section 02586 BACKFLOW PREVENTER STATION.

B. Connections of secondary water services to drinking water systems shall be done as indicated on the drawings and as described in Section 02587 SERVICE WATER BACKFLOW PREVENTER STATION.

3.11 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01400 and 02112.

B. Pressure test water piping to 200 psi for 2 hours.

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to the City.

END OF SECTION

SECTION 02586

BACKFLOW PREVENTER STATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Backflow preventer stations, complete, including:

1. Backflow preventer valves.
2. Pipe, fittings, valves, and appurtenant items.

B. Station testing.

1.2 RELATED SECTIONS

A. Section 02112 - Trenching for Pipe Work: Excavating, pipe bedding, backfilling and compacting.

B. Section 02115 - Excavation: Excavating for structures and appurtenant items.

C. Section 02116 - Fill and Backfill: Pipe bedding and excavation backfilling.

D. Section 03300 - Cast-in-Place Concrete: Concrete for structures and thrust blocks.

1.3 REFERENCES

A. ASTM A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

B. ASTM A 234 - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.

C. AWWA C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water; American Water Works Association; (ANSI/AWWA C104/A21.4).

D. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; American Water Works Association; (ANSI/AWWA C105/A21.5).

E. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; American Water Works Association; (ANSI/AWWA C111/A21.11).

F. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast, for Water; American Water Works Association; (ANSI/AWWA C151/A21.51).

G. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; American Water Works Association.

H. AWWA C504 - Rubber Seated Butterfly Valves; American Water Works Association.

I. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 In. (50 mm) Through 24 In. (600 mm) NPS; American Water Works Association; (ANSI/AWWA C508/C508a).

J. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C509/C509a).

K. AWWA C515 - Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C515).

L. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances; American Water Works Association; (ANSI/AWWA C600).

M. Use the latest issue of the above reference standards as of the date of the Project.

1.4 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, controllers, sprinkler heads, and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Project Record Documents: Record actual locations of pipe lines, valves, controllers, sprinkler heads, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with City's requirements as described herein.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves and appurtenant items in shipping containers with labeling in place.

1.7 OPERATING AND MAINTENANCE DATA

A. Provide instructions covering full operation, care and maintenance of backflow preventer valves; and manufacturer's parts catalog. Information shall be included in the manual for operation and maintenance of the backflow preventer station.

B. Instruct Owner's designated maintenance personnel in the proper operation of the valves.

C. Submit 3 copies of written instructions recommending procedures to be established by the City Engineer for the maintenance of the valves from year to year.

1. Submit prior to expiration of required one year guarantee period.
2. Provide information in the manuals that include the following:
    a. written index near front of Manual listing location in the Manual of all emergency data regarding the installation;
    b. complete nomenclature of all replaceable parts, their part numbers, current cost, and name and address of the nearest vendor of replacement parts; and
    c. copy of all guarantees and warranties issued on the installation showing all dates of expiration.

PART 2 PRODUCTS

2.1 PIPE AND FITTINGS

A. Ductile Iron Pipe: AWWA C151:

1. Fittings: Ductile iron, standard thickness.
2. Joints:
   a. Push-On Joints: AWWA C111, push-on type with rubber gasket.
   b. Mechanical Joints: AWWA C111, mechanical joint type with gasket, bolts, and nuts.
   c. Flange Joints: AWWA C110, flange type with gasket, bolts, and nuts.
3. Jackets: AWWA C105 polyethylene jacket.

B. Steel Pipe: ASTM A 53:

1. Fittings: ASTM A 47.

2.2 VALVES

A. Valves: Manufacturer's name and pressure rating marked on valve body.

~~B. Gate Valves Up To 3 Inches:~~

~~0. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, IPS ends, and handwheel.~~

~~0. Product: Powell U.S. Bronze Gate Valves.~~

~~0. Substitutions: See Section 01600 - Product Requirements.~~

~~F.~~B. Gate Valves ~~3 Inches and Over~~:

1. AWWA C500, iron body, bronze trim, non-rising stem with square nut, single wedge, mechanical joint or flanged ends as indicated, and cast iron valve box.
2. AWWA C509, iron body, bronze trim, non-rising stem with square nut, single wedge, resilient seat, mechanical joint or flanged ends as indicated, and cast iron valve box.
3. AWWA C515, ductile iron, bronze trim, non-rising stem with square operating nut, single ductile iron wedge, mechanical joint or flanged ends as indicated, and cast iron valve box.
4. Product: Mueller Resilient Wedge Gate Valves ~~or Resilient Seat Gate Valves,~~ or American Flow Control Series 2500 Resilient Seat Gate Valves; with appropriate type Pacific States Cast Iron Valve Box.

~~G.~~C. Ball Valves Up To 2 Inches:

1. Brass body, teflon coated brass ball, rubber seats and stem seals, Tee stem pre-drilled for control rod, compression inlet end, compression outlet, with control rod, valve key, and extension box.

~~H.~~D. Swing Check Valves From 2 Inches to 24 Inches:

1. AWWA C508, iron body, bronze trim, 45 degree swing disc, renewable disc and seat, flanged ends.
2. Product: Mueller Swing-Type Check Valve.

~~I. Butterfly Valves From 2 Inches to 24 Inches:~~

~~0. AWWA C504, iron body, bronze disc, resilient replacement seat, mechanical joint or flanged ends as indicated, manual worm gear operator, and cast iron valve box where required.~~

~~0. Underground manual operators shall be totally enclosed, factory grease packed and sealed, bronze worm gear operators with self-locking gearing; stops shall be provided to prevent over travel of valve disc.~~

~~0. Valve operator shall be geared to close valves slowly. Number of turns to close valve from full open position shall be: 32 turns for 10-inch and smaller valves, 52 turns for 12-inch thru 16-inch valves, and 76 turns for 18-inch thru 24-inch valves. Closing times for larger valves must first be accepted by the City Engineer.~~

~~0. Product: Mueller "Lineseal III" Butterfly Valve with appropriate type Pacific States Cast Iron Valve Box.~~

~~N.~~E. Corporation Stops: shall be type for connecting to copper or polyethylene pipe; Mueller No. H- 15000, for up to 2-inch service line.

~~O.~~F. Air Release Valves: shall be combination air release valves; APCO Combination Air Release Valves, of size indicated on the drawings.

2.3 BACKFLOW PREVENTER

A. The backflow preventer shall be a reduced pressure type valve.

1. The backflow preventer shall be bronze for 6-inch and smaller valves, and epoxy coated ductile iron for 8-inch and larger valves.
2. The backflow preventer shall consist of two independently acting, spring-loaded check valves with a differential pressure relief valve located between the check valves.
3. The backflow preventer shall include inlet and outlet shutoff valves; and four test cocks, three on the backflow preventer valve bodies and one on the inlet shutoff valve.

B. The backflow preventers shall be of the appropriate size and type, as manufactured by Febco or Watts.

2.4 MISCELLANEOUS METAL WORK

A. Miscellaneous metal work shall be provided as indicated on the drawings, as required to complete the Station.

2.5 PAINTING

A. All exposed pipe, valves, fittings, and metal work for the station shall be painted.

1. Painting shall consist of either:
   a. 4 coats of alkyd paint, Painting System II (Steel Structural Painting Council - Specification No. 2);

b. 4 coats of phenolic paint, Painting System III (S. S. P. C. - Specification No 3).

2. Painting shall include surface preparation, pretreatment, primer coat, inter-mediate coats, and finish coat, as specified; with total dry film thickness not less than 4.0 mils.

3. Aluminum surfaces which will be in contact with concrete after erection shall be coated with bituminous mastic coating, SSPC-Paint 12, prior to erection.

2.6 MISCELLANEOUS ITEMS

A. Miscellaneous appurtenant items shall be as indicated on the drawings or as required to complete the station.

PART 3 EXECUTION

3.1 GENERAL

A. The Contractor shall furnish all labor, materials and equipment as required to construct the backflow preventer station, complete, as described herein and as shown on the drawings.

B. The backflow preventer station shall be constructed on the supply line to the sprinkling system, as shown, where the supply line is connected to a drinking water line.

C. All work shall be done according to the currently adopted plumbing codes, and to manufacturer's written instructions and recommendations.

D. The Contractor shall test the station to assure proper operation.

3.2 EXAMINATION

A. Verify that design drawings conform to project conditions.

B. Verify that water line sizes and locations are as indicated on the drawings.

3.3 PREPARATION

A. Cut pipe ends square, ream pipe ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside of pipes before assembly.

C. Prepare pipe connections to equipment with flanges, mechanical joints or mechanical couplings.

3.4 EXCAVATING

A. Excavating for the backflow preventer station shall be done to ensure proper grades and alignment as shown on the drawings.

B. See Section 02112 and Sections 02115 and 02116 for additional requirements.

C. Hand trim excavation for accurate placement of pipe to elevations indicated.

D. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide required area of thrust restraint bearing on subsoil as indicated on the drawings.

E. Backfill around sides and to top of pipe zone with pipe bedding material, tamp in place and compact to required density.

F. Backfill trench from top of pipe zone to top of trench with trench backfill material, tamp in place and compact to required density.

3.5 INSTALLATION - PIPE

A. Establish elevations of buried piping to ensure not less than 2 feet of cover over secondary water lines and 4 feet over drinking water lines; or as indicated on the drawings.

B. Install pipe to indicated elevation to within tolerance of one inches.

C. Install ductile iron piping and fittings to AWWA C600.

D. Install pipe lines to the line and grade indicated.

E. Install pipe to allow for expansion and contraction without stressing pipe or joints.

F. Slope water pipe and position drains at low points.

3.6 INSTALLATION – VALVES

A. Set valves level and plumb, as indicated.

B. Install adjustable pipe supports under each valve.

C. Reduced pressure (RP) backflow preventer assemblies shall be installed as indicated on the drawings and as described herein.

1. The assemblies shall be installed in a horizontal position only.
2. The assemblies shall be maintained as an intact assembly.
3. The bottom of the RP assembly shall be minimum of 12-inches above the ground or floor level; and shall not be closer than 12 inches to any wall, ceiling or other encumbrance. Assemblies shall be readily accessible for testing, repair and maintenance.
4. RPZ assemblies shall NOT be installed in a pit.
5. The relief valve on the RP assembly shall not be directly connected to any waste disposal line, including sanitary sewer, storm drains or vents.
6. RP assemblies shall be protected from freezing and vandalism where applicable.

3.7 CONCRETE WORK

A. Construct a concrete slab for the station over a compacted gravel base, as shown on the drawing.

B. Concrete work and reinforcing shall conform to the requirements of Section 03300 of these specifications.

3.8 MISCELLANEOUS ITEMS

A. Miscellaneous appurtenant items shall be furnished and installed as indicated on the drawings or as required to complete the station.

3.9 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01400.

B. Pressure test water piping to 200 PSI for 2 hours.

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to City.

3.10 OPERATIONAL TESTING

A. Provide the City Engineer or City Inspector with seven days written notice before operational test of backflow preventer. Test must be completed by a certified backflow technician.

B. Test shall consist of the operation of the station for propose of checking operation and assuring of absence of leaks.

1. Repair pipe, fittings, valves, or connections which show evidence of leakage.

C. After all repairs or replacements have been made and accepted by the City Engineer or City Inspector, repeat the above required test.

END OF SECTION

SECTION 02641

BITUMINOUS PAVING

The change is on the last page of this section (page 16)

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Bituminous paving for new surfaces.

B. Bituminous paving for restoration of bituminous surfaces.

C. Bituminous paving for overlay.

1.2 RELATED SECTIONS

A. Section 01300 – Administrative Requirements

B. Section 01400 - Quality Requirements.

C. Section 02100 – Roadway and General Earthwork.

D. Section 02116 - Fill and Backfill: Compacted subgrade for paving.

E. Section 02621- Gravel Road Base Course: Gravel road base course.

1.3 REFERENCES

A. AASHTO M 303 – Lime for Asphalt Mixtures

B. AASHTO R 35 – Superpave Volumetric Design for Hot-Mix Asphalt

C. AASHTO T 19 – Bulk Density (“Unit Weight”) and Voids in Aggregate

D. AASHTO T 89 – Determining the Liquid Limit of Soils

E. AASHTO T 90 – Determining the Plastic Limit and Plasticity Index of Soils

F. AASHTO T 96 – Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

G. AASHTO T 104 – Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate

H. AASHTO T 176 – Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test

I. AASHTO T 195 – Determining Degree of Particle Coating of Asphalt Mixtures

J. AASHTO T 209 – Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures

K. AASHTO T 255 – Total Evaporable Moisture Content of Aggregate by Drying

L. AASHTO T 304 – Uncompacted Void Content of Fine Aggregate

M. AASHTO T 324 – Hamburg Wheel-Track Testing of Compacted Hot-Mix Asphalt (HMA)

N. AASHTO T 335 – Determining the Percentage of Fracture in Coarse Aggregate

O. APWA Standard Specifications – 2012 Edition

P. Asphalt Institute Manual SP-2: Superpave Mix Design

Q. ASTM D 4791 – Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

R. UDOT Quality Management Plan 514: Hot Mix Asphalt (latest edition as of date of project)

S. UDOT Standard Specifications (latest edition as of date of project)

1.4 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures

B. Volumetric Mix Design as per Article 2.02 D.

C. Verification of current UDOT HMA Mix Plant certification as per Article 1.05 B.

D. Verification of Laboratory Accreditation and Technician Certification as per Article 1.05 D.

E. Daily Plant Production records and Quality Control Data as per Article 1.05 E and Article 1.06 A.

F. Cold weather paving plan as per Article 1.09 A.2.

1.5 QUALITY ASSURANCE

A. Perform Mix Design and Quality Control work in accordance with Section 32 12 05 of the APWA Standard Specifications unless otherwise directed within this specification.

B. HMA Mixing Plant: Use UDOT 514 QMP certified Asphalt Mix Plant.

1. Submit plant certification and lab accreditation documentation with mix design.

C. Obtain materials from same source throughout or submit new mix design.

D. Independent Laboratory: Use AMRL certified laboratory and WAQTC/UDOT TTQP certified technicians.

1. Submit lab accreditation documentation with mix design
2. Submit field technician certification documentation at least 5 working days before paving

E. Submit daily plant production records and Quality Control data within 1 working day after completion of each day of paving.

1.6 QUALITY CONTROL AND QUALITY DEMONSTRATION

A. Quality Control is performed by Contractor or ~~his~~ their representative. Perform QC sampling and testing of material in accordance with Section 01400 - Quality Requirements.

1. Submit QC data and plant daily production summary to the City at least 24 hours prior to the start of paving subsequent lots.
    a. Include component percentages and totalized quantities for the individual mix run for the following:
        i. Asphalt Binder
        ii. All aggregates, including RAP
        iii. Anti-Strip Ingredient
        iv. Water

B. A lot equals the number of tons of HMA placed during each production day.

C. Gradation and asphalt binder content

1. Gradation and Binder Content samples may be post-paver samples from the grade, truck samples from the plant or windrow samples.
2. Evaluate a lot on the average of all test results for the lot.
    a. Take at least one gradation and binder content sample for each 500 tons, or portion thereof.
3. Perform and report to the City Engineer gradation and asphalt binder content testing.
4. Lot is acceptable for Gradation/Asphalt Binder Content when test results for gradation and binder content are within the limits of Table 1.

D. Mix Volumetrics

1. Take one volumetric verification sample per 500 tons of mix, or fraction thereof.
    a. Determine mix maximum specific gravity.
    b. Compact in accordance with mix design parameters.
2. Calculate and report Effective Asphalt Content (by Volume), Air Void Content, VMA, VFA and Dust to Binder Ratio for each sample taken.

E. Density and Thickness Quality Demonstration

1. Demonstrate lot density and thickness based on the test results of 4 random density/thickness cores per lot.
    a. Random location is based on use of random number table, generator or other objective measure to establish both station and off-set for each sample.
    b. Density and thickness may be evaluated in nom-destructive formats. Obtain written permission from the City for non-destructive evaluation prior paving.
        i. Density is based on documented summary of results of 10 **randomly** located nuclear density tests using **core-correlated gauge specific to this mix.**
            (a). Submit random density locations to the City Engineer prior to paving.
            (b). One nuclear density test is the average of two determination of at least 1 minute, taken at right angles to each other over the same location.
        ii. Thickness is based on documented summary of minimum 10 random thickness checks with a depth probe during compaction efforts or ground penetrating radar after compaction efforts, including any corrective actions taken.

c. For lift thicknesses less than 2", use non-destructive format as detailed above.

2. Contractor obtains cores from random locations within two days after the pavement is placed.
   a. Move transversely to a point 1 ft from the edge of the pavement for In-place density if the random location for coring falls within 1 ft of the edge of the overall pavement section (outer part of shoulders).
   b. Fill core holes with HMA or high AC content cold mix and compact.
   c. Begin testing the cores within 24 hours for density acceptance.
3. Lot is acceptable for density when test results are within the limits of Table 1.
4. Lot is acceptable for thickness when:
   a. The average thickness of the lot is not more than ¼ inch less than the total thickness specified.
   b. No individual core shows a deficient thickness of more than ⅜ inch.
5. Deficient Thickness: Place additional material where lots are deficient in thickness.
   a. Use a minimum compacted lift of 3 times the nominal maximum aggregate size.

Table 1: Quality Control Acceptance Limits Gradation, Binder Content, Density

Parameter	Acceptable Limits
½ inch sieve for ¾ inch HMA ⅜ inch sieve for ½ inch HMA (percent passing by weight)	Lot Average*: Target Value 3.0% Individual Test: Target Value 6.0%
No. 8 sieve (percent passing by weight)	Lot Average*: Target Value 2.5% Individual Test: Target Value 5.0%
No. 50 sieve (percent passing by weight)	Lot Average*: Target Value 2.0% Individual Test: Target Value 3.0%
No. 200 sieve (percent passing by weight)	Lot Average*: Target Value 1.0% Individual Test: Target Value 2.0%
Total Asphalt Binder Content	Lot Average*: Target Value 0.2% Individual Test: Target Value 0.4%
Density Target Value: 93.5 percent of Mix Design Maximum Specific Gravity (Rice) (for design overlay thickness < 1.5" target is 92.5% of Rice)	Lot Average*: Target Value 2.0% Individual Test: Target Value 4.0%

* Lot Average not applicable to lots with only 1 test. Use Individual Test limits when evaluating lots with only 1 test.

1.7 ACCEPTANCE

A. The City will make acceptance decisions for all projects. The City may accept or reject a project if it is not up to the specifications included herein.

1. Project Definitions
   a. Capital Projects: Projects where City has contracted directly with the General Contractor for construction of the roadway.

b. Non-Capital Projects: All other projects, including Development, Permit and Utility work.

2. Acceptance Practices

a. For Capital projects, the City, or its representative, will perform testing for gradation, asphalt binder content, density, thickness and smoothness on samples taken by the contractor in the presence of the City or its representative.

i. Testing will be performed by an AMRL certified laboratory and WAQTC/UDOT TTQP certified technicians.

ii. For Capital projects with total tonnages equal to or larger than 1000 tons, the City will accept material based on Articles 1.07 B through 1.07 F. Projects less 1000 tons will be accepted based on Table 1 limits.

b. For the Non-Capital projects, the City may accept the lot based on results of the quality control test results and plant production records defined in Article 1.06.

i. The City will reject the lot if the Contractor QC data for density, gradation or binder content is outside the limits of Table 1.

ii. The City may perform partial or full acceptance testing on non-Capital projects in accordance with Articles 1.07B through 1.07E, Article 1.07H, and Article 1.07I.

(a). The City will reject the lot if the Acceptance data is outside the limits of Table 1, if calculated PT is less than 80%, or if True-Elevation tolerance of Article 7H is not met.

(i) 80% limit for PT is not applicable for small projects with total tonnages less than 1000 tons.

B. A lot equals the number of tons of HMA placed during each production day.

C. Gradation and asphalt binder content

1. The City Engineer will evaluate a lot on the test results of four samples with the following exceptions:

a. Compute disincentive using the test results from three samples if only three samples can be taken for the production day.

b. Add the lot to the next day's production if three random samples cannot be taken.

c. Add the lot to the previous day's production for the final day's production if three random samples cannot be taken.

d. The lot may be increased to include up to three production days when agreed upon in advance by both the Contractor and City Engineer when less than 900 tons are anticipated per production day.

2. Take samples at locations directed by the City Engineer or their representative. The City Engineer will inform the Contractor of the time and place of sampling not more than 15 minutes before the sampling.

a. The City takes immediate possession of the sample(s).

D. Mix Volumetrics

1. In conjunction with the gradation and binder content samples, the City will test for, calculate and report Air Void Content, VMA, VFA and Dust to Binder Ratio.

a. Laboratory compaction in accordance with mix design parameters.

b. Calculations will be based on sample maximum specific gravity.

E. Density and Thickness

1. Density Sampling and Testing

   a. For paving areas not containing paving Fabric: Contractor obtains cores within two days after the pavement is placed.

      i. The City Engineer will mark coring location for in-place density and joint density cores.
      ii. Move transversely to a point 1 foot from the edge of the pavement for in-place density if the random location for coring falls within 1 foot of the edge of the overall pavement section (outer part of shoulders).
      iii. Fill core holes with HMA or high AC content cold mix and compact.
      iv. The City Engineer will witness the coring operation, take possession of the cores immediately, and begin testing the cores for density acceptance.

   b. For paving areas with paving Fabric, the owner will perform density testing with a core- correlated nuclear gauge instead of cores.

2. Density Requirements

   a. The limits for in-place density are in accordance with Table 3.
   b. Use the average of the Maximum Specific Gravity tests for each lot.

3. Thickness Requirements

   a. The City will accept a lot for thickness when:

      i. The average thickness of all sub-lots is not more than 1/4-inch greater, nor 1/4-inch less than the total thickness specified.
      ii. No individual sub-lot shows a deficient thickness of more than 3/8-inch.

   b. Excess Thickness: The City Engineer may allow excess thickness to remain in place or may order its removal.

      i. For excess material left in place on unit price contracts, the City will not pay for any material above the upper thickness tolerance.

   c. Deficient Thickness: Place additional material where lots or sub-lots are deficient in thickness.

      i. Use Minimum compacted lift of 3 times the nominal maximum aggregate size.

   d. Thickness tolerances established above do not apply to leveling courses. Check final surfaces in stage construction.
   e. Thickness acceptance for thin lift projects less than 2 inches consists of checking thickness regularly with a depth probe during compaction efforts and taking corrective action as necessary.

F. For Capital Projects, the City will apply Disincentives for Gradation/Asphalt Content and In-Place Density. The City Engineer will compute Disincentive for each lot.

1. Compute disincentive for Gradation/Asphalt Binder and In-place Density according to Table 2.
2. Base the disincentive on Percent within Limit (PT) computation using Tables 3, 4, and 5.

   a. Evaluate with the appropriate number of tests “n” in Table 4.

3. Use lowest single value combined for gradation (each of the sieves) and asphalt binder content for calculating the gradation/asphalt binder content disincentive.
4. Use Table 5 to determine PT for in-place density.

Tables 2: Disincentive for Gradation, Asphalt Binder Content, and Density	
PT Based on Min. Four Samples	Disincentive (Dollars/Ton)
> 88	0.00
84-87	-0.26
80-83	-0.60
76-79	-0.93
72-75	-1.27
68-71	-1.60
64-67	-1.93
60-63	-2.27
<60	Reject

Tables 3: Upper and Lower Limit Determination	
Parameter	UL and LL
½ inch sieve for ¾ inch HMA ⅜ inch sieve for ½ inch HMA	Target Value 6.0%
No. 8 sieve	Target Value 5.0%
No. 50 sieve	Target Value 3.0%
No. 200 sieve	Target Value 2.0%
Asphalt Binder Content	Target Value 0.35%
Density	Lower Limit: Target Value - 2.0% Upper Limit: Target Value + 3.0%

Tables 4: Quality Index Values for Estimating Percent Within Limits										
PU/PL	**n=3**	**n=4**	**n=5**	**n=6**	**n=7**	**N=8**	**n=10**	**n=12**	**n=15**	**n=20**
100	1.16	1.50	1.75	1.91	2.06	2.15	2.29	2.35	2.47	2.56
99	1.16	1.47	1.68	1.79	1.89	1.95	2.04	2.09	2.14	2.19
98	1.15	1.44	1.61	1.70	1.77	1.80	1.86	1.89	1.93	1.97
97	1.15	1.41	1.55	1.62	1.67	1.69	1.74	1.77	1.80	1.82
96	1.15	1.38	1.49	1.55	1.59	1.61	1.64	1.66	1.69	1.70
95	1.14	1.35	1.45	1.49	1.52	1.54	1.56	1.57	1.59	1.61
94	1.13	1.32	1.40	1.44	1.46	1.47	1.49	1.50	1.51	1.53
93	1.12	1.29	1.36	1.38	1.40	1.41	1.43	1.43	1.44	1.46
92	1.11	1.26	1.31	1.33	1.35	1.36	1.37	1.37	1.38	1.39
91	1.10	1.23	1.27	1.29	1.30	1.31	1.32	1.32	1.32	1.33
90	1.09	1.20	1.23	1.24	1.25	1.25	1.26	1.26	1.27	1.27
89	1.08	1.17	1.20	1.21	1.21	1.21	1.21	1.21	1.22	1.22
88	1.07	1.14	1.16	1.17	1.17	1.17	1.17	1.17	1.17	1.17
87	1.06	1.11	1.12.	1.12	1.12	1.13	1.13	1.13	1.13	1.13
86	1.05	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
85	1.03	1.05	1.05	1.05	1.05	1.04	1.04	1.04	1.04	1.04
84	1.02	1.02	1.02	1.01	1.01	1.01	1.00	1.00	1.00	1.00
83	1.00	0.99	0.98	0.97	0.97	0.96	0.96	0.96	0.96	0.96
82	0.98	0.96	0.95	0.94	0.94	0.93	0.93	0.92	0.92	0.92
81	0.96	0.93	0.92	0.91	0.90	0.90	0.89	0.89	0.89	0.88
80	0.94	0.90	0.88	0.87	0.86	0.86	0.85	0.85	0.85	0.85
79	0.92	0.87	0.85	0.84	0.83	0.83	0.82	0.82	0.82	0.81
78	0.89	0.84	0.82	0.81	0.80	0.79	0.79	0.78	0.78	0.78
77	0.87	0.81	0.79	.0.78	0.77	0.76	0.76	0.75	0.75	0.75
76	0.84	0.78	0.76	0.75	0.74	0.73	0.72	0.72	0.72	0.72
75	0.82	0.75	0.73	0.72	0.71	0.70	0.69	0.69	0.69	0.68
74	0.79	0.72	0.70	0.68	0.67	0.67	0.66	0.66	0.66	0.65
73	0.77	0.69	0.67	0.65	0.64	0.64	0.62	0.62	0.62	0.62
72	0.74	0.66	0.64	0.62	0.61	0.61	0.60	0.59	0.59	0.59
71	0.71	0.63	0.60	0.59	0.58	0.58	0.57	0.56	0.56	0.56
70	0.68	0.60	0.58	0.56	0.55	0.55	0.54	0.54	0.54	0.53
69	0.65	0.57	0.55	0.54	0.53	0.52	0.51	0.51	0.51	0.50
68	0.62	0.54	0.52	0.51	0.50	0.50	0.48	0.48	0.48	0.48
67	0.59	0.51	0.49	0.48	0.47	0.47	0.46	0.45	0.45	0.45
66	0.56	0.48	0.46	0.45	0.44	0.44	0.43	0.42	0.42	0.42
65	0.53	0.45	0.43	0.42	0.41	0.41	0.40	0.40	0.40	0.39
64	0.49	0.42	0.40	0.39	0.38	0.38	0.37	0.37	0.37	0.37
63	0.46	0.39	0.37	0.36	0.35	0.35	0.35	0.34	0.34	0.34
62	0.43	0.36	0.34	0.33	0.33	0.33	0.32	0.31	0.31	0.31
61	0.39	0.33	0.31	0.30	0.30	0.30	0.29	0.29	0.29	0.28
60	0.36	0.30	0.28	0.27	0.26	0.26	0.25	0.25	0.25	0.25
<60	≤0.35	≤0.29	≤0.27	≤0.26	≤0.25	≤0.25	≤0.24	≤0.24	≤0.24	≤0.24

Enter table in the appropriate “number of tests” column and round down to the nearest value.

Table 5: Definitions, Abbreviations, and Formulas for Acceptance	
Term	Explanation
Target Value (TV)	The target values for gradation and asphalt binder content are given in the Contractor's volumetric mix design. See this Section article 1.4 for density target values.
Average (AVE)	The sum of the lot's test results for a measured characteristic divided by the number of test results–the arithmetic mean.
Sample Standard Deviations	The square root of the value formed by summing the squared difference between the individual test results of a measured characteristic and AVE, divided by the number of test results minus one.
Upper Limit (UL)	The value above the TV of each measured characteristic that defines the upper limit of acceptable production. (Table 3)
Lower Limit (LL)	The value below the TV of each measured characteristic that defines the lower limit of acceptable production (Table 3)
Upper Quality Index (QU)	QU = (UL - AVE)/s
Lower Quality Index (QL)	QL = (AVE - LL)/s
Percentage of Lot Within UL (PU)	Determined by entering Table 4 with QU.
Percentage of Lot Within LL (PL)	Determined by entering Table 4 with QL.
Total Percentage of Lot Within UL and LL (PT)	PT = (PU + PL) – 100
Disincentive	Determined by entering Table 2 with PT or PL.

All values for AVE, s, QU, and QL will be calculated to at least four decimal place accuracy, which will be carried through all further calculations. Rounding to lower accuracy is not allowed.

G. Rejected Lots: Rejected lots do not necessarily indicate bad material, rather insufficient data to perform proper acceptance. Submit an engineering analysis for all rejected lots.

1. Include in the analysis:
   a. A summary of the specific issues leading to rejection, including identification of any specific acceptance data being disputed.
   b. Justification for dispute of the specific acceptance data in question.
   c. An engineering evaluation of the expected performance of the pavement based on available project quality control or acceptance data other than acceptance data in question.
   d. Copies of all data supporting the engineering evaluation of expected performance.
   e. Summary of recommended changes to mitigate future occurrences of disputed results.
2. The City Engineer may allow a rejected lot to remain in place based on review and concurrence with engineering analysis.
   a. Capital Projects: A maximum of $25 per ton price reduction will be assessed. The City may adjust or remove the price reduction based on the results of the engineering analysis.
   b. Non-Capital Projects: No price reduction will be assessed. The City may require additional work by the contractor to mitigate concerns of any lot allowed to remain in place.

H. Variation from True Elevation: Construct final riding surface within 1/2 inch of plan elevation.

I. Smoothness

1. Limit all longitudinal and transverse pavement deviations to less than ⅛ inch from the lower edge of a 10-foot straightedge.
2. Meet smoothness requirements of Table 6.

Table 6: Roughness Tolerances

Speed Mph	Profile Roughness[d] (Inches/Mile), Maximum		Profile Deviation[c] Inches/25 feet
	IRI[a]	PI[b]	Maximum
Residential			
All Speeds	–	–	0.4
Arterials and Collectors			
0 to 30	120	50	0.4
31 to 45	90	35	0.4
45 +	70	21	0.3

(a) IRI (International Roughness Index), ASTM E 950. Use 1/4 car analysis.
(b) PI (Profile Index), ASTM E 1274. Use a zero blanking band.
(c) Profile deviation applies to bump and depression measurements.
(d) Evaluate PR lots based on average of two traces from each lot, in the direction of travel, approximately 2.5 feet from each edge of pass.

3. Smoothness is evaluated before the placement of preservation surfacing including: Thin Bonded Polymer Overlay, Microsurfacing, Slurry Seal, Bonded Wearing Course, Stone Matrix Asphalt or Chip Seal Coat.
4. Profile Roughness: Verify bumps and depressions are corrected so profile roughness index in each lot meets tolerance:
    a. Lot is 0.1 mile (528 feet long) for each paving pass. Add segments shorter than 250 feet to preceding lot. Treat partial segments longer than 250 feet as a lot.
    b. Perform trace on each paving pass, regardless of location in roadway.
        i. Exclude bridge decks from profile roughness evaluation. Profile deviation (bump) requirements still apply.
5. Profile Deviation: Verify “must grind” bumps and depressions are removed from the lot surface:
    a. Lot is area of total placement. No area is excluded.
    b. Begin traces 50 feet before edge of new pavement and end traces 50 feet after edge of new pavement. Areas (including the 50 feet end traces) exceeding profile deviation tolerances are “must grind” areas.
6. Correct all defects at no additional cost to the City.
    a. Correct defects across the entire width of the traffic lane or shoulder either by grinding or by surface replacement.
    b. Seal areas in HMA, and SMA that have been ground with a flush coat application.
        i. Use a CSS-1h, CSS-1, CQS-1, based on 2:1 dilution of emulsion concentrate (approximately 60% binder/40% water) to water.
        ii. Apply the emulsion at 0.11 ± 0.01 gal/yd2. Provide beginning and ending meter reading from applicator for application rate verification.

1.8 REGULATORY REQUIREMENTS

A. Conform to applicable City requirements for paving work on City streets.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Place asphalt mix when base/pavement surface and ambient temperatures are 50°F or higher.

1. Submit a cold-weather paving plan to the City for any work to be performed outside the above limits. Include modified procedures and practices to ensure proper compaction will be obtained.
2. The City determines and provides written acceptance if it is acceptable to place outside the above limits.

B. Do not place on surfaces that have standing water or are frozen.

PART 2 PRODUCTS

2.1 MATERIALS

A. Asphalt Binder: Use PG 64-28 conforming to APWA Standard Specifications Section 32 12 05 or UDOT Standards Specifications Section 02745.

B. Aggregate: Crusher processed virgin aggregate material consisting of crushed stone, gravel, or slag meeting Table 7.

1. Coarse aggregates
   a. Retained on No. 4 sieve
2. Fine aggregates
   a. Clean, hard grained, and angular
   b. Passing the No. 4 sieve

Table 7: Aggregate Properties – HMA			
Test Method	Test No.	Arterials and Collectors	Local streets
One Fractured Face	AASHTO T 335	95% minimum	90% minimum
Two Fractured Face	AASHTO T 335	90% minimum	80% minimum
Fine Aggregate Angularity	AASHTO T 304	45 minimum	
Flats or Elongates	ASTM D 4791, 3:1 ratio	20% maximum	
L.A. Wear	AASHTO T 96	35% maximum	
Sand Equivalent	AASHTO T 176 (Pre-wet method)	45 minimum	
Plasticity Index	AASHTO T 89 and T 90	Non-Plastic	
Unit Weight	AASHTO T 19	minimum 75 lb/cu ft	
Soundness (sodium sulfate)	AASHTO T 104	16% maximum loss with five cycles	
Clay Lumps and Friable Particles	AASHTO T 112	2% maximum	
Natural Fines	N/A	0%	

C. Meet gradation requirements in Table 8. Use ½" gradation unless specifically directed otherwise by the City Engineer.

Table 8: Aggregate Gradations (Percent Passing by Dry Weight of Aggregate)			
Sieve Size		¾ inch	½ inch
Control Sieves	1 inch	100.0	
	¾ inch	90.0 - 100.0	100.0
	½ inch	<90	90.0 – 100.0
	⅜ inch		<90
	No. 4	Provide target for Information Only	
	No. 8	23.0 - 49.0	28.0 - 58.0
	No. 16	Provide target for Information Only	
	No. 30		
	No. 50		
	No. 100		
	No. 200	2.0 - 8.0	– 10.0

D. Antistrip Agent: Hydrated Lime - AASHTO M 303, Type I in 3:1 slurry (water to lime) format.

E. Tack Coat: Homogeneous, Catonic Emulsified Asphalt, Grade CQS-1 or CQS-1h, conforming to Section 32 12 13.13 of APWA Standard Specifications.

2.2 ASPHALT PAVING MIXES AND MIX DESIGN

A. Perform Superpave Volumetric Mix Design according to Asphalt Institute Manual SP-2 and the following:

1. Comply with Table 9 and Table 10.
2. Use minimum 11.0% effective asphalt binder by volume of mix.

3. Incorporate hydrated lime as necessary to meet Hamburg Wheel Tracker Requirements.
4. Do not use mix designs more than 1 year old.

Table 9: Volumetric Design Gyrations				
Pavement Category	Compaction Parameters			Voids Filled with Asphalt (VFA) (%)
	$N_{initial}$ /% of G_{mm}*	N_{design} /% of G_{mm}*	N_{max} /% of G_{mm}*	
All Classes	7/ ≤ 90.5	75/ = 96.5	115/ ≤ 98	70 – 80

* G_{mm}: Theoretical maximum specific gravity of mix. Refer to AASHTO T 209.

Table 10: Volumetric Design Requirements	
HMA design mixing and compaction temperatures	As recommended by Binder Supplier, 325°F Maximum
Dust to Binder Ratio (by weight)	0.6 - 1.20 (Design) 0.6 - 1.40 (Production)
Voids in Mineral Aggregate (VMA) at N_{design} AASHTO R 35.9.2 using G_{sb} (dry) for virgin and recycled aggregates. Equation based on percent of total mix.	14.5% - 16.0% for ½ inch (report for information only – effective binder content and design air voids are primary design controls)
Hamburg Wheel Tracker AASHTO T 324, 50°C	Maximum 10 mm impression at 10,000 passes

B. Recycled Asphalt Pavement (RAP): Mix design shall contain 15% or less recycled asphalt binder from RAP by total weight of binder. Do not adjust virgin binder grade when adding RAP.

1. RAP aggregate is required to meet Table 7 with exception of Sand Equivalent

C. Submit proposed mix design of each class of mix for review at least 10 working days prior to beginning of work. Include the following.

1. Date of mix design.
2. Asphalt Binder source, type, chemical composition, and grade.
3. Effective and total binder target percentages, by weight **and by volume**, and calculated dust to effective binder ratio (by weight).
4. Compaction density at $N_{initial}$, N_{design}, and N_{max}.
5. Volumetric targets including air voids, voids in the mineral aggregate (VMA), and voids filled with Bituminous Binder (VFA).
6. Hamburg Wheel Tracker results and lime percentage
7. Target Grading Curve for aggregate, including all sieves listed in Table 9.
8. RAP properties including asphalt binder content and grade, and RAP percentage.
9. Aggregate source and physical properties as identified in Table 8. Test results shall not be older than 455 days from the date of submission.
10. 1Aggregate bulk and apparent specific gravities, percent absorption and blend percentage.
11. Optimum compaction temperature at the project site.

D. Warm Mix Asphalt

1. At the City's discretion, warm mix asphalt application based on foamed asphalt or surfactant based applications may be used.
2. In addition to meeting requirements of articles 2.02.A through 2.02.C above, include warm-mix process description and related modifications to laboratory testing procedures in submittal.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that compacted subgrade is dry and ready to support paving and imposed loads; and that the base course has been inspected and accepted by the City Inspector.

B. Perform redhead and string-line test, verify gradients and elevations of base are correct.

C. Locate, reference, and protect all utility covers, monuments, curb and gutter and other components and street fixtures affected by the paving operations.

D. Remove all moisture, dirt, sand, leaves, dust, mill remnants and other objectionable material from the prepared surface.

3.2 PREPARATION - TACK COAT

A. Apply tack coat with minimum 98% coverage.

B. Apply tack coat to all contact surfaces of curbs, gutters, existing pavement, manhole frames and other utility structures.

C. Apply tack coat to all longitudinal joints and between lifts.

D. Apply tack in accordance with Table 11, based on 2:1 dilution of emulsion concentrate (approximately 60% binder/40% water) to water. Provide beginning and ending meter reading from applicator for application rate verification.

Table 11: Minimum Tack Application Rates (gal/SY)	
Milled Surface	0.08
Existing HMA Surface	0.05
New HMA Surface (less than 48 hrs since placement)	0.03
Vertical and Contact Surfaces (Hand spray applications)	Minimum 98% Coverage

3.3 HMA PRODUCTION AND PLACING ASPHALT PAVEMENT

A. Dry aggregate material to an average moisture content of not more than 0.2 percent by weight. Mix uniformly; May be verified by AASHTO T 255. Adjust burners to avoid damage or soot contamination of the aggregate

B. Coat with asphalt binder 100 percent of the particles passing and 98 percent of the particles retained on the No. 4 sieve.

1. May be verified by AASHTO T 195.

2. Discontinue operation and make necessary corrections if material is not properly coated.

C. Maintain temperature of the HMA between identified limits for mixing and compaction as defined on Volumetric Mix Design Submittal.

1. The City Engineer will reject all materials heated over the identified limits.
2. Remove all material rejected by the City Engineer for overheating and dispose of in a legally acceptable manner.

3.4 CEASE PRODUCTION

A. Cease production when any two out of three consecutive lots meet one of the following criteria:

1. A net disincentive
2. Air voids at Ndes averaged for each lot are less than 2.5 or greater than 4.5 percent
3. Effective binder content averaged for each lot is not within Target Value ± 0.5 percent
4. Dust to binder Ratio exceeds limits in Table 11.

B. Submit a corrective action plan to the City Engineer before production continues indicating the changes in production procedures that will be implemented to correct the deficiencies.

3.5 PLACING ASPHALT PAVEMENT

A. Provide a compactable sloped edge adjacent to the next lane to be paved when full-width or Echelon paving is impractical and more than one pass is required. Echelon paving is the preferred method for constructing a longitudinal joint.

B. Adjust the production of the mixing plant and material delivery until a steady paver speed is maintained.

C. Offset longitudinal joints 6 to 12 inches in succeeding courses.

1. Place top course joint within 1 ft of the centerline or lane line.

D. Offset transverse construction joints at least 6 ft longitudinally.

E. Do not allow construction vehicles, general traffic, or rollers to pass over the uncompacted end or edge of freshly placed mix until the mat temperature drops to a point where damage or differential compaction will not occur.

F. Taper the end of a course subjected to traffic at approximately 50:1 (horizontal to vertical).

1. Remove the portion of the pass that contains the tapered end before placing fresh mix.

G. Use a motor grader, spreader box, or other City Engineer accepted spreading method for projects under 180 yd2, irregular areas, or for miscellaneous construction such as detours, sidewalks, and leveling courses.

H. Use a minimum compacted lift equal to 3 times the nominal maximum aggregate size.

I. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

J. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.6 CONTRACTOR INITIATED CHANGES IN MIX DESIGN

A. Changes in job mix gradation:

1. Submit a written request for a change in a job-mix gradation at least 48 hours prior changing. Include basis for requesting change. Submittal must meet requirements of Article 2.02 C.
2. Do not change until permission from City or its representative is received.

3.7 PROTECTION

A. Immediately after placement, protect pavement from injury or damage until surface temperature is less than 120 degrees F.

~~A.~~B. Allow pavement to cool on its own without the use of any other method.

END OF SECTION

SECTION 02724

AUTOMATIC SPRINKLING SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Complete automatic sprinkling system, including:

1. Pipe and fittings.
2. Valves, valve boxes, and appurtenant items.
3. Automatic controller, control valves, valve boxes, wires and appurtenant items.
4. Sprinkler heads and appurtenant items.
5. Connections to water main lines.

B. System design and testing.

1.2 RELATED SECTIONS

A. Section 02112 - Trenching for Pipe Work: Excavating, pipe bedding, backfilling and compacting.

B. Section 02115 - Excavation: Excavating for structures and appurtenant items.

C. Section 02116 - Fill and Backfill: Pipe bedding and excavation backfilling.

D. Section 02586 - Backflow Preventer Station.

E. Section 03300 - Cast-in-Place Concrete: Concrete for structures and thrust blocks.

1.3 REFERENCES

A. ASTM A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

B. ASTM A 234 - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.

C. ASTM D 1785 - Standard Specification for Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120.

D. ASTM D 2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter.

E. ASTM D 2241 - Standard Specification for Poly Vinyl Chloride (PVC) Pressure-Rated Pipe (SDR Series).

F. ASTM D 2447 - Standard Specification for Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on Outside Diameter.

G. ASTM D 2466 - Standard Specification for Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedules 40.

H. ASTM D 2564 - Standard Specification for Solvent Cement for Poly Vinyl Chloride (PVC) Plastic Piping Systems.

I. ASTM D 2609 - Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe.

J. ASTM D 3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastromeric Seals.

K. ASTM D 3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.

L. AWWA C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water; American Water Works Association; (ANSI/AWWA C104/A21.4).

M. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; American Water Works Association; (ANSI/AWWA C105/A21.5).

N. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; American Water Works Association; (ANSI/AWWA C111/A21.11).

O. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast, for Water; American Water Works Association; (ANSI/AWWA C151/A21.51).

P. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; American Water Works Association.

Q. AWWA C504 - Rubber Seated Butterfly Valves; American Water Works Association.

R. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 In. (50 mm) Through 24 In. (600 mm) NPS; American Water Works Association; (ANSI/AWWA C508/C508a).

S. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association; (ANSI/AWWA C509/C509a).

T. AWWA C515 - Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service; American Water Works Associations: (ANSI/AWWA C515).

U. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances; American Water Works Association; (ANSI/AWWA C600).

V. STM D2774 - Standard Recommended Practice for Underground Installation of Thermoplastic Pressure Piping.

W. W AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 12 In., for Water Distribution; American Water Works Association; (ANSI/AWWA C900/C900a).

X. X AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 4 inch through 63 inch, for Water Distribution;

Y. American Water Works Association.

Z. Y Use the latest issue of the above reference standards as of the date of the Project.

1.4 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, controllers, sprinkler heads, and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Project Record Documents: Record actual locations of pipe lines, valves, controllers, sprinkler heads, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.5 SYSTEM DESIGN

A. The sprinkling system shall be designed to provide adequate coverage to all areas to be watered.

B. Project drawings of the system shall be submitted to the City Engineer, showing design and general layout of pipe distribution system and sprinkler heads required to provide complete coverage and uniform distribution.

1. Drawings shall indicate pipe sizes, control valves, quick-coupling valves, automatic controller, control wiring, electrical service line, connections to water mains, backflow preventers, filters, and all appurtenant items.
2. Pipe system for spray heads shall have minimum pipe size of 3/4-inch; rotor pop-up sprinklers shall have minimum pipe size of 3/4-inch; and impact rotor pop-up or rotors above I-40 shall have minimum pipe size of 1-inch.
3. Quick-coupling valves shall be placed in the system where indicated on the drawings.
4. Drawings shall show system design pressures and PVC pipe classifications (either Schedule 40 or Schedule 80). A pipe size over 4” shall utilize gasketed joints.

C. Design a pipe distribution system to provide sufficient water to each of the heads. Spray Heads and Rotator Heads shall be on separate zones.

D. The Contractor may modify the layout of heads to better fit project conditions with notification and City approval; providing that complete coverage and uniform distribution is maintained.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with City's requirements as described herein.

B. A third party audit by a certified irrigation auditor verifying the distribution uniformity (DU) of the system is 70% for the rotors and 50% for spray heads. Testing results to be submitted prior to start of warranty period for new development in accordance with the City’s land development code.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves, controllers, heads, and appurtenant items in shipping containers with labeling in place.

1.8 OPERATING AND MAINTENANCE DATA

A. Provide complete As-Builts for entire system. Also Provide an 8 ½"x 11" laminated zone map illustrating each zone by color and zone number.

B. Provide instructions covering full operation, care and maintenance of system and controls; and manufacturer's parts catalog.

C. Instruct City's designated maintenance personnel in the proper operation of the system, including adjustment of sprinkler heads.

D. Submit 3 copies of written instructions recommending procedures to be established by the City Engineer for the maintenance of the system from year to year.

1. Submit at least 30 days before the expiration of required one year guarantee period.
2. Provide information in the manuals that include the following:
    a. Written index near front of Manual listing location in the Manual of all emergency data regarding the installation;
    b. Complete nomenclature of all replaceable parts, their part numbers, current cost, and name and address of the nearest vendor of replacement parts; and
    c. Copy of all guarantees and warranties issued on the installation showing all dates of expiration.

PART 2 PRODUCTS

2.1 GENERAL

A. All sprinkler heads, control valves, quick-coupling valves, automatic controllers and appurtenant items for the sprinkling system shall be supplied by the same supplier.

2.2 WATER SUPPLY AND DISTRIBUTION PIPE

A. PVC Pipe: AWWA C900 DR 18.

1. Fittings: AWWA C111, cast iron.
2. Joints: ASTM D 3139 compression gasket ring.

B. Polyethylene Pipe: ASTM D 3035, for 160 psig pressure rating:

1. Fittings: AWWA C901, molded or fabricated.
2. Joints: Compression.

C. High Density Polyethylene Pipe: AWWA C906:

1. Material: PE 4710 High Density Polyethylene (HDPE) meeting ASTM D3350 cell classification of 345434C.
2. Fittings: AWWA C906, molded or fabricated; or mechanical joint ductile iron fittings.
3. Joints: Butt fusion.

D. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Water Service" in large letters for all plastic pipe.

2.3 SPRINKLING SYSTEM DISTRIBUTION AND LATERAL PIPE

A. PVC Pipe: ASTM D 1785, Schedule 40 or 80, as required.

1. Fittings: ASTM D 2466, Schedule 40 or 80, as required.
2. Joints: Cemented with Primer and solvent weld, using I.P.S. Brand, purple primer and grey solvent weld or approved equal. Red Hot Blue not permitted.
3. Schedule 80 pipe shall be used between stop & waste valves and master valves; and Schedule 40 pipe shall be used downstream from master valves.

B. Polyethylene Pipe: ASTM D 3035, for 160 psi pressure rating:

1. Fittings: AWWA C901, molded or fabricated.
2. Joints: Compression.

C. The minimum pipe size for distribution and lateral pipes to be 3/4-inch.

2.4 VALVES

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Gate Valves Up To 3 Inches:

1. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, IPS ends, and handwheel.
2. Product: Powell U.S. Bronze Gate Valves.
3. Substitutions: See Section 01600 - Product Requirements.

C. Gate Valves 3 Inches and Over:

1. AWWA C500, iron body, bronze trim, non-rising stem with square nut, single wedge, mechanical joint or flanged ends as indicated, and cast iron valve box.
2. AWWA C509, iron body, bronze trim, non-rising stem with square nut, single wedge, resilient seat, mechanical joint or flanged ends as indicated, and cast iron valve box.
3. AWWA C515, ductile iron, bronze trim, non-rising stem with square operating nut, single ductile iron wedge, mechanical joint or flanged ends as indicated, and cast iron valve box.
4. Product: Mueller Gate Valves or Resilient Seat Gate Valves, or American Flow Control Series 2500 Resilient Seat Gate Valves; with appropriate type Pacific States Cast Iron Valve Box.

D. Ball Valves Up To 2 Inches:

1. Brass body, teflon coated brass ball, rubber seats and stem seals, Tee stem pre-drilled for control rod, compression inlet end, compression outlet, with control rod, valve key, and extension box.
2. Treat the Ball Valve and Handle to prevent moisture from metal causing corrosion.

E. Swing Check Valves from 2 Inches to 24 Inches:

1. AWWA C508, iron body, bronze trim, 45 degree swing disc, renewable disc and seat, flanged ends.
2. Product: Mueller Swing-Type Check Valve.

~~F. Butterfly Valves from 2 Inches to 24 Inches:~~

~~0. AWWA C504, iron body, bronze disc, resilient replacement seat, mechanical joint or flanged ends as indicated, manual worm gear operator, and cast iron valve box where required.~~

~~0. Underground manual operators shall be totally enclosed, factory grease packed and sealed, bronze worm gear operators with self-locking gearing; stops shall be provided to prevent over travel of valve disc.~~

~~0. Valve operator shall be geared to close valves slowly. Number of turns to close valve from full open position shall be: 32 turns for 10-inch and smaller valves, 52 turns for 12-inch thru 16-inch valves, and 76 turns for 18-inch thru 24-inch valves. Closing times for larger valves must first be accepted by the City Engineer.~~

~~0. Product: Mueller "Lineseal III" Butterfly Valve with appropriate type Pacific States Cast Iron Valve Box.~~

~~K.~~F. Corporation Stops: shall be type for connecting to copper or polyethylene pipe; Mueller No. H- 15000 for up to 2-inch service line.

~~L.~~G. Air Release Valves: shall be combination air release valves; APCO Combination Air Release Valves, or of size indicated on the drawings.

2.5 SPRINKLER HEADS

A. Part Circle Rotor Pop-Up Sprinklers.

1. Part circle rotor pop-up sprinklers shall be a single nozzle gear drive type, capable of covering the design radius at the site pressure with a discharge rate as recommended by the manufacturer; and shall have an infinitely adjustable arc of coverage from 40° to 360°. Spacing design shall be based on a 10-20% reduction of manufacturer recommendation.
2. Sprinkler case shall be constructed of rugged ABS plastic. The internal assembly shall include water-lubricated gear drive, pressure-activated wiper seal, SAM check device and heavy duty screen. The rotation of the sprinkler shall be accomplished by a gear drive.
3. The sprinkler nozzle shall have an outlet trajectory of 25° from the horizontal, with adjustment screw.
4. The sprinkler shall have a heavy-duty stainless steel retract spring to ensure positive pop-down. Pop-up height shall be not less than 6 inches; and the inlet shall be one-inch (FNPT).
5. The sprinkler shall be constructed so that all internal parts, including inlet screen, are accessible through the top of the sprinkler case without disturbing the soil around the case. The sprinkler shall have a rubber cover and vandal resistant cover screws.
6. Sprinklers shall be Part Circle Rotor Pop-up Sprinklers, of the appropriate size and type, as manufactured by Rain Bird Sprinkling Mfg. Corporation, Hunter Industries.

B. Full Circle Rotor Pop-Up Sprinklers.

1. Full circle rotor pop-up sprinklers shall be a single nozzle gear drive type, except for Hunter I-40 Opposing Nozzles, capable of covering the design radius at the site pressure with a discharge rate as recommended by the manufacturer.
2. Full circle sprinklers shall have the same construction as the part circle sprinklers described above.
3. Sprinklers shall be Full Circle Rotor Pop-up Sprinklers, of the appropriate size and type, as manufactured by Rain Bird Sprinkling Mfg. Corporation or Hunter Industries.

C. Full/Part Circle Rotor Pop-Up Sprinklers.

1. Rotor pop-up sprinklers shall have full or part circle capabilities in one unit; and shall be a single nozzle, water lubricated, turbine drive type with internal impact speed reduction, capable of covering the design radius at the site pressure with a discharge rate as recommended by the manufacturer.
2. Part circle sprinkler shall have an infinitely adjustable arc of coverage from 25^{o} to 350^{o}. The sprinkler shall not reverse direction during continuous operation in the full circle mode. Arc adjustment shall not require any tools.
3. The sprinkler case shall be constructed of rugged ABS plastic. The sprinkler shall include a stainless steel locking set-screw at cap threads to provide vandal resistance and a "Seal-A-Matic" (SAM) device built onto the inlet screen shall hold back 8 feet of elevation change to prevent puddling. The sprinkler shall have a non-strippable drive mechanism and shall permit manual rotation of the pop-up stem; and shall have a pressure-activated, multi-function, soft elastomer wiper seal that positively seals against the nozzle flange to keep debris out of the rotor and to clean debris from the pop-up stem as it retracts. The sprinkler range nozzle shall have an outlet trajectory of 23^{o} from the horizontal. The sprinkler shall have a screen attached to the drive housing to filter inlet water and prevent the nozzle from clogging.
4. Sprinklers shall have a heavy-duty stainless steel retract spring to ensure positive pop-down. Pop- up height shall be not less than 5 5/8-inch; and the bottom inlet shall be 3/4-inch (FNPT).
5. Sprinklers shall be constructed so that all internal parts, including inlet screen, are accessible through the top of the sprinkler case without disturbing the soil around the case. The sprinkler shall have a rubber cover and vandal resistant cover screws.
6. Sprinklers shall be Full/Part Circle Pop-up Rotor Sprinklers, of the appropriate size and type, as manufactured by Rain Bird Sprinkling Mfg. Corporation, Hunter Industries.

D. Sprinkler Types and Spacing.

1. Large Area Rotors: Hunter I-40 at 45 foot maximum spacing.
2. Medium Area Rotors: Hunter I-20 at 30 foot maximum spacing.
3. Spray Heads: Rainbird # 1806 for turf areas; # 1812 for shrub beds.
    a. East to west park strips: provide 120 percent coverage; 12 foot spacing typical, or 15' Nozzels.
    b. North to south park strips: provide 100 percent coverage; 15 foot spacing typical.
    c. Built in check valves required if elevation changes from one head to next head.
    d. No Adjustable Arc Nozzles, Fixed Arc Nozzles only.
    e. No MP Rotator Nozzles.
    f. Bottom inlet only

4. Drip Systems: Hunter PCN Nozzles, series bubbler nozzles placed adjacent to plants higher in grade to allow flow to root zones of the plant.
    a. Compatible with Pro Spray bodies or 1800 heads.
    b. No fixed risers for bubblers.
    c. Pop-Ups/spray head bodies with PCN bubbler nozzles.
5. Type of landscape areas will determine flow requirements.
    a. P.R.V., if needed, use an individual pressure regulating device, such as an accuset.

2.6 ELECTRIC CONTROL VALVES

A. Electric remote control valves shall be normally closed 24 VAC, 60 cycle, solenoid actuated globe pattern design capable of having a flow rate as required with a pressure loss not to exceed 1.5 psi. The valve pressure rating shall not be less than 200 psi.

B. Valve body and bonnet shall be constructed of heavy-duty glass-filled UV resistant nylon and have stainless steel studs and flange nuts; diaphragm shall be of nylon reinforced nitrile rubber.

C. Valve shall have both internal and external manual open/close control, for manually opening and closing the valve without electrically energizing the solenoid. The valve's internal bleed shall prevent flooding of the valve box.

D. Valves shall house a fully-encapsulated, one-piece solenoid. The solenoid shall have a captured plunger with a removable retainer for easy servicing, and a leverage handle for easy turning. The 24 VAC, 60 Hz solenoid shall open with 19.6 VAC minimum at 200 psi. At 24 VAC, average inrush current shall not exceed 0.41 amps.

E. Valves shall have a brass flow control stem for accurate manual regulation and/or shut off of outlet flow. The valve must open or close in less than one minute at 200 psi, and less than 30 seconds at 20 psi.

F. Valves shall have a self-cleaning stainless steel screen designed for use in dirty water applications.

G. Valve construction shall be such as to provide for all internal parts to be removable from the top of the valve without disturbing the valve installation.

H. Control valves shall be Electric Remote Control Plastic Scrubber Valves, of the appropriate size and type, as manufactured by Rain Bird Sprinkling Mfg. Corporation, Hunter ICV Control Valves with Filter Sentry.

2.7 QUICK-COUPLING VALVES

A. Quick-coupling valves shall be a 1" minimum one piece type; constructed on heavy cast brass. The cover shall be a durable, self-closing, and locking rubber cover. The valves shall be opened and closed by a brass key of the same manufacturer, having an appropriate outlet. The valve throat shall have a keyway with detent positions for regulating flow.

B. Quick-coupling valves shall be Model 3-RC, as manufactured by Rain Bird Sprinkling Mfg. Corp

2.8 CONTROL WIRE

A. Control wire shall be UF No. 14 gauge or larger; conforming to the requirement of Section 05123. For two wire systems, shall use Maxi-cable 14-2 paired 14 awg double jacketed wire. Control wire to be placed in ¾-1" conduit with sweep elbows into each valve box. For multiple wire pats, each path shall be colored differently. Polypipe is acceptable for two wire conduit.

2.9 SPRINKLING SYSTEM CONTROLLER

A. Sprinkling system controller shall be capable of fully automatic or manual operation of the system.

B. The controller shall operate on a 17 VAC, plus or minus 10%, power input; and be capable of operating four 24 VAC electric remote control valves per station. The controller shall have a reset circuit breaker to protect it from power overload.

C. The controller shall be constructed such that all internal parts are accessible through the controller door without disturbing the cabinet installation.

D. The controller shall be a WeatherTRAK ETPro3-CH2o-2W two-wire controller, of the appropriate size and type, and CWM enclosure (cold rolled steel coated wall mount). Other enclosure options include: SWM (Stainless Wall Mount), SPT (Heavy Duty Stainless pedestal), CWM-CPED (Light Duty Coated Pedestal).

E. The decoders shall be WeatherTRAK H2O-2, installed with each solenoid valve.

F. The enclosure for the controller shall be a combined 120/240 volt commercial meter socket with enclosure, as required.

1. The enclosure unit shall have a compact, double door, front and back design; to provide viewing and programming convenience.
    a. Construction shall be 100 percent stainless steel; finish shall be brushed stainless steel.
    b. The unit shall be weather and vandal resistant, NEMA TYPE 3R rated, with three-point locking system; and shall be UL listed.
    c. The unit shall have a 10-year limited warranty.
2. Meter section:
    a. UL listed, E.U.S.E.R.C. 308 accepted commercial meter socket, 100 amp rated, with test block bypass provision.
    b. Hinged viewing window to provide convenient access for metering agency.
    c. Shall include 100 amp load center with 8 positions.
    d. Surge/line protection shall be WeatherTRAK WT2W-LSP. Line surge protection required for every five valves or 500 ft along the two-wire path.
3. The enclosures shall be Strong Box Metered Stainless Steel Combination Enclosure, Model SB- 24SS / 120/240 V, as required and as manufactured by V.I.T. Products, Inc.

2.10 MISCELLANEOUS ITEMS

A. Miscellaneous appurtenant items shall be provided as indicated on the drawings or as required to complete the sprinkler system.

2.11 PIPE BEDDING AND BACKFILL MATERIALS

A. Bedding: As specified in Sections 02112 and 02116.

B. Backfill: As specified in Sections 02112 and 02116.

2.12 ACCESSORIES

A. Service Clamps: shall be bronze, double-strap type; Mueller No. H-16134, for up to 2 inch service lines.

B. Concrete for Thrust Restraints: Concrete type specified in Section 03300.

C. Manhole and Cover: Refer to Section 02340.

PART 3 EXECUTION

3.1 GENERAL

A. The Contractor shall furnish all labor, materials and equipment as required to construct the complete automatic, underground sprinkling system, as described herein and as shown on the design drawings, as indicated on the submittal drawings; and shall furnish and install all supplementary and miscellaneous items, appurtenances, and devices incidental to or necessary for a workable and complete sprinkling system installation.

B. All material shall be installed according to the manufacturer's written instructions and recommendations.

C. The Contractor shall test the entire sprinkling system to assure proper operation prior to final inspection with City representation for systems check

3.2 EXAMINATION

A. Verify that design drawings conform to project conditions.

B. Verify that existing water main sizes and locations are as indicated on the drawings.

3.3 PREPARATION

A. Cut pipe ends square, ream pipe ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges, mechanical joints or mechanical couplings.

3.4 TRENCHING

A. Trenching for the sprinkling system shall be done to ensure proper grades, slopes and alignment; and to provide minimum cover over main lines of 24-inches and 12-inches over laterals.

B. See Section 02112 and Sections 02115 and 02116 for additional requirements.

C. Hand trim excavation for accurate placement of pipe to elevations indicated.

D. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide required area of thrust restraint bearing on subsoil as indicated on the drawings.

E. Backfill around sides and to top of pipe zone with pipe bedding material, tamp in place and compact to required density.

F. Backfill trench from top of pipe zone to top of trench with trench backfill material, tamp in place and compact to required density.

3.5 INSTALLATION - PIPE

A. Group piping with other piping work whenever practical, per City Standard LS-11.

B. Establish elevations of buried piping to ensure not less than 2 feet of cover over main lines and 12 inches over laterals; or as indicated on the drawings.

C. Install pipe to indicated elevation to within tolerance of one inch.

D. Install ductile iron piping and fittings to AWWA C600.

E. Install PVC pressure pipe and fittings to ASTM D2774.

F. Install pipe lines to line and grade indicated.

G. Install pipe to allow for expansion and contraction without stressing pipe or joints.

H. Slope water pipe and position drains at low points.

I. Install trace wire above top of PVC and PE pipe; coordinate with Section 02112.

3.6 INSTALLATION - VALVES

A. Set valves on concrete block.

B. Center and plumb valve box over valve operating nut. Set box cover flush with finished grade.

3.7 INSTALLATION - CONTROL VALVES

A. Install control valves where and as shown on the submittal drawings.

1. Each control valve shall have threaded unions installed immediately upstream and downstream of all valves.
2. Each control valve shall have its own isolation valve, immediately upstream of the first union. No “Action” manifolds allowed.
3. Install only one control valve per rectangular box. Valve box to be Carsen Jumbo size, or approved equal by the City.
4. Use of male adapters are prohibited.

B. Set valves on concrete block.

C. Center and plumb valve boxes and brace over valves. Set box cover flush, not level, with finished grade. All valve lids to have label of the assigned zone number.

3.8 INSTALLATION - QUICK-COUPLING VALVES

A. Quick-coupling valves shall be installed where and as shown on the submittal drawings.

B. Quick-coupling valves are to be installed in the system to provide the Owner access so that the system can be winterized by blowing out the system with compressed air; therefore, the valves shall be located as indicated on the drawings.

3.9 INSTALLATION - AUTOMATIC CONTROLLER

A. The controller and remote control valves shall be compatible, having similar operational and adjustment features.

B. The controller shall have a weatherproof panel enclosure; with the controller mounted on a pedestal, where and as indicated on the drawings; in such a manner that all normal adjustments can be conveniently made by the operator.

C. The controller shall be properly grounded in accordance with local codes.

D. Control wire shall be installed from the controller to all control valves and other equipment as required for proper operation of the sprinkling system.

3.10 WIRE AND ELECTRICAL WORK

A. Electrical control and ground wire shall be suitable for sprinkler control cable of sizes indicated on the drawings and as recommended by the manufacturer or supplier.

B. Use Type "UF", 600 volt, stranded or solid copper, single conductor wire, with PVC insulation and bearing UL-approved for direct underground burial, for connecting the automatic remote control valves to the automatic controller.

1. Use wire with 4/64-inch insulation, minimum covering of ICC-100 compound for positive weatherproofing protection.
2. For wire sizes 14, 12, 10 and 8 use a single conductor solid copper wire; and for sizes 6 and 4 use stranded copper wire.
3. Control or "hot" wires shall be red and all common or "ground" wires shall be white.

C. Make all connections with UL acceptance 3M DBRY-6 type seal to make a waterproof connection.

D. Verify that all wire types and installation procedures conform to NEC and local codes.

3.11 INSTALLATION - SPRINKLER HEADS

A. Flush the sprinkler system thoroughly to remove all foreign materials prior to the installation of sprinkler heads.

B. Install rotor pop-up heads with a swing joint connection, as indicated on the drawings.

1. All swing joints shall consist of three 90 degree Schedule 40 PVC street ells and Schedule 80 nipples with a minimum length of 12 inches.
2. Size of swing joint pipe and fittings shall be as shown on the drawings.

C. Install spray heads as indicated on the drawings.

3.12 BACKFLOW PREVENTER STATION

A. Provide Reduce Pressure Zone (RPZ) where and as indicated on the drawings; see Section 02586.

3.13 CONNECTIONS TO EXISTING WATER LINES

A. Connection to existing water lines shall be made where and as indicated on the drawings. The sizes of pipe, fittings, valves and appurtenant items required to make connection shall correspond to the sizes of existing pipe and of project pipe.

B. Excavate to existing pipe line at point of connection; determine actual conditions of existing pipe and all fittings and appurtenant items required to make the connection; and have all materials needed on site prior to any shut down or cutting into existing pipe lines.

C. Connections that involve cutting into existing pipe lines include: cutting and removing sections of existing pipe and fittings as required; cleaning and preparing ends of existing pipe as required for connection; furnishing and installing all new pipe, fittings and valves required to make the connection of project pipe to the existing pipe as indicated; and all appurtenant work required to complete the connection.

D. Connection into existing pipe lines under pressure include: furnishing and installing mechanical joint tapping sleeve of the appropriate size on the existing pipe at point of connection; furnishing and installing tapping valve, with valve box, on sleeve; tapping existing pipe with drilling machine and equipment, without interrupting flow in existing pipe line; and all appurtenant work required to complete the connection.

E. Connection to existing pipe line shall be made at such times and within the time limits and according to the directions as agreed to between the Contractor and the City Engineer.

3.14 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01400.

B. Pressure test water piping to 1.25 times pipe line working pressure in psi.

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to City.

3.15 OPERATIONAL TESTING

A. Provide the City Engineer or City Inspector with seven days written notice of sprinkling operational system test.

B. Test shall consist of the operation of the entire system through one cycle of controller for propose of checking coverage and assuring of absence of leaks.

1. Repair water lines, valves, or connections which show evidence of leakage.

C. After all repairs or replacements have been made and accepted by the City Engineer or City Inspector, repeat the above required test.

END OF SECTION

SECTION 02727

RESTORING NATIVE AREA

PART 1 GENERAL

1.1 SUMMARY

A. This specification addresses the restoration of vegetation in areas which were disturbed by construction activity outside of public right of ways. Restoration of these areas includes weed removal, grading, import of topsoil, automated irrigation systems, hydroseeding or sod installation.

B. The micro-climate of Saratoga Springs City is highly influenced by the topography of the mountains immediately to the west and further west of the City. Because the City is located on the lee side (East) of the mountains very little rainfall occurs and is not consistent. The lack of rainfall does not create a force majeure condition for this specification. Compliance with plant germination and growth are required to meet the standard of success specified herein. At various times of year and in various years,Contractors may need to provide temporary irrigation of the project sites in order to meet the acceptance standard in PART 3/3.1 of this specification.

C. Contractor may elect to install hydroseed or sod. For the sod option an irrigation system is required. For the hydroseed option the specification does not require an irrigation system.

D. To improve the likelihood of successful plant growth and avoid the cost of addressing plant failure, Contractor may elect to provide additional thickness of topsoil and temporary automatic sprinkler systems (for hydroseeding option).

1.2 SECTION INCLUDES

A. Preparation of the site including import of topsoil.

B. Hydroseeding or installing sod.

C. Supply and installation of erosion control matting.

D. Installing irrigation systems.

E. The inspection and definition of germination success

F. Maintaining the site and replacing areas which did not achieve germination success.

G. The definition of the beginning of the warranty period and work that is required during the warranty period.

1.3 RELATED SECTIONS

A. The following City Standard Specifications are referenced:

1. 00500 Design Standards
2. 02100 Roadway and General Earthwork
3. 02116 Fill and Backfill

4. 02740 Automatic Sprinkling System

5. 02726 Landscaping

6. 02728 Hydroseeding

1.4 REFERENCES

A. Standards of Official Seed Analysis of North America.

B. ANSI Z60.1, American Standard for Nursery Stock.

1.5 DEFINITIONS

A. Weeds: The definition of Weed includes Cheatgrass (Bromus Tectorum), Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Phragmites.

B. Coverage: coverage is defined as the successful mature growth of plants in hydroseeded or sodded areas with less than 10% of weeds present. Mature growth shall be determined by the presence of seeds produced by the mature plants. The City may use various methods of measuring coverage, including on-site ground level inspections, aerial photography, and drone photography.

1.6 SUBMITTALS

A. See appropriate sections of the Contract Documents for submittal procedures.

B. Topsoil:

1. Submit documentation of the topsoil in compliance with Section 02116.
2. Submit the source of the topsoil.

C. Irrigation System:

1. Submit documentation of the irrigation components to be used in the project.

D. Hydroseeding:

1. Submit seed supplier’s qualifications.
2. Submit seed mix.
3. Submit installer’s qualifications.

E. Sod:

1. Submit sod supplier’s qualifications.
2. Submit sod seed mix.
3. Erosion control matting:
4. Submit documentation for erosion control matting documentation compliance with the specifications.

F. Maintenance:

1. Prepare and submit a maintenance plan identifying the work to be performed, the individual responsible for maintenance, and contact information for the responsible person.

1.7 SEED SUPPLIER AND INSTALLER QUALIFICATIONS

A. Seed Suppliers: The minimum qualification requirements for Seed Suppliers are:

1. The company shall specialize in supplying seed.
2. Have a minimum five years' experience supplying seeds, and
3. Be a member of the Utah Crop Improvement Association.

B. Seed Installers: The minimum qualification requirements for Seed Installers are:

1. The company shall specialize in landscaping construction and maintenance.
2. Have an active Utah contractor's license with S330 Landscape & Recreation Contractor classification.
3. Have a minimum five years' experience as a landscape contractor.
4. Have a written approval to install seeds supplied by the Seed Supplier for this project.

1.8 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

B. Provide certificate of compliance from authority having jurisdiction indicating acceptance of fertilizer and herbicide mixture.

1.9 MAINTENANCE SERVICE

A. Furnish service and maintenance of seeded or sod areas up to the end of warranty. Maintenance services includes confirming irrigation systems are functional, repairing irrigation systems, re-seeding, and repairing eroded areas.

PART 2 PRODUCTS

2.1 MATERIALS

A. Topsoil - See Section 02116, Fill and Backfill.

1. Topsoil is required

B. Erosion Control Matting (Erosion Control Blanket)

1. Erosion control matting shall be erosion control blankets (ECB) which will provide temporary, biodegradable cover material to reduce slope erosion, enhance vegetation germination and growth, and minimize germination of weeds.
2. ECBs shall be provided in rolls and wrapped with a suitable material to protect against moisture intrusion and extended ultraviolet exposure prior to placement. Each roll shall be labeled with a date code for identification.

3. ECBs shall consist of a seed free aspen curled wood excelsior with 80% of the wood fibers equal to or greater than six inches in length. The fiber count shall be a minimum of 7,000 per square yard with a mass of 0.73 lbs/yd.
4. The top and bottom of the ECB shall have green polypropylene netting containing oxo-biodegrader and UV additives. The net openings shall be 1.0-inch x 2.0-inch maximum.
5. Erosion control blankets performance capabilities shall meet ASTM D 6459 and AST D 6460.
6. Staples shall have a minimum length of six inches with a U-shaped top.
7. ECBs shall be Manufactured by American Excelsior Company or equal.

2.2 TEMPORARY AUTOMATIC SPRINKLING SYSTEMS

A. Design Requirements

1. Contractor shall submit an irrigation design prepared by a Landscape Architect or Certified Irrigation System Designer.
2. The irrigation design shall include the following elements:
   a. System to have automatic controller and control valves.
   b. Filter when using secondary water.
   c. Backflow preventer when using culinary water.
   d. Low Precipitation Sprinkler Heads.
   e. Device to raise the head to 20 inches minimum above grade.
   f. Sprinkler head spacing no further than 120% of coverage (30' heads spaced no further than 36').
3. Irrigation systems shall be automatically operated.
4. Irrigation systems shall be designed and installed in compliance with Section 02724 Automatic Sprinkling Systems.

2.3 SEED/SOD OPTIONS

A. Seed/Sod Options

1. Contractor may elect to hydroseed or install sod as specified below.

B. Plant Option A: Sod.

1. BioNative sod supplied from BioGrass Sod Farms, Inc. or equivalent sod comprised of Idaho Bentgrass seed, and Utah native wheat grass seed; Streambank Wheatgrass, Western Wheatgrass and Thickspike Wheatgrass with 98% purity and grown in with NanoGro fertilizer for thicker density and establishment.
2. Automated sprinkling systems are required for sod installations.

C. Plant Option B: Seed Mix.

1. Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by Official Seed Analysis of North America. Provide proof of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed. Seed blend shall consist of the following:

Crested Wheatgrass	38%
'Sodar' Streambank Wheatgrass	35%
'Covar' Sheep Fescue	20%
'Rabbitbrush' Chrysothamnus nauseous	2%
'Appar' Lewis Blue Flax	1%
'Lutana' Cicer Milkvetch	1%
Western Yarrow	1%
Rocky Mountain Penstemon	1%
'Californica' California Poppy	1%

2. When using the hydroseeding method erosion control blankets are required on all areas which were hydroseeded. Erosion control blankets shall be installed on top of the hydroseed. Erosion control blankets shall be installed by hand without driving on top of the hydroseeded areas. Care shall be taken to avoid disturbing hydroseeded areas.
3. Temporary automated sprinkling systems are not required for hydroseed installations. Sprinkler systems may be installed at Contractor's option.
4. Hydroseeding shall be performed in compliance with Section 02728 Hydroseeding.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that prepared soil base has no existing weeds and the site has been graded smooth without depressions, humps, or exposed rocks.

3.2 PREPARATION-TOPSOIL

A. Prepare sub-grade in accordance with Section 02116.

B. Prior to placing topsoil there shall not be any actively growing weeds. If active weeds are present Contractor shall remove the weeds by grubbing the site. Weed plant material shall be physically removed from the site.

C. If the site has been allowed to lay dormant for more than two months after rough grading Contractor shall apply a non-selective herbicide to plants growing on the site. After applying herbicide, Contractor shall wait two-three weeks before grubbing the site.

D. After grubbing and fine grading the site, Contractor shall install a three-inch (3") depth of topsoil on all areas to be hydroseeded or have sod installed.

3.3 IRRIGATION SYSTEM

A. Install irrigation systems in accordance with Section 02740.

3.4 HYDROSEEDING

A. Install hydroseed in accordance with Section 02728.

3.5 SOD INSTALLATION

A. Install sod per supplier's recommendations.

3.6 EROSION CONTROL BLANKET INSTALLATION

A. Install Erosion Control Blanket (ECB) per manufacturer's guidelines.

1. ECBs shall be installed in a vertical pattern. ECBs shall be anchored with staples. Adjacent strips shall be abutted or overlapped to allow for a common row of staples to anchor both blankets.
2. Horizontal joints shall be overlapped with adjacent blankets using a common row of staples with the adjoining blanket.
3. Damaged ECB material shall not be installed.

3.7 ACCEPTANCE

A. Acceptance of restoration shall be based on a site inspection at the three separate site stages defined below. A successful inspection is required at each of the three stages.

1. Germination: Germination is evidenced by plants which are alive and growing.
2. Maturity. Maturity is evidenced by plants which have produced seeds.
3. End of Warranty Period.

B. Contractor may request a site inspection with ten days' notice to the City.

1. ACCEPTANCE STANDARD

a. The Acceptance Standards for a successful inspection are:

i. Plants occupy more than 70% of the area.
ii. Weeds occupy less than 10% of the area.
iii. Bare spots shall not be larger than 3 square feet.
iv. No more than 10% of total areas with bare spots larger than 1 square feet.
v. No more than 15% of total areas with bare spots larger than six square inches.

b. If the inspection is acceptable, the Contractor may proceed to the maintenance period. Contractor may schedule the next inspection when ready.
c. If the inspection fails, the Contractor shall address deficiencies at Contractor's cost. Another inspection at this milestone is required.
d. To confirm coverage, the City will use site inspections, aerial photography, and drone photography, at its election.

3.8 MAINTENANCE REQUIREMENTS FOR NATIVE AREA DURING WARRANTY PERIODS

A. Furnish service and maintenance of restored area for one year. During the warranty period the contractor shall provide the following services:

1. Inspect the site at least monthly.
2. Remove weeds as required to achieve the acceptance standard.
3. Remove garbage and litter from the site.
4. Maintain and repair the irrigation system.
    a. Repair all breaks immediately.
    b. Perform weekly inspections and make needed adjustments.
    c. Make seasonal adjustments to controllers as needed.
5. Repair erosion and settling damage.

3.9 WARRANTY

A. The warranty period will begin when a successful inspection has been achieved at the Maturity stage as defined in paragraph 3.7.

B. All landscaping will be covered by a warranty for a minimum of one year.

C. The warranty period will end with a successful site inspection as defined in paragraph 3.7.

END OF SECTION

SECTION 02728

HYDROSEEDING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To

1. Furnish and install seeded lawn as described in Contract Documents.

B. Related City Standard Specification Sections

1. 02116 Fill and Backfill
2. 02727 Restoring Native Area

1.2 QUALITY ASSURANCE

A. Pre-Installation Meetings - Participate in pre-installation meetings specified in previous sections.

B. Do not make substitutions. If acceptable seed landscape material is not obtainable, submit to Architect proof of non-availability and proposal for use of equivalent material. When authorized, adjustment of contract amount will be made.

PART 2 PRODUCTS

2.1 MATERIALS

A. Topsoil – Refer to City Standard Specification 02116 Fill and Backfil.

B. Erosion Control Blanket

1. Use Curlex I Erosion Control Blanket covering all hydroseeded areas.

C. Seed

1. Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by Official Seed Analysis of North America. Provide proof of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed. Seed blend shall consist of the following:

'Sodar' Streambank Wheatgrass	35%
Crested Wheatgrass	40%
'Covar' Sheep Fescue	20%
'Appar' Lewis Blue Flax	1%
'Lutana' Cicer Milkvetch	1%
Western Yarrow	1%
Rocky Mountain Penstemon	1%
'Californica' California Poppy	1%

2. Purchase seeds from a reputable seed company containing a certification submittal of weight, purity, and germination. Certification submittal date of purchased seeds shall be within 365 days prior to application of seeds.

PART 3 EXECUTION

3.1 PREPARATION

A. Protection

1. Take care and preparation in work to avoid conditions which will create hazards. Post signs or barriers as required.
2. Provide adequate means for protection from damage through excessive erosion, flooding, heavy rains, etc. Repair or replace damaged areas.

B. Surface Preparation

1. Seven days maximum prior to seeding -
   a. Loosen area 4 inches deep, dampen thoroughly, and cultivate to properly break up clods and lumps.
   b. Rake area to remove clods, rocks, weeds, roots, and debris.
   c. Grade and shape area to receive seed to bring surface to true uniform planes free from irregularities and to provide drainage and proper slope to catch basins.
   d. After areas have been prepared, take no heavy objects over them except lawn rollers.
   e. Rake or scarify and cut or fill irregularities that develop as required until area is true and uniform, free from lumps, depressions, and irregularities.

3.2 INSTALLATION

A. Site Tolerances - Final grade of soil after installing topsoil and hydro-seeding is complete shall be one inch below top of adjacent pavement of any kind.

B. Install 3” depth of approved topsoil.

C. One Step Hydro-Seeding – After topsoil is placed and areas are graded, hydro-seed with adequate equipment at time when little or no wind is blowing. Perform operation within the following dates: March 1 to May 1 and October 1 to November 1. Hydro-Seeding shall consist of preparing the seed mixture at a rate of 40 pounds per acre, fertilizer at a minimum rate of 50 pounds per acre, ‘silva-fiber’ at a rate of fourteen hundred pounds per acre of area. With water, agitate these components into a well mixed slurry substance and spray the mixture, under pressure, onto the prepared area.

D. After completion of One Step hydro-seeding place erosion control blanket.

1. Before installing erosion control blanket, the seedbed shall be inspected by the Owner's Representative to ensure it has been properly compacted and fine graded to remove any existing rills. It shall be free of obstructions, such as tree roots, projections such as stones, and any other foreign objects. The contractor shall proceed when satisfactory conditions are present, After the area has been properly shaped, seeded, fertilized and compacted, remove the erosion control blanket protective cover. Next, locate the start of the roll, making sure the roll is facing toward the area to be covered, and then roll out the product. The product shall be rolled out flat, even, and smooth without stretching the material then anchored to the sub-grade.

2. Erosion control blanket to be installed vertically on the slope; however, on short slopes it may be more practical to install horizontally across the width of the application when agreed upon by the Engineer prior to installation. If more than one width is required, simply abut the edges of the vertically installed blankets together and secure them with a common row of staples. Overlapping adjacent sides of erosion control blankets ins not required when installed vertically on slopes. Erosion control blankets shall be trenched at the head of the slope if the blanket cannot be extended three feet over the slope crest or if overland flow is anticipated from upslope areas.

3.3 MAINTENANCE

A. The contractor shall be responsible for the weeding of hydroseeded areas until accepted by the owner and Architect. The contractor shall be responsible for re-seeding, filling in low areas, repairing or replacing erosion control blanket, etc., as required.

3.4 FIELD QUALITY CONTROL

A. Inspection

1. Refer to City Standard Specification Section 02727 for Acceptance Standards

3.5 ADJUSTING

A. Replace damaged areas at no additional cost to Owner.

3.6 CLEANING

A. Immediately clean up any soil or debris spilled onto pavement and dispose of all deleterious materials.

3.7 PROTECTION

A. Protect Hydro-seeded areas against traffic or other use immediately after seeding is completed by placing warning signs and barricades.

B. Provide protection of hydro-seeded areas against trespassing, erosion, and damage of any kind. Remove this protection after seeded areas have been accepted by City Inspector.

END OF SECTION

SECTION 05060

GROUNDING AND BONDING

PART 0 GENERAL

0.0 SECTION INCLUDES

. Grounding electrodes and conductors, equipment grounding conductors, and bonding to complete grounding system consisting of:

0. Existing metal underground water pipe.

0. Metal frame of the building.

0. Concrete-encased electrode.

0. Rod electrodes.

0. Plate electrodes.

0. Active electrodes.

0.0 REFERENCES

. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 PERFORMANCE REQUIREMENTS

. Grounding System Resistance: 25 ohms or less.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements for submittals procedures.

. Product Data: Provide for grounding electrodes and connections.

. Test Reports: Indicate overall resistance to ground and resistance of each electrode.

. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

. Project Record Documents: Record actual locations of components and grounding electrodes.

. Certificate of Compliance: Indicate acceptance of installation by authority having jurisdiction.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70, Article 250.

. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

PART 0 PRODUCTS

0.0 ELECTRODES

. Grounding electrode system and grounding electrode conductor. NFPA 70, Article 250, Part III.

0.0 CONNECTORS AND ACCESSORIES

. Grounding electrode system and grounding electrode conductor. NFPA 70, Article 250, Part VII.

PART 0 EXECUTION

0.0 EXAMINATION

. Verify existing conditions prior to beginning work.

. Verify that final backfill and compaction has been completed before driving rod electrodes.

0.0 INSTALLATION

. Install ground electrodes at locations indicated. Install additional rod electrodes as required to achieve specified resistance to ground.

. Foundation Electrodes: No. 4.

. Provide grounding electrode conductor and connect to reinforcing steel in foundation footing where indicated. Bond steel together.

. Provide bonding to meet requirements described in Quality Assurance of this section.

. Bond together reinforcing steel and metal accessories in pool and fountain structures; in accordance with NFPA 70, Article 250, Part IV and Article 680.

. Install transient suppression plate where indicated.

. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing. NFPA 70, Part VII.

. Interface with lightning protection system. NFPA 70, Article 250.106.

0.0 FIELD QUALITY CONTROL

. Owner will provide field inspection in accordance with Section 01400.

. Inspect and test in accordance with NETA STD ATS except Section 4.

. Perform inspections and tests listed in NETA STD ATS, Section 7.13.

END OF SECTION

SECTION 05070

HANGERS AND SUPPORTS

PART 0 GENERAL

0.0 SECTION INCLUDES

- Conduit and equipment supports.
- Anchors and fasteners.

0.0 REFERENCES

- NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.
- NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

- See Section 01300 - Administrative Requirements, for submittal procedures.
- Product Data: Provide manufacturer's catalog data for fastening systems.
- Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

0.0 QUALITY ASSURANCE

- Conform to requirements of NFPA 70.
- Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

PART 0 PRODUCTS

0.0 MATERIALS

- Hangers, Supports, Anchors, and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.
- Supports: Fabricated of structural steel or formed steel members; galvanized.
- Anchors and Fasteners:
    0. Concrete Structural Elements: Use precast inserts, expansion anchors, or preset inserts.
    0. Steel Structural Elements: Use beam clamps, or welded fasteners.
    0. Concrete Surfaces: Expansion anchors.
    0. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.

0. Sheet Metal: Use sheet metal screws.

0. Wood Elements: Use wood screws.

PART 0 EXECUTION

0.0 INSTALLATION

. Locate and install anchors, fasteners, and supports in accordance with NECA "Standard of Installation".

0. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.

0. Obtain permission from City Engineer before drilling or cutting structural members.

. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.

. Install surface-mounted cabinets and panel boards with minimum of four anchors.

. In wet and damp locations use steel channel supports to stand cabinets and panel boards 1 inch off wall. In corrosive environments such as wet wells, chlorine rooms, pools, etc. supporting means such as strut and conduit straps shall be made of 316 stainless steel, fiberglass, or equal. Steel structural supports shall have an anti-corrosion epoxy coating or equal.

. Use sheet metal channel to bridge studs above and below cabinets and panel boards recessed in hollow partitions.

END OF SECTION

SECTION 05075

ELECTRICAL IDENTIFICATION

PART 0 GENERAL

0.0 SECTION INCLUDES

- Nameplates and labels.
- Wire and cable markers.
- Conduit markers.
- Field-painted identification of conduit.

0.0 RELATED SECTIONS

- Section 04900 - Paints and Coatings.

0.0 REFERENCES

- NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

- See Section 01300 - Administrative Requirements for submittals procedures.
- Product Data: Provide catalog data for nameplates, labels, and markers.
- Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, preparation and installation of product.

0.0 QUALITY ASSURANCE

- Conform to requirements of NFPA 70.
- Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

PART 0 PRODUCTS

0.0 NAMEPLATES AND LABELS

- Nameplates: Engraved three-layer laminated plastic, white letters on black background.

0. Arc Flash Risk Assessment Labeling: Durable printed moisture and sunlight resistant adhesive label containing the following information-
    - A square box with black lettering on orange background containing the word ‘warning’ or red background containing the word ‘danger’ as appropriate
    - Calculated available fault current
    - System nominal voltage
    - Equipment name

. Name and circuit number of upstream source feeding equipment
. Calculated level of arc flash PPE required
. Approach boundary dimensions
. Information shall be obtained from an incident energy analysis and the method of calculation and data to support the information for the label shall be furnished to, and accepted by the City Engineer prior to affixing the label.

. Locations:

0. Each electrical distribution and control equipment enclosure.

. Letter Size:

0. Use 1/8 inch letters for identifying individual equipment and loads.

. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background. Use only for identification of individual wall switches and receptacles, control device stations, and appurtenant items.

0.0 WIRE MARKERS

. Description: tape type wire markers or heat shrink.

. Locations: Each conductor at panel board gutters, pull boxes, outlet boxes, and junction boxes and each load connection.

. Legend:

0. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
0. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on drawings. 120/208-240 vault.

. Phase ID: Black, red, blue, white, green, 120/208 - 240 volt and brown, orange, yellow, grey, green 277/480 volt. Insulated conductors sized AWG 6 and smaller shall have continuous colored outer insulation along its entire length. Conductors sized AWG 4 and larger shall be permitted to be field identified with at least 6 inches of phase tape neatly wrapped at all terminations, condulets, pull boxes, and similar.

0.0 CONDUIT MARKERS

. Location: Furnish markers for each conduit longer than 6 feet.

. Spacing: 20 feet on center.

0.0 UNDERGROUND WARNING TAPE

. Description: 4 inch wide plastic tape, detectable type colored red with suitable warning legend describing buried electrical lines.

PART 0 EXECUTION

0.0 PREPARATION

. Degrease and clean surfaces to receive nameplates and labels.

0.0 INSTALLATION

. Install nameplates and labels parallel to equipment lines.

. Secure nameplates to equipment front using screws.

. Identify underground conduits using underground warning tape. Install one tape per trench at 12 inches below finished grade.

END OF SECTION

SECTION 05123

BUILDING WIRE AND CABLE

PART 0 GENERAL

0.0 SECTION INCLUDES

. Wire and cable for 600 volts and less.

. Wiring connectors and connections.

0.0 RELATED SECTIONS

. Section 02112 - Trench Excavation.

. Section 02115 - Excavation.

. Section 02116 - Fill and Backfill: Bedding and backfilling.

. Section 05075 - Electrical Identification.

0.0 REFERENCES

. NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.

. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements, for submittal procedures.

. Product Data: Provide for each wire and cable type.

. Test Reports: Indicate procedures and values obtained.

. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency.

. Project Record Documents: Record actual locations of components and circuits.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70.

. Products: Listed and classified by Underwriters Laboratories Inc. as meeting their standards for the purpose specified and indicated.

PART 0 PRODUCTS

0.0 WIRING REQUIREMENTS

- Concealed Dry Interior Locations: Use only building wire with Type THHN insulation in raceway.
- Exposed Dry Interior Locations: Use only building wire with Type THHN insulation in raceway.
- Wet or Damp Interior Locations: Use only building wire with Type XHHW.
- Exterior Locations: Use only building wire with Type THWN insulation in raceway.
- Underground Installations: Use only building wire with Type XHHW-2 insulation in raceway.
- Use stranded copper conductor for feeders and branch circuits.
- Use stranded copper conductors for control circuits.
- Use copper conductor not smaller than 12 AWG for power and lighting circuits.
- Use copper conductor not smaller than 16 AWG for control circuits.
- Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet or calculated minimum size required by NFPA 70 for purposes of required voltage drop, whichever is greater.
- Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet or calculated minimum size required by NFPA 70 for purposes of required voltage drop, whichever is greater.
- Conductor sizes are based on copper.

0.0 BUILDING WIRE

- Description: Single conductor insulated wire.
- Conductor: Copper.
- Insulation Voltage Rating: 600 volts.
- Insulation: NFPA 70, Type THHN.

0.0 WIRING CONNECTORS

- Solderless Pressure Connectors:
- Spring Wire Connectors:
- Compression Connectors:

PART 0 EXECUTION

0.0 EXAMINATION

. Verify that interior of building has been protected from weather.

. Verify that mechanical work likely to damage wire and cable has been completed.

. Verify that raceway installation is complete and supported.

. Verify that field measurements are as indicated.

0.0 PREPARATION

. Completely and thoroughly swab raceway before installing wire.

0.0 INSTALLATION

. Route wire and cable as required to meet project conditions.

0. Wire and cable routing indicated is approximate unless dimensioned.

0. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.

0. Include wire and cable of lengths required to install connected devices within 10 ft of location shown.

. Install wire and cable in accordance with the NECA "Standard of Installation."

. Use wiring methods indicated.

. Pull all conductors into raceway at same time.

. Use suitable wire pulling lubricant.

. Protect exposed cable from damage.

. Use suitable cable fittings and connectors.

. Neatly train and lace wiring inside boxes, equipment, and panel boards.

. Clean conductor surfaces before installing lugs and connectors.

. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.

. Identify and color code wire and cable under provisions of Section 16075. Identify each conductor with its circuit number or other designation indicated.

0.0 FIELD QUALITY CONTROL

. Perform field inspection and testing in accordance with Section 01400.

. Inspect and test in accordance with NETA STD ATS, except Section 4.

. Perform inspections and tests listed in NETA STD ATS, Section 7.3.1.

END OF SECTION

SECTION 05131

CONDUIT

PART 0 GENERAL

0.0 SECTION INCLUDES

. Conduit, fittings and conduit bodies.

0.0 RELATED SECTIONS

. Section 05060 - Grounding and Bonding.

. Section 05070 - Hangers and Supports.

. Section 05075 - Electrical Identification.

. Section 05138 - Boxes.

0.0 REFERENCES

. ANSI C80.1 - American National Standard Specification for Rigid Steel Conduit -- Zinc Coated; latest edition.

. ANSI C80.3 - American National Standard Specification for Electrical Metallic Tubing -- Zinc Coated; latest edition.

. NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.

. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies; National Electrical Manufacturers Association; latest edition.

. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit; National Electrical Manufacturers Association; latest edition.

. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80); National Electrical Manufacturers Association; latest edition.

. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing; National Electrical Manufacturers Association; latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements for submittals procedures.

. Product Data: Provide for metallic conduit, flexible metal conduit, liquid tight flexible metal conduit, metallic tubing, nonmetallic conduit, flexible nonmetallic conduit, nonmetallic tubing, fittings, and conduit bodies.

. Project Record Documents: Accurately record actual routing of conduits larger than 2 inches.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70.

. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

0.0 DELIVERY, STORAGE, AND HANDLING

. Accept conduit on site. Inspect for damage.

. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

. Protect PVC conduit from sunlight.

PART 0 PRODUCTS

0.0 CONDUIT REQUIREMENTS

. Conduit Size: Comply with NFPA 70.

0. Minimum Size: 3/4 inch unless otherwise specified.

. Underground Installations:

0. More than Five Feet from Foundation Wall: Use schedule 40 non-metallic conduit or schedule 80 thickwall non-metallic conduit.

0. Within Five Feet from Foundation Wall: Use plastic coated GRC conduit or thickwall GRC rigid conduit with corrosion tape.

0. In or Under Slab on Grade: Use schedule 40 conduit or schedule 80 thickwall non-metallic conduit.

0. Minimum Size: 1 inch.

. Outdoor Locations Above Grade: Use rigid steel conduit or electrical metallic tubing.

. In Slab Above Grade:

0. Use rigid steel conduit.

0. Maximum Size Conduit in Slab: one inch; 3/4 inch for conduits crossing each other.

. Wet and Damp Locations: GRC, RSC.

. Dry Locations:

0. Concealed: Use rigid steel conduit or electrical metallic tubing.

0. Exposed: GRC or RSC.

. Corrosive Locations such as wet wells, chlorine rooms, pools, etc.: PVC coated GRC or RMC

0.0 METAL CONDUIT

. Rigid Steel Conduit: ANSI C80.1.

. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

0. No Aluminum

. Conduit must be threaded, no threadless fittings.

0.0 PVC COATED METAL CONDUIT

. Description: NEMA RN 1; rigid steel conduit with external PVC coating, 40 mil thick and 2 mil urethane interior lining and thread coating.

. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to match conduit.

0.0 FLEXIBLE METAL CONDUIT

. Description: Interlocked steel construction.

. Fittings: NEMA FB 1.

0.0 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

. Description: Interlocked steel construction with PVC jacket.

. Fittings: NEMA FB 1.

0.0 ELECTRICAL METALLIC TUBING (EMT)

. Description: ANSI C80.3; galvanized tubing.

. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron compression type.

0.0 NONMETALLIC CONDUIT

. Description: NEMA TC 2; Schedule 40 PVC and Schedule 80 PVC.

. Fittings and Conduit Bodies: NEMA TC 3.

PART 0 EXECUTION

0.0 EXAMINATION

. Verify that field measurements are as shown on drawings.

. Verify routing and termination locations of conduit prior to rough-in.

. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

0.0 INSTALLATION

- Install conduit in accordance with NECA Standard of Installation.
- Install nonmetallic conduit in accordance with manufacturer's instructions.
- Arrange supports to prevent misalignment during wiring installation.
- Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits.
- Fasten conduit supports to building structure and surfaces under provisions of Section 05070.
- Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- Do not attach conduit to ceiling support wires.
- Arrange conduit to maintain headroom and present neat appearance.
- Route exposed conduit parallel and perpendicular to walls.
- Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- Route conduit in and under slab from point-to-point.
- Maintain adequate clearance between conduit and piping.
- Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F.
- Cut conduit square using saw or pipe cutter; de-burr cut ends.
- Bring conduit to shoulder of fittings; fasten securely.
- Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- Use conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations.
- Install no more than equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one shot bender to fabricate bends in metal conduit larger than 2 inch size.
- Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic.
- Provide suitable pull string, rated for 200 pounds tensile strength, in each empty conduit except sleeves and nipples.

. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

. Ground and bond conduit as required.

. Identify conduit under provisions of Section 05075.

END OF SECTION

SECTION 05138

BOXES

PART 0 GENERAL

0.0 SECTION INCLUDES

. Wall, ceiling, and floor outlet boxes.

. Pull and junction boxes.

0.0 RELATED SECTIONS

. Section 05139 - Cabinets and Enclosures.

. Section 05140 - Wiring Devices: Wall plates in finished areas.

0.0 REFERENCES

. NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.

. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies; National Electrical Manufacturers Association; latest edition.

. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports; National Electrical Manufacturers Association; latest edition.

. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements, for submittal procedures.

. Project Record Documents: Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70.

. Products: Listed and classified by Underwriters Laboratories, Inc., as meeting their standards for the purpose specified and indicated.

PART 0 PRODUCTS

0.0 OUTLET BOXES

. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.

0. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.

. Cast Boxes: NEMA FB 1, Type FD, Malleable Iron. Provide gasketed cover by box manufacturer. Provide threaded hubs.

. Wall Plates for Finished Areas: As specified in Section 05140.

0.0 PULL AND JUNCTION BOXES

. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

. Hinged Enclosures: As specified in Section 16139.

. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:

0. Material: Galvanized cast iron.

0. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover and screws.

. In-Ground Cast Metal Box: NEMA 250, Type 6, outside flanged, recessed cover box for flush mounting:

0. Material: Galvanized cast iron.

0. Cover: Smooth cover with neoprene gasket and stainless steel cover screws.

0. Cover Legend: "ELECTRIC".

. Corrosive environments shall use NEMA type 4X or type 12 boxes of fiberglass or stainless steel construction.

PART 0 EXECUTION

0.0 EXAMINATION

. Verify locations of floor boxes and outlets in offices and work areas prior to rough-in.

0.0 INSTALLATION

. Install boxes in accordance with NECA "Standard of Installation."

. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.

. Coordinate installation of outlet boxes for equipment connected under Section 05155.

. Set wall mounted boxes at elevations to accommodate mounting heights specified in section for outlet device.

. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.

0. Adjust box locations up to 10 feet if required to accommodate intended purpose.

- Orient boxes to accommodate wiring devices oriented as specified in Section 05140.
- Maintain headroom and present neat mechanical appearance.
- Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- Locate outlet boxes to allow luminaries positioned as shown on reflected ceiling plan.
- Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
- Use flush mounting outlet box in finished areas.
- Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- Do not install flush mounting box back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.
- Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- Use stamped steel bridges to fasten flush mounting outlet box between studs.
- Use adjustable steel channel fasteners for hung ceiling outlet box.
- Do not fasten boxes to ceiling support wires.
- Support boxes independently of conduit.
- Use gang box where more than one device is mounted together. Do not use sectional box.
- Use cast outlet box in exterior locations exposed to the weather and wet locations.
- Large Pull Boxes: Use hinged enclosure in interior dry locations, Nema 12 cast metal box in other locations.

0.0 ADJUSTING

- Adjust flush-mounting outlets to make front flush with finished wall material.
- Install knockout closures in unused box openings.

0.0 CLEANING

- Clean interior of boxes to remove dust, debris, and other material.
- Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 05139

CABINETS AND ENCLOSURES

PART 0 GENERAL

0.0 SECTION INCLUDES

. Hinged cover enclosures.

. Cabinets.

. Terminal blocks.

. Accessories.

0.0 RELATED SECTIONS

. Section 05070 - Hangers and Supports.

0.0 REFERENCES

. NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.

. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; latest edition.

. NEMA ICS 4 - Industrial Control and Systems: Terminal Blocks; National Electrical Manufacturers Association; latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements, for submittal procedures.

. Product Data: Provide manufacturer's standard data for enclosures and cabinets.

. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70.

. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

0.0 MAINTENANCE MATERIALS

. Furnish two of each key.

PART 0 PRODUCTS

0.0 HINGED COVER ENCLOSURES

. Construction: NEMA 250, Type 4 steel enclosure.

. Covers: Continuous hinge, held closed by flush latch operable by screwdriver.

. Provide interior metal back panel for mounting terminal blocks and electrical components; finish with white enamel.

. Enclosure Finish: Manufacturer's standard enamel.

0.0 CABINETS

. Boxes: Galvanized steel (NEMA 4).

. Backpan: Provide metal back pan for mounting terminal blocks. Paint white enamel.

. Fronts: Steel, flush type with concealed trim clamps, door with concealed hinge, and flush lock keyed to match branch circuit panelboard. Finish with gray baked enamel.

. Provide metal barriers to form separate compartments wiring of different systems and voltages.

. Provide concrete housekeeping pad 4” thick for free-standing equipment.

0.0 TERMINAL BLOCKS

. Terminal Blocks: NEMA ICS 4.

. Power Terminals: Unit construction type with closed back and tubular pressure screw connectors, rated 600 volts.

. Signal and Control Terminals: Modular construction type, suitable for channel mounting, with tubular pressure screw connectors, rated 600 volts.

. Provide ground bus terminal block, with each connector bonded to enclosure.

0.0 ACCESSORIES

. Plastic Raceway: Plastic channel with hinged or snap-on cover.

PART 0 EXECUTION

0.0 INSTALLATION

. Install in accordance with NECA Standard of Installation.

. Clearances in accordance to NFPA70E.

. Install enclosures and boxes plumb. Anchor securely to wall and structural supports at each corner under the provisions of Section 05070.

. Install cabinet fronts plumb.

- In locations where splashing may occur due to water leaks, or locations that are otherwise considered damp or wet, cabinets should only be penetrated in bottom to reduce equipment damage caused by ingress of water. If conduits originate from above cabinet or enclosure, they should be routed beside cabinet and brought into bottom by use of wireway, liquidtite, or similar means.

- In corrosive areas such as wet wells, chlorine rooms, pools, etc., enclosures and cabinets should be of NEMA type 4X or type 12 construction. If fiberglass is used, bond bushings

0.0 CLEANING

- Clean electrical parts to remove conductive and harmful materials.

- Remove dirt and debris from enclosure.

- Clean finishes and repair damage.

END OF SECTION

SECTION 05140

WIRING DEVICES

PART 0 GENERAL

0.0 SECTION INCLUDES

. Wall switches.

. Receptacles.

. Device plates and decorative box covers.

0.0 RELATED SECTIONS

. Section 05138 - Boxes.

0.0 REFERENCES

. NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.

. NEMA WD 1 - General Requirements for Wiring Devices; National Electrical Manufacturers Association; latest edition.

. NEMA WD 6 - Wiring Device -- Dimensional Requirements; National Electrical Manufacturers Association; latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements, for submittal procedures.

. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

. Manufacturer's Installation Instructions.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70.

. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

PART 0 PRODUCTS

0.0 WALL SWITCHES

. Wall Switches: NEMA WD 1, Heavy Duty, AC only general-use snap switch.

0. Body and Handle: Ivory plastic with toggle handle.

0. Ratings:

. Voltage: 120 volts, AC.
. Current: 20 amperes.

0.0 RECEPTACLES

. Receptacles: NEMA WD 1, Heavy duty.

0. Device Body: Ivory plastic.

0. Ratings:

. Voltage: 120 volts, AC.
. Current: 20 amperes.

0. Configuration: NEMA WD 6, type as specified and indicated.

. GFCI Receptacles: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory Requirements (20 AMP).

0.0 WALL PLATES

. Decorative Cover Plates: Stainless Steel.

. Jumbo Cover Plates: Stainless Steel.

. Weatherproof Cover Plates: Gasketed cast metal hinged.

PART 0 EXECUTION

0.0 EXAMINATION

. Verify that outlet boxes are installed at proper height.

. Verify that wall openings are neatly cut and will be completely covered by wall plates.

. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

0.0 PREPARATION

. Provide extension rings to bring outlet boxes flush with finished surface.

. Clean debris from outlet boxes.

0.0 INSTALLATION

. Install in accordance with NECA "Standard of Installation."

. Install devices plumb and level.

. Install switches with OFF position down.

. Install receptacles with grounding pole on bottom.

. Connect wiring device grounding terminal to outlet box with bonding jumper.

. Install decorative plates on switch, receptacle, and blank outlets in finished areas. Include printed label denoting circuit number and panel of origin.

. Connect wiring devices by wrapping conductor around screw terminal.

. Use jumbo size plates for outlets installed in masonry walls.

. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, on surface mounted outlets and label.

0.0 FIELD QUALITY CONTROL

. Perform field inspection, testing, and adjusting in accordance with Section 01400.

. Inspect each wiring device for defects.

. Operate each wall switch with circuit energized and verify proper operation.

. Verify that each receptacle device is energized.

. Test each receptacle device for proper polarity. Indicate that voltage drops are within limits required by NFPA 70 by means of voltage drop load testing at each receptacle location and document tested values. Test documents shall be furnished to City Engineer or designee at final inspection.

. Test each GFCI receptacle device for proper operation.

0.0 ADJUSTING

. Adjust devices and wall plates to be flush and level.

0.0 CLEANING

. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION

~~SECTION 05155~~

~~EQUIPMENT WIRING~~

~~PART 0 GENERAL~~

~~0.0 SECTION INCLUDES~~

- ~~Electrical connections to equipment.~~

~~0.0 RELATED SECTIONS~~

- ~~Section 05131 - Conduit.~~
- ~~Section 05123 - Building Wire and Cable.~~
- ~~Section 05138 - Boxes.~~
- ~~Section 05140 - Wiring Devices.~~

~~0.0 REFERENCES~~

- ~~NEMA WD 1 - General Requirements for Wiring Devices; National Electrical Manufacturers Association; latest edition.~~
- ~~NEMA WD 6 - Wiring Devices - Dimensional Requirements; National Electrical Manufacturers Association; latest edition.~~
- ~~NFPA 70 - National Electrical Code; National Fire Protection Association.~~

~~0.0 SUBMITTALS~~

- ~~See Section 01300 - Administrative Requirements, for submittal procedures.~~
- ~~Product Data: Provide wiring device manufacturer's catalog information showing dimensions, configurations, and construction.~~
- ~~Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.~~

~~0.0 QUALITY ASSURANCE~~

- ~~Conform to requirements of NFPA 70.~~
- ~~Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.~~

~~0.0 COORDINATION~~

- ~~Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.~~
- ~~Determine connection locations and requirements.~~

. Sequence rough-in of electrical connections to coordinate with installation of equipment.

. Sequence electrical connections to coordinate with start-up of equipment.

PART 0 PRODUCTS

0.0 MATERIALS

. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.

0. Attachment Plug Construction: Conform to NEMA WD 1.

0. Cord Construction: NFPA 70, Type SO multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.

0. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

. Disconnect Switches: As specified in applicable Sections and in individual equipment sections.

. Wiring Devices: As specified in Section 05140.

. Flexible Conduit: As specified in Section 05131.

. Wire and Cable: As specified in Section 05123.

. Boxes: As specified in Section 05138.

0.0 EQUIPMENT CONNECTIONS

. Electrical equipment shall be connected as indicated:

0. Electrical Connection: Flexible conduit where required.

0. Electrical Connection: Cord and plug (NEMA 6-20R).

0. Provide field-installed disconnect switch.

PART 0 EXECUTION

0.0 EXAMINATION

. Verify that equipment is ready for electrical connection, wiring, and energization.

0.0 ELECTRICAL CONNECTIONS

. Make electrical connections in accordance with equipment manufacturer's instructions.

. Make conduit connections to equipment using flexible conduit. Use liquid tight flexible conduit with watertight connectors in damp or wet locations.

. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

. Provide receptacle outlet to accommodate connection with attachment plug.

- Provide cord and cap where field-supplied attachment plug is required.

- Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

- Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

- Install terminal block jumpers to complete equipment wiring requirements.

- Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

- Tighten electrical connections to manufacturer recommended torque values. For all busbars and wires 4AWG or larger, document applied torque values for each fastener and lug screw and apply a witness mark of anti-sabotage lacquer to each. Furnish torque value sheet to City Engineer or designee at final inspection.

END OF SECTION

~~SECTION 05210~~

~~ELECTRICAL UTILITY SERVICES~~

~~PART 0 GENERAL~~

~~0.0 SECTION INCLUDES~~

- ~~Meter bases.~~

~~0.0 REFERENCES~~

- ~~NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.~~
- ~~NFPA 70 - National Electrical Code; National Fire Protection Association.~~
- ~~RMP 6 State ESR.~~

~~0.0 SYSTEM DESCRIPTION~~

- ~~Service Entrance: as acceptable to the electrical utility company.~~

~~0.0 SUBMITTALS~~

- ~~See Section 01300 - Administrative Requirements, for submittal procedures.~~
- ~~Product Data: Provide ratings and dimensions of transformer cabinets and meter bases.~~

~~0.0 QUALITY ASSURANCE~~

- ~~Perform work in accordance with utility company written requirements and NFPA 70.~~

  ~~0. Maintain one copy of each document on site.~~

- ~~Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.~~

~~PART 0 PRODUCTS~~

~~0.0 COMPONENTS~~

- ~~Meter: Furnished by utility company.~~
- ~~Utility Transformer Pad: Prefabricated precast concrete transformer pad with cable pit or vault as required by utility company.~~
- ~~Other Components: As required by utility company.~~

~~PART 0 EXECUTION~~

~~0.0 PREPARATION~~

- ~~Arrange with utility company to obtain permanent electric service to the Project.~~

. Verify that field measurements are as indicated on utility company drawings.

0.0 INSTALLATION

. Install service rack, weatherhead, transformer pad, metering transformer cabinets, and meter base as required by utility company.

. Install in accordance with NECA "Standard of Installation" & NFPA 70, RMP 6 State ESR.

END OF SECTION

SECTION 05412

ENCLOSED SWITCHES

PART 0 GENERAL

0.0 SECTION INCLUDES

. Fusible switches.

0.0 REFERENCES

. NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.

. NEMA FU 1 - Low Voltage Cartridge Fuses; National Electrical Manufacturers Association; latest edition.

. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum); National Electrical Manufacturers Association; latest edition.

. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements, for submittal procedures.

. Product Data: Provide switch ratings and enclosure dimensions.

. Project Record Documents: Record actual locations of enclosed switches.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70.

. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.

. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

PART 0 PRODUCTS

0.0 COMPONENTS

. Fusible Switch Assemblies: NEMA KS 1, Type HD enclosed load interrupter knife switch.

0. Externally operable handle interlocked to prevent opening front cover with switch in ON position.

0. Handle lockable in OFF position.

0. Fuse clips: Designed to accommodate NEMA FU1, Class R fuses.

. Enclosures: NEMA KS 1.

0. Interior Dry Locations: Type 1.

0. Exterior Locations: Type 3R.

0. Booster Pump, Well House, and Vault locations: NEMA Type 4.

PART 0 EXECUTION

0.0 INSTALLATION

. Install in accordance with NECA Standard of Installation.

. Install fuses in fusible disconnect switches.

. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

0.0 FIELD QUALITY CONTROL

. Perform field inspection in accordance with Section 01400.

. Inspect and test in accordance with NETA STD ATS, except Section 4.

. Perform inspections and tests listed in NETA STD ATS, Section 7.5.

END OF SECTION

SECTION 05423

ENCLOSED MOTOR CONTROLLERS

PART 0 GENERAL

0.0 SECTION INCLUDES

- Manual motor controllers.
- Magnetic motor controllers.
- Automatic Controllers
- Combination magnetic motor controllers and disconnects.
- Soft Start
- SPD – Surge Protection Device

0.0 RELATED SECTIONS

- Section 05070 - Hangers and Supports.
- Section 05075 - Electrical Identification: Engraved nameplates.
- Section 05425-Variable Frequency Controller
- Section 05491 - Fuses.

0.0 REFERENCES

- NEMA ICS 7.1 - Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable Speed Drive Systems; National Electrical Manufacturers Association; latest edition.
- NEMA ICS 7 - Industrial Control and Systems: Adjustable Speed Drives; National Electrical Manufacturers Association; latest edition.
- NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; latest edition.
- NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.
- NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches; National Electrical Manufacturers Association; latest edition.
- NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC; National Electrical Manufacturers Association; latest edition.
- NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices; National Electrical Manufacturers Association; latest edition.

- NEMA ICS 6 - Industrial Control and Systems: Enclosures; National Electrical Manufacturers Association; latest edition.

- NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum); National Electrical Manufacturers Association; latest edition.

- NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; latest edition.

- NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

- See Section 01300 - Administrative Requirements, for submittal procedures.

- Product Data: Provide catalog sheets showing voltage, controller size, ratings and size of switching/overcurrent protective devices, short circuit ratings, dimensions, enclosure details.

- Test Reports: Indicate field test and inspection procedures and test results.

- Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

- Maintenance Data: Replacement parts list for controllers.

0.0 QUALITY ASSURANCE

- Conform to requirements of NFPA 70.

- Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.

- Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

PART 0 PRODUCTS

0.0 MANUFACTURERS

- Weg SSW07 series or equal

- Substitutions: See Section 01600 - Product Requirements.

0.0 MANUAL CONTROLLERS

- Manual Motor Controllers: NEMA ICS 2, AC general-purpose, Class A, manually operated, full-voltage controller with overload element, red pilot light, NO auxiliary contact, and push button operator.

- Fractional Horsepower Manual Controllers: NEMA ICS 2, AC general-purpose, Class A, manually operated, full-voltage controller for fractional horsepower induction motors, with thermal overload unit, red pilot light, and key operator.

- Motor Starting Switches: NEMA ICS 2, AC general-purpose Class A manually operated, full-voltage controller for fractional horsepower induction motors, without thermal overload unit, with red pilot light and key operator.

- Enclosures: NEMA ICS 6, NEMA Type4.

0.0 AUTOMATIC CONTROLLERS

- Magnetic Motor Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower, with motor circuit protector.

- Reversing Controllers: Include electrical interlock and integral time delay transition between FORWARD and REVERSE rotation.

- Two-Speed Controllers: Include integral time delay transition between FAST and SLOW speeds.

- Coil Operating Voltage: 120 volts, 60 Hertz.

- Overload Relays: NEMA ICS 2; bimetal.

- Motor Circuit Protector: NEMA AB 1, circuit breakers with integral instantaneous magnetic trip in each pole. All controllers shall include a three phase motor protector; Motor Saver Model 777.

- Enclosures: NEMA ICS 6, NEMA Type 4.

- SPD – An appropriate Surge Protection Device necessary to limit transient overvoltage's of atmospheric origin and divert current waves to ground.

0.0 ACCESSORIES

- Auxiliary Contacts: NEMA ICS 2, 2 normally open contacts in addition to seal-in contact.

- Cover Mounted Pilot Devices: NEMA ICS 5, standard duty oil-tight type.

- Pilot Device Contacts: NEMA ICS 5, Form Z, rated A150.

- Pushbuttons: Unguarded type.

- Indicating Lights: LED.

- Selector Switches: Rotary type.

- Relays: NEMA ICS 2.

- Control Power Transformers: 120 volt secondary, primary as required, in each motor starter. Provide fused primary, secondary, and bond unfused leg of secondary to enclosure.

- Remote HMI: Furnish and install remote human machine interface panel for RVSS on panel door near pushbuttons and switches.

0.0 COMBINATION CONTROLLERS

. Combination Controllers: Combine motor controllers with disconnects in common enclosure. Obtain IEC Class 2 coordinated component protection.

. Thermal Magnetic Circuit Breakers: NEMA AB 1, with integral thermal and instantaneous magnetic trip in each pole.

. Motor Circuit Protector: NEMA AB 1, circuit breakers with integral instantaneous magnetic trip in each pole. All controllers shall include a three phase motor protector; Motor Saver Model 777.

. Nonfusible Switch Assemblies: NEMA KS 1, enclosed knife switch with externally operable handle.

. Fusible Switch Assemblies: NEMA KS 1, enclosed knife switch with externally operable handle. Fuse clips: Designed to accommodate Class R fuses.

. SPD – An appropriate Surge Protection Device necessary to limit transient overvoltage's of atmospheric origin and divert current waves to ground.

0.0 SOFT START

. All controllers for pump motors shall include soft start operation. The soft start shall provide adjustable ramp times for starting and stopping pumps to minimize system hammers. Soft starts shall be compatible with the controllers, and shall be inspected and accepted by the City Engineer.

. SPD – An appropriate Surge Protection Device necessary to limit transient overvoltage's of atmospheric origin and divert current waves to ground.

PART 0 EXECUTION

0.0 INSTALLATION

. Install enclosed controllers where indicated, in accordance with NECA Standard of Installation, NFPA70.

. Install enclosed controllers plumb. Provide supports in accordance with Section 05070.

. Height: 5 feet to operating handle.

. Provide fuses for fusible switches; refer to Section 05491 for product requirements.

. Select and install overload heater elements in motor controllers to match installed motor characteristics.

. Provide engraved plastic nameplates; refer to Section 05075 for product requirements and location.

. Neatly type label inside each motor controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating. Place label in clear plastic holder.

. Provide clearances around enclosed controllers according to NECA Standards & NFPA70E.

0.0 FIELD QUALITY CONTROL

- Perform field inspection and testing in accordance with Section 01400.
- Inspect and test in accordance with NETA STD ATS, except Section 4.
- Perform inspections and tests listed in NETA STD ATS, Section 7.16.2.

END OF SECTION

SECTION 05425

VARIABLE FREQUENCY CONTROLLERS

PART 0 GENERAL

0.0 SECTION INCLUDES

. Variable frequency controllers.

0.0 RELATED SECTIONS

. Section 05075 - Electrical Identification: Engraved nameplates.

. Section 05491 - Fuses.

0.0 REFERENCES

. NEMA ICS 7.1 - Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable Speed Drive Systems; National Electrical Manufacturers Association; latest edition.

. NEMA ICS 7 - Industrial Control and Systems: Adjustable Speed Drives; National Electrical Manufacturers Association; latest edition.

. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; latest edition.

. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements, for submittal procedures.

. Product Data: Provide catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings, dimensions, and enclosure details.

. Shop Drawings: Indicate front and side views of enclosures with overall dimensions and weights shown; conduit entrance locations and requirements; and nameplate legends.

. Test Reports: Indicate field test and inspection procedures and test results.

. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

. Manufacturer's Field Reports: Indicate start-up inspection findings.

. Operation Data: NEMA ICS 7.1. Include instructions for starting and operating controllers, and describe operating limits that may result in hazardous or unsafe conditions.

. Maintenance Data: NEMA ICS 7.1. Include routine preventive maintenance schedule.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70.

. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.

. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

. Conform to requirements of IEEE 519-1992.

0.0 DELIVERY, STORAGE, AND HANDLING

. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to components, enclosure, and finish.

0.0 MAINTENANCE SERVICE

. Provide service and maintenance of controller during the warranty period.

PART 0 PRODUCTS

0.0 MANUFACTURERS

. Schneider Altivar 600 series or equal.

. Substitutions: See Section 01600 - Product Requirements.

0.0 DESCRIPTION

. Variable Frequency Controllers: Enclosed controllers suitable for operating the indicated loads, in conformance with requirements of NEMA ICS 7. Select unspecified features and options in accordance with NEMA ICS 3.1.

0. Employ microprocessor-based inverter logic isolated from power circuits.

0. Design for ability to operate controller with motor disconnected from output.

0. Harmonies Filter to meet IEEE 519 Levels

. Enclosures: NEMA 250, Type 4, suitable for equipment application in places regularly open to the public.

. Finish: Manufacturer's standard enamel.

0.0 OPERATING REQUIREMENTS

. Displacement Power Factor: Between 1.0 and 0.95, lagging, over entire range of operating speed and load.

. Operating Ambient: 0 degrees C to 40 degrees C.

. Minimum Efficiency at Full Load: as per manufacturer's standard design.

. Time to Stop: as per manufacturer's recommendations.

. Volts Per Hertz Adjustment: Plus or minus 10 percent.

. Current Limit Adjustment: 60 to 110 percent of rated.

. Acceleration Rate Adjustment: 0.5 to 30 seconds.

. Deceleration Rate Adjustment: 1 to 30 seconds.

. Input Signal: 4 to 20 mA.

0.0 COMPONENTS

. Display: Provide integral digital display to indicate output voltage, output frequency, and output current.

. Status Indicators: Separate indicators for over-current, over-voltage, ground fault, over-temperature, and input power ON.

. Furnish HAND-OFF-AUTOMATIC selector switch and manual speed control.

. Include under-voltage release.

. Control Power Source: If separate circuit is used, a separate indicating pilot light shall be equipped on door front to indicate if control power is present. Light shall be labeled 'control power', and shall list circuit and panel of origin.

. Door Interlocks: Furnish mechanical means to prevent opening of equipment with power connected, or to disconnect power if door is opened; include means for defeating interlock by qualified persons.

. Safety Interlocks: Furnish terminals for remote contact to inhibit starting under both manual and automatic mode.

. Control Interlocks: Furnish terminals for remote contact to allow starting in automatic mode.

. Manual Bypass: Furnish contactor, motor running overload protection, and short circuit protection for full voltage, non-reversing operation of the motor. Include isolation switch to allow maintenance of inverter during bypass operation.

. Wiring Terminations: Match conductor materials and sizes indicated.

0.0 SOURCE QUALITY CONTROL

. Shop inspect and perform standard productions tests for each controller.

. Make completed controller available for inspection at manufacturer's factory prior to packaging for shipment. Notify Owner at least 7 days before inspection is allowed.

. Allow witnessing of factory inspections and tests at manufacturer's test facility. Notify Owner

at least 7 days before inspections and tests are scheduled.

PART 0 EXECUTION

0.0 EXAMINATION

. Verify that surface is suitable for controller installation.

. Do not install controller until building environment can be maintained within the service conditions required by the manufacturer.

. Verify that field measurements are as indicated on shop drawings.

0.0 INSTALLATION

. Install in accordance with NEMA ICS 7.1 and manufacturer's instructions.

. Tighten accessible connections and mechanical fasteners after placing controller.

. Provide fuses in fusible switches; refer to Section 05491 for product requirements.

. Select and install overload heater elements in motor controllers to match installed motor characteristics.

. Provide engraved plastic nameplates; refer to Section 05075 for product requirements and location.

. Neatly type label inside each motor controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating. Place in clear plastic holder.

. VFD shall be located in climate controlled conditions. If room heating and air conditioning are not present, cabinet heating (for humidity control) and air conditioning shall be provided.

0.0 FIELD QUALITY CONTROL

. Perform field inspection and testing in accordance with Section 01400.

. Inspect and test in accordance with NETA STD ATS, except Section 4.

. Perform inspections and tests listed in NETA STD ATS, Section 7.16.2.

0.0 MANUFACTURER'S FIELD SERVICES

. Provide the service of the manufacturer's field representative to prepare and start controllers.

0.0 ADJUSTING

. Make final adjustments to installed controller to assure proper operation of load system. Obtain performance requirements from installer of driven loads.

0.0 DEMONSTRATION

. Demonstrate operation of controllers in automatic and manual modes.

~~END OF SECTION~~

SECTION 05443

PANELBOARDS

PART 0 GENERAL

0.0 SECTION INCLUDES

- Distribution panel boards.
- Branch circuit panel boards.
- Load centers.

0.0 RELATED SECTIONS

- Section 05075 - Electrical Identification.

0.0 REFERENCES

- NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; latest edition.
- NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches; National Electrical Manufacturers Association; latest edition.
- NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC; National Electrical Manufacturers Association; latest edition.
- NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum); National Electrical Manufacturers Association; latest edition.
- NEMA PB 1 - Panel boards; National Electrical Manufacturers Association; latest edition.
- NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panel boards Rated 600 Volts or Less; National Electrical Manufacturers Association; latest edition.
- NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; latest edition.
- NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

- See Section 01300 - Administrative Requirements, for submittal procedures.
- Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.
- Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

. Project Record Documents: Record actual locations of panel boards and record actual circuiting arrangements.

. Maintenance Data: Include spare parts listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70.

. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

0.0 MAINTENANCE MATERIALS

. See Section 01600 - Product Requirements, for additional provisions.

. Furnish two of each panel board key.

PART 0 PRODUCTS

0.0 DISTRIBUTION PANELBOARDS

. Description: NEMA PB 1, circuit breaker type.

. Panel board Bus: Copper, ratings as indicated. Provide copper ground bus in each panel board.

. Minimum integrated short circuit rating: 65,000 AIC.

. Fusible Switch Assemblies: NEMA KS 1, bolt on circuit breakers, quick-make, quick-break, load interrupter with externally operable handle. Provide interlock to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse clips.

. Molded Case Circuit Breakers: NEMA AB 1, bolt on circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits and motors.

. Current Limiting Molded Case Circuit Breakers: NEMA AB 1, bolt on circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.

. Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower, with bimetal overload relay.

0. Coil operating voltage: 120 volts, 60 Hz.

0. Size as shown on Drawings.

0. Provide unit mounted control power transformer, RED indicating light in front cover.

. Circuit Breaker Accessories: Trip units and auxiliary switches as indicated.

. Enclosure: NEMA PB 1 cabinet box; type and size as required.

. Cabinet Front: Surface type, fastened with concealed trim clamps, hinged door with flush lock, metal directory frame, finished in manufacturer's standard gray enamel.

0.0 BRANCH CIRCUIT PANELBOARDS

. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panel board.

. Panel board Bus: Copper, ratings as indicated. Provide copper ground bus in each panel board; provide insulated ground bus where scheduled.

. Minimum Integrated Short Circuit Rating: As indicated.

. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles.

0. Type SWD for lighting circuits.

0. Class A ground fault circuit interrupter breakers where scheduled.

. Current Limiting Molded Case Circuit Breakers: NEMA AB 1, bolt on circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.

. Enclosure: NEMA PB 1, Type 1; Indoor, Outdoor-3R, Booster, well and vault-type 4.

. Cabinet Front: Flush cabinet front with concealed trim clamps, concealed hinge, metal directory frame, and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.

0.0 LOAD CENTERS

. Description: Circuit breaker load center, with bus ratings as indicated.

. Minimum Integrated Short Circuit Rating: 10,000 amperes rms symmetrical.

. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles.

0. Type SWD for lighting circuits.

0. Class A ground fault circuit interrupter breakers where indicated.

. Enclosure: NEMA PB 1, Type 1. Indoor, Outdoor-3R, Booster, well and vault-type 4.

. Box: Flush type with door, and pull ring and latch on door. Finish in manufacturer's standard gray enamel.

PART 0 EXECUTION

0.0 INSTALLATION

. Install panel boards in accordance with NEMA PB 1.1 and the NECA Standard of Installation.

. Install panel boards plumb. Install recessed panel boards flush with wall finishes.

. Height: 6 feet to top of panel board; install panel boards taller than 6 feet with bottom no more than 4 inches above floor.

. Provide filler plates for unused spaces in panel boards.

. Provide typed circuit directory for each branch circuit panel board. Revise directory to reflect circuiting changes required to balance phase loads. Circuit location shall describe area served in a uniquely identifiable manner such as “NE Hallway lighting” or “Mezzanine Receptacles” and shall not be ambiguous or repetitive descriptions such as “Lighting” or “Receptacle”.

. Provide engraved plastic nameplates under the provisions of Section 05075.

. Provide spare conduits out of each recessed panel board to an accessible location above ceiling. Identify each as SPARE.

. Ground and bond panel board enclosure as required by NFPA70.

0.0 FIELD QUALITY CONTROL

. Perform field inspection and testing in accordance with Section 01400.

. Inspect and test in accordance with NETA STD ATS, except Section 4.

. Perform inspections and tests listed in NETA STD ATS, Section 7.4 for switches, Section 7.5 for circuit breakers.

0.0 ADJUSTING

. Measure steady state load currents at each panel board feeder; rearrange circuits in the panel board to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.

END OF SECTION

SECTION 05510

INTERIOR LUMINAIRES

PART 0 GENERAL

0.0 SECTION INCLUDES

. Interior luminaries for buildings to include:

0. Interior luminaires and accessories.

0. Ballasts.

0. Lamps.

0. Luminaire accessories.

0.0 REFERENCES

. ANSI C78.379 - American National Standard for Electric Lamps -- Reflector Lamps -- Classification of Beam Patterns; latest edition.

. NEMA WD 6 - Wiring Devices - Dimensional Requirements; National Electrical Manufacturers Association; latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures; National Fire Protection Association.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements, for submittal procedures.

. Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.

. Product Data: Provide dimensions, ratings, and performance data.

. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

. Operation and Maintenance Data: Instructions for each product.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70 and NFPA 101.

. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

0.0 EXTRA MATERIALS

. See Section 01600 - Product Requirements, for additional provisions.

. Furnish one replacement lamps for each lamp type.

. Furnish one of each ballast type.

PART 0 PRODUCTS

0.0 LUMINAIRES

. Furnish products as indicated in Schedule included on the Drawings.

. Substitutions: See Section 01600 - Product Requirements.

0.0 LAMPS

. Lamp Types: As specified for each luminaire.

PART 0 EXECUTION

0.0 INSTALLATION

. Install suspended luminaires using pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height.

. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.

. Install wall mounted luminaires at height as indicated on Drawings.

. Install accessories furnished with each luminaire.

. Connect luminaires to branch circuit outlets provided under Section 05138 using flexible conduit.

. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.

. Bond products and metal accessories to branch circuit equipment grounding conductor.

. Install specified lamps in each emergency lighting unit.

0.0 FIELD QUALITY CONTROL

. Perform field inspection in accordance with Section 01400.

. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

0.0 ADJUSTING

. Aim and adjust luminaires as indicated.

0.0 CLEANING

. Clean electrical parts to remove conductive and deleterious materials.

. Remove dirt and debris from enclosures.

. Clean photometric control surfaces as recommended by manufacturer.

. Clean finishes and repair damage.

0.0 DEMONSTRATION AND INSTRUCTIONS

. Demonstrate luminaire operation for minimum of two hours.

0.0 PROTECTION

. Re-lamp luminaires that have failed lamps at Substantial Completion.

END OF SECTION

SECTION 05520

EXTERIOR LUMINAIRES

PART 0 GENERAL

0.0 SECTION INCLUDES

. Exterior luminaires for buildings, such as pump houses, to include:

0. Exterior luminaires and accessories.

0. Ballasts.

0. Lamps.

0. Luminaire accessories.

0.0 REFERENCES

. ANSI C78.379 - American National Standard for Electric Lamps -- Reflector Lamps -- Classification of Beam Patterns; latest edition.

. ANSI C82.4 - American National Standard for Ballasts for High-Intensity-Discharge and Low Pressure Sodium Lamps (Multiple-Supply Type); latest edition.

. NFPA 70 - National Electrical Code; National Fire Protection Association.

0.0 SUBMITTALS

. See Section 01300 - Administrative Requirements, for submittal procedures.

. Shop Drawings: Indicate dimensions and components for each luminaire which is not a standard product of the manufacturer.

. Product Data: Provide dimensions, ratings, and performance data.

. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

. Maintenance Data: For each luminaire.

0.0 QUALITY ASSURANCE

. Conform to requirements of NFPA 70.

. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

. Electrical Components: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

0.0 EXTRA MATERIALS

. See Section 01600 - Product Requirements, for additional provisions.

. Furnish one of each type and wattage lamp installed.

PART 0 PRODUCTS

0.0 LUMINAIRES

. Furnish products as indicated in Schedule included on the Drawings.

. Substitutions: See Section 01600 - Product Requirements.

0.0 BALLASTS

. LED

0. Voltage: 120 volts.

0.0 LAMPS

. Lamp Types: As specified for each luminaire.

PART 0 EXECUTION

0.0 INSTALLATION

. Install luminaires as indicated on the drawings.

. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.

. Install accessories furnished with each luminaire.

. Connect luminaires to branch circuit outlets provided under Section 05138.

. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.

. Bond products and metal accessories to branch circuit equipment grounding conductor.

. Install lamps in each luminaire.

0.0 FIELD QUALITY CONTROL

. Perform field inspection, testing, and adjusting in accordance with Section 01400.

. Operate each luminaire after installation and connection. Inspect for improper connections and operation.

0.0 ADJUSTING

. Aim and adjust luminaires to provide illumination levels and distribution as recommended by the manufacturer.

0.0 CLEANING

. Clean electrical parts to remove conductive and deleterious materials.

. Remove dirt and debris from enclosures.

. Clean photometric control surfaces as recommended by the manufacturer.

. Clean finishes and repair damage.

0.0 DEMONSTRATION AND INSTRUCTIONS

. Demonstrate luminaire operation for minimum of two hours.

0.0 PROTECTION OF FINISHED WORK

. Re-lamp luminaires which have failed lamps at Substantial Completion.

END OF SECTION

SECTION 05530

STREET LIGHTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Street lighting for City streets.

1.2 RELATED SECTIONS

A. Section 02112 - Trenching.

~~. Section 05131 - Conduit.~~

~~. Section 05123 - Building Wire and Cable.~~

~~. Section 05138 - Boxes.~~

~~. Section 05140 - Wiring Devices.~~

~~. Section 05155 - Equipment Wiring.~~

~~1.8~~1.3 REFERENCES

A. See appropriate sections of these specifications.

~~1.9~~1.4 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer’s catalog information showing dimensions, configurations, and construction.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

~~1.10~~1.5 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their standards for the purpose specified and indicated.

~~1.11~~1.6 COORDINATION

A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's installation instructions for equipment furnished under this and other sections.

B. Determine connection locations and requirements. Lights shall be 120 v. nominal to ground.

C. Coordinate all work on lighting system with Rocky Mountain Power.

D. Sequence electrical connections to coordinate with start-up of equipment.

1.7 LIGHTING REQUIREMENTS

D.A. Light source shall be LED with a color temperature of 3000K.

PART 2 PRODUCTS

2.1 MATERIALS

A. Street lights, including poles and luminaires, shall be as indicated on the drawings.

1. Manufacturer: HADCO Division of Genlyte Thomas Group L.L.C.

B. Disconnect Switches: As specified in applicable Sections and in individual equipment sections.

C. Wiring Devices: As specified in Section 05140.

D. Wire and Cable: As specified in Section 05123.

E. Boxes: As specified in Section 05138. Junction box lids to be marked “Saratoga Springs Electric”.

F. Concrete: As specified in Section 03300.

G. Conduit: As specified in Section 05131.

PART 3 EXECUTION

3.1 PREPARATION

A. Private Street Lights:

1. Must be master-metered and
2. Shall not contain any City identification, such as the City logo.

B. Verify location of street light with Project Engineer.

C. Verify location and type of power source with Rocky Mountain Power.

3.2 INSTALLATION - STREET LIGHTS

A. Construct concrete base for light pole; size and type to be according to manufacturer’s written instructions and recommendations. Anchor bolts shall be installed according to manufacturer’s template.

B. Install light poles and luminaires, with lamps, in accordance with manufacturer’s written instructions and recommendations. Poles shall be plumb and securely attached to the concrete base.

C. Install an electrical junction box near the base of each light pole.

D. Install an Electrical junction/fuse ground box four to ten feet from Rocky Mountain Power

source, as indicated on drawings and according to the Rocky Mountain Power Streetlight Point of Disconnect Diagram.

E. Install underground electrical conductors in conduit from electrical junction/fuse ground box (Rocky Mountain Power Street Light point of Disconnect Ground Box) to electrical junction ground box at streetlight pole, as indicated on the drawings. Conductors shall be #6, Copper, XHHW-2. Trenching shall be done as described in Section 02112. Conduit to be installed with sand bedding and 24-inches of cover. Trenches shall be backfilled and compacted to required densities.

F. The neutral conductor shall be bonded (as per NFPA 70, 250.4) at the Rocky Mountain Power Street Light Point of Disconnect Ground Box.

G. Connection to power source will be made by Rocky Mountain Power. The contractor shall leave a 5- foot pig-tail at the Power source to be used for the connection. The contractor shall provide a trench and run the conduit from the electrical junction/fuse ground box (Rocky Mountain Power Street Light point of Disconnect Ground Box) to the source, as required by Rocky Mountain Power.

H. Make electrical connection to light poles in accordance with equipment manufacturer's instructions and as indicated on the drawings.

I. All work shall be done in accordance with the National Electrical Code (NEC) and International Building Code (IBC) and, where applicable, with the requirements of Rocky Mountain Power.

3.3 FIELD QUALITY CONTROL

A. Perform field inspection, testing, and adjusting in accordance with Section 01400.

B. Operate each luminaire after installation and connection. Inspect for improper connections and operation.

3.4 ADJUSTING

A. Aim and adjust luminaires to provide illumination levels and distribution as recommended by the manufacturer.

3.5 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosures.

C. Clean finishes and repair damage.

3.6 OPERATIONAL DEMONSTRATION

A. Demonstrate luminaire operation by verifying with City Inspector it’s continuous operation for a minimum of 48 hours.

3.7 PROTECTION OF FINISHED WORK

A. Re-lamp luminaires which have failed lamps at Substantial Completion.

END OF SECTION

SECTION 05540

OUTDOOR LIGHTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Outdoor lighting

1.2 RELATED SECTIONS

A. Section 02112 - Trenching.

~~. Section 05131 - Conduit.~~

~~. Section 05123 - Building Wire and Cable.~~

~~. Section 05138 - Boxes.~~

~~. Section 05140 - Wiring Devices.~~

~~. Section 05155 - Equipment Wiring.~~

~~1.8~~1.3 REFERENCES

A. Illuminating Engineering Society of North America (IESNA) Lighting Handbook.

B. See appropriate related sections of these specifications.

~~1.9~~1.4 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer’s catalog information showing dimensions, configurations, and construction.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

~~1.10~~1.5 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Products: Listed and classified by Underwriters Laboratories, Inc. as meeting their requirements for the purpose specified and indicated.

~~1.11~~1.6 COORDINATION

A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's installation instructions for equipment furnished under this and other sections.

B. Determine connection locations and requirements.

C. Coordinate all work on lighting systems with Rocky Mountain Power.

D. Sequence electrical connections to coordinate with start-up of equipment.

~~1.12~~1.7 LIGHTING REQUIREMENTS AND DESIGN STANDARDS

A. The purpose of lighting requirements is to require and set minimum standards for outdoor lighting to:

1. Provide for and control lighting in outdoor public places where public health, safety and welfare are potential concerns.
2. Protect drivers and pedestrians from the glare of non-vehicular light sources.
3. Protect neighbors and the night sky from nuisance glare and light trespass from improperly selected or poorly placed, aimed, applied, maintained or shielded light sources.
4. Promote energy-efficient lighting design and operation.
5. Protect and retain the intended visual character of the various venues of the City.

B. Applicability.

1. Uses that are proposed to operate during hours of darkness where there is public assembly and traverse, including but not limited to the following: residential, commercial, industrial, parking lots, sales lots, recreational and institutional uses, and sign, billboard, architectural and landscape lighting applications.
2. The City may require lighting be incorporated for other uses, applications and locations.
3. The glare-control requirements herein contained apply to lighting in all uses, applications and locations.

C. Definitions.

1. Lighting definitions shall be as described in the IESNA Lighting Handbook. If there is a difference between what is provided for here and the most recent edition of the IESNA Lighting Handbook, the terms found in the most recent edition will prevail. If there is a standard herein that is not contained in the most recent edition of the IESNA Lighting Handbook, the standard herein shall be imposed unless inconsistent with the most recent edition of the IESNA Lighting Handbook
2. The following definitions are selected from the Handbook for ready reference.
    a. Full Cutoff - attribute of a lighting fixture from which no light is emitted at or above a horizontal plane drawn through the bottom of the fixture, and no more than 10% of the lamp's intensity is emitted at or above an angle 10 degrees below that horizontal plane, at all lateral angles around the fixture.
    b. Cutoff - attribute of a lighting fixture from which no more than 2.5% of the lamp's intensity is emitted at a horizontal plane drawn through the bottom of the fixture or above, and no more than 10% of the lamp's intensity is emitted at or above an angle 10 degrees below that horizontal plane, at all lateral angles around the fixture.
    c. Fully Shielded – attribute of a lighting fixture provided with internal and/or external shields and louvers to prevent brightness from lamps, reflectors, refractors and lenses from causing glare at normal viewing angles.
    d. Glare - excessive brightness in the field of view that causes loss in visual performance or annoyance, so as to jeopardize health, safety or welfare.

e. Light Trespass – light emitted by a lighting fixture or installation, which is cast beyond the boundaries of the property on which the lighting installation is sited.

D. Design Criteria.

1. Illumination Levels. Outdoor lighting, as allowed by the City, shall have intensities and uniformities and glare control in accordance with the current recommended practices of the IESNA a contained in the latest edition of the IESNA Lighting Handbook and applicable Recommended Practices, except as may otherwise be required by the City.
   a. The design calculations for outdoor lighting installations shall be in accordance with the Lighting Handbook. This is includes, but is not limited to, calculation methods and procedures, photometric classifications, and photometric testing procedures.
   b. Illuminance selection should be based on the usage of the area to be illuminated, the level of activity, and night-time security requirements.
   c. Parking Stalls and Sidewalks, footpaths, and grounds around open parking lots shall be illuminated to a minimum of 0.5 fc, with a uniformity ratio of 10:1, the maximum shall not exceed 20 fc.
   d. Primary ingress and egress trails and walkways in parks and public areas shall be illuminated to a minimum of 0.1 fc, with an average of 1 fc.
   e. Primary building entrances shall be lit to a minimum of 5 fc.
2. Lighting Fixture Design.
   a. Fixtures shall be of a type and design appropriate to the lighting application and shall conform to Chapter 19.11 of the City Code.
   b. For the lighting of predominantly horizontal surfaces, such as, but not limited to parking areas, roadways, vehicular and pedestrian passage areas, merchandising and storage areas, automotive-fuel dispensing facilities, automotive sales areas, loading docks, cul-de-sacs, active and passive recreation areas, building entrances, sidewalks, bicycle and pedestrian paths, and site entrances, fixtures shall be aimed straight down and shall meet IESNA full- cutoff criteria.
      i. Fixtures with an aggregate rated lamp lumen output per fixture that does not exceed the rated output of a standard 60-watt incandescent lamp, i.e., 1,000 lumens, are except from the requirements of this paragraph.
   c. For the lighting of predominantly non-horizontal surfaces, such as, but not limited to, facades, landscaping, signs, billboards, fountains, displays and statuary, fixtures shall be fully shielded and shall be installed and aimed so as to not project their output into the windows of neighboring residences, adjacent uses, past the object being illuminated, skyward or onto public roadways.
      i. Fixtures with an aggregate rated lamp lumen output per fixture that does not exceed the rated output of a standard 60-watt incandescent lamp, i.e., 1,000 lumens, are except from the requirements of this paragraph.
   d. “Barn lights”, aka “dusk-to-dawn lights”, where visible from other properties, shall not be permitted unless fully shielded.
3. Control of Nuisance and Disabling Glare.
   a. All lighting shall be aimed, located, designed, fitted and maintained so as not to present a hazard to drivers and pedestrians by impairing their ability to safely traverse and so as not to create a nuisance by projecting or reflecting objectionable light onto a neighboring use or property.
   b. Floodlights and spotlights shall be so shielded, installed and aimed that they do not project their output into the windows of neighboring residences, adjacent uses, past the object being illuminated, skyward or onto a public roadway or pedestrian way.

c. Parking facility and vehicular and pedestrian way lighting (except for safety and security applications and all-night business operations), for commercial, industrial and institutional uses shall be automatically extinguished no later than one hour after the close of business or facility operation. When safety or security lighting is proposed for after-hours illumination, it shall not be in excess of thirty-three (33) percent of the number of fixtures required or permitted for illumination during regular business hours.

d. Illumination for signs, billboards, building facades and/or surrounding landscapes for decorative, advertising or aesthetic purposes is prohibited between 11:00 p.m. and dawn, except that such lighting situated on the premises for a commercial establishment may remain illuminated while the establishment is actually open for business, and until one hour after closing.

e. Vegetation screens shall not be employed to serve as the primary means for controlling glare.

   i. Glare control shall be achieved primarily through the use of such means as cutoff fixtures, shields and baffles, and appropriate application of fixture mounting height, wattage, aiming angle and fixture placement.

f. The illumination projected from any property to a residential use shall at no time exceed 0.1 footcandle, measured line-of-sight from any point on the receiving property.

g. The illumination projected from any property to a non-residential use shall at no time exceed 1.0 footcandle, measured line-of-sight from any point on the receiving property.

h. Externally illuminated billboards and signs shall be lighted by fixtures mounted at the top of the billboard or sign and aimed downward. The fixtures shall be designed, shielded and aimed to limit the light output onto and not beyond the sign or billboard.

   i. Except for certain recreational lighting, fixtures meeting IESNA full-cutoff criteria shall not be mounted in excess of twenty (20) feet above finished grade. Fixtures not meeting IESNA full- cutoff criteria shall not be mounted in excess of sixteen (16) feet above finished grade.

i. The United States flag and the state flag shall be permitted to be illuminated from dusk till dawn. All other flags shall not be illuminated past 11:00 p.m. Flag lighting sources shall not exceed 10,000 lumens per flagpole. The light source shall have a beam spread no greater than necessary to illuminate the flag.

j. Under-canopy lighting, for such applications as gas/service stations, hotel/theater marquees, fast- food/bank/drugstore drive-ups, shall be accomplished using flat-lens full-cutoff fixtures aimed straight down and shielded in such a manner that the lowest opaque edge of the fixture shall be below the light sources at all lateral angles.

   i. The average illumination intensity in the area directly below the canopy shall not exceed 20 maintained footcandles and the maximum intensity shall not exceed 40 maintained footcandles.

k. The use of white strobe lighting for tall structures, such as smokestacks, chimneys, and radio/ communications/television towers is prohibited during hours of darkness, except as specifically required by FAA.

~~1.13~~1.8 OUTDOOR LIGHTING PLAN SUBMISSION

A. For land development applications where site lighting is required and is proposed, lighting plans shall be submitted to the City Engineer for review and acceptance, with the preliminary and final land development plan applications and conditional use applications; and shall

contain the following:

1. A plan or plans of the site, complete, with all structures, parking spaces, building entrances, traffic areas(both vehicular and pedestrian), landscaping that might interfere with lighting, and adjacent uses that might be adversely impacted by the lighting.
    a. The lighting plan shall contain a layout of all proposed fixtures by location, orientation, aiming direction, mounting heights, and types.
    b. The submission shall include, in addition to proposed area lighting, all other exterior lighting, such as, architectural, building-entrance, landscape, flag, signs, etc.
2. A 10 ft x 10 ft illuminance grid (point-by-point) plot of maintained horizontal footcandles overlaid on the site plan, plotted out to 0.0 footcandles, which demonstrates compliance with the light trespass, intensity and uniformity requirements as set forth in the Lighting Handbook.
    a. When the scale of the plan makes a 10 ft x 10 ft grid plot illegible, a larger grid spacing may be used.
3. The lamp lumen ratings and types, maintenance (light-loss) factors and IES file nomenclature used in calculating the illuminance levels.
4. Description of the proposed equipment, including fixture catalog cuts, photometrics, glare reduction devices, lamps, on/off control devices, mounting heights, pole foundation details and mounting methods.
5. Landscaping plans shall contain lighting fixture locations and shall demonstrate that the site lighting and landscaping have been coordinated to minimize conflict between vegetation and intended light distribution, both initially and at vegetation maturity.
6. A visual-impact plan that demonstrates appropriate steps have been taken to mitigate the potential consequences of on-site and off-site glare and to retain the intended character of the City.
    a. This plan may require the inclusion of initial vertical footcandle values at specific off-site venues, such as, bedroom windows of adjacent residential uses.
7. Plan notes. The following notes shall appear on the Lighting Plan:
    a. Post-acceptance alterations to lighting plans or intended substitutions for accepted lighting equipment are not permitted.
    b. The City reserves the right to conduct post-installation inspections to verify compliance with the City's requirements and with the Lighting Plan provided in the accepted drawings. Remedial action due to non-conformance shall be provided at no expense to the City.
    c. All exterior lighting shall meet IESNA full-cutoff criteria.

PART 2 PRODUCTS

2.1 MATERIALS

A. Outdoor lighting, including poles, luminaries and appurtenant items, shall be as indicated on the construction drawings.

1. Outdoor lighting shall conform to all the Lighting Requirement and Design Standards described above.
2. Outdoor lighting shall be acceptable to the City Engineer.

3. Fixtures shall be of the cutoff type, in accordance with the candlepower distribution classification of the Lighting Handbook.

    a. The manufacturer of the fixtures shall provide certification of the cutoff classification based on photometric testing performed in accordance with the Lighting Handbook and the applicable testing procedures referenced therein.

    b. Fixtures which do not meet the strict definition for cutoff fixtures, yet employ advanced or alternative technology which causes the photometric performance to approach that of cutoff fixtures, may be accepted by the City Engineer, on a case-by-case basis.

        i. (1) Such fixtures include, but are not limited to, period-style fixtures with refractive globes and internal cutoff reflectors.

B. Conduit: See Section 05131

C. Wiring Devices: As specified in Section 05140.

D. Wire and Cable: As specified in Section 05123.

E. Boxes: As specified in Section 05138. Junction box lids to be marked “Street Lights” or “Lighting.”

F. Concrete: As specified in Section 03300.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify location of outdoor lighting items with the City Engineer.

B. Verify location and type of power source with Rocky Mountain Power.

3.2 INSTALLATION - OUTDOOR LIGHTING

A. Mounting heights of lighting fixtures shall be as described in Paragraph 1.07 above.

B. Poles supporting outdoor lighting fixtures shall be installed as indicated on the construction drawings that have been reviewed and accepted by the City Engineer.

1. Poles for outdoor lighting fixtures for the illumination of parking areas and located directly behind parking spaces, or where they could be hit by snow plows, shall be placed a minimum of five (5) feet outside paved areas or tire stops, or placed on concrete pedestals at least thirty (30) inches high above the pavement.

2. Construct concrete bases for light poles, as indicated on the construction drawings; size and type to be according to manufacturer’s written instructions and recommendations. Anchor bolts shall be installed according to manufacturer’s template.

3. Install light poles on bases, in accordance with manufacturer’s written instructions and commendations. Poles shall be plumb and securely attached to the concrete base.

C. Install pole mounted cutoff fixtures, with lamps, in accordance with manufacturer’s written instructions and recommendations.

1. Fixtures for the illumination of horizontal areas shall be aimed straight down, as described in Paragraph 1.07 above.

2. Cutoff fixtures shall be mounted plumb and level in accordance with the intended application of their design.
    a. The photometric nadir or the fixture (zero degree vertical angle of the candlepower distribution) shall be oriented plumb and the vertical angle of 90 degrees above the nadir (horizontal) shall be oriented level.
    b. Cutoff fixtures shall not be installed in a canted or tilted position which permits candlepower distribution above the horizontal.

D. Install other types of lighting fixtures, with lamps, for other types of installations as indicated on the construction drawings, in accordance with manufacturer's written instructions and recommendations.

E. All electrical feeds for lighting poles shall be run underground. No overhead feeds will be permitted.

1. Electrical feeds shall be installed as indicated on the construction drawings.
2. Install an electrical junction box near the base of light poles, as required.
3. Install underground electrical supply line lighting control panel to junction box at base of light pole, as indicated on the drawings. Wire shall be in conduit. Trenching shall be done as described in Section 02112. Conduit to be installed with sand bedding and 24-inch cover. Trenches shall be backfilled and compacted to required densities.
4. Make electrical connection to light poles in accordance with equipment manufacturer's instructions and as indicated on the drawings.
5. All work shall be done in accordance with the National Electrical Code (NEC) and the International Building Code (IBC) and, where applicable, with the requirements of Rocky Mountain Power.

3.3 FIELD QUALITY CONTROL

A. Perform field inspection, testing, and adjusting in accordance with Section 01400.

B. Operate each lighting fixture after installation and connection. Inspect for improper connections and operation.

3.4 ADJUSTING

A. Aim and adjust lighting fixtures to provide illumination levels and distribution as recommended by the manufacturer and as indicated on the construction plans.

3.5 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosures.

C. Clean finishes and repair damage.

3.6 PROTECTION OF FINISHED WORK

A. Re-lamp lighting fixtures which have failed lamps at Substantial Completion.

END OF SECTION

STANDARD SANITARY SEWER DETAILS

INDEX:

SS-1 SANITARY SEWER PIPE TRENCH
SS-2 PRE-CAST SANITARY SEWER MANHOLE
SS-2A CAST IN PLACE SANITARY SEWER MANHOLE
SS-3 SEWER SERVICE CONNECTION
SS-4 SEWER PIPE CASING

NOTE:

REFER TO TIMPANOGOS SPECIAL SERVICE DISTRICT FOR GREASE TRAP DETAIL

continue note on 1 line

SANITARY SEWER DETAILS

DATE: AUGUST 2017

DRAWING NAME: SS-0

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	8-31-17	RM	ADDED SS-4

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

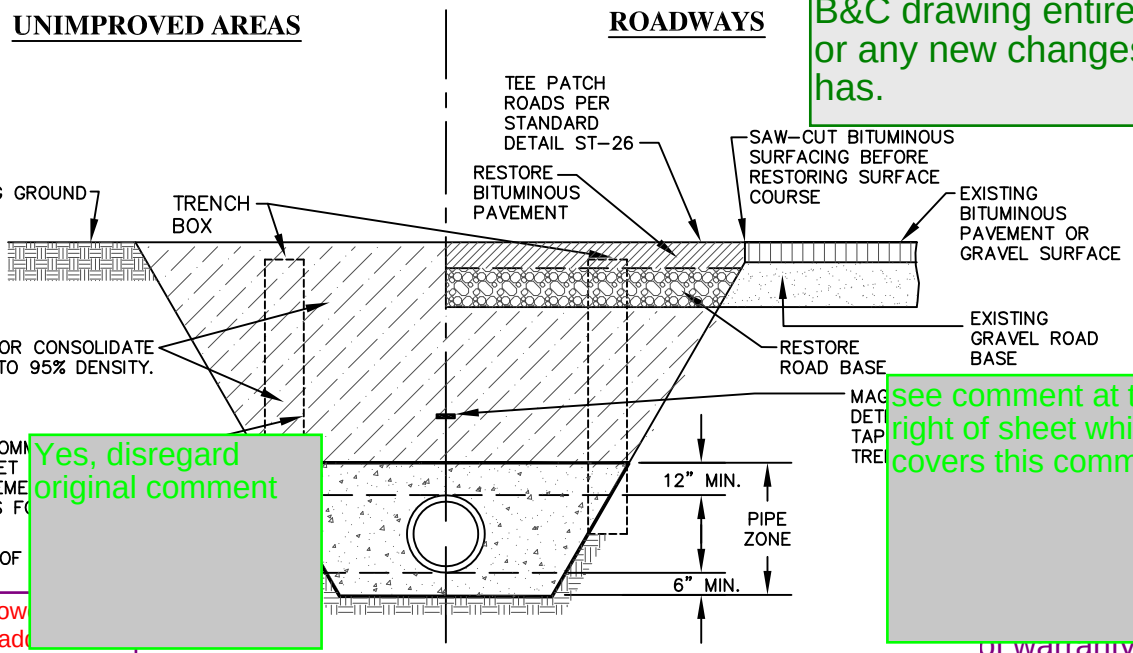
STANDARD DETAILS

SANITARY SEWER

SS-0

When the sewer lays over the waterline it has to be 10 ft separation flowfill

Emily's (B&C) new 7/31/23 SS standard drawing is at the right. Incorporate the new B&C drawing entirely or any new changes it has.



Yes, disregard original comment

see comment at top right of sheet which covers this comment

Sewer is not allow over waterline (ad note in details AND specs)

CROSS-SECTION: TYPICAL TRENCH

RECOMMENDED TRENCH QUANTITIES

PIPE DIAMETER (INCHES)		RECOMMENDED MAXIMUM TRENCH WIDTH FOR FILL IN PIPE ZONE		RECOMMENDED MAXIMUM WIDTH FOR FILL & SURFACING ABOVE PIPE ZONE MEASURED AT TOP OF TRENCH CENTERED ON PIPE	
inches	mm	inches	mm	inches	mm
4	101.6	72	1828.8	96	2438.4
6	152.4	72	1828.8	96	2438.4
8	203.2	72	1828.8	96	2438.4
10	254.0	72	1828.8	96	2438.4
12	304.8	72	1828.8	96	2438.4
15	381.0	72	1828.8	96	2438.4
18	457.2	72	1828.8	96	2438.4
21	533.4	72	1828.8	96	2438.4
24	609.6	72	1828.8	96	2438.4
30	762.0	84	2133.6	108	2743.2
36	914.4	84	2133.6	108	2743.2
42	1066.8	96	2438.4	120	3048.0
48	1219.2	96	2438.4	120	3048.0
54	1371.6	108	2743.2	132	3352.8
60	1524.0	120	3048.0	144	3657.6

NOTES:

1. THE CITY RECOMMENDS CONTRACTOR MEET ALL OF THE REQUIREMENTS ESTABLISHED FOR SAFE TRENCHING. (SEE OSHA AND UOSH REQUIREMENTS, LATEST EDITIONS).

2. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES BEFORE LAYING PIPE WITHIN 50' OF SAID UTILITIES WHICH MAY BE EXPOSED, DAMAGED OR CROSSED AS SHOWN ON THE DRAWINGS OR AS "BLUE STAKED". THE CONTRACTOR WILL MAKE ARRANGEMENTS WITH THE UTILITY COMPANY TO MOVE THE UTILITY IF NECESSARY OR OBTAIN PERMISSION FROM THE CITY ENGINEER TO MODIFY GRADE OF PIPELINE IN ORDER TO GO AROUND UTILITIES.

3. TESTING: ALL NEW SANITARY SEWERS TO BE "TELEVISED" AND NECESSARY REPAIRS MADE BEFORE ACCEPTANCE. ALL LINES SHALL BE PRESSURE TESTED TO 3.5 psi MIN. FOR 5 MINUTES. A MANDRAL OR BALL CAN BE USED TO VERIFY DEFORMATION OF A PIPE AS DETERMINED FROM THE VIDEO UNLESS SPECIFIED OTHERWISE. MANHOLES SHALL BE TESTED AS PER CITY STANDARDS.

of warranty and before the end of warranty.

4. ALL SEWER LINES TO BE INSTALLED IN PUBLIC RIGHT-OF-WAY OR RECORDED SEWER EASEMENT UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

5. WHERE COLLAPSIBLE SOILS ARE ENCOUNTERED, FURNISH, PLACE AND COMPACT IMPORTED BACKFILL MATERIALS AS REQUIRED AND AS DIRECTED.

6. MIN. DEPTH SHALL BE 3' TO TOP OF PIPE. A 2' SPACING MUST BE MAINTAINED BETWEEN ALL WATER LINE PIPE CROSSINGS AND THE TOP OF THE SEWER PIPE.

7. IF THE SEWER LINE IS NOT 13' DEEP A NOTE MUST BE PLACED ON THE PLAT "SHALLOW SEWER DEPTHS. BEFORE EXCAVATING BASEMENTS, CONTRACTOR MUST VERIFY SEWER DEPTH"

8. MAX. DEPTH SHALL BE 20' TO THE TOP OF PIPE UNLESS APPROVED OTHERWISE BY THE CITY ENGINEER.

9. INSTALL MAGNETIC DETECTOR TAPE 3' ABOVE PIPE, OR 2' ABOVE PIPE WHEN PIPE IS SHALLOWER THAN 4'.

10. IN ROCKY SUB-GRADES A MINIMUM OF 18" CLEARANCE ON ALL SIDES OF THE PIPE SHALL BE PROVIDED.

Add to all similar details (show in separate detail?).

11. When bedding utilities in ground water installation of stabilization-separation geotextile will be required to separate backfill material and native subgrade materials if common fill cannot provide a working surface to prevent soils migration

SANITARY SEWER PIPE TRENCH

DATE: AUGUST 2017

DRAWING NAME: SS-1

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

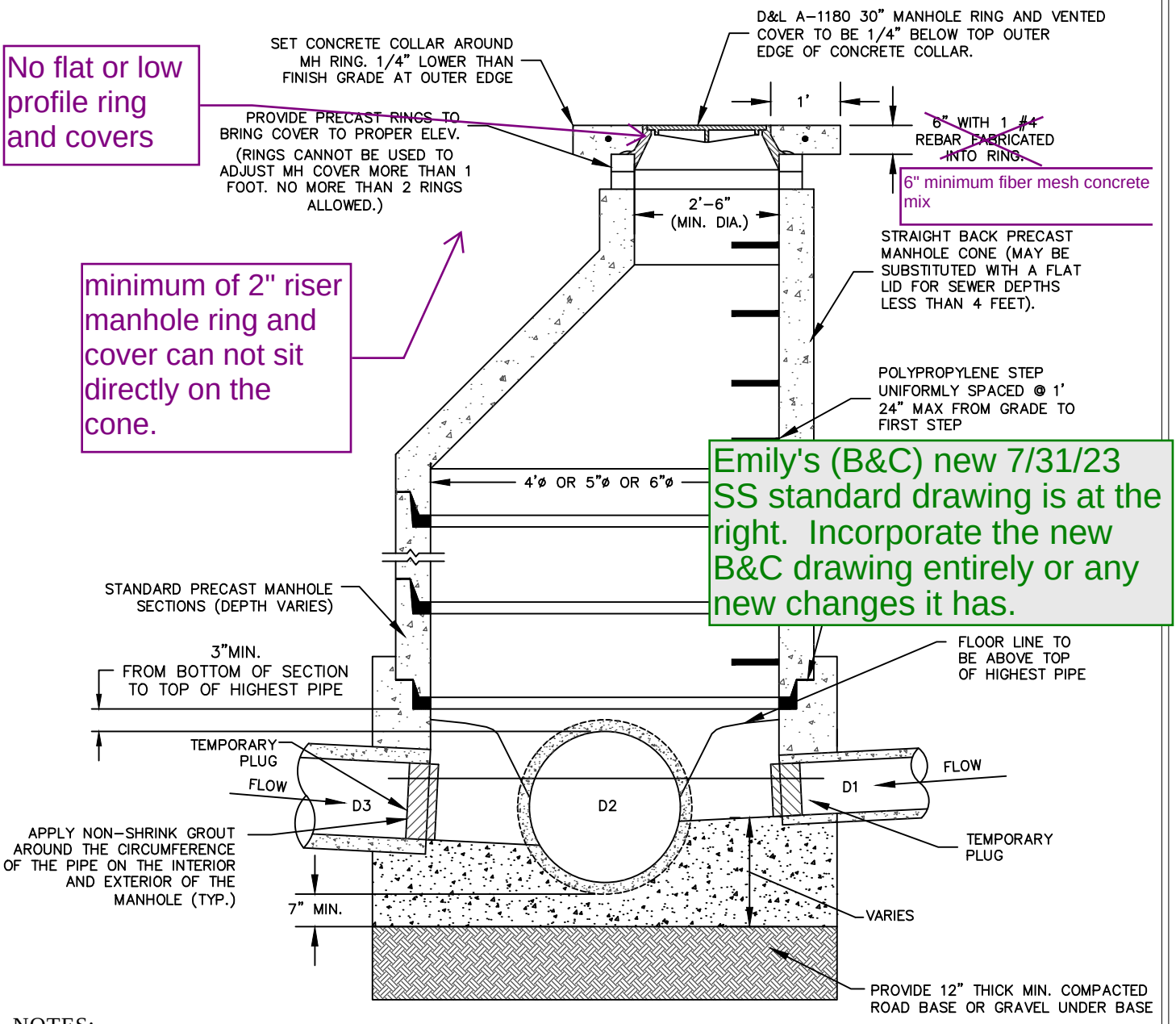
STANDARD DETAILS

SANITARY SEWER

SS-1

No flat or low profile ring and covers

minimum of 2" riser manhole ring and cover can not sit directly on the cone.



Emily's (B&C) new 7/31/23 SS standard drawing is at the right. Incorporate the new B&C drawing entirely or any new changes it has.

NOTES:

1. PRE-CAST BASES ARE REQUIRED. POURED-IN-PLACE BASES ARE ALLOWED ONLY ON EXISTING SEWER. SEE SS-2A FOR CAST IN PLACE BASE
2. AFTER ALL GRADING AROUND MANHOLE HAS BEEN COMPLETED AND FINAL SURFACING IS IN PLACE REMOVE TEMPORARY PLUGS, DEBRIS AND PLYWOOD FROM INSIDE OF MANHOLES.
3. MANHOLES DEEPER THAN 20 FEET SHALL HAVE AN 18" THICK CONCRETE BASE.
4. CONE AND WALL SECTIONS SHALL CONFORM WITH ASTM C-478 STANDARD.
5. ALL MANHOLES TO BE HS-20 RATED.
6. MANHOLES OUTSIDE OF ROW SHALL HAVE SOLID LOCKING LIDS.
7. FLAT CAST RINGS ARE NOT PERMITTED.
8. LID SHALL BE VENTED AND MARKED SS SEWER.
9. MANHOLES WITH SOLID LIDS MUST BE EPOXY LINED.
10. MANHOLES ARE NOT ALLOWED WITHIN SIDEWALKS, GUTTERS, WATERWAYS, OR OTHER PEDESTRIAN PATHWAYS.

PRE-CAST SANITARY SEWER MANHOLE

DATE: 2/21/2020
DRAWING NAME: SS-2
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	6/25/15	JW	MAKING PRE-CAST AND CAST IN PLACE DTLS
2	8/31/17	RM	EDITED CALLOUTS AND NOTES. REMOVED COLLARS AND GROUT RINGS.

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAIL
SANITARY SEWER
SS-2

Emily's (B&C) new 7/31/23 SS standard drawing is at the right. Incorporate the new B&C drawing entirely or any new changes it has.

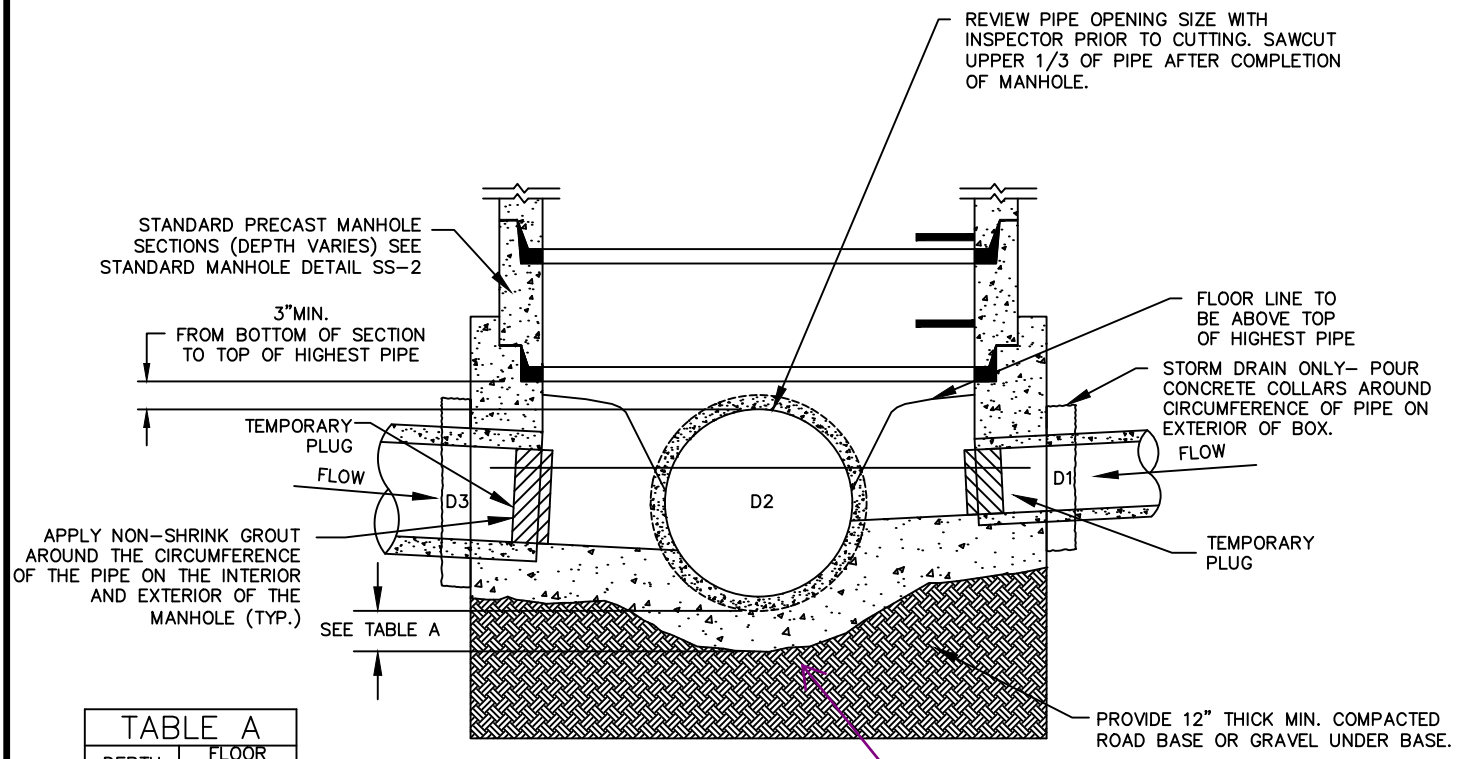


TABLE A	
DEPTH	FLOOR THICKNESS
0-20'	10"
20' OR MORE	18"

POURED-IN-PLACE BASES ARE ALLOWED ONLY WHEN PRE-APPROVED BY CITY ENGINEER AND WHEN BASE IS ON EXISTING SEWER MAINS

Add a note requiring at least 4 cinder blocks or equally approved (can't just shove concrete under it and call it good).

NOTES:

1. POURED-IN-PLACE BASES ARE ALLOWED ONLY ON EXISTING SEWER MAINS ~~WHEN ACCEPTED BY ENGINEER.~~
2. AFTER ALL GRADING AROUND MANHOLE HAS BEEN COMPLETED AND FINAL SURFACING IS IN PLACE REMOVE TEMPORARY PLUGS, DEBRIS AND PLYWOOD FROM INSIDE OF MANHOLES.
3. CONE AND WALL SECTIONS SHALL CONFORM WITH ASTM C-478 STANDARD
4. ALL MANHOLES TO BE HS-20 RATED
5. MANHOLES WITH SOLID LIDS MUST BE EPOXY LINED.
6. MANHOLES OUTSIDE OF ROW SHALL HAVE SOLID LOCKING LIDS.
7. FLAT CAST RINGS ARE NOT PERMITTED
8. LID SHALL BE VENTED AND MARKED SS SEWER

CAST IN PLACE SANITARY SEWER MANHOLE

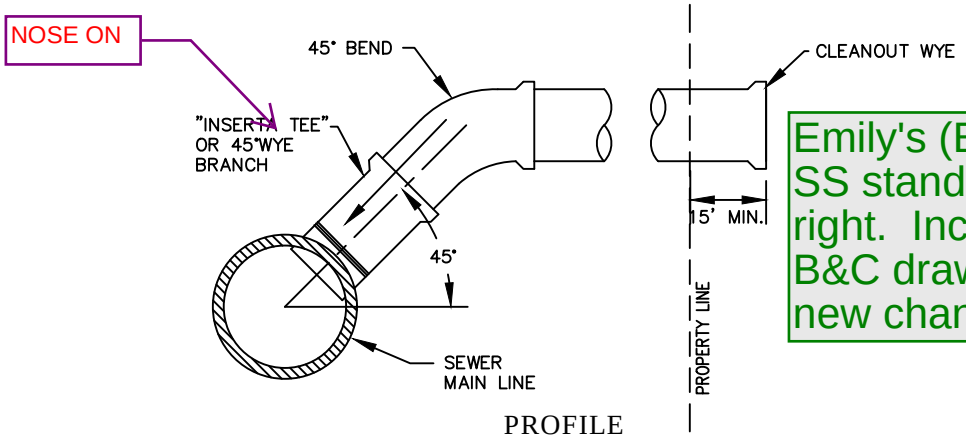
DATE: AUGUST 2017
DRAWING NAME: SS-2
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	8-25-15	JW	MAKING PRE-CAST AND CAST IN PLACE DETAILS

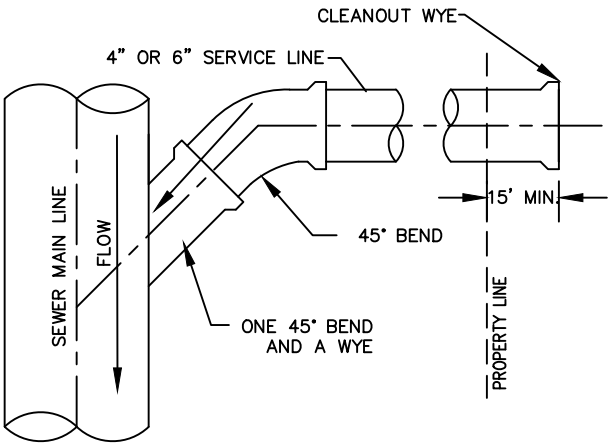
SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
SANITARY SEWER
SS-2A

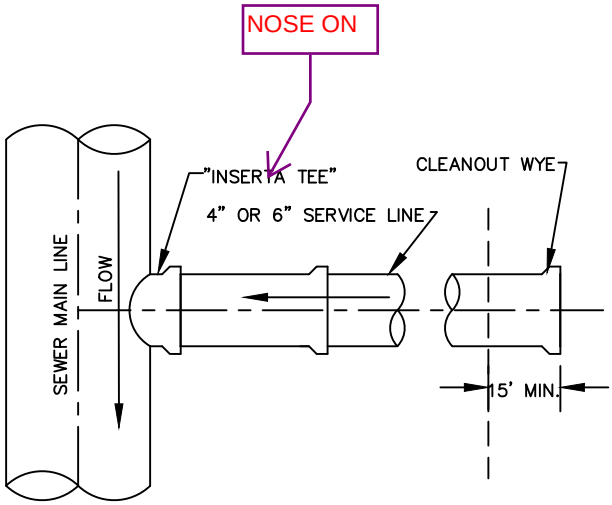


PROFILE

Emily's (B&C) new 7/31/23 SS standard drawing is at the right. Incorporate the new B&C drawing entirely or any new changes it has.



PLAN VIEW- 45° WYE BRANCH



PLAN VIEW- "INSERTA TEE"

NOTES:

1. ALL RESIDENTIAL SERVICES SHALL BE 4" DIAMETER. NON-RESIDENTIAL SHALL BE 6" DIAMETER UNLESS DIRECTED OTHERWISE AND SHALL BE EXTENDED FROM MAIN LINES TO PROPERTY LINES.
2. EVERY RESIDENTIAL UNIT SHALL HAVE A SEPARATE SEWER LATERAL.
3. MINIMUM GRADE SHALL BE 2% FOR SERVICE LINES.
4. ALL 90° BENDS AT CONNECTION TO MAIN MUST BE CONSTRUCTED WITH ONE 45° BEND AND A WYE.
5. DIRECT NOSE ON IS ALLOWED WHEN CONNECTING TO EXISTING MAIN LINE. USE RUBBER BOOT AS PER CITY WITH STAINLESS STEEL STRAPS, IF REQUIRED. CORE CUT EXISTING PIPE, DO NOT BREAK OUT WITH A HAMMER.
6. NOTIFY CITY 24 HOURS IN ADVANCE OF ANY CONNECTION. EVERY CONNECTION TO BE INSPECTED BY CITY.
7. CONNECTION TO USERS TO BE DONE BY OTHERS.
8. ~~CAST IRON WYES ARE REQUIRED FOR ALL NON-RESIDENTIAL CONNECTIONS.~~

On 12 inch or smaller pipe use double strap stainless steel mission band.

Mission bands have a lot of issues - will look into issue and get back to BCA.

SEWER SERVICE CONNECTION

DATE: APRIL 2018
DRAWING NAME: SS-3
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

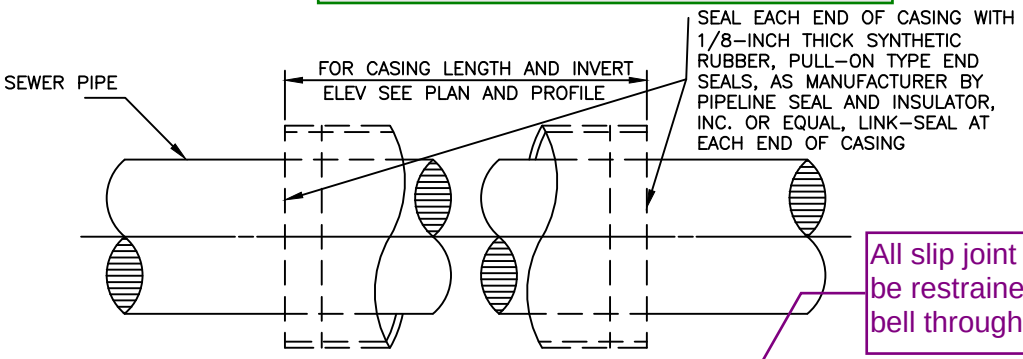
REV	DATE	BY	COMMENTS
1	8-31-17	RM	ADDED NOTE

SARATOGA SPRINGS CITY

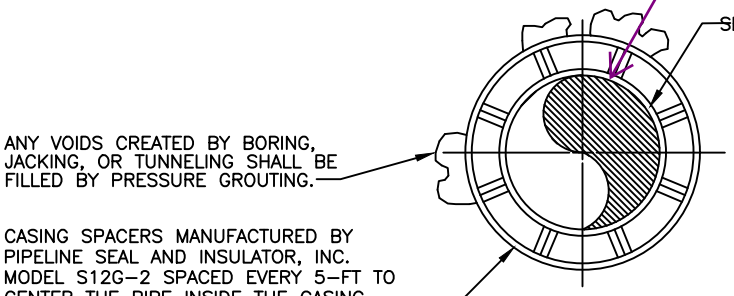
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
SANITARY SEWER
SS-3

Emily's (B&C) new 7/31/23 SS standard drawing is at the right. Incorporate the new B&C drawing entirely or any new changes it has.



All slip joint fitting must be restrained at each bell through casing



SECTION

Address situation where ground water could float gravity feed carrier pipe.

tolerances

Add a note to addre

MINIMUM WALL THICKNESS OF CASINGS	
Diameter	Wall Thickness
12" and under	0.188"
14" – 18"	0.312"
20" – 22"	0.375"
24" – 26"	0.438"
28" – 32"	0.500"
34" – 42"	0.562"

LARGER CASINGS AS DIRECTED BY THE CITY ENGINEER.

NOTES:

1. CASING PIPES SHALL BE REQUIRED AS INDICATED ON THE DRAWINGS AND/OR WHERE REQUIRED BY THE CITY INSPECTOR OR ENGINEER.
2. THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE SIZED AT LEAST 4" LARGER THAN THE OUTSIDE DIAMETER OF CARRIER PIPE.
3. CARRIER PIPE SHALL BE TESTED BEFORE SEALING THE ENDS OF THE CASING.
4. SPACERS SHALL BE SECURELY ATTACHED TO CARRIER PIPE PER MANUFACTURER'S REQUIREMENTS.
5. CASING PIPE SHALL BE WELDED STEEL, ASTM A53, GRADE B.
6. THERE SHALL BE A MAXIMUM OF 1' FROM THE ENDS OF THE CASING TO THE SPACER.

SEWER PIPE CASING

DATE: AUGUST 2017
DRAWING NAME: SS-4
DRAWN BY: RFM
CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
SANITARY SEWER
SS-4

STANDARD STORM DRAIN DETAILS

Revise to add 3 more details as shown below

SD-1 STORM DRAIN PIPE TRENCH
SD-2 GUTTER INLET BOX
SD-3 DOUBLE INLET BOX
SD-4 CLEANOUT BOX
SD-5 COMBINATION GUTTER INLET & CLEANOUT BOX
SD-6 INLET/OUTLET TRASH GRATES
SD-7 STORM DRAIN PIPE CASING
SD-8 DETENTION BASIN EMERGENCY SPILLWAY
SD-9 DETENTION BASIN OUTLET CONTROL BOX

INDEX:

SD-1 STORM DRAIN PIPE TRENCH
SD-2 GUTTER INLET BOX
SD-3 CLEANOUT BOX
SD-4 COMBINATION GUTTER INLET & CLEANOUT BOX
SD-5 INLET/OUTLET TRASH GRATES
SD-6 STORM DRAIN PIPE CASING

STORM DRAIN DETAILS

DATE: AUGUST 2017
DRAWING NAME: SD-0
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

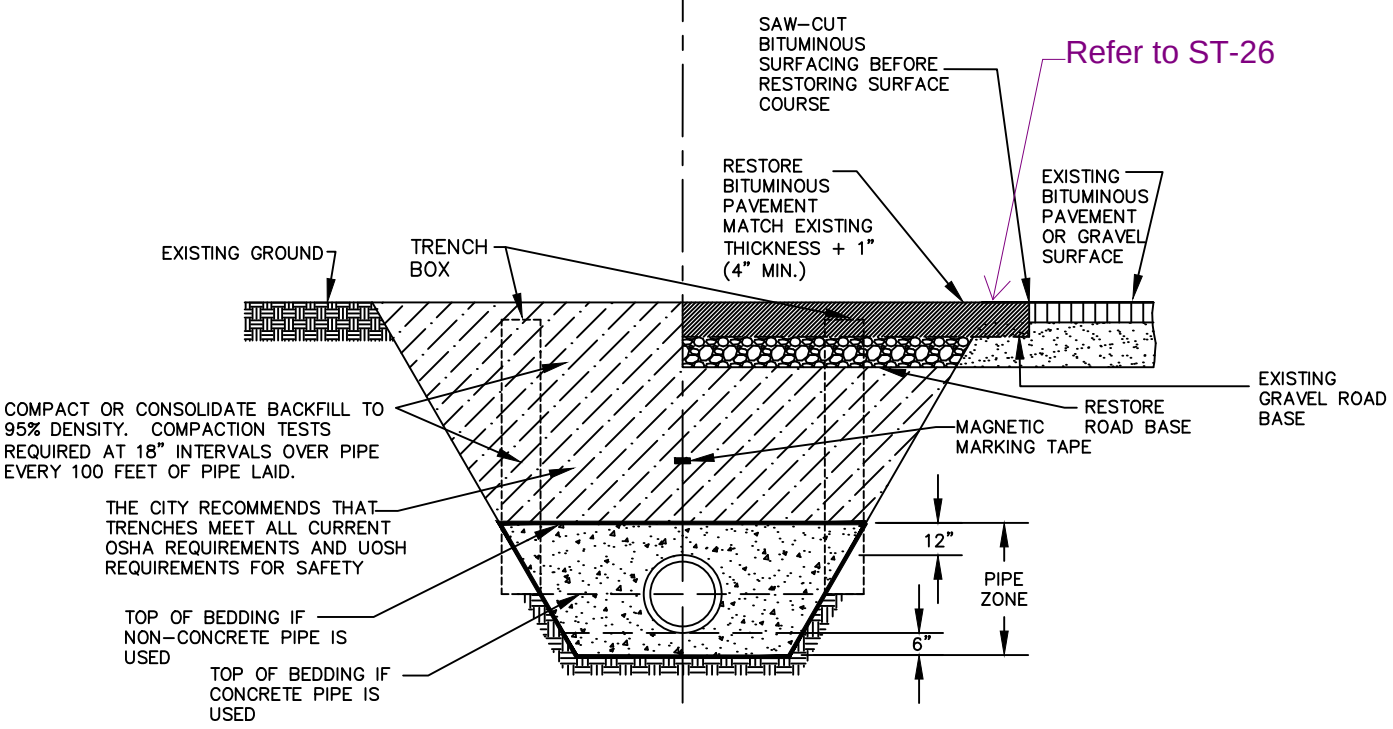
REV	DATE	BY	COMMENTS
1	8-31-17	RM	ADDED SD-6

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
STORM DRAIN
SD-0

Emily's (B&C) new 7/31/23 SS standard drawing is at the right. Use the new B&C drawing.

UNIMPROVED AREAS | ROADWAYS



CROSS-SECTION: TYPICAL TRENCH

Backfill all trenches with Granular Borrow

NOTES:

1. THE CITY RECOMMENDS CONTRACTOR MEET ALL OF THE REQUIREMENTS ESTABLISHED FOR SAFE TRENCHING. (SEE OSHA AND UOSH REQUIREMENTS, LATEST EDITIONS).

2. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES BEFORE LAYING PIPE WITHIN 50' OF SAID UTILITIES WHICH MAY BE EXPOSED, DAMAGED OR CROSSED AS SHOWN ON THE DRAWINGS OR AS "BLUE STAKED". THE CONTRACTOR WILL MAKE ARRANGEMENTS WITH THE UTILITY COMPANY TO MOVE THE UTILITY IF NECESSARY OR OBTAIN PERMISSION FROM THE CITY ENGINEER TO MODIFY GRADE OF PIPELINE IN ORDER TO GO AROUND UTILITIES.

3. TESTING: ALL STORM DRAIN LINES TO BE "VIDEOED" AND NECESSARY REPAIRS MADE BEFORE ACCEPTANCE. A MANDRAL OR BALL CAN BE USED TO VERIFY DEFORMATION OF A PIPE AS DETERMINED FROM THE VIDEO UNLESS SPECIFIED OTHERWISE.

4. ALL STORM DRAIN TO BE INSTALLED IN PUBLIC RIGHT-OF-WAY OR RECORDED DRAINAGE EASEMENT UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

5. WHERE COLLAPSIBLE SOILS AR[illegible]OUNTERED, FURNISH, PLACE AND COMPACT IMPORTED BACKFILL MATERIALS AS REQUIRED AND AS DIRECTED.

6. MIN. DEPTH OF COVER SHALL MEET MANUFACTURERS RECOMMENDATIONS.

7. IN ROCKY SUB-GRADES 18" OF CLEARANCE SHALL BE PROVIDED ON ALL SIDES OF PIPE.

8. INSTALL MAGNETIC DETECTOR TAPE 3' ABOVE PIPE IN TRENCH.

9. When bedding utilities in ground water installation of stabilization-separation geotextile will be required to separate backfill material and native subgrade.

STORM DRAIN PIPE TRENCH

DATE: AUGUST 2017

DRAWING NAME: SD-1

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

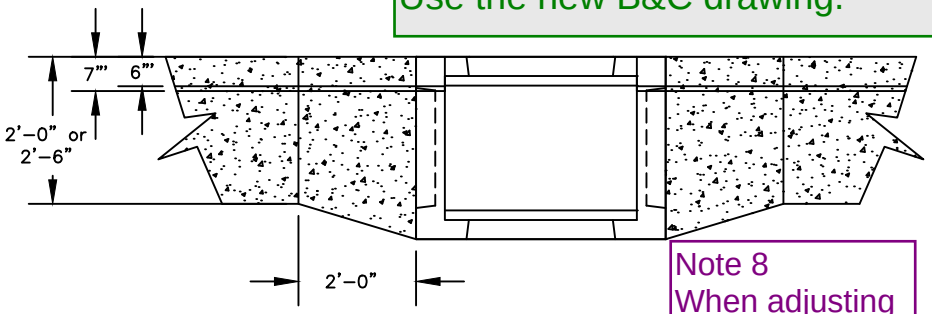
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

STORM DRAIN

SD-1

Emily's (B&C) new 7/31/23 SS standard drawing is at the right. Use the new B&C drawing.



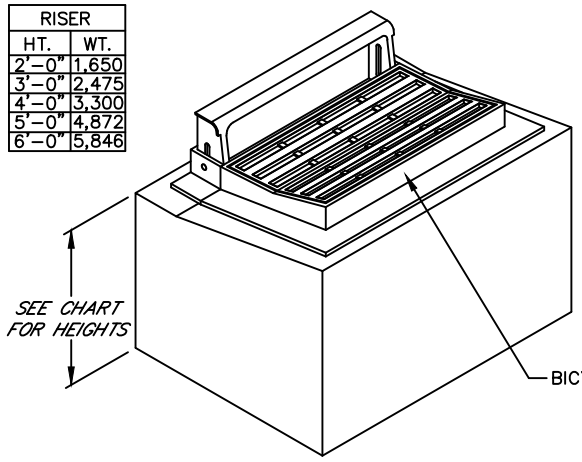
PLAN VIEW

Note 8
When adjusting to grade frame must be resting on concrete.

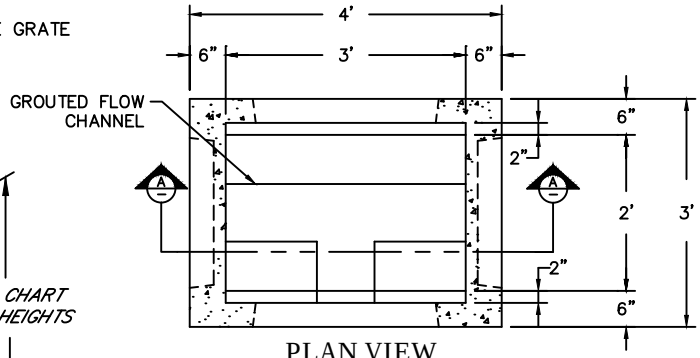
NOTES:

1. DESIGNED FOR AASHTO HS-20 LOADING.
2. DESIGNED ACCORDING TO ASTM C857-87 AND ASTM C858-83.
3. ALL SUMPS TO BE GROUTED WITH FLOW CHANNELS FORMED INTO THE BOTTOM OF THE BOX TO MINIMIZE DEBRIS ACCUMULATION
4. BICYCLE SAFE GRATES ONLY. PROVIDE TYPE 13 "A" GRATE, D&L I-3516, OR TYPE 16 "L" GRATE, D&L I-3517.
5. POUR CONCRETE COLLARS AROUND CIRCUMFERENCE OF PIPE ON EXTERIOR OF BOX.
6. USE NON-SHRINK GROUT AROUND CIRCUMFERENCE OF PIPE ON INTERIOR OF BOX
7. CURB HOODS SHALL BE USED ONLY IN CURB APPLICATIONS.

RISER	
HT.	WT.
2'-0"	1,650
3'-0"	2,475
4'-0"	3,300
5'-0"	4,872
6'-0"	5,846



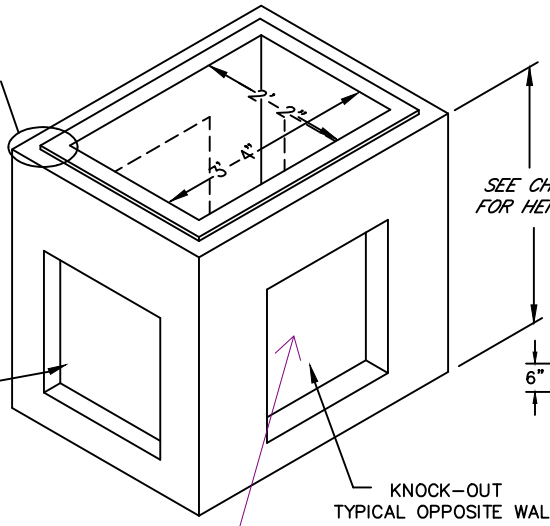
More then 1 pipe combo box is required.

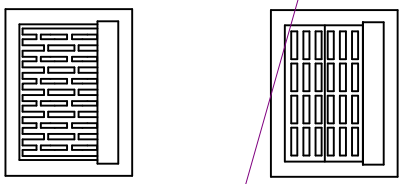


PLAN VIEW

IF RISER IS REQUIRED THE BASE IS POURED WITH A "SHIP-LAP" JOINT

BASE	
HT.	WT.
3'-0"	3,140
4'-0"	4,112
5'-0"	5,088
6'-0"	6,062

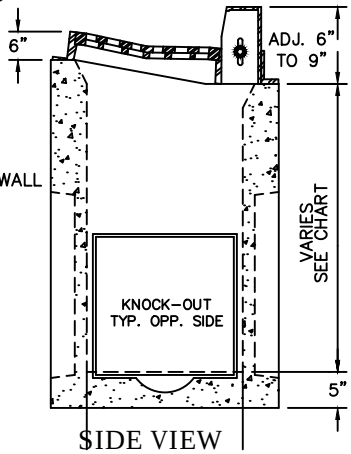




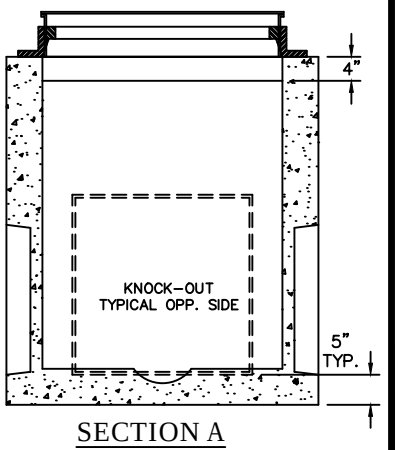
TYPE 16 "L" VALLEY FRAME AND GRATE 680 lbs.

TYPE 13 "A" CURB-COMBO FRAME AND GRATE 600 lbs.

GRATES



SIDE VIEW



SECTION A

GUTTER INLET BOX

DATE: AUGUST 2017
DRAWING NAME: SD-2
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

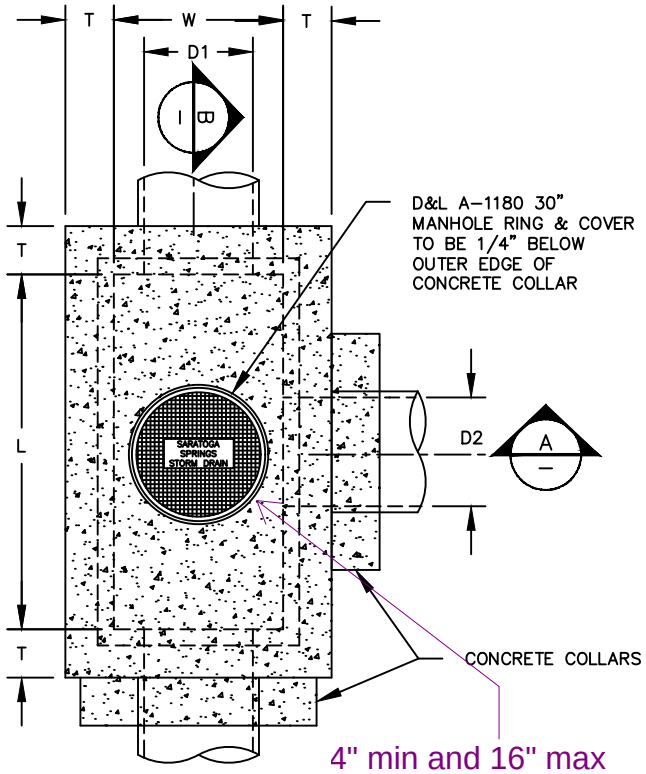
REV	DATE	BY	COMMENTS
1	8-31-17	RM	ADDED NOTE #7

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
STORM DRAIN
SD-2

Show an orifice control box with a snout in new detail sheet

Emily's (B&C) new 7/31/23 SS standard drawings are at the right. Use the new B&C drawing.



PLAN

4" min and 16" max grade rings.

NOTES:

1. BOTTOM OF BOX SHALL BE GROUTED TO ENSURE FLOW LINE OF PIPE IS FLUSH WITH BOTTOM OF BOX.

2. AMCOR CB110 OR EQUAL BOXES WILL BE ACCEPTED.

3. PRE-CAST MANHOLES ARE ALSO ACCEPTABLE. SEE DETAIL SS-2

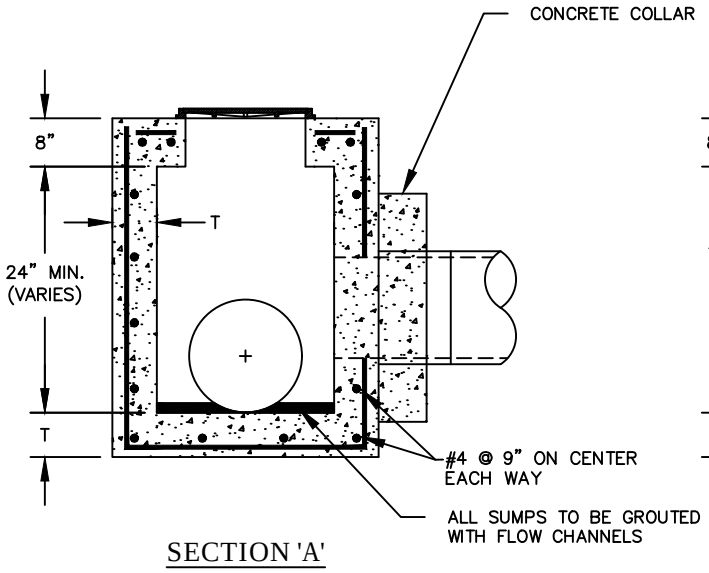
4. "FLAT" CASTING RINGS AND COVERS ARE NOT ACCEPTABLE

5. DESIGN FOR AASHTO HS-20 LOADING

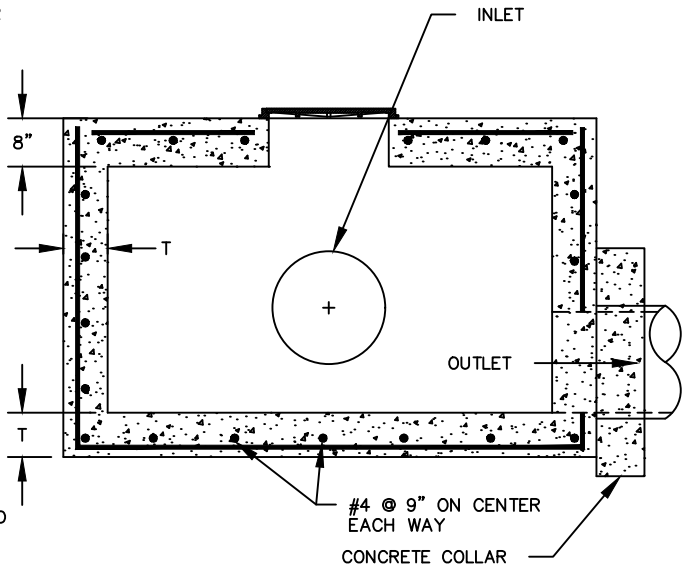
5. POUR CONCRETE COLLARS AROUND CIRCUMFERENCE OF PIPE ON EXTERIOR OF BOX.

6. USE NON-SHRINK GROUT AROUND CIRCUMFERENCE OF PIPE ON INTERIOR OF BOX.

DIMENSIONS	
W=	D1 + 12" (24" MIN.)
L=	D2 + 24" (44" MIN.)
T=	6" IF L IS LESS THAN OR EQUAL TO 5'-0"
T=	8" IF L IS GREATER THAN 5'-0"



SECTION 'A'



SECTION 'B'

CLEANOUT BOX

DATE: AUGUST 2017

DRAWING NAME: SD-3

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	6-1-15	JW	D&L A-1180 MANHOLE RING AND COVER
2	6-24-15	JW	CLEANOUT BOX THICKNESS

SARATOGA SPRINGS CITY

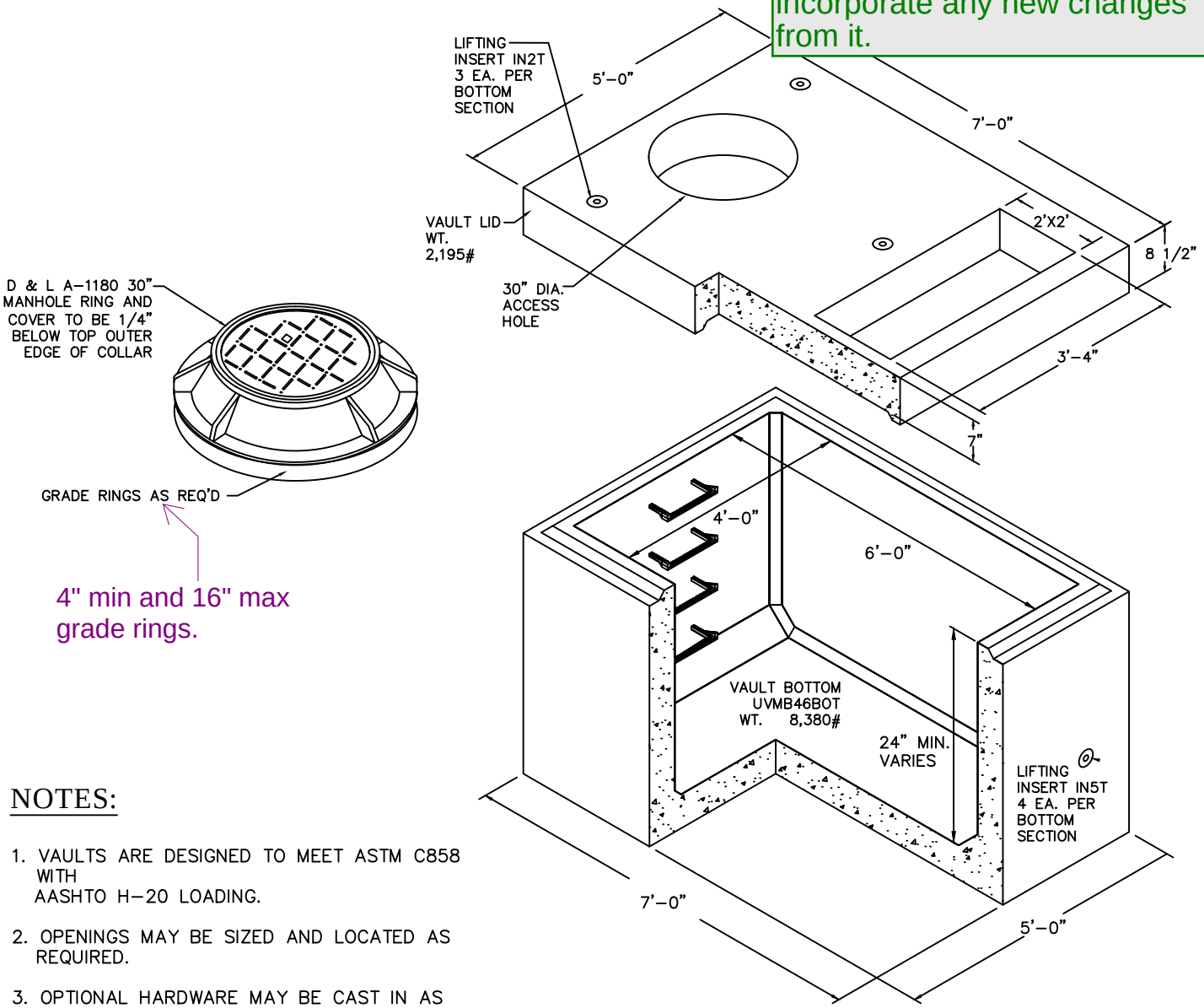
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

STORM DRAIN

SD-3

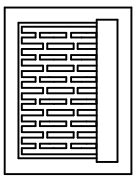
Emily's (B&C) new 7/31/23 SS standard drawing is at the right. Use the new B&C drawing or incorporate any new changes from it.



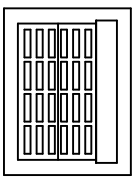
4" min and 16" max grade rings.

NOTES:

1. VAULTS ARE DESIGNED TO MEET ASTM C858 WITH AASHTO H-20 LOADING.
2. OPENINGS MAY BE SIZED AND LOCATED AS REQUIRED.
3. OPTIONAL HARDWARE MAY BE CAST IN AS REQUIRED.
4. CHECK HARDWARE SECTION FOR OPTIONAL HARDWARE.
5. POUR CONCRETE COLLARS AROUND CIRCUMFERENCE OF PIPE ON EXTERIOR OF BOX.
6. USE NON-SHRINK GROUT AROUND CIRCUMFERENCE OF PIPE ON INTERIOR OF BOX
7. BICYCLE SAFE GRATES ONLY. PROVIDE TYPE 13 "A" GRATE, D&L I-3516, OR TYPE 16 "L" GRATE, D&L I-3517.



TYPE 16 "L" VALLEY FRAME AND GRATE 680 lbs.



TYPE 13 "A" CURB-COMBO FRAME AND GRATE 600 lbs.

GRATES

COMBINATION GUTTER INLET & CLEANOUT BOX

DATE:	AUGUST 2017
DRAWING NAME:	SD-4
DRAWN BY:	ETL
CHECKED:	APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	6-1-15	JT	D&L A-1180 MANHOLE RING AND COVER

SARATOGA SPRINGS CITY

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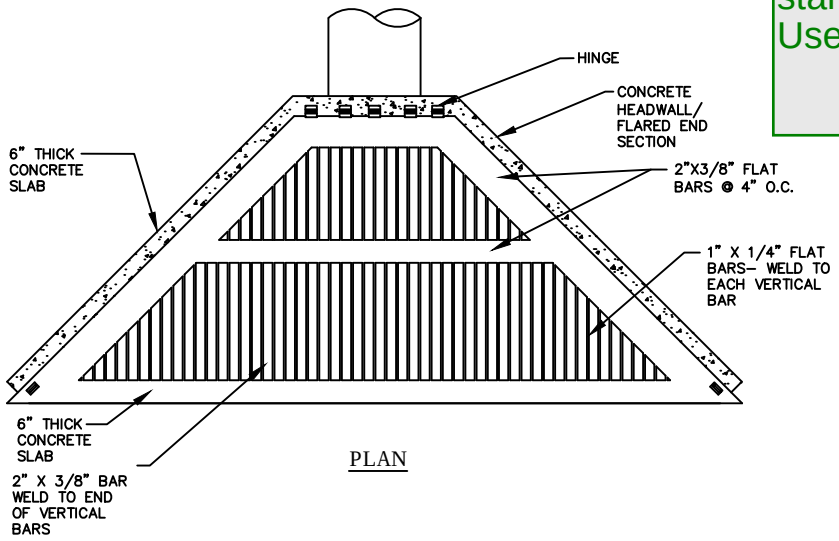
FAX: 8017669794

STANDARD DETAILS

STORM DRAIN

SD-4

Emily's (B&C) new 7/31/23 SS standard drawing is at the right. Use the new B&C drawing.



PLAN

NOTES:

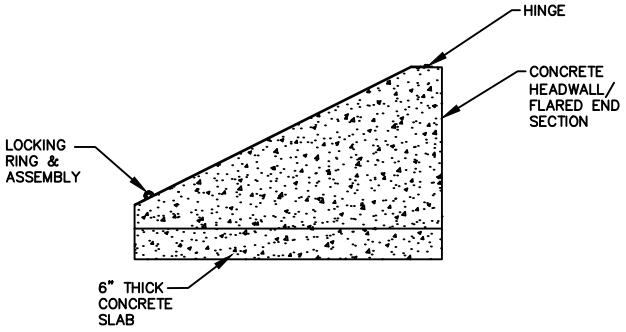
1. INSTALL AT INLETS AND OUTLETS OF ALL STORM DRAIN PIPE 15" OR GREATER.

2. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS PRIOR TO FABRICATION.

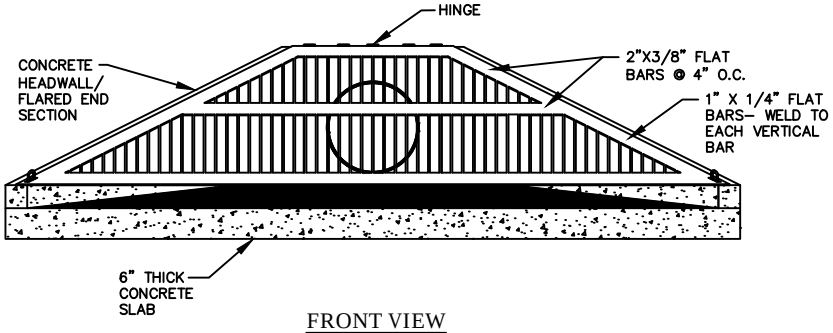
3. FABRICATION SHALL BE ALL STEEL, FLAT, HOT DIP GALVANIZED AFTER FABRICATION.

4. FLARED END SECTIONS SHALL BE CONCRETE UNLESS OTHERWISE APPROVED BY CITY ENGINEER.

5. REINFORCE ALL CONCRETE WITH #4 BARS AT 9" O..C. EACH WAY MINIMUM.



SIDE VIEW



FRONT VIEW

INLET/OUTLET TRASH GRATES

DATE: AUGUST 2017

DRAWING NAME: SD-5

DRAWN BY: ETL

CHECKED: ETL | APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS

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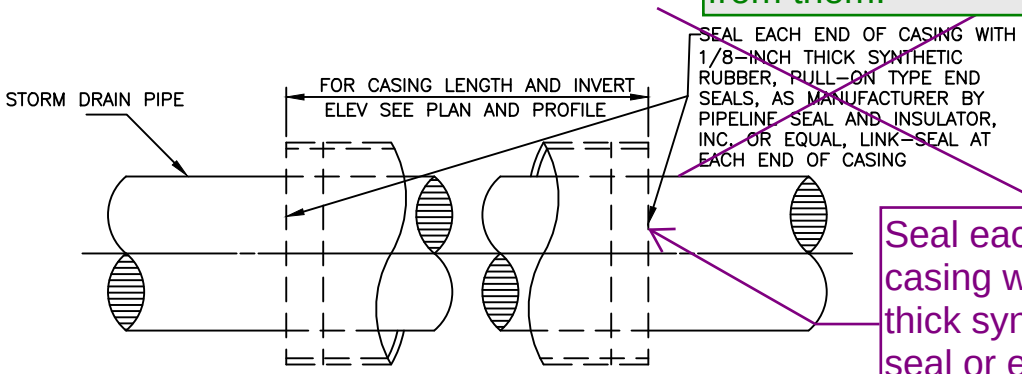
STANDARD DETAILS

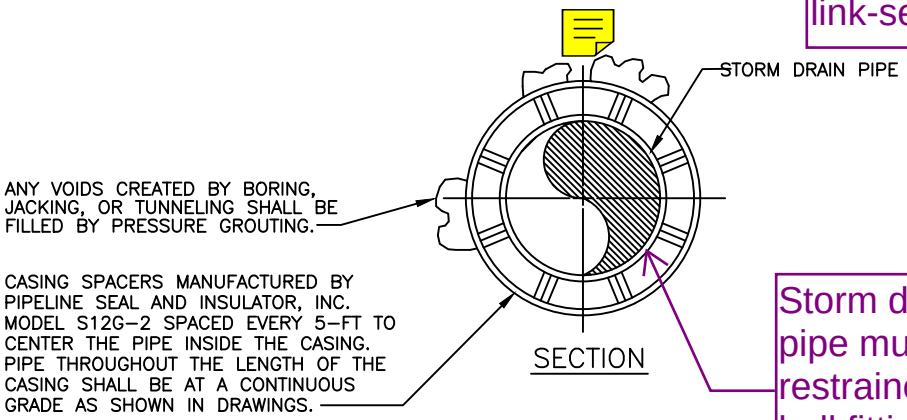
STORM DRAIN

SD-5

3 of Emily's (B&C) new 7/31/23 SS standard drawings are at the right. Use the new B&C drawing or incorporate any new changes from them.



Seal each end of casing with 1/8" thick synthetic seal or equal link-seal



Storm drain carrier pipe must be restrained at each bell fitting or fusion welded HDPE

MINIMUM WALL THICKNESS OF CASINGS	
Diameter	Wall Thickness
12" and under	0.188"
14" – 18"	0.312"
20" – 22"	0.375"
24" – 26"	0.438"
28" – 32"	0.500"
34" – 42"	0.562"

LARGER CASINGS AS DIRECTED BY THE CITY ENGINEER.

NOTES:

1. CASING PIPES SHALL BE REQUIRED AS INDICATED ON THE DRAWINGS AND/OR WHERE REQUIRED BY THE CITY INSPECTOR OR ENGINEER.
2. THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE SIZED AT LEAST 4" LARGER THAN THE OUTSIDE DIAMETER OF CARRIER PIPE.
3. CARRIER PIPE SHALL BE TESTED BEFORE SEALING THE ENDS OF THE CASING.
4. SPACERS SHALL BE SECURELY ATTACHED TO CARRIER PIPE PER MANUFACTURER'S REQUIREMENTS.
5. CASING PIPE SHALL BE WELDED STEEL, ASTM A53, GRADE B.
6. THERE SHALL BE A MAXIMUM OF 1' FROM THE ENDS OF THE CASING TO THE SPACER.

STORM DRAIN PIPE CASING

DATE: AUGUST 2017
DRAWING NAME: SD-6
DRAWN BY: RFM
CHECKED: APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

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#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
STORM DRAIN
SD-6

DONE

Add Four meter connection DW-5a Drawing

STANDARD DRINKING WATERLINE DETAILS

INDEX

DW-1 DRINKING WATER PIPE TRENCH
DW-2 CONCRETE THRUST BLOCKS
DW-3 DRINKING WATER PIPE LOOP
DW-4 FIRE HYDRANT CONNECTION
DW-5 RESIDENTIAL METER CONNECTION- 3/4 X 5/8 INCH OR 1"
DW-6 METER VAULT 2-INCH
DW-7 METER VAULT 4-INCH
DW-8 METER VAULT 6-INCH
DW-9 METER VAULT 8-INCH
DW-10A PRESSURE REDUCING VALVE (PRV) STATION - 1 OF 2
DW-10B PRESSURE REDUCING VALVE (PRV) STATION - 2 OF 2
DW-11 DETECTOR CHECK VALVE
DW-12 AIR/VACUUM RELIEF VALVE
DW-13A 2" BLOW OFF VALVE
DW-13B TEMPORARY 2" BLOW OFF VAL
DW-14 SAMPLING STATION
DW-15 CONCRETE COLLAR
DW-16 DRINKING WATER PIPE CASING

Revise to the standard drawing sheets shown below

DW-1	DRINKING WATER PIPE TRENCH
DW-2	CONCRETE THRUST BLOCKS
DW-2A	CONCRETE THRUST ANCHORS FOR DOWNWARD VERTICAL BENDS IN DRY SOIL CONDITIONS
DW-2B	CONCRETE THRUST ANCHORS FOR DOWNWARD VERTICAL BENDS WHERE SIGNS OF GROUNDWATER ARE PRESENT
DW-2C	ALTERNATIVE THRUST RESTRAINT
DW-2D	ALTERNATIVE THRUST RESTRAINT TABLES
DW-3	DRINKING WATERLINE LOOP
DW-4	FIRE HYDRANT CONNECTION
DW-5	RESIDENTIAL METER CONNECTION 3/4" X 5/8" INCH OR 1"
DW-5A	RESIDENTIAL METER MULTI-CONNECTION 3/4" X 5/8" OR 1"
DW-6	NON-RESIDENTIAL METER CONNECTION 2" OR 1 1/2"
DW-7	4 INCH METER AND VAULT WITH 2" BYPASS FOR 4" LATERAL
DW-8	6 INCH METER AND VAULT WITH 2" BYPASS FOR 6" LATERALS
DW-9	6 INCH METER AND VAULT WITH 4" BYPASS FOR 8" LATERALS
DW-10A	PRESSURE REDUCING VALVE STATION - 1 OF 5
DW-10B	PRESSURE REDUCING VALVE STATION - 2 OF 5
DW-10C	PRESSURE REDUCING VALVE STATION - 3 OF 5
DW-10D	PRESSURE REDUCING VALVE STATION - 4 OF 5
DW-10E	PRESSURE REDUCING VALVE STATION - 5 OF 5
DW-12A	AIR/VACUUM RELIEF VALVE IN PUBLIC ROW - 1 OF 2
DW-12B	AIR/VACUUM RELIEF VALVE IN PUBLIC ROW - 2 OF 2
DW-12C	AIR/VACUUM RELIEF VALVE IN PRIVATE ROADS - 1 OF 2
DW-12D	AIR/VACUUM RELIEF VALVE IN PRIVATE ROADS - 2 OF 2
DW-12E	AIR/VACUUM RELIEF VALVE IN RURAL ROADS - 1 OF 2
DW-12F	AIR/VACUUM RELIEF VALVE IN RURAL ROADS - 2 OF 2
DW-12G	AIR VACUUM RELIEF VALVE VENT DETAILS
DW-13A	2" BLOW OFF VALVE
DW-13B	TEMPORARY 2" BLOW OFF VALVE
DW-14	SAMPLING STATION
DW-14A	SAMPLING STATION IN PUBLIC ROADS
DW-14B	SAMPLING STATION IN PRIVATE ROADS
DW-15	CONCRETE COLLAR
DW-16	DRINKING WATER PIPE CASING

DRINKING WATER DETAILS

DATE: AUGUST 2017

DRAWING NAME: DW-0

DRAWN BY: ETL

CHECKED: APPROVED:

REVISI

REV	DATE	BY	COMME

SARATOGA SPRINGS CIT

AILS

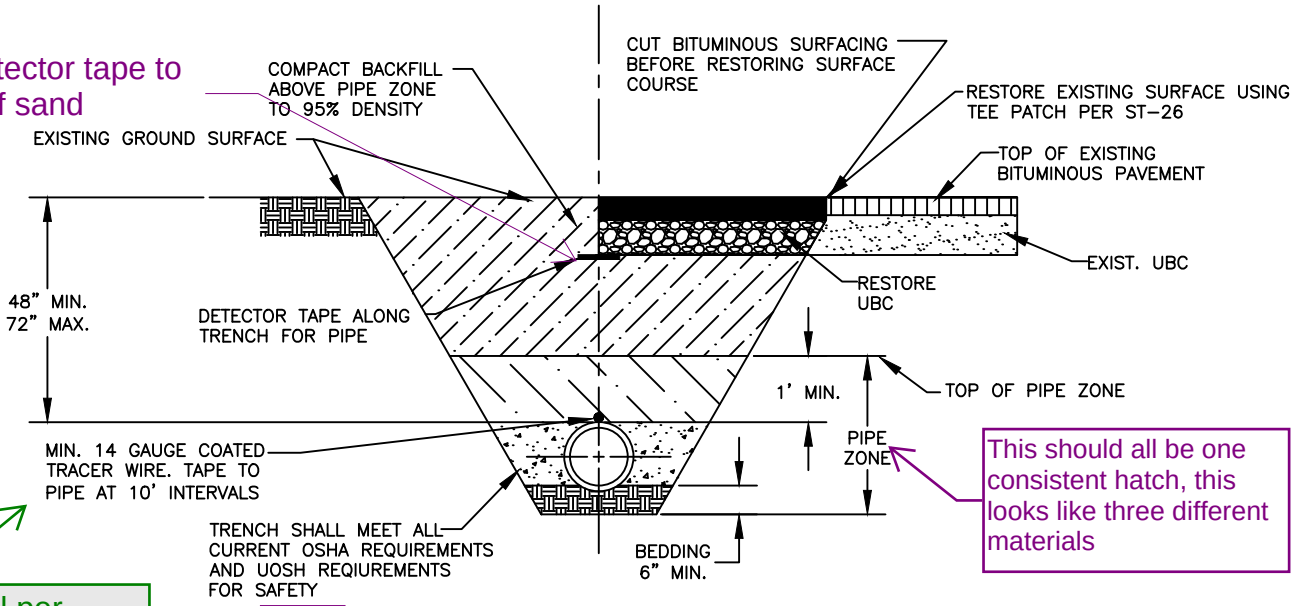
TER

0

UNIMPROVED AREAS

ROADWAYS

Move detector tape to the top of sand



This should all be one consistent hatch, this looks like three different materials

Update detail per Hansen Allen & Luce recomendations

16"

CROSS-SECTION: TYPICAL TRENCH

OTES:

1. VALVES 12 INCHES AND LARGER SHALL BE BUTTERFLY VALVES.

2. WHENEVER POSSIBLE "HOT TAP" CONNECTIONS REQUIRED. HOT TAP VALVE TO BE SUPPORTED DURING CONNECTION. CONTRACTOR TO NOTIFY CITY 24 HOURS IN ADVANCE OF MAKING CONNECTION.

3. PIPE ZONE SHALL BE BACKFILLED WITH BEDDING MATERIAL, OR OTHER ACCEPTABLE MATERIAL.

4. TRACING WIRE TO BE BROUGHT OUTSIDE OF BOTTOM PORTION OF VALVE BOX AND INSIDE TOP TO SURFACE.

5. FURNISH AND INSTALL POLY-WRAP ON DUCTILE IRON PIPE.

6. WHERE COLLAPSIBLE SOILS ARE ENCOUNTERED, FURNISH, PLACE AND COMPACT IMPORTED BACKFILL MATERIALS AS REQUIRED AND AS DIRECTED.

7. When bedding utilities in ground water installation of stabilization-separation geotextile will be required to separate backfill material and native subgrade materials if common fill cannot provide a working surface to prevent soils migration

Update notes per Hansen Allen & Luce recomendations

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL OF THE REQUIREMENTS ESTABLISHED FOR SAFE TRENCHING. (SEE OSHA AND UOSH REQUIREMENTS, LATEST EDITIONS).

2. MINIMUM COVER OVER TOP OF PIPE SHALL BE 48-INCHES BELOW THE FINISHED GRADE. THIS DEPTH MAY BE INCREASED AS REQUIRED TO MISS UNDERGROUND UTILITIES, STORM DRAINS, OR OTHER OBSTRUCTIONS, OR WHERE INDICATED ON THE DRAWINGS.

3. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES BEFORE LAYING PIPE WITHIN 200 FEET OF UTILITY CROSSINGS SHOWN ON THE DRAWINGS, OR AS "BLUE-STAKED."

4. SEWER MAINS, WATER MAINS, GAS MAINS AND OTHER UTILITIES ARE SHOWN ON THE PLANS IN A GENERAL SCHEMATIC WAY ACCORDING TO INFORMATION RECEIVED FROM OTHERS AND SOMETIMES FROM FIELD MEASUREMENTS. THE ACCURACY OR COMPLETENESS OF THE LOCATIONS SHOWN IS NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE THE ACTUAL LOCATION OF EXISTING SERVICE CONNECTIONS AND UTILITIES AND TAKE THE NECESSARY STEPS TO AVOID THEM.

5. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S SOLE EXPENSE.

6. THE CONTRACTOR MAY, AT HIS DISCRETION, USE SLOPING WALLS IN UNIMPROVED TERRAIN.

7. THE PIPE ZONE WIDTH AS RECOMMENDED BY THE PIPE MANUFACTURER. THE WIDTH OF THE PIPE ZONE IS MEASURED AT THE PIPE SPRING LINE AND INCLUDES ANY NECESSARY SHEATHING. IN TRENCH BOX APPLICATIONS, FOLLOW THE MANUFACTURER'S RECOMMENDATIONS. IN ROCKY SUB-GRADES A MINIMUM OF 18" CLEARANCE ON ALL SIDES OF PIPE SHALL BE PROVIDED.

DRINKING WATER PIPE TRENCH

DATE: AUGUST 2017

DRAWING NAME: DW-1

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED AND EDITED NOTES AND CALLOUTS

SARATOGA SPRINGS CITY

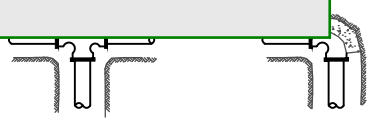
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

DRINKING WATER

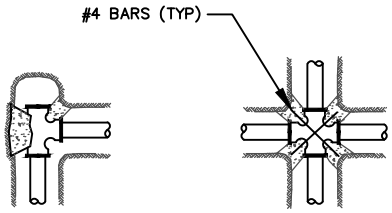
DW-1

update per Hansen Allen & Luce Recommendations



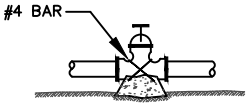
TEE

90° ELBOW

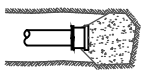


TEE WITH CAP

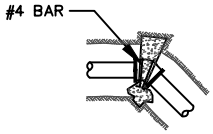
CROSS



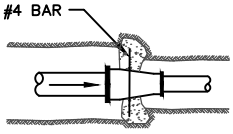
VALVE



CAP OR PLUG



ELBOW



REDUCER

SAFE BEARING LOADS

SOIL TYPE	SAFE BEARING LOAD (lb/ft^2)
SAND	1000
SAND & GRAVEL	1500
SAND & GRAVEL CEMENTED WITH CLAY	2000
SHALE	5000

SAFE BEARING LOAD FORMULA

THRUST BLOCK AREA AGAINST TRENCH WALL (SQUARE FEET) = THRUST ON FITTING / SAFE BEARING LOAD OF SOIL

NOTES:

1. REINFORCING BARS REQUIRED FOR HANGING THRUST BLOCKS AND SHALL BE EPOXY COATED.

2. RESIDENT PROJECT ENGINEER WILL CALCULATE QUANTITIES OF CONCRETE REQ'D AND SPECIFY PLACEMENT METHODS & REQUIREMENTS; WHICH SHALL BE APPROVED BY CITY ENGINEER.

3. CONCRETE SHALL BE 4000 PSI MIN.

4. POUR CONCRETE AGAINST UNDISTURBED SOIL.

Do we want to make a note that will allow for the Engineer to design a system without thrust blocks?

THRUST ON FITTINGS

POUNDS @ 1 POUND PER SQUARE INCH OF WATER PRESSURE*				
PIPE SIZE	TEES/ PLUGS	90° BENDS	45° BENDS	22.5° BENDS
4"	18.5	26.1	14.2	7.2
6"	38	53.7	29.1	14.7
8"	65.8	93	50.4	25.5
10"	107.5	152	82.4	41.7
12"	153.1	216.4	117.2	59.4
14"	215.5	304.7	164.9	84
16"	281.5	398.1	215.4	109.8
18"	356.3	503.8	272.6	139
20"	439.8	622	336.6	171.6
24"	633.3	895.6	484.7	247.1

*MULTIPLY THRUST BY MAXIMUM WATER PRESSURE

*PIPE SIZES LARGER THAN 24" SHALL BE THRUST BLOCKED AS PER ENGINEER RECOMMENDATION

THRUST BLOCK AREA AGAINST TRENCH WALL (SQUARE FEET)

ASSUMING SAND AND MAX PRESSURE OF 150 PSI SIZE MAY BE REDUCED WITH AN ENGINEERED SUBMITTAL AND AS APPROVED BY THE CITY ENGINEER				
PIPE SIZE	TEES/ PLUGS	90° BENDS	45° BENDS	22.5° BENDS
4"	2.8	3.9	2.1	1.1
6"	5.7	8.1	4.4	2.2
8"	9.9	14.0	7.6	3.8
10"	16.1	22.8	12.4	6.3
12"	23.0	32.5	17.6	8.9
14"	32.3	45.7	24.7	12.6
16"	42.2	59.7	32.3	16.5
18"	53.4	75.6	40.9	20.9
20"	66.0	93.3	50.5	25.7
24"	95.0	134.3	72.7	37.1

CONCRETE THRUST BLOCKS

DATE: AUGUST 2017

DRAWING NAME: DW-2

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
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STANDARD DETAILS

DRINKING WATER

DW-2

Add DW-2A "concrete thrust anchors...." per Hansen Allen & Luce Recommendations

Add DW-2B "concrete thrust anchors...." per Hansen Allen & Luce Recommendations

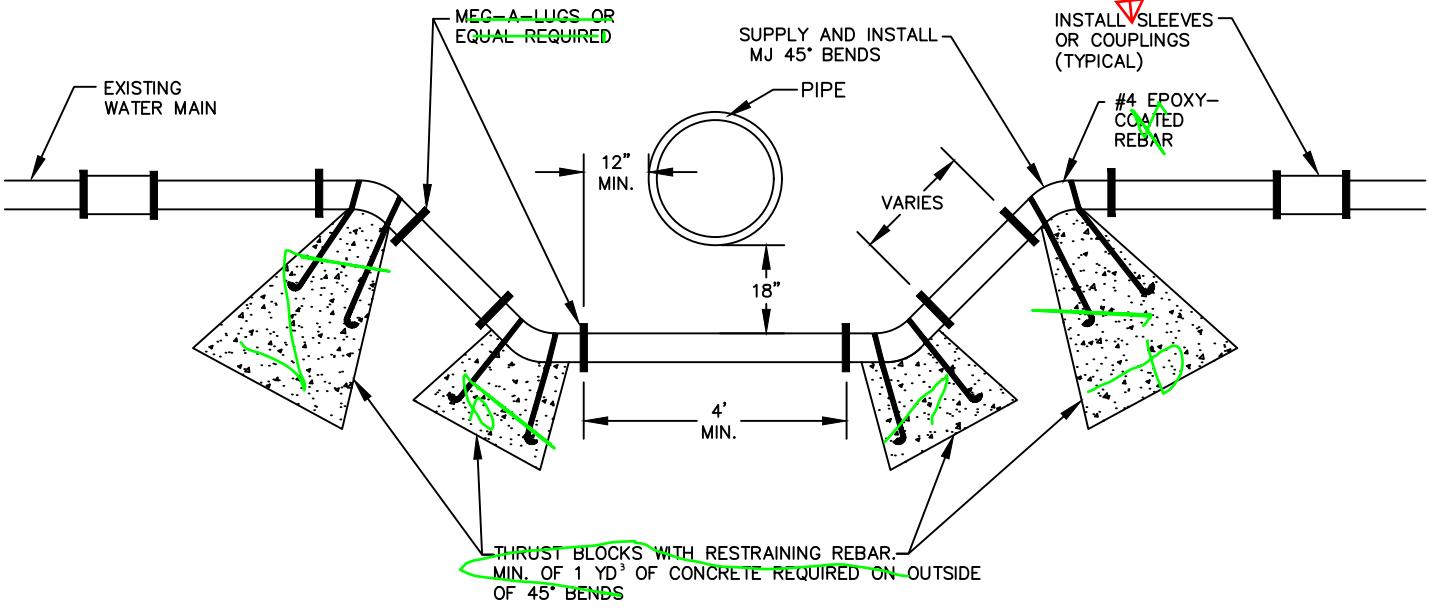
Add DW-2C "Alternative Thrust Restraint" per Hansen Allen & Luce Recommendations

Add DW-2C "Alternative Thrust Restraint Tables" per Hansen Allen & Luce Recommendations

per 7/13 mtng, action item HAL

RESTRAINED JOINTS REQUIRED
(MEGA LUG OR EQUAL)

RESTRAINED



NOTES:

1. CITY TO BE GIVEN 72 HOUR NOTICE BEFORE LOOPING ANY WATERLINE WHEN SHUT OFF IS REQUIRED
2. A CASE OR SLEEVE IS REQUIRED WHEN CROSSING CULINARY WATER UNDER SANITARY AND STORM SEWER.
3. ENGINEER SHALL DETERMINE # AND LOCATION OF RESTRAINTS.

Engineer of Record

4. Within the pavement section all tees, crosses, and bends shall be restrained, thrust blocking will not be allowed

DRINKING WATERLINE LOOP

DATE: AUGUST 2017
DRAWING NAME: DW-3
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

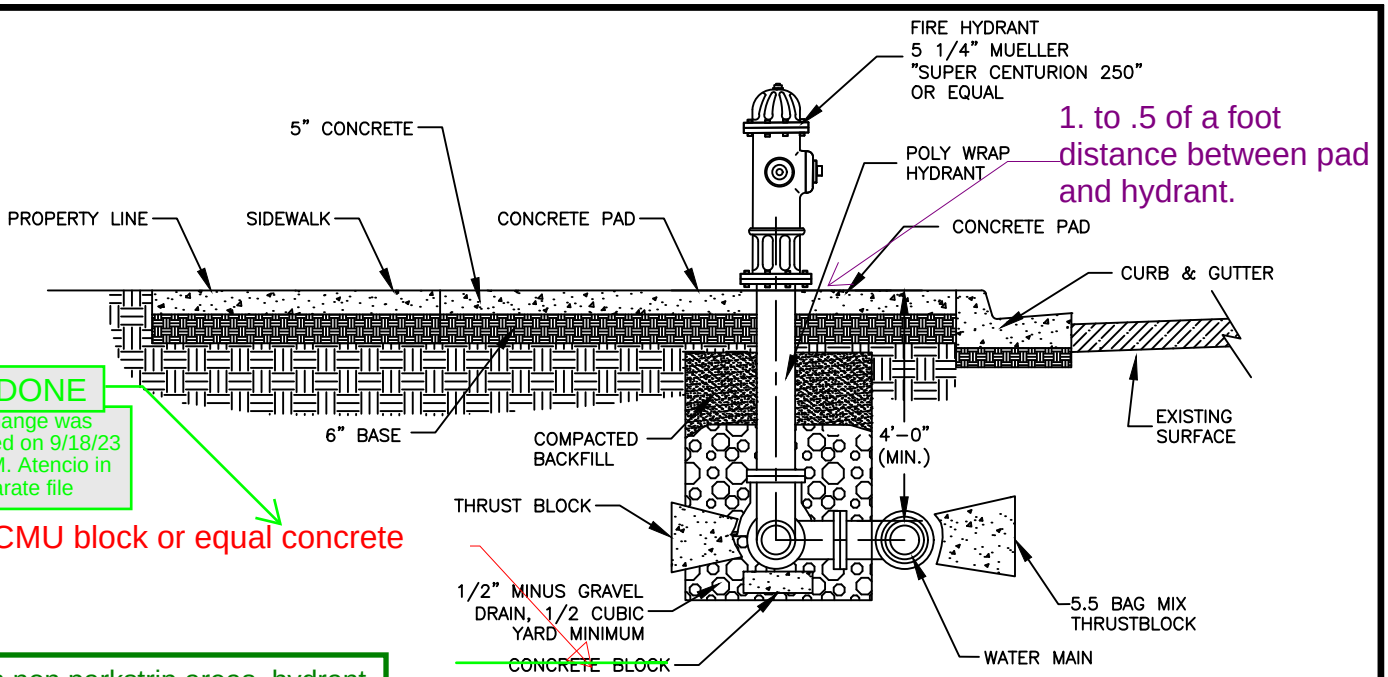
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

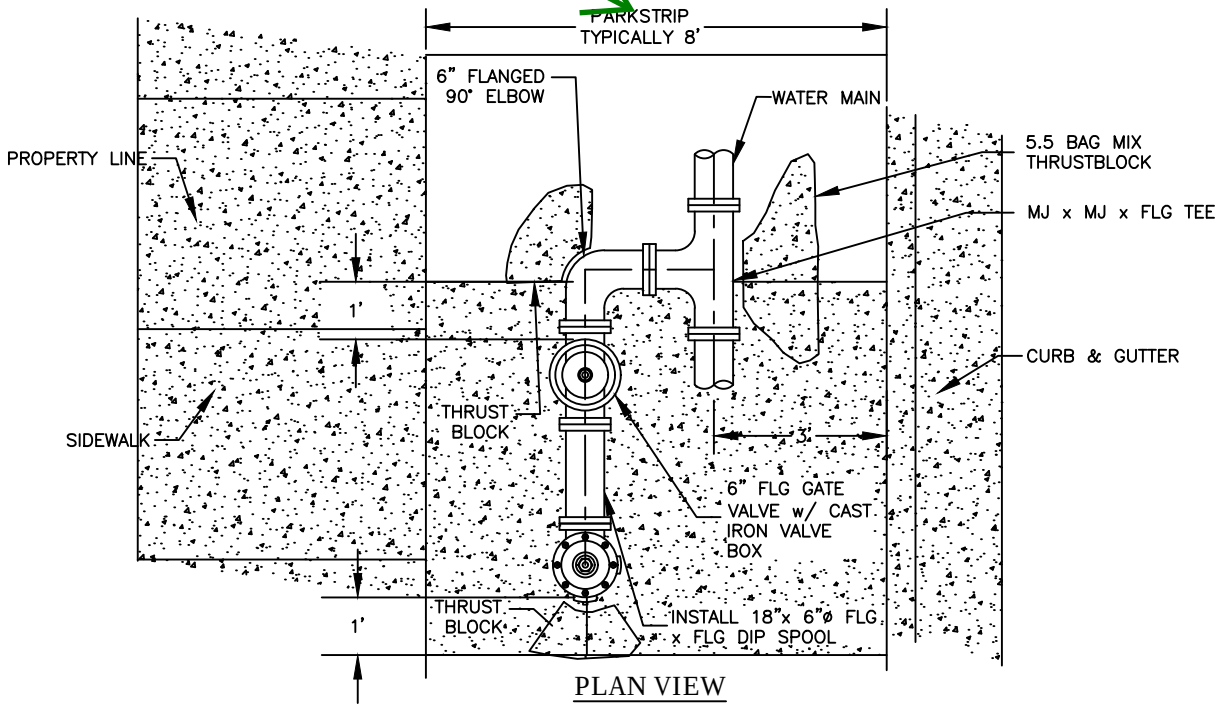
DRINKING WATER

DW-3



SECTION VIEW

In non parkstrip areas, hydrant pad shall be minimum 4-ft x 4-ft



PLAN VIEW

NOTES:

1. HYDRANT SHALL BE "TRAFFIC" TYPE WITH A REPLACEABLE BREAK-AWAY UNIT IMMEDIATELY ABOVE GROUND.

FIRE HYDRANT CONNECTION

DATE: AUGUST 2017

DRAWING NAME: DW-4

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED CONCRETE PAD AND DELETED NOTE

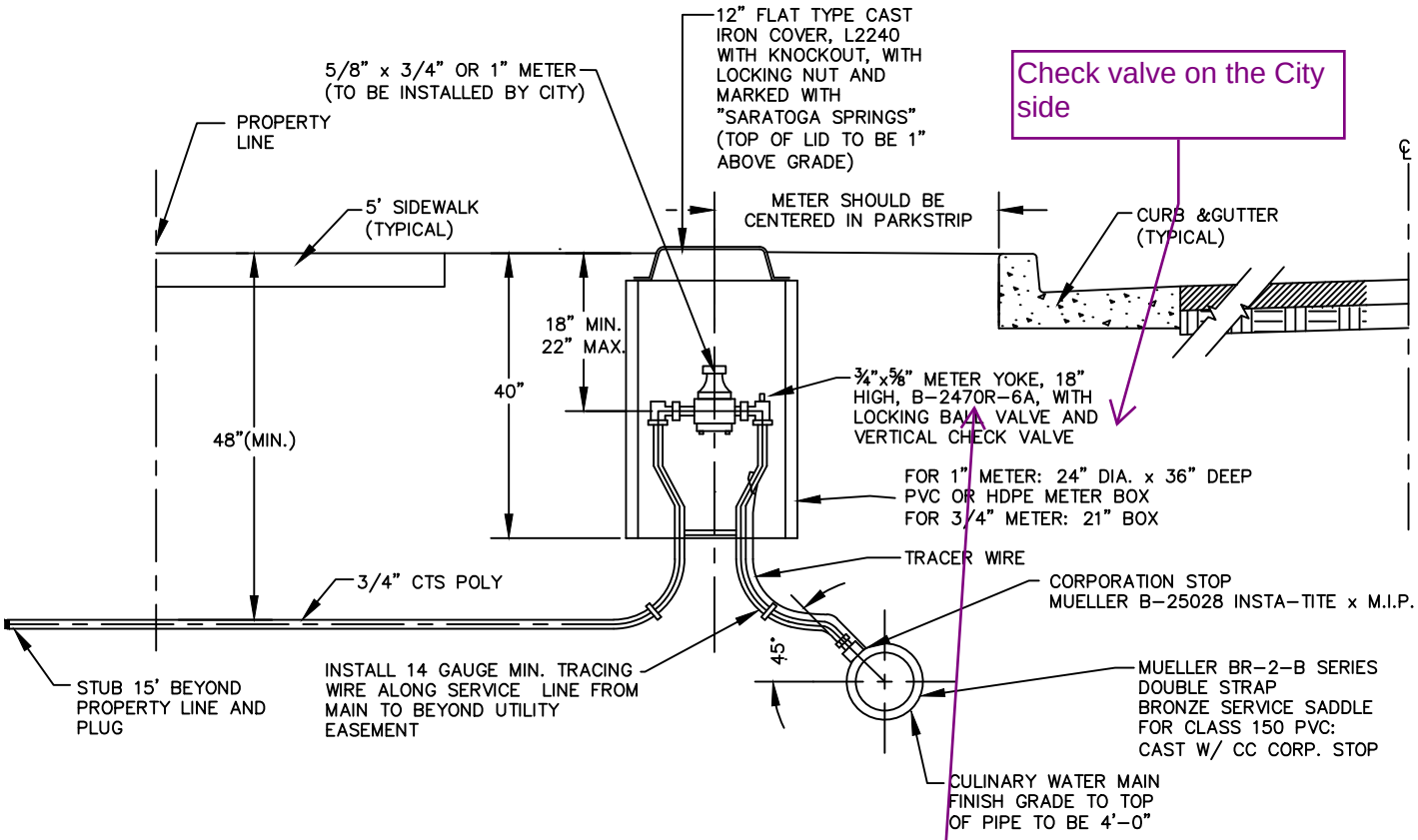
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

DRINKING WATER

DW-4



Check valve on the City side

NOTES:

1. INSPECTION: METER BOX AND SERVICE LINE SHALL BE INSPECTED BY CITY PRIOR TO BACKFILLING.
2. BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT EACH LIFT TO AN AVERAGE DRY DENSITY OF 95% WITH NO DENSITY TEST RESULT LESS THAN 92%.
3. CONTRACTOR TO SUPPLY ALL MATERIALS EXCLUDING METER
4. METER BOXES SHOULD BE PVC OR HDPE.
5. PIPE: INSTALL MINIMUM 3/4" CTS POLY PIPE (SDR-9) FROM MAIN TO METER AND FROM METER TO BUILDING. MINIMUM 1" POLYETHYLENE PIPE TO BE USED IN COMMERCIAL AREAS. INSTALL TRACING WIRE FROM MAIN LINE TO METER.
6. PLACEMENT: ALL METERS ARE TO BE INSTALLED IN THE PARK STRIP, ~~MUST BE PLACED NEAR MIDPOINT OF THE LOT,~~ AND MUST NOT BE LOCATED IN A DRIVEWAY OR IN A SIDEWALK.
7. METER YOKE TO BE MUELLER B-2470R-6A, OR ACCEPTABLE EQUAL
9. SERVICE SADDLES SHALL BE MUELLER BR-2-B SERIES, OR EQUAL
11. METER LID TO BE 1" ABOVE LINE GRADE OF WALK/CURB
12. STAINLESS STEEL LINER INSERTS WILL BE REQUIRED INSIDE OF TUBING AT COMPRESSION FITTINGS.
13. WATER SERVICES SHALL BE STUBBED TO A POINT APPROXIMATELY 1' BEYOND UTILITY EASEMENT (PUE).
14. 1" METER INSTALLATION TO BE SIMILAR USING 1" METER, PIPE, AND FITTINGS.

Check part numbers to include check valve on City side.

Water meters places 5' off property line.

RESIDENTIAL METER CONNECTION 3/4" x 5/8" OR 1"

DATE: AUGUST 2017
DRAWING NAME: DW-5
DRAWN BY: ETL
CHECKED: APPROVED:

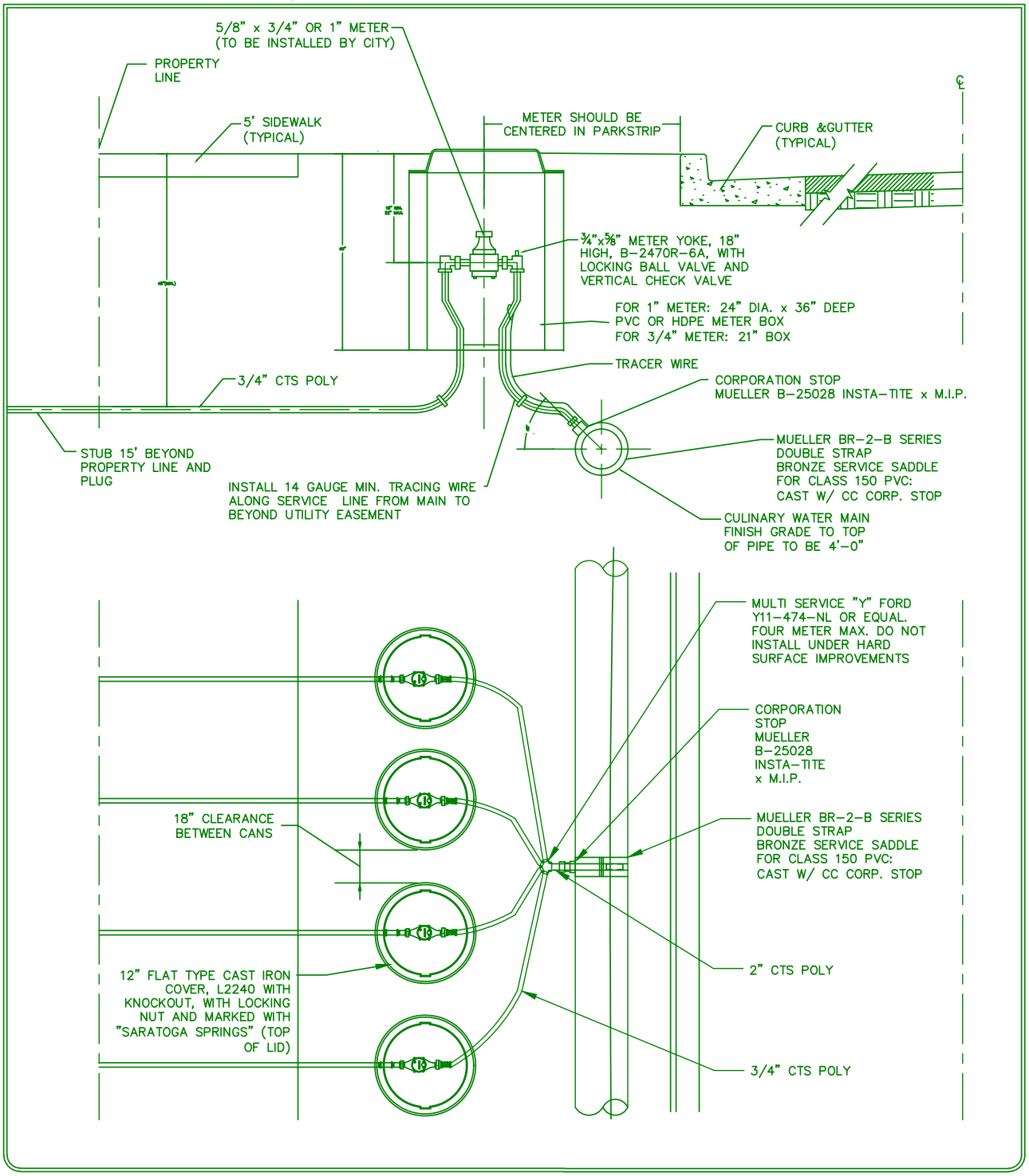
REVISIONS			
REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED CALLOUT

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
DRINKING WATER
DW-5

add DW-5A



RESIDENTIAL METER MULTI-CONNECTION 3/4" x 5/8" OR 1"

DATE: MARCH 2022

DRAWING NAME: DW-5A

DRAWN BY: JRP

CHECKED: | APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

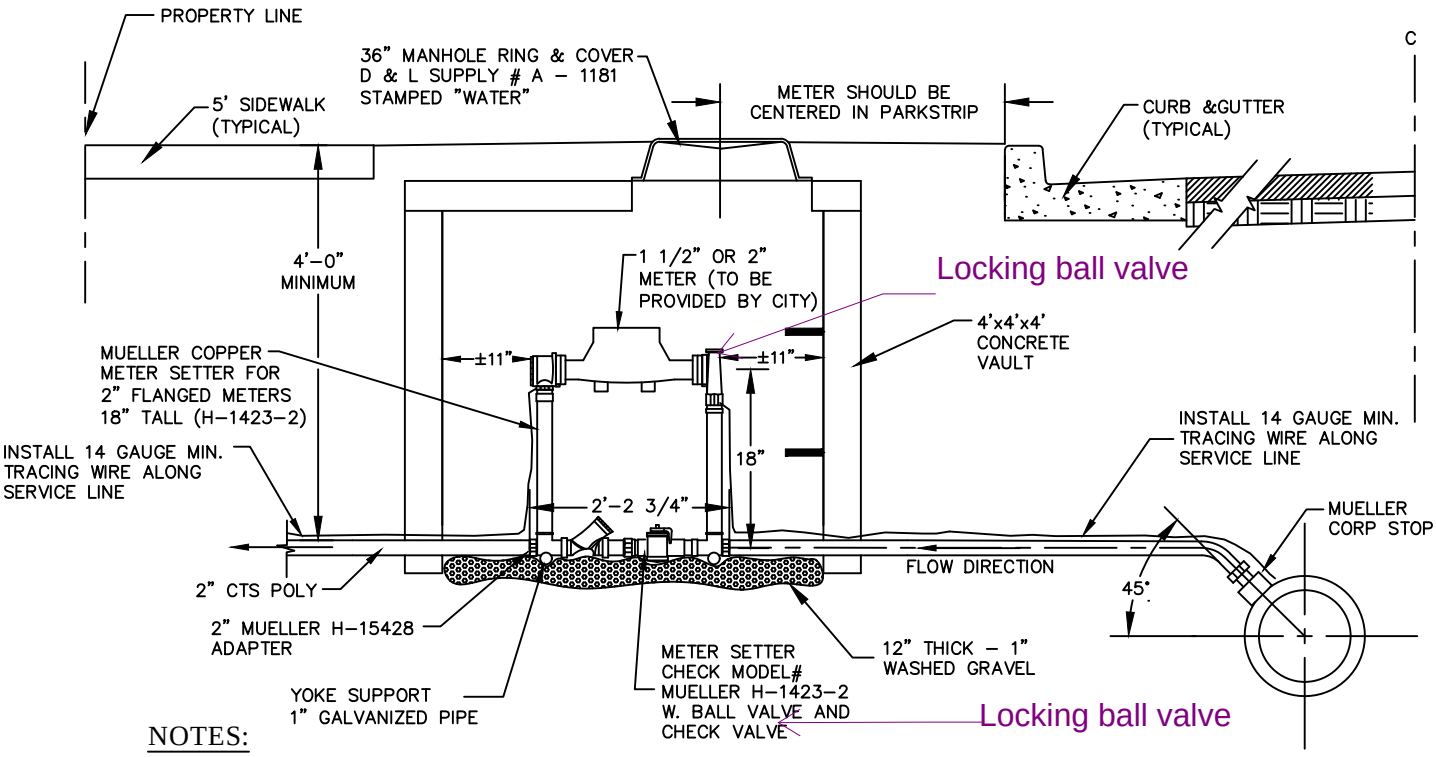
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

DRINKING WATER

DW-5A

Any meter that is in a vault needs a Ert box in the park strip see PI-7 for example



NOTES:

1. INSPECTION: METER BOX AND SERVICE LINE SHALL BE INSPECTED BY CITY PRIOR TO BACKFILLING.
2. BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT EACH LIFT TO AN AVERAGE DRY DENSITY OF 97% WITH NO DENSITY TEST RESULT LESS THAN 95%.
3. CONTRACTOR TO SUPPLY ALL MATERIALS EXCLUDING METER.
4. METER BOXES SHALL BE A 4'x4'x4' CONCRETE VAULT.
5. PIPE: INSTALL MINIMUM 2" CTS POLY PIPE FROM MAIN TO METER AND FROM METER TO BUILDING. INSTALL TRACING WIRE FROM MAIN LINE TO METER
6. PLACEMENT: ALL METERS ARE TO BE INSTALLED IN THE PARK STRIP, MUST BE PLACED NEAR THE MIDPOINT OF THE LOT, AND MUST NOT BE LOCATED IN A DRIVEWAY OR IN A SIDEWALK.
7. METER SETTER TO BE MUELLER H–1423–2, OR ACCEPTABLE EQUAL. INSTALL CORRECT SIZE METAL PIPE TO STABILIZE SETTER.
8. PIPE SPLICES SHALL BE MADE USING A COMPRESSION FITTING; MUELLER 110 COMPRESSION CONNECTION (MUELLER H–15403) W/ STAINLESS STEEL INSERTS
9. WATER SERVICES SHALL BE STUBBED TO A POINT APPROXIMATELY 1 (ONE) FOOT BEYOND UTILITY EASEMENT.
10. IN TRAFFIC AREAS, BOXES SHOULD BE ABLE TO SUPPORT H–20 LOADING. (NOTE: TYPICALLY WATER METERS ARE NOT ALLOWED IN TRAFFIC AREAS.)
11. METER LID TO BE 1" ABOVE THE LINE GRADE OF WALK/CURB.
12. 1 1/2–INCH METER INSTALLATION TO BE SIMILAR; USING 1 1/2–INCH METER, PIPE, FITTINGS AND SETTER.

NON-RESIDENTIAL METER CONNECTION 2 " OR 1 1/2"

DATE: AUGUST 2017

DRAWING NAME: DW-6

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS
1	10/17/2017	EL	CONCRETE BOX WITH CORP STOP

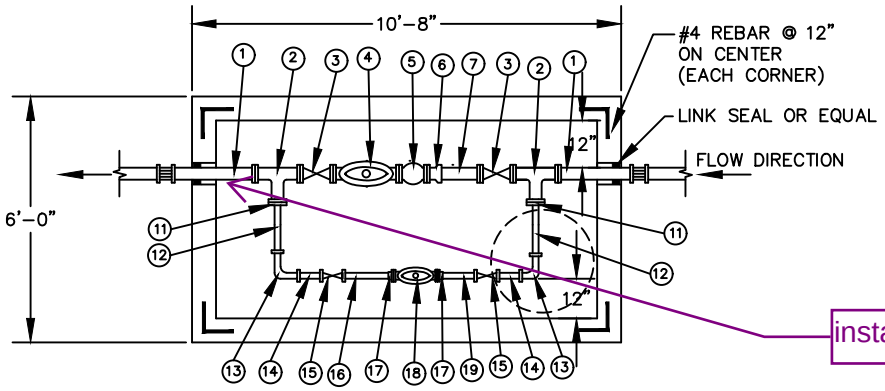
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

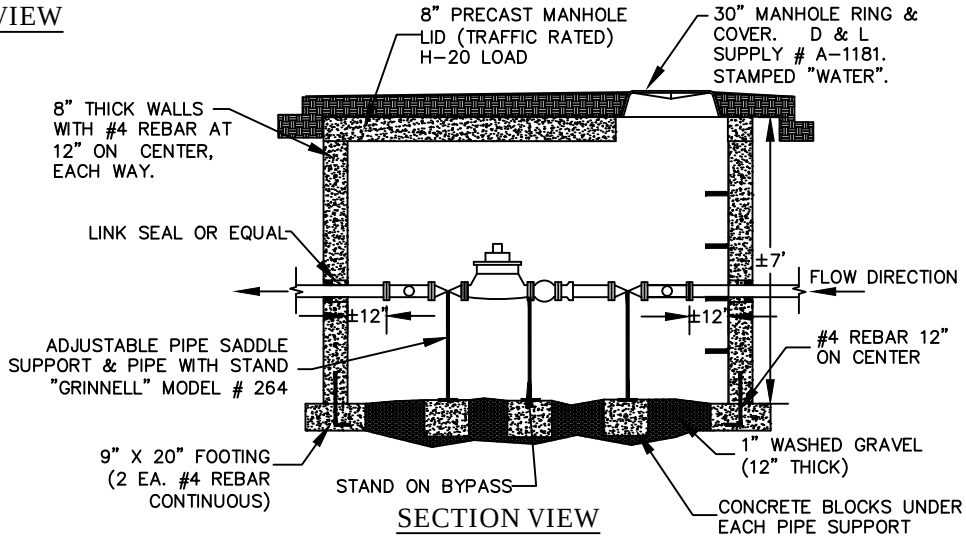
STANDARD DETAILS

DRINKING WATER

DW-6



PLAN VIEW



SECTION VIEW

NOTES:

1. INSPECTION: METER BOX AND SERVICE LINE SHALL BE INSPECTED BY CITY PRIOR TO BACKFILLING.

2. BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT EACH LIFT TO AN AVERAGE DRY DENSITY OF 97% WITH NO DENSITY TEST RESULT LESS THAN 92%.

3. ALL 4" INTERIOR FITTINGS TO BE FLANGED AND ALL 2" INTERIOR FITTINGS TO BE BRASS, SCHEDULE 40 (THREADED).

4. WATER METERS SHALL BE PROVIDED BY CITY.

5. PLACEMENT: ALL METERS ARE TO BE INSTALLED IN THE PARK STRIP AND MUST BE PLACED NEAR MIDPOINT OF THE LOT AND MUST NOT BE LOCATED IN A DRIVEWAY, OR IN A SIDEWALK.

6. CONTRACTOR SHALL SUPPLY ALL MATERIALS AND LABOR, EXCLUDING THE WATER METER.

4" PIPE SCHEDULE		
#	QTY	DESCRIPTION
1	1	FLxPE D.I. SPOOL LENGTH = ±48"
2	1	4"x4"x4" FLGD. TEE
3	1	4" FLxFL GATE VALVE (MUELLER)**
4	1	4" FLxFL METER*
5	1	FLANGED METER STRAINER
6	1	4" FLANGED COUPLING ADAPTER
7	1	FLxPE D.I. SPOOL (LENGTH AS NEEDED)
2" PIPE SCHEDULE		
#	QTY	DESCRIPTION
11	2	4" BLIND FLANGE W\2" TAP
12	2	±23" NIPPLE
13	2	2" 90° ELBOW
14	2	2"x6" NIPPLE
15	2	2" GATE VALVE (MUELLER) #2380-8**
16	1	2"x ±21.5" NIPPLE
17	2	2" SCREW-ON FLANGE
18	1	2" METER*
19	1	2" NIPPLE, LENGTH AS NEEDED

*SUPPLIED BY CITY
** GATE VALVE SHALL BE FURNISHED WITH A HANDWHEEL.

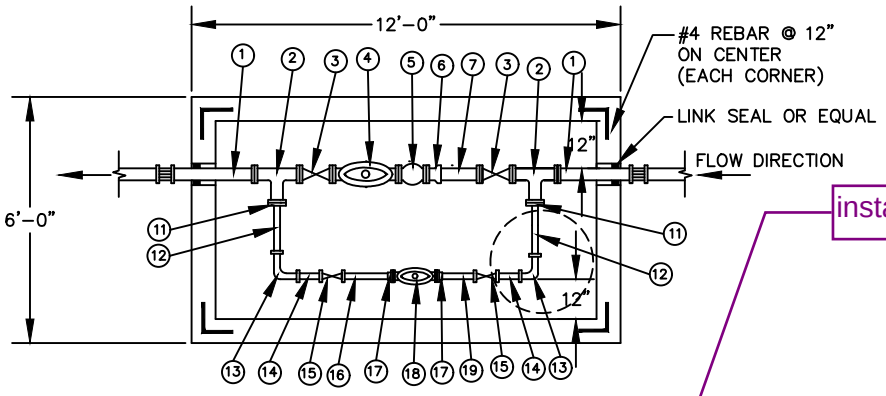
4 INCH METER AND VAULT WITH 2" BYPASS FOR 4" LATERAL

DATE: AUGUST 2017
DRAWING NAME: DW-7
DRAWN BY: ETL
CHECKED: APPROVED:

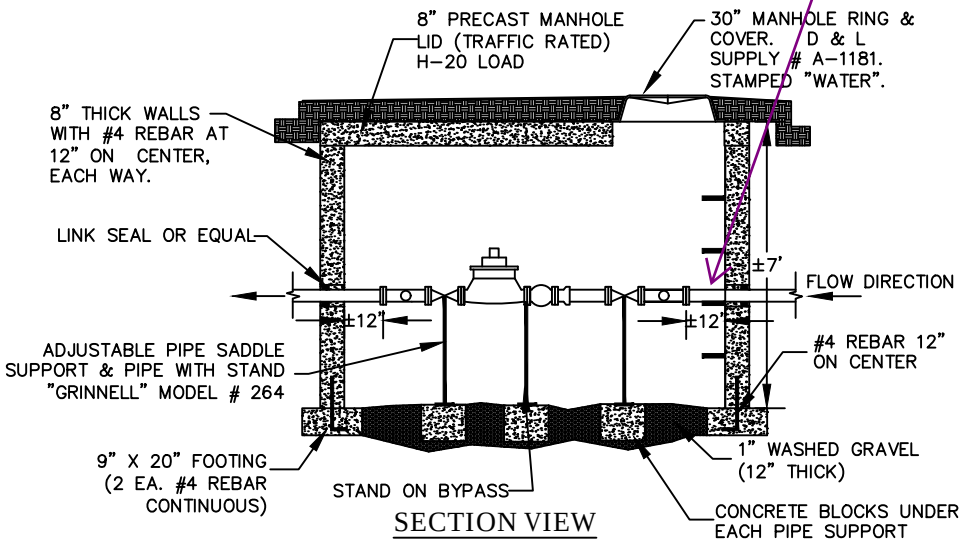
REVISIONS			
REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
DRINKING WATER
DW-7



PLAN VIEW



SECTION VIEW

95%

NOTES:

1. INSPECTION: METER BOX AND SERVICE LINE SHALL BE INSPECTED BY CITY PRIOR TO BACKFILLING.
2. BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT EACH LIFT TO AN AVERAGE DRY DENSITY OF ~~95~~% WITH NO DENSITY TEST RESULT LESS THAN 92%.
3. ALL 4" INTERIOR FITTINGS TO BE FLANGED AND ALL 2" INTERIOR FITTINGS TO BE BRASS, SCHEDULE 40 (THREADED).
4. PLACEMENT: ALL METERS ARE TO BE INSTALLED IN THE PARK STRIP, MUST BE PLACED NEAR MIDPOINT OF THE LOT AND MUST NOT BE LOCATED IN A DRIVEWAY OR IN A SIDEWALK.
6. CONTRACTOR SHALL SUPPLY ALL MATERIALS AND LABOR EXCLUDING METER

Backfill and compact per section 02116

6" PIPE SCHEDULE		
#	QTY	DESCRIPTION
1	1	FLxPE D.I. SPOOL LENGTH = ±48"
2	1	6"x6"x2" FLGD. TEE
3	1	6" FLxFL GATE VALVE (MUELLER)*
4	1	6" FLxFL METER**
5	1	FLANGED METER STRAINER
6	1	6" FLANGED COUPLING ADAPTER
7	1	FLXPE DI SPOOL, LENGTH AS NEEDED
2" PIPE SCHEDULE		
#	QTY	DESCRIPTION
11	2	4" BLIND FLANGE W\2" TAP
12	2	±23" NIPPLE
13	2	2" 90° ELBOW
14	2	2"x6" NIPPLE
15	2	2" GATE VALVE (MUELLER) #2380-8*
16	1	2"x ±21.5" NIPPLE
17	2	2" SCREW-ON FLANGE
18	1	METER**
19	1	2" NIPPLE (LENGTH AS NEEDED)

* GATE VALVE SHALL BE FURNISHED WITH A HANDWHEEL.
** SUPPLIED BY CITY

6 INCH METER AND VAULT WITH 2" BYPASS FOR 6" LATERALS

DATE: AUGUST 2017

DRAWING NAME: DW-8

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

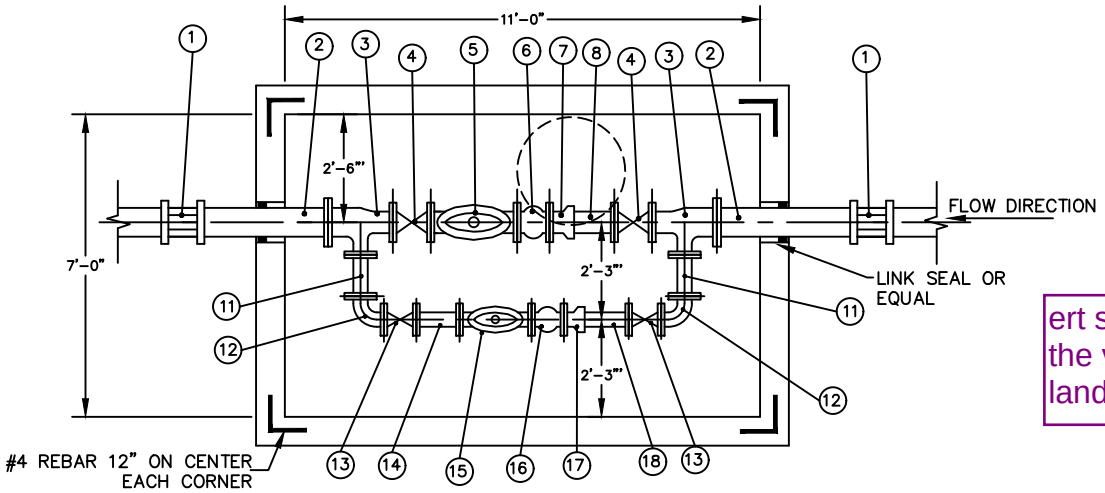
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

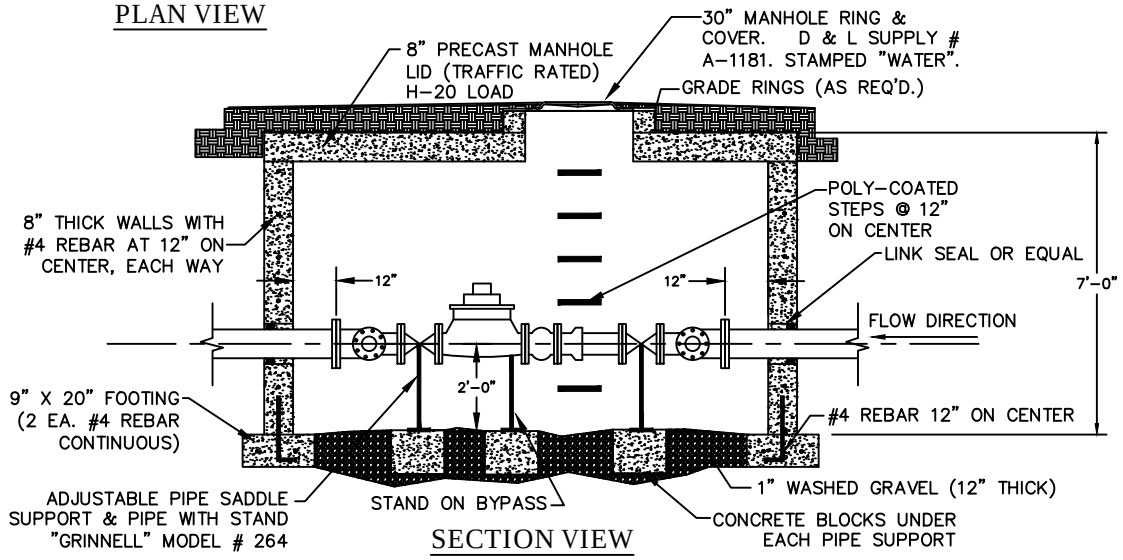
DRINKING WATER

DW-8



PLAN VIEW

ert stubbed out of the vault into a landscaping box



SECTION VIEW

8" & 6" PIPE SCHEDULE		
#	QTY	DESCRIPTION
1	2	8" MECHANICAL COUPLINGS
2	2	8" FLxPE D.I. SPOOL (LENGTH AS NEEDED)
3	2	8"x6"x4" FLxFLxFL TEE
4	2	6" FLxFL GATE VALVE (MUELLER)*
5	1	6" FLxFL METER**
6	1	6" FLANGED METER STRAINER
7	1	6" FLANGED COUPLING ADAPTER
8	1	6" FLxPE D.I. SPOOL (LENGTH AS NEEDED)
4" PIPE SCHEDULE		
#	QTY	DESCRIPTION
11	2	4" FLxFL D.I. SPOOL (LG = ±11.5")
12	2	4" FLxFL 90° BEND
13	2	4" GATE VALVE (MUELLER)*
14	1	4" FLxFL D.I. SPOOL (LG = ±12")
15	1	4" METER**
16	1	4" FLxFL METER STRAINER
17	1	4" FLANGED COUPLING ADAPTER
18	1	4" FLxPE D.I. SPOOL (LENGTH AS NEEDED)

* GATE VALVE SHALL BE FURNISHED WITH A HANDWHEEL.

** SUPPLIED BY CITY

95%

NOTES:

1. INSPECTION: METER BOX AND SERVICE LINE SHALL BE INSPECTED BY CITY PRIOR TO BACKFILLING.
2. BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT EACH LIFT TO AN AVERAGE DRY DENSITY OF 97% WITH NO DENSITY TEST RESULT LESS THAN 92%.
3. ALL INTERIOR FITTINGS TO BE FLANGED, UNLESS OTHERWISE INDICATED.
4. PLACEMENT: ALL METERS ARE TO BE INSTALLED IN THE PARK STRIP, MUST BE PLACED NEAR MIDPOINT OF THE LOT AND MUST NOT BE LOCATED IN A DRIVEWAY OR IN A SIDEWALK.
6. CONTRACTOR SHALL SUPPLY ALL MATERIALS AND LABOR EXCLUDING METER

5

Write in new dates.

6 INCH METER AND VAULT WITH 4" BYPASS FOR 8" LATERALS

DATE: AUGUST 2017

DRAWING NAME: DW-9

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

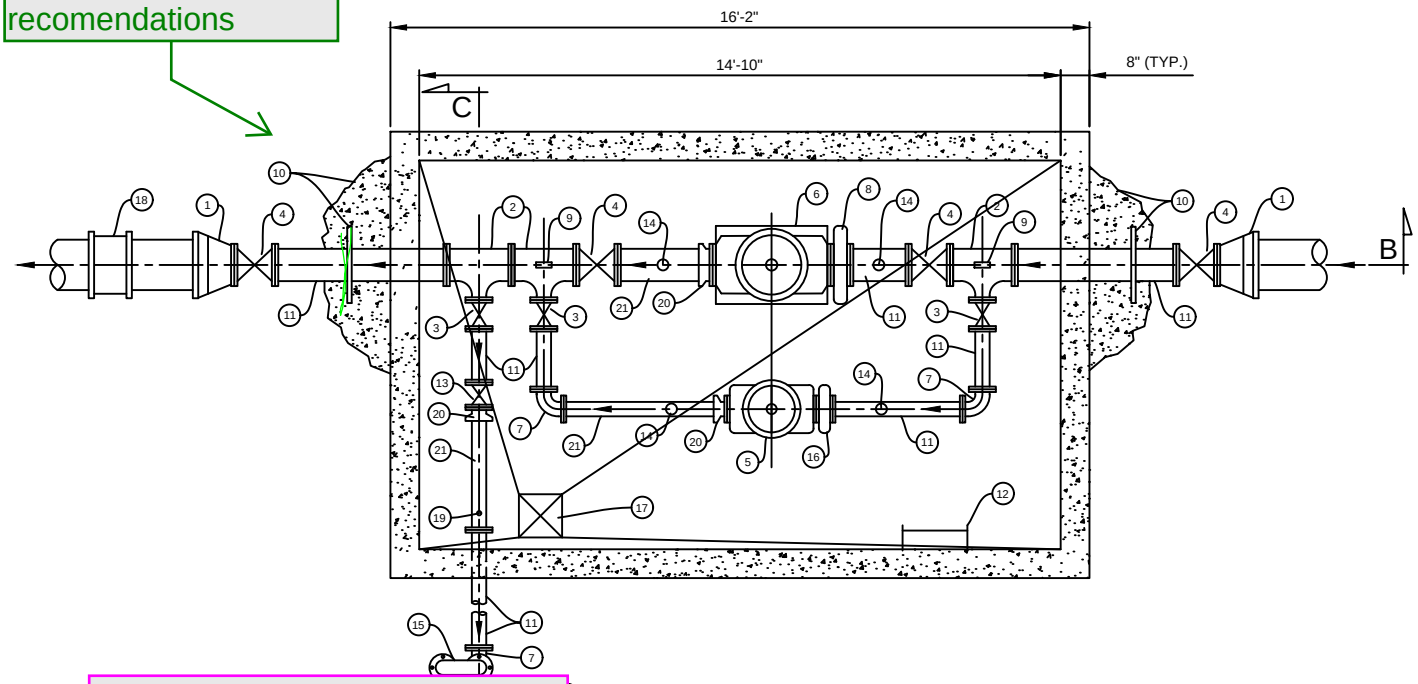
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

DRINKING WATER

DW-9

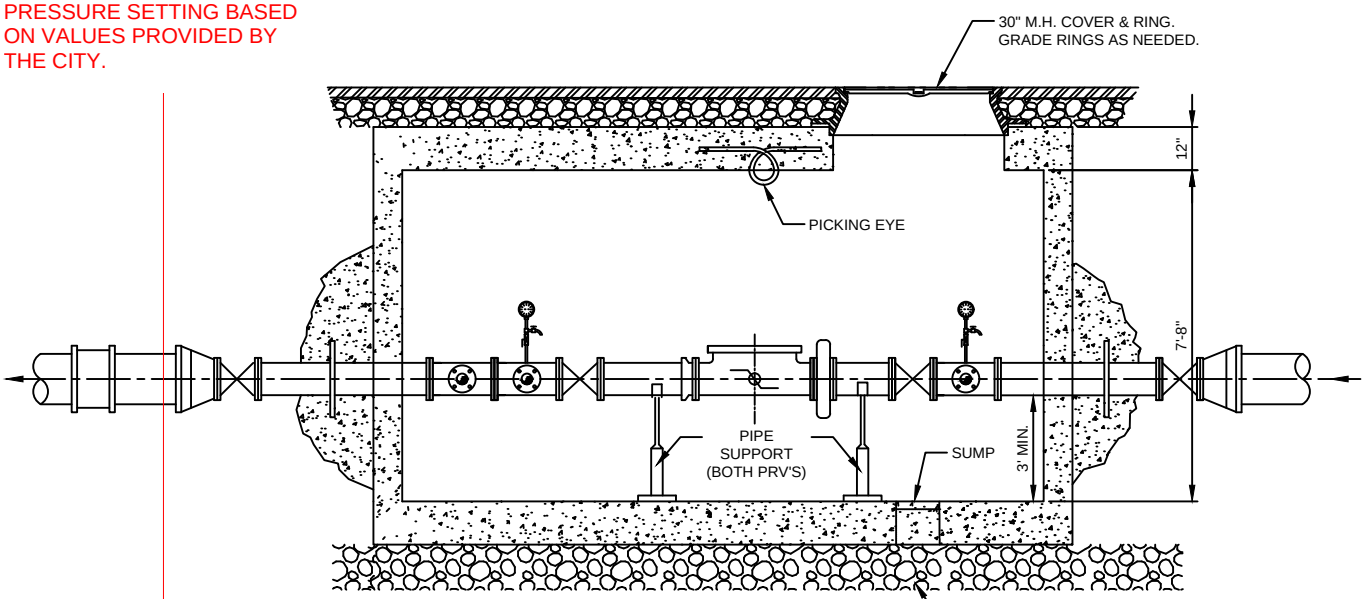
Update detail per Hansen Allen & Luce recomendations



per 7/13 mtng, action item HAL. note 5 on new DW 10E drawing

PRESSURE REDUCING VALVE VAULT
PLAN VIEW
SCALE: NTS

NOTE: CONTRACTOR'S SUPPLIER TO SET VALVE PRESSURE SETTING BASED ON VALUES PROVIDED BY THE CITY.



B
-
SECTION VIEW
SCALE: NTS

PRESSURE REDUCING VALVE STATION

DATE: AUGUST 2017
DRAWING NAME: DW-10A
DRAWN BY: CJG
CHECKED:
APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

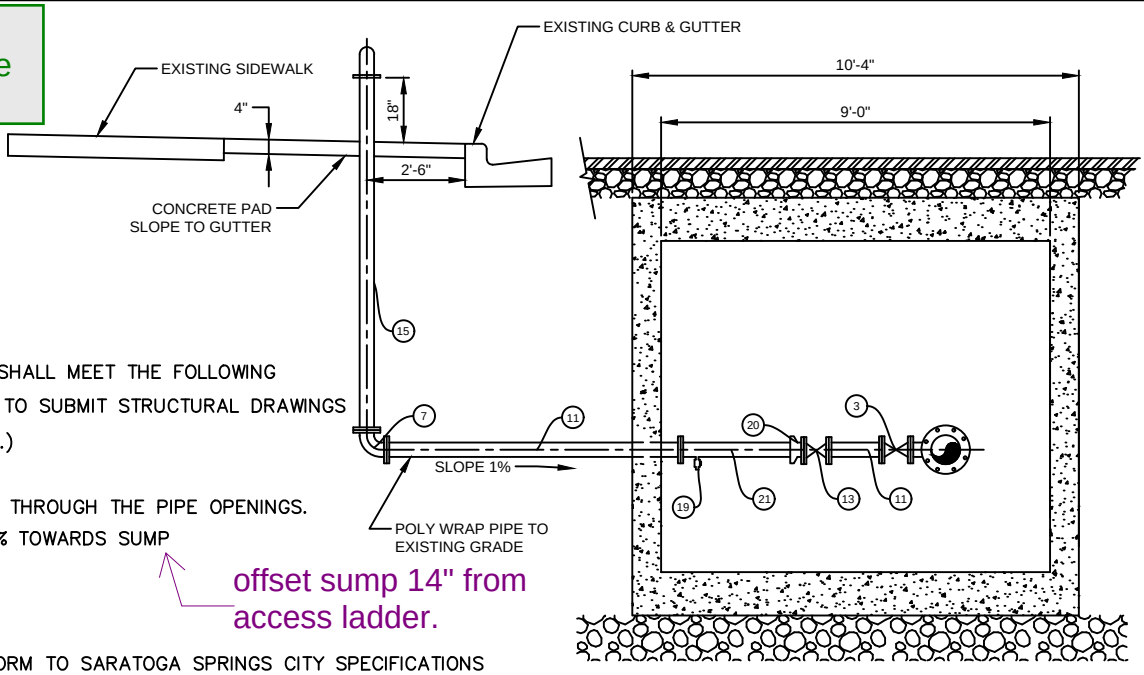
SARATOGA SPRINGS CITY
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

DRINKING WATER

DW-10A

Update detail per Hansen Allen & Luce recomendations



C SECTION VIEW
SCALE: NTS

CONCRETE VAULT NOTES:

PRECAST BOX AS SHOWN, SHALL MEET THE FOLLOWING CONDITIONS. (CONTRACTOR TO SUBMIT STRUCTURAL DRAWINGS FOR CAST IN PLACE VAULT.)

1. H–20 LOADING
2. NO HORIZONTAL JOINTS THROUGH THE PIPE OPENINGS.
3. FLOOR SHALL SLOPE 2% TOWARDS SUMP

offset sump 14" from access ladder.

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO SARATOGA SPRINGS CITY SPECIFICATIONS
2. SHOP DRAWINGS SHALL BE SUBMITTED TO SARATOGA SPRINGS CITY ENGINEER FOR APPROVAL PRIOR TO SHIPMENT
3. THE PRV ASSEMBLY DETAIL SHALL BE VERIFIED PER MANUFACTURE RECOMMENDATIONS
4. ALL VALVES SHALL HAVE 150 LB FLG'S, DUCTILE IRON BODY, BRONZE INTERNAL TRIM, EPOXY COATED, AND STAINLESS STEEL TUBES AND FITTINGS
5. PROVIDE DESIGN SUBMITTAL FOR WATERMAIN SIZES ABOVE 12"
6. PROVIDE BOLLARDS OR OTHER PROTECTION IF AND AS DIRECTED BY CITY INSPECTOR.
7. INSTALL AIR–VACUUM RELEIF VALVES WHERE REQUIRED AND AS DIRECTED.

PIPE SCHEDULE FOR 10" AND 12" WATERMAINS

#	DESCRIPTION
1.	12" X 10" MJ x FL REDUCER (NOT USED ON 10" MAINS)
2.	10" X 6" FL TEE
3.	6" FL GATE VALVE WITH HANDWHEEL
4.	10" FL GATE VALVE WITH HANDWHEEL
5.	6" CLA–VAL PRV
6.	10" CLA–VAL PRV
7.	6" 90 DEGREE FL ELBOW
8.	10" FL STRAINER
9.	4" LIQUID FILLED PRESSURE GAUGE UP TO 250 PSI W/ 3/4" BALL VALVE & HOSE BIB (NON–THREADED)
10.	THRUST RESTRAINT W/ WELDED SEEP RING & THRUST BLOCK
11.	FL SPOOL
12.	POLYPROPYLENE M.H. STEPS @ 12" O.C.
13.	6" CLA–VAL PRESSURE RELIEF VALVE (MODEL 50G–01B, SEE NOTE 4) ON LOW PRESSURE SIDE
14.	PIPE SUPPORT
15.	FL STAND PIPE W/ FL GOOSE NECK POINTING DOWNWARD. THE OPEN END OF GOOSE NECK SHALL BE 18" ABOVE GRADE AND PROVIDED WITH A SCREEN (#14 MESH NON–CORRODIBLE).
16.	6" FL STRAINER
17.	12" X 12" RECESSED SUMP WITH REMOVABLE ALUM. GRATE
18.	MJ COUPLING OR MECHANIC COUPLING
19.	3/4" B 25008 MUELLER CORP ON BOTTOM OF SPOOL
20.	FL COUPLING ADAPTER
21.	FL X PE D.I. PIPE

PIPE SCHEDULE FOR 6" AND 8" WATERMAINS

#	DESCRIPTION
1.	8" X 6" MJ x FL REDUCER (NOT USED ON 6" MAINS)
2.	6" X 3" FL TEE
3.	3" FL GATE VALVE WITH HANDWHEEL
4.	6" FL GATE VALVE WITH HANDWHEEL
5.	3" CLA–VAL PRV
6.	6" CLA–VAL PRV
7.	3" 90 DEGREE FL ELBOW
8.	6" FL STRAINER
9.	4" LIQUID FILLED PRESSURE GAUGE UP TO 250 PSI W/ 3/4" BALL VALVE & HOSE BIB (NON–THREADED)
10.	THRUST RESTRAINT W/ WELDED SEEP RING & THRUST BLOCK
11.	FL SPOOL
12.	POLYPROPYLENE M.H. STEPS @ 12" O.C.
13.	3" CLA–VAL PRESSURE RELIEF VALVE (MODEL 50G–01B, SEE NOTE 4) ON LOW PRESSURE SIDE
14.	PIPE SUPPORT
15.	FL STAND PIPE W/ FL GOOSE NECK POINTING DOWNWARD. THE OPEN END OF GOOSE NECK SHALL BE 18" ABOVE GRADE AND PROVIDED WITH A SCREEN (#14 MESH NON–CORRODIBLE).
16.	3" FL STRAINER
17.	12" X 12" RECESSED SUMP WITH REMOVABLE GRATE
18.	MJ OR MECHANICAL COUPLING
19.	3/4" B 25008 MUELLER CORP ON BOTTOM OF SPOOL
20.	FL COUPLING ADAPTER
21.	FL X PE D.I. PIPE

PRESSURE REDUCING VALVE STATION

DATE: AUGUST 2017
DRAWING NAME: DW-10B
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED NOTE

SARATOGA SPRINGS CITY

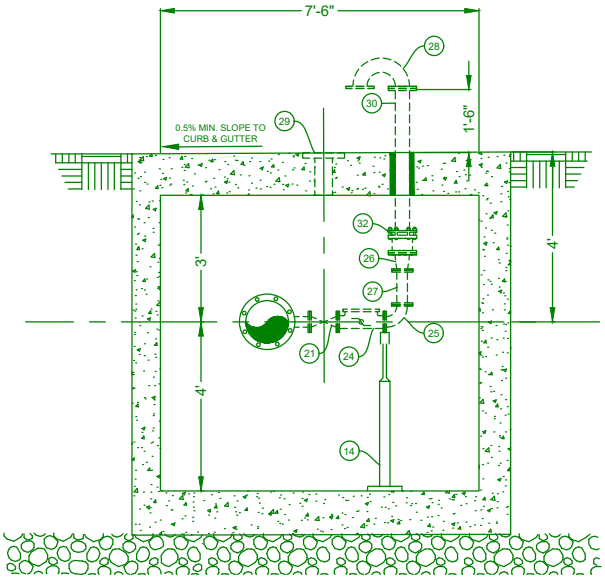
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

DRINKING WATER

DW-10B

Add DW-10C Pressure Reducing Valve Station Detail per Hansen Allen & Luce recomendations



C - SECTION VIEW
SCALE: NTS

SHEET NOTES:

1. THIS DETAIL INCLUDES DW-10A THROUGH DW-10E.

PRESSURE REDUCING VALVE STATION

DATE:	OCTOBER 2023
DRAWING NAME:	DW-10C
DRAWN BY:	ABO
CHECKED:	APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

DRINKING WATER

DW-10C

Add DW-10D Pressure Reducing Valve Station Detail per Hansen Allen & Luce recomendations

PIPE SCHEDULE

#	DESCRIPTION
1.	MAINLINE PIPE UP TO 12"
2.	[MAINLINE DIA]" X 6" FL TEE
3.	6" FL GATE VALVE WITH HANDWHEEL
4.	[MAINLINE DIA]" FL GATE VALVE WITH HANDWHEEL
5.	[MAINLINE DIA]" FL X PE D.I. PIPE
6.	[MAINLINE DIA]" CLA-VAL OR SINGER PRV
7.	6" 90 DEGREE FL ELBOW
8.	[MAINLINE DIA]" LONG SLEEVE COUPLING
9.	PRESSURE GAUGE PER DETAIL B
10.	MEGALUG SERIES 1100 SDB RESTRAINT. INSTALL ADJACENT TO CONCRETE WALL. COAT WITH DENSO THREE PART WAX TAPE COATING SYSTEM.
11.	PIPE SUPPORT WITH RESTRAINING ROD
12.	POLYPROPYLENE M.H. STEPS @ 12" O.C.
13.	4" DIA SCH 20 GALVANIZED STEEL STAND PIPE W/ FL GOOSENECK POINTING DOWNWARD. 4" SCREENED OUTLET TO BE USED ON OPEN END, SEE DETAIL C.
14.	FLANGE SUPPORT WITH RESTRAINING ROD, SEE DETAIL D AND GENERAL NOTE 4.
15.	6" FL SPOOL
16.	25 ½" EJ V1600-3 CAST FLUSH WITH CONCRETE. COVER SHALL BE STAMPED "WATER", SEE DETAIL A.
17.	12" X 12" RECESSED SUMP WITH REMOVABLE GRATE LOCATED BENEATH MANHOLE.
18.	6" CLA-VAL OR SINGER PRV, SEE GENERAL NOTE 2
19.	6" FL COUPLING ADAPTOR (SP) ROMAC DJ405, 12" INSTALLATION LENGTH, SEE GENERAL NOTE 2
20.	[MAINLINE DIA]" FL COUPLING ADAPTOR (SP) ROMAC DJ405, 13" INSTALLATION LENGTH
21.	3" FL GATE VALVE WITH HANDWHEEL, SEE GENERAL NOTE 2
22.	[MAINLINE DIA]" X 3" FL TEE, SEE GENERAL NOTE 2
23.	PICKING EYE
24.	3" CLA-VAL PRESSURE RELIEF VALVE (MODEL 50G-01B, SEE NOTE 4) ON LOW PRESSURE SIDE, SEE GENERAL NOTE 2
25.	3" FL ELBOW
26.	4" X 3" FL REDUCER, SEE GENERAL NOTE 2
27.	3" FL D.I. SPOOL, SEE GENERAL NOTE 2
28.	4" FL STAND PIPE W/ FL GOOSENECK POINTING DOWNWARD. 4" SCREENED OUTLET TO BE USED ON OPEN END, SEE DETAIL C AND GENERAL NOTE 2.
29.	MUELLER BEVELED ADJUSTABLE TOP FOR MVB COMPOSITE VALVE BOX, PART AJBV-4D, CENTERED OVER VALVE. TYP FOR ALL GATE VALVES
30.	4" FL X PE D.I. SPOOL
31.	3'X3'X3' CUBE OF CRUSHED GRAVEL WRAPPED WITH MIRAFI 1100 GEOTEXTILE FABRIC
32.	4" ROMAC RFCA

SHEET NOTES:

1. THIS DETAIL INCLUDES DW-10A THROUGH DW-10E.

PRESSURE REDUCING VALVE STATION

DATE: OCTOBER 2023
DRAWING NAME: DW-10D
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

DRINKING WATER

DW-10D

Add DW-10E Pressure Reducing Valve Station Detail per Hansen Allen & Luce recomendations

CONCRETE VAULT NOTES:

VAULT BOX SHALL MEET THE FOLLOWING CONDITIONS:

1. H–20 LOADING.
2. NO HORIZONTAL JOINTS THROUGH THE PIPE OPENINGS.
3. THE FLOOR WILL SLOPE AT A 0.5% MINIMUM TO TOWARDS THE SUMP.
4. REINFORCEMENT MUST BE EPOXY COATED.
5. SHOP DRAWINGS SHALL BE SUBMITTED TO THE CITY ENGINEER FOR ACCEPTANCE PRIOR TO FABRICATION.
6. PRESSURE PIPE PENETRATIONS SHALL BE 4" LARGER THAN CARRIER PIPE NOMINAL SIZE. LINK SEAL IS REQUIRED.
7. ROOF DECK SHALL HAVE 0.5% MINIMUM SLOPE, REFER TO C SECTION VIEW.

GENERAL NOTES:

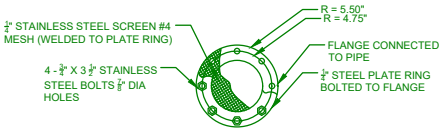
1. IF AN AIR VALVE IS NEEDED FOR THE PROJECT, AN AIR VALVE MAY BE INSTALLED ON THE DOWNSTREAM SIDE OF THE PRV INSTEAD OF A SEPARATE AIR VALVE VAULT. SEE STANDARD DETAILS DW–12 AND PI–8. A SPECIFIC DESIGN DETAIL MUST BE SUBMITTED FOR REVIEW TO AND ACCEPTED BY THE CITY ENGINEER.
2. AT THE DIRECTION OF THE CITY ENGINEER, THE DASHED FEATURES MAY BE REQUIRED FOR SPECIFIC LOCATIONS. OTHERWISE, THESE FEATURES MAY BE DELETED. THE VAULT DIMENSIONS SHALL NOT CHANGE. IF THE 6–IN PRV IS DELETED, IT SHALL BE REPLACED WITH A GATE VALVE AND A LONGER SPOOL PIECE.
3. FOR WATERMAIN SIZES ABOVE 12" OR FOR PIPE SIZES NOT IN COMPLIANCE WITH THIS DETAIL, A SPECIFIC ENGINEERING DESIGN MUST BE SUBMITTED FOR REVIEW TO AND ACCEPTED BY THE CITY ENGINEER.
4. PIPE SUPPORTS SHALL HOT DIPPED GALVANIZED AFTER MANUFACTURE. FLANGE SUPPORTS SHALL BE B–LINE B3094 W/ B3089 AND B3088T.
5. CONTRACTOR'S SUPPLIER TO SET VALVE PRESSURE SETTING BASED ON VALUES PROVIDED BY THE CITY.

SHEET NOTES:

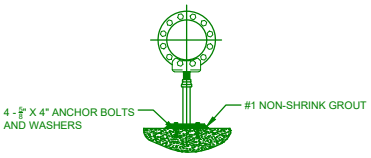
1. THIS DETAIL INCLUDES DW–10A THROUGH DW–10E.

MANHOLE COVER
DETAIL A

PRESSURE GAUGE
DETAIL B



4" SCREENED OUTLET
DETAIL C



FLANGE SUPPORT
DETAIL D

PRESSURE REDUCING VALVE STATION

DATE:	OCTOBER 2023
DRAWING NAME:	DW-10E
DRAWN BY:	ABO
CHECKED:	APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE 801-766-9793
FAX: 801-766-9794

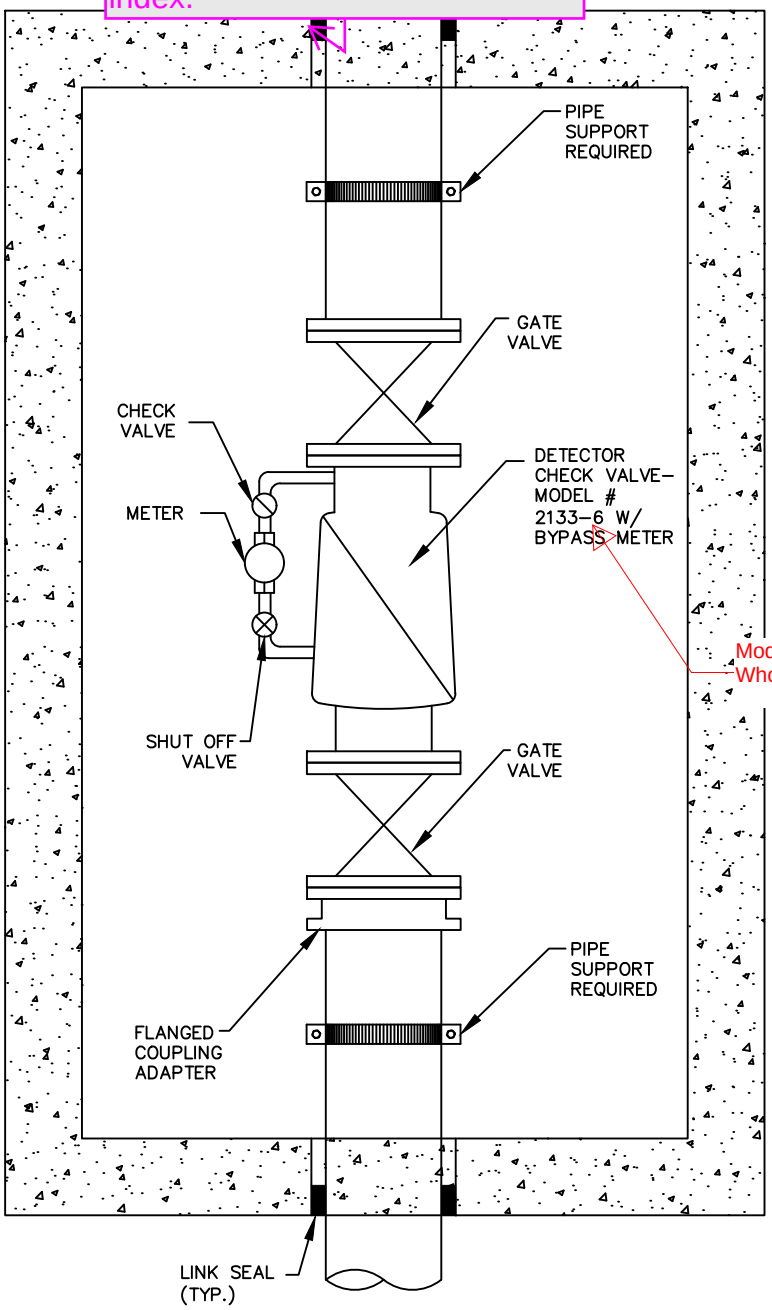
STANDARD DETAILS

DRINKING WATER

DW-10E

DONE

per 7/13 mtng, action item DM, remove std dwg DW-11 and from index.



see status on above comment

Model cannot be found. Who is the manufacturer?

DETECTOR CHECK VALVE

DATE: AUGUST 2017

DRAWING NAME: DW-11

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

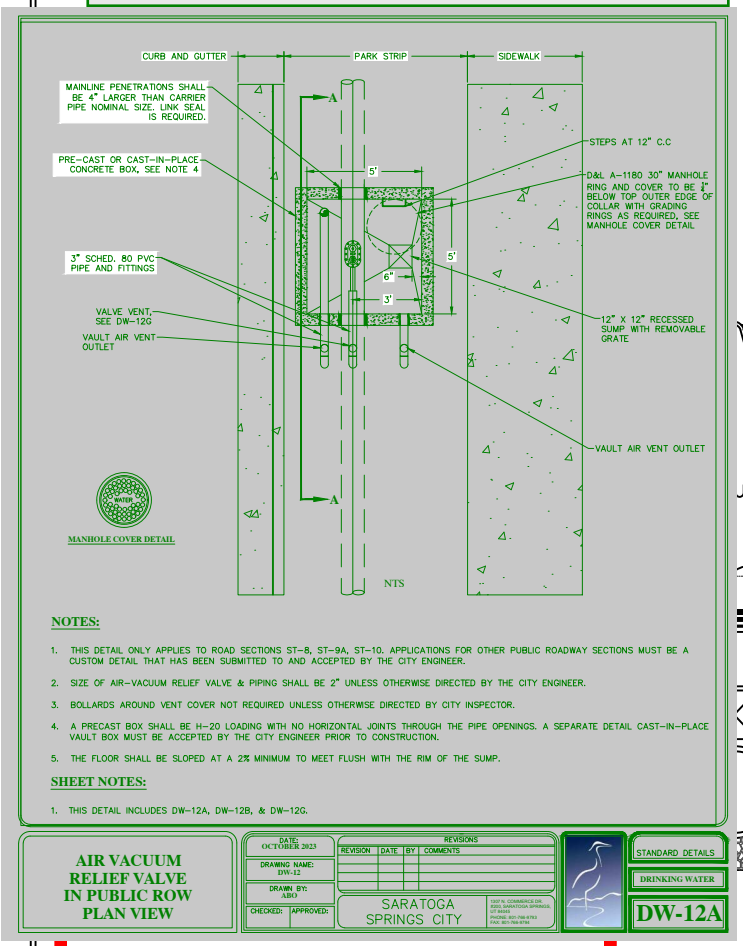
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

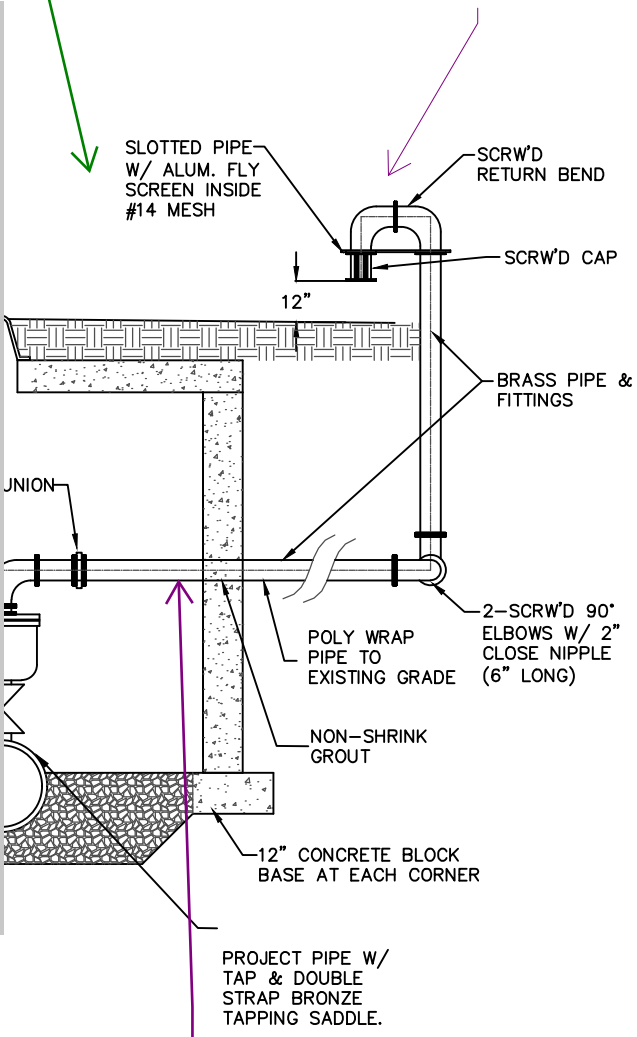
DRINKING WATER

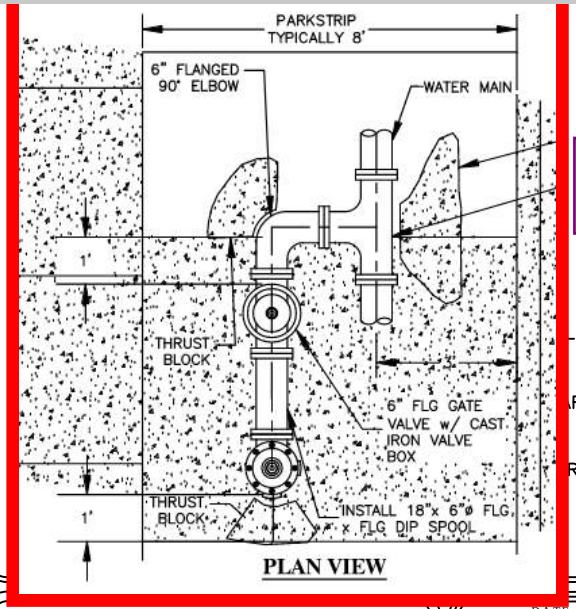
DW-11

Revise the 1 detail DW-12 air relief valve detail to be 7 details DW-12A through G per Hansen Allen & Luce recommendations



Insert Mark Antencio air vac design





Install a pip cock valve and lay pipe a 1 percent grade back to the pip cock valve.

LVE & PIPING SHALL BE AS DETERMINED BY PROJECT ENGINEER; AND

REA BEHIND CURB & GUTTER OR APPROX. 2 FT. FROM R/W LINE, AS

ROTECTION FOR RISER IF AND AS DIRECTED BY CITY INSPECTOR.

AIR VACUUM RELIEF VALVE

DATE: AUGUST 2017
DRAWING NAME: DW-12
DRAWN BY: ETL
CHECKED: APPROVED:

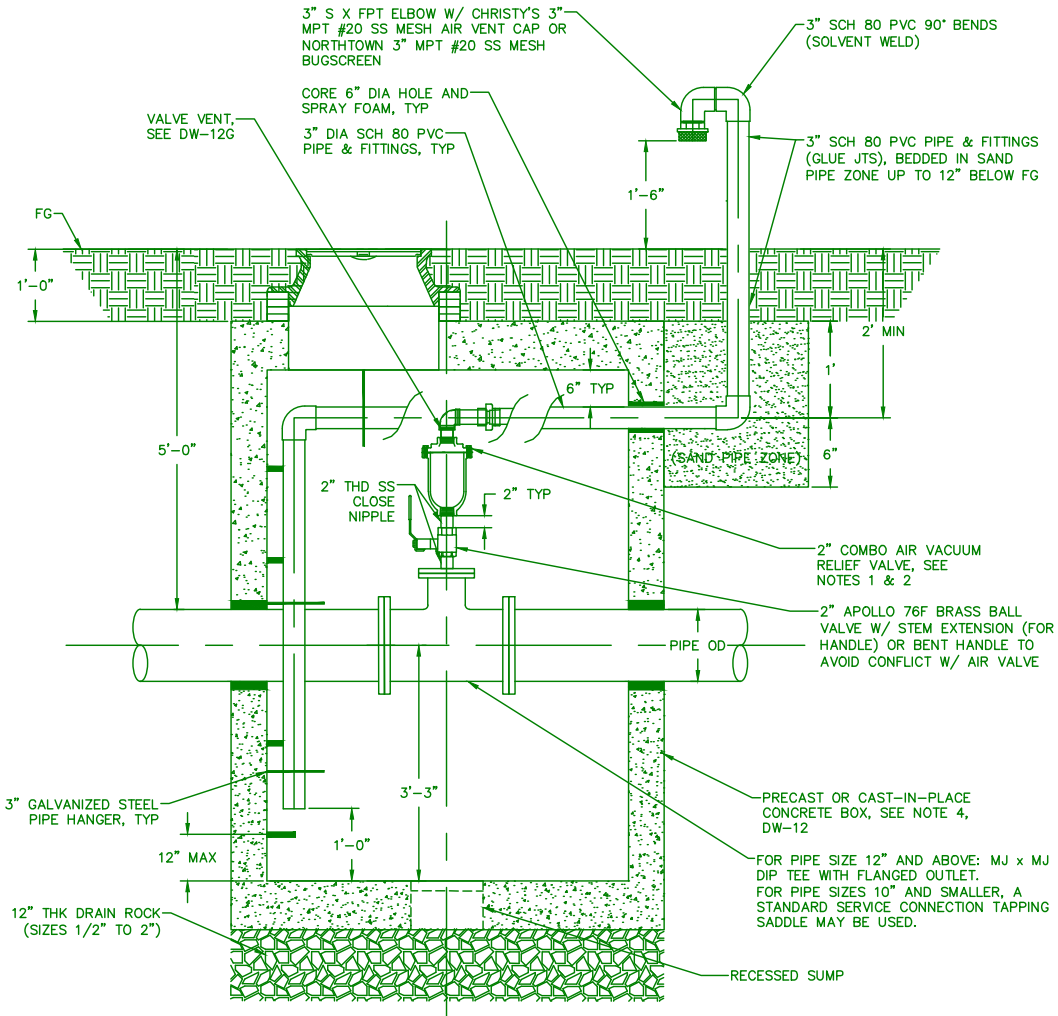
REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED NOTE

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
DRINKING WATER
DW-12

Revise the 1 detail DW-12 air relief valve detail to be 7 details DW-12A through G per Hansen Allen & Luce recommendations



AIR VACUUM RELIEF VALVE SECTION A

NTS

SHEET NOTES:

1. THIS DETAIL INCLUDES DW-12A, DW-12B, AND DW-12G

NOTES:

1. COMBO AIR VACUUM RELIEF VALVE SHALL BE VENT-O-MAT 050RBX 1921 S4 (4 FUNCTION), APCO, SINGLE BODY MODEL AVC 145C, ARI D-60, OR VALMATIC 202C. VALVE SHALL BE TREADED OR FLANGED DEPENDING ON MANUFACTURER.
2. AIR VALVE SHALL BE INSTALLED PLUMB WITHIN 3 DEGREES OF VERTICAL ALIGNMENT
3. DRINKING WATER PIPLINE IS DEEPER THAN STANDARD BURY DEPTH. ENSURE APPROACHING PIPES DO NOT CREATE ADDITIONAL LOCALIZED HIGH POINTS.

AIR VACUUM RELIEF VALVE IN PUBLIC ROW

DATE: OCTOBER 2023
DRAWING NAME: DW-12.1A
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

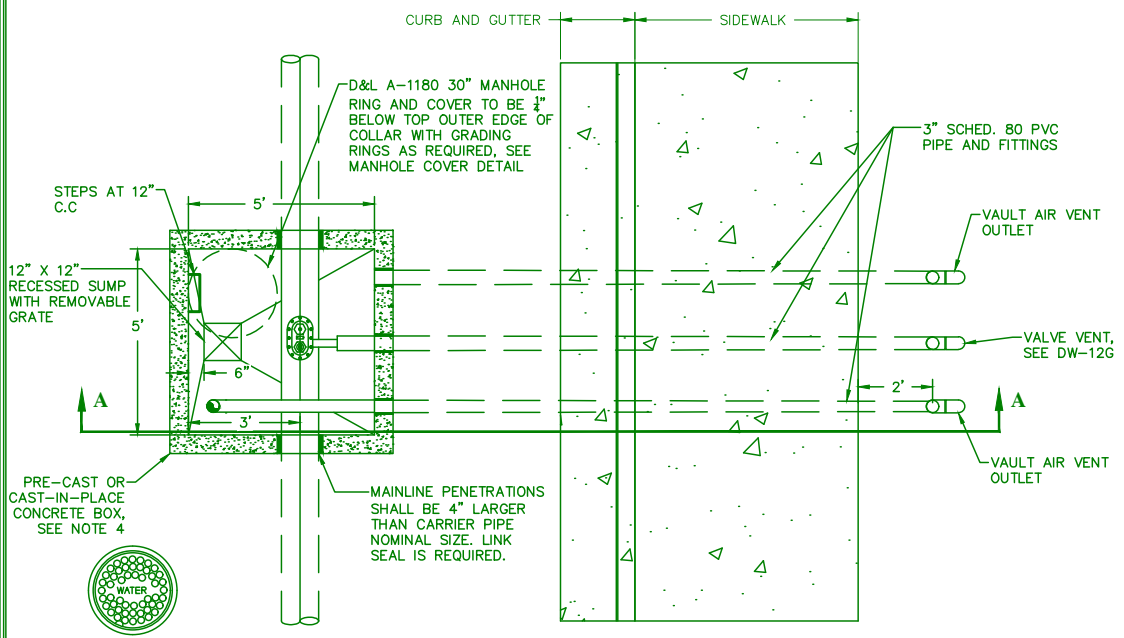
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

DRINKING WATER

DW-12B

Revise the 1 detail DW-12 air relief valve detail to be 7 details DW-12A through G per Hansen Allen & Luce recommendations



MANHOLE COVER DETAIL

NTS

NOTES:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-30 & ST-31.
2. SIZE OF AIR-VACUUM RELIEF VALVE & PIPING SHALL BE 2" UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
3. BOLLARDS AROUND VENT COVER NOT REQUIRED UNLESS OTHERWISE DIRECTED BY CITY INSPECTOR.
4. A PRECAST BOX SHALL BE H-20 LOADING WITH NO HORIZONTAL JOINTS THROUGH THE PIPE OPENINGS. A SEPARATE DETAIL CAST-IN-PLACE VAULT BOX MUST BE ACCEPTED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.
5. THE FLOOR SHALL BE SLOPED AT A 2% MINIMUM TO MEET FLUSH WITH THE RIM OF THE SUMP.

SHEET NOTES:

1. THIS DETAIL INCLUDES DW-12C, DW-12D, & DW-12G.

AIR VACUUM RELIEF VALVE IN PRIVATE ROADS PLAN VIEW

DATE: OCTOBER 2023
DRAWING NAME: DW-12.2
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

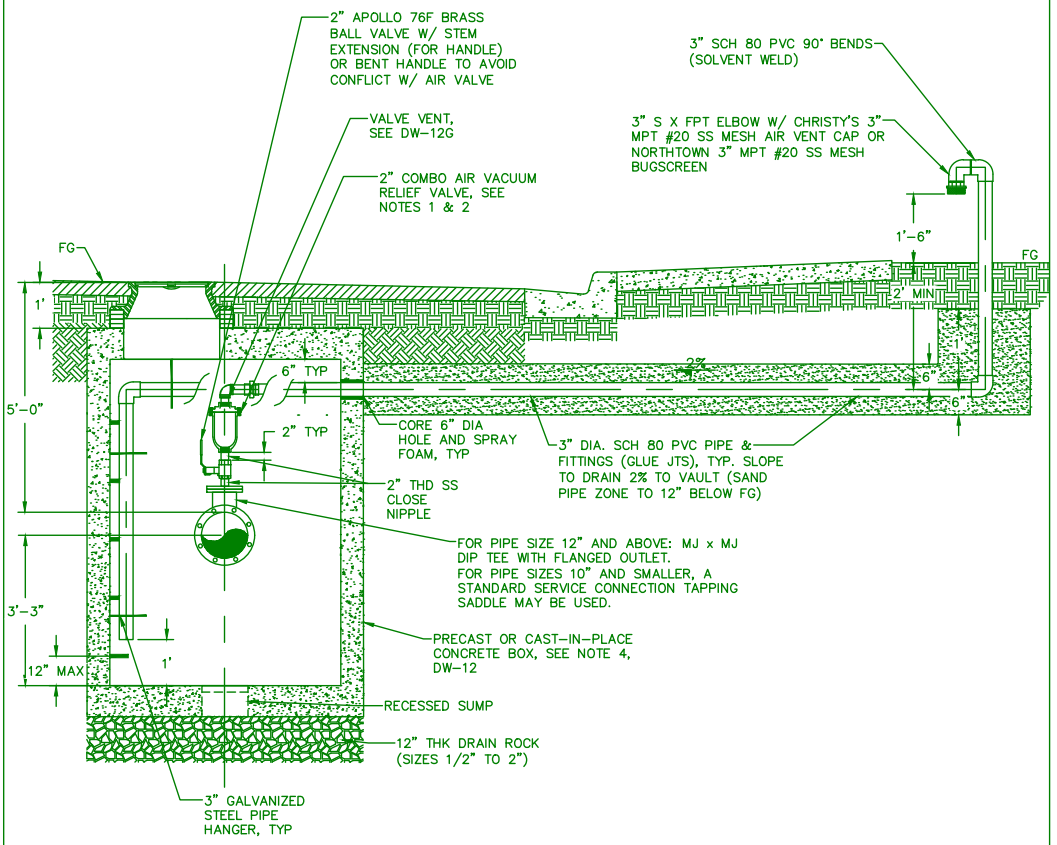
REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
DRINKING WATER
DW-12C

Revise the 1 detail DW-12 air relief valve detail to be 7 details DW-12A through G per Hansen Allen & Luce recommendations



AIR VACUUM RELIEF VALVE SECTION A

NTS

NOTES:

1. COMBO AIR VACUUM RELIEF VALVE SHALL BE VENT-O-MAT 050RBX 1921 S4 (4 FUNCTION), APCO, SINGLE BODY MODEL AVC 145C, ARI D-60, OR VALMATIC 202C. VALVE SHALL BE TREADED OR FLANGED DEPENDING ON MANUFACTURER.
2. AIR VALVE SHALL BE INSTALLED PLUMB WITHIN 3 DEGREES OF VERTICAL ALIGNMENT.
3. DRINKING WATER PIPELINE IS DEEPER THAN STANDARD BURY DEPTH. ENSURE APPROACHING PIPES DO NOT CREATE ADDITIONAL LOCALIZED HIGH POINTS.

SHEET NOTES:

1. THIS DETAIL INCLUDES DW-12C, DW-12D, & DW-12G.

AIR VACUUM RELIEF VALVE IN PRIVATE ROADS

DATE: OCTOBER 2023
DRAWING NAME: DW-12.2A
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

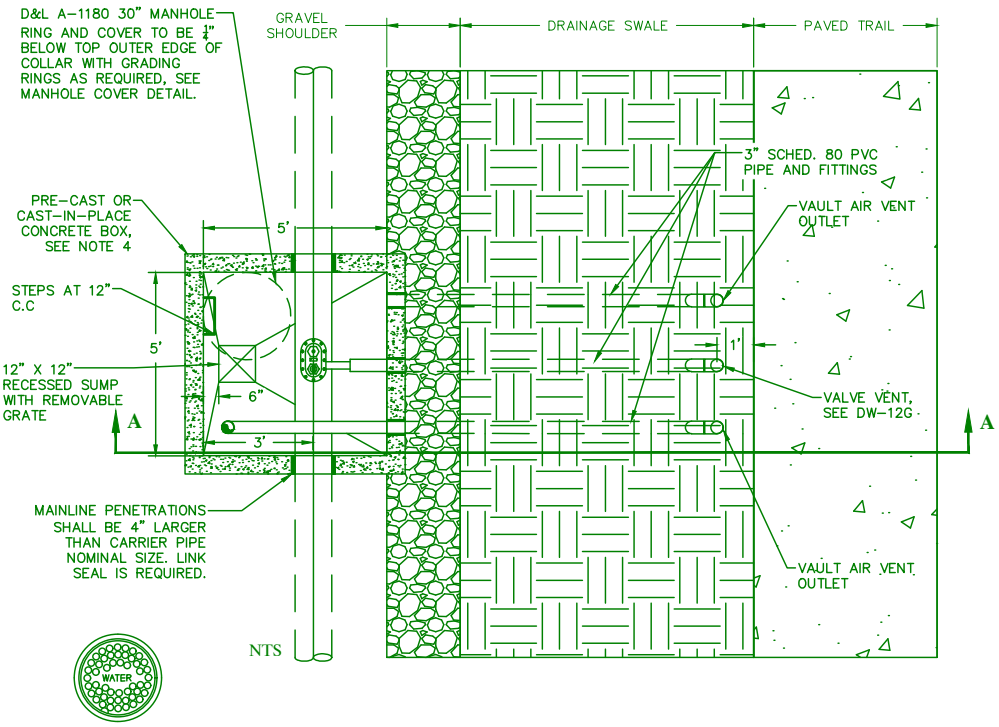
REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
DRINKING WATER
DW-12D

Revise the 1 detail DW-12 air relief valve detail to be 7 details DW-12A through G per Hansen Allen & Luce recommendations



MANHOLE COVER DETAIL

NOTES:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-32.
2. SIZE OF AIR-VACUUM RELIEF VALVE & PIPING SHALL BE 2" UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
3. BOLLARDS AROUND VENT COVER NOT REQUIRED UNLESS OTHERWISE DIRECTED BY CITY INSPECTOR.
4. A PRECAST BOX SHALL BE H-20 LOADING WITH NO HORIZONTAL JOINTS THROUGH THE PIPE OPENINGS. A SEPARATE DETAIL CAST-IN-PLACE VAULT BOX MUST BE ACCEPTED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.
5. THE FLOOR SHALL BE SLOPED AT A 2% MINIMUM TO MEET FLUSH WITH THE RIM OF THE SUMP.

SHEET NOTES:

1. THIS DETAIL INCLUDES DW-12E, DW-12F, & DW-12G.

AIR VACUUM RELIEF VALVE IN RURAL ROADS PLAN VIEW

DATE:	NOVEMBER 2023
DRAWING NAME:	DW-12.3
DRAWN BY:	ABO
CHECKED:	APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

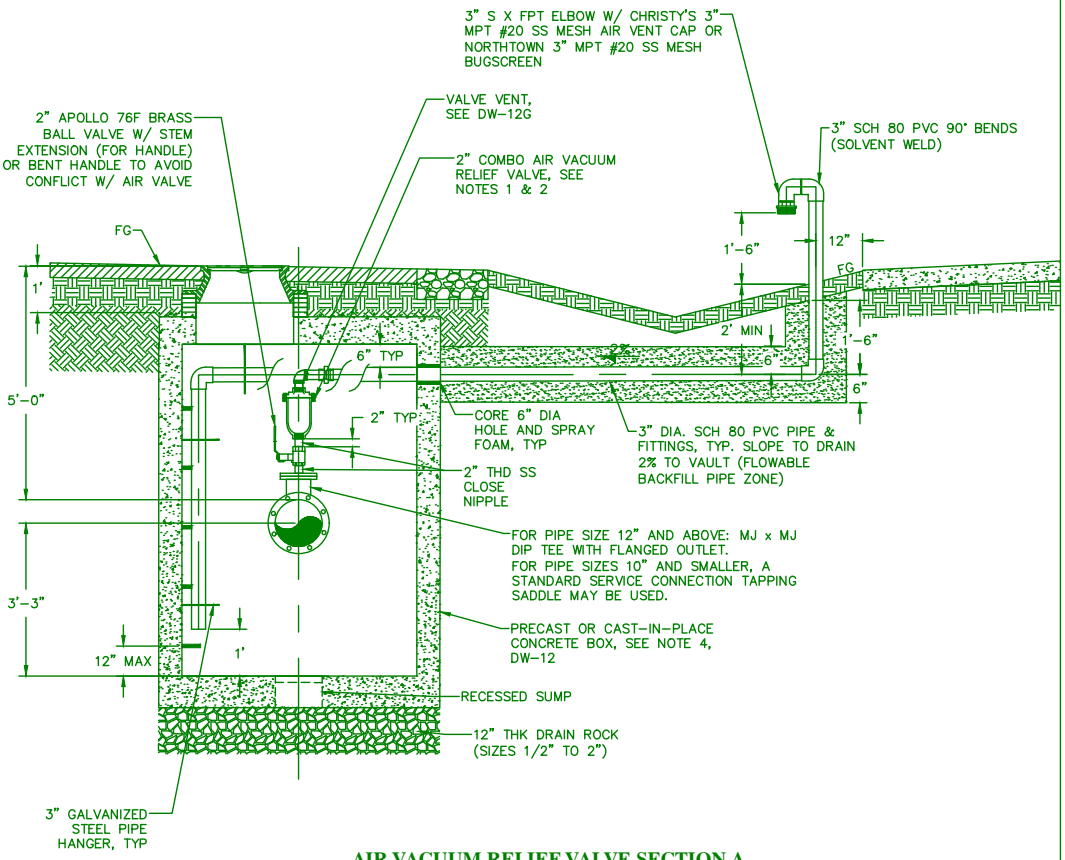
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

DRINKING WATER

DW-12E

Revise the 1 detail DW-12 air relief valve detail to be 7 details DW-12A through G per Hansen Allen & Luce recommendations



AIR VACUUM RELIEF VALVE SECTION A

NTS

NOTES:

1. COMBO AIR VACUUM RELIEF VALVE SHALL BE VENT-O-MAT 050RBX 1921 S4 (4 FUNCTION), APCO, SINGLE BODY MODEL AVC 145C, ARI D-60, OR VALMATIC 202C. VALVE SHALL BE TREADED OR FLANGED DEPENDING ON MANUFACTURER.
2. AIR VALVE SHALL BE INSTALLED PLUMB WITHIN 3 DEGREES OF VERTICAL ALIGNMENT.
3. DRINKING WATER PIPELINE IS DEEPER THAN STANDARD BURY DEPTH. ENSURE APPROACHING PIPES DO NOT CREATE ADDITIONAL LOCALIZED HIGH POINTS.

SHEET NOTES:

1. THIS DETAIL INCLUDES DW-12E, DW-12F, & DW-12G

AIR VACUUM RELIEF VALVE IN RURAL ROADS

DATE: NOVEMBER 2023
DRAWING NAME: DW-12.3A
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

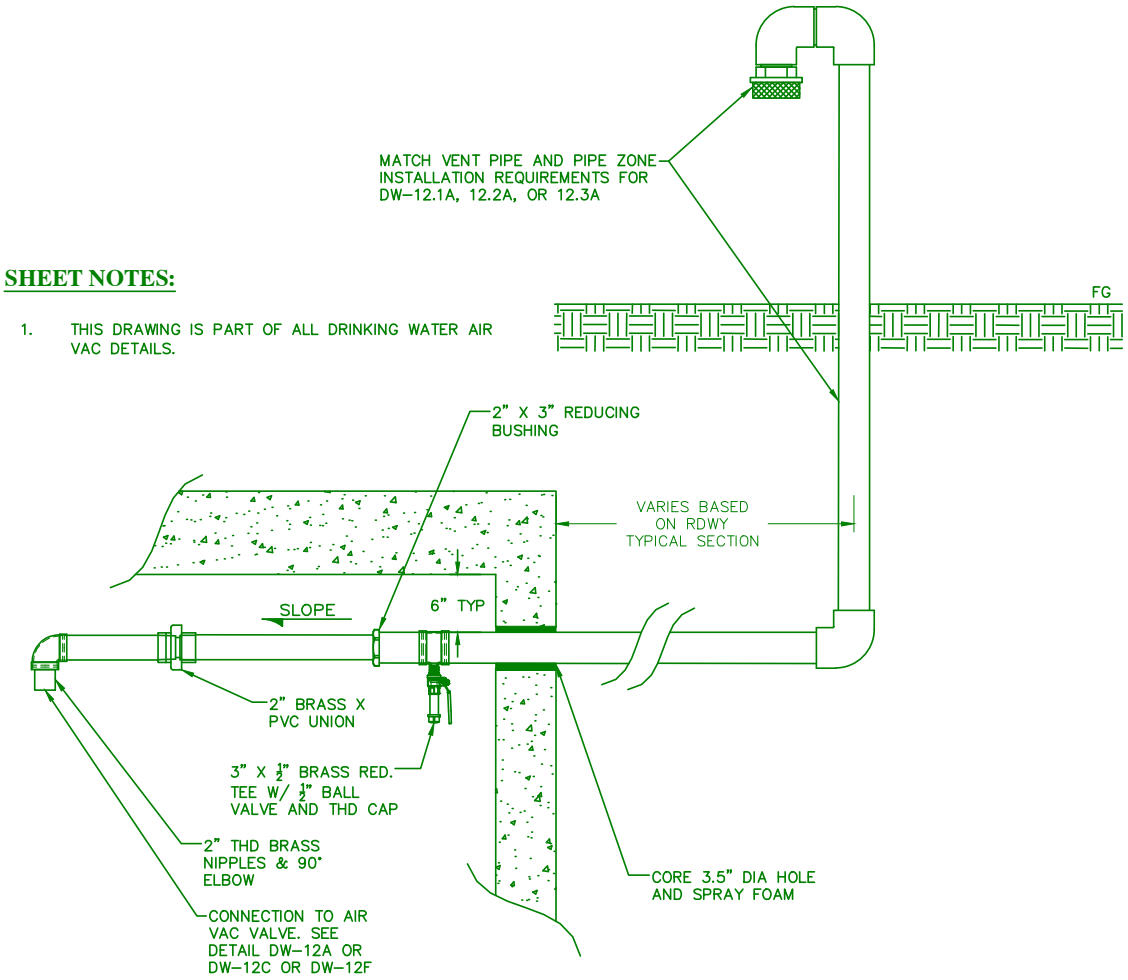
REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
DRINKING WATER
DW-12F

Revise the 1 detail DW-12 air relief valve detail to be 7 details DW-12A through G per Hansen Allen & Luce recommendations



SHEET NOTES:

1. THIS DRAWING IS PART OF ALL DRINKING WATER AIR VAC DETAILS.

DETAIL B - VENT

NTS

AIR VACUUM RELIEF VALVE VENT DETAILS

DATE:	NOVEMBER 2023
DRAWING NAME:	DW-12B
DRAWN BY:	ABO
CHECKED:	
APPROVED:	

REVISIONS

REVISION	DATE	BY	COMMENTS

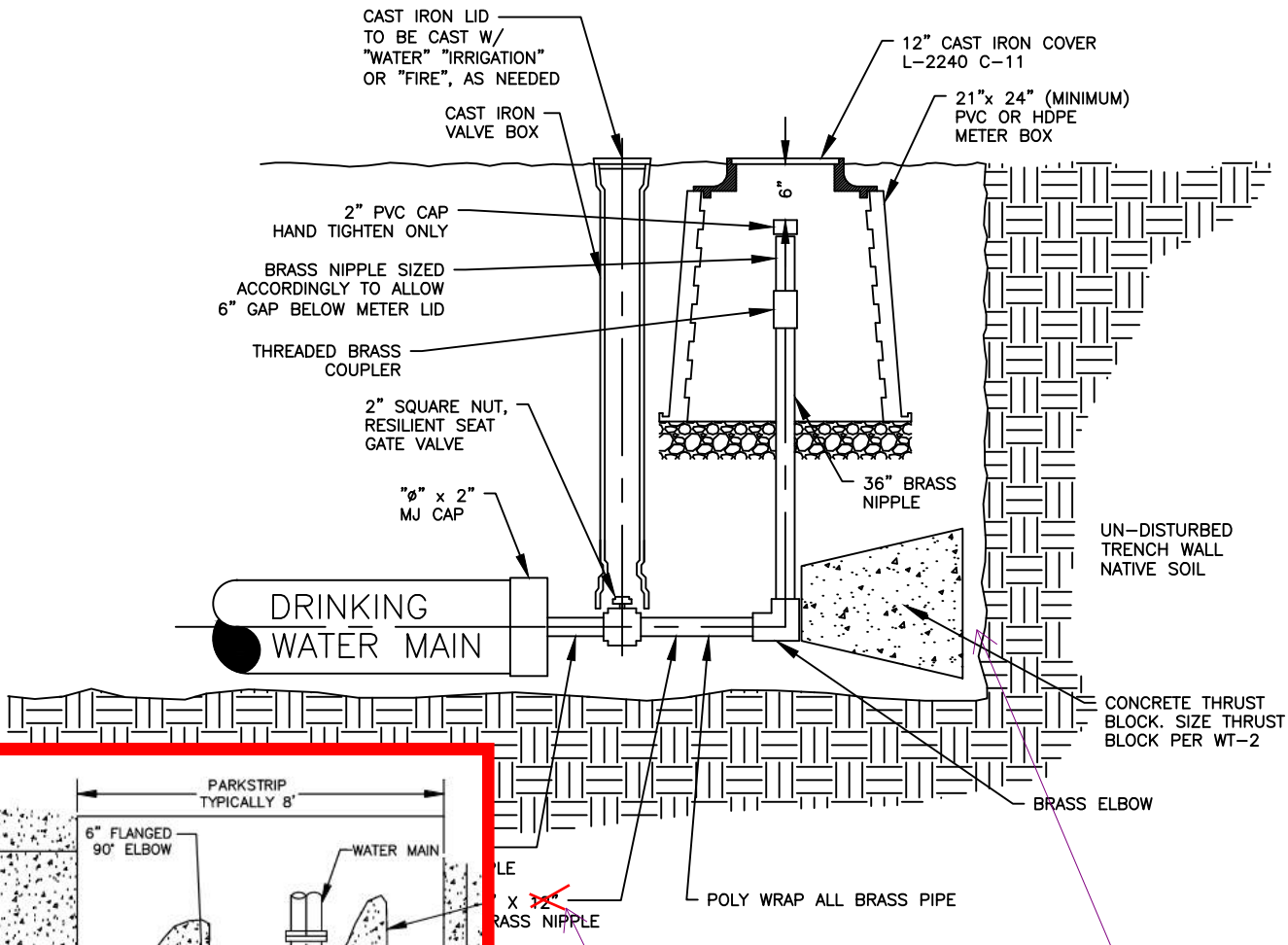
SARATOGA SPRINGS CITY

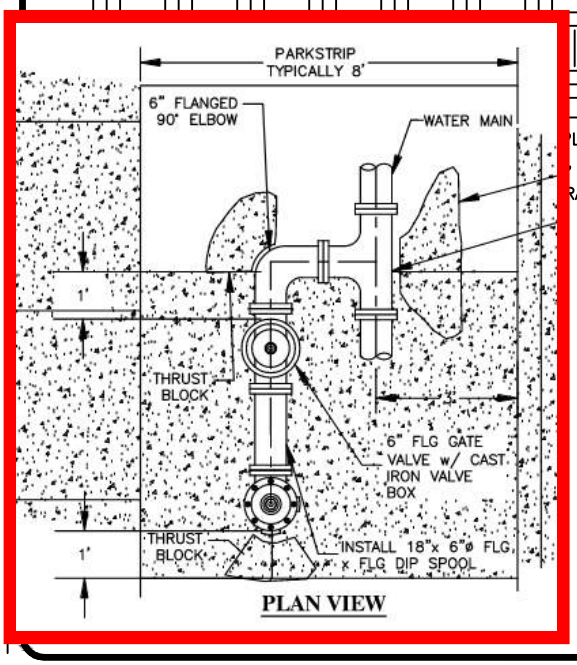
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

DRINKING WATER

DW-12G





2" BLOW-OFF VALVE

DATE:	AUGUST 2017
DRAWING NAME:	DW-13A
DRAWN BY:	ETL
CHECKED:	
APPROVED:	

REVISIONS

REV	DATE	BY	COMMENTS

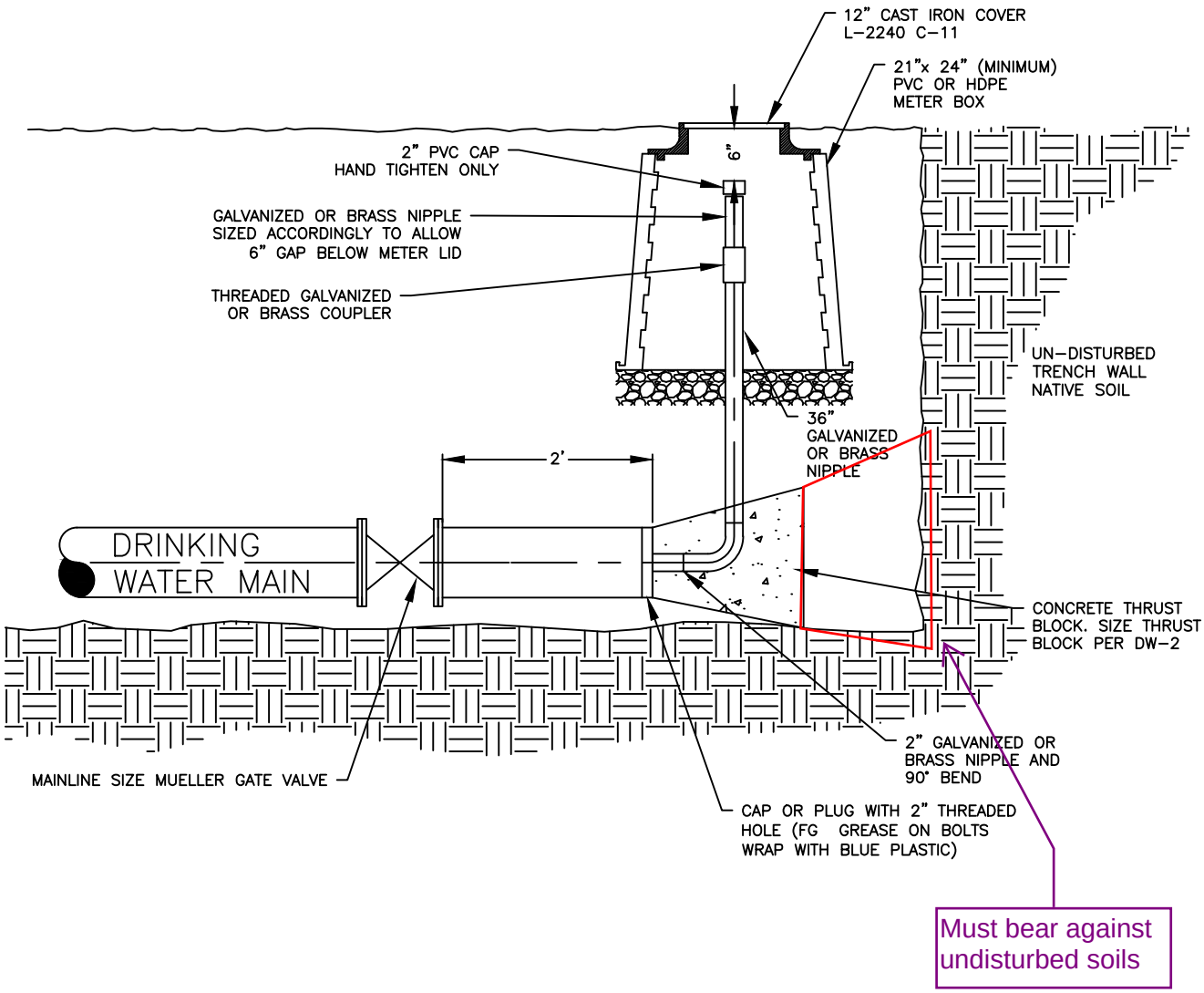
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

DRINKING WATER

DW-13A



TEMPORARY 2" BLOW-OFF VALVE

DATE: AUGUST 2017

DRAWING NAME: DW-13B

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	09-1-17	RM	EXTENDED MAIN TO BLOCK AND PUT ELBOW IN BLOCK.

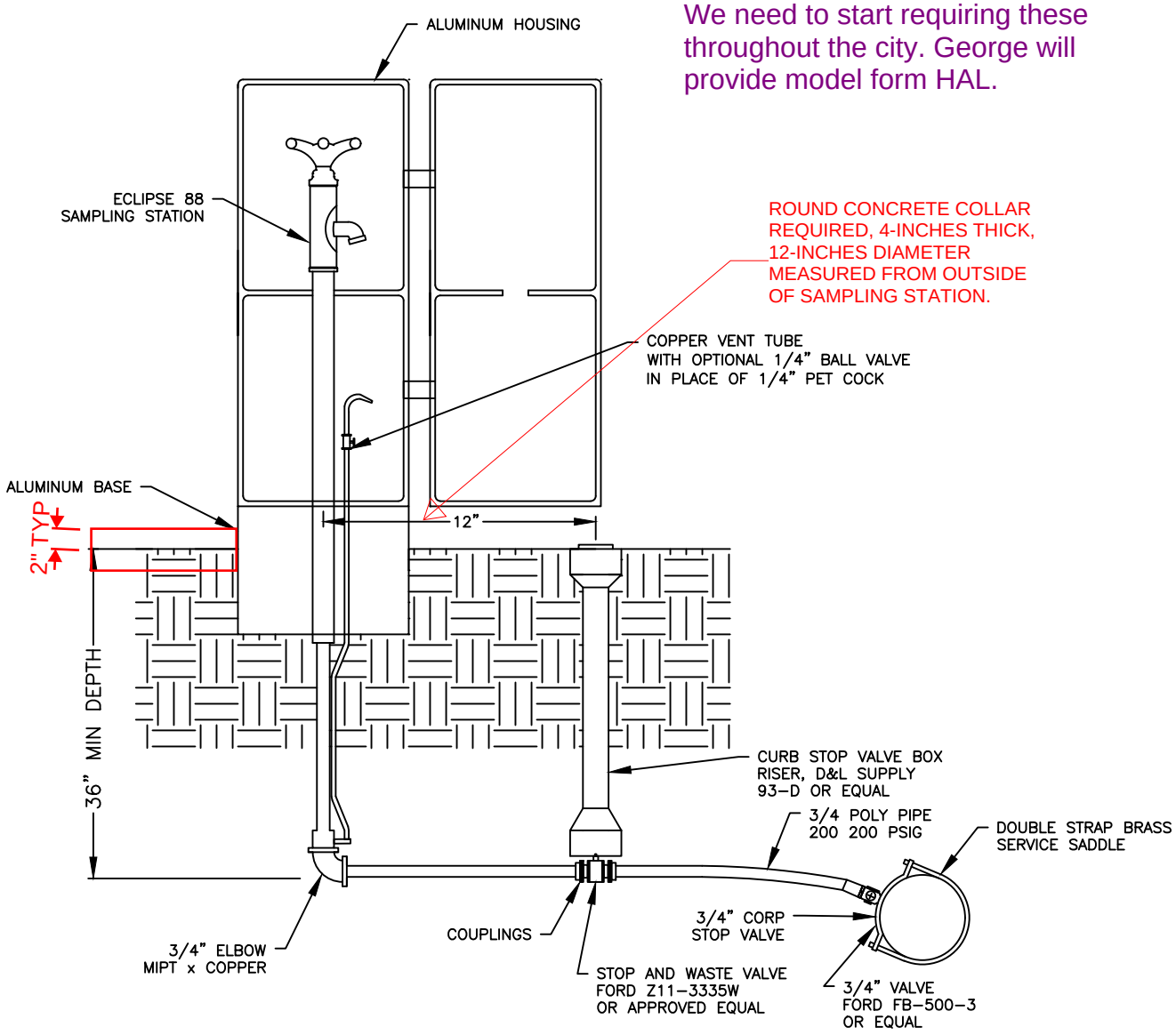
SARATOGA SPRINGS CITY
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

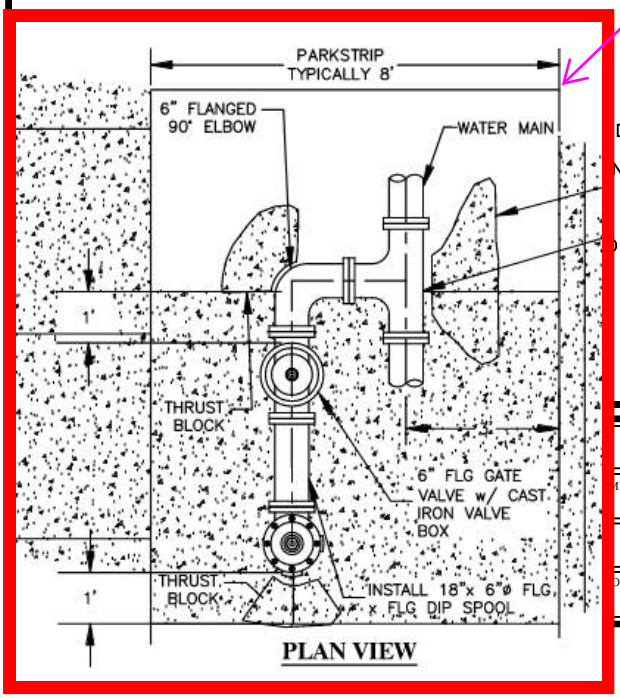
DRINKING WATER

DW-13B

We need to start requiring these throughout the city. George will provide model form HAL.



per 7/13 mtng, action item HAL



DEVELOPMENT AND A MINIMUM OF ONE SAMPLING STATION PER 100 LOTS.

ND SIDEWALK.

INSPECTION OF INSTALLATION BY ENGINEER.

) OTHERWISE.

LOCATE CENTER SAMPLING STATION THREE FEET FROM EDGE OF SIDEWALK.

REVISIONS			
REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

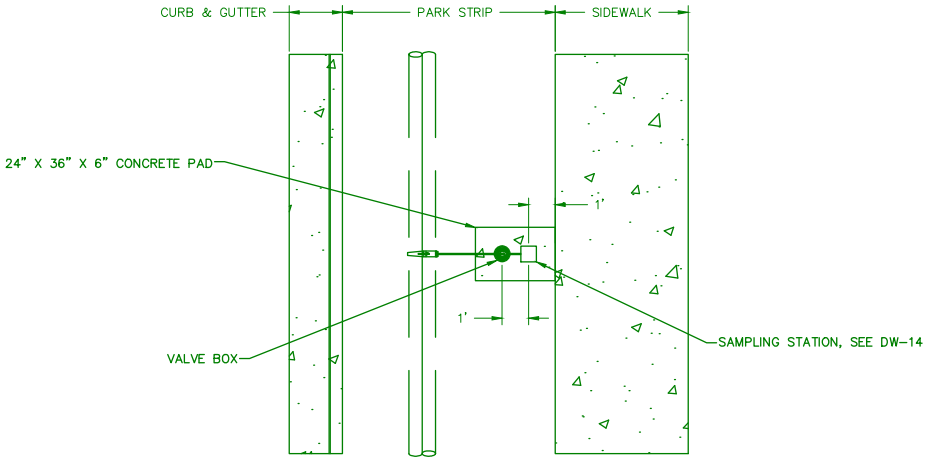
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

DRINKING WATER

DW-14

Add sampling station in public roads detail



NOTE:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-8, ST-9A, ST-10. APPLICATIONS FOR OTHER PUBLIC ROADWAY SECTIONS MUST BE A CUSTOM DETAIL THAT HAS BEEN SUBMITTED TO AND ACCEPTED BY THE CITY ENGINEER.

SAMPLING STATION IN PUBLIC ROADS PLAN VIEW

DATE: NOVEMBER 2023	
DRAWING NAME: DW-14A	
DRAWN BY: ABO	
CHECKED:	APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

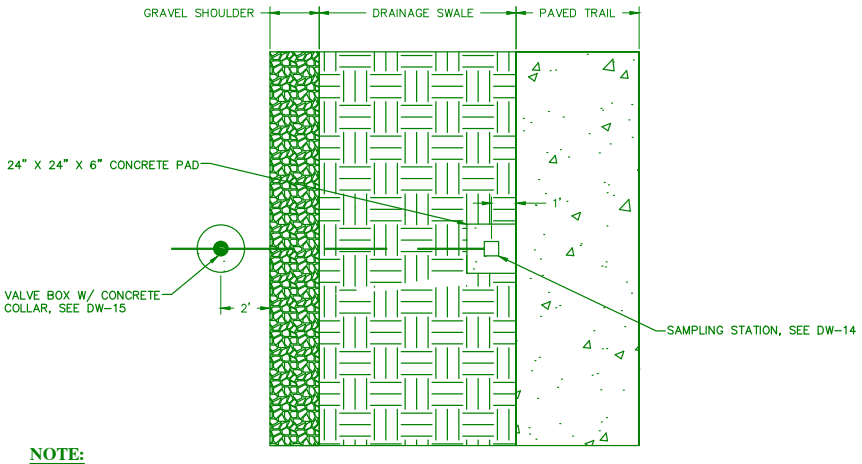
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

DRINKING WATER

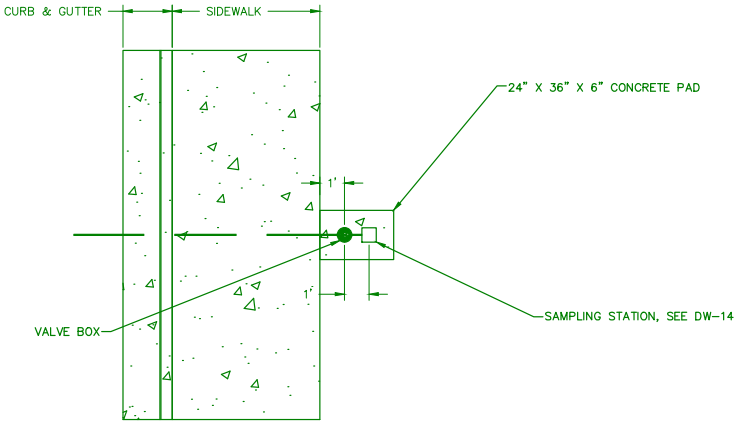
DW-14A

Add sampling station in private roads detail



NOTE:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-32.



NOTE:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-30 & ST-31.

SAMPLING STATION IN PRIVATE ROADS PLAN VIEW

DATE: NOVEMBER 2023
DRAWING NAME: DW-14B
DRAWN BY: ABO
CHECKED: APPROVED:

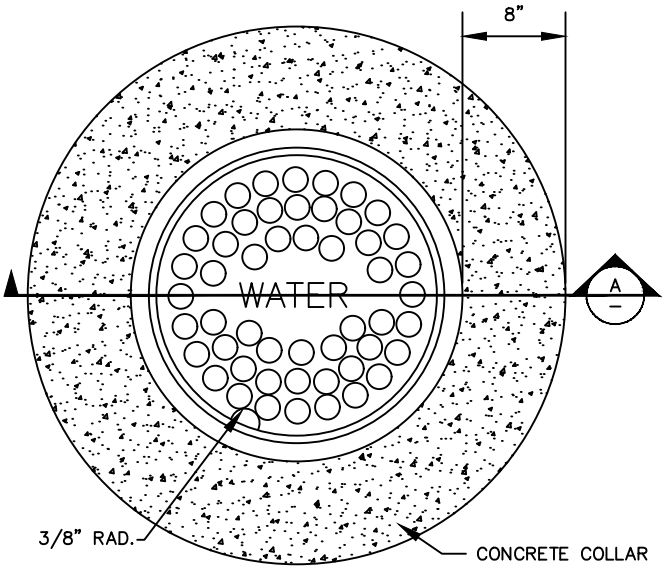
REVISIONS

REVISION	DATE	BY	COMMENTS

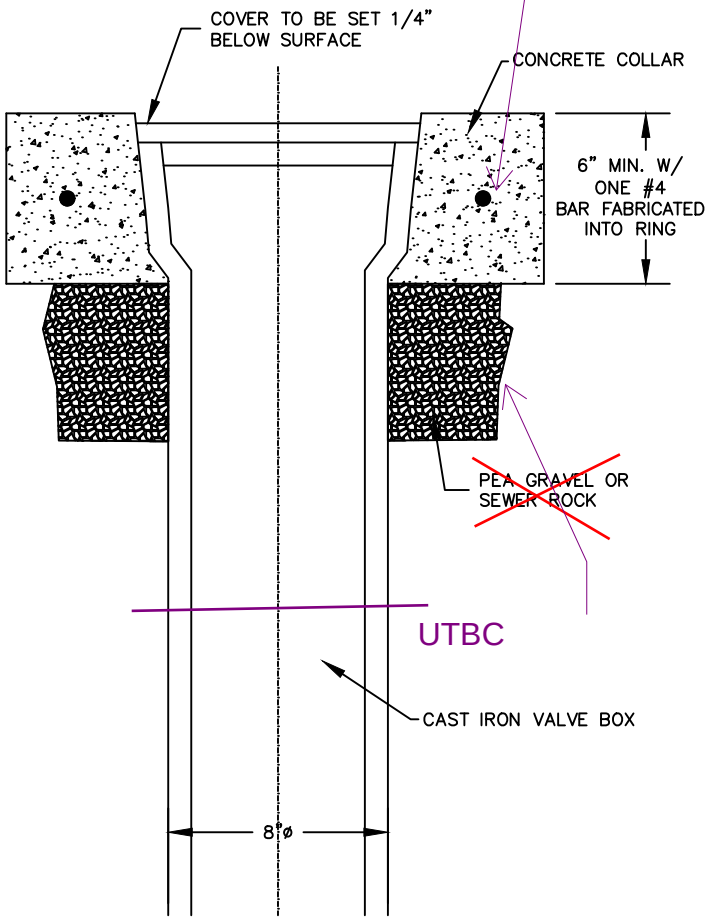
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
DRINKING WATER
DW-14B



#4 bar or fiber reinforced concrete



NOTES:

1. ALL WORK SHALL CONFORM TO APWA STANDARDS UNLESS OTHERWISE APPROVED BY CITY ENGINEER

draw wire

CONCRETE COLLAR

DATE: AUGUST 2017

DRAWING NAME: DW-15

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED COLLAR NOTE

SARATOGA SPRINGS CITY

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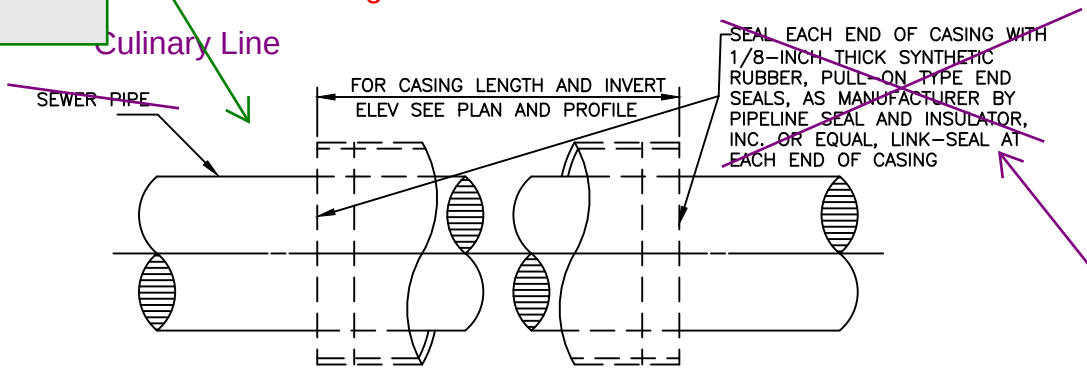
STANDARD DETAILS

DRINKING WATER

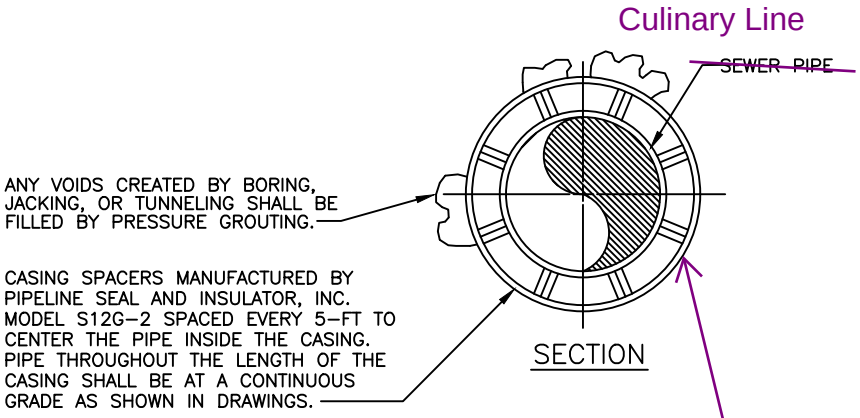
DW-15

Revise DW-16 per Hansen Allen & Luce recommendations

Should we delete the casing standard entirely? Should we base this on an engineer design?



Seal each end of casing with 1/8" thick synthetic seal or equal link-seal



All slip joint fitting must be restrained at each bell

MINIMUM WALL THICKNESS OF CASINGS	
Diameter	Wall Thickness
12" and under	0.188"
14" – 18"	0.312"
20" – 22"	0.375"
24" – 26"	0.438"
28" – 32"	0.500"
34" – 42"	0.562"

LARGER CASINGS AS DIRECTED BY THE CITY ENGINEER.

NOTES:

1. CASING PIPES SHALL BE REQUIRED AS INDICATED ON THE DRAWINGS AND/OR WHERE REQUIRED BY THE CITY INSPECTOR OR ENGINEER.
2. THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE SIZED AT LEAST 4" LARGER THAN THE OUTSIDE DIAMETER OF CARRIER PIPE.
3. CARRIER PIPE SHALL BE TESTED BEFORE SEALING THE ENDS OF THE CASING.
4. SPACERS SHALL BE SECURELY ATTACHED TO CARRIER PIPE PER MANUFACTURER'S REQUIREMENTS.
5. CASING PIPE SHALL BE WELDED STEEL, ASTM A53, GRADE B.
6. THERE SHALL BE A MAXIMUM OF 1' FROM THE ENDS OF THE CASING TO THE SPACER.

DRINKING WATER PIPE CASING DETAIL

DATE: AUGUST 2017

DRAWING NAME: DW-16

DRAWN BY: RFM

CHECKED: | APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

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STANDARD DETAILS

DRINKING WATER

DW-16

STANDARD PRESSURIZED IRRIGATION DETAILS

INDEX:

PI-1	PRESSURIZED IRRIGATION PIPE TRENCH
PI-2	CONCRETE THRUST BLOCKS
PI-3	1" SINGLE AND DUAL SERVICE LATERALS
PI-4	CONNECTION FOR PUBLIC PARKS & OPEN SPACE
PI-5A	1" SINGLE SERVICE LATERAL BOX
PI-5B	1 $\frac{1}{2}$" DUAL SERVICE LATERAL BOX
PI-5C	PARTS LIST FOR SINGLE AND DU
PI-6	2" SERVICE LATERAL
PI-7	4" METER VAULT
PI-8	AIR VACUUM RELIEF VALVE
PI-9	2" & 4" DRAIN VALVES
PI-10	RPZ BACKFLOW PREVENTER FOR
PI-11	RPZ BACKFLOW PREVENTER FOR
PI-12A	2" BLOW OFF VALVE
PI-12B	TEMPORARY 2" BLOW OFF VALVE
PI-13	CONCRETE COLLAR FOR WATER
PI-14	PRESSURIZED IRRIGATION PIPE

Update to the sheets listed below

INDEX:

PI-1	PRESSURIZED IRRIGATION PIPE TRENCH
PI-2	CONCRETE THRUST BLOCKS
PI-2A	CONCRETE THRUST ANCHORS FOR DOWNWARD VERTICAL BENDS IN DRY SOIL
PI-2B	CONCRETE THRUST ANCHORS FOR DOWNWARD VERTICAL BENDS WHERE SIGNS OF GROUNDWATER ARE PRESENT
PI-3	1" SINGLE AND DUAL SERVICE LATERALS
PI-4	CONNECTION FOR PUBLIC PARKS & OPEN SPACE
PI-5A	1" SINGLE SERVICE LATERAL BOX
PI-5B	1 $\frac{1}{2}$" DUAL SERVICE LATERAL BOX
PI-5C	PARTS LIST FOR SINGLE AND DUAL SERVICE LATERAL BOXES
PI-6	2" SERVICE LATERAL
PI-7	4" METER VAULT
PI-8A	AIR VACUUM RELIEF VALVE IN PUBLIC ROW 1 OF 2
PI-8B	AIR VACUUM RELIEF VALVE IN PUBLIC ROW 2 OF 2
PI-8C	AIR VACUUM RELIEF VALVE IN PRIVATE ROW 1 OF 2
PI-8D	AIR VACUUM RELIEF VALVE IN PRIVATE ROW 2 OF 2
PI-8E	AIR VACUUM RELIEF VALVE IN RURAL ROW 1 OF 2
PI-8F	AIR VACUUM RELIEF VALVE IN RURAL ROW 2 OF 2
PI-8G	AIR VACUUM RELIEF VALVE DETAILS
PI-9	2" & 4" DRAIN VALVES
PI-10	RPZ BACKFLOW PREVENTER FOR SERVICE LATERALS
PI-11	RPZ BACKFLOW PREVENTER FOR WATER MAINS
PI-12A	2" BLOW OFF VALVE
PI-12B	TEMPORARY 2" BLOW OFF VALVE
PI-12C	6" BLOW OFF VALVE
PI-13	CONCRETE COLLAR FOR WATER VALVES
PI-14	PRESSURIZED IRRIGATION PIPE CASING

PRESSURIZED IRRIGATION DETAILS

DATE: AUGUST 2017

DRAWING NAME: PI-0

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

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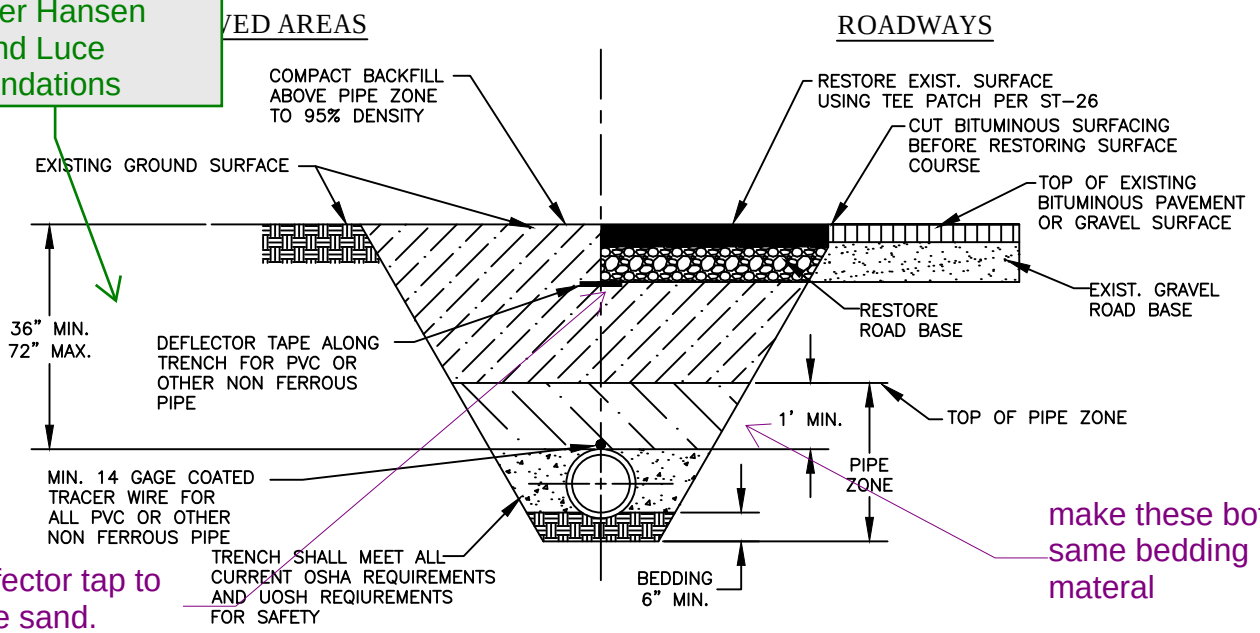
STANDARD DETAILS

PRESSURIZED IRR

PI-0

Update detail and notes per Hansen Allen and Luce recomendations



Move defector tap to above the sand.

make these both the same bedding materal

CROSS-SECTION: TYPICAL TRENCH

NOTES:

1. VALVES 12 INCHES AND LARGER SHALL BE BUTTERFLY VALVES.

2. WHENEVER POSSIBLE "HOT TAP" CONNECTIONS REQUIRED. HOT TAP VALVE TO BE SUPPORTED DURING CONNECTION. CONTRACTOR TO NOTIFY CITY 24 HOURS IN ADVANCE OF MAKING CONNECTION.

3. PIPE ZONE SHALL BE BACKFILLED WITH BEDDING MATERIAL, OR OTHER ACCEPTABLE MATERIAL.

4. TRACING WIRE TO BE BROUGHT OUTSIDE OF BOTTOM PORTION OF VALVE BOX AND INSIDE TOP TO SURFACE.

5. FURNISH AND INSTALL POLY-WRAP ON DUCTILE IRON PIPE. POLY-WRAP MAY BE DELETED WHERE DIRECTED BY CITY ENGINEER.

6. WHERE COLLAPSIBLE SOILS ARE ENCOUNTERED, FURNISH, PLACE AND COMPACT IMPORTED BACKFILL MATERIALS AS REQUIRED AND AS DIRECTED.

7. When bedding utilities in ground water installation of stabilization-separation geotextile will be required to separate backfill material and native subgrade materials if common fill cannot provide a working surface to prevent soils migration

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL OF THE REQUIREMENTS ESTABLISHED FOR SAFE TRENCHING. (SEE OSHA AND UOSH REQUIREMENTS, LATEST EDITIONS).

2. MINIMUM COVER OVER TOP OF PIPE SHALL BE 36-INCHES BELOW THE FINISHED GRADE. THIS DEPTH MAY BE INCREASED AS REQUIRED TO MISS UNDERGROUND UTILITIES, STORM DRAINS, OR OTHER OBSTRUCTIONS, OR WHERE INDICATED ON THE DRAWINGS.

3. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES BEFORE LAYING PIPE WITHIN 200 FEET OF UTILITY CROSSINGS SHOWN ON THE DRAWINGS, OR AS "BLUE-STAKED."

4. SEWER MAINS, WATER MAINS, GAS MAINS AND OTHER UTILITIES ARE SHOWN ON THE PLANS IN A GENERAL SCHEMATIC WAY ACCORDING TO INFORMATION RECEIVED FROM OTHERS AND SOMETIMES FROM FIELD MEASUREMENTS. THE ACCURACY OR COMPLETENESS OF THE LOCATIONS SHOWN IS NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE THE ACTUAL LOCATION OF EXISTING SERVICE CONNECTIONS AND UTILITIES AND TAKE THE NECESSARY STEPS TO AVOID THEM.

5. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S SOLE EXPENSE.

6. THE CONTRACTOR MAY, AT HIS DISCRETION, USE SLOPING WALLS IN UNIMPROVED TERRAIN.

7. THE PIPE ZONE WIDTH AS RECOMMENDED BY THE PIPE MANUFACTURER. THE WIDTH OF THE PIPE ZONE IS MEASURED AT THE PIPE SPRING LINE AND INCLUDES ANY NECESSARY SHEATHING. IN TRENCH BOX APPLICATIONS, FOLLOW THE MANUFACTURER'S RECOMMENDATIONS. IN ROCKY SUB-GRADES A MINIMUM OF 18" CLEARANCE ON ALL SIDES OF PIPE SHALL BE PROVIDED.

PRESSURIZED IRRIGATION PIPE TRENCH

DATE: AUGUST 2017
DRAWING NAME: PI-1
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED CONSTRUCTION NOTE #7, DELETED 2 NOTES, ADDED DEFLECTOR TAPE CALLOUT

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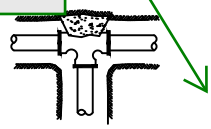
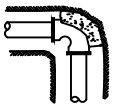
STANDARD DETAILS
PRESSURIZED IRR
PI-1

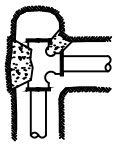
Revise Standard Detail per Hansen Allen & Luce recomendations



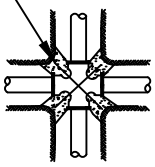
TEE



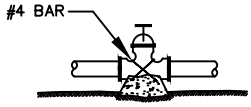
90° ELBOW



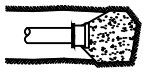
TEE WITH CAP



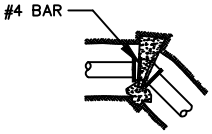
CROSS



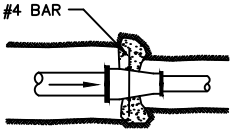
VALVE



CAP OR PLUG



ELBOW



REDUCER

SAFE BEARING LOADS

SOIL TYPE	SAFE BEARING LOAD (lb/ft²)
SAND	1000
SAND & GRAVEL	1500
SAND & GRAVEL CEMENTED WITH CLAY	2000
SHALE	5000

SAFE BEARING LOAD FORMULA

THRUST BLOCK AREA AGAINST TRENCH WALL (SQUARE FEET) = THRUST ON FITTING / SAFE BEARING LOAD OF SOIL

NOTES:

1. REINFORCING BARS SHALL BE EPOXY COATED
2. RESIDENT PROJECT ENGINEER WILL CALCULATE QUANTITIES OF CONCRETE REQ'D AND SPECIFY PLACEMENT METHODS & REQUIREMENTS; WHICH SHALL BE APPROVED BY CITY ENGINEER
3. CONCRETE SHALL BE 4000 PSI MIN.
4. POUR CONCRETE AGAINST UNDISTURBED SOIL

THRUST ON FITTINGS

POUNDS @ 1 POUND PER SQUARE INCH OF WATER PRESSURE*				
PIPE SIZE	TEES/ PLUGS	90° BENDS	45° BENDS	22.5° BENDS
4"	18.5	26.1	14.2	7.2
6"	38	53.7	29.1	14.7
8"	65.8	93	50.4	25.5
10"	107.5	152	82.4	41.7
12"	153.1	216.4	117.2	59.4
14"	215.5	304.7	164.9	84
16"	281.5	398.1	215.4	109.8
18"	356.3	503.8	272.6	139
20"	439.8	622	336.6	171.6
24"	633.3	895.6	484.7	247.1

*MULTIPLY THRUST BY MAXIMUM WATER PRESSURE

*PIPE SIZES LARGER THAN 24" SHALL BE THRUST BLOCKED AS PER ENGINEER RECOMMENDATION

THRUST BLOCK AREA AGAINST TRENCH WALL (SQUARE FEET)

ASSUMING SAND AND MAX PRESSURE OF 150 PSI SIZE MAY BE REDUCED WITH AN ENGINEERED SUBMITTAL AND AS APPROVED BY THE CITY ENGINEER				
PIPE SIZE	TEES/ PLUGS	90° BENDS	45° BENDS	22.5° BENDS
4"	2.8	3.9	2.1	1.1
6"	5.7	8.1	4.4	2.2
8"	9.9	14.0	7.6	3.8
10"	16.1	22.8	12.4	6.3
12"	23.0	32.5	17.6	8.9
14"	32.3	45.7	24.7	12.6
16"	42.2	59.7	32.3	16.5
18"	53.4	75.6	40.9	20.9
20"	66.0	93.3	50.5	25.7
24"	95.0	134.3	72.7	37.1

CONCRETE THRUST BLOCKS

DATE: AUGUST 2017

DRAWING NAME: PI-2

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
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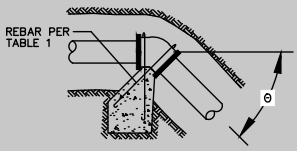
STANDARD DETAILS

PRESSURIZED IRR

PI-2

Add PI-2A per Hansen Allen & Luce recommendations



DOWNWARD VERTICAL BENDS

THRUST BLOCK VOLUME FORMULA FOR DOWNWARD VERTICAL BENDS

THRUST BLOCK VOLUME (CUBIC FEET) = THRUST ON FITTING (LBS) SEE TABLE 2 DW-2 / UNIT WEIGHT OF CONCRETE (150 LBS/CU FT)

TABLE 1:

FOR 45° BEND VERTICAL DOWNWARD BENDS WITHOUT GROUNDWATER

PIPE SIZE	BAR SIZE	EMBEDMENT LENGTH (FT)	# OF BARS	CONCRETE VOLUME (FT ^3)
6	3	1	1	29
8	4	2	1	52
10	4	2	1	81
12	5	2	1	116
14	5	2	2	158
16	6	2	2	206
18	6	2	3	260
20	7	3	3	321
24	8	4	3	462

TABLE 2:

FOR 22.5° BEND VERTICAL DOWNWARD BENDS WITHOUT GROUNDWATER

PIPE SIZE	BAR SIZE	EMBEDMENT LENGTH (FT)	# OF BARS	CONCRETE VOLUME (FT ^3)
6	3	1	1	15
8	3	1	1	27
10	4	2	1	41
12	4	2	1	59
14	5	2	1	81
16	5	2	1	105
18	6	2	1	133
20	6	2	1	164
24	6	2	3	236

TABLE 3:

FOR 11.25° BEND VERTICAL DOWNWARD BENDS WITHOUT GROUNDWATER

PIPE SIZE	BAR SIZE	EMBEDMENT LENGTH (FT)	# OF BARS	CONCRETE VOLUME (FT ^3)
6	3	1	1	8
8	3	1	1	14
10	3	1	1	21
12	3	1	1	30
14	4	2	1	41
16	4	2	1	53
18	4	2	1	67
20	5	2	1	83
24	6	2	1	119

NOTES:

1. CONCRETE THRUST BLOCKS (OR ANCHORS) ARE NOT ALLOWED UNDER PAVED SURFACES WITHIN PUBLIC RIGHT OF WAYS, I.E. BETWEEN INITIAL AND FUTURE CURB LINES. ALL PIPE FITTINGS WITHIN PUBLIC RIGHT OF WAYS SHALL BE RESTRAINED PER DW-17 OR SHALL BE DESIGNED AND SPECIFIED BY THE PROJECT ENGINEER.
2. RESTRAINED PIPE JOINTS MAY BE USED AS AN ALTERNATIVE TO THRUST BLOCKS PER DW-17.
3. REINFORCING BARS REQUIRED FOR HANGING THRUST BLOCKS SHALL BE EPOXY COATED.
4. MINIMUM SIZE OF THRUST ANCHORS SHALL BE DETERMINED FROM THE TABLES ON THIS DRAWING.
5. CONCRETE MIX STRENGTH SHALL BE 2,000 PSI MIN.
6. THRUST ANCHORS FOR PIPE SIZES LARGER THAN 24" SHALL BE DESIGNED BY THE PROJECT ENGINEER.
7. FITTINGS SHALL BE POLYETHYLENE WRAPPED PROR TO PLACING CONCRETE THRUST ANCHOR. CARE SHOULD BE TAKEN TO ASSURE THAT THE JOINT, INCLUDING BOLTS WILL BE ACCESSIBLE AFTER PLACING THE THRUST ANCHOR.
8. THRUST BLOCK BEARING AREA SHALL BE ROUNDED TO THE NEAREST WHOLE NUMBER.
9. RESTRAINT SIZING IS BASED UPON A MAXIMUM OPERATING PRESSURE OF 150 PSI AND A TEST PRESSURE OF 200 PSI.

CONCRETE THRUST ANCHORS FOR DOWNWARD VERTICAL BENDS IN DRY SOIL CONDITIONS

DATE: OCTOBER 2023
DRAWING NAME: DW-2A
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
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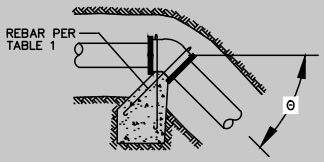
STANDARD DETAILS
DRINKING WATER
PI-2A

Add PI-2B per Hansen Allen & Luce recommendations



DOWNWARD VERTICAL BENDS

THRUST BLOCK VOLUME FORMULA FOR DOWNWARD VERTICAL BENDS

THRUST BLOCK VOLUME (CUBIC FEET) = THRUST ON FITTING (LBS) SEE TABLE 2 DW–2 / UNIT WEIGHT OF CONCRETE (150 LBS/CU FT)

TABLE 1:

FOR 45° BEND VERTICAL DOWNWARD BENDS IN GROUNDWATER

PIPE SIZE	BAR SIZE	EMBEDMENT LENGTH (FT)	# OF BARS	CONCRETE VOLUME (FT ^3)
6	3	1	1	49
8	4	2	1	87
10	4	2	1	137
12	5	2	1	197
14	5	2	2	268
16	6	2	2	350
18	6	2	3	443
20	7	3	3	546
24	8	4	3	787

TABLE 2:

FOR 22.5° BEND VERTICAL DOWNWARD BENDS IN GROUNDWATER

PIPE SIZE	BAR SIZE	EMBEDMENT LENGTH (FT)	# OF BARS	CONCRETE VOLUME (FT ^3)
6	3	1	1	25
8	3	1	1	45
10	4	2	1	70
12	4	2	1	100
14	5	2	1	137
16	5	2	1	178
18	6	2	1	226
20	6	2	1	279
24	6	2	3	401

TABLE 3:

FOR 12.25° BEND VERTICAL DOWNWARD BENDS IN GROUNDWATER

PIPE SIZE	BAR SIZE	EMBEDMENT LENGTH (FT)	# OF BARS	CONCRETE VOLUME (FT ^3)
6	3	1	1	13
8	3	1	1	22
10	3	1	1	35
12	3	1	1	50
14	4	2	1	69
16	4	2	1	90
18	4	2	1	113
20	5	2	1	140
24	6	2	1	202

NOTES:

1. CONCRETE THRUST BLOCKS (OR ANCHORS) ARE NOT ALLOWED UNDER PAVED SURFACES WITHIN PUBLIC RIGHT OF WAYS, I.E. BETWEEN INITIAL AND FUTURE CURB LINES. ALL PIPE FITTINGS WITHIN PUBLIC RIGHT OF WAYS SHALL BE RESTRAINED PER DW–17 OR SHALL BE DESIGNED AND SPECIFIED BY THE PROJECT ENGINEER.
2. RESTRAINED PIPE JOINTS MAY BE USED AS AN ALTERNATIVE TO THRUST BLOCKS PER DW–17.
3. REINFORCING BARS REQUIRED FOR HANGING THRUST BLOCKS SHALL BE EPOXY COATED.
4. MINIMUM SIZE OF THRUST ANCHORS SHALL BE DETERMINED FROM THE TABLES ON THIS DRAWING.
5. CONCRETE MIX STRENGTH SHALL BE 2,000 PSI MIN.
6. THRUST ANCHORS FOR PIPE SIZES LARGER THAN 24" SHALL BE DESIGNED BY THE PROJECT ENGINEER.
7. FITTINGS SHALL BE POLYETHYLENE WRAPPED PROR TO PLACING CONCRETE THRUST ANCHOR. CARE SHOULD BE TAKEN TO ASSURE THAT THE JOINT, INCLUDING BOLTS WILL BE ACCESSIBLE AFTER PLACING THE THRUST ANCHOR.
8. THRUST BLOCK BEARING AREA SHALL BE ROUNDED TO THE NEAREST WHOLE NUMBER.
9. RESTRAINT SIZING IS BASED UPON A MAXIMUM OPERATING PRESSURE OF 150 PSI AND A TEST PRESSURE OF 200 PSI.

CONCRETE THRUST ANCHORS FOR DOWNWARD VERTICAL BENDS WHERE SIGNS OF GROUNDWATER ARE PRESENT

DATE: OCTOBER 2023
DRAWING NAME: DW-2A
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

DRINKING WATER

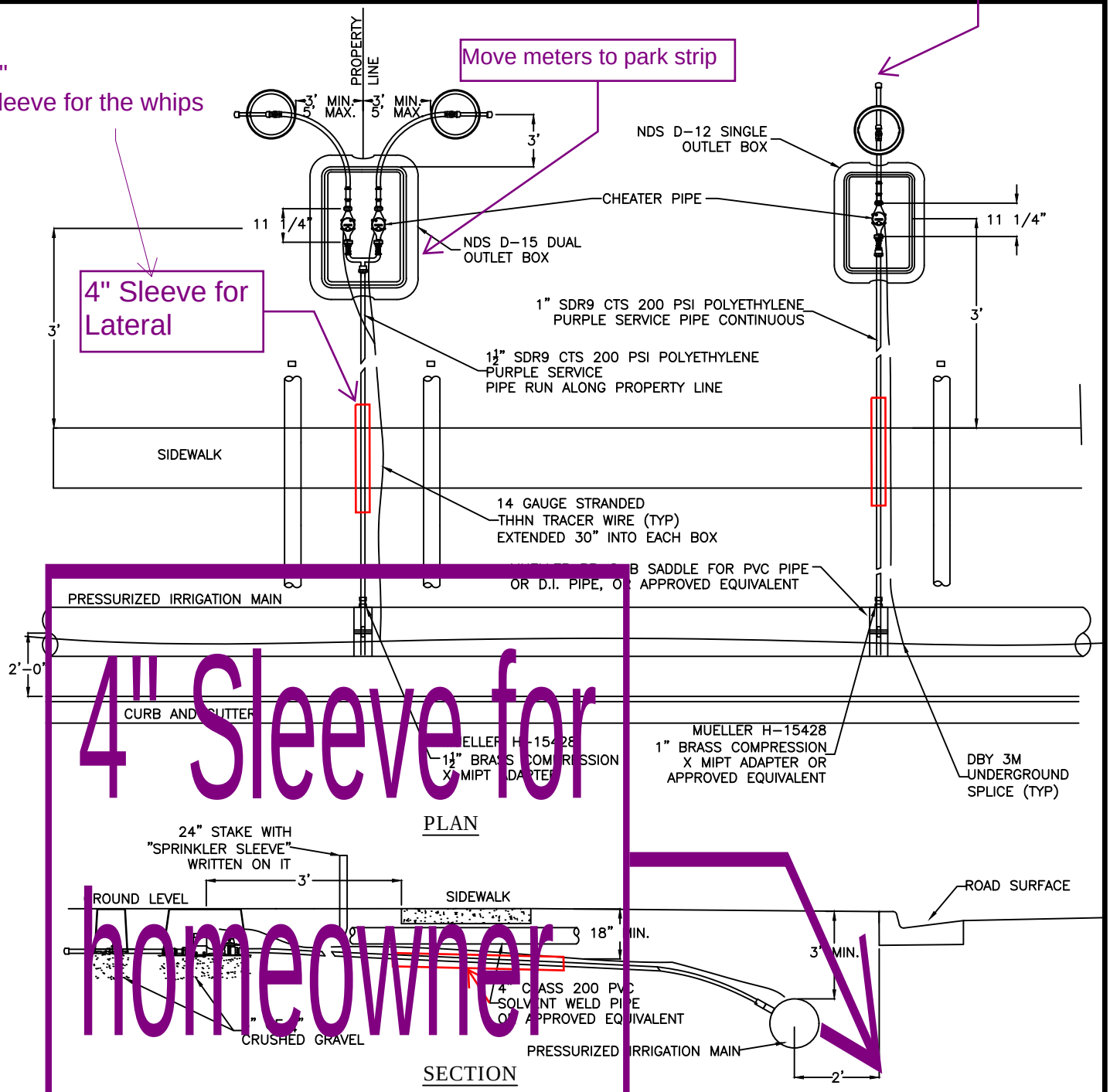
PI-2B

3-5' from property line

2"
sleeve for the whips

Move meters to park strip

4" Sleeve for Lateral



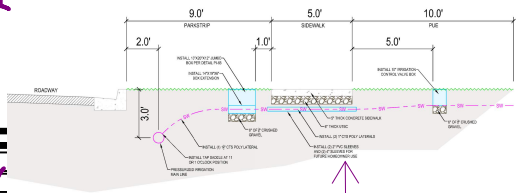
PLAN

SECTION

4" Sleeve for homeowner

NOTES:

1. STA… 1" …
AND PI-5B FOR SERVICE BOX AND METER DETAILS
2. STAINLESS STEEL LINER INSERTS WILL BE REQUIRED INSIDE OF TUBING AT COMP…
3. ALL FITTINGS SHALL BE COMPATIBLE WITH SERVICE SIZE.
4. SERVICE LATERAL SHALL SLOPE TOWARDS PRESSURIZED IRRIGATION MAIN.
5. SPRINKLER SLEEVE SHALL NOT BE IN LINE WITH ANY UTILITY BOXES.
6. 4" SLEEVE SHALL BE BURIED 1' BELOW GRADE.
7. CHEATER PIPE TO BE EXACTLY 11 1/4" FROM FACE TO FACE.



NEW PI LATERAL DETAIL

1" SINGLE & DUAL SERVICE LATERALS

DATE: AUGUST 2017

DRAWING NAME: PI-3

DRAWN BY:

CHECKED: APPROVED:

REV	DATE	BY	
B	1/21/05	jmc	upda…
C	4-6-06	MH	Wi…

SARA… SPRINGS CITY

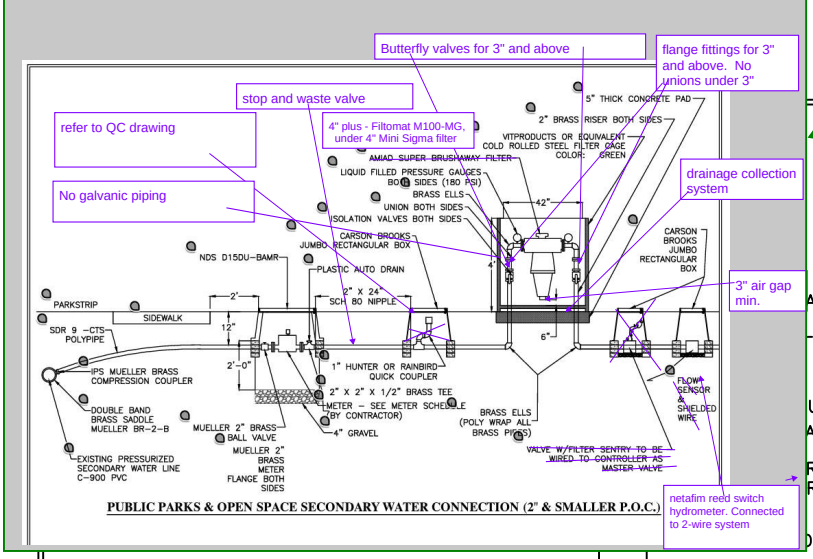
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

AILS

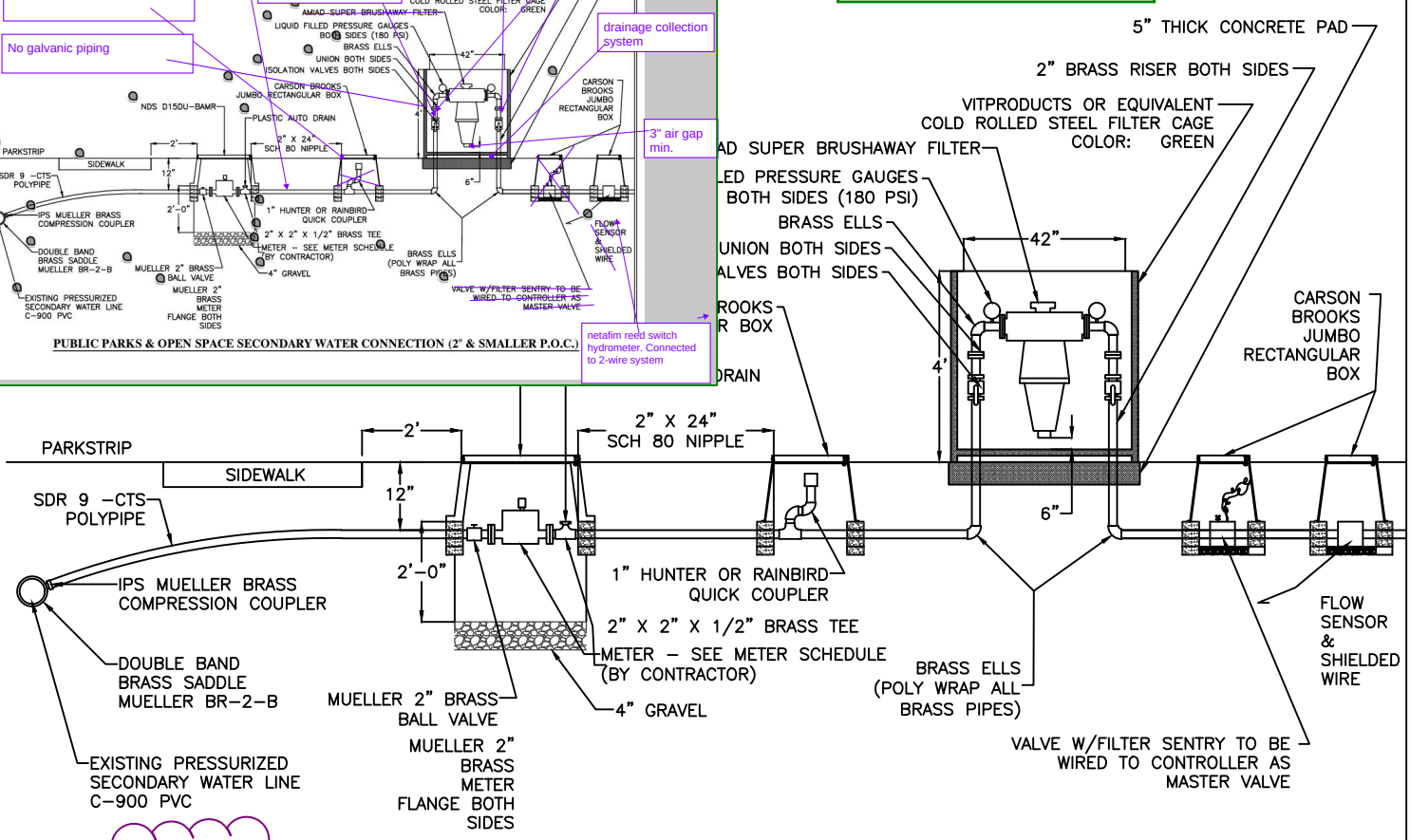
IRR

PI-3

the two 4" sleeves 1' off the meter box.



incorporate redlines from Parks Dept



PUBLIC PARKS & OPEN SPACE SECONDARY WATER CONNECTION (2" & SMALLER P.O.C.)

This detail should be in landscape section

STET

NOTES:

1. MINIMUM SURFACE RESTORATION SHALL BE 3" BITUMINOUS OVER 8" ROADBASE COMPACTED TO 95%. AT MAJOR STREETS, CITY ENGINEER WILL PROVIDE PAVEMENT DESIGN.
2. SERVICES MAY BE TUNNELED OR JETTED UNDER CURB AND GUTTER, DRIVEWAYS, OR SIDEWALKS. OTHER STRUCTURES SHALL BE OPEN CUT WITH SURFACE RESTORATION AT THE ENGINEERS DIRECTION.
3. IF TAPPING SADDLES ARE USED, METHOD OF SAWING/DRILLING TAP HOLES, TYPE OF SADDLE, PROCEDURES MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL PIPE AND FITTINGS UPSTREAM OF FILTER TO BE SCH 80 UNLESS SPECIFIED AS BRASS.
5. SCH 40 PIE AND FITTINGS ALLOWED DOWNSTREAM OF FILTER.
6. NO MALE ADAPTERS.
7. 18" BURY TO TOP OF PIPE.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL OF THE REQUIREMENTS ESTABLISHED FOR SAFE TRENCHING. (SEE OSHA REQUIREMENTS)
9. ALL CONSTRUCTION SHALL MEET CURRENT SARATOGA SPRINGS CITY STANDARDS, SPECIFICATIONS, & ORDINANCES.
10. STAINLESS STEEL LINER INSERTS WILL BE REQUIRED INSIDE OF TUBING AT COMPRESSION FITTINGS.
11. ALL FITTINGS SHALL BE COMPATIBLE WITH SERVICE SIZE.
12. SEE STANDARD FOR PRESSURIZED IRRIGATION SERVICE BOX, 2" PRESSURIZED IRRIGATION SERVICE, AND 4" PRESSURIZED IRRIGATION SERVICE.
13. SERVICE LATERAL SHALL SLOPE TOWARDS PRESSURIZED IRRIGATION MAIN.
14. SPRINKLER SLEEVE SHALL NOT BE IN LINE WITH ANY UTILITY BOXES.
15. SEE SERVICE DETAILS FOR BOX DESCRIPTIONS & TYPES
16. ALL PIPES TO BE BURIED WITH 14 GAUGE STRANDED THHN TRACE WIRE AND MARKING TAPE.

CONNECTION FOR PUBLIC PARKS & OPEN SPACE

DATE: AUGUST 2017

DRAWING NAME: PI-4

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS			
REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

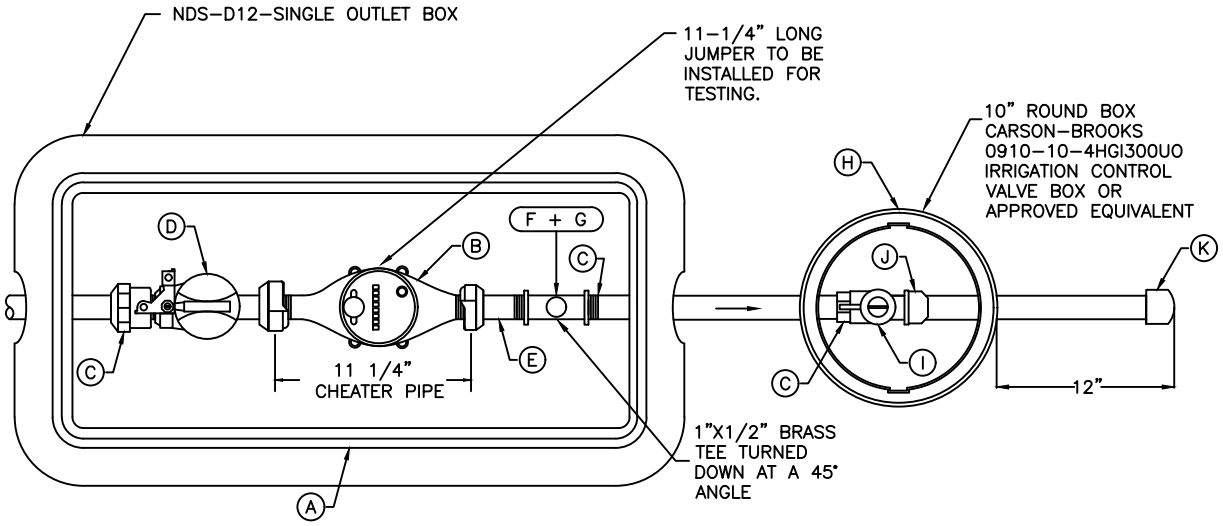
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

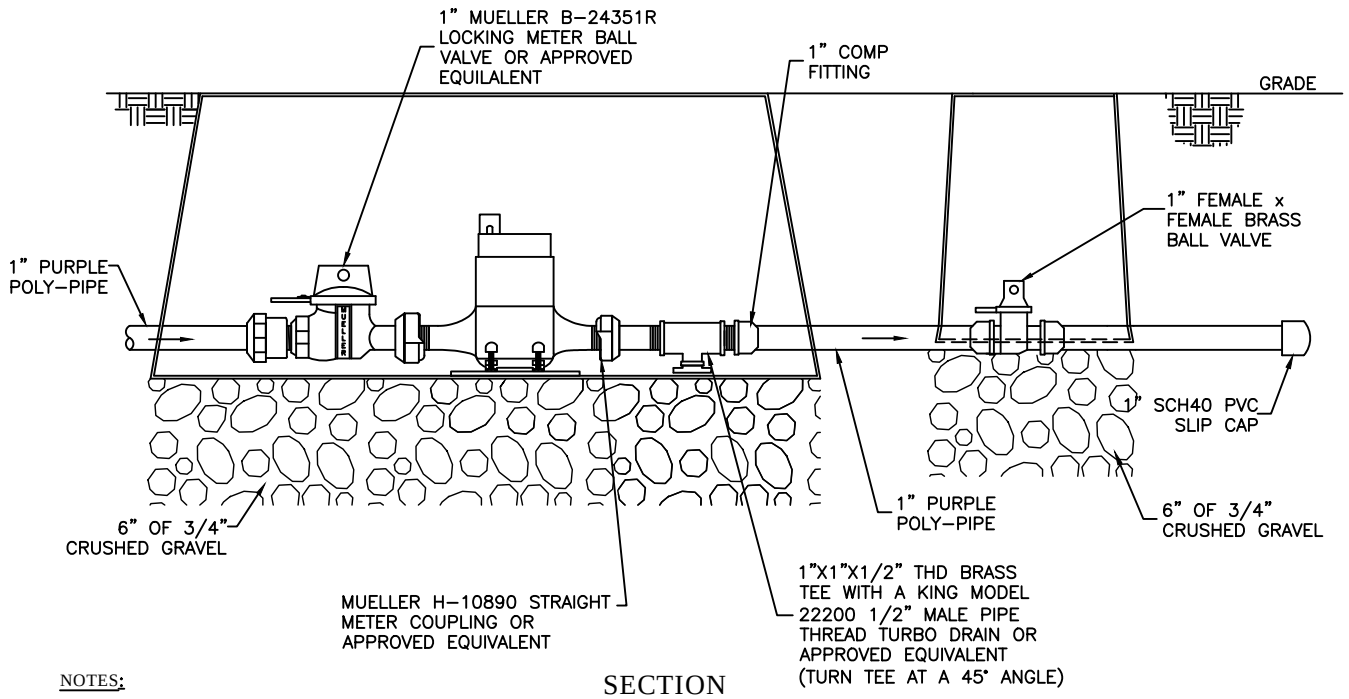
PRESSURIZED IRR

PI-4

this would be redundant from the new PI-3



PLAN



SECTION

NOTES:

1. RESIDENTIAL METERS PROVIDED BY THE CITY. COMMERCIAL METERS PROVIDED BY THE CONTRACTOR.
2. ALL PIPES SHALL BE BURIED WITH 14 GAUGE STRANDED THHN TRACE WIRE
3. CHEATER PIPE TO BE EXACTLY 11' 1/4" FROM FACE TO FACE

1" SINGLE SERVICE LATERAL BOX

DATE: AUGUST 2017

DRAWING NAME: PI-5A

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED NOTE #1

SARATOGA SPRINGS CITY

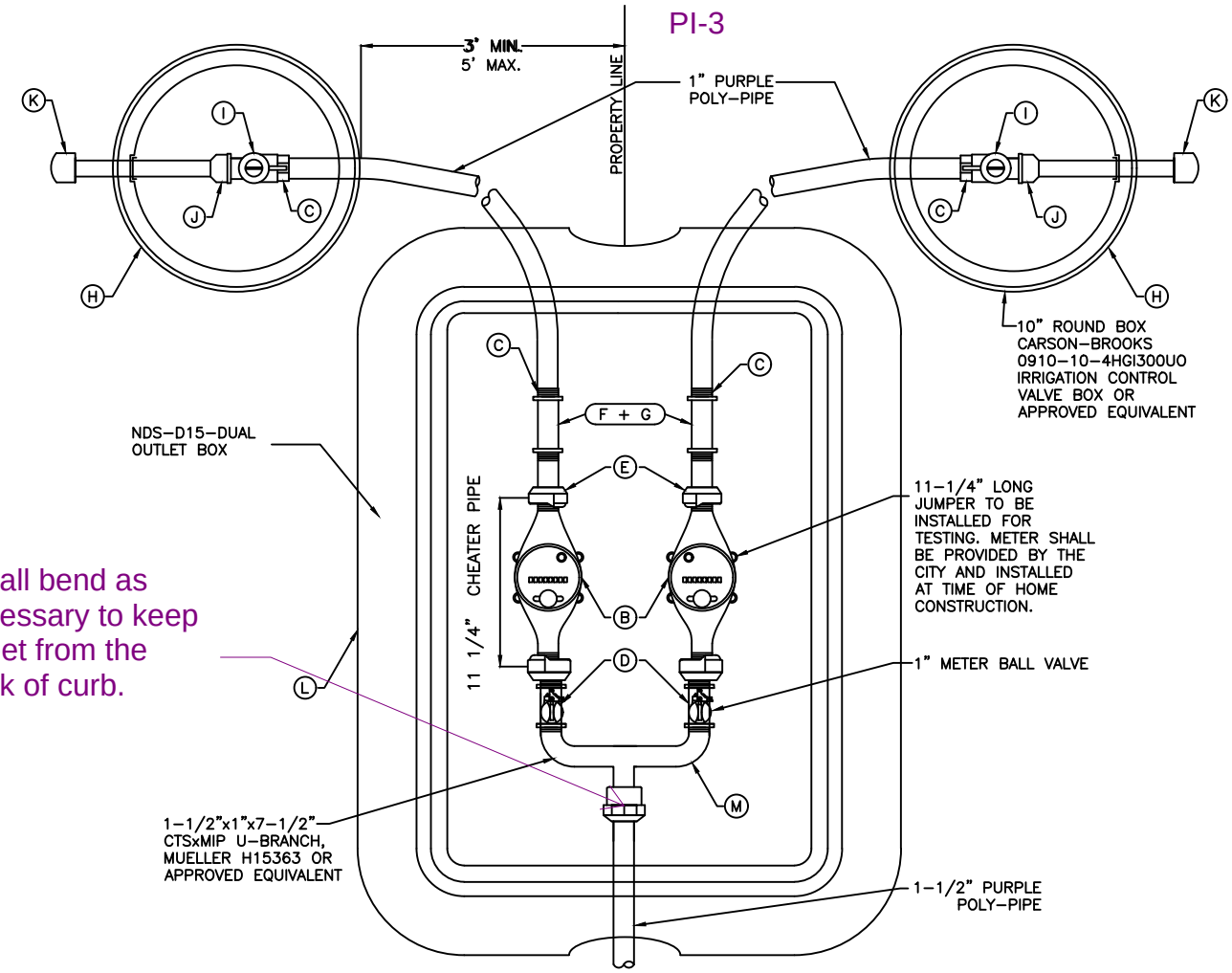
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

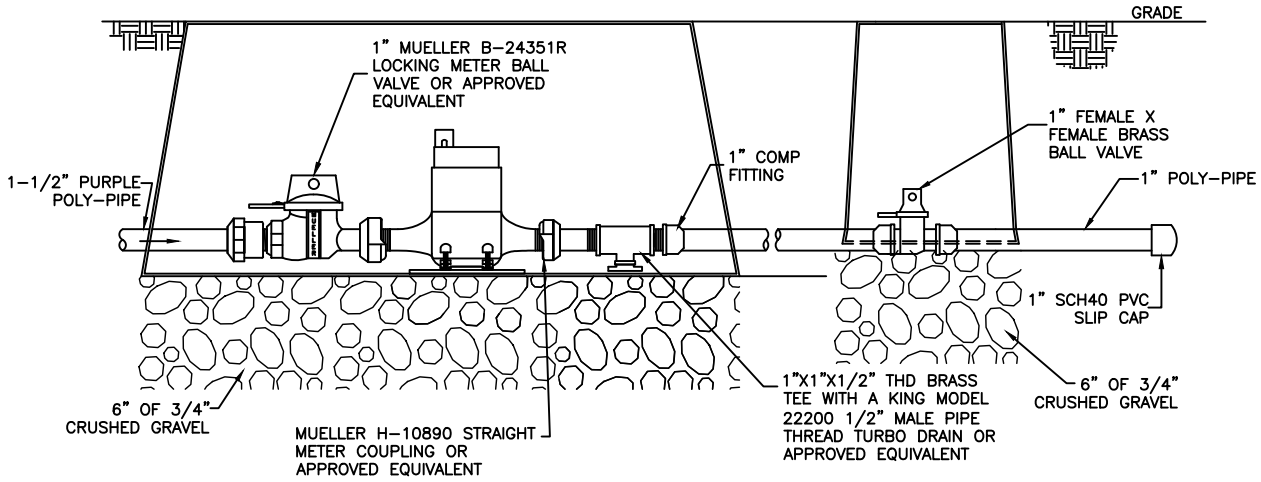
PRESSURIZED IRR

PI-5A

this would be redundant from the new PI-3



Install bend as necessary to keep 4 feet from the back of curb.



Note:
1. CHEATER PIPE TO BE EXACTLY 11' 1/4" FROM FACE TO FACE.

1 1/2" DUAL SERVICE LATERAL BOX

DATE: AUGUST 2017
DRAWING NAME: PI-5B
DRAWN BY:
CHECKED: APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS
B	1/21/05	jmc	Concrete Block
C	4-6-06	MH	WR WHITE REDLINES

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
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STANDARD DETAILS

PRESSURIZED IRR

PI-5B

SCHEDULE OF PLUMBING MATERIAL FOR WATER METER BOXES

1" SINGLE SERVICE CONNECTION

ITEM	QUANTITY	DESCRIPTION
A	1ea	14"x19"x12" METER BOX W/ SINGLE OUTLET
B	1ea	1" METER (SUPPLIED AND INSTALLED BY CITY)
C	3ea	1" COUPLER CCT/MIPT H15428
D	1ea	1" STR BALL METER VALVE B24351R
E	1ea	1" STR METER COUPLER H10890
F	1ea	1"X1/2" BRASS TEE
G	1ea	1/2" MALE PIPE THREAD AUTO DRAIN
H	1ea	10" IRRIGATION VALVE BOX
I	1ea	1" BRASS BALL VALVE 600 WOG
J	1ea	1" MALE ADAPT SXM1PT SCH 40
K	1ea	1" SLIP CAP SHC 40

revise parts list

1 1/2" TO DUAL 1" SERVICE CONNECTION

ITEM	QUANTITY	DESCRIPTION
L	1ea	13"x20"x12" JUMBO METER BOX W/ DOUBLE OUTLET
B	2ea	1" METER (SUPPLIED AND INSTALLED BY CITY)
M	1ea	1.5"X7.5" CTSxMIP U-BRANCH H15363
D	2ea	1" STR BALL METER VALVE B24351R
E	2ea	1" STR METER COUPLER H10890
F	2ea	1"X1/2" BRASS TEE
G	2ea	1/2" MALE PIPE THREAD AUTO DRAIN
C	4ea	1" COUPLER CCT/MIPT H15428
I	2ea	1" BRASS BALL VALVE 600 WOG
H	2ea	10" IRRIGATION VALVE BOX
J	2ea	1" MALE ADAPT SXM1PT SCH 40
K	2ea	1" SLIP CAP SHC 40

PARTS LIST FOR SINGLE AND DUAL SERVICE LATERAL BOXES

DATE: AUGUST 2017

DRAWING NAME: PI-5C

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DESCRIPTIONS FOR ITEMS B AND G FOR 1" AND 1 ½"

SARATOGA SPRINGS CITY

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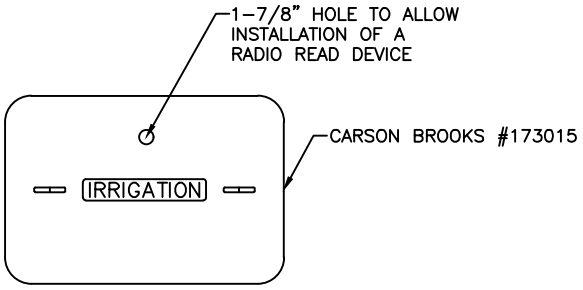
STANDARD DETAILS

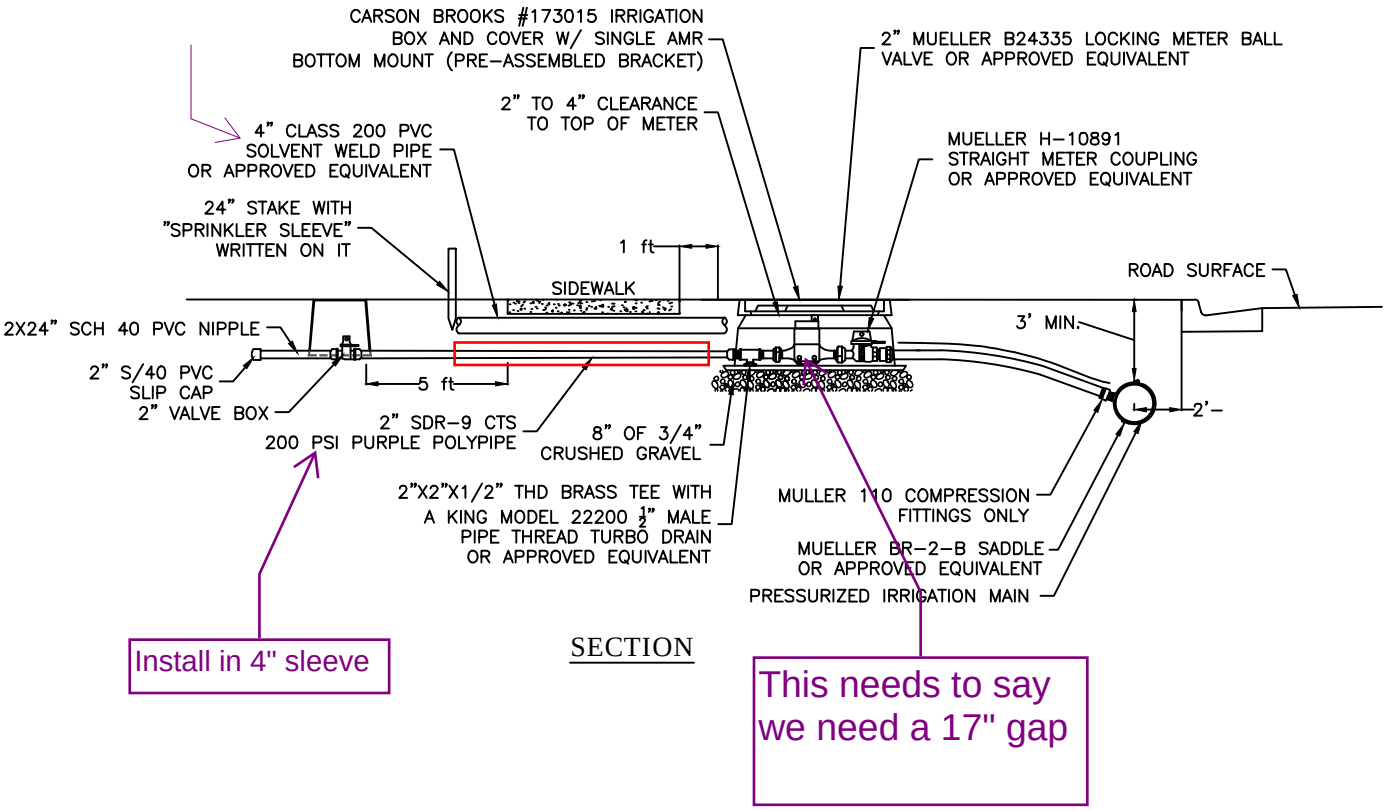
PRESSURIZED IRR

PI-5C



1' offset to the majority side of the lot.

IRRIGATION BOX



Install in 4" sleeve

SECTION

This needs to say we need a 17" gap

NOTES:

1. ADJUST ALL APPURTENCES TO AN EQUIVALENT 1½" SIZE FOR 1½" SERVICES.

2. SPRINKLER SLEEVE SHALL NOT BE IN LINE WITH ANY UTILITY BOXES.

3. ALL PIPES SHALL BE BURIED WITH 14 GAUGE STRANDED THHN TRACE WIRE AND MAGNETIC MARKING TAPE.

2" SERVICE LATERAL

DATE: AUGUST 2017

DRAWING NAME: PI-6

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED CALLOUTS

SARATOGA SPRINGS CITY

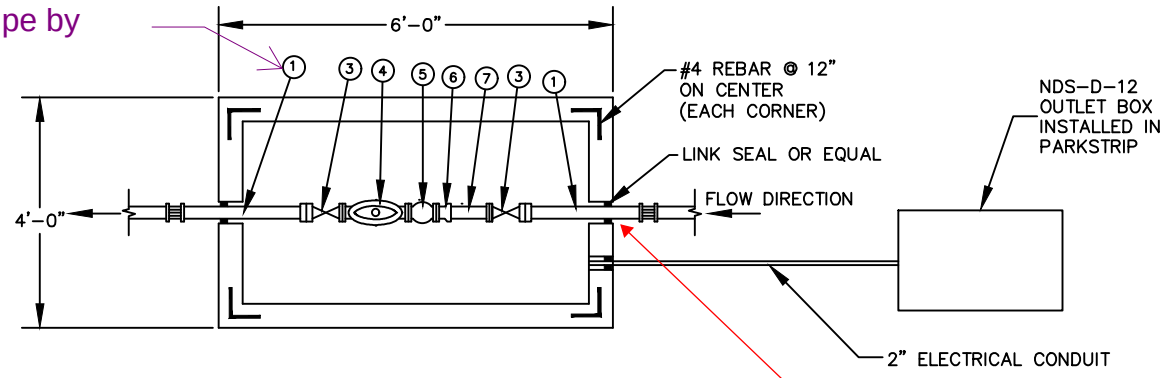
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

PRESSURIZED IRR

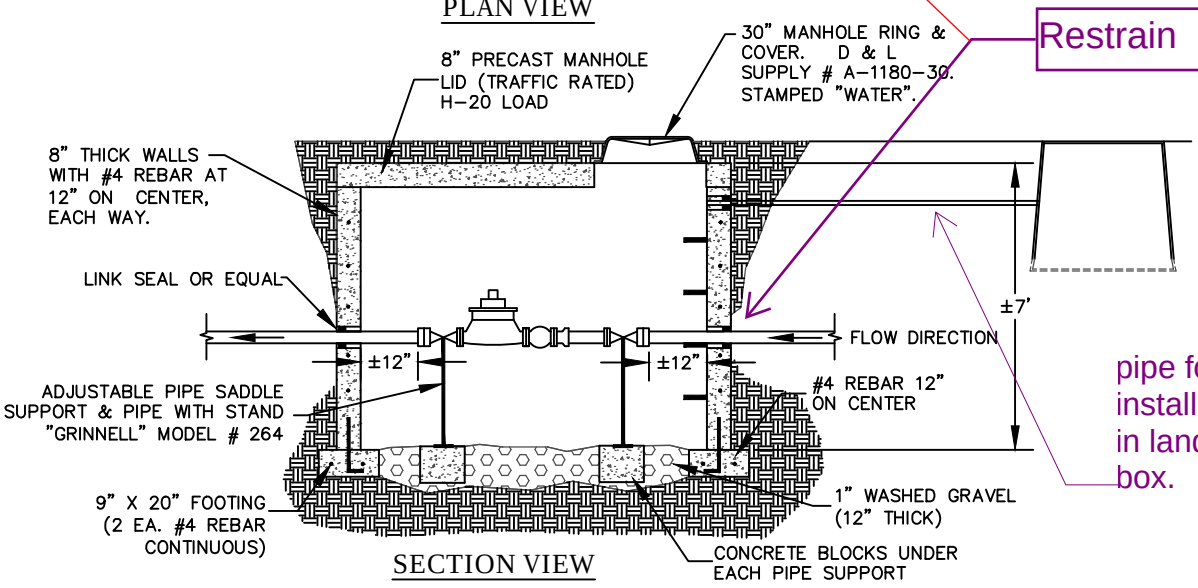
PI-6

ductile iron pipe by



PLAN VIEW

Restrain



SECTION VIEW

pipe for ert wire, install ert re-bar in landscaping box.

NOTES:

1. INSPECTION: METER BOX AND SERVICE LINE SHALL BE INSPECTED BY CITY PRIOR TO BACKFILLING.

2. BACKFILL: INSTALL BACKFILL IN LIFTS NOT EXCEEDING 8" AFTER COMPACTION. COMPACT EACH LIFT TO AN AVERAGE DRY DENSITY OF 97% WITH NO DENSITY TEST RESULT LESS THAN 92%.

3. ALL 4" INTERIOR FITTINGS TO BE FLANGED.

4. WATER METERS SHALL BE PROVIDED BY CONTRACTOR.

5. PLACEMENT: ALL METERS ARE TO BE INSTALLED IN THE PARK STRIP OR WITHIN 7 FEET OF THE PROPERTY LINE (STREET SIDE) ~~AND MUST BE PLACED NEAR MIDPOINT OF THE LOT AND~~ MUST NOT BE LOCATED IN A DRIVEWAY, OR IN A SIDEWALK.

6. CONTRACTOR SHALL SUPPLY ALL MATERIALS AND LABOR.

7. ALL PIPES SHALL BE BURIED WITH 14 GUAGE STRANDED THHN TRACE WIRE AND MARKING TAPE.

4" PIPE SCHEDULE		
#	QTY	DESCRIPTION
1	1	FLxPE D.I. SPOOL LENGTH = ±48"
3	1	4" FLxFL GATE VALVE (MUELLER)*
4	1	4" FLxFL METER
5	1	FLANGED METER STRAINER
6	1	4" FLANGED COUPLING ADAPTER
7	1	FLxPE D.I. SPOOL (LENGTH AS NEEDED)

* GATE VALVE SHALL BE FURNISHED WITH A HANDWHEEL.

4 INCH METER VAULT

DATE: AUGUST 2017

DRAWING NAME: PI-7

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS			
REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

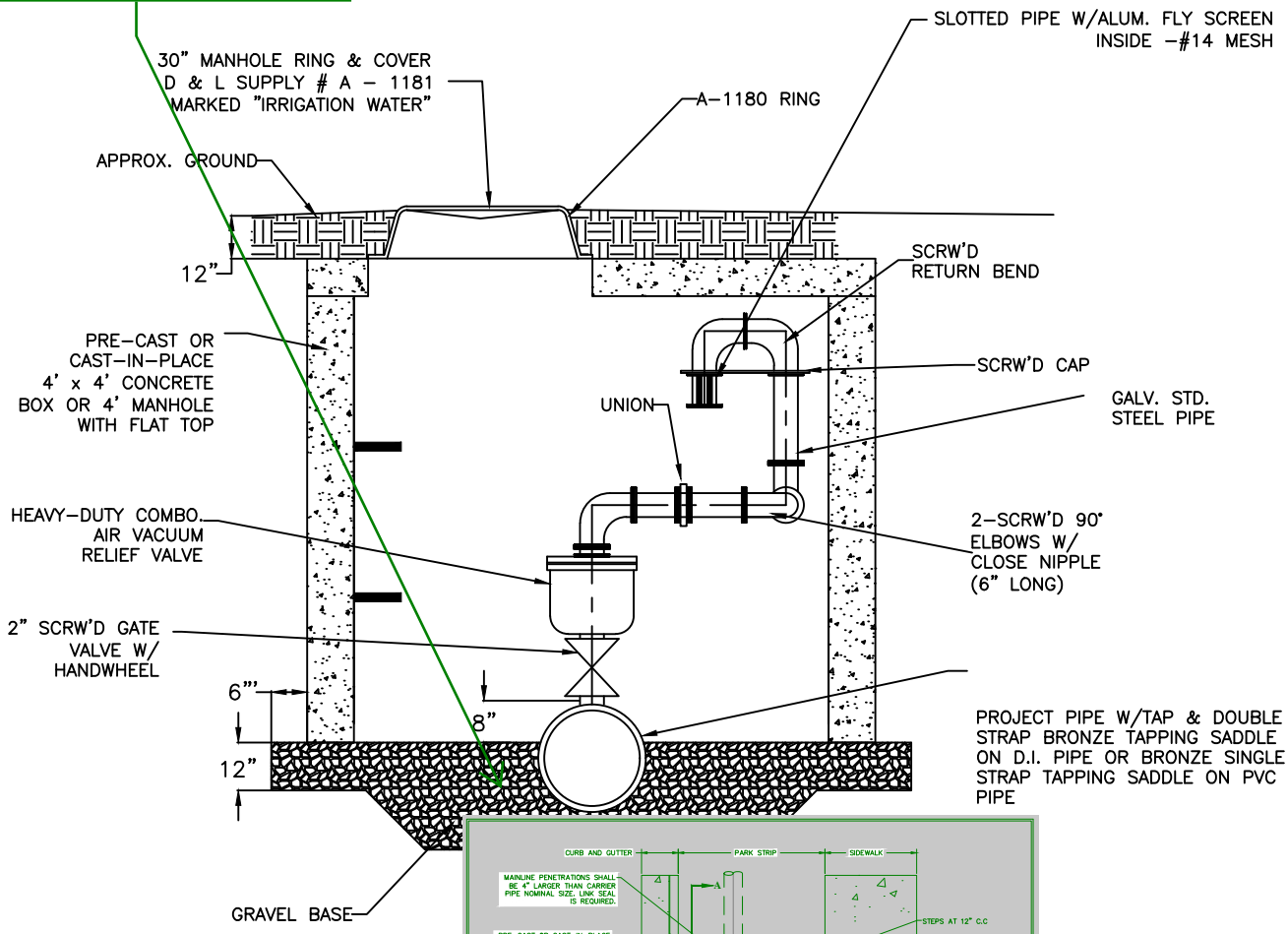
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

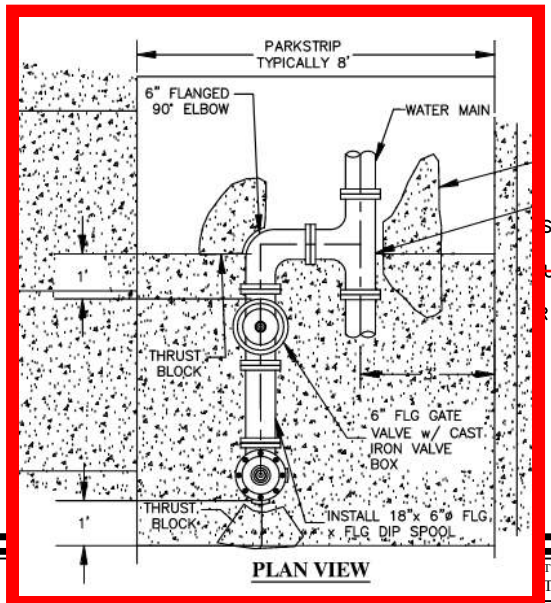
STANDARD DETAILS

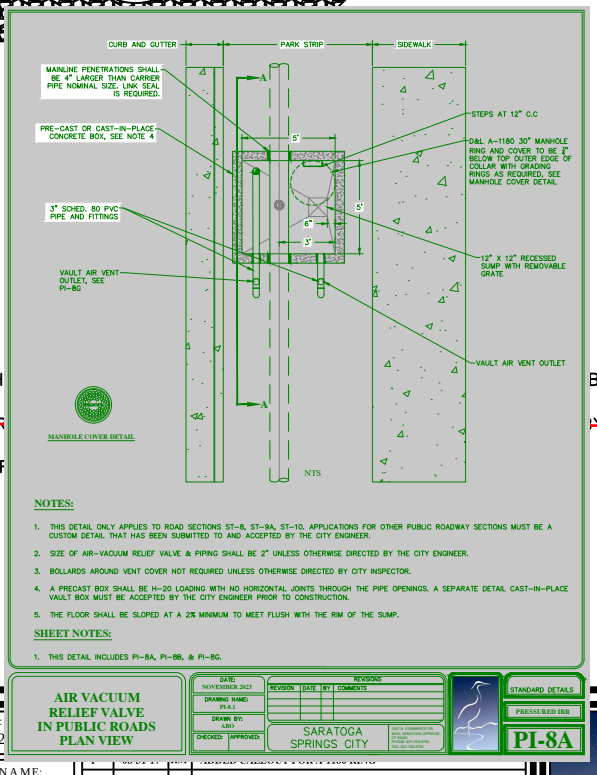
PRESSURIZED IRR

PI-7

Add the 7 Air Vacuum Relief Valve Details PI-8A through PI-8G per Hansen Allen & Luce recommendations







BY CITY ENGINEER.

~~Y CITY ENGINEER.~~

AIR VACUUM RELIEF VALVE

DRAWING NAME: PI-8

DRAWN BY: ETL

CHECKED: | APPROVED:

SARATOGA SPRINGS CITY

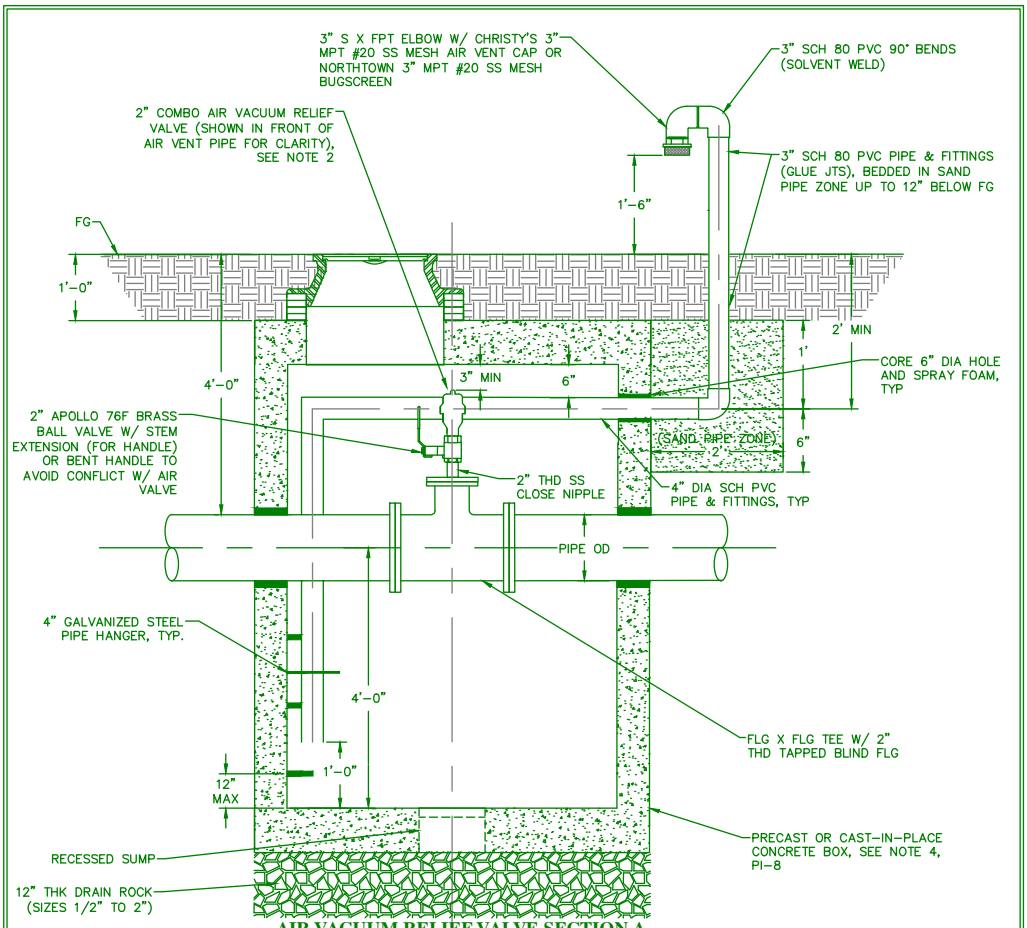
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

PRESSURIZED IRR

PI-8

Add the 7 Air Vacuum Relief Valve Details PI-8A through PI-8G per Hansen Allen & Luce recommendations



AIR VACUUM RELIEF VALVE SECTION A

NTS

NOTES:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-8, ST-9A, ST-10, AND ST-31. APPLICATIONS FOR OTHER PUBLIC ROADWAY SECTIONS MUST BE A CUSTOM DETAIL THAT HAS BEEN SUBMITTED TO AND ACCEPTED BY THE CITY ENGINEER.
2. COMBO AIR VACUUM RELIEF VALVE SHALL BE VENT-O-MAT SERIES 2" RPS NTP.
3. PRESSURIZED IRRIGATION PIPELINE IS DEEPER THAN STANDARD BURY DEPTH. ENSURE APPROACHING PIPES DO NOT CREATE ADDITIONAL LOCALIZED HIGH POINTS.

SHEET NOTES:

4. THIS DETAIL INCLUDES PI-8A & PI-8B.

AIR VACUUM RELIEF VALVE

DATE:	NOVEMBER 2023
DRAWING NAME:	PI-8.1A
DRAWN BY:	ABO
CHECKED:	APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

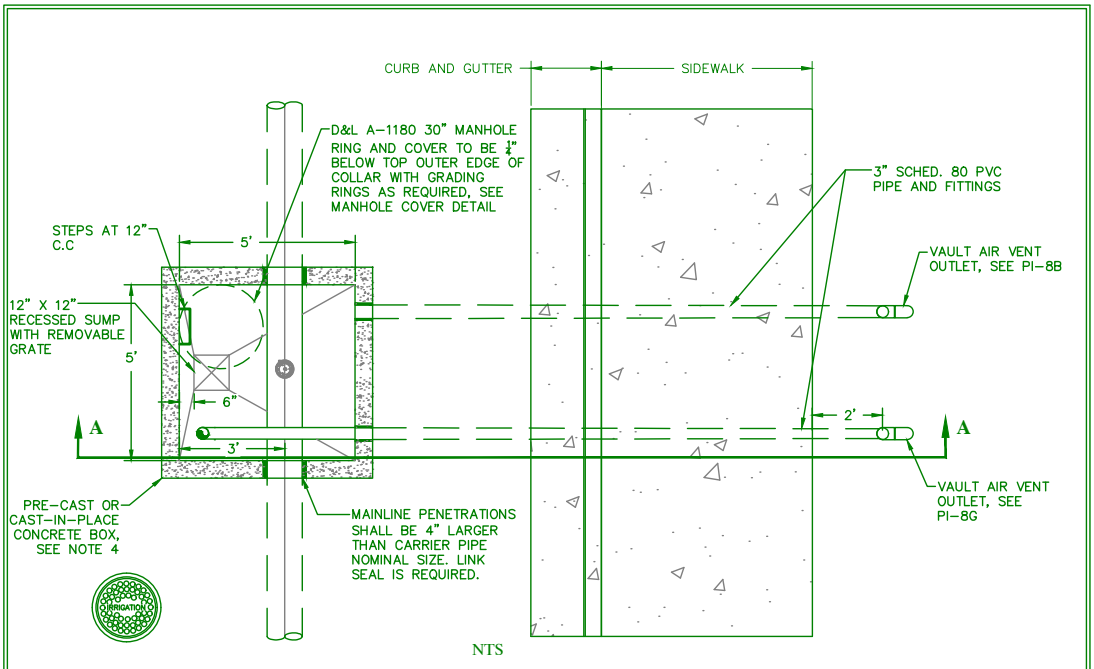
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

PRESSURIZED IRR

PI-8B

Add the 7 Air Vacuum Relief Valve Details PI-8A through PI-8G per Hansen Allen & Luce recommendations



MANHOLE COVER DETAIL

NOTES:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-30 & ST-31.
2. SIZE OF AIR-VACUUM RELIEF VALVE & PIPING SHALL BE 2" UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
3. BOLLARDS AROUND VENT COVER NOT REQUIRED UNLESS OTHERWISE DIRECTED BY CITY INSPECTOR.
4. A PRECAST BOX SHALL BE H-20 LOADING WITH NO HORIZONTAL JOINTS THROUGH THE PIPE OPENINGS. A SEPARATE DETAIL CAST-IN-PLACE VAULT BOX MUST BE ACCEPTED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.
5. THE FLOOR SHALL BE SLOPED AT A 2% MINIMUM TO MEET FLUSH WITH THE RIM OF THE SUMP.

SHEET NOTES:

1. THIS DETAIL INCLUDES PI-8C, PI-8D, & PI-8G.

AIR VACUUM RELIEF VALVE IN PRIVATE ROADS PLAN VIEW

DATE: NOVEMBER 2023
DRAWING NAME: PI-8.2
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

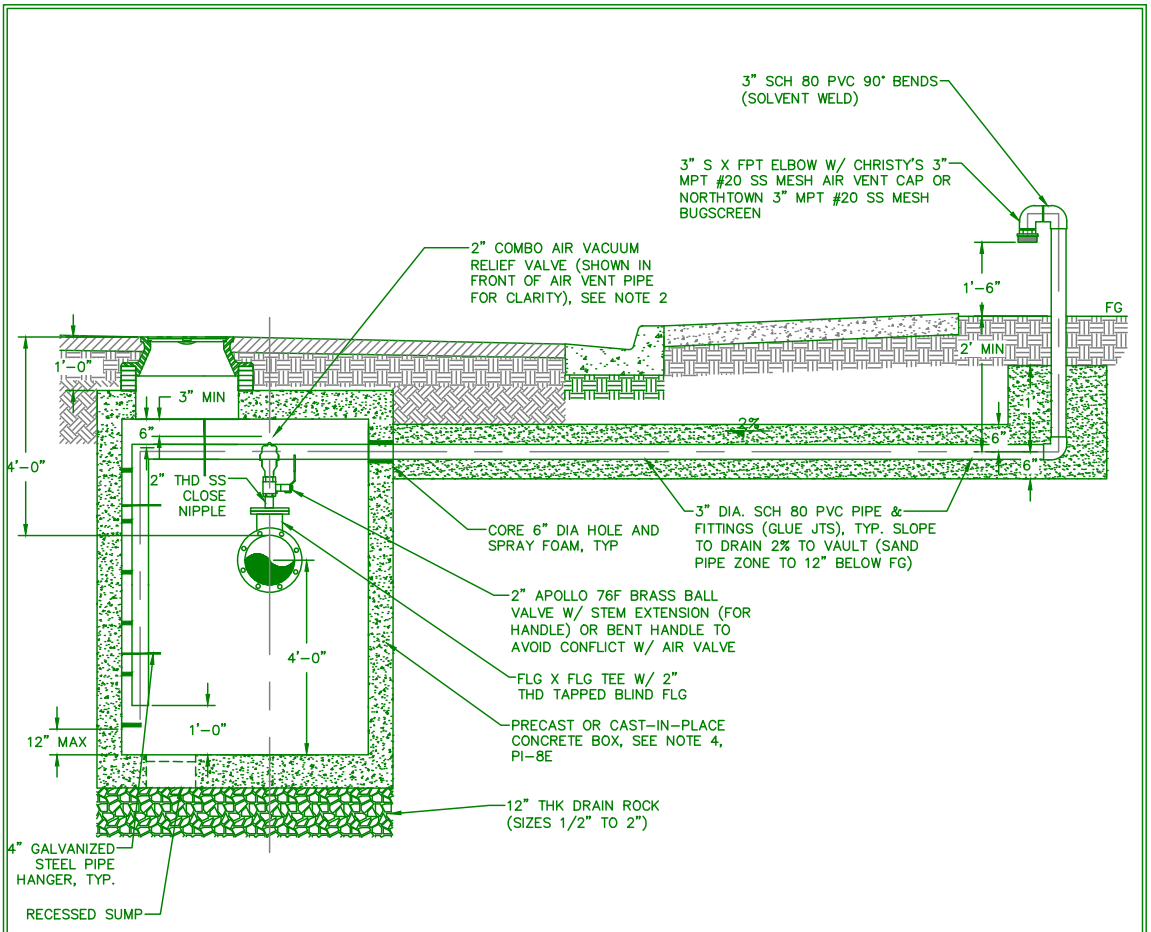
REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
PRESSURIZED IRR
PI-8C

Add the 7 Air Vacuum Relief Valve Details PI-8A through PI-8G per Hansen Allen & Luce recommendations



AIR VACUUM RELIEF VALVE SECTION A

NTS

NOTES:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-30 & ST-31.
2. COMBO AIR VACUUM RELIEF VALVE SHALL BE VENT-O-MAT SERIES 2" RPS NTP.
3. PRESSURIZED IRRIGATION PIPELINE IS DEEPER THAN STANDARD BURY DEPTH. ENSURE APPROACHING PIPES DO NOT CREATE ADDITIONAL LOCALIZED HIGH POINTS.

SHEET NOTES:

1. THIS DETAIL INCLUDES PI-8C AND PI-8D.

AIR VACUUM RELIEF VALVE

DATE: NOVEMBER 2023
DRAWING NAME: PI-8.2A
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

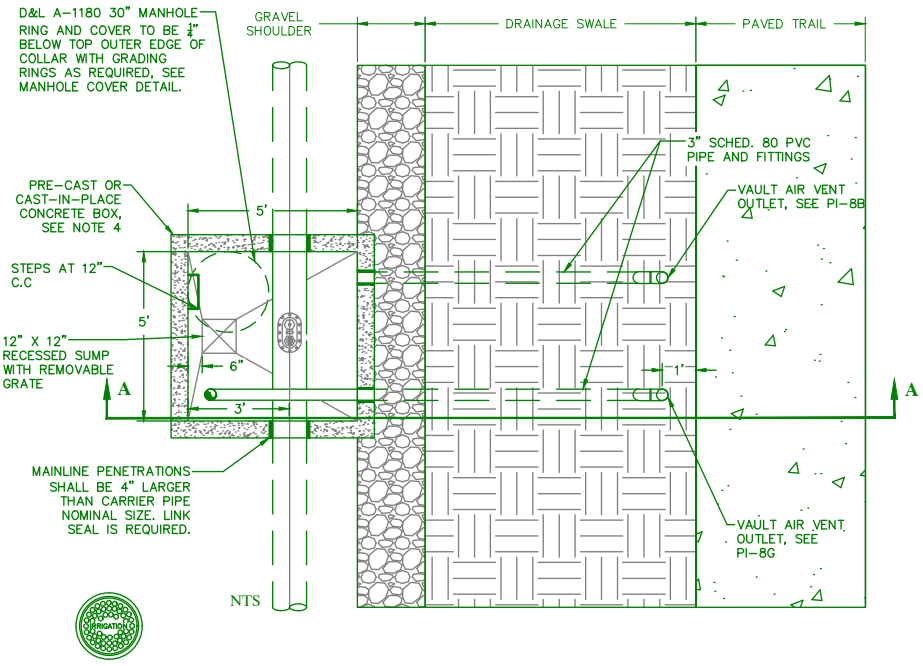
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

PRESSURIZED IRR

PI-8D

Add the 7 Air Vacuum Relief Valve Details PI-8A through PI-8G per Hansen Allen & Luce recommendations



MANHOLE COVER DETAIL

NOTES:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-32.
2. SIZE OF AIR-VACUUM RELIEF VALVE & PIPING SHALL BE 2" UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
3. BOLLARDS AROUND VENT COVER NOT REQUIRED UNLESS OTHERWISE DIRECTED BY CITY INSPECTOR.
4. A PRECAST BOX SHALL BE H-20 LOADING WITH NO HORIZONTAL JOINTS THROUGH THE PIPE OPENINGS. A SEPARATE DETAIL CAST-IN-PLACE VAULT BOX MUST BE ACCEPTED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.
5. THE FLOOR SHALL BE SLOPED AT A 2% MINIMUM TO MEET FLUSH WITH THE RIM OF THE SUMP.

SHEET NOTES:

1. THIS DETAIL INCLUDES PI-8E, PI-8F, & PI-8G.

AIR VACUUM RELIEF VALVE IN PRIVATE ROADS PLAN VIEW

DATE:	NOVEMBER 2023
DRAWING NAME:	PI-8.3
DRAWN BY:	ABO
CHECKED:	APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

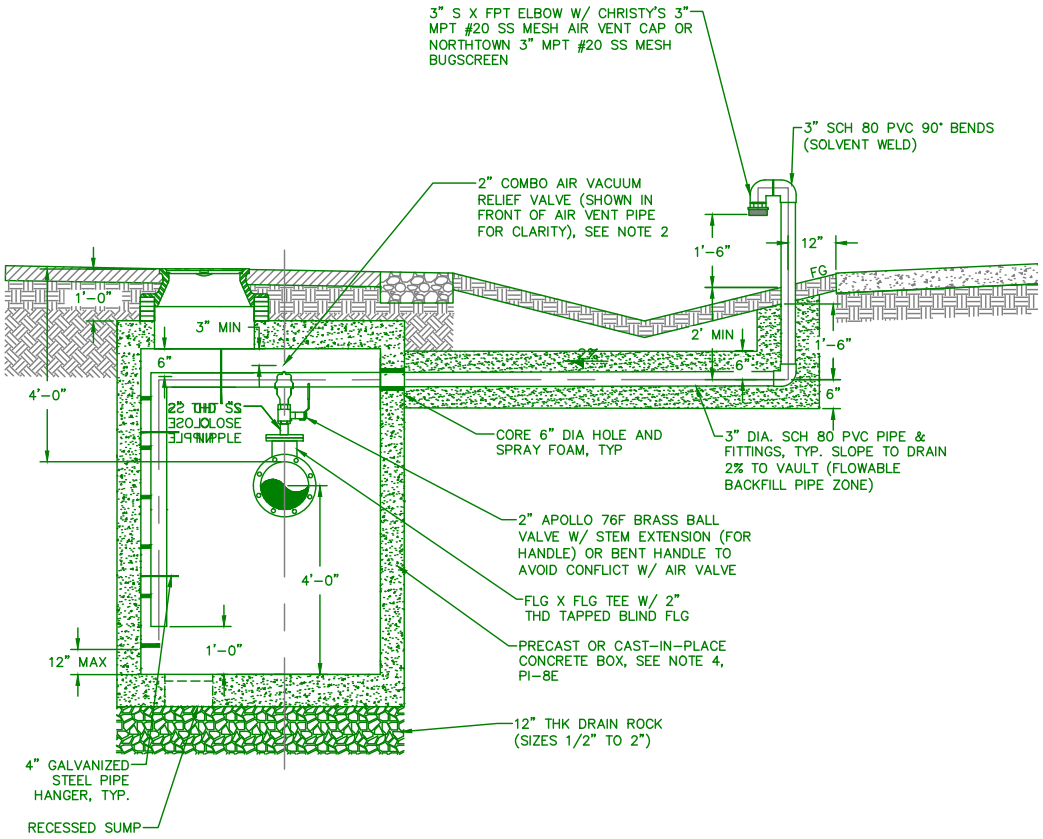
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

PRESSURIZED IRR

PI-8E

Add the 7 Air Vacuum Relief Valve Details PI-8A through PI-8G per Hansen Allen & Luce recommendations



AIR VACUUM RELIEF VALVE SECTION A

NTS

NOTES:

1. THIS DETAIL ONLY APPLIES TO ROAD SECTIONS ST-32.
2. COMBO AIR VACUUM RELIEF VALVE SHALL BE VENT-O-MAT SERIES 2" RPS NTP.
3. PRESSURIZED IRRIGATION PIPELINE IS DEEPER THAN STANDARD BURY DEPTH. ENSURE APPROACHING PIPES DO NOT CREATE ADDITIONAL LOCALIZED HIGH POINTS.

SHEET NOTES:

1. THIS DETAIL INCLUDES PI-8E AND PI-8F.

AIR VACUUM RELIEF VALVE

DATE: NOVEMBER 2023
DRAWING NAME: PI-8.3A
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

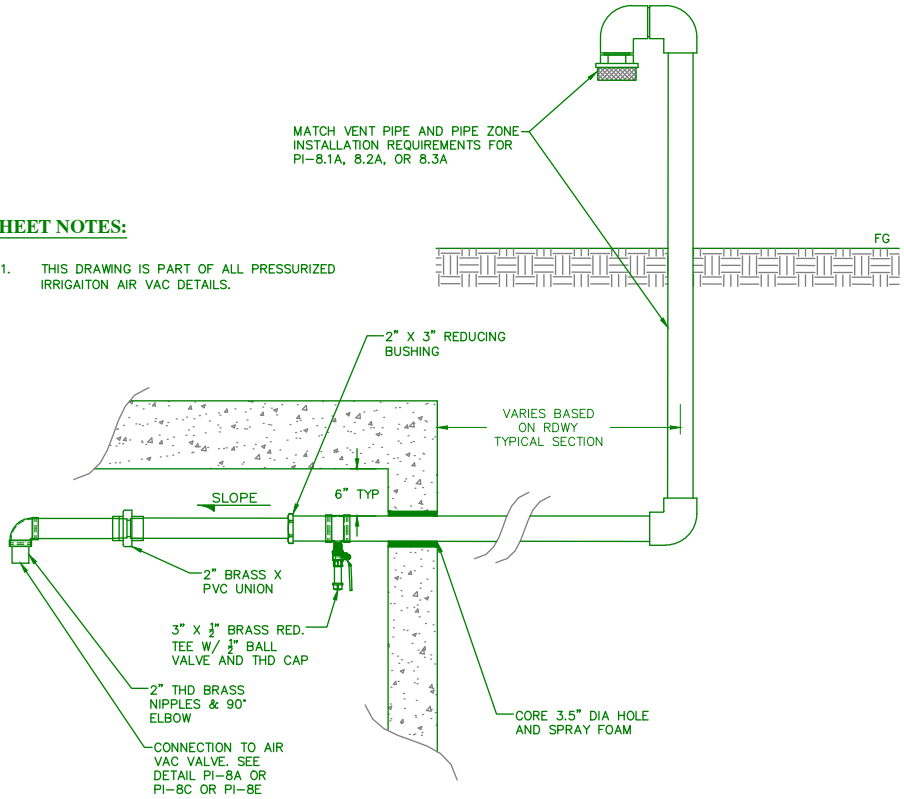
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
PRESSURIZED IRR
PI-8F

Add the 7 Air Vacuum Relief Valve Details PI-8A through PI-8G per Hansen Allen & Luce recommendations

SHEET NOTES:

1. THIS DRAWING IS PART OF ALL PRESSURIZED IRRIGAITON AIR VAC DETAILS.



DETAIL B - VENT
NTS

AIR VACUUM RELIEF VALVE VENT DETAILS

DATE: NOVEMBER 2023
DRAWING NAME: PI-8B
DRAWN BY: ABO
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

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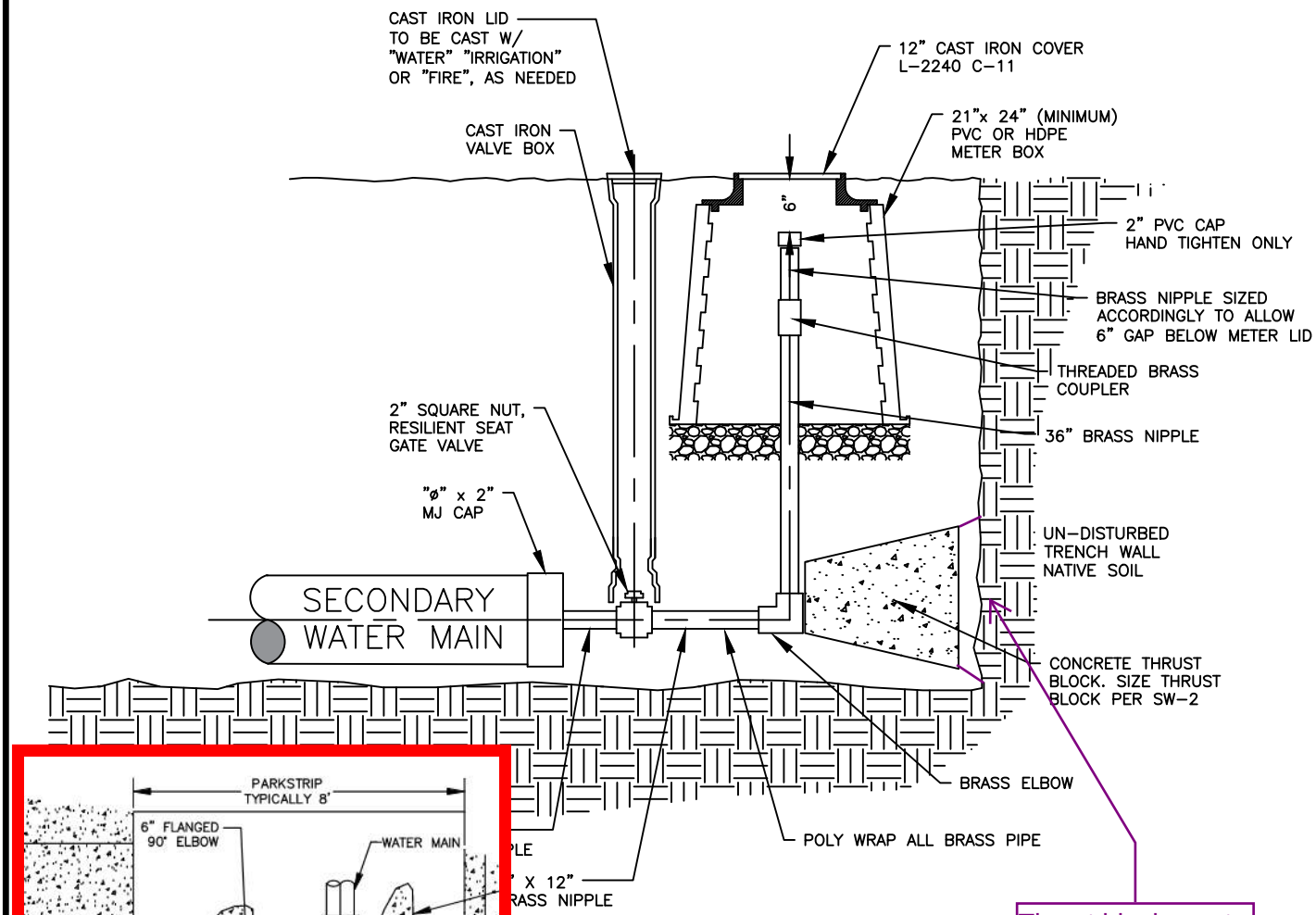
STANDARD DETAILS
PRESSURIZED IRR
PI-8G

Add 6" blowoff detail from Lehi.



Thrust block must bear against undisturbed soil

2" BLOW-OFF VALVE

DATE:	AUGUST 2017
DRAWING NAME:	PI-12A
DRAWN BY:	ETL
CHECKED:	
APPROVED:	

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

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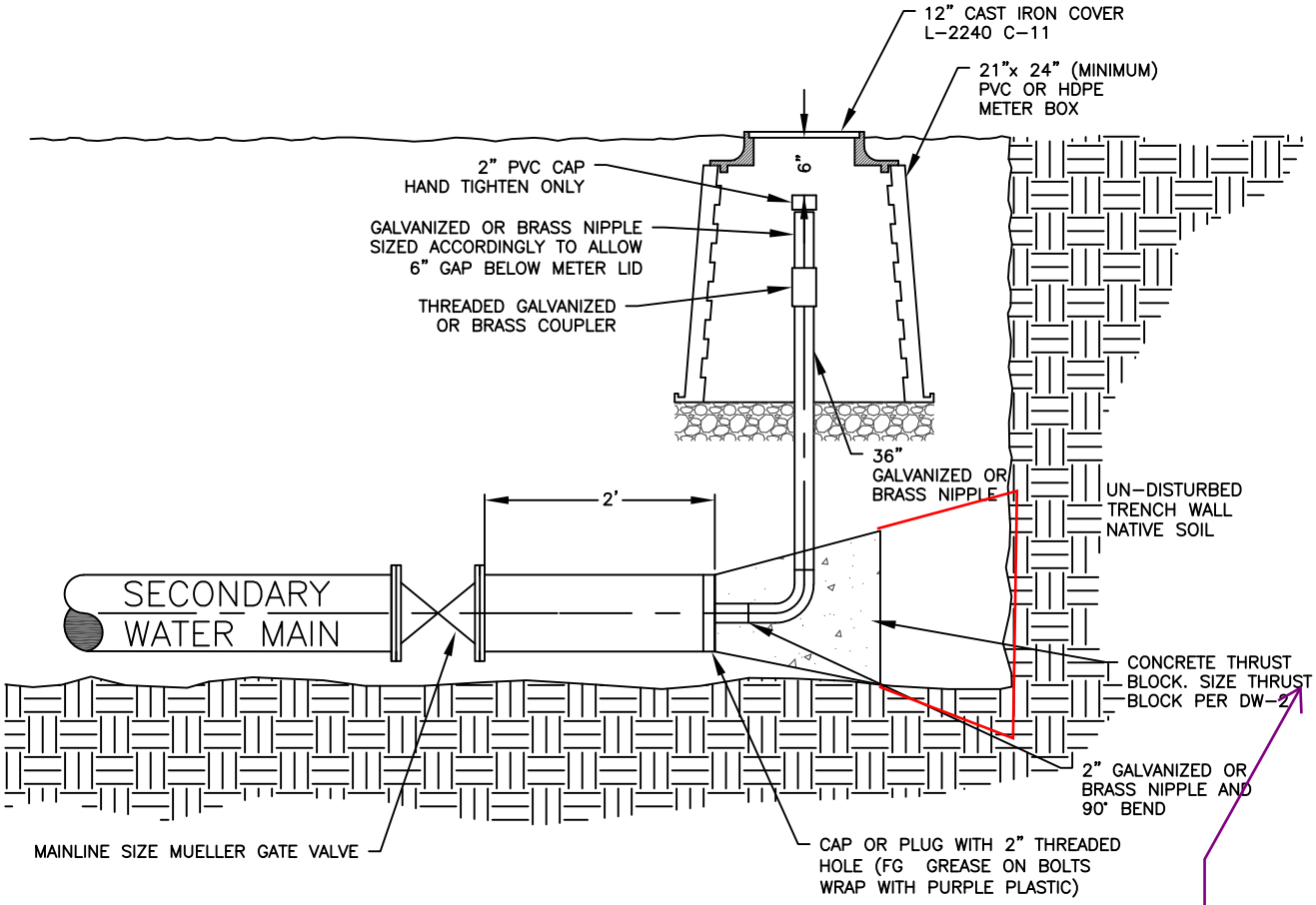
STANDARD DETAILS

PRESSURIZED IRR

PI-12A



Thrust block must bear against undisturbed soil

TEMPORARY 2" BLOW-OFF VALVE

DATE: AUGUST 2017

DRAWING NAME: PI-12B

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	09-1-17	RM	EXTENDED MAIN TO BLOCK AND PUT ELBOW IN BLOCK.

SARATOGA SPRINGS CITY
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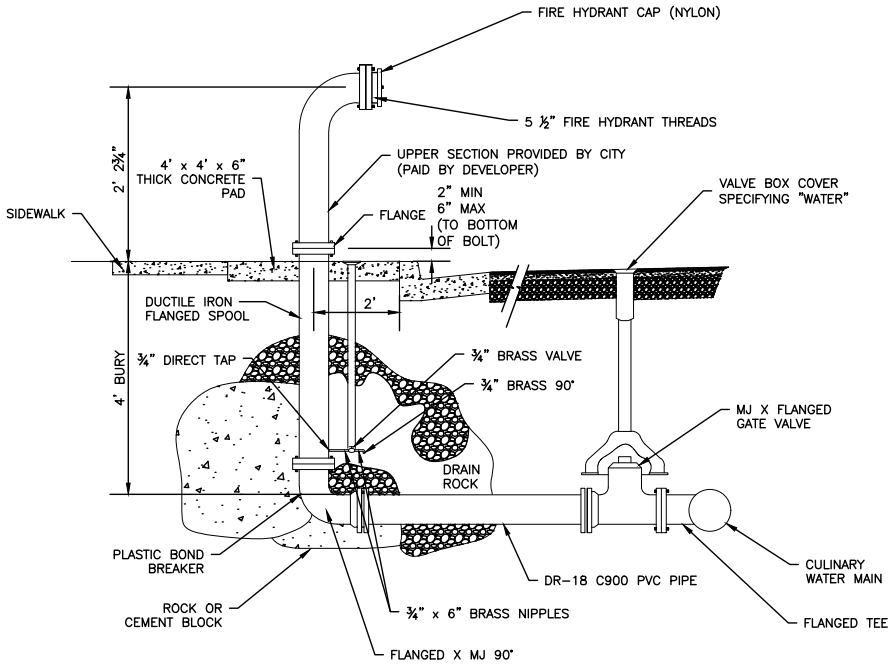
STANDARD DETAILS

PRESSURIZED IRR

PI-12B

Add 6" Blow off detail
PI-12C



NOTES:

1. 4" SIZE FOR 8" OR SMALLER LINES. 6" SIZE FOR 10" OR LARGER LINES. OTHER SIZES AS DIRECTED BY THE CITY ENGINEER
2. BLOW-OFF SHALL BE INSTALLED 2' BEHIND THE WALK WITH CONCRETE PAD WHEN THERE IS NO PLANER.
3. WHEN INSTALLING CONCRETE PAD AROUND BLOW-OFF, CONTRACTOR SHALL PLACE CRACK CONTROL JOINTS DIAGONALLY FROM THE BLOW-OF TO THE CORNERS OF SAID PAD.
4. A THREE (3) FOOT HORIZONTAL CLEARANCE MUST BE MAINTAINED AROUND THE OUTSIDE OF ALL BLOW-OFFS.
5. BLOW-OFF TOP, ADAPTOR, AND CAP TO BE SUPPLIED BY THE WATER DEPARTMENT.

6" BLOW-OFF

DATE:	MARCH 2022
DRAWING NAME:	PI-12B
DRAWN BY:	JRP
CHECKED:	APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

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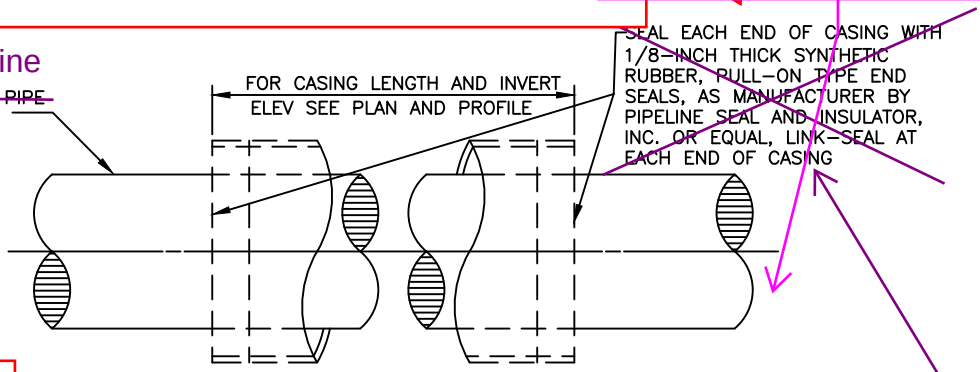
STANDARD DETAILS

PRESSURIZED IRR

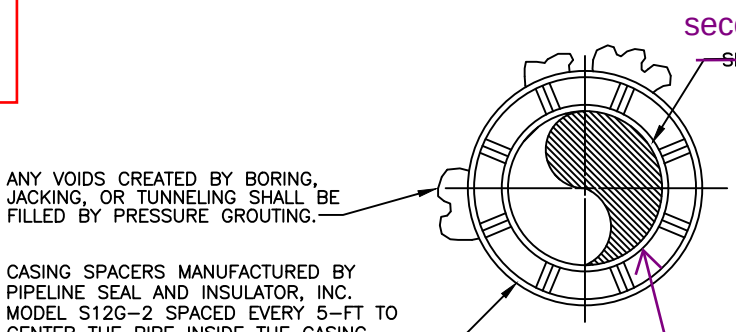
PI-12C

I think the text may be confusing. There are two concepts here:
1. Use a casing seal at the end of the casing by Pipeline Seal and Insulator or equal to s.
2. Use Linkseal, or equal, at each end of casing to prevent migration of soil into th casing.
Mark Atencio

per 7/13 mtng, action item JP, see HAL's DW-16 and copy it for PI and Sewer.



Because the detail is for "Pressurized Irrigation", recommend using the term "Irrigation Pipe"



Seal each end of casing with 1/8" thick synthetic seal or equal link-seal

All slip joint fitting must be restrained at each bell through the casing

MINIMUM WALL THICKNESS OF CASINGS	
Diameter	Wall Thickness
12" and under	0.188"
14" – 18"	0.312"
20" – 22"	0.375"
24" – 26"	0.438"
28" – 32"	0.500"
34" – 42"	0.562"

LARGER CASINGS AS DIRECTED BY THE CITY ENGINEER.

NOTES:

1. CASING PIPES SHALL BE REQUIRED AS INDICATED ON THE DRAWINGS AND/OR WHERE REQUIRED BY THE CITY INSPECTOR OR ENGINEER.
2. THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE SIZED AT LEAST 4" LARGER THAN THE OUTSIDE DIAMETER OF CARRIER PIPE.
3. CARRIER PIPE SHALL BE TESTED BEFORE SEALING THE ENDS OF THE CASING.
4. SPACERS SHALL BE SECURELY ATTACHED TO CARRIER PIPE PER MANUFACTURER'S REQUIREMENTS.
5. CASING PIPE SHALL BE WELDED STEEL, ASTM A53, GRADE B.
6. THERE SHALL BE A MAXIMUM OF 1' FROM THE ENDS OF THE CASING TO THE SPACER.

PRESSURIZED IRRIGATION PIPE CASING DETAIL

DATE: AUGUST 2017
DRAWING NAME: PI-14
DRAWN BY: RFM
CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

PRESSURIZED IRR

PI-14

STANDARD STREET IMPROVEMENT DETAILS

INDEX:

ST-1	SIDEWALK AND CURB & GUTTER STANDARDS
ST-2A-D	CURB & GUTTER
ST-3	WATERWAY
ST-4A	SINGLE FAMILY RESIDENTIAL DRIVE APPROACH
ST-4B	COMMERCIAL DRIVE APPROACH
ST-5A-E	ADA ACCESSIBLE RAMP
ST-6	DEFECTIVE CONCRETE REPLACEMENT CRITERIA
ST-7	STANDARD INTERSECTION & UTILITIES
ST-8	LOCAL ROADWAY - 59' RIGHT-OF-WAY
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ST-9B	FOOTHILL INTERIM COLLECTOR ROADWAY
ST-10	MINOR ARTERIAL - 95' RIGHT-OF-WAY
ST-11	MAJOR ARTERIAL - 180' RI
ST-12	PRINCIPAL ARTERIAL - 180'
ST-13	INTERIM ARTERIAL - 180' R
ST-14	STANDARD TEMPORARY TU
ST-15A	TRAIL STANDARDS
ST-15B	TRAIL STANDARDS FOR IN
ST-16	STANDARD CUL-DE-SAC
ST-17	ROUNDABOUT: LOCAL RO
ST-18	ROUNDABOUT: COLLECTO
ST-23	LOCAL STREET TRAFFIC CA
ST-26	STANDARD TEE PATCH
ST-27	UTILITY MARKERS
ST-28	STREET AND REGULATORY
ST-29	SURVEY MONUMENT
ST-30	PRIVATE ROADWAY: W/O PA
ST-31	PRIVATE ROADWAY: W/ PA
ST-32	PRIVATE ROADWAY: RURAL
ST-33	PRIVATE INTERSECTION &
ST-34	URBAN, RURAL, AND WILDL
ST-35	ANGLED ON STREET PARKI
ST-39	POLYMER CONCRETE JUNC
ST-40	CONDUIT: FIBER OPTIC/CO

Revise to standard details and names as shown below

ST-1	SIDEWALK AND CURB & GUTTER STANDARDS
ST-2A	RESIDENTIAL 30" HIGH BACK CURB & GUTTER
ST-2B	RESIDENTIAL 24" HIGH BACK CURB & GUTTER
ST-2C	6" CURB WALL
ST-2D	FALL-OUT CURB AND GUTTER
ST-3	WATERWAY
ST-4A	SINGLE FAMILY RESIDENTIAL DRIVE APPROACH
ST-4B	COMMERCIAL DRIVE APPROACH
ST-5A-E	ADA ACCESSIBLE CURB RAMP
ST-6	DEFECTIVE CONCRETE REPLACEMENT CRITERIA
ST-7	STANDARD INTERSECTION & UTILITIES
ST-8	LOCAL 62' RIGHT-OF-WAY
ST-9A	COLLECTOR 77' RIGHT-OF-WAY
ST-9B	INTERIM COLLECTOR 86.5' RIGHT-OF-WAY MTN VIEW CORRIDOR
ST-10	MINOR ARTERIAL 100' RIGHT-OF-WAY
ST-11	MAJOR ARTERIAL 180' RIGHT-OF-WAY
ST-12	PRINCIPAL ARTERIAL 180' RIGHT-OF-WAY
ST-13	INTERIM ARTERIAL 180' RIGHT-OF-WAY
ST-14	TEMPORARY TURN-AROUND
ST-15	TRAILS
ST-16	CUL-DE-SAC
ST-17	ROUNDABOUT COLLECTOR 77' RIGHT-OF-WAY
ST-26	TEE PATCH
ST-27	UTILITY MARKER
ST-28	STREET SIGNS AND REGULATORY SIGNS
ST-29	SURVEY MONUMENT
ST-30	PRIVATE ROAD 45' RIGHT-OF-WAY W/O PARK STRIP
ST-31	PRIVATE ROAD 53' RIGHT-OF-WAY W PARK STRIP
ST-32	PRIVATE ROAD 59' RIGHT-OF-WAY RURAL
ST-33	PRIVATE ROAD INTERSECTION & UTILITIES
ST-35	ANGLED ON STREET PARKING
ST-39	POLYMER CONCRETE JUNCTION BOX
ST-40	CONDUIT: FIBER OPTIC/COMMUNICATION

STREET IMPROVEMENT DETAILS

DATE: AUGUST 2017

DRAWING NAME: ST-0

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

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#200, SARATOGA SPRINGS,
UT 84045
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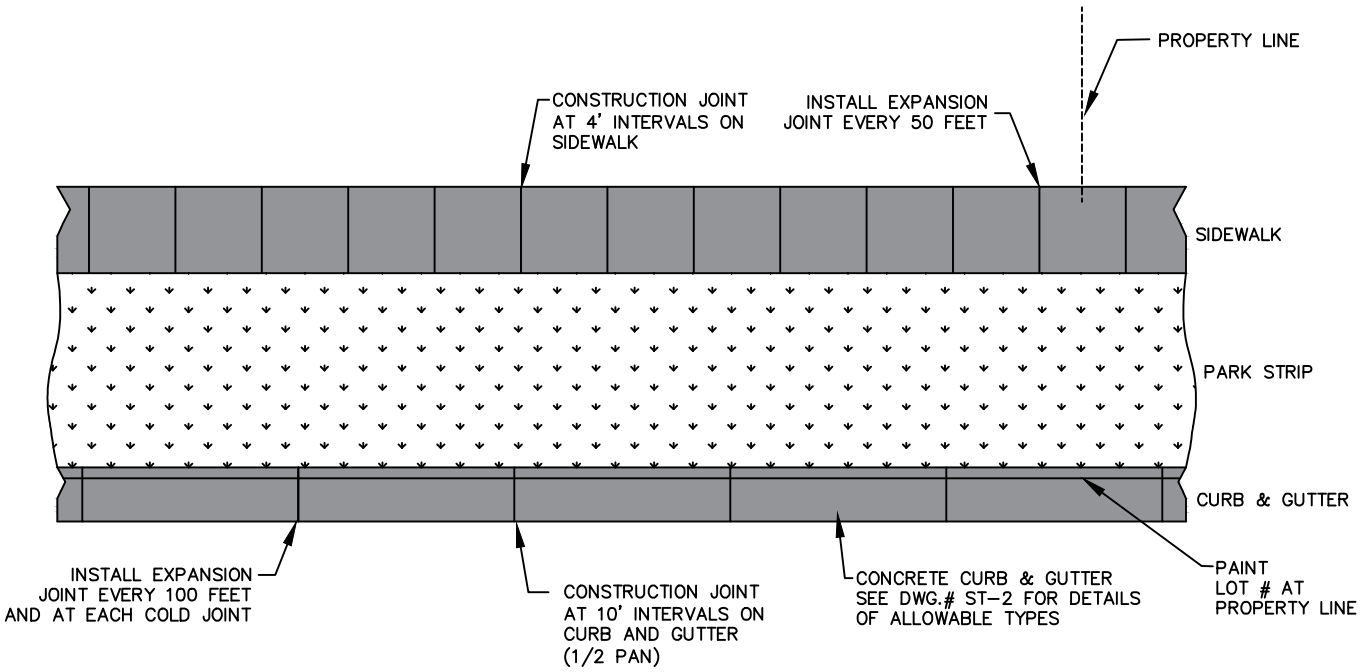
STANDARD DETAILS

STREET STANDARDS

ST-0



PLAN VIEW

NOTES:

1. A MINIMUM 6" DEPTH OF ROADBASE MATERIAL SHALL BE PLACED TO GRADE AND COMPACTED TO 95% OF MAXIMUM DRY DENSITY UNDER DRIVEWAY, WATERWAY, AND CURB & GUTTER PRIOR TO PLACEMENT OF CONCRETE.

2. A MINIMUM 6" DEPTH OF ROADBASE MATERIAL SHALL BE PLACED TO GRADE AND COMPACTED TO 95% OF MAXIMUM DRY DENSITY UNDER SIDEWALK AT ALL OTHER LOCATIONS PRIOR TO PLACEMENT OF CONCRETE.

3. WHERE CONSTRUCTION IS ADJACENT TO STATE HIGHWAY FRONTAGE, STATE HIGHWAY DEPARTMENT REQUIREMENTS SHALL GOVERN.

4. CONCRETE SHALL BE 3/4 INCH MAXIMUM AGGREGATE, 6.3 BAGS PER YARD OF TYPE 2 CEMENT WITH A MINIMUM COMMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.

5. EXPANSION JOINTS FOR CURB & GUTTER ARE TO BE SPACED NO MORE THAN 100 FT. AND SIDEWALKS SHALL BE SPACED ~~NO MORE THAN~~ EVERY 50 FT. EXPANSION JOINTS SHALL BE CONSTRUCTED BY PLACING AN APPROVED MATERIAL, (TYPICALLY BITUMINOUS IMPREGNATED FIBERBOARD), THE FULL DEPTH OF THE CONCRETE. ~~EXPANSION MATERIAL SHALL BE SET 1/2" BELOW THE FINISH LEVEL OF THE SIDEWALK.~~

6. CONSTRUCTION JOINT IS MADE BY SCORING THE CONCRETE WITH 1/2" RADIUS EDGING TOOL OR OTHER METHOD APPROVED BY ENGINEER.

7. SLOPE SIDEWALK TO ROADWAY AT 1.5% GRADE ~~(2% MAX)~~.

8. LOCATE ALL INLET GRATES 2' MINIMUM AWAY FROM THE PEDESTRIAN CROSSWALK, WITH ALL DRAINAGE INTO GETS TO THE CROSSWALK AREA.

9. THE SIDEWALK SHALL BE A MIN. 5" THICK CONCRETE.

~~10. IN ROCKY SUB-GRADES 18" OF BOTTOM OF TRENCH TO BOTTOM OF PIPE. MIN. OF 2' OF OUTSIDE DIAM~~

11. INSTALL MAGNETIC DETECTOR TAPE WITH A MIN. OF 14 GAUGE COATED TRACER WIRE FOR ALL PVC OR OT

12. PAINT LOT NUMBERS AT PROPERTY LINES.

13. SEWER LATERAL LOCATIONS TO BE MARKED ON TOP OF CURB WITH AN S.

14. CULINARY WATER LATERAL LOCATIONS TO BE MARKED ON TOP OF CURB WITH A W.

15. SECONDARY WATER LATERAL LOCATIONS TO BE MARKED ON TOP OF CURB WITH AN I.

16. WATER VALVE LOCATIONS TO BE MARKED ON TOP OF CURB WITH A V.

(+/- .5%)

SIDEWALK, CURB & GUTTER STANDARDS

DATE: AUGUST 2017
DRAWING NAME: ST-1
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
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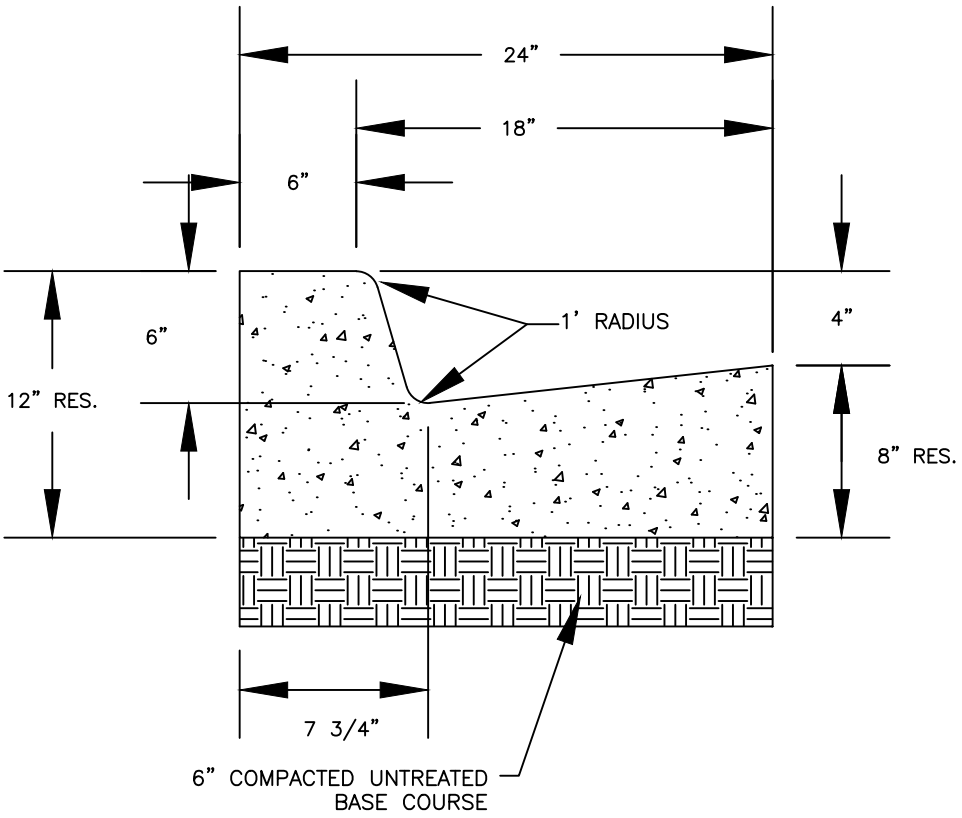
FAX: 801-766-9794

STANDARD DETAILS
STREET STANDARDS
ST-1



& Local

*FOR USE IN LOCAL ~~& MINOR~~ COLLECTORS

RESIDENTIAL
24" HIGH BACK
CURB & GUTTER

DATE: AUGUST 2017

DRAWING NAME: ST-2B

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
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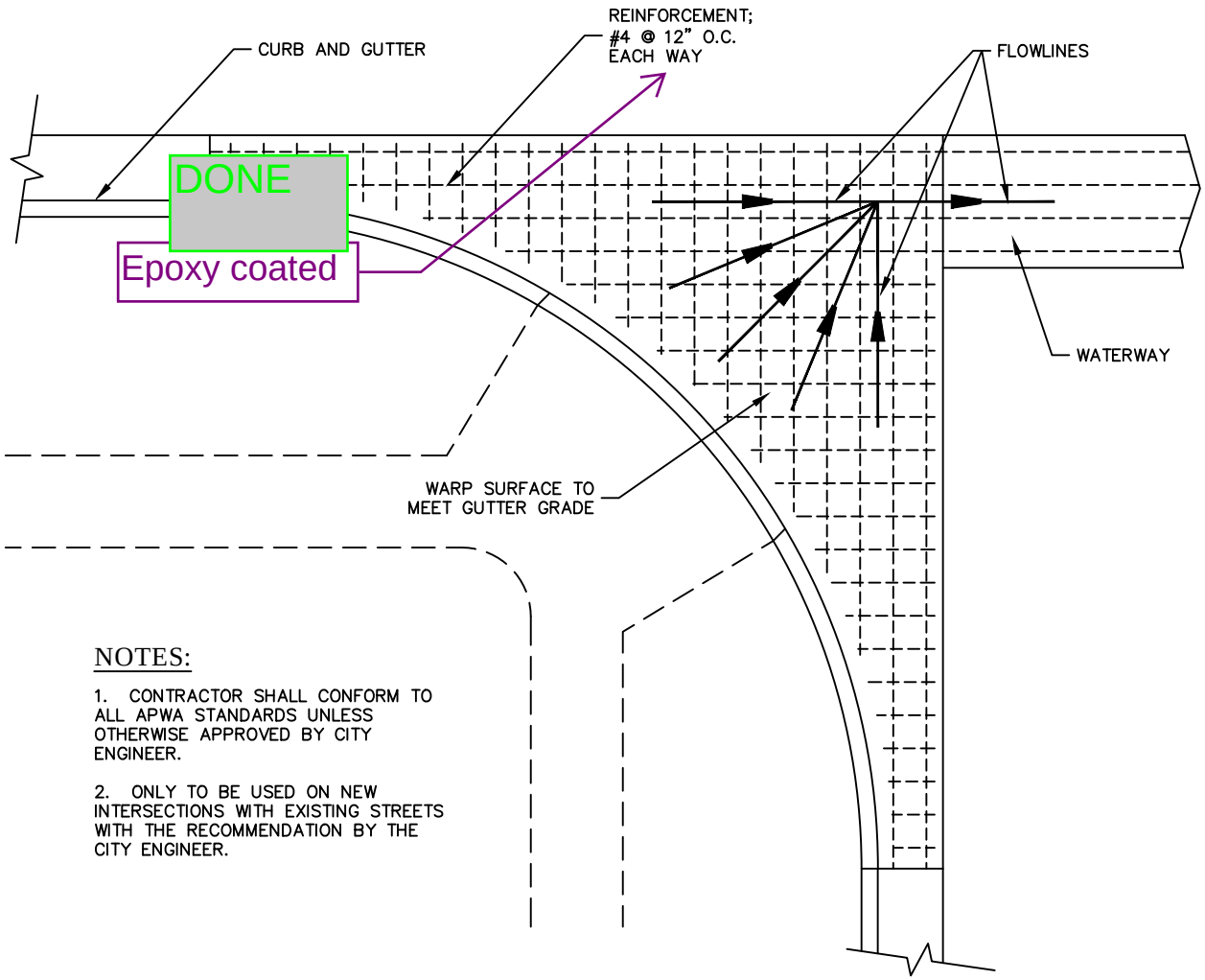
STANDARD DETAILS

STREET STANDARDS

ST-2B

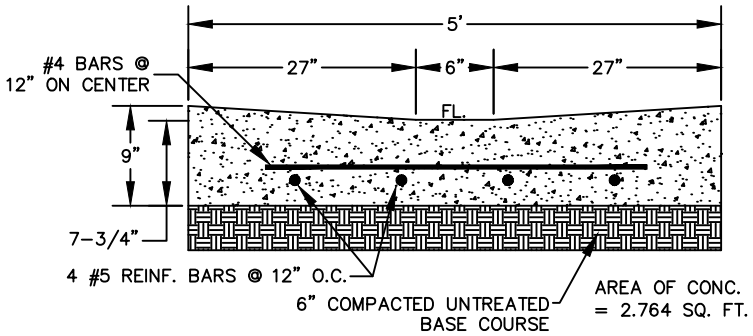


NOTES:

1. CONTRACTOR SHALL CONFORM TO ALL APWA STANDARDS UNLESS OTHERWISE APPROVED BY CITY ENGINEER.

2. ONLY TO BE USED ON NEW INTERSECTIONS WITH EXISTING STREETS WITH THE RECOMMENDATION BY THE CITY ENGINEER.

PLAN VIEW



WATERWAY

WATERWAY

DATE: AUGUST 2017

DRAWING NAME: ST-3

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED NOTE #2

SARATOGA SPRINGS CITY

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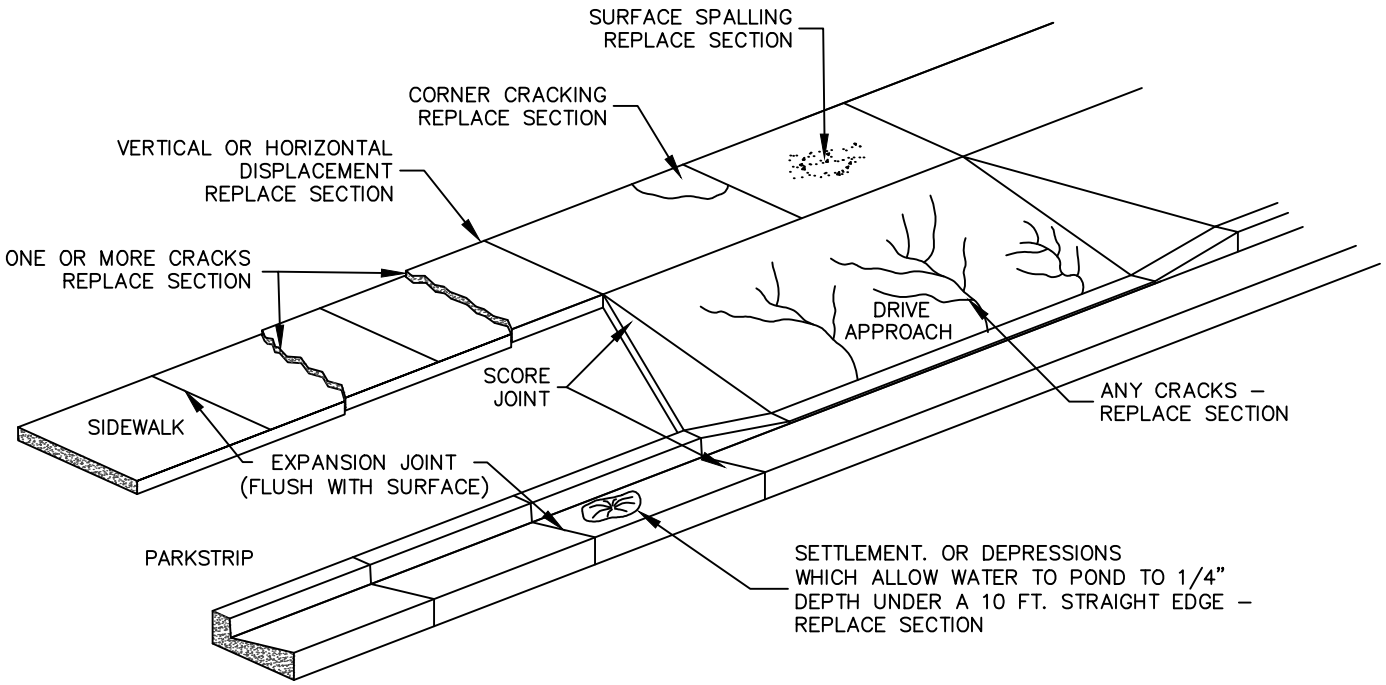
STANDARD DETAILS

STREET STANDARDS

ST-3



NOTES:

REPLACEMENT IS REQUIRED IF ANY COMPONENT HAS ONE OR MORE OF THE CONDITIONS NOTED ABOVE. OTHERWISE REPAIR SECTION UNDER THE DIRECTION OF THE CITY ENGINEER.

DEFECTIVE CONCRETE REPLACEMENT CRITERIA

DATE: AUGUST 2017

DRAWING NAME: ST-6

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
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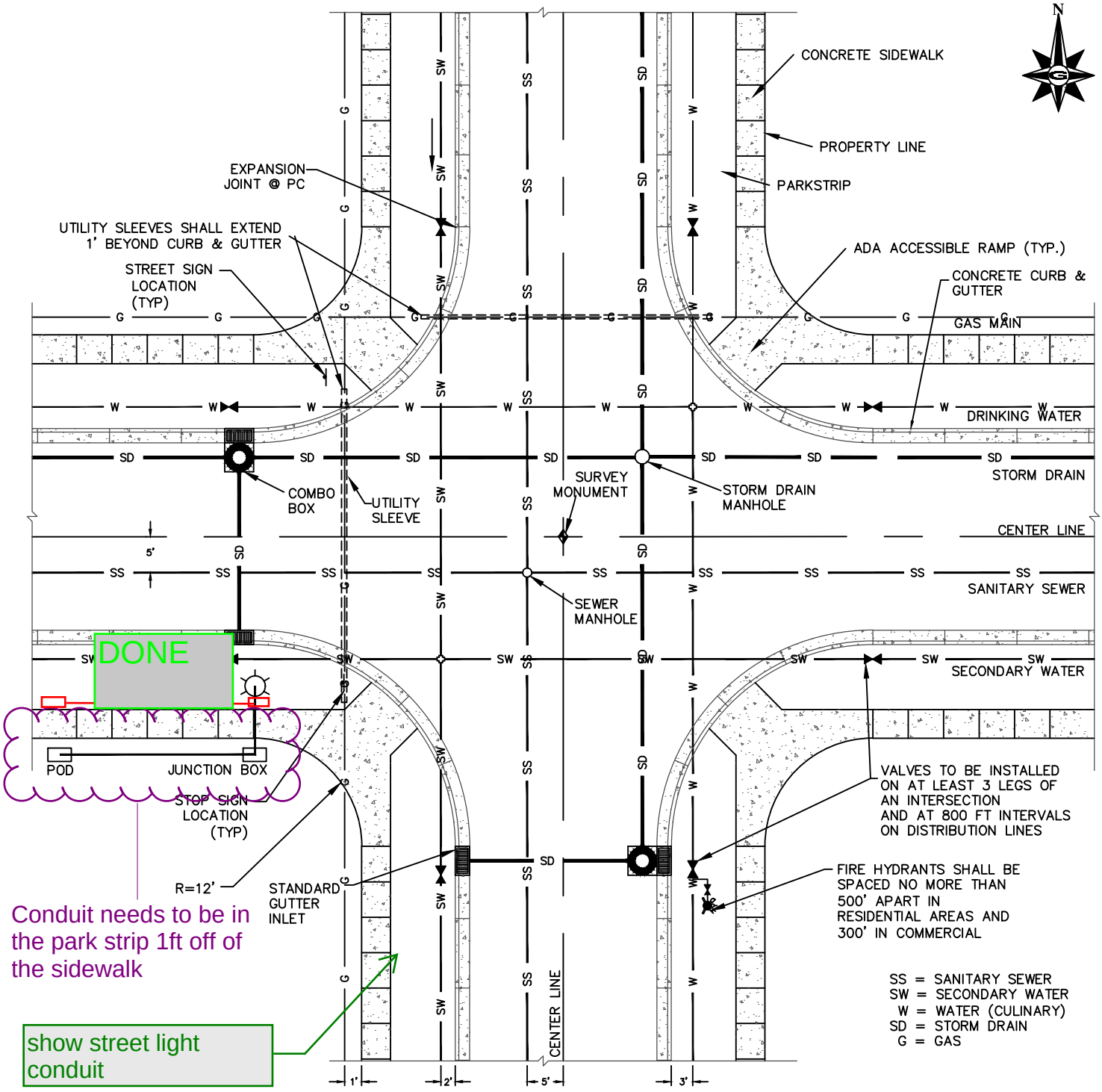
STANDARD DETAILS

STREET STANDARDS

ST-6



1. LAND DRAINS ARE UNACCEPTABLE UNLESS EXPLICITLY ALLOWED BY CITY ENGINEER. WHEN ALLOWED, PIPES SHALL NOT BE PERFORATED OR DESIGNED TO ACCEPT WATER WITHIN THE STREET RIGHT-OF-WAY.

2. CURB RADIUS ON LOCAL AND COLLECTOR RIGHT-OF-WAYS SHALL BE 25', ON MINOR ARTERIALS IT SHALL BE 35', AND ON MAJOR AND PRINCIPAL ARTERIALS SHALL BE 40' AS MEASURED FROM FACE OF CURB.

3. CHECK ALL CITY STANDARDS FOR UTILITY LOCATIONS.

4. STREET LIGHTS ARE TO BE CENTERED IN PARK STRIPS.

5. STREET LIGHTS ARE TO BE PLACED AT INTERSECTIONS AND EVERY 300 FEET, ALTERNATING SIDES OF STREET.

6. MANHOLES SHALL BE LOCATED A MINIMUM OF 7' FROM EDGE OF GUTTER WHEN ROAD CURVATURE REQUIRES DEVIATION FROM THE ABOVE STANDARD.

STANDARD INTERSECTION & UTILITIES

DATE: AUGUST 2017

DRAWING NAME: ST-7

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
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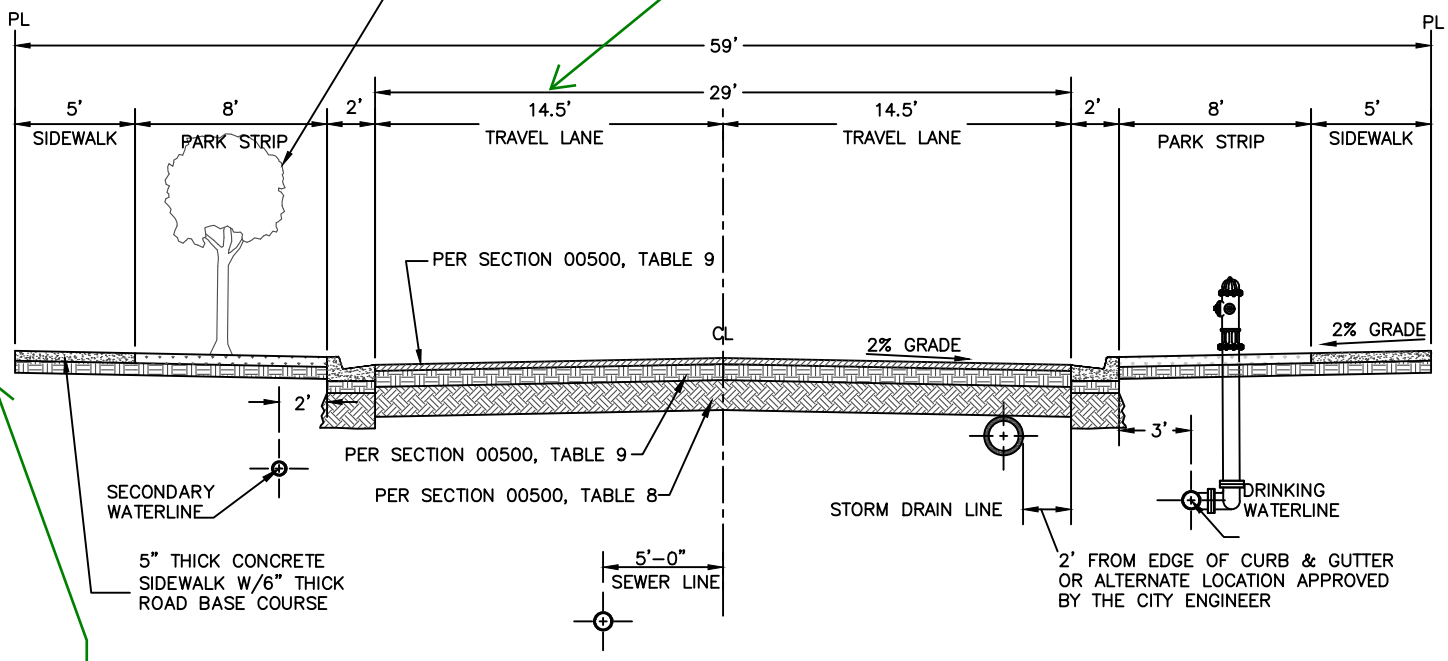
STANDARD DETAILS

STREET STANDARDS

ST-7

TREES SHALL MEET SPECIFICATIONS FOUND IN SECTION 02726. TREES ARE TO BE PLACED EVERY 50' ON BOTH SIDES OF THE ROAD. STAGGER LOCATIONS FROM ONE SIDE OF THE ROAD TO THE OTHER. GRADE "A" MINIMUM IN ALL APPLICATIONS.

Update to a 62' ROW by increasing each of the travel lines 1.5ft to 16ft



Add the 1-D fiber conduit bank per ST-40 on both sides in the PUE

Updated note 5 to:

5. THIS ROW CROSS SECTION SHALL BE PERMITTED FOR PRIVATE ROAD CROSS SECTIONS IN THE FOLLOWING ZONES: R1-20, R1-10 AND R1-8.

NOTES:

1. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURB ON OPPOSITE SIDES OF STREET SHALL NOT EXCEED 1'-0"

2. PROVIDE A MINIMUM 6" THICKNESS OF 3/4" OR 1" CRUSHED GRAVEL BASE COURSE UNDER SIDEWALKS, DRIVEWAY APPROACHES, AND CURB & GUTTER.

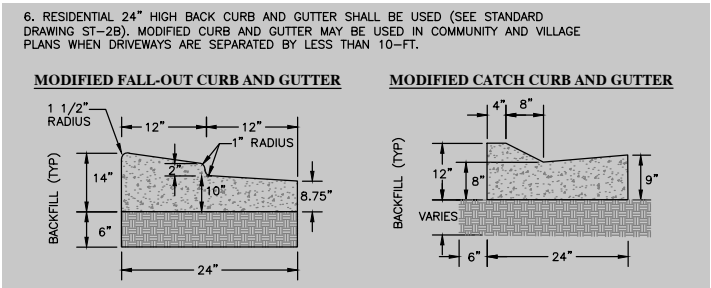
3. INSTALL TYPE 2 SLURRY SEAL.

4. HOUSES MAY FRONT ON THESE STREETS.

5. THIS ROW CROSS SECTION SHALL BE PERMITTED FOR PRIVATE ROAD CROSS SECTIONS IN THE FOLLOWING ZONES: R-2, R-3 AND R-4.

Add the modified curb details and note shown below

6. RESIDENTIAL 24" HIGH BACK CURB AND GUTTER SHALL BE USED (SEE STANDARD DRAWING ST-2B). MODIFIED CURB AND GUTTER MAY BE USED IN COMMUNITY AND VILLAGE PLANS WHEN DRIVEWAYS ARE SEPARATED BY LESS THAN 10-FT.



LOCAL ROADWAY
59' RIGHT-OF-WAY

DATE: AUGUST 2017
DRAWING NAME: ST-8
DRAWN BY: ETL
CHECKED:
APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS, ADDED REFERENCES TO SPECIFICATIONS, DELETED UNNECESSARY NOTES.

SARATOGA SPRINGS CITY

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PHONE: 801-766-9793
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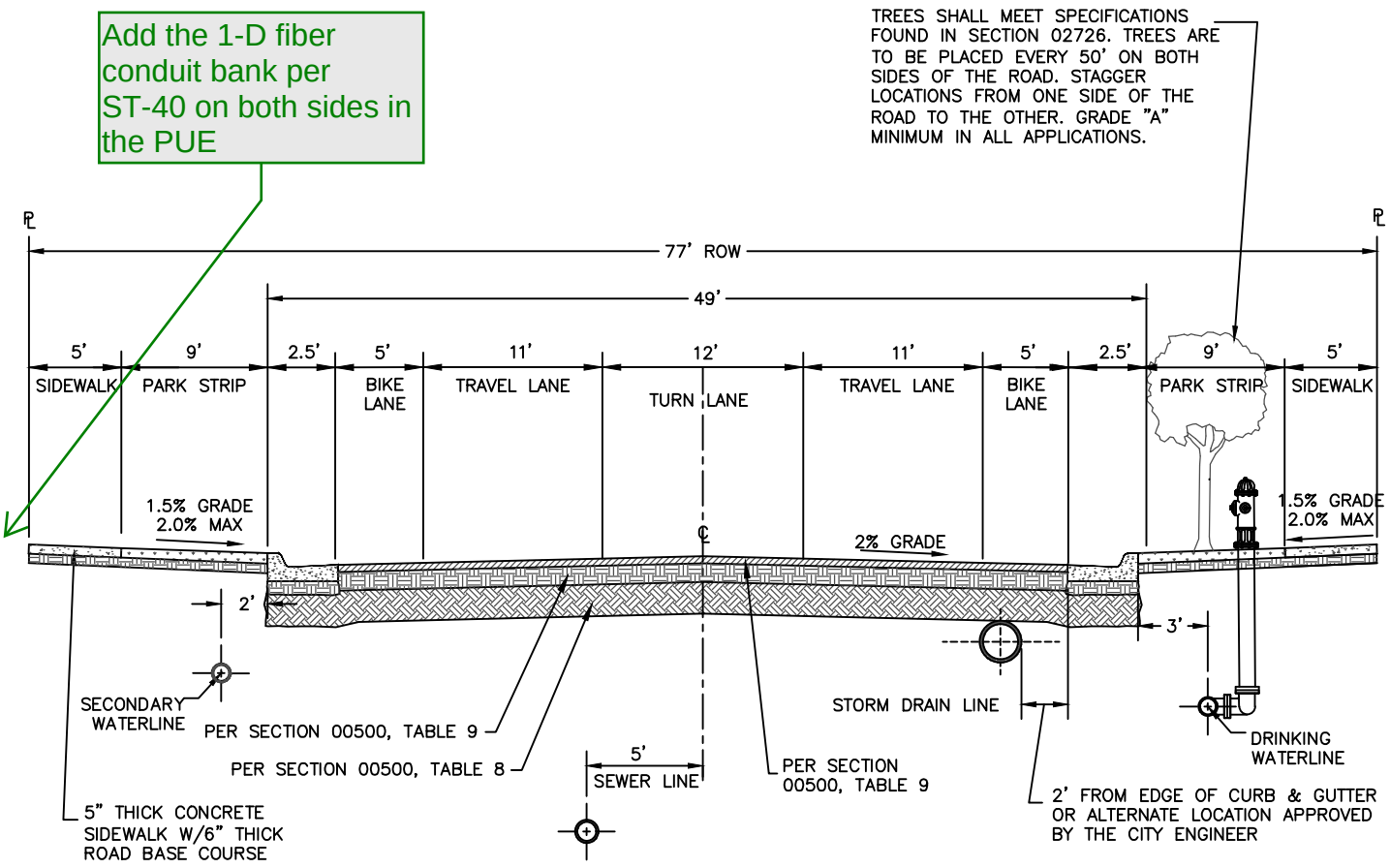
STANDARD DETAILS
STREET STANDARDS
ST-8

Add the 1-D fiber conduit bank per ST-40 on both sides in the PUE



NOTES:

1. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURB ON OPPOSITE SIDES OF STREET SHALL NOT EXCEED 1'–0"
2. PROVIDE A MINIMUM 6" THICKNESS OF 3/4" OR 1" CRUSHED GRAVEL BASE COURSE UNDER SIDEWALKS, DRIVEWAY APPROACHES, AND CURB & GUTTER.
3. INSTALL TYPE 2 SLURRY SEAL.
4. HOUSES ARE DISCOURAGED FROM FRONTING ON THESE STREETS.

COLLECTOR
77' RIGHT OF WAY

DATE: AUGUST 2017

DRAWING NAME: ST-9

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED REFERENCES TO SPECIFICATIONS, DELETED UNNECESSARY NOTES.

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
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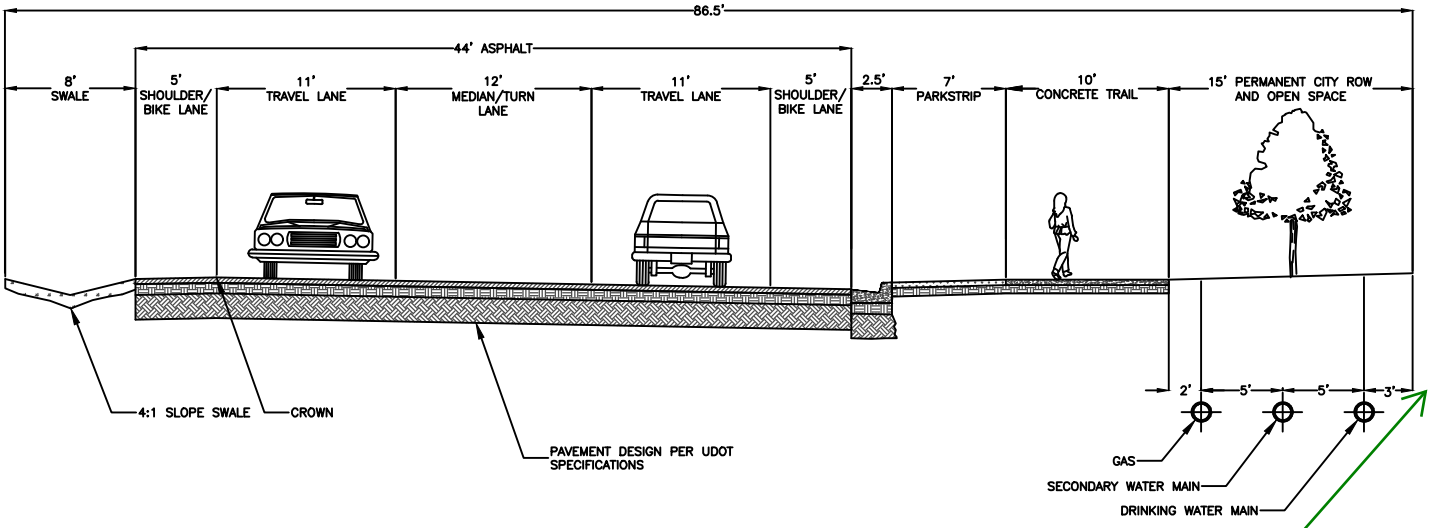
STANDARD DETAILS

STREET STANDARDS

ST-9A



Add the 1-D fiber conduit bank per ST-40 on this side in the PUE

FOOTHILL INTERIM COLLECTOR ROADWAY

DATE: JUNE 2019

DRAWING NAME: ST-9*

DRAWN BY: JRP

CHECKED: | APPROVED:

REVISIONS			
REVISION	DATE	BY	COMMENTS

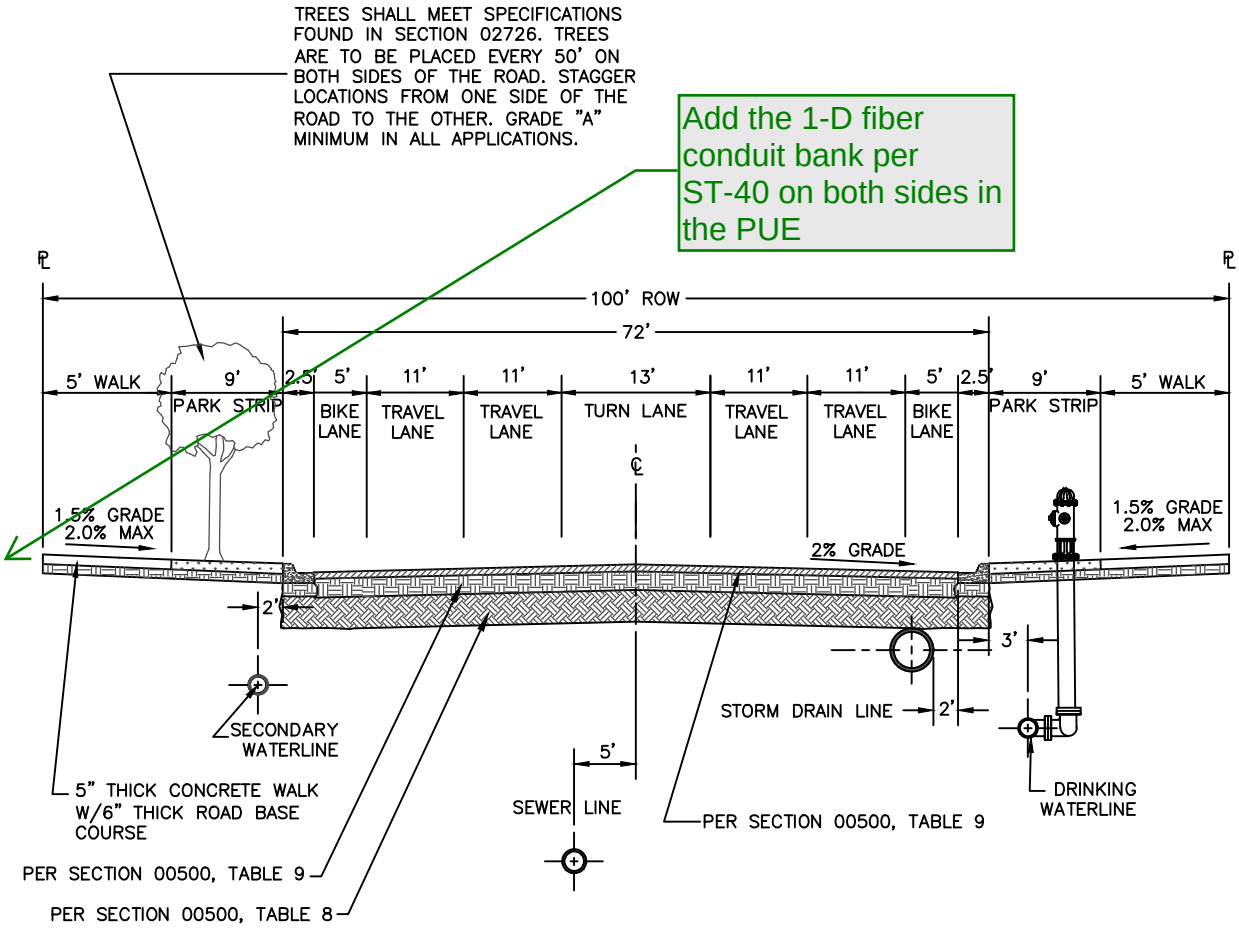
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

STREET STANDARDS

ST-9B



NOTES:

1. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURB ON OPPOSITE SIDES OF STREET SHALL NOT EXCEED 1'–0"
2. PROVIDE A MINIMUM 6" THICKNESS OF 3/4" OR 1" CRUSHED GRAVEL BASE COURSE UNDER SIDEWALKS, DRIVEWAY APPROACHES, AND CURB & GUTTER.
3. INSTALL TYPE 2 SLURRY SEAL.
4. COMMERCIAL OR INDUSTRIAL DRIVEWAYS CAN ENTER THIS ROADWAY, BUT ARE TO BE MINIMIZED.
5. HOUSES ARE NOT PERMITTED TO FRONT ON THESE STREETS.
6. PAVEMENT SECTION SHALL BE ADEQUATE FOR CONSTRUCTION TRAFFIC OR AN ALTERNATE ROUTE SHALL BE PROVIDED.
7. MEDIAN SHALL HAVE PLOWABLE END SECTIONS

MINOR ARTERIAL
100' RIGHT-OF-WAY

DATE: AUGUST 2017

DRAWING NAME: ST-10

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

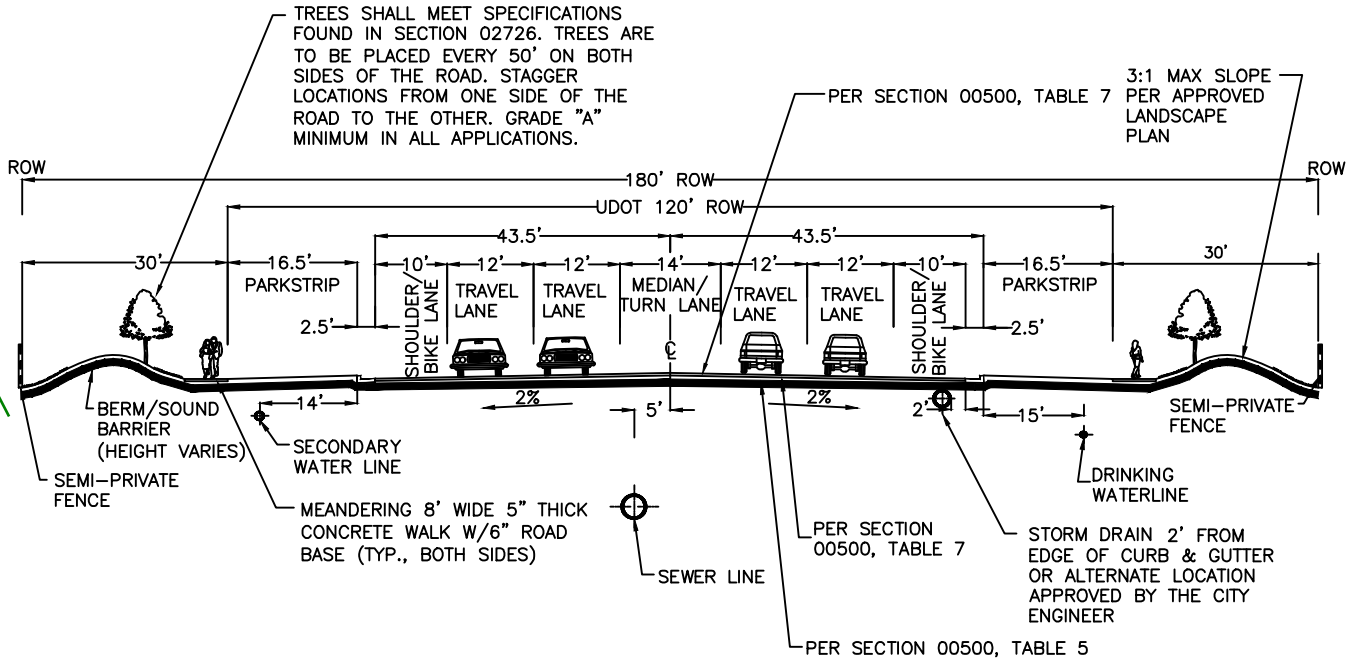
REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS, ADDED REFERENCES TO SPECIFICATIONS, DELETED UNNECESSARY NOTES

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

STREET STANDARDS

ST-10



Add the 1-D fiber conduit bank per ST-40 on both sides in the PUE

NOTES:

1. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURB ON OPPOSITE SIDES OF STREET SHALL NOT EXCEED 1'–0"

2. PROVIDE A MINIMUM 6" THICKNESS OF 3/4" OR 1" CRUSHED GRAVEL BASE COURSE UNDER SIDEWALKS, DRIVEWAY APPROACHES, AND CURB & GUTTER.

3. INSTALL TYPE 2 SLURRY SEAL.

4. HOUSES ARE NOT PERMITTED TO FRONT ON THESE STREETS.

5. ALL COMMERCIAL OR INDUSTRIAL ACCESSES ARE TO BE MINIMIZED.

MAJOR ARTERIAL ROADWAY 180' RIGHT-OF-WAY

DATE:	AUGUST 2017
DRAWING NAME:	ST-11
DRAWN BY:	ETL
CHECKED:	APPROVED:

REVISIONS

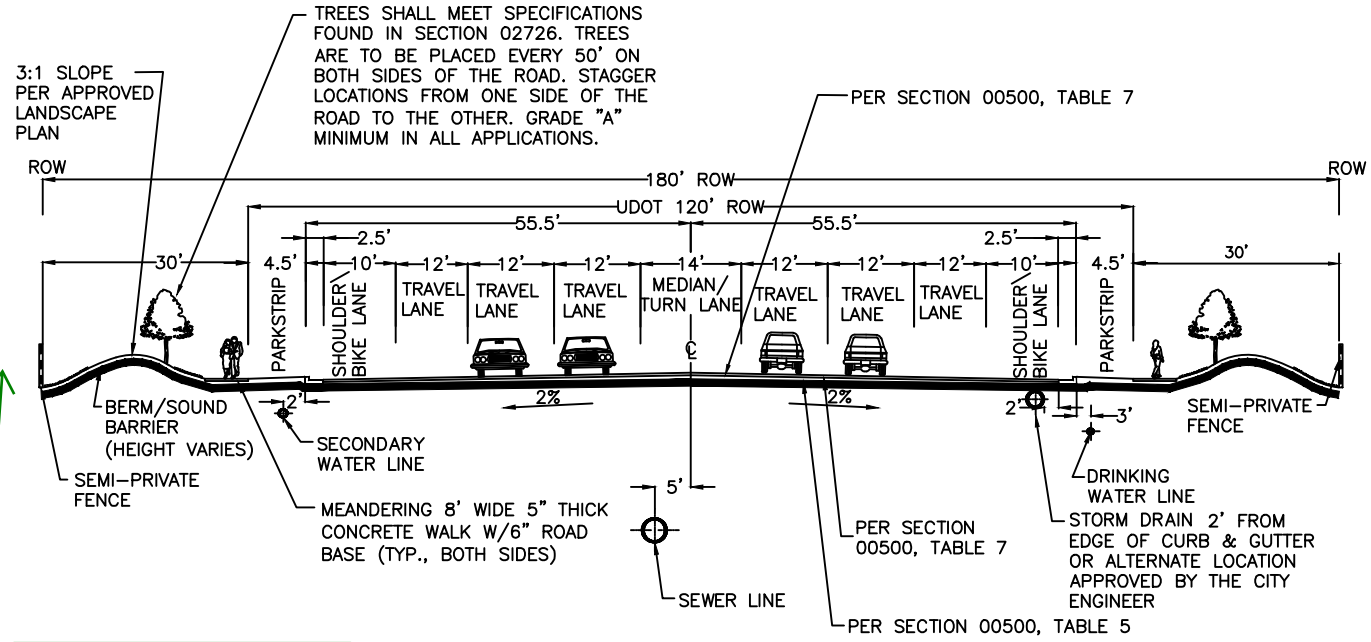
REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS, ADDED REFERENCES TO SPECIFICATIONS, DELETED UNNECESSARY NOTES.

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

STREET STANDARDS

ST-11



Add the 1-D fiber conduit bank per ST-40 on both sides in the PUE

NOTES:

1. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURB ON OPPOSITE SIDES OF STREET SHALL NOT EXCEED 1'-0"
2. PROVIDE A MINIMUM 6" THICKNESS OF 3/4" OR 1" CRUSHED GRAVEL BASE COURSE UNDER SIDEWALKS, DRIVEWAY APPROACHES, AND CURB & GUTTER.
3. INSTALL TYPE 2 SLURRY SEAL.
4. HOUSES ARE NOT PERMITTED TO FRONT ON THESE STREETS.
5. ALL COMMERCIAL OR INDUSTRIAL DRIVEWAY ARE TO BE MINIMIZED.

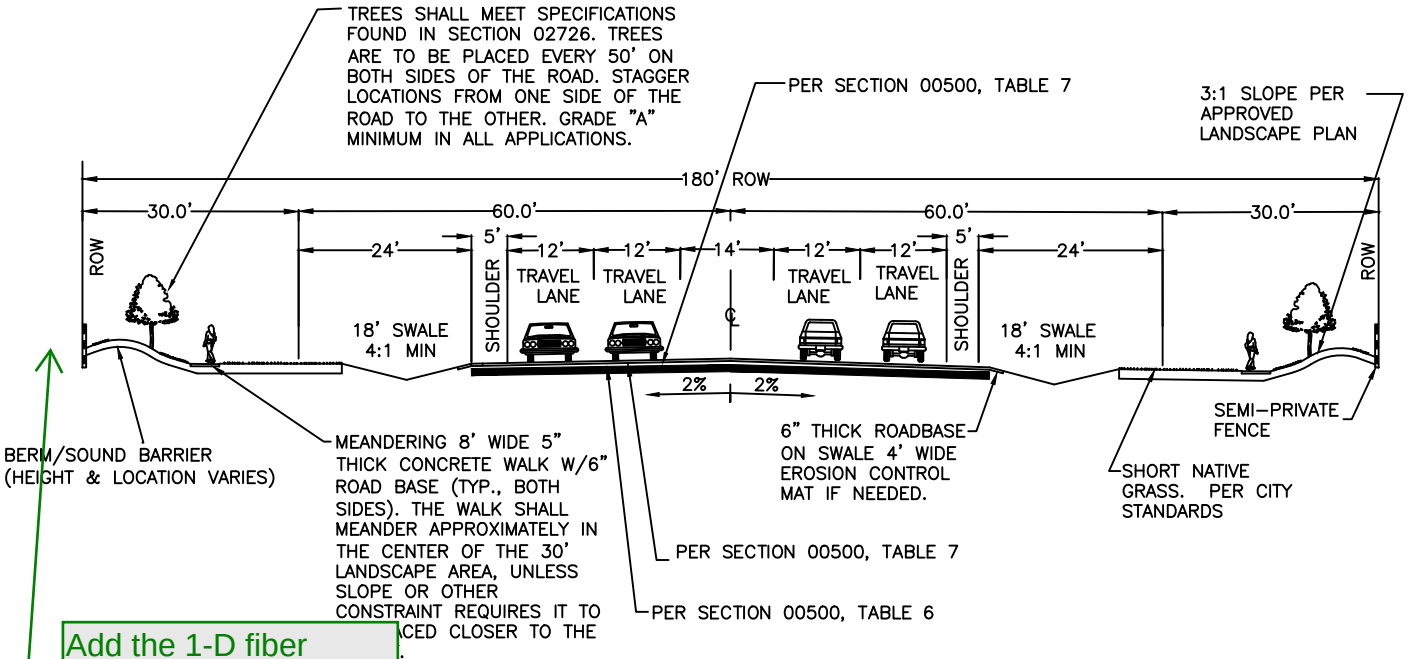
PRINCIPAL ARTERIAL ROADWAY 180' RIGHT-OF-WAY

DATE: AUGUST 2017
DRAWING NAME: ST-12
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS, ADDED REFERENCES TO SPECIFICATIONS. DELETED UNNECESSARY NOTES.

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
STREET STANDARDS
ST-12



Add the 1-D fiber conduit bank per ST-40 on both sides in the PUE

NOTES:

1. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURB ON OPPOSITE SIDES OF STREET SHALL NOT EXCEED 1'-0"

2. PROVIDE A MINIMUM 6" THICKNESS OF 3/4" OR 1" CRUSHED GRAVEL BASE COURSE UNDER SIDEWALKS, DRIVEWAY APPROACHES, AND CURB & GUTTER.

3. INSTALL TYPE 2 SLURRY SEAL.

4. HOUSES ARE NOT PERMITTED TO FRONT ON THESE STREETS.

5. ALL COMMERCIAL OR INDUSTRIAL DRIVEWAY ARE TO BE MINIMIZED.

INTERIM 180' RIGHT-OF-WAY ARTERIAL STANDARD

DATE: APRIL 2018

DRAWING NAME: ST-13

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS, ADDED REFERENCES TO SPECIFICATIONS, ADDED/EDITED NOTES, ADJUSTED BERM AND TREE LOCATION.

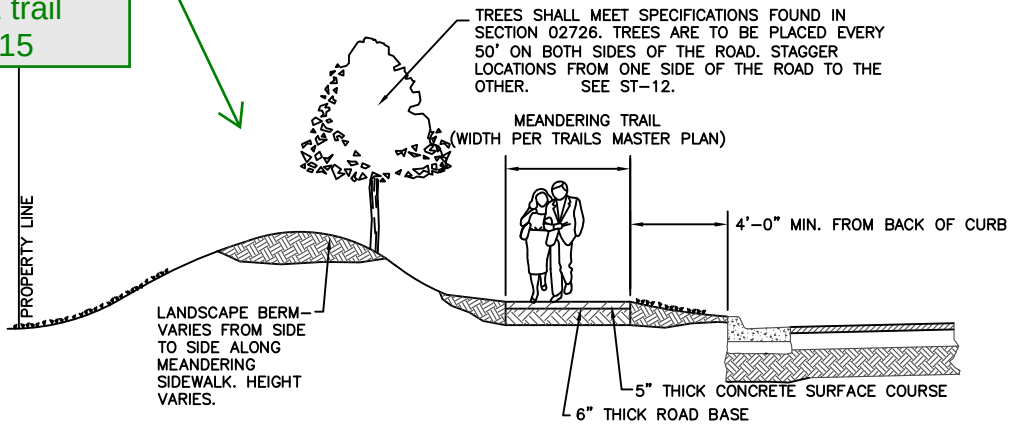
SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

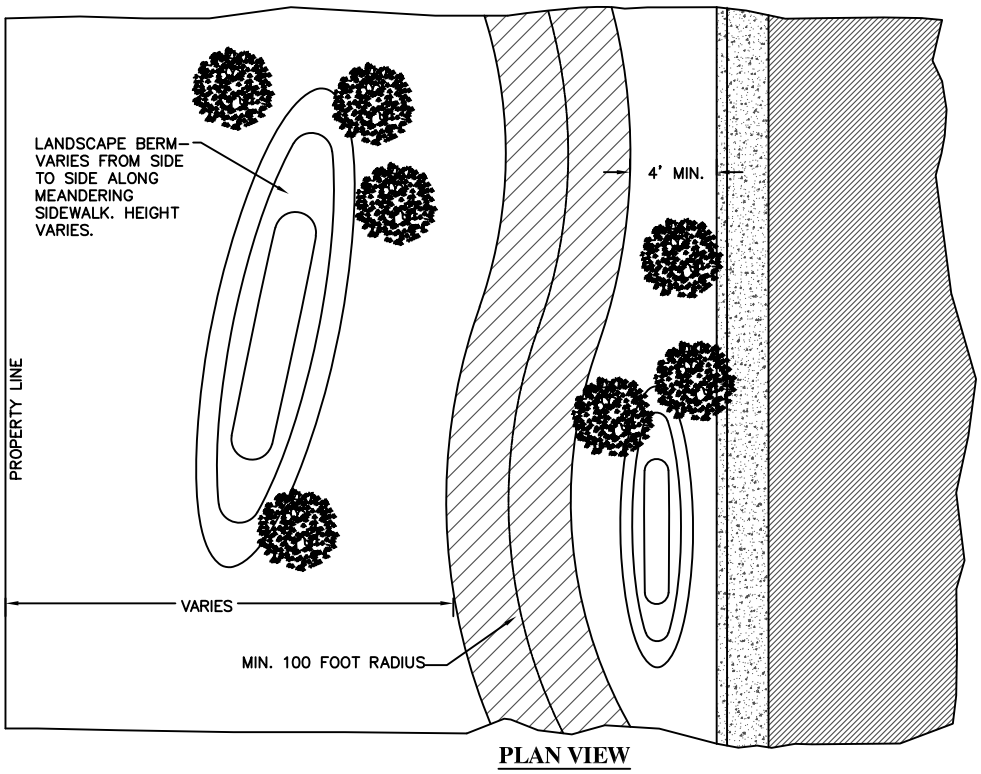
STREET STANDARDS

ST-13

Combine the 3 trail details (ST-15, ST-15A, and ST-34) into 1 trail detail named ST-15



SECTION VIEW



PLAN VIEW

NOTES:

1. MEANDERING SIDEWALKS/TRAILS SHALL BE REQUIRED ON ARTERIAL STREETS.

2. CONSTRUCTION JOINTS @ 8' INTERVALS EXPANSION JOINTS @ 40' INTERVALS.

3. CENTER LINE RADIUS OF MEANDERING SIDEWALKS/TRAILS SHALL BE APPROVED BY CITY ENGINEER.

4. SLOPES:
- MAXIMUM SLOPE = 15% (FOR MAXIMUM LENGTH OF 50 FT)
- THE MINIMUM DISTANCE BETWEEN SLOPES EXCEEDING 10% IS 100 FT
- RUNNING GRADE ≤ 50% OF SIDESLOPE GRADE

TRAIL STANDARDS

DATE: AUGUST 2017
DRAWING NAME: ST-15A
DRAWN BY: ETL
CHECKED: APPROVED:

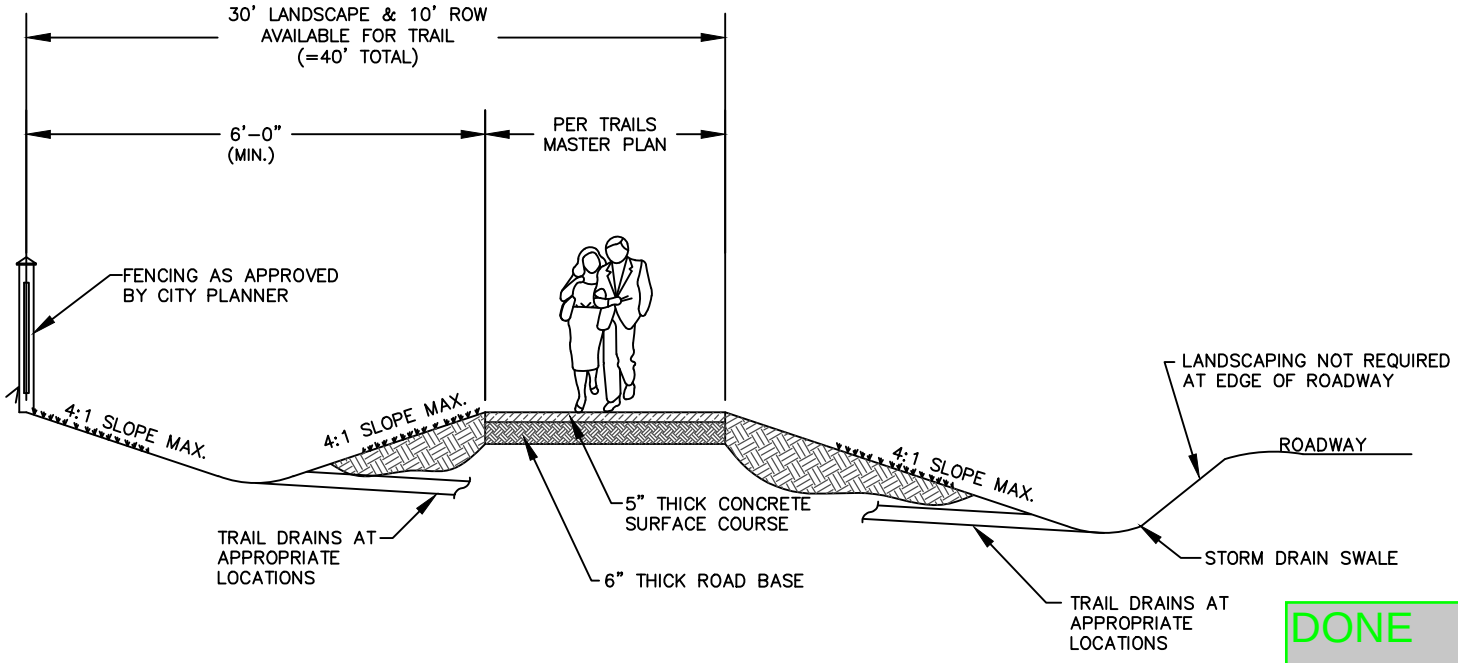
REVISIONS

REV	DATE	BY	COMMENTS
1	2-1-15	JW	UPDATED TRAIL WIDTHS
1	4-12-18	KS	ADDED NOTE #4

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
STREET STANDARDS
ST-15A

Combine the 3 trail details (ST-15, ST-15A, and ST-34) into 1 trail detail named ST-15



DONE

NOTES:

1. CONSTRUCTION JOINTS @ 8' INTERVALS EXPANSION JOINTS @ 40' INTERVALS
2. TRAIL TO BE CONSTRUCTED WITH A 1.5% CROSS SLOPE AND ~~2% MAX.~~ (+/- 0.5 %)

TRAIL STANDARDS FOR INTERIM ROADS

DATE: AUGUST 2017
DRAWING NAME: ST-15B
DRAWN BY: ETL
CHECKED: APPROVED:

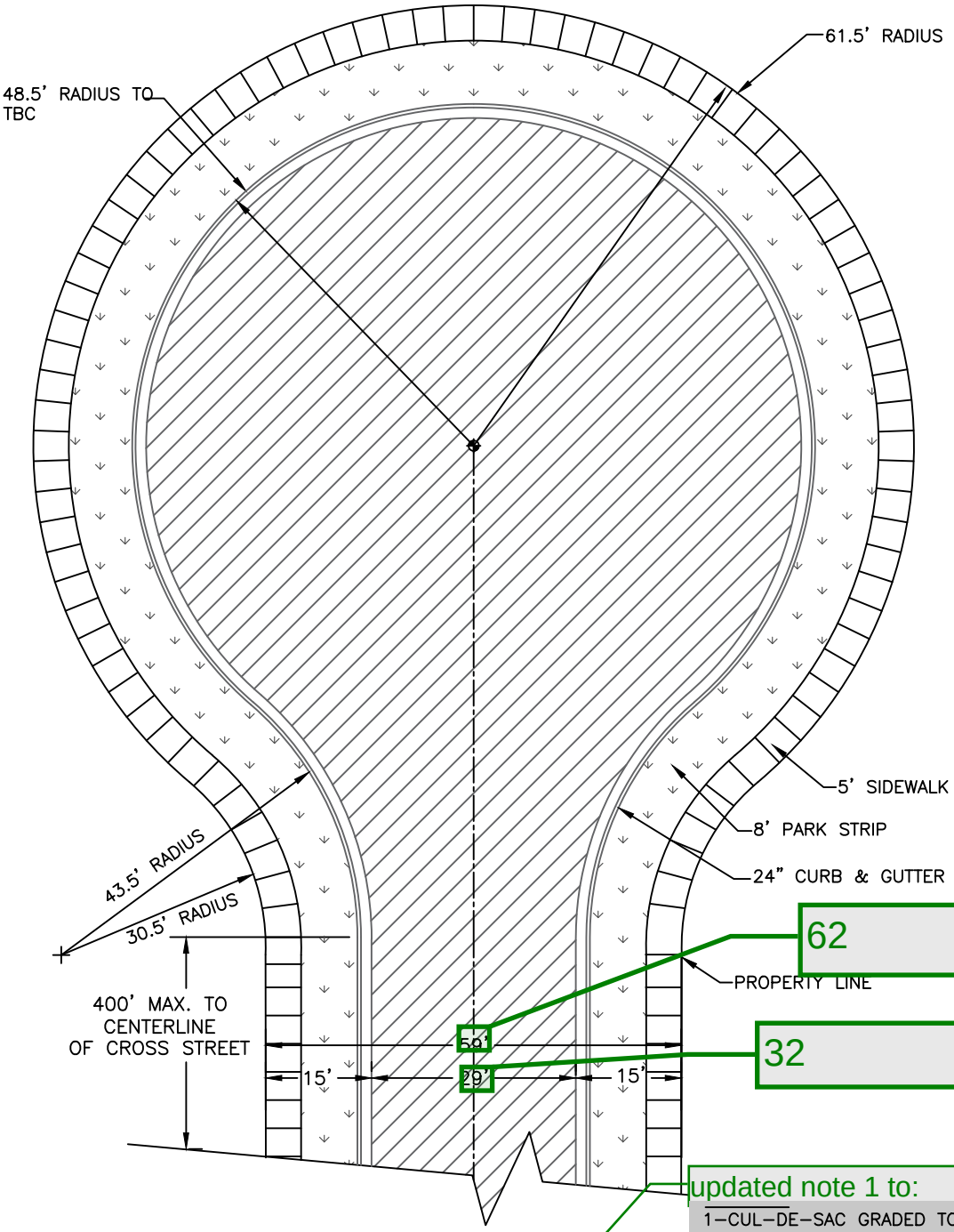
REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
STREET STANDARDS
ST-15B



updated note 1 to:

1–CUL–DE–SAC GRADED TO DRAIN AWAY FROM THE BULB WITH MAXIMUM 4% IN ANY DIRECTION

NOTE:

1–MAXIMUM 4.0% SLOPE IN CUL–DE–SAC IN ANY DIRECTION

2– CUL–DE–SAC DESIGN SHALL COMPLY WITH FIGURE D103.1 OF THE INTERNATIONAL FIRE CODE (MOST RECENT EDITION)

STANDARD CUL-DE-SAC

DATE: AUGUST 2017

DRAWING NAME: ST-16

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS
1	01-29-19	JRP	EDITED DIMENSIONS

SARATOGA SPRINGS CITY

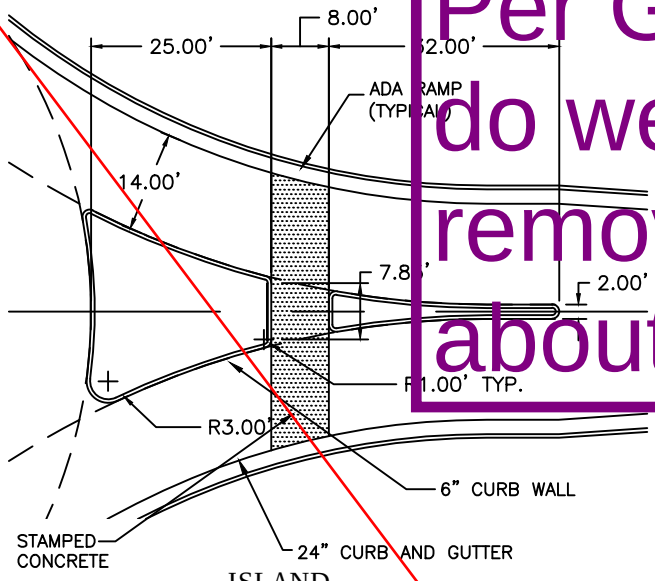
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

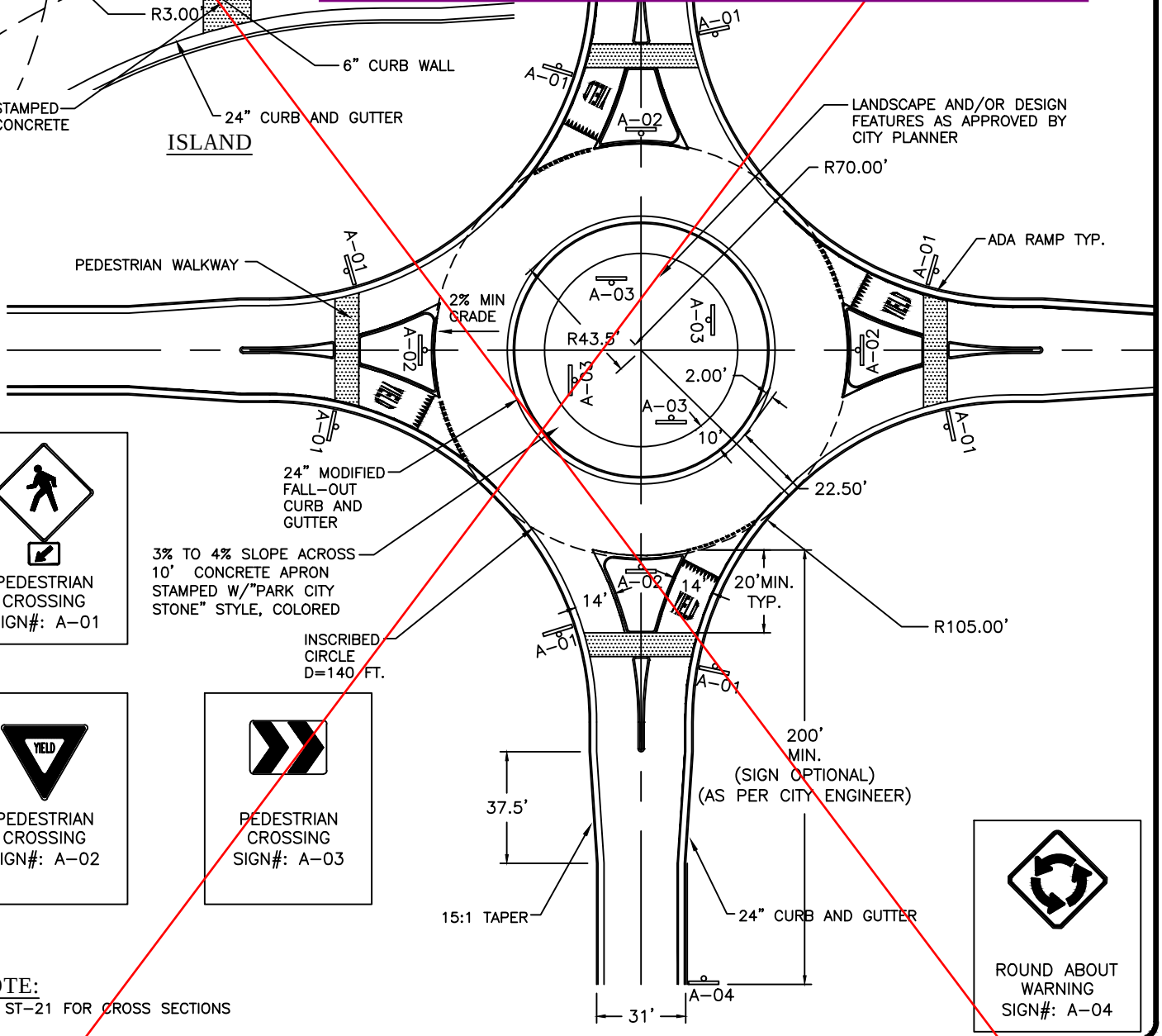
STREET STANDARDS

ST-16

Per Gordon last year do we want to remove all round about details ?



ISLAND



PEDESTRIAN CROSSING SIGN#: A-01

PEDESTRIAN CROSSING SIGN#: A-02

PEDESTRIAN CROSSING SIGN#: A-03

ROUND ABOUT WARNING SIGN#: A-04

NOTE:
SEE ST-21 FOR CROSS SECTIONS

ROUND-ABOUT
LOCAL
59' RIGHT-OF-WAY

DATE: AUGUST 2017
DRAWING NAME: ST-17
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS, NOTES, AND CALLOUTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
STREET STANDARDS
ST-17

Ⓐ "KEEP RIGHT" SIGN R4-7A 18"x24" INSTALL 3' ABOVE GRADE.

Ⓑ DIRECTIONAL STREET SIGN, INSTALL 4' ABOVE GRADE

Ⓒ "ONE WAY" SIGN R6-1 36"x12" AND R6-4A 48"x24"

Ⓓ "BIKE LANE" SIGN R3-17 24"x30"

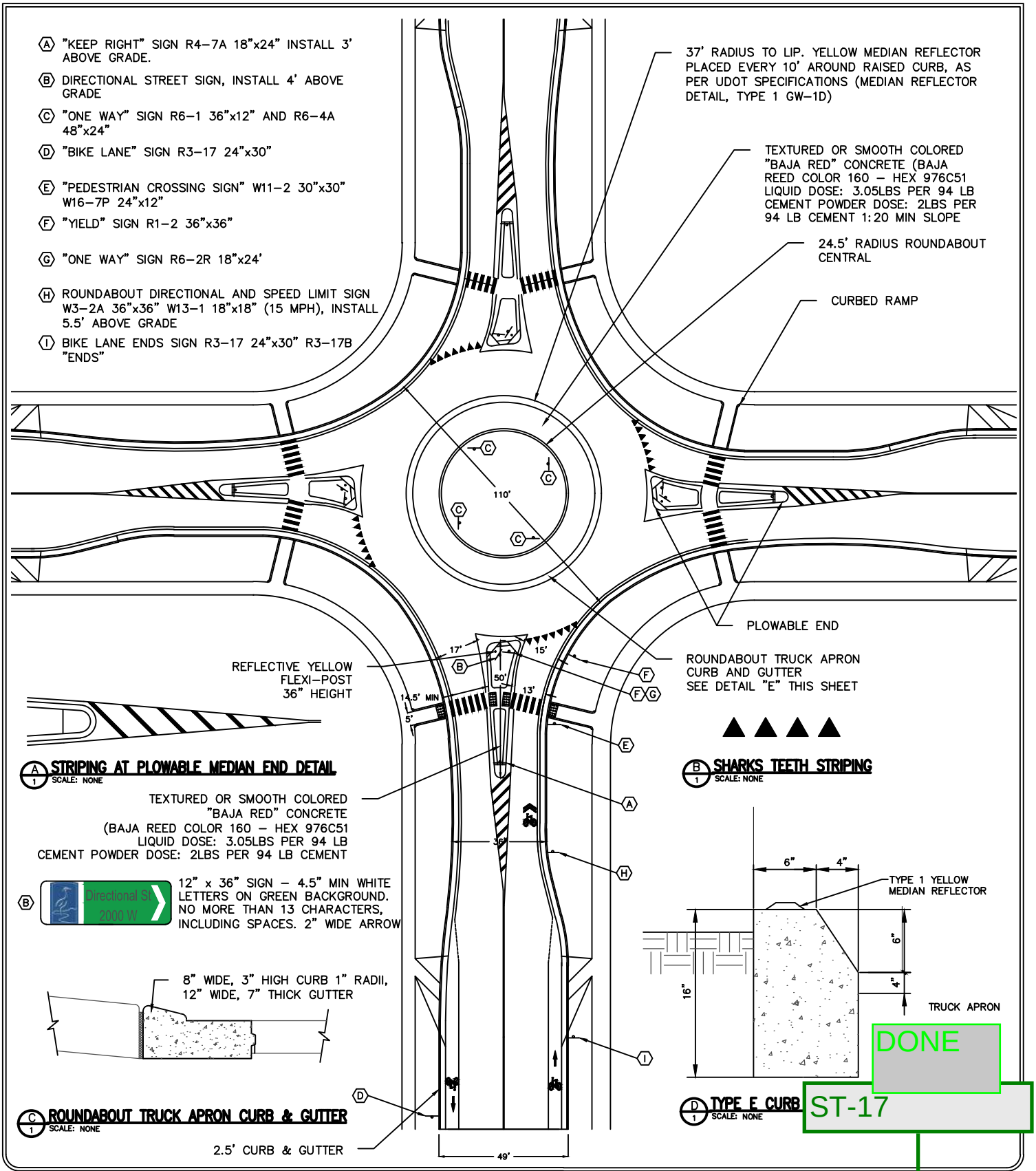
Ⓔ "PEDESTRIAN CROSSING SIGN" W11-2 30"x30" W16-7P 24"x12"

Ⓕ "YIELD" SIGN R1-2 36"x36"

Ⓖ "ONE WAY" SIGN R6-2R 18"x24'

Ⓗ ROUNDABOUT DIRECTIONAL AND SPEED LIMIT SIGN W3-2A 36"x36" W13-1 18"x18" (15 MPH), INSTALL 5.5' ABOVE GRADE

Ⓘ BIKE LANE ENDS SIGN R3-17 24"x30" R3-17B "ENDS"



A 1 **STRIPING AT PLOWABLE MEDIAN END DETAIL**
SCALE: NONE

TEXTURED OR SMOOTH COLORED "BAJA RED" CONCRETE (BAJA REED COLOR 160 – HEX 976C51 LIQUID DOSE: 3.05LBS PER 94 LB CEMENT POWDER DOSE: 2LBS PER 94 LB CEMENT

Ⓑ 12" x 36" SIGN – 4.5" MIN WHITE LETTERS ON GREEN BACKGROUND. NO MORE THAN 13 CHARACTERS, INCLUDING SPACES. 2" WIDE ARROW

8" WIDE, 3" HIGH CURB 1" RADII, 12" WIDE, 7" THICK GUTTER

C 1 **ROUNDABOUT TRUCK APRON CURB & GUTTER**
SCALE: NONE

2.5' CURB & GUTTER

B 1 **SHARKS TEETH STRIPING**
SCALE: NONE

D 1 **TYPE E CURB**
SCALE: NONE

DONE

ST-17

ROUND-ABOUT COLLECTOR 77' RIGHT-OF-WAY

DATE:	AUGUST 2017
DRAWING NAME:	ST-18
DRAWN BY:	ETL
CHECKED:	
APPROVED:	

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED NOTES AND CALLOUTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

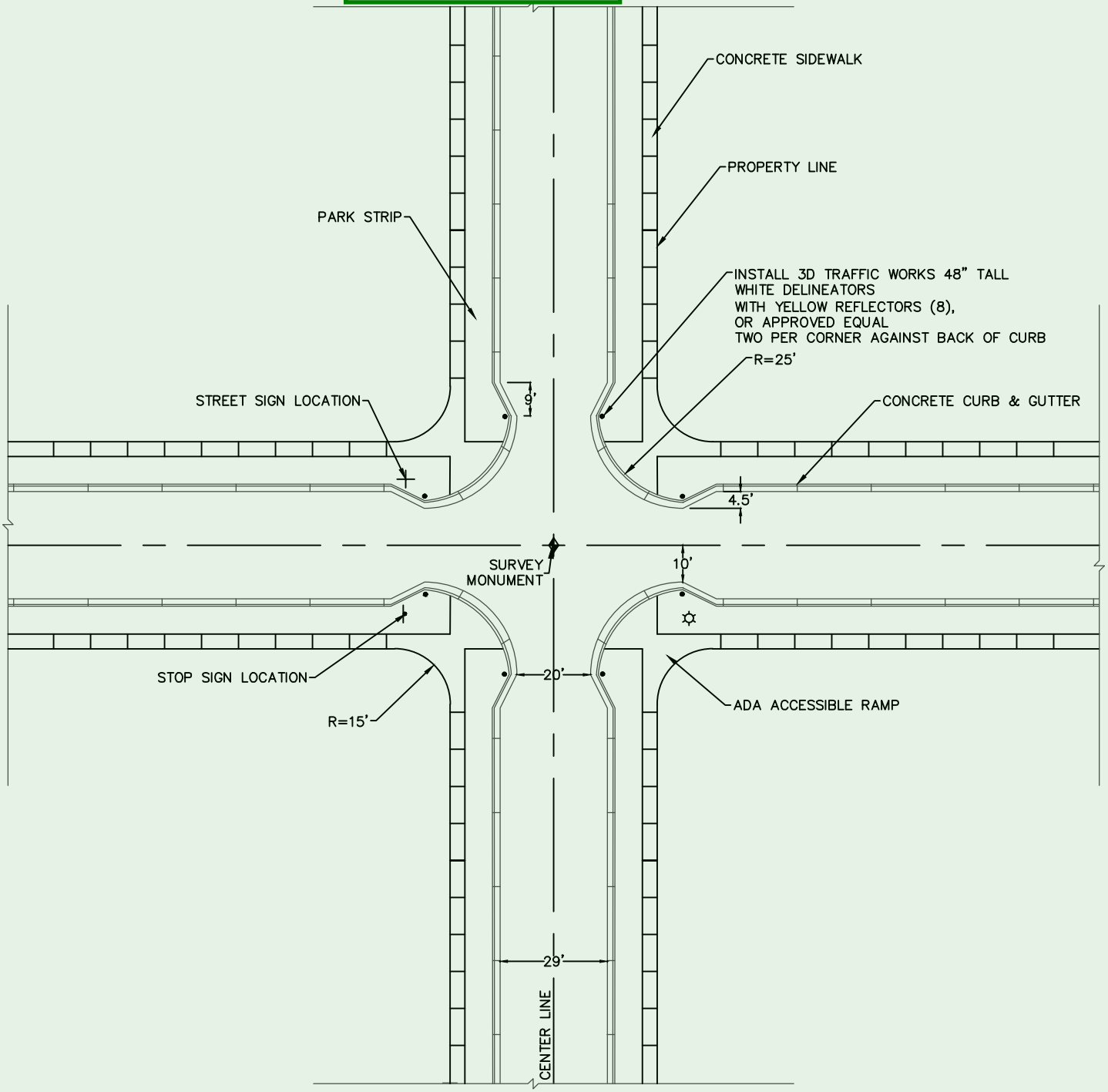
STANDARD DETAILS

STREET STANDARDS

ST-18

DONE

delete, per JL comments on 8/29/2023



LOCAL STREET TRAFFIC CALMING INTERSECTION

DATE: AUGUST 2017

DRAWING NAME: ST-23

DRAWN BY: RFM

CHECKED: | APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

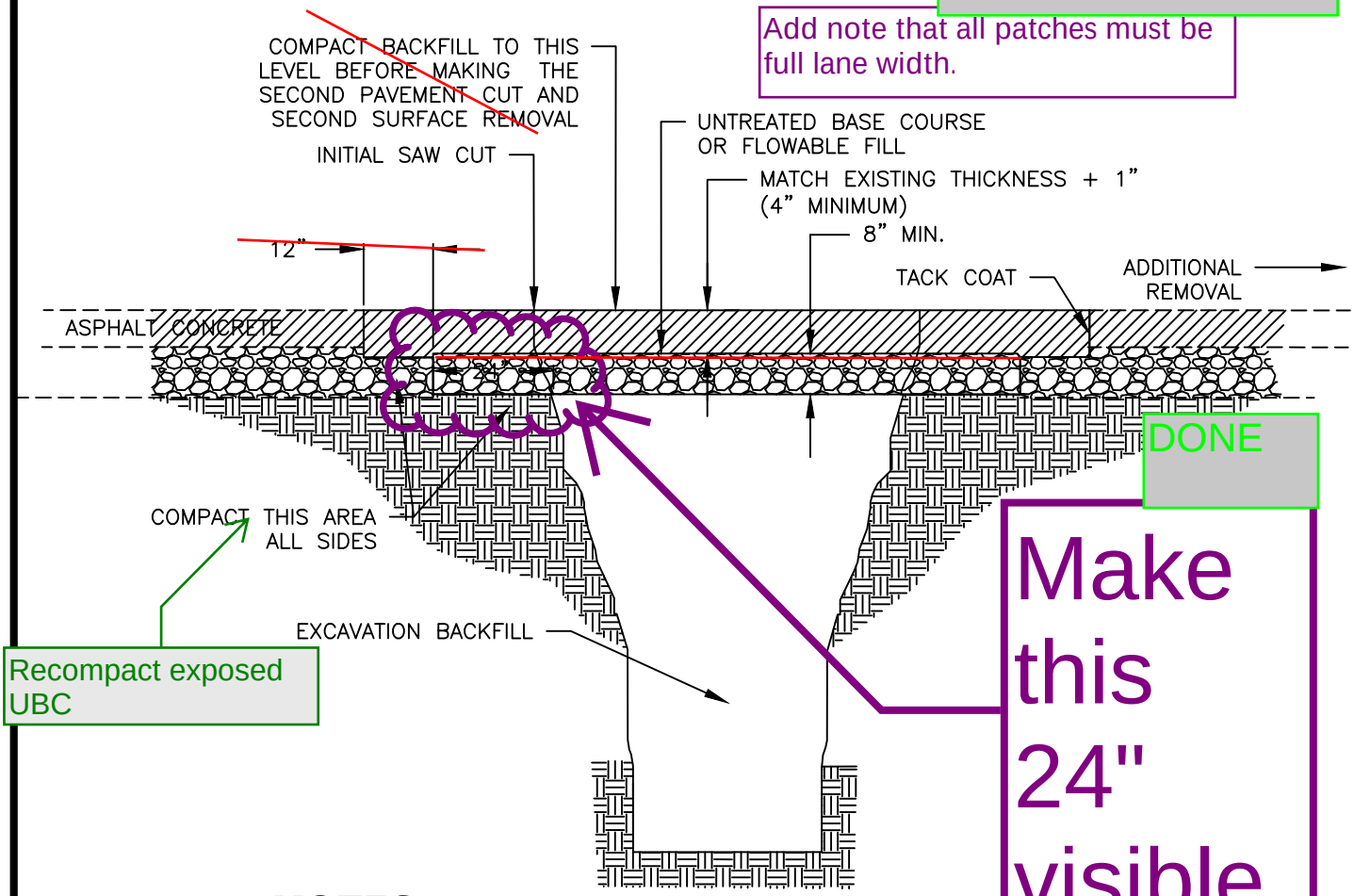
STANDARD DETAILS

STREET STANDARDS

ST-23

STET, this conflicts with note 1.

Add note that all patches must be full lane width.



DONE

Make this 24" visible

Recompact exposed UBC

NOTES

1. ADDITIONAL PAVEMENT REMOVAL: REMOVE ADDITIONAL PAVEMENT TO A PAINTED LANE STRIPE, A LIP OF GUTTER, A CURB, AN EXISTING PAVEMENT PATCH OR AN EDGE OF THE PAVEMENT IF SUCH STREET FEATURE IS WITHIN 2 FEET OF THE SECOND SAW–CUT.

2. FLOWABLE FILL: PROVIDE 28 DAYS 60 PSI CONTROLLED LOW STRENGTH MATERIAL AS SPECIFIED IN APWA SECTION 31 05 15. USE FILL MATERIAL WHICH FLOWS EASILY AND VIBRATION IS NOT REQUIRED. CURE TO INITIAL SET BEFORE PLACING AGGREGATE BASE OR ASPHALT PAVEMENT. USE FLOWABLE FILL IN EXCAVATIONS THAT ARE TOO NARROW TO RECEIVE COMPACTION EQUIPMENT.

3. JOINT REPAIR: IF A CRACK OCCURS AT THE "T" PATCH [illegible] CONNECTION TO EXISTING PAVEMENT OR AT ANY STREET FIXTURE, SEAL THE CRACK.

4. PATCH REPAIR: REPAIR THE ASPHALT PAVEMENT PATCH IF ANY OF THE FOLLOWING CONDITIONS OCCUR WITHIN THE PATCH

A. PAVEMENT SURFACE DISTORTION EXCEEDS ¼" DEVIATION IN 10 FEET. REPAIR
OPTION: PLANE OFF SURFACE DISTORTIONS. COAT PLANED SURFACES WITH CATIONIC OR ANIONIC EMULSION AND PROVIDE SAND BLOTTER.
B. CRACK AT LEAST 1–FOOT LON AND ¼ INCH WIDE OCCUR MORE OFTEN THAN 1 IN 10 SQUARE FEET.
C. REPAIR OPTION: CRACK SEAL.
D. ASPHALT RAVELING IS GREATER THAN 1 SQUARE FOOT PER 100 SQUARE FEET. REPAIR OPTION: MILL AND INLAY

DONE

Clean up spacing TYP

STANDARD TEE PATCH

DATE: AUGUST 2017
DRAWING NAME: ST-26
DRAWN BY: ETL
CHECKED: APPROVED:

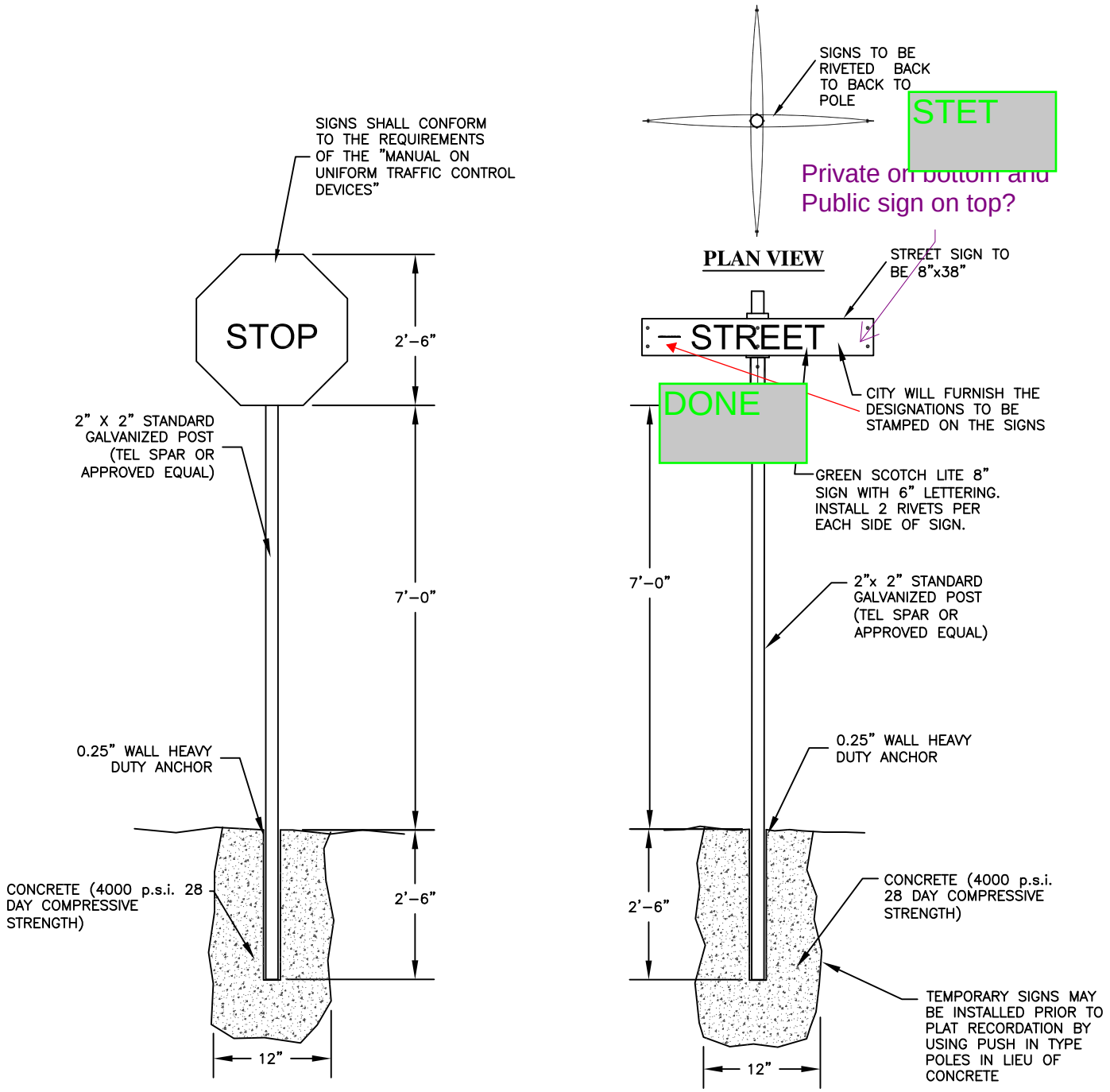
REVISIONS

REV	DATE	BY	COMMENTS
1	9/21/15	JW	FIX MULTI-LEADER TO UBC

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
STREET STANDARDS
ST-26



NOTES:

1. SECURE CITY'S APPROVAL OF SIGN FORMAT AND INSTALLATION.

2. INSTALL THE EDGE OF THE SIGN TWO FEET FROM THE VERTICAL EXTENSION OF THE BACK OF CURB AS NEAR AS POSSIBLE TO THE APPROACH CURB POINT OF CURVATURE. SIGNS SHOULD NOT OVERHANG SIDEWALK OR CURB & GUTTER.

3. ALL STREET SIGNS (STOP, SPEED, ETC.) SHALL BE 7' MINIMUM FROM GROUND TO BOTTOM OF SIGN.

4. ALL STREET SIGNS TO BE COATED WITH 3M-HIGH INTENSITY SHEETING, OR ACCEPTABLE EQUAL.

5. PRIVATE STREET SIGNS TO HAVE BLUE BACKGROUND.

STREET AND REGULATORY SIGNS

DATE: AUGUST 2017

DRAWING NAME: ST-28

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

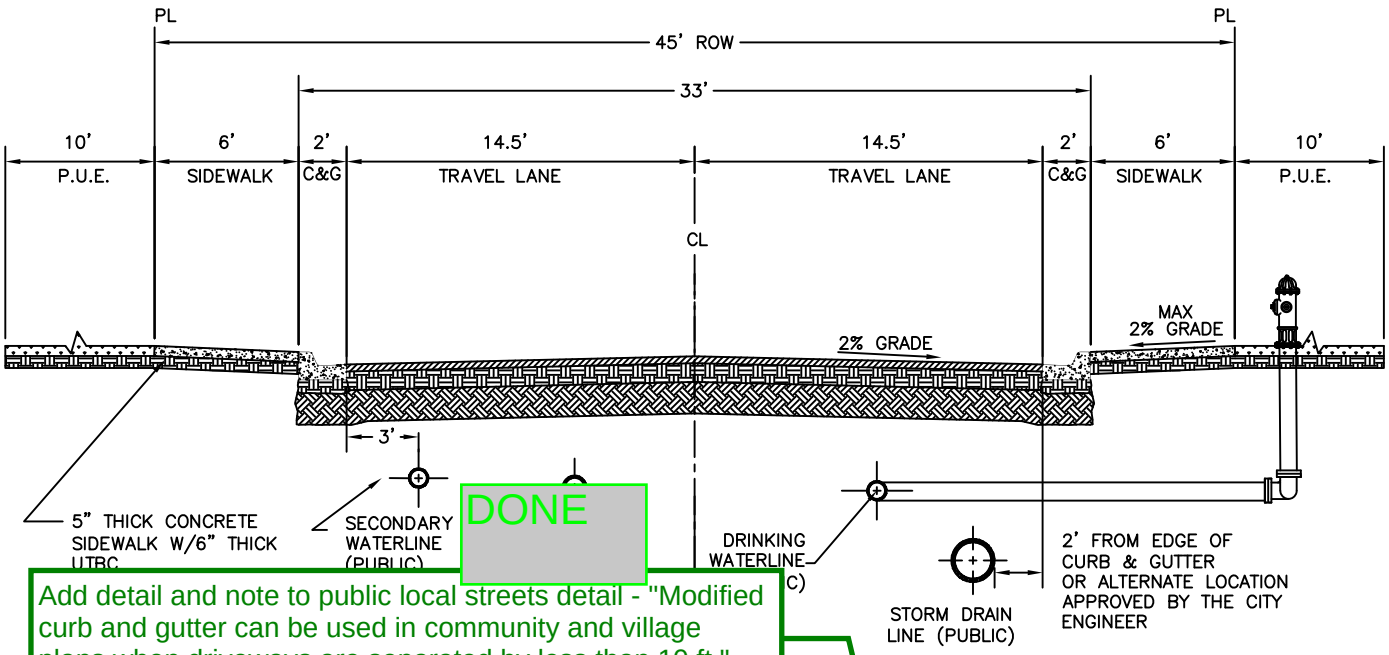
REV	DATE	BY	COMMENTS
1	11-4-15	JW	CLARIFICATION OF STREET SIGN SIZING
1	08-31-17	RM	EDITED CALLOUT

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

STREET STANDARDS

ST-28



DONE

Add detail and note to public local streets detail - "Modified curb and gutter can be used in community and village plans when driveways are separated by less than 10 ft."

NOTES:

1. THIS ROW CROSS SECTION SHALL BE PERMITTED FOR PRIVATE ROAD CROSS SECTIONS IN THE FOLLOWING ZONES: R-10, R-14, R-18, NC, MU, RC, OW, I, ML, BP, PC, AND IC.

2. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURB ON OPPOSITE SIDES OF STREET SHALL NOT EXCEED 1'-0"

3. PAVEMENT DESIGN SHALL BE BASED ON A SOILS REPORT AS PER CITY STANDARDS.

4. PROVIDE A MINIMUM 6" THICKNESS UTBC UNDER SIDEWALKS, DRIVEWAY APPROACHES, AND CURB & GUTTER.

5. INSTALL TYPE 2 SLURRY SEAL ON ALL HMA UPON COMPLETION OF PAVING AND PRIOR TO ACCEPTANCE OF ROADS.

USES MAY FRONT ON THESE STREETS.

DIFIED CURB AND GUTTER MAY BE PERMITTED ONLY WHEN THE SPACING BETWEEN DRIVEWAYS IS LESS THAN 50 FEET AS MEASURED FROM EDGE TO EDGE. IF MODIFIED CURB AND GUTTER IS PERMITTED, THE TRAVEL LANES SHALL BE REDUCED TO 14' TO ACCOMMODATE LONGER CURB AND GUTTER CROSS SECTION.

8. P.U.E. SHALL JOG AROUND ALL HYDRANT LOCATIONS.

9. THE PAVEMENT DESIGN MAY BE, AT THE DEVELOPER'S DISCRETION, ACCORDING TO THE DEVELOPER'S GEOTECHNICAL ENGINEER'S RECOMMENDATIONS IF THE FOLLOWING DESIGN PARAMETERS ARE USED ACCORDING TO THE AASHTO 1993 PAVEMENT DESIGN PROCESS:

A. RELIABILITY = 90%
B. STD DEV = 0.45
C. INITIAL SI = 4.2
D. TERMINAL SI = 2.5
E. WHEN CALCULATING THE STRUCTURAL NUMBER, USE THE FOLLOWING LAYER COEFFICIENT DEFAULTS:

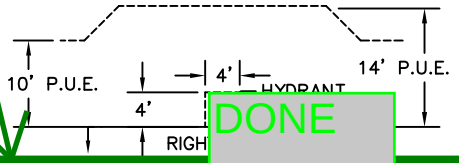
i. ASPHALT = 0.40
ii. UNTREATED BASE COURSE = 0.10
iii. GRANULAR BORROW = 0.08

NE

ating
pt to

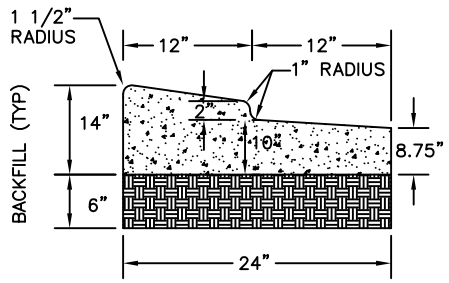
ROAD CROSS
U, NC, CC, RC, HC,

P.U.E FIRE HYDRANT DETAIL

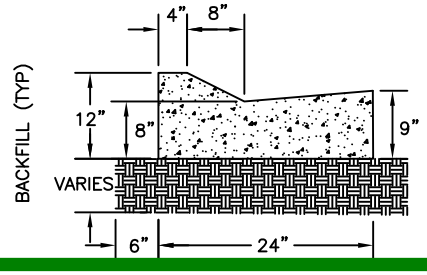


DONE

MODIFIED FALL-OUT CURB AND GUTTER



MODIFIED CATCH CURB AND GUTTER



PRIVATE ROADWAY W/O PARK STRIP 45' RIGHT-OF-WAY

DATE:	AUGUST 2017
DRAWING NAME:	ST-30
DRAWN BY:	ETL
CHECKED:	APPROVED:

REVISIONS

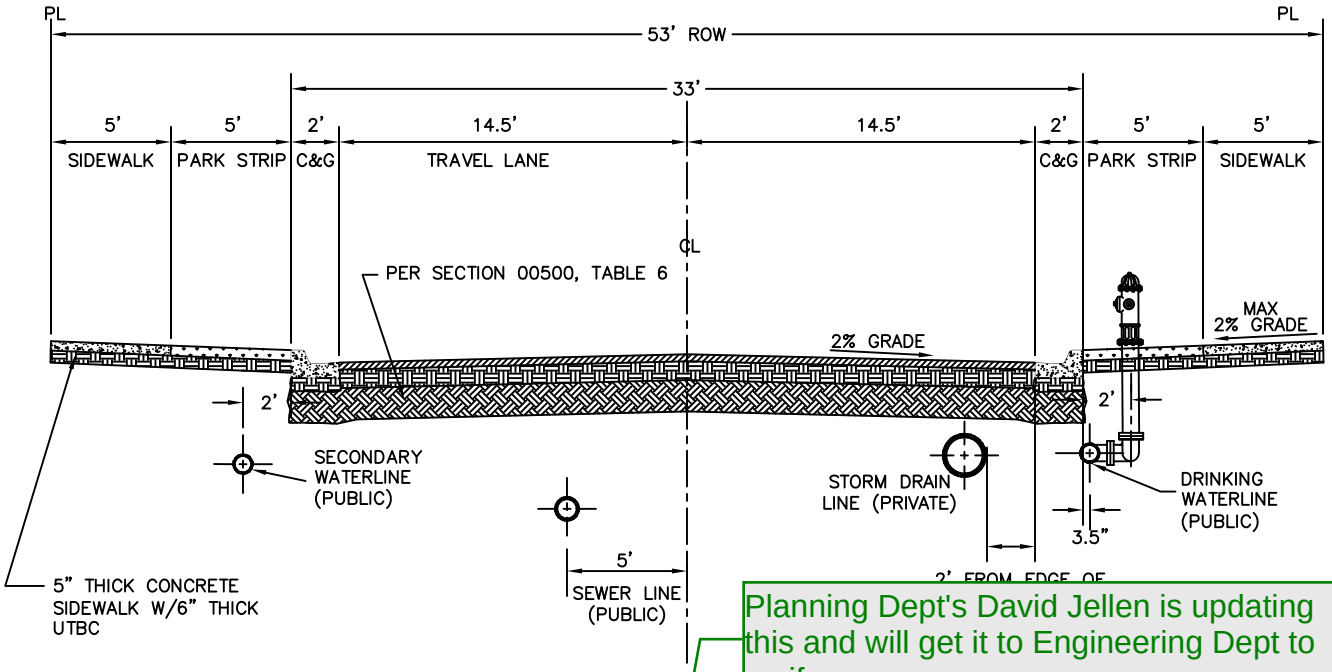
REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS, EDITED CALLOUTS, DELETED NOTES
2	03-11-19	JRP	ADDED NOTE

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

STREET STANDARDS

ST-30



Planning Dept's David Jellen is updating this and will get it to Engineering Dept to verify.

1. THIS ROW CROSS SECTION SHALL BE PERMITTED FOR PRIVATE ROAD CROSS SECTIONS IN THE FOLLOWING ZONES: R1-40, R1-20, R1-10, R1-9, R2-8, R3-6, MF-10, MF-14, MF-18, MU, NC, CC, RC, HC, OW, I, LI, MW, MR, BP, PC, AND IC.

NOTES:

1. THIS ROW CROSS SECTION SHALL BE PERMITTED FOR PRIVATE ROAD CROSS SECTIONS IN THE FOLLOWING ZONES: R-5, R-6, R-10, R-14, R-18, NC, MU, RC, OW, I, ML, BP, PC AND IC.

2. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURB ON OPPOSITE SIDES OF STREET SHALL NOT EXCEED 1'-0"

3. PROVIDE A MINIMUM 6" THICKNESS UTBC UNDER SIDEWALKS, DRIVEWAY APPROACHES, AND CURB & GUTTER.

4. INSTALL TYPE 2 SLURRY SEAL ON ALL HMA UPON COMPLETION OF PAVING AND PRIOR TO ACCEPTANCE OF ROADS.

5. HOUSES MAY FRONT ON THESE STREETS.

6. THE PAVEMENT DESIGN MAY BE, AT THE DEVELOPER'S DISCRETION, ACCORDING TO THE DEVELOPER'S GEOTECHNICAL ENGINEER'S RECOMMENDATIONS IF THE FOLLOWING DESIGN PARAMETERS ARE USED ACCORDING TO THE AASHTO 1993 PAVEMENT DESIGN PROCESS:

A. RELIABILITY = 90%
B. STD DEV = 0.45
C. INITIAL SI = 4.2
D. TERMINAL SI = 2.5
E. WHEN CALCULATING THE STRUCTURAL NUMBER, USE THE FOLLOWING LAYER COEFFICIENT DEFAULTS:

i. ASPHALT = 0.40
ii. UNTREATED BASE COURSE = 0.10
iii. GRANULAR BORROW = 0.08

PRIVATE ROADWAY W/ PARK STRIP 53' RIGHT-OF-WAY

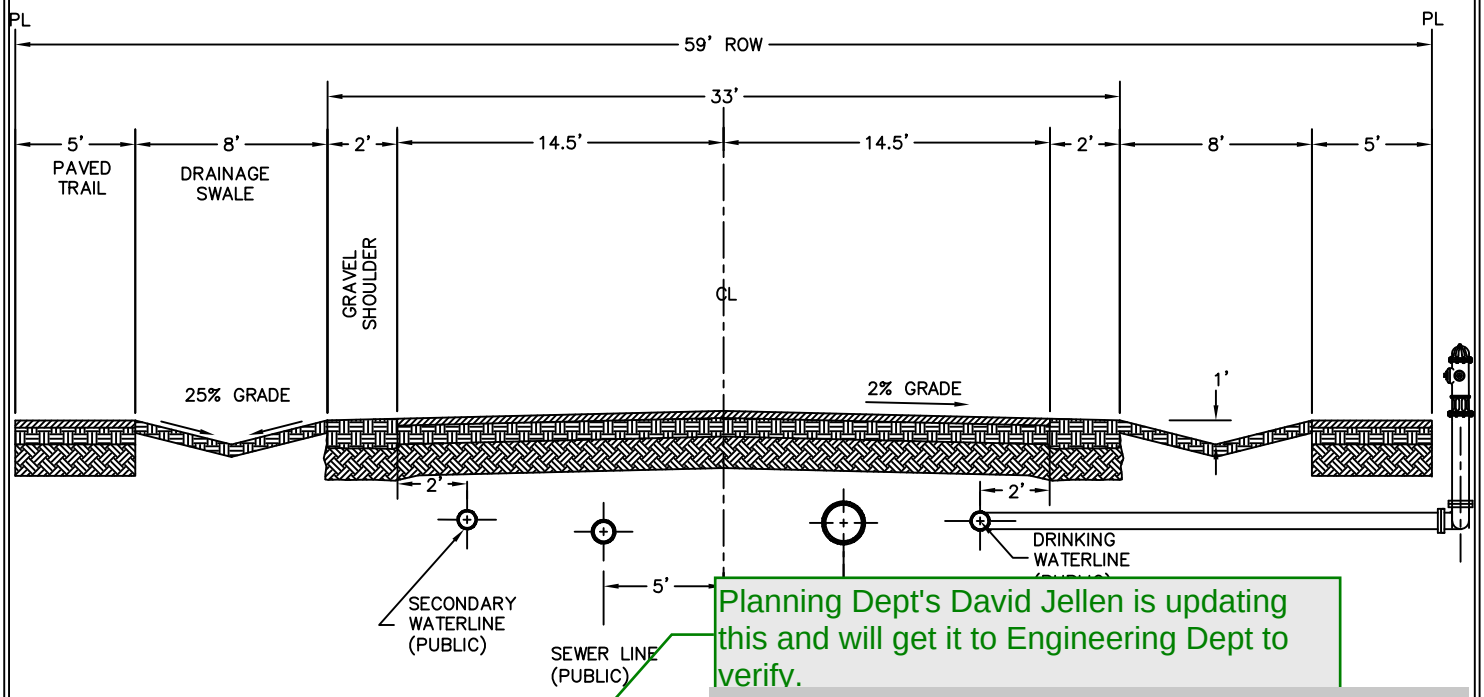
DATE: AUGUST 2017
DRAWING NAME: ST-31
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS			
REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS, EDITED CALLOUTS, DELETED NOTES.
2	03-11-19	JRP	ADDED NOTE

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
STREET STANDARDS
ST-31



Planning Dept's David Jellen is updating this and will get it to Engineering Dept to verify.

1. THIS ROW CROSS SECTION SHALL BE PERMITTED FOR PRIVATE ROAD CROSS SECTIONS IN THE FOLLOWING ZONES: A, RR, RA-5, AND R1-40.

NOTES:

1. THIS ROW CROSS SECTION SHALL BE PERMITTED FOR PRIVATE ROAD CROSS SECTIONS IN THE FOLLOWING ZONES: A, RA-5, R-1, AND RR.

2. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN SWALE ON OPPOSITE SIDES OF STREET SHALL NOT EXCEED 1'-0"

3. INSTALL TYPE 2 SLURRY SEAL ON ALL HMA UPON COMPLETION OF PAVING AND PRIOR TO ACCEPTANCE OF ROADS.

4. HOUSES MAY FRONT ON THESE STREETS.

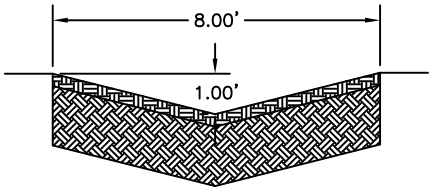
5. A FIVE FOOT ASPHALT OR CONCRETE TRAIL MUST BE PROVIDED BOTH SIDE OF THE STREET. TRAILS ARE NOT REQUIRED IN DEVELOPMENTS WITH 5 ACRE LOTS OR LARGER

6, THE PAVEMENT DESIGN MAY BE, AT THE DEVELOPER'S DISCRETION, ACCORDING TO THE DEVELOPER'S GEOTECHNICAL ENGINEER'S RECOMMENDATIONS IF THE FOLLOWING DESIGN PARAMETERS ARE USED ACCORDING TO THE AASHTO 1993 PAVEMENT DESIGN PROCESS:

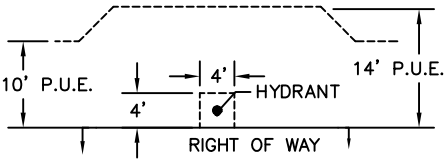
A. RELIABILITY = 90%
B. STD DEV = 0.45
C. INITIAL SI = 4.2
D. TERMINAL SI = 2.5
E. WHEN CALCULATING THE STRUCTURAL NUMBER, USE THE FOLLOWING LAYER COEFFICIENT DEFAULTS:

   i. ASPHALT = 0.40
   ii. UNTREATED BASE COURSE = 0.10
   iii. GRANULAR BORROW = 0.08

DRIVE APPROACH SWALE CROSS SECTION



DRIVE APPROACHES SHALL HAVE BASE COURSE AND GRANULAR BORROW CONSISTENT WITH PAVEMENT DESIGN



P.U.E FIRE HYDRANT DETAIL

PRIVATE ROADWAY RURAL 59' RIGHT-OF-WAY

DATE: AUGUST 2017
DRAWING NAME: ST-32
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED DIMENSIONS, ADDED/EDITED CALLOUTS
2	03-11-19	JRP	ADDED NOTES

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS
STREET STANDARDS
ST-32

DONE

Combine all trail standard drawings ST-15A, ST-15B and ST-34 into 1 standard drawing called ST-15.

DONE

DONE

Trail type & Width: (see notes 1-7)

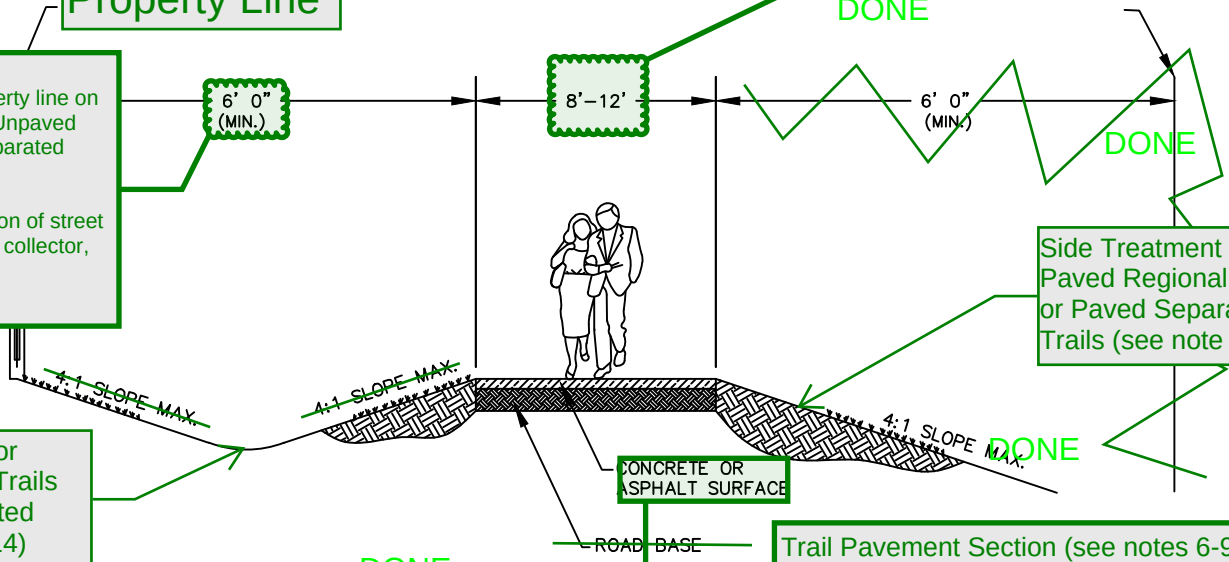
DONE

Property Line

DONE

Trail location:
6ft minimum from property line on Paved Regional Trail, Unpaved Regional Trail, and Separated Trail.

see notes 1-3 for location of street adjacent trails on local, collector, and arterial roadways.



DONE

Side Treatment for Paved Regional Trails or Paved Separated Trails (see note 14)

DONE

Side Treatment for Paved Regional Trails or Paved Separated Trails (see note 14)

DONE

Trail Pavement Section (see notes 6-9)
Joints (see note 10)
Meandering Curves (see note 11)
Running Slope (see note 12)
Cross Slope (see note 13)

NOTES:

1. TRAILS ALONG ARTERIAL ROADWAYS, AND CANAL PARKWAYS SHAL
MEANDERING CONCRETE TRAILS.

2. TRAILS FOR LAKESIDE AND RIVERSIDE ACCESS MUST USE CONCRETE AND BE 12' WIDE
OR BOARDWALK WIDTH WHERE APPROVED BY COUNCIL.

3. IN RIPARIAN AREAS PROVIDE 8' CONCRETE TRAILS.

4. IN UPLAND AREAS PROVIDE 12' ASPHALT TRAILS.

5. FOR POWER LINE CORRIDORS, MOUNTAIN TRAILS, ATV TRAILS, AND EQUESTRIAN USE, PROVIDE 12' WIDE TRAILS WITH 8" OF ROAD BASE OR APPROVED SOFT-SURFACE MATERIAL.

6. FOR WILDERNESS TRAILS IN DEVELOPED AREAS PROVIDE 12' WIDE ASPHALT TRAILS.

6. FOR WILDERNESS TRAILS IN UNDEVELOPED AREAS PROVIDE 8'-10' WIDE TRAILS WITH 8" OF ROAD BASE OR APPROVED SOFT-SURFACE MATERIAL.

7. ALL TRAILS MUST BE ADA ACCESSIBLE AND PROVIDE MAINTENANCE ACCESS.

8. CENTER LINE RADIUS OF MEANDERING SIDEWALKS/TRAILS SHALL BE 100' MIN.

9. FOR CONCRETE TRAILS, PROVIDE CONSTRUCTION JOINTS @ 8' INTERVALS EXPANSION JOINTS @ 40 ' INTERVALS.

10. CONCRETE TRAILS MUST HAVE 5" OF CONCRETE OVER 6" OF ROAD BASE.

11. ASPHALT TRAILS MUST HAVE 3" OF ASPHALT OVER 8" OF ROAD BASE.

12. ALL TRAILS ALONG REDWOOD ROAD SHALL BE CONSTRUCTED EITHER OF ASPHALT OR CONCRETE IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

A. TRAILS ON THE WEST SIDE OF REDWOOD ROAD SHALL BE CONSTRUCTED OF CONCRETE AND BE 10 FEET IN WIDTH.

B. TRAILS ON THE EAST SIDE OF REDWOOD ROAD SHALL BE CONSTRUCTED OF ASPHALT AND BE 10 FEET IN WIDTH

DONE

DONE

Trails

15

URBAN, RURAL, AND WILDERNESS TRAILS

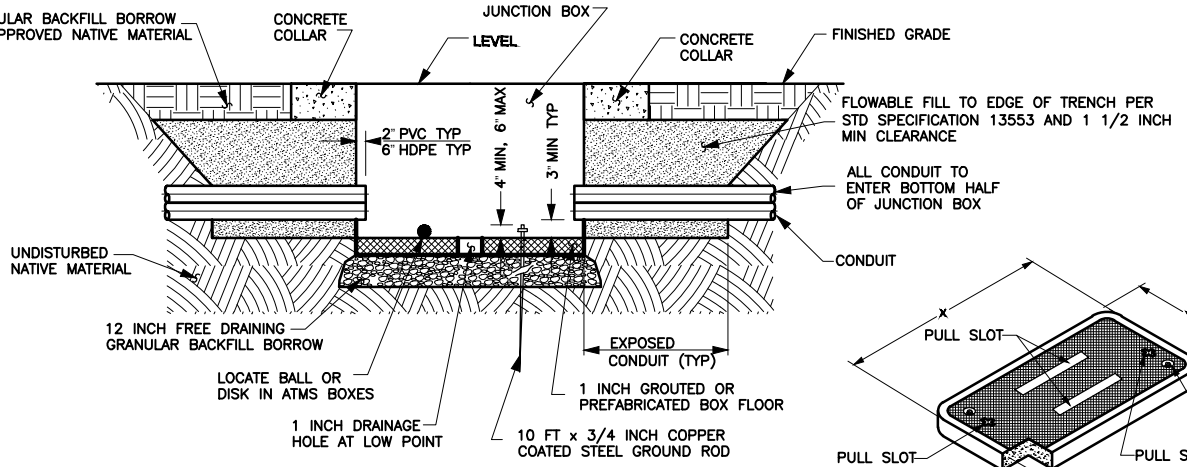
DATE: AUGUST 2017
DRAWING NAME: ST-34
DRAWN BY: JMT
CHECKED: APPROVED:

REVISIONS

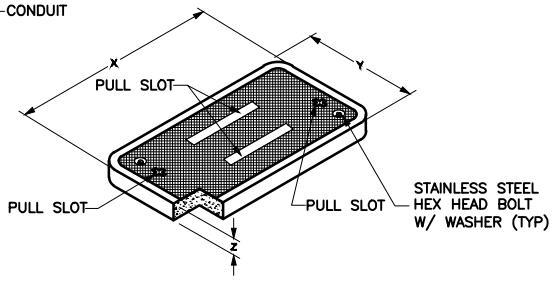
REV	DATE	BY	COMMENTS
1	4-12-18	KS	ADDED NOTE #12 AND EDITED NOTE #2

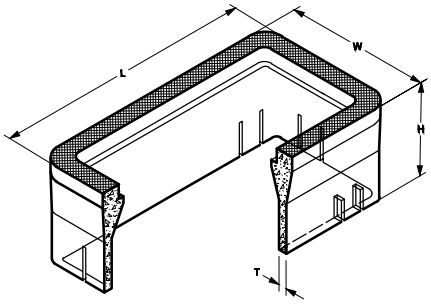
SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

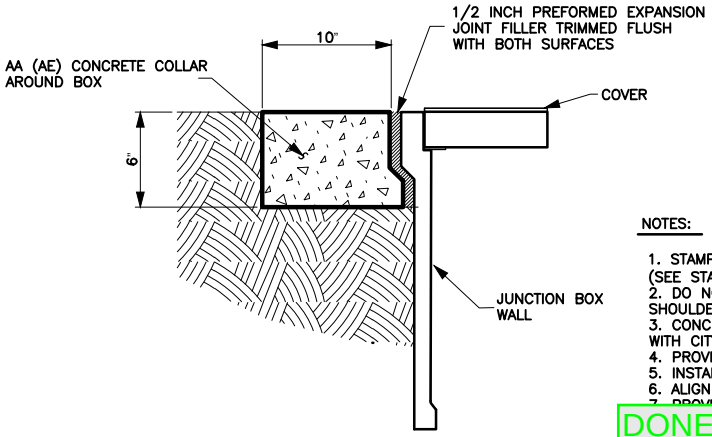
STANDARD DETAILS
STREET STANDARDS
ST-34



JUNCTION BOX CONDUIT PENETRATION DETAIL







JUNCTION BOX CONCRETE COLLAR DETAIL

BOX AND LID DIMENSION

BOX TYPE	"H" inch	"L" inch	"T" inch	"W" inch	"X" inch	"Y" inch	"Z" inch
HPC	24	25	1 ½	16	23 ¼	13 ¾	2
	24	37 ⅝	1 ½	28	35 ⅝	24	3
	24	49 ⅝	2	32 ½	47 ⅝	30 ½	3

DONE
junction

NOTES:

1. STAMP BOX AND LOGO INTO THE LID FROM THE FACTORY. (SEE STANDARD SPECIFICATION 05133)
2. DO NOT PLACE JUNCTINO BOXES IN THE TRAVELED WAY OR ON THE FREEWAY SHOULDERS.
3. CONCRETE COLLAR WIDTH VARIES WHEN ADJACENT TO OTEHR IMPROVEMENTS. CO WITH CITY INSPECTOR AS REQUIRED.
4. PROVIDE CONCRETE COLLARS EXCEPT WITHIN CONCRETE PAVED AREAS.
5. INSTALL CONDUIT PLUG PER STANDARD SPECIFICATION 05133.
6. ALIGN ATMS CONDUIT BY COLOR ON EACH SIDE OF THE JUNCTION BOX.
7. PROVIDE TYPE III-PC JUNCTINO BOXES WITH A SPLIT LID.
   TO ANSI/SCTE 77-2007 SPECIFICATION FOR UNDERGROUND ENCLOSURE
   ER 22 LOADING FOR ALL JUNCTION BOXES.

DONE
Other

DONE
junction

POLYMER CONCRETE JUNCTION BOX

DATE: MAY 2020
DRAWING NAME: ST-39
DRAWN BY: JRP
CHECKED: APPROVED:

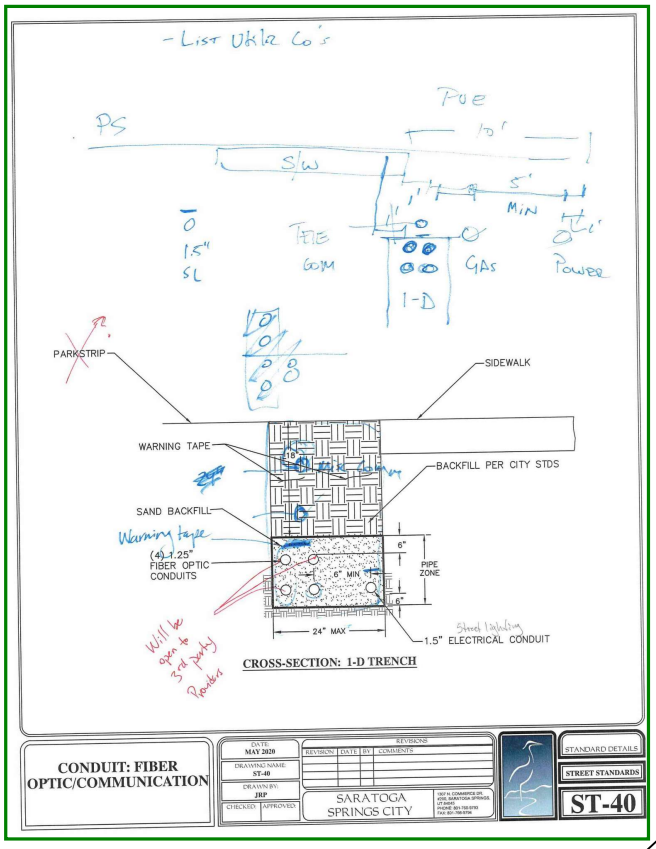
REVISIONS

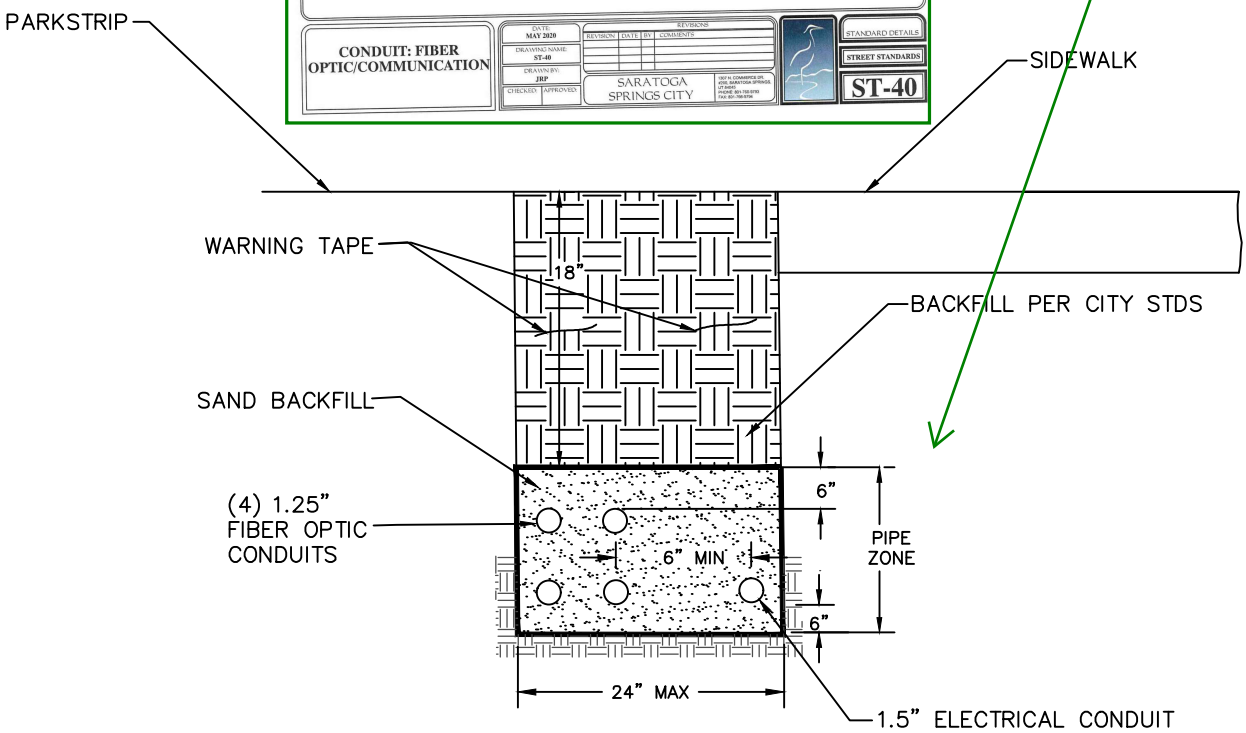
REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
STREET STANDARDS
ST-39

Revise to add 1-D Fiber Conduit in the PUE as per redlines shown below





CROSS-SECTION: 1-D TRENCH

CONDUIT: FIBER OPTIC/COMMUNICATION

DATE: MAY 2020

DRAWING NAME: ST-40

DRAWN BY: JRP

CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

STREET STANDARDS

ST-40

STANDARD STREET LIGHT DETAILS

INDEX:

LP-1	NOTES
LP-1A	14' LOCAL STREET LIGHT
LP-1B	CONCRETE BASE FOR LOCAL STREET LIGHT
LP-1C	LOCAL STREET LIGHT LUMINARE
LP-2A	20' COLLECTOR STREET LIGHT
LP-2B	20' COLLECTOR STREET LIGHT W/ BANNER ARM FOR COLLECTOR ROADS AND COMMERCIAL AREAS
LP-2C	CONCRETE BASE FOR COLLECTOR STREET LIGHT
LP-2D	COLLECTOR STREET LIGHT LUMINARE
LP-3A	28' ARTERIAL STREET LIGHT
LP-3B	28' ARTERIAL STREET LIGHT WITH BANNER ARM
LP-3C	CONCRETE BASE FOR ARTERIAL STREET LIGHT
LP-3D	ARTERIAL STREET LIGHT LUMINARE
LP-4	LOCAL STREET LIGHT CONNECTION
LP-5	COLLECTOR AND ARTERIAL STREET LIGHT CONNECTION
LP-6	LIGHT POLE BELOW GRADE BOXES INSTALLATION

delete

delete

delete

add LP-6A Monopole

STREET LIGHT DETAILS

DATE: AUGUST 2017

DRAWING NAME: LP-0

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

STREET LIGHTS

LP-0

STREET LIGHT NOTES:

1. LIGHT POLES AND LUMINAIRES SHALL CONFORM TO 05540 OF THE CITY STANDARDS AND SHALL BE ACCEPTABLE TO THE CITY ENGINEER.
2. ALTERNATIVE PRODUCT ASSEMBLIES MAY BE SUBSTITUTED IF DEEMED TO BE EQUAL AND APPROVED IN WRITING BY THE CITY
3. ALL PRIVATE STREET LIGHTS SHALL BE MASTER-METERED AT PRIVATELY OWNED SERVICES
4. ALL PRIVATE STREETLIGHTS SHALL NOT BEAR ANY SORT OF CITY IDENTIFICATION, SUCH AS THE CITY LOGO
5. ALL STREET LIGHTS SHALL BE 120 VOLTS NOMINAL TO GROUND.
6. DUCT SEAL SHALL BE USED AT CONDUIT OPENINGS
7. WIRE MUST BE PULLED USING POLY PULL TAPE BY ACCEPTABLE INDUSTRY STANDARD METHODS
8. TERMINATE CONDUIT IN BOXES WITH GLUE ON CONDUIT END BELLS ATTACHED TO END OF CONDUITS
9. CONDUIT ENTRY SHALL BE IN THE BOTTOM OF THE BOX. SIDE ENTRY SHALL NOT BE PERMITTED
10. STREET LIGHTS SHALL BE LOCATED AT ROADWAY INTERSECTIONS (NEAR FIRE HYDRANTS WHERE POSSIBLE), PLACED EVERY 300' ON ALTERNATE SIDES OF THE STREET, AND AT OTHER REQUIRED LOCATIONS PER CITY STANDARDS.
11. MARK JUNCTION BOX LIDS **STREET LIGHTS**
12. INSTALL 1.25 TRADE SIZE SCH40 PVC CONDUIT WITH 24 COVER AND SAND BEDDING
13. WIRES BELOW GRADE SHALL BE SINGLE CONDUCTOR (NOT CABLE ASSEMBLY) #6 AWG XHHW-2 COPPER UNLESS OTHERWISE NOTI WIRES IN POLE TO BE #12 THHN SINGLE CONDUCTOR STRANDED WIRES. WIRE SHALL CONSIST OF CONTINUOUSLY COLORED INSULATION IN COLORS NOTED ON DETAIL (PHASE TAPE COLOR IDENTIFICATION NOT PERMITTED.) WIRE SIZE SHALL BE UPSIZED AS NEEDED FOR NEC COMPLIANCE.
14. CONTRACTOR TO INSTALL POD JUNCTION BOX WITH FUSE. BOX TO BE LOCATED 4' MINIMUM AND 10' MAXIMUM FEET FROM RMP SOURCE. PROVIDE 2 SCH 40 PVC CONDUIT TO RMP SOURCE. PROVIDE CONDUCTORS LONG ENOUGH TO REACH RMP POWER SOURCE PLUS 5'. CONTRACTOR SHALL SUPPLY PULL STRING IN CONDUIT.
15. POD GROUNDING ELECTRODES AND GECS SHALL BE COMPLIANT WITH NEC STANDARDS. IF GROUND RODS ARE USED, TWO SHALL BE REQUIRED PER NEC. REFER TO DETAIL DRAWINGS.
16. POD AND SERVICE CONDUCTOR/CONDUIT INSTALLATION REQUIREMENTS ARE BASED PRIMARILY ON RMP STANDARDS. CONFIRM INSTALLATION REQUIREMENTS WITH RMP REPRESENTATIVE AND PACIFICORP'S LATEST SIX STATES ELECTRICAL SERVICE REQUIREMENTS DOCUMENT.
17. CONNECT GROUND WIRE TO METAL SHELL OF LIGHT POLE. BOND ALL METAL PARTS AS PER NFPA 70.250
18. EACH INDIVIDUAL STREET LIGHT SHALL HAVE A JUNCTION BOX WITH A FUSE LOCATED WITHIN 4' OF STREET LIGHT BASE. FUSE ASSEMBLIES SHALL BE BUSSMAN KTK 5 AMP. IF MORE THAN ONE POLE IS BEING SUPPLIED, POD SHALL BE MINIMUM OF KTK 10 AMP AND MAXIMUM OF KTK 30 AMP AND LIGHT POLE FUSES SHALL BE KTK 5 AMP. FUSES SHALL NOT BE PERMITTED IN POLE HAND HOLE
19. FUSE ASSEMBLIES SHALL BE (1) BUSSMAN HEB-JJ, WITH (2) BUSSMAN 2AO660 INSULATION BOOTS. NO SUBSTITUTIONS.
20. SQUID TERMINAL BLOCK ASSEMBLY SHALL BE BLACKBURN USB33S OR USB43S. NO SUBSTITUTIONS.
21. POD, STREET LIGHT (FUSE), JUNCTION, AND PULL BOXES SHALL CONSIST OF (2) CARSON ~~BROOKS 1419 BOXES~~ BOLTED TOGETHER 'CLAMSHELL' STYLE. DRILL ¼ HOLES IN EVERY CELL OF LOWER (FLOOR) LID TO ALLOW DRAINAGE. INSTALL BOX ASSEMBLY ON 4 OF ¾ GRAVEL. NO SUBSTITUTIONS.
22. STREET LIGHTS ARE TO BE CENTERED IN PARK STRIP.
23. IF FIXTURE IS NOT INDICATED FOR INSTALLATION WITH CURRENT CONTRACT, ONLY CONDUIT IS REQUIRED. SOME CONDUCTORS INDICATED MAY BE REQUIRED WITH FIXTURE UPGRADES.
24. POLES FOR OUTDOOR LIGHTING FIXTURES FOR THE ILLUMINATION OF PARKING AREAS AND LOCATED DIRECTLY BEHIND PARKING SPACES, OR WHERE THEY COULD BE HIT BY SNOW PLOWS, SHALL BE PLACED A MINIMUM OF FIVE (5) FEET OUTSIDE PAVED AREAS OR TIRE STOPS, OR PLACED ON CONCRETE PEDESTALS AT LEAST THIRTY (30) INCHES HIGH ABOVE THE PAVEMENT, OR OTHERWISE SUITABLY PROTECTED.
25. ADDITIONAL REQUIREMENTS MAY APPLY IN UDOT RIGHT OF WAYS.
26. WHERE OVERHEAD POWER LINES ARE PRESENT, POLE HEIGHT MAY REQUIRE REDUCTION IN HEIGHT TO OBSERVE MINIMUM CLEARANCE REQUIRED BY POWER UTILITY.

BOLD WRITING

add at the end of #13 "Show voltage dr calculation upon requ

Carson 12 in deep standa box.

Photocell will face North. Verify Luminaire direction

STREET LIGHT DETAILS

DATE: MARCH 2020
DRAWING NAME: LP-1
DRAWN BY: JRP
CHECKED: APPROVED:

REVISION	DATE	BY	C

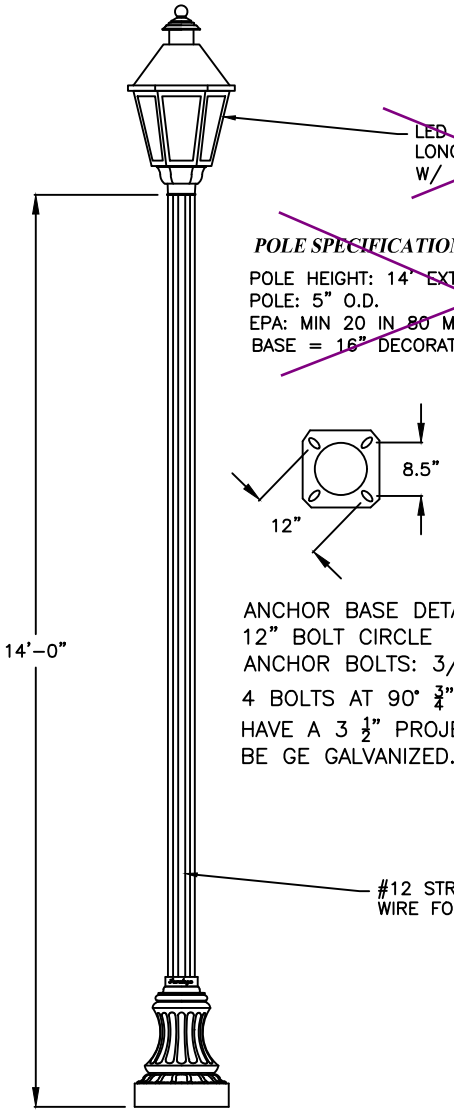
SARATOGA SPRINGS CITY

#200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

STREET LIGHTS

LP-1



POLE SPECIFICATIONS:

POLE HEIGHT: 14' EXTRUDED ALUMINUM TOTAL
POLE: 5" O.D. THICKNESS: .250"
EPA: MIN 20 IN 80 MPH ZONE (1.3 GUST FACTOR)
BASE = 16" DECORATIVE TWO-PIECE CLAMSHELL

ANCHOR BASE DETAIL
12" BOLT CIRCLE
ANCHOR BOLTS: 3/4" x 18"
4 BOLTS AT 90° $\frac{3}{4}$" DIA. X 18" LONG X 3" HOOK BOLTS TO HAVE A 3 $\frac{1}{2}$" PROJECTION OUT OF THE CONCRETE. BOLTS TO BE GE GALVANIZED.

FINISH:
BLACK

Can we update the dates? TYP.

14' LOCAL STREET LIGHT

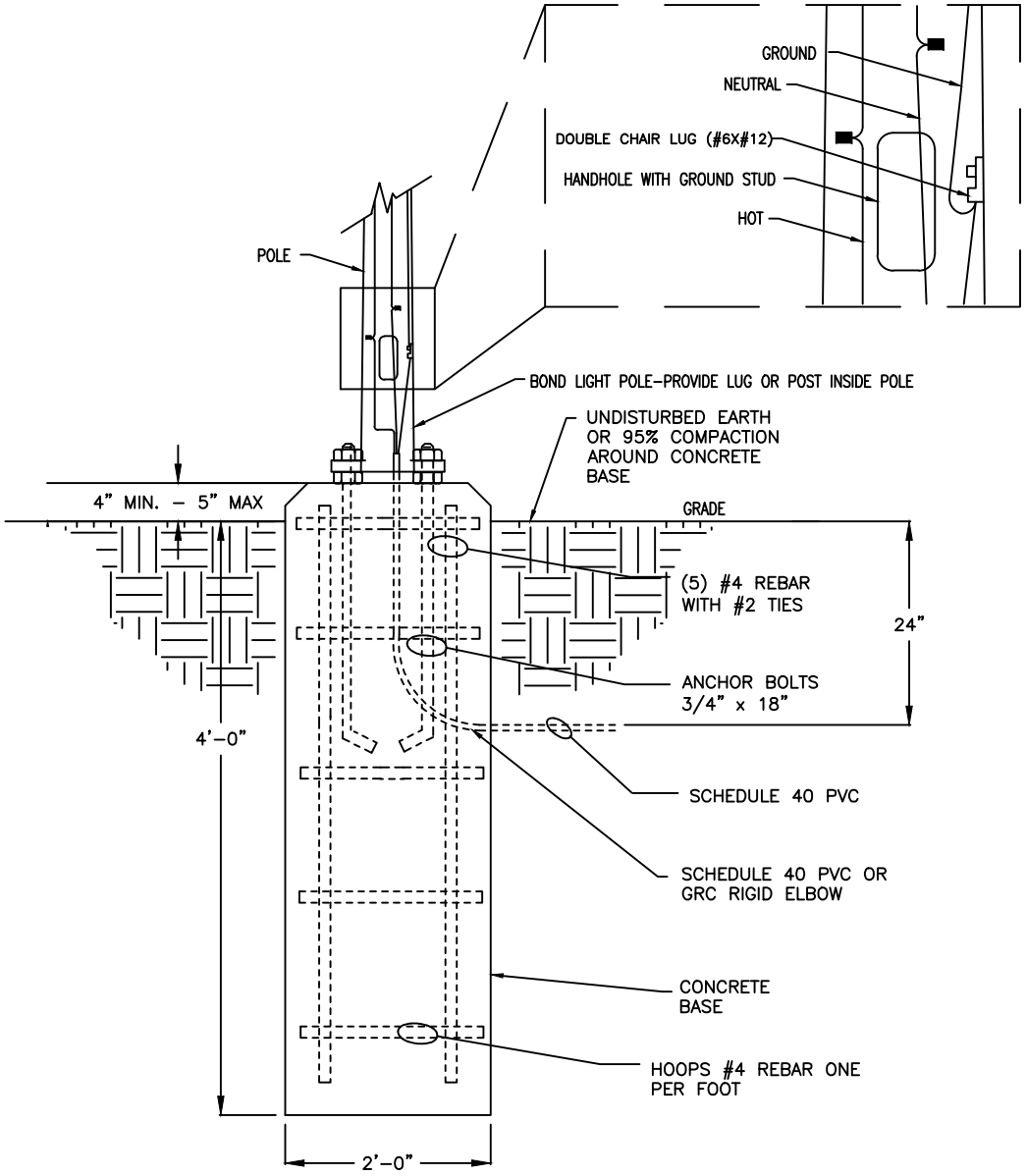
DATE: AUGUST 2017
DRAWING NAME: LP-1A
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED CALLOUTS AND EDITED/ADDED NOTES
2	05-15-20	JRP	REMOVED NOTES

SARATOGA SPRINGS CITY
1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
STREET LIGHTS
LP-1A



NOTES:

1. ALL PRIVATE STREET LIGHTS SHALL BE MASTER–METERED.
2. ALL PRIVATE STREET LIGHTS SHALL NOT BEAR ANY SORT OF CITY IDENTIFICATION, SUCH AS THE CITY LOGO.
3. IF DEPTH CANNOT BE MET MASS MUST BE EQUIVALENT TO MASS SHOWN!
4. ALTERNATIVE PRODUCTS MAY BE SUBSTITUTED IF DEEMED EQUAL AND APPROVED BY THE CITY.

CONCRETE BASE FOR LOCAL STREET LIGHT

DATE: AUGUST 2017

DRAWING NAME: LP-1B

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED CALLOUTS, DELETED WIRES AND ADDED NOTES
2	11-15-18	KS	ADDED CALL-OUT FOR DOUBLE CHAIR LUG

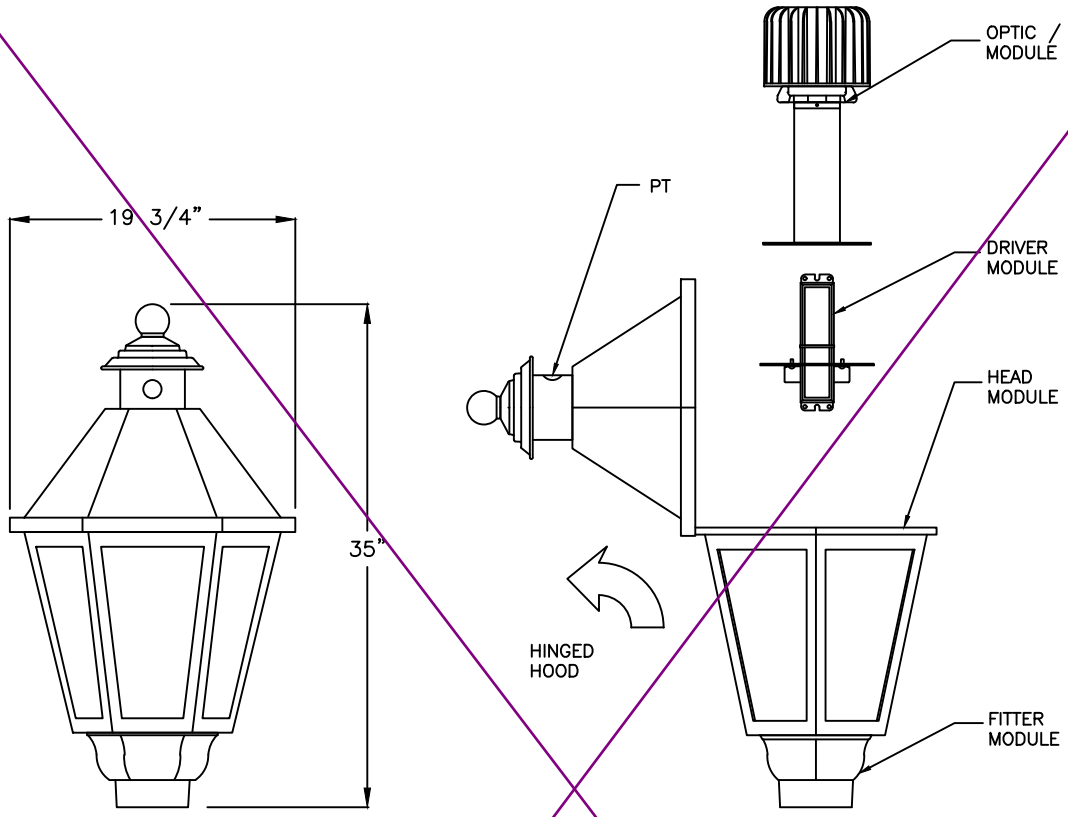
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

STREET LIGHTS

LP-1B



CATALOG NO:
CL62T4–FLAF–3L–34W–4K–120–EK1–DEP–F3AP–PT–RAL9005TX
LUMINAIRE: HEXAGONAL SHAPE
IES CLASSIFICATION: FROSTED ACRYLIC LENS
WATTAGE: 34 WATTS
LIGHT SOURCE: BOARD LED – 4000K
LINE VOLTAGE: 120 VOLTS
DRIVER: MOUNTED ON TRAY WITH QUICK RELEASE CONNECTORS
IP66 WEATHERPROOF LUMINAIRE WITH "V" GROOVE SILICONE GASKET
OPTION: TWIST LOCK PHOTOCELL PRE–INSTALLED IN DECORATIVE CUPOLA.

ALL NON ELECTRICAL HARDWARE SHALL BE STAINLESS STEEL

COLOR & FINISH: BLACK (RAL9005TX) TEXTURED POWDER COAT
PAINT WARRANTY: 5 YEARS

SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS

LOCAL STREET LIGHT LUMINARE

DATE: AUGUST 2017
DRAWING NAME: LP-1C
DRAWN BY: ETL
CHECKED: APPROVED:

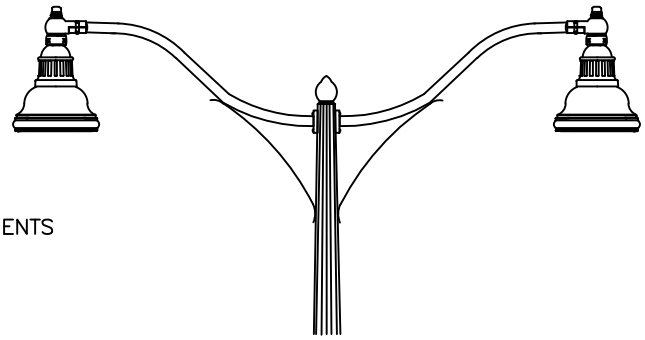
REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED/ADDED NOTES

SARATOGA SPRINGS CITY

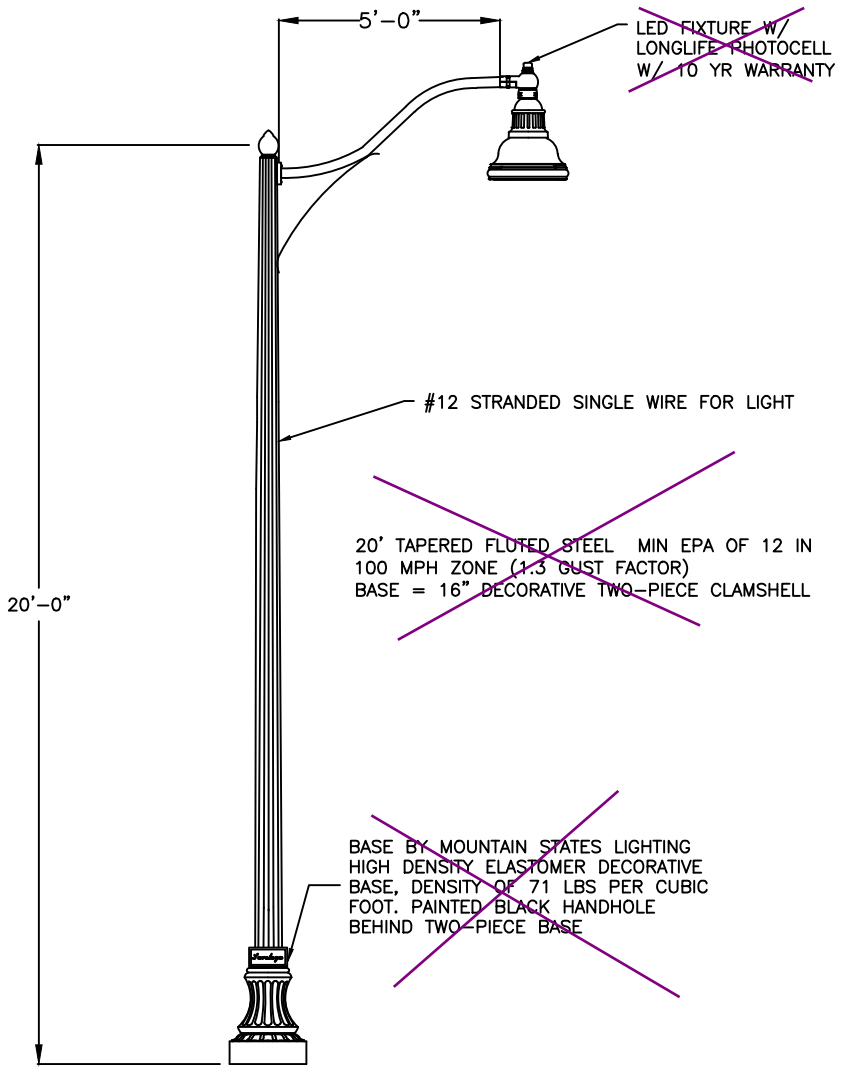
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
STREET LIGHTS
LP-1C

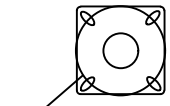


SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS

SHOWN WITH DOUBLE FIXTURE



4 BOLTS AT 90 DEGREES 3/4" DIA x 18" LONG x 3" HOOK BOLTS TO HAVE A 3.5" PROJECTION OUT OF THE CONCRETE. BOLTS TO GE GALVANIZED



ANCHOR BASE DETAIL 12" BOLT CIRCLE 7/8" x 1" HOLES TO ACCOMMODATE UP TO 3/4" DIA BOLT

ANCHOR BASE

FINISH: BLACK

20' COLLECTOR STREET LIGHT

DATE: AUGUST 2017

DRAWING NAME: LP-2A

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED CALLOUTS AND NOTES
2	05-15-20	JRP	REMOVED NOTES

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

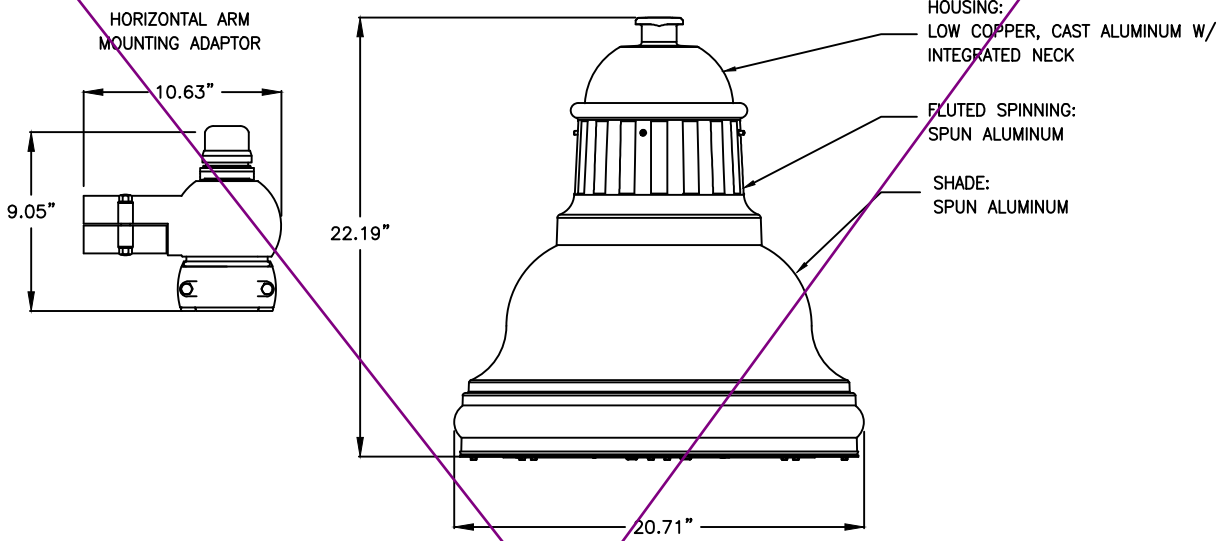
STANDARD DETAILS

STREET LIGHTS

LP-2A

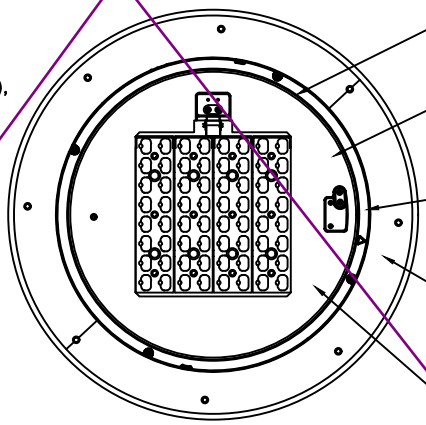
MSL ORDERING GUIDE

LIGHT FIXTURE: C12750A–64LED–120
PHOTOCELL: 6390TF–BK



Philips LEDgine Specifications:

- 64, 4000K (NEUTRAL) PHILIPS LUMILEDs LUXEON R LEDs, TYPICAL 75 COLOR RENDERING INDEX (CRI), >65,000 HOURS OF OPERATIONAL LIFE (AT 25°C AMBIENT TEMPERATURE & 70% LUMEN MAINTENANCE), INJECTION MOLDED TYPE III OPTICAL PLATES.
- INTEGRAL PHILIPS ADVANCE XITANIUM LED DRIVER, CLASS 1, IP66 RATED, 350mA, INTELLIVOLT 120 VAC, 50–60 Hz, RoHS COMPLIANT, STANDARD BUILD IN >3kV SURGE SUPPRESSION.
- UL8750 & UL1598 COMPLIANT, ETL/cETL LISTED TO U.S. & CANADIAN SAFETY STANDARDS FOR WET LOCATIONS, MANUFACTURED TO ISO 9001:2008 STANDARDS, VIBRATION TESTED TO ANSI C136.31 FOR BRIDGE APPLICATIONS.
- WATTAGE: 69.1 WATTS



SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS

COLLECTOR STREET LIGHT LUMINARE

DATE: AUGUST 2017
DRAWING NAME: LP-2D
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED NOTES

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

STREET LIGHTS

LP-2D

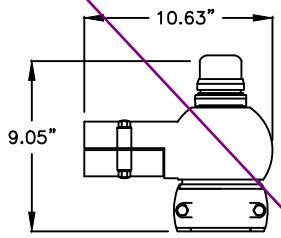
MSL ORDERING GUIDE

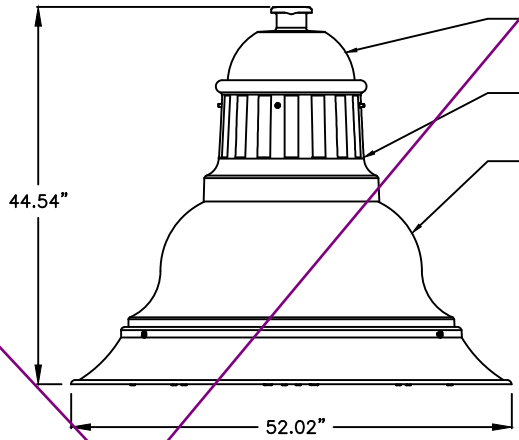
LIGHT FIXTURE: C12750A-80LED-120
PHOTOCELL: 6390TF-BK

NOTES:

1. ALL PRIVATE STREET LIGHTS SHALL BE MASTER-METERED.
2. ALL PRIVATE STREET LIGHTS SHALL NOT BEAR ANY SORT OF CITY IDENTIFICATION.
3. ALTERNATIVE PRODUCTS MAY BE SUBSTITUTED IF DEEMED TO BE EQUAL AND APPROVED BY THE CITY.

Horizontal Arm
Mounting Adaptor

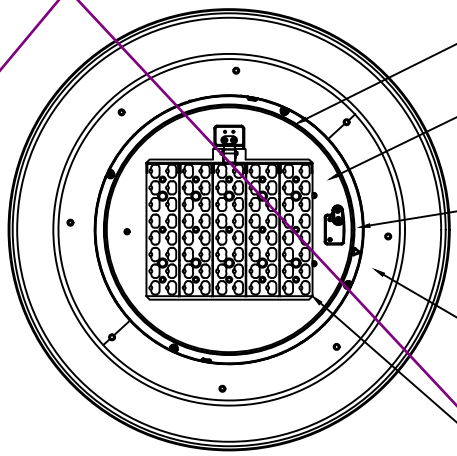




HOUSING:
LOW COPPER, CAST ALUMINUM
W/ INTEGRATED NECK

FLUTED SPINNING:
SPUN ALUMINUM

SHADE:
SPUN ALUMINUM



LENS: TEMPERED GLASS

HEAT SINK: LOW COPPER, DIE-CAST ALUMINUM

LENS FRAME: LOW COPPER, DIE-CAST ALUMINUM

DECORATIVE AIR VENT: PERFORATED, 14 GAUGE, #304 STAINLESS STEEL SHEET

PHILIPS LEDGINE BOARD, SEE SPECIFICATIONS

SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS

ARTERIAL STREET LIGHT LUMINARE

DATE: AUGUST 2017

DRAWING NAME: LP-3D

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED NOTES

SARATOGA SPRINGS CITY

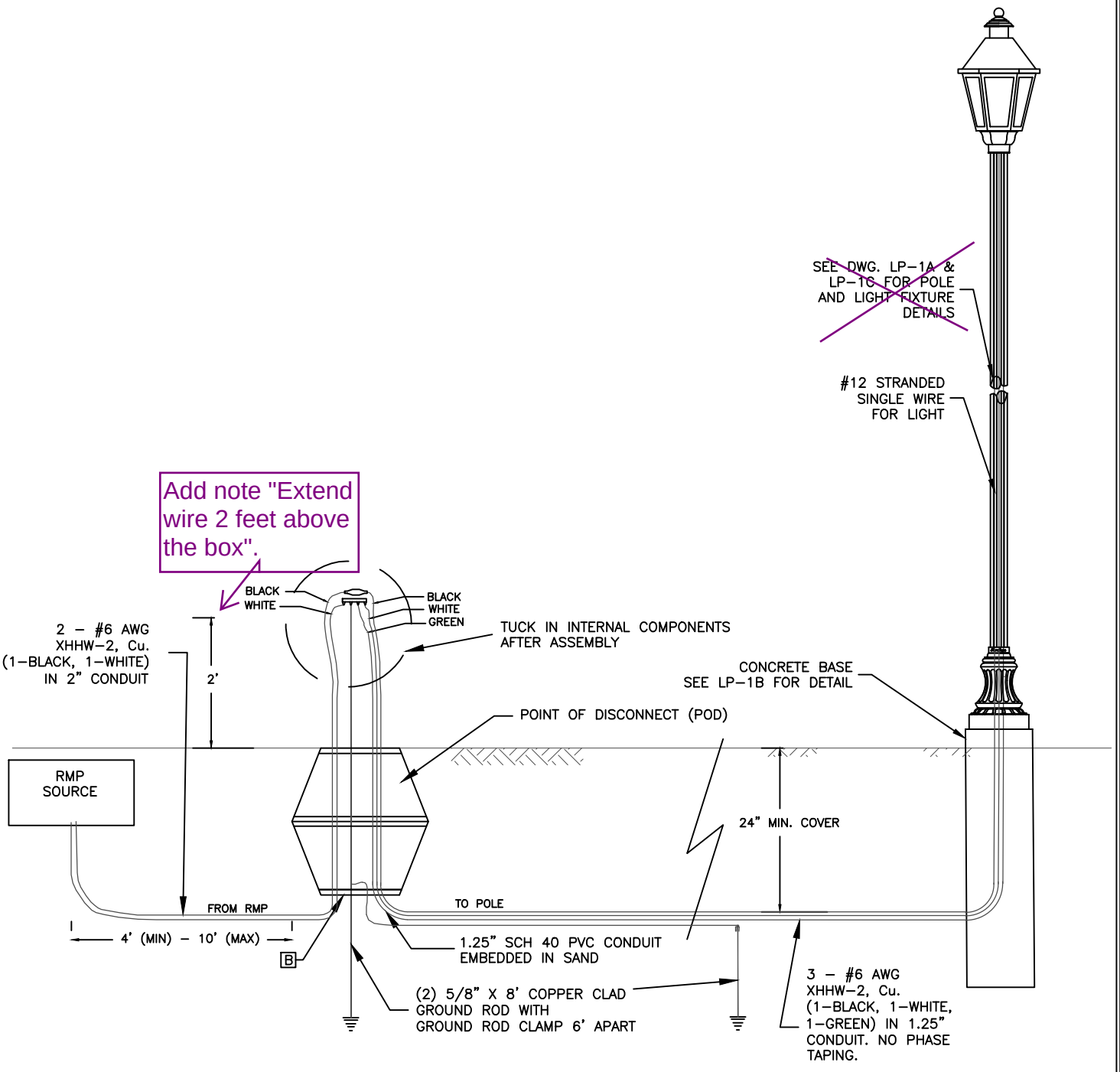
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

STREET LIGHTS

LP-3D

SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS



LOCAL STREET LIGHT CONNECTION

DATE: AUGUST 2017

DRAWING NAME: LP-4

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED ROD & WIRING, CALLOUTS, AND NOTES

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

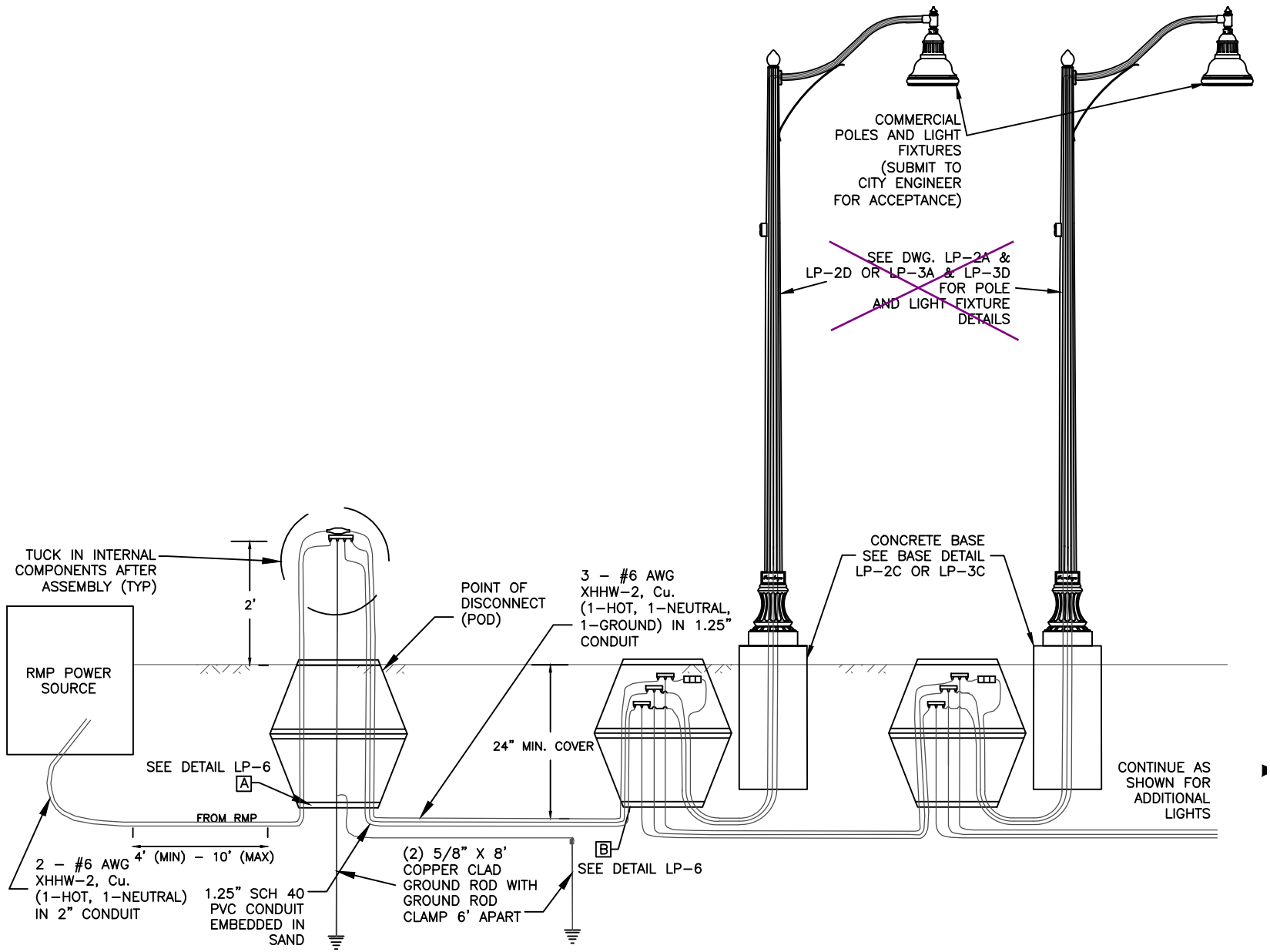
STANDARD DETAILS

STREET LIGHTS

LP-4

COLLECTOR & ARTERIAL STREET LIGHT CONNECTION

SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS



DATE: AUGUST 2017

DRAWING NAME: LP-5

DRAWN BY: ETL

CHECKED:

APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED ROD & WIRING, CALLOUTS, AND NOTES

SARATOGA SPRINGS CITY

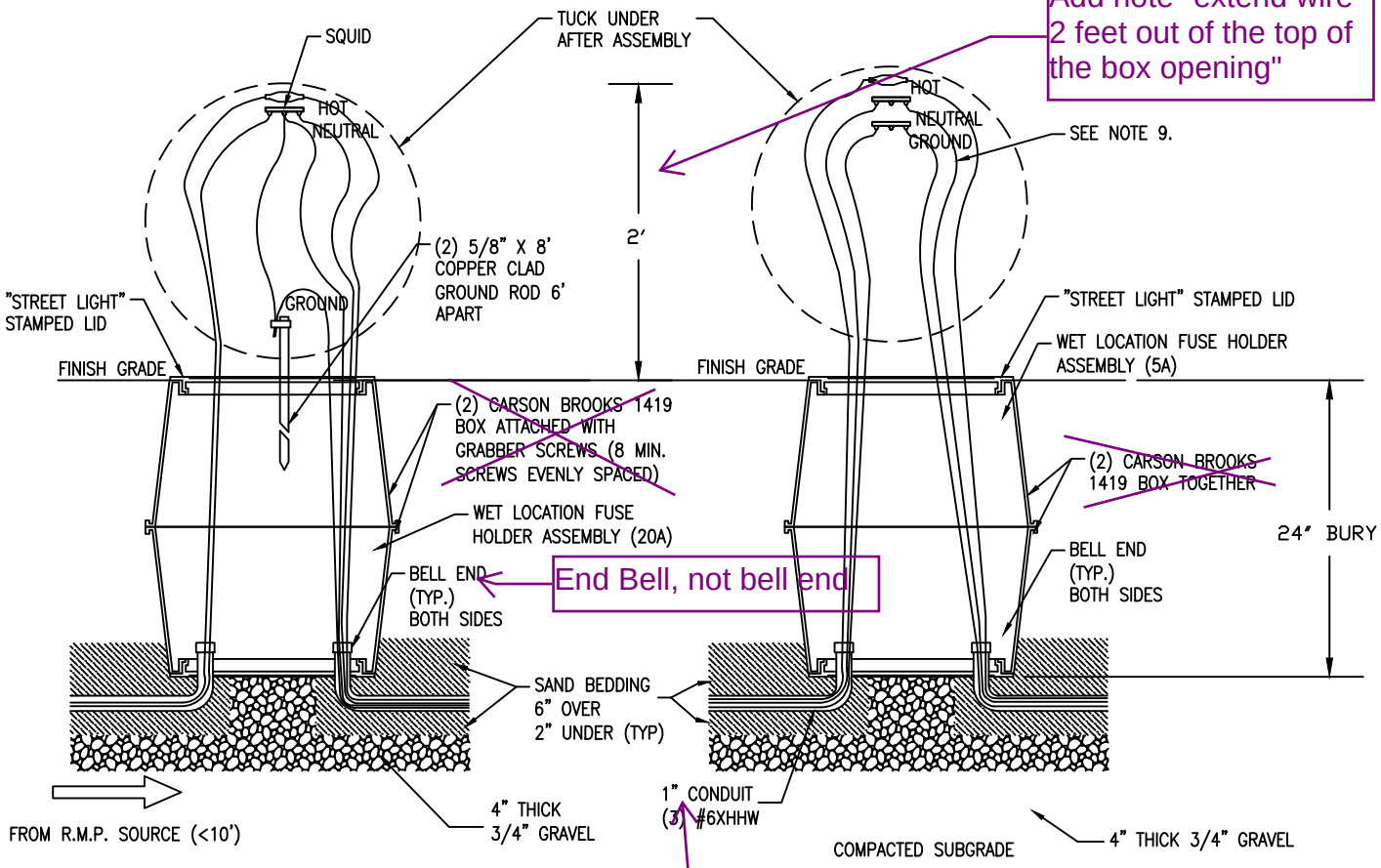
1307 N. COMMERCE DR.
SUITE 200
SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

LP-5

STREET LIGHTS

STANDARD DETAILS

Add note "extend wire 2 feet out of the top of the box opening"

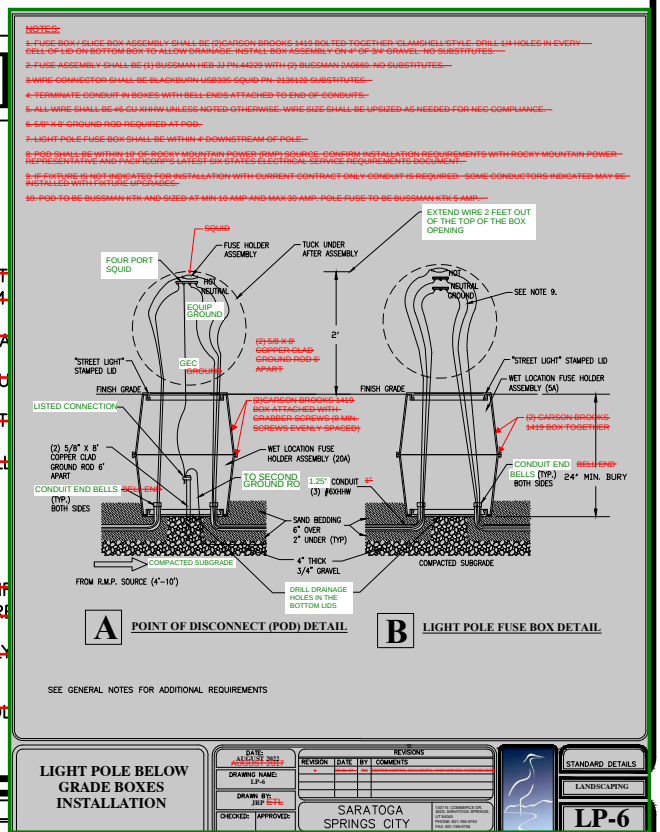


A POINT OF CONNECTION (POD) DETAIL

1 1/4

NOTES:

1. ~~FUSE BOX / SLICE BOX ASSEMBLY SHALL BE (2) CARSON BROOKS 1419 BOLT~~ CELL OF LID ON BOTTOM BOX TO ALLOW DRAINAGE. INSTALL BOX ASSEMBLY ON 4
2. ~~FUSE ASSEMBLY SHALL BE (1) BUSSMAN HEB-JJ PN. 44229 WITH (2) BUSSMA~~
3. ~~WIRE CONNECTOR SHALL BE BLACKBURN USB33S SQUID PN. 2136122. NO SU~~
4. ~~TERMINATE CONDUIT IN BOXES WITH BELL ENDS ATTACHED TO END OF CONDUIT~~
5. ~~ALL WIRE SHALL BE #6 CU XHHW UNLESS NOTED OTHERWISE. WIRE SIZE SHALL~~
6. ~~5/8" X 8' GROUND ROD REQUIRED AT POD.~~
7. ~~LIGHT POLE FUSE BOX SHALL BE WITHIN 4' DOWNSTREAM OF POLE.~~
8. ~~POD SHALL BE WITHIN 10' OF ROCKY MOUNTAIN POWER (RMP) SOURCE. CONF~~ REPRESENTATIVE AND PACIFICORP'S LATEST SIX STATES ELECTRICAL SERVICE REQUIR
9. ~~IF FIXTURE IS NOT INDICATED FOR INSTALLATION WITH CURRENT CONTRACT ONLY~~ INSTALLED WITH FIXTURE UPGRADES.
10. ~~POD TO BE BUSSMAN KTK AND SIZED AT MIN 10 AMP AND MAX 30 AMP. POL~~



LIGHT POLE BELOW GRADE BOXES INSTALLATION

DATE: AUGUST 2017
DRAWING NAME: LP-6
DRAWN BY: ETL
CHECKED: APPROVED:

REV	DATE	BY	
1	08-31-17	RM	EDITED NOTES, CALLOUTS, AND MOVED ASSEMBLIES

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

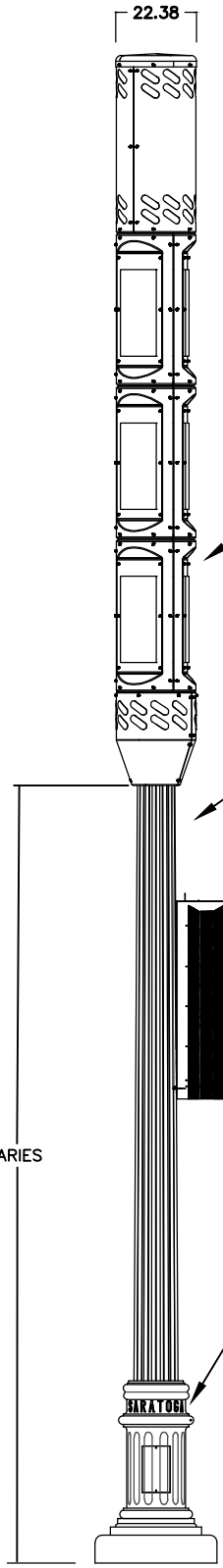
LANDSCAPING

LP-6

NOTES:

1. WHERE OVERHEAD POWER LINES WILL REMAIN, THE HEIGHT OF THE POLE MAY BE REDUCEDTO THE MINIMUM CLEAR DISTANCE SPECIFIED BY THE POWER COMPANY.
2. ADDITIONAL UDOT REQUIREMENTS MAY APPLY.
3. ALTERNATIVE PRODUCTS MAY BE SUBSTITUTED IF DEEMED TO BE QUAL AND APPROVED BY THE CITY.
4. SMALL CELL WIRELESS FACILITIES TO COMPLY WITH UTAH CODE TITLE 54–21 AND CITY CODE 8.05.
5. SMALL CELL WIRELESS FACILITIES SHALL BE PAINTED WITH THE SAME PAINT AS THE DECORATIVE POLE.

This is a new detail being added for 2024



MULTI CARRIER EQUIPMENT SHOWN FOR ILLUSTRATIVE PURPOSES ONLY

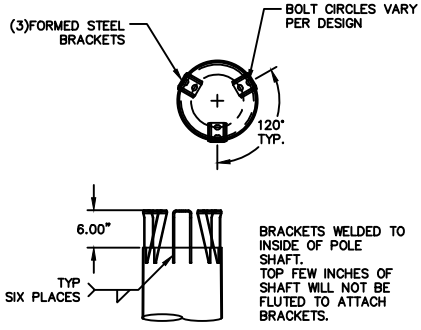
ROUND TAPERED STEEL POLE. 16" SHARP FLUTE TO MATCH STREET LIGHT POLES. INTERNAL DIVISIONS FOR WIRE WAY CHANNELING. BLACK FINISH.

SIDE CABINET FOR 4G/5G EQUIPMENT. PAINTED BLACK

Keep out of the city ROW

Shall not have Saratoga Logo on the pole.

DECORATIVE 2 PIECE CLAM SHELL W/ "SARATOGA" RAISED LETTERING IN GOLD



INTERNAL DIVIDERS

POLE DATA

ITEM	QTY.	POLE TUBE				POLE BASE				ANCHOR BOLT			
		BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	GAUGE OR THK. (IN)	SQUARE "S" (IN)	BOLT CIRCLE "J" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK OR THREAD "H" (IN)	THREAD LENGTH "I" (IN)
1	1	13.00	10.20	20.00	7	18.00	17.00	1.50	1.50	1.25	42.00	6.00	6.00

WIRELESS SUPPORT STRUCTURE-MONOPOLE FOR SMALL CELL WIRELESS FACILITIES

DATE: OCTOBER 2018

DRAWING NAME: LP-6A

DRAWN BY: JRP

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

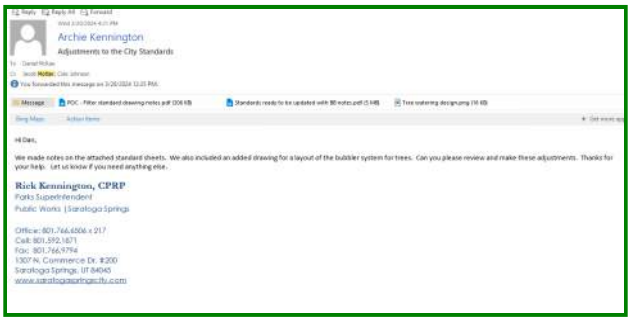
STANDARD DETAILS

STREET LIGHTS

LP-6A

STANDARD LANDSCAPING DETAILS

Incorporate these changes per Parks Dept's request



INDEX:

LS-1 SPRINKLER SYSTEM MAINLINE ISOLATION VALVE 4" & LARGER
LS-2 SPRINKLER SYSTEM QUICK COUPLER VALVE
LS-3 SPRINKLER SYSTEM REMOTE CONTROL VALVE
LS-4 METER & CONTROLLER STAINLESS STEEL ENCLOSURE
LS-5 SATELLITE STAINLESS STEEL CONTROLLER ENCLOSURE
LS-6 SPRINKLER SYSTEM LARGE ROTARY HEAD
LS-7 MEDIUM & SMALL AREA SPRINKLER HEAD
LS-8 SPRINKLER SYSTEM MANUAL DRAIN
LS-9 SPRINKLER SYSTEM SLEEVING
LS-10 SPRINKLER SYSTEM PIPE/TRENCH
LS-11 SPRINKLER SYSTEM PIPE AND WIRE TRENCH
LS-12 SPRINKLER SYSTEM AUTOMATIC DRAIN
LS-13 TREE STAKING AND PLANTING
LS-14 VINYL FENCE WITH MOW STRIP
LS-15 CONCRETE MOW CURB

add LS-16 Drip Irrigation Detail

LANDSCAPING DETAILS

DATE: AUGUST 2017

DRAWING NAME: LS-0

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

1307 N. COMMERCE DR. #200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

LANDSCAPING

LS-0

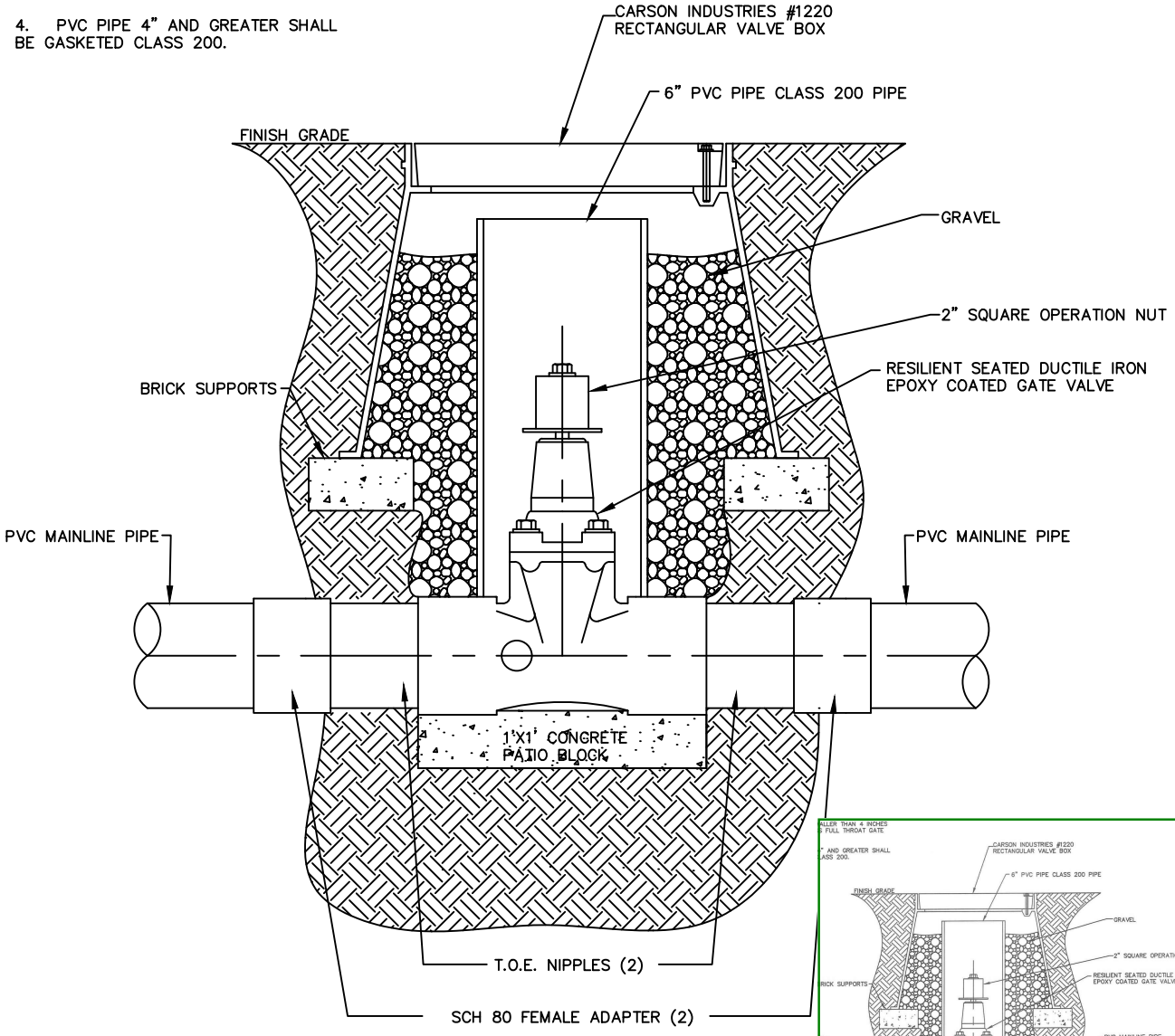
NOTE:

1. GATE VALVE SHALL MATCH NOMINAL SIZE OF MAINLINE PIPE.

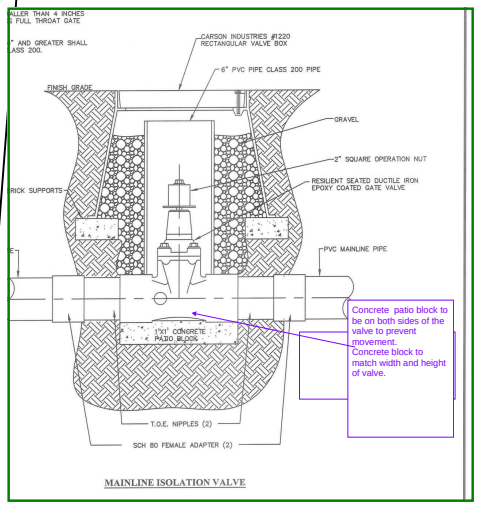
2. NO MALE ADAPTORS.

3. VALVES SMALLER THAN 4 INCHES SHALL BE BRASS FULL THROAT GATE VALVES.

4. PVC PIPE 4" AND GREATER SHALL BE GASKETED CLASS 200.



MAINLINE ISOLATION VALVE



SPRINKLER SYSTEM MAINLINE ISOLATION VALVE 4" AND LARGER

DATE: AUGUST 2017

DRAWING NAME: LS-1

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED NOTES AND CALLOUTS

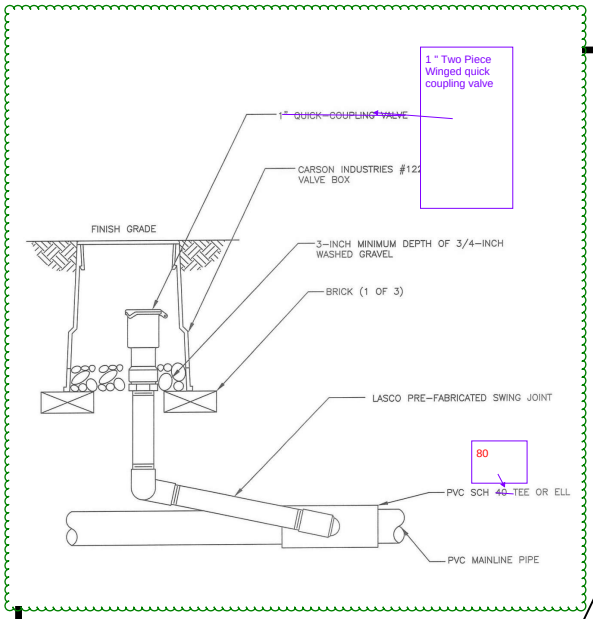
SARATOGA SPRINGS CITY

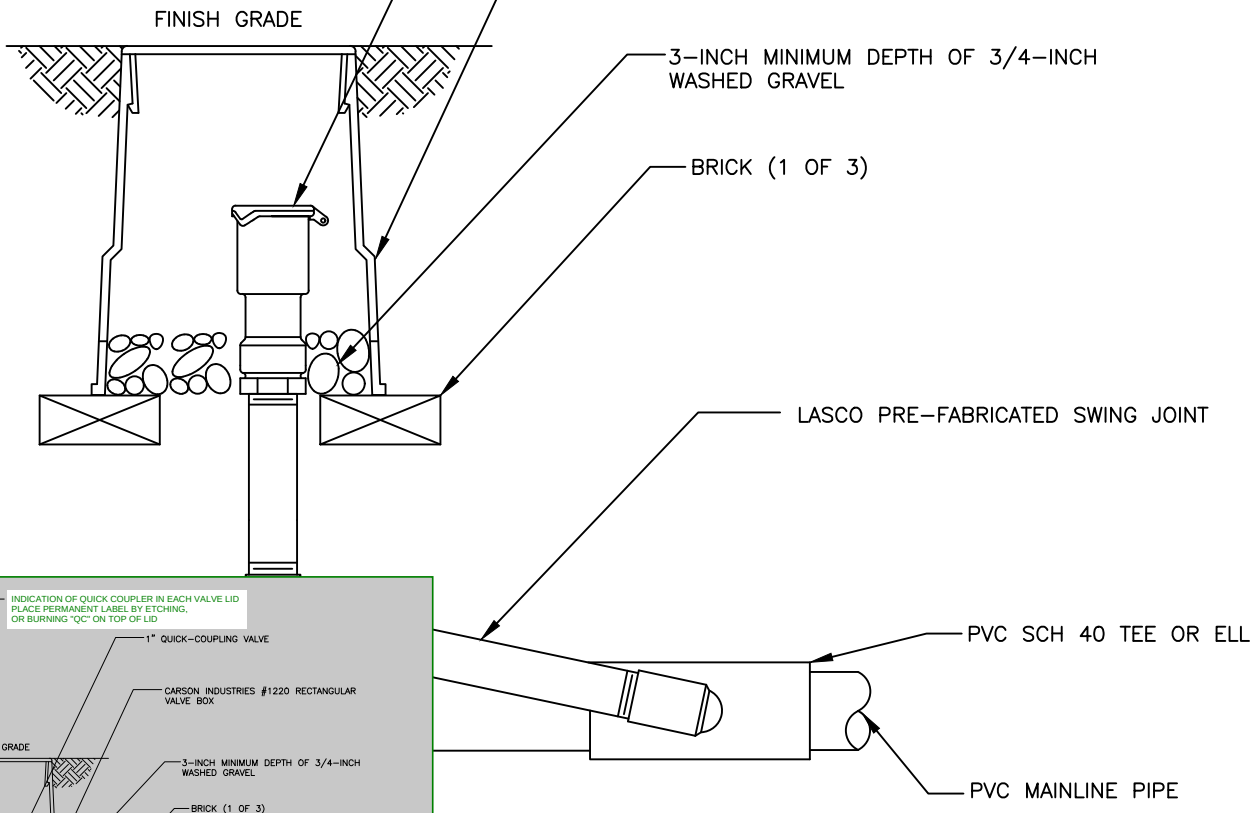
1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

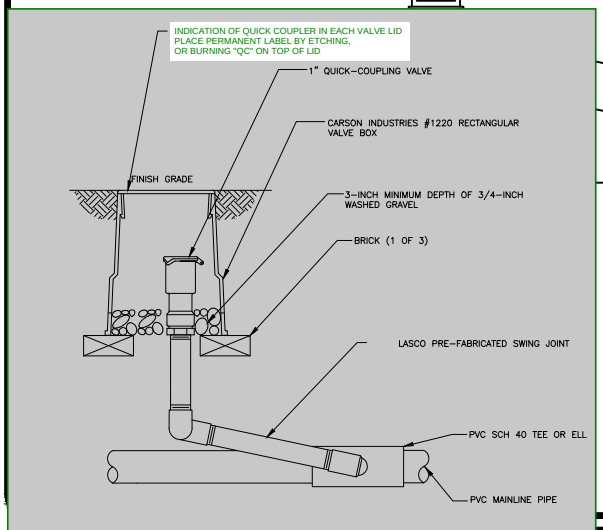
STANDARD DETAILS

LANDSCAPING

LS-1







SPRINKLER SYSTEM QUICK COUPLER VALVE

DATE: AUGUST 2017

DRAWING NAME: LS-2

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED CALLOUTS

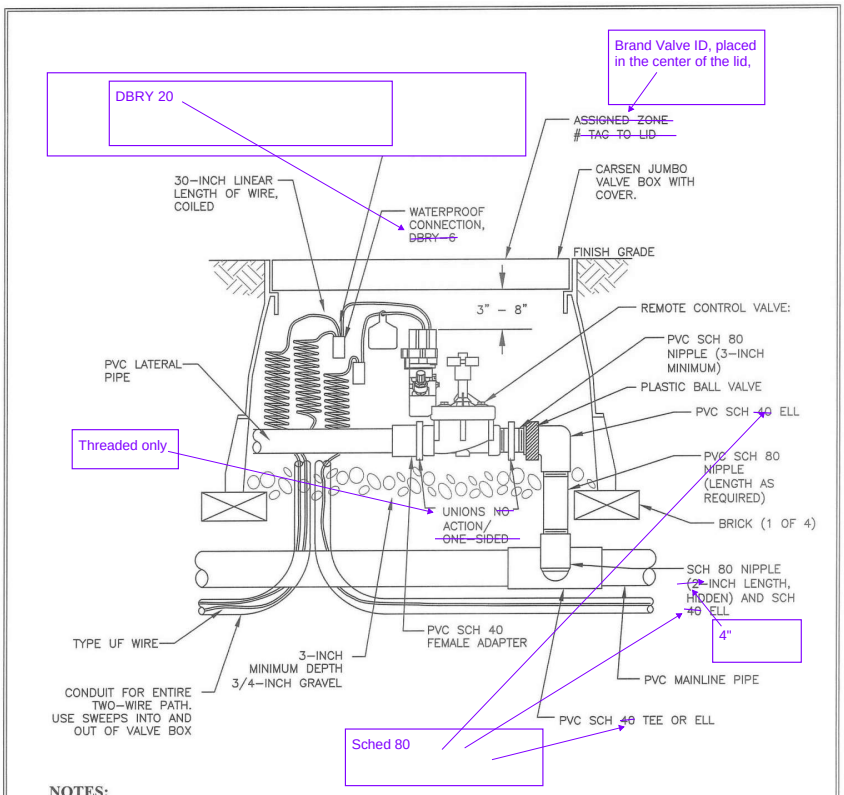
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 8017669794

STANDARD DETAILS

LANDSCAPING

LS-2



:R

ASSIGNED ZONE # TAG TO LID

CARSEN JUMBO VALVE BOX WITH COVER.

FINISH GRADE

– 8"

REMOTE CONTROL VALVE:

PVC SCH 80 NIPPLE (3–INCH MINIMUM)

PLASTIC BALL VALVE

PVC SCH 40 ELL

NO

ED

PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)

BRICK (1 OF 4)

SCH 80 NIPPLE (2–INCH LENGTH, HIDDEN) AND SCH 40 ELL

TYPE UF WIRE

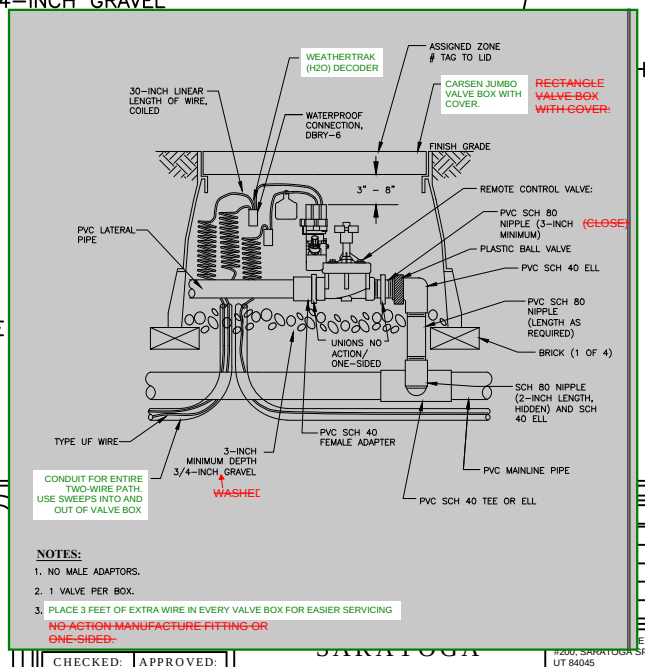
3–INCH MINIMUM DEPTH 3/4–INCH GRAVEL

PVC SCH 40 FEMALE ADAPTER

PVC MAINLINE PIPE

CONDUIT FOR ENTIRE TWO–WIRE PATH. USE SWEEPS INTO AND OUT OF VALVE BOX

H 40 TEE OR ELL



NOTES:

1. NO MALE ADAPTORS.
2. 1 VALVE PER BOX.
3. PLACE 3 FEET OF EXTRA WIRE

SPRINKLER SYSTEM REMOTE CONTROL VALVE

CHECKED: APPROVED:

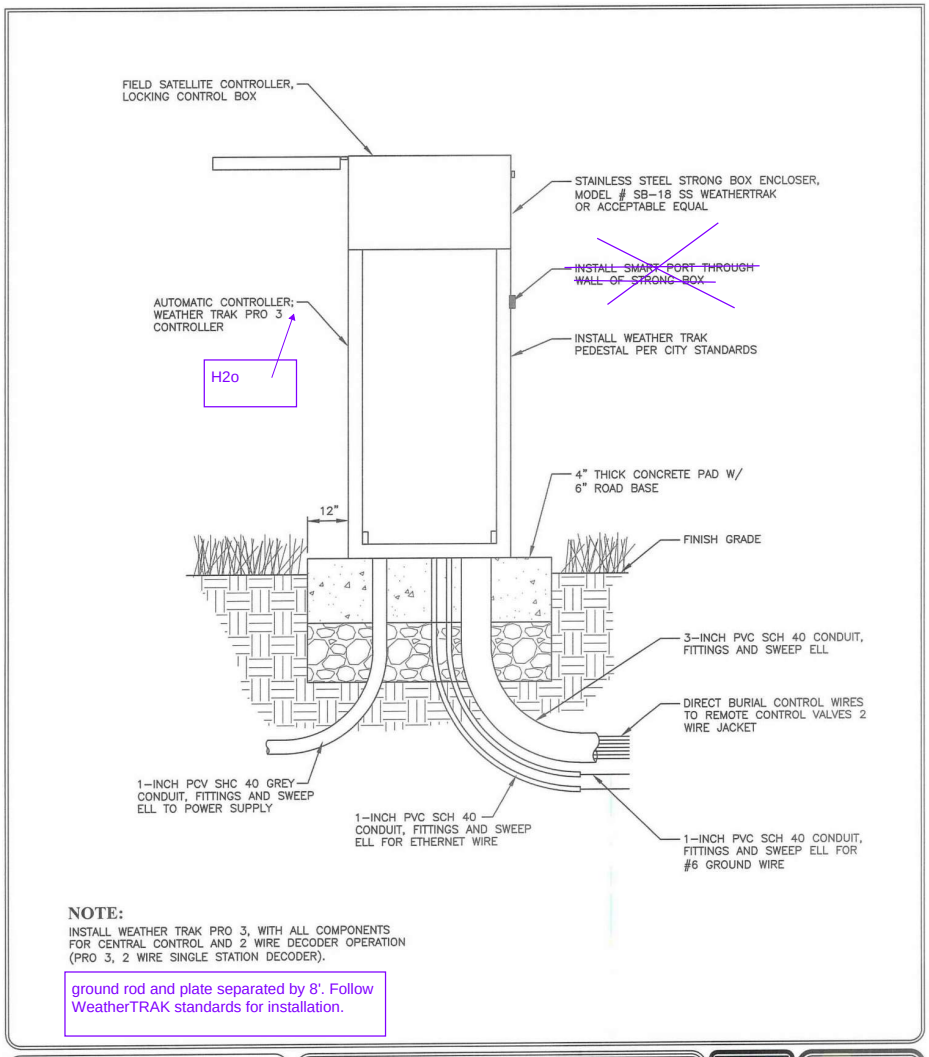
SARATOGA SPRINGS CITY

#200, SARATOGA SPRINGS, UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

LANDSCAPING

LS-3



:SS STEEL STRONG BOX ENCLOSER,
SB-18 SS WEATHERTRAK
CEPTABLE EQUAL

. SMART PORT THROUGH
)F STRONG BOX

. WEATHER TRAK
'AL PER CITY STANDARDS

:K CONCRETE PAD W/
.D BASE

FINISH GRADE

3-INCH PVC SCH 40 CONDUIT, FITTINGS AND SWEEP ELL

DIRECT BURIAL CONTROL WIRES TO REMOTE CONTROL VALVES 2 WIRE JACKET

1-INCH PCV SHC 40 GREY CONDUIT, FITTINGS AND SWEEP ELL TO POWER SUPPLY

1-INCH PVC SCH 40 CONDUIT, FITTINGS AND SWEEP ELL FOR ETHERNET WIRE

1-INCH PVC SCH 40 CONDUIT, FITTINGS AND SWEEP ELL FOR #6 GROUND WIRE

NOTE:

INSTALL WEATHER TRAK PRO 3, WITH ALL COMPONENTS FOR CENTRAL CONTROL AND 2 WIRE DECODER OPERATION (PRO 3, 2 WIRE SINGLE STATION DECODER).

SATELLITE STAINLESS STEEL CONTROLLER ENCLOSURE

DATE: AUGUST 2017
DRAWING NAME: LS-5
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS			
REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED NOTES AND CALLOUTS

SARATOGA SPRINGS CITY

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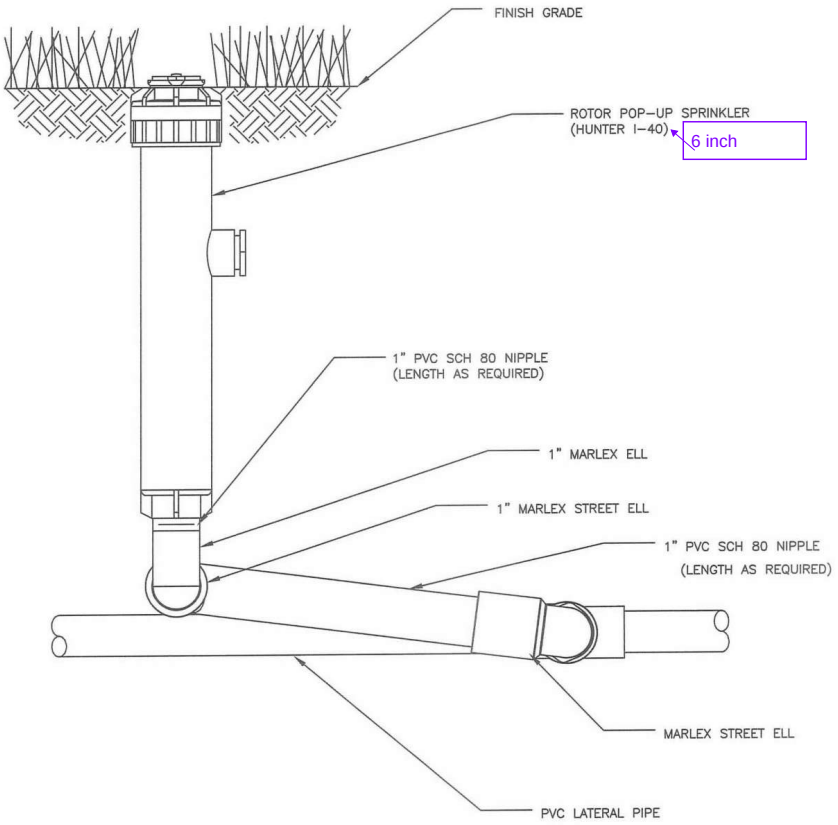
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS
LANDSCAPING
LS-5



NOTE:

1. USE MARLEX STREET ELL
2. USE OF TEFLON TAPE OR PIPE DOPE IS NOT PERMITTED ON MARLEX STREET ELLS

›–UP SPRINKLER
-40)

L

L

1" PVC SCH 80 NIPPLE
(LENGTH AS REQUIRED)

MARLEX STREET ELL

PIPE

SPRINKLER SYSTEM LARGE AREA ROTARY HEAD

DATE:	AUGUST 2017
DRAWING NAME:	LS-6
DRAWN BY:	ETL
CHECKED:	APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08/31/17	RM	EDITED CALLOUTS

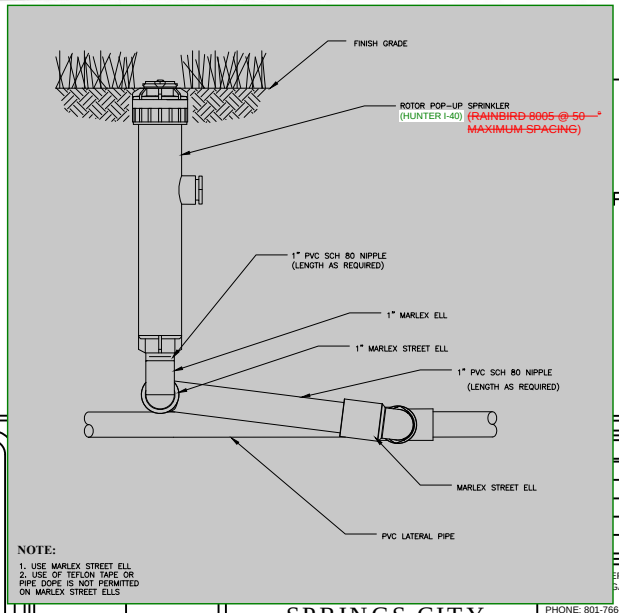
SARATOGA SPRINGS CITY

1307 N. COMMERCE DR.
#200, SARATOGA SPRINGS,
UT 84045
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

LANDSCAPING

LS-6



NOTE:

1. USE MARLEX STREET ELL
2. USE OF TEFLON TAPE OR PIPE DOPE IS NOT PERMITTED ON MARLEX STREET ELLS

SPRINKLER SYSTEM
LARGE AREA
ROTARY HEAD

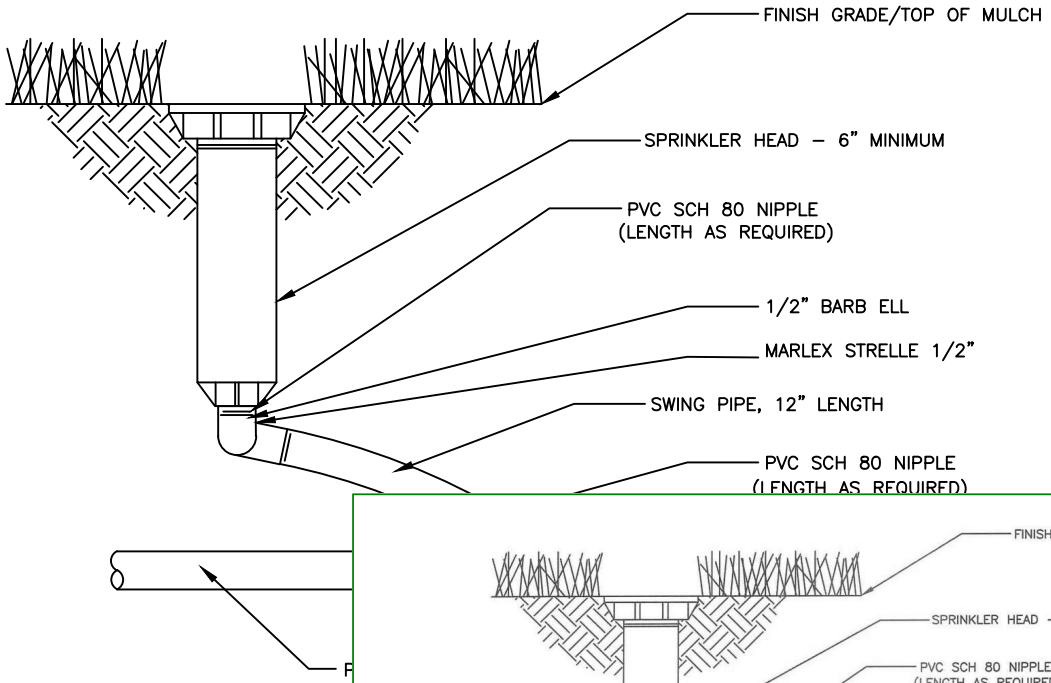
SPRINGS CITY

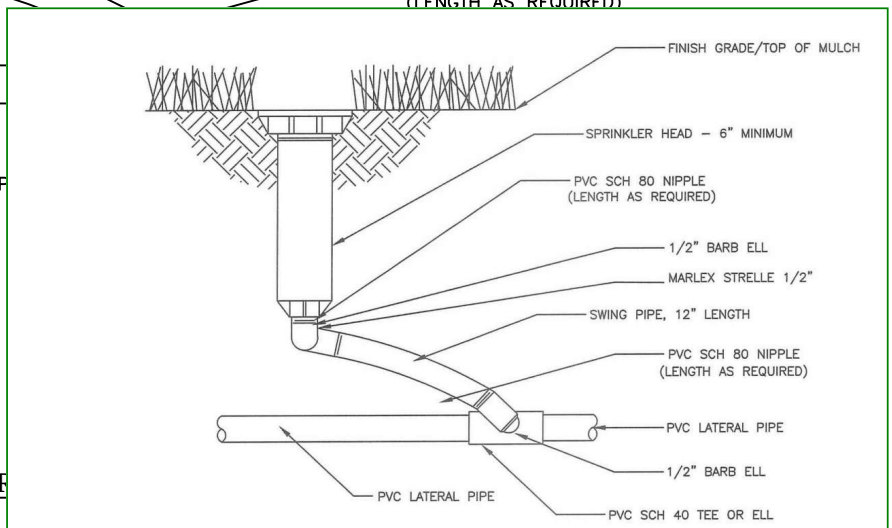
PHONE: 801-766-9793
FAX: 801-766-9794

STANDARD DETAILS

LANDSCAPING

LS-6





ROTORS FOR MEDIUM AND SMALL AR

HUNTER I–20 @ 30' MAXIMUM SPACING.

SPRAY HEADS FOR SMALL AREAS:

RAINBIRD #1806 FOR TURF AREAS, #1812 F
HUNTER 6" PRO–SPRAY FOR TURF AREAS, 1
INLET ONLY) FOR SHRUB BEDS. NO SIDE OU

ROTORS FOR MEDIUM AND SMALL AREAS:

HUNTER I–20 @ 30' MAXIMUM SPACING.

Hunter
PRS 40-cv 6"

PRS 40-0cv 12"

SMALL AREAS:

~~RAINBIRD #1806~~ FOR TURF AREAS, ~~#1812~~ FOR SHRUB BEDS.
~~HUNTER 6" PRO–SPRAY FOR TURF AREAS, 12" PRO–SPRAY (BOTTOM INLET ONLY) FOR SHRUB BEDS. NO SIDE OUTLETS ON 6" PRO SPRAY~~

MEDIUM AND SMALL AREA SPRINKLER HEAD

DATE: AUGUST 2017
DRAWING NAME: LS-7
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED NOTES & CALLOUTS

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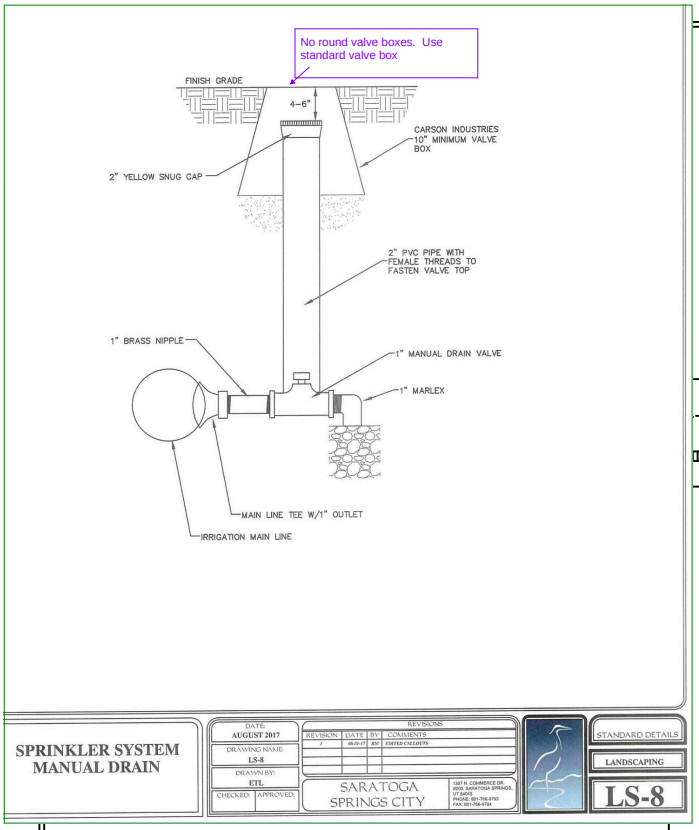
STANDARD DETAILS
LANDSCAPING
LS-7



SPRINKLER SYSTEM MANUAL DRAIN

DATE: AUGUST 2017
DRAWING NAME: LS-8
DRAWN BY: ETL
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED CALLOUTS

SARATOGA SPRINGS CITY

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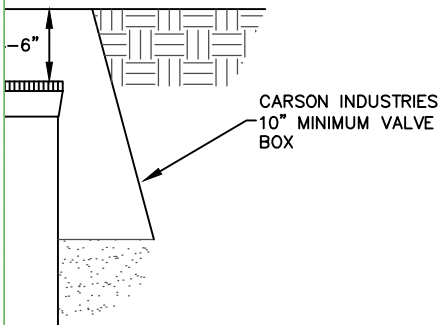
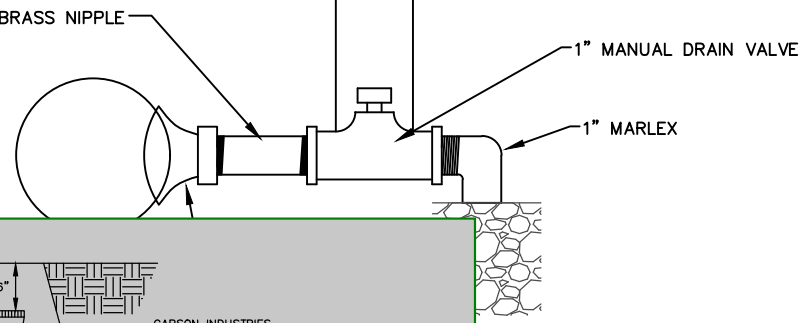
STANDARD DETAILS

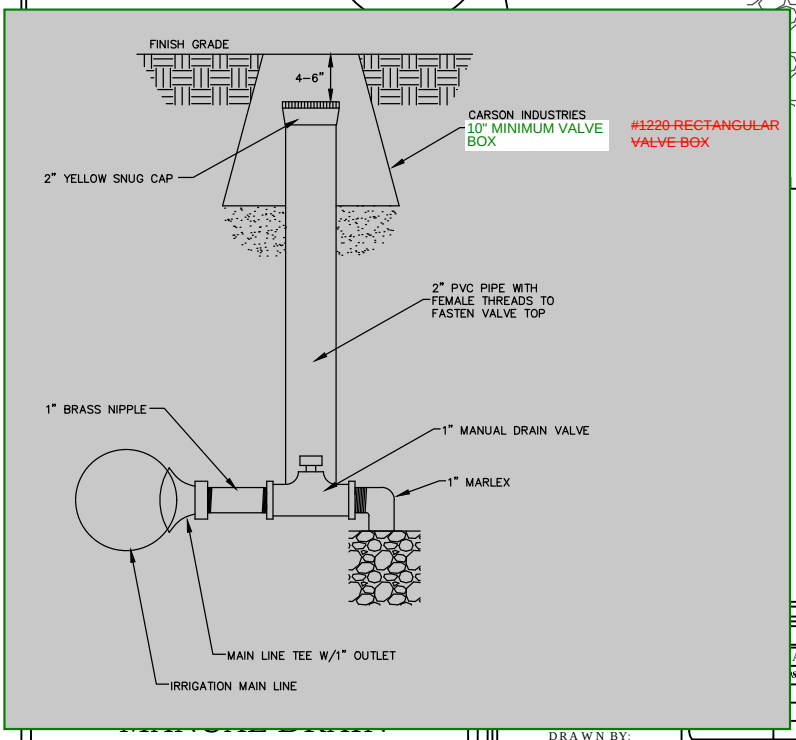
LANDSCAPING

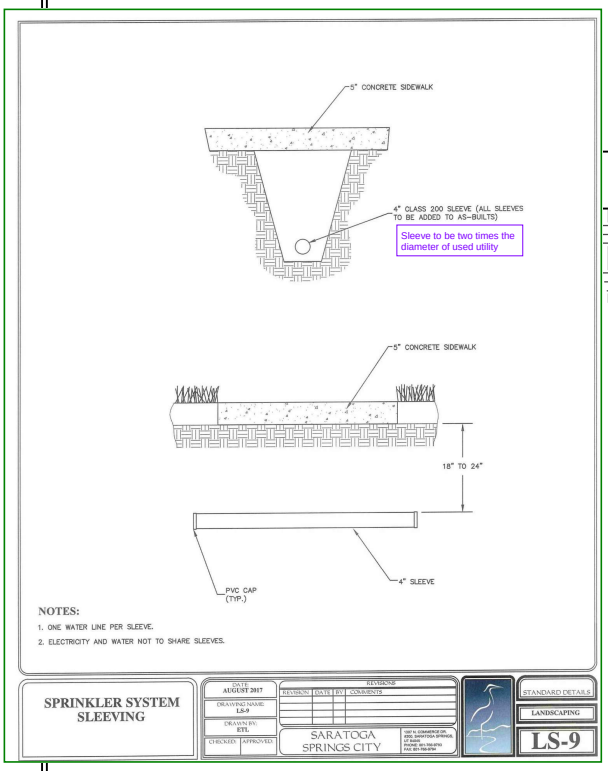
LS-8

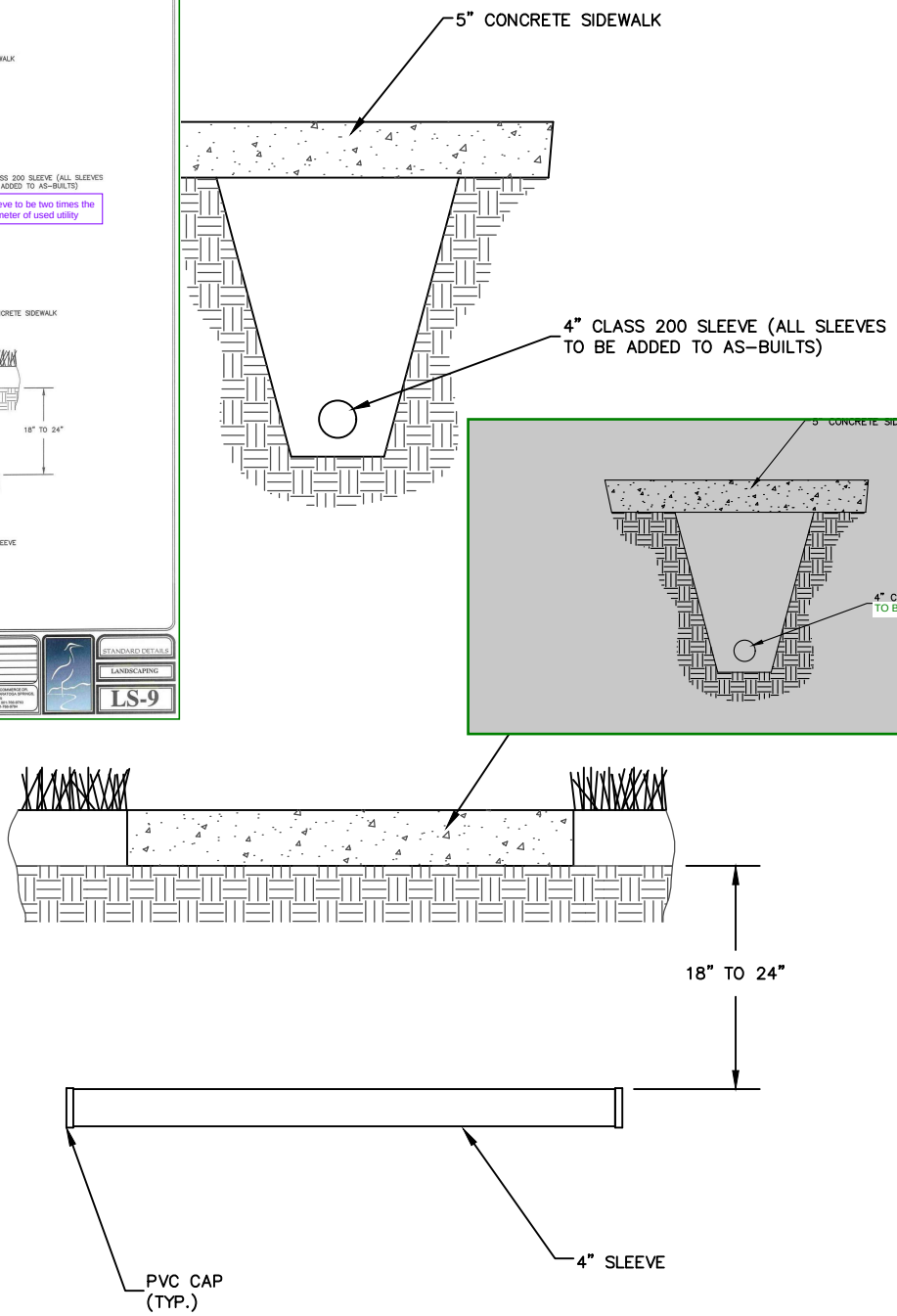


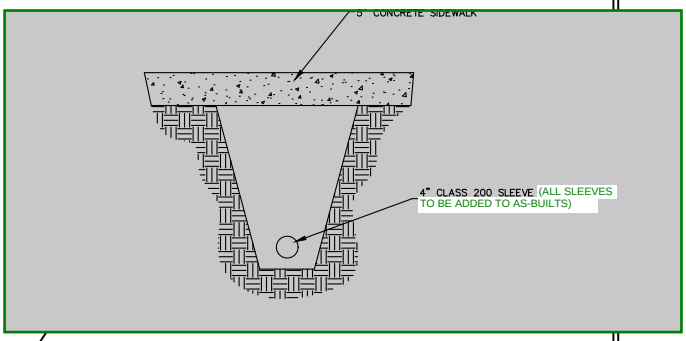


LET









NOTES:

1. ONE WATER LINE PER SLEEVE.
2. ELECTRICITY AND WATER NOT TO SHARE SLEEVES.

SPRINKLER SYSTEM SLEEVING

DATE:	REVISIONS			
AUGUST 2017	REVISION	DATE	BY	COMMENTS
DRAWING NAME: LS-9				
DRAWN BY: ETL				
CHECKED:	APPROVED:			

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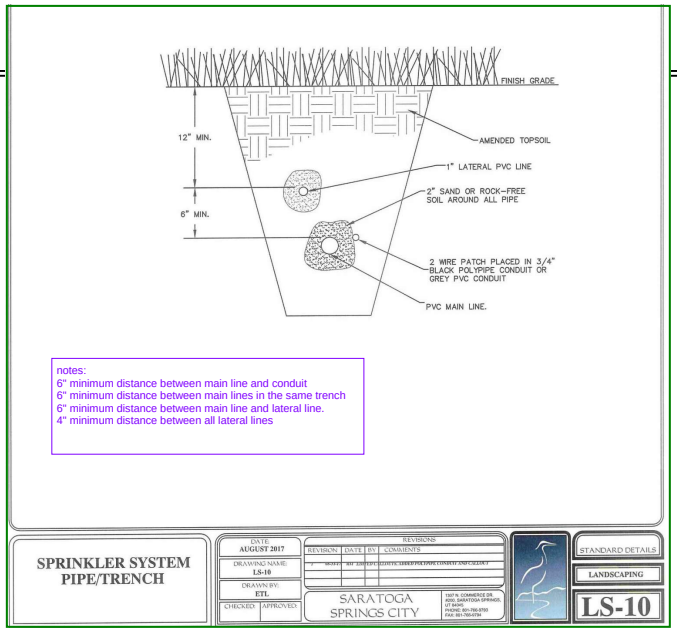
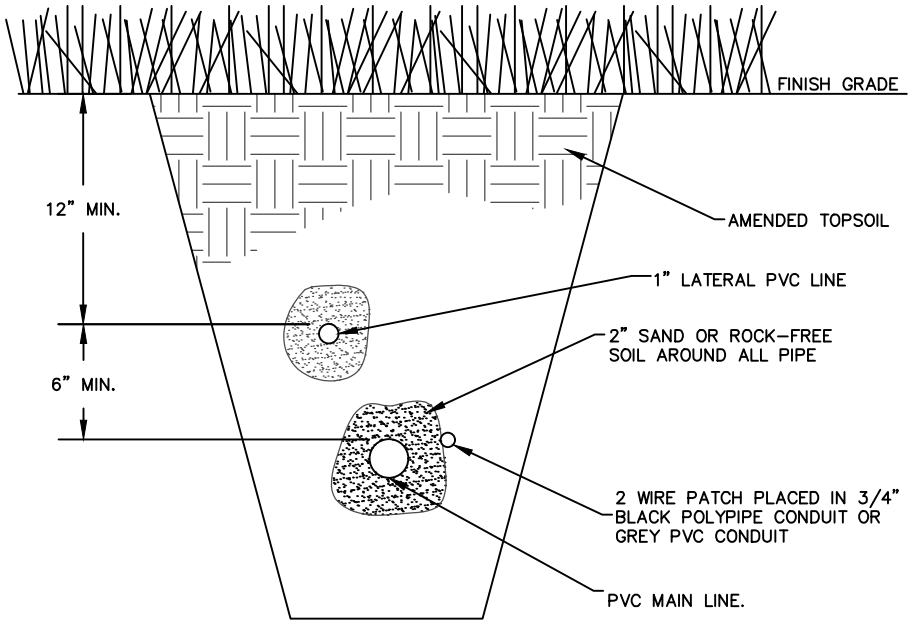
STANDARD DETAILS

LANDSCAPING

LS-9





SPRINKLER SYSTEM PIPE/TRENCH

DATE: AUGUST 2017

DRAWING NAME: LS-10

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED CALLOUTS, ADDED POLYPIPE CONDUIT AND CALLOUT

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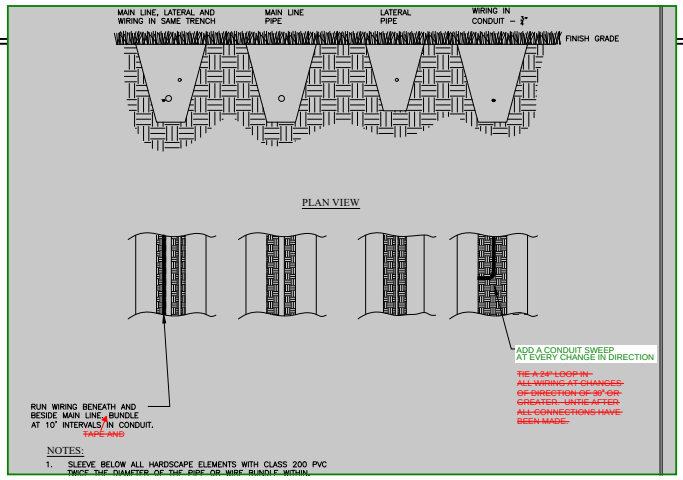
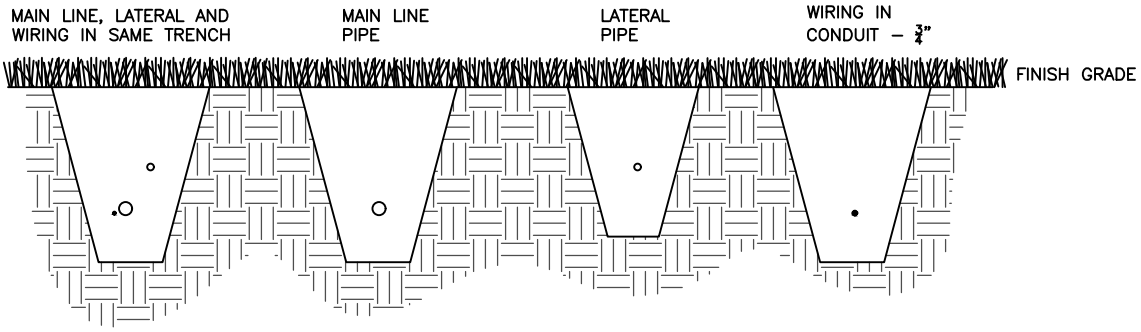
STANDARD DETAILS

LANDSCAPING

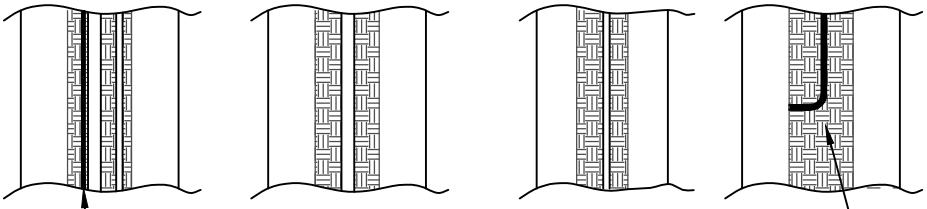
LS-10



SECTION VIEW



PLAN VIEW



ADD A CONDUIT SWEEP AT EVERY CHANGE IN DIRECTION

RUN WIRING BENEATH AND BESIDE MAIN LINE. BUNDLE AT 10' INTERVALS IN CONDUIT.

NOTES:

1. SLEEVE BELOW ALL HARDSCAPE ELEMENTS WITH CLASS 200 PVC TWICE THE DIAMETER OF THE PIPE OR WIRE BUNDLE WITHIN.
2. FOR PIPE AND WIRE BURIAL DEPTHS DETAILS. SEE SPECS.
3. ELECTRIC AND WATER NOT TO SHARE SLEEVES.

SPRINKLER SYSTEM PIPE AND WIRE TRENCH

DATE: AUGUST 2017

DRAWING NAME: LS-11

DRAWN BY: ETL

CHECKED: | APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS
1	08-31-17	RM	EDITED CALLOUTS

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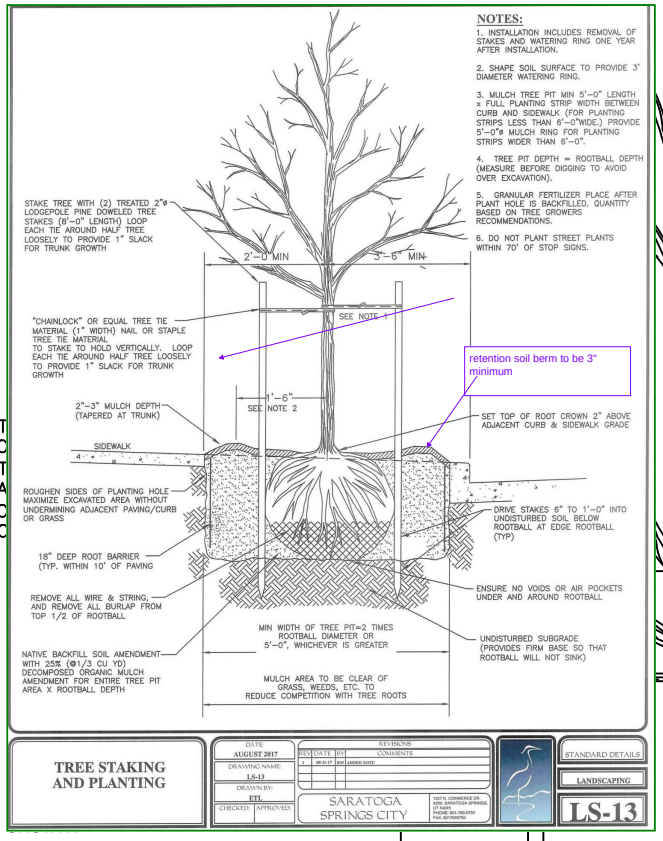
FAX: 801-766-9794

STANDARD DETAILS

LANDSCAPING

LS-11



NOTES:

1. INSTALLATION INCLUDES REMOVAL OF STAKES AND WATERING RING ONE YEAR AFTER INSTALLATION.

2. SHAPE SOIL SURFACE TO PROVIDE 3' DIAMETER WATERING RING.

3. MULCH TREE PIT MIN 5'–0" LENGTH x FULL PLANTING STRIP WIDTH BETWEEN CURB AND SIDEWALK (FOR PLANTING STRIPS LESS THAN 6'–0"WIDE.) PROVIDE 5'–0"ø MULCH RING FOR PLANTING STRIPS WIDER THAN 6'–0".

4. TREE PIT DEPTH = ROOTBALL DEPTH (MEASURE BEFORE DIGGING TO AVOID OVER EXCAVATION).

5. GRANULAR FERTILIZER PLACE AFTER PLANT HOLE IS BACKFILLED. QUANTITY BASED ON TREE GROWERS RECOMMENDATIONS.

6. DO NOT PLANT STREET PLANTS WITHIN 70' OF STOP SIGNS.

3'–6" MIN

SEE NOTE 1

1'–6" SEE NOTE 2

2"–3" MULCH DEPTH (TAPERED AT TRUNK)

SET TOP OF ROOT CROWN 2" ABOVE ADJACENT CURB & SIDEWALK GRADE

SIDEWALK

ROUGHEN SIDES OF PLANTING HOLE MAXIMIZE EXCAVATED AREA WITHOUT UNDERMINING ADJACENT PAVING/CURB OR GRASS

DRIVE STAKES 6" TO 1'–0" INTO UNDISTURBED SOIL BELOW ROOTBALL AT EDGE ROOTBALL (TYP)

18" DEEP ROOT BARRIER (TYP. WITHIN 10' OF PAVING

ENSURE NO VOIDS OR AIR POCKETS UNDER AND AROUND ROOTBALL

REMOVE ALL WIRE & STRING, AND REMOVE ALL BURLAP FROM TOP 1/2 OF ROOTBALL

MIN WIDTH OF TREE PIT=2 TIMES ROOTBALL DIAMETER OR 5'–0", WHICHEVER IS GREATER

UNDISTURBED SUBGRADE (PROVIDES FIRM BASE SO THAT ROOTBALL WILL NOT SINK)

NATIVE BACKFILL SOIL AMENDMENT WITH 25% (@1/3 CU YD) DECOMPOSED ORGANIC MULCH AMENDMENT FOR ENTIRE TREE PIT AREA X ROOTBALL DEPTH

MULCH AREA TO BE CLEAR OF GRASS, WEEDS, ETC. TO REDUCE COMPETITION WITH TREE ROOTS

TREE STAKING AND PLANTING

DATE: AUGUST 2017

DRAWING NAME: LS-13

DRAWN BY: ETL

CHECKED: APPROVED:

REVISIONS

REV	DATE	BY	COMMENTS
1	08-31-17	RM	ADDED NOTE

SARATOGA SPRINGS CITY

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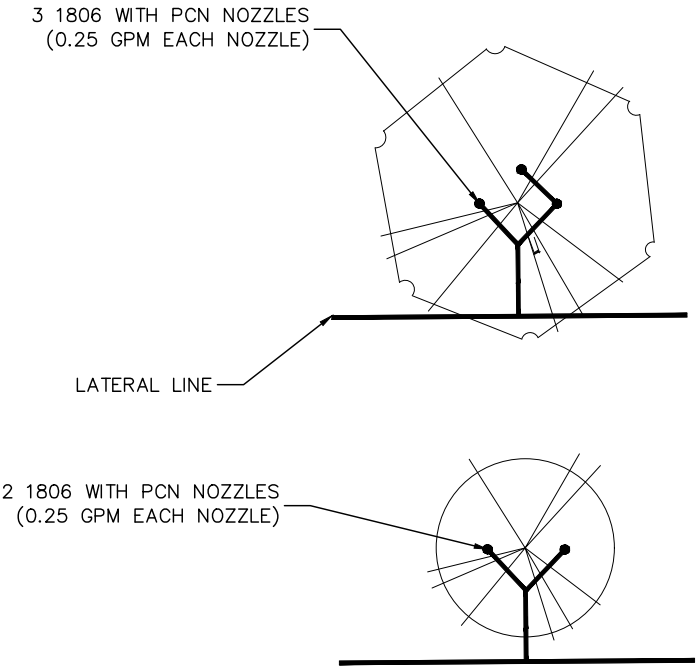
FAX: 8017669794

STANDARD DETAILS

LANDSCAPING

LS-13

add a drip irrigation detail from parks dept called LS-16 Drip Irrigation as shown below



DRIP IRRIGATION

DATE: MARCH 2024
DRAWING NAME: LS-16
DRAWN BY: JRP
CHECKED: APPROVED:

REVISIONS

REVISION	DATE	BY	COMMENTS

SARATOGA SPRINGS CITY

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STANDARD DETAILS
LANDSCAPING
LS-16

SARATOGA SPRINGS PLANNING

PLANNING COMMISSION
Staff Report

SITE PLAN
JACK IN THE BOX, SARATOGA SPRINGS COMMERCIAL PLAT F, LOT 602
MAY 16, 2024
PUBLIC MEETING

Report Date:	May 8, 2024
Applicant:	Karen Wallace and Sherri Miller, Magellan Architects
Owner:	Salt Rock Holdings, LLC
Location:	1303 N. Redwood Road
Major Street Access:	Redwood Road and Lake Drive
Parcel Number(s) & Size:	66:931:0602; 0.74 acres
Land Use Designation:	Regional Commercial
Parcel Zoning:	RC
Adjacent Zoning:	RC, PC
Current Use of Parcel:	Vacant Lot
Adjacent Uses:	Regional Commercial, Planned Community
Previous Meetings:	Plat F approved in November 2022
Previous Approvals:	Concept Plan Review by staff, 11/27/23
Type of Action:	Administrative
Land Use Authority:	City Council
Planner:	Gina Grandpre, Senior Planner

A. Executive Summary:

The applicant requests approval of a site plan for a Jack in the Box drive-thru restaurant, located on lot 602 of the Saratoga Springs Commercial Plat F, at 1303 N. Redwood Road. The Lot is 0.74 acres, includes the required 30 foot trail/landscape easement along Redwood Road, and incorporates 20% landscaping on the site. Access to the lot will be from the west side of Lake Drive, with no access to the lot from Redwood Road or the south side of Lake Drive. The proposed site plan provides the required parking for a drive-thru/restaurant use.

Recommendation:

Staff recommends that the Planning Commission conduct a public meeting on the Jack in the Box Site Plan, review and discuss the proposal, and choose from the options in Section I of this report. Options include approval with or without conditions, denial, or continuation.

B. Background: The subject property is part of the Saratoga Springs Commercial Plat F subdivision, which was approved by the City Council on November 7, 2022.

Gina Grandpre, Senior Planner
ggrandpre@saratogaspringscity.com
1307 North Commerce Drive, Suite 200 • Saratoga Springs, Utah 84045
801-766-9793 x185 • 801-766-9794 fax

C. **Specific Request:** The applicant is requesting site plan approval of the Jack in the Box site improvements and building elevations located on Lot 602 of the Saratoga Springs Commercial Plat F Subdivision.

D. **Process:** Section 19.13 summarizes the process of site plan approval. The City Council is the Land Use Authority of new site plans, followed by a recommendation from the Planning Commission. This item is scheduled to be discussed in a public meeting and a public hearing is not required.

E. **Community Review:** This has been noticed as a public meeting per City and State statutes, which requires 24-hour notice on the public notice website. As of the date of this report no public input has been received.

F. **General Plan:** The site is designated as Regional Commercial on the General Plan Land Use Map. The General Plan describes the general characteristics of the Regional Commercial land use designation as follows:

> *Regional Commercial (RC): Areas that incorporate retail, employment, entertainment, and civic uses.*

Staff conclusion: Consistent. A drive-thru/restaurant use is allowed in the Regional Commercial zone, which covers the uses proposed by Jack in the Box. Adjacent properties are zoned RC where retail, restaurant, and office uses occur. Other adjacent properties will remain vacant until future development happens. Sidewalks and pathways are provided for pedestrian access in and around the parcel.

G. **Code Criteria:**
For full analysis please see the attached Planning Review Checklist.

- 19.04, Land Use Zones: **Complies**.
- 19.05, Supplemental Regulations: **Complies**.
- 19.06, Landscaping and Fencing: **Complies.**
- 19.09, Off Street Parking: **Complies**.
- 19.11, Lighting: **Complies.**
- 19.13, Process: **Complies** and scheduled for PC.
- 19.14, Site Plans: **Complies**.
- 19.16, Site and Architectural Design Standards: **Complies.**

I. **Recommendation and Alternatives:**
Staff recommends that the Planning Commission review, discuss the application, and choose from the following options.

Option 1 – Recommendation of Approval

"I move that the Planning Commission recommend approval to the City Council of the proposed Jack in the Box Site Plan, located at 1303 N. Redwood Road, with the Findings and Conditions in the Staff Report."

Findings

1. The application is consistent with the General Plan, as articulated in Section "F" of the staff report, which section is incorporated by reference herein.
2. The application complies with the criteria of the Land Development Code, as articulated in in section "G" of the staff report, which section is incorporated by reference herein.

Conditions:

1. All conditions of the City Engineer shall be met, including but not limited to those in the attached Engineering Staff Report.
2. All requirements of the Fire Chief shall be met.
3. All other Code requirements shall be met.
4. Any other conditions or changes as articulated by the Planning Commission: _____.

Option 2 – Continuance

"I move to **continue** the Site Plan for Jack in the Box to another meeting on [DATE], with direction to the applicant and Staff on information and/or changes needed to render a decision, as follows:

1. _____
2. _____

Option 3 – Denial

"I move that the Planning Commission recommend denial to the City Council of the proposed Site Plan for Jack in the Box, located at 1303 N. Redwood Road with the Findings below:

1. The application is not consistent with the General Plan:
   a. _____, and/or,
2. The Site Plan is not consistent with Section [19.04, 19.05, 19.06, 19.09, 19.11, 19.13, 19.14, 19.16, 19.18] of the Code, as articulated by the Planning Commission: _____.

J. Exhibits:

1. City Engineer's Report
2. Location & Zone Map
3. Planning Review Checklist
4. Site Plan
5. Landscaping
6. Elevations

Exhibit 1: Engineer Staff Report

Staff Report

Author: Ken Knight, Staff Engineer

Subject: Jack in the Box– Site Plan

Date: May 16, 2024

Type of Item: Site Plan Approval

Description:

A. Topic: The Applicant has submitted a Site Plan application. Staff has reviewed the submittal and provides the following recommendations.

B. Background:

Applicant:	Karen Wallace and Sherri Miller, Magellan Architects
Request:	*Site Plan Approval*
Location:	1303 N. Redwood Road
Acreage:	*0.74 Acres - 1 Lots*

C. Recommendation: Staff recommends the approval of Site Plan subject to the following conditions:

1. All review comments and redlines provided by the City Engineer are to be complied with and implemented with the approved construction drawings.

2. Provide a Storm Water Pollution Prevention Plan (SWPPP) following the State template, prior to the pre-construction meeting. Coordinate with Thomas Gwynn, Storm Water Division (TGwynn@saratogaspringscity.com).

3. Owner to record a Long-Term Storm Water Management Agreement and provide a Long-Term Storm Water Management Plan (LTSWMP) for the project. The plan portion will be required prior to scheduling a pre-construction meeting. Coordinate with Thomas Gwynn, Storm Water Division (TGwynn@saratogaspringscity.com).

4. Project shall comply with all ADA standards and requirements.

5. Developer must secure water rights as required by the City Engineer, City Attorney, and

development code.

6. Developer shall provide easements for all public utilities not located in the public right-of-way.

7. Developer is required to ensure that there are no adverse effects to adjacent properties due to the grading practices employed during construction.

8. Developer may be required by the Saratoga Springs Fire Chief to perform fire flow tests prior to the issuance of certificate of occupancy or prior to commencement of the warranty period.

9. Submittal of as-built drawings in pdf format to the City Engineer is required prior to acceptance of site improvements and the commencement of the warranty period.

10. Project bonding for the site plan must be completed as approved by the City Engineer prior to the preconstruction meeting.

11. Below are the "Summary of Key Findings/Recommendations" from the traffic study:

SUMMARY OF KEY FINDINGS & RECOMMENDATIONS

Project Conditions

- The development will consist of a Jack in the Box restaurant
- The project is anticipated to generate approximately 703 weekday daily trips, including 71 trips in the midday peak hour, and 46 trips in the evening peak hour
- No additional auxiliary lanes are recommended beyond those recommended in the WPI Commercial TIS (Hales, 2022), and these auxiliary lanes are assumed in the existing (2023) background conditions for this study.

Exhibit 2: Location & Zoning Map

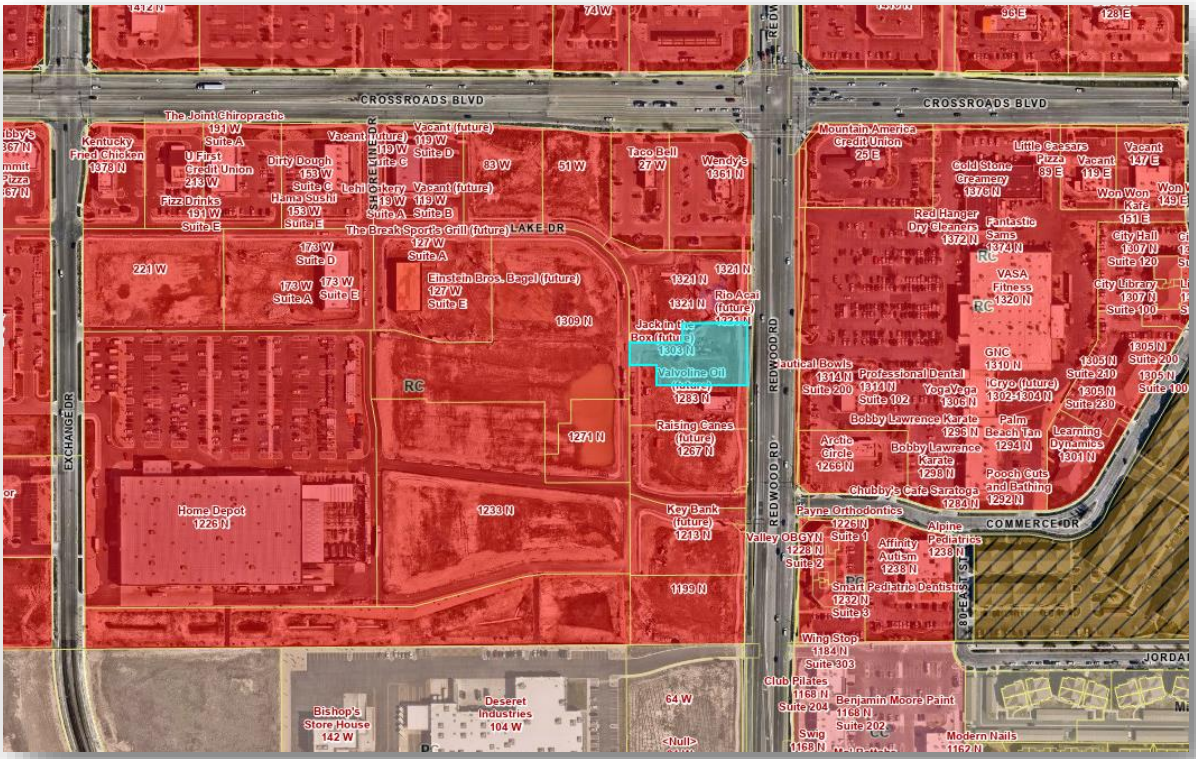


Exhibit 3: Planning Review Checklist

APPLICATION REVIEW CHECKLIST

Application Information

Date Received:	4/8/2024
Date of Review:	**4/22/2024**
Project Name:	Jack in the Box Site Plan
Project Request / Type:	Site Plan
Meeting Type:	Public Meeting
Applicant:	Karen Wallace and Sherri Miller, Magellan Architects
Owner:	Salt Rock Holdings, LLC
Location:	1303 N Redwood Road
Major Street Access:	Redwood Road and Crossroads Blvd
Parcel Number(s) and size:	66:931:0602; 0.74 acres
Land Use Designation:	Regional Commercial
Parcel Zoning:	Regional Commercial
Adjacent Zoning:	Regional Commercial
Current Use:	Undeveloped Lot
Adjacent Uses:	Commercial
Previous Meetings:	None
Previous Approvals:	Concept Plan – 11/27.23
Type of Action:	Administrative
Land Use Authority:	City Council
Planner:	Gina Grandpre, Senior Planner

Section 19.13 – Application Submittal

- Application Complete: Yes
- Rezone Required: No
- General Plan Amendment required: No
- Additional Related Application(s) required: None

Section 19.13.04 – Process

- DRC: 03/05/24
- Neighborhood Meeting: Not required
- PC: TBD
- CC: TBD

General Review

Building Department

- No Comments

Fire Department

- No Comments

Gina Grandpre, Senior Planner
ggrandpre@saratogaspringscity.com
1307 North Commerce Drive, Suite 200 • Saratoga Springs, Utah 84045
801-766-9793 x185 • 801-766-9794 fax

GIS / Addressing

- No Comments

Additional Recommendations:

- No Comments

Code Review

- 19.04, Land Use Zones
  - Zone: RC
  - Use: RC

19.04.01 Requirements		Regional Commercial	
Category To Be Reviewed	**Regulation**	**Compliance**	**Findings**
Development Size (Minimum)	N/A	**N/A.**	
Lot Size (Minimum)	30,000 sq. ft.	**Complies.**	*See Planning for plans*
Front/Corner Side Setback (Minimum)	10'	**Complies.**	*See Planning for plans*
Interior Side Setback (Minimum)	10' or height of building, whichever is greater, when adjacent to a residential zone	**Complies.**	*See Planning for plans*
Rear Setback (Minimum)	30' or height of building, whichever is greater, when adjacent to a residential zone	**Complies.**	*See Planning for plans*
Building Separation (Minimum)	N/A	**N/A.**	*See Planning for plans*
Lot Width (Minimum)	N/A	**N/A.**	*See Planning for plans*
Lot Frontage (Minimum)	N/A	**N/A.**	*See Planning for plans*
Building Height (Maximum)	50'	**Complies.**	*See Planning for plans*
Lot coverage (Maximum)	50%	**Complies.**	*See Planning for plans*
Building Size (Minimum)	1,000 sq. ft.	**Complies.**	*See Planning for plans*
Building Size (Maximum)	N/A	**N/A.**	*See Planning for plans*

19.05 Supplemental Regulations		
Regulation	**Compliance**	**Findings**
Flood Plain: All buildings and structures intended for human occupancy shall be constructed at least (1) one foot above the base flood elevation of Zone A as defined on the FEMA Flood Insurance Map.	**Complies.**	*See Planning for plans*
Water & Sewage: Each lot shall be connected to City water and sewer.	**Complies.**	*See Planning for plans*
Transportation Master Plan: No building lot shall be created and no structure shall be erected within the location of a proposed street, road, highway, or right-of-way as shown on the City's currently-approved Transportation Master Plan.	**Complies.**	*See Planning for plans*

Property Access - All lots shall abut a dedicated public street or highway or a private roadway.	**Complies.**	*See Planning for plans*
19.05.16. Special Standards and Considerations Governing Particular Uses. *See Code for details*		
Automobile refueling stations and car wash operations.	**N/A.**	*Proposed use is a restaurant/drive-thru*
Automobile Repair, Minor:	**N/A.**	*Proposed use is a restaurant/drive-thru*
Car Wash (full service).	**N/A.**	*Proposed use is a restaurant/drive-thru*
Hotels.	**N/A.**	*Proposed use is a restaurant/drive-thru*
Kennel, Private.	**N/A.**	*Proposed use is a restaurant/drive-thru*
Storage, Self-Storage, or Mini-Storage Units.	**N/A.**	*Proposed use is a restaurant/drive-thru*
Vehicle Storage.	**N/A.**	*Proposed use is a restaurant/drive-thru*
Public and Private Utility Building or Facility and Public Building Sites.	**N/A.**	*Proposed use is a restaurant/drive-thru*
Bars.	**N/A.**	*Proposed use is a restaurant/drive-thru*

19.06 Landscaping and Fencing

Landscape Plans

Regulation	Compliance	Findings
Landscape Architect: Landscaped plans shall be prepared by a licensed landscape architect.	**Complies.**	*See Planning for plans*
Existing Conditions: Show the location and dimension of all existing and proposed structures, property lines, easements, parking lots, power lines, rights-of-way, ground signs, refuse areas, and lighting.	**Complies.**	*See Planning for plans*
Planting Plan: Show location and planting details for all proposed vegetation and materials. Indicate the size of the plant material at maturation. All existing vegetation that will be removed or remain must be identified.	**Complies.**	*See Planning for plans*
Plants: The name (both botanical and common name), quantity, and size of all proposed plants.	**Complies.**	*See Planning for plans*
Topography: Existing and proposed grading of the site indicating contours at two-foot intervals.	**Complies.**	*See Planning for plans*
Irrigation: Irrigation plans showing the system layout and details.	**Complies.**	*See Planning for plans*
Fencing: Location, style, and details for proposed and existing fences and identification of the fencing materials.	**N/A.**	*None required*
Data Table: Table including the total number of each plant type, and total square footage and percentage of landscaped areas, domestic turf grasses, decorative rock, mulch, bark, and drought tolerant plant species.	**Complies.**	*See Planning for plans*

Planting Standards

Deciduous Trees: Minimum 2" in caliper.	**Complies.**	*See Planning for plans*
Evergreen Trees: Minimum 6' in height.	**Complies.**	*See Planning for plans*
Tree Base Clearance: 3’ diameter around every tree must be kept clear of turf and rock mulch. In parking lot islands and other narrow strips where turf two feet or less in width would otherwise occur, this clear area may be reduced to 2’.	**Complies.**	*See Planning for plans*
Shrubs: 25% of required shrubs must be a minimum of 5 gallons in size at time of installation; all other required shrubs shall be a minimum of 1 gallon in size.	**Complies.**	*See Planning for plans*
Turf: No landscaping shall be comprised of more than seventy percent turf, except within landscaped parks.	**Complies.**	*See Planning for plans*
Artificial Turf : Shall require a building permit shall meet the following requirements with documentation provided by home owner or contractor: i. Artificial turf shall have a minimum eight-year “no-fade” warranty; ii. Multi-color blend needed to mimic real grass iii. Must be installed according to manufacturer’s instructions;	**N/A.**	

iv. Minimum pile height shall be 1.5 inches, minimum face/pile weight shall be at least 50 oz. per square yard, and water permeability shall be at least 19 inches per hour; v. Landscape plan shall provide for a minimum of 25 percent live vegetation coverage to comply with residential front and/or street side yard landscape standards; vi. Landscaping shall maintain a five-foot diameter around trees free from roc, debris, or artificial turf; vii. Rubber or inorganic infill is prohibited while organic infill is permitted; viii. The term "artificial turf" shall not be construed to include artificial trees, shrubs or bushes; and ix. Storm water runoff shall be maintained on-site.		
Drought Tolerant Plants: 50% of all trees and shrubs shall be drought tolerant.	**Complies.**	*See Planning for plans*
Rock Mulch: Rock mulch shall be two separate colors and separate sizes and must be contrasting in color from the pavement and other hard surfaces. All colors used must be earth tones.	**Complies.**	*See Planning for plans*
Design Requirements		
Evergreens: Evergreens shall be incorporated into landscaped treatment of sites where screening and buffering are required.	**Can Comply.**	*Use additional evergreens to buffer parking lot and drive-thru*
Softening of Walls and Fences: Plants shall be placed intermittently against long expanses of building walls, fences, and barriers to create a softening effect.	**Complies.**	*See Planning for plans*
Planting and Shrub Beds: Planting and shrub beds are encouraged to be used in order to conserve water.	**Complies.**	*See Planning for plans*
Water Conservation: Water-conserving sprinkler heads and rain sensors are required. Drip lines should be used for shrubs and trees.	**Complies.**	*See Planning for plans*
Energy Conservation: Placement of plants shall be designed to reduce energy consumption. Deciduous trees are encouraged to be planted on the south and west sides of structures. Evergreens are encouraged to be planted on the north side of structures.	**Complies.**	*See Planning for plans*
Placement: Whenever possible, landscaping shall be placed immediately adjacent to structures, particularly where proposed structures have large empty walls.	**Complies.**	*See Planning for plans*
Trees and Power Poles: No trees shall be planted directly under or within 10' of power lines, poles, or utility structures unless: a. The Land Use Authority gives its approval. b. The Power Company or owner of the power line gives written consent. c. The maximum height or width at maturity of the tree species planted is less than 5' to any pole, line, or structure.	**Complies.**	*See Planning for plans*
Preservation of Existing Vegetation		
Where possible and appropriate, existing native vegetation must be incorporated into the landscape treatment of the proposed site.	**Complies.**	*See Planning for plans*
Tree Preservation: Existing mature evergreen trees of 16' in height or greater, and existing mature deciduous or decorative trees of more than 4" in caliper, shall be identified on the landscape plan and preserved if possible. If a mature tree is preserved, an area around the roots as wide as the existing canopy shall not be disturbed.	**Complies.**	*See Planning for plans*
If preservation is not possible, the required number of trees shall be increased by double the number of such trees removed.	**Complies.**	*See Planning for plans*
The replacement trees for evergreen trees shall be evergreens, and for deciduous shall be deciduous.	**Complies.**	*See Planning for plans*

Deciduous trees smaller than four inches in caliper, or mature ornamental trees, that are removed shall be replaced on a one to one ratio.	**Complies.**	*See Planning for plans*
Replacement trees shall be in addition to the minimum tree requirements of this Chapter, and shall comply with minimum sizes as outlined in the Chapter.	**Complies.**	*See Planning for plans*
Planter Beds		
Weed Barrier: A high quality weed barrier or pre-emergent shall be used.	**Complies.**	*See Planning for plans*
Materials: High quality materials such as wood chips, wood mulch, ground cover, decorative rock, landscaping rocks, or similar materials shall be used, and materials must be heavy enough to not blow away in the wind.	**Complies.**	*See Planning for plans*
Edging: Concrete edging must be used to separate planter and turf areas in all non-residential zones.	**Complies.**	*See Planning for plans*
Drip Lines: Drip lines must be used in planter beds.	**Complies.**	*See Planning for plans*
Fencing and Screening		
Front Yards: Fences exceeding 3' in height shall not be erected in any front yard space of any residential lot.	**N/A.**	*Commercial Development*
Clear Sight Triangle: All landscaping and fencing shall be limited to a height of not more than 3' and the grade at such intersections shall not be bermed or raised and comply with AASHTO Standards.	**Complies.**	*See Planning for plans*
Required Residential Fencing: Fencing in residential development shall be placed along property lines abutting open space, parks, canals, and trails. In addition, fencing may also be required adjacent to undeveloped properties.	**N/A.**	*Commercial Development*
Fences along open space, parks, canals, and trails shall be semi-private. Exception: privacy fencing is permitted for property lines abutting trail corridors that are not City maintained and are both adjacent to and visible from an arterial.	**N/A.**	*Commercial Development*
Fencing along arterial roads shall be of a consistent material and color within each development.	**N/A.**	*Commercial Development*
Fencing along open space, parks, and trails may be less than 6' in height but shall not be less than 3' in height, at the discretion of the property owner or HOA as applicable.	**Complies.**	*See Planning for plans*
Screening at Boundaries of Residential Zones: For residential developments abutting active agricultural property or operations, a solid fence or wall shall be installed and maintained along the abutting property line.	**N/A.**	*No residential zones adjacent to development*
Amount of Required Landscaping		
Portions of the property that are not developed with structures, rights of ways, or parking areas shall be required to be landscaped per the definition of Landscaping in Section 19.02 in all land use zones.	**Complies.**	*See Planning for plans*
Multi-family, common space not including parks, and nonresidential development in all zones shall be required to adhere to the minimum landscaped standards in 19.06.07 of the Land Development Code.	**Complies.**	*See Planning for plans*
At least 50% of the landscaped area shall be covered with live vegetation at maturity, including shrubs, grasses, flowers, tree and shrub canopies and other live vegetation. The percentage may be reduced to 40% in areas where bark mulch, wood or plant fiber mulch, or rubber mulch is used instead of rock mulch.	**Complies.**	*See Planning for plans*

Landscape Amount			
Category To Be Reviewed	**Regulation**	**Compliance**	**Findings**
Total Square Footage	32,386		
Required Landscaping	6,477	**Complies.**	*See Planning for plans*
Required Deciduous Trees	5	**Complies.**	*See Planning for plans*
Required Evergreen Trees	3	**Complies.**	*See Planning for plans*
Required Shrubs	14	**Complies.**	*See Planning for plans*
Drought Tolerant Plants	11	**Complies.**	*See Planning for plans*

19.09 Off Street Parking

General Provisions

Regulation	Compliance	Findings
Materials: Parking areas shall consist of concrete, asphalt, or other impervious materials approved in the City's adopted construction standards	**Complies.**	*See Planning for plans*
Parking Area Access: Common Access: Parking areas for one or more structures may have a common access so long as the requirements of all City ordinances, regulations, and standards are met. The determination of the locations for a common access shall be based upon the geometry, road alignment, and traffic volumes of the accessed road per the Standard Technical Specifications and Drawings.	**Complies.**	*See Planning for plans*
Sidewalk Crossing: All non-residential structures are required to provide parking areas where automobiles will not back across a sidewalk to gain access onto a public or private street.	**Complies.**	*See Planning for plans*
Cross Access: Adjacent non-residential development shall stub for cross-access. Developers must provide the City with documentation of cross-access easements with adjacent development.	**Complies.**	*See Planning for plans*
Lighting: Parking areas shall have adequate lighting to ensure the safe circulation of automobiles and pedestrians. Lighting shall be shielded and directed downward.	**Complies.**	*See Planning for plans*
Location of Parking Areas: Required off-street parking areas for non-residential uses shall be placed walking path of travel distance to the nearest customer entrance from the correlating non-residential use and individual tenant space as outlined in the table below. Unenclosed parking for residential areas shall not be provided in rear yards, unless said yard abuts an alley-type access or is fenced with privacy fencing.	**Complies.**	*See Planning for plans*

Size of Non-Residential Use and Individual Tenant Space	Walking Path of Travel Distance to the Nearest Customer Entrances
Up to 1,500 square feet	150'
1,501 to 5,000 square feet	200'
5,001 to 10,000 square feet	250'
10,001 to 25,000 square feet	300'
25,001 to 50,000 square feet	350'
50,001 to 75,000 square feet	400'
75,001 to 100,000 square feet	450'
100,001 to 125,000 square feet	500'
Over 125,000 square feet	600'

a. Exception: To promote walkability, Mixed-Use and Mixed-Waterfront zones, and the Town Center Overlay (identified in the General Plan), shall be allowed to place parking garages and parking lots on the edge of shopping areas.
   i. The walking path travel distance from a business' main entrance shall not apply to these areas.

Curb Cuts and Shared Parking: In most cases, shared parking areas shall share ingress and egress. This requirement may be waived when the City Engineer believes that shared accesses are not feasible. In reviewing the site plans for the shared parking areas, the City Engineer shall evaluate the need for limited access, appropriate number of curb cuts, shared driveways, or other facilities that will result in a safer, more efficient parking and circulation pattern.	**Complies.**	*See Planning for plans*
Parking plans shall show the following: the required number of stalls and aisles scaled to the correct dimensions; the correct number of ADA accessible parking spaces; storm water drainage capabilities; lighting; landscaping and irrigation; and pedestrian walkways.	**Complies.**	*See Planning for plans*
Provide accessible parking as required by Americans with Disabilities Act, see https://www.ada.gov/topics/parking/ https://adata.org/factsheet/parking	**Complies.**	*See Planning for plans*
Parking Requirements and Shared Parking		
Available on-street parking shall not be counted towards meeting the required parking stalls.	**Complies.**	*See Planning for plans*
When a parking requirement is based upon square footage, the assessed parking shall be based upon gross square footage of the building or use unless otherwise specified in the requirement.	**Complies.**	*See Planning for plans*
When parking requirements are based upon the number of employees, parking calculations shall use the largest number of employees who work at any one shift. Where shift changes may cause substantial overcrowding of parking facilities, additional stalls may be required.	**Complies.**	*See Planning for plans*
When a development contains multiple uses, more than one parking requirement may be applied.	**Complies.**	*See Planning for plans*
Tandem parking spaces will not be counted as parking spaces for non-residential uses except for stacking spaces where identified.	**Complies.**	*See Planning for plans*
Any fraction obtained when calculating the parking requirement shall be rounded up to the next whole number to determine the required number of parking stalls.	**Complies.**	*See Planning for plans*
Where no comparative land use standard for parking is found in Section 19.09.10, Required Minimum Parking, the Land Use Authority for the related development shall determine an appropriate requirement using the following criteria: (see code)		
Any information provided by the developer relative to trip generation, hours of operation, shared parking, peak demands, or other information relative to parking shall be considered when evaluating parking needs.	**Complies.**	*See Planning for plans*
Parking Deviations. Parking requirements may deviate from the standards contained in Section 19.09.10, Required Minimum Parking, when the Land Use Authority determines that the deviation meets the intent of this Chapter. Reductions may not exceed 25% of the parking requirements and shall be based on the following criteria: 1. the intensity of the proposed use; 2. times of operation and use; 3. whether the hours or days of operation are staggered thereby reducing the need for the full amount of required parking; 4. whether there is shared parking agreement in accordance with Section 19.09.05.10 below; 5. the number of employees; 6. the number of customers and patrons; 7. trip generation; and 8. peak demands.	**N/A.**	*No parking deviations requested*

Shared Parking. Up to 25% of required parking may be shared with an adjacent use upon approval by the Land Use Authority. The developer must provide: a. an agreement granting shared parking or mutual access to the entire parking lot; and b. b. peak demand data by a professional traffic engineer showing that shared parking will accommodate the uses.	**N/A.**	*No shared parking requested*
Guest Parking. Two-Family dwellings, Three-Family dwellings, Multi-Family dwellings, and dwellings above commercial. a. Guest parking shall be provided at a ratio of 0.25 stalls per unit. i. When a rear-load product is allowed in a village plan or neighborhood plan, and is accessed with aprons rather than driveways, guest parking shall be provided at a ratio of one stall per unit. b. Driveways shall not count towards the guest parking requirement. c. Guest parking shall be located within two-hundred feet of the dwelling unit.	**N/A.**	
Pedestrian Walkways and Accesses. Parking lots larger than 75,000 square feet shall provide raised or delineated pedestrian walkways. Walkways shall be a minimum of 10' wide and shall be placed through the center of the parking area and extend to the entrance of the building. Landscaped islands along the center walkway shall be placed at a minimum interval of every 30'. Landscaped islands are encouraged to be offset from one another to create a feeling of greater coverage. Pedestrian covered walkways may be substituted for tree-lined walkways. Where the developer desires to have a driveway access at the center of the parking area, a pedestrian access shall be placed on either side of the driveway.	**Complies.**	*See Planning for plans*
Landscaping in Parking Areas		
All parking areas (not including a driveway for an individual dwelling) for non-residential or multi-family residential uses that are adjacent to public streets shall have landscaped strips of not less than 10' in width placed between the sidewalk and the parking areas, containing a berm, hedge, or screen wall with a minimum height of 3' to minimize intrusion of lighting from headlights and other lighting on surrounding property. Trees, both deciduous and evergreen, shall be placed in the strip with spacing of no more than 30' between trees except in the clear sight triangle, and except where located beneath powerlines. The standards of section 19.06.06, Planting Standards and Design Requirements, shall apply for the minimum size of vegetation. Within regional parks this requirement may be met through the use of intermittent planter beds rather than a berm, hedge, or screen wall; trees or shrubs may be clustered in the planter beds where necessary to shield light spillage.	**Complies.**	*See Planning for plans*
All landscaped areas abutting any paved surface shall be curbed (not including a driveway for an individual dwelling). Boundary landscaping around the perimeter of the parking areas shall be separated by a concrete curb 6" higher than the parking surface.	**Complies.**	*See Planning for plans*
Clear Sight Triangles must be followed.	**Complies.**	*See Planning for plans*
All landscaped parking areas shall consist of trees, shrubs, and groundcover. Areas not occupied by structures, hard surfaces, vehicular driveways, or pedestrian walkways shall be landscaped and maintained. All landscaped areas shall have an irrigation system.	**Complies.**	*See Planning for plans*
On doubled rows of parking stalls, there shall be one 36' x 9' landscaped island on each end of the parking rows, plus one 36' x 9' landscaped island to be placed at a minimum of every twenty parking stalls. Each island on doubled parking rows shall include a minimum of two trees per planter.	**Complies.**	*See Planning for plans*

On single rows of parking or where parking abuts a sidewalk, there shall be one 18' x 9' foot landscaped island a minimum of every ten stalls. Islands on a single parking row shall have a minimum of one tree per island. i. Exception: Landscaped islands are not required in single rows of parking that abut or are no farther than 6' from a landscaped area containing an equal or greater number of trees as would have been provided in islands, in addition to trees required for the landscaped area. Such trees shall be located within 9' of the edge of parking area, and shall have a canopy width that, at maturity, will extend into the parking area.	**Complies.**	*See Planning for plans*
Landscaped islands at the ends of parking rows shall be placed and shaped in such a manner as to help direct traffic through the parking area.	**Complies.**	*See Planning for plans*
Required Minimum Parking		
See table in 19.09 – Restaurant: 1/100 sq. ft. = 24 stalls required	**Complies.**	*See Planning for plans*
Drive-thru Requirements		
Each stacking space shall accommodate one vehicle and be no less than 20 feet in length from the point of service.	**Complies.**	*See Planning for plans*
All drive-thru facilities must provide at a minimum 3 stacking spaces (60') per lane (up to 3 stacking spaces may count towards required parking).	**Complies.**	*See Planning for plans*
Bank or financial institution (including ATMs): minimum of 3 stacking spaces per lane. Food or beverage establishment: minimum of 5 stacking spaces.	**Complies.**	*See Planning for plans*
Entrances and exits of drive-thru lanes shall be clearly marked to designate the direction of traffic flow.	**Complies.**	*See Planning for plans*
A Final Traffic report shall be provided and approved to demonstrate how all queuing shall be contained within the property, business, or use and not affect the surrounding roads. Stacking shall be designed so that it does not have the potential to overflow onto the street or adjacent property, business, or use.	**Complies.**	*See Planning for plans*
Landscaping: A three foot (3') wide raised median or planter between the drive-thru aisle and the parking area shall be provided.	**Complies.**	*See Planning for plans*
All drive-thru lanes adjacent to public streets shall have landscaped strips of not less than ten feet in width placed between the sidewalk and the drive-thru lanes that contain a berm, hedge, or screen wall with a minimum height of three feet to minimize intrusion of lighting from headlights and other lighting from surrounding properties.	**Complies.**	*See Planning for plans*

Dimensions for Parking Stalls & Aisle				
	Stall Width	Stall Length	Aisle Width (one-way traffic)	Aisle Width (two-way traffic)
90° Parking				
Required	9'	18'	24'	24'
Provided	**Complies.**	**Complies.**	**Complies.**	**Complies.**

19.11 Lighting		
General Standards		
Regulation	**Compliance**	**Findings**
Material: All Lighting Fixtures and assemblies shall be metal.	**Complies.**	*See Planning for plans*
Base: All lighting poles shall have a 16" decorative base.	**Complies.**	*See Planning for plans*
Type: All lighting fixtures shall be of the full cutoff variety. Shoebox fixtures are prohibited.	**Complies.**	*See Planning for plans*
Angle: Shall be directed downward.	**Complies.**	*See Planning for plans*

Lamp: Bulbs may not exceed 4000k.	**Complies.**	*See Planning for plans*
Drawings: Design and location of fixtures shall be specified on the plans.	**Complies.**	*See Planning for plans*
Flags: The Unites States flag and the state flag shall be permitted to be illuminated from dusk till dawn. All other flags shall not be illuminated past 11:00 p.m. Flag lighting sources shall not exceed 10,000 lumens per flagpole. The light source shall have a beam spread no greater than necessary to illuminate the flag.	**N/A.**	*None proposed*
Prohibited Lighting: Searchlights, strobe lights and any laser source light or any similar high intensity light.	**N/A.**	*None proposed*
Descriptions: Descriptions of the illuminating devices, fixtures, lamp supports, and other devices. This description may include, but is not limited to, manufacturers' specifications, drawings, and sections.	**Complies.**	*See Planning for plans*
Nonresidential Lighting		
All wall-mounted fixtures shall not be mounted above 16'. The exception shall be those instances where there is a second story access directly from the outdoors, and under-eave lighting. Wall-mounted lighting shall be only for the illumination of vertical surfaces such as building facades and signs, and shall not cast illumination beyond the surface being illuminated.	**Complies.**	*See Planning for plans*
Intermittent lighting must be of the "motion sensor" type that stays on for a period of time not to exceed 10 minutes and has a sensitivity setting that allows the lighting fixture to be activated only when motion is detected on the site.	**N/A.**	*None proposed*
All trespass lighting shall not exceed 1.0 foot-candles measured at the property line, except that trespass lighting into residential development shall not exceed 0.1 foot-candles measured at the property line.	**Complies.**	*See Planning for plans*
Service station canopies must utilize canopy lights that are fully recessed into the canopy or are fully shielded by the canopy.	**N/A.**	*No service station proposed*
All freestanding lighting fixtures and assemblies shall be black. Regional Parks may include theme lighting fixtures in colors other than black. The color shall enhance the theme of the park and shall be approved during the site plan review process.	**Complies.**	*See Planning for plans*
Pole design shall include an arm and bell shade. Regional Parks may include theme lighting fixtures that do not include an arm and bell shade. The design shall enhance the theme of the park and shall be approved during the site plan review process.	**Complies.**	*See Planning for plans*
Parking lot poles shall be limited to a height of 16' when in or within 200' of a residential zone; all other locations shall have a height limit of 20'.	**Complies.**	*See Planning for plans*
All lighting fixtures in surface parking lots and on the top decks of parking structures shall be fitted to render them full cutoff.	**Complies.**	*See Planning for plans*
One hour after closing or by 11:00 pm, whichever is earlier, businesses must turn off at least 50% of building lighting and lighting fixtures in surface parking lots and on top decks of parking structures; however, those lighting fixtures turned off may be set to function utilizing a motion detector system. Lights may be turned back on one half hour prior to the first employee shift.	**Complies.**	*See Planning for plans*
Business open for 24 hours must turn off 50% of their outdoor and parking lot lighting by 11:00 pm and must keep them off until one half hour before sunrise, however, those lighting fixtures turned off may be set to function utilizing a motion detector system.	**Complies.**	*See Planning for plans*
Walkway Lighting		
Lighting of all pedestrian pathways is recommended.	**N/A.**	*None proposed*
All pathway, walkway, and sidewalk lighting fixtures shall be mounted at a height not to exceed 10'.	**N/A.**	*None proposed*

i. Themed walkway lighting within Regional Parks shall not exceed a height of 25'. Such lighting within 200' of residential development shall not exceed 16'.		
Bollard lighting shall be limited to a height of 4'.	**N/A.**	*None proposed*
Lighting Plan		
Plans indicating the location and types of illuminating devices on the premises.	**Complies.**	*See Planning for plans*
Descriptions of the illuminating devices, fixtures, lamp supports, and other devices. This description may include, but is not limited to, manufacturers' specifications, drawings, and sections.	**Complies.**	*See Planning for plans*
Photometric sheet showing measurement of light intensity across the site and onto adjacent property in terms of candela, lumens, and foot-candles.	**Complies.**	*See Planning for plans*
Plans providing information required in the Technical Standards and Specifications Manual.	**Complies.**	*See Planning for plans*

19.13 Process	
Regulation	**Findings**
Neighborhood Meeting. Required?	*Not required*
Notice/Land Use Authority.	*City Council*
Master Development Agreement. A Master Development Agreement shall be required of any development that is in excess of twenty acres in size if non-residential or mixed-use or developments in excess of 160 acres in size if residential. A Master Development Agreement may also be required pursuant to this Title 19 including Chapter 19.26 or may be desirable or necessary pursuant to the exercise of the City Council's legislative discretion in the fact scenarios listed in Section 19.13.08.	*N/A*
Phasing Improvements.	*N/A*
Payment of Lieu of Open Space.	Amount of $: N/A
Piping of Canals	For residential projects, piping of canals per canal company specifications if a canal or canal easement that area is adjacent to or within the area of the proposed residential project, unless the canal company or Bureau of Reclamation does not allow piping. Non-residential projects shall install secure fencing adjacent to canal easements or canals per canal company specifications to prevent entry from the non-residential project onto the canal or canal easement.
Burial of Overhead Utility Lines	See Section 19.13.10

19.14 Site Plan Review		
Regulation	**Compliance**	**Findings**
Approval Required: Site Plan approval shall be required for all developments which contain the following uses, together with any others for which it is required elsewhere in these Ordinances: 1. Any industrial use; 2. Any commercial use; 3. Any institutional use; 4. Two-Family Structures and Three-Family Structures; and 5. A multi-family residential development.	**Complies.**	*See Planning for plans*
Site Plan Standards: The entire parcel area shall be built upon, landscaped, or paved in accordance with the zone's open space and parking requirements.	**Complies.**	*See Planning for plans*
Utilities: All utility lines shall be underground in designated easements. No pipe, conduit, cable, water line, gas, sewage, drainage, steam, electrical, or any other energy or service shall be installed or maintained upon any lot outside of any building above the surface of the ground except during construction.	**Complies.**	*See Planning for plans*

a. Transformers shall be grouped with other utility meters where possible and screened with vegetation or fencing. b. Each contractor and owner or developer shall be responsible to know the whereabouts of all underground utilities. Protection of such utilities shall also be their responsibility. c. Prior to construction, contact must be made with Blue Stakes and any other utility company, public or private, not participating in Blue Stakes in the area to identify underground utility lines. d. Exception: electric power transmission lines of 46kV or above are not required to be placed underground.		
Grading and Drainage: Drainage from any lot must follow current City requirements to show on site retention and a maximum allowable discharge of 0.2 cubic feet per second (cfs) per acre. Drainage shall not be allowed to flow upon adjoining lots unless the owner of the lot upon which the water flows has granted an easement for such purpose. The Planning Commission must approve a Site Plan with grading, drainage, and clearing plans before any such activities may begin. Lot grading shall be kept to a minimum. Roads and development shall be designed for preservation of natural grade except as otherwise approved by the City Engineer based on standards and specifications.	**Complies.**	*See Planning for plans*
Secondary Water System and Dedication of Water Shares: The applicant shall comply with the City's adopted Water Utility Ordinance and other adopted standards, regulations, and ordinances and shall dedicate to the City the amount of water specified in those adopted standards, regulations, and ordinances upon approval of the Site Plan.	**Complies.**	*See Planning for plans*
Piping of Irrigation Ditches: All existing irrigation canals and ditches which are located on the site or straddle a site property line shall be piped with a sufficient size pipe and shall be approved by the City Engineer.	**N/A.**	*Project property does not have any canals or ditches located on property*
Preliminary Plat With Attached Units: When the proposed Site Plan includes attached units, the Site Plan submittal shall include a preliminary subdivision plat. Said plat shall include an ALTA survey of the property recorded with the Utah County Surveyor pursuant to the Utah Code, the proposed building locations, proposed floor plans and proposed elevations identifying each building in the development. Approval of the proposed Site Plan may occur simultaneously with the approval of the proposed preliminary plat.	**Complies.**	*See Planning for plans*
Nuisances: All commercial uses shall be free from objectionable odors, noises, hazards, or other nuisances.	**Complies.**	*See Planning for plans*
Residential Conversions: No existing residential dwelling or residential lot in any commercial or residential zone may be used or converted into a commercial use unless all of the standards set forth herein are met, including parking regulations, setbacks, landscaping, and architectural design.	**N/A.**	*None proposed*
Ownership Affidavit: A statement of ownership and control of the subject property and a statement describing the nature of the intended use.	**Complies.**	*See Planning for plans*
Vicinity Map: A general location map indicating the approximate location of the subject parcel.	**Complies.**	*See Planning for plans*
Context plan: A context plan shall include the existing features within 200 feet of the proposed Site Plan property line. Existing features include, but are not limited to, buildings, ingress and egress points, landscaping areas, pedestrian paths, and property names.	**Complies.**	*See Planning for plans*
Site Analysis: A site analysis is a plan view drawing demonstrating land constraints and existing features. Existing features may consist of the presence of boulders, existing man-made features, significant trees, canals or ditches, access points or public rights-of-way, and existing conditions within 200 feet of the property line.	**Complies.**	*See Planning for plans*
Survey: A survey prepared and stamped by a Utah registered land surveyor listing the metes and bounds legal description and the gross acreage within the subject parcel.	**Complies.**	*See Planning for plans*

Compliance statement: A statement indicating how the proposed development complies with the City's adopted Land Use Element of the General Plan.	**Complies.**	*See Planning for plans*
Final Construction Drawings containing, at a minimum, all items specified in the City's "Standard Technical Specification and Drawings" manual. Applicant shall provide three full-size 24" x 36" copies and five 11 x 17 inch reductions as required on the application form, along with digital copies as outlined below. Additional copies may be required prior to adding the application to the Planning Commission agenda. Final Construction Drawings for a Site Plan is hereby required and shall be prepared and stamped by licensed or certified professionals including architects, landscape architects, land planners, engineers, surveyors, transportation engineers, or other professionals deemed necessary by the Planning Director. The City may require plans prepared by any or all of the above-noted professionals. A Site Plan application shall also contain the following : i. locations, dimensions, floor plans, uses and heights of all proposed buildings and structures, including overhangs, porches, stairwells, and balconies, and the locations of all structures on adjoining properties; ii. access points, provisions for vehicular and pedestrian circulation on and off site, interconnection to adjacent sites, dimensions of such access and circulation, and pedestrian paths within 200 feet of the property boundary; iii. acceleration and deceleration lanes, and dimensions thereof, if required; iv. off-street parking and loading areas complying with the City's off-street parking requirements contained in Chapter 19.09 of this Title; v. proposed outdoor display areas; vi. screening and buffering provisions, including types and heights of existing and proposed buffering and fencing elements; vii. location and treatment of refuse collection areas, storage areas, mechanical equipment, and external structures; viii. location, type, and size of all business and on-site circulation signage; ix. tabulation of square footage devoted to various land uses, ground coverage by structures, and other impervious surfaces; x. type of construction of all structures, presence or absence of fire sprinkling, and location of existing and proposed fire hydrants; xi. Established Grade of building area.	**Complies.**	*See Planning for plans*
Final Hydraulic and Hydrological storm drainage report and calculations. location of all existing and proposed secondary irrigation systems, both on site and on adjacent properties, including ditches, pipes, and culverts;	**Complies.**	*See Planning for plans*
Final Traffic report: Said report shall comply with the standards outlined in the City's adopted Transportation Master Plan and shall include, but not be limited to, the following: i. an analysis of the average daily trips generated by the proposed project; ii. an analysis of the distribution of trips on City street systems; iii. a description of the type of traffic generated; and iv. recommendations on what mitigation measures should be implemented with the project to maintain a level of service for existing and proposed residents acceptable to the City.	**Complies.**	*See Planning for plans*
Data table including: i. total project area ii. total number of lots, dwellings, and buildings iii. square footage of proposed building footprints and, if multiple stories, square footage by floor	**Complies.**	*See Planning for plans*

iv. number of proposed garage parking spaces v. number of proposed surface parking spaces vi. percentage of buildable land vii. acreage of sensitive lands and what percent sensitive lands comprise of total project area and of open space area viii. area and percentage of open space or landscaping ix. area to be dedicated as right-of-way (public and private) x. net density of dwellings by acre (sensitive lands must be subtracted from base acreage). xi. number of off-street parking spaces (e.g., number of proposed garage parking spaces, number of proposed surface parking spaces, etc.)		
Landscaping Plan: A landscaping plan, prepared and stamped by a licensed landscape architect, indicating the location, spacing, types, and sizes of landscaping elements and existing trees, and showing compliance with the City's off-street parking requirements, the City's design guidelines and policies, and the requirements of the appropriate zone.	**Complies.**	*See Planning for plans*
Lighting Plan: A lighting plan indicating the illumination of all interior areas and immediately adjoining streets showing the location, candle power, and type of lighting proposed, and in conformance with the City's lighting standards. An individual photometric plan is also required.	**Complies.**	*See Planning for plans*
Elevations: The elevations of all proposed buildings, fences, and other structures viewed from all sides indicating height of structures, the average finished grade of the site at the foundation area of all structures, percentage of building materials proposed, and color of all materials. A board showing building colors and materials is required.	**Complies.**	*See Planning for plans*
Signage Plan: An overall signage plan shall be approved during the Site Plan approval process. All information to be provided for the sign approval shall be submitted concurrent with Site Plan application materials, consistent with the requirements in Section 19.18.	**Complies.**	*See Planning for plans*
Fee: A fee set by resolution of the City Council shall accompany the application for any Site Plan review.	**Complies.**	*See Planning for plans*
Public Notice and Hearing: All site plans shall comply with the noticing and public hearing requirements of Section 19.13, and applicants shall pay the cost to post and mail required notice to property owners.	**Complies.**	*See Planning for plans*
Development or Bond Agreement: A development agreement and bond agreement shall be required based on the conditions, requirements, findings, and recommendations made by the City Council. The development agreement and bond agreement shall also be based on requirements of the City Code and legal requirements as specified by the City Attorney. The City Council may determine that a development agreement is not required, but in all cases a bond agreement shall be required. A development agreement is not required when conditions, requirements, findings, and recommendations are all consistent with Title 19 requirements unless the City Council, in exercising its legislative authority pursuant to Utah Code § 10-9a-102, determines that a development agreement is necessary to further the public health, safety, or welfare or any other legitimate purpose outlined in Utah Code § 10-9a-102(1).	**Complies.**	*See Planning for plans*
Considerations Relating to Traffic Safety and Traffic Congestion: i. the effect of the site development plan on traffic conditions on adjacent street systems; ii. the layout of site with respect to location and dimensions of vehicular and pedestrian entrances, exits, driveways, and walkways; iii. the arrangement and adequacy of off-street parking facilities to prevent traffic congestion and compliance with the provisions of Chapter 19.09, off-street parking requirements; iv. the location, arrangement, and dimensions of truck loading and unloading facilities;	**Complies.**	*See Planning for plans*

v. the circulation patterns within the boundaries of the development; and vi. the surfacing and lighting of off-street parking facilities.		
Considerations Relating to Outdoor Advertising: Outdoor advertising shall comply with the provisions of Chapter 19.18.	**Complies.**	*See Planning for plans*
Consideration Relating to Landscaping: i. the location, height, and materials of walls, fences, hedges, and screen plantings to ensure harmony with adjacent development, to provide buffer areas, or to conceal storage areas, utility installations, or other unsightly development; ii. the requirements of Chapter 19.06; iii. the planting of ground cover or other surfaces to prevent dust and erosion; and iv. the unnecessary destruction of existing healthy trees.	**Complies.**	*See Planning for plans*
Considerations Relating to Buildings and Site Layout: i. the general silhouette and mass, including location on the site, elevations, and relation to natural plan coverage, all in relationship to the character of the neighborhood; ii. the exterior design in relation to adjoining structures in height, bulk, and area openings, breaks in facade facing the street, line and pitch of roofs, and the arrangement of structures on the parcel; iii. compliance with the City's Architectural design standards.	**Complies.**	*See Planning for plans*
The effect of the site development plan on the adequacy of the storm and surface water drainage.	**Complies.**	*See Planning for plans*
Adequate water pressure and fire flow must be provided on the site as required by the applicable fire code.	**Complies.**	*See Planning for plans*
The proposed project shall comply with the City's adopted Land Use Element of the General Plan, Land Use Ordinance, land development regulations, architectural guidelines, and all other adopted ordinances, regulations, policies, and standards.	**Complies.**	*See Planning for plans*
Trails Master Plan: Shows required trails	**Complies.**	*See Planning for plans*

19.16 Site and Architectural Design Standards

General Site Design Standards

Regulation	Compliance	Findings
Pedestrian Connectivity: All buildings and sites shall be designed to be pedestrian friendly by the use of connecting walkways.	**Complies.**	*See Planning for plans*
Safe pedestrian connections shall be made between buildings within a development, to any streets adjacent to the property, to any pedestrian facilities that connect with the property, when feasible between developments, and from buildings to the public sidewalk to minimize the need to walk within the parking lot among cars.	**Complies.**	*See Planning for plans*
All pedestrian connections shall be shown on the related site plan or plat.	**Complies.**	*See Planning for plans*
Parking Areas: On-site parking shall be located primarily to the sides or rear of the building. Variations may be approved by the Land Use Authority, subject to the following criteria: i. The use is a big box with outparcels helping to screen parking, or ii. At least 50% of the parking is located to the side or rear of the building, or iii. A safety issue is created by locating parking to the side or rear as verified and documented by the Saratoga Springs Police Department. For example, the parking will be entirely concealed from view by existing walls or buildings, or	**Complies.**	*See Planning for plans*

iv. That portion of development that lies within the Waterfront Buffer Overlay, or v. The development is Office, Warehouse/Flex space and when loading docks are not adjacent to a public right-of-way. Exception: when a lot with Office, Warehouse/Flex space is adjacent to more than one public street, loading docks may face the lower classification of the streets.		
Parking lots shall be designed with a hierarchy of circulation: major access drives with no parking; major circulation drives with little or no parking; and then parking aisles for direct access to parking spaces.	**Complies.**	*See Planning for plans*
Parking lots adjacent to, and visible from, public streets shall be screened from view through the use of earth berms, screen walls, landscape hedges or combinations thereof with a minimum height of 3' as measured from the parking surface. Within regional parks this requirement may be met through the use of intermittent planter beds rather than a berm, hedge, or screen wall; trees and shrubs may be clustered in the planter beds where necessary to avoid light spillage.	**Complies.**	*See Planning for plans*
Acceleration and Deceleration Lanes: Acceleration and deceleration lanes shall be required on major arterials when deemed necessary by the City Engineer.	**N/A.**	*None needed, access is from private road*
Parking Structures: Parking structures shall be architecturally consistent with the project buildings, including the use of the same primary finish materials as the exterior of the adjacent or adjoining buildings.	**N/A.**	*None proposed*
When placement of parking structures along site frontages is necessary, visual mitigation such as landscape buffers, upper-level setbacks, or additional architectural treatment shall be used.	**N/A.**	*None proposed*
The view of a parking structure from a public street shall be minimized by placing its shortest dimension along the street edge.	**N/A.**	*None proposed*
The top deck of parking structures shall include screen walls, periphery landscape islands, or similar features where visible from public view in order to soften the appearance of the top of the parking structure and screen the view of cars on the top deck of the structure.	**N/A.**	*None proposed*
All top deck lighting shall be screened and directed downward to avoid light spill onto the street below and shall consist of only bollards or building lighting. Light poles are prohibited.	**N/A.**	*None proposed*
Trash Enclosures, Storage Areas, and External Structures: Landscaping, fencing, berms, or other devices integral to overall site and building design shall screen trash enclosures, storage areas, and other external structures.	**Complies.**	*See Planning for plans*
Service yards, refuse and waste-removal areas, loading docks, truck parking areas and other utility areas shall be screened from view by the use of a combination of walls, fences, and dense planting. Screening shall block views to these areas from on-site as well as from public rights of way and adjacent properties.	**Complies.**	*See Planning for plans*
All trash dumpsters shall be provided with solid enclosures. a. Enclosures shall be composed of 6' high solid masonry or decorative precast concrete walls, with opaque gates and self-latching mechanisms to keep gates closed when not in use. Bollards are required at the front of the masonry walls to protect the enclosure from trash collection vehicles. Gates shall be made of opaque metal for durability. Chain-link gates with or without opaque slats are not acceptable. Colors and materials shall be consistent with the main building or use.	**Complies.**	*See Planning for plans*
Where trash enclosures, storage areas, or other external structures are adjacent to parking areas, a 3' landscaped buffer shall be provided that does not impede access into and out of vehicles.	**Complies.**	*See Planning for plans*

These areas shall be well maintained and oriented away from public view. The consolidation of trash areas between buildings is encouraged. The use of modern disposal and recycling techniques is encouraged. This section shall not apply to community or public recycling bins or drop boxes; however, the location shall be determined by city Staff in accordance with the standards herein.	**Complies.**	*See Planning for plans*
Utility Boxes: Dense vegetative buffers which include an evergreen variety of plant materials shall be placed where appropriate to screen all utility boxes and pedestals in order to remain attractive during the winter months.	**Complies.**	*See Planning for plans*
Site Design Standards: Non-Residential Development		
Shopping Cart Corrals: Shopping cart corrals are required for big box or mid box retail uses. Roof covers are recommended as the local climate includes wind, rain, and winter snow conditions. If roof covers are utilized they shall blend in with the established building design.	**N/A.**	*None proposed*
The shopping cart corral rail finish shall match or compliment the exterior finishes of the main building through the use of two out of three of the same exterior colors and finishes.	**N/A.**	*None proposed*
Uses Within Buildings: All uses established in any commercial, office warehouse, business park, or industrial zone shall be conducted entirely within a fully enclosed approved building except those uses deemed by the City Council to be customarily and appropriately conducted in the open. Uses which qualify for this exception include vegetation nurseries, home improvement centers with lumber, outdoor cafes, outdoor retail display, car wash vacuums, auto dealerships, and similar uses.	**Complies.**	*See Planning for plans*
Outdoor Display: All retail product displays shall be located under the buildings' permanent roof structure or on designated display pads within front landscape areas.	**N/A.**	*None proposed*
All display areas shall be clearly defined on the approved Site Plan and designated on the site with a contrasting colored, painted, or striped surface.	**N/A.**	*None proposed*
Display areas shall not block building entries or exits, pedestrian walks, or parking spaces in front of the building. Outdoor display areas shall not spill into walkways or any drive aisle adjacent to a building.	**N/A.**	*None proposed*
Seasonal uses outside of these areas may be approved through the Temporary Use process.	**N/A.**	*None proposed*
Outdoor Storage Standards: Outdoor storage areas shall be located to minimize views from adjacent public rights-of-way, residential development or zones, and adjacent developments. They shall be located behind or to the side of buildings.	**N/A.**	*None proposed*
Outdoor storage shall be screened from public view. Screening shall consist of a solid wall, excluding CMU blocks. Screening shall be a minimum of 6 feet high and may reach a maximum height of 20 feet subject to approval by the Land Use Authority. A building permit is required for all fencing or walls higher than 7 feet. Chain link fencing is prohibited.	**N/A.**	*None proposed*
The method of screening shall be architecturally integrated with the adjacent building in terms of materials and colors.	**N/A.**	*None proposed*
A landscape strip with a minimum width of five feet shall be installed next to the screening fence or wall when the storage area is adjacent to or visible from a public right-of-way.	**N/A.**	*None proposed*
Outdoor storage materials must be stored in an orderly manner such that fire codes are met and access to all areas of the yard is possible (e.g. access lanes).	**N/A.**	*None proposed*
The outdoor storage materials may not extend above the height of the fence or wall.	**N/A.**	*None proposed*
Access Requirements: a. Each roadway shall not be more than 40' in width, measured at right angles to the center line of the driveway except as increased by permissible curb return radii; and	**Complies.**	*See Planning for plans*

b. the entire flare of any return radii shall fall within the right-of-way.		
Off-Street Truck Loading Space: Every structure involving the receipt or distribution by vehicles of materials or merchandise shall provide and maintain on the building's lot adequate space for standing, loading, and unloading of the vehicles in order to avoid undue interference with public use of streets, alleys, required parking stalls, or accessible stalls.	**Complies.**	*See Planning for plans*
Screening of Storage & Loading Areas: To alleviate the unsightly appearance of loading facilities, these areas shall not be located on the side(s) of the building facing the public street(s). Such facilities shall be located interior to the site.	**N/A.**	*None proposed*
Screening for storage and loading areas shall be composed of 6' high solid masonry or architectural precast concrete walls with opaque gates and self-latching mechanisms, to keep gates closed when not in use. Bollards are required at the front of the masonry walls to protect the enclosure from trash collection vehicles.	**N/A.**	*None proposed*
Gates shall be made of opaque metal for durability. Chain-link gates with opaque slats are prohibited.	**N/A.**	*None proposed*
The method of screening shall be architecturally integrated with the adjacent building in terms of materials and colors.	**N/A.**	*None proposed*
Trash areas shall be designed to include the screening of large items (e.g. skids and pallets) as well as the trash bin(s) that are needed for the business (unless storage is otherwise accommodated behind required screened storage areas).	**N/A.**	*None proposed*
Buffers: A wall and landscaping, fencing, or landscaping of acceptable design shall effectively screen the borders of any commercial or industrial lot which abuts an existing agricultural or platted residential use. Such a wall, fence, or landscaping shall be at least 6' in height, unless a wall or fence of a different height is required by the Land Use Authority as part of a site Plan review.	**N/A.**	*None proposed*
No chain-link or wood fences are permitted as buffering or screening between commercial and residential. Masonry and solid vinyl are suggested types of fences, and as circumstances require, one or the other may be required.	**N/A.**	*None proposed*
Unless otherwise required by this Title, walls or fences used as a buffer or screen shall not be less than 6' in height.	**N/A.**	*None proposed*
Parking Lot Buffers: There shall be a minimum of 10' of landscaping between parking areas and side and rear property lines adjacent to agricultural and residential land uses.	**N/A.**	*Proposed development is in the middle of a commercial subdivision.*
Building Buffer: No building shall be closer than 5' from any private road, driveway, or parking space. The intent of this requirement is to provide for building foundation landscaping and to provide protection to the building. Exceptions may be made for any part of the building that may contain an approved drive-up window.	**Complies.**	*See Planning for plans*
Interconnection: All parking and other vehicular use areas shall be interconnected with adjacent non-residential properties in order to allow maximum off-street vehicular circulation.	**Complies.**	*See Planning for plans*
General Architectural Design Standards		
General standards do not apply one-family and two-family dwellings unless governed under a DA.		
Building Articulation: Building elevations exceeding 40' in length shall incorporate a minimum of one horizontal elevation shift or combination of vertical and horizontal elevation shifts, stepping portions of the elevation to create shadow lines and changes in volumetric spaces of at least five feet, and a minimum of two of the following, all spaced at intervals of 20' to 50' of horizontal width: i. A combination of vertical and horizontal elevation shifts that together equal at least 5'. ii. Addition of horizontal and vertical divisions by use of textures or materials. iii. Primary material change.	**Complies.**	*See Planning for plans*

iv. Addition of projections such as balconies, cornices, covered entrances, porte-cocheres, trellis', pergolas, arcades, and colonnades. Such trellis' and awnings extend outward from the underlying wall surface at least 36". v. Variation in the rooflines by use of dormer windows, overhangs, arches, stepped roofs, gables or other similar devices.		
Roof Treatment: Sloped roofs shall provide articulation and variations in order to break up the massiveness of the roof. Sloped roofs shall include eaves which are proportional to the roofs slope and scale of the building.	**Complies.**	*See Planning for plans*
Flat roofs shall be screened with parapets on all sides of the building. If no roof top equipment exists or is proposed, the parapet shall be a minimum of 12" in height above the roof.	**Complies.**	*See Planning for plans*
All roofs on three-family and multi-family dwellings shall have a minimum pitch of 3/12 (25% slope). To provide architectural enhancement, residential structures are encouraged to have multiple pitch variations.	**N/A.**	*Proposed site is commercial*
Roof mounted equipment shall not be visible from adjacent public and private streets as well as from adjacent properties, unless grade differences make visibility unavoidable.	**Complies.**	*See Planning for plans*
Screening shall be solid and shall be consistent with the material and color of exterior finishes of the building through the use of at least two out of three of the exterior finishes of the building.	**Complies.**	*See Planning for plans*
Windows: Windows, other than rectangular windows, may be used as accents and trim. Untreated aluminum or metal window frames are prohibited.	**Complies.**	*See Planning for plans*
Awnings, Canopies, Trellises, Pergolas, and Similar Features: All such features must be attached to a vertical wall.	**Complies.**	*See Planning for plans*
All such features shall project at least 4' from the building when located over a pedestrian traffic area and no less than 2' otherwise.	**Complies.**	*See Planning for plans*
All such features shall maintain a minimum clearance above sidewalk grade of 8' to the bottom of the framework when located over a pedestrian traffic area.	**Complies.**	*See Planning for plans*
Backlighting is not permitted.	**Complies.**	*See Planning for plans*
Mechanical Equipment: All mechanical equipment shall be located or screened and other measures shall be taken so as to shield visibility of such equipment from any public or private streets.	**Complies.**	*See Planning for plans*
Wing walls, screens, or other enclosures shall be shall be integrated into the building and landscaping of the site, whether located on the ground or roof.	**Complies.**	*See Planning for plans*
Rooftops of buildings shall be free of any mechanical equipment unless completely screened from all horizontal points of view.	**Complies.**	*See Planning for plans*
Screening materials shall conform to the color scheme and materials of the primary building.	**Complies.**	*See Planning for plans*
Non-Residential Architectural Design Standards		
Four Sided Architecture: All sides of a building that are open to public view (including views from adjacent residential dwellings or probable location of residential dwellings) shall receive equal architectural design consideration as the building front.	**Complies.**	*See Planning for plans*
Color and Materials: Exterior Building Materials shall be considered any materials that make up the exterior envelope of the building and shall be limited to no more than four and no less than two types of materials per building, window and door openings excluded.	**Complies.**	*See Planning for plans*
Color of exterior building materials (excluding accent colors) shall be limited to no more than four and no less than two major colors per development.	**Complies.**	*See Planning for plans*
Bright colors, such as neon or fluorescent colors, bright orange or yellow, and primary colors, are only permitted as accent colors.	**Complies.**	*See Planning for plans*
No more than 75% of any building elevation shall consist of any one material or color.	**Complies.**	*See Planning for plans*

i. No more than 50% of any building elevation shall consist of CMU, except in the Office Warehouse and Industrial zones, or ii. Office, Warehouse, Flex buildings in approved zones that utilize concrete tilt up construction are exempt from the maximum 75% of one material per elevation requirement but must follow all other architectural standards.		
Prohibited Materials: Tiles. Full veneer brick and tiles exceeding ½" in thickness is permitted, however veneer tile is prohibited. Stucco stone patterns and stucco brick patterns. Wood as a primary exterior finish material. Plain, grey, unfinished CMU block except as an accent material.	**Complies.**	*See Planning for plans*
Stairways: All stairways to upper levels shall be located within the building unless otherwise approved by the Land Use Authority for secondary access to outdoor patio decks or other usable outdoor area.	**Complies.**	*See Planning for plans*
Roof Drains: All roof drains, conduit and piping, maintenance stairs and ladders, and other related services shall be located on the interior of the building.	**Complies.**	*See Planning for plans*
Electrical Panels: To the extent possible, all electric panels and communication equipment should be located in an interior equipment room.	**Complies.**	*See Planning for plans*
Street Orientation: All Retail or Commercial buildings shall have expansive windows, balconies, terraces, or other design features oriented to the street or adjacent public spaces.	**Complies.**	*See Planning for plans*
At least 35 percent of the first floor elevation(s) of a building that is viewed from a public street shall include windows, and/or glass doors to minimize the expanse of blank walls and encourage a pedestrian friendly atmosphere. For purposes of determining the glass area, the first floor shall be the first 10 feet from the finished floor. This standard does not apply to a single-story retail building of 50,000 square feet or greater provided a single primary tenant occupies the entire building square footage and additional architectural elements are used in City of Saratoga Springs Municipal Code Land Development Code - Title 19.16 Page | 9 place of windows and/or glass doors to include awnings or canopies, and must include roof line changes and horizontal articulation.	**Complies.**	*See Planning for plans*
Metal Buildings: Metal buildings are only permitted in the Agricultural, Residential Agricultural, Rural Residential, Office Warehouse and Industrial Zones.	**Complies.**	*See Planning for plans*
All metal buildings shall be designed to have an exterior appearance of conventionally built structures. Stock, "off the shelf" metal buildings are prohibited.	**Complies.**	*See Planning for plans*
Metal buildings in the Agricultural, Residential Agricultural, and Rural Residential zones shall only be used for agriculture as defined in Section 19.02.02 of the City Code.	**Complies.**	*See Planning for plans*

19.18 Signs

Regulation	Compliance	Findings
Site Plans require signage information (if tenant known, show location potential location size)	**Complies.**	*See Planning for plans*
Monument sign location and details	**Complies.**	*See Planning for plans*
Wall signs and potential locations and details	**Complies.**	*See Planning for plans*

Fiscal Impact

Regulation	Findings
Is there any City maintained open space?	*None*
What is the anticipated cost to the City?	*None*
When will City maintenance begin?	*No*

Exhibit 4: Site Plan

SITE LEGEND

- PROPERTY BOUNDARY LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- PROPOSED ASPHALT PAVING
- PROPOSED CONCRETE PAVING
- EXISTING SIDEWALK
- PROPOSED SIDEWALK
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- CURB RAMPS
- EXISTING STREET LIGHT
- PROPOSED SITE LIGHTING
- BUILDING ENTRANCE
- WHEEL STOP
- ACCESSIBLE PARKING SPACES
- BIKE RACK
- PROPOSED TRANSFORMER LOCATION
- PROPOSED WATER METER LOCATION
- PROPOSED GREASE INTERCEPTOR LOCATION
- NUMBER OF PARKING STALLS
- LIMITS OF WORK
- VEHICLE STACKING

GENERAL CONDITIONS

GENERAL CONTRACTOR SHALL NOTE THAT ALL WORK TO BE DONE SUCH AS EXCAVATIONS, TRENCHES, CAISSONS, WALLS, ETC., AS INDICATED ON DRAWINGS, IS SHOWN WITHOUT KNOWLEDGE OF UNDERGROUND UTILITIES ON THIS PARTICULAR SITE. THE ARCHITECT AND OWNER ASSUME NO RESPONSIBILITY FOR DETERMINING THEIR LOCATION, SIZE, DEPTH, OR HAZARD.

GENERAL NOTES

A. REFER TO THE ACCESSIBILITY AND DIMENSIONING PLAN, SHEET SD1.1, FOR HORIZONTAL CONTROL INFORMATION AND JOINT DETAILING.

B. GENERAL CONTRACTOR SHALL PROVIDE, AS REQUESTED BY CONSTRUCTION MANAGER, 'COMING SOONISH' SIGNAGE, SEE DETAIL 9/SD2.1.

C. ALL SITE CONCRETE PAVING SHALL BE SPRAYED WITH A CURING COMPOUND AS SOON AS CONCRETE IS SET UP.

D. GENERAL CONTRACTOR SHALL PROVIDE 12"x12" LANDSCAPE PAVERS AT WINDOWS WHEN LANDSCAPE IS PROVIDED AROUND WINDOW AREAS.

PARKING REQUIREMENTS

THE PARKING REQUIREMENTS FOR THIS PARCEL ARE AS FOLLOWS:

4 SPACES PER 1,000 GROSS SQFT

BUILDING FOOTPRINT SQUARE FOOTAGE = 2,378 SQFT

(2,378/1000)*4 = 9.512 SPACES

TOTAL PARKING REQUIRED: 10 SPACES

ACCESSIBLE PARKING PROVIDED: 1 SPACE

STANDARD PARKING PROVIDED: 22 SPACES

PARKING PROVIDED PER STACKING: 3 SPACES

TOTAL PARKING PROVIDED: 26 SPACES TOTAL (1)

LEGAL DESCRIPTION

ALL OF LOT 602, PLAT F, SARATOGA SPRINGS COMMERCIAL SUBDIVISION ACCORDING TO THE OFFICIAL PLAT THEREOF BEING LOCATED IN THE NORTHWEST QUARTER OF SECTION 14, TOWNSHIP 5 SOUTH, RANGE 1 WEST, SALT LAKE BASE & MERIDIAN, IN SARATOGA SPRINGS, UTAH, DESCRIBED BY SURVEY AS FOLLOWS:

BEGINNING AT POINT LOCATED N00°22'47"E ALONG THE SECTION LINE 663.73 FEET AND EAST 2329.46 FEET FROM THE WEST QUARTER CORNER OF SECTION 14, TOWNSHIP 5 SOUTH, RANGE 1 WEST, SALT LAKE BASE & MERIDIAN; THENCE NORTH 53.92 FEET; THENCE EAST 126.27 FEET; THENCE NORTH 45.53 FEET; THENCE EAST 153.94 FEET TO THE WEST LINE OF REDWOOD ROAD; THENCE S00°30'32"W ALONG SAID WEST LINE 147.23 FEET; THENCE WEST 215.66 FEET; THENCE NORTH 47.78 FEET; THENCE WEST 63.25 FEET TO THE POINT OF BEGINNING.

BASIS OF BEARING

BEARINGS ARE BASED ON N0°22'47"E ALONG THE SECTION LINE FROM THE WEST 1/4 CORNER TO THE THE NORTHWEST CORNER OF SECTION 14, TOWNSHIP 5 SOUTH, RANGE 1 WEST, SALT LAKE BASE AND MERIDIAN. DEEDS AND PLATS OF RECORD HAVE BEEN ROTATED TO THE ABOVE MENTIONED BASIS OF BEARING.

BENCHMARK

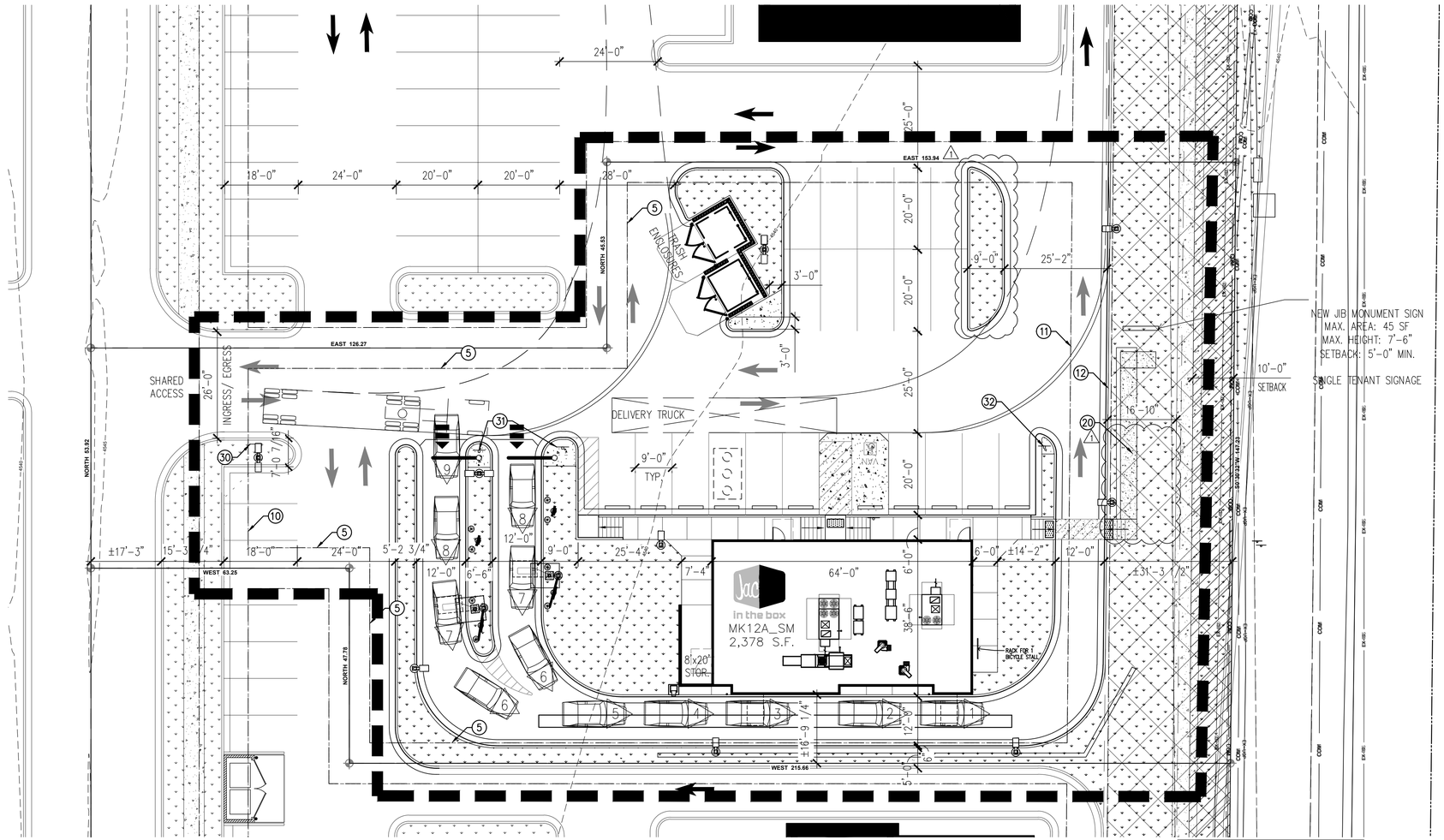
BENCHMARK: CITY OF SARATOGA SPRINGS, UT

PAVING SECTION THICKNESS

PAVEMENT AREA	THICKNESS OF ASPHALT PAVING	THICKNESS OF CLASS II AGGREGATE BASE	THICKNESS OF CONCRETE PAVING
VEHICLE PARKING			
MAIN AISLES			
DRIVE-THRU LANE			SEE NOTE

NOTES:

1. CONCRETE PAVING TO BE REINFORCED W/ 6x6 – W1.4xW1.4 W.W.M. AT MID DEPTH, TYPICAL, UNLESS OTHERWISE NOTED.
2. SEE SOILS REPORT UNDER SEPARATE COVER FOR ADDITIONAL INFORMATION.



1 SITE PLAN

SCALE: 1" = 15'

0 5' 15' 30'

N

CALL STATE UTILITY NOTIFICATION CENTER
1-801-208-2100
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

KEYNOTES

1. INSTALL ASPHALT PAVING; REFER TO THE 'PAVING SECTION THICKNESS' TABLE THIS SHEET AND GEOTECHNICAL RECOMMENDATIONS UNDER SEPARATE COVER.
2. INSTALL CONCRETE PAVING; REFER TO THE 'PAVING SECTION THICKNESS' TABLE THIS SHEET AND GEOTECHNICAL RECOMMENDATIONS UNDER SEPARATE COVER.
3. PROVIDE THICKENED CONCRETE EDGE AT PAVING INTERFACE; SEE DETAIL 8/SD2.0.
4. CONSTRUCT CONCRETE CURB AND GUTTER; SEE DETAIL 1/SD2.0.
5. CONSTRUCT CONCRETE CURB AT ASPHALT PAVING; SEE DETAIL 2/SD2.0.
6. CONSTRUCT CONCRETE CURB AT CONCRETE PAVING; SEE DETAIL 3/SD2.0.
7. CONSTRUCT MONOLITHIC CONCRETE CURB AND SIDEWALK; SEE DETAIL 4/SD2.0.
8. 5' SIDE P.U.E. (TYP.)
9. CONSTRUCT CONCRETE CURB AT BUILDING SIDE OF DRIVE-THRU LANE; SEE DETAIL 6/SD2.0.
10. 12' FRONT P.U.E. (TYP.)
11. 10' REAR P.U.E. (TYP.)
12. 30' PUBLIC ACCESS & UTILITY EASEMENT TO CITY OF SARATOGA SPRINGS.
13. INSTALL 4-INCH (MIN) THICK CONCRETE SIDEWALK WITH LIGHT BROOM FINISH. SEE DETAIL 2/SD2.1.
14. NOT USED.
15. NOT USED – DOWEL TO EXISTING CONCRETE PAVING WITH 18-INCH NO. 4 BARS AT 18-INCHES O.C.; MINIMUM OF TWO BARS – REDUCE SPACING AS NECESSARY.
16. NOT USED – CONSTRUCT FLARE SIDED (WINGED) CURB RAMP; SEE DETAIL 13/SD2.0.
17. CONSTRUCT IN-LINE CURB RAMP; SEE DETAIL 14/SD2.0.
18. PROVIDE RAMP AND LANDINGS AT HANDICAP ACCESSIBLE PARKING SPACES; SEE DETAIL 15/SD2.0.
19. CONSTRUCT DELIVERY RAMP; SEE DETAIL 17/SD2.0.
20. PROVIDE PUBLIC RIGHT-OF-WAY ACCESS RAMPS PER THE MUNICIPALITY STANDARDS.
21. INSTALL LIGHT POLE BASE; SEE DETAIL 16/SD2.1. REFER TO SHEET ES1.1 FOR POLE AND FIXTURE REQUIREMENTS.
22. INSTALL CONCRETE WHEEL STOP TYPICAL AT HANDICAP SPACES AND STANDARD SPACES FRONTING 6-FOOT OR LESSER WIDTH SIDEWALKS; SEE DETAIL 9/SD2.0. SEE KEYNOTE 55.
23. INSTALL BARRIER POSTS AT PREVIEW BOARD, MENU BOARD, AND PERIPHERAL TO BUILDING CORNERS; SEE DETAIL 4/SD2.1. CONTRACTOR TO PROVIDE SLEEVES THROUGH CURB AND GUTTER WHERE APPROPRIATE. SEE A1.0 FOR DIMENSIONING CONTROL & BARRIERS ADJACENT TO BUILDING.
24. INSTALL DETECTOR LOOP FOR ORDER BOARD; SEE DETAIL 18/SD2.1.
25. INSTALL DETECTOR LOOP AT PICK UP WINDOW; SEE DETAIL 10/SD2.1.
26. PROVIDE TRASH RECEPTACLE AT CAR 4; CENTERED ON WINDOW. LOCATE AS REQUIRED FOR SITE CONDITIONS.
27. INSTALL PREVIEW BOARD; SEE DETAIL 20/SD2.0.
28. INSTALL ORDER/SPEAKER BOARD AND WEATHER PROTECTION CANOPY; SEE DETAIL 18/SD2.1.
29. CONSTRUCT MASONRY BLOCK TRASH ENCLOSURE; SEE DETAIL 16/SD2.2.
30. SITE 'ENTRY' SIGN UNDER SEPARATE COVER. GENERAL CONTRACTOR REFER TO SHEET ES1.0 FOR CONDUIT AND WIRING REQUIREMENTS.
31. SITE 'DRIVE-THRU' SIGN UNDER SEPARATE COVER. GENERAL CONTRACTOR REFER TO SHEET ES1.0 FOR CONDUIT AND WIRING REQUIREMENTS.
32. SITE 'THANK YOU/DO NOT ENTER' SIGN UNDER SEPARATE COVER. GENERAL CONTRACTOR REFER TO SHEET ES1.0 FOR CONDUIT AND WIRING REQUIREMENTS.
33. INSTALL DOUBLE BAR HEIGHT CLEARANCE (9'-0") AND WARNING POLE SIGN; SEE DETAIL 20/SD2.1. DO NOT INCLUDE SITE 'DRIVE-THRU' SIGN.
    - □ INSTALL SINGLE BAR HEIGHT CLEARANCE (9'-0") AND WARNING POLE SIGN; SEE DETAIL 20/SD2.1, INCLUDE SITE 'DRIVE-THRU' SIGN; SEE NOTE 31.
    - □ INSTALL DRIVE-THRU ENTRY PORTAL; SEE DETAIL 1/SD2.1. DO NOT INCLUDE SITE 'DRIVE-THRU' SIGN.
34. INSTALL ACCESSIBLE PARKING SIGN. SEE DETAIL 8/SD2.1.

34A. INSTALL ACCESSIBLE PARKING SIGN WITH 'VAN' PLACARD. SEE DETAIL 8/SD2.1.

35. PROJECT MONUMENT SIGN; GENERAL CONTRACTOR TO PROVIDE CONDUIT AND WIRING PER SHEET ES1.0. INSTALLATION BY SIGN CONTRACTOR.
36. APPLY INTERNATIONAL SYMBOL OF ACCESSIBILITY DECAL ON DOOR.
37. PAINT 4-INCH SOLID WHITE PARKING STRIPES TO MUNICIPALITY STANDARDS. SEE KEYNOTE 55.
38. PAINT ACCESSIBLE PARKING SYMBOLS, TEXT, AND DIAGONALS; SEE DETAIL 6/SD2.1.
39. PAINT 4-INCH SOLID WHITE STRIPES AT 8-INCHES O.C. AND 45-DEGREES TO TRAFFIC DIRECTION, BORDER WITH 6-INCH SOLID WHITE STRIPE. TYPICAL LOADING SPACES AS SHOWN.
40. PAINT TRAFFIC DIRECTIONAL ARROWS; SOLID WHITE AND TYPICAL AS SHOWN.
41. PAINT 18-INCH WIDE SOLID WHITE CROSS WALK STRIPES AT 5-FEET (MAX) O.C.
42. NOT USED – INSTALL OUTDOOR SEATING PER PLAN. VERIFY WITH JIB IF PATIO FURNITURE IS TO BE USED; VERIFY WITH LOCAL AUTHORITY IF PATIO ALLOWED. SEE DETAIL 1 & 2/SD2.3.
43. INSTALL PEDESTRIAN GUARD RAILING; SEE DETAIL 3/SD2.1.
44. PROPOSED WATER METER, CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY PROVIDER. REFER TO SHEET PS1.0.
45. PROVIDE SCHEDULE 40 PVC SLEEVES AT 2X DIAMETER OF PROPOSED IRRIGATION PIPING; TYPICAL OF ALL LANDSCAPE AREAS. REFER TO SHEET I1.1.
46. PROPOSED GREASE INTERCEPTOR, CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY PROVIDER. PREFERRED TO BE LOCATED IN PARKING SPOT. REFER TO SHEET SP1.0.
47. PROPOSED TRANSFORMER LOCATION, CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY PROVIDER. BOLLARDS INSTALLED PER PROVIDER STANDARDS. REFER TO SHEETS PS1.0 AND ES1.0.
48. PROPOSED ELECTRIC METER AND C/T CABINET MOUNTING, CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY PROVIDER. REFER TO SHEET SP1.0.
49. PROPOSED GAS METER LOCATION, CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY PROVIDER. BOLLARDS INSTALLED PER PROVIDER STANDARDS. REFER TO SHEETS PS1.0 AND P3.0.
50. INSTALL U-BAR BIKE RACK(S); SEE DETAIL 5/SD2.1.
51. NOT USED – CONSTRUCT CONCRETE ROOF DRAIN SWALE; SEE DETAIL 15/S2.2. COORDINATE W/ CIVIL DWGS IF STORM WATER IS TO BE PROVIDED.
52. RTU LOCATION
53. NOT USED – POSSIBLE CROSS ACCESS DRIVE IF REQUIRED.
54. LOCATION OF EXTERIOR WATER METER AND BACKFLOW PREVENTER IF REQUIRED. SEE DETAIL 18/SD2.2.
55. DEDICATED WAITING STALL PARKING SIGN, SEE DETAIL 8/SD2.1. PAINT PARKING STALL STRIPING IMPULSIVE PURPLE FOR ONLINE ORDERING/DELIVERY PARKING SPOTS. PAINT WHEEL STOPS AT THE DEDICATED WAITING SPACES IMPULSIVE PURPLE.
56. NOT USED
57. (2) 44"H X 32"W METAL RAILING, SEE DETAIL 3/SD2.1
58. DRIVE-THRU ARROW, PAINTED IMPULSIVE PURPLE, SEE DETAIL 20/SD2.2.
59. NOT USED – EXPRESS LANE ARROW, PAINTED WHITE, SEE DETAIL 20/SD2.2.
60. NOT USED
61. OF-WR2 TRASH RECEPTICLE ON 3' X 3' CONCRETE PAD
62. NOT USED – PAINT 4" WIDE SOLID STRIPE FOLLOWING EXTENT OF DRIVE THRU LANE.
63. OF-WR1 TRASH & RECYCLING RECEPTACLES NOT SHOWN, SEE ENLARGED PLAN ON SD2.3 FOR LOCATION

Jack in the box
9357 SPECTRUM CENTER BLVD
SAN DIEGO, CA 92123
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DATES

RELEASE: OCTOBER 2022
P.M. UPDATES: APRIL 2023
SUBMITTAL DATE:
1: 1/31/24
2:
3:
BID:
CONSTRUCTION:

REVISIONS

1 03/14/24 CITY PLAN REVIEW

Magellan ARCHITECTS
8383 158th Avenue Northeast, Suite 280
Redmond, Washington 98052
Tel (425) 885-4300 Fax (425) 885-4393
www.magellanarchitects.com
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SITE INFORMATION

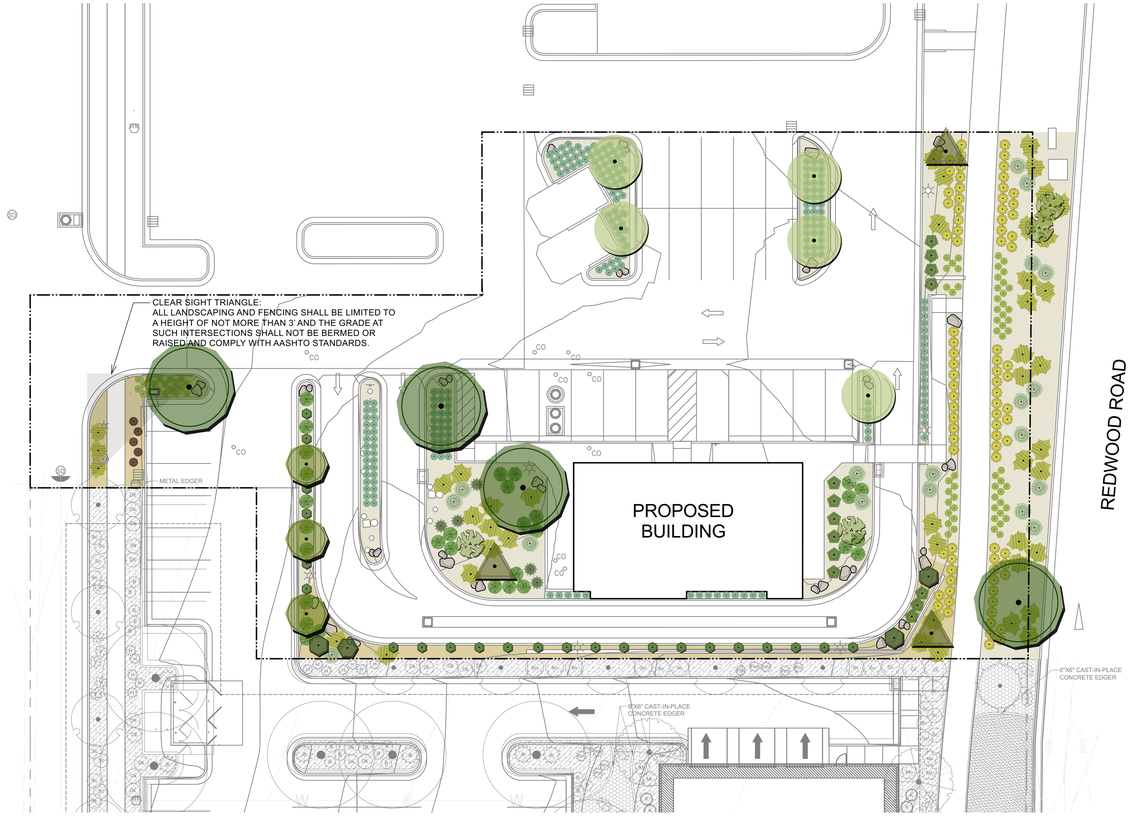
BLDG TYPE: MK12A_SM
JIB #: 1319
ADDRESS:
1303 N REDWOOD RD.
SARATOGA SPRINGS, UT
(CROSSROADS BLVD & REDWOOD RD.)
DRAWN BY: MLR
PROJECT #: 22-136
SCALE: AS NOTED

SITE PLAN

MK12A_SM

SD1.0

Exhibit 5: Landscape Plans



LANDSCAPE SCHEDULE

SYMBOL	QTY.	COMMON NAME	BOTANICAL NAME	SIZE	DROUGHT TOLERANCE	DETAIL
DECIDUOUS TREES						
	3	PRAIRIE SENTINEL COMMON HACKBERRY	CELTIS OCCIDENTALIS 'JFS-KSU1' PRAIRIE SENTINEL®	2" CAL	YES	D/L5.01
	5	SUMMER SPRITE LINDEN	TILIA CORDATA 'HALKA'	2" CAL.	YES	D/L5.01
	4	ZILERATION GREEN VASE ZELKOVA	ZELKOVA SERRATA 'ZILERATION'	---	YES	D/L5.01
EVERGREEN TREES						
	3	BRISTLECONE PINE	PINUS ARISTATA	7' HT.	YES	E/L5.01
SHRUBS						
	30	PANCHITO MANZANITA	ARCTOSTAPHYLOS X COLORADOENSIS 'PANCHITO'	5 GAL.	YES	B/L5.01
	18	BIG SAGEBRUSH	ARTEMISIA TRIDENTATA 'TRIDENTATA'	5 GAL.	YES	B/L5.01
	5	CONCORDE BARBERRY	BERBERIS THUNBERGII 'CONCORDE'	5 GAL.	YES	B/L5.01
	4	CURL-LEAF MOUNTAIN MAHOGANY	CERCOCARPUS LEDIFOLIUS	5 GAL.	YES	B/L5.01
	5	FERN BUSH	CHAMAEBATIARIA MILLEFOLIUM	5 GAL	YES	B/L5.01
	83	YELLOW RABBITBRUSH	CHRYSOTHAMNUS VISCIDIFLORUS	3 GAL.	YES	B/L5.01
	13	MONTANA MOSS JUNIPER	JUNIPERUS CHINENSIS 'MONTANA MOSS'	5 GAL.	YES	B/L5.01
	44	BAR HARBOR JUNIPER	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	5 GAL.	YES	B/L5.01
	4	IDYLLWIND EASTERN RED CEDAR	JUNIPERUS VIRGINIANA 'IDYLLWILD'	10 GAL.		B/L5.01
	23	SILVER TOTEM BUFFALOBERRY	SHEPHERDIA ARGENTEA 'TOTEM'	5 GAL.	YES	B/L5.01
ORNAMENTAL GRASSES						
	73	TUFTED HAIR GRASS	DESCHAMPSIA CESPITOSA 'PIXIE FOUNTAIN'	1 GAL.	YES	A/L5.01
	208	SAPPHIRE BLUE OAT GRASS	HELICTOTRICHON SEMPERVIRENS 'SAPHIRSPRUDEL'	1 GAL.	YES	---

SYMBOL	QTY.	DESCRIPTION	INSTRUCTIONS	SIZE	SOURCE	DETAIL
BOULDERS						
	42	"BROWNS CANYON" BOULDERS	BURY 1/3 THE DEPTH OF THE BOULDER INTO FINISH GRADE. DO NOT USE BOULDERS THAT ARE LESS THAN 24" DIAMETER. BOULDER SHALL BE WASHED AND FREE OF DIRT AND OTHER FOREIGN DEBRIS	2'-4' DIAMETER IN ALL DIRECTIONS	BOULDERS FROM BROWN'S CANYON QUARRY. CONTACT ONE SOURCE MATERIALS, ONESOURCEMATERIALS.COM, (385) 447-9374.	F/L5.01
CRUSHED ROCK						
	6,886 S.F.	"BROWNS CANYON" CRUSHED ROCK	INSTALLED A MINIMUM 3" DEEP. INSTALL OVER DEWITTS 4.1 WEED BARRIER FABRIC. CRUSHED ROCK SHALL BE FREE OF DIRT & OTHER FOREIGN DEBRIS.	3/4" DIAMETER	CRUSHED ROCK FROM BROWN'S CANYON QUARRY. CONTACT ONE SOURCE MATERIALS, ONESOURCEMATERIALS.COM, (385) 447-9374.	G/L5.01
	1,441 S.F.	"SOUTH TOWN" COBBLE	INSTALLED A MINIMUM 3" DEEP. INSTALL OVER DEWITTS 4.1 WEED BARRIER FABRIC. CRUSHED ROCK SHALL BE FREE OF DIRT & OTHER FOREIGN DEBRIS.	1-1/2" DIAMETER	UTAH LANDSCAPING ROCK (435) 250-3851 OR APPROVED EQUAL	G/L5.01

GENERAL NOTE

1. REFER TO COMMON EARTHWORK AND PLANTING NOTES ON SHEET L0.01
2. TREE BASE CLEARANCE: 3' DIAMETER AROUND EVERY TREE MUST BE KEPT CLEAR OF TURF AND ROCK MULCH. IN PARKING LOT ISLANDS AND OTHER NARROW STRIPS WHERE TURF TWO FEET OR LESS IN WIDTH WOULD OTHERWISE OCCUR, THIS CLEAR AREA MAY BE REDUCED TO 2' DIAMETER.

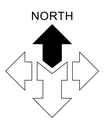
SARATOGA SPRINGS CITY DATA

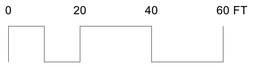
CH. 19.04: ESTABLISHMENT OF LAND USE ZONES AND OFFICIAL MAP

CH. 19.06: LANDSCAPING AND FENCING

CH. 19.09: OFF-STREET PARKING

ZONED AS	REGIONAL COMMERCIAL (RC)	
TOTAL SITE AREA	32,386 S.F.	
ON-SITE LANDSCAPE AREA	7,507S.F. = 23%	
	REQUIRED	PROVIDED
GENERAL:		
REQUIRED LANDSCAPE AREA - MIN. 20%	32,386 S.F. X 20% = 6,477 S.F.	7,507 S.F. = 23%
LAWN	MAX. 70%	0%
PLANT COVERAGE	MIN. 50%	51%
DROUGHT TOLERANT PLANT SPECIES	MIN. 50%	100%
REQUIRED DECIDUOUS TREES	5	5
REQUIRED EVERGREEN TREES	3	3
REQUIRED SHRUBS	14	>14
REQUIRED 5-GAL. SHRUBS	25%	45%
SETBACKS:		
FRONT YARD SETBACK - REDWOOD ROAD	10'	YES
INTERIOR PARKING LOT:		
PERIMETER LANDSCAPE ADJACENT TO PARKING	MIN. 10' WIDE	YES
REQUIRED 3' HT. BERM, FENCE, OR HEDGE		YES
REQUIRED TREES - DOUBLE ROWS	4	4
REQUIRED TREES - SINGLE ROWS	3	3





AVOID CUTTING UNDERGROUND UTILITIES. IT'S COSTLY.
Call BEFORE YOU Dig
1-800-662-4111

NOTICE!
THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION, PROTECTION, AND RESTORATION OF ALL BURIED OR ABOVE GROUND UTILITIES, SHOWN OR NOT SHOWN ON THE PLANS.

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Civil Engineering • Consulting & Landscape Architecture
Structural Engineering • Land Surveying & HDS

LICENSED LANDSCAPE ARCHITECT
SCOTT A. SCHOONOVER
349757
04/29/2024

JACK IN THE BOX - SARATOGA SPRINGS

CROSSROADS BLVD & REDWOOD RD
SARATOGA SPRINGS, UTAH

REVISIONS

REV	DATE	DESCRIPTION
A	24/04/01	CITY REVIEW COMMENTS
B	24/04/29	CITY REVIEW COMMENTS

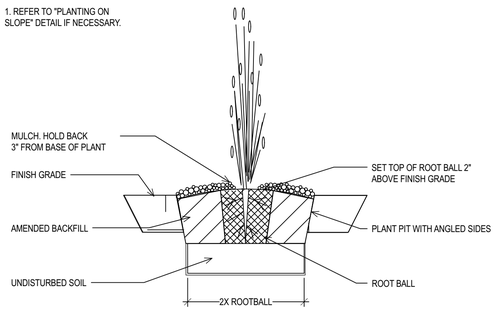
PROJECT NO: 23492
DRAWN BY: TG
CHECKED BY: SS
DATE: OCTOBER 2023
PROPERTY NO:

LANDSCAPE PLANTING PLAN

L2.01

NOTE:

1. REFER TO "PLANTING ON SLOPE" DETAIL IF NECESSARY.

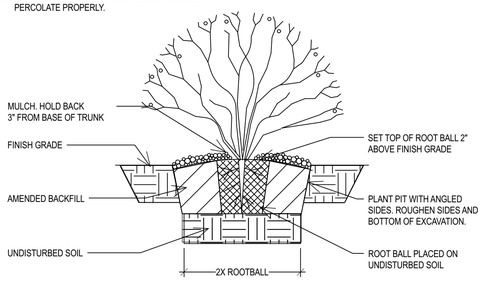


A GRASSES AND PERENNIALS

NO SCALE

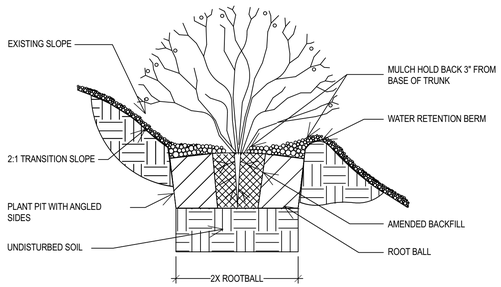
NOTES:

1. REFER TO "PLANTING ON SLOPE" DETAIL IF NECESSARY.
2. AMENDED BACKFILL SHALL BE A BLENDED MIXTURE OF THREE (3) PARTS EXCAVATED SOIL OR IMPORTED TOPSOIL AND ONE (1) PART WELL ROTTED COMPOSTED MANURE, APPROVED COMMERCIAL MIX, OR OTHER AMENDMENT RECOMMENDED IN TOPSOIL TESTING REPORT.
3. DO NOT PLANT IN HOLES THAT DO NOT DRAIN OR PERCOLATE PROPERLY.



B SHRUB PLANTING

NO SCALE

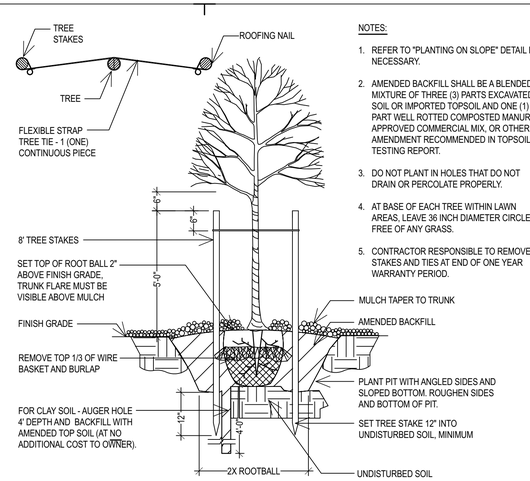


C PLANTING ON SLOPE

NO SCALE

NOTES:

1. APPLY PRE-EMERGENT HERBICIDE TO SHRUB AND GROUND COVER PLANTING AREAS AND GRASS-FREE AREAS AT TREES IN LAWN PRIOR TO PLACEMENT OF WEED BARRIER FABRIC AND MULCH.
2. PRE-EMERGENT SHALL BE "SURFLAN AS" (LIQUID) BY UNITED PHOSPHORUS INC, TRENTON, NJ, OR APPROVED EQUAL.
3. INSTALL MULCH TO UNIFORM DEPTH AND RAKE TO NEAT FINISHED APPEARANCE FREE OF HUMPS AND DEPRESSIONS.



NOTES:

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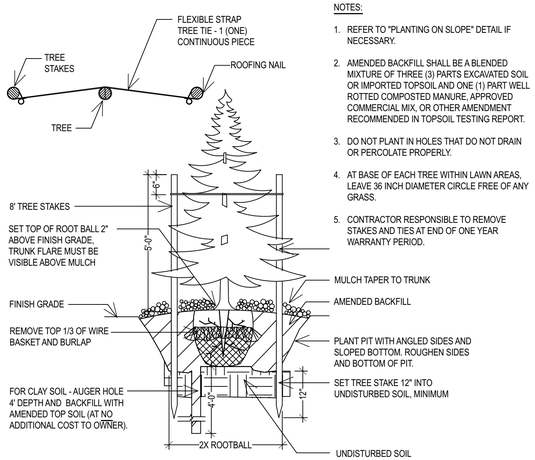
2. AMENDED BACKFILL SHALL BE A BLENDED MIXTURE OF THREE (3) PARTS EXCAVATED SOIL OR IMPORTED TOPSOIL AND ONE (1) PART WELL ROTTED COMPOSTED MANURE, APPROVED COMMERCIAL MIX, OR OTHER AMENDMENT RECOMMENDED IN TOPSOIL TESTING REPORT.
3. DO NOT PLANT IN HOLES THAT DO NOT DRAIN OR PERCOLATE PROPERLY.
4. AT BASE OF EACH TREE WITHIN LAWN AREAS, LEAVE 36 INCH DIAMETER CIRCLE FREE OF ANY GRASS.
5. CONTRACTOR RESPONSIBLE TO REMOVE STAKES AND TIES AT END OF ONE YEAR WARRANTY PERIOD.

D DECIDUOUS TREE

NO SCALE



NOTES:

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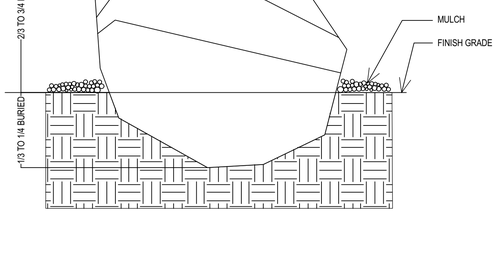
2. AMENDED BACKFILL SHALL BE A BLENDED MIXTURE OF THREE (3) PARTS EXCAVATED SOIL OR IMPORTED TOPSOIL AND ONE (1) PART WELL ROTTED COMPOSTED MANURE, APPROVED COMMERCIAL MIX, OR OTHER AMENDMENT RECOMMENDED IN TOPSOIL TESTING REPORT.
3. DO NOT PLANT IN HOLES THAT DO NOT DRAIN OR PERCOLATE PROPERLY.
4. AT BASE OF EACH TREE WITHIN LAWN AREAS, LEAVE 36 INCH DIAMETER CIRCLE FREE OF ANY GRASS.
5. CONTRACTOR RESPONSIBLE TO REMOVE STAKES AND TIES AT END OF ONE YEAR WARRANTY PERIOD.

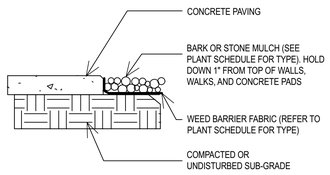
E EVERGREEN TREE

NO SCALE



F BOULDER

NO SCALE



G MULCH

NO SCALE

McNEIL ENGINEERING™
Economic and Sustainable Designs, Professionals You Know and Trust
8610 South Sandy Parkway, Suite 200 Sandy, Utah 84070 801.255.7700 mcneilengineering.com
Civil Engineering • Consulting & Landscape Architecture
Structural Engineering • Land Surveying & HDS

STATE OF UTAH
04/29/2024
SCOTT A. SCHOONOVER
349757
LICENSED LANDSCAPE ARCHITECT

JACK IN THE BOX - SARATOGA SPRINGS

CROSSROADS BLVD & REDWOOD RD
SARATOGA SPRINGS, UTAH

REVISIONS

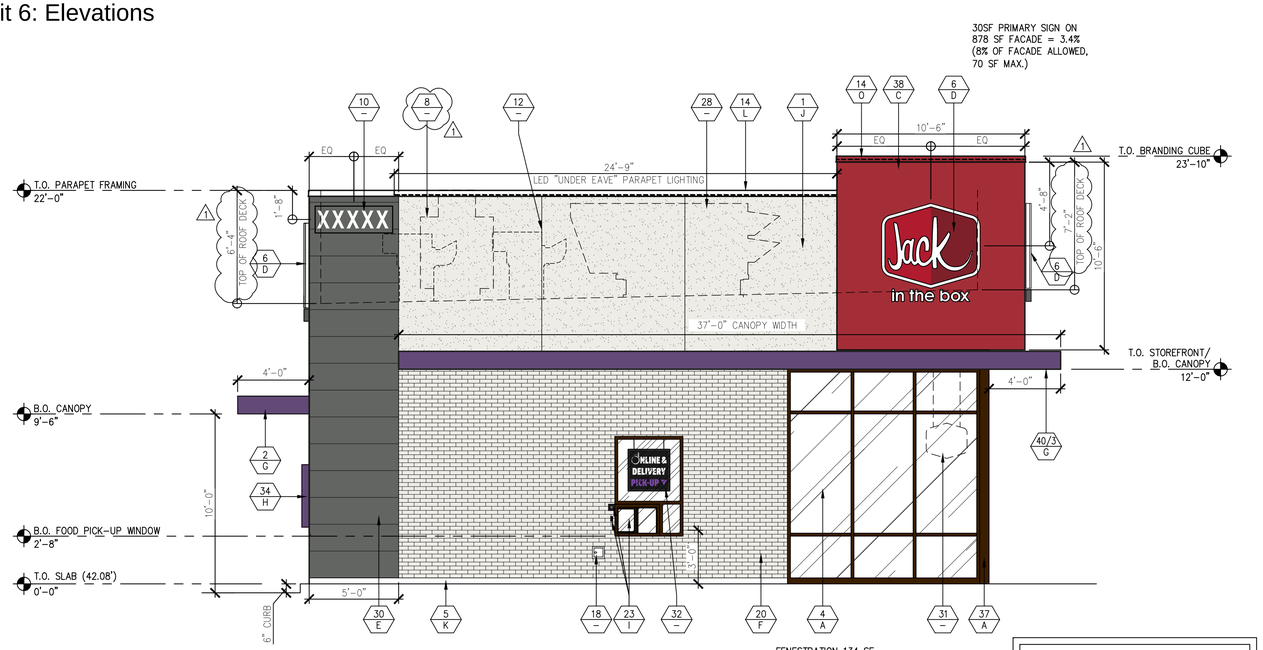
REV	DATE	DESCRIPTION

PROJECT NO: 23492
DRAWN BY: TG
CHECKED BY: SS
DATE: OCTOBER 2023
PROPERTY NO:

LANDSCAPE DETAILS

L5.01

Exhibit 6: Elevations



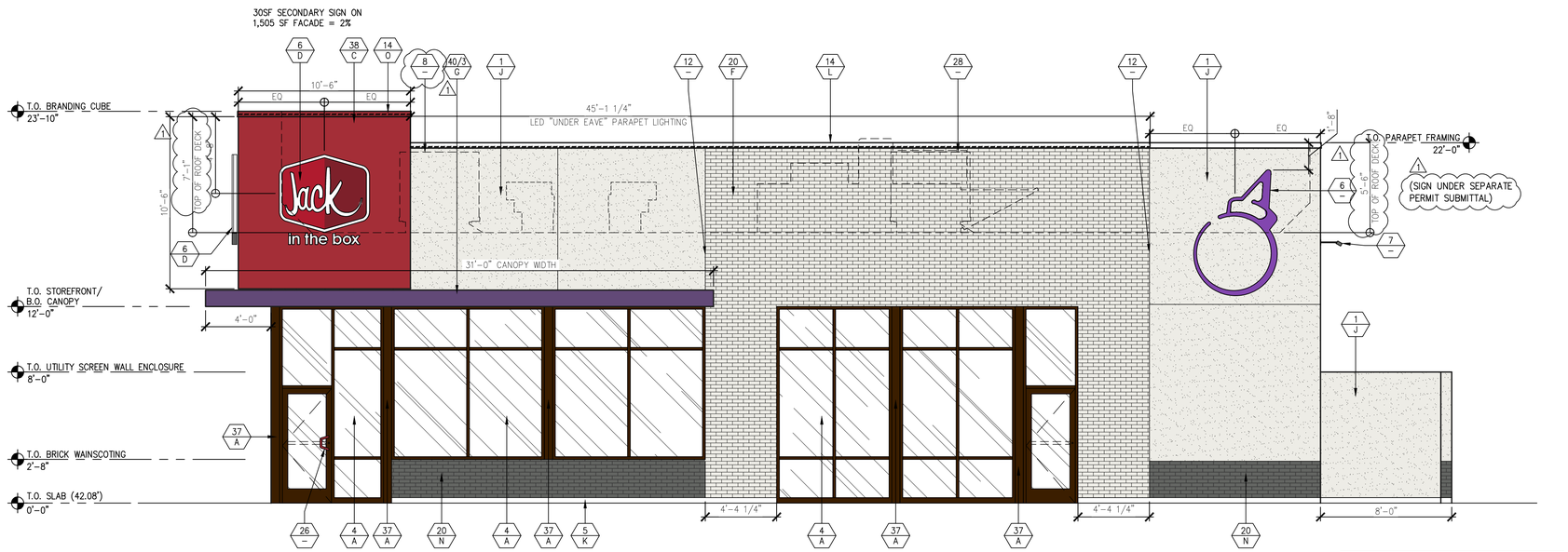
FRONT ELEVATION (EAST)

1

SCALE: 1/4" = 1'-0"

FENESTRATION 134 SF
ON 380 SF FACADE
UP TO 10'-0" = 35.2%
(35% MIN. REQUIRED)

PRIMARY MATERIAL:	1	24.4%
PRIMARY MATERIAL:	20	26.4%
PRIMARY MATERIAL:	30	12%
PRIMARY MATERIAL:	38	12.2%
ACCENT MATERIALS & STOREFRONT:	2, 14, 40, 4, 23=	25%
PRIMARY GREY COLOR:	E, N	12%
PRIMARY WHITE COLOR:	F, J, L	51.8%
ACCENT RED COLOR:	C, O	13%
ACCENT PURPLE COLOR:	G, H	4.2%
ACCENT, OTHER:	A, K	19%



SIDE ELEVATION (NORTH)

2

SCALE: 1/4" = 1'-0"

PRIMARY MATERIAL:	1	41.2%
PRIMARY MATERIAL:	20	28.8%
PRIMARY MATERIAL:	30	0%
PRIMARY MATERIAL:	38	13.7%
ACCENT MATERIALS & STOREFRONT:	2, 14, 40, 4=	16.3%
PRIMARY GREY COLOR:	E, N	4.6%
PRIMARY WHITE COLOR:	F, L, J	52.2%
ACCENT RED COLOR:	C, O	7.6%
ACCENT PURPLE COLOR:	G, H	2.1%
ACCENT, OTHER:	A, K	33.5%

GENERAL NOTES

A. REFER TO A1.0 FOR DOOR & WINDOW TAGS & A8.0 SHEET SERIES FOR DOOR & WINDOW TYPES & SCHEDULES.

B. ALL SIGNAGE IS UNDER SEPARATE SUBMITTAL AND PERMIT (N.I.C)

C. ALL PLASTER ACCESSORIES, FLASHING, ETC. SHALL BE PAINTED TO MATCH ADJACENT SURFACES (U.O.N)

D. ALL EXTERIOR WALL OPENINGS FOR RECEPTACLES, HOSE BIBS, ETC. SHALL BE SEALED. SEE FLOOR PLAN, GENERAL NOTES, AND SPECIFICATIONS FOR ADDITIONAL NOTES.

E. ALL FINISHES, LIGHTING, & EQUIPMENT ARE TO SUBMITTED TO ARCHITECT FOR REVIEW & APPROVAL.

F. SEE ID4 SHEET SERIES FOR EQUIPMENT, FURNITURE, SIGNAGE, & INTERIOR FINISH SHEDULES DESIGNATED BY (XX–XXX).

COLORS

BASIS OF DESIGN

A. DARK BRONZE ANODIZED ALUMINUM

B. COLOR/ FINISH TO MATCH ADJACENT SURFACE

C. SHERWIN WILLIAMS: SW 7588 "SHOW STOPPER"

D. JIB LOGOS: WHITE TEXT – RED BACKGROUND (SIGN UNDER SEPARATE PERMIT SUBMITTAL) 1

E. SHERWIN WILLIAMS: SW 7068 "GRIZZLE GRAY"

F. THIN–BRICK VENEER: WIRE CUT, "ICEBERG" (MIN. 1" THICK VENEER) 1

G. CANOPY: SW 6832 "IMPULSIVE PURPLE"

H. SHERWIN WILLIAMS: SW 6832 "IMPULSIVE PURPLE"

I. DOOR PULL: RAL 3001 "SIGNAL RED"

J. SHERWIN WILLIAMS: SW 7005 "PURE WHITE"

K. CONCRETE: NATURAL/ GRAY

L. COPING: DUROLAST "BONE WHITE"

M. NOT USED –

N. THIN–BRICK VENEER: "MIDNIGHT SKY"

O. COPING: DUROLAST "BRITE RED" (TO MATCH SHERWIN WILLIAMS SW 7588 "SHOW STOPPER")

EXTERIOR FINISH SCHEDULE

1. EXTERIOR CEMENT PLASTER–SAND FLOAT FINISH & INTEGRAL COLOR, SEE SPECIFICATIONS.
2. PRE–FAB CANOPY BY JIB VENDOR, SEE DETAIL 7/A9.5 (O.F.O.I).
3. MOUNT LIGHTING FIXTURE WITHIN CANOPY, COORDINATE WITH VENDOR MOUNTING REQUIREMENTS. (NOTE: JURISDICTION DOES NOT PERMIT CANOPIES TO BE BACKLIT)
4. ALUMINUM STOREFRONT SYSTEM, SEE WINDOW TYPES & SPECIFICATIONS.
   - ☑ 1" CLEAR INSULATED GLASS
   - ☐ 1" CLEAR INSULATED GLASS W/ SOLARBAN 70XL COATING
   - ☐ 1" CLEAR INSULATED PER LOCAL AHJ REQUIREMENTS
   - ☐ ANTI GRAFFITI FILM W/ SOLARBAN 60 COATING
5. EXPOSED CONCRETE CURB/ STEM WALL.
6. INTERNALLY ILLUMINATED SIGNAGE BY JIB VENDOR (O.F.O.I, UNDER SEPARATE SUBMITTAL).
7. WALL MOUNTED LIGHT FIXTURE, SEE DETAIL 6/A9.5 FOR FIXTURE ATTACHMENT.
8. (ROOF TOP UNITS DASHED BEYOND) 1
9. DRIVE–UP WINDOW, SEE A1.0 & A8.1.
10. INTERNALLY ILLUMINATED ADDRESS, MIN. 12"H, WHITE LETTERS (OF–EQ8), OR AS REQUIRED PER LOCAL JURISDICTION (O.F.O.I, UNDER SEPRATE SUBMITTAL).
11. MAIN ELECTRICAL SERVICE, SEE ELECTRICAL & CIVIL DWGS.
12. CONTROL JOINT, SEE DETAIL 11/A9.3.
13. HOLLOW METAL DOORS & FRAMES, MISCELLANEOUS TRIM.
14. ALUMINUM COPING WITH FACATORY APPLIED FINISH, VERIFY W/ ROOF PLAN COPING AT LED LIGHTING LOCATION, SEE DETAILS 6, 7, & 8/A9.6.
15. CO2 FILL BOX, SEE DETAIL 5/A9.3. 1
16. BULK OIL FILL BOX (OPTION), SEE DETAIL 3/A9.3, VERIFY W/ JIB CONSTRUCTION IF REQUIRED.
17. GREASE TANK RECOVERY TAP–IN (STANDARD), SEE DETAIL 4/A9.3.
18. RECESSED, LOCKABLE, NON–FREEZE HOSE–BIB ENCLOSURE.
19. NOT USED
20. THIN–BRICK VENEER, SEE SPECIFICATIONS. (NOTE: VENEER MUST EXCEED 1/2" THICKNESS PER JURISDICTION REQUIREMENTS)
21. NOT USED – DISPLAY POSTER PANEL & SURROUND, SEE DETAIL 9/A9.3.
22. EXTERIOR WALL PACK LIGHT FIXTURE
23. WALK–UP FOOD WINDOW, BELL PUSH BUTTON (GC–EQ15) & INTERCOM (OF–EL2) / (OF–EL3).
24. NOT USED
25. DOWNSPOUT OUTLET, SEE DETAIL 7/A9.0.
26. JIB CUSTOM STOREFRONT DOOR PULL, SEE HARDWARE SCHEDULES (OF–EQ13).
27. NOT USED
28. ROOF TOP MECHANICAL EQUIPMENT BEYOND, SEE MECHANICAL & HOOD DWGS.
29. NOT USED
30. FIBER CEMENT PANEL BY JAMES HARDIE ARCHITECTURAL WALL PANELS (HARDIE ARCHITECTURAL COLLECTION "FINE SAND"). SEE SECTIONS, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
31. WINDOW SIGN (OF–EQ12).
32. WINDOW SIGN (OF–EQ14) .
33. "PAY HERE" BLADE DIRECTIONAL SIGN (OF–EQ7A).
34. "PICK–UP" BLADE DIRECTIONAL SIGN (OF–EQ7B).
35. NOT USED – GRAPHIC PANEL BY JIB SIGN VENDOR (O.F.O.I, UNDER SEPARATE SUBMITTAL).
36. NOT USED – INTERNALLY ILLUMINATED SIGN WITH WHITE LETTERS WITH "PURPLE" BACKGROUND PROVIDED BY JIB VENDOR (O.F.O.I, UNDER SEPARATE SUBMITTAL).
37. BRAKE METAL WRAP & COLUMN, SEE SHEET A1.0 & DETAILS ON A9.2.
38. METAL PANEL VENEER SYSTEM BY JIB VENDOR, SEE SEE SECTIONS & DETAILS.
39. GAS METER, SEE A1.0, MECHANICAL, & CIVIL DWGS.
40. PRE–FABRICATED CANOPY FASCIA BY JIB VENDOR.

EXTERIOR ELEVATION LEGEND

(#/X) ← MATERIAL/FINISH
← COLOR

-------- LED LIGHT IN COPING COVE BY JIB VENDOR. SEE EXTERIOR ELEVATIONS, DETAILS, & ELECTRICAL DWGS. (SEE DETAIL 1/A4.1) 1

in the box
9357 SPECTRUM CENTER BLVD
SAN DIEGO, CA 92123

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DATES

RELEASE: OCTOBER 2022
P.M. UPDATES: APRIL 2023
SUBMITTAL DATE:
1: 1/31/24
2:
3:
BID:
CONSTRUCTION:

REVISIONS

1 03/14/24 CITY PLAN REVIEW

Magellan ARCHITECTS
8383 158th Avenue Northeast, Suite 280
Redmond, Washington 98052
Tel (425) 885-4300 Fax (425) 885-4303
www.magellanarchitects.com

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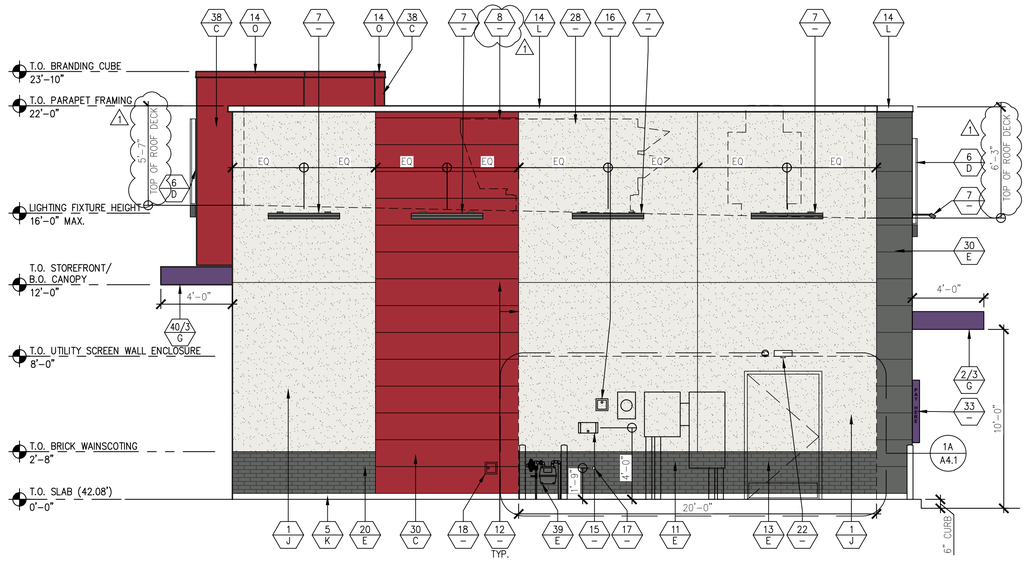
SITE INFORMATION

BLDG TYPE: MK12A_SM
JIB #: 1319
ADDRESS:
1303 N REDWOOD RD.
SARATOGA SPRINGS, UT
(CROSSROADS BLVD
& REDWOOD RD.)
DRAWN BY: MLR
PROJECT #: 22–136
SCALE: 1/4" = 1'–0"

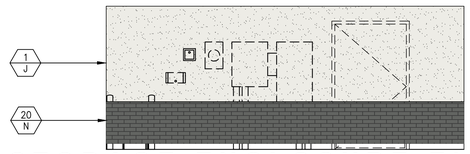
EXTERIOR ELEVATIONS
MK12A_SM
A4.0



1 REAR ELEVATION (WEST)

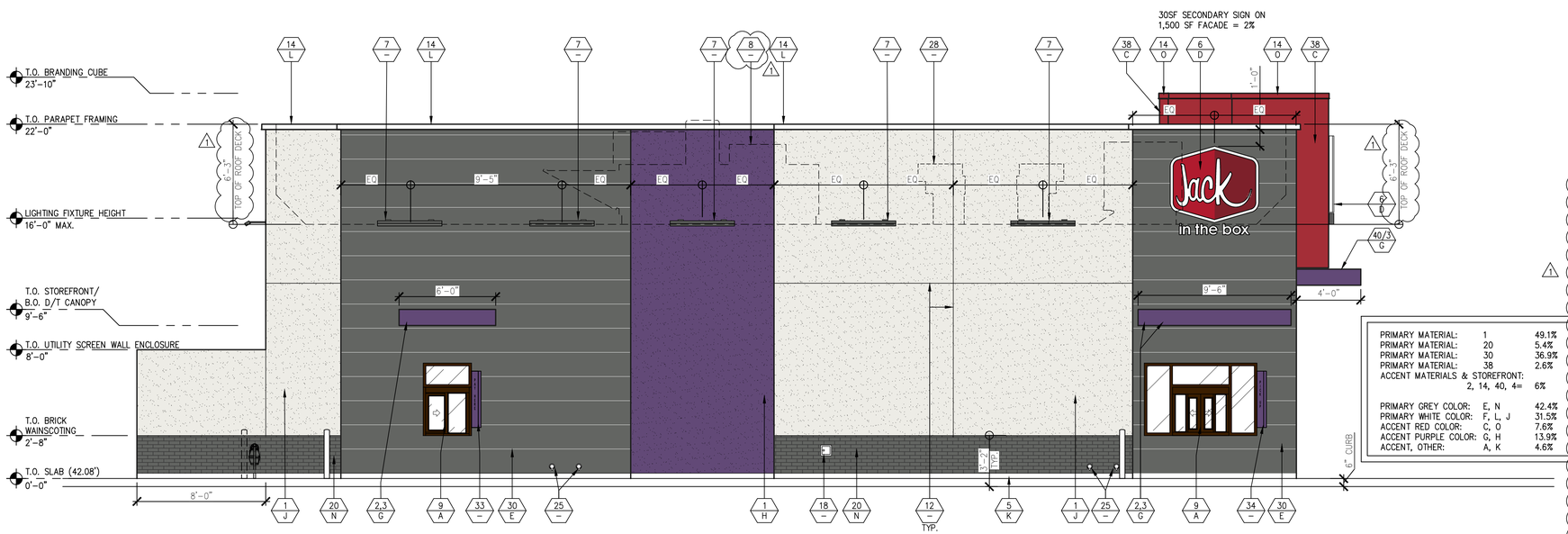
SCALE: 1/4" = 1'-0"

PRIMARY MATERIAL:	1	60.5%
PRIMARY MATERIAL:	20	7.4%
PRIMARY MATERIAL:	30	24.2%
PRIMARY MATERIAL:	38	4%
ACCENT MATERIALS:	2, 14, 40=	3.9%
PRIMARY GREY COLOR:	E, N	12.3%
PRIMARY WHITE COLOR:	F, L, J	61.7%
ACCENT RED COLOR:	C, O	23.7%
ACCENT PURPLE COLOR:	G, H	0.9%
ACCENT, OTHER:	A, K	1.4%



1A STORAGE ENCLOSURE ELEVATION (WEST)

SCALE: 1/4" = 1'-0"



PRIMARY MATERIAL:	1	49.1%
PRIMARY MATERIAL:	20	5.4%
PRIMARY MATERIAL:	30	36.9%
PRIMARY MATERIAL:	38	2.6%
ACCENT MATERIALS & STOREFRONT:	2, 14, 40, 4=	6%
PRIMARY GREY COLOR:	E, N	42.4%
PRIMARY WHITE COLOR:	F, L, J	31.5%
ACCENT RED COLOR:	C, O	7.6%
ACCENT PURPLE COLOR:	G, H	13.9%
ACCENT, OTHER:	A, K	4.6%

2 DRIVE-THRU SIDE ELEVATION (SOUTH)

SCALE: 1/4" = 1'-0"

GENERAL NOTES

A. REFER TO A1.0 FOR DOOR & WINDOW TAGS & A8.0 SHEET SERIES FOR DOOR & WINDOW TYPES & SCHEDULES.

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COLORS

BASIS OF DESIGN

A. DARK BRONZE ANODIZED ALUMINUM

B. COLOR/ FINISH TO MATCH ADJACENT SURFACE

C. SHERWIN WILLIAMS: SW 7588 "SHOW STOPPER"

D. JIB LOGOS: WHITE TEXT – RED BACKGROUND (SIGN UNDER SEPARATE PERMIT SUBMITTAL) 1

E. SHERWIN WILLIAMS: SW 7068 "GRIZZLE GRAY"

F. THIN-BRICK VENEER: WIRE CUT, "ICEBERG" (MIN. 1" THICK VENEER) 1

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H. SHERWIN WILLIAMS: SW 6832 "IMPULSIVE PURPLE"

I. DOOR PULL: RAL 3001 "SIGNAL RED"

J. SHERWIN WILLIAMS: SW 7005 "PURE WHITE"

K. CONCRETE: NATURAL/ GRAY

L. COPING: DUROLAST "BONE WHITE"

M. NOT USED –

N. THIN-BRICK VENEER: "MIDNIGHT SKY"

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   - ☐ 1" CLEAR INSULATED GLASS W/ SOLARBAN 70XL COATING
   - ☐ 1" CLEAR INSULATED PER LOCAL AHJ REQUIREMENTS
   - ☐ ANTI GRAFFITI FILM W/ SOLARBAN 60 COATING
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7. WALL MOUNTED LIGHT FIXTURE, SEE DETAIL 6/A9.5 FOR FIXTURE ATTACHMENT.
8. ROOF TOP UNITS DASHED BEYOND 1
9. DRIVE–UP WINDOW, SEE A1.0 & A8.1.
10. INTERNALLY ILLUMINATED ADDRESS, MIN. 12"H, WHITE LETTERS (OF-EQ8), OR AS REQUIRED PER LOCAL JURISDICTION (O.F.O.I, UNDER SEPRATE SUBMITTAL).
11. MAIN ELECTRICAL SERVICE, SEE ELECTRICAL & CIVIL DWGS.
12. CONTROL JOINT, SEE DETAIL 11/A9.3.
13. HOLLOW METAL DOORS & FRAMES, MISCELLANEOUS TRIM.
14. ALUMINUM COPING WITH FACATORY APPLIED FINISH, VERIFY W/ ROOF PLAN COPING AT LED LIGHTING LOCATION, SEE DETAILS 6, 7, & 8/A9.6.
15. CO2 FILL BOX, SEE DETAIL 5/A9.3. 1
16. BULK OIL FILL BOX (OPTION), SEE DETAIL 3/A9.3. VERIFY W/ JIB CONSTRUCTION IF REQUIRED.
17. GREASE TANK RECOVERY TAP–IN (STANDARD), SEE DETAIL 4/A9.3.
18. RECESSED, LOCKABLE, NON–FREEZE HOSE–BIB ENCLOSURE.
19. NOT USED
20. THIN–BRICK VENEER, SEE SPECIFICATIONS. (NOTE: VENEER MUST EXCEED 1/2" THICKNESS PER JURISDICTION REQUIREMENTS)
21. NOT USED – DISPLAY POSTER PANEL & SURROUND, SEE DETAIL 9/A9.3.
22. EXTERIOR WALL PACK LIGHT FIXTURE
23. WALK–UP FOOD WINDOW, BELL PUSH BUTTON (OC-EQ15) & INTERCOM (OF-EL2) / (OF-EL3).
24. NOT USED
25. DOWNSPOUT OUTLET, SEE DETAIL 7/A9.0.
26. JIB CUSTOM STOREFRONT DOOR PULL, SEE HARDWARE SCHEDULES (OF-EQ13).
27. NOT USED
28. ROOF TOP MECHANICAL EQUIPMENT BEYOND, SEE MECHANICAL & HOOD DWGS.
29. NOT USED
30. FIBER CEMENT PANEL BY JAMES HARDIE ARCHITECTURAL WALL PANELS (HARDIE ARCHITECTURAL COLLECTION "FINE SAND"). SEE SECTIONS, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
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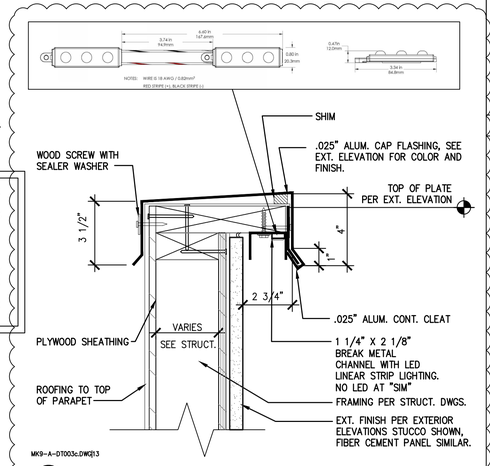
EXTERIOR ELEVATION LEGEND

(#/X) MATERIAL/FINISH / COLOR

-------- LED LIGHT IN COPING COVE BY JIB VENDOR. SEE EXTERIOR ELEVATIONS, DETAILS, & ELECTRICAL DWGS. (SEE DETAIL 1/A4.1) 1



1 LED LIGHT PARAPET CAP DETAIL 3" = 1'-0"

Jack in the box
9357 SPECTRUM CENTER BLVD
SAN DIEGO, CA 92123

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REVISIONS

1	03/14/24	CITY PLAN REVIEW

Magellan ARCHITECTS
8383 158th Avenue Northeast, Suite 280
Redmond, Washington 98052
Tel (425) 885-4300 Fax (425) 885-4303
www.magellanarchitects.com

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SITE INFORMATION

BLDG TYPE: MK12A_SM
JIB #: 1319
ADDRESS:
1303 N REDWOOD RD.
SARATOGA SPRINGS, UT
(CROSSROADS BLVD
& REDWOOD RD.)
DRAWN BY: MLR
PROJECT #: 22-136
SCALE: 1/4" = 1'-0"

EXTERIOR ELEVATIONS
MK12A_SM
A4.1

MINUTES – Planning Commission

Thursday, April 25, 2024
City of Saratoga Springs City Offices
1307 North Commerce Drive, Suite 200, Saratoga Springs, Utah 84045

PLANNING COMMISSION MEETING MINUTES

CALL TO ORDER - 6:00 p.m. by Vice Chair Ken Kilgore.

1. **Pledge of Allegiance -** led by Commissioner Scott A. Hill

2. **Roll Call** – A quorum was present.
Present:
Commission Members: Scott A. Hill, Ken Kilgore, Jack K. Mangum, Doug Willden.
Staff: Sarah Carroll, Planning Director; Ken Young, Community Development Director; Rulon Hopkins, Assistant City Attorney; Kendal Black, Planner I; David Jellen Planner II; Gina Grandpre, Senior Planner; Wendy Wells, Deputy Recorder.
Others: Stefanie Lance.
Excused: Chairman Reed Ryan, Commissioner Virginia Rae Mann, Commissioner Rachel Sprosty Burns.

3. **Public Input -** No public comment was given.

BUSINESS ITEMS

1. **Magic Woods Montessori Class III Home Occupation, located at 543 W. Marie Way. Stefanie Lance as applicant.**
Planner I Kendal Black presented the item. The applicant is requesting approval for a Class III Home Occupation to operate a preschool at the Lance Residence at 543 W. Marie Way. The operating hours will be Monday to Friday from 8:00 a.m.-4:00 p.m. There will be two classes a day with a maximum number of up to ten students per class.

Applicant Stefanie Lance of Saratoga Springs was present to answer any questions.

Commissioner Willden asked if neighbors were aware of the preschool plans, and if there were any concerns.

Planner I Kendal Black related that there were no concerns from neighbors.

Commissioner Hill echoed Commissioner Willden's concern, and wanted to be sure neighbors were aware of the plans. He liked the plan as laid out in the Staff Report, and felt it complied with all the Codes. He was very pleased with the parking and drop-off plan.

Commissioner Kilgore clarified that the Planning Commission was the approving authority for this item. He asked if the Applicant would comply with the Findings and Conditions in the Staff Report.

Ms. Lance agreed to comply with the Findings and Conditions in the Staff Report.

Commissioner Kilgore referred to the floorplan layout and wanted to know if there was a bathroom included in the 637.6 square feet, and if that would be available for use by both employees and students.

Planner I Kendall Black said the bathroom had not been included in the 637.6 square foot plan.

Ms. Lance explained that the entrance area had been included in the 637.6 square foot plan and is not space the preschool would be using. The bathroom could be added in place of the entrance area that won't be used, and with this change, it would be in compliance with the square footage requirements.

DRAFT

Commissioner Kilgore inquired if the Planning Commission could add a condition into the motion to have the Applicant provide information to City Staff showing the bathroom had been added to the floorplan, and the entrance area subtracted from the floorplan so it would then be compliant to the square footage requirement.

Planner I Kendall Black advised that the floorplan drawings could be updated.

Ms. Lance received clarification from the Planning Commission that the plan could be approved with a condition that the bathroom be included in the square footage to ensure the plan was in compliance.

Motion made by Commissioner Hill that the Planning Commission approve the requested Class III Home Occupation Permit for Magic Woods Montessori, located at 543 West Marie Way, with the Findings and Conditions in the Staff Report with the added condition that the bathroom be added and included in the square footage requirement. Seconded by Commissioner Mangum.
Yes: Scott A. Hill, Ken Kilgore, Jack K. Mangum, Doug Willden.
No: None.
Absent: Chairman Reed Ryan, Commissioner Virginia Rae Mann, Commissioner Rachel Sprosty Burns.
Motion passed 4 - 0.

2. **City Drinking Water Well #7 Site Plan, located at NW of intersection of Pioneer Crossing and Saratoga Road (2300 West, Lehi). City Initiated.**

Planner II David Jellen presented the item. The request is for Site Plan approval for a drinking water well located NW of the intersection of Pioneer Crossing and Saratoga Road (2300 West, Lehi). The water well will be City-owned and maintained, and is located on approximately 0.92 acres within the Agricultural Zone and consists primarily of a pump house and retention ponds.

Commissioner Hill had a few specific questions about the well. He asked if there would be a pumping station, how deep the well would be, what percentage of City water usage would come from this well, and if the well would affect the surrounding land. He noted that the Site Plan complied with Code.

Planner II David Jellen advised that Commissioner Hill's questions would best be addressed by City Engineers, who were not available at the Planning Commission Meeting.

Commissioner Kilgore was appreciative of a very clean application, and asked what the anticipated noise level of the pump might be.

Senior Planner Gina Grandpre explained that the generators do cycle, but are not very loud and one generator is screened.

Motion made by Commissioner Mangum that the Planning Commission forward a recommendation for approval of the requested Site Plan for Saratoga Springs Drinking Water Well #7, located at the NW intersection of Pioneer Crossing and Saratoga Road (2300 West), with the Findings and Conditions in the Staff Report. Seconded by Commissioner Willden.
Yes: Scott A. Hill, Ken Kilgore, Jack K. Mangum, Doug Willden.
No: None.
Absent: Chairman Reed Ryan, Commissioner Virginia Rae Mann, Commissioner Sprosty Burns.
Motion passed 4 - 0.

3. **South Fire Station Major Site Plan Amendment, located at 2021 S. Ring Road, City Initiated.**

Senior Planner Gina Grandpre presented the item. The proposed Site Plan Amendment is a 3,588 sq. ft. addition to the south of the building to allow for additional apparatus storage bays. The site encompasses 8.01 acres. A Code Amendment will be required to allow for an exception listed in Condition #4.

Senior Planner Gina Grandpre explained that some trees on the South end of the building will be relocated with water wise landscaping. She also related that City Staff had decided there would need to be a Code Amendment for Public Buildings.

DRAFT

Commissioner Willden asked if there would be any problem with Planning Commission approving the Site Plan conditionally.

Senior Planner Gina Grandpre said there would not be a problem because it will go before City Council on May 7th. A Resolution will be presented to City Council and go into effect and be good for 180 days.

Commissioner Hill thanked Staff for the thorough plan. He felt that this was a cost-effective way to provide good protection to residents in the South part of the City. He mentioned that the street-view of the new plan from the addition to the existing building blends together really well.

Commissioner Kilgore received clarification about "Adjacent Uses" mentioned on page 1 of the Staff Report, and that "Secular Usage" would be for non-religious land use.

Commissioner Kilgore asked about the wording in Condition #4 and wanted more understanding of the amendment to 19.16.05.01.

Planning Director Carroll said it is recommended that the Planning Commission change Condition #4 to say that the Code Amendment is forthcoming. She explained that a Pending Ordinance will be taken to City Council. That process allows Staff to put an ordinance in place temporarily while the formal ordinance is being worked on.

Commissioner Mangum wondered what the "30% obscured" language in Condition #4 referred to and wanted more information.

Senior Planner Gina Grandpre responded that there will be a Code Amendment presented to the Planning Commission at a future time to address Condition #4. At this time Condition #4 should be listed in the motion as "To be Determined" or similar language.

Planning Director Sarah Carroll reiterated that the language listed in Condition #4 should be struck, and City Staff will present something better or simpler.

Commissioner Kilgore appreciates that the City will be moving trees instead of just getting rid of them, and thanked Staff for a clean application.

Motion made by Commissioner Scott A. Hill that the Planning Commission forward a recommendation for approval to the City Council for the South Fire Station Site Plan Major Amendment located at 2021 S Ring Road, with the Findings and Conditions in the Staff Report, with the condition to strike Condition #4 and there will be a Pending Ordinance to amend Section 19.16.05.01. Seconded by Commissioner Jack Mangum.
Yes: Scott A. Hill, Ken Kilgore, Jack K. Mangum, Doug Willden.
No: None.
Absent: Chairman Reed Ryan, Commissioner Virginia Rae Mann, Commissioner Rachel Sprosty Burns.
Motion passed 4 - 0.

4. Approval of Minutes: April 11, 2024.

Motion made by Commissioner Willden to approve the minutes of April 11, 2024. Seconded by Commissioner Mangum.
Yes: Scott A. Hill, Ken Kilgore, Jack K. Mangum, Doug Willden.
No: None.
Absent: Chairman Reed Ryan, Commissioner Virginia Rae Mann, Commissioner Sprosty Burns.
Motion passed 4 - 0.

REPORTS

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1. **Commission Comments.** No comments were given.

2. **Director's Report.** – Planning Director Sarah Carroll reminded Planning Commissioners that the May calendar had changed, and the next meeting will be May 16th. OPMA training will be on May 30th.

CLOSED SESSION

Possible motion to enter into closed session – No closed session was held.

ADJOURNMENT

Meeting Adjourned Without Objection at 6:42 p.m. by Vice Chair Ken Kilgore.

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Date of Approval Planning Commission Chair

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Deputy City Recorder

DRAFT