LA VERKIN CITY PLANNING COMMISSION AGENDA

Regular Meeting
Wednesday, November 12, 2025, 6:00 pm.
Council Chambers, 111 South Main Street
La Verkin, Utah 84745

A. Call to Order: Chair Allen Bice
Invocation by Invitation; Pledge of Allegiance

B. Approval of Agenda:

C. Approval of Minutes: October 22, 2025, regular meetings.

D. Business:

1. Discussion regarding updates to the zoning code.

E. Adjourn:

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify Nancy Cline, City Recorder, (435) 635-2581, at least 48 hours in advance.

Certificate of Posting

The undersigned City Recorder does hereby certify that the agenda was sent to each member of the governing body, sent to the Spectrum newspaper, posted on the State website at http://pmn.utah.gov, posted on the La Verkin City website at www.laverkin.gov, and at the city office buildings 111 S. Main and 435 N. Main on November 7, 2025
Nancy Cline, City Recorder

LA VERKIN CITY PLANNING COMMISSION
Regular Meeting
Wednesday, October 22, 2025, 6:00 pm.
City Council Chambers, 111 South Main Street
La Verkin, Utah 84745

Present: Chair: Allen Bice, Commissioners: Kyson Spendlove, Hugh Howard, Matt Juluson, Sherman Howard, and Richard Howard; Staff: Derek Implay, Fay Reber, and Nancy Cline.

A. Call to Order: Allen Bice called the meeting to order at 6:00 pm.
The invocation and Pledge of Allegiance were given by Matt Juluson

B. Approval of Agenda:

The motion was made by Commissioner Hugh Howard to approve the agenda, second by Commissioner Kyson Spendlove. Bice-yes, Spendlove-yes, Sherman Howard-yes, Hugh Howard-yes, Juluson-yes. The motion carried unanimously.

C. Approval of Minutes: September 24, 2025, and October 8, 2025, regular meetings.

The motion was made by Commissioner Sherman Howard to approve the Minutes for September 24, 2025, and October 8, 2025, second by Commissioner Matt Juluson. Spendlove-yes, Juluson-yes, Hugh Howard-yes, Sherman Howard-yes. The motion carried unanimously.

E. Business:
1. Discussion and possible recommendation regarding the application for Utah Rural Opportunity Grant.

Derek explained the grant steps. The grant is for a company to design a master plan of downtown. After speaking with Kyle Gubler and Patricia Wise they wanted to include the area by the Hot Springs. They are considering downtown to be SR9 and SR17 to 200 North by Interstate Rocks property. They want to rebrand La Verkin and what the vision is. They will be highlighting the master plan for downtown including statistics. They will not be writing ordinances. They have broken it down to restaurants and retail shops that patrons would be able to walk around and go shop to shop. They will be working with the current master plan and staff including Brad Robbins. Tonight, the planning commission needs to decide whether to support the application or not. This doesn't mean they will get the grant; it's only the application process. It would provide the funding for what is in the packet. The money cannot be used to hire a planner. They come in and take the vision from City Council and the Planning commission to help construct the downtown zone. They would provide all the statics. Brad and he would take that information and create the zoning within the recommendations.

Commissioner Bice added that they qualify for this grant because we are a rural community. The city will need to provide 30-40% of the cost, it doesn't cover everything, and it seemed like there's no downside to him, but it does require a planning commission approval.

Commissioner Juluson asked if this was only downtown and not the Master plan.

Derek replied that it focuses on the south side by the hot springs and then downtown main street and SR 9. It's focused on where people are likely to stop and shop.

Commissioner Spendlove wondered about UDOT's master plan for SR9 and if it will be a part of this plan.

Derek replied he hoped the company would take into consideration the corridor study done by UDOT. The city has used that study a lot when completing the planning part of this. But he is not sure what they will use.

Commissioner Spendlove thinks they should use it, so everyone is on the same page.

Brad added that he has had experience with these types of grants and agreed there isn't a downside. However, when you start changing zoning on people's property there could be some pushback.

Commissioner Bice replied that other cities in Utah are redesigning their downtowns or creating a walkable downtown. This gives us an opportunity to do that.

Commissioner Richard Howard asked if they would only present one option or if there would be a few to choose from.

Derek responded that he thought there would be communication with the staff. There will be multiple discussions with the staff, planning commission, and city council to get a feel for what the city wants.

Commissioner Richard Howard was concerned that they would be able to control what the zones were and what could be built.

Derek explained that the current city codes need to be updated. The codes that we have now, any piece of property, commercial area, we're missing many things on there. We're missing building separation other than fire code related. We're missing open space. We don't have anything in there that requires additional setbacks on the side or in the back that would work with open space to alleviate as many buildings as they have. Right now it says 75% of the property can be built on. What the Fields have built could happen on any piece of property right now. They are meeting next week to make some little insertions on those zones so that we don't get those types of buildings again. He doesn't personally have a problem with those buildings and thinks work-live zones are a good idea. He realizes that the changes are upsetting the community, but they need to understand as the code is that could happen on any piece of property in a commercial zone. The county planner studied our ordinance, and he came up with the same interpretation. So we're interpreting it right. We just don't have the mechanisms there to prevent what we've got. That is something we need to get on sooner rather than later because as developers come, if that's not what you guys want, we need to do something about it now.

Commissioner Bice added It feels like we don't know what we don't know until something like that drops in our laps.

Derek added that they thought the ordinance was fine. But they only had commercial, and they introduced retail and tourist commercial. They thought they were prepared at that point. However, we are delinquent in our sign ordinance, and parking ordinance. Development has happened fast, and we have outgrown our ordinance.

Commissioner Bice commented this gives us a professional planner, at least for that part, to help us do better.

Derek replied that they would bring in ideas and the staff, planning commission, and city council would determine what they want.

Commissioner Richard Howard asked how long this process would take. To get the application in, be approved and receive that grant money. Will it take a year or longer?

Derek replied he didn't know. He explained they could take steps now to prevent commercial development. He has heard possibly putting a moratorium on anything in commercial areas. He didn't know if that was a good

idea with the momentum they had going. He thinks they can limit things they don't want by making the few changes they have talked about.

Commissioner Spendlove added in addition to our master plan and the vision we have having we need a marketing plan. He has noticed that there's a lot more posts about tourism from other cities. Whether La Verkin likes it or not, tourism is here and there's things that can help create that marketing plan.

Derek agreed they do need to rebrand La Verkin. It was looked down on when they had a lot of trailer parks, and they cleaned all that up. They need to fix the ordinance, so they don't end up back with those same problems.

Brad commented that what usually happens is that the company will ask for the citizens' input and give a few examples with those recommendations. Then they turn it over to the city.

Commissioner Juluson asked if this would mesh with the master plan or would it replace some of it.

Derek responded that the city is currently doing an update to the master plan. They put invitations out and they had a meeting here asking the public to give their opinions. Not many showed up. We are under a time constraint. If they both get done about the same time, they can mesh them but if not they would do an addendum to the master plan to include the downtown plan.

Councilman Hugh Howard asked how much this would cost the city.

Commissioner Bice replied 30-40% the city would be responsible for.

Derek added not more than $40,000 has been mentioned. Unless the state will help with the grant like they did with our portion of the corridor study.

The recommendation was made by Commissioner Matt Juluson to apply for the Utah Rural Opportunity Grant, second by Commissioner Kyson Spendlove. Bice-yes, Spendlove-yes, Sherman Howard-yes, Hugh Howard-yes, Juluson-yes. The motion passed.

F. Adjourn:

The meeting was adjourned at 6:20 p.m.

_____

Planning Commission Chair

_____

Date Approved

7-6-5: BURIALS:

(Code now)

C. Vaults:

1. Unless in writing waived by the cemetery sexton, it shall be unlawful for any person to be buried in the cemetery unless the casket shall be placed in a vault made of concrete, fiberglass, steel or brick lined, or of such other material approved by the city council, substantially constructed and covered with a similar durable material.

(Proposed change)

C. Vaults:

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(Clean copy)

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10-7-21: INTERNAL ACCESSORY DWELLING UNITS:

(Code now)

B. Minimal Requirements for Internal Accessory Dwelling Units (IADUs):
   1. An IADU shall comply with all applicable building, health, and fire codes.
   2. The City:
      a. Prohibits the installation of a separate utility meter for an IADU;
      b. Requires that an IADU be designed in a manner that does not change the appearance of the primary dwelling as a single-family dwelling;
      c. Requires a primary dwelling:

(Proposed change)

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      c. Must be attached to the primary dwelling (see definitions)
      d. Requires a primary dwelling:

(Clean copy)

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   c. Must be attached to the primary dwelling (see definitions)
   d. Requires a primary dwelling:

10-1-6: DEFINITIONS:

(Code now)

ACCESSORY DWELLING UNIT (ADU): An adjunct living unit - sometimes known as a casita, guest house, or mother-in-law apartment - (a) which is clearly incidental and secondary to the primary use of the primary dwelling or residence (for residential purposes), and (b) which contains a sleeping area and has access to a bathroom within the structure in which it is located, and (c) which may or may not have its own dedicated kitchen facilities, and (d) which is located either within or detached from the primary dwelling or residence on the same lot or parcel of real property, or (e) which may be used by members of the family or nonpaying guests, or rented for thirty (30) consecutive days or longer, but shall not be used for short-term rental purposes [rentals intended to be rented out for a period of twenty-nine (29) days or fewer]. No more than one ADU per lot or parcel of property, whether designated as detached ("DADU") or internal ("IADU"), is permitted; provided that, a lot or parcel of property that is one- half (½) acre or larger may contain a DADU and an IADU.

(Proposed change)

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Note: To avoid potential confusion, we need to remove the definition of ACCESSORY DWELLING UNIT, as we now cover each component under DETACHED ACCESSORY DWELLING UNIT (DADU) and INTERNAL ACCESSORY DWELLING UNIT (IADU).

(New)

ACCESSORY BUILDING OR ACCESSORY STRUCTURE: *- Means a building or structure located on the same lot as the primary structure that is subordinate to, and the use of which is incidental to, that of*

the primary building or structure. An accessory building or structure is a non-habitable building or structure and shall not be served by water or sewer service. Accessory buildings or structures in residential zones shall be a maximum of one story in height

(Clean copy)

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(Proposed change)

~~ACCESSORY USE OR STRUCTURE: A use or structure on the same lot and of a nature customarily incidental and subordinate to the principal use or structure.~~

(New)

ATTACHED TO THE PRIMARY BUILDING: means a structure or unit is physically connected to the main building by a shared wall, floor, roof, and often includes a door providing interior access. This connection makes it an extension of the main house rather than a separate, standalone structure.

(Clean copy)

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(Code now)

DETACHED ACCESSORY DWELLING UNIT (DADU): An accessory dwelling unit created or established and operated or used: (a) outside of a primary dwelling or residence, and having its own separate outside entrance; and (b) within the appropriate and relevant setbacks established by law or ordinance, and not encumbering dedicated rights-of-way; and (c) in accordance with the provisions of Section 10-7-22

(Proposed change)

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(New)

LOT COVERAGE - Means the total area of a lot covered by any structure or building on the lot. Lot coverage does not mean or is defined as typical lot landscaping, a pool or patio cover

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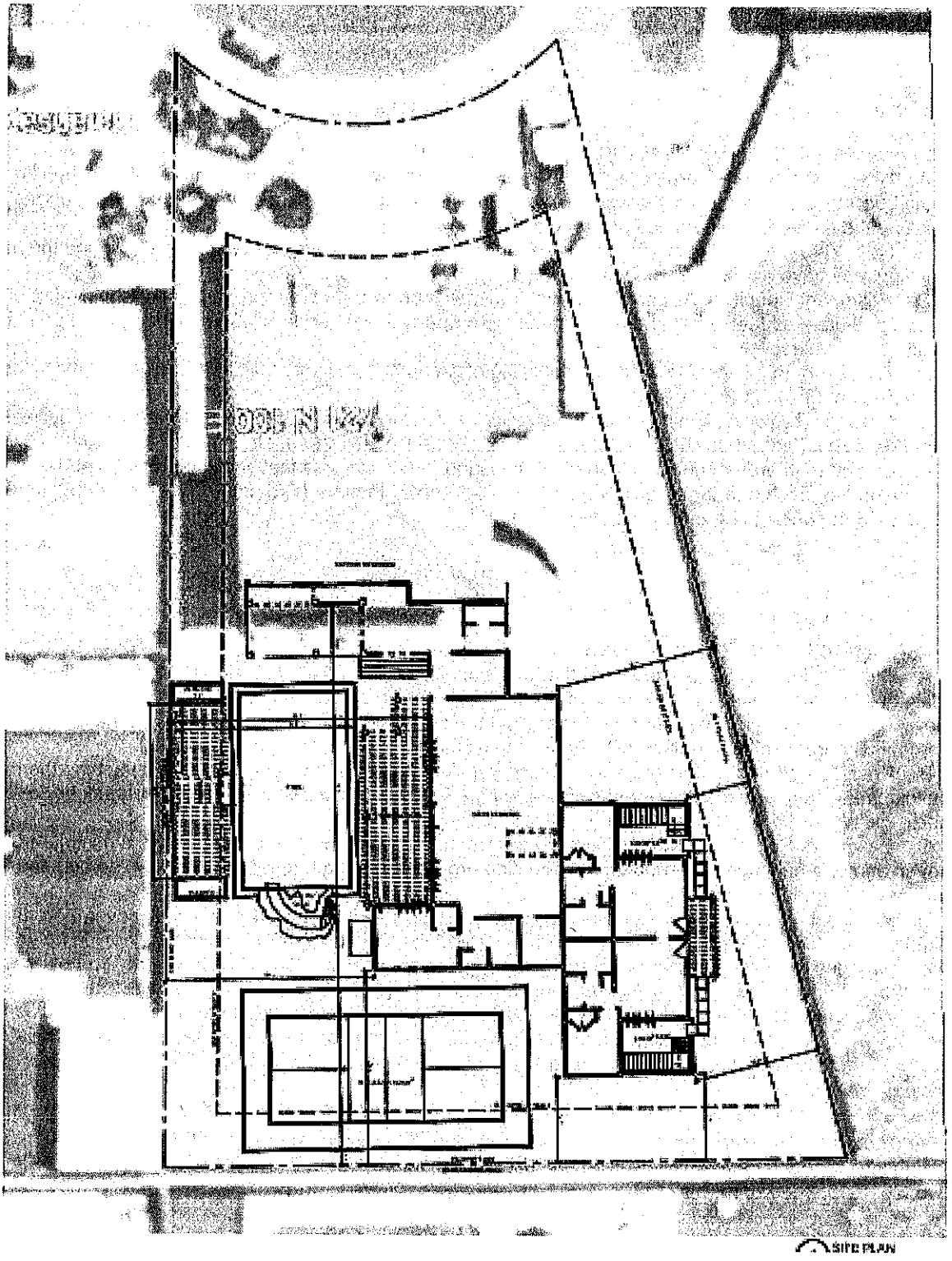
SITE PLAN

ARTICLE A. ONE-FAMILY RESIDENTIAL (R-1-8)

(Code now)

10-6A-5: MODIFYING REGULATIONS:

A. Side Yards: Private garages and other accessory buildings located at least ten feet (10') behind the main building may have a side setback of two feet (2'), except that the street side setback on a corner lot shall be the same as the front setback required for the zoning district.

B. Rear Yards: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of two feet (2'). (Ord. 2008-07, 5-7-2008)

C. Easement Required: All lots shall have easements on side and rear property lines a minimum of seven and one-half feet (7½') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage.

D. Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area.

E. Garages Required: Minimum garage size for new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

F. Lot Size: An area of not less than eight thousand (8,000) square feet shall be provided and maintained for each one-family dwelling and uses accessory thereto. (Ord. 2009-02, 2-18-2009; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

(Proposed change)

10-6A-5: MODIFYING REGULATIONS:

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F. *Lot Coverage: Lot area coverage by single story buildings, structures or accessory buildings shall not exceed 40% of the total lot area. Lots with two-story buildings or structures shall not exceed 35% coverage of the total lot area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

G. Lot Size: An area of not less than eight thousand (8,000) square feet shall be provided and maintained for each one-family dwelling and uses accessory thereto. (Ord. 2009-02, 2-18-2009; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-

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ARTICLE B. ONE- AND TWO-FAMILY RESIDENTIAL (R-1-10)

(Code now)

10-6B-5: MODIFYING REGULATIONS:

A. Side Yard: Private garages and other accessory buildings located at least ten feet (10') behind the main building may have a side setback of two feet (2'), except that the street side yard of a corner lot shall be the same as the front setback required for the zoning district.

B. Rear Yards: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of two feet (2'); provided, that on corner lots rearing on the side of another lot, the minimum rear yard for all buildings shall be ten feet (10'). (Ord. 2008-07, 5-7-2008)

C. Minimum Frontage: On a two-family dwelling with divided ownership, each dwelling shall have a minimum frontage on a dedicated City street of forty five feet (45'), which shall be measured at the required setback or building line.

D. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet (7½') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage.

E. Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area. (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

F. Lot Size: An area of not less than ten thousand (10,000) square feet shall be approved and maintained for each one-family dwelling and uses accessory thereto including detached zero lot line dwellings, and not less than sixteen thousand (16,000) square feet for each two-family dwelling and uses accessory thereto. Lots for zero lot line (twin homes) shall have an area of not less than eight thousand

(8,000) square feet for each unit. (Ord. 2009-02, 2-18-2009; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

G. Garages Required: Minimum garage size for new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

(Proposed change)

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H. *Lot Coverage: Lot area coverage by single story buildings, structures or accessory buildings shall not exceed 40% of the total lot area. Lots with two-story buildings or structures shall not exceed 35% coverage of the total lot area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

(Clean copy)

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C. Minimum Frontage: On a two-family dwelling with divided ownership, each dwelling shall have a minimum frontage on a dedicated City street of forty five feet (45'), which shall be measured at the required setback or building line.

D. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet (7½') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage.

E. Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area. *Accessory buildings shall be a maximum of one story in height.* (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

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G. Garages Required: Minimum garage size for new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

H. *Lot Coverage: Lot area coverage by single story buildings, structures or accessory buildings shall not exceed 40% of the total lot area. Lots with two-story buildings or structures shall not exceed 35% coverage of the total lot area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

ARTICLE C. MULTIPLE-FAMILY RESIDENTIAL (R-3-6)

(Code now)

10-6C-5: MODIFYING REGULATIONS:

A. Side Yard: Private garages or other accessory buildings located at least ten feet (10') behind the main building may have a side setback of two feet (2').

B. Rear Yard: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of two feet (2').

C. Area: Minimum lot area shall be increased by no less than four thousand (4,000) square feet for each additional dwelling unit above one.

D. Usable Open Space: A minimum of one thousand (1,000) square feet per dwelling unit of usable open space, to be used in common with all units in the development, shall be provided for multi-family developments. Such area shall be part of the development and maintained as private property.

E. Building Coverage: Building coverage may not exceed sixty percent (60%) of the lot area.

F. Multi-Family Dwellings: These buildings shall be considered as one building for the purpose of determining front, side and rear yard requirements as required by the zoning district. No two (2) separate structures shall be closer than ten feet (10') and the front yard on any dwelling may not be less than twenty feet (20') from an adjacent dwelling unit.

G. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet (7½') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage. (Ord. 2008-07, 5-7-2008)

H. Garages Required: Minimum garage size for one-family new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2009-06, 4-15-2009)

I. Parking: Each multi-family dwelling development shall provide two (2) enclosed parking spaces per unit for occupant use and two (2) additional off street general parking spaces per unit for guest use. (Ord. 2008-07, 5-7-2008)

(Proposed change)

10-6C-5: MODIFYING REGULATIONS:

A. Side Yard: Private garages or other accessory buildings located at least ten feet (10') behind the main building may have a side setback of ~~two feet (2').~~*Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist*

B. Rear Yard: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of ~~two feet (2').~~ *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist*

C. Area: Minimum lot area shall be increased by no less than four thousand (4,000) square feet for each additional dwelling unit above one.

D. Usable Open Space: A minimum of one thousand (1,000) square feet per dwelling unit of usable open space, to be used in common with all units in the development, shall be provided for multi-family developments. Such area shall be part of the development and maintained as private property.

E. *Lot Coverage: Lot area coverage by single story buildings, structures or accessory buildings shall not exceed 50% of the total lot area. Lots with two-story buildings or structures shall not exceed 40% coverage of the total lot area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

F. Multi-Family Dwellings: These buildings shall be considered as one building for the purpose of determining front, side and rear yard requirements as required by the zoning district. No two (2) separate structures shall be closer than ten feet (10') and the front yard on any dwelling may not be less than twenty feet (20') from an adjacent dwelling unit.

G. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet ($7^1/_2$') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage. (Ord. 2008-07, 5-7-2008)

H. Garages Required: Minimum garage size for one-family new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2009-06, 4-15-2009)

I. Parking: Each multi-family dwelling development shall provide two (2) enclosed parking spaces per unit for occupant use and two (2) additional of f street general parking spaces per unit for guest use. (Ord. 2008-07, 5-7-2008)

J. *Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area. Accessory buildings shall be a maximum of one story in height.*

(Clean copy)

10-6C-5: MODIFYING REGULATIONS:

A. Side Yard: Private garages or other accessory buildings located at least ten feet (10') behind the main building may have a side setback of *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist*

B. Rear Yard: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist*

C. Area: Minimum lot area shall be increased by no less than four thousand (4,000) square feet for each additional dwelling unit above one.

D. Usable Open Space: A minimum of one thousand (1,000) square feet per dwelling unit of usable open space, to be used in common with all units in the development, shall be provided for multi-family developments. Such area shall be part of the development and maintained as private property.

E. *Lot Coverage: Lot area coverage by single story buildings, structures or accessory buildings shall not exceed 50% of the total lot area. Lots with two-story buildings or structures shall not exceed 40% coverage of the total lot area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

F. Multi-Family Dwellings: These buildings shall be considered as one building for the purpose of determining front, side and rear yard requirements as required by the zoning district. No two (2) separate

structures shall be closer than ten feet (10') and the front yard on any dwelling may not be less than twenty feet (20') from an adjacent dwelling unit.

G. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet (7½') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage. (Ord. 2008-07, 5-7-2008)

H. Garages Required: Minimum garage size for one-family new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2009-06, 4-15-2009)

I. Parking: Each multi-family dwelling development shall provide two (2) enclosed parking spaces per unit for occupant use and two (2) additional of f street general parking spaces per unit for guest use. (Ord. 2008-07, 5-7-2008)

J. *Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area. Accessory buildings shall be a maximum of one story in height.*

ARTICLE D. RESIDENTIAL-AGRICULTURAL (R-A-1)

(Code now)

10-6D-5: MODIFYING REGULATIONS:

A. Side Yards: Accessory buildings shall have a minimum side yard of ten feet (10'). Private garages located at least ten feet (10') behind the main building may have a side yard of two feet (2'), except on the street side of a corner lot, which shall be the same as the front yard setbacks.

B. Rear Yards: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of two feet (2'). (Ord. 2008-07, 5-7-2008)

C. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet (7½') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage.

D. Garages Required: Minimum garage size for new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

E. Lot Size: An area of not less than twenty one thousand seven hundred ninety (21,790) square feet shall be approved and maintained for each one-family dwelling, uses accessory thereto, and permitted uses as listed. (Ord. 2009-02, 2-18-2009; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

(Proposed change)

10-6D-5: MODIFYING REGULATIONS:

A. Side Yards: Accessory buildings shall have a minimum side yard of ten feet (10'). Private garages located at least ten feet (10') behind the main building may have a side yard ~~of two feet (2'),~~ *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist* except on the street side of a corner lot, which shall be the same as the front yard setbacks.

B. Rear Yards: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of ~~two feet (2').~~ *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist* (Ord. 2008-07, 5-7-2008)

C. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet (7½') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage.

D. Garages Required: Minimum garage size for new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

E. Lot Size: An area of not less than twenty one thousand seven hundred ninety (21,790) square feet shall be approved and maintained for each one-family dwelling, uses accessory thereto, and permitted uses as listed. (Ord. 2009-02, 2-18-2009; amd. Ord. 2013-10, 8-21-2013,

eff. 2-17-2014)

F. *Lot Coverage: Lot area coverage by single story buildings, structures or accessory buildings shall not exceed 40% of the total lot area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

G. *Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area. Accessory buildings shall be a maximum of one story in height.*

(Clean copy)

10-6D-5: MODIFYING REGULATIONS:

A. Side Yards: Accessory buildings shall have a minimum side yard of ten feet (10'). Private garages located at least ten feet (10') behind the main building may have a side yard of, *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist* except on the street side of a corner lot, which shall be the same as the front yard setbacks.

B. Rear Yards: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist* (Ord. 2008-07, 5-7-2008)

C. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet ($7^1/_2$') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage.

D. Garages Required: Minimum garage size for new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

E. Lot Size: An area of not less than twenty one thousand seven hundred ninety (21,790) square feet shall be approved and maintained for each one-family dwelling, uses accessory thereto, and permitted uses as listed. (Ord. 2009-02, 2-18-2009; amd. Ord. 2013-10, 8-21-2013,
eff. 2-17-2014)

F. *Lot Coverage: Lot area coverage by single story buildings, structures or accessory buildings shall not exceed 40% of the total lot area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

G. *Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area. Accessory buildings shall be a maximum of one story in height.*

ARTICLE D1. LOW DENSITY RESIDENTIAL (R-1-14)

(Code now)

10-6D1-5: MODIFYING REGULATIONS:

A. Side Yard: Private garages and other accessory buildings located at least ten feet (10') behind the main building may have a side setback of two feet (2'), except that the street side yard of a corner lot shall be the same as the front setback required for the zoning district.

B. Rear Yards: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of two feet (2'). (Ord. 2008-07, 5-7-2008)

C. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet ($7^1/_2$') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage.

D. Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area. (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

E. Lot Size: An area of not less than fourteen thousand (14,000) square feet shall be approved and maintained for each one-family dwelling and uses accessory thereto.

Exceptions shall be allowed with a development agreement as specified in chapter 12 of this title. (Ord. 2009-02, 2-18-2009; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

F. Garages Required: Minimum garage size for new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

(Proposed change)

10-6D1-5: MODIFYING REGULATIONS:

A. Side Yard: Private garages and other accessory buildings located at least ten feet (10') behind the main building may have a side setback of ~~two feet (2'),~~ *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist* except that the street side yard of a corner lot shall be the same as the front setback required for the zoning district.

B. Rear Yards: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of ~~two feet (2').~~*Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist* (Ord. 2008-07, 5-7-2008)

C. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet (7½') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage.

D. Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area. (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014) *Accessory buildings shall be a maximum of one story in height.*

E. Lot Size: An area of not less than fourteen thousand (14,000) square feet shall be approved and maintained for each one-family dwelling and uses accessory thereto. Exceptions shall be allowed with a development agreement as specified in chapter 12 of this title. (Ord. 2009-02, 2-18-2009; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

F. Garages Required: Minimum garage size for new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

G. *Lot Coverage: Lot area coverage by single story buildings, structures or accessory buildings shall not exceed 40% of the total lot area. Lots with two-story buildings or structures shall not exceed 35% coverage of the total lot area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation*

. (Clean copy)

10-6D1-5: MODIFYING REGULATIONS:

A. Side Yard: Private garages and other accessory buildings located at least ten feet (10') behind the main building may have a side setback of *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist* except that the street side yard of a corner lot shall be the same as the front setback required for the zoning district.

B. Rear Yards: Private garages and accessory buildings located at least ten feet (10') behind the main building may have a rear setback of *Five feet (5') if no utility's exist in the setback or Seven and Half feet (7.5) if utility exist* (Ord. 2008-07, 5-7-2008)

C. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet (7½') and on a street side property line of ten feet (10') minimum, to be used for utilities and drainage.

D. Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot area. (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014) *Accessory buildings shall be a maximum of one story in height.*

E. Lot Size: An area of not less than fourteen thousand (14,000) square feet shall be approved and maintained for each one-family dwelling and uses accessory thereto. Exceptions shall be allowed with a development agreement as specified in chapter 12 of this title. (Ord. 2009-02, 2-18-2009; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

F. Garages Required: Minimum garage size for new home construction shall be twenty feet by twenty feet (20' x 20'). (Ord. 2008-07, 5-7-2008; amd. Ord. 2013-10, 8-21-2013, eff. 2-17-2014)

G. *Lot Coverage: Lot area coverage by single story buildings, structures or accessory buildings shall not exceed 40% of the total lot area. Lots with two-story buildings or structures shall not exceed 35% coverage of the total lot area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

ARTARTICLE F. MOBILE HOME (MH)

(Code now)

10-6F-5: MODIFYING REGULATIONS:

A. Development Plan Review: The Building Review Board shall review the proposed development plan to determine its compliance with all portions of the local zoning ordinances and building codes.

B. Applications: The Building Review Board shall not recommend approval of any application for a mobile home subdivision if the developer cannot provide required water supplies and facilities, waste disposal systems, storm drainage facilities, access or improvements, or if it is determined there would be unusual danger of flood or fire.

C. State Regulations: In addition to meeting these requirements and conditions, and conforming to the other laws of the City, all mobile home subdivisions shall also conform to all applicable State regulations.

D. HUD Sticker Required: All mobile homes to be installed, must have a HUD sticker affixed to the exterior wall as provided by the Federal agency.

E. Compliance With Other Regulations: All mobile homes located in any permitted area shall comply with and conform to all other zoning laws, rules, regulations and Building, Plumbing, Electrical, Fire Prevention Codes and all other codes and requirements applicable to a structure or building erected within the Mobile Home Zone.

F. Side Yard: Accessory buildings shall have a minimum side yard of ten feet (10') and the total of two (2) side yards shall be twenty feet (20'). Accessory buildings located at least ten feet (10') behind the main building may have a side yard requirement of two feet (2'), except for the street side of a corner lot shall be the same as the front setback.

G. Rear Yard: Accessory buildings located at least ten feet (10') behind the main building may have a rear yard of two feet (2'); provided, that on a corner lot rearing on a side yard of another lot, the minimum rear yard for all buildings shall be ten feet (10').

H. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet ($7^1/_2$') and on street side property lines of ten feet (10') minimum, to be used for utilities and drainage.

I. Parking: Each mobile home subdivision lot shall provide for the off street parking of at least two (2) vehicles. The parking space shall be not less than ten feet (10') in width and twenty feet (20') deep. All required parking spaces must be paved with two inches (2") of asphalt or four inches (4") of concrete.

J. Skirting:

1. Within fifteen (15) days of occupancy, each mobile home shall be skirted or if shields are used, they shall be fireproof, well painted or otherwise preserved.

2. All mobile homes shall be skirted with a skirt matching or complementing the design and color of the mobile home and all skirts shall be kept in place and in good repair at all times.

K. Walls, Fences And Landscaping: Walls, fences, landscaping elements, and requirements for clear view of intersecting streets are as described in chapter 7 of this title.

L. Streets: Streets shall include a fifty foot (50') right-of-way and thirty six feet (36') of paved sections bounded by curb, gutter and sidewalk constructed to City specifications. (Ord. 2008-05, 2-20-2008)

M. Rentals: Except as specifically provided in section 10-6F-2-1 of this article and section 10-7-20 of this title, for licensed vacation rentals, no mobile homes shall be rented for a period less than thirty (30) days and occupancy shall be by written lease. Mobile home leases shall be made available for inspection by officials of the City upon demand. (Ord. 2018-01, 1-3-2018)

N. Inspections And Fees: Prior to installation in the City, building permits shall be obtained for all mobile homes. Each home shall be inspected by the building inspector for compliance with all Building, Fire and Safety Codes. Fees shall be in accordance with the latest adopted resolutions of the City.

O. Placement Of Mobile Homes: No mobile home will be allowed to be placed on any lot or acreage outside a mobile home subdivision.

P. Recreational Vehicles: Recreational vehicles do not meet the requirements for mobile homes and may not be used in a mobile home subdivision in lieu of a mobile home. (Ord. 2008-05, 2-20-2008)

(Proposed change)

10-6F-5: MODIFYING REGULATIONS:

Q. *Area coverage by coach and covered outdoor areas shall not exceed 75% of the lot or rentable area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

R. *Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot or rental area. Accessory buildings shall be a maximum of one story in height.*

. (Clean copy)

10-6F-5: MODIFYING REGULATIONS:

A. Development Plan Review: The Building Review Board shall review the proposed development plan to determine its compliance with all portions of the local zoning ordinances and building codes.

B. Applications: The Building Review Board shall not recommend approval of any application for a mobile home subdivision if the developer cannot provide required water supplies and facilities, waste disposal systems, storm drainage facilities, access or improvements, or if it is determined there would be unusual danger of flood or fire.

C. State Regulations: In addition to meeting these requirements and conditions, and conforming to the other laws of the City, all mobile home subdivisions shall also conform to all applicable State regulations.

D. HUD Sticker Required: All mobile homes to be installed, must have a HUD sticker affixed to the exterior wall as provided by the Federal agency.

E. Compliance With Other Regulations: All mobile homes located in any permitted area shall comply with and conform to all other zoning laws, rules, regulations and Building, Plumbing, Electrical, Fire Prevention Codes and all other codes and requirements applicable to a structure or building erected within the Mobile Home Zone.

F. Side Yard: Accessory buildings shall have a minimum side yard of ten feet (10') and the total of two (2) side yards shall be twenty feet (20'). Accessory buildings located at least ten feet (10') behind the main building may have a side yard requirement of two feet (2'), except for the street side of a corner lot shall be the same as the front setback.

G. Rear Yard: Accessory buildings located at least ten feet (10') behind the main building may have a rear yard of two feet (2'); provided, that on a corner lot rearing on a side yard of another lot, the minimum rear yard for all buildings shall be ten feet (10').

H. Easement Required: All lots shall have easements on side and rear property lines of a minimum of seven and one-half feet (7½') and on street side property lines of ten feet (10') minimum, to be used for utilities and drainage.

I. Parking: Each mobile home subdivision lot shall provide for the off street parking of at least two (2) vehicles. The parking space shall be not less than ten feet (10') in width and twenty feet (20') deep. All required parking spaces must be paved with two inches (2") of asphalt or four inches (4") of concrete.

J. Skirting:

1. Within fifteen (15) days of occupancy, each mobile home shall be skirted or if shields are used, they shall be fireproof, well painted or otherwise preserved.

2. All mobile homes shall be skirted with a skirt matching or complementing the design and color of the mobile home and all skirts shall be kept in place and in good repair at all times.

K. Walls, Fences And Landscaping: Walls, fences, landscaping elements, and requirements for clear view of intersecting streets are as described in chapter 7 of this title.

L. Streets: Streets shall include a fifty foot (50') right-of-way and thirty six feet (36') of paved sections bounded by curb, gutter and sidewalk constructed to City specifications. (Ord. 2008-05, 2-20-2008)

M. Rentals: Except as specifically provided in section 10-6F-2-1 of this article and section 10-7-20 of this title, for licensed vacation rentals, no mobile homes shall be rented for a period less than thirty (30) days and occupancy shall be by written lease. Mobile home leases shall be made available for inspection by officials of the City upon demand. (Ord. 2018-01, 1-3-2018)

N. Inspections And Fees: Prior to installation in the City, building permits shall be obtained for all mobile homes. Each home shall be inspected by the building inspector for compliance with all Building, Fire and Safety Codes. Fees shall be in accordance with the latest adopted resolutions of the City.

O. Placement Of Mobile Homes: No mobile home will be allowed to be placed on any lot or acreage outside a mobile home subdivision.

P. Recreational Vehicles: Recreational vehicles do not meet the requirements for mobile homes and may not be used in a mobile home subdivision in lieu of a mobile home. (Ord. 2008-05, 2-20-2008)

Q. *Area coverage by coach and covered outdoor areas shall not exceed 75% of the lot or rentable area. Accessory structure lot coverage shall be included in the maximum lot coverage limitation.*

R. *Accessory Buildings: No accessory building or group of accessory buildings shall cover more than eight percent (8%) of the total lot or rental area. Accessory buildings shall be a maximum of one story in height.*

(Remove from City, add to Construction Standards)

CHAPTER 7
WATER SYSTEMS DESIGN, INSTALLATION, SPECIFICATIONS

SECTION:

8-7-1: CULINARY WATER DESIGN:

All culinary water mains and appurtenances within LaVerkin City shall be designed to provide for adequate future service for all contiguous areas which may, within a twenty (20) year period in the future, be tributary thereto. Trunk lines shall be designed in accordance with the system master plan. (Ord. 2007-01, 1-3-2007)

8-7-2: DESIGN FLOW PRESSURES:

Water mains shall be designed to provide a minimum residual pressure of forty (40) psi under maximum day demand conditions including designed fire flow. A minimum of thirty five (35) psi residual pressure must be maintained under normal peak hour conditions without fire flow. (Ord. 2007-01, 1-3-2007)

8-7-3: PEAK INSTANTANEOUS FLOW:

Peak instantaneous flow as determined in section 5.1 of the State of Utah public drinking water regulations shall be as follows:

A. Residential (indoor use; not including fire flow): $Q_i = 10.8N^{0.64}$ where Q_i = Total indoor flow (in gpm) in delivered to all connections. N = Total number of equivalent residential connections. Required storage is four hundred (400) gallons per connection. Peak instantaneous fire flows shall be added to peak instantaneous domestic flows for distribution system design flow total.

B. Commercial or industrial areas may require special investigation to determine fire flow requirements. Existing and future static pressure and flow information used in the design must be obtained from or approved by the water department. (Ord. 2007-01, 1-3-2007)

8-7-4: MINIMIZE SIZE AND DEPTH:

The minimum depth of cover (to the top of the pipe) for water mains shall be three feet (3') below the final grade of the street. Where final grades have not been established, mains shall be installed to a depth great enough to ensure three feet (3') of cover below future grade based on the best information available. Maximum depth shall be four feet (4') of cover below the final grade of the street, unless otherwise determined by the LaVerkin City public works department or engineer. The water mains shall be sized to deliver the peak instantaneous flow rate as previously determined within this chapter. The fire flow requirements and pressures shall be as previously outlined within this chapter. The minimum water main size for residential or commercial development shall be six inches (6"). The minimum size water mains serving any fire hydrant shall be eight inches (8") in diameter. (Ord. 2007-01, 1-3-2007)

8-7-5: VALVES AND HYDRANTS:

The water system shall be looped and valves shall generally be spaced such that a break in any one length of main will put no more than five hundred feet (500') of main nor more than two (2) fire hydrants out of service (whichever is less) while maintaining adequate minimum service in the remainder of the water system during repairs, except for major transmission lines, where longer spacing may be allowed. All distribution mains connecting to larger transmission mains shall be valved at the connection. All fire hydrant runs shall also be valved at the distribution main. Valves generally shall be located at street intersections in line with an extension of the property line. (Ord. 2007-01, 1-3-2007)

8-7-6: PRESSURE REDUCING VALVES:

The locations of the high water pressure zones within the city can be located and identified upon request, from the water department. The water department requires that in high water pressure zones, secondary pressure reducing devices shall be installed by the owner on all water connections to buildings per the current international plumbing code. Maintenance shall be the owner's responsibility. (Ord. 2007-01, 1-3-2007)

8-7-7: FIRE HYDRANTS:

A. Fire Hydrants: Fire hydrants shall be Kennedy, model K81A, or approved equal with four and one-half inch ($4\frac{1}{2}$") pumper nozzle and two (2) $2\frac{1}{2}$-inch hose nozzle, five and one-fourth inch ($5\frac{1}{4}$") main valve and six inch (6") mechanical joint connection. Fire hydrants shall conform to the latest edition of AWWA C-502, "dry barrel fire hydrants". All hydrants shall be designed for a working pressure of two hundred (200) psi and a hydrostatic pressure of three hundred fifty (350) psi. It shall be the responsibility of the owner to furnish hydrants with finish paint above the ground line identical to the existing hydrant paint (red).

B. Design: The hydrant shall be of a flanged joint type or mechanical joint inlet. All hydrants shall be so designed as to allow the flanges at sidewalk level to separate without material damage to the main barrel section when struck by a large object, such as a car. Upon such damage, the main gate must remain closed to avoid flooding or washout. Hydrants with a five inch (5") valve opening shall be furnished with two and one-half inch ($2\frac{1}{2}$") national standard thread hose nozzles and one $4\frac{1}{2}$-inch national standard thread pumper nozzle. All nozzles shall be furnished with a cap and gasket with attaching chain. All hydrants shall open counterclockwise with a pentagon operating nut conforming in size to the specifications of the water department ($1\frac{1}{2}$ inch pentagon).

C. Specifications: Fire hydrants shall be set so that at least the minimum pipe cover is provided for the branch supply line and the nozzles are at least eighteen inches (18") above finish grade. Each hydrant shall be set on a concrete foundation at least eighteen inches (18"), but not more than twenty four inches (24") square and four inches (4") thick. Each hydrant shall be restrained with Megalugs and joint restraints. Hydrant drainage shall be provided by installing gravel or crushed rock around the hydrant, and below the top of the hydrant supply line. One-third ($\frac{1}{3}$) cubic yard of one and one-half inch ($1\frac{1}{2}$") gravel shall be placed around the drain holes just above the hydrant valve casing. All hydrants shall stand plumb. Hydrant pumper nozzles shall have hose nozzles parallel and perpendicular to the curb line. Hydrants shall be located inside the street right of way and/or as directed by the water department. All auxiliary valves for fire hydrants shall be flanged to main line tees.

D. Maintenance: After the hydrant is installed and approved, it will be the water department's responsibility to maintain the hydrant, and, where applicable, the customer/property owner will allow access for the water department to do so.

E. Dead End Mains: Dead end mains shall be avoided wherever possible. If installed they shall not exceed five hundred feet (500'). Hydrants or taps shall be installed at the end of dead end mains for flushing purposes as well as for fire protection and must be approved by the LaVerkin City water department. Washout valves, in lieu of fire hydrants, are not allowed without prior approval of the water department.

F. Hydrant Spacing And Locations: Generally, fire hydrants shall be spaced and located as follows:

1. At each intersection, generally on the same sides of the street.

2. In residential areas, fire hydrant spacing shall be no greater than five hundred feet (500') and no house shall be more than two hundred fifty feet (250') from a hydrant via a street access to the property being served.

3. In multiple-family areas, PUD zones, PD zones, industrial, business, or commercial areas, fire hydrant spacing shall require special investigation to determine the hydrant spacing per the international fire code (IFC).

4. Generally, hydrants shall be located in line with extensions of the property line when located mid block.

5. Hydrants shall be placed no more than five feet (5') from the back of the sidewalk, with a five foot (5') radius of clearance to adjacent obstacles and with the lowest water outlet not less than eighteen inches (18") nor more than thirty inches (30") from the final ground elevation (see standard drawings). The "break away" flange at bottom of hydrant shall be installed so that it is at, or within six inches (6") above, final ground elevation.

6. All fire hydrants to be installed on dedicated easements or public rights of way will be owned and maintained by the water department.

G. Fire Flow Requirements:

1. Under maximum day demand conditions, fire flow shall be at least one thousand (1,000) gallons per minute at any one hydrant with a total fire flow of at least one thousand five hundred (1,500) gpm at any combination of two (2) hydrants in the area. The total system design shall be such that fire flows and normal peak instantaneous flow demand (as called out within this chapter) can be met while still maintaining a minimum pressure of twenty (20) psi at all points in the distribution system.

2. High density residential, commercial, or industrial areas shall require special investigation to determine fire flow requirements and hydrant spacing per the IFC.

3. Existing and future static pressure and flow information used in the design shall be obtained from or approved by the LaVerkin City water department. (Ord. 2007-01, 1-3-2007)

8-7-8: MISCELLANEOUS DESIGN CRITERIA:

A. Easements: All public water mains shall be installed in an easement at least fifteen feet (15') in unobstructed width or in public rights of way with adequate access for maintenance vehicles.

B. Separate Services: Each building shall be served by a separate line and meter except in PUDs (or PDs) as approved by LaVerkin City's representative. In some situations, a common tap and service line from the main to a manifold with two (2) meter setters and boxes may be installed to serve two (2) adjacent properties. All lots shall have a minimum of three-fourths inch (¾") service line from the main to the meter box.

C. Machine Tapping: All service line taps shall be machine tapped at the time of the water main installation. Service lines shall be installed prior to testing and acceptance of the water main.

D. Line Spacing: Water mains shall be laid at least ten feet (10') horizontally from any existing or proposed sewer main. The distance shall be measured edge to edge. Irrigation lines shall be separated from culinary water lines by a horizontal distance of three feet (3').

E. Vertical Spacing: When a water main crosses over a sewer main, the water main shall be laid at such an elevation that the bottom of the water main is at least eighteen inches (18") above the top of the sewer. When the water main cannot be as high as eighteen inches (18") above the sewer, the sewer shall be constructed of material with pressure conduit standards for a distance of ten feet (10') on either side of the crossing.

F. Blocking: All tees, bends, plugs and hydrants shall be provided with reaction blocking, tie rods, and/or joints designed to prevent movement, i.e., "Megalug" or approved equal. Wood blocking of future main extensions is not acceptable. Concrete thrust blocks shall be formed and poured in place and must bear against undisturbed soil, per the thrust block details in the standard drawings.

G. Air Release: Air release vacuum assemblies and blow off valves shall be provided on all mains larger than twelve inches (12"), where required, to prevent damage due to air accumulations. (Ord. 2007-01, 1-3-2007)

8-7-9: SECONDARY WATER OR WASTEWATER REUSE IRRIGATION SYSTEM:

A. Secondary Water: All secondary water irrigations systems shall be designed and constructed in accordance with the requirements outlined for culinary water systems in these specifications. However, all valve box covers shall bear the legend "Sprinkler" or "Irrigation" in order to differentiate between culinary and secondary systems. In addition, there shall be no cross connections between secondary and culinary water systems.

B. Reuse Water: All wastewater reuse irrigation systems shall be designed and constructed in accordance with the requirements outlined for culinary water systems in these specifications. However, all requirements for the treating and reuse of wastewater outlined in the latest applicable Utah division of water quality standards for utilization and isolation of domestic wastewater treatment works effluent shall be followed. These requirements include, but are not limited to, a reuse project plan, allowed uses, required treatment processes, and water quality limits. (Ord. 2007-01, 1-3-2007)

8-7-10: MATERIALS:

This section specifies acceptable pipe and accessories for underground culverts, storm drains, and water pipe construction. The materials used for pipe and fittings shall all be new and conform to the requirements for class, brand, size and material as specified. Each pipe used shall have a manufacturer's stamp on it indicating that it complies with the requirements of the appropriate specification. Any pipe not so stamped shall be rejected. All pipe shall be homogeneous throughout and free from cracks, holes, foreign inclusions or other defects. All PVC pipe shall be made from clean, virgin, type 1, grade 1, polyvinyl chloride conforming to ASTM resin specification D1784. All pipe joints shall be bell and spigot type with rubber ring gasket to permit expansion and contraction. Pipe and fittings shall be assembled with a nontoxic lubricant.

A. Storm Drain Pipe: All pipes listed under these standards, as well as the following pipes, may be used in the construction of storm drain lines and culverts:

1. Nonreinforced Concrete Pipe: Nonreinforced concrete sewer pipe may be used for storm drains, up to and including eighteen inch (18") size, unless otherwise specifically designated in these standards or on the approved drawings. Pipe shall be extra strength and manufactured to comply with the requirements set forth in ASTM designation C14, class 3 unless otherwise approved by LaVerkin City's representative. Joints shall be of the bell and spigot with rubber gasket design, and with joints and gaskets conforming to the requirements of ASTM designation C443. Pipe joints shall be so designed as to provide for self-centering, and when assembled, to compress the gasket to form a watertight seal. The gasket shall be confined in a groove on the spigot so that pipe movement or hydrostatic pressure will not displace the gasket.

2. Reinforced Concrete Pipe: Reinforced concrete pipe shall be used for all storm drains greater than eighteen inches (18") in diameter, and for all drains of smaller size where installation does not provide a cover of at least three feet (3') over the top of the pipe. Reinforced concrete pipe shall comply with the requirements of ASTM C76 (class II) unless otherwise approved by LaVerkin City's representative. Joints shall be of the bell and spigot design with rubber gasket type joints for storm drains, with an alternate option of tongue and groove mortar joints for storm drain lines when approved by LaVerkin City's representative.

3. Corrugated Polyethylene Pipe: Corrugated polyethylene pipe shall be high density polyethylene corrugated exterior/smooth interior pipe. Twelve inch (12") to thirty six inch (36") diameters shall conform to AASHTO M294 type S; eight inch (8") to ten inch (10") diameter shall meet the strength requirements of AASHTO M252 with the addition that the pipe have a smooth interior liner. Materials shall conform to ASTM D3350. All pipe joints and fittings shall be watertight and conform to AASHTO M353 or M294, and shall be approved by LaVerkin City's representative.

B. Water Pipe And Fittings: The materials used for pipe and fittings shall all be new and conform to the requirements for class, brand, size and material as specified. A copy of the manufacturer's installation recommendation for each kind of pipe shall be provided to each foreman prior to construction. These recommendations shall be followed during construction unless instructed otherwise by LaVerkin City's representative. All pipe materials are as outlined below.

C. General Pipe Requirements: Pipe materials shall conform to the following requirements:

Size	-	**Type**
$^{3}/_{4}$ inch - 1 inch	-	Copper type K Polyethylene IPS PE3408 200 psi
$1^{1}/_{2}$ inch - 2 inch	-	Rigid copper type K (sweat fittings) Polyethylene CTS PE3408 200 psi
3 inch and larger	-	Ductile iron class 50 minimum,

		PVC C900

All pipe shall conform to the current AWWA standards for each class of pipe listed above.

D. Connecting Water Meters: Only authorized employees of the water department shall be allowed to connect or disconnect water meters. All boxes set in concrete shall be flanged to prevent settlement.

E. Ductile Iron Pipe: All ductile iron pipe shall be a minimum of class 50 conforming to the latest edition of AWWA specifications C-151 (ANSI A21.51).

1. Joints: Ductile iron pipe shall be either mechanical joints, rubber gasket slip on joints, flanged joints, or a combination of the above as specified on the approved plans. Pipe shall also conform to all current AWWA standards.

2. Polyethylene Wrapping: A polyethylene wrap will be required on all ductile iron pipe laid in corrosive soils or where directed by LaVerkin City's representative.

a. The polyethylene wrap tubing shall be cut to provide for a minimum of one foot (1') of lap over both the adjoining pipes.

b. The ends of the tubing shall be wrapped using three (3) circumferential turns of plastic adhesive tape.

c. The loose wrap on the barrel shall be pulled snugly around the barrel of the pipe and the excess folded over at the top. This fold shall be held in place by means of six inch (6") strips of plastic tape placed at intervals of three feet (3') along the pipe barrel.

d. Bends, reducers, offsets, and restraint gland locations shall be wrapped in the same manner as the pipe. Valves shall be wrapped by bringing the tube wrap on the adjacent pipe over the bells of the valve and sealing with adhesive tape. The valve bodies shall then be wrapped with flat sheets passed under the valve bottom and brought up around the body to the stem and fastened with the tape.

F. Copper Pipe: Where service lines are two inches (2") or less in diameter, type K copper pipe may be allowed with prior approval of LaVerkin City's representative. Pipe, which has outside dimensions greater than two inches (2") in diameter, shall not be copper. All copper pipe shall conform to the current AWWA standards.

G. Tapping Material Specification: For small tappings (¾ inch through 2 inch) tapped into cast iron, steel or ductile iron pipe, the following materials shall be required:

1. Saddle Castings: Large saddle tappings shall be stainless steel or bronze single/double strap. Romac 101N or approved equal.

2. Stainless Steel Strap: The stainless steel strap shall consist of a two inch (2") wide strap to spread out the clamping force on the pipe and shall come complete with sufficient stainless steel or bolts, nuts and washers (with ⅝ inch NC teflon coated roll threads) to properly clamp the strap to the pipe. MIG welds shall be passivated for resistance to corrosion.

3. Gaskets: Gaskets shall be made from virgin SBR compounded for water services.

H. Valves And Boxes: All valves, twelve inches (12") and smaller, may be of a resilient seat gate valve type, and all valves over twelve inches (12") shall be butterfly valves unless otherwise specified by the water department.

1. Gate And Butterfly Valves: Valves shall conform to the latest revision of AWWA resilient seated gate valve standards.

a. All valves twelve inches (12") and less, installed next to a fitting must be flange x MJ and installed with the flange end connecting to the tee, cross, or fitting and megaluged to the line unless otherwise approved by the water department. Valves greater than twelve inches (12") shall have flange x flange with an MJ adaptor in order to flange to tee, cross, or fitting and megalug to line.

b. All six inch (6") and eight inch (8") valves shall have a sixteen inch by sixteen inch by four inch (16" x 16" x 4") slab of concrete placed under them for support. Valves ten inches (10") and greater shall have a twenty inch by twenty inch by four inch (20" x 20" x 4") slab placed under them for support. All support slabs shall be tied to the valves.

2. Valve Boxes:

a. All valves shall be provided with a cast iron valve box of the extension sleeve type, and the correct adjustable height to bring the top of the valve box flush with the ground surface. The valve box shall not be less than five inches (5") in diameter and shall have a minimum

thickness of 0.375 inch. The box provided also shall be provided with a suitable base and cover. The word "WATER" shall be cast on the cover.

b. Valve boxes shall be installed plumb and properly positioned to allow access of the operating wrench. To ensure that the box is not displaced during backfill operations, the backfill shall be hand mechanical tamped for a distance of five feet (5') each way along the trench with a concrete ring of eighteen inch (18") diameter around the valve box.

I. Water Service Laterals: The material used for water service connections shall comply with the following requirements:

1. Service Pipe: Service pipe shall be copper or polyethylene.

2. Corporation Stops: Corporation stops shall be similar to those manufactured by the Mueller Company, or Ford, similar to Ford F1101-3-G or Mueller H-15000. All services shall have compression or instratight type joint for the service pipe and threaded on the inlet end with an iron pipe thread.

3. Meter Setter Yokes: Meter setters or meter yokes shall be fifteen inches (15") high, Ford 70 series copper setter, VBHC72-15W or equal, and shall have an AWWA approval, built in backflow device and inlet angle ball valve. All internal parts shall be accessible without removing the valve from the line. Meters shall only be installed by water department personnel.

4. Meter Box And Lid: The meter boxes shall be black or white, high density polyethylene ADS N-12 or equal, eighteen inch by twenty four inch (18" x 24") (standard size) or as otherwise approved by water department. The meter lids shall be cast iron, Tyler 6150BL or approved equal. Lid marking shall be approved by water department. All meter boxes shall be placed behind sidewalks in the ten foot (10') easement along the frontage and within two feet (2') of the sidewalk.

5. Service Connections: At all points designated by the water department, the property owner shall install services for building connections. The building service shall extend such services from the property line or meter box to the building, unless otherwise indicated by the water department.

6. Service Standard: Individual residential water services shall be one inch (1") for dual services and three-fourths inch (¾") for a single service from the water main to the meter setter for normal domestic service, but may be one and one-half inches (1½") or two inches (2") in diameter as directed by the water department for larger users. Services shall have a minimum of three feet (3') of cover and be laid as shown in the standard drawings.

7. Curb Marking: At the point where the service line crosses under the curb a "W" for water or a "S" for sewer, will be neatly stamped or inscribed into the face of the curb.

8. Hot Taps: All hot taps shall be performed by the LaVerkin City water department.

J. Irrigation Line: All irrigation pipe shall be DR-18 conforming to the requirements of AWWA standard C-900 and be NSF approved. The color of the irrigation pipe is to be purple to conform to the color coding scheme of LaVerkin City, and classified as irrigation pipe. (Ord. 2007-01, 1-3-2007)

8-7-11: PIPELINE CONSTRUCTION:

This section covers the requirements for materials, placement, cleaning and testing of underground pipelines and incorporates the requirements of the AWWA standards and manufacturers recommended installation procedures, whichever is more stringent. Backfill shall include filling of all trenches to the original ground surface or final grading elevation as shown on the approved construction drawings, or otherwise directed by LaVerkin City's representative. (Ord. 2007-01, 1-3-2007)

8-7-12: TRACER WIRE:

14-1-UF jacketed wire was designed specifically for direct burial shall be installed adjacent to all newly installed PVC water transmission pipeline. The tracer wire shall be attached to each fire hydrant and meter connected to the pipeline using waterproof couplers as recommended by the manufacturer. All wire splices shall be watertight and shall be identified as the location on the as built plans. (Ord. 2007-01, 1-3-2007)

8-7-13: CONSTRUCTION METHODS:

This section covers the requirements for pipe laying, installation and bedding. Further requirements for trenching, placement, and backfilling of all underground pipelines and excavation may be found in title 7, chapter 4, "Excavations", of this code. The methods employed in performing the work shall be the responsibility of the contractor. The contractor shall make such changes in the methods employed as

~~are necessary to install an acceptable finished product. These methods shall include, but are not limited to, the following:~~

~~A. Pipe Laying And Bedding:~~

~~1. Pipe will be carefully inspected in the field by LaVerkin City water department before and after laying. If any cause for rejection is discovered in a pipe after it has been laid, it shall be removed and replaced by the contractor.~~

~~2. When connections are to be made to any existing pipe, conduit, or other appurtenances, the actual elevation or position of which cannot be determined without excavation, the contractor shall carefully excavate for, and expose the existing improvement before laying any pipe or conduit with a water department inspector present. LaVerkin City water department shall be given the opportunity to inspect the existing pipe or conduit before the connection is made. Any adjustments in line or grade, which may be necessary to accomplish the intent of the plans, will be made.~~

~~3. Pipe shall be laid upgrade with the socket or collar ends of the pipe upgrade unless otherwise authorized by the water department.~~

~~4. Pipe shall be laid true to line and grade, with uniform bearing under the full length of the barrel of the pipe. Suitable excavation shall be made to receive the bell or collar, which shall not bear upon the subgrade or bearing material. Any pipe that is not true to alignment or shows any settlement after laying, shall be removed and relaid to the proper grade and alignment. Wherever possible, sanitary sewers shall be installed on the downhill side of the street.~~

~~B. Requirements For Line And Grade: All drainage pipe shall be installed accurately to the defined line and grade within the following limits:~~

~~1. Variance from established grade shall be not greater than one-tenth ($^1/_{10}$) of a foot between manholes. Variance from established line shall be not more than one-half foot ($^1/_2$') between manholes. Any variances approved shall not impact the system design capacity in the judgment of LaVerkin City's representative. In addition, any variations granted shall not result in a level or reverse sloping invert.~~

~~2. Invert elevations of each box inlet and outlet and distance measurements between boxes shall be verified by a surveying instrument prior to pouring of the box floor.~~

~~C. Installation Of Pipe:~~

~~1. A groove shall be excavated in the bottom of the trench to receive the bells. Bell holes shall be excavated so that only the barrel of the pipe receives bearing from the trench bottom. Large rocks (over 6 inches in least dimension) near the surface shall be removed and the hole refilled with approved backfill in accordance to requirements in title 7, chapter 4, "Excavations", of this code.~~

~~2. Drainpipe shall be laid upgrade. All pipe installation shall proceed with joints closely and accurately fitted. Gaskets shall be fitted properly in place and care shall be taken in joining the units to avoid twisting the gaskets. Joints shall be clean and dry and a joint lubricant, as recommended by the pipe supplier, shall be applied uniformly to the mating joint surfaces to facilitate easy and positive joint closures. If adjustments to the position of a pipe length are required after being laid, the pipe shall be removed and rejoined as for a new pipe. When laying is not in progress, the ends of the pipe shall be closed with a tightfitting stopper to prevent the entrance of foreign material. In addition to the above requirements, all pipe installation shall comply with the specified requirements of the pipe manufacturer.~~

~~D. Setting Bends, Tees, Crosses And Reducers:~~

~~1. Bends, tees, crosses, and reducers shall be lowered into the trench, inspected, cleaned, and joined to the pipe.~~

~~2. Reaction or thrust blocking, when permitted by LaVerkin City, shall be applied at bends and tees, and at points of reducing or in fittings where changes in pipe diameter occur. The design of concrete thrust blocking shall be as shown in the standard drawings or as directed by the water department. The mat for reaction or thrust blocking shall be concrete composed of concrete aggregates in accordance with ASTM designation C33, Portland cement in accordance with ASTM designation C150. If an air entraining agent is used, it shall conform to ASTM designation C175 and C260. The mix shall not be leaner than one part cement, two and one-half ($2^1/_2$) parts sand, and five (5) parts stone, and shall have a compressive strength of not less than two thousand five hundred (2,500) psi. Blocking shall be placed between solid ground and the fitting to be anchored. The area of bearing on the fitting and on the ground shall in each instance be that required in the approved drawings or by LaVerkin City. Unless otherwise directed by LaVerkin City, the blocking shall be placed so that the pipe and fitting joints will be accessible~~

for repair. Restraining joints (Megalug or equal) shall also be used to prevent movement wherever thrust blocks are required.

3. Concrete thrust blocks shall not be used as a restraining system for water line mains or laterals without prior approval of water department.

4. A Megalug retainer gland system shall be used on all mechanical joints. These shall meet Uni-B-13 for PVC and be UL/FM approved through twelve inches (12") for both ductile iron and PVC. The restraint mechanism shall consist of individually activated gripping surfaces to maximize restraint capability. Twist off nuts, sized the same as the tee head bolts, shall be used to ensure proper activating of restraining devices. The gland shall be manufactured of ductile iron conforming to ASTM A536-80. The retainer gland shall have a pressure rating equal to that of the pipe on which it is used (through 14 inches) with a minimum safety factor of two to one (2:1). Gland shall be Megalug by EBAA Iron, Inc., or approved equal. The type of model of retainer and amount for each connector is shown on standard drawings.

5. If a Megalug retainer system cannot be used, a concrete thrust block system can be substituted, if designed and approved by the water department, on a case by case basis.

E. Plugging Dead Ends: Standard plugs shall be inserted into the bells of all dead end fittings. Spigot ends of fittings and plain ends of pipe shall be capped. When directed by LaVerkin City's representative, a concrete reaction or thrust block shall be provided at all plugged outlet fittings in the sizes indicated on the standard drawings or as directed by LaVerkin City. They also shall be tied to the pipe with restraining joints. The number and size of rods shall be as specified.

F. Service Lines: All service lines shall be installed according to the details shown on the standard drawings. A "W" (for water) or "S" (for sewer) shall be stamped or inscribed in the curb where the service lines cross the curb line.

G. Pipe To Be Kept Clean: All foreign matter or dirt shall be removed from the interior of the pipe before lowering into position in the trench. Pipe shall be kept clean by means approved by LaVerkin City during and after laying.

H. Jointing Pipe Sections: The sealing surface of the pipe, the bell to be joined, and the elastomeric gaskets shall be cleaned immediately prior to assembly, and assembly shall be made as recommended by the manufacturer. When pipe laying is not in progress, the open ends of installed pipe shall be closed to prevent entrance of trench water into the line. Whenever water is excluded from the interior of the pipe, enough backfill shall be placed on the pipe to prevent floating. Any pipe that has floated shall be removed from the trench and the bedding restored. No pipe shall be laid when the trench conditions or the weather are unsuitable for proper installations as determined by the LaVerkin City water department.

I. Cutting Pipe: The pipe shall be cut in a neat manner without damage to produce a smooth end at right angles to the axis of the pipe.

J. End Preparation: Pipe ends shall be cut square, deburred and beveled in accordance with the pipe manufacturer's recommendations.

K. Push On Joints: The push on joint shall be a single elastomeric gasketed joint, which shall be assembled by positioning the elastomeric gasket in the annular groove of the bell and inserting the spigot end of the pipe into the bell. The spigot end of the pipe shall compress the gasket radially to form a positive seal. The gasket and annular groove shall be designed, sized, and shaped so that the gasket will resist displacement. Care shall be taken so that only the correct elastomeric gasket, compatible with the annular groove of the bell, is used. Insertion of the elastomeric gasket in the annular groove of the bell must be in accordance with the manufacturer's recommendations.

L. Mechanical Joints: The mechanical joint shall be a bolted joint of the stuffing box type, and installation recommendations from the manufacturer shall be followed. Each joint shall consist of:

1. A bell provided with an exterior gland having bolt holes or slots and a socket with an annular recess for the sealing gasket and the spigot end of the pipe.

2. A sealing gasket.

3. A follower gland with bolt holes matching those in the fitting.

4. Tee bolts and hexagonal nuts of cor-ten metal.

M. Meter Boxes: All meter boxes shall be located behind the sidewalk. Any meter box covered or damaged during the construction operations shall be replaced or uncovered and raised to finish grade by the contractor. Any meter, which is placed in a driveway, shall have a concrete or equivalent box with brake joints around it. (Ord. 2007-01, 1-3-2007)

8-7-14: CLEANING AND DISINFECTION:

A. Chlorination: Each line, after being tested and before being placed in service, shall be disinfected by chlorination. Prior to chlorination the entire line shall be flushed to ensure that all dirt or foreign objects have been removed from the line. Sufficient chlorine shall be added to ensure a residual of twenty five (25) parts per million in the water after twenty four (24) hours standing in the pipe. Chlorine calcium hypochlorite dry chlorinating chemical solution may be used for this purpose. Methods of application shall be approved by the water department. Following chlorination, all treated water shall be drained and the pipeline thoroughly flushed with clean water. Water will be metered through a hydrant meter approved from the LaVerkin City water department.

B. Flushing: The entire line shall be flushed after the specified contact period, and such flushing shall be continued until the water is free from excess chlorine. The entire line, including hydrant laterals, branch lines, and dead end mains shall be flushed. Chlorine residual must be tested after final flushing by the water department. The discharge of flushed water shall be accomplished in such a manner that no erosion will occur and with no damage to streets or other property. Procedures for discharge will be subject to the review of the water department. (Ord. 2007-01, 1-3-2007)

8-7-15: TESTING AND ACCEPTANCE:

The owner and/or contractor shall test all water mains prior to final acceptance. This shall include the repairing of existing facilities that must be included in the test but are not capable of holding test pressures. All concrete reaction blocks, given prior approval by LaVerkin City's representative, shall be in place at least five (5) days before the initial filling of the line, unless high early strength concrete is used which will require three (3) days in place.

A. Pressure Test: After all utility services have been installed in the trench and the water pipe has been laid, including fittings, valves, corporation stops, services, and hydrants, and the line has been backfilled in accordance with these standards, each valved section, unless otherwise directed by the water department, shall be subjected to hydrostatic pressure of not less than two hundred (200) pounds per square inch prior to asphalt installation. The duration of each such test shall be twenty four (24) hours unless otherwise specified by the LaVerkin City public works director. Water added to maintain the pressure shall not exceed 0.4 gallons per inch diameter per one thousand (1,000) linear feet of main being tested during the twenty four (24) hour test period.

B. Test Requirements: Each valved section of pipe shall be slowly filled with water, and the specified test pressure measured at the lowest point of elevation. This shall be applied by means of a pump connected to the pipe in a satisfactory manner. The pump, pipe connection, gauges, and all necessary apparatus shall be furnished by the contractor. Gauges and measuring devices must meet with the acceptance of the water department and the necessary pipe taps shall be made as directed. Before applying the specified test pressure, all air shall be expelled from the pipe by drilling small holes at points of highest elevations and afterward tightly plugging these holes with brass plugs.

C. Defective Pipes, Cracks: Any cracked or defective pipes, fittings, valves, or hydrants discovered in the pressure test shall be removed and replaced with sound material in the manner provided. The test shall be repeated until the water main passes the pressure test and is accepted by the water department.

D. Operational Inspection: At the completion of the project and in the presence of the LaVerkin City's representative, the contractor shall operate all valves, hydrants, and water services to ascertain that the entire facility is in good working order; that all valve boxes are centered and valves are operational; that all hydrants operate and drain properly and that water is available at all meter boxes.

E. Test Results And Certificates Of Compliance: Test results shall be submitted for pressure and operational testing in accordance with current water department requirements. Certificates of compliance may be required, at option of LaVerkin City's representative, from materials suppliers for any materials not specifically covered herein. (Ord. 2007-01, 1-3-2007)

(Remove from City, add to Construction Standards)

TITLE 7
PUBLIC WAYS AND PROPERTY
CHAPTER 3
STREET AND SIDEWALK CONSTRUCTION

7-3-10: DESIGN STANDARDS:

All streets within LaVerkin City shall be designed structurally to conform to these specifications. Streets shall conform to the standards and technical design requirements contained within this section. Asphalt pavements shall be constructed of three inches' (3") compacted hot mix asphalt installed in accordance with the requirements of the standard drawings and specifications on file in the city.

A. Basic Street Cross Section Standards: Requirements for the basic street cross section configurations are shown in the standard drawings. Alternate road cross sections may be used, if applicable safety and traffic standards are met and approved by the LaVerkin City public works director.

B. Private Street Cross Section Standard: Private streets must be constructed to public street standards.

C. Improvement Requirements:

1. Curb, Gutter And Sidewalk: Required curb, gutter, and sidewalk shall be constructed in accordance with the standard drawings and specifications on file in the city.

2. Driveways: Driveways shall be constructed in accordance with the standard drawings and specifications on file in the city.

3. Pavement: All streets, public or private, shall be surfaced to grade, with asphalt pavement, to the minimum width and thickness in accordance with standard drawings and specifications on file in the city.

4. Fog Coat: Within thirty (30) days or after the asphalt has cured, whichever comes first, a fog coat shall be applied to all streets within the subdivision by the subdivider.

5. Street Lighting: Street lighting shall be provided on all public streets. The construction shall be in accordance with the standard drawings and specifications on file in the city.

6. Valley Gutters: When constructed they shall be in accordance with the standard drawings. The LaVerkin City public works director may, with justification, prohibit construction on any street.

7. Wheelchair Ramps: Wheelchair ramps shall be constructed at all street intersections, when new construction occurs, in accordance with the standard drawings, and federal ADA requirements. (Ord. 2006-23, 7-5-2006)

D. Technical Design Requirements: The following requirements apply to public and private streets:

1. Street Grades:

a. All street grades shall have a maximum of twelve percent (12%). Minimum grade shall be 0.5 percent unless approved by the city engineer.

b. Maximum street grades may be increased to fifteen percent (15%) and upon prior approval of the LaVerkin city council. Approval may be given based upon evaluation of evidence submitted which shows a smaller amount of disturbance to the existing terrain if larger percentages are used and result in no significant decrease in safety features. Any approvals for increased grades must be consistent with access requirements of fire apparatus as defined by the fire department. (Ord. 2007-02, 1-3-2007)

2. Intersections:

a. Wherever possible, all street intersections shall be ninety degree (90°) angles.

b. In the event an acute angle intersection is required, the LaVerkin City public works director may require mitigation by realigning to achieve a ninety degree (90°) intersection. At a minimum, this can be accomplished by use of a fifty foot (50') section prior to the PC of the curve or a landing area design in which a vehicle is brought ninety degrees (90°) to the intersecting road. Other design approaches to mitigate the acute angle may be required by LaVerkin City.

c. Intersections should not be located on or near sharp curves, i.e., curves with radii close to AASHTO minimums. Intersections should be located sufficient distance from all curves to provide proper sight distance for vehicles on the intersecting road or driveway and on the through road.

d. New intersections with more than four (4) "legs" are not permitted. For arterial access, only four-leg and "T" intersections are permitted. When designing local road networks, four-leg, "T" and "L" intersections are desired. The "L" intersection will only be permitted when the street length, in either direction from the angle point, is three hundred feet (300'), or less. Exceptions to these requirements may be granted by LaVerkin City on a case by case basis. The developer must provide compelling justification before deviations will be granted.

e. When designing local road networks, block lengths without an intervening connector street shall not exceed eight hundred feet (800') in length unless previous approval has been obtained from the LaVerkin City representative. Cul-de-sacs are not included in this requirement.

f. New access locations created by development shall be unified whenever possible to create the fewest number of access points onto arterials or major collectors.

g. The intersection of two (2) local roads should be designed to operate without a requirement for any traffic control device, whenever possible.

h. Access to corner lots should be from the lesser classified road, at greatest distance possible from the intersection.

i. Direct access will not be allowed for parking, loading, or driveway areas that require backing maneuvers onto arterial streets.

3. Intersection Spacing: The minimum distance between intersections on low volume streets is one hundred fifty feet (150'); for the minor and major collector streets, the minimum distance is two hundred fifty feet (250'). Minimum distance measurements are centerline to centerline. The minimum spacing requirement on arterials shall be based upon current and projected turning movement volumes at the intersections in question. The LaVerkin City public works director shall review and give final approval to any intersection requests on arterials in which the spacing would be less than four hundred feet (400') apart.

4. Driveway Spacing: Driveways shall be spaced far enough apart so that the traffic stopped to make left turns at one intersection does not interfere with traffic movements at the adjacent intersection.

5. Cul-De-Sac: A minimum centerline radius of fifty feet (50') shall be maintained on all cul-de-sacs.

6. Sidewalks: Sidewalks on all urban streets shall be concrete, constructed to city specifications.

a. In industrial and manufacturing areas, road pavement may be widened ten feet (10') in lieu of concrete sidewalks if approved by LaVerkin City.

b. Sidewalk in areas of high pedestrian flow shall require greater width as determined by LaVerkin City.

7. Curb And Gutter:

a. High Water Flows: Areas of high water flow may require larger gutter capacity than shown on the standard drawing. High back or wedge back curb may be used in accordance with standard drawings and with direction from the LaVerkin City representative. Sidewalk depth shall be at least six inches (6").

b. Curb Corners: All curb corners shall have a radius of not less than fifteen feet (15'); at intersections involving collector or major streets, of not less than twenty five feet (25'); in industrial areas, not less than twenty five feet (25').

8. Design Speed: The design of geometric features such as horizontal and vertical alignment will depend on the design speed selected for each street. The design speed is primarily determined by the street function and is the maximum speed for safe and comfortable operation of a vehicle. The use of design speeds other than those listed below must be approved by LaVerkin City, who may decide that the speed provided in this section be reduced to that which is reasonable and prudent under the conditions and having due regard to the actual and potential hazards. Local streets designed for thirty (30) miles per hour shall be posted at twenty five (25) miles per hour. Minor collectors designed for thirty five (35) miles per hour shall be posted at thirty (30) miles per hour.

9. Clear Sight Distance At Intersections: At intersections, adequate, clear sight distance should be provided to permit drivers entering the higher order street from a driveway or stop controlled intersection to see approaching traffic from a long enough distance to allow them to decide when to safely enter the higher order street and complete their turning maneuvers in advance of approaching traffic. Clear sight distance, for both left and right turning vehicles, shall be in accordance with the following AASHTO guidelines:

Through Street Design Speed	Sight Distance

-	-
20 mph	230 feet
25 mph	290 feet
30 mph	375 feet

10. Vertical Alignment:

a. Vertical curves shall be provided in all changes in grade where the algebraic difference is one percent (1%) or greater.

b. Longitudinal street grades shall not be less than one-half percent (½%) unless adequate alternative street drainage is provided, nor more than twelve percent (12%), except as allowed in this chapter.

c. Vertical curve stopping sight distance design shall utilize criteria recommended by the latest edition of the AASHTO publication.

d. Minimum cross slope from street crown shall be two percent (2%) unless otherwise approved by LaVerkin City.

e. Vertical alignment with the intersection is also of special nature, and design alternatives may be required. As a guideline, the approach area where vehicles stop while waiting to enter an intersection shall not exceed five percent (5%) from the gutter line of the street being intersected for a distance of fifty feet (50'), though a range of fifty feet (50') to one hundred feet (100') is more desirable. This applies to all intersections, except those where both intersecting streets are minor or major collectors. In this situation, the landing area for a minor collector which is controlled by a stop or yield sign shall be designed for a grade of two (2) to three percent (3%) for a distance of one hundred feet (100').

11. Safe Stopping Sight Distance: The minimum sight distance or length of roadway ahead visible to the driver is to be provided for through traffic traveling at, or near, the design speed to stop before reaching a stationary object in its path shall comply with the requirements set forth below (AASHTO guidelines):

Design Speed	Required Distance
-	-
20 mph	125 feet
25 mph	150 feet
30 mph	200 feet

12. Horizontal Curves: The recommended minimum centerline radii for horizontal curves are outlined below:

Curve Radius In Feet	
-	-
25 mph	185 feet
30 mph	310 feet

13. Deceleration Lanes:

a. Deceleration lanes may be required on streets in conjunction with driveways and/or intersections adjacent to a proposed development. They are specifically required when all of the following factors are determined to apply:

(1) At least five thousand (5,000) vehicles per day are using, or are expected to be using, the street;

(2) The 85th percentile traffic speed on the street is a least thirty five (35) miles per hour; or forty five (45) miles per hour for a two (2) lane (1 lane each direction) roadway; and

(3) At least fifty (50) vehicles will be making right turns into the driveway during a one hour peak period.

b. The lane lengths for a deceleration lane shall be determined on a case by case basis and must receive prior approval of LaVerkin City and/or UDOT. In addition to the above guidelines, deceleration lanes may be required in connection with the results of a traffic impact study.

14. Alignment And Continuity; Off Site:

a. Normally, off site pavement construction requires asphalt concrete paving to the right of way centerline plus ten feet (10'). When asphalt pavement is existing, the developer's engineer may submit to the LaVerkin City representative sufficient information prepared by a professional engineer to indicate vertical and horizontal alignment is maintained and adequate drainage is provided for. The developer may be required to replace all or any portion of existing roadway, in a manner that two-way traffic can be maintained without the use of potentially hazardous alignment transitions (vertical or horizontal) and in a manner to ensure that adequate drainage is provided for. As a minimum, there shall be twenty five feet (25') of paving to accommodate through traffic. When off site pavement construction consists of improvement to the right of way centerline (approximately), deceleration and acceleration transition tapers shall be placed at each end of the improvements. The transition tapers shall be designed and constructed based upon the posted speed zoning.

b. When paving for partial street construction, the edges of the pavement are to be protected by placing a minimum two feet (2') of aggregate base material beyond the edge of pavement matching the pavement grade.

c. Wherever partial street construction is required, grades shall be set for the future curb line and approved by the LaVerkin City representative. The future grades shall be compatible with the curb and centerline grades for the partial street construction. (Ord. 2006-23, 7-5-2006)

7-3-11: PAVEMENT STRUCTURAL DESIGN:

A. Requirements: The structural details shown on the standard drawings are minimum requirements. The actual structural section for each roadway shall be designed by accepted engineering design methods for flexible pavement (i.e., AASHTO or CALTRANS). Required subgrade soil properties shall be obtained from an on site geotechnical investigation. Required traffic design information is provided within this section.

B. Geotechnical Investigation: The geotechnical investigation shall be conducted by an approved geotechnical consultant under the direction and control of a Utah registered professional engineer. The investigation shall include a thorough exploration and sampling program of the subgrade to determine the nature and engineering properties of the on site soils within the roadway construction area. For new construction and reconstruction projects, the minimum sampling and testing requirements are provided on the following schedule.

C. Subgrade Sampling And Testing Schedule:

Project Length Under Construction (Feet)	**Minimum Number Of Test Holes To A Depth Of At Least 5 Feet Below Subgrade**	**Minimum Number Of R-Values (Or CBR-Values)**
Less than 1,000	3	2
1,000 to 5,000	1 every 500 feet	3, with at least 1 per major soil type
5,001 to 16,000	1 every 800 feet	4, with at least 1 per major soil type
More than 16,000	1 every 1,000 feet	2 per mile with at least 1 per major soil type

Notes:

1. Sieve analysis: 1 for each stratum of each test hole and PI (or sand equivalent).
2. Density: 2 per test hole.
3. pH and resistivity: 1 for each corrugated metal pipe location.
4. Soluble Salt: 1/3 of the number of test hole locations.

5. It is stressed that the above schedule presents minimal sampling and testing requirements. The responsible geotechnical engineer should analyze each project to determine actual sample locations, frequency, and testing program.
(Ord. 2006-23, 7-5-2006)
7-3-12: CURBSIDE MAILBOXES:
All curbside mailboxes shall be installed in accordance with postal service requirements. (Ord. 2006-23, 7-5-2006)
7-3-13: ACCESS CONTROL:
The access control requirements for arterials and major collectors are provided below. In any case where these conflict with adopted zoning ordinance requirements the zoning ordinance shall rule.
A. When necessary for the safe and efficient movement of traffic, access points may be required to be designed for right turns in and out only.
B. When approved, or directed by the LaVerkin City representative, a driveway access design may be a "street type intersection" with curb returns. (Ord. 2006-23, 7-5-2006)
7-3-14: SURVEY MONUMENTATION STANDARDS:
This section sets forth the general standards for survey monuments. Class I or class II survey control monuments, as shown in the standard drawings of specifications on file in the city, shall be installed on all dedicated and private streets. All survey control monuments shall be installed in strategic locations as determined by LaVerkin City's representative to ensure adequate survey control required for subsequent resurvey in the area.
A. General Requirements:
1. Only a land surveyor, duly registered in the state of Utah, shall be authorized to determine or establish the exact location for a survey monument. Only such registered land surveyor shall be authorized to perpetuate and reference existing class I survey monuments located within the limits of public or private streets.
2. All class I monuments shall be cross tied and referenced to permanent features and mapped sufficiently for future use in relocation and replacement. All cross tie information shall be submitted to the LaVerkin City engineer and should be kept in a permanent record by the professional surveyor doing the work.
3. Any section, witness or reference corners which fall within roadway or parking lot construction areas shall be reset with a class I type monument with appropriate cap as shown in the charts on file in the city. All corners being replaced shall be referenced in a manner as to accurately reset the corner. A copy of the field notes shall be submitted to the appropriate public agency surveyors for approval before corners are destroyed. The appropriate public agency surveyors, city or county, shall give direction on requirements for referencing the corner to be replaced and the method of reinstallation before corners are destroyed.
B. Monuments: Class I or II monuments shall be set in accordance with the recorded maps so that the survey, or any part thereof, may be readily retraced. Such monuments shall be set at:
1. All angle points in survey boundary (class II).
2. All angle PTs and PCs on and along survey boundary (class II).
3. All street centerline intersections (class I).
4. At a PI outside of right of way (class II).
a. If PI falls outside limits of pavement then PCs and PTs shall be monumented with class I.
b. If PI falls inside the pavement area then a class I monument is required and no monumentation required for PCs and PTs.
5. All intersections of street center lines at survey boundary (class II).
6. Six hundred foot (600') intervals, unless otherwise approved by LaVerkin City's representative. If line of sight is not obtainable within a six hundred foot (600') interval, then monuments will be required to be closer together unless otherwise approved by LaVerkin City's representative.
7. Class I and II monuments shall be installed in accordance with LaVerkin City requirements. All monuments shall be set in such a manner that the accuracy of their relative positions is not less than second order class II, in accordance with the specifications established by the U.S. federal geodetic control committee. When monuments are being reset, the initial order used in the setting shall be used, but in no event shall it be less than second order class II.

8. All the above established points, which fall within the limits of public or private rights of way, shall be referenced to four (4) firmly established ties within a radius of twenty feet (20') to one hundred feet (100'). The angle from tie to tie shall be as near ninety degrees (90°) as possible, radiating from the established intersection points. A copy of the survey notes documenting the setting of the reference ties shall be kept by the responsible surveyor and a copy shall be delivered to the appropriate county surveyor's depository and LaVerkin City's representative.

9. When a section corner, quarter corner or sixteenth corner falls within a fully improved roadway and must be set, or reset, the responsible surveyor shall contact the appropriate LaVerkin City representative for directions and/or requirements.

10. All monuments shall have a nonferrous cap mounted in accordance with the standard drawings section of these specifications. The surveyor's registration or license number shall be stamped on the nonferrous cap.

11. Monuments must be set prior to the final acceptance of the improvements.

12. Where hard rock or other physical obstructions are encountered, monument length sufficient to resist removal may vary within reasonable limits. (Ord. 2006-23, 7-5-2006)

7-3-15: EXCAVATION AND RESTORATION OF SURFACE IMPROVEMENTS:

All excavation and restoration of surface improvements shall be in accordance with the specifications and standards as set forth in chapter 4 of this title. (Ord. 2006-23, 7-5-2006)

7-3-16: STREET SIGNS AND PAVEMENT MARKINGS:

This section covers preparation and installation of street signing and application of pavement markings. All signs required on the street system within a development, shall be installed by the developer in accordance with the standard drawings.

A. Signing Materials, Fabrication And Placement: All street name signage shall follow the requirements for materials, fabrication and installation outlined in the standard drawings of these specifications:

1. Street name sign face materials shall consist of reflective high intensity grade sheeting. The sign face colors shall conform to the local requirements for public and private streets. The street name sign blank shall consist of high tensile degreased aluminum in accordance with the standard drawings.

2. The street name signs shall be installed on galvanized steel posts that conform to the requirements contained in the standard drawings. The installation method and location shall be in accordance with the standard drawings.

3. All advisory and regulatory traffic signing shall conform to the requirements relating to color, face material, blank material, size and method of installation as found in the MUTCD for streets and highways.

4. All street name, advisory and regulatory signing shall be installed in such a manner as to provide adequate advance visibility for an approaching driver.

B. Pavement Markings: Pavement markings shall include all traffic lane striping and other traffic oriented street markings.

1. The standards regarding color, size and layout of pavement markings outlined in the MUTCD for streets and highways, shall be followed. However, in such cases where the Utah department of transportation standards take precedence, these standards shall be followed.

2. Centerline markings on two-lane, two-way roads shall be either:

a. A four inch (4") wide broken yellow line where passing is permitted, or

b. A double line consisting of a four inch (4") wide broken yellow line and a four inch (4") solid yellow line where passing is permitted in one direction, or

c. A double line consisting of two (2) 4-inch solid yellow lines where passing is prohibited in both directions.

3. Lane lines separate lanes of traffic traveling in the same direction. They shall be four inch (4") wide broken white lines. A four inch (4") wide solid white line may be used as the lane line in critical areas where it is advisable to discourage lane changing, such as on bridges having width restrictions and in intersection areas where lane changing disrupts traffic flow. Reflective glass beads shall be applied during the painting process.

4. Traffic paint shall conform to the latest requirements contained in the state of Utah department of transportation "Standard Specifications For Road And Bridge Construction". Traffic paint shall be applied only when all of the following conditions are met:

a. The air temperature is above fifty degrees Fahrenheit (50°F);

b. The surface temperature of the surface to be painted is between forty (40) and one hundred degrees Fahrenheit (100°F);

c. The surface to be painted is clean and dry; and

d. The weather is not windy, foggy, or humid.

5. The painting shall be done in a neat and competent manner. Paint shall be applied smoothly and uniformly in accordance with the manufacturer's specifications. The finish shall be uniform in appearance and hiding. The total exterior dry film thickness shall be not less than three (3) mils.

6. All permanent pavement striping (lines and crosswalks) shall be sixty (60) mil hot sprayed thermoplastic. Temporary pavement markings shall be reflectorized traffic paint or other material approved by LaVerkin City's representative.

7. Raised pavement markers shall conform, in terms of materials and application, to the latest standards found in the requirements of the state of Utah department of transportation. (Ord. 2006-23, 7-5-2006)

7-3-17: SIDEWALKS, CONCRETE, GUTTERS:

A. Concrete Work: This section of the standards defines the materials to be used and the requirements for mixing, placing, finishing, and curing all Portland cement concrete work on public improvements.

B. Materials: Concrete construction materials in improvements shall conform to the following requirements:

1. Portland Cement Concrete Material: The concrete shall be composed of coarse aggregate, fine aggregate, Portland cement and water, and shall conform to the following requirements:

a. Portland Cement: ANSI/ASTM C 150, type V, unless otherwise indicated.

b. Aggregates: Except as otherwise specified herein, concrete aggregates shall conform to all applicable provisions of the latest revision of ASTM standard specification C 33.

(1) Fine Aggregate: Fine aggregate shall consist of natural sand or, subject to approval by LaVerkin City's representative, other inert materials with similar characteristics, having clean, hard, durable, uncoated grains and shall conform to the requirements of these standards. The amount of deleterious substances shall not exceed the following limits:

Material	Percent (By Weight)
Clay lumps	1.00
Coal and lignite	0.50
Material passing number 200 sieve	3.00
Other deleterious substances such as shale, alkali, mica, coated grains, soft and flaky particles, etc.	3.00

(A) The sum of the percentage of all deleterious substances shall not exceed three percent (3%) by weight.

(B) Fine aggregate shall be well graded and shall range in size from fine to coarse within the following percentages by weight:

Sieve Size	Percent Passing (By Weight)
Sieve Size	Percent Passing (By Weight)
3/8 inch	100
No. 4	90
No. 8	80 – 90
No. 16	50 – 75
No. 30	30 – 50
No. 50	10 – 20
No. 100	2 – 5

(2) Coarse Aggregate: Coarse aggregate shall consist of crushed or natural stone, gravel, slag or other approved inert material with similar characteristics or combination thereof, having clean, hard, durable, uncoated particles free from deleterious matter. Deleterious substances shall not be present in the aggregate in excess of the following limits:

Material	Percent (By Weight)
Clay lumps	0.25
Coal and lignite	0.30
Material passing number 200 sieve	1.00
Soft fragments	2.00
Other deleterious substances such as shale, alkali, mica, coated grains, soft and flaky particles, etc.	3.00

(A) The sum of the percentages of all deleterious substances in any size or delivered to the mixer shall not exceed five percent (5%), by weight.

(B) Coarse aggregate may be rejected if it fails to meet the following test requirements:

(i) Los Angeles Abrasion Test: If the percent of loss by weight exceeds ten percent (10%) at one hundred (100) revolutions, or forty percent (40%) at five hundred (500) revolutions.

(ii) Sodium Sulfate Test For Soundness: If the weighted average loss after five (5) cycles is more than twelve percent (12%) by weight.

(iii) Mix Design: A preapproved mix design shall be used for all concrete delivery.

(iv) Aggregate Size: The maximum size of the aggregate shall be not be larger than one-fifth (1/5) of the narrowest dimension between forms within which the concrete is to be encased, and in no case larger than three-fourths (3/4) of the minimum clear spacing between reinforcing bars or between reinforcing bars and forms. For unreinforced concrete slabs, the maximum size of aggregates shall not be larger than one-fourth (1/4) the slab thickness.

c. Water 1 :

(1) Sufficient potable water shall be added to the mix to produce concrete with the minimum practical slump, and in no case shall the slump be greater than four inches (4"). However, a greater slump may be allowed with plasticizers, no loss of strength and the LaVerkin City representative's prior approval.

(2) The maximum permissible water-cement ratio, including free moisture in the aggregate, shall be five (5) gallons per bag of cement (0.44) for class A and five and three-fourths (5 3/4) gallons per bag of cement (0.51) for class C concrete.

d. Entraining Agent: An air entraining agent shall be used in all concrete exposed to the weather. The agent shall conform to ASTM designation C 260. Air content for air entrained concrete shall be five percent (5%) by volume, plus or minus one percent (±1%). The air entraining agent shall be added as a liquid to the mixing water by means of mechanical equipment capable of accurate measurement and control.

e. Admixtures:

(1) Pozzolan: If authorized by LaVerkin City's representative, pozzolan conforming to the requirements of ASTM C 618 class F may be added to the concrete mix with no reduction in cement.

(A) Pozzolans shall be sampled and tested as prescribed in ASTM C 618 and ASTM C 311. The contractor shall obtain and deliver to LaVerkin City a certification of compliance signed by the pozzolan supplier identifying the pozzolan and stating that the pozzolan delivered to the batching site complies with applicable specifications.

(B) Pozzolan material shall be handled and stored in the same manner as Portland cement. When facilities for handling bulk pozzolan are not available, the pozzolan shall be delivered in original unopened sacks bearing the name and brand of supplier, the type, and source of the pozzolan, and the weight contained in each sack plainly marked thereon.

(C) Different brands or types of pozzolan shall not be mixed together unless written permission has first been obtained from LaVerkin City's representative. All pozzolan used in the manufacture of concrete for any individual structure shall be of the same type, and from the same source unless otherwise approved by LaVerkin City.

(2) Calcium Chloride: No calcium chloride shall be added to any concrete mix. Nonchloride accelerators may be used with permission of LaVerkin City.

f. Concrete Mix 2 : For the purpose of practical identification, concrete has been divided into classes. The basic requirements of class A and class C and the use for each is defined in the following table:

CONCRETE MIX SPECIFICATIONS

Class	Minimum Cement Content		Maximum Water Content (Gallons/Bag Of Cement)	Maximum Slump	Minimum 28 Day Compressive Strength (psi)	Primary Use
	(Bags/Cubic Yard)	(Pounds/Cubic Yard)				
A	6	564	5	4 inches - 1 ½ inches for machine placement	4,000	Reinforced structural concrete; sidewalks; curbs and gutters; cross gutters; pavements; unreinforced footings
C	5	470	5.75	4 inches	2,500	Minor nonstructural items such as thrust blocks; anchors, mass concrete, etc.

Unless specifically waived by LaVerkin City's representative, all concrete placed shall be class A.

2. Concrete Reinforcing Materials: Concrete reinforcing materials shall conform to the following requirements.

a. Steel Bars:

(1) All bar material used for reinforcement of concrete shall be intermediate or hard grade steel conforming to the requirements of ASTM designated A 615 and shall be deformed in accordance with ASTM designation A 615. All reinforcing steel shall be minimum grade sixty (60).

(2) Reinforcing steel bars shall conform to the requirements of ASTM A 615, and the specifications for billet steel bars for concrete reinforcement ASTM A 615, or the specification for rail steel concrete reinforcement bars, ASTM A 616. All bars shall be deformed, round, and have a net section equivalent to that of plain bar of equal nominal size. Only intermediate and/or hard grades will be used and no twisted bars will be accepted.

(3) All reinforcing steel, at the time concrete is placed, shall be free from flaws, cracks, rust, oil, dirt, paint (unless epoxy coated) or other coatings that will destroy or reduce the bond.

b. Wire Or Wire Mesh Reinforcement: Welded wire fabric for concrete reinforcement shall conform to the requirements of ASTM A 185. Wire for concrete reinforcement shall conform to the requirements of the "Standard Specification For Cold Drawn Steel Wire For Concrete Reinforcement" ASTM A 82. All wire reinforcement, wire mesh, or expanded metal shall be of the type designated unless an alternate type is approved by the LaVerkin City representative.

c. Steel Fiber Reinforcement: Deformed steel fiber for concrete reinforcement shall conform to the requirements of ASTM A 820, type I, deformed fiber, except that the average tensile strength shall be not less than one hundred fifty thousand (150,000) psi.

3. Curb, Gutter, Sidewalk And Concrete Base Materials: This subsection defines materials, practices and designs to be used in the construction of all public curbs, gutters and sidewalks. Concrete base materials shall conform to the following requirements:

a. Materials: All curb, gutter and sidewalk shall consist of air entrained type V Portland cement concrete constructed on a prepared subgrade in accordance with these specifications. All work shall conform to the lines and grades, thickness, and typical cross sections as shown on the approved plans or established by LaVerkin City. Certified copies, in triplicate, of the mill test of cement shall be furnished upon request of LaVerkin City's representative.

b. Lateral Marks: The contractor shall be responsible for stamping an "S" in the curb face at all sewer lateral locations and a "W" in the curb face at all water lateral locations along the curb.

c. Subgrade: The subgrade shall be excavated and filled with suitable material, to within six inches (6") of the required grades for curbs and gutters, waterways, and driveways. For sidewalks, the subgrade shall be excavated and filled with suitable material to within four inches (4") of the required grades. All

soft, yielding, and otherwise unsuitable material shall be removed and replaced with suitable materials as outlined above. Filled sections shall be compacted and extend to a minimum of two feet (2') outside the form lines.

d. Gravel Base Course: A gravel base course consisting of three-fourths inch (3/4") maximum crushed road base gravel six inches (6") thick shall be placed under all curbs, gutters, driveways, waterways and sidewalks. Where the foundation material is found to be unstable, the contractor shall furnish and place sufficient extra gravel fill as directed by the LaVerkin City representative to firm up the soil upon which the curb, gutter and sidewalk is to be placed. (Ord. 2006-23, 7-5-2006)

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Notes

1 1. See also subsection B1f of this section.

2 1. See also subsection B1c of this section.

7-3-18: CONSTRUCTION METHODS AND EQUIPMENT:

The methods employed in performing the work, all equipment, tools and machinery, and other appliances used in handling the materials and executing the work shall be the responsibility of the contractor. The contractor shall make such changes in the methods employed and in the equipment used as are necessary whenever the concrete being installed does not meet the specifications herein established. These methods shall include, but are not limited to, the following:

A. General Concrete Placement: Generally concrete shall be installed as follows:

1. Forms: Forms shall be substantially built and adequately braced to withstand the liquid weight of concrete. All linings, studding, walling and bracing shall be such as to prevent bulging, spreading, or loss of true alignment while pouring and displacement of concrete while setting.

2. Preparations:

a. Before batching and placing concrete, all equipment for mixing and transporting the concrete shall be cleaned. All debris and ice shall be removed from the places to be occupied by the concrete. Forms shall be oiled with a form-release agent and masonry filler units that will be in contact with concrete shall be well drenched with water except in freezing weather. The reinforcement shall be thoroughly cleaned of ice or other coatings. Water shall be removed from spaces to receive concrete.

b. When placing concrete on earth surfaces, the surfaces shall be free from frost, ice, mud and water. When the subgrade is dry soil or pervious material, it shall be sprayed with water prior to the placing of concrete or shall be covered with waterproof sheathing paper or a plastic membrane. No concrete shall be placed until the surfaces have been inspected and approved.

3. Concrete Mixing:

a. The concrete shall be mixed until there is a uniform distribution of the materials. Sufficient water shall be used in concrete in which reinforcement is to be embedded, to produce a mixture which will flow sluggishly when worked and which, at the same time, can be conveyed from the mixer to the forms without separation of the coarse aggregate from the mortar. In no case shall the quantity of water used be sufficient to cause the collection of a surplus in the forms.

b. Ready mixed concrete shall be mixed and delivered in accordance with the requirements set forth in specifications for ready mixed concrete ASTM C 94. Concrete shall be delivered and deposited in its final position within sixty (60) minutes after adding the cement and water to the mixture.

4. Depositing:

a. Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. The concrete placing shall be carried on at such a rate that the concrete is at all times plastic and flows readily into the corners of forms and reinforcing bars. No concrete that has partially hardened or been contaminated by foreign material shall be deposited in the work, nor shall retempered concrete be used.

b. All concrete in structures shall be compacted by means of high frequency internal vibrators of approved type and design during the operation of placing, and shall be thoroughly worked around reinforcement and embedded fixtures and into the corners of the forms to prevent "honeycombing". Care must be taken not to overuse vibrators causing separation of cement and aggregates.

5. Finishing: After the concrete for slabs has been brought to the established grade and screeded, it shall be worked with a magnesium float and then given a light "broom" finish. In no case shall dry cement or a mixture of dry cement and sand be sprinkled on the surface to absorb moisture or hasten hardening. Surface edges of all slabs shall be rounded to a radius of one-fourth inch (¼") to one-half inch (½") with standard concrete finishing tools.

6. Curing And Protection:

a. As soon as the concrete has hardened sufficiently to prevent damage, the finished surface shall be kept moist for seven (7) days, or a chemical curing agent may be used to prevent the concrete from premature drying.

b. The freshly finished surface shall be protected from hot sun and drying winds until it can be sprinkled or covered as herein specified. The concrete surface must not be damaged or pitted by rain. The contractor shall provide and use, when necessary, sufficient tarpaulins to cover completely all sections that have been placed within the preceding twelve (12) hours. The contractor shall erect and maintain suitable barriers to protect the finished surface. Any section damaged from traffic, weather or other causes occurring prior to its official acceptance by the city shall be repaired or replaced by the contractor.

7. Weather Limitations: No concrete shall be poured where the air temperature is lower than thirty five degrees Fahrenheit (35°F) unless approved by the LaVerkin City representative. When there is likelihood of freezing during the curing period, the concrete shall be protected by means of an insulating covering to prevent freezing of the concrete for a period of not less than seven (7) days after placing. Equipment for protecting the concrete from freezing shall be available at the job site prior to placing concrete. Particular care shall be exercised to protect edges and exposed corners from freezing.

B. Concrete Reinforcement Installation: Concrete reinforcement shall be installed as follows:

1. Bending: Reinforcing bars shall be accurately formed to the dimensions indicated on the plans. Bends for stirrups and ties shall be made around a pin having a diameter not less than two (2) times the minimum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than six (6) times the minimum thickness of the bar, except that for bars larger than one inch (1"), the pin shall be not less than eight (8) times the minimum thickness of the bar.

2. Splicing: Splicing of bars at points other than as shown on the plans will be permitted only by permission of the LaVerkin City representative. Splices of reinforcement at points of maximum stress shall be avoided wherever possible, and shall be staggered when used. The minimum overlap for a lapped splice shall be as shown on the approved structural drawings, or twenty four (24) bar diameter if not called out, but not less than eighteen inches (18").

3. Placing: All reinforcing bars shall be placed accurately in the position shown on the plans, and shall be securely held in position by annealed iron wire ties of not less than 16-gauge or suitable clips at intersection and supported by metal supports, spacers, chairs or hangers, in such a manner that there will not be any displacement while placing concrete.

4. Embedment And Protection: All reinforcing steel shall be protected by concrete embedment and protective cover as shown in the following table, such cover in each case being the shortest distance between the face of the form or concrete surface, and the nearest edge or face of the reinforcement.

REINFORCING BAR CLEARANCE

Location Of Reinforcement	**Cover**
Bottom bars, where concrete is deposited against ground without use of forms	Not less than 3 inches
Main bars, where concrete is exposed to the weather, or exposed to the ground but placed in forms	Not less than 2 inches
Bars in slabs and walls not exposed to the ground or weather	Not less than 1 inch

C. Curb And Gutter And Sidewalk Concrete Placement: The concrete shall be placed either by an approved slip form/extrusion machine, by the formed method, or by a combination of those methods. Curb and gutter shall be placed as follows:

1. Machine Placement: The slip form/extrusion machine approved shall be so designed as to place, spread, consolidate, screed, and finish the concrete in one complete pass in such a manner that a minimum of hand finishing will be necessary to provide a dense and homogeneous concrete section. The machine shall shape, vibrate, and/or extrude the concrete for the full width and depth of the concrete

section being placed. It shall be operated with as nearly a continuous forward movement as possible. All operations of mixing, delivery, and spreading concrete shall be so coordinated as to provide uniform progress, with stopping and starting of the machine held to a minimum.

2. Formed Method:

a. The forms shall be of wood, metal, or other suitable material that is straight and free from warp, having sufficient strength to resist the pressure of the concrete without displacement and sufficient tightness to prevent the leakage of mortar. Flexible or rigid forms of proper curvature may be used for curves having a radius of one hundred feet (100'), or less. Division plates shall be metal.

b. The front and back forms shall extend for the full depth of the concrete. All forms shall be braced and staked so that they remain in both horizontal and vertical alignment until their removal. They shall be cleaned and coated with an approved form-release agent before concrete is placed against them.

c. The concrete shall be deposited into the forms without segregation and then tamped and spaded or mechanically vibrated for thorough consolidation. Front and back forms shall be removed without damage to the concrete after it has set.

3. Finishing:

a. The plastic concrete shall be finished smooth, if necessary, by means of a wood or magnesium float and then given a final surface texture using a light broom or burlap drag. Concrete that is adjacent to forms and formed joints shall be edged with a standard jointer or edging tool to the dimensions shown on the plans. The top, face, and flow line of the curb, and the top of the apron on driveway aprons, shall be finished true to line and grade and without any irregularities of surface noticeable to the eye.

b. The gutter shall not pond water when tested by water flow and no portion of the surface of the curb and gutter shall depart more than one-fourth inch (¼") from a straight edge, ten feet (10') in length, placed on the curb parallel to the centerline of the street, nor shall any part of the exposed surface present a wavy appearance.

4. Jointing:

a. Contraction Joints:

(1) Transverse weakened plane contraction joints shall be constructed at right angles to the curb line at intervals not exceeding twelve feet (12') for curb and gutter, and not to exceed five feet (5') for sidewalks. Joint depth shall at least be one-half (½) of the cross section of the concrete. Generally, surface areas shall not exceed fifty (50) square feet without contraction joints unless otherwise approved by LaVerkin City's representative.

(2) Contraction joints may be sawed, hand formed, or made by placing one-half inch (½") thick division plates in the form work. Sawing shall be done within twenty four (24) hours after the concrete has set to prevent the formation of uncontrolled cracking. The joints may be hand formed either by using a narrow or triangular jointing tool, or a thin metal blade to impress a plane of weakness into the plastic concrete, or by inserting one-eighth inch (⅛") thick steel strips into the plastic concrete temporarily. Steel strips shall be withdrawn before final finishing of the concrete. Where division plates are used to make contraction joints, the plates shall be removed after the concrete has set while the forms are still in place.

(3) Expansion joints in a slip formed curb and gutter shall be constructed with an appropriate hand tool by raking or sawing through partially set concrete for the full depth and width of the section. The cut shall be only wide enough to permit a snug fit for the joint filler. After the filler is placed, open areas adjacent to the filler shall be filled with concrete and then troweled and edged.

(4) Alternately, an expansion joint may be installed by removing a short section of freshly extruded curb and gutter, immediately installing temporary holding forms, placing the expansion joint filler, and replacing and reconsolidating the concrete that was removed. Contaminated concrete shall be discarded.

b. Expansion Joints: Expansion joints for curb and gutter shall be constructed at right angles to the curb line at no greater than one hundred fifty foot (150') intervals for curb and gutter, at immovable structures and at points of curvature for short radius curves. Spacing for sidewalk jointing shall not exceed twenty feet (20'). Filler material for expansion joints shall conform to requirements of ASTM D 994, D 1751, or D 1752 and shall be furnished in a single one-half inch (½") thick piece for the full depth and width of the joint.

c. Other Jointing:

(1) Construction joints may be either butt or expansion type joints. Curbs and gutters constructed adjacent to existing concrete shall have the same type of joints as in the existing concrete with similar spacing; however, contraction joint spacing shall not exceed twelve feet (12').

(2) A silicone joint sealer as defined in ASTM C 962 shall be applied to all form plate expansion joints. The silicone joint sealer shall be applied under pressure to a depth of not less than two inches (2") from the outside surface of the curb and gutter.

5. Protection:

a. At all times during the construction of the project, the contractor shall have materials available at the site to protect the surface of the plastic concrete against rain. These materials shall consist of waterproof paper or plastic sheeting. For slip form construction, materials such as wood planks or forms to protect the edges shall also be required.

b. When concrete is being placed in cold weather and the temperature may be expected to drop below thirty five degrees Fahrenheit (35°F), suitable protection shall be provided to keep the concrete from freezing until it is at least seven (7) days old. Concrete injured by frost action shall be removed and replaced at the contractor's expense.

6. Curing: Concrete shall be cured for at least three (3) days after placement to protect it against loss of moisture, rapid temperature change, and mechanical injury. Moist burlap, waterproof paper, polyethylene sheeting, liquid membrane curing compound, or a combination thereof may be used as the curing material. Membrane curing shall not be permitted in frost affected areas when the concrete will be exposed to deicing chemicals within thirty (30) days after completion of the curing period.

7. Backfilling: After at least three (3) days after placement and the forms have been removed from the concrete, the contractor shall backfill to the line and elevation as shown on the drawings or as required by the LaVerkin City representative. This time may be shortened if it can be demonstrated that the placement has reached design strength.

8. Concrete Repair: In lieu of removing and replacing concrete with minor cracks, the LaVerkin City representative may direct the contractor to repair the affected sections by sawing, cleaning, and sealing the cracks. All cracks repaired shall be sealed with a polyurethane TTS-230 type II crack filler. Where modifications are to be made to existing concrete, the edges to be poured against shall be sawed and the new concrete shall be edged with a standard edging tool.

9. Weather Limitations: No concrete shall be poured when there is likelihood of freezing. During the curing period, the concrete shall be protected by means of an insulating covering to prevent freezing of the concrete for a period of not less than seven (7) days after placing. Equipment for protecting the concrete from freezing shall be available at the job site prior to placing concrete. Particular care shall be exercised to protect edges and exposed corners from freezing. (Ord. 2006-23, 7-5-2006)

7-3-19: QUALITY CONTROL:

The placement of concrete base materials under curb, gutter, and sidewalk shall conform to these standards. All concrete and base materials shall be placed in accordance with these standards and tested as follows. These are minimum requirements and additional testing may be required.

A. Concrete Testing: Minimum testing of the concrete shall be as follows:

1. Mix design certification: One per job. Testing shall be according to the latest ASTM standards.

2. Compressive strength tests: One set of four (4) cylinders for each fifty (50) cubic yards of concrete placed. Tests shall be according to ASTM C 39.

3. Air entrainment: Tested at beginning of load placement until two (2) consecutive tests pass. Others shall be taken as required. Tests shall be according to ASTM C 231.

4. Slump tests: Tested at beginning of load placement until two (2) consecutive tests pass. Others shall be taken as required. Tests shall be according to ASTM C 143.

B. Concrete Base Material Testing: Minimum testing of the curb, gutter and sidewalk base materials (both pit run and road base materials) shall be as follows:

1. Gradation tests: One test per one thousand (1,000) linear feet of curb and gutter and one test per four thousand (4,000) square feet of a combination of sidewalk and driveway, or fraction thereof. The sieve analysis shall be according to ASTM C 136, C 117.

2. Soil proctor: One determination of each source of base course as necessary to provide required compaction testing. Test shall be according to ASTM D 1557, method A or D (modified proctor).

3. Moisture density tests: One test per three hundred (300) linear feet of curb and gutter and one test per three hundred (300) linear feet of sidewalk or fraction thereof. Moisture content shall be at plus or

minus two percent (±2%) for tests to pass and shall be maintained until the concrete is poured. Tests shall be according to ASTM D 1556 or D 2922 and D 3017.

4. Thickness:

a. One random boring or test hole per two hundred (200) linear feet of curb and gutter and one random boring or test hole per two hundred (200) linear feet of sidewalk or fraction thereof. If sufficient inspection has been made by a LaVerkin City representative to verify required thickness. The representative may waive thickness testing.

b. No single measured thickness shall be less than the required thickness.

c. Testing documentation shall fully address the requirements of these standards.

C. Acceptance:

1. A total of four (4) concrete test cylinders shall be taken at time of pouring. One "early warning" cylinder shall be broken at seven (7) days. Two (2) cylinders shall be broken at twenty eight (28) days. If the average of the two (2) 28-day breaks is below specification, the concrete may be rejected unless retests prove otherwise. At the contractor's option, the fourth cylinder may be broken at twenty eight (28) days, if additional test results are needed to meet the specification. Or, it can be held and broken at fifty six (56) days for the same reason.

2. Concrete with a compressive strength below the required strength shall be evaluated for capabilities necessary to the integrity of the structure. At this point, the "hold" cylinder may be broken or other specialized tests, such as a spectrum analysis, may be required. The LaVerkin City representative shall make the final decision. If additional tests are required to determine if strength tests are representative they shall be performed by coring in accordance with ASTM C 42 method or other acceptable nondestructive methods. The retested strength shall be the average of three (3) cores or other means. All costs incurred in resampling and retesting shall be paid by the contractor.

3. Any curb, gutter, or sidewalk base material determined not to comply with these standards, shall either be removed and replaced or reworked until compliance is obtained. Any costs for testing rework shall be paid for by the contractor. (Ord. 2006-23, 7-5-2006)

7-3-20: DEFINITIONS OF ABBREVIATIONS:

AASHTO: American association of state highway and transportation officials.

ADA: Americans with disabilities act.

ADT: Average daily traffic.

ANSI: American national standards institute.

ASTM: American society for testing and materials.

CALTRANS: California transportation department.

DUs: Dwelling units.

FEMA: Federal emergency management act.

FESWMS: Federal emergency storm water management service.

FHWA: Federal highway administration.

HEC: Hydraulic engineer circular.

ITE: Institute of transportation engineers.

MUTCD: Manual on uniform traffic control devices.

PC: Point of curve.

PI: Point of intersection.

PT: Point of tangent.

PUD: Planned unit development.

TIS: Traffic impact study.

UDOT: Utah department of transportation. (Ord. 2006-23, 7-5-2006)

7-3-21: PENALTY:

(Remove from City, add to Construction Standards)

TITLE 7
PUBLIC WAYS AND PROPERTY

CHAPTER 4
EXCAVATIONS

SECTION:

~~7-4-1: SCOPE:~~

~~This chapter sets forth the requirements for excavations and backfill for installation or repair of water lines, sewer lines, gas lines, electrical cable and conduits, telephone cable and conduits, pipeline construction, concrete work, restoration of surface improvements and all other excavations for any other purpose within the street rights of way of the city or in other public places. Excavation projects designed, contracted for and inspected by the city engineer or other authorized personnel of the city do not come within the scope of this chapter. (Ord. 2006-24, 7-5-2006)~~

~~7-4-2: PERMIT REQUIREMENTS:~~

~~A. Excavation Permit Required: It shall be unlawful for any person to break, excavate, tunnel, undermine or in any manner affect the surface or base of any street, land, sidewalk or alley; or remove any pavement or other material from any street or improvement thereon, unless such person shall first have obtained an excavation permit from the public works director or other authorized representative of the city.~~

~~B. Street/Sidewalk Obstruction Permit: No person shall place, deposit, or leave upon any street any earth or any other excavated material obstructing or tending to interfere with the free use of the street or sidewalk, unless such person shall first have obtained a permit from the public works director or other authorized representative of the city.~~

C. Trenches On Highways And Streets: Wherever trenches will be in, or must cross state highways or streets, the contractor shall obtain such excavation permits as are required for these crossings and shall become familiar with and abide by the rules and directions of the Utah department of transportation while working in these streets.

D. Franchise; Public Utility:

1. Nothing contained in this chapter shall be construed to waive the franchise required for any person by city ordinances or laws of Utah.

2. Any public utility regulated by the state or holding a franchise from the city which, in the pursuit of its calling, has frequent occasion to open or make excavations in streets, may, upon application, receive a general permit from the city to cover all excavations such utilities may make within the streets of the city.

E. Exception In Emergency: Excavation permits will not be required prior to excavation in case of emergency endangering life or property, providing the city is notified as soon as practicable and a permit is applied for upon the next regular working day following the emergency.

F. Revocation Or Refusal Of Permit: All permits shall be subject to revocation and the city may refuse to issue a permit for failure of the permittee or applicant to abide by the terms and conditions of this chapter. (Ord. 2006-24, 7-5-2006)

7-4-3: BOND REQUIRED:

A. Term: In order to ensure proper backfill and restoration of surface, the permittee shall deposit a surety bond with the city clerk/recorder, payable to the city. Such bond will be held by the city for a period of twelve (12) months.

B. Utility Exemptions: A public utility operating or using any of the streets under a franchise from the city will not be required to furnish such bond, providing such franchise obligates the holder thereof to restore the streets and to hold the city harmless in the event of any injury to any person or damage to any property due to negligence of such holder in conducting excavation and restoration operations under such franchise.

C. Requirements: The required surety bond must be:

1. With good and sufficient surety;

2. By a surety company authorized to transact business in the state;

3. Satisfactory to the city attorney in form and substance;

4. Conditioned upon the permittee's compliance with this chapter in order to secure and hold the city and its officers harmless against any and all claims, judgments or other costs arising from the excavation and other work covered by the excavation permit for which the city, the city council or any city officer may be made liable by reason of any accident or injury to any person or property through the fault of the permittee arising out of failure to properly guard the excavation or for any other negligence of the permittee;

5. Conditioned to fill up, restore and place in good and safe condition, as near as may be to its original condition, and to the satisfaction of the city, all openings and excavations made in streets, and to maintain any street where excavation is made in as good condition for the period of twelve (12) months after the work shall be done, usual wear and tear excepted, as it was before the work shall have been done.

D. Amount: The amount of the surety bond shall be established by resolution and may be changed from time to time. (Ord. 2006-24, 7-5-2006)

7-4-4: PROTECTION OF PUBLIC:

A. Protection: Excavation operations shall be conducted in such a manner that a minimum amount of interference or interruption of street traffic will result. Inconvenience to residents and businesses fronting on public streets shall be minimized. Suitable, adequate, and sufficient barricades shall be available and used where necessary to prevent accidents involving property or persons. Barricades must be in place until all of the excavator's equipment is removed from site and excavation has been backfilled and proper temporary gravel surface is in place. From sunset to sunrise, all barricades and excisions must be clearly outlined by acceptable warning lights, lanterns, flares and other devices. Police and fire departments shall be notified at least twenty four (24) hours in advance of any planned excavation requiring street closures or detour.

B. Notification: Prior to any construction in front of driveways, the contractor shall notify the property owner twenty four (24) hours in advance. Inconvenience caused by construction across driveways and sidewalks shall be kept to a minimum by restoring the serviceability within twenty four (24) hours, or as

~~otherwise approved by the LaVerkin City representative. If it is necessary to leave open excavation for a long period of time the contractor shall provide structurally adequate steel plates to bridge the excavation. (Ord. 2006-24, 7-5-2006)~~

~~**7-4-5: PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE:**~~

~~A. Preservation: The contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property marks until the LaVerkin City representative has witnessed or otherwise referenced their location and shall not move them until directed.~~

~~B. Restoration: Public or private property damaged on account of a contractor through direct or indirect injury, including any act, omission, neglect, defective work or materials, misconduct in his manner or method of executing the work, or in consequence of the nonexecution thereof by the contractor, shall be restored, at no cost to LaVerkin City. Such restoration shall be to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner. Said responsibility shall not be released until the project shall have been completed and accepted.~~

~~C. Dumping: The contractor shall not dump spoil or waste material on private property without first obtaining from the owner written permission for such dumping. (Ord. 2006-24, 7-5-2006)~~

7-4-6: RELOCATION AND PROTECTION OF UTILITIES:

A. Relocation: An excavator shall not interfere with any existing utility without the written consent of the city council and without advance notice to the owner of the utility. If it becomes necessary to relocate an existing utility, it shall be done by its owner unless the owner otherwise directs. No utility, whether owned by the city or by a private enterprise, shall be moved to accommodate the permittee unless the cost of such work is borne by the permittee or an expressly written agreement is made whereby the utility owner and the excavator make other arrangements relating to such cost.

B. Protection: The permittee shall support and protect by timbers or otherwise all pipes, conduits, poles, wires or other apparatus which may be in any way affected by the excavation work, and shall do everything necessary to support, sustain and protect them under, over, along or across the work.

C. Liability: In case any of the pipes, conduits, poles, wires or apparatus should be damaged they shall be repaired by the agency or person owning them, but the utility owner shall be reimbursed for the expense of such repairs by the permittee, and for this purpose pipe coating or other encasement or devices are to be considered as part of a substructure. It is the intent of this chapter that the permittee shall assume all liability for damage to substructures, and any resulting damage or injury to anyone because of such substructure damage and such assumption of liability shall be deemed a contractual obligation, which the permittee accepts upon acceptance of an excavation permit. The city need not be made a party to any action because of this chapter.

D. Permittee Responsibility: The permittee shall inform itself as to the existence and location of all underground utilities and protect the same against damage. (Ord. 2006-24, 7-5-2006)

~~**7-4-7: DEFINITIONS:**~~

~~BACKFILL: Any earth that has been excavated from a trench or other excavation and then replaced and compacted as specified after the structure has been installed.~~

~~EMBANKMENT: Any raised area of compacted earth to support a roadway, structure, parking lot, etc. The material used for embankment shall be specified and tests shall be performed to determine the fill material's adequacy for the specific project.~~

~~FILL: Any material used to fill a depression. It is any material which can be compacted enough to prevent settlement such as earth, broken up concrete, old building blocks, crushed stone or material from a riverbank, etc. Embankment is a type of fill.~~

~~MAXIMUM DRY DENSITY: As determined by ASTM D 1557.~~

~~SUBGRADE: The native, prepared original soil or engineered fill under any roadway, fill, embankment, structure, etc. (Ord. 2006-24, 7-5-2006)~~

~~**7-4-8: STANDARDS:**~~

~~A. Safety: During the entire trenching, backfilling and patching operations, the contractor will be required to observe all safety and traffic control procedures as outlined in chapter 3 of this title.~~

~~B. Maintenance: The contractor shall be responsible for maintenance of the trench and patch for a period of twelve (12) months from the date of the completion of the patching operation.~~

~~C. Limitations: Unless otherwise approved by the LaVerkin City representative, not more than four hundred feet (400') of trench shall be left unfilled at any time in one continuous run. Up to one-half (1/2) the width of any street or road shall be temporarily restored for use before excavation is commenced on the remaining portion of the street or road. All excavation, backfilling, and temporary resurfacing on any portion of any street or road shall be planned for completion in one working day so that no trenches are left open overnight.~~

~~D. Dust: All streets and roads trenched shall be kept free from dust and open to through traffic unless permission to close the street is obtained by the contractor from the LaVerkin City representative.~~

~~E. Right Of Way: All requirements governing work within a right of way shall be addressed in general traffic regulations and road closures as outlined in chapter 3 of this title. (Ord. 2006-24, 7-5-2006)~~

~~7-4-9: SURVEY METHODS:~~

~~All construction shall have appropriate construction staking in place before work begins. The staking shall have all necessary information, including, but not limited to, stationing, cut or fill data, offset distance and invert elevations. The information shall be placed on the face of stakes in a legible manner using weatherproof marking materials. When a water main design has a profile with grades, the water department will require a grade line be set at the designed grades prior to installation of any pipe. A laser may be used in lieu of a grade line if approved by the water department. (Ord. 2006-24, 7-5-2006)~~

7-4-10: EXCAVATION STANDARDS:

A. Preparation: The pavement, sidewalk, driveway or other surface shall be cut vertically along the lines forming the trench in such a manner as to not damage the adjoining pavement or hard surfacing. An undercut bevel at the rate of one inch (1") per foot of thickness will be provided at the proposed junction between the old and new surfaces. The portion to be removed shall be broken up in a manner that will not cause damage to the pavement outside the limits of the trench. However, any pavement damaged by operations outside the limits of the trench shall be replaced. All waste material resulting from the excavation shall be removed immediately from the site of the work.

B. Cutting: All asphalt cuts shall be made with a diamond or carbide tipped masonry or asphalt cutting saw or with a steel asphalt cutting wheel attached to a grader or backhoe. No scarifier tooth cuts, backhoe or bucket rips will be allowed.

~~C. Sheeting, Bracing, And Shoring Of Excavations: All excavations shall be sheeted, braced, and shored as required to protect the workers and existing utilities and improvements from sliding, sloughing, or settling of the trench walls while the work is in progress. All such sheeting, bracing and shoring shall comply with the requirements of the Utah state industrial commission. All damage resulting from lack of adequate sheeting, bracing and shoring shall be the responsibility of the contractor, and the contractor shall make all necessary repairs or reconstruction resulting from such damage.~~

D. Restoration: All concrete or asphalt surfaces damaged or cut in trenching operations shall be restored to an "as good or better condition" than prior to excavation. (Ord. 2006-24, 7-5-2006)

~~7-4-11: CONTROL OF GROUND WATER:~~

~~All trenches shall be kept free from water during excavation, fine grading, pipe laying, jointing, and embedment operations. Where the trench bottom is mucky or otherwise unstable because of the presence of ground water, and in cases where the static ground water elevation is above the bottom of any trench or bell hole excavation, such ground water shall be lowered to the extent necessary to keep the trench free from water and the trench bottom stable when the work within the trench is in progress. Surface water shall be prevented from entering the trenches. (Ord. 2006-24, 7-5-2006)~~

~~7-4-12: HAZARDOUS MATERIALS DISCOVERIES:~~

~~A. Discovery: If suspected hazardous materials including chemicals, petroleum products, etc., are encountered, construction operations shall be immediately stopped in the vicinity of the discovery and the LaVerkin City representative shall be verbally notified of the nature and exact location of the findings. The contractor shall secure the site of the discovery and shall provide written confirmation of the discovery to the LaVerkin City representative within twenty four (24) hours. The written confirmation shall include a statement regarding the responsibility of the LaVerkin City representative to report the discovery to the local health district and the Utah department of environmental response and remediation within twenty four (24) hours as required by federal statute (40 CFR 280.50) as adopted by the state of Utah.~~

~~B. Abatement: After operations in the vicinity of the discovery have been restricted, the LaVerkin City representative shall keep the contractor informed concerning the status of the restriction. The time necessary for the contractor and appropriate regulatory agency to arrange for an acceptable solution to~~

the discovered hazardous material situation is variable and dependent upon the nature and extent of the discovered materials. After clearance is received from the appropriate regulatory agency, the LaVerkin City representative shall inform the contractor when work may be continued in the vicinity of the discovery. Written confirmation shall be provided within two (2) calendar days. (Ord. 2006-24, 7-5-2006)

7-4-13: CONSTRUCTION METHODS:

The methods employed in performing the work shall be the responsibility of the developer. The developer shall make such changes in the methods employed as are necessary to install an acceptable finished product. These methods shall include, but are not limited to, the following:

A. Construction Of Embankments: Unsuitable materials that occur in the foundations for embankments shall be removed by clearing, stripping and/or grubbing. Soils used as roadway embankment material shall be approved by a geotechnical engineer licensed in the state of Utah. All materials in embankments shall be placed, moistened, and compacted as provided in the following subsections.

1. When the embankment exceeds the amount of excavation, sufficient additional material shall be obtained from borrow pits provided by the contractor. All material proposed to be imported shall be subject to the review and approval of LaVerkin City prior to starting of hauling operations. The materials used for embankment construction shall be free from sod, grass, trash, rocks larger than three inches (3") in diameter and all other material unsuitable for construction of embankments. Rocks larger than three inches (3") may be proposed by the geotechnical engineer, to be revised by the city engineer.

2. Grading of completed embankments and backfills shall bring the surfaces to a smooth, uniform condition with final grades being within 0.1 foot of the design grade. Cut and fill slopes shall be two (2) horizontal/one vertical maximum. Construction of slopes steeper than two (2) horizontal/one vertical or fills in excess of five feet (5') shall be approved by the LaVerkin City engineer.

B. Compaction Of Earth Materials:

1. The fill material shall be deposited in horizontal layers having a thickness of not more than six inches (6") and then compacted to the specified density as herein specified. Moisture content during compaction operations shall be within two percent (2%) optimum for granular soils and at two (2) to five percent (5%) above optimum for fine grained soils. The moisture content shall be uniform throughout the layers.

2. If the moisture content is greater than specified for compaction, the compaction operations shall be delayed until the material has dried to the specified moisture content or material is blended/replaced. When the material has been conditioned as specified, the backfill or embankment shall be compacted as directed below.

3. Under roadways, curb and gutter, sidewalks, and driveways, in accordance with AASHTO standards, the embankment material shall be compacted to a density equal to not less than ninety five percent (95%) for granular soils and ninety percent (90%) for fine grain soils as classified by AASHTO M-145 soil classification system. Other fills and embankments not listed above shall be compacted to ninety percent (90%) maximum dry density. Any variance shall be approved by the LaVerkin City engineer.

4. Exposed natural soils within building areas, beneath walkways, slabs, and pavement shall be scarified to a depth of six inches (6"), moisture conditioned, and compacted to the specified density.

5. Foundations for structures shall not be placed partially on undisturbed soil or compacted fill and partially on cemented deposits or rock.

6. Foundation soils shall not be allowed to become saturated during construction.

C. Subgrade Preparation:

1. As a minimum, the original soils under roadways, curb and gutter, sidewalks, and driveways shall be scarified to a depth of six inches (6") prior to compaction operations. All scarified soils shall be compacted to the equivalent of ninety five percent (95%) of maximum dry density for granular soils or ninety percent (90%) of maximum dry density for fine grain soils as classified by AASHTO M-145 soil classification system. Additional over excavation and recompaction of original soils due to poor subgrade conditions may be required by the geotechnical report. Subgrades shall be shaped and graded to within a tolerance of 0.10 foot of design grade and drainage shall be maintained at all times. Subgrades shall be stabilized and compacted as directed by the LaVerkin City representative. Any springs or underground water encountered in the construction of the streets shall be properly disposed of in accordance with instructions of LaVerkin City.

2. When required to demonstrate the stability and compaction of the subgrade, the contractor shall proof roll the subgrade prior to laying any base gravel. The subgrade shall be proof rolled with at least

~~one pass coverage with a pneumatic tired roller of at least ten (10) ton capacity. All proof rolling shall be accomplished in the presence of the LaVerkin City representative. Ground contact pressure for all tires shall be eighty five (85) to ninety (90) psi.~~

~~3. When the proof rolling shows an area to be unstable, it shall be brought to satisfactory stability by additional compaction, reworking, or removal of unsuitable material and replacement with acceptable material.~~

~~4. The subgrade preparation requirements listed above are the minimum requirements. When the soils report requires, a certain amount of over excavation of the native material may be required. In such cases, importing and placement of select borrow material may be required, as directed by the LaVerkin City representative. The material shall be placed and compacted in accordance with the requirements of LaVerkin City.~~

~~D. Construction Of Nonstructural Fills: Nonstructural fills shall be placed to the lines shown on the drawings and shall be any areas not specifically designated for support of structures or utilities such as landscape areas, and open space areas. Fill material shall have no specific compaction requirements but shall consist of material that can be compacted to prevent settlement such as rocks, old building blocks, crushed stone, broken up concrete, gravel, cobbles, etc., with a maximum diameter of six inches (6"). Fill material shall not include broken up asphalt, toxic or hazardous materials or waste sludge, organic or deleterious materials such as muck, ash, sod, grass, trash, tree stumps, lumber, dead animals, etc. (Ord. 2006-24, 7-5-2006)~~

7-4-14: EARTHWORK:

This section defines the requirements for excavation and backfill for structures, preparation of embankments and fills and subgrade preparation for pavements and other surface improvements. Earthwork shall conform to the following:

A. Excavation: All structures shall be founded on prepared original soil or engineered fill. All unauthorized excavation below the specified structure subgrade shall be replaced with concrete, untreated base course, and/or approved engineered fill thoroughly compacted to a minimum of ninety five percent (95%) of maximum dry density. Subgrade soil for all concrete structures, regardless of type or location, shall be firm and thoroughly compacted to a minimum of ninety five percent (95%) of maximum dry density for granular soils or ninety percent (90%) of maximum dry density for silty/clay soils as classified by AASHTO M-145 soil classification system.

B. Subsoil Reinforcement: Coarse gravel, crushed stone, or a geotextile fabric may be used for subsoil reinforcement when approved by LaVerkin City. Coarse gravel or crushed stone shall be applied in six inch (6") layers, each layer being embedded in the subsoil by thorough tamping. All excess soil shall be removed to compensate for the displacement of the gravel or crushed stone, and the finished evaluation of any subsoil reinforced in this manner shall not be above the specified subgrade.

C. Backfills:

1. Backfill shall be placed to the lines shown on the approved drawings, or as directed by LaVerkin City.

2. Materials for backfill shall consist of approved excavated material or clean borrow sand, gravel, or other suitable material. All broken concrete, peat, decomposed vegetable matter and similar materials obtained from excavation will be removed from the site prior to beginning of backfilling.

3. Material for backfilling will have optimum moisture to ensure compaction to a degree equivalent to that of the undisturbed ground in which the trench was dug.

4. All backfill will be placed in layers not over six inches' (6") loose measure in thickness. Compaction will be obtained by mechanical rollers, mechanical tampers, or similar means. It shall be placed in layers compatible with the equipment and not exceeding six inches (6") in compacted thickness.

5. Each layer shall be compacted to a minimum density of ninety five percent (95%) of maximum dry density for granular soils or ninety percent (90%) of maximum dry density for silty/clay soils as classified by AASHTO M-145 soil classification system.

6. After completion of construction below the elevation of the final grades, and prior to backfilling, the excavation shall be cleaned and all forms, trash, and debris shall be removed.

7. The density (dry) of the backfill under pavements, sidewalks, curbs or other structures will be not less than that existing prior to excavation. The fill shall be restored and placed in a good condition, which will prevent settling. (Ord. 2006-24, 7-5-2006)

~~**7-4-15: EXCAVATION FOR PIPELINES:**~~

A. Trenches: Trench excavation shall include all operations necessary for excavation of all materials of whatever nature within the designated lines of the trenches. All excavation, including the manner of supporting excavation and provisions for access to trenches, shall comply with all current regulations as determined by OSHA.

B. Specifications: Trenches shall be excavated to the lines shown on the approved drawings or otherwise established by LaVerkin City, and to a depth to provide a minimum burial of three feet (3') over the pipe unless otherwise specified.

C. Trench Bottoms: The bottom two feet (2') of the trench walls shall be vertical. All finish grade excavation necessary for preparation of the trench bottom shall be shaped as specified and the maximum width of the trench, measured at the top of the pipe, shall be as narrow as possible, but not wider than fifteen inches (15") on each side of the pipe. All trench work shall be according to current OSHA standards.

D. Over Excavation: No over excavating shall be allowed without recompaction of backfill in accordance with these standards.

E. Trenches In Rock: Excavation for trenches in ledge rock, cobble rock, or stones shall extend to a depth of at least four inches (4") below the invert of the pipe.

F. Unsuitable Materials: Where unstable earth, mud or muck is encountered in the excavation at the grade of the pipe, the unsuitable material shall be removed to a minimum of twelve inches (12") below grade and the subsequent hole shall be backfilled with crushed rock or gravel as called out in section 7-4-17 of this chapter under "foundation material" to provide a stable subgrade.

G. Compaction: The gravel material shall be deposited over the entire trench width in a maximum of six inch (6") thick layers. Each layer shall be compacted by tamping, rolling, vibrating, spading, slicing, rodding or by a combination of one or more of these methods. In addition, the material shall be graded to produce a uniform and continuous support for the entire length of the installed pipe.

H. Tunneling: Should the contractor elect to tunnel or jack any portion of the project, approval must first be obtained from the LaVerkin City water department. The contractor shall furnish, place, and maintain all supports and shoring that may be required for the sides of the excavation, and all pumping, ditching, or other approved measures for the removal or exclusion of water, including storm water and wastewater reaching the site of the work from any source so as to prevent damage to the work or adjoining property.

I. Open Trenches: The maximum amount of open trench permitted in any one location shall be four hundred feet (400'), or the length necessary to accommodate the amount of pipe installed in a single day, whichever is greater, unless otherwise approved by the LaVerkin City water department. (Ord. 2006-24, 7-5-2006)

7-4-16: PIPE BEDDING:

A. Protection Of Pipe: Pipe shall be protected from lateral displacement and possible damage resulting from impact or unbalanced loading during backfilling operations by being adequately bedded in accordance with the bedding details in the standard drawings.

B. Bedding Materials: Bedding material as outlined in section 7-4-17 of this chapter shall be placed and compacted to ninety five percent (95%) of maximum dry density with pneumatic or vibratory tampers in eight (8) to twelve inch (12") lifts to provide a smooth, well compacted and stable foundation for the pipe or appurtenant works.

C. Compaction: Pipe bedding materials shall be deposited and compacted in layers not to exceed six inches (6") in compacted thickness. Deposition and compaction of bedding materials shall be done simultaneously and uniformly on both sides of the pipe. Compaction shall be accomplished with hand or mechanical compactors to the satisfaction of LaVerkin City. All bedding materials shall be placed in the trench with hand tools, or other approved methods in such a manner that the bedding materials will be scattered alongside the pipe and not dropped into the trench in compact masses. Bedding materials shall conform to the requirements of section 7-4-17 of this chapter and shall be free from roots, sod, or other vegetation.

D. Imported Bedding: In the event trench materials are not satisfactory for pipe bedding, imported bedding will be required. Imported bedding shall consist of placing compacted granular material on each side of and to the level of twelve inches (12") above the top of the pipe. Imported bedding material shall be graded in accordance with section 7-4-17 of this chapter, under "bedding material". Compaction shall be to satisfaction of the LaVerkin City representative.

E. Replacement Of Over Excavated Material: In the event "foundation material" is used in backfill, or replacement of over excavated material, the contractor shall at his expense, construct dams within the drain rock bedding material at maximum intervals of six hundred feet (600'). The dams shall be constructed to the top of the pipe or the level of groundwater, whichever is greater, with class "B" Portland cement concrete and shall have a minimum thickness of six inches (6"). (Ord. 2006-24, 7-5-2006)

7-4-17: BACKFILL MATERIAL:

Sieve Size	Foundation Material	Bedding/Pipe Zone Material[1]	Two Feet Above Pipe Zone	Final Backfill Material[2]
	Percentage Passing			

Sieve Size	Foundation Material	Bedding/Pipe Zone Material[1]	Two Feet Above Pipe Zone	Final Backfill Material[2]
	Percentage Passing			
12 inch	—	—	100	Native material which contains no sod, vegetation, rocks larger than 6 inch diameter, asphalt or concrete chunks, etc.
6 inch	—	—	100	
3 inch	100	—	85 - 100	
2 inch	90 - 100	—	70 - 100	
1 inch	70 - 90	100	50 - 100	
½ inch	51 - 75	90 - 100	30 - 100	
No. 4	31 - 65	50 - 80	25 - 80	
No. 16	16 - 30	30 - 42	16 - 50	
No. 200	0 - 5	0 - 15	5 - 30	

Notes:

1. ¾ inch or 1 inch clean crushed sound gravel may be used in lieu of the above table without compaction.
2. Placement of any rocks larger than 6 inches shall be observed by the geotechnical engineer, and have prior written permission by LaVerkin City.

(Ord. 2006-24, 7-5-2006)

7-4-18: BACKFILLING AND COMPACTION:

A. Protection Of Pipe: Backfill shall be carefully placed around and over pipes and shall not be permitted to fall directly on a pipe from such a height or in such a manner as to cause damage.

B. Backfill Material: Backfill material shall be as required by section 7-4-17 of this chapter or as approved by the LaVerkin City representative and shall not contain any organic or deleterious materials such as wood, grass, roots, broken concrete, frozen soil, asphalt chunks, trash or debris of any kind that may cause unequal settlement or improper consolidation.

C. Compaction: The backfill in all utility trenches under proposed or existing roadways, curb and gutter, sidewalks and driveways shall be compacted to the equivalent of ninety five percent (95%) of maximum dry density for granular soils or ninety percent (90%) of maximum dry density for silty/clay soils as classified by AASHTO M-145 soil classification system. In shoulders and other street right of way areas, the in-place density shall be a minimum of ninety percent (90%) of the maximum dry density. (Ord. 2006-24, 7-5-2006)

7-4-19: INITIAL BACKFILL PROCEDURE:

A. Specifications: Backfill of selected material, which shall conform to the requirements of section 7-4-17 of this chapter, shall be placed carefully in eight inch (8") noncompacted horizontal layers and tamped to a depth of twelve inches (12") over the top of the pipe. During compaction of the initial backfill, special care shall be taken not to move the pipe, either vertically or horizontally.

B. Protection Of Pipes: All backfill operations shall be performed in such a manner to avoid any damage to the pipe, valves, laterals, etc.

C. Pipe Displacement: In the event such damage or displacement occurs, such damaged or displaced pipe shall be removed and replaced with undamaged pipe on proper grade and alignment. (Ord. 2006-24, 7-5-2006)

7-4-20: MECHANICAL COMPACTION OF BACKFILL:

A. Compaction: The backfill shall be thoroughly compacted by consolidation or mechanical compaction. Structural and trench backfill shall be deposited in horizontal layers and compacted by the following method in such manner that the compacted material will be homogeneous and free from lenses, pockets, streaks, and other imperfections:

1. The materials shall be deposited in horizontal layers across the length or width of the excavation of not more than six inches' (6") compacted thickness.

2. The excavation and placing operations shall be such that the materials when compacted will be blended sufficiently to secure the best practicable degree of compaction, impermeability, and stability.

3. Prior to and during compaction operations, all backfill material shall have the optimum practicable moisture content within two percent (2%) and shall be uniform throughout each layer.

B. Moisturizing Materials: Moisturizing of the materials shall be performed at the site of excavation. If the moisture content is not optimum within two percent (2%) for compaction, the compaction operations shall be delayed until such time that the material has been brought to the optimum moisture content. When the material has been properly conditioned, it shall be compacted by using appropriate mechanical compaction equipment as indicated below:

1. Vibrating rollers shall consist of a self-propelled roller with a vibrating steel drum of at least one ton capacity. The roller shall have an effective rolling width of at least twenty four inches (24") and shall deliver a compaction force of at least seven hundred (700) pounds per square inch when vibrating.

2. Pneumatic rollers shall consist of a self-propelled roller with pneumatic tires arranged in a manner to provide a satisfactory compacting unit. The roller shall have an effective rolling width of at least thirty inches (30") and shall give a compaction force of at least five hundred (500) pounds per inch of width of tread when fully loaded. The tires shall be uniformly inflated.

3. Vibrating plates shall consist of a pneumatic vibrating plate attached to the boom of a backhoe and capable of compacting an area of at least three (3) square feet. The plate and backhoe combination shall together be capable of exerting a compactive force of at least one thousand (1,000) pounds per square inch.

4. Hand compactors shall be used when hand compacted methods are specified or required because the location of the area to be compacted does not permit the use of self-propelled mechanical compactors. Vibrating plates, "pogo stick" tampers, or other approved hand compacting equipment shall be used. (Ord. 2006-24, 7-5-2006)

7-4-21: FINAL BACKFILL PROCEDURE:

The backfill above a point twelve inches (12") above the top of the pipe shall be backfilled in horizontal layers twelve inches (12") thick or less with materials containing no brush, perishable or objectionable material, or rocks, stones or boulders larger than six inches (6") in the greatest dimension. The material shall be mechanically compacted with appropriate vibrating compaction equipment. Wherever, in the opinion of the LaVerkin City representative surface settlement is not critical, consolidation or compaction may be omitted and the backfill shall be neatly rounded over the trench to a sufficient height to allow for settlement to grade after consolidation. (Ord. 2006-24, 7-5-2006)

7-4-22: EXCAVATION AND RESTORATION OF SURFACE IMPROVEMENTS:

A. General: All street surfacing, curbs, gutters, sidewalks, driveways or other hard surfaces falling in the line of the excavation which must be removed in performance of the work shall be restored in kind by the excavator, unless otherwise directed by the city council, in accordance with the specifications contained herein governing the various types of surfaces involved.

B. Protection Of Paved Surfaces: In order to avoid unnecessary damage to paved surfaces, track equipment shall use pavement pads when operating on or crossing paved surfaces.

C. Road Base: Where trenches are excavated through gravel surfaced areas such as roads and driveways, the gravel surface shall be restored and maintained as follows:

1. The gravel shall be placed deep enough to provide a minimum of six inches (6") of material, or to match thickness of existing material, or these specifications, whichever is greater.

2. The gravel shall be placed in the trench at the time it is backfilled. The surface shall be maintained by blading, sprinkling, rolling, or adding gravel in order to maintain a safe uniform surface satisfactory to the LaVerkin City representative. Excess material shall be removed from the premises immediately.

3. Material for use on gravel surfaces shall conform to the requirements contained in chapter 3 of this title.

D. Time: In traffic lanes of paved streets, the excavator shall provide temporary gravel surfaces or cold mulch in good condition immediately after backfill has been placed, and shall complete permanent repairs on the street, sidewalk, curb, gutter, driveway and other surfaces, within five (5) days from the date of completion of the backfill, except for periods:

1. When permanent paving material is not available;

2. When weather conditions prevent permanent replacement;

3. When an extension of time is granted by the public works director.

E. Temporary Repair: If temporary repair has been made on the paved street with gravel and a permanent repair cannot be made within the time specified above due to any of the above mentioned conditions, then the excavator shall be required to replace the gravel with cold mulch as soon as possible.

F. Temporary Grade Surface: Where excavations are made in paved areas, the surface shall be replaced with a temporary gravel surface. The gravel shall be placed deep enough to provide a minimum of six inches (6") below the bottom of the bituminous or concrete surface. Normally, this will require nine inches (9") of gravel for bituminous surfaces, twelve inches (12") of gravel for concrete and concrete base for asphalt wearing surfaces. The gravel shall be placed in the trench at the time it is backfilled. The temporary gravel surface shall be maintained by blading, sprinkling, rolling, adding gravel, to maintain a safe, uniform surface satisfactory to the public works director until the final surface is laid. Excess material shall be removed from the premises immediately. Material for use on temporary gravel surfaces shall be obtained from sound, tough, durable gravel or rock meeting the following requirements for gradings:

1. Passing 1 inch sieve: 100 percent.

2. Passing $^{3}/_{4}$ inch sieve: 85-100 percent.

3. Passing no. 4 sieve: 45-65 percent.

4. Passing no. 10 sieve: 30-50 percent.

5. Passing no. 200 sieve: 5-10 percent.

G. Bituminous Surfaces: The exposed edges of existing pavement shall be primed with type MC-1 bituminous material. The type, grade, and mixture of the asphalt to be used for street surface replacement shall be approved by the public works director. Bituminous surfaces shall be restored by standard paving practices to a thickness equal to the original pavement but not less than three inches (3"). The finished repaired surface shall not deviate more than one-half inch ($^{1}/_{2}$") vertically from the existing road surface. Any deviations greater than specified shall be immediately removed and replaced to the proper standards. Where trenches are excavated through bituminous surfaced roads, driveways or parking areas, the surface shall be restored within five (5) days as follows:

1. Mud or other soft or spongy material shall be removed from the trench and the space filled with granular backfill to within twelve inches (12") of finished grade. The pit run gravel shall be rolled and tamped to a minimum of ninety five percent (95%) of maximum dry density in layers not exceeding six inches (6") in compacted thickness. Base gravel shall then be placed to a depth equal to the original gravel base, but not less than six inches (6") thick and compacted to a minimum of ninety five percent (95%) of maximum dry density.

2. Prior to permanent resurfacing, the contractor shall saw cut the existing paving to vertical, clean, straight lines as nearly parallel to the centerline of the trench as practical. The existing bituminous paving shall be cut back beyond the limits of any excavation so that the edges of the new paving will rest on at least six inches (6") of undisturbed soil.

3. Pavement restoration shall include tacking of pavement edges with type SS-1H bituminous material, and placing and rolling plant mix asphalt to the level of the adjacent pavement surfaces.

4. All backfilled trenches in roadways shall be patched with hot mix asphalt within five (5) days of initial excavation unless otherwise directed by the LaVerkin City representative. The backfill section shall be according to the typical road sections of these standards. (Ord. 2006-24, 7-5-2006)

7-4-23: QUALITY CONTROL:

All earthwork shall be performed in accordance with these standards and shall be tested and accepted as herein outlined. These are minimum requirements and additional testing may be required.

A. Soil Testing: Minimum testing of earthwork shall be as follows:

1. Soil classification: One per material source. The sieve analysis shall be according to ASTM C136, C117.

2. Soil proctor: One determination for each significant change in soil type as necessary to provide required compaction testing. Tests shall be ASTM D1557 method A or D (modified proctor).

3. Earth fill moisture/density determination: One test per five hundred (500) cubic yards of fill placed in an embankment, or every other lift not to exceed two feet (2'). Tests shall be ASTM D1556 or D2922 and D3017.

4. Subgrade moisture/density determination: One test per one thousand (1,000) square yards of surface area. Moisture density determinations shall be made in accordance with requirements of LaVerkin City. Tests shall be ASTM D1557 or D2922 and D3017.

B. Acceptance: Any earthwork determined not to comply with these standards shall be removed and replaced or reworked until compliance is obtained. Any costs for the rework or testing the rework shall be paid for by the developer.

C. Trench Backfill Moisture/Density Testing: All utility installations, i.e., gas, power, phone, cable TV and associated utilities, shall conform to the applicable test requirements contained within these standards for earthwork, compaction, base course, bituminous surface course, concrete and other materials. Minimum testing of trench backfill shall be as follows:

1. Soil proctor: One determination for each significant change in soil type as necessary to provide required compaction testing. Tests shall be ASTM D1557 method A or D (modified proctor).

2. Trench backfill moisture/density determination: Tests are required for trench backfill for every two hundred (200) linear feet of trunk line trenching including twenty five percent (25%) of service laterals, fifty percent (50%) of valve locations and all manholes. Tests shall be run at the following trench elevations:

a. One test per two feet (2') of depth measured from the bottom of the subgrade to the top of the pipe zone.

b. Tests shall be evenly spaced vertically through the trench with one test at top of trench (bottom of subgrade).

3. Additional testing may be required by the LaVerkin City representative or soils testing lab to verify compaction. Tests shall be according to ASTM D1556 or D2922 and D3017.

4. Moisture/density determinations shall be made in accordance with these standards. Proctors for all trench backfill compaction shall be determined using ASTM D1557 modified proctor method. (Ord. 2006-24, 7-5-2006)

7-4-24: SPECIAL REQUIREMENTS:

A. Geotechnical Investigation And Report: In areas where a geotechnical investigation is required before development, the recommendations of the geotechnical report shall be followed and verified. The requirements outlined previously in this chapter are only a minimum. (Ord. 2006-24, 7-5-2006)

B. Final Soils Submissions: All subdivisions and planned unit development projects shall submit a final soils engineering and engineering geology report in accordance with the applicable building related code(s). (Ord. 2007-24, 8-15-2007)

C. No Cut Policy: When a street has been newly improved, there will be a "no cut" policy in force that will not allow the new asphalt to be cut to install utilities or for other reasons for a period of two (2) years. After the two (2) year period all cuts must meet the following standards:

1. Flowable backfill (1 bag mix) in trench (at city's discretion);

2. Ten foot (10') minimum patch width (2 foot minimum each side of trench);

3. Saw cut edges of patch;

4. Patch must be machine laid hot mix (cold mix may be used temporarily if hot mix cannot be obtained then removed and replaced with hot mix when it is available);

5. Patch shall be three inches' (3") asphalt over nine inches' (9") granular base meeting city standards;

6. Seal the saw cut edges with a rubberized crack fill material.

D. No Cut Exceptions: Exceptions to the "no cut" policy during the first two (2) years may be made on a case by case basis. The following standards will apply where exceptions are granted:

1. Flowable backfill (1 bag mix) in trench (at city's discretion);

2. Twelve foot (12') minimum patch width (3 foot minimum each side of trench);

3. Saw cut edges of patch;

4. Patch must be machine laid hot mix, cold mix may be used temporarily if hot mix cannot be obtained then removed and replaced with hot mix when it is available, or at the discretion of the LaVerkin City street department;

5. Patch shall be three inches' (3") asphalt over twelve inches' (12") granular base meeting city standards;

6. Fill the saw cut edges with a rubberized crack fill material.

E. Flowable Backfill Installation Exceptions: In lieu of backfilling all trenches cut into new city streets with flowable backfill as set forth above, contractors, utility companies or any other entity working on new city streets may backfill any trench according to the specifications and standards set forth in section 7-4-14 of this chapter provided that such contractor, utility company or other entity working on new city streets provides the following:

1. A written warranty in a form approved by the city providing that if such trench compaction subsides, sinks or otherwise fails for any reason, or the pavement over the compacted trench cracks, during the life of said trench, that the contractor, utility company or other entity will repair and recompact said trench. Such repair shall be completed at no cost to the city according to the standards set forth in section 7-4-14 of this chapter. Repairs shall be completed within thirty (30) days after receiving written notice that such trench has failed. However, in an "emergency", which is defined as the failure of any trench due to a natural or artificial condition and which poses an eminent risk to persons or property, such contractor, utility company or entity whose trench failed will undertake all reasonable steps to protect persons or property from further damage, within twenty four (24) hours after receiving notice from the city. Such steps shall include, but are not limited to, erecting barricades, warning lights, lanterns, flares, or other devices to alert the public to the potential hazard. Thereafter, such contractor, utility company or entity shall commence repairs to the affected trench as soon as practicable according to the standards set forth herein; and

2. Any contractor, utility company, or entity incapable of providing evidence of a net worth in excess of one million dollars ($1,000,000.00) must in lieu thereof, also post a cash bond for the estimated and reasonable cost to repair said trench as established by the city engineer. The city will retain said cash bond for two (2) years following completion of the trench work. If, upon inspection by the city engineer or inspector after the expiration of two (2) years, it is discovered that the trench is still intact and has not subsided, sunk or otherwise failed for any reason, the city will release such bond.

F. Conflicts: Where the provisions of this section conflict with the provisions of other sections, the provisions of this section shall take precedence.

G. Concrete Surfaces: The subbase for concrete surfaces shall be sprinkled just before placing the concrete. Joints and surfaces shall be made to match the original surfaces. The thickness of concrete shall be equal to the adjacent concrete but in no case less than six inches (6") thick. The mixing, cement, water content, proportion, placement, and curing of the concrete will be approved by the public works director. In no case shall the concrete have less compressive strength than three thousand (3,000) pounds per square inch at the end of twenty eight (28) days.

H. Concrete Base, Bituminous Wearing Surfaces: This type of surfacing shall be constructed as outlined in chapter 3 of this title.

I. Gravel Surfaces: Trenches excavated through gravel surfaced area, such as gravel roads and shoulders and unpaved driveways, shall have the gravel restored and maintained as described in this chapter, except that the gravel shall be a minimum of one inch (1") more than the thickness of the existing gravel. (Ord. 2006-24, 7-5-2006)

7-4-25: BLASTING; USE OF EXPLOSIVES:

A. Blasting Permit Required: Blasting will not be allowed except by written permit from the LaVerkin fire authority. If the permit is granted, the contractor shall 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. Any conflict with these regulations and permit issued by fire authority, the fire authority requirements shall take precedence. The blasting permit shall be site specific and expire thirty (30) days from issuance, unless otherwise extended by the issuing agency.

B. Additions: All requirements contained in this section shall be followed: (Ord. 2006-24, 7-5-2006)

1. The use of explosives or blasting agents is controlled by the applicable building related code(s); (Ord. 2007-24, 8-15-2007)

2. The contractor shall obtain a special permit from the LaVerkin City fire department for the use of explosives;

3. A copy of this permit shall be delivered to the LaVerkin City representative prior to the use of explosives;

4. The approval by the LaVerkin City representative for the use of explosives shall not relieve the contractor from his responsibilities for proper use and handling of the explosives or for any damages resulting from their use.

C. Handling: Explosives shall be transported, stored, handled, and used in accordance with the provisions and requirements of all applicable laws, ordinances and regulations.

D. Command, Control And Permits: When any blasting is to occur within the limits of LaVerkin City, a permit for such activity shall be applied for at least three (3) working days prior to the desired blasting day. A detailed blast plan shall be submitted for review at the time of application for a permit. The blast plan shall contain the following information:

1. Number of holes per blast;
2. Blast pattern;
3. Depth of holes;
4. Maximum holes per delay;
5. Numbers of the delays used;
6. Type of explosives used;
7. Total pounds of explosives;
8. Maximum pounds per delay;
9. Method of detonation;
10. Proximity to nearest structure;
11. Expected duration of blasting activity;
12. Name of independent monitoring company;
13. Whether or not preblast survey is required and the name of the company doing such a survey;
14. Plan outline for notification of fire marshal, fire chief or governing agency one hour prior to detonation of each blast and approximate time of each blast.

E. Blasting Criteria: In accordance with United States bureau of mines (USBM) report 8705, two inches (2") per second (IPS) when the frequencies are greater than fifty (50) hertz (Hz) in any of the three (3) spatial components in which the data is being collected:

1. The blaster shall submit with his permit application the projected equative scale distance to be represented by each blast in relationship to the nearest structure. This scale distance shall not be less than fifty (50). If the scale distance results in a number less than fifty (50) the blaster will be required to modify the blasting plan in order to produce a safe blast within the above parameters.

2. Blasting activity that is to occur within one thousand feet (1,000') of any school, public or private, university, daycare center, church, library, medical facility, or any public building shall be conducted during off hours where possible and shall require seismic monitoring of each blast to ensure the integrity of the building as well as the safety of the occupants of said buildings. Since there is a wide variety in the type density, specific gravity, velocity, and general characteristics within the graphical area of southern Utah, there are varied methods that can be employed to attain the desired results. These methods, if used and however varied, shall adhere to the above limit criteria.

3. Any blasting that is intended within five hundred feet (500') of any structure, building, tunnel, underground utilities, gas lines, overhead transmission lines, pump station, piping, radio tower, or any other structure of any kind, requires that the blast be monitored with a seismograph capable of measuring peak particle velocities in three (3) spatial components of horizontal, vertical and transverse and be capable of printing this data into a permanent digital record as well as wave form and air blast over pressure in terms of millibar, psi or decibel (dB) recording of each event. Any structure such as residential homes, commercial buildings, public buildings, storage facilities, or any other permanent structure that is within five hundred feet (500') of blasting activity shall be required to have a preblast survey performed at the expense of the contractor and/or the blaster by an independent company whose primary nature of business is to conduct and perform these types of services. The said company shall furnish to the authorizing agency a copy of the preblast survey report prior to issuance of the blasting permit. A certificate of insurance issued by an underwriter legally doing business within the state of Utah showing contractor and/or blaster to be properly insured for the express purpose of blasting and showing the

issuing agency as additional insured, shall be submitted with the application of the blasting permit. The amount of insurance shown on the certificate of insurance shall be in the amount required by the LaVerkin City fire authority or the LaVerkin City representative.

4. Furnish and erect special signs to warn the public of his blasting operations. They shall be located and maintained to be evident to the public during all critical periods of blasting operations.

5. Notify each public utility company, having structures or facilities adjacent to the work, of his intention to use explosives. Such notice shall be given sufficiently in advance to enable the companies to advise the contractor of any precautions that should be taken to protect their structures from damage.

6. Make a survey of adjacent properties, before commencing blasting operations, locating on drawings and by photographs all existing cracks and damages to structures. A copy shall be filed with the LaVerkin City representative, including a report of any property owners who refused to permit entry and inspection.

7. Blasting shall be accomplished in such a manner that nearby buildings, structures, railways, highways, etc., will be safe from rocks and other projectiles. Adequate blasting mats or other means of protection shall be employed when blasting in congested area or close proximity to any of the above improvements. Steel mats shall not be allowed within two thousand feet (2,000') of power lines.

8. At the time of firing, the contractor shall station certified flaggers along the road at sufficient distance from the blasting operation to flag down any vehicles.

9. LaVerkin City reserves the right to order the discontinuance of blasting operations at any time.

F. Electric Detonation Method: Electric detonators, if employed, shall be manufactured by a company currently in business. Such detonators shall be used in series and be of twenty five (25), fifty (50), or one hundred (100) milliseconds' delay. Millisecond series delay devices for multi-linking larger events may also be used provided they have been included in the approved blast plan.

G. Nonelectric Detonation: Several methods of detonation utilizing other than electric detonators or blasting caps are used by the blasting industry. Since, under certain conditions, use of nonelectric detonators instead of standard electric caps can be advantageous, they may be used provided they possess delay capability and have been described in the approved blast plan.

H. Explosives And Accelerants:

1. Limits: Based on utilization of forty/sixty percent (40/60%) nitro based explosives and the utilization of ammonium nitrate based accelerants the following limits shall be adhered to:

a. One thousand feet (1,000') or greater from any structure, a charge no greater than twenty two and one-half (22½) pounds of accelerants and/or explosives per delay.

b. Between five hundred (500) and one thousand feet (1,000') from any structure, a charge no greater than fifteen (15) pounds of accelerants and/or explosives per delay.

c. Between two hundred fifty (250) and five hundred feet (500') from any structure, a charge no greater than eight and one-half (8½) pounds of accelerants and/or explosives per delay.

d. Between one hundred (100) and two hundred fifty feet (250') from any structure, a charge no greater than four and three- tenths (4 3/10) pounds of accelerants and/or explosives per delay.

e. Under one hundred feet (100') from any structure, a charge no greater than two and one-half (2½) pounds of accelerants and/or explosives per delay. No ammonium nitrate based accelerants may be used within this area.

2. Notes: Since the purpose of blasting is the breakup and removal of rock, utilizing shock waves generated by explosives, it should be understood that these same shock waves travel through the formation resulting in potential damage to any structure that may be in contact with the same formation. Most of the formations in the geographical area of southern Utah fall into three (3) general categories. Each, generally speaking, has its own specific gravity and resonant velocities with some minor variations. Most of these resonant velocities occur at greater than twelve thousand (12,000) IPS and at frequencies of greater than fifty (50) hertz. It is therefore necessary to meet or exceed these resonant velocities and frequencies in order to accomplish the desired breakage of the rock.

3. Ammonium Nitrate Accelerants: Although ammonium nitrate based accelerants provide an inexpensive enhancement to the nitro based explosives, their velocities are generally well below twelve thousand (12,000) IPS and produce frequencies under fifty (50) hertz. Therefore, the use of ammonium nitrate based accelerants within close proximity to existing structures shall not be permitted. As per USBM report 8707, the greatest potential for structural damage to occur is when the peak particle velocity (PPV) exceeds two (2) IPS with frequencies of less than fifty (50) hertz. In addition, the use of these accelerants

~~has a tendency to increase the air blast over pressures and lower frequencies within close proximity to the blast.~~

~~I. Storage And Transportation: Explosives shall be stored in a magazine with separate storage compartments and/or a separate magazine for the storage and transportation of detonators as per NFSC specifications.~~

~~J. Stemming: Stemming shall consist of three-eighths inch (3/8") gravel with a minimum vertical fill dimension of no less than three feet (3') covering each charge. Cuttings, sand, gravel, or any other on site material will not be accepted when blasting is to occur within five hundred feet (500') of any structure.~~

~~K. Flyrock:~~

~~1. Within five hundred feet (500') of any structure the use of certified blasting mats to cover each charge shall be required. The number of holes per blast shall be limited to the blaster's ability to adequately cover and protect each charge hole. However, no more than fifty two (52) holes shall be loaded and detonated at any one time when within five hundred feet (500') of any structure.~~

~~2. When within five hundred (500) to one thousand feet (1,000') of any structure, the blaster shall continue to utilize blasting mats. However, utilization of sand, or other suitable on site material having an aggregate containing material four inches (4") in diameter or less can be used as cover for a height of three feet (3') or greater over the top of the existing charge holes. No more than one hundred eighteen (118) holes shall be loaded and detonated at any one time with the five hundred (500) to one thousand foot (1,000') range of any structure.~~

~~L. Logs: Each blaster shall keep a detailed record of each blasting event. Such record shall contain the following information:~~

~~1. Depths of holes;~~

~~2. The hole pattern or spacing, confined or free face;~~

~~3. The total number of holes detonated per event;~~

~~4. Number and series of delays used;~~

~~5. Method of detonation;~~

~~6. Maximum pounds of explosives;~~

~~7. Maximum pounds per delay;~~

~~8. Maximum pounds of accelerants;~~

~~9. Total pounds for the blast;~~

~~10. Vertical spacing of decks;~~

~~11. Manufacturer and type of blasting agent, accelerants if applicable, and detonation device or devices;~~

~~12. The material and depth of stemming;~~

~~13. Distance and direction of the blast from nearest structure and location within the construction site of blast, i.e., station marker, lot corner, survey marker and so on;~~

~~14. The time of the blast;~~

~~15. Name of the blaster and assistants, including address and phone number;~~

~~16. Name of seismograph company, if applicable, and resultant seismograph reading with regard to peak particle velocity (PPV), decibel (dB) and frequency (FWHz).~~

~~M. Surrender Logs Upon Request: The blaster shall at the request of any authorizing agency, surrender logs, or a copy thereof, for review by said agency within twenty four (24) hours of receiving such request. Failure to keep current and/or surrender the logs to said authority will result in the immediate cancellation of any permits issued within the scope of the jurisdiction of these authorizing agencies. No further permits will then be issued within thirty (30) days of submission of said records. (Ord. 2006-24, 7-5-2006)~~

7-4-26: PENALTY:

Any person violating any provision of this chapter shall be guilty of a class B misdemeanor and upon conviction thereof, subject to penalty as provided in section 1-4-1 of this code. (Ord. 2006-24, 7-5-2006)