



WEST VALLEY CITY

WEST VALLEY CITY
2020 ENGINEERING STANDARDS
VOLUME I

GENERAL STANDARDS AND SPECIFICATIONS

APPLICABLE FOR WORK IN THE PUBLIC RIGHT-OF-WAY AND ON PUBLIC
INFRASTRUCTURE AND APPURTENANCES

WEST VALLEY CITY - PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
ADOPTED BY WEST VALLEY CITY COUNCIL August 25, 2020

WEST VALLEY CITY, UTAH

RESOLUTION NO. 20-135

A RESOLUTION ADOPTING REVISIONS TO THE WEST VALLEY CITY ENGINEERING STANDARDS.

WHEREAS, the West Valley City Engineering Standards set forth certain regulations and requirements applicable to development and construction within the City; and

WHEREAS, the City's Engineering Division has prepared revisions and updates to said Engineering Standards; and

WHEREAS, the revised Engineering Standards are attached hereto as Exhibit A;

WHEREAS, the City Council of West Valley City, Utah, does hereby determine that it is in the best interests of the health, safety, and welfare of the citizens of West Valley City to adopt the revised Engineering Standards;

NOW, THEREFORE, BE IT RESOLVED, by the City Council of West Valley City, Utah, that the West Valley City Engineering Standards attached hereto as Exhibit A shall replace the existing Engineering Standards, are hereby adopted as binding City regulations, and said Engineering Standards shall have the full force of law.

PASSED, APPROVED and MADE EFFECTIVE this 25th day of August, 2020.



WEST VALLEY CITY

A handwritten signature in blue ink that reads "Ron Biggs". The signature is written in a cursive, flowing style.

MAYOR

ATTEST:

A handwritten signature in blue ink that reads "Nichole Cannon". The signature is written in a cursive, flowing style.

CITY RECORDER

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Part 1: Introduction - West Valley City Engineering Standards

1.1 Volume I – General Standards and Specifications

These Engineering Standards are intended to provide a foundation for design and construction and to ensure quality and uniform construction of public infrastructure in West Valley City.

All public improvements constructed in the city right-of-way are required to comply with these standards. Some engineering standards are also applicable to private development site design, and all new development and redevelopment projects are required to adhere to these standards. Design exceptions to specific standards will be considered and must be approved by the City Engineer.

1.2 Volume II – Minimum Sampling and Testing Requirements

West Valley City has adopted minimum sampling & testing requirements which are intended to ensure quality and uniform construction of public infrastructure in West Valley City. This document shall be used to determine the frequency of verification sampling and testing on all public improvements constructed within the city right-of-way. Test results will be used to determine acceptance or rejection of material placed. Exceptions to specific sampling and testing requirements must be approved by the City Engineer.

1.3 Modifications

Sections that have been modified from the previous version are noted with a solid vertical line to the right of the paragraph.

Part 2: Standard Specifications and Standard Drawings

West Valley City uses the APWA Standard Specifications. APWA standard specifications and drawings are available for purchase from the Utah Chapter of the American Public Works Association (APWA), via the Utah Chapter website.

<http://utah.apwa.net>

2.1 APWA Manual of Standard Specifications –2017 Edition

APWA amendments are not automatically adopted.

2.1.1.1 *West Valley City Special Provisions*

The following sections of the APWA Standard Specifications have been modified by West Valley City. These Special Provisions replace or supplement the APWA Standard Specifications and are available for download on the Engineering Division webpage.

- Section 01 45 00-M – Quality Control
- Section 26 56 19-M – Roadway Lighting
- Section 31 05 13-M – Common Fill
- Section 31 23 23-M – Backfilling for Structures
- Section 32 12 05-M – Bituminous Concrete
- Section 32 12 13.13-M – Tack Coat
- Section 32 12 16.13-M – Plant Mix Asphalt Paving
- Section 32 16 14-S – Curb Cut Assembly
- Section 32 16 24-S – Stamped Concrete
- Section 33 05 20-M – Backfilling Trenches
- Section 33 41 00-M – Storm Drainage Systems

2.2 APWA Manual of Standard Drawings – 2017 Edition

The drawings listed in the section below are adopted as standard drawings. Other plans in the APWA Manual of Standard Drawings may be used if proposed under specific circumstances.

2.2.1 APWA Adopted Standard Drawings:

Plan 205 – Type A Curb and Gutter

Plan 211 – Waterway

Plan 215 – Dip Driveway Approach

Plan 221 – Flare Driveway Approach – Type A

Plan 222 – Saw-cut Driveway Approach

Plan 231 – Sidewalk

Plan 251 – Asphalt Concrete Pavement Tie-In

Plan 302 – 30” Frame and Cover

Plan 308 – 35-1/2” Grate and Frame

Plan 315 – Catch Basin

Plan 381 – Trench Backfill

Plan 382 – Pipe Zone Backfill

Plan 802 – Defective Concrete – For application in areas with existing infrastructure adjacent to new development.

2.3 West Valley City Standard Drawings

The following standard drawings are available for download on the Engineering Division webpage.

WVC 213 – Waterway Transition Structure

WVC 232.1 – Patterned Concrete Park Strip

WVC 239 – Pedestrian Access Ramp Rolled Curb Transition

WVC 255 – Asphalt Concrete T-Patch

WVC 316 – Modified Storm Drain Combo Box

WVC 331 - Cleanout Box

WVC 762.1 – Asphalt Speed Table

WVC 762.2 – Concrete Speed Table

WVC 731 – Streetlight Junction Box Detail

WVC LP-01 – 40W LED Residential (10-9-2019)

WVC LP-02 – 40W LED Arterial Less than 80’ ROW (10-9-2019)

WVC LP-03 – 80W LED Arterial Over 80’ ROW (10-9-2019)

WVC LP-03A – Fairbourne Streetlight (10-9-2019)

WVC LP-04 – 80W LED 3500 South Double (10-9-2019)

WVC LP-05 – Sidewalk – Lake Park Pole LED (10-9-2019)

WVC LP-06 – Lake Park Median (10-9-2019)

WVC LP-07 – Industrial Standard (10-9-2019)

Part 3: Roadway Design

3.1 General Roadway Design Elements

3.1.1 Horizontal Alignment

1. Make horizontal alignments as direct as possible and consistent with topography.
2. Horizontal curves must meet AASHTO standards. Avoid minimum horizontal curve radii.
3. Avoid sharp curves at the end of long tangents.
4. Avoid short lengths on curves on small deflection angles of horizontal alignment.
5. Avoid compound circular curves with large difference in radii.
6. Avoid the use of “broken-back curves” (two curves in the same direction on either side of a short tangent or large radius curve).
7. Avoid the use of direct reverse curves. Use a tangent length between the curves.

3.1.2 Vertical Alignment

Vertical curves should be used to enable gradual changes between tangent grades. Crest and Sag Vertical Curves shall be governed by *K values* as shown in the latest edition of *AASHTO - A Policy on Geometric Design of Highways and Streets*. A *K* value of 167 shall not be exceeded on vertical curves that create a high point or low point for drainage purposes.

Design Speed	Maximum Algebraic Difference without Vertical Curve
Less than or equal to 30 mph	2.0%
Greater than 30 mph	1.0%

3.1.3 Longitudinal Street Grades

Longitudinal grades of streets without curb and gutter shall not be less than 0.5%.

Longitudinal grades of streets with curb and gutter is preferred to have a minimum of 0.5%, but no grade shall be less than 0.3%.

Maximum Grades: Longitudinal grades of streets shall not be greater than 5%. Any exception to this standard must be approved in writing by the City Engineer. No roadway will be approved with a longitudinal grade of 12% or greater.

3.1.4 Cross Slope

Street cross slope on new construction shall be 2%. When widening the shoulder on existing pavement maintain cross slope between 1% and 4%. It may be necessary to remove additional pavement to meet cross slope requirements.

3.1.5 Sight Stopping Distance

Sight distance requirements are as defined by the latest edition of *AASHTO - A Policy on Geometric Design of Highways and Streets*.

3.1.6 Design Speed

Local streets: 25 mph (lower design speeds may be considered on local urban streets with approval of the City Engineer)

Collector Streets: 40 mph

Arterial Streets: 45 mph

Any exception to this standard must be approved in writing by the City Engineer.

3.1.7 Intersection Design

Intersections should be designed with as much sight distance as possible, conforming to AASHTO design standards.

Roads may not intersect with an angle greater than 5° from perpendicular.

Intersection grades should be as flat as possible while still maintaining drainage.

Maximum grade for curb radii shall be 5%, with exceptions being approved by the City Engineer.

3.1.7.1 Intersection Spacing

Intersecting roads must be spaced according to the table below. Exceptions to this standard must be approved by the City Engineer.

Intersecting Road Spacing Measured from Centerline to Centerline	
Intersected Street Classification	Min. Centerline Offset
Minor Street/Minor Collector	150-feet
Collector	250-feet
Arterial	500-feet

3.1.7.1 Back of Curb Radius of Curb Returns

Back of curb curve radii for various intersecting street right-of-way widths are as shown in the following table (in feet).

		Right-of-Way Width (ft)				
		54	60	66	80	106
Right-of-Way Width (ft)	106	30	30	35	45	45
	80	25	25	35	40	
	66	25	25	30		
	60	25	25			
	54	25				

A larger radius than is shown in the table may be required in areas of higher truck turning volume, where a turning template indicates necessity.

3.1.8 Driveway Construction and Access Management

Driveway access to properties shall be per West Valley City Code 7-9-107 – Parking Lot Access.

Provisions for residential double Driveways – West Valley City Code 7-9-114

3.1.9 Dead End Roadways

Dead end roadways shall conform to West Valley City Code 7-13-705.

The maximum number of units for a single access street shall not exceed 30-single unit dwellings, or 100-multiple unit dwellings.

3.1.9.1 Cul-de-Sac Design:

Roadways must be terminated with a cul-de-sac, per West Valley City Code 7-13-705.

Cul-de-Sacs must be designed according to the following criteria:

Residential Streets:

- Radius at the Right-of-Way: 52 feet
- Radius at Top Back of Curb: 42 feet
- Radius at the Lip of Gutter: 39.5 feet

Commercial or Industrial Streets (66’ ROW or Greater)

- Radius at the Right-of-Way: 60 feet
- Radius at Top Back of Curb: 50 feet
- Radius at the Lip of Gutter: 47.5 feet

A larger radius may be required in areas of anticipated high-volume use or as determined by the City Engineer.

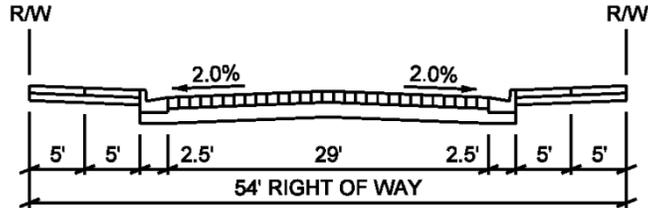
3.1.9.1.1 Maximum cul-de-sac length

The maximum length of a cul-de-sac is 750-feet, as measured along the centerline from the right-of-way line of the connecting street to the point of curvature on the radius entering the cul-de-sac.

3.2 Typical Section Elements

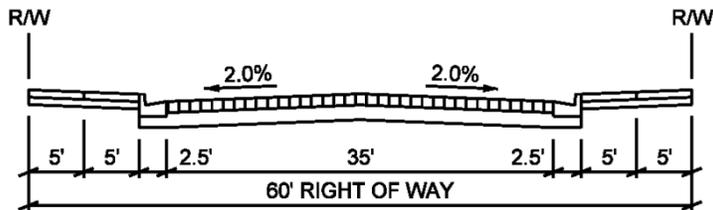
3.2.1 Subdivision Street Sections

3.2.1.1 54 foot ROW - Minor Street – 29 feet of pavement

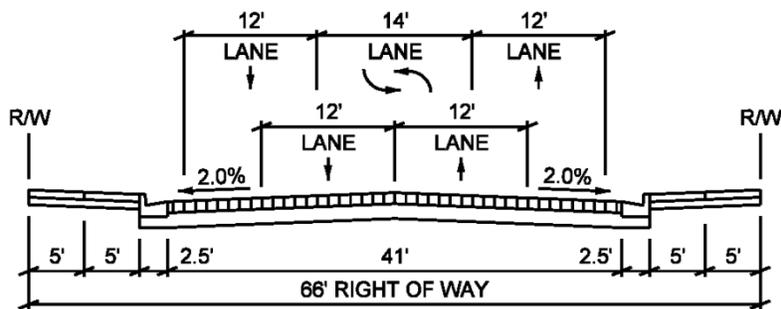


A 44 foot right-of-way road section without park strip may be allowed in certain infill development circumstances, with approval of the City Engineer.

3.2.1.2 60 foot ROW - Minor Collector Street Section – 35 feet of pavement

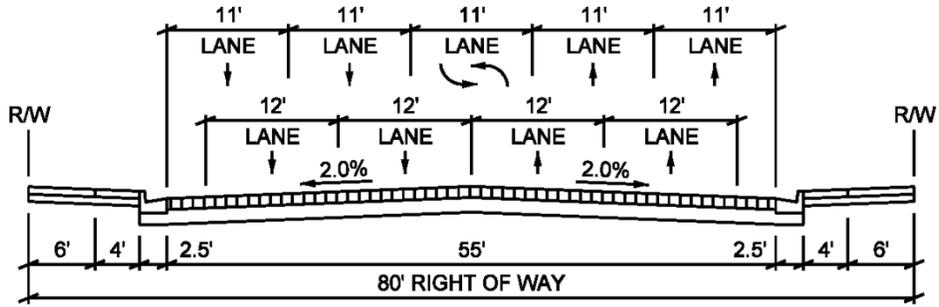


3.2.1.3 66 foot ROW - Collector Section – 41 feet of pavement



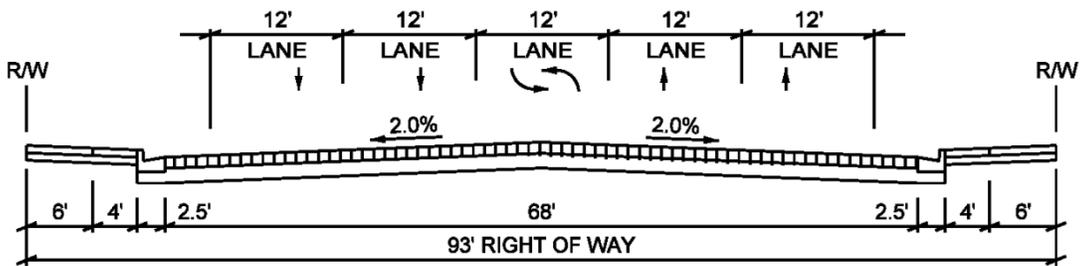
3.2.1.4 80 foot ROW - Minor Arterial Section – 55 feet of pavement

For use on existing 80-foot rights of way.

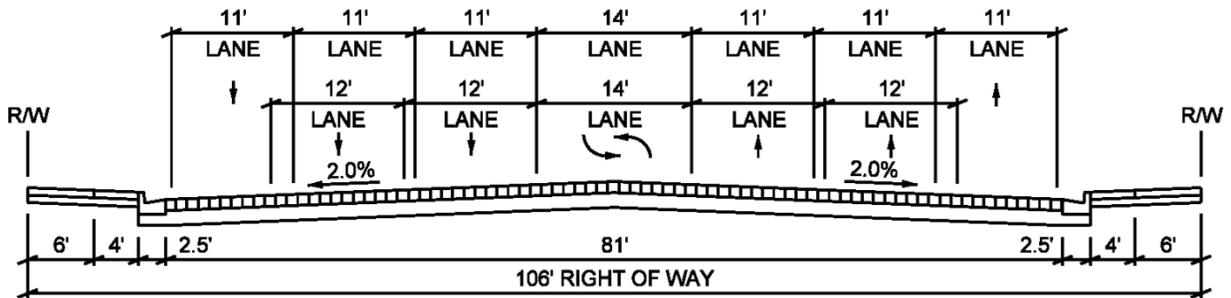


3.2.1.5 93 foot ROW – Minor Arterial Section 68 feet of pavement

For use on new minor arterial roadways.



3.2.1.6 106 foot ROW - Major Arterial Section – 81 feet of pavement



3.2.2 Bike Lanes

Streets on the City Bike Plan – Class 2 Bike Lanes – Add a minimum of 8 feet of total pavement width (to allow for one 4-foot bike lane on each side of the street). The Bike Plan is part of the West Valley City General Plan; *Vision West 2035*, under the Transportation Chapter, and can be found on the City’s Website.

<http://www.wvc-ut.gov/450/General-Plan>

3.2.3 Curb and Gutter, Sidewalk

Curb and Gutter is required on all streets. Curb and Gutter to be per APWA Plan 205, Type A (30-inch). Other types of curb and gutter may be considered in unique instances but must be approved by the City Engineer.

Sidewalks on arterial streets shall not be less than 6-feet in width. (West Valley City Code 7-19-805, (5), b.)

Pedestrian Access Ramps are required at all intersections and mid-block crosswalks. Any exceptions must be approved by the City Engineer. WVC has adopted the Utah Department of Transportation (UDOT) standards for pedestrian access ramps. The UDOT Standard Drawings shall be used to design and construct all pedestrian access ramps within WVC. Each ramp will be evaluated utilizing the “UDOT Pedestrian Access Evaluation Form C170” to ensure ADA requirements are met. Each pedestrian ramp is required to pass this evaluation prior to acceptance by WVC.

In residential areas, sidewalks through the drive approach must be 6-inches thick, as shown on APWA Plan 215, and 221. Sidewalks in subdivisions with a park strip are to be constructed per APWA 231, 4-inches thick. In residential subdivisions where the locations of drive approaches are not known at the time of the sidewalk construction, the developer may choose either to construct all sidewalk 6-inches thick, or to remove 4-inch thick sidewalk through the driveway and replace with 6-inch thick sidewalk. Sidewalk is to be 8-inches thick through the driveway in commercial or industrial areas.

In areas where walls are required in double frontage lots or other scenarios, patterned colored concrete will be required in the park strip. See Section 6.9.3 for requirements.

In general, sidewalk should be placed with a 2% cross slope draining toward the street. The elevation of the sidewalk is determined by projecting up 2% through the park strip from the top back of curb elevation. If a cross slope through the park strip greater than 2% is necessary, a design exception must be given.

3.3 Pavement Design

3.3.1 Rigid Pavement

3.3.1.1 Minimum Rigid Pavement Section

Portland Cement Concrete Pavement (PCCP) designs should be prepared by a geotechnical engineer and approved by the City Engineer.

Pavement designs will include load transfer bars at each joint aligned with the wheel path.

3.3.2 Flexible Pavement

3.3.2.1 Minimum Pavement Section

As part of the subdivision approval process, a soils report is required to be prepared by a Professional Engineer, specializing in geotechnical engineering and soil mechanics. The soils report must include pavement section recommendations using generally accepted engineering practices and methods. The soils report must include a CBR value for existing subgrade soils under proposed pavements. Absence of CBR data will require all roads be built to the standard below for *Collector or Greater*, with *Very Poor* Subgrade Class, regardless of street classification.

The minimum pavement sections are shown in the table below.

Subgrade Class	Pavement Section	Street Classification (as defined in West Valley City Code 7-13-705)		
		Minor Street	Minor Collector	Collector or Greater (66' ROW +)
Very Poor (CBR<3)	Asphalt Pavement	3.5-inches	4-inches	6-inches
	Untreated Base Course – Grade 1, or 1-1/2	8-inches	8-inches	10-inches
	Granular Borrow	10-inches	10-inches	12-inches
	Non-woven Geotextile Fabric Required	Yes	Yes	Yes
Poor (CBR 3-9)	Asphalt Pavement	3-inches	3.5-inches	6-inches
	Untreated Base Course – Grade 1, or 1-1/2	12-inches	12-inches	14-inches
	Granular Borrow	0	0	0
	Non-woven Geotextile Fabric Required	No	No	No
Medium CBR>9	Asphalt Pavement	3-inches	3.5-inches	6-inches
	Untreated Base Course – Grade 1, or 1-1/2	8-inches	8-inches	10-inches
	Granular Borrow	0	0	0
	Non-woven Geotextile Fabric Required	No	No	No

3.3.2.2 Seal Coat After Warranty Period

A seal coat treatment per APWA 32 01 13.52 or 32 01 13.68 is required to be placed on asphalt pavements on development projects at the end of the warranty period and final release of the bond.

3.4 Traffic Issues

3.4.1 Traffic Impact Studies

A traffic impact study may be required by the City and must be prepared by a registered Professional Engineer. The traffic study shall include an analysis of on-site circulation, capacities of existing streets, number of additional trips which will be generated, origin/destination studies and peak home traffic generation and movements. West Valley City Code 7-14-106.

3.4.2 Traffic Calming in Residential Neighborhoods

New residential developments must evaluate with the Public Works Department the need for neighborhood traffic calming devices to be installed with the subdivision roadway improvements.

Traffic calming speed tables may be required on residential roadways (66' ROW or less) that exceed 750 feet in length. Developer's engineer to recommend locations of traffic calming devices.

3.5 Roadway Lighting

Per West Valley City Code 7-13-803, streetlights are required to be installed in all new developments.

3.5.1 Streetlight Standards

3.5.1.1 General

The Developer shall incur all costs for and provide trenching in which subsurface electrical lines may be installed to power the street lighting system as shown on the development plans or subdivision plats. Trenching shall be to the depth, width and standards specified by West Valley City.

Components of the street lighting system shall follow the West Valley City special provisions and standard drawings.

The Developer shall purchase the streetlight assemblies and shall provide materials, equipment and labor necessary to install a complete and operable street lighting system as shown on the development plat.

See Streetlight Assembly Drawings in West Valley City Standard Drawings.

The Developer shall schedule a preconstruction meeting with West Valley City Transportation Division, (801-955-3726), prior to any part of construction of the streetlight system for review of the extent of the project and responsibilities of both parties. Failure to comply will result in rejection and delay of project.

3.5.1.2 Streetlight Placement

Streetlights shall be placed on alternating sides of the street at 200 feet maximum for roads of less than 60 feet of right-of-way and at 150 feet maximum for roads of greater than or equal to 60 feet of right-of-way.

Streetlights shall be placed at each road intersection and at the end of each cul-de-sac.

Sidewalk lights shall be located behind the sidewalk and spaced as defined in Title 7.

The developer shall show streetlight locations on all residential, commercial, and industrial development plans or plats. Streetlights should be placed at the intersection of lot line boundaries to avoid unnecessary obstruction along the property frontage. The Transportation Engineer may require additional or fewer

streetlights at his discretion. Additional streetlights may be required in locations where safety hazards or special traffic needs exist.

3.5.1.3 Required Notes on Streetlight Plan

1. All street lighting work shall be performed in accordance with the West Valley City Street Lighting Standards and the APWA Standard Plans and Specifications.
2. Electrical contractor shall contact West Valley City at 801-955-3726 prior to commencement of construction.
3. Contractor shall be responsible to inspect poles and fixtures upon delivery to the job site and to protect the same from damage until installation is complete and lighting system is accepted by West Valley City.
4. Contractor shall be responsible to coordinate construction of lighting system with Rocky Mountain Power and West Valley City. Confirm final location of Rocky Mountain Power transformers or secondary boxes before starting construction.
5. All Light poles, fixtures, junction boxes, transformers or secondary boxes, underground conduit and wiring shall be placed only within the public street right-of-way and/or designated public utility easement. All underground work shall be completed and inspected prior to construction of permanent roadway, sidewalk, and curb and gutter.
6. All aspects of street lighting installation shall be inspected by West Valley City. Call West Valley City Transportation Division at 801-955-3726 to schedule inspections at least 24 hours in advance. Two (2) inspections will be required. One (1) pole and underground installation, and one (1) Final inspection after system installation is completed.
7. Anticipate 12 weeks for delivery of streetlight assemblies from manufacturer.

3.5.1.4 Streetlight ID Number

West Valley City Engineering Division will assign Streetlight Identification Numbers to be shown on the street lighting plans after the light location has been established.

3.5.2 Street Lighting Standard Drawings

Refer to Standard Drawing section in this document for streetlight standard drawings.

3.5.3 Streets with Specific Lighting Requirements per West Valley City Code

Lehman Avenue (West Valley City Code 7-6-406)

Market Street (West Valley City Code 7-6-407)

Constitution Blvd (West Valley City Code 7-6-408)

3500 South – City Center (West Valley City Code 7-6-408)

3650 South (West Valley City Code 7-6-409)

Weigh Station Road and Three Mill Lane (West Valley City Code 7-6-410)

3300/3500 South east of 2700 West, Redwood Road, and 5600 West between 2100 South and 3100 South (West Valley City Code 7-10-200P)

3500 South Streetscape – Between 2700 West and Bangerter Highway (West Valley City Code 7-10-300P)

Part 4: Drainage Design Standards

The following standards apply to new development, redevelopment or construction activities as described below within West Valley City.

4.1 Drainage Design Requirements

The objective of drainage design in the city is to address flood control and water quality impacts of land development activities.

4.1.1 Retention and Detention Standards

4.1.1.1 Land Disturbance Threshold

Certain development or land disturbance projects will be required to meet various requirements in these engineering standards if the following threshold is met:

Any projects that disturb land greater than or equal to one acre, including projects that are part of a larger common plan of development or sale which collectively disturbs land greater than or equal to one acre (i.e., lots within a subdivision).

This threshold will be referred to as the “Land Disturbance Threshold”. Retention Requirement

As directed by the Jordan Valley Municipalities MS4 Permit UTS000001, certain projects meeting the Land Disturbance Threshold are required to retain all or a portion of the *80th Percentile Storm Rainfall Depth* onsite using various low impact development techniques.

4.1.1.2 80th Percentile Storm Rainfall Depth

The following depth shall be used as the *80th Percentile Storm Rainfall Depth for all locations in West Valley City*:

0.43 inches

0.0358 feet

The *80th Percentile Storm Rainfall Depth* for West Valley City was determined using precipitation data from the Salt Lake City International Airport.

4.1.1.3 Retention Requirement on New Development

As directed by the Jordan Valley Municipalities MS4 Permit UTS000001, part 4.2.5.1.2, any new development projects meeting the “Land Disturbance Threshold” must manage rainfall on-site, and prevent the off-site discharge of the precipitation from all rainfall events less than or equal to the 80th percentile rainfall event or a **predevelopment hydrologic condition**, whichever is less.

This objective must be accomplished using practices that are designed, constructed, and maintained to infiltrate, evapotranspire and/or harvest and reuse rainwater.

4.1.1.4 Retention Requirement on Redevelopment

As directed by the Jordan Valley Municipalities MS4 Permit UTS000001, part 4.2.5.1.2, redevelopment projects meeting the “Land Disturbance Threshold” must provide a site-specific and project-specific plan aimed at net gain to onsite retention or a reduction to impervious surface to provide similar water quality

benefits. If a redevelopment project increases the impervious surface by greater than 10%, the project shall manage rainfall on-site, and prevent the off-site discharge of the net increase in the volume associated with the precipitation from all rainfall events less than or equal to the 80th percentile rainfall event. This objective must be accomplished using practices that are designed, constructed, and maintained to infiltrate, evapotranspire and/or harvest and reuse rainwater.

4.1.1.5 Low Impact Development (LID) Design

LID is an approach to land development (or re-development) that works with nature to more closely mimic pre-development hydrologic functions. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat storm water as a resource rather than a waste product. There are many practices that have been used to adhere to these principles such as bio-retention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements. By implementing LID principles and practices, storm water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within a watershed.

LID design methods should be used to meet the *Retention Requirements* above. Design methods within *A Guide to Low Impact Development within Utah*, published by the Utah Department of Environmental Quality, Division of Water Quality, may be used to meet LID objectives.

The Retention Requirement storage areas may not be altered in the future without a re-submittal of the Low Impact Development Analysis.

4.1.1.5.1 Project Volume Retention Goals

Compliance with the *Retention Requirements* will require a project to establish and meet a Project Volume Retention Goal.

The Project Volume Retention Goal (V_{goal}) for new development is the product of the total area of the development (in square feet), the 80th percentile precipitation depth in feet and a volumetric runoff coefficient (R_v).

Methods for calculating the Volumetric runoff coefficient (R_v) can be found in *A Guide to Low Impact Development within Utah*. The Drainage Report must include Project Volume Retention Goal calculations.

4.1.1.5.2 Recommended LID Best Management Practices

The following BMPs may be considered for use in an LID implementation; additional information can be found in *A Guide to Low Impact Development within Utah*.

- Pervious surfaces in private parking areas or private sidewalks
- Rainwater harvest and reuse
- Rain Garden
- Bioretention Cell
- Bioswale
- Vegetated Strip
- Tree Box Filter

- Infiltration Basin
- Infiltration Trench
- Dry Well
- Underground Infiltration Galleries
- Minimize impervious area on the site
- Preserve natural areas undisturbed
- Reduce directly-connected impervious area, using landscaped areas to capture and store runoff from roof drains or drive/parking areas

4.1.1.5.2.1 Rainwater Harvesting

Since 2010, rainwater harvesting is legal in the State of Utah. If rainwater harvesting and onsite beneficial use is planned as a Low Impact Development technique, registration and other requirements of the Utah Division of Water Rights must be met.

<http://waterrights.utah.gov/forms/rainwater.asp>

4.1.1.5.2.2 Residential BMPs

Residential BMPs should be selected to meet *Project Volume Retention Goals*

Storm water runoff is not to be stored in the public right-of-way.

4.1.1.5.2.3 Commercial BMPs

Commercial BMPs should be selected to meet *Project Volume Retention Goals*

Storm water runoff is not to be stored in the public right-of-way.

4.1.1.5.3 LID Technical Resources

The following sites are potential technical resources for use in the preparation of a Low Impact Development (LID) Analysis.

Utah DEQ - A Guide to Low Impact Development within Utah

<https://documents.deq.utah.gov/water-quality/stormwater/updes/DWQ-2019-000161.pdf>

Utah DEQ Low Impact Development Resources

<https://deq.utah.gov/water-quality/low-impact-development>

EPA Green Infrastructure Resources

<http://water.epa.gov/polwaste/green/index.cfm>

4.1.1.6 Retention Standard Feasibility

It is recognized that certain Low Impact Development BMPs are not feasible in soils of low permeability or in areas with high ground water. Infiltration may be less desirable in areas where retention and/or use of storm water onsite or discharge of storm water onsite via infiltration has a significant adverse effect on the site or the down gradient water balance of surface waters, ground waters or receiving watershed ecological processes. The location of underground utilities should also be considered when analyzing

certain LID BMPs. Feasibility of LID techniques will be assessed within the Drainage Report submitted with each new development or re-development project.

If meeting the retention standards is infeasible, a rationale shall be provided for the use of alternative design criteria. The new development or redevelopment project must document and quantify that infiltration, evapotranspiration, and rainwater harvesting have been used to the maximum extent feasible and that full employment of these controls are infeasible due to constraints. LID infeasibility may be due to one or more of the following conditions: high groundwater, drinking water source protection areas, soil conditions, slopes, accessibility, excessive costs, or others.

4.1.1.7 Retention Only Areas

In some areas of the city (as shown on the Engineering Division Storm Water Release Rate Map) there is no public storm drain system available to receive site runoff, and offsite discharge is not allowed. In these areas, complete storm water retention is required. LID practices and/or ponds are to be sized to store the entire runoff volume of a 100-year 24-hour storm (assume no percolation).

4.1.1.8 Detention Requirement

Storm water detention is required in various locations within the city (as shown on the Engineering Division Storm Water Release Rate Map) to control system wide flood peaks, by capturing storm water onsite and releasing into the city system at a controlled reduced rate.

After the Project Volume Retention Goal has been established, the peak offsite discharge will be limited to the allowable release rate shown on the Engineering Division Storm Water Release Rate Map (see Appendix of these standards). The City Engineer has the latitude to modify the release rate for any given development parcel depending on the capacity of the local storm drain system.

Total onsite runoff storage must contain the required detention storage volume with 1-foot of freeboard. Project Volume Retention Goal may be counted among the required detention storage volume. Detention storage volumes required will be calculated based on the allowable release rate.

Detention calculations should be based on a 10-year storm. Modified Rational Based FAA Method may be used to calculate required detention. Other detention basin sizing methods may be used, together with an approved rainfall distribution.

4.1.1.9 On-Site Storm Water Storage Requirements

Project Volume Retention Goal storage must infiltrate into the soil within 72 hours. Open air ponds with stagnant standing water on soils of low permeability will not be allowed. Project Volume Retention Goal shall be stored in multiple small volume areas to avoid concentration of water into centralized locations.

Storm water detention volume and Project Volume Retention Goal water may be stored in detention basins, parking areas, landscaped areas (where allowed in Title 7), or underground in pipes or storage chambers. Underground storage using open-bottom chambers and open pond retention storage will require detail drawings and an evaluation of sub-surface conditions (water table, soil type, etc...) to demonstrate infiltration feasibility. Outfall pipes of any conveyance offsite will be placed in a manner to prevent the offsite discharge of the Project Volume Retention Goal storage.

4.1.2 Water Quality Standards

4.1.2.1 Pollutant Removal Requirements

A Drainage Report will include a summary of potential pollutants that could be generated from the site after construction stabilization has occurred. The Drainage Report will include structural and non-structural BMPs that will be included on the site to prevent the discharge of potential pollutants.

Potential pollutants from certain site operations are shown in the table below. This is not a comprehensive list.

Potential Pollutants from Various Site Operations					
Pollutant of Concern	Vehicle Operations	Waste Management	Site Maintenance Practices	Outdoor Materials	Landscaping
Nutrients (Nitrogen and Phosphorous)			X	X	X
Pesticides			X	X	X
Solvents			X	X	
Fuels			X	X	
Oil and grease	X			X	
Toxic chemicals		X		X	
Sediment		X	X	X	X
Road salt			X	X	
Bacteria		X			X
Trace metals	X			X	
Hydrocarbons	X			X	

Projects involving vehicle fueling should include BMPs designed to capture hydrocarbons. Projects must include the ability to isolate and store potential high-volume spills on-site.

BMPs selected for use on a project must be included in the Post-Construction (Long Term) Storm Water Management Plan, along with maintenance plans. See section on Drainage Related Permitting in these standards for more information on the Storm Water Management Plan requirements.

4.1.2.2 Non-Structural BMPs

New development and redevelopment projects should evaluate non-structural BMPs to minimize development in areas susceptible to erosion and sediment loss; to minimize the disturbance of native soils and vegetation; to preserve areas that provide important water quality benefits; and to protect the integrity of natural resources and sensitive areas. This evaluation should be included in the drainage report.

4.1.2.3 Other Water Quality Measures

Grease interceptors on sanitary sewer service lines should be located within a depressed landscaped area where feasible to prevent overflows from entering the storm drain system.

4.1.3 Design Storms – Precipitation Depths

The following design storms are for use in determining peak discharge and detention storage requirements.

A design storm is shown below for areas below an elevation of 4500 feet, and above an elevation of 4500 feet. The storm data is established from a NOAA Atlas 14 – Point Precipitation Frequency Estimate from representative areas.

DESIGN STORM FOR AREAS BELOW 4500 FEET IN ELEVATION								
	NOAA Atlas 14 Point Precipitation Frequency Analysis (Depth and Intensity) - For use in areas BELOW 4500 feet.							
	1-Year		2-Year		10-Year		100-Year	
	Depth	Intensity	Depth	Intensity	Depth	Intensity	Depth	Intensity
5-min	0.12 in	1.44 in/hr	0.15 in	1.81 in/hr	0.26 in	3.12 in/hr	0.52 in	6.28 in/hr
10-min	0.18 in	1.10 in/hr	0.23 in	1.38 in/hr	0.40 in	2.38 in/hr	0.80 in	4.78 in/hr
15-min	0.23 in	0.91 in/hr	0.29 in	1.14 in/hr	0.49 in	1.96 in/hr	0.99 in	3.95 in/hr
30-min	0.31 in	0.61 in/hr	0.39 in	0.77 in/hr	0.66 in	1.32 in/hr	1.33 in	2.66 in/hr
60-min	0.38 in	0.38 in/hr	0.48 in	0.48 in/hr	0.82 in	0.82 in/hr	1.65 in	1.65 in/hr
2-hr	0.49 in	0.24 in/hr	0.61 in	0.30 in/hr	0.96 in	0.48 in/hr	1.82 in	0.91 in/hr
3-hr	0.57 in	0.19 in/hr	0.70 in	0.23 in/hr	1.04 in	0.35 in/hr	1.85 in	0.62 in/hr
6-hr	0.73 in	0.12 in/hr	0.89 in	0.15 in/hr	1.25 in	0.21 in/hr	1.97 in	0.33 in/hr
12-hr	0.90 in	0.08 in/hr	1.10 in	0.09 in/hr	1.52 in	0.13 in/hr	2.32 in	0.19 in/hr
24-hr	1.06 in	0.04 in/hr	1.30 in	0.05 in/hr	1.75 in	0.07 in/hr	2.48 in	0.10 in/hr

DESIGN STORM FOR AREAS ABOVE 4500 FEET IN ELEVATION								
	NOAA Atlas 14 Point Precipitation Frequency Analysis (Depth and Intensity) - For use in areas ABOVE 4500 feet.							
	1-Year		2-Year		10-Year		100-Year	
	Depth	Intensity	Depth	Intensity	Depth	Intensity	Depth	Intensity
5-min	0.12 in	1.49 in/hr	0.16 in	1.88 in/hr	0.27 in	3.23 in/hr	0.53 in	6.41 in/hr
10-min	0.19 in	1.13 in/hr	0.24 in	1.43 in/hr	0.41 in	2.46 in/hr	0.81 in	4.88 in/hr
15-min	0.23 in	0.94 in/hr	0.30 in	1.18 in/hr	0.51 in	2.03 in/hr	1.01 in	4.04 in/hr
30-min	0.32 in	0.63 in/hr	0.40 in	0.80 in/hr	0.68 in	1.37 in/hr	1.36 in	2.72 in/hr
60-min	0.39 in	0.39 in/hr	0.49 in	0.49 in/hr	0.85 in	0.85 in/hr	1.68 in	1.68 in/hr
2-hr	0.49 in	0.25 in/hr	0.62 in	0.31 in/hr	0.98 in	0.49 in/hr	1.84 in	0.92 in/hr
3-hr	0.58 in	0.19 in/hr	0.71 in	0.24 in/hr	1.06 in	0.35 in/hr	1.88 in	0.63 in/hr
6-hr	0.75 in	0.12 in/hr	0.92 in	0.15 in/hr	1.29 in	0.22 in/hr	2.03 in	0.34 in/hr
12-hr	0.94 in	0.08 in/hr	1.14 in	0.10 in/hr	1.58 in	0.13 in/hr	2.40 in	0.20 in/hr
24-hr	1.14 in	0.05 in/hr	1.40 in	0.06 in/hr	1.91 in	0.08 in/hr	2.71 in	0.11 in/hr

4.1.4 Storm Drain Design for Publicly Owned Systems

4.1.4.1 Pipe Sizing

All pipes in the public storm drain system are to be sized to pass the peak flow on a 10-year storm without pressurizing. Peak flow shall be determined after runoff has been calculated using an approved rainfall distribution through time, addressed in the section below.

Minimum pipe size in the public right-of-way is 15-inch. Exceptions must be approved by the City Engineer. Pipe sizing calculations must be prepared by a Professional Engineer.

4.1.4.2 Rainfall Distribution

To compute runoff from a given storm, the distribution of rainfall through time must be known. Critical rain events in the region occur as cloudburst storms, with short durations of high intensity of rainfall. In sizing pipes, use a rainfall distribution reflecting these cloudburst rainfall events.

Options for a rainfall distribution could include a transformed SCS Type II distribution, or a Salt Lake County modified “Farmer-Fletcher” Distribution.

4.1.4.3 Minimum Velocity

Maintain a minimum velocity of 2.5 feet per second in all gravity pipe culverts, assuming the pipe is flowing full. Exceptions must be approved by the City Engineer.

4.1.4.4 Pipe Type

All storm drains or irrigation pipe in the public right-of-way shall be reinforced concrete pipe. Class of pipe is determined from recommendations of pipe manufacturers, based on soil type, depth of cover and loads.

Storm drain pipes (city-owned) located outside of the public right-of-way are required to be reinforced concrete pipe. Other pipe types may be considered for a specific application and must be approved by the City Engineer.

4.1.4.4.1 Video Inspection

A video inspection of all city-owned storm drain pipe is required at the expense of the developer or permit holder for the city to process the 90% Bond release.

4.1.4.5 Storm Drain Boxes

Storm Drain Cleanout Boxes shall be per the West Valley City Storm Drain Cleanout Box standard detail.

Other Storm Drain Boxes (Catch Basins, and Combination Catch Basin/Cleanout Boxes) shall be per APWA 315 and 316.

Thin walled “knock-out” boxes are not approved for use in the public right-of-way.

Deviations from this standard must be approved by the City Engineer.

4.1.4.5.1 Storm Drain Layout Principles

4.1.4.5.1.1 Use of Waterways or Cross-Gutters

In general, avoid the use of waterways or cross-gutters. No mid-block waterways are allowed. Waterways are not allowed at intersections of streets of right-of-way widths of 66-feet or larger. Any exception must be approved by the City Engineer.

4.1.4.5.1.2 Silt Traps

In general, do not install silt traps in each catch basin. Install silt traps in selected cleanout boxes at strategic locations designed to maximize the amount of sediment that can be cleaned from a single box.

4.1.4.5.1.3 Cleanout Spacing

Do not exceed 300 feet between cleanout access. Exceptions must be approved by the City Engineer.

4.1.4.5.1.4 Inlet Spacing

Drainage inlets are sized and located to limit the spread of water into traffic lanes. The following table summarizes allowable spread of water under various conditions.

Gutter Spread Design Criteria			
Roadway Classification		Design Frequency	Allowable Spread
Subdivision Streets		10-Year	Gutter + 6-feet
Collector	< 45 mph	10-Year	Gutter + 6-feet
	Sag Point	10-Year	Gutter + 3-feet
Arterial (ROW > than 66')	< 45 mph	10-Year	Gutter + 3-feet
	Sag Point	50-Year	Gutter + 6-feet

The Rational Method is an acceptable method for calculating momentary peak-flow rate for use in spread calculations.

4.2 Drainage Report Requirements

All new development and redevelopment sites must submit a drainage report, stamped by a Professional Engineer addressing items in this section.

4.2.1 Drainage Report Requirements – Plan Elements

Drainage Report should contain all relevant drainage data and calculations. Include a narrative describing hydrologic methodology and software used to determine runoff, routing, and other applicable information.

Complete layout of storm drainage system is required as part of the Drainage Report. Show drainage areas that will contribute to storm flows, both on-site and off-site. Provide data indicating cumulative pipe flows and full flow capacities for each segment of pipe. Each pipe segment is to be labeled with length, pipe material type, diameter and slope. Provide arrows indicating the flow direction of each pipe.

4.2.2 Drainage Report Requirements – Low Impact Development Evaluation

Drainage report must include a thorough evaluation of Low Impact Development techniques, and a rationale for the use of alternative design criteria on sites where retention/LID standards are infeasible must be included in the Drainage Report. The new or redevelopment project will be required to document

and quantify that infiltration, evapotranspiration and rainwater harvesting have been used to the maximum extent feasible.

Evaluate new development and redevelopment sites to determine if they are susceptible to erosion and sediment loss. Include BMPS to address erosion including preserving natural vegetation if feasible for the site. Natural Vegetation should not be completely removed from sites until required for construction. If mass grading is needed for the project, include alternative BMPs structural and nonstructural for erosion prevention/reduction.

The Low Impact Development Evaluation on redevelopment projects will address the net reduction of site runoff volume or reduction to impervious surfaces on the project. A Low Impact Development Evaluation must include calculations to determine if the Project Volume Retention Goal has been met if the impervious surface is increased by 10%.

4.2.3 Drainage Report Requirements – Retention Requirement Calculations

Drainage reports are to include Project Volume Retention Goal calculations and show retention storage locations.

4.2.4 Drainage Report Requirements – Detention Calculations

Drainage reports are to include peak discharge and detention storage calculations.

4.2.5 Drainage Report Requirements – Water Quality and Targeted Pollutants

Drainage reports are to include an evaluation of proposed land use and identify and target potential pollutants that will be generated in the long-term use of the project.

Drainage reports should address the following:

- BMP selection rationale. Discuss how long-term storm water BMPs were selected, and how they will protect water quality and reduce the discharge of pollutants to the city’s drainage system.
- The pollutant removal expected from the selected BMPs
- The technical basis which supports the performance claims for the selected BMPs

4.2.6 Drainage Report Requirements - Hydrologic analysis

Include a hydrologic analysis used to design the system.

4.2.7 Drainage Report Requirements - Pipe sizing calculations

Drainage reports to include pipe sizing calculations, inlet spacing and gutter spread calculations.

4.3 Drainage Related Permitting

4.3.1 Storm Water Management Permits

A project will be required to obtain a West Valley City *Storm Water Management Permit* if the proposed work meets the requirements of Title 18-2-101 or 18-7-106 (largely based on area of disturbed soil). The *Storm Water Management Permit* addresses two separate components of storm water quality and is issued as two separate permits. The first component of the *Storm Water Management Permit* covers construction activities, and the second covers the post-construction (long term) storm water management of a proposed development, re-development, or other improvements. The construction *Storm Water*

Management Permit may be issued prior to full plan approval to allow for early site grading. The post-construction *Storm Water Management Permit* must be completed prior to issuance of a building permit or other type of permit.

Application for stormwater permits is made through the West Valley City Permitting and Licensing Portal. <https://pllportal.wvc-ut.gov/portal>

4.3.1.1 Construction Period Storm Water Management Permit

Address the following requirements to obtain a Construction Period Storm Water Management Permit.

4.3.1.1.1 Storm Water Pollution Prevention Plan (SWPPP)

Prepare a site-specific Storm Water Pollution Prevention Plan (SWPPP) for any site requiring a Construction Period Storm Water Management Permit. The SWPPP shall be prepared by a competent professional with experience in developing SWPPPs.

4.3.1.1.2 SWPPP Preparation Guidelines

The following are some of the resources available for use in the preparation of a Storm Water Pollution Prevention Plan:

DWQ SWPPP Template, and other guides – available on the Utah Department of Environmental Quality - Division of Water Quality website, under “Construction Activities”

4.3.1.1.3 NOI Required

A Utah State Notice of Intent (NOI) is required whenever a project meeting the “Land Disturbance Threshold” has been met. Application for NOI obligates the project to comply with all requirements contained in the UPDES General Permit for Discharges from Construction Activities (UTRC00000).

West Valley City storm water permits will not be issued until a copy of the NOI has been submitted to the Engineering Division.

4.3.1.1.4 NOI on Lots Smaller than One Acre

An NOI is also required on lots smaller than one acre when that lot is part of a common plan of development larger than one acre. An NOI will only be required on these smaller lots when the larger development has been stabilized, and when the NOT (Notice of Termination) has been issued for the larger common plan of development.

Construction on lots smaller than one acre which are part of a larger common plan of development will require a storm water pollution prevention plan, and a West Valley City Construction Storm Water Permit.

4.3.1.1.5 West Valley City Construction Storm Water Permit Required on All Projects

A West Valley City Storm Water Construction Permit is required on all construction projects, regardless of disturbance area.

4.3.1.1.6 Permit Application

Construction period Storm Water Management Permits are obtained through the West Valley City Permitting Portal

<https://pllportal.wvc-ut.gov/portal>

4.3.1.2 *Post Construction Storm Water Management Permit*

4.3.1.2.1 Storm Water Management Plan (SWMP)

All new development and redevelopment projects are required to develop a Storm Water Management Plan. Using the *Guidance Document for Storm Water Management* or other resources, prepare a Post-Construction (Long Term) Storm Water Management Plan (SWMP) to address long term storm water quality issues. SWMP must address the treatment of potential pollutant sources (as identified in the drainage report) from the proposed land use, BMPs to address the potential pollutants, maintenance practices of proposed BMPs, employee training, landscape maintenance, waste disposal and any other long term practice that will be required to maintain quality storm water runoff.

The SWMP will become part of the Storm Water Management Permit and annual post-construction inspections will be performed by the Engineering Division to ensure compliance with the requirements of the permit. **The SWMP is best prepared by the property owner, as they will be required to implement the plan in perpetuity.**

4.3.1.2.1.1 *Storm Water Management Template*

Commercial/Industrial Best Management Practices (BMPs) are those measures and/or practices to be maintained by the property owner or operator to prevent illicit discharges, pollutants, and other contaminants from entering the City storm water system. These measures and practices are to be implemented upon completion of construction activities, to be conducted and maintained in perpetuity.

A template for the Long-Term Stormwater Management Plan can be downloaded from the West Valley City Webpage: <http://www.wvc-ut.gov/785/Development-Section>

4.3.1.2.1.2 *Permit Application*

Long Term Storm Water Management Permits are obtained through the West Valley City Permitting Portal. <https://pllportal.wvc-ut.gov/portal>

Part 5: Development Review

The following standards apply to all new development or redevelopment projects.

5.1 Development Plan Set Submittal Requirements

5.1.1 Digital Plan Submittal

Plans may be submitted electronically through the West Valley City Permitting and Licensing Portal.
<https://pllportal.wvc-ut.gov/portal>

Plans should be submitted as pdf files formatted to print to scale on a standard paper size.

5.1.2 Subdivisions

5.1.2.1 Subdivision Plan Elements

Engineering drawings should include the following:

- Cover sheet with vicinity map and a sheet index
- Subdivision plat. (Subdivision plans must be approved prior to final approval of plat)
- Site Plan
- Street Plan
 - Show existing and proposed improvements on opposite and adjacent frontages
 - Show plan and profile of streets, including sidewalk, curb and gutter
 - Include TBC and Centerline stations and elevations to be shown at 50' intervals and at all PC, PT, PRC, PVI, BVC and EVC locations
 - Vertical curve stations and elevations to be shown at 25' intervals
 - Pavement section shall be per soils report recommendations or West Valley City standards, whichever is greater
 - Include storm drain improvements in both plan and profile views. Label size, type, slope and length of each segment (minimum 15" RCP required within public right-of-way)
 - Show all monuments to be installed, include monument to monument bearings and distances
 - Include north arrow, scale and legend (horizontal scale to be 1"=20')
 - Reference plans to specific APWA standard plans and WVC standards
- Grading and drainage plan with drainage calculations (see Storm Water Design Requirements).
 - Subdivision grading plans shall conform to West Valley City Code 7-2-116, and 7-13-102, 7-13-805.
 - On drainage plan, reference Drainage Report completed for the project
 - Final grading of individual lots shall be performed in such a way that excess water shall be contained entirely on the site or directed to an improved street or directed to an approved drainage inlet, drainage channel or drainage easement. Excess water shall not be allowed to drain onto adjacent private property unless approved as part of an overall system, as reflected in the subdivision approval or otherwise
 - Storm water retention areas on individual lots are permanent designed features to prohibit movement of water from one lot to the next and may not be altered. Individual lot

grading and Drainage Plans will be required at building permit stage in areas where stormwater runoff cannot be directed to an improved street. The retention areas shall be designed to capture a 10-year, 1-hour storm event. Only directly connected impervious areas need to be modeled to evaluate required storage. Infiltration rates, determined from a percolation test, may be used in retention volume calculations.

- Retention areas are to be constructed underground, with a buried perforated pipe, gravel and fabric with an inlet and lot grading to direct runoff into the storage system
- Show existing and finish grade contours (clearly differentiated) at minimum one-foot intervals
- Identify County benchmark location and elevation
- Label size, type, slope and length of each gravity flow pipe. All storm drain piping within the public right-of-way to be minimum 15” RCP
- Label high water contour of detention areas
- Show all irrigation and drainage ditches and proposed piping (Written approval from water users to pipe or abandon any ditches on property)
- Utilities Drawing
- A Storm Water Pollution Prevention Plans (SWPPP) is required for developments meeting the “Land Disturbance Threshold”. Developments of area less than one acre will still be required to take appropriate measures to prevent sediment from entering the storm drain system and to prevent the tracking of mud and debris onto city streets. Developments of less than one acre will be required to prepare an erosion control plan and obtain a West Valley City Storm Water Management Permit – Construction Period. Refer the Drainage Standards in this document in preparing a SWPPP.
- Applicable notes and details

Upon plan approval, a bond will be calculated, and a list of applicable fees will be provided for the developer (see bonding).

Submit a street lighting plan. See the Modified APWA Specification Section 26 56 19 – Roadway Lighting for details.

5.1.2.2 Subdivision Drainage Design Submittal

Submit a Drainage Report as addressed in the Drainage Design section of these standards.

5.1.3 Commercial, Industrial and Multi-Family Plan Set Requirements

Engineering drawings should include the following:

- Cover sheet with vicinity map and a sheet index.
- Site plan
 - Show existing off-site improvements on opposite and adjacent frontages, including drive approaches, existing utilities, storm drain, sewer, water, and proposed improvements
 - Dimension site plans (i.e. drive approach widths, throat length, setbacks, etc.)
 - Include north arrow, scale, vicinity map and legend
 - Show plan and profile and/or spot elevations of sidewalk, curb and gutter

- Indicate right-of-way dedication, if necessary, to match major street plan. Include road centerline information (ties to existing monuments)
- Reference plans to specific APWA Standard Plans and Specifications and WVC standards
- Grading and Drainage Plan.
 - Site grading must conform to West Valley City Code 7-2-116 relating to grade changes.
 - Submit an overall grading and drainage plan for the entire site. Include final and existing contours at no greater than 1-foot intervals. Identify County benchmark and elevation.
 - On drainage plan, reference Drainage Report completed for the project.
 - High water contour required in detention areas. Identify orifice plate location, size and elevation. Clearly identify any LID Capture Volume storage areas.
 - Provide oil/water separator for all parking areas or other approved BMP.
 - Label size, type, slope and length of each gravity flow pipe.
 - Label invert, grate and/or lid elevations of storm drain inlets and boxes
 - Show all irrigation and drainage ditches and proposed piping (Written approval from water users is required to pipe or abandon any ditches on property)
- Plan and Profile drawings of any street improvements in new or along existing streets (see Roadway Design).
- Utility Plans.
- A Storm Water Pollution Prevention Plan (SWPPP) for developments meeting the “Land Disturbance Threshold”. Developments of area less than one acre will still be required to take appropriate measures to prevent sediment from entering the storm drain system and to prevent the tracking of mud and debris onto city streets. Refer to the Drainage Standards in this document in preparing a SWPPP. A Post-Construction (Long Term) Storm Water Management Plan is required. Refer to Drainage Standards in this document in preparing a Storm Water Management Plan.

Upon plan approval, a bond will be required to guarantee the construction of certain public improvements and appurtenances. The plan review staff will determine a bond amount and a list of applicable fees will be provided to the developer (see section on Bonding for Public Improvements in these standards).

5.1.3.1 Commercial, Industrial and Multi-Family Drainage Design Submittal

Submit a Drainage Report containing all pertinent data and calculations as discussed in the Drainage Design section of these standards.

Submit a drainage construction plan set showing pipes and drainage structures to be constructed together with all information necessary to construct the drainage system.

See section on Drainage Design Concepts in this document for drainage standards.

5.2 Subdivision Platting Requirements

This section contains information required on a Preliminary Plat, Final Plat or Subdivision by Metes and Bounds.

(Note: Per West Valley City Code; 1-2-110, Consolidated Fee Schedule; Plan review - \$50 (Fees will be assessed for plan reviews in which the developer or engineer has not made appropriate modifications requested in the previous review.)

5.2.1 Preliminary Plat Requirements

The following items should be addressed on a preliminary plat:

- A vicinity sketch at a scale of 1000 feet or more to the inch. The vicinity sketch shall show the street and tract lines and names and numbers of all existing subdivisions, and the outline of parcels of land adjacent to the proposed subdivision.
- The date, North point, written and graphic scales (North to top or right of sheet).
- A legal description to define the location and boundaries of the proposed subdivision.
- The location, names and existing widths of adjacent streets.
- The contours, at one-foot intervals, for predominant ground slopes within the subdivision between level and five percent, and two-foot contours for predominant ground slopes within the subdivision over five percent. Such contours shall be based on Salt Lake County datum. The closest City or County survey monument shall be used, and its elevation called out on the map. Survey monument information shall be obtained from the Salt Lake County Surveyor.
- A grading and drainage plan showing the proposed grading of the subdivision. Contours should be consistent with West Valley City Code 7-19-603(2)(j).
- Preliminary indication of needed storm drainage facilities with location, size and outlets of the drainage system. Preliminary Drainage calculations to include flows from offsite, flows to be generated onsite, and flows to be discharged to existing storm drain systems.
- The boundaries of areas subject to flooding or storm water overflow, as determined by the Public Works Department, and the location, width and direction of flow of all watercourses, including all existing and proposed irrigation and natural runoff channels and courses.
- The locations, proposed names, widths and a typical cross section of curbs, gutters, sidewalks and other improvements of the proposed street and access easements.
- Street names to be approved by the Salt Lake County Addressing Division.
- Preliminary location and size of sanitary sewers, water mains and any other public or private utility.
- The dimensions and locations of all existing or proposed dedications, easements and deed restrictions. These shall include easements for drainage, sewerage and public utilities.
- The location of any of the foregoing improvements which may be required to be constructed beyond the boundaries of the subdivision.
- The name of the subdivision. Such subdivision names shall not duplicate or nearly duplicate the name of any subdivision in the City or in the incorporated and unincorporated area of Salt Lake County.
- Layout of all lots, including the average and minimum lot size, lot divisions, building setback lines and consecutive numbering.
- The name and address of the subdivider and his or her agent, if applicable.
- The name and address of the person, firm or organization preparing the preliminary plat.

- The names and numbers of adjacent subdivisions and the names of owners of adjacent unplatted land.
- The location of all isolated trees worthy of preservation with a trunk diameter of four inches or greater, within the boundaries of the subdivision, and the outlines of groves or orchards.
- The existing use or uses of the property and the outline of any existing buildings and their locations in relation to existing or proposed street and lot lines drawn to scale.
- The location and description of all existing fencing.
- A statement of the present zoning and proposed use of the property, as well as proposed zoning changes, whether immediate or future.
- Location and dimensions of proposed sites to be dedicated or reserved for open space or recreational use.
- Any proposed lands to be reserved in private ownership for community use.
- The boundaries of phases, along with the estimated construction schedule for each phase.
- The words “Preliminary Plat - Not to be Recorded” shall be shown on the plat.

5.2.2 Final Plat

- Submit copy or Record of Survey Map used to determine existing or proposed boundaries of the proposed subdivision.
- Submit closure sheets for all lots, parcel, streets and exterior boundary of proposed subdivision.

5.2.2.1 Plat Information Requirements

The following information is to be shown on a final plat:

- Title shall include approved name and phase number of subdivision, 1/4 Section, Section, Township and Range followed by words “West Valley City.” Subdivision name is to be distinct from any name on a plat recorded in the office of the Salt Lake County Recorder.
- Plat to be signed, sealed, and certified by a Professional Land Surveyor (PLS). PLS stamp, signature and date required on all plats submitted for review.
- Plat plotted on a 24”x 36” sheet(s) with a north arrow, and both written & graphic scales.
- Legend required for all symbols and line types depicted.
- Exterior boundary to agree with existing or proposed division lines as depicted on filed or approved Record of Survey ROS Map(s).
- Exterior boundary clearly defined (heavy line) with Point of Beginning (POB), lines, and curves labeled.
- Boundary tied spatially to at least two existing (found) clearly described PLSS monuments or other monuments of record. Basis of bearings (B of B) identified between two PLSS monuments or other found monuments of record.
- Written legal description to agree with exterior boundary labels, ties to monuments, and Basis of Bearing.
- Total acres shown and total number of lots noted.
- Show recording information for adjoining plats of record and to vesting documents for adjoining parcels.

- Plat boundary checked spatially for harmony with legal descriptions for adjoining parcels and plats.
- Lot distances equal boundary and street distances.
- Vicinity map required.
- Monuments shown at intersections, P.C. and P.T. or at P.I. if within roadway. Monument to monument, and monument to boundary bearings and distances to be labeled.
- Right-of-Way widths to be labeled at all PC & PT locations.
- Show centerlines and widths of all existing streets (within 200 feet of subdivision boundary) clearly defined with line, curve, and offset labels, also identify and show dimensions to any existing (found) street monuments.
- Proper approach angle on streets; intersections with major streets must dedicate right-of-way to chord.
- Existing easements are to be depicted graphically on the plat along with references to their instrument(s) of record or to ROS map(s) asserting any observed evidence of possible unrecorded, statutory, or prescriptive easements, said easements are to be clearly defined with line and curve labels, centerline offsets, and dimensions to future ownership interest lines.
- Public utility easements to be shown as required.
- Shown any other easements as may be required. Include specific conveyance language (to whom it is in favor) and declared purpose for each easement type created by the plat.
- Streets, lots, parcels and easements to be adequately labeled with necessary line, curve, and offset dimensions.
- Subdivision boundary, lots, parcels and streets to close mathematically.
- Postal easements shown (streets without parkstrips).
- Street names shown and approved (non-linear streets to have alpha name as well as coordinates). Names required for non-linear streets (may not duplicate existing street names within the County). Street names to be approved by the Salt Lake County Addressing Division.
- Lot and street addresses required.
- Floodplain boundary and base flood elevation (BFE) information should be shown for all plats lying with a Special Flood Hazard Area.

5.2.2.2 Required Notes on a Final Plat

When applicable, the following notes should be included on the plat.

- A soils report in accordance with Section 7-13-504 of the West Valley City Ordinances has been prepared. Include name of geotechnical engineer or firm, report #, and date.
- Note indicating historical depth of high-water table and elevation of lowest floor slab (min 3' above water table). Include table showing finished floor elevation for each lot referenced to finished TBC (based upon soils report findings).
- Identify lots where easements for special drainage facilities will be required.
- 5/8" x 24" rebar with survey cap to be placed at all lot corners (Cap shall include the business name or "P.L.S." followed by the license number of the surveyor in charge). Off-set pins to be placed in the back of the curb, in lieu of rebar and cap at front corners.

- Building permits will not be issued for any structure until 1) asphalt paving is installed; and 2) fire hydrants are installed, approved & charged.
- This area is adjacent to Agriculturally Zoned property and is subject to the normal, everyday sounds, odors, and all other aspects associated with an agricultural lifestyle (If adjacent to A zones).

5.2.2.3 Additional Requirements

Letters from all utility companies may be required, indicating their review and approval of plat.

5.2.3 Subdivision by Metes and Bounds

Requirements for Subdivision by Metes and Bounds will follow those plat (map) requirements per Utah State law for boundary surveys as outlined in West Valley City Code 17-23-17 (3) & (4). The following should be addressed on a Subdivision by Metes and Bounds:

5.2.3.1 Plat Requirements

Utah State Code as amended, Section 17-23-17(3)

- The location of survey by quarter section and township and range;
- The date of survey;
- The scale of drawing and; north point
- The distance and course of all lines traced or established, giving the basis of bearing and the distance and course to two or more section corners or quarter corners, including township and range, or to identified monuments within a recorded subdivision;
- All measured bearings, angles, and distances separately indicated from those of record;
- A written boundary description of property surveyed;
- All monuments set and their relation to older monuments found;
- A detailed description of monuments found, and monuments set, indicated separately;
- The surveyor’s seal or stamp; (seal requirements see R156-22-701 (1) (c) states “Each seal shall be signed and dated with the signature and date appearing across the face of each seal imprint.”)
- The surveyor’s business name and address

5.2.3.2 Narrative Requirements

Utah State Code as amended Section 17-23-17(4)

- The map shall contain a written narrative that explains and identifies;
 - The purpose of the survey;
 - The basis on which the lines were established; and
 - The found monuments and deed elements that controlled the established or reestablished lines

5.2.3.3 Additional West Valley City Requirements

- Vicinity map
- Checks with ownership plat; adjoining ownership shown
- Addresses shown
- Lot area shown; total acres shown

- Existing easements and rights-of-way of record
- Final approval signature block included
- Print on 24" x 36" sheet

5.2.4 Survey Monuments

Survey monuments to be placed in accordance with West Valley City Code 7-19-909

5.2.4.1 *Disturbance of existing Section Corner, Quarter Corner or Street Monuments*

Prior to any disturbance or removal of any existing survey monuments, the office of the Salt Lake County Surveyor must be notified and a Monument Permit must be obtained.

In accordance with Utah State Code as amended, 17-23-14, a Monument Permit is issued by the County Surveyor or Designee prior to disturbing, damaging, removing, moving or covering any public survey monument. If a permit is not issued, a person may be guilty of a Class C misdemeanor and is additionally responsible for assessed penalties and fees.

5.2.4.2 *Street monuments in conjunction with new subdivisions or road dedication plats*

Street monuments are required to be set at street centerline intersections and at radius points of cul-de-sacs, and inter-visibly along street rights-of-way corridors on curve PIs (if within asphalt), PCs, PTs, or Midpoints.

Subdivision monuments shall be installed by the subdivider's land surveyor at such points designated on the final plat as approved by the City Engineer. Monuments must be placed prior to the release of the improvement bonds. All monuments shall be certified by the subdivider's land surveyor as accurate.

5.2.4.2.1 Monument Permit required for new monuments

It is unlawful for any person to install survey monuments having a spatial relationship with any section or quarter section corner without first obtaining from the Salt Lake County Surveyor's Office a monument permit for such installation. All survey monuments installed shall be in accordance with the permit issued and shall be subject to inspection and approval by the Salt Lake County Surveyor's Office.

5.2.4.2.2 Lot and property corners to be monumented

Rebar five-eighths inch in diameter and 24 inches in length, with surveyor cap, shall be located in the ground, flush at finished grade and at all lot corners. Cap shall include the business name or "P.L.S." followed by the license number of the surveyor in charge. Off-set pins to be placed in the back of the curb where applicable, in lieu of rebar and cap at front corners.

5.3 Bonding for Public Improvements

In accordance with West Valley City Code 7-19-618, a subdivider is required to either complete all improvements, or enter into a performance bond agreement with the city prior to plat recordation to ensure the completion of all required public improvements. Improvements installed prior to plat recording shall be bonded at a rate of 10 percent for the duration of the warranty period and must be inspected during construction by West Valley City Engineering staff.

5.3.1 Bonding Procedures

Performance Bond agreements shall be entered into in accordance with West Valley City Code 7-19-618.

5.3.1.1 Acceptable Bond Agreement Types

- With a surety company licensed to do business in the State of Utah
- An irrevocable letter of credit with a financial institution federally or state insured
- Cash or a cashier's check made payable only to the city

5.3.1.2 Bond Time Period Requirements

Per West Valley City Code; Completion of the improvements within a period of time not to exceed two years from the date the agreement is executed.

The time period for the completion of the required public improvements may be extended in the following manner:

- Upon approval of the City Manager, the time period may be extended an additional two years from the expiration date of the original bond agreement.
- Said approval shall be in a form approved by the City Attorney's Office and in compliance with all provisions of West Valley City Code.
- Any further extension shall be by approval of the City Council.

Per Utah State Code as amended, 10-9a-604.5; the warranty period for subdivision or other development activity improvements may extend up to one year after final acceptance of the improvement or warranty work. In some cases, the city may require two years of warranty after final acceptance of the improvement or warranty work if the city determines for good cause that a lesser period would be inadequate to protect the public health, safety, and welfare and had substantial evidence of prior poor performance of the applicant, unstable soil conditions within the subdivision or development area, or extreme fluctuations in climatic conditions that would render impracticable the discovery of substandard or defective performance within a one-year period.

5.4 Floodplain Development Requirements

5.4.1 Flood Plain Development

5.4.1.1 Flood Plain Development Permit

In accordance with and to ensure compliance to West Valley City Code, Title 25 (Flood Damage Prevention), a *Development Permit* is required within *Special Flood Hazard Areas* as defined on the FEMA *Flood Insurance Rate Maps* (FIRM).

5.4.1.1.1 Flood Plain Development Permit Procedures

Flood Plain Development Permit Procedures are defined in West Valley City Code 25-4-103.

A Flood Plain Development Permit application is available in the office of the Engineering Division. Contact the engineering development personnel for more information.

5.4.1.1.2 Establishment of a Base Flood Elevation

The FEMA Flood Insurance Study, including floodway data tables and profiles must be used to establish the base flood elevation to the nearest tenth of a foot.

Part 6: General Construction Requirements

The following standards apply to construction activities within the public right-of-way.

6.1 Construction in the Public Right-of-Way

6.1.1 Quality Control

Quality control is the responsibility of the Contractor and shall be performed in compliance with the WVC Minimum Sampling and Testing Guide.

Contractors doing work or placing materials in a public road or what will become a public road or other infrastructure, will be required to have qualified quality control personnel on site to test and document material placement in accordance with the WVC Minimum Sampling and Testing Guide.

All work and quality control testing must be performed in coordination with and under the supervision of a West Valley City technician. Random testing locations shall be identified by a West Valley City technician. Inspections with the Engineering Division must be scheduled 24-hours in advance of proposed work.

Quality control documentation must be submitted for all required tests outlined in the WVC Minimum Sampling and Testing Guide. Documentation will be required prior to the advancement to the next phase of construction and the release of bonds.

6.1.2 Right-of-Way Permit

6.1.2.1 *A Right-of-Way Permit is Required*

Any excavation work in a West Valley City right-of-way requires West Valley City Right-of-Way Permit. Exceptions in emergency cases are noted in West Valley City Code 19-2-301.

6.1.2.2 *General Right-of-Way Permit Requirements*

6.1.2.2.1 Permitting and Licensing Portal

Application for Right-of-Way Permits is made through the West Valley City Permitting and Licensing Portal.

<https://www.wvc-ut.gov/177/Right-of-Way-Permits>

6.1.2.2.2 Insurance and Completion Bond

Insurance requirements shall be per West Valley City Code 19-2-304

A completion bond is required in the amount specified in West Valley City Code 19-2-305. A minimum amount of \$10,000 is required, but a larger bond may be required based upon the extent of the construction.

6.1.2.2.3 Contractor's License

A copy of the contractor's license must be submitted to receive a Right-of-Way Permit.

6.1.2.2.4 Traffic Control Plan

A traffic control plan must be submitted and approved for all work in the public right-of-way prior to issuance of a Right-of-Way Permit.

6.1.2.2.5 Proposed Work Plan

A plan showing the proposed work must be submitted with the permit application.

6.1.2.2.6 Boring or Directional Drilling in the Right-of-Way

Permits involving directional boring will be charged a fee for each instance that a storm drain is crossed to verify the culvert or structure has not been compromised. The contractor will be notified of any damage and required to remedy prior end of the warranty period.

6.1.2.2.7 Peak Hour Lane Use Restrictions

Certain streets have peak-hour lane use restrictions, requiring an additional fee for peak hour lane restrictions. Peak Hour Lane Use Fee is shown in the consolidated fee schedule in Title 1.

The AM Peak is defined as 6:00 am to 10:00 am. The PM Peak is defined as 4:00 pm to 7:00 pm.

Restrictions are as follows:

Peak Hour Lane Use Fee - Major Roads				
Road	From	to	AM Peak	PM Peak
4700 South	2700 West	5600 West	Eastbound	Westbound
4100 South	Jordan River	8400 West	Eastbound	Westbound
3100 South	Redwood Road	5600 West	Eastbound	Westbound
Parkway Blvd/Lake Park Blvd.	Redwood Road	5600 West	Eastbound	Westbound
Parkway Blvd/Lake Park Blvd.	5600 West	7200 West	Either Direction	Either Direction
2700 West	4100 South	2700 South	Either Direction	Either Direction
3200 West	2100 South	4100 South	Either Direction	Either Direction
3600 West	3500 South	4100 South	Either Direction	Either Direction
4000 West	3100 South	4700 South	Either Direction	Either Direction
4800 West	3500 South	Lake Park Blvd	Northbound	Southbound
7200 West	3500 South	SR-201	Northbound	Southbound

6200 South	5600 West	SR-111	Eastbound	Westbound
3030 West	Lehman Avenue	3500 South	Either Direction	Either Direction
Lehman Avenue	Market Street	3030 West	Either Direction	Either Direction
Market Street	Lehman Avenue	3500 South	Either Direction	Either Direction
Weigh Station Road	Market Street	3030 West	Either Direction	Either Direction
SR-201 Frontage Road	7200 West	2700 West	Either Direction	Either Direction

6.1.3 Roadway Excavation Restoration Standards

6.1.3.1 Minimum Pavement Replacement Requirements

Any pavement excavation in which the remaining pavement width is less than the width shown below shall be removed and replaced to the existing edge of pavement.

	Minimum Allowable Remaining Pavement Width
Roads with curb and gutter	2-feet
Roads with no curb and gutter	4-feet

6.1.3.2 Embankment Material

Material used to build fill under a roadway or sidewalk grade shall meet the requirements for *Granular Borrow*, in Section 31 05 13 of the Utah APWA Standard Specifications. Exceptions to be approved by the City Engineer. Trench backfill requirements are discussed in the Utility Trench section below.

6.1.3.3 Compaction Requirements

Per WVC Minimum Sampling and Testing Guide.

6.1.3.4 Asphalt Restoration Standard

Trenches in asphalt pavement shall be restored per WVC Standard Drawing 255 – Asphalt Concrete T-Patch

Cuts with a profile deviation of 1/4 inch or greater in a 10-foot area will require a profile grind to eliminate a bump, or re-mill and pave the cut area to fill depressions with a minimum of 2-inches of newly placed asphalt.

6.1.3.5 Concrete Pavement Restoration Standard

Concrete pavement shall be removed and replaced in full slabs only. APWA Plan 256 does not apply. The Engineering Division will define restoration requirements for each excavation. Restoration plans must be approved by the City Engineer prior to the issuance of a permit.

6.1.3.6 Exploratory Pothole Restoration Standard

Exploratory potholes must be backfilled using an approved Flowable Fill (APWA 31 05 15, Part 2.1).

Removed pavement cores may be replaced as the pavement restoration material provided that the core is in good condition and that it is secured and sealed with epoxy or other approved material.

The limits of repair for openings greater than eight (8) inches in diameter are the same as any asphalt repair done in West Valley City right-of-way. The minimum overcut patch required on exploratory potholes is 3-feet by 3-feet. Cold patch asphalt mix is not allowed as a permanent restoration and must be maintained by the contractor until the permanent patch is installed.

6.1.4 Work Zone Traffic Control Requirements

All traffic control placed on West Valley City roads must conform to current MUTCD Standards. Traffic control plans must be signed and sealed by a Professional Engineer licensed in the State of Utah or be a certified Traffic Control Supervisor. Traffic control must be placed and maintained by a certified traffic control maintainer.

6.1.5 Pavement Cut Moratorium and Special Restoration Standard

West Valley City enforces a pavement cut moratorium on all newly paved or constructed roadways.

6.1.5.1 Pavement Cut Moratorium

1. Overlaid Streets
 - a. Overlaid streets shall not be cut for one (1) year from the time the street was overlaid. Roads cut on emergency basis must be restored with Special Restoration Standards.
2. New or Reconstructed Streets
 - a. New Streets shall not be cut for two (2) years from the time of construction. Any new or reconstructed street cut within five (5) years of construction must be restored with the Special Restoration Standard.
3. Slurry Sealed Streets
 - a. May be cut anytime. If cut within one year of slurry seal, must be restored with Special Restoration Standard.
4. Chip Sealed Streets
 - a. May be cut anytime. If cut within one year of chip seal, must be restored with Special Restoration Standard.

6.1.5.2 Special Restoration Standard

6.1.5.2.1 New or Reconstructed Streets

Asphalt T-Patches per WVC Standard Drawing 255 are required on all roadway excavations.

Final driving surface over road cuts with noticeable bump or with a profile deviation of 1/8 inch or greater over a 10-foot area will require a profile grind to eliminate a bump, or re-mill and pave the entire cut area to fill depressions with a minimum of 2-inches of newly placed asphalt.

Any settlement within the warranty period will require rotomilling and repaving.

Special restoration on new or reconstructed streets also requires a crack seal around the perimeter of the cut per APWA 32 01 17.

Cuts on newly constructed or reconstructed streets within the last ten years will be subject to a road damage fee, assessed according to the age of the pavement.

6.1.5.2.2 Overlaid Streets

Asphalt T-Patches per WVC Standard Drawing 255 are required on all roadway excavations.

Cuts with a noticeable bump, or with profile deviation of 1/8-inch or greater in a 10-foot area will require a profile grind to eliminate a bump, or re-mill and pave the cut area to fill depressions with a minimum of 2-inches of newly placed asphalt.

Special restoration on new or reconstructed streets also requires a crack seal around the perimeter of the cut per APWA 32 01 17.

Cuts on streets overlaid within the last five years will be subject to a road damage fee, assessed according to the age of the pavement.

6.1.5.2.3 Slurry Sealed and Chip Sealed Streets

Asphalt T-Patches per WVC Standard Drawing 255 are required on all roadway excavations.

Special restoration requires a crack seal around the perimeter of the cut per APWA 32 01 17.

6.2 Utility Trench Requirements

6.2.1 Trench Safety

Excavating is one of the most hazardous construction operations. Trench safety is the highest priority to West Valley City in any excavation. The contractor is responsible for the safety of the construction site; however West Valley City will issue a Stop Work Order when unsafe conditions are observed. When required by OSHA, protective systems must be put into place to protect workers, either by benching, sloping, shoring or shielding. OSHA access and egress standards must be met by the contractor.

Contractor is responsible to provide safe access into trenches for inspectors to perform backfill density measurement or other inspection purposes.

6.2.2 Backfill and Compaction Requirements in Storm Drain Trenches

All pipe zone material and trench backfill to be performed per West Valley City Special Provision Section 33 05 20-M.

6.2.3 Compaction Requirements in Water, Sewer and other Utility Trenches

Bedding and pipe zone material placed may be in accordance with utility owner requirements. If Sewer Rock or open graded material is used as pipe bedding or pipe zone backfill, a separation geotextile fabric (APWA 31 05 19) must be used.

Trench Backfill to be performed per West Valley City Special Provision Section 33 05 20-M. Any deviations from this standard must be approved by the City Engineer.

6.3 Temporary Surfacing Requirements

6.3.1 Trench Plate Requirements

Trench plates may be placed directly on top of the asphalt when the plate will be in place for 24 hours or less. Surface trench plates must be placed with mastic and secured to the pavement by some mechanical means. Where necessary, plates should be welded together to avoid movement.

Hot or cold mix asphalt must be placed around the perimeter surface of the plate when placed on top of the asphalt surface.

NEVER overcut for a T-Patch when trench plates will be used. Sawcut only after the trench is backfilled prior to asphalt placement.

Any trench plate to be left in place longer than 24 hours must be milled into the asphalt so the top of the plate is flush with the pavement surface.

Use sign W8-24 “Steel Plate Ahead” when steel plates are placed on the roadway. Place sign WI-1 “Bump” with a W16-7P diagonal downward pointing arrow adjacent to the steel plate.

Between the months of November and March, trench plates are not to be used but must be recessed into the pavement if they are necessary.

6.3.2 Temporary Asphalt

Temporary asphalt surfaces are required on any roadway with a right-of-way width of 66-feet or greater by the end of each workday (unless trench plates are to be used). The temporary asphalt must be maintained by the permit holder until the permanent surface is completed and accepted.

Temporary asphalt or trench plates may be required on minor roads at the discretion of the West Valley City Permits Officer, especially if a longer period will pass before final pavement placement.

If trenches remain unpaved for any period during construction, unpaved trenches must be monitored and maintained regularly for safety and dust control purposes. Citations will be issued for unsafe or neglected trenches.

Any pavement placed outside of acceptable paving temperatures and density requirements will be considered temporary pavement.

6.4 Aggregate Base Course Material

6.4.1 Untreated Base Course

Aggregate base course in pavement sections shall meet the requirements of APWA 32 11 23 – *Aggregate Base Course*, Part 2.1 *Untreated Base Course*, Grade 1-1/2 or Grade 1.

6.4.2 Treated Base Course

Treated base course may only be used with materials containing crushed concrete, and must meet the requirements stated in APWA 32 11 23 – *Aggregate Base Course*, Part 2.2 *Treated Base Course*, Paragraph C. Grade 1-1/2 or Grade 1.

6.5 Asphalt Pavement Requirements

6.5.1 Asphalt Mix Requirements

6.5.1.1 *Minor Streets and Minor Collectors*

APWA Section 32 12 05 Mix Design Parameters in Table 6 – **Marshall 50 blow**

Gradation - DM-1/2

Binder – PG58-28

RAP/ROSP content shall not exceed 15 percent by weight.

6.5.1.2 *Major Arterial, Minor Arterial and Collector*

APWA Section 32 12 05 Mix Design Parameters in Table 6 – **Superpave – 75Nd**

Gradation - SP-1/2

Binder – PG64-28

RAP/ROSP content shall not exceed 15 percent by weight.

6.5.1.3 *Small Quantity – Asphalt Patch Mix Design*

Other mix designs will be considered for small quantity asphalt patches.

6.5.2 Asphalt Placement Standard

See WVC Special Provisions 32 12 05-M and 32 12 16.13-M for asphalt placement requirements.

6.5.2.1 *Weather*

Paving will not be allowed unless the air temperature is 50 degrees F and rising. Cease paving if air temperature falls below 50 degrees F.

Do not pave if the weather is wet. Cease paving if precipitation begins.

6.5.2.2 *Tack Coat*

Tack coat shall be applied as specified in WVC Special Provision 32 12 13.13-M.

6.5.2.3 *Quality Control*

Quality control is the responsibility of the Contractor and shall be performed in compliance with the WVC Minimum Sampling and Testing Guide. Contractors placing asphalt pavement in a public road or what will become a public road or other infrastructure, will be required to have qualified quality control personnel on site to split samples with engineer, perform all necessary quality control testing and obtain cores at locations marked by engineer. Density and thickness will be measured from cores taken by the developer or contractor.

Quality control documentation must be submitted on the placed asphalt for all required tests outlined in the WVC Minimum Sampling and Testing Guide. Documentation will be required prior to the release of bonds.

6.5.2.4 *Quality Assurance*

West Valley City reserves the option to perform quality assurance testing at randomly selected locations or to utilize the submitted QC results as QA.

6.5.2.5 *Asphalt Acceptance*

As a requirement for the city to accept asphalt pavement installed, the following conditions must be met:

Compaction Pay Factors: (WVC Special Provision 32 12 16.13-M, 1.8 E - Compaction) Density of asphalt placed must meet the requirements for a pay factor of 1.0. Pavement placed with a pay factor between 0.9 and 1.0 will be accepted only after the placement of a slurry seal product to be approved by the city. Pavement placed with density pay factors below 0.9 will be rejected and replaced at no cost to the city.

Thickness: (APWA Section 32 12 16.13, 1.8 F - Thickness) Thickness of asphalt placed must meet the requirements for a pay factor of 1.0. Pavement placed with a thickness pay factor between 0.9 and 1.0 will be accepted only after the placement of a slurry seal product to be approved by the city. Pavement placed with thickness pay factors below 0.9 will be rejected and replaced at no cost to the city.

Binder Content: (APWA Section 32 12 05, 1.6 C – Pay Reduction) Binder Content of asphalt placed must meet the requirements for a pay factor of 1.0. Pavement placed with a pay factor between 0.9 and 1.0 will be accepted only after the placement of a slurry seal product to be approved by the city. Pavement placed with pay factors below 0.9 will be rejected and replaced at no cost to the city.

Gradation Targets: (APWA Section 32 12 05, 1.6 C – Pay Reduction) Gradation Targets of asphalt placed must meet the requirements for a pay factor of 1.0. Pavement placed with a pay factor between 0.85 and 1.0 on any sieve will be accepted only after the placement of a slurry seal product to be approved by the city. Pavement placed with pay factors below 0.85 on any sieve will be rejected and replaced at no cost to the city.

6.6 Concrete Pavement Standards

6.6.1 Concrete Pavement Restoration Standards

Concrete pavement must be replaced in full panels (this is a deviation from the APWA Standard Drawings). The existing depth must be matched. Tie new panels to existing panels as shown in APWA Plan 256. Dowels and tie-bars must be replaced matching the existing placement.

Some concrete pavement replacement may be required to be completed using pre-cast concrete paving slabs. This will be required when impacts to the traveling public from traditional restoration methods will be more significant. The determination to require pre-cast concrete paving slabs will be reviewed and approved by the City Engineer. When pre-cast concrete paving slabs are required, construction will conform to UDOT Standards for pre-cast concrete paving slabs.

6.7 Concrete Placement Standard

6.7.1 Placement Weather

6.7.1.1 Cold Weather Concrete Placement

If air temperature is predicted to fall below 32 degrees F. within 14 days of placement, follow procedures as shown in APWA 03 30 10, 3.4C. Do not increase cement content in the mix design.

Contractor is required to place and monitor thermometers capable of recording high and low temperatures in each 24-hour period until concrete reaches 90 percent of design strength.

6.7.1.2 Hot Weather Concrete Placement

If the rate of evaporation exceeds 0.2 lb./ft²/hr, implement practices shown in ACI 305.

6.7.2 Air Entrainment

Concrete should have entrained air at a target of 6%, with tolerances between 5% and 7.5%, unless otherwise specified by the concrete supplier, and approved by the Engineering Division. Admixtures for air entrainment will be allowed on-site to correct low air content results. Only ONE attempt per batch will be allowed. Batch will be rejected if the test immediately following the attempt fails.

6.7.3 Slump

Concrete slump is to be proposed by the concrete supplier, and appropriate for the proposed application i.e., fixed form vs. slip form, etc.

6.7.4 Tempering

Do not add water without notifying the inspector. Water may be added if all conditions of APWA Section 03 30 10 Part 3.3.D are met. Do not add water after 1 cubic yard of concrete has discharged from the delivery vehicle.

6.7.5 Placement Time

Concrete must be placed within 60 minutes of batching if air temperature is greater than 90 degrees Fahrenheit and within 90 minutes if air temperature is less than 90 degrees Fahrenheit. Concrete will be rejected if not placed within these time limits. Hydration stabilizers will not be allowed to extend placement time.

6.8 Geotechnical Considerations

6.8.1 Soil Stabilization

6.8.1.1 Soft Spot Repair in Sub-Grade

Contractors should propose solutions for soft spot repair techniques and have proposals approved by the City Engineer. Minimum measures should include excavation of soft material, placement of a stabilization fabric and backfill using a granular material.

6.9 Other Construction Considerations

6.9.1 Collars on Utility Covers

Concrete collars on utility covers and survey monuments are required in most circumstances in asphalt paving. Collars are to be built per APWA Plan 362, 413, or 574. In a deviation from the standard drawings, concrete collars are to be recessed below the pavement from 1/8-inch to a maximum of 1/4-inch. Any concrete collar on a utility cover recessed above or below the allowable tolerances must be replaced.

Concrete collars must be protected during concrete curing periods with steel plates. Plates are to be secured and monitored for movement. Damaged concrete will be replaced by the contractor.

Utility covers in concrete pavement must be coordinated with the Engineering Division. Utility covers must be considered in joint layout plan.

6.9.2 Survey Monuments

Survey monuments are not to be disturbed without having obtained a Monument Preservation Permit from the Salt Lake County Surveyor's Office.

6.9.3 Patterned Concrete Park Strip

When patterned concrete park strip is to be placed, construct per APWA Plan 232, (as a modification from the standard drawing, thickness of patterned concrete parkstrip shall be a minimum of 4-inches). Unless specified otherwise, pattern and color shall be as follows:

1. Pattern – “Ashlar Slate” or approved equal.
2. Color – Two-part color compound; base color with color release.
 - a. Base Color shall be:
 - i. Yosemite Brown, Per Davis Colors
 - ii. Sahara No. 242, Solomon Liquid Color
 - iii. or approved equal
 - b. Color release shall be Dark Gray (Per Brickform Standard Color Selector Brochure (or equal approved by West Valley City Engineering Division)).

6.9.4 Detectable Warning Surface on Pedestrian Access Ramps

The detectable warning surface panels on pedestrian access ramps shall be yellow and adhere to the standards set forth on the “UDOT Pedestrian Access Evaluation Form C170.” Exceptions must be approved by the City Engineer.

6.9.5 Pipe Removal/Abandonment Standard

When pipes are removed the trench shall be backfilled per WVC Special Provision 33 05 20-M. All existing pipes that are to be abandoned in the right-of-way should be completely removed when possible.

6.9.5.1 Gravity Pipe Removal/Abandonment

Complete removal will be required on reconstruction projects or when the removal does not require excessive disturbance of hard surface improvements as determined by the city. If the pipe removal will result in excessive disturbance of hard surface improvements the abandoned pipes shall be filled

completely with flowable fill. In rare circumstances where removing the abandoned pipe or placing flowable fill is infeasible, and with approval from City Engineer, abandoned pipe may be plugged with a permanent, water-tight concrete (4000 PSI) plug extending into the abandoned pipe at least two feet. All openings in walls of remaining manholes, catch basins, or structures must be plugged as well. This will not be an option for pipes showing signs of significant deterioration (i.e. corrugated metal pipes).

6.9.5.2 Pressure Pipe Removal/Abandonment

Complete removal will be required on reconstruction projects or when the removal does not require excessive disturbance of hard surface improvements as determined by the city. If the pipe removal will result in excessive disturbance of hard surface improvements the contractor shall cap and restrain the pipe with a blind flange or equivalent type of plug.

Part 7: Utilities in the Right-of-Way

7.1 Utilities

7.1.1 Public Utilities in the Right-of-Way

7.1.1.1 Franchise Agreement is Required

A franchise agreement is required prior to the installation of any facilities associated with a public utility within a public right-of-way. Permits will not be reviewed unless a current franchise agreement with the city is in place.

7.1.2 Small Cell Wireless Facilities

7.1.2.1 Small Cell Wireless Facilities Permit Required

Refer to Title 7 for Small Cell Wireless Facility Permits

8.1 Storm Water Release Rate Map

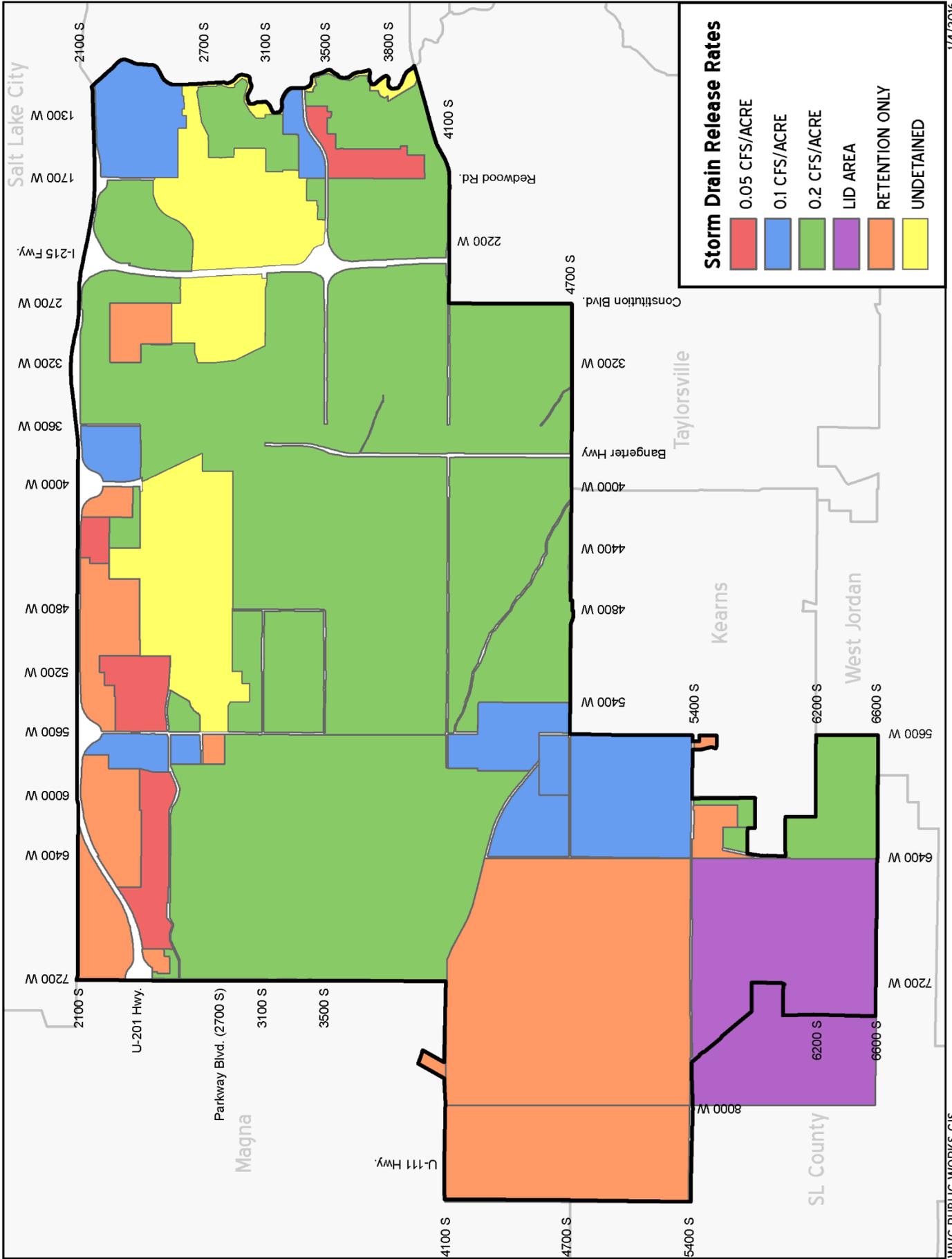
8.2 West Valley City Standard Drawings

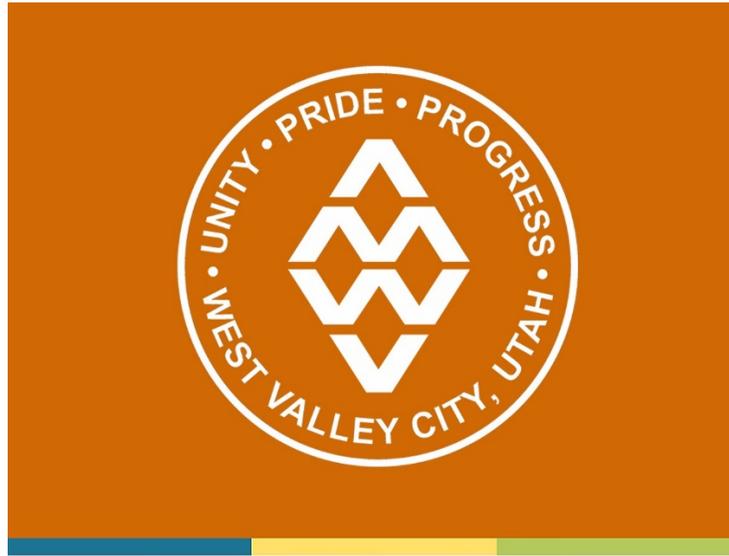
Available for download on the West Valley City Engineering Division webpage.

8.3 West Valley City Special Provisions (Modifications to the APWA Standard Specifications)

Available for download on the West Valley City Engineering Division webpage.

West Valley City Storm Drain Release Rates





WEST VALLEY CITY

WEST VALLEY CITY
2020 ENGINEERING STANDARDS
VOLUME II

MINIMUM SAMPLING AND TESTING REQUIREMENTS

APPLICABLE FOR WORK IN THE PUBLIC RIGHT OF WAY AND ON PUBLIC
INFRASTRUCTURE AND APPURTENANCES

WEST VALLEY CITY - PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
ADOPTED BY WEST VALLEY CITY COUNCIL August 25, 2020

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Part 1: Introduction

This document provides the minimum sampling and testing requirements for all construction materials placed inside the public right-of-way. These requirements are intended to ensure quality and uniform construction of public infrastructure in West Valley City (WVC). This document shall be used to determine the frequency of verification sampling and testing on all public improvements constructed within the city right-of-way. Test results will be used to determine acceptance or rejection of material placed. Where permitted by contract provisions, some rejected material may remain in place at the discretion of the Engineer with appropriate adjustments to the contract price. Exceptions to specific sampling and testing requirements must be approved by the City Engineer.

1.1 Modifications

Sections that have been modified from the previous version are noted with a solid vertical line to the right of the paragraph. Not applicable for version adopted August 26, 2020.

1.2 Testing Standards

Generally, WVC uses the Utah Chapter of the APWA Standard Specifications which typically outline sampling and testing frequencies. This guide has been assembled to consolidate that information and to provide guidance to personnel responsible for verification sampling and testing. However, some of the requirements in this guide have modified those found in the APWA Standard Specifications. In case of difference between this guide and the APWA Standard Specifications, this guide governs. Also, when a submitted manufacturer's recommendation differs from the requirements outlined in this guide or APWA Standards, the most stringent requirement applies for acceptance.

Items not identified in these minimum sampling and testing requirements still require appropriate testing or verification as outlined in the Utah Chapter of the APWA Specifications, supplemental specifications and/or approved special provisions.

1.3 General Procedures

1.3.1 Contractor Submittals

Contractor submittals are required for all materials placed in the public right-of-way. Refer to the APWA Standard Specifications or project special provisions for submittal requirements. The WVC Engineering Division "Contractor's Submittal Transmittal Form" should be attached to each submittal. The submittal transmittal form is found in the appendix to this document. All submittals must be reviewed and approved by the Engineering Division **prior** to placement. Once approved, contractors are not allowed to change material or material source without submitting and obtaining approval for the new material prior to placement.

1.3.2 Lots and Sub-lots

Lot sizes and requirements vary depending on the type of material being placed. Acceptance is based upon lots. A Lot will not be accepted with a defective sub-lot. Any failed sub-lot will result in rejection of the entire lot in accordance with APWA Section 01 35 10.

Each lot requires a report. Do not combine different lots or materials on the same report.

1.3.3 Quality Control

The contractor is responsible for quality control. Part of those responsibilities include providing all testing and substantiating documentation needed to show specification compliance. The Contractor is required to promptly submit the documentation to the WVC Engineering Division for review. Materials placed without proper testing and supporting documentation provided by the contractor will not be accepted. In addition, Contractor's field quality control testing does not constitute acceptance. Such testing, however, may be used by ENGINEER for acceptance at the discretion of the Engineer.

1.3.4 Quality Assurance

The WVC Engineering Division must obtain documentary evidence to certify the materials incorporated into each project are in conformance with the approved plans and specifications. Verification of conformance is required prior to acceptance of materials placed and when applicable, payment to the contractor for materials furnished and work completed. This verification may be accomplished by performing quality assurance testing independent from the contractor, splitting samples with the contractor, utilizing the Contractor's quality control results, or a combination thereof. The method of acceptance will be determined by the City representative based upon project complexity, schedule, and available resources. The acceptance method may vary throughout the project at the discretion of the City; however, the contractor is required to provide all quality control documentation regardless of acceptance method.

Samples of any material may be taken at any time. Any material found to be out of specification shall be rejected and removed from the project site at the contractor's expense or be subject to applicable price adjustments.

In the case of a failure to meet the material quality requirements, the documentation will constitute the basis for rejection of work, or it may be the basis for its acceptance upon appropriate contract price adjustment where permitted under the contract provisions. If such contract provisions do not exist and negotiations are unattainable, the material will be rejected and require replacement. Complete records including test and inspection reports covering acceptance or rejection are to be maintained in the project files. Refer to WVC Engineering Standards for development projects.

1.3.5 Application of Pay Factors on Developments

Acceptance of materials placed on development projects with pay deduction factors defined by specification will be based on material test results falling within the requirements for Pay Factors of 1.00.

A development project may elect to leave a materials lot in place with test results falling below a Pay Factor of 1.00 by applying a pay deduction factor to the contractor and paying the reduced payment amount to the city. Calculation of the pay deduction factor will be based on actual bid prices paid to the contractor. Developer will be required to show documentation of bid prices. The city retains sole discretion to accept a Pay Factor for materials placed in reject.

Part 2: Backfilling – Roadways/Structures/Trenches

Backfilling Roadways

- Assurance:** In-place density
- Assurance Reference:** ASTM D2922
- APWA Reference:** Section 31 05 13, Section 31 23 26, Section 32 05 10
- Lot Size:** Production Day
- Frequency per Lot:** One test per lift per subplot. A subplot is 1000 square yards of contiguous area. If area is not contiguous, lot sizes for Base Course Type II apply.
- Required Density:** 95 percent or greater relative to a modified proctor density (A-1 Soils) or standard proctor density (all other soils), APWA Section 31 23 26.
- Comments:** N/A

Backfilling Structures

- Assurance:** In-place density
- Assurance Reference:** ASTM D2922
- APWA Reference:** Section 31 23 26, Section 31 23 23

Lot Size:

Structure Type	Lot Size
Small Structures (e.g. manholes, drainage boxes, etc.):	Each Structure
Strip Footings:	40 Linear Feet
Structure Footing excluding strip footings:	225 Square Feet
Embankments:	625 Square Feet
Interior Slab on Grade:	625 Square Feet
Side of Foundation Walls and Retaining Walls:	New lot every time wall changes direction or exceeds 40 Linear Feet

- Frequency per Lot:** One test per lift on each lot.
- Required Density:** 95% minimum of modified proctor.
- Comments:** N/A

Backfilling Trenches

- Assurance:** In-place density
- Assurance Reference:** ASTM D2922
- APWA Reference:** Section 31 23 26, Section 33 05 20
- Lot Size:** One pipe, pipe culvert, or box culvert and not more than 40 linear feet along a pipe, pipe culvert, or box culvert. When pipe/culvert connects to a

structure the lot is complete and a new lot will begin on the other side of the structure.

Frequency per Lot: One test per lift on each lot.

Required Density: 95 percent or greater relative to a modified proctor density (A-1 Soils) or standard proctor density (all other soils), APWA Section 31 23 26.

Comments: N/A

Part 3: Aggregate Base Course

Base Course Type I Placement: Pavement (includes curb, gutter and waterway when in conjunction with pavement placement).

Base Course Type II Placement: Curb, Gutter, Waterway, Sidewalk, Driveway Approach, Concrete Park Strip, Pedestrian Ramps, and Flatwork.

Base Course Type III Placement: Shoulders, landscaping and other non-structural, non-load bearing areas or areas determined by the Engineer as too small to test.

Base Course Type I Placement

Assurance: In-place density

Assurance Reference: ASTM D2922

APWA Reference: Section 31 23 26, Section 32 11 23

Lot Size: Production Day

Frequency per Lot: One per subplot of 1000 square yards.

Required Density: 95% minimum of modified proctor.

Comments: N/A

Base Course Type II Placement

Assurance: In-place density

Assurance Reference: ASTM D2922

APWA Reference: Section 31 23 26, Section 32 11 23

Lot Size: Production Day

Frequency per Lot: Curb, Gutter, or Waterway: One per 200 Linear Feet
Sidewalk or Concrete Park Strip: One per 400 Linear Feet
Driveway approach, Ped Ramp, or Flatwork: One per 400 Square Feet

Required Density: 95% minimum of modified proctor.

Comments: N/A

Base Course Type III Placement

- Assurance:** Visual acceptance of In-place density
- Assurance Reference:** Acceptance is limited to materials being furnished from sources found satisfactory under normal sampling and testing procedures.
- APWA Reference:** Section 31 23 26, Section 32 11 23
- Lot Size:** Production Day
- Frequency per Lot:** One report for each day material is placed.
- Required Density:** Suitable to overlying surface, or installation, or use. Verify compaction effort with Engineer.
- Comments:** N/A

Part 4: Concrete

Concrete Type I Placement: Concrete Paving

Concrete Type II Placement: Includes placement for Curb, Curb and Gutter, Driveways, Drive Approaches, Pedestrian Access Ramps, Sidewalks, Waterways, Flatwork, Patterned Concrete Park Strip, and Surface Utility Collars.

Concrete Type III Placement: Includes Class 2000 and Class 3000 concrete. Also includes Class 4000 concrete that is being used as utility collars underground.

NOTE: Concrete must be placed within 60 minutes of batching if air temperature is greater than 90 degrees Fahrenheit and within 90 minutes if air temperature is less than 90 degrees Fahrenheit. Concrete will be rejected if not placed within these time limits. Hydration stabilizers will not be allowed to extend placement time.

Concrete Type I Placement

- Assurance:** Slump, Air Content, and Concrete Temperature
- Assurance Reference:** ASTM C143, ASTM C231, ASTM C1064
- APWA Reference:** Section 32 13 13, Section 03 30 05, Section 03 30 10
- Lot Size:** Paving Day
- Frequency per Lot:** For each mix design test until two consecutive batches meet specification at the beginning of placement, after shutdowns of 1 hour or more, and after each failed batch. Randomly thereafter perform one test for every 200 cubic yards placed. If first determination fails, immediately retest. If

second test meets specification, immediately retest. Batch is rejected on two failed determinations.

Comments: Air results to be adjusted per results of correlation testing. Admixtures for air entrainment will be allowed on-site to correct low air content results. **Only ONE attempt per batch will be allowed.** Batch will be rejected if the test immediately following the attempt fails.

Concrete Type I Placement

Assurance: Air Content Correlation test to determine loss of air through the paver.

Assurance Reference: ASTM C231

APWA Reference: Section 32 13 13, Section 03 30 05, Section 03 30 10

Lot Size: Paving Day

Frequency per Lot: Two tests, one at the beginning of the pave and one approximately halfway through the pave. Perform air test in front of paver and again from the same load in the finished pavement. Apply adjustment to all remaining air tests.

Comments: N/A

Concrete Type I Placement

Assurance: Compressive Strength Test

Assurance Reference: ASTM C31, ASTM C39

APWA Reference: Section 32 13 13, Section 03 30 05, Section 03 30 10

Lot Size: Paving Day

Frequency per Lot: One strength test on the second batch and randomly thereafter every 800 square yards. Hand placements will be considered Type II Placements. A strength test consists of four cylinders. Break one cylinder at seven days and three cylinders at 28 days. The average strength of these three cylinders will be considered the test result.

Comments: Refer to APWA Section 32 13 13 for pay deductions applied when strength is under specification.

Concrete Type I Placement

Assurance: Thickness

Assurance Reference: ASTM C134

APWA Reference: Section 32 13 13

Lot Size: Paving Day

Frequency per Lot: One core per 1000 square yards. Final areas less than 500 square yards will be added to the previous section. Final areas over 500 square yards

will constitute a separate area. Hand placements are considered separately. One core per hand placement area
Comments: Refer to APWA Section 32 13 13 for pay deductions applied when thickness is deficient.

Concrete Type II Placement

Assurance: Slump, Air Content, and Concrete Temperature
Assurance Reference: ASTM C143, ASTM C231, ASTM C1064
APWA Reference: Section 32 16 13, Section 32 16, 14, Section 03 30 05, Section 03 30 10
Lot Size: Production Day
Frequency per Lot: For each mix design test until two consecutive batches meet specification at the beginning of placement, after shutdowns of 1 hour or more, and after each failed batch. Randomly thereafter perform one test for every 50 cubic yards placed
If first determination fails, immediately retest. If second test meets specification, immediately retest. Batch is rejected on two failed determinations.
Comments: Admixtures for air entrainment will be allowed on-site to correct low air content results. **Only ONE attempt per batch will be allowed.** Batch will be rejected if the test immediately following the attempt fails.

Concrete Type II Placement

Assurance: Compressive Strength Test
Assurance Reference: ASTM C31, ASTM C39
APWA Reference: Section 32 16 13, Section 32 16 14, Section 03 30 05, Section 03 30 10
Lot Size: Production Day
Frequency per Lot: One strength test for each 50 cubic yards or fraction thereof for each mix design. Visual acceptance and laboratory testing are done at Engineers discretion for daily quantities between 4 and 8 cubic yards. A strength test consists of four cylinders. Break one cylinder at seven days and three cylinders at 28 days. The average strength of these three cylinders will be considered the test result.
Comments: Refer to APWA Section 32 16 13 for pay deductions applied when strength is under specification.

Concrete Type II Placement

Assurance: Visual Acceptance of very small quantities of material.
Assurance Reference: Acceptance is limited to materials being furnished from sources found satisfactory under normal sampling and testing procedures.

- APWA Reference:** Section 03 30 05, Section 03 30 10
- Lot Size:** Not to exceed 4 cubic yards per day and not to exceed 50 cubic yards of total continuous visual acceptance quantities.
- Frequency per Lot:** One report for each day material is accepted.
- Comments:** Visual acceptance will not be allowed unless a West Valley City representative is on-site to perform the inspection.
-

Concrete Type III Placement

- Assurance:** Visual Acceptance or as mandated by Contractor Submittal
- Assurance Reference:** N/A
- APWA Reference:** Section 03 30 05, Section 03 30 10
- Lot Size:** Daily Placement
- Frequency per Lot:** One report for each day material is accepted.
- Comments:** Visual acceptance will not be allowed unless a West Valley City representative is on-site to perform the inspection.

Part 5: Asphalt

- HMA Type I Placement:** For projects with plan quantities of more than 1,000 tons.
- HMA Type II Placement:** For small projects with plan quantities of less than 1,000 tons or for work such as approaches, detours, driveways, traffic signals, utility work, etc.
- Or-**

Type I projects with a production day of less than 500 tons AND when additional production days are not anticipated within 7 calendar days.

HMA Type I Placement

- Assurance:** Asphalt Sieve Analysis and Binder Content
- Assurance Reference:** ASTM C117, ASTM C136, ASTM D6307
- APWA Reference:** Section 32 12 05, Section 32 12 16.13
- Lot Size:** Production Day
- Frequency per Lot:** One random sample per 500 tons subplot. Binder content by ignition oven test. Sieve analysis on the residue of the ignition oven tests.

If at least three random samples cannot be taken (less than 1100 tons placed), combine test results with the next day of production if it is a similar placement on the same lift, otherwise pay factors will be determined on the available sample results.

The lot may be increased to include up to three production days when agreed upon in advance by both the Contractor and the Engineer when less than 750 tons are anticipated per production day.

Comments: Contractor to sample from grade behind the paver and split the sample with the Engineer. Refer to APWA Section 32 12 05 for pay deductions applied when material is deficient.

HMA Type I Placement

Assurance: Theoretical Maximum Specific Gravity (Rice)

Assurance Reference: ASTM D2041

APWA Reference: Section 32 12 05, Section 32 12 16.13

Lot Size: Production Day

Frequency per Lot: One per sample (500 tons subplot) for the first three sublots in conjunction with VMA from samples taken with those for gradation and binder content. A determination is the average of two test results split from a single sample.

Comments: The average for the lot will be used to determine density of cores.

HMA Type I Placement

Assurance: Voids in the Mineral Aggregate (VMA) and Air Voids (V_a)

Assurance Reference: ASTM D6925 using Superpave Gyratory Compactor

APWA Reference: Section 32 12 05, Section 32 12 16.13

Lot Size: Production Day

Frequency per Lot: One per sample (500 tons subplot) for the first three sublots in conjunction with Rice determination from samples taken with those for gradation and binder content.

Comments: N/A

HMA Type I Placement

Assurance: In-Place Mat Density (Core Densities)

Assurance Reference: ASTM D5361, ASTM D2725

APWA Reference: Section 32 12 16.13

Lot Size: Production Day

Frequency per Lot: One set of cores per 1000 square yards sub-lots. Collect two cores for each set. Final areas less than 250 square yards will be added to the

previous sub-lot. Final areas over 250 square yards will constitute an additional sub-lot.

Comments: Provide one core from each set to the Engineer immediately after extracting. Refer to APWA Section 32 12 16.13 for pay deductions applied when density is deficient.

HMA Type I Placement

Assurance: Thickness

Assurance Reference: ASTM D5361

APWA Reference: Section 32 12 16.13

Lot Size: Production Day

Frequency per Lot: In conjunction with in-place mat density determination.

Comments: Refer to APWA Section 32 12 16.13 for pay deductions applied when thickness is deficient.

HMA Type I Placement

Assurance: Smoothness

Assurance Reference: ASTM E950, ASTM E1274

APWA Reference: Section 32 01 31

Lot Size:

Frequency per Lot:

Comments: Refer to referenced sections in APWA for acceptance procedures. Required on all Major Roads. Consult with ENGINEER prior to paving Minor Roads to determine if profilograph will be required.

HMA Type II Placement

Assurance: In-Place Mat Density (Nuclear Density Gauge)

Assurance Reference: ASTM D2950

APWA Reference: Section 32 12 16.13

Lot Size: Production Day

Frequency per Lot: One density determination per 1000 square yards sub-lots. Final areas less than 250 square yards will be added to the previous sub-lot. Final areas over 250 square yards will constitute an additional sub-lot.

Comments: Refer to APWA Section 32 12 16.13 for pay deductions applied when density is deficient.

HMA Type II Placement

- Assurance:** Smoothness
- Assurance Reference:** West Valley City Engineering Standards
- APWA Reference:** West Valley City Standards
- Lot Size:** See Comments
- Frequency per Lot:** N/A
- Comments:** Cuts with a profile deviation of 1/4 inch or greater in a 10-foot area will require a profile grind to eliminate a bump, or re-mill and pave the cut area to fill depressions with a minimum of 2-inches of newly placed asphalt. If the cut is in a roadway that requires special restoration per the WVC Engineering Standards, the profile deviation is reduced to 1/8-inch or greater in a 10-foot area.
-

HMA Placement

- Assurance:** Visual Acceptance – Requires City Engineer Approval
- Assurance Reference:** Acceptance is limited to materials being furnished from sources found satisfactory under normal sampling and testing procedures.
- APWA Reference:** Section 32 12 05, Section 32 12 16.13
- Lot Size:** Determined by City Engineer
- Frequency per Lot:** One report for each day material is accepted.
- Comments:** Visual acceptance will not be allowed unless a West Valley City representative is on-site to perform the inspection.
-



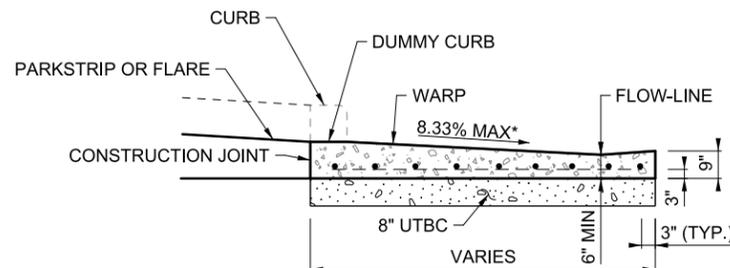
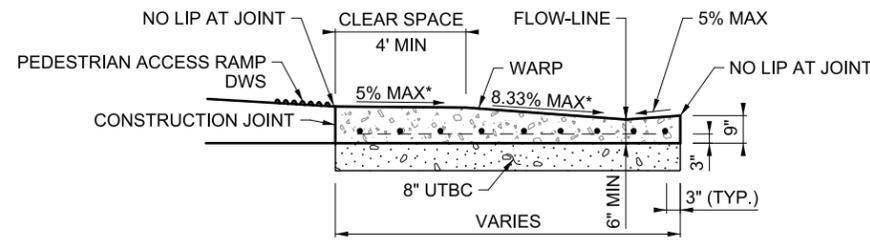
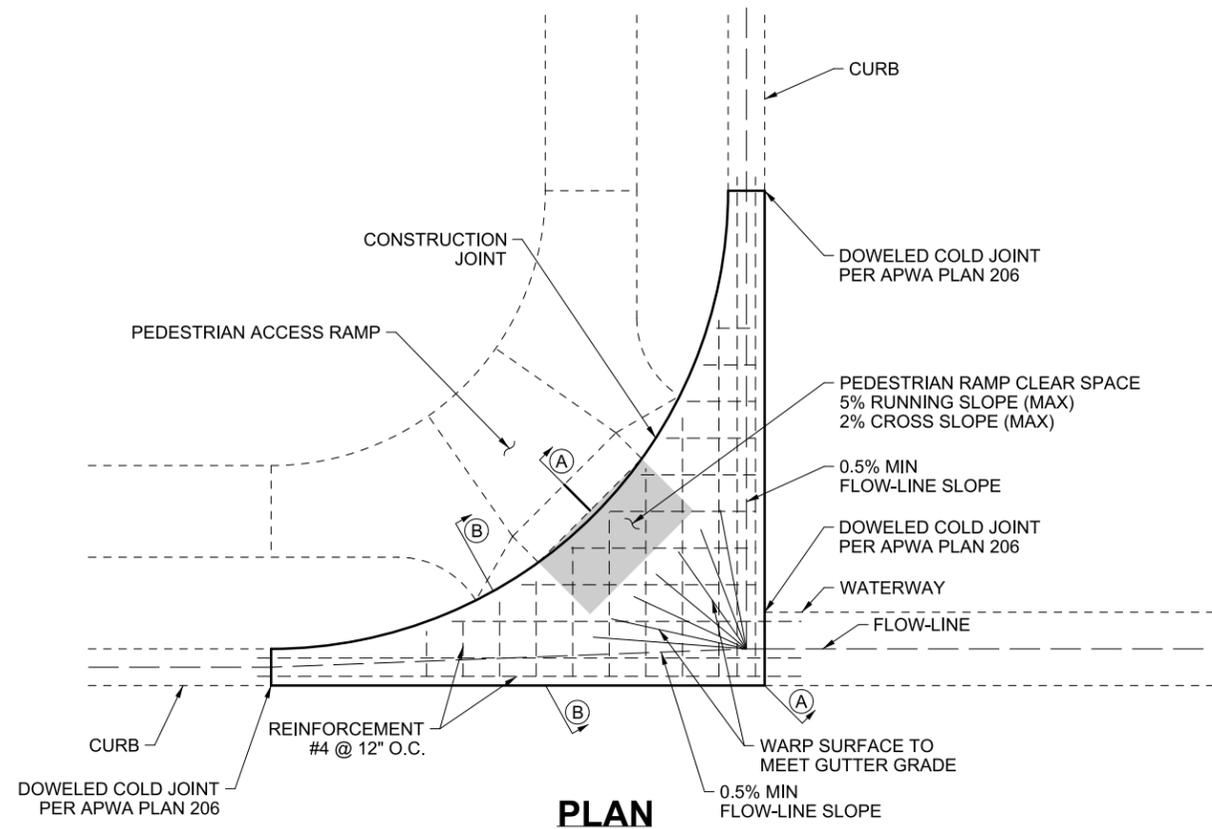
WEST VALLEY CITY

WEST VALLEY CITY
2020 ENGINEERING STANDARDS
8.2 - APPENDIX

WEST VALLEY CITY STANDARD DRAWINGS

APPLICABLE FOR WORK IN THE PUBLIC RIGHT OF WAY AND ON PUBLIC
INFRASTRUCTURE AND APPURTENANCES

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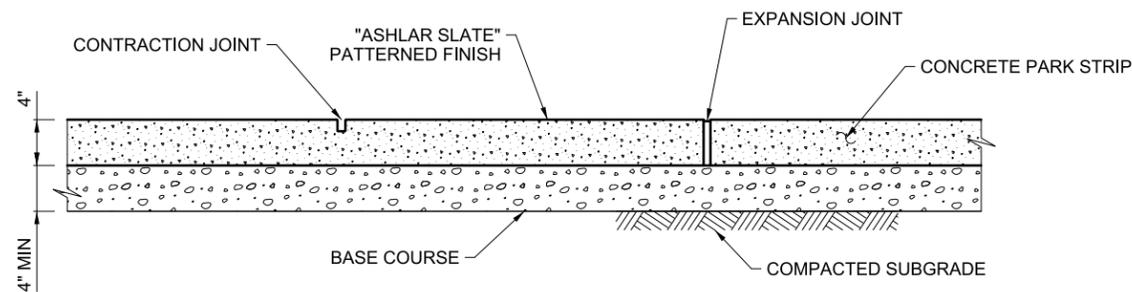
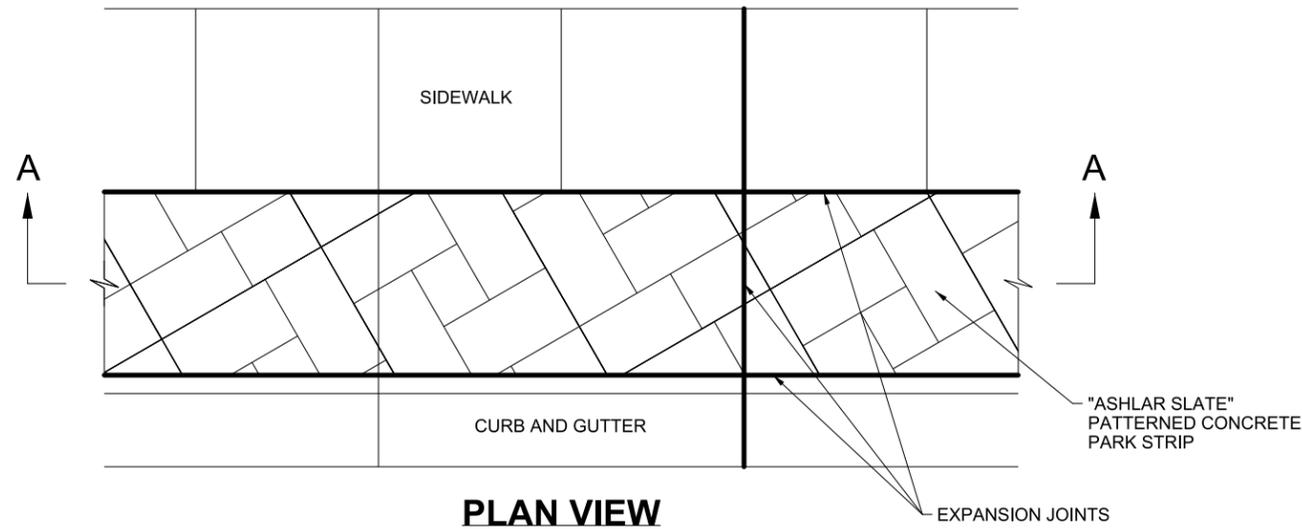


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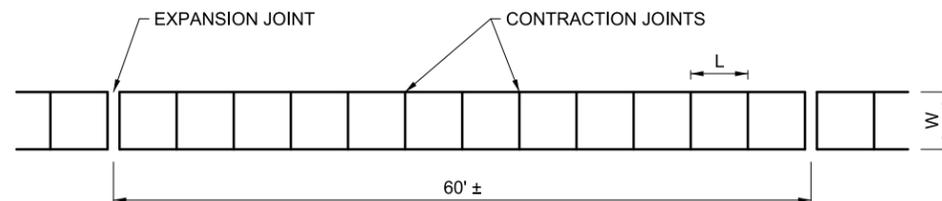
1. GENERAL
 - A. VARIANCE FROM SPECIFIED DIMENSIONS AND SLOPES MUST BE ACCEPTABLE TO THE ENGINEER. SYSTEM CONFIGURATION MAY BE CHANGED AT ENGINEER'S DISCRETION.
 - B. ADDITIONAL REQUIREMENTS ARE SPECIFIED IN APWA SECTION 32 16 13.
2. PRODUCTS
 - A. BASE COURSE: UNTREATED BASE COURSE, APWA SECTION 32 11 23. DO NOT USE GRAVEL AS A BASE COURSE.
 - B. EXPANSION JOINT FILLER: 1/2-INCH THICK TYPE F1 FULL DEPTH, APWA SECTION 32 13 73.
 - C. CONCRETE. CLASS 4000, APWA SECTION 03 30 04. IF NECESSARY, PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION; HOWEVER, AS CONCRETE CRAZING (SPIDER CRACKS) MAY DEVELOP IF AIR TEMPERATURE EXCEEDS 90 DEGREES F.
 - D. REINFORCEMENT. GALVANIZED OR EPOXY COATED, DEFORMED, 60 KSI YIELD GRADE STEEL, ASTM A615.
 - E. CONCRETE CURING AGENT: CLEAR MEMBRANE FORMING COMPOUND WITH FUGITIVE DYE (TYPE ID CLASS A), APWA SECTION 03 39 00.
3. EXECUTION
 - A. BASE COURSE PLACEMENT: APWA SECTION 32 05 10. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8-INCHES WHEN USING RIDING EQUIPMENT OR 6-INCHES WHEN USING HAND HELD EQUIPMENT. COMPACTION IS 95 PERCENT OR GREATER RELATIVE TO A MODIFIED PROCTOR DENSITY, APWA SECTION 31 23 26.
 - B. CONCRETE PLACEMENT: APWA SECTION 03 30 10.
 - 1) INSTALL EXPANSION JOINTS VERTICAL, FULL DEPTH, WITH TOP OF FILLER SET FLUSH WITH CONCRETE SURFACE. INSTALL AT THE START OR END OF A STREET INTERSECTION CURB RETURN. EXPANSION JOINTS ARE NOT REQUIRED IN CONCRETE PLACEMENT USING SLIP-FORM CONSTRUCTION.
 - 2) INSTALL CONTRACTION JOINTS VERTICAL, 1/8-INCH WIDE OR 1/4 SLAB THICKNESS IF THE SLAB IS GREATER THAN 8-INCHES THICK. MATCH JOINT LOCATION IN ADJACENT PORTLAND-CEMENT CONCRETE ROADWAY PAVEMENT.
 - 3) PROVIDE 1/2-INCH RADIUS EDGES. APPLY A BROOM FINISH. APPLY A CURING AGENT.
 - C. PROTECTION AND REPAIR. PROTECT CONCRETE FROM DEICING CHEMICALS DURING CURE. FLOW-LINE SLOPE NOT TO BE LESS THAN 0.5%, UNLESS APPROVED BY THE ENGINEER. REPAIR CONSTRUCTION THAT DOES NOT DRAIN. IF NECESSARY, FILL FLOW-LINE WITH WATER TO VERIFY.

DESIGN	CHECK	DRAWN	CHECK	REVISIONS	DATE	NO.	BY
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720				DESIGN: <i>[Signature]</i> PROFESSIONAL ENGINEER			
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720				DATE: 7/15/2020			
WVC STANDARD DRAWING				WATERWAY TRANSITION TABLE			
WVC STD. DWG. NO. WVC 213							

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SECTION A-A



$L_{MIN} = W$ $L_{MAX} \text{ (IN FEET)} = 1.5 \times W$

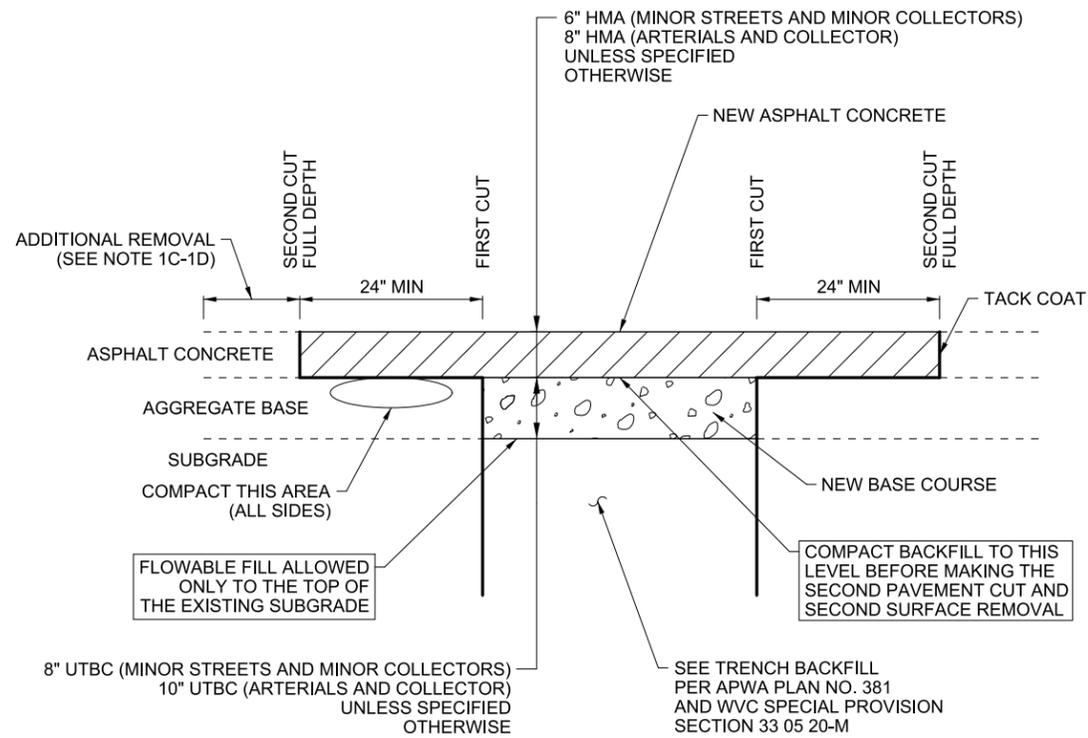
PARK STRIP JOINT DETAIL

NOTES:

1. GENERAL
 - A. VARIANCE FROM SPECIFIED DIMENSIONS AND SLOPES MUST BE ACCEPTABLE TO THE ENGINEER. SYSTEM CONFIGURATION MAY BE CHANGED AT ENGINEER'S DISCRETION.
 - B. COLOR: TWO-PART SHAKE COLOR COMPOUND; BASE COLOR WITH COLOR RELEASE. SCOFIELD UV RESISTANT:
 - 1) BASE COLOR: YOSEMITE BROWN PER DAVIS COLORS OR EQUAL APPROVED BY ENGINEER.
 - 2) COLOR RELEASE: DARK GRAY PER BRICKFORM STANDARD COLOR SELECTOR BROCHURE OR EQUAL APPROVED ENGINEER.
 - C. PATTERN: "ASHLAR SLATE" OR EQUAL APPROVED BY ENGINEER.
 - D. ADDITIONAL REQUIREMENTS ARE SPECIFIED IN APWA SECTION 32 16 13 AND WEST VALLEY CITY SPECIAL PROVISION 32 16 24-S.
2. PRODUCTS
 - A. BASE COURSE: UNTREATED BASE COURSE, APWA SECTION 32 11 23. DO NOT USE GRAVEL AS BASE COURSE.
 - B. EXPANSION JOINT FILLER: 1/2-INCH THICK TYPE F1 FULL DEPTH, APWA SECTION 32 13 73.
 - C. CONCRETE: CLASS 4000, APWA SECTION 03 30 04. IF NECESSARY, PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION; HOWEVER, AS CONCRETE CRAZING (SPIDER CRACKS) MAY DEVELOP IF AIR TEMPERATURE EXCEEDS 90 DEGREES FAHRENHEIT.
 - D. CONCRETE CURING AGENT: CLEAR MEMBRANE FORMING COMPOUND WITH FUGITIVE DYE (TYPE ID CLASS A), APWA SECTION 03 39 00.
3. EXECUTION
 - A. BASE COURSE PLACEMENT: APWA SECTION 32 05 10. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8-INCHES WHEN USING RIDING EQUIPMENT OR 6-INCHES WHEN USING HAND HELD EQUIPMENT. COMPACTION IS 95 PERCENT OR GREATER RELATIVE TO A MODIFIED PROCTOR DENSITY, APWA SECTION 31 23 26.
 - B. CONCRETE PLACEMENT: APWA SECTION 03 30 10.
 - 1) INSTALL EXPANSION JOINTS VERTICAL, FULL DEPTH, WITH TOP OF FILLER SET FLUSH WITH CONCRETE SURFACE.
 - 2) INSTALL CONTRACTION JOINTS VERTICAL, 1/8-INCH WIDE OR 1/4 SLAB THICKNESS IF THE SLAB IS GREATER THAN 8-INCHES THICK. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1. MAXIMUM PANEL LENGTH (IN FEET) IS 1.5 TIMES THE SLAB THICKNESS (IN INCHES).
 - 3) PROVIDE 1/2-INCH RADIUS EDGES. APPLY A BROOM FINISH. APPLY A CURING AGENT.

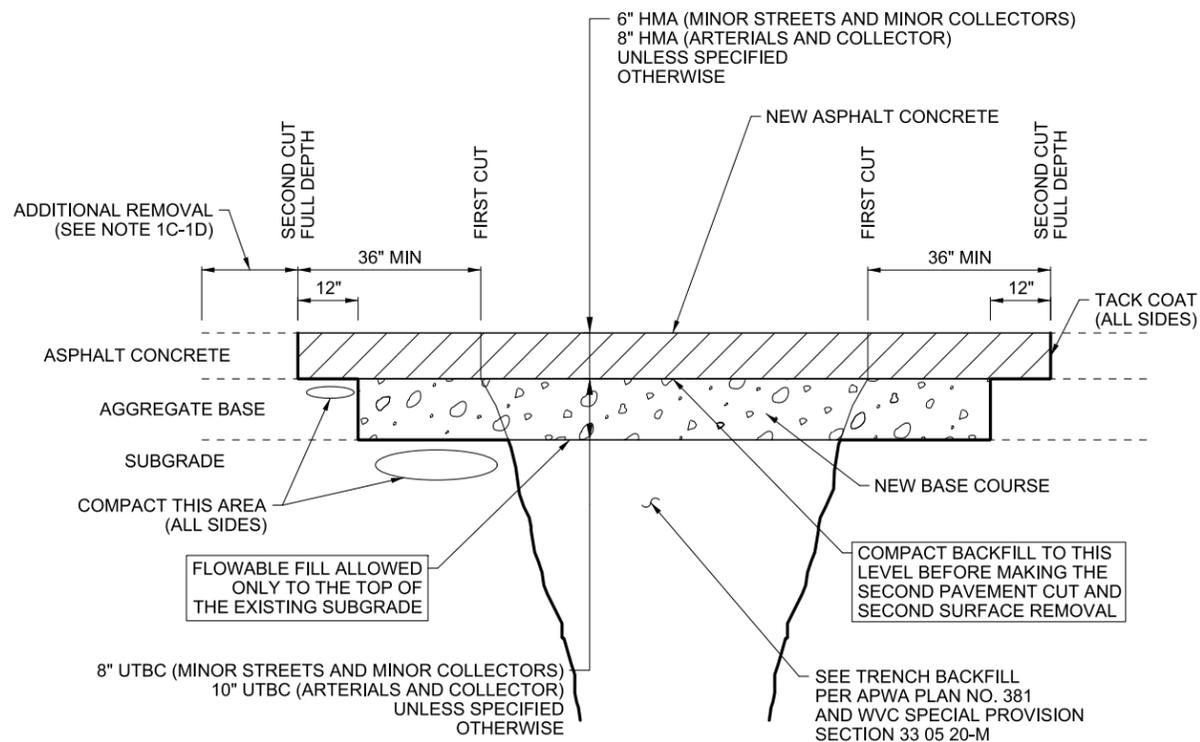
DESIGN	CHECK	DRAWN	CHECK	REVISIONS	DATE	NO.	BY
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720				DESIGN: <i>[Signature]</i> PROFESSIONAL ENGINEER DATE: 7/21/2020			
WVC STANDARD DRAWING PATTERNED CONCRETE PARK STRIP							
WVC STD. DWG. NO. WVC 232.1							

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SHALLOW EXCAVATION

(LESS THAN 72 INCHES FROM PAVEMENT SURFACE TO BOTTOM OF EXCAVATION)



DEEP EXCAVATION

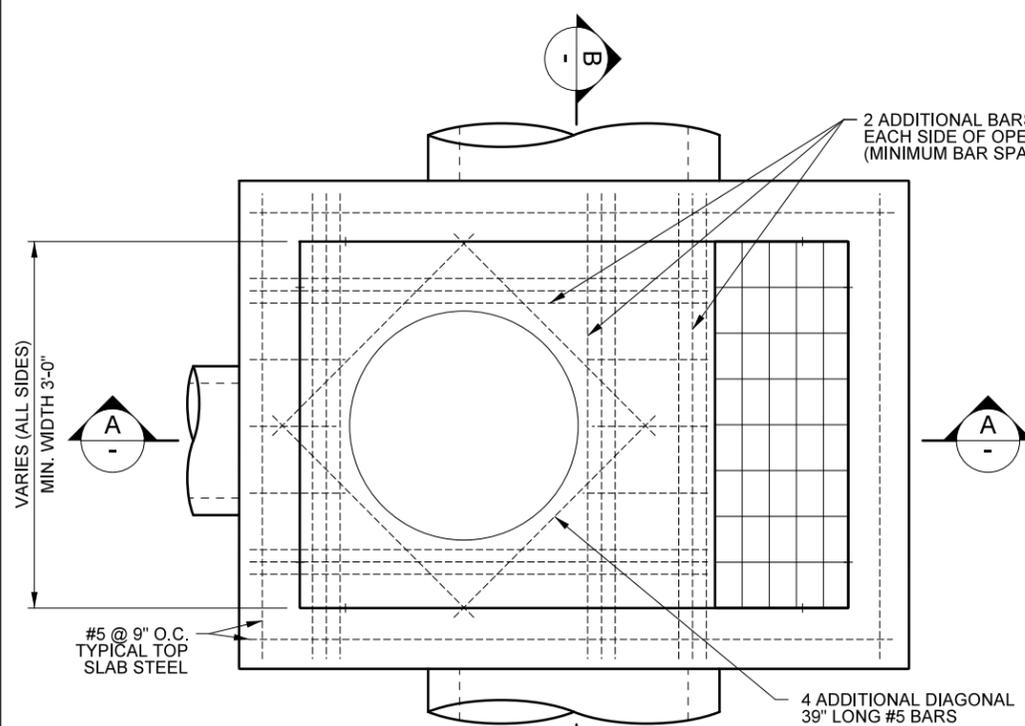
(MORE THAN 72 INCHES FROM PAVEMENT SURFACE TO BOTTOM OF EXCAVATION)

NOTES:

1. GENERAL
 - A. VERTICAL CUTS IN ASPHALT CONCRETE MAY BE DONE BY SAW OR PAVEMENT ZIPPING. IF CUTS GREATER THAN 10 INCHES ARE NECESSARY TO PREVENT PAVEMENT "BREAK OFF" CONSULT ENGINEER FOR DIRECTIONS ON HANDLING ADDITIONAL COSTS.
 - a. FIRST CUT IS TO BE THE WIDTH OF THE TRENCH AND IS INCIDENTAL TO THE PIPE REMOVAL/INSTALLATION PAY ITEMS.
 - b. SECOND CUT IS NOT TO BE PERFORMED UNTIL THE TRENCH HAS BEEN BACK FILLED AND THE UNTREATED BASE COURSE HAS BEEN PLACED AND COMPACTED. THE SECOND CUT IS INCIDENTAL TO THE ASPHALT T-PATCH BID PAY ITEM.
 - B. REPAIR T-PATCH IF ANY OF THE FOLLOWING CONDITIONS OCCUR PRIOR TO FINAL PAYMENT OR AT THE END OF THE ONE YEAR CORRECTION PERIOD:
 - a. PAVEMENT SURFACE DISTORTION EXCEEDS 1/4-INCH DEVIATION IN 10 FEET. REPAIR OPTION - PLANE OFF SURFACE DISTORTIONS. COAT PLANED SURFACE WITH A CATIONIC OR ANIONIC EMULSION THAT COMPLIES WITH APWA SECTION 32 12 03 OR RE-MILL AND PAVE THE CUT AREA TO FILL DEPRESSIONS WITH A MINIMUM OF 2-INCHES OF NEWLY PLACED ASPHALT.
 - b. SEPARATION APPEARS AT A CONNECTION TO AN EXISTING PAVEMENT OR ANY STREET FIXTURE. REPAIR OPTION - BLOW SEPARATION CLEAN AND APPLY JOINT SEALANT, PLAN 265.
 - c. CRACKS AT LEAST 1-FOOT LONG AND 1/4-INCH WIDE OCCUR MORE OFTEN THAN 1 IN 10 SQUARE FEET. REPAIR OPTION - BLOW CLEAN AND APPLY CRACK SEAL, PLAN 265.
 - d. PAVEMENT RAVELING IS GREATER THAN 1 SQUARE FOOT PER 100 SQUARE FEET. REPAIR OPTION - MILL AND INLAY, APWA SECTIONS 32 01 16.71 AND 32 12 05.
 - C. IF A SAW CUT IN THE DIRECTION OF VEHICULAR TRAVEL IS IN A WHEEL PATH, CONSULT ENGINEER FOR DIRECTIONS ON REMOVING ADDITIONAL PAVEMENT OTHER THAN THE AMOUNT SHOWN ON THE DRAWINGS.
 - D. ALLOWABLE REMAINING PAVEMENT WIDTH AS FOLLOWS:
 - a. ROADS WITH CURB AND GUTTER: 2 FEET MINIMUM.
 - b. ROADS WITHOUT CURB AND GUTTER 4 FEET MINIMUM.
2. PRODUCTS
 - A. BASE COURSE: UNTREATED BASE COURSE, APWA SECTION 32 11 23. DO NOT USE GRAVEL AS A BASE COURSE.
 - B. FLOWABLE FILL: TARGET IS 60 PSI IN 28 DAYS WITH 90 PSI MAXIMUM IN 28 DAYS, APWA SECTION 31 05 15. IT MUST FLOW EASILY REQUIRING NO VIBRATION FOR CONSOLIDATION.
 - C. TACK COAT: WVC SPECIAL PROVISION SECTION 32 12 13.13-M
 - D. ASPHALT CONCRETE: WVC SPECIAL PROVISION SECTION 32 12 05-M
3. EXECUTION
 - A. BASE COURSE PLACEMENT: APWA SECTION 32 05 10. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8-INCHES WHEN USING RIDING EQUIPMENT OR 6-INCHES WHEN USING HAND HELD EQUIPMENT. COMPACTION IS 95 PERCENT OR GREATER RELATIVE TO A MODIFIED PROCTOR DENSITY, APWA SECTION 31 23 26
 - B. FLOWABLE FILL: CURE TO INITIAL SET BEFORE PLACING AGGREGATE BASE OR ASPHALT PAVEMENT. USE IN EXCAVATIONS THAT ARE TOO NARROW TO RECEIVE COMPACTION EQUIPMENT. ALLOWED ONLY TO THE TOP OF THE EXISTING SUBGRADE.
 - C. TACK COAT. CLEAN ALL HORIZONTAL AND VERTICAL SURFACES. APPLY FULL COVERAGE ALL SURFACES.
 - D. ASPHALT CONCRETE: UNLESS INDICATED OTHERWISE, LIFT THICKNESS PLACEMENT IS 3-INCHES MINIMUM AFTER COMPACTION. COMPACT TO 94 PERCENT OF ASTM D 2041 (RICE DENSITY).

DESIGN	CHECK	DRAWN	CHECK	REMARKS	DATE	NO. BY	
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720				7/15/2020 DATE PROFESSIONAL ENGINEER			
WVC STANDARD DRAWING ASPHALT CONCRETE T-PATCH							
WVC STD. DWG. NO. WVC 255							

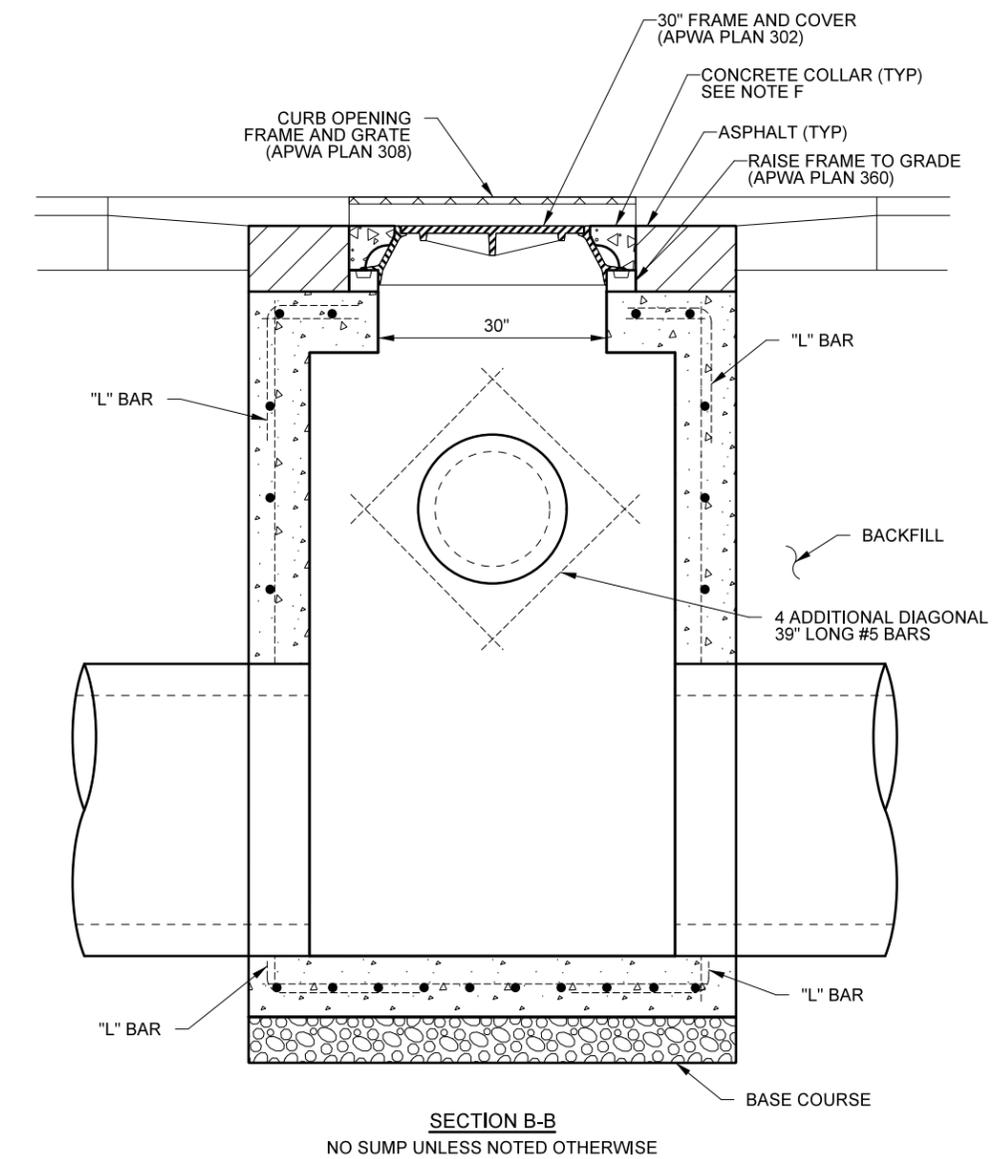
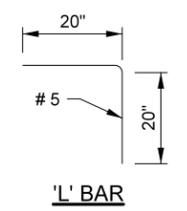
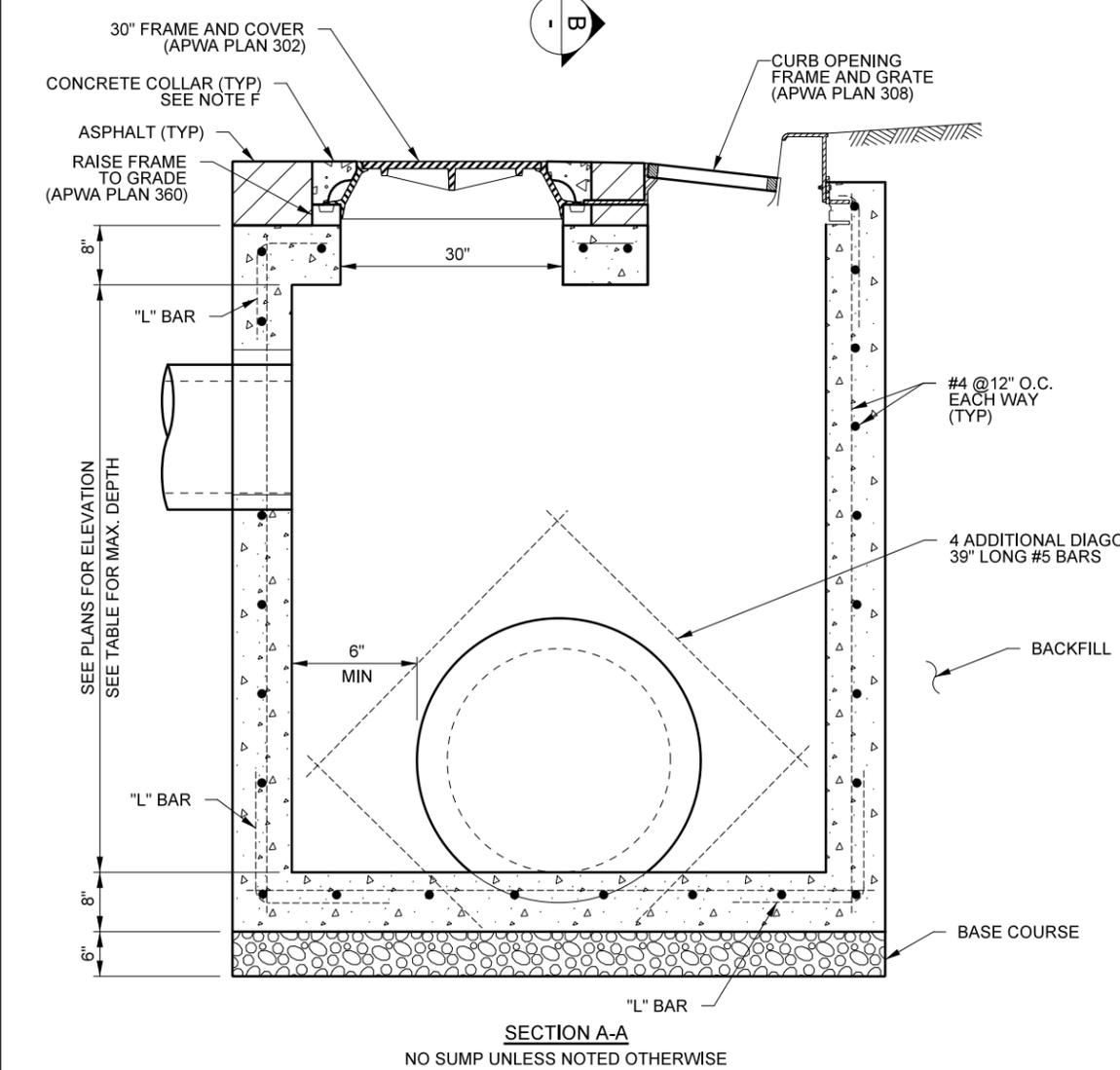
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WALL THICKNESS AND WALL STEEL				
LOW WATER TABLE				
MAXIMUM BOX WIDTH	6 FEET	8 FEET	8 FEET	9 FEET
MAXIMUM BOX DEPTH	5 FEET	8 FEET	12 FEET	12 FEET
WALL THICKNESS	8 INCHES	8 INCHES	12 INCHES	12 INCHES
WALL CURTAIN STEEL	#5 @ 12"	#5 @ 6"	#5 @ 6"	#7 @ 9"
MODIFICATIONS FOR HIGH WATER TABLE				
WALL THICKNESS	8 INCHES	10 INCHES	16 INCHES	12 INCHES
WALL CURTAIN STEEL	#5 @ 9"	#5 @ 6"	#5 @ 6"	#6 @ 6"

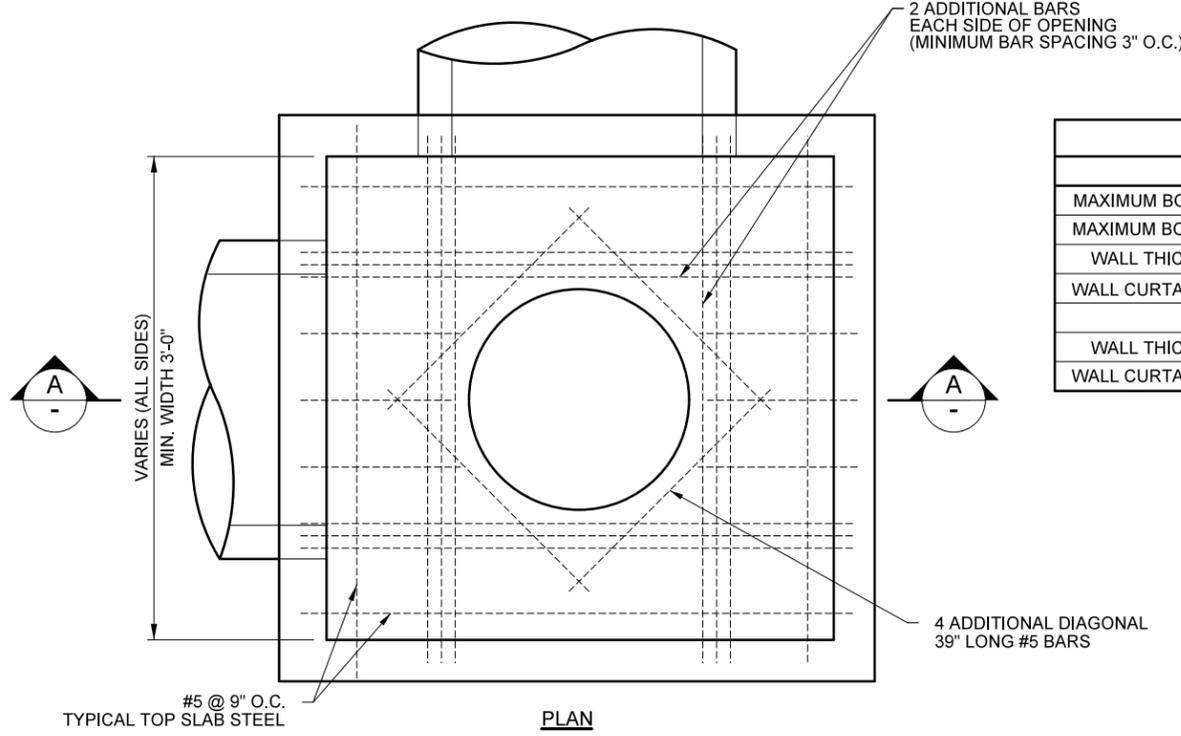
NOTES:

1. **GENERAL**
 - A. THE DRAWING SHOWS TYPICAL PIPE CONNECTIONS. REFER TO CONSTRUCTION DRAWINGS FOR CONNECTION LOCATIONS OR REFER TO FIELD LOCATION OF EXISTING PIPING WHEN DETERMINING PIPE CONNECTION TO THE BOX.
2. **PRODUCTS**
 - A. BASE COURSE: UNTREATED BASE COURSE, APWA SECTION 32 11 23.
 - B. BACKFILL: GRANULAR BACKFILL BORROW PER APWA SECTION 31 05 13.
 - C. CONCRETE: CLASS 4000, APWA SECTION 03 30 04.
 - D. REINFORCEMENT: DEFORMED, 60 ksi YIELD GRADE STEEL, ASTM A 615.
 - E. STABILIZATION-SEPARATION GEOTEXTILE: HIGH MARV, WOVEN OR NON-WOVEN, APWA SECTION 31 05 19.
3. **EXECUTION**
 - A. FOUNDATION STABILIZATION: GET ENGINEER'S PERMISSION TO USE FREE DRAINING GRANULAR BACKFILL IN A GEOTEXTILE WRAP TO STABILIZE AN UNSTABLE FOUNDATION.
 - B. BASE COURSE PLACEMENT: APWA SECTION 32 11 23. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION. COMPACTION IS 95 PERCENT OR GREATER RELATIVE TO A MODIFIED PROCTOR DENSITY, APWA SECTION 31 23 26.
 - C. REINFORCEMENT: CENTER STEEL IN WALLS AND SLABS WITH A MINIMUM COVER OF 2-INCHES. KEEP STEEL 2-INCHES CLEAR AROUND PIPE AND LID OPENING. TIE-BARS REQUIRED AT ALL CORNERS, VERTICAL AND HORIZONTAL. TIE-BARS CONNECTING TWO WALLS MUST MATCH WALL BAR SIZE AND SPACING. TIE-BARS CONNECTING WALLS TO TOP AND BOTTOM SLABS MUST MATCH SLAB STEEL SIZE SPACING.
 - D. CONCRETE PLACEMENT: APWA SECTION 03 30 10. ADJUST CONCRETE DIMENSIONS AT FRAME ACCORDINGLY. PROVIDE 1/2-INCH RADIUS EDGES. APPLY A BROOM FINISH. APPLY A CURING AGENT.
 - E. BACKFILL: PROVIDE BACKFILL AGAINST ALL OF THE BOX WALLS. PEA GRAVEL AND RECYCLED RAP AGGREGATE IS NOT ALLOWED. WATER JETTING IS NOT ALLOWED. MAXIMUM LIFT THICKNESS (BEFORE COMPACTION) IS 8-INCHES WHEN USING RIDING EQUIPMENT AND 6-INCHES WHEN USING HAND HELD EQUIPMENT. COMPACTION IS 95 PERCENT OR GREATER OF PROCTOR PER APWA SECTION 31 23 26.
 - F. INSTALL CONCRETE COLLAR PER APWA PLAN 362 WITH A DEVIATION FROM THE DRAWING FOR THE COLLARS TO BE RECESSED BELOW PAVEMENT FROM 1/8-INCH TO 1/4-INCH. ANY CONCRETE COLLAR ON A UTILITY COVER RECESSED ABOVE OR BELOW THE ALLOWABLE TOLERANCES MUST BE REPLACED.



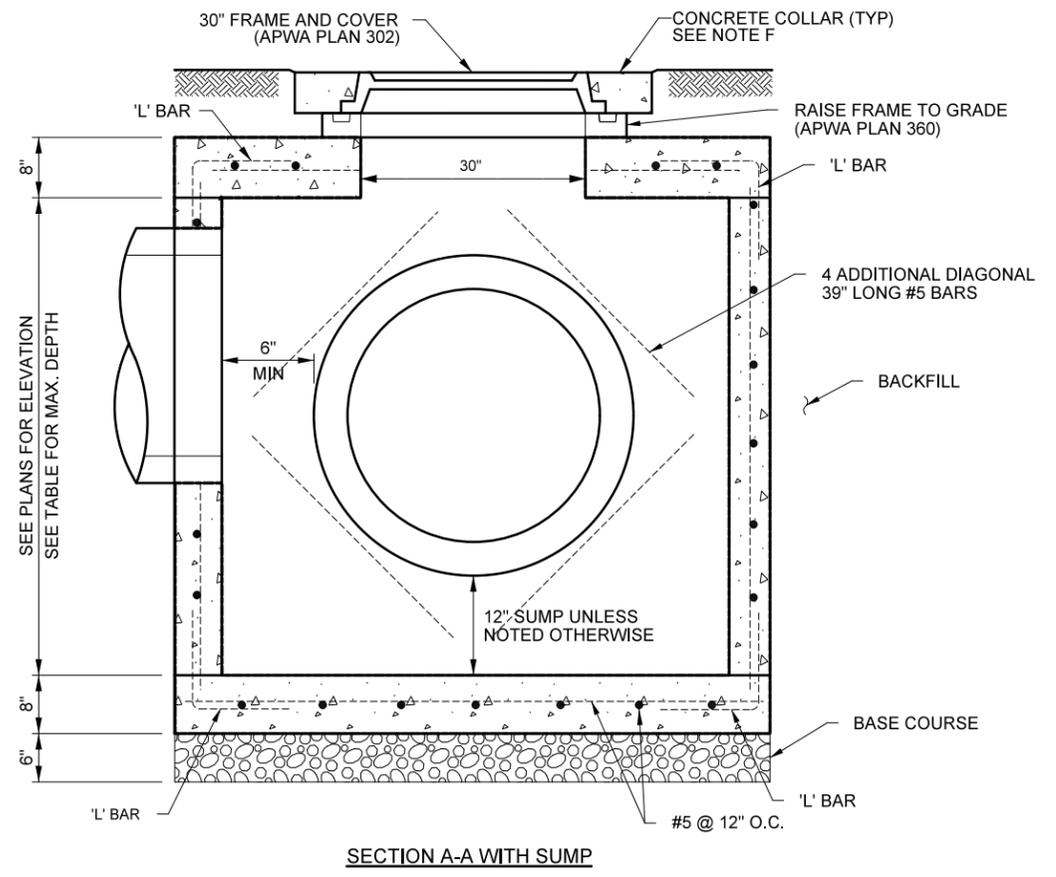
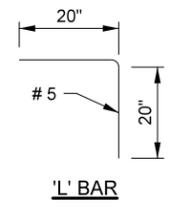
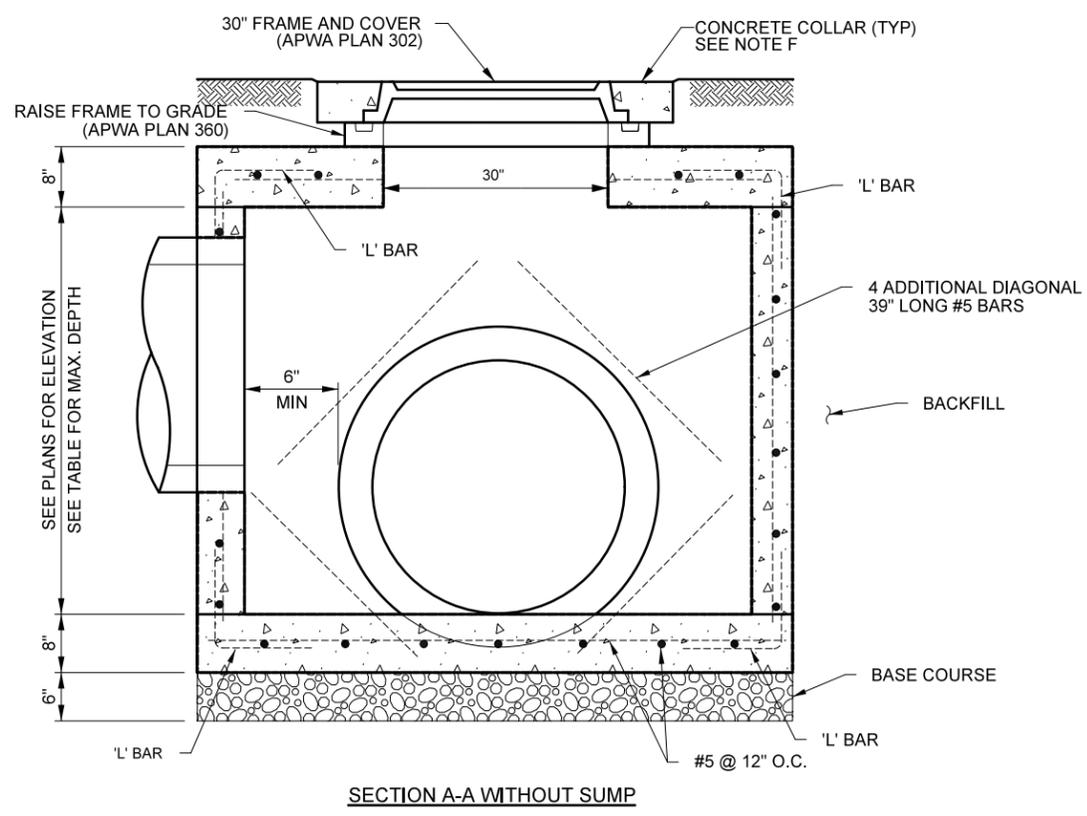
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<p>WVC STANDARD DRAWING MODIFIED COMBO BOX</p>	<p>DATE: 7/15/2020 PROFESSIONAL ENGINEER: _____</p>
<p>WVC STD. DWG. NO. WVC 316</p>	

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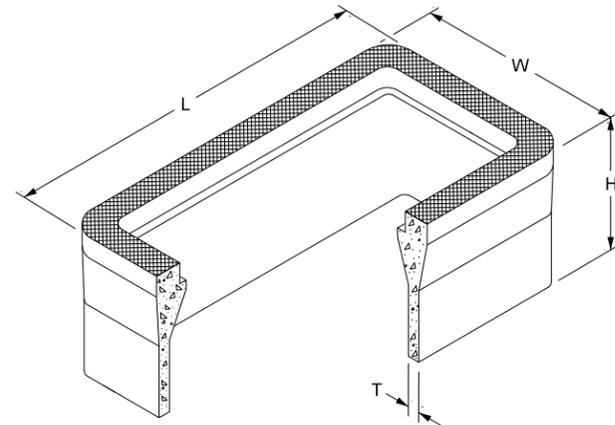
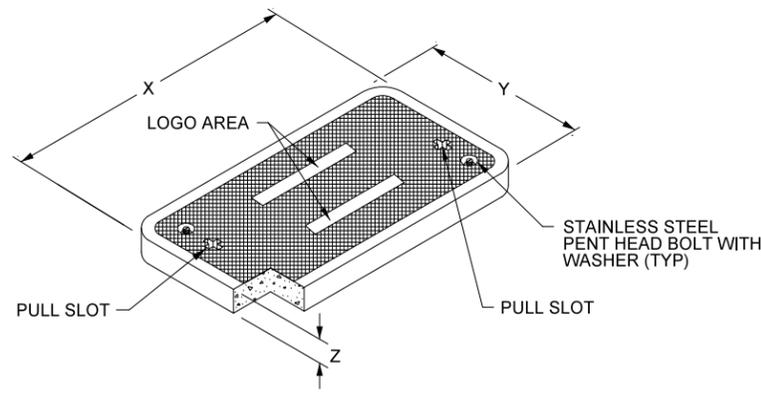
WALL THICKNESS AND WALL STEEL				
LOW WATER TABLE				
MAXIMUM BOX WIDTH	6 FEET	8 FEET	8 FEET	9 FEET
MAXIMUM BOX DEPTH	5 FEET	8 FEET	12 FEET	12 FEET
WALL THICKNESS	8 INCHES	8 INCHES	12 INCHES	12 INCHES
WALL CURTAIN STEEL	#5 @ 12"	#5 @ 6"	#5 @ 6"	#7 @ 9"
MODIFICATIONS FOR HIGH WATER TABLE				
WALL THICKNESS	8 INCHES	10 INCHES	16 INCHES	12 INCHES
WALL CURTAIN STEEL	#5 @ 9"	#5 @ 6"	#5 @ 6"	#6 @ 6"

- NOTES:**
- GENERAL**
 - A. THE DRAWING SHOWS TYPICAL PIPE CONNECTIONS. REFER TO CONSTRUCTION DRAWINGS FOR CONNECTION LOCATIONS OR REFER TO FIELD LOCATION OF EXISTING PIPING WHEN DETERMINING PIPE CONNECTION TO THE BOX.
 - PRODUCTS**
 - A. BASE COURSE: UNTREATED BASE COURSE, APWA SECTION 32 11 23.
 - B. BACKFILL: GRANULAR BACKFILL BORROW PER APWA SECTION 31 05 13.
 - C. CONCRETE: CLASS 4000, APWA SECTION 03 30 04.
 - D. REINFORCEMENT: DEFORMED, 60 KSI YIELD GRADE STEEL, ASTM A 615.
 - E. STABILIZATION-SEPARATION GEOTEXTILE: HIGH MARV. WOVEN OR NON-WOVEN, APWA SECTION 31 05 19.
 - EXECUTION**
 - A. FOUNDATION STABILIZATION: GET ENGINEER'S PERMISSION TO USE FREE DRAINING GRANULAR BACKFILL IN A GEOTEXTILE WRAP TO STABILIZE AN UNSTABLE FOUNDATION.
 - B. BASE COURSE PLACEMENT: APWA SECTION 32 11 23. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION. COMPACTION IS 95 PERCENT OR GREATER RELATIVE TO A MODIFIED PROCTOR DENSITY, APWA SECTION 31 23 26.
 - C. REINFORCEMENT: CENTER STEEL IN WALLS AND SLABS WITH A MINIMUM COVER OF 2-INCHES. KEEP STEEL 2-INCHES CLEAR AROUND PIPE AND LID OPENING. TIE-BARS REQUIRED AT ALL CORNERS, VERTICAL AND HORIZONTAL. TIE-BARS CONNECTING TWO WALLS MUST MATCH WALL BAR SIZE AND SPACING. TIE-BARS CONNECTING WALLS TO TOP AND BOTTOM SLABS MUST MATCH SLAB STEEL SIZE SPACING.
 - D. CONCRETE PLACEMENT: APWA SECTION 03 30 10. ADJUST CONCRETE DIMENSIONS AT FRAME ACCORDINGLY. PROVIDE 1/2-INCH RADIUS EDGES. APPLY A BROOM FINISH. APPLY A CURING AGENT.
 - E. BACKFILL: PROVIDE BACKFILL AGAINST ALL OF THE BOX WALLS. PEA GRAVEL AND RECYCLED RAP AGGREGATE IS NOT ALLOWED. WATER JETTING IS NOT ALLOWED. MAXIMUM LIFT THICKNESS (BEFORE COMPACTION) IS 8-INCHES WHEN USING RIDING EQUIPMENT AND 6-INCHES WHEN USING HAND HELD EQUIPMENT. COMPACTION IS 95 PERCENT OR GREATER OF PROCTOR PER APWA SECTION 31 23 26.
 - F. INSTALL CONCRETE COLLAR PER APWA PLAN 362 WITH A DEVIATION FROM THE DRAWING FOR THE COLLARS TO BE RECESSED BELOW PAVEMENT FROM 1/8-INCH TO 1/4-INCH. ANY CONCRETE COLLAR ON A UTILITY COVER RECESSED ABOVE OR BELOW THE ALLOWABLE TOLERANCES MUST BE REPLACED.



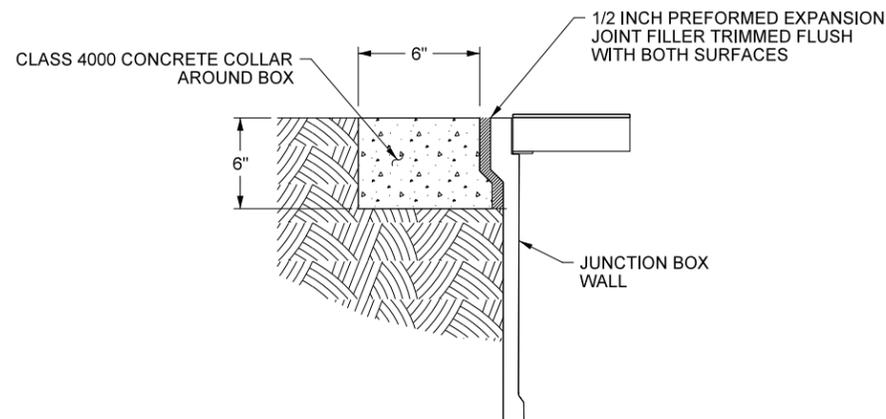
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WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720			
DESIGN			7/15/2020 DATE
WVC STANDARD DRAWING CLEANOUT BOX			
WVC STD. DWG. NO. WVC 331			

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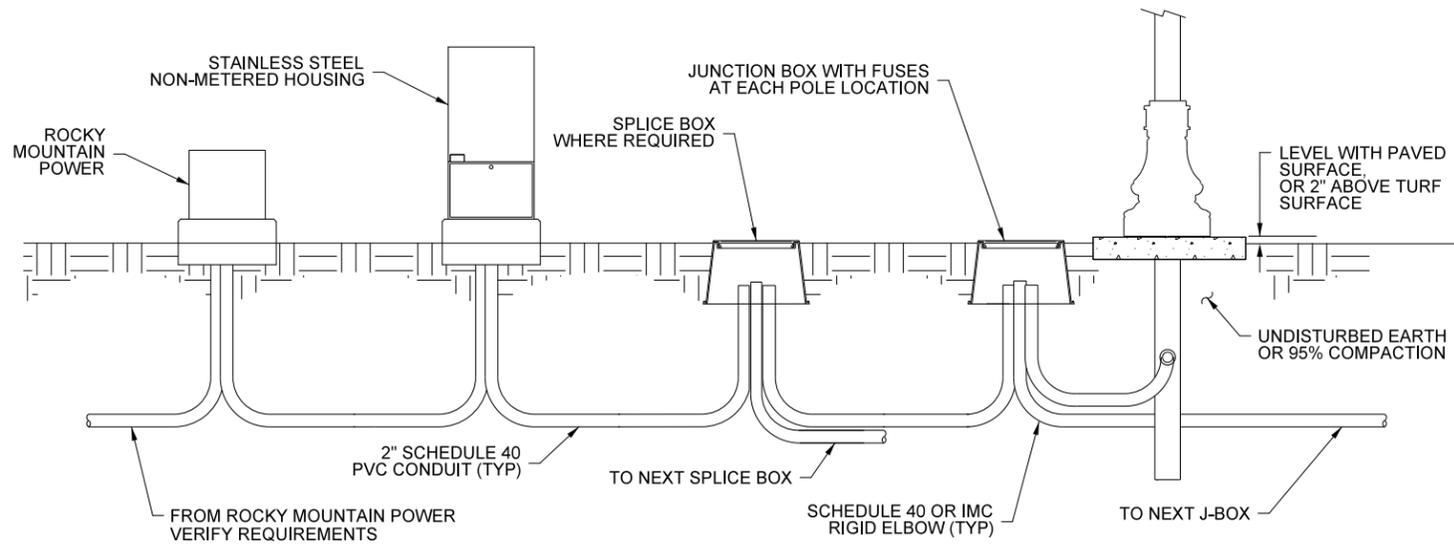
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II-PC	24	37 5/8	1 1/2	26	35 5/8	24	3
III-PC	24	49 5/8	2	32 1/2	47 5/8	30 1/2	3

POLYMER-CONCRETE JUNCTION BOX DETAIL

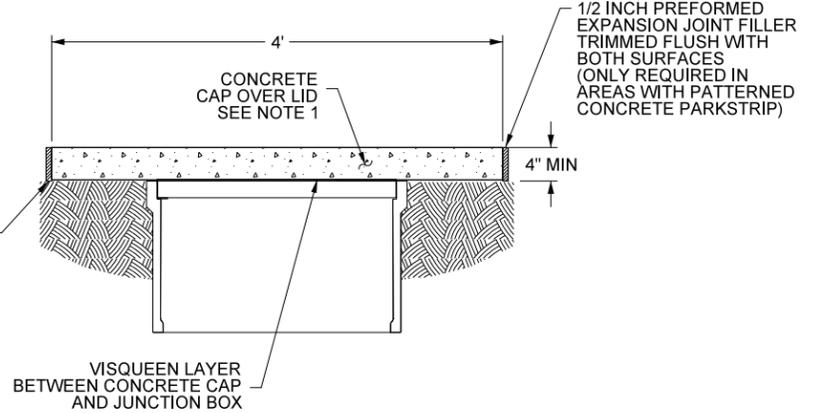
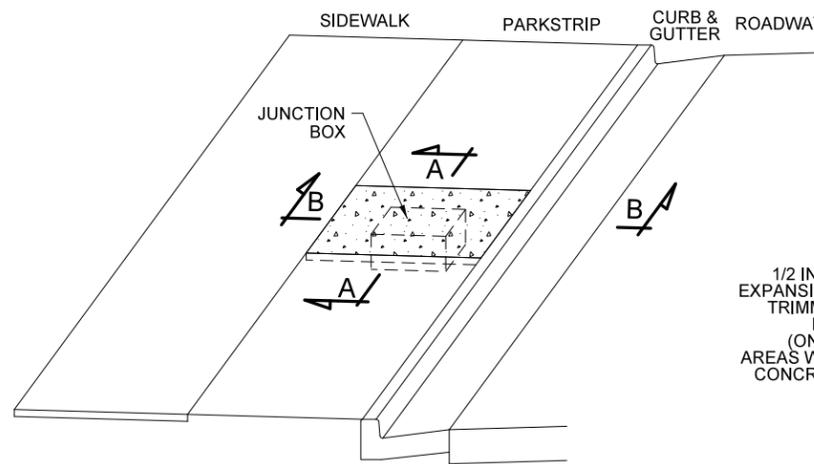


JUNCTION BOX CONCRETE COLLAR DETAIL

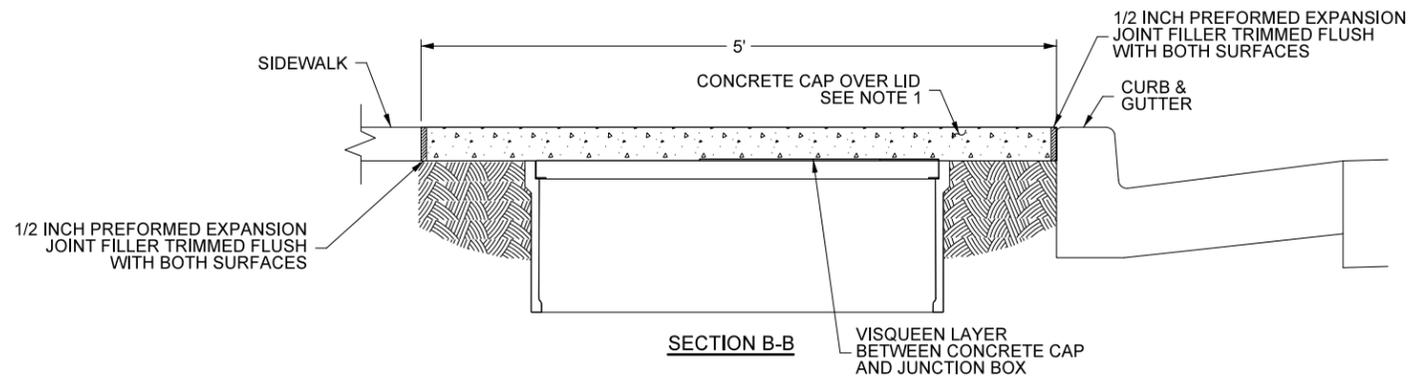
(ONLY REQUIRED ON BOXES WITHOUT CONCRETE CAP - FUTURE USE JUNCTION BOXES)



STREET LIGHT UNDERGROUND DETAIL



SECTION A-A



SECTION B-B

JUNCTION BOX CONCRETE CAP DETAIL

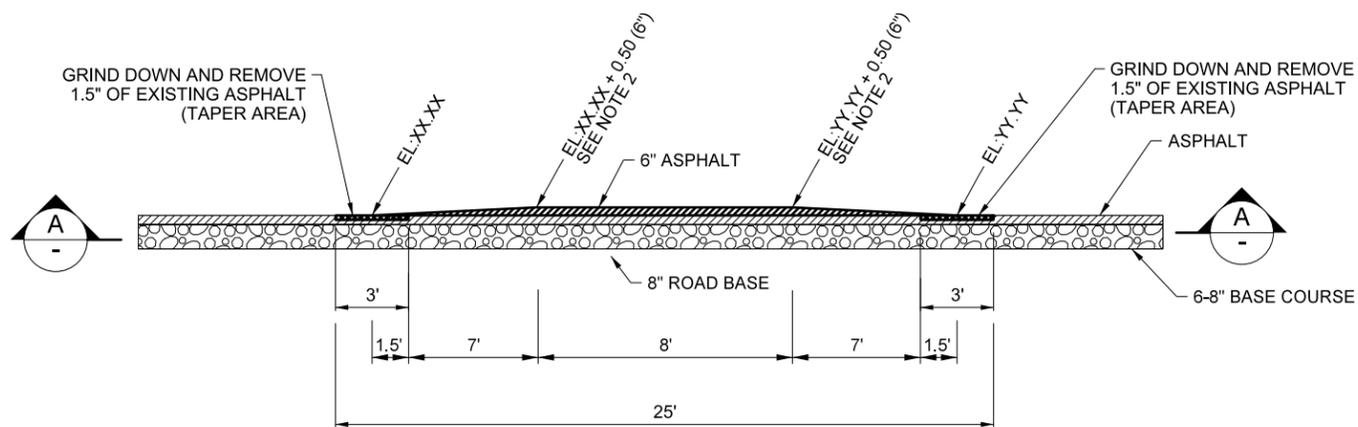
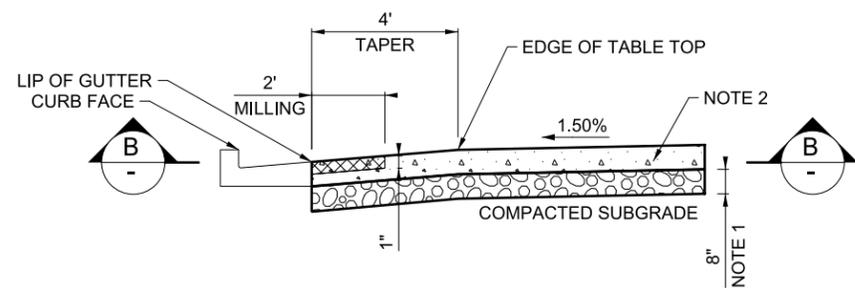
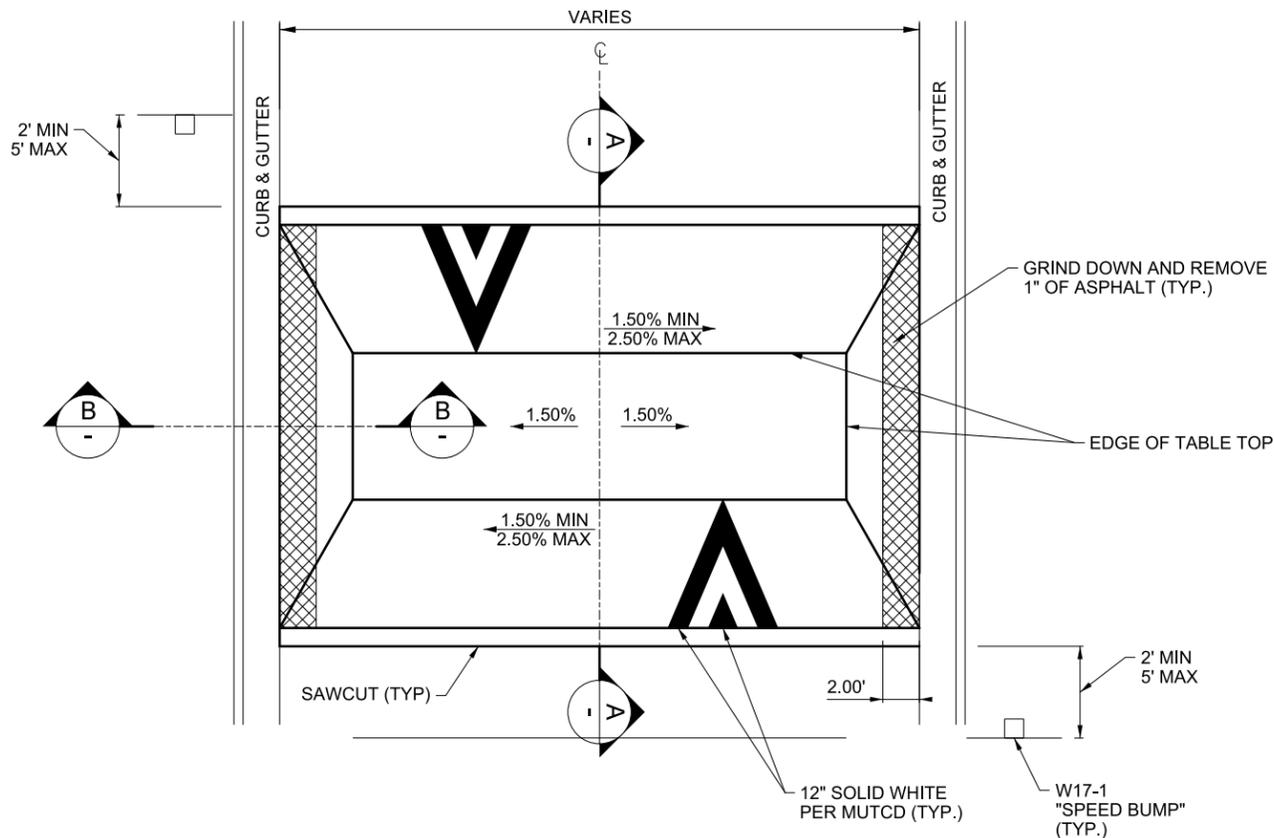
(CONCRETE CAP REQUIRED ON ALL JUNCTION BOXES UTILIZED FOR STREET LIGHTING SYSTEMS)

NOTE:

1. IF JUNCTION BOX IS IN A PATTERNED CONCRETE PARKSTRIP AREA THE CONCRETE CAP IS TO BE PATTERNED CONCRETE PARKSTRIP WITH AN EXPANSION JOINT AROUND ALL 4 SIDES OF THE CAP. OTHER AREAS TO BE CLASS 4000 CONCRETE.

DESIGN	CHECK	DRAWN	CHECK	REVISIONS	DATE	NO. BY
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720				7/15/2020 DATE PROFESSIONAL ENGINEER		
WVC STANDARD DRAWING JUNCTION BOX				DESIGN		
WVC STD. DWG. NO. WVC 731						

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NOTES:

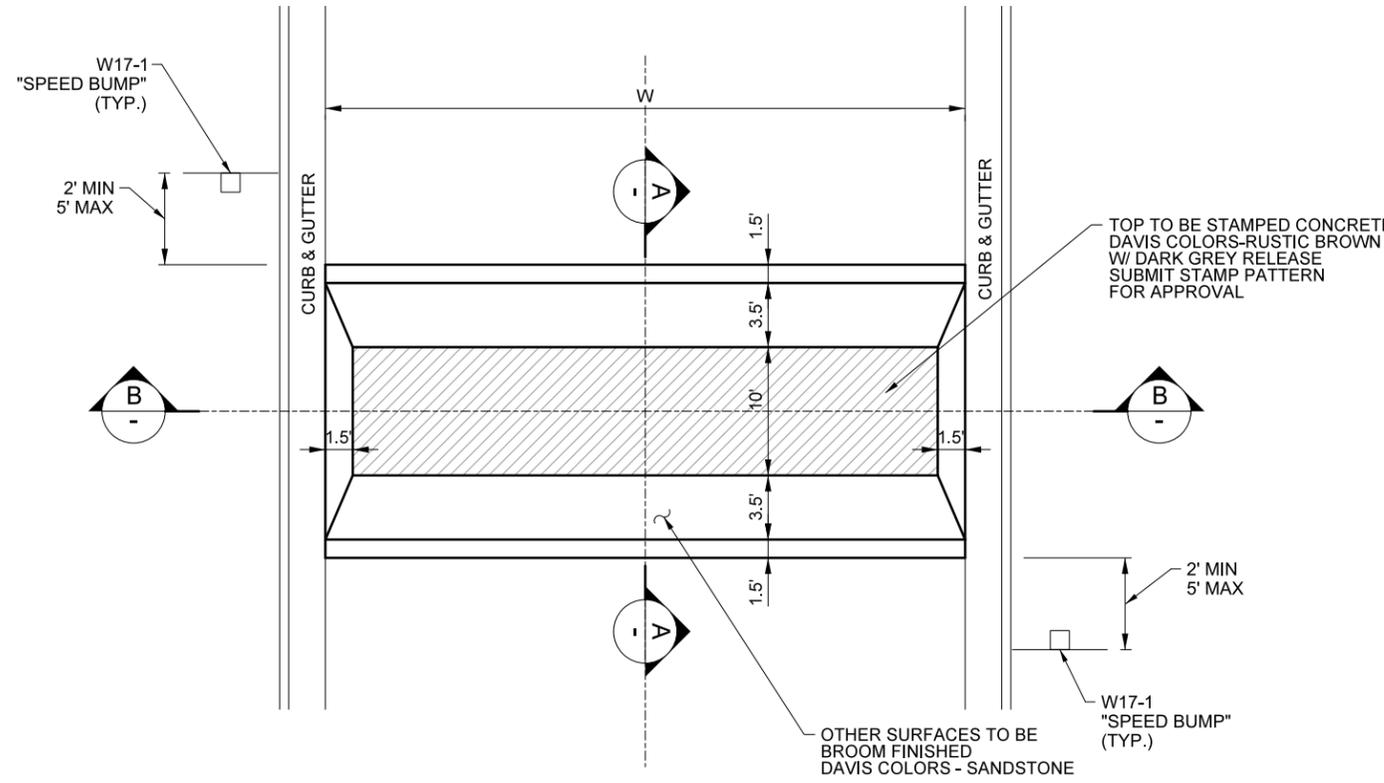
1. UNTREATED BASE COURSE; PROVIDE CLASS A UNTREATED BASE COURSE SPECIFIED IN APWA SECTION 32 11 23.
 - A. DO NOT USE GRAVEL AS A SUBSTITUTE FOR UNTREATED BASE COURSE.
 - B. PLACE MATERIAL PER APWA SECTION 32 05 10.
 - C. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8 INCHES WHEN USING RIDING COMPACTION EQUIPMENT OR 6 INCHES WHEN USING HAND HELD COMPACTION EQUIPMENT.
2. ASPHALT PAVEMENT: USE PG 64-34 DM 1/2 ASPHALT CONCRETE PAVEMENT SPECIFIED IN APWA SECTION 32 12 05.
 - A. INSTALL IN LIFT NO GREATER THAN 3 INCHES AFTER COMPACTION.
 - B. COMPACT EACH LIFT TO 93.5 PERCENT OF AST D 2041 (RICE METHOD) PLUS OR MINUS 2 PERCENT.
3. TACK COAT: APWA SECTION 32 12 13.13 CLEAN ALL VERTICAL SURFACES ADJACENT TO THE PATCH. APPLY FULL COVERAGE TACK COAT.
4. ASPHALT PAVEMENT JOINTS: PROVIDE A NEAT STRAIGHT JOINT BETWEEN EXISTING AND NEW ASPHALT CONCRETE. SAW-CUT JOINT IF EXISTING PAVEMENT EXCEEDS 2 INCHES IN THICKNESS PAVEMENT.
5. JOINT REPAIR: IF A CRACK OCCURS AT THE CONNECTION TO EXISTING PAVEMENT OR AT ANY STREET FIXTURE, SEAL THE CRACK PER APWA SECTION 32 01 17.
6. MILLING: APWA SECTION 02 41 14
 - A. REMOVE COMPACTED MILLING ON PREPARED SURFACES
 - B. MILL AROUND GUTTER LIP RADII TO SPECIFIED DEPTH PRIOR TO PAVING.
7. PAINT: PROVIDE ALKYD RESIN PAINT AS SPECIFIED IN UDOT SECTION 02765 AND SECTION 02768. REMOVE DIRT, LOOSE STONES, OR OTHER FOREIGN MATERIAL IMMEDIATELY PRIOR TO APPLYING. APPLY PER UDOT SECTION 02765 AND 02768.



W17-1
30" x 30" SINGLE LANE
36" x 36" MULTI LANE

<p>WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720</p>	<p>DESIGN _____ CHECK _____ DRAWN _____ CHECK _____</p>
<p>WVC STANDARD DRAWING</p>	<p>ASPHALT SPEED TABLE</p>
<p>DESIGN _____ DATE _____ PROFESSIONAL ENGINEER _____</p>	
<p>WVC STD. DWG. NO. WVC 762.1</p>	

7/20/2020 7:29:39 PM H:\ENGDIV\STANDARDS\WEST VALLEY CITY\WVC Standard Drawings\WVC 762.2 - Concrete Speed Table.dgn

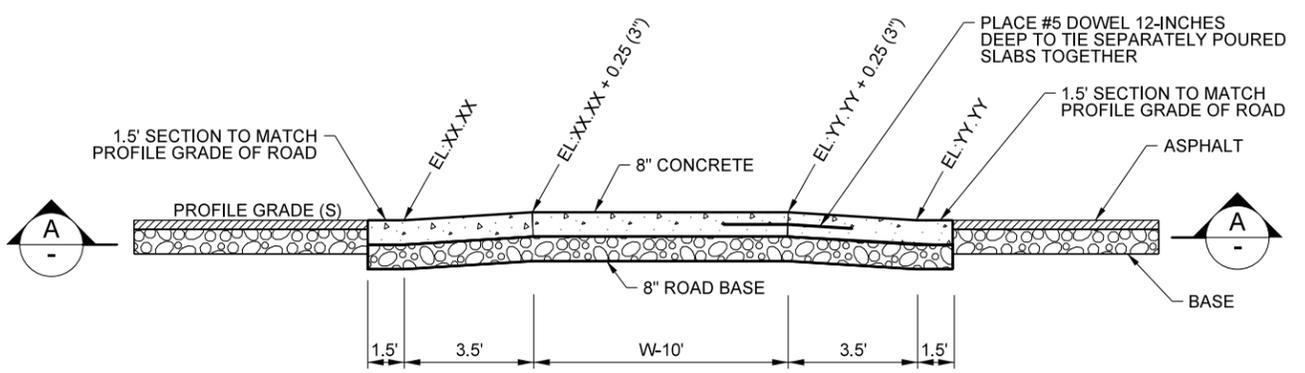
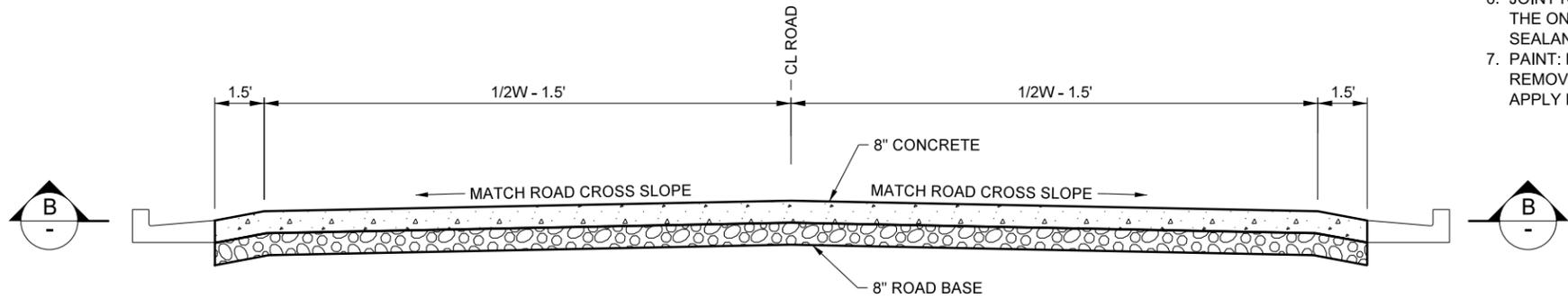


TOP TO BE STAMPED CONCRETE
DAVIS COLORS-RUSTIC BROWN
W/ DARK GREY RELEASE
SUBMIT STAMP PATTERN
FOR APPROVAL

OTHER SURFACES TO BE
BROOM FINISHED
DAVIS COLORS - SANDSTONE

NOTES:

1. UNTREATED BASE COURSE; PROVIDE CLASS A UNTREATED BASE COURSE SPECIFIED IN APWA SECTION 32 11 23.
 - A. DO NOT USE GRAVEL AS A SUBSTITUTE FOR UNTREATED BASE COURSE.
 - B. PLACE MATERIAL PER APWA SECTION 32 05 10.
 - C. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8 INCHES WHEN USING RIDING COMPACTION EQUIPMENT OR 6 INCHES WHEN USING HAND HELD COMPACTION EQUIPMENT.
2. CONCRETE: CLASS 4000, APWA SECTION 03 30 04.
 - A. IF NECESSARY, PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION; HOWEVER, AS CONCRETE CRAZING (SPIDER CRACKS) MAY DEVELOP IF AIR TEMPERATURE EXCEEDS 90°F.
 - B. CONCRETE PLACEMENT PER APWA SECTION 03 30 10. CLEAN ALL EDGES OF DIRT, OIL AND LOOSE DEBRIS. PROVIDE 1/2" RADIUS EDGES, APPLY A CURING AGENT
3. CONCRETE CURING AGENT: WHITE PIGMENTED MEMBRANE FORMING COMPOUND (TYPE II CLASS A OR B), APWA SECTION 03 39 00.
4. EXPANSION JOINT: VERTICAL, FULL DEPTH WITH TOP OF FILLER SET FLUSH WITH CONCRETE SURFACE.
5. CONTRACTION JOINT: VERTICAL, 1/8" WIDE AND 1/3 SLAB THICKNESS. MATCH JOINT LOCATIONS IN ADJACENT PORTLAND-CEMENT CONCRETE ROADWAY PAVEMENT.
6. JOINT REPAIR: IF A CRACK OR SEPARATION OCCURS AT A CONNECTION TO EXISTING PAVEMENT DURING THE ONE YEAR CORRECTION PERIOD, BLOW THE CRACK OR SEPARATION CLEAN AND APPLY JOINT SEALANT PER PLAN 265.
7. PAINT: PROVIDE ALKYD RESIN PAINT AS SPECIFIED IN UDOT SECTION 02765 AND SECTION 02768. REMOVE DIRT, LOOSE STONES, OR OTHER FOREIGN MATERIAL IMMEDIATELY PRIOR TO APPLYING. APPLY PER UDOT SECTION 02765 AND 02768.



W17-1
30" x 30" SINGLE LANE
36" x 36" MULTI LANE

SPEED TABLE DETAILS
NTS

<p>WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720</p>	<p>DESIGN _____ DATE _____ CHECK _____ DRAWN _____ CHECK _____</p>
<p>WVC STANDARD DRAWING</p>	<p>CONCRETE SPEED TABLE</p>
<p>PROFESSIONAL ENGINEER</p>	
<p>WVC STD. DWG. NO. WVC 762.2</p>	



FIXTURE BY: MOUNTAIN STATES LIGHTING
 LED FIXTURE# M-VH-57-1-HSS-IP66-BK
 RD8645-BK PE CELL (10YR WARRANTY)

FINISH;
 BLACK

TENON
 3" x 3" TALL

REINFORCED HAND-HOLE
 WITH COVER
 GROUND LUG LOCATED
 INSIDE POLE OPPOSITE
 COVER

POLE BY MOUNTAIN STATES LIGHTING
 PART# 18'OH/14'AG-SRA-4.5"(,220)-TT/3X3-WE-BK
 PAINTED BLACK WITH THE FIRST 48"
 COATED WITH COLD TAR EPOXY
 EPA: MIN 30 IN 80 MPH ZONE (1.3 GUST FACTOR)
 (15 YEAR STRUCTURAL WARRANTY)



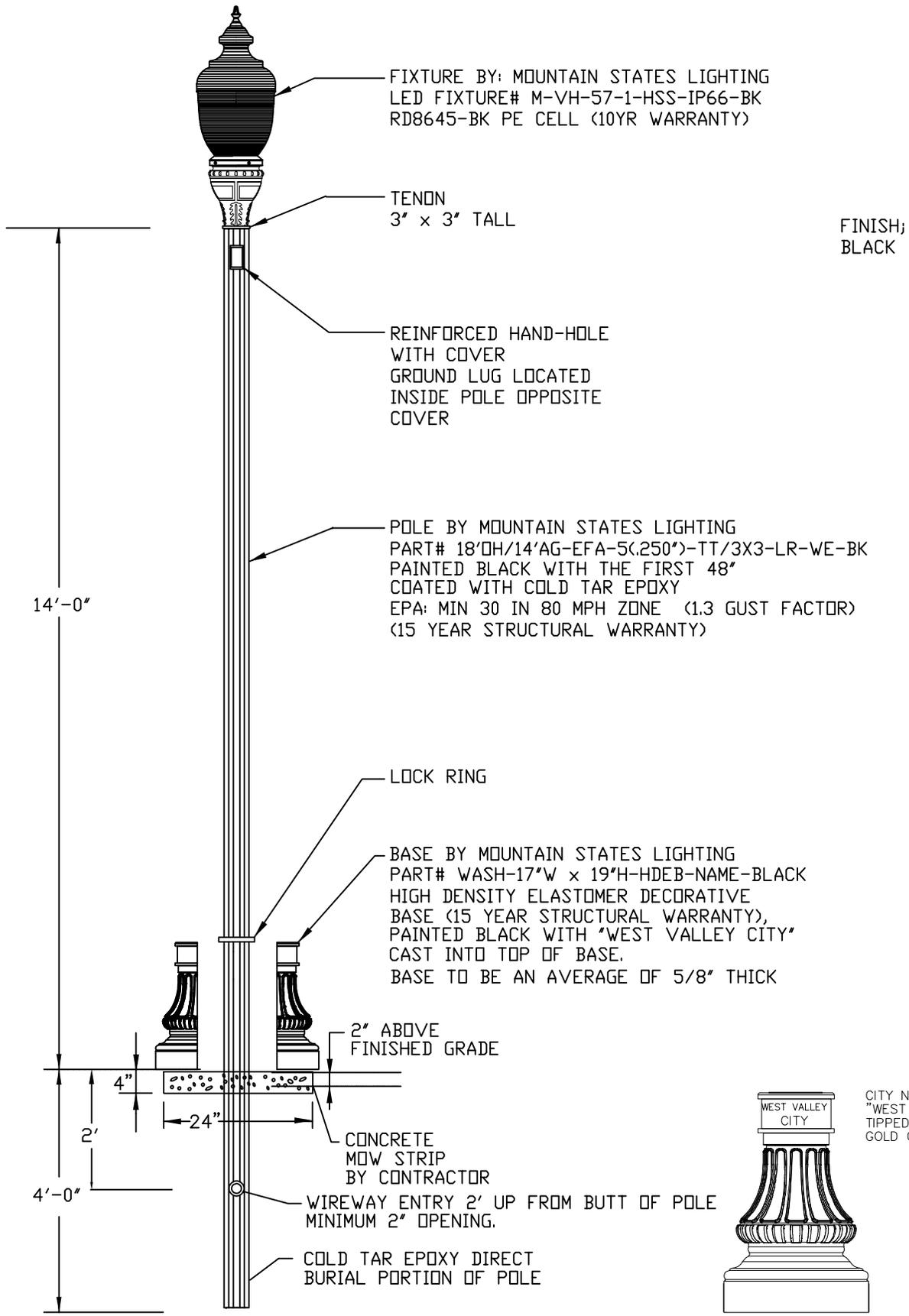
CONCRETE
 MOW STRIP
 BY CONTRACTOR

2" ABOVE
 FINISHED GRADE

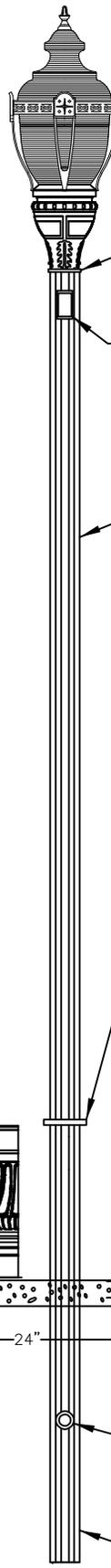
WIREWAY ENTRY 2' UP FROM BUTT OF POLE
 MINIMUM 2" OPENING.

COLD TAR EPOXY DIRECT
 BURIAL PORTION OF POLE

SHEET NO. 1	STANDARD DRAWING	 WEST VALLEY CITY PUBLIC WORKS DEPARTMENT TRANSPORTATION DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720			
	LP-01				
	RESIDENTIAL STREET LIGHT				
	PROJECT NUMBER		WVC STREET LIGHTING	DESIGN	FTM
				REVISIONS	DATE NO. BY



SHEET NO. 2	STANDARD DRAWING	 WEST VALLEY CITY PUBLIC WORKS DEPARTMENT TRANSPORTATION DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720						
	LP-02							
	SECONDARY STREET LIGHT							
	PROJECT NUMBER		WVC STREET LIGHTING	DESIGN	FTM	DATE	10-08-2019	
			REMARKS	REVISIONS		DATE	NO.	BY



FIXTURE BY: MOUNTAIN STATES LIGHTING
 LED FIXTURE# M-VH-57-2-HSS-IP66-BK
 RD8645-BK PE CELL (10YR WARRANTY)

TENDON
 3" x 3" TALL

REINFORCED HAND-HOLE
 WITH COVER
 GROUND LUG LOCATED
 INSIDE POLE OPPOSITE
 COVER

POLE BY MOUNTAIN STATES LIGHTING
 PART# 20'OH/16'AG-EFA-5(250)-TT/3X3-LR-WE-BK
 PAINTED BLACK WITH THE FIRST 48"
 COATED WITH COLD TAR EPOXY
 EPA: MIN 30 IN 80 MPH ZONE (1.3 GUST FACTOR)
 (15 YEAR STRUCTURAL WARRANTY)

FINISH;
 BLACK

16'
 MOUNTING
 HEIGHT

LOCK RING

BASE BY MOUNTAIN STATES LIGHTING
 PART# WASH-17"W x 19"H-HDEB-NAME-BLACK
 HIGH DENSITY ELASTOMER DECORATIVE
 BASE, (15 YEAR STRUCTURAL WARRANTY)
 PAINTED BLACK WITH "WEST VALLEY CITY"
 CAST INTO TOP OF BASE.
 BASE TO BE AN AVERAGE OF 5/8" THICK

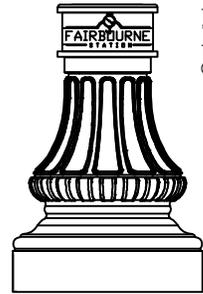
2" ABOVE
 FINISHED GRADE

CONCRETE
 MOW STRIP
 BY CONTRACTOR

WIREWAY ENTRY 2' UP
 FROM BUTT OF POLE
 MINIMUM 2" OPENING.

COLD TAR EPOXY DIRECT
 BURIAL PORTION OF POLE

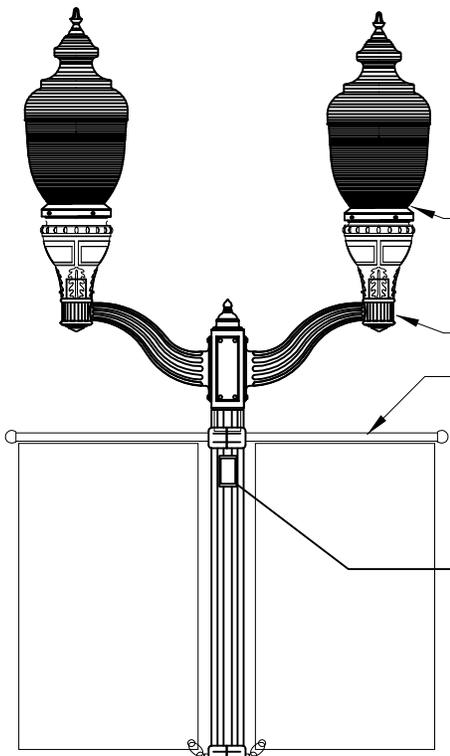
4"
 2'
 4'
 EMBED



TOWN CENTER LOGO
 "FAIRBOURNE STATION"
 TIPPED IN NON-FADING
 GOLD COLOR 5YR WARRANTY

BASE DETAIL

SHEET NO. 4	STANDARD DRAWING	 WEST VALLEY CITY PUBLIC WORKS DEPARTMENT TRANSPORTATION DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	REMARKS			
	LP-3A					
	FAIRBOURNE STREET LIGHT					
	PROJECT NUMBER WVC STREET LIGHTING			DESIGN FTM	DATE 10-09-2019	
				REVISIONS		



FIXTURE BY: MOUNTAIN STATES LIGHTING
 LED FIXTURE# M-VH-57-1-HSS-IP66-BK
 RD8645-BK PE CELL (10YR WARRANTY)

TWIN ARM BRACKET # NSC2420
 HUB STYLE DOUBLE BANNER ARM
 # SLX-PLC-SH2021-DBL

REINFORCED HAND-HOLE
 WITH COVER
 GROUND LUG LOCATED
 INSIDE POLE OPPOSITE
 COVER

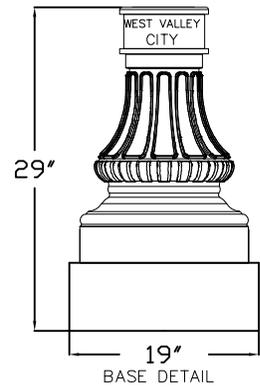
HUB STYLE DOUBLE BANNER CLIP
 # SLX-PLC-CLP-DBL

POLE BY MOUNTAIN STATES
 16' EXTRUDED ALUMINUM
 PAINTED WITH THE FIRST 16"
 OF POLE & BASE PLATE TO BE COATED
 WITH ZINC COLD GALVANIZING COMPOUND
 HAND HOLE LOCATED BEHIND 2-PIECE BASE
 COLOR: BLACK

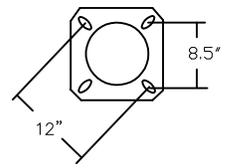
BASE BY MOUNTAIN STATES
 PART# NW-19"W x 29"H-HDEB-BLACK-WVC-BKAWAY
 HIGH DENSITY ELASTOMER DECORATIVE
 BASE, (15 YEAR STRUCTURAL WARRANTY)
 PAINTED BLACK WITH A MODIFIED
 URETHANE COATING AND "WEST VALLEY CITY"
 MOLDED IN TOP PORTION OF BASE
 BASE TO BE AN AVERAGE OF 5/8" THICK

LOCK RING
 HANDHOLE

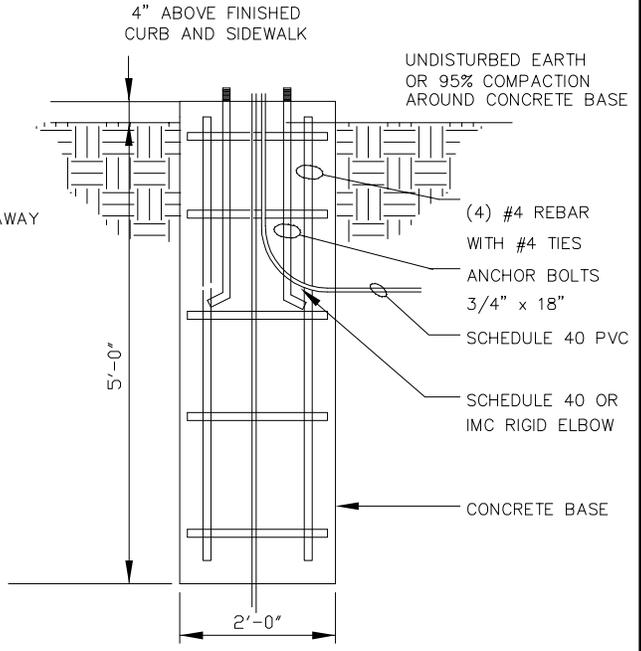
3/4" NUT PER TRANSP SPEC
 FLAT WASHER
 FLAT WASHER
 UPPER WRENCH FLAT
 BREAK-AWAY POLE-SAFE
 COUPLING FOR 3/4" BOLTS.



CITY NAME:
 "WEST VALLEY CITY"
 TIPPED IN NON-FADING
 GOLD COLOR



ANCHOR BASE DETAIL
 12" BOLT CIRCLE
 ANCHOR BOLTS: 3/4" x 18"



CONCRETE BASE

SHEET NO. 5	STANDARD DRAWING	 WEST VALLEY CITY PUBLIC WORKS DEPARTMENT TRANSPORTATION DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	REMARKS	DATE	NO.	BY
	LP-04					
	RESIDENTIAL STREET LIGHT					
	PROJECT NUMBER WVC STREET LIGHTING					
DESIGN	FTM	10-09-2019	DATE			
			REVISIONS			

MTAIN STATES LIGHTING
RD8645-BK (10 YEAR WARRANTY)

HOOK ARM WITH PLUMBIZER

FIXTURE BY: MTAIN STATES LIGHTING
LED FIXTURE# M-VH-81-1-IP66-BK

REINFORCED HAND-HOLE WITH COVER
GROUND LUG LOCATED INSIDE POLE
OPPOSITE COVER

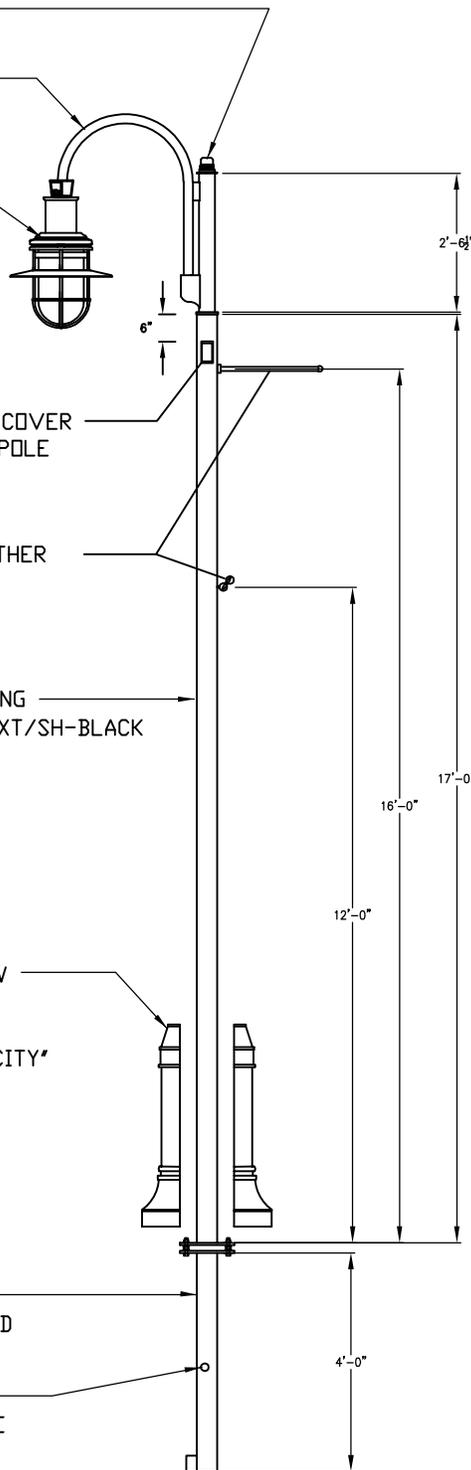
24" BANNER ARM & LOWER TETHER

POLE BY MTAIN STATES LIGHTING
PART #17SRA-4.5"-SGL/SA/SI/30"EXT/SH-BLACK
BASE PLATE TO BE
COATED WITH ZINC OXIDE
MIN EPA OF 20 IN 90 MPH ZONE
1.3 GUST FACTOR)
(15 YEAR STRUCTURAL WARRANTY)

LARGE "UTAH" BASE 42" H X 18" W
HIGH DENSITY ELASTOMER
1/2" MIN. THICKNESS
TWO PIECE WITH "WEST VALLEY CITY"
CAST INTO BASE AS SHOWN
(15 YEAR STRUCTURAL WARRANTY)

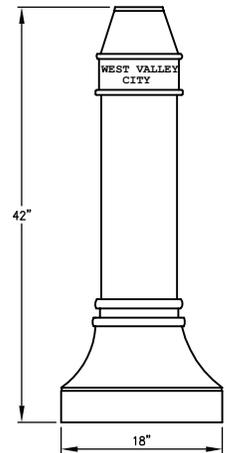
STINGER W/HARDWARE:
DIRECT BURIAL SHAFT ZINC COATED

WIRE ENTRY
2 @ 180 DEGREE 24" BELOW GRADE



ASSEMBLY COLOR; BLACK

CITY NAME:
"WEST VALLEY CITY"
TIPPED IN NON-FADING
GOLD COLOR



DECORATIVE BASE
ENLARGED DETAIL

SHEET NO. 0	STANDARD DRAWING	 WEST VALLEY CITY PUBLIC WORKS DEPARTMENT TRANSPORTATION DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	REMARKS			
	LP-05					
	SINGLE SIDEWALK STREET LIGHT					
	PROJECT NUMBER WVC STREET LIGHTING			DESIGN FTM	DATE 10-09-2019	
			REVISIONS	DATE	NO.	BY

MOUNTAIN STATES LIGHTING
PHOTOCELL 10 YEAR WARRANTY

HOOK ARM WITH PLUMBIZER
(TYPICAL OF TWO)

FIXTURES BY: MOUNTAIN STATES LIGHTING
LED FIXTURE# M-VH-81-1-IP66-BK

REINFORCED HAND-HOLE WITH COVER
GROUND LUG LOCATED INSIDE POLE
OPPOSITE COVER

24" BANNER ARM & LOWER TETHER

POLE BY MOUNTAIN STATES LIGHTING
PART #17SRA-4.5"-SGL/SA/SI/30"EXT/SH-BLACK
BASE PLATE TO BE
COATED WITH ZINC OXIDE
MIN EPA OF 20 IN 90 MPH ZONE
1.3 GUST FACTOR
(15 YEAR STRUCTURAL WARRANTY)

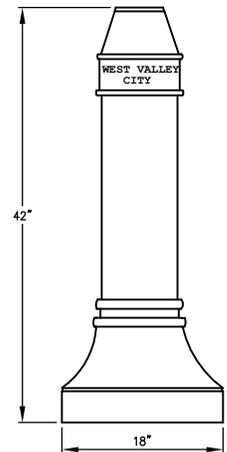
LARGE "UTAH" BASE 42" H X 18" W
HIGH DENSITY ELASTOMER
1/2" MIN. THICKNESS
TWO PIECE WITH "WEST VALLEY CITY"
CAST INTO BASE AS SHOWN
(15 YEAR STRUCTURAL WARRANTY)

STINGER W/HARDWARE:
DIRECT BURIAL SHAFT ZINC COATED

WIRE ENTRY
2 @ 180 DEGREE 24" BELOW GRADE

ASSEMBLY COLOR; BLACK

CITY NAME:
"WEST VALLEY CITY"
TIPPED IN NON-FADING
GOLD COLOR



DECORATIVE BASE
ENLARGED DETAIL

SHEET NO. 7	STANDARD DRAWING	 WEST VALLEY CITY PUBLIC WORKS DEPARTMENT TRANSPORTATION DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	REMARKS			
	LP-06					
	DOUBLE SIDEWALK STREET LIGHT					
	PROJECT NUMBER: WVC STREET LIGHTING			DESIGN: FTM	DATE: 10-09-2019	
			REVISIONS	DATE	NO.	BY

ASSEMBLY COLOR: BLACK

HANDHOLE WITH COVER
SEE ENLARGED DETAIL

5'-0"

MOUNTAIN STATES LIGHTING
PHOTOCELL #RD8645-BK (10YR WARRANTY)

FIXTURE BY MSL W/10 YR WARRANTY
LED FIXTURE# M-VH-60-1-IP66-GRAY
LED FIXTURE# M-VH-60-2-IP66-BLACK

STRAIN RELIEF HOOK

HANDHOLE COVER

GROUNDING LUG

POLE BY MOUNTAIN STATES LIGHTING
#30RTS-8/3.8-5'US/SA/SCR/2R-HH-ABC-BK
30' TAPERED SMOOTH STEEL WITH FINIAL
ALL PAINTED BLACK
MIN EPA OF 12 IN 80 MPH ZONE (1.3 GUST FACTOR)

HAND HOLE DETAIL

Luminaire Specifications:
(10 YEAR WARRANTY)

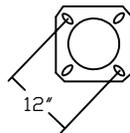
- Low copper die-cast housing and power doors. 3,000 hours salt spray according to ASTM D1654-08
- IP 66 on light engine consisting of 4000K Cree XP-G3 LEDs, Lens embossed with the light distribution Type >70 color rendering index (CRI) with injection molded polycarbonate optics lens
- Philips Advance Class 1 rated dimming LED driver , Driver operates 120~277VAC(standard), 50-60Hz, specific drive current >90% power factor, <20% THD. 120-277V Input Voltage available.
- Operating temperature range is F-40F to +130F
- L70 @ 100,000 hrs. @25C. Driver 100,000 hrs <65
- UL/ DLC listed. Manufactured in U.S.A. RoHS, Vibration tested to ANSI 136.31 for Bridge Applications
- UL 1598 & UL8750 standards
- ANSI C136.15 wattage small decal
- NEMA twist-lock receptacle
- Bird Guard
- ANSI C136.41 7-Pin Dimming Receptacle
- 20kVA SPD

Finish:
Black

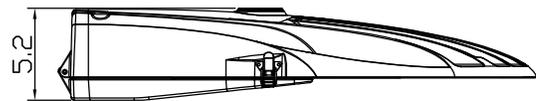
Mounting:
O.D. 1.6"~2.6"(Standard)

30'-0"

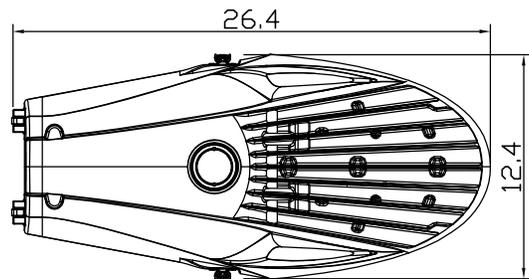
BOLT COVER
COLOR TO MATCH POLE



ANCHOR BASE DETAIL
12" BOLT CIRCLE
ANCHOR BOLTS: 1" x 36"



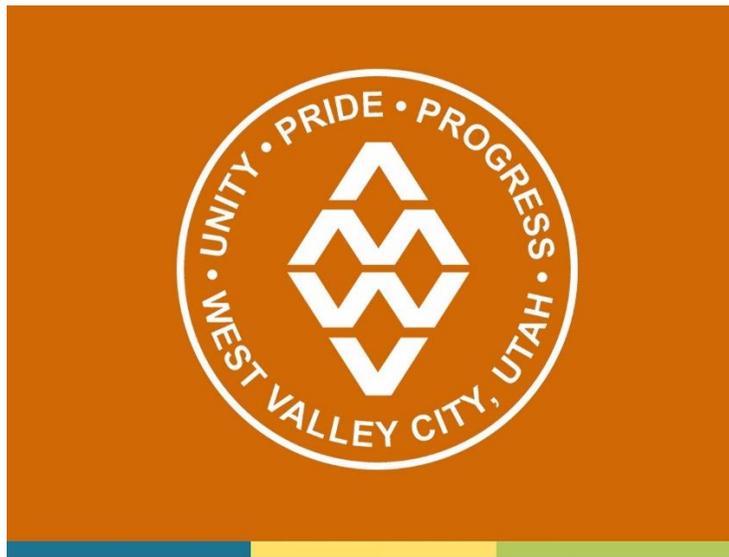
SIDE VIEW



TOP VIEW

LED FIXTURE DETAIL

SHEET NO.	STANDARD DRAWING	 <p>WEST VALLEY CITY PUBLIC WORKS DEPARTMENT TRANSPORTATION DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720</p>			
	LP-07				
	INDUSTRIAL STREET LIGHT				
	PROJECT NUMBER WVC STREET LIGHTING				
CO	DESIGN FTM	10-09-2019	REMARKS	DATE	NO. BY
			REVISIONS		



WEST VALLEY CITY

WEST VALLEY CITY 2020 ENGINEERING STANDARDS 8.3 - APPENDIX

WEST VALLEY CITY SPECIAL PROVISIONS MODIFICATIONS TO APWA STANDARD SPECIFICATIONS

APPLICABLE FOR WORK IN THE PUBLIC RIGHT OF WAY AND ON PUBLIC
INFRASTRUCTURE AND APPURTENANCES

SECTION 01 45 00-M

QUALITY CONTROL

This specification changes a portion of the 2017 Edition APWA Standard Specification No. 32 12 13.13. All other provisions of the Section remain in full force and effect.

Add the following to Part 1:

1.7 MINIMUM SAMPLING AND TESTING

- A. The West Valley City Minimum Sampling and Testing Requirements provided in the bid documents shall be used to determine the frequency of verification sampling and testing on all public improvements constructed within the city right-of-way.

END OF SECTION 01 45 00-M

SECTION 26 56 19-S ROADWAY LIGHTING

This specification replaces APWA Standard Specification Section 26 56 19 in its entirety.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Materials and procedures for installing roadway lighting system.
- B. Testing, painting, restoration, salvage.

1.2 REFERENCES

A.. ASTM Standards:

- B3 Soft or Annealed Copper Wire.
- B8 Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
- D2301 Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape.

B. NEMA Standards:

- 250 Enclosures for Electrical Equipment (1000 Volts Maximum).

C. NFPA Standards:

- 70 National Electric Code.

D. SSPC Standards:

- 25 BCS Zinc Oxide Alkyld, Linseed Oil Primer for.

1.3 SUBMITTALS

- A. Shop Drawings and Product Data: Complete, bound, indexed, large enough for all items included. When requested, supplement the following list by such other data as may be required, including detailed scale drawings and wiring diagrams of any special equipment and of any proposed deviation from the Contract Documents:
 - 1. Performance data for luminaires, including lighting contours on the roadway surface and average maintained level of light in foot-candles.
 - 2. Shop Drawings for luminaires showing pertinent physical characteristics, type of light source, and wattage.
 - 3. Shop Drawings of ornamental poles.
 - 4. Luminaire supports.
 - 5. Pole bases.
 - 6. Wiring schematic.
 - 7. Fixture mounting height.
 - 8. Drawing showing location of poles and underground power conduit.
- B. Warranties and instruction sheets.

- C. Testing results of this section article 3.9.

1.4 MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS

- A. Notify ENGINEER before performing any work on existing systems.
- B. Allow 20 feet minimum overhead clearance across thoroughfares and 12 feet minimum clearance above sidewalk areas. Do not run temporary conductor on top of the ground or across any sidewalk area unless protected in an electrical raceway and barricaded.
- C. Maintain existing electrical systems or approved temporary replacements, in effective operation for the benefit of the traveling public during the progress of the Work, except when shutdown is permitted to allow for alteration or removal of the systems. Do not interfere with the regular lighting schedule.

1.5 GENERAL ITEMS

- A. Components of the street lighting system shall be in compliance with the standards, specifications and styles currently adopted by West Valley City for use in the municipal right-of-way.
- B. Contractor shall be responsible to inspect poles and fixtures upon delivery to the job site and to protect the same from damage until installation is complete and lighting system is accepted by West Valley City.
- C. Contractor shall be responsible to coordinate construction of lighting system with Rocky Mountain Power and West Valley City. Confirm final location of Rocky Mountain Power transformers or secondary boxes before starting construction.
- D. All Light poles, fixtures, junction boxes, transformers or secondary boxes, underground conduit and wiring shall be placed only within the public street right-of-way and/or designated public utility easement. All underground work shall be completed and inspected prior to construction of permanent roadway, sidewalk, and curb and gutter.

1.6 INSPECTION

- A. Two inspections shall be required. Call West Valley City Transportation Division at (801-955-3726) at least 24 hours in advance to schedule the required inspections.
 - 1. Underground system including but not limited to conduit, wiring, boxes, compaction and pole installation.
 - 2. Final inspection after system installation for a complete and operable system.

1.7 IN THE EVENT THAT MATERIALS ARE FURNISHED BY WEST VALLEY CITY

- A. Contractor shall be responsible to inspect poles and fixtures upon receiving material. Material furnished by West Valley City to the contractor shall be the responsibility of the contractor until final approval of the system at which time the City will take ownership and the one-year contractor warranty for labor and underground will begin.
- B. Anticipate 12-14 weeks for delivery of streetlight assemblies from manufacturer.

PART 2 PRODUCTS

2.1 EXISTING MATERIALS

- A. Where existing systems are to be modified, incorporate existing material in revised system, salvage, or abandon.

2.2 Materials

- A. The Contractor shall provide two #6RHH copper conductors or equivalent copper burial wires for wiring streetlights (the ground must be green color insulation or bare copper).
- B. Permanently label the voltage that the wires are carrying inside the junction box (to be approved by WVC). Install dual fuse holder (set screw type only with rubber boots), two 10-amp fuses, and 3-outlet rubberized aluminum bar connector in each junction box.
 - 1. No wire nuts allowed.
- C. All wires shall be placed within a 2-inch conduit a minimum of 24 inches below finished grade. Conduit shall be installed under park strip or within the public utility easement behind integral sidewalk except where crossing streets. Conduit under park strips shall be Schedule 40 PVC and conduit under streets shall be Schedule 80 PVC or rigid steel. Conduit entering junction box shall be 6 inches above pea gravel at bottom of junction box.
- D. Seal all conduits in each junction box with duct seal. Polywater FST duct sealant or approved equal.
- E. Complete all connections and work per current NEC requirements.

2.3 POLES AND LUMINAIRE SUPPORTS

- A. Per WVC standard drawings.

2.4 JUNCTION BOXES

- A. Junction/Splice boxes shall be pre-cast polymer concrete, 25" x 16" x 24". See Street Light Details drawing.
- B. Manufacture lids with "STREET LIGHTING" in the logo area, in 1-inch recessed letters.
- C. Lid Access Points: recessed reinforced steel pull slots to allow removal of cover with a hook or lever. Replace lid if damage occurs to the pulling point.
- D. Bolts: stainless steel recessed penta head bolts with washer.
- E. Place 6 inches of pea gravel on top 12 inches of free draining granular backfill borrow under junction boxes.
- F. Level the top of junction box and grade accordingly.
- G. Install concrete collars around junction boxes in all locations except where junction boxes are in concrete paved surfaces. See Street Light Details drawing.
 - 1. Secure ½ inch expansion joint material around the junction box before placing concrete collar.
 - 2. In certain areas as determined by the Engineer, junction boxes may be required to be recessed 4-inches and covered by a 4-inch thick concrete slab as a wire theft deterrent.

2.5 INSULATING TAPE

- A. Type 1 vinyl chloride, ASTM D2301.

2.6 LUMINAIRE

- A. Per WVC standard drawings.

2.7 POLYSULFIDE BASE, SINGLE COMPONENT SEALANT

- A. Chemical curing; capable of being continuously immersed in water, withstand movement up to 20 percent of joint width, and satisfactorily applied throughout a temperature range to 40 to 80 deg F, Shore A hardness of 15 minimum and 50 maximum; non-staining and non-bleeding; color as selected by ENGINEER.

2.8 CONCRETE AND GROUT

- A. Concrete: Class 4000 minimum cast-in-place, Section 03 30 04.
- B. Grout: Cement, Section 03 61 00.

PART 3 EXECUTION

3.1 PREPARATION

- A. Locate and preserve utilities, Section 31 23 16.
- B. Excavate; Section 31 23 16 and backfill; Section 33 05 20.
- C. Do not disturb roadway surface, sidewalk, curb, gutter, or other obstructions without approval.
- D. Do not block or restrict pedestrian traffic, vehicle traffic, drainage or utilities.
- E. Barricade all Excavations in traveled ways.
- F. Compact excavated Trench material; Section 33 05 20 to the requirements of the adjacent areas.
- G. After backfilling excavations, maintain smooth and well-drained surfaces until permanent repairs are effected.
- H. Legally dispose of all excess or waste material.

3.2 POLE FOUNDATION

- A. Construct foundation per details indicated and Section 34 41 13.
- B. Locations:
 - 1. 18 inches clear from pull box.
 - 2. Not in pedestrian access way.
 - 3. Unless specified otherwise:
 - a. 5 feet from new tree.
 - b. 10 feet from existing tree, driveway, or hydrant.
 - c. Center of park strip or 24 inches clear from top back of curb on wide park strips.
- C. Pole Installation:
 - 1. Contractor is responsible for any damage to underground utilities or structures. Contractor shall contact Blue Stakes (800-662-4111) prior to any excavation.

2. Contractor is responsible for verification of streetlight location and restoration of environment compromised by installation.
3. All concrete shall be class 4000 per APWA 03 30 04. Placement shall be compliant with APWA Section 03 30 04.
4. Pole shall be plumb and secure.
5. Locate light pole behind signs when there is conflict.
6. All poles located in park strips shall be centered in park strip.
7. Pole shall be cleaned of dirt and debris after installation.
8. On direct burial poles install 24-inch diameter 4-inch thick concrete ring centered on pole and cast-in-place, (**NO Pre-cast is allowed**).

3.3 CONDUIT INSTALLATION

- A. In structural applications, use rigid steel conduit in areas subject to vehicular load, on the surface of structures, inside of structures and foundations, between structures, and the adjacent pull boxes located next to structures.

- B. In buried utility applications, place conduit as follows.

<u>Location</u>	<u>Depth of Burial, inches</u>
In front of curb faces	36 to 60
Back of the back of curb	24 to 36
Railroad tracks	36 to 60
Primary power cables	40 minimum

- C. Use sizes of conduit indicated or use larger sizes for any run at no additional cost to OWNER. No expanding or reducing fittings will be permitted.
- D. Make field cuts square and true so that the ends will come together for full circumference. Paint threads on all rigid steel conduit with rust preventive paint before couplings are made. Repair damaged coating on galvanized steel conduit.
- E. Cap all conduit ends with standard pipe caps until wiring is installed. When caps are removed from metallic conduit, provide threaded ends and approved conduit bushings.
- F. Clean all existing underground conduit to be incorporated into new system with a mandrel and blow out with compressed air. Where existing rigid steel conduit systems are to be modified or extended, install rigid steel conduit.
- G. Make changes in direction by bending the conduit to a radius which will meet code or, preferable, by the use of standard bends or elbows.
- H. Install a No. 12 AWG pull wire or equivalent strength cord in all conduits which are to receive future conductors. Leave at least two (2) feet of pull wire extending beyond each end of the conduit run and secure.
- I. Center conduit ends within the bolt circle of traffic signal poles or pedestals.
- J. Pack conduit ends with sealant after conductors are installed.
- K. Cap all conduit terminated without a pull box and identify its location by monumenting.

3.4 CONDUCTOR INSTALLATION

- A. Install wiring per the appropriate articles of NFPA 70. Neatly arrange wiring within cabinets, junction boxes, etc.
- B. Splice only at junction boxes, transformer leads, in pole bases, or at control equipment. Splice conductors as per manufacturer's recommendations and codes.

Provide a fused connector between the line and the ballast, accessible at the hand holes located in the poles.

- C. Provide conduit to separate low-voltage conductors from high-voltage conductors in the same raceway (i.e. poles).
- D. Splice insulation shall consist of layers of vinyl chloride electrical insulating tape applied to a thickness equal to and well lapped over the original insulation to provide uninterrupted underwater operation.
- E. Leave two (2) feet of slack at each pole. Leave 18 inches of slack above top of pull box grade.
- F. Mark termination of each conductor. Where circuit and phase are clearly indicated by conductor insulation, bands need not be used, otherwise use bands.

3.5 GROUNDING INSTALLATION

- A. Effectively ground metallic cable sheaths, metal conduit, nonmetallic conduit grounding wire, ballast and transformer cases, service equipment, anchor bolts, metal poles, and pedestals, and make mechanically and electrically secure to form a continuous system. Use a copper wire strap for bonding and grounding jumpers of the same cross-sectional area as No. 6 AWG for all lighting systems.
- B. Ground one side of the secondary circuit of series-multiple and step-down transformers. Ground metal conduit, service equipment, and neutral conductor at service point as required by NEC and electricity company with grounding conductor No. 6 AWG or larger.
- C. In all nonmetallic (PVC) type conduit, provide a No. 8 AWG bare copper wire continuously and ground at each junction box.
- D. At each multiple service point, unless otherwise indicated, furnish a ground electrode. Use copper coated ground electrodes of steel or iron in one piece lengths at least 3/4 inch in diameter. Do not use electrodes of nonferrous materials less than 1/2 inch in diameter.
- E. Bond metal poles by means of a No. 8 AWG bonding wire attached from a grounding bushing to a foundation bolt or to a 3/16 inch or larger brass or bronze bolt installed in the lower portion of the pole.
- F. On wood poles, ground all equipment mounted less than eight (8) feet above the ground surface.
- G. Ground metallic conduit or bonding conductor system at intervals less than 500 feet to one of the following:
 - 1. 1-inch galvanized pipe driven eight (8) feet deep.
 - 2. 1/2-inch copper rod driven eight (8) feet deep.
 - 3. Metal water main with the approval of the water company. Clean water main thoroughly before connection.
- H. Use galvanized grounding bushings and bonding jumpers for bonding metallic conduit in a concrete pull box. Use lock nuts for bonding metallic conduit in steel pull boxes, one inside and one outside of the box.
- I. Pull Boxes: Install 3/4-inch x 10 feet copper clad ground rods at each pull box, six (6) inches above bottom. Ground all metal parts, neutral and ground wire with #6 B.C. Use exothermic weld or hammerlock connection.

3.6 JUNCTION AND PULL BOX INSTALLATION

- A. Install at locations indicated, and at additional points when conduit runs are more than 200 feet. Without additional cost to OWNER and at CONTRACTOR's convenience add such additional boxes as may be desired to facilitate the work.
- B. Rest bottom of pull box firmly on 12 inches thick bed of 1-inch crushed rock extending a minimum of six (6) inches beyond the outside edge of box.
- C. Establish grade of top of boxes as for foundations.
- D. Place long side of box parallel to curb unless indicated.
- E. Use box extensions if ballasts or transformers are installed in box.
- F. Do not install boxes in Driveway aprons.

3.7 LUMINAIRE AND BALLAST INSTALLATION

- A. Immediately before installation, clean all light control surfaces, refractors, and reflectors to provide the maximum lumen output possible. Clean per luminaire manufacturer's recommendations.
- B. Mount at height indicated.
- C. Adjust luminaires individually to give the optimum light distribution.

3.8 SALVAGE

- A. Terminate all conduit abandoned in place at least five (5) inches below finished grade.
- B. Exercise care in removing equipment to be reused or salvaged so that it will remain in the condition existing before its removal.

3.9 RESTORATION

- A. Replace damaged equipment, concrete work or other fixtures or features disturbed or damaged by the installation.
- B. Restore paved surfaces, Section 33 05 25.
- C. Finish landscaped surfaces to match existing with grass, Section 32 92 00 or with other ground cover, Section 32 93 13.

3.10 POINTS OF CONNECTION

- A. All points of connection to Rocky Mountain Power facilities shall comply with the current release of the Electric Service Requirements Manual published by Rocky Mountain Power and available at;
<http://www.rockymountainpower.net/esr>

END OF SECTION 26 56 19-S

SECTION 31 05 13-M

COMMON FILL

This specification changes a portion of 2017 Edition APWA Standard Specification No. 31 05 13. All other provisions of the Section remain in full force and effect.

PART 1 GENERAL

Delete Article 1.5 in its entirety.

PART 2 PRODUCTS

Replace Article 2.1 with the following:

2.12 FREE DRAINING GRANULAR BACKFILL

A. Meet the following gradation:

Free Draining Granular Backfill Gradation	
Sieve Size	Percent Passing
1 ½ inch	100
1 inch	95 to 100
½ inch	25 to 60
No. 4	0 to 10
No. 200	0 to 5

END OF SECTION 31 05 13-M

SECTION 31 23 23-M

BACKFILLING FOR STRUCTURES

This specification changes a portion of 2017 Edition APWA Standard Specification No. 31 23 23. All other provisions of the Section remain in full force and effect.

PART 1 GENERAL

Replace Article 1.7 with the following:

1.7 ACCEPTANCE

- A. **Materials:** For material acceptance refer to:
1. Common Fill, Section 31 05 13
 2. Aggregate Base Course, Section 32 11 23
 3. Cement Treated Fill, Section 31 05 15
- B. **Compaction Requirements:** One test per lift on each lot as defined in Table 1.

Table 1 - Lot Sizes for Backfilling Structures	
Structure Type	Lot Size
Strip Footings	40 Linear Feet
Structure Footing excluding strip footings	225 Square Feet
Embankments	625 Square Feet
Interior Slab on Grade	625 Square Feet
Side of Foundation Walls and Retaining Walls	New lot every time wall changes direction or exceeds 40 linear feet
Misc. small structures (e.g. manholes, drainage boxes, etc.)	Each structure.

PART 2 PRODUCTS

Replace Article 2.1 with the following:

2.1 BACKFILL MATERIALS

- A. Foundation Stabilization (as required)
1. Granular Backfill Borrow per APWA Section 31 05 13.
 2. Free Draining Granular Backfill per WVC Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per APWA Section 31 05 19 and is to be worked with compaction equipment to consolidate rock and minimize voids.

- B. Bedding
 - 1. Bedding Options
 - a. Untreated Base Course per APWA Section 32 11 23 unless required otherwise by pipe manufacturer.
 - b. Free Draining Granular Backfill per WVC Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per APWA Section 31 05 19 and is to be worked with compaction equipment to consolidate rock and minimize voids.
 - 2. Material for other pipe types to be per manufacturer's recommendation.
- C. Structure Backfill
 - 1. Backfill Options
 - a. Untreated Base Course per APWA Section 32 11 23.
 - b. Granular Backfill Borrow per APWA Section 31 05 13.
 - c. Free Draining Granular Backfill per WVC Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per APWA Section 31 05 19 and is to be worked with compaction equipment to consolidate rock and minimize voids.
- D. Use a flowable fill (Cement Treated Fill) when vibration is not allowed, or when specified. See APWA Section 31 05 15. Other uses of flowable fill are to be approved by the Engineer.
- E. Materials excavated on site will not be allowed for use on project without written approval from Engineer. All backfill materials must meet specifications.
- F. Slag or recycled asphalt material is NOT ALLOWED in the backfill

PART 3 EXECUTION

Replace or add the following articles:

3.7 TOLERANCES

- A. Compaction: 95 percent or greater relative to a standard or modified proctor density, APWA Section 31 23 26,
- B. Lift thickness (before compaction) shall be a maximum of 8 inches when using riding equipment or 6-inches when using handheld equipment.
- C. Cement Treated Fill: Compressive strength targets are 60 psi in 28 days and 90 psi maximum in 28 days.

END OF SECTION 33 05 20-M

SECTION 32 12 05-M

BITUMINOUS CONCRETE

This specification changes a portion of the 2017 Edition APWA Standard Specification No. 32 12 05. All other provisions of the Section remain in full force and effect.

Add or Replace the following:

1.2 REFERENCES

- D. **UDOT Standards:**
UDOT Standard Specifications for Road and Bridge Construction (Latest Ed.)
UDOT Materials Manual of Instruction
UDOT Quality Management Plans

1.3 DEFINITIONS

- H. Road Class
- a. Class I: See Section 32 01 31 for definition
 - b. Class II: **Minor Roads:** WVC Minor Streets and Minor Collectors - See WVC Standards and Section 32 01 31 for additional definition
 - c. Class III: **Major Roads:** WVC Arterials and Collector – See WVC Standards and Section 32 01 31 for additional definition
- I. Effective Binder Content, by volume (Vbe): Volume of Asphalt Binder incorporated into the mix but not absorbed into the aggregate. Calculated as the volume difference between Voids in the Mineral Aggregate (VMA) and Air Voids (Va):
- $$Vbe = VMA - Va$$

1.4 SUBMITTALS

- A. Paragraph A, **General**, remains in full force and effect.
- B. **Quality Assurance**
1. HMA Mixing Plant: Use UDOT 514 QMP certified Asphalt Mix Plant.
 - a. Submit plant certification and lab accreditation documentation with mix design.
 2. Obtain materials from same source throughout or submit new mix design.
 3. Use AMRL certified laboratories and WAQTC/UDOT TTQP certified technicians.
 - a. Submit lab accreditation documentation with mix design
 - b. Submit field technician certification documentation at least 5 working days before paving
 4. Contractor to submit daily plant production records and quality control data to the Engineer prior to start of paving subsequent lots. Plant production record must include the following:
 - Plant Location

- Production Date and Times
- Mix Designation
- Total Mix Tonnage
- Virgin Aggregate Tonnage
- Virgin Asphalt Tonnage
- RAP Aggregate Tonnage
- Lime Tonnage (if used)
- Water Tonnage (if lime used)

1.5 QUALITY CONTROL

- A. Quality Control is performed by Contractor or their representative. Each bid schedule is treated independently regarding lots. Perform QC sampling and testing in accordance with the adopted West Valley City Minimum Sampling & Testing requirements.
- B. Provide split sample to the Engineer for each sample taken.
- C. The Engineer may sample any portion of the HMA that exhibits a non-uniform appearance.
 - a. The contractor will repair subjectively sampled portions found to be out of specification at no cost to the Owner.
 - b. Subjective sample results will not be included in the pay factor calculations.
- D. Submit QC data and plant daily production summary to the Engineer prior to the start of paving subsequent lots.
- E. Failure to obtain and provide all required testing will automatically result in test results being deemed out of specification for that lot.

1.6 ACCEPTANCE

- A. Observation of Contractor's field quality control testing does not constitute acceptance. Such testing, however, may be used by ENGINEER for acceptance at the discretion of the Engineer.
- B. A lot equals the number of tons of HMA placed during each production day.
- C. Gradation and asphalt binder content
 - 1. The Engineer informs the Contractor of the time and place of sampling not more than 15 minutes before the sampling.
 - 2. Contractor obtains the sample from behind the paver and field splits the sample, and Engineer takes immediate possession of the sample.
 - 3. Lot Acceptance for Gradation/Asphalt Binder according to Table 1 and Table 2. (See standard specification for tables)
- D. Failure to Notify or Wait for Test: Lots that are not tested by the owner due to the contractor failing to notify the Engineer or failing to wait for testing personnel to be present automatically result in Owner test results being deemed out of specification.

- E. Small Lots: The Engineer may elect to accept material on visual inspection for work such as utility work, traffic signals, detours, lane leveling, driveways, etc., or small projects with plan quantities less than 1,000 tons.
 - 1. The Engineer reserves the option of conducting any acceptance tests necessary to determine that the material and workmanship meets the project requirements.
 - 2. At the Engineer's discretion, acceptance for density may be based on establishing and maintaining a roller pattern to obtain maximum density without over-stressing the pavement.

2.3 ADDITIVES

- D. RAP or ROSP: Free of detrimental quantities of deleterious materials.
 - 1. Do not incorporate more than 15% RAP or RAP binder.
 - 2. No binder grade adjustments are to be used to account for any binder stiffness caused by RAP.
 - 3. Determine RAP binder content by chemical extraction.

2.4 MIX DESIGN

- A. Preparation
 - 1. Mix Designator
 - a. Minor Roads: DM-1/2, PG58-28, 50 Blow
 - b. Major Roads: SP-1/2, PG64-28, 75 Nd
 - 2. Use Paragraph 1.4C to determine submittal requirements.

3.3 CEASE PRODUCTION

- A. Cease production when any two out of three consecutive lots meet one of the following criteria:
 - 1. Air voids averaged for each lot are less than 2.5 or greater than 4.75 percent.
 - 2. VMA averaged for each lot are not within Target Value +/- 1.25%.
- B. Submit a corrective action plan for approval before production continues indicating the changes in production procedures that will be implemented to correct the deficiencies
 - 1. Address the specific issues contributing to the cease production.
 - 2. Obtain approval of the revised plan before production continues.
- C. The Engineer may require a new mix design.
- D. The Engineer may require Hamburg Wheel-Track testing up to 5 lots after the cease production order.
 - 1. Sample randomly from behind the paver for up to 5 lots after the cease production order.
 - 2. Failure to meet the requirements of Table 6 will result in rejection of the lot.

3.3 LABORATORY CORRELATION

- A. Perform split-sample, paired t-testing with City designated lab based on project quality control testing.
 - 1. Perform split-sample, paired t analysis on all mix acceptance tests and tests related to volumetric properties.

2. Perform paired t analysis as defined in the UDOT Materials Manual of Instruction.
3. Continue paired t-testing until at least two consecutive production days meet $\alpha = 0.05$ for a two tailed distribution.
4. Resolve discrepancies in lab results within the first five production days.
 - a. Cease production if the requirements for two consecutive days of the first five days cannot be met.
 - b. Submit a corrective action plan to the Engineer before production continues indicating the changes in procedures that will be implemented to correct the deficiencies.
 - c. Both Contractor and City designated lab must make paired t test results available within 24 hours of sampling.

END OF SECTION 32 12 05-M

SECTION 32 12 13.13-M

TACK COAT

This specification changes a portion of the 2017 Edition APWA Standard Specification No. 32 12 13.13. All other provisions of the Section remain in full force and effect.

Replace the following:

3.2 APPLICATION

B. Application Rate:

1. Emulsions - Concentrate shall be diluted at a rate of 2:1 (2 parts concentrate to 1-part water)
 - a. Smooth Surfaces: shall be applied at a rate of 0.06 to 0.08 gallons per SY.
 - b. Rotomilled Surfaces: 0.08 to 0.1 gallons per SY.
 - c. Coverage shall be 95% or better.
2. Cutback, Contractor's choice.

END OF SECTION 32 12 16.13-M

SECTION 32 12 16.13-M

PLANT-MIX BITUMINOUS PAVING

This specification changes a portion of the 2017 Edition APWA Standard Specification No. 32 12 16.13. All other provisions of the Section remain in full force and effect.

Replace the following:

1.8 ACCEPTANCE

- A. Paragraph A, **General**, remains in full force and effect.
- B. Paragraph B, **Mix Material**, remains in full force and effect.
- C. **Mix Temperature at Site:**
 - 1. Reject mixes if transport material exceeds the following temperatures:
 - a. Hot Mix, 325°
- D. Paragraph B, **Grade, Cross Slope**, remains in full force and effect.
- E. **Compaction:** Acceptance is based on core density unless specified otherwise. A lot is acceptable if density tests are within pay factor 1.00 limits. At ENGINEER's discretion, a Lot with deficient sub-lot density tests may be accepted if pay is adjusted using an applicable pay factor in the following table or accepted at 50 percent pay if a sub-lot is in Reject. Use the average of the Maximum Specific Gravity tests for each lot when determining in-place density.

Table 1 - Compaction Pay Factors		
Pay Factor	Density, in Percent Relative to ASTM D 2041	
	Average	Lowest Test
0.70	More than 96	
1.00	93.5 to 96	90 or greater
0.90	93.5 to 96	Less than 90
0.80	Less than 92	90 or greater
Reject	Less than 92	Less than 90

- 1. **Core Density:**
 - a. Lot Size: One (1) day production with 1,000 square yard sub lots or part thereof.

- b. Contractor obtains cores within two days after the pavement is placed. Obtain two samples at each test location
 - c. Engineer marks coring location for in-place density cores.
 - d. Move transversely to a point 1 ft from the edge of the pavement for In-place density if the random location for coring falls within 1 ft of the edge of the overall pavement section (outer part of shoulders).
 - e. Fill core holes with HMA or high AC content cold mix and compact with mechanical impact means using multiple lifts. Do not fill hole by loose filling of hole and compacting through constant pressure of foot, tool or tire.
 - f. The Engineer witnesses the coring operation, takes possession of the cores immediately, and begins testing the cores within 24 hours for density acceptance.
- 2. At the discretion of the Engineer, perform randomly located nuclear density tests, divided into 1,000 square yard sublots (2 tests each) in lieu of coring, using an average of two (2) 30 second counts at 90 degree or 180 degree offsets, for each nuclear density test. ASTM D 2950.
 - 3. Delete paragraph 3.
 - 4. Paragraph 4, **Compaction Dispute Resolution**, remains in full force and effect.
- F. Paragraph F, **Thickness**, remains in full force and effect.
- G. **Profile Roughness and Profile Deviation:**
- 1. Profilograph and any necessary corrective action per Section 32 01 31 will be required on all streets with a Major Road Mix Design.
 - 2. Profilograph and any necessary corrective action per Section 32 01 31 may be required on streets with a Minor Mix design at the Engineers discretion.
 - 3. No additional payment is made for smoothness verification procedures.

3.8 TOLERANCES

- A. Compaction: Target is 94 percent of ASTM D2041(Rice Density). See pay factors in Table 1.
- B. Paragraph B remains in full force and effect.
- C. Paragraph C remains in full force and effect.

END OF SECTION 32 12 16.13-M

SECTION 32 16 14-S

CURB CUT ASSEMBLY

This specification replaces APWA Standard Specification Section 32 16 13 in its entirety.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Americans with Disabilities Act (ADA) pedestrian access ramps.

1.2 REFERENCES

- A. UDOT 2017 Standard Specification Section 02771.
- B. UDOT PA Series Standard Drawings.
- C. UDOT Pedestrian Access Evaluation Form C-170.

1.3 DEFINITIONS

- A. **ADA Pedestrian Access Ramp:** Includes pedestrian access elements as contained on the UDOT PA Series Standard Drawings.
- B. **Certified Installer** The contractor or subcontractor who has successfully completed UDOT's ADA Pedestrian Ramp Training Course. Refer to <https://www.udot.utah.gov/go/standardsreferences>.
- C. **Crosswalk (or Pedestrian Street Crossing):**
 - 1. Unmarked: That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the roadway measured from the curbs or in the absence of curbs, from the edges of the traversable roadway. In the absence of a sidewalk on one side of the roadway, that part of a roadway included within the extension of the lateral lines of the sidewalk at right angles to the center line;
 - 2. Marked: Any portion of a roadway at an intersection or elsewhere distinctly indicated as a pedestrian crossing by pavement marking lines on the surface, which might be supplemented by contrasting pavement texture, style, or color.

1.4 SUBMITTALS

- A. Certificate of completion of UDOT ADA Pedestrian Access Ramp Evaluation Training Course for information.
- B. Manufacturer's product data sheet and recommended installation instructions for detectable warning surface.
- C. Provide copy of current certificate for the Certified Installer.
- D. Traffic Control Plan, Section 01 55 26.
- E. Concrete mix design, Section 03 30 04.
- F. Batch ticket, Section 03 30 10.
- G. UDOT Pedestrian Access Evaluation Form C-170

1.5 OWNER'S INSTRUCTIONS

- A. **Alterations:** If the direction of water flow in an existing curb and gutter system is not apparent, proceed as follows:
 - 1. Flood curb and gutter system to determine extent of replacement.
 - 2. Flood curb and gutter system after installation to verify drainage.
- B. **Steep Slopes:** Prior to placing concrete, allow ENGINEER time to check slopes and dimensions of construction forms.

1.6 ACCEPTANCE

- A. Passing all necessary criteria found on UDOT's Pedestrian Access Evaluation Form C-170.

PART 2 PRODUCTS

2.1 CONCRETE

- A. Class 4000, Section 03 30 04.

2.2 UNTREATED BASE COURSE

- A. Refer to Section 32 11 23.

2.3 DETECTABLE WARNING SURFACE

- A. Use In-line truncated dome pattern that meets the requirements of UDOT PA Series Standard Drawings.
- B. Minimize number of panels used.
- C. Acceptable products for installation:
 - 1. Detectable warning surface shall be **fluorescent yellow** Vitrified Polymer Composite (VPC) Cast-in-Place Tiles embedded in concrete.
 - 2. Tiles shall be 24"x 48" or 24"x 60"
 - a. If tile must be cut, minimum tile cut length is 3/4 tile. Do not cut tiles longitudinally. Remove domes that were cut. Seal cuts to prevent water intrusion.

PART 3 EXECUTION

3.1 GENERAL

- A. A certified ADA Pedestrian Access installer must always be on site when ramps are being formed and installed.
- B. Construct as shown in UDOT PA Series Standard Drawings and project plans.

3.2 PREPARATION

- A. Implement notification and traffic control plan requirements, Section 01 55 26. Provide safe passage for pedestrians and vehicles.
- B. Construct subgrade to required elevation
- C. Place and compact Untreated Base Course per Section 32 11 23
- D. Forms:
 - 1. Use wood, metal, reinforced fiberglass, or plastic forms free of warps or bends and of sufficient strength to prevent deflection during the placement of concrete

2. Transition smoothly from curves to straight section. keep forms in curves free of flat sections and sharp bends.
3. Anchor securely in place.
4. Clean the inside surface of all dirt, concrete, and foreign material before concrete placement.

3.3 INSTALLATION

- A. Verify forms meet requirements per UDOT C-170 Evaluation form prior to concrete placement
- B. Place and finish concrete, Section 03 30 10
- C. Install Detectable Warning Surface
 1. Tiles shall be installed per manufacturer's recommendations.
 2. Use an 8-foot minimum curb cut for Bi-directional crosswalks. A 4-foot minimum curb cut width and detectable warning surface is allowed for two unmarked crossings on streets with less than 66 feet of right-of-way. Approval from the City Engineer is required to use a 4-foot curb cut width on streets with 66 feet of right-of-way or larger and for locations with marked crosswalks.
 3. The tiles shall be installed so that the maximum difference between the tile surface and the adjacent concrete surface is 1/16". Tiles shall be placed in accordance with the slopes shown in the pedestrian access ramp standard drawing.
 4. Tiles shall be placed in a manner to eliminate air voids between the tile surface and the concrete surface.
 5. Tiles shall be placed with plastic coating intact to protect the tile color. After ramp has been poured, clean any remaining concrete residue from tiles.
- D. Place contraction joints according to Section 32 16 13.
- E. Cure concrete according to Section 03 39 00.

3.4 FIELD QUALITY CONTROL

- A. Evaluate ramp using the UDOT Pedestrian Access Evaluation Form C-170 to verify that the curb cut assembly complies with layout requirements.
- B. Contractor to replace any deficiency found using the evaluation form at no cost to owner.

3.5 CLEANING AND REPAIR

- A. Remove all debris and concrete dust.
- B. Clean surrounding handrails, sidewalks, driveways approaches, landscaping, and other objects in vicinity of work.
- C. Repair surfaces damaged by saw cutting, grinding, or removal operations at no additional cost to OWNER.

END OF SECTION 32 16 14-S

SECTION 32 16 24-S

STAMPED CONCRETE PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Furnish materials and construct stamped portland cement concrete paving in park strips and median islands.

1.2 SUBMITTALS

- A. Provide Section 03 30 04 submittals.
- B. Submit color chart with specified color sample, and patterns.
- C. Manufacturer's recommendations for placement.

1.3 ACCEPTANCE

- A. Acceptance is by sub-lot. One sub-lot is 50 cubic yards. One lot is one day's production.
- B. All sampling and testing to be performed per WVC Minimum Sampling and Testing Requirements.
- C. Refer to Section 03 30 10 for compressive strength pay factors.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Portland Cement Concrete: Class 4000 minimum per Section 03 30 04.
- B. Coarse Aggregate: Grade 57 (1") per Section 03 30 04.
- C. Color: Two-part shake color compound; base color with color release. Scofield UV resistant.
 - 1. **Base Color shall be Yosemite Brown (Per Davis Colors or equal approved by West Valley City Engineering Division).**

2. **Color release shall be Dark Gray (Per Brickform Standard Color Selector Brochure (or equal approved by West Valley City Engineering Division)).**
- D. Forms: Wood, metal, reinforced fiberglass, or plastic per Section 03 11 00. Use approved concrete forms on all curves that transition smoothly from curves to straight section. Keep forms free of flat sections and sharp bends.
- E. Expansion Joint Filler: Per Section 32 13 73.
- F. Pattern:
 1. **Pattern shall be “Ashlar Slate” or equal approved by ENGINEER.**
- G. Sealant Compound: Liquid membrane per Section 03 39 00. Sealant compound used on stamped concrete paving shall be clear liquid, or clear when dry.

PART 3 EXECUTION

3.1 PREPARATION

- A. General:
 1. Examine surfaces scheduled to receive concrete form work for defects.
 2. Do not start work until defects are corrected.
 3. Curb, gutter and sidewalk work shall be placed and cured a minimum of seven days prior to placing stamped concrete.
- B. Form Construction: Place forms per Section 03 11 00. Obtain ENGINEER’s review of forms before placing concrete.

3.2 CONCRETE PLACEMENT

- A. Place concrete per section 03 30 10.
- B. Do not place concrete until sub-base course and forms have been checked for line and grade. Moisten sub-base if required to provide uniform dampened condition at time of placement.
- C. Place concrete using methods which prevent segregation of mix. Consolidate concrete with external screen vibrator or other acceptable methods. Do not use mechanical vibrators.
- D. Provide 5-foot test strip.
- E. Add concrete base color to mix at the batch plant. Allow concrete to set prior to application of color release compound. Apply stamped pattern. Wash off unstamped color release compound after concrete has set. Follow manufacturer’s instruction.
- C. Stamp pattern into fresh concrete in accordance with manufacturer’s recommendations.

3.3 CONTRACTION AND EXPANSION JOINTS

- A. Additional contraction and expansion joint requirements per Section 32 13 73.

3.4 FINISHES

- A. Tool edges as required to remove sharp or jagged edges.
- B. Remove form marks or irregularities from finish surfaces.

3.5 CURING

- A. Seal concrete surface using only clear sealer.

3.6 FIELD QUALITY CONTROL

- A. Line and grade per Section 32 16 13.

3.7 PROTECTION AND REPAIRS

- A. Protect concrete work from deicing operations during the 28-day cure period.

END OF SECTION 32 16 24-S

SECTION 33 05 20-M

BACKFILLING TRENCHES

This specification changes a portion of 2017 Edition APWA Standard Specification No. 33 05 20. All other provisions of the Section remain in full force and effect.

PART 1 GENERAL

Replace Article 1.9 with the following:

1.9 ACCEPTANCE

- A. **Materials:** For material acceptance refer to:
 - 1. Common Fill, Section 31 05 13
 - 2. Aggregate Base Course, Section 32 11 23
 - 3. Cement Treated Fill, Section 31 05 15

- B. **Compaction Requirements:** One test per lift on every lot for all bedding, pipe zone backfill, and trench backfill material using nuclear density tests, ASTM D2922.
 - 1. Lot Size: Not more than one pipe, pipe culvert, or box culvert and not more than 40 linear feet along a pipe, pipe culvert, or box culvert.

PART 2 PRODUCTS

Replace Article 2.1 with the following:

2.1 BACKFILL MATERIALS

- A. Foundation Stabilization (as required)
 - 1. Granular Backfill Borrow per APWA Section 31 05 13.
 - 2. Free Draining Granular Backfill per WVC Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per APWA Section 31 05 19 and is to be worked with compaction equipment to consolidate rock and minimize voids.

- B. Pipe Bedding
 - 1. Rigid Pipe Options
 - a. Untreated Base Course per APWA Section 32 11 23 unless required otherwise by pipe manufacturer.
 - b. Free Draining Granular Backfill per WVC Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate

- separation geotextile per APWA Section 31 05 19 and is to be worked with compaction equipment to consolidate rock and minimize voids.
2. Material for other pipe types to be per manufacturer's recommendation.
- C. Pipe Zone Backfill
1. Rigid Pipe Options
 - a. Untreated Base Course per APWA Section 32 11 23.
 - b. Granular Backfill Borrow per APWA Section 31 05 13.
 - c. Free Draining Granular Backfill per WVC Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per APWA Section 31 05 19 and is to be worked with compaction equipment to consolidate rock and minimize voids.
 2. Material for other pipe types to be per manufacturer's recommendation.
- D. Trench Backfill
1. Rigid Pipe Options
 - a. Untreated Base Course per APWA Section 32 11 23.
 - b. Granular Backfill Borrow per APWA Section 31 05 13.
 - c. Granular Borrow per APWA Section 31 05 13 with a maximum particle size of 3-inches.
 - d. Free Draining Granular Backfill per WVC Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per APWA Section 31 05 19 and is to be worked with compaction equipment to consolidate rock and minimize voids.
 2. Material for other pipe types to be per manufacturer's recommendation.
- E. Use a flowable fill (Cement Treated Fill) when vibration is not allowed, or when specified. See APWA Section 31 05 15. Other uses of flowable fill are to be approved by the Engineer.
- F. Materials excavated on site will not be allowed for use on project without written approval from Engineer. All backfill materials must meet specifications.
- G. Pea gravel, slag or recycled asphalt material is NOT ALLOWED in the trench.

PART 3 EXECUTION

Replace or add the following articles:

3.5 PIPE ZONE

- A. Pipe zone backfill to be installed per APWA Plan 382 unless specified otherwise in this section. The pipe zone backfill extends from the bedding material to a height of at least 1 foot above the crown of the pipe and extends over the entire width of the trench.
- B. Placement of the pipe zone materials should be at approximately the same rate on each side of the pipe. The difference in elevation of backfill soils on each side of the pipe should not exceed 6 inches.

- C. Slice and tamp to ensure proper placement of pipe zone material under and around the pipe haunch.
- D. Don't not permit free fall of backfill material that may damage pipe, pipe finish or pipe alignment.
- E. Except where piping must remain exposed for tests, fill pipe zone as soon as possible.
- F. Pipe zone materials shall be placed and compacted in lifts with a maximum loose (uncompacted) thickness of 8 inches of thickness when using riding equipment or 6-inches when using hand held equipment.
- G. Compact pipe backfill materials to a minimum of 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26, unless pipe manufacturer requires more stringent installation.

3.6 TRENCH ABOVE PIPE ZONE

- A. Follow APWA Plan 381 unless specified otherwise in this section.
- B. Pipe zone materials shall be placed and compacted in lifts with a maximum loose (uncompacted) thickness of 8 inches of thickness when using riding equipment or 6-inches when using hand held equipment.
- C. Fill unauthorized excavations with material acceptable to Engineer at no additional cost to Owner.
- D. Do not damage adjacent structures or service lines.
- E. Install continuous identification tape directly over buried lines 18 inches below finished grade.
- F. Compact pipe backfill materials to a minimum of 95 percent or greater relative to a standard or modified proctor density, APWA Section 31 23 26, unless pipe manufacturer requires more stringent installation.

3.12 PIPE BEDDING

- A. Pipe bedding to be installed per APWA Plan 382 unless specified otherwise in this section.
- B. Pipe bedding materials shall be compacted in loose (uncompacted) lifts of not more than 8 inches of thickness when using riding equipment or 6-inches when using hand held equipment.

- B. Compact pipe bedding materials to a minimum of 95 percent or greater relative to a modified proctor density, APWA Section 31 23 26.
- C. Minimum thickness of the bedding layer as shown in APWA Plan 382.
- D. The surface of the bedding layer should be graded so that the final grade of the layer meets the specified pipeline grade requirements.
- E. The bedding layer should be shaped to support the full length of the pipe section and deleterious materials, e.g., boulders, angular rocks and gravel should be removed to prevent damage to the pipe. Maintain uniform foundation along barrel of pipe with sufficient relief for joint connections.

END OF SECTION 33 05 20-M

SECTION 33 41 00-M

STORM DRAINAGE SYSTEMS

This specification changes a portion of 2017 Edition APWA Standard Specification Section 33 41 00. All other provisions of the section remain in full force and effect.

PART 1 GENERAL

Replace the following:

1.2 REFERENCES

- A. APWA (Utah Standards)
 - Plan 315 Catch basin (single or double grate)
 - Plan 323 Pipe outfall
 - Plan 341 Precast manhole (where specified)
 - Plan 381 Trench backfill
 - Plan 382 Pipe zone backfill

- B. WVC Standard Drawings
 - WVC 255 Asphalt Concrete T-Patch
 - WVC 316 Combination Catch Basin and Cleanout Box
 - WVC 331 Cleanout Box

PART 3 EXECUTION

Replace the following:

3.6 INSTALLATION – INLETS, CATCH BASINS, CLEANOUTS

- A. Install facilities per APWA 315, WVC 316 and WVC 331 (WVC Cleanout Box)

END OF SECTION 33 41 00-M

CONTRACTOR’S SUBMITTAL TRANSMITTAL FORM

For contractor submittals (including shop drawings, calculations, data or other product information)

Project Name:		Project #:	
Contractor:		Date:	
Submitted By:		Submittal #: (Sequential order starting at 1)	

Description of Item Submitted:			
Bid Item Number(s): (All that apply)			
Contract Document Reference: (Specification No. or Drawing No.)			
Material Certification (check one)			
	We certify that the material or equipment contained in this submittal meets all requirements specified or shown (no exceptions).		
	We certify that the material or equipment contained in this submittal meets all the requirements specified or shown, except for the following deviations:		
Request for Deviation from Specification:			