



WEST VALLEY CITY 2026 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, 2026

WEST VALLEY CITY, UTAH
ORDINANCE NO. 26-31

Date Adopted: 08/25/2026

Date Effective: 08/26/2026

**AN ORDINANCE ADOPTING UPDATED ENGINEERING
STANDARDS.**

WHEREAS, the City has enacted engineering standards to regulate the construction and design of certain improvements and structures within the City; and

WHEREAS, the City desires to update said engineering standards; and

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 update the City's adopted engineering standards.

NOW, THEREFORE, BE IT ORDAINED by the City Council of West Valley City, Utah as follows:

Section 1. Repealer. Any provision of the West Valley City Municipal Code found to be in conflict with this Ordinance is hereby repealed.

Section 2. Adoption. The City hereby adopts the Engineering Standards attached hereto as Exhibit A. Said Engineering Standards shall replace the existing Engineering Standards, are hereby adopted as binding City regulations, and shall have the full force of law.

Section 3. Severability. If any provision of this Ordinance is declared to be invalid by a court of competent jurisdiction, the remainder shall not be affected thereby.

Section 4. Effective Date. This Ordinance shall take effect immediately upon posting in the manner required by law.

PASSED and APPROVED this 25th day of August, 2026.



WEST VALLEY CITY

Scott Harmon

MAYOR PRO TEM

ATTEST:

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CITY RECORDER

Table of Contents

Part 1:	Introduction - West Valley City Engineering Standards.....	5
1.1	Volume I – General Standards and Specifications.....	5
1.2	Volume II – Minimum Sampling and Testing Requirements	5
1.3	Modifications	5
Part 2:	Standard Specifications and Standard Drawings	6
2.1	APWA Manual of Standard Specifications – Latest Edition	6
2.2	APWA Manual of Standard Drawings – 2026 Edition.....	7
2.2.1	APWA Adopted Standard Drawings:	7
2.3	West Valley City Standard Drawings	7
Part 3:	Roadway Design	9
3.1	General Roadway Design Elements.....	9
3.1.1	Horizontal Alignment	9
3.1.2	Vertical Alignment.....	9
3.1.3	Longitudinal Street Grades	9
3.1.4	Cross Slope	9
3.1.5	Stopping Sight Distance.....	9
3.1.6	Design Speed	10
3.1.7	Intersection Design	10
3.1.8	Driveway Construction and Access Management	11
3.1.9	Dead End Roadways	11
3.2	Typical Section Elements.....	13
3.2.1	Street Sections.....	13
3.2.2	Active Transportation	15
3.2.3	Curb and Gutter, Sidewalk.....	15
3.3	Pavement Design	16
3.3.1	Rigid Pavement.....	16
3.3.2	Flexible Pavement.....	16
3.4	Traffic Issues.....	17
3.4.1	Trip Generation Analysis (TGA)	17
3.4.2	Traffic Impact Study (TIS)	17



3.4.3	Traffic Calming in Residential Neighborhoods	18
3.5	Roadway Lighting.....	18
3.5.1	Streetlight Standards	18
3.5.2	Street Lighting Standard Drawings.....	19
3.5.3	Streets with Specific Lighting Requirements per West Valley City Code	20
Part 4:	Drainage Design Standards.....	21
4.1	Drainage Design Requirements	21
4.1.1	Retention and Detention Standards.....	21
4.1.2	Water Quality Standards	25
4.1.3	Design Storms – Precipitation Depths	27
4.1.4	Storm Drain Design for Publicly Owned Systems.....	28
4.2	Drainage Report Requirements.....	29
4.2.1	Drainage Report Requirements – Plan Elements	29
4.2.2	Drainage Report Requirements – Low Impact Development Evaluation.....	29
4.2.3	Drainage Report Requirements – Retention Requirement Calculations.....	30
4.2.4	Drainage Report Requirements – Detention Calculations	30
4.2.5	Drainage Report Requirements – Water Quality and Targeted Pollutants	30
4.2.6	Drainage Report Requirements – Hydrologic analysis.....	30
4.2.7	Drainage Report Requirements – Pipe sizing calculations	30
4.3	Drainage Related Permitting.....	30
4.3.1	Storm Water Management Permits	30
Part 5:	Development Review.....	33
5.1	Development Plan Set Submittal Requirements	33
5.1.1	Digital Plan Submittal.....	33
5.1.2	Plan Resubmittal	33
5.1.3	Subdivision Plan Elements.....	33
5.1.4	Commercial, Industrial and Multi-Family Plan Set Requirements.....	33
5.1.5	Subdivision Platting Requirements.....	33
5.1.6	Survey Monuments	34
5.2	Bonding for Public Improvements.....	34
5.2.1	Bonding Procedures	35
5.3	Floodplain Development Requirements.....	35
5.3.1	Flood Plain Development.....	35



Part 6:	General Construction Requirements	37
6.1	Construction in the Public Right-of-Way	37
6.1.1	Quality Control	37
6.1.2	Right-of-Way Permit.....	37
6.1.3	Roadway Excavation Restoration Standards	39
6.1.4	Work Zone Traffic Control Requirements.....	40
6.1.5	Pavement Cut Moratorium and Special Restoration Standard.....	40
6.2	Utility Trench Requirements.....	41
6.2.1	Trench Safety	41
6.2.2	Backfill and Compaction Requirements in Storm Drain Trenches.....	42
6.2.3	Compaction Requirements in Water, Sewer and other Utility Trenches	42
6.3	Temporary Surfacing Requirements	42
6.3.1	Trench Plate Requirements	42
6.3.2	Temporary Asphalt	42
6.4	Aggregate Base Course Material	43
6.4.1	Untreated Base Course.....	43
6.4.2	Treated Base Course	43
6.5	Asphalt Pavement Requirements	43
6.5.1	Asphalt Mix Requirements	43
6.5.2	Asphalt Placement Standard	43
6.6	Concrete Pavement Standards.....	44
6.6.1	Concrete Pavement Restoration Standards	44
6.7	Concrete Placement Standard	44
6.7.1	Placement Weather	44
6.7.2	Air Entrainment.....	45
6.7.3	Slump	45
6.7.4	Tempering.....	45
6.7.5	Placement Time.....	45
6.8	Geotechnical Considerations.....	45
6.8.1	Soil Stabilization.....	45
6.9	Other Construction Considerations	45
6.9.1	Collars on Utility Covers	45
6.9.2	Survey Monuments	46



6.9.3	Patterned Concrete Park Strip	46
6.9.4	Detectable Warning Surface on Pedestrian Access Ramps	46
6.9.5	Pipe Removal/Abandonment Standard	46
Part 7:	Utilities in the Right-of-Way	47
7.1	Utilities.....	47
7.1.1	Public Utilities in the Right-of-Way	47
7.1.2	Small Cell Wireless Facilities	47
Part 8:	Appendix.....	48
8.1	West Valley City Special Provisions	48
8.2	West Valley City Standard Drawings	48



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 (Owner).

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.

All submitted plans shall be signed by a civil engineer registered in the State of Utah and all work shall be in accordance with good engineering practices. Any changes from the final approved set of plans must be revised by the design engineer, including stamp and signature, and submitted to the West Valley City Engineering Division for approval.

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

Contractors should thoroughly read and understand these standards and associated documents before performing any work in the city. The order of precedence in case of conflict shall be (1) West Valley City Special Provisions (2) West Valley City Engineering Plans (3) West Valley City Engineering Standards (3) APWA Specifications (4) the approved third-party construction drawings.

2.1 APWA Manual of Standard Specifications – Latest Edition

West Valley City uses the latest edition of the America Public Works Association (APWA) Manual of Standard Specifications. APWA standard specifications and drawings can be found on the Utah Chapter website. <https://utah.apwa.org/>

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 in Appendix 8.1.

Section 01 45 00-M – Quality Control
Section 01 55 26-M – Traffic Control
Section 03 30 04-M – Concrete
Section 26 56 19-S – Roadway Lighting
Section 31 05 13-M – Common Fill
Section 31 23 23-M – Backfilling for Structures
Section 32 01 13.55-S – Frictional Mastic Surface Treatment
Section 32 01 31-M – Pavement Smoothness
Section 32 12 05-M – Bituminous Concrete
Section 32 12 16.13-M – Plant-Mix Bituminous Paving
Section 32 13 13-M – Concrete Paving
Section 32 16 14-S – Curb Cut Assembly
Section 32 16 24-S – Stamped Concrete
Section 32 17 23-M – Pavement Markings
Section 32 93 13-M – Ground Cover
Section 33 05 02-M – Concrete Pipe and Culvert
Section 33 05 20-M – Backfilling Trenches
Section 33 41 00-M – Drainage Systems



2.2 APWA Manual of Standard Drawings – 2026 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 and approved under specific circumstances.

2.2.1 APWA Adopted Standard Drawings:

Plan 205.1 – Type A – 30” Curb and Gutter
Plan 205.3 – Type H – 30” Curb and Gutter (PUD Streets Only)
Plan 206 – Curb and Gutter Connection
Plan 211 – Waterway
Plan 221 – Flare Driveway Approach – Type A&B
Plan 222 – Saw-cut Driveway Approach
Plan 231 – Sidewalk
Plan 245 – Subgrade Stabilization
Plan 251 – Bituminous Concrete Pavement Tie-In
Plan 302.1 – 24” Cover and Frame
Plan 308 – 35-1/2” Grate and Frame
Plan 315 – Catch Basin (without sump)
Plan 323.1 – Pipe Outfall
Plan 323.2 – Pipe Outfall
Plan 360 – Raise Frame to Grade
Plan 362 – Cover Collar for Storm Drains
Plan 381 – Trench Backfill
Plan 382 – Pipe Zone Backfill
Plan 413 – Cover Collar for Sanitary Sewer Manhole

2.3 West Valley City Standard Drawings

The following standard drawings are available in Appendix 8.2.

WVC 210 – Raised Island and Plowable End Section
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 261.5 – Concrete Pavement Joints
WVC 293 – Street Name Sign
WVC 316 – Modified Combo Box
WVC 331 – Cleanout Box
WVC 731 – Junction Box
WVC 762.1 – Asphalt Speed Table
WVC 762.2 – Concrete Speed Table
WVC 802 – Defective Concrete
WVC LP-01 – Residential Street Light; 54-Foot ROW and Less
WVC LP-02 – Secondary Street Light; >54-Foot & <80-Foot ROW
WVC LP-03 – Arterial Street Light; 80-Foot ROW and Greater



WVC LP-03A – Fairbourne Street Light
WVC LP-04 – Arterial Break-Away Dual Street Light
WVC LP-04A – Arterial Break-Away Single Street Light
WVC LP-05 – Single Sidewalk Light
WVC LP-06 – Dual Sidewalk Light
WVC LP-07 – Industrial Street Light



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).

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* based on stopping sight distance 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 30 mph	2.0%
30 mph to 45 mph	1.0%
Greater than 45 mph	0.5%

3.1.3 Longitudinal Street Grades

Minimum Grades: Longitudinal grades of streets shall not be less than 0.5%. Any exception to this standard must be approved in writing by the City Engineer. No roadway will be approved with a longitudinal grade of 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 Stopping Sight 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 feasible, conforming to AASHTO design standards.

Roads may not intersect with an angle greater than 5° from perpendicular. Provide a minimum 50-foot tangent approach section measured from the right-of-way line of the intersected road.

Intersection grades should be as flat as feasible while still maintaining drainage (0.5% minimum).

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
PUD	150 feet
Minor Street/Minor Collector	150 feet
Collector	250 feet
Arterial	500 feet



3.1.7.2 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). Scenarios not identified in the table below should be rounded up to the next available right-of-way width.

		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.

3.1.7.3 Traffic Signals

All traffic signal steel shall be powder-coated black.

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.

Access Spacing Measured from Centerline to Centerline	
Future Right-of-Way Width	Min. Spacing
< 66'	150 feet
66'-79'	200 feet
80' and up	350 feet

New access locations must line up with opposing access points.

At signalized intersections, maximize the access separation distance from the corner.

Where feasible, or when minimum separation from lot lines cannot be met, shared access with adjacent parcels is required with cross access easements.

Driveway surfacing shall be per 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 (Collector 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 top back of curb curve radius entering the cul-de-sac.



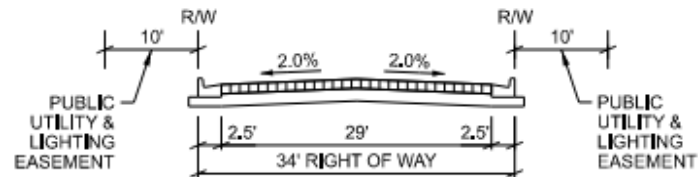
3.2 Typical Section Elements

3.2.1 Street Sections

Untreated base course shall extend one foot beyond the back of curb on all sections.

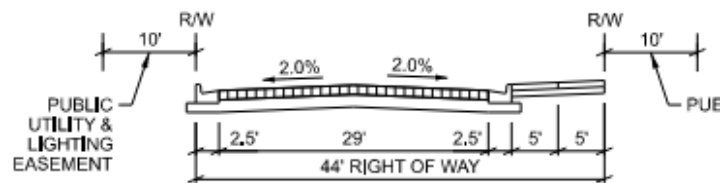
3.2.1.1 34-foot ROW – PUD Secondary Street – 29 feet of pavement

May only be used to serve the backs of Townhomes or Condominiums that are attached to the side of each other where sidewalks are provided within common areas.



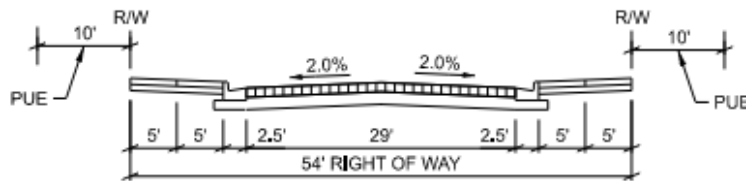
3.2.1.2 44-foot ROW – PUD Primary Street – 29 feet of pavement

May only be used for Townhomes or Condominiums that are attached to the side of each other.

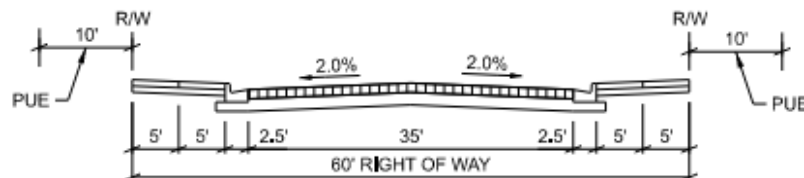


3.2.1.3 54-foot ROW - Minor Street – 29 feet of pavement

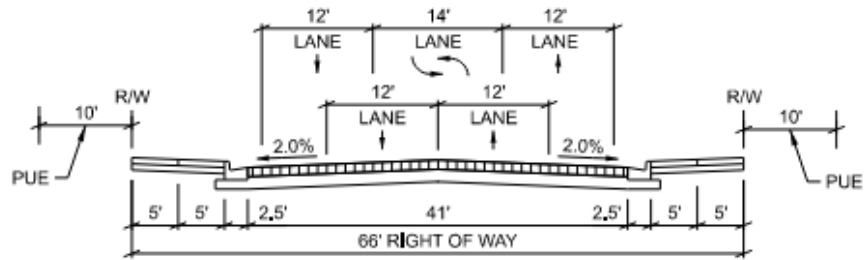
A 44-foot right-of-way road section without park strip may be allowed in certain infill development circumstances, with approval of the City Engineer.



3.2.1.4 60-foot ROW - Minor Collector Street Section – 35 feet of pavement

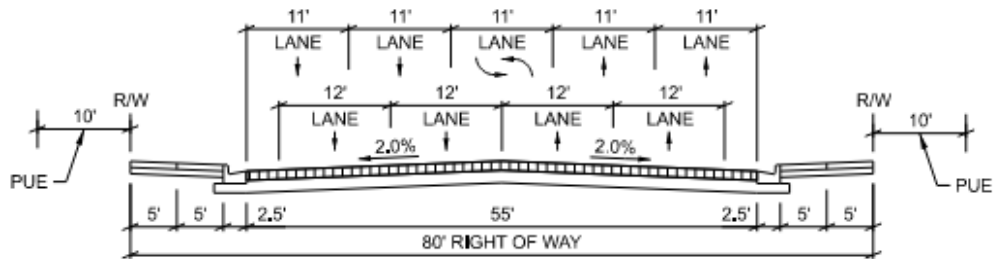


3.2.1.5 66-foot ROW - Collector Section – 41 feet of pavement



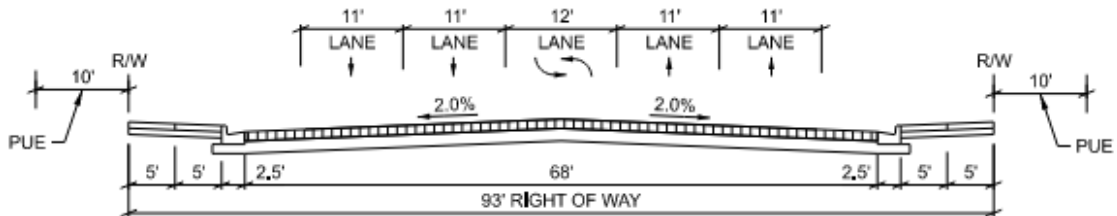
3.2.1.6 80-foot ROW - Minor Arterial Section – 55 feet of pavement

For use on existing 80-foot rights of way.

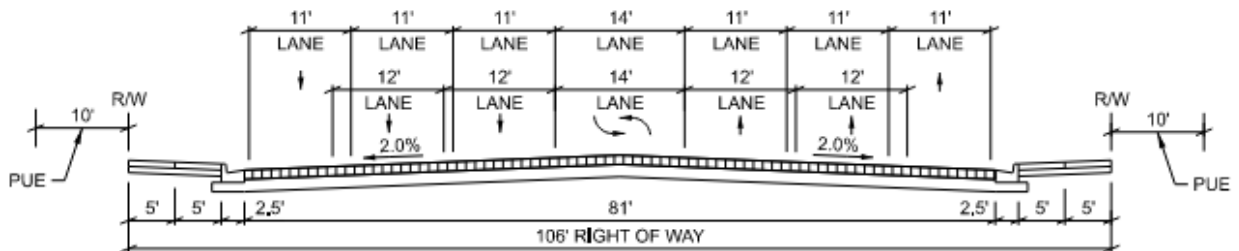


3.2.1.7 93-foot ROW – Minor Arterial Section 68 feet of pavement

For use on new minor arterial roadways.



3.2.1.8 106-foot ROW - Major Arterial Section – 81 feet of pavement



3.2.2 Active Transportation

West Valley City has adopted an Active Transportation Plan that identifies active transportation projects throughout the city. Additional pavement width may be required to accommodate projects recommended in Section 4.1 of the Active Transportation Plan. Coordinate with the engineering division prior to designing the pavement width on any corridor in which an active transportation project has been identified.

Add a minimum of 10 feet of total pavement width (to allow for one 5-foot bike lane on each side of the street) to all streets with Class 2 Bike Lanes as identified on the City Bike Plan. The Bike Plan is part of the West Valley City General Plan; *Vision West 2035*, under the Transportation Chapter. Both the Active Transportation Plan and the Bike Plan can be found on the [City's Website](#).

3.2.3 Curb and Gutter, Sidewalk

Curb and Gutter is required on all streets. Curb and Gutter shall be per APWA Plan 205, Type A - 30" Standard, except for Planned Unit Development streets which may use Type A or Type H - 30" Standard. Other types of curb and gutter may be considered in unique instances but must be approved by the City Engineer.

All raised medians and islands require plowable end sections per WVC Standard Drawing 210 – Raised Island and Plowable End Section.

Integral sidewalk may only be used when approved by the City Engineer and shall not be less than 6 feet in width.

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.

Provide 1/2-inch thick, full-depth Type F1 expansion joint filler per APWA Section 32 13 73, between sidewalk and adjacent concrete pours; including driveway approaches, driveways, and other concrete flatwork.

In areas where walls are required in double frontage lots or other scenarios where the parkstrip is not privately maintained, patterned colored concrete will be required in the park strip. See Section 6.9.3 for requirements. Wall standards can be found in West Valley City Code 7-2-114.



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 obtained.

All repairs to curb, gutter, or sidewalk shall require the replacement of full panels, or ensure that no remaining section is less than five feet in length. Refer to WVC Standard Drawing 802 – Defective Concrete.

3.3 Pavement Design

3.3.1 Rigid Pavement

3.3.1.1 Minimum Rigid Pavement Section

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

Pavement designs shall 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 California Bearing Ratio (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 following table.



		Street Classification (as defined in West Valley City Code 7-13-705)		
Subgrade Class	Pavement Section	Minor Street / PUD	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

3.4 Traffic Issues

A Trip Generation Analysis (TGA) and a Traffic Impact Study (TIS) may be required by the City and must be prepared by a registered Professional Engineer approved by West Valley City. West Valley City Code 7-11-103.

3.4.1 Trip Generation Analysis (TGA)

A TGA is required for all developments to determine if or what level of TIS is required. The TGA Should be prepared using the ITE Trip Generation Manual and must include a description of the proposed development and calculations for anticipated trip generation.

3.4.2 Traffic Impact Study (TIS)

A TIS is required for developments anticipated to generate 50 or more new peak hour trips. Traffic studies may also be required regardless of trip generation when deemed necessary due to safety or operational concerns.

If required, the Public Works Department will determine the study area and which TIS level (I, II, or III) is to be completed.

A TIS shall include, at a minimum (additional items may be required as determined necessary by the Public Works Department):

- Summary at the beginning of report with key assumptions, findings and recommendations
- Identify nearby roadways and intersection, speed limits, and intersection control
- Peak hours turning movements



- Morning (7-9 AM), evening (4-6 PM) or if different peak hour of development (e.g. school, venue, church etc.)
- On-site circulation analysis
- Origin/Destination analysis
- Peak hour traffic generation and movements
- Capacity Analysis
- Delay, Level of Service (LOS), and queuing results in study area intersections for existing condition (no project), existing plus project, future conditions, and future conditions plus project as required
- Recommendations to mitigate poor levels of service or other concerns.
- Exhibits showing peak hour turning movements, including trip assignment volumes and LOS for each scenario.
- Include traffic count date, capacity analysis, and queuing reports for each scenario

Study Level		New Peak Hour Trips	TIS Horizon Years	Study Area
TIS	I	≥50-100	Current Year	Project Accesses and Closest Intersections
	II	>100-500	Current, + 5 Years	Project Accesses and Major Intersections within ¼ mile
	III	>500	Current, +5 Years, +20 Years	Project Accesses and Major Intersections within ½ mile

3.4.3 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 of street lighting components.

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 their sole 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

Refer to the City Code for special lighting requirements within designated limits of the following streets.

Lehman Avenue (West Valley City Code 7-6-406) – WVC Standard Drawing LP-03A

Market Street (West Valley City Code 7-6-407) – WVC Standard Drawing LP-03A

Constitution Blvd (West Valley City Code 7-6-408) – WVC Standard Drawing LP-03

3500 South – City Center (West Valley City Code 7-6-408) – WVC Standard Drawing LP-04

3650 South (West Valley City Code 7-6-409) – WVC Standard Drawing LP-03

Weigh Station Road and Three Mill Lane (West Valley City Code 7-6-410) – WVC Standard Drawing LP-03A

3300/3500 South east of Redwood Road, Redwood Road, and 5600 West between 2100 South and 3100 South (West Valley City Code 7-10-200P) - WVC Standard Drawing LP-05

3500 South between 2700 West and Redwood Road (West Valley City Code 7-10-200P) - WVC Standard Drawing LP-04

3500 South Streetscape – Between 2700 West and 6000 West (West Valley City Code 7-10-300P) - WVC Standard Drawing LP-04



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 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”.

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 Small MS4 Permit UTR090000, 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 Small MS4 Permit UTR090000, 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.

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](#)

[Utah DEQ Low Impact Development Resources](#)

[EPA Green Infrastructure Resources](#)

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). As-built plans will be required on all retention basins prior to bond release to verify storage volume.

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](#). 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 as part of 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. The Modified Rational Method (FAA method) may be used to calculate required detention. Other detention basin sizing methods may be used, together with an approved rainfall distribution. As-built plans will be required on all detention basins prior to bond release to verify storage volume.

Orifice plates must be made of corrosion-resistant metal suitable for prolonged outdoor exposure with a minimum thickness of 1/2". Orifice plates must be installed prior to onsite paving operations.

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. When possible, the Project Volume Retention Goal should 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 piping of any storm water conveyance offsite shall be placed in a manner to prevent the offsite discharge of the Project Volume Retention Goal storage.



4.1.1.10 Individual Residential Lot Retention Requirements

Final grading of individual Lots shall be performed in such a way that excess water shall be contained entirely on the site, directed to an improved Street or directed to an HOA maintained common area approved for storm water conveyance/storage without crossing another Lot or Parcel.

Lots that do not drain directly to the public right-of-way or an HOA maintained common area shall provide permanent on-site stormwater retention facilities to prevent the conveyance of runoff between properties. A lot-specific Grading and Drainage Plan is required and is recommended to be submitted with the building permit application. Occupancy will not be issued until an acceptable drainage plan has been submitted and the required improvements have been constructed.

Retention facilities shall be sized to capture and retain runoff from the 10-year, 1-hour storm event. The retention system shall consist of an underground storage facility incorporating a perforated pipe, gravel, separation fabric, and inlet structure. Lots shall be graded to convey runoff to the storage facility, and inlet protection shall be provided to prevent sediment from entering the system. Gravel shall conform to the requirements for Free Draining Granular Backfill in accordance with WVC Special Provision 31 05 13-M, or as otherwise recommended by the manufacturer to achieve the required storage volume. All facilities shall be constructed in accordance with approved plans. These facilities shall not be altered without approval of updated plans.

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 following table. 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.

City-owned storm drain pipes 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 per WVC Special Provision 33 05 02-M 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 and Modified Combo Boxes shall be per the West Valley City standard drawings.

Catch Basins shall be per APWA 315.

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	On Grade	10-Year	Gutter + 3 feet
	Sag Point	10-Year	Gutter + 6 feet
Arterial (ROW > than 66')	On Grade	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.

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 West Valley City Code 18-2-101 (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](#).

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

[DWQ SWPPP Template](#), and other guides – available on the Storm Water Permits page of the Utah Department of Environmental Quality - Division of Water Quality [website](#), under “General Construction (Storm Water): UPDES Permits.”

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](#).



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 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 Engineering [Development Section Webpage](#).

4.3.1.2.1.2 *Permit Application*

Long Term Storm Water Management Permits are obtained through the West Valley City [Permitting 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](#).

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

5.1.2 Plan Resubmittal

In addition to revised plans, an applicant shall provide a written explanation in response to the municipality's review comments, identifying and explaining the applicant's revisions and reasons for declining to make revisions, if any. The applicant's written explanation shall be comprehensive and specific, including citations to applicable standards and ordinances for the design and an index of requested revisions or additions for each required correction. If an applicant fails to address a review comment in the response, the review cycle is not complete and the subsequent review cycle may not begin until all comments are addressed. Utah State Code 10-20-806

All changes to plans, including those not required by the City, must be included in the written explanation and index of revisions or additions.

5.1.3 Subdivision Plan Elements

Engineering drawings and reports must include items from the Subdivision Final Plat and Plan Checklist which can be downloaded from the West Valley City Engineering [Development Section Webpage](#). A completed certified checklist is required with development applications.

5.1.4 Commercial, Industrial and Multi-Family Plan Set Requirements.

Engineering drawings and reports must include items from the Commercial/Industrial Plan Set Checklist which can be downloaded from the West Valley City Engineering [Development Section Webpage](#). A completed certified checklist is required with development applications.

5.1.5 Subdivision Platting Requirements

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

5.1.5.1 Preliminary Plat Requirements

The Preliminary Plat must include items from the Preliminary Plat Checklist which can be downloaded from the West Valley City Engineering [Development Section Webpage](#). A completed certified checklist is required with applications.

5.1.5.2 Final Plat

The Final Plat must include items from the Subdivision Final Plat and Plan Checklist which can be downloaded from the West Valley City Engineering [Development Section Webpage](#). A completed certified checklist is required with applications.



5.1.5.3 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 Utah State Code 17-73-504. The subdivision by Metes and Bounds must include items from the Subdivision by Metes and Bounds Checklist which can be downloaded from the West Valley City Engineering [Development Section Webpage](#). A completed certified checklist is required with applications.

5.1.6 Survey Monuments

Survey monuments to be placed in accordance with West Valley City Code 7-13-809

5.1.6.1 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, 17-73-502, 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.

5.1.6.2 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.

5.1.6.2.1 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.

5.1.6.2.2 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.

5.2 Bonding for Public Improvements

In accordance with West Valley City Code 7-13-409, 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.



5.2.1 Bonding Procedures

Performance Bond agreements shall be entered into in accordance with West Valley City Code 7-13-516.

5.2.1.1 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

5.2.1.2 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.

Per Utah State Code 10-20-807; 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.

5.3 Floodplain Development Requirements

5.3.1 Flood Plain Development

5.3.1.1 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).

5.3.1.1.1 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.



5.3.1.1.2 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 Requirements.

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 Requirements.

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 Requirements. 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 a West Valley City [Right-of-Way Permit](#). Exceptions in emergency cases are noted in West Valley City Code 19-2-101.

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](#).

6.1.2.2.2 Insurance and Completion Bond

Insurance requirements shall be per West Valley City Code 19-2-102.

A completion bond is required in the amount specified in West Valley City Code 19-2-102. 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 to end of the warranty period.

6.1.2.2.7 Peak Hour Lane Use Restrictions

Certain streets have peak hour lane use restrictions Monday through Friday, requiring an additional fee for peak hour lane restrictions. The Peak Hour Lane Closure fee is shown in West Valley City Code 1-2-110.

The AM Peak is defined as 6:00 am to 9:30 am. The PM Peak is defined as 3:30 pm to 7:00 pm.

Restrictions are as follows:

Peak Hour Lane Closure 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
5600 West	6600 South	6200 South	N/A	Southbound
7200 West	3500 South	SR-201	Northbound	Southbound
6200 South	5600 West	SR-111	Eastbound	Westbound



Peak Hour Lane Closure Fee - Major Roads				
Road	From	to	AM Peak	PM Peak
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

6.1.2.2.8 Holidays

Do not perform any work within the public right-of-way without approval except for repairing or servicing equipment, protecting work, maintaining, or curing concrete, and maintaining traffic on the following holidays: New Year's Day, Memorial Day, Independence Day, Pioneer Day, Labor Day, Thanksgiving Day and Christmas Day. Holidays that fall on a Saturday will recognize both the preceding Friday and the Saturday as holidays. Holidays that fall on Sunday will recognize both the Sunday and the following Monday as holidays.

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 or adjacent patch.

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

For the final lift of asphalt, joints shall not be placed within the wheel path. If the planned joint location for patches, widening, or repair work would fall within a wheel path, additional asphalt removal may be required to relocate the joint outside the wheel path.

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-M of the WVC Special Provisions. Trench backfill requirements are discussed in the Utility Trench section below.

6.1.3.3 Compaction Requirements

Per WVC Minimum Sampling and Testing Requirements.



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 panels only. 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 including maintenance/detours of all pedestrian and bicycle routes. 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. 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.
 - b. Cuts on newly constructed or reconstructed streets within ten (10) years of construction will be subject to a road damage fee assessed according to the age of the pavement per West Valley City Code 1-2-110.
2. Overlaid Streets
 - a. Overlaid streets shall not be cut for one (1) year from the time the street was overlaid. Any overlaid streets cut within two (2) years from when the street was overlaid must be restored with the Special Restoration Standard.



- b. Cuts on streets overlaid within five (5) years from the time the street was overlaid will be subject to a road damage fee assessed according to the age of the pavement per West Valley City Code 1-2-110.
- 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 and Overlaid Streets

Asphalt T-Patch per WVC Standard Drawing 255. Driving surfaces following T-Patch with a noticeable bump or with a profile deviation of 1/8 inch or greater over a 10-foot area will require a profile grind per APWA 32 01 26 to eliminate the bump, or re-mill and pave the entire cut area to fill depressions with a minimum of 2-inches of newly placed asphalt.

A crack seal around the perimeter of the cut per APWA 32 01 17 and a Frictional Mastic Surface Treatment per WVC Special Provision 32 01 13.55-S is required. Frictional Mastic Surface should be on the full width of pavement and extend to the two nearest intersections or a maximum distance of 500 feet.

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

6.1.5.2.1.1 Emergency Repairs During Moratorium

In the event an emergency road cut is required by an improvement district during the moratorium period but after the development or construction activity warranty period has expired, a Frictional Mastic Surface Treatment is not required. If profile grinding is necessary to meet the allowable surface tolerance, a fog seal per APWA 32 01 13.50 shall be applied over the ground area.

6.1.5.2.2 Slurry Sealed and Chip Sealed Streets

Asphalt T-Patches per WVC Standard Drawing 255. A crack seal around the perimeter of the cut per APWA 32 01 17 is required.

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 measurements 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 used. Place sign W8-1 “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 Engineering Division, 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 Courses*, 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 Courses*, 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

All Mix design submittals shall be for hot mix asphalt (HMA).

6.5.1.1 Minor Streets and Minor Collectors

See WVC Special Provision 32 12 05-M

Binder Grade – PG58-28

Aggregate Gradation - SP-1/2

Compaction Level – 50Nd

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

6.5.1.2 Major Arterial, Minor Arterial and Collector

See WVC Special Provision 32 12 05-M

Binder Grade – PG64-34

Aggregate Gradation - SP-1/2

Compaction Level – 75Nd

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 Fahrenheit and rising. Cease paving if air temperature falls below 50 degrees Fahrenheit.

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



6.5.2.2 Quality Control

Quality control is the responsibility of the Contractor and shall be performed in compliance with the WVC Minimum Sampling and Testing Requirements. 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 Requirements. Documentation will be required prior to the release of bonds.

6.5.2.3 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.

6.5.2.4 Asphalt Acceptance

Refer to West Valley City Engineering Standards Volume II – Minimum Sampling and Testing Requirements.

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.

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.

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

See WVC Special Provision 03 30 04-M.

6.7.1 Placement Weather

6.7.1.1 Cold Weather Concrete Placement

If air temperature is predicted to fall below 32 degrees Fahrenheit 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.

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 per WVC Special Provision 03 30 04-M, 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 unless approved by the Engineer. 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 shall be constructed in accordance with the standards of the applicable Improvement District or per APWA Plan 362, 413, or 574, whichever is more stringent. 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 or asphalt 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 concrete park strip is to be placed, construct per WVC Standard Drawing WVC 232.1 and WVC Special Provision 32 16 24-S.

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 feasible.

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 Engineer. If the pipe removal will result in excessive disturbance of hard surface improvements the abandoned pipes shall be filled completely with flowable fill meeting requirements of APWA Section 31 05 15. In rare circumstances where removing the abandoned pipe or placing flowable fill is infeasible, and with approval from the 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 Engineer. 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 West Valley City Code 7-7-603 for Small Cell Wireless Facility Permits



Part 8: Appendix

8.1 West Valley City Special Provisions

8.2 West Valley City Standard Drawings





WEST VALLEY CITY 2026 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, 2026

Table of Contents

Part 1:	Introduction.....	2
1.1	Modifications	2
1.2	Testing Standards.....	2
1.3	General Procedures	2
1.3.1	Contractor Submittals	2
1.3.2	Lots and Sub-lots.....	2
1.3.3	Quality Control.....	3
1.3.4	Quality Assurance	3
1.3.5	Application of Pay Factors on Developments	3
Part 2:	Backfilling – Roadways/Structures/Trenches	4
Part 3:	Aggregate Base Course.....	5
Part 4:	Concrete	6
Part 5:	Asphalt	10



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.

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. 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.

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. Separate lots will be required if the work being tested is not continuous.

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.

With approval from the City Engineer, a material lot may remain in place with test results falling below a Pay Factor of 1.00. Applicable pay factors found in the specifications will be applied to the deficient lot and the deduction will be paid by the Developer to the City. Calculation of the deduction will be based on actual contract unit prices paid to the contractor. The Developer will be required to show documentation of contract 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 sub-lot. A sub-lot 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:	<table><tr><th>Structure Type</th><th>Lot Size</th></tr><tr><td>Small Structures (e.g. manholes, drainage boxes, etc.):</td><td>Each Structure</td></tr><tr><td>Strip Footings:</td><td>40 Linear Feet</td></tr><tr><td>Structure Footing excluding strip footings:</td><td>225 Square Feet</td></tr><tr><td>Embankments:</td><td>625 Square Feet</td></tr><tr><td>Interior Slab on Grade:</td><td>625 Square Feet</td></tr><tr><td>Side of Foundation Walls and Retaining Walls:</td><td>New lot every time wall changes direction or exceeds 40 Linear Feet</td></tr></table>	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
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 sub-lot 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:	<u>Curb, Gutter, or Waterway:</u>	One per 200 Linear Feet
	<u>Sidewalk or Concrete Park Strip:</u>	One per 400 Linear Feet
	<u>Driveway approach or misc. Flatwork:</u>	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. <u>Hand placements will be considered Type II Placements.</u> 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-

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 sub-lot. 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 (i.e. less than 900 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 sub-lot) for the first three sub-lots 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 sub-lot) for the first three sub-lots 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:	0.1 Lane Mile (528 feet long one lane wide). Add segments shorter than 250 feet to preceding lot. Treat partial segments longer than 250 feet as a lot.
Frequency per Lot:	N/A
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 2026 ENGINEERING STANDARDS 8.1 - APPENDIX

WEST VALLEY CITY SPECIAL PROVISIONS

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 Section 01 45 00.
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 shall be used to determine the frequency of sampling and testing on all public improvements constructed within the city right-of-way.

SECTION 01 55 26-M
TRAFFIC CONTROL

This specification changes a portion of Section 01 55 26.
All other provisions of the Section remain in full force and effect.

Add the following to Article 1.5, Paragraph A:

1. Oversees all traffic control operations.
2. Implements the Traffic Control Plan.
3. Remains available 24 hours a day, seven days a week, and can be on-site within 30 minutes of notification.
4. Corrects deficiencies immediately upon verbal or written notification from ENGINEER or representative.
5. Coordinates project traffic control and any traffic pattern alterations or changes with emergency services and local law enforcement agencies.
 - a. Coordinates with ENGINEER to send an email to roadwork@wvc-ut.gov anytime traffic patterns are modified.

Add the following to Article 3.2, Paragraph B:

1. Replace any device missing any part of the message or background.
2. Replace or repair graffiti-damaged signs.
3. Replace non-reflective traffic control devices with reflective devices per MUTCD requirements.

Add the following to PART 3:

3.4 SPECIAL TRAFFIC CONTROL PROVISIONS

- A. Pedestrian Traffic Control:
1. Close the sidewalk to public use when approved by West Valley City.
 2. Coordinate with school flagging personnel.
- B. Business Access and Signage:
1. Provide signs that display the names of businesses located in the work zone.
 2. Show motorists how to reach businesses using signage in the work zone.
- C. Access to Properties:
1. Provide access to all affected properties, except for durations less than 24 hours or when achieving concrete strengths.
 2. Notify the occupants of adjacent properties at least 48 hours in advance of change or loss of access and the anticipated duration.
 3. Construct temporary ramps over curb, gutter, sidewalks, and other construction to each residence and business entrance as required for uninterrupted vehicular and pedestrian access.
- D. Public Transit:
1. Keep existing bus stops open and clear for bus service operation.
 2. Minimize bus service disruption in and around the stops.
 3. Coordinate at least 48 hours in advance with Utah Transit Authority for service disruptions or approved Road Closures.

E. Partial or Complete Lane Closure (Without Permit):

1. Provide a Certified Flagger when work momentarily affects travel lanes. Example: A backhoe maneuvering in a travel lane outside of the construction work zone.
2. If one traffic lane for each direction cannot be maintained, provide one 12 ft. wide lane with Certified Flaggers alternating traffic flow for each direction.

F. Street Closure: (Permit Required)

1. Maintain local traffic at all times during the project.
2. Maintain access to abutting properties at all times via one 12 ft. wide travel lane.
 - a. Provide alternative access whenever normal access is blocked and an alternative access method is possible.
 - b. Notify affected property owners 48 hours in advance of change or loss of access and the anticipated duration of time.

SECTION 03 30 04-M**CONCRETE**

This specification changes a portion of Section 03 30 04.
All other provisions of the Section remain in full force and effect.

Add the following to Article 3.2:**D. Mobile Tow-Behind Concrete Mixer (“U-Cart”):**

1. Mobile Tow-Behind concrete mixers, or similar, are not permitted without ENGINEER approval and an approved mix design.
 - a. If approved, may only be used in underground applications (i.e., pipe collars at joints or structure connections, fence posts, etc.).

E. Mobile Volumetric Mixer:

1. Mobile Volumetric Mixer trucks, or similar, are not permitted without ENGINEER approval.
 - a. If approved, may only be used for very small applications (i.e., at-grade utility collars, single panel repairs, etc.).

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.

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 with 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.

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 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 OWNER for use in the municipal right-of-way.
- B. CONTRACTOR shall inspect poles and fixtures upon delivery to the job site and shall protect them from damage until installation is complete and the lighting system is accepted by OWNER.
- C. CONTRACTOR shall be responsible to coordinate construction of lighting system with Rocky Mountain Power and OWNER. 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. CONTRACTOR shall 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 (WVC) to CONTRACTOR shall be the responsibility of 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 the 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. CONTRACTOR shall provide a #4 URD Triplex Aluminum wire or two #6RHH copper conductors (or equivalent copper burial wires) for wiring streetlights and a #6 ground wire (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 two (2) Bussman HEB-JJ fuse holders or approved equivalent with rubber boots (set screw type only), two 10-amp fuses, and a Homac 3-outlet rubberized aluminum bar connector in each junction box or approved equal.
 - 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 National Electric Code 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 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.
 3. A junction box will be required on both sides of the road at roadway crossings.

2.5 INSULATING TAPE

- A. Type 1 vinyl chloride, ASTM D2301.

2.6 LUMINAIRE

- A. Per WVC standard drawings.

2.7 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 per Section 31 23 16 and backfill per 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 in accordance with 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 affected.
- 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. 24 inches clear from the pull box.
 2. Not in a pedestrian access way.

3. Unless specified otherwise:
 - a. 5 feet from a new tree.
 - b. 10 feet from an existing tree, driveway, or hydrant.
 - c. Center of park strip or 24 inches clear from the top back of the 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 Section 03 30 04. Placement shall be compliant with 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. Direct burial poles: Install 4-inch thick concrete ring centered on pole and cast-in-place. **(NO Pre-cast is allowed)**. See WVC Standard Drawings LP Sheets for ring diameter.

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. Bury conduit at least 24" deep.
- 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 the new system, with a mandrel and blow out with compressed air. Where the 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, making all components 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 National Electric Code 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 otherwise.
- 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

SECTION 31 05 13-M
COMMON FILL

This specification changes a portion of Section 31 05 13
All other provisions of the Section remain in full force and effect.

Delete Article 1.5 in its entirety.

Add the following to PART 2:

2.12 FREE DRAINING GRANULAR BACKFILL

A. Meet the following gradation:

Table 2 - Free Draining Granular Backfill	
Sieve Size	Percent Passing
1 ½ inch	90 to 100
1 inch	20 to 55
¾ inch	0 to 15
3/8 inch	0 to 5

SECTION 31 23 23-M

BACKFILLING FOR STRUCTURES

This specification changes a portion of Section 31 23 23.
All other provisions of the Section remain in full force and effect.

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.

Replace Article 2.1 with the following:

2.1 BACKFILL MATERIALS

- A. Foundation Stabilization (as required):
1. Granular Backfill Borrow per Section 31 05 13.
 2. Free Draining Granular Backfill per Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per 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 Section 32 11 23 unless required otherwise by pipe manufacturer.
 - b. Free Draining Granular Backfill per Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per 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 Section 32 11 23.
 - b. Granular Backfill Borrow per Section 31 05 13.

- c. Free Draining Granular Backfill per Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per 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 Section 31 05 15. Other uses of flowable fill are to be approved by ENGINEER.
- E. Materials excavated on site will not be allowed for use on the project without written approval from ENGINEER. All backfill materials must meet specifications.
- F. Slag or recycled asphalt material is NOT ALLOWED in the backfill.

Replace Article 3.7 with the following:

3.7 TOLERANCES

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

SECTION 32 01 13.55-S

FRICTIONAL MASTIC SURFACE TREATMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Application of an asphalt-aggregate Frictional Mastic Surface Treatment (FMST), as a roadway surface preservation treatment, consisting of an engineered mixture of fine aggregates, clay, polymers, other additives, and asphalt emulsion.

1.2 REFERENCES**A. AASHTO Standards:**

- R 5 Selection and Use of Emulsified Asphalts
T 11 Materials Finer than 75 µm (No. 200) Sieve in Mineral Aggregate T 27 Sieve Analysis of Fine and Coarse Aggregates
T 84 Specific Gravity and Absorption of Fine Aggregate
T 96 Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
T 308 Determining the Asphalt Binder Content of Hot-Mix Asphalt (HMA) by the Ignition Method.
T 327 Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus.

B. ASTM Standards:

- C 117 Materials Finer Than 0.075mm (No. 22) Sieve in Mineral Aggregates by Washing
C 136 Sieve Analysis of Fine and Coarse Aggregates D 5 Penetration of Bituminous Materials.
D 244 Emulsified Asphalts.
D 2196 Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield Type) Viscometer
D 6934 Residue by Evaporation of Emulsified Asphalt D 6937 Determining Density of Emulsified Asphalt.
E 1911 Measuring Paved Surface Frictional Properties Using the Dynamic Friction Tester.

C. ISSA Standards:

- ISSA Specifications and Guidelines, Current Edition
TB 100 Wet Track Abrasion of Slurry Surfaces, Modified.

1.3 SUBMITTALS

- A. Experience Reports: If requested by ENGINEER, submit the following.
1. List of five (5) projects that have successful product application on bituminous surfaces. Provide names of project contacts.
 2. Source and field quality control testing reports performed by CONTRACTOR and Suppliers.
- B. Mix Design: Submit the following. Allow ENGINEER 10 days to evaluate the submittal.
1. Date of mix design. If older than 60 days from date of submission, recertify mix design.
 2. Proportions of aggregate, filler, water, polymer, and emulsion in the mix.
 3. Residual in-place bitumen content, in pounds per square yard.
 4. Residual in-place aggregate or mineral solids content, in pounds per square yard.
 5. Thickness target for each application coat, in gallons per square yard.
 6. Total minimum thickness, in gallons per square yard.
 7. Results of a wear resistance or wet track abrasion test current within one (1) calendar year of the proposed mix design.

- C. Asphalt/polymer emulsion
 - 1. Test report meets the requirements of this Section, Article 2.2.
 - 2. Certificate of analysis and compliance from the manufacturer for each batch.
- D. Test reports for aggregate.
 - 1. Refer to this Section, Article 2.3.
- E. Changes in the job mix gradation.
 - 1. Submit a written request for a change in the job mix gradation.
- F. Before Placement: Submit 48 hours before delivery.
 - 1. Traffic control plan, Section 01 55 26.
 - 2. List of construction equipment to be used.
 - 3. Certification from the emulsion supplier stating emulsion meets the requirements in this Section.
 - 4. Names, certification levels, and years of experience of the testing agency's field technicians that are assigned to the Work.
 - 5. Name and certifications of the laboratory to be used for testing.
 - a. Laboratory must comply with ASTM standards.
 - 6. Warranty.
- G. Quality Control Data as per Article 3.6.

1.4 QUALITY ASSURANCE

- A. Foreman of CONTRACTOR's crew or Supplier's representative has completed at least three (3) projects of similar scope. If the crew foreman does not have such experience, Supplier must provide a full-time representative on site during the application.
- B. Use a laboratory that complies with ASTM D 3666 and follows Section 01 45 00 requirements.
- C. CONTRACTOR must complete the certification program from licensed FMST manufacturer and be approved and certified to apply material from a licensed manufacturer of FMST.
- D. Verify mixture delivered to site contains the same emulsion specified in the mix design.
- E. Do not change the source of the asphalt emulsion or aggregate without supporting changes in the mix design.
- F. Reject product or work that does not meet the requirements of this Section.

1.5 WEATHER

- A. Temperature:
 - 1. Apply surface treatment material if air and pavement surface temperatures in the shade is 55 degrees F and rising.
 - 2. Cease application if air or pavement surface temperatures are projected to fall below 45 degrees F within 24 hours.
- B. Moisture and Wind:
 - 1. Do not apply surface treatment material to a wet surface (no visible standing water or high sheen), during rain, 24 hours prior to forecast rain, or in unsuitable windy weather.
 - 2. Cease work if weather or other conditions prolong opening the pavement surface to traffic.

1.6 NOTICE

- A. Follow Laws and Regulations concerning when and to whom notices are to be given at least three (3) days before applying surface treatment material.
- B. Indicate application time and when the new surface can be used. If necessary, include a map showing closed-off areas.
- C. Provide phone numbers of at least two (2) individuals who represent CONTRACTOR who can be reached at any time during the work.

- D. Warning of potential vehicle tow-away and other construction issues affecting the neighborhood.
- E. Should work not occur on the specified day, issue an updated notice.

1.7 ACCEPTANCE

A. General:

- 1. Acceptance is by Lot.
- 2. Acceptance is performed by ENGINEER through review and approval of the submitted Quality Control data and yield calculations. ENGINEER may perform additional sampling, testing and verification of any portions of the placement that do not appear to meet requirements.
- 3. Dispute resolution, Section 01 35 10.
- 4. Opening surface treatment to vehicular traffic does not constitute acceptance.
- 5. Observation of CONTRACTOR's field quality control testing does not constitute acceptance.

B. Frictional Mastic Surface Treatment Thickness:

- 1. Lot size is one (1) day's production. Sub-lot size is one truck placement.
- 2. If yield tests indicate the average application rate for any sub-lot is more than 0.02 gallons per square yard below the target, apply an additional coat of FSMT to meet or exceed target thickness at no additional cost to OWNER.

C. Placement:

- 1. Mat appearance.
 - a. No runoff onto concrete curbs, gutter pans, and shoulders.
 - b. No streaking, drilling, drag marks, or squeegee marks.
 - c. No light spots.
 - d. No de-bonding.
 - e. Straight longitudinal edges with proper joints.
- 2. Correct mat placement deficiencies at no additional cost to OWNER.

1.8 WARRANTY

- A. Both CONTRACTOR and Supplier shall provide a two (2) year minimum written warranty when the existing pavement is in an appropriate condition (CONTRACTOR and Supplier to determine condition). Warranty covers delaminating, peeling, and premature surface wear.
 - 1. Before placement, notify ENGINEER if pavement condition or application condition voids the warranty.
 - 2. ENGINEER may allow or cancel product application at no cost to OWNER if a warranty cannot be given.
- B. Acceptable performance after two (2) year period is no delaminating, peeling, or inter- aggregate loss in surface wear. Mechanical disturbances caused by snow plow chatter, studded tires, etc., are excluded from warranty. Repair defective coverage at no additional cost to OWNER.

PART 2 PRODUCTS

2.1 ASPHALT BINDER

- A. Emulsified Asphalt incorporated in: CSS-1, or CSS-1h according to AASHTO R 5 and Table 1.

Table 1 – Physical Properties			
Criterion	Standard	Min	Max
Tests on Emulsion			
Viscosity at 25 degrees C, seconds	D 244	15	100
Particle Charge Test (a)		Positive	
Residue by distillation, percent		57	--
Tests on Residue from Evaporation			
Penetration at 25 degrees C, 100 g, 5 seconds	D 5	15	150
NOTES			
(a) In case of inconclusive particle charge, material having a pH value of 6.0 will be acceptable as a CSS type.			

2.2 AGGREGATE

A. Material:

1. Clean and free from organic matter or other detrimental substances.
2. Light weight with the following properties.

Table 2 - Aggregate Properties			
Criterion	Standard	Min	Max
Water absorption, percent	T 84	--	10
Micro-Deval, percent (b)	T 327	--	20
NOTES			
(a) Test results are on aggregate received before blending into sealer.			
(b) Micro-Deval wear of aggregate retained on No. 60 sieve.			

B. Gradation: Analyzed on a dry weight and percent passing basis.

1. Material passing any sieve and retained on the next consecutive sieve is 45 percent maximum.
2. Target Grading Curve must lie within the Master Grading Band.

Table 3 - Master Grading Band and Target Tolerance Limits			
Sieve	Standard	Master Grading Band Limits Percent Passing^a	Production Tolerance^b
No. 8	C136	100	+/- 5
No. 16		80 - 100	
No. 30		75 - 100	
No. 60		50 - 85 ^c	
No. 100		40 - 65	
No. 200	C117	25 - 65	+/- 5
NOTES			
(a) Test results are on aggregate received before blending into sealer.			
(b) Production tolerance is the allowable variation from the Target Grading Curve during production.			
(c) Provide gradation such that FMST contains a minimum of 18 percent aggregate above the No. 60 sieve, by weight of the wet mixture.			

2.3 ADDITIVES

- A. Use water that is clean, non-detrimental, and free from salt and contamination.
- B. Use a minimum of 14% polymer solids content, by weight of asphalt binder.
- C. Use clays, other additives as necessary to achieve mix design performance.

2.4 MIX DESIGN

- A. Select type and grade of emulsified asphalt, AASHTO R 5.
- B. Select set and cure time to meet opening to traffic requirements.
- C. Provide a mix meeting the following requirements.
 1. Use the same materials and aggregate gradation to be used on the project.
 2. Do not change the source of the asphalt emulsion and aggregate without supporting changes in the mix design.

Table 4 – Mix Properties				
Test		Standard	Min	Max
Tests on Mix				
Weight per gallon, pounds (a)		ASTM D 6937	Report	
Solids content by evaporation at 130 C, percent (b)		ASTM D 6934	48	--
Rotational Viscosity @ 20 RPM / RV spindle, (cPs) @ 25 C		ASTM D 2196	800	4000
Tests on Residue from Evaporation				
Asphalt binder content of cured mix (130 degrees C method), percent (b)		AASHTO T 308	30	--
Mineral aggregate and fines content of cured mix (130 degrees C method), percent (b,c)		AASHTO T 308	50	--
Wet-track abrasion loss, (72-hour soak), g/m ² (e)		ISSA TB 100 Modified	--	80
Asphalt content by ignition method, percent (b,c)		AASHTO T 308	30	--
Dynamic friction test number, 20 km/h (b,d)		ASTM E 1911	> 90 percent of base value	
NOTES				
(a) Use the modified method to account for a fine emulsion mixture. Required for calibration of application equipment and for field control and acceptance				
(b) A 500 to 1000-gram representative sample of the mix shall be dried in a suitable oven until weight loss ceases. Solids content shall then be defined as the net residual weight divided by the net original weight, expressed in percent. Retain this residual dried mix for AASHTO T 308 tests if required.				
(c) Due to the high binder content of the mix, the sample size processed in the ignition oven may need to be adjusted to not exceed the binder content allowable for a particular model ignition oven. IMPORTANT: This test should be performed on a completely dry sample.				
(d) Establish base friction value using a prepared laboratory compacted slab of any ENGINEER approved mix as the surface to be tested. The Dynamic Friction Test (DFT) number ratio should indicate that after application of the mastic seal, the surface retains the required minimum percentage of the original pavement surface’s DFT number. Based on a minimum of three (3) slabs with three (3) measurements per slab. Value for information only. Will not be used for project control.				
(e) See UDOT for Guidelines for Modifications of ISSA TB 100				

PART 3 EXECUTION

3.1 CONSTRUCTION EQUIPMENT

- A. Paver: Use a continuous-flow mixing unit.
 - 1. Capable of applying at least 15,000 square yards of material per day.
 - 2. Equipped with a full sweep agitation system to assure proper suspension of fine aggregates.
 - 3. Equipped with an operator control station that adjusts material spread rate in accordance with the project calibration process.
 - 4. Equipped with a filtering system to catch particles that plug in nozzles.
 - 5. Equipped with a retractable spray bar capable of applying the mixture without drilling. The bar should be positioned to meet calibration requirements.
- B. Storage Tanks:
 - 1. When delivering mix from the central mixing plant to a job site storage tank, use only storage tanks with a capacity to contain the entire transport load.
 - 2. Ensure that all site storage tanks have internal full sweep mixing mechanisms and mixing capability that can provide, at any given point in the tank, a homogenous mix.

3.2 PREPARATION

- A. Paver Calibration: On a test strip at least 300 feet long, determine the correct pump settings, spray bar height, and ground speed for the application equipment. Apply material with pump settings at 80 percent of maximum output (plus or minus 5 percent) and a ground speed of 300 to 400 feet per minute.
 - 1. Do not begin or continue the application without ENGINEER's knowledge of the calibration process and equipment settings.
 - 2. Do not deviate from calibration settings without ENGINEER's knowledge.
- B. Surface Repair: Method of payment to be determined by ENGINEER if any of the following repairs are required.
 - 1. Raising low areas to grade, lowering high areas to grade, hole patching, inlays.
 - 2. Providing tack coat on highly absorbent, polished, oxidized, or raveled asphalt surfaces or on brick and concrete surfaces.
 - 3. Crack sealing and crack repairing, Section 32 01 17.
 - 4. Pushing or shoving pavement repairs.
 - a. Mill damaged area at least three (3) inches below the required surface elevation.
 - b. Install and compact three (3) inches of asphalt concrete (grade designated by ENGINEER).
- C. Masking: Mask-off Street Fixtures, end of streets, intersections.
- D. Traffic Control:
 - 1. Implement traffic control plan requirements. Provide safe passage for pedestrians and vehicles. Do not proceed without flaggers if work requires maintaining two-way vehicular traffic.
 - 2. Remove all thermoplastic and pavement marking tape. If existing markings and stripes are to be reestablished, use reflective tabs to mark existing locations before applying surface treatment material. Unless specified otherwise, costs are not included in the work of this Section.
- E. Cleaning:
 - 1. Remove loose material, mud spots, sand, dust, oil, vegetation and other objectionable material.
 - 2. Do not flush water or apply pressurized water over cracked pavement unless ENGINEER allows its use and a sufficient time is allowed for drying.

3.3 PROTECTION

- A. Trees, Plants, Ground Cover:
 - 1. Protect trees, plants and other ground cover from damage.

2. Prune trees to allow equipment passage underneath, and repair tree damage at no additional cost to OWNER.
- B. Protect structures, curbs, gutters, sidewalks, guard rails, guideposts, etc., from physical damage.

3.4 APPLICATION

A. General:

1. Two separate application coats are required. The first application must be thoroughly set and free of any damp areas before the second application begins.
2. Adjust application rates according to surface conditions, only after obtaining review by ENGINEER and the asphalt emulsion manufacturer.
3. Do not add additional water to the FMST mixture once the required mix design components have been combined at the plant, and do not dilute the mixture at any point after the FMST mixture has been manufactured and loaded for transport.
4. Do not allow runoff of the FMST in any areas outside of specified application limits. Remove runoff at no cost to OWNER.

B. Spreading:

1. Keep material delivery at a constant rate, even if the forward speed of the lay-down machine varies.
2. Do not reduce the application rate along edges or around manhole covers.
3. Apply both applications right to the edge of the pavement. Do not leave uncovered areas near curbs, Street Fixtures, or edges on either application.
4. Make straight lines at all locations.
5. Place product out to the right-of-way line on side streets and intersections.
6. Use hand squeegees to spread the mix in areas that cannot be reached with the distribution spray bar.
 - a. Provide complete and uniform coverage.
 - b. Avoid unsightly appearance from handwork.

C. Joints:

1. Make transverse joints straight-cut butt type, not overlap type.
2. Place longitudinal joints on lane lines. Limit overlap to three (3) inches maximum.
3. Stop and correct the paving operation if longitudinal or transverse joints have uncovered areas or an unsightly appearance.

D. Lines:

1. Make straight lines along the lip of gutters, the shoulders, the end of streets, and in the street intersections. No runoff on these areas will be permitted.
2. Vary edge lines no more than one (1) inch per 100 feet.

3.5 TOLERANCES

- A. Each coat thickness = at least 40 percent of the total thickness.
- B. Total thickness = 0.30 gallons per square yard minimum.

3.6 QUALITY CONTROL

A. Perform plant testing as per below, minimum per batch.

1. Solids content by evaporation: 1 per batch, minimum.
2. Rotational viscosity: 1 per batch, minimum.
3. Asphalt binder content of cured mix: 1 per week, minimum.
4. Mineral aggregate and fines content of cured mix: 1 per week, minimum.

B. Perform field yield calculations for each truck placed to verify the application rate. Calculate to the nearest 0.01 gallons per square yard.

C. Submit the following within 2 working days of the end of placement:

1. Summary of all plant production quality control data from the time period covering production of the material for the project.
2. Yield calculations for each truck load, or portion thereof, placed on the project.

3.7 AFTER APPLICATION

- A. Raise reflective tabs that were covered over by the application.
- B. Clean Street Fixtures.
- C. Do not apply permanent pavement markings or striping material until layout and method of payment has been determined by ENGINEER and final application of surface treatment material has been in place at least 10 days, or as permitted by ENGINEER. Layout must be verified by ENGINEER prior to application.

3.8 REPAIR

- A. Remove delaminated or non-compliant product found after installation and apply an acceptable product.
- B. Remove spatter, mar, and overcoat from curb, gutter, sidewalk, guard rails, guideposts, etc.
- C. Remove overcoat from Street Fixtures.
- D. Make edge and end lines straight. Provide a good appearance.
- E. Leave no streaks, holes, bare spots, or cracks through which liquids or foreign matter could penetrate to the underlying pavement.
- F. Repair collateral damage caused by construction.

3.9 OPENING TO TRAFFIC

- A. Cure time depends on the type of asphalt, mixture characteristics, and weather. Keep traffic off the surface until the material does not track out.

END OF SECTION

SECTION 32 01 31-M

PAVEMENT SMOOTHNESS

This specification changes a portion of Section 32 01 31.
All other provisions of the Section remain in full force and effect.

Replace Article 1.3, Paragraph B with the following:

B. Road Class:

1. Class I: (ESAL < 10^4 per year) Includes maintenance mixes, bike paths, parking lots, residential driveways, light traffic residential streets, light traffic rural farm roads.
2. Class II: **Minor Roads:** (ESAL between 10^4 and 10^6 per year) West Valley City (WVC) Minor Streets and Minor Collectors – See WVC Standards. Includes heavy traffic residential streets, rural farm collector roads, non-industrial parking lots, and urban low-volume collector streets.
3. Class III: **Major Roads:** (ESAL > 10^6 per year) WVC Arterials and Collector – See WVC Standards. Includes high volume collectors, arterials, industrial parking lots (primary load from 3-axle or greater vehicles), climbing lanes, and truck weight stations.

SECTION 32 12 05-M BITUMINOUS CONCRETE

This specification changes a portion of Section 32 12 05.
All other provisions of the Section remain in full force and effect.

Replace Article 1.3, Paragraph I with the following:

- I. **Road Class:** See Section 32 12 05-M.

Replace Article 1.6 with the following:

1.6 ACCEPTANCE

- A. Quality Control (QC) is performed by CONTRACTOR or their representative. Each bid schedule is treated independently regarding lots or sub-lots. Perform QC sampling and testing in accordance with the adopted West Valley City Minimum Sampling & Testing Requirements.

1. Gradation and asphalt binder content:
 - a. ENGINEER informs CONTRACTOR of the time and place of sampling not more than 15 minutes before the sampling.
 - b. CONTRACTOR obtains the sample from behind the paver, field splits the sample, and ENGINEER takes immediate possession of the sample.
 - c. Lot Acceptance for Gradation/Asphalt Binder according to Table 1.

Table 1 – Pay Factors					
Criteria	Pay Factor	Range of Mean of Deviations of Tests Results in Percentage Points from Binder and Gradation Targets			
		1 Sub-lot	2 Sub-lots	3 Sub-lots	4+ Sub-lots
Binder Content	1.00	0.00 – 0.46	0.00 – 0.41	0.00 – 0.38	0.00 – 0.35
	0.95	0.47 – 0.58	0.42 – 0.52	0.39 – 0.58	0.36 – 0.52
	0.90	0.59 – 0.64	0.53 – 0.56	0.59 – 0.64	0.53 – 0.56
	0.85	0.65 – 0.69	0.57 – 0.61	0.65 – 0.69	0.57 – 0.61
Nominal Sieve	1.00	0.0 – 6.3	0.0 – 5.6	0.0 – 5.3	0.0 – 5.0
	0.95	6.4 – 7.9	5.7 – 7.0	5.4 – 7.9	5.1 – 7.0
	0.90	8.0 – 8.7	7.1 – 7.7	8.0 – 8.7	7.1 – 7.7
	0.85	8.8 – 9.5	7.8 – 8.4	8.8 – 9.5	7.8 – 8.4
No. 8 Sieve	1.00	0.0 – 4.8	0.0 – 4.3	0.0 – 4.0	0.0 – 3.8
	0.95	4.9 – 6.0	4.4 – 5.3	4.1 – 5.0	3.9 – 4.3
	0.90	6.1 – 6.6	5.4 – 5.8	5.1 – 5.6	4.4 – 4.8
	0.85	6.7 – 7.2	5.9 – 6.4	5.7 – 6.2	4.9 – 5.4
No. 50 Sieve	1.00	0.0 – 3.8	0.0 – 3.3	0.0 – 3.0	0.0 – 2.8
	0.95	3.9 – 5.0	3.4 – 4.3	3.1 – 4.0	2.9 – 3.3
	0.90	5.1 – 5.6	4.4 – 4.8	4.1 – 4.6	3.4 – 3.8
	0.85	5.7 – 6.2	4.9 – 5.4	4.7 – 5.2	3.9 – 4.4
No. 200 Sieve	1.00	0.0 – 2.0	0.0 – 1.8	0.0 – 1.8	0.0 – 1.8
	0.95	2.1 – 2.4	1.9 – 2.2	1.9 – 2.2	1.9 – 2.2
	0.90	2.5 – 2.7	2.3 – 2.4	2.3 – 2.4	2.3 – 2.4
	0.85	2.8 – 3.0	2.5 – 2.6	2.5 – 2.6	2.5 – 2.6
NOTES:					
(a) Test binder content using a burn-off oven, ASTM D6307.					
(b) Determine aggregate gradation by extraction, ASTM D5444.					

- B. Provide a split sample to ENGINEER for each sample taken.
- C. ENGINEER may sample any portion of the HMA that exhibits a non-uniform appearance.
 1. CONTRACTOR will repair subjectively sampled portions found to be out of specification at no cost to OWNER.

- 2. Subjective sample results will not be included in the pay factor calculations.
- D. Submit QC data and plant daily production summary to 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.
- F. 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 ENGINEER.
- G. Failure to Notify or Wait for Test: Lots that are not tested by OWNER due to CONTRACTOR failing to notify ENGINEER or failing to wait for testing personnel to be present automatically result in OWNER test results being deemed out of specification.
- H. Installation: See Section 32 12 16.13-M acceptance requirements.

Replace Article 2.3, Paragraph D with the following:

- 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.

Replace Article 2.4, Paragraph A.1 with the following:

- 1. Mix Designator:
 - a. Trails: SP-3/8, PG58-28, 50 Nd
 - b. Minor Roads: SP-1/2, PG58-28, 50 Nd
 - c. Major Roads: SP-1/2, PG64-34, 75 Nd

Replace Article 3.2 with the following:

3.2 QUALITY CONTROL

- A. See Article 1.6 ACCEPTANCE

Add the following to PART 3:

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%.
 - 2. VMA averages 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. ENGINEER may require a new mix design.
- D. 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.

3.4 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 ENGINEER before production continues, indicating the changes in procedures that will be implemented to correct the deficiencies.
 - c. Both CONTRACTOR's and OWNER's designated lab must make paired t-test results available within 24 hours of sampling.

SECTION 32 12 16.13-M

PLANT-MIX BITUMINOUS PAVING

This specification changes a portion of Section 32 12 16.13.
All other provisions of the Section remain in full force and effect.

Replace Article 1.3 with the following:**1.3 DEFINITIONS**

- A. Lot and sub-lot: See the West Valley City Minimum Sampling and Testing document.
- B. Must Grind: See Section 32 01 31.
- C. Road Class: See Section 32 12 05-M.
- D. Sample: See Section 01 35 10.

Replace Article 1.8, Paragraph E with the following:

- E. Compaction: Acceptance is based on core density unless specified otherwise. A Lot is acceptable if density tests are within the 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 of 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	Mat Density, in Percent Relative to ASTM D2041^(a)		Joint Density, in Percent Relative to ASTM D2041^{(a) (d)}	
	Average	Lowest Test	Average	Lowest Test
0.80	More than 98.0	–	More than 98.0	–
1.00	93.0 to 98.0	90.0 or greater	91.0 to 98.0	89.0 or greater
0.90	93.0 to 98.0	Less than 90.0	91.0 to 98.0	Less than 89.0
0.80	Less than 93.0	90.0 or greater	Less than 91.0	89.0 or greater
Eng. Analysis	Less than 93.0	Less than 90.0	Less than 91.0	Less than 89.0
Notes: (a) For overlay design thicknesses of less than 2 inches, mat density targets are reduced by 1% and no joint density cores are taken. (b) Difference based on actual subplot mat density and subplot core density values. (c) Report and calculate all density values to 0.1%. (d) A paving Joint is defined as a longitudinal seam between two adjacent passes of asphalt placed during the project, and where the initial pass cools below 180 degrees F prior to placement of the adjacent pass. Do not take Joint cores where the "Joint" is comprised of existing asphalt or concrete. Use 6 inch diameter cores for joint density determination.				

1. Core Density: This method compares the average density of cores extracted from a pavement surface to the maximum theoretical density. CONTRACTOR to take two (2) cores at each location in the presence of and immediately deliver one (1) core to ENGINEER or ENGINEER's representative.
 - a. Lot Size: One (1) day production with 1,000 square yard sub-lots or part thereof.
 - b. ENGINEER randomly selects and marks coring location for in-place density cores.
 - i. 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).

- c. Fill core holes with HMA 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.
 - d. Joint Sampling Protocol: Use ASTM D3665 to randomly select a total of three (3) longitudinal joint test locations for each joint. Samples are full depth or overlay depth in overlay construction.
 - i. Use 6 inch diameter cores, centered within 1 inch of center of joint.
 - ii. Do not core projects smaller than 250 Tons.
 - e. Testing Protocol: ASTM D2726 for core density and ASTM D2041 (Rice) for maximum theoretical density.
2. Non-Destructive Density Testing by Electronic Gage:
- a. Lot Size: One (1) day production, with sub-lots as defined in Article 1.8.E 2 Core Density.
 - b. Mat Sampling Protocol: Use ASTM D3665 to randomly select in each sub-lot at least two (2) surface test locations.
 - c. Testing Protocol: ASTM D2950 (nuclear gauge) or AASHTO TP68 (non-nuclear gauge) and ASTM D2041 (Rice) for maximum theoretical density. A non-destructive test is the average of two (2) test samples at each test location with a minimum 90 degree offset between test samples using mix correlated gauges. Use minimum 60 second count with the Nuclear Gauge.
3. Compaction Dispute Resolution:
- a. CONTRACTOR:
 - i. Provide an Independent Testing Agency, Section 01 45 00.
 - ii. Secure two (2) supplementary cores 10-15 feet in opposing directions from the deficient acceptance test locations.
 - iii. Fill core holes.
 - iv. Conduct testing at no additional cost to OWNER.
 - b. ENGINEER:
 - i. Accept Lot at full pay if new information shows compliance, or
 - ii. Accept Lot at pay reduction using new test information, or
 - iii. Reject Lot.

Add the following to Article 1.8:

- H. 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:
 - a. Major Road Mix Design, or
 - b. Minor Mix design at ENGINEERs discretion.
 - 2. No additional payment is made for smoothness verification procedures.

Replace Article 3.8, Paragraph A Table 4 with the following:

Table 4 – Lift Thickness Tolerance ^(a)		
Mix	Minimum	Maximum
Bituminous Concrete	2.5 times <i>nominal</i> aggregate size	3.5 inches ^(b)
NOTES: (a) Thickness is measured after compaction. (b) Maximum lift thickness may be exceeded if CONTRACTOR can demonstrate ability to achieve consistent compaction from top to bottom of lift without breaking down aggregate. Determine compaction consistency by cutting a minimum of 3 random cores in half vertically and testing top and bottom half of cores. If density range between top half and bottom half of each core is equal to or less than 1%, compaction consistency is verified. If range exceeds 1%, placement must adhere to Maximum lift thickness requirement.		

SECTION 32 13 13-M
CONCRETE PAVING

This specification changes a portion of Section 32 13 13.
All other provisions of the Section remain in full force and effect.

Replace Article 1.3, Paragraph B with the following:

- B. Road Class: See Section 32 12 05-M.

Replace Article 1.5, Paragraph D with the following:

- D. Foreman of paving crew has completed at least five (5) projects of similar size and nature.

Replace Article 3.1, Paragraph G with the following:

- G. **Vibrating Screed:**
 - 1. Not Allowed

Add the following to Article 3.6:

- G. Use epoxy coated reinforcing in all dowel bars, tie-bars, and baskets.

Replace Article 3.7, Paragraph B.3 with the following:

- 3. Use of a mechanical control joint void former in lieu of saw cutting is NOT acceptable. Tooling is not acceptable.

Replace Article 3.7, Paragraphs E.1 and E.2 with the following:

- 1. If a volunteer crack joint falls within 5 feet of the location of the proposed contraction joint, omit the contraction joint, or remove and replace the cracked slab at ENGINEER's discretion.
- 2. Rout volunteer crack joints to a depth of 1/4 slab thickness per the "Backer Rod Detail" in APWA Plan 261 or remove and replace the cracked slab at ENGINEER's discretion.

Replace Article 3.10, Paragraph E.1 with the following:

- 1. For speed less than 45 mph: Apply 1/16 inch deep burlap drag or turf drag.

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 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:** CONTRACTOR or Subcontractor who has successfully completed UDOT's ADA Pedestrian Ramp Training Course. Refer to:
<https://connect.udot.utah.gov/business/contractortraining/adapedramp/>
- 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 the detectable warning surface.
- C. Provide a copy of the 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 the curb and gutter system to determine the extent of replacement.
 - 2. Flood the 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 an in-line truncated dome pattern that meets the requirements of UDOT PA Series Standard Drawings.
- B. Minimize the 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 the tile must be cut, the minimum length of the resulting tile is 3/4 the length of the original tile. Do not cut tiles longitudinally. Remove domes that were cut. Seal cuts to prevent water intrusion.

PART 3 EXECUTION

3.1 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 the 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 a 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 the 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 ENGINEER is required to use a 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 the ramp has been poured, clean any remaining concrete residue from the 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 shall 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 the vicinity of work.
- C. Repair surfaces damaged by saw cutting, grinding, or removal operations at no additional cost to OWNER.

END OF SECTION

SECTION 32 16 24-S
STAMPED CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Furnish materials and construct stamped portland cement concrete 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 West Valley City 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 ENGINEER).
 2. Color release shall be Dark Gray (Per Brickform Standard Color Selector Brochure (or equal approved by ENGINEER)).
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 a 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 shall be a clear liquid, or clear when dry.

PART 3 EXECUTION

3.1 PREPARATION

- A. General:
 1. Examine surfaces scheduled to receive concrete formwork 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 the sub-base course and forms have been checked for line and grade. Moisten the sub-base if required to provide a uniform dampened condition at the time of placement.
- C. Place concrete using methods that prevent segregation of the mix. Consolidate concrete with an external screen vibrator or other acceptable methods. Do not use mechanical vibrators.
- D. Provide 5-foot test strip.
- E. Add concrete base color to the mix at the batch plant. Allow concrete to set prior to application of color release compound. Apply stamped pattern. Wash off the unstamped color release compound after the concrete has set. Follow the manufacturer's instruction.
- F. Stamp pattern into fresh concrete in accordance with the 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 the concrete surface using only a 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

SECTION 32 17 23-M

PAVEMENT MARKINGS

This specification changes a portion of Section 32 17 23.
All other provisions of the Section remain in full force and effect.

Add the following to Article 1.3:

- B. Pavement Markings: Pavement Messages, Pavement Striping, and Pavement Symbols.
- C. Pavement Striping: Lines placed parallel with, adjacent to, perpendicular to, or across the flow of traffic, such as lane lines, center lines, edge lines, channelizing lines, crosswalks, stop lines, etc.
- D. Pavement Messages: Words generally placed perpendicular to and across the flow of traffic.
- E. Pavement Symbols: Arrows, parking space markings, speed measurement, bike rider markings, etc.
- F. Long-term stationary: work that occupies a location for more than three days.

Replace Article 1.6, Paragraph A with the following:

- A. Apply pavement markings only when the air and pavement temperatures are 50 degrees F and rising.

Add the following to Article 3.3, Paragraph A:

- 1. First application: after the surface is properly prepared.
- 2. Second application: no sooner than 14 days after the first.

Add the following to PART 3:**3.10 REMOVE PAVEMENT MARKINGS**

- A. Use equipment specifically designed for the removal of pavement marking material.
- B. Use one of these removal methods:
 - 1. High-pressure water spray
 - 2. Sandblasting
 - 3. Shot blasting
- C. Do not use grinding without approval.
- D. Do not eliminate or obscure existing striping; instead of removing, cover with black paint or any other covering.
 - 1. ENGINEER may approve the use of black paint or other obscuring material prior to installation for work durations shorter than “long-term stationary,” as defined in this Section, Article 1.6, and in the Temporary Traffic Control section of the MUTCD.

SECTION 32 93 13-M
GROUND COVER

This specification changes a portion of Section 32 93 13.
All other provisions of the Section remain in full force and effect.

Replace Article 2.2 with the following:

2.2 NATIVE GRASS SEED

A. Use the following seed mixture:

SEED SCHEDULE									
SEED NO.	SPECIES NAME		Number of seeds per pound	DRILL SEED			BROADCAST SEED		
	BOTANICAL NAME	COMMON NAME		Pounds of pure live seed per acre	Percent of mix	Seeds per square foot	Pounds of pure live seed per acre	Percent of mix	Seeds per square foot
1	<i>Agropyron cristatum</i> 'Roadcrest'	Roadcrest Wheatgrass	311,200	5	22.03%	36	6	16.36%	43
2	<i>Elymus Wawawaiensis</i>	Snake River Wheatgrass	120,000	4	6.79%	11	5	5.26%	14
3	<i>Elymus lanceolatus</i> 'Sodar'	Sodar Streambank Wheatgrass	156,000	3	6.62%	11	4	5.47%	14
4	<i>Agropyron trachycaulum</i>	Slender Wheatgrass	135,000	3	5.73%	9	4	4.73%	12
5	<i>Festuca ovine</i> 'Covar'	Covar Sheep Fescue	530,320	2	15.01%	24	3	13.94%	37
6	<i>Linum lewisii</i> 'Appar'	Appar Blue Flax	294,848	1	4.17%	7	2	5.17%	14
7	<i>Sporobolus cryptandrus</i>	Sand Dropseed	5,600,080	0.5	39.64%	64	1	49.07%	129
TOTAL				18.5	100.00%	162	25	100.00%	262

B. Purity of all seed types: 90 percent.

C. Germination of all seed types: 90 percent.

SECTION 33 05 02-M

CONCRETE PIPE AND CULVERT

This specification changes a portion of Section 33 05 02.

All other provisions of the Section remain in full force and effect.

Add the following to Article 1.3:

- C. NASSCO Pipeline Assessment certification for remote video technician.
- D. Pipe inspection report for each pipe for review. At a minimum, include the following:
 - 1. The project number, date, and time of the inspection for each pipe inspection, the pipe identification used in the plan set, and the type and size of pipe.
 - 2. A video recording of each pipe inspection in a digital format for remote inspection.
 - 3. Written and still image documentation of locations showing alignment deviations, joint gaps, pipe damage, and any other deficiencies observed.

Add the following to PART 3:**3.4 POST INSTALLATION PIPE INSPECTION**

- A. Inspect pipes prior to placing hard surfaces over pipe (i.e., asphalt, concrete, etc.).
 - 1. Notify ENGINEER at least 24 hours before performing the inspection.
 - 2. Clean and flush the pipe with water immediately before the inspection.
 - 3. Remote inspection is required unless OSHA requirements can be met for manual inspection.
- B. Manual Inspection:
 - 1. Follow OSHA requirements.
 - 2. Observe and document the following:
 - a. Cracks: Any crack larger than 0.01 inch
 - b. Joint Gaps: Measured to the nearest 1/4 inch
 - c. Damage
- C. Remote Inspection:
 - 1. CCTV Equipment:
 - a. Record video using a crawler-mounted camera capable of panning and tilting to a 90-degree angle with the axis of the pipe and rotating 360 degrees.
 - b. Center the camera head in the pipe both vertically and horizontally to allow a clear picture of the entire periphery of the pipe.
 - c. Video image must be continuously illuminated, clear, focused, and free from roll, static, or other image distortion qualities that may prevent the reviewer from evaluating the pipe's condition.
 - i. Calibrate the video's lighting and focus to view the internal markings within the pipe.
 - 2. CCTV Inspection:
 - a. Remote video inspection operator must have a current NASSCO Pipeline Assessment certification.
 - b. Use the video image to observe horizontal and vertical alignment deviations, joint gaps, and pipe damage.
 - i. Document all observations with captions in the video.
 - ii. Note each location and provide a still image in the inspection report.
 - c. Do not move the crawler through the pipe at a speed greater than 30 ft/minute.
 - i. Stop the crawler and video the entire circumference at each joint.
 - ii. Stop the crawler and zoom when necessary to video observations.

SECTION 33 05 20-M
BACKFILLING TRENCHES

This specification changes a portion of Section 33 05 20.
All other provisions of the Section remain in full force and effect.

Replace Article 1.9 with the following:

1.9 ACCEPTANCE

- A. **Material:** 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:** 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.

Replace Article 2.1 with the following:

2.1 BACKFILL MATERIALS

- A. Foundation Stabilization (as required):
 - 1. Granular Backfill Borrow per Section 31 05 13.
 - 2. Free Draining Granular Backfill per Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per Section 31 05 19 and worked with compaction equipment to consolidate rock and minimize voids.
- B. Pipe Bedding:
 - 1. Rigid Pipe Options:
 - a. Untreated Base Course per Section 32 11 23 unless required otherwise by pipe manufacturer.
 - b. Free Draining Granular Backfill per Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per Section 31 05 19 and worked with compaction equipment to consolidate rock and minimize voids.
 - 2. Material for other pipe types to be per the manufacturer's recommendation.
- C. Pipe Zone Backfill:
 - 1. Rigid Pipe Options:
 - a. Untreated Base Course per Section 32 11 23.
 - b. Granular Backfill Borrow per Section 31 05 13.
 - c. Free Draining Granular Backfill per Special Provision Section 31 05 13-M. Material must be completely enclosed with an appropriate separation geotextile per 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 Section 32 11 23.
 - b. Granular Backfill Borrow per Section 31 05 13.
 - c. Granular Borrow per Section 31 05 13 with a maximum particle size of 3-inches.
 - 2. Material for other pipe types to be per the manufacturer's recommendation.
- E. Use a flowable fill (Cement Treated Fill) when vibration is not allowed, or when specified. See Section 31 05 15. Other uses of flowable fill are to be approved by 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.

Replace Articles 3.5 and 3.6 with the following:

3.5 BACKFILLING - PIPE ZONE

- A. Pipe zone backfill to be installed per Plan 382 unless specified otherwise in this Section. The pipe zone backfill extends from the bedding material to a height of at least 1foot 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. Do 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 the 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 handheld equipment.
- G. Compact pipe backfill materials to a minimum of 95 percent or greater relative to a modified proctor density, Section 31 23 26, unless pipe manufacturer requires more stringent installation.

3.6 BACKFILLING - ABOVE PIPE ZONE

- A. Follow 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 handheld 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 per utility owner's requirements, or 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, Section 31 23 26, unless pipe manufacturer requires more stringent installation.

Add the following to PART 3:**3.12 BACKFILLING - PIPE BEDDING**

- A. Pipe bedding to be installed per 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 handheld equipment.
- C. Compact pipe bedding materials to a minimum of 95 percent or greater relative to a modified proctor density, Section 31 23 26.
- D. Minimum thickness of the bedding layer as shown in Plan 382.
- E. The surface of the bedding layer should be graded so that the final grade of the layer meets the specified pipeline grade requirements.
- F. 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 a uniform foundation along the barrel of the pipe with sufficient relief for joint connections.

SECTION 33 41 00-M
DRAINAGE SYSTEMS

This specification changes a portion of Section 33 41 00.
All other provisions of the Section remain in full force and effect.

Replace Article 1.2 with the following:

1.1 REFERENCES

- A. APWA (Utah Standards):
 - Plan 315 Catch basin (without sump)
 - Plan 323 Pipe outfall
 - Plan 341 Precast manhole (where specified)
 - Plan 381 Trench backfill
 - Plan 382 Pipe zone backfill
- B. West Valley City (WVC) Standard Drawings:
 - WVC 255 Asphalt Concrete T-Patch
 - WVC 316 Combination Catch Basin and Cleanout Box
 - WVC 331 Cleanout Box
- C. ASTM Standards:
 - C 478 Precast Reinforced Concrete Manhole Section
 - C 923 Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals

Replace Article 3.6, Paragraph A with the following:

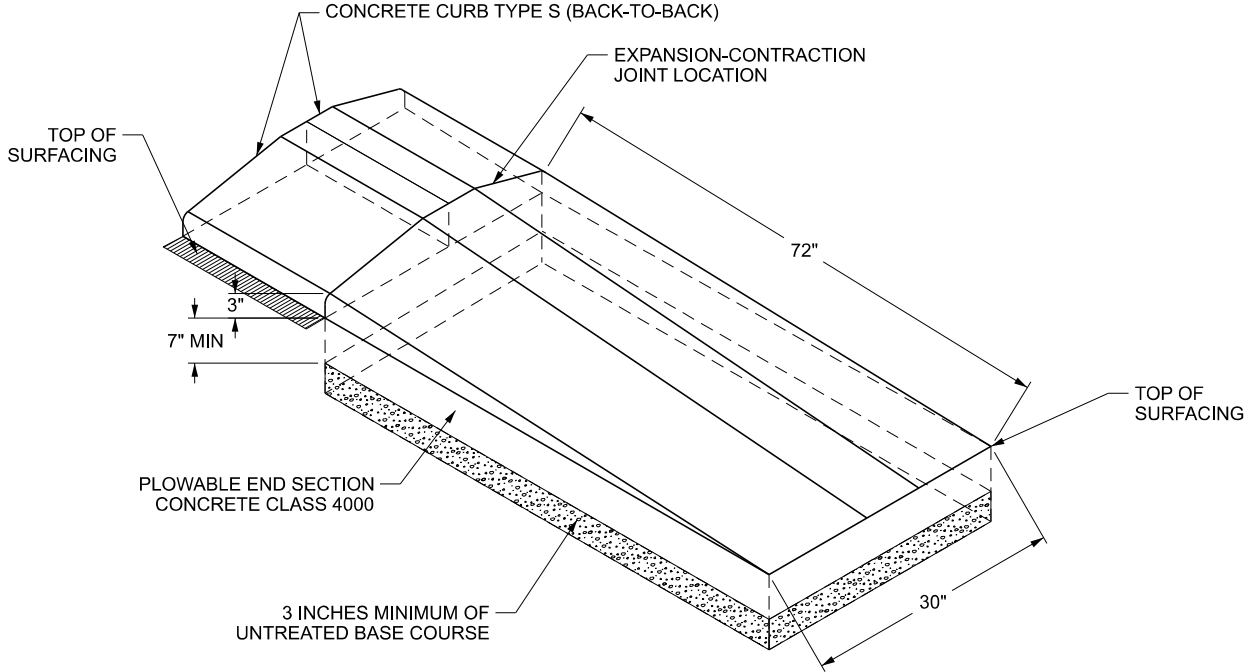
- A. Install structures as shown in APWA Plan 315 (without sump), WVC 316 (WVC Modified Combo Box), and WVC 331 (WVC Cleanout Box).



WEST VALLEY CITY
2026 ENGINEERING STANDARDS
8.2 - APPENDIX

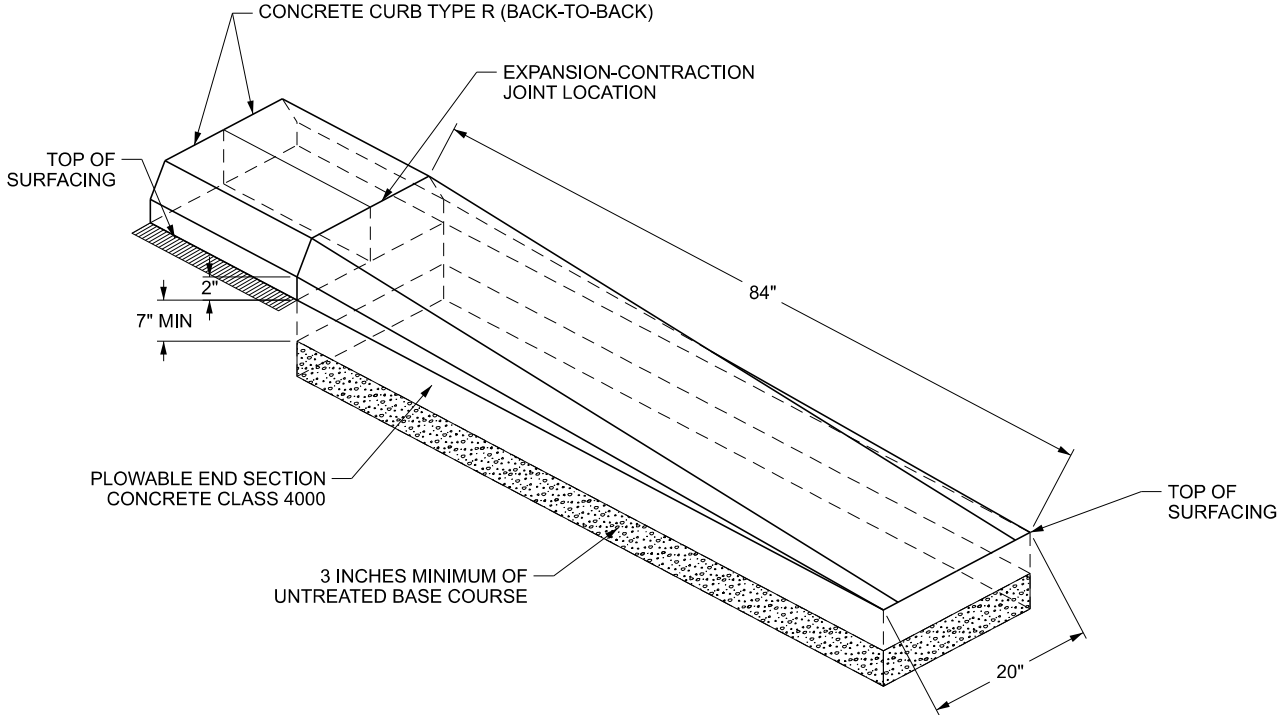
WEST VALLEY CITY STANDARD DRAWINGS

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



PLOWABLE END SECTION DETAIL

TYPE S CURB



PLOWABLE END SECTION DETAIL

TYPE R CURB

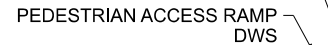
NOTES:

1. SEE APWA STD DWG 209 FOR TYPE R AND TYPE S CURB DETAILS.
2. PAINT PLOWABLE END SECTION TO MATCH ADJACENT EDGE LINE. IF NO EDGE LINE PRESENT PAINT PLOWABLE END SECTION YELLOW.

 WVC STANDARD DRAWING RAISED ISLAND AND PLOWABLE END SECTION		DESIGN		DATE		NO. BY	
		PROFESSIONAL ENGINEER		4/6/2026			
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720		DESIGN		DATE		NO. BY	
		DRAWN					
		CHECK					
		REVISIONS					



PLAN



SECTION A-A

WITHIN CLEAR SPACE/DWS

* 0.5% MIN SLOPE TO FLOW-LINE



SECTION B-B

OUTSIDE CLEAR SPACE/DW

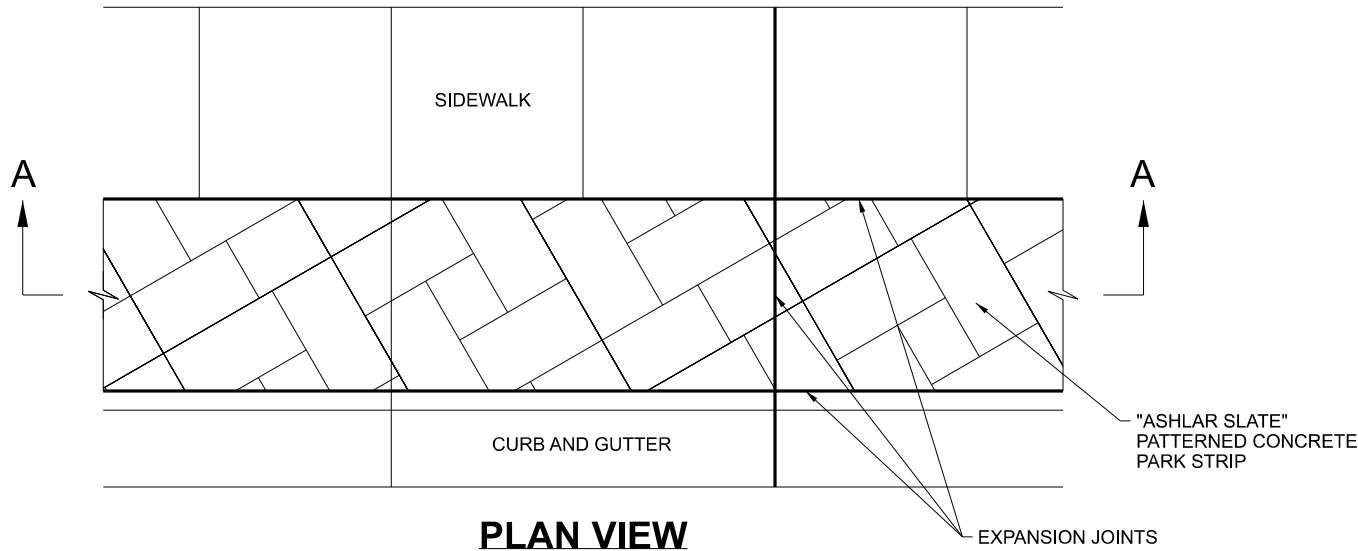
* 0.5% MIN SLOPE TO FLOW-LINE

NOTES:

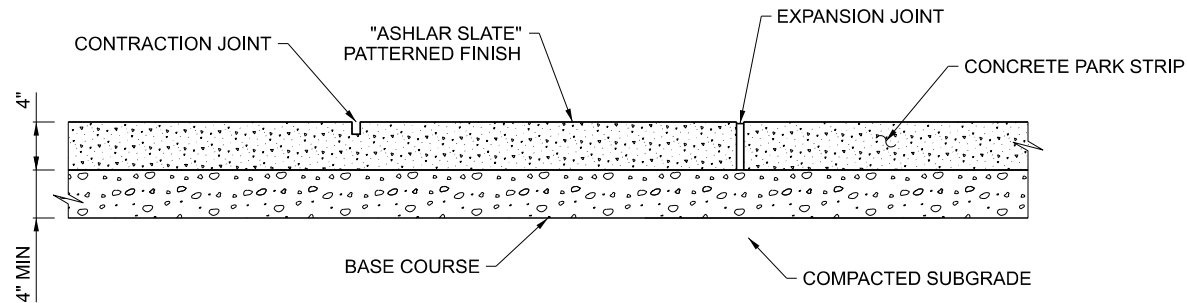
- ## 1. GENERAL

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WVC STD. DWG. NO. WVC 213		DESIGN								4/6/2026	DATE	_____	NO.	BY	REVISIONS
WATERWAY		PROFESSIONAL ENGINEER													
TRANSITION STRUCTURE															

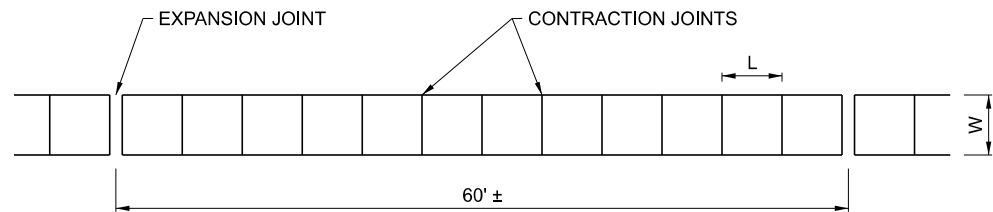
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PLAN VIEW



SECTION A-A



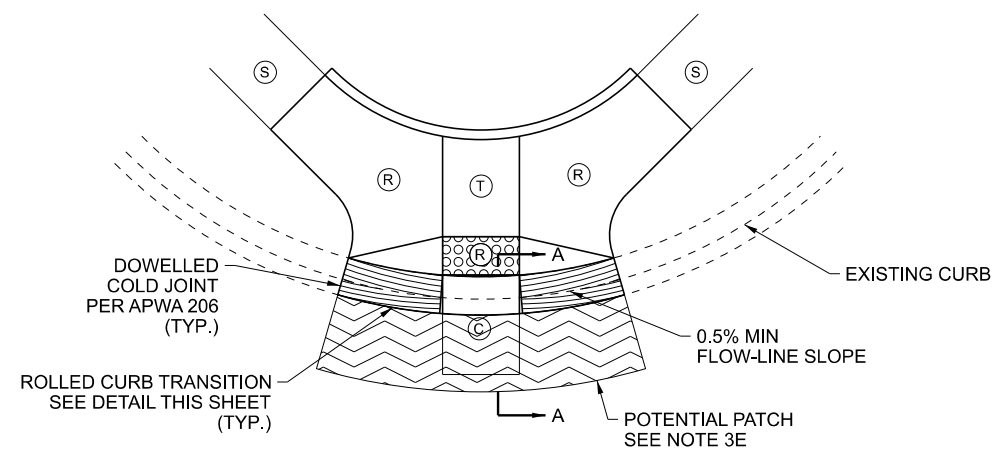
$$L_{MIN} = W$$
$$L_{MAX} \text{ (IN FEET)} = 1.5 \times W$$

PARK STRIP JOINT DETAIL

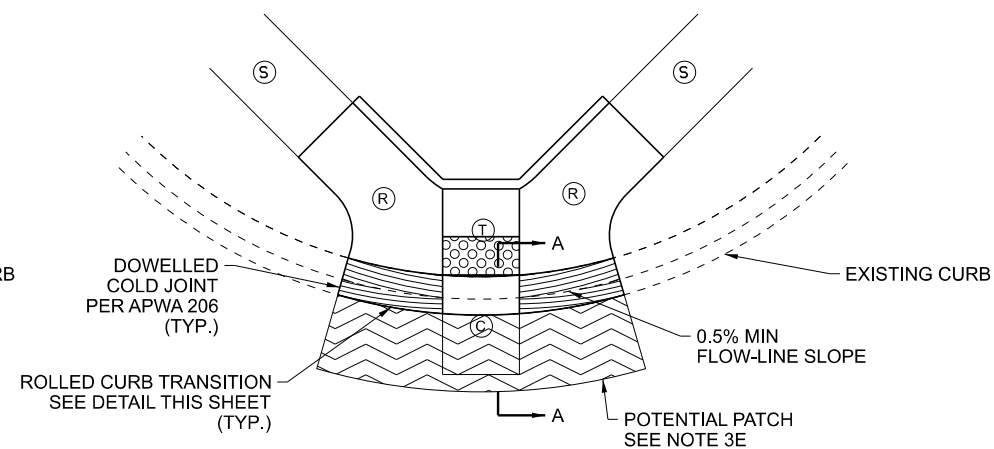
NOTES:

- GENERAL
 - VARIANCE FROM SPECIFIED DIMENSIONS AND SLOPES MUST BE ACCEPTABLE TO THE ENGINEER. SYSTEM CONFIGURATION MAY BE CHANGED AT ENGINEER'S DISCRETION.
 - COLOR: TWO-PART SHAKE COLOR COMPOUND; BASE COLOR WITH COLOR RELEASE. SCOFIELD UV RESISTANT:
 - BASE COLOR: YOSEMITE BROWN PER DAVIS COLORS OR EQUAL APPROVED BY ENGINEER.
 - COLOR RELEASE: DARK GRAY PER BRICKFORM STANDARD COLOR SELECTOR BROCHURE OR EQUAL APPROVED ENGINEER.
 - PATTERN: "ASHLAR SLATE" OR EQUAL APPROVED BY ENGINEER.
 - ADDITIONAL REQUIREMENTS ARE SPECIFIED IN APWA SECTION 32 16 13 AND WEST VALLEY CITY SPECIAL PROVISION 32 16 24-S.
- PRODUCTS
 - BASE COURSE: UNTREATED BASE COURSE, APWA SECTION 32 11 23. DO NOT USE GRAVEL AS BASE COURSE.
 - EXPANSION JOINT FILLER: 1/2-INCH THICK TYPE F1 FULL DEPTH, APWA SECTION 32 13 73.
 - 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.
 - CONCRETE CURING AGENT: CLEAR MEMBRANE FORMING COMPOUND WITH FUGITIVE DYE (TYPE ID CLASS A), APWA SECTION 03 39 00.
- EXECUTION
 - 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.
 - CONCRETE PLACEMENT: APWA SECTION 03 30 10.
 - INSTALL EXPANSION JOINTS VERTICAL, FULL DEPTH, WITH TOP OF FILLER SET FLUSH WITH CONCRETE SURFACE.
 - 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).
 - PROVIDE 1/2-INCH RADIUS EDGES. APPLY A BROOM FINISH. APPLY A CURING AGENT.

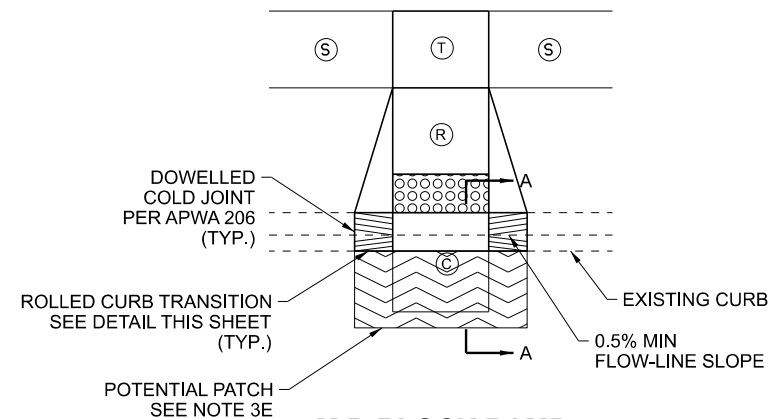
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WEST VALLEY CITY PUBLIC WORKS DEPARTMENT		ENGINEERING DIVISION		3600 CONSTITUTION BOULEVARD		WEST VALLEY CITY, UTAH 84119-3720		4/6/2026		DATE	
DESIGN		CHECK		DRAWN		CHECK		REVISIONS		NO. BY	
WVC STANDARD DRAWING		PATTERNED		CONCRETE PARK STRIP		WVC STD. DWG. NO.		WVC 232.1			



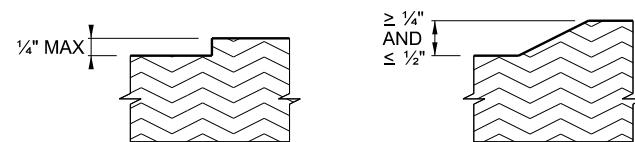
COMBINATION AND PERPENDICULAR RAMP EXAMPLE



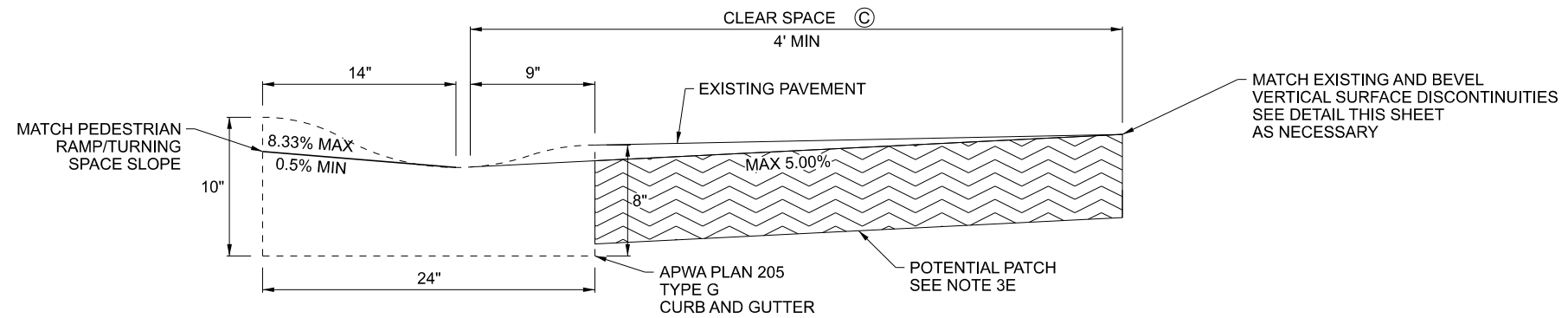
PARALLEL RAMP EXAMPLE



MID-BLOCK RAMP EXAMPLE

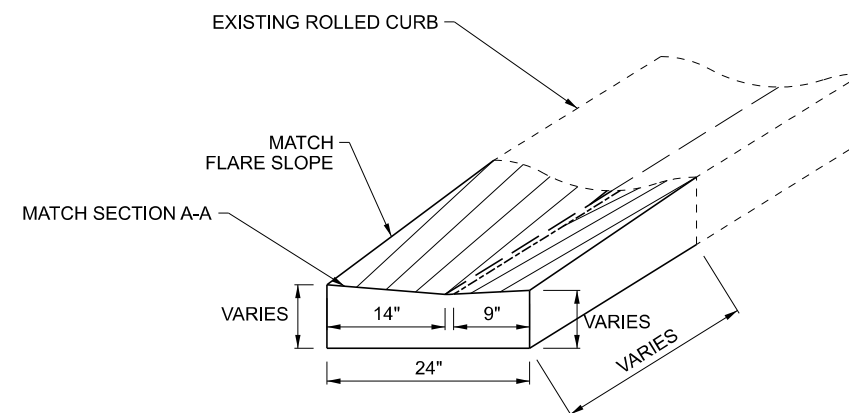


BEVEL VERTICAL SURFACE DISCONTINUITIES



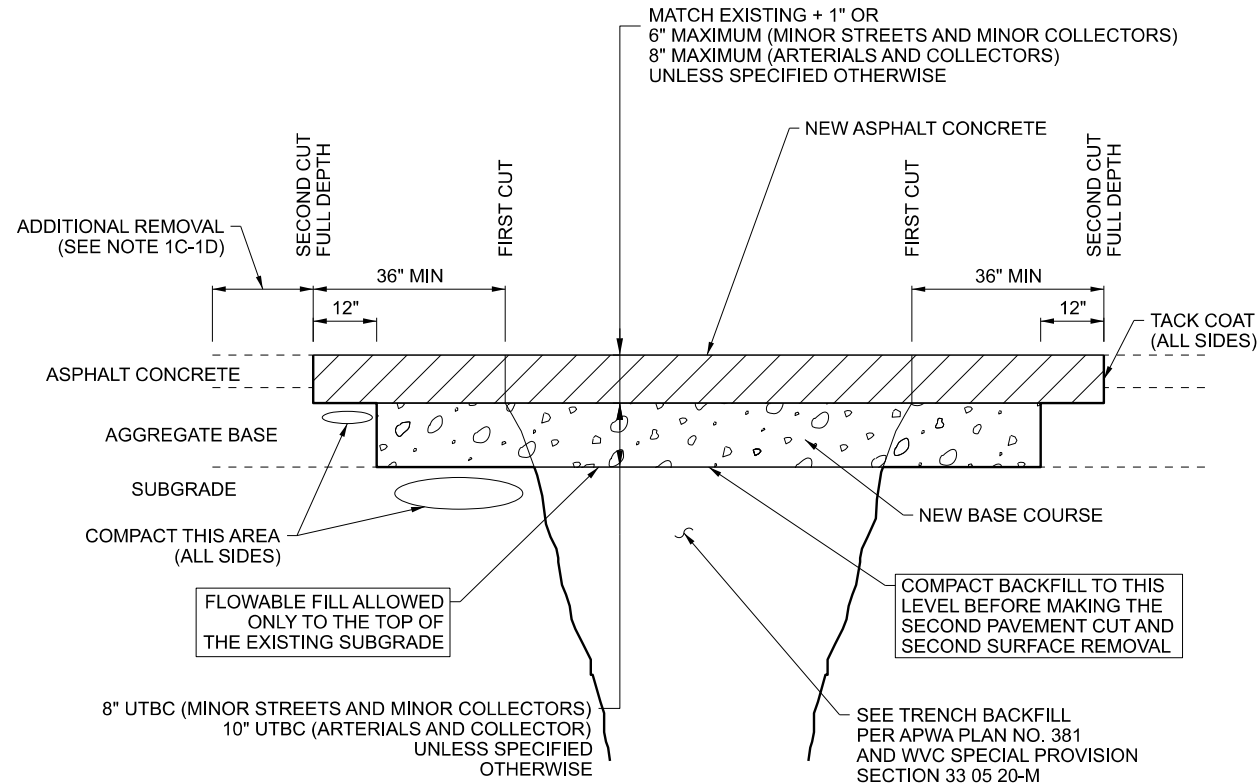
SECTION A-A

- ## NOTES:
1. GENERAL
 - A. THE DRAWING SHOWS TYPICAL ROLLED CURB TRANSITIONS AND CONNECTIONS. REFER TO CONSTRUCTION DRAWINGS FOR ROLLED CURB TRANSITIONS AND CONNECTION LOCATIONS OR REFER TO FIELD LOCATION OF EXISTING ROLLED CURB WHEN DETERMINING ROLLED CURB TRANSITIONS.
 - B. WHERE EXISTING ELEMENTS OR SPACES ARE ALTERED TO RECEIVE AN ASSEMBLY, SLOPES AND DIMENSIONS SHALL COMPLY WITH SLOPES AND DIMENSIONS SHOWN ON THE UDOT PA SERIES STANDARD DRAWINGS, OR TO THE MAXIMUM EXTENT FEASIBLE PERMITTED BY THE ENGINEER. FINAL CONFIGURATION OF THE ASSEMBLY MAY BE DIFFERENT THAN SHOWN.
 - C. DEFINITIONS AND SUPPLEMENTAL REQUIREMENTS ARE SPECIFIED IN WVC SPECIAL PROVISION 32 16 14-S AND UDOT FORM C-170.
 2. PRODUCTS
 - A. EXPANSION JOINT FILLER: 1/2-INCH THICK TYPE F1 FULL DEPTH, APWA SECTION 32 13 73
 3. EXECUTION
 - A. A COMPLETED ROLLED CURB TRANSITION SECTION SURFACE WILL HAVE A SMOOTH "NON- SLIP" TEXTURED SURFACE FINISH WITHOUT ANY ROUGH EDGES.
 - B. PROTECTION: PROVIDE EXPANSION JOINT FILLER 1/2" THICK WHERE CURB RAMP ADJOINS TO ANY RIGID PAVEMENT OR STRUCTURE WITH THE TOP OF JOINT FILLER FLUSH WITH ADJACENT CONCRETE SURFACE.
 - C. REPAIR CONSTRUCTION THAT DOES NOT DRAIN. FLOW-LINE SLOPE NOT TO BE LESS THAN 0.5%, UNLESS APPROVED BY THE ENGINEER. IF NECESSARY, FLOOD FLOW-LINE WITH WATER TO VERIFY.
 - D. CONSTRUCT THE DEPRESSED CURB TO BE FLUSH WITH ADJACENT SURFACES (RAMPS, TURNING SPACE, CLEAR SPACE, FLARES).
 - E. IF NECESSARY, SAWCUT AND REPLACE PAVEMENT 4 FEET FROM LIP OF CURB AND FLARE TO FLARE, TO PREVENT TRIP HAZARDS IN THE CLEAR SPACE.
 - 1) MINOR ROADS: REPLACE PAVEMENT WITH 4 INCHES OF HOT MIX ASPHALT MINOR ROAD MIX.
 - 2) MAJOR ROADS: REPLACE PAVEMENT WITH 6 INCHES OF HOT MIX ASPHALT MAJOR ROAD MIX.
 - F. CONSTRUCT GRADE BREAKS TO BE FLUSH, PREVENT OR CORRECT ANY VERTICAL DIFFERENCES IN SURFACES GREATER THAN 0.5 IN. BEVEL VERTICAL DIFFERENCES BETWEEN 0.25 IN AND 0.5 IN WITH A SLOPE NOT STEEPER THAN 2H:1V ACROSS THE VERTICAL DIFFERENCE.



ROLLED CURB TRANSITION

WVC STANDARD DRAWING PEDESTRIAN ACCESS RAMP ROLLED CURB TRANSITION		 WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	DESIGN _____		_____	_____
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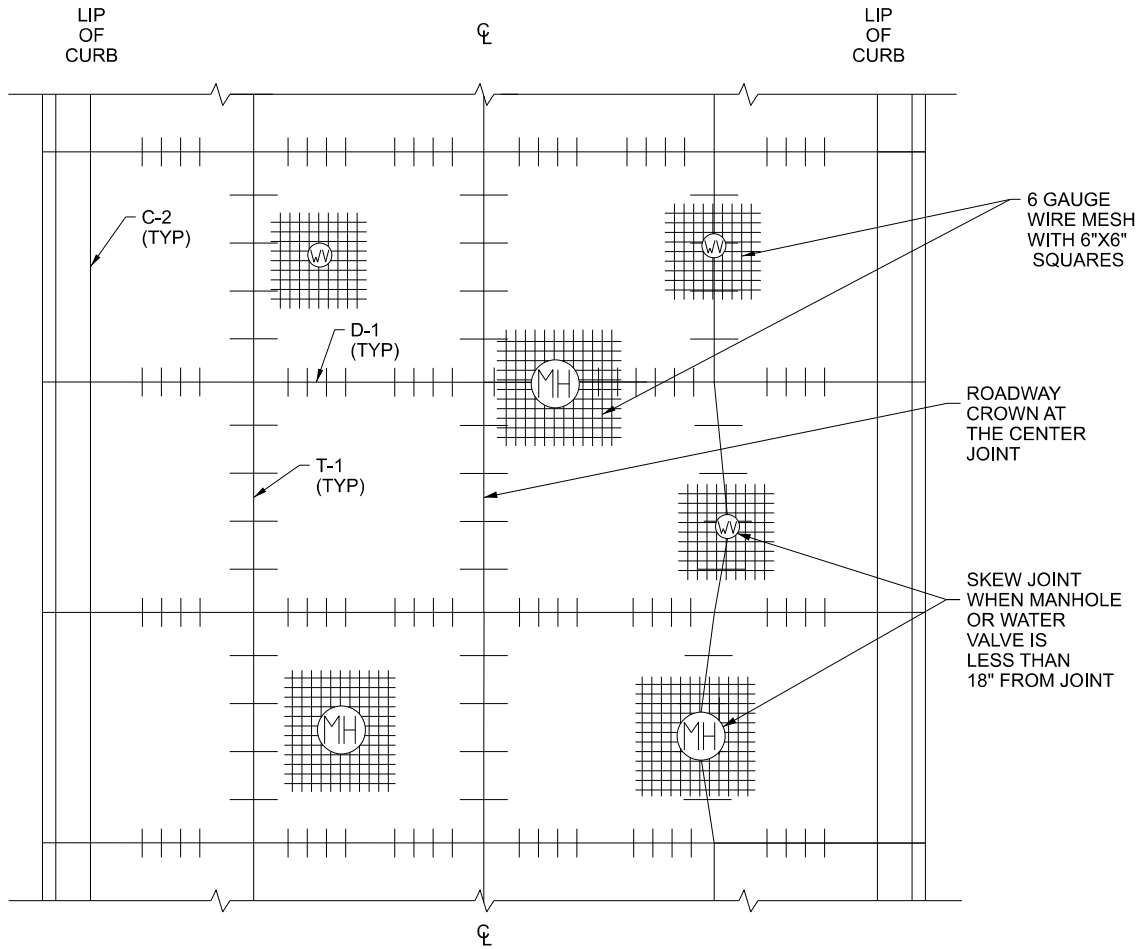


(LESS THAN 72 INCHES FROM PAVEMENT SURFACE TO BOTTOM OF EXCAVATION)

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

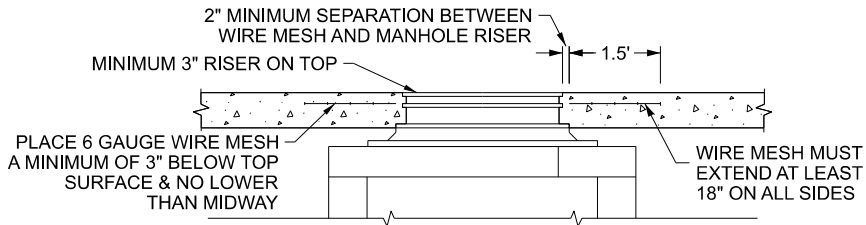
2. PRODUCTS
 - A. BASE COURSE: UNTREATED BASE COURSE, APWA SECTION 32 11 23. DO NOT USE GRAVEL AS A BASE COURSE.
 - B. FLOWABLE FILL: TARGET IS 60 PSI IN 28 DAYS WITH 90 PSI MAXIMUM IN 28 DAYS, APWA SECTION 31 05 15. IT MUST FLOW EASILY REQUIRING NO VIBRATION FOR CONSOLIDATION.
 - C. TACK COAT: WVC SPECIAL 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: FOLLOW APWA SECTION 32 12 16.13

WVC STANDARD DRAWING	 WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	DESIGN _____					
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		REMARKS _____					
ASPHALT CONCRETE T-PATCH	DESIGN _____ PROFESSIONAL ENGINEER <i>[Signature]</i> 5/6/2026 DATE						
WVC STD. DWG. NO. WVC 255							



JOINT LAYOUT

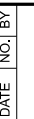
JOINT LEGEND:
C-2: CONTACT JOINTS PER APWA PLAN NO. 261.1
T-1: TIE-BAR JOINTS PER APWA PLAN NO. 261.2
D-1: DOWEL JOINTS PER APWA PLAN NO. 261.3



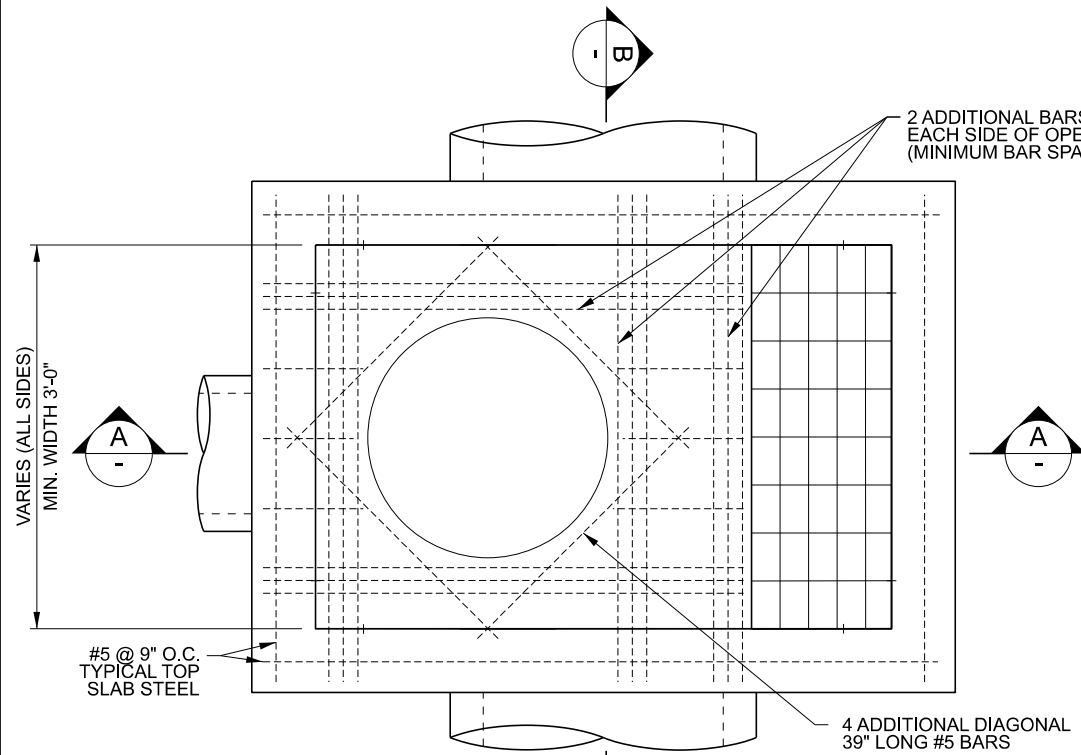
WIRE MESH

- NOTES:**
1. SEE APWA STANDARD PLAN NO. 261.4 FOR DOWEL-BAR BASKET ASSEMBLY AND INSTALLATION.
 2. ALL SAW CUTTING / JOINT SEALANT TO BE PER APWA PLAN NO. 261.1 STRESS CUT DETAIL.

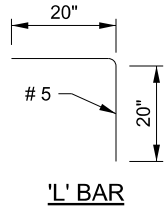
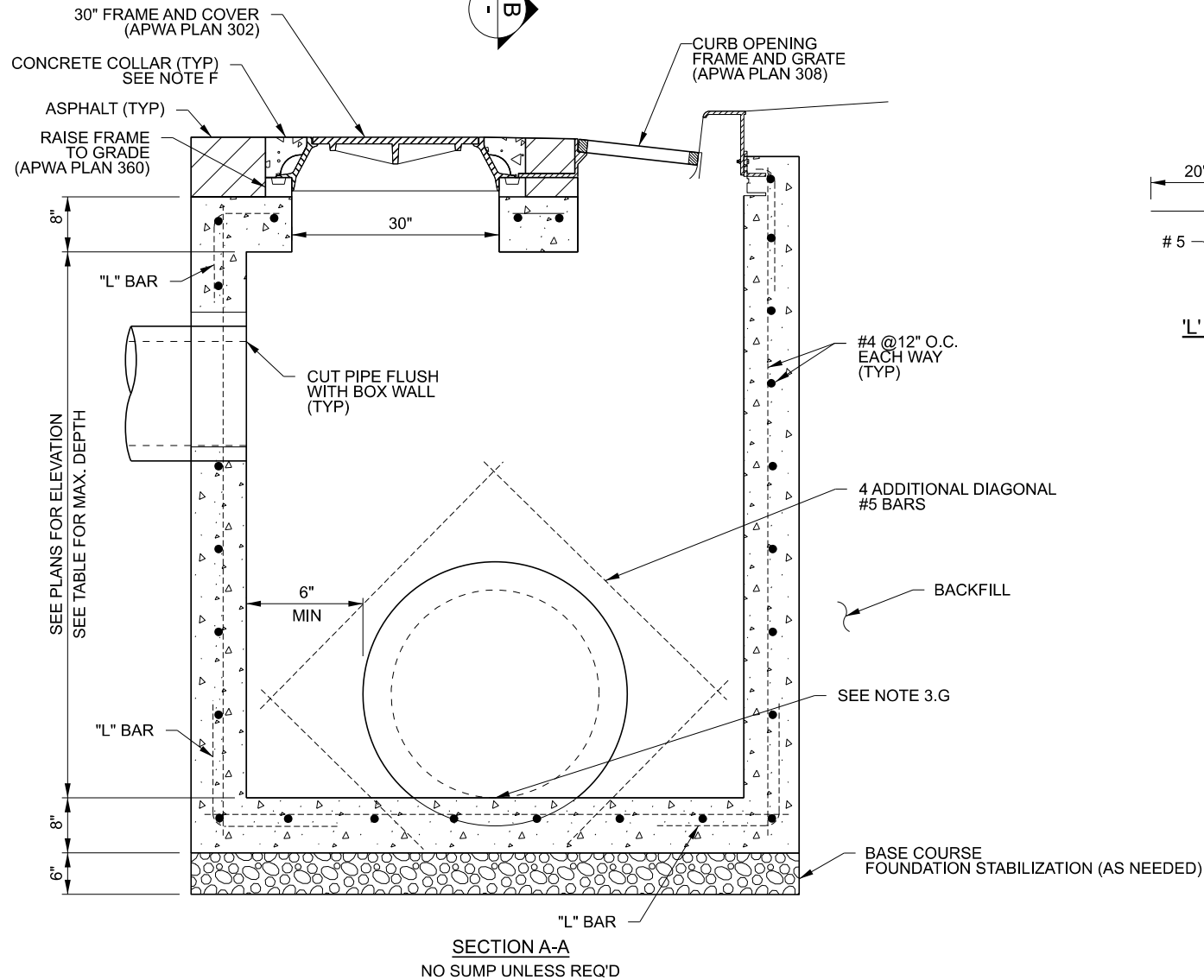
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CONCRETE PAVEMENT JOINTS					DRAWN	_____	_____	_____	_____	_____	_____	_____
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WVC STD. DWG. NO. WVC 261.5		DESIGN	5/12/2026 DATE		_____ PROFESSIONAL ENGINEER		REMARKS	_____	_____	DATE	NO.	BY



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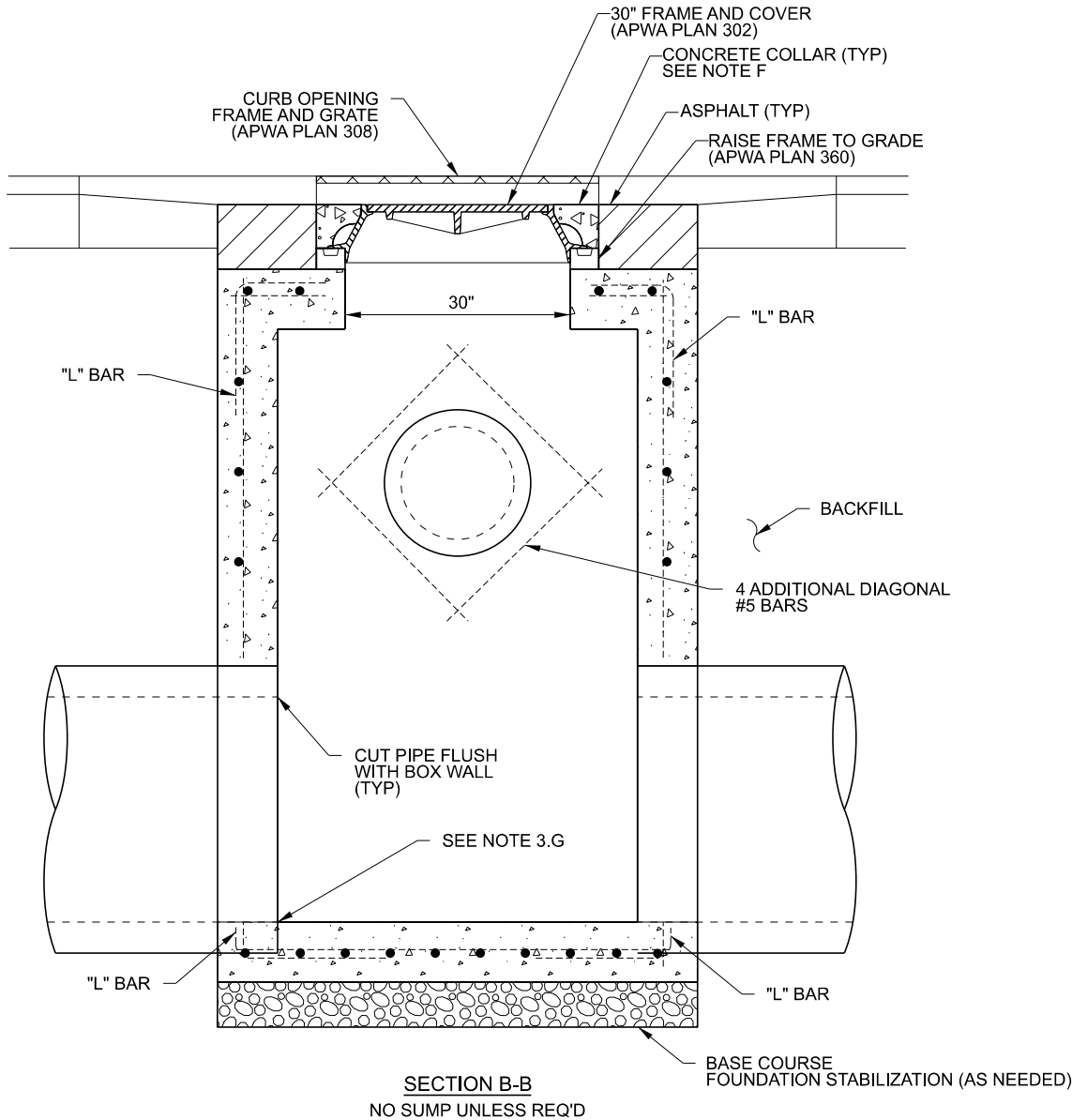


WALL THICKNESS AND WALL STEEL				
LOW WATER TABLE				
MAXIMUM BOX WIDTH	6 FEET	8 FEET	8 FEET	9 FEET
MAXIMUM BOX DEPTH	5 FEET	8 FEET	12 FEET	12 FEET
WALL THICKNESS	8 INCHES	8 INCHES	12 INCHES	12 INCHES
WALL CURTAIN STEEL	#5 @ 12"	#5 @ 6"	#5 @ 6"	#7 @ 9"
MODIFICATIONS FOR HIGH WATER TABLE				
WALL THICKNESS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



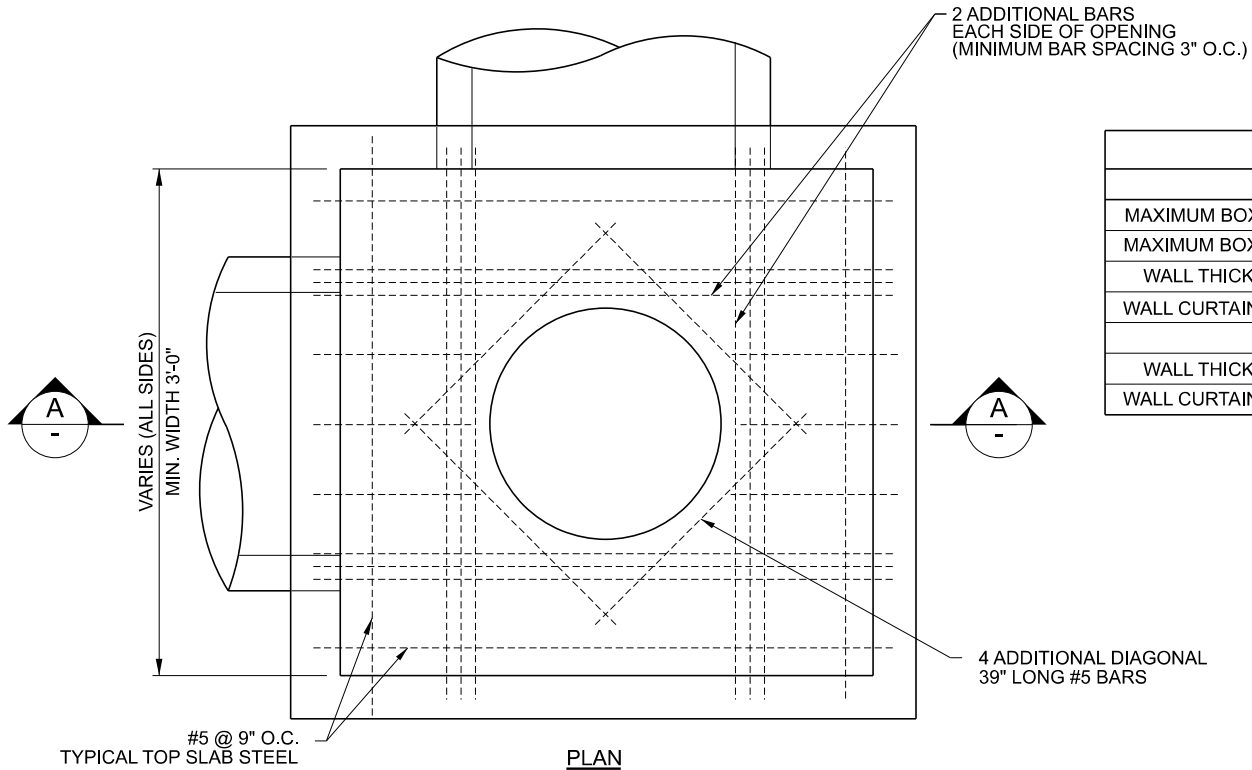
NOTES:

- GENERAL**
 - 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**
 - BASE COURSE: UNTREATED BASE COURSE, APWA SECTION 32 11 23.
 - BACKFILL: GRANULAR BACKFILL BORROW PER APWA SECTION 31 05 13.
 - CONCRETE: CLASS 4000, APWA SECTION 03 30 04.
 - REINFORCEMENT: DEFORMED, 60 ksi YIELD GRADE STEEL, ASTM A 615.
 - STABILIZATION-SEPARATION GEOTEXTILE: HIGH MARV, WOVEN OR NON-WOVEN, APWA SECTION 31 05 19.
- EXECUTION**
 - FOUNDATION STABILIZATION: GET ENGINEER'S PERMISSION TO USE FREE DRAINING GRANULAR BACKFILL IN A GEOTEXTILE WRAP TO STABILIZE AN UNSTABLE FOUNDATION.
 - 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.
 - 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.
 - 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.
 - 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.
 - INSTALL CONCRETE COLLAR PER APWA PLAN 362 WITH A DEVIATION FROM TE 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.
 - PROVIDE CORE OPENING SUCH THAT PIPE INVERT MATCHES BOTTOM OF BOX



DESIGN	CHECK	DRAWN	CHECK	REVISIONS	NO. BY
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	DESIGN	4/6/2026	DATE	PROFESSIONAL ENGINEER	
WVC STANDARD DRAWING	MODIFIED COMBO BOX	WVC STD. DWG. NO.	WVC 316		

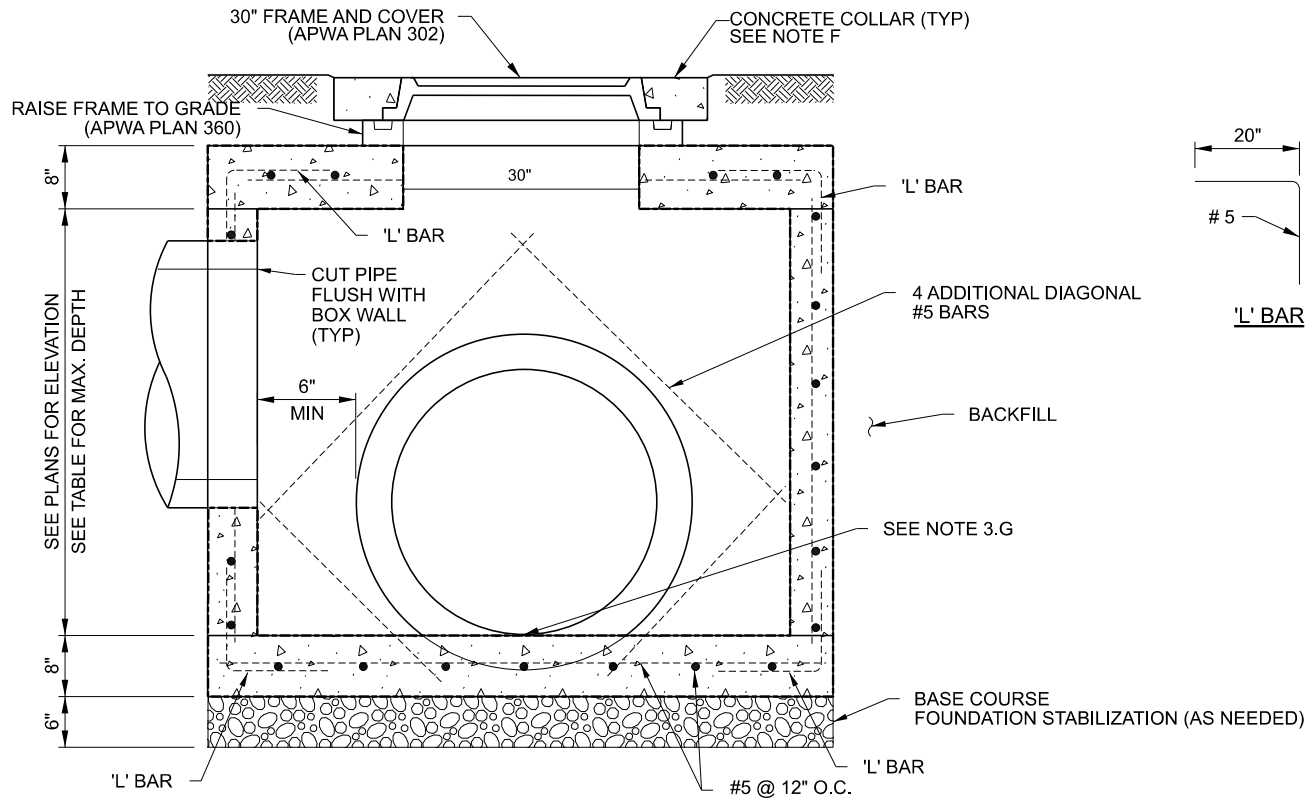
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WALL THICKNESS AND WALL STEEL				
LOW WATER TABLE				
MAXIMUM BOX WIDTH	6 FEET	8 FEET	8 FEET	9 FEET
MAXIMUM BOX DEPTH	5 FEET	8 FEET	12 FEET	12 FEET
WALL THICKNESS	8 INCHES	8 INCHES	12 INCHES	12 INCHES
WALL CURTAIN STEEL	#5 @ 12"	#5 @ 6"	#5 @ 6"	#7 @ 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:

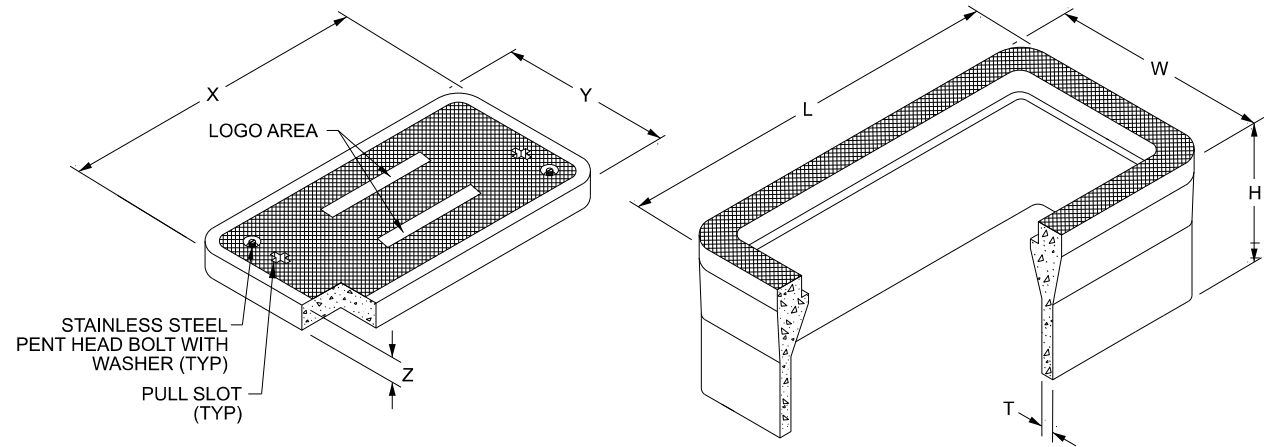
- GENERAL**
 - THE DRAWING SHOWS TYPICAL PIPE CONNECTIONS. REFER TO CONSTRUCTION DRAWINGS FOR CONNECTION LOCATIONS OR REFER TO FIELD LOCATION OF EXISTING PIPING WHEN DETERMINING PIPE CONNECTION TO THE BOX.
- PRODUCTS**
 - BASE COURSE: UNTREATED BASE COURSE, APWA SECTION 32 11 23.
 - BACKFILL: GRANULAR BACKFILL BORROW PER APWA SECTION 31 05 13.
 - CONCRETE: CLASS 4000, APWA SECTION 03 30 04.
 - REINFORCEMENT: DEFORMED, 60 ksi YIELD GRADE STEEL, ASTM A 615.
 - STABILIZATION-SEPARATION GEOTEXTILE: HIGH MARV, WOVEN OR NON-WOVEN, APWA SECTION 31 05 19.
- EXECUTION**
 - FOUNDATION STABILIZATION: GET ENGINEER'S PERMISSION TO USE FREE DRAINING GRANULAR BACKFILL IN A GEOTEXTILE WRAP TO STABILIZE AN UNSTABLE FOUNDATION.
 - 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.
 - 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.
 - 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.
 - 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.
 - INSTALL CONCRETE COLLAR PER APWA PLAN 362 WITH A DEVIATION FROM TE 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.
 - PROVIDE CORE OPENING SUCH THAT PIPE INVERT MATCHES BOTTOM OF BOX



SECTION A-A
NO SUMP UNLESS REQ'D

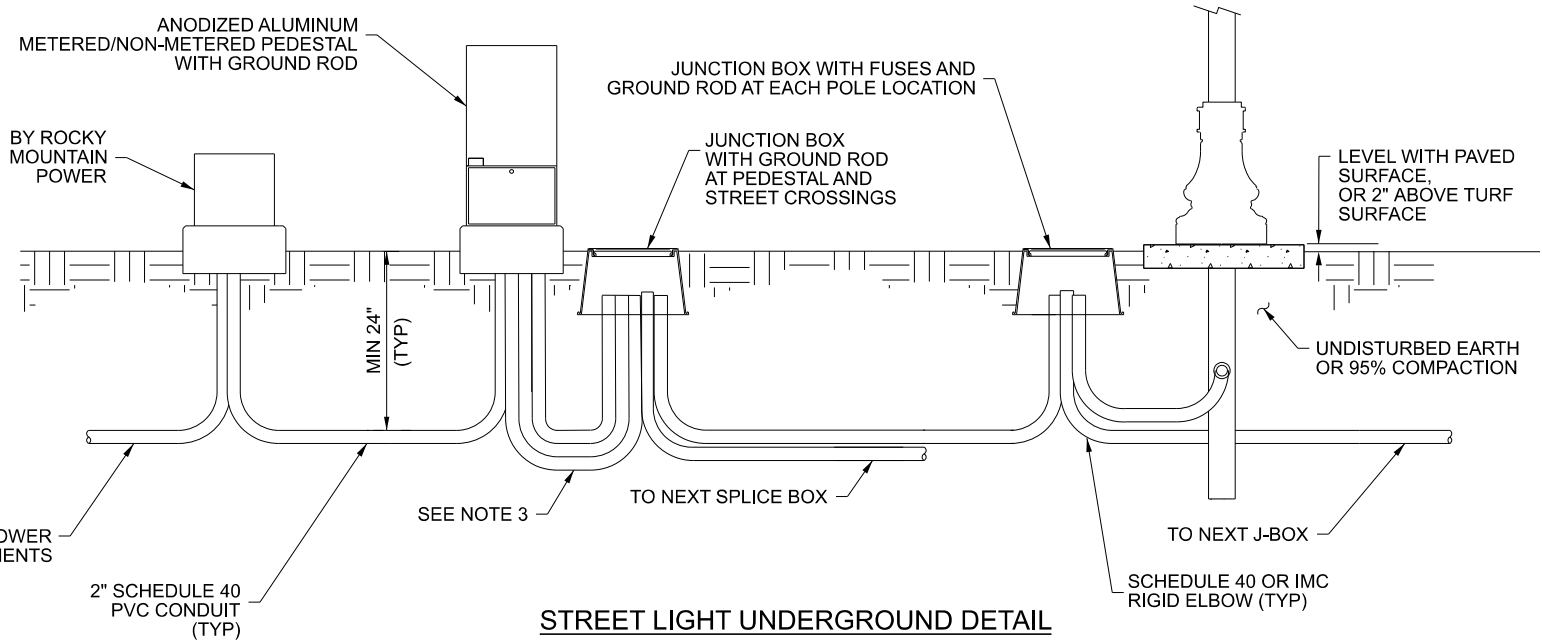
DESIGN	CHECK	DRAWN	CHECK	REVISIONS	NO. BY
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	DESIGN	4/6/2026	DATE	REMARKS	DATE
WVC STANDARD DRAWING	CLEANOUT BOX	WVC STD. DWG. NO.	WVC 331		

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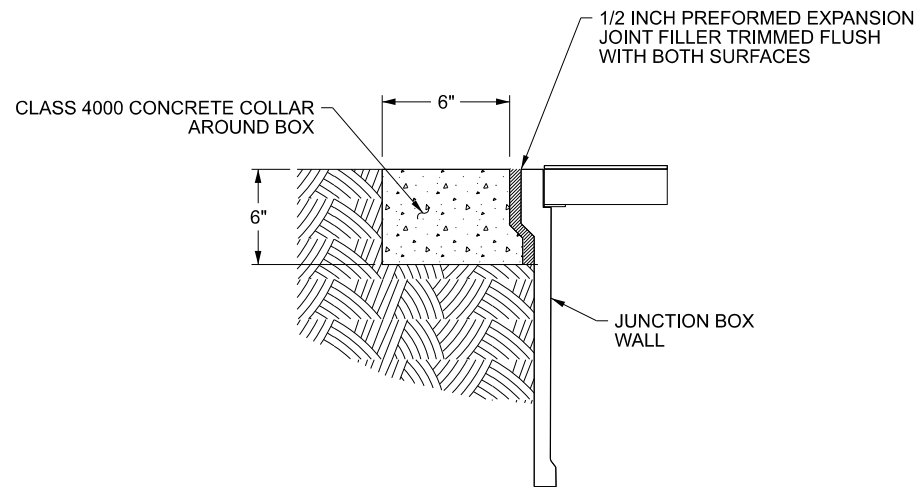


BOX TYPE	"H" INCH	"L" INCH	"T" INCH	"W" INCH	"X" INCH	"Y" INCH	"Z" INCH
I-PC	24	25	1 1/2	16	23 1/4	13 3/4	2
II-PC	24	37 5/8	1 1/2	26	35 5/8	24	3
III-PC	24	49 5/8	2	32 1/8	47 5/8	30 1/8	3

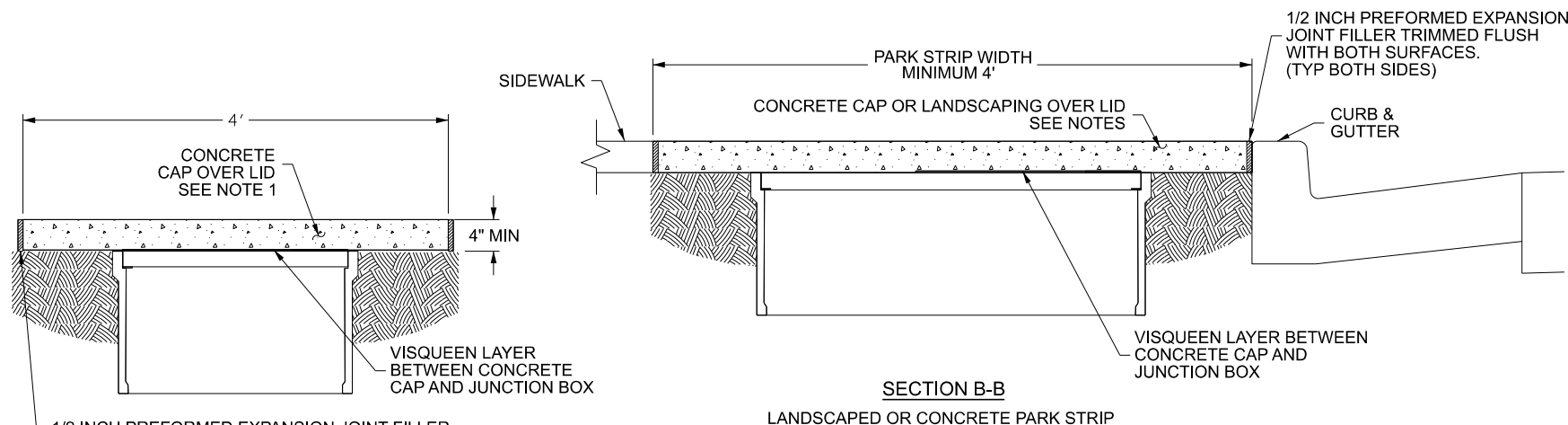
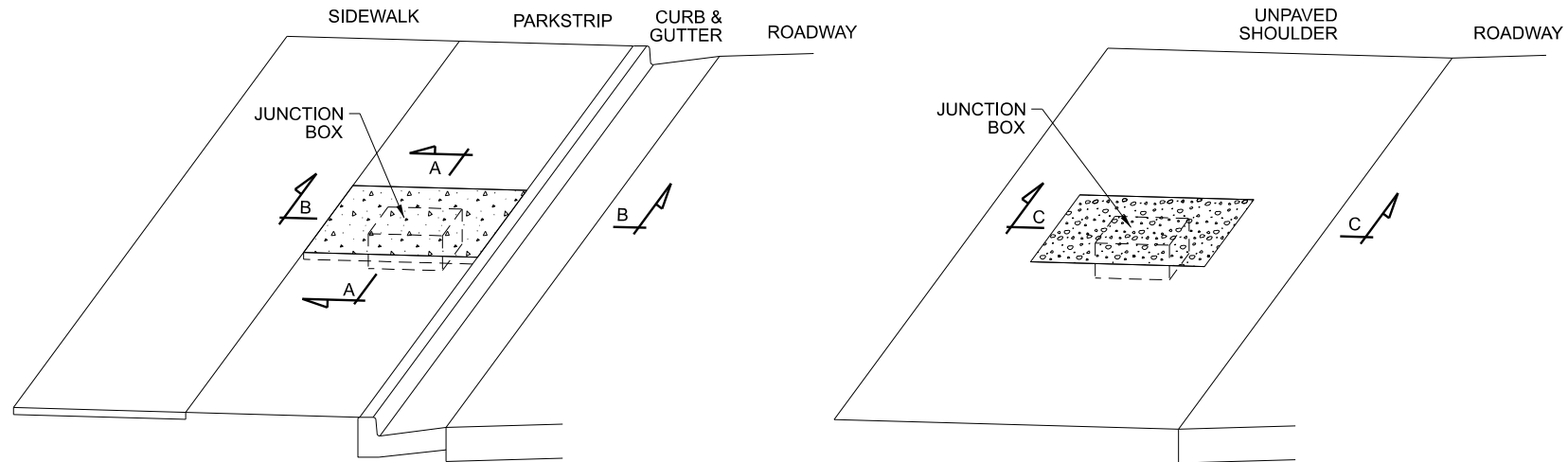
POLYMER-CONCRETE
JUNCTION BOX DETAIL



STREET LIGHT UNDERGROUND DETAIL

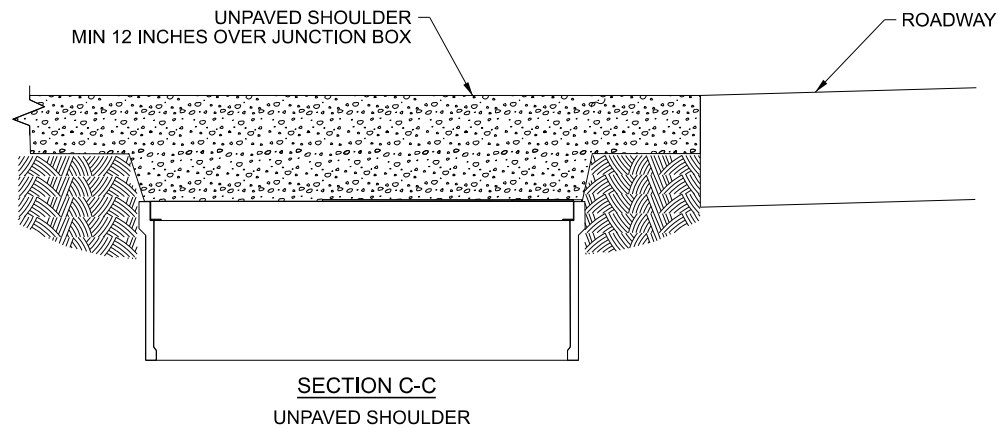


JUNCTION BOX CONCRETE COLLAR DETAIL
(ONLY REQUIRED ON BOXES INSTALLED AT FINISH GRADE)



SECTION B-B
LANDSCAPED OR CONCRETE PARK STRIP

JUNCTION BOX COVER DETAIL

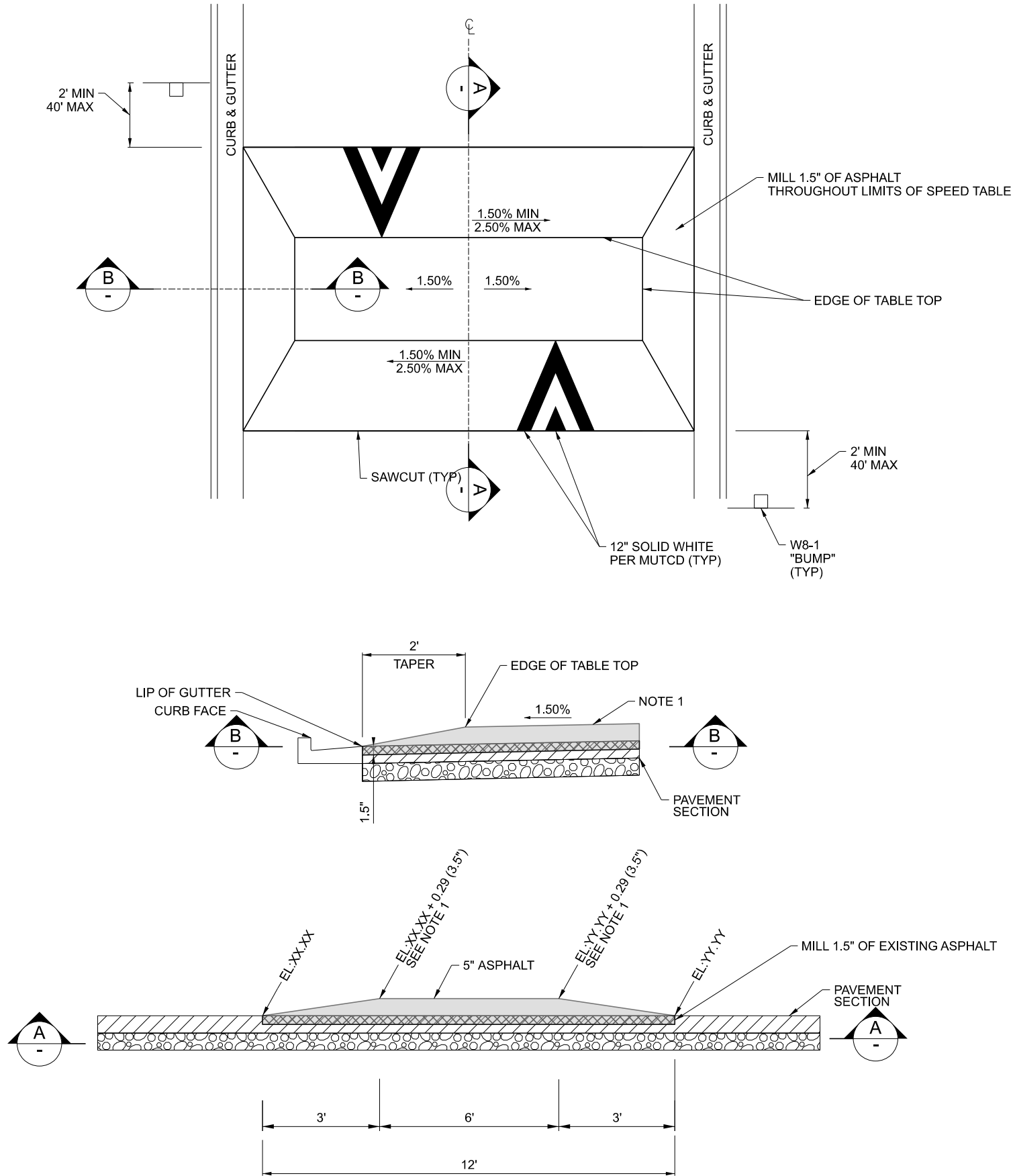


SECTION C-C
UNPAVED SHOULDER

NOTES:

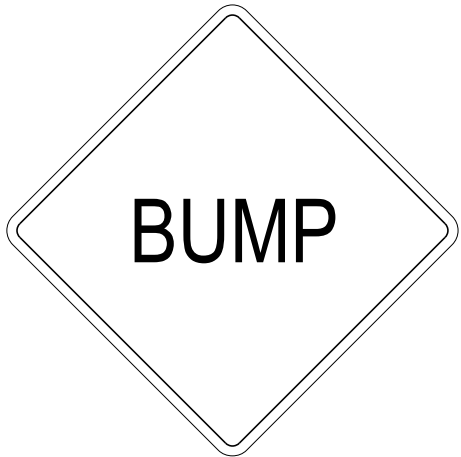
1. IF JUNCTION BOX IS IN A PATTERNED CONCRETE PARK STRIP AREA THE CONCRETE CAP IS TO BE PATTERNED CONCRETE PARKSTRIP WITH AN EXPANSION JOINT AROUND ALL 4 SIDES OF THE CAP AND VISQUEEN LAYER BETWEEN CONCRETE CAP AND JUNCTION BOX. OTHER AREAS TO BE CLASS 4000 CONCRETE.
2. IF JUNCTION BOX IS IN A LANDSCAPED PARK STRIP AREA THE THICKNESS OF THE LANDSCAPED PARK STRIP OVER THE JUNCTION BOX SHALL BE 6 INCHES. JOINT FILLER AND VISQUEEN LAYER NOT REQUIRED FOR LANDSCAPED PARK STRIP.
3. INSTALL TWO ADDITIONAL FUTURE-USE 2" SCHEDULE 40 PVC CONDUITS AT PEDESTALS AND STREET CROSSINGS.

DESIGN		CHECK		DRAWN		CHECK	
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720		4/6/2026 DATE		DESIGN		JUNCTION BOX	
WVC STANDARD DRAWING		WVC STD. DWG. NO.		WVC 731		NO. BY DATE	
REVISIONS		REMARKS		NO. BY DATE		NO. BY DATE	



NOTES:

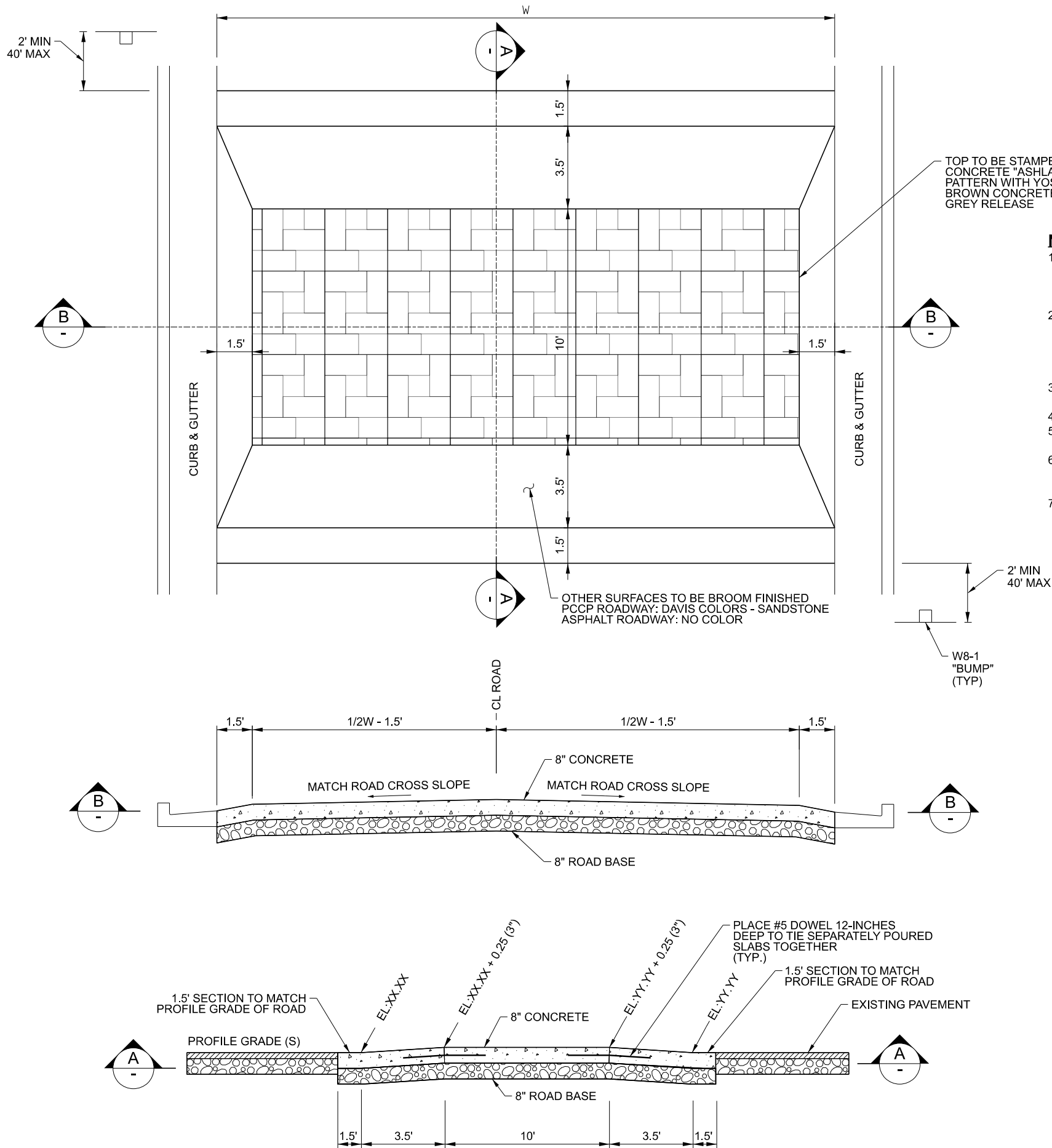
- ASPHALT PAVEMENT: SEE SECTION 32 12 05-M FOR MIX DESIGN, BASED ON ROADWAY CLASSIFICATION IN WEST VALLEY CITY ENGINEERING STANDARDS.
- TACK COAT: SECTION 32 12 13.13
 - CLEAN ALL VERTICAL SURFACES ADJACENT TO THE PATCH.
 - APPLY FULL COVERAGE TACK COAT.
- ASPHALT PAVEMENT JOINTS: PROVIDE A NEAT STRAIGHT JOINT BETWEEN EXISTING AND NEW ASPHALT CONCRETE.
 - SAW-CUT JOINT IF EXISTING PAVEMENT EXCEEDS 2 INCHES IN THICKNESS.
- JOINT REPAIR: IF A CRACK OCCURS AT THE CONNECTION TO EXISTING PAVEMENT OR AT ANY STREET FIXTURE, SEAL THE CRACK PER SECTION 32 13 73.
- MILLING: SECTION 32 01 16.71
 - REMOVE COMPACTED MILLING ON PREPARED SURFACES
 - MILL AROUND GUTTER LIP RADII TO SPECIFIED DEPTH PRIOR TO PAVING.
- PAINT: SECTION 32 17 23-M
 - REMOVE DIRT, LOOSE STONES, OR OTHER FOREIGN MATERIAL IMMEDIATELY PRIOR TO APPLYING.
 - APPLY TWO APPLICATIONS ON NEW BITUMINOUS SURFACES.



W8-1
30" x 30" SINGLE LANE
36" x 36" MULTI LANE

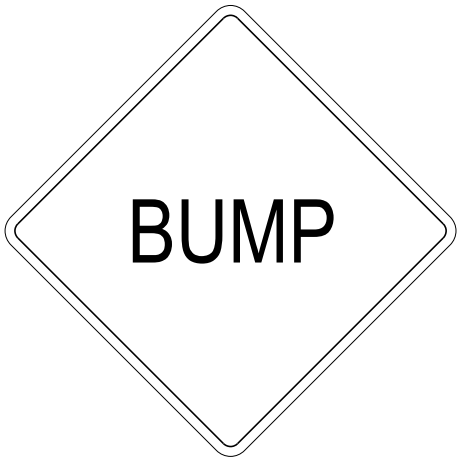
WVC STANDARD DRAWING		 WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	DESIGN	_____	_____	_____	_____	_____	_____	_____	
ASPHALT SPEED TABLE			CHECK	_____	_____	_____	_____	_____	_____	_____	
WVC STD. DWG. NO. WVC 762.1		DESIGN	_____		4/6/2026	DATE					
			PROFESSIONAL ENGINEER								
				REMARKS					DATE	NO.	BY
				REVISIONS							

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NOTES:

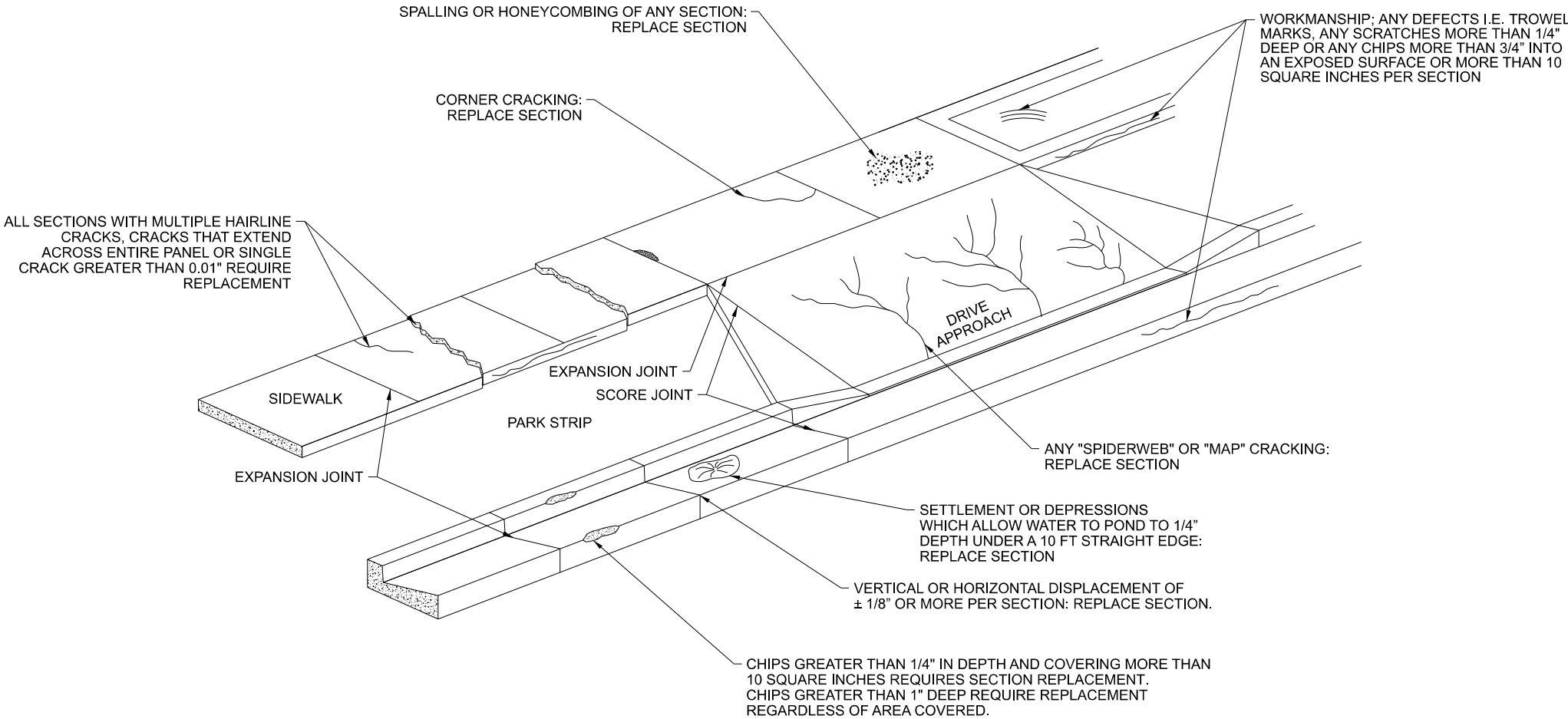
- UNTREATED BASE COURSE; PROVIDE CLASS A UNTREATED BASE COURSE SPECIFIED IN SECTION 32 11 23.
 - DO NOT USE GRAVEL AS A SUBSTITUTE FOR UNTREATED BASE COURSE.
 - MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8 INCHES WHEN USING RIDING COMPACTION EQUIPMENT OR 6 INCHES WHEN USING HANDHELD COMPACTION EQUIPMENT.
- CONCRETE: CLASS 4000, SECTION 03 30 04-M,
 - 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.
 - CONCRETE PLACEMENT PER SECTION 03 30 10. CLEAN ALL EDGES OF DIRT, OIL AND LOOSE DEBRIS. PROVIDE 1/2" RADIUS EDGES, APPLY A CURING AGENT
- CONCRETE CURING AGENT: WHITE PIGMENTED MEMBRANE FORMING COMPOUND (TYPE II CLASS A OR B), SECTION 03 39 00.
- EXPANSION JOINT: VERTICAL, FULL DEPTH WITH TOP OF FILLER SET FLUSH WITH CONCRETE SURFACE.
- CONTRACTION JOINT: VERTICAL, 1/8" WIDE AND 1/3 SLAB THICKNESS. MATCH JOINT LOCATIONS IN ADJACENT PORTLAND CEMENT CONCRETE ROADWAY PAVEMENT IF APPLICABLE.
- 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.
- SEALANT COMPOUND PER SECTION 03 39 00: INCLUDES TWO COATS OF SEALANT COMPOUND. ONE COAT PLACED IMMEDIATELY AFTER INITIAL CONCRETE SET AND THE SECOND COAT PLACED APPROXIMATELY 4 WEEKS AFTER PLACEMENT, OR AT A DIFFERENT INTERVAL AS SPECIFIED BY THE ENGINEER.
 - SEALANT COMPOUND USED ON CONCRETE SPEED TABLES SHALL BE CLEAR LIQUID, OR CLEAR WHEN DRY.



SPEED TABLE DETAILS

NTS

DESIGN		CHECK		DRAWN		CHECK	
WEST VALLEY CITY PUBLIC WORKS DEPARTMENT		ENGINEERING DIVISION		3600 CONSTITUTION BOULEVARD		WEST VALLEY CITY, UTAH 84119-3720	
DESIGN		DATE		5/6/2026		DATE	
WVC STANDARD DRAWING		CONCRETE SPEED TABLE		WVC STD. DWG. NO.		WVC 762.2	
REVISIONS		REMARKS		DATE		NO. BY	



NOTES:

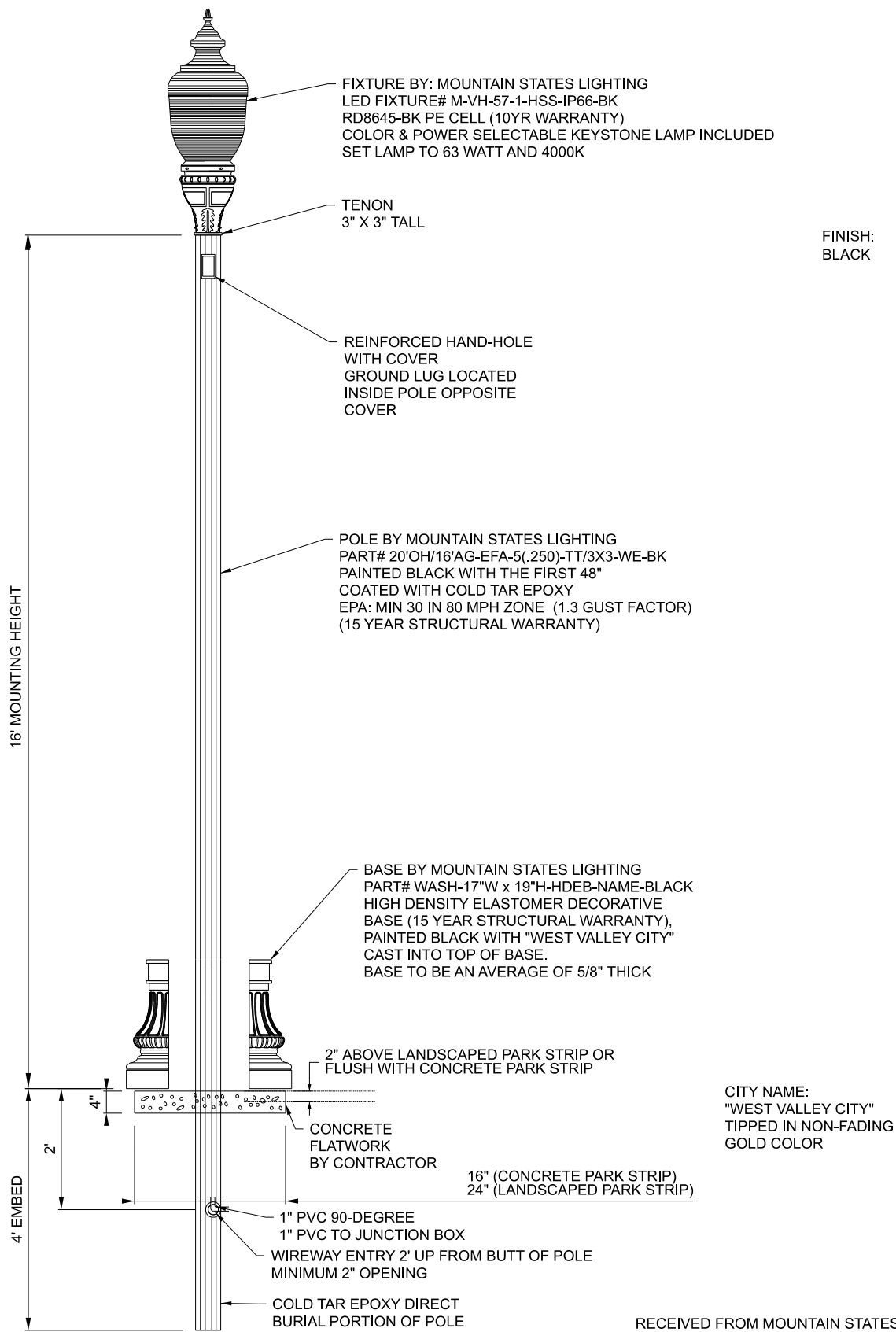
1. REPLACEMENT IS REQUIRED IF ANY COMPONENT HAS ONE OR MORE OF THE CONDITIONS NOTED ABOVE.
2. NOTES AND CALLOUTS APPLY TO ANY CONCRETE SECTION, INCLUDING CURB AND GUTTER, DRIVE APPROACH, SIDEWALK, ETC.
3. REPLACEMENT CONCRETE SHALL MEET CRITERIA SET FORTH IN WEST VALLEY CITY STANDARDS AND SPECIFICATIONS.
4. ALL CONCRETE REPAIRS REQUIRE THE REPLACEMENT OF FULL PANELS, OR ENSURE THAT NO REMAINING SECTION IS LESS THAN FIVE FEET IN LENGTH.
5. TRUE LINE AND GRADE: REPLACE IF SIDEWALK AND/OR CURB & GUTTER DEVIATES MORE THAN THE FOLLOWING:
LINE: 1/2" IN 10 FEET
GRADE: 1/4" IN 10 FEET

WVC STANDARD DRAWING		WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720		DESIGN	CHECK	DRAWN	CHECK	REVISIONS		NO.	BY
DEFECTIVE CONCRETE		DESIGN						REMARKS		DATE	BY
WVC STD. DWG. NO.		5/6/2026									
WVC 802											

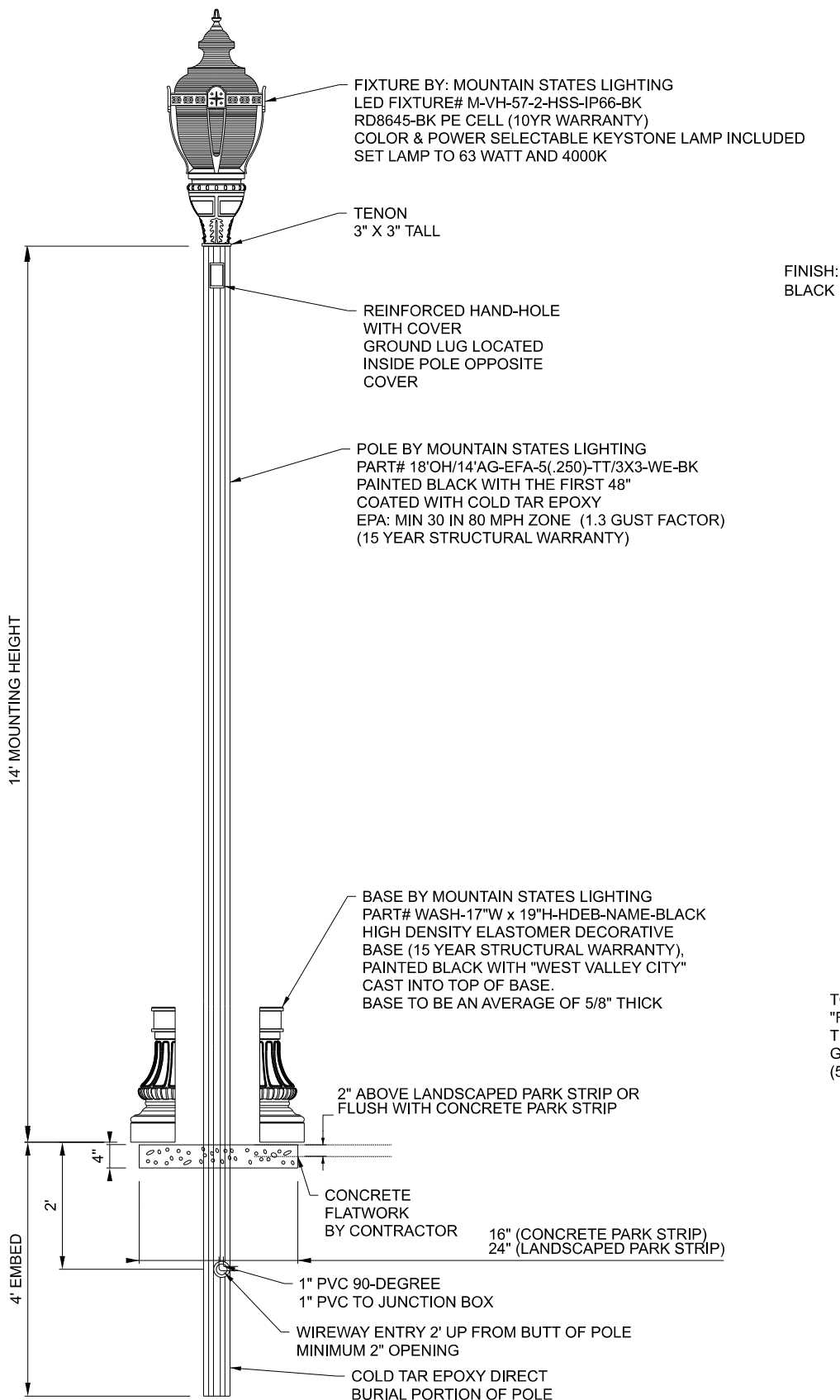


CITY NAME:
"WEST VALLEY CITY"
TIPPED IN NON-FADING
GOLD COLOR
(5 YR WARRANTY)

[illegible]

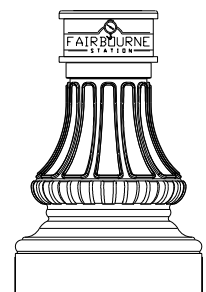


BASE DETAIL



FINISH:
BLACK

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

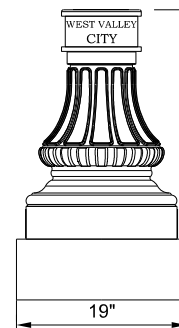


BASE DETAIL

RECEIVED FROM MOUNTAIN STATES LIGHTING ON 2/12/2026
APPROVED BY WVC TRANSPORTATION ON 5/6/2026

SHEET NO. LP-03A	STANDARD DRAWING		WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION		DESIGN	_____				
	FAIRBOURNE STREET LIGHT		3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	CHECK	_____					
				DRAWN	_____					
	PROJECT NUMBER		WVC STREET LIGHTING	CHECK	_____					
			DESIGN	 PROFESSIONAL ENGINEER	5/6/2026 DATE		REMARKS		DATE	NO. BY
							REVISIONS			

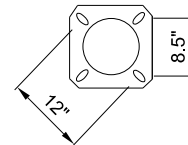
FIXTURE BY: MOUNTAIN STATES LIGHTING
 LED FIXTURE# M-VH-57-1-HSS-IP66-BK
 RD8645-BK PE CELL (10YR WARRANTY)
 COLOR & POWER SELECTABLE KEYSTONE LAMP INCLUDED
 SET LAMP TO 63 WATT AND 4000K



BASE DETAIL

CITY NAME:
 "WEST VALLEY CITY"
 TIPPED IN NON-FADING
 GOLD COLOR
 (5 YR WARRANTY)

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

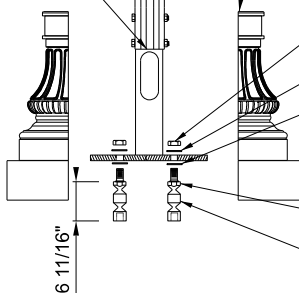


ANCHOR BASE DETAIL
 12" BOLT CIRCLE
 ANCHOR BOLTS: 3/4" x 18"

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
 (15 YEAR STRUCTURAL WARRANTY)

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

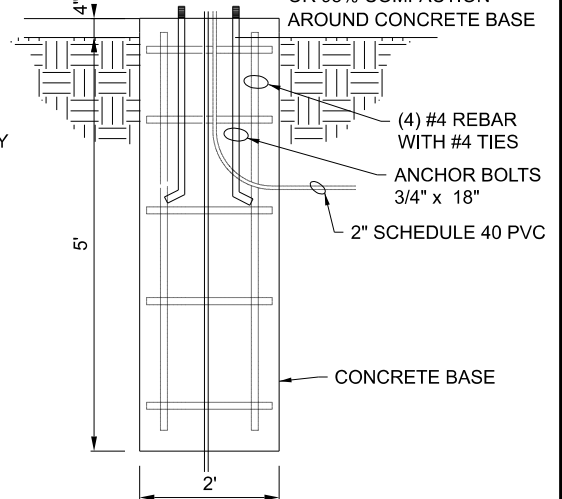
HANDHOLE



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

4" ABOVE FINISHED CURB AND SIDEWALK

UNDISTURBED EARTH
 OR 95% COMPACTION
 AROUND CONCRETE BASE



CONCRETE BASE

RECEIVED FROM MOUNTAIN STATES LIGHTING ON 2/12/2026
 APPROVED BY WVC TRANSPORTATION ON 5/6/2026

SHEET NO. LP-04A	STANDARD DRAWING	WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	DESIGN						
	ARTERIAL BREAK-AWAY		CHECK						
	SINGLE STREET LIGHT		DRAWN						
	PROJECT NUMBER WVC STREET LIGHTING		CHECK						
	DESIGN	PROFESSIONAL ENGINEER	DATE	5/6/2026					
					REMARKS			DATE	NO. BY

MOUNTAIN STATES LIGHTING
PHOTOCELL RD8645-BK (10 YEAR WARRANTY)

HOOK ARM WITH PLUMBIZER

FIXTURE BY: MOUNTAIN STATES LIGHTING
LED FIXTURE# M-VH-81-1-IP66-BK
COLOR & POWER SELECTABLE KEYSTONE
LAMP INCLUDED
SET LAMP TO 54 WATT AND 4000K

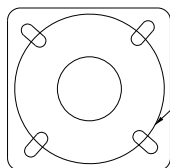
REINFORCED HAND-HOLE WITH COVER
GROUND LUG LOCATED INSIDE POLE
OPPOSITE COVER

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)

4 BOLTS AT 90 DEGREES
3/4" DIA X 18" LONG X 3" HOOK
BOLTS TO HAVE A 3.5" PROJECTION
OUT OF THE CONCRETE.
BOLTS TO BE GALVANIZED

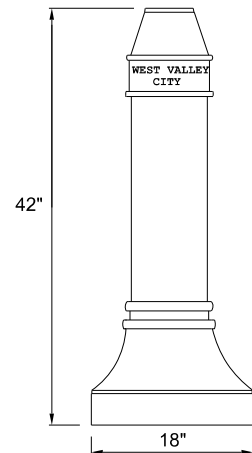


ANCHOR BASE DETAIL
12" BOLT CIRCLE
7/8" X 1" HOLES TO
ACCOMMODATE UP TO 3/4" DIA BOLT

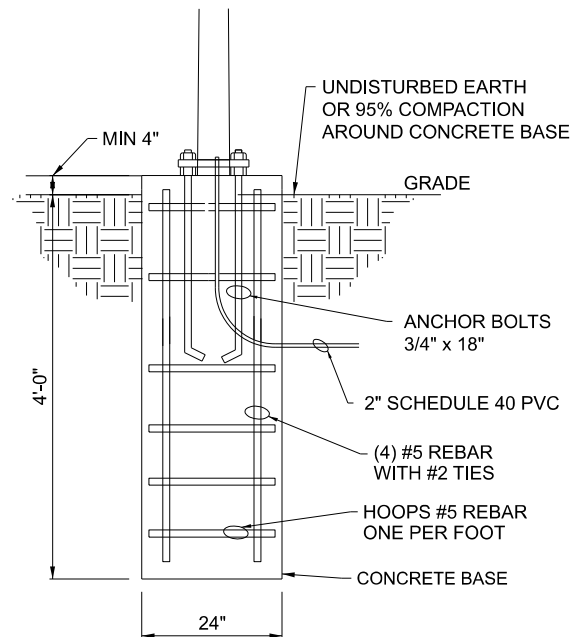
POLE ANCHOR PLATE DETAIL

ASSEMBLY COLOR: BLACK

CITY NAME:
"WEST VALLEY CITY"
TIPPED IN NON-FADING
GOLD COLOR
(5 YR WARRANTY)



DECORATIVE BASE
ENLARGED DETAIL



RECEIVED FROM MOUNTAIN STATES LIGHTING ON 2/12/2026
APPROVED BY WVC TRANSPORTATION ON 5/6/2026

SHEET NO. LP-05	STANDARD DRAWING		WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION 3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720	DESIGN	____				
	SINGLE SIDEWALK LIGHT			CHECK	____				
				DRAWN	____				
	PROJECT NUMBER WVC STREET LIGHTING			CHECK	____				
		DESIGN		5/12/2026	DATE	REMARKS	DATE	NO.	BY
			PROFESSIONAL ENGINEER						

MOUNTAIN STATES LIGHTING
PHOTOCELL RD8645-BK (10 YEAR WARRANTY)

HOOK ARM WITH PLUMBIZER
(TYPICAL OF TWO)

FIXTURE BY: MOUNTAIN STATES LIGHTING
LED FIXTURE# M-VH-81-1-IP66-BK
COLOR & POWER SELECTABLE KEYSTONE
LAMP INCLUDED
SET LAMP TO 54 WATT AND 4000K

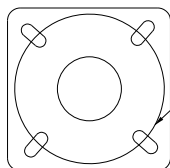
REINFORCED HAND-HOLE WITH COVER
GROUND LUG LOCATED INSIDE POLE
OPPOSITE COVER

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)

4 BOLTS AT 90 DEGREES
3/4" DIA X 18" LONG X 3" HOOK
BOLTS TO HAVE A 3.5" PROJECTION
OUT OF THE CONCRETE.
BOLTS TO BE GALVANIZED

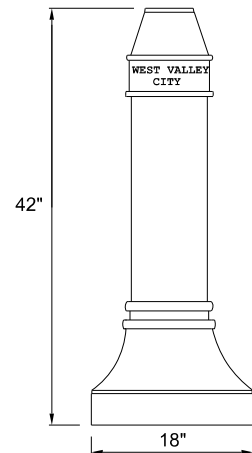


ANCHOR BASE DETAIL
12" BOLT CIRCLE
7/8" X 1" HOLES TO
ACCOMMODATE UP TO 3/4" DIA BOLT

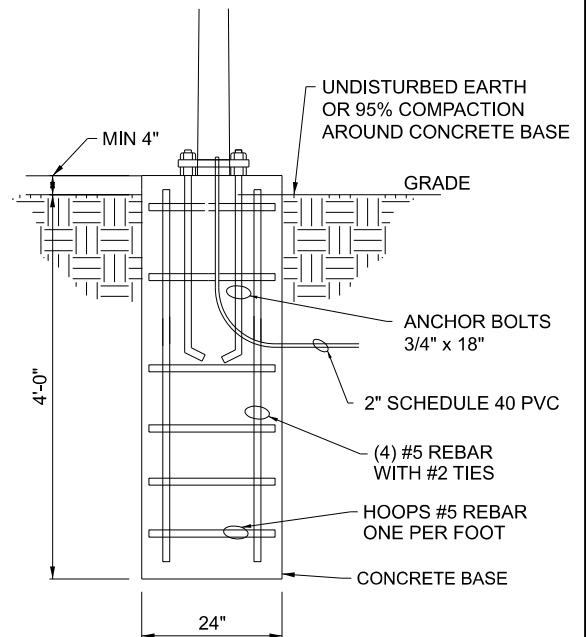
POLE ANCHOR PLATE DETAIL

ASSEMBLY COLOR: BLACK

CITY NAME:
"WEST VALLEY CITY"
TIPPED IN NON-FADING
GOLD COLOR
(5 YR WARRANTY)



DECORATIVE BASE
ENLARGED DETAIL



RECEIVED FROM MOUNTAIN STATES LIGHTING ON 2/12/2026
APPROVED BY WVC TRANSPORTATION ON 5/6/2026

SHEET NO. LP-06	STANDARD DRAWING		WEST VALLEY CITY PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION		DESIGN	____	____					
	DUAL SIDEWALK LIGHT		3600 CONSTITUTION BOULEVARD WEST VALLEY CITY, UTAH 84119-3720		CHECK	____	____					
					DRAWN	____	____					
	PROJECT NUMBER	WVC STREET LIGHTING	DESIGN		5/12/2026			REMARKS		DATE	NO.	BY
				PROFESSIONAL ENGINEER	DATE			REVISIONS				

