CITY OF
MillCreek™

Design & Construction

Standard Plans

2022

City of Mill Creek
Standard Plans

2022 Edition

The following City Standard Plans have been developed for the use in physical development activities in the City of Mill Creek. These Standard Plans and the associated general notes and requirements represent appropriate practices under most conditions, and are based upon past experiences of the City of Mill Creek, Snohomish County, and other jurisdictions. They are intended to provide safe and appropriate transportation, stormwater utility, and other engineering-related facilities and physical features.

Compliance with these City Standard Plans does not relieve a design professional of the responsibility of applying sound professional judgment to protect the safety, health, and welfare of the general public. These City Standard Plans are intended to assist, but not substitute for, competent work by design professionals. Special conditions and environmental constraints may necessitate more stringent designs and requirements than required by these City Standard Plans.

It is recognized that occasional interpretations of these City Standard Plans will be necessary. Requests for interpretation must be submitted in writing to the City Engineer. Please note that responses to requests for interpretation will be limited to refinements or explanations of meaning and/or intent of the current content. Requests for interpretation the City Engineer determines to be either suggestions for future revisions of these standards or requests to deviate from the standards for specific projects will instead be addressed as indicated in the "City General Notes and Requirements" section of these City Standard Plans.

These City Standard Plans are not intended to limit the introduction of new ideas into the City of Mill Creek. It can be anticipated that circumstances and situations may arise when alternatives may better accommodate existing conditions, overcome adverse topography, and/or allow for more cost-effective solutions without adversely affecting public safety, operations and maintenance of public road and utility systems, environmental protection, and/or aesthetics. Guidance for providing written requests to deviate from standards during the City permit application process are provided in these City Standard Plans.

The following documents published by other State and regional public agencies have been referenced in these Standard Plans and may provide additional design and construction requirements and information:

- Washington State Department of Transit (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction (latest edition)
- 2014 Revision of the Washington State Department of Ecology 2012 Stormwater Management Manual for Western Washington (SMMWW)
- December 2012 Low Impact Development Technical Guidance Manual for Puget Sound
- Rain Garden Handbook for Western Washington
- Snohomish County Engineering Design and Development Standards

Frank D. Reinart 01/13/2022

Frank D. Reinart, P.E.
City Engineer

Prepared and Distributed by:
City of Mill Creek Public Works and Development Services Department
15728 Main Street, Mill Creek, WA 98012
(425) 921-5745

January 2022

City of Mill Creek

Design and Construction Standard Plans

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City General Notes and Requirements

1. All references to "City" in these Standard Plans shall be taken to mean the City of Mill Creek, unless otherwise indicated.

2. All work and materials shall conform with the applicable requirements of the current edition of the WSDOT "Standard Specifications for Road, Bridge, and Municipal Construction", City of Mill Creek Standard Plans, and any additional development permit conditions of approval. It shall be the sole responsibility of the project/site owner, permit applicant(s)/permittee(s), and their professional architects and engineers to correct any errors, omissions, or variations not approved by the City when any such deviate from the requirements found in these Standard Plans.

3. If new and/or replacement street lights will be installed, they shall be LED fixtures unless otherwise approved by the City.

4. In accordance with Mill Creek Municipal Code (MCMC) Chapter 12.04, a City Right-of-Way (ROW) Permit is required for any work or other activities that will impact the public function and usage within the ROW, regardless of whether or not the actual work or other activities are located within the ROW. Permit applications shall be submitted to the City of Mill Creek via MyBuildingPermit.com.

5. All pedestrian facilities that are new construction shall fully comply with current ADA requirements, except in federally-recognized circumstances when the unique characteristics of terrain prevent the incorporation of accessibility features. Even in federally-recognized circumstances when the exception applies, portions of each facility that can be made accessible must still be made accessible. All exceptions must be approved by the City as part of the overall, applicable City permit application and approval process.

6. The contractor shall be responsible for providing adequate safeguards, safety devices, protective equipment, confined space entry protection, flaggers, and any other needed actions to protect the life, health, and safety of the public; and to protect property in connection and/or proximity with the performance of work. All traffic control around construction sites shall be implemented and maintained in accordance with the Manual for Uniform Traffic Control Devices (MUTCD) and City-issued ROW permit(s). All traffic control shall be subject to modification for specific locations and times by the City and by public emergency services personnel in the interest of public safety, health, and welfare.

7. All temporary traffic control systems and methods shall be designed and implemented to address public safe use by all ROW users: motor vehicles, pedestrians, and cyclists.

8. **City Pre-Construction Meeting Required:** Prior to beginning any site construction, the project/site owner, permit applicant(s)/permittee(s), their architect(s) and/or engineer(s), their contractor, and any other attendees identified as necessary for this meeting by either the project/site owner or the City shall meet with the Public Works Department for a pre-construction meeting. This meeting shall include a review of the work schedule and all required inspections and site visits by representatives of the City.

City General Notes and Requirements (Continued)

9. For all permits, contractors shall notify the City of job start no less than one (1) business day by calling 425-551-7254, or emailing permitcounter@cityofmillcreek.com.

10. A copy of the City-approved plans and all City permits must be on site and shall be promptly provided when requested by a representative of the City whenever construction is in progress.

11. Prior to any tree removal on site, all project clearing limits shall be located and protected, as required on the City-approved plans. Barrier fencing shall be placed around the driplines of all trees designated to be retained and a representative of the City shall field inspect the trees to be retained prior to commencement of clearing and grading activities.

12. In accordance with MCMC Section 15.10.075.B, where trees designated to be retained are damaged, destroyed or removed by the work or other activities, a penalty in the amount of $1,000 may be assessed per tree as determined by the City. Additionally, each tree shall be replaced at a 3:1 ratio, unless otherwise approved by the City.

13. The contractor must ensure silt, dirt, debris, or any other material does not enter catch basins and/or the public and private stormwater system(s).

14. All appropriate Best Management Practices (BMP's) for erosion and sediment control shall be installed prior to any grading or land clearing in accordance with the City-approved plans and the City-approved Stormwater Pollution Prevention Plan (SWPPP). The contractor shall perform all inspections required by the current edition of the Stormwater Management Manual for Western Washington (SMMWW) necessary for installation, upkeep and operation, maintenance and repair, and removal of BMP's. In the event additional BMP's are necessary to adequately manage temporary erosion and sediment control, BMP's shall be selected following the requirements and guidance of the current edition of the SMMWW. The SWPPP shall be updated as required by the SMMWW for any changes and additions to BMP's. All BMP's must be satisfactorily maintained until construction and landscaping is completed and the project site is in a permanently-stabilized condition with no potential on-site erosion.

15. For the wet weather season between October 1 and April 30, no soils shall remain exposed and unworked for more than two days. From May 1 through September 30, no soils shall remain exposed and unworked for more than seven days. Any unworked soil shall be stabilized with an approved BMP.

16. Public streets shall be cleaned once per day with a regenerative air vacuum sweeper or equivalent methods approved by the City. Flushing of streets with water will not be allowed.

17. Locations of existing utilities are approximate. The contractor shall contact the underground utility locate center at 811 no less than 48 hours prior to beginning of construction.

18. The contractor shall comply with all permits and other work requirements by the City of Mill Creek and other governing authorities/agencies with jurisdiction over the work.

City General Notes and Requirements (Continued)

19. **Requests to Deviate from Standards:** The City will only consider requests to deviate from the City Standard Plans as part of a permit application process. Requests must be submitted in writing to MyBuildingPermit.com along with the permit application. A separate request must be submitted for each standard that is proposed for deviation, except where the standards are related and should be evaluated as a single proposal. Request must include all supporting information and documentation to demonstrate compliance with the following criteria:

    a) The deviation will achieve the intent of these City Standard Plans;

    b) The deviation will not adversely affect safety, operation, and/or maintenance;

    c) The deviation will not entail significant modification of existing surface and/or subsurface that will be directly connected;

    d) The deviation, where it involves features that will be operated and/maintained by the City, are compatible with current City operations and maintenance resources (including, but not limited to, funds, equipment requirements for operation and maintenance, existing training, staff availability, etc.);

    e) The deviation will not adversely affect long-term and sustainable maintenance and all associated costs; and,

    f) The deviation will not adversely affect aesthetic appearance.

20. Requests for deviations from City Standard Plans that affect a project's lot yield, density, overall project scope, City zoning compliance, and/or any other land-use approval requirements recognized by SEPA must be requested during the SEPA approval process.

21. The City Engineer is the final authority for decisions on all requests to deviate from City Standards. The City Engineer reserves the right to determine whether the City has appropriate and sufficient resources available to evaluate a request to deviate from the City Standards, and may deny a request on the basis that appropriate and sufficient resources are not available at the time the request is made and/or to deliver a decision in a timely fashion. The City Engineer reserves the right to approve, approve with conditions, or deny a deviation from the City Standard Plans, in the interest of public health, safety, and welfare.

22. Written suggestions for future revisions to the City Standard Plans can be emailed or postal mailed to the City Engineer. These suggestions will be retained for consideration during a future comprehensive update to the City Standard Plans, as determined by the City.

Development Inspection General Requirements

1. All work within and/or associated with the construction work or activities shall be subject to the inspection by the City in accordance with the permit(s) issued for that work. Inspections shall conform to the following requirements, unless permit conditions of approval alter the requirements:
   a) Inspections shall be scheduled online on MyBuildingPermit.com for the applicable City-issued permit no less than one (1) business day in advance.
   b) Underground public infrastructure shall not be backfilled without a visual inspection by the City.
   c) Any work covered without prior visual inspection may be required by the City to be exposed again for City inspection.
   d) When planting trees, a visual inspection by the City is required when the root balls have been placed in the excavated pits, prior to backfilling.
   e) The contractor shall request a substantial completion inspection associated with the City-issued permit once site work for that permit has been completed. This substantial completion inspection will include identification of City punch-list items to be completed by the contractor prior to final City acceptance.
   f) The contractor shall request a physical completion inspection associated with the City-issued permit after all work, including identified punch-list items, restorations, and repair work, has been completed.

2. Documentation of compaction verification (including testing) is required for all fill placement (including trench backfill), embankment fill, concrete subgrade preparation, and asphalt paving work.
   a) Placed fill shall be compacted to a minimum of 95% of the maximum dry density, per ASTM D1557, under areas of structures and hardscape surfacing (asphalt, concrete, paver, etc.).
   b) Placed fill shall be compacted to a minimum of 90% of the maximum dry density, per ASTM D1557, in landscape or unpaved areas (except within areas of LID facilities and BMP's, unless otherwise approved by the City).
   c) Asphalt pavement shall be compacted to a minimum of 91% of the maximum (rice) density.
   d) The contractor is responsible for providing documentation to the City that required fill compaction has been achieved, including providing all compaction testing services. Satisfactory documentation and test reports shall be provided to the City prior to final acceptance.

3. Material sampling and testing is required for all concrete work within the public right-of-way.
   a) Sampling and testing requirements shall be in accordance with Section 6-02.3 of the WSDOT Standard Specifications.
   b) The contractor is responsible for providing material testing services, and shall provide satisfactory test reports to the City prior to final acceptance.

As-Built Record Drawing and Document General Requirements

1. The as-build record drawings shall display the phrase "RECORD DRAWING" near the title block in readily recognizable print with the corresponding date and surveyor's and/or project engineer's signature.

2. The as-built record drawings and documents shall show the final location of all infrastructure located within the public right-of-way. The as-built drawings shall include, but not be limited to: streets, curbs, storm drain facilities and utilities, City-owned street lights, medians, sidewalks, signs, fences and railings, buildings and structures, etc. Final elevations and locations of roadways and stormwater management/drainage facilities shall be measured by a licensed surveyor.

3. Elevations of the roadway centerlines and curb flow lines shall be measured every 50 feet after the final lift of asphalt has been placed, including the beginning and end of both horizontal and vertical curves and all points of intersection.

4. The as-built drawings shall include the approved Datum with benchmark and location. All as-built record drawing elevations must be based on the Snohomish County datum requirements of the Snohomish County Engineering Design and Development Standards.

5. The as-built drawings and information of all storm management conveyance facilities such as catch basins, inlets, pipes and swales shall include all pipe invert and frame/lid rim elevations, as well as, the material type(s) and size(s). The as-built drawings and information for all open channels and swales shall also include cross-sections at appropriate locations to verify design requirements.

6. The final as-built storage volume(s) and dimensions of all stormwater detention, flow-control, and water quality facilities, along with the orifice size(s) and elevations(s) of control structure, shall be field measured and included on the as-built drawings.

7. As-built drawing information can either be shown by adding new information to a set of the City-approved drawings or creating a new separate plan drawing set with the City-approved drawings included and with all changes/differences noted with "(CR)" following all revised and/or changed entries. For elevation differences, a line should cross out old elevations and new elevations should be entered next to the original information. Original information shall not be removed from the City approved plans unless approved by the City.

8. As-built record drawings and all other as-built documentation shall be submitted electronically to the City in one complete file using the Portable Document Format (pdf) format. Record drawings and documentation shall not be restricted or password protected.

Street

City of Mill Creek
Roadway Functional Classification

Road Classification	Roadway Function	Minimum Functional Elements	Minimum Roadway Dimensions
Private Drive	Direct access for up to four residential lots with a maximum length of 200 feet	(1) TL = 12'	12' paved, 20' min clearance
Private Alley	Serves as the primary vehicular access to the rear of single family units and/or has a length greater than 200 feet	(1) TL = 12'	12' paved, 20' min clearance
Private Road	Direct access to five or more private lots in residential areas	(2) TL = 20' CG = 2'	20' curb to curb*
Residential (parking on one side only)	Provides direct access to abutting land and access to the higher classification facility. Offers the lowest level of mobility and through traffic movement is deliberately discouraged.	(1.5) TL = 18' (1) PL = 8' CG = 2' (2) PS = 10' (2) SW = 10'	26' curb to curb* 48' ROW **Note**: Overlap of travel lanes is for traffic calming.
Collector (no on street parking)	Provides both land access service and traffic circulation within residential neighborhoods and commercial and industrial areas.	(2) BL = 10' (2) TL = 22' CG = 1' (2) PS = 10' (2) SW = 10 – 12'	32' curb to curb* 53' – 55' ROW
Minor Arterial (no on street parking)	Interconnects with and augments major arterials and provides service to trips of moderate length at a somewhat lower level of travel mobility than principal arterials.	(2) BL = 10' (2) TL = 22' (1) LM = 11' CG = 1' (2) PS = 10' (2) SW = 10 – 12'	43' curb to curb* 64 – 66' ROW
Major Arterial (no on street parking)	Serves the major centers of activity of a metropolitan area, the highest traffic volume corridors, and the longest trip desires and carry a high proportion of the total urban area travel on a minimum of roadway mileage. Carries the major portion of trips entering and leaving the urban area, as well as the majority of through movements.	(2) BL = 10' (2) TL = 24' (1) LM = 12' CG = 1' (2) PS = 10' (2) SW = 10 – 12'	46' curb to curb* 67 – 69' ROW

*Curb to curb dimension is measured from the gutter flow line.

NOTE: The above roadway elements and dimensions are only intended as minimums. Additional elements, such as on street parking or medians, can be added on a case by case basis depending on the land use of the development.

Roadway Functional Element Key

Functional Element	Abbreviation	Dimensions
Bicycle Lane	BL	5 feet (with striped separation)
Landscape Median/Turn Lane	LM	10-12 feet
Parking Lane	PL	7-8 feet*
Planter Strip	PS	5 feet
Sidewalk/Trail	SW	5-10 feet
Travel Lane	TL	10-12 feet*
Curb and Gutter (for ROW)	CG	1-2 feet (vertical or rolled, respectively)

* Minimum dimensions are consistent with Washington State Department of Transportation (WSDOT) and the American Association of State Highway and Transportation Officials (AASHTO) Standards

The purpose of these requirements are to provide a basic framework and criteria in which a roadway is designed; in order to meet the function of the land use, physical site characteristics, character of the neighborhood and safety. All roadways must meet the minimum requirements. Approval of the roadway design will occur through the land development approval process, pursuant to MCMC Title 14.

Roadway Design Criteria

Roadways

1. Roadway design shall meet emergency service access requirements with a 20' minimum clearance width.
2. The roadway design shall serve the function and accessibility needs of the land use(s) and be consistent with the Streetscape Element of the City of Mill Creek Comprehensive Plan.
3. Travel lane width shall be designed to meet the travel speed of the roadway and average daily trips.
4. Accessibility for vehicles, pedestrians and other modes of transportation shall be provided.
5. Walkability shall be addressed in the design by using rolled or vertical curbs, planter strips and sidewalks as deemed necessary to create the most efficient use of space for a safe environment.
6. On-street parking shall be provided as necessary and consider the availability and limitations of parking. Such factors to consider may include the availability of parking on private property, CC&R's, existing and proposed land uses (public facilities and parks) and shared parking options.
7. Street lighting shall be provided for all roadway classifications.
8. Traffic calming measures shall be constructed to ensure speed limits are observed.
9. Parking shall be encouraged on the right hand side of the street and shall be reviewed on an individual basis for each development.

Sidewalks

1. All residential, collector, arterial streets, and state highways shall have sidewalks along both sides, where practical and appropriate.
2. Mid-block crossings shall be allowed with approval from the City Engineer.
3. Sidewalks shall be located in a way that promotes public safety.

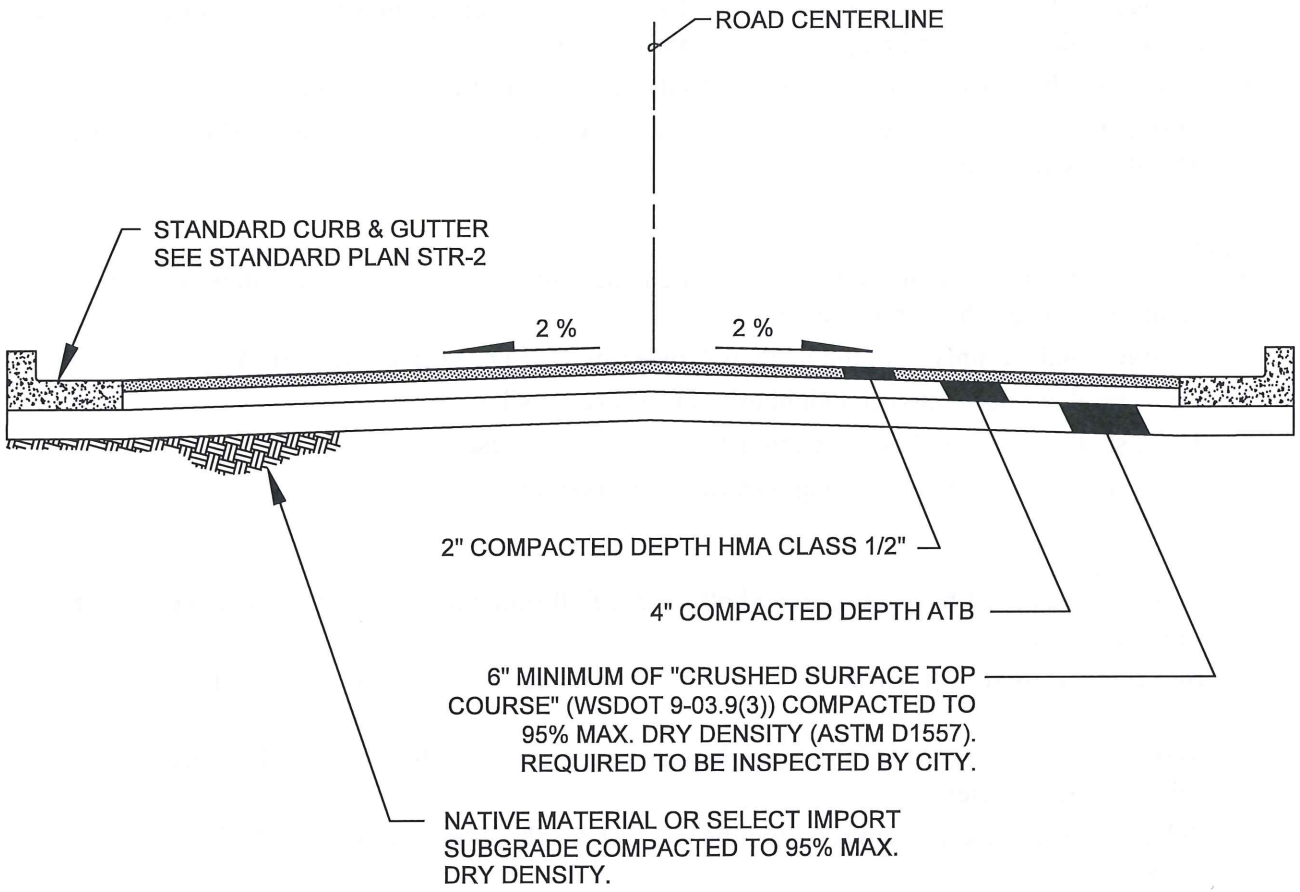
4. All sidewalks shall comply with the Federal Americans with Disabilities Act (ADA) requirements.
5. Sidewalks shall be "transit oriented" (i.e., located to connect neighborhoods to transit stops and include pedestrian boarding pads where appropriate).
6. Sidewalks shall be provided for easy and safe access to all transit bus stop sites.
7. Curb extensions should be constructed at corners and crosswalks to "calm" traffic and reduce pedestrian exposure.

Trails

1. Trails shall connect public sidewalks, public roads/bicycle lanes, public facilities, and other public areas (i.e., shopping center).
2. All trails shall comply with the Federal Americans with Disabilities Act (ADA).
3. Trails shall connect between neighborhoods where possible.
4. Trails shall be designed to accommodate bicycle and pedestrian use.
5. Trails shall be located within major open space corridors.

Bicycle Lanes

1. Bicycle Lanes shall be located along both sides of all state highways, arterials, and collectors, where practical.
2. Bicycle lanes shall be provided where possible to interconnect with adjoining jurisdictions' bicycle lanes.
3. New road construction shall provide adequate pavement width to allow for the shared use by vehicles and bicycles.
4. Public trails/multi-use sidewalks shall be used where shoulder area is not suitable for bicycle lanes.



NOTES:

1) HOT MIX ASPHALT CLASS $\frac{1}{2}$" MAY BE USED IN LIEU OF ATB.
2) MAXIMUM ALLOWABLE GRADE OF A STREET IS 15%, UNLESS APPROVED BY CITY.
3) WHEN PLACING NEW CURB AND GUTTER ALONG EXISTING ROADWAY, THE ASPHALT SHOULD BE SAWCUT AT A WIDTH TO ALLOW FOR 20" TO 24" ASPHALT PATCH AS MEASURED FROM THE OUTER EDGE OF THE GUTTER.

APPROVED FOR USE

04/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STREET

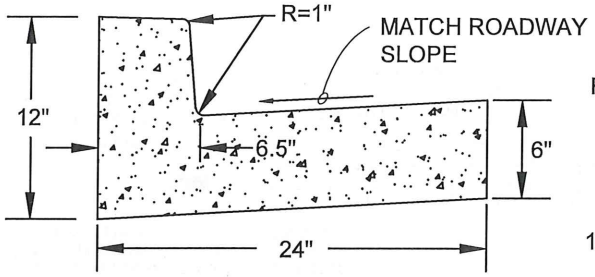
TYPICAL ROAD CROSS SECTION

NOT TO SCALE

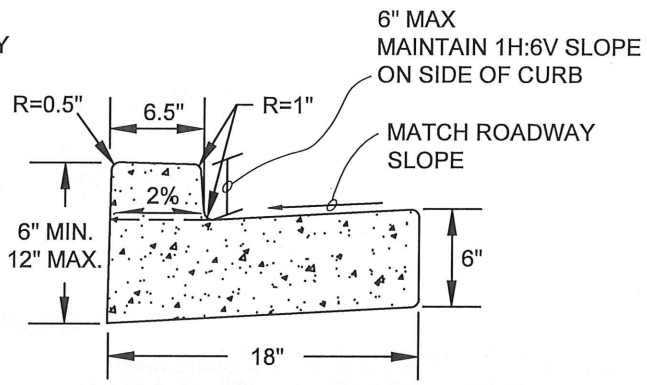
PUBLIC WORKS DEPARTMENT

PLAN NO. **STR-1**

REV. DATE: 9/13/2021

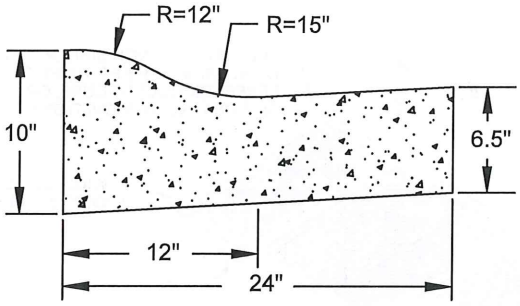


VERTICAL CURB & GUTTER

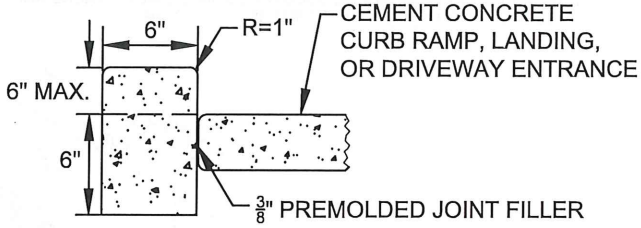


DEPRESSED CURB & GUTTER

AT CURB RAMPS AND DRIVEWAY ENTRANCES



ROLLED CURB & GUTTER

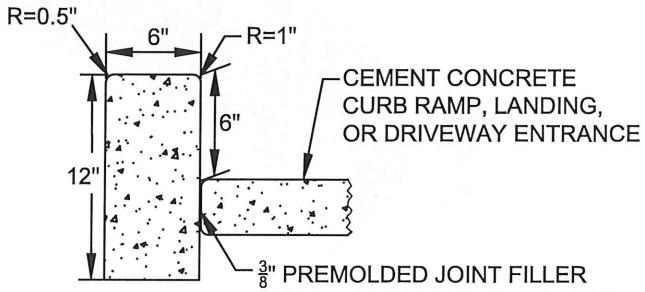


CEMENT CONCRETE PEDESTRIAN CURB

AT CURB RAMPS, LANDINGS, AND DRIVEWAY ENTRANCES

NOTES:

1. CONCRETE SHALL BE CLASS 3000 AIR-ENTRAINED.
2. BASE SHALL BE CRUSHED SURFACING TOP COURSE. PER WSDOT SEC. 9-03.9(3) WITH A MINUMUM DEPTH OF 4". IN-SITU NATIVE MATERIAL MAY BE USED FOR A BASE IF APPROVED BY THE CITY. SUB-GRADE COMPACTION SHALL MEET A 95% MAX. DRY DENSITY (PER ASTM D1557).
3. STEEL FORMS SHALL BE USED ON ALL STRAIGHT SECTIONS. WOOD FORMS SHALL BE USED ON RADIUS.
4. FULL DEPTH EXPANSION JOINTS SHALL BE PLACED AT 10 FT. CENTER TO CENTER, AT THE TOP OF EACH DRIVEWAY, AT TOP OF ACCESS RAMPS, AND ON BOTH SIDES OF A CATCH BASIN. (JOINT MATERIAL SHALL BE MIN. 3/8" PREMOLDED JOINT MATERIAL FACTORY CUT TO THE SHAPE OF THE CURB. STRIPS OF JOINT MATERIAL SHALL NOT BE STACKED).
5. FINISH SHALL BE BROOMED WITH TOOLED EDGES. ALL JOINTS SHALL BE CLEAN.



CEMENT CONCRETE PEDESTRIAN CURB

APPROVED FOR USE

01/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STREET

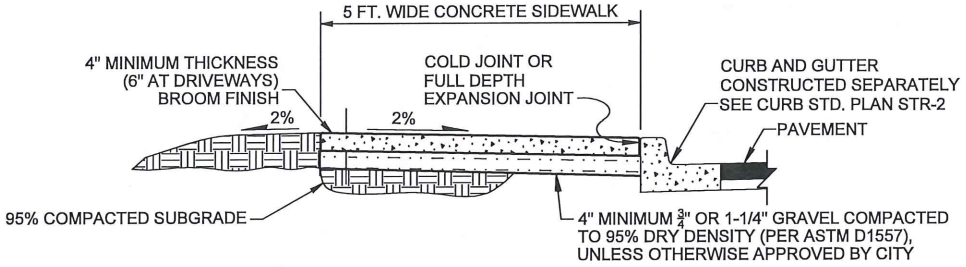
CEMENT CONCRETE CURBS

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

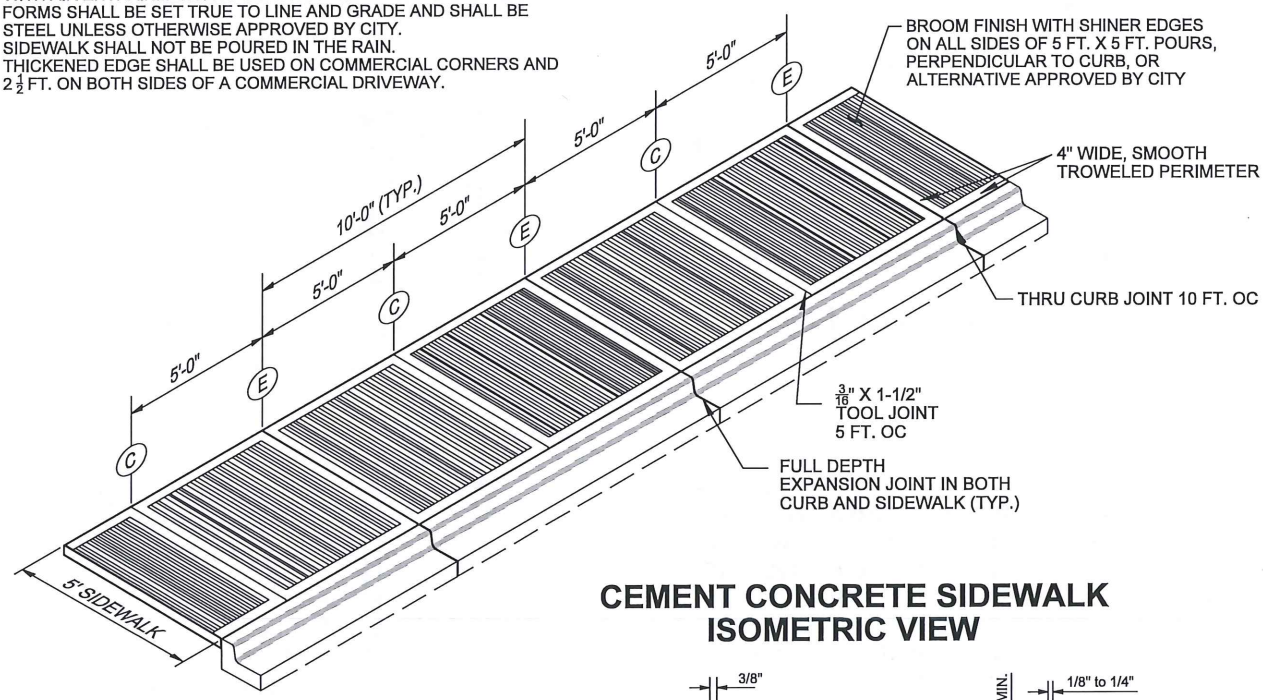
PLAN NO.
STR-2

REV. DATE:
10/12/2021

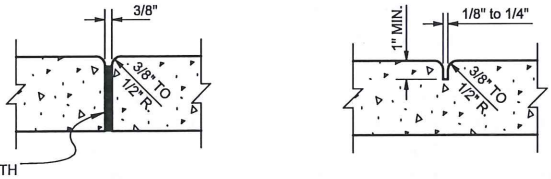


CEMENT CONCRETE SIDEWALK SECTION

NOTES:
1) SIDEWALK AND CURB & GUTTER CANNOT BE POURED MONOLITHICALLY. EXPANSION JOINT WILL BE REQUIRED WHEN CONCRETE SIDEWALK IS SURROUNDED BY OTHER HARD SURFACES (E.G. DRIVEWAY); OR AS APPROVED BY CITY.
2) CONCRETE SHALL BE CEMENT CONCRETE CLASS 3000 PSI MINIMUM, WITH AIR ENTRAINMENT. NO COLOR OR TINT SHALL BE ADDED.
3) FORMS SHALL BE SET TRUE TO LINE AND GRADE AND SHALL BE STEEL UNLESS OTHERWISE APPROVED BY CITY.
4) SIDEWALK SHALL NOT BE POURED IN THE RAIN.
5) THICKENED EDGE SHALL BE USED ON COMMERCIAL CORNERS AND 2½ FT. ON BOTH SIDES OF A COMMERCIAL DRIVEWAY.



CEMENT CONCRETE SIDEWALK ISOMETRIC VIEW



MIN. SIDEWALK WIDTHS

RESIDENTIAL & COMMERCIAL = 5 FT.
USE AS MULTI-PURPOSE TRAIL = 10 FT.

(E) EXPANSION JOINT

(C) CONTRACTION JOINT

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/22

CITY OF Mill Creek WASHINGTON

STREET

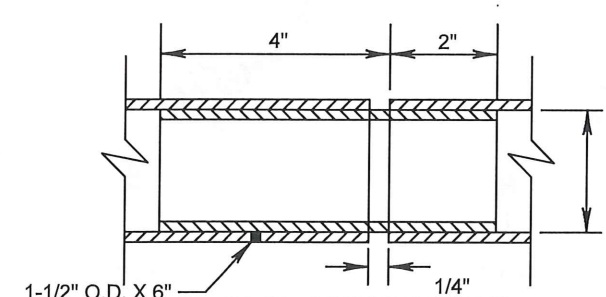
CEMENT CONCRETE SIDEWALK

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

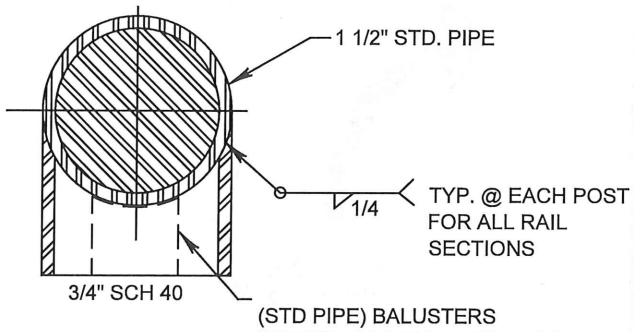
PLAN NO.
STR-3

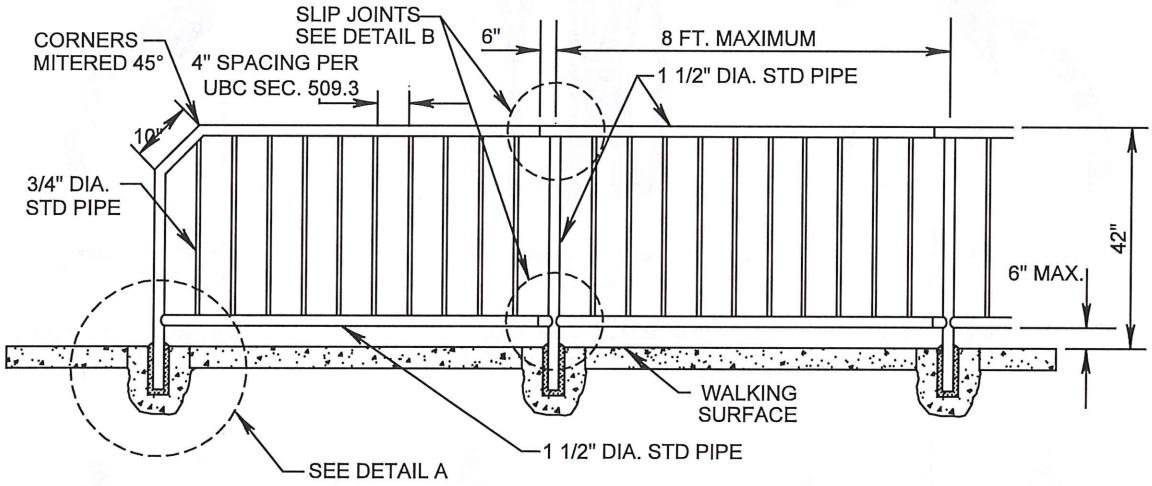
REV. DATE:
09/13/2021

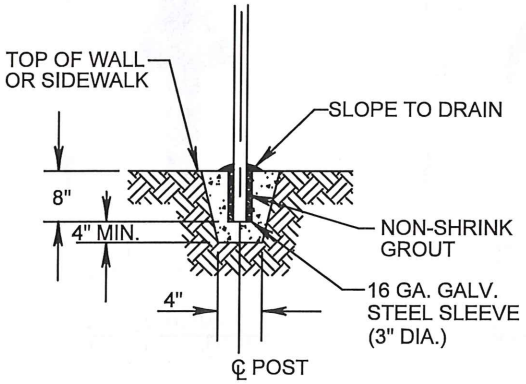


SLIP JOINT DETAIL

DETAIL B







DETAIL A

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

NOTES:

GALV. STEEL

1. GALVANIZED STEEL PEDESTRIAN RAIL SHALL CONFORM TO ASTM A120. ALL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE AWS D1.1-72. AFTER FABRICATION EACH SECTION OF RAILING SHALL BE HOT-DIPPED GALVANIZED WITH A MINIMUM ZINC COATING OF 2 OUNCES PER SQUARE FOOT. ALL BURRS AND SHARP EDGES SHALL BE REMOVED PRIOR TO GALVANIZING.
2. FIELD WELDS SHALL BE GALVANIZED WITH 3 COATS OF SUCH MATERIALS AS "GALVALLOY" OR GALVICON. PAINTING OF WELDS WILL NOT BE PERMITTED.
3. HORIZONTAL RAILS AND VERTICAL SUPPORT POSTS SHALL BE BE 2" DIAMETER AND BALUSTERS SHALL BE 1" DIAMETER STANDARD WEIGHT GALVANIZED STEEL PIPE. RAILS, POSTS AND BALUSTERS SHALL BE MACHINE CUT TO PROVIDE A UNIFORM LENGTH PRIOR TO ASSEMBLY.
4. RAILING SHALL BE ERECTED AND ADJUSTED, IF NECESSARY, TO ASSURE A CONTINUOUS LINE AND GRADE. FINISHED HEIGHT IS TO BE 42" ABOVE PEDESTRIAN SURFACE. EXPANSION JOINTS SHALL BE PROVIDED AT INTERVALS, AS SHOWN.

CITY OF Mill Creek WASHINGTON

STREET

PEDESTRIAN HANDRAIL

NOT TO SCALE

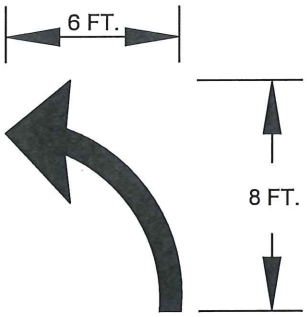
PUBLIC WORKS DEPARTMENT

PLAN NO.

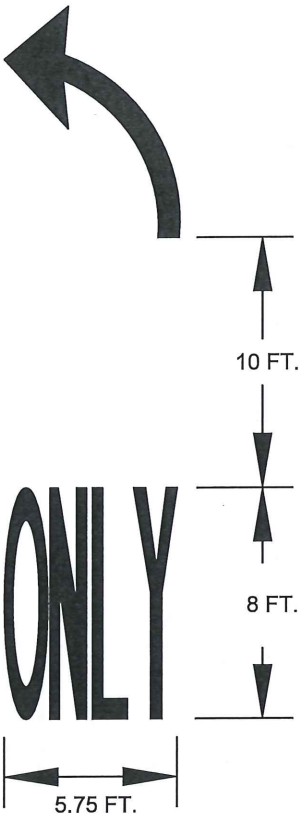
STR - 4

REV. DATE:

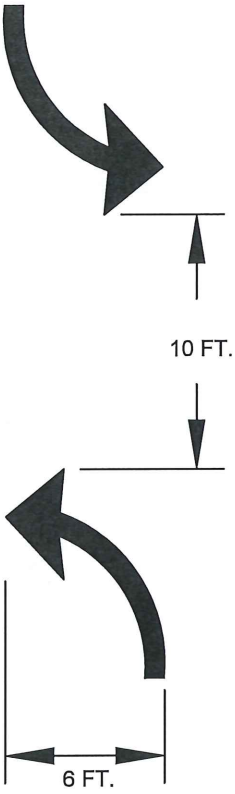
12/29/2021



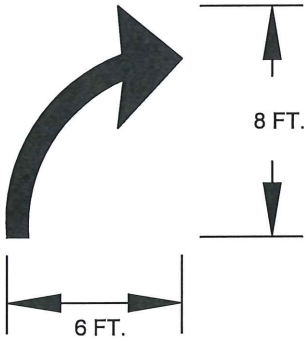
THERMOPLASTIC
LEFT TURN ARROW



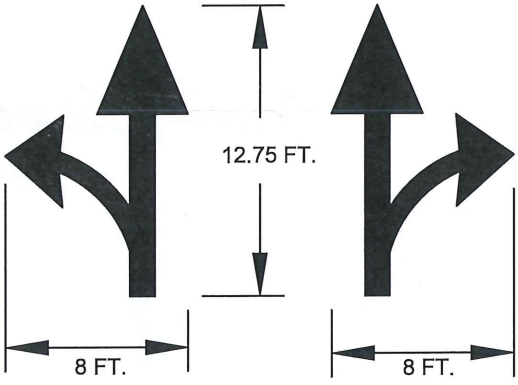
THERMOPLASTIC LETTERS
AND ARROW FOR TURN LANE



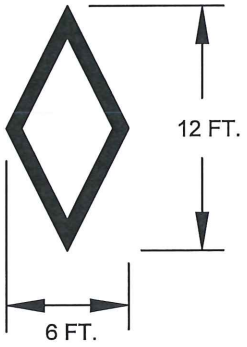
TWO-WAY LEFT TURN LANE
ARROW SPACING



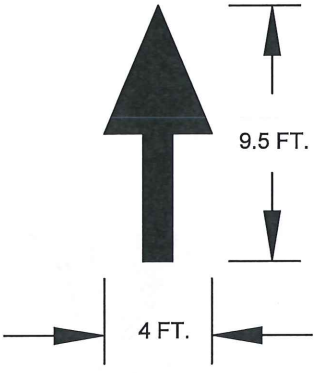
THERMOPLASTIC
RIGHT TURN ARROW



THERMOPLASTIC THROUGH/LEFT ARROW &
THROUGH/RIGHT ARROW



THERMOPLASTIC
HOV SYMBOL



THERMOPLASTIC
THROUGH ARROW

APPROVED FOR USE

01/13/2022

MILL CREEK CITY ENGINEER

NOTES:
1. PAVEMENT SHALL BE SWEPT BEFORE APPLICATION.
2. LOCATIONS SHALL BE PRE-APPROVED BY THE CITY PRIOR TO INSTALLATION.

CITY OF Mill Creek WASHINGTON

STREET

LANE MARKINGS

NOT TO SCALE

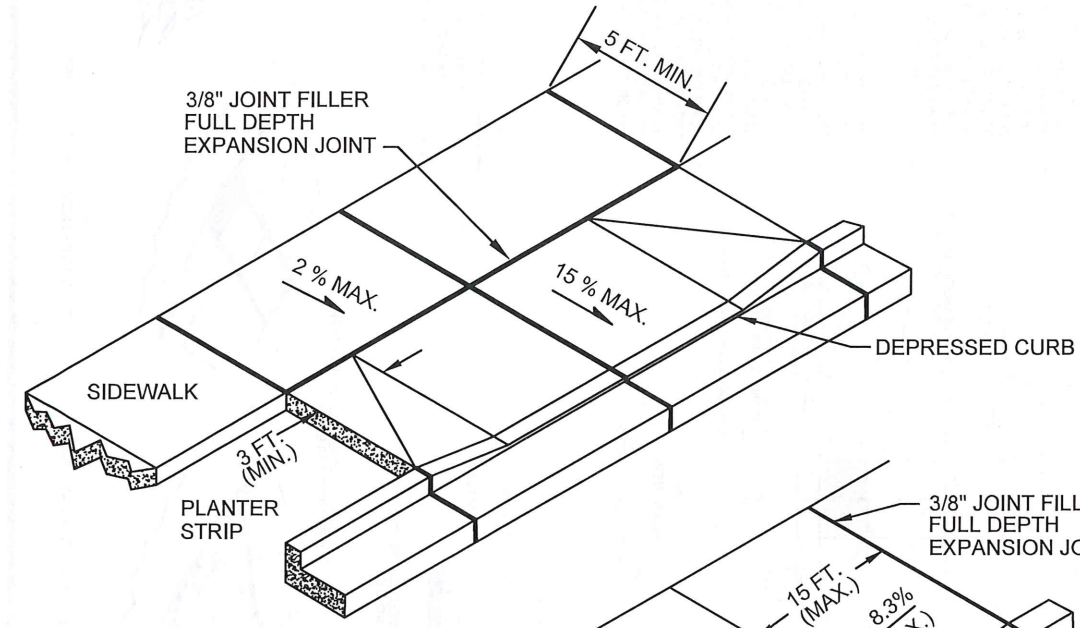
PUBLIC WORKS DEPARTMENT

PLAN NO.
STR - 5

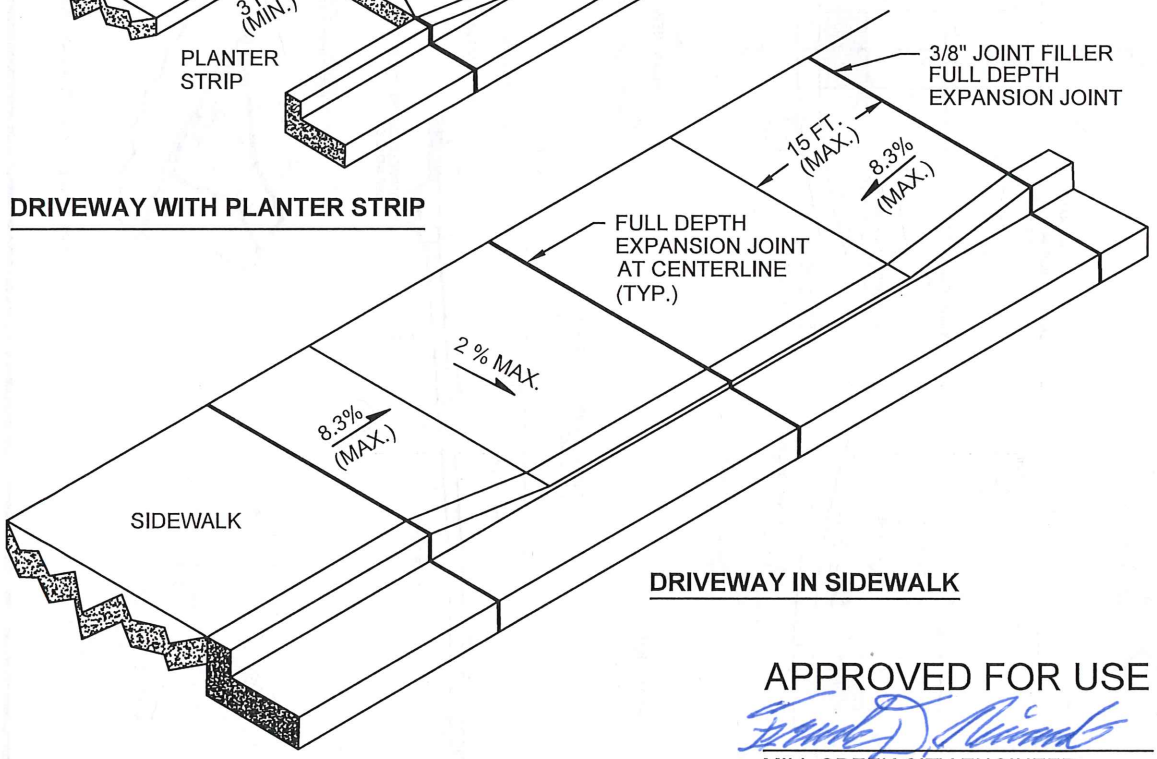
REV. DATE:
10/21/2021

NOTES:

1) ALL DRIVEWAYS (AND WHEEL CHAIR RAMPS) MUST BE DESIGNED TO MEET ADA STANDARDS. USE WSDOT STANDARD PLANS FOR LAYOUTS NOT SHOWN ON THIS PLAN WITH CLASS 3,000 PSI CONCRETE.
2) LANDING SHALL BE A MINIMUM OF 5 FT. BY 5 FT.
3) EXPANSION JOINT SPACING NOT TO EXCEED 10 FT.
4) CURB AND APRON SHOULD BE POURED SEPARATELY. MONOLITHIC CURB AND APRON IS NOT ALLOWED.
5) DRIVEWAY SHALL BE 6" THICK.
6) BROOM FINISH SURFACE WITH TOOLED JOINTS AND EDGES.
7) THE MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 15 FT. TO AVOID CHASING THE SLOPE INDEFINITELY WHEN CONNECTING TO STEEP ROAD AND CURB GRADES.



DRIVEWAY WITH PLANTER STRIP



DRIVEWAY IN SIDEWALK

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STREET

VERTICAL CURB DRIVEWAY

NOT TO SCALE

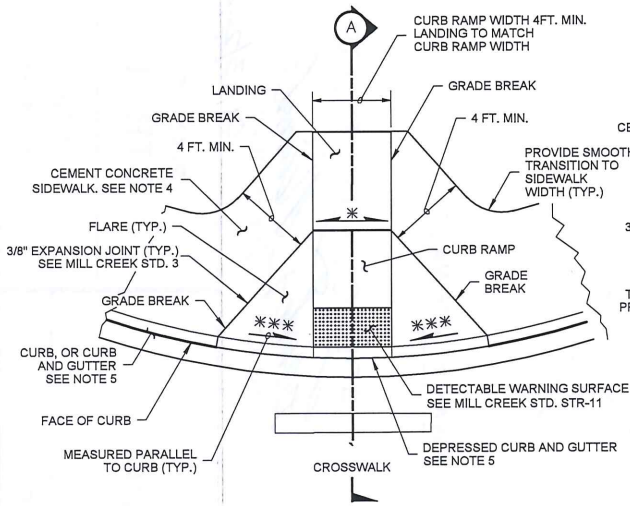
PUBLIC WORKS DEPARTMENT

PLAN NO.

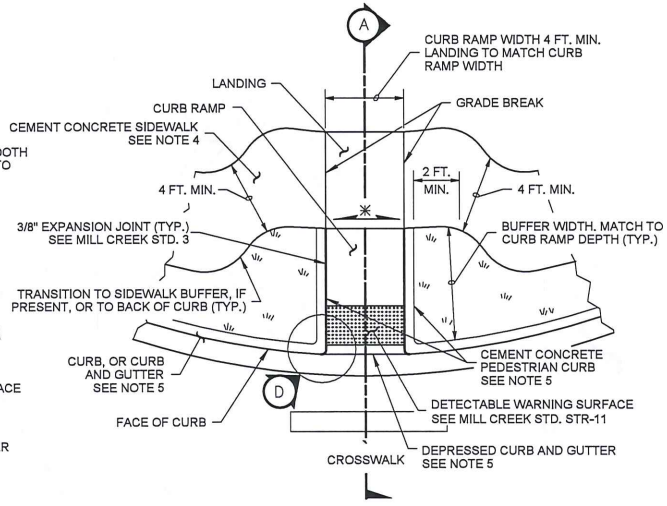
STR - 6

REV. DATE:

11/23/2021



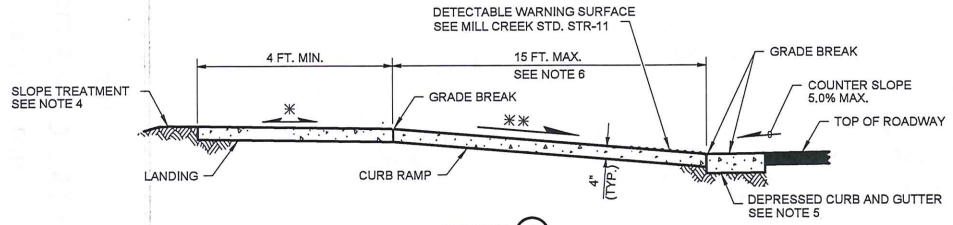
PLAN VIEW
TYPE PERPENDICULAR A



PLAN VIEW
TYPE PERPENDICULAR B
(SHOWN WITH BUFFER)

NOTES:

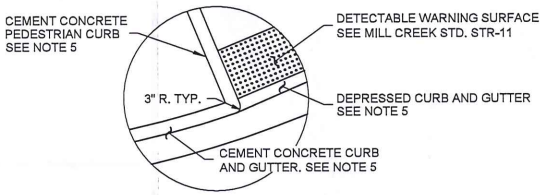
1. AT MARKED CROSSWALKS, THE CONNECTION BETWEEN THE CURB RAMP AND THE ROAD WAY MUST BE CONTAINED WITHIN THE WIDTH OF THE CROSSWALK MARKINGS.
2. WHERE "GRADE BREAK" IS CALLED OUT, THE ENTIRE LENGTH OF THE GRADE BREAK BETWEEN THE TWO ADJACENT SURFACE PLANES SHALL BE FLUSH.
3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES ON ANY PART OF THE CURB RAMP OR LANDING, OR IN FRONT OF THE CURB RAMP WHERE IT CONNECTS TO THE ROADWAY.
4. FOR CONCRETE SIDEWALK DETAILS, SEE MILL CREEK STD. STR-3.
5. FOR CURB, CURB AND GUTTER, DEPRESSED CURB AND GUTTER, AND PEDESTRIAN CURB DETAILS, SEE MILL CREEK STD. STR-2.
6. THE CURB RAMP LENGTH IS NOT REQUIRED TO EXCEED 15 FT. WHEN APPLYING THE 15 FT. MAX. LENGTH, THE RUNNING SLOPE OF THE CURB RAMP IS ALLOWED TO EXCEED 8.3%. USE A SINGLE CONSTANT SLOPE FROM THE BOTTOM OF THE RAMP TO TOP OF RAMP TO MATCH INTO THE LANDING OVER A HORIZONTAL DISTANCE OF 15 FT. DO NOT INCLUDE THE ABUTTING LANDING IN THE 15 FT. MAX MEASUREMENT.
7. CURB RAMPS AND LANDINGS SHOULD HAVE A BROOM FINISH.
8. PEDESTRIAN CURB MAY BE OMITTED IF THE GROUND SURFACE AT THE BACK OF THE CURB RAMP AND/OR LANDING WILL BE AT THE SAME ELEVATION AS THE CURB RAMP OR LANDING AND THERE WILL NOT BE MATERIAL TO RETAIN.



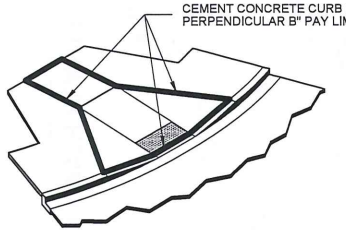
SECTION (A)

LEGEND

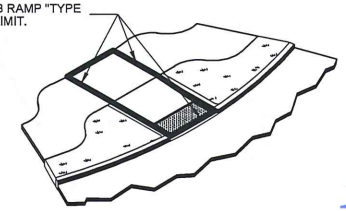
⟷	SLOPE IN EITHER DIRECTION
✳	1.5% OR FLATTER REC. FOR DESIGN/FORMWORK (2% MAX.)
✳✳	7.5% OR FLATTER REC. FOR DESIGN/FORMWORK (8.3% MAX.)
✳✳✳	9.5% OR FLATTER REC. FOR DESIGN/FORMWORK (10% MAX.)



CURB RADIUS DETAIL (D)



ISOMETRIC VIEW
TYPE PERPENDICULAR A PAY LIMIT



ISOMETRIC VIEW
TYPE PERPENDICULAR B PAY LIMIT

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

STREET

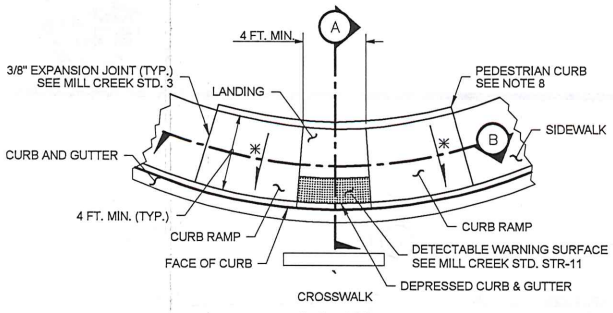
PERPENDICULAR CURB RAMP

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

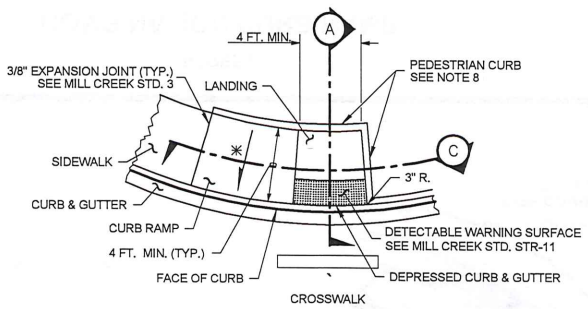
PLAN NO.
STR - 7

REV. DATE:
10/11/2021



PLAN VIEW

TYPE PARALLEL A

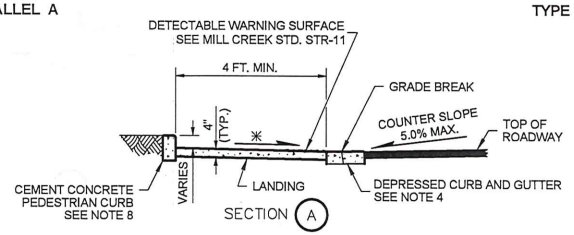


PLAN VIEW

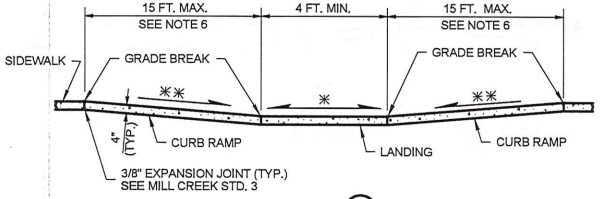
TYPE PARALLEL B

NOTES

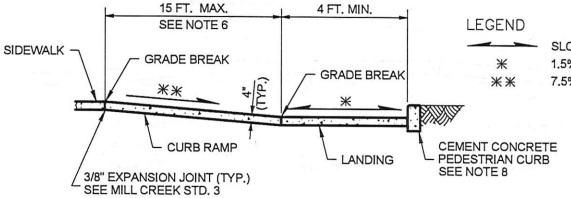
1. AT MARKED CROSSWALKS, THE CONNECTION BETWEEN THE LANDING AND ROADWAY MUST BE CONTAINED WITHIN THE WIDTH OF THE CROSSWALK MARKINGS.
2. WHERE "GRADE BREAK" IS CALLED OUT, THE ENTIRE LENGTH OF THE GRADE BREAK BETWEEN THE TWO ADJACENT SURFACE PLANES SHALL BE FLUSH.
3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES ON ANY PART OF THE CURB RAMP OR LANDING, OR IN THE DEPRESSED CURB AND GUTTER WHERE THE LANDING CONNECTS TO THE ROADWAY.
4. FOR CURB, CURB AND GUTTER, DEPRESSED CURB AND GUTTER, AND PEDESTRIAN CURB DETAILS, SEE MILL CREEK STD. STR-2.
5. FOR CONCRETE SIDEWALK DETAILS, SEE MILL CREEK STD. STR-3.
6. THE CURB RAMP LENGTH IS NOT REQUIRED TO EXCEED 15 FT. WHEN APPLYING THE 15 FT. MAX. LENGTH, THE RUNNING SLOPE OF THE CURB RAMP IS ALLOWED TO EXCEED 8.3%. USE A SINGLE CONSTANT SLOPE FROM BOTTOM OF RAMP TO TOP OF RAMP TO MATCH INTO THE SIDEWALK OVER A HORIZONTAL DISTANCE OF 15 FT. DO NOT INCLUDE ABUTTING LANDING IN THE 15-FT MAX MEASUREMENT. WHEN A RAMP IS CONSTRUCTED ON A RADIUS, THE 15 FT. MAX. LENGTH IS MEASURED ON THE INSIDE RADIUS ALONG THE BACK OF THE WALKWAY.
7. CURB RAMP, LANDING, AND FLARES SHALL RECEIVE BROOM FINISH.
8. PEDESTRIAN CURB MAY BE OMITTED IF THE GROUND SURFACE AT THE BACK OF THE CURB RAMP AND/OR LANDING WILL BE AT THE SAME ELEVATION AS THE CURB RAMP OR LANDING AND THERE WILL BE NO MATERIAL TO RETAIN.



SECTION (A)



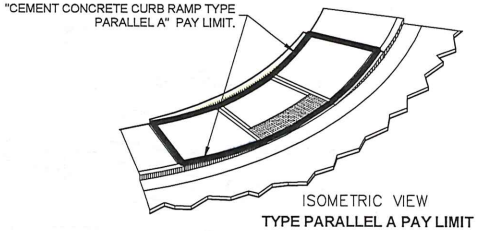
SECTION (B)



SECTION (C)

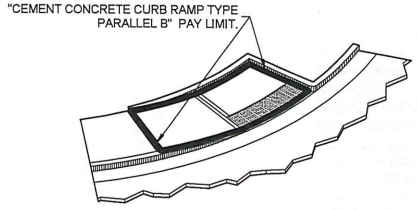
LEGEND

- SLOPE IN EITHER DIRECTION
- ✳ 1.5% OR FLATTER REC. FOR DESIGN/FORMWORK (2% MAX.)
- ✳✳ 7.5% OR FLATTER REC. FOR DESIGN/FORMWORK (8.3% MAX.)



ISOMETRIC VIEW

TYPE PARALLEL A PAY LIMIT



ISOMETRIC VIEW

TYPE PARALLEL B PAY LIMIT

APPROVED FOR USE

Brandon D. Clement

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STREET

PARALLEL CURB RAMP

NOT TO SCALE

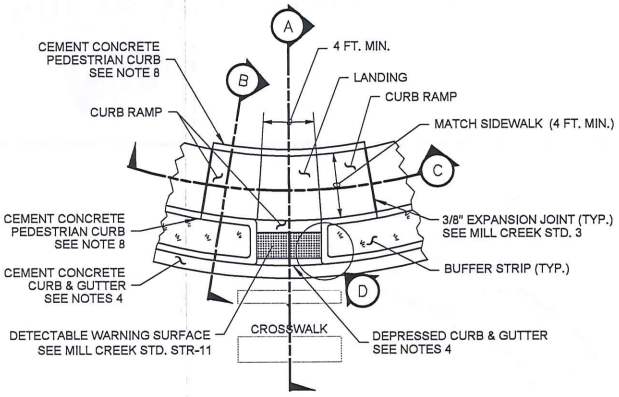
PUBLIC WORKS DEPARTMENT

PLAN NO.

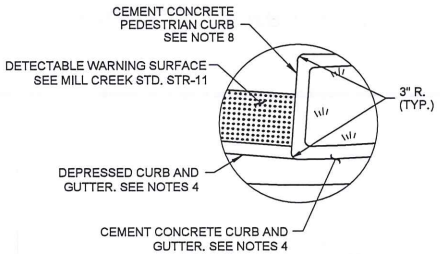
STR - 8

REV. DATE:

10/11/2021



PLAN VIEW
TYPE COMBINATION
WITH BUFFER



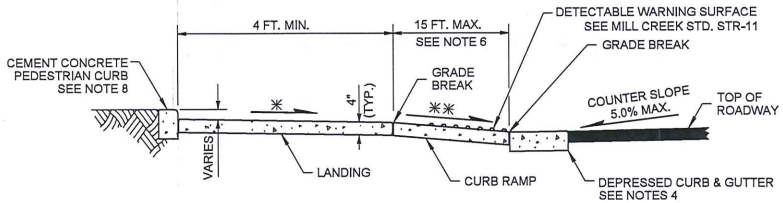
DETAIL (D)
CURB RADIUS DETAIL

LEGEND

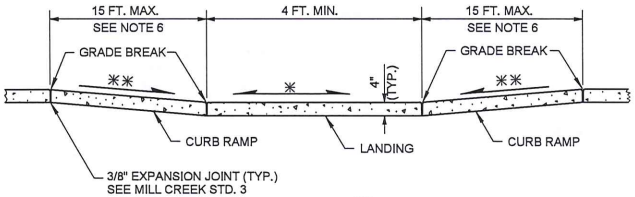
SLOPE IN EITHER DIRECTION
✳ 1.5% OR FLATTER REC. FOR DESIGN/FORMWORK (2% MAX.)
✳✳ 7.5% OR FLATTER REC. FOR DESIGN/FORMWORK (8.3% MAX.)

NOTES:

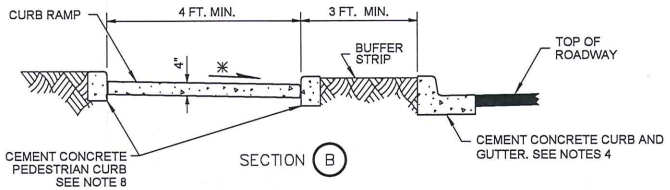
1. AT MARKED CROSSWALKS, THE CONNECTION BETWEEN THE CURB RAMP AND THE ROADWAY MUST BE CONTAINED WITHIN THE WIDTH OF THE CROSSWALK MARKINGS.
2. WHERE "GRADE BREAK" IS CALLED OUT, THE ENTIRE LENGTH OF THE GRADE BREAK BETWEEN THE TWO ADJACENT SURFACE PLANES SHALL BE FLUSH.
3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES ON ANY PART OF THE CURB RAMP OR LANDING, OR IN THE DEPRESSED CURB AND GUTTER WHERE THE LANDING CONNECTS TO THE ROADWAY.
4. FOR CURB, CURB AND GUTTER, DEPRESSED CURB AND GUTTER, AND PEDESTRIAN CURB DETAILS, SEE MILL CREEK STD. STR-2.
5. FOR CONCRETE SIDEWALK DETAILS, SEE MILL CREEK STD. STR-3.
6. THE CURB RAMP LENGTH IS NOT REQUIRED TO EXCEED 15 FT. WHEN APPLYING THE 15 FT. MAX. LENGTH, THE RUNNING SLOPE OF THE CURB RAMP IS ALLOWED TO EXCEED 8.3%. USE A SINGLE CONSTANT SLOPE FROM BOTTOM OF RAMP TO TOP OF RAMP TO MATCH INTO THE SIDEWALK OVER A HORIZONTAL DISTANCE OF 15 FT. DO NOT INCLUDE ABUTTING LANDING IN THE 15-FT MAX MEASUREMENT. WHEN A RAMP IS CONSTRUCTED ON A RADIUS, THE 15 FT. MAX. LENGTH IS MEASURED ON THE INSIDE RADIUS ALONG THE BACK OF THE WALKWAY.
7. CURB RAMP, LANDING, AND FLARES SHALL RECEIVE BROOM FINISH.
8. PEDESTRIAN CURB MAY BE OMITTED IF THE GROUND SURFACE AT THE BACK OF THE CURB RAMP AND/OR LANDING WILL BE AT THE SAME ELEVATION AS THE CURB RAMP OR LANDING AND THERE WILL BE NO MATERIAL TO RETAIN.



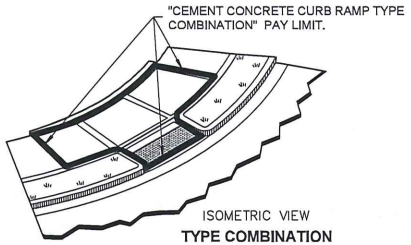
SECTION (A)



SECTION (C)



SECTION (B)



ISOMETRIC VIEW
TYPE COMBINATION PAY LIMIT

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STREET

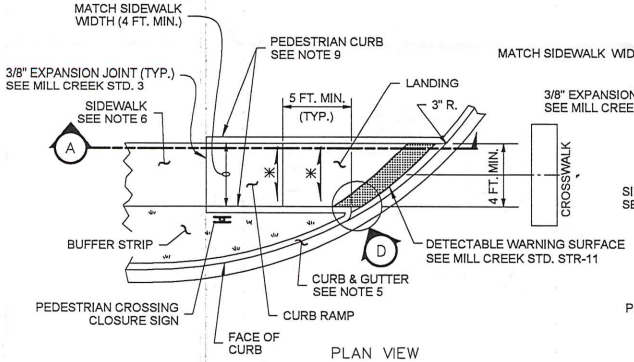
COMBINATION CURB RAMP

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

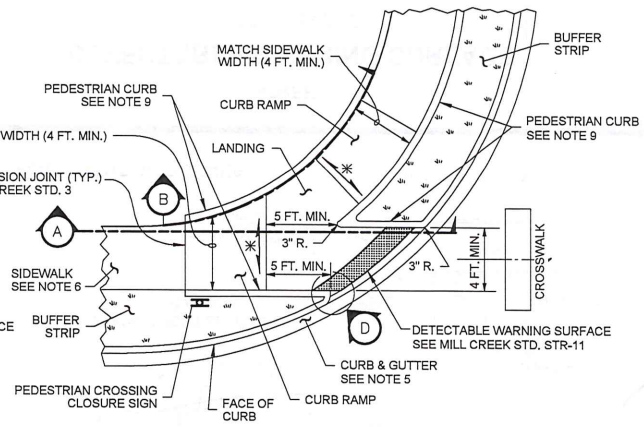
PLAN NO.
STR - 9

REV. DATE:
10/11/2021



PLAN VIEW

TYPE SINGLE DIRECTION A

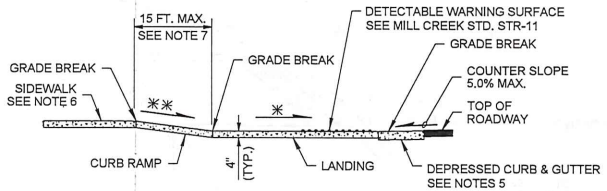


PLAN VIEW

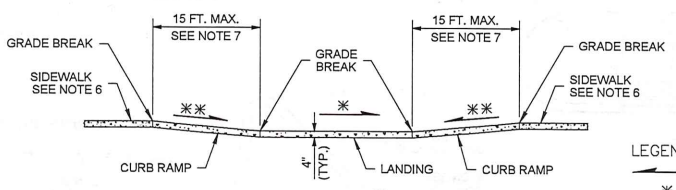
TYPE SINGLE DIRECTION B

NOTES:

1. THIS PLAN IS TO BE USED WHERE PEDESTRIAN CROSSING IN ONE DIRECTION IS NOT PERMITTED.
2. AT MARKED CROSSWALKS, THE CONNECTION BETWEEN THE LANDING AND THE ROADWAY MUST BE CONTAINED WITHIN THE WIDTH OF THE CROSSWALK MARKINGS.
3. WHERE "GRADE BREAK" IS CALLED OUT, THE ENTIRE LENGTH OF THE GRADE BREAK BETWEEN THE TWO ADJACENT SURFACE PLANES SHALL BE FLUSH.
4. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES ON ANY PART OF THE CURB RAMP OR LANDING, OR IN THE DEPRESSED CURB AND GUTTER WHERE THE LANDING CONNECTS TO THE ROADWAY.
5. FOR CURB, CURB AND GUTTER, DEPRESSED CURB AND GUTTER, AND PEDESTRIAN CURB DETAILS, SEE MILL CREEK STD. STR-2.
6. FOR CONCRETE SIDEWALK DETAILS, SEE MILL CREEK STD. STR-3.
7. THE CURB RAMP LENGTH IS NOT REQUIRED TO EXCEED 15 FT. WHEN APPLYING THE 15 FT. MAX. LENGTH (MEASURED FROM BACK OF SIDEWALK), THE RUNNING SLOPE OF THE CURB RAMP IS ALLOWED TO EXCEED 8.3%. USE SINGLE CONSTANT SLOPE FROM BOTTOM OF RAMP TO TOP OF RAMP TO MATCH INTO SIDEWALK OVER A HORIZONTAL DISTANCE OF 15 FT.
8. CURB RAMP, LANDING, AND FLARES SHALL RECEIVE BROOM FINISH.
9. PEDESTRIAN CURB MAY BE OMITTED IF THE GROUND SURFACE AT THE BACK OF THE CURB RAMP AND/OR LANDING WILL BE AT THE SAME ELEVATION AS THE CURB RAMP OR LANDING AND THERE WILL BE NO MATERIAL TO RETAIN.



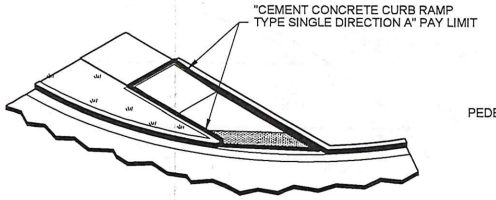
SECTION (A)



SECTION (B)

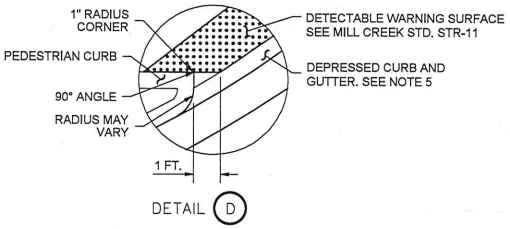
LEGEND

- SLOPE IN EITHER DIRECTION
- ✳ 1.5% OR FLATTER REC. FOR DESIGN/FORMWORK (2% MAX.)
- ✳✳ 7.5% OR FLATTER REC. FOR DESIGN/FORMWORK (8.3% MAX.)

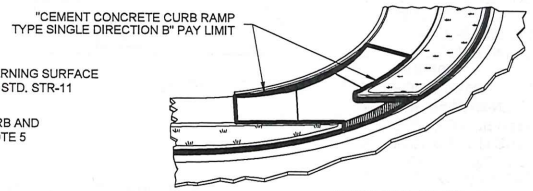


ISOMETRIC VIEW

TYPE SINGLE DIRECTION A PAY LIMIT



DETAIL (D)



ISOMETRIC VIEW

TYPE SINGLE DIRECTION B PAY LIMIT

APPROVED FOR USE

Edmund D. Glasmann

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STREET

SINGLE DIRECTION RAMPS

NOT TO SCALE

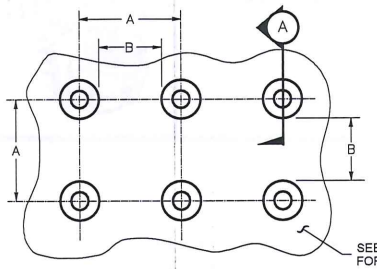
PUBLIC WORKS DEPARTMENT

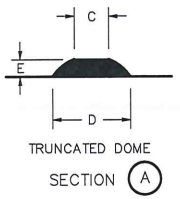
PLAN NO.

STR - 10

REV. DATE:

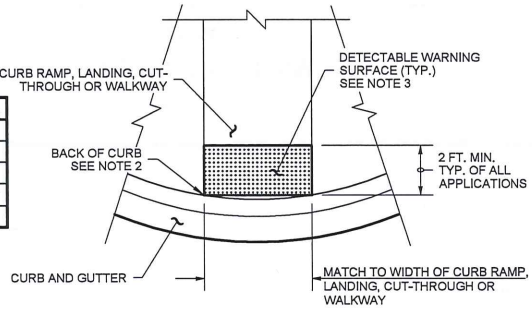
10/12/2021





	MIN.	MAX.
A	1.60"	2.40"
B	0.65"	—
C	0.45"	0.90"
D	0.9"	1.40"
E	0.2"	0.2"

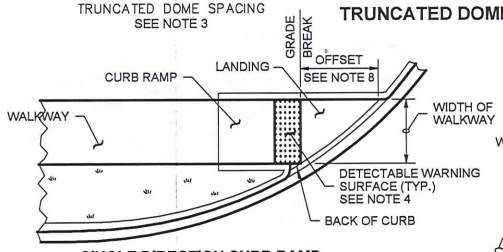
TRUNCATED DOME DETAILS



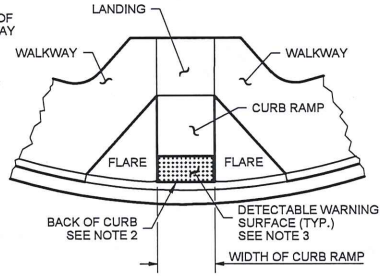
DETECTABLE WARNING SURFACE DETAIL

NOTES:

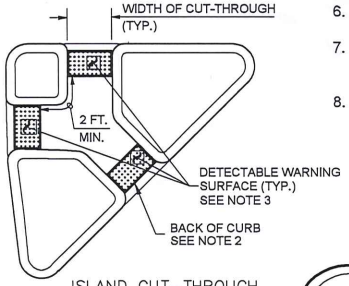
1. THE DETECTABLE WARNING SURFACE (DWS) SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR OTHER ROADWAY ENTRANCE AS APPLICABLE. EXCEPTION: IF THE MANUFACTURER OF THE DWS REQUIRES A CONCRETE BORDER AROUND THE DWS, A VARIANCE OF UP TO 2 IN. ON EACH SIDE OF THE DWS IS PERMITTED.
2. THE DWS SHALL BE PLACED AT THE BACK OF CURB, WITH THE LEADING CORNERS OF THE DWS PANEL PLACED ADJACENT TO THE BACK OF THE CURB, AND WITH NO MORE THAN 2" GAP BETWEEN THE DWS AND THE BACK OF THE CURB MEASURED AT THE CENTER OF THE DWS PANEL. EXCEPTION: IF THE MANUFACTURER OF THE DWS REQUIRES A CONCRETE BORDER AROUND THE DWS, A VARIANCE OF UP TO 2 IN. ON EACH SIDE OF THE DWS IS PERMITTED (MEASURED AT THE LEADING CORNERS OF THE DWS PANEL).
3. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED TO BE PERPENDICULAR TO THE GRADE BREAK AT THE BACK OF CURB.
4. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED TO BE PARALLEL TO THE DIRECTION OF TRAVEL..
5. IF CURB AND GUTTER ARE NOT PRESENT, SUCH AS A SHARED-USE PATH CONNECTION, THE DWS SHALL BE PLACED AT THE PAVEMENT EDGE.
6. FOR SIDEWALK AND CURB RAMP DETAILS, SEE MILL CREEK STD. STR-10.
7. IF A CURB RAMP IS REQUIRED, THE LOCATION OF THE DWS MUST BE AT THE BOTTOM OF THE RAMP AND WITHIN THE REQUIRED DISTANCE FROM THE RAIL.
8. WHEN THE GRADE BREAK BETWEEN THE CURB RAMP AND THE LANDING IS LESS THAN OR EQUAL TO 5 FT. FROM THE BACK OF CURB AT ALL POINTS, PLACE THE DWS ON THE BOTTOM OF THE CURB RAMP.



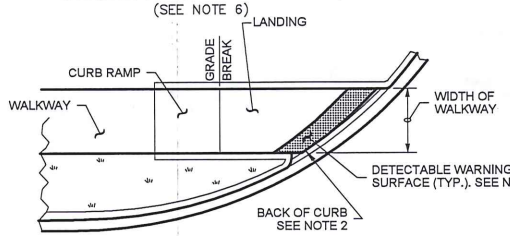
SINGLE DIRECTION CURB RAMP
(GRADE BREAK BETWEEN CURB AND LANDING LESS THAN OR EQUAL TO 5 FT. FROM BACK OF CURB)
(SEE NOTE 6)



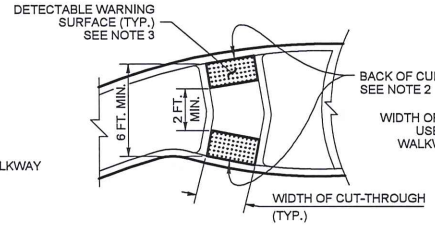
PERPENDICULAR CURB RAMP
(SEE NOTE 6)



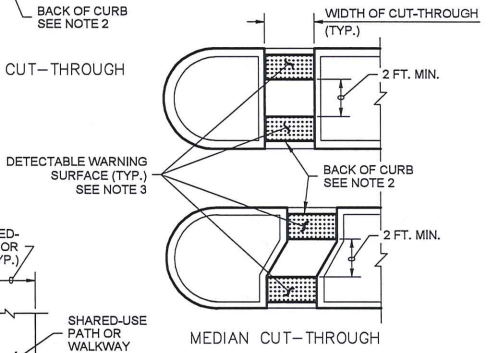
ISLAND CUT-THROUGH



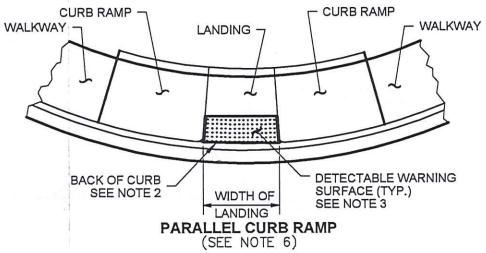
SINGLE DIRECTION CURB RAMP
(GRADE BREAK BETWEEN CURB AND LANDING GREATER THAN 5 FT. FROM BACK OF CURB)
(SEE NOTE 6)



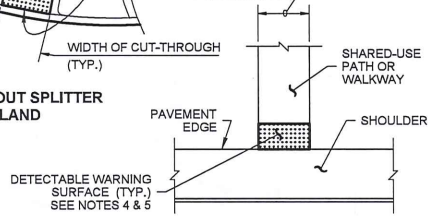
ROUNDABOUT SPLITTER ISLAND



MEDIAN CUT-THROUGH



PARALLEL CURB RAMP
(SEE NOTE 6)



SHARED-USE PATH CONNECTION

PLACEMENT GUIDELINES

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

STREET

DETECTABLE WARNING SURFACE

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

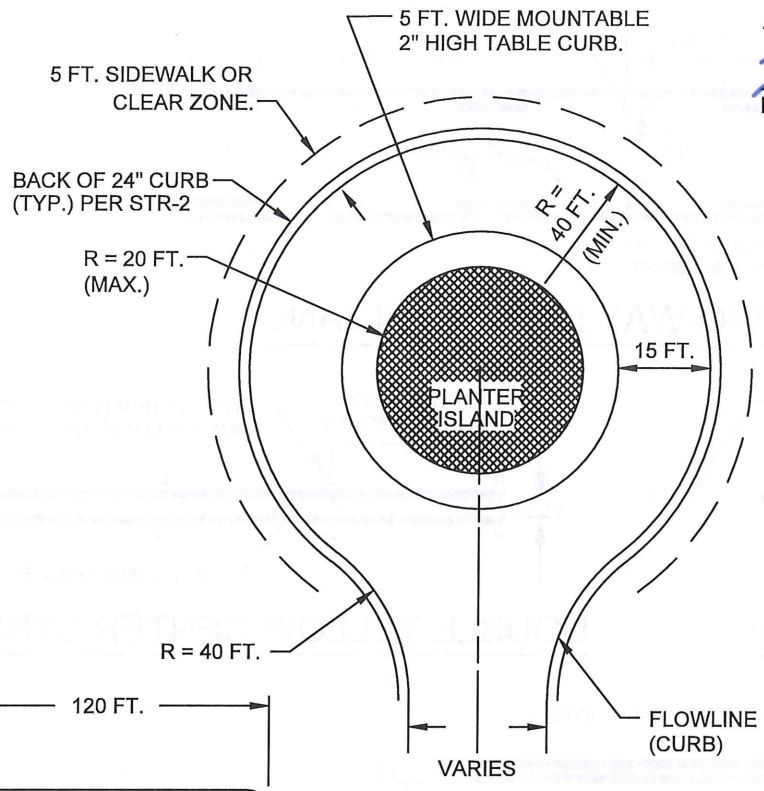
PLAN NO.
STR - 11

REV. DATE:
10/12/2021

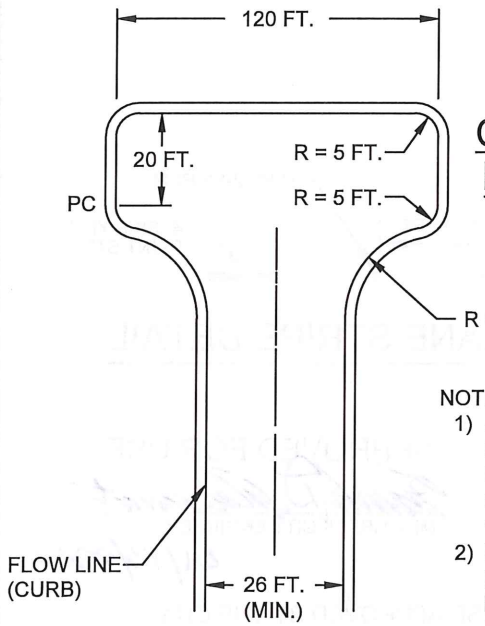
APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022



CUL-DE-SAC WITH PLANTER ISLAND

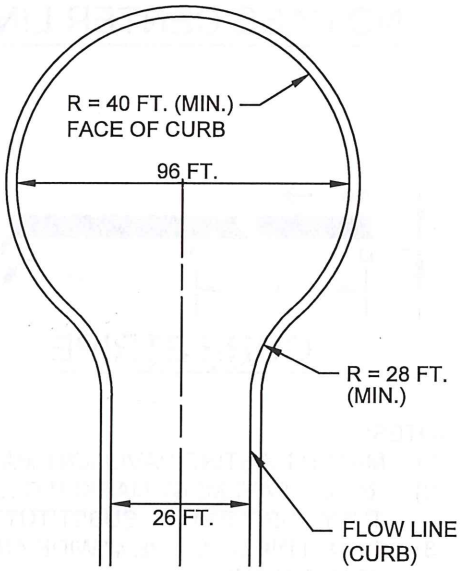


HAMMER HEAD

HAMMER HEAD SHALL ONLY BE USED WITH PRIVATE ROADS W/ ACCESS TO FOUR LOTS OR LESS.

NOTES:

1) A CITY APPROVED TURN-AROUND SHALL BE INSTALLED AT THE END OF ANY ACCESS ROAD, PUBLIC OR PRIVATE, THAT IS MORE THAN 150 FT. LONG.
2) UTILITY EASEMENT AROUND THE PERIMETER OF THE CUL-DE-SAC MAY BE REQUIRED.



STANDARD CUL-DE-SAC

CITY OF Mill Creek WASHINGTON

STREET

CUL-DE-SAC / HAMMER HEAD

NOT TO SCALE

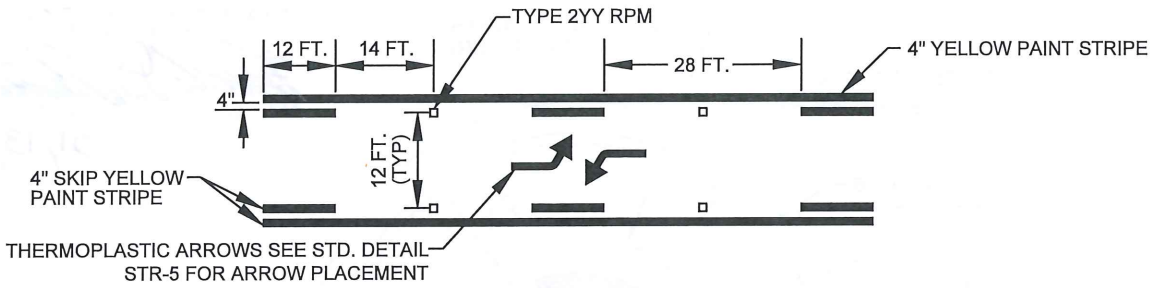
PUBLIC WORKS DEPARTMENT

PLAN NO.

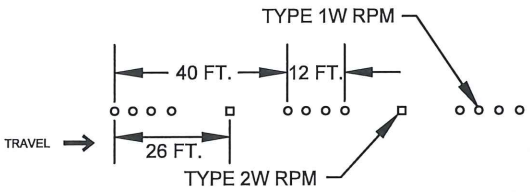
STR - 12

REV. DATE:

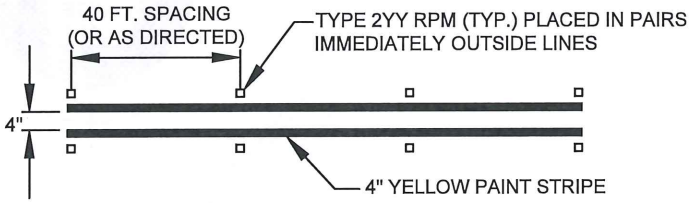
11/23/2021



TWO-WAY LEFT TURN LANE

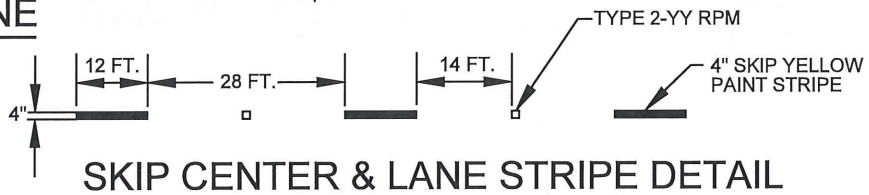


LANE LINE DETAIL

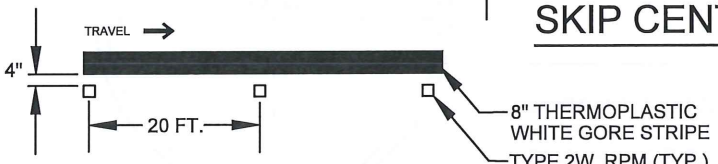


DOUBLE YELLOW CENTER STRIPE

NO PASS CENTER LINE



SKIP CENTER & LANE STRIPE DETAIL



GORE STRIPE

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

NOTES:

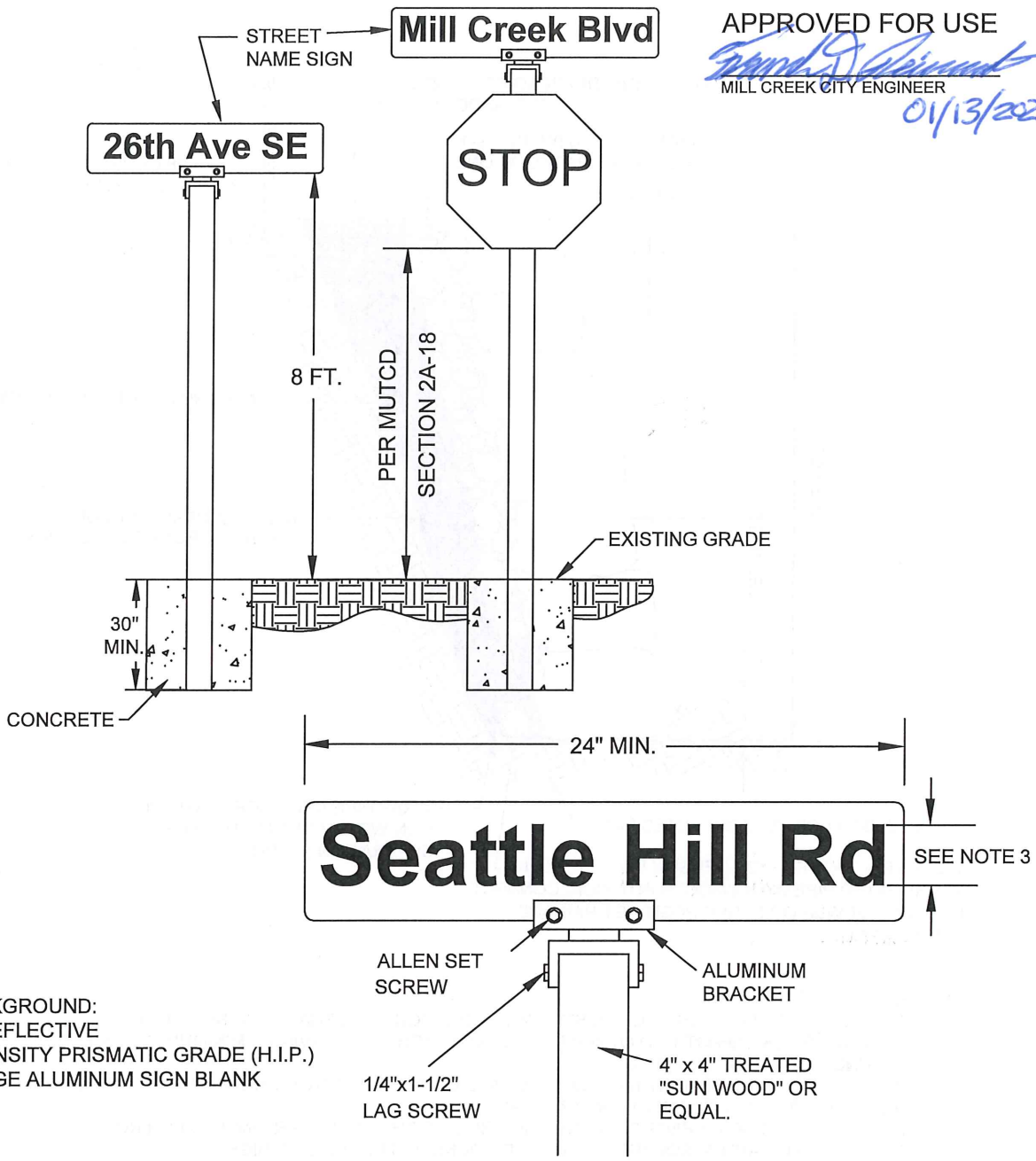
1) MATCH EXISTING PAVEMENT MARKING DIMENSIONS, OR OTHERWISE APPROVED BY THE CITY.
2) RAISED PAVEMENT MARKER COLOR SHALL CONFORM TO THE COLOR OF THE MARKING FOR WHICH THEY SUPPLEMENT, SUBSTITUTE FOR, OR SERVE AS A POSITIONING GUIDE FOR.
3) PAINT LINE SHALL BE 4" WIDE AND SHALL BE WSDOT APPROVED PAINT. SURFACES SHALL BE GLASS BEAD FINISHED.
4) TYPE 1 AND TYPE 2 PAVEMENT MARKERS SHALL BE ACCORDANCE WITH WSDOT SEC. 9-21, UNLESS OTHERWISE APPROVED BY THE CITY.

CITY OF Mill Creek WASHINGTON	STREET **LANE MARKING DETAILS** NOT TO SCALE PUBLIC WORKS DEPARTMENT	PLAN NO. **STR - 13** REV. DATE: 12/29/2021

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022



SIGN BACKGROUND:
GREEN, REFLECTIVE
HIGH INTENSITY PRISMATIC GRADE (H.I.P.)
0.080 GAUGE ALUMINUM SIGN BLANK

NOTES:

1. SIGN SHALL BE WHITE LETTERS ON A REFLECTIVE GREEN BACKGROUND. (SERIES C LETTERING)
2. 0-25 MPH ROADS - 4" CAPS / 3" LOWER CASE (6" BLANK)
   26-40 MPH ROADS - 6" CAPS / 4.5" LOWER CASE (8" BLANK)
   41-55 MPH ROADS - 8" CAPS / 6" LOWER CASE (9" BLANK)
3. ALL STREET NAME SIGNS MUST BE PRINTED ON BOTH SIDES OF THE SIGN.
4. THE LETTERING FOR NAMES OF STREETS ON STREET NAME SIGNS SHALL BE COMPOSED OF A COMBINATION OF LOWER-CASE LETTERS WITH INITIAL UPPER-CASE LETTERS. (ABBREVIATIONS SHOULD NOT CONTAIN PERIODS).

CITY OF Mill Creek WASHINGTON

STREET

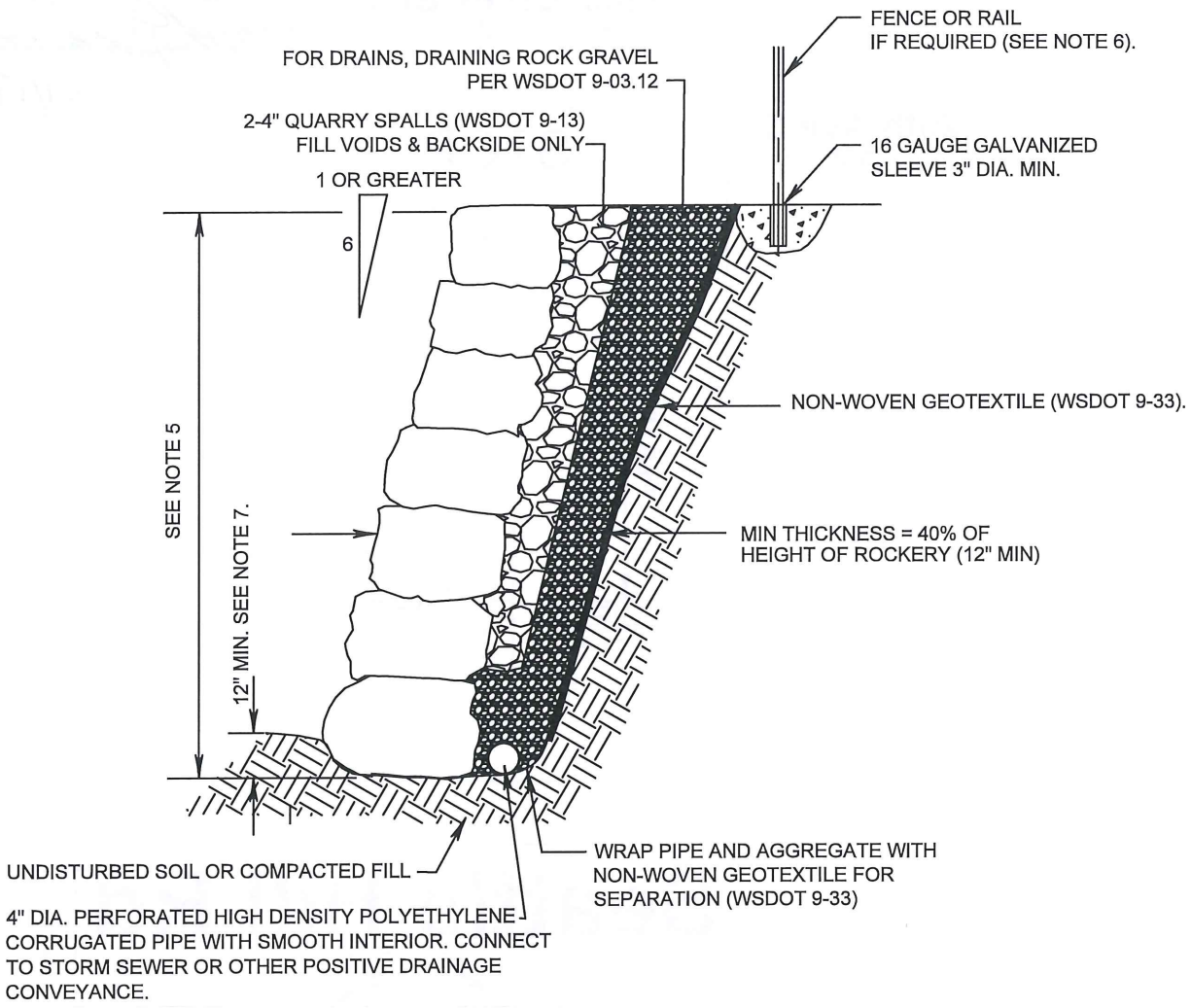
STREET NAME SIGNS

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STR - 14

REV. DATE:
10/25/2021



NOTES:

1. ROCKERY SHALL BE CONSTRUCTED BY PLACING THE ROCKS SO THAT EACH ROCK IS IN CONTACT WITH AT LEAST TWO OTHER ROCKS WITH EACH ROCK HAVING A MINIMUM OF THREE BEARING SURFACES PER ROCK.
2. EACH ROCK SHALL BE LAID WITH A FLAT SURFACE ON THE OUTWARD FACE OF THE ROCKERIES AND WITH THE LONG DIMENSION HORIZONTAL.
3. VOIDS IN THE ROCKERY FACE SHALL NOT BE GREATER THAN 50 SQUARE INCHES FOR ROCKS OVER 3 FT. HIGH AND 36 SQUARE INCHES FOR ROCKERIES UNDER 3 FT. HIGH.
4. ROCKERIES SHALL BE DESIGNED BY A GEOTECHNICAL ENGINEER.
5. ROCKERIES OVER 4 FT. HIGH REQUIRE A CITY PERMIT. MAXIMUM ROCKERY HEIGHT IS 8 FT.
6. ROCKERIES WHICH ARE MORE THAN 30" ABOVE GRADE OF ROCKERY TOE ELEVATION SHALL BE PROTECTED BY A FENCE OR PEDESTRIAN RAILING. SEE MILL CREEK STANDARD DRAWING STR-4.
7. ROCKERY EMBEDMENT SHALL BE PER GEOTECHNICAL ENGINEER DESIGN.

APPROVED FOR USE

Frank D. Quinnat 04/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STREET

ROCKERY WALL

(RIGHT-OF-WAY & PRIVATE ACCESS ROAD USE ONLY)

NOT TO SCALE

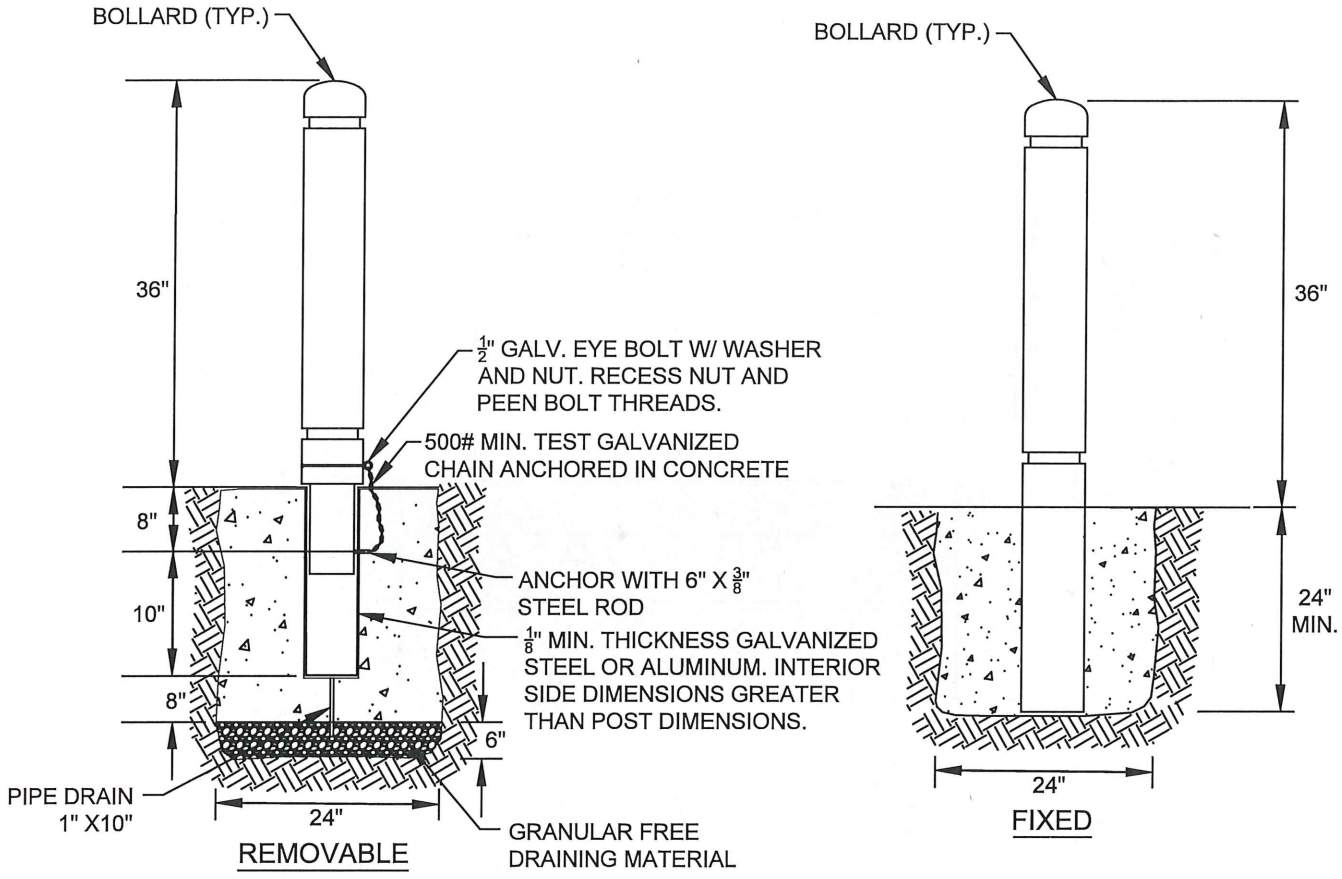
PUBLIC WORKS DEPARTMENT

PLAN NO.

STR - 15

REV. DATE:

10/11/2021



NOTES:

1. ALL WOOD SHALL BE PRESSURE TREATED.
2. STEEL TUBE SHALL CONFORM TO ASTM A53 OR ASTM A53 GRADE A.
3. NUTS, BOLTS, AND WASHERS SHALL CONFORM TO ASTM A307.
4. ALL STEEL PARTS SHALL BE GALVANIZED.
5. COMMERCIAL CLASS CONCRETE SHALL BE USED.

APPROVED FOR USE

Frank D. Rainwater

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STREETS

BOLLARDS

NOT TO SCALE

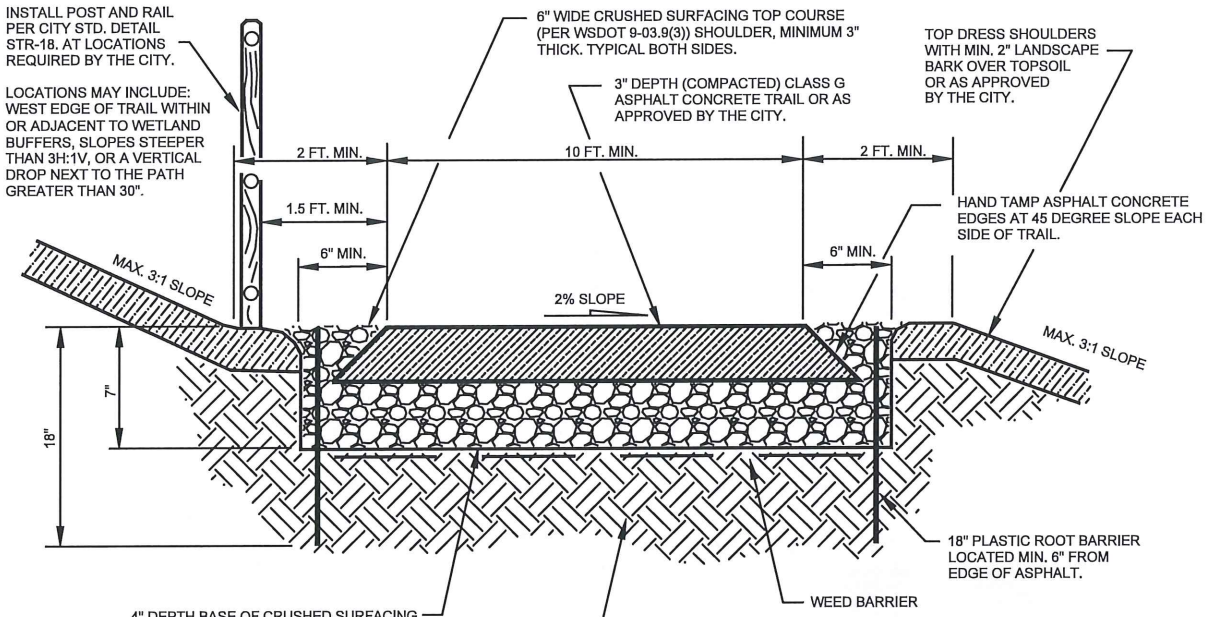
PUBLIC WORKS DEPARTMENT

PLAN NO.

STR - 16

REV. DATE:

9/15/2021



NOTES:
1. ASPHALT TRAIL SHALL HAVE A CROSS SLOPE OF 2%.
2. FINAL LOCATION AND GRADES TO BE APPROVED IN THE FIELD BY THE CITY OF MILL CREEK.
3. THIS STANDARD SHALL APPLY TO PRIMARY TRAIL DEVELOPMENT NORTH OF 164TH ST. SE, WEST OF SR527, SOUTH OF McCOLLUM PARK, AND EAST OF NORTH CREEK.

APPROVED FOR USE

Frank D. Nimmerick 01/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STREETS

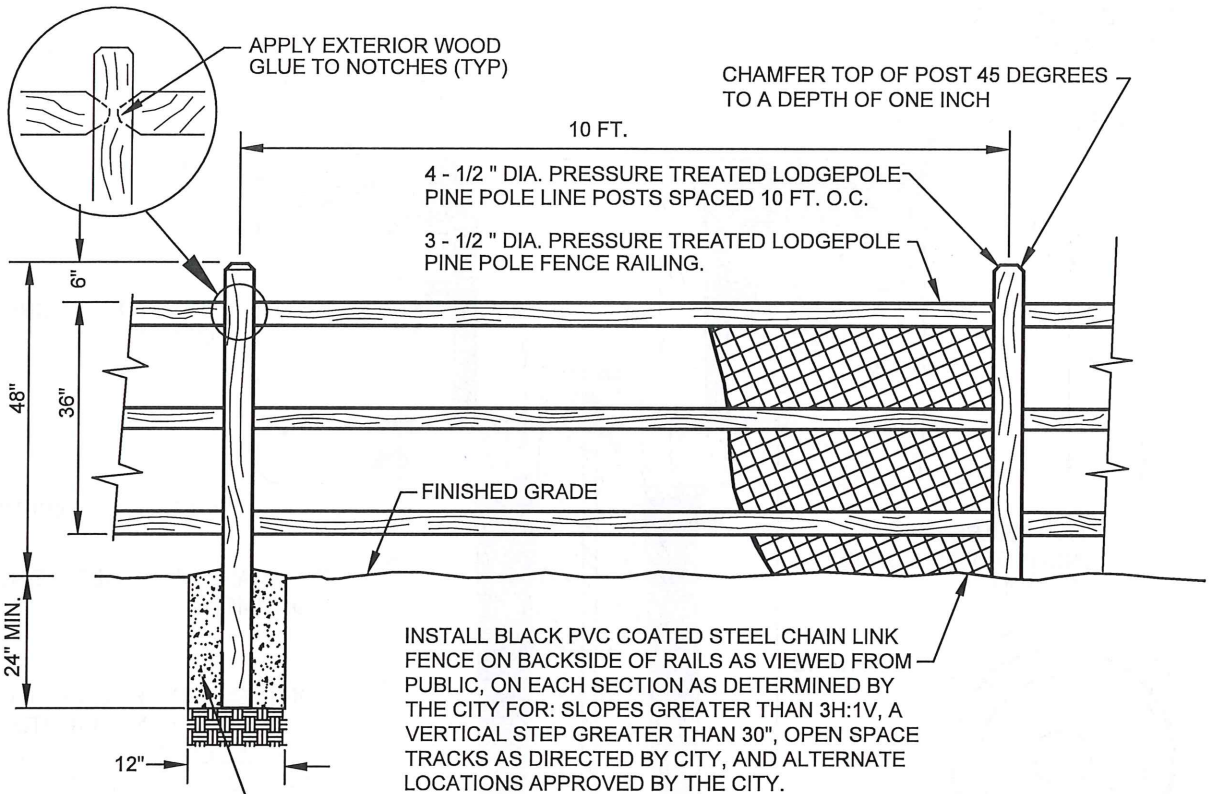
NORTH CREEK TRAIL

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO. STR-17

REV. DATE: 12/08/2021



NOTES

1. FENCING SHALL BE PRESSURE TREATED LODGEPOLE PINE.PRESSURE TREATMENT SHALL BE CCA IN ACCORDANCE WITH APWA LP-22 TO A MINIMUM RETENTION OF 0.4 LB./CU. FT.
2. CORNER FENCE POSTS SHALL BE 5-1/2" DIA. AND LINE POSTS SHALL BE 4-1/2" DIA. BY 6 FT. IN LENGTH, SPACED 10 FT. O.C.
3. FENCE RAILING SHALL BE 3-1/2" DIA. BY 10 FT. IN LENGTH WITH 3 RAILS PER POST.
4. THE TOP OF THE POSTS SHALL BE 4 FT. ABOVE FINISH GRADE.
5. ALL POSTS AND RAILS SHALL BE INSTALLED PER THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
6. CHAIN LINK FENCING SHALL BE FASTENED TO WOOD FENCE RAILING USING MINIMUM 1-1/4". LONG CORROSION RESISTANT STAPLES SPACED 16" O.C.
7. CHAIN LINK FENCING SHALL NOT EXTEND ABOVE THE TOP HORIZONTAL RAILING OR BELOW THE GROUND FINISH GRADE. FENCING SHALL BE CLASS 2B-ASTM F668 OR APPROVED EQUAL.

APPROVED FOR USE

01/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STREET

POST AND RAIL FENCE

NOT TO SCALE

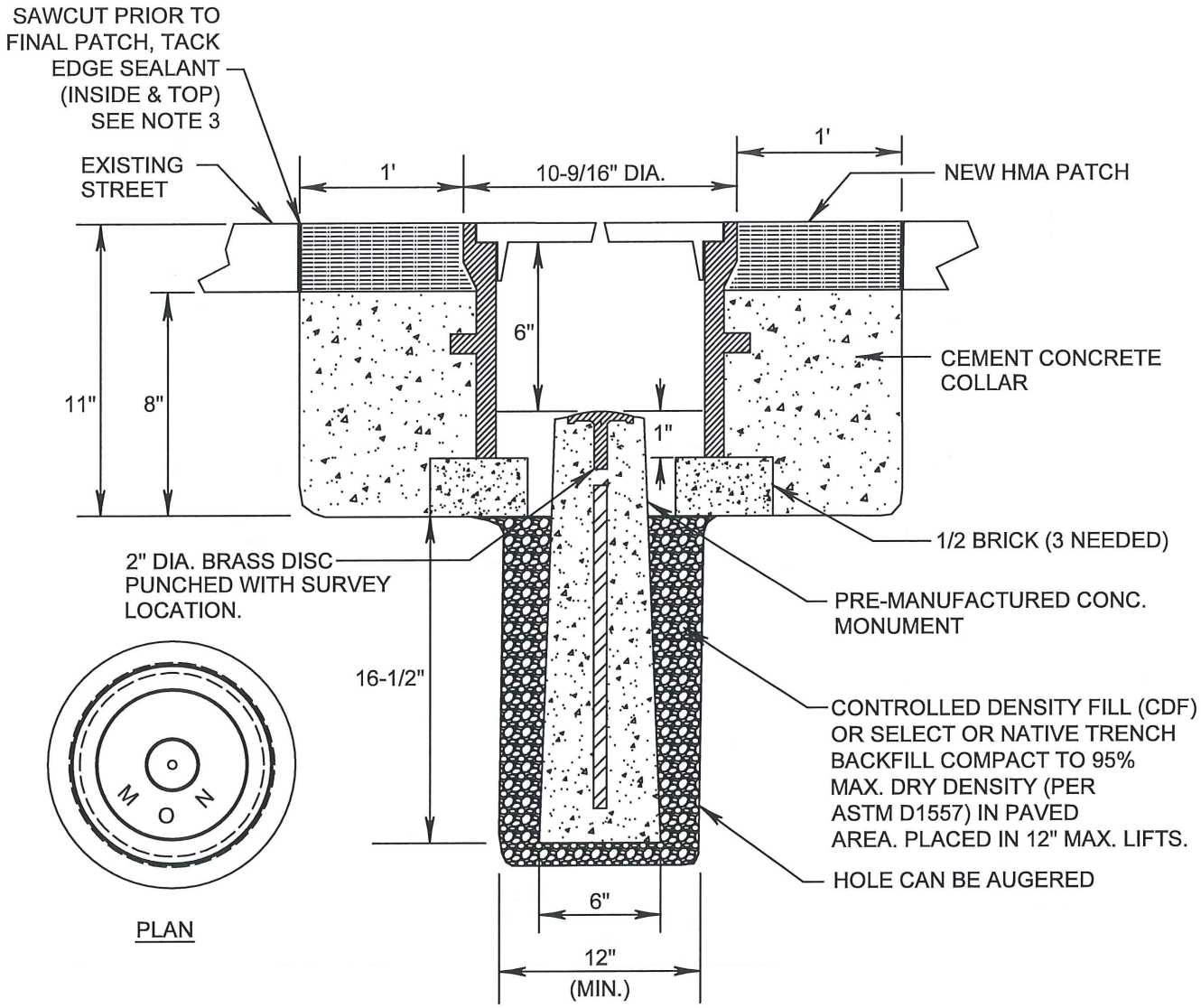
PUBLIC WORKS DEPARTMENT

PLAN NO.

STR - 18

REV. DATE:

9/16/2021



GRAY IRON LID

NOTES:

1. THE CASTINGS SHALL BE GRAY-IRON CASTINGS, ASTM DESIGNATION A-48, CLASS 35B.
2. MONUMENT CASE AND COVER SHALL BE EAST JORDAN IRON WORKS PRODUCT NO. 369505 OR APPROVED EQUAL.
3. TOP SEAL-USE PG 64-22 AND PROVIDE A SAND BLANKET TO ALLEVIATE TRAILING.

APPROVED FOR USE

Frank D. Nilsen 01/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STREET

SURVEY CONTROL MONUMENT

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STR - 19

REV. DATE:
9/24/2021

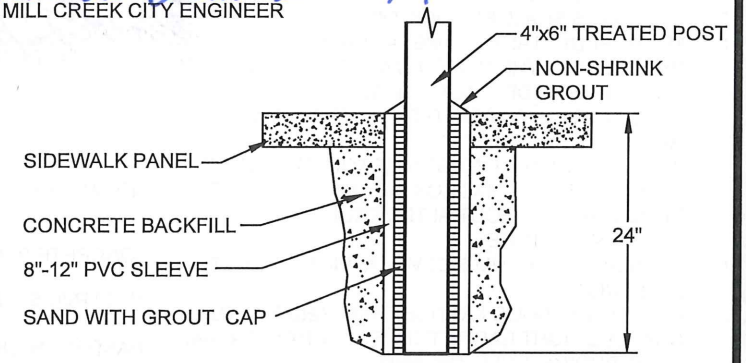
NOTES:

1. MAILBOX SHALL BE APPROVED BY THE U.S. POSTAL SERVICE.
2. ALL BOXES SHALL BE LOCK TYPE.
3. METAL PEDESTAL WITH METAL BASE IS REQUIRED BY THE U.S. POSTAL SERVICE. DO NOT COVER PEDESTAL OR BASE WITH WOOD.
4. STRUCTURE DESIGN ALTERATIONS ONLY WITH THE APPROVAL BY THE CITY.
5. WOOD STRUCTURE MUST NOT TOUCH MAILBOX OR METAL BASE. MAILBOX AND BASE MUST BE REMOVABLE WITHOUT ALTERATION TO THE WOOD STRUCTURE.
6. STANDARD MINIMUM SIDEWALK WIDTH OF 5 FT. REQUIRED.
7. COLOR FOR WOOD LATTICE, TRIM, AND POSTS SHALL BE LIGHT EARTH TONES I.E. GRAY, CREAM, LT. BROWN, BUFF, OR WHITE

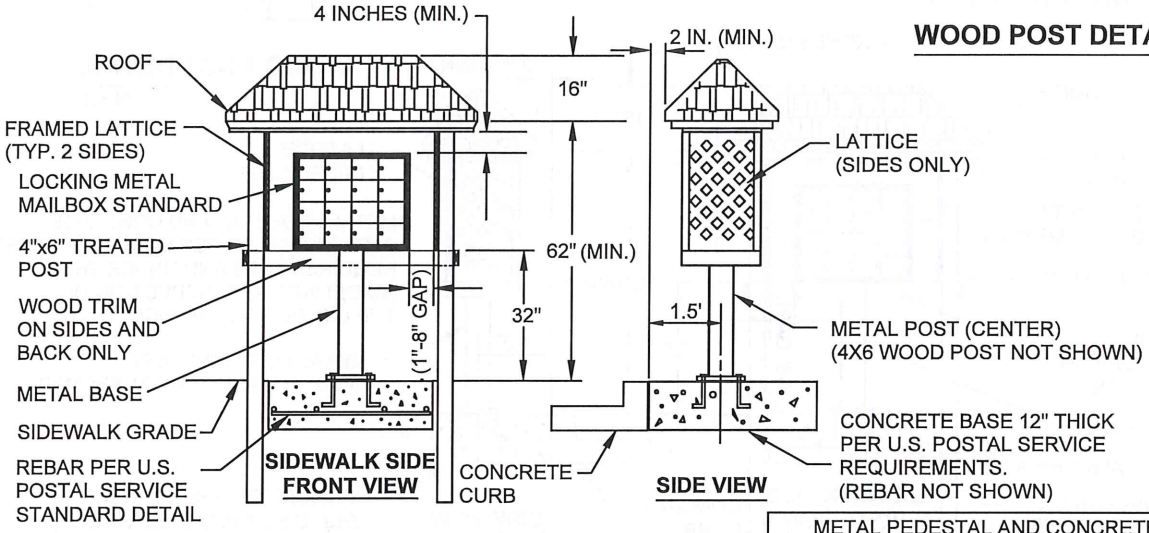
APPROVED FOR USE

Frank D Gilmore 01/13/2022

MILL CREEK CITY ENGINEER

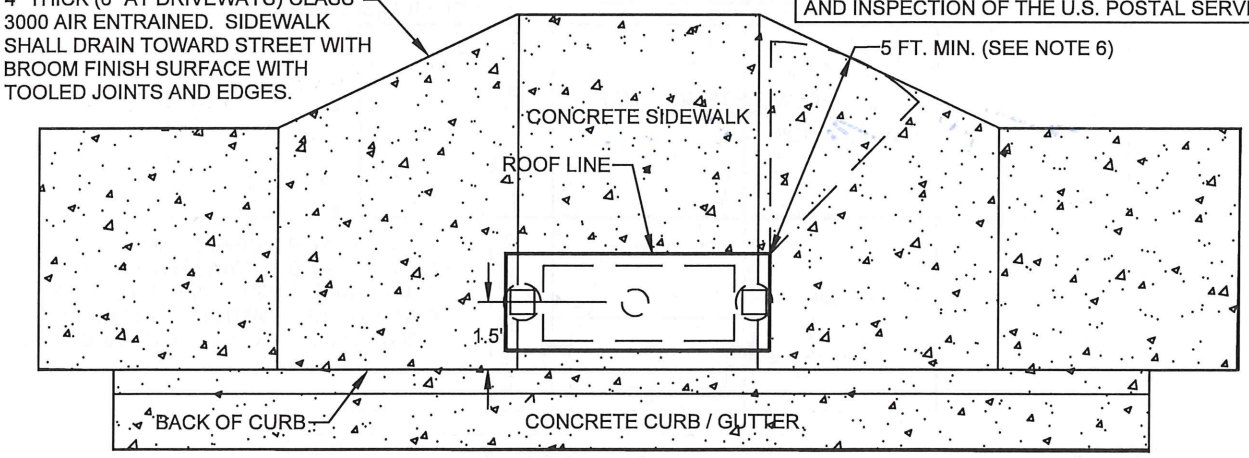


WOOD POST DETAIL



STAND DETAIL

METAL PEDESTAL AND CONCRETE BASE INSTALLED PER MANUFACTURER'S REQUIREMENTS AND UNDER THE GUIDELINES AND INSPECTION OF THE U.S. POSTAL SERVICE.



SIDEWALK DETAIL WITHOUT PLANTER STRIP

CITY OF Mill Creek WASHINGTON

STREET

MAILBOX STAND IN SIDEWALK

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO. **STR - 20**

REV. DATE: 9/21/2021

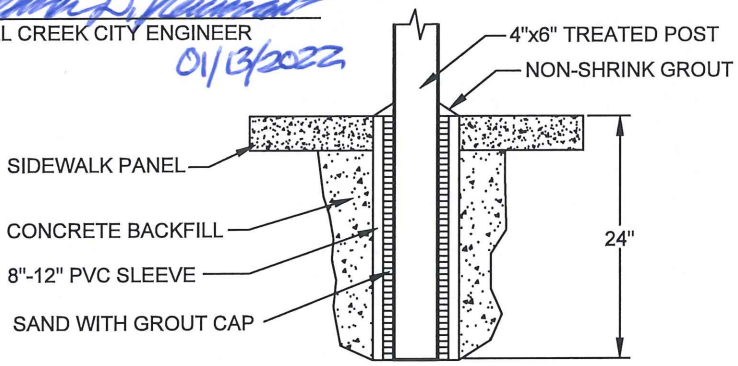
NOTES:

1. MAILBOX SHALL BE APPROVED BY THE U.S. POSTAL SERVICE.
2. ALL BOXES SHALL BE LOCK TYPE.
3. METAL PEDESTAL WITH METAL BASE IS REQUIRED BY THE U.S. POSTAL SERVICE. DO NOT COVER PEDESTAL OR BASE WITH WOOD.
4. STRUCTURE DESIGN ALTERATIONS ONLY WITH APPROVAL FROM THE CITY.
5. WOOD STRUCTURE MUST NOT TOUCH MAILBOX OR METAL BASE. MAILBOX AND BASE MUST BE REMOVABLE WITHOUT ALTERATION TO THE WOOD STRUCTURE.
6. STANDARD MINIMUM SIDEWALK WIDTH OF 5 FT. REQUIRED.
7. COLOR FOR WOOD LATTICE, TRIM, AND POSTS SHALL BE LIGHT EARTH TONES I.E. GRAY, CREAM, LIGHT BROWN, BUFF, OR WHITE.

APPROVED FOR USE

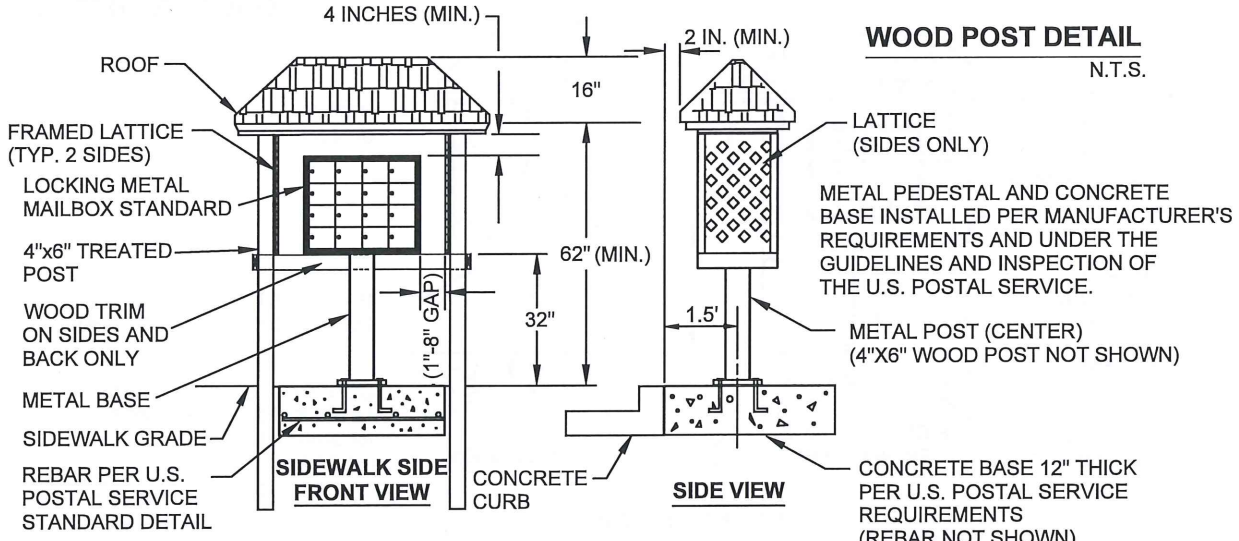
MILL CREEK CITY ENGINEER

01/13/2022

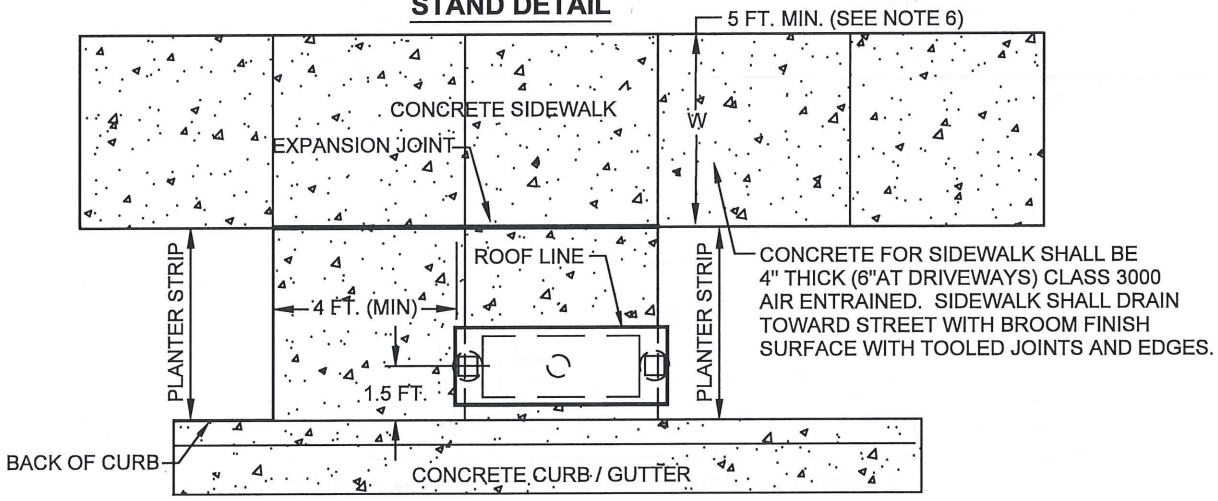


WOOD POST DETAIL

N.T.S.



STAND DETAIL



SIDEWALK DETAIL WITHOUT PLANTER STRIP

CITY OF Mill Creek WASHINGTON

STREET

MAILBOX STAND IN PLANTER STRIP

NOT TO SCALE

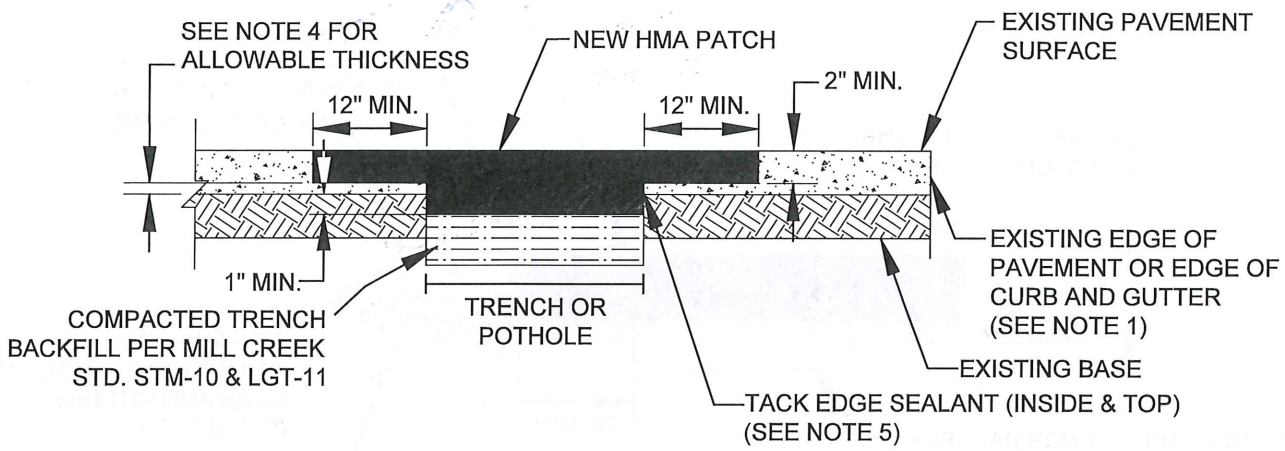
PUBLIC WORKS DEPARTMENT

PLAN NO.

STR - 21

REV. DATE:

9/21/2021



NOTES:

1) IF THE DISTANCE FROM THE EDGE OF PATCH TO THE EDGE OF PAVEMENT, LANE EDGE, CENTERLINE OF STREET, OR CURB AND GUTTER IS LESS THAN 36", THE PATCH MUST CONTINUE TO THE EXISTING EDGE UNLESS ROADWAY IS OVERLAID WITHIN 60 DAYS.
2) HOT MIX ASPHALT SHALL BE CLASS $\frac{1}{2}$".
3) ALL TRENCH BACKFILL SHALL BE "CRUSHED SURFACING TOP COURSE" PER WSDOT STD SPEC 9.03-9(3). COMPACT TO 95% MAX DENSITY FOR PERPENDICULAR TRENCHES. WHERE TRENCH IS PARALLEL TO TRAVELED LANES, BACKFILL THE TOP 48"' OF TRENCH TO SUBGRADE WITH CRUSHED SURFACING TOP COURSE.
4) OUTSIDE OF THE TRENCH, EXISTING ASPHALT MUST ALWAYS BE 1" DEEPER THAN NEW HALF-DEPTH PATCH THICKNESS. IF EXISTING ASPHALT IS LESS THAN 1" OR CRACKING DURING GRINDING, A FULL-DEPTH PATCH IS REQUIRED. SEE CITY OF MILL CREEK STANDARD PLAN STR-23.
5) TOP SEAL-USE PG 64-22 AND PROVIDE A SAND BLANKET TO ALLEVIATE TRAILING.
6) THIS STANDARD DETAIL SHALL NOT BE USED FOR PATCHING PERMEABLE PAVEMENT.
7) NO IRREGULAR PATCH PERIMETER SHALL BE ALLOWED. EACH PATCH SHALL HAVE A SINGLE STRAIGHT EDGE IN BOTH TRANSVERSE (CURB TO CURB) AND LONGITUDINAL (DIRECTION OF TRAVEL) DIRECTIONS.
8) THE MINIMUM PATCH DIMENSION IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS SHALL BE 24".
9) IF TWO OR MORE PATCHES WILL BE LOCATED WITHIN 48" OF EACH OTHER IN THE TRANSVERSE DIRECTION, AND/OR WITHIN 10 FT. OF EACH OTHER IN THE LONGITUDINAL DIRECTION, THEY SHALL BE COMBINED INTO A SINGLE LARGER PATCH.
10) IF A NEW PATCH IS MADE WITHIN ANY PORTION OF AN EXISTING LARGER PATCH, THEN THE ENTIRE ORIGINAL PATCH SHALL BE REPLACED.
11) POTHOLES TO BE RESTORED PER THIS DETAIL.
12) IF THE PATCH IS MORE THAN 4FT. X 4 FT., A GRIND AND OVERLAY IS REQUIRED, UNLESS OTHERWISE APPROVED BY THE CITY, IN ACCORDANCE WITH MILL CREEK STANDARD DETAIL STR-30.
13) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL FRAMES AND GRATES OR SOLID LIDS PRIOR TO FINAL PAVING. ALL UTILITY MANHOLES, VALVES, AND SURVEY MONUMENTS SHALL BE ADJUSTED AFTER PAVING.
14) THE CONTRACTOR SHALL RESTORE CHANNELIZATION, PAVEMENT MARKINGS, AND LOOP DETECTORS.

APPROVED FOR USE

Frank D. Spinnato

MILL CREEK CITY ENGINEER

04/13/2022

CITY OF Mill Creek WASHINGTON

STREET

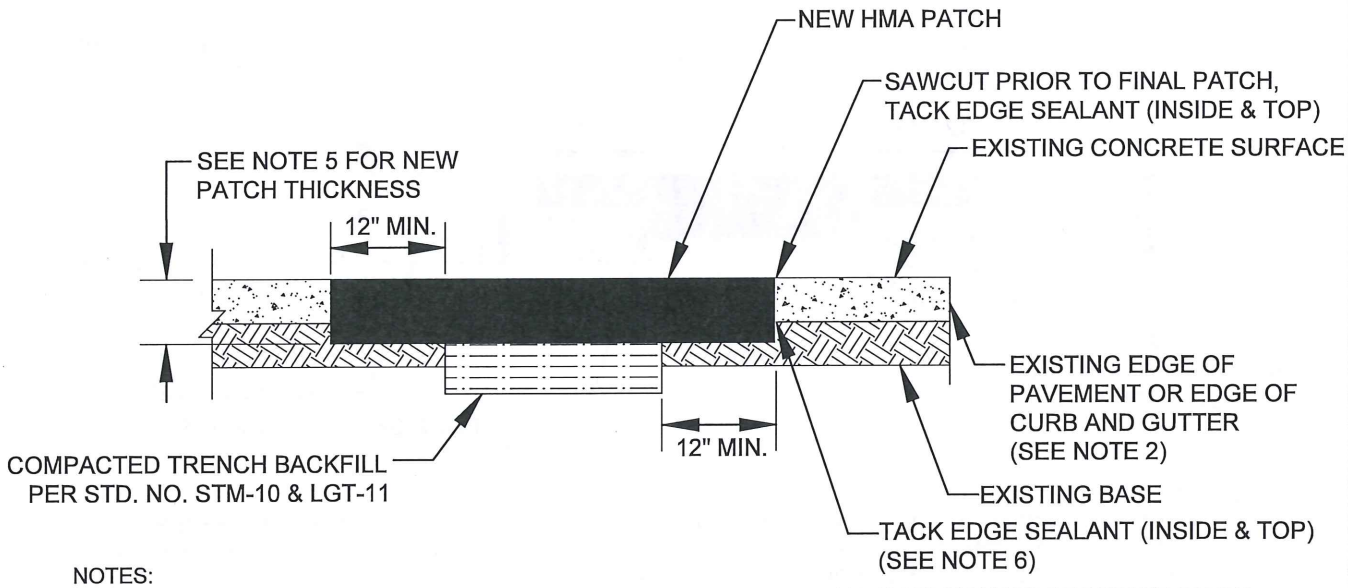
RESTORATION DETAIL & PARTIAL DEPTH PAVEMENT PATCHING

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STR-22

REV. DATE:
12/20/2021



NOTES:

1) EXISTING ASPHALT PAVEMENT MUST BE SAWCUT TO PROVIDE A CLEAN STRAIGHT EDGE BEFORE PATCH PLACEMENT.
2) IF THE DISTANCE FROM THE EDGE OF PATCH TO THE EDGE OF PAVEMENT, LANE EDGE, CENTERLINE OF STREET, OR CURB AND GUTTER IS LESS THAN 36", THE PATCH MUST CONTINUE TO THE EXISTING EDGE UNLESS ROADWAY IS OVERLAID WITHIN 60 DAYS.
3) HOT MIX ASPHALT SHALL BE CLASS $\frac{1}{2}$".
4) ALL TRENCH BACKFILL SHALL BE "CRUSHED SURFACING TOP COURSE" PER WSDOT STD SPEC 9.03-9(3). COMPACT TO 95% MAX DENSITY FOR PERPENDICULAR TRENCHES. WHERE TRENCH IS PARALLEL TO TRAVELED LANES, BACKFILL THE TOP 48" OF TRENCH TO SUBGRADE WITH CRUSHED SURFACING TOP COURSE.
5) PATCH MUST ALWAYS BE 1" DEEPER THAN EXISTING ASPHALT; MAX 6" DEEP, OR AS DIRECTED BY ENGINEER.
6) TOP SEAL-USE PG 64-22 AND PROVIDE A SAND BLANKET TO ALLEVIATE TRAILING.
7) THIS STANDARD DETAIL SHALL NOT BE USED FOR PATCHING PERMEABLE PAVEMENT.
8) NO IRREGULAR PATCH PERIMETER SHALL BE ALLOWED. EACH PATCH SHALL HAVE A SINGLE STRAIGHT EDGE IN BOTH TRANSVERSE (CURB TO CURB) AND LONGITUDINAL (DIRECTION OF TRAVEL) DIRECTIONS.
9) THE MINIMUM PATCH DIMENSION IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS SHALL BE 24".
10) IF TWO OR MORE PATCHES WILL BE LOCATED WITHIN 48" OF EACH OTHER IN THE TRANSVERSE DIRECTION, AND/OR WITHIN 10 FT. OF EACH OTHER IN THE LONGITUDINAL DIRECTION, THEY SHALL BE COMBINED INTO A SINGLE LARGER PATCH.
11) IF A NEW PATCH IS MADE WITHIN ANY PORTION OF AN EXISTING LARGER PATCH, THEN THE ENTIRE ORIGINAL PATCH SHALL BE REPLACED.
12) IF THE PATCH IS MORE THAN 4 FT. X 4 FT., A GRIND AND OVERLAY IS REQUIRED, UNLESS OTHERWISE APPROVED BY THE CITY, IN ACCORDANCE WITH MILL CREEK STANDARD DETAIL STR-30.
13) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL FRAMES AND GRATES OR SOLID LIDS PRIOR TO FINAL PAVING. ALL UTILITY MANHOLES, VALVES, AND SURVEY MONUMENTS SHALL BE ADJUSTED AFTER PAVING.
14) THE CONTRACTOR SHALL RESTORE CHANNELIZATION, PAVEMENT MARKINGS, AND LOOP DETECTORS.

APPROVED FOR USE

01/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STREET

RESTORATION DETAIL & FULL-DEPTH PAVEMENT PATCHING

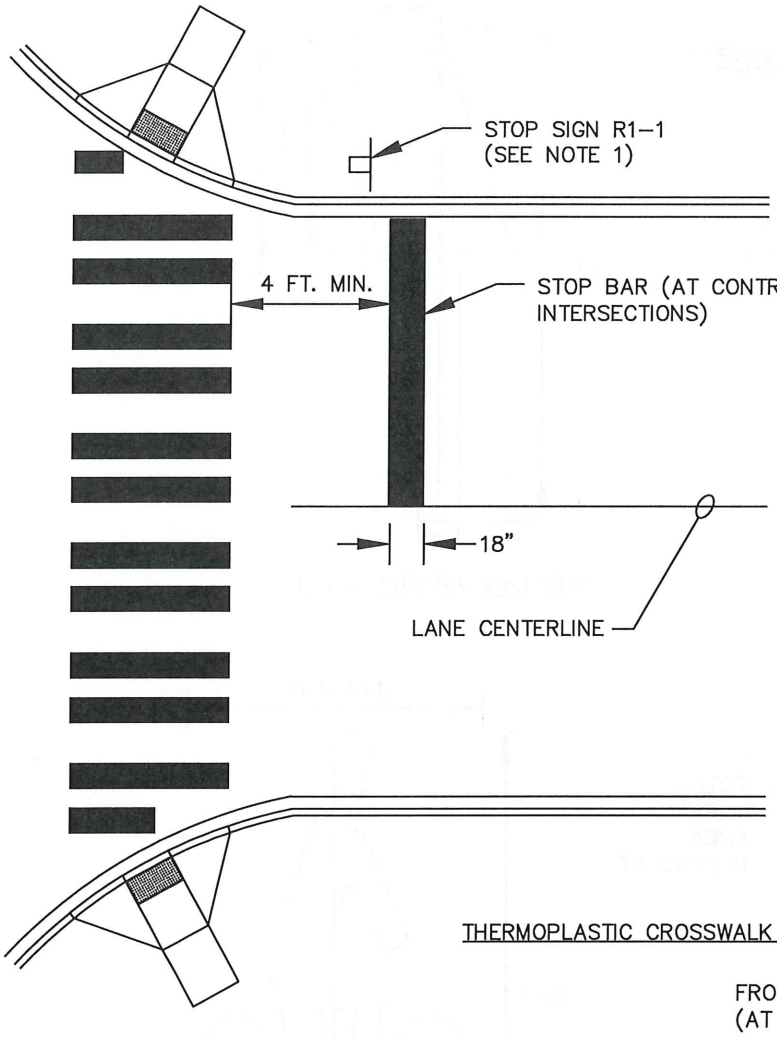
NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STR-23

REV. DATE:
8/24/2021

THERMOPLASTIC STOP BAR AND CROSSWALK DETAILS



NOTES:
1. STOP SIGN LOCATION ADJACENT TO STOP BAR, UNLESS OTHERWISE APPROVED BY CITY.
2. CROSSWALK BARS AND MARKINGS SHALL BE THERMO-PLASTIC WITH GLASS BEAD SURFACE.
3. PAVEMENT SHALL BE SWEPT BEFORE APPLICATION.
4. LOCATIONS SHALL BE PRE-APPROVED BY THE CITY PRIOR TO INSTALLATION.

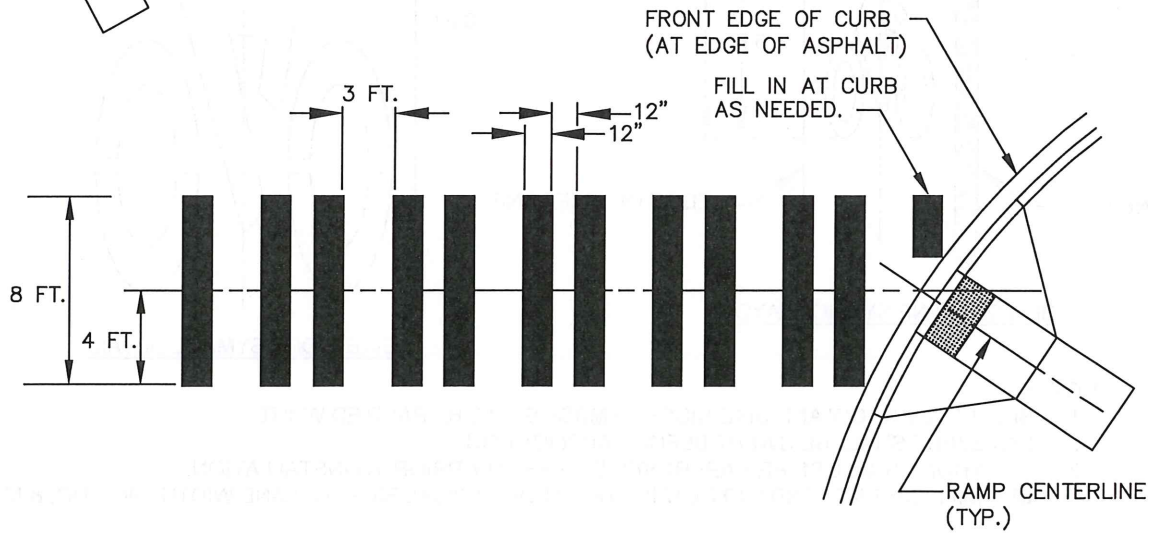
APPROVED FOR USE

Frank D. Lancaster

MILL CREEK CITY ENGINEER

01/13/2022

THERMOPLASTIC CROSSWALK BARS



CITY OF Mill Creek WASHINGTON

STREET

CROSSWALK AND STOP BAR DETAIL

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

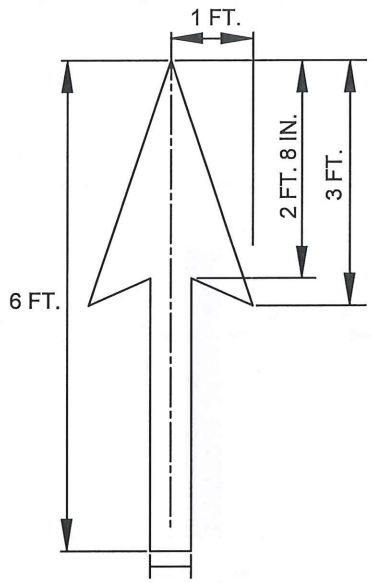
PLAN NO.
STR - 24

REV. DATE:
10/22/2021

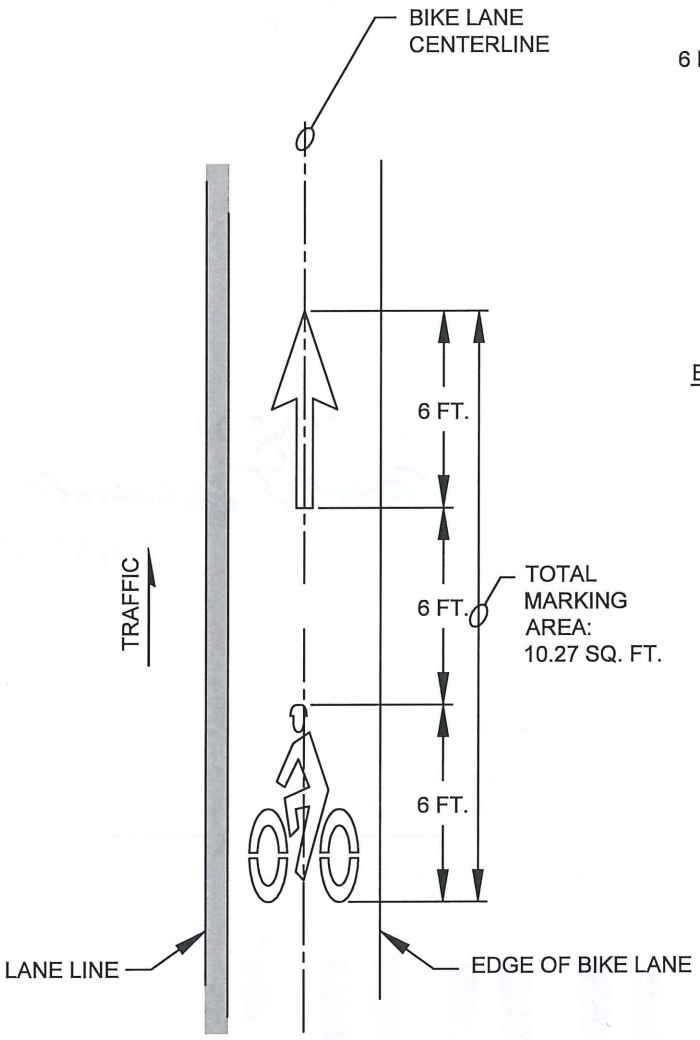
APPROVED FOR USE

01/13/2022

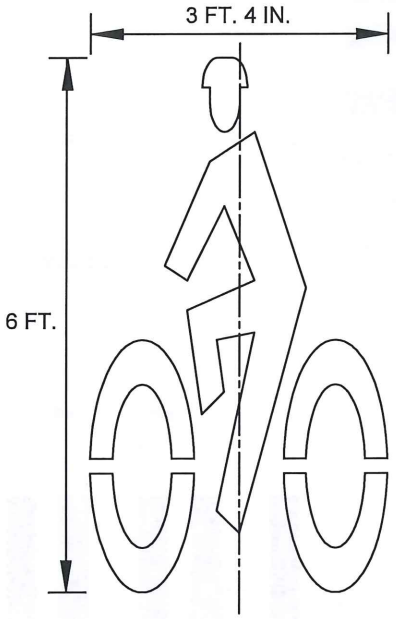
MILL CREEK CITY ENGINEER



BIKE LANE ARROW DETAIL



BICYCLE LANE SYMBOL LAYOUT



BIKE RIDER SYMBOL DETAIL

NOTES:

1. BIKE LANE ARROW AND BIKE RIDER SYMBOL SHALL BE PAINTED WHITE.
2. PAVEMENT SHALL BE SWEPT BEFORE APPLICATION.
3. LOCATIONS SHALL BE PRE-APPROVED BY THE CITY PRIOR TO INSTALLATION.
4. SEE MILL CREEK STANDARD DETAIL STR-27 FOR TYPICAL BICYCLE LANE WIDTH, SIGNING, & MARKING.

CITY OF Mill Creek WASHINGTON

STREET

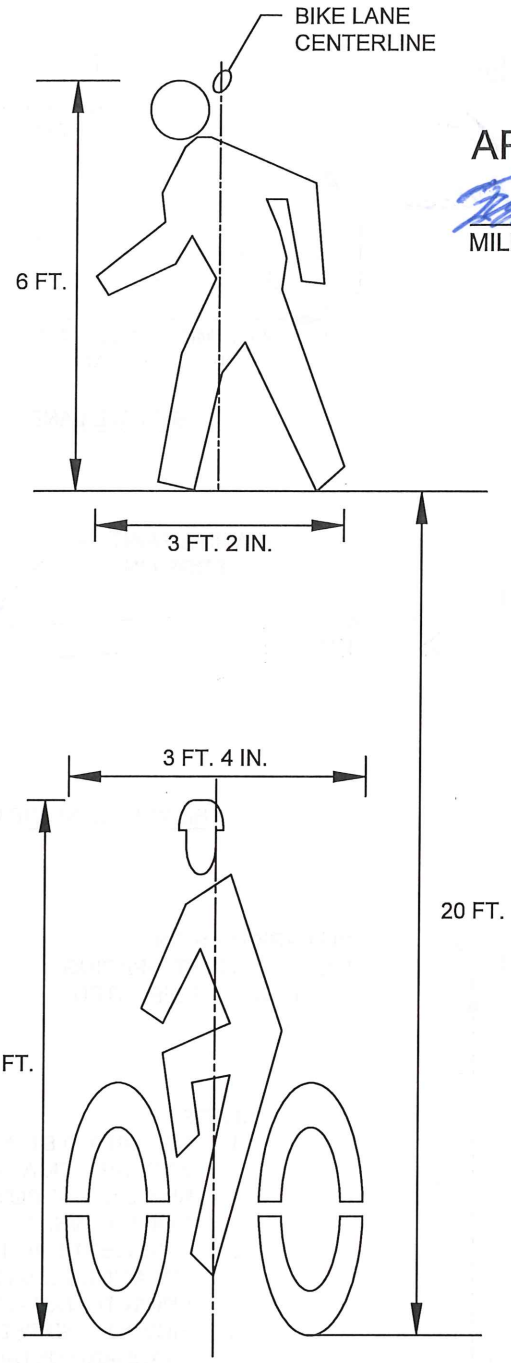
BICYCLE LANE MARKINGS

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STR - 25

REV. DATE:
10/21/2021



APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

NOTES:

1. BIKE RIDER AND PEDESTRIAN SYMBOLS SHALL BE PAINTED WHITE.
2. BIKE AND PEDESTRIAN SYMBOLS SHALL FACE ROADWAY CENTERLINE.
3. PAVEMENT SHALL BE SWEPT BEFORE APPLICATION.
4. LOCATIONS SHALL BE PRE-APPROVED BY THE CITY PRIOR TO INSTALLATION.
5. SEE MILL CREEK STANDARD DETAIL STR-27 FOR TYPICAL BICYCLE LANE WIDTH, SIGNING, & MARKING.

CITY OF Mill Creek WASHINGTON

STREET

PEDESTRIAN AND BICYCLE LANE MARKINGS

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.

STR - 26

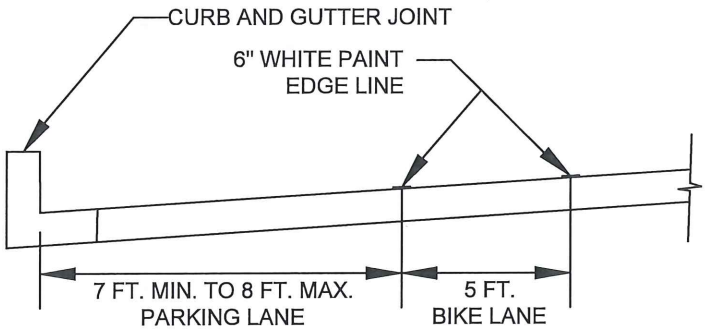
REV. DATE:

10/21/2021

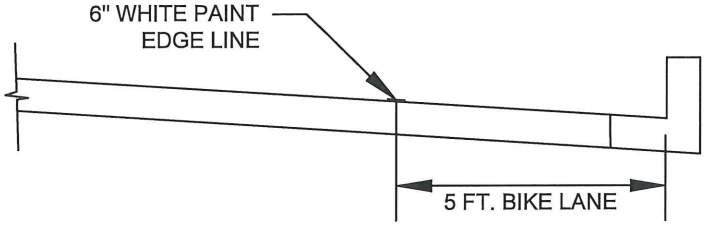
APPROVED FOR USE

MILL CREEK CITY ENGINEER

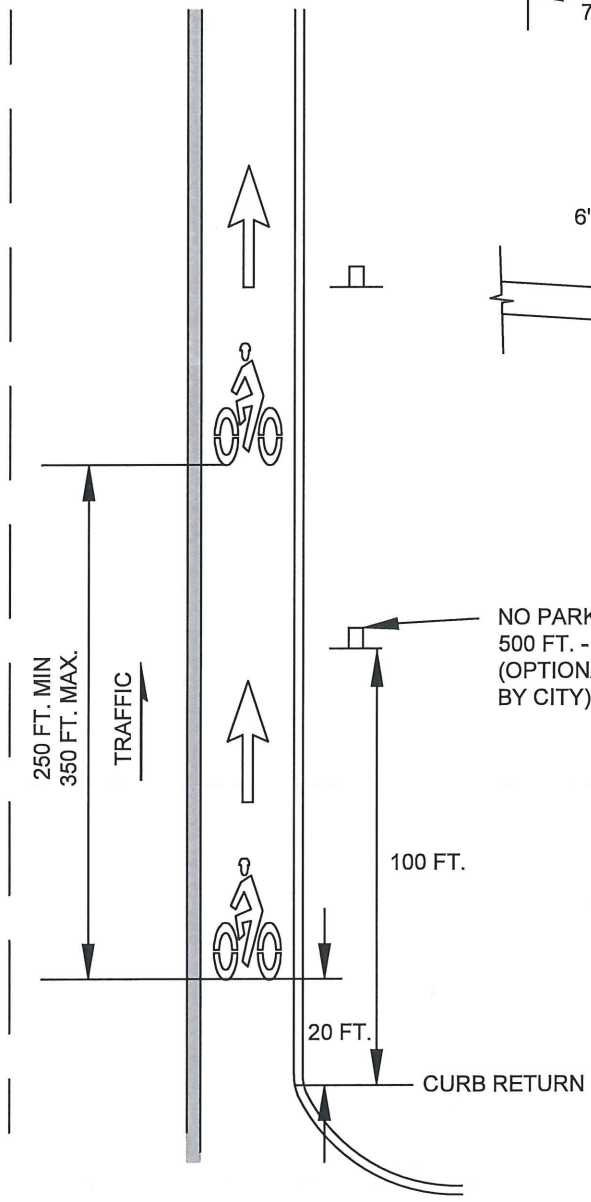
04/13/2022



BICYCLE LANE WITH STREET PARKING



BICYCLE LANE WITHOUT STREET PARKING



NOTES:

1. SEE MUTCD STANDARDS FOR MORE INFORMATION AND SPECIFICATIONS.
2. BIKE LANE ARROW AND BIKE RIDER SYMBOL SHALL BE PAINTED WHITE.
3. PAVEMENT SHALL BE SWEPT BEFORE APPLICATION.
4. LOCATIONS SHALL BE PRE-APPROVED BY THE CITY PRIOR TO INSTALLATION.
5. BICYCLE AND PEDESTRIAN SYMBOLS PER MILL CREEK STANDARD DETAIL STR-25.

CITY OF Mill Creek WASHINGTON

STREET

TYPICAL BICYCLE LANE WIDTH, SIGNING, & MARKING

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STR - 27

REV. DATE:
10/21/2021

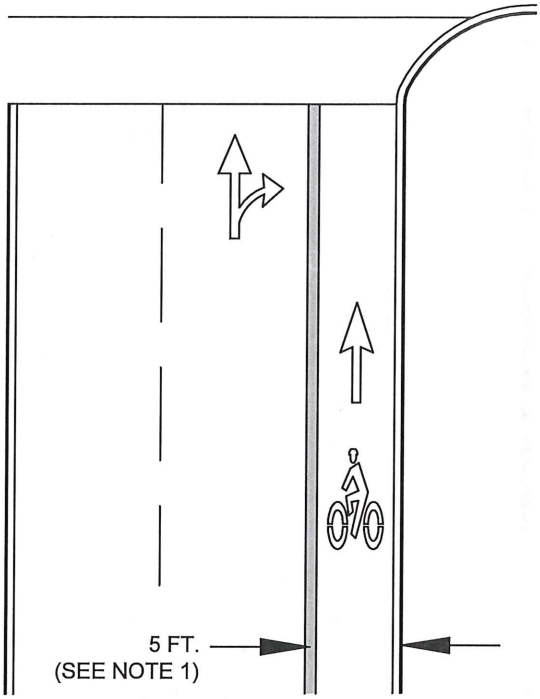
NOTES:

1. 5 FT. MEASURED FROM THE CENTER OF BICYCLE LANE TO FACE OF VERTICAL CURB, OR BASE OF ROLLED CURB FACE, OR EDGE OF ASPHALT (NO CURB PRESENT).
2. SEE MUTCD STANDARDS FOR MORE INFORMATION AND SPECIFICATIONS.
3. BIKE LANE ARROW AND BIKE RIDER SYMBOL SHALL BE PAINTED WHITE.
4. PAVEMENT SHALL BE SWEPT BEFORE APPLICATION.
5. LOCATIONS SHALL BE PRE-APPROVED BY THE CITY PRIOR TO INSTALLATION.
6. BICYCLE AND PEDESTRIAN SYMBOLS PER MILL CREEK STANDARD DETAIL STR-25.

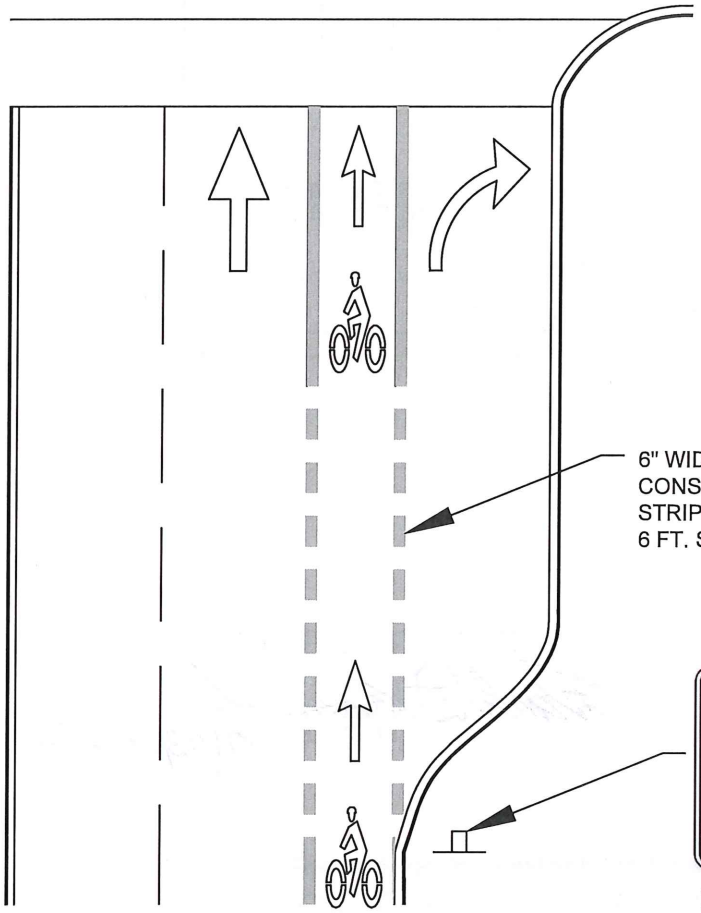
APPROVED FOR USE

01/13/2022

MILL CREEK CITY ENGINEER



TYPICAL RIGHT-THROUGH LANE
(BICYCLE LANE CONTINUES THROUGH INTERSECTION)



PLACE SIGN (R4-4) AT BEGINNING OF TURN POCKET

TYPICAL RIGHT TURN POCKET
(BICYCLE LANE CONTINUES THROUGH INTERSECTION)

CITY OF Mill Creek WASHINGTON

STREET

TYPICAL BICYCLE LANE TREATMENTS AT INTERSECTION

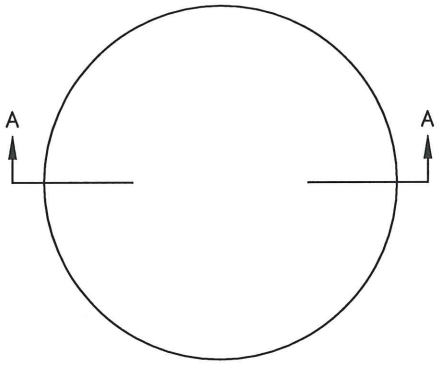
NOT TO SCALE

PUBLIC WORKS DEPARTMENT

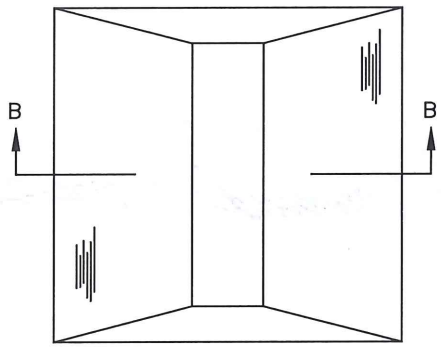
PLAN NO.
STR - 28

REV. DATE:
10/21/2021

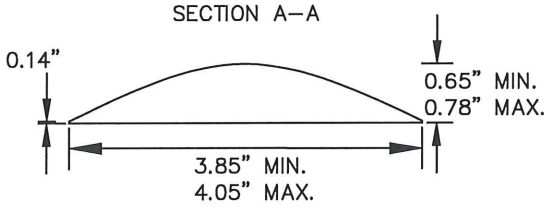
TYPE 1
PLAN VIEW



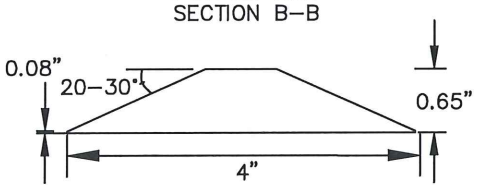
TYPE 2
PLAN VIEW



PROFILE VIEW
SECTION A–A



PROFILE VIEW
SECTION B–B



APPROVED FOR USE

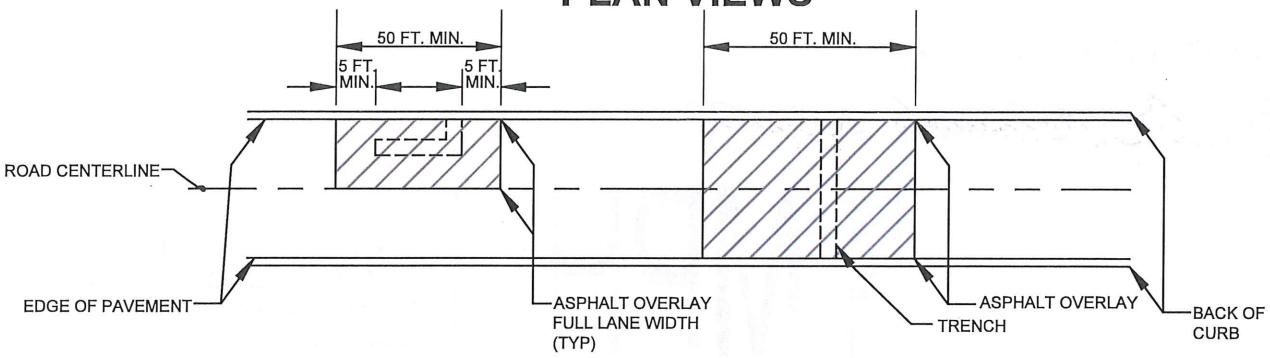
MILL CREEK CITY ENGINEER 01/13/2022

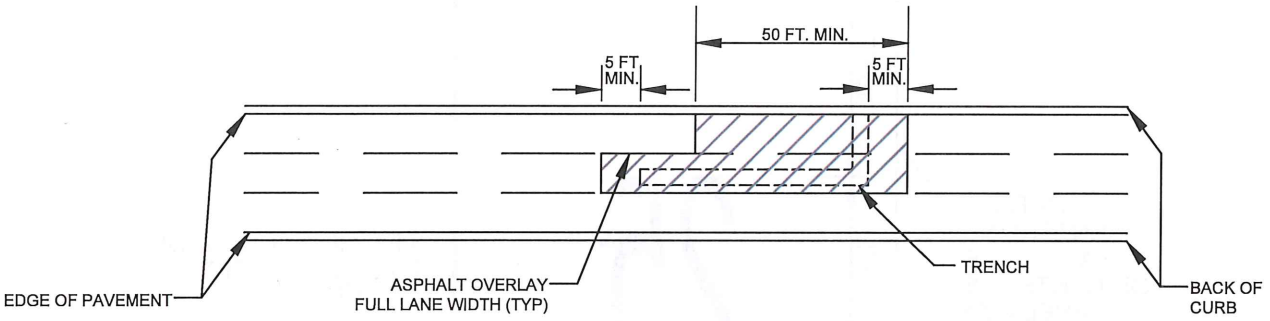
NOTES:

1) TYPE 1 AND TYPE 2 PAVEMENT MARKERS SHALL BE ACCORDANCE WITH WSDOT SEC. 9-21, UNLESS OTHERWISE APPROVED BY THE CITY.

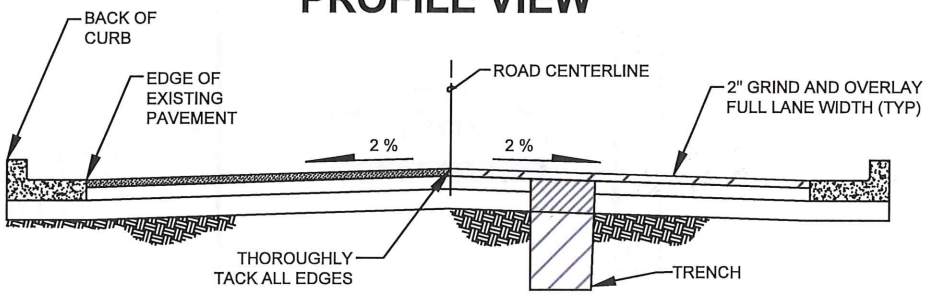
CITY OF Mill Creek WASHINGTON	STREET **RAISED LANE MARKERS** NOT TO SCALE	PLAN NO. **STR - 29**
	PUBLIC WORKS DEPARTMENT	REV. DATE: 10/25/2021

PLAN VIEWS





PROFILE VIEW



NOTES:

1) THIS STANDARD APPLIES TO ALL CUTS IN MINOR AND MAJOR ARTERIAL STREETS AND ALL PAVEMENT AND OVERLAY LESS THAN 5 YEARS OLD.
2) OVERLAY AREA MAY BE MODIFIED BY CITY ON OLDER PAVEMENT DEPENDING ON CONDITIONS OR SCHEDULED CONSTRUCTION/MAINTENANCE.
3) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL FRAMES AND GRATES OR SOLID LIDS PRIOR TO FINAL PAVING. ALL UTILITY MANHOLES, VALVES, AND SURVEY MONUMENTS SHALL BE ADJUSTED AFTER PAVING.
4) THE CONTRACTOR SHALL RESTORE CHANNELIZATION, PAVEMENT MARKINGS, AND LOOP DETECTORS.
5) POTHOLES TO BE RESTORED PER MILL CREEK STANDARD DETAIL STR-22.
6) IF THE PATCH IS MORE THAN 4 FT. X 4 FT., A GRIND AND OVERLAY IS REQUIRED UNLESS OTHERWISE APPROVED BY THE CITY. IF THE PATCH IS WITHIN 2 LANES OF TRAVEL, THE GRIND AND OVERLAY WILL BE REQUIRED ON BOTH LANES. 50 FT. MIN. LENGTH.

APPROVED FOR USE

Frank D. Nimmo

MILL CREEK CITY ENGINEER 04/13/2022

CITY OF Mill Creek WASHINGTON

STREET

ASPHALT OVERLAY FOR ROADWAY TRENCH REPAIR

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

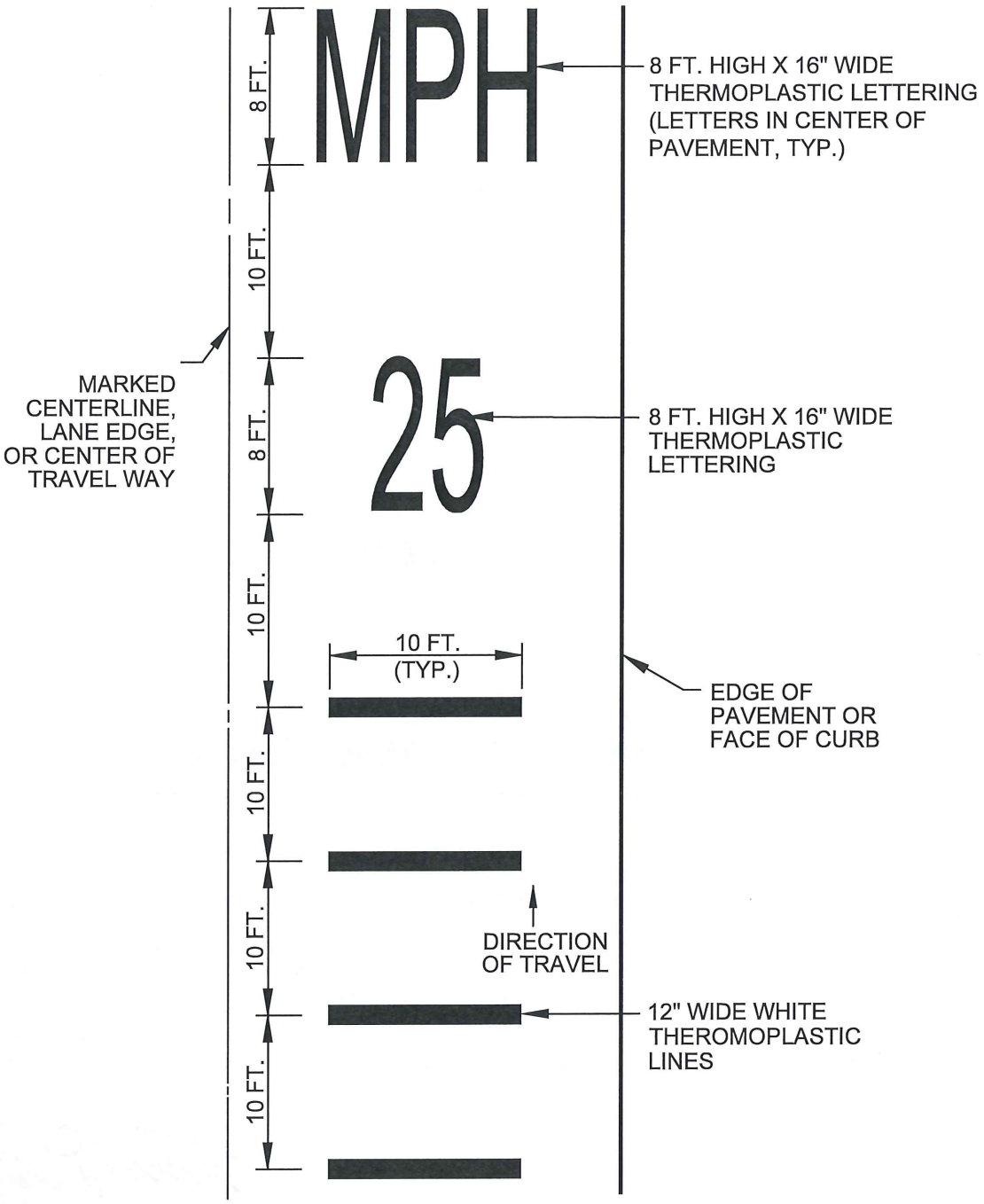
PLAN NO. **STR-30**

REV. DATE: 11/23/2021

APPROVED FOR USE

01/13/2022

MILL CREEK CITY ENGINEER



CITY OF Mill Creek WASHINGTON

STREET

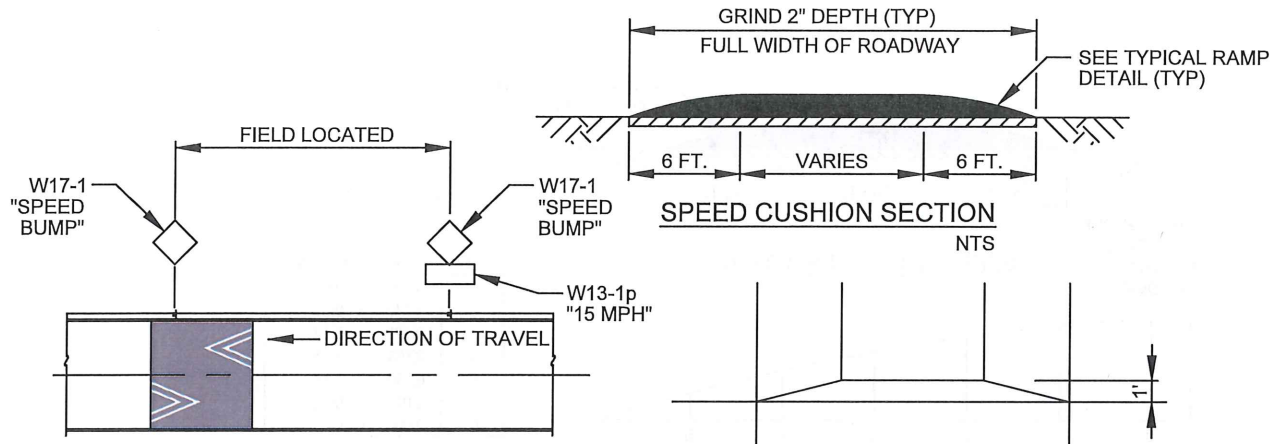
SPEED LIMIT PAVEMENT MARKING

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STR-31

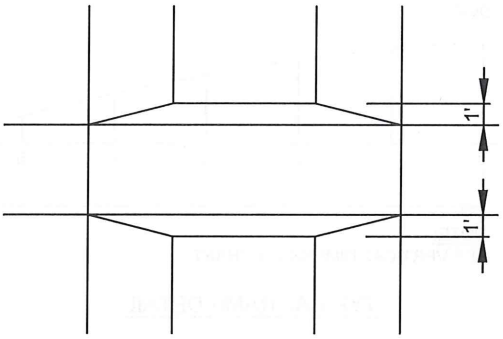
REV. DATE:
10/26/2021



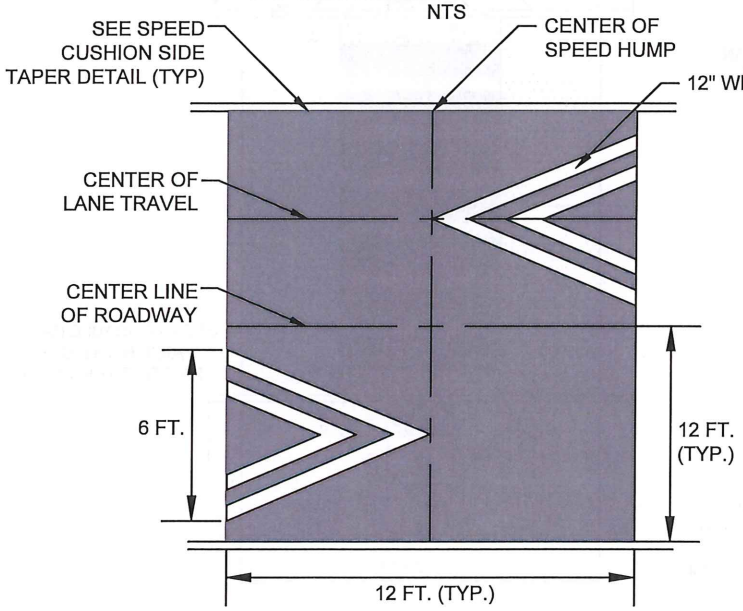
SPEED CUSHION SECTION
NTS

NOTE:
1. SIGNS TYPICAL FOR BOTH DIRECTIONS OF TRAVEL.
2. SIGN AND MARKING LOCATIONS SHALL BE VERIFIED BY CITY PRIOR TO INSTALLATION.
3. ALL SPEED CUSHION MARKINGS SHALL BE THERMOPLASTIC.

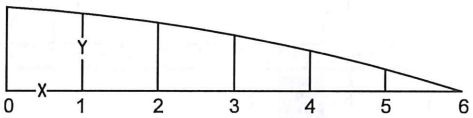
SIGNAGE DETAIL
NTS



SPEED CUSHION SIDE TAPER DETAIL
NTS



MARKING DETAIL



VERTICAL DIMENSION CHART

X(FT.)	Y(FT.)	= INCHES
0	0.25	= 3.0
1	0.243	= 2.92
2	0.222	= 2.67
3	0.186	= 2.25
4	0.139	= 1.67
5	0.077	= 0.92
6	0.00	= 0

TYPICAL RAMP DETAIL
NTS

SPEED CUSHION
NTS

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

STREET

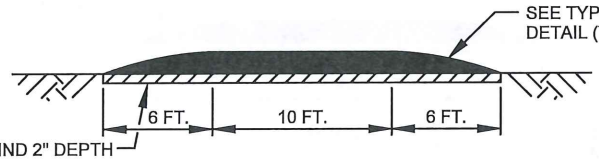
SPEED CUSHION

NOT TO SCALE

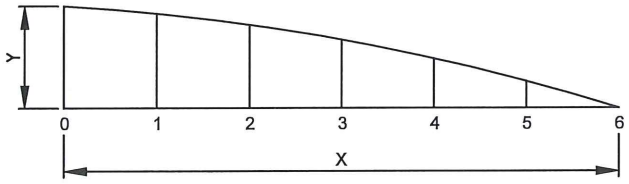
PUBLIC WORKS DEPARTMENT

PLAN NO.
STR-32

REV. DATE:
10/27/2021



SPEED CUSHION SECTION

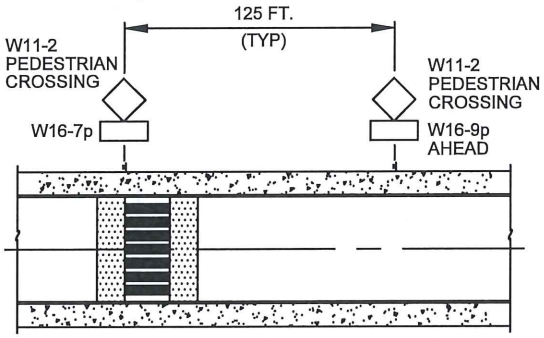


NOTE:
SEE VERTICAL DIMENSION CHART

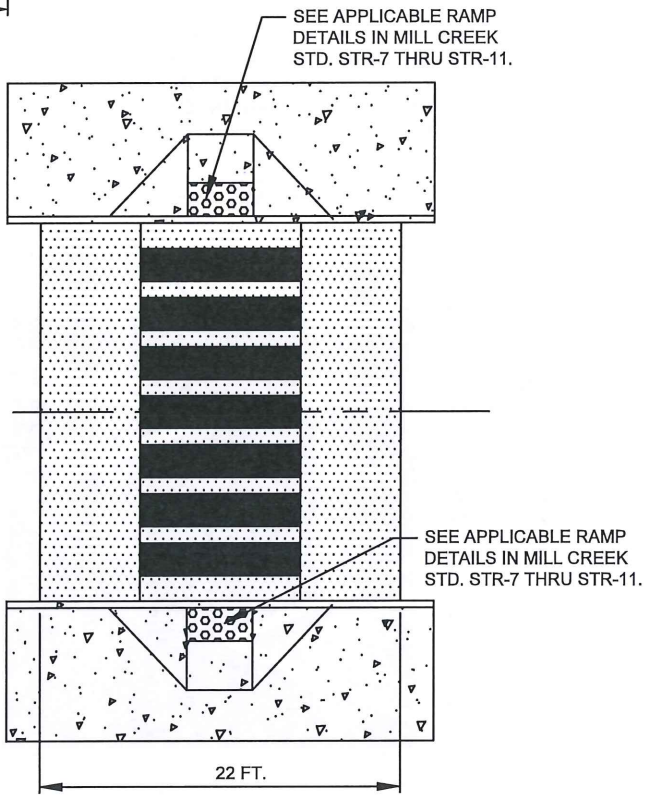
VERTICAL DIMENSION CHART

X (FT)	Y (FT)	= INCHES
0	0.25	= 3.0
1	0.243	= 2.92
2	0.222	= 2.67
3	0.186	= 2.25
4	0.139	= 1.67
5	0.077	= 0.92
6	0.00	= 0

TYPICAL RAMP DETAIL



TYPICAL RAISED CROSSWALK SIGNAGE
TYPICAL, BOTH SIDES



TYPICAL RAISED CROSSWALK MARKING

NOTES:
1. SIGNS TYPICAL FOR BOTH DIRECTIONS OF TRAVEL.
2. SIGN AND MARKING LOCATIONS SHALL BE VERIFIED BY THE CITY PRIOR TO INSTALLATION.
3. CROSSWALK MARKINGS TO BE THERMOPLASTIC PER MILL CREEK STD. STR-24.
4. ALL SIGNS TO BE FLUORESCENT YELLOW-GREEN.

APPROVED FOR USE

Frank D. Quinn

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

STREET

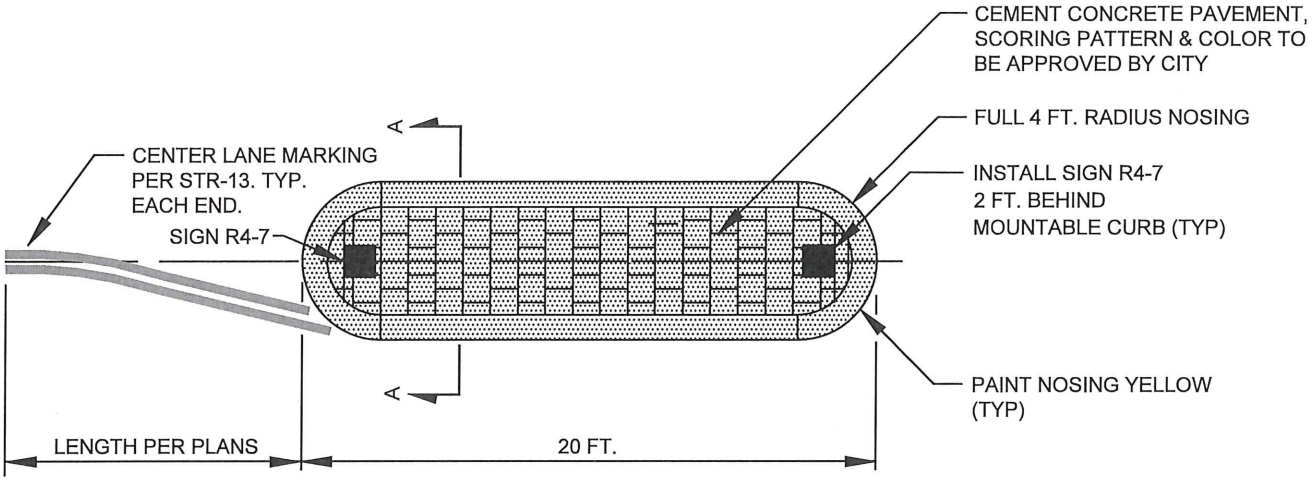
RAISED CROSSWALK

NOT TO SCALE

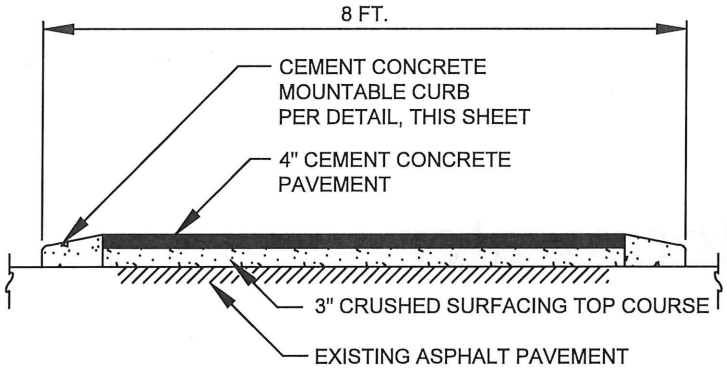
PUBLIC WORKS DEPARTMENT

PLAN NO.
STR-33

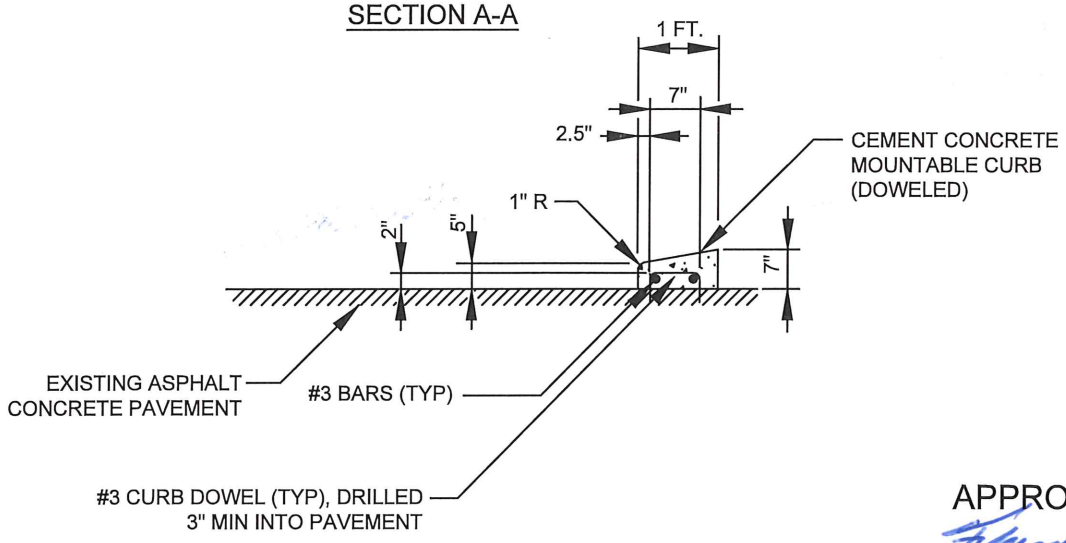
REV. DATE:
11/04/2021



PLAN



SECTION A-A



CEMENT CONCRETE MOUNTABLE CURB DETAIL
NTS

R4-7
24" X 30"

SIGN

FOUR SIGNS TOTAL: TWO ON THE MEDIAN AND TWO ON THE STREET.

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STREET

TRAFFIC MEDIAN

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STR-34

REV. DATE:
11/04/2021

Stormwater

Stormwater Utility and Drainage General Requirements

1. The City of Mill Creek is issued a Western Washington Phase II municipal stormwater permit by the Washington State Department of Ecology to meet the requirements and obligations of the National Pollutant Discharge Elimination System (NPDES) chapters of the federal Clean Water Act. In order to comply with the City permit, the City adopted the 2014 revision of the 2012 Stormwater Management Manual for Western Washington (SMMWW). All development proposals are required to comply with the design requirements, procedures, and standards in the SMMWW.

2. Development (both new development and redevelopment of existing developed areas) are required to demonstrate compliance with the requirements of the SMMWW through preparation and submittal of stormwater site plans, as described in Chapter 2 of the SMMWW. These documents, often combining drawings and documentation, are typically submitted as part of City development permit applications (e.g. Building Permits, Clearing and Grading Permits, Stormwater Connection Permits, etc.). Two primary components of the stormwater site plan are:

   a) A construction Stormwater Pollution Prevention Plan (SWPPP) demonstrating how pollution generated by construction and other temporary impacting activities will be controlled and managed (with a primary focus on erosion and sediment control); and,

   b) The permanent stormwater management design for the development, including all permanent facilities and Best Management Practices (BMPs), that will control and manage pollution from stormwater runoff after construction has been completed.

3. Positive drainage is to be provided for all new and existing developments. Positive drainage is expected to connect with the nearest catch basin or similar conveyance pathway, unless otherwise approved by the City. A City Stormwater Connection Permit is required for new or replacement connections to public catch basins, open channels, stormwater facilities, or outfalls. Permit applications shall be submitted via MyBuildingPermit.com.

4. Any development proposal that will add and/or replace 2,000 square feet or more of hard/impervious surface, or disturb 7,000 square feet or more, will need to prepare and submit a stormwater site plan prepared to meet the applicable Minimum Requirements in accordance with the SMMWW for City review and approval.

5. An application for a City Stormwater Connection Permit may require submittal of a stormwater site plan, even if the total disturbance to make the connection is less than described above. In these circumstances, the existing surface area contributing runoff to the new connection point will be the basis for determining Minimum Requirements from the SMMWW to include and address in the stormwater site plan.

6. Additional general requirements for inspections of stormwater facilities, conveyance, and related features can be found in the "Development Inspection General Requirements and Notes" section of these Standard Plans.

7. All stormwater pipe shall have a minimum of 18 inches of pipe cover when located within any part of the City right-of-way (ROW) or in a private drive area exposed to vehicular traffic. Where sufficient coverage is not achievable, the pipe shall be ductile iron (Class 50) or C-900.

Stormwater Utility and Drainage General Requirements (Continued)

8. Storm pipes proposed to be installed in the load bearing zone of structural walls must be protected by a ductile iron (Class 50) sleeve. Proposals to install sleeved storm pipes must be approved by the City.

9. All storm utility mainline pipes in the right-of-way (ROW) shall be 12-inch minimum diameter unless approved by the City. Side lines leading from adjacent private property shall have a 6-inch minimum diameter unless otherwise approved by the City. Perforated drain lines and rockery/retaining wall drains shall have a 6-inch minimum diameter unless otherwise approved by the City.

10. Downstream pipe shall be the same size or larger than the largest-diameter upstream pipe.

11. Pipe and joint materials shall be in accordance with Sections 7-04 and 9-05 of the WSDOT Standard Specifications.

12. All catch basins with 5 feet or less between the top of grate and the pipe inverts can be Type I unless otherwise required.

13. All catch basins with a depth over five feet to the flow line shall be Type II.

14. Catch basin spacing shall conform to the following general requirements:

    a) For grades less than 8 percent, catch basins can have a maximum spacing up to 300 feet, unless otherwise required;

    b) For grades from 8 to 12 percent, catch basins shall have a maximum spacing of 200 feet; and,

    c) For grades greater than 12 percent, catch basins shall have a maximum spacing of 150 feet.

15. Standard ladder steps shall be provided in all catch basins and manholes extending over five feet in depth, unless otherwise approved by the City.

16. Catch basins are required for the following conditions:

    a) A change in the flow-line slope.

    b) At a maximum distance of 300 feet in a main line.

    c) A change in the pipe size.

    d) For the jointing of two or more main lines.

    e) For a side-line service.

    f) A change in pipe-material type.

    g) Bends are not allowed in main lines.

Stormwater Utility and Drainage General Requirements (Continued)

17. All drainage structures shall incorporate a ductile iron frame and grate or solid lid in accordance with the following requirements:
    a) Structures receiving flow in only one direction shall include a vaned frame and grate.
    b) Structures in a curb line receiving flow in two directions shall use a Through Curb Inlet with a vaned bi-directional grate with a full height diamond plate hood.
    c) Rolled frame and grates may only be used where approved by the City.
    d) Structures outside a curb line (e.g. parking lots) receiving flow from multiple directions may use a frame and grate with a flat herringbone pattern or equivalent.
    e) All drainage structures outside a water collection area shall have solid lids unless otherwise approved by the City.
    f) All fasteners (e.g. bolts, nuts, washers, etc.) for catch basin lids shall be standard size. No metric fasteners shall be allowed.
    g) All grates or solid lids within the public right-of-way shall be non-locking unless otherwise approved by the City. Grates and solid lids outside the public right-of-way may be locking at the owner's discretion.
    h) All frame and grates or solid lids shall have an HS-25 rating.
    i) Catch basin solid covers located in sidewalks, pathways, crosswalks, or other pedestrian use areas shall have non-slip covers. The non-slip surface shall be a non-grit, metallic alloy surface with a hardness of up to 62 on the Rockwell "C" scale, SlipNOT, or equal. Diamond or checker plate surfaces will not be considered equal.
18. Cuts into existing asphalt paved areas shall be neat line cut with saw or jackhammer in continuous lines consistent with the dimensions of the trench.
19. Disturbed areas for utility construction shall be limited to no more than 100 linear feet of open trench before temporary repairs are initiated, unless otherwise approved by the City.
20. The contractor shall be responsible for adjusting all frames and grates or solid lids prior to final paving. All utility manholes, valves and survey monuments shall be adjusted after final paving. Final adjustments shall be completed within three (3) calendar weeks following final paving, unless a different time frame is approved by the City.
21. Final adjustments of all frames (grate or solid lid), utility manholes and accesses, valves, and survey monuments in paved areas shall conform to the following minimum completion requirements (unless more stringent requirements apply):
    a) Saw-cut or neat-line jackhammer of pavement around frame/lids/covers. This opening shall be no larger than 12 inches beyond the perimeter of the frame/lid/cover;
    b) Remove base material, surfacing course, and frame; add raising bricks; replace frame and cover to finish grade;

Stormwater Utility and Drainage General Requirements (Continued)

c) Pour 5 inches of concrete around structure and frame within no less than 2 inches from the final surface grade;

d) Fill the remaining void with HMA class ½", compact and seal around entire perimeter to provide a dense, uniform, sealed surface; and,

e) The maximum vertical differential allowed between the finished pavement grade and the top of frame shall not exceed ¼ inch.

22. Stub outs for traditional yard, foundation and roof drains shall be installed behind the sidewalk as required. The location and type of stub-out shall be indicated with an above ground marker.

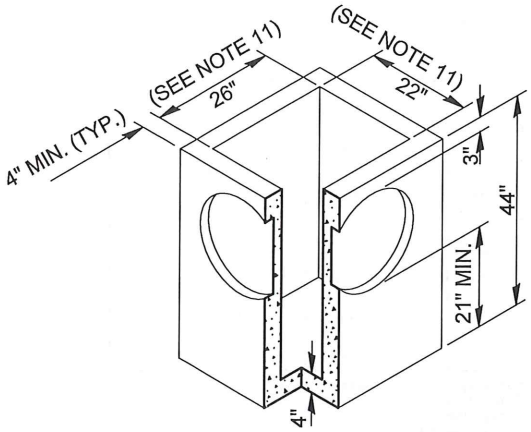
23. Grout shall be applied within all seams and openings in all inlets and catch basins. Jetset grout is not allowed unless otherwise approved by the City.

24. All stormwater detention and water quality facilities, flow control structures, pipes and catch basins shall be jetted and cleaned prior to final City acceptance.

APPROVED FOR USE

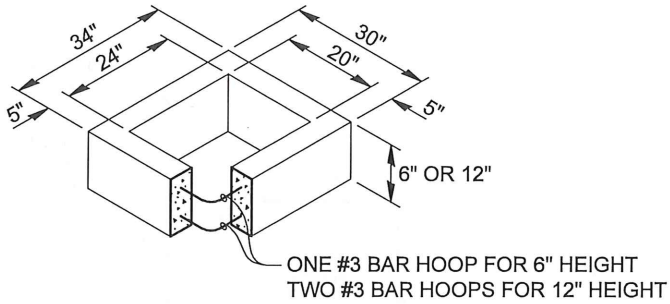
01/13/2022

MILL CREEK CITY ENGINEER

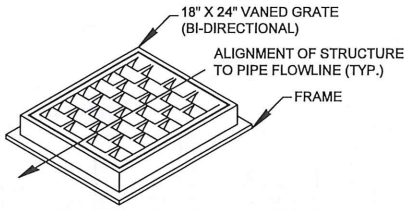


PRECAST BASE SECTION

REBAR NOT SHOWN FOR CLARITY.



6" or 12" CONCRETE RISER



FRAME AND VANED GRATE

NOTES:

1) BASE TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS (SECTION 7-05) FOR CATCH BASIN TYPE 1, OR AS APPROVED BY THE CITY.
2) CONCRETE INLET TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M 199) & C890 UNLESS OTHERWISE APPROVED BY THE CITY.
3) KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM TO 2.5" MAXIMUM. PROVIDE A 1.5" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 9-04.3. ALL SIDE ACCESS INTO THE BASE SHALL BE THROUGH A PRECAST KNOCKOUT.
4) ROUND KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAXIMUM DIAMETER OF 20".
5) ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000.
6) THE MAXIMUM DEPTH FROM THE FINISHED GRADE TO THE LOWEST PIPE INVERT SHALL BE 5 FT.
7) THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2" PER FOOT.
8) CATCH BASIN FRAMES AND GRATES OR COVERS SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
9) THE FRAME AND GRATE MAY BE INSTALLED WITH THE FLANGE DOWN.
10) THE PRECAST BASE SECTION MAY HAVE A ROUNDED FLOOR, AND THE WALLS MAY BE SLOPED AT A RATE OF 1:24 OR STEEPER.
11) THE OPENINGS SHALL BE MEASURED AT THE TOP OF THE PRECAST BASE SECTION.
12) ALL PICKUP HOLES SHALL BE GROUTED FULL AFTER THE BASIN HAS BEEN PLACED.
13) ALL NEW PVC PIPES SHALL BE INSTALLED WITH SAND COLLARS AND NON-SHRINK GROUT. JETSET NOT ALLOWED.
14) 1", 2", AND 4" RISERS ACCEPTED AS NEEDED. TOTAL NUMBER OF RISERS SHOULD BE LIMITED TO MINIMUM NECESSARY.
15) MINIMUM 10 FT. FROM ADJACENT TREES, UNLESS OTHERWISE APPROVED BY CITY.

CITY OF Mill Creek WASHINGTON

STORMWATER

CATCH BASIN TYPE 1

NOT TO SCALE

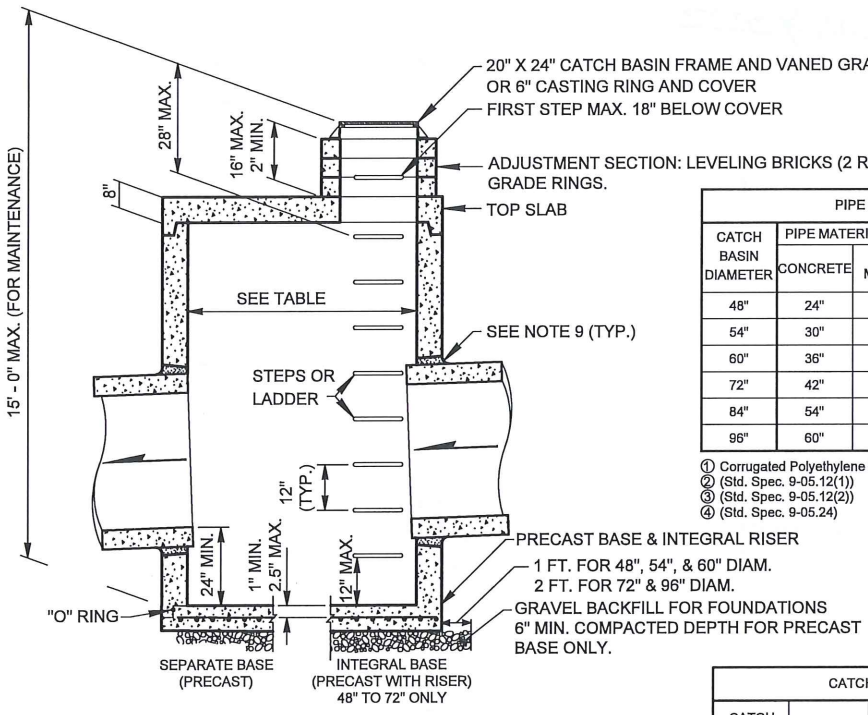
PUBLIC WORKS DEPARTMENT

PLAN NO.

STM - 1

REV. DATE:

10/06/2021



PIPE ALLOWANCES					
CATCH BASIN DIAMETER	PIPE MATERIAL WITH MAXIMUM INSIDE DIAMETER				
	CONCRETE	ALL METAL	CPSSP① PP④	SOLID WALL PVC②	PROFILE WALL PVC③
48"	24"	30"	24"	30"	30"
54"	30"	36"	30"	36"	36"
60"	36"	42"	36"	42"	42"
72"	42"	54"	42"	48"	48"
84"	54"	60"	54"	48"	48"
96"	60"	72"	60"	48"	48"

① Corrugated Polyethylene Storm Sewer Pipe (Std. Spec. 9-05.20)
② (Std. Spec. 9-05.12(1))
③ (Std. Spec. 9-05.12(2))
④ (Std. Spec. 9-05.24)

CATCH BASIN DIMENSIONS				
CATCH BASIN DIAMETER	WALL THICKNESS	BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS
48"	4"	6"	36"	8"
54"	4.5"	8"	42"	8"
60"	5"	8"	48"	8"
72"	6"	8"	60"	12"
84"	8"	12"	72"	12"
96"	8"	12"	84"	12"

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

NOTES:

1) CATCH BASIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M199) AND ASTM C890 UNLESS OTHERWISE APPROVED BY THE CITY.
2) HANDHOLDS IN ADJUSTMENT SECTION SHALL HAVE 3" MIN. CLEARANCE. STEPS WITH CATCH BASIN SHALL HAVE 6" MIN. CLEARANCE. HANDHOLDS SHALL BE PLACED IN ALTERNATING GRADE RINGS OR LEVELING BRICK COURSE WITH A MIN. OF ONE HANDHOLD BETWEEN THE LAST STEP AND TOP OF THE FINISHED GRADE.
3) ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000. ALL PRECAST CONCRETE SHALL BE CLASS 4000.
4) CATCH BASIN FRAMES AND GRATES OR COVERS SHALL BE IN ACCORDANCE WITH THE WSDOT STANDARD SPECIFICATIONS. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
5) ALL BASE REINFORCING STEEL SHALL HAVE A MIN. YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH 1" MIN. CLEARANCE.
6) MIN. SOIL BEARING VALUE SHALL EQUAL 3,500 POUNDS PER SQUARE FOOT.
7) ALL MANHOLE JOINTS SHALL USE A CONFINED RUBBER GASKET AND GROUTED (INSIDE AND OUT) TO MEET ASTM C-443 SPECIFICATIONS.
8) ROUND SOLID LOCKING LIDS REQUIRED WHENEVER CATCH BASIN DOES NOT COLLECT SURFACE WATER, OR WHEN LOCATED IN SIDEWALK AND PLANTER AREAS. ROUND CONCRETE RISERS ARE REQUIRED FOR ROUND SOLID LOCKING LIDS.
9) ALL NEW PIPES SHALL BE INSTALLED WITH EITHER A KOR-N-SEAL BOOT, OR SAND COLLARS AND A NON-SHRINK GROUT. JETSET NOT ALLOWED.
10) MINIMUM 10 FT. FROM ADJACENT TREES, UNLESS OTHERWISE APPROVED BY THE CITY.
11) ALL RISERS WILL BE WET SET IN GROUT, AND SMOOTHED INSIDE AND OUT PRIOR TO BEING BURIED.
12) NO STEPS ARE REQUIRED WHEN HEIGHT IS 4 FT. OR LESS.
13) THE BOTTOM OF THE PRECAST CATCH BASIN MAY BE SLOPED TO FACILITATE CLEANING.
14) THE RECTANGULAR FRAME AND GRATE MAY BE INSTALLED WITH THE FLANGE UP OR DOWN. THE FRAME MAY BE CAST INTO THE ADJUSTMENT SECTION.
15) KNOCKOUTS SHALL HAVE A WELL THICKNESS OF 2" MIN. TO 2.5" MAX. PROVIDE A 1.5" MIN. GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS. 9-04.3.

CITY OF Mill Creek WASHINGTON

STORMWATER

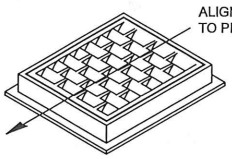
CATCH BASIN TYPE 2

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

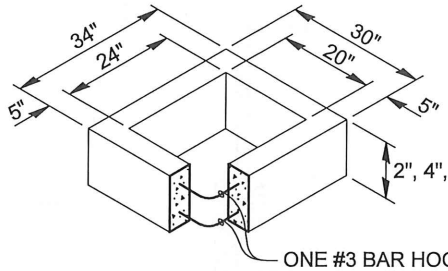
PLAN NO.
STM - 2

REV. DATE:
10/06/2021



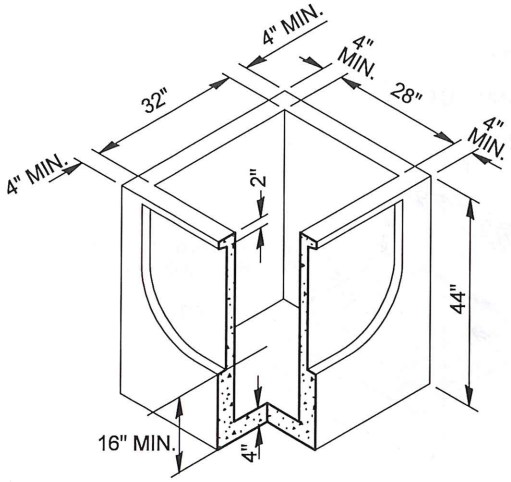
FRAME AND VANED GRATE

GRATE SIZE 20" X 24"



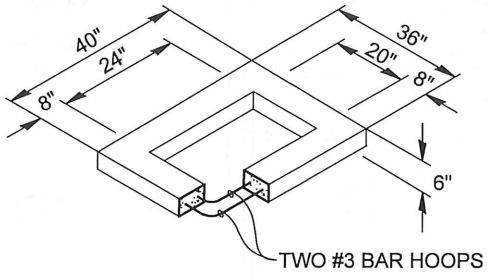
ONE #3 BAR HOOP FOR 6" HEIGHT
TWO #3 BAR HOOPS FOR 12" HEIGHT

RECTANGULAR ADJUSTMENT SECTION



PRECAST BASE SECTION

MEASUREMENT AT THE TOP OF THE BASE
REBAR NOT SHOWN FOR CLARITY



TWO #3 BAR HOOPS

REDUCING SECTION

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

NOTES:

1) CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M 199) & C890 UNLESS OTHERWISE APPROVED BY CITY. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
2) CATCH BASIN FRAME AND GRATE SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
3) THE KNOCKOUT SHALL NOT BE GREATER THAN 26" IN ANY DIRECTION. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MIN. TO 2.5" MAX. PROVIDE A 1.5" MIN. GAP BETWEEN KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS 9-04.3.
4) THE MAXIMUM DEPTHS FROM FINISHED GRADE TO PIPE INVERT SHALL BE 5 FT.
5) THE PRECAST BASE SECTION MAY HAVE A ROUNDED FLOOR AND THE WALLS MAY BE SLOPED AT A RATE OF 1:24 OR STEEPER.
6) THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED $\frac{1}{2}$" PER FOOT.
7) APPLY NON-SHRINK GROUT TO INSIDE AND OUTSIDE OF ALL JOINTS RINGS, RISERS, AND FRAMES.
8) ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000.
9) FRAME AND GRATE SHALL BE INSTALLED WITH FLANGE DOWN.
10) ALL NEW PVC PIPES SHALL BE INSTALLED WITH SAND COLLARS AND NON-SHRINK GROUT. JETSET NOT ALLOWED.
11) 1", 2", AND 4" RISERS ACCEPTED AS NEEDED. TOTAL NUMBER OF RISERS SHOULD BE LIMITED TO MINIMUM NECESSARY.
12) MINIMUM 10 FT. FROM ADJACENT TREES, UNLESS OTHERWISE APPROVED BY CITY.
13) CLEAN SURFACE AND BOTTOM AREA. PROVIDE UNIFORM CONTACT. THE SURFACE AREA OF THE BASE SECTION MUST BE MORTARED TO THE BOTTOM AREA OF THE RISER SECTION.
14) THE OPENINGS SHALL BE MEASURED AT THE TOP OF THE PRECAST BASE SECTION.

CITY OF Mill Creek WASHINGTON

STORMWATER

CATCH BASIN TYPE 1-L

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

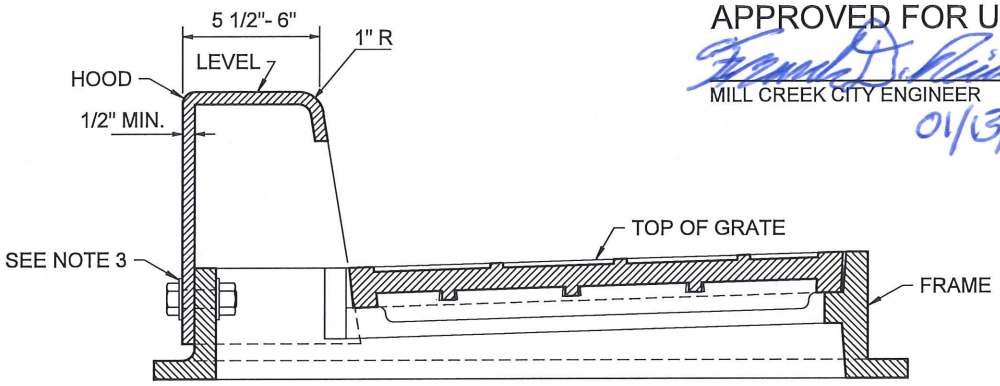
PLAN NO.
STM - 3

REV. DATE:
8/27/2021

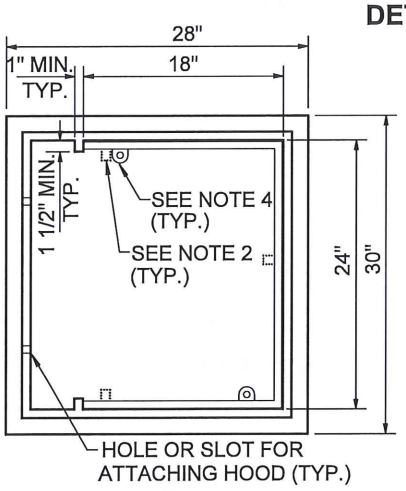
APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

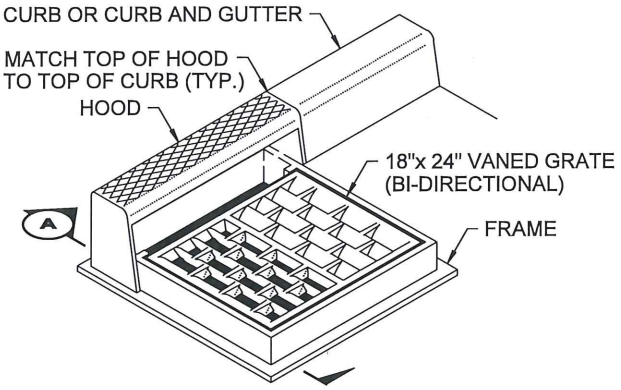


DETAIL SECTION (A)



TOP VIEW

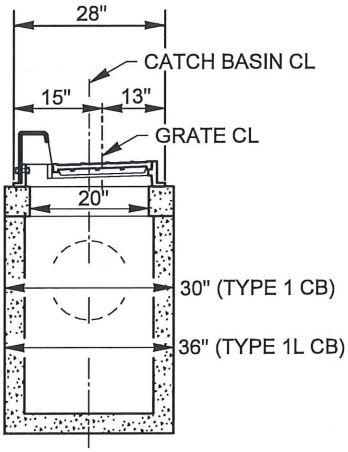
FRAME DETAIL



ISOMETRIC VIEW

NOTES:

1) THE ASYMMETRY OF THE COMBINATION INLET SHALL BE CONSIDERED WHEN CALCULATING THE OFFSET DISTANCE FOR THE CATCH BASIN.
2) THE DIMENSIONS OF THE FRAME AND HOOD MAY VARY SLIGHTLY AMONG DIFFERENT MANUFACTURERS, THE FRAME MAY HAVE CAST FEATURES INTENDED TO SUPPORT A GRATE GUARD. HOOD UNITS SHALL MOUNT OUTSIDE OF THE FRAME.
3) ATTACH THE HOOD TO THE FRAME WITH TWO $\frac{3}{4}$" X 2" HEX HEAD BOLTS, NUTS, AND OVERSIZED WASHERS. THE WASHERS SHALL HAVE DIAMETERS ADEQUATE TO ASSURE FULL BEARING ACROSS THE SLOTS.
4) CASTING MUST BE SET 0.5" BELOW FINAL ROAD/GUTTER GRADE.
5) HOOD SHALL MATCH TOP OF CURB ELEVATION.
6) NO HORIZONTAL CROSS BAR IN THE OPENING.
7) TROWELED EDGE MUST BE IN CONTACT WITH THE FRAME (RATHER THAN EXPANSION JOINT).
8) WHEN BOLT-DOWN GRATES ARE SPECIFIED IN THE CONTRACT, PROVIDE TWO TAP HOLES TO ACCEPT A $\frac{5}{8}$" X -11 NC X 2" ALLEN HEAD CAP SCREW IN THE FRAME THAT ARE VERTICALLY ALIGNED WITH THE GRATE SLOTS.
9) ONLY DUCTILE IRON VANED GRATES SHALL BE USED. REFER TO WSDOT STANDARD SPECIFICATIONS 9.05-15(2) FOR ADDITIONAL REQUIREMENTS.
10) THROUGH CURB CATCH BASIN SHALL BE 2-WAY VANED GRATE WITH 9" DIAMOND PLATE HOOD WITH H20 RATING (OLYMPIC FOUNDARY ITEM NO. SM52VG) OR APPROVED EQUAL BY THE CITY.
11) THIS PLAN IS INTENDED TO SHOW THE INSTALLATION DETAILS OF MANUFACTURED PRODUCT. IT IS NOT THE INTENT OF THIS PLAN TO SHOW THE SPECIFIC DETAILS NECESSARY TO FABRICATE THE CASTINGS SHOWN ON THIS DRAWING.



SECTION (A)

CITY OF Mill Creek WASHINGTON

STORMWATER

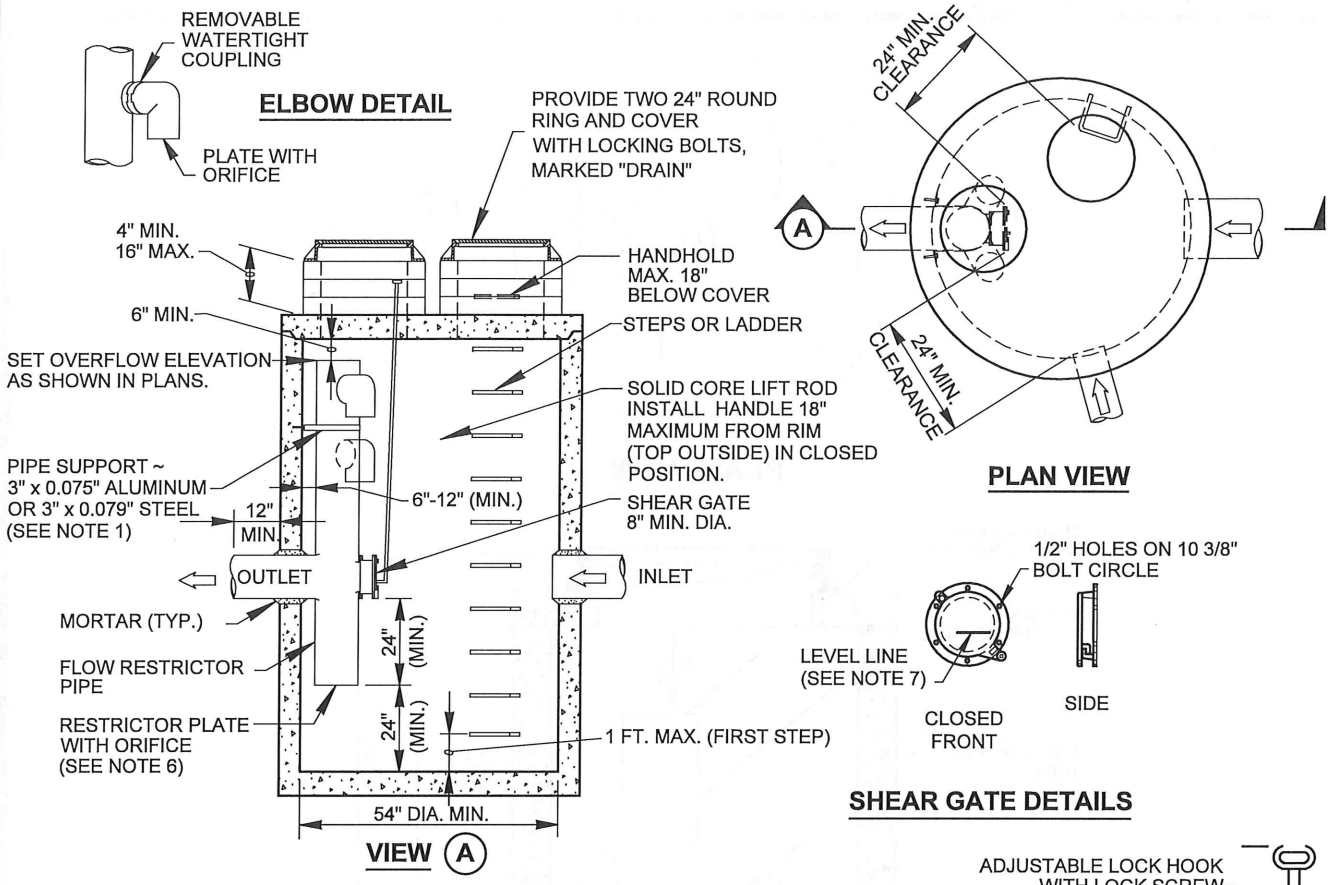
THROUGH CURB INLET

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STM - 4

REV. DATE:
10/14/2021



NOTES:

1. THE PIPE SUPPORTS AND THE FLOW RESTRICTOR SHALL BE CONSTRUCTED OF THE SAME MATERIAL AND BE ANCHORED AT A MAXIMUM SPACING OF 36". ATTACH THE PIPE SUPPORTS TO THE MANHOLE WITH 5/8" STAINLESS STEEL EXPANSION BOLTS OR EMBED THE SUPPORTS INTO THE MANHOLE WALL 2".
2. THE VERTICAL RISER STEM OF THE FLOW RESTRICTOR SHALL BE THE SAME DIAMETER AS THE HORIZONTAL OUTLET PIPE WITH A MINIMUM DIAMETER OF 12". THE OVERFLOW PIPE AND OUTLET PIPE MUST HAVE A COMBINED CAPACITY EQUAL TO OR GREATER THAN THE TOTAL INLET VOLUME.
3. THE FLOW RESTRICTOR SHALL BE FABRICATED FROM ONE OF THE FOLLOWING MATERIALS:
   - 0.060" CORRUGATED ALUMINUM ALLOY DRAIN PIPE
   - 0.064" CORRUGATED GALVANIZED STEEL DRAIN PIPE WITH TREATMENT 1
   - 0.064" CORRUGATED ALUMINIZED STEEL DRAIN PIPE
   - 0.060" ALUMINUM ALLOY FLAT SHEET, IN ACCORDANCE WITH ASTM B 209, 5052 H32 OR EPS HIGH DENSITY POLYETHYLENE STORM SEWER PIPE
4. THE FRAME AND LADDER OR STEPS ARE TO BE OFFSET SO THAT THE SHEAR GATE IS VISIBLE FROM THE TOP; THE CLIMB-DOWN SPACE IS CLEAR OF THE RISER AND GATE, AND THE FRAME IS CLEAR OF THE CURB.
5. THE MULTI-ORIFICE ELBOWS MAY BE LOCATED AS SHOWN, OR ALL PLACED ON ONE SIDE OF THE RISER TO ASSURE LADDER CLEARANCE. THE SIZE OF THE ELBOWS AND THEIR PLACEMENT SHALL BE SPECIFIED IN THE PLANS.
6. RESTRICTOR PLATE WITH ORIFICE AS SPECIFIED IN THE PLANS. THE OPENING SHALL BE CUT ROUND AND SMOOTH.
7. THE SHEAR GATE SHALL BE MADE OF ALUMINUM ALLOY IN ACCORDANCE WITH ASTM B 26 AND ASTM B 275, DESIGNATION ZG32A; OR CAST IRON IN ACCORDANCE WITH ASTM A 48, CLASS 30B. THE LIFT HANDLE SHALL BE MADE OF A SIMILAR METAL TO THE GATE (TO PREVENT GALVANIC CORROSION), AND SHALL BE OF SOLID ROD WITH ADJUSTABLE HOOK AS REQUIRED. A NEOPRENE RUBBER GASKET IS REQUIRED BETWEEN THE RISER MOUNTING FLANGE AND THE GATE FLANGE. INSTALL THE GATE SO THAT THE LEVEL-LINE MARK IS LEVEL WHEN THE GATE IS CLOSED. THE MATING SURFACES OF THE LID AND THE BODY SHALL BE MACHINED FOR PROPER FIT. ALL SHEAR GATE BOLTS SHALL BE STAINLESS STEEL.
8. THE SHEAR GATE MAXIMUM OPENING SHALL BE CONTROLLED BY LIMITED HINGE MOVEMENT, A STOP TAB, OR SOME OTHER DEVICE.
9. ALTERNATIVE SHEAR GATE DESIGNS ARE ACCEPTABLE IF MATERIAL SPECIFICATIONS ARE MET AND FLANGE BOLT PATTERN MATCHES.

APPROVED FOR USE

MILL CREEK CITY ENGINEER 04/13/2022

CITY OF MillCreek WASHINGTON

STORMWATER

CATCH BASIN TYPE 2 WITH FLOW RESTRICTOR

NOT TO SCALE

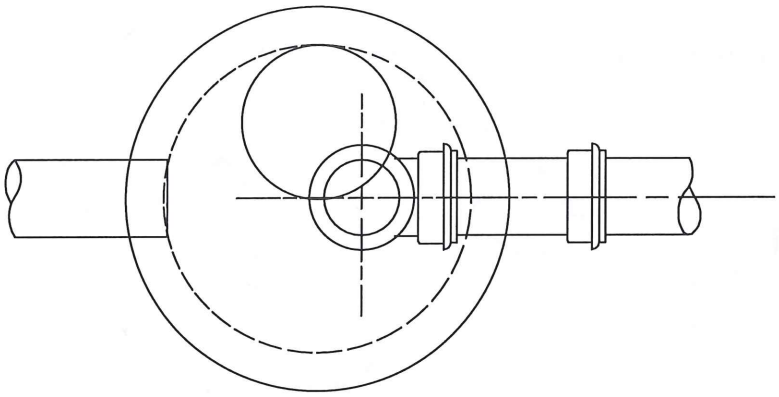
PUBLIC WORKS DEPARMENT

PLAN NO.

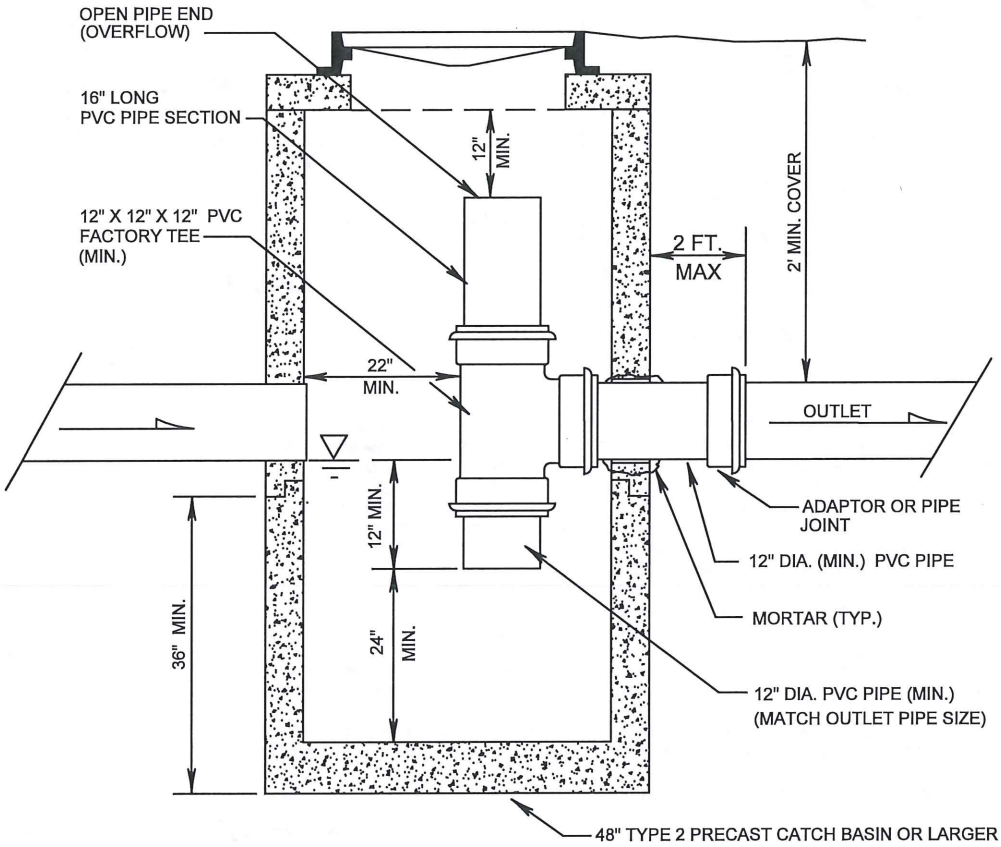
STM - 5

REV. DATE:

10/01/2021



PLAN VIEW



NOTES

1. OTHER VERSIONS OF THIS CONCEPT DESIGN MAY BE ACCEPTABLE IF APPROVED BY CITY.
2. PIPE MATERIALS FOR THE SPILL CONTROL SEPARATOR SHALL BE ASTM 3034 PVC SDR 35 SEWER PIPE WITH GASKETED FITTINGS OR CITY APPROVED ALTERNATE STORM DRAIN PIPING.

APPROVED FOR USE

01/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STORMWATER

SPILL CONTROL SEPARATOR

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

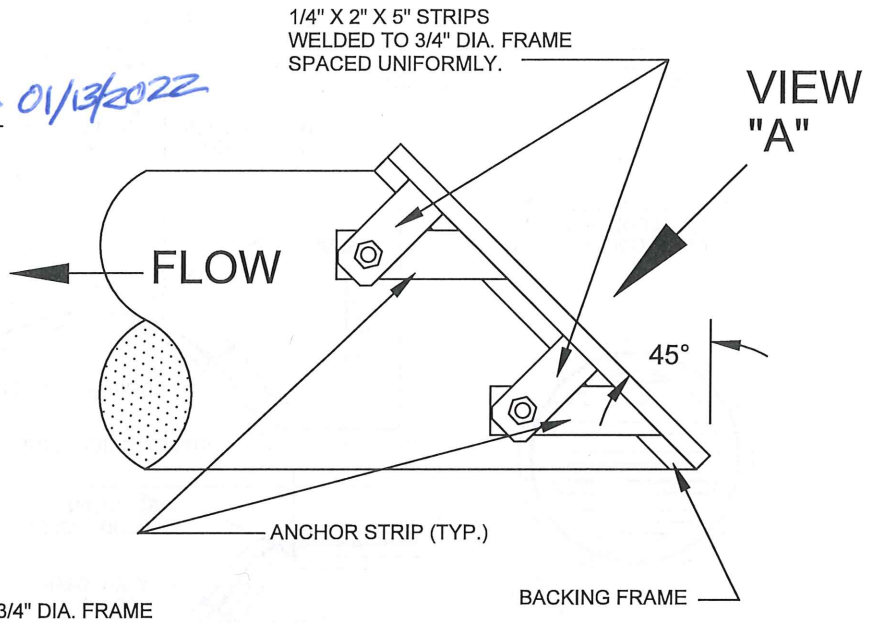
PLAN NO.
STM - 6

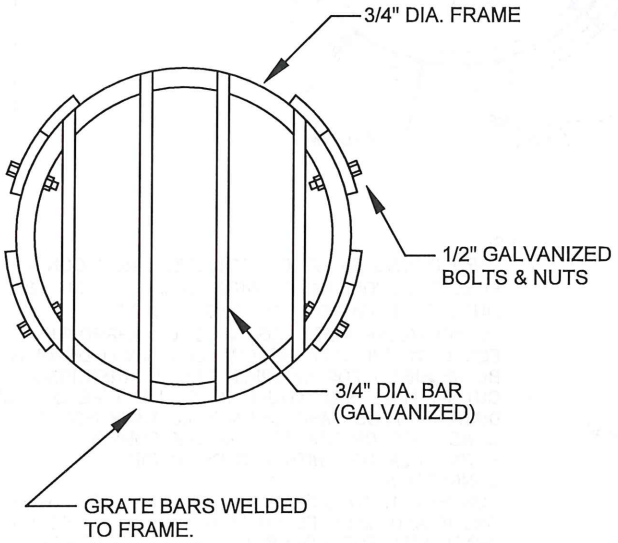
REV. DATE:
10/04/2021

APPROVED FOR USE

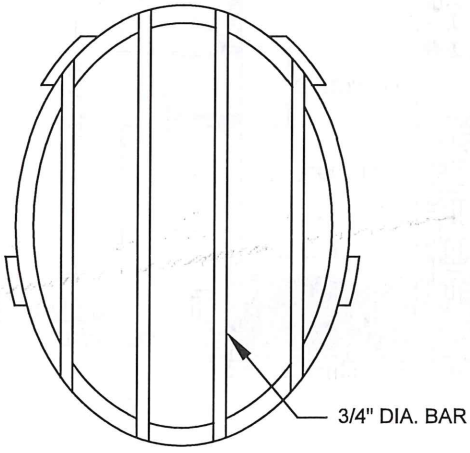
Frank D. Gleinnd 01/13/2022

MILL CREEK CITY ENGINEER





END VIEW



VIEW "A"

NOTES:
1. ALL STEEL PARTS SHALL BE HOT DIPPED GALVANIZED.
2. FRONT GRATE FRAME SHALL BE REMOVABLE WITH BOLTS.
3. SPACING BETWEEN GRATE BARS SHALL NOT EXCEED 3" C/C.
4. ALL FIELD WELDS SHALL BE FIELD GALVANIZED.
5. TO BE USED ON ALL PIPE ENDS OVER 12" DIAMETER.

CITY OF Mill Creek WASHINGTON

STORMWATER

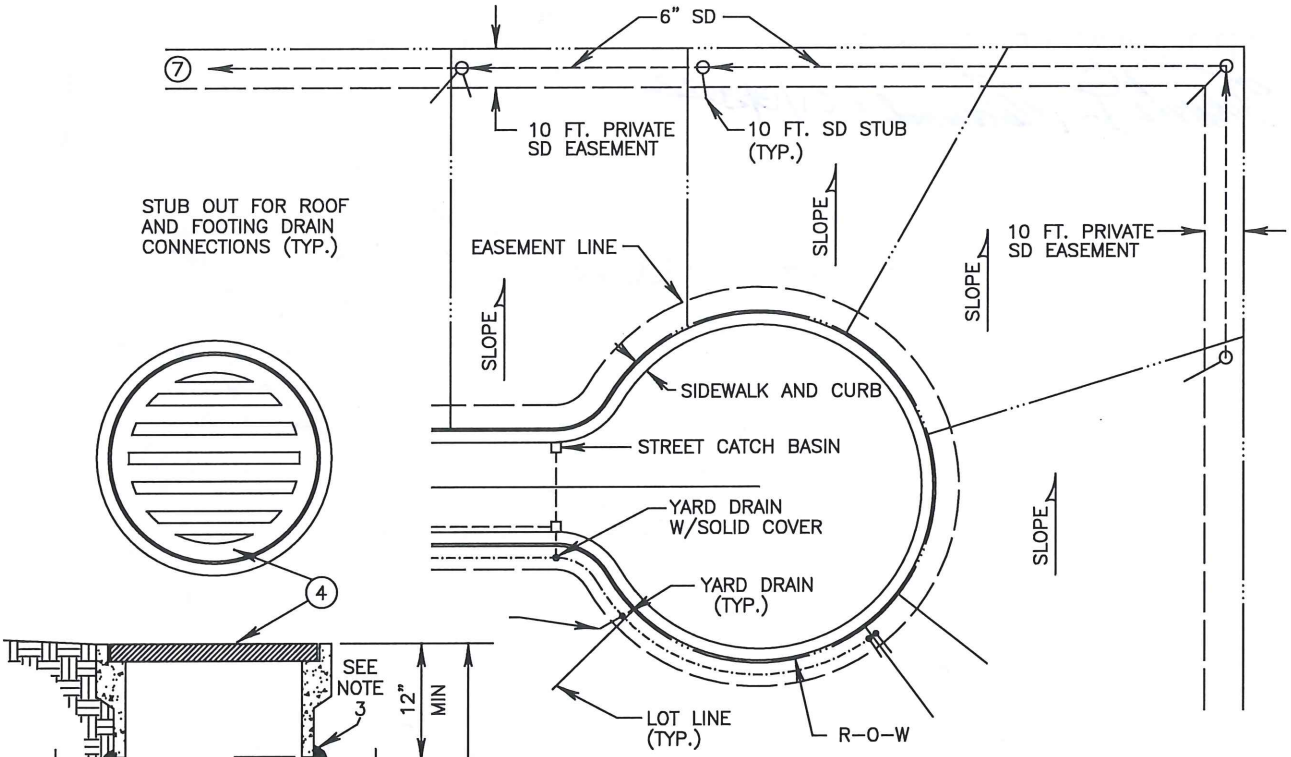
DEBRIS BARRIER

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STM - 7

REV. DATE:
10/14/2021



DETAIL NOTES

NOTES:

1. YARD DRAINS TO BE CONSTRUCTED FROM CONCRETE PIPE, IN ACCORDINANCE WITH ASTM C 14 OR 18" LINED CORRUGATED HDPE (HIGH DENSITY POLYETHYLENE PIPE) ADS N-12 OR APPROVED EQUAL BY THE CITY. SPECIAL CAST YARD DRAIN MAY BE REQUIRED FOR MULTIPLE PIPE CONNECTIONS.
2. CUTOUT HOLE SIZE EQUAL TO OUTLET PIPE OUTSIDE DIAMETER PLUS YARD DRAIN WALL THICKNESS FOR CONC. PIPE OR USE INSERTA TEE COMPRESSION FITTING FOR USE WITH PVC DRAIN PIPE CONNECTION.
3. CONNECTION TO OUTLET PIPE TO BE SEALED WITH GROUT AND MADE FLUSH WITH INSIDE OF THE YARD DRAIN WALL FOR CONCRETE PIPE OR COMPRESSION TEE FOR PLASTIC PIPE.
4. CAST IRON BELL GRATE SHALL FIT INSIDE BELL OF CONC. PIPE AND ON THE OUTSIDE OF HDPE PIPE.
   HDPE PIPE GRATE – OLYMPIC FOUNDARY 10-1800 OR EAST JORDAN IRON WORKS PRODUCT NO. 601836.
   CONC. PIPE GRATE- E. JORDDAN IRON WORKS PRODUCT NO. 601832 OR APPROVED EQUAL.
5. 6" MIN. DEPTH GRAVEL BACKFILL FOR DRAINS PER WSDOT SEC. 9-03.12(4).
6. CONNECT TO CITY OWNED AND MAINTAINED SD SYSTEM IN THE STREET.
7. IF SERVICE LINE SERVES MORE THAN 4 LOTS, INCREASE SIZE TO 8".

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STORMWATER

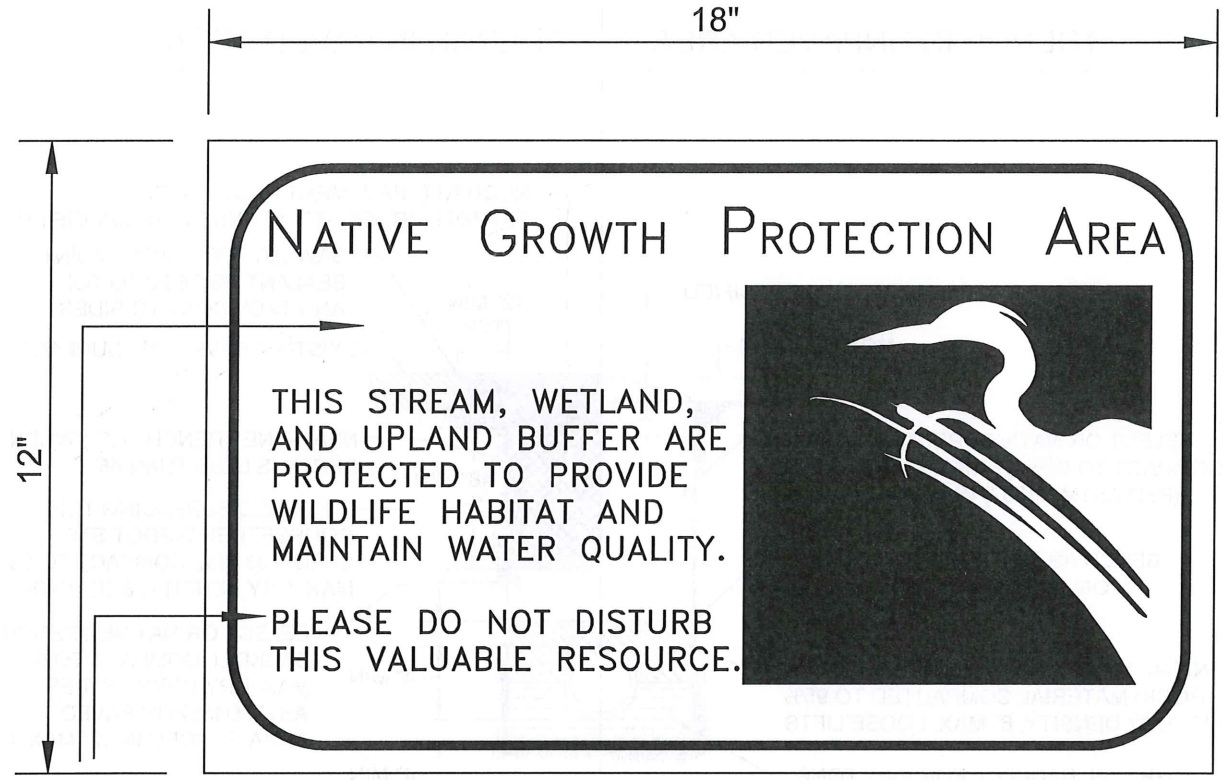
YARD DRAIN

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
STM - 8

REV. DATE:
10/14/2021



NATIVE GROWTH PROTECTION AREA SIGNAGE

CONTACT CITY FOR ARTWORK CAD FILE FOR THIS SIGN.

FOREGROUND COLOR PMS # 340C
(PANTONE COLOR FORMULA GUIDE)

BACKGROUND COLOR WHITE

NOTES:

1. ENGINEER GRADE SHEETING ON .080 ALUMINUM
2. ATTACH SIGN POST WITH (2) 5/16" GALVANIZED LAG BOLTS WITH WASHERS
3. POST SIGN ON 4"x4" CEDAR POST AT 5.5 FT. FROM GROUND

APPROVED FOR USE

01/3/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STORMWATER

NATIVE GROWTH PROTECTION SIGN

NOT TO SCALE

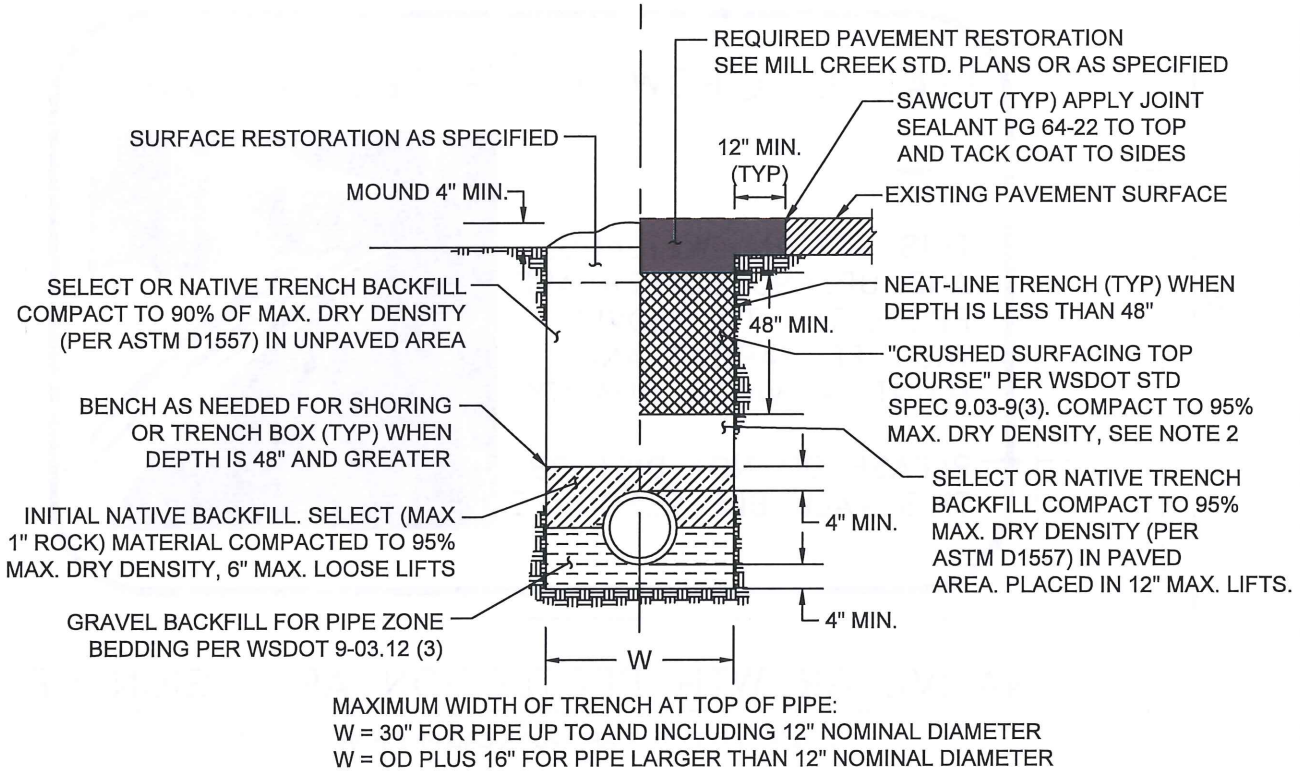
PUBLIC WORKS DEPARTMENT

PLAN NO.
STM - 9

REV. DATE:
10/04/2021

TRENCH IN UNPAVED AREA

TRENCH IN PAVED AREA



MAXIMUM WIDTH OF TRENCH AT TOP OF PIPE:
W = 30" FOR PIPE UP TO AND INCLUDING 12" NOMINAL DIAMETER
W = OD PLUS 16" FOR PIPE LARGER THAN 12" NOMINAL DIAMETER

NOTES:

1) EXISTING PAVEMENT MUST BE SAWCUT TO PROVIDE A CLEAN STRAIGHT EDGE BEFORE PIPE PLACEMENT.
2) WHERE TRENCH IS PERPENDICULAR TO TRAVELED LANES, BACKFILL FULL DEPTH WITH CRUSHED SURFACING TOP COURSE. WHERE TRENCH IS PARALLEL TO TRAVELED LANES, BACKFILL THE TOP 48" OF TRENCH TO SUBGRADE WITH CRUSHED SURFACING TOP COURSE. SUITABLE EXCAVATED MATERIAL MAY BE USED PROVIDED 95% MAX. COMPACTION DENSITY (ASTM D1557) CAN BE ACHIEVED.
3) BACK MATERIAL SHALL BE INSTALLED IN AN APPROVED MANNER TO ENSURE NO DAMAGES TO THE PIPE.
4) USE OF RECYCLED CONCRETE IS PROHIBITED, UNLESS APPROVED BY THE CITY.

APPROVED FOR USE

Frank D. Nimmo 01/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

STORMWATER

STORM TRENCH DETAIL

NOT TO SCALE

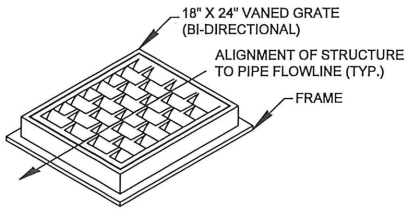
PUBLIC WORKS DEPARTMENT

PLAN NO.
STM - 10

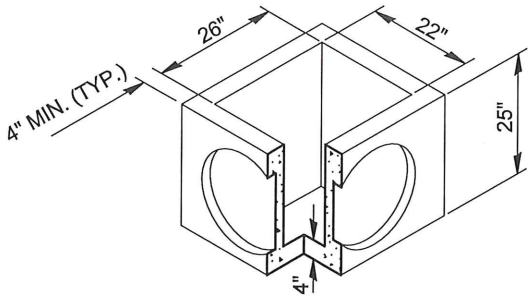
REV. DATE:
8/30/2021

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

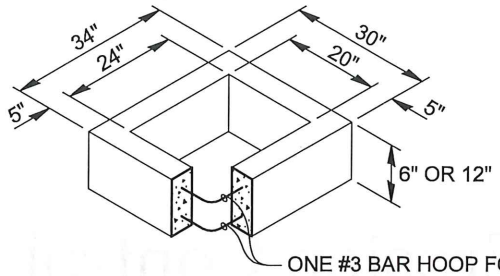


FRAME AND VANED GRATE



CONCRETE CURB INLET

REBAR NOT SHOWN FOR CLARITY.



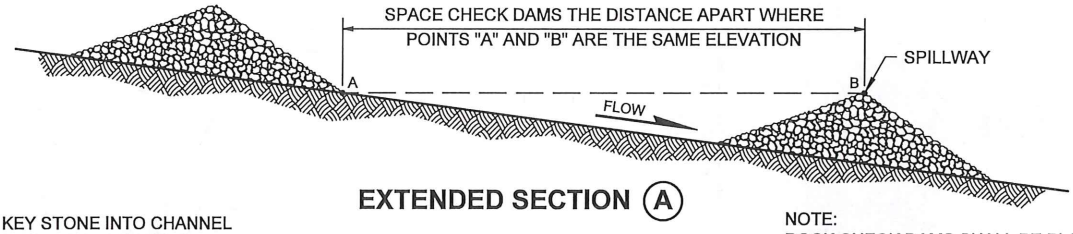
6" or 12" CONCRETE RISER

NOTES:

1) BASE TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS (SECTION 7-05) FOR CONCRETE INLET, OR AS APPROVED BY THE CITY.
2) CONCRETE INLET TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M 199) & C890 UNLESS OTHERWISE APPROVED BY CITY.
3) KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM TO 2.5" MAXIMUM. PROVIDE A 1.5" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 9-04.3. ALL SIDE ACCESS INTO THE BASE SHALL BE THROUGH A PRECAST KNOCKOUT.
4) ROUND KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAXIMUM DIAMETER OF 20".
5) ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000.
6) THE MAXIMUM DEPTH FROM THE FINISHED GRADE TO THE LOWEST PIPE INVERT SHALL BE 5 FT.
7) THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2" PER FOOT.
8) CATCH BASIN FRAMES AND GRATES OR COVERS SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
9) THE FRAME AND GRATE MAY BE INSTALLED WITH THE FLANGE DOWN.
10) THE PRECAST BASE SECTION MAY HAVE A ROUNDED FLOOR, AND THE WALLS MAY BE SLOPED AT A RATE OF 1:24 OR STEEPER.
11) THE OPENINGS SHALL BE MEASURED AT THE TOP OF THE PRECAST BASE SECTION.
12) ALL PICKUP HOLES SHALL BE GROUTED FULL AFTER THE BASIN HAS BEEN PLACED.
13) ALL NEW PVC PIPES SHALL BE INSTALLED WITH SAND COLLARS AND NON-SHRINK GROUT. JETSET NOT ALLOWED.
14) 1", 2", AND 4" RISERS ACCEPTED AS NEEDED. TOTAL NUMBER OF RISERS SHOULD BE LIMITED TO MINIMUM NECESSARY.
15) MINIMUM 10 FT. FROM ADJACENT TREES, UNLESS OTHERWISE APPROVED BY CITY.

CITY OF Mill Creek WASHINGTON	STORMWATER **CURB INLET** NOT TO SCALE	PLAN NO. **STM - 11**
	PUBLIC WORKS DEPARTMENT	REV. DATE: 10/06/2021

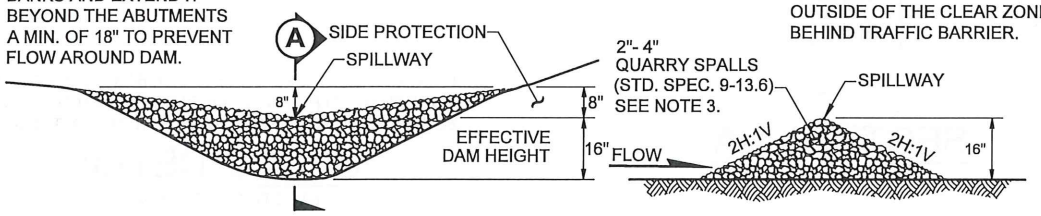
Erosion Control



EXTENDED SECTION (A)

KEY STONE INTO CHANNEL BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MIN. OF 18" TO PREVENT FLOW AROUND DAM.

NOTE:
ROCK CHECK DAMS SHALL BE PLACED OUTSIDE OF THE CLEAR ZONE, OR BEHIND TRAFFIC BARRIER.

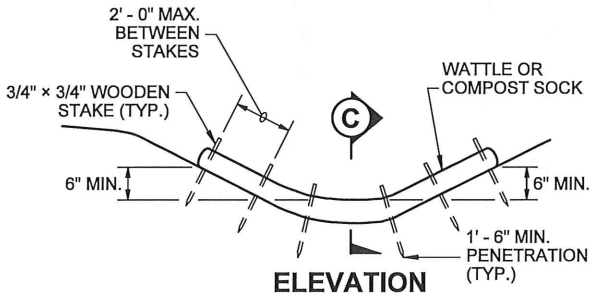


ELEVATION

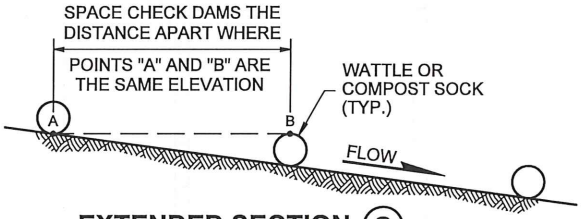
SECTION (A)

ROCK CHECK DAM

USE FILTER FABRIC FOUNDATION UNDER A ROCK OR SANDBAG CHECK DAM.



ELEVATION



EXTENDED SECTION (C)

WATTLE OR COMPOST SOCK CHECK DAM

NOTES:

1. CHECK DAMS SHALL BE CONSTRUCTED AND MONITORED FOR PERFORMANCE PER THE STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON AND WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.
2. CHECK DAMS MAY ALSO BE CONSTRUCTED OF PEA-GRAVEL FILLED BAGS, TRIANGULAR SILT DIKES, OR OTHER MANUFACTURED PRODUCTS AVAILABLE FOR THIS BMP APPROVED BY THE STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON.
3. CHECK DAM ROCK SIZE MAY BE LARGER DEPENDING ON EXPECTED SITE CONDITIONS AND FLOW.

APPROVED FOR USE

Frank D. Nimmel 01/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

EROSION CONTROL

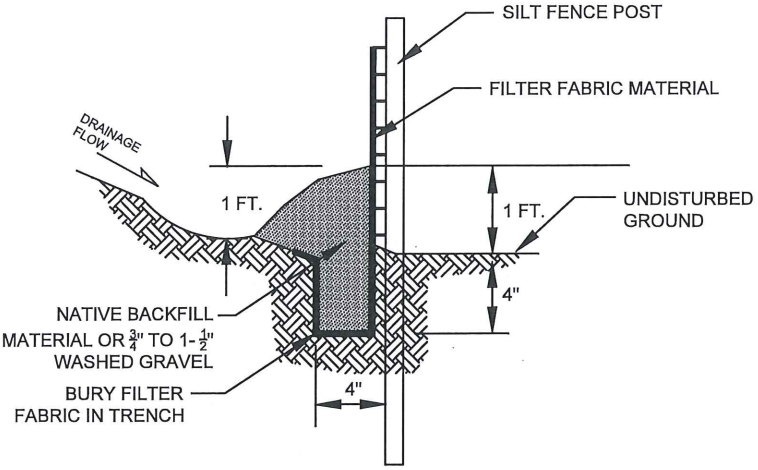
CHECK DAM

NOT TO SCALE

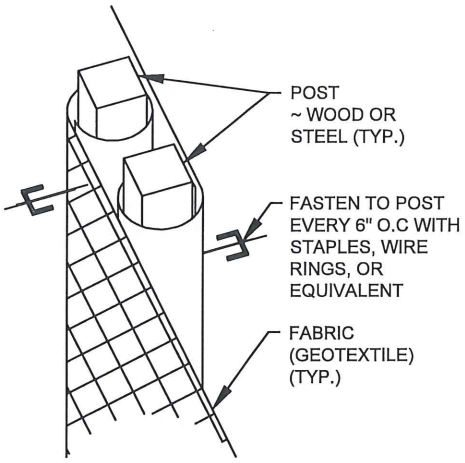
PUBLIC WORKS DEPARTMENT

PLAN NO.
ESC - 1

REV. DATE:
11/4/2021



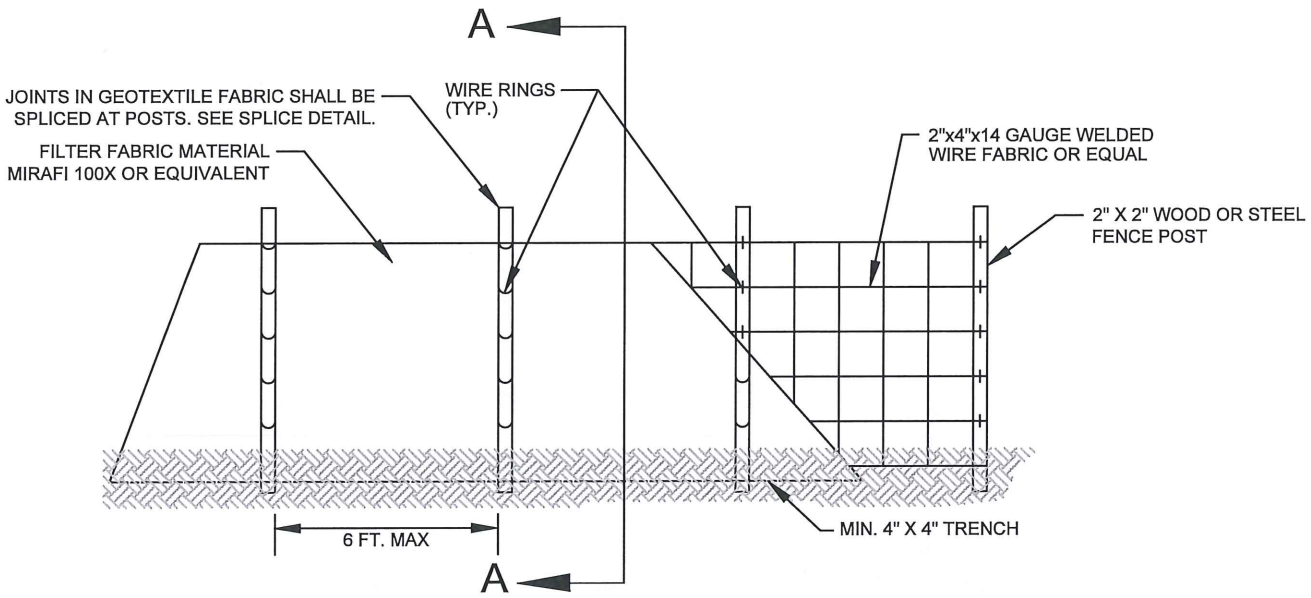
SECTION A-A



SPLICED FENCE SECTIONS SHALL BE CLOSE ENOUGH TOGETHER TO PREVENT SILT LADEN WATER FROM ESCAPING THROUGH THE FENCE AT THE OVERLAP.

SPLICE DETAIL

(WOOD POSTS SHOWN)



ELEVATION VIEW

NOTES:

1. INSTALL THE SILT FENCE FIRST. AFTER THE SILT FENCE HAS BEEN INSTALLED, DIG TRENCH, BURY FILTER FABRIC IN TRENCH AND FILL WITH NATIVE BACKFILL MATERIAL OR ¾" TO 1-½" WASHED GRAVEL.
2. SILT FENCE BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAIN EVENT AND AT LEAST DAILY DURING PROLONGED RAIN EVENTS AND AS REQUIRED BY CONSTRUCTION STORMWATER GENERAL PERMIT FOR SEASON OF CONSTRUCTION.

APPROVED FOR USE

04/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

EROSION CONTROL

SILT FENCE

NOT TO SCALE

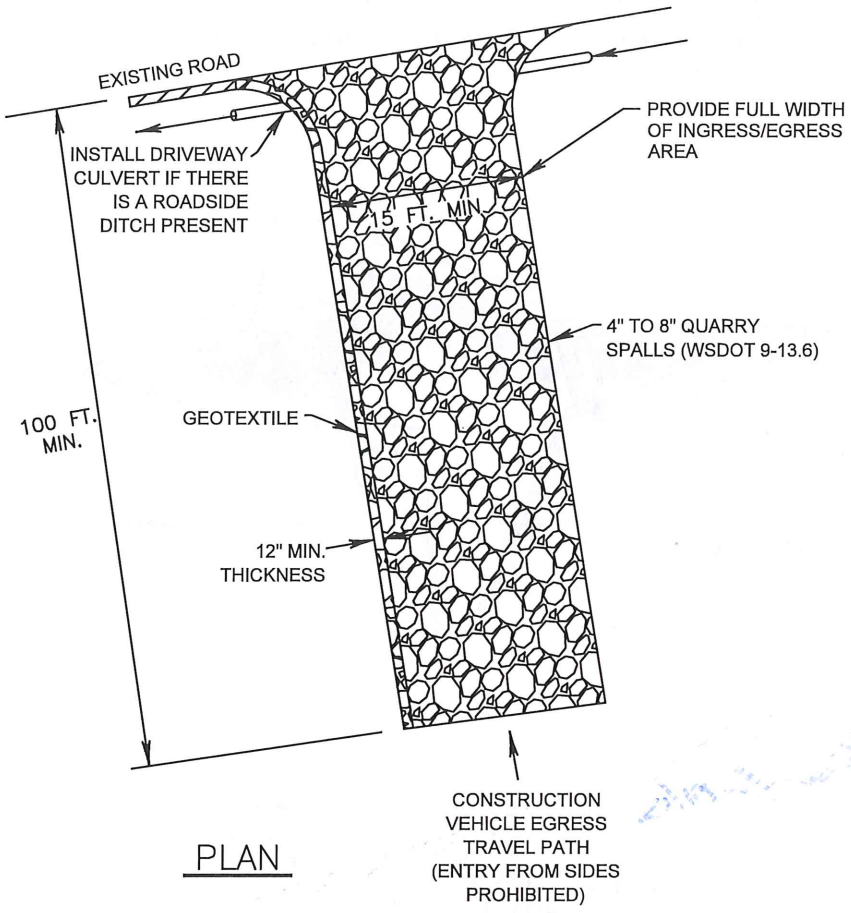
PUBLIC WORKS DEPARTMENT

PLAN NO.

ESC - 2

REV. DATE:

11/04/2021



PLAN

NOTES:

1. THE AREA OF THE ENTRANCE SHOULD BE CLEARED OF ALL VEGETATION, ROOTS, OTHER OBJECTIONABLE MATERIAL. THE GRAVEL SHALL BE PLACED TO THE SPECIFIED DIMENSIONS. INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN EVENT.
2. IF THE REQUIRED ENTRANCE PARAMETERS CANNOT BE APPLIED TO THE SITE, OTHER APPROPRIATE BMPS FROM THE STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON MAY BE APPLIED, IF APPROVED BY THE CITY.
3. IT IS RECOMMENDED THAT THE ACCESS BE CROWNED SO THAT RUNOFF DRAINS OFF THE PAD.

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

EROSION CONTROL

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

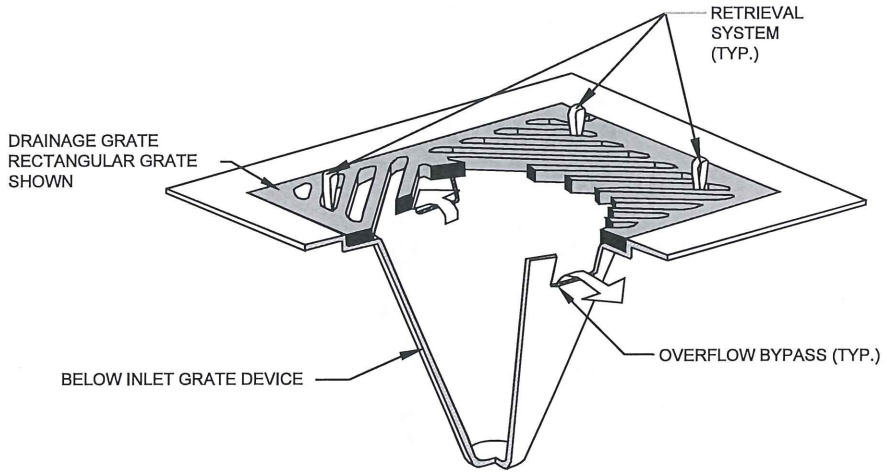
PUBLIC WORKS DEPARTMENT

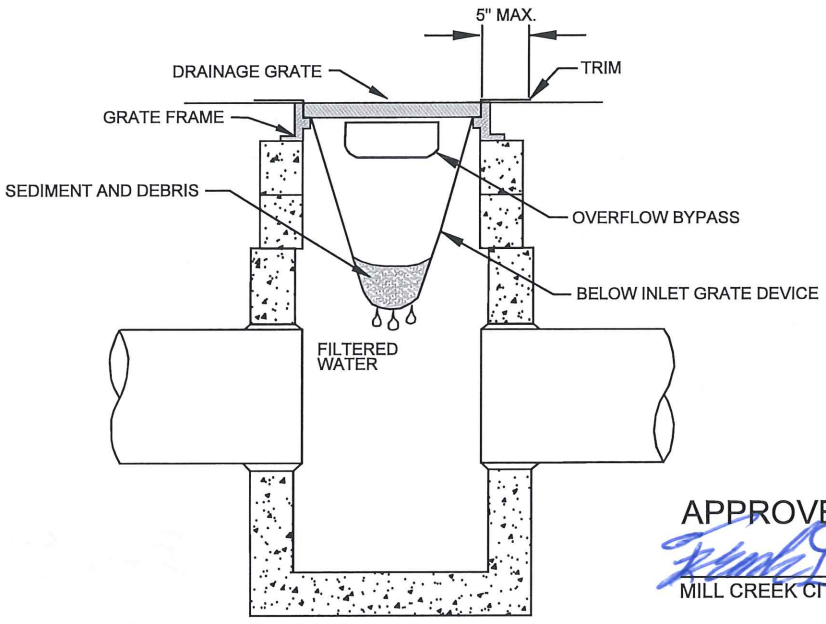
PLAN NO.
ESC- 3

REV. DATE:
11/10/2021

NOTES:

1. SIZE THE BELOW INLET GRATE DEVICE (BIGD) FOR THE STORM WATER STRUCTURE IT WILL SERVICE.
2. THE BIGD SHALL HAVE A BUILT-IN HIGH-FLOW RELIEF SYSTEM (OVERFLOW BYPASS).
3. THE RETRIEVAL SYSTEM MUST ALLOW REMOVAL OF THE BIGD WITHOUT THE COLLECTED MATERIAL.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 8-01.3(15).





APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

EROSION CONTROL

CATCH BASIN INLET PROTECTION

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO. ESC- 4

REV. DATE: 11/10/2021

Low Impact Development

Low Impact Development (LID) Construction General Notes

1. The City of Mill Creek is issued a Western Washington Phase II municipal stormwater permit by the Washington State Department of Ecology to meet the requirements and obligations of the National Pollutant Discharge Elimination System (NPDES) chapters of the federal Clean Water Act. In order to comply with the City permit, the City adopted the 2014 revision of the 2012 Stormwater Management Manual for Western Washington (SMMWW). All development proposals are required to comply with the design requirements, procedures, and standards in the SMMWW.

2. LID facilities and Best Management Practices (BMP's) shall be designed, constructed, and maintained in accordance with the SMMWW. Additional technical guidance for the design and construction of particular LID facilities and BMP's from the Rain Garden Handbook for Western Washington and the current edition of the LID Technical Guidance Manual shall be followed when applicable.

3. General requirements for inspections of LID facilities and Best Management Practices (BMP's) can be found in the "Development Inspection General Requirements" section of these Standard Plans.

4. LID facilities and BMP's may not be sited at locations and in configurations that may create flooding or erosion problems for either the site or onto adjacent properties and/or City right-of-way (ROW).

5. Bioretention cells and engineered rain gardens shall be designed to drain within 24 hours. Water storage volume shall equal 0.25 times the square footage of the impervious surface area contributing to the facility or sized using the Western Washington Hydrology Model (WWHM) or other approved continuous runoff model.

6. For locations (on-site and adjacent properties) with septic systems, bioretention cells, engineering rain gardens, and other LID using infiltration must be located down-gradient of the primary and reserve drainfield areas, unless otherwise approved by the City.

7. Contact City Public Works staff for a separate pre-construction meeting prior to beginning work on or adjacent to all new and existing LID facilities or permanent BMP's. The City may waive the requirement for a separate pre-construction meeting based on the work or other activities to be performed. Pre-construction meetings for LID will include the same participants as indicated in the General Notes.

8. Install perimeter protections around all new and existing rain gardens, bioswales, and/or permeable pavement areas before grading work begins.

9. All perimeter protections shall be maintained until permanent stabilization is complete, except where removal is necessary to complete work on new LID facilities and BMP's, or to perform repair work on existing LID facilities and BMP's. Contractor shall prevent compaction of native and/or fill soils within LID facilities and BMP's, and shall protect these from being clogged with sediment. Any LID facilities and BMP's whose function is or may be damaged by compaction and/or sediment shall be repaired by the contractor before final acceptance by the City.

Low Impact Development (LID) Construction General Notes (Continued)

10. Contractor shall submit all applicable laboratory analysis reports and related documentation to the City for all bioretention soil mix(es) used during the work.

11. Permeable pavement shall be covered with plastic after installation in order to prevent construction materials from clogging the surface. Plastic shall not be removed until permanent stabilization has been completed for the project site.

12. All rain gardens shall have a City approved education sign installed after completion, unless otherwise approved by the City.

13. All new LID facilities and BMP's shall be demonstrated to be functioning fully as designed and approved by the City prior to final City acceptance.

Approved Bioretention Cell Planting List and Sample Plot

Biorentention Cell Planting Example

Zone 1
(area with frequent standing water)

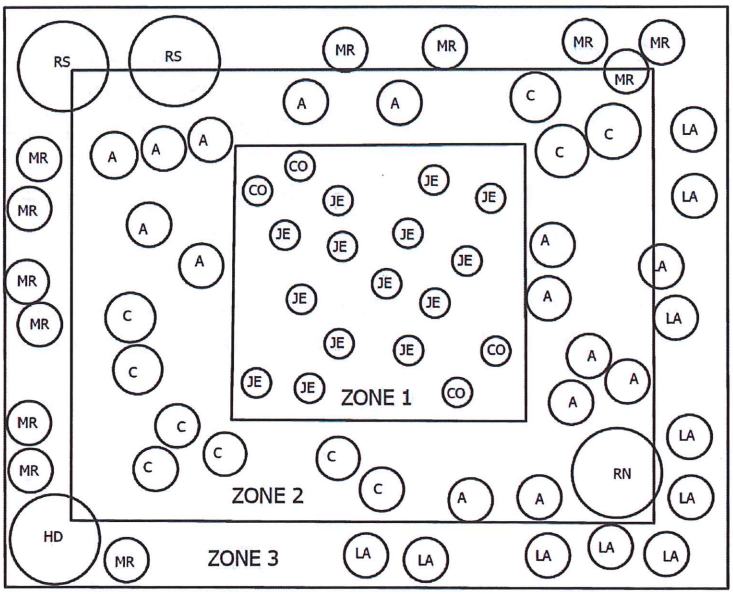
Symbol	Plant Name	Quantity
CO	Carex obnupta* (Slough sedge)	4
JE	Juncus effuses* (Common rush)	14

Zone 2
(area with occasional standing water)

Symbol	Plant Name	Quantity
RN	Rosa nutkana* (Nootka rose)	1
A	Aquilegia formosa* (Western columbine)	14
C	Camassia quamash* (Common camas)	10

Zone 3
(area with drier conditions)

Symbol	Plant Name	Quantity
RS	Ribes sanguineum* (Red-flowering currant)	2
HD	Holodiscus discolor* (Oceanspray)	1
LA	Lavandula angustifolia (Lavender)	12
MR	Mahonia repens (Creeping mahonia)	12



*Denotes native species

General Sample Plot Notes:

1. Emergents are shown in diagram as 4" pots, not individual plugs. For example, 3 plugs equal one 4" pots.
2. In the diagram, there are 70 plants total for 100 sq. ft. (4 shrubs + 66 herbaceous/emergent).
3. The plants listed to the left for each zone are suggested options for sun/partial shade, but other plants can be substituted from the comprehensive plant list below.

General Bioretention Cell Planting Notes:

1. Incorporate a minimum of 3 different shrubs and 3 herbaceous groundcover species in each facility.
2. Minimum plant quantities are 70 plants per 100 sq. ft. bioretention area; including 4 shrubs minimum.
3. Bioretention cells must contain planting Zones 1, 2, and 3.
4. Trees can be installed in cells, but species and placement must be approved by City prior to planting.
5. Emergents shall be installed as 4" plots, or as plugs in clusters of 3, at 9" O.C.
6. Shrubs shall be installed as 1-gallon container size at 1-2 ft. O.C. Do not install shrubs larger than 1-gallon.
7. Do not use turf grass mix in bioretention cells.
8. Additional approved plants can be found in the 2012 Low Impact Development Technical Guidance Manual for Puget Sound

Approved Bioretention Cell Planting List and Sample Plot (Continued)

Comprehensive Plant List by Zone

Zone 1 – Shrubs
Lonicera involucrata*(Black twinberry)
Physocarpus capitatus* (Pacific ninebark)
Rosa pisocarpa* (Clustered wild rose)
Spiraea douglasii* (Steeplebush)
Dwarf Arctic Willow
Darf Dogwood

Zone 1 – Emergents
Carex obnupta* (Slough sedge)
Carex stipata* (Sawbreak sedge)
Juncus effusus* (Common rush)
Juncus ensifolius* (Daggerleaf rush)
Juncus tenius* (Slender rush)
Scirpus acutus* (Hardstem bulrush)
Scirpus microcarpus* (Small-fruited bulrush)

Zone 2 – Shrubs
Acer circinatum* (Vine maple)
Oemleria cerasiformis*(Indian plum/Osoberry)
Ribes lacustre* (Black swamp gooseberry)
Rosa nutkana* (Nootka Rose)
Rosa rugosa (Rugosa Rose)
Rubus parviflorus* (Thimbleberry)
Rubus spectabilis* (Salmonberry)
Sambucus racemosa* (Red elderberry)
Symphoricarpos albus* (Snowberry)
Vaccinium parvifolium* (Red huckleberry)

Zone 2 – Herbaceous
Asarum caudatum* (Wild ginger)
Aquilegia formosa* (Western columbine)
Aster chilensis* (California Aster)
Aster subspicatus* (Douglas' aster)
Camassia quamash* (Common camas)

Zone 2 – Herbaceous (cont.)
Camassia leichtlinii* (Giant camas)
Iris douglasiana* (Pacific coast iris)
Juncus tenius* (Slender rush)
Iris sibirca* (Siberian iris)
Tellima grandiflora* (Fringecup)
Tiarella trifoliata* (Foamflower)
Tolmiea menziesii* (Piggy-back plant)
Viola species* (Violets)

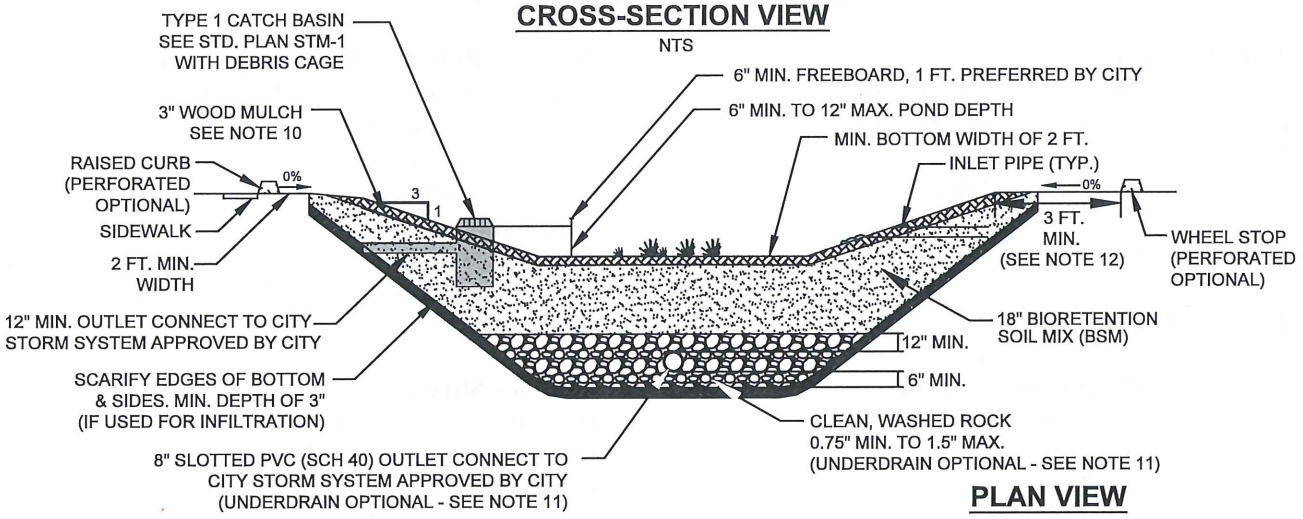
Zone 3 – Shrubs
Holodiscus discolor* (Oceanspray)
Philadelphus lewisii* (Mock-orange)
Pinus mugo pumilio (Mugho pine)
Ribes sanguineum* (Red-flowering currant)
Rosa gymnocarpa* (Baldhip rose)
Arbutus unedo (Compacta)
Cistus purpureus (Orchid rockrose)
Cistus salviifolius (White rockrose)
Osmanthus delavayi (Delavay Osmanthus)
Osmanthus x burkwoodii (Devil wood)
Rhododendron ('PJM' hybrids)
Vaccinium ovatum* (Evergreen Huckleberry)
Myrica californica*(Pacific wax myrtle)

Zone 3 – Groundcover
Arctostaphylos uvaursi* (Kinnikinnick)
Gaultheria shallon* (Salal)
Helianthemum nummularium (Sunrose)
Lavandula angustifolia (Lavender)
Mahonia nervosa* (Oregon grape)
Mahonia repens (Creeping mahonia)
Penstemon davidsonii* (Davidson's penstemon)
Wild Strawberry

*Denotes native species

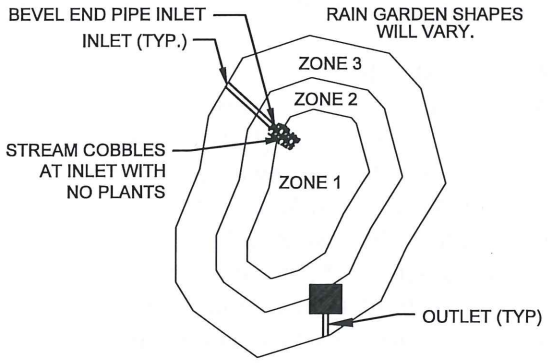
CROSS-SECTION VIEW

NTS



PLAN VIEW

NTS



PLANTING ZONES:
ZONE 1 - AREA WITH FREQUENT STANDING WATER
ZONE 2 - AREA WITH OCCASIONAL STANDING WATER & DRIER PERIODS
ZONE 3 - AREA WITH DRIER CONDITIONS

NOTES:

1. STEEPER SIDE SLOPES MAY BE NECESSARY DEPENDING ON SETTING AND REQUIRE ADDITIONAL ATTENTION FOR EROSION CONTROL, PLANT SELECTION, VEHICLE AND PEDESTRIAN SAFETY, ETC.
2. AREA AND DEPTH OF FACILITY TO BE SIZED BASED UPON ENGINEERING CALCULATIONS.
3. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN INFILTRATION AREAS PRIOR TO, DURING, AND AFTER CONSTRUCTION.
4. MAXIMUM BOTTOM SLOPE OF CELL SHALL BE 0.5%.
5. OVERFLOW POINT SHALL BE AT LEASE 6" BELOW ANY ADJACENT PAVEMENT AREA.
6. MINIMUM 3 FT. DEPTH BETWEEN BOTTOM OF BIORETENTION SOIL MIX (BSM) AND WATER TABLE.
7. INSTALL STREAMBED COBBLES (1"-4") AT INLET TO DISSIPATE RUNOFF.
8. MINIMUM SETBACK OF 5 FT. FROM TOP OF BIORETENTION CELL TO BUILDING STRUCTURES AND PROPERTY LINES. DO NOT LOCATE IMMEDIATELY UPSLOPE OF BUILDING STRUCTURES.
9. SITE SPECIFIC LANDSCAPE MUST MEET BIORETENTION PLANT DESIGN CRITERIA. SEE APPROVED BIORETENTION CELL PLANTING LIST AND SAMPLE PLOTS IN SECTION 1 (ALL NOTES).
10. MAXIMUM 3" MULCH LAYER IN PONDING AREA AND ON SIDES SLOPES. MULCH MUST BE ARBORIST OR HOG FUEL WITHOUT BARK, CONSISTING OF SHREDDED OR CHIPPED HARDWOOD. MULCH SHALL NOT CONTAIN WEED SEEDS, GRASS CLIPPINGS, OR BARK.
11. IF OPTIONAL UNDERDRAIN IS USED:
    - USE SLOTTED SUBSURFACE DRAIN PVC PER ASTM D1785 SCH 40, NOT PERFORATED PVC OR FLEXIBLE SLOTTED HDPE
    - 0% - 1% MIN. SLOPE
    - PROVIDE A CLEAN OUT EVERY 100 FEET MIN.
12. 2 FT. MIN. BETWEEN WHEEL STOP AND EDGE OF ASPHALT, EXTEND FLAT SOIL 1 FT. FROM EDGE OF ASPHALT BEFORE STARTING 3H:1V SLOPE.

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

LOW IMPACT DEVELOPMENT

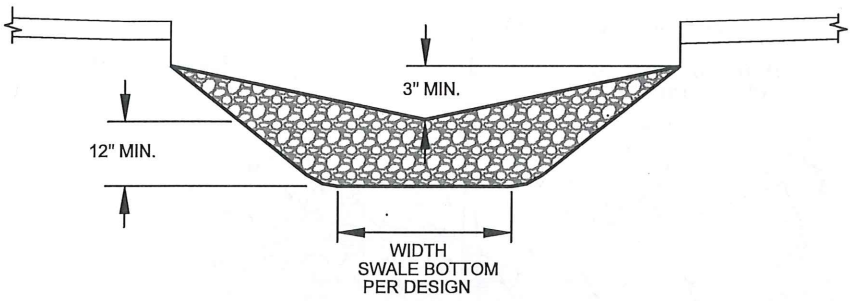
BIORETENTION CELL

NOT TO SCALE

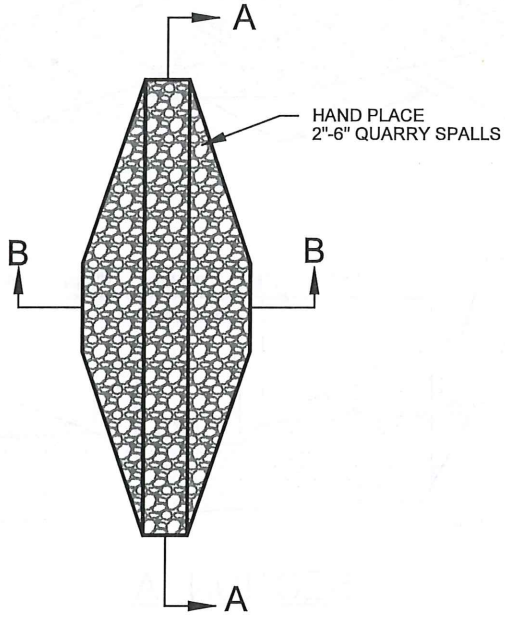
PUBLIC WORKS DEPARTMENT

PLAN NO.
LID-1

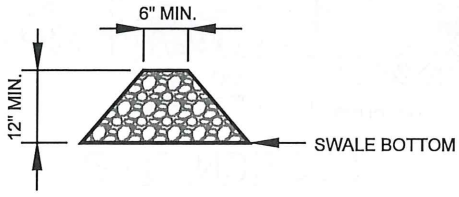
REV. DATE:
11/18/2021



SECTION A-A



TOP VIEW



SECTION B-B

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

LOW IMPACT DEVELOPMENT

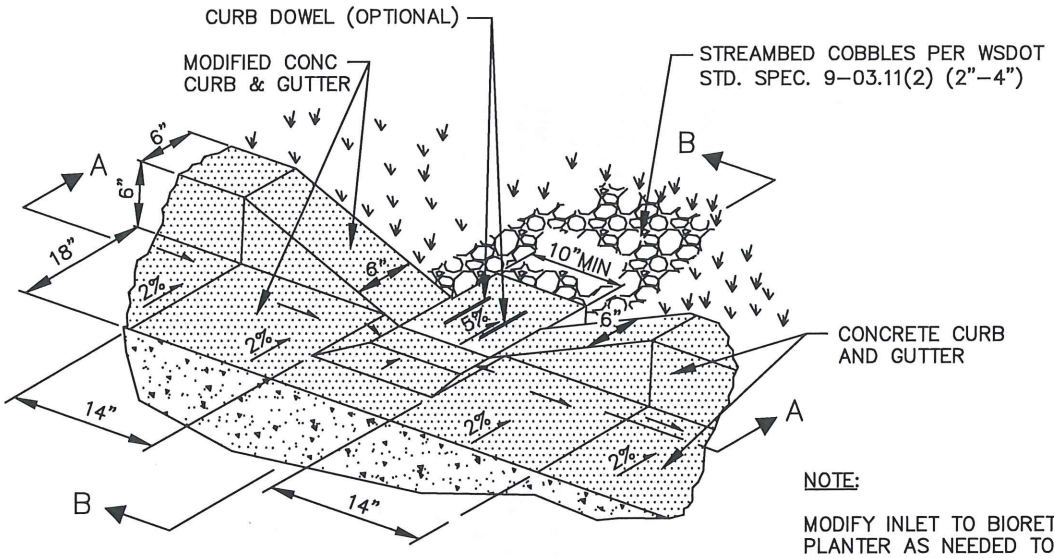
BIORETENTION AND SWALE CHECK DAM

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

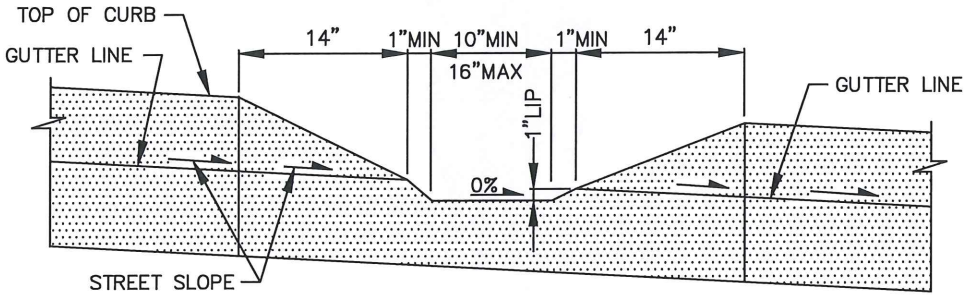
PLAN NO.
LID-2

REV. DATE:
11/19/2021

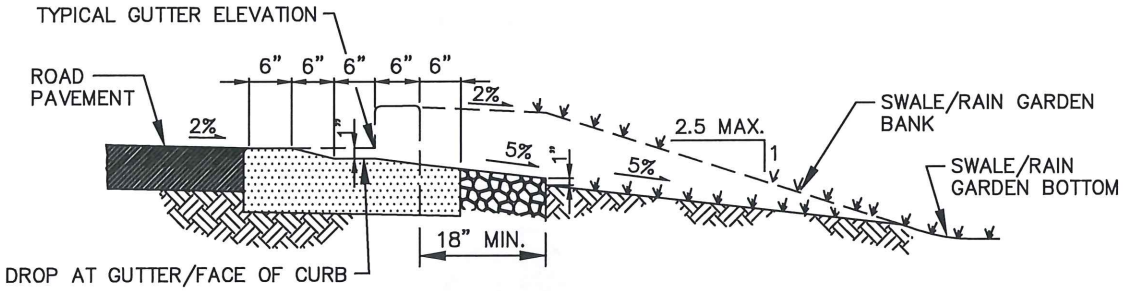


NOTE:

MODIFY INLET TO BIORETENTION PLANTER AS NEEDED TO PREVENT EROSION.



SECTION A–A



SECTION B–B

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

LOW IMPACT DEVELOPMENT

CURB CUT OPENING FOR BIORETENTION

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LID-3

REV. DATE:
11/19/2021

NEW DEVELOPMENT RAIN GARDEN SIGNAGE

CONTACT THE CITY FOR ARTWORK CAD FILE FOR THIS SIGN.

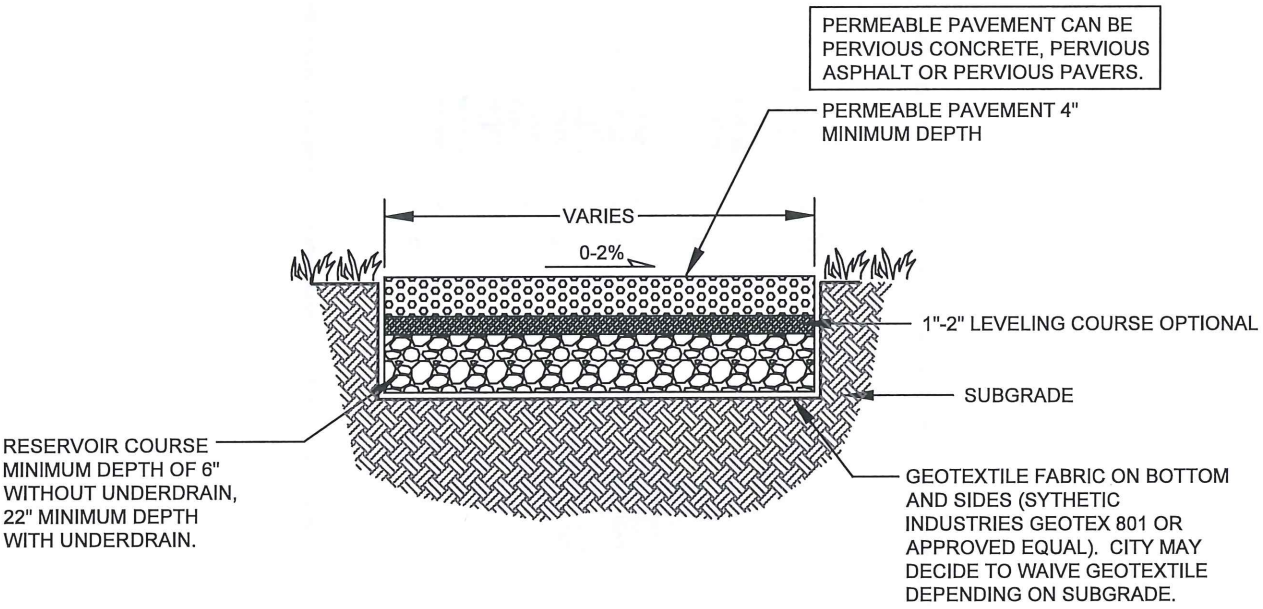
NOTES:

1. ENGINEER GRADE SHEETING ON 0.080 ALUMINUM
2. ATTACH SIGN POST WITH (2) 5/16" GALVANIZED LAG BOLTS WITH WASHERS.
3. POST SIGN ON 4"x4" CEDAR POST WITH BOTTOM OF SIGN MIN. 3 FT. ABOVE GROUND.
4. PRINT IN COLOR ON WHITE BACKGROUND.

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON	LOW IMPACT DEVELOPMENT **RAIN GARDEN SIGN** NOT TO SCALE	PLAN NO. **LID-4**
	PUBLIC WORKS DEPARTMENT	REV. DATE: 11/22/2021



NOTES:

1. INSTALL GEOTEXTILE FOR UNDERGROUND SEPARATION. UNDERGROUND SEPARATION REQUIRED ONLY ON TYPE "C" AND "D" SOILS.
2. THESE GUIDELINES PROVIDE A MINIMUM DEPTH FOR THE HYDROLOGIC PERFORMANCE. THE STRUCTURAL CAPACITY OF PAVEMENT SECTIONS WHEN SUBJECT TO VEHICULAR LOADS DEPEND ON SEVERAL FACTORS AND MUST BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER.
3. LONGITUDINAL SLOPE, 0 TO 5% MAX. FOR POROUS ASPHALT, 10% MAX. FOR PERVIOUS CONCRETE.
4. USE CHECK DAM TO MAXIMIZE PONDING IN THE SUBSURFACE FOR LONGINTUDINAL SLOPES EXCEEDING 2%. SEE PERMEABLE PAVEMENT ON SLOPES DETAIL. LID-6.
5. RESERVOIR COURSE MINIMUM DEPTH OF 6" WITHOUT UNDERDRAIN, 22" MINIMUM WITH UNDERDRAIN.
6. PERVIOUS CONCRETE SHALL BE INSTALLED BY A CERTIFIED PERVIOUS CONCRETE INSTALLER.
7. POROUS ASPHALT SHALL BE INSTALLED BY AN EXPERIENCED POROUS ASPHALT INSTALLER. (NRMCA OR EQUIVALENT).
8. PERMEABLE PAVEMENTS IS APPLICABLE TO LOW VOLUME, LOW TRAFFIC SURFACES.

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

LOW IMPACT DEVELOPMENT

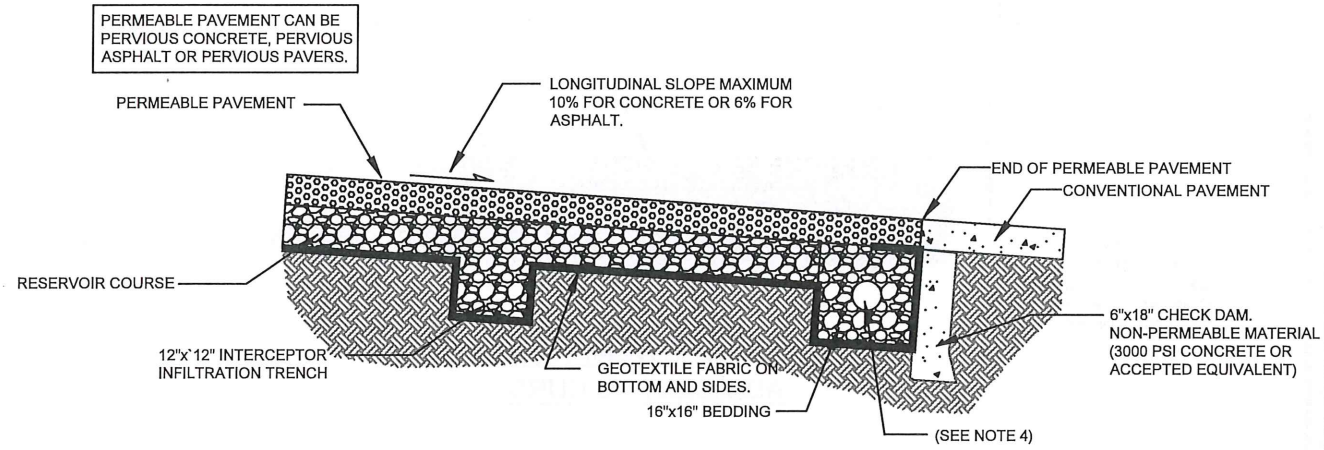
PERMEABLE PAVEMENT

NOT TO SCALE

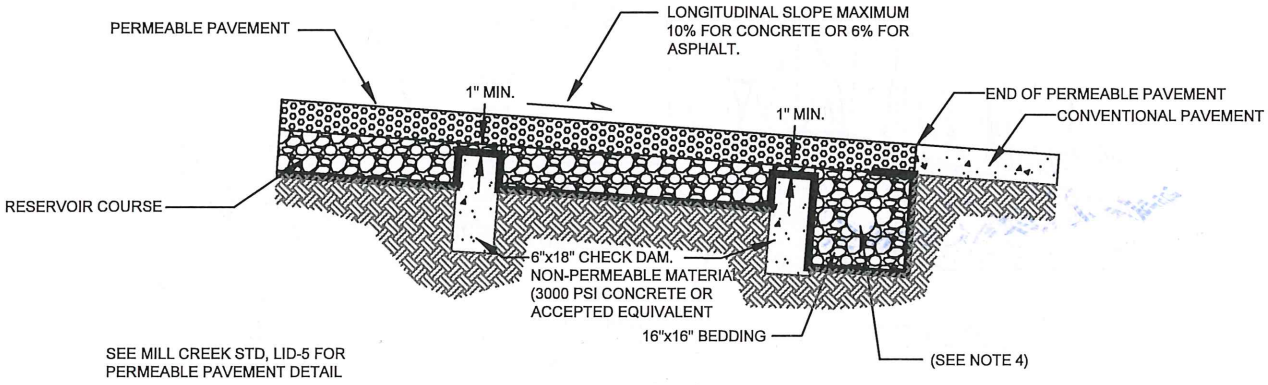
PUBLIC WORKS DEPARTMENT

PLAN NO. **LID-5**

REV. DATE: 11/22/2021



INTERCEPTOR INFILTRATION TRENCH



CHECK DAM

NOTES:

1. CHECK DAM OR INTERCEPTOR REQUIRED FOR LONGITUDINAL SLOPES > 2%.
2. SPACE CHECK DAMS BASED ON SLOPE TO ACHIEVE DESIGN AVERAGE PONDING DEPTH BEFORE OVERTOPPING DAM.
3. CALCULATE STORAGE VOLUME BETWEEN CHECK DAMS BASED ON CHECK DAM HEIGHT AND SLOPE FOR MODELING.
4. 6" PVC PERFORATED PIPE WITH CLEANOUTS AND CONNECTION TO STORM DRAIN. SEE MILL CREEK STD. LID-9 FOR LID CLEAN OUT DETAIL.

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

LOW IMPACT DEVELOPMENT

PERMEABLE PAVEMENT ON SLOPES

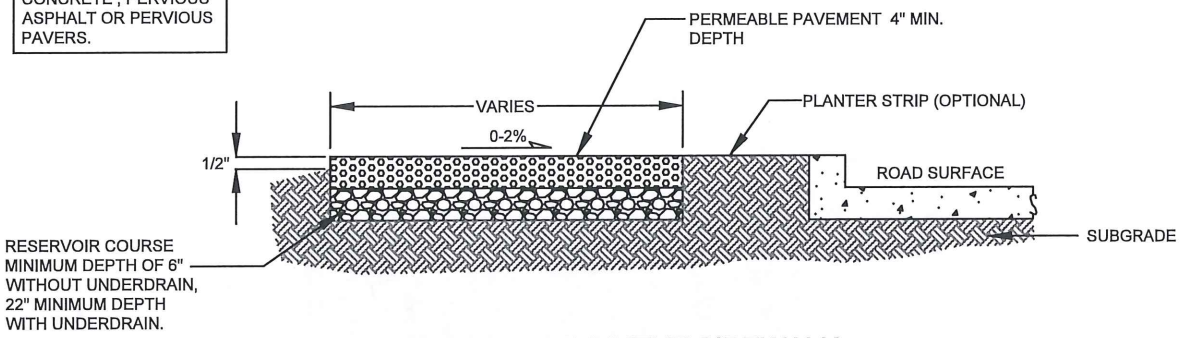
NOT TO SCALE

PUBLIC WORKS DEPARTMENT

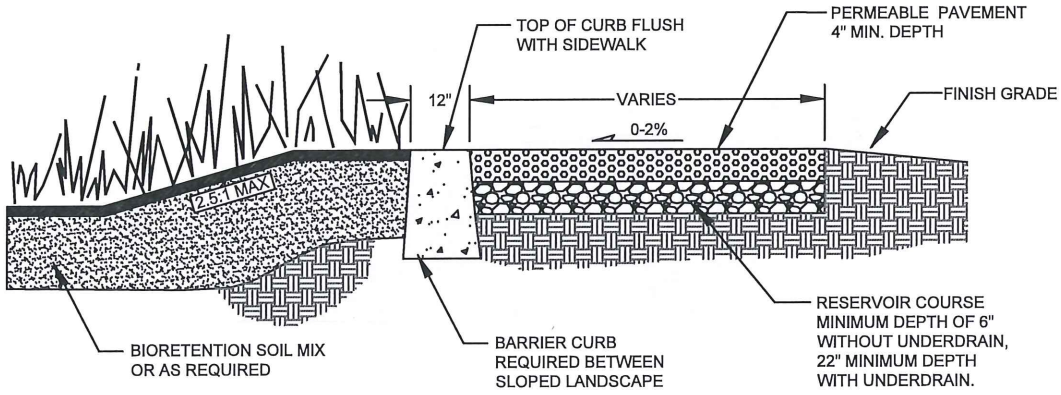
PLAN NO.
LID-6

REV. DATE:
11/22/2021

PERMEABLE PAVEMENT CAN BE PERVIOUS CONCRETE , PERVIOUS ASPHALT OR PERVIOUS PAVERS.



PERMEABLE PAVEMENT SIDEWALK ADJACENT TO CURB



PERMEABLE PAVEMENT ADJACENT TO BIORETENTION OR DITCH

NOTES:
1. ROUGH GRADE DITCH OR BIORETENTION FIRST.
2. SUBGRADE SHALL NOT BE COMPACTED.
3. COVER PERMEABLE PAVEMENT AFTER POUR TO PROTECT SURFACE UNTIL FINAL LANDSCAPE IS COMPLETE.

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

LOW IMPACT DEVELOPMENT

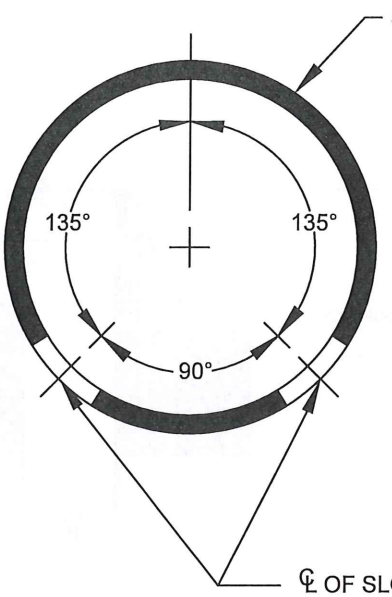
PERMEABLE PAVEMENT SIDEWALK

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO. **LID-7**

REV. DATE: 11/22/2021



NOTES:

1. MINIMUM PIPE DIAMETER: 4" (PIPE DIAMETER WILL DEPEND ON HYDRAULIC CAPACITY REQUIRED, 4" - 8" IS COMMON).
2. SLOTTED SUBSURFACE DRAIN PVC PER ASTM D1785 SCH 40.
3. SLOTS SHOULD BE CUT PERPENDICULAR TO THE LONG AXIS OF THE PIPE AND BE 0.04" - 0.069" BY 1" LONG AND BE SPACED 0.25" APART (SPACE LONGITUDINALLY). SLOTS SHOULD BE ARRANGED IN TWO ROWS SPACED ON 45 DEGREE CENTERS AND COVER 1/2 OF THE CIRCUMFERENCE OF THE PIPE.
4. THE UNDER-DRAIN SHALL BE INSTALLED WITH SLOTS ORIENTED ON BOTTOM OF PIPE.
5. UNDER-DRAINS SHOULD BE SLOPED NEGATIVELY WITH A MINIMUM OF 0% UNLESS OTHERWISE APPROVED BY CITY.

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

LOW IMPACT DEVELOPMENT

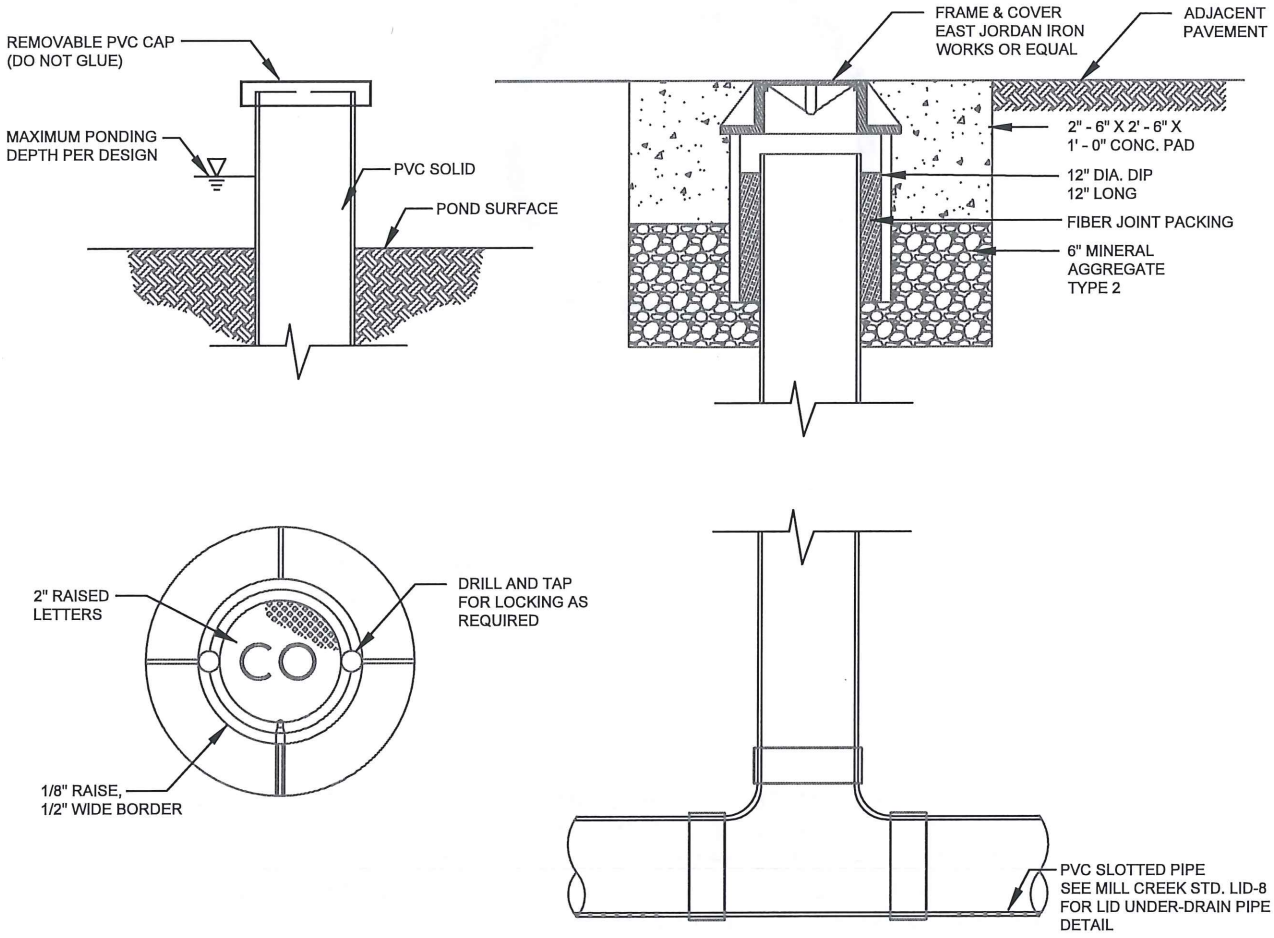
LID UNDER-DRAIN PIPE

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LID-8

REV. DATE:
11/22/2021



NOTE:

LOCATE CLEAN OUTS EVERY 100 FT. UNLESS OTHERWISE APPROVED BY THE CITY.

APPROVED FOR USE

04/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

LOW IMPACT DEVELOPMENT

LID CLEAN OUT

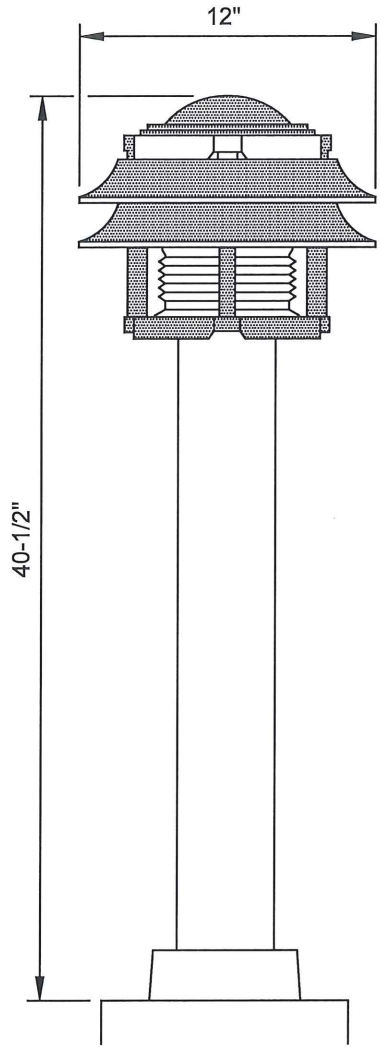
NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LID-9

REV. DATE:
11/12/2021

Street Lighting



LUMINAIRE AND POLE:

CANDB2-FRN-PH7 (CANDELA BOLLARD SERIES BY LUMEC) WITH CAST ALUMINUM HOUSING WITH LOUVERS, CLEAR FRESNEL LENS, PHOTOCELL AND EXTRUDED ALUMINUM 4-1/2" POLE WITH HINGED BASE.

COLOR:	GN8-TX (TEXTURED DARK FOREST GREEN)
VOLTAGE:	240V (110V MINIMUM)
LAMP:	70W HPS (PROVIDED BY GE, PHILIPS OR SYLVANIA)
OPTICS:	TYPE IV, LONG, CUTOFF

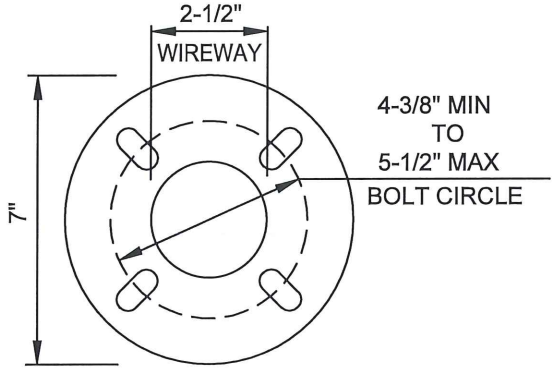
BASE COVER:

ROUND COVER MADE FROM CAST ALUMINUM MECHANICALLY FASTENED TO THE BASE PLATE WITH FOUR STAINLESS STEEL SCREWS.

BASE PLATE:

BASE PLATE COMES WITH 4 ANCHOR BOLTS AND 8 NUTS AND WASHERS. BOLT PROJECTION (ABOVE FOUNDATION) SHALL NOT EXCEED 1-3/4".

FOR FOUNDATION DETAILS, SEE CITY OF MILL CREEK STANDARD PLAN LGT-10.



APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

NOTES:

1. THIS STANDARD SHALL APPLY TO TRAIL ACCESS POINTS ALONG THE NORTH CREEK TRAIL AND WITHIN THE EAST GATEWAY URBAN VILLAGE.
2. INSTALLATION OF ALL LUMINAIRE COMPONENTS SHALL COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
3. FOR FUTURE DEVELOPMENT, THE CITY HAS A PREFERENCE FOR LED LIGHT BULBS.

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

BOLLARD PATH LIGHT

(CONCRETE FOUNDATION)

NOT TO SCALE

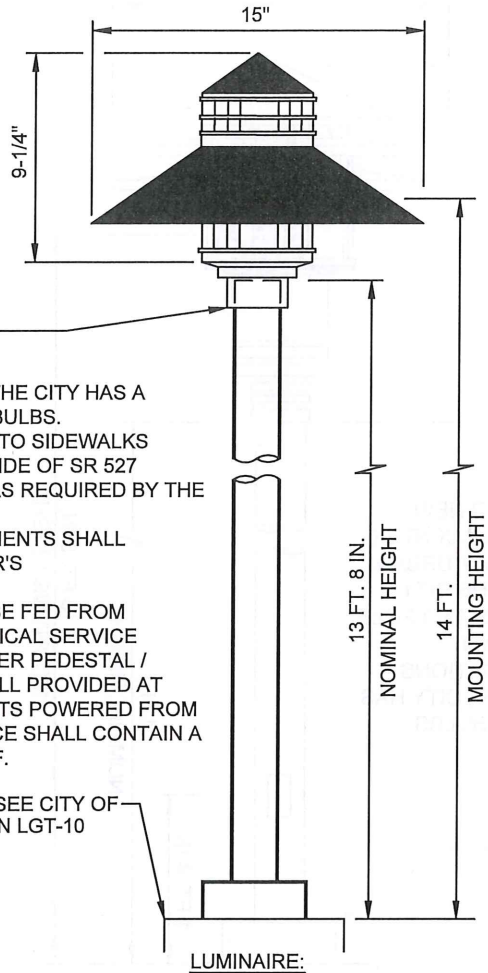
PUBLIC WORKS DEPARTMENT

PLAN NO.

LGT - 1

REV. DATE:

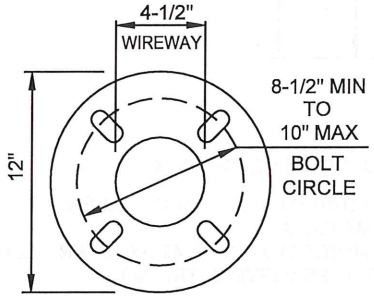
10/18/2021



NOTES:

1. FOR FUTURE DEVELOPMENT, THE CITY HAS A PREFERENCE FOR LED LIGHT BULBS.
2. THIS STANDARD SHALL APPLY TO SIDEWALKS INSTALLED ALONG THE EAST SIDE OF SR 527 (BOTHELL-EVERETT HWY) OR AS REQUIRED BY THE CITY.
3. INSTALLATION OF ALL COMPONENTS SHALL COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
4. POWER TO LUMINAIRE SHALL BE FED FROM ADJACENT BUILDING'S ELECTRICAL SERVICE PANEL, OR STAND ALONE POWER PEDESTAL / CABINET WITH ONE PHOTO CELL PROVIDED AT POWER SOURCE FOR ALL LIGHTS POWERED FROM THAT SOURCE. POWER SOURCE SHALL CONTAIN A BREAKER FOR LIGHT TURN OFF.

FOR FOUNDATION DETAILS SEE CITY OF MILL CREEK STANDARD PLAN LGT-10



LUMINAIRE:

BPM-2246/NATURAL (BEACON SERIES BY TEKA) WITH CAST BRONZE LOWER HOUSING AND CAP, COPPER SHADE, SOLID BRASS SPACERS AND CLEAR CYLINDRICAL GLASS LENS.

COLOR: NATURAL
VOLTAGE: 120V (110V MINIMUM)
LAMP: 100W HPS (PROVIDED BY GE, PHILIPS OR SYLVANIA)
OPTICS: TYPE V, SHORT, CUTOFF

POLE:

PTR5-1308 (BY TEKA) WITH SMOOTH TAPERED (3" O.D. TOP & 5" O.D. BOTTOM) ALLOY ALUMINUM SHAFT WITH HINGED BASE ASSEMBLY (NO HANDHOLE) AND POLE MOUNTED BALLAST (TEKA #BMB).
COLOR: CARDINAL TO25BR01 (CUSTOM BRONZE)

BASE COVER:

COVER CONSISTS OF TWO PIECE DECORATIVE CAST ALUMINUM COMPONENTS (ROUND).

BASE PLATE:

BASE PLATE COMES WITH TEKA ANCHOR KIT #PTR-A. BOLT PROJECTION SHALL NOT EXCEED 3-1/2".

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

TEKA PEDESTRIAN PATH LIGHTING

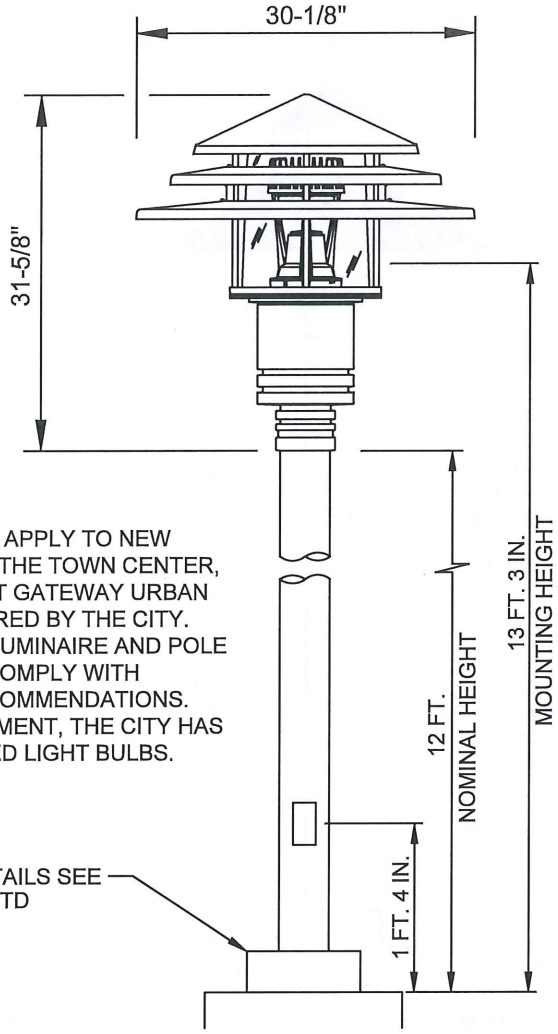
(CONCRETE FOUNDATION)

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

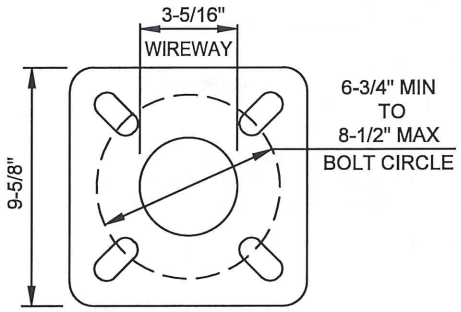
PLAN NO.
LGT - 2

REV. DATE:
10/18/2021



NOTES:

1. THIS STANDARD SHALL APPLY TO NEW PEDESTRIAN PATHS IN THE TOWN CENTER, SR-527 SUB-AREA, EAST GATEWAY URBAN VILLAGE, OR AS REQUIRED BY THE CITY.
2. INSTALLATION OF ALL LUMINAIRE AND POLE COMPONENTS SHALL COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
3. FOR FUTURE DEVELOPMENT, THE CITY HAS A PREFERENCE FOR LED LIGHT BULBS.



LUMINAIRE:
CAND6-40W42LED4K-R-PC-C-RLE5-VOLT-GN8TX

COLOR:	GN8-TX (TEXTURED DARK FOREST GREEN)
VOLTAGE:	240V (110V MINIMUM)
LAMP:	PHILIPS LUMILEDS LUXEON R. 42 HIGH-PERF. LEDS- 40W LAMP.
OPTICS:	(RLE5) I.E.S. TYPE V (SYMMETRICAL).

POLE:
APR4F-12HB (4" DIA ROUND STRAIGHT ALUMINUM POLE) WITH HINGED BASE (BY LUMEC).
COLOR: GN8-TX (TEXTURED DARK FOREST GREEN)

BASE COVER:
SQUARE COVER MADE FROM TWO PIECES OF FORMED ALUMINUM MECHANICALLY FASTENED TO THE BASE WITH STAINLESS STEEL SCREWS.

BASE PLATE:
BASE PLATE COMES WITH 4 ANCHOR BOLTS AND 8 NUTS AND AND WASHERS. BOLT PROJECTION (ABOVE FOUNDATION) SHALL NOT EXCEED 3".

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

CANDELA PEDESTRIAN PATH LIGHTING

(CONCRETE FOUNDATION)

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LGT - 3

REV. DATE:
10/18/2021

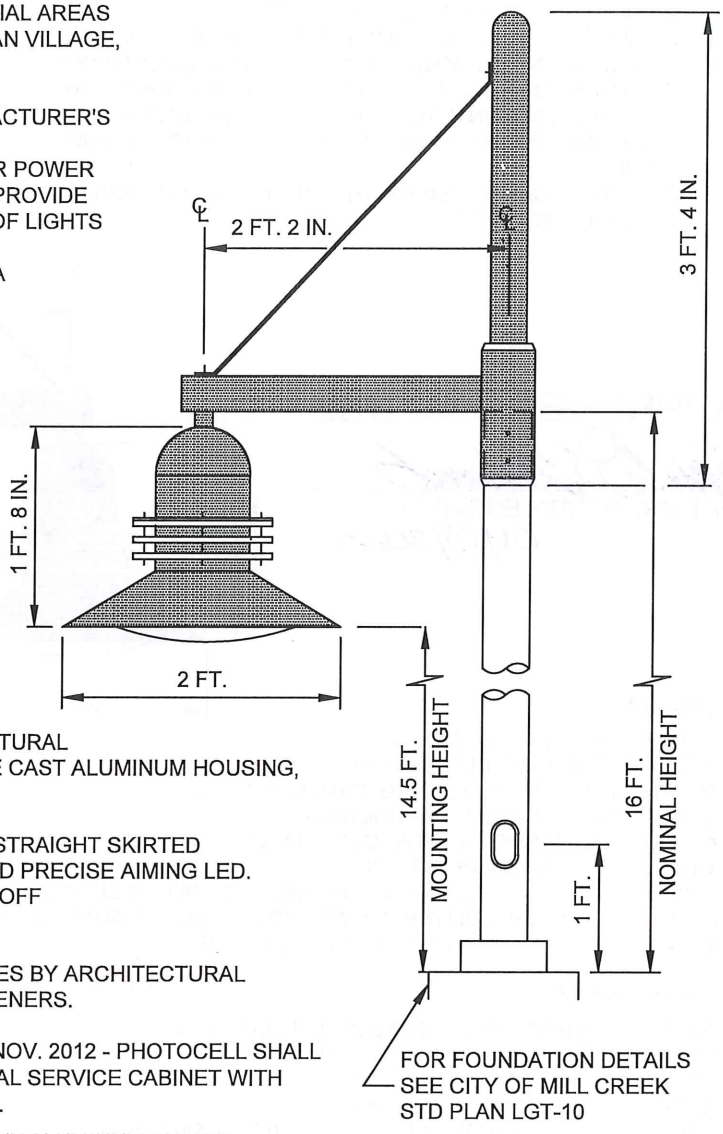
NOTES:

1. THIS STANDARD SHALL APPLY TO COMMERCIAL AREAS IN THE TOWN CENTER, EAST GATEWAY URBAN VILLAGE, OR AS REQUIRED BY THE CITY.
2. INSTALLATION OF ALL LUMINAIRE AND POLE COMPONENTS SHALL COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
3. INSTALL ONE TYPE B-SERVICE CABINET NEAR POWER SOURCE WITH TOP MOUNTED PHOTO CELL. PROVIDE BREAKER / DISCONNECT FOR EACH GROUP OF LIGHTS INSIDE LOCKABLE CABINET.
4. FOR FUTURE DEVELOPMENT, THE CITY HAS A PREFERENCE FOR LED LIGHT BULBS.

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022



FOR FOUNDATION DETAILS SEE CITY OF MILL CREEK STD PLAN LGT-10

LUMINAIRE:

UCM-SR-STR-T2-60LED-BW-DGN
(UNIVERSE COLLECTION SERIES BY ARCHITECTURAL AREA LIGHTING) WITH ONE-PIECE BALLAST DIE CAST ALUMINUM HOUSING, 24" HOOD WITH RINGS AND FLAT GLASS LENS.

COLOR: DGN (DARK GREEN)
LUMINOUS & HOOD: SR-STR (SOLID RINGS- STRAIGHT SKIRTED
LAMP: MICROEMITTER DLC APPROVED PRECISE AIMING LED.
OPTICS: TYPE II (H2), SHORT, FULL-CUTOFF

LUMINAIRE ARM:

SLA17-DGN-PCR (UNIVERSE COLLECTION SERIES BY ARCHITECTURAL AREA LIGHTING) WITH STAINLESS STEEL FASTENERS.

COLOR: DGN (DARK GREEN)
PHOTOCELL: INSTALLATIONS DONE AFTER NOV. 2012 - PHOTOCELL SHALL BE LOCATED ON AN ELECTRICAL SERVICE CABINET WITH A BREAKER AND TEST SWITCH.

POLE:

PR4-4R16-125 (4" DIA. ROUND SMOOTH STRAIGHT ALUMINUM SHAFT) (BY ARCHITECTURAL AREA LIGHTING).

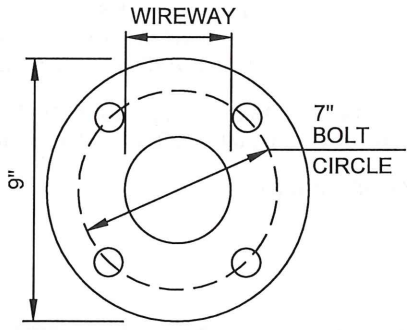
COLOR: DGN (DARK GREEN)

BASE COVER:

ROUND COVER MADE FROM FORMED ALUMINUM.

BASE PLATE:

BASE PLATE COMES WITH 4 ANCHOR BOLTS AND 8 NUTS AND WASHERS. BOLTS PROJECTION (ABOVE FOUNDATION) SHALL NOT EXCEED 3-1/2".



CITY OF Mill Creek WASHINGTON

STREET LIGHTING

ARCHITECTURAL LIGHTING COMMERCIAL STREET LIGHT

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LGT- 4

REV. DATE:
10/18/2021

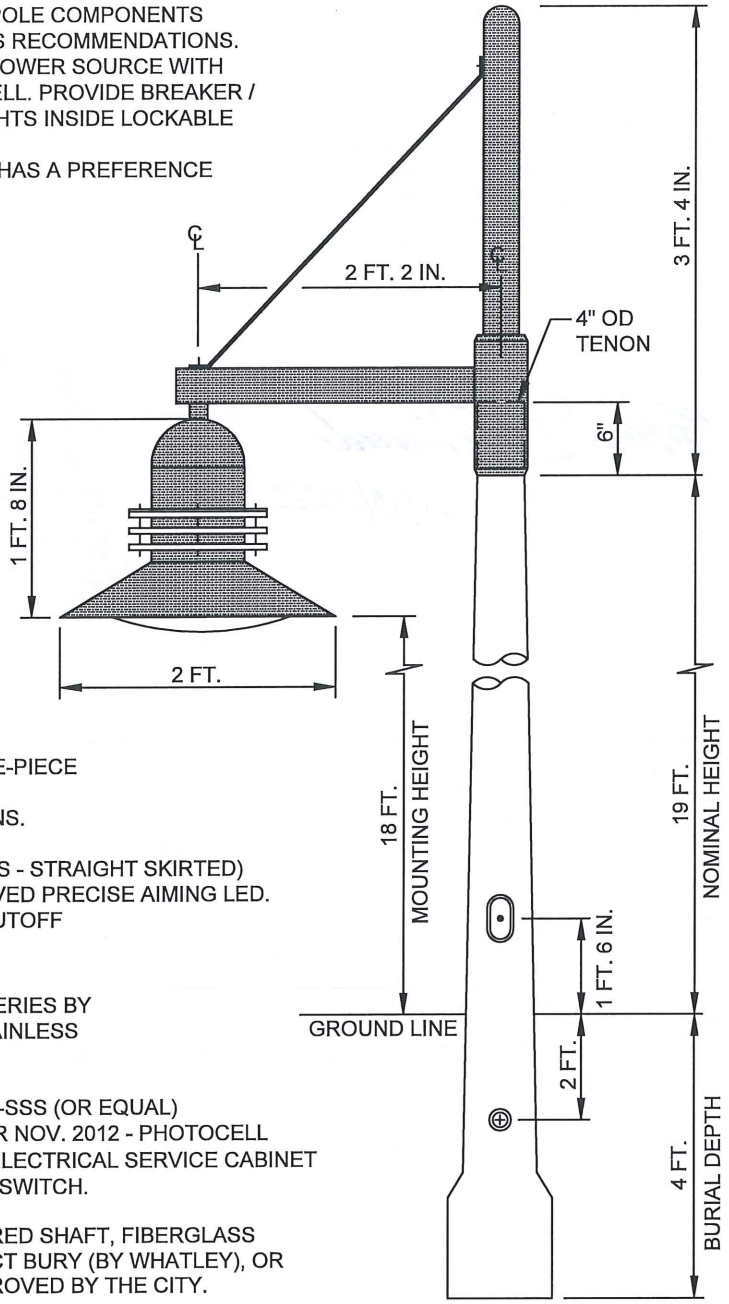
NOTES:

1. THIS STANDARD SHALL APPLY TO RESIDENTIAL AREAS IN THE TOWN CENTER AND WITHIN THE EAST GATEWAY URBAN VILLAGE, OR AS REQUIRED BY THE CITY.
2. INSTALLATION OF ALL LUMINAIRE AND POLE COMPONENTS SHALL COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
3. INSTALL ONE SERVICE CABINET NEAR POWER SOURCE WITH TOP MOUNTED OR INTERNAL PHOTO CELL. PROVIDE BREAKER / DISCONNECT FOR EACH GROUP OF LIGHTS INSIDE LOCKABLE CABINET.
4. FOR FUTURE DEVELOPMENT, THE CITY HAS A PREFERENCE FOR LED LIGHT BULBS.

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022



LUMINAIRE:

UCM-SR-STR-T2-60LED-BW-DGN
(UNIVERSE COLLECTION SERIES BY ARCHITECTURAL AREA LIGHTING) WITH ONE-PIECE DIE CAST BALLAST ALUMINUM HOUSING, 24" HOOD WITH RINGS AND FLAT GLASS LENS.
COLOR: DGN (DARK GREEN)
LUMINOUS & HOOD: SR-STR (SOLID RINGS - STRAIGHT SKIRTED)
LAMP: MICROEMITTER DLC APPROVED PRECISE AIMING LED.
OPTICS: TYPE II (H2), SHORT, FULL-CUTOFF

LUMINAIRE ARM:

SLA17-DGN-PCR (UNIVERSE COLLECTION SERIES BY ARCHITECTURAL AREA LIGHTING) WITH STAINLESS STEEL FASTENERS AND PHOTOCELL.
COLOR: DGN (DARK GREEN)
PHOTOCELL: FISHER-PIERCE, PART #7760-SSS (OR EQUAL) INSTALLATIONS DONE AFTER NOV. 2012 - PHOTOCELL SHALL BE LOCATED ON AN ELECTRICAL SERVICE CABINET WITH A BREAKER AND TEST SWITCH.

POLE:

RT45-19-DE-SMS-DGR-40-60 SMOOTH TAPERED SHAFT, FIBERGLASS REINFORCED COMPOSITE MATERIAL, DIRECT BURY (BY WHATLEY), OR BH23-03S8BE09 BY SHAKESPEARE, AS APPROVED BY THE CITY.
COLOR: DGR (DARK GREEN)

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

ARCHITECTURAL LIGHTING RESIDENTIAL STREET LIGHTING

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

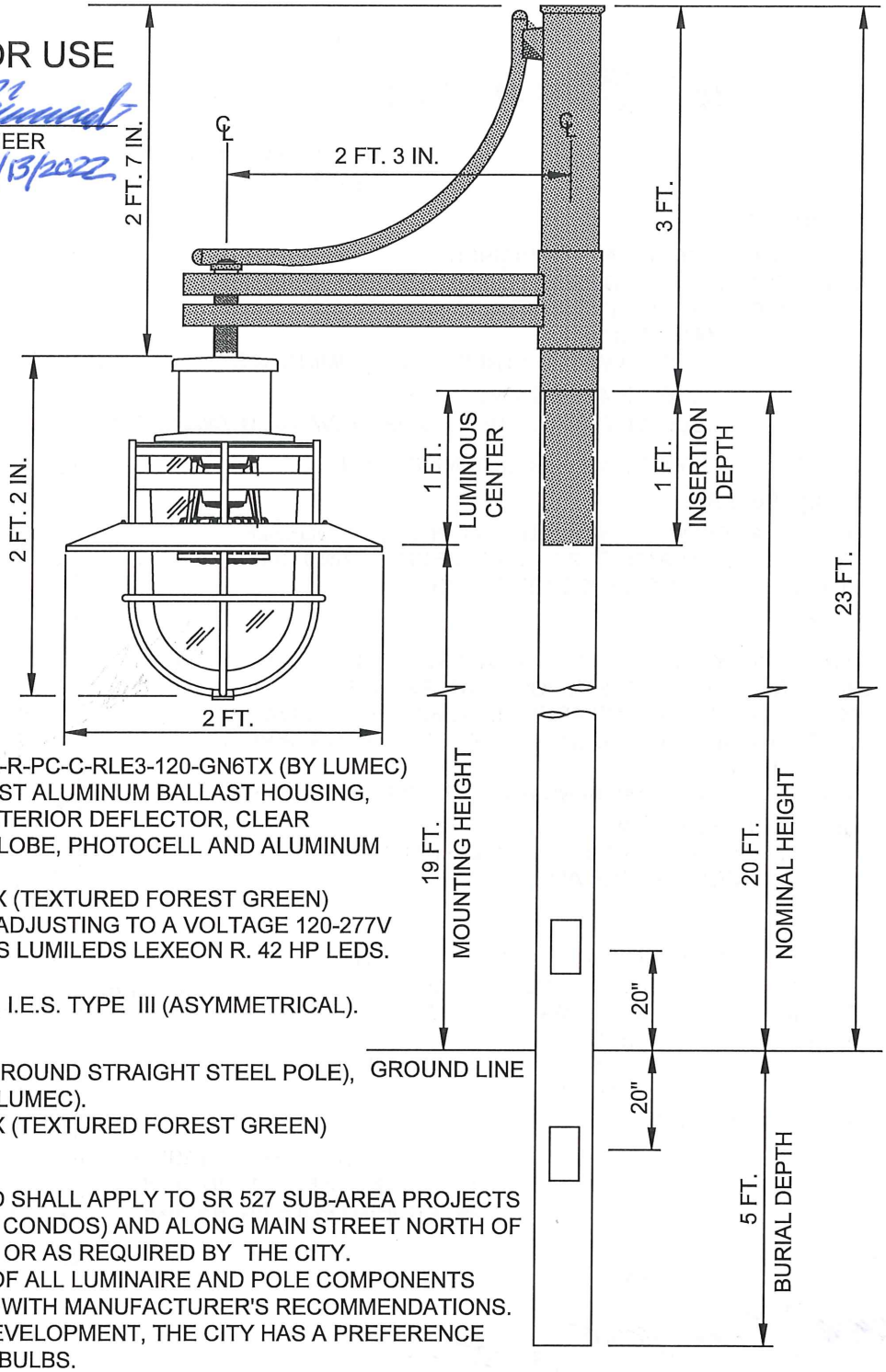
PLAN NO.
LGT - 5

REV. DATE:
10/18/2021

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022



LUMINAIRE:

CAND1-40W42LED4K-R-PC-C-RLE3-120-GN6TX (BY LUMEC) WITH ONE-PIECE CAST ALUMINUM BALLAST HOUSING, SPUN-ALUMINUM EXTERIOR DEFLECTOR, CLEAR POLYCARBONATE GLOBE, PHOTOCELL AND ALUMINUM MOUNTING ARM.

COLOR: GN6-TX (TEXTURED FOREST GREEN)
VOLTAGE: AUTO-ADJUSTING TO A VOLTAGE 120-277V
LAMP: PHILIPS LUMILEDS LEXEON R. 42 HP LEDS.

OPTICS: (RLE3), I.E.S. TYPE III (ASYMMETRICAL).

POLE:

SPR4N-20DE (4" DIA. ROUND STRAIGHT STEEL POLE), DIRECT BURIED (BY LUMEC).
COLOR: GN6-TX (TEXTURED FOREST GREEN)

NOTES:

1. THIS STANDARD SHALL APPLY TO SR 527 SUB-AREA PROJECTS (APARTMENTS / CONDOS) AND ALONG MAIN STREET NORTH OF TOWN CENTER, OR AS REQUIRED BY THE CITY.
2. INSTALLATION OF ALL LUMINAIRE AND POLE COMPONENTS SHALL COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.
3. FOR FUTURE DEVELOPMENT, THE CITY HAS A PREFERENCE FOR LED LIGHT BULBS.

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

CANDELA COMMERCIAL HOUSING STREET LIGHT

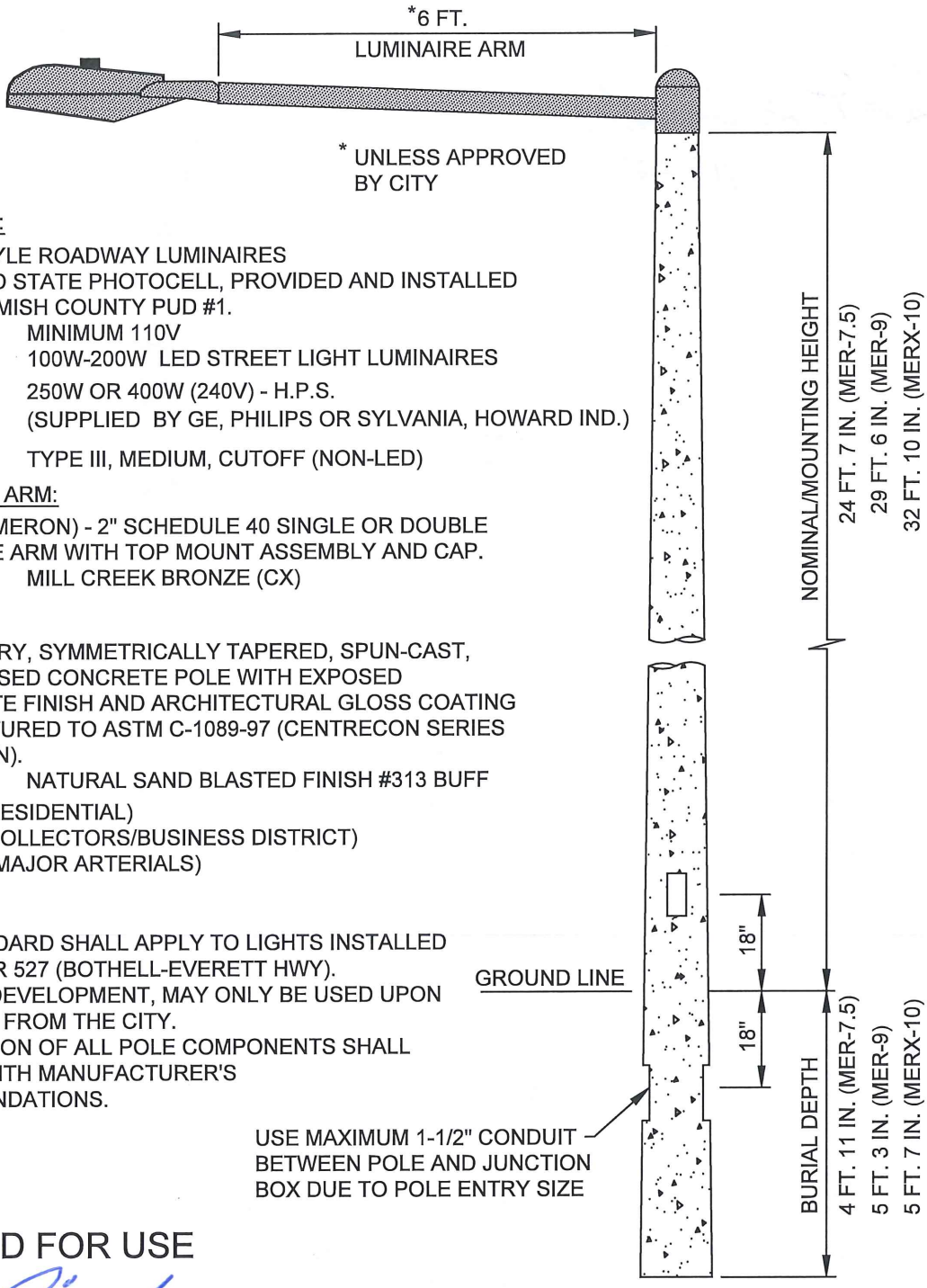
(DIRECT BURY)

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LGT - 6

REV. DATE:
10/18/2021



LUMINAIRE:

COBRA STYLE ROADWAY LUMINAIRES
WITH SOLID STATE PHOTOCELL, PROVIDED AND INSTALLED
BY SNOHOMISH COUNTY PUD #1.
VOLTAGE: MINIMUM 110V
LAMP: 100W-200W LED STREET LIGHT LUMINAIRES
250W OR 400W (240V) - H.P.S.
(SUPPLIED BY GE, PHILIPS OR SYLVANIA, HOWARD IND.)

OPTICS: TYPE III, MEDIUM, CUTOFF (NON-LED)

LUMINAIRE ARM:

SP-6 (BY AMERON) - 2" SCHEDULE 40 SINGLE OR DOUBLE
STEEL PIPE ARM WITH TOP MOUNT ASSEMBLY AND CAP.
COLOR: MILL CREEK BRONZE (CX)

POLE:

DIRECT BURY, SYMMETRICALLY TAPERED, SPUN-CAST,
PRESTRESSED CONCRETE POLE WITH EXPOSED
AGGREGATE FINISH AND ARCHITECTURAL GLOSS COATING
MANUFACTURED TO ASTM C-1089-97 (CENTRECON SERIES
BY AMERON).
COLOR: NATURAL SAND BLASTED FINISH #313 BUFF

MER-7.5 (RESIDENTIAL)
MER-9.0 (COLLECTORS/BUSINESS DISTRICT)
MERX-10 (MAJOR ARTERIALS)

NOTES:

1. THIS STANDARD SHALL APPLY TO LIGHTS INSTALLED EAST OF SR 527 (BOTHELL-EVERETT HWY).
2. FOR NEW DEVELOPMENT, MAY ONLY BE USED UPON APPROVAL FROM THE CITY.
3. INSTALLATION OF ALL POLE COMPONENTS SHALL COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

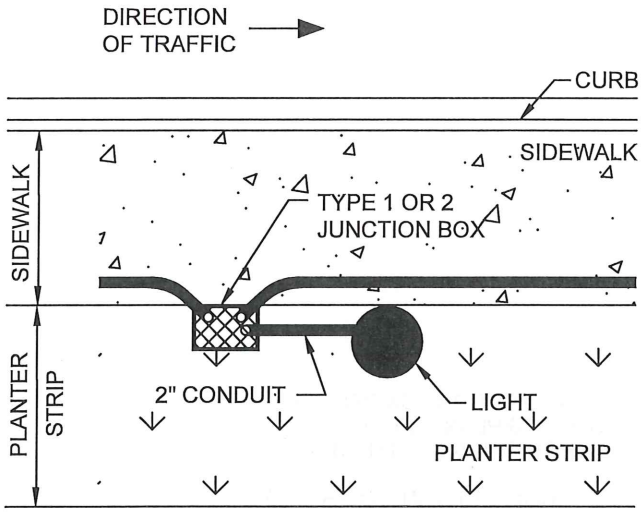
MILL CREEK STANDARD STREET LIGHT

NOT TO SCALE

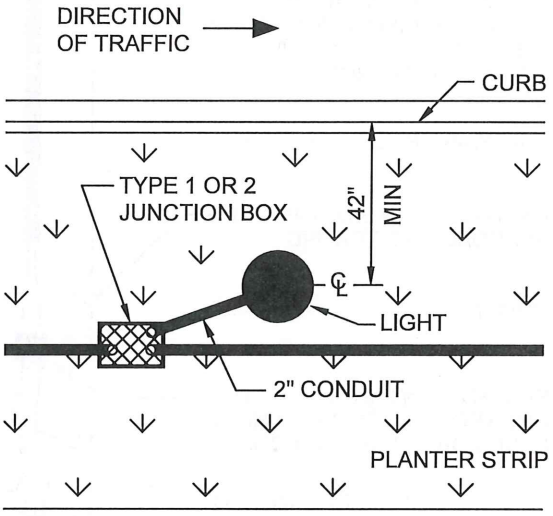
PUBLIC WORKS DEPARTMENT

PLAN NO.
LGT - 7

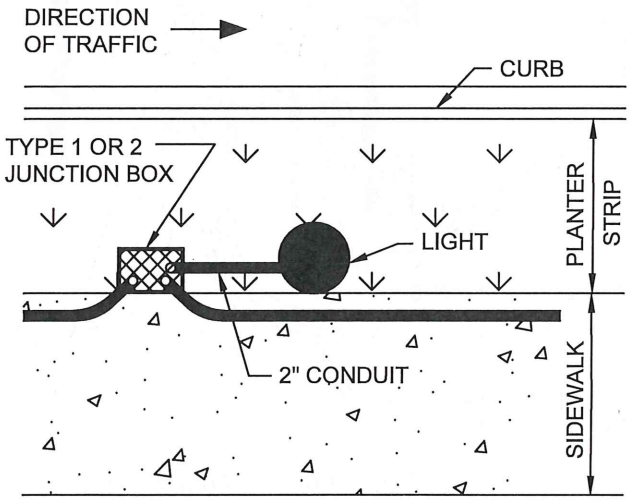
REV. DATE:
10/18/2021



SIDEWALK NEXT TO CURB



NO SIDEWALK



SIDEWALK WITH
PLANTER STRIP NEXT TO CURB

APPROVED FOR USE

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

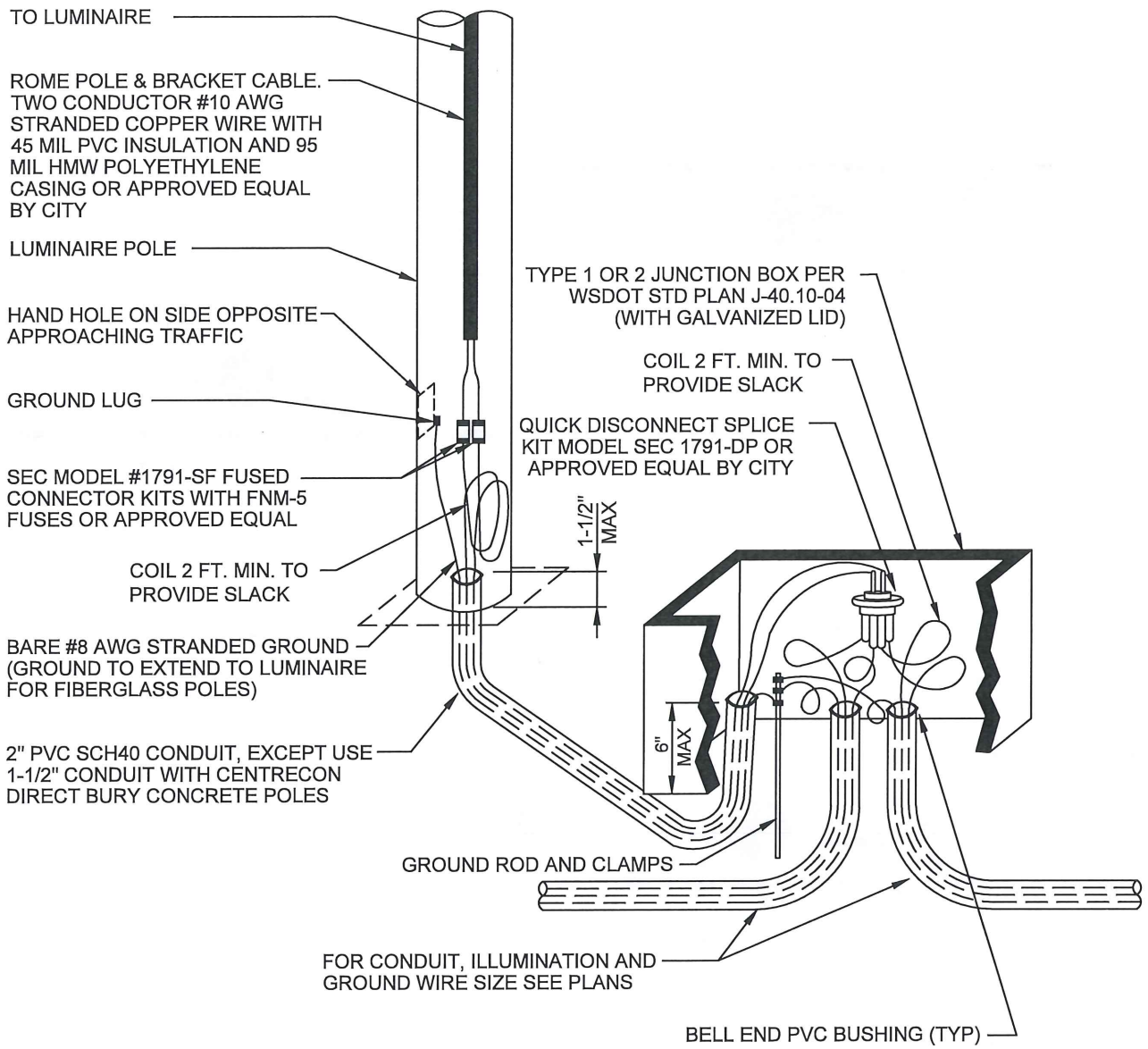
TYPICAL LUMINAIRE LOCATIONS

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LGT - 8

REV. DATE:
10/18/2021



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MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

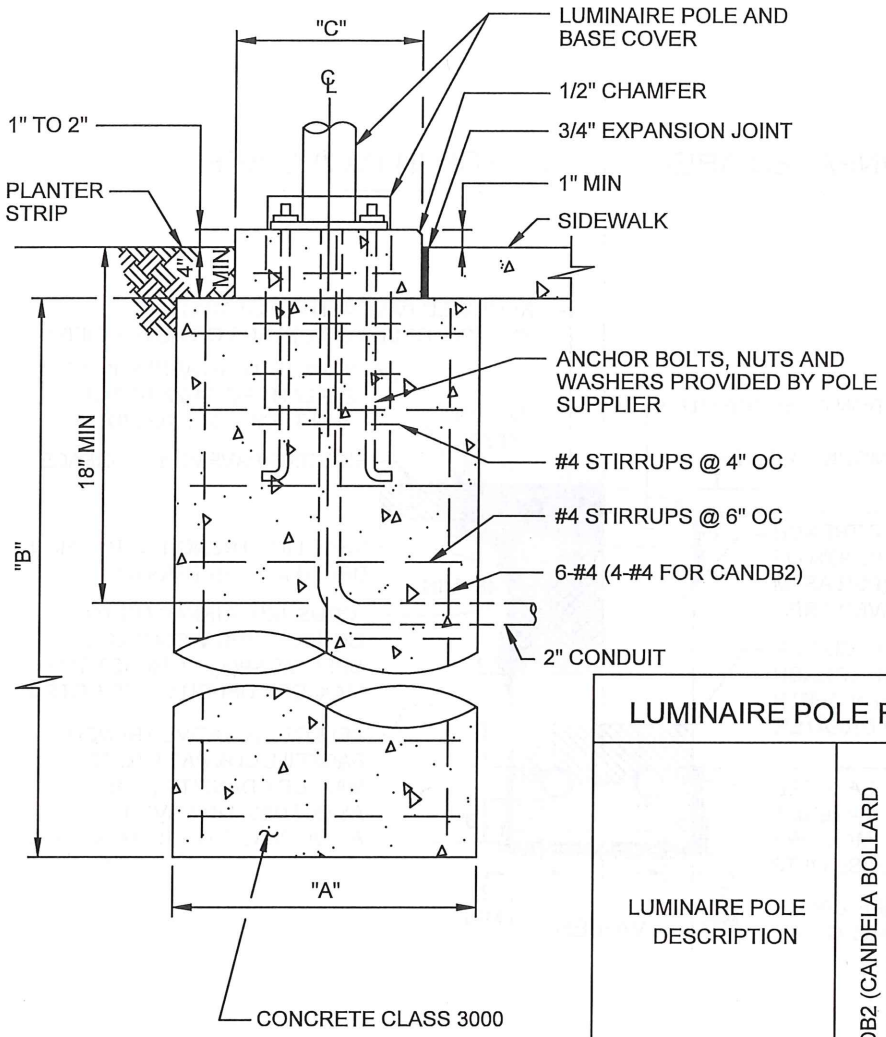
TYPICAL LUMINAIRE POLE JUNCTION BOX WIRING DETAIL

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LGT - 9

REV. DATE:
10/18/2021



LUMINAIRE POLE FOUNDATION TABLE

LUMINAIRE POLE DESCRIPTION	CANDB2 (CANDELA BOLLARD SERIES BY LUMEC)	PTR5-1308 (PEDESTRIAN PATH LIGHT BY TEKA)	CANDS6 (CANDELA PEDESTRIAN PATH LIGHT BY LUMEC)	PR4-4R16-125 (STREET LIGHT BY ARCHITECTURAL AREA LIGHTING)
CITY OF MILL CREEK STD PLAN NUMBER	LGT -01	LGT -02	LGT -03	LGT -04
FOUNDATION DIAMETER "A"	1'-3"	2'-0"	2'-0"	2'-0"
FOUNDATION HEIGHT "B"	2'-6"	4'-6"	4'-6"	4'-6"
PEDESTAL WIDTH (SQUARE) "C"	8"x8"	14"x14"	14"x14"	14"x14"

APPROVED FOR USE

Frank Leininger

MILL CREEK CITY ENGINEER

01/13/2022

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

TYPICAL LUMINAIRE POLE FOUNDATION DETAIL

NOT TO SCALE

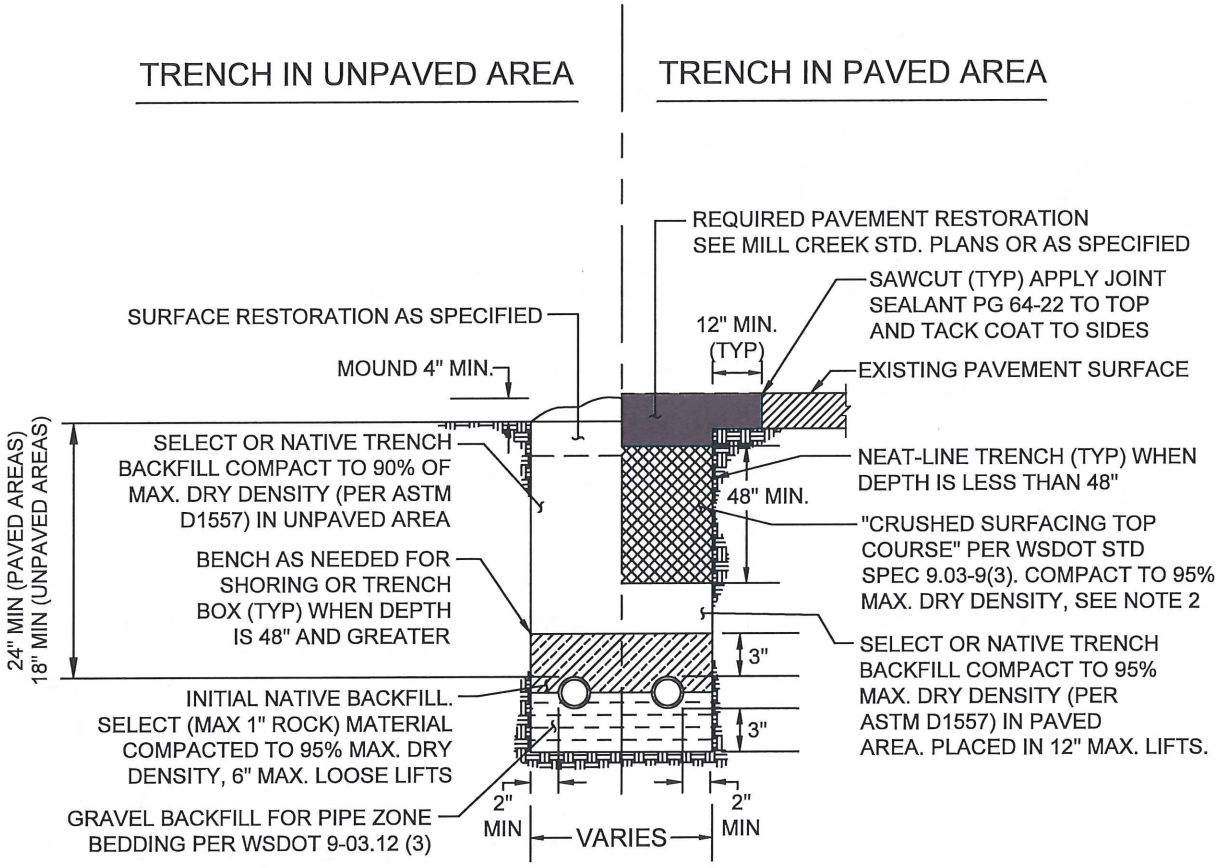
PUBLIC WORKS DEPARTMENT

PLAN NO.

LGT - 10

REV. DATE:

10/18/2021



NOTES:

1) EXISTING PAVEMENT MUST BE SAWCUT TO PROVIDE A CLEAN STRAIGHT EDGE BEFORE PIPE PLACEMENT.
2) WHERE TRENCH IS PERPENDICULAR TO TRAVELED LANES, BACKFILL FULL DEPTH WITH CRUSHED SURFACING TOP COURSE. WHERE TRENCH IS PARALLEL TO TRAVELED LANES, BACKFILL THE TOP 48" OF TRENCH TO SUBGRADE WITH CRUSHED SURFACING TOP COURSE. SUITABLE EXCAVATED MATERIAL MAY BE USED PROVIDED 95% MAX. COMPACTION DENSITY (ASTM D1557) CAN BE ACHIEVED.
3) BACK MATERIAL SHALL BE INSTALLED IN AN APPROVED MANNER TO ENSURE NO DAMAGES TO THE PIPE.
4) USE OF RECYCLED CONCRETE IS PROHIBITED, UNLESS APPROVED BY THE CITY.

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

TYPICAL CONDUIT TRENCH DETAIL

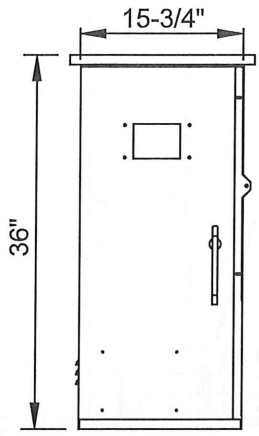
NOT TO SCALE

PUBLIC WORKS DEPARTMENT

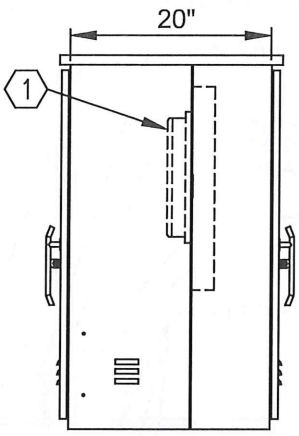
PLAN NO.
LGT - 11

REV. DATE:
9/14/2021

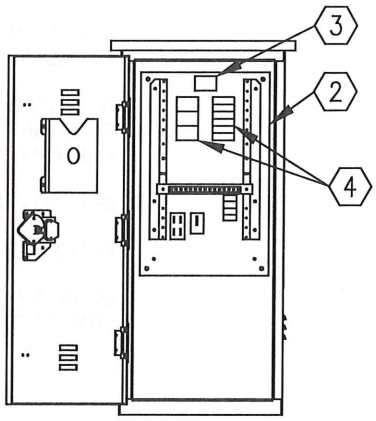
CABINET DETAILS:



UTILITY SIDE

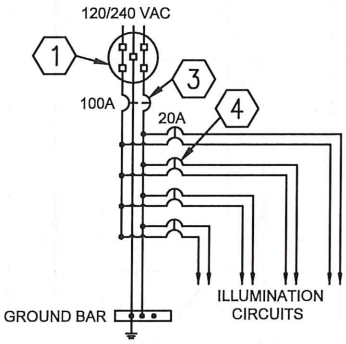


SIDE VIEW



SERVICE SIDE
(SHALL FACE THE STREET)

WIRING SCHEMATIC:



NOTES:

1. CABINET SHALL BE UL LISTED PER STANDARD #508, SUITABLE FOR USE AS SERVICE ENTRANCE CABINET.
2. FOR SERVICE CABINET FOUNDATION DETAILS SEE CITY OF MILL CREEK STD SHEET LGT-13.

COMPONENT SCHEDULE:

(1) METERBASE:
200A, 4-JAW, U3504-XL METER SOCKET (WITH JUMPER - METER SHALL NOT BE INSTALLED), WITH 5TH JAW AT 9:00 9:00 POSITION (VERIFY WITH SERVICE UTILITY REPRESENTATIVE PRIOR TO FABRICATION).

(2) PANELBOARD:
120/240 VAC, 225A, 1Ø, 3-WIRE, COPPER BUS (SQUARE D LOAD CENTER)

(3) MAIN BREAKER:
100A, 2-POLE

(4) BRANCH BREAKERS:
4-20/2 ILLUMINATION
(MAX 12 SINGLE POLE BREAKERS OR 6 DOUBLE POLE BREAKERS)

(5) CABINET:
NEMA 3R PADMOUNT, 1/8" ALUMINUM, 5052 AL POWDER COATED ASA 61 GRAY OUTSIDE AND INSIDE, 2 SCREENED GASKETED VENTS AND HINGED DEADFRONT.

(6) CABINET DOORS:
WITH CLOSED CELL NEOPRENE GASKETS, CARD HOLDER, HEAVY-DUTY CONCEALED HINGES (LIFT-OFF TYPE), STAINLESS STEEL VAULT HANDLES (INTEGRAL "BEST LOCK" ON SERVICE DOOR). FINISH SHALL BE POLYESTER POWDER COAT ASA 61 GRAY OUTSIDE AND INSIDE. UTILITY DOOR SHALL PROVIDED WITH 4"x6" POLISHED WIRE GLASS WINDOW.

APPROVED FOR USE

Frank D. Spencer

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

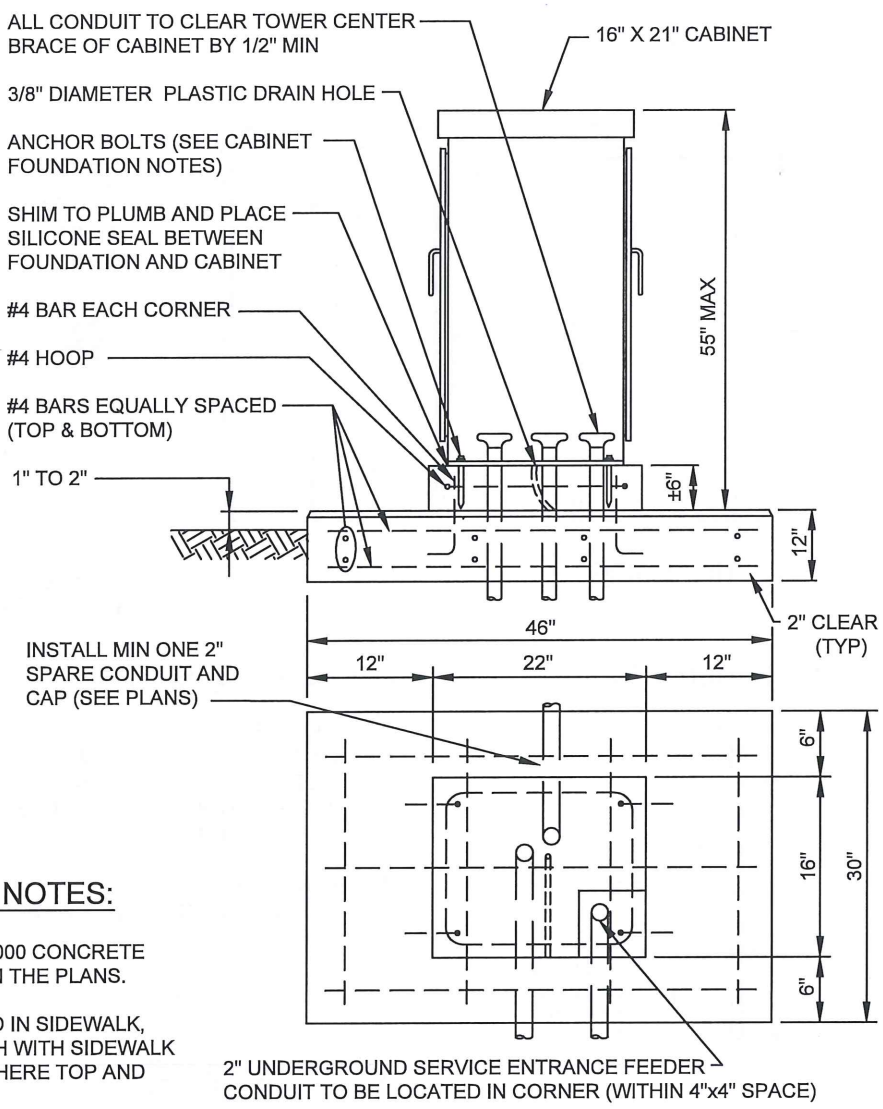
ELECTRICAL SERVICE CABINET

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

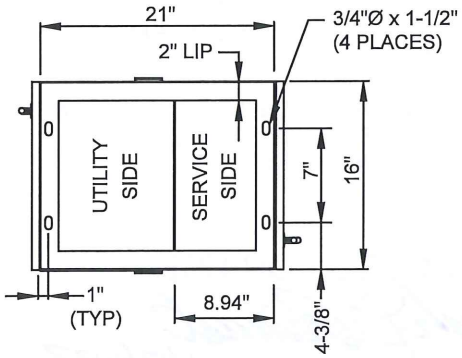
PLAN NO.
LGT - 12

REV. DATE:
10/18/2021



CABINET FOUNDATION NOTES:

1. PADMOUNT SHALL BE CLASS 3000 CONCRETE UNLESS OTHERWISE NOTED ON THE PLANS.
2. WHERE PADMOUNT IS LOCATED IN SIDEWALK, CONSTRUCT MOUNT TOP FLUSH WITH SIDEWALK GRADE, OMITTING CHAMFER WHERE TOP AND SIDEWALK ABUT.
3. PADMOUNT DESIGN IS TYPICAL: CONTRACTOR SHALL USE CABINET MANUFACTURER'S SPECIFICATIONS (SEE CITY OF MILL CREEK STD PLAN FOR ELECTRICAL SERVICE CABINET DETAILS) TO ASSURE PROPER FIT OF CABINET ON BASE WITH RESPECT TO CONDUIT PLACEMENT.
4. CABINET SHALL BE ATTACHED WITH 1/2" X 4" QUICK BOLTS.
   SEAL CABINET TO FOUNDATION WITH 1/2" BEAD OF SILICONE JOINT SEALANT- APPLY TO DRY SURFACE ONLY.



APPROVED FOR USE

MILL CREEK CITY ENGINEER 04/13/2022

CITY OF Mill Creek WASHINGTON

STREET LIGHTING

ELECTRICAL SERVICE CABINET FOUNDATION

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO. LGT - 13

REV. DATE: 10/18/2021

Landscaping

Landscape General Requirements

1. General requirements for inspections of landscape plantings and similar features can be found in the "Development Inspection General Requirements" section of these Standard Plans.

2. Trees shall have one central leader. If the leader was headed, a new leader (with a live terminal bud) at least one-half the diameter of the pruning cut shall be present.

   - All trees are assumed to have one central leader trees unless a different form is specified in the plant list or drawings.

3. Twine and burlap used for wrapping the root ball package shall be natural, biodegradable material.

4. **Container Root Ball Shaving:** The outer surfaces of **all** container trees, including the top, sides and bottom of the root ball shall be shaved to remove all circling, descending, and matted roots. Shaving shall be performed using saws, knives, sharp shovels or other suitable equipment that is capable of making clean cuts on the roots. Shaving shall remove a minimum of 1-inch of root mat or up to 2 inches as required to remove all root segments that are not growing reasonably radial to the trunk.

5. For trees to be planted in prepared Type B Topsoil that is deeper than the root ball depth, compact the soil under the root ball using a mechanical tamper to assure a firm bedding for the root ball. Type B Topsoil depth shall be a minimum of 24 inches.

6. Root barrier is required adjacent to trees planted in a planter strip narrower than six feet and in landscape islands. Barrier adjacent to the curb and sidewalk shall be 18 inches.

7. Set top outer edge of the root ball at the average elevation of the proposed finish. Set the plant plumb and upright in the center of the planting hole. The tree graft, if applicable, shall be visible above the grade. Do not place soil on top of the root ball.

8. After the root ball has been placed in the excavated pit, remove root ball wrapping (burlap, wire basket, twine, etc.) from the top 12 inches or 2/3 of the root ball, whichever is greater. Cut the burlap away; do not fold down onto the soil surrounding the root ball.

9. Stabilize the root ball by firming a ring of backfill soil around the bottom of the root ball. Place additional Type B Topsoil around base and sides of ball in 6-inch lifts. Lightly tamp each lift using foot pressure or hand tools to settle backfill, support the tree and eliminate voids. DO NOT over compact the backfill or use mechanical or pneumatic tamping equipment.

10. When the planting hole has been backfilled to ¾ of its depth, water shall be poured around the root ball and allowed to soak into the soil to settle the soil. Do not flood the planting space. Air pockets shall be eliminated and backfill continued until the planting soil is brought to grade level.

Landscape General Requirements (Continued)

11. Where indicated on the drawings, build a 4-inch high, level berm of planting soil around the outside of the root ball to retain water. Tamp the berm to reduce leaking and erosion of the saucer.

12. Thoroughly water the root ball and surrounding top soil immediately after planting.

13. Remove all nursery plant identification tags and ribbons prior to final inspection by the City.

14. Stake or guy all new trees unless otherwise approved by the City.

15. Trees that are guyed shall have their guys and stakes removed after year.

16. Apply 2 to 3 inches of mulch before settlement, covering the entire planting bed area. Install no more than 1 inch of mulch over the top of the root balls of all plants. Taper to 2 inches when abutting pavement.

17. Maintenance during the period prior to final acceptance by the City shall consist of pruning, watering, cultivating, weeding, mulching, removal of dead material, resetting plants to proper grades and upright position, and furnishing and applying such sprays as are necessary to keep plantings reasonably free of damaging insects and disease, and in healthy condition. The threshold for applying insecticides and herbicide shall follow City-approved Integrated Pest Management (IPM) procedures. Mulch areas shall be kept reasonably free of weeds and grass.

City of Mill Creek
Approved Street Tree List

Effective July 25, 2013

In accordance with Mill Creek Municipal Code Section 17.34.040.H.1.k Landscaping Design, "street trees shall be a species listed on the latest edition of the City of Mill Creek "Approved Street Tree List," which shall be maintained by and is available from the Department of Community Development. If a tree species, which is not listed on the City's Approved Street Tree list, is desired, a request may be submitted to the Mill Creek Design Review Board for approval; however, the tree species must at a minimum be: urban tolerant, not likely to cause infrastructure damage, and able to be pruned to a height that would avoid conflicts with pedestrians and vehicle traffic."

Tom Rogers, AICP
Director of Community Development

Distributed by:
City of Mill Creek Community Development
15728 Mill Creek, WA 98012
(425) 745-1891

CITY OF
Mill Creek
WASHINGTON

Approved Street Tree List

Street trees provide many benefits including improved water quality and air quality, as well as psychological and aesthetic benefits. However, trees have been known to cause problems, usually when the wrong species is planted in the wrong place. To assist businesses and developers in choosing appropriate trees for urban planting sites, staff has created an Approved Street Tree List, which is referenced in the Code. The List was compiled from numerous research sources and was vetted and approved by the City's Public Works Department, two plant wholesalers and Certified Arborist and Design Review Board Member, Jessica Bloom.

Street tree spacing shall be based on the species type and shall adhere to the following guidelines:

- In a planting strip street trees should not be planted:
  - Within thirty feet (30') of the intersection,
  - Within fifteen feet (15') from power poles and street lights, or
  - Within five feet (5') from underground utility boxes/meters or driveways.
- When planting under overhead power lines choose trees that will not exceed twenty-five feet (25') at mature height.
- Minimum size at time of planting shall be 1.5 inch to 3 inch caliper.

In commercial areas consider tree shape and whether or not proposed trees will obscure signage or desired views to the property.

Street tree branches that extend over the sidewalk and/or roadway should be kept trimmed to a height of eight feet (8') above the sidewalk and fourteen feet (14') above a roadway.

It is the responsibility of the adjacent property owner to maintain the street tree(s) in perpetuity, including watering during the drier seasons, mulching and pruning. Proper planting and pruning techniques will increase the aesthetic appearance and value of the street trees. **Using an ISA Certified Arborist to prune street trees is strongly encouraged.** For more information refer to the ISA website: http://www.treesaregood.org/treecare/treecareinfo.aspx.

Do not plant a tree before determining where underground utilities are located. To request the location of underground utilities, please call 1-800-424-5555 or 811 or visit: http://www.callbeforeyoudig.org/iticlitepickstates.html.

When planting in a planting strip (five feet or less) a vertical barrier treatment to reduce root growth under pavement should be installed.

Omitted Tree Species

Many tree species were specifically not included in the Approved Street Tree List for various reasons such as: destructive root system, messy fruit, low survival rates, poor branching pattern, etc. Although the City tried to include a wide variety of tree species, there are undoubtedly appropriate trees that were unintentionally omitted. If there is a tree species not included on the Approved Street Tree List that you feel should be included, please contact Planning Specialist Sherrie Ringstad at (425) 921-5717.

Discouraged Trees

The following tree species are discouraged:

- *Acer negundo, Acre saccarinum, Acer macrophyllum* (boxelder, silver maple, and big leaf maple) – Break badly in storms.
- *Ailanthus altissima* (tree of heaven) – Roots are invasive, brittle wood, suckers freely.
- *Alnus rubra* (red alder) – Brittle wood. Favorite of tent caterpillars.
- *Betula alba* (white birch) – Regular aphid infestations – probably will not kill the tree, but sticky "honeydew" drips and makes a mess. Do not plant where people park their cars. While many trees get aphids, birch is always more heavily attacked.
- *Juglans nigra, J. regia* (black walnut, English walnut) – Messy fruit and J. nigra roots are destructive.
- *Liquidambar styraciflua* (sweetgum) – Roots are particularly destructive to sidewalks. *They need an especially wide planting strip.*
- *Populus trichocarpa (*black cottonwood) Wood very brittle. Female trees release a substantial amount of "cotton", which some consider a nuisance.
- *Populus* spp. (Poplars) – Tops are brittle and break up easily in storms.
- *Robinia pseudoacacia* (black locust) – Thorny, brittle.
- *Salix* spp. (willows) - Roots are particularly hard on sewers.

Acknowledgements

The following people are acknowledged for their contributions in creating the Approved Street Tree List:

City of Mill Creek Design Review Board
Jessica Bloom, CPH & Certified Arborist, NW Bloom
Bruce Bosley, Maintenance Worker, City of Mill Creek
Ella Smith, Wetlands & Woodlands Wholesale Nursery, Inc.
Brian Wegner, Vibrant Plants, Inc.
Sherrie Ringstad, Planning Specialist; City of Mill Creek

Common Name	Scientific Name	Mature Height	Mature Spread	Suitable for Planter Strip 4' or <	Root Damage Potential	Comments
Amur maple	*Acer ginnala*	20'	15'	Yes	Low	Use single-trunk form, requires little water beyond early establishment, adaptable and hardy.
Flame Amur Maple	*Acer ginnala* 'Flame'	20'	15'	Yes	Low	Fast growing cultivar, nice fall color. Same attributes as Amur maple.
Trident Maple	*Acer buergerianum*	25'	20'		Low	Will tolerate sandy and clay soils; drought tolerant once established; minimal pruning required.
Paperbark Maple	*Acer griseum*	18'	15'		Low	Will tolerate a wide range of soils including compacted urban sites, sand and clay. Avoid locations where water puddles. Very little pruning required.
Japanese Maple	*Acer palmatum*	Varies	Varies		Low	Use single-trunk form. Slow growth rate; canopy size small; good street tree. Several cultivars available.
Bowhall Red Maple	*Acer rubrum* 'Bowhall'	35'	15'	Yes	Low	Upright form; medium-fast growth rate, very tolerant of urban conditions.
'Brandywine' Red Maple	*Acer rubrum* 'Brandywine'	35'	25'		Low/ Medium	'Brandywine' has a brilliant red-purple autumn color. It produces only male flowers; thus, no fruit or nuisance seedlings.
Red Sunset Red Maple	*Acer rubrum* Red Sunset®	40'	30'			Very tolerant of soils, has shown high tolerance to flooding. Not recommended for narrow planter strip.
Pacific Sunset Maple	*Acer truncatum x platanoides* 'Warrnered'	30'	25'			Upright spreading, rounded crown, glossy summer foliage.
Princess Diana Serviceberry	*Amelanchier x grandiflora* 'Princess Diana'	25'	15'	Yes	Low	Moderate growth rate; disease resistant; adaptable.
Autumn Brilliance Serviceberry	*Amelanchier x grandiflora* 'Autumn Brilliance'	25'	15'	Yes	Low	Tolerates range of soil types; resistant to leaf spot.
Pyramidal European Hornbeam	*Carpinus betulus* 'Fastigiata'	40'	15'	Yes		Well-shaped; Great Plant Pick; tolerates a wide range of soil types and urban conditions including pollution, heat, drought, and soil compaction.

Common Name	Scientific Name	Mature Height	Mature Spread	Suitable for Planter Strip 4' or <	Root Damage Potential	Comments
Pyramidal European Hornbeam	*Carpinus betulus* 'Franz Fontaine'	30'	15'	Yes		Upright growth with a dense crown. Ideal selection for narrow planting strips.
Eastern redbud	*Cercis canadensis*	30'	20'	Yes	Low	Requires little water beyond early establishment; tolerates any soil but wet; short trunk with spreading branches – would need to be limbed up.
Thornless Cockspur Hawthorn	*Crataegus crus-galli* v. inermis	30'	25'			Grows well in tough sites such as poor soils, urban conditions, or temperature extremes.
Leprechaun Ash	*Fraxinus pennsylvanica* 'Johnson'	20'	15'			Resistant to drought; tolerant of urban conditions; does not produce fruit.
Goldenrain tree	*Koelreuteria paniculata*	30'	25'			Drought- and smog-tolerant; moderate growth rate; adaptable to a wide range of urban conditions including poor soil, heat, drought, pollution, and compacted soil. Needs regular water when young. Great Plant Pick.
Amur Maackia	*Maackia amurensis*	30'	20'	Yes	Low	Slow growing; great urban tree.
Vanessa Persian Ironwood	*Parrotia persica* 'Vanessa'	30'	20'			Use single-trunk form. Oval crown, beautiful exfoliating bark and excellent fall color. Hardy and pest resistant, but requires good drainage.
Chanticleer Pear	*Pyrus calleryana* 'Chanticleer'	40'	15'			Adapts well to urban sites including various soil types, pollution, drought, heat and compacted soil.
Red Cascade Mountain Ash	*Sorbus Americana* 'Dwarfcrown'	20'	10'			Nice winter form; no insect or disease problems; great street tree.
Tall Stewartia	*Stewartia monadelpha*	30'	20'			Cinnamon colored bark. Avoid hot, dry sites. Great Plant Pick.
Japanese Stewartia	*Stewartia pseudocamellia*	25'	15'			Patchwork bark; white flowers in spring; best in irrigated site. Great Plant Pick.

Common Name	Scientific Name	Mature Height	Mature Spread	Suitable for Planter Strip 4' or <	Root Damage Potential	Comments
Japanese Snowbell	*Styrax japonicus*	25'	15'	Yes	Low	Reliable and easy to grow; rounded crown with white spring flowers; slow to moderate growth rate; needs good well-drained soil with plenty of water. Great Plant Pick.
Ivory Silk Japanese tree lilac	*Syringa reticulate* 'Ivory Silk'	30'	15'	Yes	Low	Trouble-free plant; deep green leaves, showy white flowers; excellent specimen or street tree; moderate growth rate; tolerant of urban conditions; relatively pest free.

Reference Sources

City of Seattle Approved Street Tree List
City of Federal Way Recommended Tree Species, January 1, 2011
City of Renton Approved Street Tree List
City of Tigard Street Tree List
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City of Portland Tree and Landscaping Manual, December 14, 2010
City of Bozeman Tree Guide, Choosing Trees for Public Spaces

Seattle Department of Transportation Street Tree Planting Procedures, March 23, 2010
Snohomish County PUD Tree Book, A Tree Selection Guide for Planting Near Power Lines, October 2004
Puget Sound Energy Energy Landscaping, A guide for Planting Near Utility Lines and Equipment
Washington State University Extension and PugetSoundPartnership Low Impact Development Technical Guidance Manual for Puget Sound, December 2012

Oregon State University Extension Service, Selecting, Planting, and Caring For A New Tree, August 1997
Center for Urban Forest Research and USDA Forest Service, Pacific Southwest Research Station, Western Washington and Oregon Community Tree Guide: Benefits, Costs and Strategic Planting, March 2002
University of Florida, Choosing Suitable Trees for Urban and Suburban Sites: Site Evaluation and Species Selection

The Street Tree Problem for The Pacific Northwest, by John Wesley Neill, Ph.D.
Under the Avenue, Seattle Times article by Valerie Easton, 2001
Urban Ecosystems, A Review of Tree Root Conflicts with Sidewalks, Curbs and Roads
Arboricultural Journal, Costs of Street Tree Damage to Infrastructure, E. Gregory McPherson & Paula Peper, 1996
Bartlett Tree Research Laboratories Technical Report, Sidewalk Repair Near Trees, E. Thomas Smiley, Ph.D.
Slosson Report 2000-2001, Strategies to Reduce Infrastructure Damage by Tree Roots
Journal of Arboriculture, Hardscape Damage by Tree Roots, by Lawrance M. Lesser
Aboriculture & Urban Forestry, Comparison of Mehtods to Reduce Sidewalk Damage from Tree Roots, by E. Thomas Smiley, 2008

Urban Forest Ecosystems Institute: http://selectree.calpoly.edu/
Oregon State University Landscape Plants: http://oregonstate.edu/dept/ldplants/
Elisabeth Carey Miller Botanical Garden: http://www.greatplantpicks.org/

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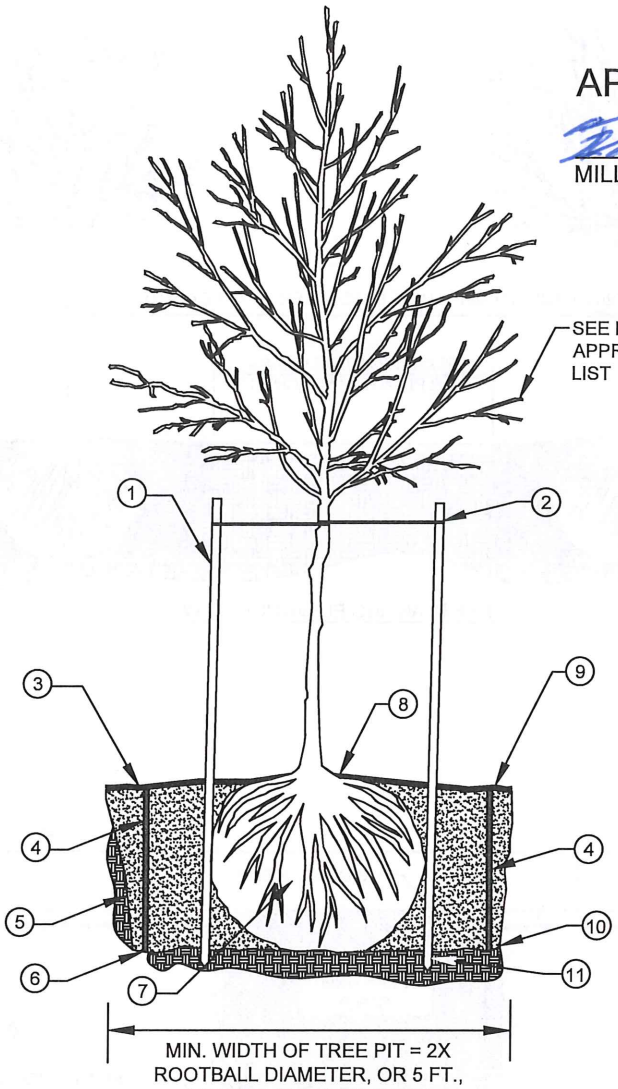
MILL CREEK CITY ENGINEER

01/13/2022



NOTES:

1. STAKE TREE WITH TWO (2) TREATED 2" DIAMETER STAKES (8 FT. LONG). STAKE HEIGHTS SHALL BE MIN. $\frac{1}{3}$ HEIGHT OF TREE (TYP.). REMOVE STAKES ONE (1) YEAR AFTER INSTALLATION.
2. "CHAINLOCK", OR APPROVED EQUAL, TREE TIE MATERIAL (1" SIZE). LOOP EACH TIE AROUND HALF TREE LOOSELY TO PROVIDE 1" SLACK FOR TRUNK GROWTH. NAIL OR STABLE TREE MATERIAL TO STAKE.
3. 2" TO 3" MULCH DEPTH, TAPERED AT THE TRUNK.
4. ROOTBARRIER 18" DEPTH 15 FT. LONG, 6" FROM SIDEWALK AND CURB, IF PRESENT.
5. ROUGHEN SIDES OF PLANTING HOLE. MAXIMIZE EXCAVATED AREA WITHOUT UNDERMINING ADJACENT PAVEMENT/CURB.
6. BACKFILL: (1) MUST BE PLACED AND COMPACTED IN LOOSE LIFTS NOT EXCEEDING 6", (2) UNLESS SPECIFIED OTHERWISE BY CITY, MIX $\frac{2}{3}$ EXCAVATED NATIVE SOIL WITH $\frac{1}{3}$ COMPOST FOR A HOMOGENEOUS BLEND, (3) PLACE AND COMPACT BACKFILL WITHOUT VOIDS. FOR BARE ROOT TREES, PLACE BACKFILL TO ENSURE ROOTS ARE SPREAD TO AVOID CIRCLING AND COMPACT TO ENSURE NO VOIDS EXIST. WATER SETTLING OF BACKFILL IS NOT ALLOWED.
7. REMOVE ALL WIRES, STRINGS, AND OTHER NON-BURLAP MATERIAL. REMOVE BURLAP FROM TOP $\frac{2}{3}$ OF ROOTBALL MINIMUM.
8. SET TOP OF ROOT CROWN 2" ABOVE ADJACENT CURB AND SIDEWALK GRADE AND AT OR JUST ABOVE SOIL LEVEL.
9. 3" TO 4" HIGH WATERING RING WITH 3 FT. TO 4 FT. DIAMETER.
10. TREE PIT DEPTH = ROOTBALL DEPTH. AVOID OVER-EXCAVATION.
11. DRIVE STAKE AT ROOTBALL EDGE 1 FT. MINIMUM INTO UNDISTURBED SOIL BELOW ROOTBALL.

CITY OF Mill Creek WASHINGTON

LANDSCAPE

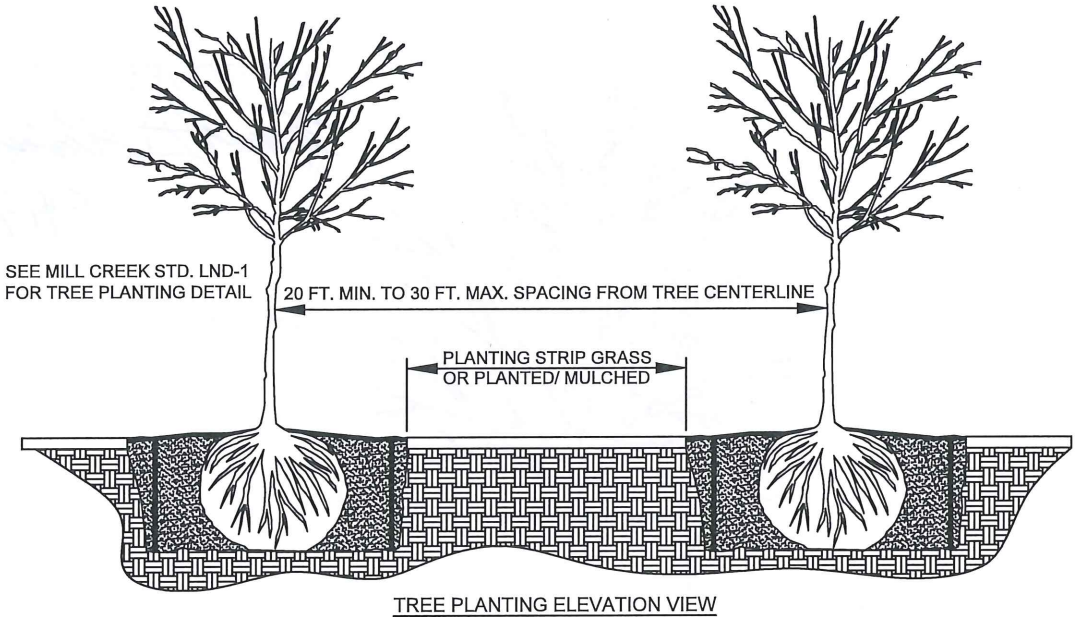
DECIDUOUS TREE PLANTING

NOT TO SCALE

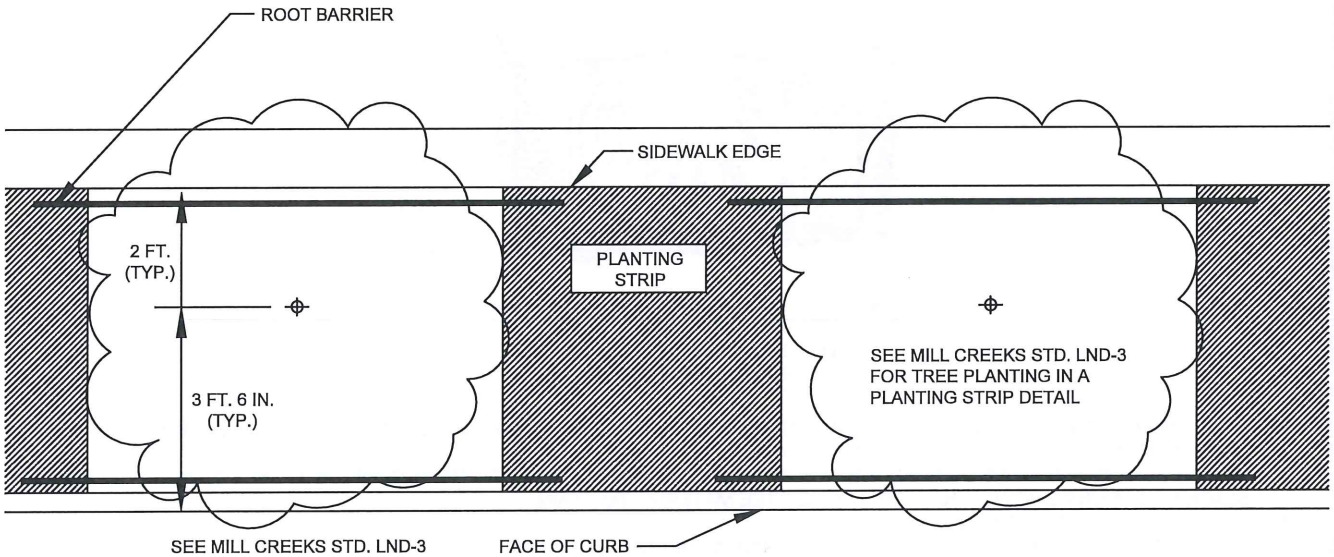
PUBLIC WORKS DEPARTMENT

PLAN NO.
LND-1

REV. DATE:
10/25/2021



TREE PLANTING ELEVATION VIEW



TREE PLANTING PLAN VIEW

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MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

LANDSCAPE

DECIDUOUS TREE PLANTING IN AMENDED TRENCH

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LND - 2

REV. DATE:
11/02/2021

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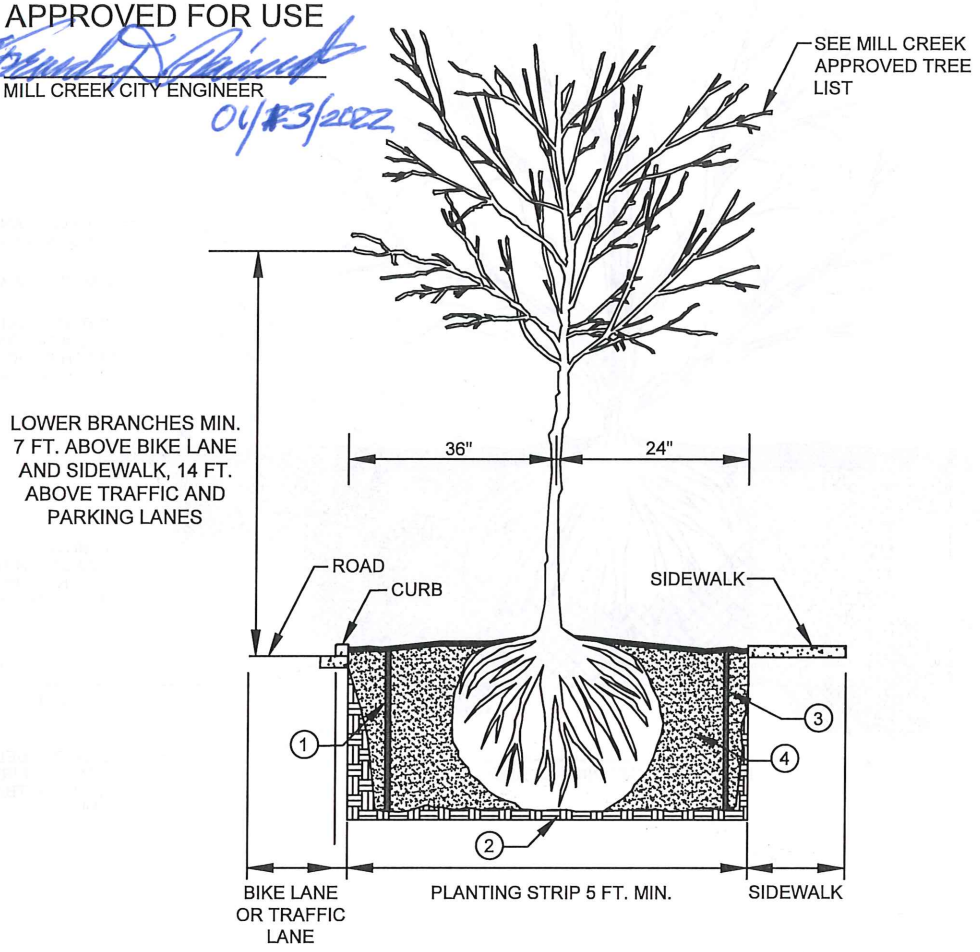
MILL CREEK CITY ENGINEER

04/13/2022



NOTES:

1. ROOTBARRIER 18" DEPTH 15 FT. LONG, 6" FROM PAVED FEATURE
2. COMPACTED NATIVE SOIL
3. ROOTBARRIER 18" DEPTH 15 FT. LONG, 6" FROM SIDEWALK
4. 24" MIN. DEPTH TYPE B TOPSOIL
5. STREET TREES SHALL BE PLANTED PER MILL CREEK STD. LND-1, INCLUDING STAKING FOR ONE YEAR UNLESS OTHERWISE SPECIFIED.
6. SMALL SHRUBS AND/OR GROUNDCOVERS MAY BE PLANTED BETWEEN STREET TREES WHERE APPROVED BY THE CITY IN A PROJECT LANDSCAPING PLAN.

CITY OF Mill Creek WASHINGTON

LANDSCAPE

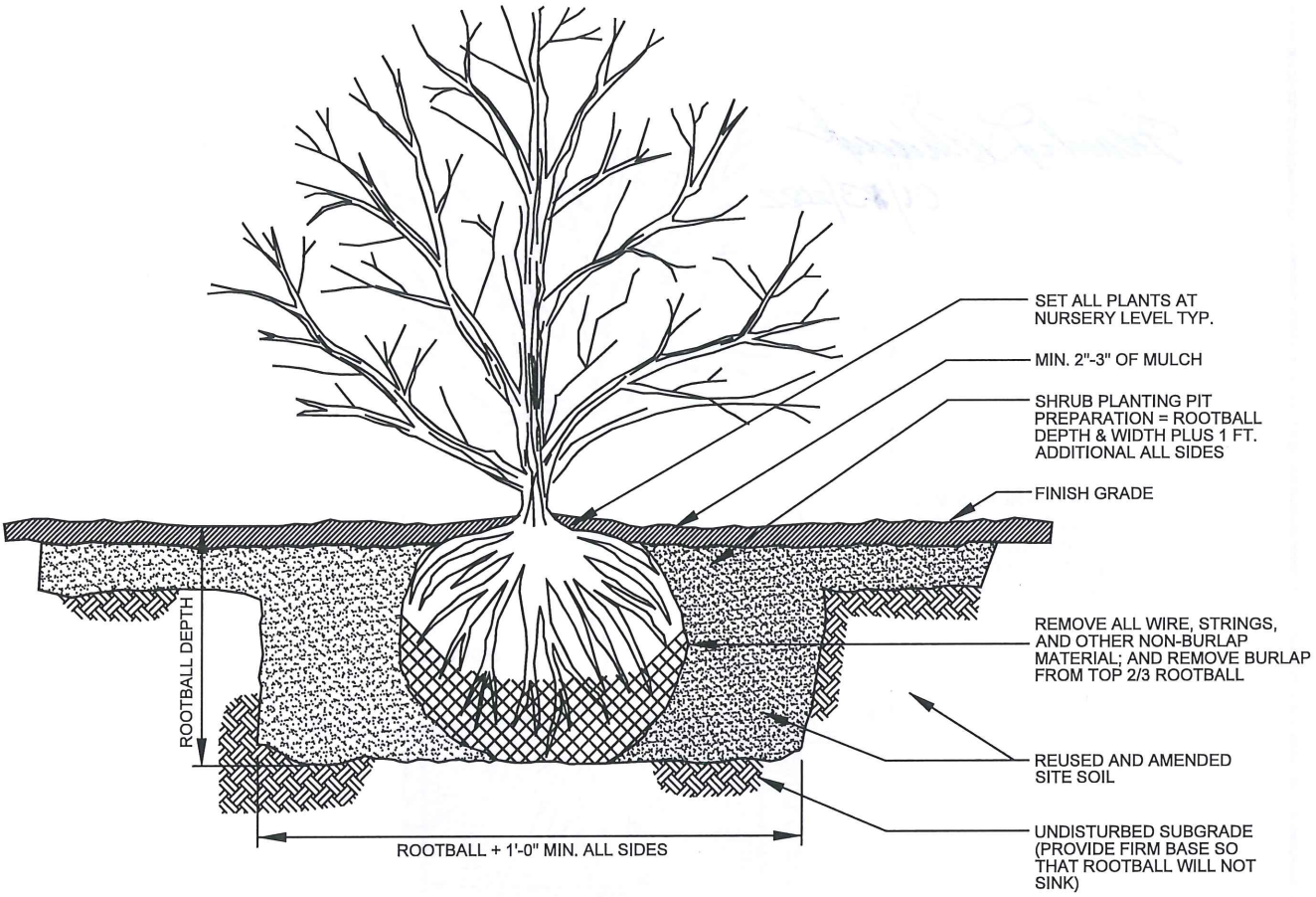
DECIDUOUS TREE IN A STANDARD PLANTING STRIP

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LND-3

REV. DATE:
11/1/2021



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MILL CREEK CITY ENGINEER

04/13/2022

CITY OF Mill Creek WASHINGTON

LANDSCAPE

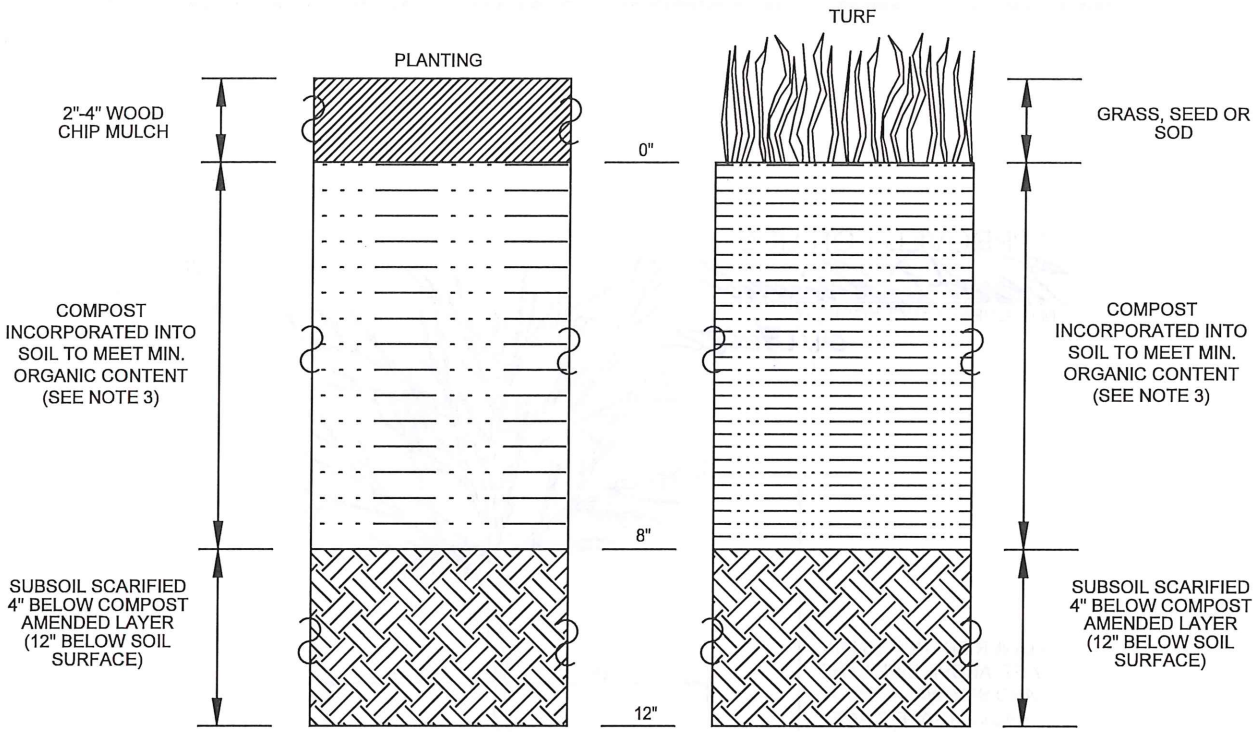
SHRUB PLANTING

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LND-4

REV. DATE:
10/25/2021



NOTES

1. ALL SOIL AREAS DISTURBED OR COMPACTED DURING CONSTRUCTION, AND NOT COVERED BY BUILDINGS OR PAVEMENT, SHALL BE AMENDED WITH COMPOST AS DESCRIBED BELOW.
2. SUBSOIL SHOULD BE SCARIFIED (LOOSENED) 4" BELOW AMENDED LAYER TO PRODUCE 12" DEPTH OF UN-COMPACTED SOIL, EXCEPT WHERE SCARIFICATION WOULD DAMAGE TREE ROOTS.
3. FOR SOIL AMENDMENT REQUIREMENTS, INCLUDING MINIMUM ORGANIC CONTENT SPECIFICATIONS, REFER TO THE SOIL AMENDMENT NOTES FOR BMP T5.13 IN THE WASHINGTON STATE DEPARTMENT OF ECOLOGY'S STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON.
4. COMPOST SHALL BE TILLED IN TO 8" DEPTH INTO EXISTING SOIL, OR PLACE 8" OF COMPOST-AMENDED SOIL.
5. SETBACKS: TO PREVENT UNEVEN SETTLING, DO NOT COMPOST- AMEND SOIL WITHIN 1 FT. OF UTILITY INFRASTRUCTURES (POLES, VAULTS, METERS ETC.), PAVEMENT EDGES, CURBS AND SIDEWALKS.

APPROVED FOR USE

MILL CREEK CITY ENGINEER 01/13/2022

CITY OF Mill Creek WASHINGTON

LANDSCAPE

SOIL AMENDMENT AND DEPTH

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LND-5

REV. DATE:
10/26/2021

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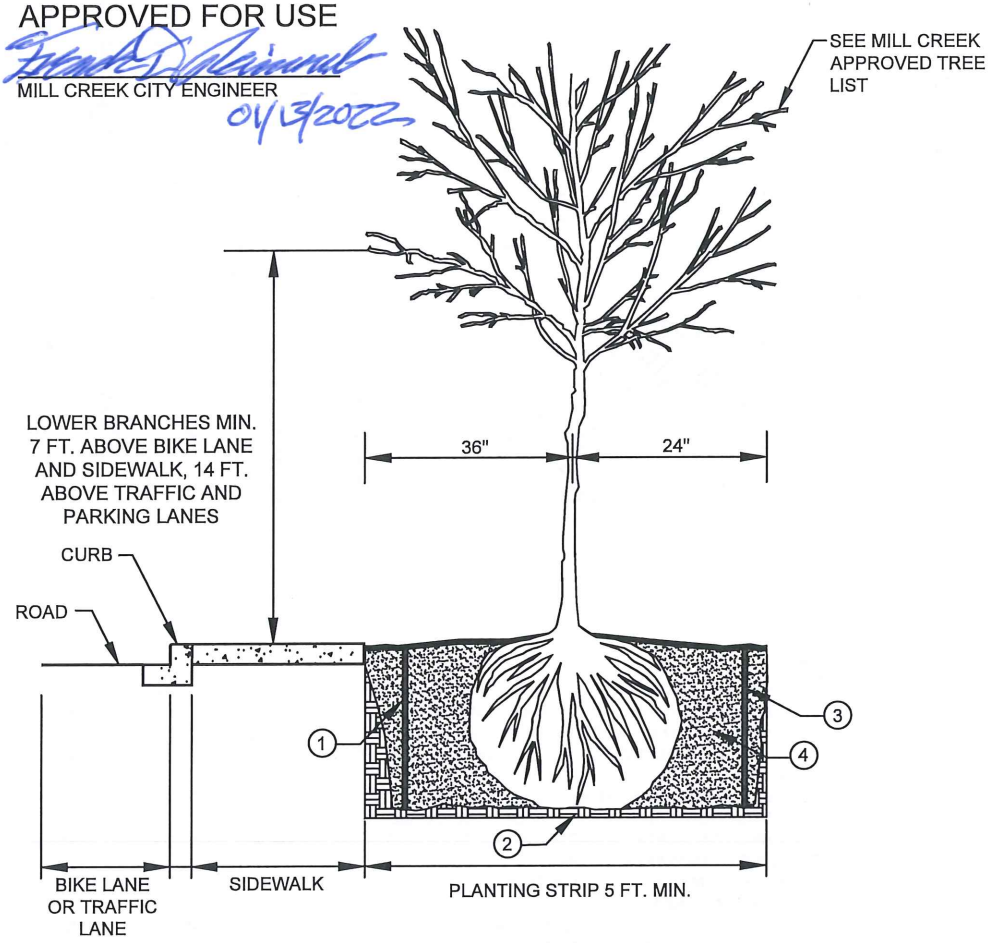
MILL CREEK CITY ENGINEER

01/13/2022



NOTES:

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CITY OF Mill Creek WASHINGTON

LANDSCAPE

DECIDUOUS TREE IN PLANTING STRIP BEHIND SIDEWALK

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LND-6

REV. DATE:
11/01/2021

NOTES:

1. STAKE TREE WITH TWO (2) TREATED 2" DIAMETER STAKES (8 FT. LONG). STAKES SHALL BE MIN. $\frac{1}{3}$ HEIGHT OF TREE (TYP.). REMOVE STAKES ONE (1) YEAR AFTER INSTALLATION.
2. "CHAINLOCK", OR APPROVED EQUAL, TREE TIE MATERIAL (1" SIZE). LOOP EACH TIE AROUND HALF TREE LOOSELY TO PROVIDE 1" SLACK FOR TRUNK GROWTH. NAIL OR STABLE TREE MATERIAL TO STAKE.
3. 2" TO 3" MULCH DEPTH, TAPERED AT THE TRUNK.
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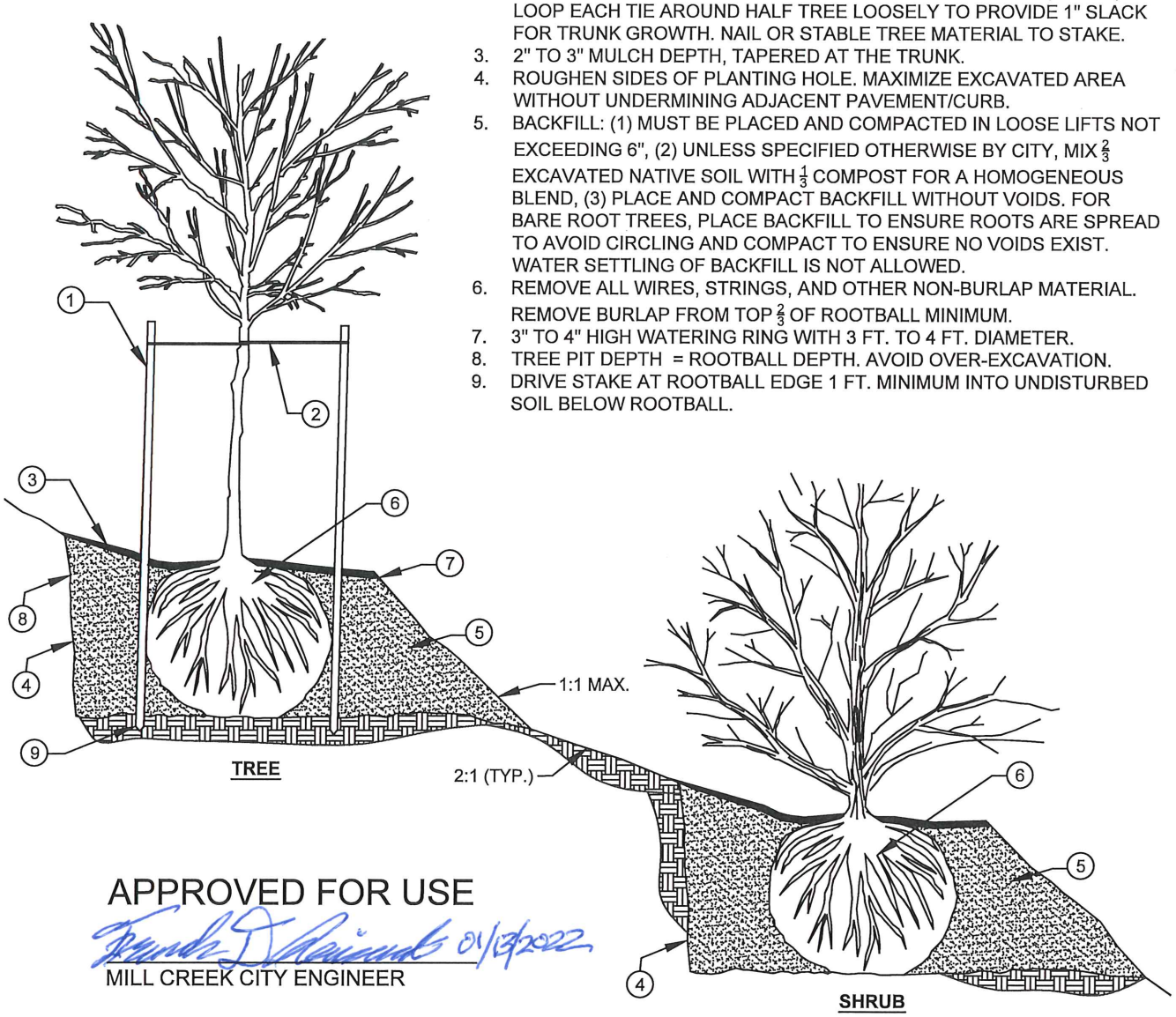
9. DRIVE STAKE AT ROOTBALL EDGE 1 FT. MINIMUM INTO UNDISTURBED SOIL BELOW ROOTBALL.



APPROVED FOR USE

Frank D. Lemmons 01/13/2022

MILL CREEK CITY ENGINEER

CITY OF Mill Creek WASHINGTON

LANDSCAPE

TREE AND SHRUB PLANTING ON SLOPES

NOT TO SCALE

PUBLIC WORKS DEPARTMENT

PLAN NO.
LND-7

REV. DATE:
11/02/2021