

Appendix C

Standard Plans



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△	
△	
△	
△	09-20-18
△	DATE
△	REVISIONS

WOODINVILLE SIGNAGE

KEY PLAN:

City of Woodinville

DRAWN BY : DS
CHECKED BY : MK

DIRECTIONAL SIGN

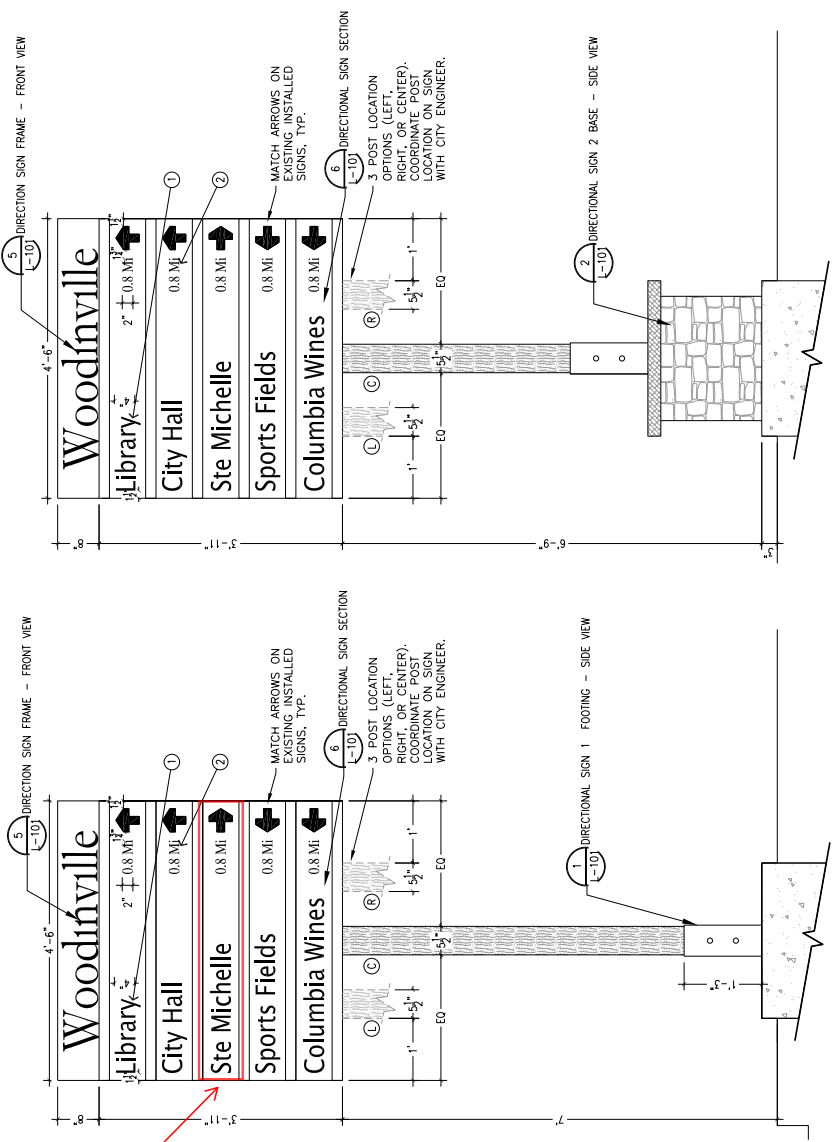
L-100

SIGN UPDATE

1. 4" WHITE REFLECTIVE VINYL LETTERS, FONT IS "LUCIDA SANS" WITH ADHESIVE BACK, LASER CUT
2. 2" WHITE REFLECTIVE VINYL NUMBERS, FONT IS "ROMANTIC" WITH ADHESIVE BACK, LASER CUT

NOTES:

- a. STONE BASE OPTION IS ADD ALTERNATE
- b. SHOP DRAWINGS REQUIRED FOR SIGN PANEL, LETTERS, ARROWS
- c. ALL SIGNS TO HAVE 5 BLADES. FOR COSTING PURPOSES ASSUME ALL SIGNS TO HAVE 10 LETTERS EACH WITH 2 CAPITAL LETTERS.
- d. CITY ENGINEER TO LOCATE EXTENTS OF FOUNDATION IN THE FIELD



2 DIRECTIONAL SIGN 2

SCALE: 1" = 1'-0"

1 DIRECTIONAL SIGN 1

SCALE: 1" = 1'-0"



DATE: 09-20-18
REVISIONS:
1. UPDATE
2. DATE: 09-20-18

WOODINVILLE SIGNAGE

KEY PLAN:

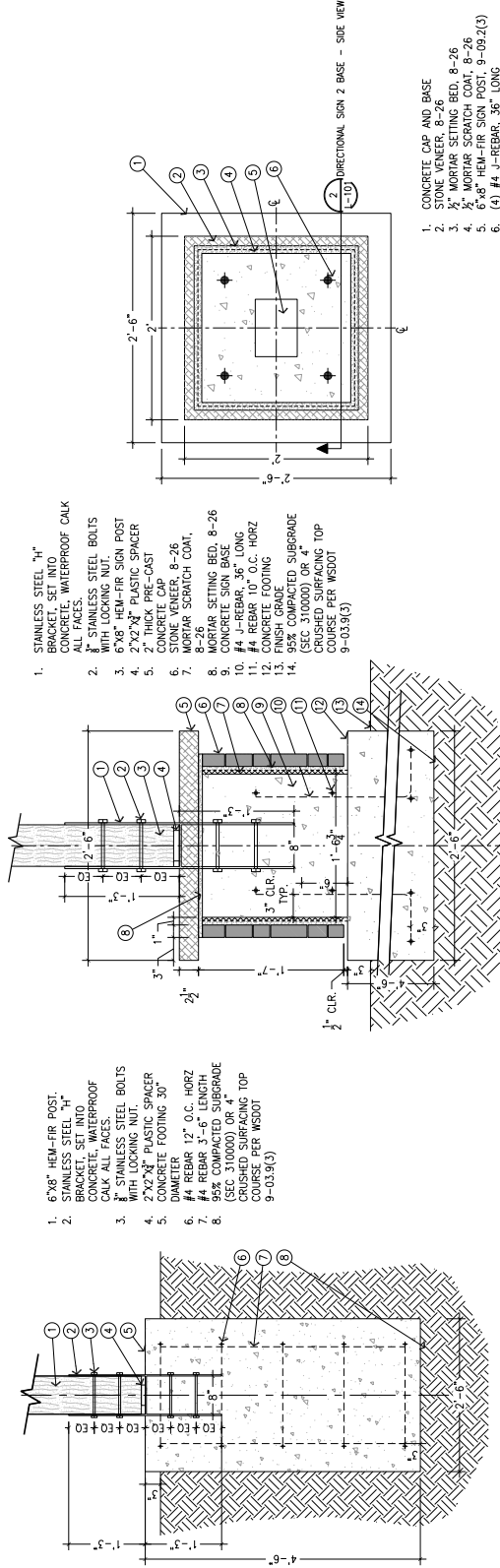
City of Woodinville

DRAWN BY: DS
CHECKED BY: JAK

DIRECTIONAL SIGN DETAILS

L-101

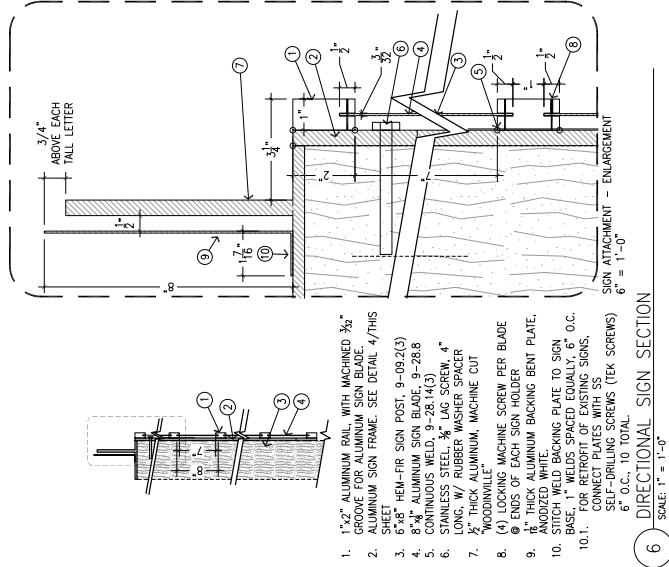
SIGN UPDATE



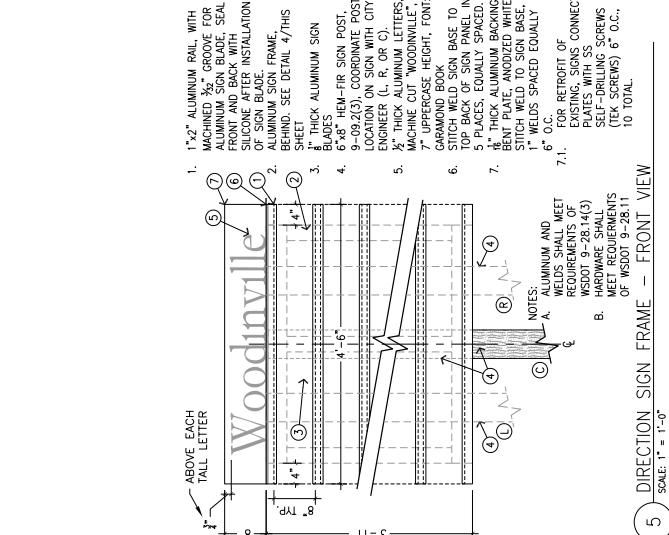
1 DIRECTIONAL SIGN 1 FOOTING - SIDE VIEW
SCALE: 1" = 1'-0"

2 DIRECTIONAL SIGN 2 BASE - SIDE VIEW
SCALE: 1 1/2" = 1'-0"

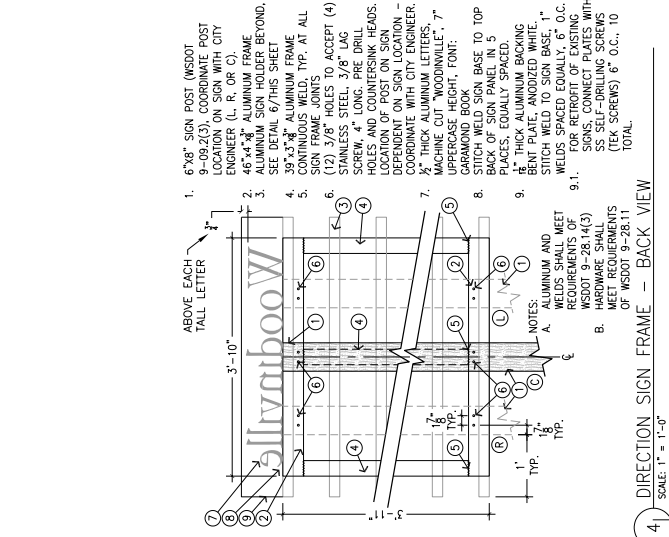
3 DIRECTIONAL SIGN 2 PLAN VIEW
SCALE: 1 1/2" = 1'-0"



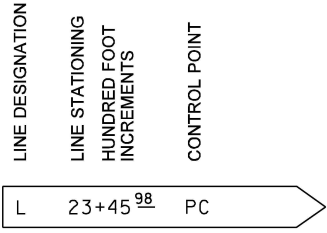
6 DIRECTIONAL SIGN SECTION
SCALE: 1" = 1'-0"



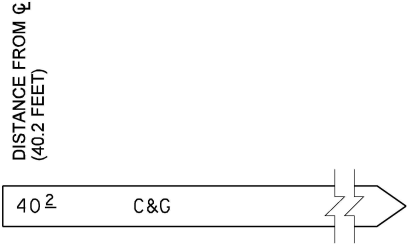
5 DIRECTION SIGN FRAME - FRONT VIEW
SCALE: 1" = 1'-0"



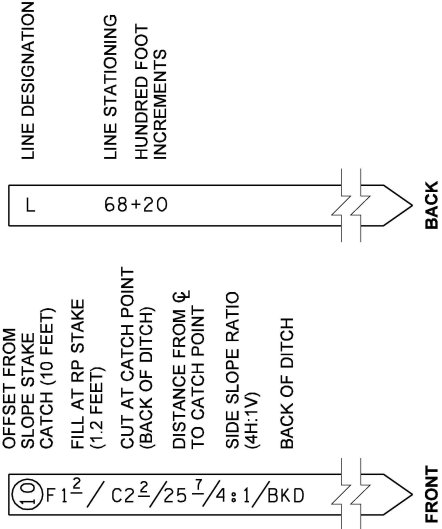
4 DIRECTION SIGN FRAME - BACK VIEW
SCALE: 1" = 1'-0"



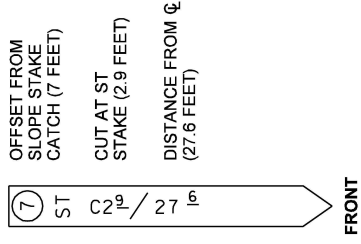
ALIGNMENT STAKE
STAKE EVERY 100 FEET ON TANGENTS,
EVERY 25 FEET ON CURVES



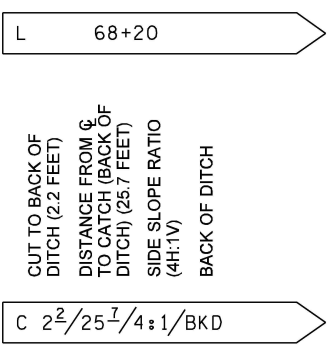
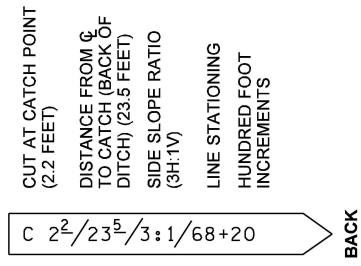
CLEARING/GRUBBING (C&G) LATH
STAKE AT EACH FULL STATION,
100 FEET ON TANGENTS,
EVERY 25 FEET ON CURVES.
NO HUB NECESSARY.



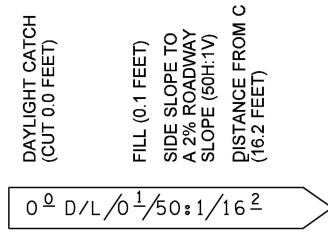
LATH FOR SLOPE REFERENCES



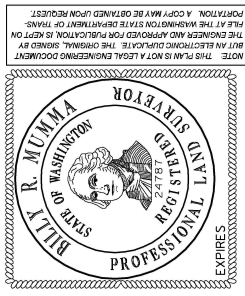
**SLOPE TREATMENT (ST) STAKE
FOR CUT SECTIONS**



SLOPE STAKE



DAYLIGHT (D/L) STAKE



SURVEY STAKES

STANDARD PLAN A-10.10-00

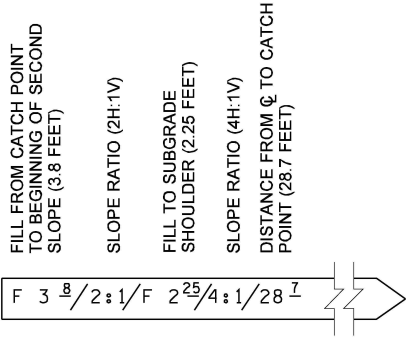
SHEET 1 OF 2 SHEETS

APPROVED FOR PUBLICATION

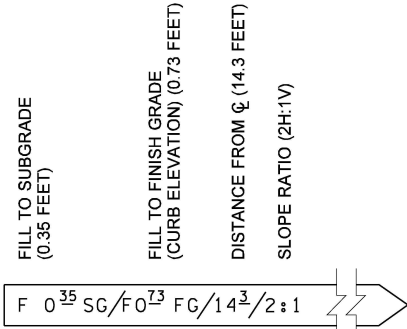
Pasco Bakotich III 08-07-07

STATE DESIGN ENGINEER DATE

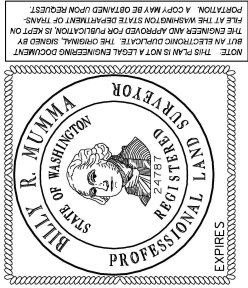
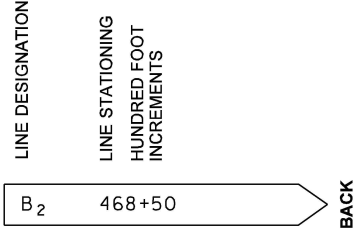
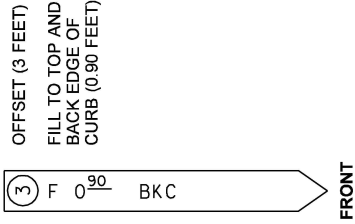
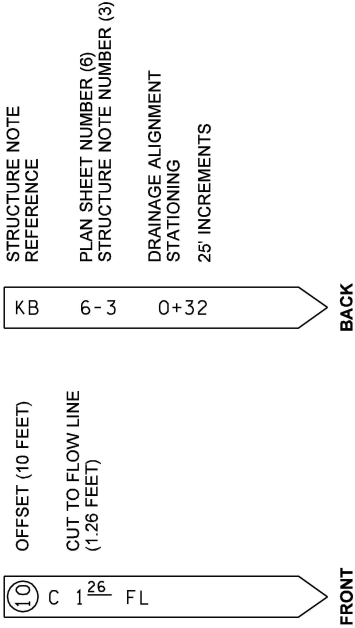
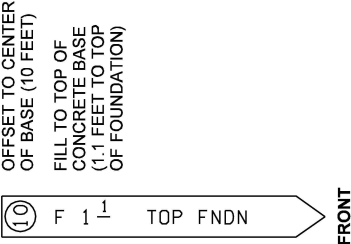
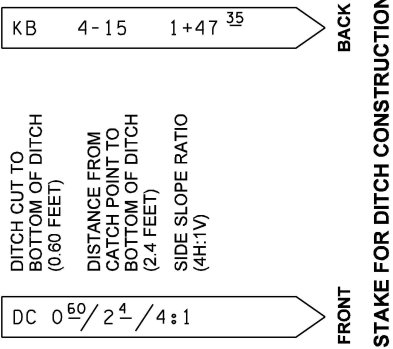
Washington State Department of Transportation



COMPOUND SLOPE LATH



SLOPE LATH FOR CURB SECTION



SURVEY STAKES

STANDARD PLAN A-10.10-00

SHEET 2 OF 2 SHEETS

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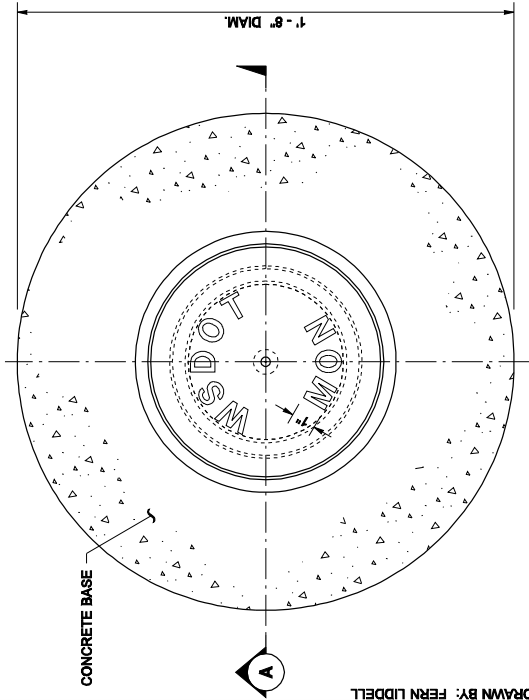
Pasco Bakotich III 08-07-07
STATE DESIGN ENGINEER DATE
Washington State Department of Transportation

RISER RING DIMENSIONS			
A (SIZE)	1 1/2"	2"	3"

NOTES

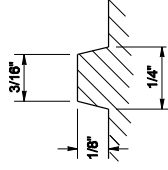
1. Dimensions may vary according to manufacturer.
2. Base to be placed on a well compacted foundation.
3. Monument case to be installed by contractor.
4. See Standard Plan A-10.20 for Monument (brass disc) type to place in 2" O.D. galvanized pipe.

APPROXIMATE WEIGHTS	
CASE	60 LBS
COVER	19 LBS
TOTAL	79 LBS

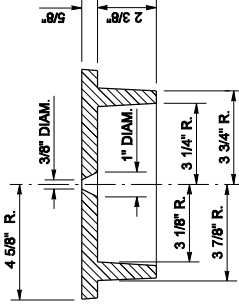


PLAN VIEW

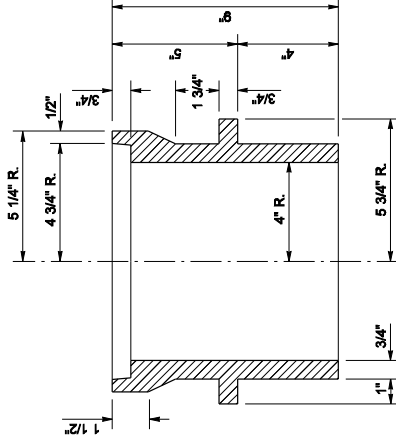
DRAWN BY: FERN LIDDELL



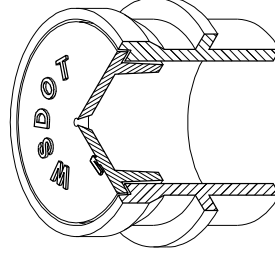
SECTION OF LETTER



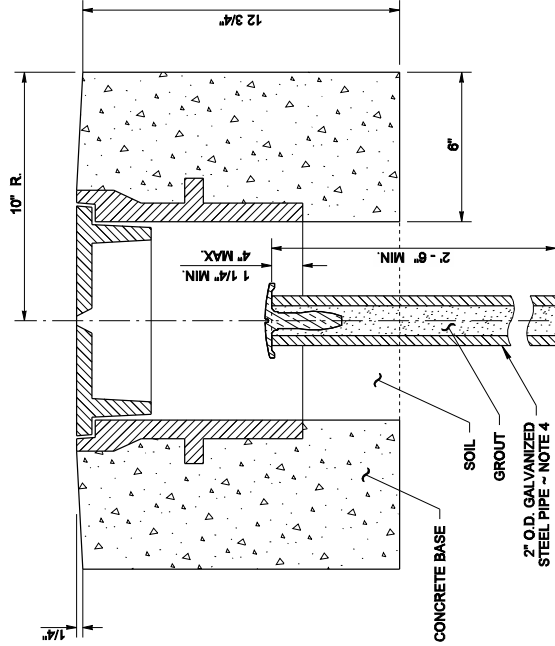
SECTION COVER



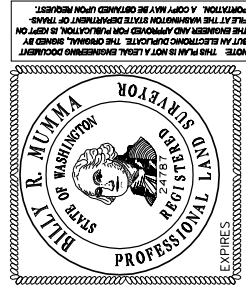
SECTION CASE



ISOMETRIC



SECTION A
INSTALLATION



MONUMENT CASE AND COVER

STANDARD PLAN A-10.30-00

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Pasco Bakofich III 10-05-07
STATE DESIGN ENGINEER DATE
Washington State Department of Transportation

PLAN
(FOR STEPPED APPROACH SLAB SEE SHEET 2)

BRIDGE
25'-0" MIN.
BRIDGE APPROACH SLAB
BR APPROACH SLAB EDGE (TYP)
2' (TYP)
BRIDGE APPROACH SLAB WIDTH
TOP: AP2 ∇ #5 @ 5" & AP2 ∇ #5 @ 5"
BOTTOM: AP1 #8 @ 5"
ROADWAY EDGE SHALL BE FINISHED TO MATCH AT CENTERLINE UNLESS NOTED OTHERWISE

BRIDGE
OR BURIED STRUCTURE
1'-0" (TYP)
SKREW ANGLE 30 DEG. MAX.
BACK OF PAVEMENT SEAT
LONGITUDINAL JOINT - WHEN REQUIRED (SEE NOTE 2)
LANE LINE (TYP)
ROADWAY
2 AP5 ∇ #5
APPROACH EXPANSION ANCHORS 2'-0" MAX. CENTERS 2
SEE FLARED CORNER STEEL DETAIL ON SHEET 2
TOP: AP4 ∇ #6 @ 1'-0" MAX. 3
BOTTOM: AP3 #5 @ 9" MAX.

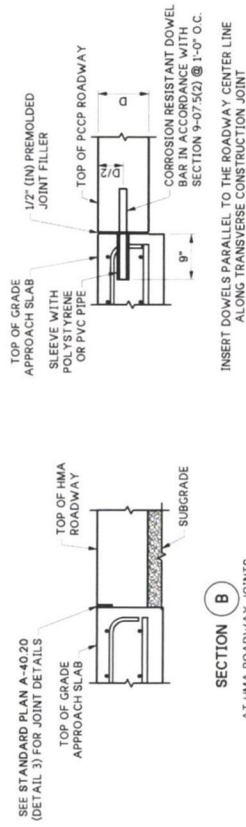
BRIDGE
BRIDGE APPROACH SLAB
TOP: AP4 ∇ #6
BOTTOM: AP3 #5
2' CLR
2 1/2' CLR
AP2 ∇ #5
AP7 ∇ #5
PS5 ∇ #5
SEE SOWEL BAR DETAIL FOR CEMENT CONCRETE PAVEMENT OR HMA ROADWAY JOINT DETAIL

BRIDGE
CRUSHED SURFACING BASE COURSE - COMPACTED TO 95% OR MORE
2' CLR
AP1 #8
2' CLR (TYP)
ROADWAY

SHEET 2 FOR
OR DETAILS

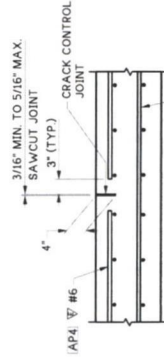
1. All edges of the approach slab shall have 1/2" (in) radii except at longitudinal construction joints and adjacent to L-type abutments.
2. Longitudinal joints shall be placed on lane lines and shall be constructed and sealed in accordance with Standard Specification Section 5-05.3(8). Joints may be either a sawcut crack control joint or a construction joint. Sawcut joints shall terminate 1'-0" before reaching edge of slab and must be sawed as soon as possible after placement of concrete.

- (A) Approach slabs less than 40' (ft) wide - no joint is required.
- (B) Approach slabs wider than 40' (ft) - one or more joints are required to divide the slab into approximately 24' (ft) wide sections.
3. Optional lap splices are permitted for AP1, AP2, AP3, and AP4. Reinforcing bars. The minimum lap splice of #3 is 2'-6". ∇ #5 is 3'-0". ∇ #6 is 3'-3". Alternate lap splice location on adjacent reinforcing bars so that no more than 30% of rebar is spliced at the same location.
4. Concrete for approach slabs shall be class 4000A.

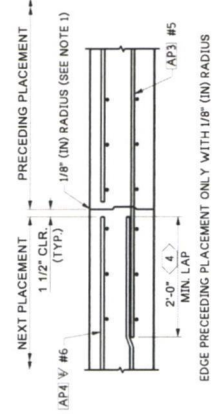


SECTION B

AT CEMENT CONCRETE PAVEMENT JOINTS
(OMIT DOWELS ON LONGITUDINAL EDGES
OF APPROACH SLABS WITH STRIPS)



LONGITUDINAL JOINT

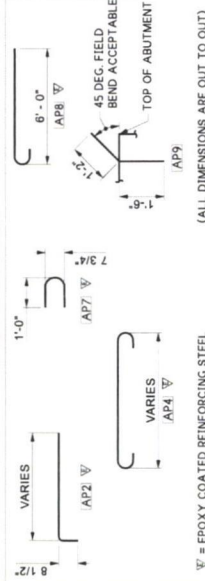


ALTERNATE LONGITUDINAL JOINT DETAIL
(SEE NOTE 2)

KEY NOTES

- ① FOR BURIED STRUCTURES AND WITH THE APPROVAL OF THE STATE GEOTECHNICAL ENGINEER, THE LENGTH MAY BE REDUCED TO THE CLEAR SPAN OR 10 FEET, WHICHEVER IS GREATER.
- ② EXPANSION ANCHORS FOR SEMI-INTEGRAL TYPE ABUTMENT OR BURIED STRUCTURE SHOWN L-TYPE ABUTMENT PINNED ANCHORS SIMILAR EXCEPT AT 1'-0" MAX. SPACING.
- ③ APPROACH SLAB EDGES WITH CONCRETE TRAFFIC BARRIER SHALL ALSO HAVE APA # 8 PLACED MIDWAY BETWEEN EACH SET OF APA REINFORCING BARS.
- ④ MECHANICAL COUPLERS MEETING THE REQUIREMENTS OF SECTION 6-02.32(4)F MAY BE SUBSTITUTED IN PLACE OF LAP SPICE.

BENDING DIAGRAM



[†]E = EPOXY COATED REINFORCING STEEL. (ALL DIMENSIONS ARE OUT TO OUT)

IF AP4 IS SPLICED, HOOKS ARE ONLY REQUIRED AT EDGE OF APPROACH SLAB.



Sep 11, 2023

BRIDGE APPROACH SLAB

STANDARD PLAN A-40.50-03

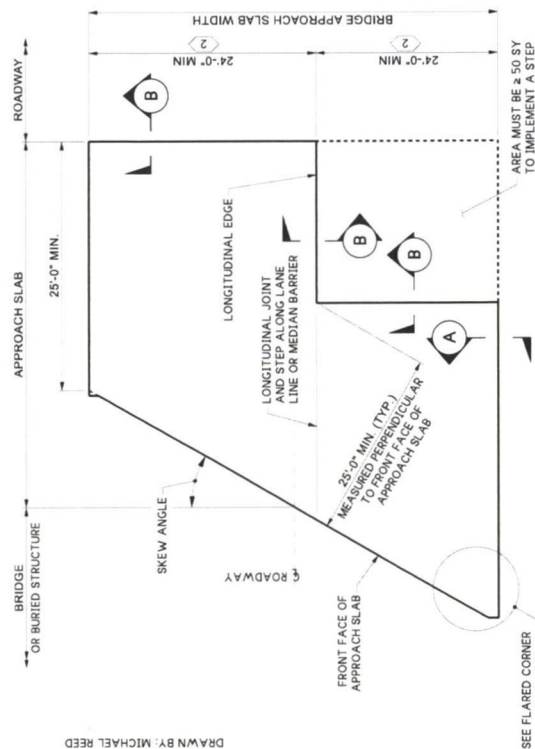
SHEET 1 OF 3 SHEETS

APPROVED FOR PUBLICATION

Sep 12, 2023

STATE DESIGN ENGINEER

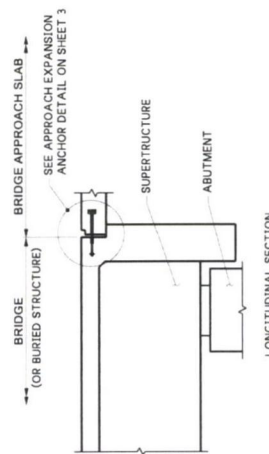
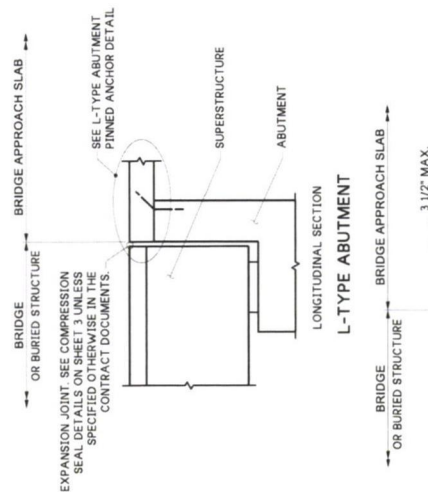




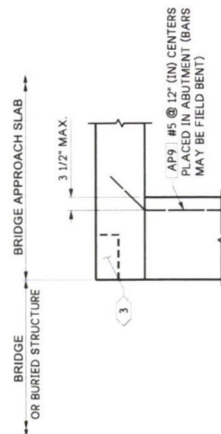
PLAN
STEPPED APPROACH SLAB

PLAN
STEPPED APPROACH SLAB

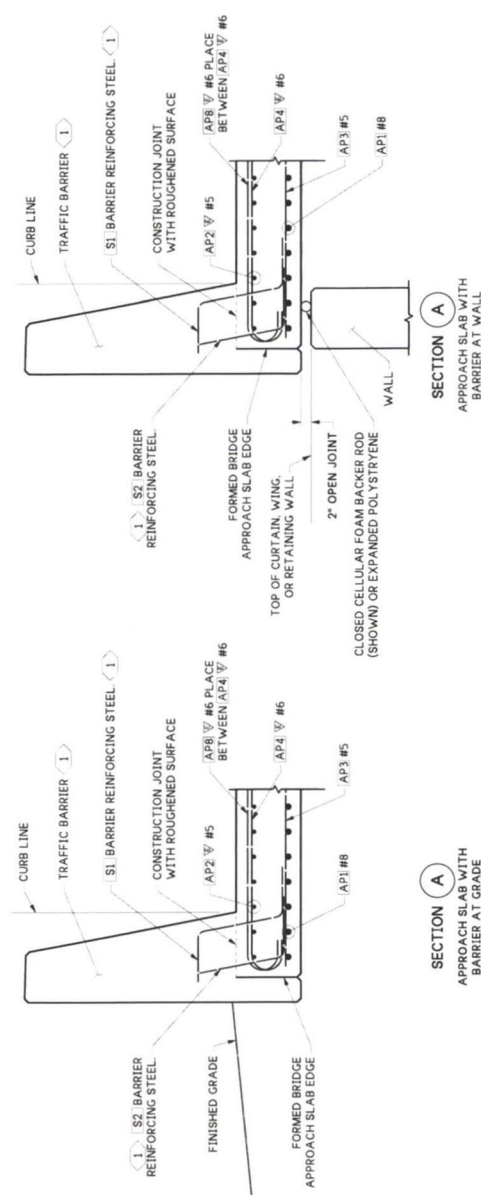
STIFFED APPROACH SLAB
(FOR REINFORCING REQUIREMENTS AND OTHER INFORMATION
NOT SHOWN SEE PLAN ON SHEET 1)



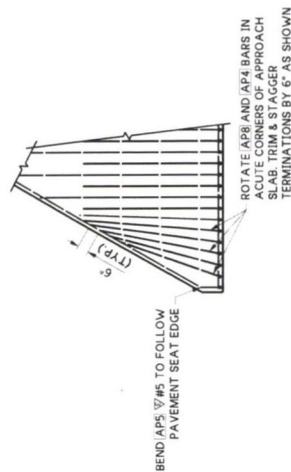
SEMI-INTEGRAL TYPE ABUTMENT



L-TYPE ABUTMENT PINNED ANCHOR DETAIL



SECTION A

APPROACH SLAB WITH
BARRIER AT GRADE

FLARED CORNER STEEL DETAIL

NOTE:

1. For approach slab seat and expansion anchor details for buried structures, see Standard Plans E-20.10 and E-20.20.

KEY NOTES

1. SEE CONTRACT DOCUMENTS FOR TRAFFIC BARRIER AND CONDUIT BLOCKOUT REQUIREMENTS 47" SINGLE SLOPE CONCRETE TRAFFIC BARRIER SHOWN. OTHER TEST LEVEL 4 OR LOWER CONCRETE TRAFFIC BARRIERS ARE ACCEPTABLE. FOR 42" SINGLE SLOPE BARRIER (11-4) ON STRUCTURE DETAILS SEE 97 STANDARD PLAN C-8110.
2. DIMENSION MAY BE TWO LANE WIDTHS OR ONE LANE WIDTH PLUS THE SHOULDER WIDTH IF THE SHOULDER $\geq 8'-0"$.
3. SEE CONTRACT PLANS FOR BLOCKOUT DETAILS WHEN EXPANSION JOINTS OTHER THAN COMPRESSION SEALS ARE USED.

BRIDGE APPROACH SLAB

STANDARD PLAN A-40.50-03

SHEET 2 OF 3 SHEETS

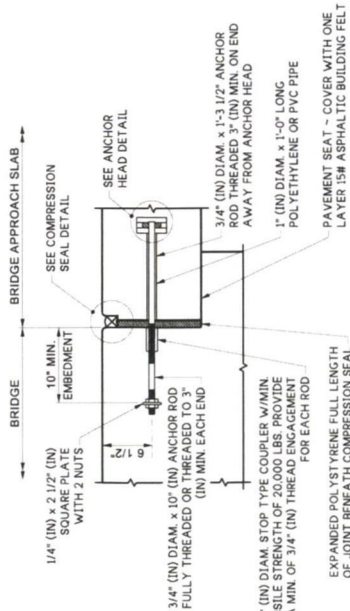
APPROVED FOR PUBLICATION

Sep 12, 2023

STATE DESIGN ENGINEER

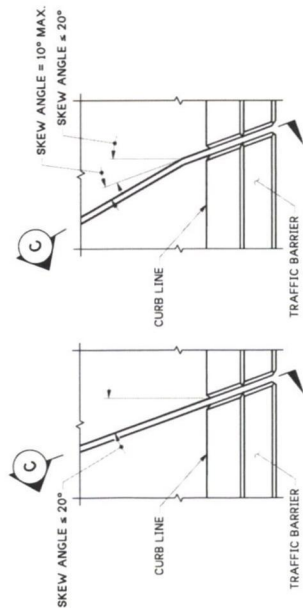
 Washington State

Sep 11. 2023



APPROACH EXPANSION ANCHOR - METHOD A

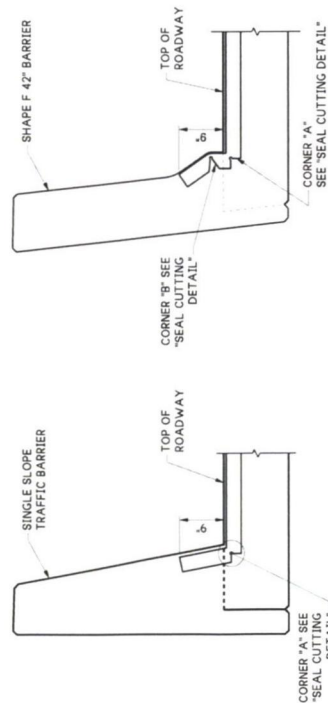
SEMI-INTEGRAL TYPE ONLY FOR BURIED STRUCTURES.
(SIMILAR FOR STANDARD AND D-20.10 AND D-20.20 FOR DETAILS)



SEMI-INTEGRAL TYPE ONLY FOR BURIED STRUCTURES.
(SIMILAR FOR STANDARD AND D-20.10 AND D-20.20 FOR DETAILS)

APPROACH EXPANSION ANCHOR - METHOD B

SEMI-INTEGRAL TYPE ONLY FOR BURIED STRUCTURES.
(SIMILAR FOR STANDARD AND D-20.10 AND D-20.20 FOR DETAILS)



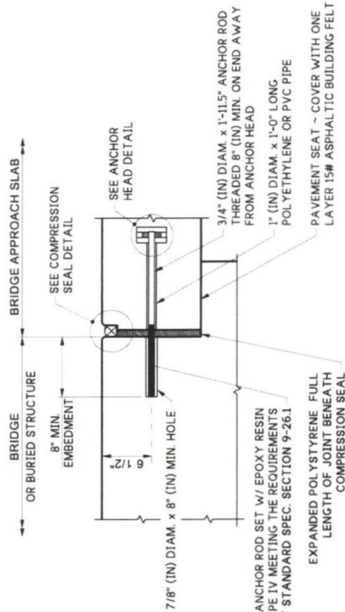
SEMI-INTEGRAL TYPE ONLY FOR BURIED STRUCTURES.
(SIMILAR FOR STANDARD AND D-20.10 AND D-20.20 FOR DETAILS)

SEMI-INTEGRAL TYPE ONLY FOR BURIED STRUCTURES.
(SIMILAR FOR STANDARD AND D-20.10 AND D-20.20 FOR DETAILS)

SECTION C

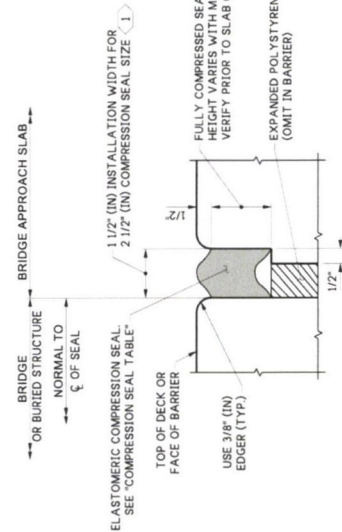
SINGLE SLOPE TRAFFIC BARRIER

SHAPE F 42" BARRIER

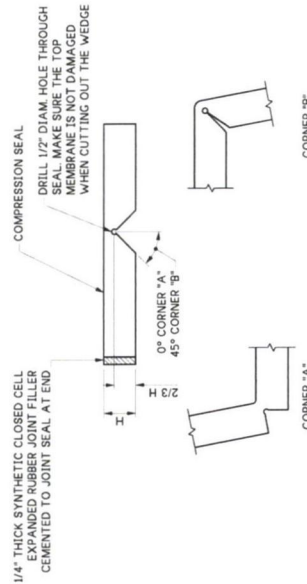


APPROACH EXPANSION ANCHOR - METHOD B

SEMI-INTEGRAL TYPE ONLY FOR BURIED STRUCTURES.
(SIMILAR FOR STANDARD AND D-20.10 AND D-20.20 FOR DETAILS)



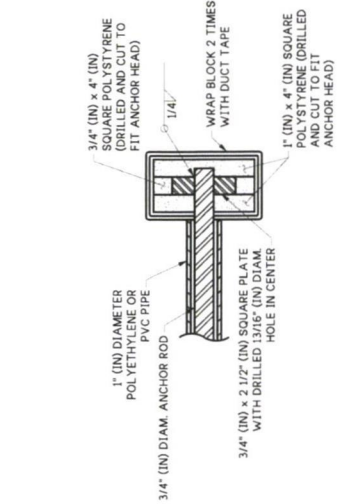
COMPRESSION SEAL DETAIL



SEAL CUTTING DETAIL

CORNER "B"

CORNER "A"



ANCHOR HEAD DETAIL

NOTE
The metal components of the approach expansion anchor shall either be painted with one coat of zinc primer paint conforming to Standard Specification Section 9-08.12H or be galvanized in accordance with AASHTO M 232 or ASTM F2329, as applicable.

COMPRESSION SEAL TABLE			
D.S. BROWN		WATSON BOWMAN	
SEAL		ACME	
CV-2502	2 1/2	WA-250	2 1/2

TESTING SHALL BE PER ASTM D2628 PRIOR TO USE

KEY NOTES

1. WHEN AN HMA AND WATERPROOF MEMBRANE IS PLACED OVER BRIDGE/BURIED STRUCTURE AND APPROACH SLAB, REPLACE COMPRESSION SEAL WITH PREMOULDED JOINT FILLER AND USE JOINT FILLER FOR NEW CONSTRUCTION. JOINT WIDTH MAY BE REDUCED TO 1".



Sep 11, 2023

BRIDGE APPROACH SLAB

STANDARD PLAN A-40.50-03

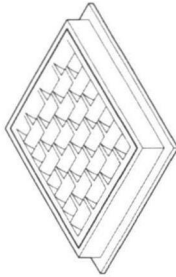
SHEET 3 OF 3 SHEETS

APPROVED FOR PUBLICATION

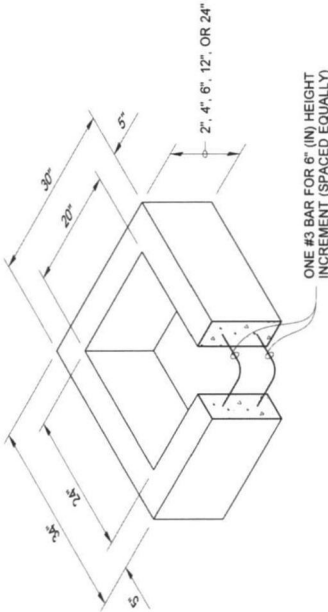
Sep 12, 2023

STATE DESIGN ENGINEER

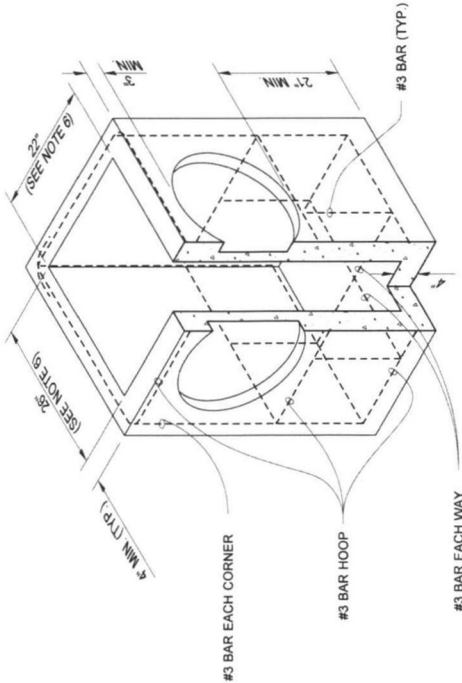
Washington State
Department of Transportation



FRAME AND VANED GRATE



RECTANGULAR ADJUSTMENT SECTION



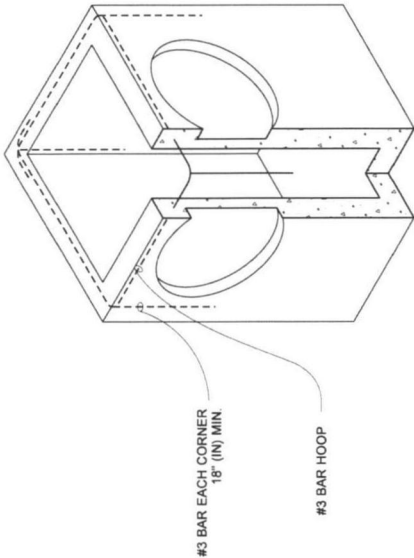
PRECAST BASE SECTION

PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM INSIDE DIAMETER (INCHES)
REINFORCED OR PLAIN CONCRETE	12"
ALL METAL PIPE	15"
CPSSP ★ (STD. SPEC. SECT. 9-05.20)	12"
SOLID WALL PVC (STD. SPEC. SECT. 9-05.12(1))	15"
PROFILE WALL PVC (STD. SPEC. SECT. 9-05.12(2))	15"

★ CORRUGATED POLYETHYLENE STORM SEWER PIPE

NOTES

- As acceptable alternatives to the rebar shown in the **PRECAST BASE SECTION**, fibers (placed according to the Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot shall be used with the minimum required rebar shown in the **ALTERNATIVE PRECAST BASE SECTION**. Wire mesh shall not be placed in the knockouts.
- The knockout diameter shall not be greater than 20" (in). Knockouts shall have a wall thickness of 2" (in) minimum to 2.5" (in) maximum. Provide a 1.5" (in) 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 **Standard Specification Section 9-04.3**.
- The maximum depth from the finished grade to the lowest pipe invert shall be 5' (ft).
- The frame and grate may be installed with the flange down, or integrally cast into the adjustment section with flange up.
- The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1 : 24 or steeper.
- The opening shall be measured at the top of the **Precast Base Section**.
- All pickup holes shall be grouted full after the basin has been placed.



(SEE NOTE 1)

ALTERNATIVE PRECAST BASE SECTION



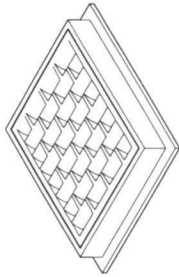
Julie Heilman
2020.09.01 07:52:50 -0700

CATCH BASIN TYPE 1

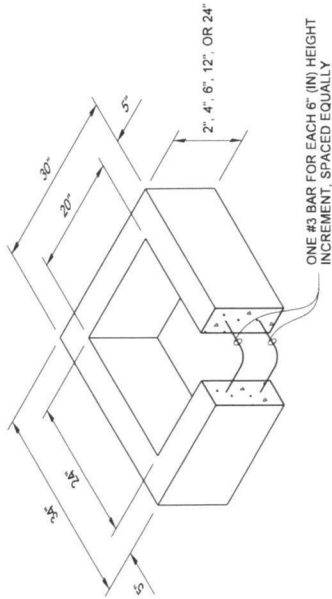
STANDARD PLAN B-5.20-03

SHEET 1 OF 1 SHEET

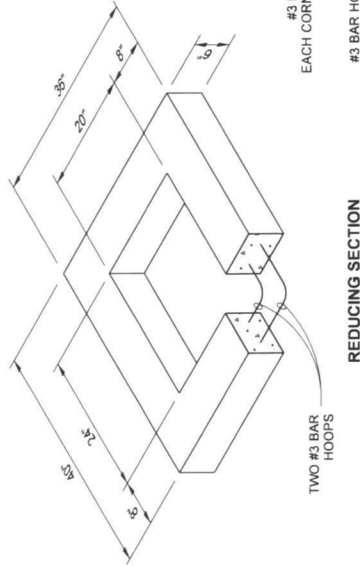
APPROVED FOR PUBLICATION
Digitally signed by Roark, Steve
Date: 2020.09.09 09:45:23 -0700
STATE DESIGN ENGINEER
Washington State Department of Transportation



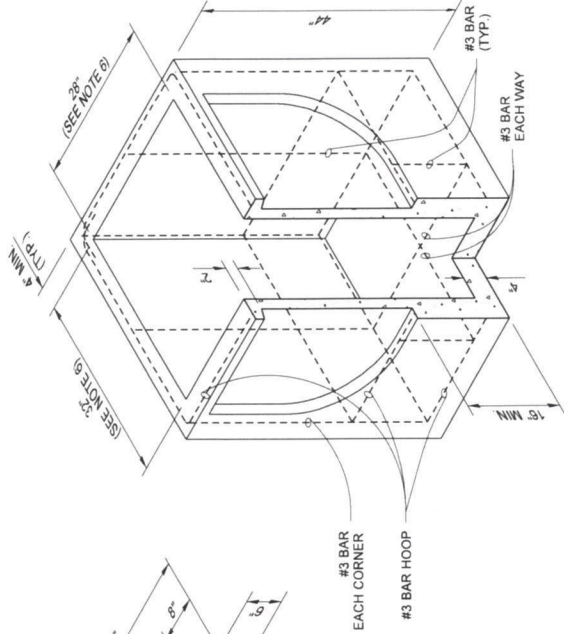
FRAME AND VANED GRATE



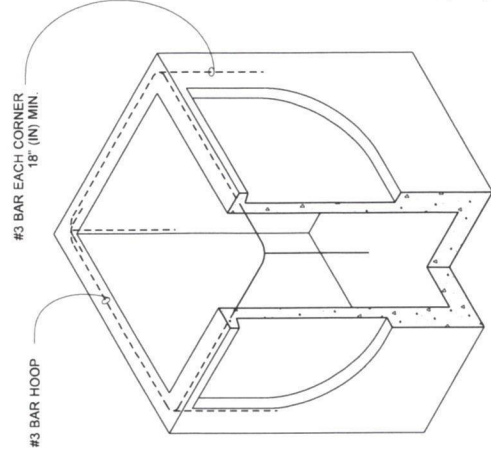
RECTANGULAR ADJUSTMENT SECTION



REDUCING SECTION



PRECAST BASE SECTION



ALTERNATIVE PRECAST BASE SECTION

PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM INSIDE DIAMETER (INCHES)
REINFORCED OR PLAIN CONCRETE	18"
ALL METAL PIPE	21"
CPSSP ★ (STD. SPEC. SECT. 9-05.20)	18"
SOLID WALL PVC (STD. SPEC. SECT. 9-05.12(1))	21"
PROFILE WALL PVC (STD. SPEC. SECT. 9-05.12(2))	21"

★ CORRUGATED POLYETHYLENE STORM SEWER PIPE

NOTES

- As acceptable alternatives to the rebar shown in the **PRECAST BASE SECTION**, fibers (placed according to the Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot, shall be used with the minimum required rebar shown in the **ALTERNATIVE PRECAST BASE SECTION**. Wire mesh shall not be placed in the knockouts.
- The knockout shall not be greater than 26" (in), in any direction. Knockouts shall have a wall thickness of 2" (in) minimum to 2.5" (in) maximum. Provide a 1.5" (in) 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 **Standard Specification Section 9-04.3**.
- The maximum depth from the finished grade to the lowest pipe invert shall be 5' (ft).
- The frame and grate may be installed with the flange down or integrally cast into the adjustment section with flange up.
- The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1 : 24 or steeper.
- The opening shall be measured at the top of the Precast Base Section.
- All pickup holes shall be grouted full after the basin has been placed.



Heilman, Julie
Jan 25 2017 2:56 PM
CATCH BASIN TYPE 1L

STANDARD PLAN B-5.40-02

SHEET 1 OF 1 SHEET

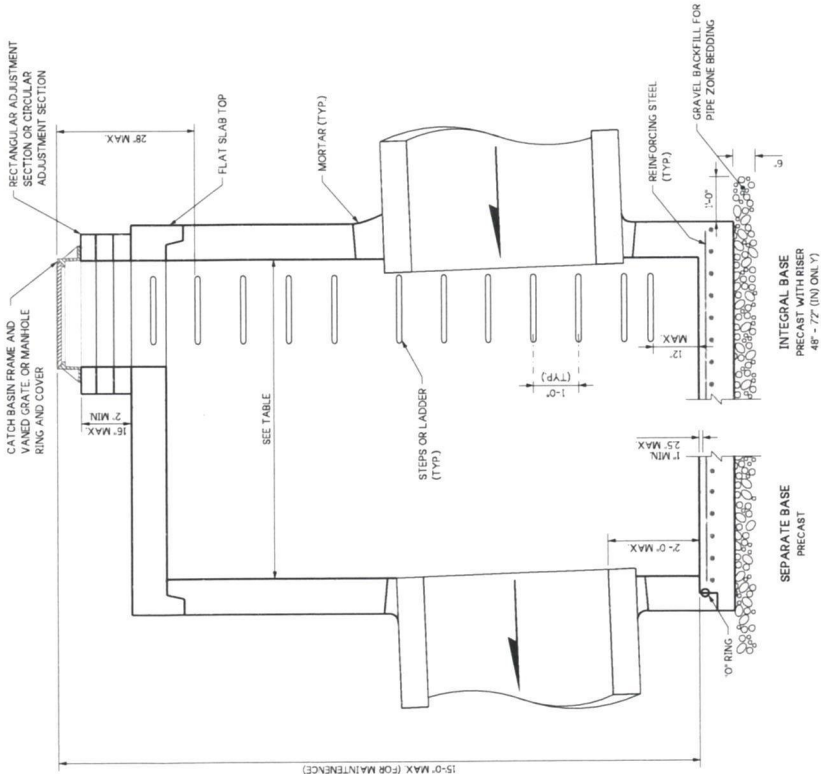
APPROVED FOR PUBLICATION
LISA CYFORD
JAN 25 2017 8:49 AM
STATE DESIGN ENGINEER
Washington State Department of Transportation

NOTES:

1. No steps are required when height is 4' or less.
2. The bottom of the precast catch basin may be sloped to facilitate cleaning.
3. The rectangular frame and grate may be installed with the flange up or down. The frame may be cast into the adjustment section.
4. Knockouts shall have a wall thickness of 2" (in) minimum to 2.5" (in) maximum. Provide a 1.5" (in) 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 **Standard Specification Section 9-04.3**.
5. Pipe allowances will vary depending on the pipe material used. Contact the Region Hydraulics Engineer for assistance.

CATCH BASIN DIMENSIONS				
CATCH BASIN DIAMETER	MIN WALL THICKNESS	MIN 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"
120"	10"	12"	96"	12"
144"	12"	12"	108"	12"

PIPE ALLOWANCES				
CATCH BASIN DIAMETER	PIPE MATERIAL WITH MAXIMUM INSIDE DIAMETER		SOLID WALL PROFILE	
	CONCRETE	ALL METAL	PP (1)	PVC (2)
48"	24"	30"	24"	30"
54"	30"	36"	30"	36"
60"	36"	42"	36"	42"
72"	42"	54"	42"	48"
84"	54"	60"	54"	48"
96"	60"	72"	60"	48"
120"	66"	84"	60"	48"
144"	78"	96"	60"	48"



Aug 23, 2023

CATCH BASIN TYPE 2

STANDARD PLAN B-10.20-03

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Aug 23, 2023

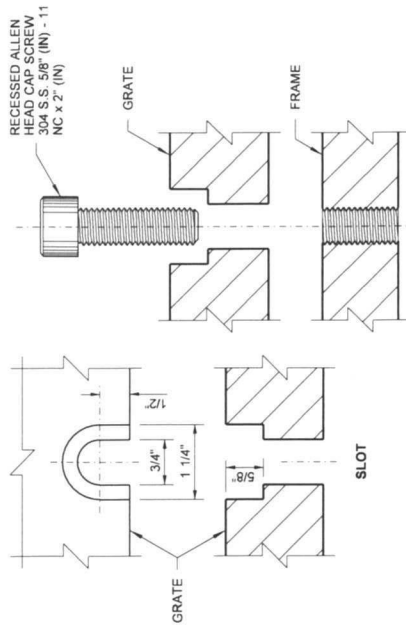
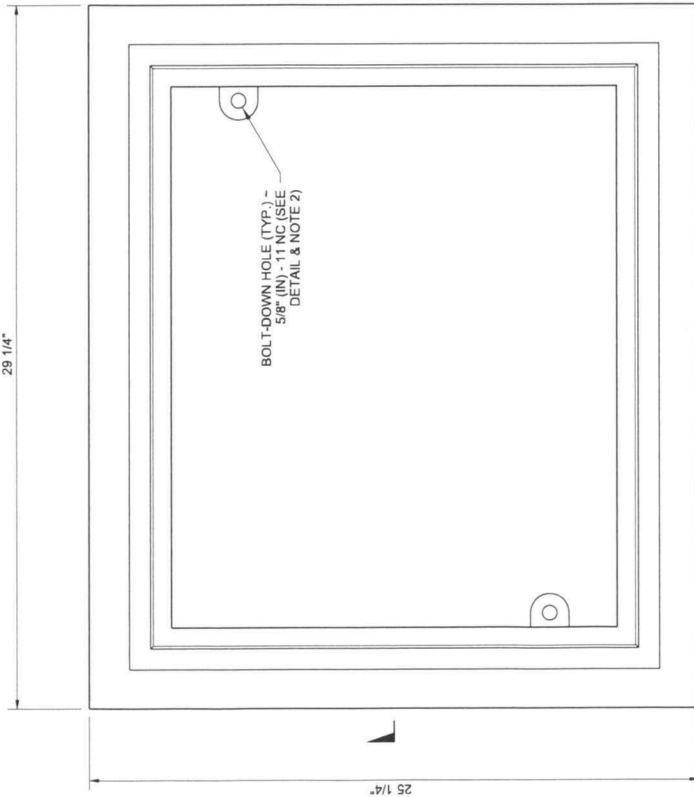
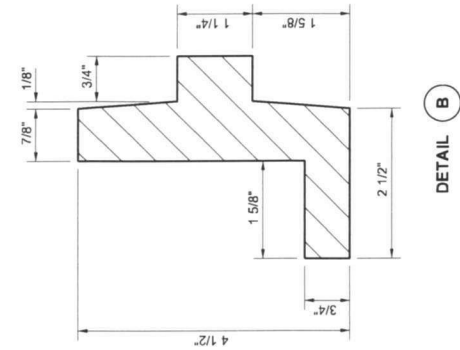
STATE DESIGN ENGINEER

Washington State
Department of Transportation

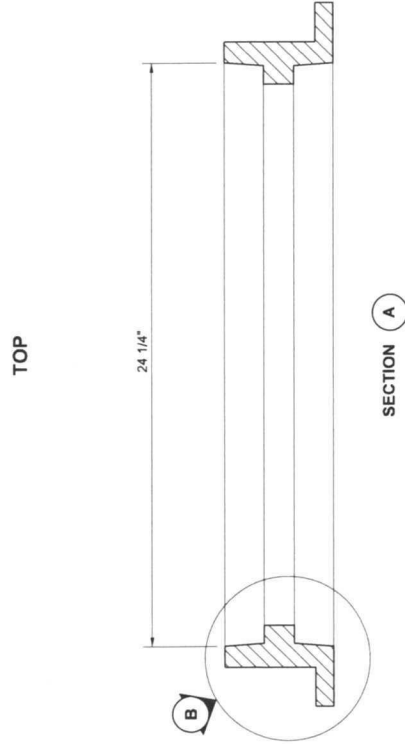
- 1 Corrugated Polyethylene Storm Sewer Pipe (See Standard Specification Section 9-05.20)
- 2 (See Standard Specification Section 9-05.12(1))
- 3 (See Standard Specification Section 9-05.12(1))
- 4 Polypropylene Pipe (See Standard Specification Section 9-05.24)

NOTES

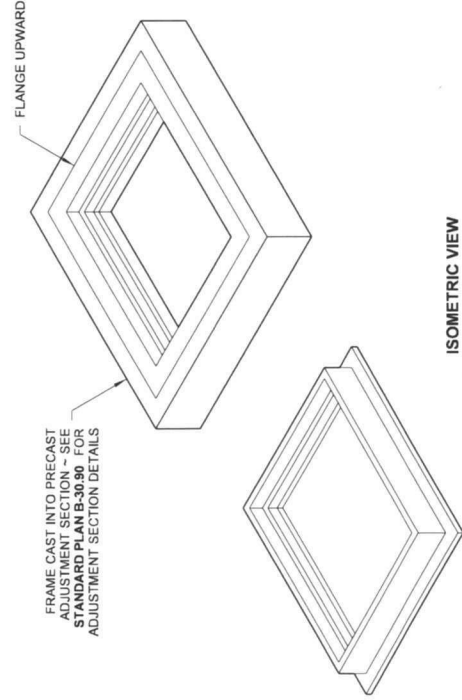
1. This frame is designed to accommodate 20" (in) x 24" (in) grates or covers as shown on **Standard Plans B-30.20, B-30.30, B-30.40, and B-30.50.**
2. Bolt-down capability is required on all frames, grates, and covers, unless specified otherwise in the Contract. Provide 2 holes in the frame that are vertically aligned with the grate or cover slots. The frame shall accept the 304 Stainless Steel (S.S.) 5/8" (in) - 11 NC x 2" (in) allen head cap screw by being tapped, or other approved mechanism. Location of bolt-down holes varies by manufacturer.
3. Refer to **Standard Specification Section 9-05.15** and **9-05.15(2)** for additional requirements.



HOLE BOLT-DOWN DETAILS SEE NOTE 2



TOP



ISOMETRIC VIEW SHOWING THE VARIATIONS

DRAWN BY: FERN LIDDELL



Heilman, Julie
Feb 20 2018 12:52 PM
cogent

RECTANGULAR FRAME (REVERSIBLE)

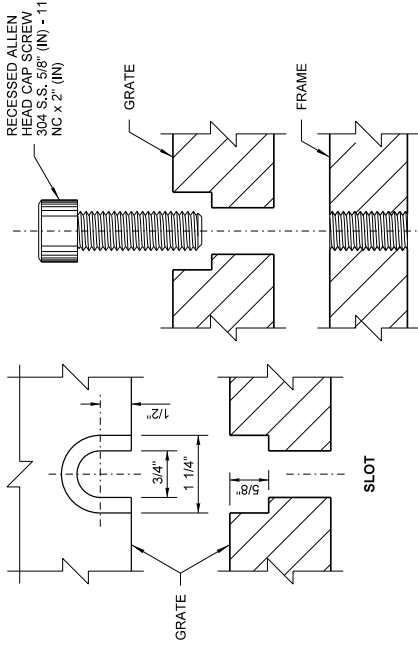
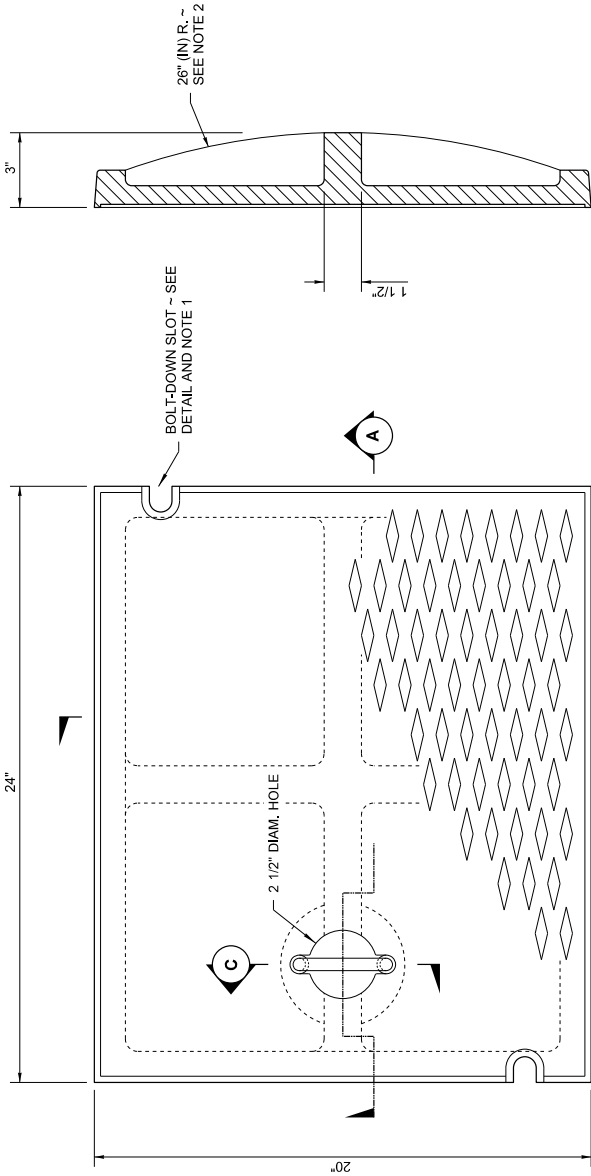
STANDARD PLAN B-30.10-03

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
C. Ferguson, J. J. J.
Feb 27 2018 11:53 AM
STATE DESIGN ENGINEER
Washington State Department of Transportation

NOTES

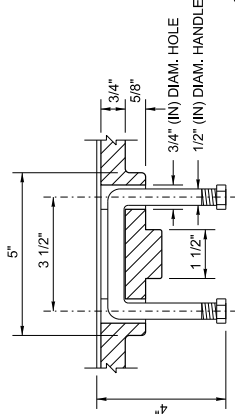
1. Bolt-down capability is required on all frames, grates, and covers, unless specified otherwise in the Contract. Provide 2 holes in the frame that are vertically aligned with the grate or cover slots. The frame shall accept the 304 Stainless Steel (S.S.) 5/8" (in) - 11 NC x 2" (in) allen head cap screw by being tapped, or other approved mechanism. Location of bolt-down holes varies by manufacturer.
2. Alternative reinforcing designs are acceptable in lieu of the rib design.
3. Refer to **Standard Specification Section 9-05.15** and **9-05.15(2)** for additional requirements.
4. For frame details, see **Standard Plan B-30.10**.



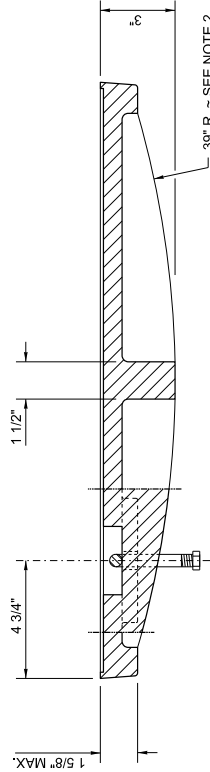
BOLT-DOWN DETAILS
SEE NOTE 1

SECTION B

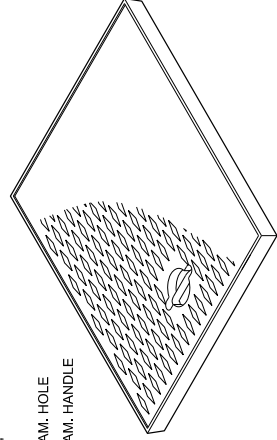
TOP



SECTION C



SECTION A



ISOMETRIC



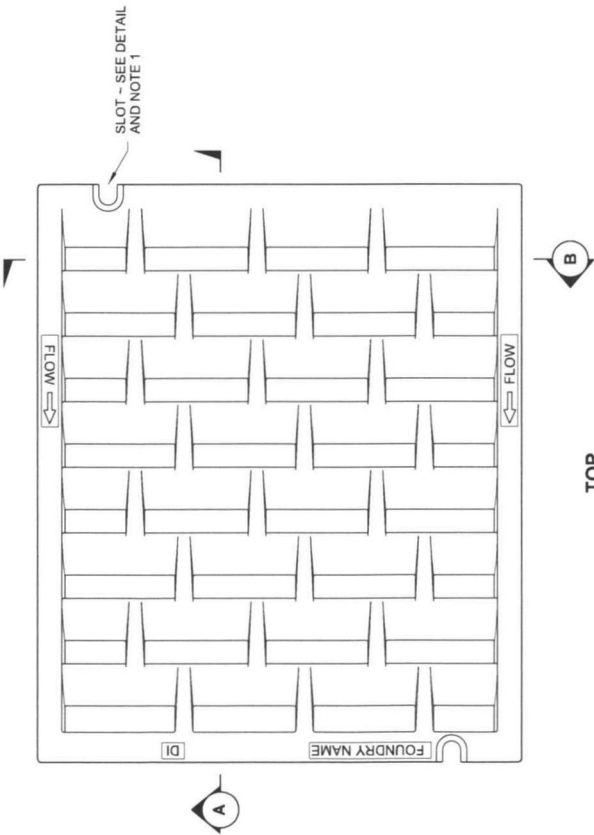
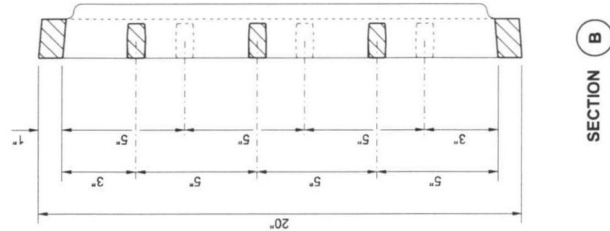
**RECTANGULAR SOLID
METAL COVER**
STANDARD PLAN B-30.20-04
SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

STATE DESIGN ENGINEER
Washington State Department of Transportation

NOTES

1. Bolt-down capability is required on all frames, grates, and covers, unless specified otherwise in the Contract. Provide 2 holes in the frame that are vertically aligned with the grate or cover slots. The frame shall accept the 304 Stainless Steel (S.S.) 5/8" (in) - 11 NC x 2" (in) allen head cap screw by being tapped, or other approved mechanism. Location of bolt-down holes varies by manufacturer.
2. Refer to **Standard Specification Section 9-05.15** and **9-05.15(2)** for additional requirements.
3. For frame details, see **Standard Plan B-30.10**.



BOLT-DOWN DETAILS
SEE NOTE 1



Heilman, Julie
Feb 20 2018 12:54 PM
COOGE

RECTANGULAR VANED GRATE

STANDARD PLAN B-30.30-03

SHEET 1 OF 1 SHEET

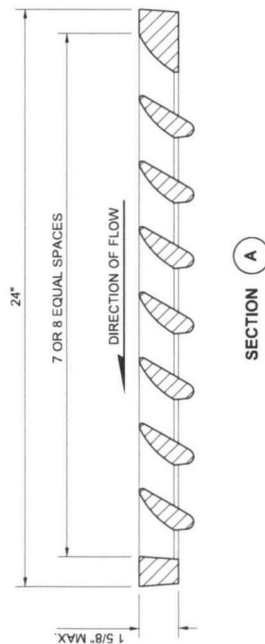
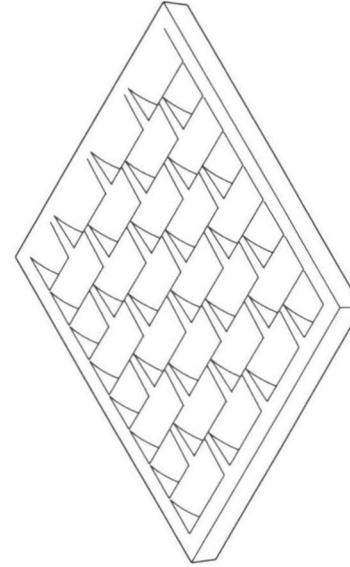
APPROVED FOR PUBLICATION

Engineer Jeff
Feb 27 2018 7:58 AM

STATE DESIGN ENGINEER

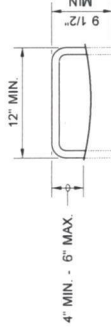
Washington State Department of Transportation

ISOMETRIC

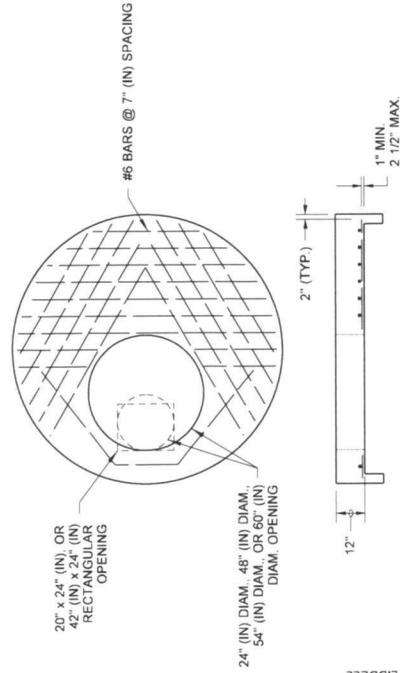


NOTE

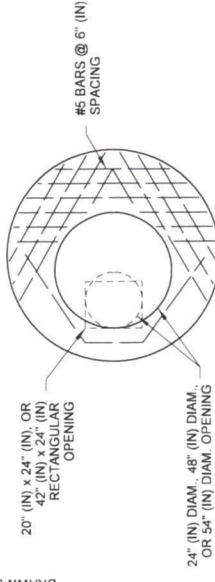
1. Ladder rungs for manholes and catch basins shall meet the requirements of **AASHTO M 199**.



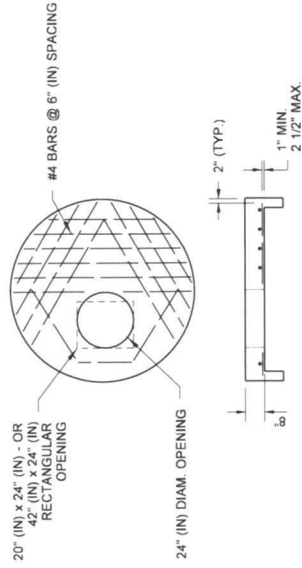
STEP



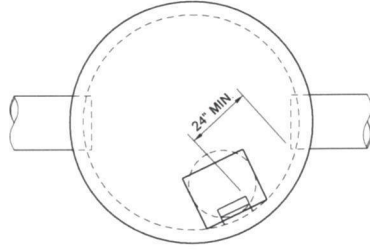
84" (IN) or 96" (IN) FLAT SLAB TOP



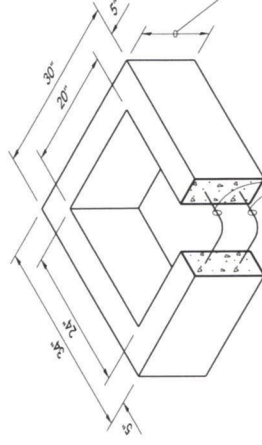
72" (IN) FLAT SLAB TOP



48" (IN), 54", or 60" (IN) FLAT SLAB TOP



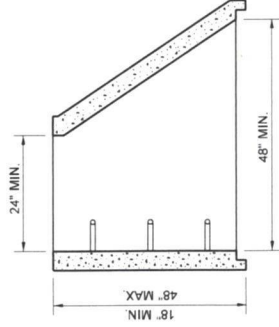
TYPICAL ORIENTATION FOR ACCESS AND STEPS



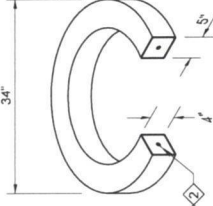
- ONE #3 BAR HOOP FOR 2', 4', OR 6' (IN)
- TWO #3 BAR HOOPS FOR 12' (IN)
- FOUR #3 BAR HOOPS FOR 24' (IN)

RECTANGULAR ADJUSTMENT SECTION

1. As an acceptable alternative to rebar, wire mesh having a minimum area of 0.12 square inches per foot may be used for adjustment sections.
2. As an acceptable alternative to conventional steel reinforcement, manufacturers shall use Synthetic Structural Fibers meeting the requirements of **Standard Specification Section 9-05.50(10)**.



ECCENTRIC CONE SECTION



- ONE #3 BAR HOOP FOR 2', 4', OR 6' (IN)
- TWO #3 BAR HOOPS FOR 12' (IN)

CIRCULAR ADJUSTMENT SECTION

For rectangular and circular adjustment sections, approved alternate material compositions are acceptable in lieu of precast concrete designs



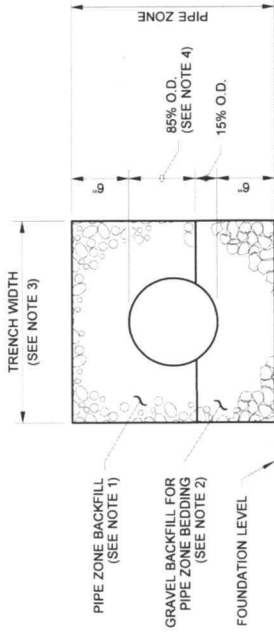
Julie Helman
Professional Engineer
No. 18153
Exp. 12/31/2021

MISCELLANEOUS DETAILS FOR DRAINAGE STRUCTURES STANDARD PLAN B-30.90-02

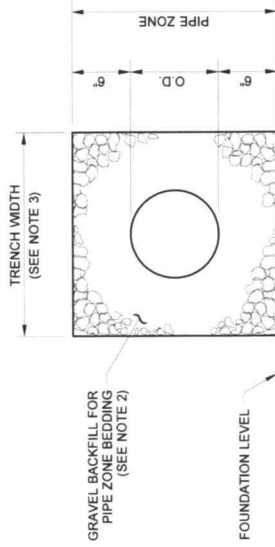
SHEET 1 OF 1 SHEET



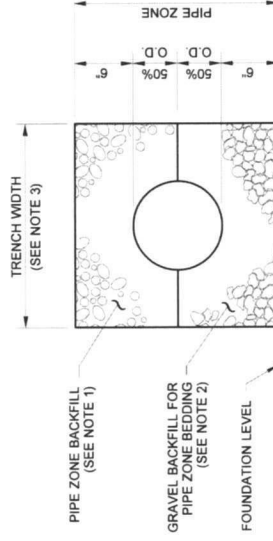
DRAWN BY: FERN LIDDELL



CONCRETE AND DUCTILE IRON PIPE



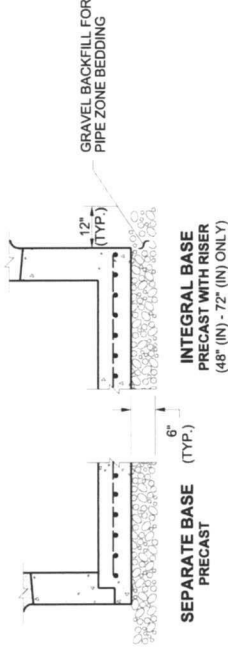
THERMOPLASTIC PIPE



METAL AND STEEL RIB REINFORCED POLYETHYLENE PIPE

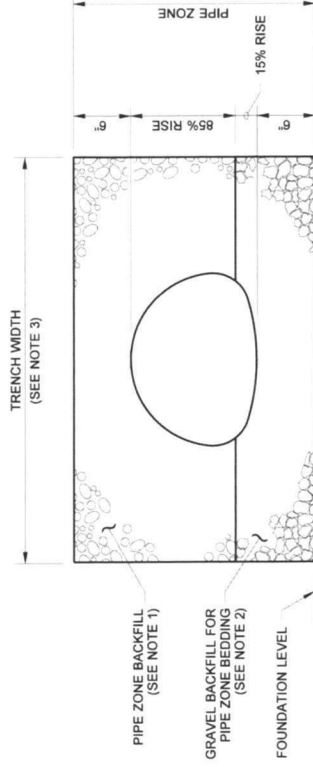
NOTES

1. See Standard Specifications Section 7-08.3(3) for Pipe Zone Backfill.
2. See Standard Specifications Section 9-03.12(3) for Gravel Backfill for Pipe Zone Bedding.
3. See Standard Specifications Section 2-09.4 for Measurement of Trench Width.
4. For sanitary sewer installation, concrete pipe shall be imbedded to spring line.



TYPICAL CONDITION FOR DRAINAGE STRUCTURE

THIS DETAIL APPLIES TO STANDARD PLANS B-6.20,
B-6.40, B-6.60, B-10.20, B-10.40, B-15.20, B-15.40, B-15.60,
B-25.20, B-25.60, B-35.20 AND B-35.40.



PIPE ARCHES

CLEARANCE BETWEEN PIPES FOR MULTIPLE INSTALLATIONS		
PIPE	SIZE	MINIMUM DISTANCE BETWEEN BARRELS
CIRCULAR PIPE (DIAMETER)	UP TO 48"	24"
METAL PIPE ARCH (SPAN)	48" AND LARGER	DIAMETER/2 OR 36" WHICHEVER IS LESS



Aug 17, 2021

PIPE ZONE BEDDING AND BACKFILL STANDARD PLAN B-55.20-03 SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Aug 17, 2021

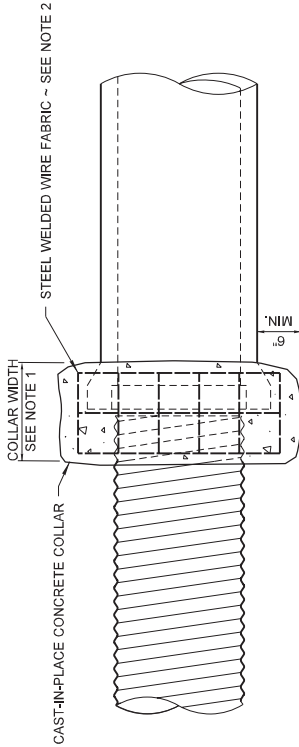
STATE DESIGN ENGINEER
Washington State Department of Transportation

NOTES

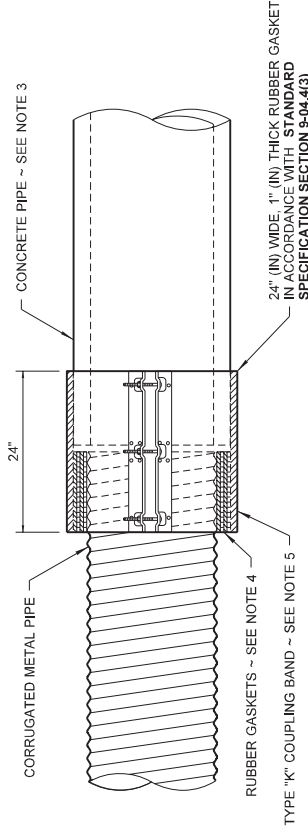
- The Concrete Collar width shall be one half of the outside pipe diameter of the largest pipe. The minimum Concrete Collar width shall be 12" (in). Concrete Collars may be used with all pipe materials and diameters. The Concrete Collar option shall only be used to extend existing pipes. Concrete shall be Commercial Concrete in accordance with **Standard Specification Section 6-02.3(2)**.
- Steel Welded Wire Fabric shall be in accordance with **Standard Specification Section 9-07.7**. Install two wraps for size 6 x 6 W1.4 x W1.4 (10 Gage) Steel Welded Wire Fabric or one wrap for any of the following sizes:

6 x 6 W2.1 x W2.1 (8 Gage)
 6 x 6 W2.9 x W2.9 (6 Gage)
 4 x 4 W2.9 x W2.9 (6 Gage)
 4 x 4 W4.0 x W4.0 (4 Gage)

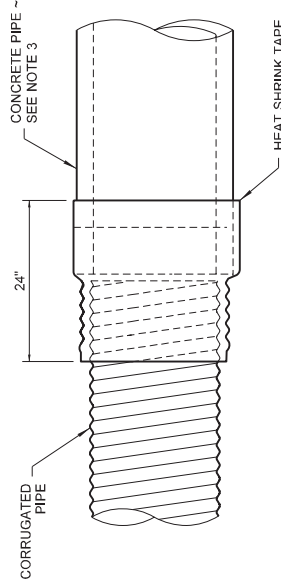
 Provide 1 1/2" min. covering over wire fabric.
- When a Coupling Band connection requires attachment to the bell end of a concrete pipe, the bell end of the pipe shall be removed before the connection is installed.
- Increase the outside diameter of the metal pipe to match the outside diameter of the concrete pipe by installing 12" (in) wide rubber gaskets, thickness as required (Coupling Band only). The rubber gaskets shall be in accordance with **Standard Specification Section 9-04.4(3)**.
- Use a flat Type K Coupling Band. Type K Coupling Bands with dimples are not allowed for the installation detail shown. The Coupling Band option shall only be used for extending existing pipes that have an inside diameter of 36" (in) or less.
- Heat shrink shall have a width of 24" (in). The material shall be wrapped around the outside of the pipe with a 2" (in) minimum overlap. There shall also be a 4" (in) minimum closure patch of material centered along the entire length of the seam.



CONCRETE COLLAR OPTION

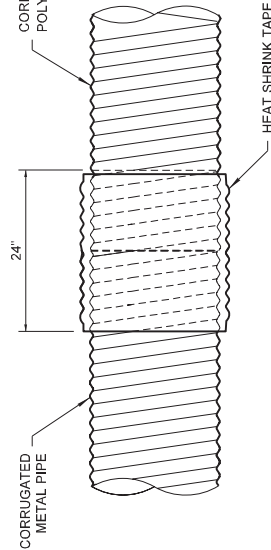


COUPLING BAND OPTION



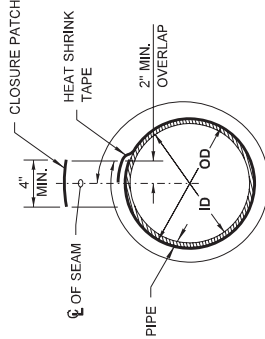
HEAT SHRINK OPTION

CORRUGATED PIPE TO CONCRETE PIPE



HEAT SHRINK OPTION

CORRUGATED METAL PIPE TO CORRUGATED POLYETHYLENE PIPE



SECTION DETAIL



Julie Heilman
2020.09.01 07:54:03 -4700'

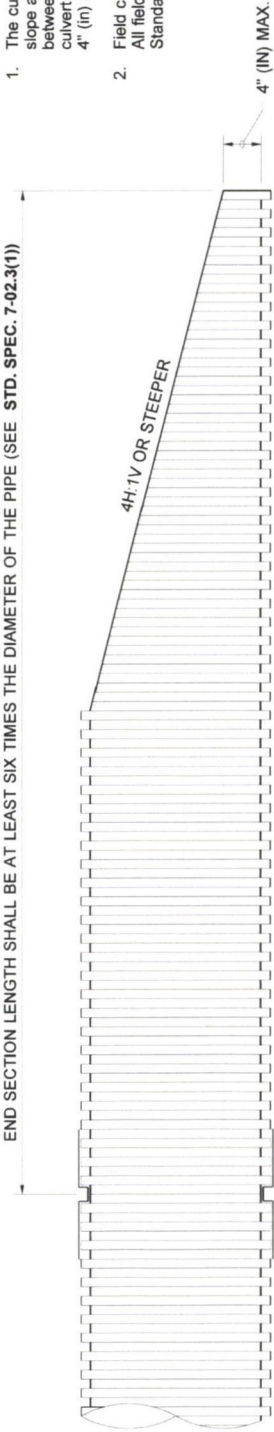
CONNECTION DETAILS FOR DISSIMILAR CULVERT PIPE STANDARD PLAN B-60.20-02

SHEET 1 OF 1 SHEET

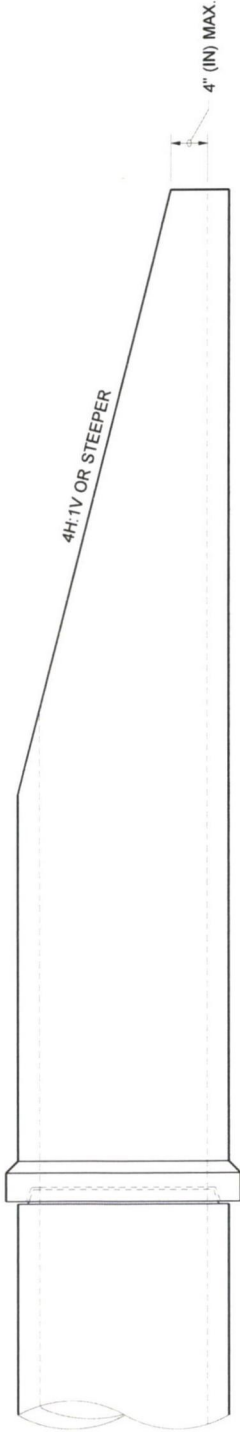
APPROVED FOR PUBLICATION
Roark, Steve
 Digitally signed by Roark, Steve
 Date: 2020.09.09 09:52:35 -4700'
 STATE DESIGN ENGINEER
 Washington State Department of Transportation

NOTES

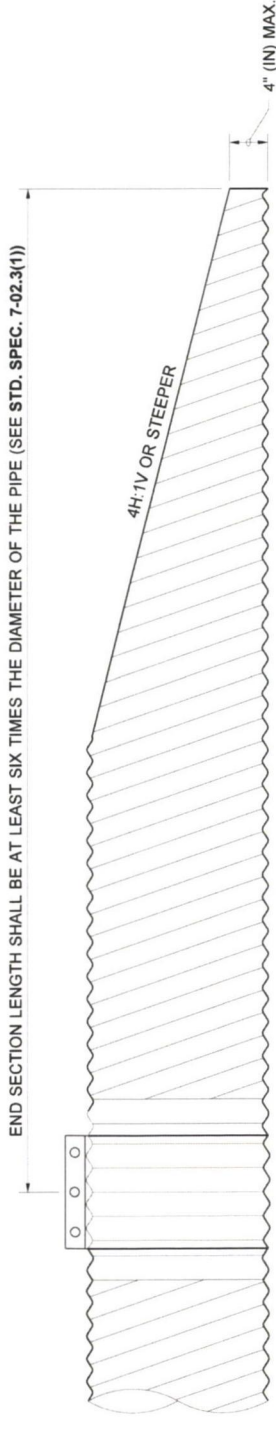
1. The culvert ends shall be mitered to match the embankment or ditch slope and shall not be mitered flatter than 4H : 1V. When slopes are between 4H : 1V and 6H : 1V, shape the slope in the vicinity of the culvert end to ensure that no part of the culvert protrudes more than 4" (in) above the ground line.
2. Field cutting of culvert ends is permitted when approved by the Engineer. All field-cut culvert pipe shall be treated with treatment as shown in the Standard Specifications or General Special Provisions.



THERMOPLASTIC PIPE



CONCRETE PIPE



METAL PIPE

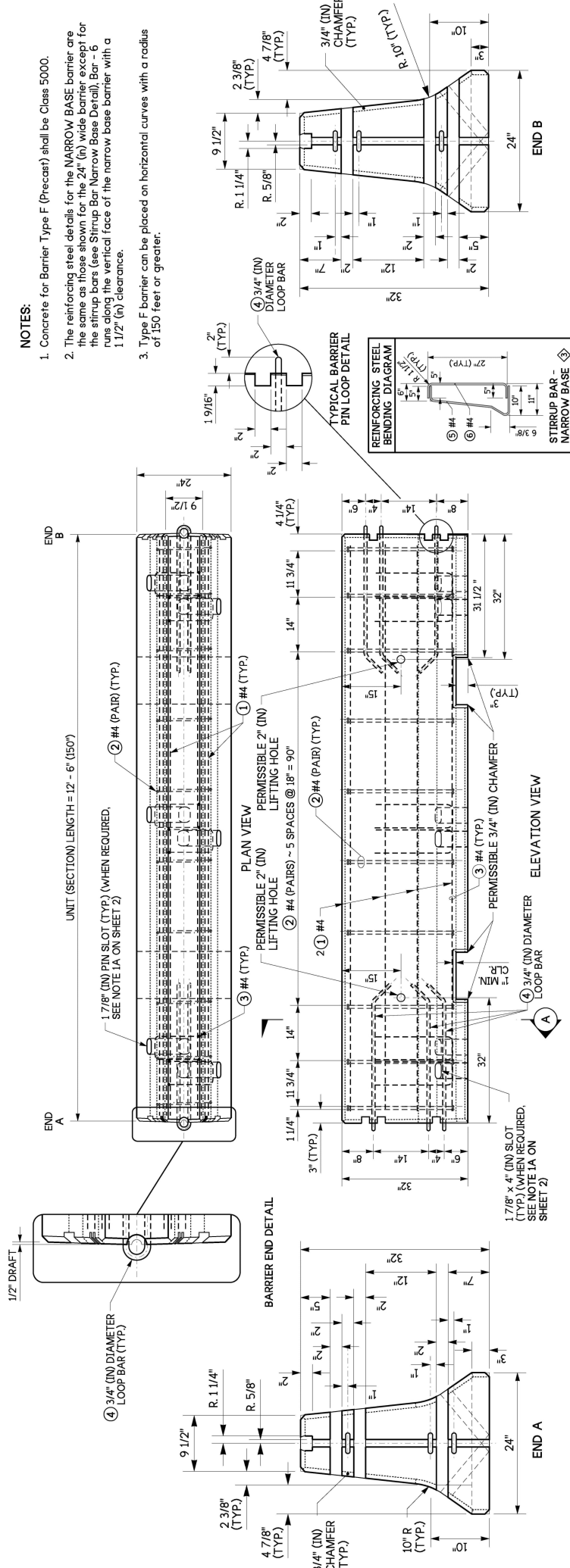
FOR CULVERTS 30" (IN)
DIAMETER OR LESS



Mar 14, 2022

MITERED END SECTIONS
STANDARD PLAN B-70.20-01

SHEET 1 OF 1 SHEET
APPROVED FOR PUBLICATION
Mark Gathert
STATE DESIGN ENGINEER
Mar 15, 2022
Washington State Department of Transportation



NOTES

- Concrete shall be Class 5000.
- Remove slack between barrier segments after inserting connecting pin.
- Precast Concrete Barrier Type F with Scuppers can be installed in the following configurations:
A) Unanchored on hot mix asphalt (HMA), or cement concrete pavement in permanent or temporary installations, and on compacted soil in temporary installations. It is permissible to manufacture the Type F scupper barrier without pin slots and pin slot bars when barrier is not anchored.
B) Anchored on hot mix asphalt (HMA) or cement concrete pavement in permanent or temporary installations as shown on **Std. Plan C-60.10**. See **Std. Plan C-60.10** for anchoring pin details.
- See **Std. Plan C-60.70** for anchoring patterns when transitioning from Type F anchored run to another type of barrier run.
- After removing the anchoring pins, clean the pin holes and fill them with sealant according to **Std. Spec. Section 9-04.2**.
- Connecting Pin head designs vary among different manufacturers. Pin designs that are shaped differently than those shown in the detail are acceptable, if the bearing surface is within the minimum and maximum widths specified.

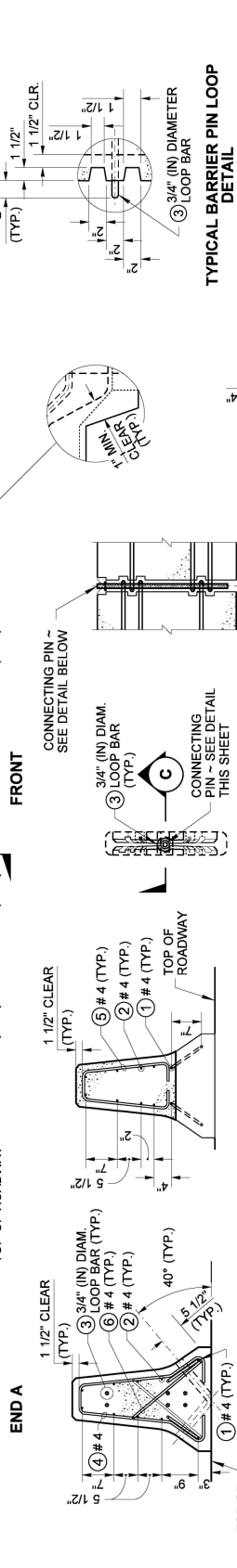
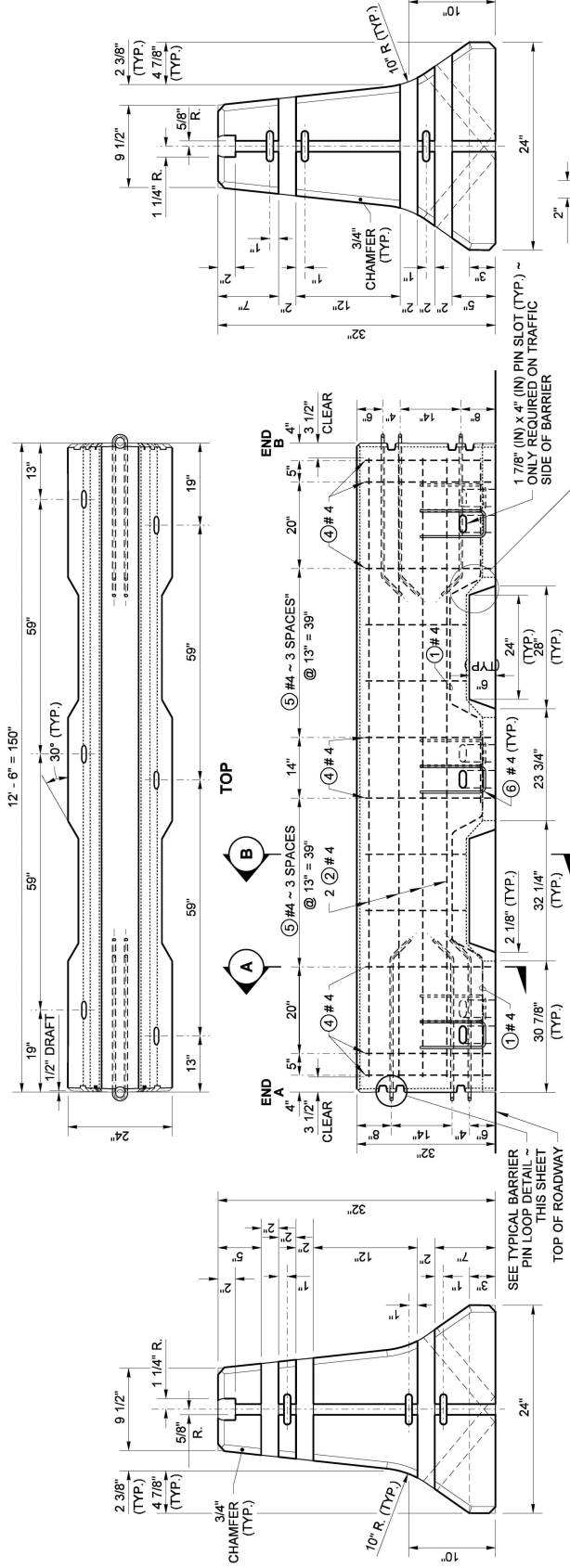


Jul 18, 2024

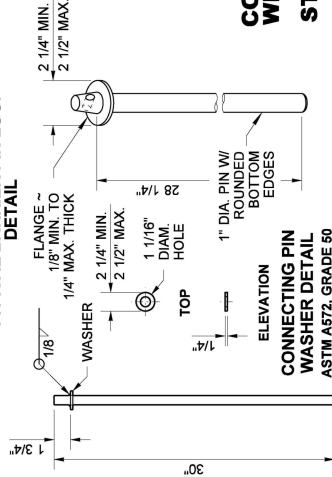
CONCRETE BARRIER TYPE F WITH SCUPPERS (PRECAST) STANDARD PLAN C-60.15-01

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Jul 21, 2024
STATE DESIGN ENGINEER
Washington State Department of Transportation

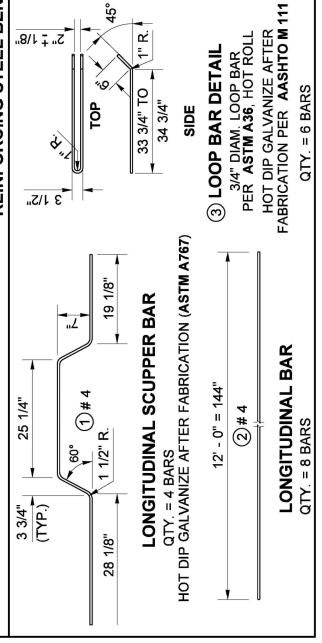


TYPICAL BARRIER PIN LOOP DETAIL



FORGED HEAD PIN (ALTERNATIVE)
SEE NOTE 6
CONNECTING PIN ASSEMBLY DETAIL
1" DIA. PIN W/ ROUNDED BOTTOM EDGES
HOT DIP GALVANIZE AFTER FABRICATION PER ASTM F2329

REINFORCING STEEL BENDING DIAGRAM



LONGITUDINAL SCUPPER BAR

QTY. = 4 BARS
HOT DIP GALVANIZE AFTER FABRICATION (ASTM A767)

12' - 0" = 144"

LONGITUDINAL BAR

QTY. = 8 BARS

STIRRUP BAR A

QTY. = 8 BARS

STIRRUP BAR B

QTY. = 4 BARS

PIN SLOT BAR

HOT DIP GALVANIZE AFTER FABRICATION PER ASTM A767 EXCEPT CHROMATE TREATMENT IS OPTIONAL

QTY. = 6 BARS

END DETAIL

JOINING TWO BARRIER SEGMENTS

SECTION C

(SEE NOTE 2)

SECTION B

TOP OF ROADWAY

SECTION A

TOP OF ROADWAY

END DETAIL

JOINING TWO BARRIER SEGMENTS

SECTION C

(SEE NOTE 2)

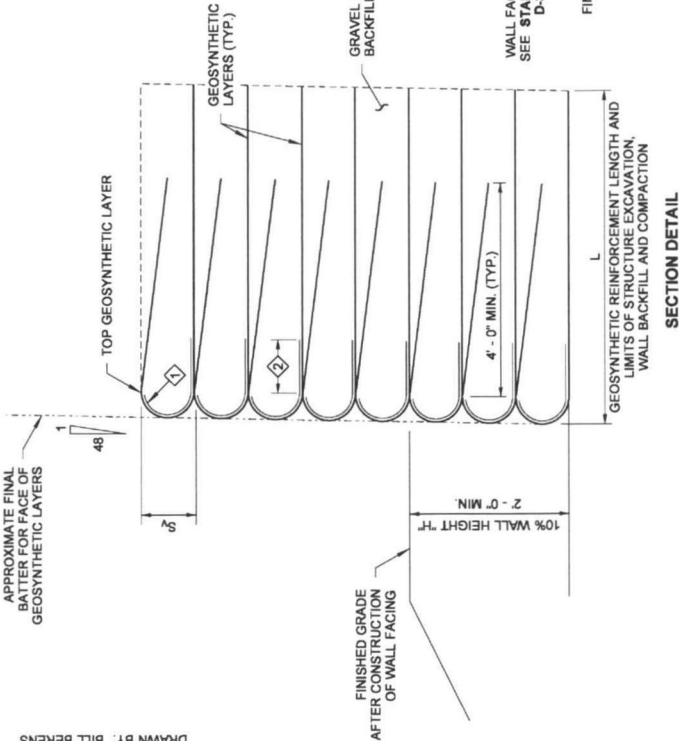
SECTION B

TOP OF ROADWAY

SECTION A

TOP OF ROADWAY

APPROXIMATE FINAL
BATTER FOR FACE OF
GEOSYNTHETIC LAYERS

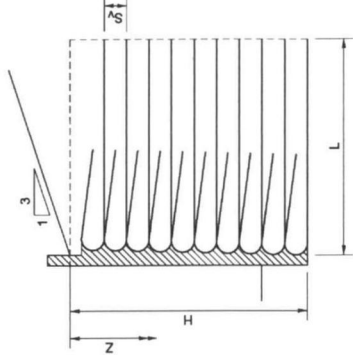
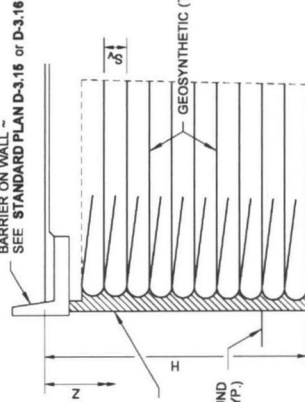


KEY NOTES

- ① GEOTEXTILE FOR UNDERGROUND DRAINAGE CLASS A. MODERATE SURVIVABILITY (ONLY NEEDED IF A GEOTEXTILE IS USED FOR GEOSYNTHETIC REINFORCEMENT)
- ② 1' - 0" MIN. GEOTEXTILE OVERLAP, TOP & BOTTOM

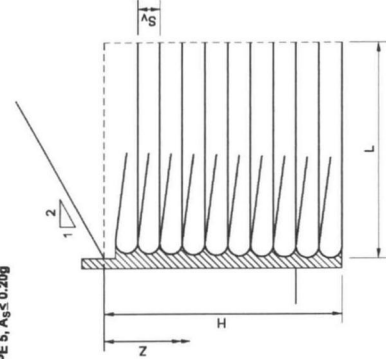
NOTES

1. For the values of "L," see sheet 3, and for the values of "S_v" see sheet 2.
2. For Geosynthetic Wall Construction Sequence, see sheet 4.
3. "A_s" is the peak seismic ground acceleration as defined and applied in the AASHTO LRFD Bridge Design Specifications, Articles 3.10.4.1 and 11.6.5.
4. The long-term geosynthetic design strength "T_{al}" shall be determined in accordance with WSDOT Standard Practice 1925. See Qualified Products List (QPL), Appendix "D," for products in which "T_{al}" has been determined. "H" and "Z" are graphically defined. "Z" is the distance from the top of the wall to a geosynthetic layer, and is used to determine "T_{al}" for that layer.
5. "L," the geosynthetic reinforcement length behind the wall face, is graphically defined. The maximum factored bearing stress acts in the vertical direction at the base of the wall. The load factors used are as specified in the AASHTO LRFD Bridge Design Specifications for each specified limit state.
6. Fascia or facing type shall be selected from **Standard Plans D-3.10 or D-3.11** and called out in the Contract Plans. Region is to coordinate with the Geotechnical Services and Bridge & Structures offices.



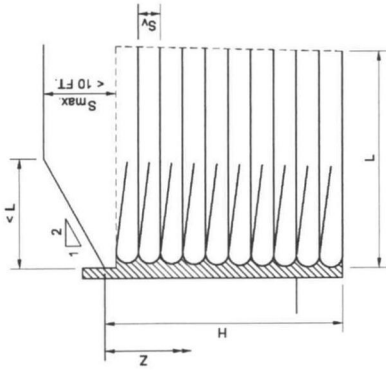
GEOSYNTHETIC WALL WITH 2 FT TRAFFIC SURCHARGE

TYPE 1, A_s ≤ 0.51g
TYPE 5, A_s ≤ 0.20g



GEOSYNTHETIC WALL

TYPE 4, A_s ≤ 0.51g
TYPE 8, A_s ≤ 0.20g



GEOSYNTHETIC WALL

TYPE 2, A_s ≤ 0.51g
TYPE 6, A_s ≤ 0.20g



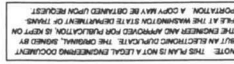
PERMANENT GEOSYNTHETIC WALL STANDARD PLAN D-3.09-00

SHEET 1 OF 4 SHEETS

APPROVED FOR PUBLICATION
DATE
Pasco Bakotich III 05/17/12
STATE DESIGN ENGINEER
Washington State Department of Transportation

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NOTE: See Note 4, sheet 1.



**PERMANENT
GEOSYNTHETIC WALL
STANDARD PLAN D-3.09-00**

SHEET 2 OF 4 SHEETS

APPROVED FOR PUBLICATION

Pasco Bakotich III 05/17/12
STATE DESIGN ENGINEER
Washington State Department of Transportation

PERMANENT GEOSYNTHETIC WALL - EXTERNAL STABILITY DESIGN
(INCLUDES SEISMIC DESIGN FOR LARGE EARTHQUAKE: $A_s \leq 0.51g$)

TOTAL WALL HEIGHT, H (ft)	GEOSYNTHETIC WALL TYPE 1				GEOSYNTHETIC WALL TYPE 2				GEOSYNTHETIC WALL TYPE 3				GEOSYNTHETIC WALL TYPE 4			
	L (ft)	SERVICE 1	STRENGTH 1	EXTREME EVENT I	L (ft)	SERVICE 1	STRENGTH 1	EXTREME EVENT I	L (ft)	SERVICE 1	STRENGTH 1	EXTREME EVENT I	L (ft)	SERVICE 1	STRENGTH 1	EXTREME EVENT I
5	11	847	1220	1011	1192	1057	1535	1391	6	852	1168	1284	7	975	1343	1473
6	11	1081	1566	1388	1849	8	1295	1862	1671	7	1028	1415	9	1171	1613	1756
7	11	1248	1800	1685	2165	9	1469	2099	1981	8	1203	1657	10	1366	1882	2058
8	11	1415	2034	1982	2381	10	1617	2336	2291	9	1378	1899	11	1551	2151	2360
9	11	1582	2268	2279	2597	11	1817	2573	2601	10	1553	2141	12	1756	2420	2662
10	11	1768	2531	2609	3278	11	2069	2968	3006	10	1738	2384	14	1951	2685	2947
11	11	1916	2796	2873	3029	12	2165	3047	3221	11	1903	2625	15	2146	2958	3266
12	11	2083	2970	3170	3245	13	2339	3284	3531	12	2078	2867	16	2341	3227	3568
13	11	2250	3204	3467	3461	14	2513	3521	3821	13	2253	3109	18	2536	3496	3870
14	11	2417	3438	3764	3677	15	2687	3758	4151	14	2428	3351	19	2731	3765	4172
15	11	2584	3673	4000	3893	16	2860	3995	4382	15	2601	3593	20	2924	4029	4494
16	11	2751	3908	4236	4119	17	3035	4232	4611	16	2776	3835	21	3116	4271	4716
17	12	2918	4140	4465	4345	18	3209	4469	4841	17	2953	4077	22	3316	4522	5078
18	13	3085	4374	4695	4541	19	3383	4708	5081	18	3128	4319	23	3511	4772	5300
19	14	3252	4608	4924	4757	20	3557	4943	5311	19	3303	4561	24	3706	5011	5582
20	15	3412	4835	5149	4927	21	3811	5178	5541	20	3476	4787	25	3899	5241	5865
21	15	3586	5076	5383	5185	21	3905	5417	5831	21	3653	5045	26	4096	5488	6148
22	16	3753	5310	5614	5405	22	4079	5654	6031	22	3828	5287	28	4291	5717	6431
23	16	3920	5544	5847	5621	23	4253	5891	6261	23	4003	5529	31	4486	5948	6714
24	17	4087	5778	6074	5837	24	4427	6128	6491	23	4178	5771	32	4681	6179	6997
25	18	4254	6012	6300	6053	25	4601	6365	6714	24	4352	6012	33	4876	6410	7280
26	18	4421	6246	6527	6278	26	4775	6602	6961	25	4526	6255	35	5071	6641	7563
27	19	4588	6480	6754	6503	26	4949	6839	7206	26	4703	6497	36	5266	6872	7846
28	19	4755	6714	6981	6729	27	5123	7076	7451	27	4878	6739	37	5461	7103	8129
29	20	4922	6948	7208	6954	28	5297	7313	7681	28	5053	6981	38	5656	7334	8412
30	21	5089	7182	7435	7181	29	5471	7550	7911	29	5228	7228	40	5851	7565	8695
31	22	5256	7416	7662	7408	30	5645	7787	8142	30	5402	7475	41	6046	7796	8978
32	23	5423	7650	7889	7643	31	5819	8024	8393	31	5578	7702	42	6241	8027	9261
33	24	5590	7884	8117	7887	32	5993	8261	8644	32	5753	7949	43	6436	8258	9544
34	25	5757	8118	8341	8117	32	6167	8498	8881	33	5928	8191	44	6631	8489	9827
35	25	5924	8341	8565	8341	32	6341	8735	9118	34	6102	8425	45	6826	8720	10110

NOTE: See General Note 5, sheet 1.

PERMANENT GEOSYNTHETIC WALL - EXTERNAL STABILITY DESIGN
(INCLUDES SEISMIC DESIGN FOR LARGE EARTHQUAKE: $A_s \leq 0.20g$)

TOTAL WALL HEIGHT, H (ft)	GEOSYNTHETIC WALL TYPE 5				GEOSYNTHETIC WALL TYPE 6				GEOSYNTHETIC WALL TYPE 7				GEOSYNTHETIC WALL TYPE 8				
	L (ft)	MAX. FACTORED BEARING STRESS (psf)		EXTREME EVENT II	L (ft)	MAX. FACTORED BEARING STRESS (psf)		EXTREME EVENT I	L (ft)	MAX. FACTORED BEARING STRESS (psf)		EXTREME EVENT I	L (ft)	MAX. FACTORED BEARING STRESS (psf)		EXTREME EVENT I	
		SERVICE 1	STRENGTH 1			SERVICE 1	STRENGTH 1			SERVICE 1	STRENGTH 1			SERVICE 1	STRENGTH 1		
5	11	847	1220	992	1192	6	1057	1535	1294	6	852	1168	1155	6	977	1349	1326
6	11	1105	1607	1320	1988	6	1358	1928	1698	6	1107	1536	1560	6	1278	1786	1868
7	11	1273	1843	1553	2090	6	1569	2226	1889	6	1302	1809	1842	6	1504	2105	2214
8	10	1441	2078	1786	2463	7	1780	2527	2211	7	1497	2082	2124	7	1730	2424	2560
9	10	1609	2315	2019	2808	7	1991	2831	2540	7	1692	2355	2406	7	1956	2743	2906
10	10	1768	2531	2229	3278	7	2286	3372	2776	7	1924	2692	2773	7	2228	3145	3381
11	10	1945	2787	2485	3424	8	2413	3445	3213	8	2082	2901	2970	8	2408	3381	3598
12	10	2113	3023	2718	3699	9	2624	3755	3555	9	2277	3174	3252	9	2634	3700	3944
13	11	2281	3259	2951	3954	10	2835	4066	3849	10	2472	3447	3534	10	2860	4019	4290
14	11	2449	3495	3184	4190	11	3046	4378	4241	11	2687	3720	3816	11	3086	4338	4638
15	11	2711	3884	3516	4396	11	3245	4598	4737	11	2886	4037	4159	11	3342	4718	5072
16	12	2785	3967	3650	4616	12	3488	5004	4948	12	3057	4266	4380	12	3538	4876	5328
17	12	2953	4203	3883	4809	12	3679	5316	5297	12	3252	4539	4662	12	3764	5295	5674
18	13	3121	4439	4116	4980	13	3890	5628	5644	13	3447	4812	4944	13	3990	5614	6020
19	14	3289	4675	4349	5163	14	4101	5939	5960	14	3642	5085	5226	14	4216	5933	6366
20	14	3522	5015	4642	5201	14	4328	6125	6321	14	3848	5383	5546	14	4468	6291	6762
21	15	3625	5147	4815	5489	15	4523	6557	6672	15	4032	5651	5790	15	4668	6571	7058
22	16	3793	5383	5048	5946	16	4734	6983	7006	16	4227	5904	6072	16	4894	6890	7404
23	17	3961	5619	5281	5801	17	4945	7466	7335	17	4422	6177	6354	17	5120	7209	7750
24	18	4129	5855	5514	5955	18	5156	7896	7657	18	4617	6450	6636	18	5348	7528	8096
25	18	4325	6131	5763	6148	18	5417	8381	7891	18	4810	6729	6932	18	5570	7863	8453
26	19	4485	6327	5980	6272	19	5678	8807	8290	19	5007	6996	7200	19	5798	8166	8788
27	19	4633	6553	6213	6438	19	5789	8934	8578	19	5202	7269	7482	19	6024	8485	9134
28	20	4801	6799	6446	6611	20	6000	9378	8896	20	5397	7542	7764	20	6250	8804	9490
29	21	4989	7035	6679	6793	21	6211	9812	9144	21	5592	7815	8046	21	6476	9123	9826
30	21	5123	7238	6881	6981	21	6377	10406	9515	21	5773	8075	8319	21	6694	9436	10143
31	22	5305	7507	7145	7192	22	6633	10957	9664	22	5982	8361	8610	22	6928	9781	10616
32	23	5473	7743	7378	7412	23	6844	11544	9905	23	6177	8634	8892	23	7154	10380	10864
33	24	5641	7919	7619	7649	24	7055	12141	10470	24	6472	8917	9174	24	7380	10710	11210
34	25	5809	8215	7844	7904	25	7266	12746	11033	25	6687	9180	9456	25	7606	11078	11556
35	25	5918	8341	7968	8177	25	7311	12859	11245	25	6735	9293	9570	25	7768	11299	11834

NOTE: See Note 5, sheet 1.

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PERMANENT
GEOSYNTHETIC WALL
STANDARD PLAN D-3.09-00

SHEET 3 OF 4 SHEETS

APPROVED FOR PUBLICATION

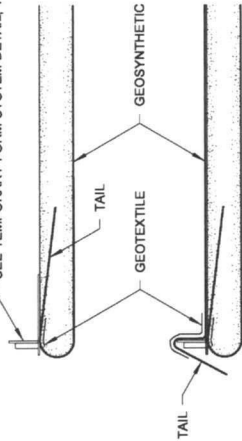
Pasco Bakotich III

STATE DESIGN ENGINEER

Washington State Department of Transportation

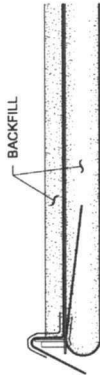
DATE: 05/17/12

SEE TEMPORARY FORM SYSTEM DETAIL, THIS SHEET



1. SET FORM ON COMPLETED LIFT.

2. UNROLL GEOSYNTHETIC AND POSITION IT SO THAT A 4" - 0" WIDE "TAIL" DRAPES OVER THE FORM. IF A GEOGRID IS USED FOR THE GEOSYNTHETIC REINFORCEMENT, POSITION GEOTEXTILE TO PREVENT BACKFILL FROM SPILLING THROUGH GEOGRID OPENINGS.



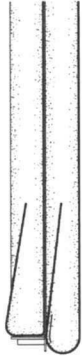
3. PLACE THE BACKFILL UNTIL THE BACKFILL IS UP TO HALF OF THE REQUIRED VERTICAL GEOSYNTHETIC LAYER SPACING



4. PLACE A WINDROW TO SLIGHTLY GREATER THAN FULL LIFT HEIGHT AGAINST THE FORM.



5. PLACE THE GEOSYNTHETIC "TAIL" OVER THE WINDROW AND LOCK INTO PLACE WITH BACKFILL



6. COMPLETE BACKFILLING UNTIL THE COMPACTED BACKFILL LAYER THICKNESS IS EQUAL TO THE REQUIRED VERTICAL GEOSYNTHETIC LAYER SPACING.



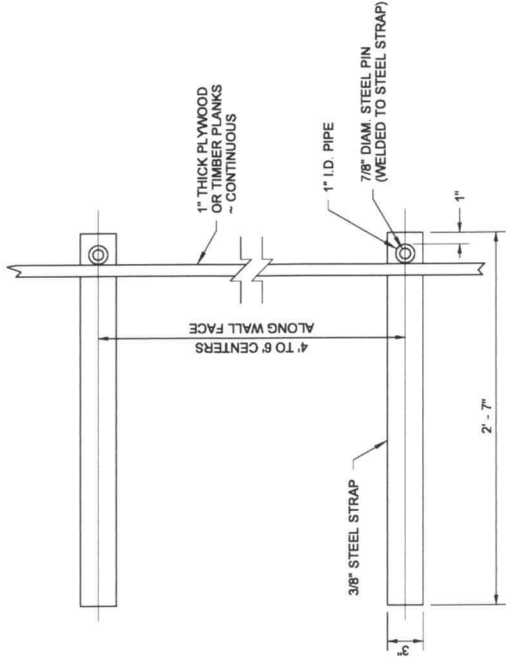
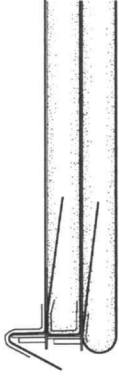
7. THE FORM MAY BE LEFT IN PLACE WHILE CONSTRUCTING THE NEXT LAYER (SEE NOTE 2) OTHERWISE, RESET THE FORM AND REPEAT THE SEQUENCE.

GEOSYNTHETIC WALL CONSTRUCTION SEQUENCE

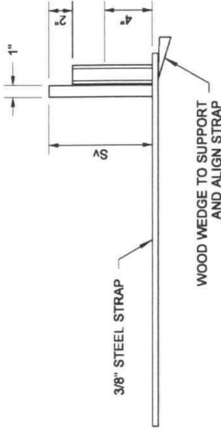
(SECTION VIEW)

NOTES(SHEET)

1. Use of the Temporary Form System, as detailed in this plan, is optional.
2. To help maintain the wall face batter, leave the form system for the preceding layer in place while constructing the next layer. When the upper layer is complete, remove the form system from the lower layer and reset it for the next layer. See below.



PLAN



ELEVATION

TEMPORARY FORM SYSTEM DETAIL

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PERMANENT GEOSYNTHETIC WALL STANDARD PLAN D-3-09-00

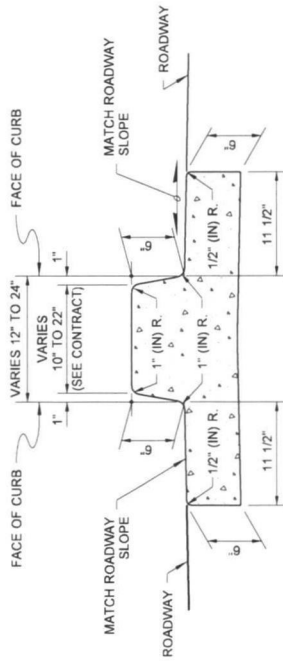
SHEET 4 OF 4 SHEETS

APPROVED FOR PUBLICATION

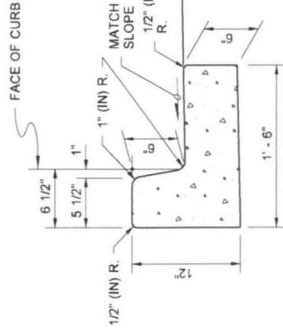
Pasco Bakotich III 05/17/12

STATE DESIGN ENGINEER DATE

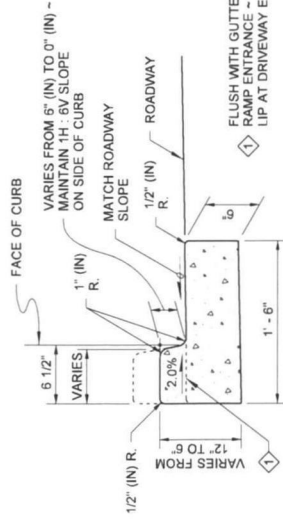
Washington State Department of Transportation



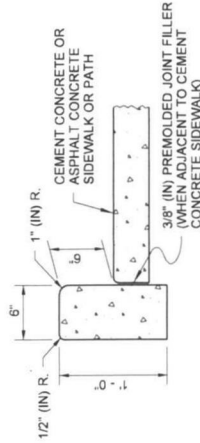
**DUAL-FACED CEMENT CONCRETE
TRAFFIC CURB AND GUTTER**



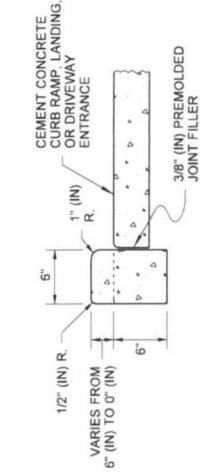
**CEMENT CONCRETE
TRAFFIC CURB AND GUTTER**



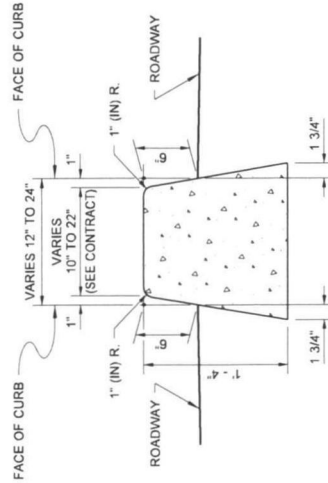
**DEPRESSED CURB AND GUTTER SECTION
AT CURB RAMPS AND
DRIVEWAY ENTRANCES**



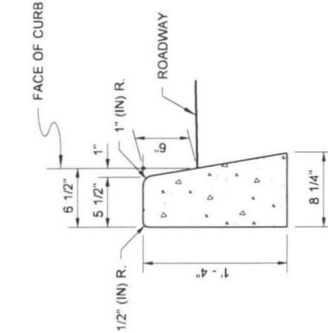
CEMENT CONCRETE PEDESTRIAN CURB



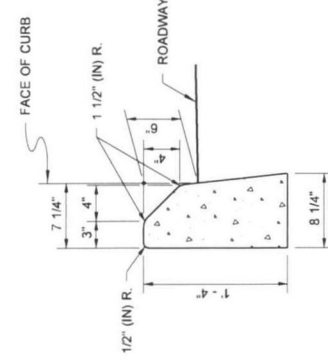
**CEMENT CONCRETE PEDESTRIAN CURB
AT CURB RAMPS, LANDINGS,
AND DRIVEWAY ENTRANCES**



**DUAL-FACED CEMENT
CONCRETE TRAFFIC CURB**



**CEMENT CONCRETE
TRAFFIC CURB**



**MOUNTABLE CEMENT
CONCRETE TRAFFIC CURB**

NOTE

1. See **Standard Plan F-30.10** for Curb Expansion and Contraction Joint Spacing. See **Standard Specification, Sections 8-04 and 9-04** for additional requirements.



Michael S
Fleming

Digitally signed by Michael S
Fleming
Date: 2020.09.24 07:39:38 -0700

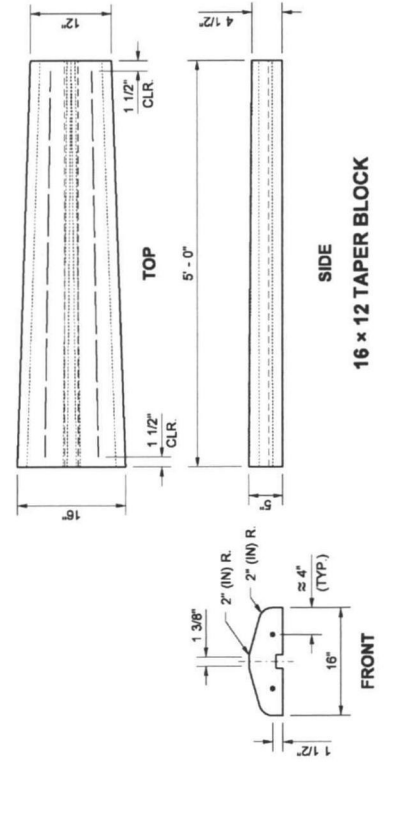
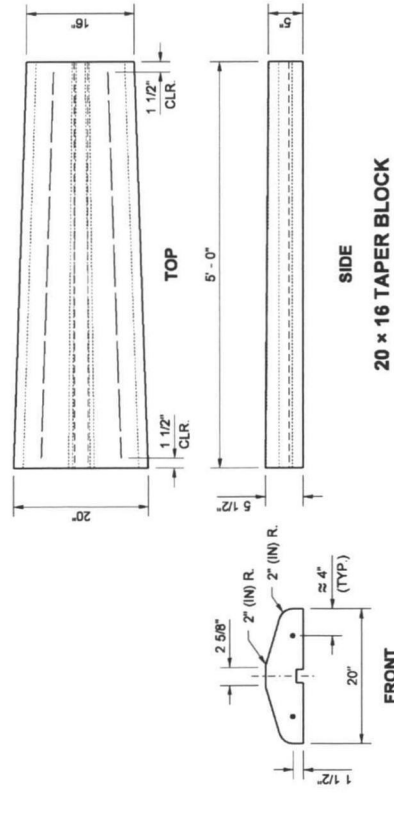
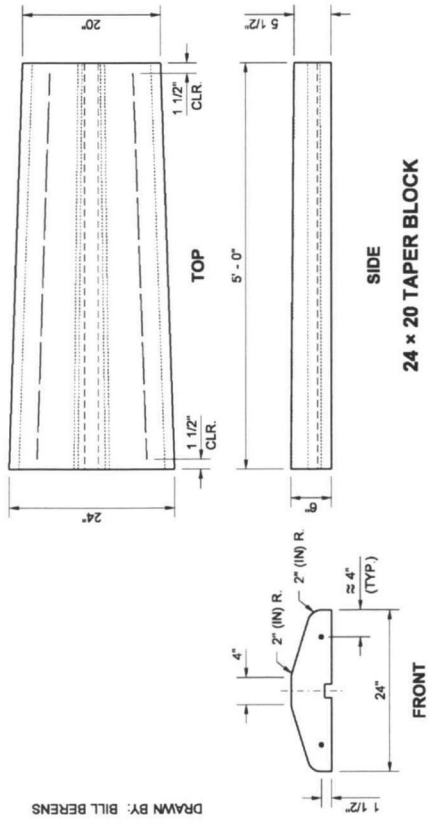
CEMENT CONCRETE CURBS

STANDARD PLAN F-10.12-04

SHEET 1 OF 1 SHEET

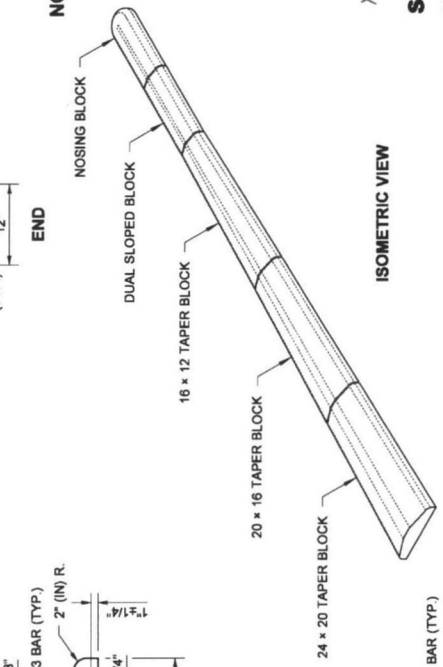
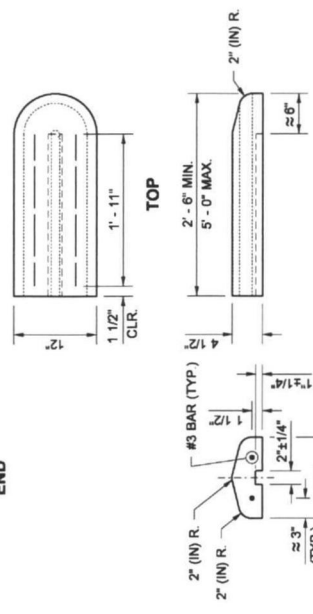
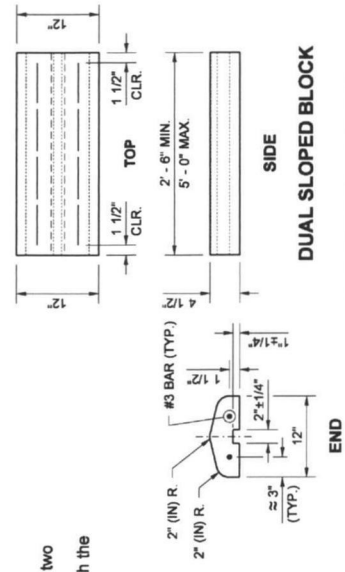
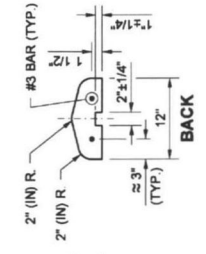
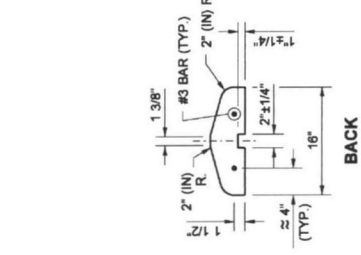
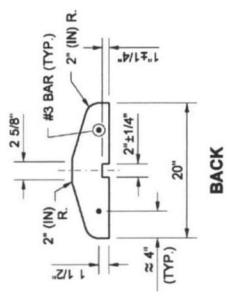
APPROVED FOR PUBLICATION
Date: 2020.09.24
07:57:43 -0700

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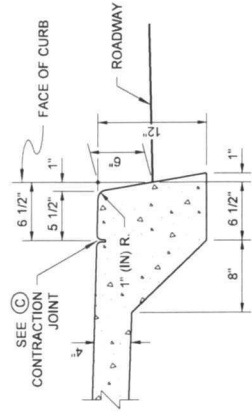
NOTES

1. The dual faced curb may be constructed by using two precast sloped mountable curbs (longitudinal halves) so long as the installation is consistent with the dimensions shown in the plan.
2. Reinforcing steel shall conform to **Standard Specification 9-07**.



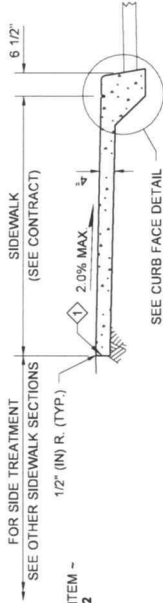
Bakotch, Pasco
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**PRECAST DUAL FACED
SLOPED MOUNTABLE CURB
STANDARD PLAN F-10.64-03**

SHEET 1 OF 1 SHEET
APPROVED FOR PUBLICATION
Bakotch, Pasco
Apr 22 2014 9:21 AM
STATE DESIGN ENGINEER
Washington State Department of Transportation



CURB FACE DETAIL

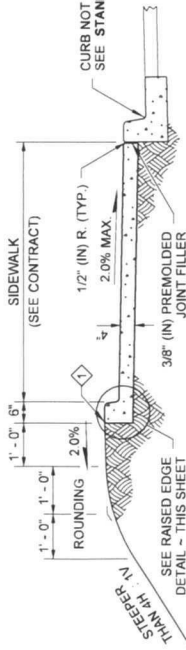
EXTEND SIDEWALK TRANSVERSE EXPANSION JOINTS TO INCLUDE CURB (FULL DEPTH)



MONOLITHIC CEMENT CONCRETE CURB AND SIDEWALK

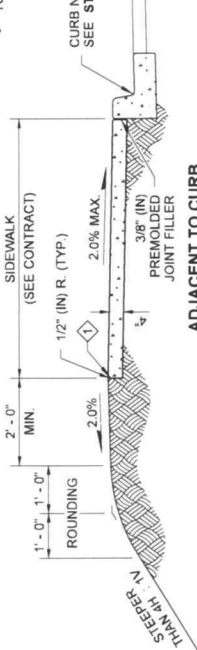
NOTE

- Gratings, Access Covers, Junction Boxes, Cable Vaults, Pull Boxes and other appurtenances within the sidewalk must have slip resistant surfaces, be flush with surface, and match grade of the sidewalk.

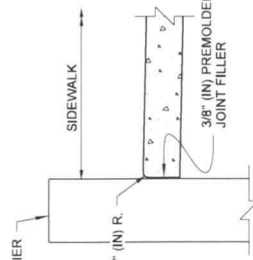


WITH RAISED EDGE

FINISHED GRADE 1" (IN) BELOW TOP OF CONCRETE SURFACE

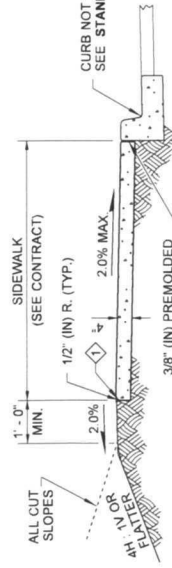


ADJACENT TO CURB (STEEP FILL SLOPES)



SIDEWALK ADJACENT TO WALL DETAIL

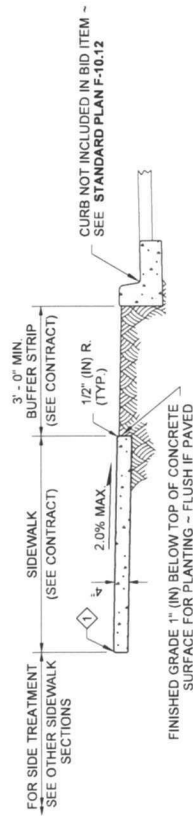
DRAWN BY: LISA CYFORD



ADJACENT TO CURB



ADJACENT TO CURB AND RAILING OR WALL



ADJACENT TO BUFFER STRIP



Michael S. Fleming
Digitally signed by Michael S. Fleming
Date: 2020.09.24 07:45:16 -0700

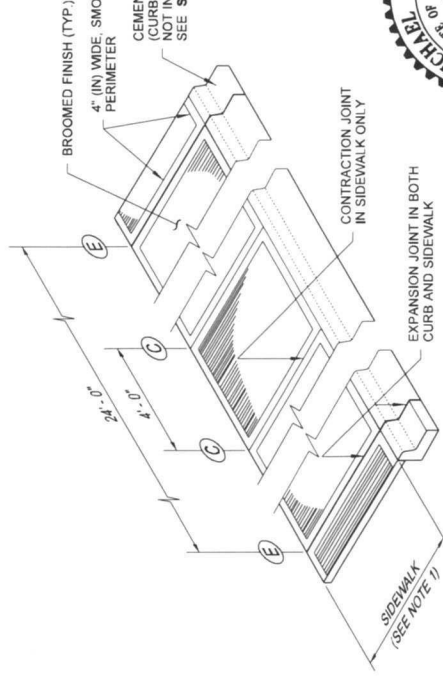
CEMENT CONCRETE SIDEWALK

STANDARD PLAN F-30.10-04

SHEET 1 OF 1 SHEET

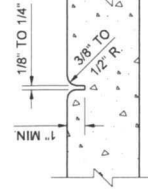
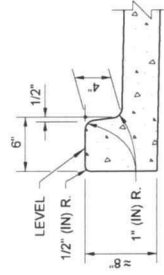
APPROVED FOR PUBLICATION
Date: 2020.09.25
15-43.50 -0700
STATE DESIGN ENGINEER
Washington State Department of Transportation

ISOMETRIC VIEW JOINT AND FINISH DETAIL

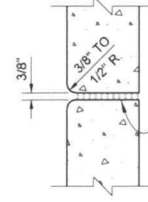


RAISED EDGE DETAIL

EXTEND SIDEWALK TRANSVERSE JOINTS TO INCLUDE RAISED EDGE



(C) CONTRACTION JOINT

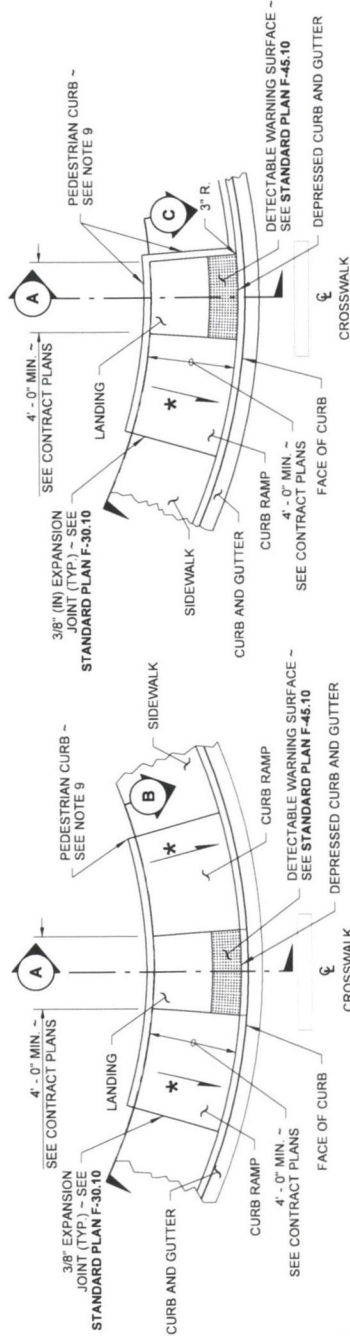


(E) EXPANSION JOINT

PREMOLED JOINT FILLER

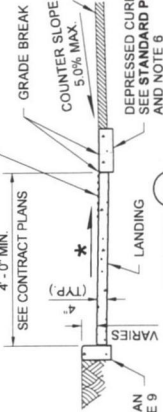
NOTES

- At marked crosswalks, the connection between the landing and the roadway must be contained within the width of the crosswalk markings.
- Where "GRADE BREAK" is called out, the entire length of the grade break between the two adjacent surface planes shall be flush.
- 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.
- See Contract Plans for the curb design specified. See **Standard Plan F-10.12** for Curb, Curb and Gutter, Depressed Curb and Gutter, and Pedestrian Curb details.
- See **Standard Plan F-30.10** for Cement Concrete Sidewalk Details.
- See Contract Plans for width and placement of sidewalk.
- The Bid Item "Cement Concrete Curb Ramp Type ___" does not include the adjacent Curb, Curb and Gutter, Depressed Curb and Gutter, Pedestrian Curb, or Sidewalks.
- The Curb Ramp length is not required to exceed 15 feet (unless otherwise shown in the Contract Plans). When applying the 15-foot 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 feet. Do not include abutting landing(s) in the 15-foot max. measurement. When a ramp is constructed on a radius, the 15-foot max. length is measured on the inside radius along the back of the walkway.
- Curb Ramps and Landings shall receive a broom finish. See **Standard Specifications 8-14**.
- 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.



PLAN VIEW TYPE PARALLEL B

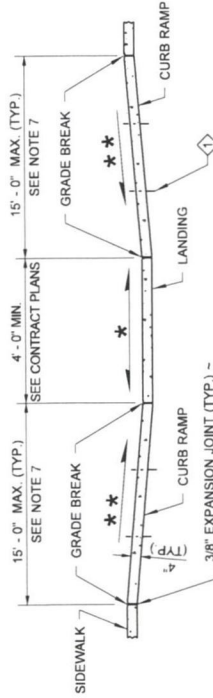
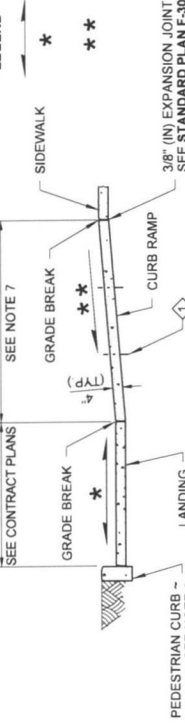
PLAN VIEW TYPE PARALLEL A



CONTRACTION JOINT (TYP.) - SEE STANDARD PLAN F-30.10 FOR CURB RAMP LENGTHS GREATER THAN 8'-0" PROVIDE CONTRACTION JOINT EQUALLY SPACED 4'-0" MIN. OC.

SECTION A

LEGEND

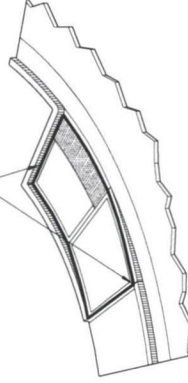
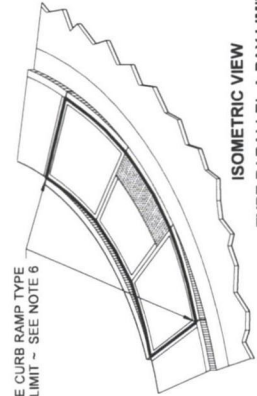


SECTION B

SECTION C

(ALONG INSIDE RADIUS AT BACK OF WALKWAY)

"CEMENT CONCRETE CURB RAMP TYPE PARALLEL B" PAY LIMIT - SEE NOTE 6



Zeller, Scott
Jun 24 2016 7:19 AM

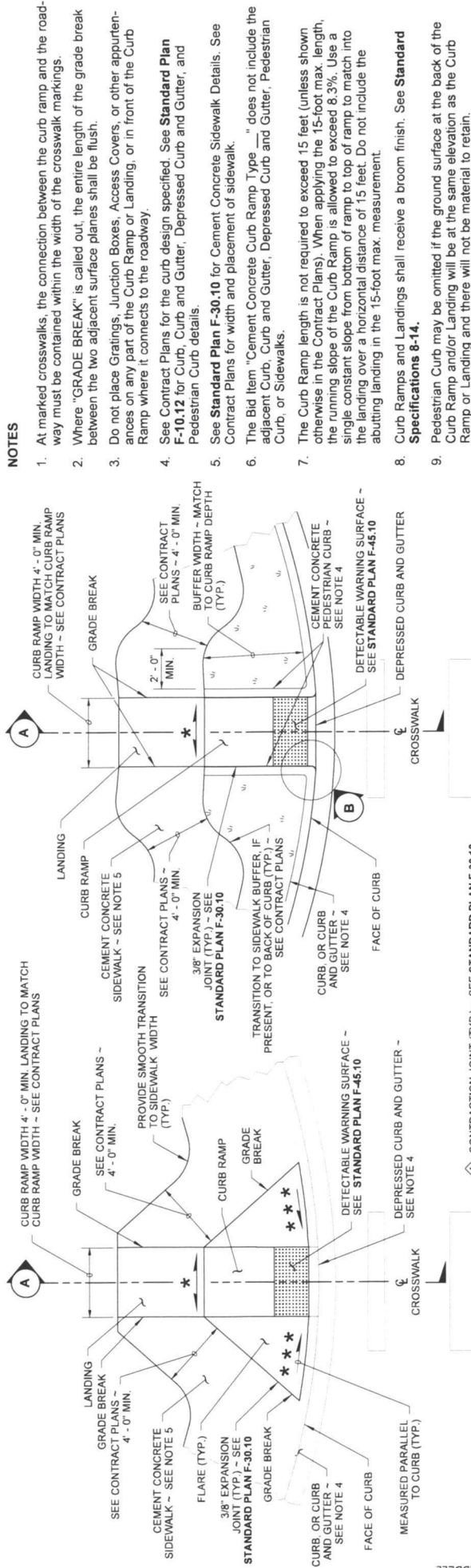
PARALLEL CURB RAMP

STANDARD PLAN F-40.12-03

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Carpeenter, Jeff
Jun 29 2016 2:27 PM





DRAWN BY: FERN LIDDELL



Digitally signed by R. Scott Zeller
Date: 2020.09.22 13:23:53 -0700

PERPENDICULAR CURB RAMP

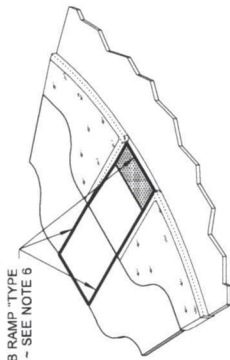
STANDARD PLAN F-40.15-04

SHEET 1 OF 1 SHEET

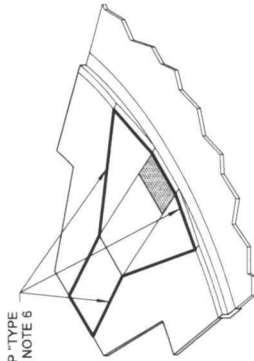
APPROVED FOR PUBLICATION
Date: 2020.09.25
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STATE DESIGN ENGINEER
Washington State Department of Transportation

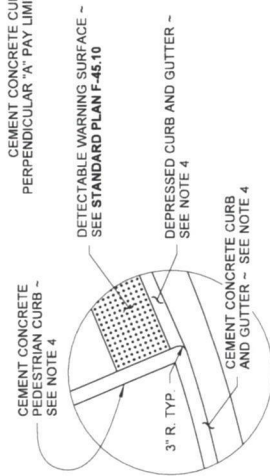
- LEGEND**
- ★ SLOPE IN EITHER DIRECTION 1.5% OR FLATTER RECOMMENDED FOR DESIGN/FORMWORK (2% MAX.)
 - ★★ 7.5% OR FLATTER RECOMMENDED FOR DESIGN/FORMWORK (8.3% MAX.)
 - ★★★ 9.5% OR FLATTER RECOMMENDED FOR DESIGN/FORMWORK (10% MAX.)



CEMENT CONCRETE CURB RAMP "TYPE PERPENDICULAR "B" PAY LIMIT - SEE NOTE 6

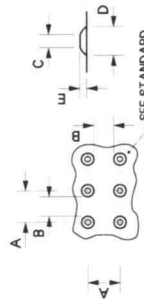


CEMENT CONCRETE CURB RAMP "TYPE PERPENDICULAR "A" PAY LIMIT - SEE NOTE 6

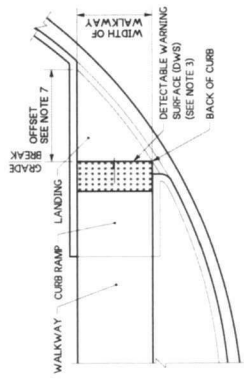


CURB RADIUS DETAIL B

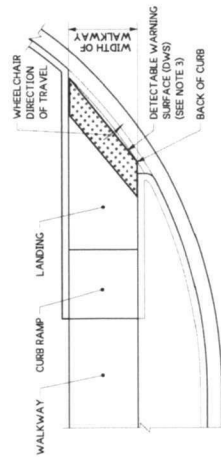
	MIN.	MAX.
A	160"	240"
B	0.65'	0.90'
C	0.45'	0.90'
D	0.90'	1.40'
E	0.20'	0.20'



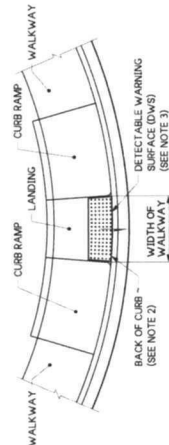
TRUNCATED DOME DETAILS
(SEE NOTE 3)



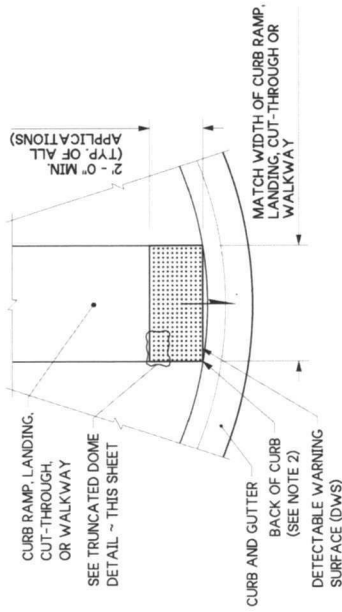
SINGLE DIRECTION CURB RAMP
(GRADE BREAK BETWEEN CURB AND LANDING < 5 FEET FROM BACK OF CURB)
(SEE NOTE 5)



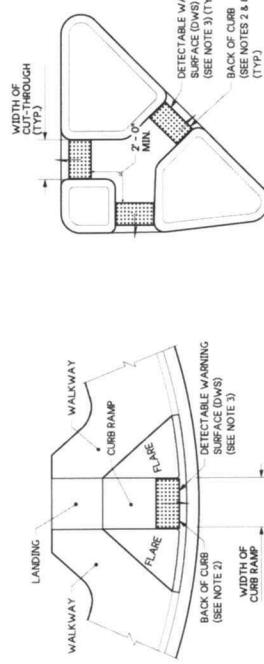
SINGLE DIRECTION CURB RAMP
(GRADE BREAK BETWEEN CURB AND LANDING > 5 FEET FROM BACK OF CURB)
(SEE NOTE 5)



PARALLEL CURB RAMP
(SEE NOTE 6)

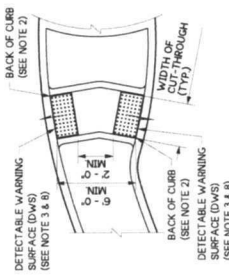


DETECTABLE WARNING SURFACE DETAIL

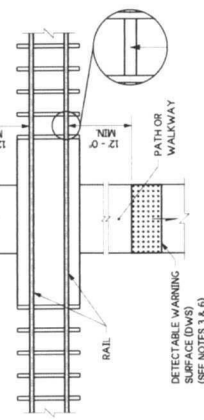


ISLAND CUT-THROUGH

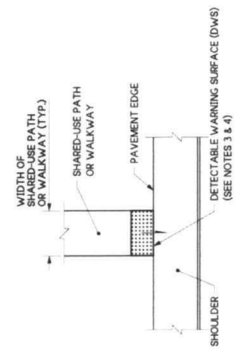
PERPENDICULAR CURB RAMP
(SEE NOTE 6)



ROUNDABOUT SPLITTER ISLAND



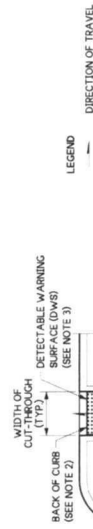
PEDESTRIAN RAILROAD CROSSING



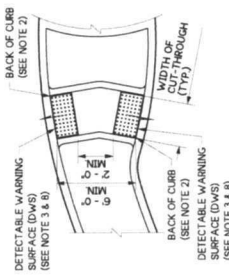
SHARED-USE PATH CONNECTION

NOTES:

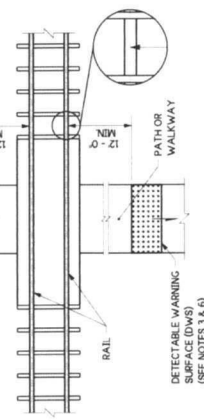
- Permanent Detectable Warning Surfaces (DWS) shall extend the full width of the curb ramp, landing, or other roadway entrance as applicable. Exception: If the manufacturer of the DWS requires a concrete border around the DWS, a variance of up to 2' (in) on each side of the DWS is permitted.
- Permanent Detectable Warning Surfaces (DWS) shall be placed on a minimum 4" (in) thick concrete pad. The DWS panel shall be placed adjacent to the back of the curb and with no more than a 2' (in) gap between the DWS and the back of the curb measured at the center of the DWS panel. Exception: If the Manufacturer of the selected DWS requires a concrete border around the DWS, a variance of up to 2' (in) from the back of the curb is permitted (measured at the leading corners of the DWS panel).
- The rows of truncated domes shall be aligned to be parallel to the direction of travel and perpendicular to the grade break at the back of curb.
- If curb and gutter are not present, such as a shared-use path connection, the Detectable Warning Surface shall be placed at the pavement edge.
- See Standard Plans for sidewalk and curb ramp details.
- If a curb ramp is required, the location of the Detectable Warning Surface must be at the bottom of the ramp and within the required distance from the rail crossing.
- When the grade break between the curb ramp and the landing is less than or equal to 5 feet from the back of curb at all points, place the Detectable Warning Surface on the bottom of the curb ramp directly above the grade break.
- Glued or stick down Detectable Warning Surfaces are allowed only for temporary work zone applications.



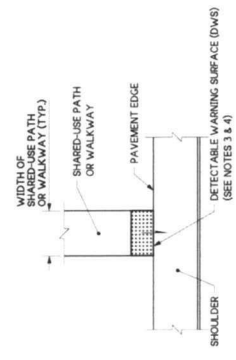
ISLAND CUT-THROUGH



ROUNDABOUT SPLITTER ISLAND



PEDESTRIAN RAILROAD CROSSING



SHARED-USE PATH CONNECTION



Jun 4, 2024

DETECTABLE WARNING SURFACE

STANDARD PLAN F-45.10-05

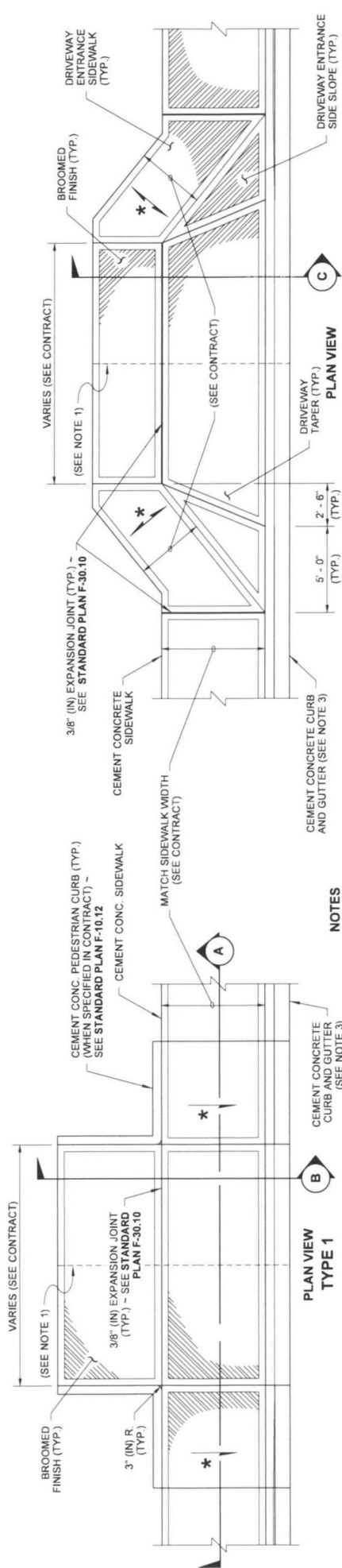
SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Jun 4, 2024

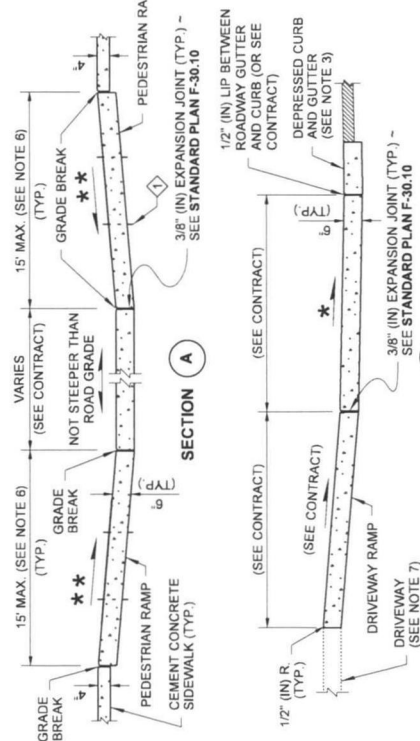
STATE DESIGN ENGINEER

Washington State Department of Transportation



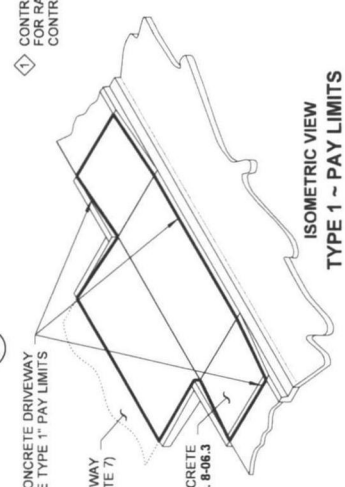
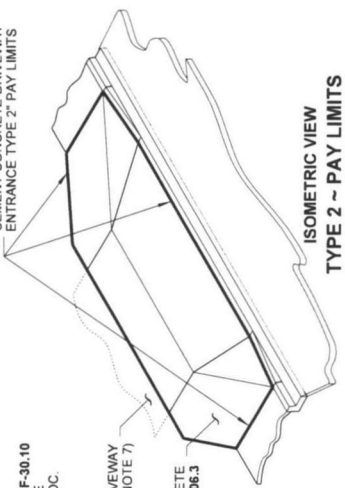
NOTES

- When the driveway width exceeds 15' (ft), construct a full depth expansion joint with 3/8" (in) joint filler along the driveway centerline. See **Standard Plan F-30.10**. Construct expansion joints parallel with the centerline as required at 15' (ft) maximum spacing when driveway widths exceed 30' (ft).
- See **Standard Plan F-30.10** for sidewalk details.
- Curb and Gutter shown; see the Contract Plans for the curb design specified. See **Standard Plan F-10.12** for Curb Details.
- Avoid placing drainage structures, junction boxes or other obstructions in front of driveway entrances.
- Where "GRADE BREAK" is called out, the entire length of the line between the two adjacent surface planes shall be flush.
- The Pedestrian Ramp length is not required to exceed 15 feet (unless otherwise shown in the Contract Plans). When applying the 15-foot max. length (measured from back of sidewalk) the running slope of the pedestrian 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 feet.
- Beyond limits shown. Pay item does not include driveway. See Contract Plans.



LEGEND

- SLOPE IN EITHER DIRECTION
- 1.5% OR FLATTER RECOMMENDED FOR DESIGN/FORMWORK (2% MAX.)
 - 7.5% OR FLATTER RECOMMENDED FOR DESIGN/FORMWORK (8.3% MAX.) (SEE NOTE 6)



Zeller, Scott
Jul 12 2016 4:26 PM

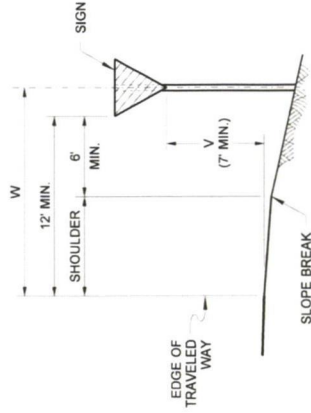
CEMENT CONCRETE DRIVEWAY ENTRANCE TYPES 1, 2, 3, & 4 **STANDARD PLAN F-80.10-04** SHEET 1 OF 2 SHEETS

APPROVED FOR PUBLICATION
Carpenter, Jeff
Jul 13 2016 2:27 PM

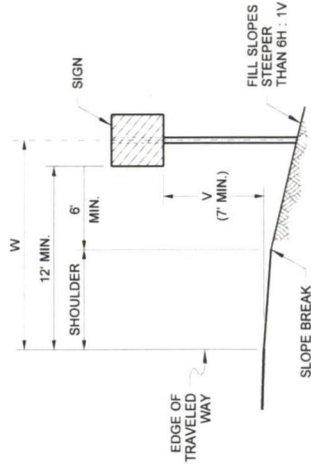
STATE DESIGN ENGINEER
Washington State Department of Transportation

NOTES

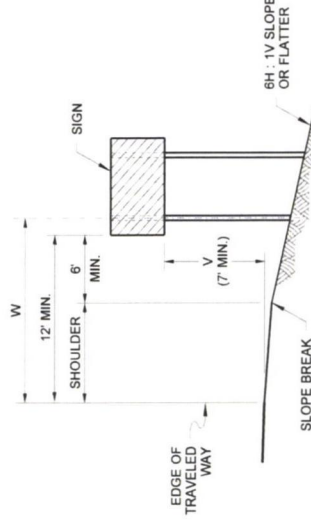
1. Refer to the Sign Specification Sheet of the Contract for the "V" and "W" distances.
2. The minimum vertical distance from the bottom of the sign to the ground shall not be less than 7' (ft) for signs located within the Design Clear Zone.



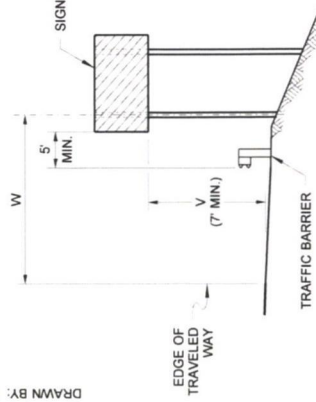
SIGN INSTALLATION
IN FILL SECTION



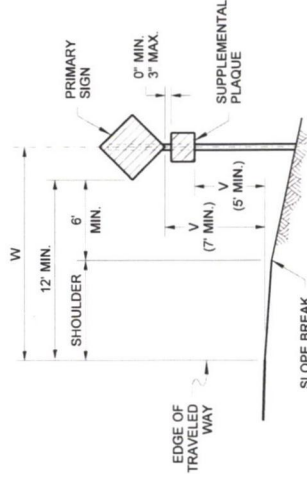
SIGN INSTALLATION
ON STEEP FILL SLOPES



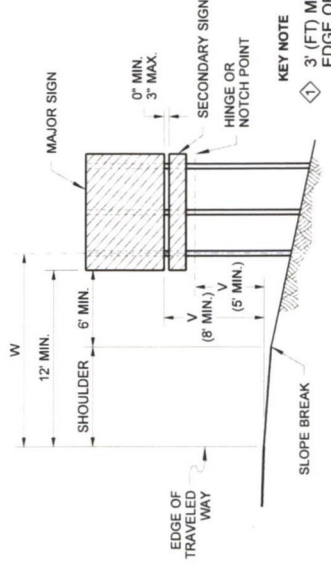
MULTIPLE SIGN POST INSTALLATION
IN FILL SECTION



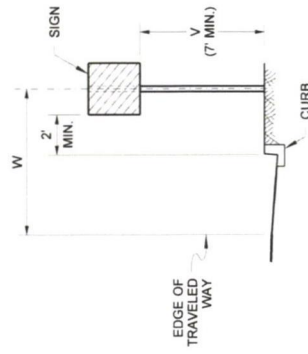
SIGN INSTALLATION
BEHIND TRAFFIC BARRIER



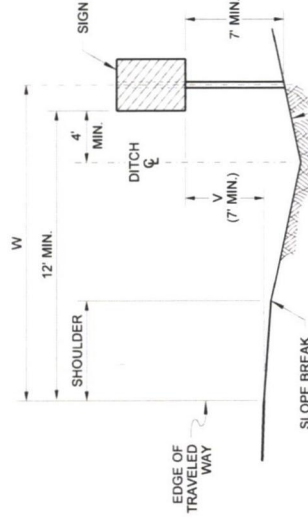
SIGN WITH SUPPLEMENTAL
PLAQUE INSTALLATION
IN FILL SECTION



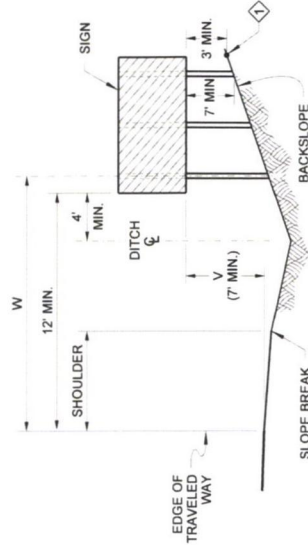
GUIDE OR DIRECTIONAL SIGN WITH
SECONDARY SIGN INSTALLATION ON
EXPRESSWAYS AND FREEWAYS



SIGN INSTALLATION
IN CURB SECTION



SIGN INSTALLATION
IN DITCH SECTION



MULTIPLE SIGN POST INSTALLATION
IN DITCH SECTION



Aug 20, 2021

GROUND MOUNTED SIGN PLACEMENT STANDARD PLAN G-20.10-03

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Aug 20, 2021

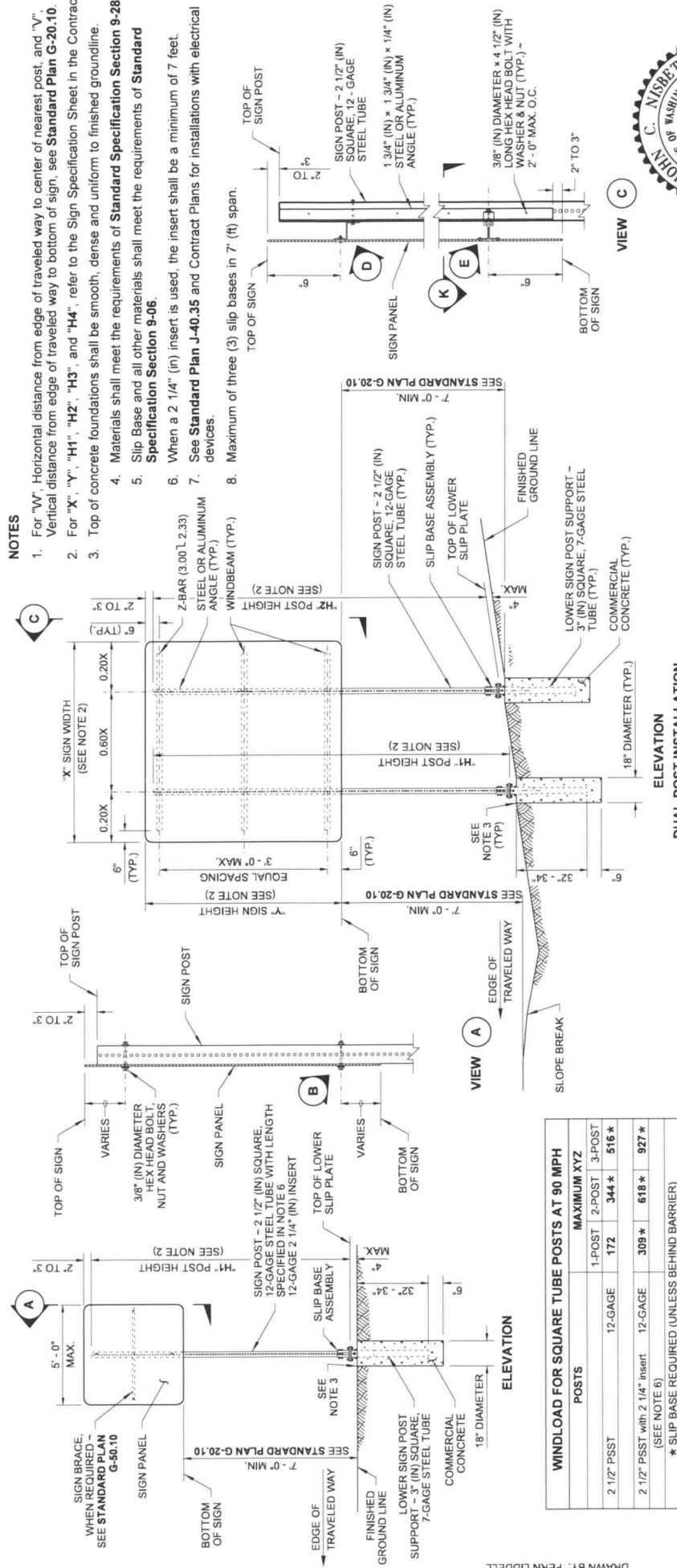
STATE DESIGN ENGINEER

Washington State Department of Transportation



NOTES

- For "W", Horizontal distance from edge of traveled way to center of nearest post, and "V", Vertical distance from edge of traveled way to bottom of sign, see **Standard Plan G-20.10**.
- For "X", "Y", "H1", "H2", "H3", and "H4", refer to the Sign Specification Sheet in the Contract.
- Top of concrete foundations shall be smooth, dense and uniform to finished groundline.
- Materials shall meet the requirements of **Standard Specification Section 9-28**.
- Slip Base and all other materials shall meet the requirements of **Standard Specification Section 9-06**.
- When a 2 1/4" (in) insert is used, the insert shall be a minimum of 7 feet.
- See **Standard Plan J-40.35** and Contract Plans for installations with electrical devices.
- Maximum of three (3) slip bases in 7' (ft) span.



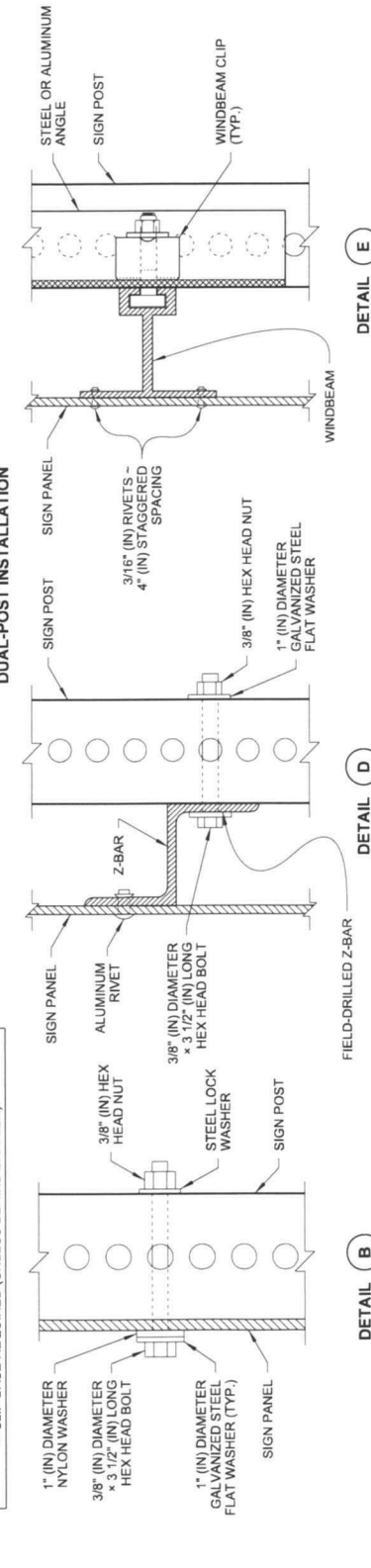
Nisbet, John
STEEL SIGN SUPPORT
TYPES SB-1, SB-2 & SB-3
INSTALLATION DETAILS
STANDARD PLAN G-24.40-07

Digitally signed by Nisbet, John
 Date: 2018.09.27 11:36:56 -0700

SHEET 1 OF 6 SHEETS

APPROVED FOR PUBLICATION
 Carpenter, Jeff
 Jan 25, 2018 10:39 AM

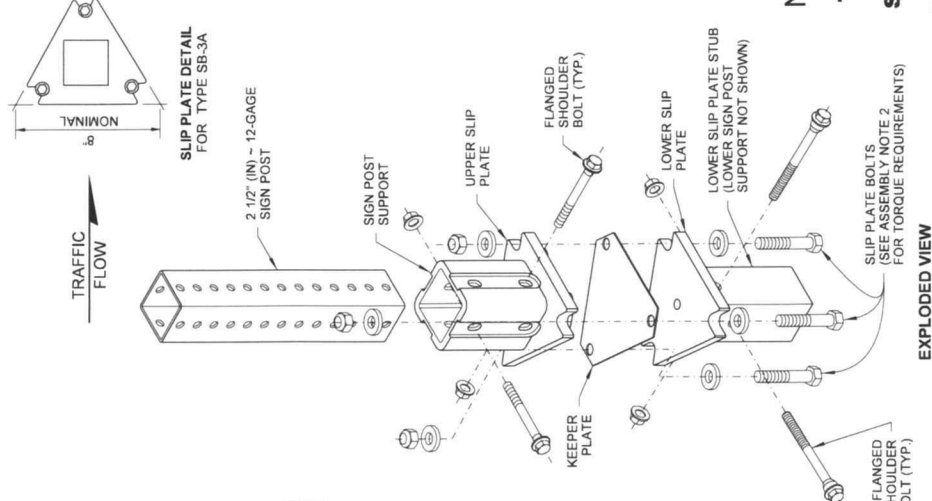
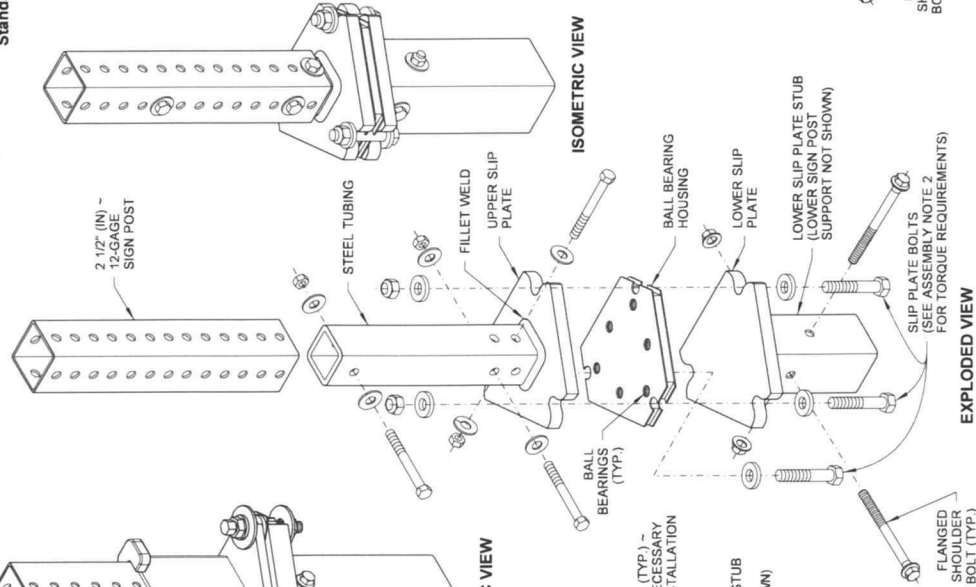
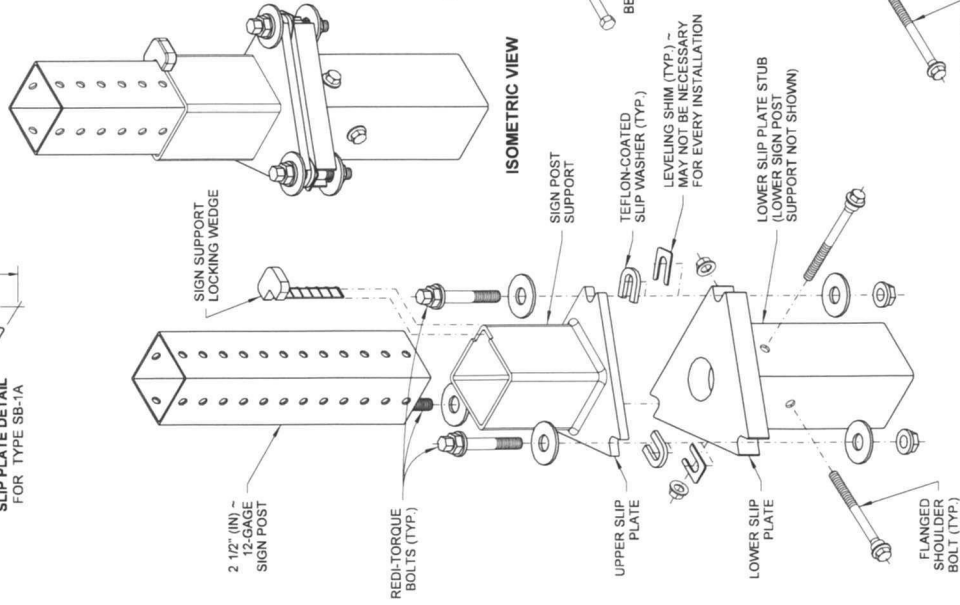
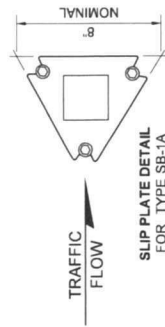
STATE DESIGN ENGINEER
 Washington State Department of Transportation



STEEL SIGN SUPPORT TYPES SB-1, SB-2 & SB-3 ~ 8" (IN)

ASSEMBLY NOTES

1. Dimensions for the parts used to assemble the base connections are intentionally not shown. Base connections are patented, manufactured products that are in compliance with NCHRP 350 crash test criteria. The base connection details are shown on this plan only to illustrate how the parts are assembled.
2. Do not tighten any single Slip Plate Bolt to the recommended torque before pretightening the other bolts. Progressively tighten the three Slip Plate Bolts in 10 ft-lb increments, alternately, to a final torque of 40 ft-lbs on each.
3. Slip Base assembly and all other materials shall meet the requirements of **Standard Specification Sections 9-06 and 9-28.**



Nisbet, John
STEEL SIGN SUPPORT
TYPES SB-1, SB-2 & SB-3
INSTALLATION DETAILS
STANDARD PLAN G-24.40-07

SHEET 2 OF 6 SHEETS

APPROVED FOR PUBLICATION

Engineer Jeff
 June 29, 2018 10:40 AM

STATE DESIGN ENGINEER

Washington State Department of Transportation

1. Dimensions for the parts used to assemble the base connections are intentionally not shown. Base connections are patented, manufactured products that are in compliance with NCHRP 350 crash test criteria. The base connection details are shown on this plan only to illustrate how the parts are assembled.

2. Do not tighten any single Slip Plate Bolt to the recommended torque before pre-tightening the other bolts. Progressively tighten the three Slip Plate Bolts in 10 ft-lb increments, alternately, to a final torque of 40 ft-lbs on each.
3. Slip Base assembly and all other materials shall meet the requirements of **Standard Specification Sections 9-06 and 9-28.**



SHEET 3 OF 6 SHEETS

APPROVED FOR PUBLICATION

Carpenter, Jeff
Jun 28 2018 10:40 AM

STATE DESIGN ENGINEER

Washington State Department of Transportation

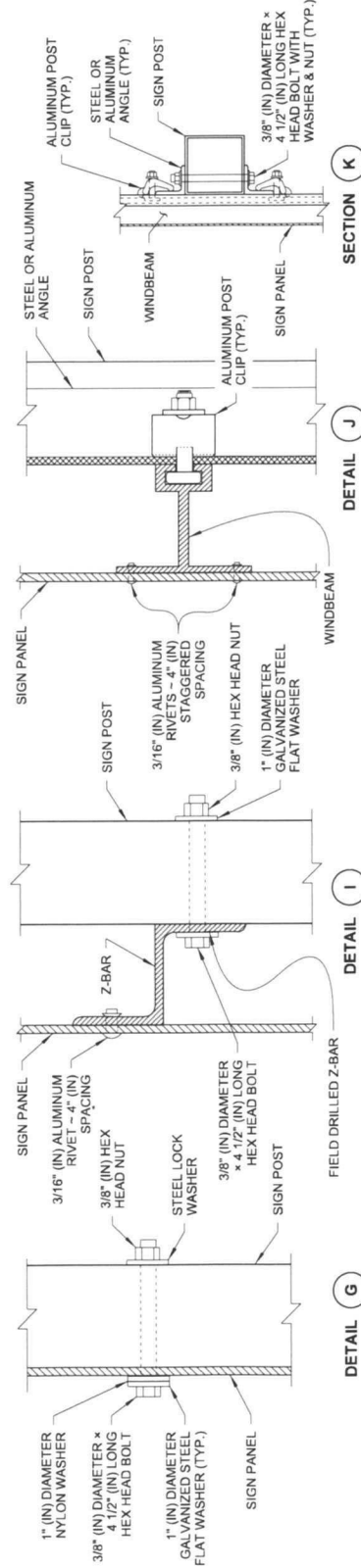
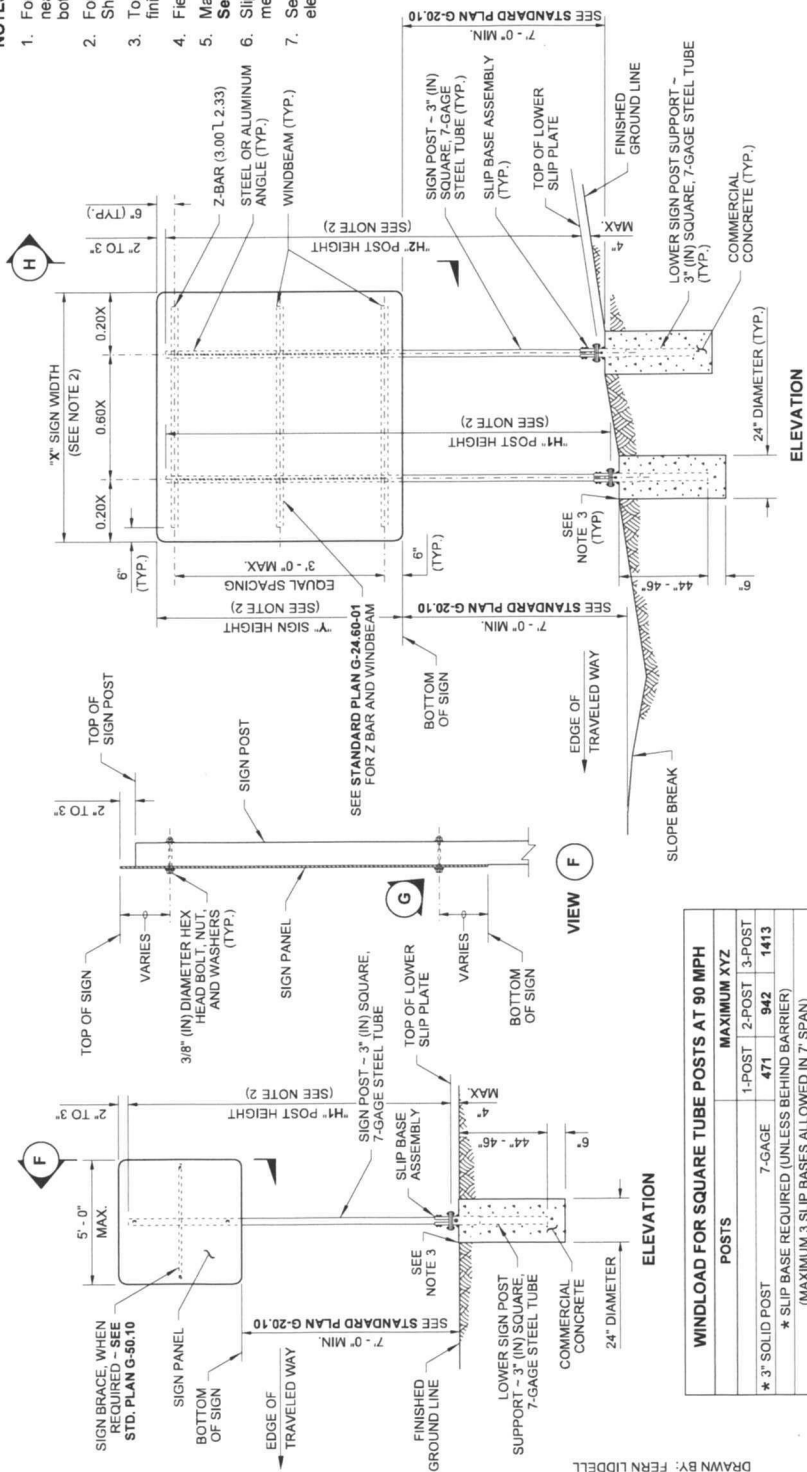


Nisbet, John
Digitally signed by Nisbet, John
Date: 2018.06.27 11:37:51 -0700

**STEEL SIGN SUPPORT
TYPES SB-1, SB-2 & SB-3
INSTALLATION DETAILS
STANDARD PLAN G-24.40-07**

NOTES

- For "W", Horizontal distance from edge of traveled way to center of nearest post, and "V", Vertical distance from edge of traveled way to bottom of sign, see **Standard Plan G-20.10**.
- For "X", "Y", "H1", "H2", "H3", and "H4", refer to the Sign Specification Sheet in the Contract.
- Top of concrete foundation shall be smooth, dense, and uniform to finished ground line.
- Field drill posts to accept angle and cold galvanized holes.
- Materials shall meet the requirements of **Standard Specification Section 9-28**.
- Slip Base assembly and all other materials shall meet the requirements of **Standard Specification Sections 9-06 and 9-28**.
- See **Standard Plan J-40.35** and Contract Plans for installations with electrical devices.



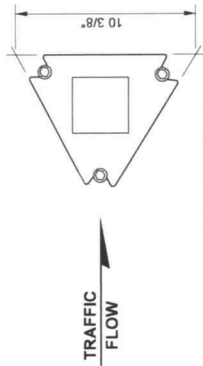
Nisbet, John
STEEL SIGN SUPPORT
TYPES SB-1, SB-2 & SB-3
INSTALLATION DETAILS
STANDARD PLAN G-24.40-07

SHEET 4 OF 6 SHEETS
 APPROVED FOR PUBLICATION
 Carpenter, Jeff
 Jan 30, 2018 10:46 AM
 STATE DESIGN ENGINEER
 Washington State Department of Transportation

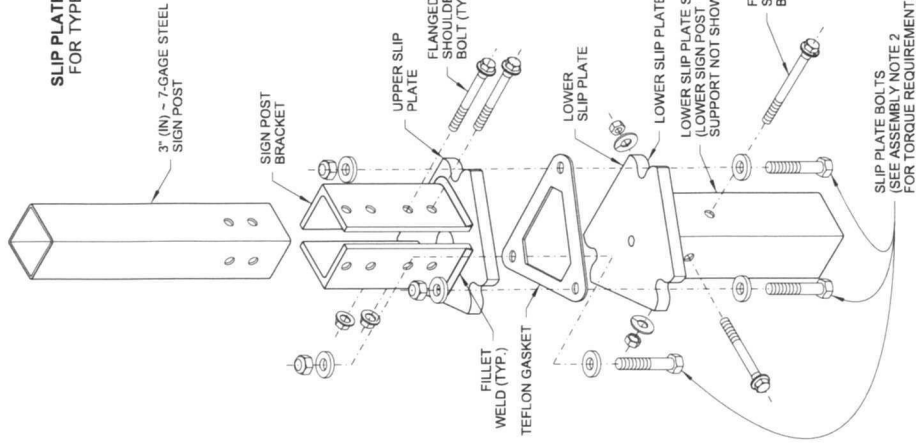
STEEL SIGN SUPPORT TYPES SB-1, SB-2 & SB-3 ~ 10" (IN)

ASSEMBLY NOTES

1. Dimensions for the parts used to assemble the base connections are intentionally not shown. Base connections are patented, manufactured products that are in compliance with NCHRP 350 crash test criteria. The base connection details are shown on this plan only to illustrate how the parts are assembled.
2. Do not tighten any single Slip Plate Bolt to the recommended torque before pretightening the other bolts. Progressively tighten the three Slip Plate Bolts in 10 ft-lb increments, alternately, to a final torque of 40 ft-lbs on each.
3. Use only Slip Base manufacturer supplied hardware that meets the requirements of Standard Specification Sections 9-06 and 9-28.

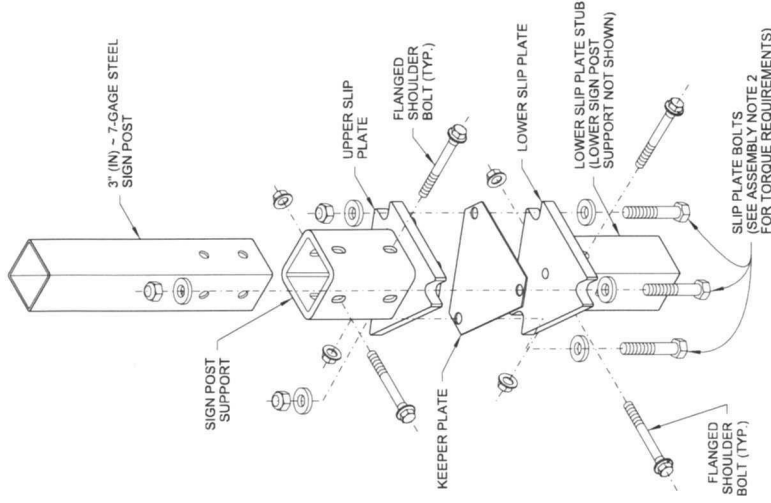


SLIP PLATE DETAIL
FOR TYPE SB-1A



EXPLODED VIEW

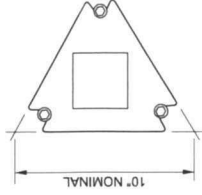
TYPE SB-1A
SLIP BASE ASSEMBLY



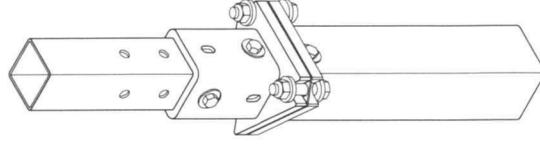
EXPLODED VIEW

TYPE SB-3A
SLIP BASE ASSEMBLY

TRAFFIC
FLOW



SLIP PLATE DETAIL
FOR TYPE SB-3A



ISOMETRIC VIEW



Nisbet, John
Digitally signed by Nisbet, John
Date: 2018.06.27 11:38:43 -0700

STEEL SIGN SUPPORT TYPES SB-1, SB-2 & SB-3 INSTALLATION DETAILS STANDARD PLAN G-24.40-07

SHEET 5 OF 6 SHEETS

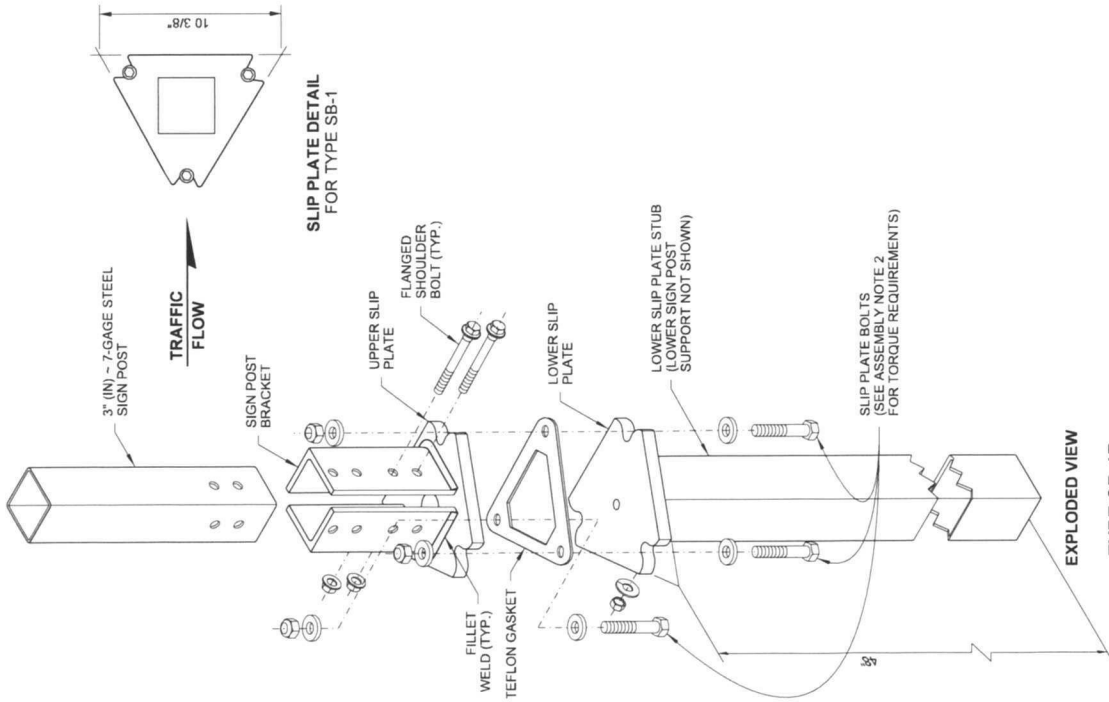
APPROVED FOR PUBLICATION
Carpenter, Jeff
Jun 28, 2018 10:40 AM



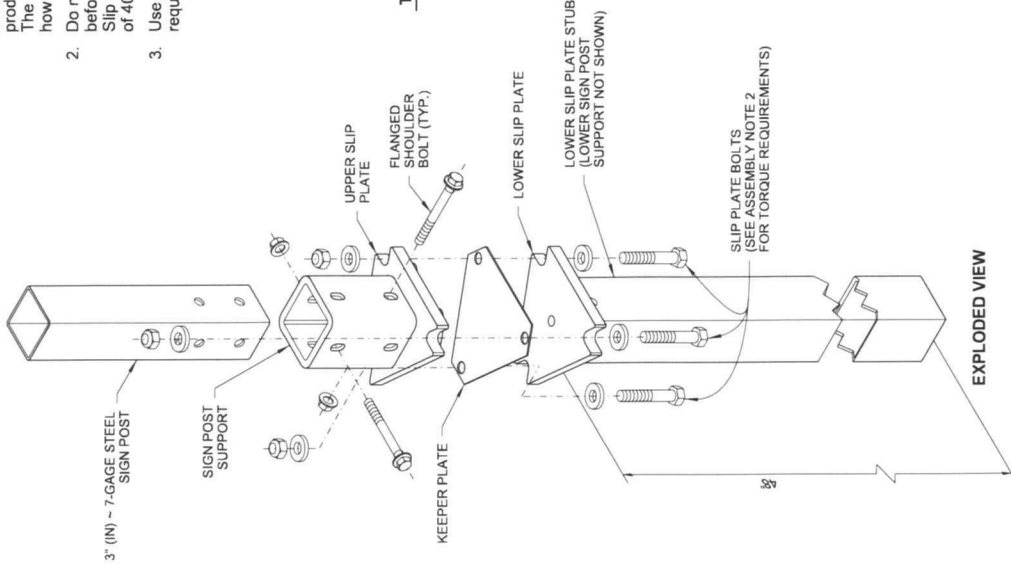
STEEL SIGN SUPPORT TYPES SB-1A & SB-3A ~ 10" (IN)

ASSEMBLY NOTES

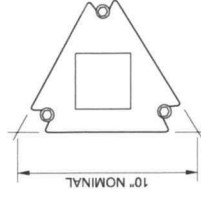
1. Dimensions for the parts used to assemble the base connections are intentionally not shown. Base connections are patented, manufactured products that are in compliance with NCHRP 350 crash test criteria. The base connection details are shown on this plan only to illustrate how the parts are assembled.
2. Do not tighten any single Slip Plate Bolt to the recommended torque before pretightening the other bolts. Progressively tighten the three Slip Plate Bolts in 10 ft-lb increments, alternately, to a final torque of 40 ft-lbs on each.
3. Use only Slip Base manufacturer supplied hardware that meets the requirements of **Standard Specification Sections 9-06 and 9-28.**



TYPE SB-1B
SLIP BASE ASSEMBLY



TYPE SB-3B
SLIP BASE ASSEMBLY



SLIP PLATE DETAIL
FOR TYPE SB-3

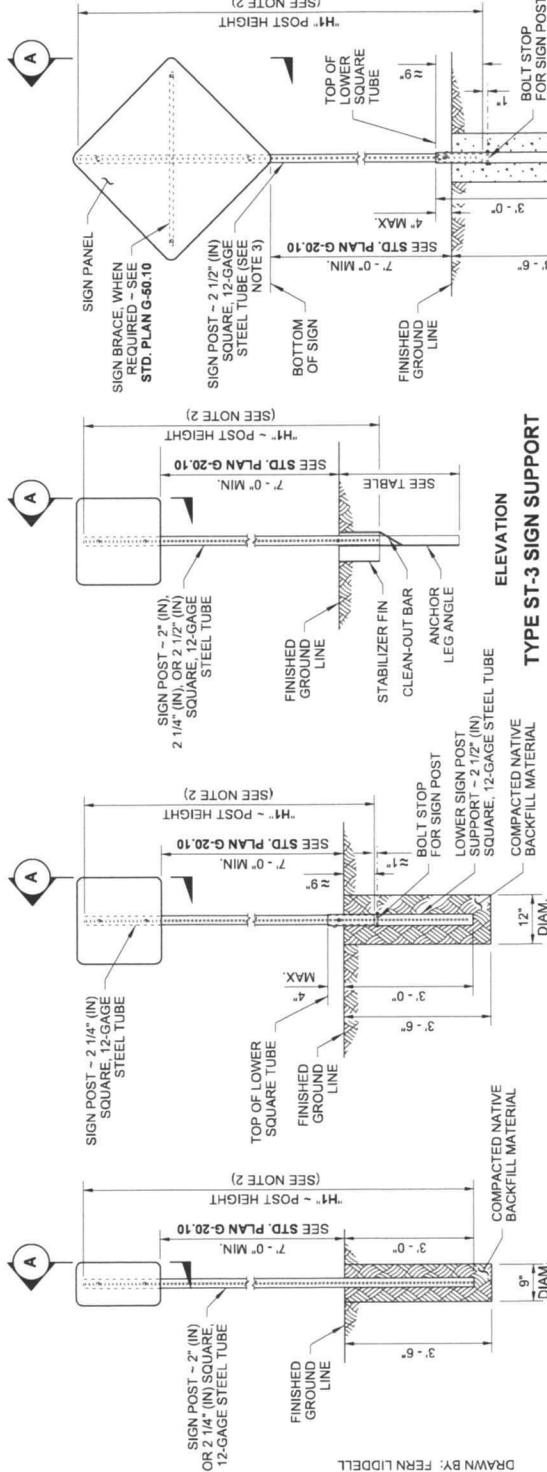


Nisbet, John
**STEEL SIGN SUPPORT
 TYPES SB-1, SB-2 & SB-3
 INSTALLATION DETAILS
 STANDARD PLAN G-24.40-07**

SHEET 6 OF 6 SHEETS
 APPROVED FOR PUBLICATION
 Carpenter, Jeff
 Jan 28, 2016 10:40 AM
 STATE DESIGN ENGINEER
 Washington State Department of Transportation

NOTES

- Dimensions for the parts used to assemble the base connections are intentionally not shown. Base connections are patented, manufactured products that are in compliance with NCHRP 350 crash test criteria. The base connection details are shown on this plan only to illustrate how the parts are assembled.
- For "H1", refer to the Sign Specification Sheet in the Contract.
- A 2" (in) post with a 2 1/4" (in) PSST anchor or a 2 1/4" (in) post with a 2 1/2" (in) PSST anchor may be substituted. See Contract Plans.
- Perforated square steel post shall meet the requirements of **Standard Specification, Section 9-06**.
- Use only base connection manufacturer supplied hardware that meets the requirements of **Standard Specification, Sections 9-06 and 9-28**.

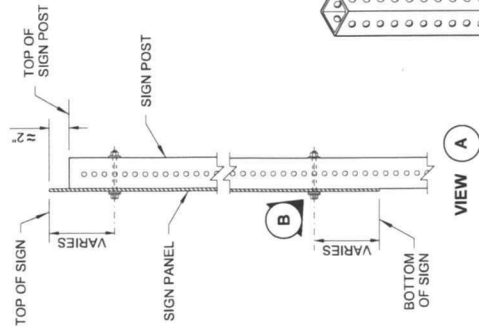


BURIED DEPTH	POST SIZE
2' - 6"	2" x 2 1/4"
3' - 0"	2 1/2"

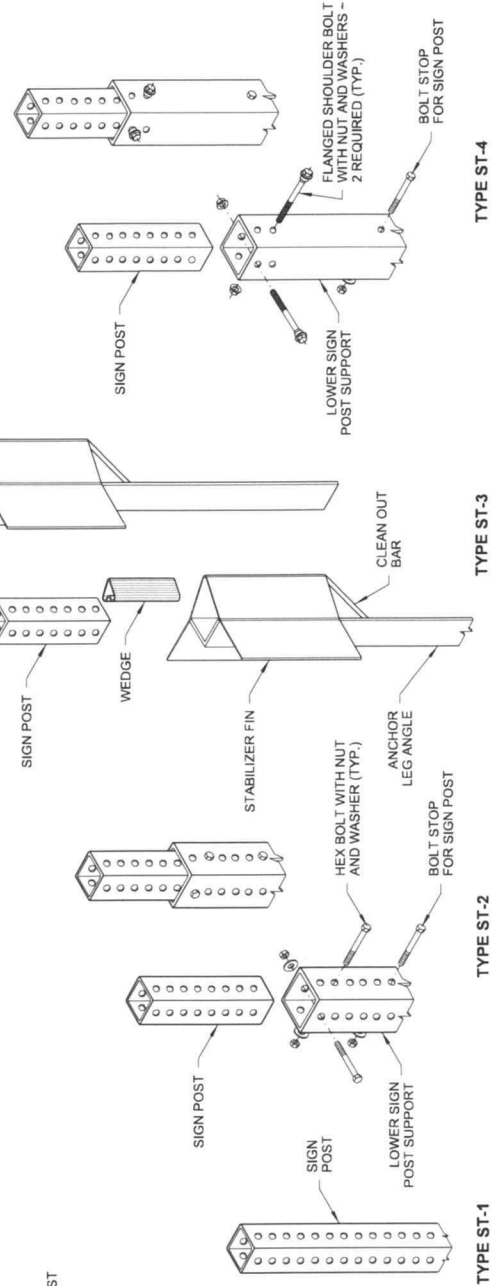
ELEVATION
TYPE ST-1 SIGN SUPPORT

ELEVATION
TYPE ST-2 SIGN SUPPORT

ELEVATION
TYPE ST-3 SIGN SUPPORT



ELEVATION
TYPE ST-4 SIGN SUPPORT



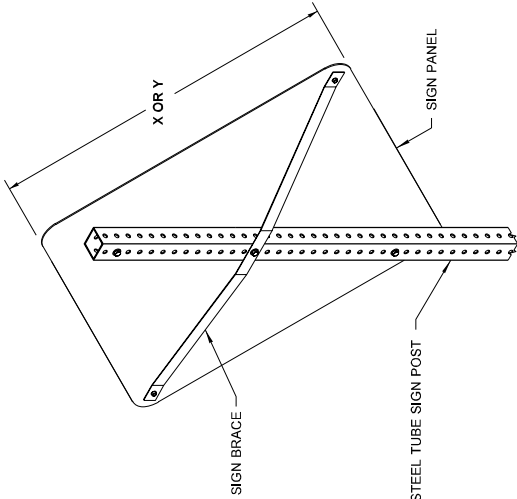
STEEL SIGN SUPPORT
TYPES ST-1 - ST-4
INSTALLATION DETAILS
STANDARD PLAN G-24.50-05

SHEET 1 OF 1 SHEET

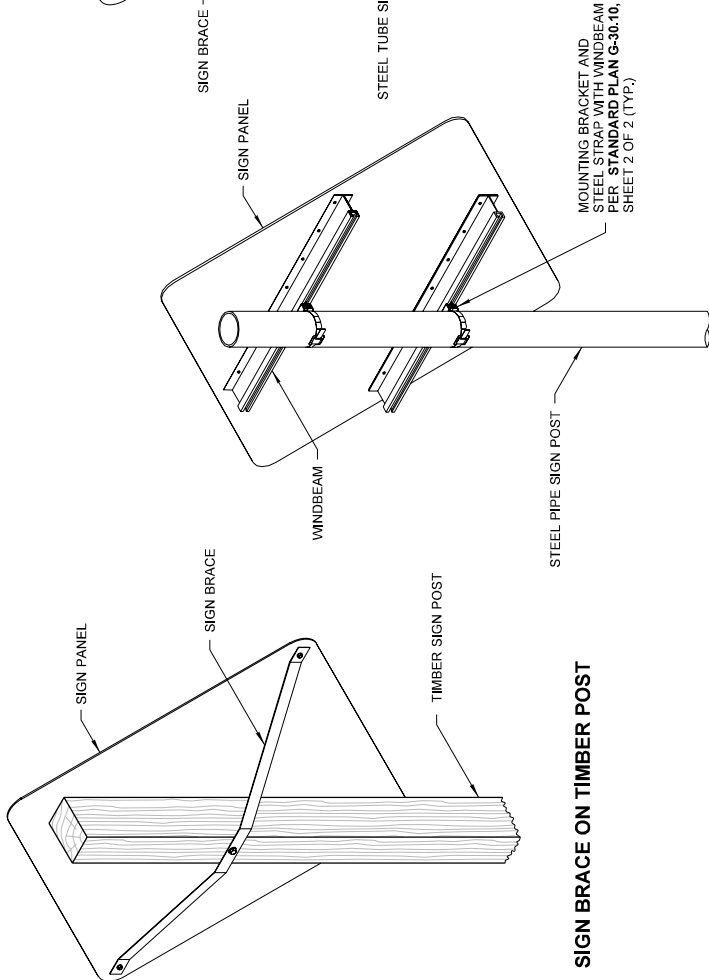
APPROVED FOR PUBLICATION
Rusk, Steve
Aug 7 2019 11:54 AM
STATE DESIGN ENGINEER
Washington State Department of Transportation

NOTES

1. Mounting brackets with steel straps shall be a stainless steel band and buckle system product or an approved equal. Mounting brackets shall be one bolt, flared leg; steel straps shall be 3/4" (in) wide and 0.030" (in) thick.
2. Sign braces are required for sign widths of 48" (in) or greater. For sign widths of 36" (in) or less, sign braces are only required when specified in the contract.
3. Sign braces are typically necessary on large sign panels that are exposed to high winds, traffic generated wind buffeting, or when snow thrown from plows might impact the sign.
4. A nylon washer shall be placed between the sign and the steel washer when the sign face has Type III, IV, VII or IX sheeting.
5. Signs 48" (in) or greater can be pinned together, back to back.
6. For signs installed back to back on a single post, no bracing is required.

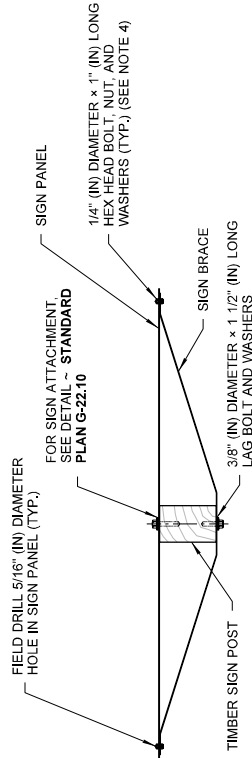


SIGN BRACE ON STEEL TUBE

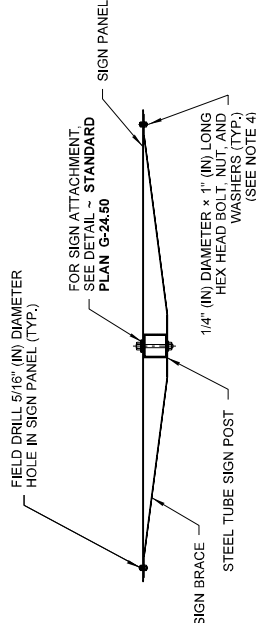


SIGN BRACE ON TIMBER POST

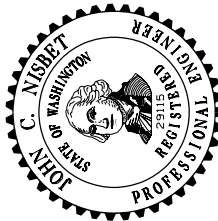
SIGN BRACE ON STEEL PIPE



PLAN



PLAN



Nisbet, John
Digitally signed by Nisbet, John
Date: 2016.06.27 11:42:32 -07'00'

SIGN BRACING

STANDARD PLAN G-50.10-03

SHEET 1 OF 2 SHEETS

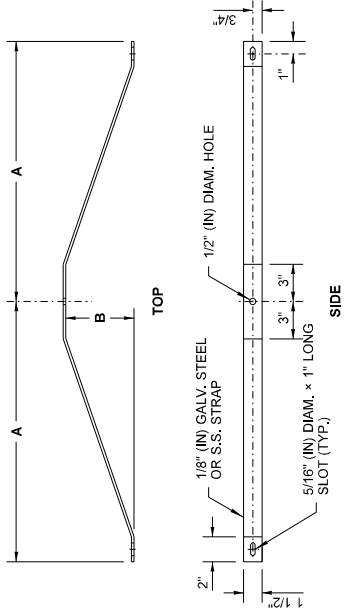
APPROVED FOR PUBLICATION
Carpenter, Jeff
Jun 28 2016 10:37 AM

STATE DESIGN ENGINEER
Washington State Department of Transportation

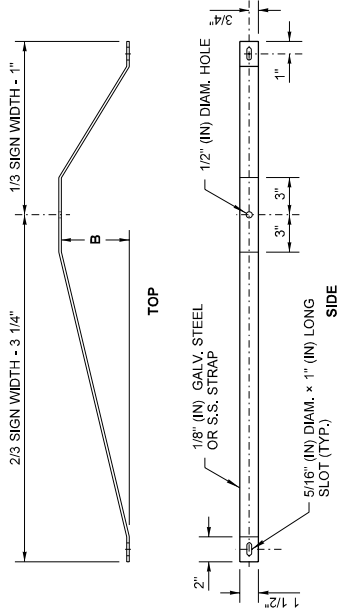
SIGN BRACE DIMENSIONS				
		SIGN TYPE		
		YIELD	DIAMOND-SHAPED	OTHERS
A	1/3 SIGN WIDTH - 1 3/4"	1/2 SIGN WIDTH - 2 1/4"	1/2 SIGN WIDTH - 1"	
SIGN POST TYPE				
	4x6 OR 6x6 TIMBER POST	6x8 TIMBER POST	3" DIAM. STEEL PIPE	2 1/2" SQUARE TUBE
B	5 1/2"	7 1/2"	4 3/4"	2 1/2"

NOTE

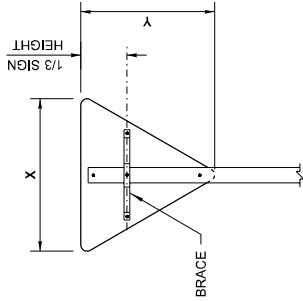
1. For sign installations on round steel posts, see **Standard Plan G-30.10, sheet 2 of 2.**



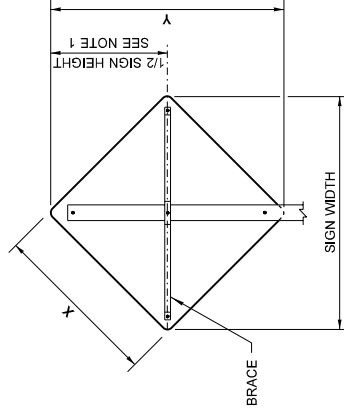
SIGN BRACE DETAIL



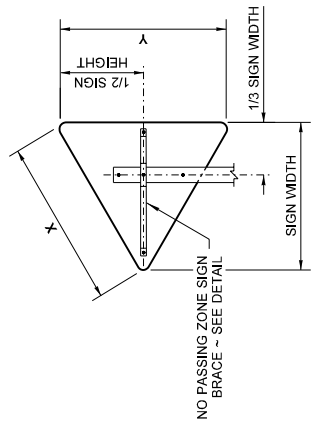
NO PASSING ZONE
SIGN BRACE DETAIL



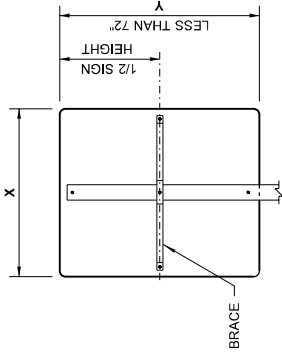
YIELD SIGN



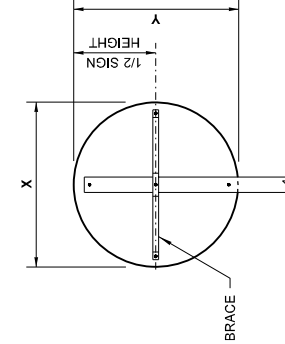
DIAMOND-SHAPED SIGN



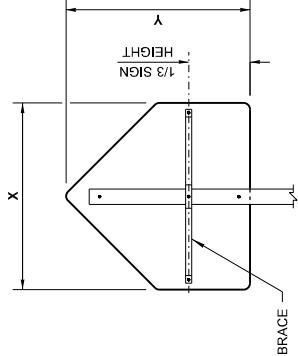
NO PASSING ZONE SIGN



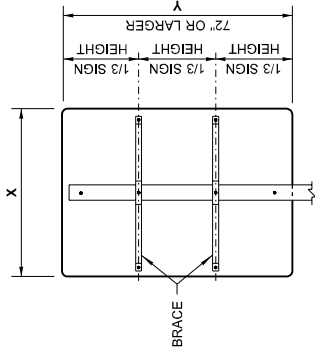
SMALL RECTANGULAR SIGN



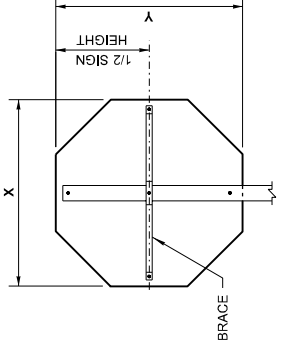
RAILROAD WARNING SIGN



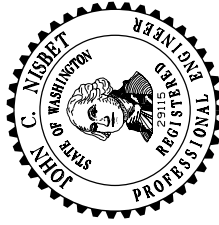
SCHOOL ZONE SIGN



LARGE RECTANGULAR SIGN



STOP SIGN



Nisbet, John
Digitally signed by Nisbet, John
Date: 2018.06.27 11:42:51
-0700

SIGN BRACING

STANDARD PLAN G-50.10-03

SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION
Carpenter, Jeff
Jun 28 2018 10:38 AM

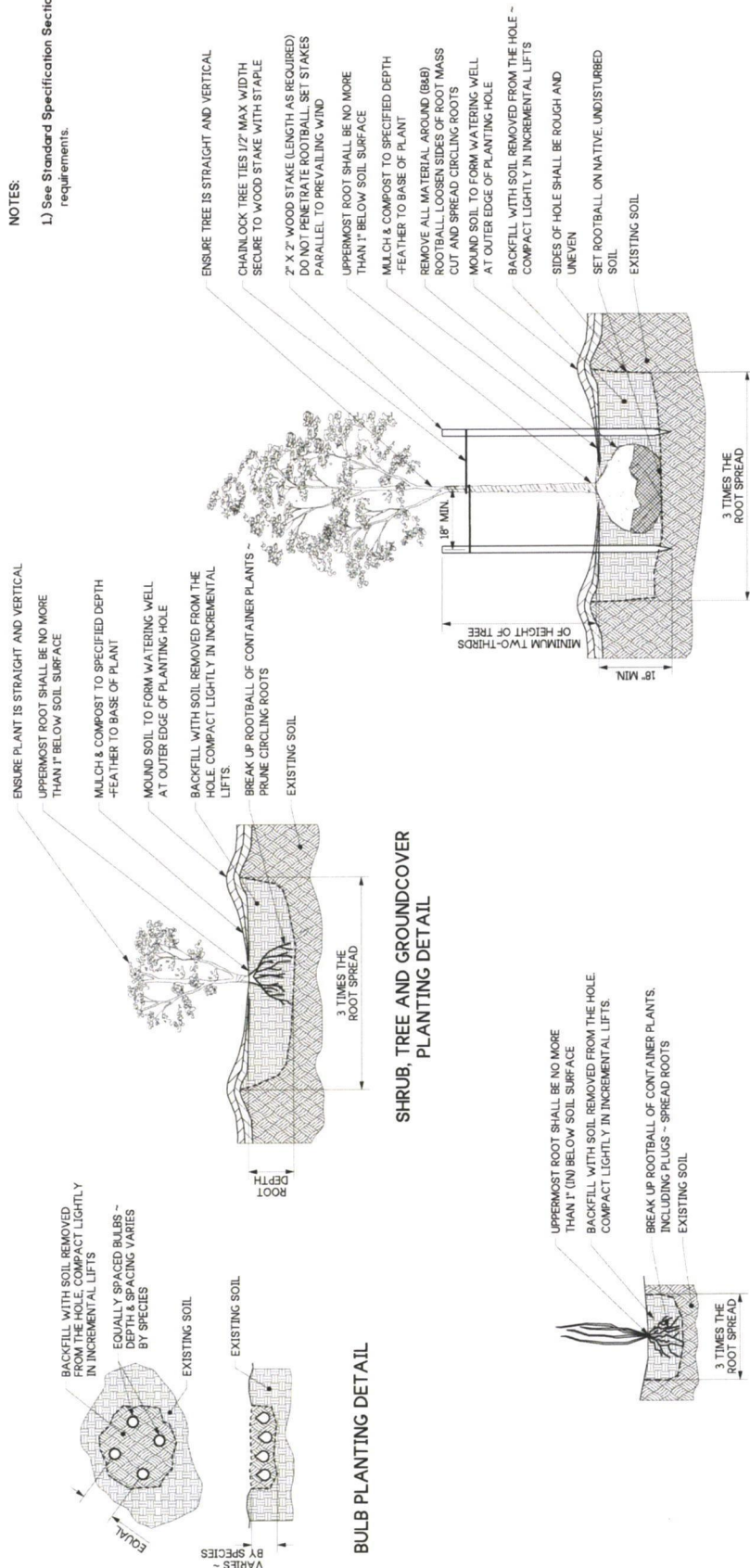
STATE DESIGN ENGINEER

Washington State Department of Transportation

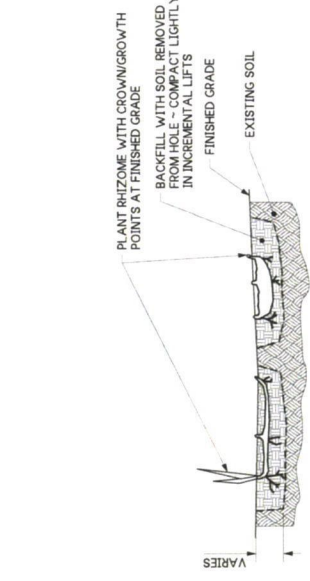
SIGN BRACE PLACEMENT

NOTES:

1.) See Standard Specification Section 8-02.3(8) and 9-14.7 for additional requirements.



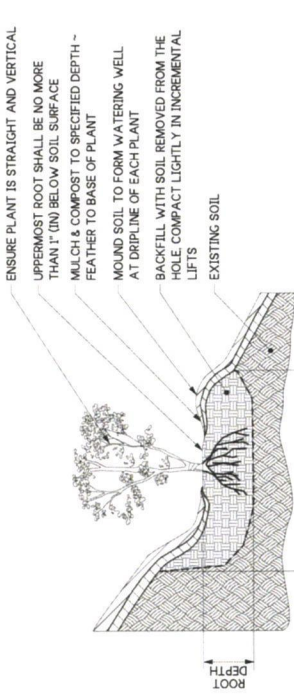
EMERGENT PLANTING DETAIL



TUBER OR RHIZOME PLANTING DETAIL

SHRUB, TREE AND GROUND COVER SLOPE PLANTING DETAIL

STREET TREE PLANTING DETAIL



May 31, 2024
**TREE, SHRUB AND GROUND COVER
 PLANTING DETAILS**
 STANDARD PLAN H-10.10-01

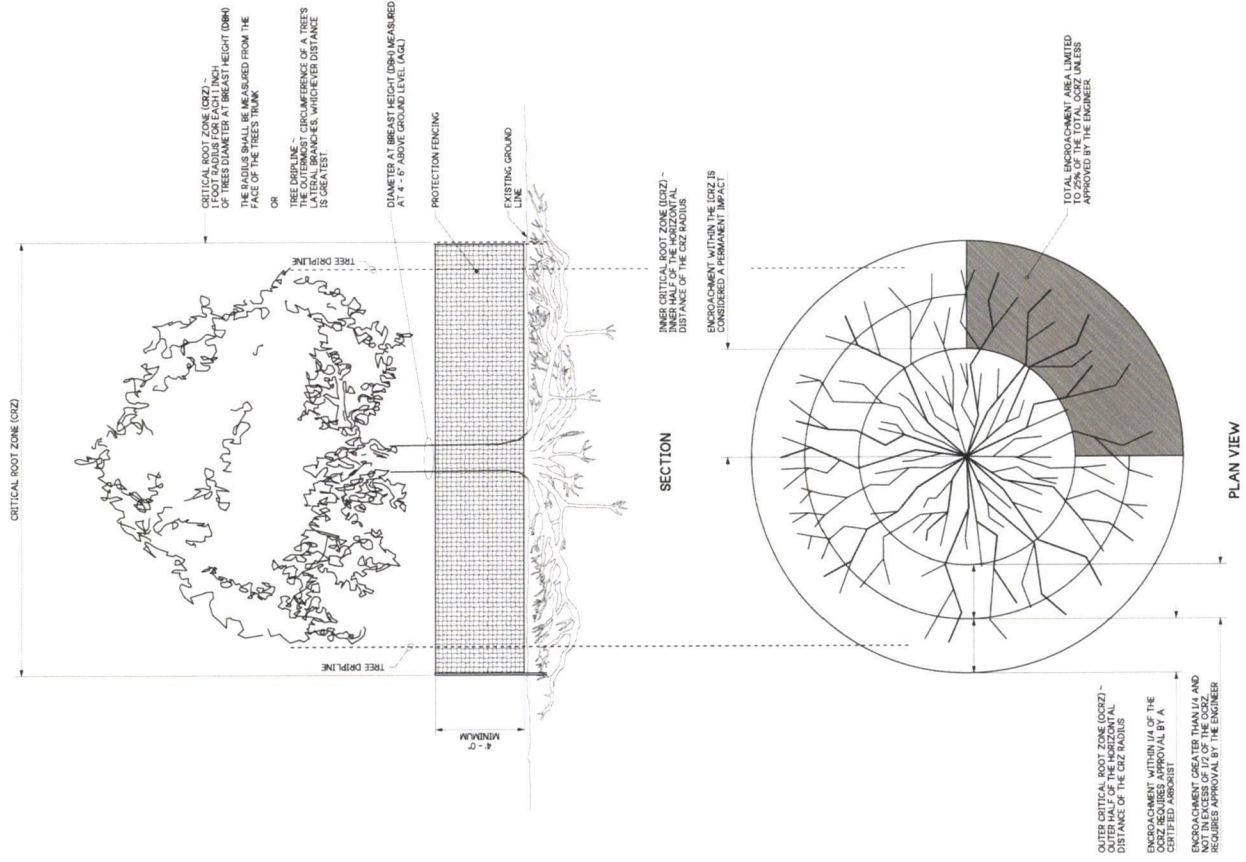
SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
 Jun 2, 2024
Mark A. Flansburg
 STATE DESIGN ENGINEER

Washington State
 Department of Transportation

NOTES:

1. Limits of protection fencing shall extend to the greatest distance from protected trees trunk as needed to perform the work.
2. Adjustments to the critical root zone require certified arborist approval. Encroachments within the identified critical root zone requires review approval by a certified arborist.
3. Protection fencing shown on plans is diagrammatic. All protection fencing locations shall be field verified by the Engineer prior to installation.
4. Protection fencing shall be inspected by the Engineer after installation for final approval.
5. Protection measures shall remain intact at all times during construction unless directed otherwise by the Engineer.
6. See Section I-0716(2) for additional protection measures.



May 31, 2024

TREE PROTECTION DETAIL

STANDARD PLAN H-10.11-00

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Jun 2, 2024

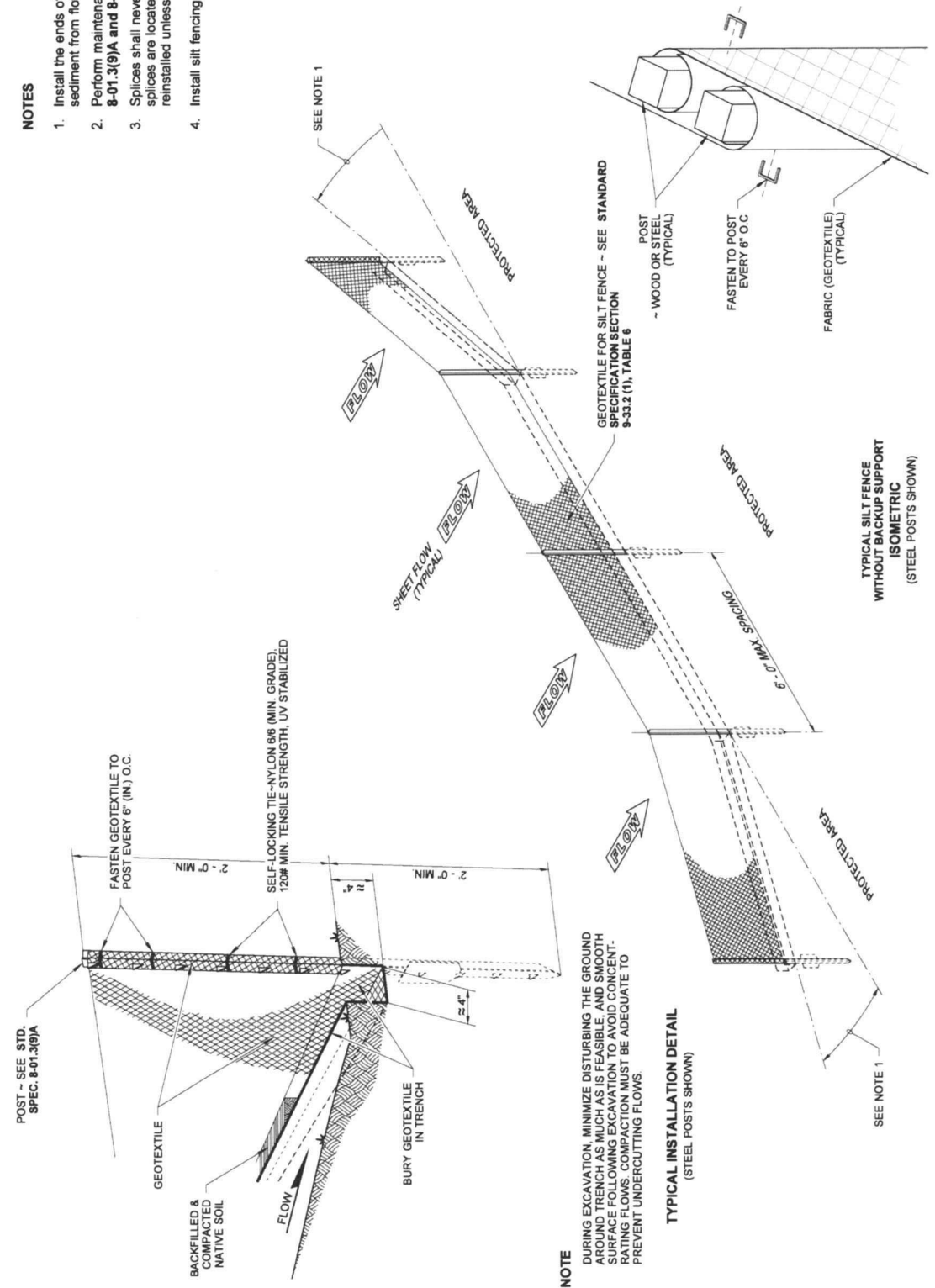
STATE DESIGN ENGINEER

Washington State Department of Transportation

Mark A. Jones

NOTES

1. Install the ends of the silt fence to point slightly upslope to prevent sediment from flowing around the ends of the fence.
2. Perform maintenance in accordance with **Standard Specifications 8-01.3(9)A and 8-01.3(15)**.
3. Splices shall never be placed in low spots or sump locations. If splices are located in low or sump areas, the fence may need to be reinstalled unless the Project Engineer approves the installation.
4. Install silt fencing parallel to mapped contour lines.



NOTE

DURING EXCAVATION, MINIMIZE DISTURBING THE GROUND AROUND TRENCH AS MUCH AS IS FEASIBLE, AND SMOOTH SURFACE FOLLOWING EXCAVATION TO AVOID CONCENTRATING FLOWS. COMPACTION MUST BE ADEQUATE TO PREVENT UNDERCUTTING FLOWS.

TYPICAL INSTALLATION DETAIL
(STEEL POSTS SHOWN)



STATE OF
WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT

SANDRA L. SALISBURY
CERTIFICATE NO. 000860

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT. IT IS NOT TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT. A COPY MAY BE OBTAINED UPON REQUEST.

SILT FENCE

STANDARD PLAN I-30.15-02

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Pasco Bakotich III 3/22/13

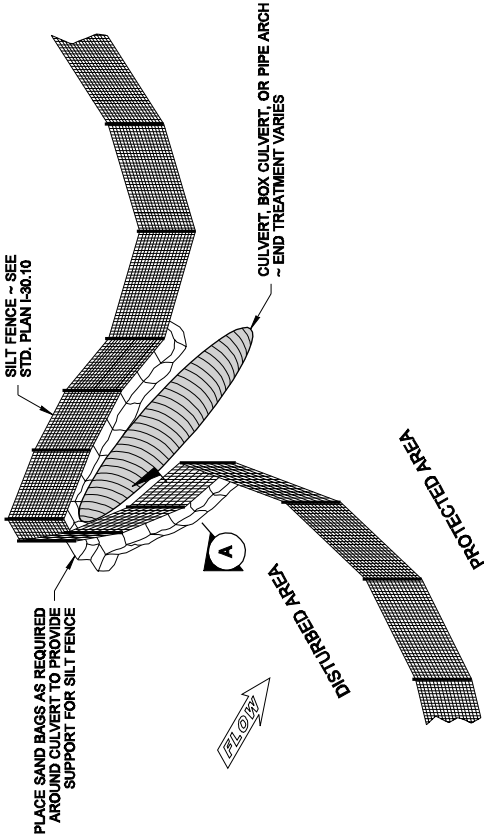
STATE DESIGN ENGINEER DATE
Washington State Department of Transportation

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

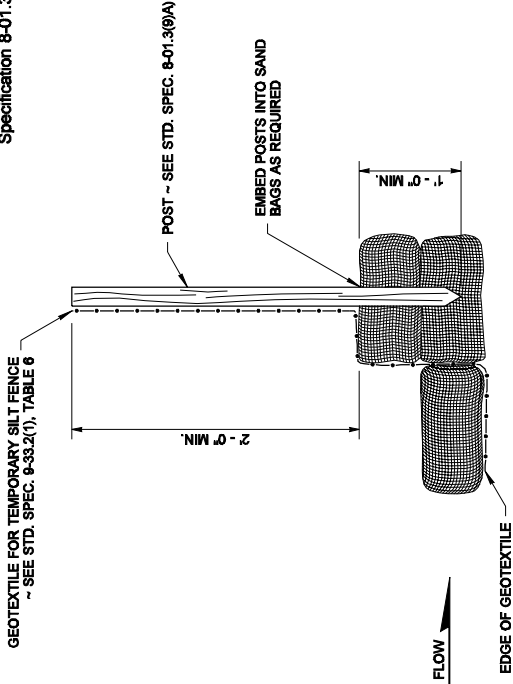
SPlice DETAIL
(WOOD POSTS SHOWN)

NOTE

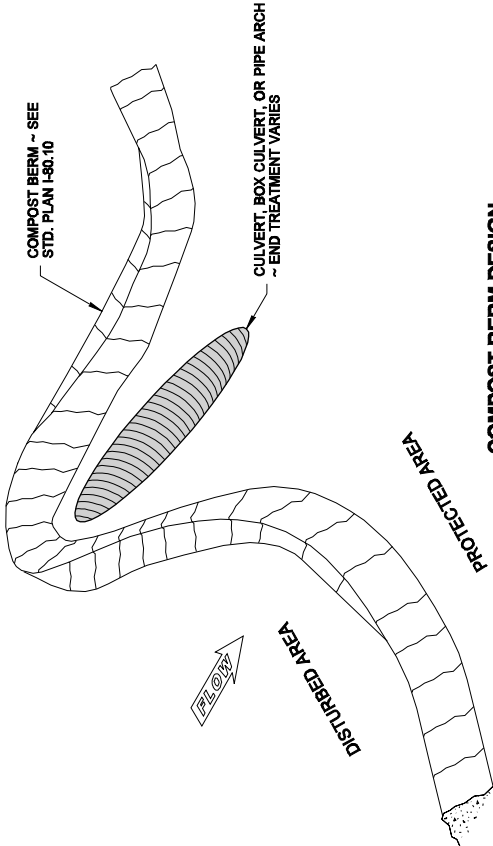
Perform maintenance in accordance with Standard Specification 8-01.3(9)(A) and 8-01.3(15).



SILT FENCE DESIGN



SECTION A



COMPOST BERM DESIGN



STATE OF
WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT

MARK W. MAURER
CERTIFICATE NO. 000598

NOTE: THIS PLAN IS NOT A LEGAL INSTRUMENT. IT IS NOT A CONTRACT. IT IS A PROFESSIONAL DESIGN. IT IS NOT A CONTRACT. IT IS A PROFESSIONAL DESIGN. IT IS NOT A CONTRACT. IT IS A PROFESSIONAL DESIGN.

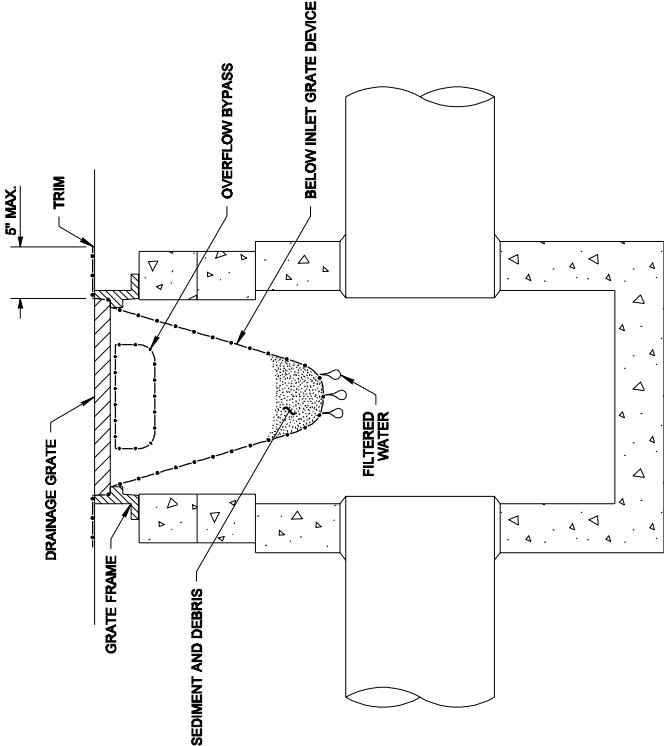
EROSION CONTROL
AT CULVERT ENDS
STANDARD PLAN I-30.20-00

SHEET 1 OF 1 SHEET

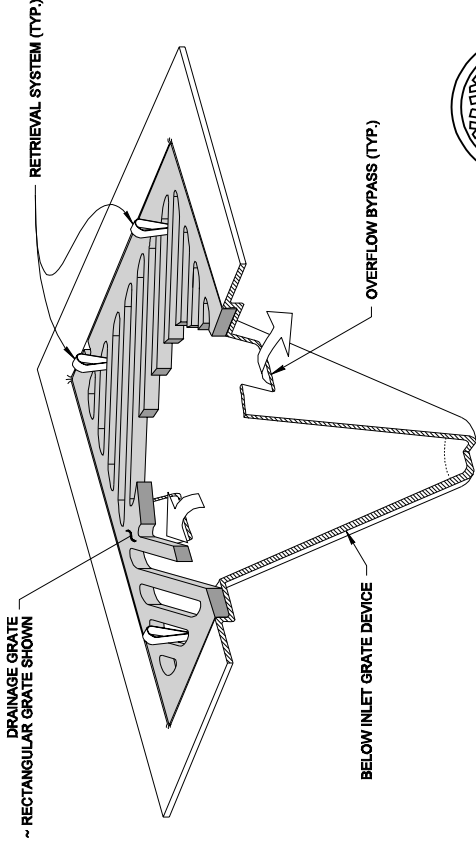
APPROVED FOR PUBLICATION
Pasco Bakotich III 09-20-07
STATE DESIGN ENGINEER DATE
Washington State Department of Transportation

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 spilling the collected material.
- 4. Perform maintenance in accordance with Standard Specification 8-01.3(15).



SECTION VIEW
NOT TO SCALE



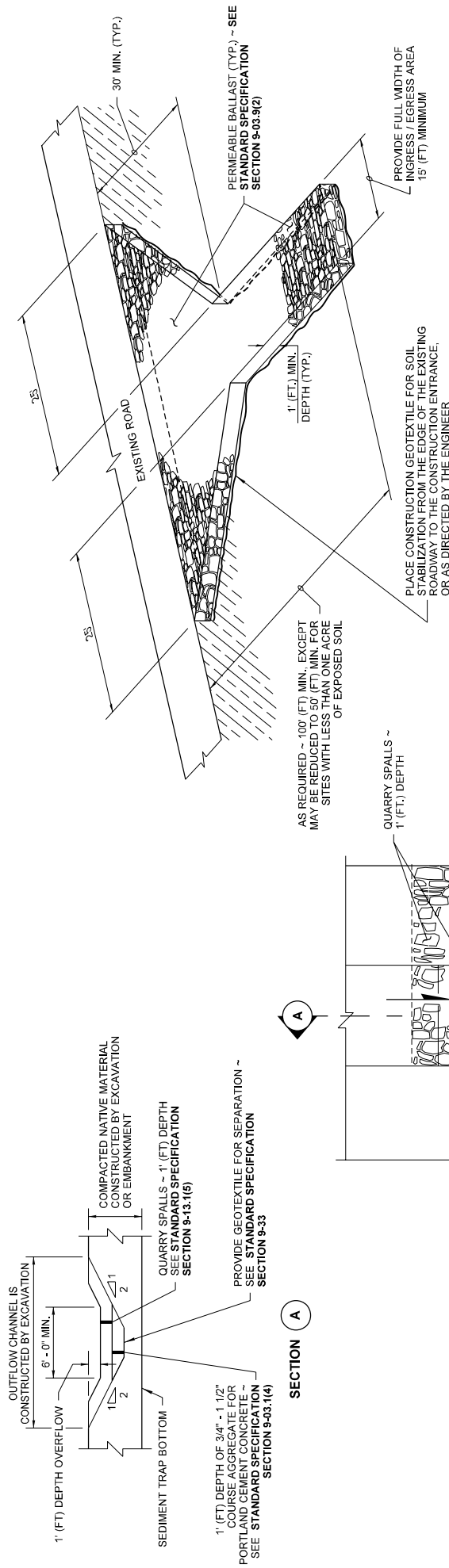
ISOMETRIC VIEW



NOTE: THIS PLAN IS NOT A FINAL ENGINEERING DOCUMENT. IT IS FOR INFORMATION ONLY. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION, IS TO BE ON FILE AT THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION. A CERTAIN RETURNED FOR REVISION.

**STORM DRAIN
INLET PROTECTION
STANDARD PLAN I-40.20-00**
SHEET 1 OF 1 SHEET

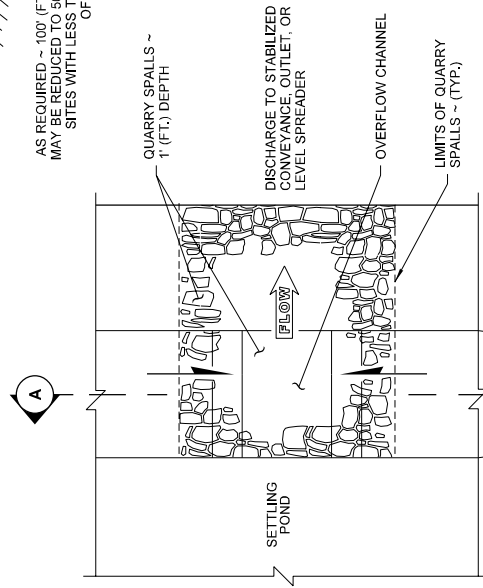
APPROVED FOR PUBLICATION
Pasco Bakotich III 09-20-07
STATE DESIGN ENGINEER DATE
Washington State Department of Transportation



ISOMETRIC VIEW

STABILIZED CONSTRUCTION ENTRANCE

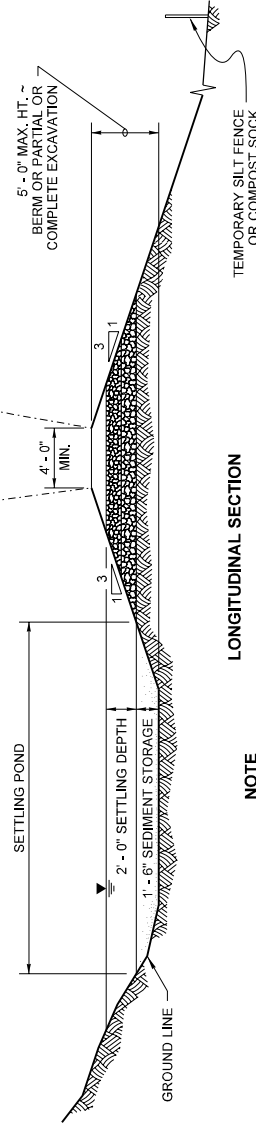
STABILIZED CONSTRUCTION ENTRANCE SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 8-01.3(7).



SECTION A

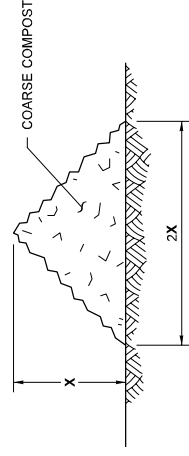
PARTIAL PLAN VIEW OF BERM

SHOWN LARGER FOR CLARITY



LONGITUDINAL SECTION

TEMPORARY SEDIMENT TRAP



TYPICAL SECTION

MISCELLANEOUS EROSION CONTROL DETAILS STANDARD PLAN I-80.10-02

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Carpenter, Jeff
Jul 15 2016 2:28 PM

STATE DESIGN ENGINEER

Washington State Department of Transportation



NOTES

1. See **Standard Specification Section 9-29.24** (Service Cabinets).
2. Cabinet shall be rated NEMA 3R.
3. Dimensions shown are minimum and shall be adjusted to accommodate the various sizes of equipment installed. A 1" tolerance is allowed for all dimensions.
4. Door shall be pad-lockable and gasketed.
5. Hinges shall have stainless steel or brass pins. See **Standard Plan J-10.20** for door hinge details.
6. When using two piece hinge type on galvanized enclosure, remove hinge pin prior to welding hinge to cabinet and prior to hot-dip galvanizing. After galvanizing, replace pin with brass pin and solder in place. See **Standard Plan J-10.20** for alternate door hinge details.
7. Equipment identified by Key Numbers 2, 3, 4, 6, 7, and 8 shall have an appropriately engraved phenolic name plate attached with screws or rivets. The name plate for Key Number 4 shall read as follows:
"PHOTOCCELL BYPASS TEST ON" AND "PHOTOCCELL TEST OFF - AUTOMATIC."
See Test Switch Label Detail
8. All buswork shall be **ASTM B187** copper and shall have a minimum rating of 125 amps. All breakers shall bolt on to the buswork. Jumpering of breakers shall not be allowed. Buswork shall accommodate all future equipment as shown in the Breaker Schedule.
9. All internal wire runs shall be identified with "TO - FROM" coded tags labeled with the code letters and/or numbers shown on the Schedules. Approved PVC or polyolefin wire marking sleeves shall be used.
10. See Contract for Breaker and Contactor Schedule.
11. Buss bars shall be sized to accommodate up to #4 AWG wires.
12. See **Standard Plan J-10.14** for pole installation details.



Aug 18, 2021

**SERVICE CABINET TYPE A
(0 - 100 AMP TYPE 120 VOLT
SINGLE PHASE)**

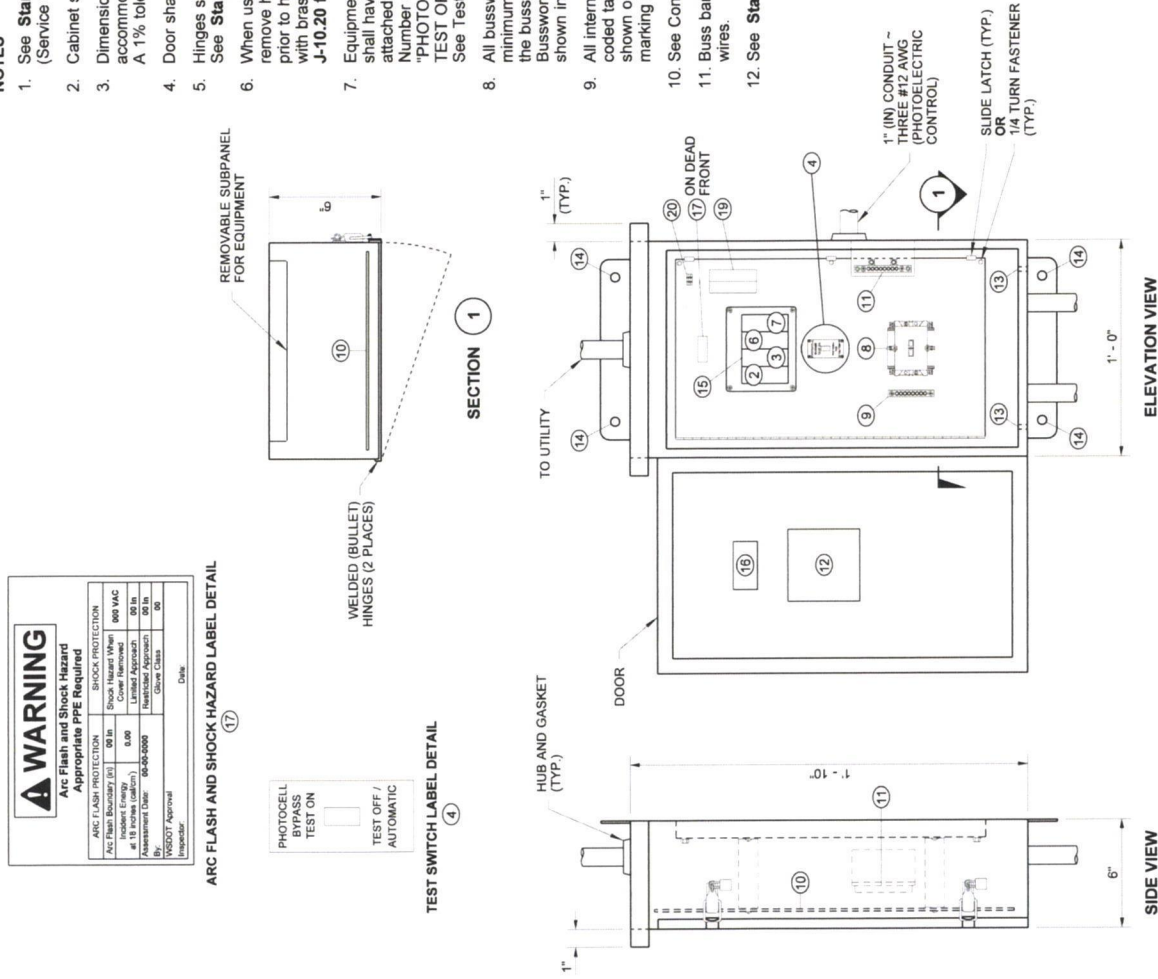
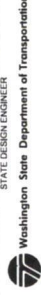
STANDARD PLAN J-10.16-02

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Aug 18, 2021

STATE DESIGN ENGINEER



TYPE A SERVICE CABINET

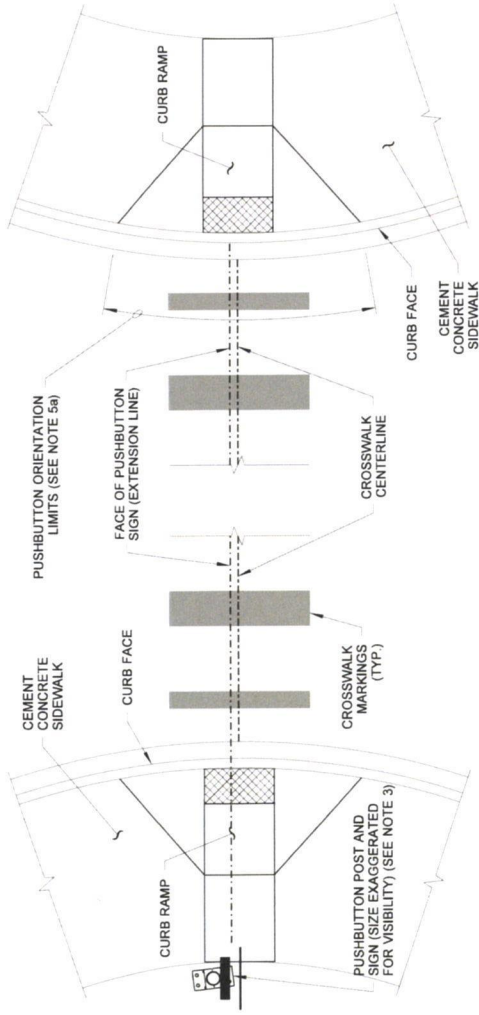
SIDE VIEW

- KEY**
- 1 METER BASE PER SERVING UTILITY REQUIREMENTS - SEE **STANDARD PLAN J-10.30**
 - 2 MAIN BREAKER (SPST - SIZE PER BREAKER SCHEDULE)
 - 3 PHOTOELECTRIC CONTROL BREAKER (SPST ~ 15 AMP ~ 120/240 VOLT)
 - 4 TEST SWITCH (SPDT ~ SNAP ACTION ~ POSITIVE CLOSE ~ 15 AMP ~ 120/277 VOLT ~ "T" RATED)
 - 5 PHOTOELECTRIC CONTROL UNIT ~ SEE **STANDARD SPECIFICATION 9-23.11(2)**
 - 6 BRANCH BREAKER ~ SEE BREAKER SCHEDULE (SPST ~ 120/240 VOLT)
 - 7 SPARE BRANCH BREAKER (SPST ~ 20 AMP ~ 120/240 VOLT)
 - 8 CONTACTOR ~ SEE BREAKER SCHEDULE
 - 9 ISOLATED NEUTRAL BUS ~ 8 LUG COPPER
 - 10 HINGED DEAD FRONT WITH 1/4 TURN FASTENERS OR SLIDE LATCHES ~ DEAD FRONT PANEL BOLTS SHALL NOT EXTEND INTO VERTICAL LIMITS OF THE BREAKER ARRAY(S)
 - 11 CABINET MAIN BONDING JUMPER ASSEMBLY - BUSS SHALL BE 8 LUG TINNED COPPER ~ SEE **STANDARD PLAN J-10.20** FOR CABINET MAIN BONDING JUMPER ASSEMBLY DETAILS
 - 12 METAL WIRING DIAGRAM HOLDER
 - 13 1/4" (IN) DIAMETER DRAIN HOLE - DRILL BEFORE GALVANIZING
 - 14 MOUNTING DETAIL
 - 15 4-CIRCUIT PANEL BOARD - MINIMUM SIZE WITH BACK-FED MAIN BREAKER
 - 16 LABEL CABINET WITH BUSSWORK RATING
 - 17 ARC FLASH AND SHOCK HAZARD LABEL - SEE DETAIL
 - 18 CONNECTION TO GROUND ELECTRODE - SEE **STANDARD PLAN J-60.05**
 - 19 20 KA TYPE 1 OR TYPE 2 SURGE PROTECTION DEVICE - DIN RAIL MOUNT WITH PLUG-IN MODULE(S)
 - 20 THREE POSITION DIN RAIL MOUNTED TERMINAL BLOCK ~ TERMINAL BLOCK SECTIONS SHALL BE BLACK, WHITE, AND RED AS SHOWN IN CABINET WIRING DIAGRAM
- 120 VAC
- METER BASE (WHERE REQUIRED)
- PHOTOELECTRIC OR TIME CLOCK
- PHOTOCELL TEST OFF - AUTOMATIC
- PHOTOCELL BYPASS TEST ON
- ILL. CKT A
- ILL. CKT B
- SPARE CKT
- GROUND
- CABINET MAIN BONDING JUMPER ~ SIZE PER NEC ~ MINIMUM SIZE #4
- TYPE A WIRING DIAGRAM ~ 120 VOLT

DRAWN BY: FERN LIDDELL

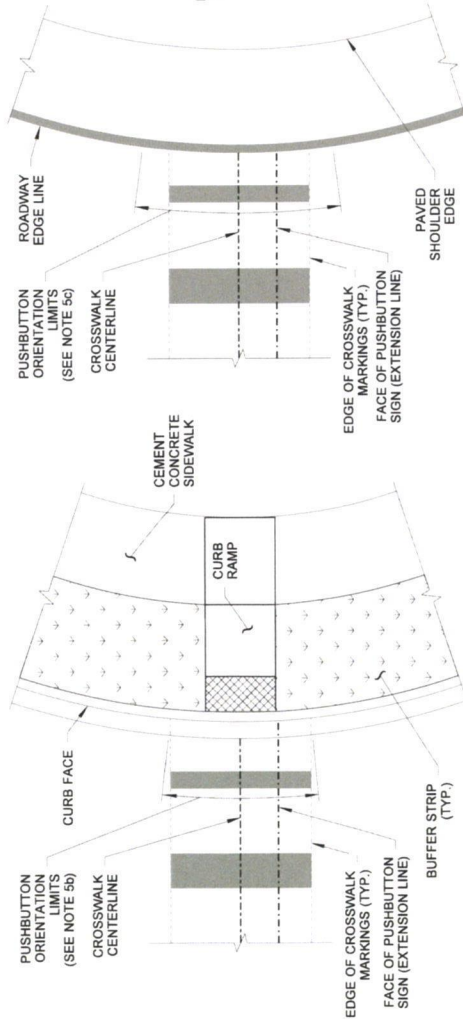
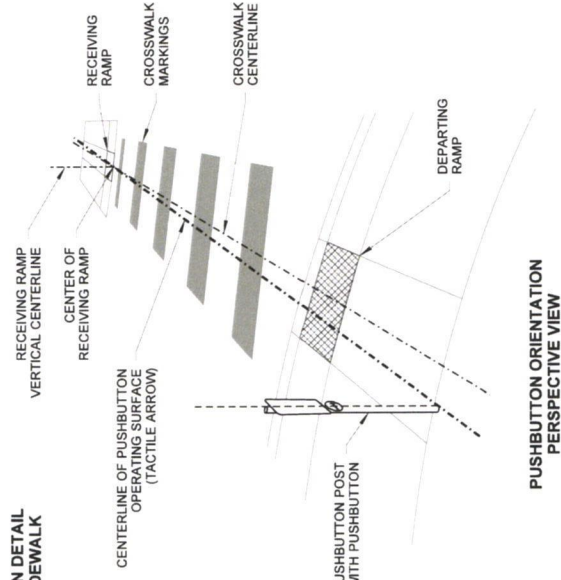
NOTES

1. All pushbuttons with tactile arrows have specific horizontal orientation requirements. Each pushbutton must be oriented relative to the crosswalk being served.
2. Pushbutton mounting height shall be in accordance with **Standard Plan J-20.15**
3. Each pushbutton shall be installed such that the face of the pushbutton is rotated generally towards the center of the intersection unless otherwise specified in the Contract Plans.
4. Each pushbutton shall be installed such that the face of the unit (the face of the sign and the face of the tactile arrow pushbutton) is oriented parallel to the crosswalk being served, unless the extension line of the pushbutton face will be outside of the limits defined in Note 5, in which case Note 5 takes precedence. The extension line of the pushbutton face shall intersect a curb face (including ramps), or roadway edge line when no curb and sidewalk are present.
5. The extension line of the pushbutton face shall intersect the receiving end of the crosswalk as follows:
 - a. Where there is a receiving sidewalk ramp and the sidewalk is directly adjacent to the curb, the pushbutton centerline shall be within the limits of the ramp flares (see **Standard Plan F-40.15**) or ramp side slopes (see **Standard Plan F-40.12**).
 - b. Where there is a receiving sidewalk ramp and there is a buffer strip between the sidewalk and the curb, the pushbutton centerline shall be no more than two feet outside the edge of the sidewalk ramp or the outer edge of the crosswalk markings - whichever is smaller.
 - c. Where there is no sidewalk and the crosswalk ends at a roadway shoulder, the pushbutton centerline shall be no more than two feet outside the edge of the crosswalk markings.



**SAMPLE DEPARTURE PUSHBUTTON LOCATION
(PERPENDICULAR RAMP SHOWN -
SEE CONTRACT FOR POST LOCATIONS)**

**PUSHBUTTON ORIENTATION DETAIL
RECEIVING RAMP WITH SIDEWALK**



**PUSHBUTTON ORIENTATION DETAIL
RECEIVING RAMP WITH BUFFER STRIP**

**PUSHBUTTON ORIENTATION DETAIL
NO RECEIVING RAMP (ROADWAY SHOULDER)**

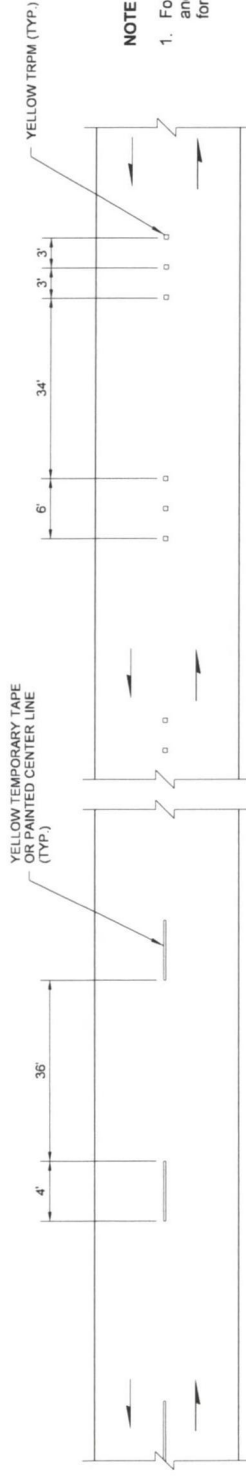


Jun 20, 2024

**PEDESTRIAN
PUSHBUTTON (PPB)
ORIENTATION
STANDARD PLAN J-20.05-00**

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Jun 21, 2024
STATE DESIGN ENGINEER
Washington State Department of Transportation



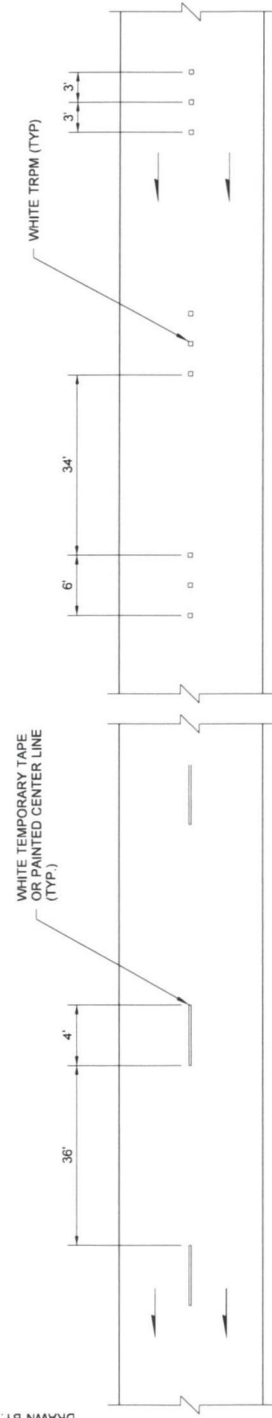
DRAWN BY: FERN LIDDELL

NOTE

1. For Hot Mix Asphalt Paving projects ~ "DO NOT PASS" and "PASS WITH CARE" signs shall be included for passing zones.

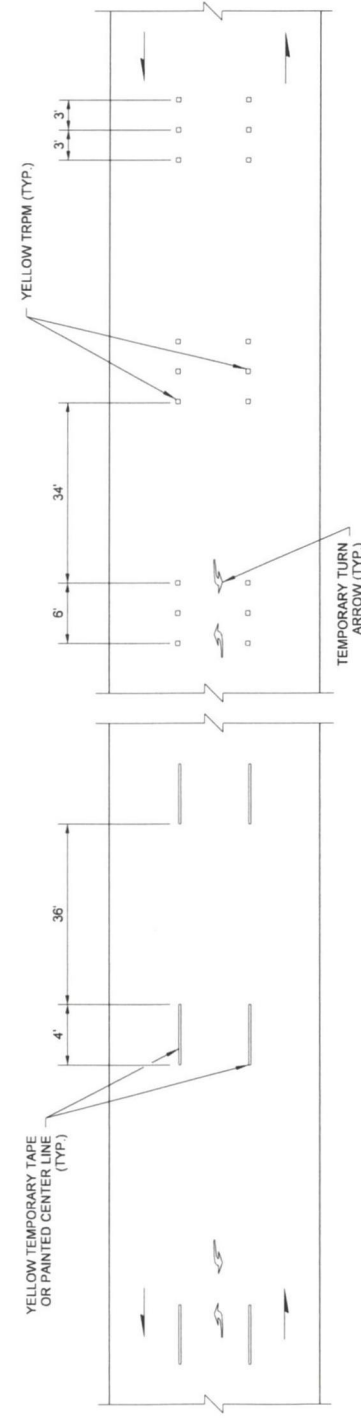
HOT MIX ASPHALT PAVEMENT

TWO-LANE ROADWAY



BITUMINOUS SURFACE TREATMENT

ONE-WAY TWO-LANE ROADWAY



BITUMINOUS SURFACE TREATMENT

TWO-WAY TWO-LANE LEFT TURN ROADWAY



Nisbet, John
Nisbet, John
May 16 2016 9:56 AM

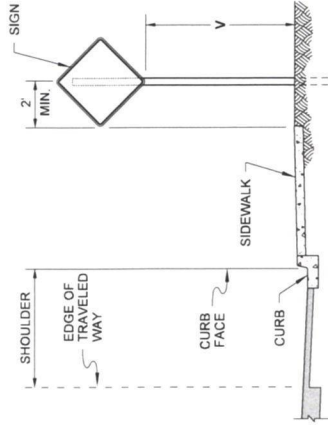
TEMPORARY PAVEMENT MARKING ~ SHORT DURATION STANDARD PLAN K-70.20-01

SHEET 1 OF 1 SHEET

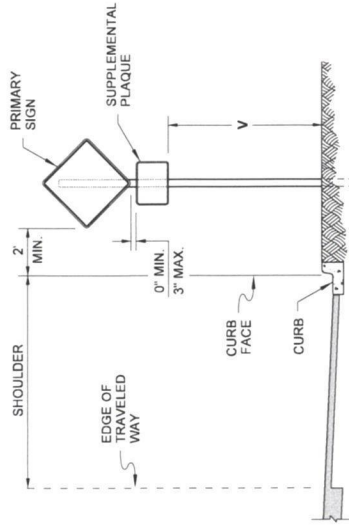
APPROVED FOR PUBLICATION
Carpenter, Jeff
Jan 1 2016 4:19 PM
STATE DESIGN ENGINEER
Washington State Department of Transportation

NOTES

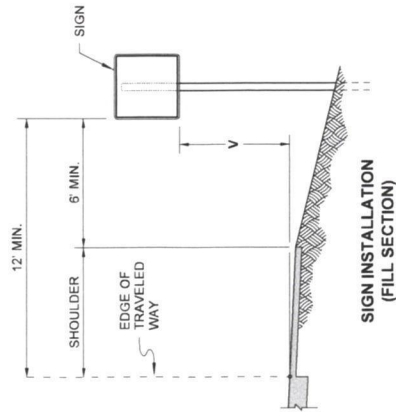
1. For sign installation details, see **Standard Plan G - series**.
2. Where it is impractical to locate a sign with the lateral offset, a minimum of 2'(ft) offset may be used. A 1'(ft) lateral offset may be used in business, commercial or residential areas.
3. The "V" height for signs, with an area of more than 50 square feet and two or more sign supports, is 7 feet in both rural and urban areas.



SIGN INSTALLATION
(SIDEWALK AND CURB SECTION)



SIGN INSTALLATION
(CURB SECTION)



SIGN INSTALLATION
(FILL SECTION)

HEIGHT V	
TO BOTTOM OF SIGN (NO SUPPLEMENTAL PLAQUE)	TO BOTTOM OF SUPPLEMENTAL PLAQUE (WHEN REQUIRED)
RURAL 5' MINIMUM	4' MINIMUM
URBAN 7' MINIMUM	6' MINIMUM

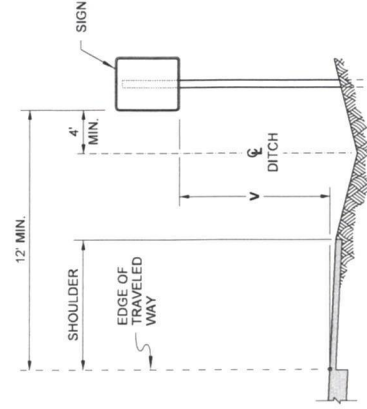


2020.09.23 13:48:58
-07'00"

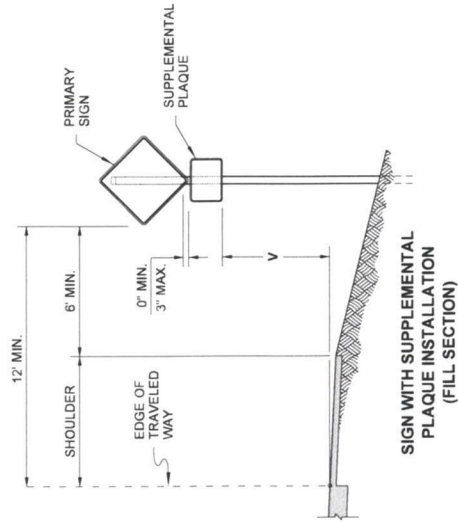
CLASS A CONSTRUCTION SIGNING INSTALLATION STANDARD PLAN K-80.10-02

SHEET 1 OF 1 SHEET

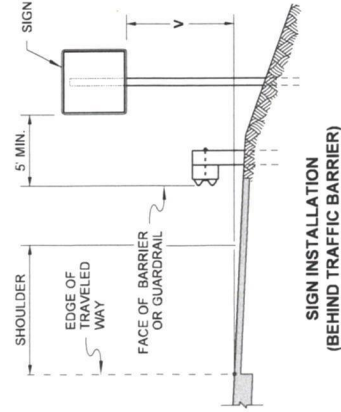
APPROVED FOR PUBLICATION
Date: 2020.09.25
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STATE DESIGN ENGINEER
Washington State Department of Transportation



SIGN INSTALLATION
(DITCH SECTION)



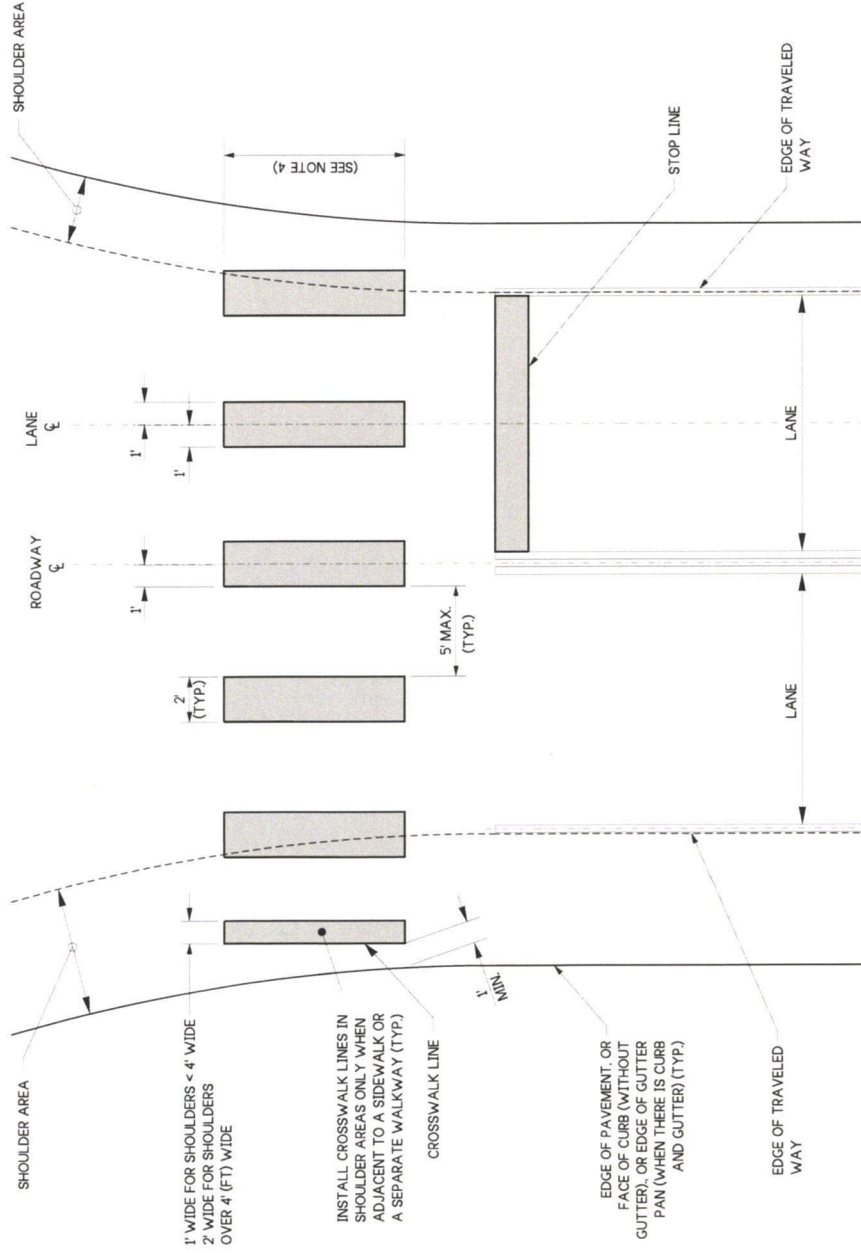
SIGN WITH SUPPLEMENTAL
PLAQUE INSTALLATION
(FILL SECTION)



SIGN INSTALLATION
(BEHIND TRAFFIC BARRIER)

NOTES:

1. See Contract Plans for crosswalk locations.
2. To the maximum extent possible, curb ramp centerline should be perpendicular to the crosswalk centerline.
3. To the maximum extent possible, crosswalks should be perpendicular to the traveled way centerline.
4. See Contract plans for crosswalk width.
5. To maximum extent possible, place crosswalk bars out of the wheel paths.



CROSSWALK DETAIL



Jul 17, 2023

CROSSWALK LAYOUT

STANDARD PLAN M-1510-02

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Jul 17, 2023

STATE DESIGN ENGINEER

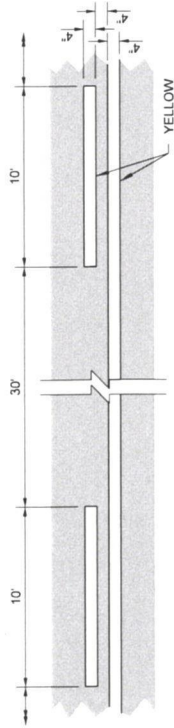
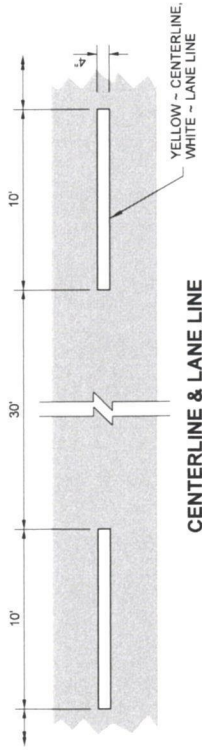
Washington State
Department of Transportation

Mark A. Davis

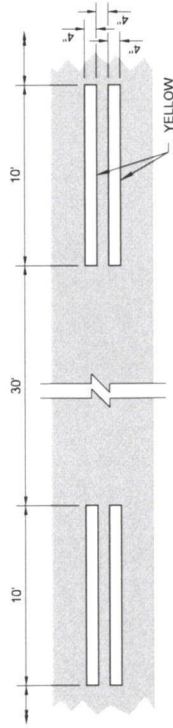


NOTES

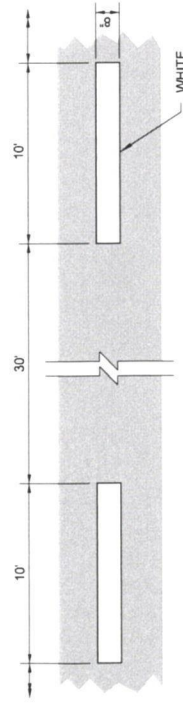
1. Dotted Extension Line shall be the same color as the line it is extending.
2. Edge Line shall be white on the right edge of traveled way, and yellow on the left edge of traveled way (on one-way roadways). Solid Lane Line shall be white.
3. The distance between the lines of the Double Centerline shall be 12" everywhere, except 4" for left-turn channelization and narrow roadways with lane widths of 10 feet or less. Local Agencies (on non-state routes) may specify a 4" distance for all locations.
The distance between the lines of the Double Lane Line shall be 4".



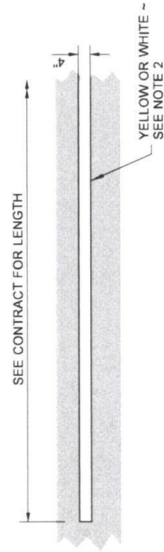
NO-PASS LINE & TWO-WAY LEFT-TURN CENTERLINE



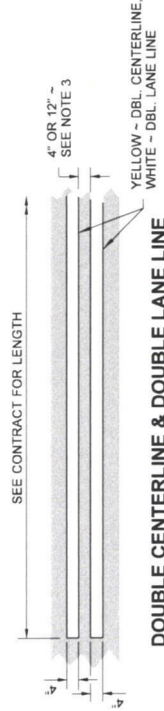
REVERSIBLE LANE LINE



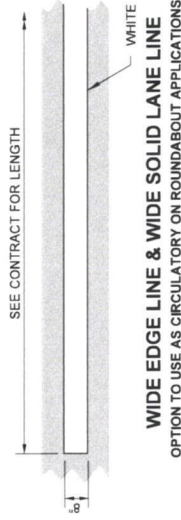
WIDE BROKEN LANE LINE



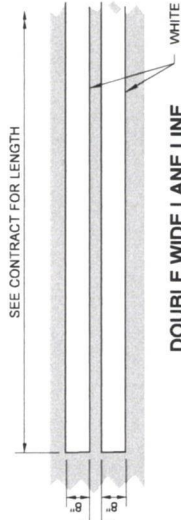
EDGE LINE & SOLID LANE LINE



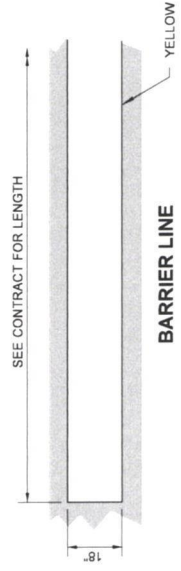
DOUBLE CENTERLINE & DOUBLE LANE LINE



WIDE EDGE LINE & WIDE SOLID LANE LINE
OPTION TO USE AS CIRCULARITY ON ROUNDABOUT APPLICATIONS



DOUBLE WIDE LANE LINE



BARRIER LINE



Aug 1, 2022

LONGITUDINAL MARKING PATTERNS STANDARD PLAN M-20.10-04

SHEET 1 OF 4 SHEETS

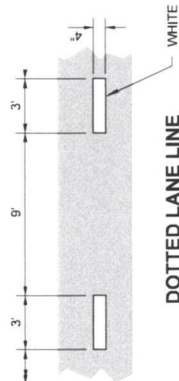
APPROVED FOR PUBLICATION

Aug 2, 2022

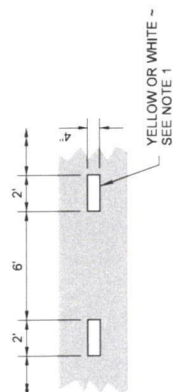
STATE DESIGN ENGINEER

Washington State Department of Transportation

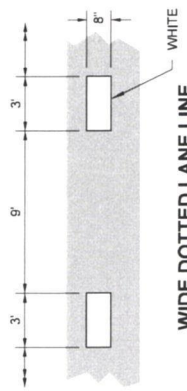




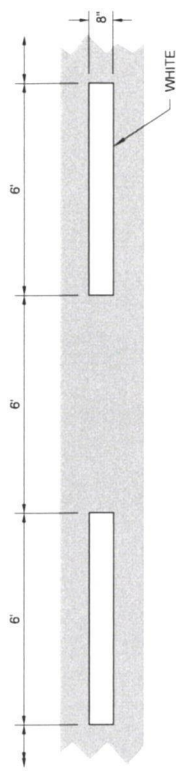
DOTTED LANE LINE



DOTTED EXTENSION LINE

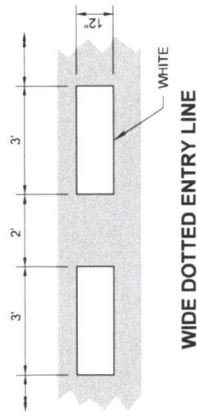


WIDE DOTTED LANE LINE

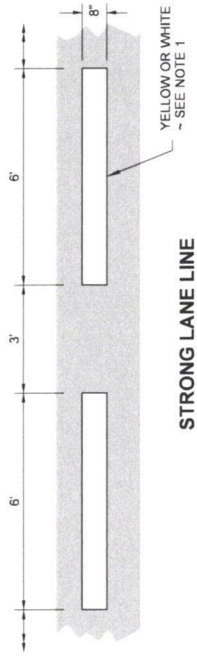


WIDE DOTTED EXTENSION LINE

ROUNDBOAT SPECIFIC LINES

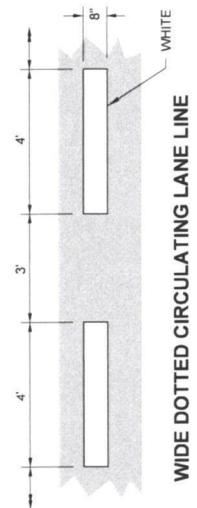


WIDE DOTTED ENTRY LINE



STRONG LANE LINE

OPTION TO USE AS CIRCULATORY ON ROUNDBOAT APPLICATIONS



WIDE DOTTED CIRCULATING LANE LINE



Aug 1, 2022

**LONGITUDINAL
MARKING PATTERNS
STANDARD PLAN M-20.10-04**

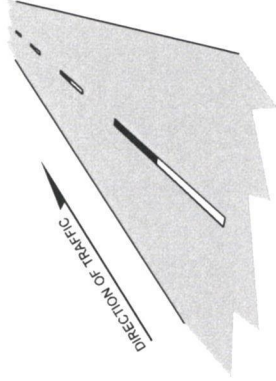
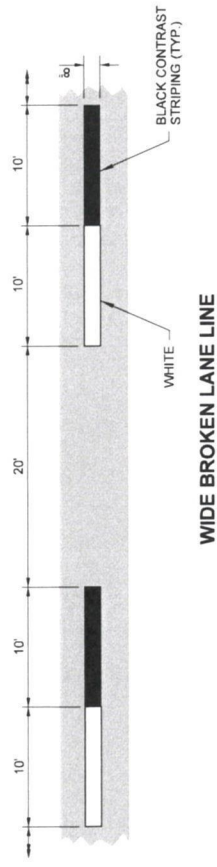
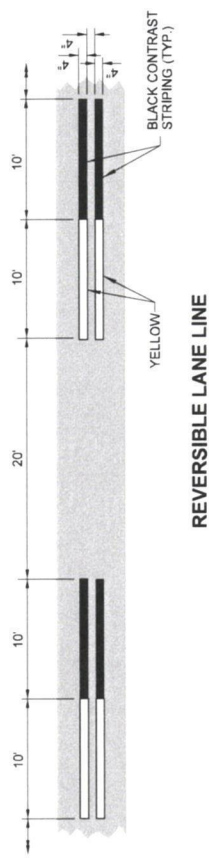
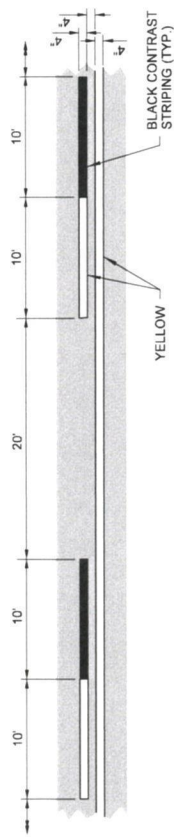
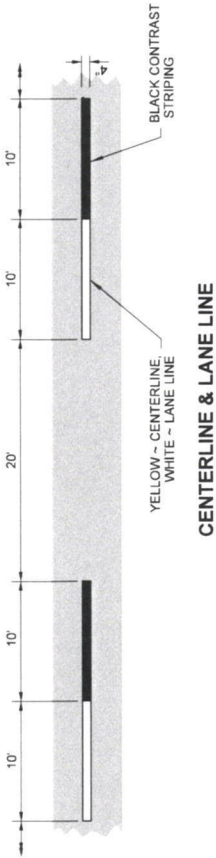
SHEET 2 OF 4 SHEETS

APPROVED FOR PUBLICATION
Aug 2, 2022

STATE DESIGN ENGINEER
Washington State Department of Transportation

NOTE

1. Dotted Extension Line shall be the same color as the line it is extending.



ISOMETRIC VIEW

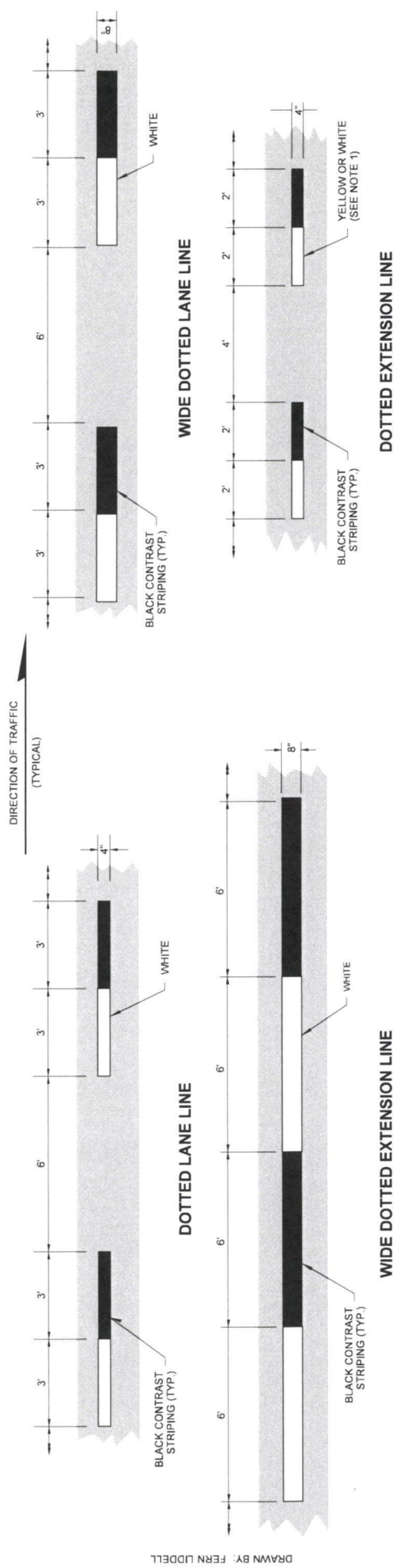


Aug 1, 2022

**LONGITUDINAL
MARKING PATTERNS
STANDARD PLAN M-20.10-04**

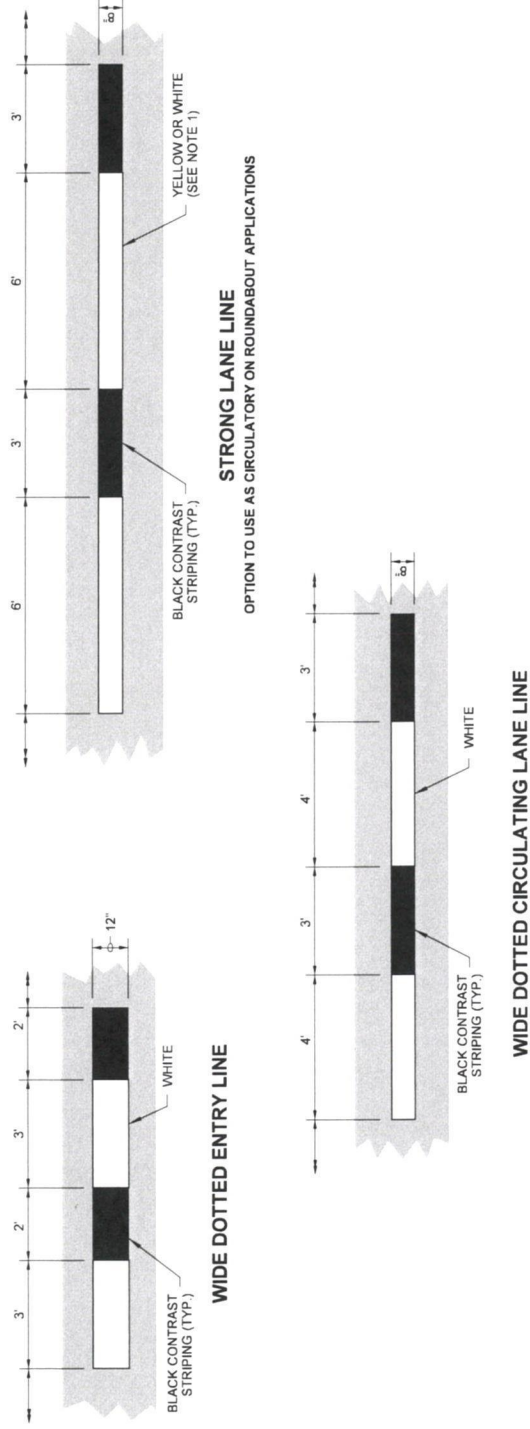
SHEET 3 OF 4 SHEETS

APPROVED FOR PUBLICATION
Aug 2, 2022
 STATE DESIGN ENGINEER
 Brian J. Walsh
 License No. 36103
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DRAWN BY: FERN LIDDELL

ROUNDABOUT SPECIFIC LINES



Aug 1, 2022

LONGITUDINAL MARKING PATTERNS

STANDARD PLAN M-20.10-04

SHEET 4 OF 4 SHEETS

APPROVED FOR PUBLICATION
Mark Gaudier
Aug 2, 2022

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Washington State Department of Transportation

NOTES:

1. Raised Pavement Markers Types 2YY and 2W, spaced at 80' (ft) intervals on tangents and on horizontal curves with a radius of 1500' (ft) or more, and at 40' (ft) intervals on horizontal curves having radii of less than 1500' (ft). Center the RPMs in the gaps between the pavement marking lines.
2. Type 2Y RPMs, when specified, placed outside the left Edge Line at 80' (ft) intervals. See "LEFT EDGE OF LANE PLACEMENT DETAIL."
3. Recessed pavement markers, when specified, installed at the locations shown for Type 2W RPMs multiline one-way roadways, and Type 2YY RPMs on two-lane two-way roadways.
4. The Type 2W RPMs placed on multiline one-way roadways and all RPMs set in recesses shall have an abrasion-resistant coating.
5. Do not recess side-to-side RPMs on Wide Dotted Lane Lines.

TYPE 2 RPM RAISED FACE COLORS	
TYPE 2YY	YELLOW AND YELLOW
TYPE 2W	WHITE ~ ONE SIDE ONLY
TYPE 2Y	YELLOW ~ ONE SIDE ONLY



Jun 28, 2024

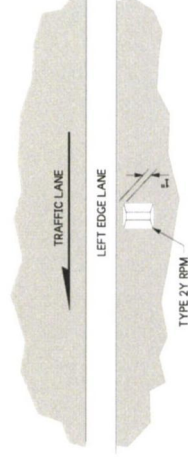
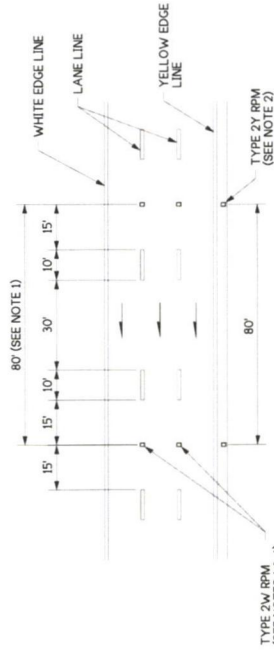
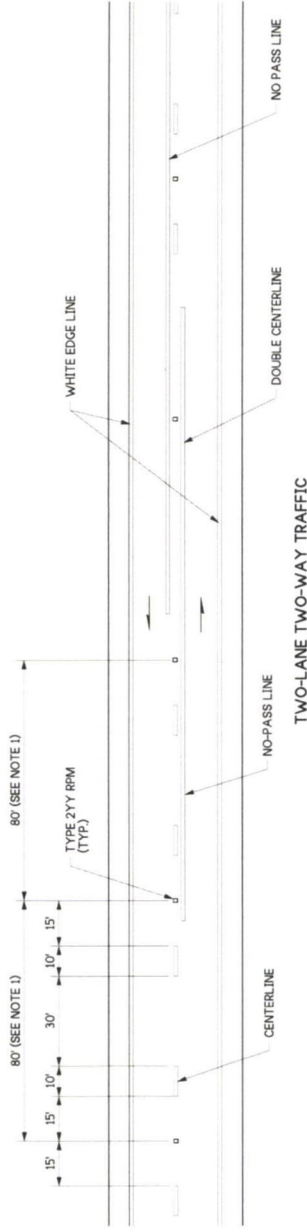
LONGITUDINAL MARKING
SUPPLEMENT WITH RAISED
PAVEMENT MARKERS
STANDARD PLAN M-20.30-05

SHEET 1 OF 2 SHEETS

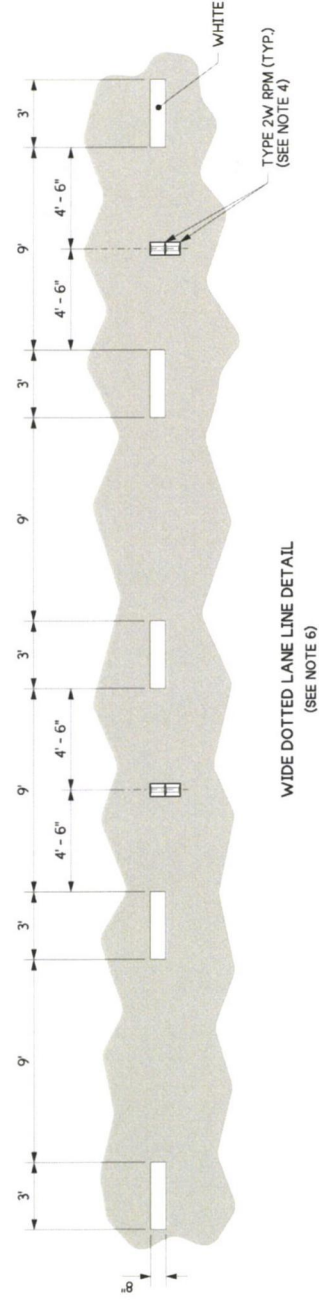
APPROVED FOR PUBLICATION
Jun 28, 2024

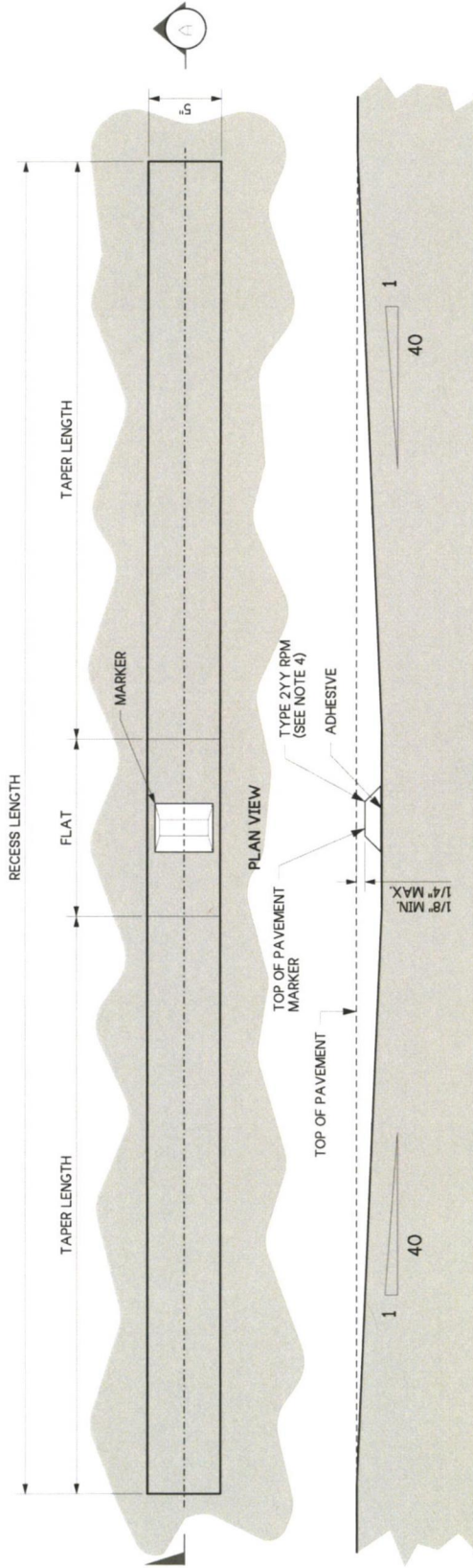
STATE DESIGN ENGINEER

Washington State
Department of Transportation

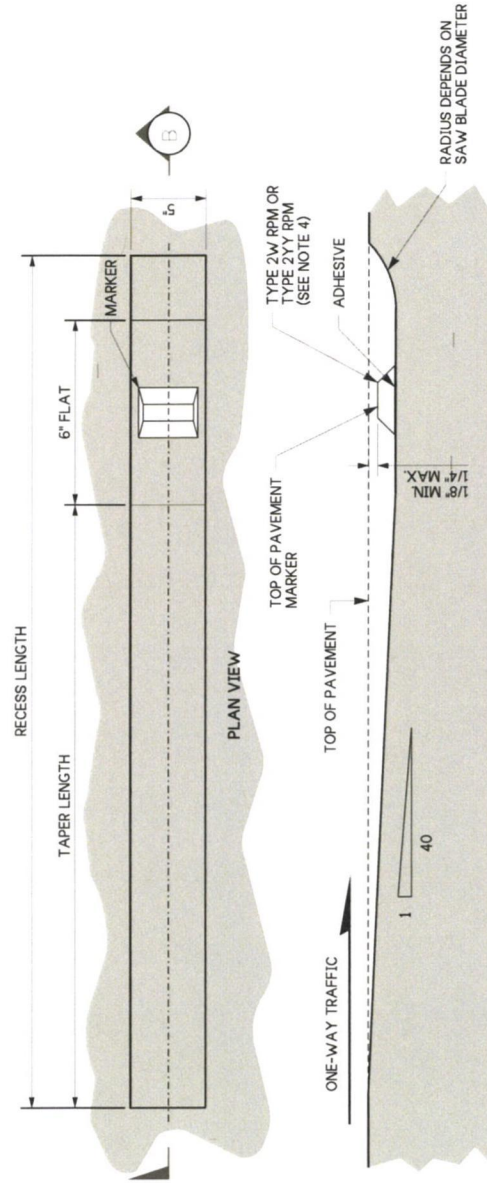


LEFT EDGE OF LANE PLACEMENT DETAIL
(SEE NOTE 2)





TWO-WAY ROADWAY RESESSED
PAVEMENT MARKER DETAIL
(FOR USE WHERE SPECIFIED IN CONTRACT)



SECTION (B)
ONE-WAY ROADWAY RESESSED
PAVEMENT MARKER DETAIL
(FOR USE WHERE SPECIFIED IN CONTRACT)



Jun 28, 2024

LONGITUDINAL MARKING
SUPPLEMENT WITH RAISED
PAVEMENT MARKERS
STANDARD PLAN M-20.30-05

SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION

Jun 28, 2024

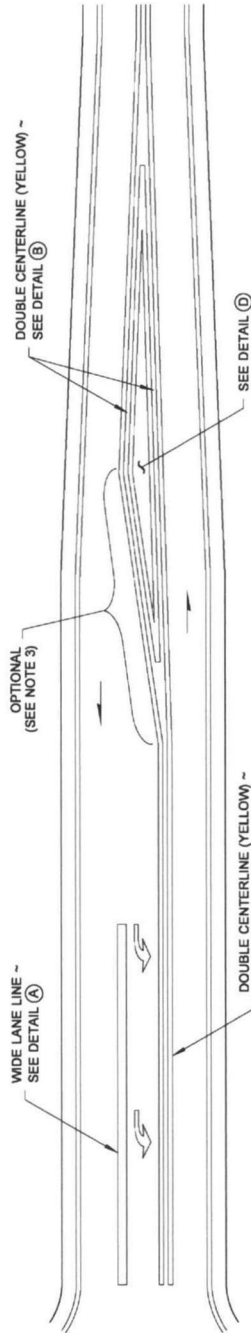
STATE DESIGN ENGINEER

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Department of Transportation

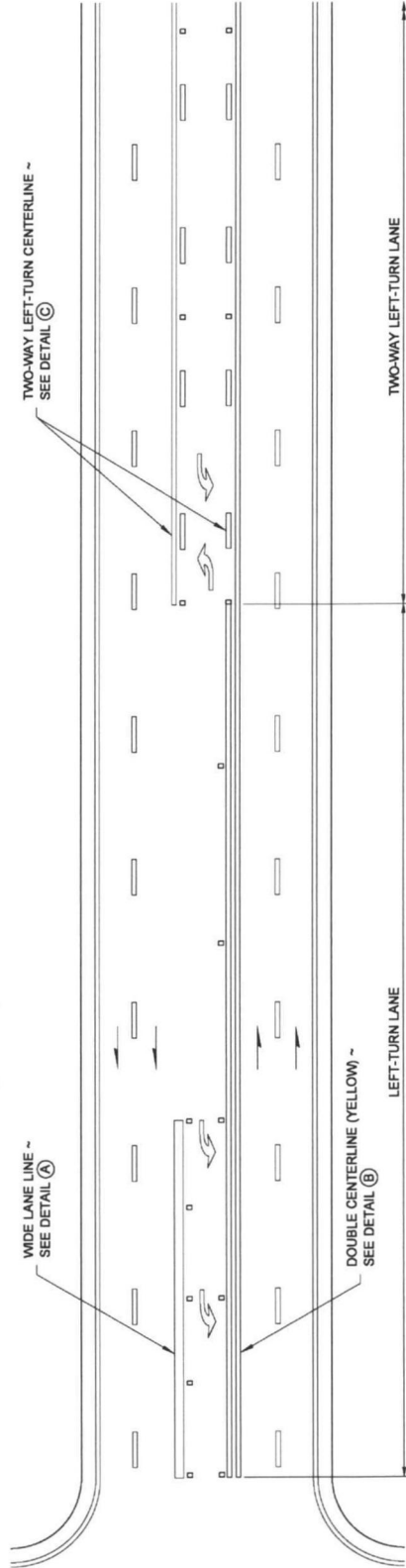
NOTES

1. Raised pavement markers shall be installed only when specified in the Contract Plans.
2. See the Standard Plans for marker designation.
3. The portion labeled "OPTIONAL" is used only when the Optional Marked Deceleration Taper (see **Standard Plans M-3.10 and M-3.20**) is specified in the Contract Plans.

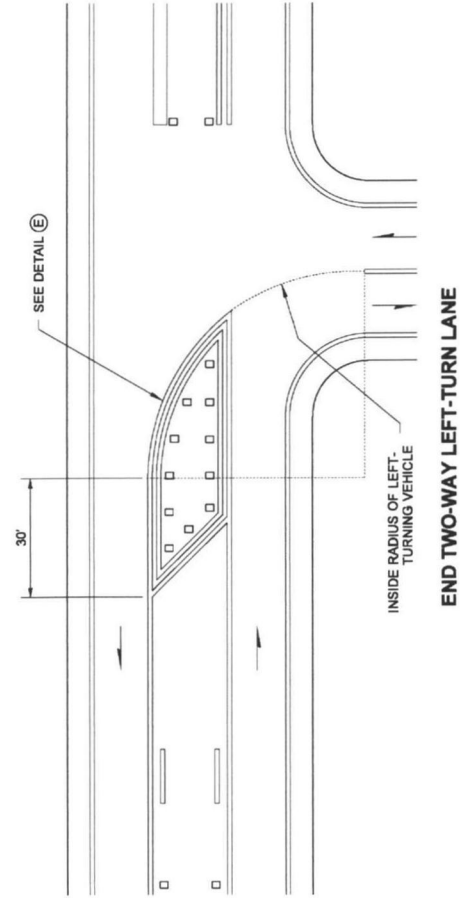
Type 2L (SL) Traffic Arrow



LEFT-TURN LANE (SEE NOTE 3)



TWO-WAY LEFT-TURN LANE



END TWO-WAY LEFT-TURN LANE



**LONGITUDINAL MARKING
SUPPLEMENT WITH RPMs ~
TURN LANES
STANDARD PLAN M-20.40-03**

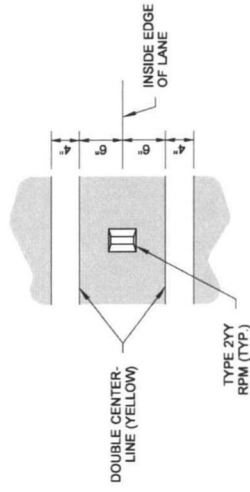
SHEET 1 OF 2 SHEETS

APPROVED FOR PUBLICATION

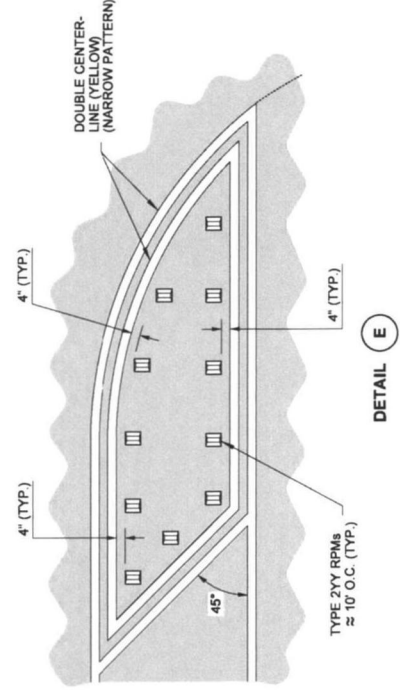
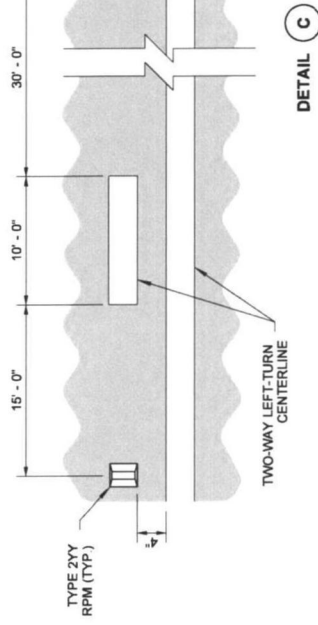
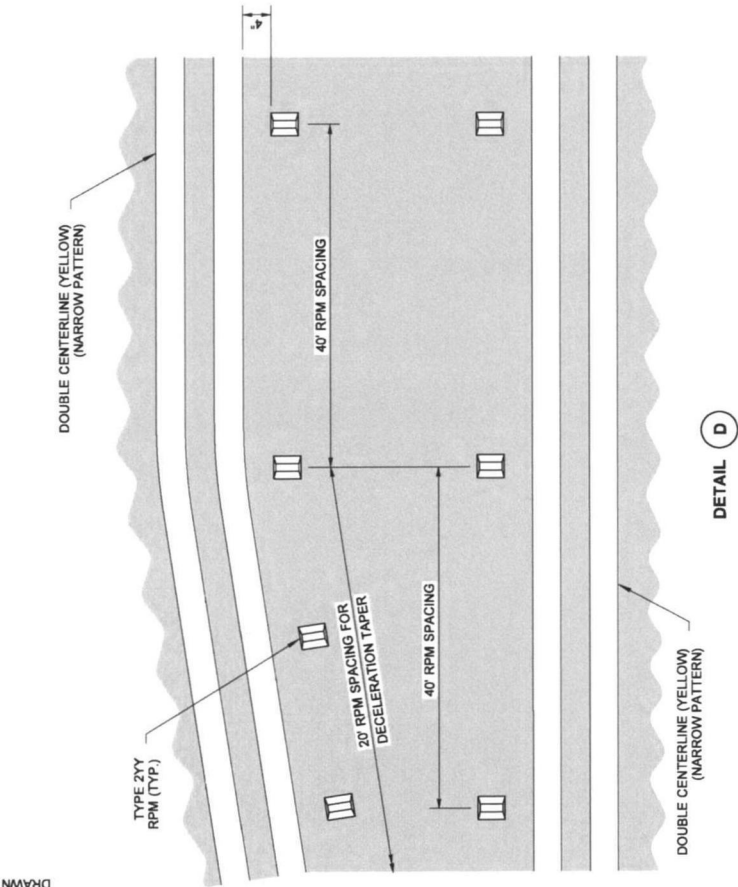
Halachuk, Pasco
Jun 24 2014 4:42 PM

STATE DESIGN ENGINEER

Washington State Department of Transportation



DRAWN BY: LISA CYFORD



Walsh, Brian

Walsh, Brian
Jun 24 2014 2:33 PM

**LONGITUDINAL MARKING
SUPPLEMENT WITH RPMs ~
TURN LANES
STANDARD PLAN M-20.40-03**

SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION

B. Lakotich

STATE DESIGN ENGINEER



Diagram of a 'V' symbol with dimensions and marking area:

- Symbol & Lane: V
- Dimensions:
 - Top horizontal dimension: 1' - 3"
 - Right vertical dimension: 0' - 5"
 - Bottom horizontal dimension: 0' - 8"
- Marking Area: 8.03 SQ. FT.

[illegible]

Use the dimensions shown on this plan for each type of Traffic Arrow being placed on roadways with a posted speed limit of 40 mph or lower.

Technical drawing of a Type 4S Traffic Arrow. The drawing shows a square marking area of 12.66 sq. ft. with a 4-inch grid. The arrow is symmetrical about a vertical centerline. Dimensions include a total width of 8'-0", a symbol and lane width of 2'-4", and a marking area width of 3'-0". The arrow is composed of two main parts: Ellipse 'A' and Ellipse 'B'. Ellipse 'A' has a width of 1'-0" and a height of 1'-2". Ellipse 'B' has a width of 3'-0" and a height of 2'-4". The center point of the ellipses is marked. The grid is 4 inches square.

MARKING AREA
14.83 SQ. IN.

MIRROR IMAGE OF
TYPE 3SL TRAFFIC ARROW
(SHOWN AT REDUCED SCALE)

SHEET 1 OF 2 SHEETS

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Bakosich, Pasco
Apr 20 2015 10 11 AM

Rene B. Holtz

STATE DESIGN ENGINEER

 Washington State Department of Transportation



Bryant Webb
Webb
Apr 16 2015 2:21 PM
**SYMBOL MARKINGS ~
TRAFFIC ARROWS FOR
LOW-SPEED ROADWAYS
STANDARD PLAN M-24.40-02**

SHEET 1 OF 2 SHEETS

APPROVED FOR PUBLICATION

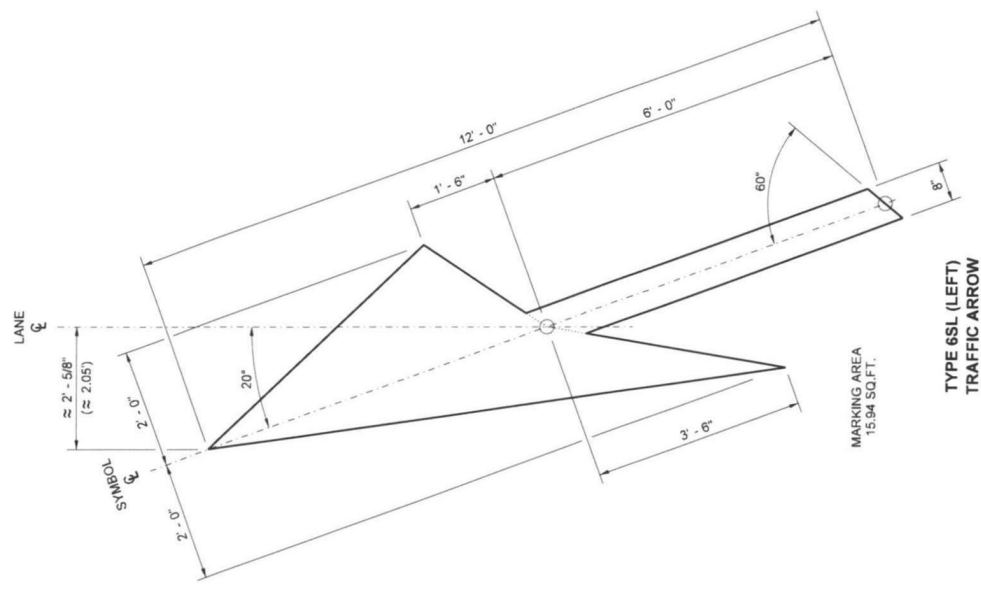
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STATE DESIGN ENGINEER

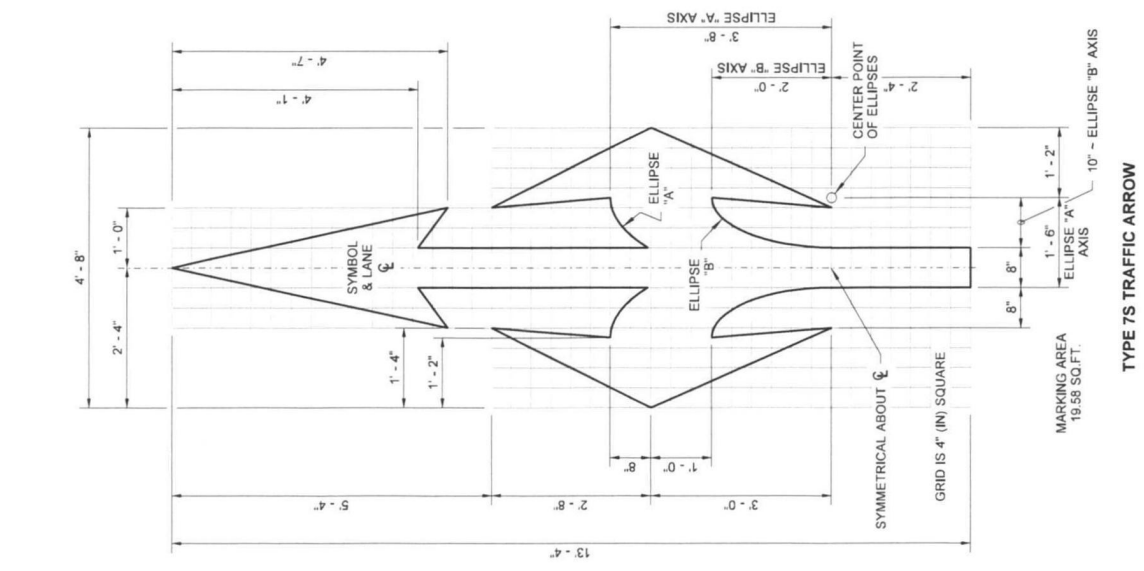


Washington State Department of Transportation
STATE DESIGN ENGINEER

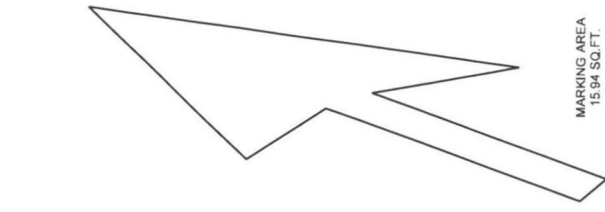
DRAWN BY: COLBY FLETCHER



TYPE 6SL (LEFT)
TRAFFIC ARROW



TYPE 7S TRAFFIC ARROW



TYPE 6SR (RIGHT)
TRAFFIC ARROW
MIRROR IMAGE OF TYPE 6SL
(MIRRORED ABOUT LANE CENTERLINE)
(SHOWN AT REDUCED SCALE)



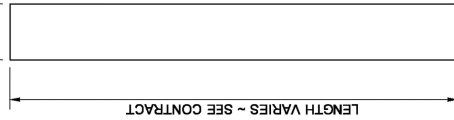
Brian J. Walsh
Professional Engineer
No. 36103
State of Washington
Apr 16 2015 2:21 PM

**SYMBOL MARKINGS ~
TRAFFIC ARROWS FOR
LOW-SPEED ROADWAYS
STANDARD PLAN M-24.40-02**

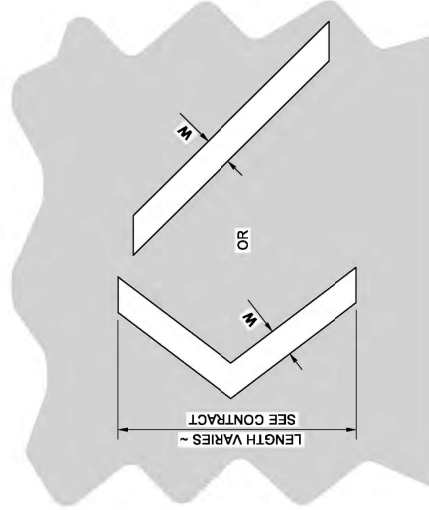
SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION
Hakim, Pao
Apr 20 2015 10:11 AM
STATE DESIGN ENGINEER
Washington State Department of Transportation

1'-6" ~ UNLESS NOTED
OTHERWISE IN CONTRACT



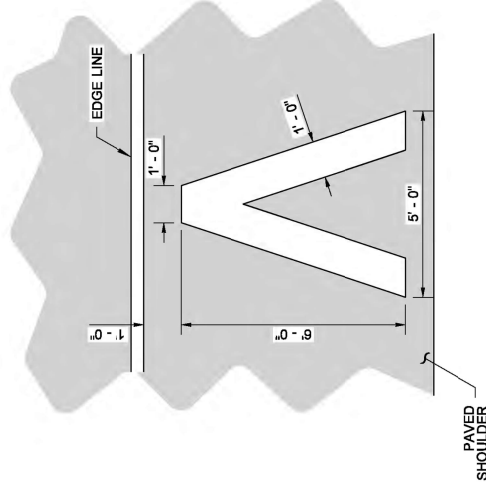
STOP LINE



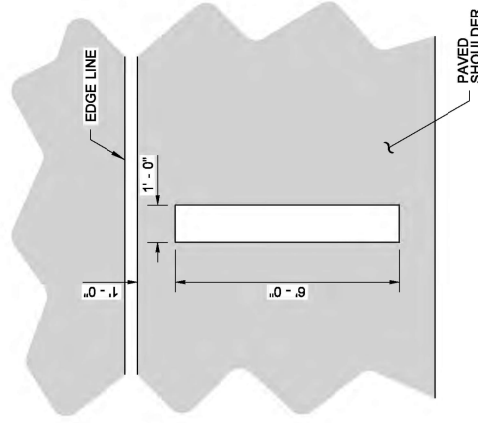
WHITE OR YELLOW ~ SEE CONTRACT
CHEVRON OR DIAGONAL

CROSSHATCH MARKING

W = 8" (N) FOR POSTED SPEED LIMIT OF 40 MPH OR LOWER
W = 12" (N) FOR POSTED SPEED LIMIT OF 45 MPH OR HIGHER

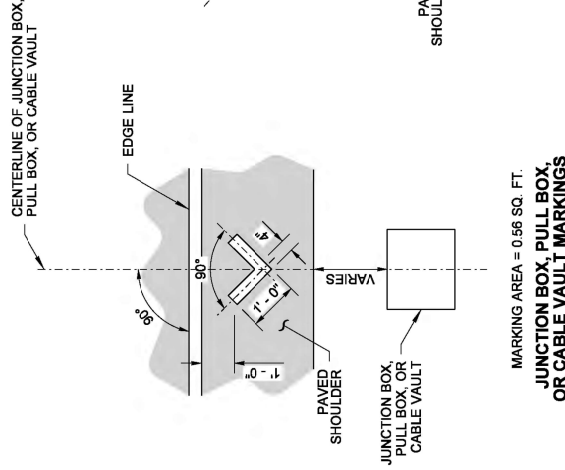


MARKING AREA = 11.73 SQ.FT.
HALF-MILE MARKER

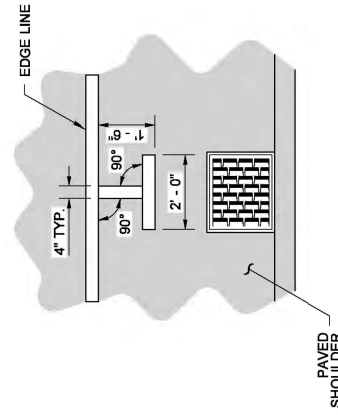


MARKING AREA = 6.00 SQ.FT.
FULL MILE MARKER

AERIAL SURVEILLANCE MARKERS



MARKING AREA = 0.56 SQ. FT.
JUNCTION BOX, PULL BOX,
OR CABLE VAULT MARKINGS

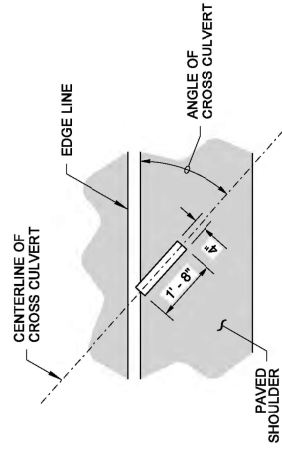


MARKING AREA = 1.06 SQ.FT.
DRAINAGE STRUCTURE INLET

DRAINAGE MARKING

NOTE

1. If Rumble Strips are present, install marking outside of the Rumble Strip.



MARKING AREA = 0.56 SQ. FT.
CROSS CULVERT

DRAINAGE MARKING



Brian J. Walsh
Walsh, Brian
Jun 24 2014 2:35 PM
C&G

SYMBOL MARKINGS MISCELLANEOUS

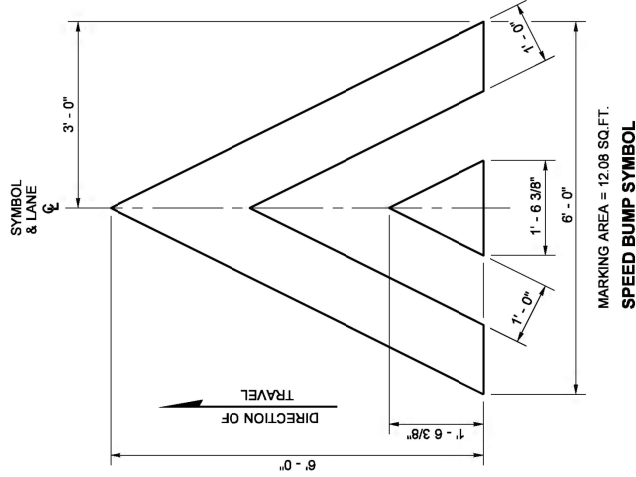
STANDARD PLAN M-24.60-04

SHEET 1 OF 2 SHEETS

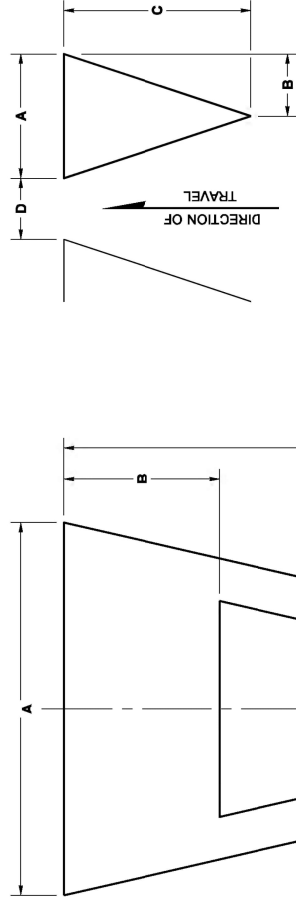
APPROVED FOR PUBLICATION
Dakotah, Inc.
Jun 24 2014 4:43 PM

STATE DESIGN ENGINEER
Washington State Department of Transportation

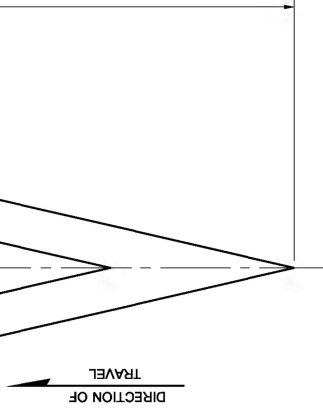
Technical drawing of a square sign with a wheelchair symbol. The sign is 5' x 5' with a 1' x 2' symbol in the center. Dimensions are provided for the symbol's placement and the sign's overall size.



Technical drawing of a square sign with a wheelchair symbol. The sign is 3'-0" square. The symbol is 2'-0" wide and 10" high. The sign has a 3" border. Dimensions are given in feet and inches.

* MINIMUM OF 4 IN LANE

YIELD LINE SYMBOL
(MULTIPLE SYMBOLS REQUIRED
FOR TRANSVERSE YIELD LINE -
SEE CONTRACT)



YIELD AHEAD SYMBOL

Walsh, Brian
Jun 24 2014 2:37 PM

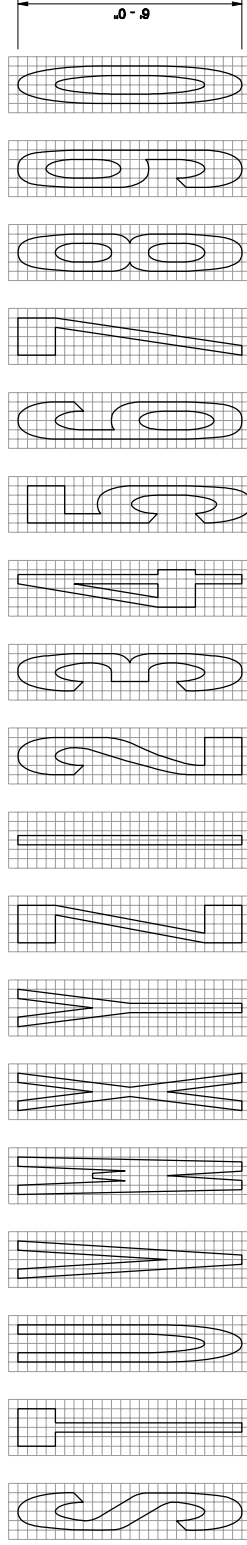
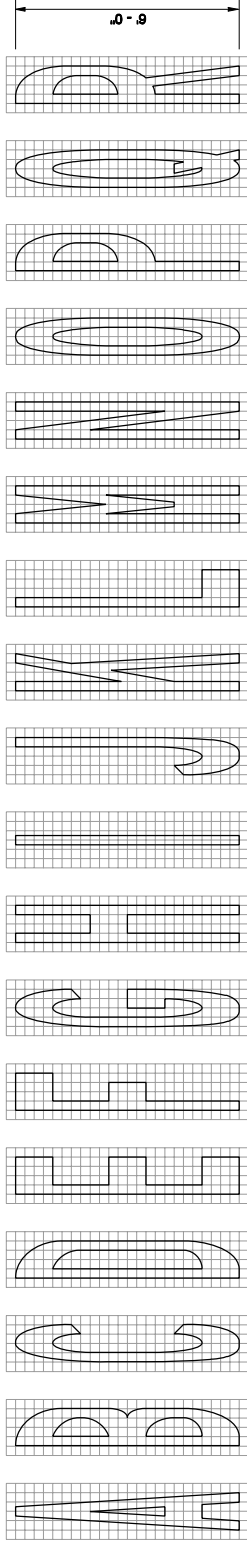
SYMBOL MARKINGS MISCELLANEOUS

STANDARD PLAN M-24.60-04

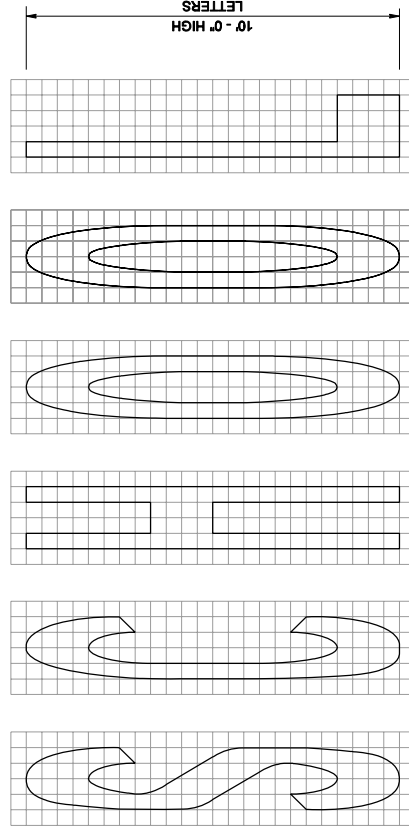
SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION
Bakotich, Pasco
Jun 24 2014 4:43 PM

STATE DESIGN ENGINEER
Washington State Department of Transportation



SIX FOOT HIGH LETTERS AND NUMERALS SHOWN ON A THREE- INCH SQUARE GRID



TEN FOOT HIGH LETTERS SHOWN ON A FIVE- INCH SQUARE GRID



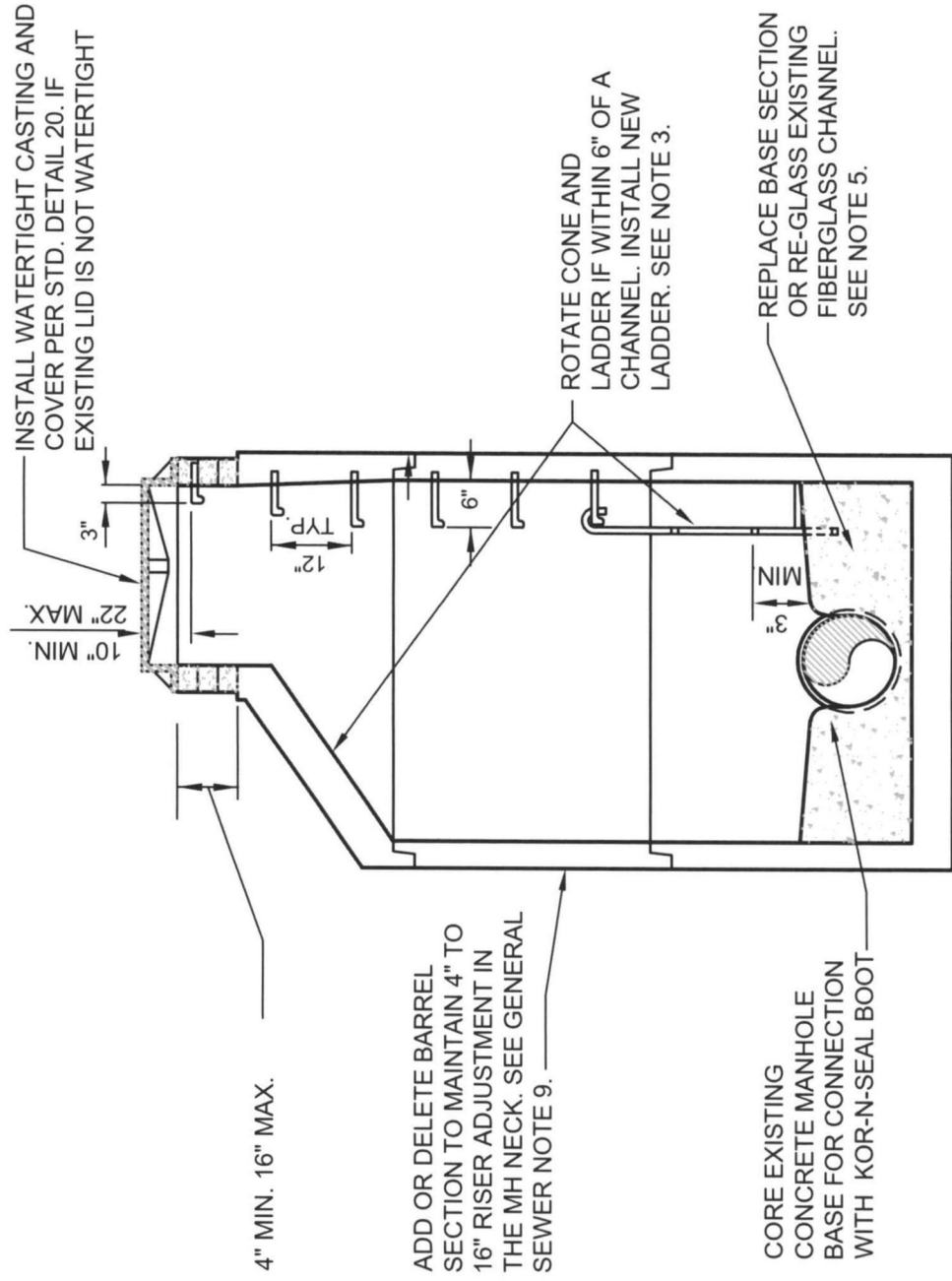
EXPIRES AUGUST 9, 2009

**TRAFFIC LETTERS AND
NUMERALS
(LOW SPEED ROADWAYS)
STANDARD PLAN M-80.30-00**

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Pasco Bakofich III 06-10-08
STATE DESIGN ENGINEER DATE
Washington State Department of Transportation

FOR USE ON ROADWAYS WITH A POSTED SPEED OF 40 MPH OR LESS



SECTION

NOTES:

1. NOTIFY THE DISTRICT AT LEAST 7 DAYS IN ADVANCE AND MAKE THE NECESSARY ARRANGEMENTS WITH THE WATER DISTRICT INSPECTOR FOR CONNECTION TO THE EXISTING MANHOLE.
2. CONTRACTOR SHALL SUBMIT A BYPASS PLAN FOR EXISTING FLOWS WHILE WORKING IN THE EXISTING MANHOLE UNLESS DEEMED UNNECESSARY BY THE DISTRICT.
3. ROTATE CONE AND INSTALL NEW LADDER PER STANDARD DETAIL 18 IF EXISTING LADDER IS WITHIN 6" OF THE EDGE OF ANY CHANNEL.
4. CORE EXISTING MH AND USE KOR-N-SEAL CONNECTION, UNLESS KNOCKOUTS EXIST ON THE BASE SECTION. IN THIS CASE, CORE STILL REQUIRED AND GPK SAND COLLAR SHALL BE USED INSTEAD OF THE KOR-N-SEAL BOOT.
5. CONNECTIONS INTO AN EXISTING FIBERGLASS BASE, CONTRACTOR SHALL REPLACE THE BASE SECTION OR HAVE THE CHANNEL RE-GLASSED BY A CERTIFIED SERVICE TECHNICIAN TO ACCOMMODATE THE NEW CONNECTION. (WWW.PREDLSYSTEMS.COM) FOR A LIST OF CERTIFIED TECHNICIANS THAT CAN PERFORM THE WORK.



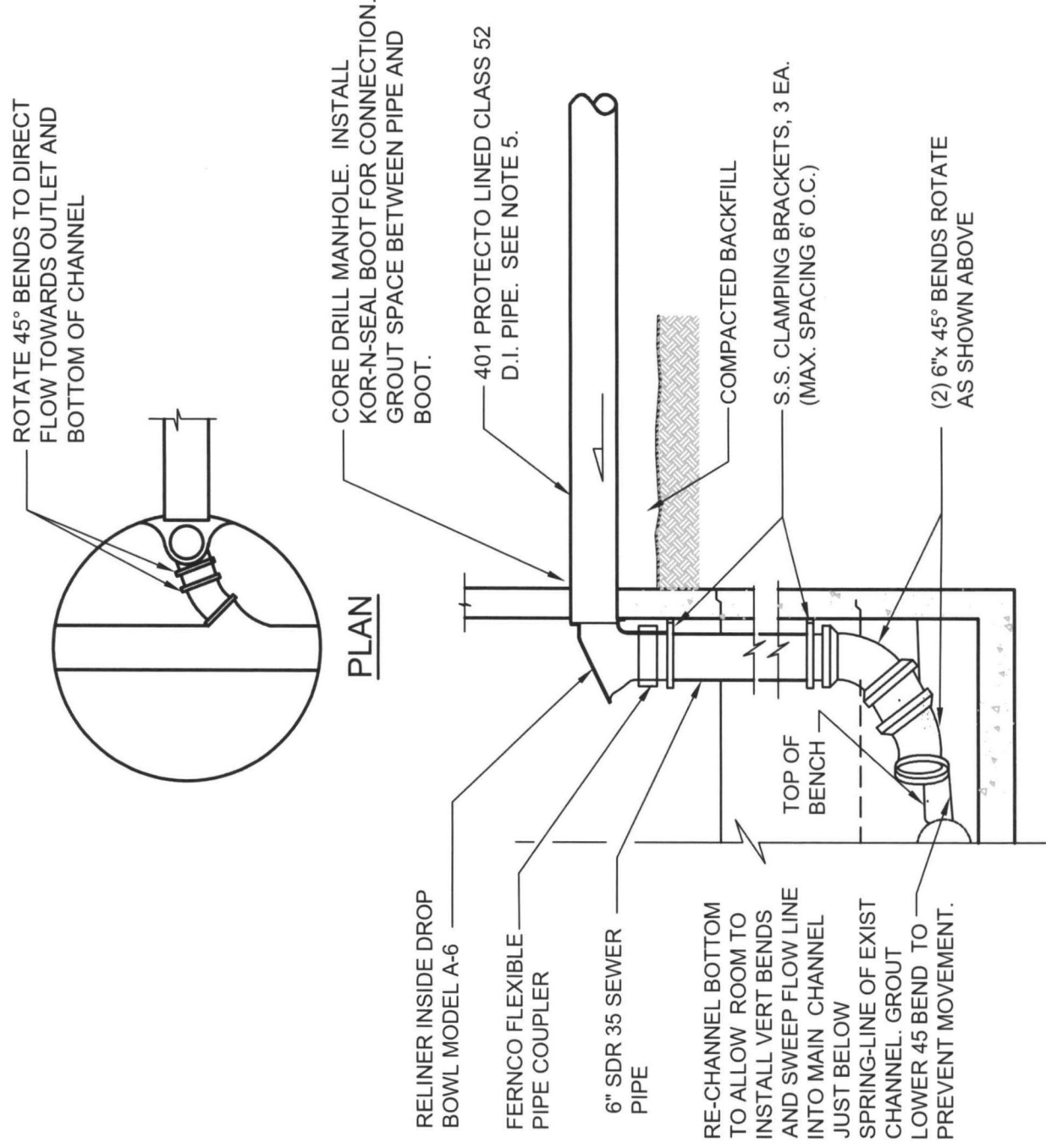
**Woodinville
Water District**



**CONNECTION TO
EXISTING MH**

**SEWER STD.
PLAN NO. 1**

REVISION DATE
12-20



NOTES:

1. INSIDE DROP ALLOWED ONLY WITH SPECIFIC APPROVAL FROM THE DISTRICT.
2. 8" MAX. SIZE INLET. DEPENDING ON FLOWS THE DROP PIPE DROP AND BENDS MAY HAVE TO BE UPSIZED TO 8".
3. RELINER INSIDE DROP BOWL AND CLAMPING BRACKETS AS MANUFACTURED BY RELINER/DURAN INC. (860)434-0277.
4. MIN. SIZE MH FOR INSIRE DROP IS 60".
5. 401 PROTECTO LINED CLASS 52 DUCTILE IRON PIPE TO BE INSTALLED FROM DROP LOCATION TO THE NEXT UPSTREAM MANHOLE.

INSIDE DROP MANHOLE CONNECTION

NOT TO SCALE



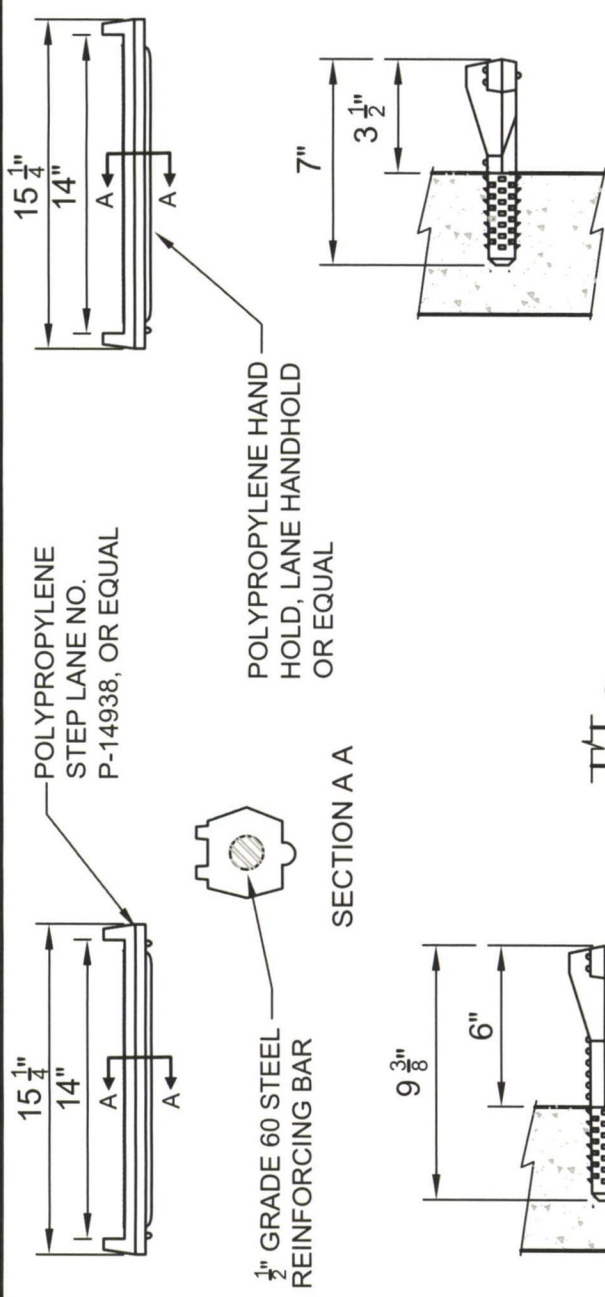
**Woodinville
Water District**



**INSIDE DROP
DETAIL**

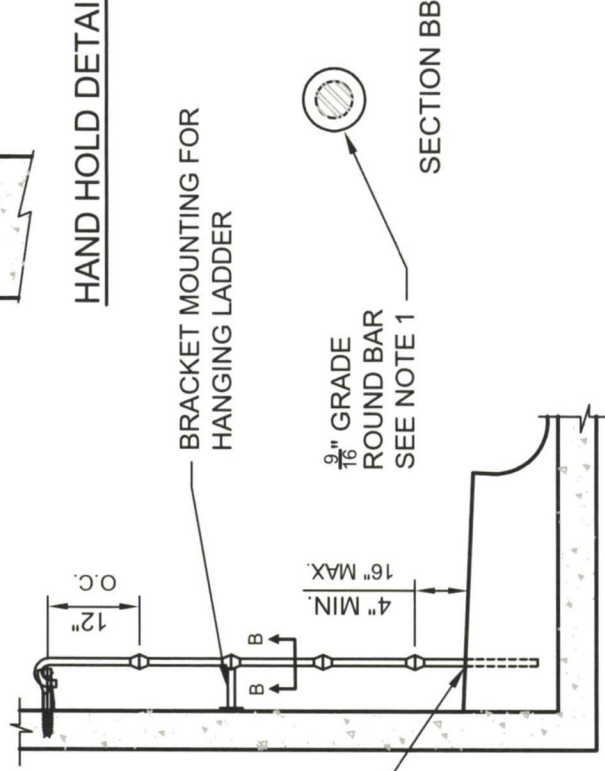
**SEWER STD.
PLAN NO. 7**

**REVISION DATE
12-20**



HAND HOLD DETAIL

MANHOLE STEP



NOTES:

1. POLYPROPYLENE TO CONFORM WITH ASTM-4101. STEPS SHALL MEET THE REQUIREMENTS OF ASTM C-478 AND AASHTO M-199. STEPS SHALL HAVE 1/2" GRADE 60 DEFORMED REINFORCING BAR THAT MEETS ASTM A-615. LADDERS TO MEET ASTM C-497 LOAD REQUIREMENTS. HANGING LADDERS SHALL USE 9/16" COLD DRAWN BARPER C-1018.
2. HANDHOLD OR RECESSED STEP TO BE USED AT TOP OF CONE. LADDER RUNGS AND HANDHOLD STEP SIDES SHALL BE IN A STRAIGHT VERTICAL LINE. SEE STANDARD PLAN 2.
3. POSITION LADDER PER STANDARD PLAN 19.
4. MAXIMUM HEIGHT FOR HANGING LADDER IS 4'.
5. MAXIMUM ALLOWABLE DISTANCE FROM TOP OF CASTING TO TOP OF CONE STEP IS 22". ADD HANDHOLD @ 12" O.C. IF GREATER THAN 22".
6. PROVIDE MOUNTING BRACKET AT BASE IF THE LADDER IS NOT EMBEDDED IN THE BENCH.



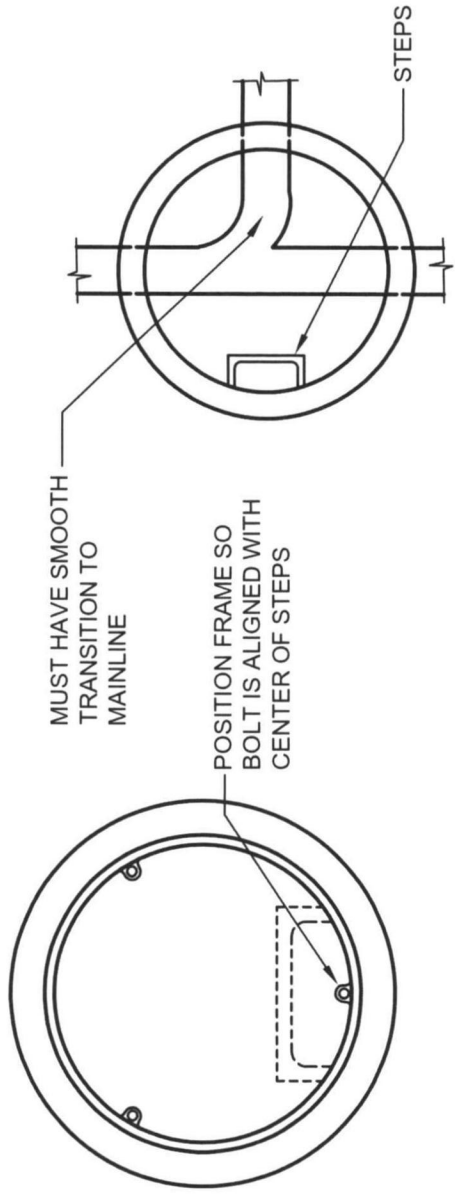
**Woodinville
Water District**



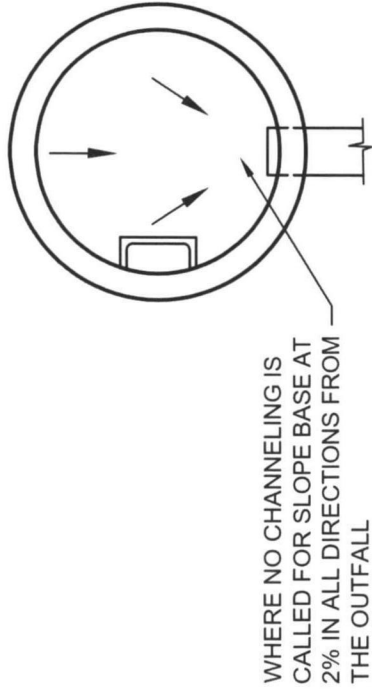
**STEP AND LADDER
DETAILS**

**SEWER STD.
PLAN NO. 18**

**REVISION DATE
12-20**



LOCKING LID POSITIONING DETAIL



CHANNELING DETAIL

FULL DEPTH CHANNELS SHALL BE MADE TO CONFORM TO THE SEWER GRADE AND SHALL BE BROUGHT TOGETHER WITH WELL-ROUNDED JUNCTIONS. CHANNEL SIDES SHALL BE CARRIED UP VERTICALLY $\frac{3}{4}$ OF THE LARGEST PIPE'S DIAMETER AND ROUNDED TO THE BENCHES. THE BENCHES SHALL BE SMOOTHLY FINISHED WITH 2% MINIMUM SLOPE TOWARD CHANNEL

1. MANHOLE CHANNELING OF EXISTING CONCRETE STRUCTURES SHALL BE PERFORMED BY DISTRICT APPROVED SUB-CONTRACTORS. SHOULD THE CONTRACTOR REQUEST DOING THE WORK THEMSELVES OR AN UNKNOWN SUB-CONTRACTOR, THE DISTRICT SHALL REQUIRE SAMPLE CHANNEL WORK ON ONE MANHOLE BEFORE GIVING APPROVAL TO PROCEED WITH THE REMAINDER OF THE WORK.
2. CHANNELS, BENCHES AND ENTIRE BASE SECTION SHALL BE FIBERGLASS LINED AND MANUFACTURED BY PREDL SYSTEMS OR APPROVED EQUAL.
3. EXISTING PREDL SYSTEM FIBERGLASS LINED MANHOLE BASES SHALL BE EITHER REPLACED OR RE-GLASSED BY A CERTIFIED SERVICE TECHNICIAN. (WWW.PREDLSYSTEMS.COM) FOR A LIST OF CERTIFIED TECHNICIANS THAT CAN PERFORM THE WORK.
4. SIDE SEWER CHANNEL I.E. TO BE .1' HIGHER (MIN) THAN MAIN CHANNEL AT POINT OF ENTRY.



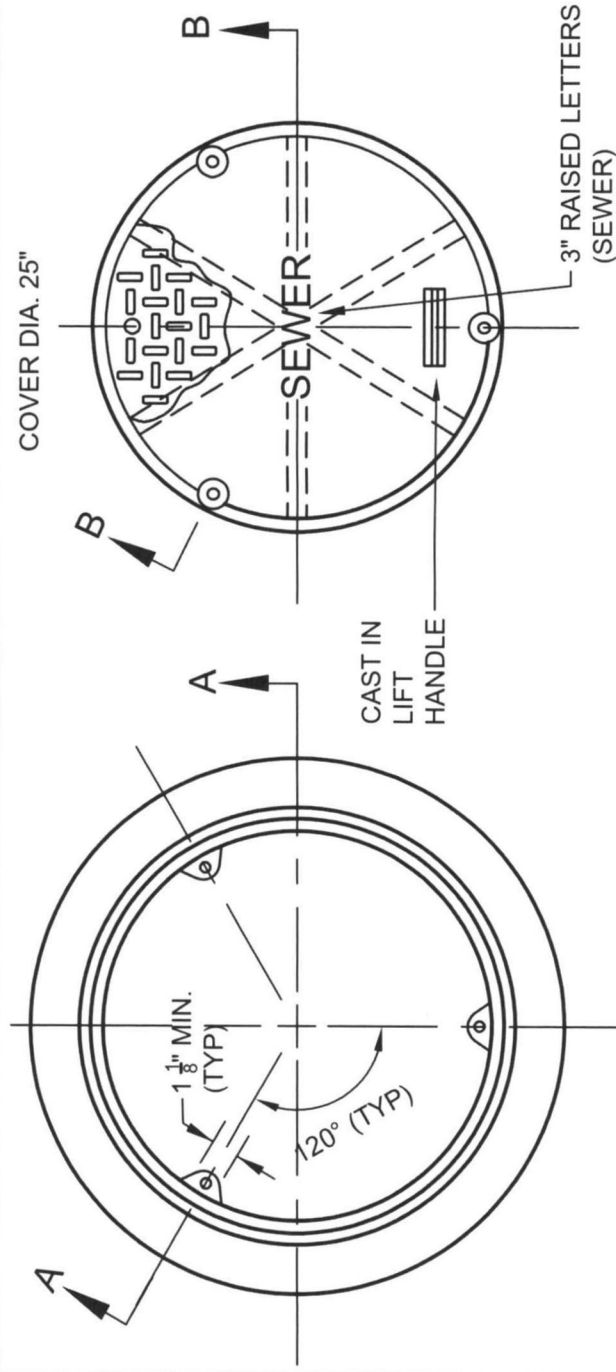
**Woodinville
Water District**

**CHANNEL & LADDER
LOCATION DETAILS**

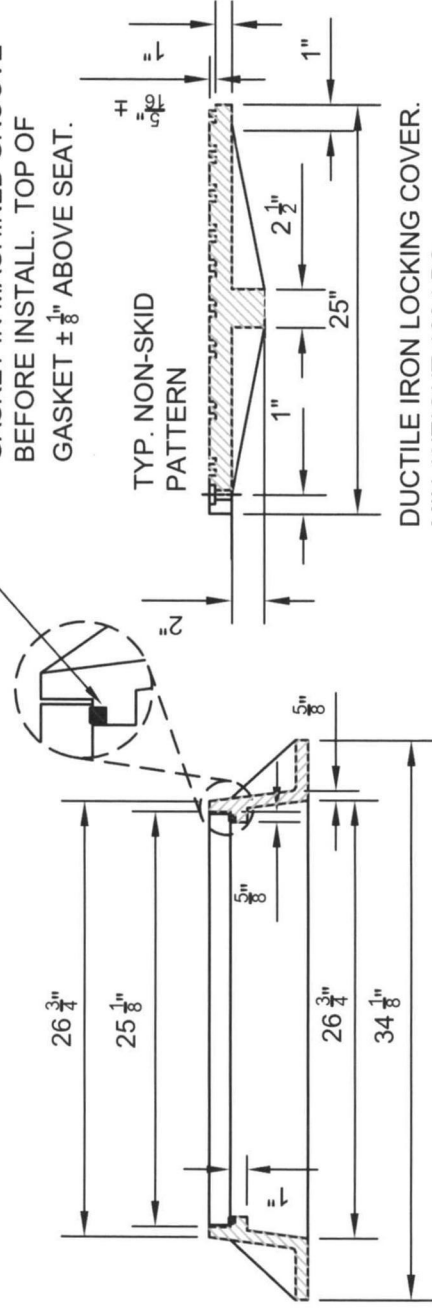


**SEWER STD.
PLAN NO. 19**

**REVISION DATE
12-20**



GLUE 1/4" RESILIENT RUBBER GASKET IN MACHINED GROOVE BEFORE INSTALL. TOP OF GASKET ± 1/8" ABOVE SEAT.



SECTION A-A

NOTES

1. MANHOLE COVER SHALL BE DUCTILE IRON (ASTM A 48 CLASS 30). MH CASTING CAN BE DUCTILE IRON OR CAST IRON AS MANUFACTURED BY EAST JORDAN IRON WORKS PRODUCT NO. 00370548W01 CATALOG NO. 3705APT DI 3715ZPT OR APPROVED EQUAL.
2. DRILL AND TAP (3) 5/8" HOLES THRU FRAME @ 120°. COVERS & CASTINGS THAT CANNOT BE BOLTED DOWN IN ANY ROTATION OF THE BOLTS WILL BE REJECTED.
3. MH COVERS NOT ALLOWED IN SIDEWALK, CURB & GUTTER, LOW AREAS THAT COLLECT RUNOFF AND WHENEVER POSSIBLE POSITION FRAME OUT OF WHEEL TRACKS.
4. MH LOCATIONS OUT OF PAVED AREAS REQUIRE A CONCRETE COLLAR. SEE STD. PLAN NO 21.
5. PROVIDE (3) 5/8" S.S. LOCKING BOLTS WITH RUBBER WASHERS PER COVER. ENSURE MH COVERS ARE BOLTED DOWN AFTER FINAL INSPECTION.



**Woodinville
Water District**

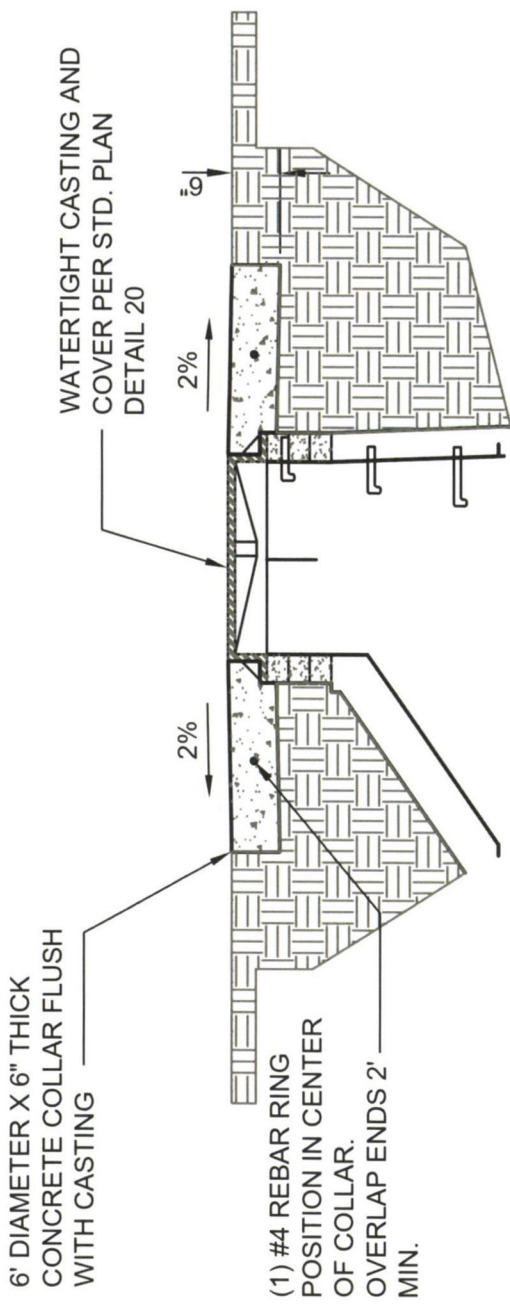


**WATERTIGHT MANHOLE
CASTING AND FRAME**

**SEWER STD.
PLAN NO. 20**

REVISION DATE

12-20



NOTES:

1. NECK OF MH TO BE SEAL WRAPPED IN WET AREAS. SEE STANDARD PLAN 1 & 2 AND SEWER SPECIFICATIONS.
2. SLOPE CONCRETE COLLAR @ 2% AWAY FROM THE TOP OF THE MH LID.
3. APPLY A SMOOTH PROFESSIONAL BROOM FINISH TO CONCRETE SURFACE.
4. CLEAN CONCRETE SLURRY FROM THE MH LID.



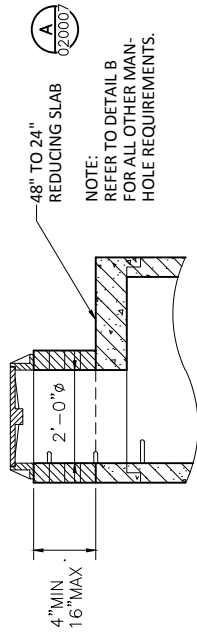
**Woodinville
Water District**



**MANHOLE COLLAR
DETAIL**

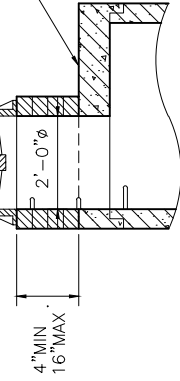
**SEWER STD.
PLAN NO. 21**

**REVISION DATE
12-20**



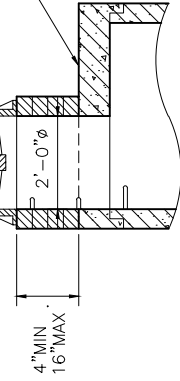
48" TO 24"
REDUCING SLAB

NOTE:
REFER TO DETAIL B
FOR ALL OTHER MAN-
HOLE REQUIREMENTS.



48" TO 24"
REDUCING SLAB

NOTE:
REFER TO DETAIL B
FOR ALL OTHER MAN-
HOLE REQUIREMENTS.

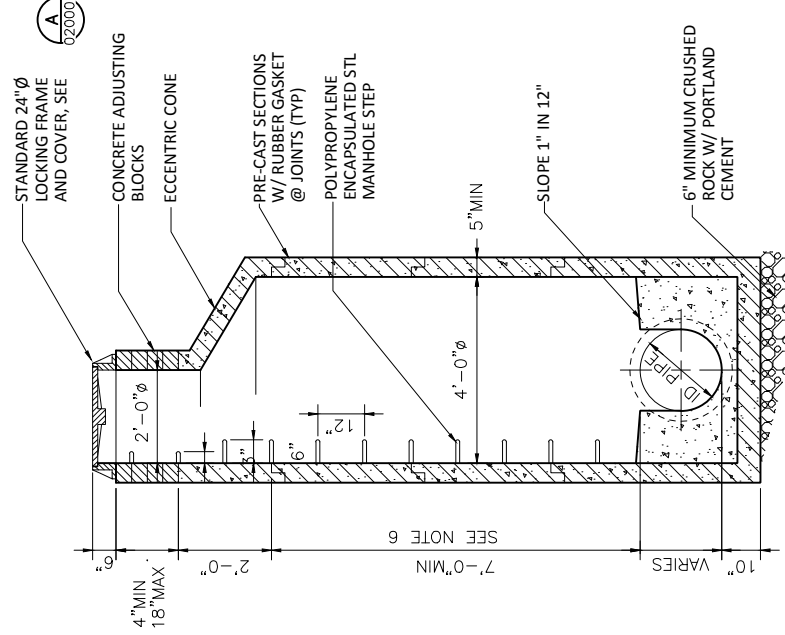


48" TO 24"
REDUCING SLAB

NOTE:
REFER TO DETAIL B
FOR ALL OTHER MAN-
HOLE REQUIREMENTS.

TYPICAL REDUCING SLAB
SCALE: 1/2" = 1'-0"

A
020001



STANDARD 24"Ø
LOCKING FRAME
AND COVER, SEE

CONCRETE ADJUSTING
BLOCKS

ECCENTRIC CONE

PRE-CAST SECTIONS
W/ RUBBER GASKET
@ JOINTS (TYP)

POLYPROPYLENE
ENCAPSULATED STL
MANHOLE STEP

4'-0"Ø

5"MIN

SLOPE 1" IN 12"

6" MINIMUM CRUSHED
ROCK W/ PORTLAND
CEMENT

VARIES

10"

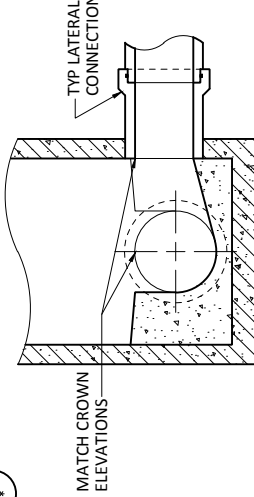
SEE NOTE 6

A
020001

8" THRU 21" DIA PIPE

TYPICAL TYPE-A PRECAST MANHOLE
SCALE: 1/2" = 1'-0"

B



MATCH CROWN
ELEVATIONS

TYP LATERAL
CONNECTION

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

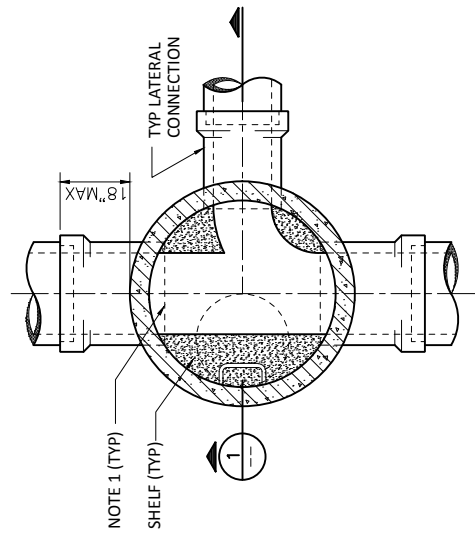
18" MAX

18" MAX

18" MAX

SECTION
SCALE: 1/2" = 1'-0"

1



NOTE 1 (TYP)

SHELF (TYP)

TYP LATERAL
CONNECTION

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

18" MAX

BASE - PLAN

TYPICAL CONNECTION DETAIL
SCALE: 1/2" = 1'-0"

D

NOTES:

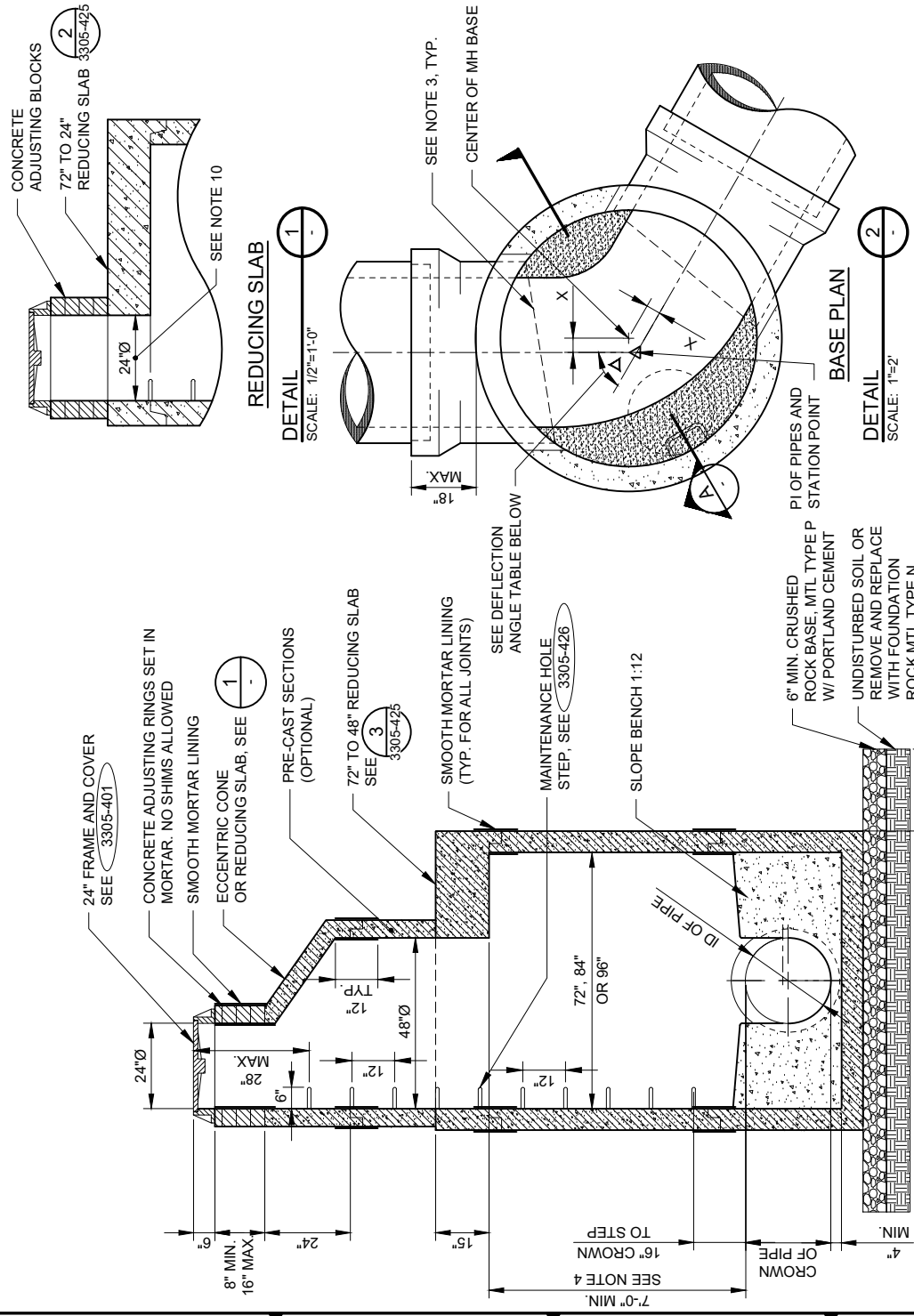
1. TOP HALF OF PIPE TO BE REMOVED TO CONTOUR OF INSIDE OF MANHOLE. BROKEN EDGES TO BE PLASTERED SMOOTH WITH MORTAR. TYPICAL ALL MANHOLES.
2. PRECAST MANHOLE SECTIONS SHALL CONFORM TO ASTM C-478 AND THE SPECIFICATIONS, EXCEPT WHERE OTHERWISE NOTED. CONTRACTOR SHALL SUBMIT DESIGN DRAWINGS FOR APPROVAL.
3. ALL MANHOLE RISERS JOINTS SHALL BE RUBBER GASKET TYPE, CONFORMING TO ASTM C-443. DETAILS OF JOINTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION. JOINTS AT BASE, CONE AND ADJUSTING RINGS SHALL BE SEALED WITH MASTIC PER SPECIFICATION SECTION 07 92 00.
4. PENETRATIONS OF EXISTING MANHOLES SHALL BE MADE BY CORE DRILLING AND USE OF A "KOR-N-SEAL" FLEXIBLE WATERTIGHT RUBBER BOOT.
5. ALL CONNECTIONS OF NEW MANHOLES SHALL BE INSTALLED WITH A "KOR-N-SEAL" FLEXIBLE WATERTIGHT RUBBER BOOT.
6. ELIMINATE 2' BY 4' PRECAST CONE SECTION ON MANHOLES LESS THAN 11' DEEP TO CROWN OF SEWER. BEFORE REDUCING 7' DEPTH OF A 4' OR 6' CIRCULAR MANHOLE, USE REDUCING SLAB FOR SUPPORTING ADJUSTING BLOCKS.
7. ALL JOINTS EXCEPT PIPE JOINTS, SHALL BE MORTAR FILLED.



King County
Department of Natural Resources Water
Treatment Division

STANDARD TYPE-A MANHOLE

MODIFIED NOTES 4 AND 5.	MAY 2017	RRB
MODIFIED MIN/MAX OF ADJUSTING BLOCKS	April 2013	GLH
DELETED NOTE SAYING TO GROUT AT PIPE	MAR 09	GLH
REDUCED MIN DEPTH OF ADJUSTING BLOCKS	JAN 07	GLH
DIS-ALLOWED LINE DRILLING OF EXISTING MH	JAN 07	GLH
DATE:	12/9/96	DRAWN: DJB
DWG/FILE NO:	20002	



DEFLECTION ANGLE (Δ)	OFFSET X - 36" 42" 48" ID	
	DIP	RCP
LESS THAN 35°	0"	0"
35° TO < 55°	3"	2"
55° TO < 75°	6"	4"
75° & LARGER	10"	8"

USE 84" DIAMETER MAINTENANCE HOLE FOR 48" RCP > 75°

MAINTENANCE HOLE DIMENSION TABLE				
DIAMETER	MIN. WALL THICKNESS	MIN. BASE THICKNESS	MAX. KNOCKOUT SIZE	MIN. DISTANCE BETWEEN KNOCKOUTS
72"	6"	8"	60"	12"
84"	8"	12"	72"	12"
96"	8"	12"	84"	12"

NOTES:

1. REFER TO SPECIFICATION SECTION 33 05 61 UTILITY STRUCTURES FOR MAINTENANCE HOLE REQUIREMENTS.
2. BASE REINFORCING: 0.35 SQUARE INCHES/LINEAR FOOT IN BOTH DIRECTIONS. MINIMUM YIELD STRENGTH = 60,000 PSI.
3. TOP HALF OF PIPE TO BE REMOVED TO CONTOUR OF INSIDE OF MAINTENANCE HOLE. BROKEN EDGES TO BE PLASTERED SMOOTH WITH MORTAR. TYPICAL ALL MAINTENANCE HOLES.
4. PRECAST MAINTENANCE HOLE SECTIONS SHALL CONFORM TO SPECIFICATION 33 05 61, EXCEPT WHERE OTHERWISE NOTED.
5. ALL MAINTENANCE HOLE RISERS, JOINTS SHALL BE RUBBER GASKET TYPE, CONFORMING TO SPECIFICATION 33 05 61. JOINTS AT BASE, CONE AND ADJUSTING RINGS SHALL BE SEALED PER SPECIFICATION SECTION 33 05 61.
6. PENETRATIONS OF EXISTING MAINTENANCE HOLES SHALL BE MADE BY CORE DRILLING AND USE OF A FLEXIBLE WATERTIGHT RUBBER BOOT PER SPECIFICATION 33 05 61.
7. ALL CONNECTIONS OF NEW MAINTENANCE HOLES SHALL BE INSTALLED WITH A FLEXIBLE WATERTIGHT RUBBER BOOT PER SPECIFICATION 33 05 61.
8. ELIMINATE 2 FT BY 4 FT PRECAST CONE SECTION ON MAINTENANCE HOLES LESS THAN 11 FT DEEP TO CROWN OF SEWER. BEFORE REDUCING 7 FT DEPTH OF A 4 FT OR 6 FT CIRCULAR MAINTENANCE HOLE, USE REDUCING SLAB FOR SUPPORTING ADJUSTING RINGS.
9. SHALLOW MAINTENANCE HOLES REQUIRING THE MAINTENANCE HOLE FRAME TO BE PLACED DIRECTLY ON THE REDUCING SLAB, THIS DIMENSION SHALL BE 24"Ø.
10. BELLS SHALL BE CAST INTO PRECAST MAINTENANCE HOLE BASE BY MAINTENANCE HOLE MANUFACTURER.
11. BRING LOCATE WIRE INTO STRUCTURE 2 FEET BELOW GRADE ADJACENT TO MH STEP. HANG MINIMUM 4 FEET OF LOCATE WIRE ON NEAREST MH STEP.

DESIGNED/DRAWN*

NI KHAMBHOI KEO

N. KHAMPHOUKEO

CHECKED:

K. MARTINEZ

DEPARTMENT OF NATURAL RESOURCES & PARKS

DEPARTMENT OF NATURAL RESOURCES &
WASTEWATER TREATMENT DIVISION

DIVISION 33 - UTILITIES

DIVISION OF MAINTENANCE HOLES

DATE:

MARCH 2024

IVIA

3305-416

SHT NO / TOTAL	REV NO:
# #	0

TYPE-B MAINTENANCE HOLE

King County

REVISED HOLE STEPS LAYOUT	AM
---------------------------	----

NO	REVISION DESCRIPTION	RY
A	REVISED STRUCTURE AND LAYOUT DIMENSIONS	IP

NO	REVISION DESCRIPTION	DATE
	A	
	B	