

2024 OREGON STANDARD DRAWINGS

Standard Distribution
Date of Issue: July 2026

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Senior Standards Engineer

This is the July 2026 release of the 2024 Oregon Standard Drawings.

For ODOT Projects, the details in the standard drawings will be effective on the **December 1, 2026**, bid opening where these drawings are called for in the project plans.

These drawings are for use with projects using the **2024 Oregon Standard Specifications**.

The drawing “effective date” is located below the title block on each Standard Drawing. The bid opening date of a project should be in the effective date window of the drawings. This will ensure the correct drawings are being used on the projects.

Electronic PDF files with the effective date for each drawing are on the web at:

<http://www.oregon.gov/ODOT/Engineering/Pages/Standards.aspx>

Each standard drawing has a corresponding Standard Drawing Reports that contains useful information for the designer as well as updates that occur on the drawing. The link to the report is the title of the specific drawing on the webpage.

The following Standard Drawings were updated for the July 2026 release:

Drawing Number	Comment
RD405	Title Change
RD415	Title Change
RD436	
RD474	Retired Drawing
RD474A	New Drawing
RD474B	New Drawing (Formerly RD474)
RD474C	New Drawing
RD474D	New Drawing
RD488A	Retired Drawing (Converted to DET1488A)
RD488B	Retired Drawing (Converted to DET1488B)
RD488C	Retired Drawing (Converted to DET1488C)
BR206	
BR207	
BR208	
BR221	

Drawing Number	Comment
BR222	
BR240	
BR241	
BR242	
BR273	
BR286	
BR287	
BR400	
BR405	
BR410	
BR415	
BR420	
BR422	
BR445	
TM223	
TM470	
TM482	
TM500	Retired Drawing
TM500A	New Drawing (Formerly TM500)
TM500B	New Drawing (Formerly TM500)
TM501	Retired Drawing
TM501A	New Drawing (Formerly TM501)
TM501B	New Drawing (Formerly TM501)
TM502	Retired Drawing
TM502A	New Drawing (Formerly TM502)
TM502B	New Drawing (Formerly TM502)
TM503	Retired Drawing
TM503A	New Drawing (Formerly TM503)
TM503B	New Drawing (Formerly TM503)
TM504	
TM631	
TM830	
TM854	
TM871	

OREGON STANDARD DRAWINGS 2024 NUMBERS AND REVISION DATES

DRAWING NUMBER	REVISION DATE	DRAWING NUMBER	REVISION DATE	DRAWING NUMBER	REVISION DATE
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RD100	1/2024
RD101	1/2024
RD110	
RD115	
RD120	
RD130	
RD140	
RD150	
RD160	
RD170	
RD250	
RD254	
RD255	
RD258	
RD262	
RD266	
RD270	
RD274	
RD278	
RD282	
RD286	
RD300	
RD302	
RD304	
RD306	
RD308	
RD310	
RD312	
RD316	
RD317	
RD318	
RD319	
RD320	
RD321	
RD322	1/2024
RD324	1/2024
RD325	
RD326	
RD327	
RD328	
RD330	
RD332	
RD334	
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RD336	
RD338	
RD339	
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RD344	
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RD366	
RD367	
RD368	
RD370	
RD371	
RD372	
RD373	
RD374	
RD376	
RD378	
RD380	
RD382	
RD384	
RD386	
RD388	1/2026
RD390	
RD391	
RD393	
RD398	1/2026
RD399	
RD400	
RD401	
RD402	7/2025
RD403	
RD404	
RD405	7/2026
RD406	
RD407	
RD408	
RD409	
RD410	1/2026
RD412	
RD415	7/2026
RD416	
RD417	
RD419	

RD420	1/2024
RD421	
RD435	
RD436	7/2026
RD437	
RD438	7/2024
RD440	
RD442	Retired 1/2026
RD442A	1/2026
RD442B	1/2026
RD443	1/2024
RD444	1/2024
RD445	
RD450	
RD451	1/2024
RD470	
RD471	1/2024
RD472	
RD473	
RD474	Retired 7/2026
RD474A	7/2026
RD474B	7/2026
RD474C	7/2026
RD474D	7/2026
RD481	
RD482	
RD484A	7/2024
RD484B	7/2024
RD486A	1/2026
RD486B	1/2026
RD486C	1/2026
RD486D	1/2026
RD488A	Retired 7/2026
RD488B	Retired 7/2026
RD488C	Retired 7/2026
RD490A	1/2026
RD490B	7/2024
RD490C	1/2026
RD490D	7/2024
RD490E	7/2024
RD490F	7/2024
RD490G	7/2024
RD490H	7/2024
RD500	
RD501	1/2024

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RD502	7/2024
RD503	
RD505	
RD510	
RD515	
RD516	
RD520	
RD526	
RD530	
RD535	Retired 1/2026
RD535A	1/2026
RD536	Retired 1/2026
RD535B	1/2026
RD545	7/2024
RD546	7/2024
RD548A	7/2025
RD548B	1/2025
RD550	
RD560	
RD570	
RD575	
RD576	
RD580	
RD581	
RD582	1/2026
RD590	
RD595	
RD596	
RD602	
RD610	
RD615	
RD700	
RD701	
RD702	1/2024
RD705	
RD706	
RD707	
RD710	Discontinued 7/2025
RD710A	1/2026
RD710B	1/2026
RD711	1/2026
RD715	
RD720	7/2025
RD721	7/2025
RD722	7/2025
RD725	
RD730	

RD735	
RD740	
RD745	
RD750	
RD770	1/2026
RD771	
RD780	1/2024
RD781	1/2024
RD782	1/2024
RD810	
RD815	
RD820	
RD825	
RD830	
RD832	
RD835	
RD840	
RD845	
RD900	1/2025
RD901	1/2025
RD902	1/2025
RD904	1/2025
RD905	1/2025
RD906	1/2026
RD908	1/2025
RD909	1/2025
RD910	1/2025
RD912	1/2025
RD913	1/2025
RD916	1/2025
RD920	1/2025
RD922	1/2025
RD930	1/2025
RD932	1/2025
RD936	1/2025
RD938	1/2025
RD940	1/2025
RD950	1/2025
RD952	1/2025
RD953	1/2026
RD960	1/2025
RD1000	
RD1005	7/2024
RD1006	
RD1010	
RD1015	
RD1030	
RD1031	
RD1032	
RD1033	

RD1040	
RD1045	
RD1050	
RD1055	
RD1060	
RD1065	
RD1070	
RD1140	
BR115	1/2024
BR133	
BR135	
BR136	
BR139	
BR140	
BR141	
BR145	
BR157	
BR165	1/2026
BR175	
BR182	
BR190	
BR191	
BR192	1/2026
BR193	7/2025
BR195	7/2025
BR200	1/2024
BR203	1/2025
BR206	
BR207	1/2026
BR208	1/2024
BR209	7/2024
BR212	
BR214	
BR216	7/2025
BR220	1/2026
BR221	
BR222	
BR223	
BR226	7/2025
BR230	1/2026
BR233	1/2026
BR236	
BR240	
BR241	
BR242	
BR245	Discontinued 7/2025
BR246	1/2026

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DRAWING NUMBER	REVISION DATE	DRAWING NUMBER	REVISION DATE	DRAWING NUMBER	REVISION DATE
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BR250	1/2026
BR253	
BR256	1/2026
BR260	
BR263	
BR266	Discontinued 1/2026
BR270	1/2025
BR273	1/2026
BR275	1/2024
BR277	7/2025
BR278	7/2025
BR279	7/2025
BR280	7/2025
BR285	7/2025
BR286	7/2025
BR287	7/2025
BR290	
BR291	1/2025
BR295	1/2026
BR296	1/2026
BR300	
BR310	
BR321	
BR325	
BR330	
BR335	
BR340	
BR350	
BR360	
BR365	
BR375	
BR400	
BR405	
BR410	
BR415	
BR420	
BR422	
BR425	
BR430	
BR435	
BR440	
BR445	
BR500	1/2024
BR505	
BR520	
BR525	
BR550	7/2025
BR705	1/2024
BR706	

BR707	
BR708	
BR709	1/2024
BR730	
BR740	
BR750	
BR751	
BR760	
BR800	
BR805	
BR820	1/2024
BR825	
BR830	
BR835	
BR840	
BR841	
BR970	
BR971	
BR972	
TM200	
TM201	
TM204	
TM206	
TM211	
TM212	
TM220	
TM221	
TM222	
TM223	7/2026
TM224	
TM225	
TM226	1/2024
TM230	
TM231	
TM232	
TM233	
TM240	1/2026
TM300	
TM301	
TM302	Discontinued 7/2025
TM303	1/2024
TM450	7/2024
TM452	7/2024
TM453	1/2026
TM454	1/2026
TM456	
TM457	1/2026

TM460	7/2025
TM462	1/2024
TM466	7/2025
TM467	1/2026
TM470	7/2026
TM471	Discontinued 1/2025
TM472	Discontinued 1/2025
TM482	7/2026
TM485	1/2025
TM492	1/2026
TM493	1/2026
TM500	Retired 7/2026
TM500A	7/2026
TM500B	7/2026
TM501	Retired 7/2026
TM501A	7/2026
TM501B	7/2026
TM502	Retired 7/2026
TM502A	7/2026
TM502B	7/2026
TM503	Retired 7/2026
TM503A	7/2026
TM503B	7/2026
TM504	1/2026
TM505	1/2026
TM515	
TM516	
TM517	
TM520	
TM521	
TM530	7/2025
TM531	
TM539	
TM547	
TM551	
TM560	7/2025
TM561	7/2025
TM570	
TM571	
TM575	
TM576	
TM577	
TM600	
TM601	1/2024

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DRAWING NUMBER	REVISION DATE	DRAWING NUMBER	REVISION DATE	DRAWING NUMBER	REVISION DATE
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TM602	
TM606	
TM607	1/2025
TM608	
TM609	
TM610	
TM611	
TM612	
TM614	
TM615	1/2025
TM616	
TM617	
TM618	
TM619	
TM620	
TM621	7/2024
TM622	1/2025
TM623	
TM624	7/2025
TM625	
TM626	
TM627	
TM628	1/2025
TM629	
TM630	7/2025
TM631	7/2026
TM635	
TM650	1/2024
TM651	
TM652	1/2024
TM653	
TM654	
TM655	1/2024
TM656	
TM657	
TM658	
TM670	1/2024
TM671	
TM672	
TM675	
TM676	1/2025
TM677	
TM678	7/2024
TM679	1/2026
TM680	1/2024
TM681	
TM687	
TM688	
TM689	
TM690	

TM691	
TM693	
TM694	1/2025
TM695	
TM696	
TM697	
TM698	
TM700	1/2025
TM701	1/2026
TM702	7/2025
TM800	7/2024
TM810	
TM820	
TM821	
TM822	
TM830	7/2026
TM831	
TM832	
TM833	
TM840	7/2025
TM841	7/2024
TM842	1/2024
TM843	
TM844	
TM845	
TM850	1/2026
TM851	
TM852	
TM853	
TM854	7/2026
TM855	7/2025
TM860	
TM861	
TM862	
TM870	
TM871	7/2026
TM880	

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35" cast-in-place	RD590
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At Expansion Joints	BR263
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	BR830, BR835
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42" Vertical	BR222	Trailing End Connection	
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2-Tube Side Mount	BR226, BR230	Painted	RD110
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Terminals, Downstream Anchor	RD438
Terminals, Energy Absorbing	RD420, RD421
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2024 OREGON STANDARD DRAWINGS INDEX

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		Connection Details, Unlike Pipe	RD325, RD326, RD327
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		Safety End Sections, Concrete Pipe	RD324
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		Pipe Fill Height Tables	
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-R-	
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2024 OREGON STANDARD DRAWINGS INDEX

-T-**Temporary Bridge Barrier**

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Tire Wash Facility	RD1060

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Island	RD705
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Separator, Concrete

RD706

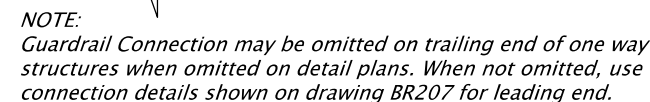
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Color Code Chart	TM470
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	-V-			
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Valve Box And Operator				
Extension Assembly	RD258			



Scale: 1"=1'-0"



Scale: 1"=1'-0"



Scale: 1"=1'-0"



Scale: 1"=1'-0"



Scale: 1"=1'-0"



Scale: 3"=1'-0"



Scale: 1"=1'-0"



Scale: 1"=1'-0"



Scale: $3/4"=1'-0"$

GENERAL NOTES:

1. Rail designed and crash tested to meet NCHRP 550 TL-4 requirements.
2. Furnish structural tubing according to Oregon Standard Specification 2810.20.
3. Furnish steel posts and plates conforming to AASHTO M183 (ASTM A36) unless otherwise noted.
4. Furnish High Strength anchor bolts (Grade 105) according to Oregon Standard Specification 02560.30 (b). Tighten top and leveling nuts for the base plate to 1/4 turn past snug tight. 
5. Furnish reinforcing steel conforming to ASTM A706 or AASHTO M31 (ASTM A615) Grade 60.
6. Furnish concrete Class 3300 - 1 1/2 or 3/4.
7. Construct railing conforming to the horizontal and vertical alignment of the structure. Install posts normal to grade in longitudinal direction and vertical in transverse direction.
8. Payment for the railing will include compensation for furnishing and installing the necessary guardrail connection plates and terminal connectors.
9. Hot-dip galvanize all structural steel including fasteners after fabrication, except as noted. Furnish Galvanize-Control Silicon according to Oregon Standard Specification 02530.70.
10. Fabricate steel studs with material, welding and inspection according to AWS D1.1.   

Accompanied by drawing BR207

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

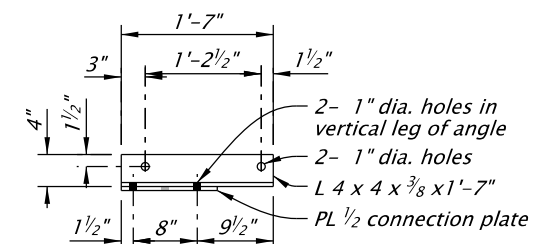
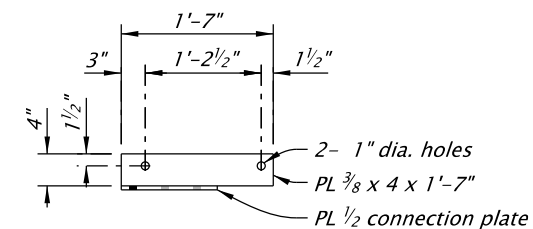
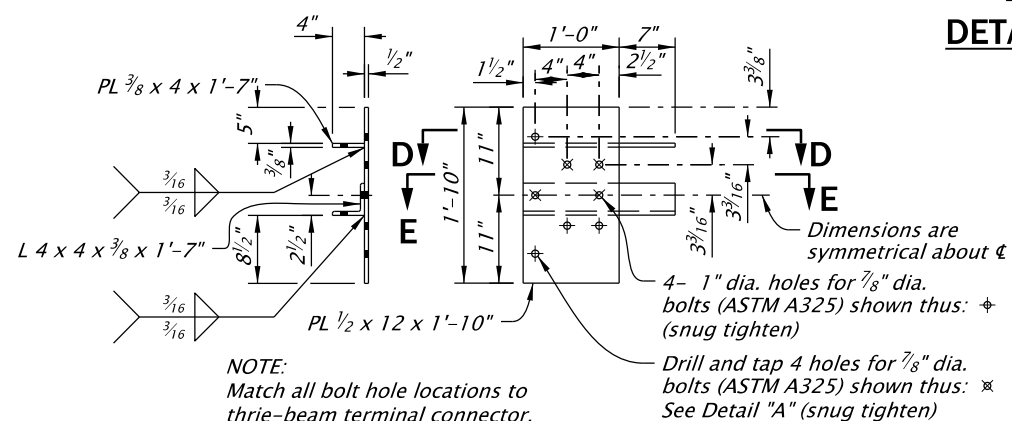
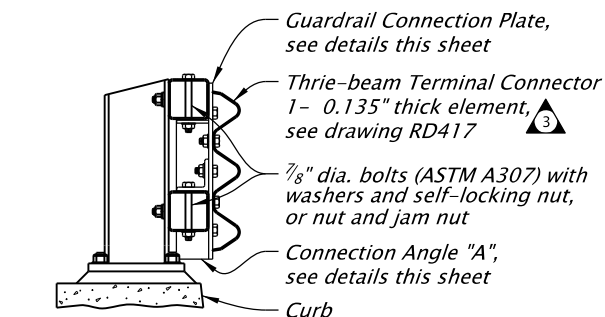
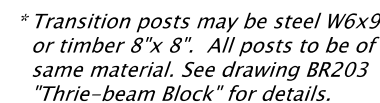
2-TUBE CURB MOUNT RAIL

2024

DATE		REVISION DESCRIPTION
12-2020	Modified detail note text; added General Note 10; CAD updates	
01-2022	Modified General Note 10; removed "Clause 7" notation.	
01-2023	Revised various notations.	
07-2026	Revised rebar at rail posts; revise text "provide" to "furnish".	

CALC. BOOK NO.	4057 & 4058	SDR DATE	10-JULY-2026	BR206
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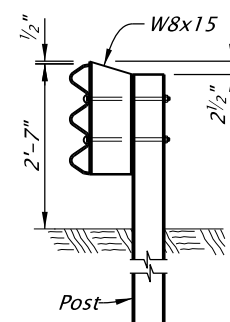
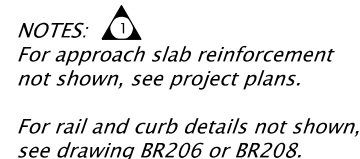
Effective Date: December 1, 2026 – May 31, 2027



3- #4 and
8- #5 x cont.,
see drawings
BR206 and BR208

Adjust Bars "A" top dimension
in tapered section as required

6- #5 x 5'-0" with 1'-0"
180° hook at each post



GENERAL NOTES:
Rail designed and crash tested to meet
NCHRP 350 TL-4 requirements.

7 *Furnish steel plates and wide-flange posts conforming to AASHTO M183 (ASTM A36).*

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.



 ACCOMPANIED BY DRAWINGS:
BR203, BR206, RD401, RD402,
RD407, RD408, RD417, RD412

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

**2-TUBE CURB MOUNT
RAIL TRANSITION**

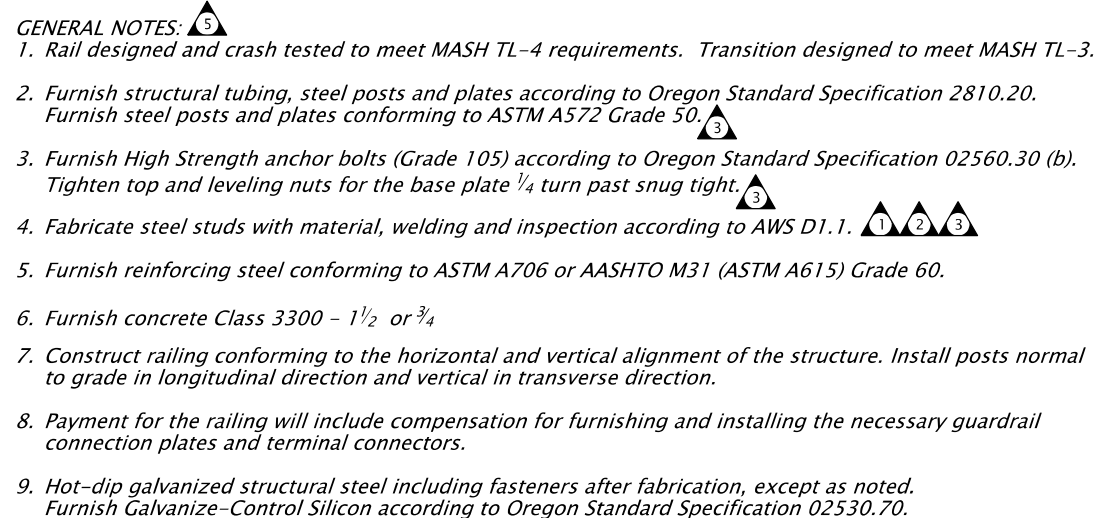
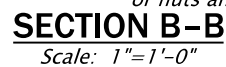
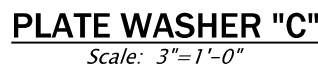
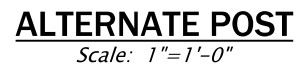
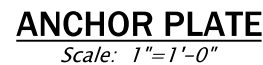
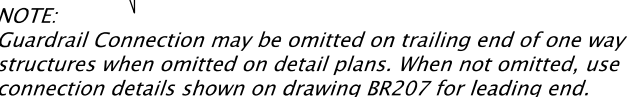
2024

DATE	REVISION DESCRIPTION
07-2024	General text revisions.
01-2025	Thrie-beam transition revised; CAD standards updates.
07-2025	Dimension edit: In Elevation View.
01-2026	Redrawn; minor corrections.
07-2026	Revised reinforcement; minor textual correction.

CALC.
BOOK NO. **4057 & 4058**

SDR
DATE **10-JULY-2026**

BR207



Accompanied by drawing BR207, BR209

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

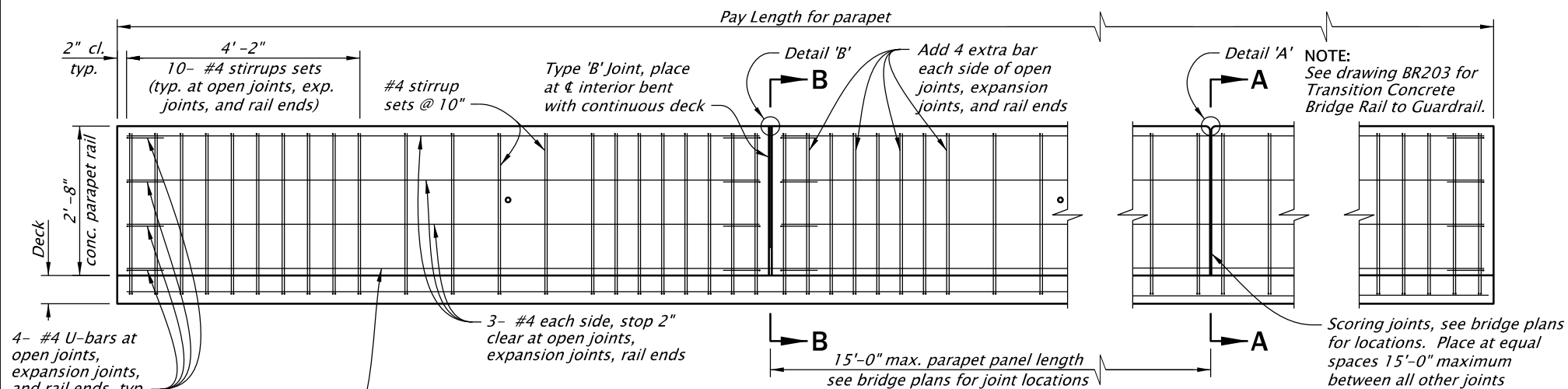
Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

3-TUBE CURB MOUNT RAIL

2024

	DATE	REVISION DESCRIPTION
	12-2020	Modified detail note text; added General Note 4: CAD updates
	01-2022	Modified General Note 4, removed "Clause 7" notation.
	01-2023	Revised general notations.
	01-2024	Revised weld callout.
	07-2026	Revised rebar at rail posts; revise text "provide" to "furnish".
CALC. BOOK NO. - - - - NA - - - -	SDR DATE - 10-JULY-2026 -	BR208



ELEVATION
Scale: 3/8"=1'-0"

GENERAL NOTES:

Rail designed and crash tested to meet NCHRP 350 TL-4 requirements.

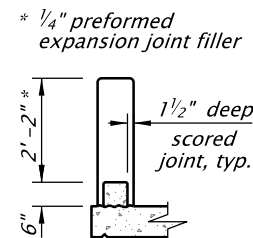
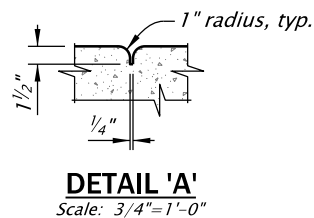
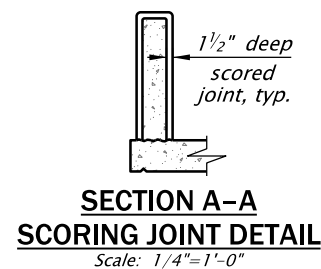
Provide all reinforcing steel conforming to AASHTO M31 (ASTM A615), Grade 60 or ASTM A706.

Place all bars 2" clear of the nearest face of concrete unless shown otherwise.

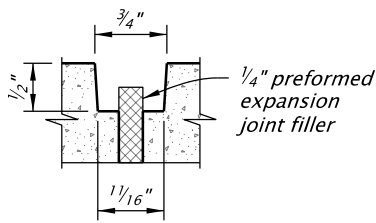
Provide Class 3300 -1 1/2 or 3/4 concrete.

Provide steel cover plates conforming to AASHTO M183 (ASTM A36). Hot-dip galvanize after fabrication.

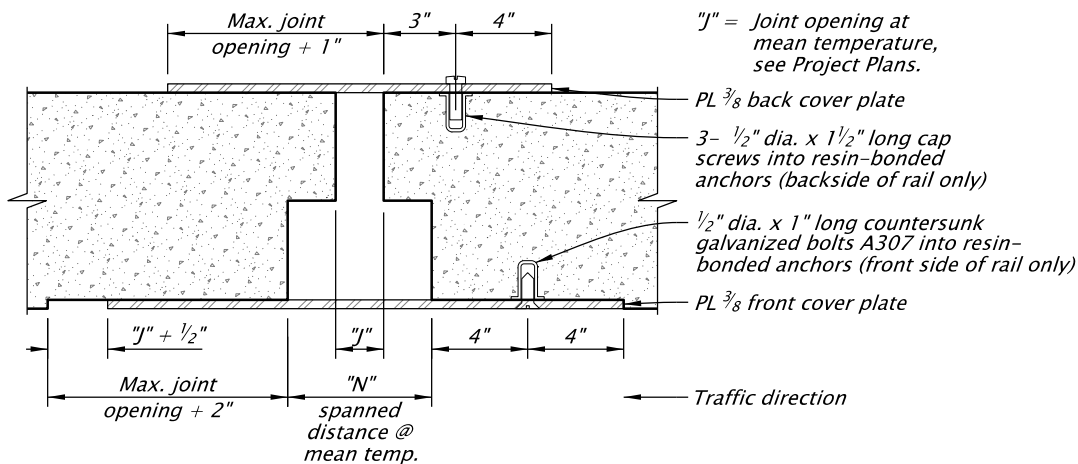
At skewed bents up to 20° make joints parallel to the bent center line. For skews greater than 20°, make joints normal to rail.



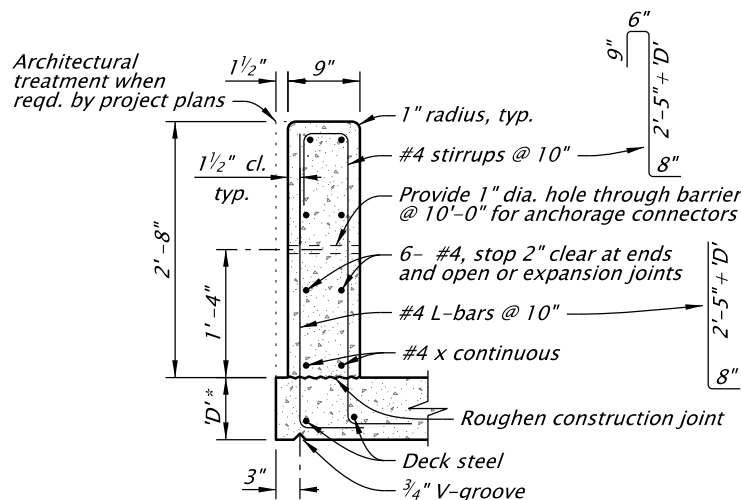
SECTION B-B
TYPE 'B' JOINT DETAIL (Fixed Forms)
Scale: 1/4"=1'-0"



DETAIL 'B'
Scale: 6"=1'-0"



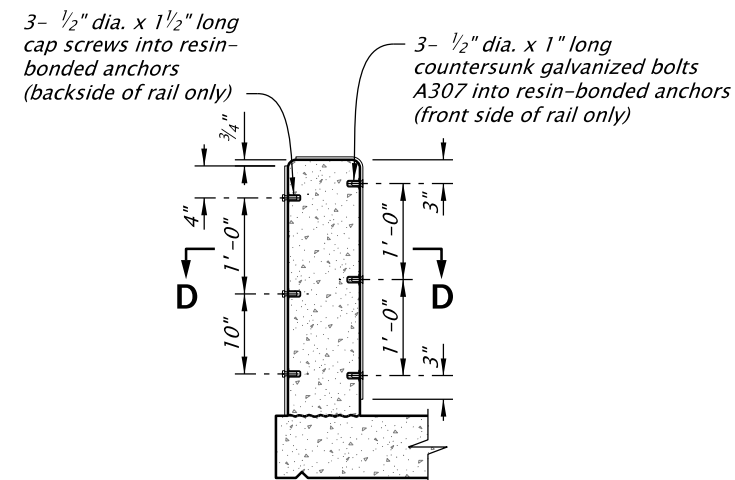
SECTION D-D
Scale: 1 1/2"=1'-0"



TYPICAL SECTION
Scale: 1/2"=1'-0"

* Depth varies, see project plans

** Continuous thru scoring and Type 'B' joints, stop 2" clear at ends, open joints, or expansion joints.



NOTE:
Details shown are general details only and should be modified as needed to fit specific project requirements.

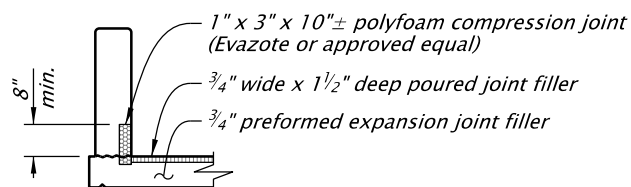
When required by Bridge Plans.

EXPANSION JOINT COVER PLATE
Scale: 1/2"=1'-0"

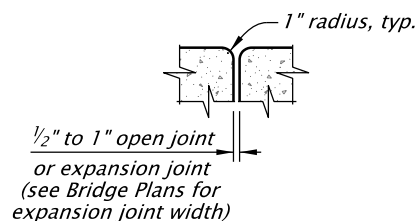
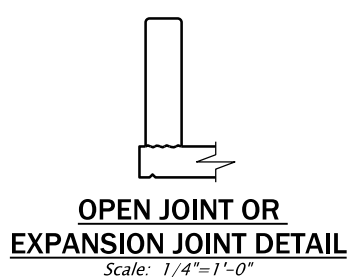
Accompanied by drawing BR203.

NOTE:

Use when water drains towards rail and no deck joint seal is used.
Use joint fillers for length of joint opening "J"+6".



DETAIL 'D'
Scale: 1/4"=1'-0"



DETAIL 'C'
Scale: 3/4"=1'-0"

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Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

VERTICAL CONCRETE PARAPET, 32 INCH

2024

DATE	REVISION	DESCRIPTION
01-2023	Revised notes and rebar callouts.	
07-2026	Revised sheet title: CAD standards update.	

CALC. BOOK NO.	N/A	SDR DATE	10-JULY-2026	BR221
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Effective Date: December 1, 2026 – May 31, 2027



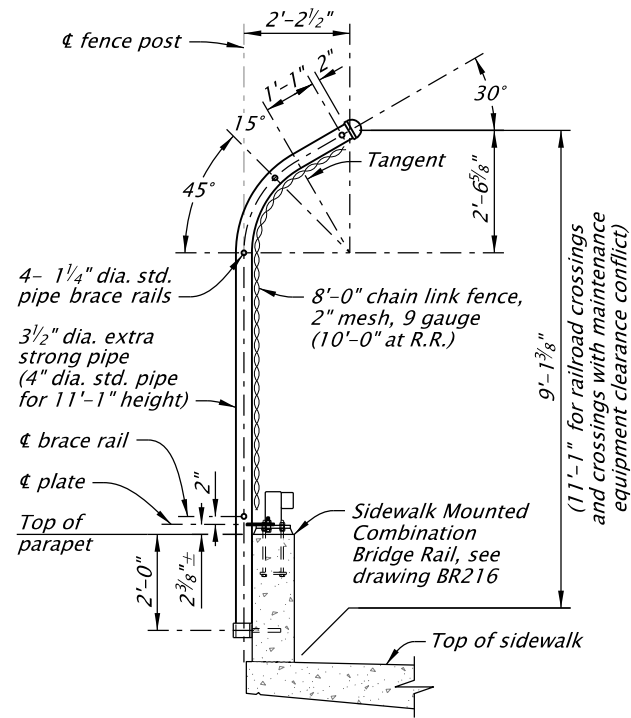
THREE-BEAM CONNECTION

 See project plans for spacing, joint locations and details not shown.

BR222

JULY 2026

BR240.dgn

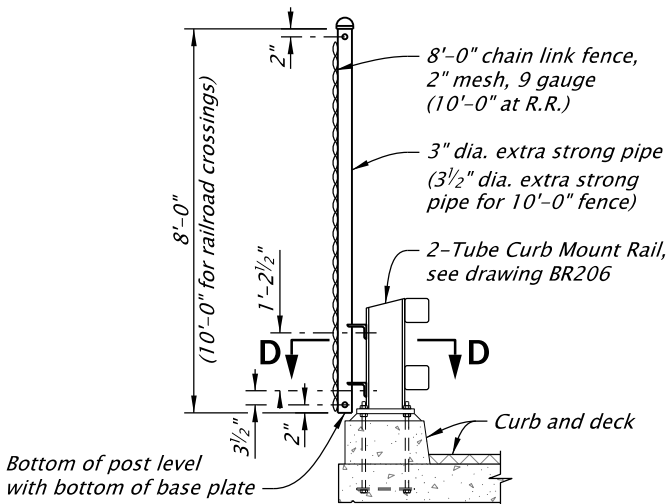


NOTE:
Use a straight fence similar to Type "C" Fence for the Flush Mounted Combination Bridge Rail drawing BR220.

Elevation similar to Type "C" Fence.

See "Type 'A' Fence" on drawing BR241 for connection details.

TYPE 'A' FENCE SECTION
Scale: 1/4"=1'-0"



NOTE:
Elevation similar to Type 'B' fence.
See drawing BR241 for Section D-D.
See "Type 'D' Fence" on drawing BR241 for connection details.

TYPE 'D' FENCE SECTION
Scale: 1/4"=1'-0"

GENERAL NOTES: 
Protective Fencing is designed according to the AASHTO LRFD Bridge Design Specifications 10th edition/2024. The applied loading is 0.015 ksf according to LRFD Subsection 13.8.

Install all fence posts normal to grade in the longitudinal direction and plumb in transverse direction.

Stretch chain link fabric and fasten to vertical posts at 1'-3" max. centers and 2'-0" max. centers to horizontal brace rails.

Furnish steel pipe for the fence posts conforming to ASTM Specification A53 Grade B. Furnish all other material for chain link fence (fabric, pipes, and hardware) conforming to AASHTO Specification M181 unless noted otherwise on the contract plans.

Furnish all steel plates and shapes conforming to AASHTO Specification M183 (ASTM Specification A36). Furnish all bolts conforming to AASHTO Specification M164 (ASTM Specification A325).

Unless noted otherwise, furnish and install 3/4" diameter concrete anchors AASTHO M314, Gr. 36 (ASTM A307) resin bonded according to ODOT Specification 00535. Provide anchors embedment such that the required strength is achieved, but not less than 6".

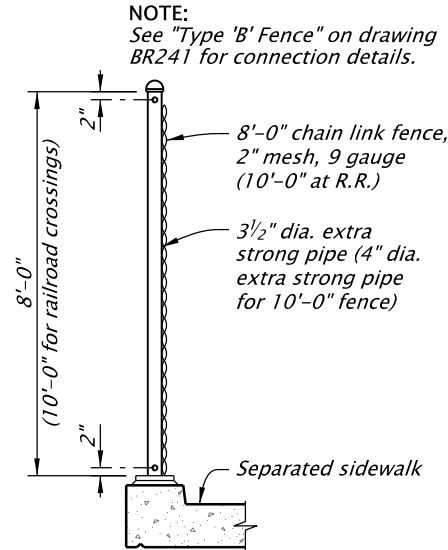
Hot-dip galvanize all steel material after fabrication.

Omit brace rails and allow the chain link fabric to be bulged 1 1/2" out of plane to allow for expansion between posts on either side of an expansion joint. See contract plans for location of fence posts with respect to expansion joints.

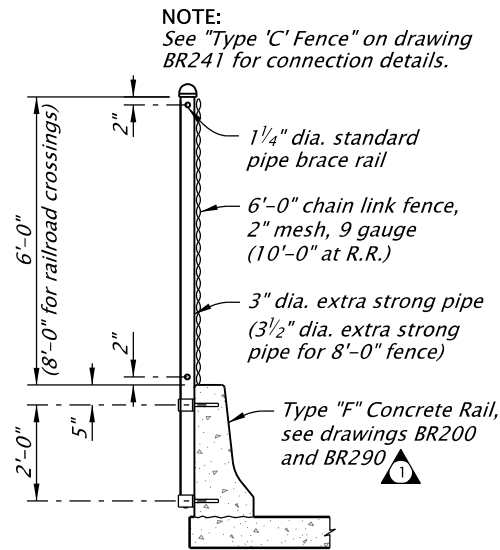
Chain link fabric to be within 1/4" of concrete surface where applicable (knuckle selvage at top and bottom of fence).

Install one stretcher bar at the beginning and end of each run. No more than two fabric splices per run spaced at 50 ft.

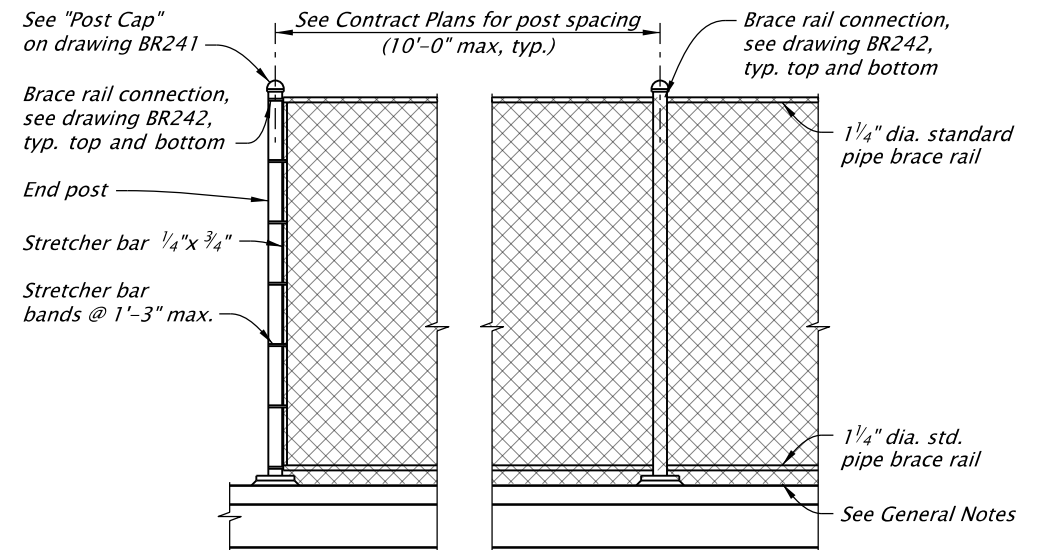
Designers may use 13 PLF for fence selfweight.



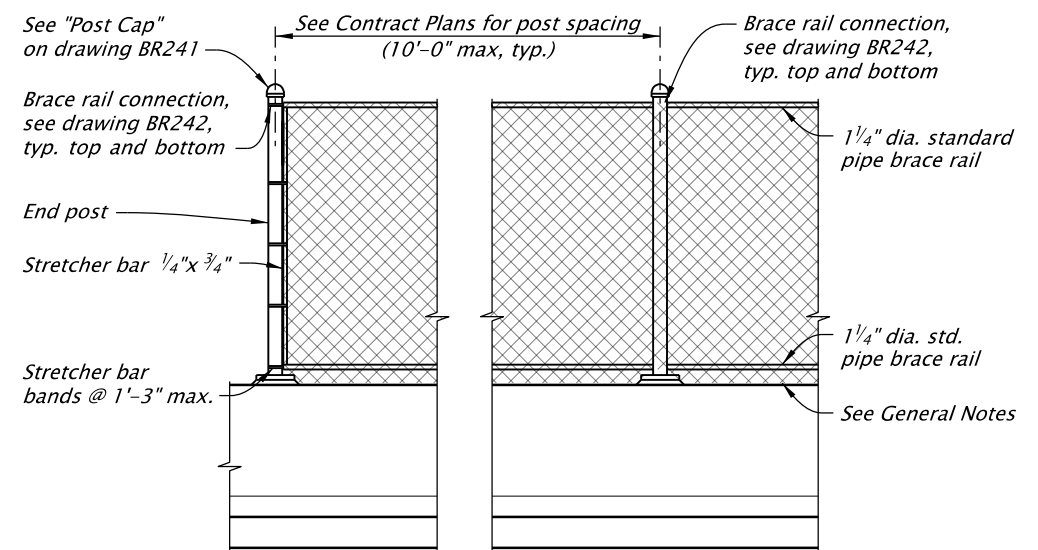
TYPE 'B' FENCE SECTION
Scale: 1/4"=1'-0"



TYPE 'C' FENCE SECTION
Scale: 1/4"=1'-0"



TYPE 'B' FENCE ELEVATION
Scale: 1/4"=1'-0"



TYPE 'C' FENCE ELEVATION
Scale: 1/4"=1'-0"

Accompanied by drawings BR241 and BR242.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

PROTECTIVE FENCING

2024

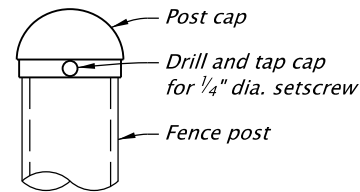
DATE	REVISION	DESCRIPTION
07-2026	Revised notes; redrawn.	
CALC. BOOK NO.	N/A	SDR DATE: 10-JULY-2026

BR240

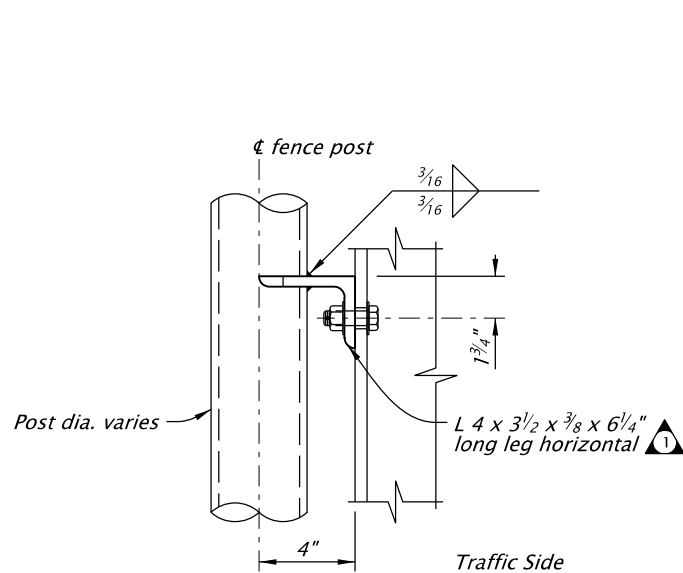
Effective Date: December 1, 2026 – May 31, 2027

NOTE:
As an alternate to resin bonded anchor use
two $\frac{3}{4}$ " dia. x 5"± embedment concrete
insert with minimum safe working loads in
3300 psi concrete of 4.3 kips tension.

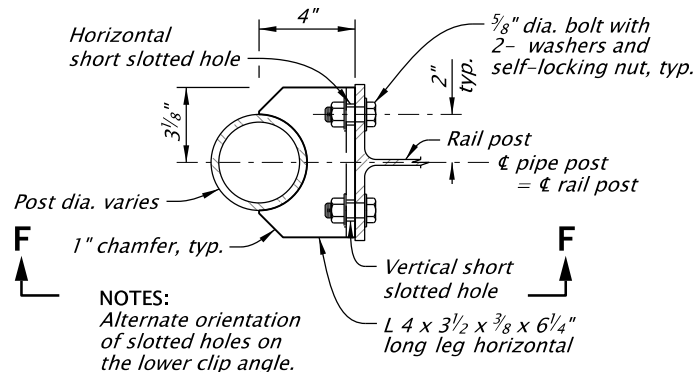
All slotted holes shall conform to
AASHTO LRFD Table 6.13.2.4.2-1.



POST CAP
Scale: 1 1/2"=1'-0"



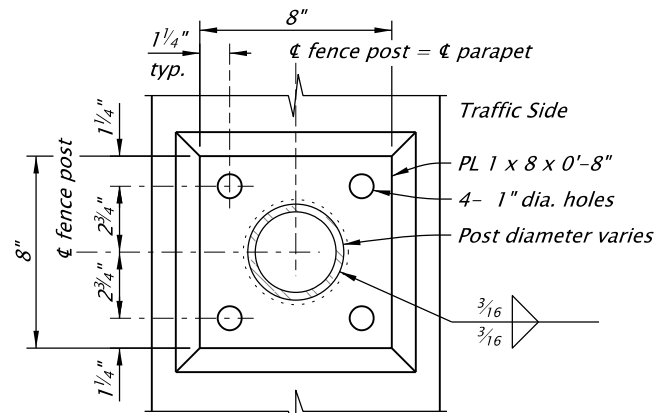
VIEW F-F
Scale: 1 1/2"=1'-0"



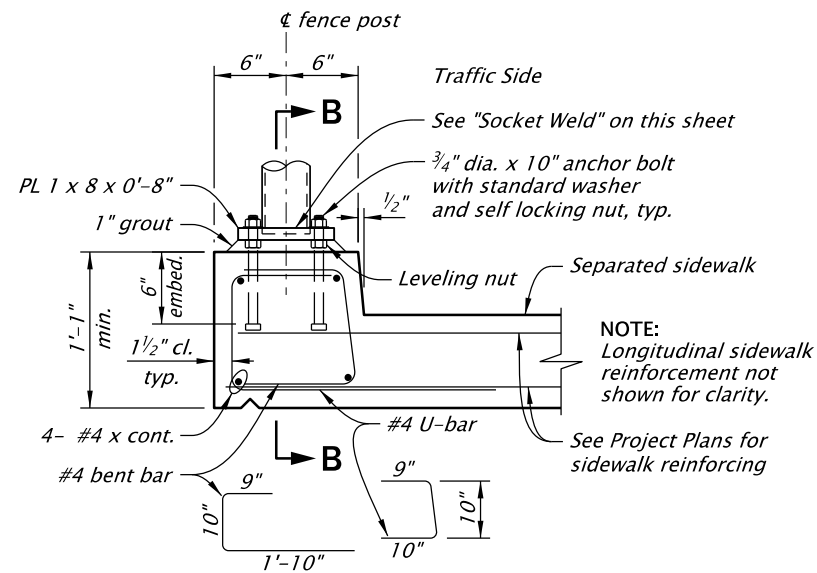
NOTES:
Alternate orientation
of slotted holes on
the lower clip angle.

See drawing BR240 for location of Section D-D.

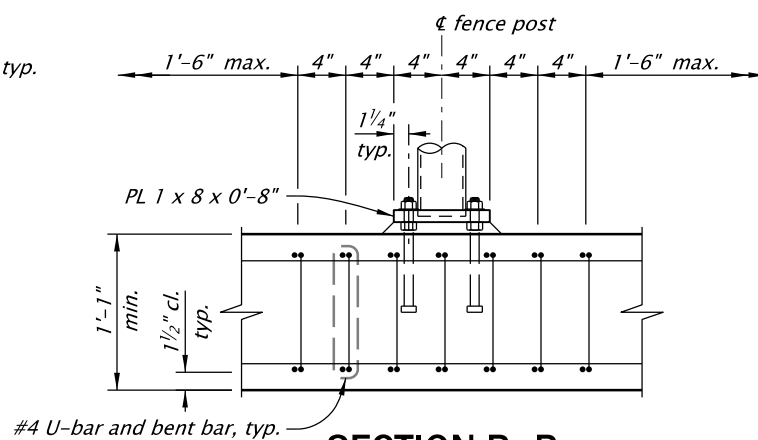
SECTION D-D
Scale: 1 1/2"=1'-0"



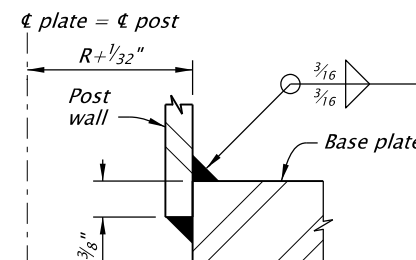
PLAN - TYPE 'B' FENCE
Scale: 1 1/2"=1'-0"



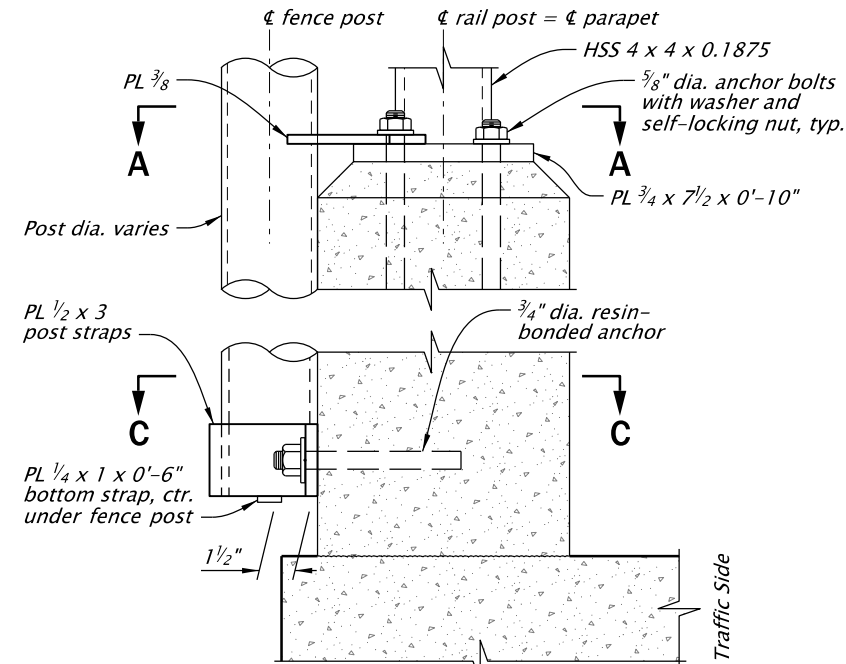
TYPE 'B' FENCE
Scale: 3/4"=1'-0"



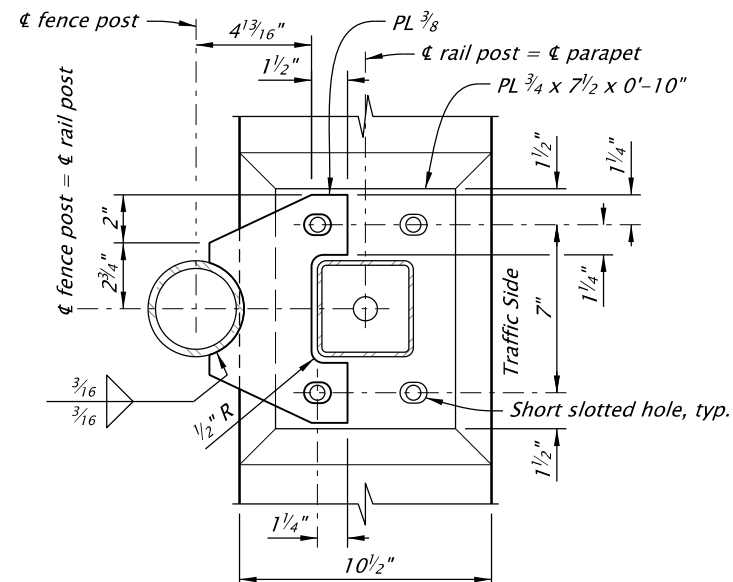
SECTION B-B
Scale: 3/4"=1'-0"



SOCKET WELD
Scale: 6"=1'-0"

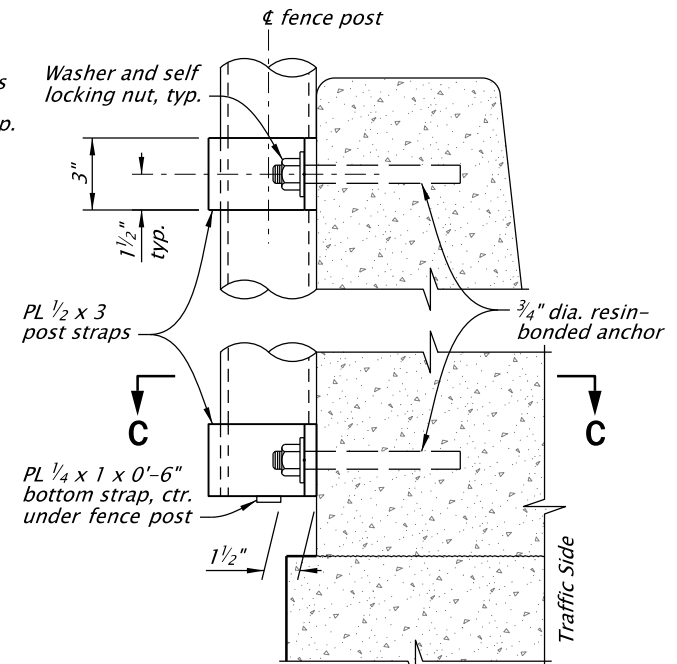


TYPE 'A' FENCE
Scale: 1 1/2"=1'-0"

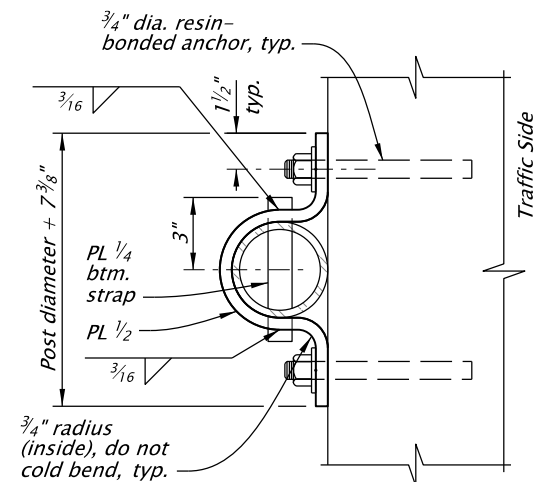


SECTION A-A
Scale: 1 1/2"=1'-0"

Accompanied by drawings BR240 and BR242.



TYPE 'C' FENCE
Scale: 1 1/2"=1'-0"



SECTION C-C
Scale: 1 1/2"=1'-0"

The selection and use of this
Standard Drawing, while
designed in accordance with
generally accepted engineering
principles and practices, is the
sole responsibility of the user
and should not be used without
first consulting a Registered
Professional Engineer.

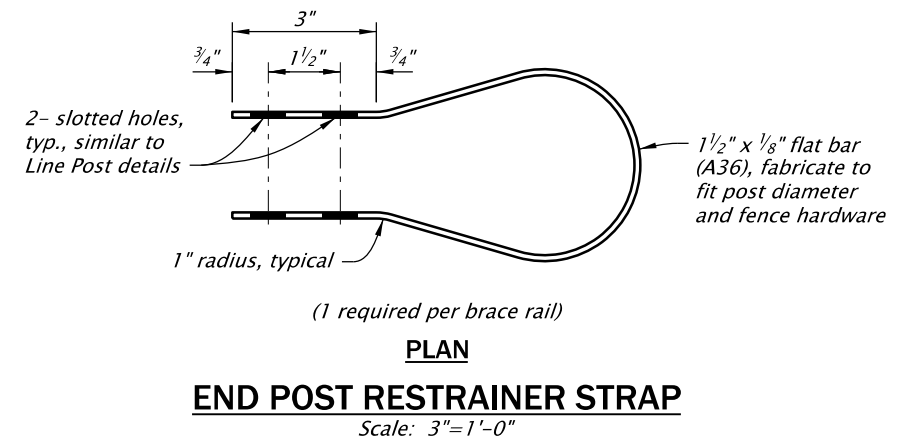
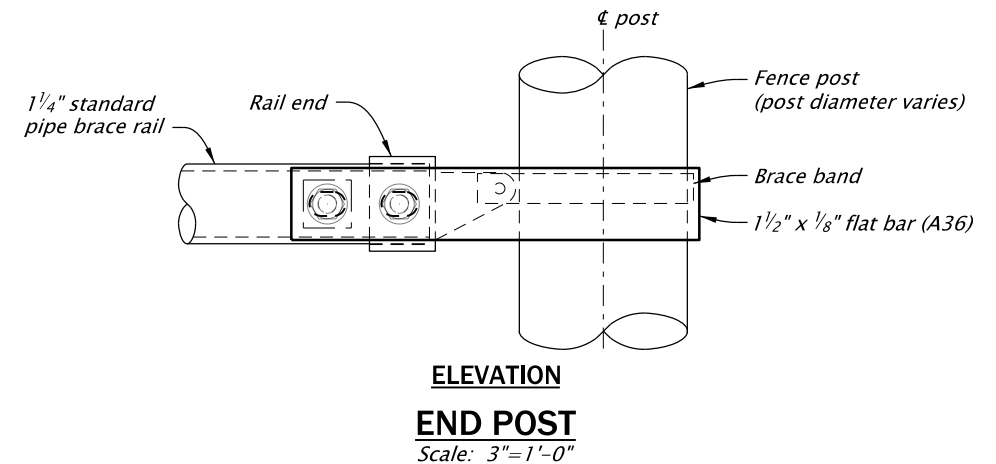
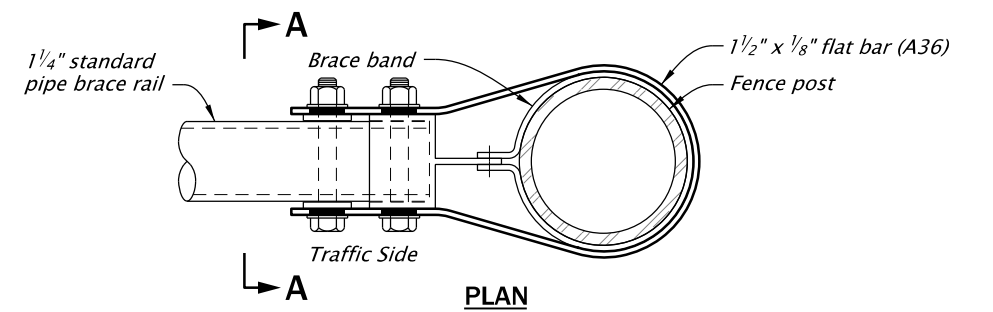
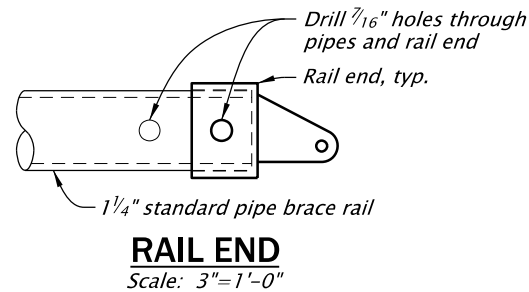
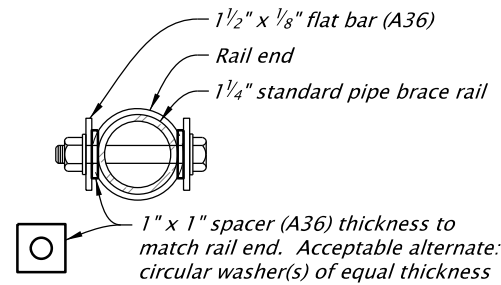
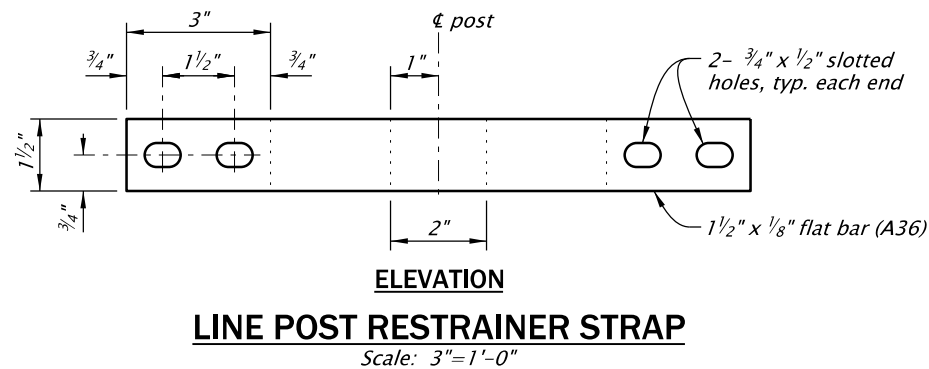
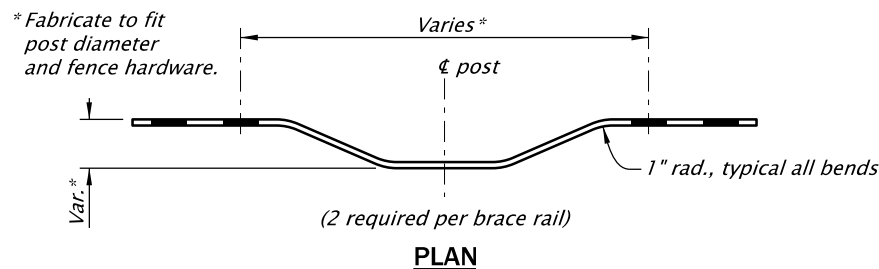
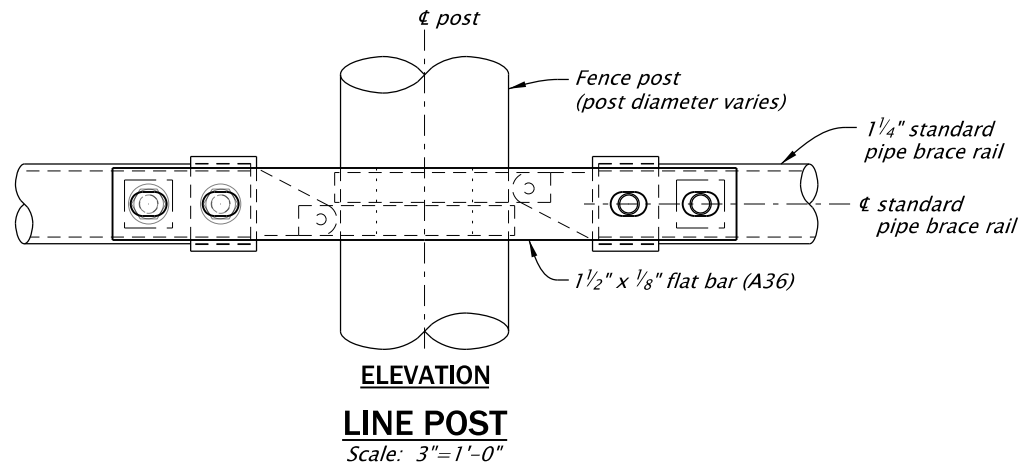
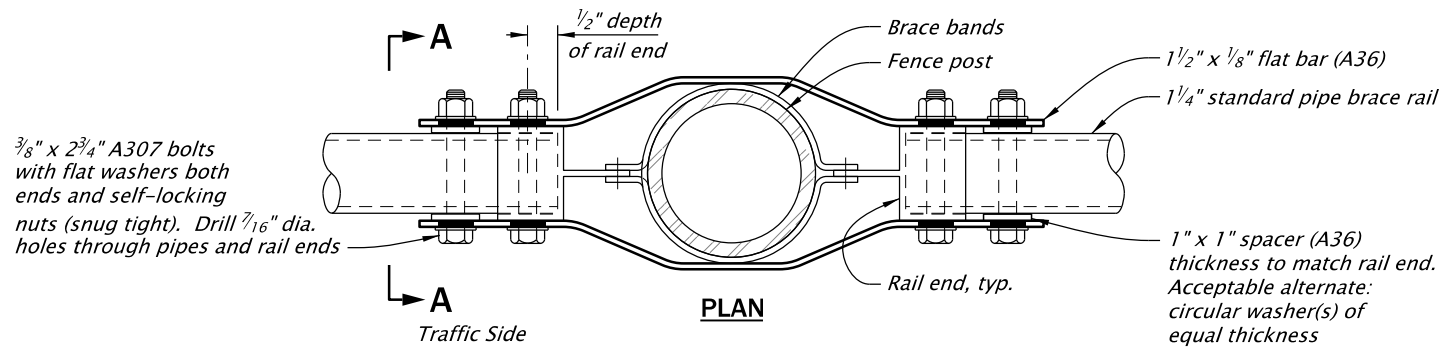
Furnish all materials and perform all work according to the
current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS
PROTECTIVE FENCING
DETAILS - 1

2024

DATE	REVISION	DESCRIPTION
06-2022		Revised angle size callout
07-2026		Added AASHTO slotted hole note; redrawn.
CALC.	N/A	SDR DATE: 10-JULY-2026
BOOK NO.		BR241

Effective Date: December 1, 2026 – May 31, 2027



Accompanied by drawings BR240 and BR241.

NOTE:
The slotted holes will allow rotation of the Restrainer Straps to accommodate a roadway grade up to approximately 8%. Beyond 8%, the hole geometry should be checked and adjusted as required.

⚠ All slotted holes shall conform to AASHTO LRFD Table 6.13.2.4.2-1.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

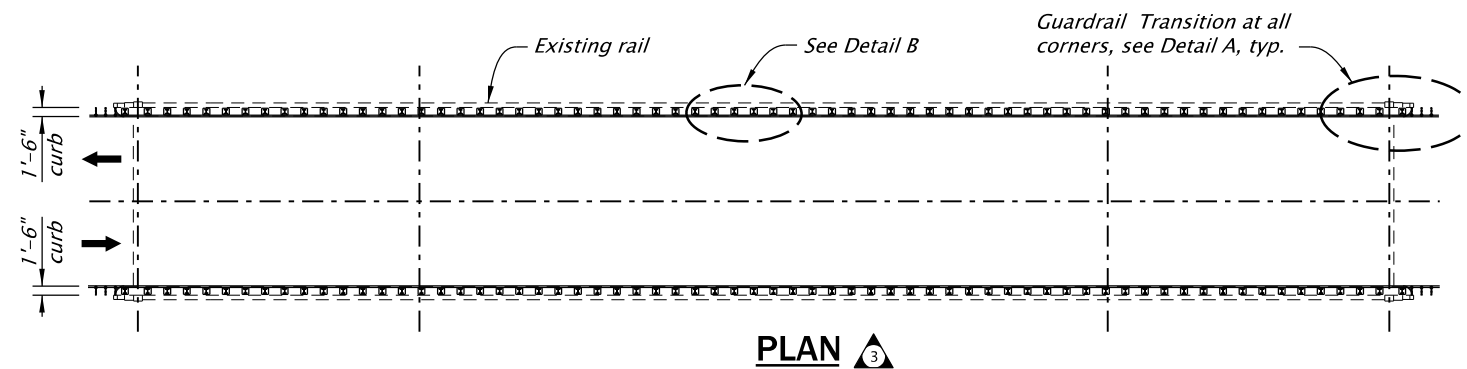
OREGON STANDARD DRAWINGS
PROTECTIVE FENCING
DETAILS - 2

2024

DATE	REVISION	DESCRIPTION
07-2026	Added AASHTO slotted hole note: redrawn.	
CALC. BOOK NO.	N/A	SDR DATE: 10-JULY-2026

BR242

Effective Date: December 1, 2026 – May 31, 2027



- GENERAL NOTES:**
 Rail designed and crash tested to meet MASH TL-3 requirements.
 Transition designed to meet MASH TL-3.

Furnish non-epoxy grout for the 1½" nominal grout pads in Section 02080.

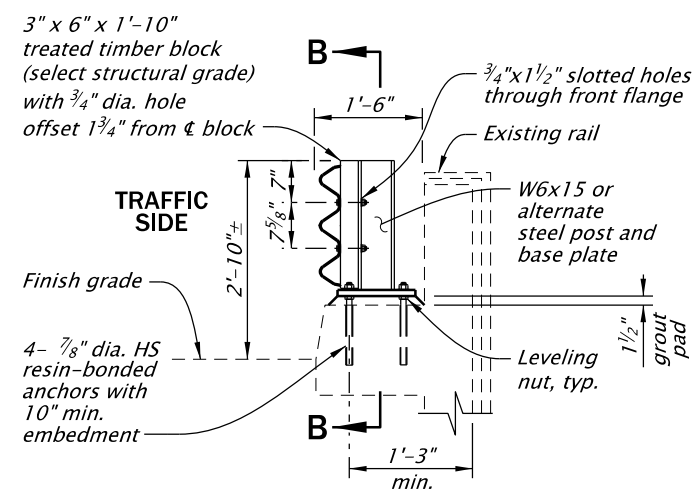
Furnish structural steel posts and plates according to Oregon Standard Specification 2810.20. Provide steel posts and plates conforming to ASTM A572 Grade 50.

Hot-dip galvanize all posts, anchor rods, washers, and nuts after fabrication.

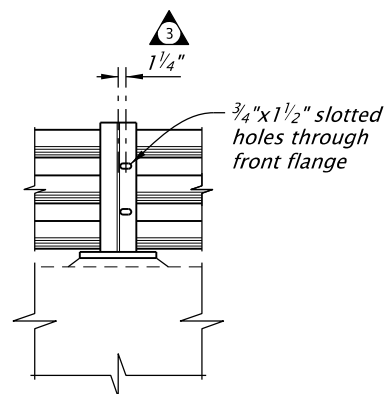
Construct railing conforming to the horizontal and vertical alignment of the structure. Install posts normal to grade in longitudinal direction and vertical in transverse direction.

Furnish and install 7/8" diameter F1554 grade 105 resin-bonded anchors with epoxy resin from the QPL. The characteristic bond stress used in design is 1200 psi. Minimum pullout strength is 33 kips with a minimum embedment (hef) of 10 inches. Install anchors according to the manufacturer's recommendations.

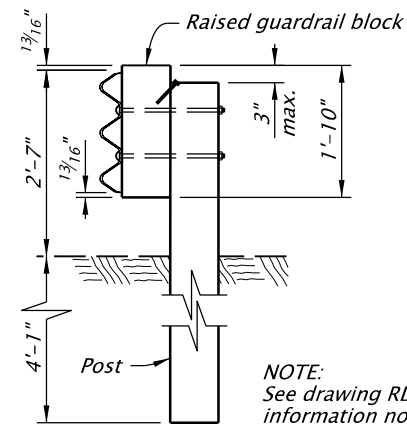
Field verify dimensions before fabrication.



SECTION A-A

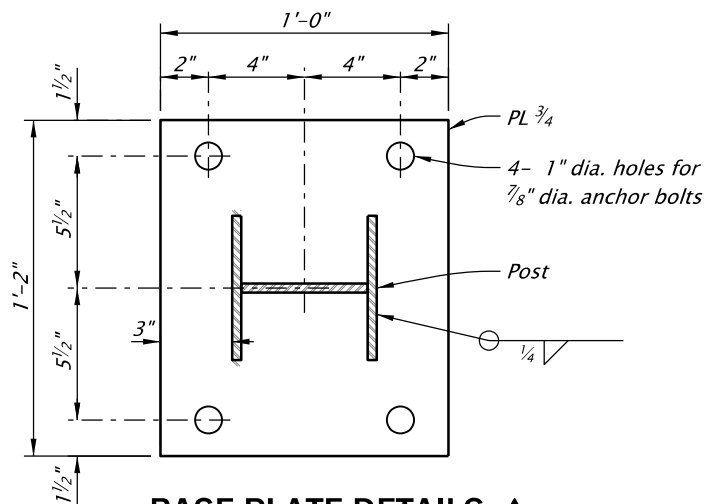


SECTION B-B

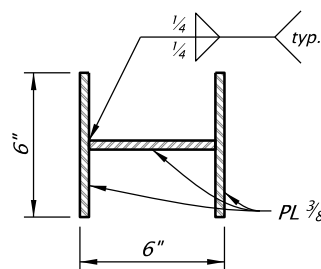


SECTION C-C

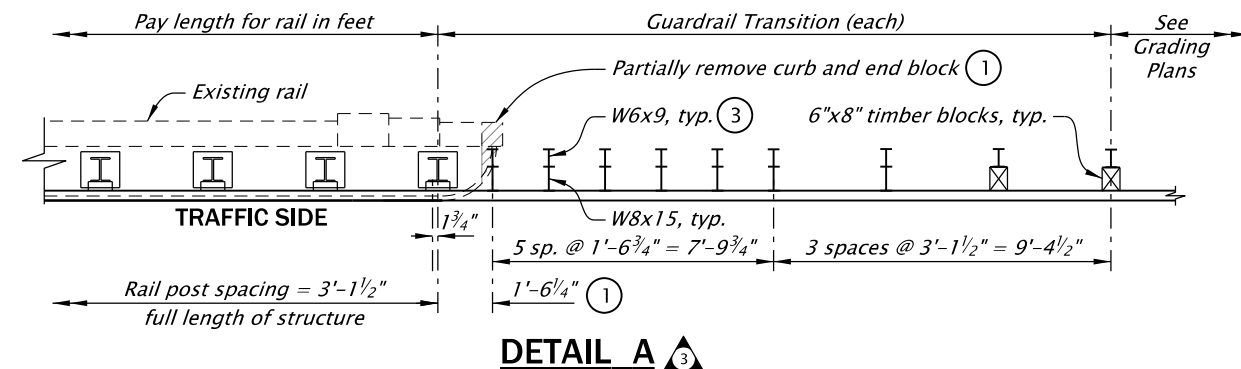
NOTE:
See drawing RD409 for information not shown.



BASE PLATE DETAILS

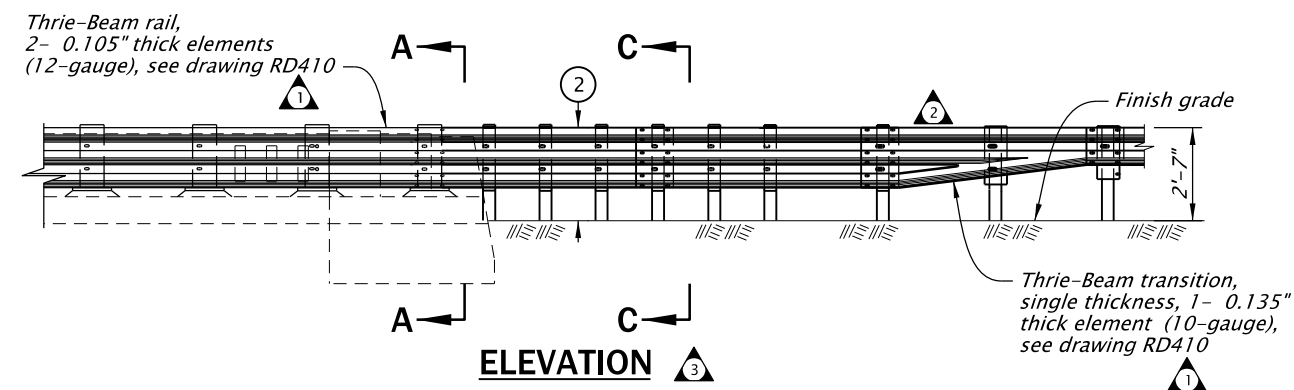


ALTERNATE POST



DETAIL A

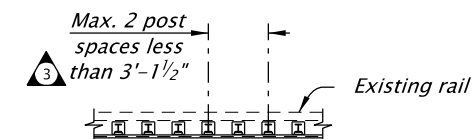
- ① Partially remove curb and end block to maintain first post spacing as shown. When removal is not feasible, consider alternative attachment details (i.e. addition of a new end block).
 ② Transition top of rail height to match 2'-7" approach rail.
 ③ Transition posts may be steel W6x9 or timber 8"x8". All posts to be of same material.



ELEVATION

NOTES:
Maintain post spacing at 3'-1½" full length of structure.

A maximum of 2 non-standard post spaces may be used to adjust the rail installation to match structure length.



DETAIL B

Accompanied by drawings RD405, RD409, RD410.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

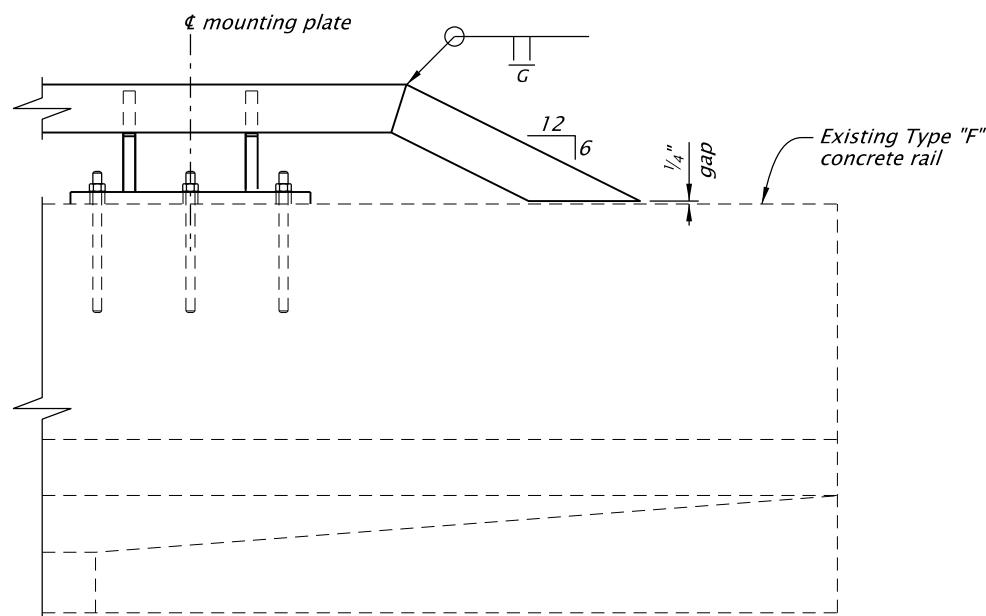
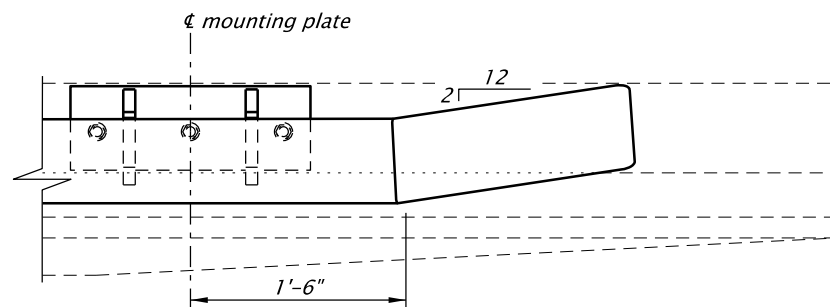
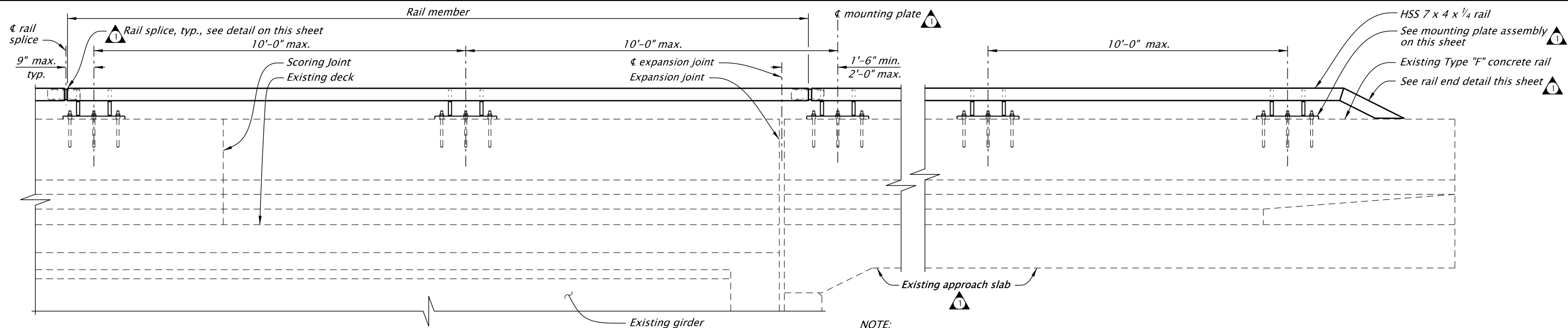
OREGON STANDARD DRAWINGS
THRIE-BEAM RAIL RETROFIT FOR CURB AND PARAPET RAIL CONNECTION DETAILS

2024

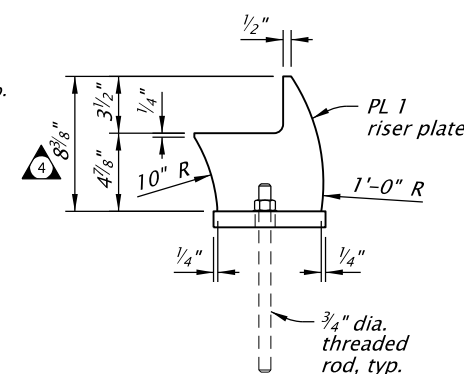
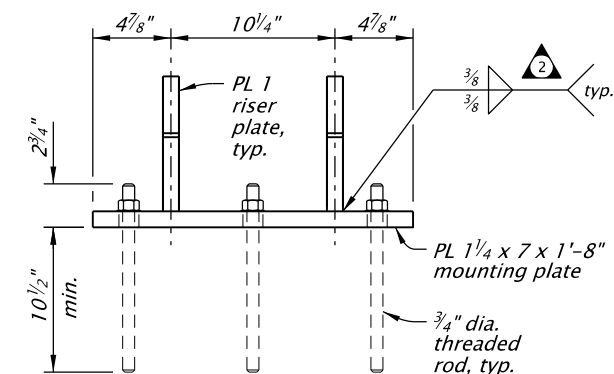
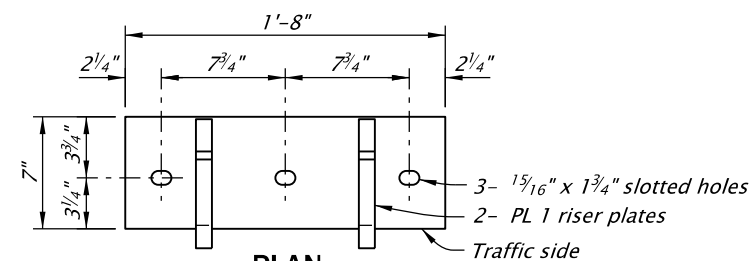
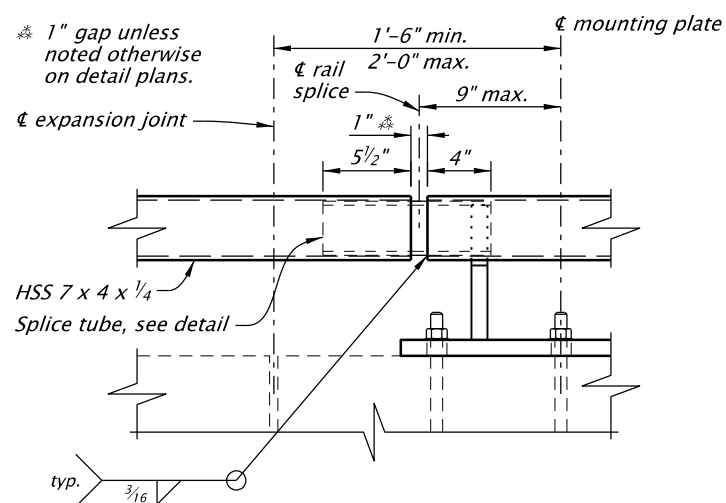
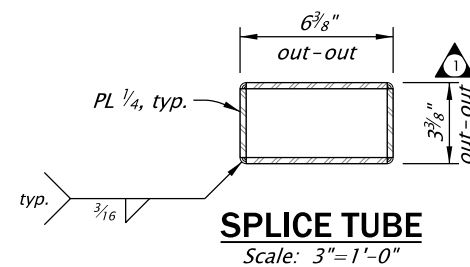
DATE	REVISION	DESCRIPTION
07-2024	General text revisions.	
01-2025	Thrie-beam transition revised; CAD standards updates.	
07-2025	Redrawn to reflect TR# 615131-01.	
01-2026	Correction to pullout strength	
07-2026	Correction to pullout strength	

CALC. BOOK NO. N/A SDR DATE 10-JULY-2026 **BR273**

Effective Date: December 1, 2026 – May 31, 2027



RAIL END
Scale: $\frac{3}{4}" = 1'-0"$



MOUNTING PLATE ASSEMBLY
Scale: $1" = 1'-0"$

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Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

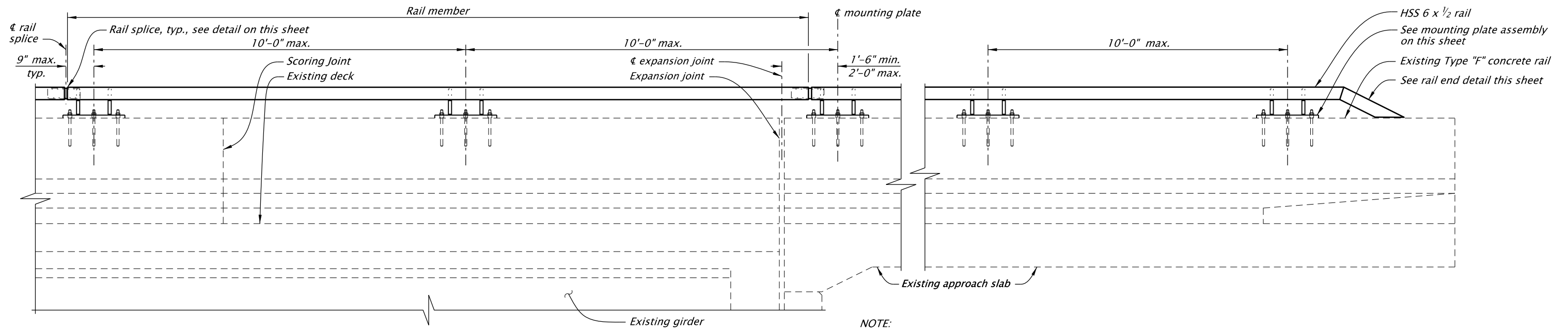
**TYPE "F" CONCRETE RAIL
TUBE RETROFIT SHEET 2 OF 3**

2024

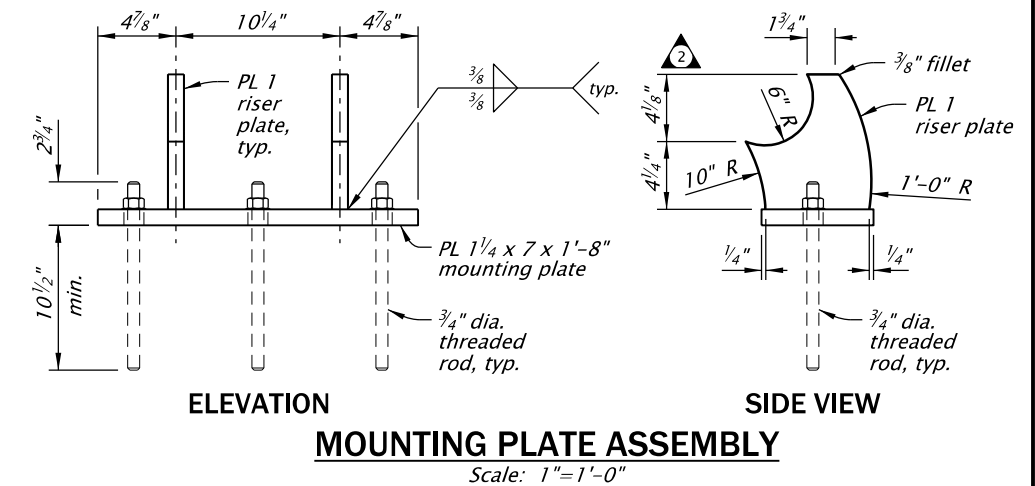
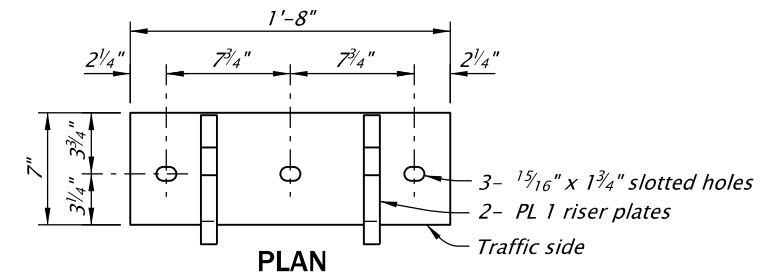
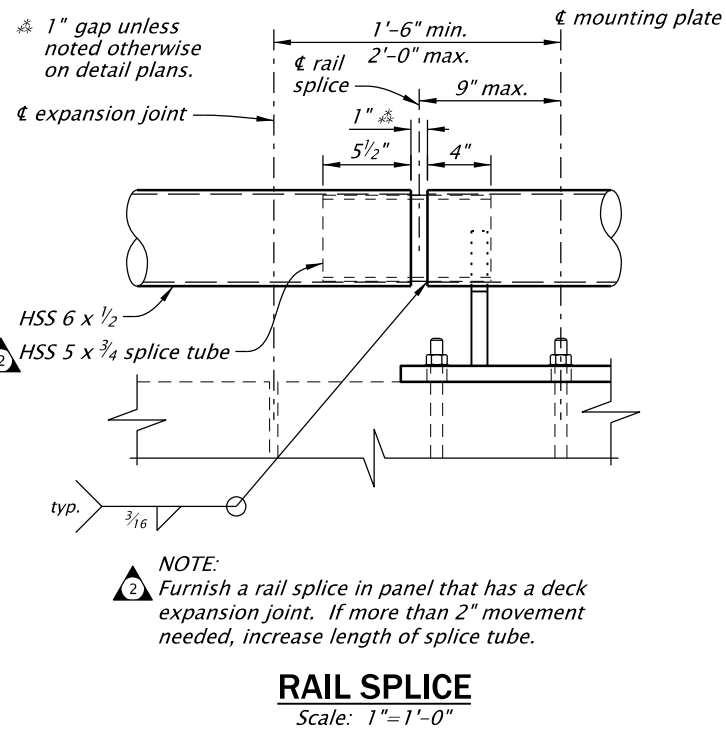
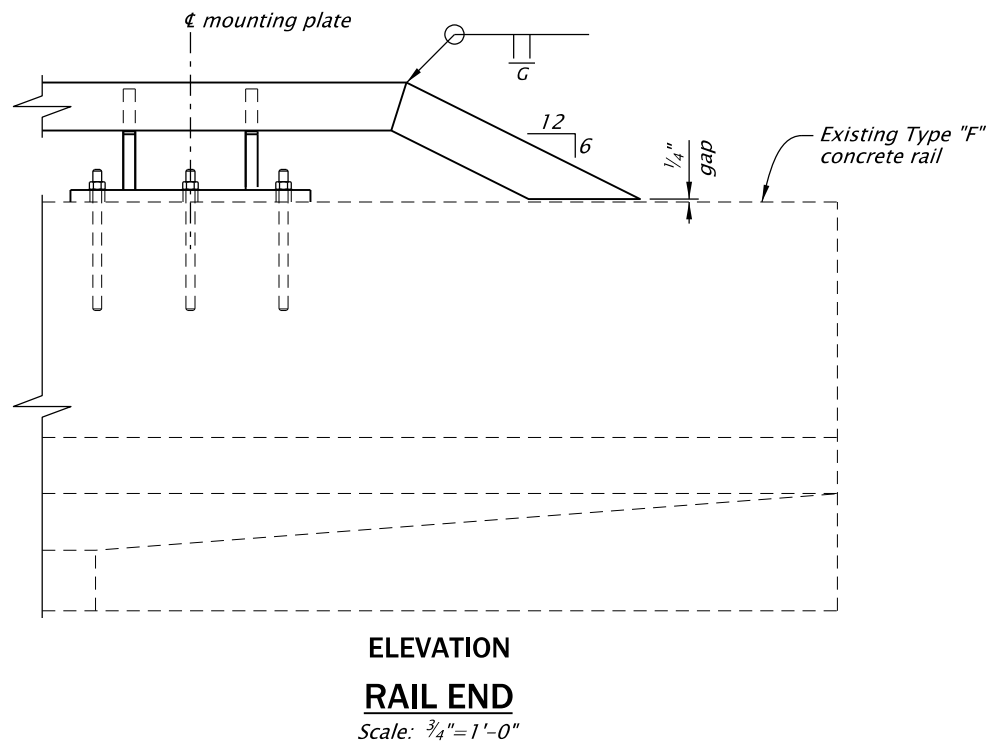
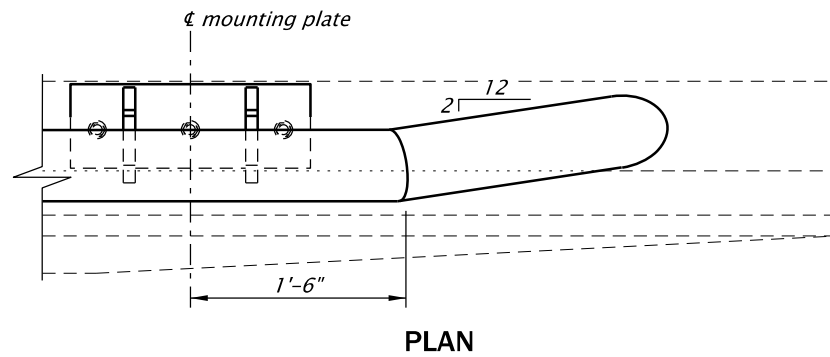
DATE	REVISION	DESCRIPTION
07-2021		Note changes, CAD edits.
01-2025		Weld correction.
07-2025		Title updated to reflect round HSS alternative.
07-2026		Dimensions added.

CALC. BOOK NO. N/A SDR DATE 10-JULY-2026 **BR286**

Effective Date: December 1, 2026 – May 31, 2027



NOTE:
Reinforcing steel in
existing components
not shown for clarity.



The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.

OREGON STANDARD DRAWINGS

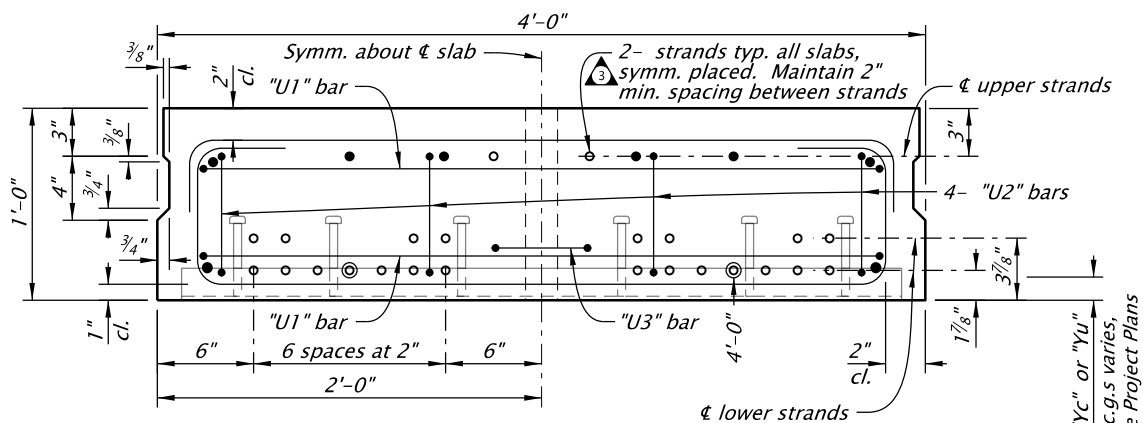
TYPE "F" CONCRETE RAIL TUBE RETROFIT SHEET 3 OF 3

2024

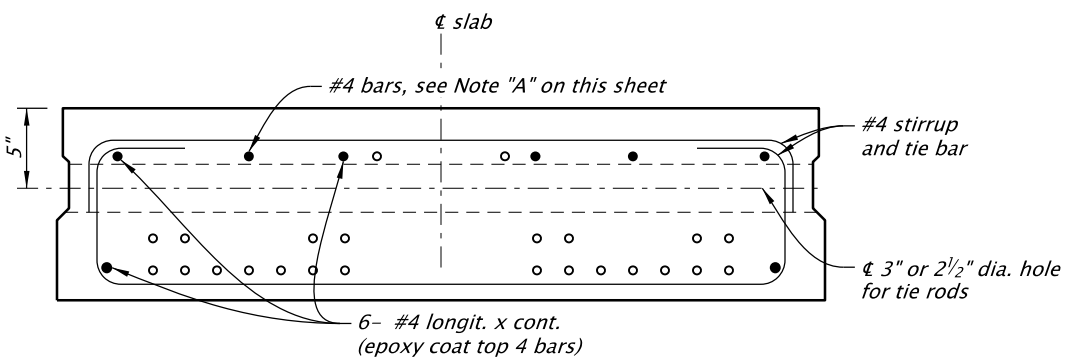
DATE	REVISION	DESCRIPTION
07-2025	Sheet added for round HSS alternative.	
07-2026	Sheet added for round HSS alternative.	

CALC. BOOK NO.	N/A	SDR DATE	10-JUL-2026	BR287
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Effective Date: December 1, 2026 – May 31, 2027



DEBONDED STRANDS:
Dimension shown indicates the length of tube required, at both ends, to debond the indicated strand. See the "PRECAST PRESTRESSED SLAB SCHEDULE" in the project plans for the strand pattern detail. Detension strands in order of increasing tube length shown.

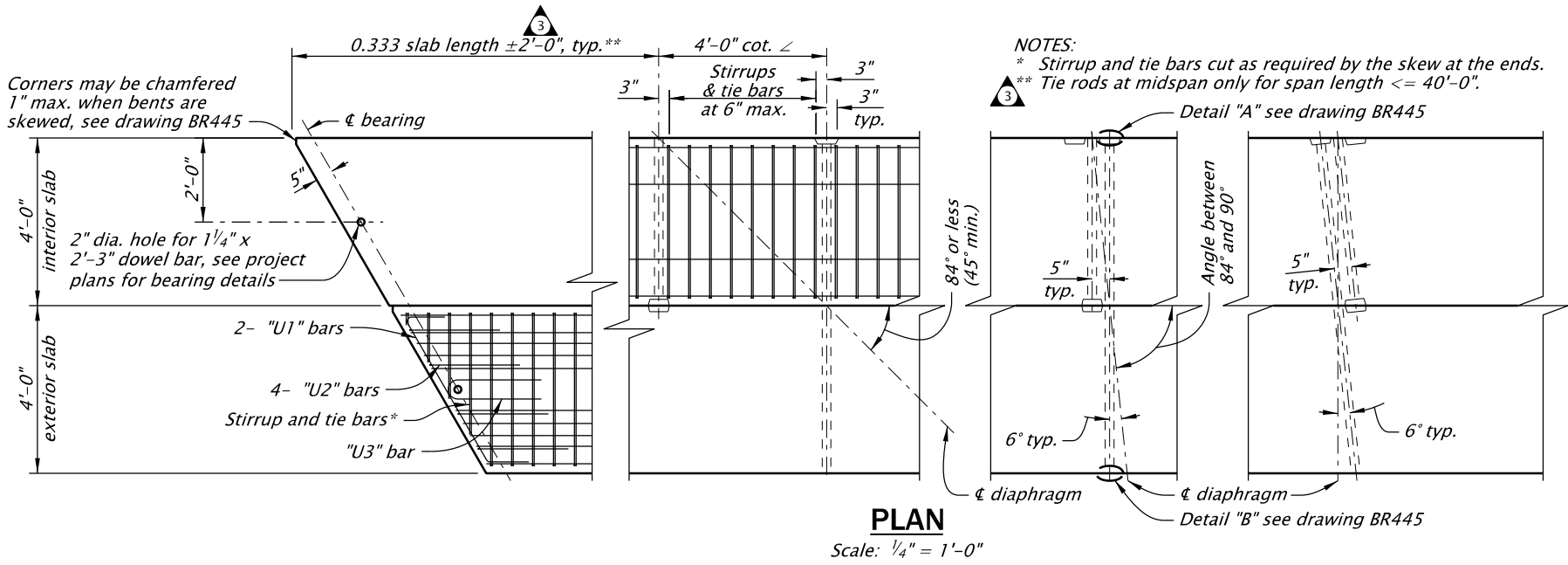


NOTE "A" (Slab End Bars)
2- #4 x 7'-6", slabs 6, 7, and 8.
Place bars each end of each slab (epoxy coat).

NOTE:
Grout keyway as specified in General Notes.
Omit keyway on exterior side of exterior slabs.
Keyway is continuous.

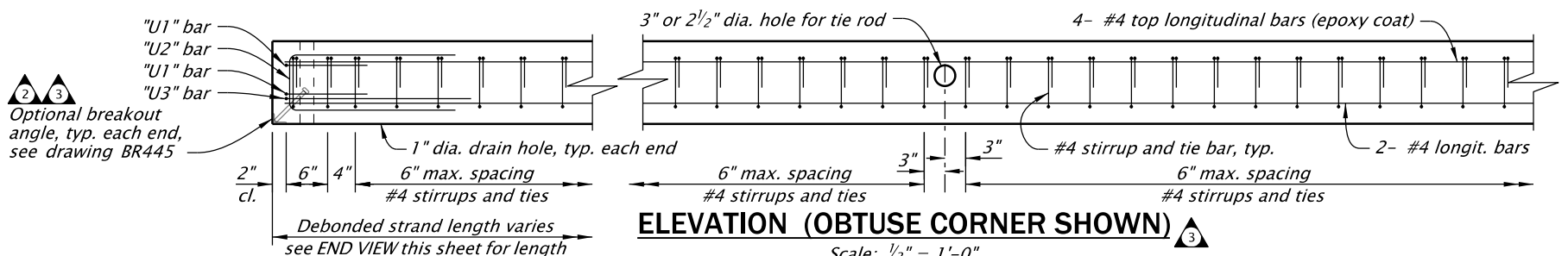
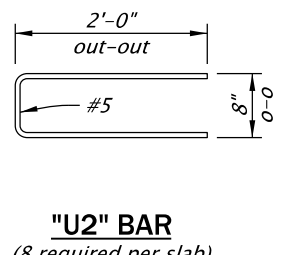
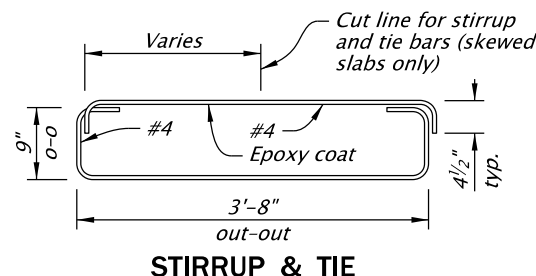
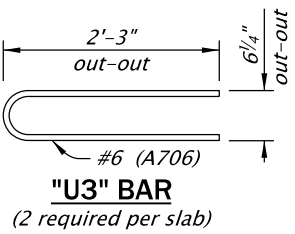
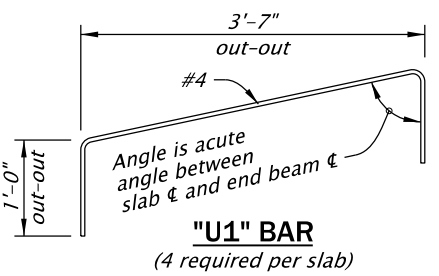
SECTION PROPERTIES

Area =	568 in ²
c.g. =	5.97 in
I =	6851 in ⁴
S _b =	1137 in ³
Weight =	612 lbs/ft
J =	23,400 in ⁴
K =	0.59
V/S =	4.74



NOTES:
* Stirrup and tie bars cut as required by the skew at the ends.
** Tie rods at midspan only for span length ≤ 40'-0".

Detail "A" see drawing BR445
Detail "B" see drawing BR445



The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

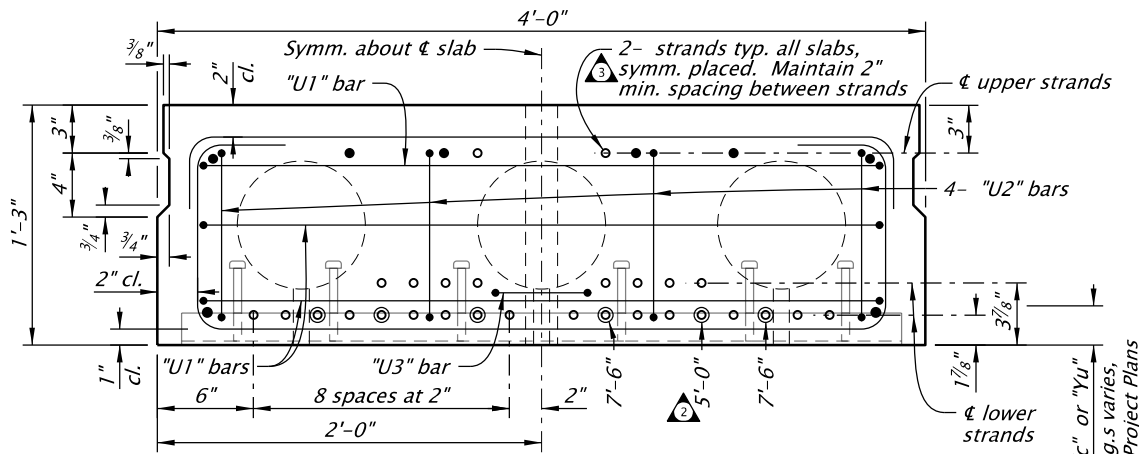
OREGON STANDARD DRAWINGS

12" PRECAST PRESTRESSED SLAB WITHOUT CAST-IN-PLACE CONCRETE DECK

2024

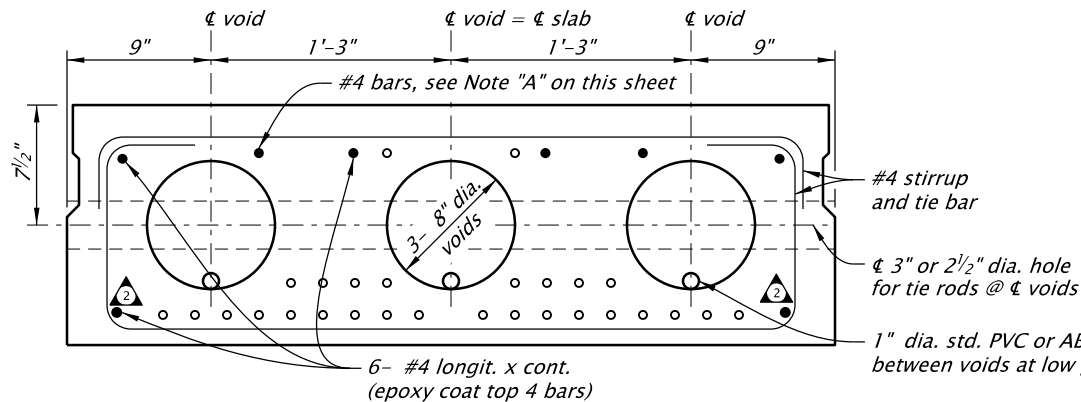
DATE	REVISION	DESCRIPTION
07-2020	Added end zone reinf.; revised debonded lengths and locations; CAD stds. update	
07-2022	Added breakout angle	
07-2026	Redrawn; notes and title edits	

CALC. BOOK NO. - - -	N/A - - -	SDR DATE - 10-JULY-2026	BR400
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END VIEW
Scale: 1" = 1'-0"

DEBONDED STRANDS:
Dimension shown indicates the length of tube required, at both ends, to debond the indicated strand. See the "PRECAST PRESTRESSED SLAB SCHEDULE" in the project plans for the strand pattern detail. Detension strands in order of increasing tube length shown.

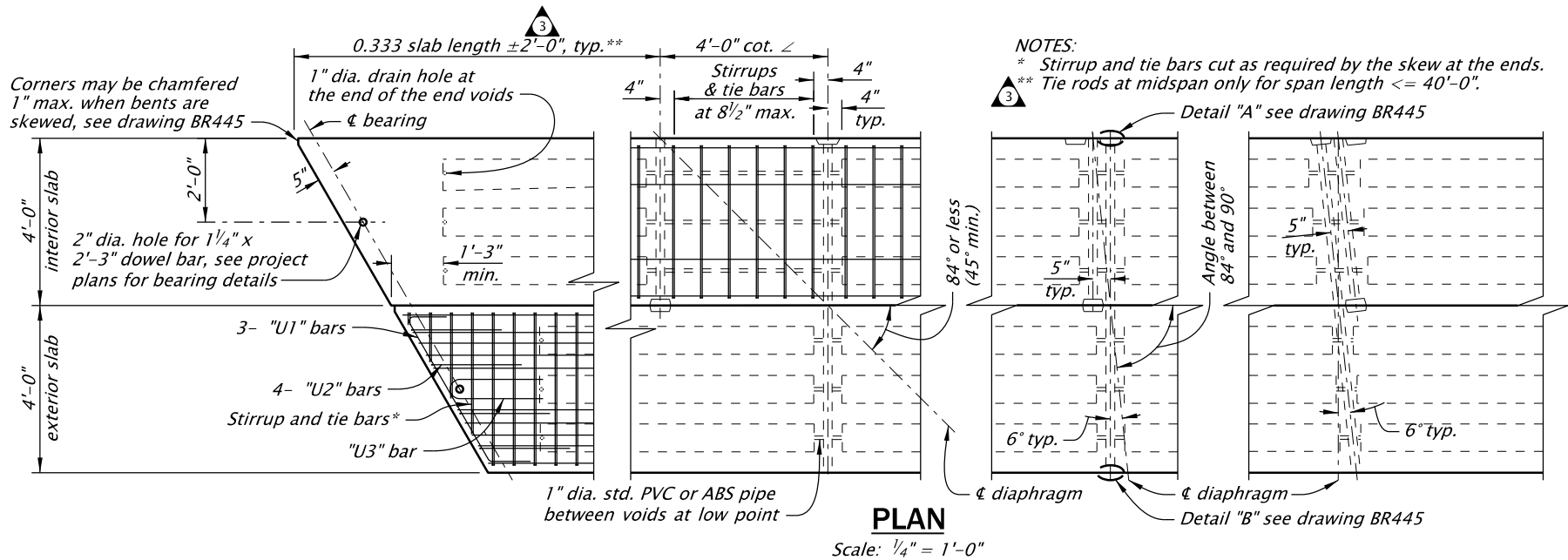


MIDSPAN VIEW
Scale: 1" = 1'-0"

NOTE "A" (Slab End Bars)
2- #4 x 7'-6", slab 5
2- #4 x 10'-0", slabs 6, 7, and 8
2- #4 x 12'-6", slab 9
Place bars each end of each slab (epoxy coat).

NOTE:
Grout keyway as specified in General Notes.
Omit keyway on exterior side of exterior slabs.
Keyway is continuous.

SECTION PROPERTIES	
Area =	562 in ²
c.g. =	7.45 in
I =	12,769 in ⁴
St =	1691 in ³
Sb =	1714 in ³
Weight =	605 lbs/ft
J =	31,900 in ⁴
K =	0.69
V/S =	3.43
Form wt =	10 lbs/ft (tubes)
Total weight with forms =	615 lbs/ft
DIAPHRAGM WEIGHT	
No skew	170 lb
15° skew	270 lb
30° skew	470 lb
45° skew	750 lb

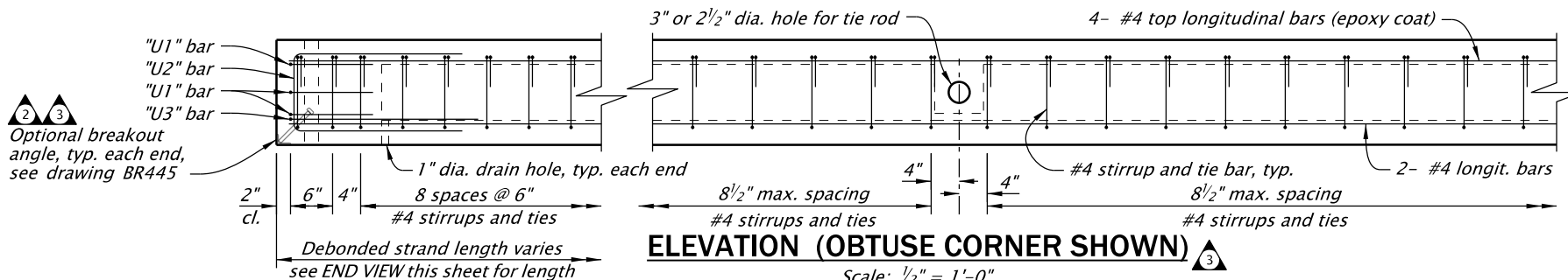
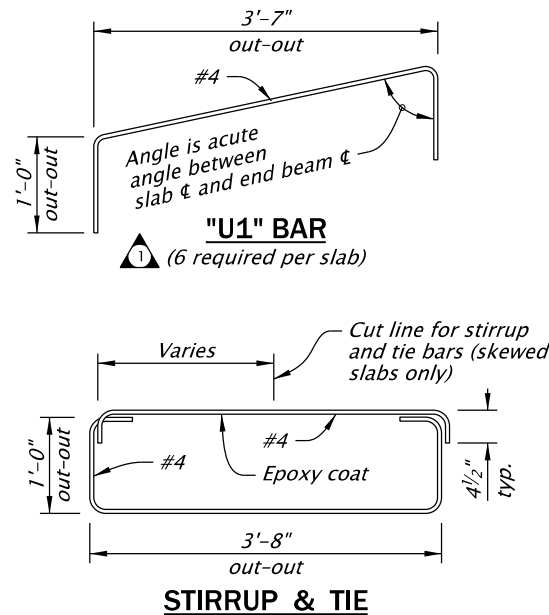


PLAN

Scale: 1/4" = 1'-0"

NOTES:
* Stirrup and tie bars cut as required by the skew at the ends.
** Tie rods at midspan only for span length <= 40'-0".

Detail "A" see drawing BR445
Detail "B" see drawing BR445



ELEVATION (OBTUSE CORNER SHOWN)

Scale: 1/2" = 1'-0"

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

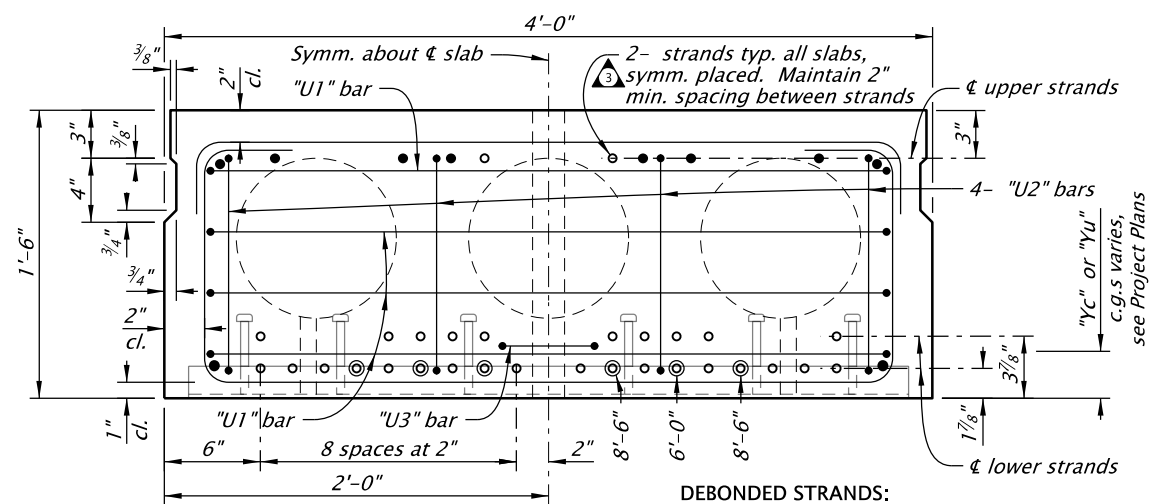
15" PRECAST PRESTRESSED SLAB WITHOUT CAST-IN-PLACE CONCRETE DECK

2024

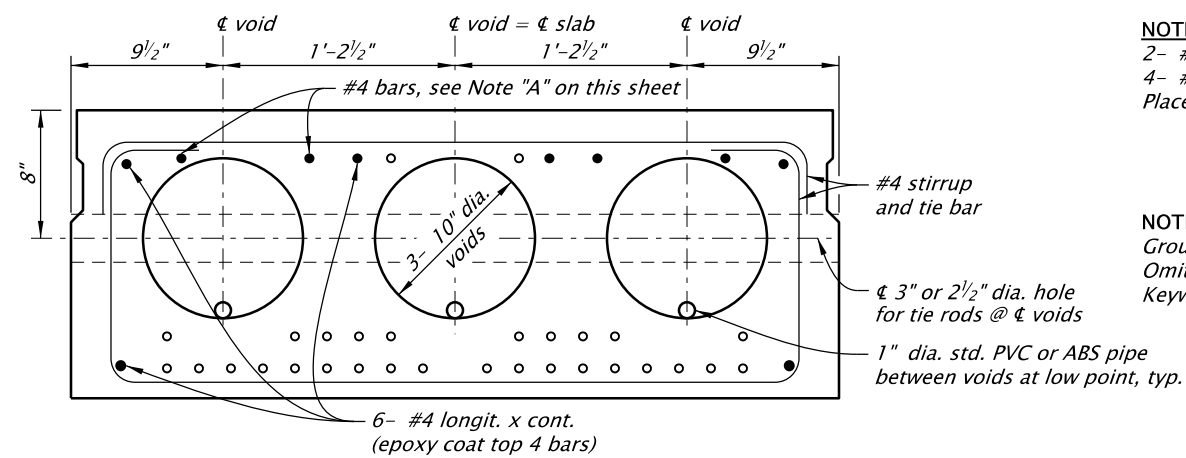
DATE	REVISION	DESCRIPTION
07-2020	Added end zone reinf.; revised debonded lengths and locations; CAD stds. update	
07-2022	Added breakout angle	
07-2026	Redrawn; notes and title edits	

CALC. BOOK NO. N/A SDR DATE 10-JULY-2026

BR405



DEBONDED STRANDS:
Dimension shown indicates the length of tube required, at both ends, to debond the indicated strand. See the "PRECAST PRESTRESSED SLAB SCHEDULE" in the project plans for the strand pattern detail. Detension strands in order of increasing tube length shown.

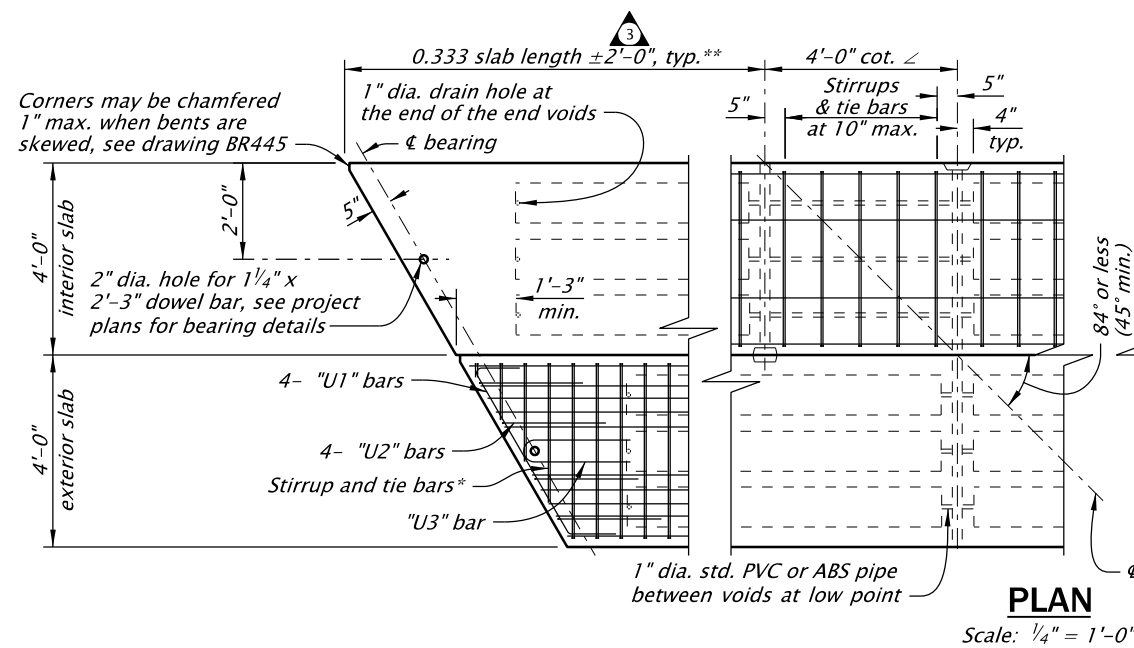


NOTE "A" (Slab End Bars)
2- #4 x 10'-0", slabs 4, 5, and 6
4- #4 x 15'-0", slabs 7, 8, and 9
Place bars each end of each slab (epoxy coat).

NOTE:
Grout keyway as specified in General Notes.
Omit keyway on exterior side of exterior slabs.
Keyway is continuous.

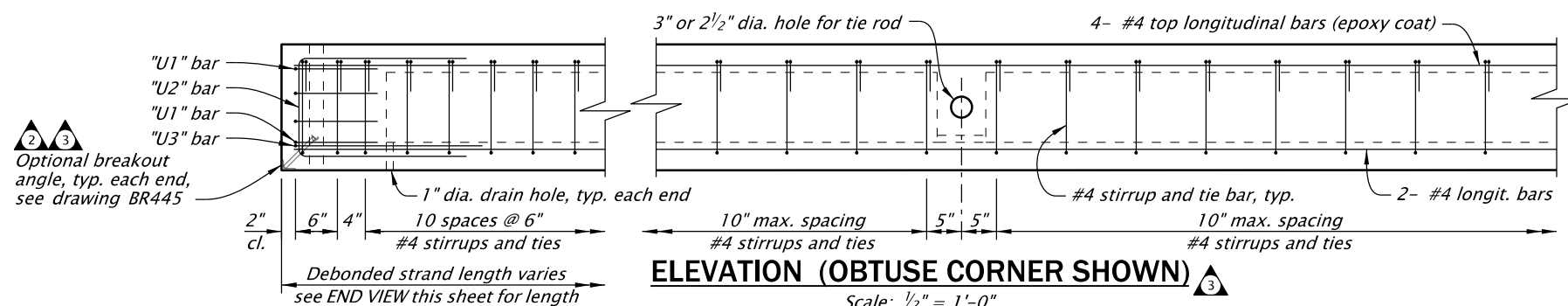
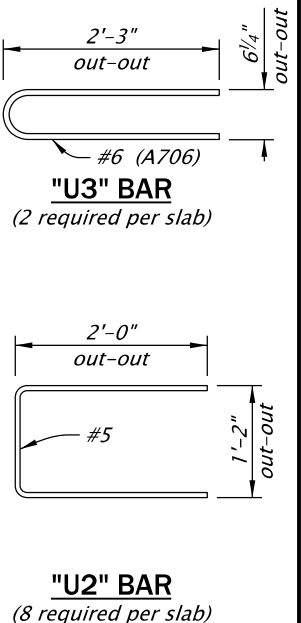
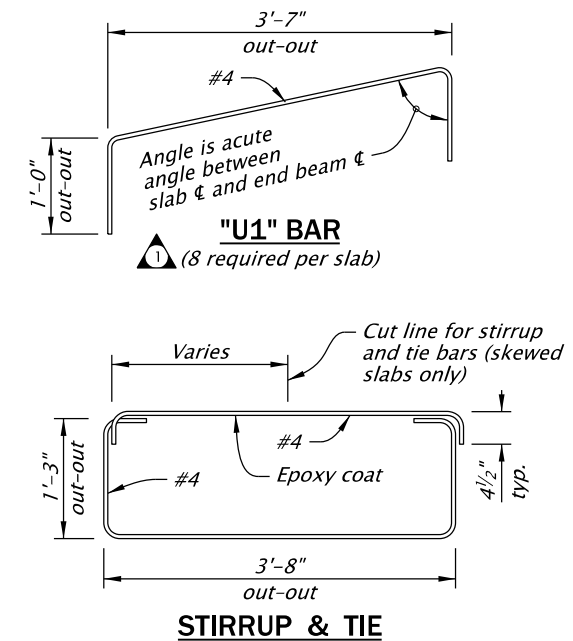
SECTION PROPERTIES
Area = 621 in²
c.g. = 8.94 in
I = 21,626 in⁴
S_b = 2386 in³
Weight = 668 lbs/ft
J = 52,200 in⁴
K = 0.71
V/S = 3.47
Form wt = 14 lbs/ft (tubes)
Total weight with forms = 682 lbs/ft

DIAPHRAGM WEIGHT
No skew 260 lb
15° skew 430 lb
30° skew 740 lb
45° skew 1170 lb



NOTES:
* Stirrup and tie bars cut as required by the skew at the ends.
** Tie rods at midspan only for span length <= 40'-0".

Detail "A" see drawing BR445
Detail "B" see drawing BR445



The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

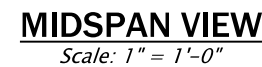
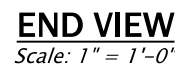
18" PRECAST PRESTRESSED SLAB WITHOUT CAST-IN-PLACE CONCRETE DECK

2024

DATE	REVISION	DESCRIPTION
07-2020	Added end zone reinf.; revised debonded lengths and locations; CAD stds. update	
07-2022	Added breakout angle	
07-2026	Redrawn; notes and title edits	

CALC. BOOK NO. N/A SDR DATE 10-JULY-2026 **BR410**

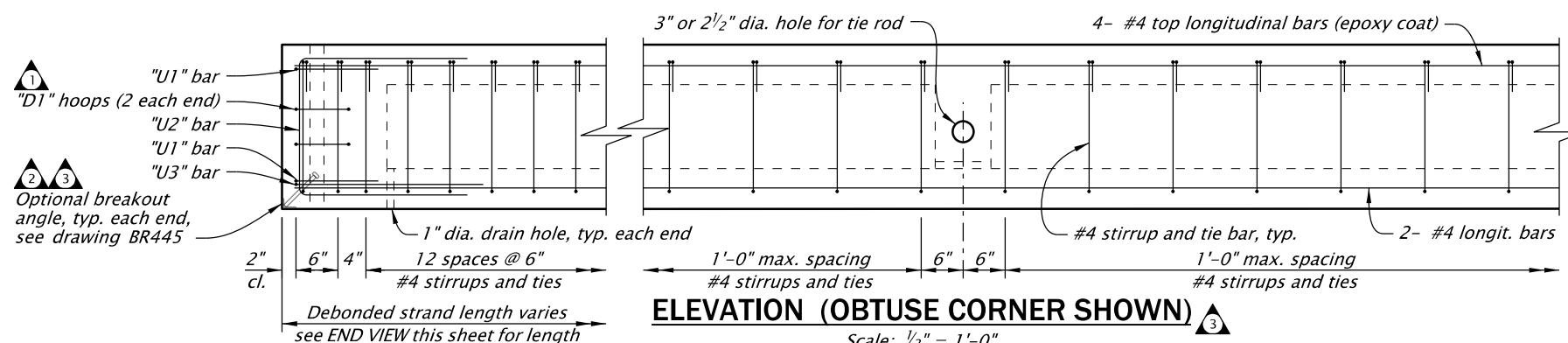
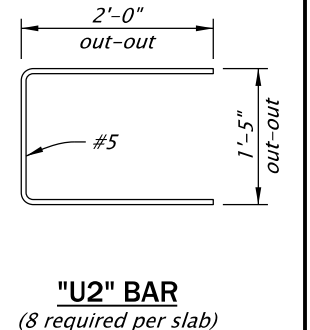
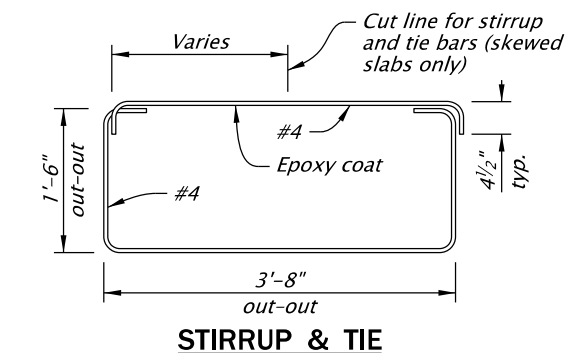
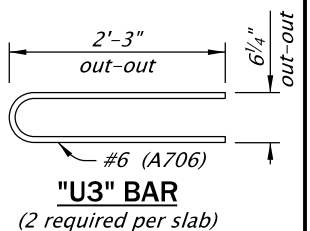
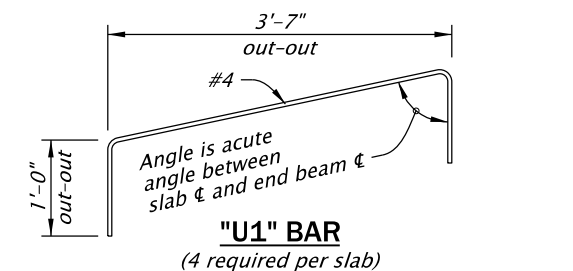
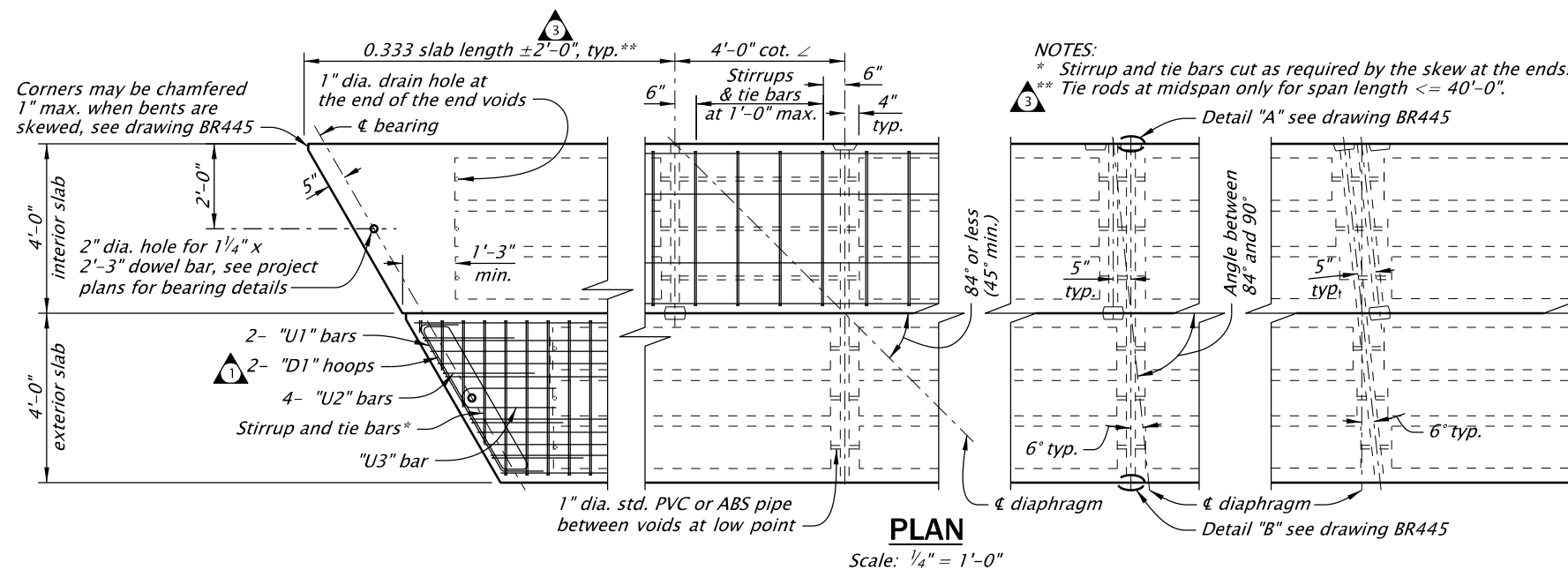
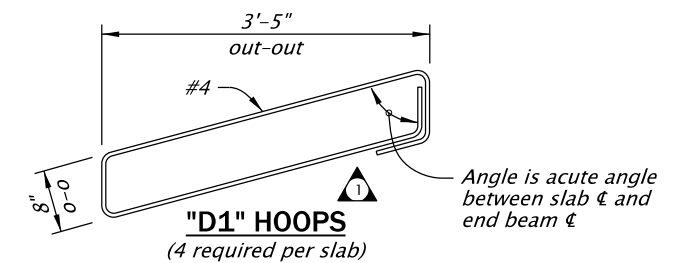
Effective Date: December 1, 2026 – May 31, 2027



NOTE:
Grout keyway as specified in General Notes.
Omit keyway on exterior side of exterior slabs.
Keyway is continuous.

SECTION PROPERTIES

Area =	696 in ²
<i>C</i> =	10.43 in
<i>I</i> =	34,152 in ⁴
<i>S_t</i> =	3230 in ³
<i>S_b</i> =	3275 in ³
Weight =	749 lbs/ft
<i>J</i> =	77,100 in ⁴
<i>K</i> =	0.73
<i>V/S</i> =	3.64
Form wt =	16 lbs/ft
(tubes)	
Total weight with	
forms =	765 lbs/ft



Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

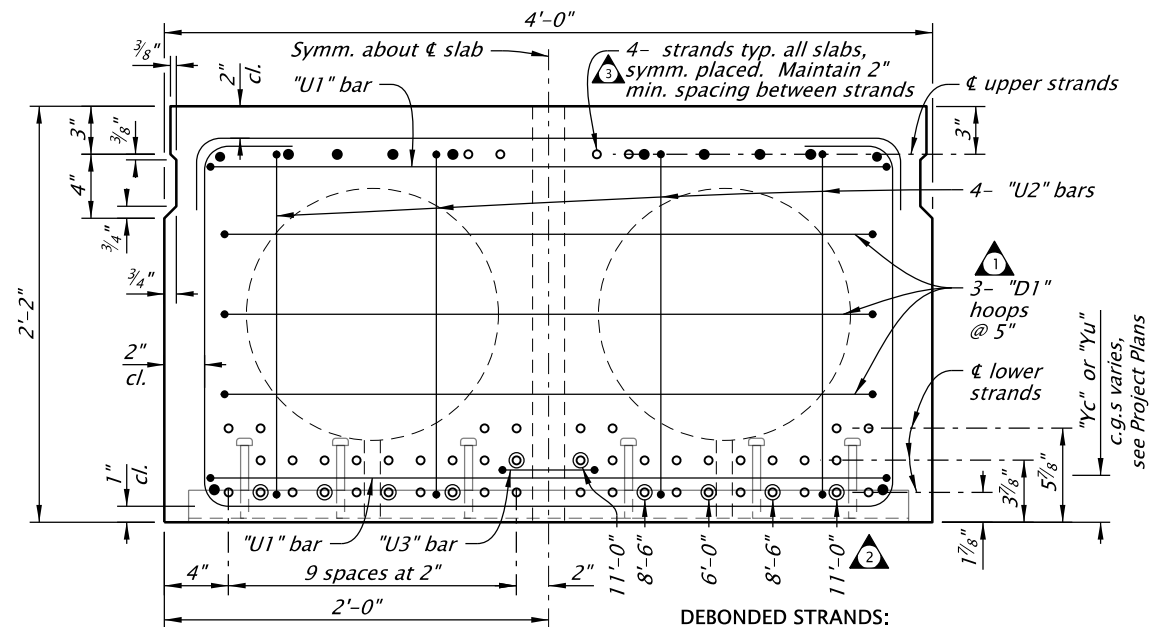
OREGON STANDARD DRAWINGS

**21" PRECAST PRESTRESSED SLAB
WITHOUT
CAST-IN-PLACE CONCRETE DECK**

2024

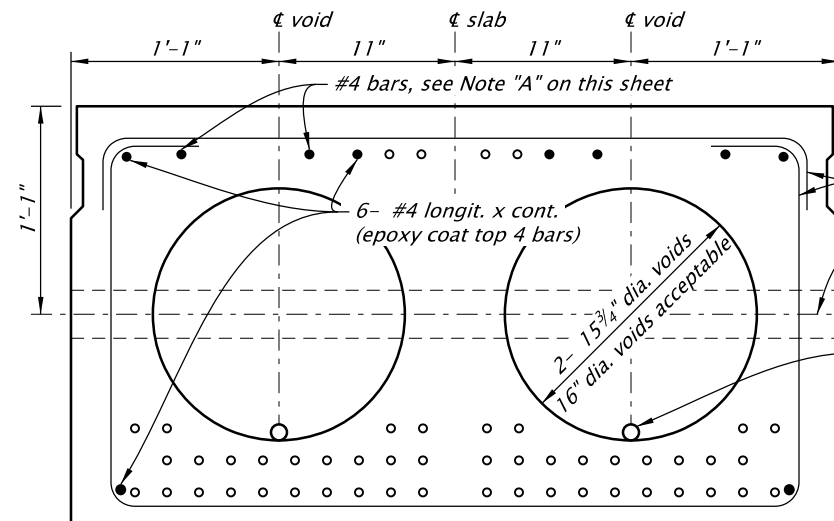
DATE	REVISION DESCRIPTION
07-2020	Added end zone reinf.; revised debonded lengths and locations; CAD stds. update
07-2022	Added breakout angle
07-2026	Redrawn; notes and title edits

CALC. BOOK NO. - - - - N/A - - - -	SDR DATE - 10-JULY-2026 - - - -	BR415
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END VIEW
Scale: 1" = 1'-0"

DEBONDED STRANDS:
Dimension shown indicates the length of tube required, at both ends, to debond the indicated strand. See the "PRECAST PRESTRESSED SLAB SCHEDULE" in the project plans for the strand pattern detail. Detension strands in order of increasing tube length shown.



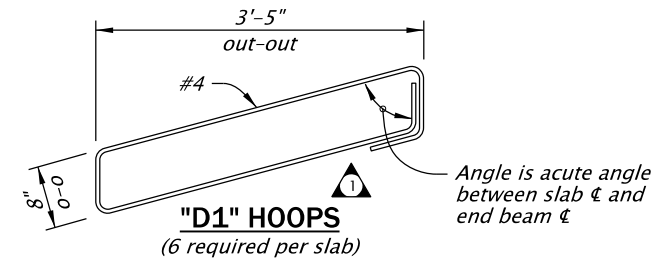
MIDSPAN VIEW
Scale: 1" = 1'-0"

NOTE "A" (Slab End Bars)
2- #4 x 10'-0", slabs 6 and 7
4- #4 x 12'-6", slabs 8, 9, 10, 11, 12, and 13
Place bars each end of each slab (epoxy coat).

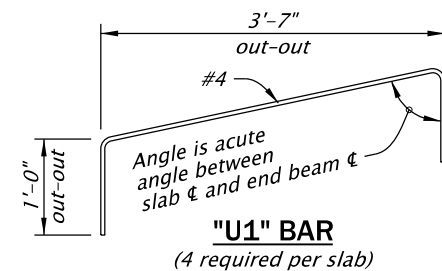
NOTE:
Grout keyway as specified in General Notes.
Omit keyway on exterior side of exterior slabs.
Keyway is continuous.

SECTION PROPERTIES
Area = 851 in²
c.g. = 12.92 in
I = 63,596 in⁴
S_t = 4862 in³
S_b = 4923 in³
Weight = 916 lbs/ft
J = 128,800 in⁴
K = 0.77
V/S = 4.31
Form wt = 20 lbs/ft (tubes)
Total weight with forms = 936 lbs/ft

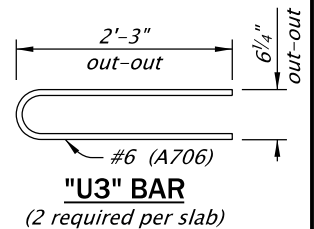
DIAPHRAGM WEIGHT
No skew 430 lb
15° skew 710 lb
30° skew 1230 lb
45° skew 1940 lb



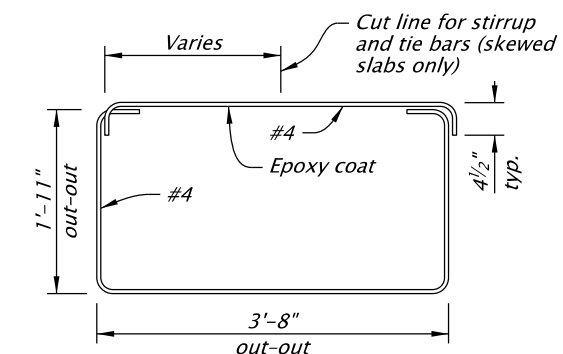
"D1" HOOPS
(6 required per slab)



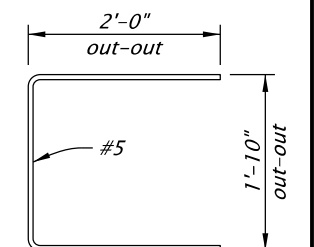
"U1" BAR
(4 required per slab)



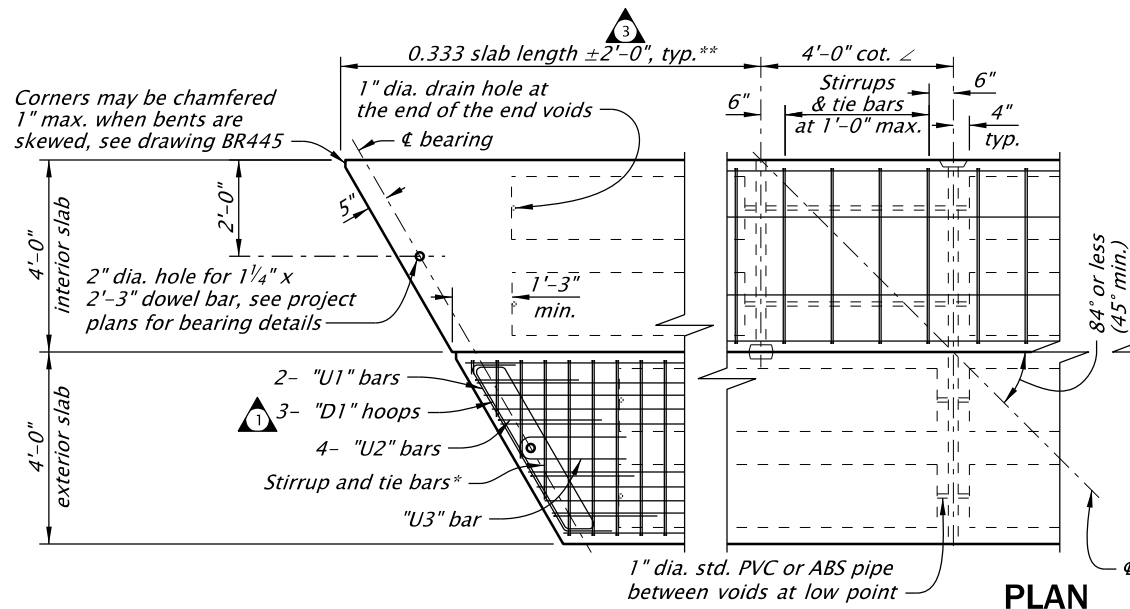
"U3" BAR
(2 required per slab)



STIRRUP & TIE



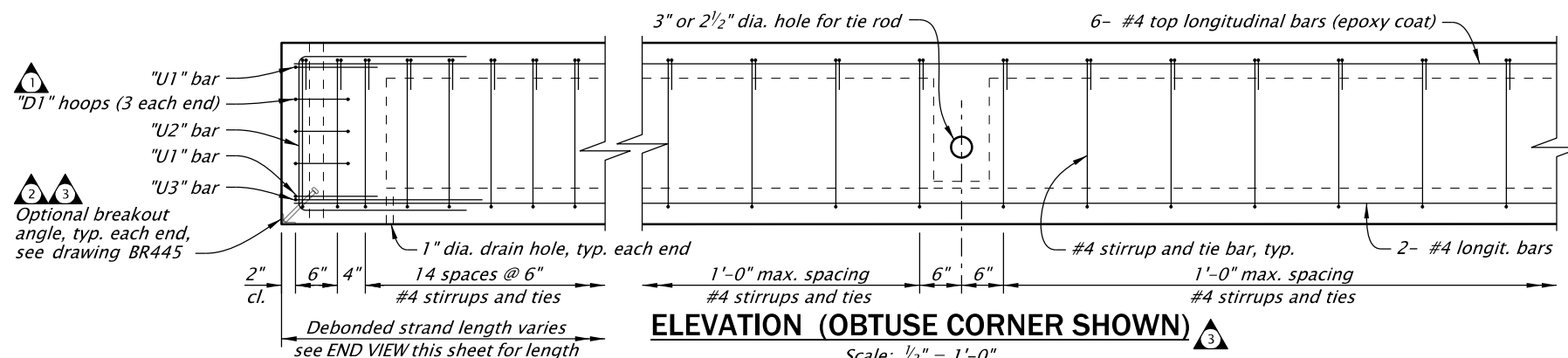
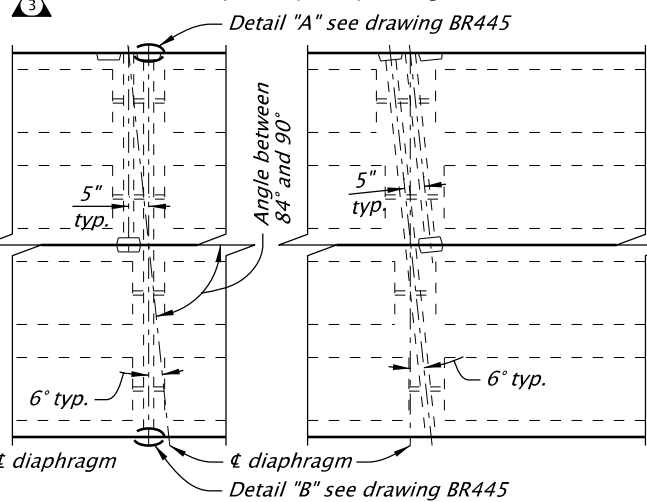
"U2" BAR
(8 required per slab)



PLAN

Scale: 1/4" = 1'-0"

NOTES:
* Stirrup and tie bars cut as required by the skew at the ends.
** Tie rods at midspan only for span length ≤ 40'-0".



ELEVATION (OBTUSE CORNER SHOWN)

Scale: 1/2" = 1'-0"

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

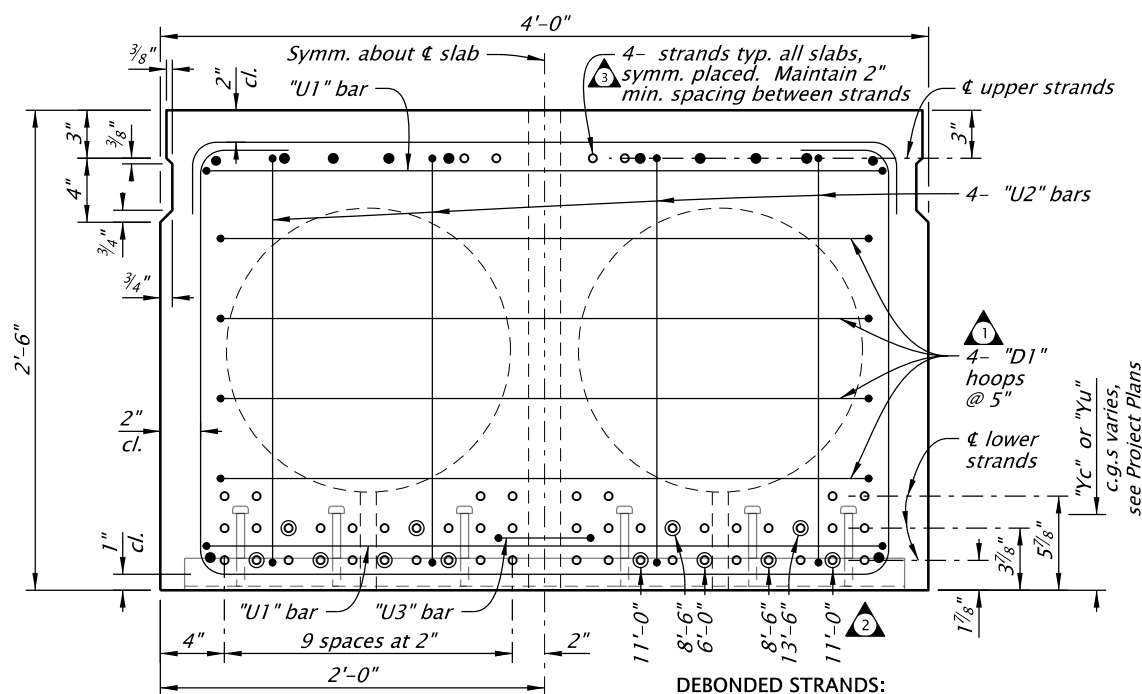
26" PRECAST PRESTRESSED SLAB WITHOUT CAST-IN-PLACE CONCRETE DECK

2024

DATE	REVISION	DESCRIPTION
07-2020	Added end zone reinf.; revised debonded lengths and locations; CAD stds. update	
07-2022	Added breakout angle	
07-2026	Redrawn; notes and title edits	

CALC. BOOK NO.	N/A	SDR DATE	10-JULY-2026	BR420
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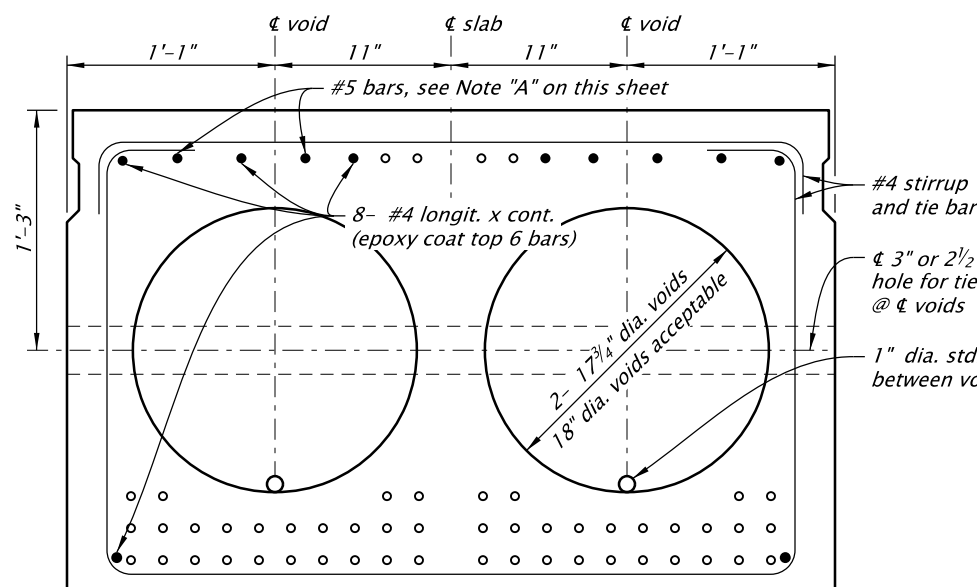
Effective Date: December 1, 2026 – May 31, 2027

**END VIEW**

Scale: 1" = 1'-0"

DEBONDED STRANDS:

Dimension shown indicates the length of tube required, at both ends, to debond the indicated strand. See the "PRECAST PRESTRESSED SLAB SCHEDULE" in the project plans for the strand pattern detail. Detension strands in order of increasing tube length shown.

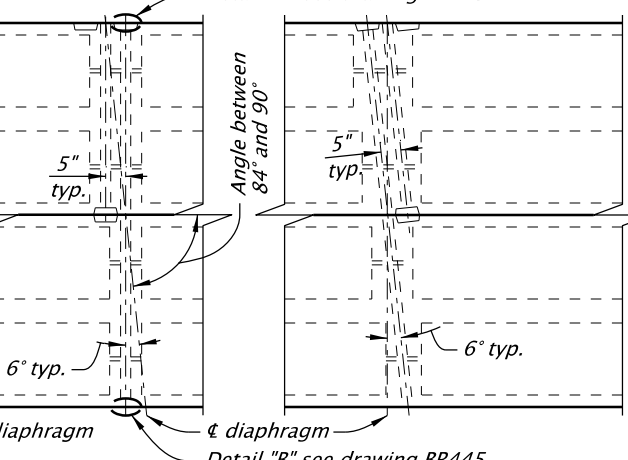
**MIDSPAN VIEW**

Scale: 1" = 1'-0"

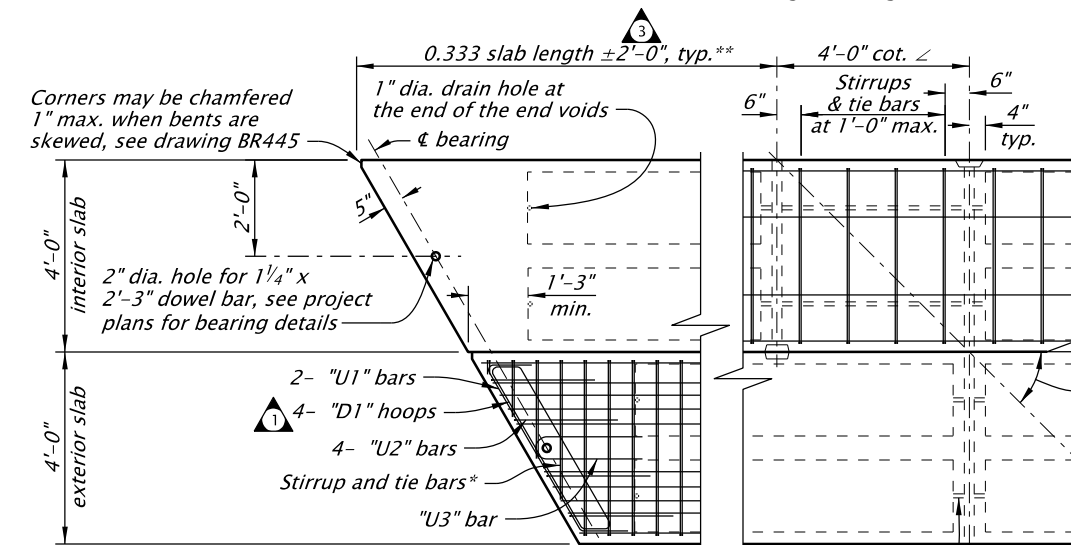
NOTES:

- * Stirrup and tie bars cut as required by the skew at the ends.
 ** Tie rods at midspan only for span length <= 40'-0".

Detail "A" see drawing BR445

**PLAN**

Scale: 1/4" = 1'-0"

**ELEVATION (OBTUSE CORNER SHOWN)**

Scale: 1/2" = 1'-0"

NOTE "A" (Slab End Bars)

- 2- #5 x 10'-0", slabs 2 and 3
 4- #5 x 10'-0", slabs 4, 5 and 6
 4- #5 x 12'-6", slabs 7, 8 and 9
 4- #5 x 15'-0", slabs 10, 11, 12 and 13
 Place bars each end of each slab (epoxy coat).

NOTE:

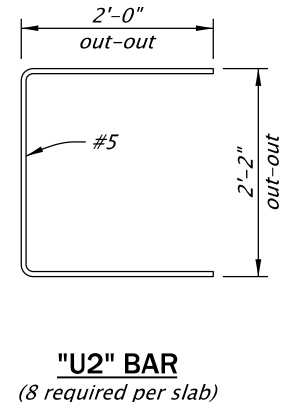
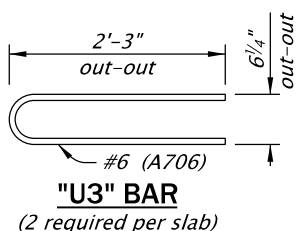
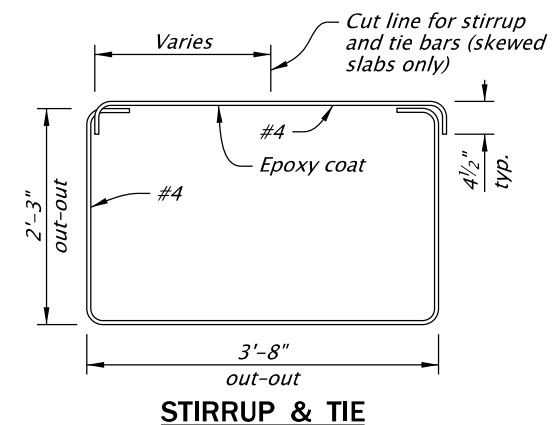
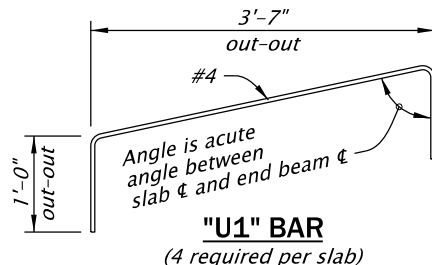
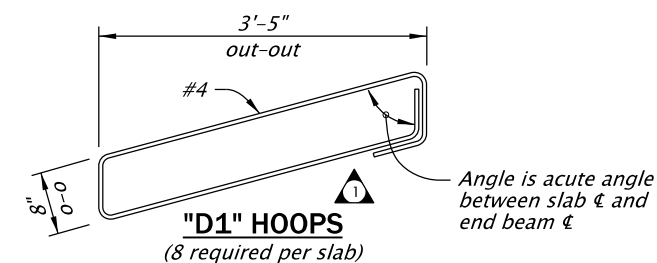
- Grout keyway as specified in General Notes.
 Omit keyway on exterior side of exterior slabs.
 Keyway is continuous.

SECTION PROPERTIES

Area =	938 in ²
c.g. =	14.91 in
I =	97,278 in ⁴
St =	6447 in ³
Sb =	6524 in ³
Weight =	1009 lbs/ft
J =	180,800 in ⁴
K =	0.80
V/S =	3 4.43
Form wt =	27 lbs/ft (tubes)
Total weight with forms =	1036 lbs/ft

DIAPHRAGM WEIGHT

No skew	550 lb
15° skew	900 lb
30° skew	1560 lb
45° skew	2380 lb



The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

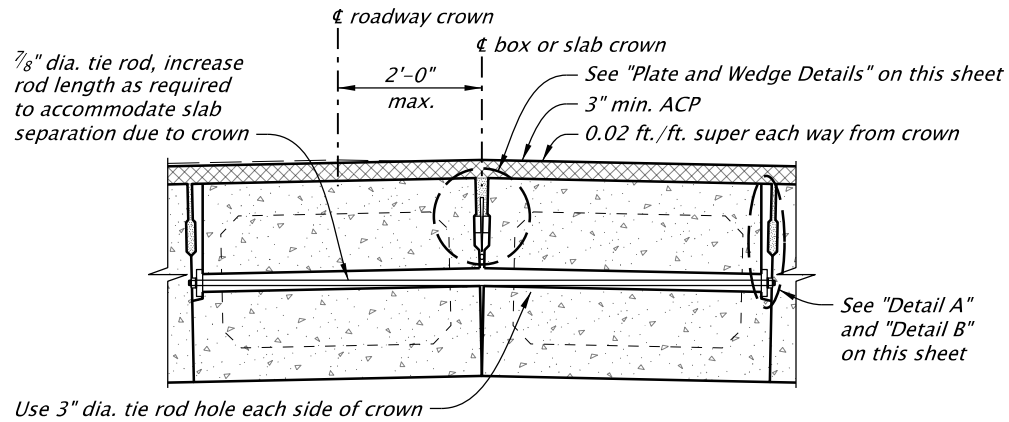
30" PRECAST PRESTRESSED SLAB WITHOUT CAST-IN-PLACE CONCRETE DECK

2024

DATE	REVISION	DESCRIPTION
07-2020	Added end zone reinf.; revised debonded lengths and locations; CAD stds. update	
07-2022	Added breakout angle	
07-2026	Redrawn; notes and title edits.	

CALC. BOOK NO.	N/A	SDR DATE	10-JULY-2026	BR422
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Effective Date: December 1, 2026 – May 31, 2027



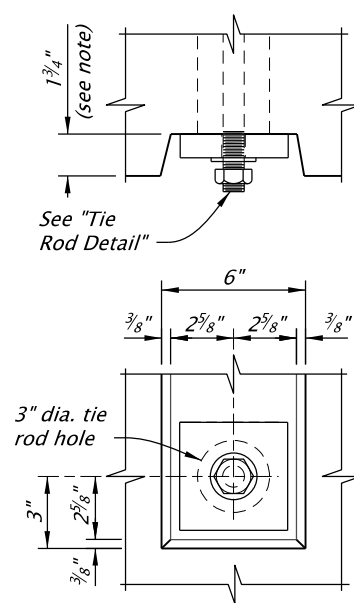
TYPICAL DETAIL FOR INSTALLING BOXES OR SLABS ON CROWN

Scale: 3/8"=1'-0"

NOTE:

Tighten tie rods until the bottom corners of the boxes or slabs are in contact. Loosen the tie rod and install the plates and wedges per detail. Shift wedge location as required to avoid conflict with the tie rod.

Tension the tie rods. Install boxes or slabs level and build up roadway crown with AC wearing surface when roadway width is 28' or less (for bridges with ACP).



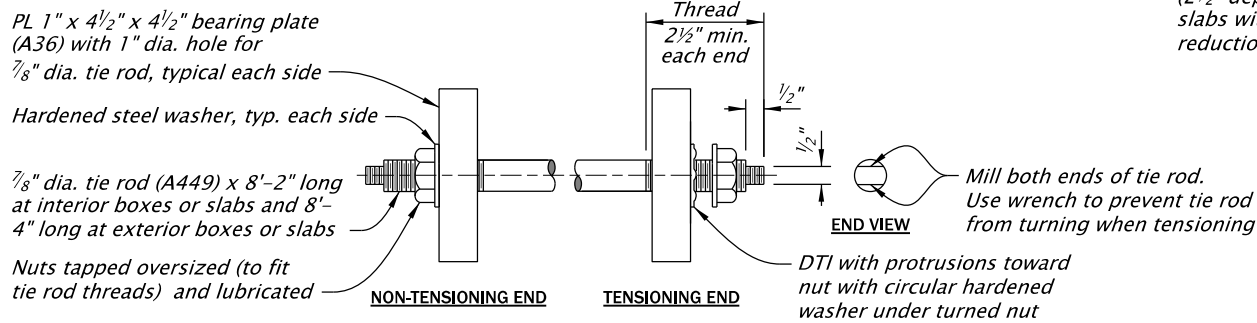
NON-TENSIONING END

DETAIL "A"

Scale: 1 1/2"=1'-0"

NOTE:

1 3/4" @ ϵ tie rod
(2 1/2" depth may be used for slabs with an appropriate reduction in tie rod length).



TIE ROD DETAILS

Not to Scale

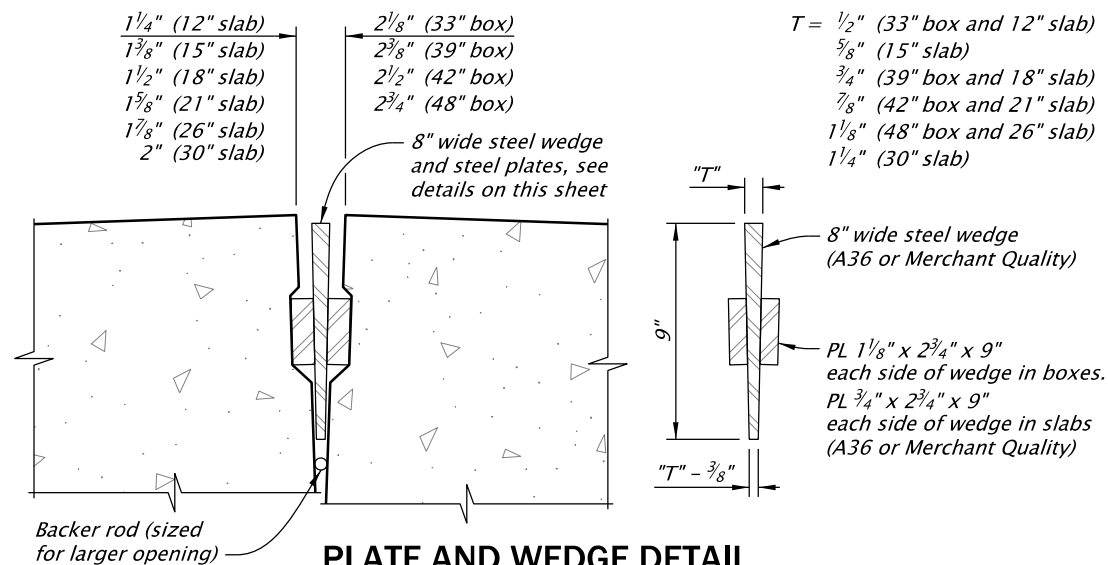
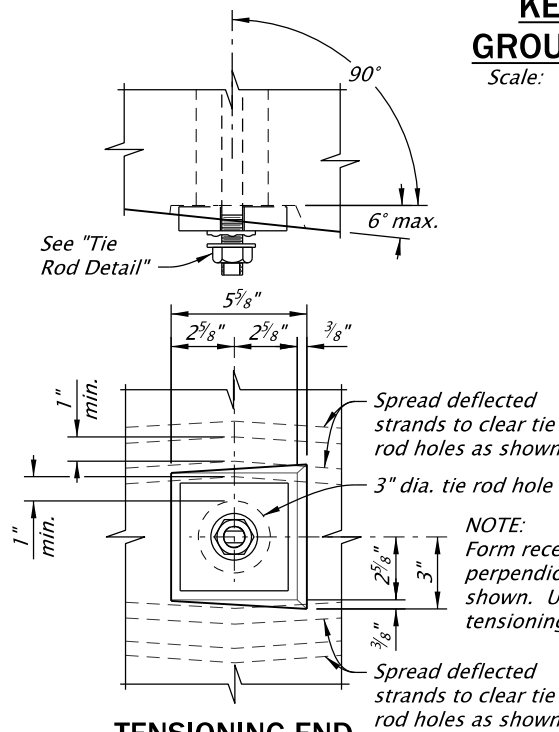


PLATE AND WEDGE DETAIL

Scale: 1 1/2"=1'-0"

NOTE:

Add steel plates and wedge at each tie rod crossing before tensioning tie rods. Hot-dip galvanize wedges and plates.



TENSIONING END

DETAIL "B"

Scale: 1 1/2"=1'-0"

GENERAL NOTES FOR PRESTRESSED BOXES AND SLABS

Boxes and slabs are designed for live and superimposed dead loading as shown in the General Notes for the Project. Furnish the class of concrete shown in the Slab or Box Schedule with nominal maximum size aggregate of 1 or 3/4.

Transfer prestress after the concrete reaches the minimum concrete strength at transfer shown in the Slab or Box Schedule.

Furnish a keyway grout from the QPL for filling keyways, lifting blockouts and tie rod blockouts.

Allow traffic on the bridge only after keyway grout has reached design strength.

Furnish reinforcing steel as specified in the General Notes for the Project.

Furnish smooth dowels conforming to AASHTO M31, Grade 60 (ASTM A615, Grade 60), ASTM F1554, Grade 55 or ASTM A529, Grade 55.

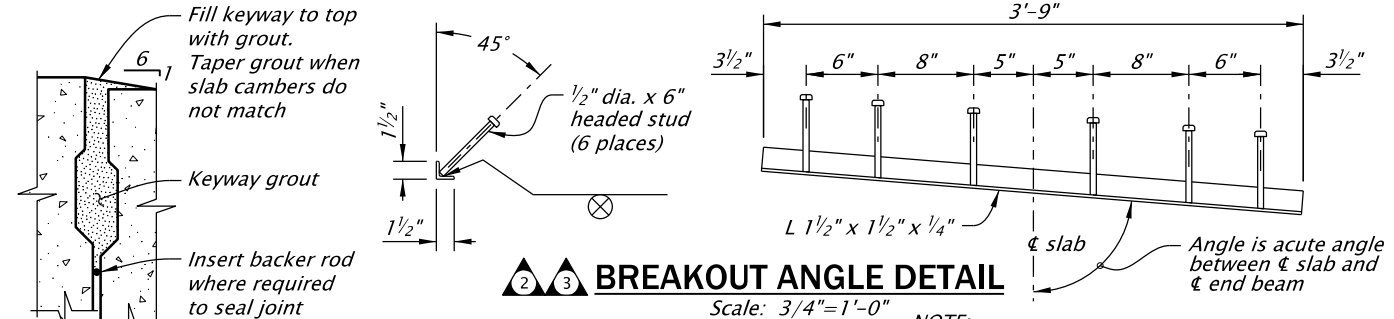
Furnish 1/2" diameter 7 wire low relaxation prestressing steel strand conforming to AASHTO Specification M203 (ASTM A416), Grade 270 Supplement 1.

Tension strand initially to 31.0 kips per strand (after harping deflected strand). Debond strands where specified using either split or solid plastic sheathing with a minimum wall thickness of 0.025".

Furnish high strength tie rods conforming to ASTM A449. Furnish heavy hexagon nuts conforming to ASTM A563. Furnish hardened steel washers conforming to ASTM F436. Hot-dip galvanize tie rods, plates, nuts and washers (except DTIs) after fabrication.

Tighten tie rods to 39 kips (minimum) using mechanically galvanized direct tension indicators (DTIs) conforming to ASTM F959 and ASTM F3125, Grade A325. Tighten all tie rods (per box or slab) to about one half the specified tension before proceeding with final tensioning.

Keep boxes and slabs upright at all times. Support them within 2'-0" of the ends during storage (to prevent excessive camber, overstress or failure). Locate transport supports and lifting devices within 2'-0" of the ends of boxes and slabs. Transport boxes and slabs after the concrete has reached the 28 day design strength and a minimum of 7 days after casting.

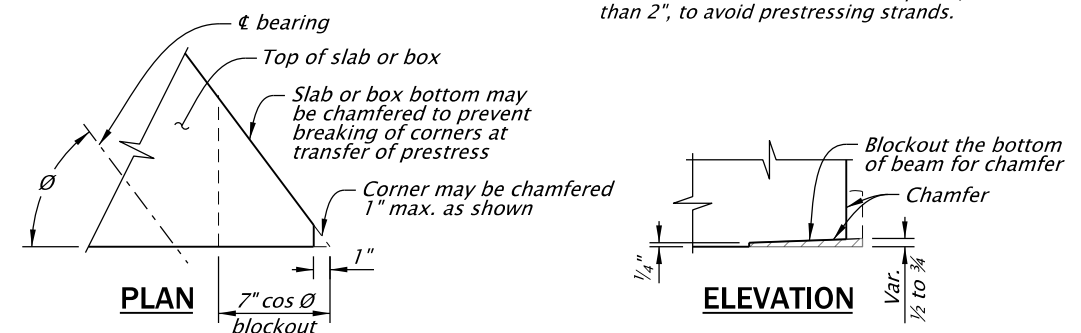


NOTE:

Furnish steel angle conforming to ASTM A36. Hot-dip galvanize breakout angle after fabrication. Bend or shift headed studs as required, no more than 2", to avoid prestressing strands.

KEYWAY GROUT DETAIL

Scale: 1 1/2"=1'-0"



PARTIAL ELEVATION CHAMFER DETAIL

Scale: 1"=1'-0"

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

Furnish all materials and perform all work according to the current Oregon Standard Specifications for Construction.

OREGON STANDARD DRAWINGS

PRECAST PRESTRESSED BOX AND SLAB DETAILS

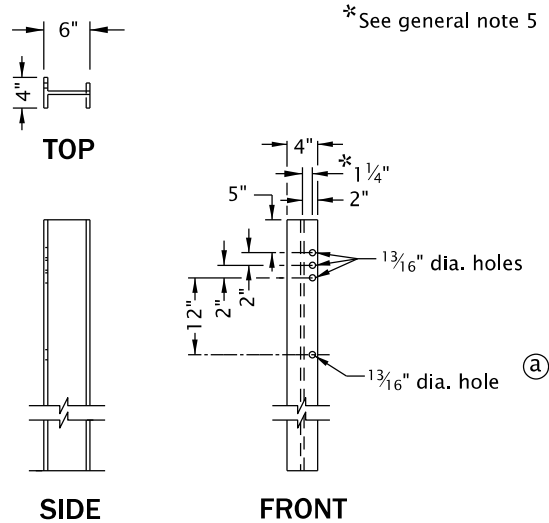
2024

DATE	REVISION	DESCRIPTION
07-2020	Revise dowels & tie rod steel grade; remove rail anchor detail.	
06-2022	Revised General Notes; added Breakout Angle Detail.	
07-2026	Revised breakout angle detail; redrawn.	

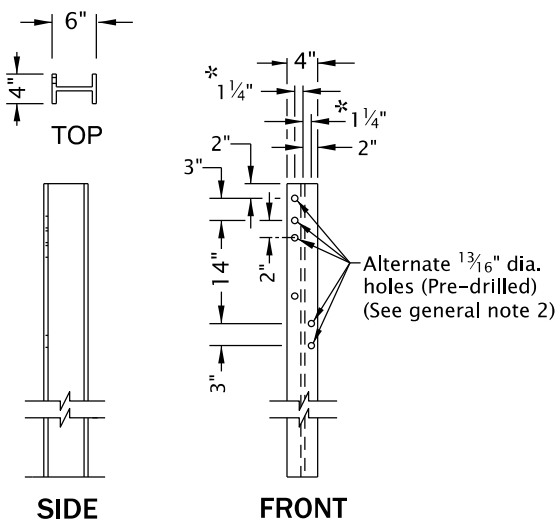
CALC. BOOK NO. - - -	N/A - - -	SDR DATE - 10-JULY-2026	BR445
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Effective Date: December 1, 2026 – May 31, 2027

STEEL



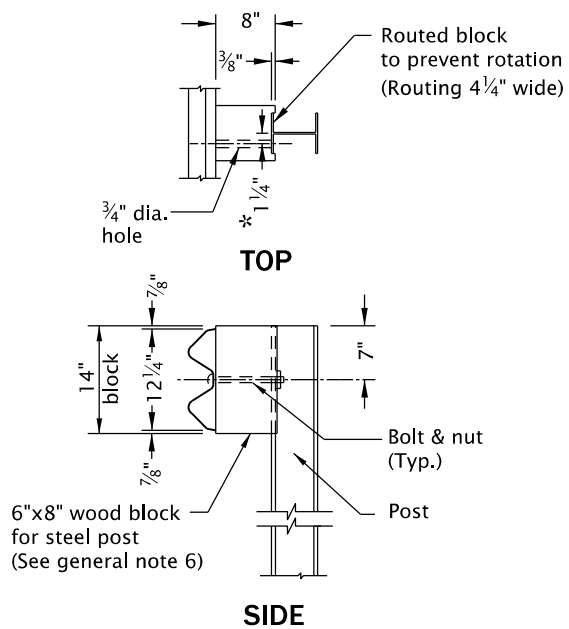
TYPE 2A, 3 OR METAL MEDIAN BARRIER



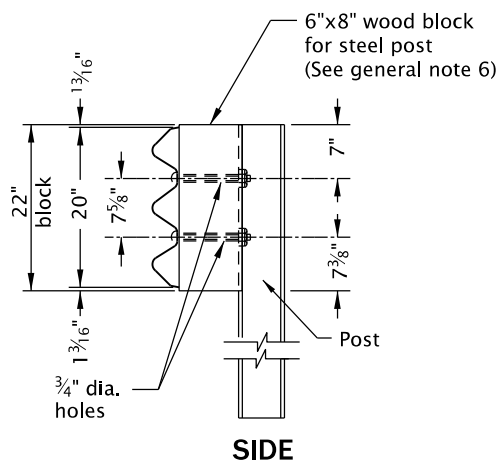
TYPE 4 OR TYPE 4 (TRANSITION) POST

(a) Lowest hole(s) required only where channel rail is to be installed. Drill 12" below top 13/16" hole(s) used. (See general note 3)

POSTS



TYPE 2A, 3 OR METAL MEDIAN BARRIER
WOOD BLOCK FOR STEEL POST

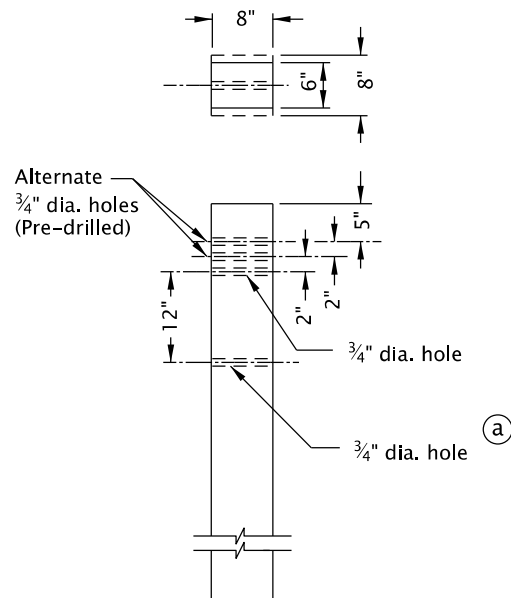


TYPE 4 OR TYPE 4 (TRANSITION) BLOCK

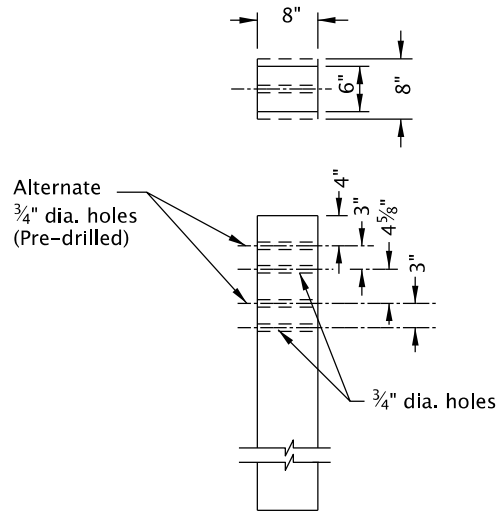
GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See appropriate guardrail standard drawing(s) for details not shown.
2. See Bridge Dwgs. for bridge transition guardrail post & block requirements. Multiple holes are not required in bridge transition rail posts.
3. Posts and blocks to be pre-drilled for the intended guardrail installation.
4. Post and block dimensions are nominal.
5. Steel posts are shifted to accommodate bolt holes. Holes may be on left, right, or both sides of web.
6. Wood blocks shown. Blocks of an approved alternate material may be used. See ODOT's QPL.

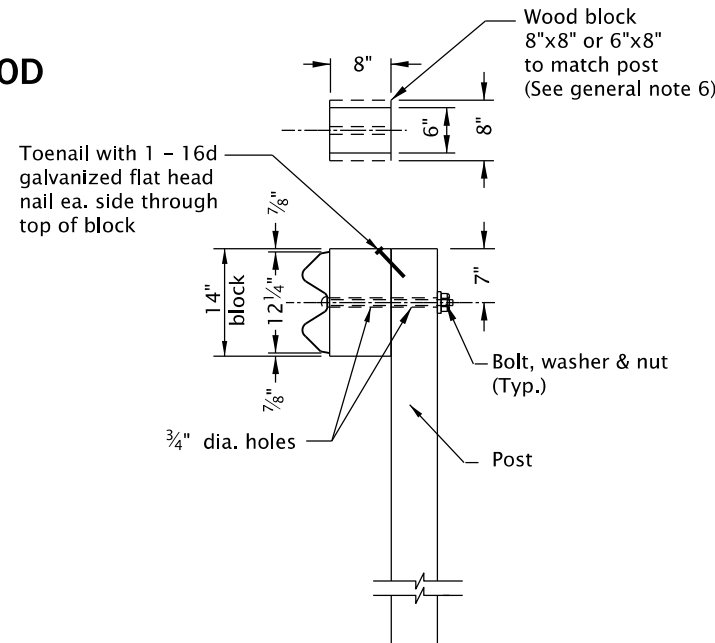
WOOD



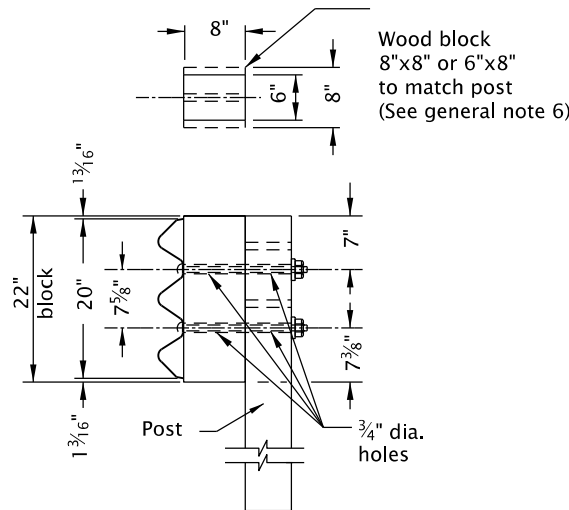
TYPE 1, 2A, 3 OR
METAL MEDIAN BARRIER



TYPE 4 OR TYPE 4 (TRANSITION)
POST



TYPE 2A, 3 OR
METAL MEDIAN BARRIER



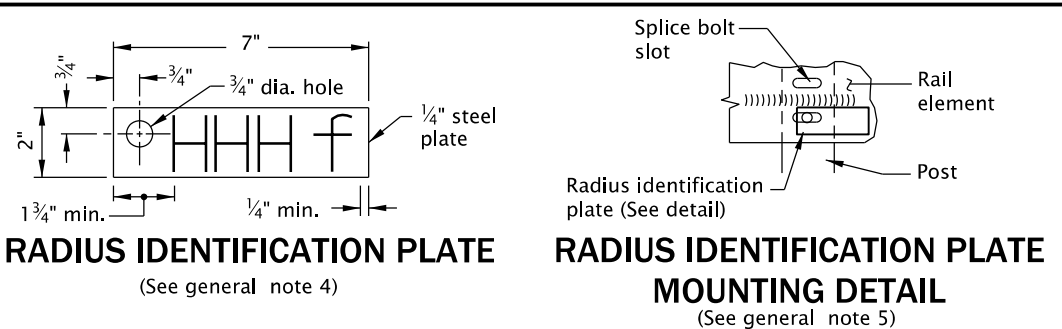
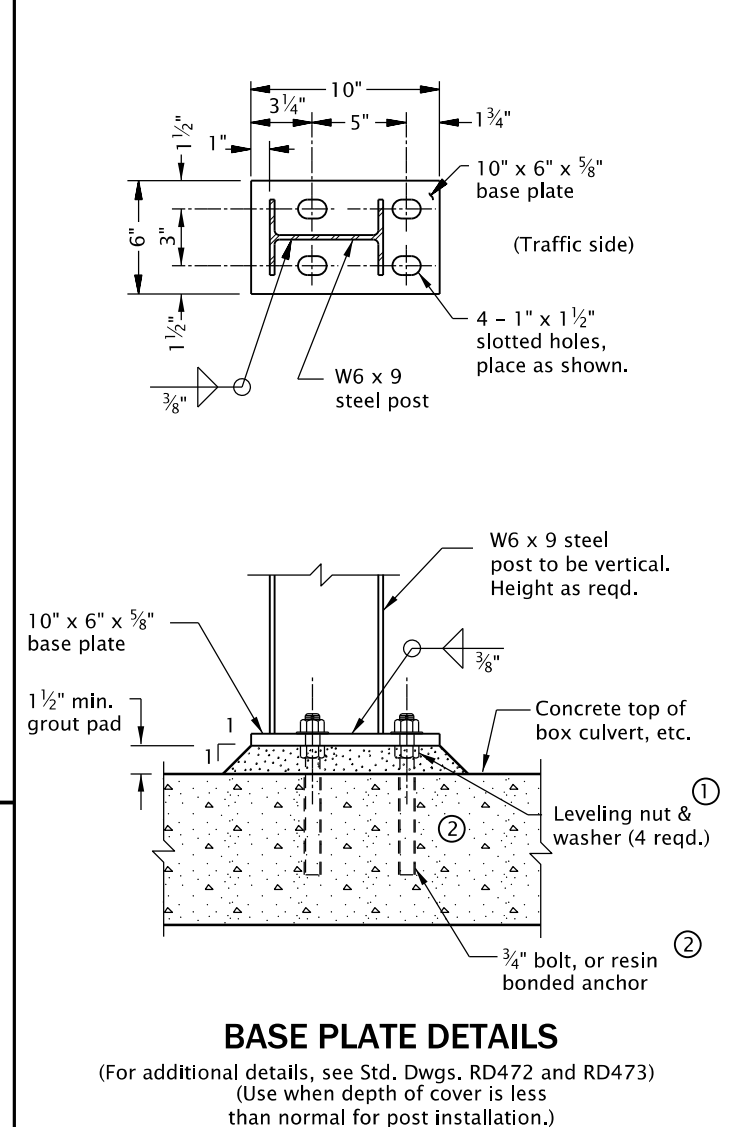
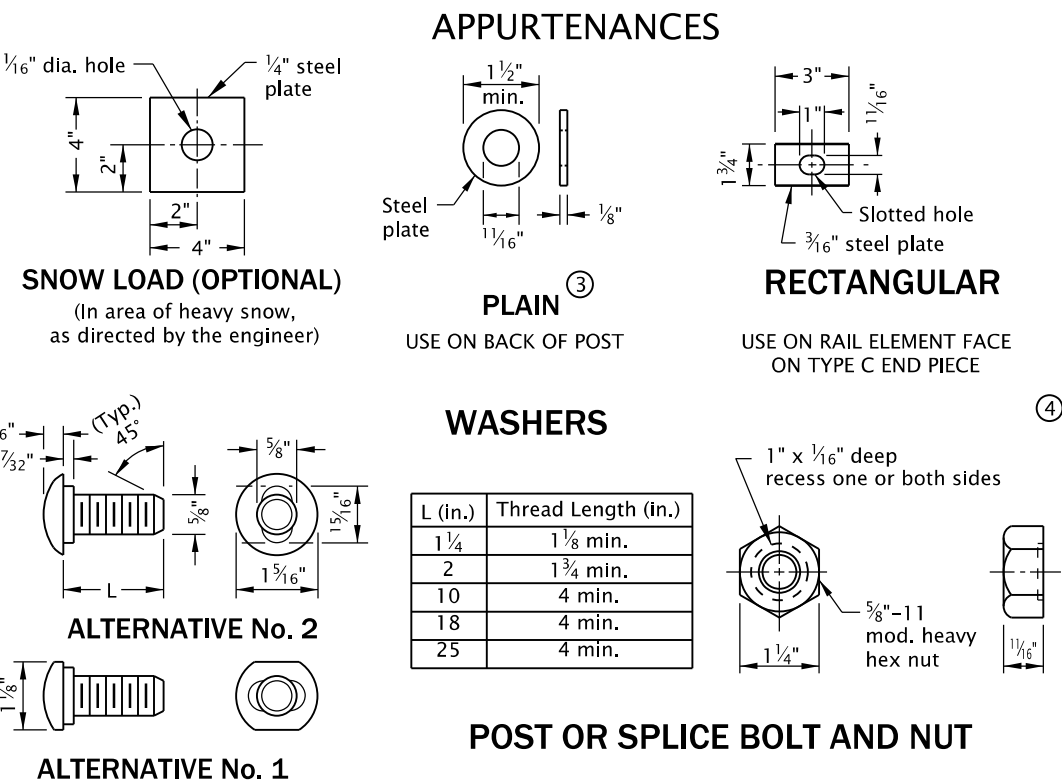
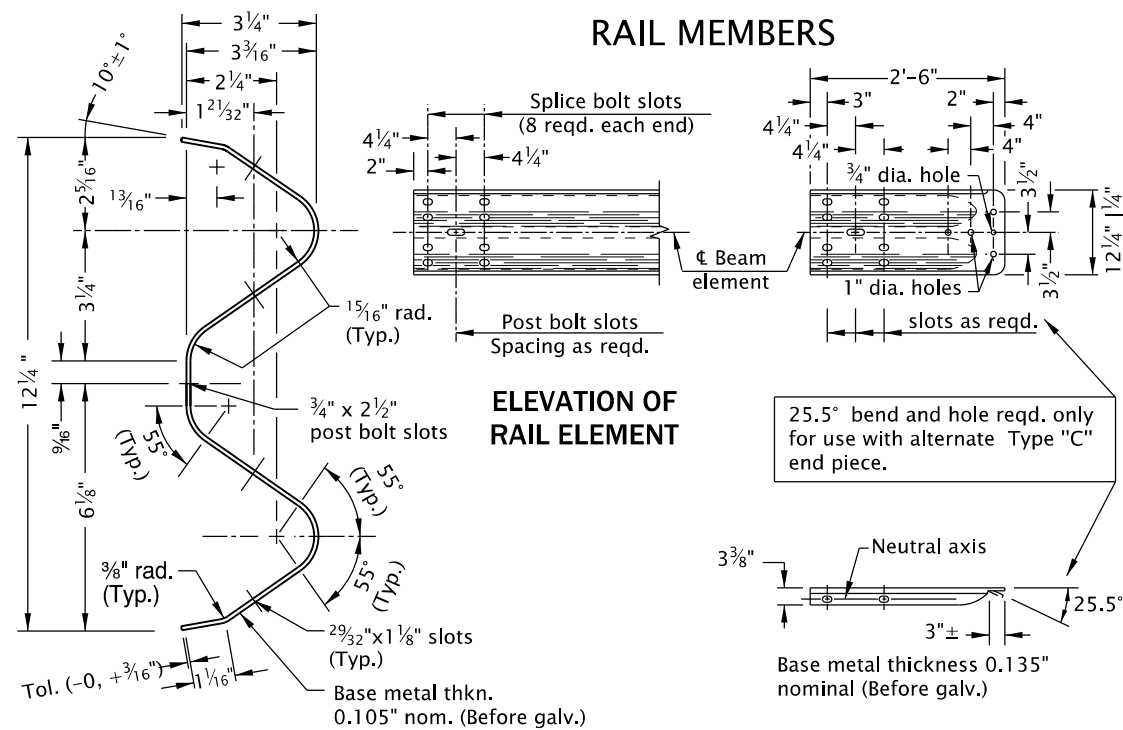
TYPE 4 OR TYPE 4 (TRANSITION) BLOCK

NOTE:
THIS DRAWING IS RETAINED FOR MAINTENANCE PURPOSES.
DO NOT USE FOR NEW CONSTRUCTION.

GUARDRAIL POST TABLE				
GUARDRAIL TYPE	POST SIZE		POST LENGTH	
	WOOD	STEEL *	WOOD	STEEL
1	6"x8" or 8"x8"	—	6'-0"	—
2A	6"x8" or 8"x8"	W6x9 or W6x8.5	6'-0"	6'-6" or 6'-0"
3	8"x8"	W6x9 or W6x8.5	6'-0"	6'-6"
Metal median barrier	8"x8"	W6x9 or W6x8.5	6' 6"	6'-6"
4	6"x8" or 8"x8"	W6x9 or W6x8.5	7'-0"	7'-0"
4 (Transition)	8"x8"	W6x9 or W6x8.5	6'-0"	6'-9"

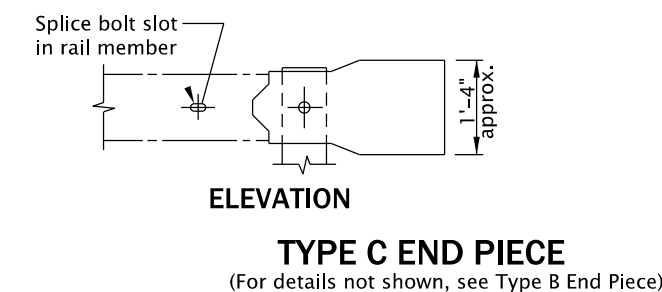
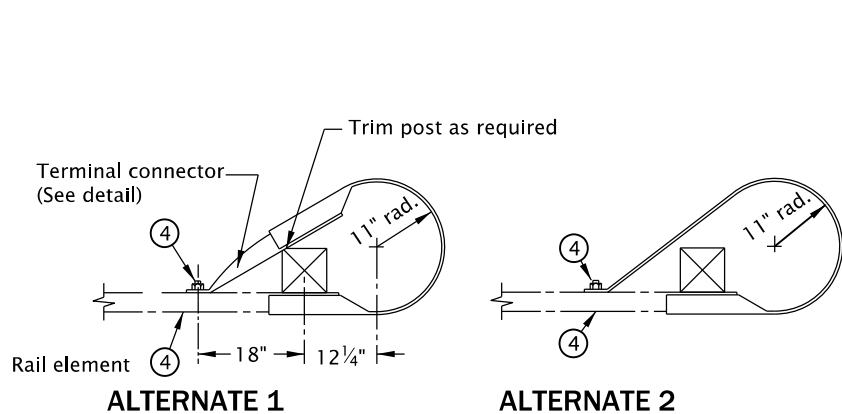
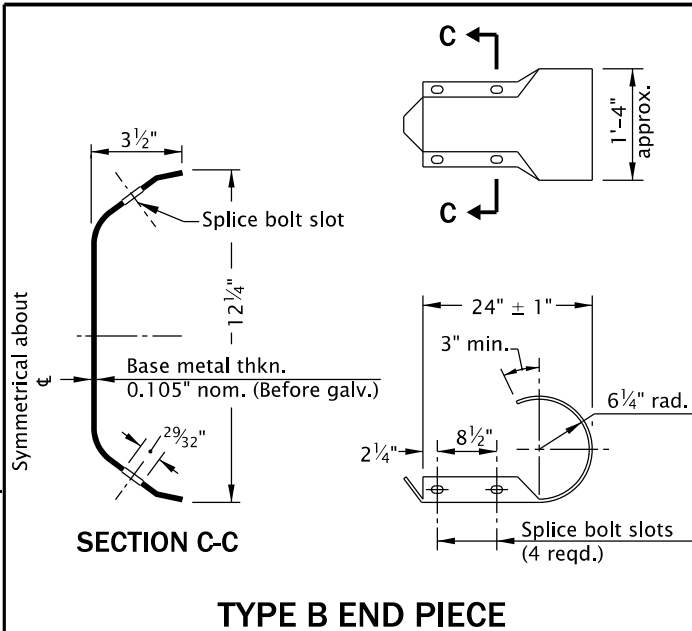
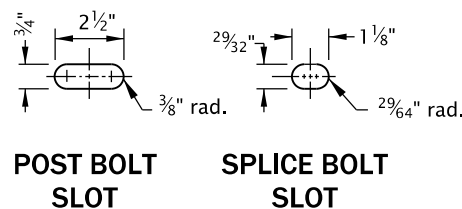
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
GUARDRAIL AND METAL MEDIAN BARRIER POST AND BLOCK (29" RAIL HEIGHT)			
2024			
DATE	REVISION DESCRIPTION		
07-2026	TITLE REVISED FOR CLARIFICATION		
CALC. BOOK NO.	N/A	SDR DATE	10-JUL-2026
RD405			



NOTES:

- For guardrail installed on radii of 150' or less (5' min. radius) use rail elements pre-curved to industry standard. Install "Radius Identification Plate" (See detail right).
- Effective length of rail sections shall be 12'-6".



NOTES:

- Furnished & installed by structure contractor when shown on structure plans.
- 6" min. penetration into concrete slabs other than bridge decks. Cast in place or core and install using approved resin bonding system.
- Not required if "Snow Load" washer option is used.
- Use rectangular washer under bolt head and nut on Type C End Piece as shown.

NOTES: THIS DRAWING IS RETAINED FOR MAINTENANCE PURPOSES.
DO NOT USE FOR NEW CONSTRUCTION.

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

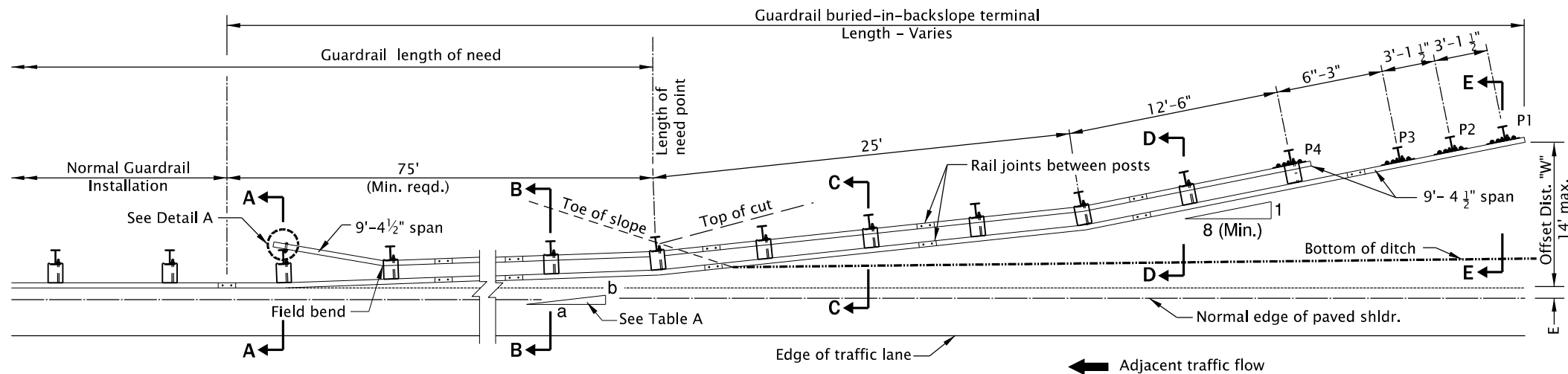
- See appropriate guardrail standard drawing(s) for details not shown.
- For details of guardrail connections to structural handrails, see special details or Standard Drawings as called for on plans.
- All indicated welds shall attain the full strength of the section welded.
- Radius dimensions, in feet to the nearest 0.5 foot, shall be placed on the plate with a raised weld bead replacing the letters "HHH", shown on the Radius Identification Plate detail. Digits shall be 1 1/2" min. height and 3/4" max. width. Plate shall be galvanized after placement of digits.
- The guardrail radius identification plate is to be mounted on the back side of the rail element with the lowest splice bolt nearest the P.C. of the guardrail radius.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

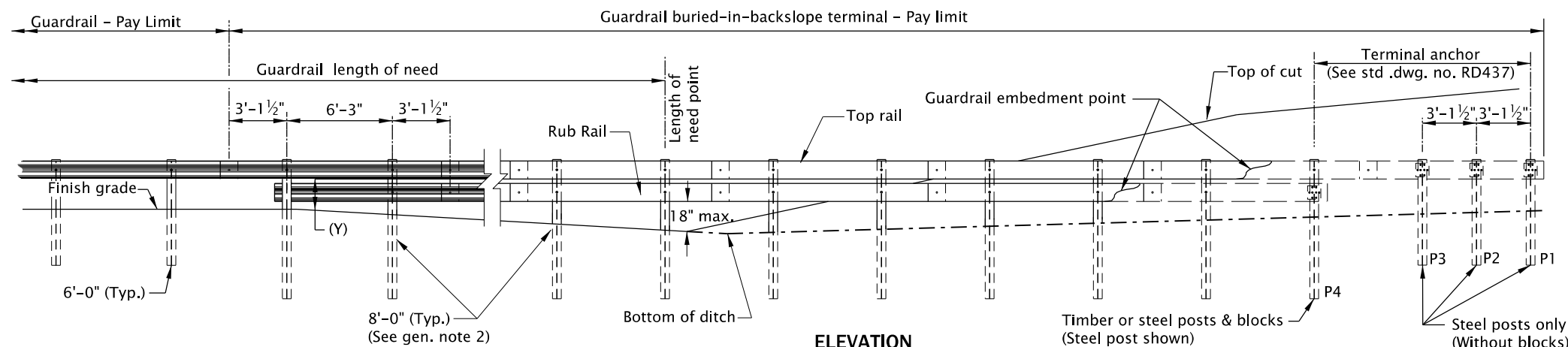
All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
GUARDRAIL AND METAL MEDIAN BARRIER			
STANDARD HARDWARE			
(29" RAIL HEIGHT)			
2024			
DATE	REVISION DESCRIPTION		
07-2026	TITLE REVISED FOR CLARIFICATION		
CALC. BOOK NO.	N/A	SDR DATE	10-JULY-2026
			RD415

10-JULY-2026

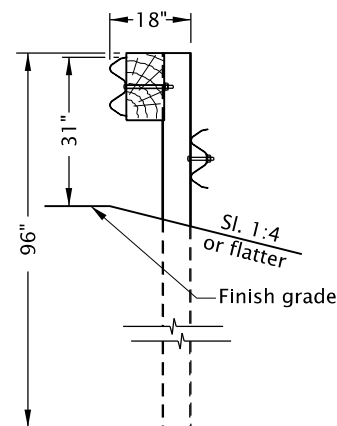
RD436.dgn



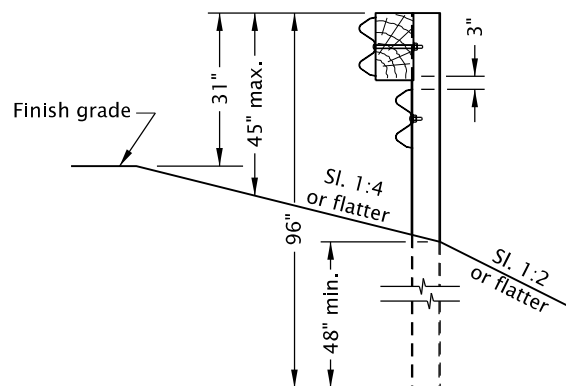
PLAN



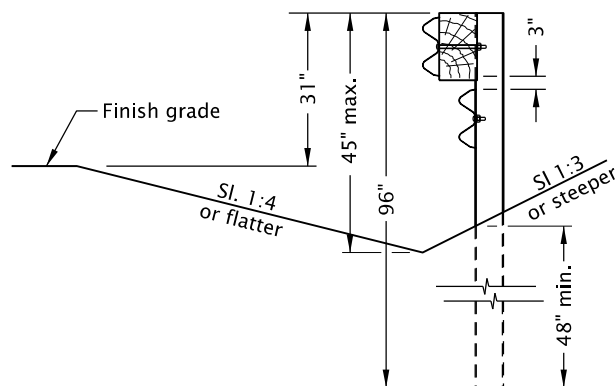
ELEVATION



SECTION A-A

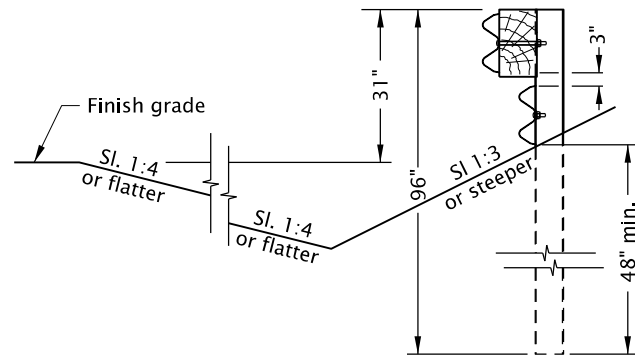


SECTION B-B

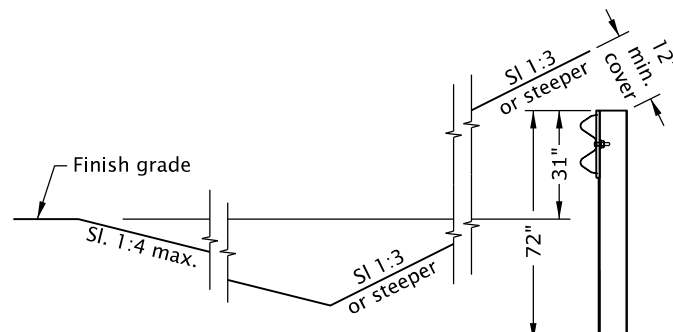


SECTION C-C

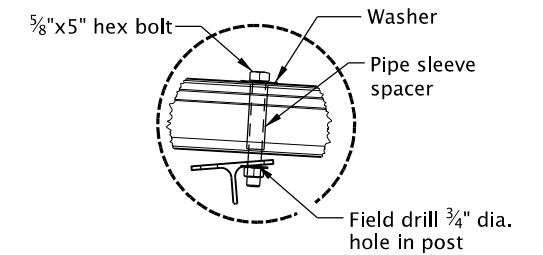
TABLE A	
POSTED SPEED (MPH)	FLARE RATE a : b
70	15:1 or Flatter
60	14:1 or Flatter
55	12:1 or Flatter
50	11:1 or Flatter
45	10:1 or Flatter
40 or less	9:1 or Flatter



SECTION D-D



SECTION E-E



DETAIL "A"

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

- See Std. Dwg. RD437 for Buried-in-backslope terminal anchorage parts. See appropriate guardrail standard drawing(s) for additional details not shown.
- On two way, two lane highways, both ends of guardrail runs shall be provided with a flared or non-flared terminal from ODOT's QPL if not buried, as detailed on plans.
- Eight foot long guardrail post required when connected to rub rail.
- The flare rate of the guardrail may be increased after crossing the ditch bottom to shorten the length of the terminal.
- Trailing ends (freeways, multilane and similar one-way facilities) not exposed to opposing traffic:
 - Guardrail terminals, use a Downstream Anchor Terminal (DAT) (Std. Dwg. RD438), Type B end piece and do not flare.
 - At bridge ends, omit Transition Guardrail & Type 3 guardrail and substitute the normal required guardrail.
- All bolts except adjustment bolts shall be drawn tight on rails and components on initial installation.
 - Final tightness check on rail and component bolts and retightening as required to be done 30 days after initial installation.
- Bend the downstream end of the bottom rail to the backside of the post and bolt to post.
- Field drilled steel posts are allowed for bottom rail element. Use zinc rich paint to coat field drilled holes in posts or rail elements. Galvanizing required for plate and hardware.
- Hold the top guardrail element constant with the typical barrier installation. Go up stream 1 post and add a bottom rail element under the standard guardrail element when the bottom of the top guardrail element exceeds 18 inch, at any point of the slope, point (Y) elevation view. Slope both elements down to maintain a maximum height of 45 inch in front of the toe of slope if the top of installation exceeds 45 inch from the ground, at any point in the installation.
- Use in established slopes. Do not build a mound to use the Buried-in-backslope terminal. Do not use the Buried-in-backslope terminal in locations where the backslope is flatter than 3:1.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.

OREGON STANDARD DRAWINGS
MIDWEST GUARDRAIL SYSTEM
BURIED IN BACKSLOPE (BIB)
TERMINAL

2024

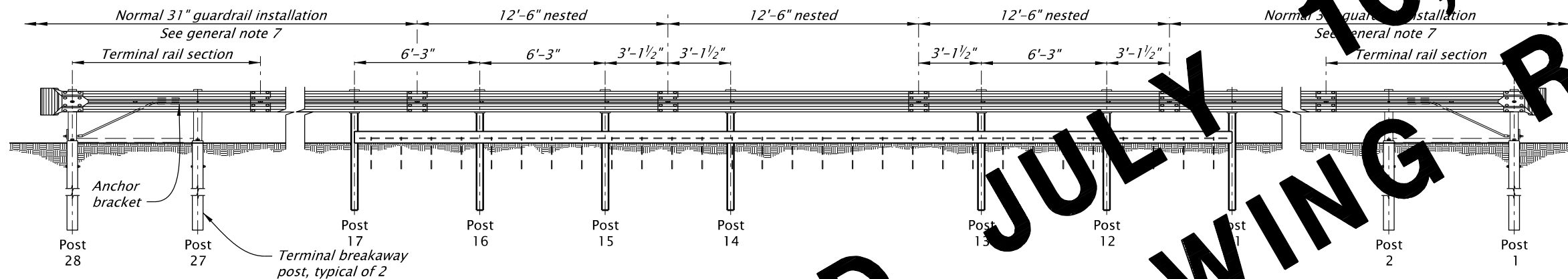
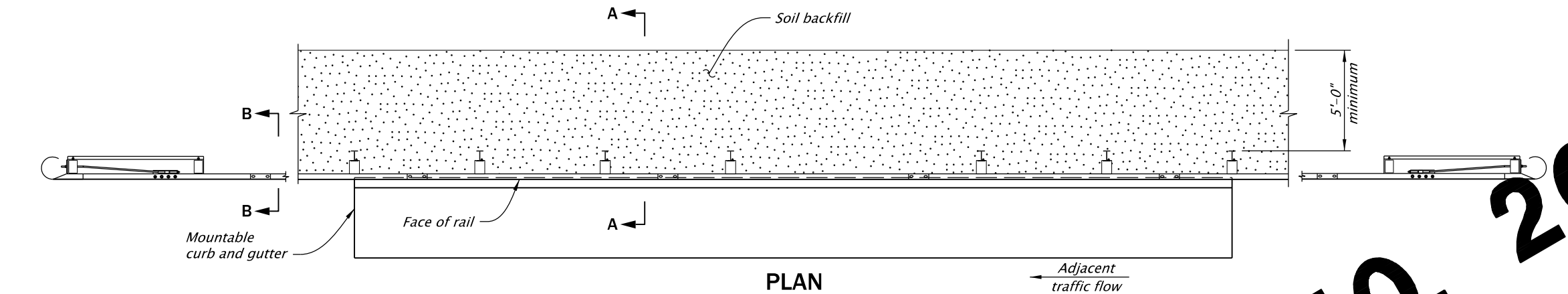
DATE	REVISION	DESCRIPTION
07-2026	REVISED NOTES	
CALC. BOOK NO.	N/A	SDR DATE: 10-JULY-2026

RD436

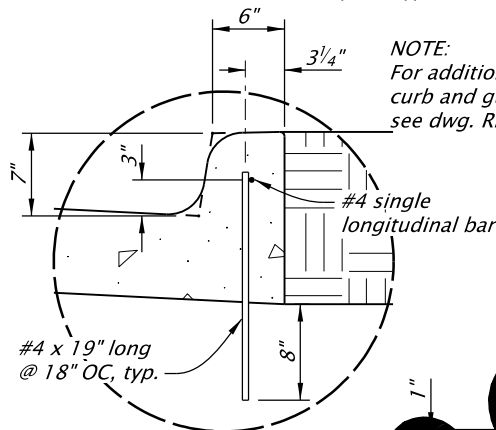
Effective Date: December 1, 2026 – May 31, 2027

14-JUL-2023

RD474.dgn



NOTE:
For additional mountable curb and gutter details, see dwg. RD700.



MOUNTABLE CURB AND GUTTER

High grade

Mountable Curb and Gutter

4'-0" min.

2'-1"

6"

1"

W6x8.5 or W6x9 steel post

16d galvanized anti-rotation nail, see general note 5

5'-0" minimum

2'-1"

4'-0"

Compacted soil

2'-1"

6"

1"

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16d galvanized anti-rotation nail, see general note 5

5'-0" minimum

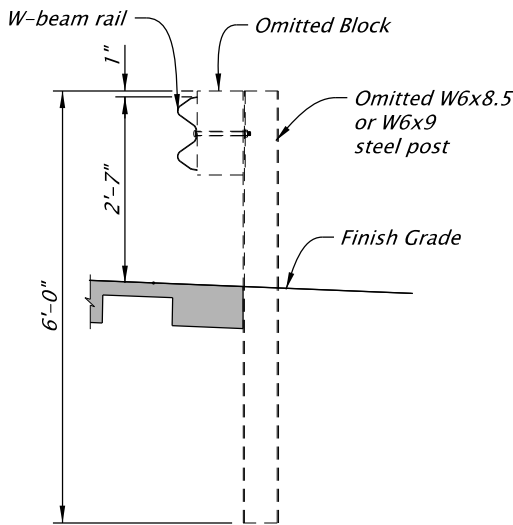
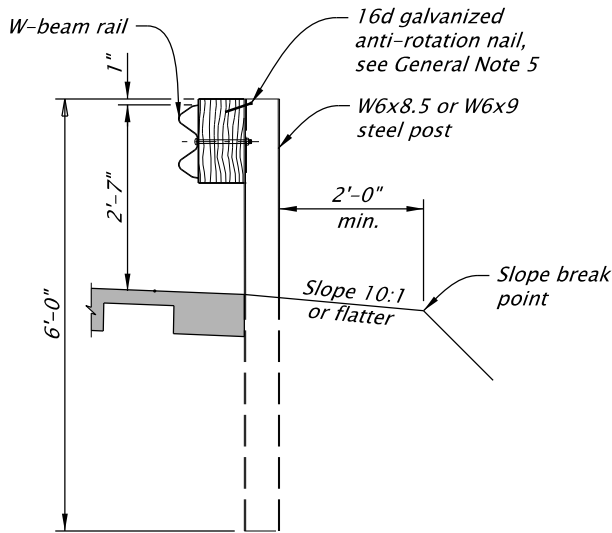
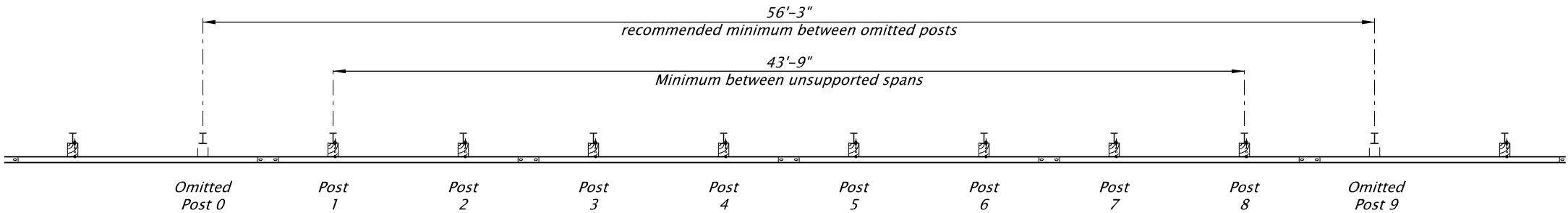
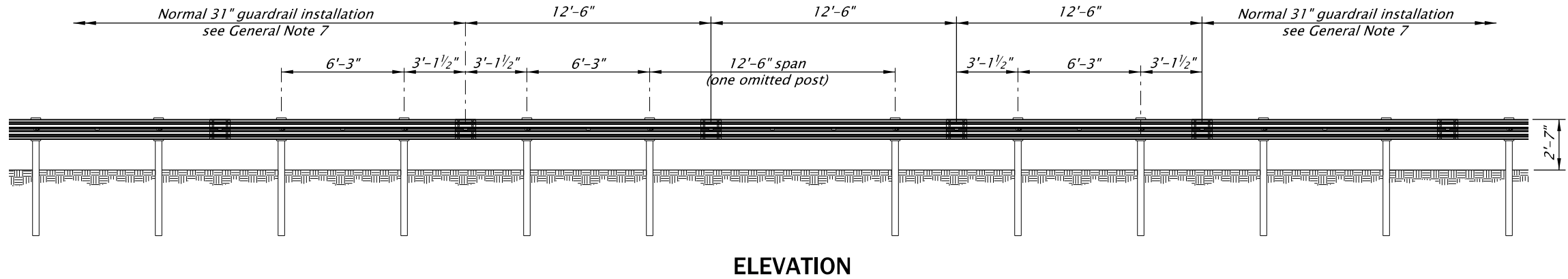
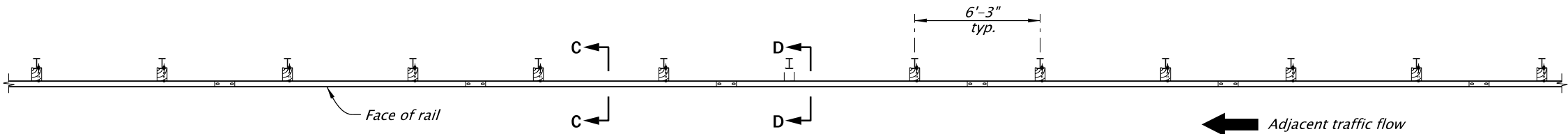
2'-1"

10-JUL-2026

RD474A.dgn

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

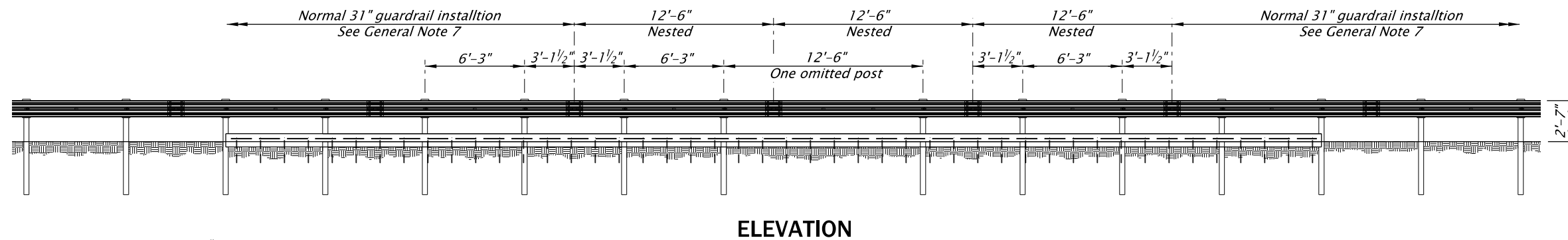
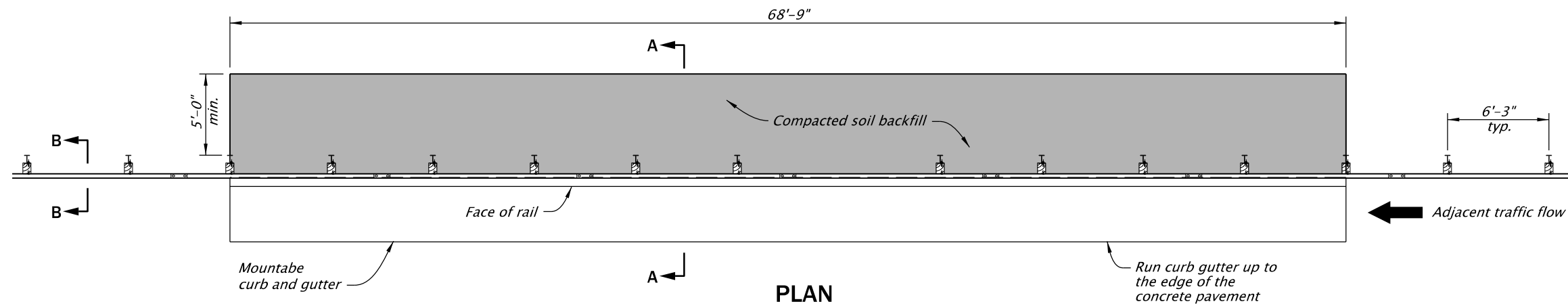
1. See the appropriate guardrail standard drawing(s) for post, rail, and other hardware details not shown. See the project plans for additional details not shown.
2. Use details shown as a general guide since manufacturer's details may vary.
3. On two-way, two-lane highways, provide a flared or non-flared terminal at both ends of guardrail runs. Install a guardrail terminal system that meets MASH requirements in accordance with the manufacturer's recommendations (post count varies). Ensure the guardrail terminal meets the appropriate test level for the project. Provide a guardrail terminal from ODOT's QPL and submit shop drawings to the Engineer.
4. Wood routed blocks shown. Blocks of an approved alternate material may be used. See ODOT's QPL.
5. Blocks shall be routed when steel posts are used to prevent rotation, or anti-rotation holes and 16d galvanized nails shall be used instead of routing the blocks.
6. Maintain a minimum distance of 43'-9" between unsupported spans. The recommended minimum distance between omitted posts is 56'-3", see Minimum Recommended Distance Between Omitted Posts detail.
7. See Drawing RD474B for the omitted post detail with a curb.



The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

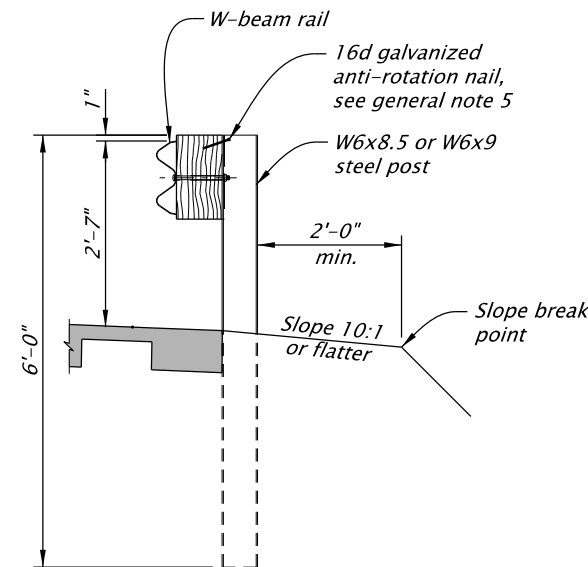
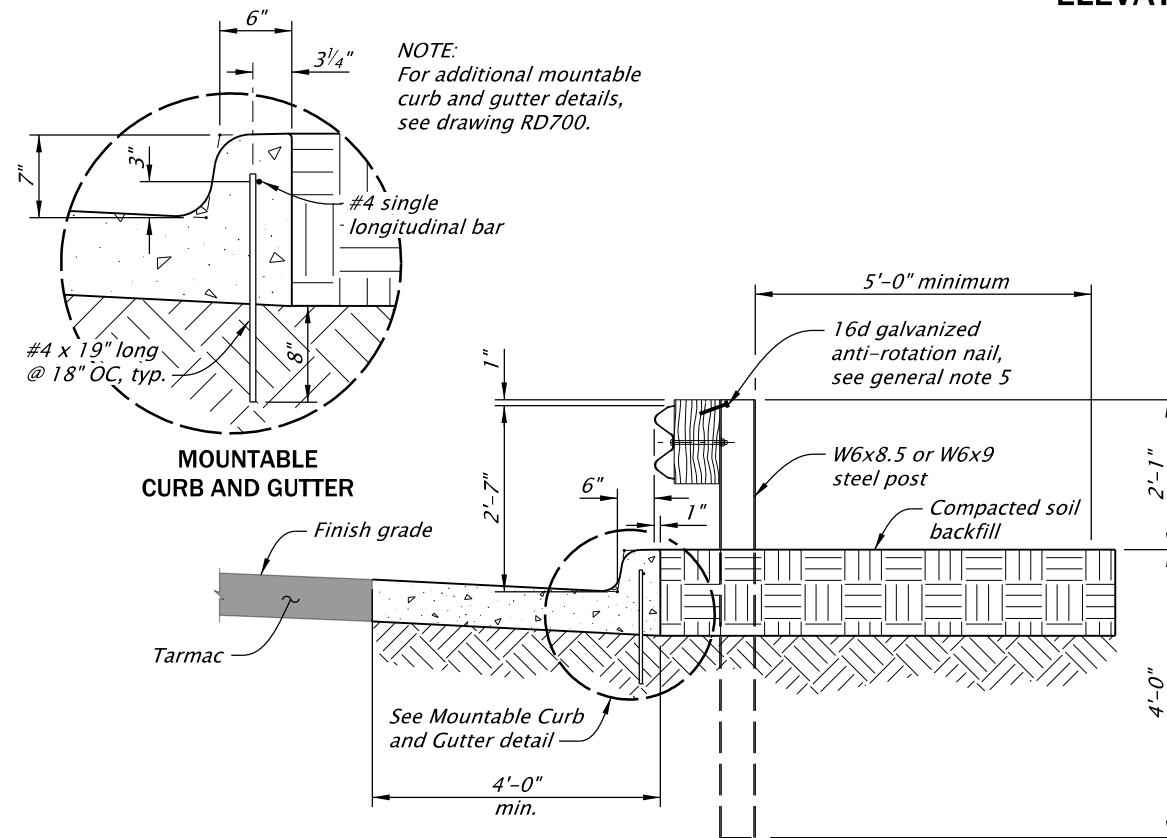
ACCOMPANIED BY DWGS.: RD474B, RD474C, RD474D			
All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS MIDWEST GUARDRAIL SYSTEM WITH OMITTED POST, NO CURB (MASH TL-3) SHEET 1 OF 4 2024			
DATE	REVISION DESCRIPTION		
06-2026	CREATED NEW DRAWING		
CALC. BOOK NO.	N/A	SDR DATE	10-JUL-2026
RD474A			RD474A

Effective Date: December 1, 2026 – May 31, 2027



GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See the appropriate guardrail standard drawing(s) for post, rail, and other hardware details not shown. See the project plans for additional details not shown.
2. Use details shown as a general guide since manufacturer's details may vary.
3. On two-way, two-lane highways, provide a flared or non-flared terminal at both ends of guardrail runs. Install a guardrail terminal system that meets MASH requirements in accordance with the manufacturer's recommendations (post count varies). Ensure the guardrail terminal meets the appropriate test level for the project. Provide a guardrail terminal from ODOT's QPL and submit shop drawings to the Engineer.
4. Wood routed blocks shown. Blocks of an approved alternate material may be used. See ODOT's QPL.
5. Blocks shall be routed when steel posts are used to prevent rotation, or anti-rotation holes and 16d galvanized nails shall be used instead of routing the blocks.
6. Install at least 37.5 feet of nested W-beam rail around the omitted post location. The two nested upstream rails shall be placed in front of the two nested downstream rails to increase the rail strength and prevent premature rail rupture.
7. Install at least 62.5 feet of 31-inch guardrail upstream and downstream from nested W-beam rail (terminals and anchors included in length).
8. See Drawing RD474A for the omitted post detail without curb.



The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

ACCOMPANIED BY DWGS.:
RD474A, RD474C, RD474D

All materials shall be in accordance with the current Oregon Standard Specifications.

OREGON STANDARD DRAWINGS
MIDWEST GUARDRAIL SYSTEM
WITH CURB AND OMITTED POST,
CURB APPLICATION (MASH TL-3)
SHEET 2 OF 4
2024

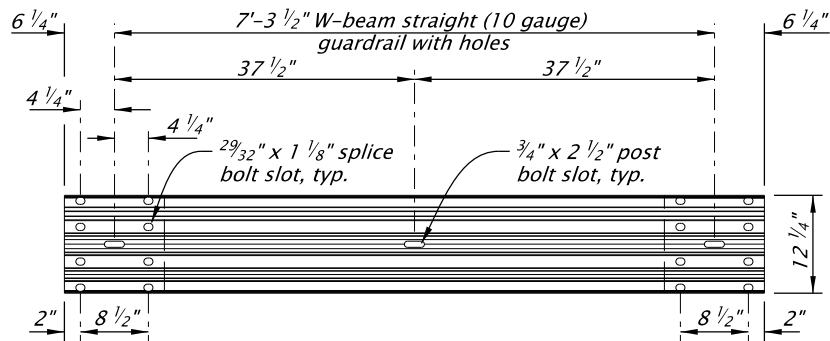
DATE	REVISION	DESCRIPTION
07-2026	RENUMBERED FROM RD474; REVISED TITLE; ADDED NOTE	
CALC. BOOK NO.	N/A	SDR DATE
		10-JUL-2026

RD474B

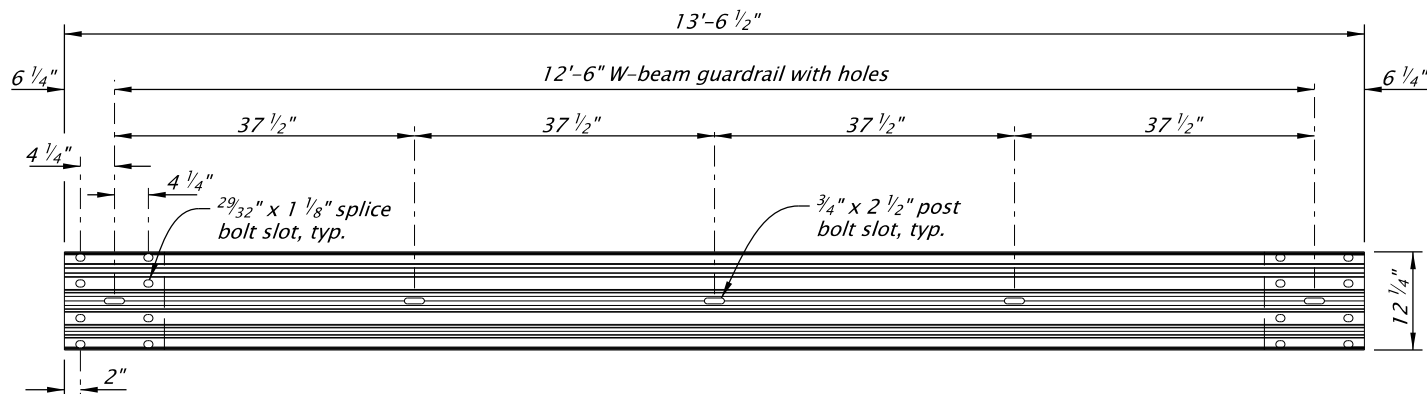
Effective Date: December 1, 2026 – May 31, 2027

10-JUL-2026

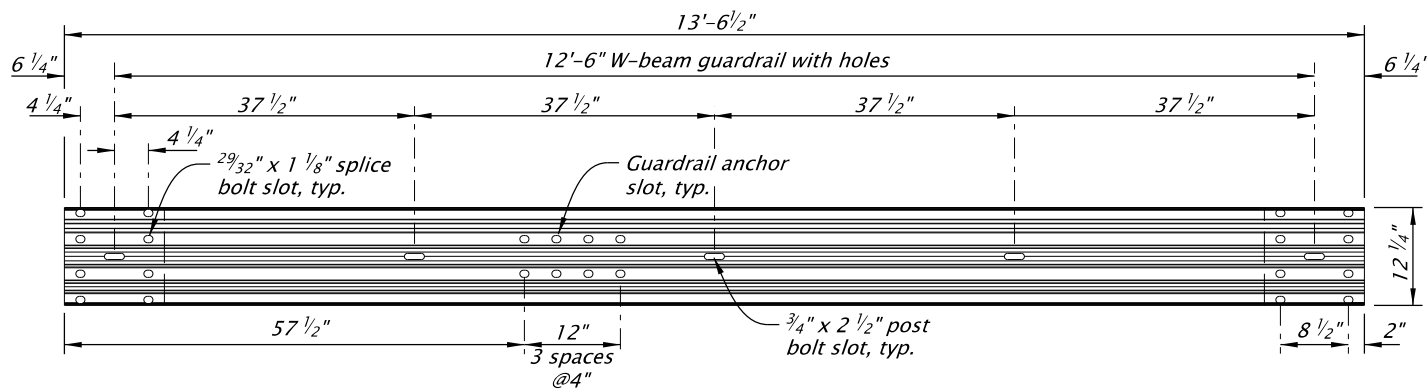
RD474C.dgn



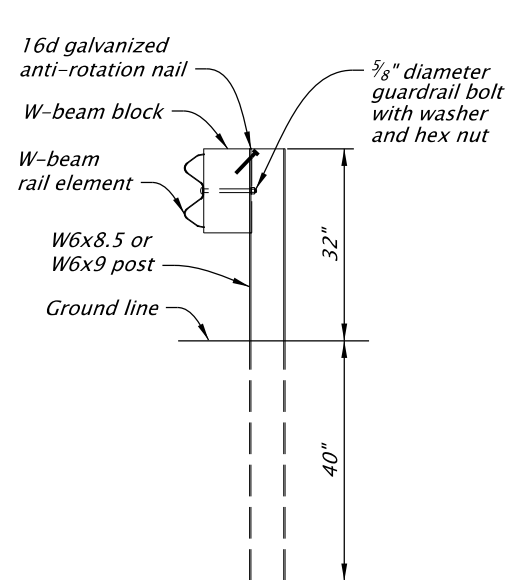
W-BEAM SPACER GUARDRAIL



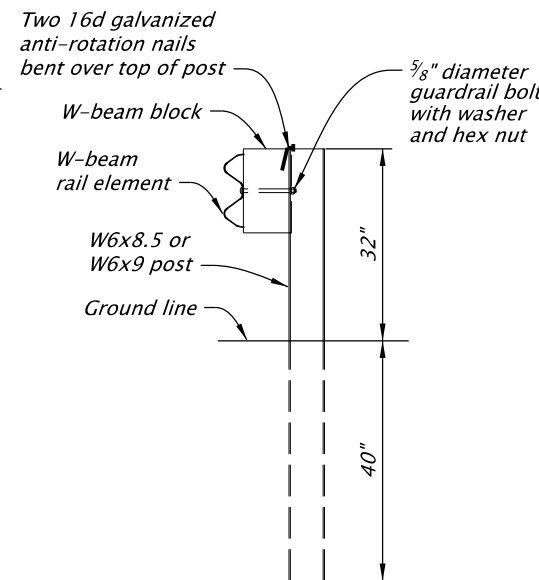
4 SPACE W-BEAM GUARDRAIL



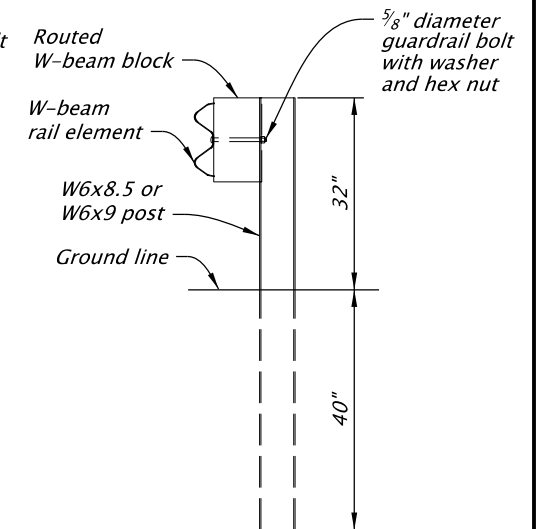
4 SPACE W-BEAM GUARDRAIL WITH HOLES



NAIL THROUGH HOLE
IN POST FLANGE



2 NAILS BENT OVER TOP



ROUTED BLOCKOUT

BLOCKOUT ATTACHMENT ALTERNATES

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

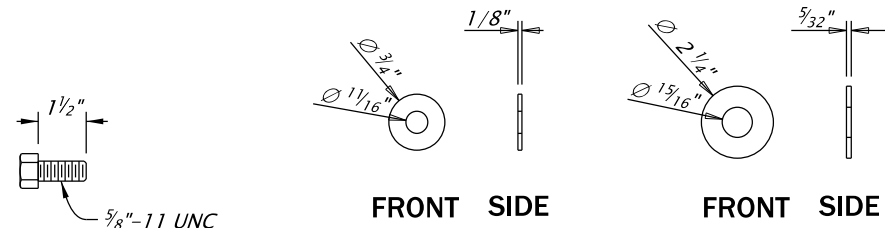
1. See appropriate guardrail standard drawing(s) for posts, rail, and other hardware details not shown.
2. See Drawing RD474A for the Midwest Guardrail System with omitted post, without curb overview details.
3. See Drawing RD474B for the Midwest Guardrail System with omitted post, with curb overview details.
4. See drawing RD474C or other details not shown.

ACCOMPANIED BY DWGS.:
RD474A, RD491B, RD474D

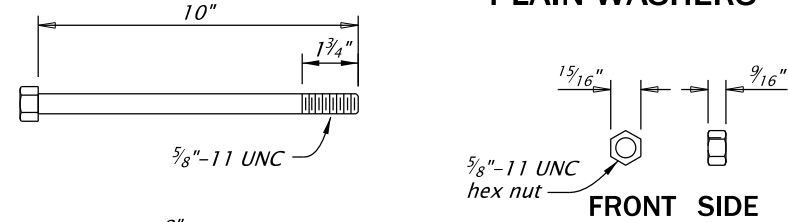
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
MIDWEST GUARDRAIL SYSTEM			
WITH OMITTED POST (MASH TL-3)			
MISCELLANEOUS DETAILS			
SHEET 3 OF 4			
2024			
DATE	REVISION DESCRIPTION		
06-2026	CREATED NEW DRAWING		
CALC. BOOK NO.	N/A	SDR DATE	10-JUL-2026
			RD474C

Effective Date: December 1, 2026 – May 31, 2027

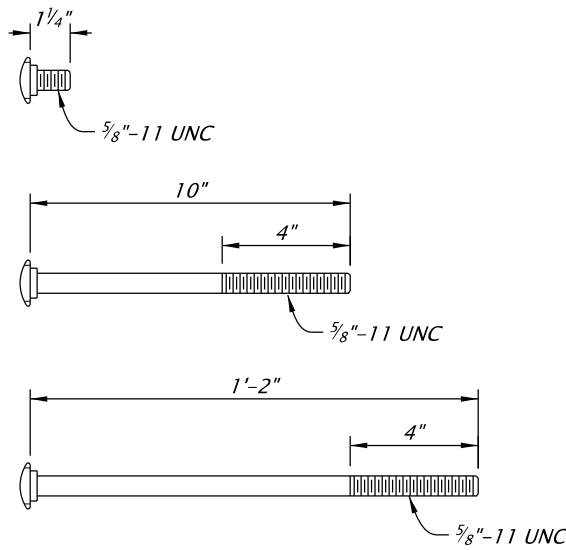


PLAIN WASHERS

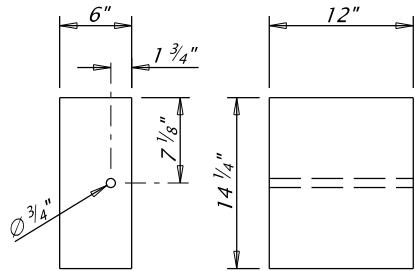


HEX BOLTS

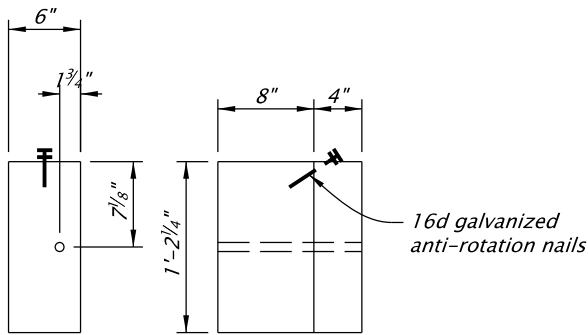
HEX NUTS



GUARDRAIL POST BOLTS

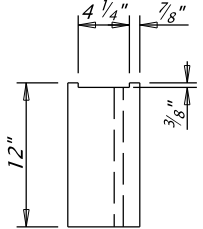


WOOD BLOCKOUT

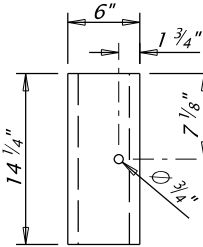


ALTERNATE BLOCKOUT

(6"x4"x14 1/4" breakout with
6"x8"x14 1/4" breakout)



TOP



FRONT

ROUTED BLOCKOUT

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See appropriate guardrail standard drawing(s) for posts, rail, and other hardware details not shown.
2. See drawing RD474A for Midwest Guardrail System with omitted post and without curb overview details.
3. See drawing RD474B for Midwest Guardrail System with omitted post and curb overview details.
4. See drawing RD474C or other details not shown.

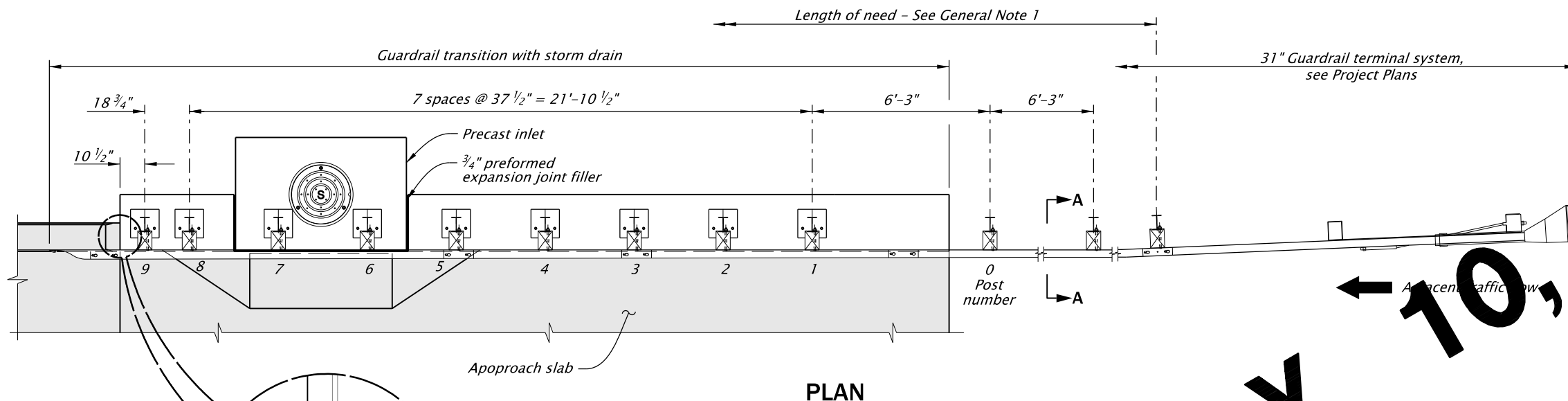
ACCOMPANIED BY DWGS.:
RD474A, RD474B, RD474C

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

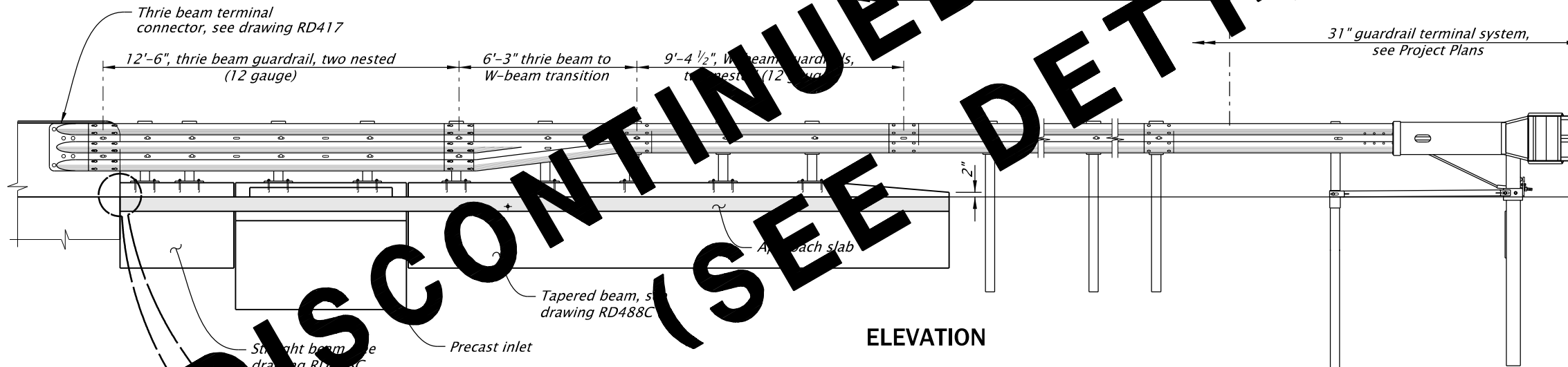
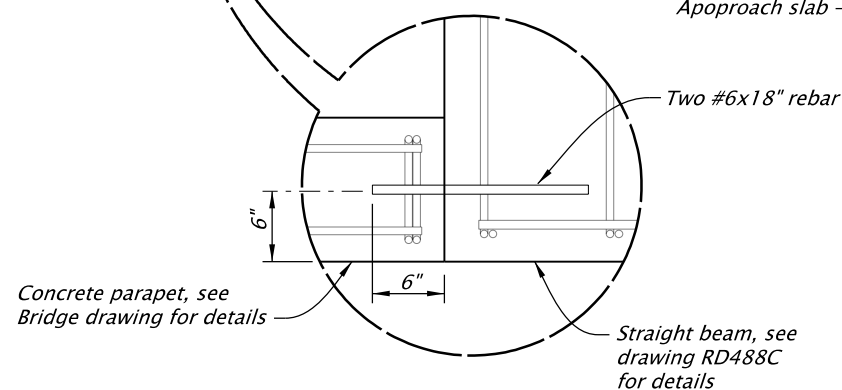
All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS MIDWEST GUARDRAIL SYSTEM WITH OMITTED POST (MASH TL-3) MISCELLANEOUS DETAILS SHEET 4 OF 4 2024			
DATE	REVISION DESCRIPTION		
06-2026	CREATED NEW DRAWING		
CALC. BOOK NO.	N/A	SDR DATE	10-JUL-2026
RD474D			

13-JAN-2026

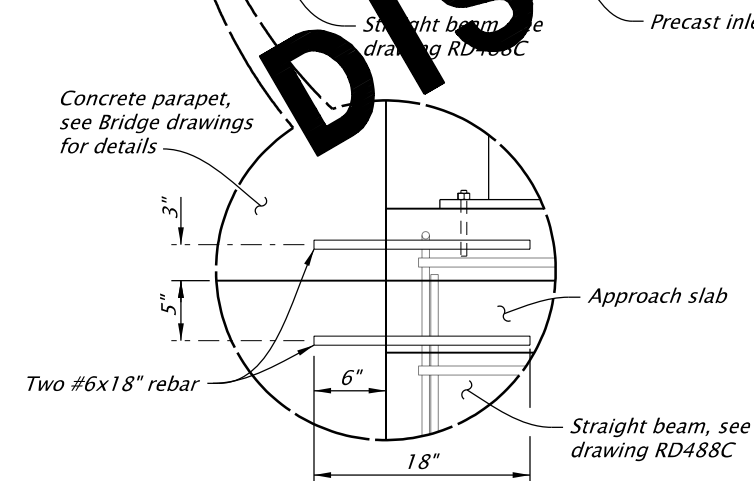
RD488A.dgn



PLAN

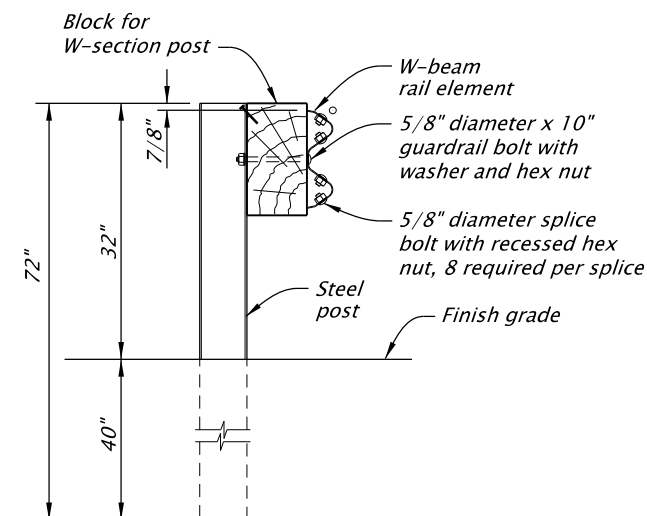


ELEVATION



GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See appropriate guardrail standard drawing(s) for posts, rail, and other hardware details not shown. See project plans for details not shown.
2. Standard guardrail terminal system that meets MASH requirements per manufacturer's recommendations. Ensure that guardrail terminal meets appropriate test level for the project.
3. Provide guardrail terminal from ODOT's QPL. Install according to manufacturer's recommendations (post count varies). Provide shop drawings to Engineer.
4. Recessed guardrail nuts on all 5/8-inch diameter bolts unless otherwise indicated.
5. All steel components, including hardware, are galvanized, and all bolts are ASTM A307 unless otherwise indicated.
6. Lap guardrail in direction of adjacent traffic.
7. See drawings RD488B and RD488C for transition details not shown.



SECTION A-A

ACCOMPANIED BY DWGS.:
RD488B, RD488C

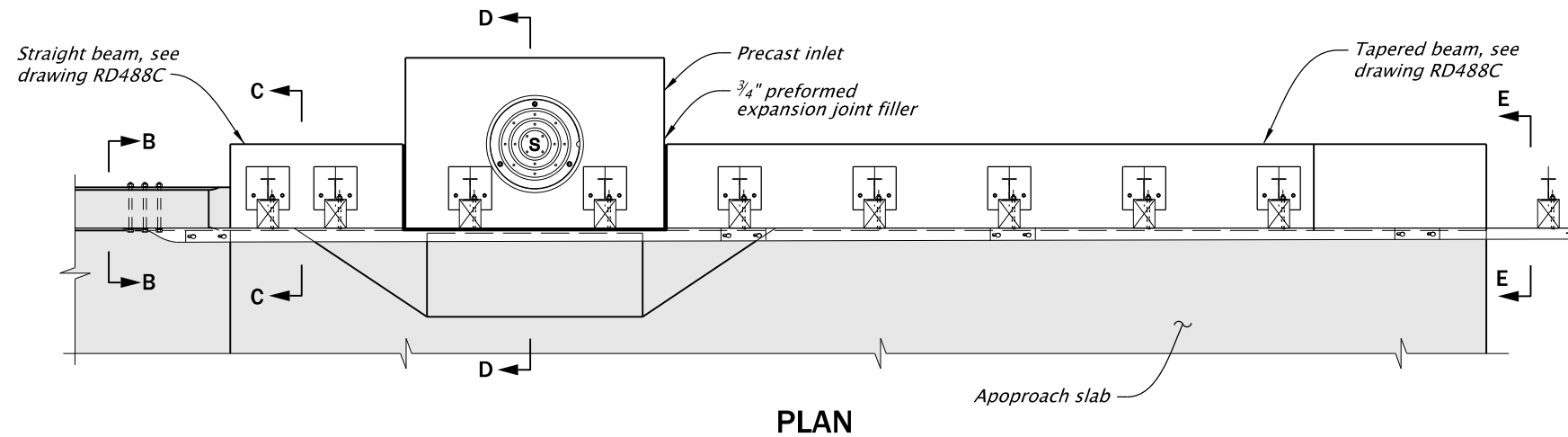
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.

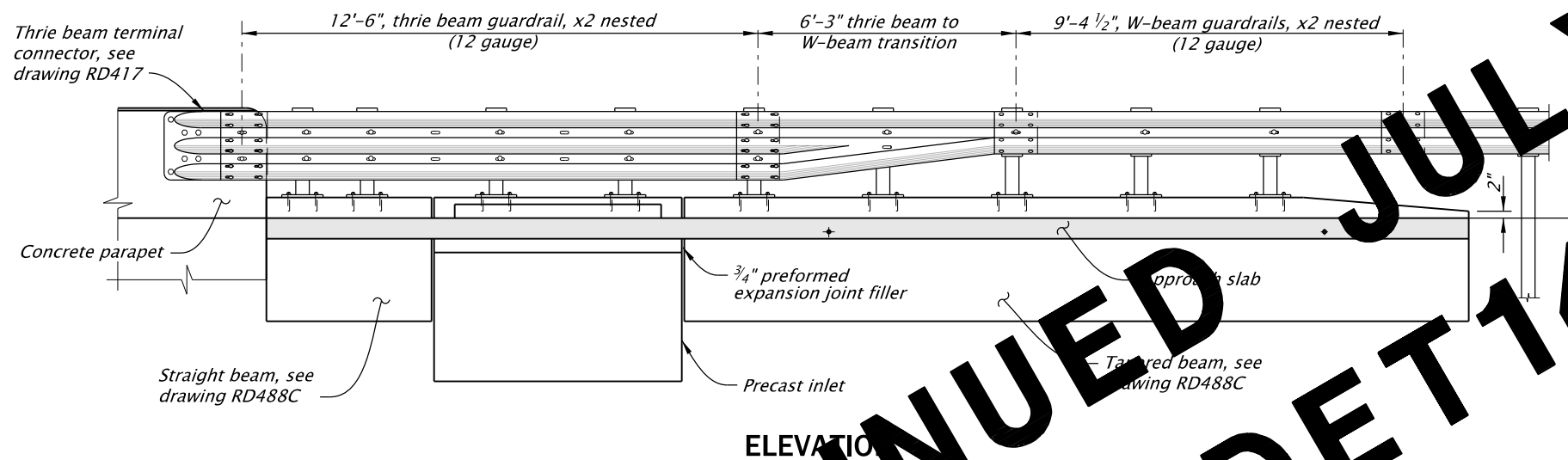
OREGON STANDARD DRAWINGS
MIDWEST GUARDRAIL SYSTEM
TRANSITION WITH STORM DRAIN
(MASH TL-3) INSTALLATION
SHEET 1 OF 3
2024

DATE	REVISION	DESCRIPTION
12-2025	NEW DRAWING	
CALC. BOOK NO.	N/A	SDR DATE: 13-JAN-2026
		RD488A

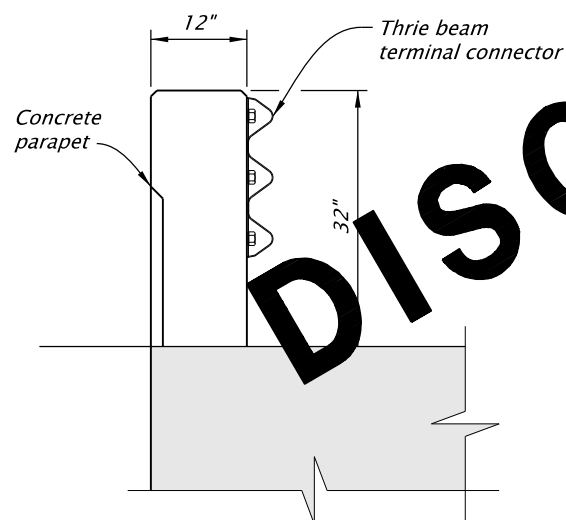
Effective Date: December 1, 2026 – May 31, 2027



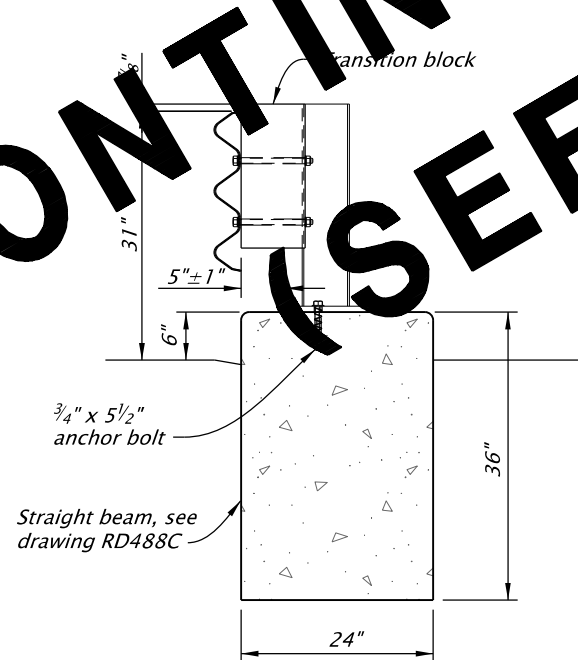
PLAN



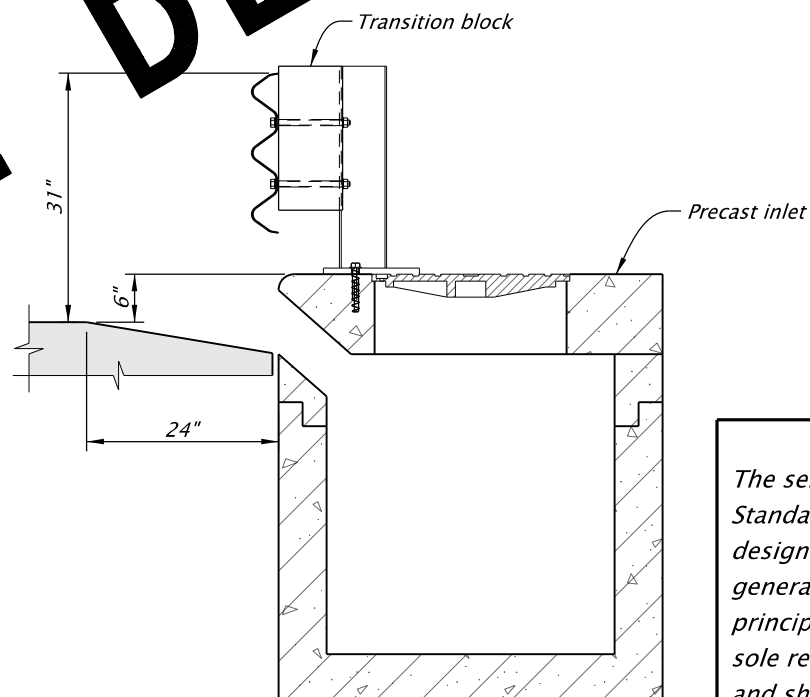
ELEVATION



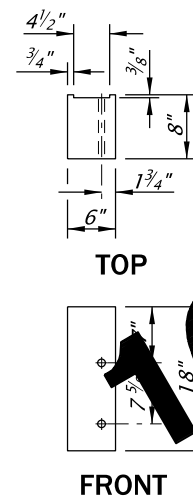
SECTION B-B



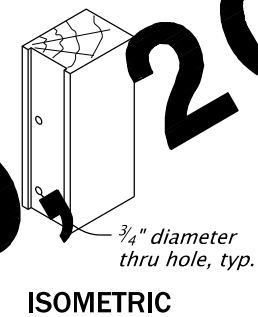
SECTION C-C



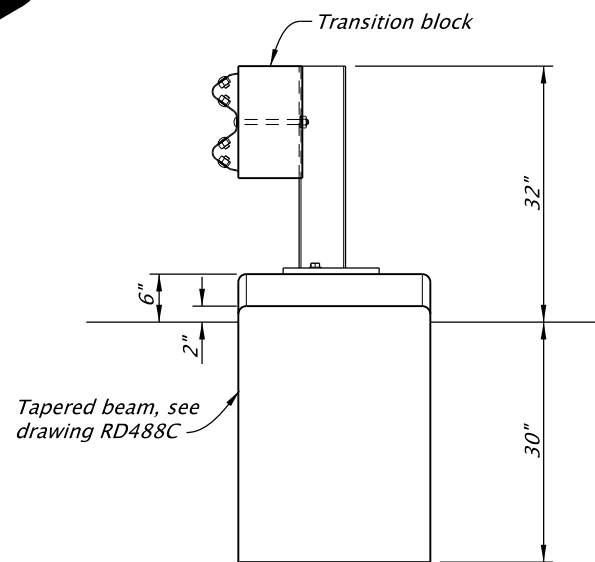
SECTION D-D



FRONT

ROUTED TRANSITION BLOCK
FOR STEEL POST

ISOMETRIC



END VIEW E-E

GENERAL NOTES FOR ALL DETAILS ON
THIS SHEET:

1. See appropriate guardrail standard drawing(s) for details not shown.
2. See drawing RD488A for overview installation.
3. See drawing RD488C for details not shown.

ACCOMPANIED BY DWGS.:
RD488A, RD488CAll materials shall be in accordance with
the current Oregon Standard Specifications.

OREGON STANDARD DRAWINGS
MIDWEST GUARDRAIL SYSTEM
TRANSITION WITH STORM DRAIN
(MASH TL-3) CROSS SECTIONS
 SHEET 2 OF 3
 2024

DATE	REVISION	DESCRIPTION
12-2025	NEW DRAWING	

CALC. BOOK NO.	N/A	SDR DATE	13-JAN-2026	RD488B
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The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

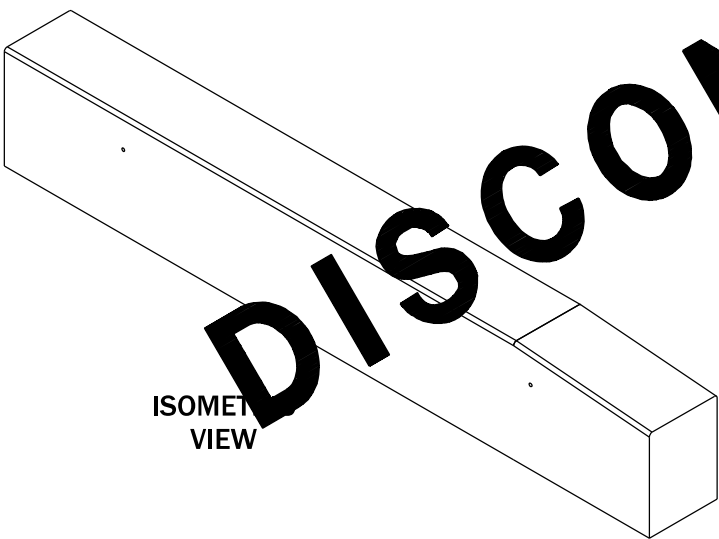
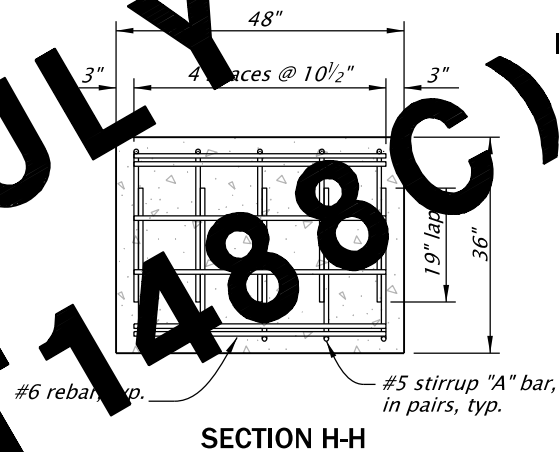
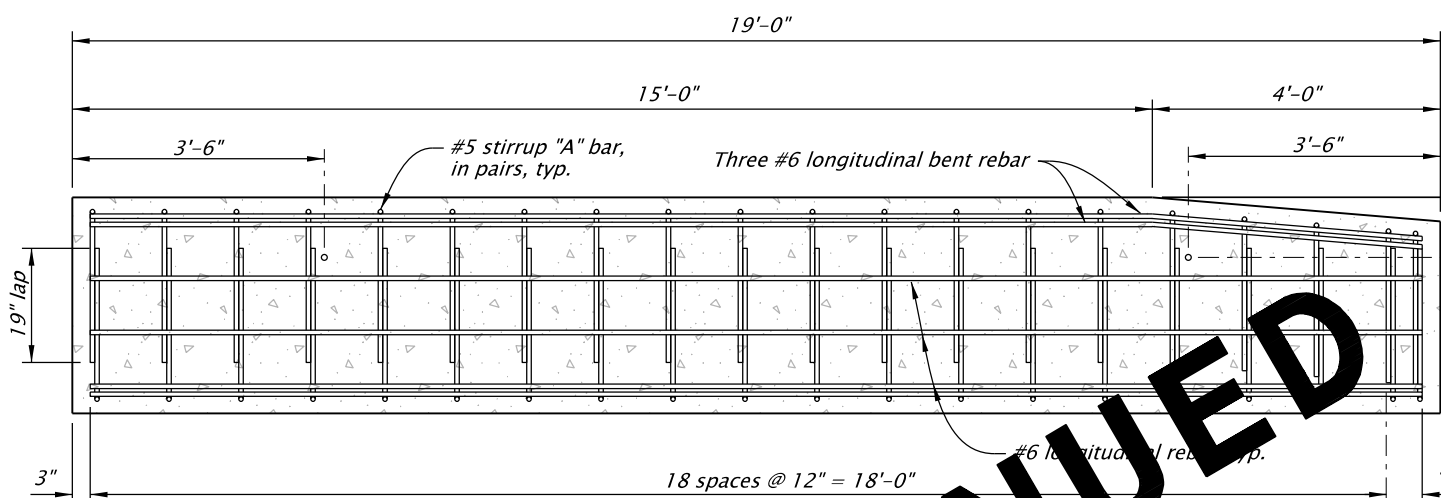
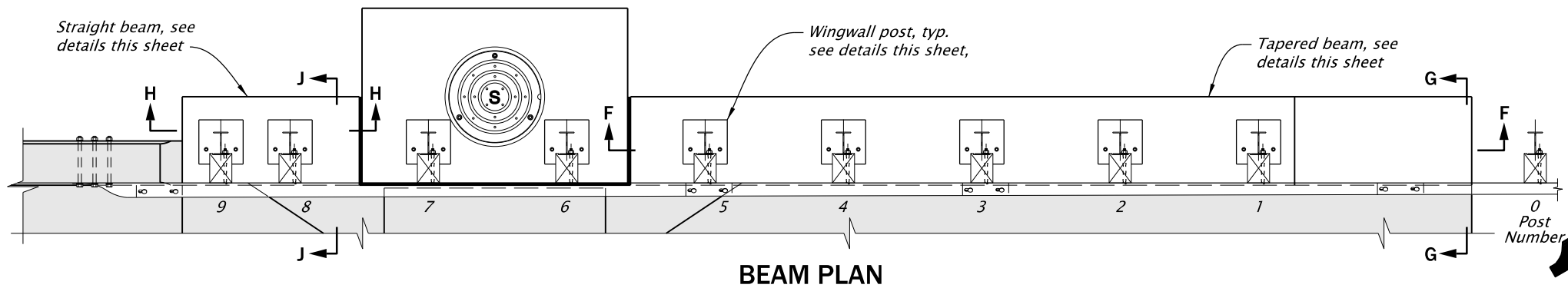
Effective Date: December 1, 2026 – May 31, 2027

13-JAN-2026

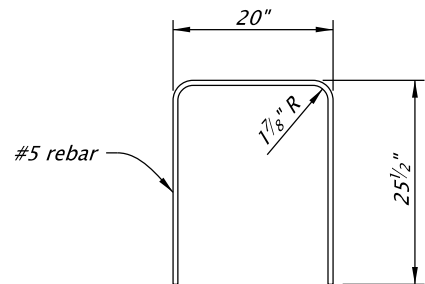
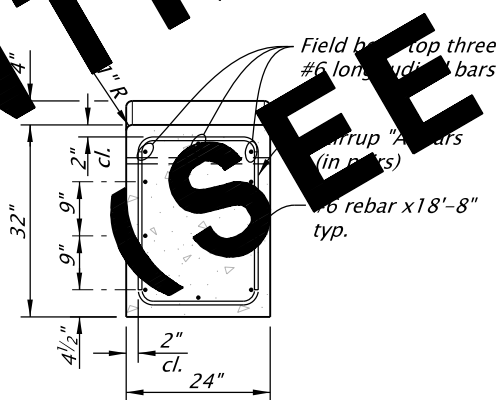
RD488C.dgn

GENERAL NOTES FOR ALL DETAILS THIS SHEET:

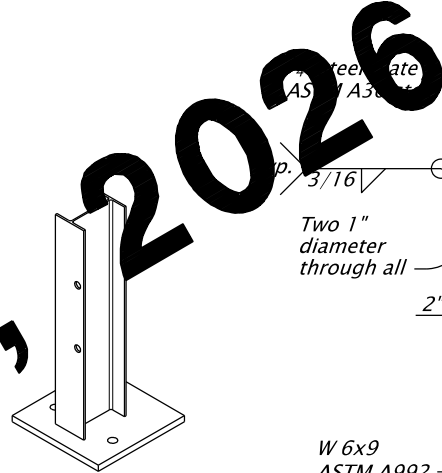
1. See appropriate standard drawing(s) for details not shown.



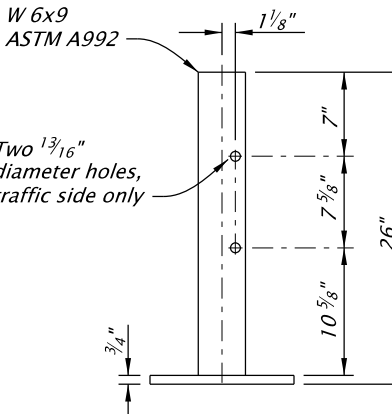
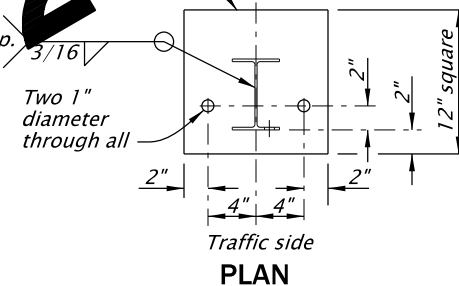
TAPERED BEAM



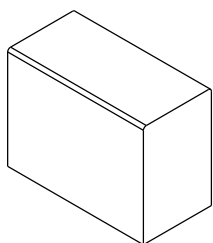
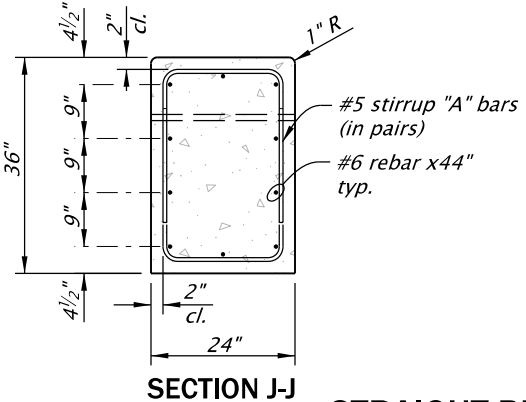
STIRRUP "A" BAR



ISOMETRIC VIEW



WINGWALL POST
Typical @ posts 1-9



ISOMETRIC VIEW

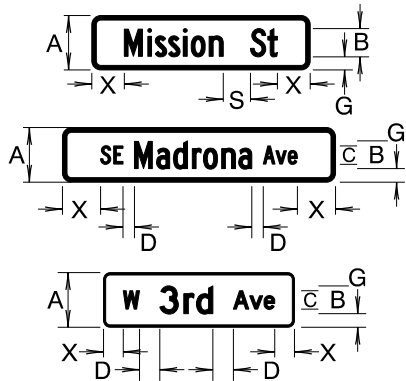
STRAIGHT BEAM

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

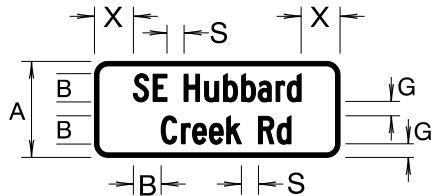
ACCOMPANIED BY DWGS.:
RD488A, RD488B

All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS MIDWEST GUARDRAIL SYSTEM TRANSITION WITH STORM DRAIN (MASH TL-3) MISCELLANEOUS DETAILS SHEET 3 OF 3 2024			
DATE	REVISION DESCRIPTION		
12-2025	NEW DRAWING		
CALC. BOOK NO.	N/A	SDR DATE	13-JAN-2026
RD488C			RD488C

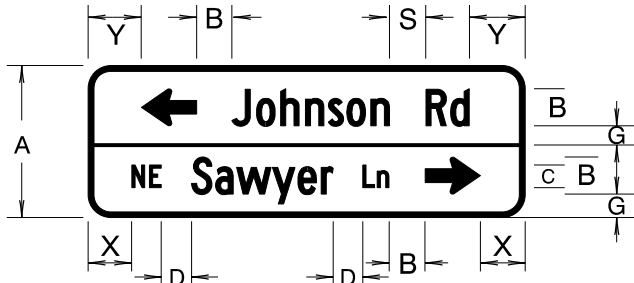
Effective Date: December 1, 2026 – May 31, 2027



LEGEND EXAMPLES FOR STREET NAME SIGNS



STACKED LEGEND FOR STREET NAME SIGN
(GROUND-MOUNTED)



STACKED LEGEND FOR STREET NAME SIGN
(MAST ARM MOUNTED)

Notes: If 12"C font on mast arm mounted sign yields signs larger than 21 square feet, the 10" Alternate may be used.
White border and legend on mast-arm signs are to be ASTM Type IX retroreflective sheeting. Borders shall be flush with edge of sign. Dividers, where used, shall be same width as border.
New Projects: Include mast-arm signs on Signing Plans.
Existing Poles: Perform pole analysis prior to adding or enlarging signs.

STREET NAME SIGN DETAILS

	A	A*	B	C	D**	E	F	G	G*
GROUND-MOUNTED SIGN (2-3 LANE HWYS)	12"	15"	6"	4"	2½"	1"	1½"	3"	5"
GROUND-MOUNTED SIGN (4+ LANES AND 40 MPH OR LESS)	12"	15"	6"	4"	2½"	1"	1½"	3"	5"
GROUND-MOUNTED SIGN (4+ LANES AND > 40 MPH)	15"	18"	8"	5"	3⅞"	1"	1½"	3½"	6"
GROUND-MOUNTED SIGN (LOCAL ROAD, 25 MPH OR LESS)	12"	12"	5"	3"	1⅞"	½"	1½"	2"	4"
MAST ARM MOUNTED SIGN *** (12" STANDARD)	24"	24"	12"	8"	5"	1"	3"	4½"	7½"
MAST ARM MOUNTED SIGN **** (10" ALTERNATE)	21"	21"	10"	6"	3¾"	1"	3"	5½"	7"
STACKED LEGEND SIGN (GROUND-MOUNTED)	24"	24"	6"	N/A	N/A	1"	3"	3"	4"
STACKED LEGEND SIGN *** (MAST ARM MOUNTED)	48"	48"	8"	5"	3⅞"	1"	3"	3½"	5"

E = BORDER WIDTH
F = BORDER RADIUS
H = LETTER HEIGHT
S = SPACE BETWEEN WORDS
X = 1/2 OF REMAINING SPACE
* = USE FOR TEXT INCLUDING LOWER-CASE g, j, p, q and y
** = MINIMUM SIZE; CAN BE LARGER TO MATCH STANDARD HIGHWAY SIGN'S D3-1
*** = SIGNS EXCEEDING THE MAXIMUM SIGN HEIGHT "Z" COLUMN OF THE MAST ARM STREET NAME SIGN MOUNT DETAIL ON TM679 WILL REQUIRE STRUCTURAL ANALYSIS OF THE MAST ARM AND POLE.
**** = THE 10" ALTERNATIVE SHOULD BE USED WHEN A 24" HEIGHT SIGN INDUCES A LOAD OVER THE STRUCTURAL CAPACITY OF THE MAST ARM OR WHEN THE LEGEND IS EXCESIVELY LONG.

SERIES (FONT)				
	B	C	D	E
S	.531 H	.625 H	.836 H	1.00 H

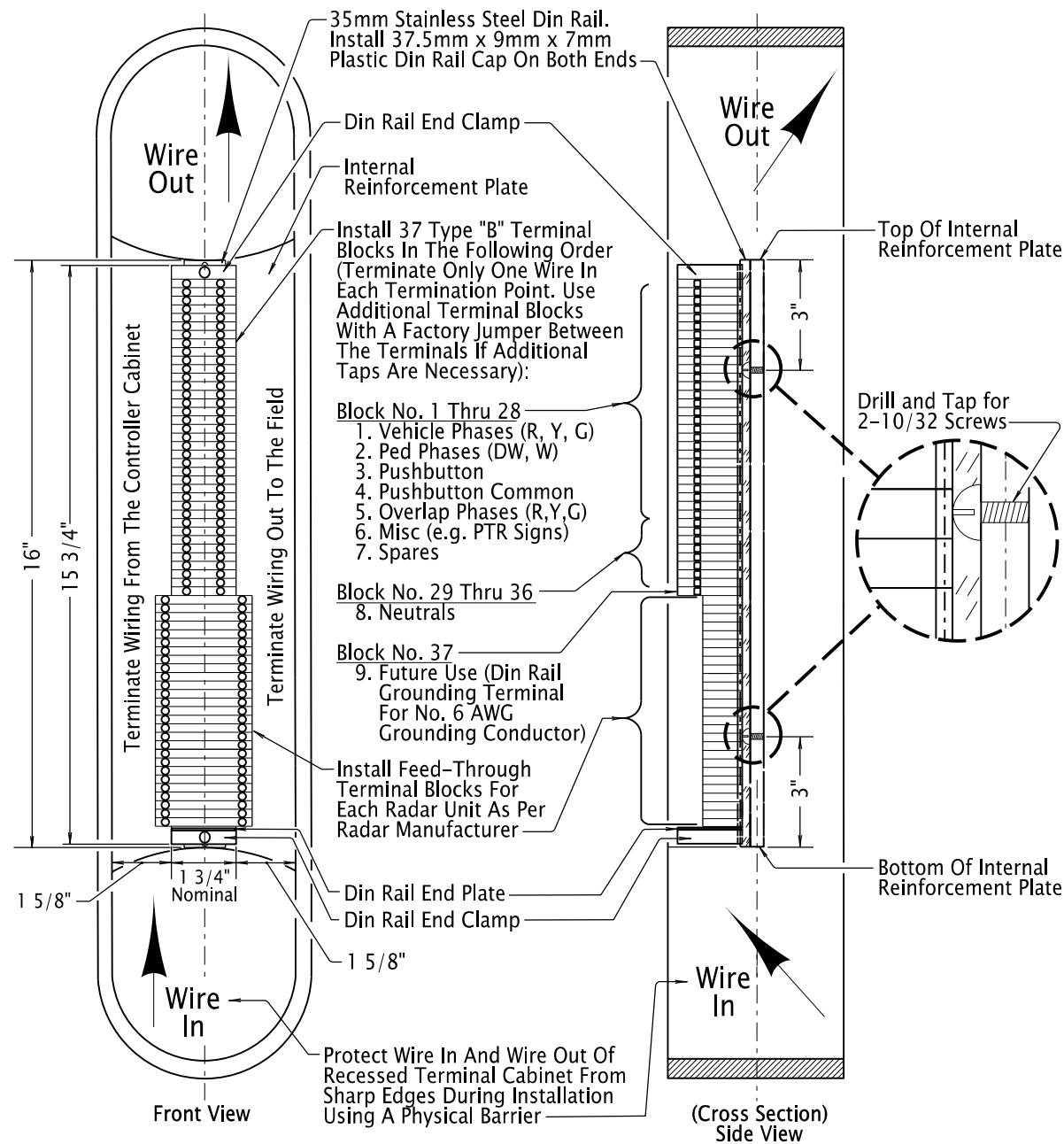
SPACING BETWEEN WORDS

X-Dimension should be approximately the same dimension as the letter Height (H). At a minimum the X-Dimension shall be no less than one-half the letter height (1/2 H)

Sign examples shown here are not drawn to scale, but to illustrate the layout of the legend items.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

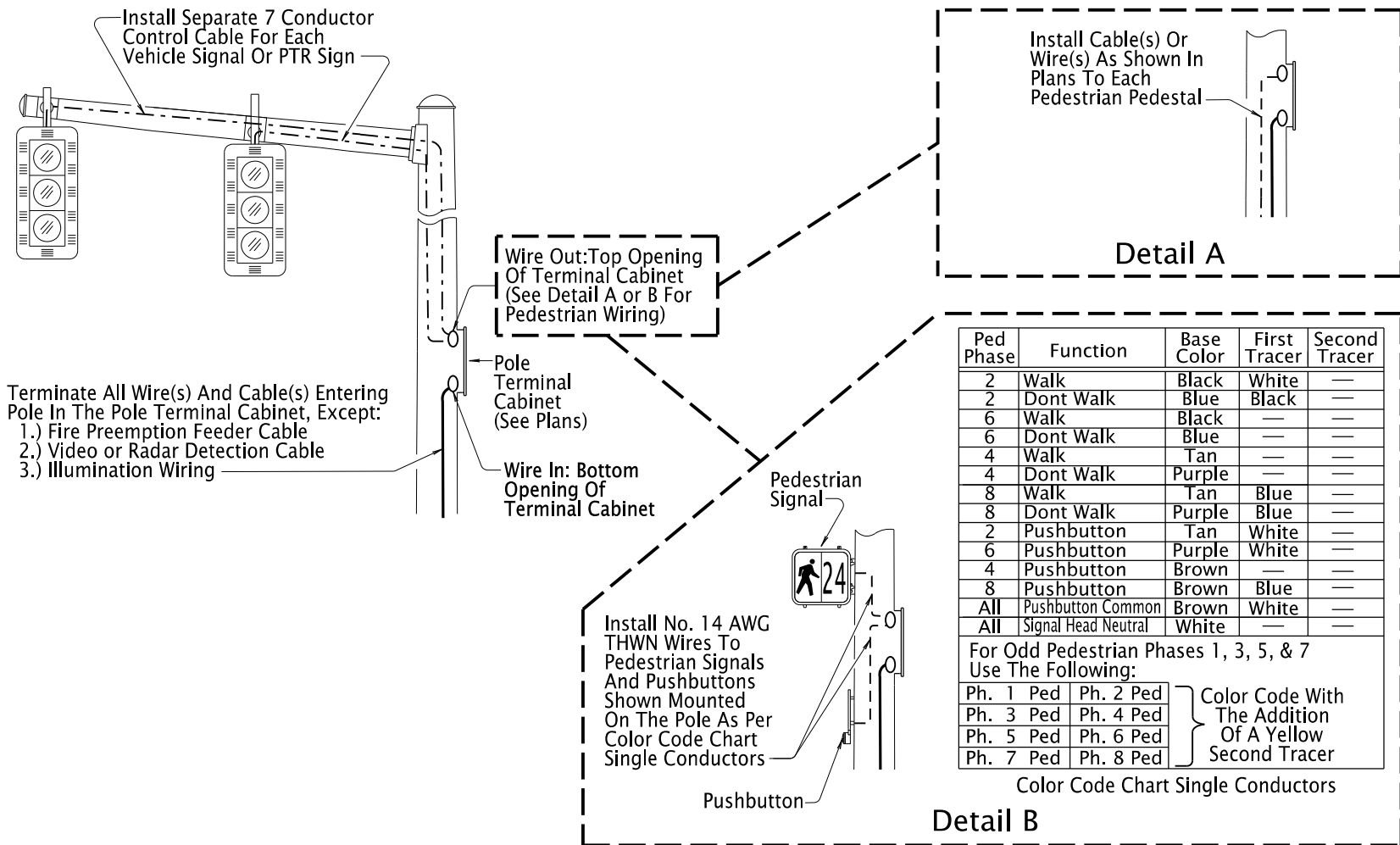
All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
STREET NAME SIGN LAYOUT			
2024			
DATE	REVISION DESCRIPTION		
01-2024	MOVED DIRECTIONAL SIGN CONTENT TO NEW STD DWG TM226		
01-2024	ADDED STREET SIGN EXAMPLE AND EDITED DIMENSION TABLE		
01-2026	UPDATED SIGN HEIGHTS ACCORDING TO 2025 MUTCD UPDATE		
01-2026	ADDED NOTE FOR 10" ALTERNATIVE SIGN		
07-2026	EDITED NOTE FOR 10" ALTERNATIVE SIGN		
CALC. BOOK NO.	N/A	SDR DATE	19-JAN-2024
			TM223



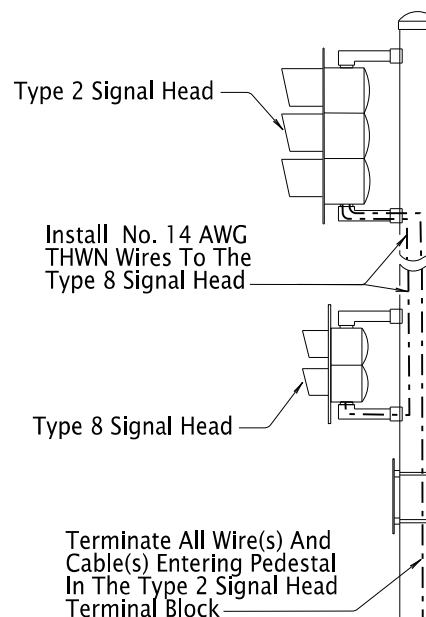
DIN RAIL, TERMINAL BLOCKS, & WIRING IN POLE RECESSED TERMINAL CABINET

7 Conductor Control Cable			Pedestrian Phases	Vehicle Phases	Signal Head Types			
Conductor Number	Base Color	First Tracer	Pedestrian Phase	Vehicle Phase	6L or 3LBF	4L, 5, or 7	1R, 1Y, 2, 3L, 3LCF, 3U, 3R, 4, 9, 12, or 12M	10
1	White	—	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
2	Black	—	Walk	Yellow	Yellow	Yellow	Yellow	Yellow
3	Red	—	Dont Walk	Red	Red	Red	Red	Red 1
4	Orange	—	P.B. Common	Spare	Flashing Yellow	Turn Yellow	Spare	Red 2
5	Green	—	Pushbutton	Green	Green	Green	Green	Spare
6	Blue	—	Spare	Spare	Spare	Turn Green	Spare	Spare
7	White	Black	Spare	Spare	Spare	Spare	Spare	Spare

COLOR CODE CHART CONTROL CABLE



WIRE & CABLE IN POLES



WIRE & CABLE IN RAMP METER PEDESTALS

General Notes:

- See TM701 For Additional Wire/Cable Installation Requirements That Apply To All Electrical Systems.
- Install All Wire And Cable Between Terminal Blocks Without Splicing.
- Mark Phase Number & Function Or Identification On All Cable And Wires Installed In Terminal Cabinets, Service Cabinets, & Controller Cabinets With Permanent Tags. Overlaps Shall Be Labeled (OLA, OLB, OLC, OLD).
- Leave Slack In Each Wire And Cable As Follows:
A.) 6 Feet In The First Junction Box Nearest The Controller Cabinet
B.) 6 Feet In Controller Cabinet And Service Cabinet
- At Existing Installations Re-wire And Re-label New And Existing Control Cables And Wires, In All Terminal Cabinets, Service Cabinets, And Controller Cabinets.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.

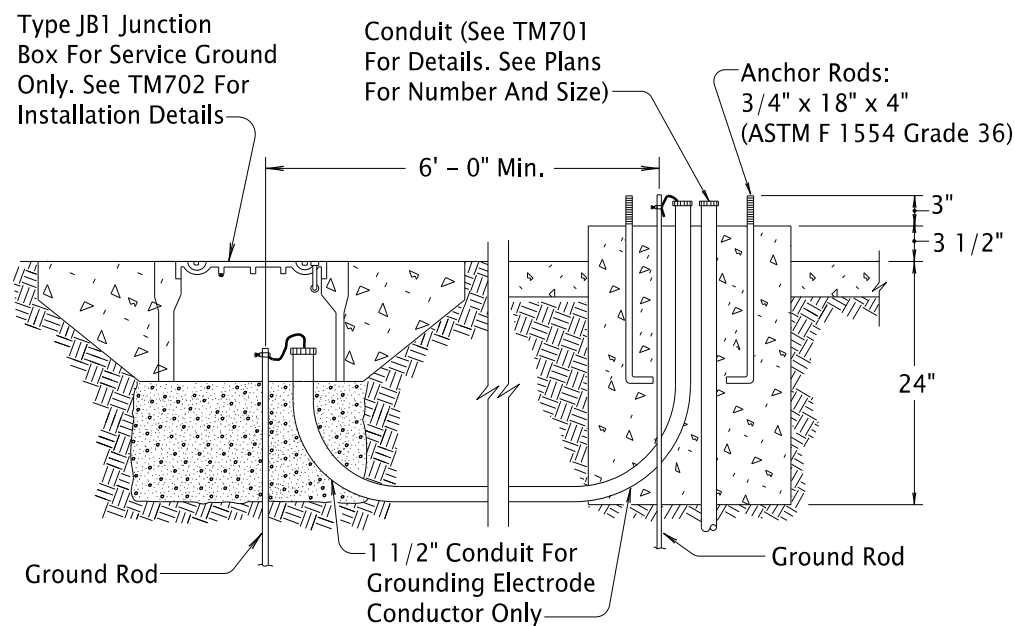
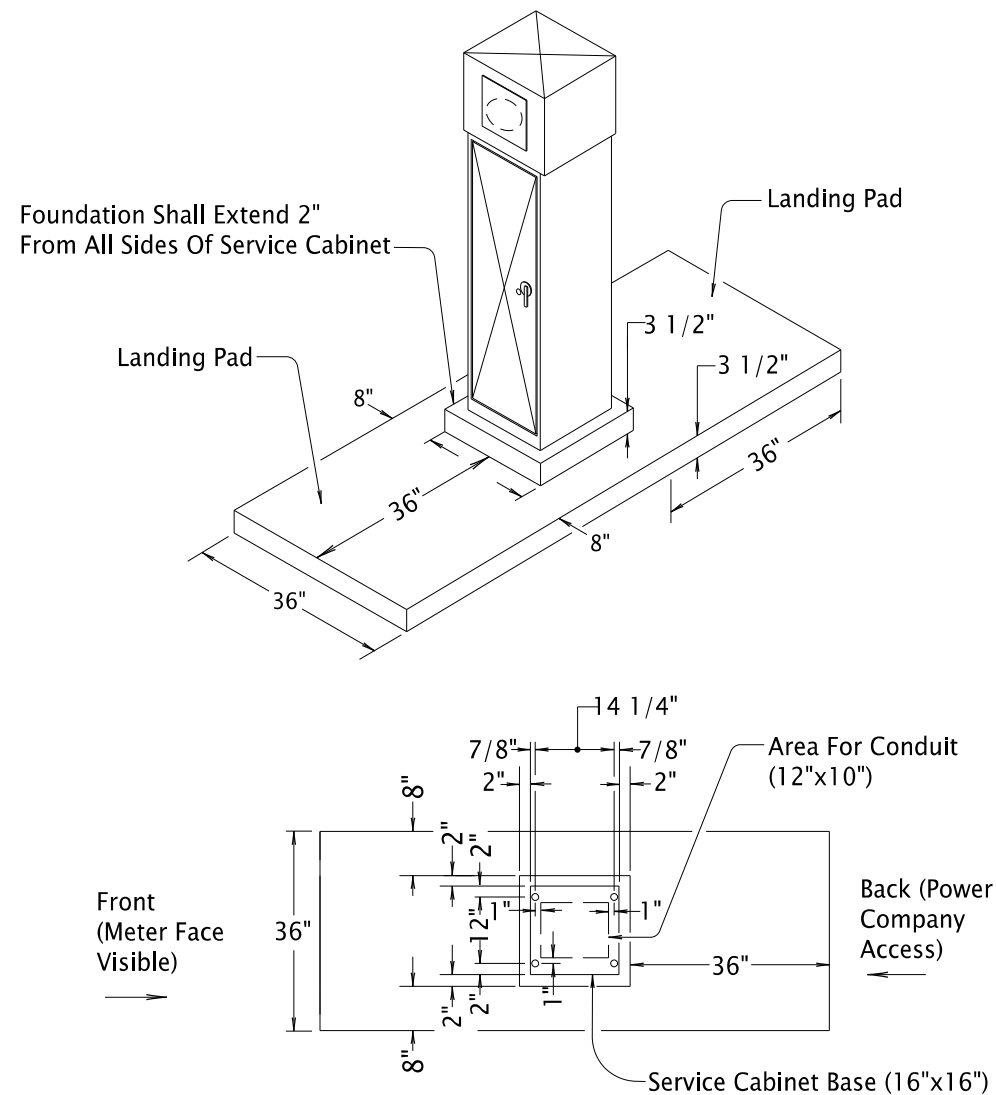
OREGON STANDARD DRAWINGS

WIRE/CABLE INSTALLATION

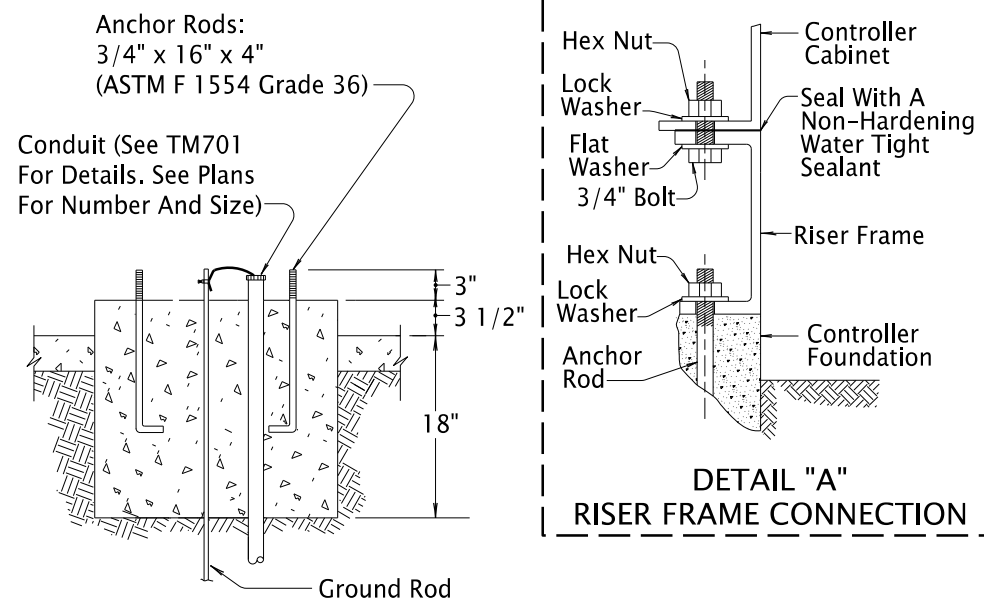
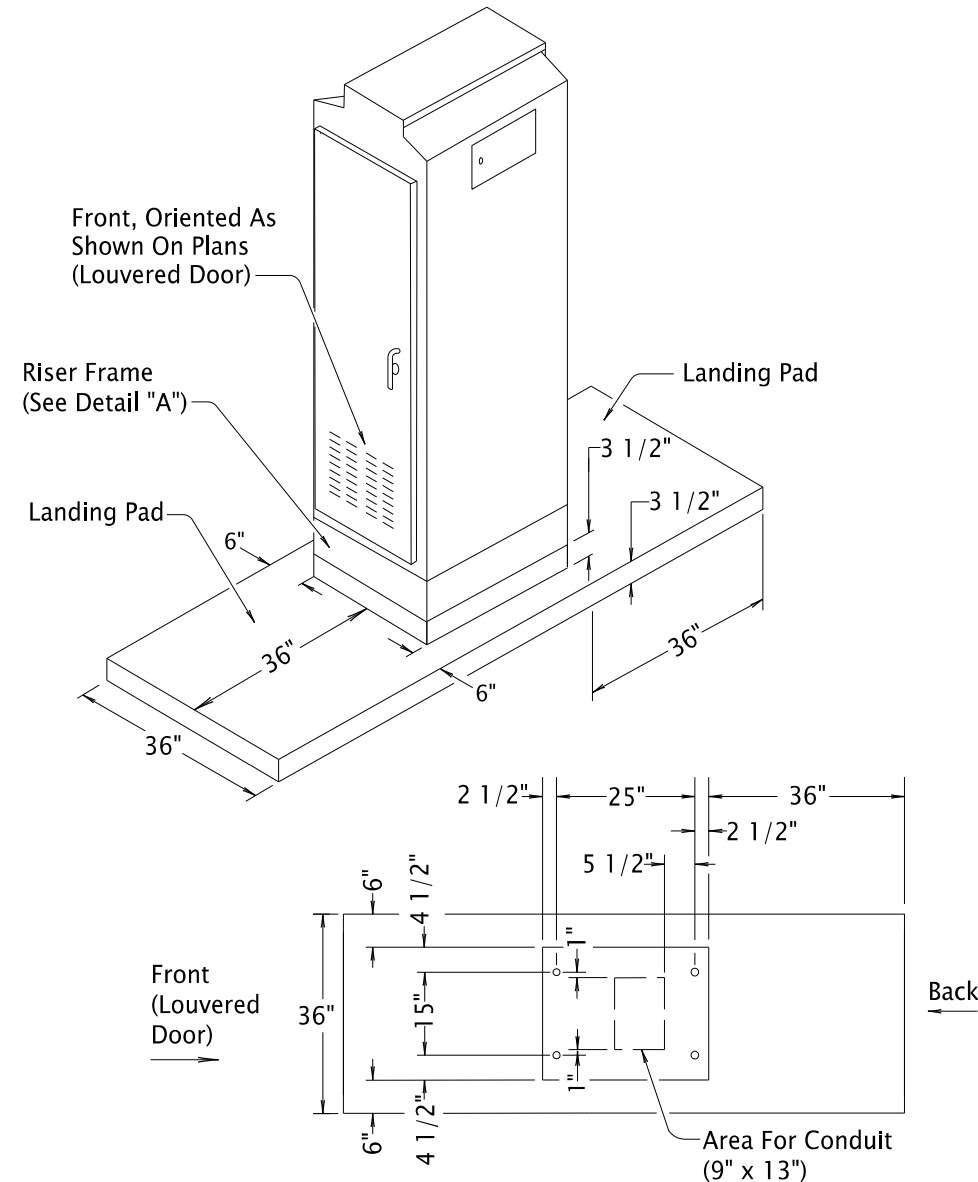
2024

DATE	REVISION	DESCRIPTION
01-2024	REVISED SIGNAL HEAD TYPES IN COLOR CODE CHART CONTROL CABLE DETAIL	
07-2024	ADDED GEN. NOTE 3, ADDED PED COLOR CODE, ADDED FACTORY JUMPERS	
01-2025	MOVED GENERAL ELECTRICAL CONTENT TO TM701, REFORMATTED CONTENT	
07-2025	MODIFIED GEN. NOTE 3 & 5, DELETED GEN. NOTE 4, TB BLOCK REVISION.	
07-2026	ADDED DIN RAIL CAP AND PHYSICAL BARRIER FOR WIRE INSTALLATION IN RTC	

CALC. BOOK NO. — N/A — SDR DATE — 10-JUL-2026 — TM470



BASE MOUNTED SERVICE CABINET FOUNDATION

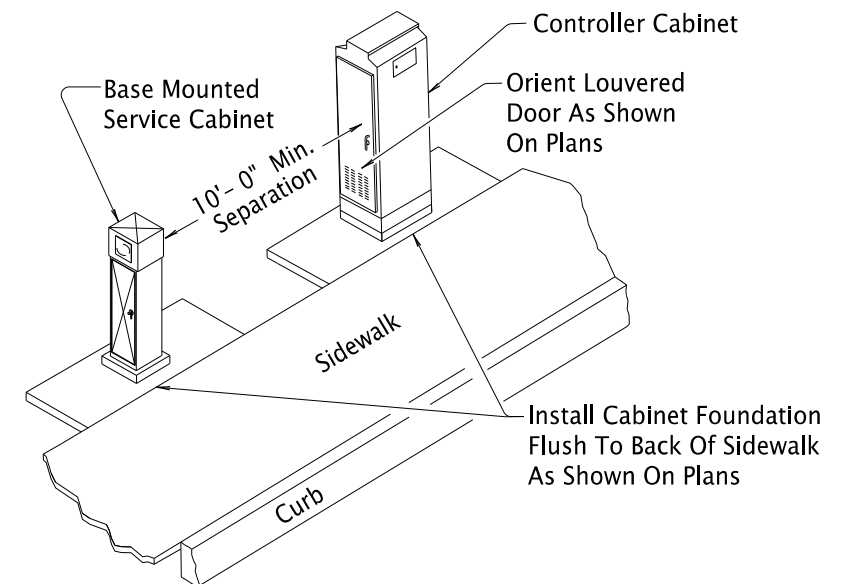


CONTROLLER CABINET FOUNDATION DETAILS

(Model 332S, 332, 334, And 340 Cabinets)

General Notes:

1. All Screws, Bolts, Nuts And Washers Shall Be Galvanized Steel Unless Noted Otherwise.
2. Bolts And Screws Shall Have Square Or Hex Heads. Allen Fasteners Not Allowed.
3. Type 304 Or 316 Stainless Steel Or Galvanized Steel May Be Used For Mounting Cabinet To Riser Frame.
4. Provide A 3/4" Chamfer On All Exposed Concrete Edges.



Notes:

1. Verify Base Mounted Service Cabinet Location And Meter Placement Is Acceptable To Local Power Company.
2. When Sidewalk Does Not Exist, See Plans For Cabinet Location And Maintenance Walkway Connection(s) From Edge Of Pavement To Cabinet.

CABINET FOUNDATION LOCATION

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

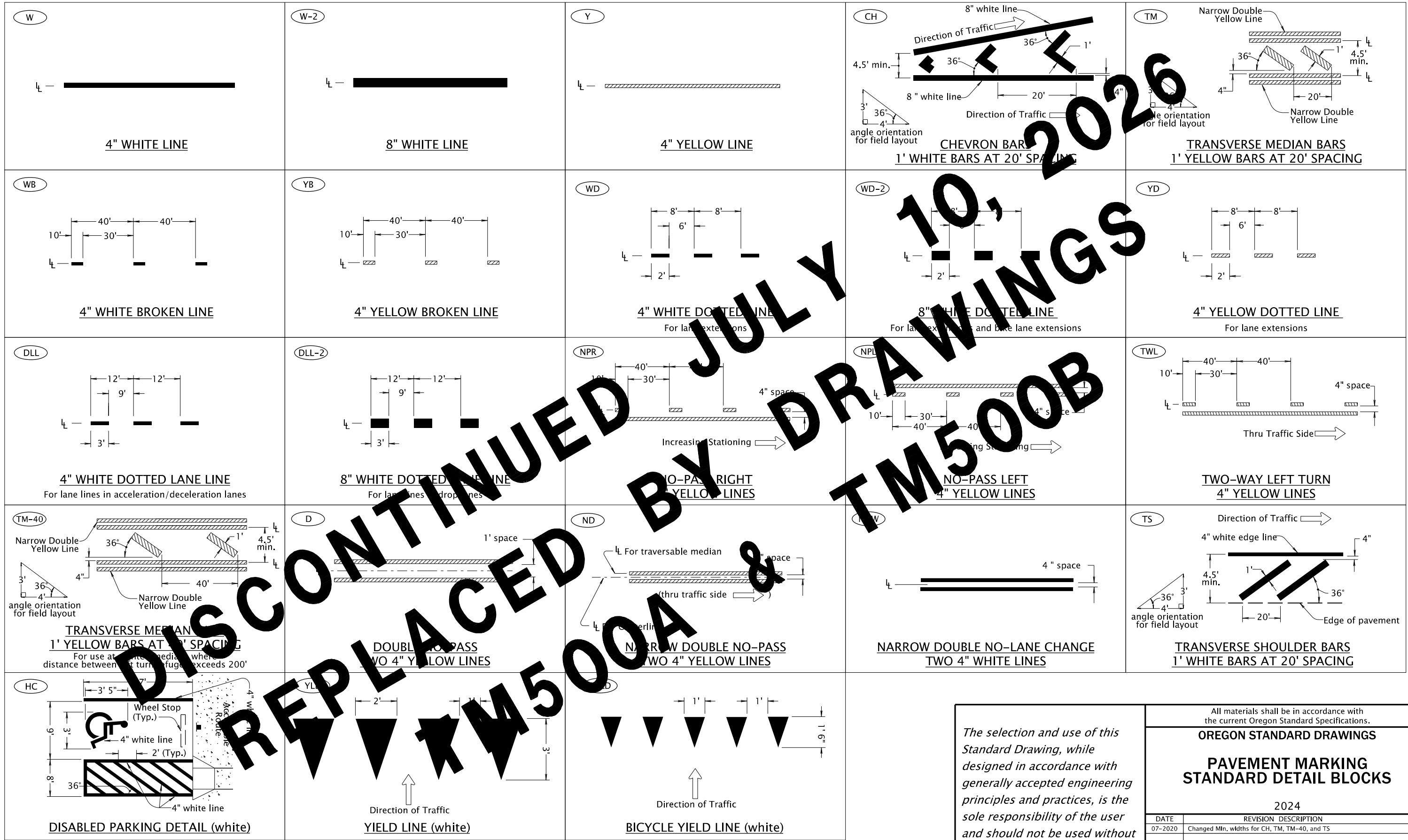
All materials shall be in accordance with the current Oregon Standard Specifications.

OREGON STANDARD DRAWINGS
CONTROLLER CABINET &
SERVICE CABINET
FOUNDATION DETAILS

2024

DATE		REVISION DESCRIPTION
01-2021	UPDATED ALL ANCHOR ROD DETAILS	
01-2025	UPDATED STANDARD DRAWING REFERENCES	
07-2025	REMOVED BUILDING PAPER REQUIREMENT	
01-2026	CORRECTED TYPOS	
07-2026	REVISED LANDING PAD WIDTH, REMOVED LOCATION W/OUT SIDEWALK DETAIL	

CALC. BOOK NO. - - -	N/A - - -	SDR DATE - 10-JUL-2026 -	TM482
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← Direction Of Traffic, Increasing Stationing
Or Thru Traffic Side

LEGEND

— Lane line dimensions are shown on the
striping plans

The selection and use of this
Standard Drawing, while
designed in accordance with
generally accepted engineering
principles and practices, is the
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Professional Engineer.

All materials shall be in accordance with
the current Oregon Standard Specifications.

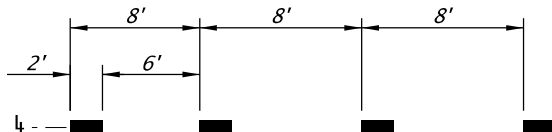
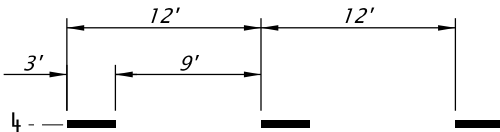
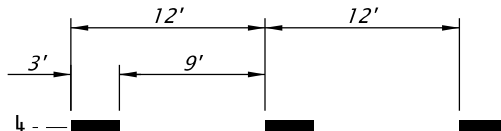
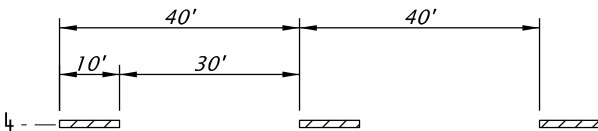
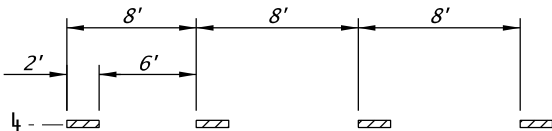
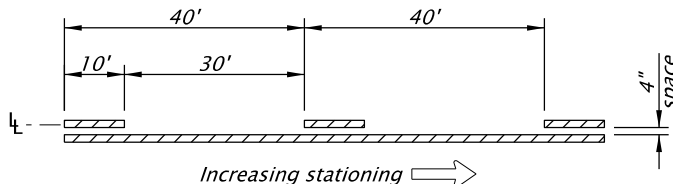
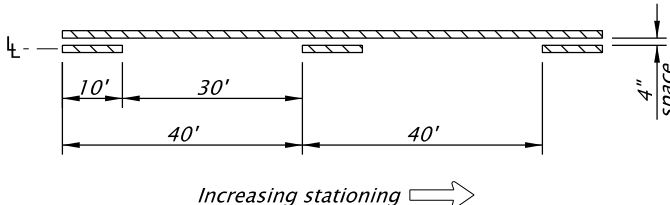
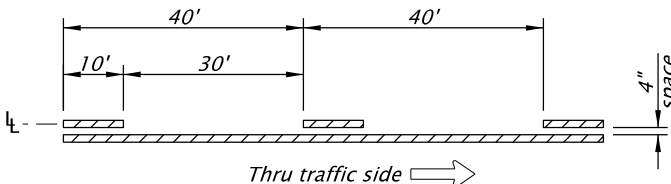
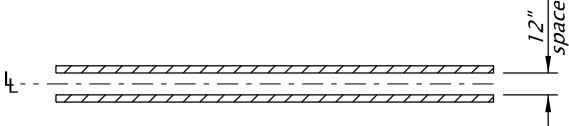
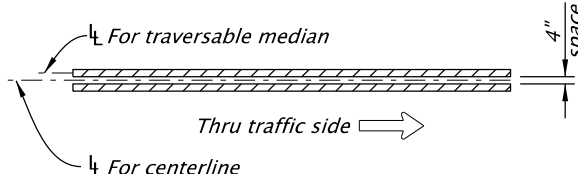
OREGON STANDARD DRAWINGS

PAVEMENT MARKING
STANDARD DETAIL BLOCKS

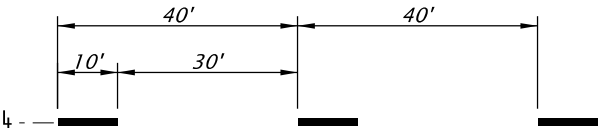
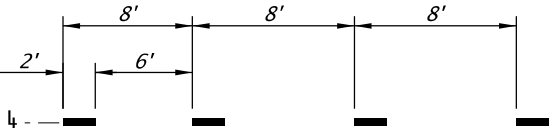
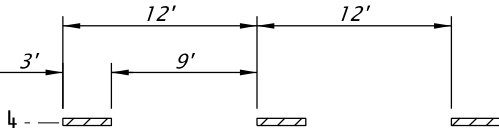
2024

DATE	REVISION	DESCRIPTION
07-2020	Changed Min. widths for CH, TM, TM-40, and TS	
CALC. BOOK NO.	N/A	SDR DATE 07-01-2020
		TM500

Effective Date: December 1, 2026 – May 31, 2027

W  4" WHITE LINE	W-2  8" WHITE LINE	WD-2  8" WHITE DOTTED LINE FOR LANE EXTENSIONS AND BIKE LANE EXTENSIONS	DLL  4" WHITE DOTTED LANE LINE FOR LANE LINES IN ACCELERATION/DECELERATION LANES																							
DLL-2  8" WHITE DOTTED LANE LINE FOR LANE LINES IN DROP LANES	Y  4" YELLOW LINE	YB  4" YELLOW BROKEN LINE	YD  4" YELLOW DOTTED LINE FOR LANE EXTENSIONS																							
NPR  NO-PASS RIGHT 4" YELLOW LINES	NPL  NO-PASS LEFT 4" YELLOW LINES	TWL  TWO-WAY LEFT TURN 4" YELLOW LINES	D  DOUBLE NO-PASS TWO 4" YELLOW LINES																							
ND  NARROW DOUBLE NO-PASS TWO 4" YELLOW LINES	LEGEND  Direction of travel, increasing stationing or through traffic side  Lane line dimensions are shown on the striping plans			The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.	All materials shall be in accordance with the current Oregon Standard Specifications. OREGON STANDARD DRAWINGS PAVEMENT MARKING STANDARD DETAIL BLOCKS 2024 <table><tr><th>DATE</th><th>REVISION</th><th>DESCRIPTION</th></tr><tr><td>07-2026</td><td>UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD</td><td></td></tr><tr><td></td><td>DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504</td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td>CALC. BOOK NO.</td><td>N/A</td><td>SDR DATE</td></tr><tr><td></td><td></td><td>10-JUL-2026</td></tr></table> TM500A	DATE	REVISION	DESCRIPTION	07-2026	UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD			DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504								CALC. BOOK NO.	N/A	SDR DATE			10-JUL-2026
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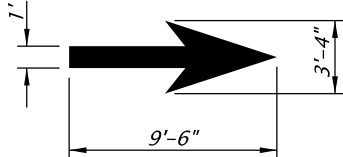
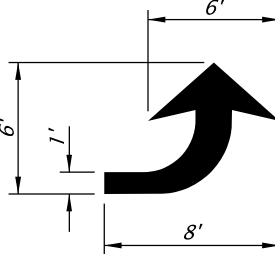
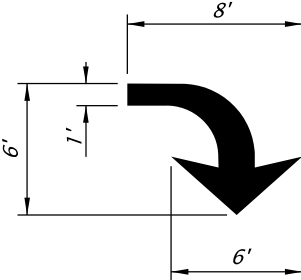
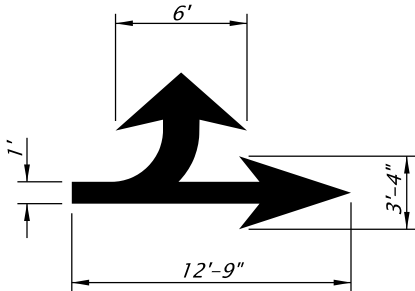
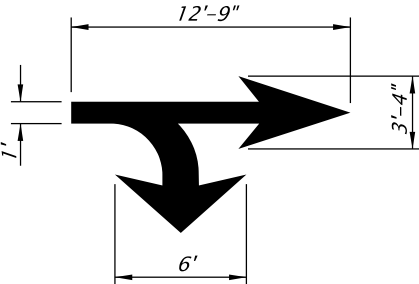
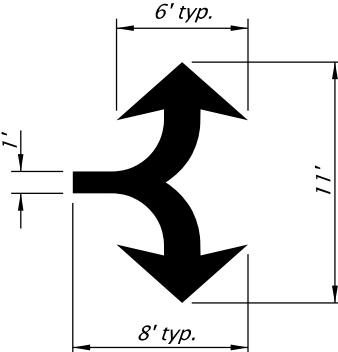
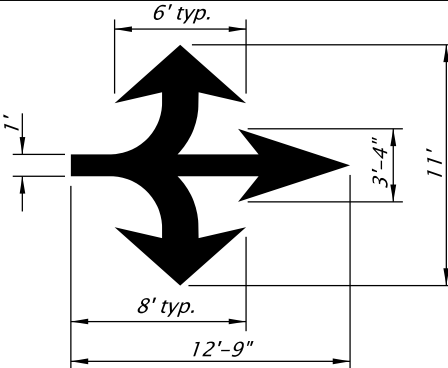
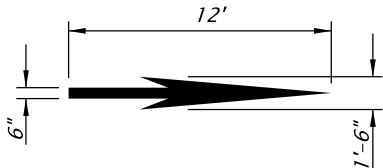
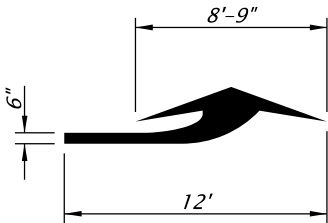
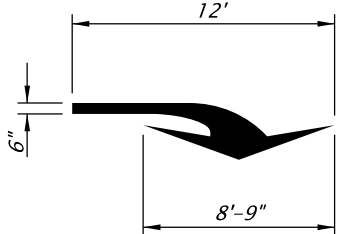
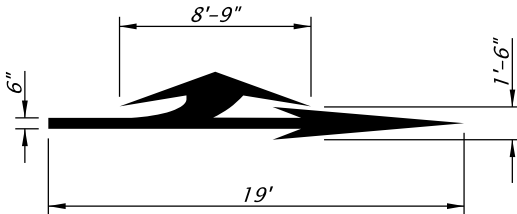
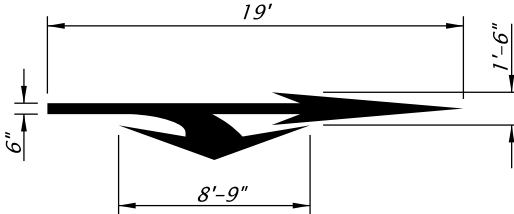
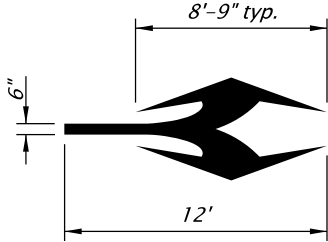
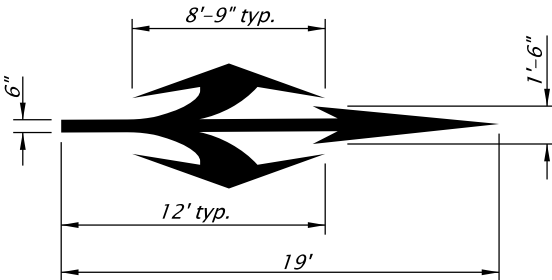
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TM500B.dgn

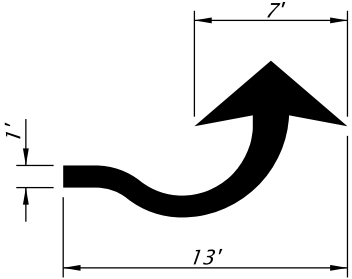
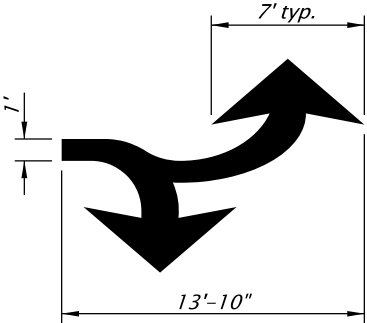
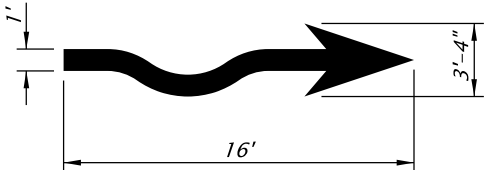
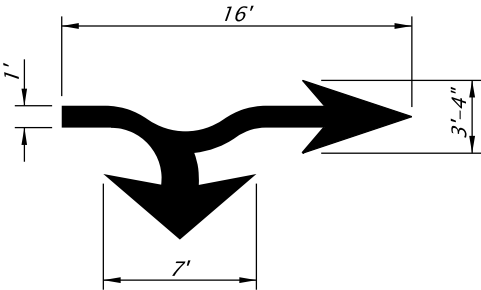
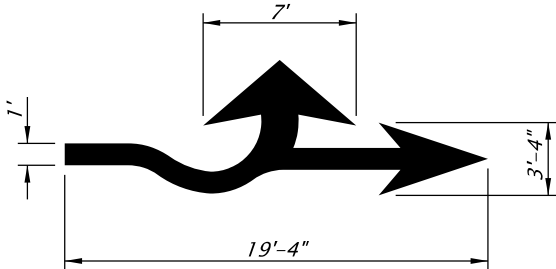
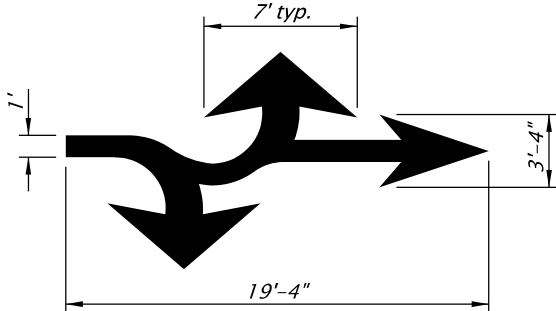
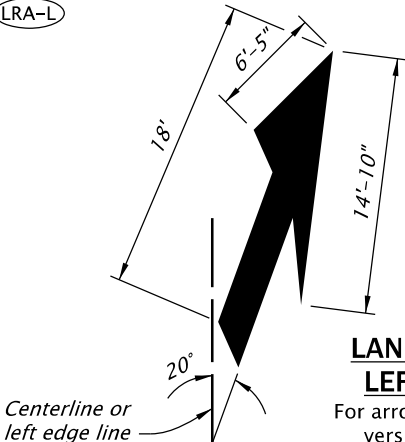
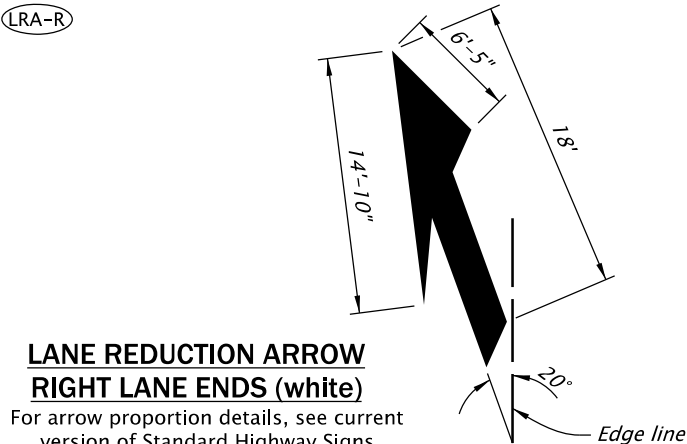
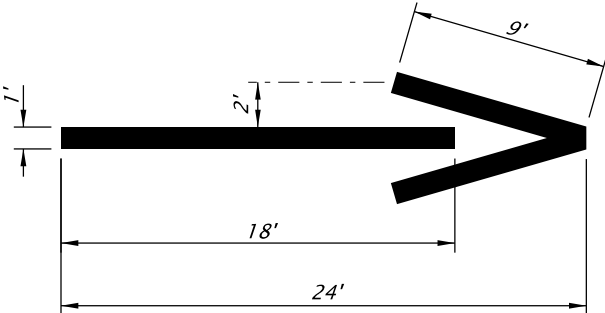
WB  4" WHITE BROKEN LINE	WD  4" WHITE DOTTED LINE FOR LANE EXTENSIONS	NDW  NARROW DOUBLE NO-LANE CHANGE TWO 4" WHITE LINES	YB-SP  4" YELLOW SHARED PATH BROKEN LINE																																																
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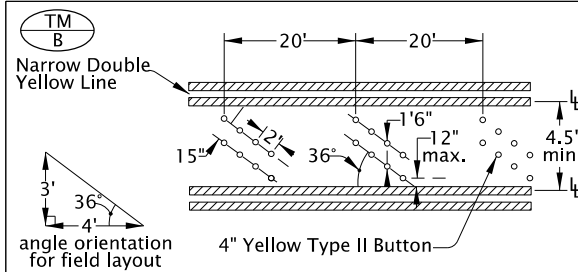
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RALA RIGHT TURN LEFT TURN ARROW (white) For arrow proportion details, see current version of Standard Highway Signs	RSLA RIGHT TURN STRAIGHT LEFT TURN ARROW (white) For arrow proportion details, see current version of Standard Highway Signs	E-SA ELONGATED STRAIGHT ARROW (white) For arrow proportion details, see current version of Standard Highway Signs	E-LA ELONGATED LEFT TURN ARROW (white) For arrow proportion details, see current version of Standard Highway Signs	E-RSA ELONGATED RIGHT TURN ARROW (white) For arrow proportion details, see current version of Standard Highway Signs
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F-RALA FISH-HOOK RIGHT TURN LEFT TURN ARROW (white) For arrow proportion details, see the current ODOT Traffic Line Manual	F-SA FISH-HOOK STRAIGHT ARROW (white) For arrow proportion details, see the current ODOT Traffic Line Manual	F-RSA FISH-HOOK RIGHT TURN STRAIGHT ARROW (white) For arrow proportion details, see the current ODOT Traffic Line Manual	F-LSA FISH-HOOK LEFT TURN STRAIGHT ARROW (white) For arrow proportion details, see the current ODOT Traffic Line Manual	F-RSLA FISH-HOOK RIGHT TURN STRAIGHT LEFT TURN ARROW (white) For arrow proportion details, see the current ODOT Traffic Line Manual
LRA-L LANE REDUCTION ARROW - LEFT LANE ENDS (white) For arrow proportion details, see current version of Standard Highway Signs	LRA-R LANE REDUCTION ARROW - RIGHT LANE ENDS (white) For arrow proportion details, see current version of Standard Highway Signs	WVA WRONG-WAY ARROW (white)		

- General Note:
- Center pavement markings within the lane width.
 - Arrow and letter dimensions nominal, excluding WWA.

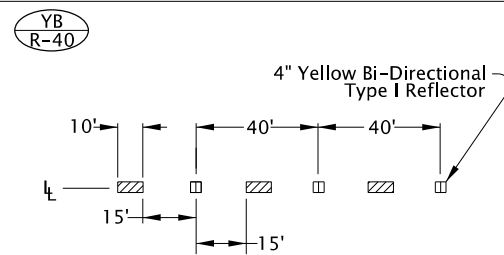
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	OREGON STANDARD DRAWINGS				
	PAVEMENT MARKING STANDARD DETAIL BLOCKS				
	2024				
	DATE	REVISION DESCRIPTION			
	07-2020	Some Detail Blocks moved to new Std. Drawing TM504			
		Fish-hook Arrows added, LRA split into LRA-L and LRA-R			
	01-2022	Corrected bubble callout of LRA-L and typo in LRA-R			
	CALC. BOOK NO. _ _ _ _	N/A _ _ _ _	SDR DATE _ _ _ _	01-03-2022 _ _	TM501

SA  STRAIGHT ARROW (white) For arrow proportion details, see current version of Standard Highway Signs	LA  LEFT TURN ARROW (white) For arrow proportion details, see current version of Standard Highway Signs	RA  RIGHT TURN ARROW (white) For arrow proportion details, see current version of Standard Highway Signs	LSA  LEFT TURN STRAIGHT ARROW (white) For arrow proportion details, see current version of Standard Highway Signs															
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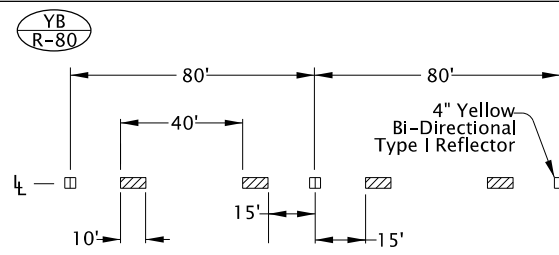
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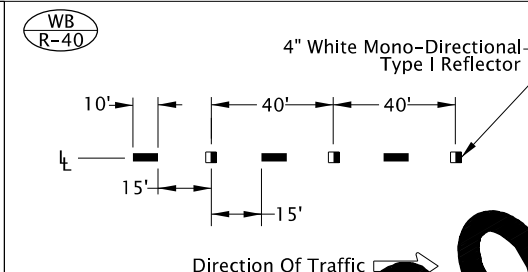
**TRANSVERSE MEDIAN BAR SUBSTITUTION
BUTTON**



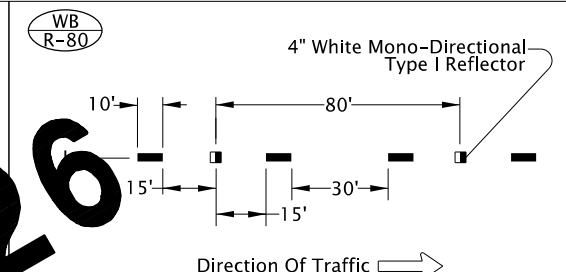
**YELLOW BROKEN LINE SUPPLEMENTATION
REFLECTORS WITH 4" YELLOW BROKEN LINE**



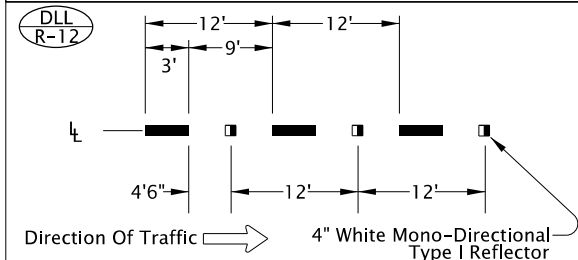
**YELLOW BROKEN LINE SUPPLEMENTATION
REFLECTORS WITH 4" YELLOW BROKEN LINE**



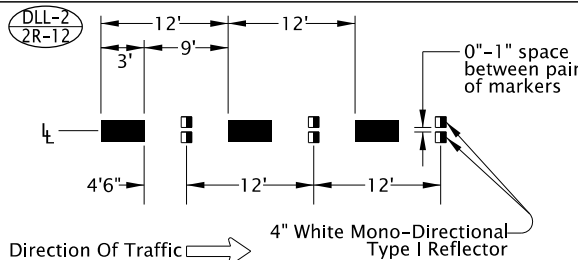
**WHITE BROKEN LINE SUPPLEMENTATION
REFLECTORS WITH 4" WHITE BROKEN LINE**



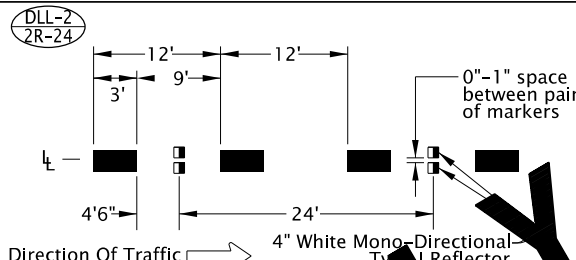
**WHITE BROKEN LINE SUPPLEMENTATION
REFLECTORS WITH 4" WHITE BROKEN LINE**



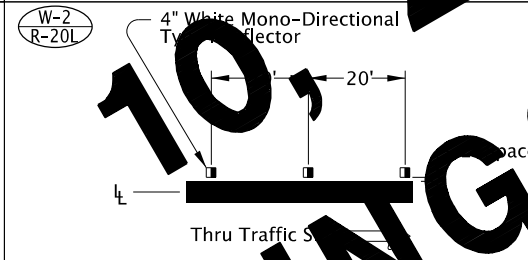
**WHITE DOTTED LANE LINE SUPPLEMENTATION
REFLECTORS WITH 4" WHITE DOTTED LANE LINE**



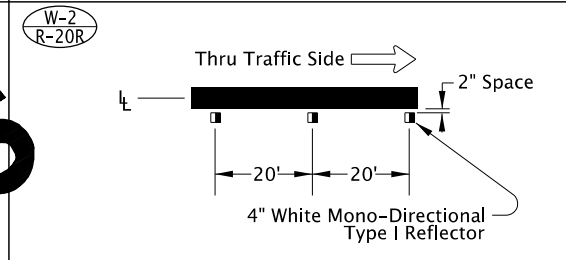
**WIDE DOTTED LANE LINE SUPPLEMENTATION
REFLECTORS WITH 8" WHITE DOTTED LANE LINE**



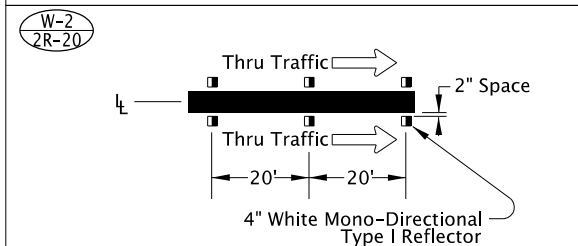
**WIDE DOTTED LANE LINE SUPPLEMENTATION
REFLECTORS WITH 8" WHITE DOTTED LANE LINE**



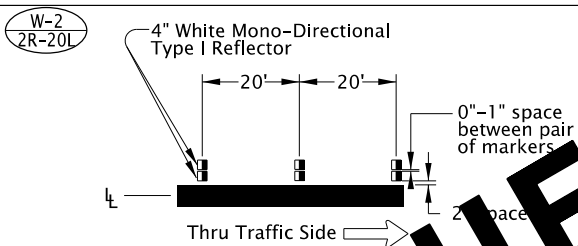
**CHANNELIZING LINE POSITIONING GUIDE
REFLECTORS WITH 8" WHITE LINE**



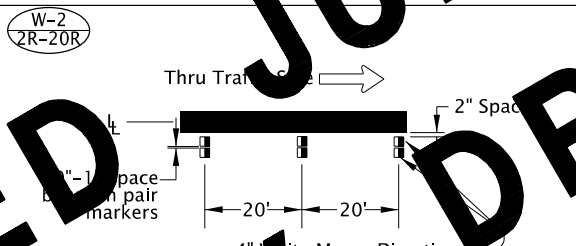
**CHANNELIZING LINE POSITIONING GUIDE
REFLECTORS WITH 8" WHITE LINE**



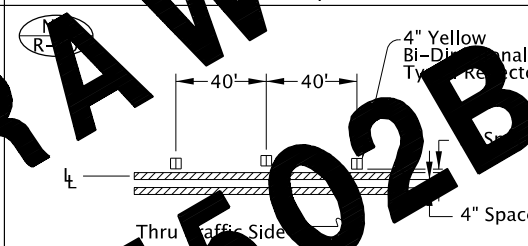
**CHANNELIZING LANE LINE POSITIONING GUIDE
REFLECTORS WITH 8" WHITE LINE**



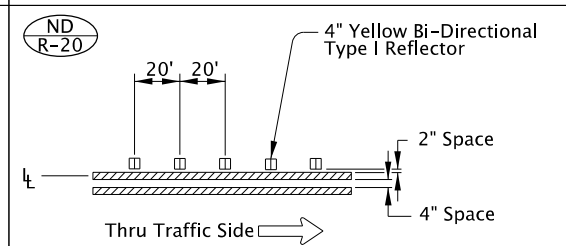
**CHANNELIZING LANE LINE POSITIONING GUIDE
REFLECTORS WITH 8" WHITE LINE**



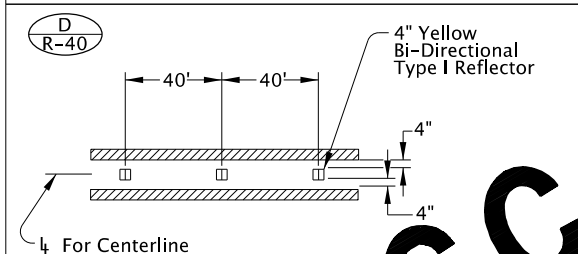
**CHANNELIZING LANE LINE POSITIONING GUIDE
REFLECTORS WITH 8" WHITE LINE**



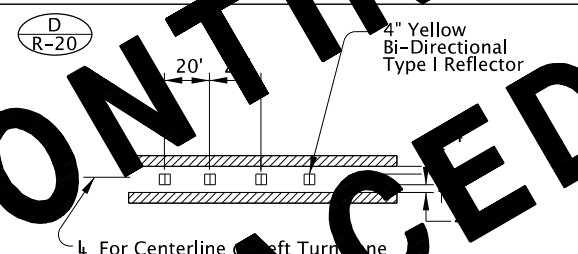
**NARROW DOUBLE YELLOW POSITIONING GUIDE
REFLECTORS WITH TWO 4" YELLOW LINES**



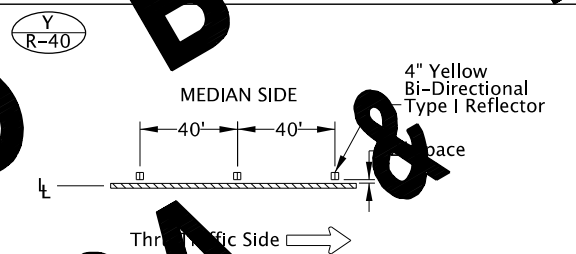
**NARROW DOUBLE YELLOW POSITIONING GUIDE
REFLECTORS WITH TWO 4" YELLOW LINES**



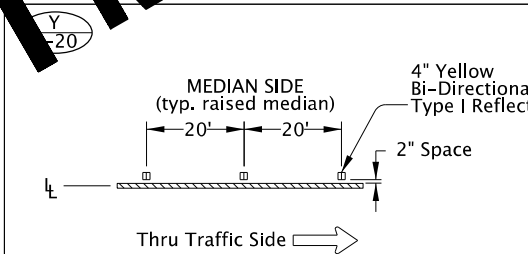
**DOUBLE NO-PASS POSITIONING GUIDE
REFLECTORS WITH TWO 4" YELLOW LINES**



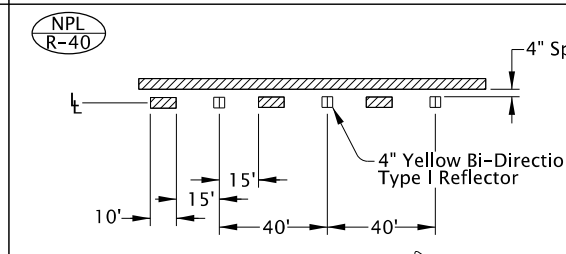
**DOUBLE NO-PASS POSITIONING GUIDE
REFLECTORS WITH TWO 4" YELLOW LINES**



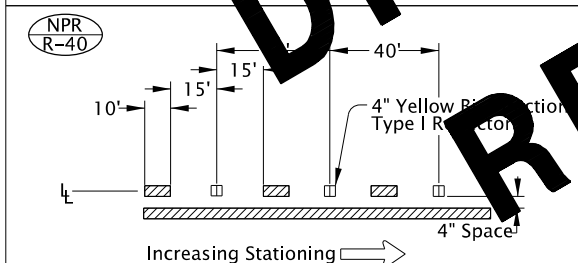
**YELLOW LINE POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINE**



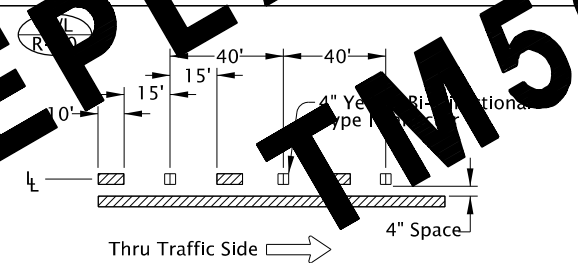
**YELLOW LINE POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINE**



**NO-PASS LEFT POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINES**



**NO-PASS RIGHT POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINES**



**TWO WAY LEFT TURN POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINES**

General note:

- 1) Surface mount Raised Pavement Markers (RPMs) unless otherwise specified.

LEGEND

- ← Direction Of Travel, Increasing Stationing or Thru Traffic Side
- ⊥ Lane line dimensions are shown on the striping plans
- Mono-directional crystal white marker reflects white to the left in this symbol
- Bi-directional yellow marker reflects yellow both left and right in this symbol

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OREGON STANDARD DRAWINGS

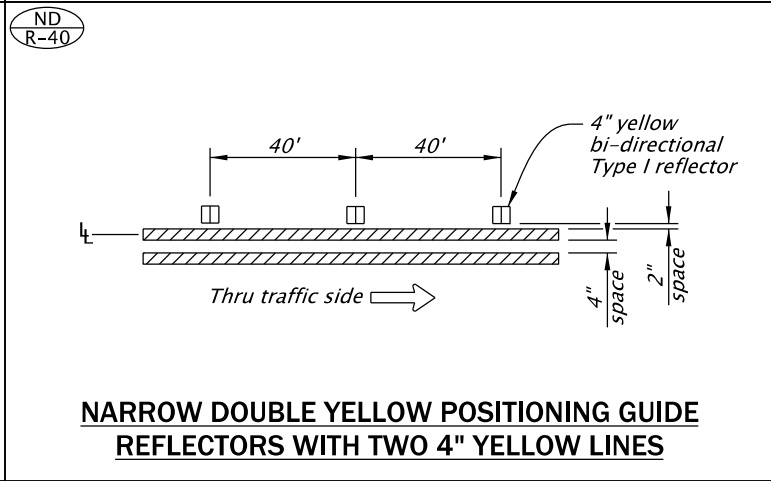
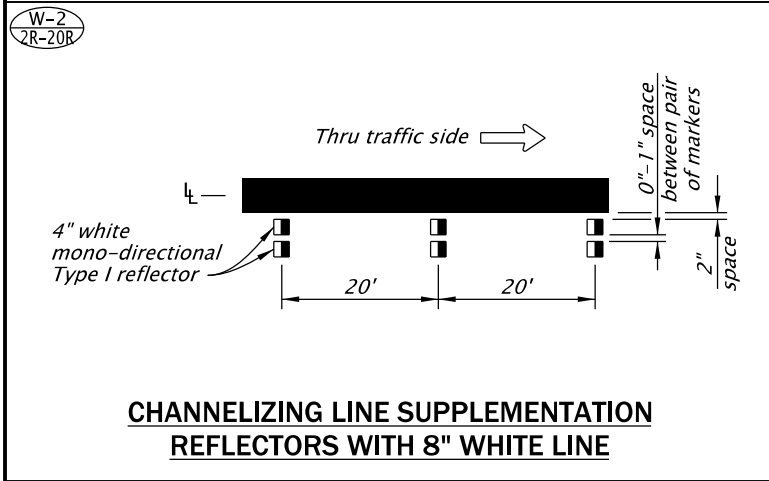
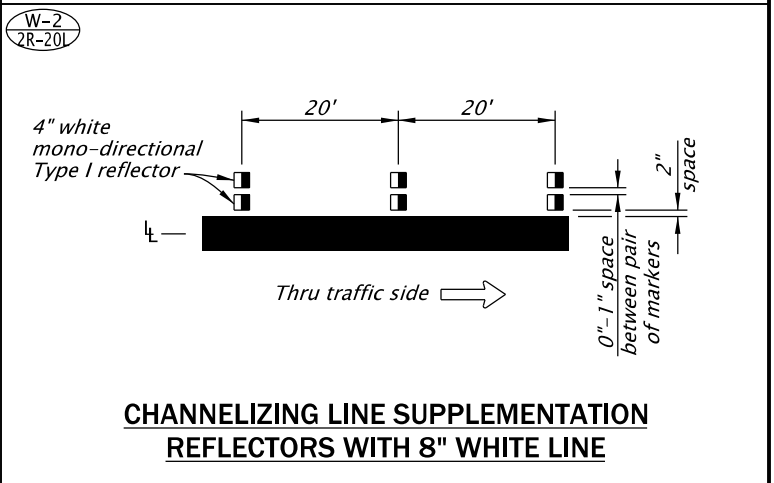
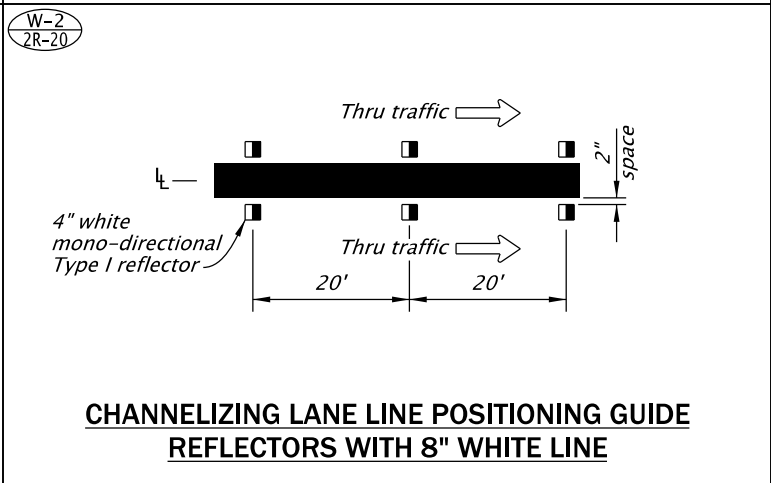
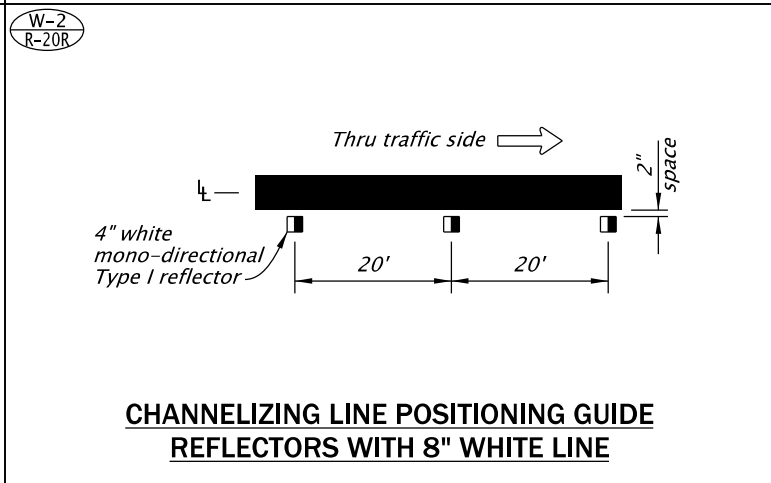
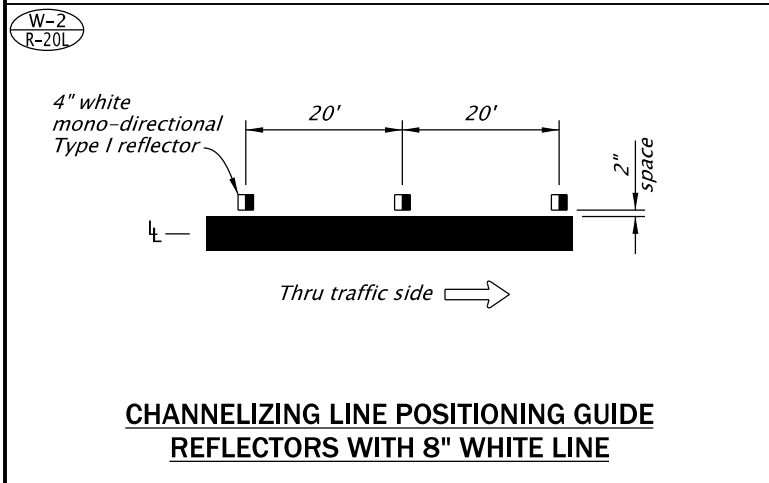
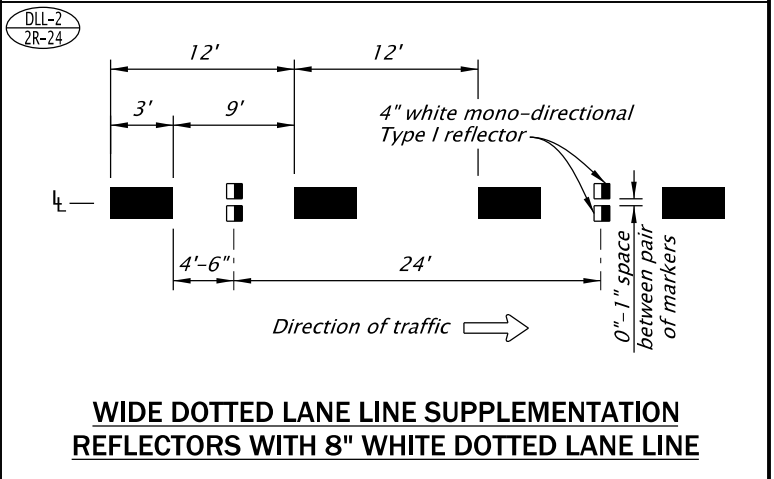
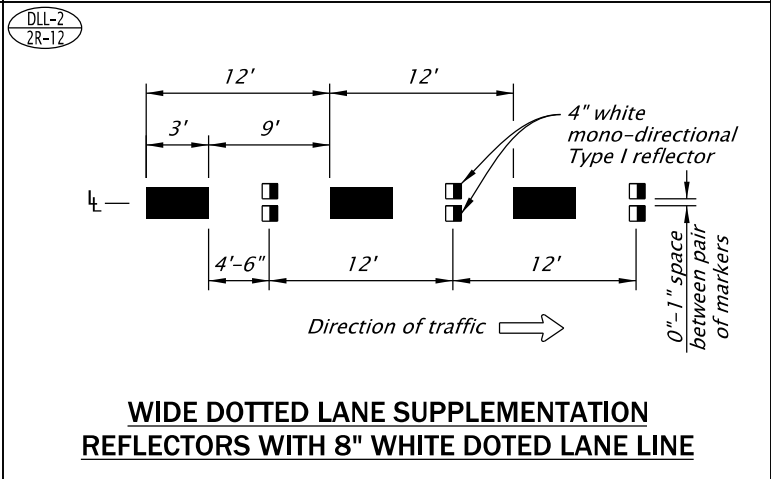
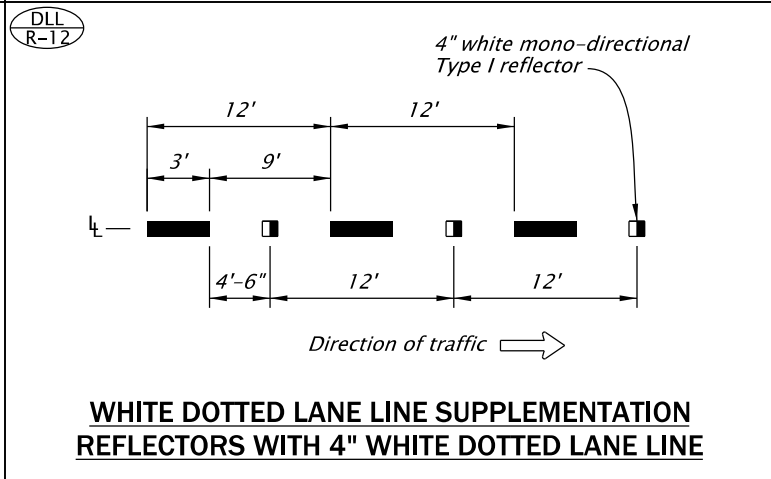
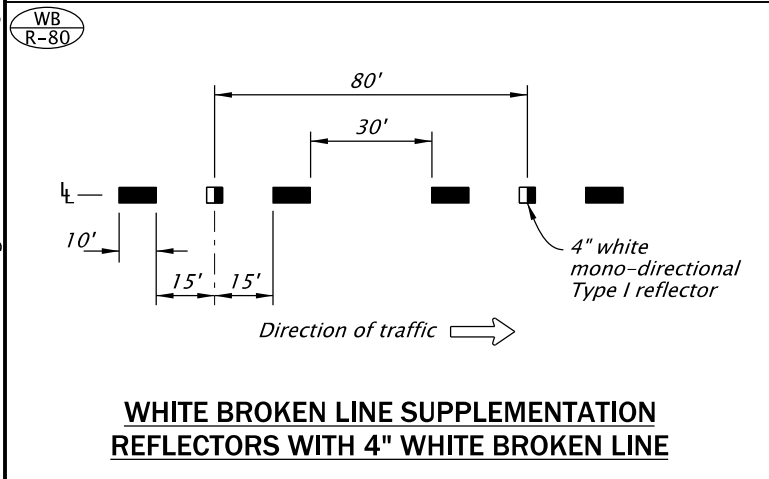
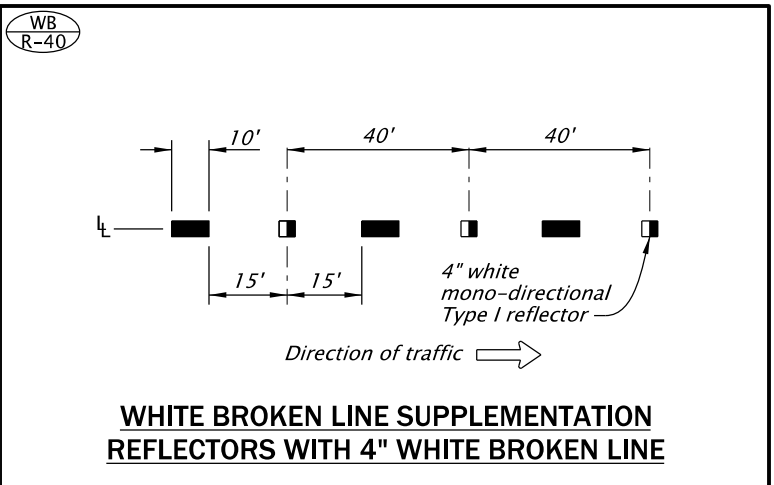
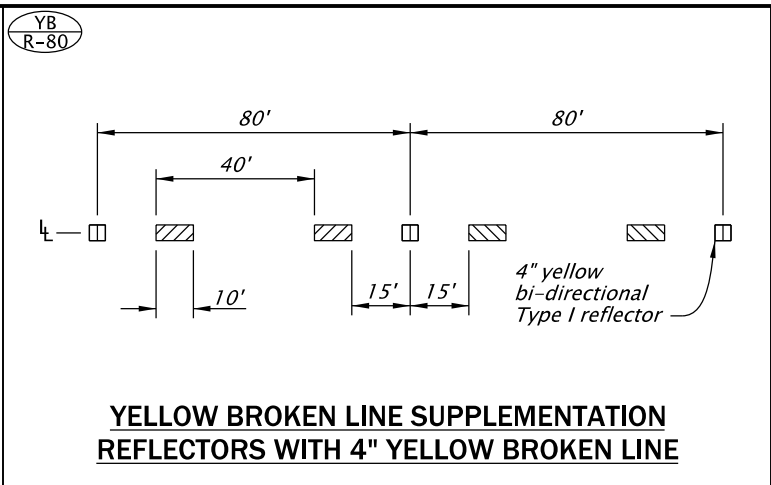
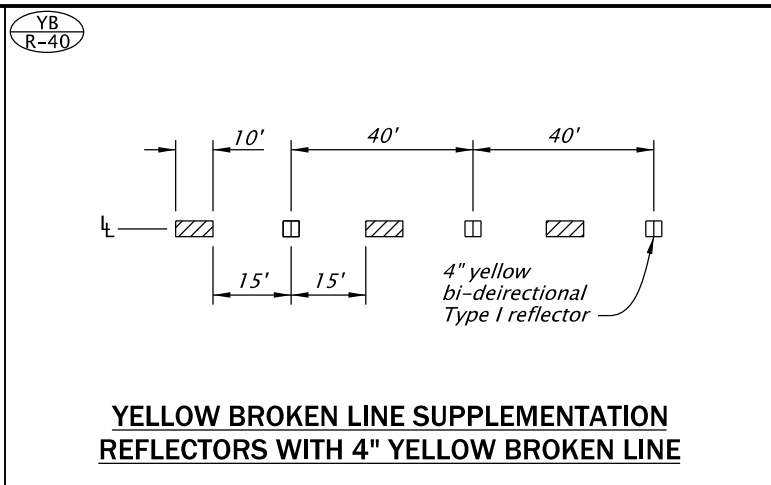
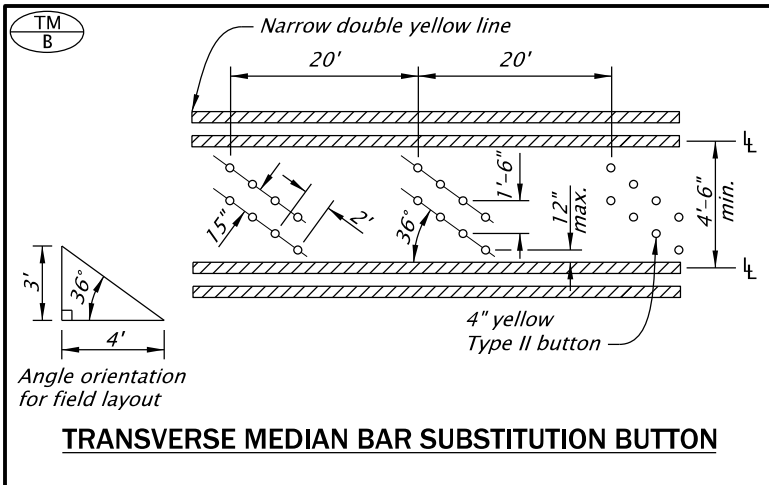
**PAVEMENT MARKING
STANDARD DETAIL BLOCKS**

2024

DATE	REVISION	DESCRIPTION
07-2020	1	Changed min. width of TM/B from 6' to 4.5'
01-2022	2	Removed "LANE" from W-2/R-20R title
CALC. BOOK NO.	N/A	SDR DATE: 01-03-2022

TM502

Effective Date: December 1, 2026 – May 31, 2027



GENERAL NOTES FOR ALL DETAILS THIS SHEET:

1. Surface mount Raised Pavement Markers (RPMs) unless otherwise specified.

LEGEND

- ← Direction of travel, increasing stationing or through traffic side
- └ Lane line dimensions are shown on the striping plans
- Mono-directional crystal white marker reflects white to the left in this symbol
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OREGON STANDARD DRAWINGS

PAVEMENT MARKING STANDARD DETAIL BLOCKS

2024

DATE	REVISION	DESCRIPTION
07-2026	UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504A	

CALC. BOOK NO. - - -	N/A - - -	SDR DATE - 10-JUL-2026 -	TM502A
----------------------	-----------	--------------------------	--------

ND
R-20

4" yellow
bi-directional
Type I reflector

20'

20'

4" space

2" space

Thru traffic side →

**NARROW DOUBLE YELLOW POSITIONING GUIDE
REFLECTORS WITH TWO 4" YELLOW LINES**

D
R-40

4" yellow
bi-directional
Type I reflector

40'

40'

4" space

4" space

for centerline ←

**DOUBLE NO-PASS POSITIONING GUIDE
REFLECTORS WITH TWO 4" YELLOW LINES**

D
R-20

4" yellow
bi-directional
Type I reflector

20'

20'

4" space

4" space

for centerline
or left turn lane ←

**DOUBLE NO-PASS POSITIONING GUIDE
REFLECTORS WITH TWO 4" YELLOW LINES**

Y
R-40

Median side ←

40'

40'

4" yellow
bi-directional
Type I reflector

4" space

2" space

Thru traffic side →

**YELLOW LINE POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINE**

Y
R-20

Median side
(typical raised median) ←

20'

20'

4" yellow
bi-directional
Type I reflector

4" space

2" space

Thru traffic side →

**YELLOW LINE POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINE**

NPL
R-40

4" space

4" yellow bi-directional
Type I reflector

10'

15'

15'

40'

40'

Increasing stationing →

**NO-PASS LEFT POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINES**

NPR
R-40

40'

40'

4" yellow
bi-directional
Type I reflector

10'

15'

15'

4" space

4" space

Increasing stationing →

**NO-PASS RIGHT POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINES**

TWL
R-40

40'

40'

4" yellow
bi-directional
Type I reflector

10'

15'

15'

4" space

4" space

Thru traffic side →

**TWO WAY LEFT TURN POSITIONING GUIDE
REFLECTORS WITH 4" YELLOW LINES**

GENERAL NOTES FOR ALL DETAILS THIS SHEET:

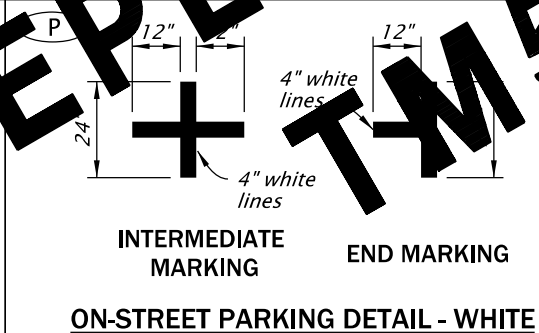
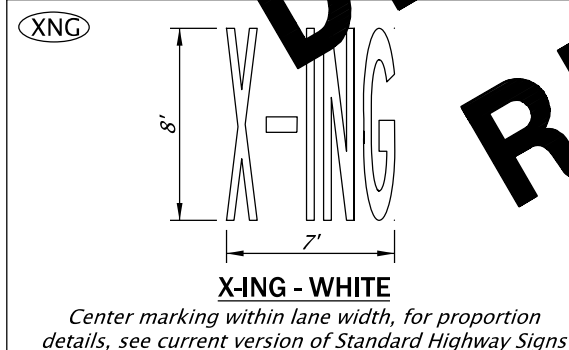
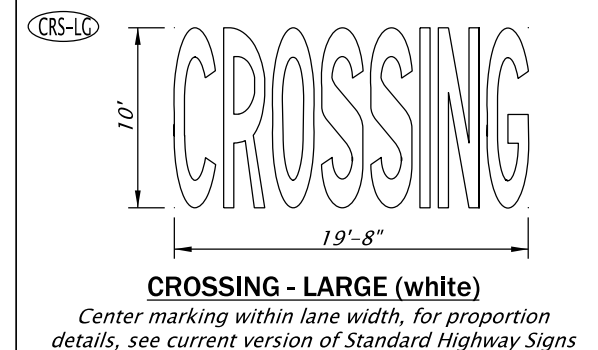
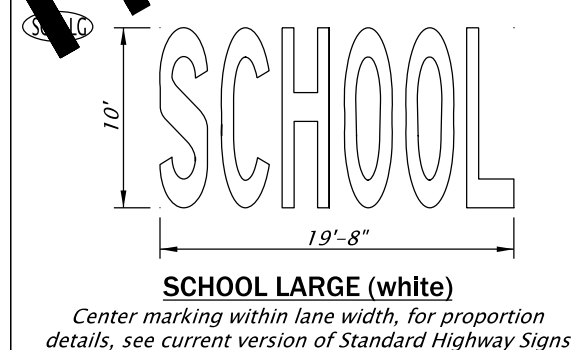
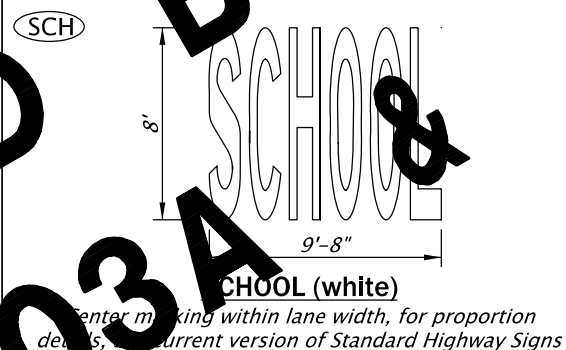
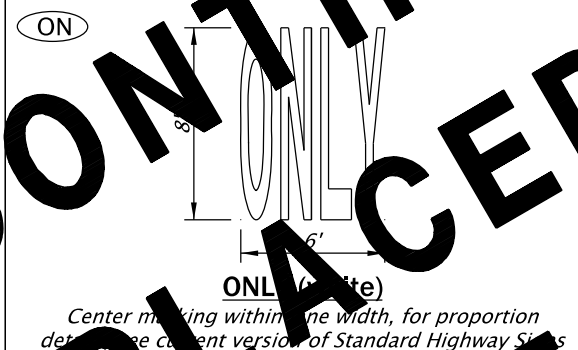
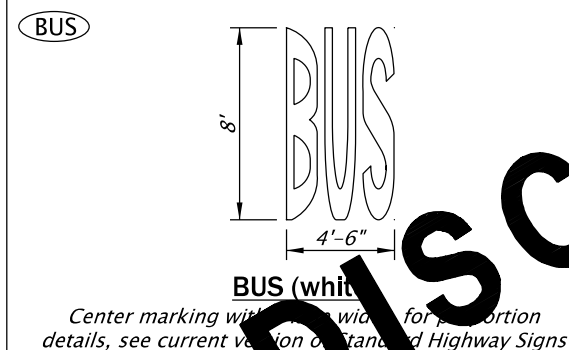
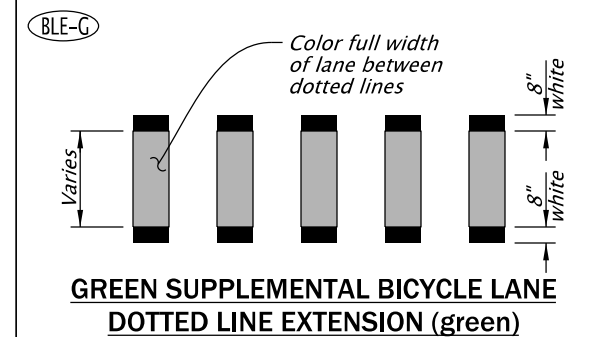
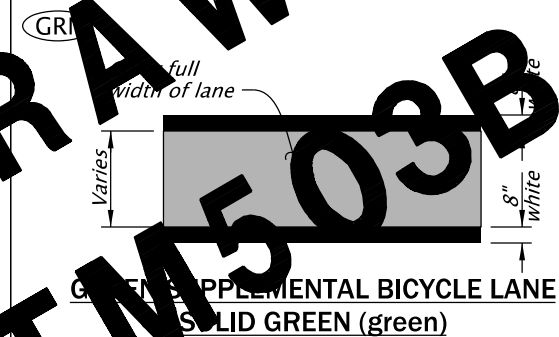
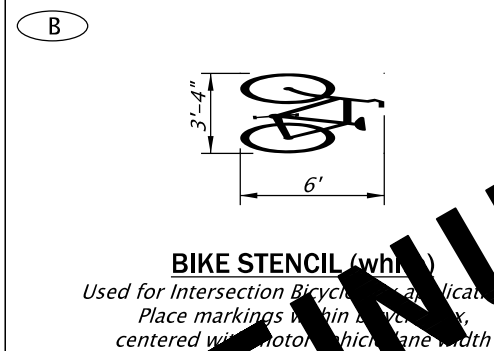
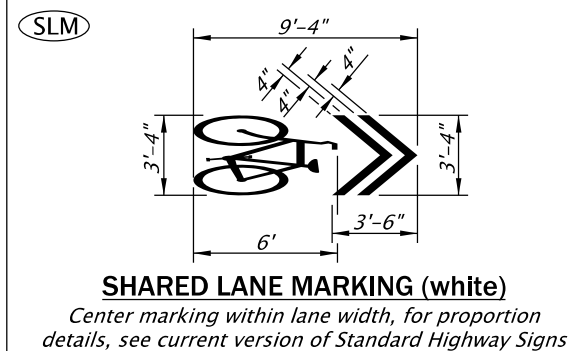
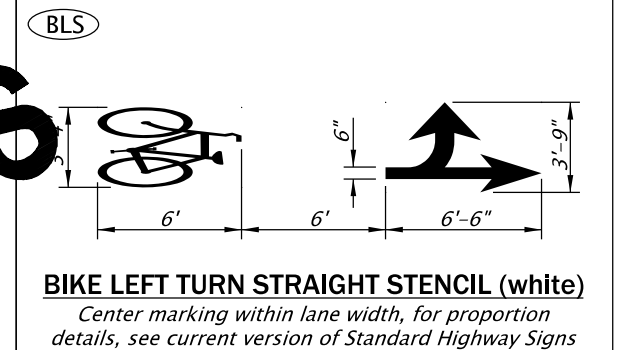
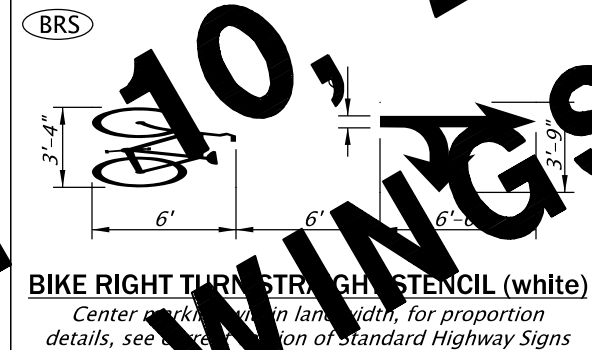
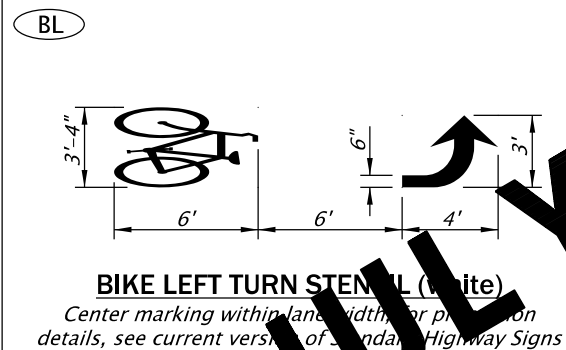
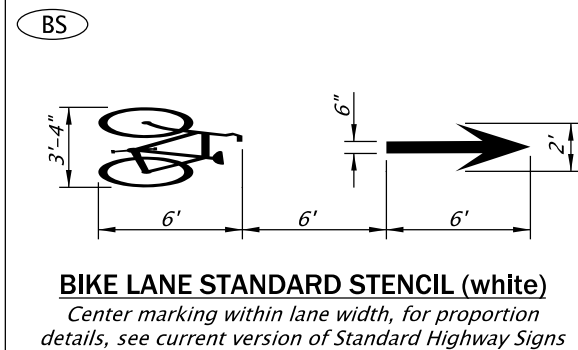
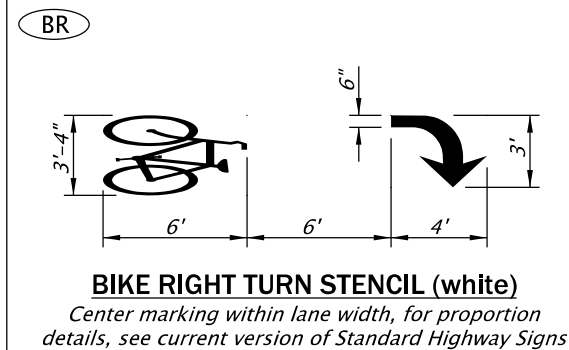
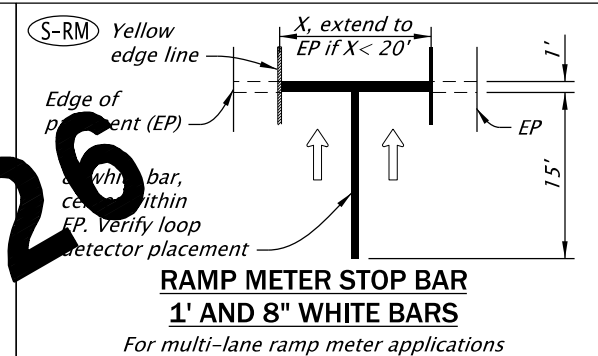
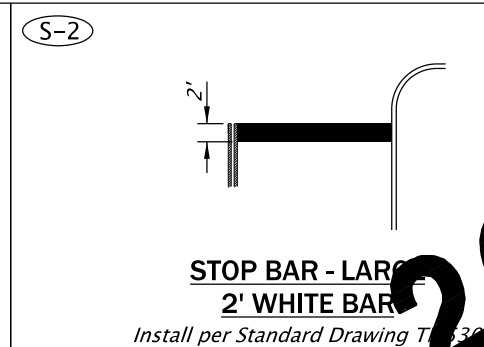
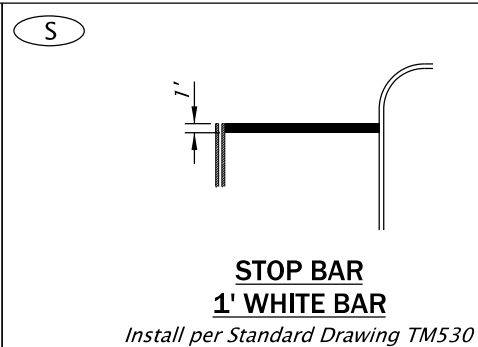
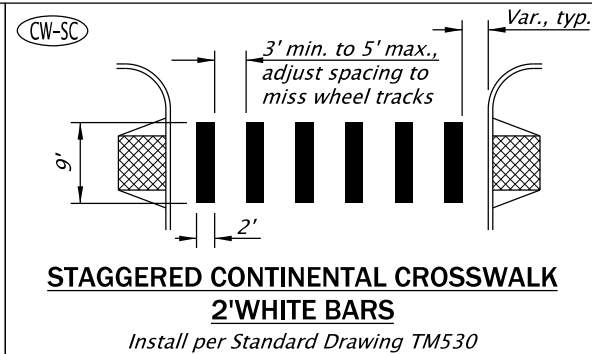
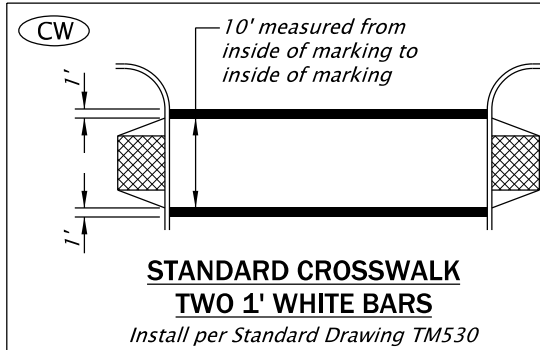
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OREGON STANDARD DRAWINGS			
PAVEMENT MARKING STANDARD DETAIL BLOCKS			
2024			
DATE	REVISION DESCRIPTION		
07-2026	UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504		
CALC. BOOK NO.	N/A	SDR DATE	10-JUL-2026
			TM502B



GENERAL NOTES:

1. Arrow, letter, and bicycle symbol dimensions nominal.

LEGEND



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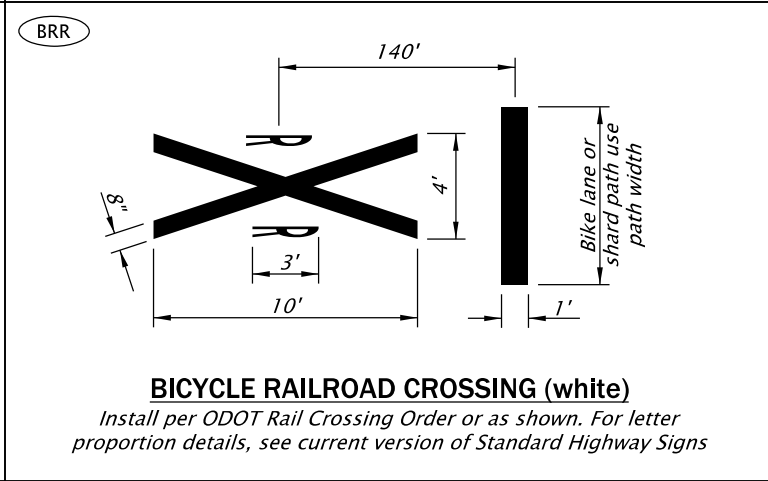
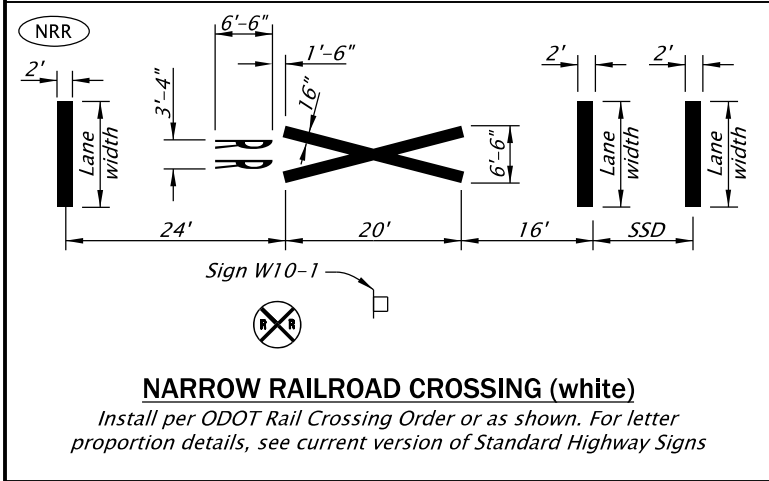
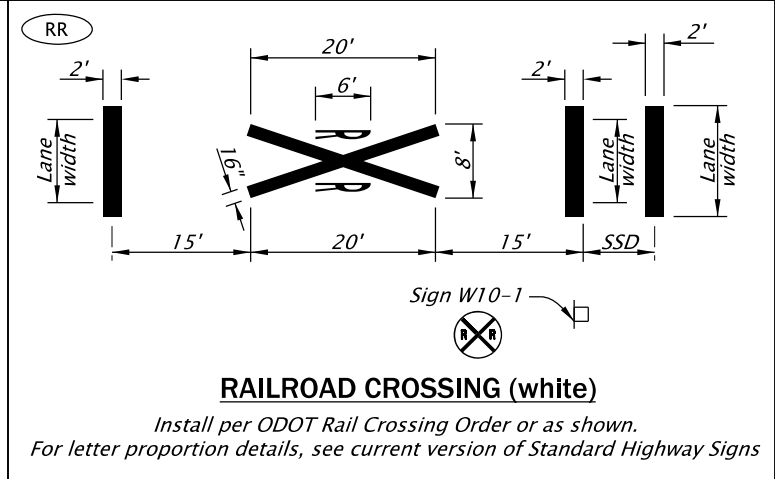
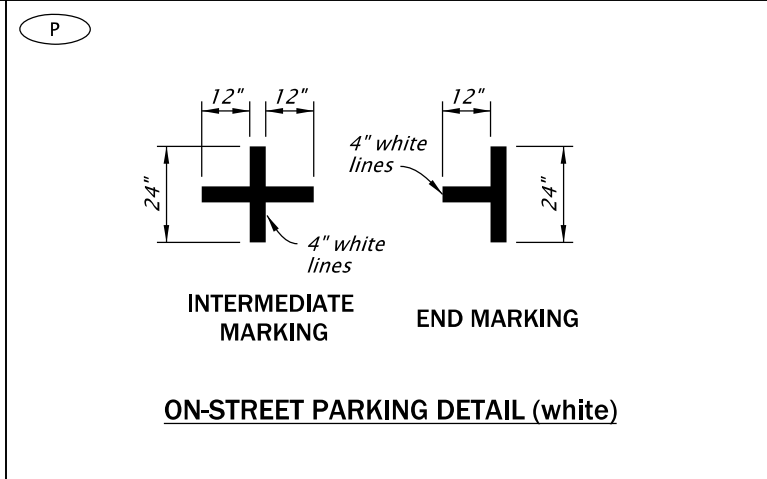
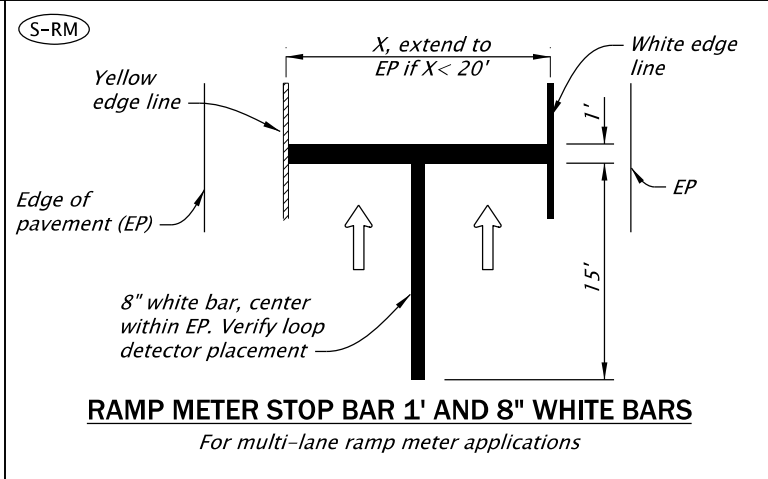
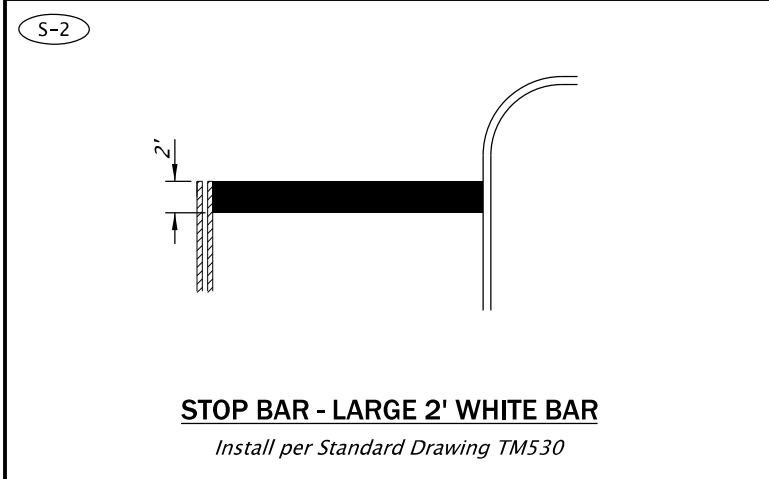
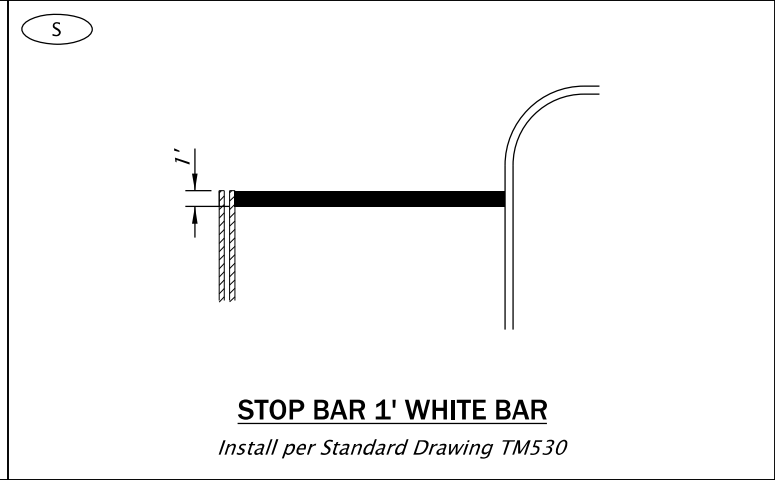
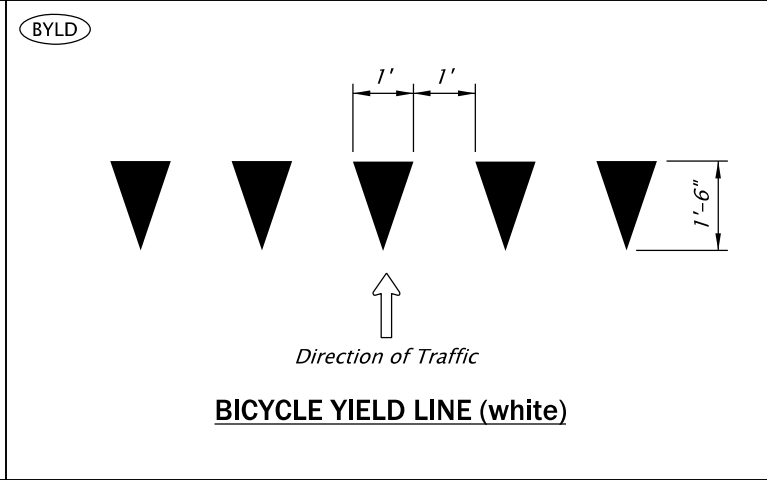
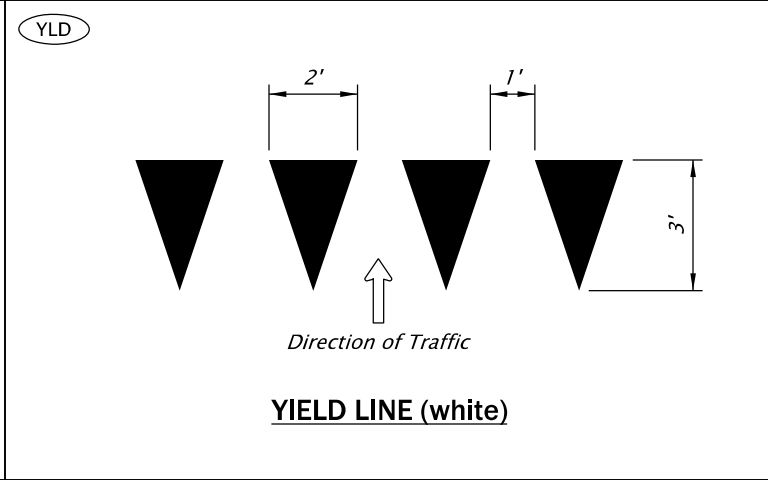
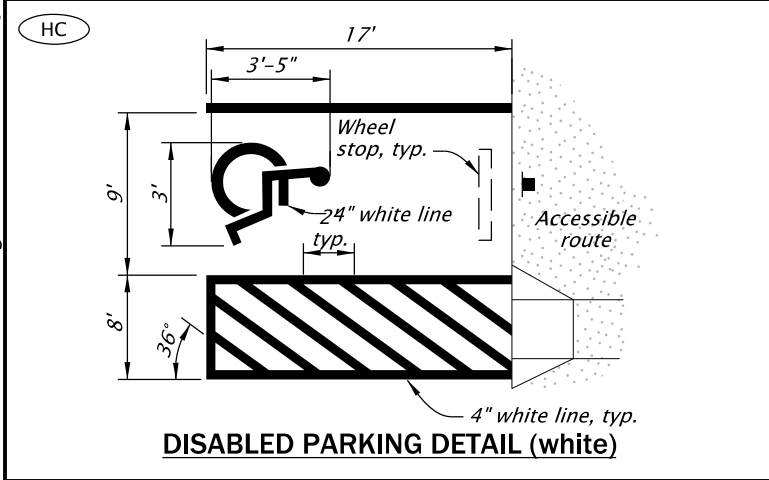
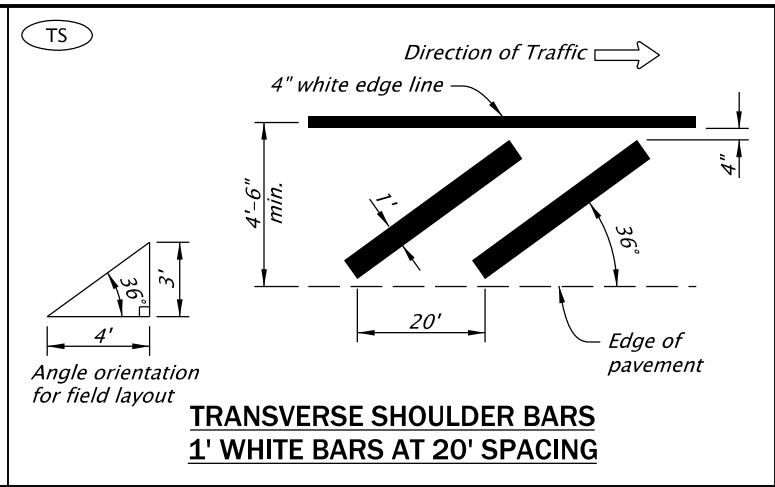
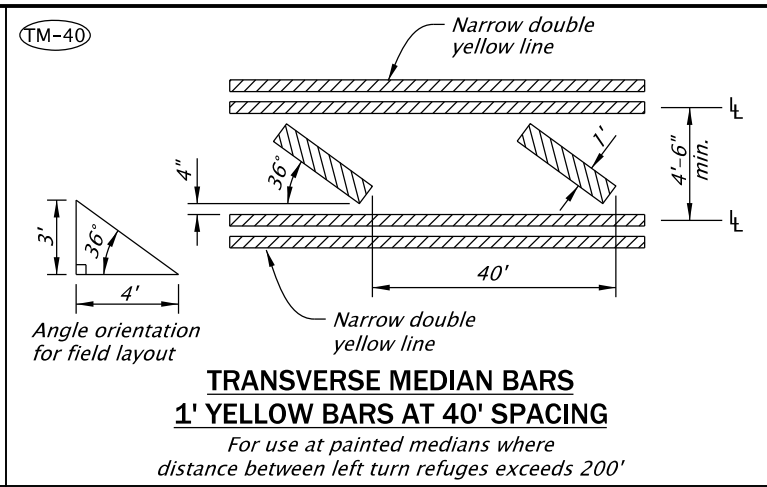
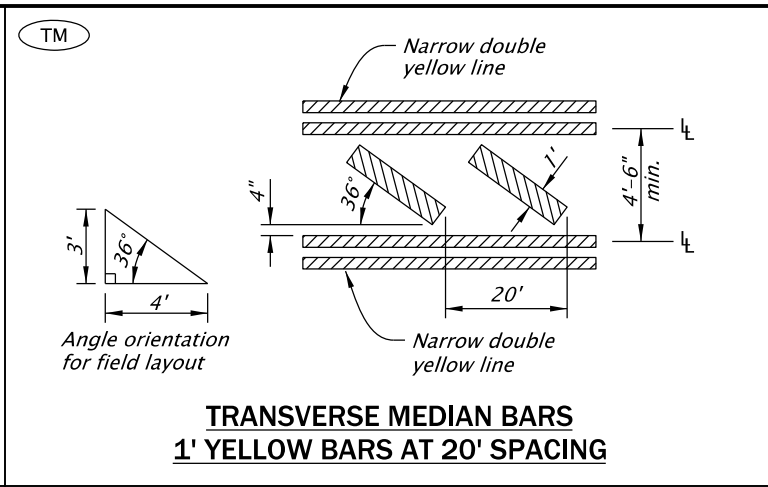
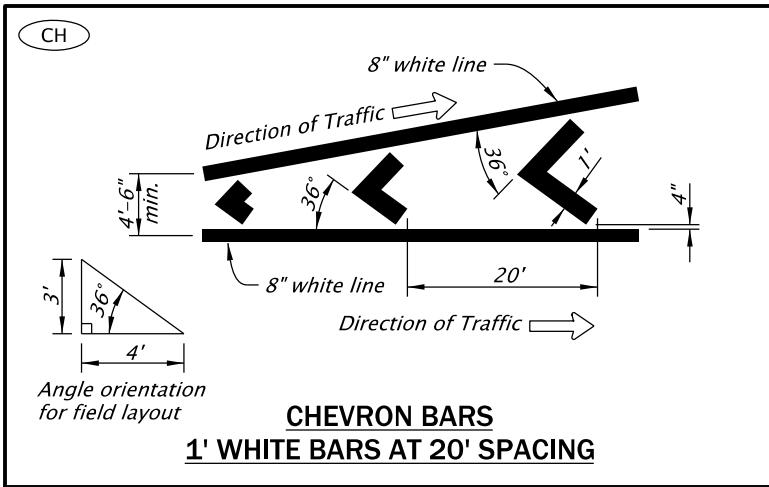
OREGON STANDARD DRAWINGS

PAVEMENT MARKING
STANDARD DETAIL BLOCKS

2024

DATE		REVISION DESCRIPTION	
07-2022		ADDED NOTE FOR MEASUREMENT OF STANDARD CROSSWALK	
07-2025		REPLACED HELMETED BICYCLIST SYMBOL WITH BICYCLE SYMBOL	
07-2025		UPDATED CAD STANDARDS	
CALC. BOOK NO. _ _ _ _ N/A _ _ _ _		SDR DATE: 11-JUL-2025	TM503

Effective Date: December 1, 2026 – May 31, 2027



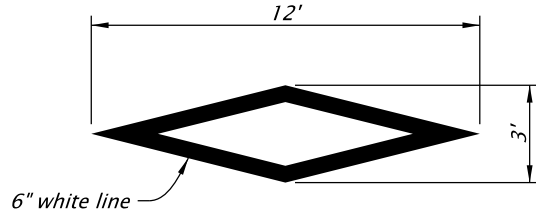
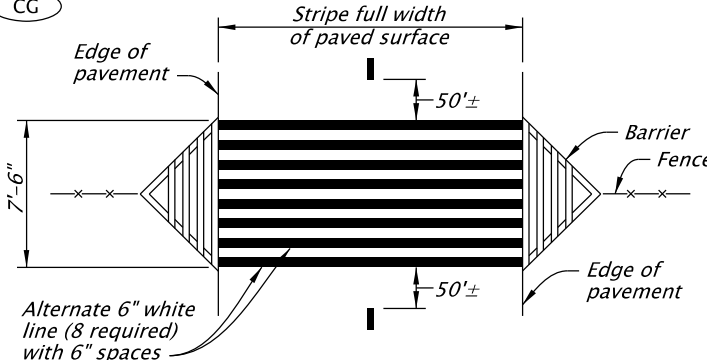
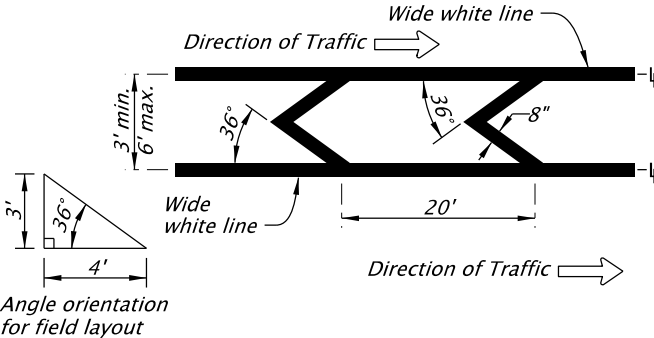
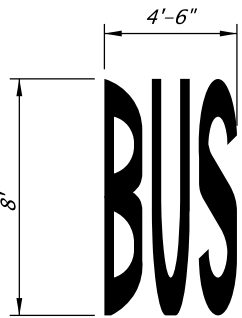
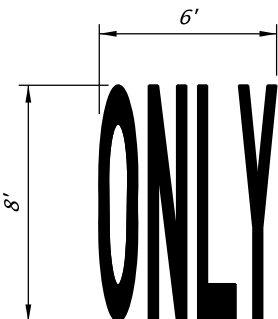
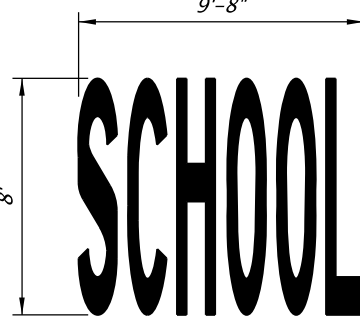
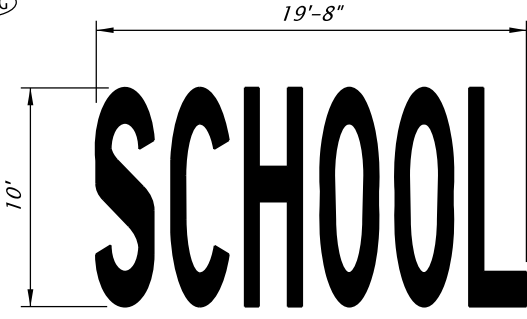
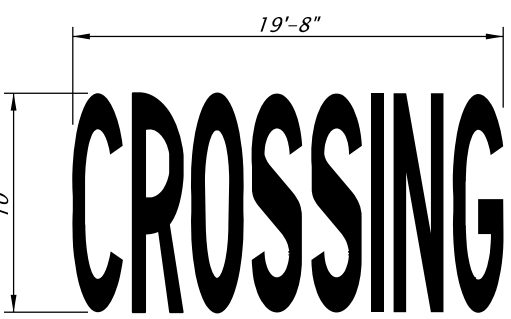
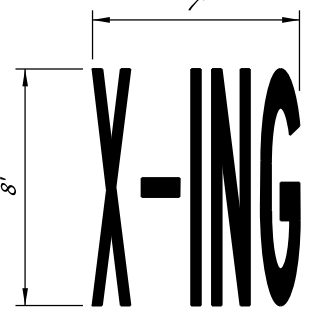
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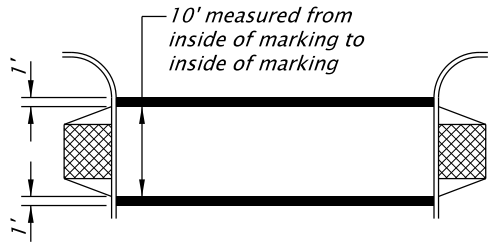
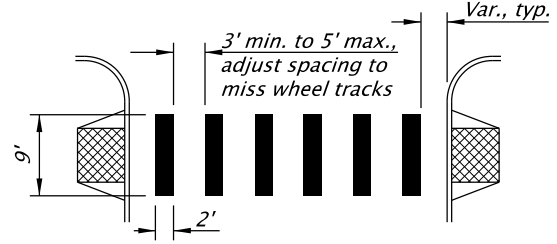
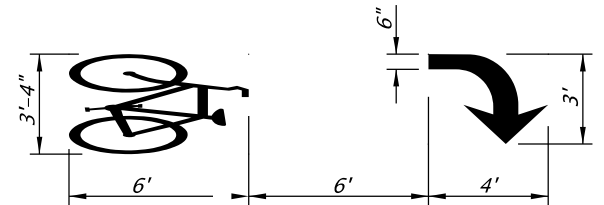
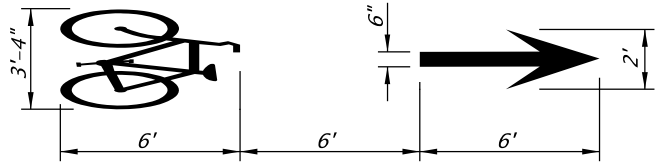
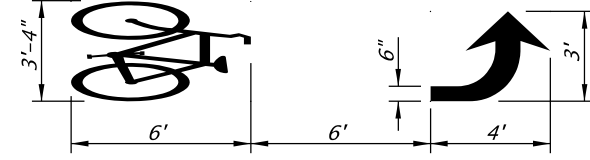
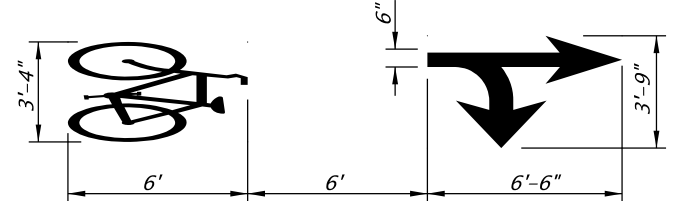
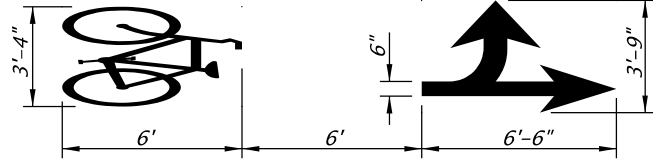
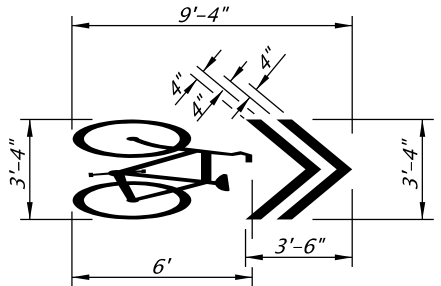
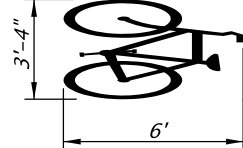
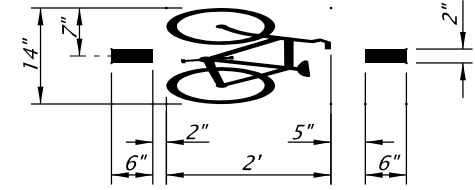
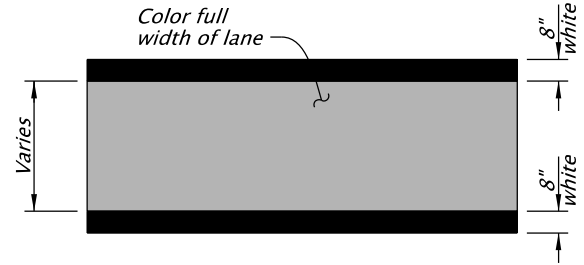
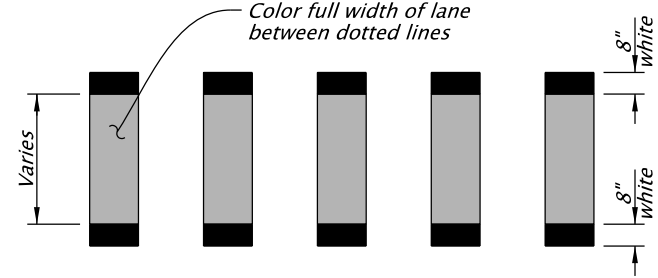
← Direction of travel, increasing stationing or through traffic side

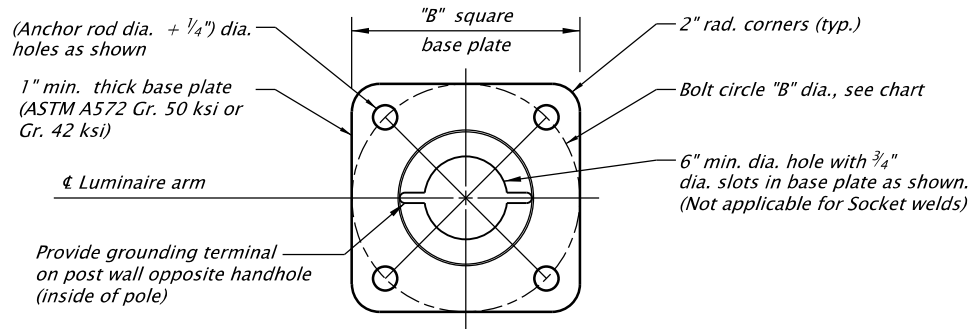
└ Lane line dimensions are shown on the striping plans

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.		
OREGON STANDARD DRAWINGS		
PAVEMENT MARKING STANDARD DETAIL BLOCKS		
2024		
DATE	REVISION	DESCRIPTION
07-2026	UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD	
	DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504	
CALC. BOOK NO.	N/A	SDR DATE
		10-JUL-2026
		TM503A

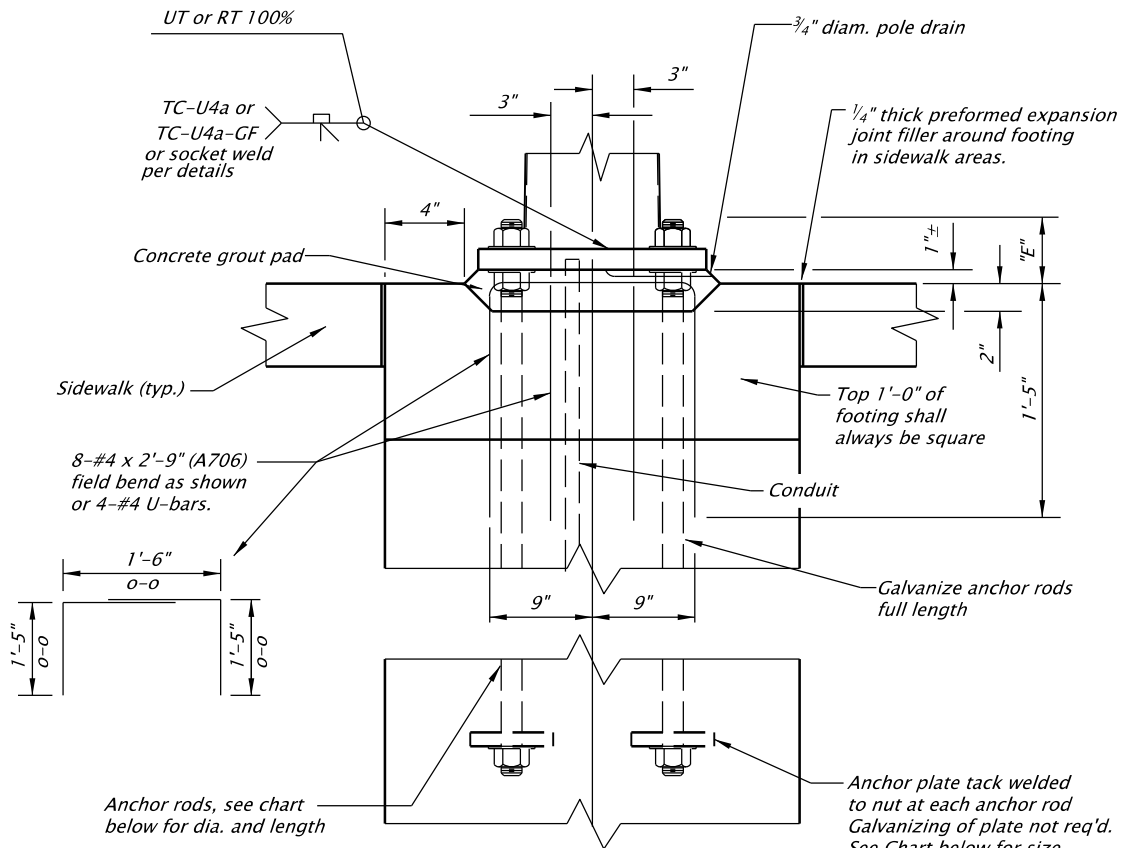
HOV  HIGH-OCCUPANCY VEHICLE DIAMOND DETAIL (white) <i>Center marking within lane width, for proportion details, see current version of Standard Highway Signs</i>	CG  CATTLE GUARD (white) <i>For barrier and fence details, see Std. Dwg. RD110</i>	CH-BS  CHEVRON BARS - BUFFER SPACE 8" WHITE BARS AT 20' SPACING	BUS  BUS (white) <i>Center marking within lane width, for proportion details, see current version of Standard Highway Signs</i>																
ON  ONLY (white) <i>Center marking within lane width, for proportion details, see current version of Standard Highway Signs</i>	SCH  SCHOOL (white) <i>Center marking within lane width, for proportion details, see current version of Standard Highway Signs</i>	SCH-LG  SCHOOL LARGE (white) <i>Center marking within lane width, for proportion details, see current version of Standard Highway Signs</i>	CRS-LG  CROSSING - LARGE (white) <i>Center marking within lane width, for proportion details, see current version of Standard Highway Signs</i>																
XNG  X-ING (white) <i>Center marking within lane width, for proportion details, see current version of Standard Highway Signs</i>	LRT  LIGHT RAIL TRANSIT (white) <i>Center marking within lane width, for proportion details, see current version of Standard Highway Signs</i>																		
		LEGEND  Direction of travel, increasing stationing or through traffic side  Lane line dimensions are shown on the striping plans	The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.	All materials shall be in accordance with the current Oregon Standard Specifications. OREGON STANDARD DRAWINGS PAVEMENT MARKING STANDARD DETAIL BLOCKS 2024 <table><tr><th>DATE</th><th>REVISION</th><th>DESCRIPTION</th></tr><tr><td>07-2026</td><td>UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD</td><td></td></tr><tr><td></td><td>DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504</td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table> CALC. BOOK NO. - - - N/A - - - SDR DATE - 10-JUL-2026 - TM503B	DATE	REVISION	DESCRIPTION	07-2026	UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD			DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504							
DATE	REVISION	DESCRIPTION																	
07-2026	UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD																		
	DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504																		

CW  STANDARD CROSSWALK TWO 1' WHITE BARS Install per Standard Drawing TM530	CW-SC  STAGGERED CONTINENTAL CROSSWALK 2' WHITE BARS Install per Standard Drawing TM530	BR  BIKE RIGHT TURN STENCIL (white) Center marking within lane width, for proportion details, see current version of Standard Highway Signs	BS  BIKE LANE STANDARD STENCIL (white) Center marking within lane width, for proportion details, see current version of Standard Highway Signs																								
BL  BIKE LEFT TURN STENCIL (white) Center marking within lane width, for proportion details, see current version of Standard Highway Signs	BRS  BIKE RIGHT TURN STRAIGHT STENCIL (white) Center marking within lane width, for proportion details, see current version of Standard Highway Signs	BLS  BIKE LEFT TURN STRAIGHT STENCIL (white) Center marking within lane width, for proportion details, see current version of Standard Highway Signs	SLM  SHARED LANE MARKING (white) Center marking within lane width, for proportion details, see current version of Standard Highway Signs																								
B  BIKE STENCIL (white) Used for Intersection Bicycle Box applications. Place markings within bicycle box, centered with motor vehicle lane width	BD  BICYCLE DETECTOR MARKING (white) Place Bicycle Detector Pavement Marking in optimum location where bicycle actuates the traffic signal	GRN  GREEN SUPPLEMENTAL BICYCLE LANE SOLID GREEN (green)	BLE-C  GREEN SUPPLEMENTAL BICYCLE LANE DOTTED LINE EXTENSION (green)																								
		GENERAL NOTES FOR ALL DETAILS THIS SHEET: 1. Arrow and bicycle symbol dimensions are nominal.	The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer. All materials shall be in accordance with the current Oregon Standard Specifications. OREGON STANDARD DRAWINGS PAVEMENT MARKING STANDARD DETAIL BLOCKS 2024 <table><tr><th>DATE</th><th>REVISION</th><th>DESCRIPTION</th></tr><tr><td>07-2026</td><td>UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD</td><td></td></tr><tr><td></td><td>DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504</td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td>CALC. BOOK NO.</td><td>N/A</td><td>SDR DATE</td></tr><tr><td></td><td></td><td>10-JUL-2026</td></tr></table> TM504	DATE	REVISION	DESCRIPTION	07-2026	UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD			DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504											CALC. BOOK NO.	N/A	SDR DATE			10-JUL-2026
DATE	REVISION	DESCRIPTION																									
07-2026	UPDATED CAD STANDARDS, REARRANGED PAVEMENT MARKING STANDARD																										
	DETAIL BLOCKS, RENUMBERED TM500 THRU TM504 TO TM500A THRU TM504																										
CALC. BOOK NO.	N/A	SDR DATE																									
		10-JUL-2026																									



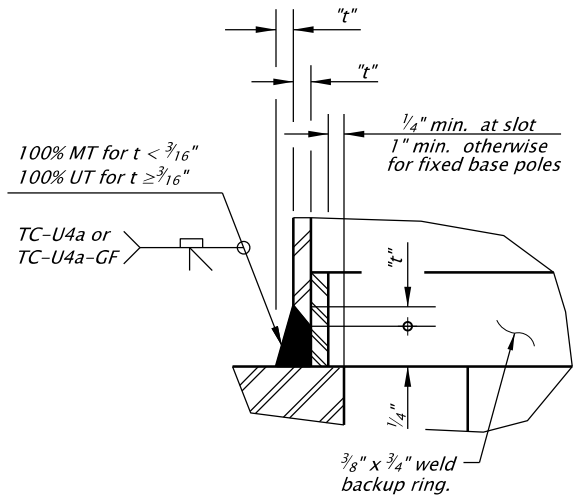
PLAN - BASE PLATE - FIXED BASE POLE

No Scale



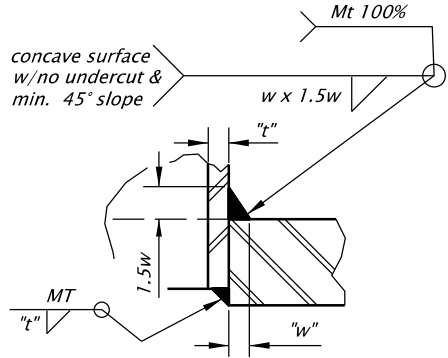
FIXED BASE DETAILS

No Scale



TC-U4a

Size of fillet weld "w" as req'd by calculations, but not less than $1.414 "t"$ or $1.414 "t" \times F_y \text{ shaft when } F_y \text{ base plate}$
base plate $F_y < \text{shaft } F_y$



SOCKET

BASE PLATE WELDS

No Scale

FIXED BASE CHART (Single Luminaire Arm)									
Pole & Arm Dimensions		4 Anchor rods req'd per pole, each with 3 nuts, 2 washers & 1 anchor plate						Footing	
"BL"	"LA"	Anchor rod Diameter	"B"	Length	Thread Top	Proj. "E" max.	Anchor plate size	Width (Dia.)	Depth
30' or less	20' or less	1" F1554 Gr. 36	14"	3'-6"	6"	4 1/4"	4" sq. x 5/8"	2'-6"	6'-6"
> 30' thru 40'	20' or less	1 1/4" F1554 Gr. 36	15"	3'-6"	6"	4 3/4"	4" sq. x 5/8"	2'-6"	7'-6"
> 40' thru 50'	20' or less	1 1/2" F1554 Gr. 36	17 1/2"	3'-6"	6"	5 1/4"	4" sq. x 5/8"	3'-0"	8'-6"
> 50' thru 60'	20' or less	1 1/2" F1554 Gr. 36	17 1/2"	3'-6"	6"	5 1/4"	4" sq. x 5/8"	3'-0"	9'-0"

- Notes:
- The maximum slope is 1V:3H.
 - The assumed cohesive soil minimum undrained shear strength, c , is 600 psf. The assumed non-cohesive soil friction angle is 25 degrees, the bulk weight is 100 pcf, and fully saturated.
 - Engineer of Record shall confirm site specific conditions satisfy the assumed soil parameters and satisfy the slope requirements. If conditions are not satisfied, Engineer of Record must adjust the shaft design as needed.

FIXED DOUBLE ARM POLES NOTE:
Foundation and anchor rod requirements for fixed double arm poles to be determined by contractor.

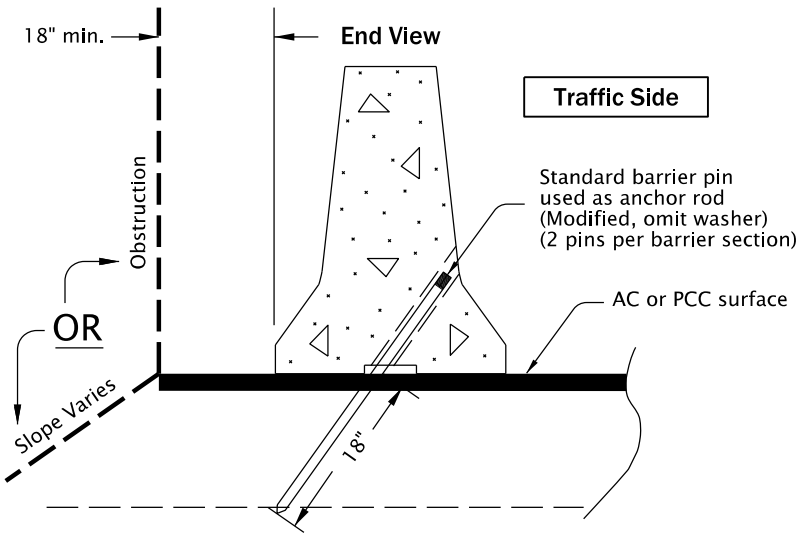
LUMINAIRE BASE ON STRUCTURE NOTE:
See contract plans for details not shown.

Accompanied by dwgs. TM629, TM630

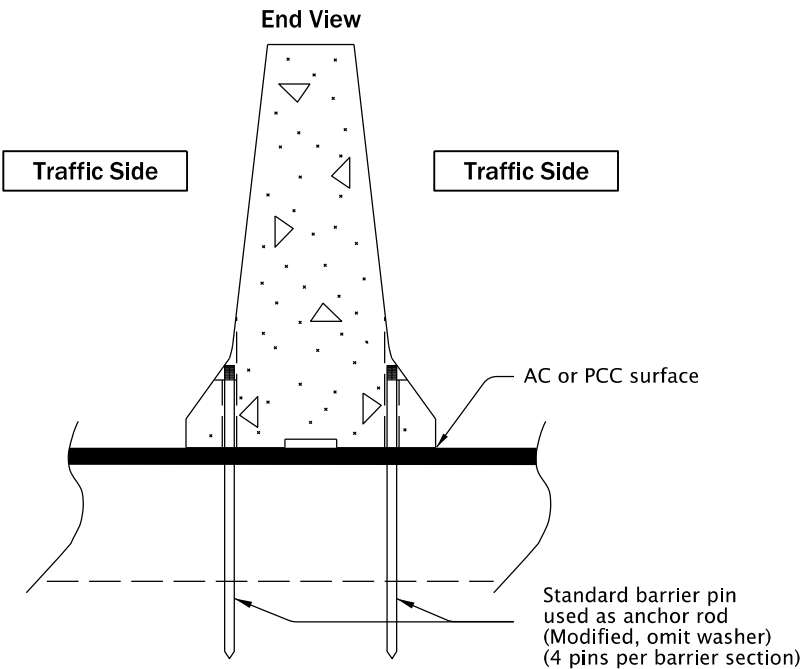
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
FIXED BASE LUMINAIRE SUPPORTS			
BASE PLATE & FOOTING DETAILS			
2024			
DATE	REVISION DESCRIPTION		
07-2021	ADDED TM631 FIXED BASE LRFD DRAWING		
07-2026	ADDED LUMINAIRE BASE ON STRUCTURE NOTE		
CALC. BOOK NO.	7481	SDR DATE	10-JUL-2026
			TM631

- NOTES:
- DO NOT USE ON BRIDGE DECKS. Restrain barrier on bridge decks according to Bridge Design Manual. See Chapter 1.13.11.
 - Predrill pin holes for PCC pavement placement.
 - Excavation height greater than 3 feet requires proper backslope based on angle of repose, or shoring as directed.
 - Place temporary barrier on smooth, solid surfacing. Maintain, smooth solid surfacing for clear area behind temporary barrier.
 - Follow manufacturer recommendations when securing barriers other than concrete.
 - To be accompanied by Dwg. Nos. RD503, RD515 & RD516.



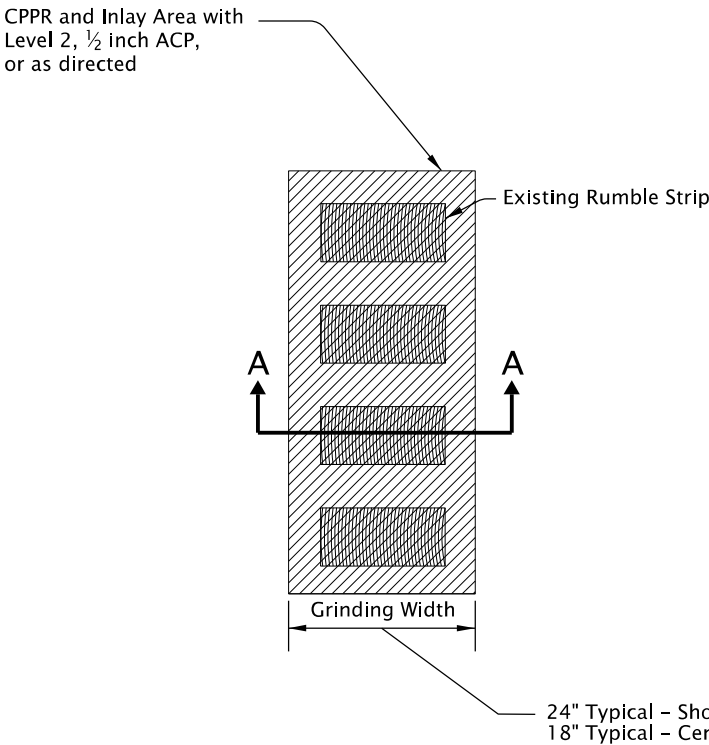
SECURING TEMPORARY CONCRETE BARRIER
(Shoulder Installation)



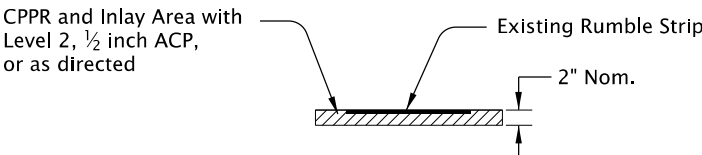
SECURING TEMPORARY TALL CONCRETE BARRIER
(Median Installation)

- NOTES:
- CPPR and inlay existing rumble strips prior to staging traffic across the area. Common application is staging for freeway crossovers and lane shifts.
 - Remove and replace existing striping as required.

 UNDER CONSTRUCTION



EXISTING RUMBLE STRIP REMOVAL

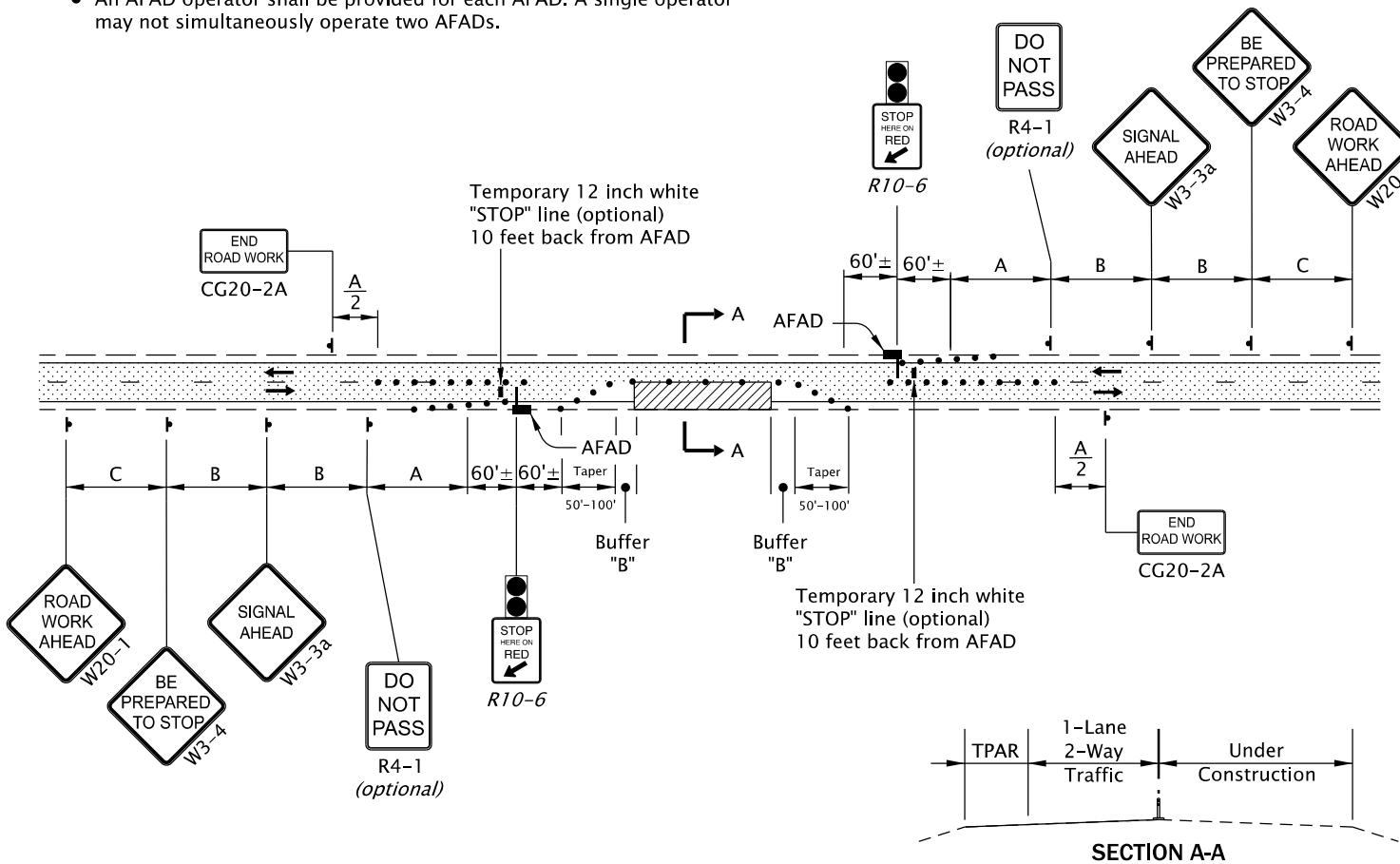


SECTION A-A

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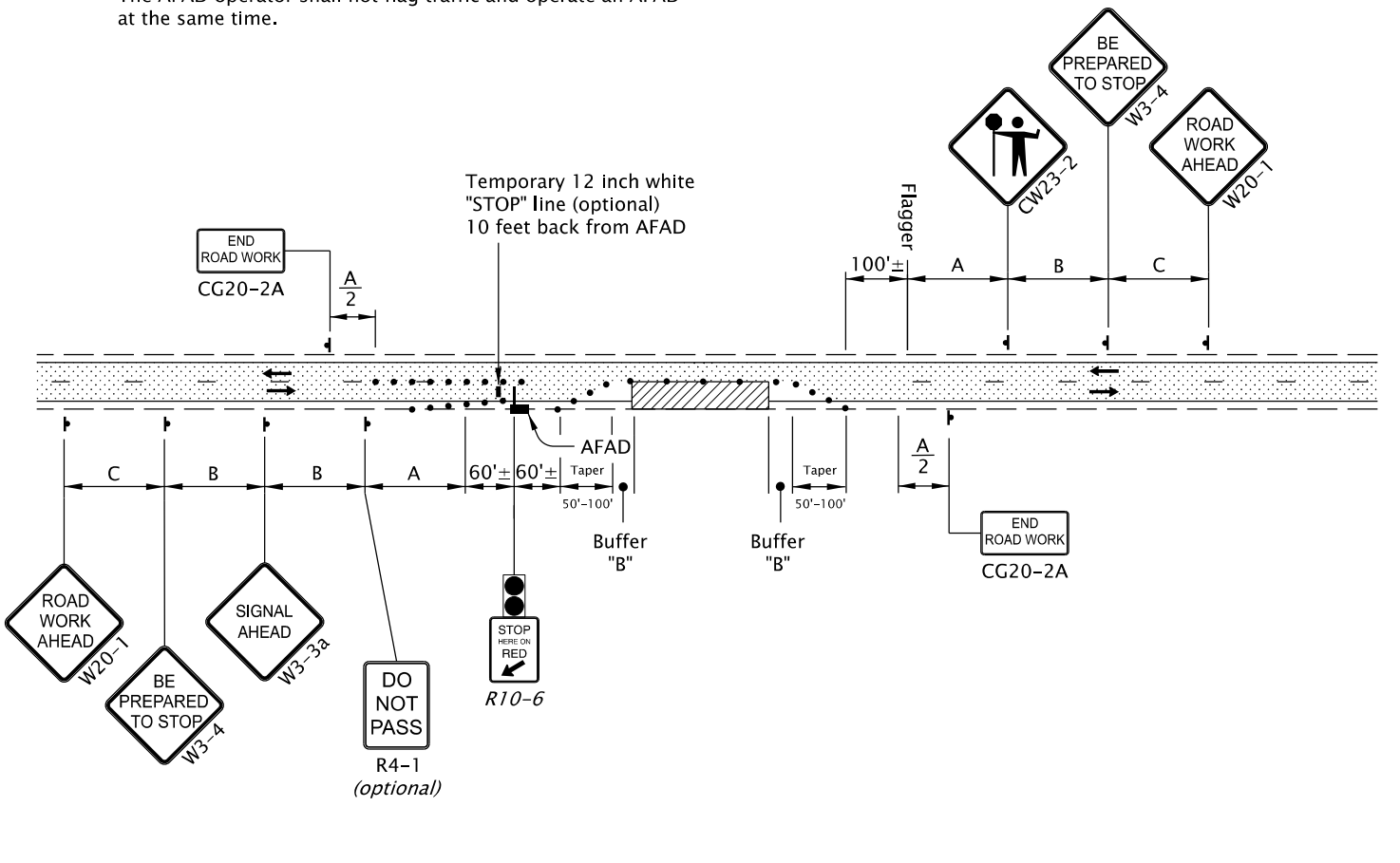
All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
TEMPORARY CONCRETE BARRIER AND RUMBLE STRIP DETAILS			
2024			
DATE	REVISION	DESCRIPTION	
07-2021	Revised	clear space to obstruction	
01-2022	Added note for	surfacing behind barrier	
07-2024	Added note for	securing barriers other than concrete	
07-2024	Added references to roadway details for	barrier pin and loop, and anchoring	
07-2026	Updated Bridge Design Manual reference		
CALC. BOOK NO.	DATE	N/A	10-JUL-2026
			TM830

- NOTES:
- An AFAD operator shall be provided for each AFAD. A single operator may not simultaneously operate two AFADs.



2-Lane, 2-Way Roadway
ONE LANE CLOSURE, TWO AFADs

- NOTES:
- The AFAD operator shall not flag traffic and operate an AFAD at the same time.



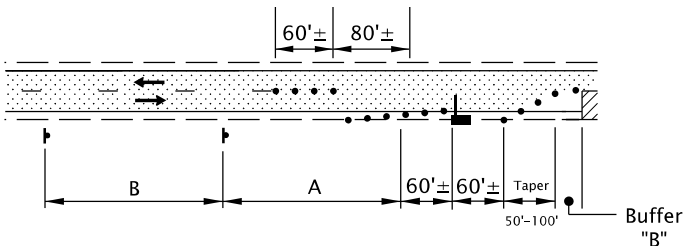
2-Lane, 2-Way Roadway
ONE LANE CLOSURE, ONE AFAD & ONE FLAGGER

GENERAL NOTES FOR ALL DETAILS:

- At night, flagger stations shall be illuminated according to the "FLAGGER STATION LIGHTING DELINEATION" detail on Dwg No. TM800.
- Bottom of lens housing shall be a minimum of 7 ft. above surface when mounted on shoulder and at least 17 ft. above any portion of the travel lane.
- The gate arm shall cover at least one half of the approaching vehicle travel lane.
- Signing and other TCD installed in conjunction with the work area, shall move with the work area.
- Use 1/3 "L" taper for shoulder closure, where necessary.
- For Taper Length ("L") and Buffer Length ("B") shown on this sheet, use the "MINIMUM LENGTHS TABLE" shown on Drg. No. TM800.
- The AFAD operator shall be a certified flagger who has been trained in the operation of the AFAD in use.
- Operator shall operate AFAD from a designated area. Designated area should maintain visual presence of the AFAD and should be at least 50' away from the AFAD and have an escape route available for the operator.
- See "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Drg. TM800 for sign spacing A, B, and C.
- Include "WAIT FOR FLAGGER" (CR4-23) signs mounted on Type II Barricade located approx. 50' before each Flagger Station.
- Remove existing striping and install temporary striping as required.
- The "SIGNAL HEAD" (W3-3a) sign may be substituted with the Signal Ahead (W3-3) symbol sign.
- Cover existing passing lane signing, as directed.
- When extended traffic queues develop during AFAD operations, protect traffic by providing advance flaggers(s) and signing according to the "Extended Traffic Queues Detail" shown on Standard Drawing TM850.
- When AFAD is not in use for less than one work shift, turn off AFAD, or switch YELLOW lens to flashing mode, and cover or remove all accompanying signing.
- When AFAD is not in use for longer than one work shift, remove AFAD and all accompanying signing from the roadway.
- Do not use the AFAD to control more than one lane of approaching traffic.
- Use temporary pavement markings or a white portable rumble strip for temporary stop line. Remove temporary stop line when AFAD is no longer in use.
- Tubular markers along centerline placed in advance of AFAD to first sign are optional, unless the DO NOT PASS sign is used.
- Include "WAIT FOR FLAGGER" (CR4-23) signs mounted on Type II Barricade located approx. 50' before each Flagger Station.
- Coordinate and control pedestrians movements through the TPAR using flaggers, other TCM, or as directed. When the existing shoulder is greater than or equal to 4' wide, provide a minimum of 4' of width for the TPAR.
- When using pilot cars with flaggers to control traffic during paving operations, the Tubular Marker spacing along centerline may be increased to 200' within the Activity Area, as shown or as directed.

- To be accompanied by Dwg. Nos. TM820 & TM821.

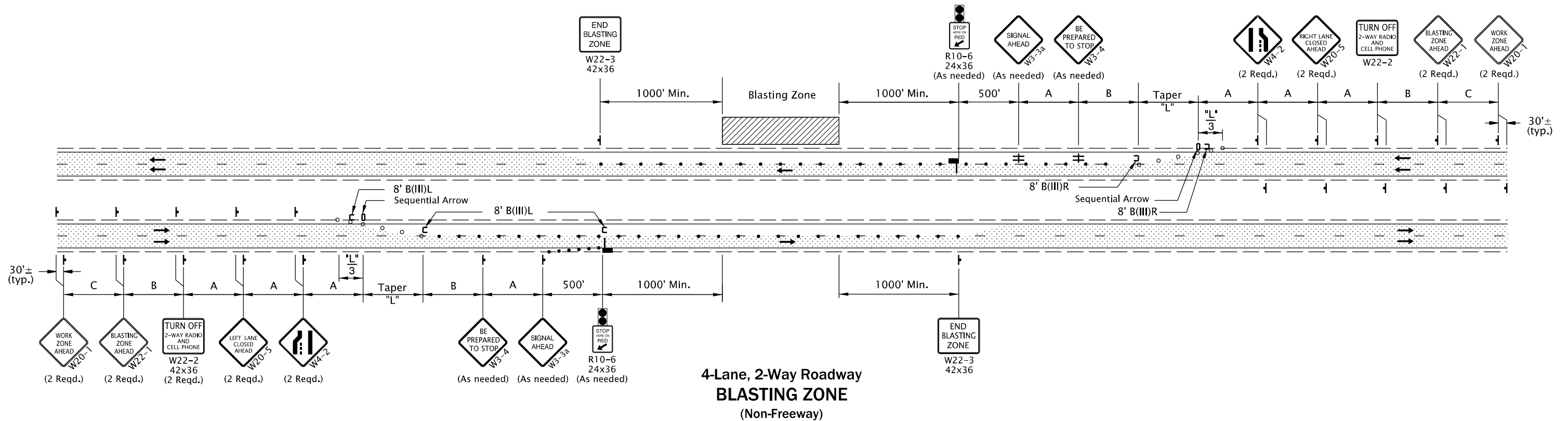
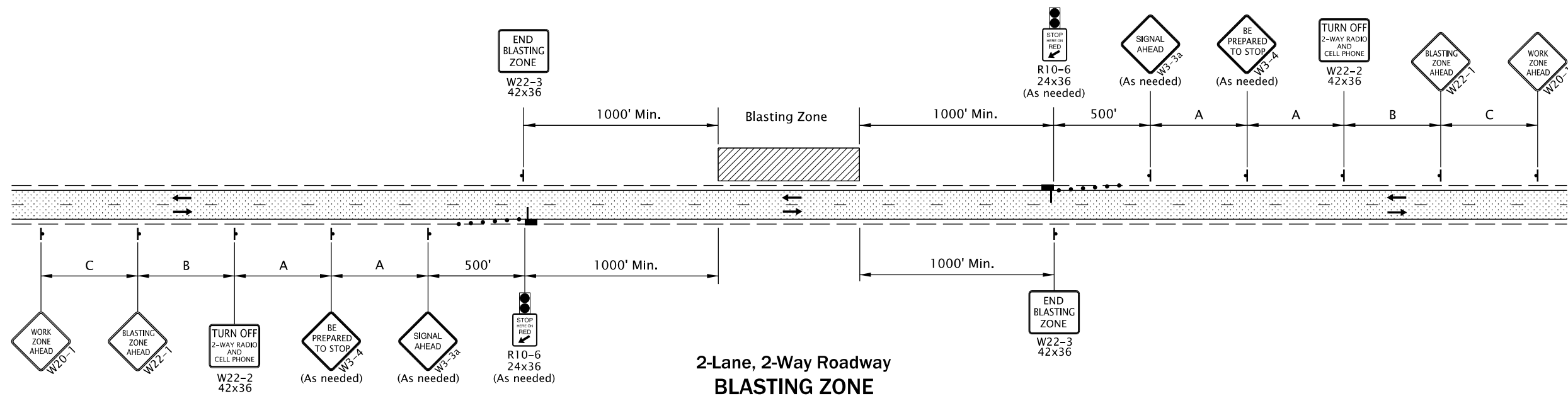
- Automated Flagger Assistance Device (AFAD)
- 28" Tubular Markers See TCD spacing table on TM800 for max. spacing
- UNDER TRAFFIC
- UNDER CONSTRUCTION



OVER-DIMENSIONAL VEHICLE ACCOMMODATION DETAIL

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All materials shall be in accordance with the current Oregon Standard Specifications.		
OREGON STANDARD DRAWINGS		
2-LANE, 2-WAY ROADWAYS		
2024		
DATE	REVISION	DESCRIPTION
MM-YYYY		
07-2023	REVISION	Minor drafting revision.
07-2025		Added notes for TPAR.
01-2026		Added cross section and notes.
07-2026		Revised the AFAD delineation guidance for consistency.
CALC. BOOK NO.	N/A	SDR DATE 10-JUL-2026
		TM854



GENERAL NOTES FOR ALL DETAILS:

- Configurations are NOT to be used on freeways. For freeways, a total closure or rolling slowdown should be used for blasting operations, as shown in the plans or directed.
- The signs shall be covered or removed when there are no explosives in the area or when the area is otherwise secure.
- Whenever a side road intersects the roadway between the "BLASTING ZONE AHEAD" (W22-1) sign and the "END BLASTING ZONE" (W22-3) sign, or a side road is within 1000' of any blasting cap, similar signing, as on the mainline, shall be erected on the side road.
- Before blasting, the "Explosives Specialist" shall determine whether highway traffic in the blasting zone will be endangered by the blasting operation. If there is danger, highway traffic shall not be permitted to pass through the blasting zone during blasting operations.

- The "SIGNAL AHEAD" (W3-3a) sign may be substituted with the Signal Ahead (W3-3) symbol sign.
- Do not stop or hold traffic in excess of 20 minutes including rock and debris clean up.
- All offsets between sign pairs in multi-lane sections are 30' with median signs closest to approaching traffic.
- To determine Taper Length "L" and Buffer Length "B" use the "MINIMUM LENGTHS TABLE" on Dwg. No. TM800.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Dwg. No. TM800.
- To be accompanied by Dwg. No. TM820, TM821 & TM854.

Automated Flagging Assistance Device (AFAD)

- 28" Tubular Markers
See TCD Spacing Table on TM800 for max. spacing.
- Temp. Plastic Drums
See TCD Spacing Table on TM800 for max. spacing.

UNDER TRAFFIC
UNDER CONSTRUCTION

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OREGON STANDARD DRAWINGS

BLASTING ZONES

2024

DATE	REVISION	DESCRIPTION
07-2022		Added AFADs to the drawing.
07-2026		Corrected the title of the top detail from "4-Lane" to "2-Lane."
CALC. BOOK NO.	N/A	SDR DATE: 10-JUL-2026

TM871

Effective Date: December 1, 2026 – May 31, 2027