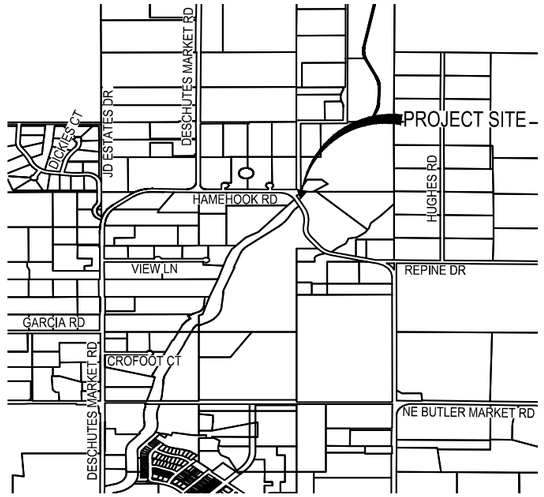
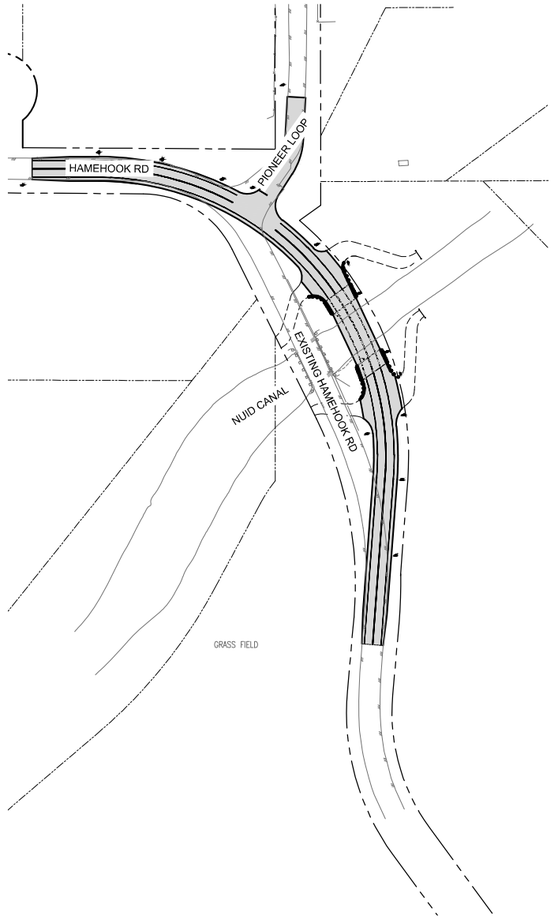
DESCHUTES COUNTY ROAD DEPARTMENT

HAMEHOOK BRIDGE REPLACEMENT

DESCHUTES COUNTY
AUGUST 2024



VICINITY MAP
NOT TO SCALE



AREA MAP
1"=100'
0 100' 200'
N
1 G0.1

LINETYPE & SYMBOL LEGEND

LINETYPES - EXISTING FEATURES
- FOG LINE STRIPING
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- ROCKERY
- WOOD FENCE
- BARB WIRE FENCE
- POWER LOCATE MARKING
- POWER OVERHEAD
- FIBER OPTIC LOCATE MARKING
- TELEPHONE LOCATE MARKING
- WATER LOCATE MARKING
- CENTER LINE RIGHT-OF-WAY
- LOT LINE

SYMBOLS - EXISTING FEATURES
- FOUND MONUMENT
- FOUND REBAR, NO CAP
- FOUND REBAR WITH CAP
- SET CONTROL POINT (SEE CONTROL TABLE)
- CABLE TV RISER
- TELEPHONE POLE
- POWER POLE WITH DROP LINE & TRANSFORMER
- POWER POLE GUY ANCHOR
- TELEPHONE JUNCTION BOX
- TELEPHONE RISER
- WATER METER
- WATER VALVE
- WATER IRRIGATION VALVE
- SIGN, AS NOTED
- JUNIPER TREE (TRUNK AND DRIPLINE DIAMETER NOTED)

LINETYPES - PROPOSED FEATURES
- SAWCUT
- STRIPING
- EDGE OF PAVEMENT
- ROW
- FENCE
- TEMPORARY CONSTRUCTION EASEMENT
- SIGN, AS NOTED
- FILL LINE
- CUT LINE

SYMBOLS - PROPOSED FEATURES
- JUNIPER TREE TO BE REMOVED

GENERAL NOTES:

ATTENTION: OREGON LAW REQUIRES THAT YOU FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN O.A.R 952-001-0010 THROUGH 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER AT 503-232-1987

IT IS THE CONTRACTORS RESPONSIBILITY TO RE-ESTABLISH, PER OREGON REVISED STATUES, ALL SURVEY MONUMENTS DISTURBED OR DESTROYED BY THIS WORK. THIS INCLUDES MONUMENTS NOT SHOWN IN THESE PLANS, WHICH ARE DISCOVERED DURING THE COURSE OF CONSTRUCTION. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ELEVATIONS OF SIDE SHOT MONUMENTS FOR USE AS TEMPORARY BENCH MARKS AND SET TEMPORARY BENCH MARKS OR ADDITIONAL HORIZONTAL CONTROL AS NEEDED.

UPON AWARD OF THE CONTRACT, PARAMETRIX WILL PROVIDE THE CONTRACTOR WITH AN "ASCII" POINT FILE CONTAINING ALL CONTROL POINTS ALONG WITH ALIGNMENT CENTER LINE POINTS AT 50' STATIONS.

CALL BEFORE YOU DIG
1-800-322-2344

BASIS OF BEARINGS

BASED ON CENTRAL OREGON COORDINATE SYSTEM (COCS), DESCHUTES 13 TRANSFORMATION, DERIVED FROM THE OREGON-REAL-TIME GNSS NETWORK (ORGN).

DATUM

HORIZONTAL: COORDINATES ARE INTERNATIONAL FEET, BASED ON THE CENTRAL OREGON COORDINATE SYSTEM (COCS), DESCHUTES 13 TRANSFORMATION, DERIVED FROM THE OREGON REAL-TIME GNSS NETWORK (ORGN).

VERTICAL: ELEVATIONS ARE NGVD29, BASED ON CENTRAL OREGON COORDINATE SYSTEM, CONTROL POINT NUMBER 104 (17121300), LOCATED AT THE SOUTHEAST CORNER OF SECTION 14, TOWNSHIP 17 SOUTH, RANGE 12 EAST, DERIVED FROM THE OREGON REAL-TIME GNSS NETWORK.

COCS CONTROL POINT 104

ELEVATION: 3439.30 FEET (NGVD29)

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
G0.1	COVER SHEET
C0.1	GENERAL NOTES
BR-01	BRIDGE PLAN & ELEVATION
BR-02	FOUNDATION PLAN
GE-01	BORING LOGS
BR-03	DECK PLAN
BR-04	TYPICAL BRIDGE SECTION
BR-05	30in PRECAST PRESTRESSED SLABS
BR-06	BENT 1 PLAN AND ELEVATION
BR-07	BENT 2 PLAN AND ELEVATION
BR-08	WINGWALL 1 & 3 DETAILS
BR-09	WINGWALL 2 & 4 DETAILS
BR-10	BRIDGE SLAB APPROACH
C1.0	TYPICAL SECTIONS
C2.0	DEMOLITION PLAN
C2.1	BRIDGE REMOVAL PLAN
C3.0	EROSION CONTROL PLAN
C4.0	PLAN & PROFILE
C4.1	PLAN & PROFILE
C4.2	PLAN & PROFILE
C4.3	PLAN & PROFILE
C4.4	PLAN-INLAY PAVING
C5.0	ROADWAY DETAILS
C6.0	SIGNING & STRIPING PLAN
C6.1	SIGNING & STRIPING PLAN
C7.0	CONSTRUCTION & STAGING PLAN-STAGE1
C7.1	CONSTRUCTION & STAGING PLAN-STAGE 2A
C7.2	CONSTRUCTION & STAGING PLAN-STAGE 2B
C7.3	CONSTRUCTION & STAGING PLAN-STAGE 3

OWNER
DESCHUTES COUNTY ROAD DEPARTMENT
61150 SE 27TH
BEND, OR 97702
CONTACT: CODY SMITH
PHONE: (541) 322-7105 (OFFICE)
EMAIL: CODY.SMITH@DESCHUTES.ORG

ENGINEER
PARAMETRIX
150 NW PACIFIC PARK LANE
BEND, OREGON 97701
CONTACT: BARRY JOHNSON, P.E.
PHONE: (541) 508-7710
EMAIL: bjohnson@parametrix.com

SURVEYOR
PARAMETRIX
150 NW PACIFIC PARK LANE
BEND, OR 97701
CONTACT: COREY PACHECO
PHONE: (541) 508-7710
EMAIL: CPACHECO@PARAMETRIX.COM

UTILITY CONTACTS

FATBEAM CONTACT: PATRICK GOTTBREHT
PHONE: 306-888-3211
EMAIL: PATRICK.GOTTBREHT@FATBEAM.COM

CENTRAL ELECTRIC COOPERATIVE
CONTACT: JOSH BOWLES
PHONE: 541-548-2144
EMAIL: JBOWLES@CEC.COOP

TDS TELECOM
CONTACT: CHESTER PARKER
PHONE: 541-480-8963
EMAIL: CHESTER.PARKER@TDSTELECOM.COM

LUMEN
TREVOR GILBERT
CONTACT: PHONE:458-231-3146
EMAIL:DANIEL.TREVOR.W.GILBERT@LUMEN.COM

Approvals:

Cody Smith
2024.08.09
13:15:18-07'00'
DESCHUTES COUNTY ROAD DEPARTMENT

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY
FILE NAME BE2509010-G0-CS
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2018
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:48:36-07'00'

Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

COVER SHEET

DRAWING NO.
1 OF 28
G0.1

PLOTTED BY: ricodov DATE: Friday, August 2, 2024 4:48:02 PM
PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Sves\CADD\DWG\SHEETS
LAYOUT: COVER SHEET

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT SPECIAL PROVISIONS AND THE 2024 OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION.
2. A TOPOGRAPHICAL SURVEY WAS PERFORMED BY PARAMETRIX. FIELD SURVEYS REFERENCE THE VERTICAL AND HORIZONTAL DATUMS LISTED IN THE PLANS, SURVEYS OF RECORD, AND INFORMATION OBTAINED FROM UTILITY COMPANIES.
3. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AT PROJECT SITE BEFORE START OF WORK. IF THE CONTRACTOR DISCOVERS DIFFERING SITE CONDITIONS, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE AGENCY, IN WRITING, OF THE SPECIFIC DIFFERING CONDITIONS BEFORE THEY ARE DISTURBED AND BEFORE THE AFFECTED WORK IS PERFORMED. CONTRACTOR SHALL NOT CONTINUE WORK IN THE AFFECTED AREA UNTIL THE AGENCY HAS INSPECTED SUCH CONDITION ACCORDING TO OSSC 00195.30 TO DETERMINE WHETHER AN ADJUSTMENT TO CONTRACT AMOUNT OR CONTRACT TIME IS REQUIRED.
4. CONTRACTOR SHALL FOLLOW APPLICABLE RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THE OREGON UTILITY NOTIFICATION CENTER CAN BE REACHED BY DIALING 811, OR ONLINE AT WWW.CALLBEFOREYOUDIG.ORG/OREGON. CONTRACTOR SHALL ALSO COMPLY WITH ALL PROVISIONS OF SECTION 00150.50 OF THE OSSC AND SPECIAL PROVISIONS.
5. ALL UTILITIES SHOWN ARE COMPILED FROM AVAILABLE RECORDS AND/OR FIELD SURVEYS. THE AGENCY DOES NOT GUARANTEE THE ACCURACY NOR THE COMPLETENESS OF SUCH RECORDS. CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE EXCAVATING WITHIN THE TOLERANCE ZONE ACCORDING TO OAR 952-001-0090(3)(c).
6. CONTRACTOR SHALL RESTRICT ALL OPERATIONS TO THE PROJECT LIMITS. CONTRACTOR SHALL NOT ENTER ONTO PRIVATE PROPERTY WITH EQUIPMENT OR MATERIAL UNLESS WRITTEN PERMISSION IS OBTAINED FROM A PROPERTY OWNER. ANY DISRUPTION TO PRIVATE PROPERTY AND/OR LANDSCAPING OUTSIDE THE PROJECT LIMITS INDICATED ON THE PLANS SHALL BE RESTORED AT CONTRACTOR'S EXPENSE.
7. IN THE EVENT OF REMOVAL, DISTURBANCE OR DESTRUCTION OF A SURVEY MONUMENT OF RECORD, IT IS THE CONTRACTOR'S RESPONSIBILITY TO RE-ESTABLISH THE MONUMENT ACCORDING TO OSSC 00170.82. THE CONTRACTOR SHALL NOTIFY THE COUNTY SURVEYOR OF MONUMENT DISTURBANCE TO COORDINATE NECESSARY RESTORATION REQUIREMENTS.
8. THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY ACCORDING TO OSSC 00170.60. DESCHUTES COUNTY AND THEIR REPRESENTATIVES AND OFFICIALS SHALL NOT BE RESPONSIBLE FOR ENFORCING SAFETY REGULATIONS.
9. CONTRACTOR IS REQUIRED TO PROVIDE AND MAINTAIN ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES THROUGHOUT THE DURATION OF THE PROJECT. THIS INCLUDES PROVIDING A CLEAR AND UNOBSTRUCTED ROUTE FOR EMERGENCY VEHICLES TO SAFELY PASS THROUGH THE WORK ZONE. WHEN EMERGENCY ACCESS IS NOT POSSIBLE, THE CONTRACTOR MUST COORDINATE WITH LOCAL EMERGENCY SERVICES TO ENSURE THAT ANY RESTRICTIONS ARE COMMUNICATED TO THE APPROPRIATE EMS PROVIDERS.
10. CONTRACTOR SHALL COORDINATE AND ACCOMMODATE OTHER CONTRACTORS PERFORMING WORK IN THE AREA INCLUDING, BUT NOT LIMITED TO: CONSTRUCTION CONTRACTORS IN THE AREA, UTILITY COMPANIES, IRRIGATION DISTRICTS AND/OR COUNTY MAINTENANCE CREWS.
11. UTILITIES, OR INTERFERING PORTIONS OF UTILITIES, THAT ARE ABANDONED IN PLACE SHALL BE REMOVED BY THE CONTRACTOR TO THE EXTENT NECESSARY TO ACCOMPLISH THE WORK, OR AS DIRECTED.
12. ALL EXISTING TREES ARE TO BE PROTECTED IN PLACE, UNLESS NOTED OTHERWISE. IF NOTED, DEMO & REMOVE EXISTING TREES AND VEGETATION WHERE IT IS IN CONFLICT WITH OR IS IMPACTED BY PROPOSED IMPROVEMENTS TO THE EXTENT THAT NO ROOTS ARE LEFT IN PLACE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DISPOSE OF ALL VEGETATION OFF SITE.
13. CONTRACTOR SHALL NOTIFY RESIDENTS AND/OR BUSINESSES WITHIN THE PROJECT LIMITS AND AFFECTED AREAS WITHIN TWO BUSINESS DAYS PRIOR TO THE START OF CONSTRUCTION BY PROVIDING WRITTEN NOTICE TO THE AFFECTED RESIDENTS SUMMARIZING THE NATURE OF THE IMPACTS AND LISTING THE CONTRACTORS CONTACT INFORMATION.
14. ATTENTION: OREGON LAW REQUIRES THAT YOU FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN O.A.R 952-001-0010 THROUGH 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER AT 503-232-1987
15. UPON AWARD OF THE CONTRACT, PARAMETRIX WILL PROVIDE THE CONTRACTOR WITH AN "ASCII" POINT FILE CONTAINING ALL CONTROL POINTS ALONG WITH ALIGNMENT CENTER LINE POINTS AT 50' STATIONS.
16. CONTRACTOR TO PERFORM A PROOF ROLL FOR AREAS UNDERNEATH THE NEW ROADWAY. CONSTRUCTION INSPECTOR MUST BE PRESENT TO DURING PROOF ROLL.

ALIGNMENT TABLE

ALIGNMENT NAME	START STATION	START NORTHING & EASTING	END STATION	END NORTHING & EASTING
HAMEHOOK RD - PROPOSED	6+40.00	N: 403112.69 E: 3308515.99	18+73.4	N: 402472.65 E: 3309254.72
NE DITCH RIDER ROAD	1+00.00	N: 403004.11 E: 3309322.98	2+58	N: 402976.59 E: 3309183.40
NW DITCH RIDER ROAD	5+00.00	N: 402968.67 E: 3309189.90	6+25.5	N: 402872.34 E: 3309117.34
PIONEER LOOP	100+00.00	N: 403212.14 E: 3309155.32	101+76.1	N: 403050.30 E: 33309099.78
SW DITCH RIDER ROAD	7+00.00	N: 402799.44 E: 3309266.91	8+08.0	N: 402782.05 E: 3309163.1440

FOUND MONUMENTS TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1138	403024.34	3309470.31	3417.81	FOUND REBAR NO CAP 5/8 INCH IRON ROD
1140	404422.22	3309824.97	3409.24	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP
1200	403094.36	3309127.01	3412.62	FOUND 5/8" IR W/O CAP
1201	403094.52	3309187.06	3413.64	FOUND 5/8" IR W/ YPC STAMPED "?????"
1202	403095.56	3309352.17	3413.86	FOUND 5/8" IR W/ YPC STAMPED "?????"
1203	403757.72	3309186.20	3401.89	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP
1204	403758.77	3309459.09	3406.25	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP
1205	403100.25	3310459.06	3428.26	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP
1206	404425.17	3310456.61	3415.67	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP
1208	403324.23	3309272.63	3412.35	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP MARKED DEA INC ZK
1209	403325.06	3309472.69	3412.06	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP MARKED DEA INC ZK
1211	404391.74	3309458.24	3405.13	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP MARKED DEA INC
1212	404393.00	3309821.01	3409.03	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP MARKED DEA INC
1213	404422.99	3309820.92	3408.62	FOUND REBAR AND CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP MARKED DEA INC
1214	401775.21	3310461.51	3426.34	FOUND 1-1/2" AL CAP STAMPED "14|13 LS 1081" DOWN 0.8'
1215	399113.81	3310467.30	3439.19	FOUND SURFACE MON
1300	403137.35	3309127.17	3411.61	FOUND 5/8" IR W/O CAP FLUSH
1301	403757.78	3309127.44	3403.89	FOUND REBAR NO CAP
1302	403139.54	3308793.97	3414.05	FOUND 5/8" IR W/O CAP UP 1.3', BEND IN ROD 0.5' ABOVE GROUND
1303	403143.74	3308152.73	3414.81	FOUND 1/2" IR W/O CAP IN ROCK OUTCROPPING
1304	403084.77	3308178.78	3416.10	FOUND 5/8" IR W/O CAP UP 0.30'
2000	403762.70	3310457.80	3422.17	SET R/CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP MARKED PARAMETRIX
2001	404069.54	3310457.28	3419.56	SET R/CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP MARKED PARAMETRIX
2002	403441.16	3310458.42	3421.94	SET R/CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP MARKED PARAMETRIX
2003	403096.55	3309622.38	3415.15	SET R/CAP 5/8 INCH IRON ROD WITH YELLOW PLASTIC CAP MARKED PARAMETRIX
90001	403089.36	3308781.92	3415.37	FOUND 1/2" IR W/ RPC "HHPR CONTROL"
90003	403139.69	3308745.75	3413.27	FOUND 5/8" IR W/O CAP LYING ON GROUND. OBLITERATED MON
90004	403141.78	3308461.20	3412.02	FOUND 1/2" IR W/O CAP FLUSH
90005	403141.53	3308463.69	3411.73	FOUND 3/4" IP DOWN 0.3'
90006	403134.83	3308397.61	3413.55	FOUND 1/2" IR W/ RPC "HHPR CONTROL" FLUSH
90007	403144.03	3308102.94	3416.27	FOUND 1/2" IR W/O CAP FLUSH
90009	403085.52	3307803.97	3413.15	FOUND 5/8" IR W/O CAP FLUSH
90010	403181.03	3307829.62	3411.04	FOUND 1/2" IR W/ RPC "HHPR CONTROL" FLUSH
90016	401985.98	3309414.02	3440.86	FOUND 3" AL CAP IN CONC FOOTING STAMPED "DESCHUTES CO SURVEY CONTROL BA 020 1979" W/ COUNTY PADDLE 1.5' WESTERLY
90017	403078.95	3307792.33	3412.44	FOUND OLD 5' TALL POWER POLE W/ NAIL AND WASHER IN WEST FACE STAMPED "RM 2"
90019	403170.87	3307861.95	3410.60	FOUND 32" JUNIPER W/ BLAZE ON NWLY FACE. VISIBLE NAIL IN BLAZE.
90021	403162.45	3309061.68	3412.39	FOUND DOUBLE JUNIPER W/ 22" AND 16" TRUNKS (39" TRUNK UNDER SPLIT) W/ TAC IN BLAZE ON SOUTH FACE
90023	401712.01	3310477.45	3426.53	FOUND 3" AL CAP STAMPED "DESCHUTES CO SURVEY CONTROL BA 030 1979" W/ OLD COUNTY PADDLE 2.5' EAST
90024	401723.55	3310470.83	3425.56	FOUND 3/4" IP DOWN 1.3' LYING HORIZONTAL AND LEANING NE'LY, TIED BOTTOM OF PIPE.
90025	401744.85	3310491.62	3427.68	FOUND 5/8" IR W/ OPC STAMPED "BECON" FLUSH
90027	401647.38	3310484.44	3423.49	FOUND 24" JUNIPER W/ HEALED FACE ON NORTH SIDE. FOUND MEMORIAL OF STONES CIRCLING BASE OF TREE.
90029	401723.05	3310514.77	3424.83	FOUND TRIPLE JUNIPER (12", 14", AND 20" TRUNKS) W/ POSSIBLE BLAZE ON WEST FACE
90031	401941.40	3309488.40	3439.47	FOUND 28" JUNIPER W/ BLAZES ON SE AND NE FACES
90033	401963.07	3309452.98	3441.72	FOUND 26" JUNIPER W/ BLAZE ON SE AND SW FACES
90035	401913.38	3309476.76	3439.22	FOUND 34" JUNIPER W/ BLAZE ON NORTH FACE AND NAIL IN BLAZE
90037	402333.26	3309214.62	3426.39	FOUND 22" JUNIPER W/ BLAZE ON EAST FACE
90039	402315.18	3309202.06	3426.43	FOUND 24" JUNIPER W/ BLAZE IN EAST FACE, VISIBLE NAIL IN BLAZE
90040	402699.38	3309306.00	3420.34	FOUND 24" JUNIPER STUMP W/ BLAZE ON WEST FACE
90042	402640.78	3309315.27	3420.39	FOUND 12" JUNIPER W/ BLAZE ON WEST FACE

ODOT STD DWG INDEX

BR 165	BRIDGE APPROACH SLAB
BR 208	3-TUBE CURB MOUNT RAIL
BR 209	3-TUBE CURB MOUNTED RAIL TRANSIION
BR 422	30" PRECAST PRESTRESSED SLAB
BR 445	PRECAST PRESTRESSED BOXES AND SLABS DETAILS
RD 300	TRENCH BACKFILL, BEDDING, PIPE ZONE AND MULTIPLE INSTALLATIONS
RD 364	CONCRETE INLETS TYPE G-1, G-2, G-2M, AND G-2MA
RD 402	MIDWEST GUARDRAIL SYSTEM TYPES
RD 403	MIDWEST GUARDRAIL SYSTEM WOOD POST AND BLOCK
RD 406	PLACEMENT OF GUARDRAILS ON SLOPES
RD 407	MIDWEST GUARDRAIL SYSTEM (W-BEAM)
RD 409	THRIE BEAM GUARDRAIL
RD 410	THRIE BEAM GUARDRAIL TRANSITION
RD 412	MIDWEST GUARDRAIL SYSTEM INSTALLATION AT BRIDGE DECK EXPANSION JOINT
RD 415	GUARDRAIL AND METAL MEDIAN BARRIER PARTS (29" RAIL HEIGHT)
RD 416	MIDWEST GUARDRAIL SYSTEM STANDARD HARDWARE (NUTS, BOLTS, WASHERS AND MISC.)
RD 417	MIDWEST GUARDRAIL SYSTEM END SECTIONS
RD 419	MIDWEST GUARDRAIL SYSTEMS GRADING FOR TERMINALS
RD 438	MIDWEST GUARDRAIL SYSTEM DOWNSTREAM ANCHOR TERMINAL (DAT)
RD 442	MIDWEST GUARDRAIL SYSTEM TYPICAL LAYOUTS AT BRIDGE ENDS
RD 450	GUARDRAIL ANCHORS
RD 451	WOOD BREAKAWAY POSTS
RD 610	ASPHALT CONCRETE PAVEMENT (ACP) DETAILS
RD 701	DRAINAGE CURB
RD 810	BARBED AND WOVEN WIRE FENCE
RD 1000	CONSTRUCTION ENTRANCES
RD 1040	SEDIMENT FENCE
RD 1070	CONCRETE TRUCK WASH OUT
TM 200	SIGN INSTALLATION DETAILS
TM 206	SIGN BRACING DETAIL
TM 500	PAVEMENT MARKING STANDARD DETAIL BLOCKS
TM 503	PAVEMENT MARKING STANDARD DETAIL BLOCKS
TM 530	INTERSECTION PAVEMENT MARKINGS (CROSSWALK, STOP BAR, BIKE LANE STENCIL)
TM 601	MULTIPOST BREAKAWAY SIGN SUPPORT NOTES
TM 602	TRIANGULAR BASE BREAKAWAY SIGN SUPPORT DETAILS
TM 671	3 SECOND GUST WIND SPEED MAP
TM 676	SIGN ATTACHMENTS
TM 681	PERFORATED STEEL SQUARE TUBE (PSST) SIGN SUPPORT INSTALLATION
TM 688	PERFORATED STEEL SQUARE TUBE (PSST) SLIP BASE FOUNDATION
TM 800	TABLES, ABRUPT EDGE AND PCMS DETAILS
TM 820	TEMPORARY BARRICADES
TM 821	TEMPORARY SIGN SUPPORTS
TM 822	TEMPORARY SIGN SUPPORTS
TM 841	INTERSECTION WORK ZONE DETAILS
TM 850	2-LANE, 2-WAY ROADWAYS
TM 854	2-LANE, 2-WAY ROADWAYS
TM 855	2-LANE, 2-WAY ROADWAYS

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY
FILE NAME BE2509010-C0-GN
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES: 12/31/2024

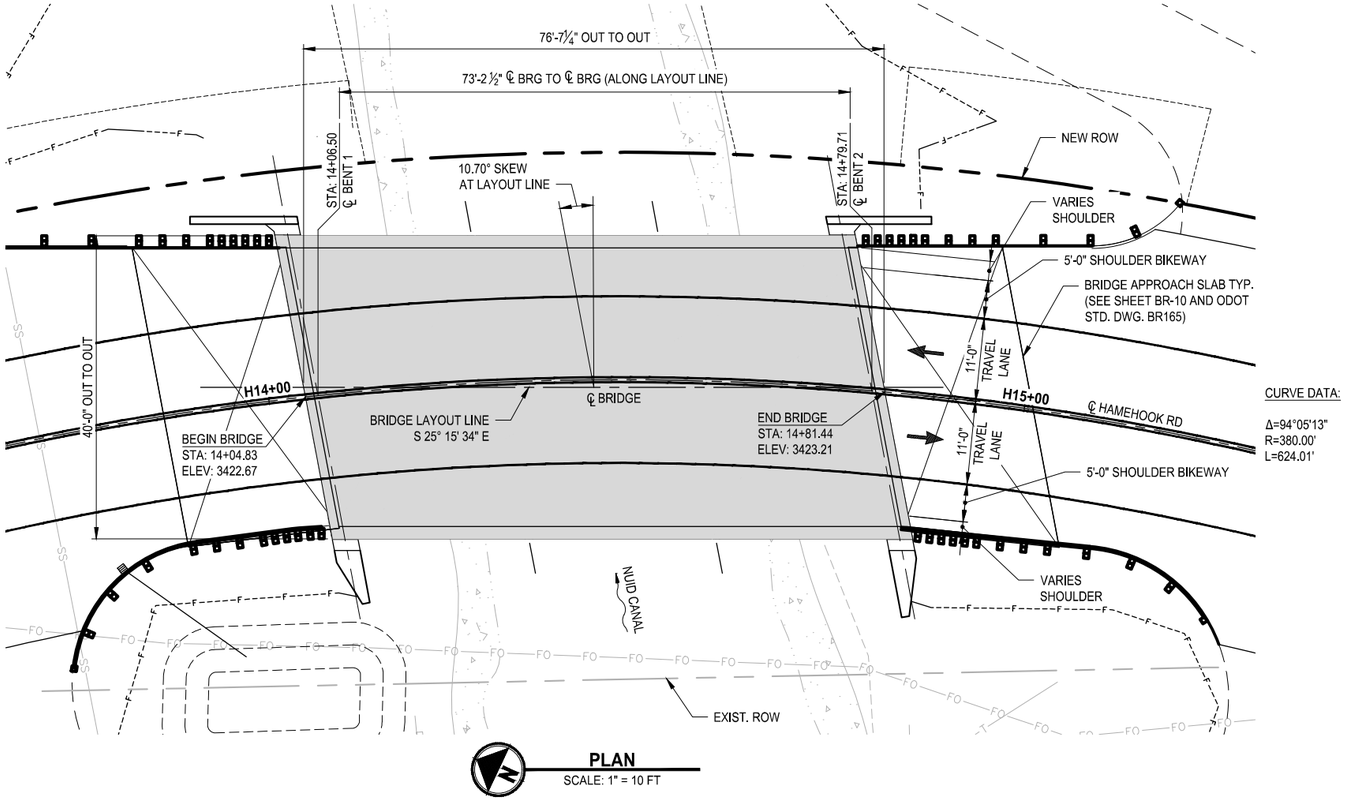
Digitally signed by David Rico
Date: 2024.08.02 16:43:42-07'00'

Parametrix

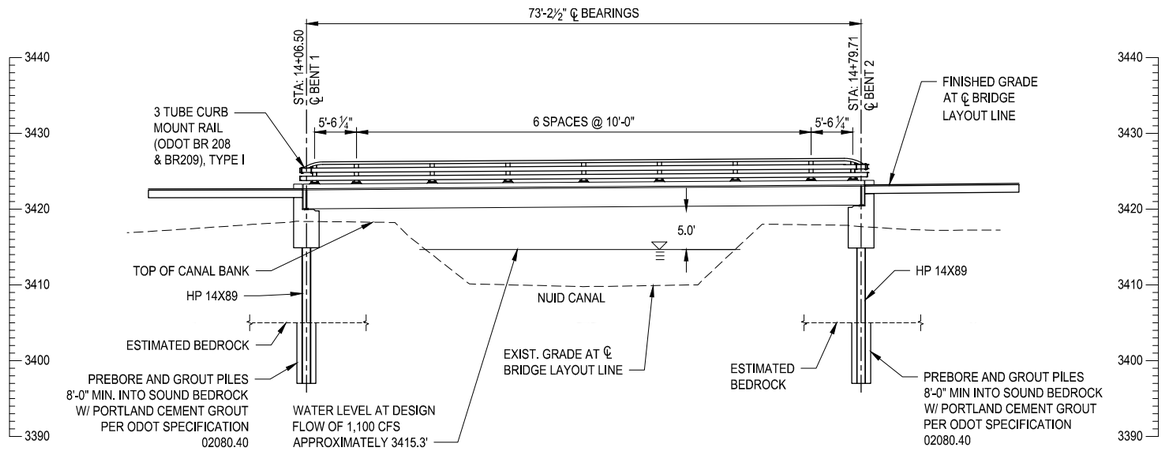
PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

GENERAL NOTES

DRAWING NO. 2 OF 28
C0.1



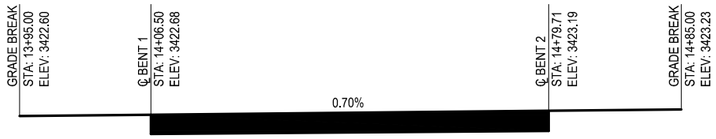
PLAN
SCALE: 1" = 10 FT



ELEVATION
SCALE: 1" = 10 FT

CURVE DATA:

Δ=94°05'13"
R=380.00'
L=624.01'



GRADELINE PROFILE
SCALE: NTS

GENERAL NOTES:

BRIDGE IS DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9th ED. WITH INTERIM REVISIONS.

BRIDGE IS DESIGNED WITH ALLOWANCE OF 3" AC OVERLAY AND 40 PSF FOR FUTURE WEARING SURFACE AND ALL OF THE FOLLOWING LIVE LOADS:

SERVICE AND STRENGTH I LIMIT STATES:
HL-93: DESIGN TRUCK (OR TRUCKS PER LFRD 3.6.1.3) OR THE DESIGN TANDEMS AND THE DESIGN LANE LOAD.

STRENGTH II LIMIT STATE:
ODOT TYPE STP-58W PERMIT TRUCK
ODOT TYPE STP-4E PERMIT TRUCK
EV3 TRUCK

SEISMIC DESIGN IS PERFORMED IN ACCORDANCE WITH THE "AASHTO GUIDE SPECIFICATIONS FOR LRFD SEISMIC BRIDGE DESIGN, 2ND ED. WITH INTERIM REVISIONS AS MODIFIED BY THE "ODOT BRIDGE DESIGN MANUAL". THE HORIZONTAL PEAK GROUND ACCELERATION COEFFICIENTS (PGA) FOR 1000-YEAR RETURN (LIFE SAFETY" AND CASCADIA SUBDUCTION ZONE EARTHQUAKE (OPERATIONAL) ARE 0.167G AND 0.167G RESPECTIVELY, BASED ON ASCE 7 HAZARDS REPORT. THE BRIDGE SITE IS DEFINED AS A SITE CLASS B WITH SITE FACTOR (FPGA) of 1.0.

PROVIDE ALL REINFORCING STEEL ACCORDING TO ASTM SPECIFICATION A706, OR AASHTO M31 (ASTM A615) GRADE 60. PROVIDE FIELD BENT STIRRUPS ACCORDING TO ASTM SPECIFICATION A706. USE THE FOLLOWING SPLICE LENGTHS (UNLESS SHOWN OTHERWISE):

Reinforcing Splice Lengths (Class B) Grade 60; f'c = 4.0ksi, λrc = 0.4, 2 in. min. concrete clear cover										
Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14 & #18
Uncoated	1'-4"	1'-7"	2'-0"	2'-5"	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"	Not permitted
Coated	1'-10"	2'-5"	3'-0"	3'-7"	4'-2"	4'-9"	5'-4"	6'-6"	6'-8"	Not permitted

INCREASE ALL SPLICE LENGTHS 30% FOR HORIZONTAL BARS WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW THE BAR.

PROVIDE EPOXY COATED REINFORCING STEEL IN THE BRIDGE APPROACH SLAB. THIS INCLUDES TOP AND BOTTOM LONGITUDINAL BARS, AND TOP AND BOTTOM TRANSVERSE BARS. NO FIELD BENDING OF EPOXY REBAR.

SPLICE REINFORCING STEEL AT ALTERNATE BARS, STAGGERED AT LEAST ONE SPLICE LENGTH OR AS FAR AS POSSIBLE (UNLESS SHOWN OTHERWISE).

PLACE BARS 2" CLEAR OF THE NEAREST FACE OF CONCRETE (UNLESS SHOWN OTHERWISE). THE TOP BENDS OF STIRRUPS EXTENDING FROM SLABS INTO THE CURB MAY BE SHOP OR FIELD BENT (UNLESS NOTED OTHERWISE).

PROVIDE CLASS HPC4500 - 1 ½ CONCRETE IN REINFORCED CONCRETE APPROACH SLABS.

PROVIDE CLASS 4000 - 1 OR ¾ CONCRETE FOR CIP CONCRETE.

PROVIDE 4000 PSI NON-METALIC, NON-SHRINK GROUT AS SPECIFIED PER PG. 13 OF THE GEOTECH REPORT.

PROVIDE CLASS 4000 - ¾ CONCRETE FOR ALL OTHER CONCRETE.

PROVIDE CLASS 6000 - ¾ CONCRETE IN PRECAST PRESTRESSED VOIDED SLABS ACCORDING TO DETAIL. THE MINIMUM STRENGTH OF CONCRETE AT TRANSFER OF PRESTRESS IS 4500 PSI.

PROVIDE PRESTRESSING STEEL ACCORDING TO DETAIL PLANS.

PROVIDE FULLY THREADED ANCHOR RODS AT INSERTS ACCORDING TO AASHTO M314, GR36 (ASTM A307).

ODOT STANDARD DRAWINGS
BR 165 - BRIDGE APPROACH SLAB
BR 208 - 3-TUBE CURB MOUNT RAIL
BR 209 - 3-TUBE CURB MOUNT RAIL TRANSITION
BR 422 - 30" PRESTRESSED VOIDED SLABS
BR 445 - PRECAST PRESTRESSED BOXES AND SLABS DETAILS

HYDRAULIC DATA		
ITEMS	UNITS	DESIGN FLOW
DISCHARGE	$ft.^3/s$	1100
HIGH WATER ELEVATION AT UPSTREAM FACE OF BRIDGE ALONG EMBANKMENT	feet	3415.3
BACKWATER	feet	0.0
SCOUR DEPTH	feet	0.0

BIDDING PLANS
STRUCTURE NO. 24363

REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-BR01
JOB No. 297-2509-010
DATE AUGUST 2024

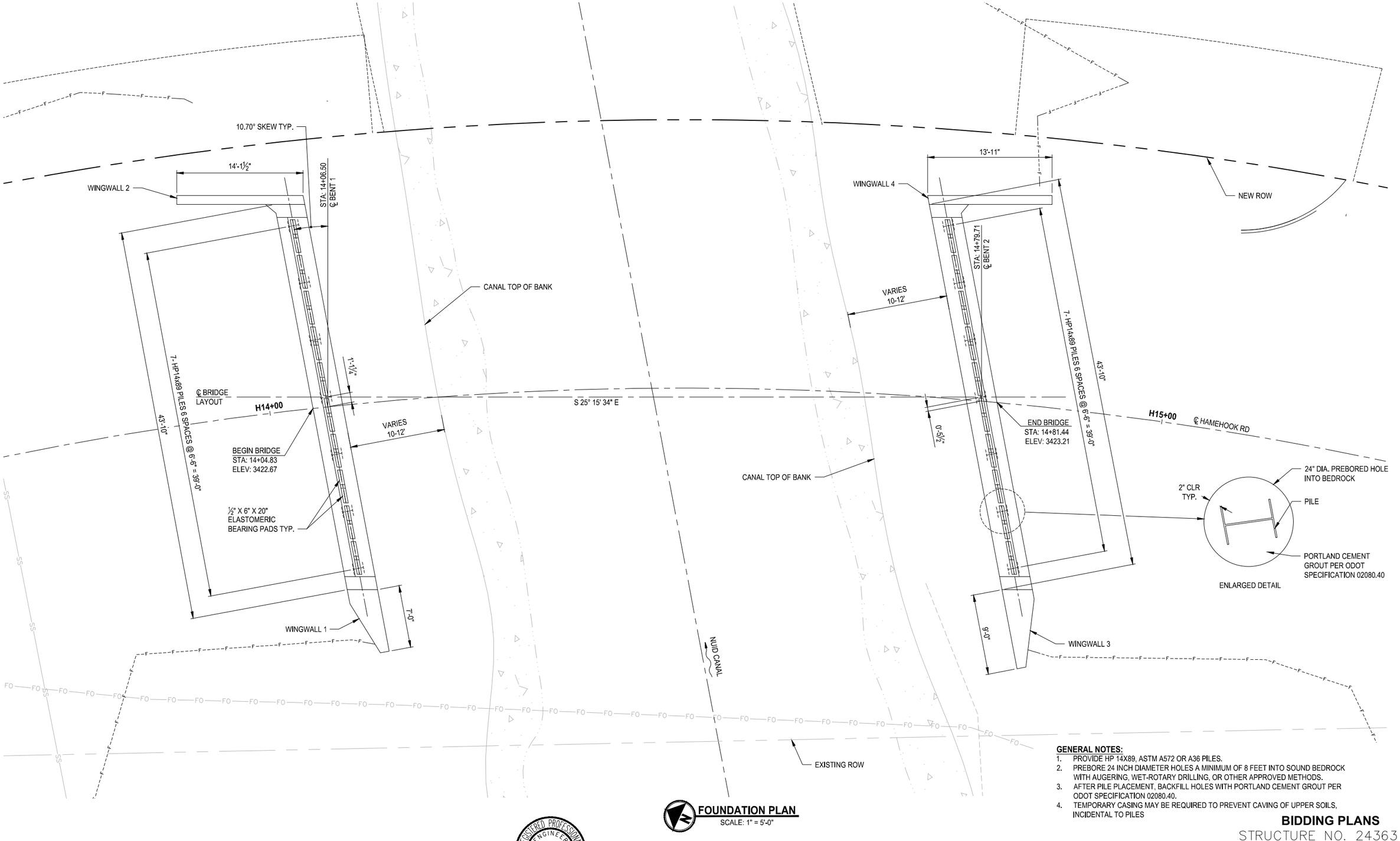
REGISTERED PROFESSIONAL ENGINEER
88969PE
DIGITALLY SIGNED 2024.08.02 12:11:40-07'00'
OREGON
MARCH 09, 2012
CHELSEA HORCHY
EXPIRES: 06/30/25

Parametrix

PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

BRIDGE PLAN & ELEVATION

DRAWING NO.
3 OF 27
BR-01



FOUNDATION PLAN
SCALE: 1" = 5'-0"

GENERAL NOTES:

1. PROVIDE HP 14X89, ASTM A572 OR A36 PILES.
2. PREBORE 24 INCH DIAMETER HOLES A MINIMUM OF 8 FEET INTO SOUND BEDROCK WITH AUGERING, WET-ROTARY DRILLING, OR OTHER APPROVED METHODS.
3. AFTER PILE PLACEMENT, BACKFILL HOLES WITH PORTLAND CEMENT GROUT PER ODOT SPECIFICATION 02080.40.
4. TEMPORARY CASING MAY BE REQUIRED TO PREVENT CAVING OF UPPER SOILS, INCIDENTAL TO PILES

BIDDING PLANS
STRUCTURE NO. 24363

	REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-BR02
JOB No. 297-2509-010
DATE AUGUST 2024

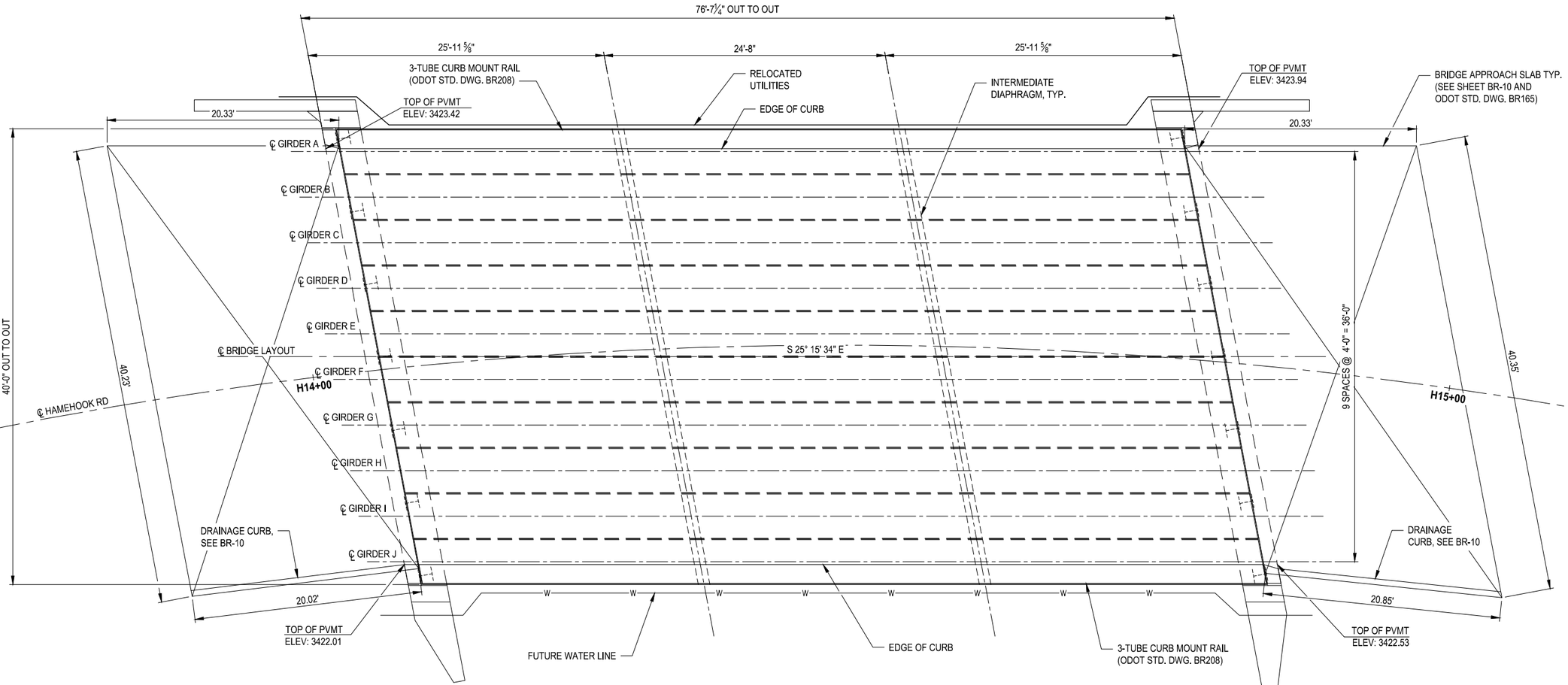
REGISTERED PROFESSIONAL ENGINEER
88969PE
DIGITALLY SIGNED 2024.08.02 12:12:37-07'00'
OREGON
MARCH 09, 2001
CHELSEA HORCHY
EXPIRES: 06/30/25

Parametrix

PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

FOUNDATION PLAN

DRAWING NO. 4 OF 27
BR-02



DECK PLAN
SCALE: 1" = 5 FT

GIRDER NOTES:

1. THE TOP SURFACE OF THE GIRDER SHALL BE INTENTIONALLY ROUGHENED.
2. SHOP PLANS SHALL SHOW THE SIZE AND LOCATION OF ALL CAST-IN HOLES. THERE SHALL BE NO FIELD-DRILLED HOLES IN THE PRESTRESSED SLABS.
3. THE CONTRACTOR SHALL SUBMIT A METHOD OF EQUALIZING GIRDER CAMBERS TO THE ENGINEER FOR REVIEW AND APPROVAL. GIRDER CAMBERS SHALL BE EQUALIZED UTILIZING THE APPROVED METHOD WHEN THE DIFFERENCE IN CAMBERS BETWEEN ADJACENT GIRDERS MEASURED AT MID-SPAN EXCEEDS ⅜ INCH. THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO EQUALIZING GIRDER CAMBERS WHEN THE DIFFERENCE IN CAMBERS BETWEEN ADJACENT GIRDERS EXCEEDS 1.5 INCHES. GIRDER EQUALIZATION IS A PROGRESSIVE OPERATION. IT SHALL START AT THE LOCATION OF THE MAXIMUM CAMBER DIFFERENCE AND SHALL PROGRESS TO THE LOCATION OF THE MINIMUM CAMBER DIFFERENCE. PRIOR TO RELEASE OF THE EQUALIZING EQUIPMENT AT ANY LOCATION, WELD AS MANY WELD TIES AS ARE LEVEL, BUT NOT LESS THAN A MINIMUM OF 3 WELD TIE CONNECTIONS CENTERED ON THE EQUALIZING EQUIPMENT.
4. AFTER ALL WELD TIE CONNECTIONS HAVE BEEN INSTALLED, KEYWAYS SHALL BE SANDBLASTED, CLEANED, AND GROUTED LEVEL WITH SURROUNDING GIRDER SURFACES. A BACKER ROD SHALL BE USED AS A SEAL FOR THE GROUT.
5. GROUT SHALL BE QUALIFIED PRODUCTS LISTING (QPL) APPROVED, NON-SHRINK TYPE.
6. NO VEHICULAR TRAFFIC OR CONSTRUCTION EQUIPMENT SHALL BE ALLOWED ON THE STRUCTURE UNTIL THE KEYWAY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.

CONSTRUCTION SEQUENCE:

1. ERECT GIRDERS
2. EQUALIZE GIRDER CAMBER, INSTALL WELD TIE CONNECTIONS (MINIMUM OF 3) RELEASE EQUALIZING EQUIPMENT, MOVE EQUALIZING EQUIPMENT TO NEXT LOCATION, AND REPEAT THIS STEP AS NEEDED.
3. INSTALL ALL REMAINING WELD TIE CONNECTIONS.
4. AFTER ALL WELD TIE CONNECTIONS HAVE BEEN INSTALLED, THE FOLLOWING ACTIVITIES MAY PROCEED AT THE CONTRACTOR'S DISCRETION: CAST END DIAPHRAGMS, AND GROUT SHEAR KEY.

	REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-BR03
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
88969PE
DIGITALLY SIGNED 2024.08.02 12:13:06-07'00'
OREGON
MARCH 09, 2021
CHELSEA HORCHY
EXPIRES: 06/30/25

Parametrix

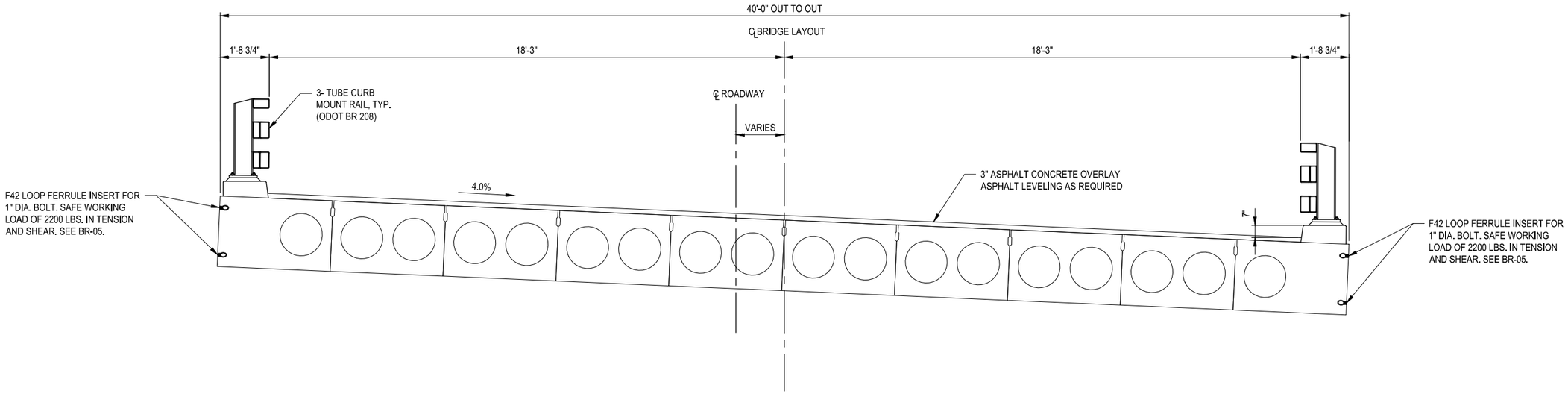
PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

DECK PLAN

DRAWING NO. 6 OF 27
BR-03

BIDDING PLANS
STRUCTURE NO. 24363

PLOTTED BY: WoodsNic DATE: Thursday, August 1, 2024 6:36:50 PM
PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\2-BRIDGE
LAYOUT: DECK PLAN



NOTE:
UTILITY HANGERS SHALL BE DESIGNED BY UTILITY WITH SUPPORT LOADS NOT TO EXCEED SAFE WORKING LOADS OF FERRULE INSERTS.

TYPICAL BRIDGE SECTION

SCALE: 1" = 2 FT

0 2'-0" 4'-0"

LAYOUT: TYPICAL BRIDGE SECTION PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\2-BRIDGE PLOTTED BY: WoodsNic DATE: Thursday, August 1, 2024 6:37:50 PM

	REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-BR04
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
88969PE
DIGITALLY SIGNED 2024.08.02 12:19:54-07'00'
OREGON
MARCH 09, 2001
CHELSEA HORCHY
EXPIRES: 06/30/25

Parametrix

PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

BIDDING PLANS
STRUCTURE NO. 24363

TYPICAL BRIDGE SECTION

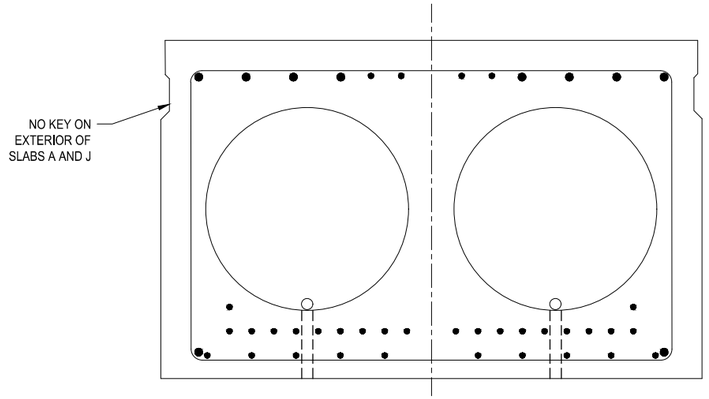
DRAWING NO. 7 OF 27

BR-04

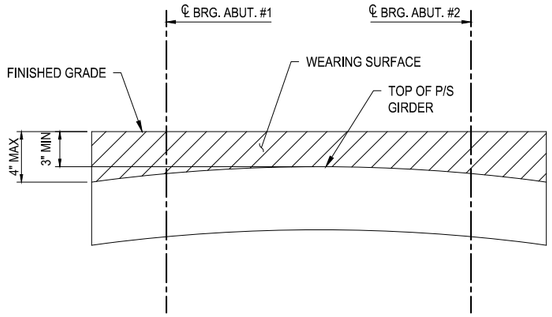
STANDARD PRECAST PRESTRESSED SLAB(S)

SLAB NUMBER	SPAN NUMBER	HORIZONTAL LENGTH O-O AT SLAB CL., FT. (AFTER SHORTENING)	SKEW ANGLE		NUMBER OF STRANDS	DEBONDED STRANDS	DISTANCE "YC" TO C.G. STRAND AT MIDSPAN, IN.	DISTANCE "YU" TO C.G.S. AT MIDSPAN SUBTRACTING TOP STRAND, IN.	CONCRETE STRENGTH @ 28 DAYS, KSI	INITIAL TENSION PER STRAND, KIPS	ESTIMATED MIDSPAN DEFLECTION, IN.				ESTIMATED SHORTENING 2 WEEKS AFTER RELEASE, IN.
			BACK	AHEAD							UPWARD AT RELEASE	UPWARD 3 MONTHS AFTER RELEASE	DOWNWARD DUE TO SIDL	DOWNWARD DUE TO SIDL 5 YRS. AFTER LOADING	
A-J	1	74'-0¾"	10.70°	10.70°	34	0	6.13	3.34	6.0	31.0	0.44	0.987	0.215	0.169	0.4

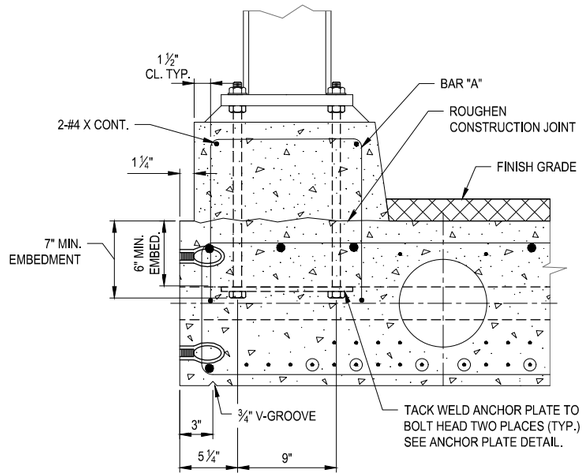
THE SUPERIMPOSED DEAD LOAD (SIDL) IS 250 LBS./FT.^{2} WHICH INCLUDES THE WEARING SURFACE, BRIDGE RAILS, UTILITIES AND ALLOWANCE FOR 3" DEPTH OF FUTURE WEARING SURFACE.



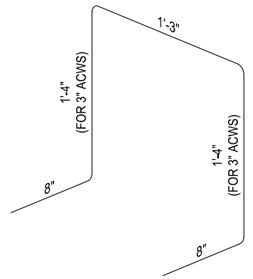
TYPICAL SECTION 30" SLAB
(DWG. BR422)
SCALE: NTS



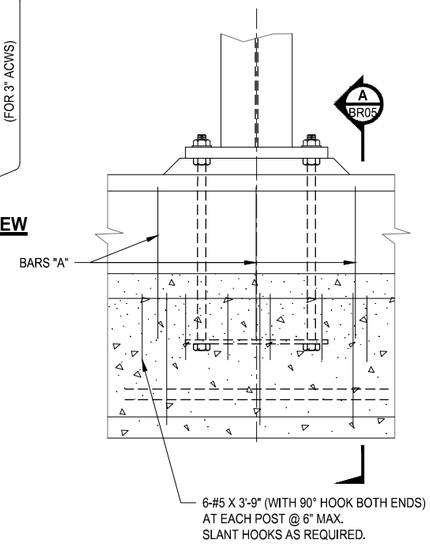
CAMBER DETAIL
SCALE: NTS



SECTION A
GIRDER A & J



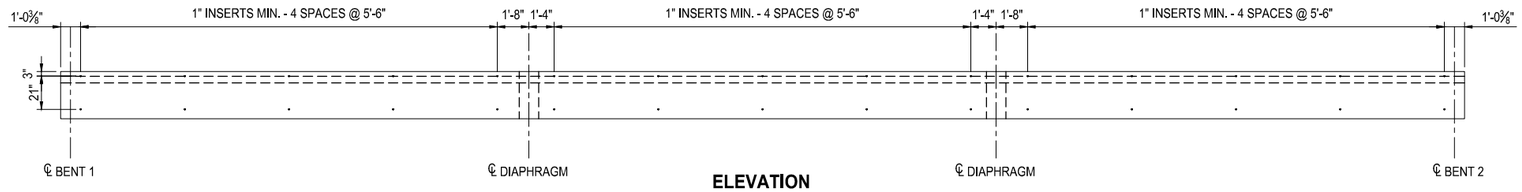
BAR "A" ISOMETRIC VIEW
EPOXY COATED #4 @ 18"



ELEVATION
GIRDER A & J

GENERAL NOTES
1. ADJUST RAIL POST LOCATIONS AS NECESSARY TO AVOID CONFLICTS BETWEEN RAIL POSTS AND TIE RODS.
2. NO EXTERIOR VOID IN EXTERIOR SLAB.

CURB AND RAIL POST CONNECTION ON PRECAST SLAB DECK
SCALE: 1-3/4" = 1'



ELEVATION
EXTERIOR SLABS
SCALE: NTS

REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY
FILE NAME BE2509010-BR05
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER 88969PE DIGITALLY SIGNED 2024.08.02 12:14:38-07'00' OREGON CHELSEA HORCHY MARCH 09, 2021
EXPIRES: 06/30/25

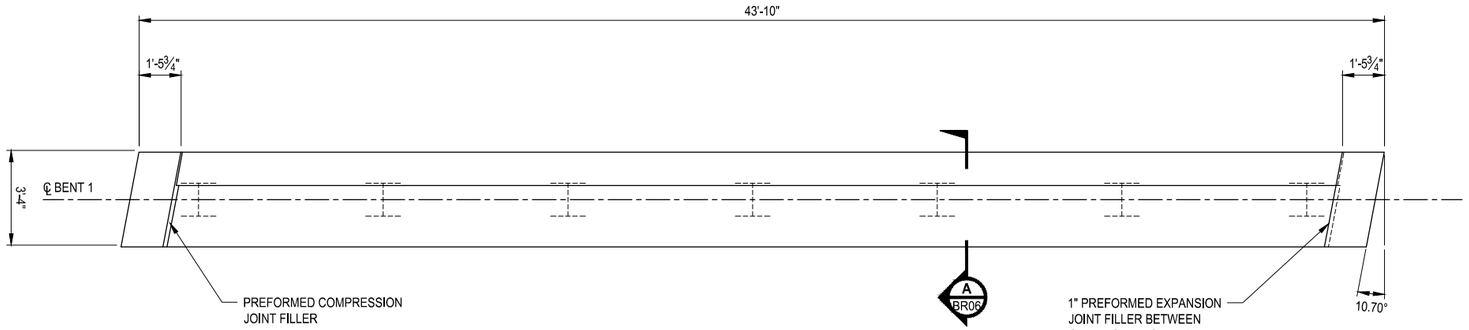
Parametrix

PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

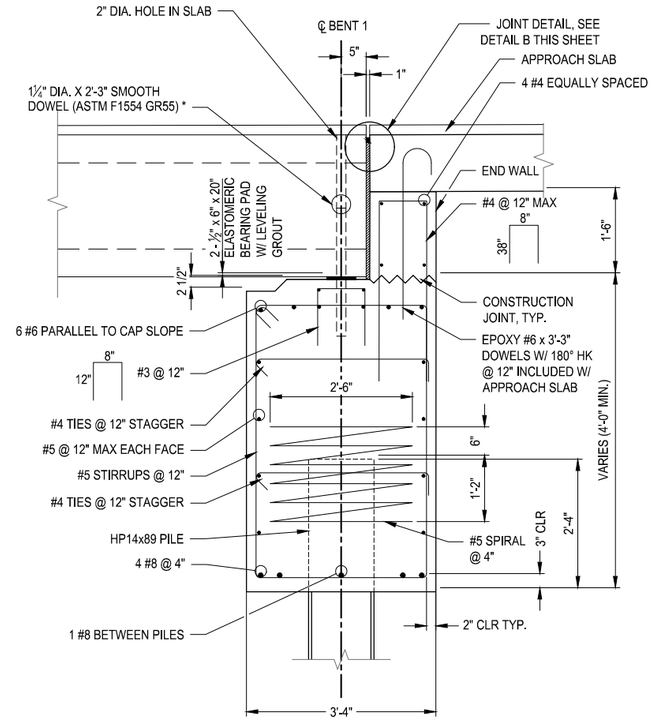
30IN PRECAST PRESTRESSED SLABS

DRAWING NO. 8 OF 27
BR-05

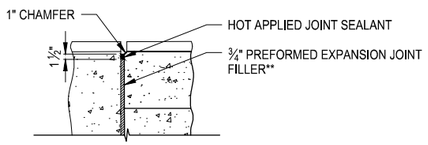
BIDDING PLANS
STRUCTURE NO. 24363



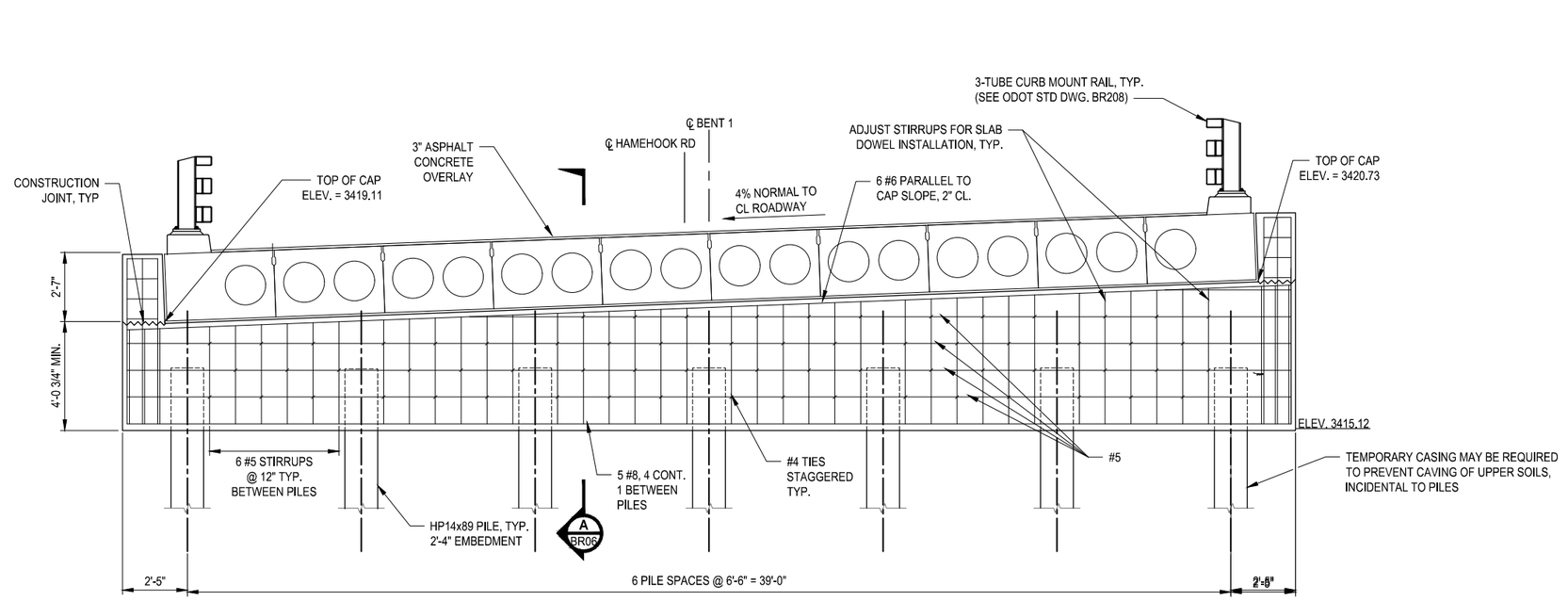
PLAN VIEW
SCALE: 3/8" = 1'-0"



SECTION A
SCALE: NTS



JOINT DETAIL B
SCALE: NTS



ELEVATION LOOKING BACK STATION
SCALE: 3/8" = 1'-0"

* DRILL A 1½" DIA. HOLE 12" DEEP INTO PILE CAP AFTER SLABS ARE IN PLACE, TIE RODS HAVE BEEN TIGHTENED AND CURED GROUT IN KEYS. USE LOW-IMPACT ROTARY DRILL. PLACE 2" DIA. X 1" THICK POLYSTYRENE PLUG ON TOP OF DOWEL. FILL REMAINDER OF HOLE WITH NON-SHRINK GROUT.

** PLACE 1" PREFORMED EXPANSION JOINT FILLER AFTER SLABS ARE IN PLACE, TIE RODS ARE TIGHTENED, AND DOWELS ARE INSTALLED. CONSTRUCT END BLOCKS PRIOR TO BACKFILLING AND CONSTRUCTING APPROACH SLAB.

NOTE: WINGWALLS NOT SHOWN FOR CLARITY.

BIDDING PLANS
STRUCTURE NO. 24363

	REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-BR06_BR07
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
88969PE
ORIGINALLY SIGNED: 2024.08.02 12:15:32-07'00'
OREGON
MARCH 09, 2021
CHELSEA HORCHY
EXPIRES: 06/30/25

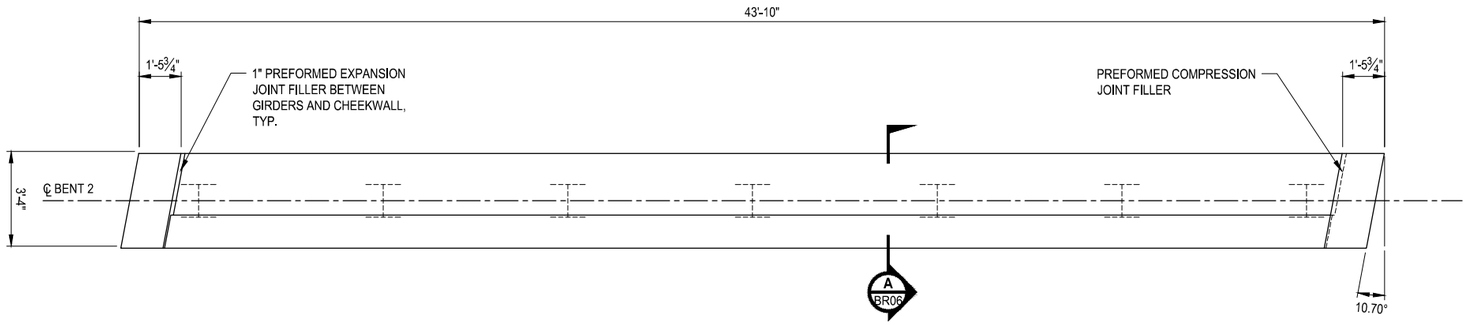
Parametrix

PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

BENT 1 PLAN AND ELEVATION

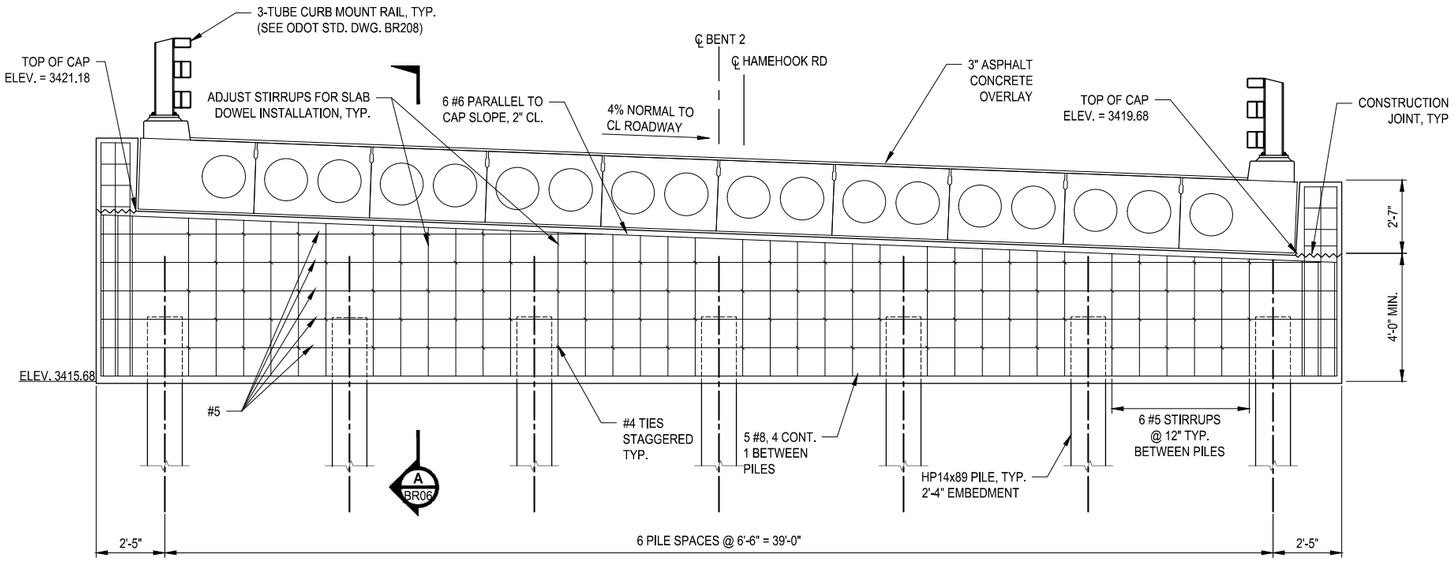
DRAWING NO. 9 OF 27
BR-06

LAYOUT: BENT 1 PLAN AND ELEVATION PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\2-BRIDGE PLOTTED BY: WoodsNic DATE: Thursday, August 1, 2024 6:29:25 PM



PLAN VIEW

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



ELEVATION LOOKING AHEAD STATION

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

	REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-BR06_BR07
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
88969PE
DIGITALLY SIGNED 2024.08.02 12:15:55-07'00'
OREGON
MARCH 09, 2001
CHELSEA HORCHY
EXPIRES: 06/30/25

Parametrix

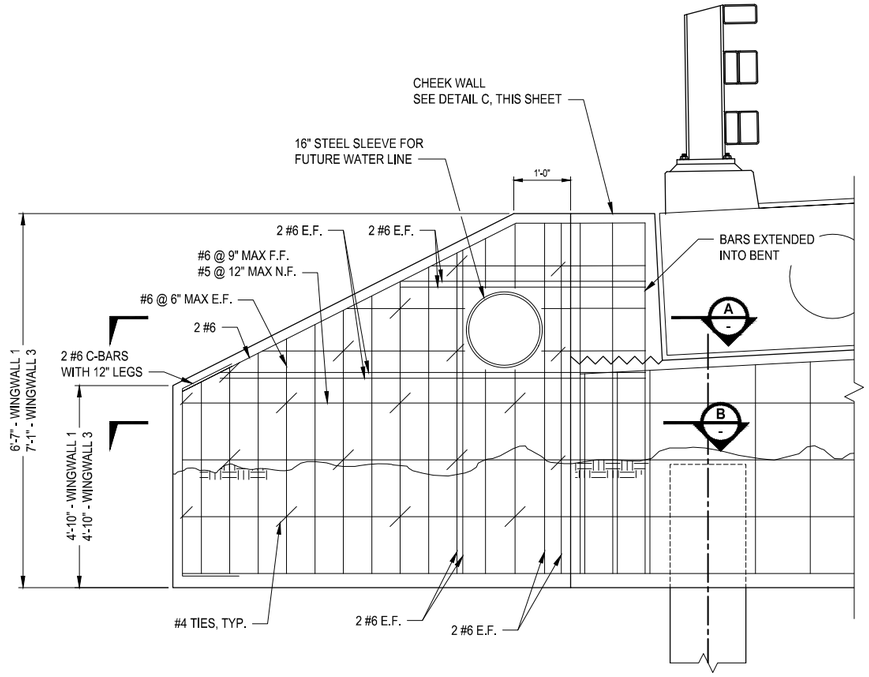
PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

BENT 2 PLAN AND ELEVATION

DRAWING NO. 10 OF 27
BR-07

BIDDING PLANS
STRUCTURE NO. 24363

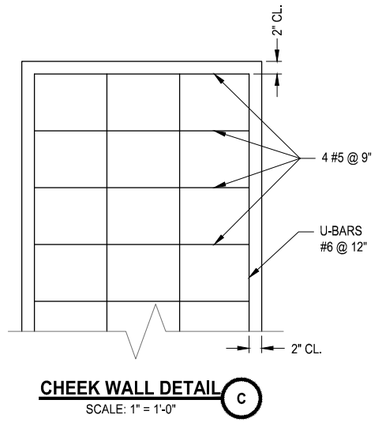
LAYOUT: BENT 2 PLAN AND ELEVATION PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\2-BRIDGE PLOTTED BY: WoodsNic DATE: Thursday, August 1, 2024 6:29:50 PM



ELEVATION WINGWALL 1 & 3

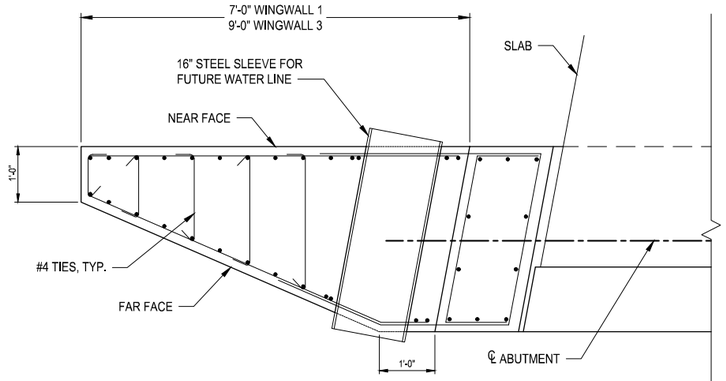
SCALE: 3/4" = 1'-0"

NOTE:
WINGWALL 1 ORIENTATION SHOWN.
WINGWALL 3 OPPOSITE HAND.



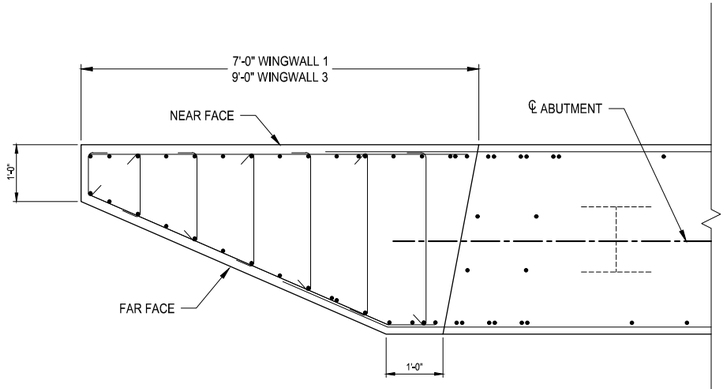
CHEEK WALL DETAIL C

SCALE: 1" = 1'-0"



SECTION A

SCALE: 3/4" = 1'-0"



SECTION B

SCALE: 3/4" = 1'-0"

NOTE:
SECTIONS A AND B AT WINGWALL 3 SHOWN. WINGWALL 1 SYMMETRIC ABOUT CENTERLINE ABUTMENT.

	REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-BR08
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
88969PE
DIGITALLY SIGNED 2024.08.02 12:16:37-07'00'
OREGON
MARCH 09, 2001
CHELSEA HORCHY
EXPIRES: 06/30/25

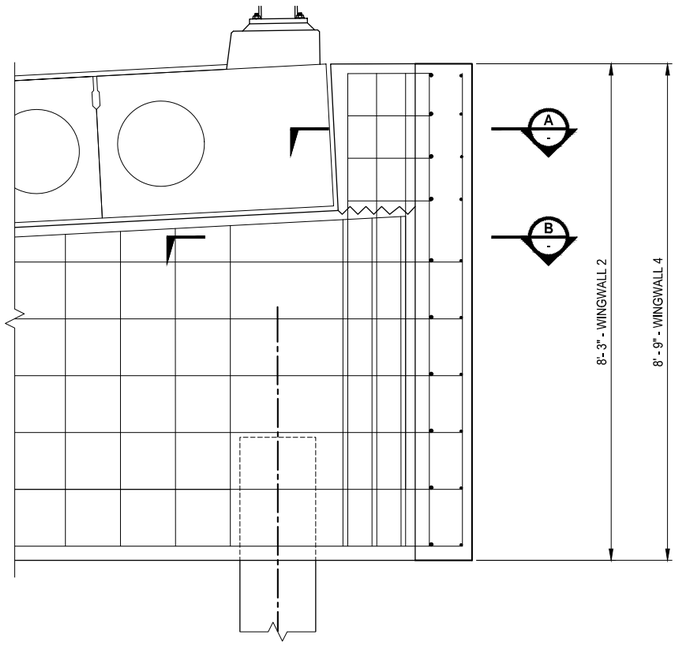
Parametrix

PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

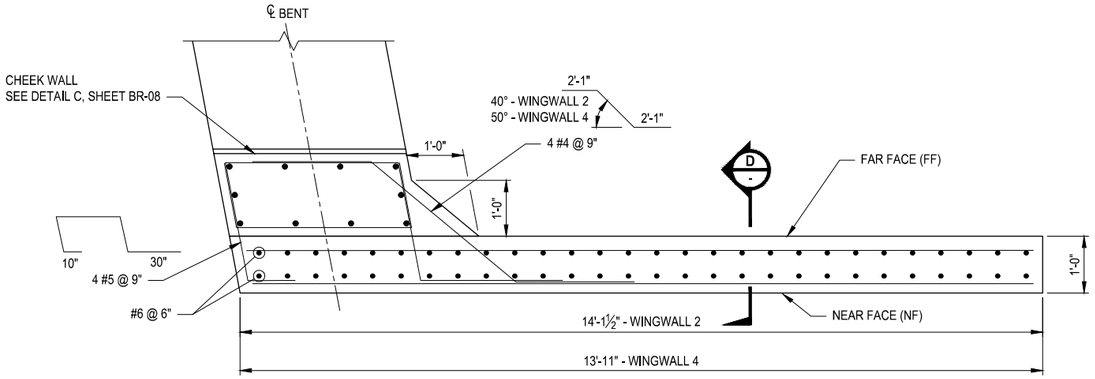
WINGWALL 1 & 3 DETAILS

DRAWING NO. 11 OF 27
BR-08

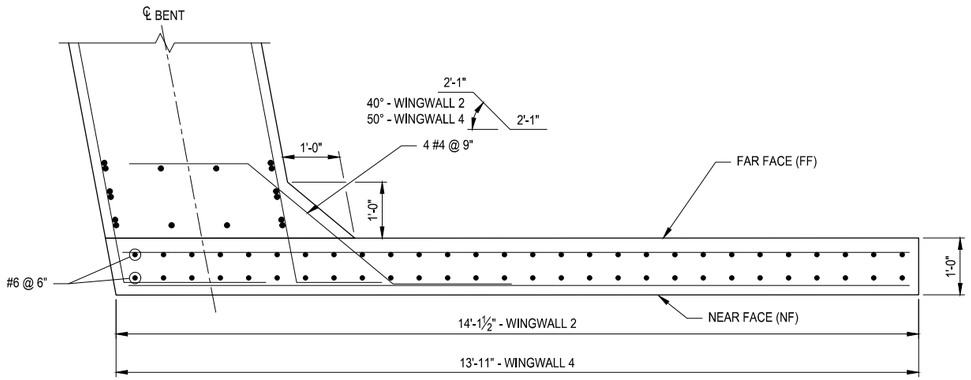
BIDDING PLANS
STRUCTURE NO. 24363



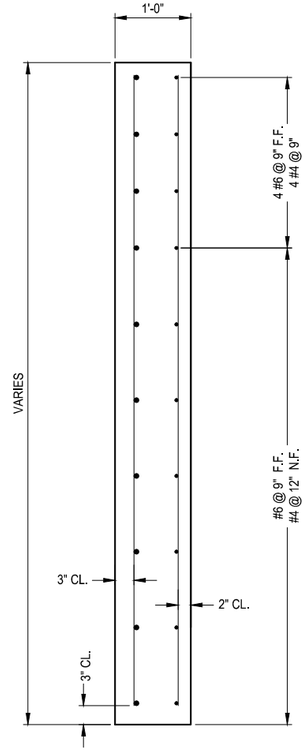
ELEVATION WINGWALL 2 & 4
SCALE: 3/4" = 1'-0"



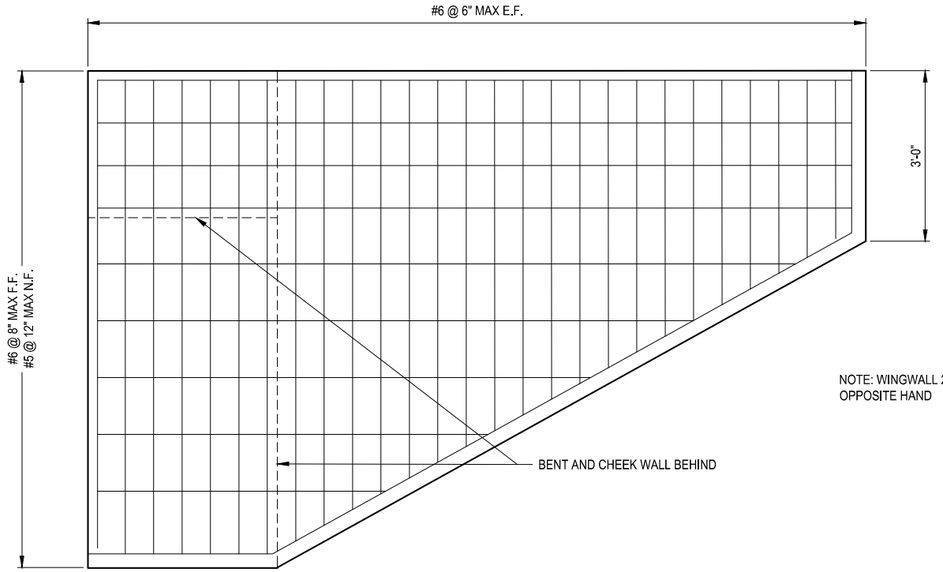
SECTION A
SCALE: 3/4" = 1'-0"



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



SECTION D
SCALE: 1" = 1'-0"



TYPICAL WINGWALL ELEVATION
SCALE: 3/4" = 1'-0"

NOTE: WINGWALL 2 SHOWN, WINGWALL 4 OPPOSITE HAND

BIDDING PLANS
STRUCTURE NO. 24363

	REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-BR09
JOB No. 297-2509-010
DATE AUGUST 2024

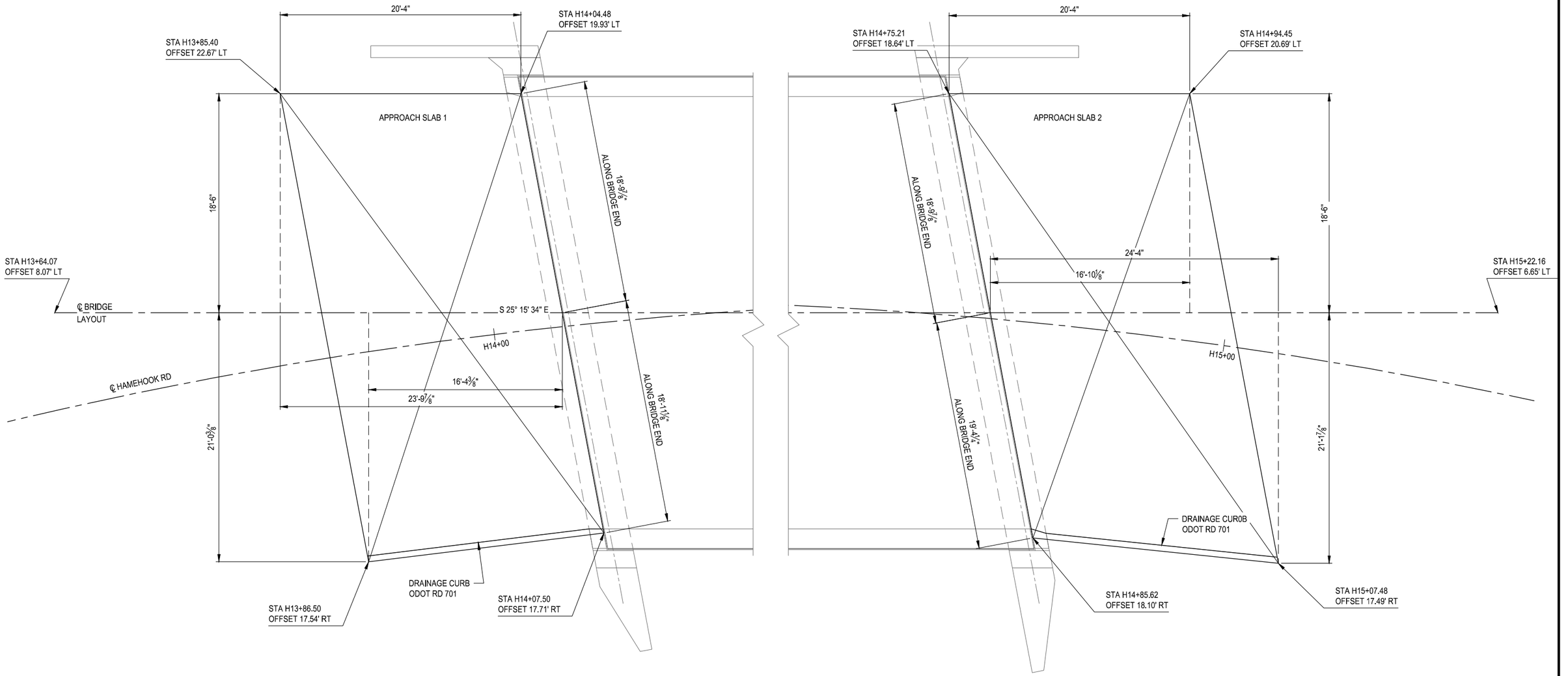
REGISTERED PROFESSIONAL ENGINEER
88969PE
DIGITALLY SIGNED 2024.08.02 12:17:00-07'00'
OREGON
MARCH 09, 2001
CHELSEA HORCHY
EXPIRES: 06/30/25

Parametrix

PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

WINGWALL 2 & 4 DETAILS

DRAWING NO. 12 OF 27
BR-09



NOTE:
ALL DIMENSIONS ARE NORMAL TO THE CENTERLINE BRIDGE LAYOUT LINE UNLESS NOTED OTHERWISE.

PLAN - APPROACH SLAB LAYOUT

SCALE: 1" = 4'-2"

	REVISIONS	DATE	BY

DESIGNED C. HORCHY
DRAWN S. McDONALD
CHECKED D. McINTIER
APPROVED B. JOHNSON

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-BR10
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
88969PE
DIGITALLY SIGNED 2024.08.02 12:17:45-07'00'
OREGON
MARCH 09, 2021
CHELSEA HORCHY
EXPIRES: 06/30/25

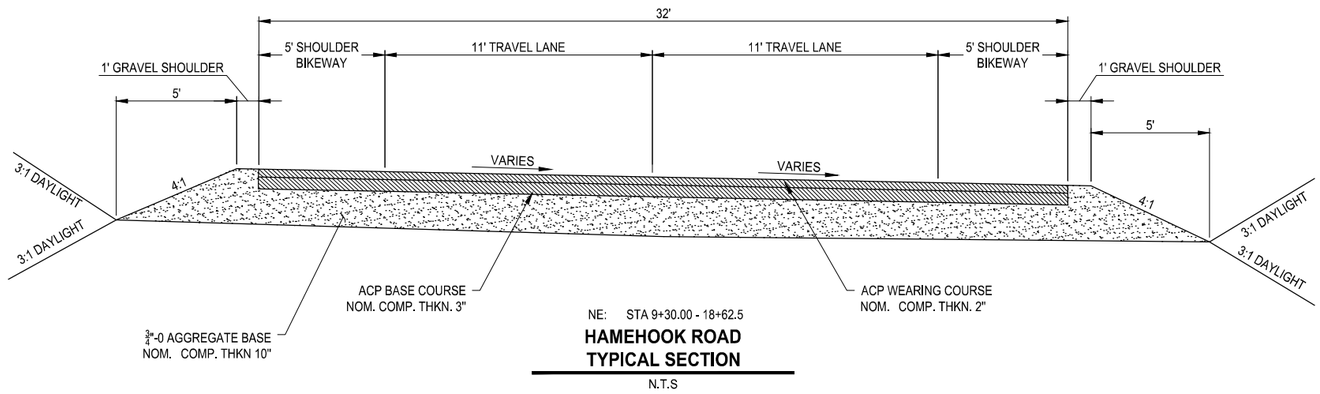
Parametrix

PROJECT NAME
HAMEHOOK BRIDGE REPLACEMENT
DESCHUTES COUNTY

BRIDGE APPROACH SLAB

DRAWING NO. 13 OF 27
BR-10

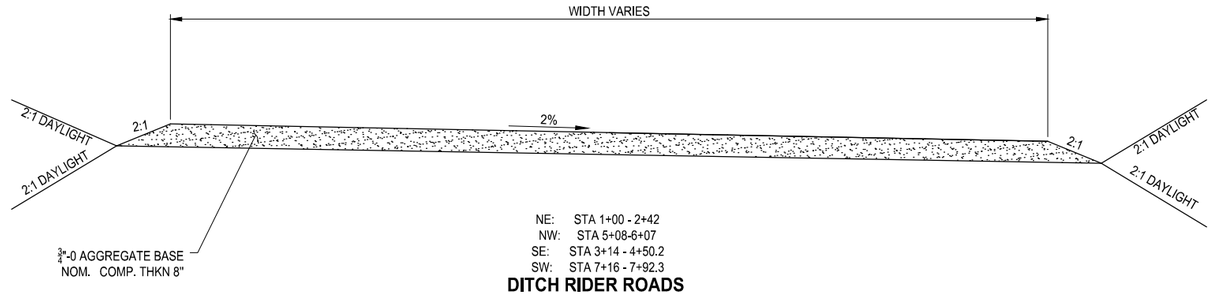
BIDDING PLANS
STRUCTURE NO. 24363



NE: STA 9+30.00 - 18+62.5

HAMEHOOK ROAD
TYPICAL SECTION

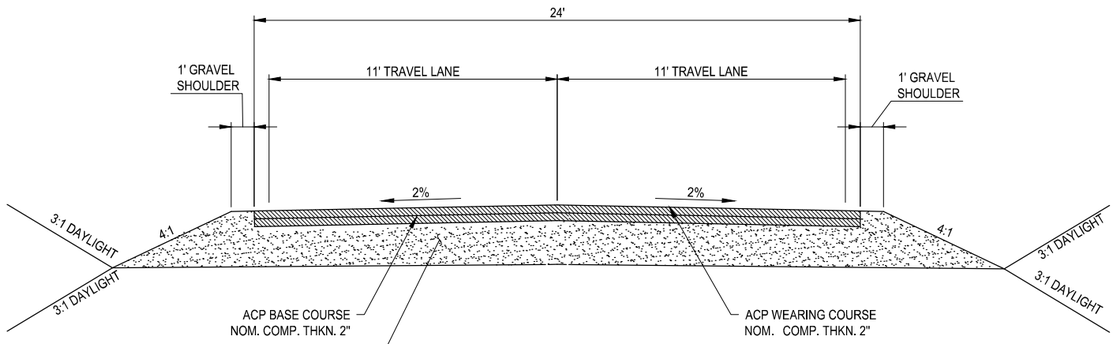
N.T.S



NE: STA 1+00 - 2+42
NW: STA 5+08-6+07
SE: STA 3+14 - 4+50.2
SW: STA 7+16 - 7+92.3

DITCH RIDER ROADS
TYPICAL SECTION

N.T.S



STA: 100+01.6 - 101+57.00

PIONEER LOOP TYPICAL SECTION

N.T.S

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C3-TS
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:44:35-07'00'

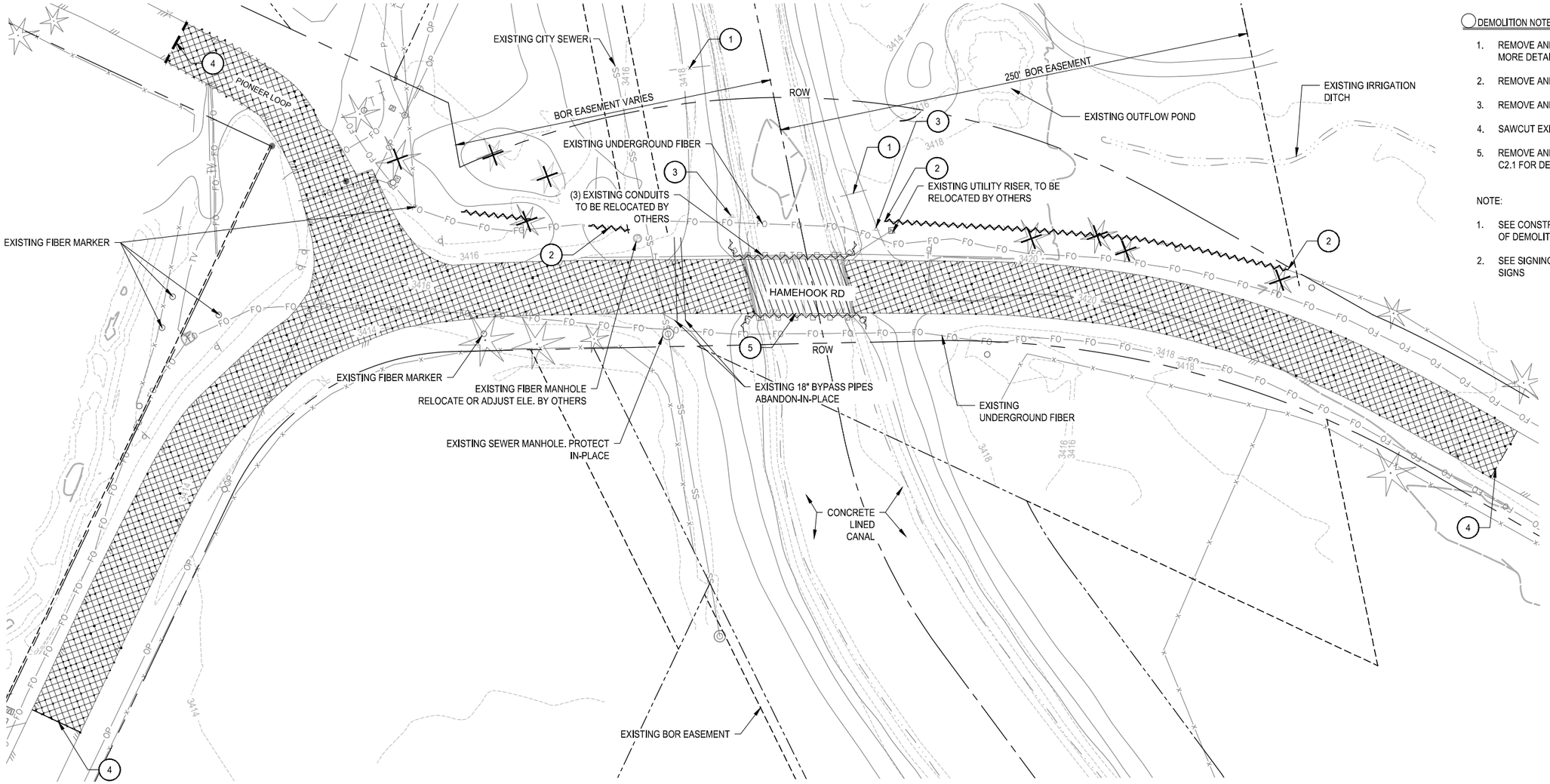
Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

TYPICAL SECTIONS

DRAWING NO. 14 OF 28
C1.0

LAYOUT: TYPICAL SECTIONS PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\3-ROADWAY PLOTTED BY: ricodov DATE: Friday, August 2, 2024 8:42:08 AM



DEMOLITION NOTES

1. REMOVE AND RELOCATED EXISTING GATE,SEE SHEET C4.2 FOR MORE DETAILS
2. REMOVE AND DISPOSE EXISTING FENCING
3. REMOVE AND RELOCATE EXISTING NUID CANAL ROAD SIGNS
4. SAWCUT EXISTING ROAD. SEE C4.0-C4.2 FOR MORE DETAILS
5. REMOVE AND DISPOSE OF EXISTING BRIDGE (#17C32). SEE SHEET C2.1 FOR DETAILS

NOTE:

1. SEE CONSTRUCTION STAGING PLANS C7.0-C7.3 FOR SEQUENCING OF DEMOLITION
2. SEE SIGNING AND STRIPING PLAN FOR REMOVAL OF EXISTING SIGNS

DEMOLITION PLAN

SCALE: 1"=30'

0 30' 60'

LEGEND

- REMOVE EXISTING TREE (TREES ARE 6" DBH AND LARGER. SMALLER TREES NOT SHOWN MAY REQUIRE REMOVAL)
- REMOVAL OF SURFACING
- REMOVAL OF EXISTING FENCE
- REMOVAL OF STRUCTURE

BIDDING PLANS

LAYOUT: DEMOLITION PLAN PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\3-ROADWAY PLOTTED BY: ricodov DATE: Friday, August 2, 2024 8:43:43 AM

REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C2-DP
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES: 12/31/2024

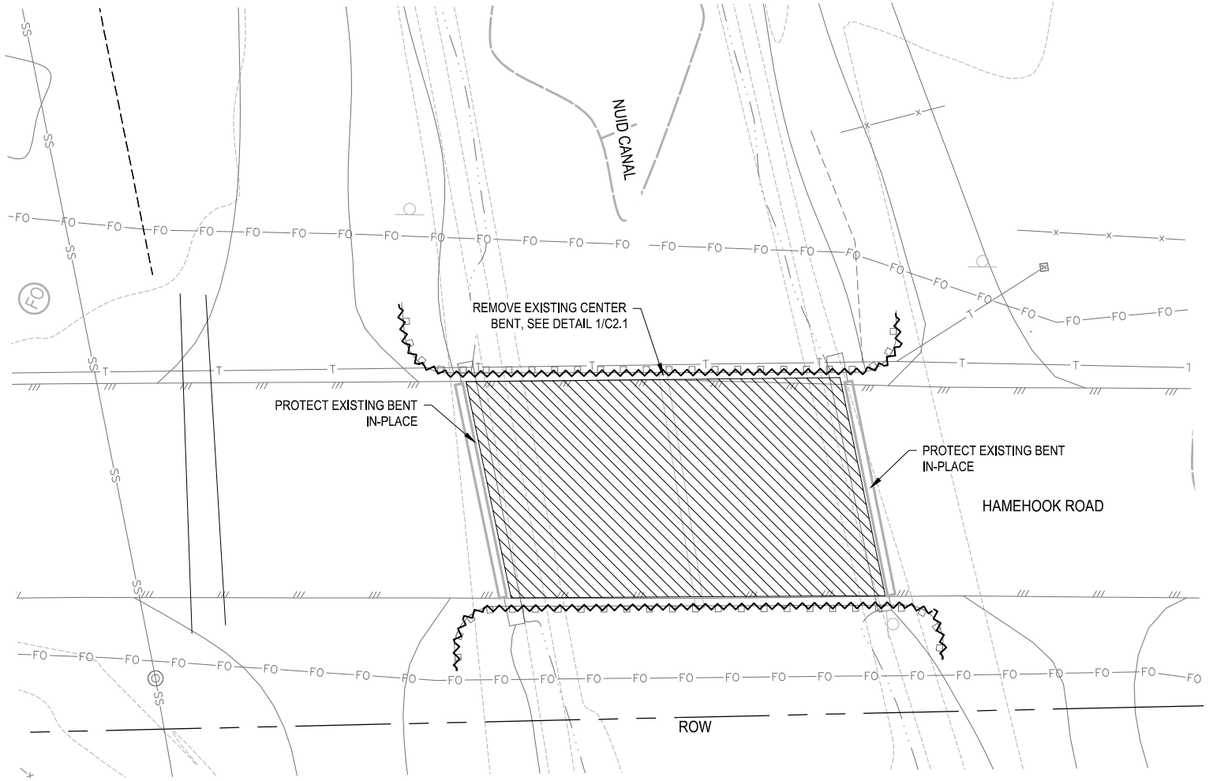
Digitally signed by David Rico
Date: 2024.08.02 16:43:24-07'00'

Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

DEMOLITION PLAN

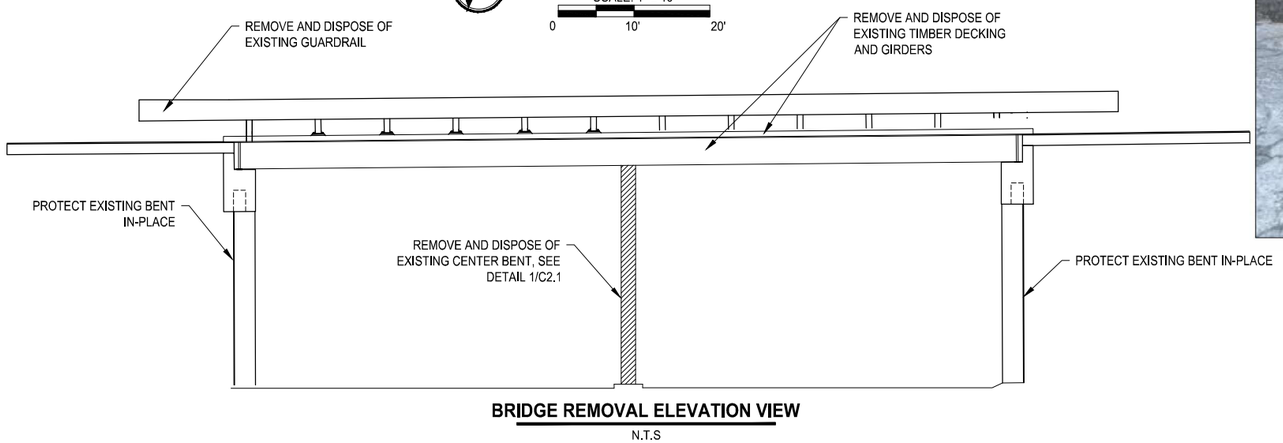
DRAWING NO. 15 OF 28
C2.0



BRIDGE REMOVAL PLAN

SCALE: 1" = 10'

0 10' 20'



BRIDGE REMOVAL ELEVATION VIEW

N.T.S

NOTE:

1. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO THE CANAL CONCRETE LINING TO THE SATISFACTION OF NUID.
2. NO HEAVY EQUIPMENT ALLOWED IN THE CANAL FOR REMOVAL OF CENTER BENT
3. CONTRACTOR TO NOTIFY NORTH UNIT IRRIGATION DISTRICT 14 DAYS IN ADVANCE PRIOR TO REMOVAL OF EXISTING CENTER BENT.
4. CONTRACTOR TO PROVIDE WORK CONTAINMENT SYSTEM FOR BRIDGE REMOVAL

CENTER BENT REMOVAL

N.T.S

1 / C2.1

NOTE:

1. CONTRACTOR TO REMOVE EXPOSED REBAR AND FLUSH SEAL WITH GROUT.
2. GROUT MATERIAL TO BE APPROVED BY NUID

LEGEND

- REMOVAL OF GUARDRAIL
- REMOVAL OF STRUCTURE NO. 17C32

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C2-DP
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:43:03-07'00'

Parametrix

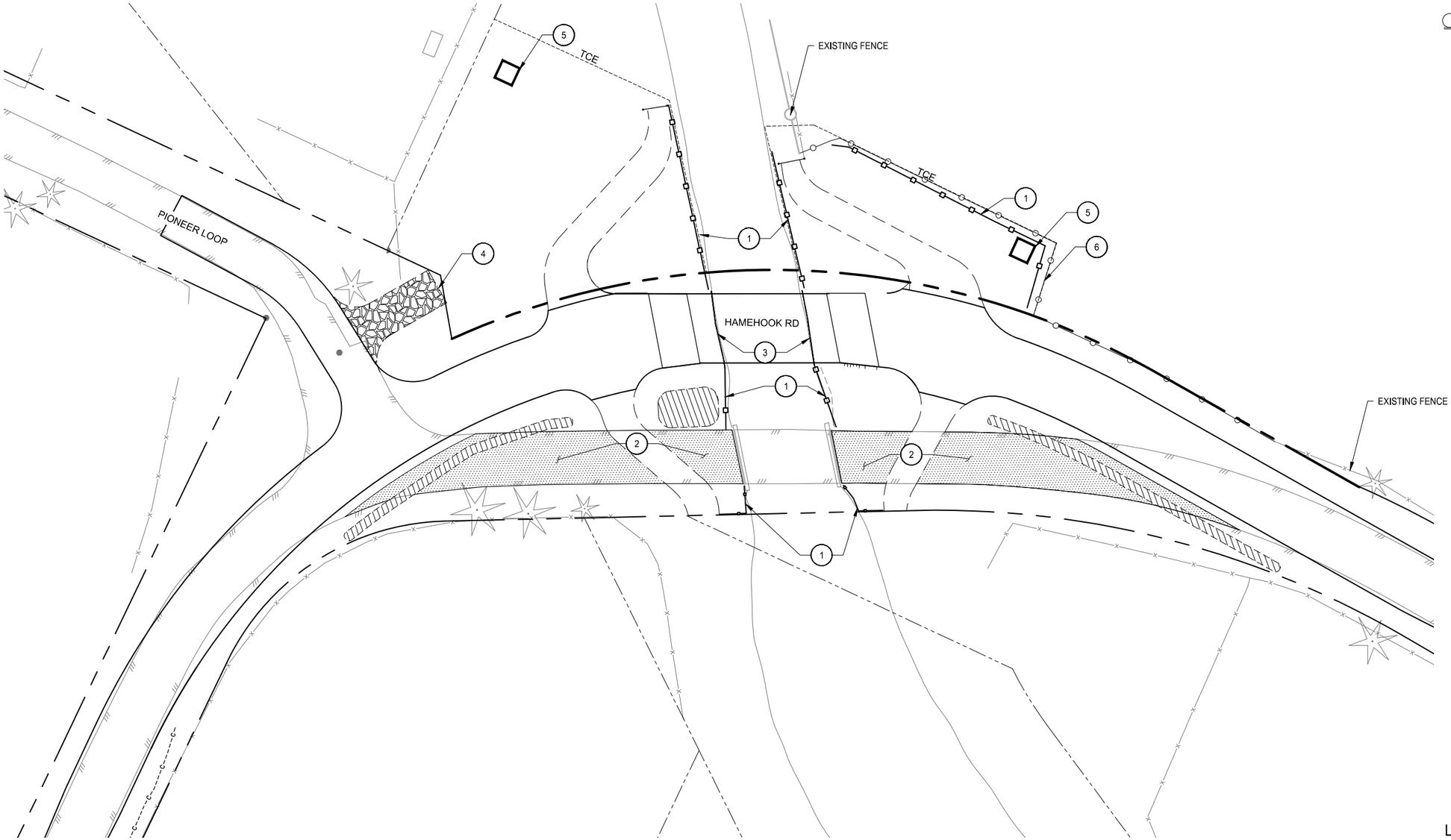
PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

BRIDGE REMOVAL PLAN

DRAWING NO. 16 OF 28

C2.1

LAYOUT: BRIDGE REMOVAL PLAN PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Homehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\3-ROADWAY PLOTTED BY: ricodav DATE: Friday, August 2, 2024 8:44:02 AM



DEMOLITION NOTES

1. INSTALL SEDIMENT FENCE PER ODOT STD. DWG. RD1040
2. SEED DISTURBED AREAS WITH PERMANENT SEEDING MIX
3. INSTALL FILTER SOCK PER ODOT STD. DWG. RD1030
4. CONSTRUCT CONSTRUCTION ENTRANCE TYPE 1 PER ODOT STD DWG RD 1000
5. INSTALL CONCRETE WASHOUT PER ODOT STD DWG RD 1070. COORDINATE FINAL LOCATION WITH DESCHUTES COUNTY
6. INSTALL TEMPORARY CHAINLINK FENCE PANELS

EROSION CONTROL PLAN

SCALE: 1"=30'

0 30' 60'

LEGEND

- PERMANENT NATIVE SEEDING
- WATER QUALITY SWALE
- SILT FENCE
- FILTER SOCK
- TEMPORARY CHAINLINK FENCE

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C3-EC
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2018
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:42:43-07'00'

Parametrix

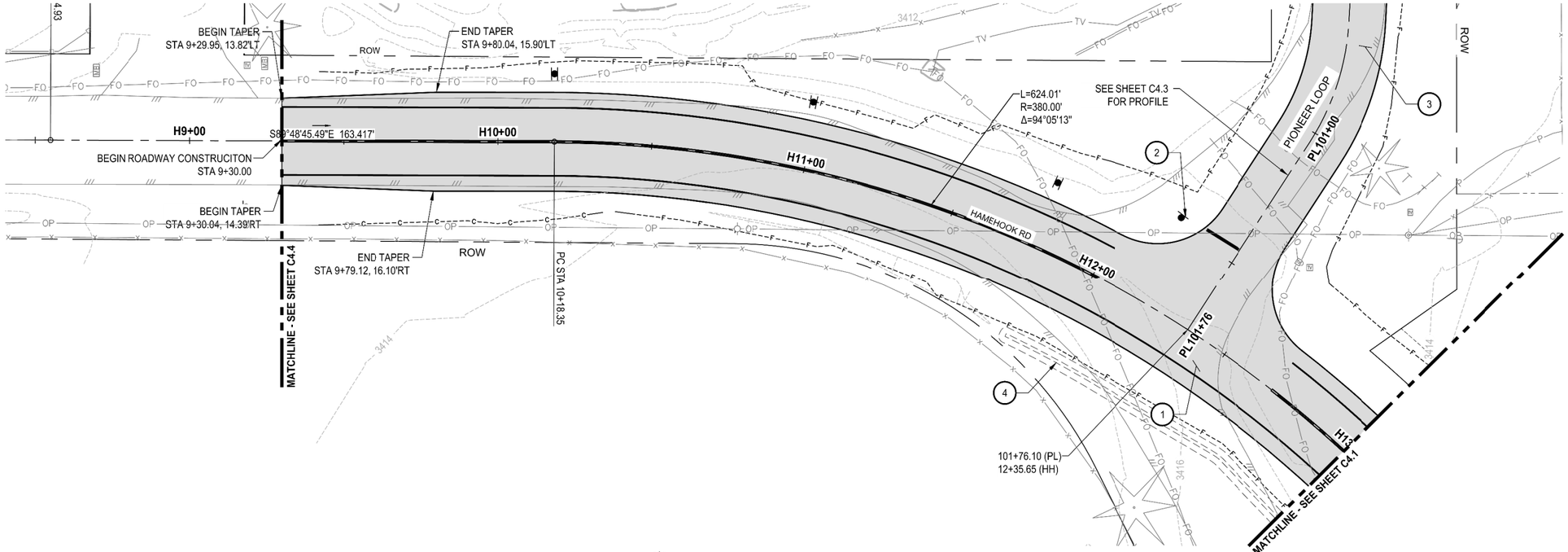
PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

EROSION CONTROL PLAN

DRAWING NO. 17 OF 28

C3.0

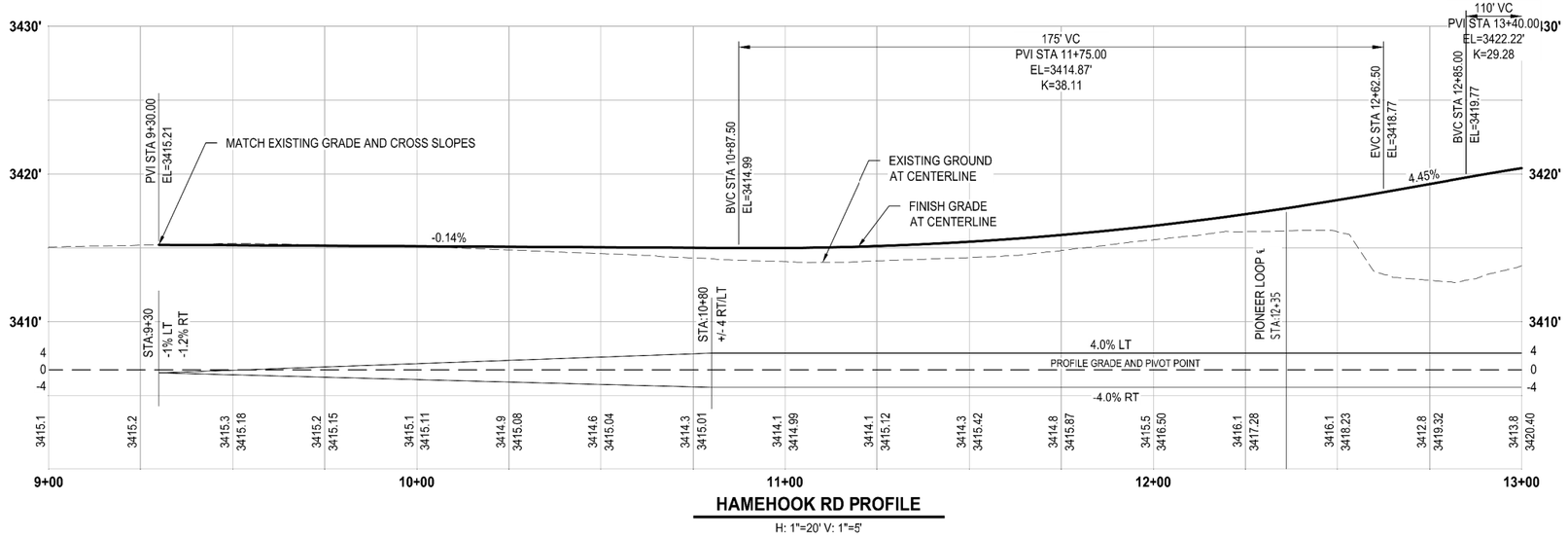
LAYOUT: EROSION CONTROL PLAN PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\3--ROADWAY PLOTTED BY: ricodov DATE: Friday, August 2, 2024 9:26:54 AM



HAMEHOOK RD PLAN

SCALE: 1"=20'

0 20' 40'



HAMEHOOK RD PROFILE

H: 1"=20' V: 1"=5'

CONSTRUCTION NOTES

1. CONSTRUCT ROAD PER TYPICAL SECTION 1/C1.0
2. INSTALL STOP SIGN. SEE SIGNING AND STRIPING PLAN
3. CONSTRUCT ROAD PER TYPICAL SECTION 3/C1.0
4. CONSTRUCT WATER QUALITY SWALE PER DETAIL 1/C5.0

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C4-PP
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2018
DAVID RICO
EXPIRES:12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:41:13-07'00'

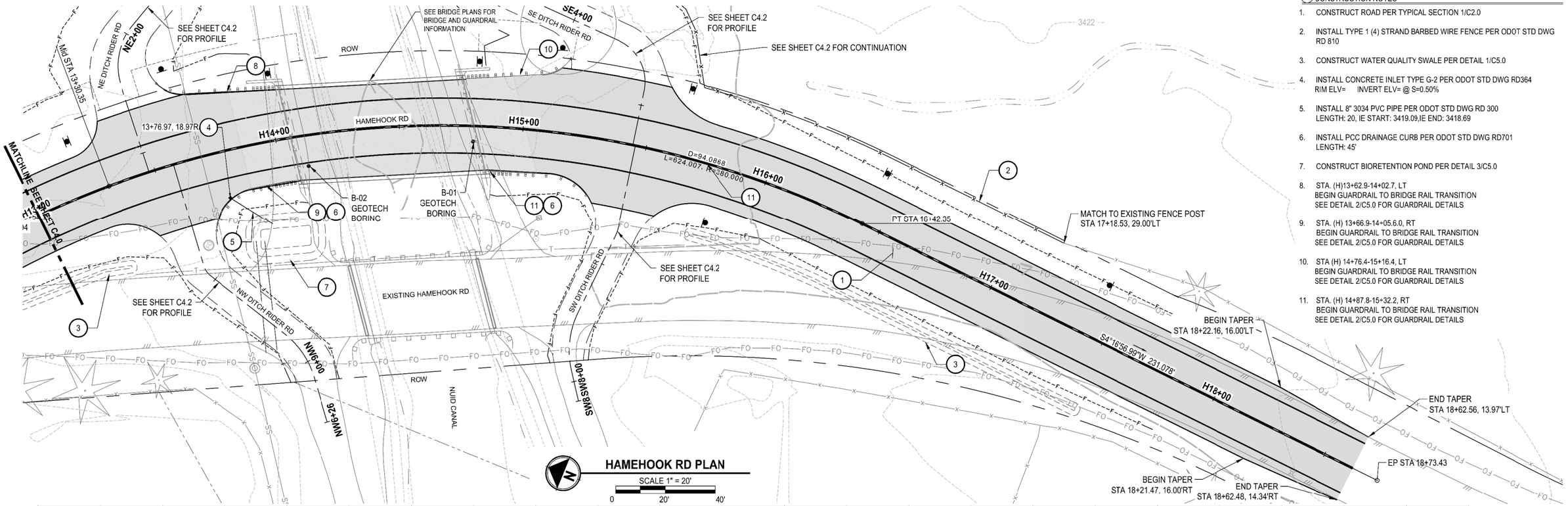
Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

PLAN & PROFILE-HAMEHOOK RD

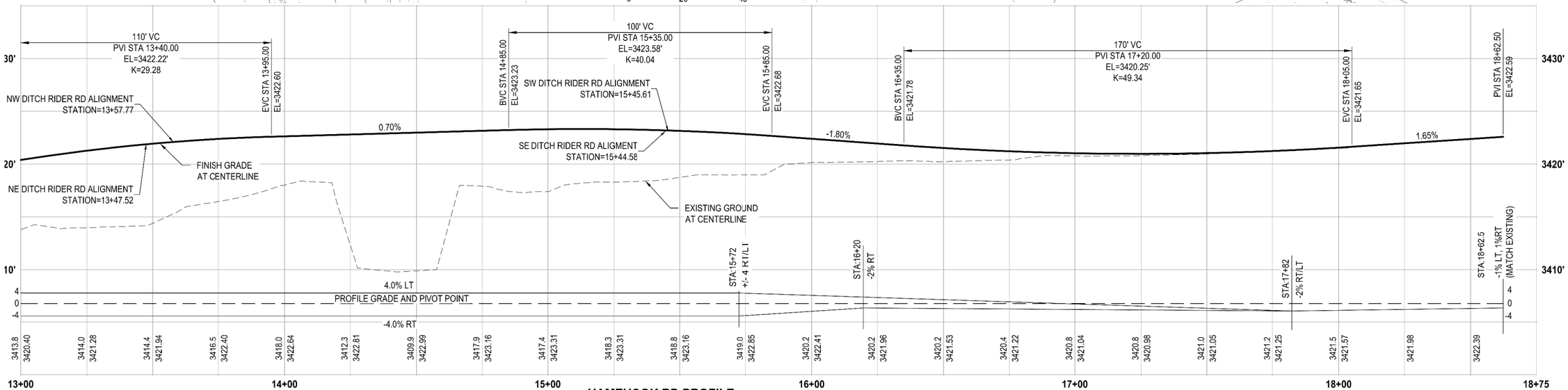
DRAWING NO. 18 OF 28
C4.0

PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Sves\CADD\DWG\Sheets\3-ROADWAY PLOTTED BY: ricodov DATE: Friday, August 2, 2024 8:46:23 AM
LAYOUT: C4.0



HAMEHOOK RD PLAN

SCALE 1" = 20'



HAMEHOOK RD PROFILE

H: 1"=20' V: 1"=5'

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C4-PP
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES:12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:42:25-07'00'

Parametrix

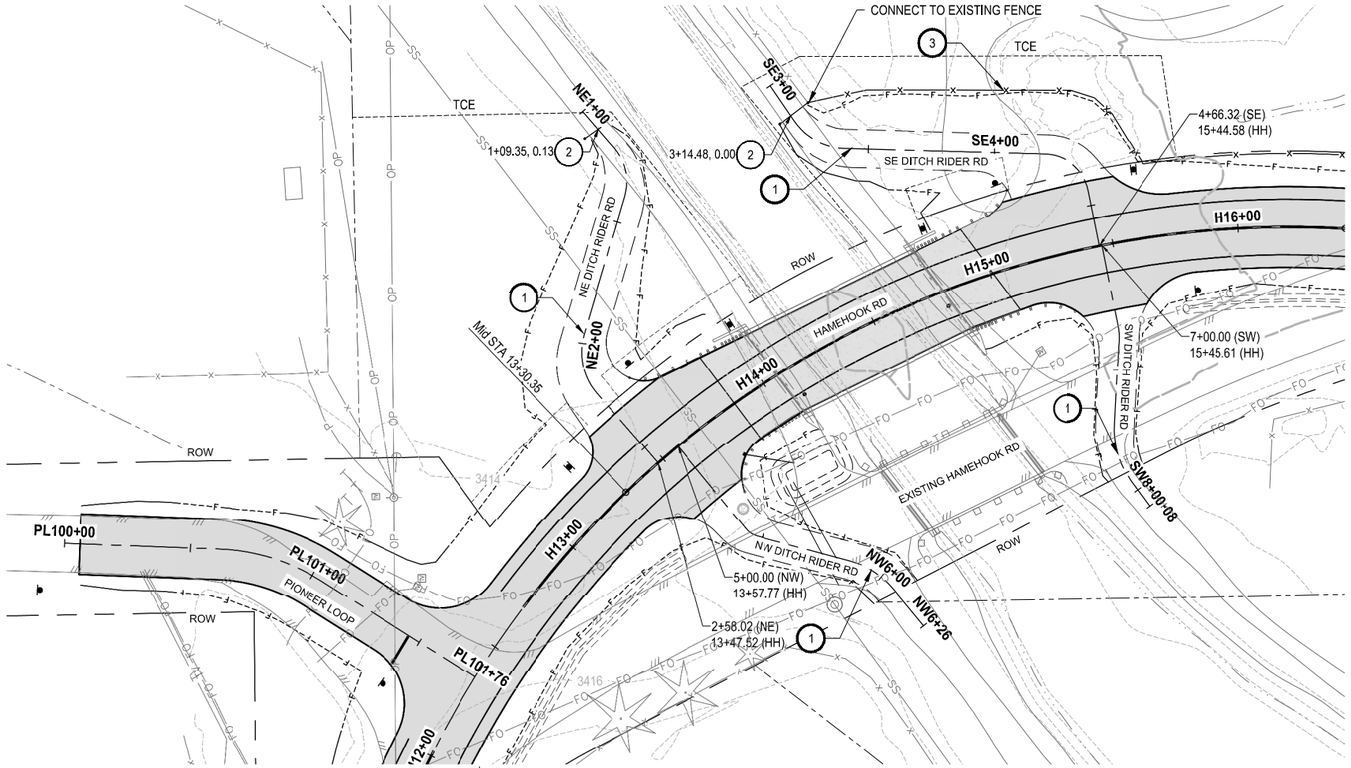
PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

PLAN & PROFILE-HAMEHOOK RD

DRAWING NO. 19 OF 28

C4.1

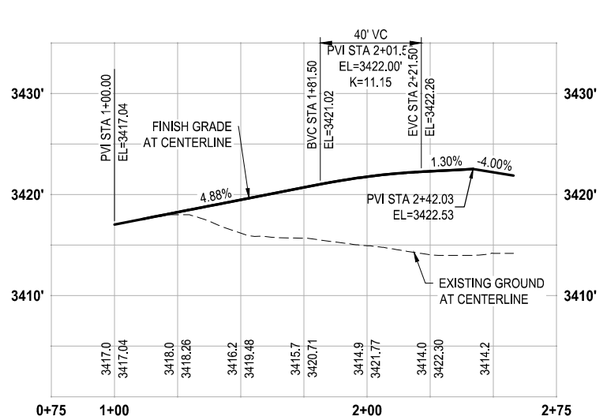
PLOTTED BY: rlcodov DATE: Friday, August 2, 2024 8:46:58 AM
PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Homehook Rd Bridge\99svcs\CADD\DWG\SHEETS\3-ROADWAY
LAYOUT: C4.1



PLAN & PROFILE-DITCH RIDER RD

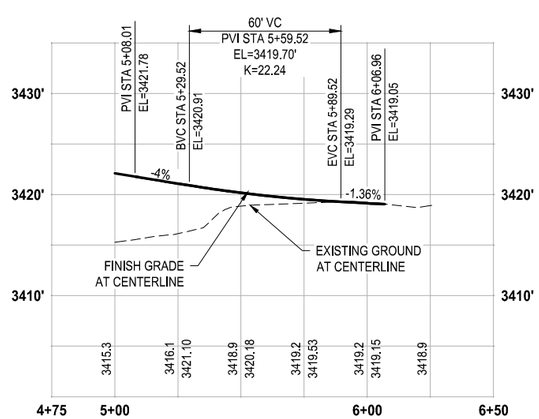
SCALE:1"=30'

0 30' 60'



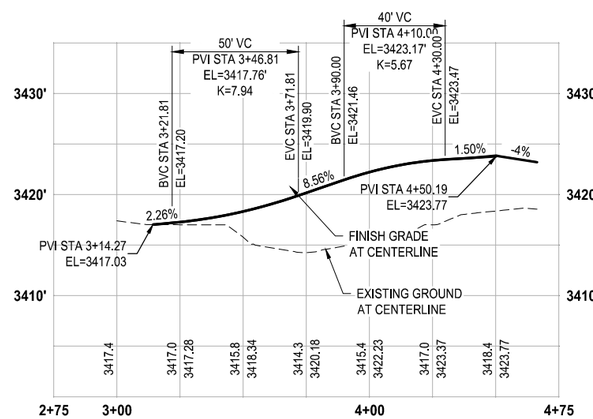
NE DITCH RIDER RD PROFILE

H: 1"=30' V: 1"=8'



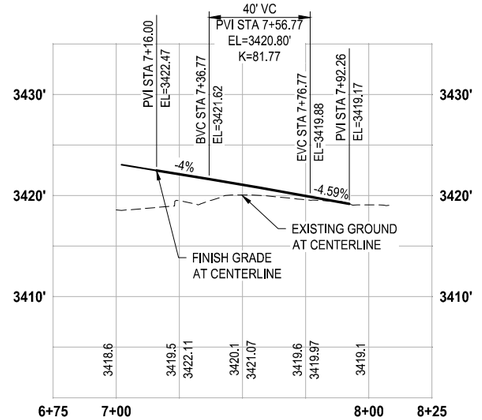
NW DITCH RIDER RD PROFILE

H: 1"=30' V: 1"=8'



SE DITCH RIDER RD PROFILE

H: 1"=30' V: 1"=8'



SW DITCH RIDER RD PROFILE

H: 1"=30' V: 1"=8'

CONSTRUCTION NOTES

1. CONSTRUCT DITCH RIDER ROADS PER DETAIL 2/C2.0
2. REINSTALL GATE
3. INSTALL TYPE 1 (4) STRAND BARBED WIRE FENCE PER ODOT STD DWG RD 810

BIDDING PLANS

REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C4-PP
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:11:45-07'00'

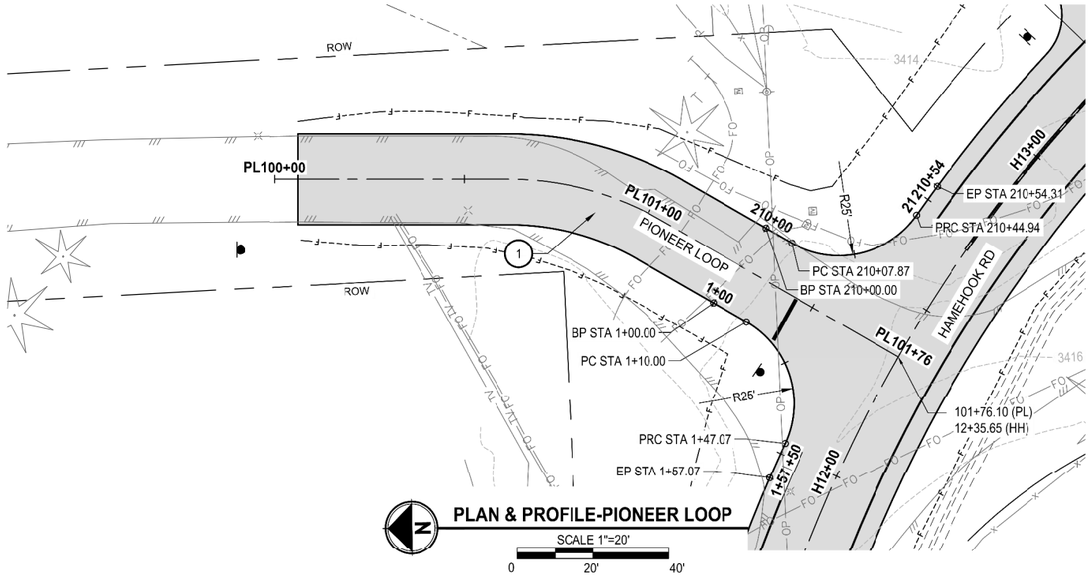
Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

PLAN & PROFILE-DITCH RIDER RD

DRAWING NO. 20 OF 28

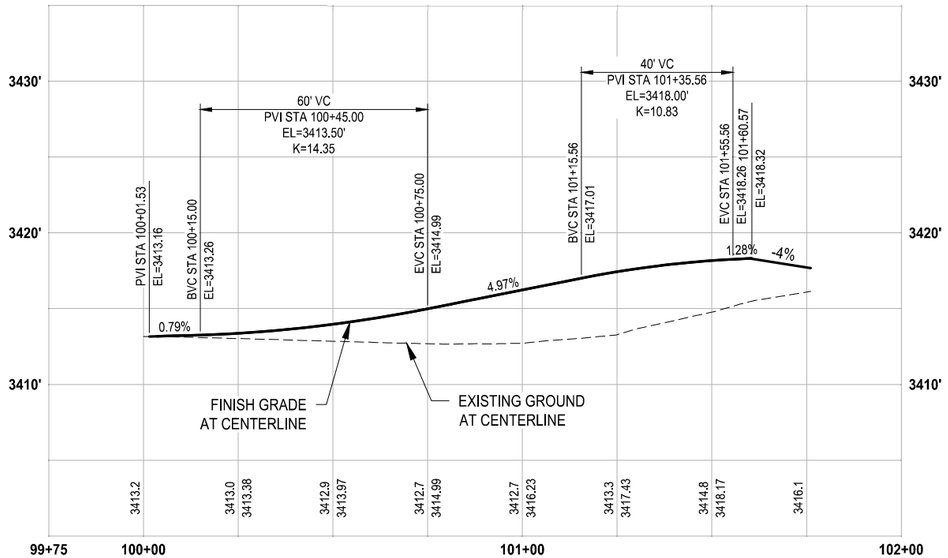
C4.2



PLAN & PROFILE-PIONEER LOOP

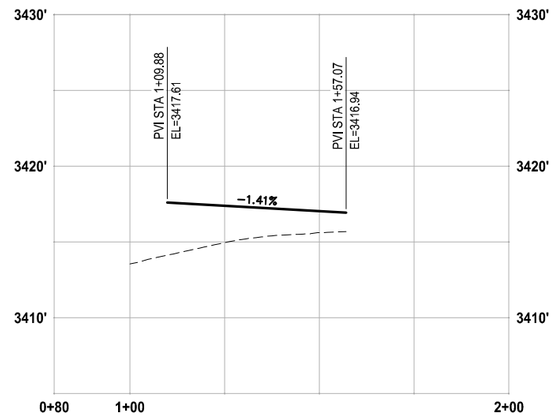
SCALE 1"=20'

0 20' 40'



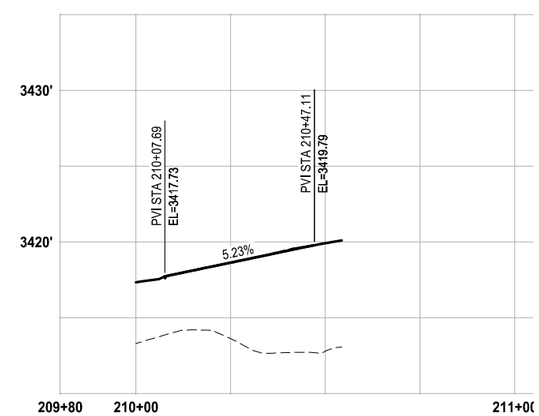
PIONEER LOOP PROFILE

H: 1"=20' V: 1"=5'



PIONEER LOOP NORTH CR PROFILE

H: 1"=30' V: 1"=5'



PIONEER LOOP SOUTH CR PROFILE

H: 1"=30' V: 1"=5'

CONSTRUCTION NOTES

1. CONSTRUCT PIONEER LOOP ROAD PER TYPICAL SECTION 3/C1.0

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C4-PP
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2018
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:45:48-07'00'

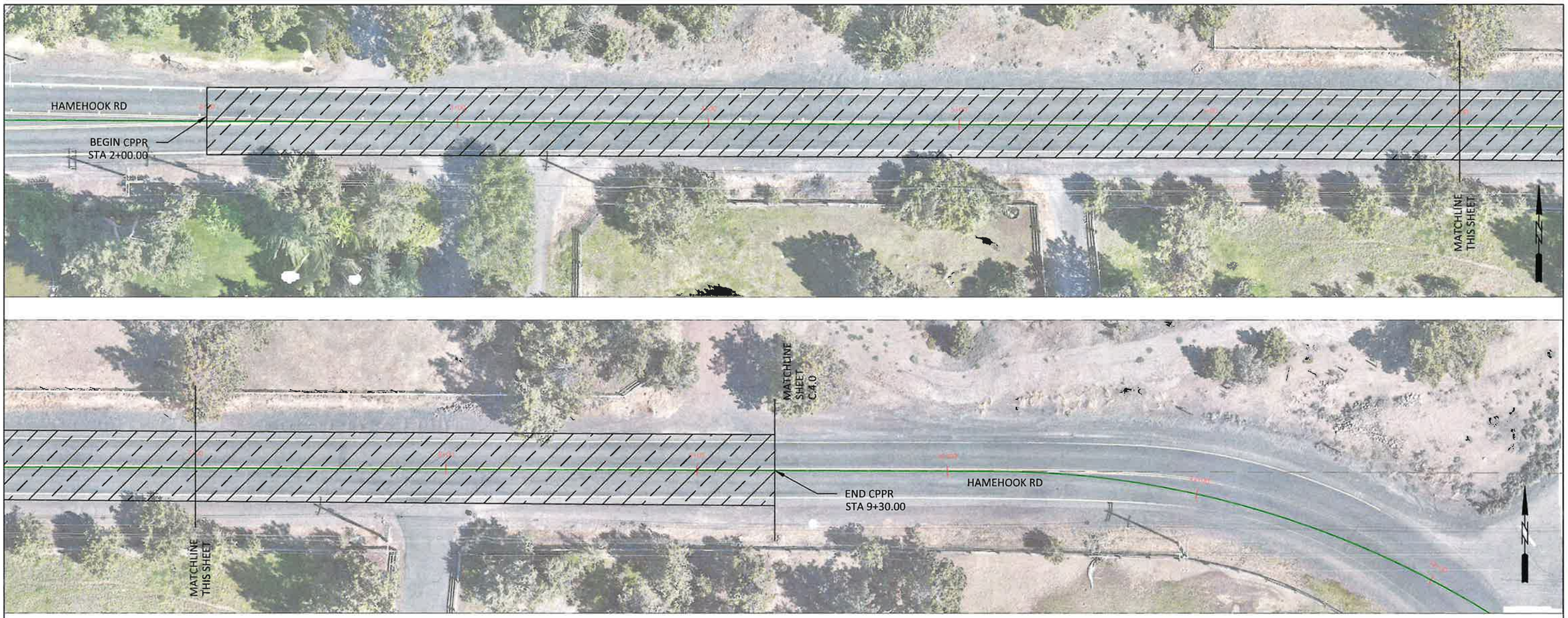
Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

PLAN & PROFILE-PIONEER LOOP

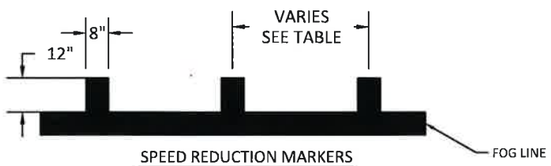
DRAWING NO. 21 OF 28

C4.3



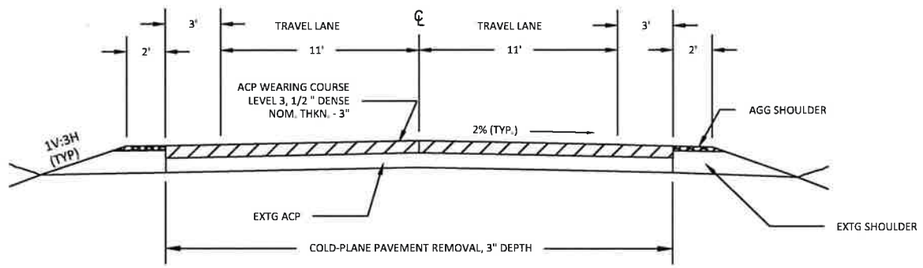
NOTES:

1) REINSTALL TRANSVERSE SPEED REDUCTION PAVEMENT MARKINGS ACCORDING TO EXISTING LAYOUT.



SPEED REDUCTION MARKERS
PLAN VIEW

SPEED REDUCTION MARKER SPACING		
STATION	DIRECTION	SPACING
1+97.20 TO 2+37.20	WB	20FT
2+37.20 TO 4+37.20	WB	25FT



TYPICAL SECTION

REGISTERED PROFESSIONAL ENGINEER
83448PE
OREGON
NOVEMBER 10, 2009
CODY C. SMITH
RENEWS: 6-30-2026

REVISIONS	DATE	BY

DESIGNED BW
DRAWN TW
CHECKED BW
APPROVED CS

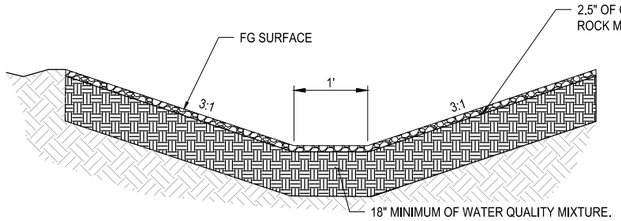
SCALE: 1" = 40'
FILE NAME
JOB No.
DATE

DESCHUTES COUNTY ROAD DEPARTMENT

PROJECT NAME
HAMEHOOK BRIDGE
#17C32 REPLACEMENT
DESCHUTES COUNTY

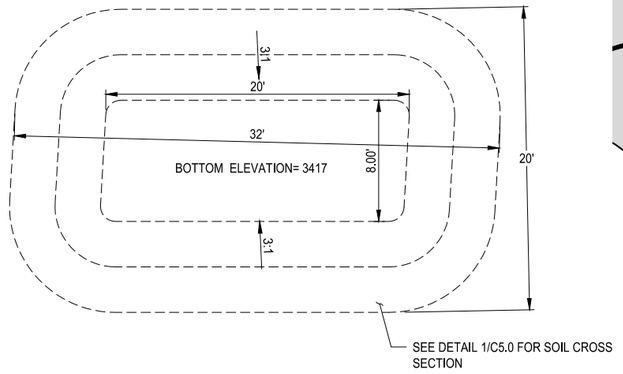
COLD PLAN PAVEMENT REMOVAL AND INLAY

DRAWING NO.
C4.4



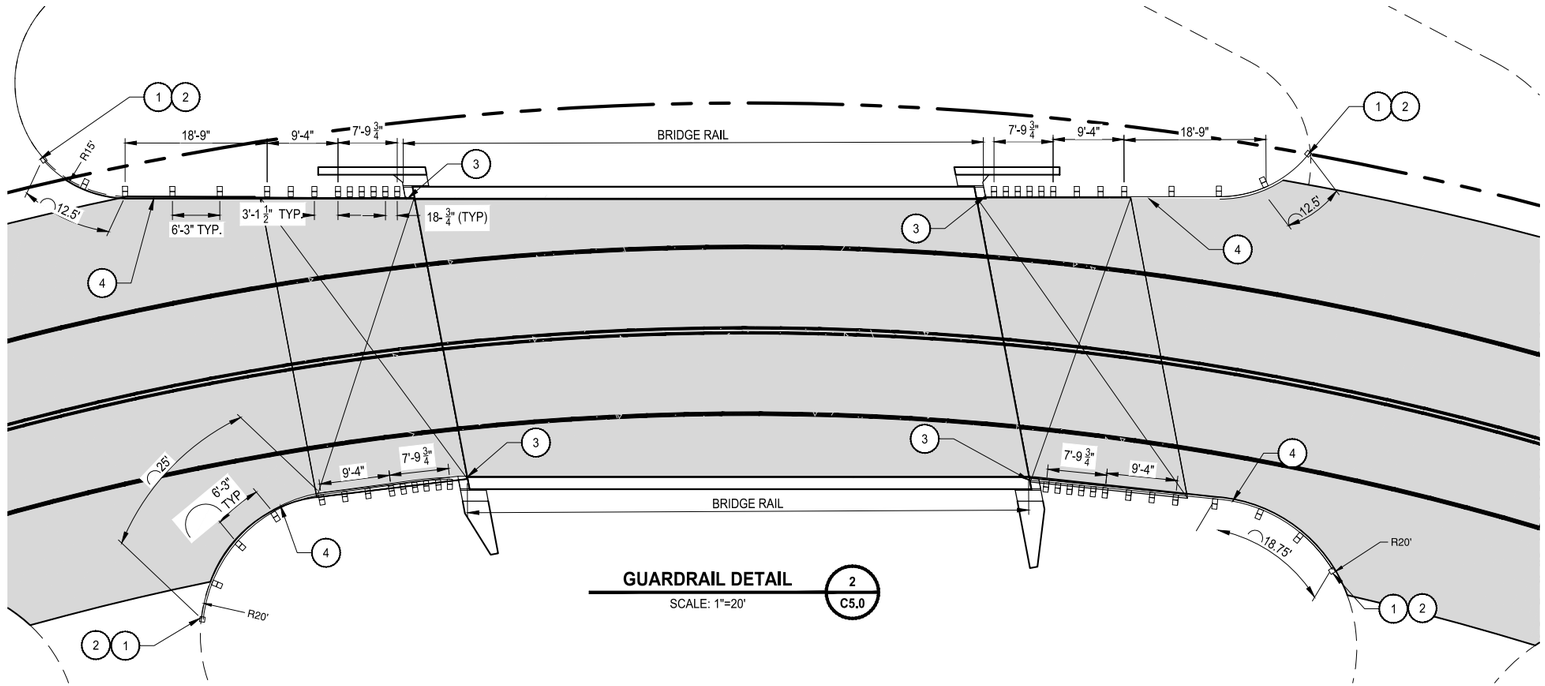
WATER QUALITY SWALE SECTION DETAIL 1 C5.0

N.T.S



WATER QUALITY POND SWALE 3 C5.0

N.T.S



GUARDRAIL DETAIL 2 C5.0

SCALE: 1"=20'

GUARDRAIL NOTES

1. INSTALL W-BEAM TYPE B END PIECE PER ODOT STD DWG RD 417
2. INSTALL TYPE 1 GUARDRAIL ANCHOR PER ODOT STD DWG RD450
3. INSTALL TYPE I TRANSITION PER ODOT STD DWG BR209
4. INSTALL MIDWEST GUARDRAIL TYPE 3 PER ODOT STD DWG RD 407

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C5-DT
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER — David Rico — 94066PE — OREGON — SEPT. 11, 2015 — DAVID RICO
Digitally signed by David Rico Date: 2024.08.09 13:44:41 -07'00'
EXPIRES: 12/31/2024

Parametrix

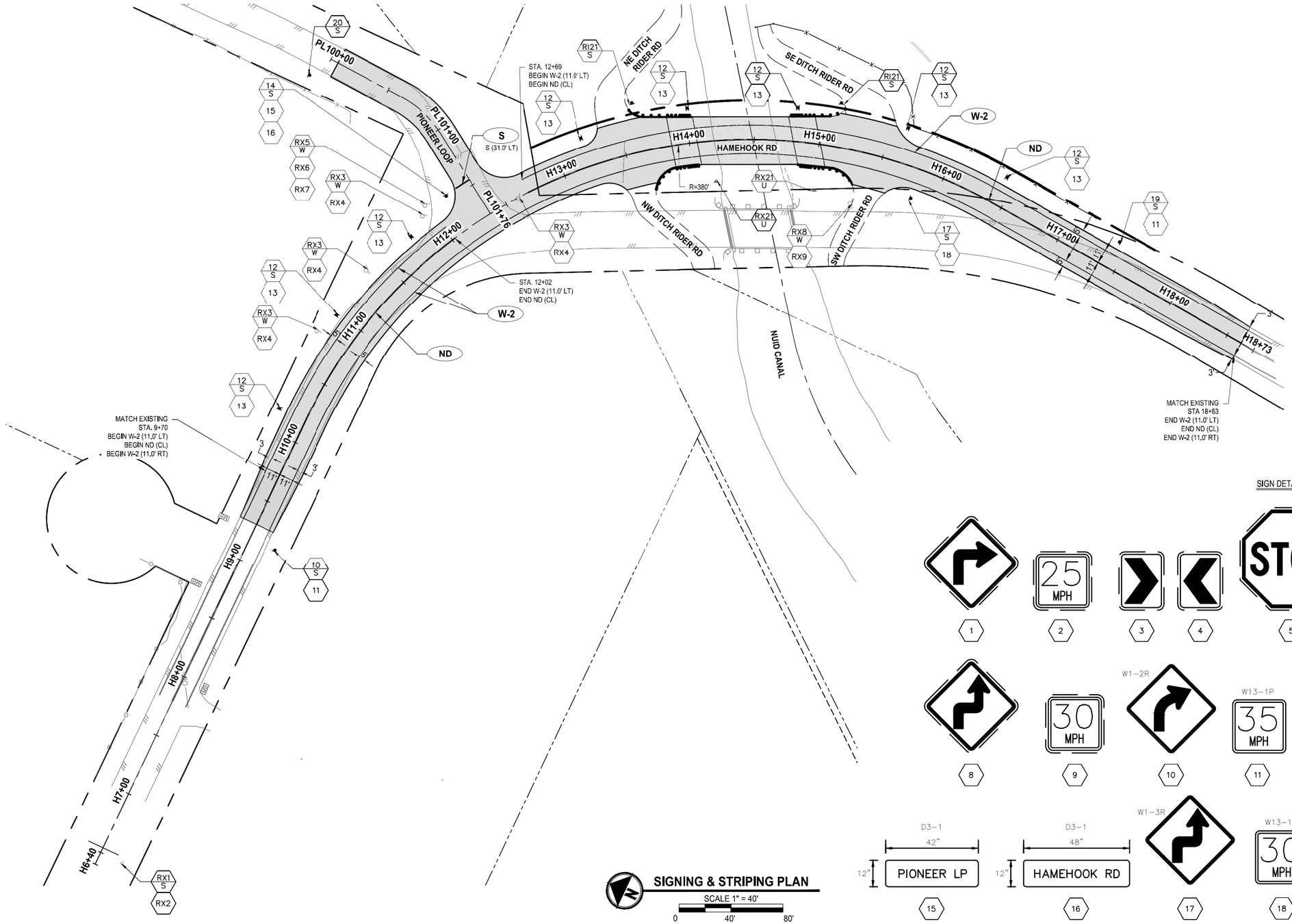
PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

ROADWAY DETAILS

DRAWING NO. 22 OF 28

C5.0

LAYOUT: ROADWAY DETAILS PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Homehook Rd Bridge\99svca\CADD\DWG\SHEETS\3--ROADWAY PLOTTED BY: ricodav DATE: Thursday, August 8, 2024 10:23:13 AM



SIGNING & STRIPING PLAN

SCALE 1" = 40'

0 40' 80'

SIGNING & STRIPING NOTES

1. ALL LONGITUDINAL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC, EXTRUDED OR SPRAYED, SURFACE, NON-PROFILED.
2. ALL TRANSVERSE PAVEMENT MARKINGS SHALL BE TYPE AB THERMOPLASTIC.
3. PRESERVE AND PROTECT ALL EXISTING STRIPING OUTSIDE OF PROJECT LIMITS.
4. SIGN SUPPORTS SHALL BE PERFORATED STEEL SQUARE TUBE (PSST) WITH SLIP BASE PER ODOT STD. DWGS. TM681 AND TM688.
5. INSTALL SIGNS PER ODOT STD. DWG. TM200.

STRIPING LEGEND

- W-2 — 8" WHITE LINE (SEE ODOT STD. DWG. TM500)
- ND — NARROW DOUBLE NO-PASS TWO 4" YELLOW LINES (SEE ODOT STD. DWG. TM500)
- S — STOP BAR 1' WHITE BAR (SEE ODOT STD. DWG. TM503)

SIGNING LEGEND

- N / M — INSTALL NEW SIGN (N) ON NEW (M) SUPPORT
- N — INSTALL NEW SIGN (N)
- RXN / M — REMOVE EXTG SIGN (N) AND SUPPORT
- RIN / M — REINSTALL EXTG SIGN (N) ON NEW (M) SUPPORT

N = SIGN NUMBER
M = SUPPORT MATERIAL
S = PERFORATED SQUARE STEEL TUBE
W = WOOD POST
U = UNKNOWN

SIGN DETAILS

BIDDING PLANS

REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C6-SS
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2018
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:35:01-07'00'

Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

SIGNING & STRIPING PLAN

DRAWING NO. 23 OF 28
C6.0

SIGN & POST DATA TABLE

SIGN NO.	SIGN LOCATION (4) (TM200-TM201, TM635)	SIGN DIMENSIONS		SUB-STRATE			COLOR (1)					LEGEND		SIGN NO. (2)	TYPE OF SUPPORT																						POST		FOOTING		REMARKS
							BACKGROUND		LEGEND																				SECONDARY SIGN (TM676 & TM678)							SIZE	LENGTH	LOCATION (3)	MIN. DEPTH (5)	
		WIDTH	HEIGHT	PLYWOOD	SHEET ALUMINUM	EXTRUDED ALUM. (TM675)	ASTM TYPE III OR TYPE IV	ASTM TYPE IX	ASTM TYPE III OR TYPE IV	ASTM TYPE IX	NON-REFLECTIVE	PERMANENT	REMOVABLE (TM230 - TM233)		WOOD POST (TM670-TM671, TM676)	SQ. TUBE SIGN SUPPORT (TM671, TM676, TM681, TM687-TM689)	PERMANENT TYPE III BARRICADE (SHT. LA03)	H-FRAME	MULTI-POST BREAKAWAY (TM220, TM600-TM601)	STAINLESS STEEL CLAMP (SSC) (TM677)	SIGNAL POLE MOUNT (TM680)	MAST ARM SIGN MOUNT (TM679)	PEDESTRIAN SIGNAL PEDESTAL (TM457, TM493)	EXIT NUMBER SIGN MOUNT (TM220, TM225)	ROUTE MARKER FRAME (TM678)	MILEPOST MARKER POST (TM221-TM222)	CROSSWALK CLOSURE SUPPORT (PBOT P-407)	VERTICAL SIGN MOUNTS ON EXISTING STRUCTURES	CUSTOM VARIABLE SUPPORT	C 4X5.4	C 4X7.25	LENGTH	(BASED ON ESTIMATED LENGTH)	(CONTRACTOR SHALL FIELD VERIFY LENGTHS)			
10	9+17, 21.5' RT	30"	30"		✓		Y				BK	✓		10		✓																			2 1/2"-10 GA.	14'-0"	10.4'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
11	9+17, 21.5' RT	18"	18"		✓		Y				BK	✓		11		✓																								INSTALL BELOW SIGN 10
11	17+43, 22.0' LT	18"	18"		✓		Y				BK	✓		11		✓																								INSTALL BELOW SIGN 19
12	10+19, 22.0' LT	18"	24"		✓		Y				BK	✓		12		✓																						2 1/2"-10 GA.	14'-0"	11.0'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
12	10+99, 22.0' LT	18"	24"		✓		Y				BK	✓		12		✓																						2 1/2"-10 GA.	14'-0"	11.0'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
12	11+76, 22.0' LT	18"	24"		✓		Y				BK	✓		12		✓																						2 1/2"-10 GA.	14'-0"	11.0'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
12	13+20, 22.8' LT	18"	24"		✓		Y				BK	✓		12		✓																						2 1/2"-10 GA.	14'-0"	11.8'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
12	14+00, 26.9' LT	18"	24"		✓		Y				BK	✓		12		✓																						2 1/2"-10 GA.	14'-0"	15.9'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
12	14+80, 25.9' LT	18"	24"		✓		Y				BK	✓		12		✓																						2 1/2"-10 GA.	14'-0"	14.9'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
12	15+61, 27.4' LT	18"	24"		✓		Y				BK	✓		12		✓																						2 1/2"-10 GA.	14'-0"	16.3'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
12	16+41, 22.8' LT	18"	24"		✓		Y				BK	✓		12		✓																						2 1/2"-10 GA.	14'-0"	11.7'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
13	10+19, 22.0' LT	18"	24"		✓		Y				BK	✓		12		✓																								INSTALL ABOVE SIGN 12
13	10+99, 22.0' LT	18"	24"		✓		Y				BK	✓		12		✓																								INSTALL ABOVE SIGN 12
13	11+76, 22.0' LT	18"	24"		✓		Y				BK	✓		12		✓																								INSTALL ABOVE SIGN 12
13	13+20, 22.8' LT	18"	24"		✓		Y				BK	✓		12		✓																								INSTALL ABOVE SIGN 12
13	14+00, 26.9' LT	18"	24"		✓		Y				BK	✓		12		✓																								INSTALL ABOVE SIGN 12
13	14+80, 25.9' LT	18"	24"		✓		Y				BK	✓		12		✓																								INSTALL ABOVE SIGN 12
13	15+61, 27.4' LT	18"	24"		✓		Y				BK	✓		12		✓																								INSTALL ABOVE SIGN 12
13	16+41, 22.8' LT	18"	24"		✓		Y				BK	✓		12		✓																								INSTALL ABOVE SIGN 12
14	12+16, 31.2' LT	30"	30"		✓		R		SW			✓		14		✓																						2 1/2"-10 GA.	14'-6"	7.3'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
15	12+16, 31.2' LT	48"	12"		✓		G		SW			✓		15		✓																								INSTALL ABOVE SIGN 14, MOUNT 2X SINGLE SIDED SIGNS
16	12+16, 31.2' LT	42"	12"		✓		G		SW			✓		16		✓																								INSTALL ABOVE SIGN 15, SIGN IS DOUBLE SIDED
17	15+81, 23.3' RT	30"	30"	EX										8																							2 1/2"-10 GA.	14'-0"	12.3'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
18	15+81, 23.3' RT	18"	18"	EX										9																								INSTALL BELOW SIGN 17
19	17+43, 22.0' LT	30"	30"		✓		Y				BK	✓		19		✓																						2 1/2"-10 GA.	12'-6"	11.0	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
20	11+92, 168.9' LT	30"	30"		✓		Y				BK	✓		20		✓																							12'-6"	7.3'	3'-0"	3/ EDGE OF TRAVEL LANE, SLIP BASE
21	13+63, 63.3' LT	(EX)	(EX)	EX																																		2 1/2"-10 GA.	9'-0"	12.0'	3'-0"	MATCH EXISTING SIGN HEIGHT, SLIP BASE
21	15+012, 34.0' LT	(EX)	(EX)	EX																																		2 1/2"-10 GA.	9'-0"	10.0'	3'-0"	MATCH EXISTING SIGN HEIGHT, SLIP BASE

(1) BK = Black
BL = Blue
BR = Brown
FY = Fluorescent yellow
G = Green
O = Orange
R = Red
RB = Red-blue
SW = Silver-white
W = White
Y = Yellow
YG = Yellow-green

(2) Note: L,C,R are locations of posts facing the sign.
L = Left post
C = Center post
R = Right post

(3) Distance from edge of travel lane, face of curb, guardrail, or barrier to the centerline of footing. For additional information see Standard Drawings TM601, TM602, and TM635.

(4) Note: The locations shown are approximate except for speed zones, school zones, object markers, and milepost markers. The exact locations are to be determined by the Engineer.

(5) Minimum depth of footing for triangular base breakaway and multi-post breakaway installations is for a 2' diameter footing. For additional information see Standard Drawings TM601 and TM602.

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY
FILE NAME BE2509010-C6-SS
JOB NO. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE David Rico
OREGON
SEPT. 11, 2018
DAVID RICO
EXPIRES: 12/31/2024
Digitally signed by David Rico
Date: 2024.08.09 13:09:57-07'00'

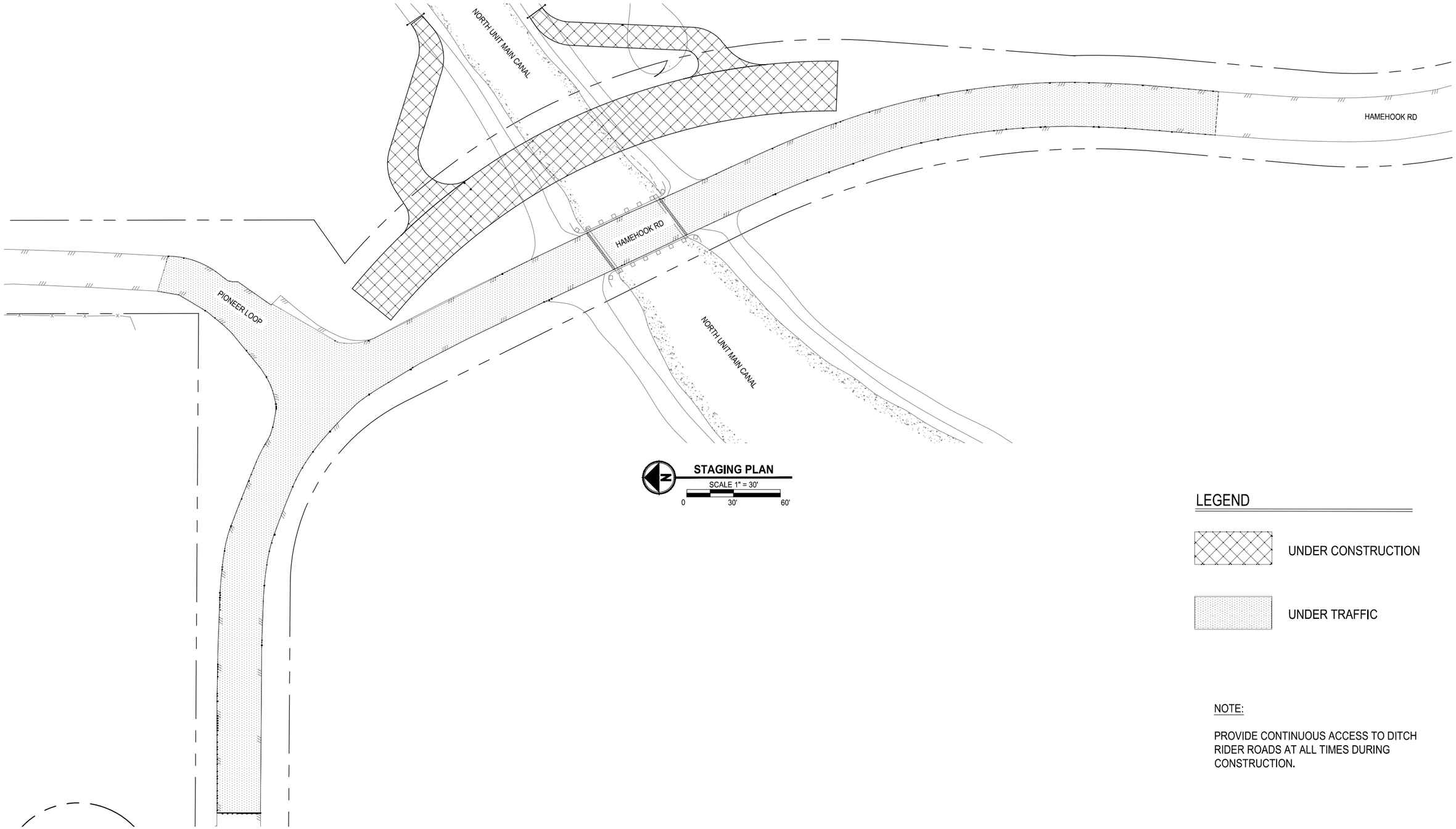
Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

SIGNING & STRIPING PLAN

DRAWING NO. 24 OF 28
C6.1

LAYOUT: SIGNING & STRIPING PLAN PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\3-ROADWAY PLOTTED BY: EyKen DATE: Thursday, August 8, 2024 3:55:02 PM



STAGING PLAN
SCALE 1" = 30'
0 30' 60'

LEGEND

UNDER CONSTRUCTION

UNDER TRAFFIC

NOTE:

PROVIDE CONTINUOUS ACCESS TO DITCH RIDER ROADS AT ALL TIMES DURING CONSTRUCTION.

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C7-CS
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:27:24-07'00'

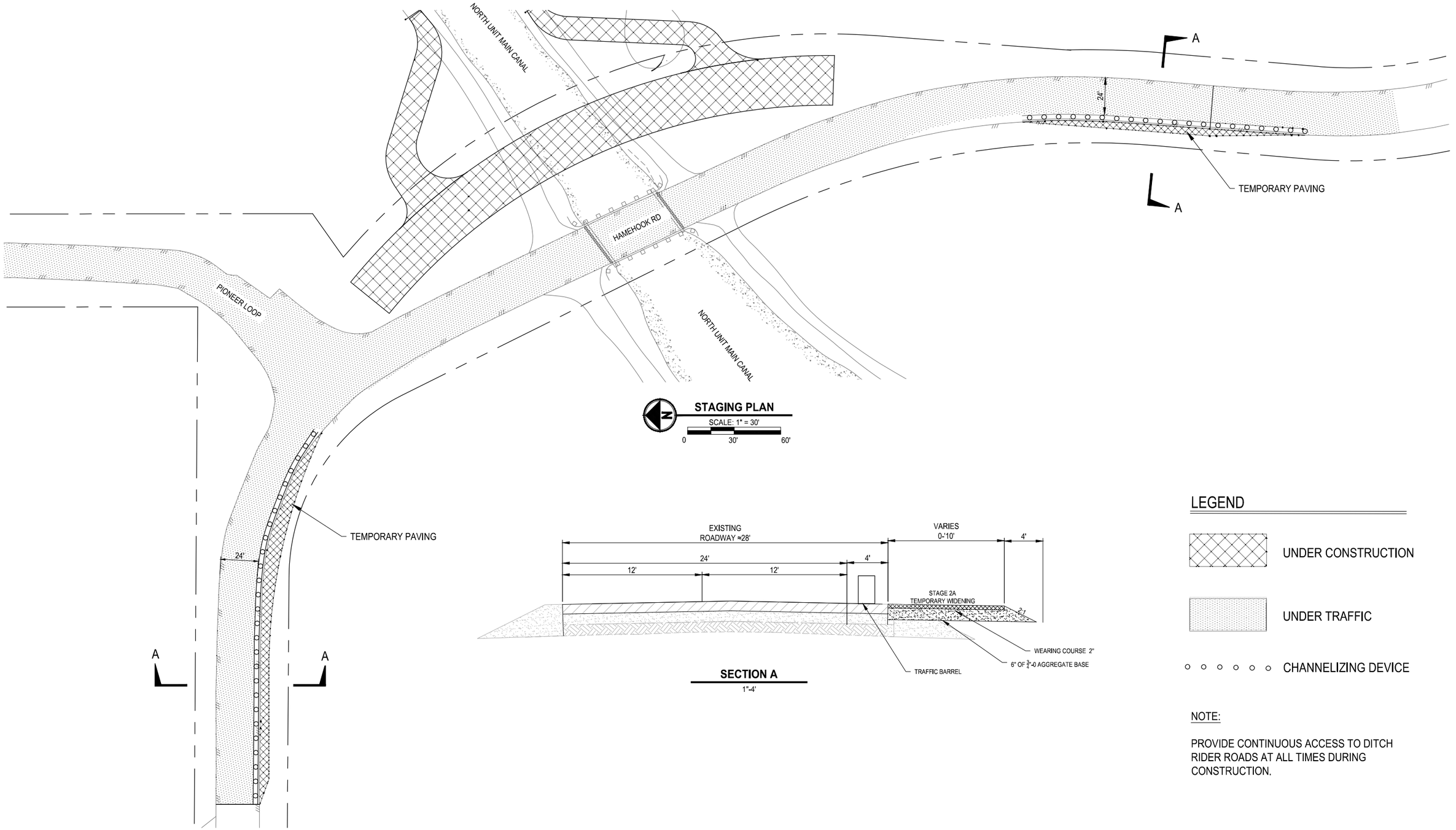
Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

CONSTRUCTION & STAGING PLAN-STAGE 1

DRAWING NO. 25 OF 28
C7.0

PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Homehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\3-ROADWAY PLOTTED BY: ricodov DATE: Friday, August 2, 2024 9:23:33 AM
LAYOUT: C7.0



LEGEND

- UNDER CONSTRUCTION
- UNDER TRAFFIC
- CHANNELIZING DEVICE

NOTE:

PROVIDE CONTINUOUS ACCESS TO DITCH RIDER ROADS AT ALL TIMES DURING CONSTRUCTION.

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C7-CS
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:17:55-07'00'

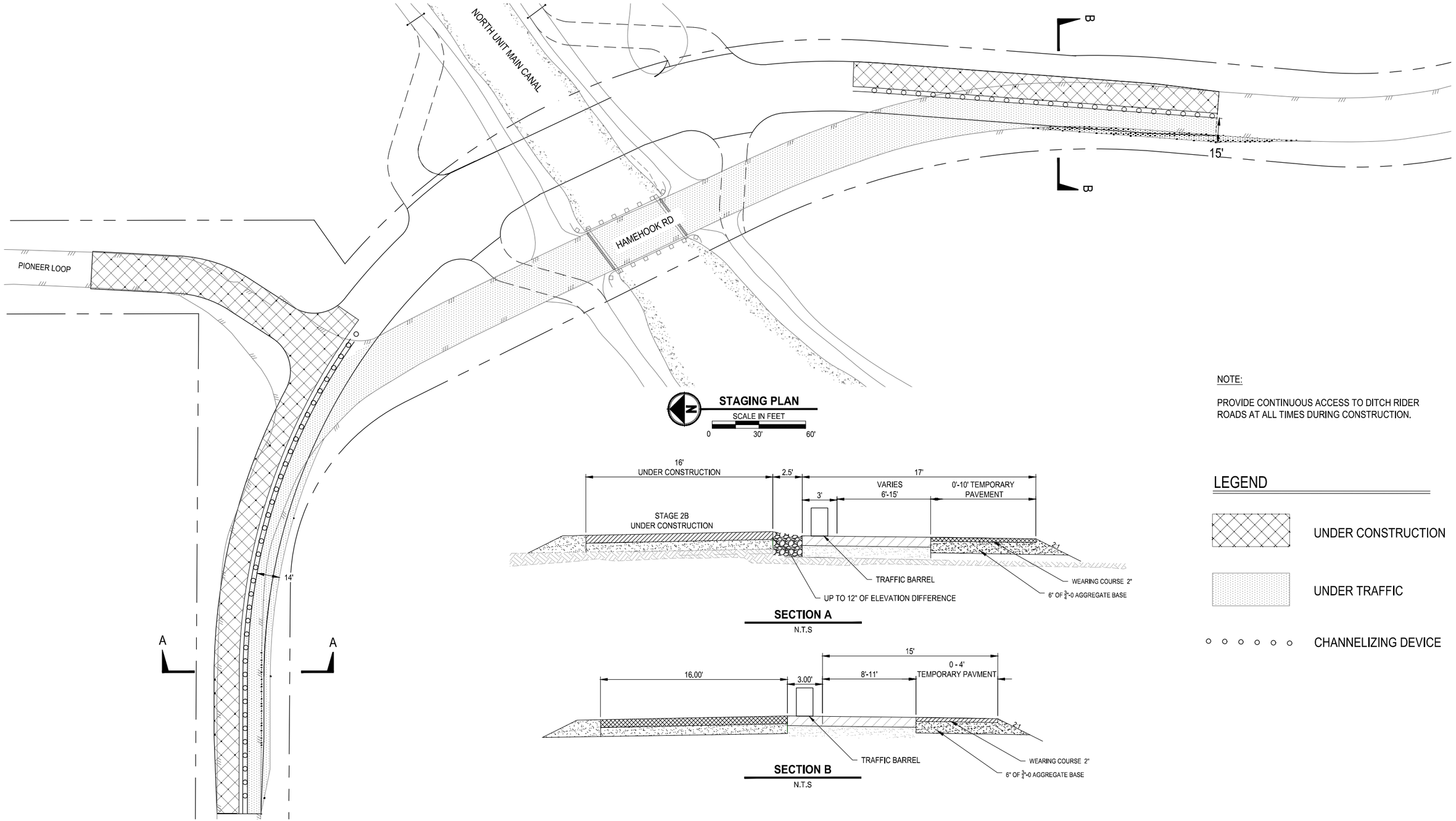
Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

CONSTRUCTION & STAGING PLAN-STAGE 2A

DRAWING NO. 26 OF 28
C7.1

PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Homehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\3-ROADWAY PLOTTED BY: ricodav DATE: Friday, August 2, 2024 9:22:39 AM
LAYOUT: C7.1



STAGING PLAN

SCALE IN FEET

0 30' 60'

NOTE:

PROVIDE CONTINUOUS ACCESS TO DITCH RIDER ROADS AT ALL TIMES DURING CONSTRUCTION.

SECTION A

N.T.S

SECTION B

N.T.S

LEGEND

UNDER CONSTRUCTION

UNDER TRAFFIC

CHANNELIZING DEVICE

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C7-CS
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:38:21-07'00'

Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

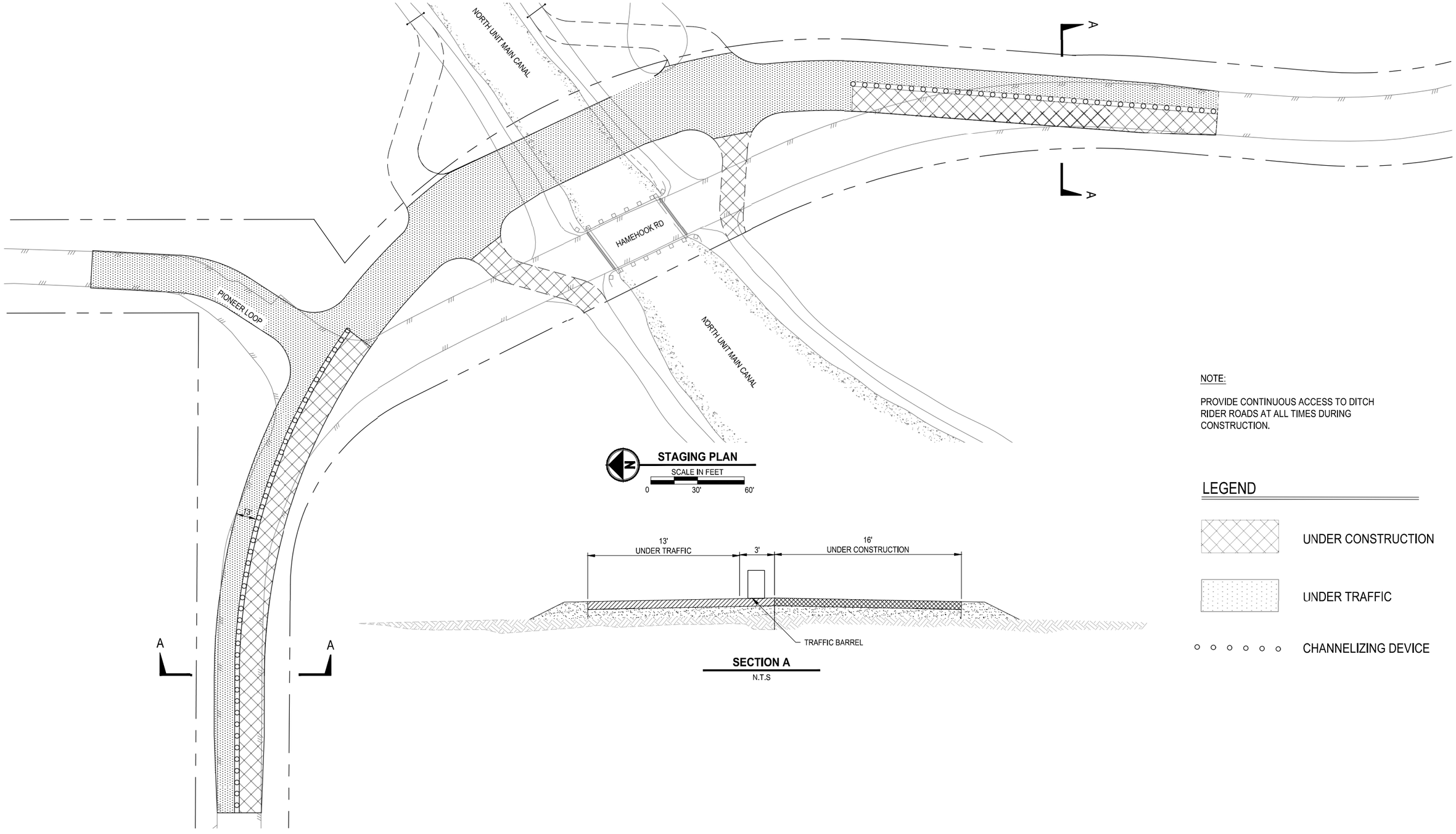
CONSTRUCTION & STAGING PLAN-STAGE 2B

DRAWING NO. 27 OF 28

C7.2

PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Homehook Rd Bridge\99svcs\CADD\DWG\SHEETS\3-ROADWAY PLOTTED BY: ricodov DATE: Friday, August 2, 2024 9:21:26 AM

LAYOUT: C7.2



STAGING PLAN

SCALE IN FEET

0 30' 60'

SECTION A

N.T.S

NOTE:

PROVIDE CONTINUOUS ACCESS TO DITCH RIDER ROADS AT ALL TIMES DURING CONSTRUCTION.

LEGEND

UNDER CONSTRUCTION

UNDER TRAFFIC

CHANNELIZING DEVICE

BIDDING PLANS

	REVISIONS	DATE	BY

DESIGNED DR
DRAWN DR, CA, TVM
CHECKED BCJ, DR
APPROVED BCJ

ONE INCH AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

FILE NAME BE2509010-C7-CS
JOB No. 297-2509-010
DATE AUGUST 2024

REGISTERED PROFESSIONAL ENGINEER
94066PE
David Rico
OREGON
SEPT. 11, 2015
DAVID RICO
EXPIRES: 12/31/2024

Digitally signed by David Rico
Date: 2024.08.02 16:38:46-07'00'

Parametrix

PROJECT NAME
HAMEHOOK RC BRIDGE #17C32 REPLACEMENT
DESCHUTES COUNTY

CONSTRUCTION & STAGING PLAN-STAGE 3

DRAWING NO. 28 OF 28

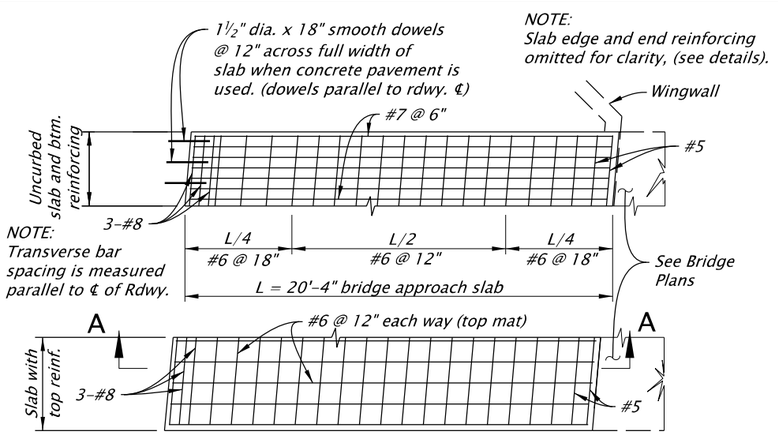
C7.3

PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-010 Hamehook Rd Bridge\99Svcs\CADD\DWG\SHEETS\3-ROADWAY PLOTTED BY: ricodov DATE: Friday, August 2, 2024 9:32:24 AM

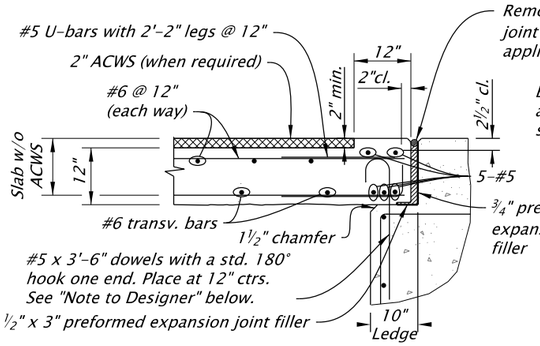
LAYOUT: C7.3

01-JAN-2024

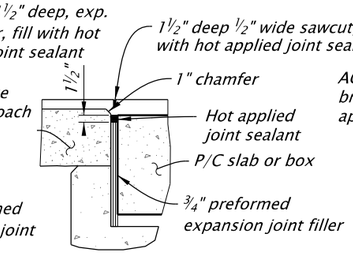
BR165.dgn



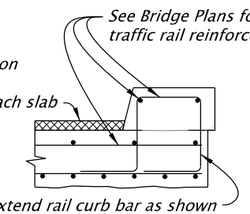
1 PLAN - TYPICAL APPROACH SLAB



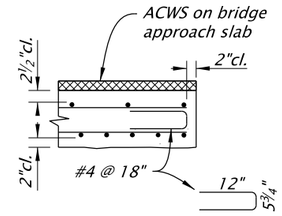
1 TYPICAL BRIDGE END DETAIL WITHOUT EXPANSION JOINT BLOCKOUT



1 JOINT DETAIL with SLABS or BOXES DETAIL "A"



1 CURB EDGE DETAIL



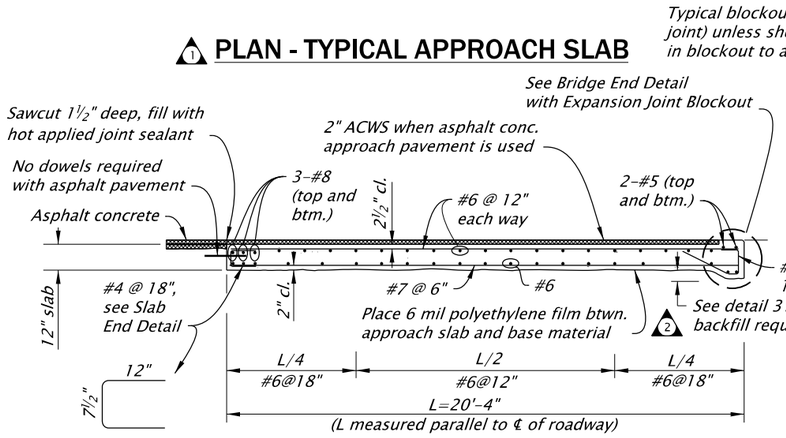
1 UNCURBED EDGE DETAIL

1 GENERAL NOTES:

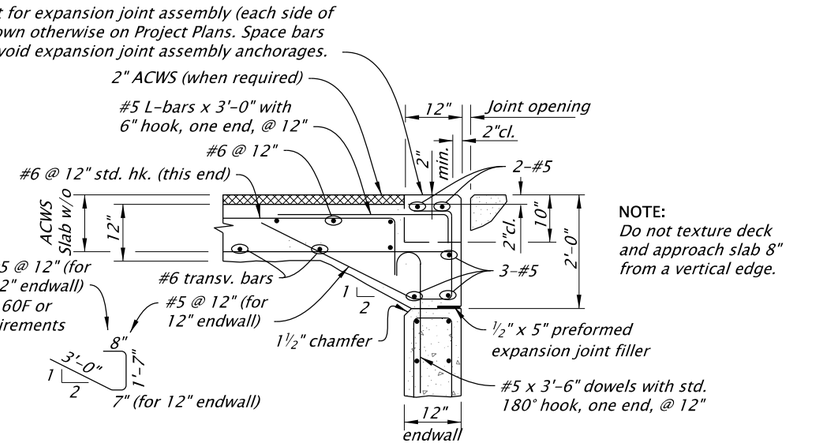
1. *See Project Plans for bridge rail, median barrier, and/or guardrail transition details.*
2. *Bridge approach slab designed for HL-93 loading according to AASHTO LRFD Bridge Design Specifications with an allowance of 25 psf for present wearing surface and 25 psf for future wearing surface (Span = 17'-4").*
3. *Provide Class HPC 4500 - 1 or 1½ concrete.*
4. *Provide reinforcing steel conforming to AASHTO Specification M31 (ASTM A615) Gr. 60 or A706. Place steel 2" clear of nearest face of concrete unless shown otherwise. Use the following splice lengths unless shown otherwise:*

Bar Size		3	4	5	6	7	8	9	10	11
Splice Length	Uncoated	1'-4"	1'-6"	1'-11"	2'-3"	2'-7"	3'-0"	3'-4"	3'-9"	4'-2"
	Epoxy Coated	1'-8"	2'-3"	2'-10"	3'-4"	3'-11"	4'-5"	5'-0"	5'-8"	6'-3"

5. *Provide ¾" chamfer at all top transverse concrete edges (each end of approach slab and each end of bridge).*
6. *Longitudinal construction joints are allowed only when permitted by the Engineer or when shown on the Project Plans.*
7. *When a longitudinal construction joint is permitted, locate joint on a lane line.*
8. *Provide dowels conforming to AASHTO Specification M31 (ASTM A615) .*
9. *Use the details on this sheet unless shown otherwise on the Project Plans.*
10. *Flare approach slab as required. Maintain bottom longitudinal bars spacing requirements at midspan.*
11. *Support top and bottom mat reinforcing steel at 3'-0" max. centers each way. Use #4 C-bars with 8" legs, or approved bar support chairs for top mat.*
12. *For additional reinforcing bars needed in the approach slab, see bridge rail and transition drawings in project plans.*

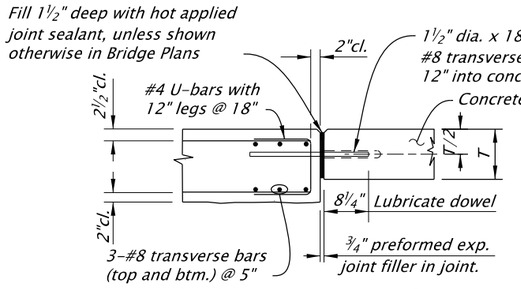


1 SECTION A-A

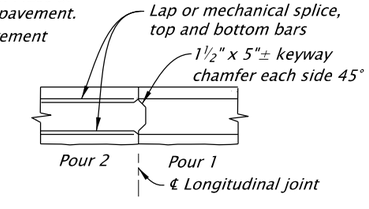


1 BRIDGE END DETAIL WITH EXPANSION JOINT BLOCKOUT

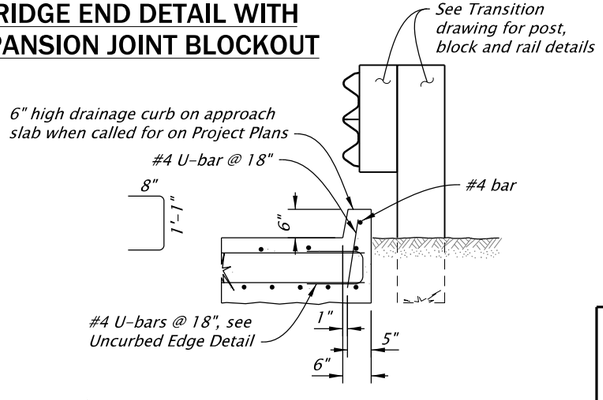
NOTE: *Do not texture deck and approach slab 8" from a vertical edge.*



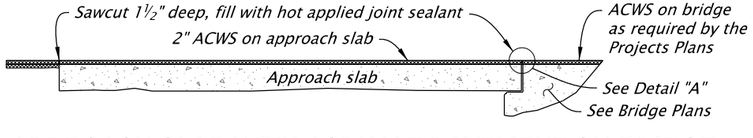
1 SLAB END DETAIL



LONGITUDINAL JOINT DETAIL



1 DRAINAGE CURB EDGE DETAIL



1 APPROACH SLAB WITH ASPHALT PAVEMENT ON BRIDGE

REGISTERED PROFESSIONAL ENGINEER
89340PE
OREGON
JULY. 08, 2014
EMILY CLYBURN
RENEWS: 12-31-2025

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

OREGON STANDARD DRAWINGS

BRIDGE APPROACH SLAB

2024

DATE	REVISION DESCRIPTION
07-2020	Changed end panel to approach slab, Removed 30'-4" length; CAD updates
01-2024	General text revisions

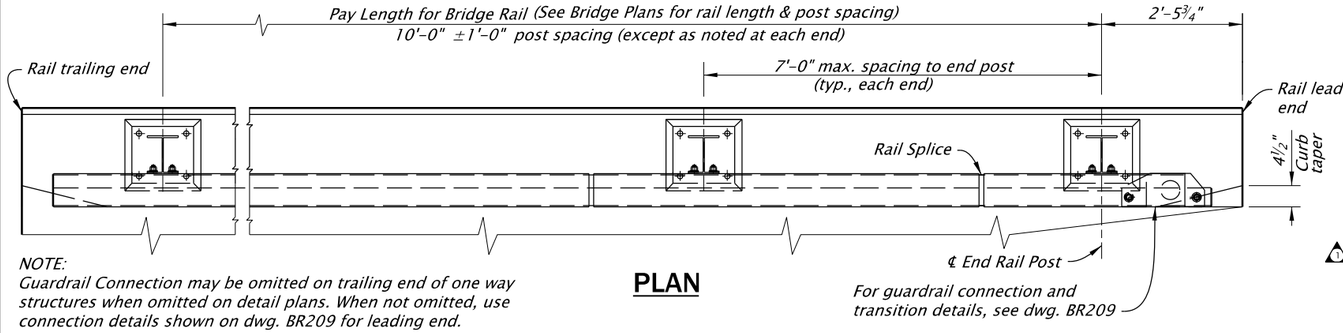
CALC. BOOK NO. N/A

SDR DATE 19-JAN-2024

BR165

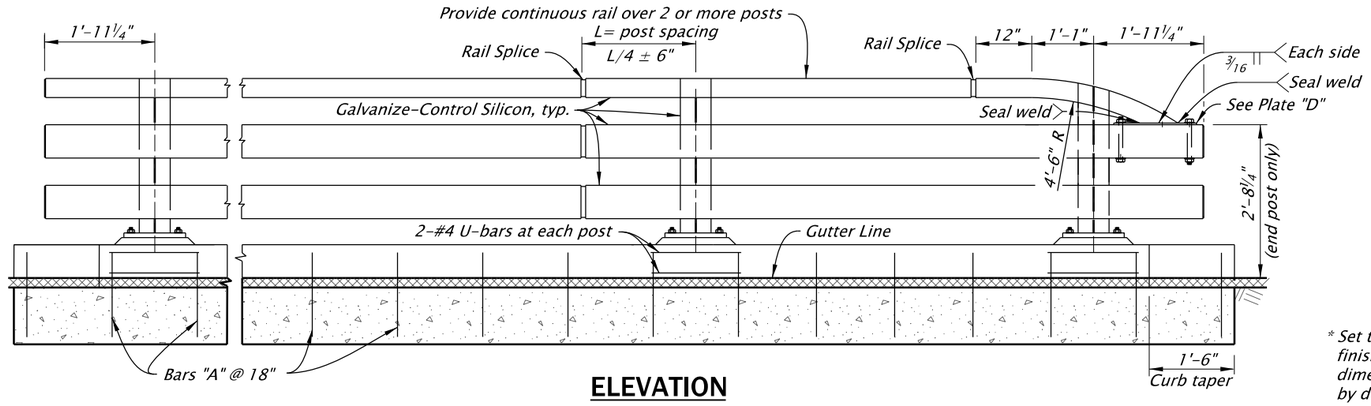
01-JAN-2024

BR208.dgn

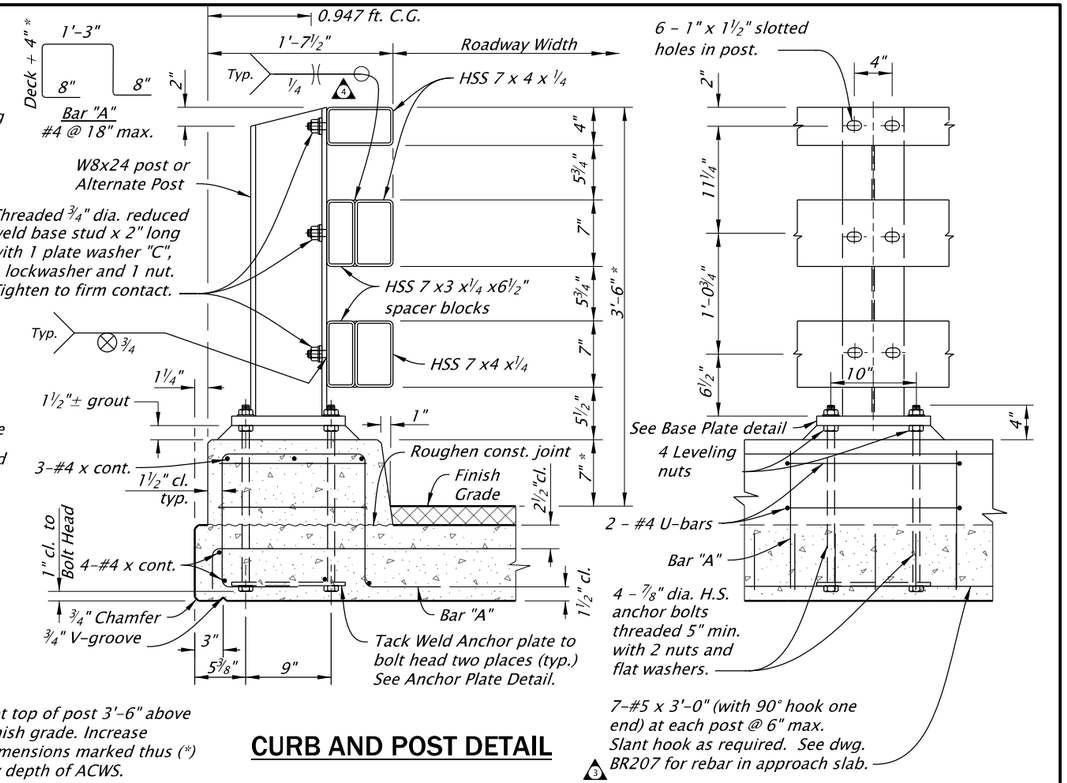


NOTE:
Guardrail Connection may be omitted on trailing end of one way structures when omitted on detail plans. When not omitted, use connection details shown on dwg. BR209 for leading end.

PLAN

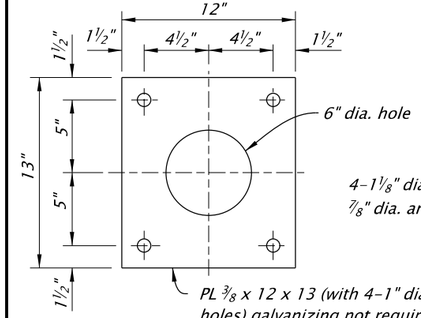


ELEVATION

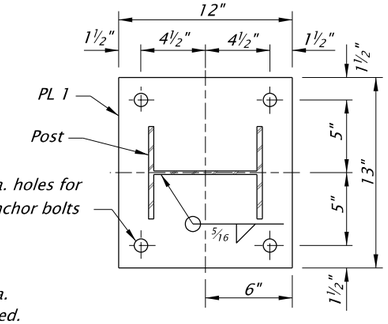


* Set top of post 3'-6" above finish grade. Increase dimensions marked thus (*) by depth of ACWS.

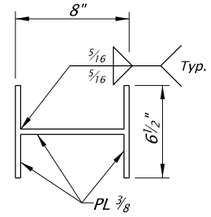
CURB AND POST DETAIL



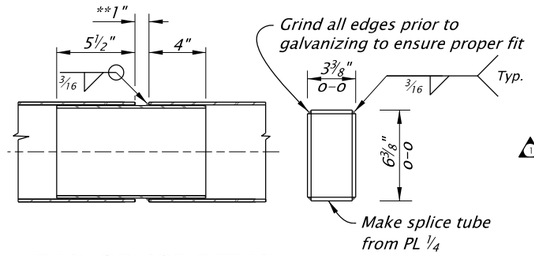
ANCHOR PLATE DETAIL



BASE PLATE DETAIL



ALTERNATE POST



RAIL SPLICE DETAIL

**1" gap unless noted otherwise on detail plans. Provide a Rail Splice in panel that has a deck expansion joint. If more than 2" movement needed, increase length of inner member.

GENERAL NOTES:

1. Rail designed and crash tested to meet MASH TL-4 requirements. Transition designed to meet MASH TL-3.
2. Provide structural tubing, steel posts and plates according to Oregon Standard Specification 2810.20. Provide steel posts and plates conforming to ASTM A572 Grade 50.
3. Provide High Strength anchor bolts (Grade 105) according to Oregon Standard Specification 02560.30 (b). Tighten top and leveling nuts for the base plate ¼ turn past snug tight.
4. Fabricate steel studs with material, welding and inspection according to AWS D1.1.
5. Provide reinforcing steel conforming to ASTM A706 or AASHTO M31 (ASTM A615) Grade 60.
6. Provide concrete Class 3300 - 1½ or ¾
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 galvanized structural steel including fasteners after fabrication, except as noted. Provide Galvanize-Control Silicon according to Oregon Standard Specification 02530.70.

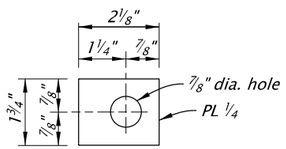
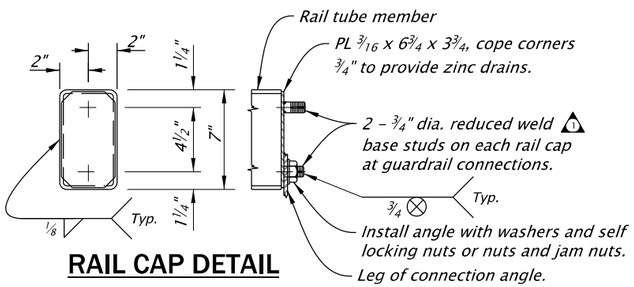
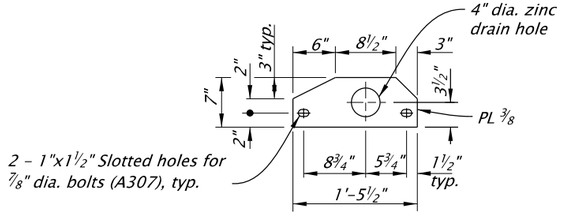


PLATE WASHER "C"



RAIL CAP DETAIL



PLAN

PLATE "D"

ACCOMPANIED BY DWGS.:
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.

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

OREGON STANDARD DRAWINGS

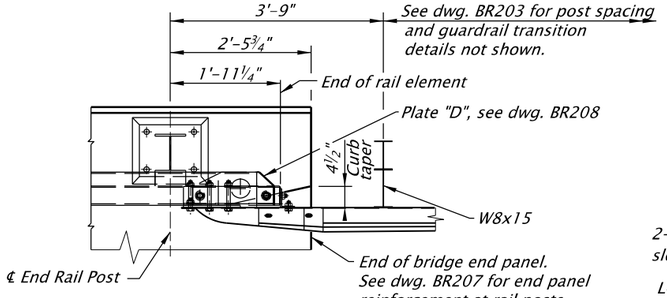
3-TUBE CURB MOUNT RAIL

2024

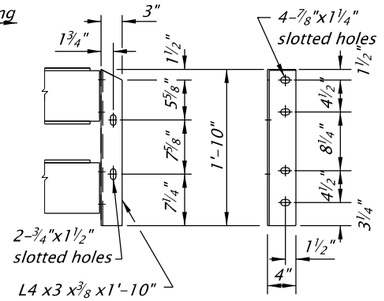
	DATE	REVISION DESCRIPTION
1	12-2020	Modified detail note text; added General Note 4; CAD updates
2	01-2022	Modified General Note 4, removed "Clause 7" notation.
3	01-2023	Revised general notations.
4	01-2024	Revised weld callout.

CALC. BOOK NO. N/A | SDR DATE 19-JAN-2024 | **BR208**

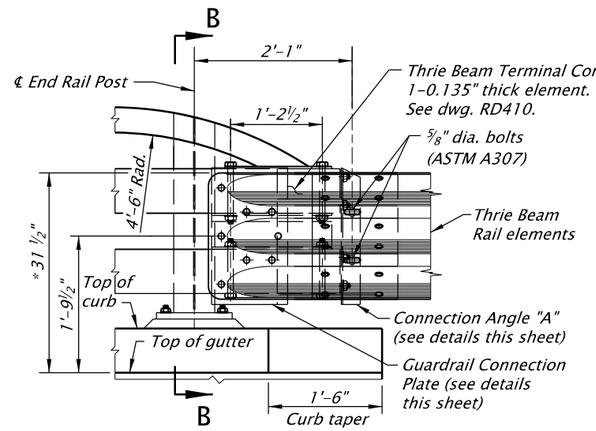
Effective Date: June 1, 2024 - November 30, 2024



PLAN

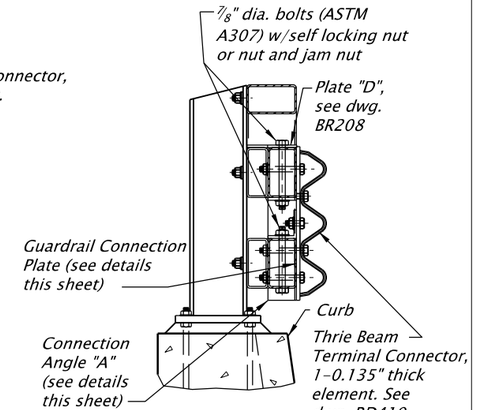


CONNECTION ANGLE "A"

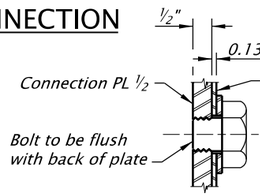


ELEVATION: TRANSITION CONNECTION TYPE I

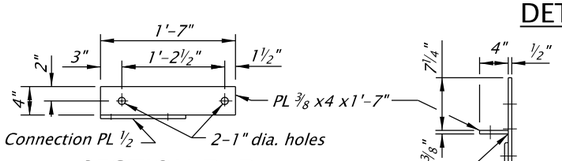
*NOTE
Transition top of rail to match 31" approach rail as shown on BR207.



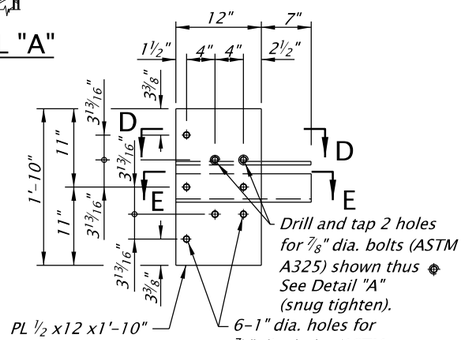
SECTION B-B

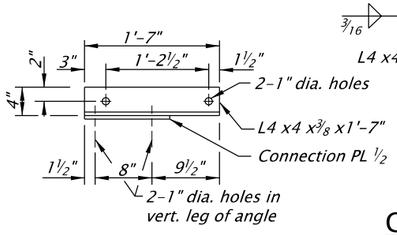


DETAIL "A"



SECTION D-D



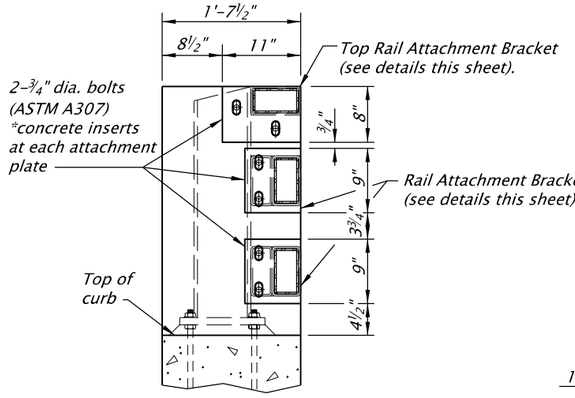


SECTION E-E

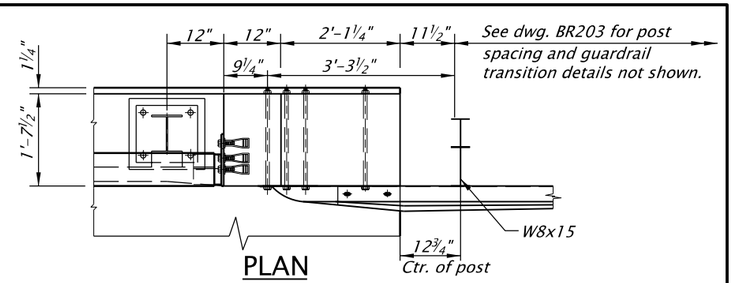
NOTE
Verify all bolt hole locations to match Thrie Beam Terminal Connector.

GUARDRAIL CONNECTION PLATE DETAIL

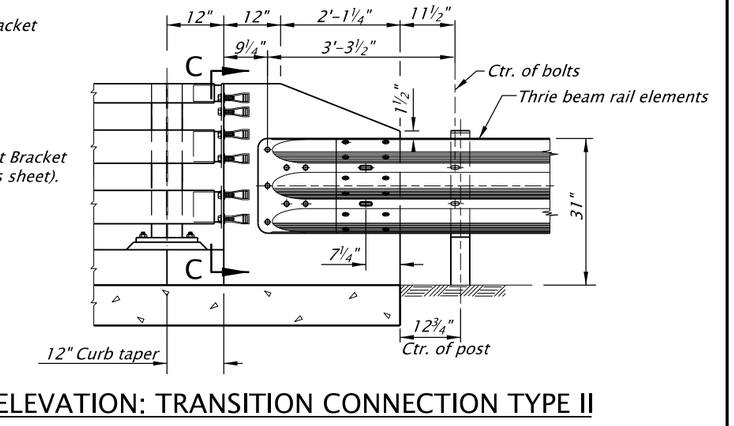
*CONCRETE INSERTS
Hot-dip galvanized expanded coil concrete inserts with closed-back ferrule threaded to receive ¾" dia. bolts, Gr36 (ASTM A307)
Minimum insert length= 4½"
Minimum safe working load in tension= 4000 lbs.



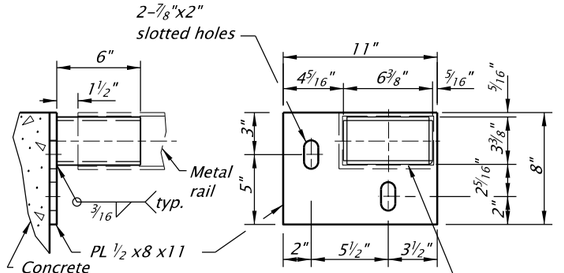
SECTION C-C



PLAN

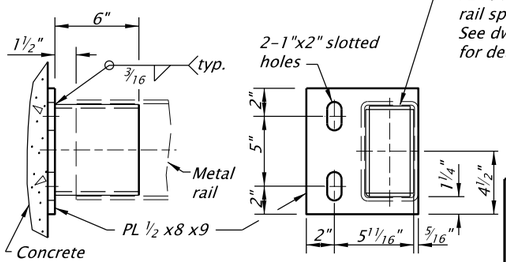


ELEVATION: TRANSITION CONNECTION TYPE II

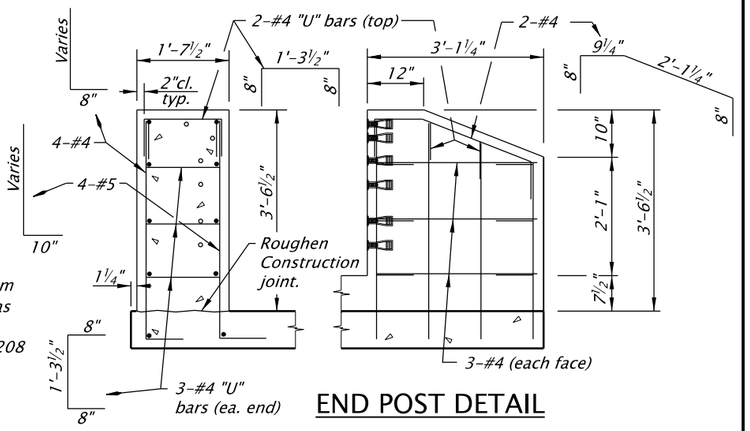


TOP RAIL ATTACHMENT BRACKET

Fabricate from PL ¼ (same as rail splices). See dwg. BR208 for details.



RAIL ATTACHMENT BRACKET



END POST DETAIL

Accompanied by dwgs. BR203, BR207, BR208, RD405, RD410

GENERAL NOTES
Rail designed and crash tested to meet NCHRP 350 TL-4 requirements.
Provide concrete Class 3300- 1½ or ¾.
Provide steel plates 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.

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

OREGON STANDARD DRAWINGS

3-TUBE CURB MOUNT RAIL TRANSITION

2024

DATE	REVISION DESCRIPTION
-	-

CALC. BOOK NO. N/A | SDR DATE 20-APR-2018 | **BR209**

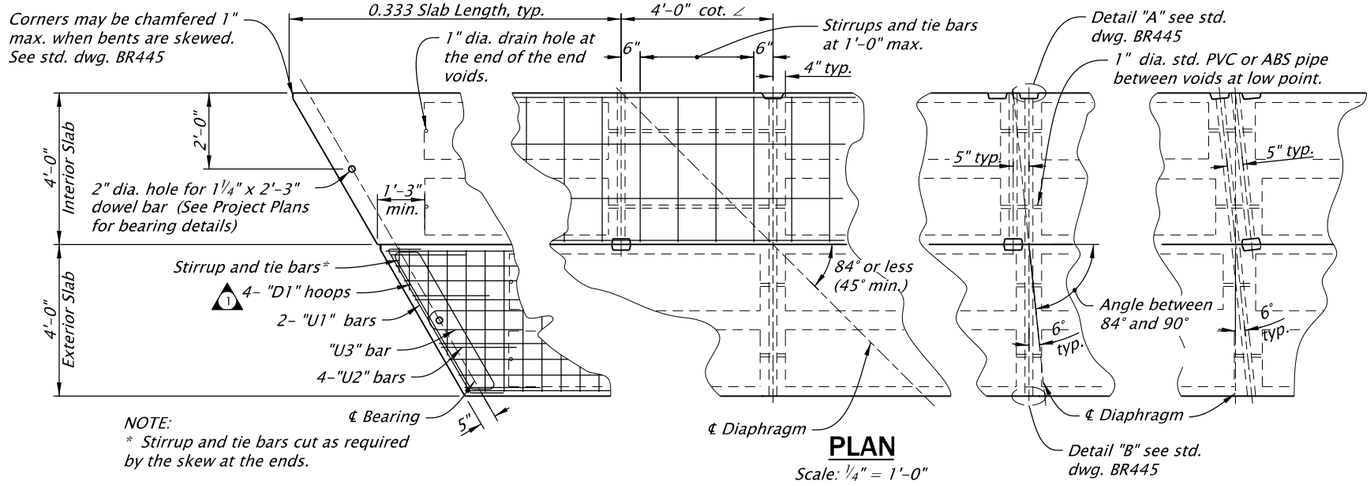
MAR-2017

BR209.dgn

Effective Date: June 1, 2024 - November 30, 2024

JUL-2022

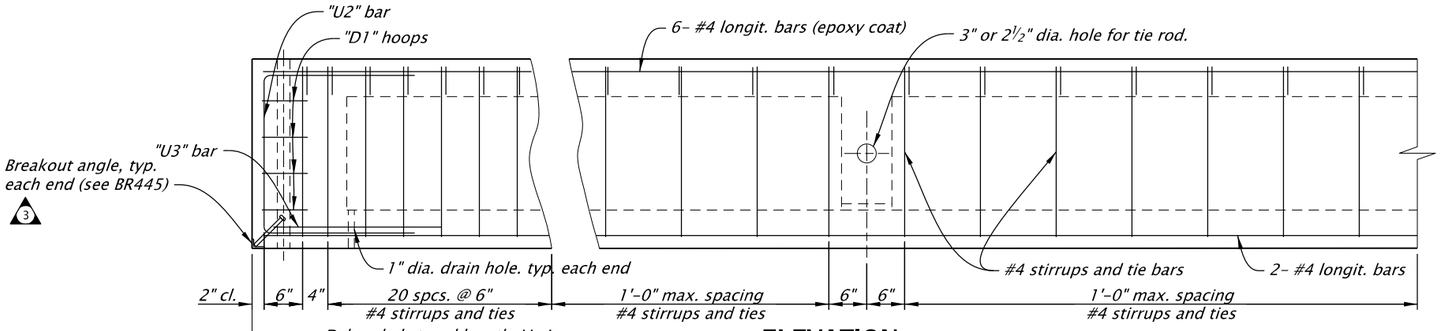
BR422.dgn



NOTE:
* Stirrup and tie bars cut as required by the skew at the ends.

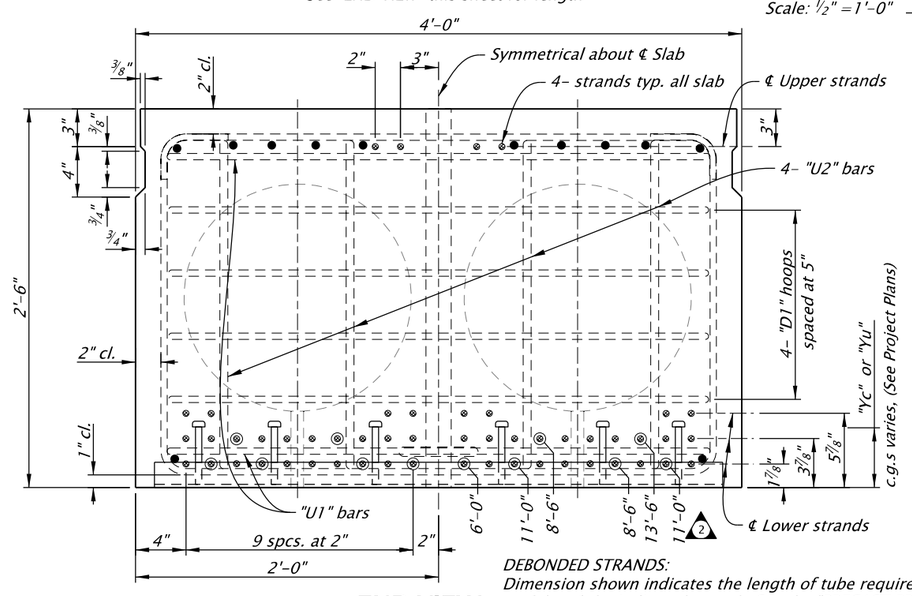
PLAN

Scale: ¼" = 1'-0"



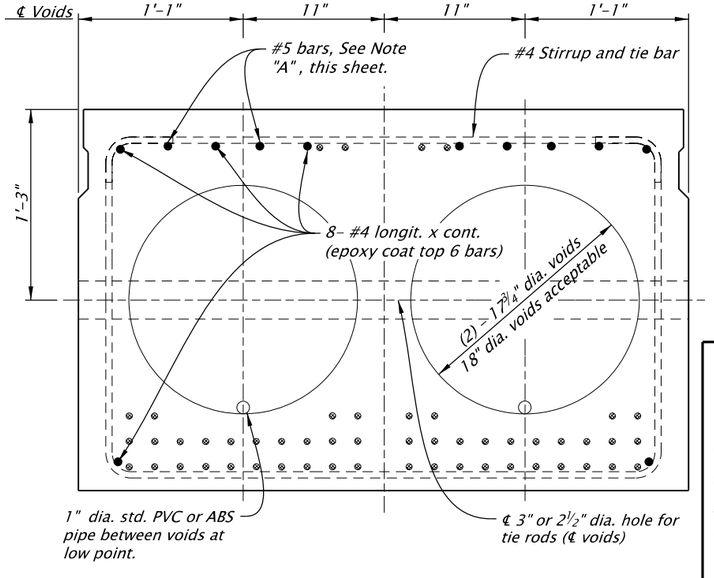
ELEVATION

Scale: ½" = 1'-0"



END VIEW

Scale: 1" = 1'-0"



MIDSPAN 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.

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).

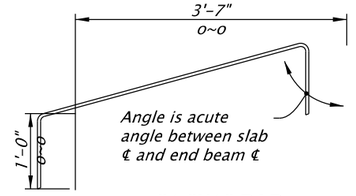
NOTE:
Grout keyway as specified in General Notes.
Omit keyway on exterior side of exterior slabs.
Keyway is continuous.

SECTION PROPERTIES

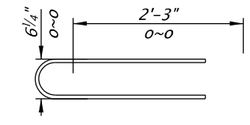
Area =	938 in²
c.g. =	14.91 in
I =	97,278 in⁴
St =	6447 in³
Sb =	6524 in³
Weight =	1009 lbs/ft
J =	180,800 in⁴
K =	0.80
V/S =	6.01
Form wt = (tubes)	27 lbs/ft
Total wt w/forms=	1036 lbs/ft

Diaphragm Weight

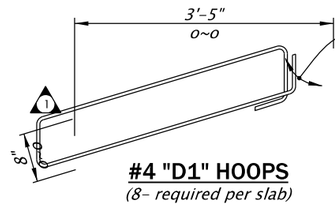
No Skew	550 lb
15° Skew	900 lb
30° Skew	1560 lb
45° Skew	2380 lb



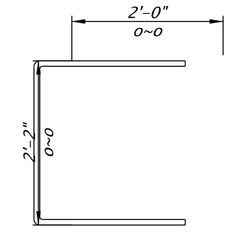
#4 "U1" BAR
(4- required per slab)



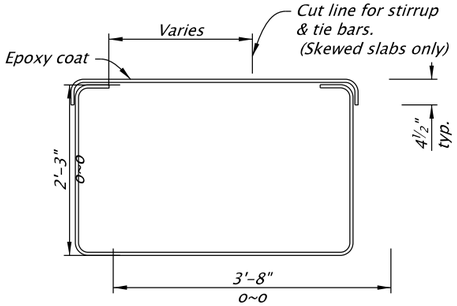
#6 "U3" BAR (A706)
(2- required per slab)



#4 "D1" HOOPS
(8- required per slab)



#5 "U2" BAR
(8- required per slab)



#4 STIRRUP & TIE

Accompanied by dwg. 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.

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

OREGON STANDARD DRAWINGS

30" PRECAST PRESTRESSED SLAB

2024

DATE	REVISION DESCRIPTION
1 07-2020	Added end zone reInf.
2 07-2020	Revised debonded lengths and locations
3 07-2020	Updated drawing to current stds.
4 07-2022	Added breakout angle.

CALC. BOOK NO. N/A

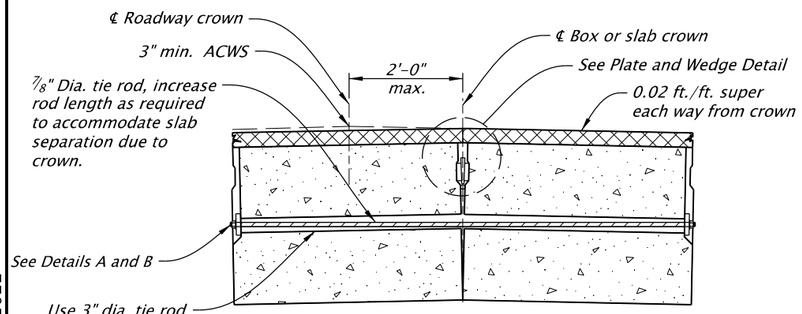
SDR DATE 08-JUL-2022

BR422

Effective Date: June 1, 2024 - November 30, 2024

JUN-2022

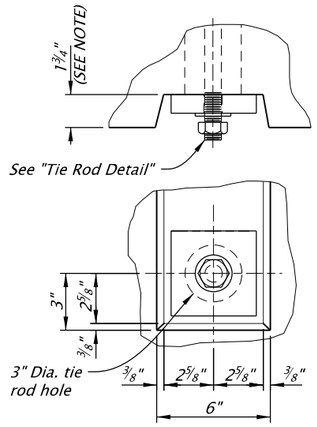
BR445.dgn



TYPICAL DETAIL FOR INSTALLING BOXES OR SLABS ON CROWN

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.

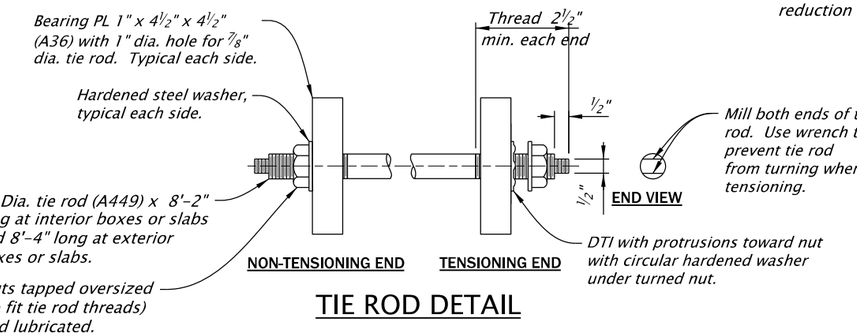
Tension the tie rods. Install boxes or slabs level and build up roadway crown with AC wearing surface when roadway width is 28' or less (for bridges with ACWS).



DETAIL "A"

Non-Tensioning End

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



TIE ROD DETAIL

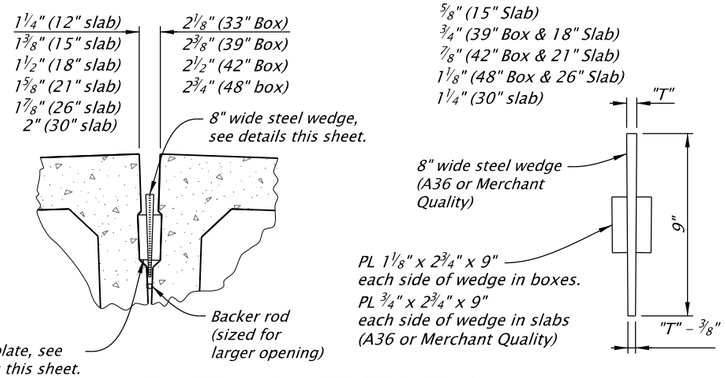
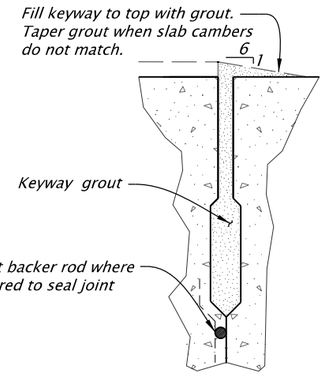
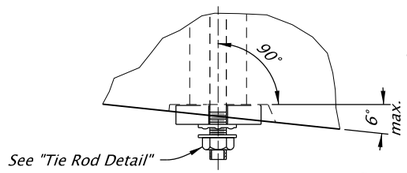


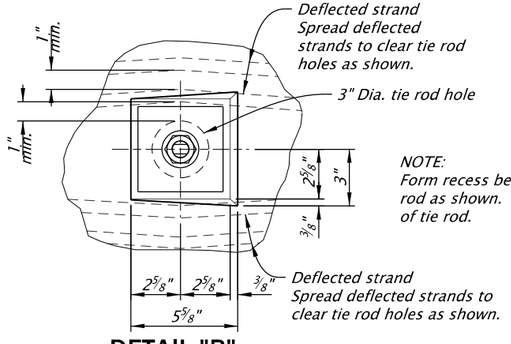
PLATE AND WEDGE DETAIL

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



KEYWAY GROUT DETAIL





DETAIL "B"

Tensioning End

NOTE:
Form recess bearing area perpendicular to tie rod as shown. Use Detail "B" at tensioning end of tie rod.

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.

Provide 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.

Select 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.

Provide reinforcing steel as specified in the General Notes for the Project. (2) (1)

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

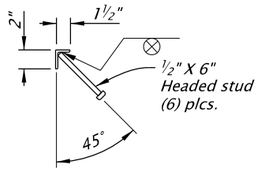
Provide 1/2" diameter 7 wire low relaxation prestressing steel strand conforming to AASHTO Specification M203 (ASTM A416), Grade 270 Supplement 1.

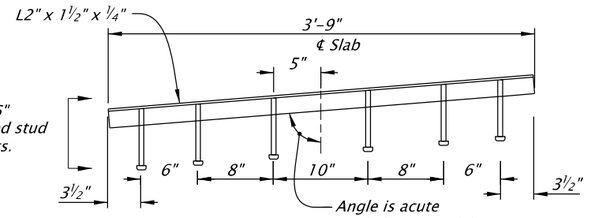
Tension strand initially to 31.0 kips per strand (after harping deflected strand). Debond strands where specified using either split or solid plastic sheathing with a minimum wall thickness of 0.025".

Provide high strength tie rods conforming to ASTM A449. Provide heavy hexagon nuts conforming to ASTM A563. Provide hardened steel washers conforming to ASTM F436. Hot-dip galvanize tie rods, plates, nuts and washers (except DTIs) after fabrication. (1)

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. (1)

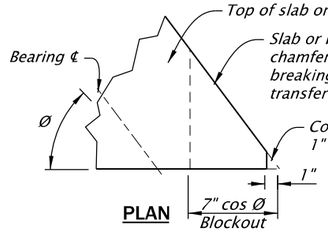
Keep boxes and slabs upright at all times. Support them within 2'-0" of the ends during storage (to prevent excessive camber, overstress or failure). Locate transport supports and lifting devices within 2'-0" of the ends of boxes and slabs. Transportboxes and slabs after the concrete has reached the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

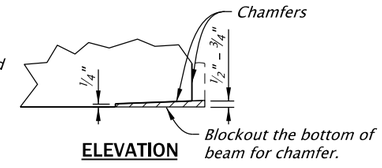




BREAKOUT ANGLE DETAIL

NOTE:
Provide steel angle conforming to ASTM A36. Hot-dip galvanize breakout angle after fabrication. Shift headed studs as required, no more than 2", to avoid prestressing strands.





PARTIAL ELEVATION CHAMFER DETAIL

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

PRECAST PRESTRESSED BOX AND SLAB DETAILS

2024

	DATE	REVISION DESCRIPTION
(1)	07-2020	Revised steel grade for dowels and tie rods.
(2)	07-2020	Updated drawing to current stds.
(3)	07-2020	Moved rail anchorage detail to det3465.
(4)	06-2022	Revised General Notes. Added breakout Angle Detail.

CALC. BOOK NO. N/A | SDR DATE 08-JUL-2022 | **BR445**

Effective Date: June 1, 2024 - November 30, 2024

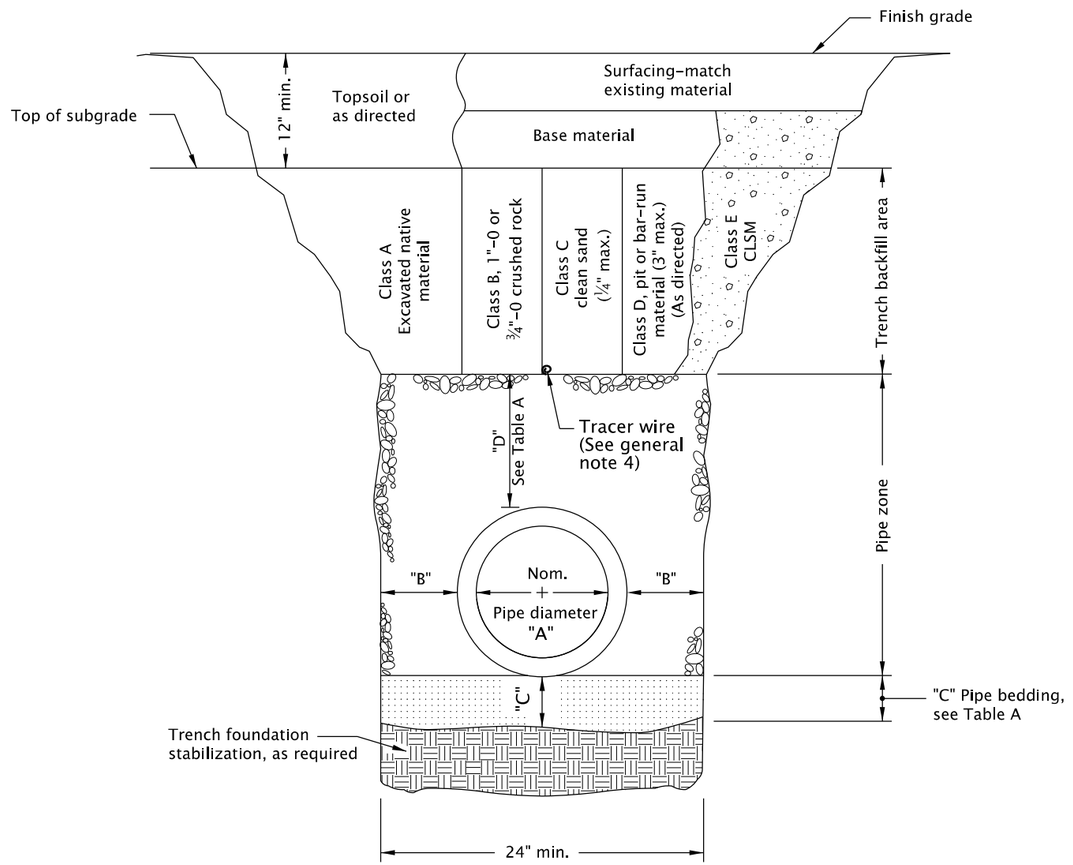
20-JUL-2020

RD300.dgn

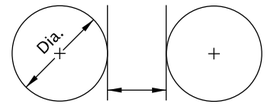
TABLE A

"A" (in)	"B" (in)	"C" (in)	"D" (in)
4	10	4	8
6	10	4	8
8	10	6	10
10	10	6	10
12	12	6	10
15	12	6	10
18	16	6	12
21	16	6	12
24	18	6	12
30	18	6	12
36	24	6	14
42	24	6	14
48	24	6	14
54	24	6	14
60	24	6	14
66	24	6	14
72	24	6	14

For pipes over 72" diameter, see general note 3.



MULTIPLE INSTALLATIONS



DIAMETER	MIN. SPACE BETWEEN PIPES
Up to 48"	24"
48" to 72"	One half (½) dia. of pipe

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. Surfacing of paved areas shall comply with street cut Std. Dwg. RD302.
2. For pipe installation in embankment areas where the trench method will not be used and the pipe is ≥ 36" diameter, increase dimension "B" to nominal pipe diameter.
3. Pipes over 72" diameter are structures, and are not applicable to this drawing.
4. See Std. Dwg. RD336 for tracer wire details (When required).

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

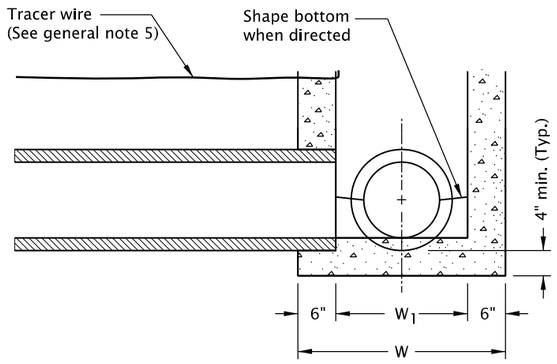
TRENCH BACKFILL, BEDDING, PIPE ZONE AND MULTIPLE INSTALLATIONS

2024

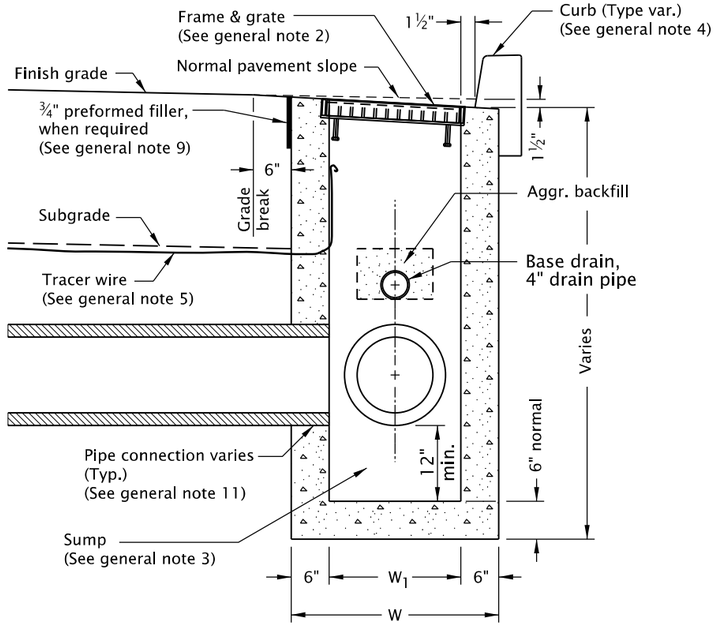
DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 14-JUL-2014 | **RD300**

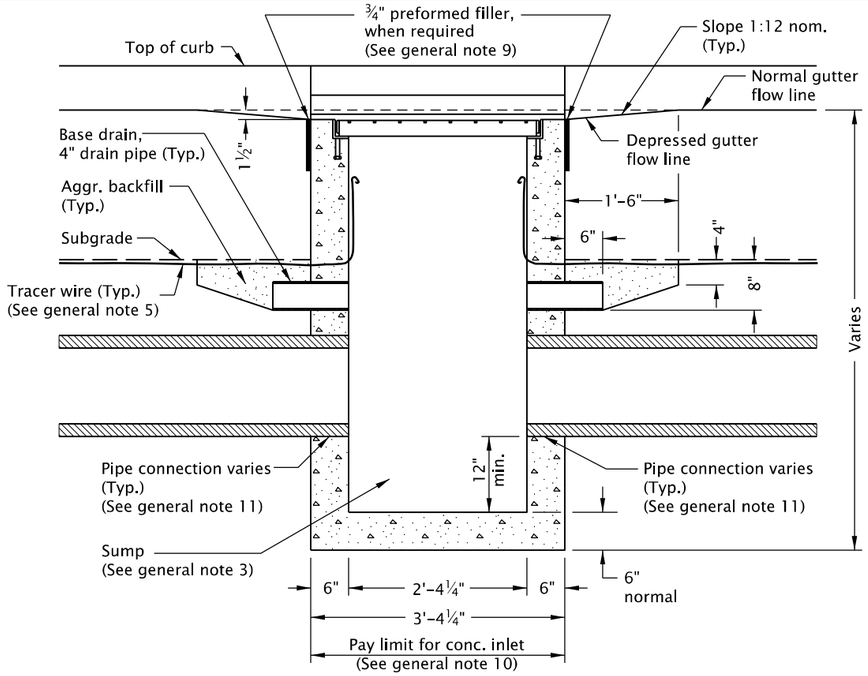
Effective Date: June 1, 2024 – November 30, 2024



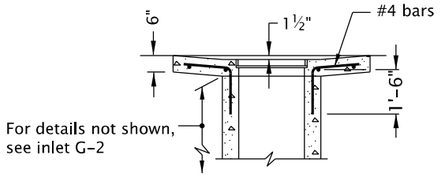
DETAIL A
WITHOUT SUMP



SECTION B - B



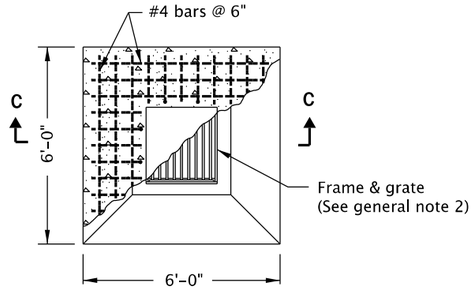
SECTION A - A



SECTION C-C

NOTE:

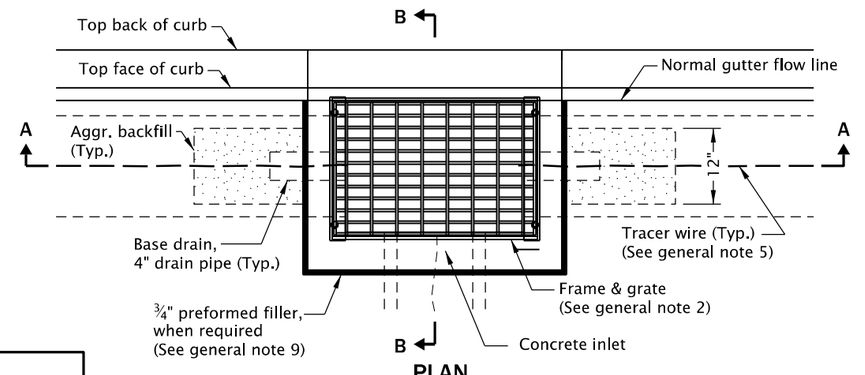
All reinforcement to be placed 2" clear of nearest face of concrete unless shown or noted otherwise



PLAN

TYPE G-2MA

TABLE A		
INLET TYPE	W	W_1
G-1	2'-8⅞"	1'-8⅞"
G-2, G-2M, G-2MA	3'-3⅜"	2'-3⅜"



PLAN

TYPE G-1, G-2, G-2M

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. Where precast inlets are used as an alternate to cast-in-place inlets, a 4" compacted leveling bed of sand or ¼"-0 crushed aggregate shall be provided. All precast inlets shall conform to requirements of ASTM C913.
2. Graphics show G-1 inlet with Type 2 grate. See Table A for inlet dimensions.
   Type 1 grate allowed only in locations not subject to bicycle or pedestrian use.
   For frame and grate details, see Std. Dwg. RD365.
3. Provide sump only where shown on plans, and allowed by jurisdiction. See Detail A for inlet without sump.
4. For curb details, see Std. Dwgs. RD700 & RD701.
5. See Std. Dwg. RD336 for tracer wire details, or approved alternate.
6. Max. pipe diameter varies with pipe material.
7. Location, elevation, diameter, slope, and number of pipe(s) varies, see project plans.
8. All concrete shall be commercial grade concrete.
9. ¾" preformed filler (in concrete pavement or gutter only) to extend through thickness of concrete.
10. See Std. Dwg. RD363 for gutter transition section, when curb and gutter are required.
11. See Std. Dwg. RD339 for pipe to structure connections.

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

CONCRETE INLETS
TYPE G-1, G-2, G-2M, & G-2MA

2024

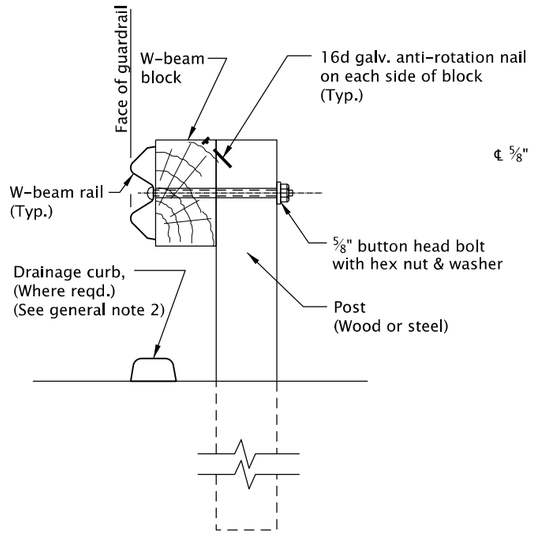
DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 21-JUL-2015 | **RD364**

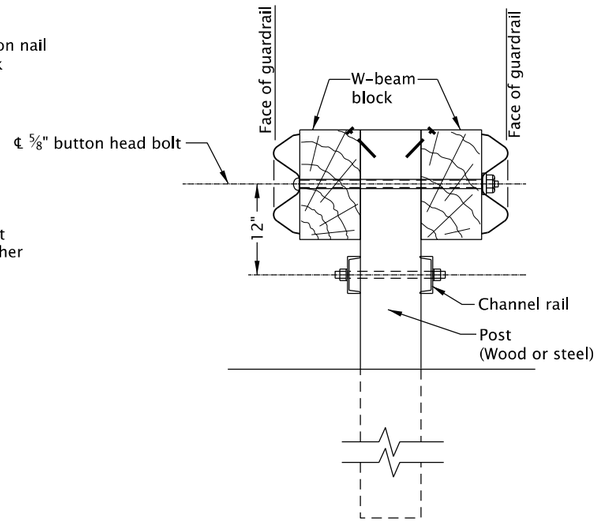
20-JUL-2020

RD364.dgn

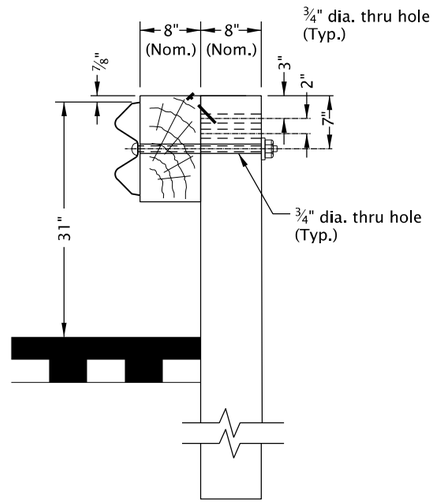
Effective Date: June 1, 2024 - November 30, 2024



TYPES 2A & 3
(For Type 3 use double thickness (2) rail elements)



METAL MEDIAN BARRIER
(DOUBLE SIDED W/ CHANNEL RAIL)
(See general note 3)

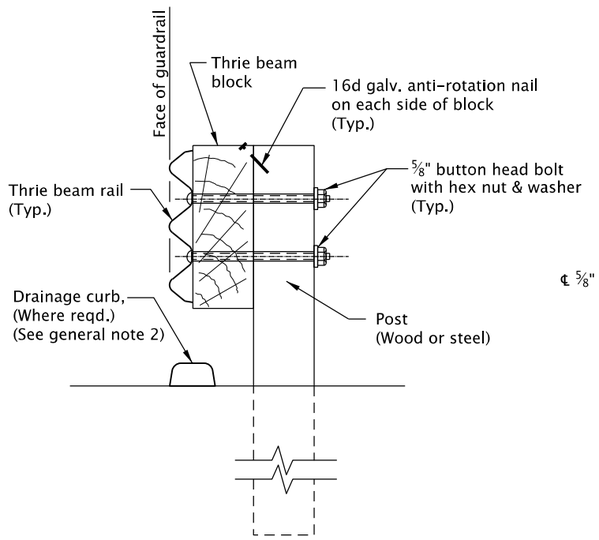


TYPICAL INSTALLATION

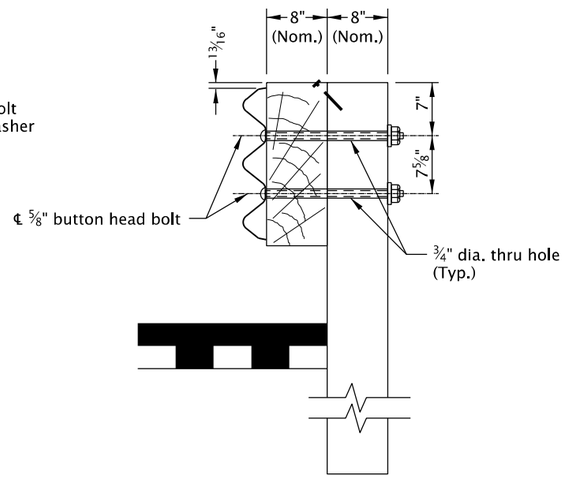
W-BEAM GUARDRAIL

W-BEAM GUARDRAIL ASSEMBLY

NORMAL RAIL ELEMENT DATA			
TYPE	RAIL	EFFECTIVE LENGTHS	GAUGE
2A	W-beam	6.25', 12.5', 25'	10 & 12
3	W-beam	6.25', 12.5', 25'	10 & 12
4	Thrie beam	6.25', 12.5', 25'	10 & 12
4 TRANSITION	Thrie beam	6.25'	10 & 12



TYPE 4 & 4 TRANSITION



INITIAL INSTALLATION

THRIE BEAM GUARDRAIL

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See appropriate guardrail standard drawing(s) for details not shown.
2. When required by the plans, Drainage curb alignment same as face of guardrail.
3. Orient post bolts with the button head located on the side nearest the traffic lane.
   The bolt's threaded portion is not permitted to extend beyond limits of ¼" to ½" from the face of the tightened nut; trim the treated portion as needed.
4. Lap guardrail in direction of adjacent traffic.
5. Final paved surfacing to extend to face of post. Rail height measured from final paved surface at face of rail (Typical all types). 1"± tolerance.
6. Wood block shall be toe-nailed to the post with 2 - 16d galvanized nails in top of block to prevent block rotation.
7. Wood blocks shown. Blocks of an approved alternate material may be used.
   See ODOT's QPL.
8. Existing posts shall not be raised.
   Replace posts as necessary to achieve required guardrail height.

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 TYPES

2024

DATE	REVISION DESCRIPTION
07-2021	REVISED DETAILS AND NOTES

CALC. BOOK NO. N/A | SDR DATE 19-JUL-2021 | **RD402**

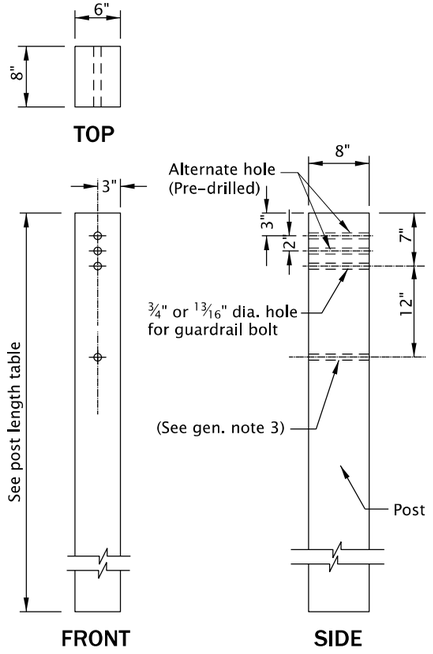
Effective Date: June 1, 2024 - November 30, 2024

19-JUL-2021

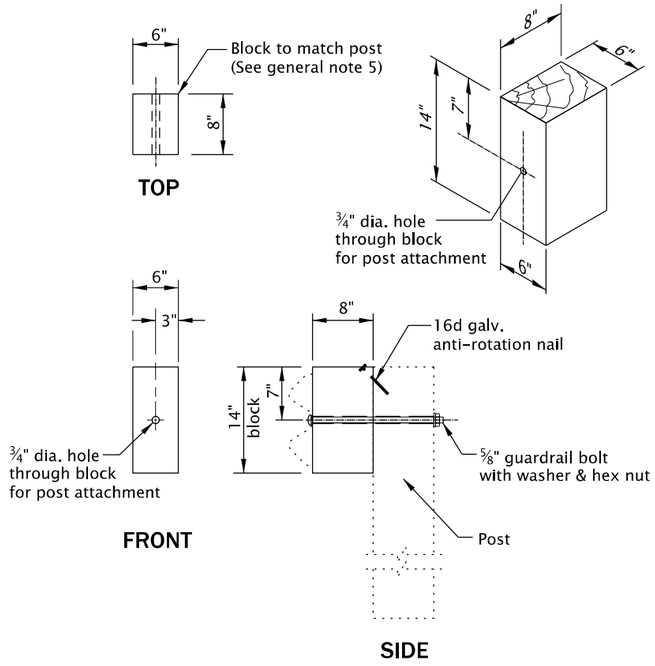
RD402.dgn

19-JUL-2021

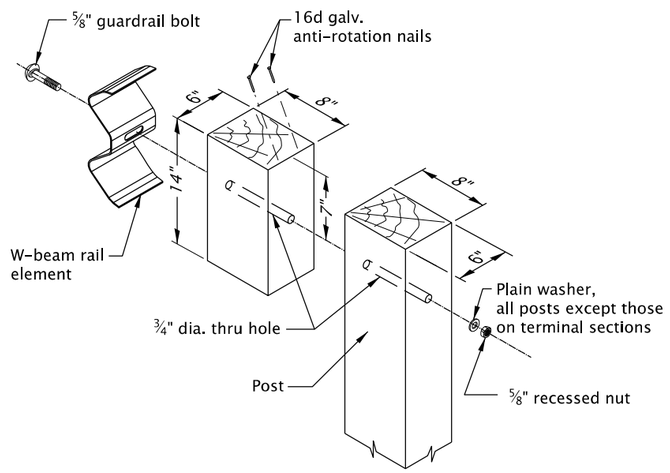
RD403.dgn



W-BEAM WOOD POST
(6x8 post shown)



W-BEAM WOOD BLOCK FOR WOOD POST
(6x8 wood block shown)



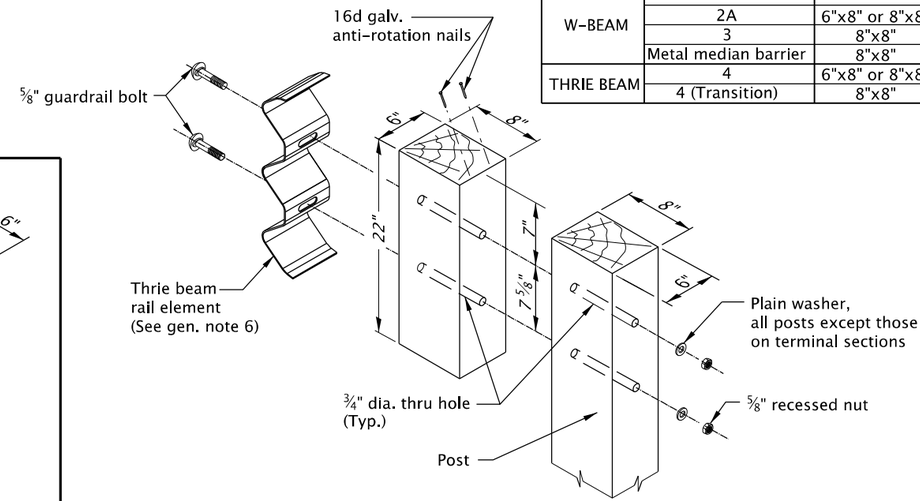
W-BEAM ASSEMBLY DETAIL
(6x8 wood post and 6x8 wood block shown)

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

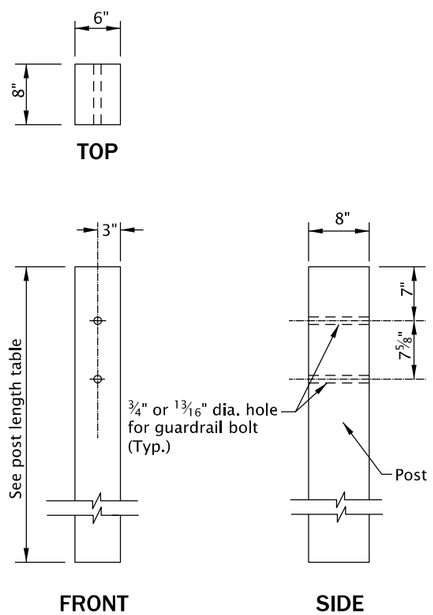
1. See appropriate guardrail standard drawing(s) for details not shown.
2. See Bridge Dwgs. for bridge transition guardrail post and block requirements.
3. Lowest hole(s) required only when channel rail is to be installed. Drill 12" below top ¾" or 13⁄16" hole(s) used.
4. Dimensions shown are for nominal posts and blocks.
5. Wood blocks shown. Blocks of an approved alternate material may be used. See ODOT's QPL.
6. When required by the plans, nested thrie beam wood post shall be 8"x8".
7. Wood block shall be toe-nail to the post with 2 - 16d galvanized nails in top of block to prevent block rotation.

GUARDRAIL WOOD POST TABLE

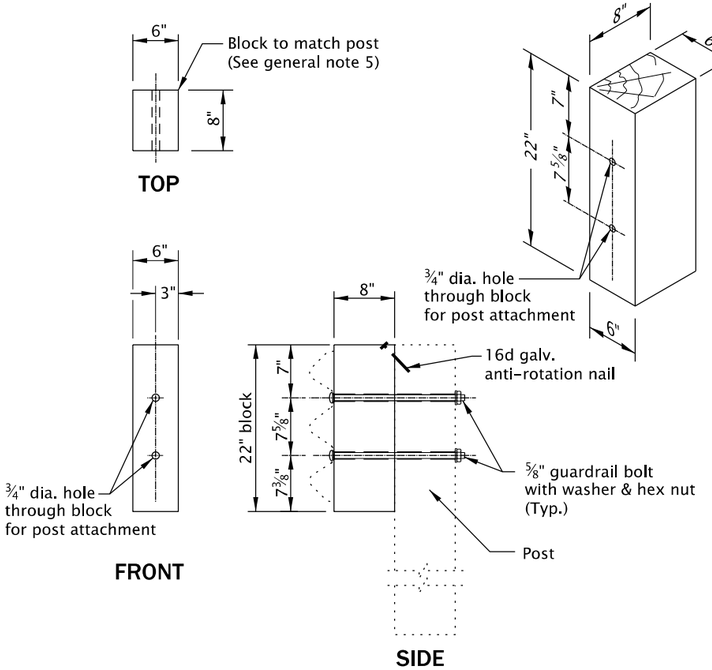
	GUARDRAIL TYPE	POST SIZE	POST LENGTH	POST SPACING
W-BEAM	2A	6"x8" or 8"x8"	6'-0"	6'-3"
	3	8"x8"	6'-0"	3'-1½"
	Metal median barrier	8"x8"	6' 6"	6'-3"
THRIE BEAM	4	6"x8" or 8"x8"	7'-0"	6'-3"
	4 (Transition)	8"x8"	6'-0"	3'-1½"



THRIE BEAM ASSEMBLY DETAIL
(6x8 wood post and 6x8 wood block shown)



THRIE BEAM WOOD POST
(6x8 post shown)



THRIE BEAM WOOD BLOCK FOR WOOD POST
(6x8 wood block shown)

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 WOOD POST AND BLOCK

2024

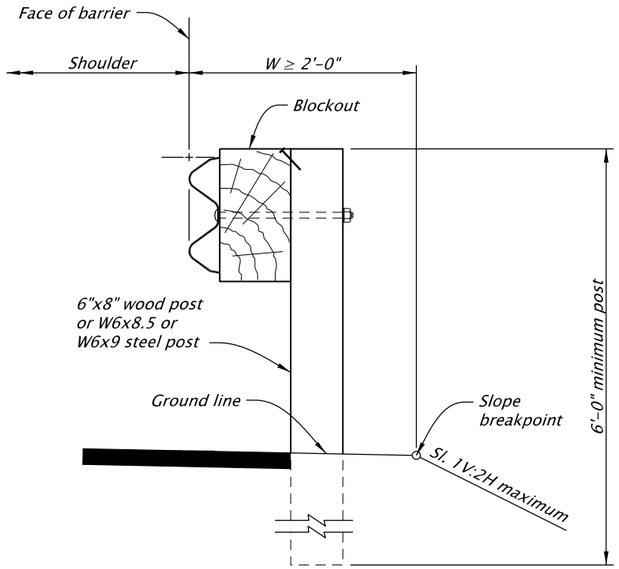
DATE	REVISION DESCRIPTION
07-2021	REVISED DETAILS AND NOTES

CALC. BOOK NO. N/A | SDR DATE 19-JUL-2021 | **RD403**

Effective Date: June 1, 2024 - November 30, 2024

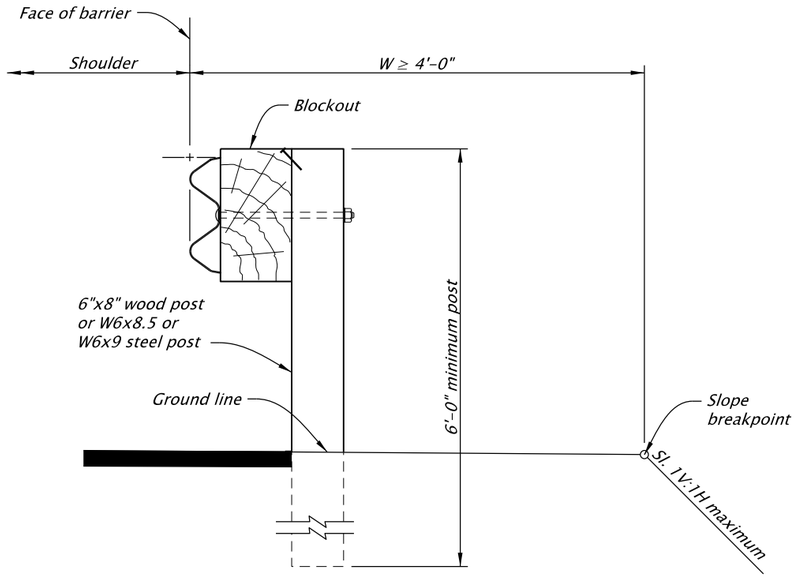
20-JAN-2023

RD406.dgn



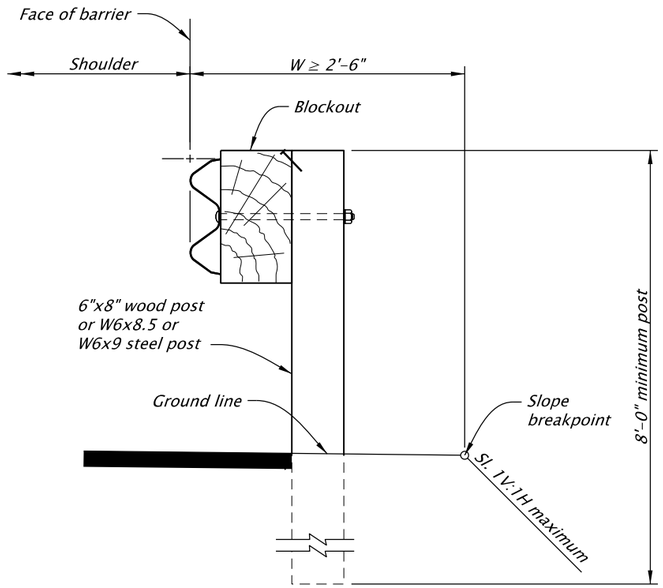
CASE 1

(Wood post shown)



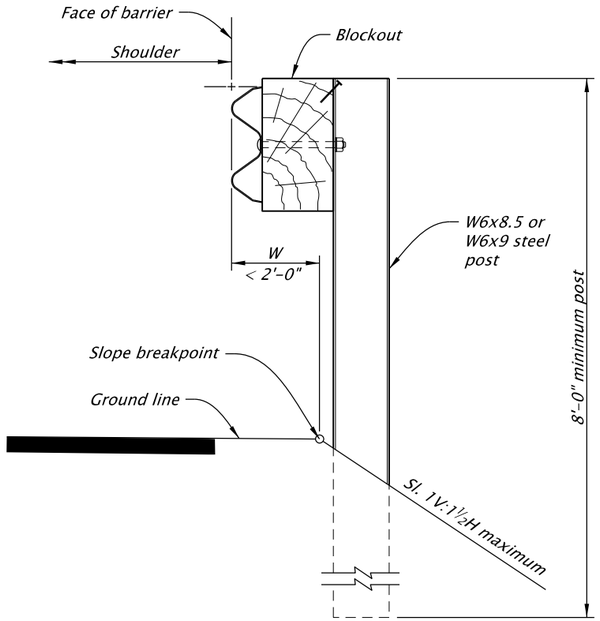
CASE 2

(Wood post shown)
Use when there is a 4'-0" or greater shoulder widening from face of guardrail to the slope breakpoint



CASE 3

(Wood post shown)
Use when there is a 2'-6" or greater shoulder widening from face of guardrail to the slope breakpoint



CASE 4

(Steel post shown)
Do not use in weak soil conditions.
Use when there is less than a 2'-0" shoulder widening from face of guardrail to the slope breakpoint

PLACEMENT OF GUARDRAIL ON SLOPES

NOTE: Cases shown do not apply to terminals, transition sections or anchors.

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. *See appropriate guardrail standard drawing(s) for details not shown.*
2. *Wood blocks shown. Blocks of an approved alternate material may be used. See ODOT's QPL.*
3. *All posts for guardrail run shall be of the same type: wood or steel.*

SLOPE / EMBANKMENT TABLE			
POST LENGTH (ft)	POST TYPE	SLOPE (V:H)	W (ft) (Face of barrier to slope of breakpoint)
6	*Wood/Steel*	*1:2 or flatter*	*2'-0" minimum*
6	*Wood/Steel*	*1:1 or flatter*	*4'-0" minimum*
8	*Wood/Steel*	*1:1 or flatter*	*2'-6" minimum*
8	*Steel*	*1:1½ or flatter*	*Less than 2'-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.

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

OREGON STANDARD DRAWINGS

PLACEMENT OF GUARDRAILS ON SLOPES

2024

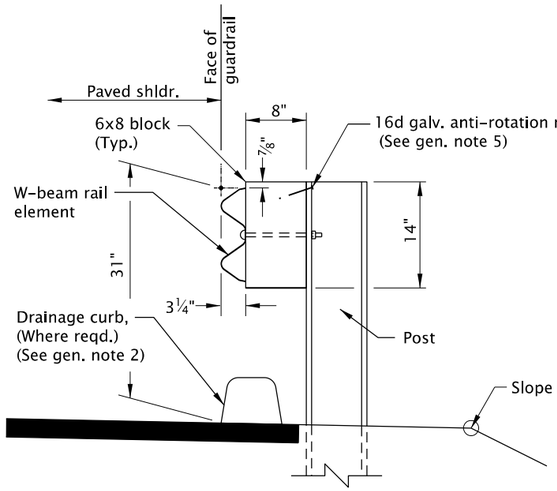
DATE	REVISION DESCRIPTION
07-2021	NEW DRAWING CREATED
12-2021	REVISED DETAILS AND NOTES
12-2022	REVISED NOTE

CALC. BOOK NO. N/A | SDR DATE 20-JAN-2023 | **RD406**

Effective Date: June 1, 2024 - November 30, 2024

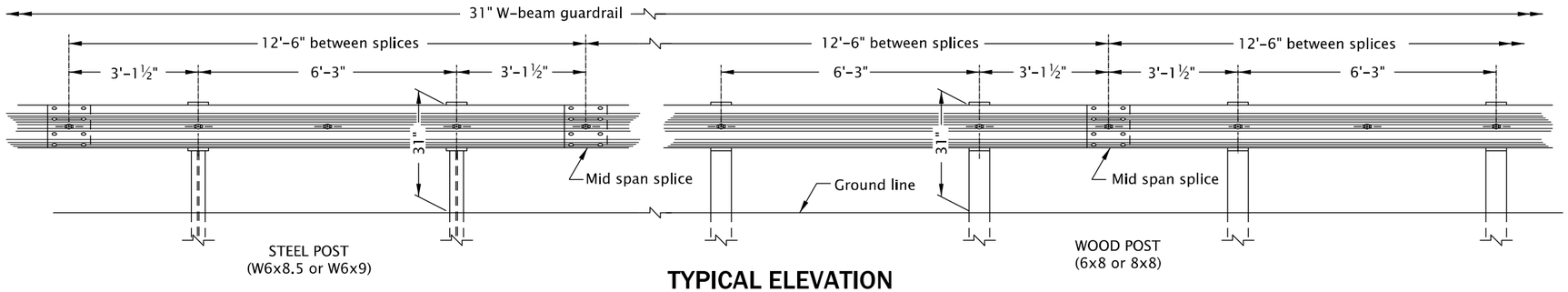
19-JUL-2021

RD407.dgn

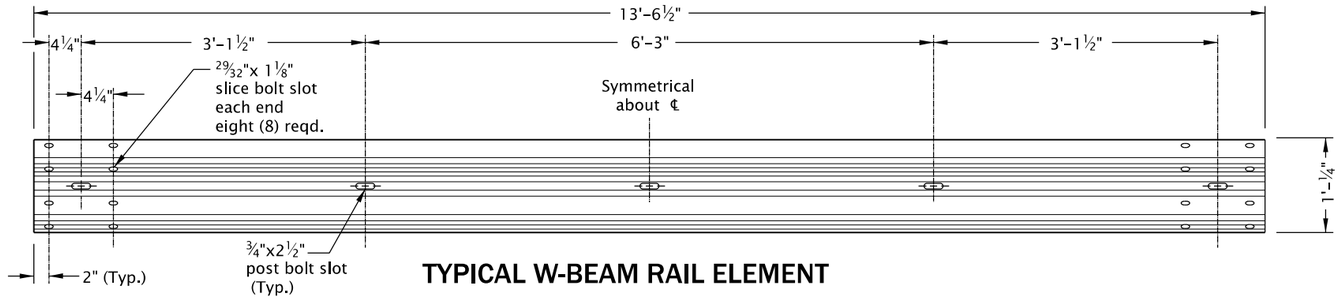


TYPICAL SECTION

(Steel post shown)



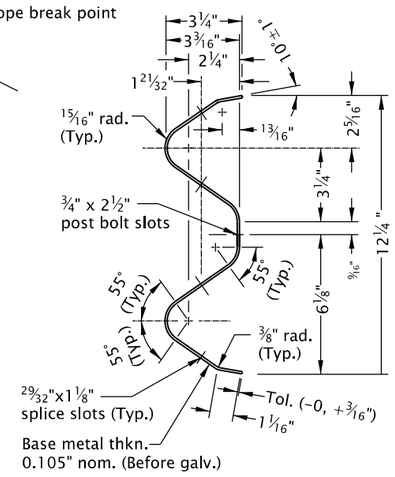
TYPICAL ELEVATION



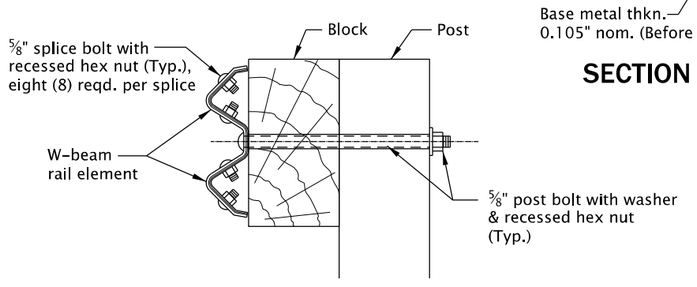
TYPICAL W-BEAM RAIL ELEMENT

NORMAL RAIL ELEMENT DATA

Type	Effective Lengths	Thkn. (Galv.)
2A, 3	6.25', 12.5', 25'	10 ga. & 12 ga.



SECTION THRU RAIL ELEMENT

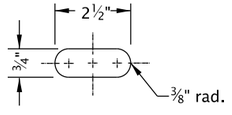


FITTINGS

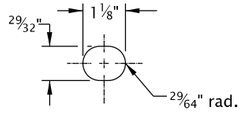
NOTES:

a. When required by the plans, post bolts to extend beyond the tightened nuts within limits of ¼" to ½".

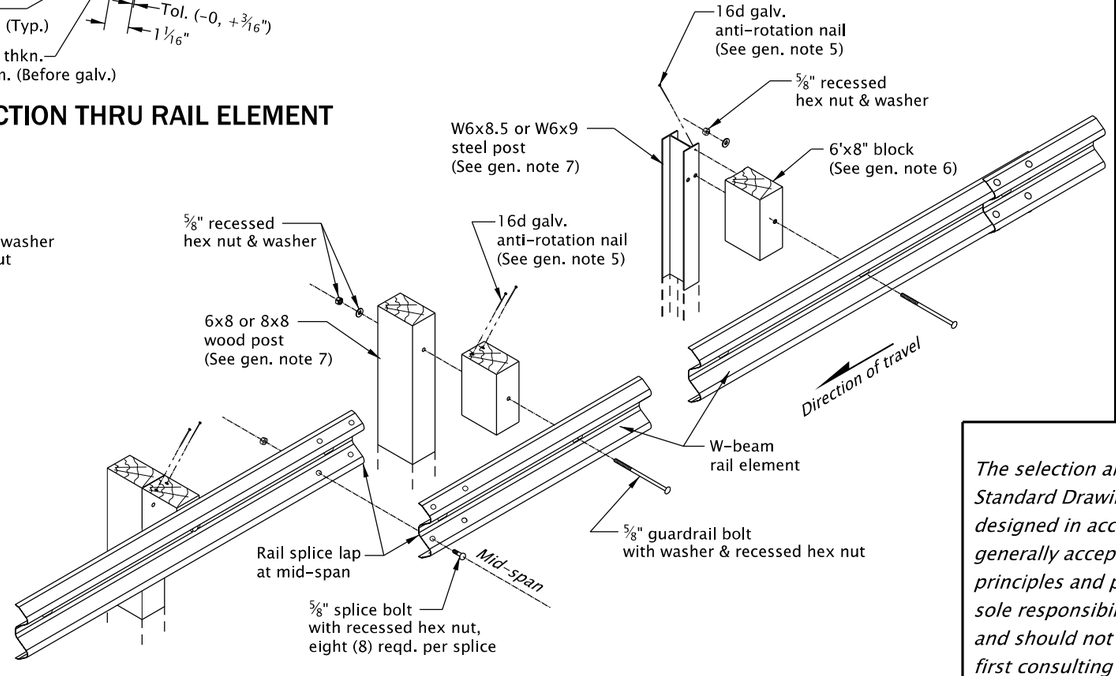
b. All post bolt threads to be set after assembly for wrench removal only.



POST BOLT SLOT



SPLICE BOLT SLOT



W-BEAM ASSEMBLY DETAILS

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See appropriate guardrail standard drawing(s) for details not shown.
2. When required by the plans, drainage curb alignment same as face of guardrail.
3. Lap guardrail in direction of adjacent traffic.
4. Final paved surfacing to extend to face of post. Rail height measured from final paved surface at face of rail to top of rail (typ. all types). 1" ± tolerance.
5. Blocks shall be toe-nailed to prevent rotation when wood posts are used (see Std. Dwg. RD403). Blocks shall be rounted or toe-nailed when steel posts are used to prevent rotation (see Std. Dwg. RD404).
6. Wood blocks shown. Blocks of an approved alternate material may be used. See ODOT's QPL.
7. All posts for guardrail run shall be of the same type: wood or steel.
8. For guardrail installed on radii of 150' or less (5' min. radius) use rail elements pre-curved to industry standard. Install "Radius Identification Plate".

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 W-BEAM

2024

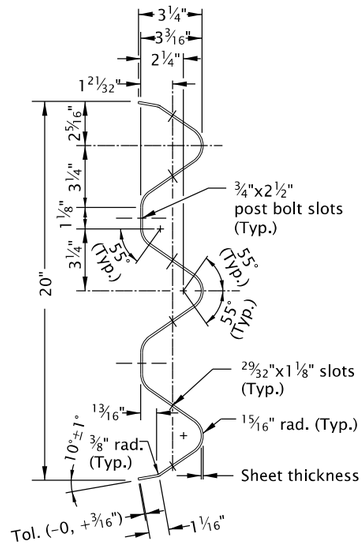
DATE	REVISION DESCRIPTION
07-2021	REVISED DETAILS AND NOTES

CALC. BOOK NO. N/A | SDR DATE ~~19-JUL-2021~~ | **RD407**

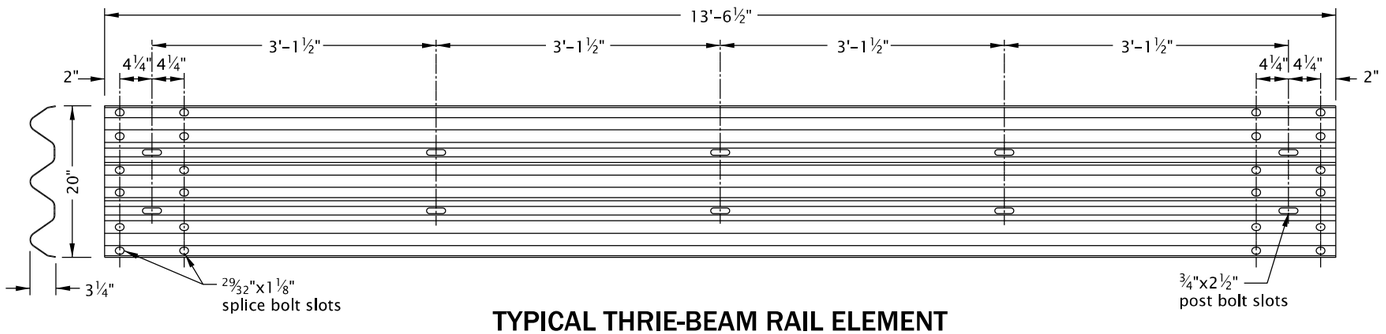
Effective Date: June 1, 2024 - November 30, 2024

20-JUL-2020

RD409.dgn

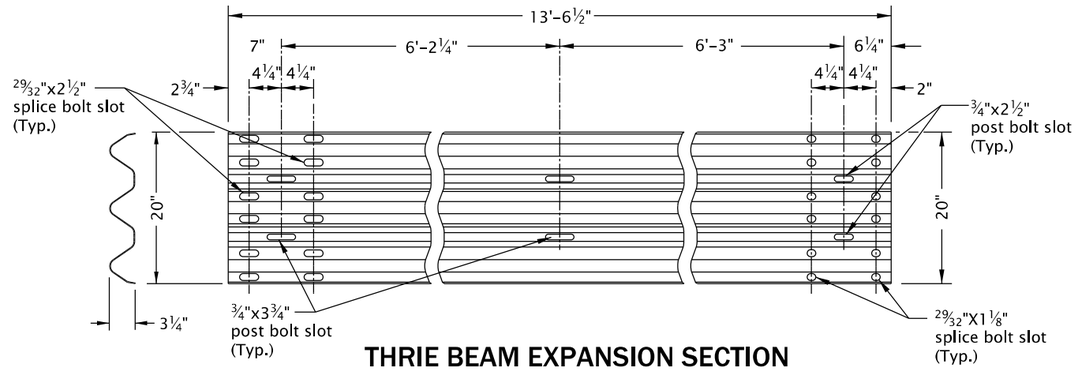


SECTION THRU RAIL ELEMENT

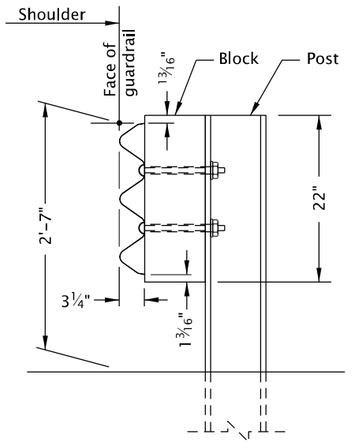


TYPICAL THRIE-BEAM RAIL ELEMENT

(12'-6" length shown)

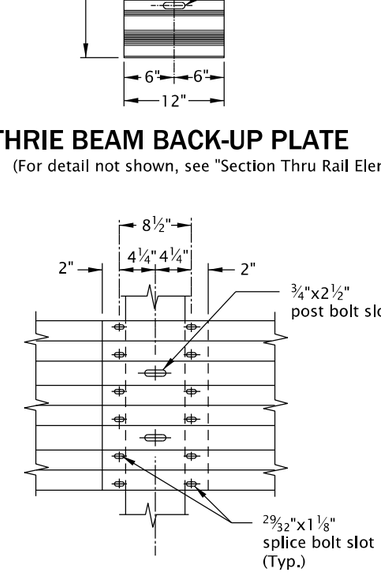


THRIE BEAM EXPANSION SECTION



TYPICAL SECTION

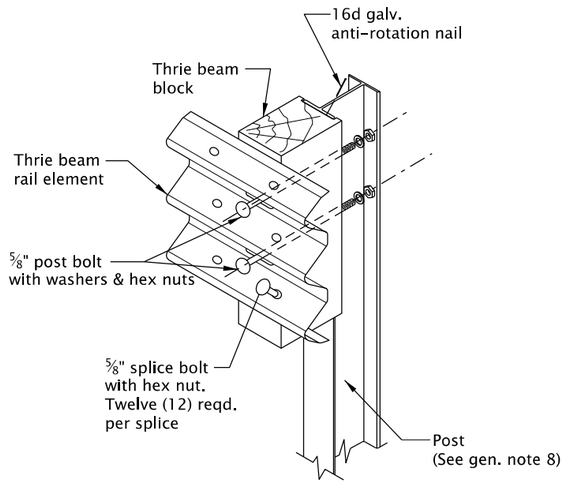
(Steel post shown)



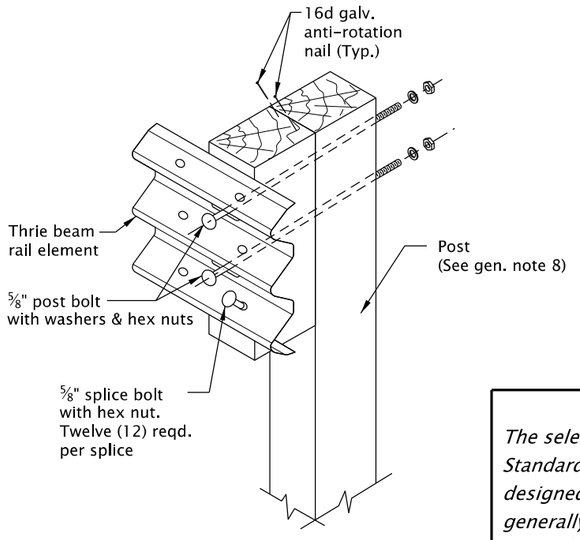
THRIE BEAM BACK-UP PLATE

(For detail not shown, see "Section Thru Rail Element")

THRIE BEAM SPLICE



STEEL POST ASSEMBLY



WOOD POST ASSEMBLY

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See appropriate guardrail standard drawing(s) for details not shown.
2. Lap guardrail in direction of adjacent traffic.
3. Hole layout per manufacturer with appropriate post and block.
4. Final paved surfacing to extend to face of post. Rail height measured from final paved surface at face of rail to top of rail (Typ. all types). 1" ± tolerance.
5. Wood block shall be toe-nailed to the post with 2 - 16d galvanized nails in top of block to prevent block rotation.
6. Wood blocks shown. Blocks of an approved alternate material may be used. See ODOT's QPL.
7. All posts for guardrail run shall be of the same type: wood or steel.
8. When required by the plans, nested thrie beam post shall be 8x8 wood or W6x9 steel.

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

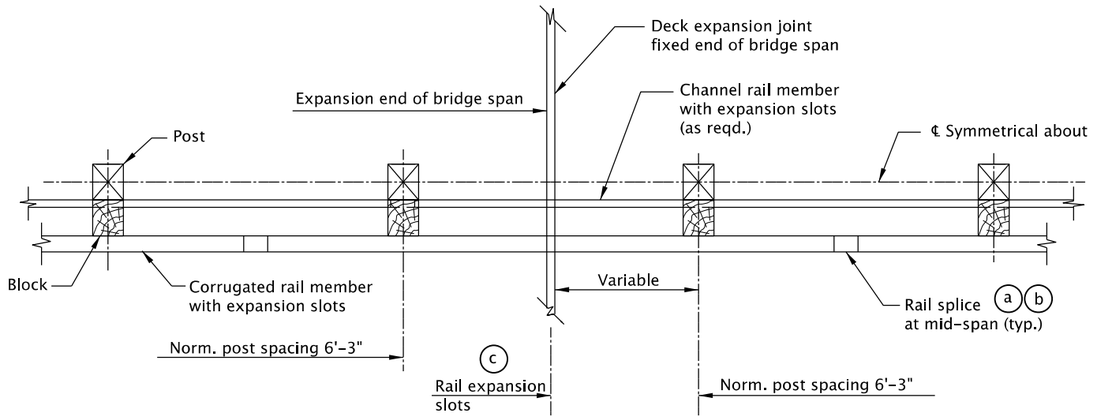
THRIE BEAM GUARDRAIL

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 13-JAN-2020 | **RD409**

Effective Date: June 1, 2024 - November 30, 2024



PLAN

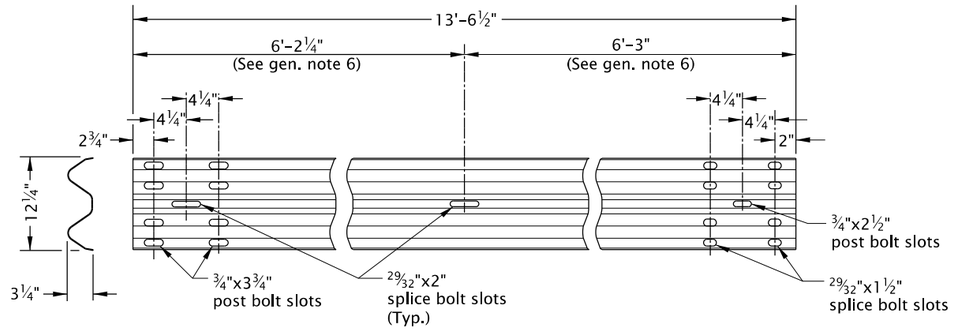
NOTES:

(a) Place 2 - 1/32" polytetrafluoroethylene (TFE) sheets between corrugated rail members. The sheets shall be 12½"x1'-7".

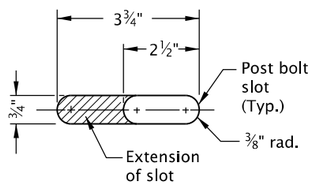
(b) Adjust nuts to provide a sliding fit and set threads to prevent loosening.

(c) Extension of slot toward bridge deck expansion joint.

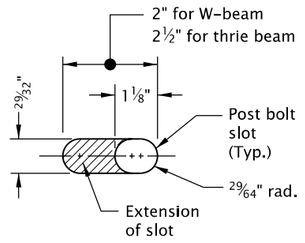
GUARDRAIL INSTALLATION AT BRIDGE DECK EXPANSION JOINT



W-BEAM EXPANSION SECTION



POST BOLT SLOT



SPLICE BOLT SLOT

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See appropriate guardrail standard drawing(s) for details not shown.
2. Median barrier post spacing shall be 6'-3" on centers.
3. Lap guardrail in direction of adjacent traffic.
4. Wood blocks shall be toe-nailed to post with 16d galvanized nails to prevent block rotation.
5. Wood blocks shown. Blocks of an approved alternate material may be used. See ODOT's QPL.
6. Spacing may vary depending on application.

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 INSTALLATION AT BRIDGE DECK EXPANSION JOINT

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 13-JAN-2020 | **RD412**

Effective Date: June 1, 2024 - November 30, 2024

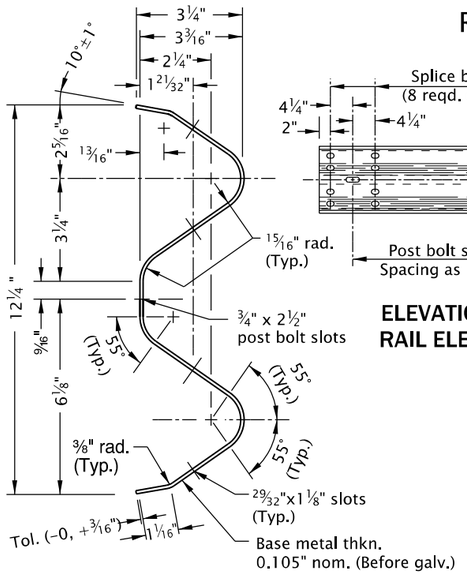
20-JUL-2020

RD412.dgn

20-JUL-2020

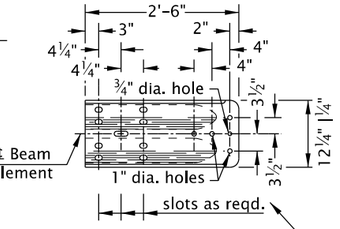
RD415.dgn

RAIL MEMBERS

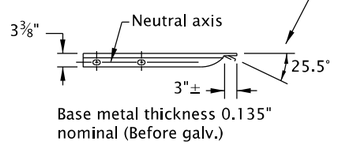


SECTION THRU RAIL ELEMENT

ELEVATION OF RAIL ELEMENT



25.5° bend and hole reqd. only for use with alternate Type "C" end piece.

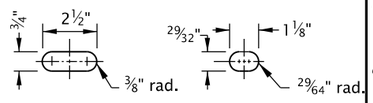


Base metal thickness 0.135" nominal (Before galv.)

TERMINAL CONNECTOR

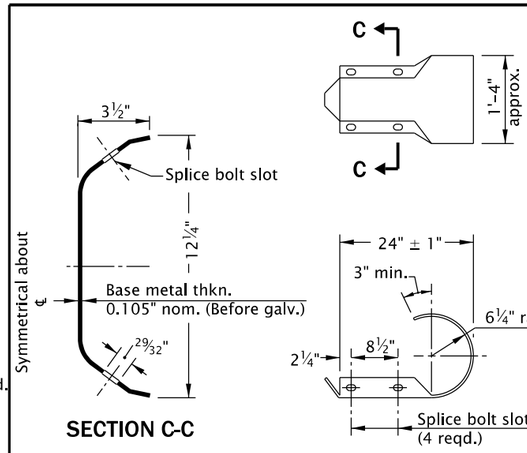
NOTES:

1. 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).
2. Effective length of rail sections shall be 12'-6".



POST BOLT SLOT

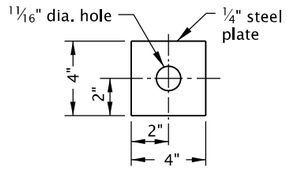
SPLICE BOLT SLOT



SECTION C-C

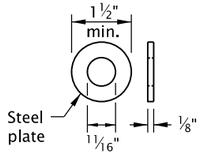
TYPE B END PIECE

APPURTENANCES



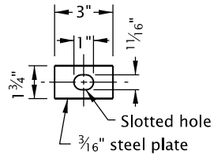
SNOW LOAD (OPTIONAL)

(In area of heavy snow, as directed by the engineer)



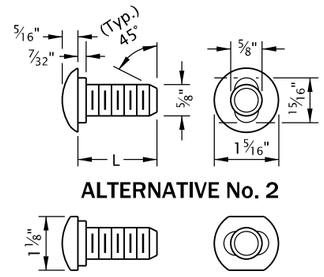
PLAIN ③

USE ON BACK OF POST



RECTANGULAR

USE ON RAIL ELEMENT FACE ON TYPE C END PIECE

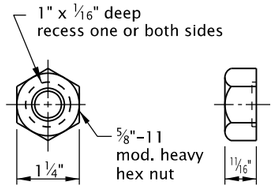


ALTERNATIVE No. 2

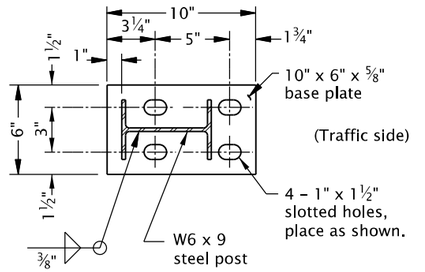
ALTERNATIVE No. 1

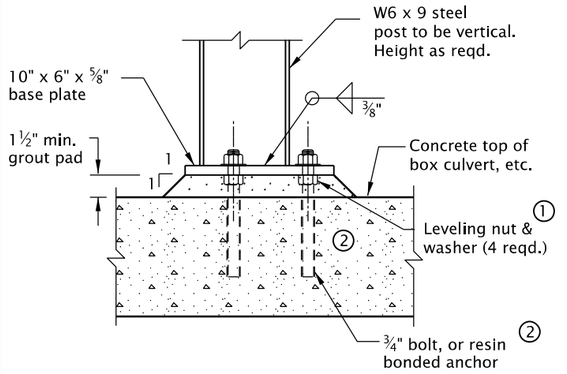
WASHERS ④

L (in.)	Thread Length (in.)
1¼	1⅛ min.
2	1¾ min.
10	4 min.
18	4 min.
25	4 min.



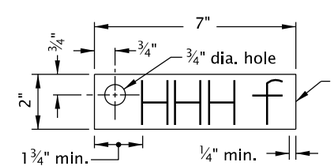
POST OR SPLICE BOLT AND NUT





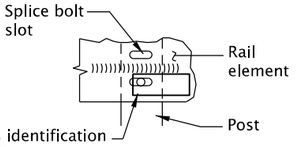
BASE PLATE DETAILS

(For additional details, see Std. Dwg. BR266)
(Use when depth of cover is less than normal for post installation.)



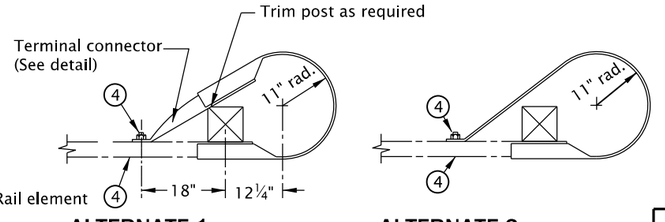
RADIUS IDENTIFICATION PLATE

(See general note 4)



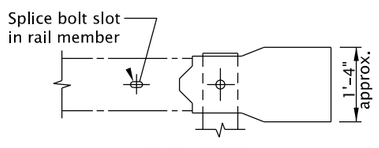
RADIUS IDENTIFICATION PLATE MOUNTING DETAIL

(See general note 5)



ALTERNATE 1

ALTERNATE 2



ELEVATION

TYPE C END PIECE

(For details not shown, see Type B End Piece)

NOTES:

① Furnished & installed by structure contractor when shown on structure plans.

② 6" min. penetration into concrete slabs other than bridge decks. Cast in place or core and install using approved resin bonding system.

③ Not required if "Snow Load" washer option is used.

④ 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:

1. See appropriate guardrail standard drawing(s) for details not shown.
2. For details of guardrail connections to structural handrails, see special details or Standard Drawings as called for on plans.
3. All indicated welds shall attain the full strength of the section welded.
4. 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 1½" min. height and ¾" max. width. Plate shall be galvanized after placement of digits.
5. 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

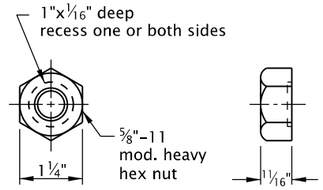
GUARDRAIL AND METAL MEDIAN BARRIER PARTS (29" RAIL HEIGHT)

2024

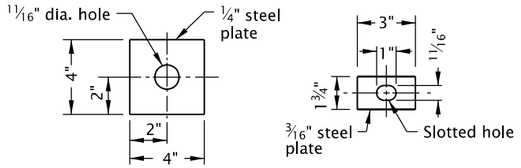
DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 13-JAN-2020 | **RD415**

Effective Date: June 1, 2024 - November 30, 2024



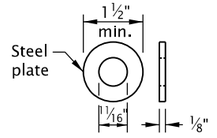
5/8" DIA. RECESSED HEX NUT



SNOW LOAD POST WASHER

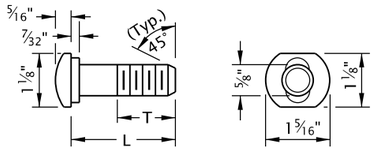
SNOW LOAD RAIL WASHER ⓑ

Use in area of heavy snow,
as directed by the engineer
(See general note 6)

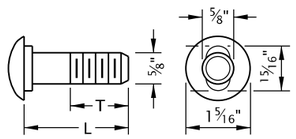


PLAIN WASHER ⓐ

Use on back of post.



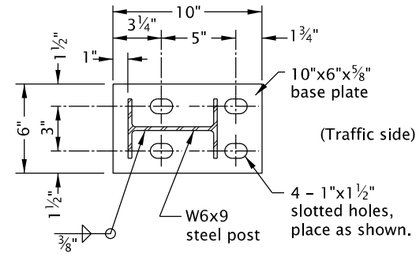
ALTERNATIVE No. 1



ALTERNATIVE No. 2

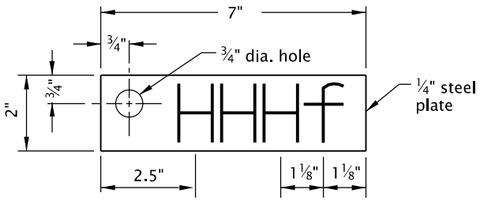
BOLT DIMENSION TABLE

Length (L) (in.)	Thread Length (T) (in.)
1 1/4	1 1/8 min.
2	1 3/4 min.
10	4 min.
18	4 min.
25	4 min.



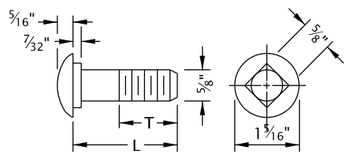
PLAN

5/8" GUARDRAIL POST/SPICE BOLT (BUTTON HEADED)

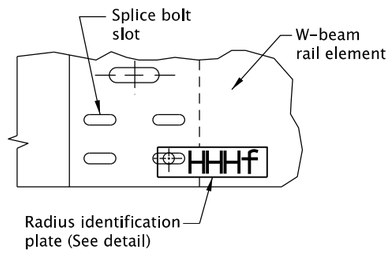


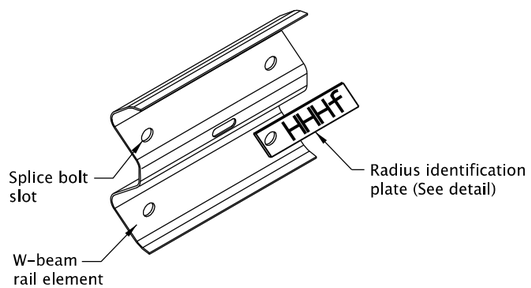
RADIUS IDENTIFICATION PLATE

(See general note 4)



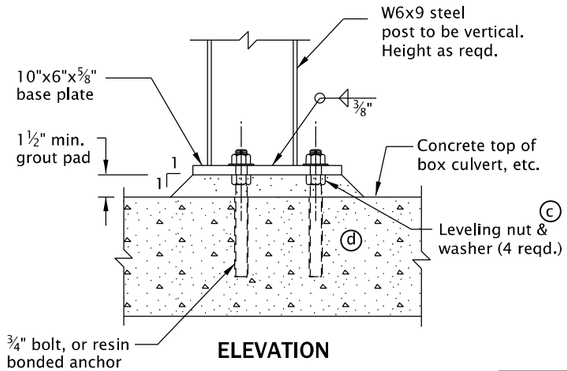
5/8" DIA. CARRIAGE BOLT





RADIUS IDENTIFICATION PLATE MOUNTING DETAIL

(See general note 5)



ELEVATION

BASE PLATE DETAILS

(For additional details, see Std. Dwg. BR266)
(Use when depth of cover is less
than normal for post installation.)

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See appropriate guardrail standard drawing(s) for details not shown.
2. For details of guardrail connections to structural handrails, see special details or Standard Drawings as called for on plans.
3. All indicated welds shall attain the full strength of the section welded.
4. 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 1½" min. height and ¾" max. width. Plate shall be galvanized after placement of digits.
5. 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.
6. When required by the plans, a Snow Load Post Washer shall be used on the backside of the post and a Snow Load Rail Washer shall be placed on rail element face. Snow Load Rail Washers shall not be installed on terminals.

SUPPLEMENTARY NOTES:

ⓐ Not required if Snow Load Post washer option is used.

ⓑ Use rectangular Snow Load Rail washer under bolt head and nut on Type C End Piece as shown.

ⓒ 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.

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

OREGON STANDARD DRAWINGS

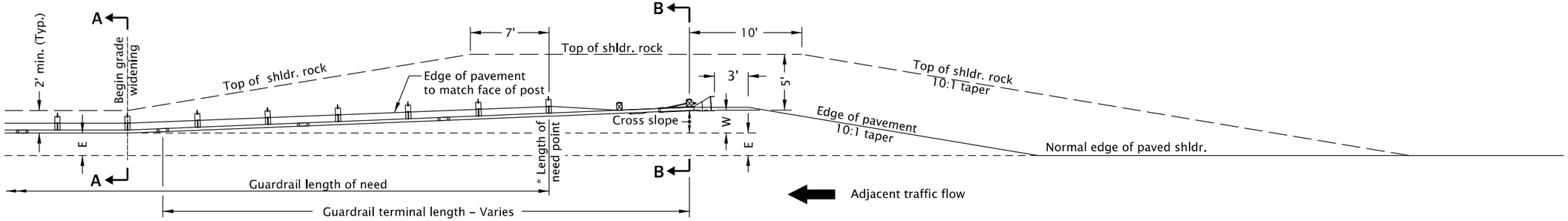
MIDWEST GUARDRAIL SYSTEM STANDARD HARDWARE (NUTS, BOLTS, WASHERS AND MISC.)

2024

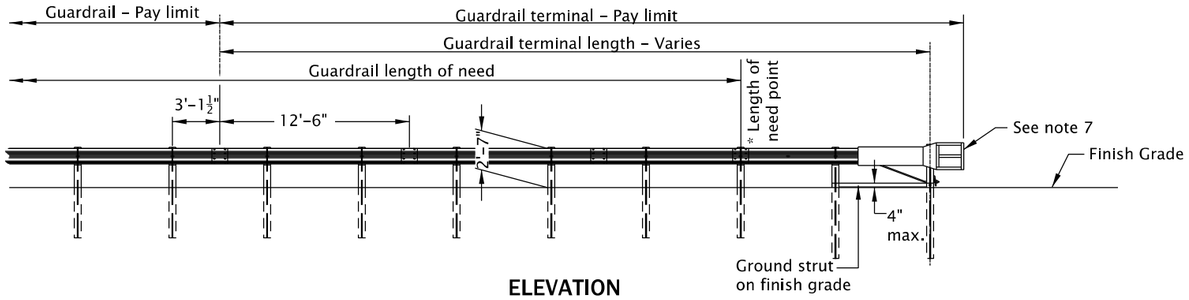
DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 13-JAN-2020 | **RD416**

Effective Date: June 1, 2024 - November 30, 2024

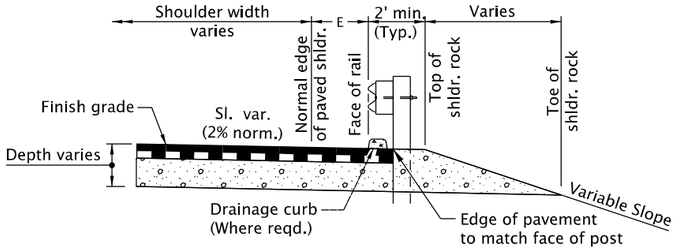


PLAN



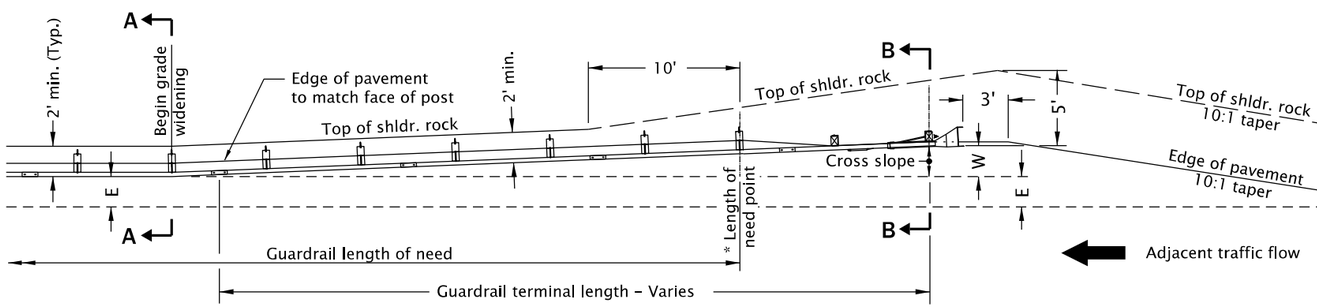
ELEVATION

* See note 6 and 9

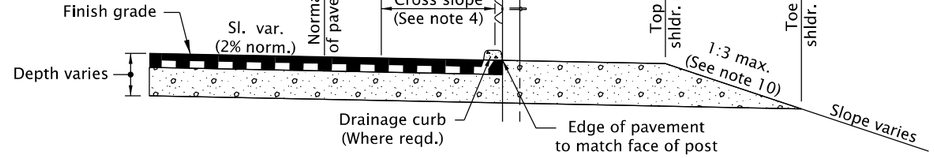


SECTION A-A

PREFERRED GRADING



ALTERNATIVE GRADING



SECTION B-B

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. Use details shown as a general guide since manufacturer's details may vary. Install a guardrail terminal system that meets MASH requirements per manufacturer's recommendations. Ensure that guardrail terminal meets appropriate test level for the project.
2. See appropriate guardrail standard drawing(s) for details not shown. See project plans for details not shown. See Std. Dwg. RD701 for drainage curbs, where required. E=2' or as shown on project plans.
3. Guardrail Non-flared terminal shall be installed with a minimum 1 foot offset ensuring that the end piece is entirely off normal shoulder.
4. Cross slope to match adjacent roadway cross slope (preferred). If required, maximum shoulder slope 10% for guardrail widening. If required, maximum grade break at normal edge of shoulder 8%.
5. On two way two lane highways, both ends of guardrail runs shall be provided with a terminal flared or non-flared. Paving of widened shoulder to the face of posts on both ends of guardrail runs is required.
6. Provide guardrail terminal from ODOT's QPL. Install according to manufacturer's recommendations (post count varies). Provide shop drawings to Engineer.
7. Install a reflectorized object marker on head of every guard rail terminal with "W" 4 feet or less according to manufacturer's recommendations.
8. "W" distance is measured to face of guardrail at end post, exclusive of end piece.
9. Length of need post location varies by manufacturer.
10. 1:4 slope or flatter preferable, 1:3 maximum.

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 GRADING FOR TERMINALS

2024

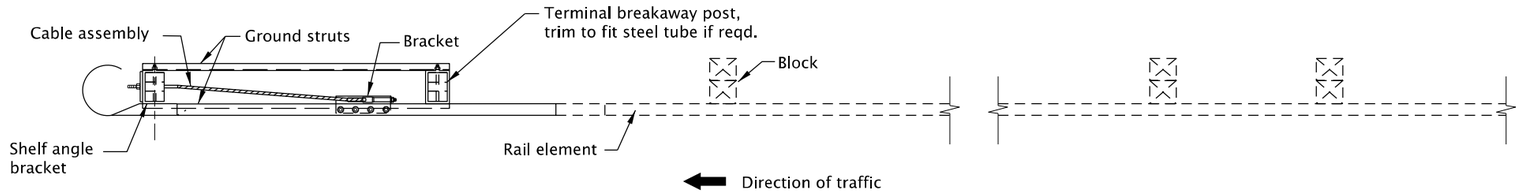
DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 19-JUL-2021 | **RD419**

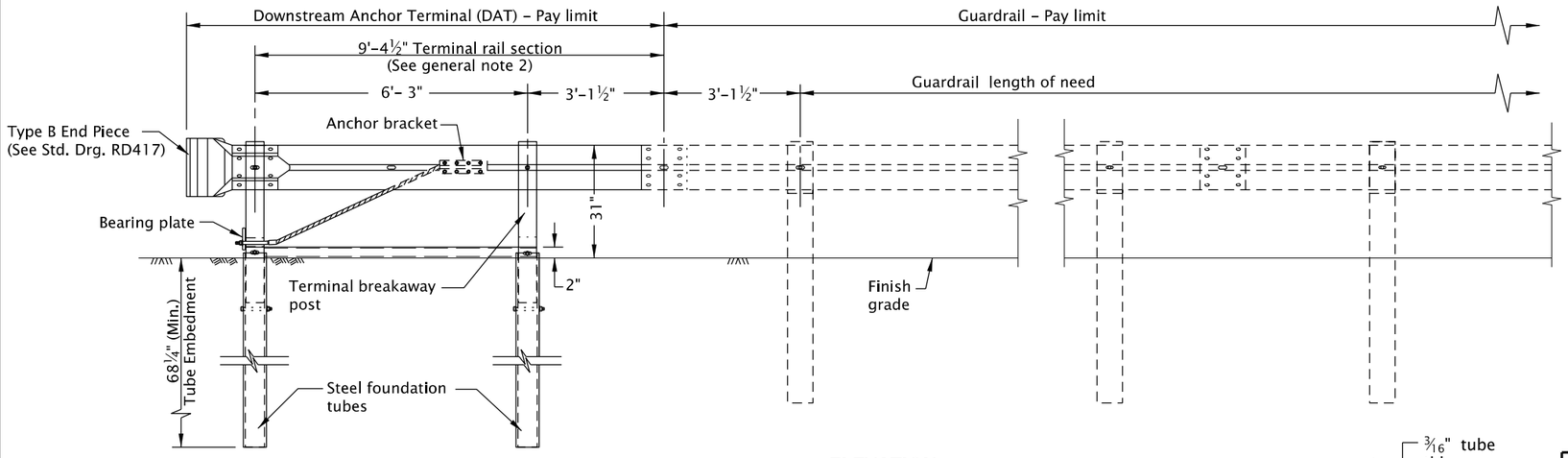
Effective Date: June 1, 2024 – November 30, 2024

19-JUL-2021

RD419.dgn



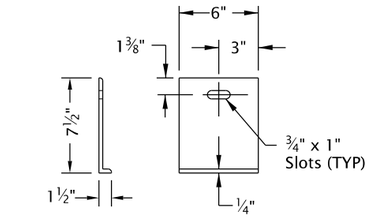
PLAN



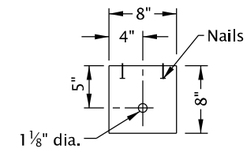
ELEVATION

DOWNSTREAM ANCHOR TERMINAL (DAT)

(See general note 1)

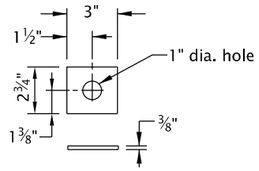


SHELF ANGLE BRACKET

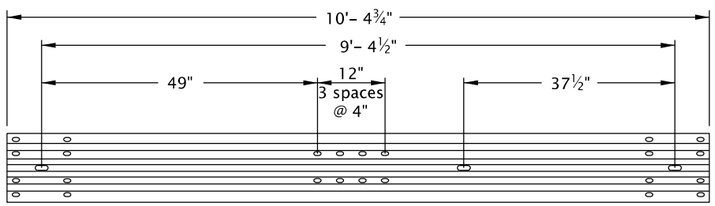


NOTE: Drive nails and bend over to prevent plate rotation

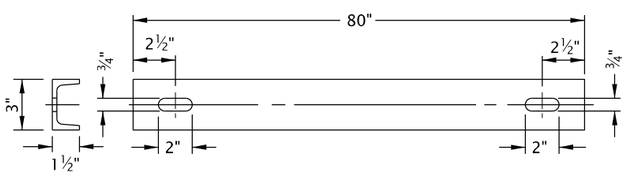
BEARING PLATE



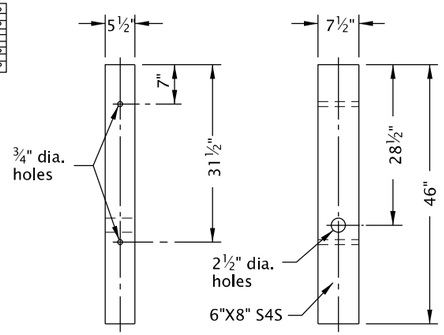
END PLATE



TERMINAL RAIL ELEMENT

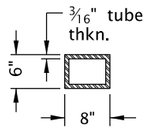


CHANNEL STRUT

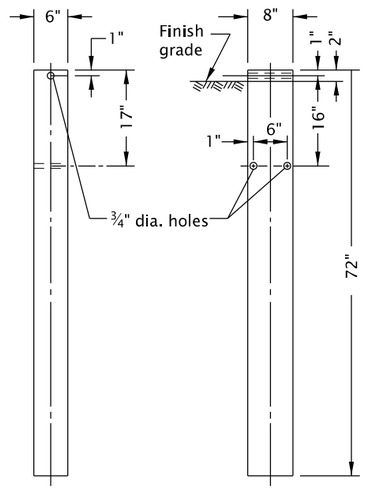


FRONT **SIDE**

TERMINAL BREAKAWAY POST



TOP



FRONT **SIDE**

STEEL FOUNDATION TUBE

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. Downstream Anchor Terminal (DAT) shall be used on the end of guardrail run, when located outside the horizontal clearance area of opposing traffic or when crashworthy terminal is not required.
2. See appropriate guardrail standard drawing(s) for additional details not shown.
3. The rail section at the end post is supported by the Shelf Angle Bracket. The rail element is not attached to the end post.
4. The foundation tubes shall not project more than 3¾" above the finished grade.
5. All hardware for Downstream Anchor Terminal (DAT) shall be ASTM A307 unless otherwise shown.
6. If a mow strip is required with the Downstream Anchor Terminal (DAT) installation the leave-out area around the steel foundation tubes and the two channel struts may be omitted. This will require a full pour at the foundation tubes.
7. See Std. Dwg. RD417 for Type B End Piece.

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

OREGON STANDARD DRAWINGS

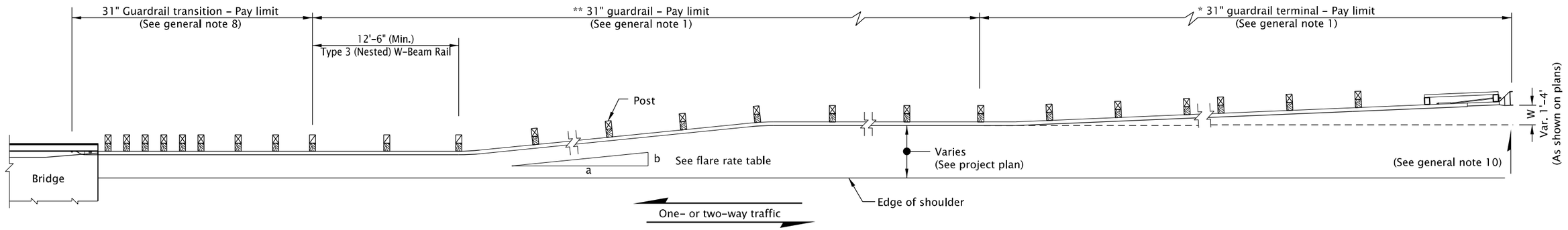
MIDWEST GUARDRAIL SYSTEM DOWNSTREAM ANCHOR TERMINAL (DAT)

2024

DATE	REVISION DESCRIPTION
09-2023	REVISED NOTES

CALC. BOOK NO. N/A | SDR DATE 19-JAN-2024 | **RD438**

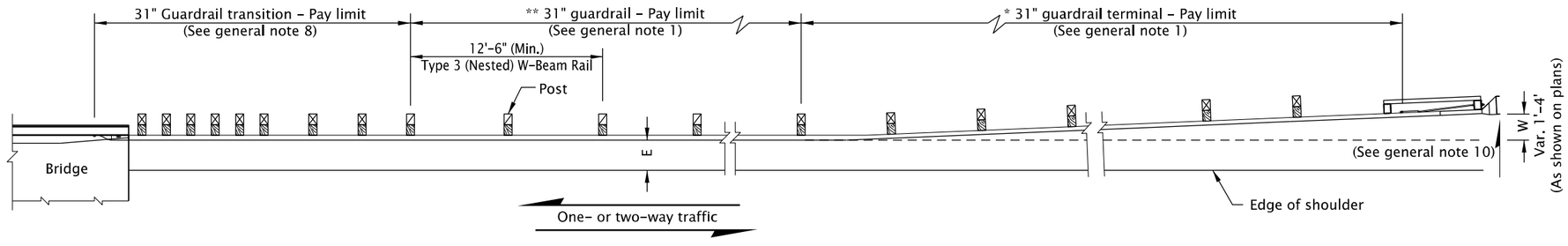
Effective Date: June 1, 2024 – November 30, 2024



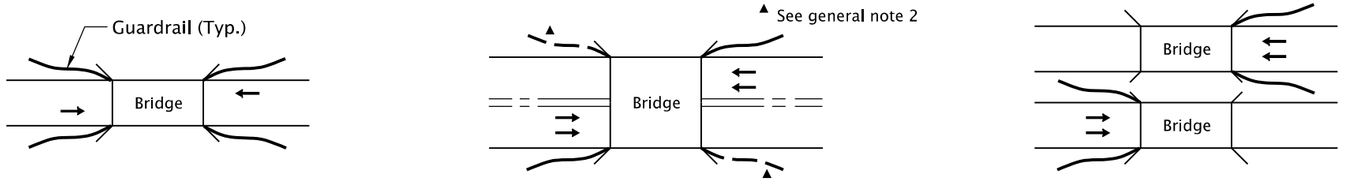
NARROW BRIDGE ON ONE OR TWO-WAY TRAFFIC

* Provide from ODOT's QPL.
Install according to manufacturer's instruction.

** Length of need calculation will determine quantity of Type 2A required.



ONE OR TWO-WAY TRAFFIC



TWO LANE | **MULTILANE** | **MULTILANE**

LOCATIONS AT BRIDGE ENDS (MINIMUM SHOWN)

FLARE RATE TABLE	
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

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. See appropriate standard drawing(s) for details not shown.
   See dwg. no. RD482 for Type 3 (Nested) W-Beam details.
2. Guardrail at indicated positions is required for protection at bridge ends.
   Additional guardrail is to be installed as required by guardrail warrant and fastened to bridge.
3. Face of guardrail at locations shown above must match face of bridge curb or bridge rail on structure without curb.
4. Trailing ends (Freeway, multilane and similar one-way facilities) not exposed to opposing traffic:
   (a) Guardrail terminals, use a Downstream Anchor Terminal (DAT) (RD438), Type B end piece and do not flare.
   (b) At bride ends, omit transition guardrail & Type 3 guardrail. Use bridge connection (Bridge drawing BR236) and guardrail as required in plans.
5. Rail expansion slots to be provided at bridge end connections.
   See dwg. no. RD412 "MIDWEST GUARDRAIL SYSTEM INSTALLATION AT BRIDGE DECK EXPANSION JOINT" details and notes.
6. Where bridges employ guardrail in lieu of handrail or vehicular barriers, adjacent connecting guardrail runs shall be the same type.
7. (a) All bolts except adjustment bolts shall be drawn tight on rails and components on initial installation.
   (b) Final tightness check on rail and component bolts and re-tightening as required to be done 30 days after initial installation.
8. See project plans for details not shown. For transition guardrail detail and installation limits at bridge ends, see applicable bridge drawings.
9. "W" distance is measured from face of guardrail at end post, exclusive of end piece.
10. The slope from the edge of the shoulder into the face of the guardrail should not be steeper than 1V : 10H when the guardrail is within 12'-0" from the edge of the shoulder. Paving of widened shoulder to face of posts in both ends of guardrail runs is required.
11. Wood or steel post. Wood post shown.

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 TYPICAL LAYOUTS AT BRIDGE ENDS

2024

DATE	REVISION DESCRIPTION
12-2021	REVISED NOTES
12-2023	REVISED DETAILS AND NOTES

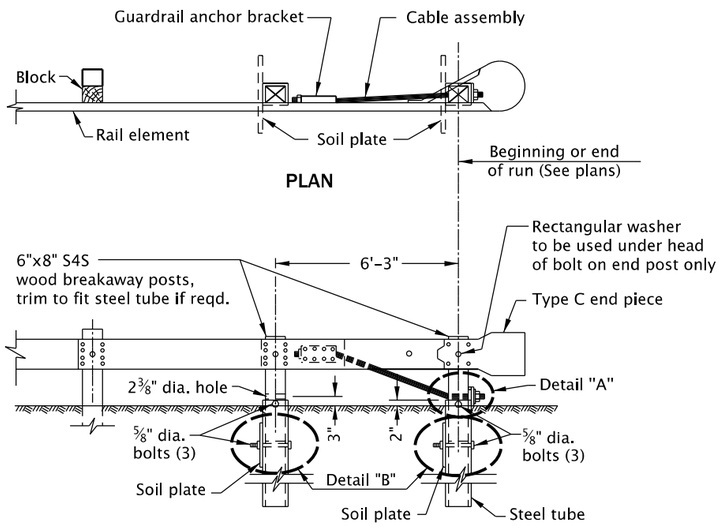
CALC. BOOK NO. N/A | SDR DATE 19-JAN-2024 | **RD442**

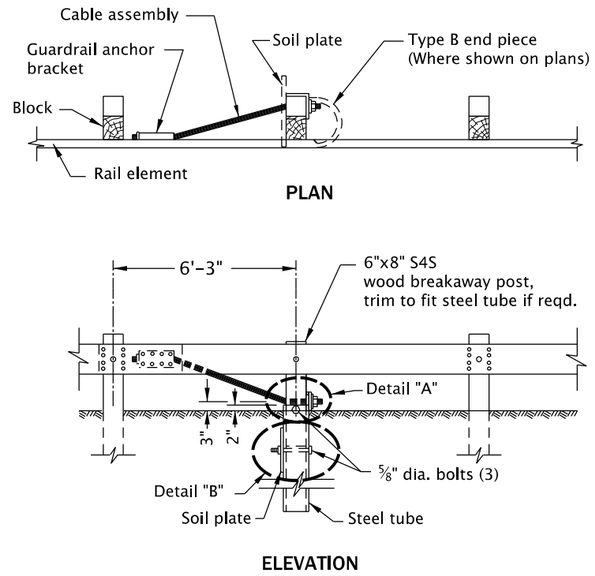
Effective Date: June 1, 2024 - November 30, 2024

19-JAN-2024
RD442.dgn

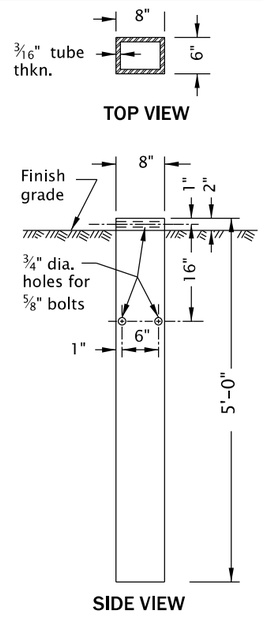
20-JUL-2020

RD450.dgn





GUARDRAIL STEEL ANCHORS
(Where shown on plans)



STEEL TUBE

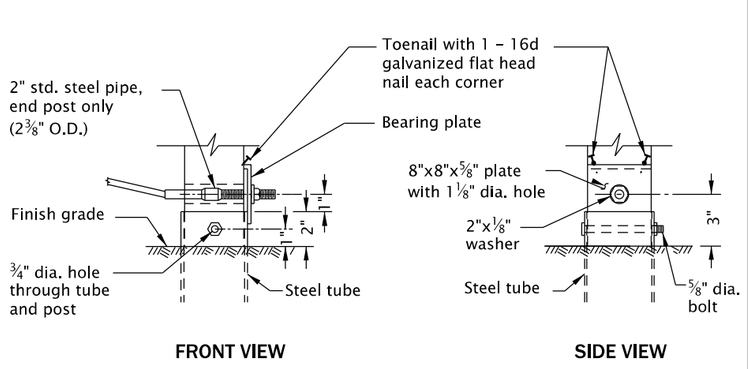
GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. (a.) Cable assembly to be tightened to a taut condition on initial installation.

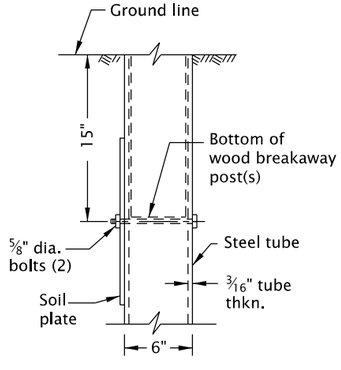
   (b.) Final tension check and tightening of cable assembly as required to be done 30 days following initial installation.

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

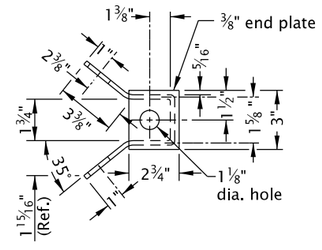
3. See Std. Dwg. RD451 for wood breakaway posts.



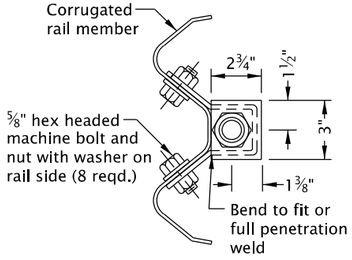
DETAIL "A"



DETAIL "B"

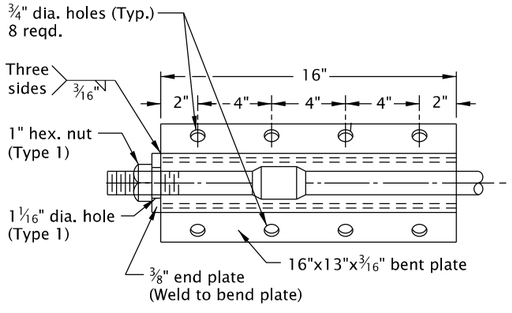


END VIEW
Alternate No. 1



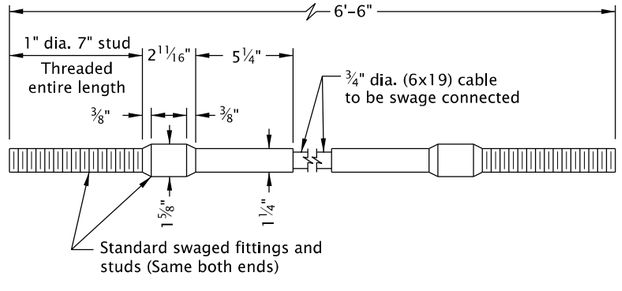
END VIEW
Alternate No. 2

BRACKET

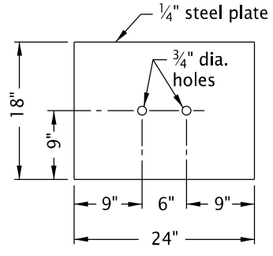


BACK VIEW

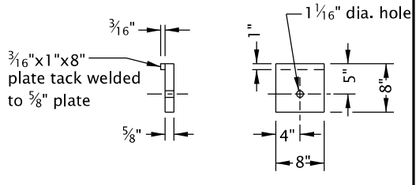
NOTE:
All plate for bracket to be ¼" thick steel, unless otherwise noted.



CABLE ASSEMBLY



SOIL PLATE



BEARING PLATE

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 ANCHORS (STEEL)

2024

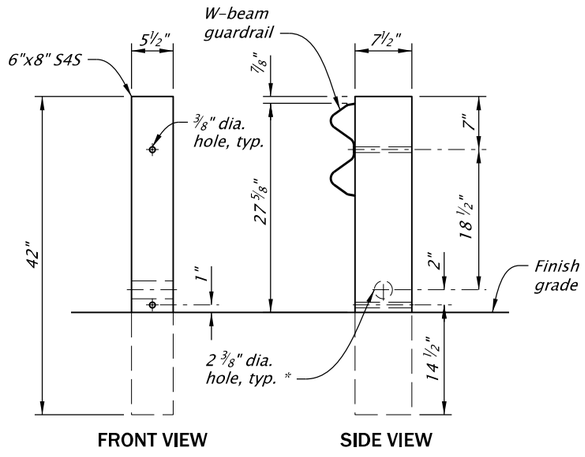
DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 13-JAN-2020 | **RD450**

Effective Date: June 1, 2024 - November 30, 2024

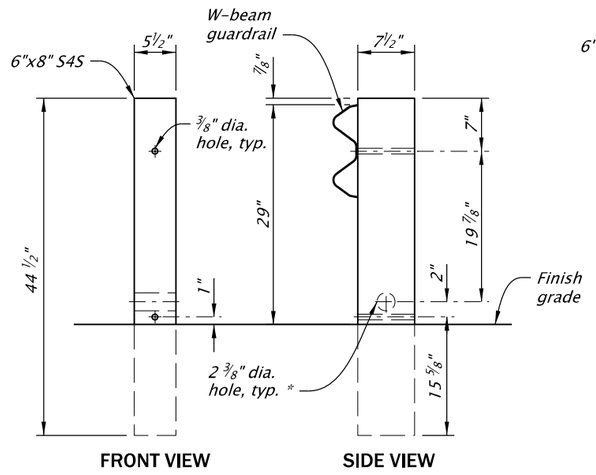
19-JAN-2024

RD451.dgn



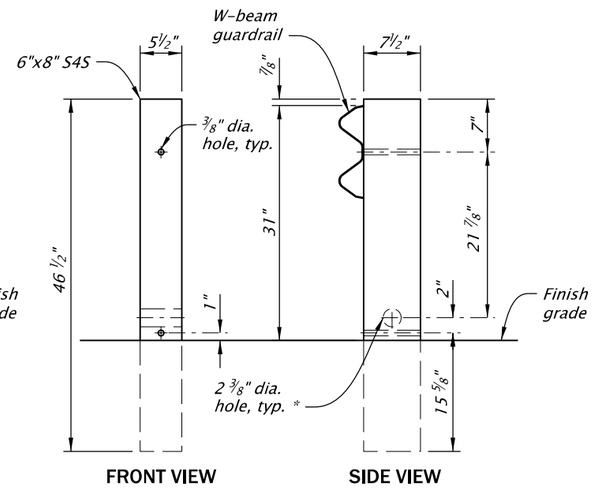
TOP OF RAIL HEIGHT 27⅝"

This detail is retained for maintenance purposes only. Do not use for new construction.



TOP OF RAIL HEIGHT 29"

This detail is retained for maintenance purposes only. Do not use for new construction.



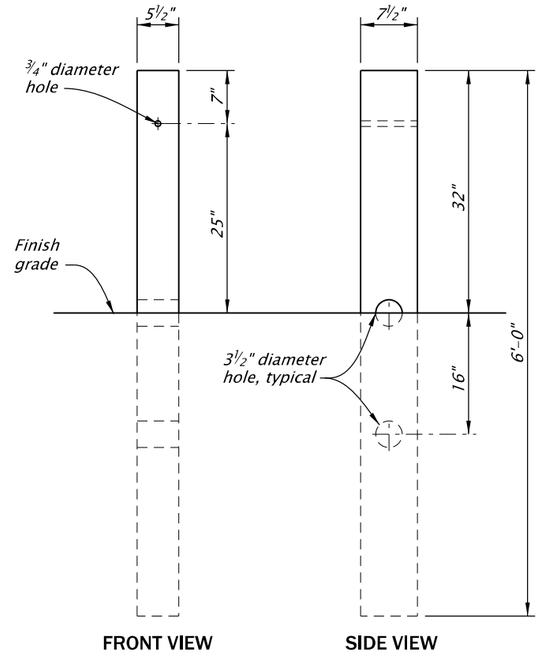
TOP OF RAIL HEIGHT 31"

W-BEAM WOOD BREAKAWAY POSTS

* 2" standard pipe in end post only, 2 ⅜" diameter hole

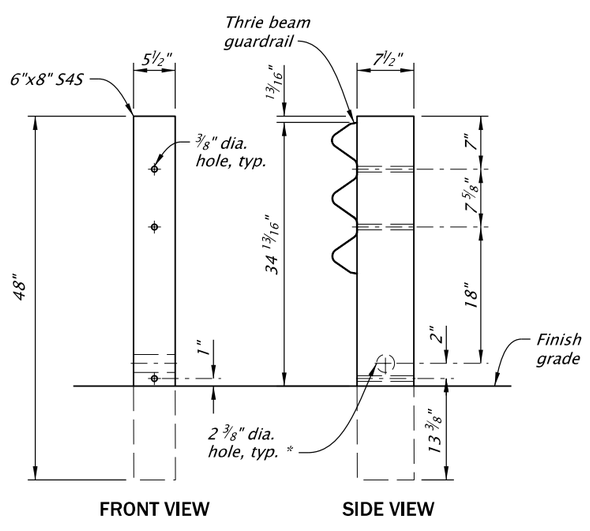
GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. *See appropriate guardrail standard drawing(s) for details not shown.*
2. *Use only 6"x8" S4S wood posts, trim to fit steel tube if required.*

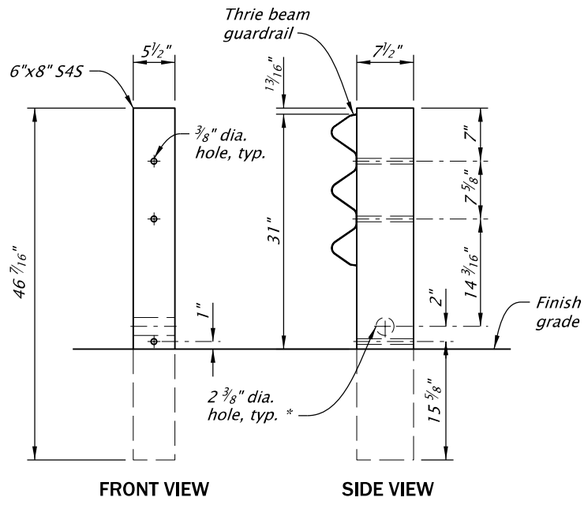


TOP OF RAIL HEIGHT 31"

CONTROLLED RELEASE TERMINAL (CRT) POST



TOP OF RAIL HEIGHT 35" (NOMINAL)



TOP OF RAIL HEIGHT 31"

THRIE BEAM WOOD BREAKAWAY POSTS

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

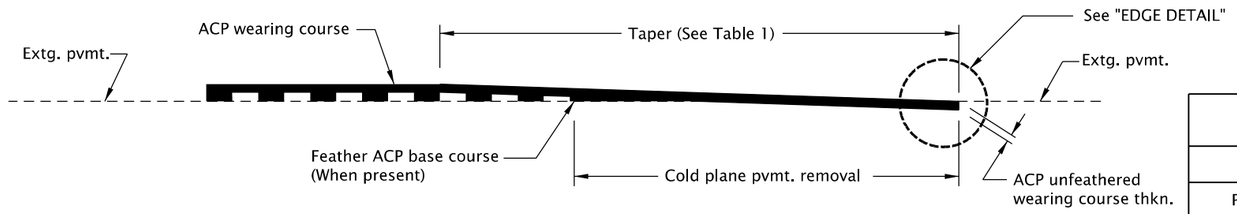
WOOD BREAKAWAY POSTS

2024

DATE	REVISION DESCRIPTION
12-2023	ADDED CRT POST, UPDATED DRAWING CAD STANDARDS

CALC. BOOK NO. N/A | SDR DATE 19-JAN-2024 | **RD451**

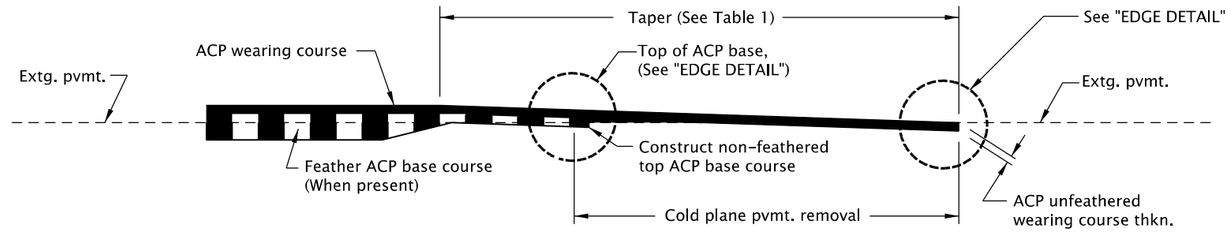
Effective Date: June 1, 2024 - November 30, 2024



METHOD A *

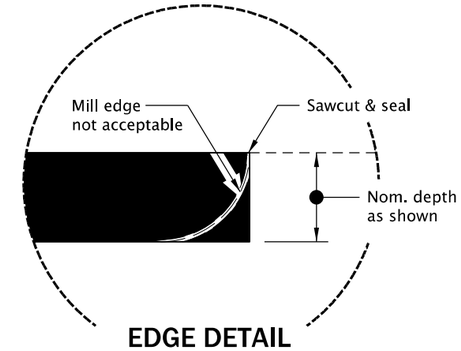
* See project plans for method.

TABLE 1	
TAPER LENGTHS	
Posted Speed	Taper Length
< 45 mph	1" per 50'
≥ 45 mph	1" per 100'

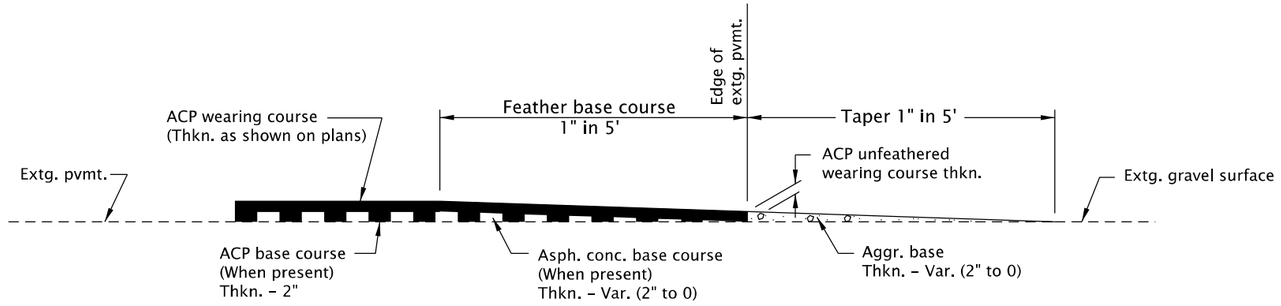


METHOD B *

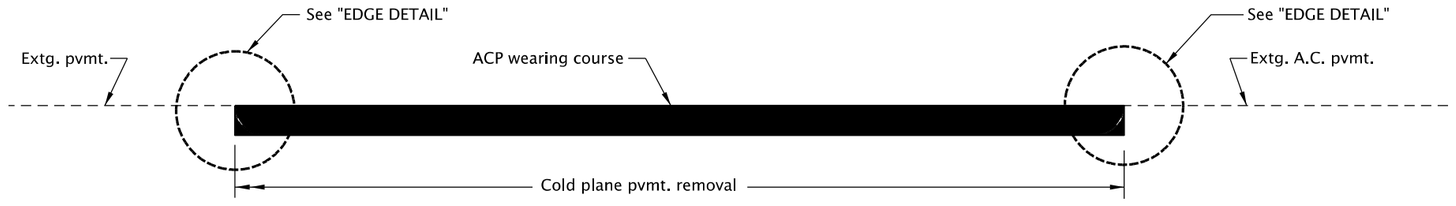
ACP PAVEMENT MATCH AT PROJECT ENDS OR BRIDGE ENDS WHEN NOT OVERLAYING THE BRIDGE



EDGE DETAIL



METHOD OF FEATHERING ACP PAVEMENT AT GRAVEL APPROACHES



METHOD OF MATCHING EXTG. ACP INLAY SURFACING

(Inlay to extg. asphalt conc. pvmt.)

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

ASPHALT CONCRETE PAVEMENT (ACP) DETAILS

2024

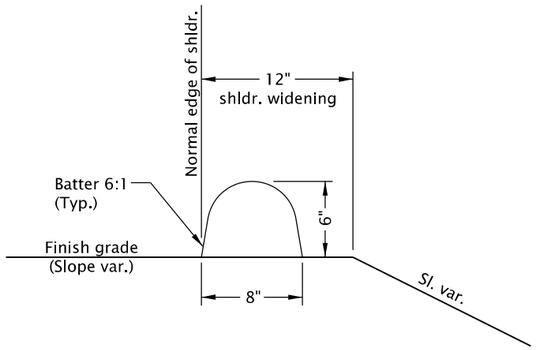
DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 25-JUL-2017 | **RD610**

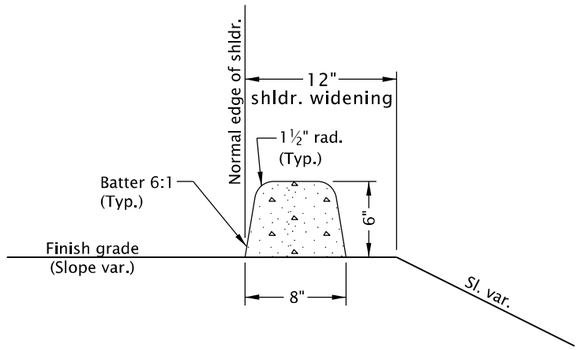
Effective Date: June 1, 2024 – November 30, 2024

20-JUL-2020

RD610.dgn



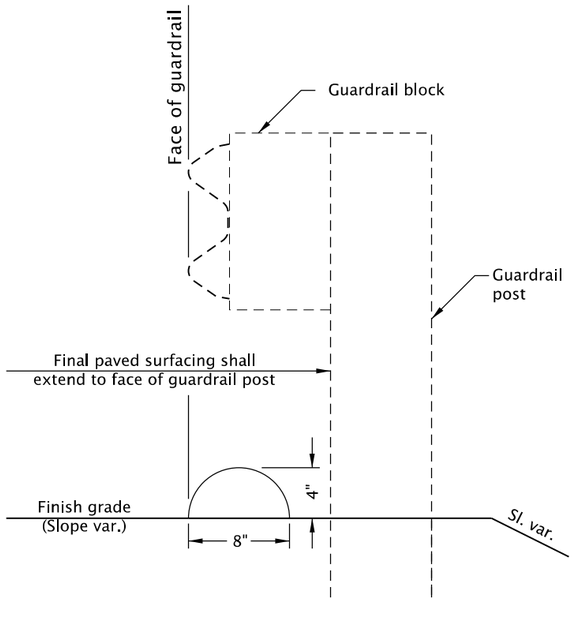
ASPHALT CONCRETE



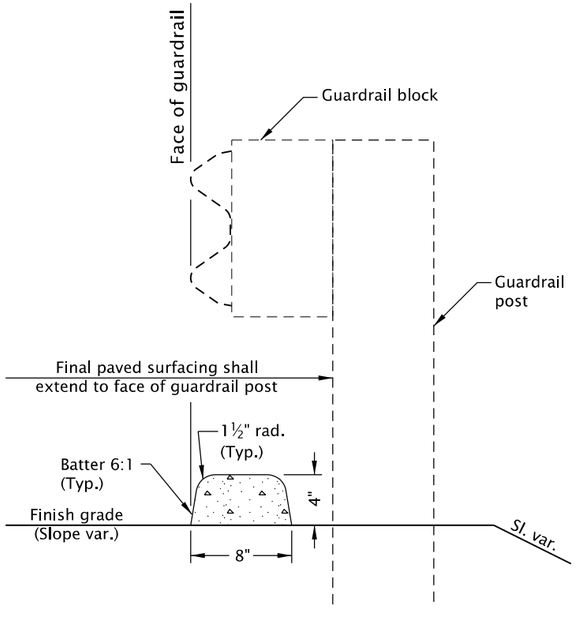
PORTLAND CEMENT CONCRETE

DRAINAGE CURBS

(See general note 4)



ASPHALT CONCRETE



PORTLAND CEMENT CONCRETE

DRAINAGE CURBS UNDER GUARDRAIL

(See general note 4)

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. For PCC drainage curbs, construct curb expansion joints at 200' maximum spacing, and at points of tangency.
2. For PCC drainage curbs, construct curb contraction joints at 15' maximum spacing.
3. Dimensions are nominal, vary to conform with curb machine approved by the engineer.
4. When bonding to dense graded ACP, apply epoxy cement between surfaces.
5. When drainage curb is required, curb alignment shall be the same as face of guardrail, as shown above. When a run of drainage curb, or any part thereof, is placed under guardrail, curb height shall be 4".
6. For other curb types, see Std. Dwg. RD700.
7. For guardrail details not shown, see Std. Dwg. RD400.

CALC. BOOK NO. N/A

SDR DATE 20-JUL-2020

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

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 consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

DRAINAGE CURBS

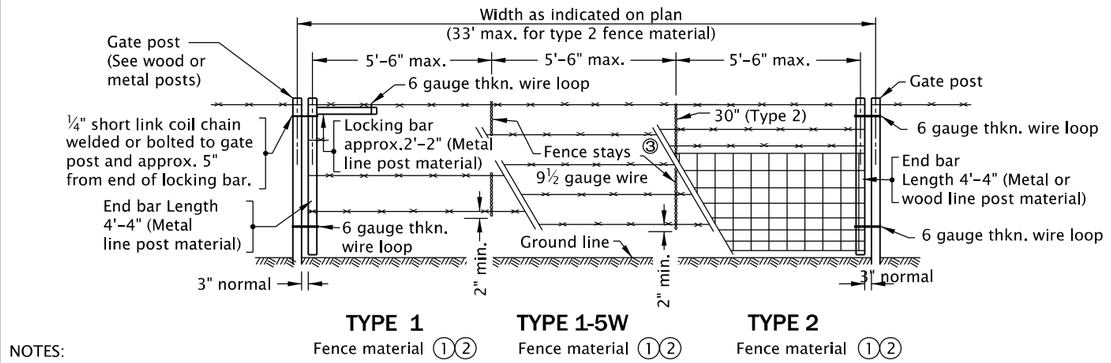
2021

DATE	REVISION DESCRIPTION

rd701.dgn 20-JUL-2020

20-JUL-2020

RD810.dgn



TYPE 1 Fence material ①②

TYPE 1-5W Fence material ①②

TYPE 2 Fence material ①②

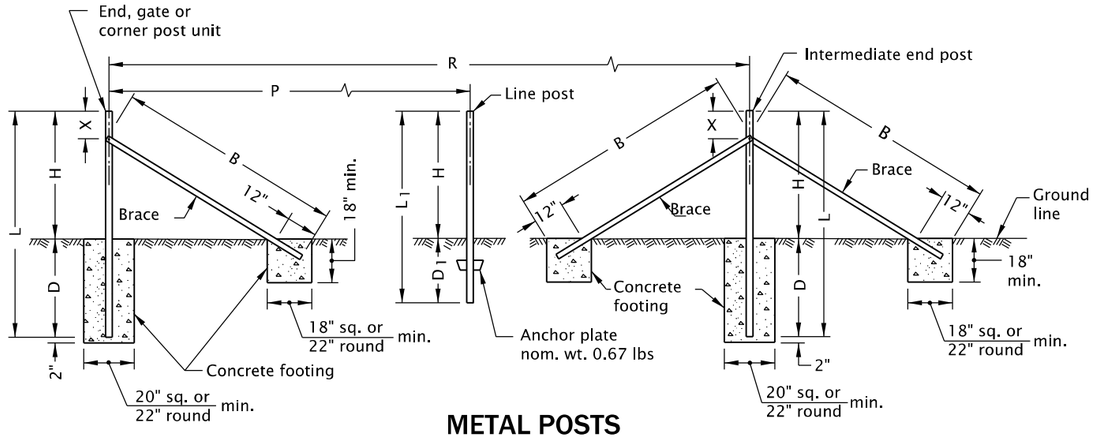
NOTES:

① Match adjointing fence type.

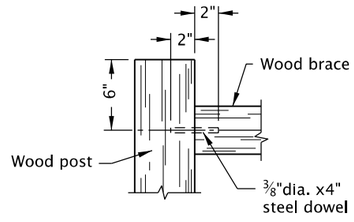
② For details not shown see fence type.

③ For wooden stays, see Type 1 fence details.

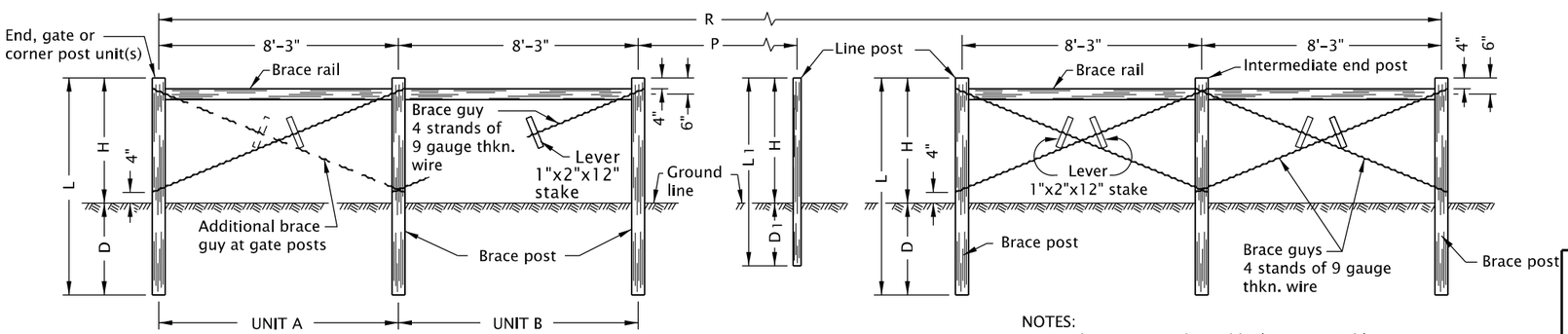
GATEWAY



METAL POSTS



BRACE RAIL CONNECTION



For units required see Table 1

WOOD POSTS

NOTES:
1. For dimensions indicated by letter see Table 2.
2. Line post spacing same as dimension P.
3. For cross sectional dimensions of members see Table 3.

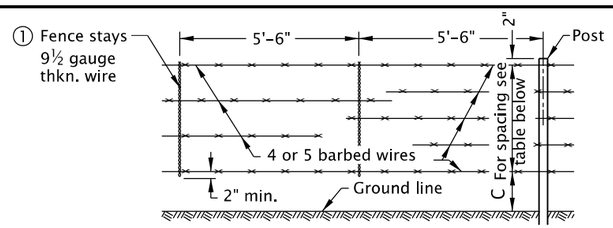


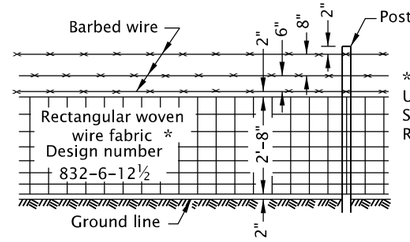
TABLE OF DIMENSIONS

FENCE	C	SPACING	NO. OF WIRES
Type 1	14"	12"	4
Type 1-5W	10"	10"	5

① NOTE:

Wooden Stays to be used in areas of heavy snowfall or snow drifts over 36". Stays to be 2"x2"x52" min. length, sound, untreated Douglas Fir, Western Hemlock or Western Pine, spaced as shown for wire stays and to rest firmly on the ground.
Horizontal wires to be stapled are: single wires and a minimum of 4 wires for woven wire fabric.

TYPES 1 , & 1-5W



* U.S. Dept. of Commerce Simplified Practice Recommendation R9-47.

② NOTE:
For wooden stays, see Type 1 fence details

② TYPE 2

TABLE 1 (For wood posts)

FENCE	R (ft)	UNITS REQUIRED
Types 1, 1-5W & 2	20 or Less	* None
	20-330	A
	Over 330	A & B

* Unit A required at gate post.

Either Unit A or Units A & B are required in existing fence line at intersection with new fence line.

TABLE 2

FENCE	R max.	P	L min.	L1 min.	H	D min.	D1 min.	B min.	X min.-max.
All Types	660'	16'-6"	7'-6"	6'-6"	4'-4"	3'-2"	2'-2"	7'-8"	9"-22"

TABLE 3

MEMBER	WOOD			METAL		
	* ROUND		SQUARE	SHAPE	WEIGHT PER (ft) nominal	SIZE nominal
	DIAMETER OF SMALL END (in)		SIZE nominal (in)			
	min.-max.	min. avg.				
Line Post	3" to 4"	3"	† 3"x3"	Tee Channel ⓐ or U-bar	1.33 lb	ASTM A-702
Brace or Brace Rail	3½" to 5½"	4"	4"x4"	Tubular	ⓑ	1½" +/- O.D.
				ⓐ Angle	3.19 lb	2"x2"x¼"
Other Post	4" to 7"	5"	† 5"x5"	Tubular	b	2⅜" O.D.
				ⓐ Angle	4.1 lb	2½"x2½"x¼"

* Max. taper 1":48".

† Max. allowable size 1" additional in each dimension.

ⓐ In accordance with ASTM A 702.

ⓑ In accordance with AASHTO M 181.

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. For dimensions indicated by letter see Table 2.
2. Line post spacing same as dimension P.
3. For shapes, weights and dimensions of members see Table 3.
4. All concrete shall be commercial grade concrete.
5. See Std. Dwg. RD820 for fence gates.
6. See project plans for details not shown.
7. Add fence grounding as required.

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

OREGON STANDARD DRAWINGS

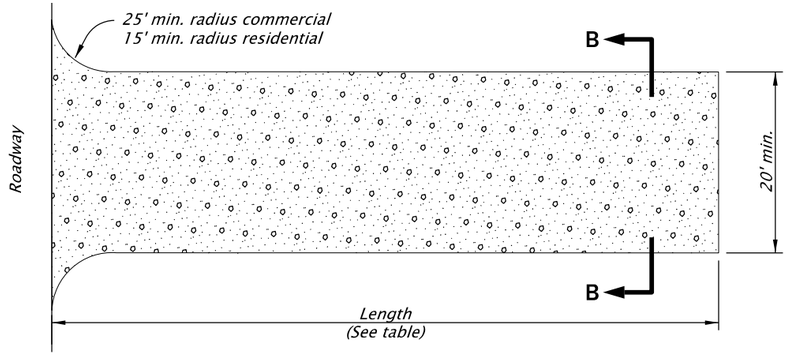
BARBED AND WOVEN WIRE FENCES

2024

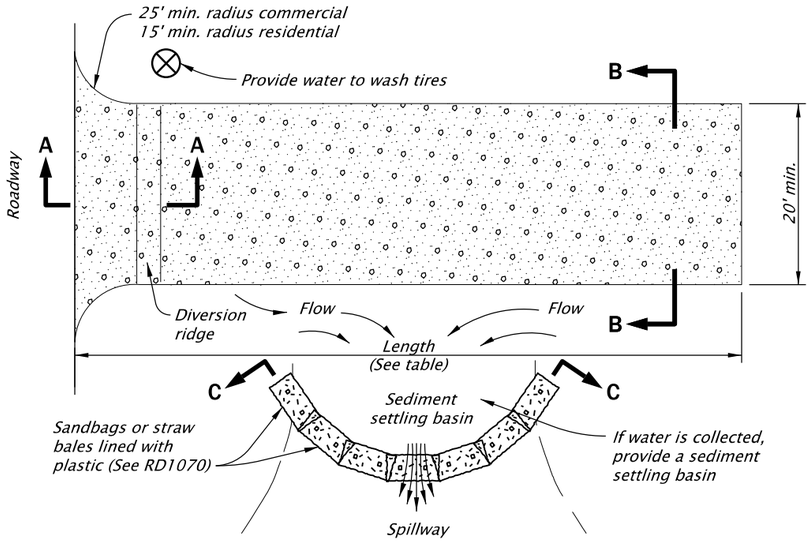
DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 13-JAN-2020 | **RD810**

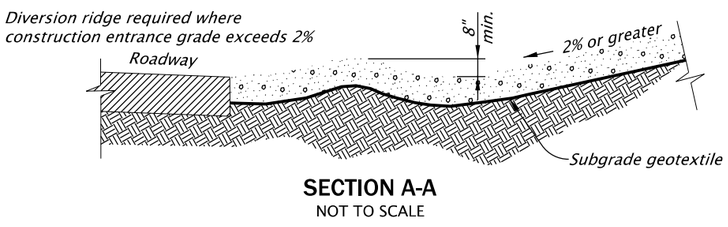
Effective Date: June 1, 2024 - November 30, 2024



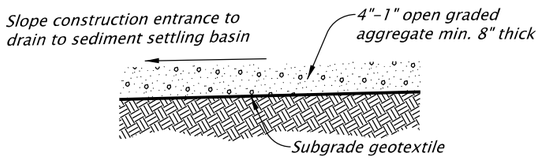
CONSTRUCTION ENTRANCE - TYPE 1
NOT TO SCALE



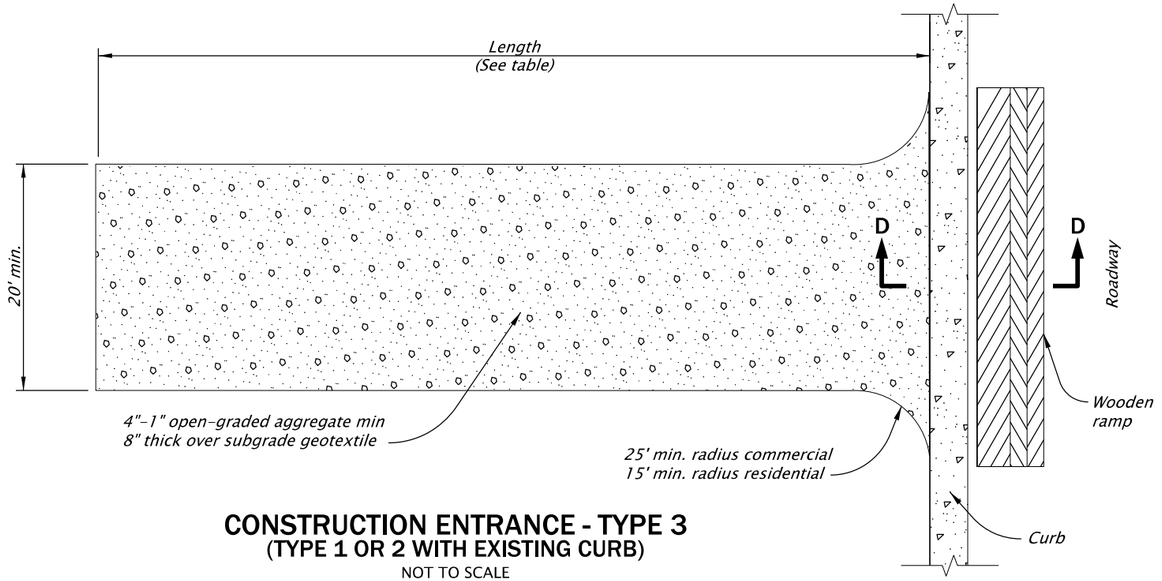
CONSTRUCTION ENTRANCE - TYPE 2
NOT TO SCALE



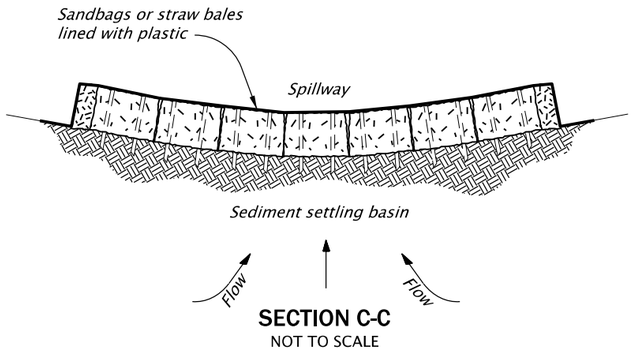
SECTION A-A
NOT TO SCALE



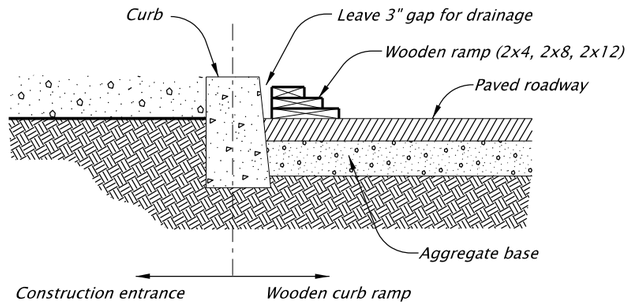
SECTION B-B
NOT TO SCALE



CONSTRUCTION ENTRANCE - TYPE 3
(TYPE 1 OR 2 WITH EXISTING CURB)
NOT TO SCALE



SECTION C-C
NOT TO SCALE



WOODEN CURB RAMP SECTION D-D
NOT TO SCALE

NOTES:
1. *The Type 1 entrance is a simple entrance without a diversion ridge or settling basin.*
2. *The wooden ramp may be used on either Type 1 or Type 2 entrances in situations where there is curb and the curb is not removed for the construction entrance.*

CONSTRUCTION ENTRANCE TABLE MINIMUM LENGTH	
Length (FT)	*Area Of Exposed Soil (Acre)*
20	*0.25*
50	*0.25 < A < 1.0*
100	*A > 1.0*

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

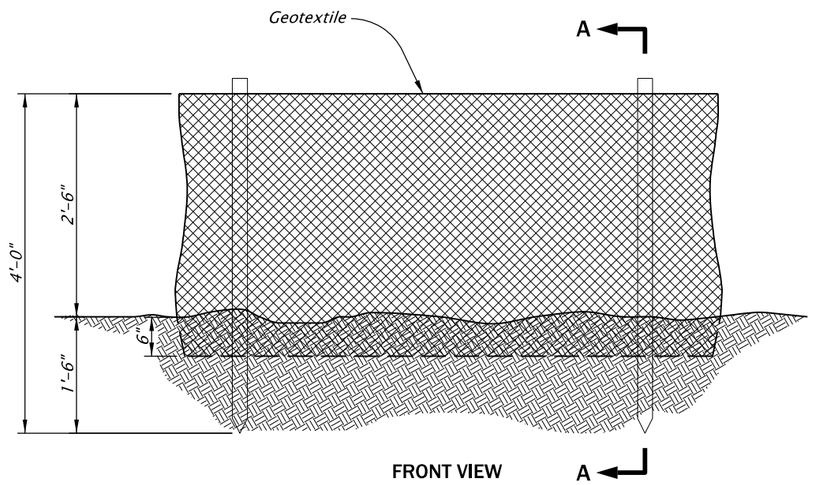
OREGON STANDARD DRAWINGS

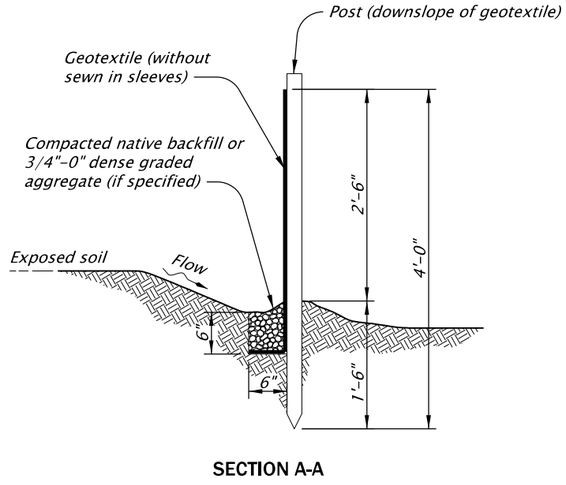
CONSTRUCTION ENTRANCES

2024

DATE	REVISION DESCRIPTION
01-2021	REMOVED CALC BOOK NUMBERS

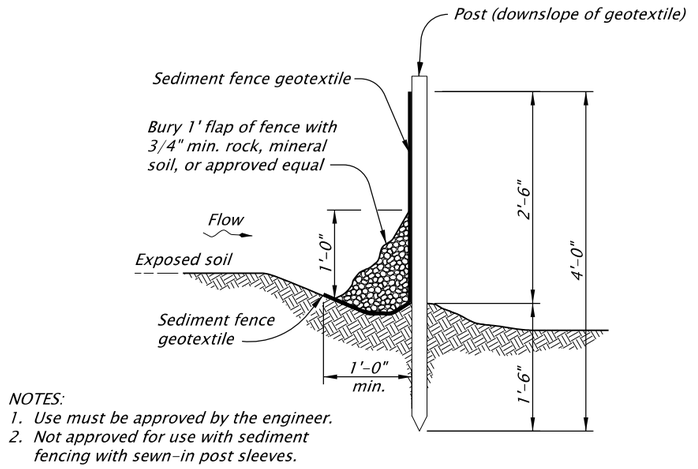
CALC. BOOK NO. N/A | SDR DATE 20-JAN-2021 | **RD1000**





SEDIMENT FENCE AND GEOTEXTILE BURY DETAIL - TYPE 1

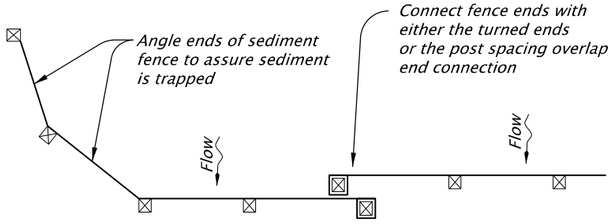
NOT TO SCALE



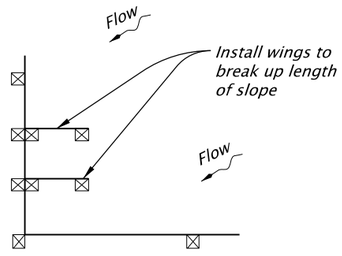
NOTES:
1. Use must be approved by the engineer.
2. Not approved for use with sediment fencing with sewn-in post sleeves.

ALTERNATE SEDIMENT FENCE WITHOUT TRENCHING - TYPE 2

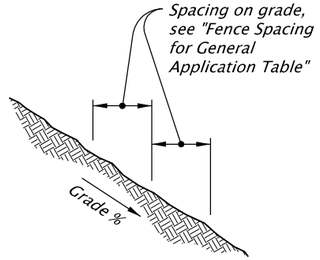
NOT TO SCALE



PLAN VIEW



TERMINATION AT CORNER OR PROPERTY LINE



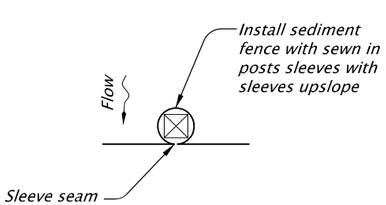
GENERAL NOTES:
1. Use 2"x2" wood fence posts.
2. Posts to be installed on downhill side of sediment fence geotextile. Position posts to prevent separation from geotextile.
3. Compact filter fabric trench backfill and soil on uphill side of fence.
4. Locate fence no closer than three feet to the toe of a slope.
5. Wing spacing shall comply with "Fence Spacing for General Application Table".

FENCE SPACING FOR GENERAL APPLICATION TABLE

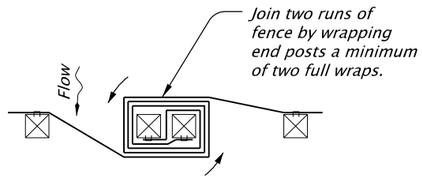
INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS	
GRADE	MAXIMUM SPACING ON GRADE
Grade < 10%	300'
10% ≤ Grade < 15%	150'
15% ≤ Grade < 20%	100'
20% ≤ Grade < 30%	50'
30% ≤ Grade	25'

POST SPACING TABLE

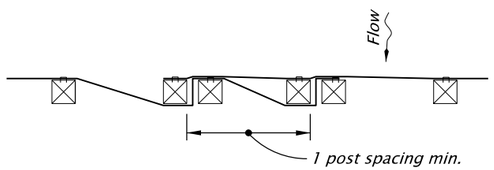
6'	Sediment Fence with Geotextile elongation less than 50%
4'	Sediment Fence with Geotextile elongation 50% or more



GEOTEXTILE WITH POST SLEEVES



TURNED ENDS CONNECTION



POST SPACING OVERLAP CONNECTION

GEOTEXTILE END CONNECTIONS

NOT TO SCALE

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

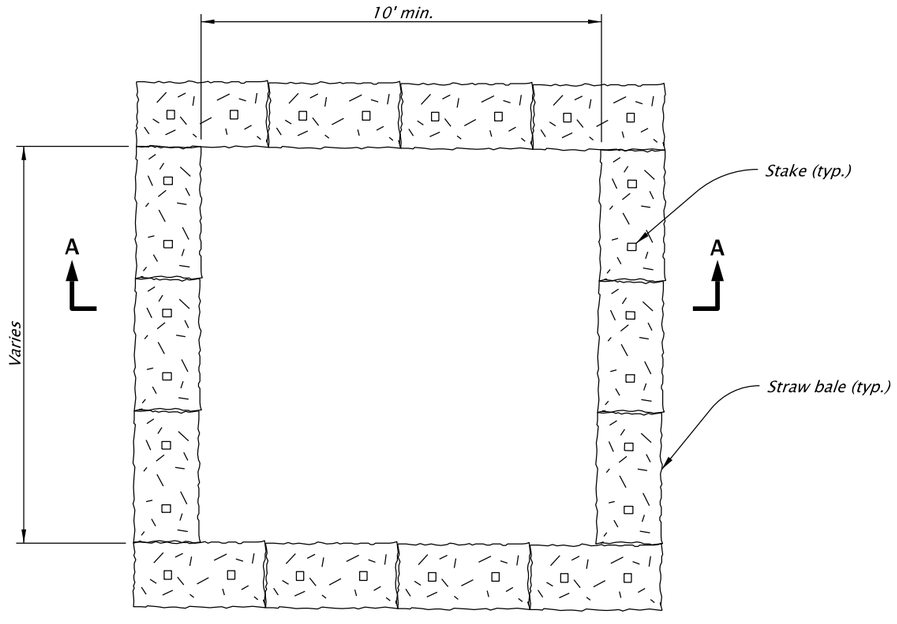
SEDIMENT FENCE

2024

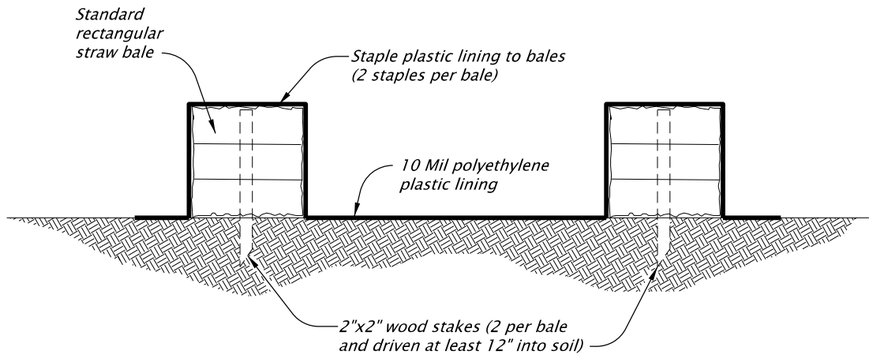
DATE	REVISION DESCRIPTION
01-2021	REMOVED CALC BOOK NUMBERS

CALC. BOOK NO. N/A | SDR DATE 20-JAN-2021 | **RD1040**

Effective Date: June 1, 2024 - November 30, 2024



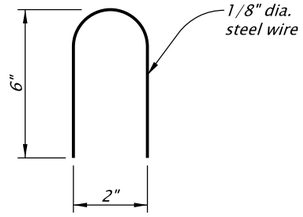
PLAN



SECTION A-A

CONCRETE TRUCK WASH OUT FACILITY

NOT TO SCALE



STAPLE DETAIL

NOT TO SCALE

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

CONCRETE TRUCK WASH OUT

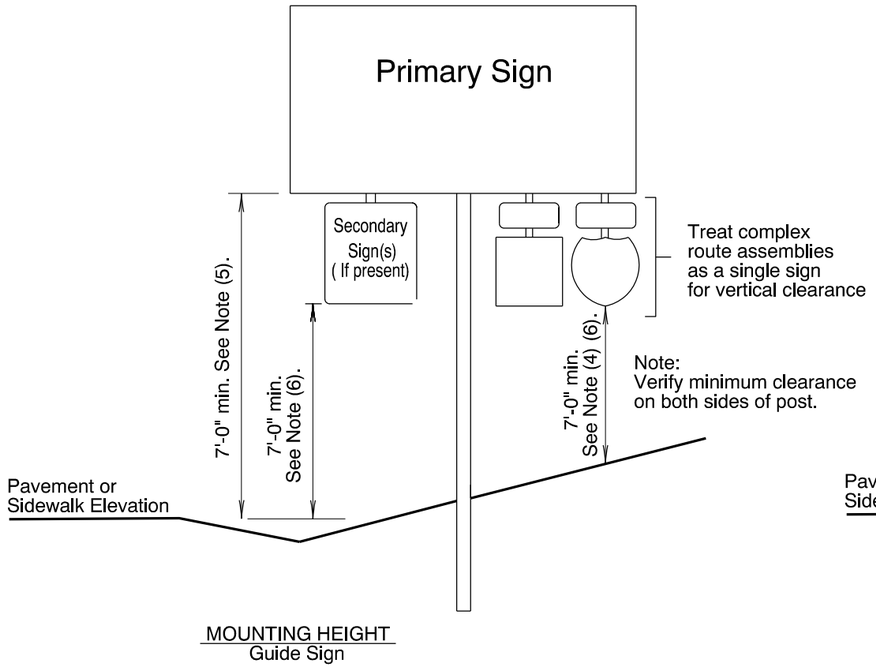
2024

DATE	REVISION DESCRIPTION

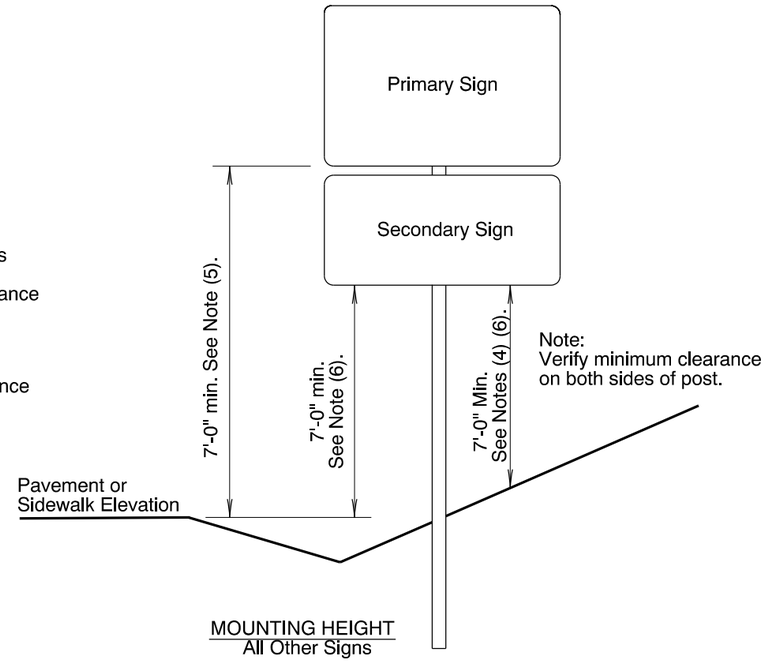
CALC. BOOK NO. N/A | SDR DATE 20-JAN-2021 | **RD1070**

Effective Date: June 1, 2024 - November 30, 2024

RD1070.dgn 20-JAN-2021



MOUNTING HEIGHT
Guide Sign



MOUNTING HEIGHT
All Other Signs

General Installation Notes:

a. Signing details shown on this sheet are intended to convey "typical" conditions only. Individual locations may require installation different from those shown.
For guidance regarding unique installations or exceptions call the Project Sign Designer or Region Traffic Section.

b. Locate breakaway supports away from ditches to avoid problems with erosion, corrosion, debris, maintenance and breakaway performance. See Dwg. No. TM635 for more information.

c. For wood post support details see Dwg. No. TM670.

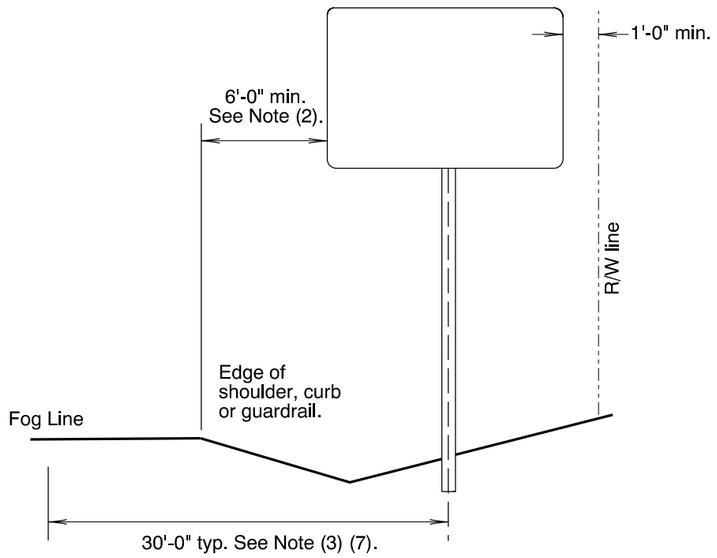
d. For perforated steelsquare tube support details see Dwg. No. TM681.

e. For triangular base breakaway support details see Dwg. No. TM602.

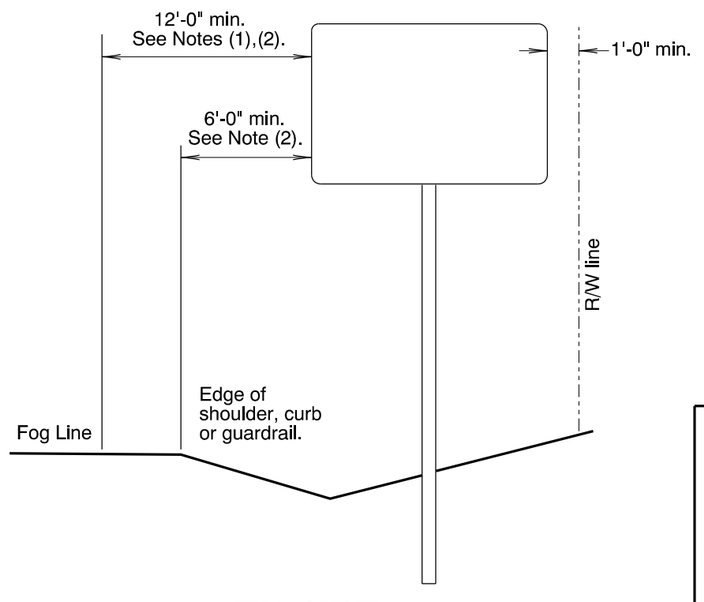
f. For multi-post breakaway support details see Dwg. No. TM600.

g. Mounting heights should not be more than 3 inches more than the minimum heights shown, where practical.

h. 2" vertical spacing between all signs.



LATERAL OFFSET
Guide Signs



LATERAL OFFSET
All Other Signs

Notes:

1). 6' minimum if behind barrier.

2). 2' minimum if restricted R/W.

3). 20' for ramp terminals.

4). 8' minimum if bicycle path underneath.

5). 8' minimum if secondary signs attached.

6). 5' minimum if outside clearzone, in rural areas and no pedestrians underneath.

7). For multi-post installations measure distance from post closest to roadway.

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

SIGN INSTALLATION DETAILS

2024

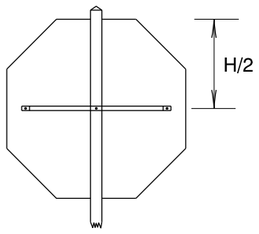
DATE	REVISION DESCRIPTION
01/22	Edited elevation text in Mounting Height details

CALC. BOOK NO. N/A | SDR DATE 07 JAN 2022 | **TM200**

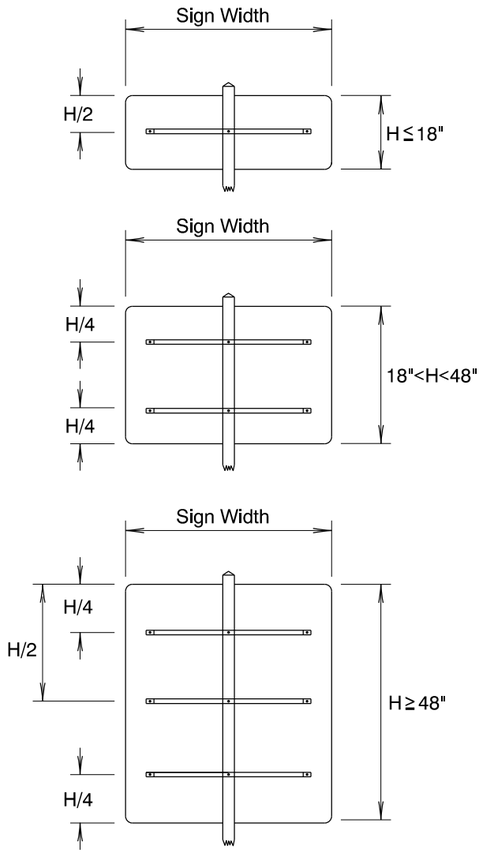
Effective Date: June 1, 2024 - November 30, 2024

10-DEC-2009

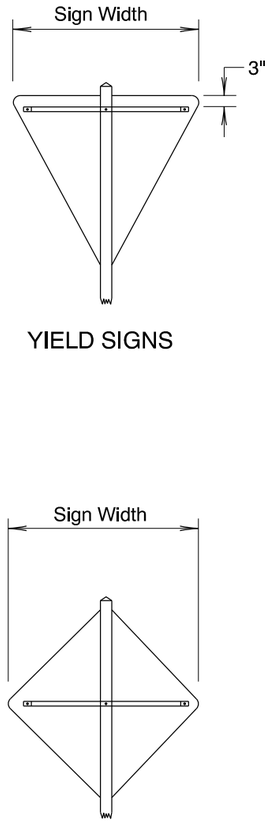
TM206.dgn



STOP SIGN

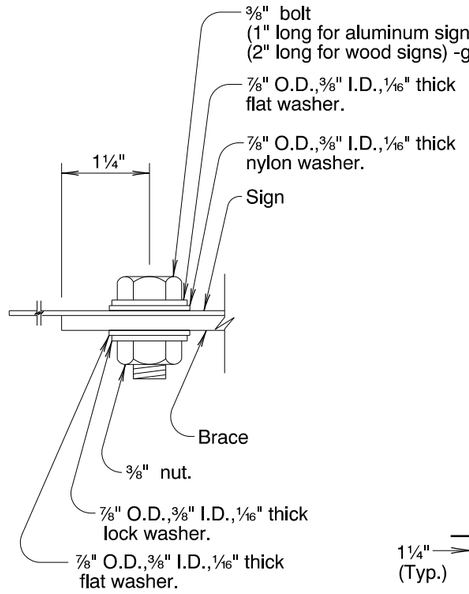


OTHER SIGNS

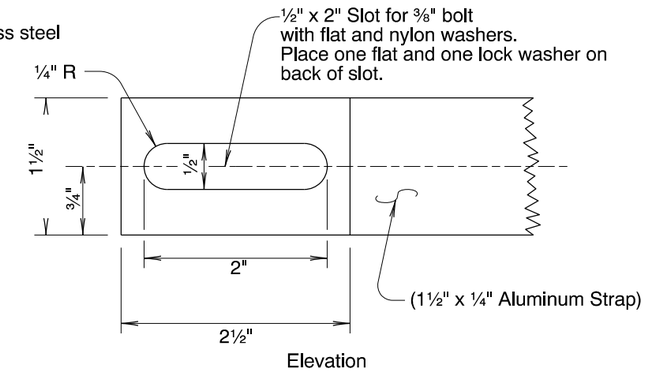


YIELD SIGNS

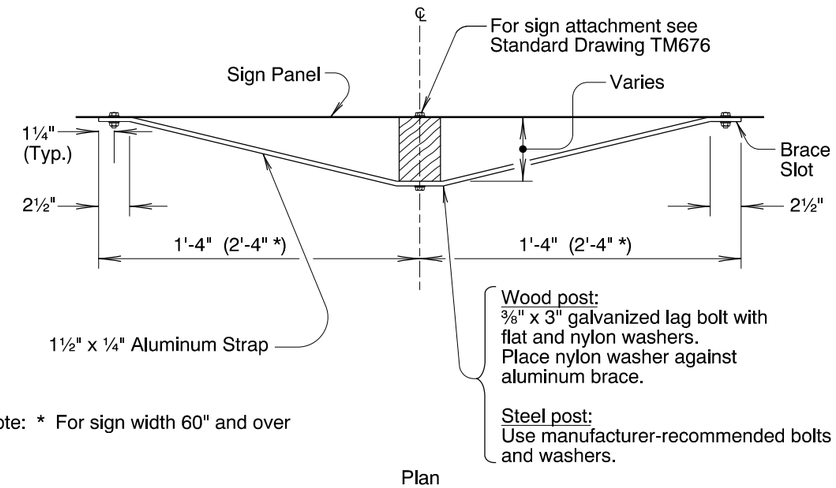
WARNING SIGNS



BOLT, NUT AND WASHER
INSTALLATION DETAIL



DETAIL OF BRACE SLOT



Note: * For sign width 60" and over

SIGN BRACING

NOTES:
1. Sign braces are only installed when specified in the contract plans, in the special provisions, or by the engineer.
2. When attaching bolts to brace slot, hold bolt head in place and turn nut on opposite side.
3. Use nylon washer against both sides of aluminum brace when using galvanized hardware.

TYPICAL LOCATION OF BRACING

(Adjust location of bracing so that bolts will miss legend)

BRACE LENGTHS **		
POST SIZE	SIGN WIDTH	
	< 60"	≥60"
2" X 2" (Steel)	32½"	56½"
2½" X 2½" (Steel)	32½"	56½"
4" X 4" (Wood)	33½"	57"
4" X 6" (Wood)	35"	57½"
6" X 6" (Wood)	35½"	58"
6" X 8" (Wood)	37½"	59 "

** Verify lengths before bending and attaching to sign and post.

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

OREGON STANDARD DRAWINGS

SIGN BRACING DETAIL

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 10-DEC-2009 | **TM206**

Effective Date: June 1, 2024 - November 30, 2024

07-01-2020

TM500.dgn

W

4" WHITE LINE

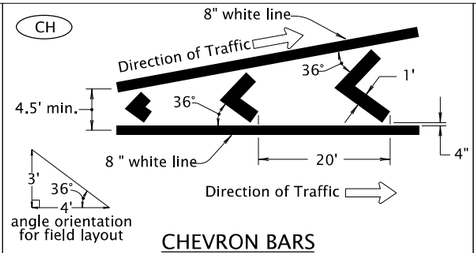
W-2

8" WHITE LINE

Y

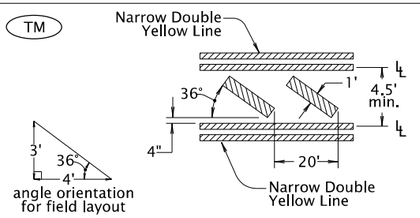
4" YELLOW LINE

CH



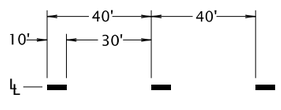
CHEVRON BARS
1' WHITE BARS AT 20' SPACING

TM



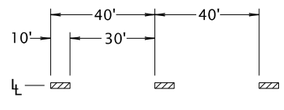
TRANSVERSE MEDIAN BARS
1' YELLOW BARS AT 20' SPACING

WB



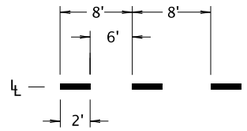
4" WHITE BROKEN LINE

YB



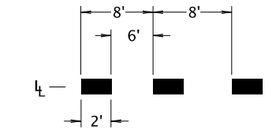
4" YELLOW BROKEN LINE

WD



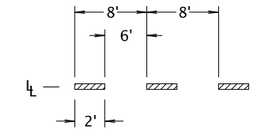
4" WHITE DOTTED LINE
For lane extensions

WD-2



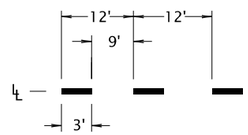
8" WHITE DOTTED LINE
For lane extensions and bike lane extensions

YD



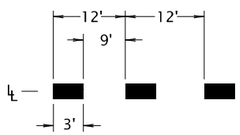
4" YELLOW DOTTED LINE
For lane extensions

DLL



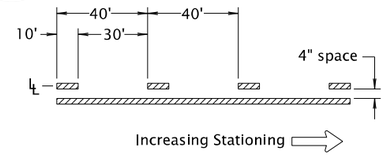
4" WHITE DOTTED LANE LINE
For lane lines in acceleration/deceleration lanes

DLL-2



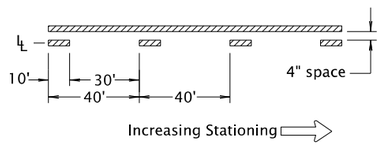
8" WHITE DOTTED LANE LINE
For lane lines in drop lanes

NPR



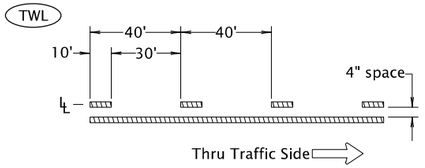
NO-PASS RIGHT
4" YELLOW LINES

NPL



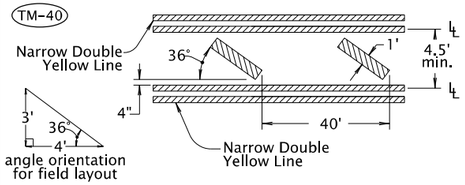
NO-PASS LEFT
4" YELLOW LINES

TWL



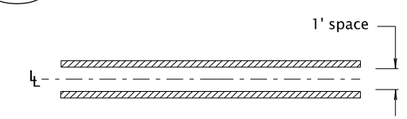
TWO-WAY LEFT TURN
4" YELLOW LINES

TM-40



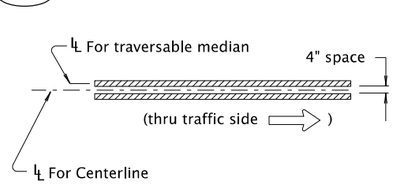
TRANSVERSE MEDIAN BARS
1' YELLOW BARS AT 40' SPACING
For use at painted medians where
distance between left turn refuges exceeds 200'

D



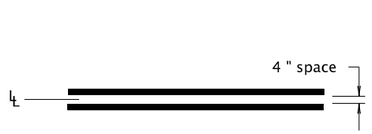
DOUBLE NO-PASS
TWO 4" YELLOW LINES

ND



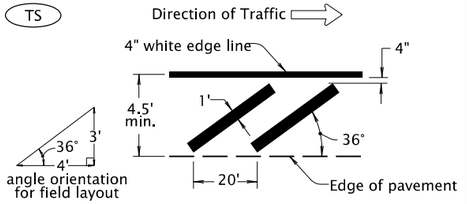
NARROW DOUBLE NO-PASS
TWO 4" YELLOW LINES

NDW



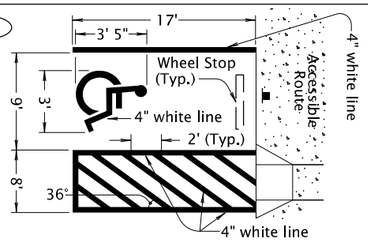
NARROW DOUBLE NO-LANE CHANGE
TWO 4" WHITE LINES

TS



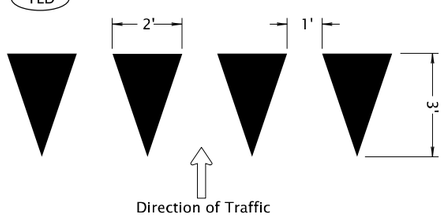
TRANSVERSE SHOULDER BARS
1' WHITE BARS AT 20' SPACING

HC



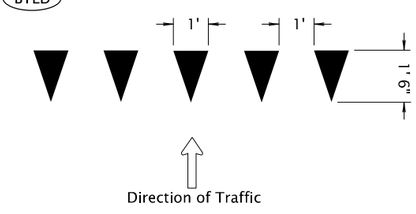
DISABLED PARKING DETAIL (white)

YLD



YIELD LINE (white)

BYLD



BICYCLE YIELD LINE (white)

LEGEND

Direction Of Traffic, Increasing Stationing Or Thru Traffic Side

℄ — Lane line dimensions are shown on the striping plans

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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

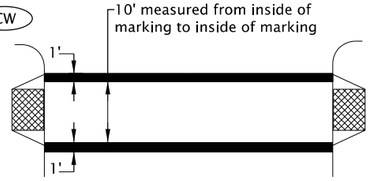
CALC. BOOK NO. N/A | SDR DATE 07-01-2020 | **TM500**

Effective Date: June 1, 2024 - November 30, 2024

07-08-2022

TM503.dgn

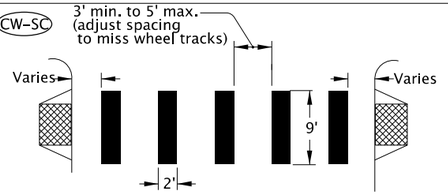
CW



STANDARD CROSSWALK
TWO 1' WHITE BARS

Install per Standard Drawing TM530

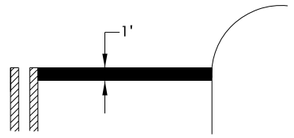
CW-SC



STAGGERED CONTINENTAL CROSSWALK
2' WHITE BARS

Install per Standard Drawing TM530

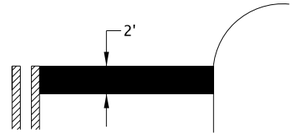
S



STOP BAR
1' WHITE BAR

Install per Standard Drawing TM530

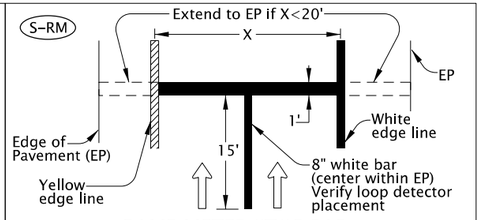
S-2



STOP BAR – LARGE
2' WHITE BAR

Install per Standard Drawing TM530

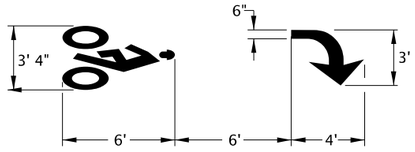
S-RM



RAMP METER STOP BAR
1' & 8" WHITE BARS

For multi-lane ramp meter applications

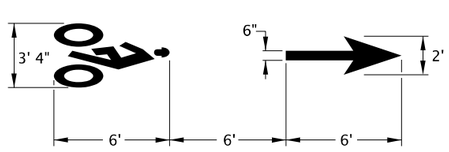
BR



BIKE RIGHT TURN STENCIL (white)

Center marking within lane width
For proportion details, see current version of Standard Highway Signs

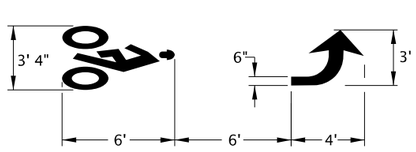
BS



BIKE LANE STANDARD STENCIL (white)

Center marking within lane width
For proportion details, see current version of Standard Highway Signs

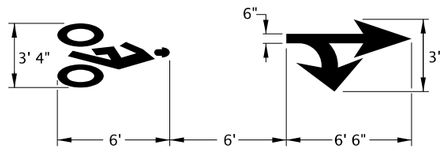
BL



BIKE LEFT TURN STENCIL (white)

Center marking within lane width
For proportion details, see current version of Standard Highway Signs

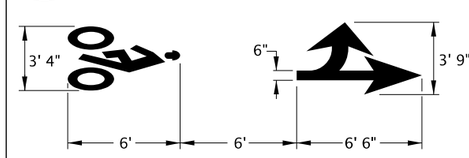
BRS



BIKE RIGHT TURN STRAIGHT STENCIL (white)

Center marking within lane width
For proportion details, see current version of Standard Highway Signs

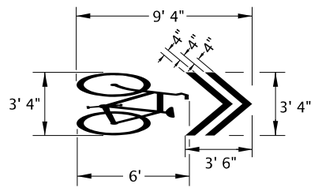
BLS



BIKE LEFT TURN STRAIGHT STENCIL (white)

Center marking within lane width
For proportion details, see current version of Standard Highway Signs

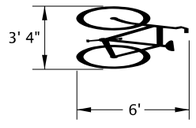
SLM



SHARED LANE MARKING (white)

Center marking within lane width or as shown
For proportion details, see current version of Standard Highway Signs

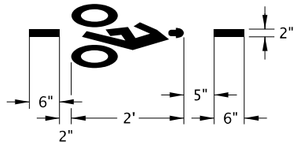
B



BIKE STENCIL (white)

Used for Intersection Bicycle Box applications
Place marking within bicycle box, ceneterd with motor vehicle lane width

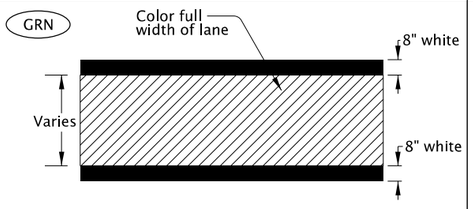
BD



BICYCLE DETECTOR MARKING (white)

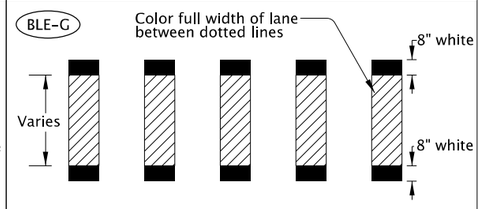
PLace Bicycle Detector Pavement Marking in optimum loction where bicycle acuates the traffic signal

GRN



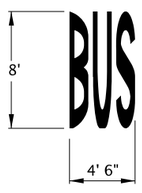
GREEN SUPPLEMENTAL BICYCLE LANE
SOLID LINE (green)

BLE-G



GREEN SUPPLEMENTAL BICYCLE LANE
DOTTED LINE EXTENSION (green)

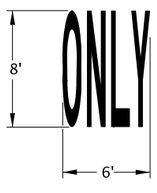
BUS



BUS (white)

Center marking within lane width
For letter proportion details, see current version of Standard Highway Signs

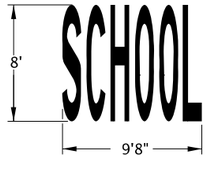
ON



ONLY (white)

Center marking within lane width
For letter proportion details, see current version of Standard Highway Signs

SCH



SCHOOL (white)

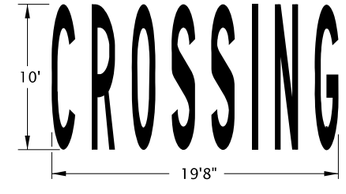
Center marking within lane width
For letter proportion details, see current version of Standard Highway Signs

SCH-LG

SCHOOL – LARGE (white)

Center marking within width of two lanes
For letter proportion details, see current version of Standard Highway Signs

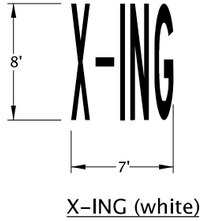
CRS-LG



CROSSING – LARGE (white)

Center marking within width of two lanes
For letter proportion details, see current version of Standard Highway Signs

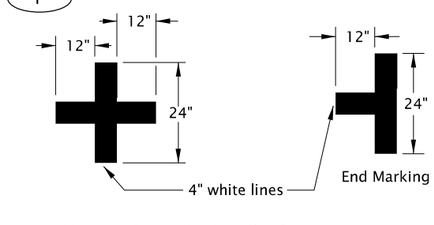
XNG



X-ING (white)

Center marking within lane width
For letter proportion details, see current version of Standard Highway Signs

P



ON-STREET PARKING DETAIL (white)

General Note:

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

LEGEND

Direction of Travel

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
07-2022	Added note for measurement of Standard Crosswalk

CALC. BOOK NO. N/A

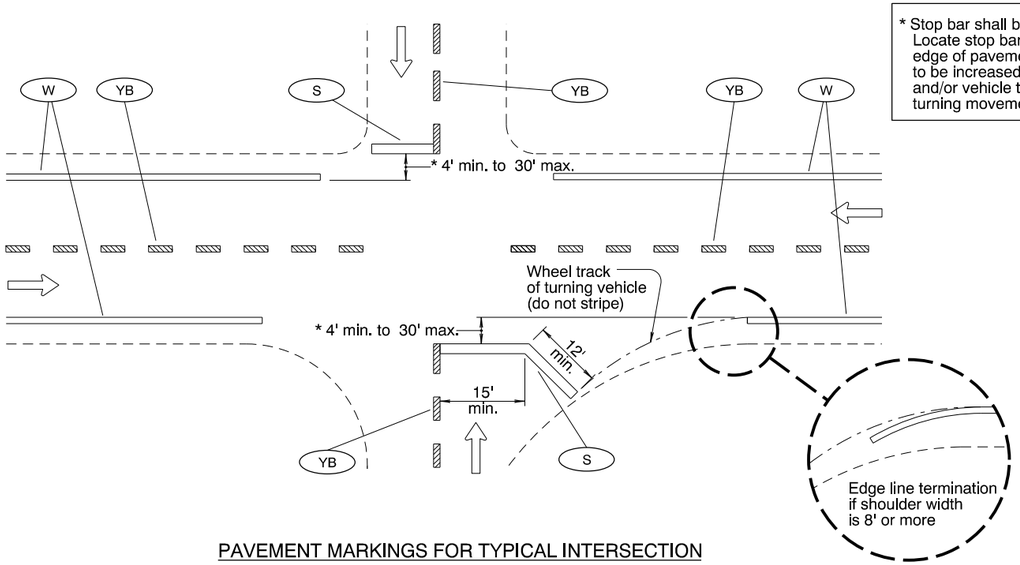
SDR DATE 07-08-2022

TM503

Effective Date: June 1, 2024 – November 30, 2024

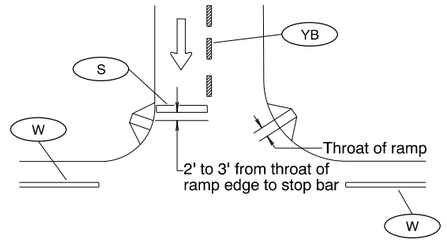
06-JUL-2022

TM530.dgn

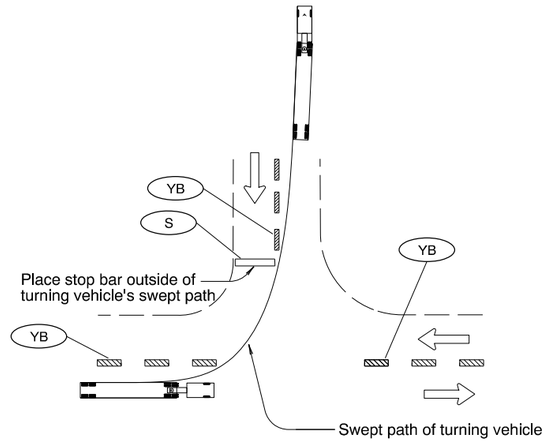


PAVEMENT MARKINGS FOR TYPICAL INTERSECTION

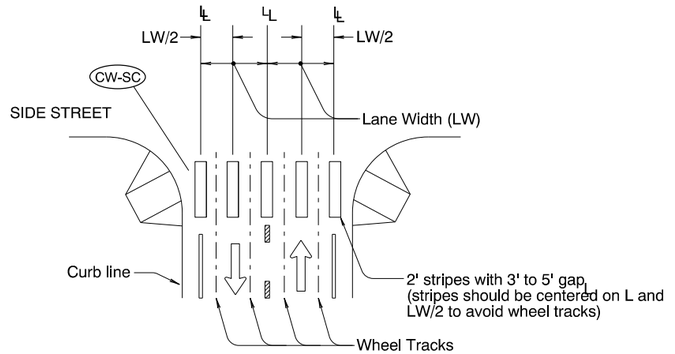
* Stop bar shall be placed as near as possible to the intersecting traveled way. Locate stop bar 4' min. to 30' max. in advance of the extended fog line, edge of pavement, or curb face. Minimum stop bar distance may need to be increased, depending on location of pedestrian ramps (see Detail "A") and/or vehicle turn radii (see Detail "B"). Field verify sight distance and truck turning movements.



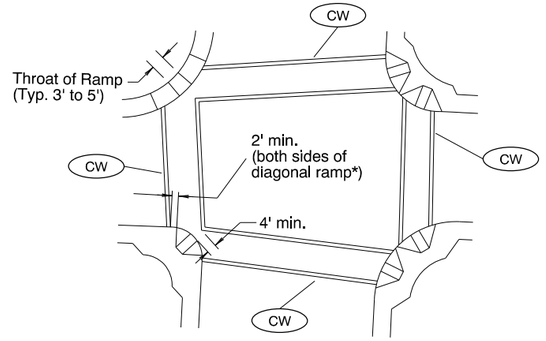
Detail "A"
STOP BAR PLACEMENT WITH
RESPECT TO PEDESTRIAN RAMPS



Detail "B"
STOP BAR PLACEMENT WITH
RESPECT TO TURN RADII



STAGGERED CONTINENTAL LAYOUT



STANDARD CROSSWALK BARS
AT INTERSECTION

* = Refer to Std Dwg RD916

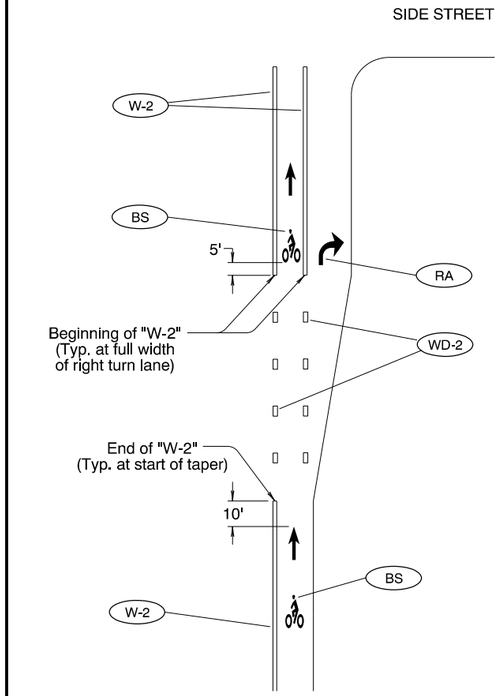
General Note:

1. Install crosswalk bars such that the throat of the ADA ramp is entirely within crosswalk markings, or 5' back of extended fog line, edge of pavement, or curb face.

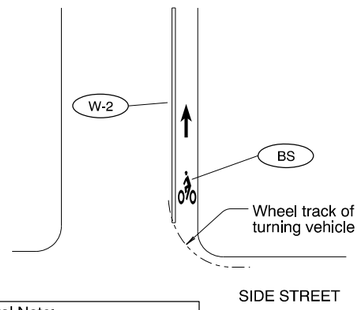
LEGEND

Direction of Travel

℄ - Lane line dimensions are shown on the striping plans



INSTALLATION OF BIKE LANE STENCILS
FOR BIKE LANE SEPARATED BY RIGHT TURN LANE



General Note:

Install bike lane stencil to avoid right turning vehicle wheel tracks.

INSTALLATION OF BIKE LANE STENCILS
FOLLOWING INTERSECTIONS

To be accompanied by Standard Dwg. Nos. TM500 thru TM504

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

OREGON STANDARD DRAWINGS

INTERSECTION PAVEMENT MARKINGS (CROSSWALK, STOP BAR & BIKE LANE STENCIL)

2024

DATE	REVISION DESCRIPTION
07-2022	Added Roadway Standard Drawing reference to detail for clarity

CALC. BOOK NO. N/A | SDR DATE 06-JUL-2022 | **TM530**

Effective Date: June 1, 2024 - November 30, 2024

Post & Stub	Hinge Data							Base Plate Data								Footing Data		Min. Footing Depth			Max. Footing Slope	
Depth & Mass/ft	Hinge ℄t1	Slip ℄t2	A	B	C	Hinge Bolts		Base ℄t3	D	E	F	G	Bolt				Stub Length	V bars	2'-0" dia.	3'-0" dia.	4'-0" dia.	Rise per ft. "Y"	Grade
						Dia.	Length						dia.	"T1" Torque	"T2" Torque	Length							
W6 x 9	3/8"	3/8"	4"	7/8"	2¼"	3/4"	2"	1"	4¼"	3/4"	8½"	10"	5/8"	150 ft.-lb.	50 ft.-lb.	4¼"	2'-0"	#4	4'-9"	—	—	12"	1V:1.00H
W6 x 12	3/8"	3/8"	4"	7/8"	2¼"	3/4"	2"	1"	4½"	3/4"	8½"	10"	5/8"	150 ft.-lb.	50 ft.-lb.	4¼"	2'-4"	#5	5'-6"	—	—	11 1/4"	1V:1.07H
W6 x 15	3/8"	1/2"	6"	1¼"	3½"	7/8"	2½"	1"	6¼"	7/8"	8½"	10¼"	3/4"	280 ft.-lb.	70 ft.-lb.	4½"	2'-8"	#6	6'-6"	—	—	7 1/4"	1V:1.66H
W8 x 18	1/2"	1/2"	5¼"	1¼"	2¾"	7/8"	2½"	1⅜"	5½"	7/8"	11¾"	1'-1½"	3/4"	280 ft.-lb.	70 ft.-lb.	5"	3'-0"	#7	8'-0"	6'-6"	—	8 1/2"	1V:1.41H
W8 x 21	1/2"	5/8"	5¼"	1¼"	2¾"	1"	2¾"	1⅜"	6"	1"	11¾"	1'-1¾"	7/8"	450 ft.-lb.	80 ft.-lb.	5¼"	3'-4"	#8	8'-9"	7'-0"	—	7 1/2"	1V:1.60H
W10 x 22	1/2"	5/8"	5¾"	1½"	2¾"	1"	2¾"	1⅜"	6"	1"	1'-1½"	1'-3½"	7/8"	450 ft.-lb.	80 ft.-lb.	5¼"	3'-8"	#8	10'-3"	7'-9"	6'-6"	7 1/2"	1V:1.60H
W10 x 26	1/2"	5/8"	5¾"	1½"	2¾"	1⅛"	3"	1⅜"	7"	1⅛"	1'-1½"	1'-3¾"	1"	680 ft.-lb.	90 ft.-lb.	5½"	4'-0"	#9	11'-0"	8'-9"	7'-3"	6 3/8"	1V:1.88H
W12 x 26	1/2"	5/8"	6½"	1½"	3½"	1⅛"	3"	1½"	7"	1⅛"	1'-3½"	1'-5¾"	1"	680 ft.-lb.	90 ft.-lb.	5¾"	4'-4"	#10	12'-3"	9'-6"	8'-0"	6 3/8"	1V:1.88H
W12 x 30	1/2"	5/8"	6½"	1½"	3½"	1¼"	3"	1½"	8"	1¼"	1'-3½"	1'-6"	1⅛"	840 ft.-lb.	100 ft.-lb.	5¾"	4'-8"	#11	13'-3"	10'-6"	8'-9"	5 3/8"	1V:2.23H
W14 x 30	1/2"	5/8"	6¾"	1½"	3¾"	1¼"	3"	1½"	8"	1¼"	1'-5½"	1'-8"	1⅛"	840 ft.-lb.	100 ft.-lb.	5¾"	5'-0"	#11	13'-9"	10'-9"	9'-0"	5 1/2"	1V:2.18H

Notes:
1. *See TM635 for placement of signs.*
2. *See TM600 for Additional details and bolting procedures.*

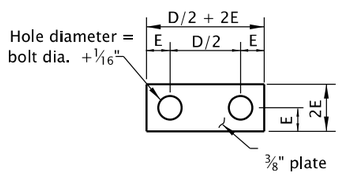
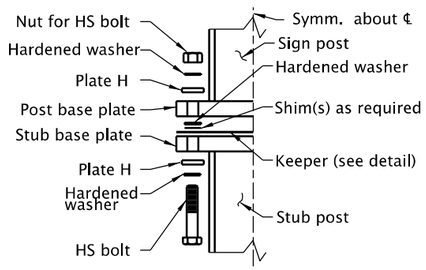
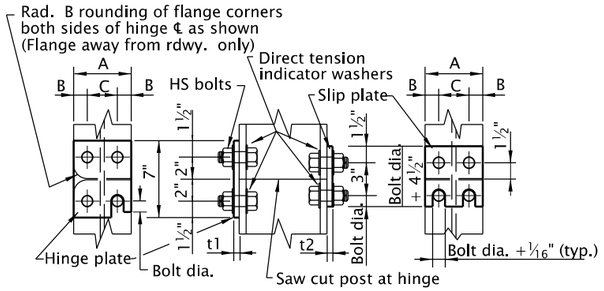


PLATE "H"
No Scale

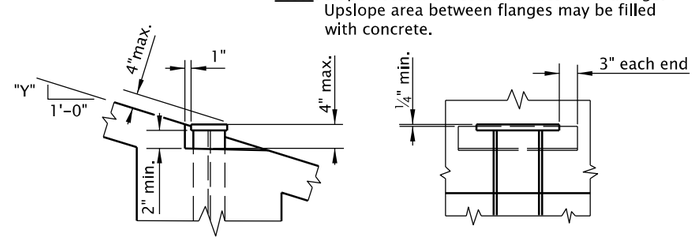


BASE ASSEMBLY DETAIL
No Scale

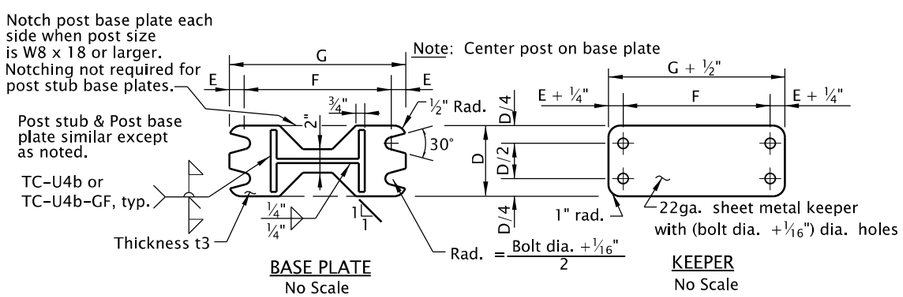


POST HINGE DETAILS
No Scale

Note: Slope bottom of recess cavities for drainage. Upslope area between flanges may be filled with concrete.

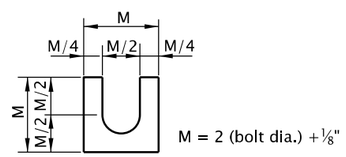


BASE PLATE RECESS FOR SIDE SLOPE INSTALLATIONS
No Scale



BASE PLATE
No Scale

KEEPER
No Scale



BRASS SHIM DETAIL

Provide 2 @ 0.012" thick and 2 @ 0.032" thick at each bolt.

Accompanied by Std. Dwgs. TM220, TM600, TM635, TM675

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OREGON STANDARD DRAWINGS

MULTI-POST BREAKAWAY SIGN SUPPORTS DETAILS

2024

DATE	REVISION DESCRIPTION
01-2024	ADDED "TYP." AND ADDED FILLET WELD ON BEVELED SIDE OF BASE PLATE WELD.

CALC. BOOK NO. 1493 | SDR DATE 19-JAN-2024 | **TM601**

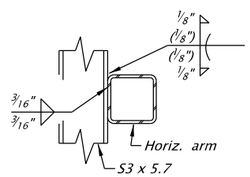
Effective Date: June 1, 2024 - November 30, 2024

19-JAN-2024

TM601.dgn

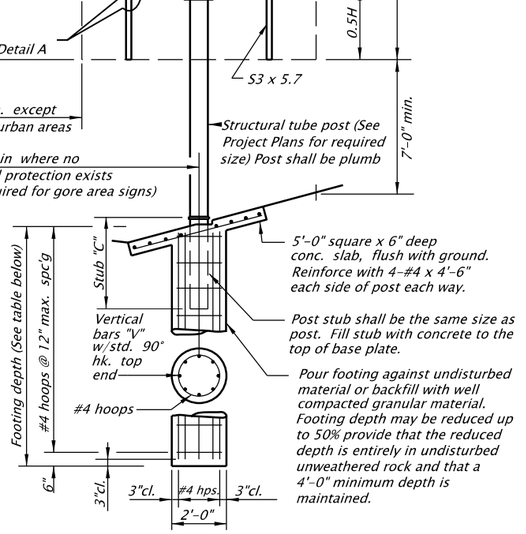
10-JUL-2020

TM602.dgn

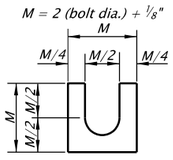


DETAIL A
No Scale

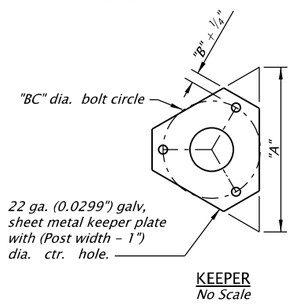
Installation Notes:
TS 6 x 6 x 3/16" structural tubing and larger posts are not recommended in vulnerable locations such as gore areas. See dwg. TM201 and TM635 for preferred design for these areas. Provide 2" space between signs when more than one sign is mounted on a single post.



BREAKAWAY SIGN POST
No Scale



BRASS SHIM DETAIL
Provide 2 @ 0.012" thick and 2 @ 0.032" thick at each bolt.



KEEPER
No Scale

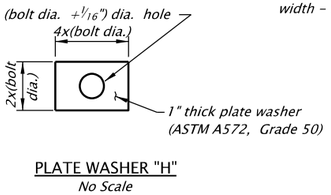
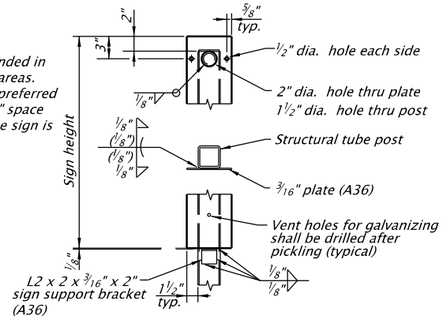
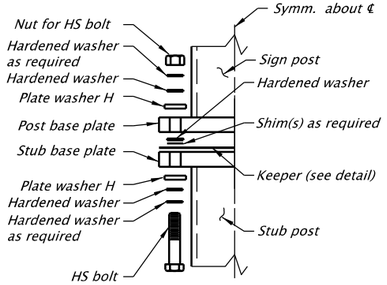


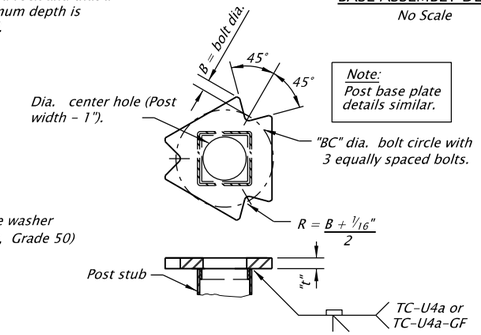
PLATE WASHER "H"
No Scale



EXTRUDED SIGN MOUNTING DETAILS
No Scale
For signs 9'-0" or less in width

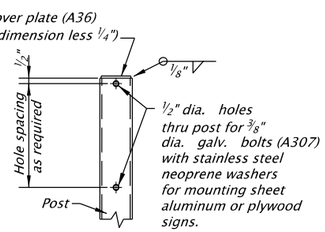


BASE ASSEMBLY DETAIL
No Scale

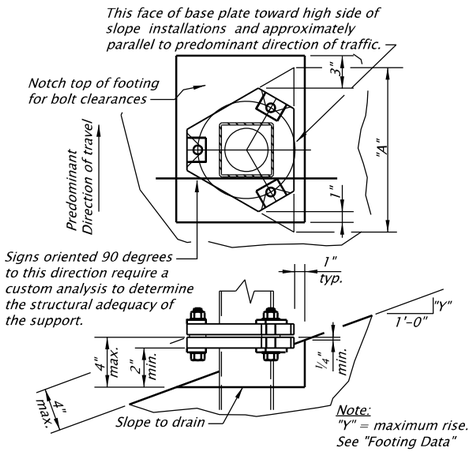


Note:
Post base plate details similar.

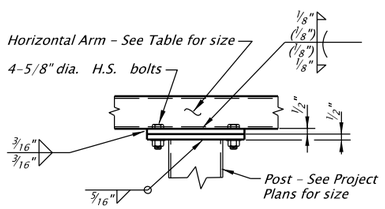
POST STUB DETAILS
No Scale

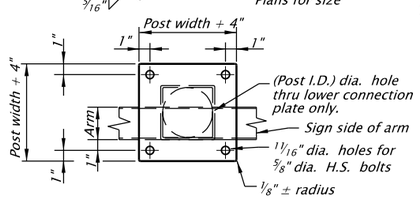


SIGN MOUNTING DETAILS
FOR PLYWOOD & SHEET ALUMINUM SIGNS
No Scale



BASE PLATE ORIENTATION
No Scale





HORIZONTAL ARM TO POST CONNECTION DETAIL
No Scale

GENERAL NOTES:

1. Sign supports are designed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals 1994. Use a wind velocity with a 10-year mean reccurrence interval.
2. All concrete shall be Commercial Grade Concrete (f'c = 3000 psi)
3. All reinforcing steel shall conform to AASHTO Specification M31, Grade 60, or ASTM A706.
4. The following splice lengths shall be used unless otherwise shown:

Bar Size	#4	#5
Splice Length (mm)	1'-1"	1'-5"

5. Structural steel shall conform to AASHTO M223 (ASTM A572) Grade 50. unless shown otherwise.
6. Structural tubing shall conform to ASTM Specification A500,Grade B, or A501.
7. Shims shall be fabricated from brass shim stock conforming to ASTM B36.
8. All bolts shall be high strength bolts conforming to to ASTM Specification A325 (AASHTO M164). Nuts for high strength bolts shall be well lubricated heavy hexagon nuts conforming to ASTM Specification A563, (AASHTO M291), Grade DH. Hardened steel washers shall conform to ASTM Specification F436 (AASHTO M293).
9. Steel sheet for keepers shall conform to ASTM Specification A653.
10. Base plate holes shall be sub-drilled and reamed to size. Base plate slot shall be saw cut or machine guided flame cut.
11. Keeper sheet metal shall be galvanized in accordance with ASTM A653, Coating G165. All other steel including fasteners shall be hot-dip galvanized after fabrication. Remove galvanizing runs and beads on all slip surfaces. Nuts for high strength bolts may be retapped after galvanizing.
12. The use of post larger than required by design will not be permitted.
13. See Dwg. TM675 for sign and sign mounting details.

BASE PLATE BOLTING PRODEDURE:

1. Assemble post to stub as shown in Base Assembly Detail.
2. Shim as required to plumb post. (± 1/16"/vert. 12") (2 shims maximum per bolt)
3. Tighten bolts in a systematic order to the "T1" ft-lbs torque.
4. Loosen and retighten bolts to the "T2" ft-lbs torque. Use the same order as the intitial tightening and DO NOT OVER TIGHTEN!
5. Burr threads at junction with nut using a center punch.

		Slip Base Data								Footing Data				
Structural Tubing Post and Post Stub Size	Structural Tubing Horiz. Arm (if req'd)	Base Plate		Bolt						Post Stub Length	Vert. Reinf. Bars "V"	Footing Depth		Max. Slope Rise per ft. "Y"
		"t"	"A"	Dia. "B"	Length	Circle "BC"	"T1" ft-lbs torque	"T2" ft-lbs torque	Num. of additional washers			2'-0" Dia.	4'-0" Dia.	
TS 3 x 3 x 3/16	TS 3 x 3 x 3/16	3/4"	10"	1/2"	5"	6"	50	30	2	1'-6"	8-#4	3'-0"	——	6.3"
TS 3 1/2x 3 1/2x 3/16	TS 3 x 3 x 3/16	3/4"	11 3/8"	5/8"	5"	6 3/4"	150	50	-	1'-9"	8-#4	3'-6"	——	5.5"
TS 4 x 4 x 3/16	TS 3 x 3 x 3/16	1"	1'-0 3/8"	5/8"	5 1/2"	7 1/2"	150	50	-	2'-0"	8-#4	4'-0"	——	5.2"
TS 5 x 5 x 3/16	TS 3 x 3 x 3/16	1"	1'-2 5/8"	3/4"	5 1/2"	9"	280	70	-	2'-3"	8-#4	4'-6"	4'-0"	4.4"
TS 6 x 6 x 3/16	TS 3 x 3 x 3/16	1 1/4"	1'-4 7/8"	7/8"	6 1/2"	10 1/2"	450	75	1	2'-6"	8-#5	5'-0"	4'-0"	3.8"
TS 7 x 7 x 3/16	TS 4 x 4 x 3/16	1 1/4"	1'-6 1/4"	7/8"	6 1/2"	12"	450	75	1	3'-0"	8-#5	6'-0"	4'-6"	3.5"
TS 8 x 8 x 3/16	TS 5 x 5 x 3/16	1 3/8"	1'-8 1/2"	1"	7"	1'-1 1/2"	680	75	1	3'-6"	12-#5	7'-0"	5'-0"	3.1"

Accompanied by dwgs. TM200, TM201, TM635, TM675

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

OREGON STANDARD DRAWINGS

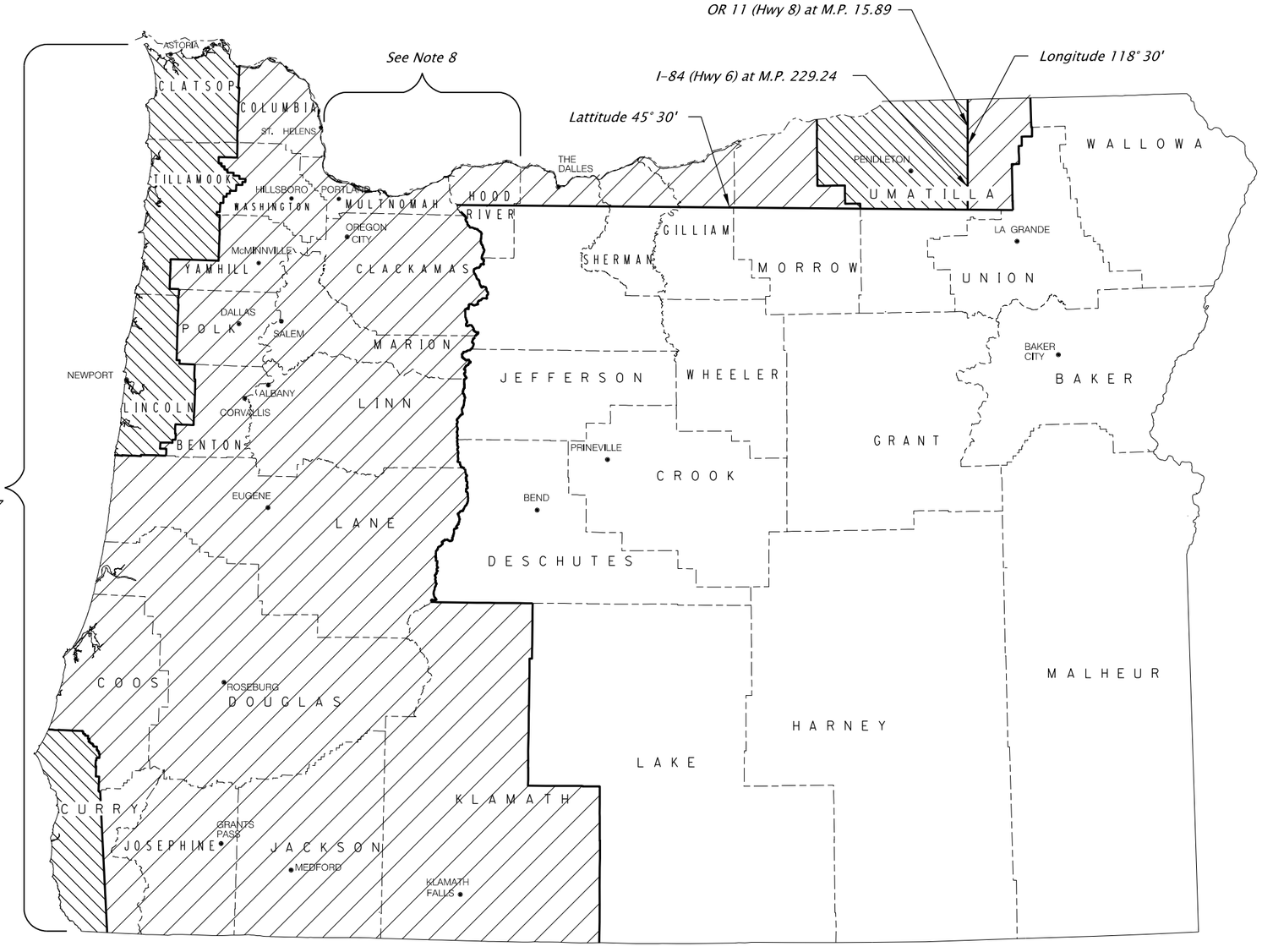
TRIANGULAR BASE BREAKAWAY MULTI-DIRECTIONAL SLIP BASE DESIGN

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. 1493 | SDR DATE 09-JAN-2015 | **TM602**

Effective Date: June 1, 2024 - November 30, 2024



NOTES:

1. *The wind velocity map as shown is adapted from AASHTO 2001 4th Edition - "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals", Appendix C, Figure C-3 and Section 3, Figure 3-2. It uses the wind speed map shown in Figure 1609 of the 2007 Oregon Structural Code to account for locations in the State with special wind regions.*
2. *The wind velocities shown above are 3-Second Gust wind velocities.*
3. *The Exposure Catagory is C.*
4. *The mean recurrence interval is 50-Years.*
5. *Mountanious terrain, gorges, and ocean promontories are classified as special wind regions and shall be examined for unusual wind conditions.*
6. *The Interval Height (Kz) is 30 ft.*
7. *All areas with full exposure to ocean winds shall be designated 110 mph areas.*
8. *Areas in Multnomah and Hood River counties with full exposure to Columbia River Gorge winds shall be designated 110 mph areas.*
9. *Localities may have adopted wind speed higher that shown on this map. Those higher wind speed shall be used.*

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

OREGON STANDARD DRAWINGS

3 SECOND GUST WIND SPEED MAP

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 06-JAN-2012 | **TM671**

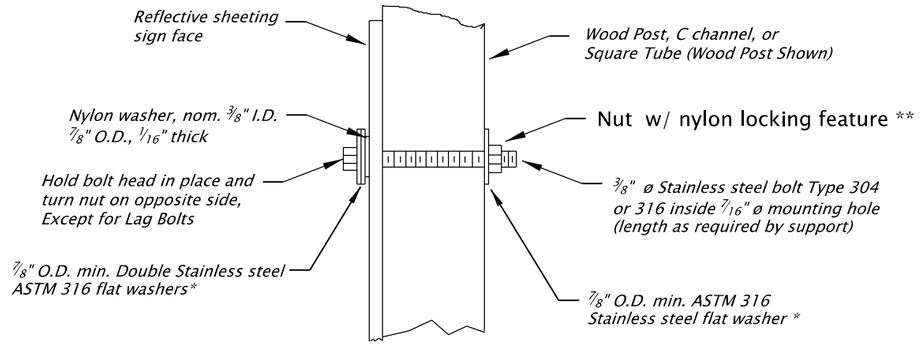
Effective Date: June 1, 2024 - November 30, 2024

10-JUL-2020

TM671.dgn

10-JUL-2020

TM676.dgn

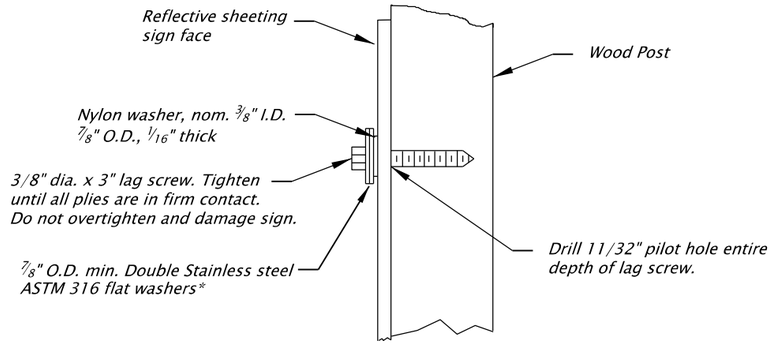


Note:
1)When signs are placed on opposing sides of post, 3/8" x 3" lag screws can be used instead of through bolt.
2) Use nylon and stainless steel washers when signs are placed on both sides of post.
3) Burr threads at junction with nut when locknuts are not used.
4) Post bolts to extend beyond the tightened nuts within the limits of 1/4" to 1".

** Stainless steel bonded sealing washer with neoprene layer is an acceptable substitue*

*** Acceptable substitute for nylon locking nuts:*
ANCO PIN-LOC
TRI-LOC® Top Lock Locknut

SIGN ATTACHMENT DETAIL



** Stainless steel bonded sealing washer with neoprene layer is an acceptable substitue*

Note: This optional detail is to be used only when specified on a project.

OPTIONAL WOOD POST LAG SCREW DETAIL

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

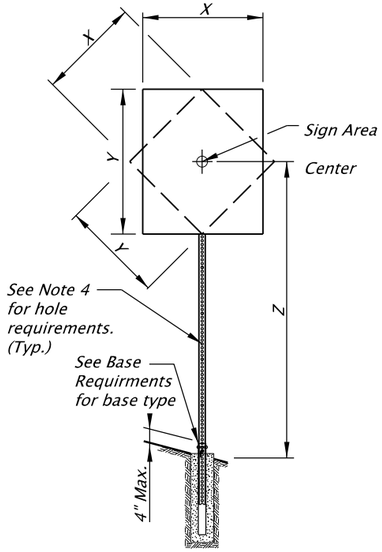
SIGN ATTACHMENTS

2024

DATE	REVISION DESCRIPTION
07-2020	ADDED OPTIONAL LAG SCREW DETAIL

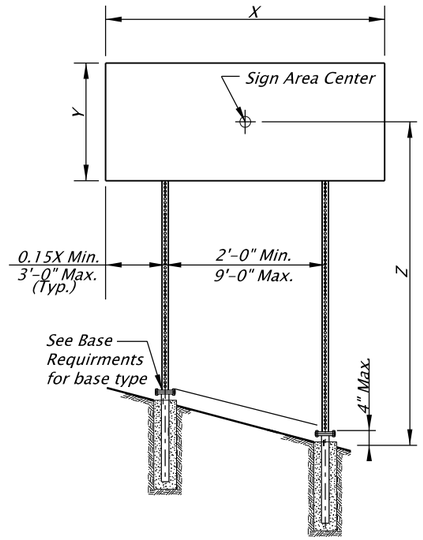
CALC. BOOK NO. N/A | SDR DATE 10-JUL-2020 | **TM676**

Effective Date: June 1, 2024 - November 30, 2024



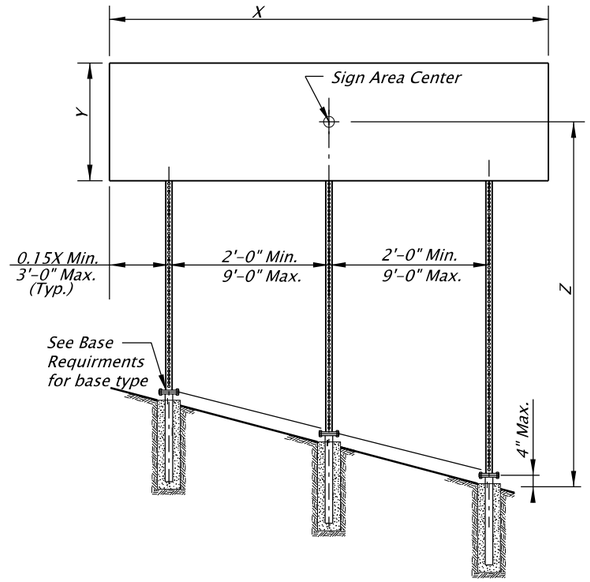
SINGLE POST ELEVATION

No scale



TWO POST ELEVATION

No scale



THREE POST ELEVATION

No scale

GENERAL NOTES:

1. Perforated Steel Square Supports are designed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals 4th Edition, 2001, 2002, 2003, and 2006 interim revisions.
2. The design basic wind speed (3 second gust) shall be according to the wind map shown on TM671.
3. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
4. Use $^{7}/_{16}$" diameter holes at 1" spacing on each of the 4 sides.
5. Steel post shall have a minimum yield stress of 50 ksi.
6. Steel shall be galvanized according to ASTM A653 with coating designation G90.
7. General design parameters are Kz = 0.87, Cd (sign) = 1.20, and G = 1.14.
8. Permanent signing uses an Ir = 0.71 for a recurrence interval of 10 years.
9. Temporary signing uses an Ir = 0.45 for a recurrence interval of 1.5 years.
10. The sign width to sign height or sign height to sign width ratio shall not exceed 5.0.
11. For horizontal and vertical clearances of permanent signs refer to TM200 and of temporary signs refer to TM822.
12. Posts protected by barrier or guardrail do not require slip bases.

	(X * Y * Z) in ft³ - Maximum								
	3 Second Gust Wind Speed (TM671)								
	85 MPH			95 MPH			105 or 110 MPH		
	Number of Posts			Number of Posts			Number of Posts		
Square Tube Size	1	2	3	1	2	3	1	2	3
2"-12 ga.	79	158	237	63	126	189	57	114	171
2½"-12 ga.	136	272	408	109	218	327	98	196	294
2½"-10 ga.	165	330	495	132	264	396	119	238	357
2¼" & 2½"-12 ga.*	231	462	693	185	370	555	167	334	501

PERMANENT PERFORATED STEEL SQUARE TUBE TABLE

	(X * Y * Z) in ft³ - Maximum								
	3 Second Gust Wind Speed (TM671)								
	85 MPH			95 MPH			105 or 110 MPH		
	Number of Posts			Number of Posts			Number of Posts		
Square Tube Size	1	2	3	1	2	3	1	2	3
2"-12 ga.	125	250	375	100	200	300	90	180	270
2½"-12 ga.	215	430	645	172	344	516	155	310	465
2½"-10 ga.	261	522	783	209	418	627	189	378	567
2¼" & 2½"-12 ga.*	364	728	1092	292	584	876	263	526	789

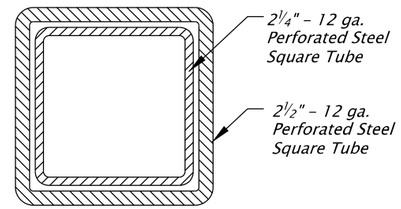
TEMPORARY PERFORATED STEEL SQUARE TUBE TABLE

* - See 2¼" & 2½" - 12 ga. detail.

	Number of Posts		
Square Tube Size	1	2	3
2"-12 ga.	Anchor	Anchor	N/A
2½"-12 ga.	Anchor	Slip	Slip
2½"-10 ga.	Slip	Slip	Slip
2¼" & 2½"-12 ga.*	Slip	Slip	Slip

1. Anchor - See Drawing TM687 for PSST anchor foundation details.
2. Slip - See Drawing TM688 for PSST slip base foundation details.
3. N/A - Do not use this option.

BASE REQUIREMENTS



2¼" - 12 ga. PSST to extend entire length inside of the 2½" - 12 ga. PSST.

2¼" & 2½" - 12 GA. DETAIL

No scale

Accompanied by dwgs. TM200, TM671, TM687, TM688, TM689, TM822

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

PERFORATED STEEL SQUARE TUBE (PSST) SIGN SUPPORT INSTALLATION

2024

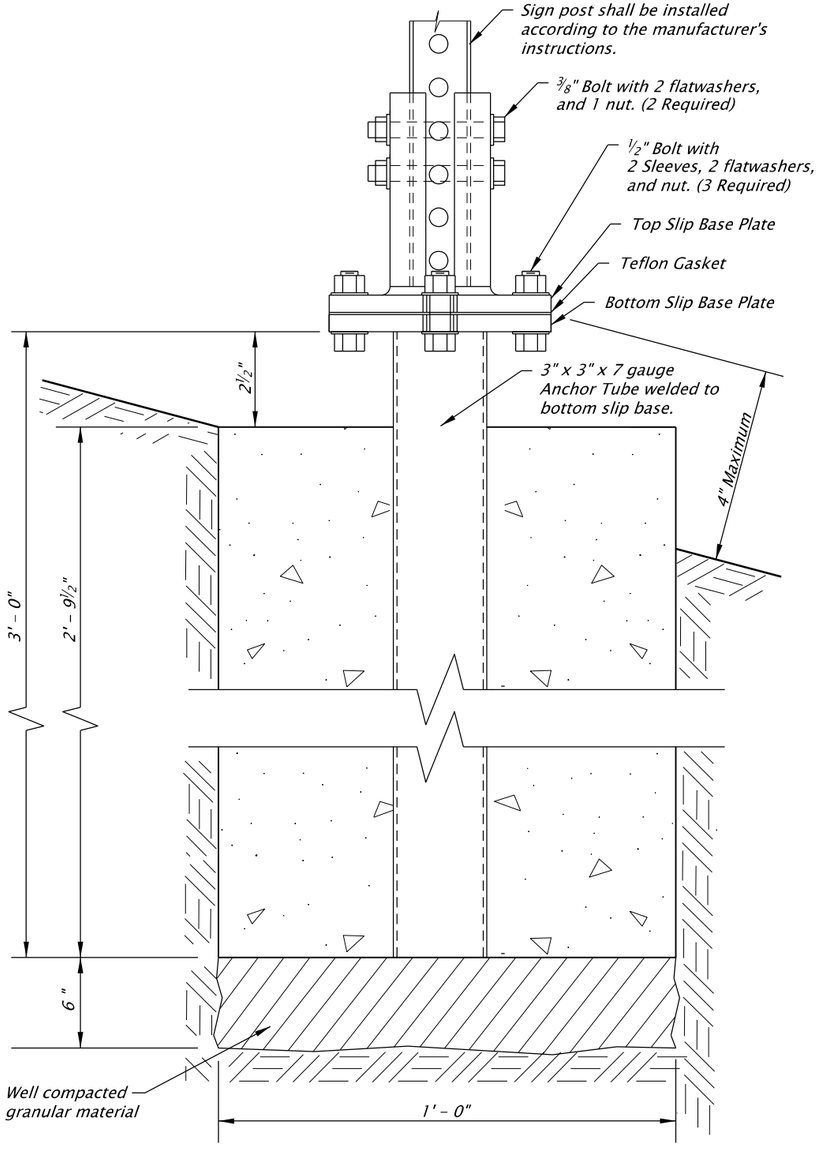
DATE	REVISION DESCRIPTION

CALC. BOOK NO. 5752 | SDR DATE 10-JUL-2017 | **TM681**

Effective Date: June 1, 2024 - November 30, 2024

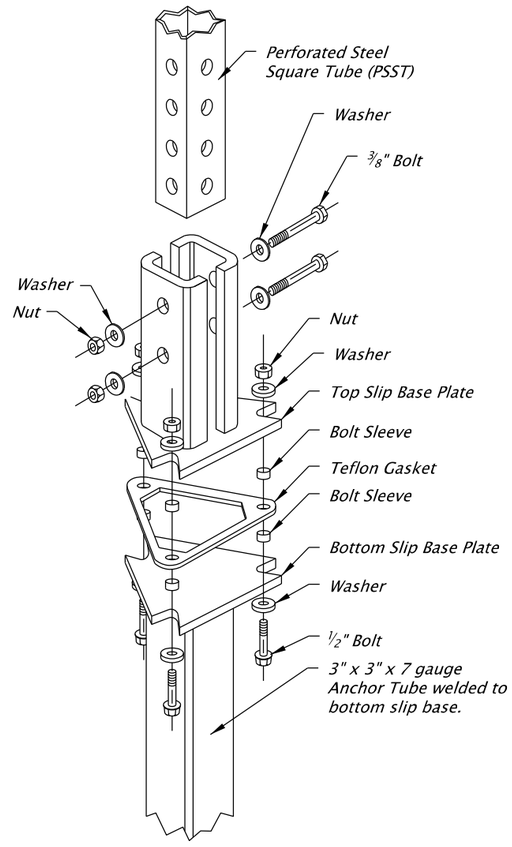
10-JUL-2020

TM688.dgn



SLIP BASE ELEVATION

No scale

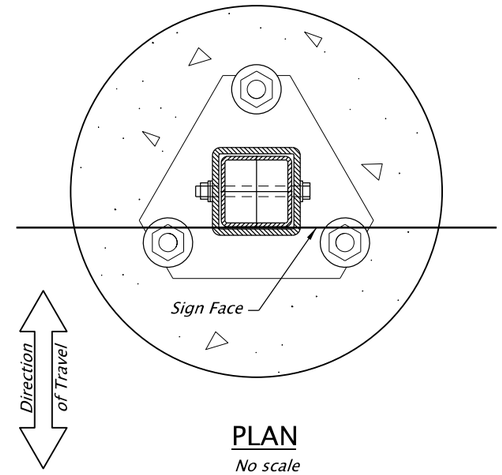


SLIP BASE EXPLODED VIEW

No scale

General Notes:

1. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
2. Slip base steel shall be hot dipped galvanized or approved equal.
3. Footing concrete shall be Commercial Grade Concrete (fc = 3000 psi) per Specification 00440. The CGC mixture may be accepted at the site of placement according to 00440.14.
4. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
5. All slip bases shall be pre-assembled by the manufacturer and shall be installed according to the manufacturer's instructions.
6. Use slip bases listed on the ODOT Qualified products list or submit crash testing data, installation instructions, and unstamped working drawings according to 00150.35.
7. Slip base details shown are not for a specific manufacturer and are only shown to convey general pieces of a slip base system. Specific slip base material will be acccording to the manufacturer's documentation.



PLAN

No scale

Accompanied by dwgs. TM681, TM687

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

PERFORATED STEEL SQUARE TUBE (PSST) SLIP BASE FOUNDATION

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. 5752 | SDR DATE 06-JAN-2012 | **TM688**

Effective Date: June 1, 2024 - November 30, 2024

01-JUL-2022

TM800.dgn

TAPER TYPES & FORMULAS	
TAPER	FORMULA
Merging (Lane Closure)	"L"
Shifting	"L"/2 or ½"L"
Shoulder Closure	"L"/3 or ⅓"L"
Flagging (See Drg. TM850)	50' – 100'
Downstream (Termination)	Varies (See Drawings)

★ Use Pre-Construction Posted Speed to select the Speed from the Tables below:

TEMPORARY BARRIER FLARE RATE TABLE	
★SPEED (mph)	MINIMUM FLARE RATE
≤ 30	8:1
35	9:1
40	10:1
45	12:1
50	14:1
55	16:1
60	18:1
65	19:1
70	20:1

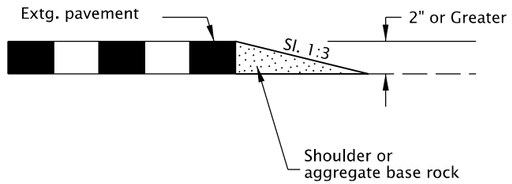
MINIMUM LENGTHS TABLE					
"L" VALUE FOR TAPERS (ft)					BUFFER "B" (ft)
★ SPEED (mph)	W = Lane or Shoulder Width being closed or shifted				
	W ≤ 10	W = 12	W = 14	W = 16	
25	105	125	145	165	75
30	150	180	210	240	100
35	205	245	285	325	125
40	265	320	375	430	150
45	450	540	630	720	180
50	500	600	700	800	210
55	550	660	770	880	250
60	600	720	840	960	285
65	650	780	910	1000	325
70	700	840	980	1000	365
FREEWAYS					
55	1000	1000	1000	1000	250
60	1000	1000	1000	1000	285
65	1000	1000	1000	1000	325
70	1000	1000	1000	1000	365

NOTES:
- For Lane closures where W < 10', use "L" value for W = 10'.
- For Shoulder closures where W < 10', use "L" value for W = 10' or calculate "L" using formula, for Speeds ≥ 45: L = WS, Speeds < 45: L = $S^2W/60$, S = Speed, W=Width

TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE				
★ SPEED (mph)	Sign Spacing (ft)			Max. Channelizing Device Spacing (ft)
	A	B	C	
20 – 30	100	100	100	20
35 – 40	350	350	350	20
45 – 55	500	500	500	40
60 – 70	700	700	700	40
Freeway	1000	1500	2640	40

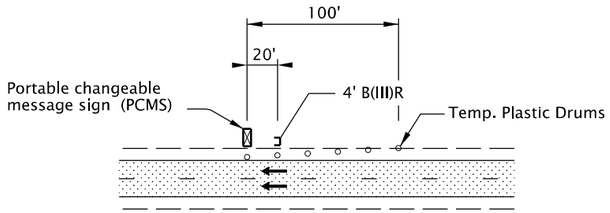
NOTES:
- Place traffic control devices on 10 ft. spacing for intersection and access radii.
- When necessary, sign spacing may be adjusted to fit site conditions. Limit spacing adjustments to 30% of the "A" dimension for all speeds.

NOTES:
- When paved shoulders adjacent to excavations are less than four feet wide protect longitudinal abrupt edge as shown.
- Use aggregate wedge when abrupt edge is 2 inches or greater.



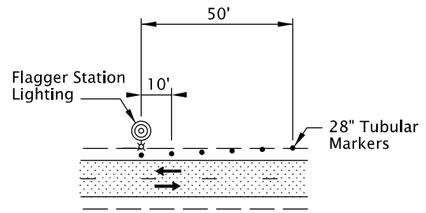
EXCAVATION ABRUPT EDGE

NOTES:
- Install PCMS beyond the outside shoulder, when possible.
- Use the appropriate type of barricade panels for PCMS location. Right shoulder, use Type B(III)R Left shoulder, use Type B(III)L
- Use six drums in shoulder taper on 20' spacing. The drums and barricade may be omitted when PCMS is placed behind a roadside barrier.
- Detail as shown is used for trailered and non-crashworthy components of:
  - Portable Traffic Signals
  - Smart Work Zone Systems



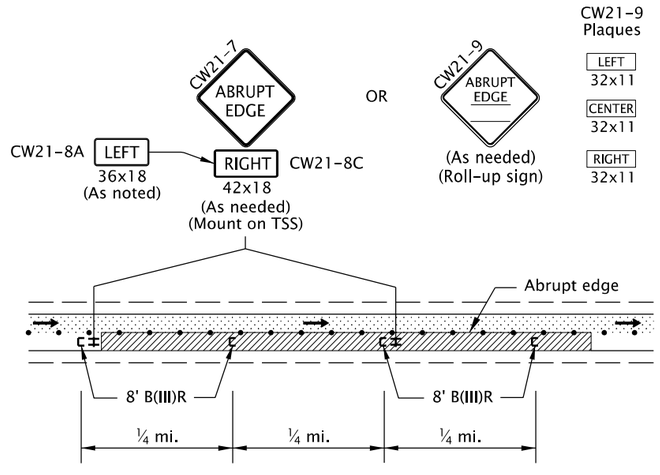
PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) INSTALLATION

NOTES:
- Install Flagger Station Lighting beyond the outside shoulder, where practical.
- Use six tubular markers in shoulder taper on 10' spacing.
- Place cart / generator / power supply off of the shoulder, as far as practical.



FLAGGER STATION LIGHTING DELINEATION

NOTES:
- Abrupt edges may be created by paving, operations, excavations or other roadway work. Use abrupt edge signing for longitudinal abrupt edges of 1 inch or greater.
- If the excavation is located on left side of traffic, replace the 8' B(III)R barricades with 8' B(III)L barricades and replace the "RIGHT" (CW21-8C) riders with "LEFT" (CW21-8A) riders.
- Continue signing and other traffic control devices throughout excavation area at spacings shown.
- If roll-up signs are used, attach the correct (CW21-9) plaques to the sign face using hook and loop fasteners. Place roll-up signs in advance of barricades.



TYPICAL ABRUPT EDGE DELINEATION

GENERAL NOTES FOR ALL TCP DRAWINGS:
- Signs and other Traffic Control Devices (TCD) shown are the minimum required.
- Place a barricade approx. 20' ahead of all sequential arrow boards.
- Arrows shown in roadway are directional arrows to indicate traffic movements.
- All signs are 48" x 48" unless otherwise shown. Use fluorescent orange sheeting for the background of all temporary warning signs.
- All diamond shaped warning signs mounted on barrier sign supports shall be 36" by 36". All other signs mounted on barrier sign supports shall not exceed 12 sq. ft. in total sign area.
- Low speed highways have a pre-construction posted speed of 40 mph or less. High speed highways have a pre-construction posted speed of 45 mph or higher.
- Do not locate sign supports in locations designated for bicycle or pedestrian traffic.
- Combine drawing details to complete temporary traffic control for each work activity.
- Coordinate and control pedestrian movements through a Temporary Accessible Route using Flaggers, Traffic Control Measures, or as directed.
- To be accompanied by Dwg. Nos. TM820 & TM821.

○ ○ ○ Temp. Plastic Drums See TCD Spacing Table for max. spacing.

• • • 28" Tubular Markers See TCD Spacing Table for max. spacing.

UNDER TRAFFIC

UNDER CONSTRUCTION

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OREGON STANDARD DRAWINGS

TABLES, ABRUPT EDGE AND PCMS DETAILS

2024

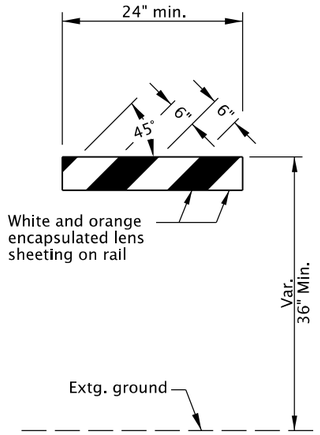
DATE	REVISION DESCRIPTION
07-2022	Added a note for TPARs

CALC. BOOK NO. N/A | SDR DATE 01-JUL-2022 | **TM800**

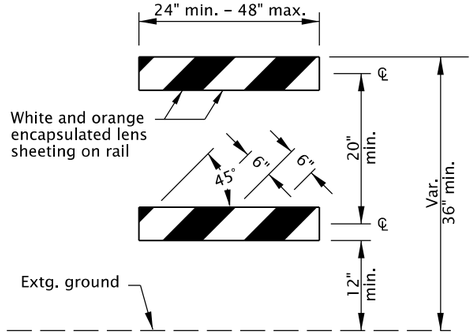
Effective Date: June 1, 2024 – November 30, 2024

01-JUL-2020

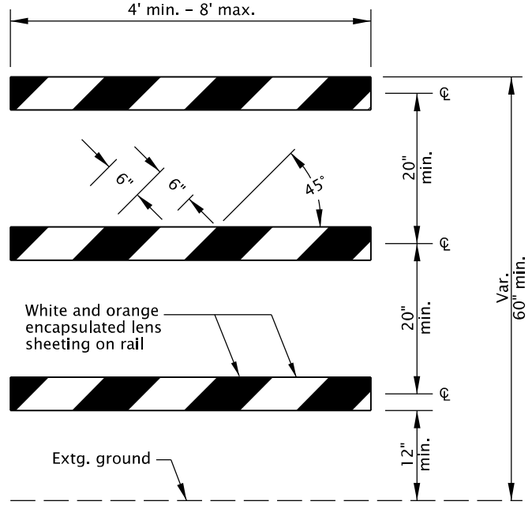
TM820.dgn



TYPE I



TYPE II



TYPE III

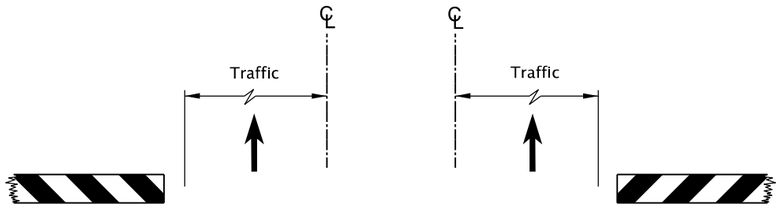
BARRICADE RAIL LAYOUT

GENERAL NOTES FOR ALL DETAILS:

- Sandbags (approximately 25 lb sack filled with sand) may be placed on lower frame to provide additional ballast.
- Ballast shall not extend above bottom rail or be suspended from barricade.
- For rails less than 36" long, 4" wide stripes shall be used.
- Rails must be 8" min. to 12" max. in height.
- Use barricades from ODOT Qualified Products List (QPL).
- Use 4' Type III barricades where horizontal space is limited.
- Do not block bike lanes or shoulders unless the facility is properly closed and signed.
- Do not place barricades in sidewalks unless sidewalk is closed and a temporary pedestrian accessible route (TPAR) is signed according to the TCP. See Dwg. No. TM844.

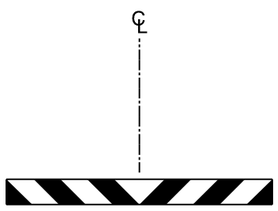
NOTES:

- Markings for barricade rails shall slope downward at an angle of 45° in the direction traffic is to pass.
- Where a barricade extends entirely across a roadway, it is desirable that the stripes slope downward in the direction toward which traffic must turn in detouring.
- Where both right and left turns are provided for, slope the chevron striping downward in both directions from the center of the barricade.
- For full roadway closures, the C or LR barricade may be used. Extend barricades completely across roadway unless access is required for local road users.

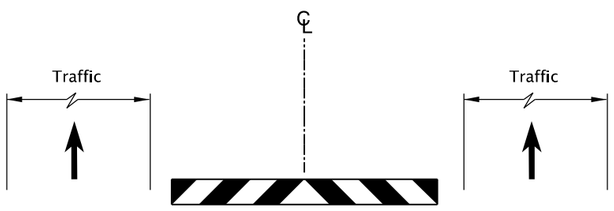


LT. SIDE - L
(For approaching traffic)

RT. SIDE - R
(For approaching traffic)

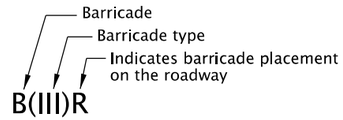


CLOSED - C
(For approaching traffic)



LT. / RT. - LR
(For approaching traffic)

DIAGRAM FOR BARRICADE PLACEMENT AND SLOPE MARKING



BARRICADE NOTATION

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

OREGON STANDARD DRAWINGS

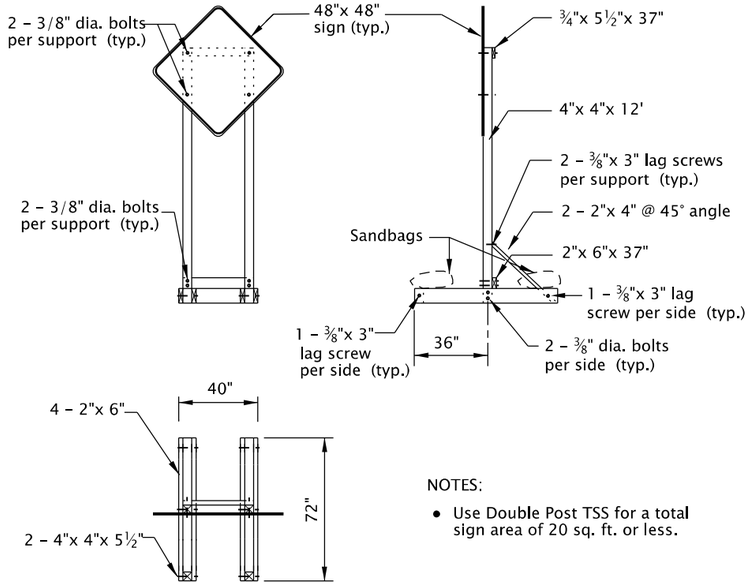
TEMPORARY BARRICADES

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 01-JUL-2020 | **TM820**

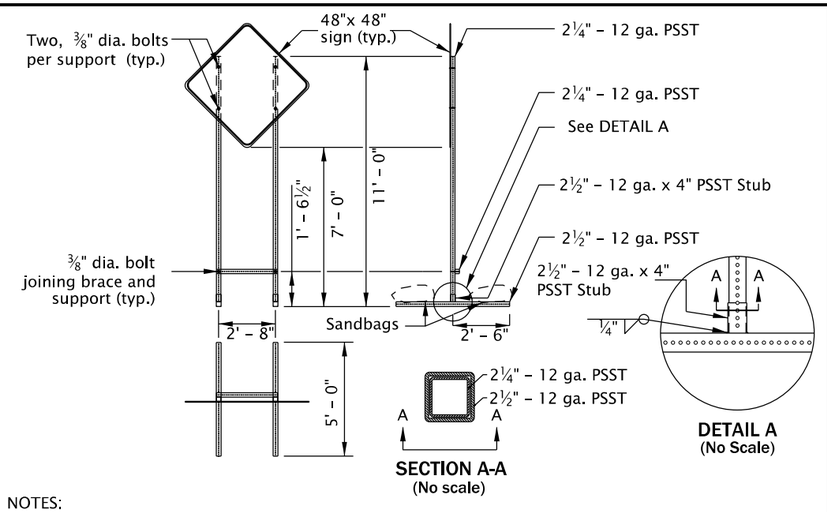
Effective Date: June 1, 2024 – November 30, 2024



NOTES:

- Use Double Post TSS for a total sign area of 20 sq. ft. or less.

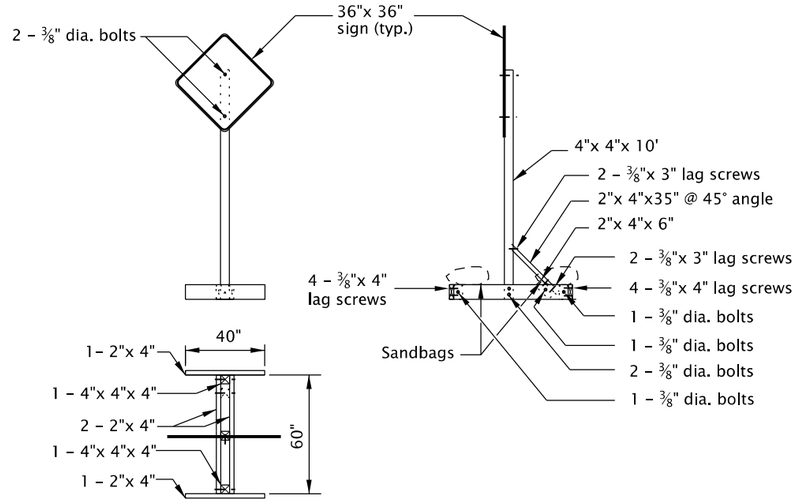
DOUBLE POST DETAIL



NOTES:

- Use PSST TSS's for a total sign area of 16 sq. ft. or less.
- All members shall have a minimum yield stress of 50 ksi.
- Galvanize steel according to ASTM A653 with coating designation G90. Remove Galvanizing from steel before welding. Repair Galvanizing according to ASTM A780.
- Use A325 Bolts or equivalent.
- 2¼" - 12 ga. PSST to extend entire length inside of the 2½" - 12 ga. x 4" PSST Stub.
- Do not use bolt to secure 2¼" PSST inside of the 2½" - 12 ga. x 4" PSST Stub.
- Weld steel according to American Welding Society (AWS) D.1.1.

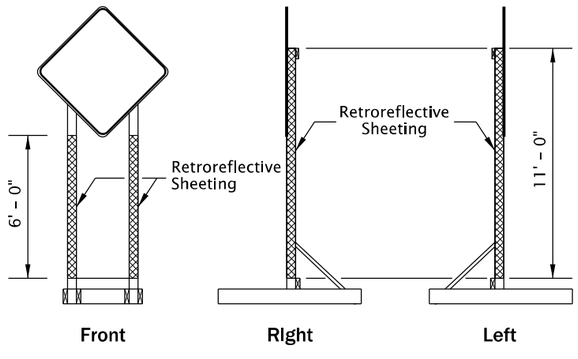
PERFORATED STEEL SQUARE TUBE (PSST) DETAIL



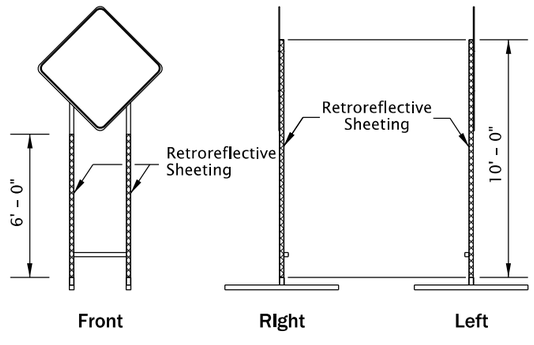
NOTES:

- Use Single Post TSS for a total sign area of 12 sq. ft. or less.
- Use Single Post TSS for mounting "Business Access" (CG20-11) signs. Do not mount signs on Type II or III Barricades.

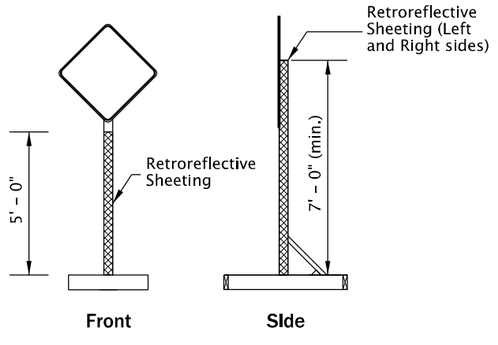
SINGLE POST DETAIL



Double Post



Perforated Steel Square Tube (PSST)



Single Post

TEMPORARY SIGN SUPPORT GENERAL NOTES:

- Do not tip over TSS at any time.
- Do not locate TSS's in locations that block pedestrian or bicycle traffic.
- For wooden TSS's, use either Douglas Fir or Hem Fir, which is surfaced four sides (S4S) and free of heart center (FOHC).
- See "Temporary Sign Placement" detail on TM822 for sign installation heights.
- Do not place or stack ballast more than 24" above the ground.
- When not in use, locate TSS as far from Public Traffic as practicable and turn away from traffic, or cover the sign. Do not cover reflective sheeting on the TSS posts.
- Place a minimum of 50 lbs of sandbags on each of the four TSS supports legs. (25 lb. max per bag) (min. 100 lbs per side of each TSS).
- See Dwg. No. TM204 for flag board mounting detail.

NOTES:

- Apply fluorescent orange, ANSI Type VIII or IX retroreflective sheeting to TSS posts, as shown, for all temporary signs, except "STOP" and "DO NOT ENTER". For "STOP" and "DO NOT ENTER" signs, used red ANSI Type III or IV retroreflective sheeting on the TSS posts.
- Apply sign post retroreflectivity to each TSS post facing front; and to the left and right sides of the TSS, as shown. Use 3" wide sheeting for wood post TSS's. Use 2" wide sheeting for PSST TSS's.
- Sheeting may be applied directly to post material; or applied to a rigid, lightweight substrate, then securely attached to the posts.

SIGN POST REFLECTIVE SHEETING PLACEMENT

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

TEMPORARY SIGN SUPPORTS

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. _ _ _ _ N/A _ _ _ | SDR DATE _ 14-JUL-2023 | TM821

Effective Date: June 1, 2024 – November 30, 2024

14-JUL-2023

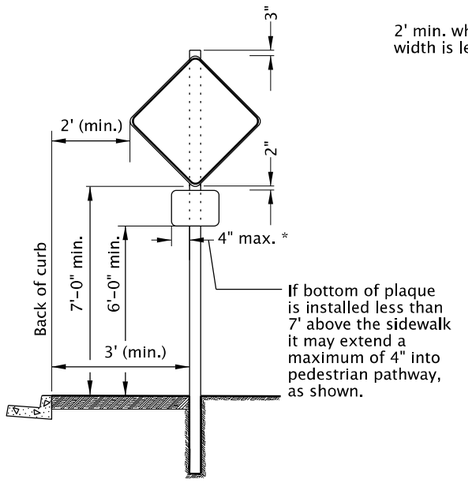
TM821.dgn

01-JUL-2020

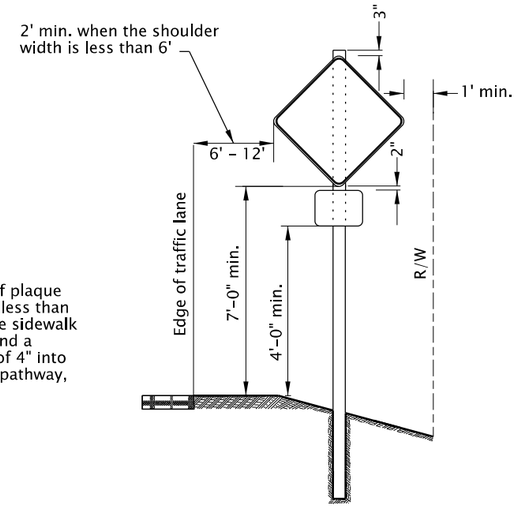
TM822.dgn

NOTES:

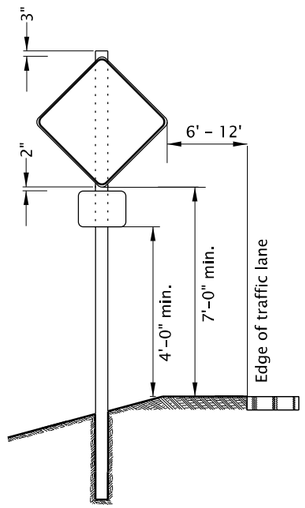
- Do not block bicycle lanes, sidewalks, or TPAR's with sign supports. Maintain minimum widths for these facilities according TCP Design Manual, MUTCD, ADA, or as directed.
- To be accompanied by Dwg. Nos. TM670, TM671, TM687, TM688 & TM689.



Urban Areas With Curb/Sidewalk

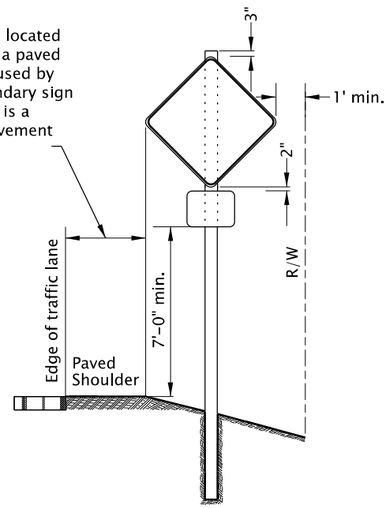


Rural Areas



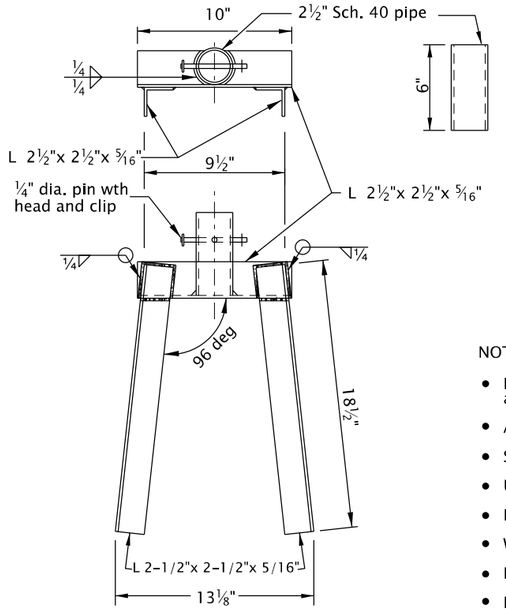
Divided Highway/Freeway Medians
No Curb/Sidewalk

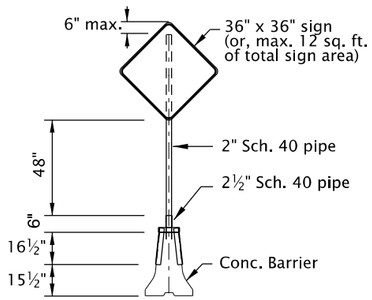
Where temporary signs are located adjacent to or intrude into a paved shoulder or other surface used by bicycle traffic, install secondary sign (plaque) so bottom of sign is a minimum of 7'0" above pavement surface, as shown.



Rural or Urban Areas - Curb or No Curb
Bicycles On Shoulder

TEMPORARY SIGN PLACEMENT





NOTES:

- Drill additional holes so sign can be rotated 90 degrees and pinned when not in use.
- All structural steel shall conform to ASTM A36.
- Support fits both 32" and 42" tall "F" barrier.
- Use for supporting a maximum 12 sq. ft. of total sign area.
- Place support at connection between two concrete barrier sections.
- Weld steel according to American Welding Society (AWS) D.1.1.
- Do not use clipped signs.
- Follow manufacturer recommendation when installing signs on barrier other than concrete.

CONCRETE BARRIER SIGN SUPPORT

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

OREGON STANDARD DRAWINGS

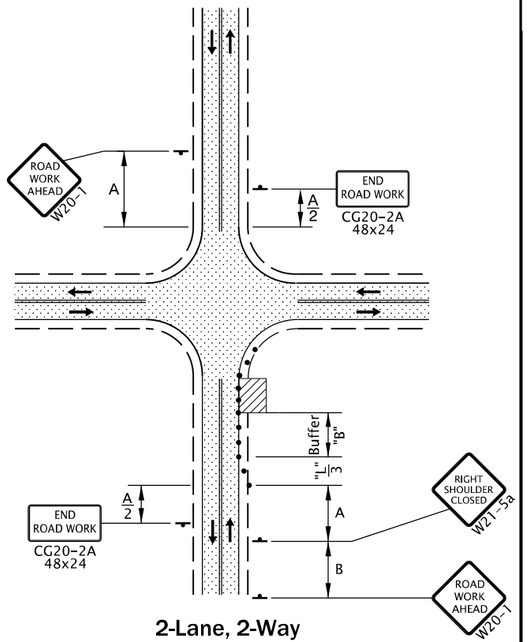
TEMPORARY SIGN SUPPORTS

2024

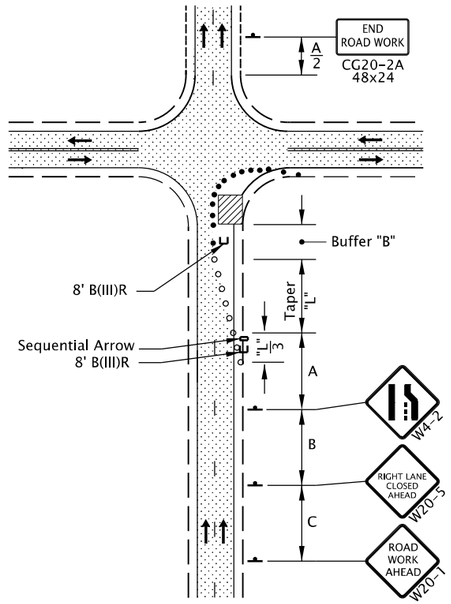
DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 01-JUL-2020 | **TM822**

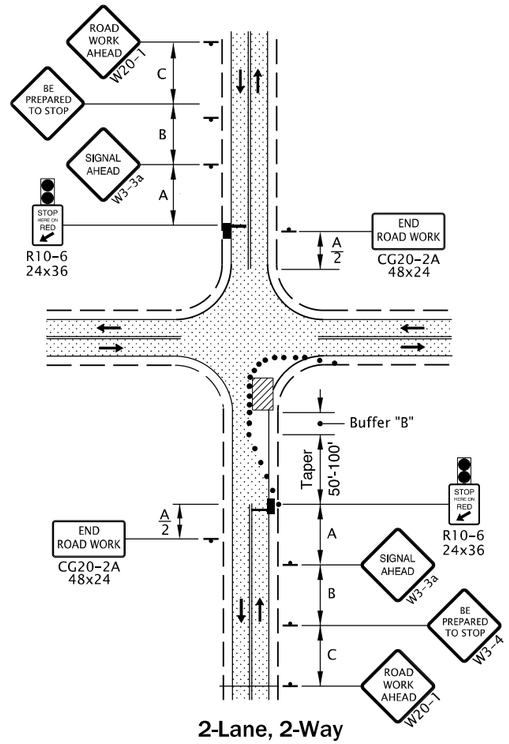
Effective Date: June 1, 2024 - November 30, 2024



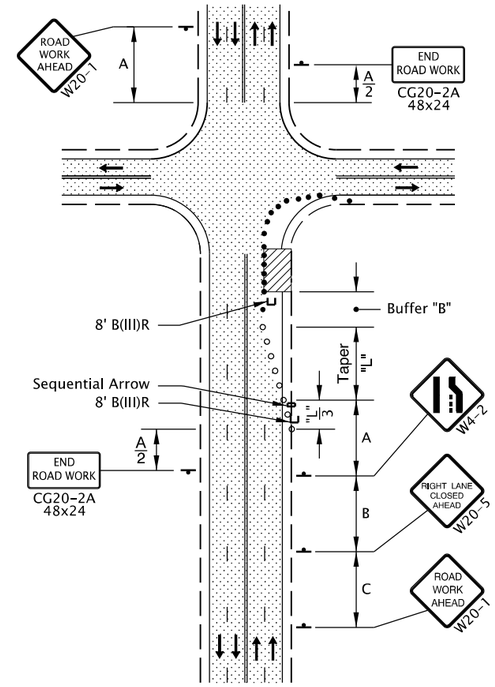
2-Lane, 2-Way
SHOULDER CLOSURE



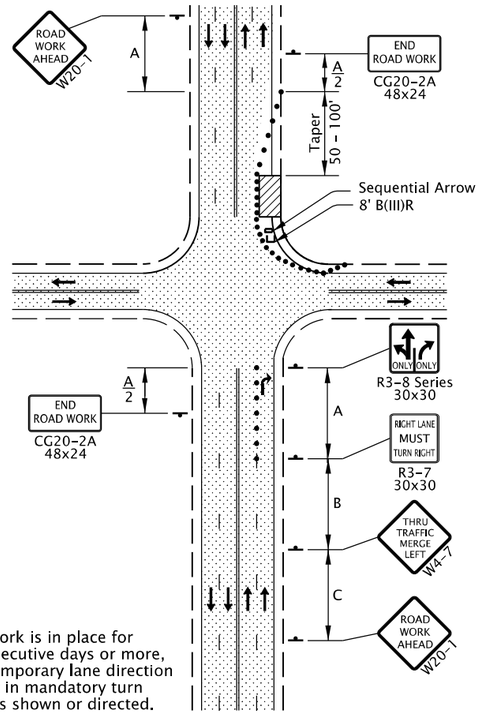
2-LANE, 1-WAY
RIGHT LANE CLOSURE



2-Lane, 2-Way
ONE LANE CLOSURE

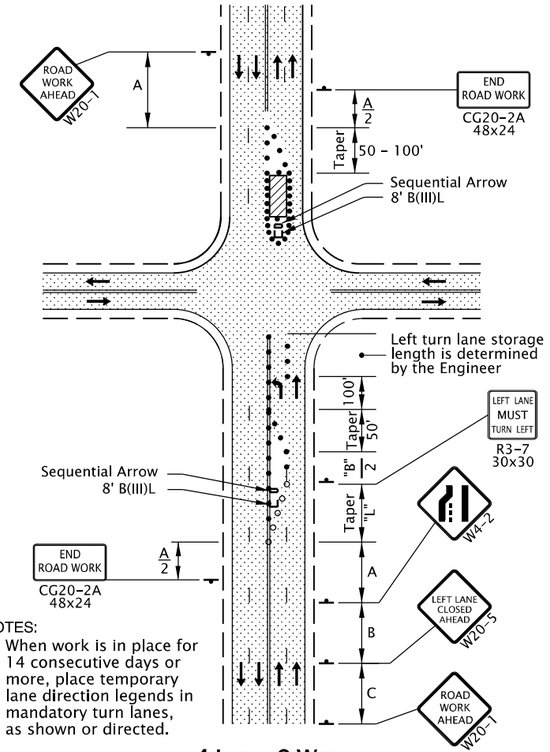


4-Lane, 2-Way
RIGHT LANE CLOSURE, NEAR SIDE



NOTES:
- When work is in place for 14 consecutive days or more, place temporary lane direction legends in mandatory turn lanes, as shown or directed.

4-Lane, 2-Way
RIGHT LANE CLOSURE, FAR SIDE



NOTES:
- When work is in place for 14 consecutive days or more, place temporary lane direction legends in mandatory turn lanes, as shown or directed.

4-Lane, 2-Way
LEFT LANE CLOSURE, FAR SIDE

GENERAL NOTES FOR ALL DETAILS:

- Additional Traffic Control Measures (TCM) may be required for all legs of the intersection.
- The "SIGNAL AHEAD" (W3-3a) sign may be substituted with the signal ahead symbol (W3-3) sign.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" on Dwg. TM800.
- For left lane or shoulder work, place TCD to close left lane or shoulder. Use "LEFT LANE CLOSED AHEAD" (W20-5) sign, "LEFT LANE ENDS" (W4-2L) symbol sign, or "LEFT SHOULDER CLOSED" (W21-5a) sign, where applicable.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Dwg. TM800.
- When a through road intersects within the work zone, place a "ROAD WORK AHEAD" (W20-1) sign in advance of the intersection at sign spacing A.
- Tubular markers may be used in lane closure tapers where posted speed is 40 mph or less.
- Where shoulder width is limited, Sequential Arrow may be placed within the lane closure taper.
- Place channelizing devices around intersection radii, business accesses and driveways at 10' spacing.
- Install a "BICYCLES ON ROADWAY" (CW11-1) sign in advance of the closure when a bike lane is closed, or when the shoulder is closed and bikes are expected.
- To be accompanied by Dwg. Nos. TM820, TM82, TM840 & 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

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

INTERSECTION WORK ZONE DETAILS

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 01-JUL-2022 | **TM841**

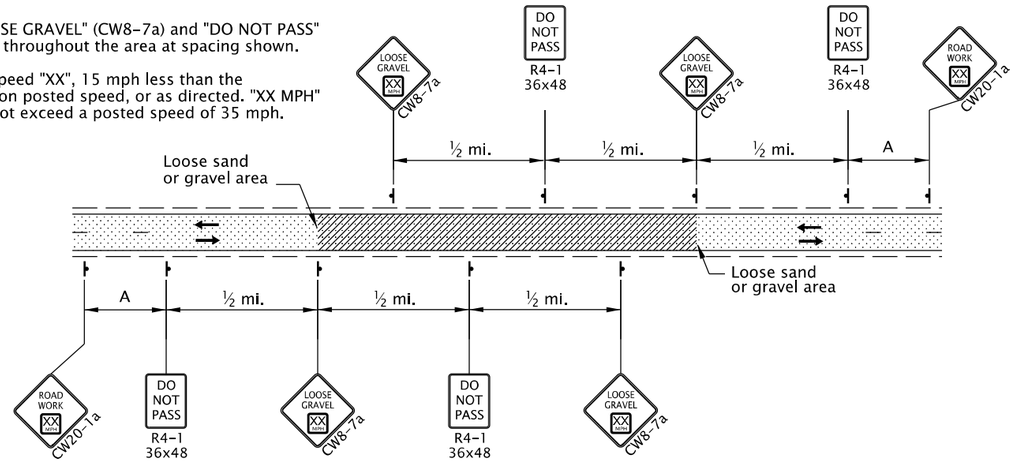
Effective Date: June 1, 2024 - November 30, 2024

01-JUL-2022

TM850.dgn

NOTE:

- Continue "LOOSE GRAVEL" (CW8-7a) and "DO NOT PASS" (R4-1) signing throughout the area at spacing shown.
- Use advisory speed "XX", 15 mph less than the pre-construction posted speed, or as directed. "XX MPH" placard shall not exceed a posted speed of 35 mph.

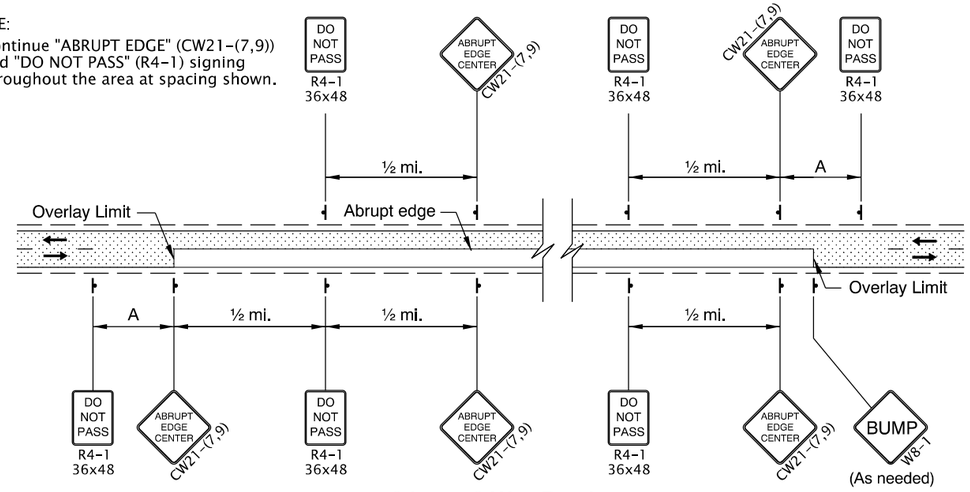


2-Lane, 2-Way Roadway

LOOSE GRAVEL IN ROADWAY SIGNING

NOTE:

- Continue "ABRUPT EDGE" (CW21-(7,9)) and "DO NOT PASS" (R4-1) signing throughout the area at spacing shown.

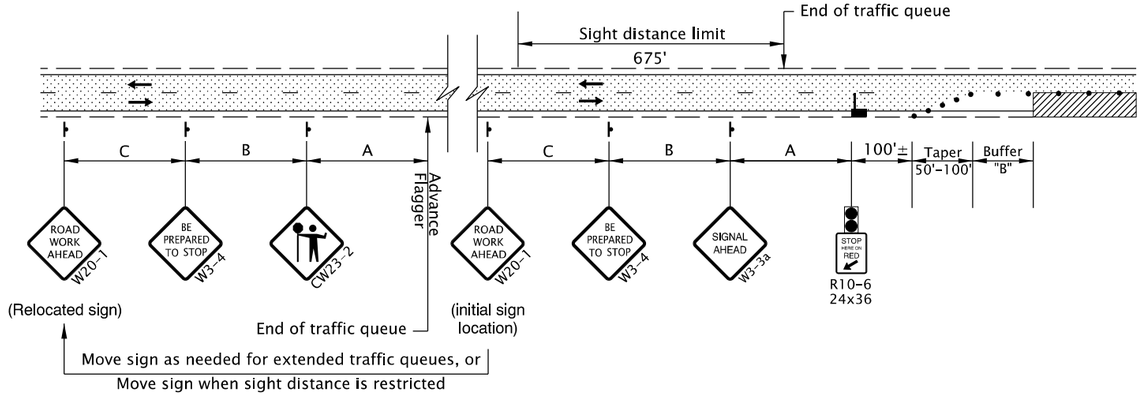


2-Lane, 2-Way Roadway

OVERLAY AREA SIGNING

NOTES:

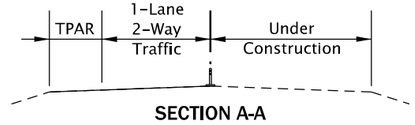
- Place Advance Flagger and additional signing when traffic queues extend beyond initial warning signing OR when sight distance is restricted.
- Relocate initial "ROAD WORK AHEAD" (W20-1) sign in advance of additional "BE PREPARED TO STOP" (W3-4) and Flagger Ahead (CW23-2) signs, as shown.
- Place additional Tubular Markers for Flagger and Advance Flagger Stations according to FLAGGER STATION DELINEATION detail.



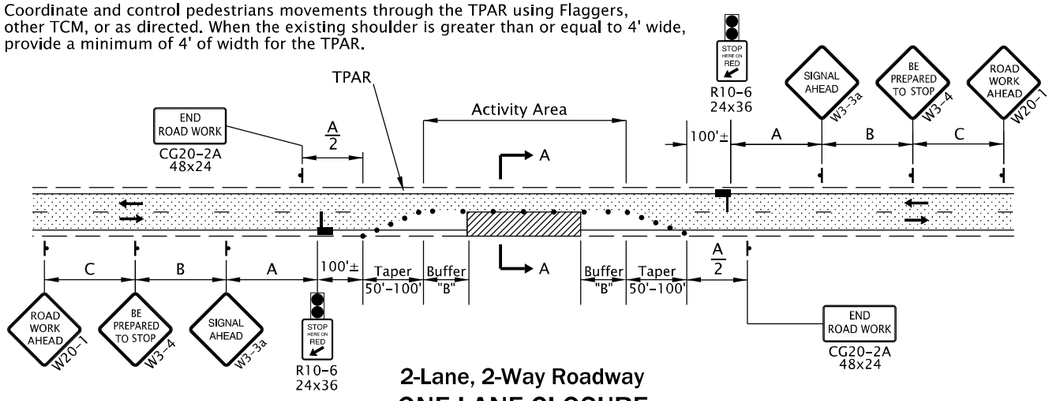
ADVANCE FLAGGER FOR EXTENDED TRAFFIC QUEUES

NOTE:

- 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.
- Include "WAIT FOR FLAGGER" (CR4-23) signs mounted on Type II Barricade located approx. 50' before each Flagger.
- 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.



SECTION A-A



2-Lane, 2-Way Roadway

ONE LANE CLOSURE

GENERAL NOTES FOR ALL DETAILS:

- The "SIGNAL AHEAD" (W3-3a) sign may be substituted with the Signal Ahead (W3-3) symbol sign.
- Cover existing passing zone signing, as directed.
- Install temporary striping as required.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" shown on Dwg. No. TM800.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Dwg. No. TM800.
- Install a "BICYCLES ON ROADWAY" (CW11-1) sign in advance of the closure when a bike lane is closed, or when the shoulder is closed and bikes are expected.
- At night, flagger stations shall be illuminated according to the FLAGGER STATION LIGHTING DELINEATION detail on Dwg No. TM800.
- To be accompanied by Dwg. Nos. TM820, TM821 & TM854.

Automated Flagging Assistance Device (AFAD)

• • • • • 28" Tubular Markers on 20' max. spacing for flagger tapers and stations

• • • 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacing.

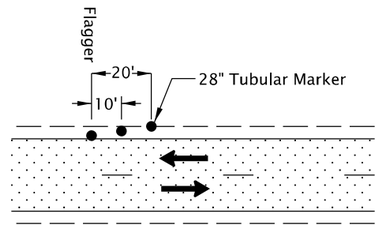
UNDER TRAFFIC

UNDER CONSTRUCTION

CONSTRUCTION UNDER TRAFFIC

NOTE:

- Use a minimum of 3 tubular markers in shoulder taper on 10' spacing for flagger station delineation.



FLAGGER STATION DELINEATION

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

2-LANE, 2-WAY ROADWAYS

2024

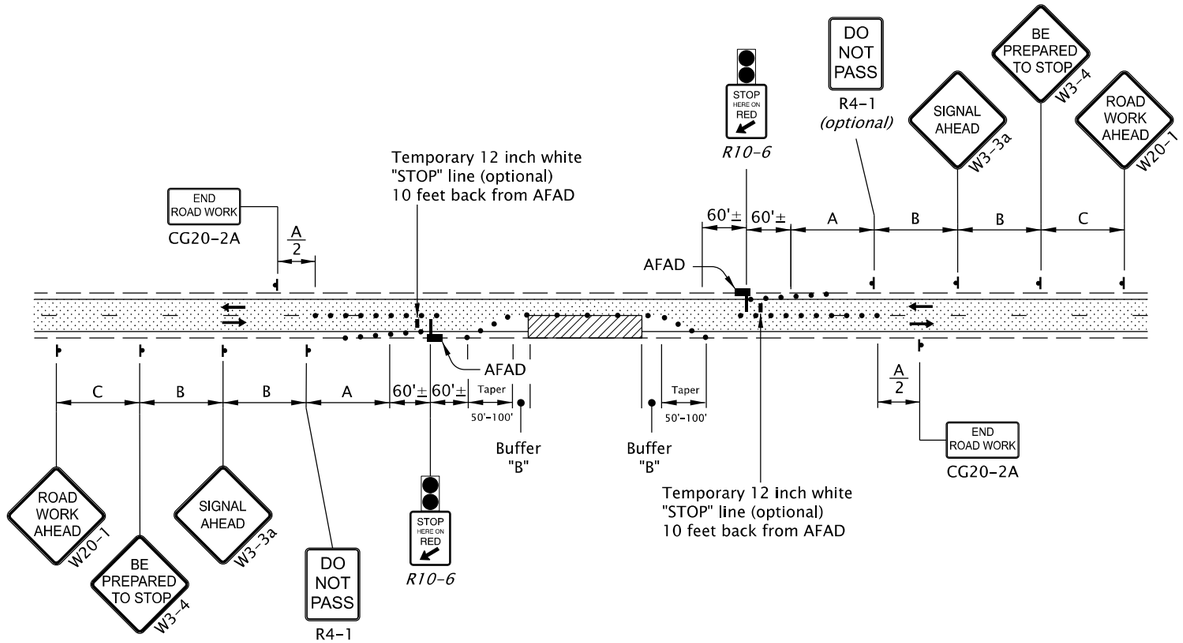
DATE	REVISION DESCRIPTION
01-2022	Added AFADs to drawing.

CALC. BOOK NO. N/A | SDR DATE 01-JUL-2022 | **TM850**

Effective Date: June 1, 2024 - November 30, 2024

NOTES:

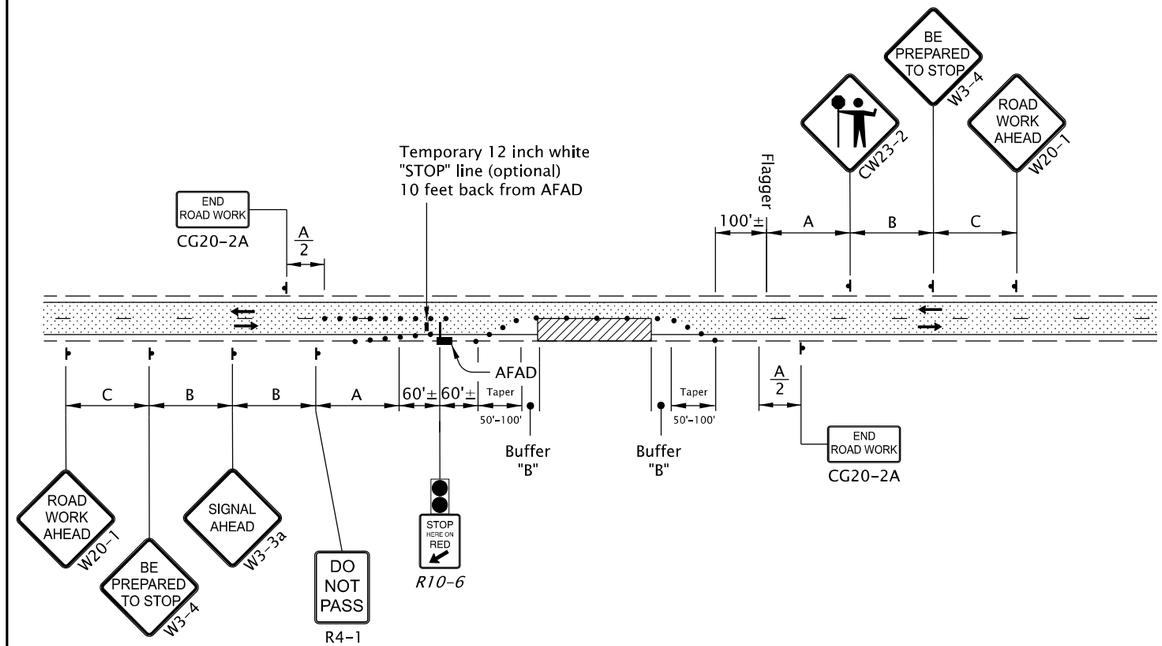
- An AFAD operator shall be provided for each AFAD. A single operator may not simultaneously operate two AFADs.



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:

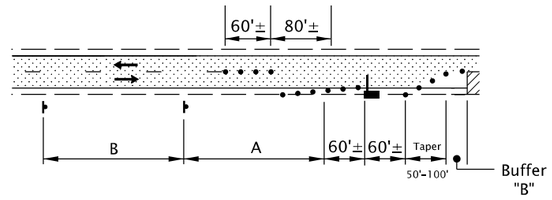
- Flagger station shall be delineated according to "FLAGGER STATION" detail shown on Standard Drawing TM800
- Bottom of lens housing shall be a minimum of 7 ft. above surface when mounted on shoulder and at least 17 ft. above any portion of the travel lane.
- The gate arm shall cover at least one half 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.
- Remove existing striping and install temporary striping as required.
- See "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Drg. TM800 for sign spacing A, B, and C.
- 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.

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

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

2-LANE, 2-WAY ROADWAYS

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 14-JUL-2023 | **TM854**

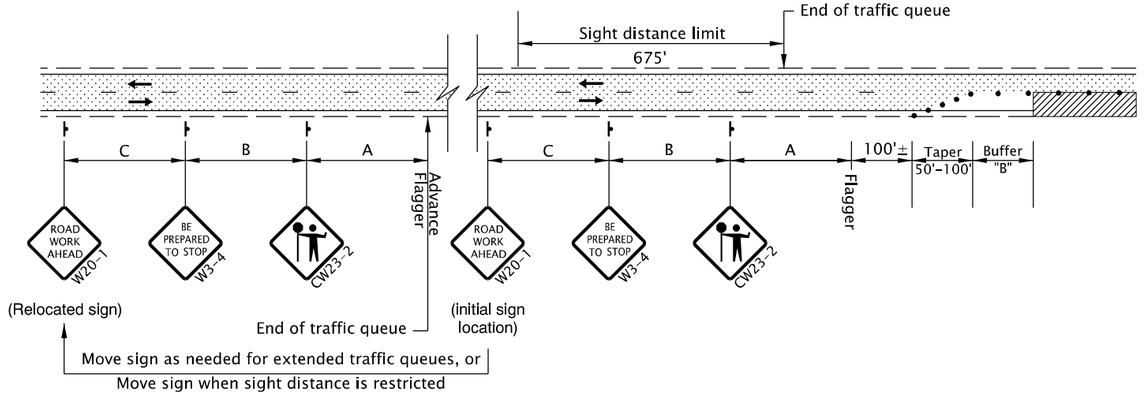
Effective Date: June 1, 2024 - November 30, 2024

14-JUL-2023

TM854.dgn

NOTES:

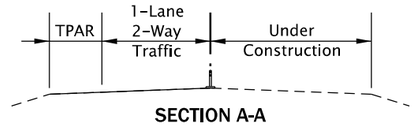
- Place Advance Flagger and additional signing when traffic queues extend beyond initial warning signing OR when sight distance is restricted.
- Relocate initial "ROAD WORK AHEAD" (W20-1) sign in advance of additional "BE PREPARED TO STOP" (W3-4) and Flagger Ahead (CW23-2) signs, as shown.
- Place additional Tubular Markers for Flagger and Advance Flagger Stations according to FLAGGER STATION DELINEATION detail.



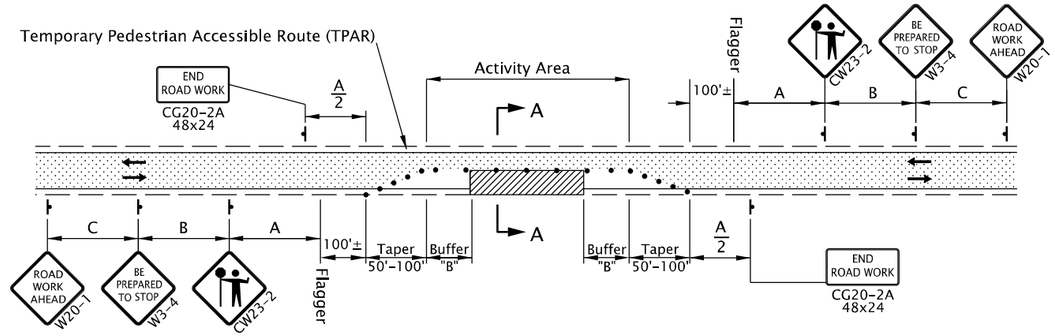
ADVANCE FLAGGER FOR EXTENDED TRAFFIC QUEUES

NOTE:

- 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.
- Include "WAIT FOR FLAGGER" (CR4-23) signs mounted on Type II Barricade located approx. 50' before each Flagger.
- 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.



SECTION A-A



2-Lane, 2-Way Roadway
ONE LANE CLOSURE

GENERAL NOTES FOR ALL DETAILS:

- This drawing is only intended to be used where an Automated Flagger Assistance Device (AFAD) cannot be utilized.
- The "FLAGGER" (CW23-2) symbol sign shall be used only in conjunction with the "BE PREPARED TO STOP" (W3-4) sign.
- Cover existing passing zone signing, as directed.
- Install temporary striping as required.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" shown on Dwg. No. TM800.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Dwg. No. TM800.
- Install a "BICYCLES ON ROADWAY" (CW11-1) sign in advance of the closure when a bike lane is closed, or when the shoulder is closed and bikes are expected.
- At night, flagger stations shall be illuminated according to the FLAGGER STATION LIGHTING DELINEATION detail on Dwg No. TM800.
- To be accompanied by Dwg. Nos. TM820 & TM821.

••••••••• 28" Tubular Markers on 10'max. spacing arround intersection radii.

• • • • • 28" Tubular Markers on 20' max. spacing for flagger tapers and stations

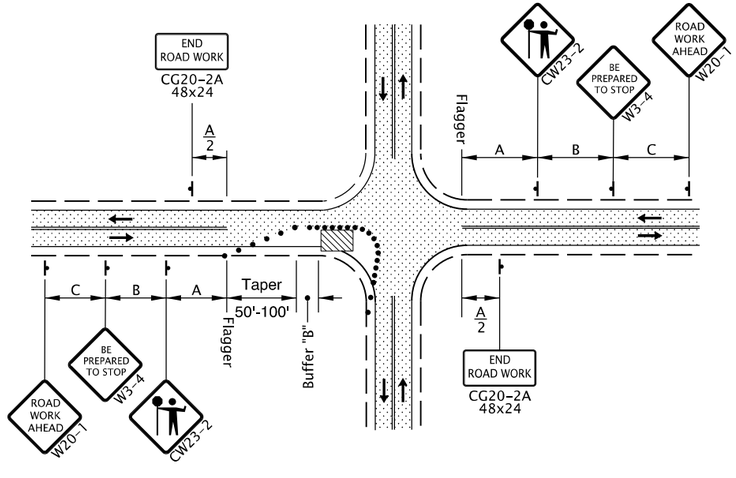
• • • 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacing.

UNDER TRAFFIC

UNDER CONSTRUCTION

NOTE:

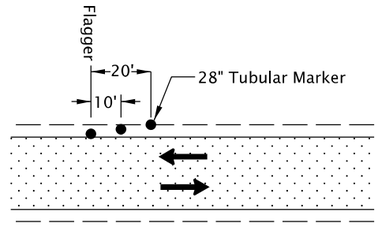
- Additional Traffic Control Measures (TCM) may be required for all legs of the intersection



2-Lane, 2-Way Roadway
ONE LANE CLOSURE, INTERSECTION

NOTE:

- Use a minimum of 3 tubular markers in shoulder taper on 10' spacing for flagger station delineation.



FLAGGER STATION DELINEATION

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

2-LANE, 2-WAY ROADWAYS

2024

DATE	REVISION DESCRIPTION

CALC. BOOK NO. N/A | SDR DATE 13-JAN-2023 | **TM855**

13-JAN-2023

TM855.dgn

Effective Date: June 1, 2024 - November 30, 2024