

JEFFERSON COUNTY, OREGON

NORTH UNIT MAIN CANAL - BEAR DRIVE BRIDGE REPLACEMENT

2026



JEFFERSON COUNTY OFFICIALS

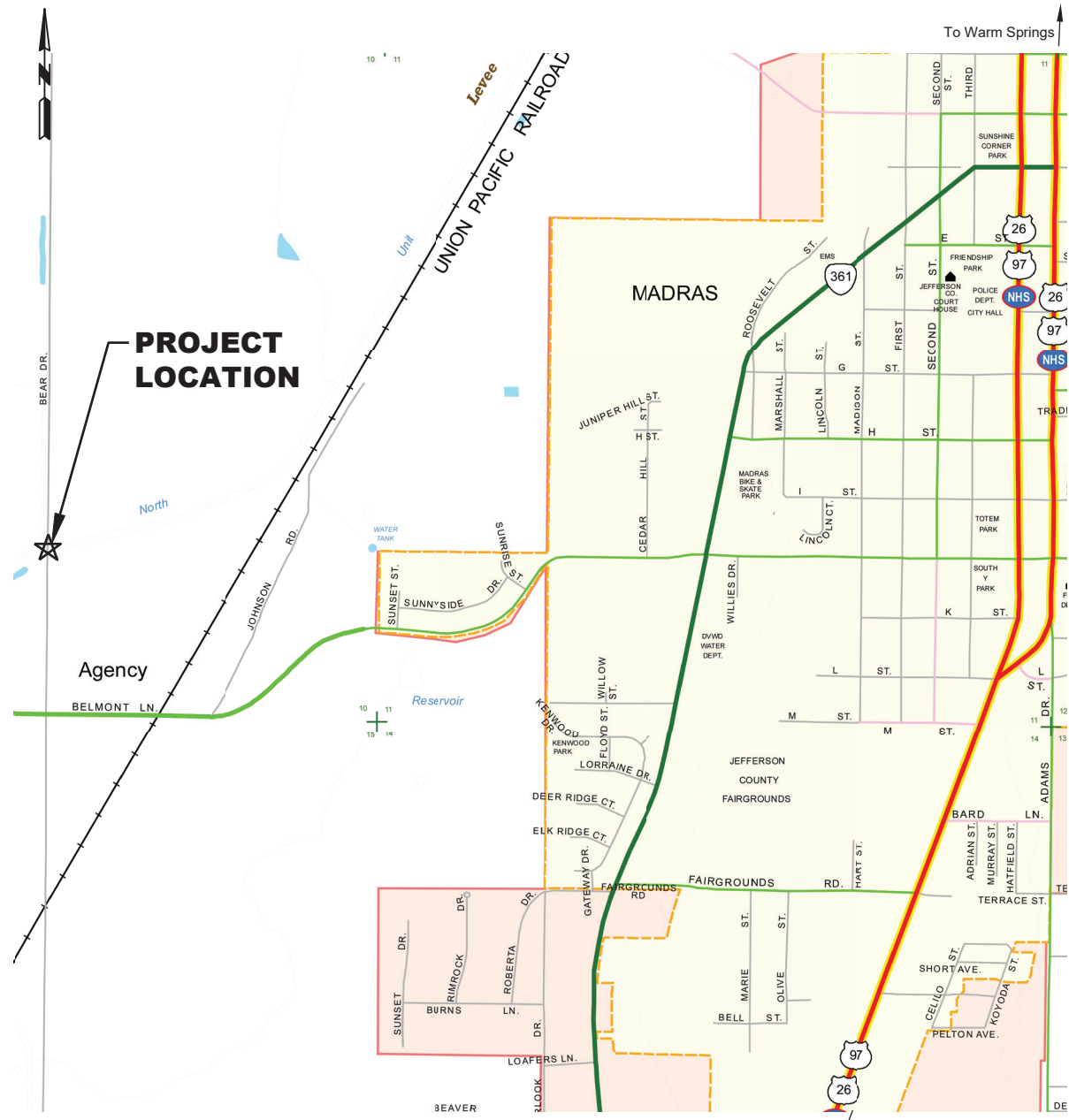
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 SETH TAYLOR, Commissioner
 KELLY SIMMELINK, Commissioner
 KATHERINE ZEMKE, County Clerk

JEFFERSON COUNTY PUBLIC WORKS

MATT POWLISON, Director
 DANNY ORTIZ, Supervisor

PROJECT FUNDED BY:

OREGON DEPARTMENT OF TRANSPORTATION'S
 LOCALLY DELIVERED
 "STATE-FUNDED LOCAL PROJECT PROGRAM"



VICINITY MAP
 N. T. S.

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RD701	DRAINAGE CURBS
RD810	BARBED AND WOVEN WIRE FENCES
RD1040	SEDIMENT FENCE
RD1070	CONCRETE TRUCK WASH OUT
TM500	PAVEMENT MARKING STANDARD DETAIL BLOCKS
TM570	TRAFFIC DELINEATORS
TM800	TABLES, ABRUPT EDGE AND PCMS DETAILS
TM820	TEMPORARY BARRICADES
TM821	TEMPORARY SIGN SUPPORTS
TM822	TEMPORARY SIGN SUPPORTS
TM840	CLOSURE DETAILS
TM850	2-LANE, 2-WAY ROADWAYS
TM854	2-LANE, 2-WAY ROADWAYS
TM870	BRIDGE CONSTRUCTION



3818 S.W. 21st Street, Suite 302 - Redmond, OR 97756 Ph: (541) 362-8682
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PLAN LEGEND

UTILITIES

	EXISTING	PROPOSED
WATER LINE	--- W --- W ---	6"W
VALVE	⊗	⊗
WATER METER	⊞	⊞
IRRIGATION	--- IRR ---	6" IRR
IRRIGATION VALVE	⊗	⊗
HOSE BIBB	⊗	⊗
CULVERT	--- --- --- ---	--- --- --- ---
OVERHEAD POWER	--- OHP --- OHP ---	--- OHP --- OHP ---
BURIED TELEPHONE	--- T --- T --- T ---	--- T --- T --- T ---
UTILITY POLE	○	●
GUY WIRE	┌───┐	┌───┐
TELEPHONE RISER	◇	◇

SITE SURVEY

	EXISTING	PROPOSED
INDEX CONTOUR	---750---	---750---
INTERMEDIATE CONTOUR	---749---	---749---
PROPERTY LINE/ RIGHT-OF-WAY CENTERLINE	--- --- ---	--- --- ---
EASEMENT LINE	--- --- ---	--- --- ---
MONUMENT	△	△
CONTROL POINT	⊙	⊙
FENCE LINE/GATE	--- X ---	--- X ---
CREEK/DITCH CENTERLINE	--- --- ---	--- --- ---
SIGN	□	□

GENERAL

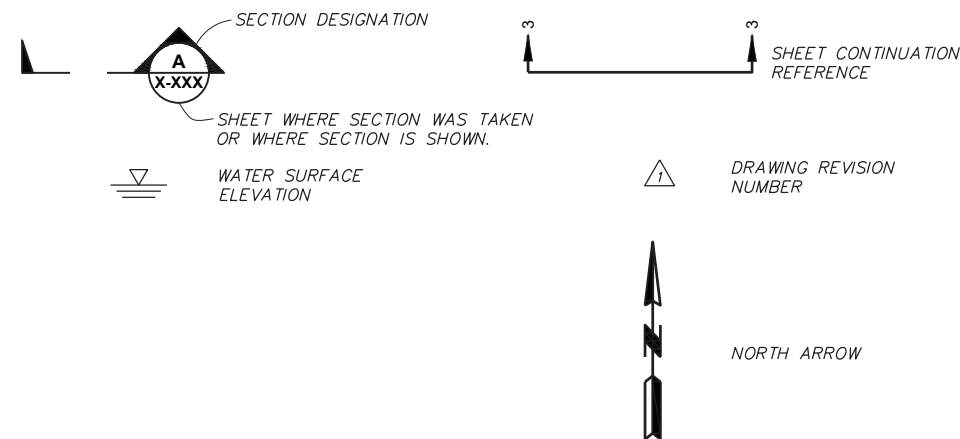
GENERAL NOTES

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND DRAWINGS.
- INFORMATION SHOWN ON THE DRAWINGS IS SCHEMATIC IN NATURE. THE RELATIVE LOCATION OF EXISTING FEATURES ARE APPROXIMATE ONLY AND IT SHOULD BE NOTED THAT SOME DISCREPANCIES AND OMISSIONS IN LOCATION, TYPE, AND SIZE WILL OCCUR. THE EXACT LOCATION OF EXISTING FEATURES WILL REQUIRE FIELD VERIFICATION IN AREAS WHERE CONFLICT MAY OCCUR. FEATURES SHOWN ARE FOR THE CONVENIENCE OF THE CONTRACTOR. THIS VERIFICATION WORK SHALL BE PERFORMED PRIOR TO PERFORMING ANY NEW WORK TO ENSURE THAT CONFLICTS WITH THE EXISTING FEATURES DO NOT OCCUR. ADJUSTMENTS TO THE LOCATION OF THE NEW IMPROVEMENTS OR RELOCATION OF EXISTING FEATURES MAY BE NECESSARY TO PREVENT CONFLICTS. ALL ADJUSTMENTS SHALL BE REVIEWED AND APPROVED BY THE ENGINEER. THIS WORK SHALL BE CONSIDERED INCIDENTAL AND NO ADDITIONAL PAYMENT WILL BE MADE.
- CONTRACTOR TO CALL ONE CALL LOCATE SERVICE PRIOR TO THE START OF WORK. 1-800-332-2344 OR 811.
- CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUIVALENT OR BETTER THAN EXISTED PRIOR TO CONSTRUCTION. ALL RESTORATION WORK SHALL BE CONSIDERED INCIDENTAL UNLESS SPECIFICALLY CALLED OUT OTHERWISE.
- CONTRACTOR SHALL REMOVE BRIDGE LOAD RATING SIGNS AND RETURN TO OWNER UPON COMPLETION OF PROJECT.

STREET AND CURB

PAVED STREET	1ST ST.	1ST ST.
GRAVEL DRIVEWAY/STREET	---	---

DRAFTING



DESIGNED BY	L. KEENAN/G. BANISTER	JOB NUMBER	756-06	DATE	March 2026
DRAWN BY	L. WILLHITE	ACAD FILE:	756-06-G-001.DWG		
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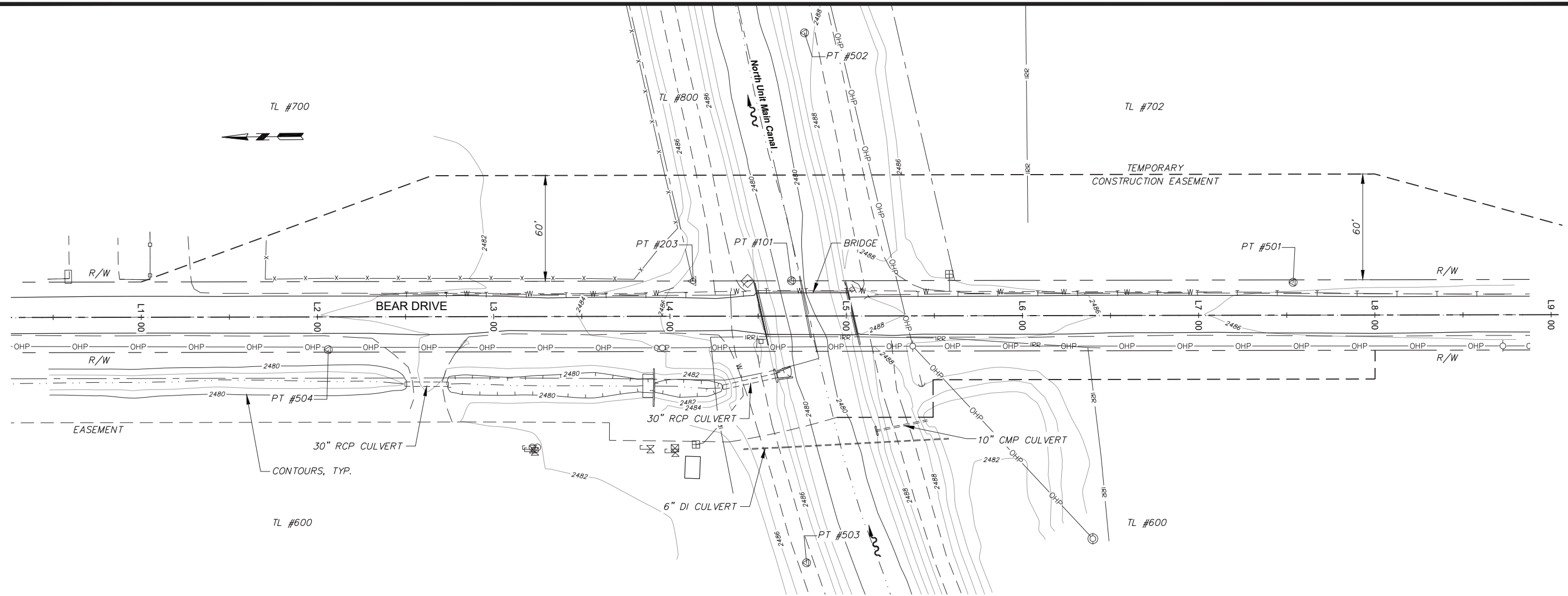
JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

LEGEND AND GENERAL NOTES

SHEET

G-001

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APA CONTROL POINTS			
NO.	NORTHING	EASTING	DESCRIPTION
101	350179.46	8030320.71	APA_H+MAG
501	349894.89	8030317.35	APA_RPC
502	350170.88	8030461.31	APA_RPC
503	350172.35	8030160.68	APA_RPC
504	350442.64	8030283.93	APA_RPC

NOTE
POINTS NOT SHOWN ON PLAN ARE OUTSIDE OF PROJECT LIMITS.

MONUMENTS	
NO.	DESCRIPTION
201	MON_2"BC
202	MON_2"BC
203	MON_YPC
204	MON_YPC

SURVEY DATUMS

HORIZONTAL: THE COORDINATES OF APA CONTROL POINTS #501-#504 REPRESENT THE OREGON COORDINATE SYSTEM-OREGON NORTH ZONE NAD83(CORS2011), EXPRESSED IN INTERNATIONAL FEET, EPSG CODE 6559 FOR REFERENCE, AS DETERMINED BY THE ORGN SOLUTIONS. THREE STATIC GPS OBSERVATIONS WERE REDUCED WITH THE NGS OPUS SYSTEM TO VERIFY ORGN SOLUTIONS. BEARINGS SHOWN ARE GRID BEARINGS. DISTANCES AND COORDINATES OF OTHER POINTS AT THE SITE ARE BASED ON GRID MEASUREMENTS.

VERTICAL: ELEVATIONS ARE A REPRESENTATION OF NAVD88 (GEOID 18) BASED ON AN ORGN SOLUTIONS AT APA #501-#504. A DIFFERENTIAL LEVEL LOOP TRAVERSED THROUGH ALL CONTROL POINTS BASED ON APA #501.

ESTIMATED ROADWAY EARTHWORK QUANTITIES		
CUT (C.Y.)	FILL (C.Y.)	BALANCE (C.Y.)
190	830	640

EARTHWORK NOTES

- THE QUANTITIES SHOWN ABOVE ARE GENERAL IN-PLACE ESTIMATES AND ARE SHOWN ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. ACTUAL QUANTITIES MAY VARY FROM THOSE SHOWN. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF THE ACTUAL QUANTITIES OF EARTHWORK REQUIRED TO COMPLETE THE WORK AS SHOWN. SEE SPECIAL PROVISIONS.
- QUANTITIES SHOWN INCLUDE EXCAVATION AND BACKFILL OF GENERAL EMBANKMENT ONLY.

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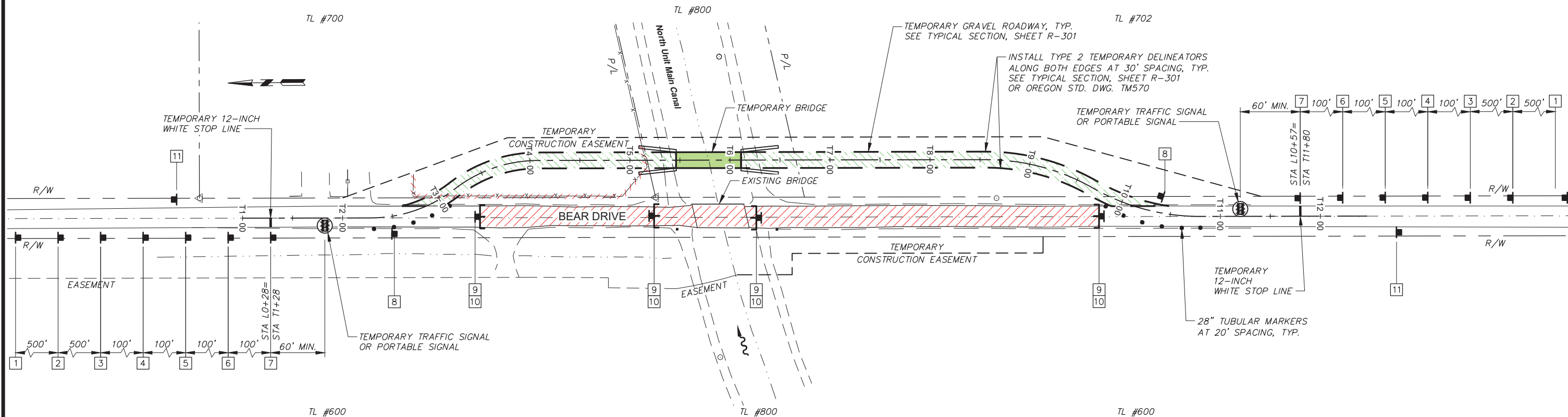
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NORTH UNIT MAIN CANAL - BEAR DRIVE
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EXISTING SITE PLAN AND SURVEY CONTROL

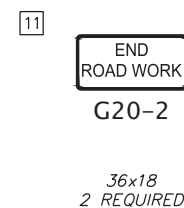
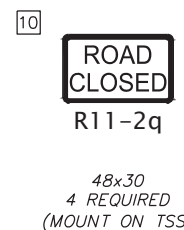
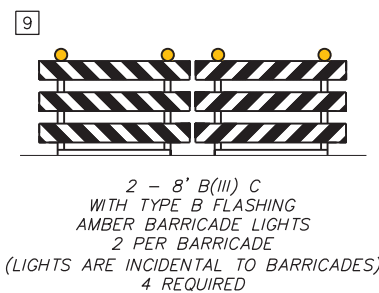
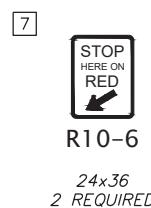
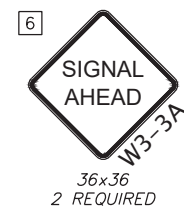
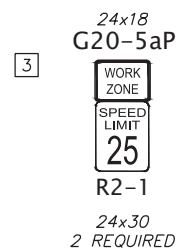
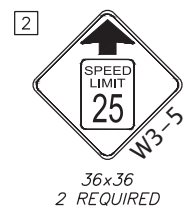
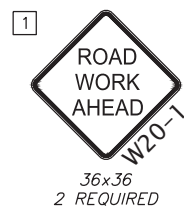
SHEET
G-101
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PLAN

LEGEND

- UNDER CONSTRUCTION
- UNDER TRAFFIC
- REMOVE EXISTING FENCE



TRAFFIC CONTROL NOTES

1. THIS PLAN SHOWS THE MINIMUM TRAFFIC CONTROL REQUIRED. PREPARE AND SUBMIT FOR APPROVAL A TRAFFIC CONTROL PLAN ADDRESSING ANY ADDITIONAL TRAFFIC CONTROL MEASURES THAT MAY BE NECESSARY TO ADEQUATELY DIRECT PEDESTRIAN AND VEHICULAR TRAFFIC FOR THE VARIOUS STAGES OF THE WORK.
2. ALL TRAFFIC CONTROL SIGNS AND DEVICES SHALL BE IN NEW OR LIKE NEW CONDITION.
3. SEE THE CURRENT EDITION OF THE FHWA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND OREGON STANDARD DRAWINGS TM800, TM820, TM821, TM822, TM840, TM850, TM854, AND TM870.

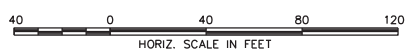
NOTE

FOR ADDITIONAL INFORMATION, SEE TEMPORARY DETOUR PLAN AND PROFILE SHEET R-101.

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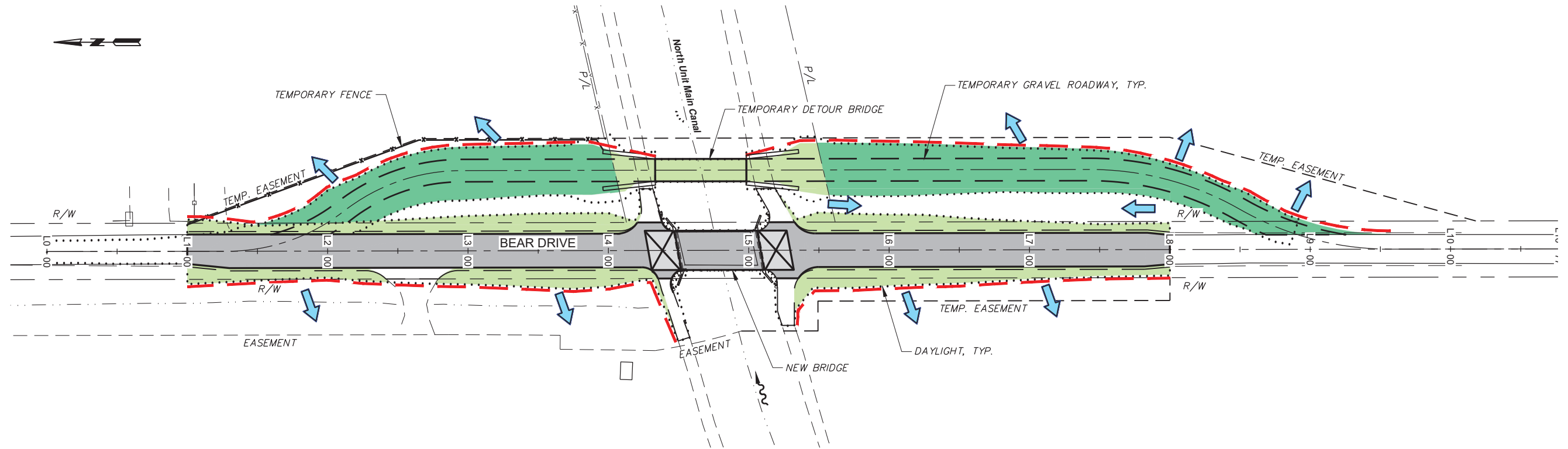
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JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

SHEET
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TRAFFIC CONTROL PLAN



EROSION CONTROL GENERAL NOTES

1. INSTALL SEDIMENTATION CONTROL FACILITIES SHOWN ON THE DRAWINGS PRIOR TO PERFORMING CONSTRUCTION ACTIVITIES. THE EROSION CONTROL FACILITIES SHOWN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED CONDITIONS. FACILITIES SHALL BE UPGRADED AS REQUIRED TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.
2. PERFORM REQUIRED MAINTENANCE ON THE SEDIMENTATION CONTROL FACILITIES ON A REGULAR BASIS DURING CONSTRUCTION IN ORDER TO MAINTAIN THE SEDIMENT CAPTURING AND FILTRATION CAPACITY OF THE FACILITIES. THIS SHALL INCLUDE BUT NOT BE LIMITED TO REMOVING SEDIMENT BUILD UP AS REQUIRED BY THE ENGINEER, REPAIRING AND/OR REPLACING DAMAGED FACILITIES AS NEEDED, REGULAR INSPECTION OF FACILITIES FOR GAPS, HOLES OR LOSS OF CONTROL FACILITIES AND REPLACEMENTS AS REQUIRED, AND INSPECTION, REPLACEMENT, REPAIR, ETC. AFTER PRECIPITATION EVENTS. THE INTEGRITY OF THE SEDIMENTATION CONTROL FACILITIES SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL CONSTRUCTION IS COMPLETED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY ADJUSTMENTS TO THE LOCATION OF SEDIMENTATION CONTROL FACILITIES AS REQUIRED IN ORDER TO PERFORM OTHER CONSTRUCTION ACTIVITIES IN CONFLICT. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR RELOCATING SEDIMENTATION CONTROL FACILITIES TO THEIR ORIGINAL POSITION IF REQUIRED ONCE CONFLICTING CONSTRUCTION IS COMPLETED.
4. CONTRACTOR SHALL CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCES AS REQUIRED TO PREVENT TRACKING OF MUD OR OTHER CONSTRUCTION DEBRIS ONTO EXISTING STREETS AND NEWLY PAVED AREAS.
5. THE CONTRACTOR SHALL ERECT AND MAINTAIN A CONCRETE WASHOUT FACILITY THROUGHOUT THE DURATION OF THE PROJECT. SEE OREGON STD DWG RD1070.
6. WATER THE SITE AS REQUIRED TO CONTROL WIND BLOWN DUST. PROVISIONS SHALL BE IN PLACE TO WATER THE SITE ON WEEKENDS AND HOLIDAYS SHOULD THE NEED ARISE. THE CONTRACTOR SHALL PROVIDE FLEET DEVELOPMENT, LLC WITH A CONTACT NAME AND PHONE NUMBER TO RECEIVE AND RESPOND TO BLOWING DUST COMPLAINTS DURING WORK AND OFF WORK HOURS.
7. ROUTINE MAINTENANCE INCLUDES REMOVING SEDIMENT BEHIND THE SEDIMENT CONTROL MEASURES BEFORE IT HAS ACCUMULATED TO ONE-THIRD OF THE ABOVE GROUND HEIGHT OF THE WATTLE OR FENCE.
8. AN OREGON DEQ NPDES 1200-C CONSTRUCTION STORMWATER GENERAL PERMIT HAS BEEN OBTAINED FOR THIS PROJECT.

LEGEND

- SEDIMENT CONTROL MEASURE
- DRAINAGE FLOW DIRECTION
- FINAL LANDSCAPING AND SITE STABILIZATION
- FINAL AGRICULTURAL SITE STABILIZATION

SURFACE RESTORATION NOTES

1. REMOVE TEMPORARY DETOUR ROADWAY FILL AND PREPARE AREAS DISTURBED FOR RETURN TO AGRICULTURAL USE.
2. REPAIR ALL DISTURBED AREAS OF THE CANAL WITH BENTONITE CANAL RESTORATION. SEE TYPICAL CANAL SECTION SHEET S-301.
3. GRADE CANAL ACCESS ROADS TO MATCH PREEXISTING CONDITIONS.
4. GRADE AND SEED EMBANKMENT SLOPES AS SHOWN ON THE TYPICAL ROADWAY SECTIONS.
5. SEDIMENT CONTROL MEASURES SHALL CONSIST OF STRAW WATTLES OR SEDIMENT FENCE, TYPE 1 PER OREGON STD DWG RD1040. THESE CONTROL MEASURES ARE TO STAY IN PLACE UNTIL VEGETATION IS ESTABLISHED. (OWNER TO REMOVE)

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REVISION	
BY	DATE



JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

EROSION CONTROL AND SURFACE RESTORATION PLAN

SHEET
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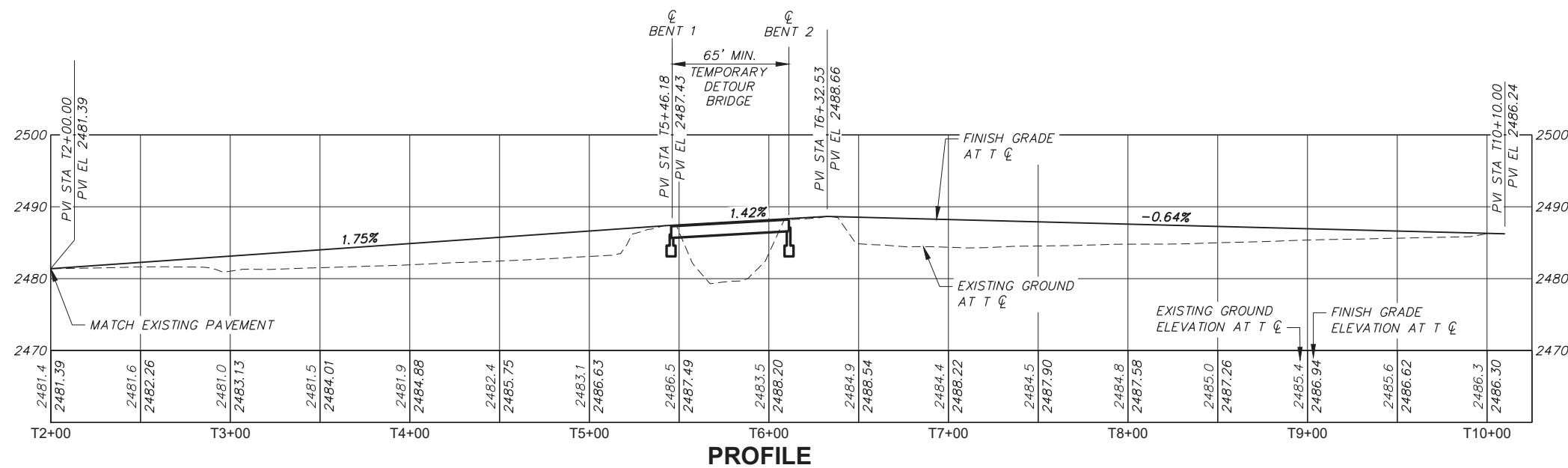
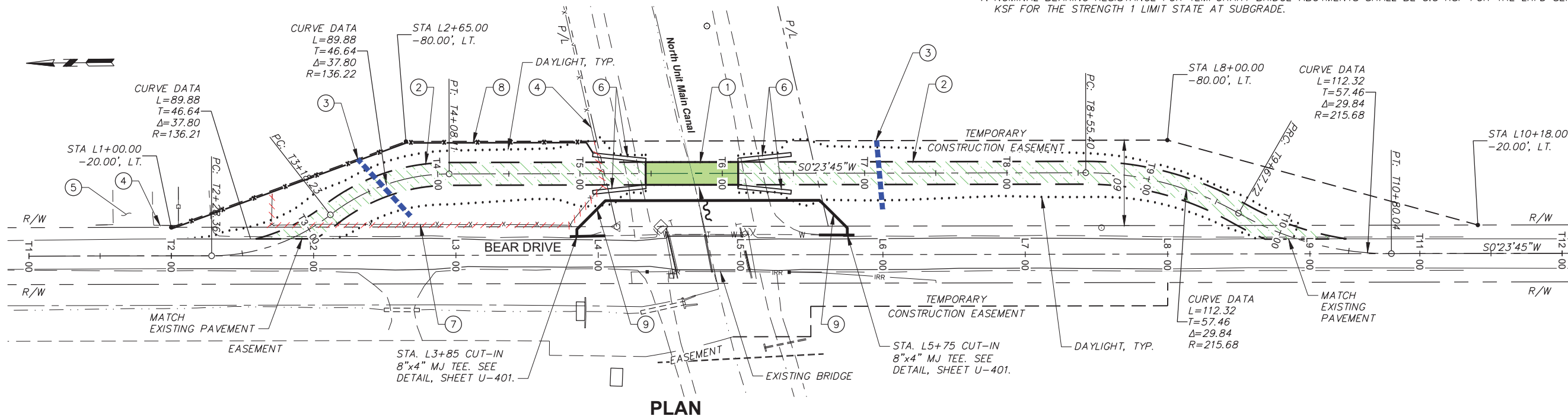
TEMPORARY DETOUR WORK ITEMS

- 1 CONSTRUCT AND REMOVE TEMPORARY DETOUR BRIDGE
SEE TYPICAL SECTION, SHEET R-301
- 2 CONSTRUCT AND REMOVE TEMPORARY GRAVEL DETOUR ROAD
SEE TYPICAL SECTION, SHEET R-301
- 3 INSTALL TEMPORARY 12" DRAINAGE CULVERT
- 4 PROTECT EXISTING FENCE
- 5 MAINTAIN ACCESS TO EXISTING DRIVEWAY

- 6 INSTALL TEMPORARY CONCRETE BARRIER, REFLECTORIZED DELINEATORS.
FLARE RATE = 9.5:1, 37.5' EACH LOCATION
- 7 REMOVE EXISTING FENCE
- 8 INSTALL AND REMOVE TEMPORARY FENCE, TYPE 2
SEE OREGON STD. DWG. RDB10
- 9 INSTALL TEMPORARY 4" PVC WATERLINE ON SURFACE.
RESTRAIN AS NEEDED. INSULATE AS NEEDED TO KEEP FROM FREEZING.
INSTALL TEMPORARY 2" PVC PHONE CONDUIT ON SURFACE.
SEE SHEET U-401

TEMPORARY DETOUR NOTES

1. WHEN DETOUR ROUTE IS NOT LONGER REQUIRED, ALL SURFACING, FILL, AND BRIDGE COMPONENTS SHALL BE COMPLETELY REMOVED AND THE SITE REGRADED TO MATCH PRE-CONSTRUCTION CONDITION. ALL DAMAGE IN THE CANAL SHALL RECEIVE BENTONITE CANAL RESTORATION. SEE TYPICAL CANAL SECTION, SHEET S-301.
2. GRADE SHOWN MAY BE MODIFIED TO ACCOMMODATE THE CONTRACTOR'S TEMPORARY BRIDGE. VERTICAL GRADE SHALL NOT EXCEED 8%.
3. THE TEMPORARY BRIDGE SHALL BE DESIGNED BY THE CONTRACTOR PER THE REQUIREMENTS OF THE AASHTO LRFD DESIGN SPECIFICATIONS 2020 EDITION. LIVE LOAD USED FOR THE DESIGN SHALL BE 75% OF HL-93.
4. BRIDGE LENGTH SHOWN IS THE MINIMUM REQUIRED. MINIMUM CLEAR WIDTH OF BRIDGE (RAIL TO RAIL) SHALL BE 16 FEET. THE LOW CHORD OF THE TEMPORARY BRIDGE SHALL BE NO LOWER THAN ELEVATION 2486.31.
5. BRIDGE RAIL SHALL MEET AASHTO TEST LEVEL 2 REQUIREMENTS.
6. PILE DRIVING FOR TEMPORARY BRIDGE ABUTMENTS WILL NOT BE ALLOWED.
7. NOMINAL BEARING RESISTANCE FOR TEMPORARY BRIDGE ABUTMENTS SHALL BE 5.5 KSF FOR THE LRFD SERVICE 1 LIMIT STATE AND 8.5 KSF FOR THE STRENGTH 1 LIMIT STATE AT SUBGRADE.



ESTIMATED DETOUR EARTHWORK QUANTITIES		
CUT (C.Y.)	FILL (C.Y.)	BALANCE (C.Y.)
50	1,170	1,120

EARTHWORK NOTES

1. THE QUANTITIES SHOWN ABOVE ARE GENERAL IN-PLACE ESTIMATES AND ARE SHOWN ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. ACTUAL QUANTITIES MAY VARY FROM THOSE SHOWN. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF THE ACTUAL QUANTITIES OF EARTHWORK REQUIRED TO COMPLETE THE WORK SHOWN. SEE SPECIAL PROVISIONS.
2. QUANTITIES SHOWN INCLUDE EXCAVATION AND BACKFILL OF GENERAL EMBANKMENT ONLY.

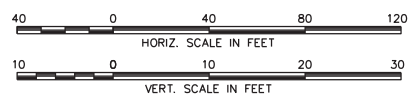
LEGEND

---X---X---X---X--- REMOVE EXISTING FENCE

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BRIDGE REPLACEMENT

TEMPORARY DETOUR PLAN AND PROFILE

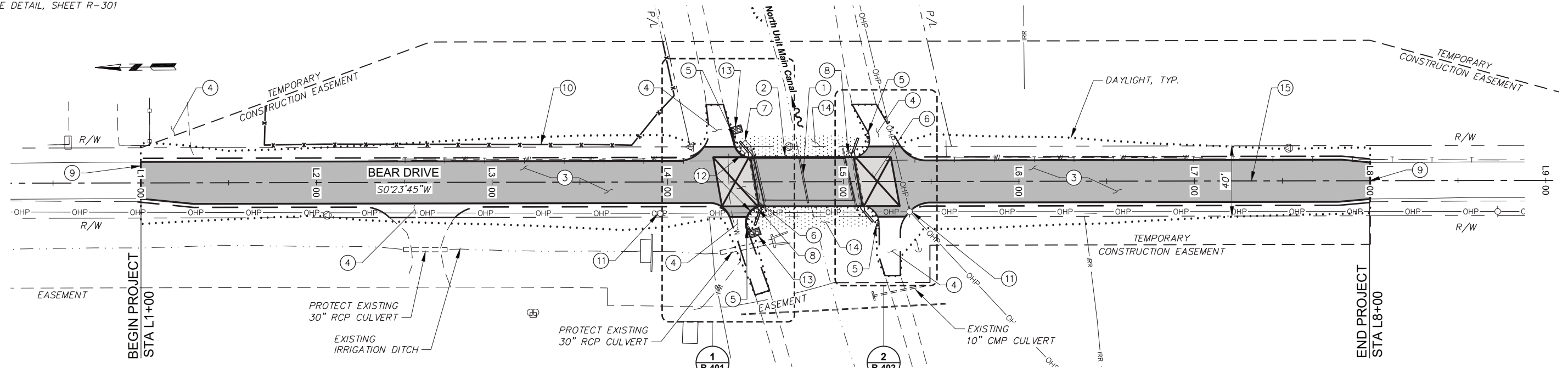
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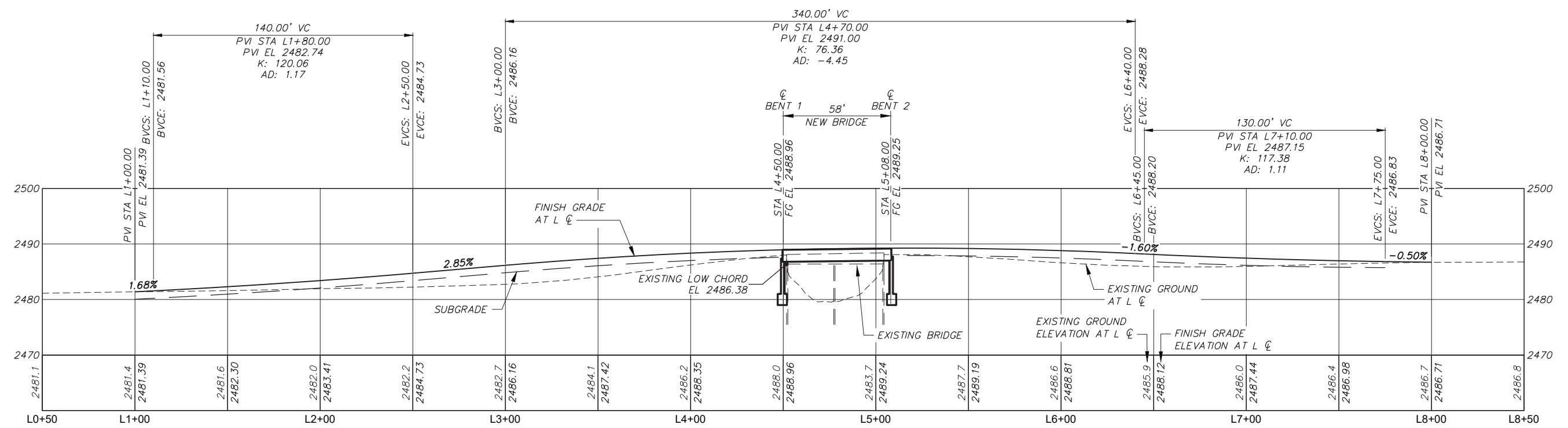
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WORK ITEMS

- ① REMOVE EXISTING TIMBER AND CONCRETE BRIDGE NO. 31C83, INCLUDING FOOTINGS AND PIER
- ② CONSTRUCT NEW 58'x28' WIDE STRUCTURE BRIDGE NO. 24453 FOR DETAILS, SEE SHEETS S-101 THRU S-601
- ③ REMOVE EXISTING ACP, CONSTRUCT NEW ROADWAY SEE TYPICAL SECTION, SHEET R-301
- ④ CONSTRUCT DRIVEWAY APPROACH SEE DETAIL, SHEET R-301
- ⑤ CONSTRUCT GUARDRAIL SEE DETAILS, SHEETS R-401 AND R-402
- ⑥ CONSTRUCT BRIDGE APPROACH SLAB SEE OREGON STD. DWG. BR165
- ⑦ RELOCATE EXISTING TELEPHONE RISER (BY OTHERS)
- ⑧ REMOVE EXISTING SIGN
- ⑨ SAWCUT AND MATCH EXISTING PAVEMENT
- ⑩ REMOVE AND REBUILD TYPE 1-5W FENCE, AS REQUIRED SEE OREGON STD. DWG. RD810
- ⑪ RELOCATE OVERHEAD UTILITY LINES AND POLES (BY OTHERS)
- ⑫ CONSTRUCT CONCRETE DRAINAGE CURB SEE DETAIL, SHEET R-401 SEE OREGON STD. DWG. RD701
- ⑬ CONSTRUCT ARMORED SLOPE DETAIL, SHEET R-302
- ⑭ INSTALL BENTONITE CANAL RESTORATION SEE TYPICAL CANAL SECTION, SHEET S-301
- ⑮ DOCUMENT EXISTING DOUBLE YELLOW AND NO PASS LEFT CENTER STRIPING STATIONS PRIOR TO CONSTRUCTION. AFTER PAVING, REAPPLY CENTERLINE STRIPING AT THE SAME STATIONING IN ACCORDANCE WITH THE SPECIAL PROVISIONS AND OREGON STD. DWG. TM500



PLAN



PROFILE

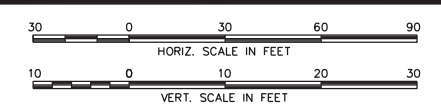
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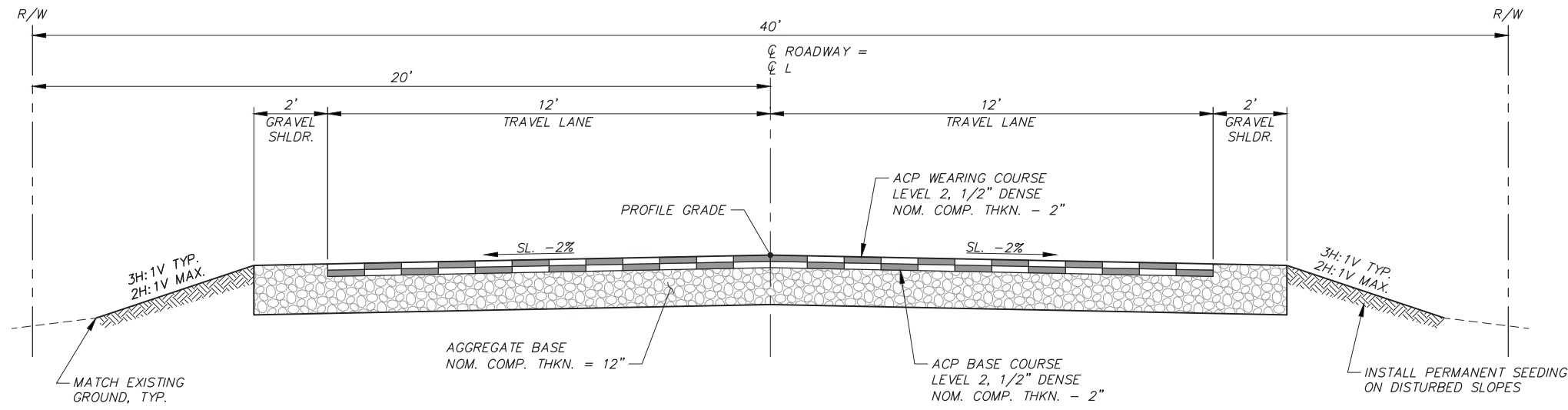
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DRAWN BY	L. WILLHITE
REVIEWED BY	E. ZITTERKOPF

REVISION	BY	DATE

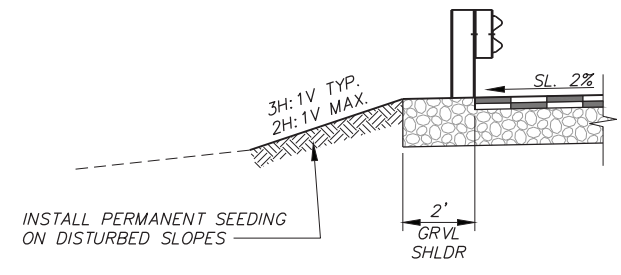
JOB NUMBER: 756-06 DATE: March 2026
 ACAD FILE: 756-06-R-102.DWG
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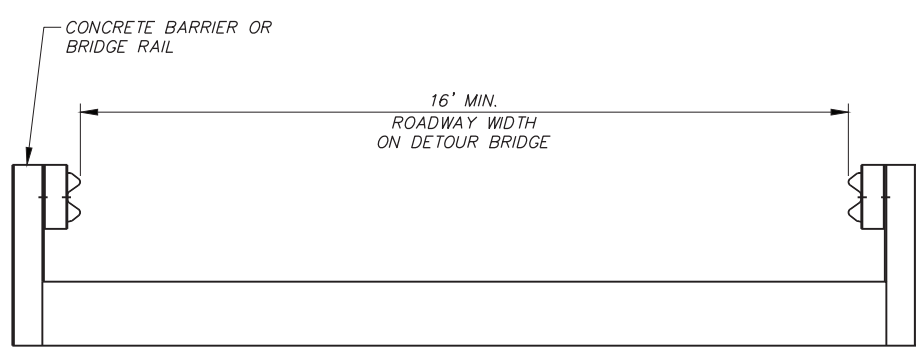
JEFFERSON COUNTY, OREGON
 NORTH UNIT MAIN CANAL - BEAR DRIVE
 BRIDGE REPLACEMENT
 ROADWAY
 PLAN AND PROFILE



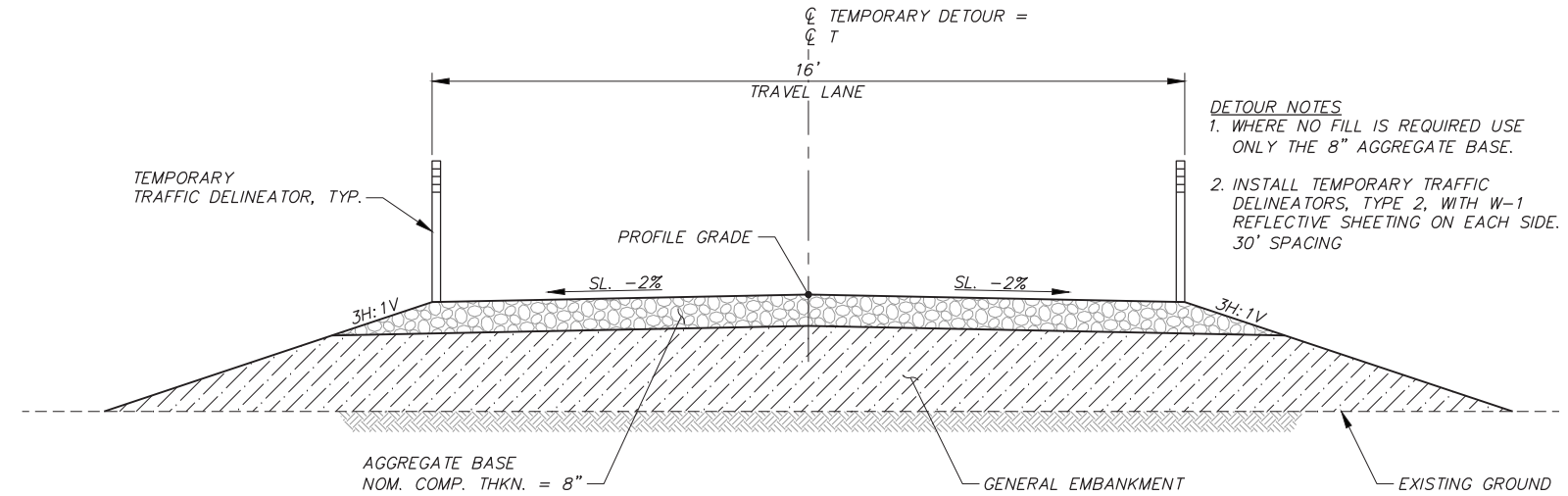
ROADWAY TYPICAL SECTION
 STA L1+00 TO STA L4+31
 STA L5+27 TO STA L8+00



GUARDRAIL TYPICAL SECTION

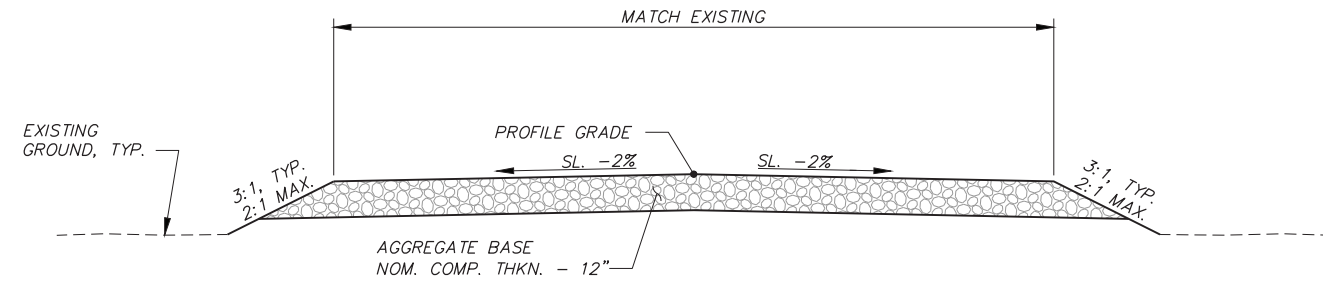


TEMPORARY BRIDGE TYPICAL SECTION



TEMPORARY DETOUR TYPICAL SECTION
 STA T2+00 TO STA T5+46
 STA T6+11 TO STA T10+10

NOTE
 SLOPES FOR ALL SECTIONS SHALL BE 3H:1V. 2H:1V WILL BE ALLOWED ONLY WHERE NECESSARY TO STAY WITHIN RIGHT-OF-WAY OR AVOID CONFLICTS.

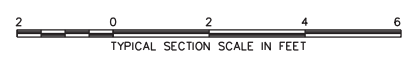


DRIVEWAY APPROACH TYPICAL SECTION

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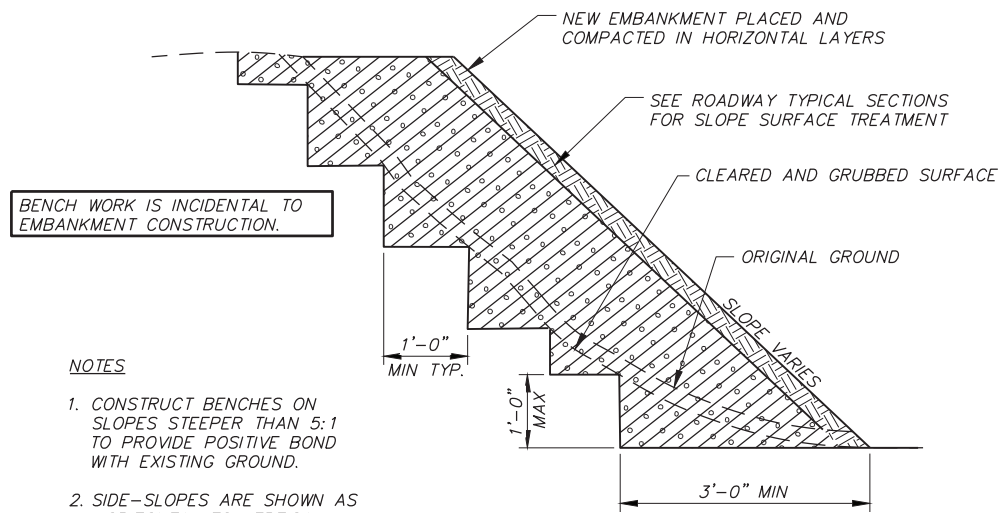


DESIGNED BY: L. KEENAN/G. BANISTER	JOB NUMBER: 756-06	DATE: March 2026
DRAWN BY: L. WILLHITE	ACAD FILE: 756-06-R-301.DWG	
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JEFFERSON COUNTY, OREGON
 NORTH UNIT MAIN CANAL - BEAR DRIVE
 BRIDGE REPLACEMENT
 ROADWAY
 TYPICAL SECTION I

SHEET
R-301
 7 OF 25



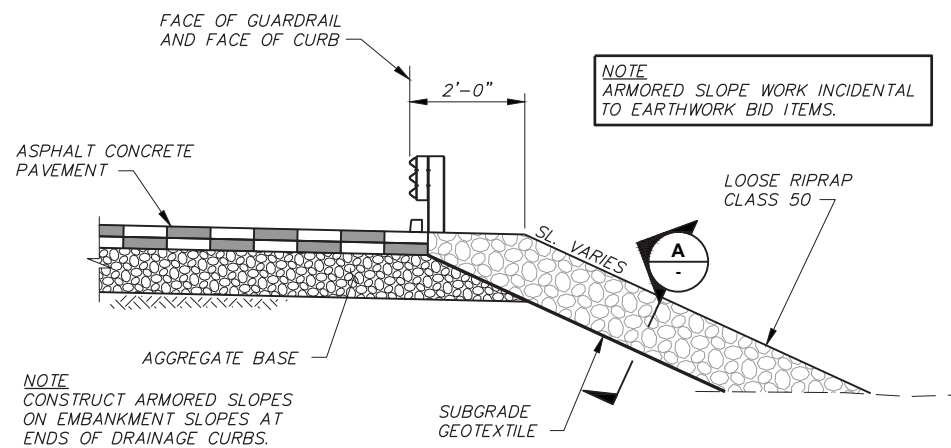
BENCH WORK IS INCIDENTAL TO EMBANKMENT CONSTRUCTION.

NOTES

1. CONSTRUCT BENCHES ON SLOPES STEEPER THAN 5:1 TO PROVIDE POSITIVE BOND WITH EXISTING GROUND.
2. SIDE-SLOPES ARE SHOWN AS HORIZONTAL TO VERTICAL.

STANDARD EMBANKMENT WIDENING CONSTRUCTION

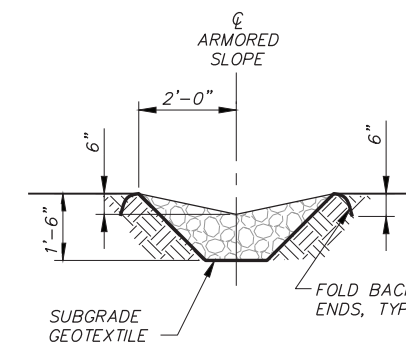
NTS



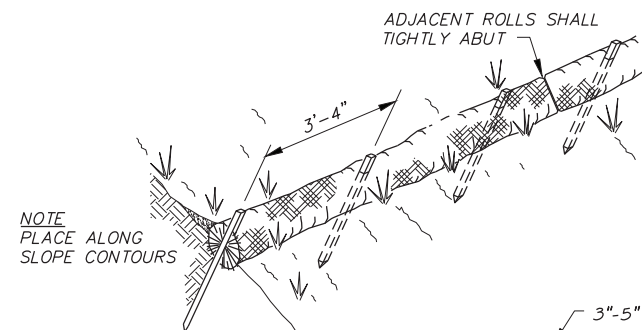
TYPICAL SECTION

ARMORED SLOPE

NTS

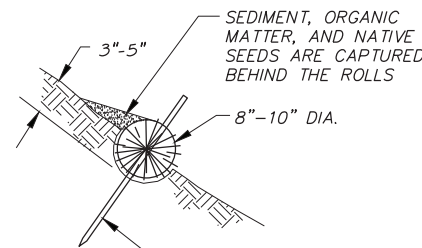


SECTION A



SLOPE	SPACING
> 1:1	5'
2:1 - 1:1	10'
4:1 - 2:1	20'
6:1 - 4:1	25'
< 6:1	30'

NOTE
STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3"-5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.



INSTALL WITH 18" TO 24" 1x1 WOOD STAKES. DRIVE STAKES UNTIL 2-3" REMAIN EXPOSED. INSTALL STAKES PERPENDICULAR TO SLOPE FACE.

STRAW WATTLE

NTS



DESIGNED BY	L. KEENAN/G. BANISTER	JOB NUMBER	756-06	DATE	March 2026
DRAWN BY	L. WILLHITE	ACAD FILE:	756-06-R-302.DWG		
REVISION		REVIEWED BY	E. ZITTERKOPF		



JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

ROADWAY
TYPICAL SECTIONS II & DETAILS

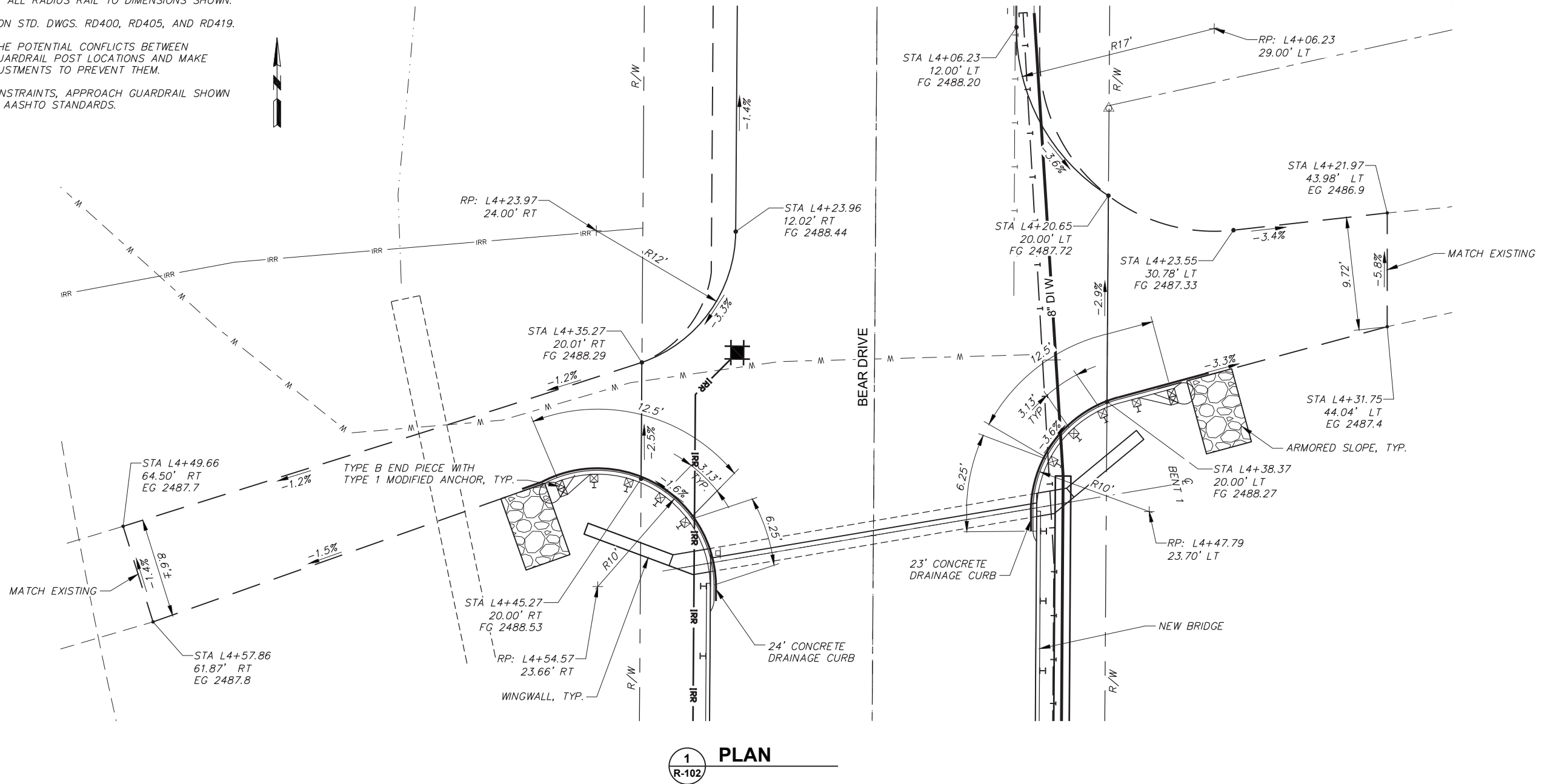
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R-302

8 OF 25

GENERAL SHEET NOTES

- BRIDGE RAIL ENDS TO RECEIVE GUARDRAIL CONNECTION PLATE AND THRIE-BEAM TERMINAL CONNECTOR. SEE OREGON STD. DWGS. BR230 AND RD417.
- USE TYPE 4 GUARDRAIL (THRIE BEAM). USE 2 NESTED RAIL ELEMENTS FOR THE FIRST 6.25' AT EACH BRIDGE END.
- PLACE RADIUS IDENTIFICATION PLATE. SEE OREGON STD. DWG. RD415.
- SHOP FABRICATE ALL RADIUS RAIL TO DIMENSIONS SHOWN.
- ALSO SEE OREGON STD. DWGS. RD400, RD405, AND RD419.
- BE AWARE OF THE POTENTIAL CONFLICTS BETWEEN UTILITIES AND GUARDRAIL POST LOCATIONS AND MAKE NECESSARY ADJUSTMENTS TO PREVENT THEM.
- DUE TO SITE CONSTRAINTS, APPROACH GUARDRAIL SHOWN DOES NOT MEET AASHTO STANDARDS.



1 PLAN
R-102

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DRAWN BY	L. WILLHITE	ACAD FILE:	756-06-R-401.DWG		
REVIEWED BY	E. ZITTERKOPF				



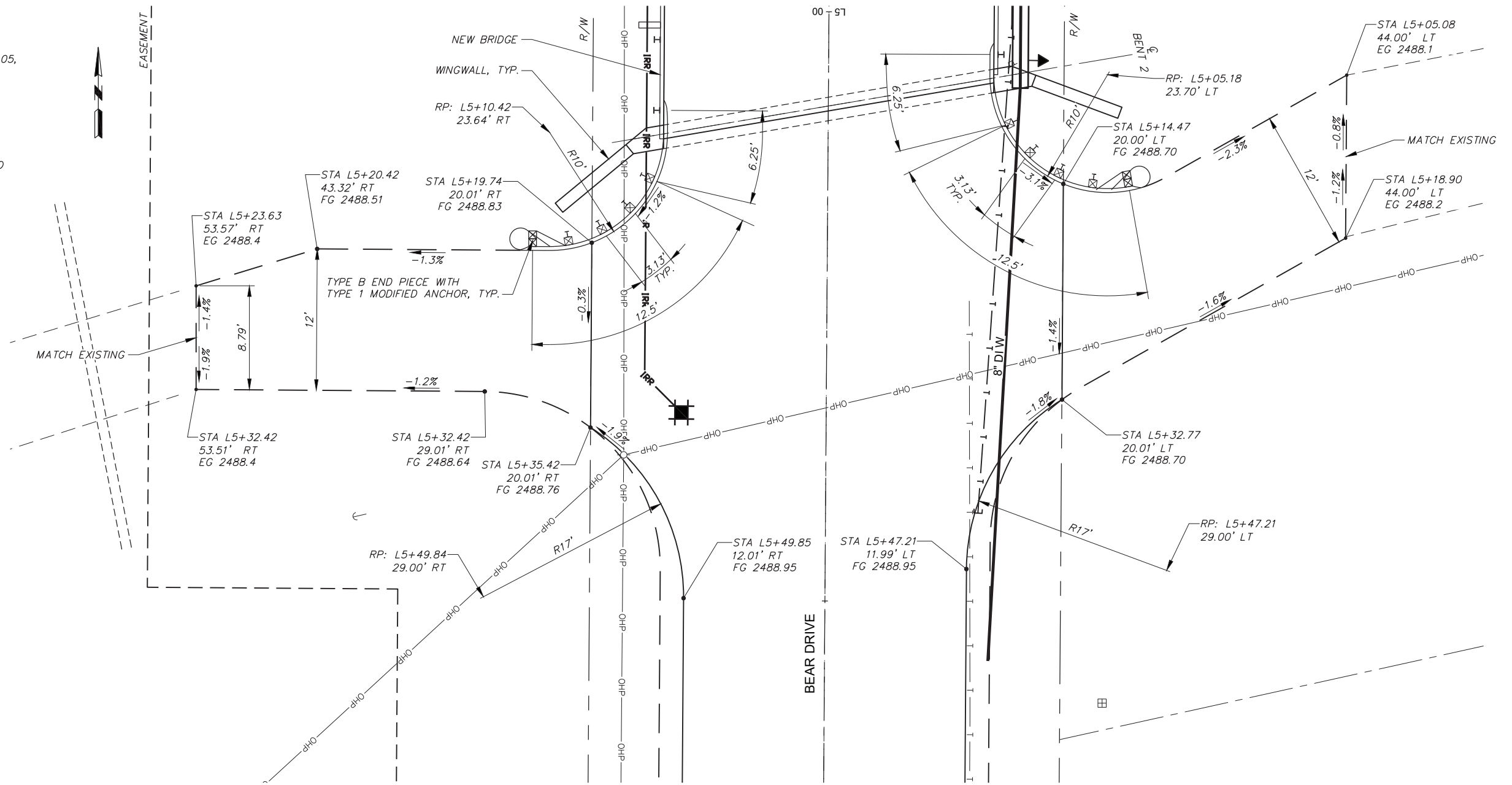
JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

ROADWAY
GUARDRAIL APPROACH DETAILS I

SHEET
R-401
9 OF 25

GENERAL SHEET NOTES

- BRIDGE RAIL ENDS TO RECEIVE GUARDRAIL CONNECTION PLATE AND THREE-BEAM TERMINAL CONNECTOR. SEE OREGON STD. DWGS. BR230 AND RD417.
- USE TYPE 4 GUARDRAIL (THREE BEAM). USE 2 NESTED RAIL ELEMENTS FOR THE FIRST 6.25' AT EACH BRIDGE END.
- PLACE RADIUS IDENTIFICATION PLATE. SEE OREGON STD. DWG. RD415.
- SHOP FABRICATE ALL RADIUS RAIL TO DIMENSIONS SHOWN.
- ALSO SEE OREGON STD. DWGS. RD400, RD405, AND RD419.
- BE AWARE OF THE POTENTIAL CONFLICTS BETWEEN UTILITIES AND GUARDRAIL POST LOCATIONS AND MAKE NECESSARY ADJUSTMENTS TO PREVENT THEM.
- DUE TO SITE CONSTRAINTS, APPROACH GUARDRAIL SHOWN DOES NOT MEET AASHTO STANDARDS.



1 PLAN
R-102

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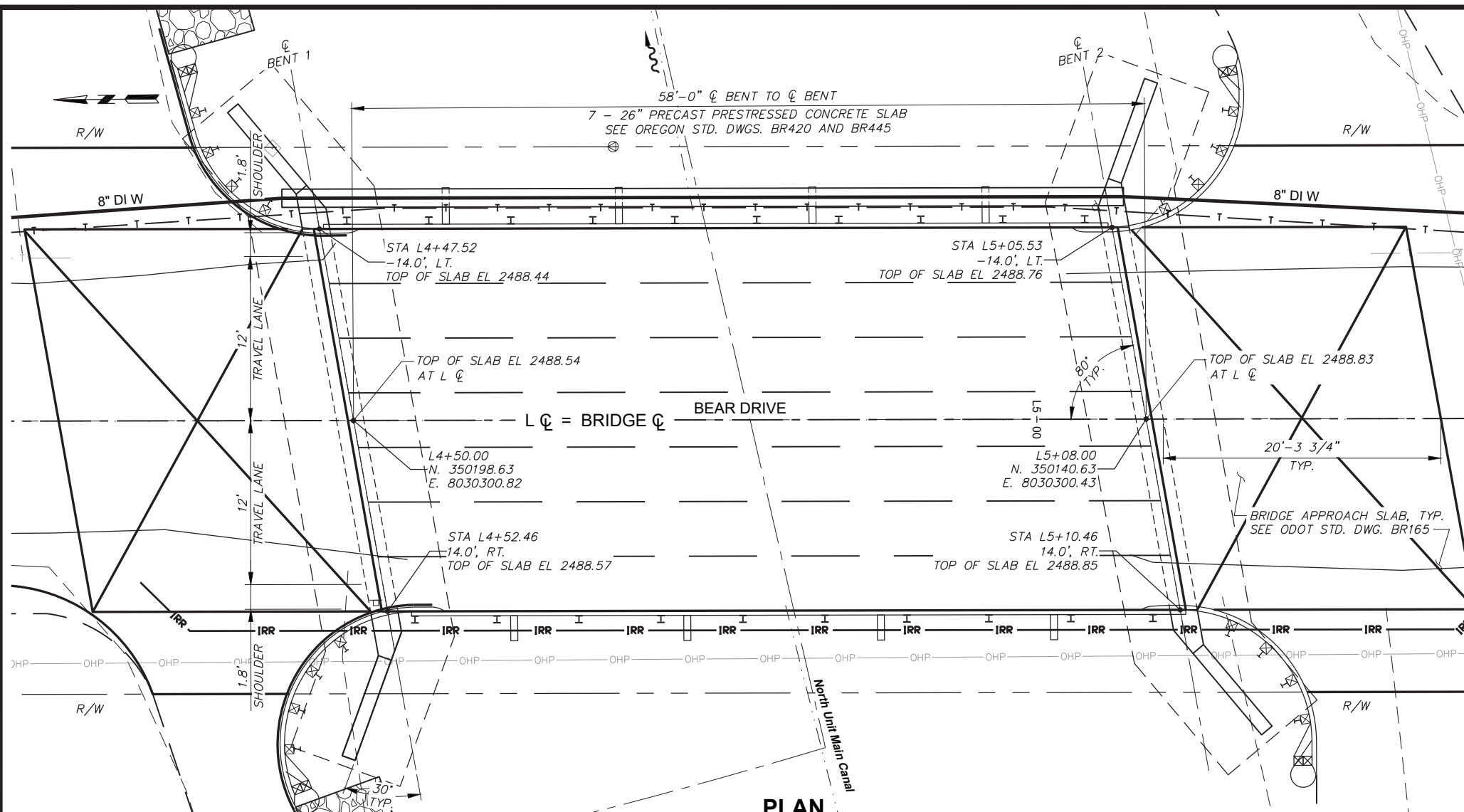
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DRAWN BY	L. WILLHITE	
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JOB NUMBER	756-06
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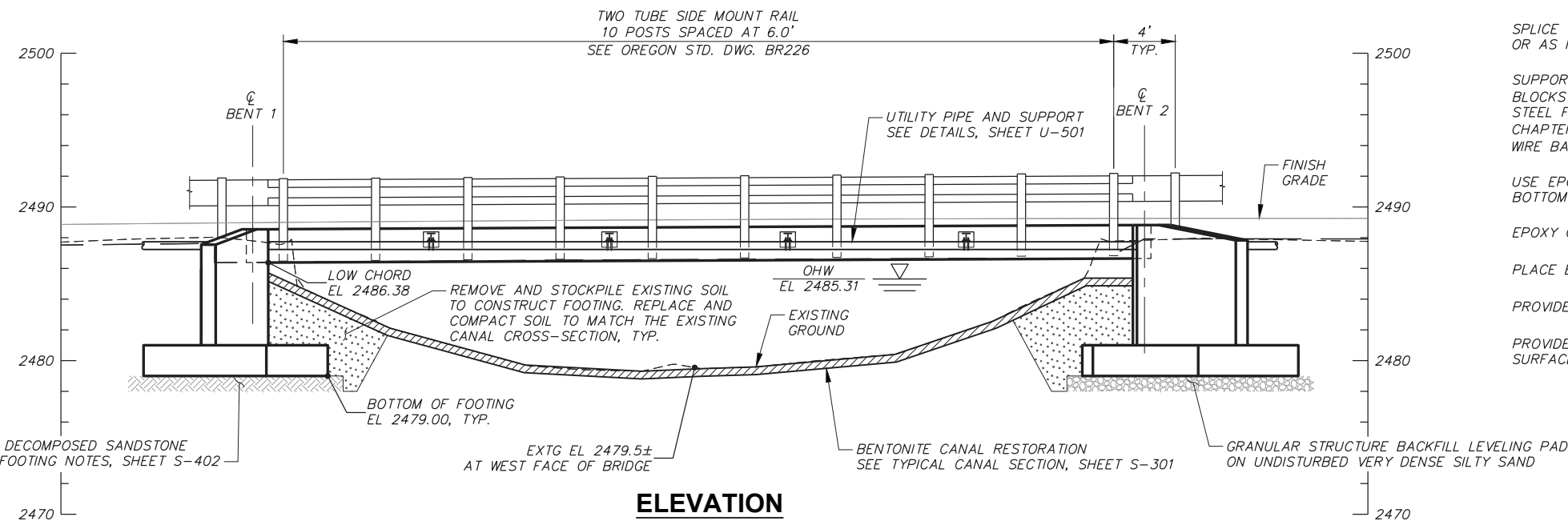


JEFFERSON COUNTY, OREGON	
NORTH UNIT MAIN CANAL - BEAR DRIVE	
BRIDGE REPLACEMENT	
ROADWAY	
GUARDRAIL APPROACH DETAILS II	

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PLAN



ELEVATION

GENERAL NOTES

PROVIDE ALL MATERIALS AND PERFORM ALL WORK ACCORDING TO THE OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION 2024.

BRIDGE IS DESIGNED IN ACCORDANCE WITH THE 2020 EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (9TH EDITION). SEE PRECAST SLAB SCHEDULE, SHEET S-601 FOR SLAB DESIGN INFORMATION.

SEISMIC DESIGN IS PERFORMED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AS MODIFIED BY THE ODOT BRIDGE DESIGN & DRAFTING MANUAL. THE HORIZONTAL PEAK GROUND ACCELERATION COEFFICIENTS (PGA) FOR 1034-YEAR RETURN (LIFE SAFETY) IS 0.111G, BASED ON 2014 USGS SEISMIC HAZARD MAPS. THE BRIDGE SITE IS DEFINED AS A SITE CLASS C WITH SITE FACTOR (FPGA) OF 1.200.

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

REINFORCING SPLICE LENGTHS (CLASS B) GRADE 60 f _c = 3.3 ksi, l _{rc} = 0.4, 2IN MIN. CONCRETE CLEAR COVER											
BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14 & #18	
UNCOATED	1'-4"	1'-9"	2'-2"	2'-7"	3'-0"	3'-5"	3'-10"	4'-4"	4'-10"	NOT PERMITTED	
COATED (1)	1'-7"	2'-1"	2'-7"	3'-2"	3'-8"	4'-2"	4'-8"	5'-3"	5'-10"	NOT PERMITTED	
COATED (2)	2'-0"	2'-7"	3'-3"	3'-11"	4'-7"	5'-2"	5'-10"	6'-7"	7'-4"	NOT PERMITTED	

REINFORCING SPLICE LENGTHS (CLASS B) GRADE 60 f _c = 4.5 ksi, l _{rc} = 0.4, 2IN MIN. CONCRETE CLEAR COVER											
BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14 & #18	
UNCOATED	1'-4"	1'-6"	1'-11"	2'-3"	2'-7"	3'-0"	3'-4"	3'-9"	4'-2"	NOT PERMITTED	
COATED (1)	1'-4"	1'-10"	2'-3"	2'-8"	3'-2"	3'-7"	4'-0"	4'-6"	5'-0"	NOT PERMITTED	
COATED (2)	1'-8"	2'-3"	2'-10"	3'-4"	3'-11"	4'-5"	5'-0"	5'-8"	6'-3"	NOT PERMITTED	

USE COATED (1) FOR EPOXY COATED BARS WITH COVER AT LEAST 3*DB AND CLEAR SPACING BETWEEN BARS AT LEAST 6*DB.

USE COATED (2) FOR EPOXY COATED BARS WITH COVER LESS THAN 3*DB OR CLEAR SPACING BETWEEN BARS LESS THAN 6*DB.

INCREASE ALL SPLICE LENGTHS 30% FOR HORIZONTAL OR NEARLY HORIZONTAL BARS SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST BELOW THE BAR.

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

SUPPORT THE BOTTOM MAT REINFORCING STEEL FROM THE FORMS WITH PRECAST MORTAR BLOCKS AT 24" MAXIMUM CENTERS EACH WAY. SUPPORT THE TOP MAT OF REINFORCING STEEL FROM THE BOTTOM MAT OF REINFORCING STEEL WITH WIRE BAR SUPPORTS AS SHOWN IN CHAPTER 3 OF THE CRSI MANUAL OF STANDARD PRACTICE (SBU, BBU, OR CHCU). PLACE WIRE BAR SUPPORTS AT 24" MAXIMUM CENTERS.

USE EPOXY COATED REINFORCING STEEL IN THE BRIDGE END PANEL. THIS INCLUDES TOP AND BOTTOM LONGITUDINAL BARS, AND TOP AND BOTTOM TRANSVERSE BARS.

EPOXY COAT REINFORCING STEEL, EXCEPT PRESTRESSING STEEL, IN PRECAST SLABS.

PLACE BARS 2" CLEAR OF THE NEAREST FACE OF CONCRETE UNLESS SHOWN OTHERWISE.

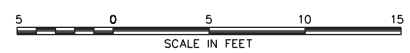
PROVIDE CLASS HPC4500 - 1 1/2 CONCRETE IN REINFORCED CONCRETE APPROACH SLABS.

PROVIDE CLASS 3300 - 1 1/2, 1 OR 3/4 CONCRETE FOR ALL (OTHER) CONCRETE. CLASS 1 SURFACE FINISH REQUIRED FOR ALL EXPOSED SURFACES, SEE SPECIFICATION 00540.53.

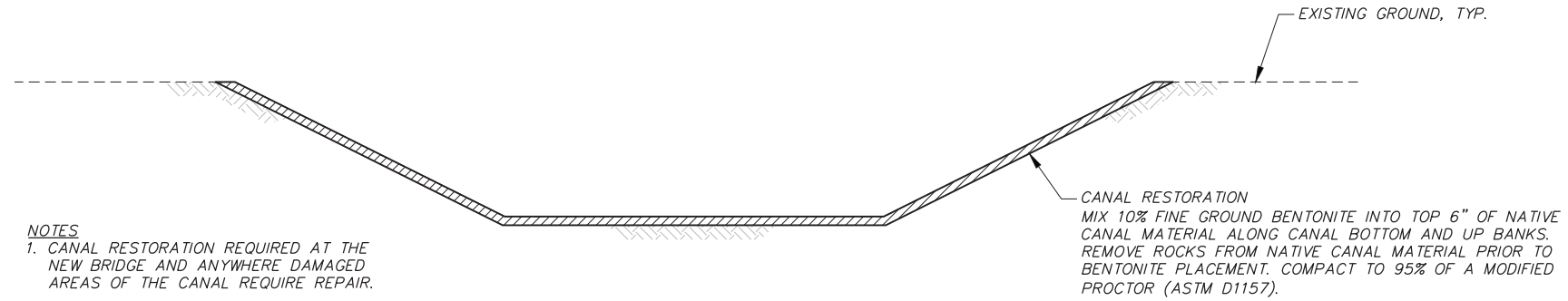
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DESIGNED BY: L. KEENAN	DATE: March 2026
DRAWN BY: L. WILLHITE	JOB NUMBER: 756-06
REVIEWED BY: A. LINDSEY / E. ZITTERKOPF	ACAD FILE: 756-06-S-101.dwg
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JEFFERSON COUNTY, OREGON NORTH UNIT MAIN CANAL - BEAR DRIVE BRIDGE REPLACEMENT		SHEET S-101 11 OF 25
BRIDGE PLAN AND ELEVATION		



- NOTES**
1. CANAL RESTORATION REQUIRED AT THE NEW BRIDGE AND ANYWHERE DAMAGED AREAS OF THE CANAL REQUIRE REPAIR.
 2. MATCH EXISTING CHANNEL SECTION UP AND DOWNSTREAM OF THE RESTORATION AREA.

TYPICAL CANAL SECTION

NTS

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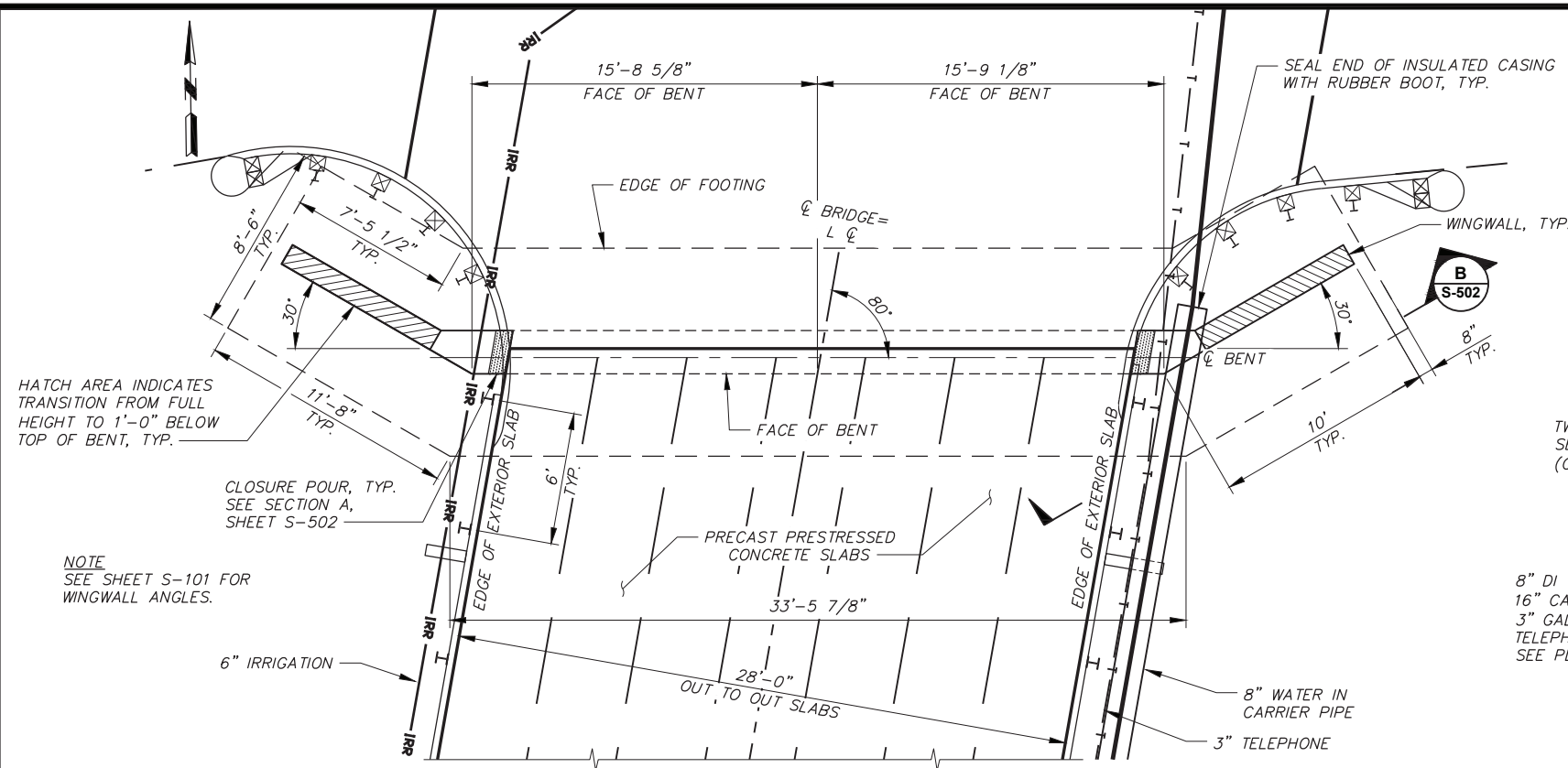
JEFFERSON COUNTY, OREGON
 NORTH UNIT MAIN CANAL - BEAR DRIVE
 BRIDGE REPLACEMENT

BRIDGE
 TYPICAL CANAL SECTION

SHEET

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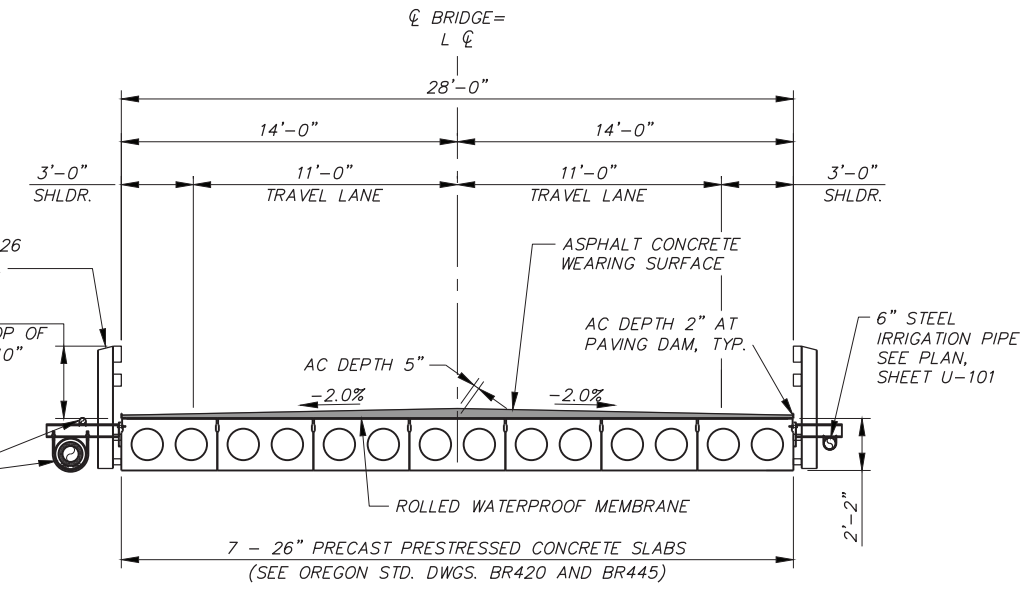


PLAN - BENT 1
LOOKING AT BENT FROM CREEK
(BENT 2 SIMILAR)

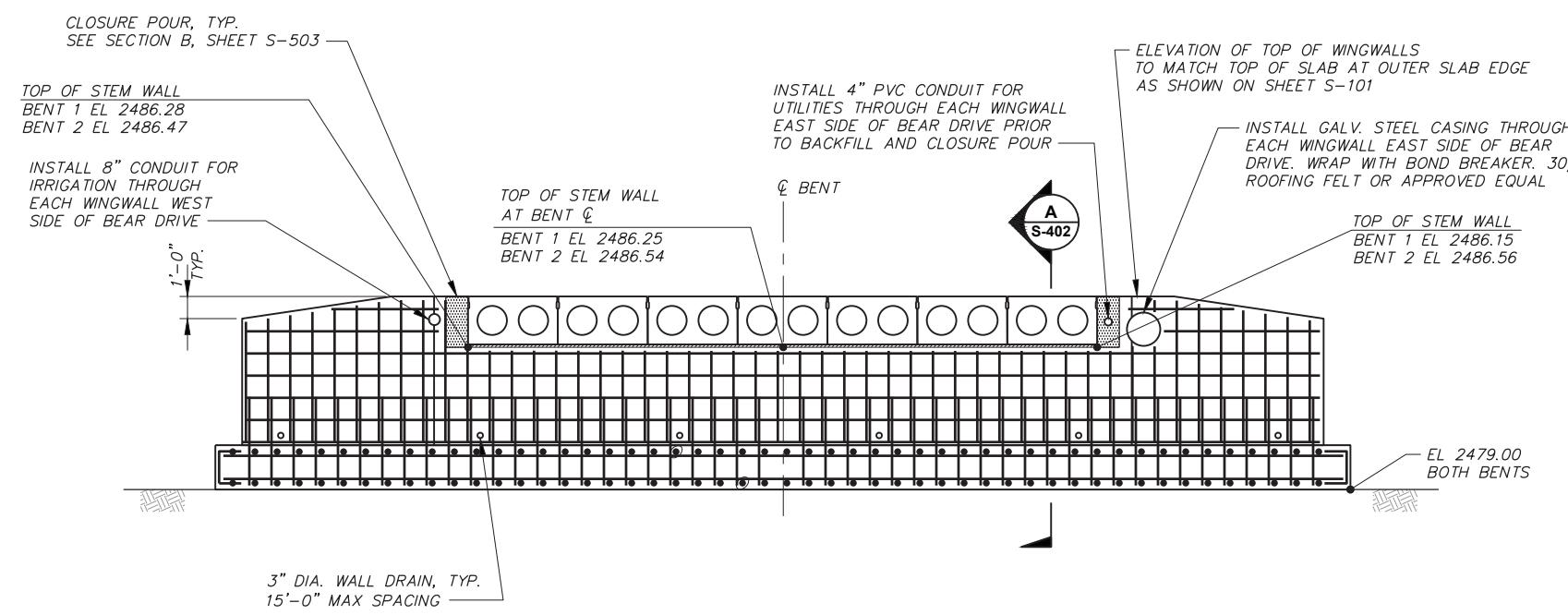
TWO TUBE SIDE MOUNT RAIL
SEE OREGON STD. DWG. BR226
(CONSTRUCT VERTICAL), TYP.

HEIGHT OF RAIL
CONCRETE DECK TO TOP OF
TWO TUBE RAIL = 2'-10"

8" DI WATER IN
16" CARRIER PIPE AND
3" GALVANIZED
TELEPHONE CONDUIT
SEE PLAN, SHEET U-101



TYPICAL BRIDGE SECTION
(LOOKING UPSTATION)



ELEVATION - BENT 1
LOOKING AT BENT FROM CREEK
(BENT 2 SIMILAR)

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DRAWN BY: L. WILLHITE		ACAD FILE: 756-06-S-401.DWG			
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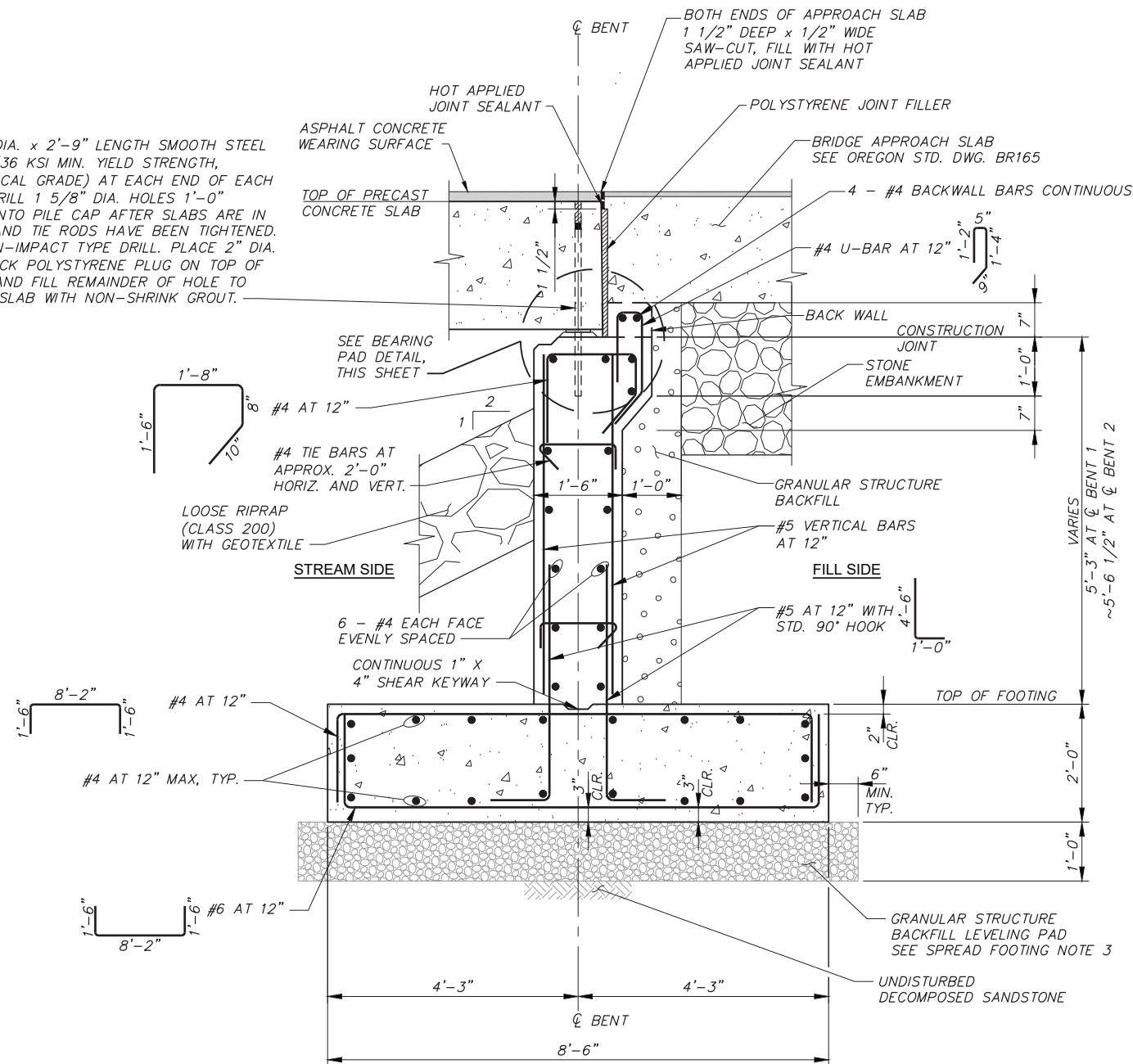


JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

BRIDGE
BENT PLAN, ELEVATION, AND BRIDGE SECTION

SHEET
S-401
13 OF 25

1 1/4" DIA. x 2'-9" LENGTH SMOOTH STEEL DOWEL (36 KSI MIN. YIELD STRENGTH, COMMERCIAL GRADE) AT EACH END OF EACH SLAB. DRILL 1 5/8" DIA. HOLES 1'-0" DEPTH INTO PILE CAP AFTER SLABS ARE IN PLACE AND TIE RODS HAVE BEEN TIGHTENED. USE NON-IMPACT TYPE DRILL. PLACE 2" DIA. x 1" THICK POLYSTYRENE PLUG ON TOP OF DOWEL AND FILL REMAINDER OF HOLE TO TOP OF SLAB WITH NON-SHRINK GROUT.

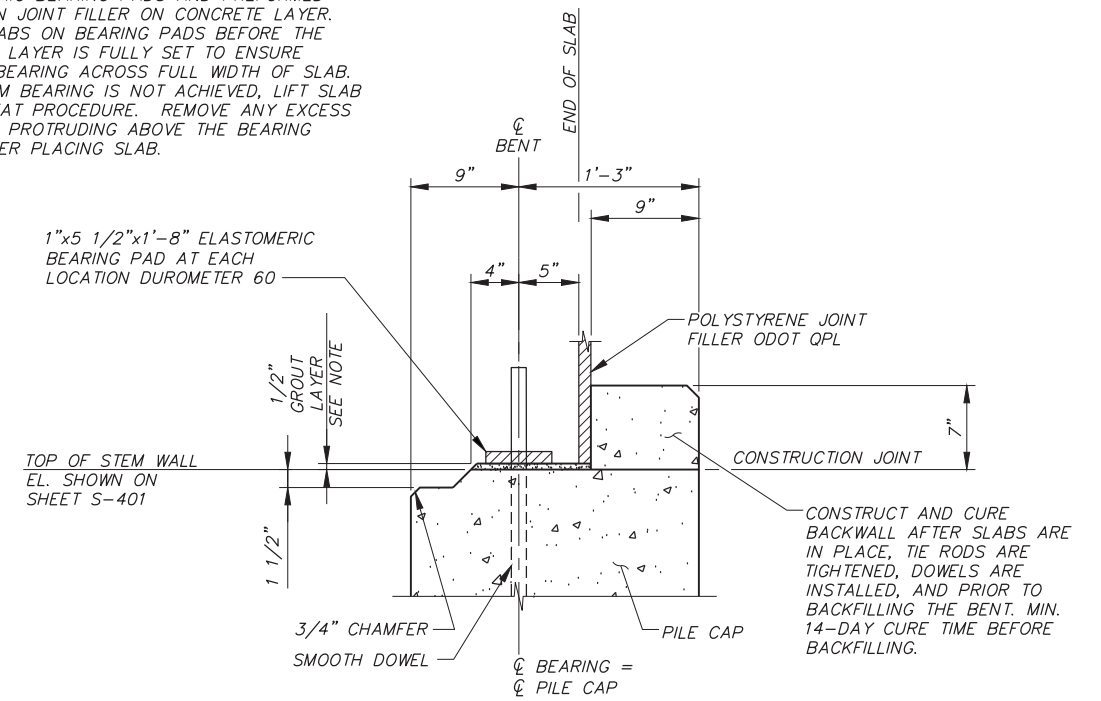


SPREAD FOOTING NOTES

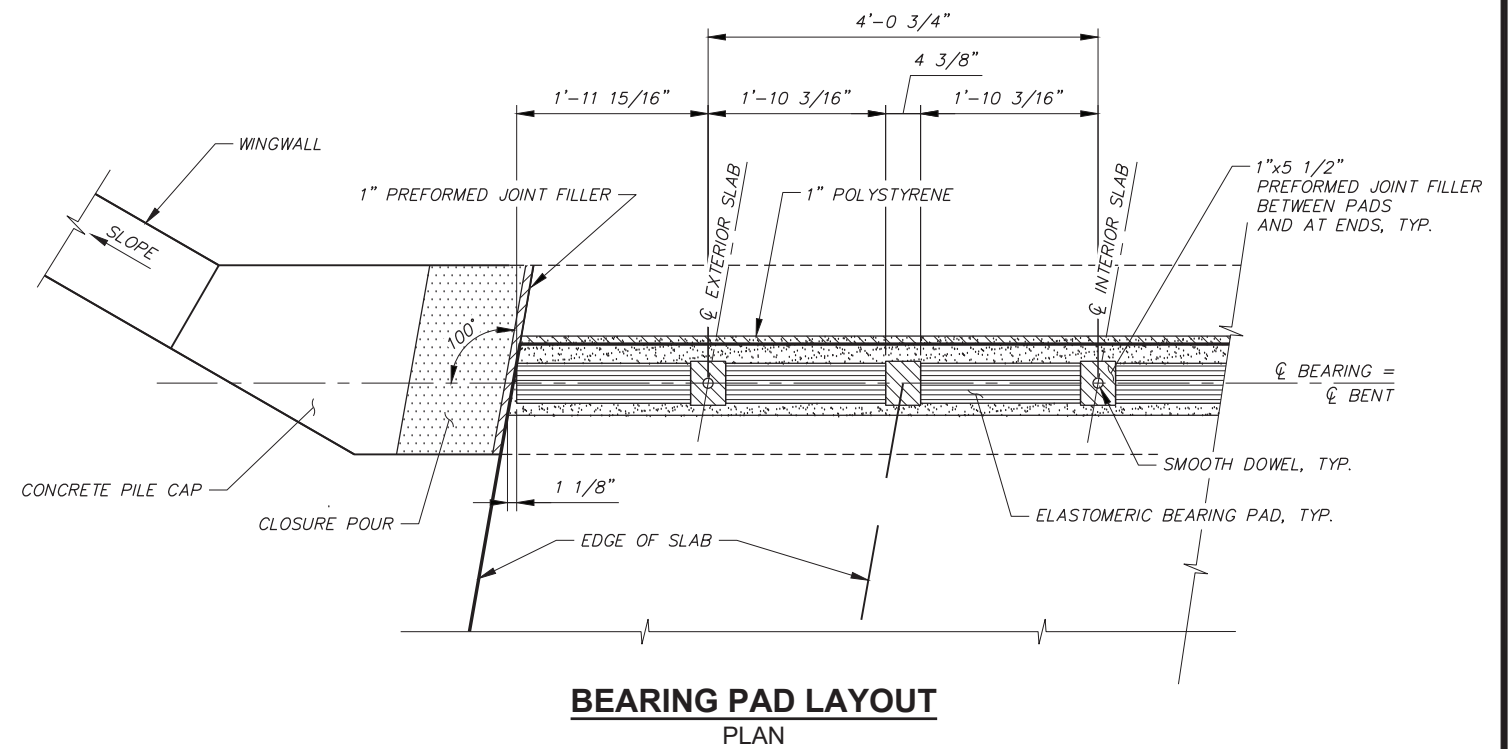
1. PREPARE FOUNDATION IN ACCORDANCE WITH OREGON STANDARD SPECIFICATIONS SEC. 00510.46. REMOVE ALL LOOSE SOIL OR DEBRIS PRIOR TO CONSTRUCTING THE FOOTINGS. THE BOTTOM OF THE EXCAVATION SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO PLACING LEVELING PAD. LEVELING PAD SHALL BE INSPECTED AND APPROVED BY ENGINEER PRIOR TO PLACING REBAR AND CONCRETE.
2. DO NOT BACKFILL BENT WALLS AND WINGWALLS ABOVE 1/2 WALL HEIGHT UNTIL SLAB DOWELS HAVE BEEN PLACED AND BACK WALL HAS BEEN POURED AND CURED. SEE OREGON STANDARD SPECIFICATIONS SEC. 00510.48 FOR ADDITIONAL BACKFILLING REQUIREMENTS.
3. GRANULAR STRUCTURE BACKFILL LEVELING PAD MAY BE ELIMINATED AT BENT 1, IN WHICH CASE SPREAD FOOTING MUST BE FOUNDED DIRECTLY ON UNDISTURBED DECOMPOSED SANDSTONE.

A SECTION
S-401

NOTE
PLACE 1/2" GROUT LAYER ON PILE CAP, PLACE ELASTOMERIC BEARING PADS AND PREFORMED EXPANSION JOINT FILLER ON CONCRETE LAYER. PLACE SLABS ON BEARING PADS BEFORE THE CONCRETE LAYER IS FULLY SET TO ENSURE UNIFORM BEARING ACROSS FULL WIDTH OF SLAB. IF UNIFORM BEARING IS NOT ACHIEVED, LIFT SLAB AND REPEAT PROCEDURE. REMOVE ANY EXCESS CONCRETE PROTRUDING ABOVE THE BEARING PADS AFTER PLACING SLAB.



BEARING PAD DETAIL
SECTION NTS



BEARING PAD LAYOUT
PLAN

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REVISION	BY	DATE	1	0	1	2	3	
DESIGNED BY	L. KEENAN/G. BANISTER		SECTION SCALE IN FEET					
DRAWN BY	L. WILLHITE		BEARING PAD LAYOUT SCALE IN FEET					
REVIEWED BY	E. ZITTERKOPF		1	0	1	2	3	
JOB NUMBER	756-06	DATE	MARCH 2026					
ACAD FILE:	756-06-S-402.DWG							
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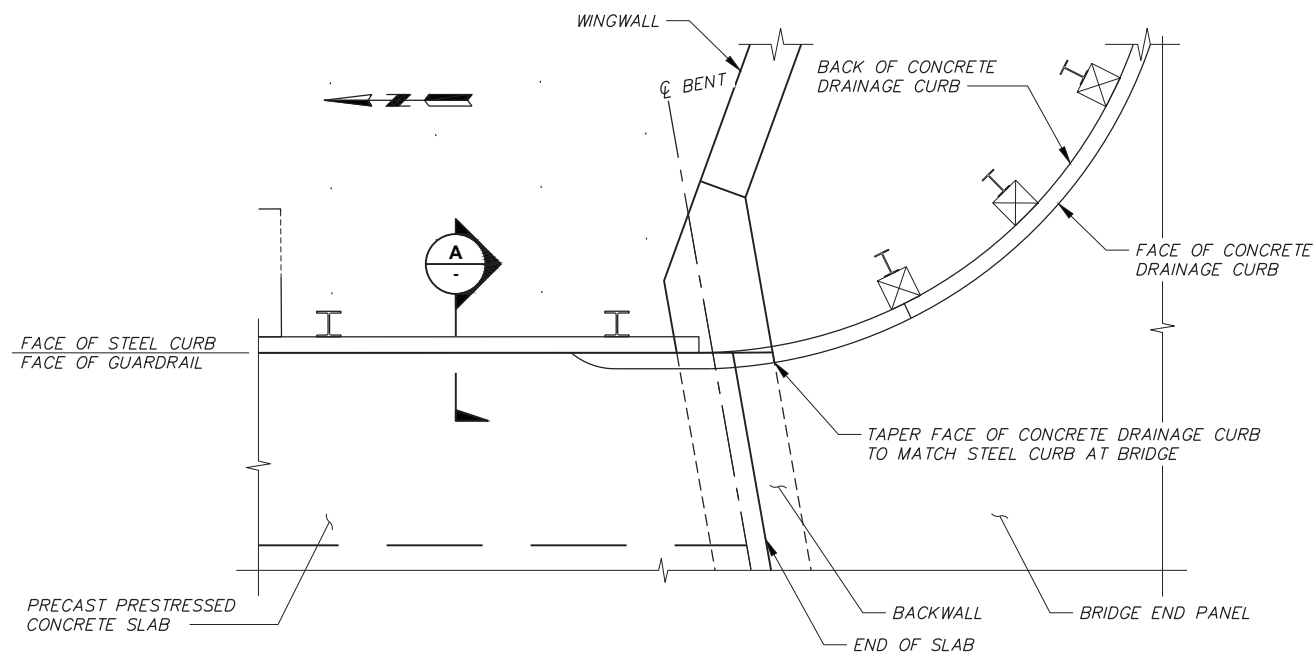
JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

BRIDGE
BENT DETAILS

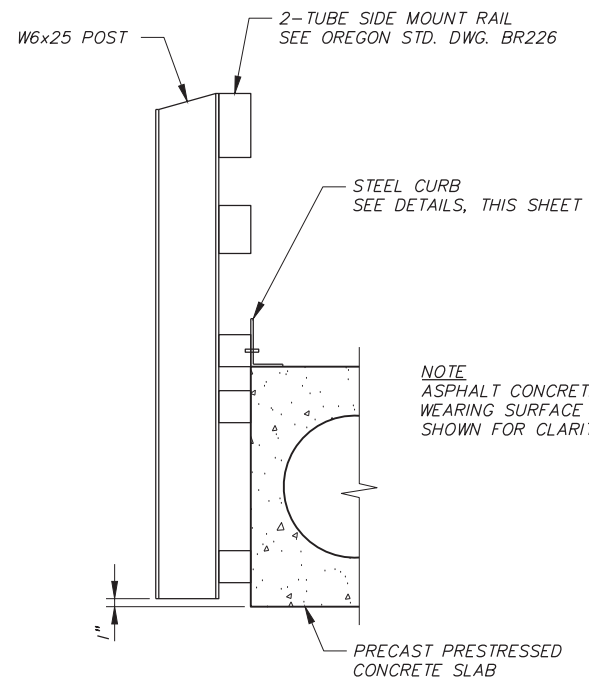
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S-402

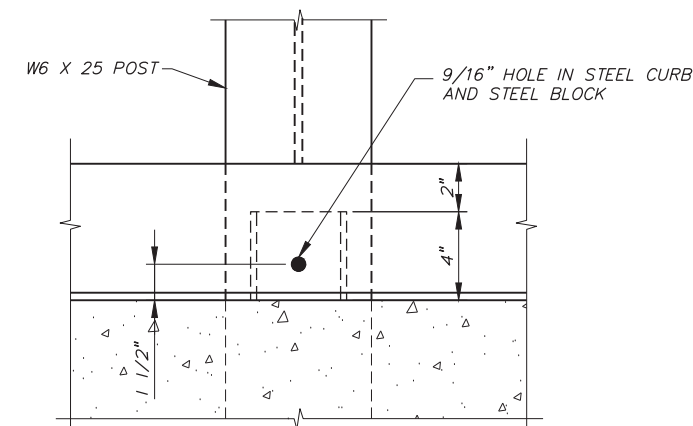
14 OF 25



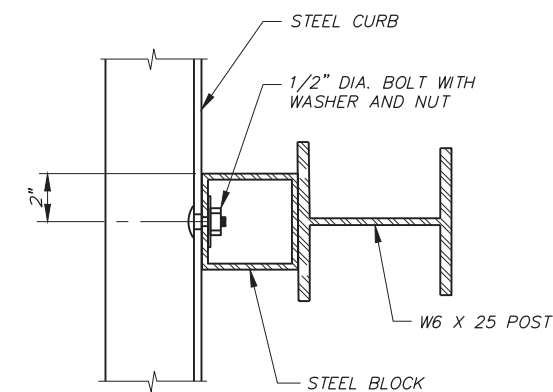
STEEL CURB PLAN



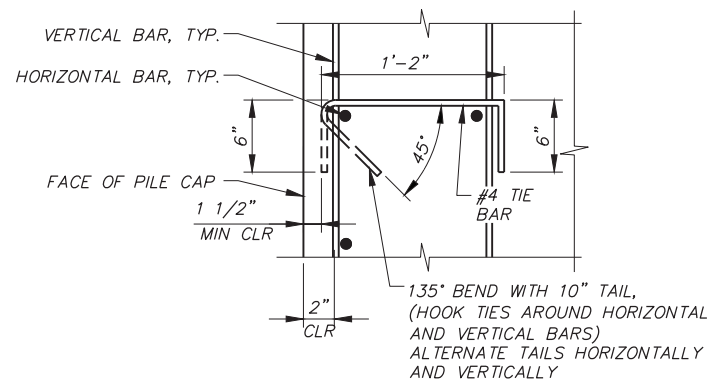
SECTION A
NTS



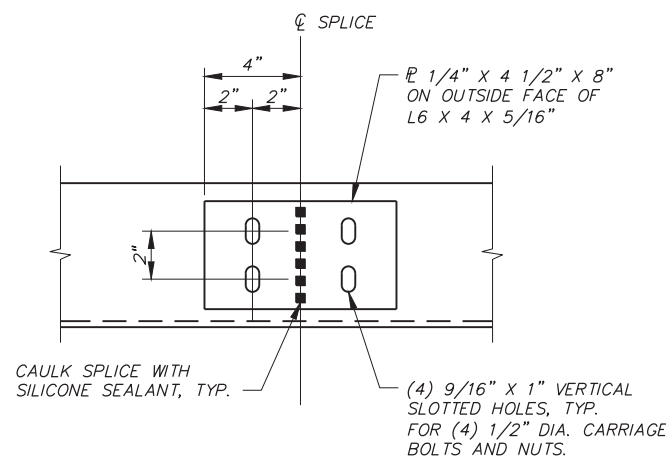
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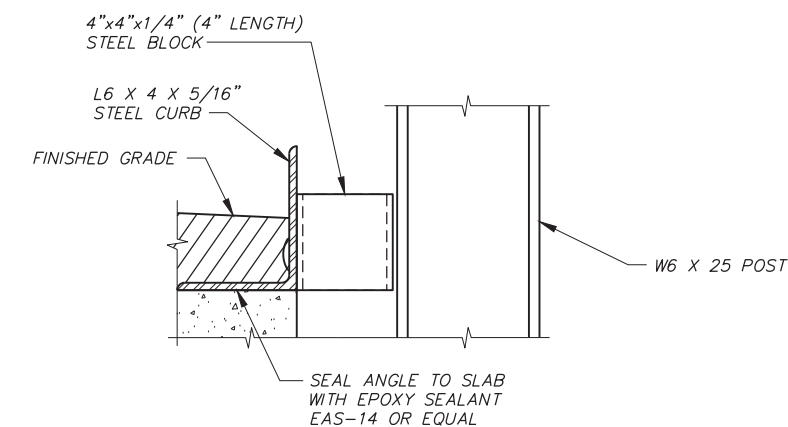
PLAN



TIE BAR DETAIL
NTS



STEEL CURB SPLICE DETAIL
NTS



SECTION
NTS

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JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

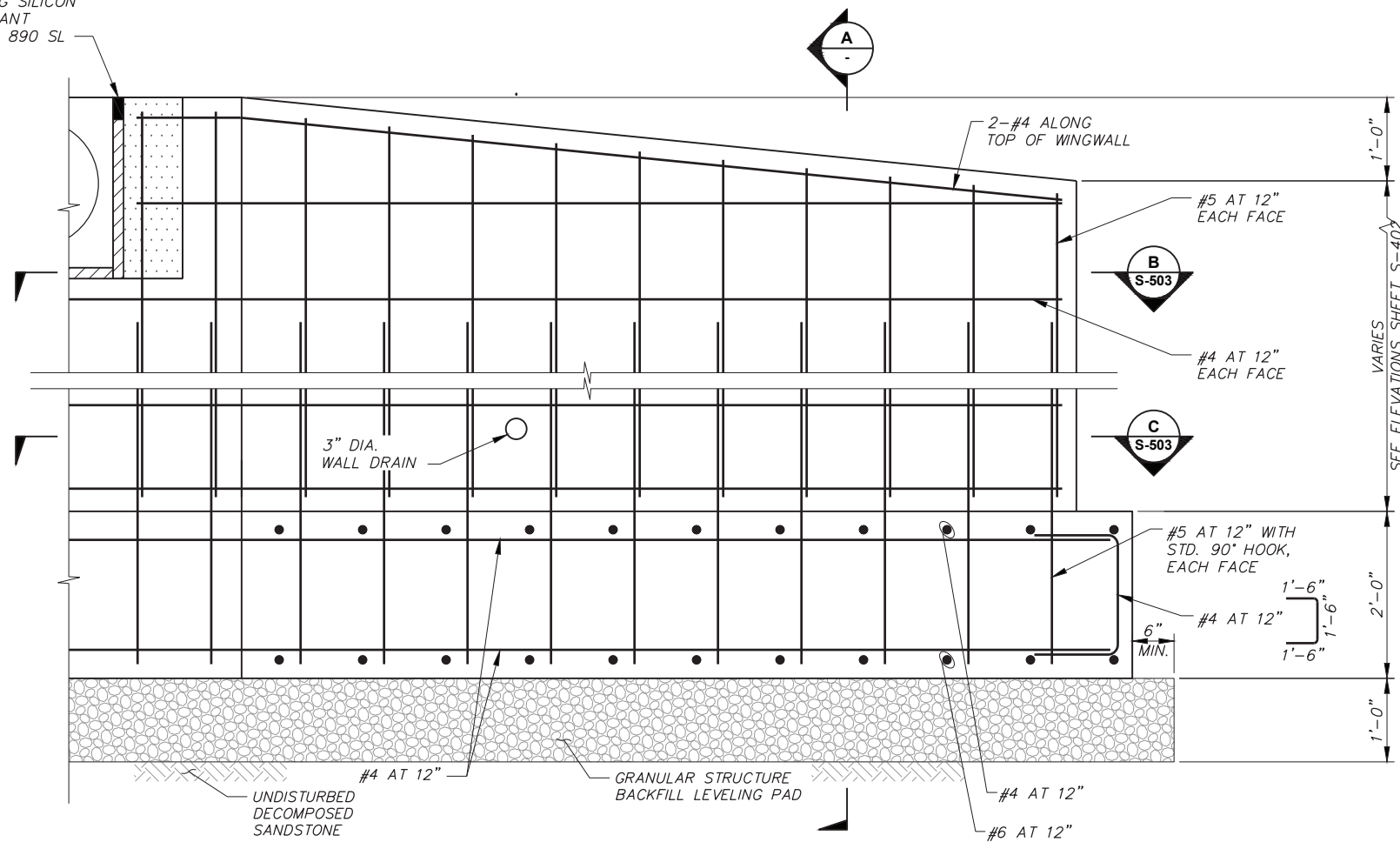
BRIDGE
MISCELLANEOUS DETAILS

SHEET

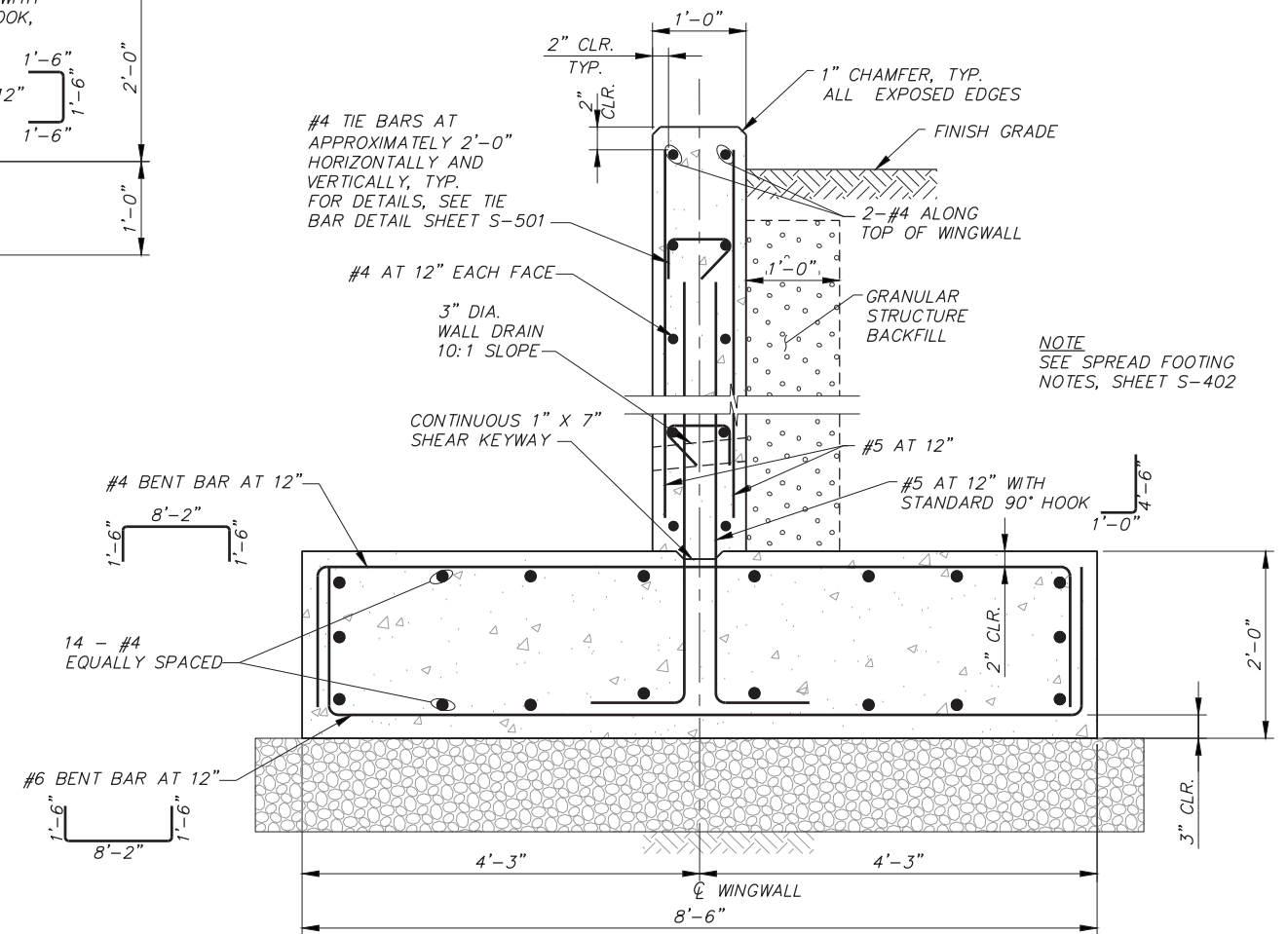
S-501

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SELF-LEVELING SILICON RUBBER SEALANT DOW CORNING 890 SL



B WINGWALL ELEVATION
(BENT 2, RIGHT SHOWN, OTHER WINGWALLS SIMILAR)



A SECTION

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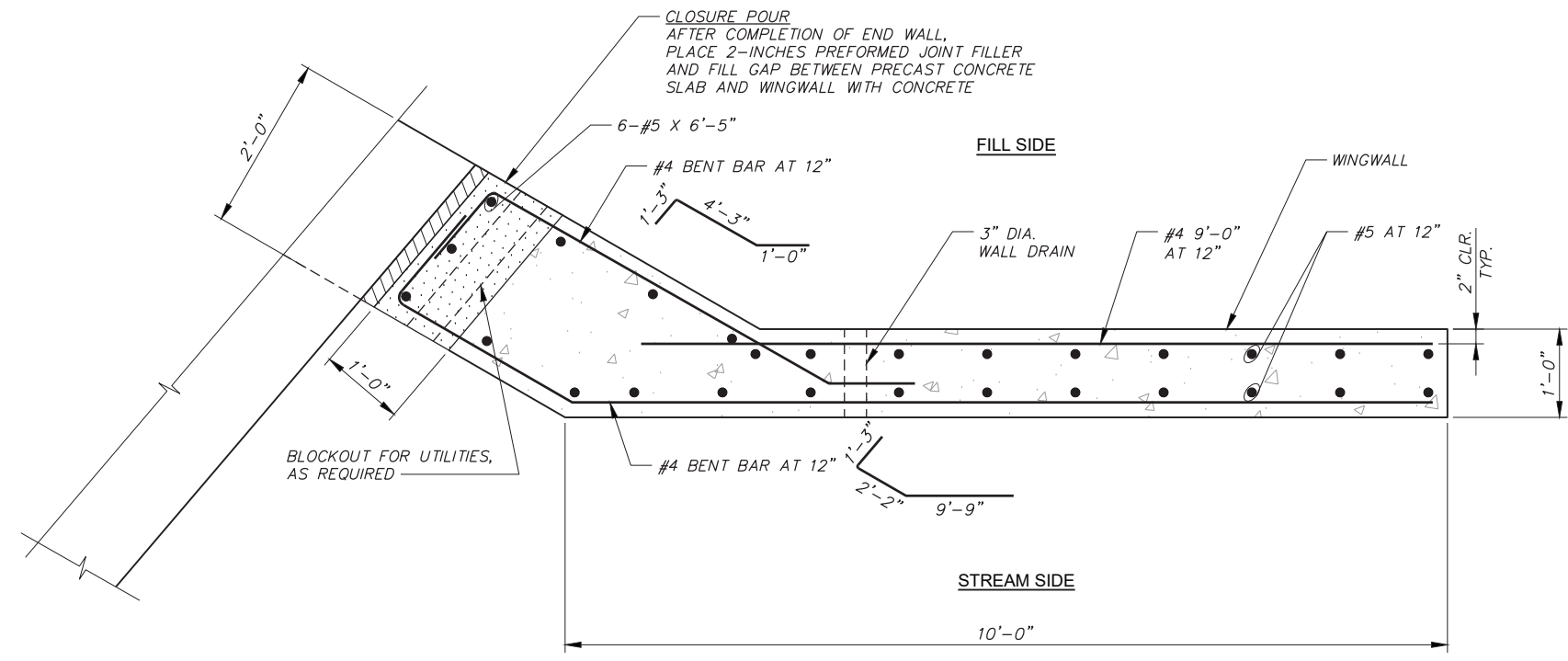
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DESIGNED BY L. KEENAN/G. BANISTER		JOB NUMBER	756-06
DRAWN BY L. WILLHITE		DATE	March 2026
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BRIDGE REPLACEMENT

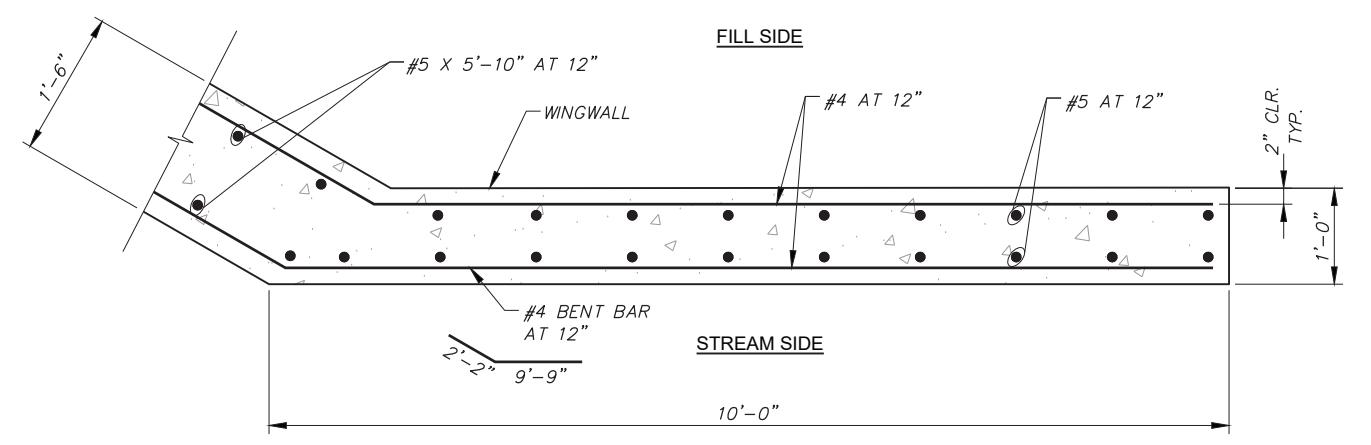
BRIDGE WINGWALL DETAILS I

SHEET
S-502
16 OF 25



B SECTION
S-502

NOTE
WINGWALLS VARY AT EACH CORNER. REBAR DIMENSIONS AND ANGLES AT EACH WINGWALL SHALL BE ADJUSTED TO FIT IN AN EQUIVALENT MANNER TO WHAT IS DETAILED HERE.



C SECTION
S-502

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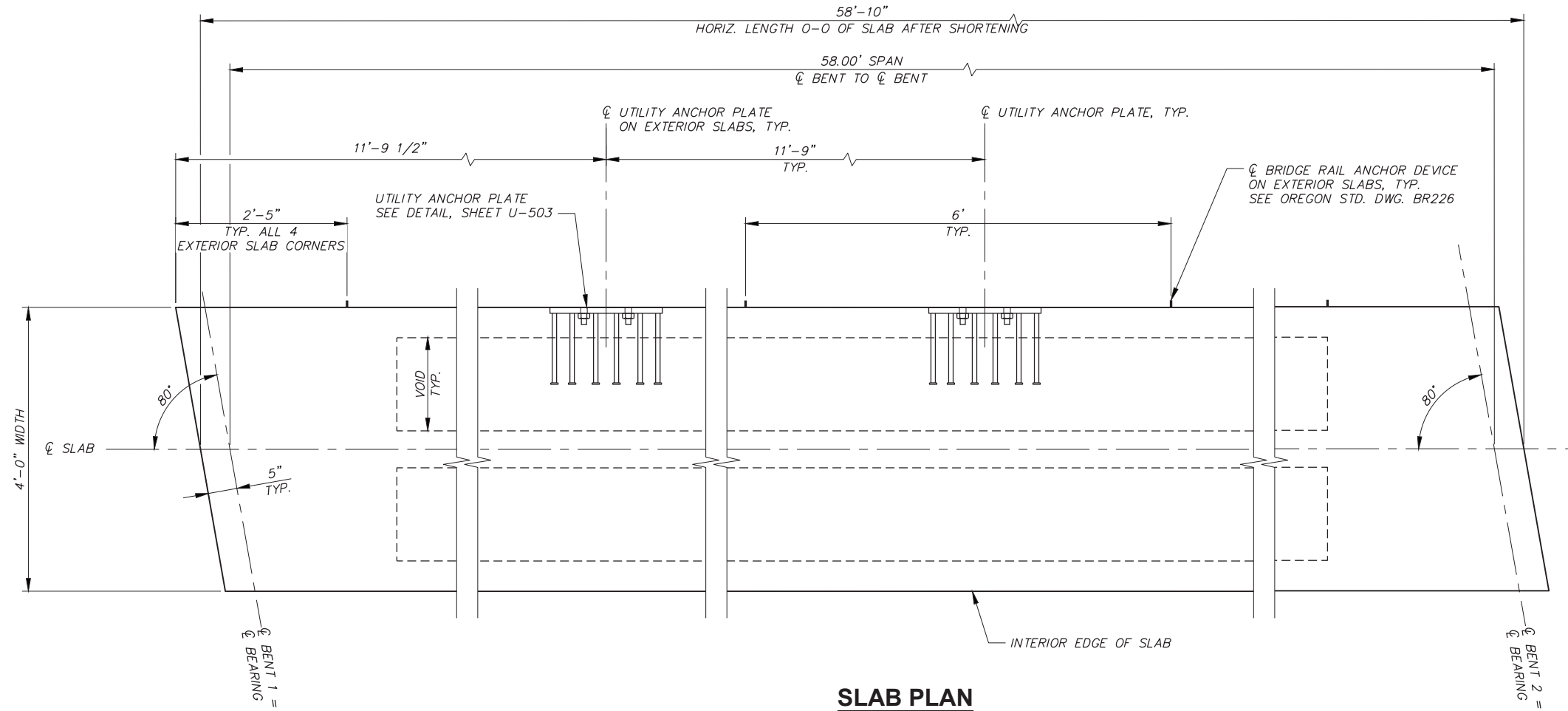
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DESIGNED BY	L. KEENAN/G. BANISTER		JOB NUMBER 756-06
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BRIDGE REPLACEMENT

BRIDGE WINGWALL DETAILS II

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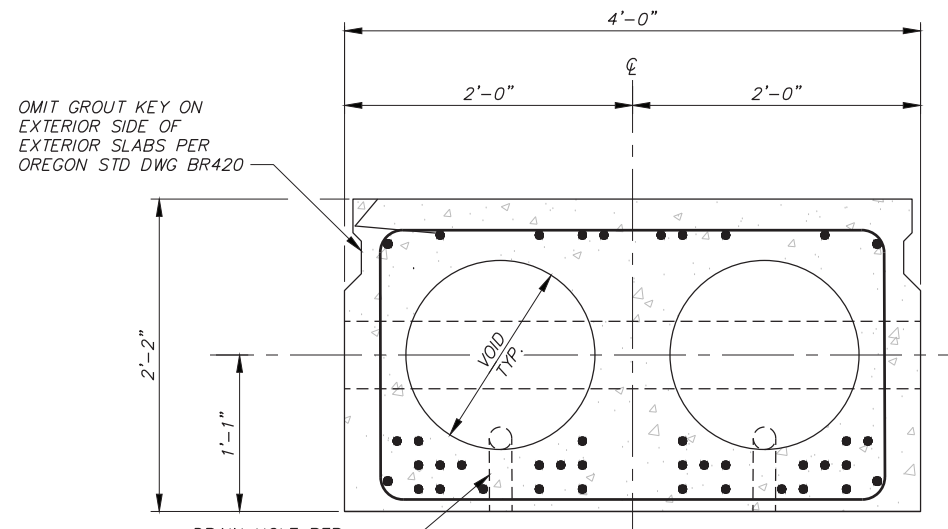


SLAB PLAN

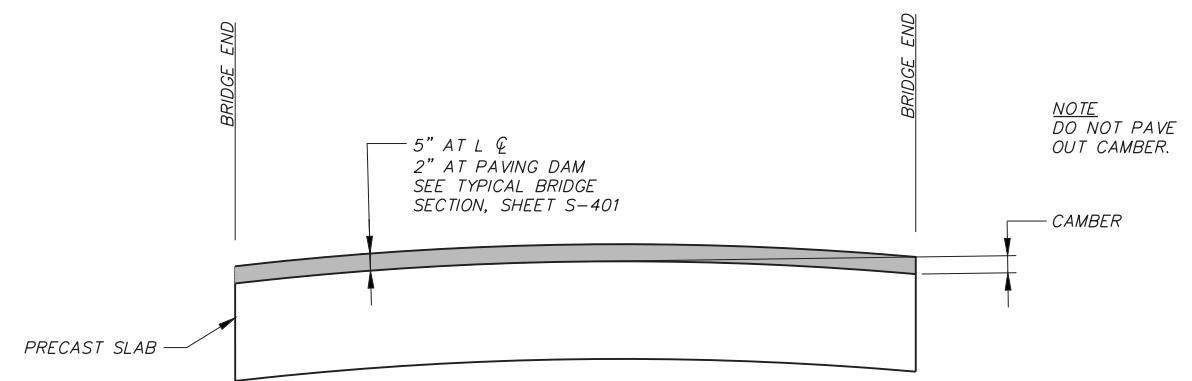
26" STANDARD PRECAST PRESTRESSED SLAB

SLAB NUMBER	NUMBER REQUIRED	SPAN NUMBER	HORIZONTAL LENGTH O-O AT SLAB C. (AFTER SHORTENING)	BACK SKEW ANGLE	AHEAD	NUMBER OF STRANDS	DEBONDED STRANDS	DISTANCE "YC" TO C.G. STRAND AT MIDSPAN, IN.	DISTANCE "YU" TO C.G.S STRAND OMITTING TOP STRAND, IN.	CONCRETE STRENGTH AT 28 DAYS, KSI	CONCRETE STRENGTH AT RELEASE, KSI	INITIAL TENSION PER STRAND, KIPS	ESTIMATED MIDSPAN DEFLECTION, IN.			
													UPWARD AT RELEASE	UPWARD 3 MONTHS AFTER RELEASE	DOWNWARD DUE TO 100 PSF SIDL	
7	7	1	58.85	-	80	32	0	6.02	3.59	5.0	4.0	31.0	1/2"	1"	1/4"	1/4"

- NOTES**
- SEE OREGON STD DWG. BR420 AND BR445 FOR DETAILS.
 - PRESTRESSED STEEL STRAND SHALL BE 1/2" DIA. SEVEN-WIRE LOW RELAXATION STRAND CONFORMING TO AASHTO M203 (ASTM A416) GRADE 270 SUPPLEMENT 1.
 - FINAL SLAB DESIGN TO BE PROVIDED BY SLAB MANUFACTURER. SLABS SHALL BE DESIGNED FOR HL-93 LOADING WITH AN ALLOWANCE FOR 100 PSF PRESENT AND FUTURE WEARING SURFACE.



TYPICAL SECTION 26" SLAB
(SEE OREGON STD. DWG. BR420)
NTS



EST. ANTICIPATED CAMBER AT 3 MONTHS..... + 1"
EST. STRUCTURE DEADLOAD DEFLECTION..... - 1/4"
NET CAMBER..... + 3/4"

ACP CAMBER DIAGRAM
NTS

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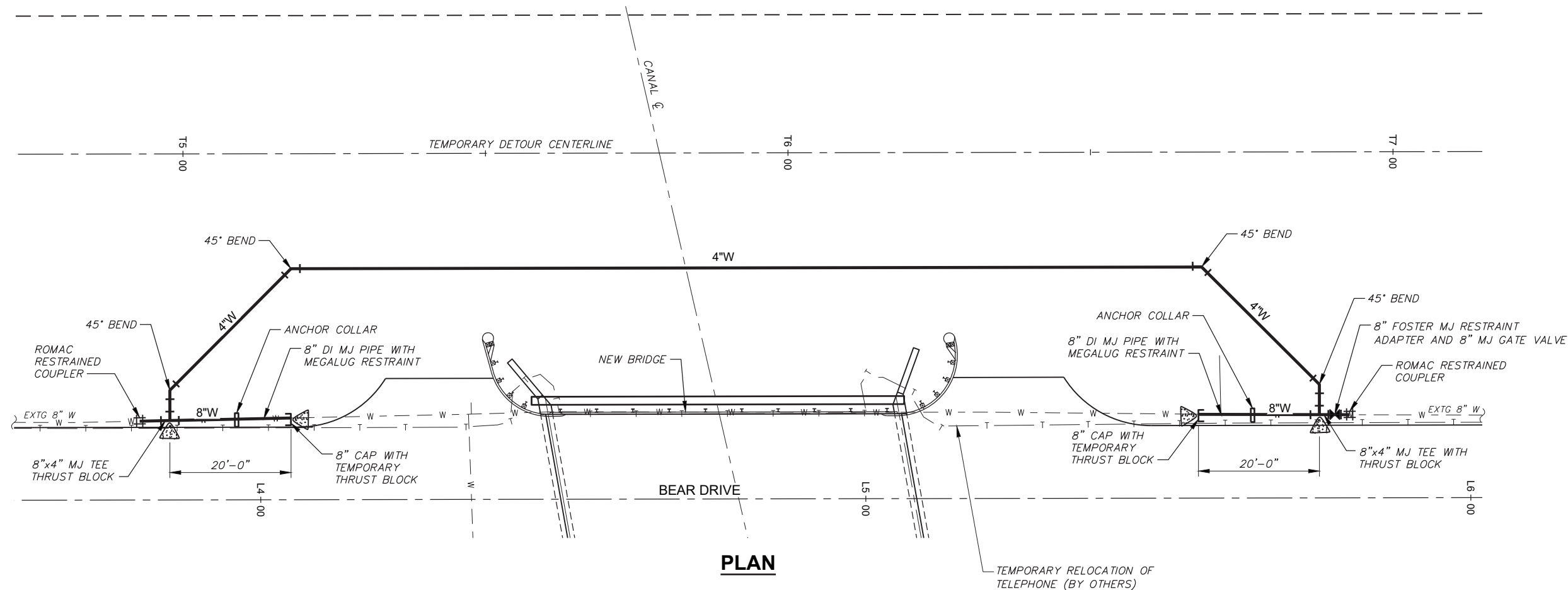


DESIGNED BY: L. KEENAN	JOB NUMBER: 756-06	DATE: March 2026
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JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT
BRIDGE
PRECAST SLAB SCHEDULE

SHEET
S-601
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GENERAL NOTES

1. TEMPORARY WATER LINE SHOWN IS A GENERAL SCHEMATIC LOCATION. CONTRACTOR TO COORDINATE ACTUAL LOCATION WITH CONSTRUCTION OF THEIR TEMPORARY DETOUR ROAD.
2. CONTRACTOR TO SUBMIT PROPOSED TEMPORARY WATER LINE MATERIAL AND INSTALLATION PLAN FOR APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION.
3. TEMPORARY WATER LINE MUST BE TESTED AND DISINFECTED PRIOR TO CONNECTION TO THE EXISTING SYSTEM.
4. ALL WATER SERVICE INTERRUPTIONS MUST BE COORDINATED AND APPROVED BY DESCHUTES VALLEY WATER DISTRICT PRIOR TO CONSTRUCTION.
5. REMOVE AND REPLACE EXISTING WATER LINE AS NEEDED FOR BRIDGE CONSTRUCTION.

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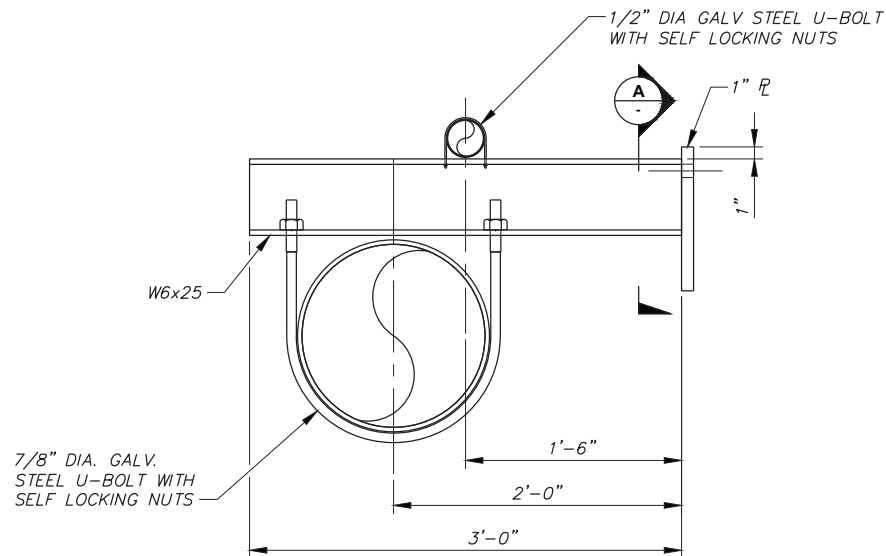
REVISION	BY	DATE	<p>HORIZ. SCALE IN FEET</p>
DESIGNED BY: T. TIRICO / K. ISLEY			
DRAWN BY: G. SAURBIER			JOB NUMBER: 756-06 DATE: March 2026
REVIEWED BY: B. VIXIE			ACAD FILE: 756-06-U-401.dwg
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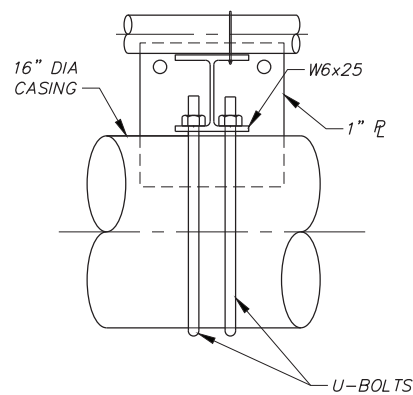
JEFFERSON COUNTY, OREGON
 NORTH UNIT MAIN CANAL - BEAR DRIVE
 BRIDGE REPLACEMENT

UTILITY
 TEMPORARY WATERLINE DETAIL

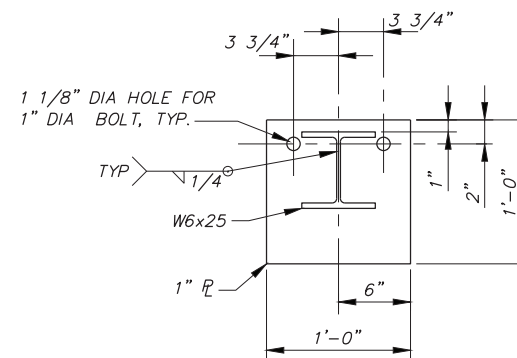
SHEET
U-401
 20 OF 25



VIEW - FRONT



VIEW - END



SECTION A

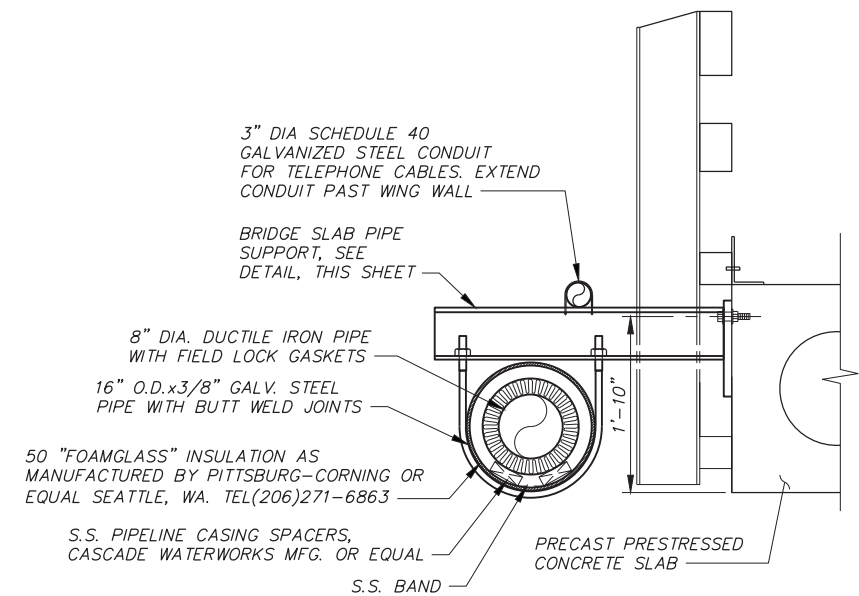
BRIDGE SLAB PIPE SUPPORT

EAST SIDE OF BRIDGE
NTS

NOTES

1. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL SHOWING COMPLETE DIMENSIONS AND DETAILS OF FABRICATION. MATERIAL BEING USED SHALL BE SPECIFIED IN THE SHOP DRAWINGS.
2. ALL COMPONENTS SHALL BE HOT-DIP GALVANIZED. DAMAGED GALVANIZED COATING SHALL BE REPAIRED IN ACCORDANCE WITH SPEC SECTION 02530.71.
3. CUTTING SHALL BE DONE BY SAWING OR MILLING AND ALL CUTS SHALL BE TRUE AND SMOOTH.
4. FABRICATE ANCHOR PLATE SHEAR STUDS WITH MATERIAL, WELDING, AND INSPECTION IN ACCORDANCE WITH SECTION 7 OF AWS D1.5.
5. U-BOLTS SHALL BE LOOSE TO ALLOW FOR BRIDGE MOVEMENT.

PART	MATERIAL SPECIFICATION
PIPE	ASTM A500 GRADE B
PLATES/BAR/CHANNELS	ASTM A36
TUBING	ASTM 500 GRADE B
FASTENERS	ASTM A325
ANCHOR BOLTS	ASTM F1554 GRADE 55
* ALL COMPONENTS SHALL BE GALVANIZED	



UTILITY PIPES DETAIL

EAST SIDE
NTS



REVISION	BY	DATE	JOB NUMBER	DATE
DESIGNED BY	L. KEENAN/G. BANISTER		756-06	March 2026
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NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

UTILITY
EAST PIPE SUPPORT DETAILS

SHEET

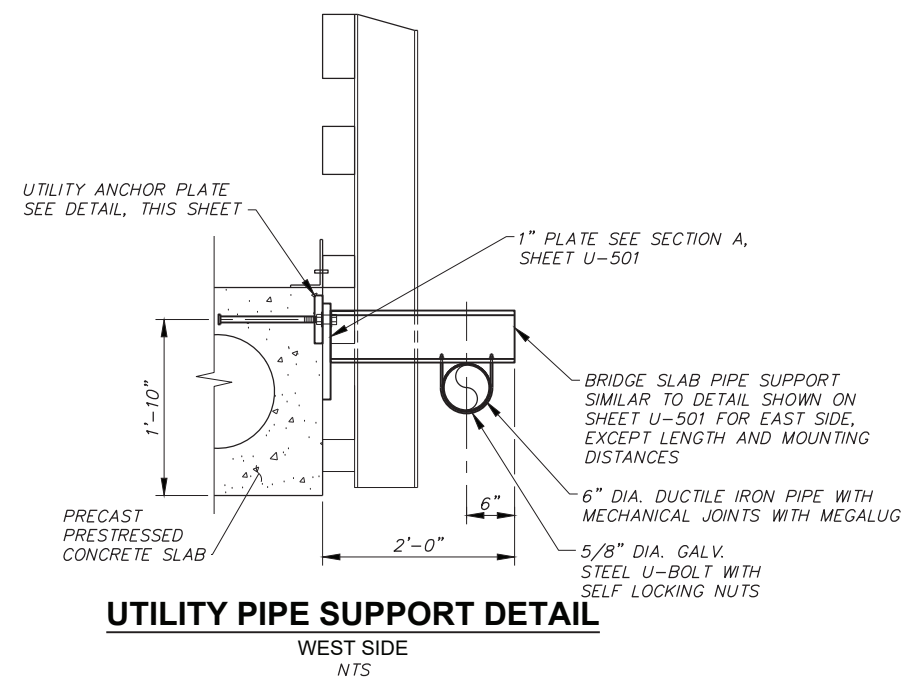
U-501

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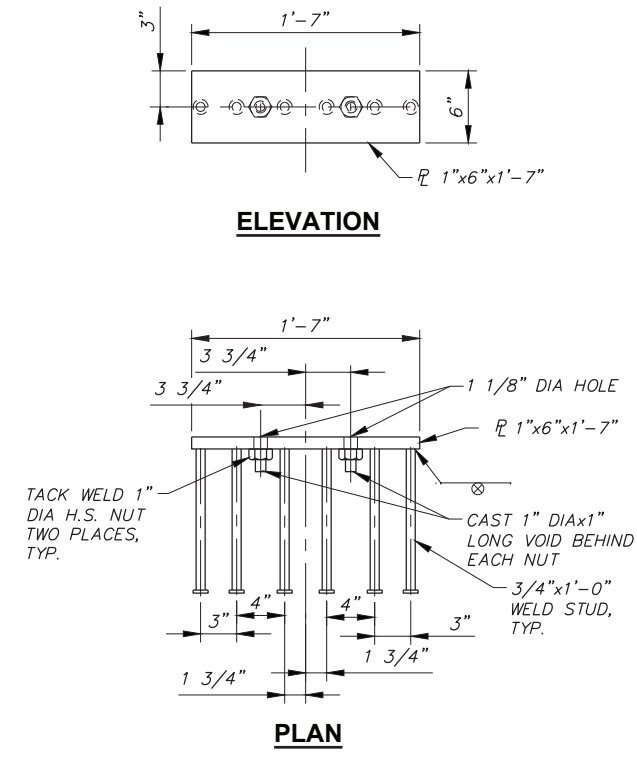
NOTES

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5. U-BOLTS SHALL BE LOOSE TO ALLOW FOR BRIDGE MOVEMENT.

PART	MATERIAL SPECIFICATION
PIPE	ASTM A500 GRADE B
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TUBING	ASTM 500 GRADE B
FASTENERS	ASTM A325
ANCHOR BOLTS	ASTM F1554 GRADE 55
* ALL COMPONENTS SHALL BE GALVANIZED	



UTILITY PIPE SUPPORT DETAIL
WEST SIDE
NTS



UTILITY ANCHOR PLATE DETAIL
NTS



REVISION	BY	DATE	JOB NUMBER	756-06	DATE	March 2026
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NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

UTILITY
WEST PIPE SUPPORT DETAILS

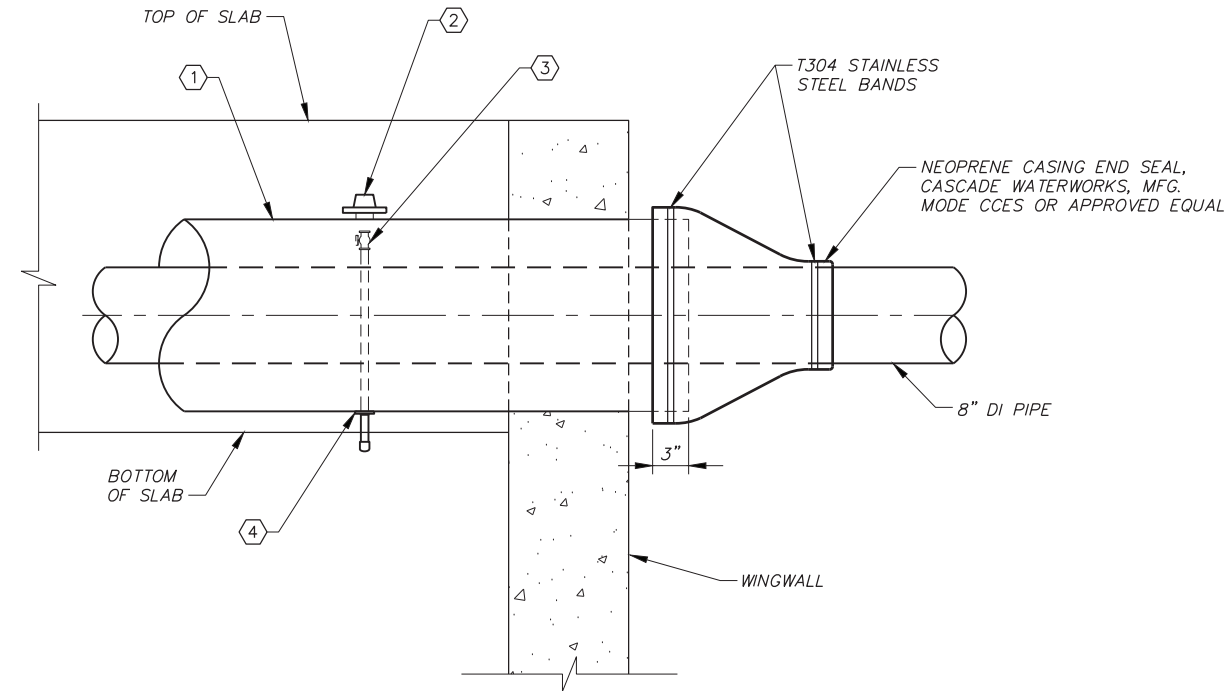
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U-502
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KEY NOTES

- ① 16" CASING, SEE SHEET U-501
- ② 2" DIA THREADED TAP AND PLUG OVER VALVE
- ③ 3/4" TAP IN DI PIPE, TAP SHALL BE TO MANUFACTURER'S SPECIFICATIONS AND LOCATION, 3/4" ANGLE BALL VALVE WITH T-HEAD
- ④ CUT 2" DIA HOLE IN CASING AND EXTEND HDPE AS SHOWN, INSTALL HOSE ADAPTER AND THREADED HOSE CAP, COVER HOLE WITH 1/2" THICK RUBBER ESCUTCHEON, OVERSIZE AND SECURE TO CASING WITH SST SCREWS

NOTE
CASING PIPE AND APPURTENANCES SHALL BE PAINTED WITH PAINT SYSTEM NO. 1, OWNER TO SELECT THE COLORS. SEE SPECIFICATIONS OF THE CONTRACT DOCUMENTS FOR DETAILS.



BLOWOFF INSIDE CASING

NTS

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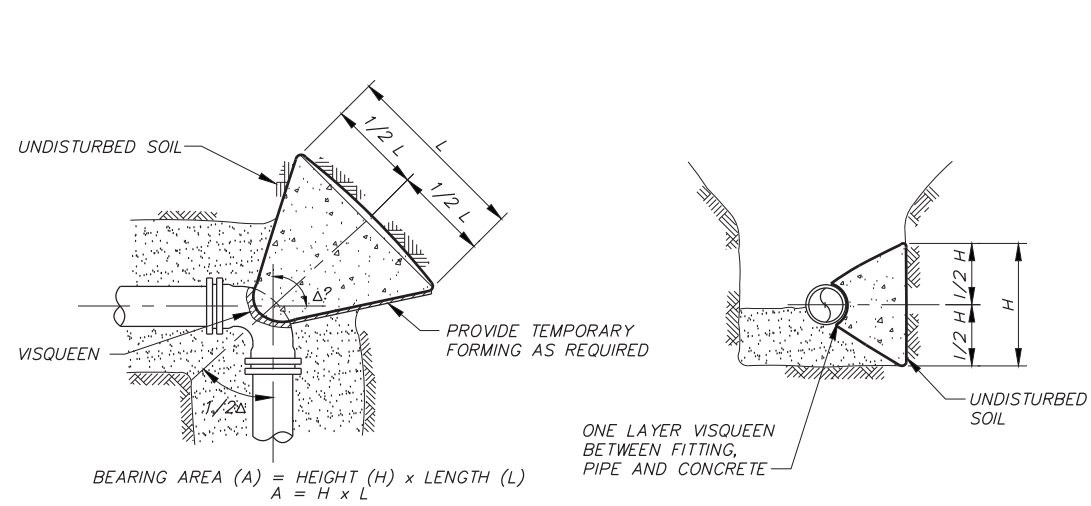
JEFFERSON COUNTY, OREGON
NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

UTILITY
MISCELLANEOUS DETAILS

SHEET

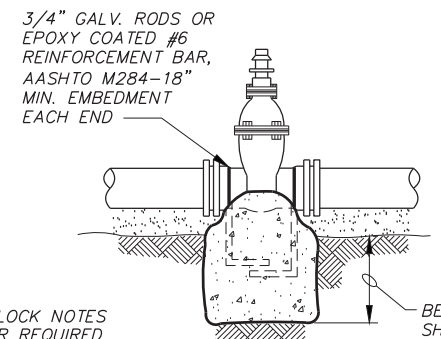
U-503

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BEARING AREA (A) = HEIGHT (H) x LENGTH (L)
 $A = H \times L$

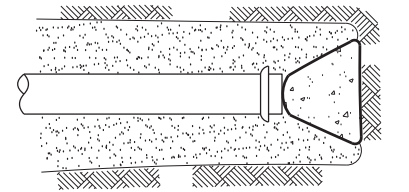
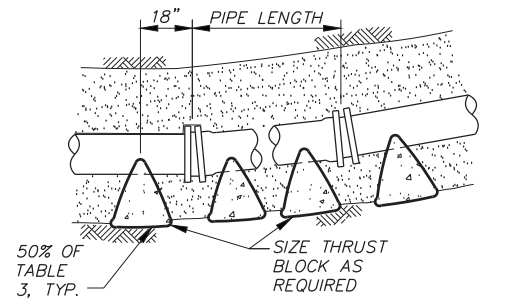
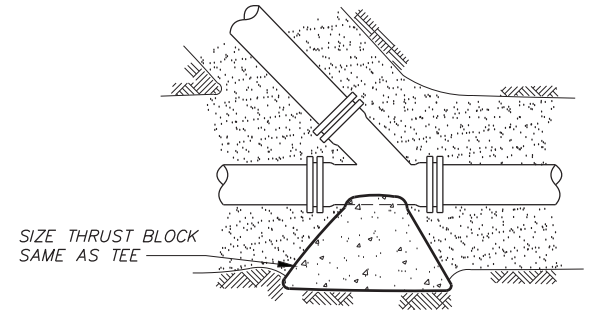
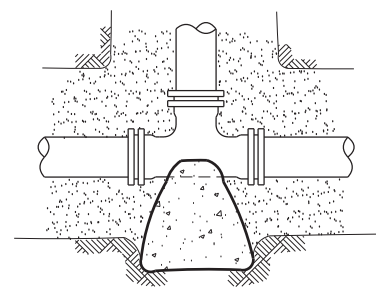
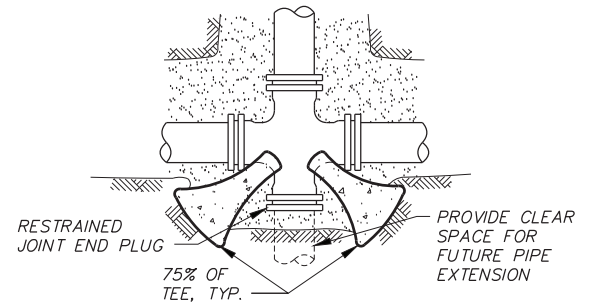
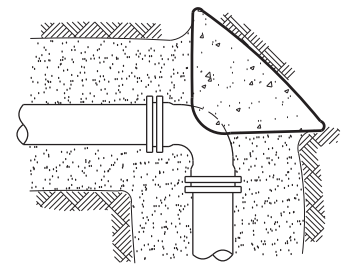
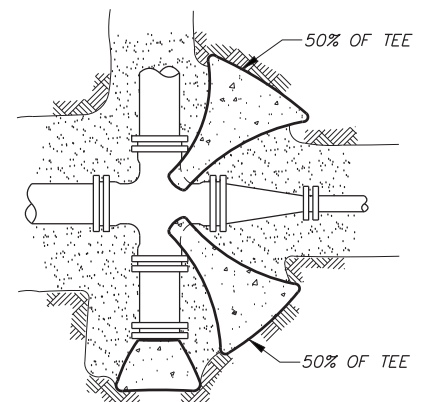
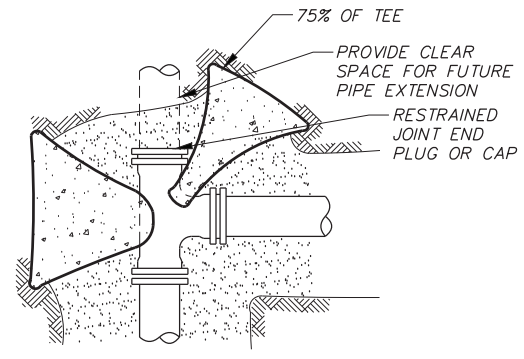
TYPICAL THRUST BLOCK DETAILS
 PLAN SECTION
 NTS



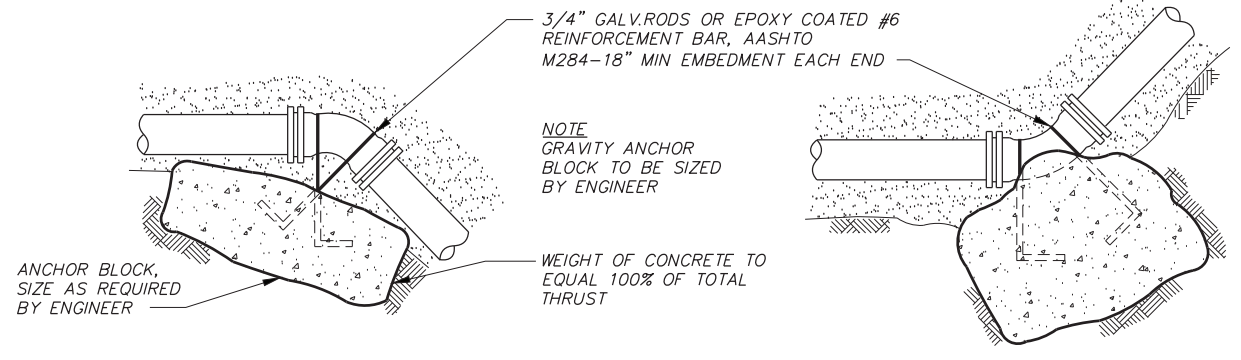
NOTE
 SEE THRUST BLOCK NOTES
 THIS SHEET FOR REQUIRED
 LOCATIONS OF THRUST
 BLOCKS FOR VALVES.

BEARING AREA
 SHALL BE AS
 CALCULATED
 FOR DEAD END
 WATER LINE

TYPICAL VALVE THRUST BLOCK
 NTS



TYPICAL THRUST BLOCK LOCATIONS
 PLAN VIEWS
 NTS

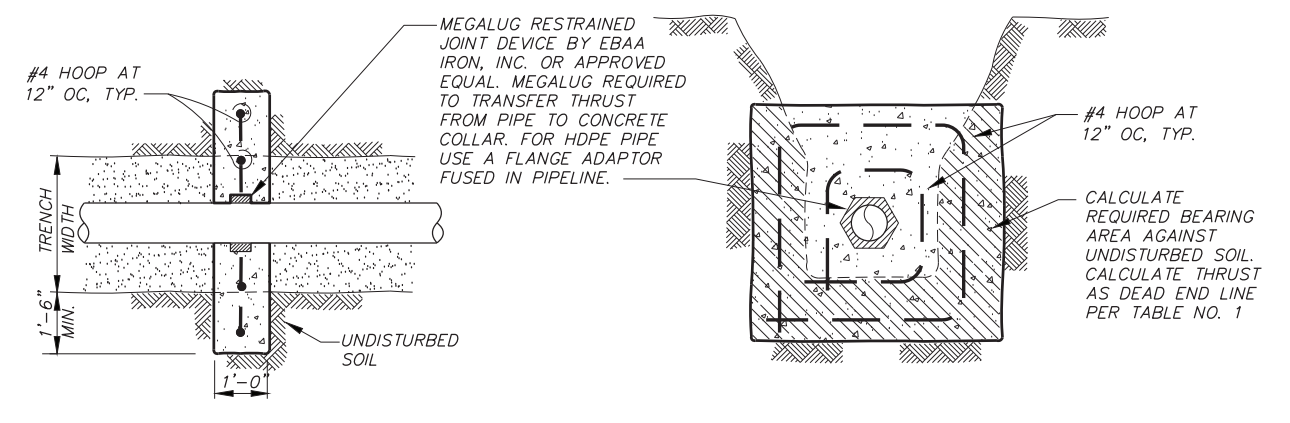


NOTE
 GRAVITY ANCHOR
 BLOCK TO BE SIZED
 BY ENGINEER

ANCHOR BLOCK,
 SIZE AS REQUIRED
 BY ENGINEER

WEIGHT OF CONCRETE TO
 EQUAL 100% OF TOTAL
 THRUST

TYPICAL ANCHOR BLOCKS
 SECTIONS
 NTS



MEGALUG RESTRAINED
 JOINT DEVICE BY EBAA
 IRON, INC. OR APPROVED
 EQUAL. MEGALUG REQUIRED
 TO TRANSFER THRUST
 FROM PIPE TO CONCRETE
 COLLAR. FOR HDPE PIPE
 USE A FLANGE ADAPTOR
 FUSED IN PIPELINE.

CALCULATE
 REQUIRED BEARING
 AREA AGAINST
 UNDISTURBED SOIL.
 CALCULATE THRUST
 AS DEAD END LINE
 PER TABLE NO. 1

TYPICAL ANCHOR BLOCKS
 ANCHOR COLLAR
 NTS

SEE SHEET U-505 FOR ADDITIONAL
 THRUST BLOCK REQUIREMENTS



DESIGNED BY	T. TIRICO / K. ISLEY	JOB NUMBER	756-06	DATE	March 2026
DRAWN BY	G. SAURBIER	ACAD FILE:	756-06-U-504.dwg		
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JEFFERSON COUNTY, OREGON
 NORTH UNIT MAIN CANAL - BEAR DRIVE
 BRIDGE REPLACEMENT
 UTILITY
 THRUST BLOCK DETAILS I

SHEET
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 24 OF 25

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THRUST BLOCK NOTES

- THRUST BLOCKS SHALL BE REQUIRED AT THE FOLLOWING LOCATIONS:
 - ALL CHANGES IN DIRECTION.
 - ALL DEAD-ENDS.
 - WHEN REDUCERS ARE INSTALLED.
 - ALL VALVES 8-INCHES AND LARGER SHALL BE SIZED FOR CLOSED CONDITION EXCEPTIONS:
 - WHEN RESTRAINED JOINT PIPE IS USED ON BOTH SIDES OF VALVE.
 - WHEN VALVE IS RESTRAINED JOINT CONNECTED TO A FITTING WHICH HAS APPROPRIATE THRUST BLOCKING.
 - AT LOCATIONS SPECIFICALLY CALLED OUT ON THE DRAWINGS.
 - AT TEMPORARY DEAD ENDS DURING PIPE INSTALLATION AS REQUIRED FOR TEMPORARY PRESSURE TESTING.
 - AT OTHER LOCATIONS REQUIRED BY THE ENGINEER.
- THRUST BLOCKS SHALL BE SIZED AS REQUIRED BY SOIL CONDITIONS AND DESIGN PRESSURE.
- PLACE CONCRETE AGAINST UNDISTURBED TRENCH WALL.
- CONCRETE SHALL BE 2,500 PSI MINIMUM.
- ALL CONCRETE SHALL BE PLACED SO THAT PIPE, FITTING JOINTS, BOLTS AND NUTS, ETC., WILL BE ACCESSIBLE FOR REPAIRS.
- PLACE ONE LAYER OF VISQUEEN BETWEEN FITTING AND CONCRETE TO FACILITATE FUTURE REMOVAL OF THRUST BLOCK IF REQUIRED.
- ANCHOR RODS SHALL BE 3/4" DIAMETER GALVANIZED STEEL RODS OR #6 EPOXY COATED REINFORCEMENT BAR, AASHTO M284, HAVING AN 18" MINIMUM EMBEDMENT IN CONCRETE.
- ALL THRUST BLOCKS SHALL BE SIZED FOR 150 PSI PRESSURE.
- IF THE REQUIRED BEARING AREA IS LESS THAN 1 SQUARE FOOT, A THRUST BLOCK SHALL NOT BE REQUIRED.

DETERMINATION OF THRUST BLOCK BEARING AREA

NOTE:
WHEN THRUST BLOCK BEARING AREA IS NOT SPECIFIED ON THE PLANS OR DETERMINED BY THE ENGINEER, THE FOLLOWING PROCEDURE SHALL BE USED TO DETERMINE REQUIRED BEARING AREA.

- DETERMINE THRUST (T) FOR TYPE OF FITTING OR JOINT AND SIZE OF PIPE FROM TABLE NO. 1 OR TABLE NO. 2.
- DETERMINE ADJUSTMENT FACTOR (F) FROM TABLE NO. 3 IF DESIGN PRESSURE IS DIFFERENT THAN 150 PSI.
- DETERMINE BEARING CAPACITY (B) OF SOIL FROM TABLE NO. 4.
- DETERMINE REQUIRED BEARING AREA (A) AS FOLLOWS:
 $A = (T \times F) / B$
 EXAMPLE: DESIGN PRESSURE = 200 PSI
 PIPE = 10"
 FITTING = TEE
 SOIL - SANDY GRAVEL

 FROM TABLE NO. 1: T = 15,660 LB.
 FROM TABLE NO. 3: F = 1.33
 FROM TABLE NO. 4: B = 3000 LB/SQ.FT.

 $A = \frac{15,660 \times 1.33}{3,000} = 6.9 \text{ SQ.FT.} = 7 \text{ SQ.FT. (ROUND UP TO NEAREST WHOLE SQ.FT.)}$

TABLE NO. 1

THRUST AT FITTINGS IN POUNDS AT 150 PSI OF DESIGN PRESSURE

PIPE SIZE	TEES AND DEAD ENDS	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	2,520	3,470	1,940	990	510
6"	5,660	7,980	4,340	2,220	1,130
8"	10,040	14,190	7,680	3,930	1,980
10"	15,660	22,170	12,020	6,140	3,080
12"	22,580	31,920	17,280	8,820	4,440
14"	30,740	43,440	23,520	12,000	6,030
16"	40,125	56,750	30,710	15,660	7,890
18"	50,775	71,810	38,870	19,820	9,960
20"	62,690	88,635	47,970	24,470	12,290
24"	90,260	127,650	69,090	35,240	17,700

TABLE NO. 2

SIDE THRUST PER 150 LB./SQ.IN. PRESSURE PER DEGREE OF DEFLECTION

PIPE SIZE	SIDE THRUST-LB	PIPE SIZE	SIDE THRUST-LB
4"	N/A	14"	540
6"	N/A	16"	700
8"	170	18"	900
10"	270	20"	1,100
12"	390	24"	1,575

MULTIPLY THRUST BY DEGREE OF DEFLECTION TO OBTAIN TOTAL THRUST

TABLE NO. 3

DESIGN PRESSURE (1)	ADJUSTMENT FACTOR (F) FOR DESIGN PRESSURE DIFFERENT THAN 150 PSI
50	0.33
75	0.50
100	0.67
125	0.83
150	1.00
200	1.33
250	1.67

(1) OTHER DESIGN PRESSURE CONTACT ENGINEER

TABLE NO. 4

SOIL	SAFE BEARING LOAD LB/SQ.FT.
SOFT CLAY	500
SILT	1,000
SAND	2,000
SAND AND GRAVEL	3,000
SAND AND GRAVEL CEMENTED WITH CLAY	4,000
HARD CLAY	4,000

SEE SHEET U-504 FOR ADDITIONAL THRUST BLOCK REQUIREMENTS



REVISION	BY	DATE	JOB NUMBER 756-06	DATE March 2026
DESIGNED BY T. TIRICO / K. ISLEY			ACAD FILE: 756-06-U-505.dwg	
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NORTH UNIT MAIN CANAL - BEAR DRIVE
BRIDGE REPLACEMENT

UTILITY
THRUST BLOCK DETAILS II

SHEET

U-505

25 OF 25