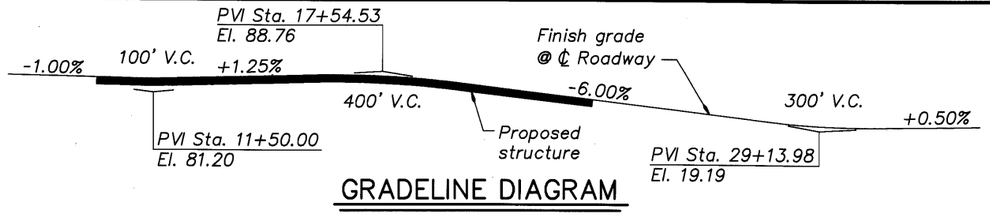
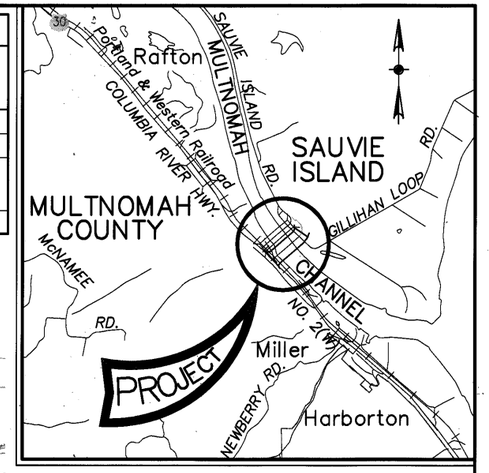
P:\O\ODOT00000460\0400CAD\EB\DLV\sa002.dwg Aug 16, 2005 11:13am



GRADELINE DIAGRAM

No Scale

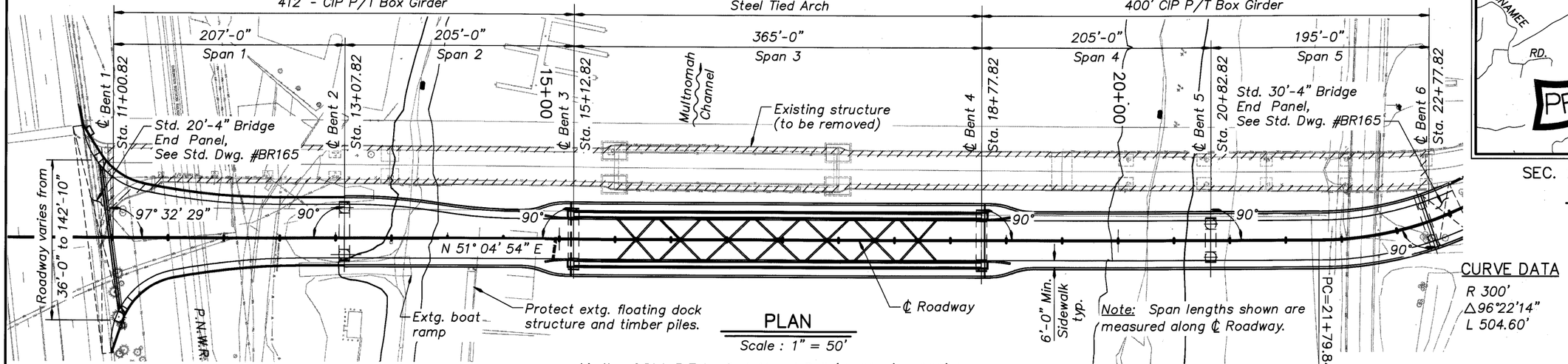
HYDRAULIC DATA		
	DESIGN FLOOD	BASE FLOOD
DISCHARGE (cfs)	120,000	130,000
FREQUENCY (yrs)	50	100
H.W. ELEVATION AT UPSTREAM FACE OF BRIDGE	25.75	27.39
BACKWATER (ft.)	0.01	0.01



SEC. 28, T. 2 N., R. 1 W., W.M.

LOCATION MAP

No Scale



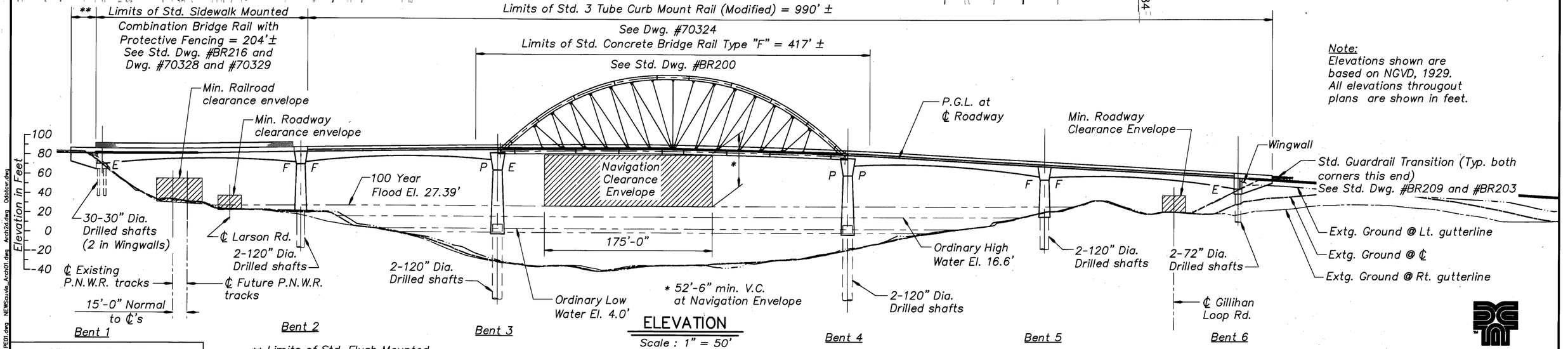
PLAN

Scale : 1" = 50'

Note: Span lengths shown are measured along ℄ Roadway.

CURVE DATA

R 300'
Δ 96°22'14"
L 504.60'



ELEVATION

Scale : 1" = 50'

** Limits of Std. Flush Mounted Combination Bridge Rail = 43'± See Std. Dwg. #BR220

Note: Elevations shown are based on NGVD, 1929. All elevations througout plans are shown in feet.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Clifford Coulter

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ

EXPIRES: 12/31/05

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

ACCOMPANIED BY DWGS. BR120, BR135, BR136, BR145, BR150, BR165, BR200, BR203, BR208, BR209, BR216, BR220, BR223 & BR246

Existing Co. Br. No. 2641

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.
MULTNOMAH CHANNEL (SAUVIE ISLAND RD.) (BR. #02641)
SAUVIE ISLAND BRIDGE REPLACEMENT
MULTNOMAH COUNTY

GENERAL PLAN AND ELEVATION

FEDERAL HIGHWAY ADMINISTRATION | PROJECT NUMBER
REGION 1 | OREGON DIVISION

SHEET 1 OF 173

DRAWING NO. 70188

Xrefs: LM01.dwg H001.dwg Scou5a_Bm.dwg GL01.dwg PE01.dwg NEWSauvie_Arch01.dwg Arch2d.dwg Odotcvr.dwg

INDEX of DRAWINGS

	DATE	REVISION	BY
2	08/05	Added Dwg. #70315	KWC
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Joel Tubbs

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ

Kent Cordtz EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

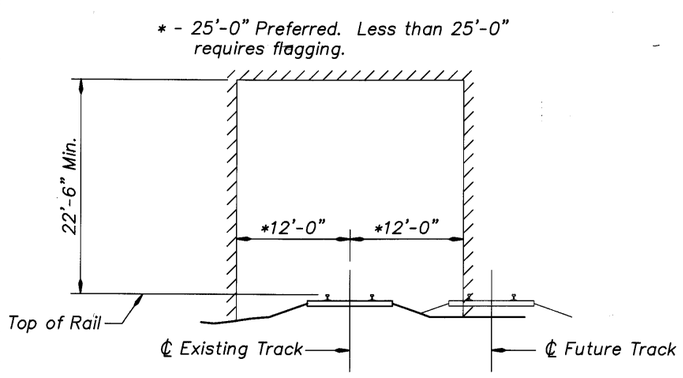
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

INDEX OF BRIDGE DRAWINGS

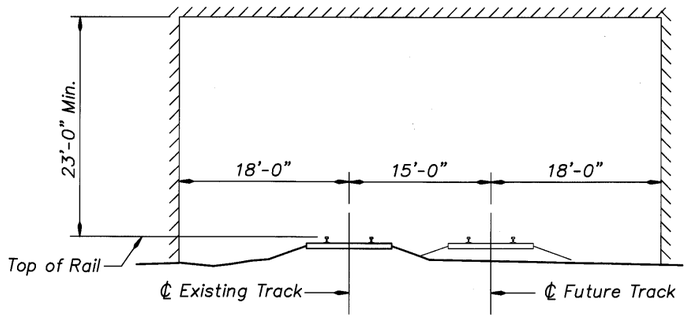
SHEET 2 OF 173.
DRAWING NO. 70189

Xrefs: Odotbdr.dwg ODOT0460_INDEX.dwg



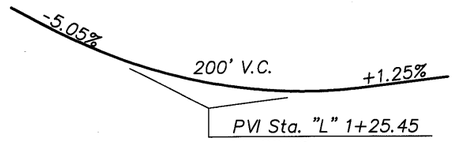
RAILROAD TEMPORARY CONSTRUCTION CLEARANCE

No Scale



RAILROAD PERMANENT CLEARANCE

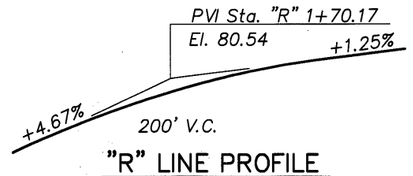
No Scale



"L" LINE PROFILE

No Scale

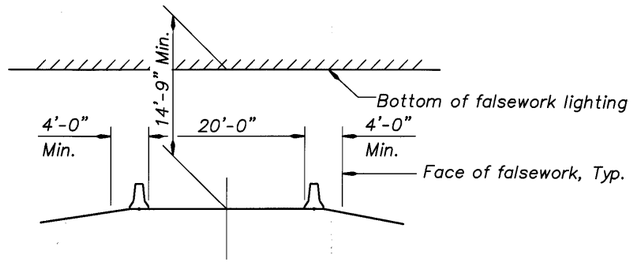
Left Curb Sta. "L" 2+24.87 PT = 30.00' left, Sta. 12+47.36 ℄ Roadway
See also Dwg. #70208.



"R" LINE PROFILE

No Scale

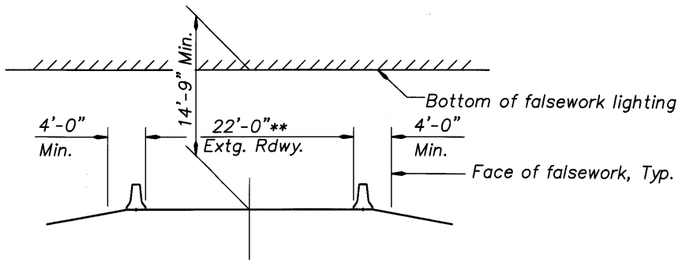
Right Curb Sta. "R" 3+12.73 PT = 18.00' right, Sta. 12+68.09 ℄ Roadway
See also Dwg. #70207.



LARSON ROAD TEMPORARY CONSTRUCTION CLEARANCE

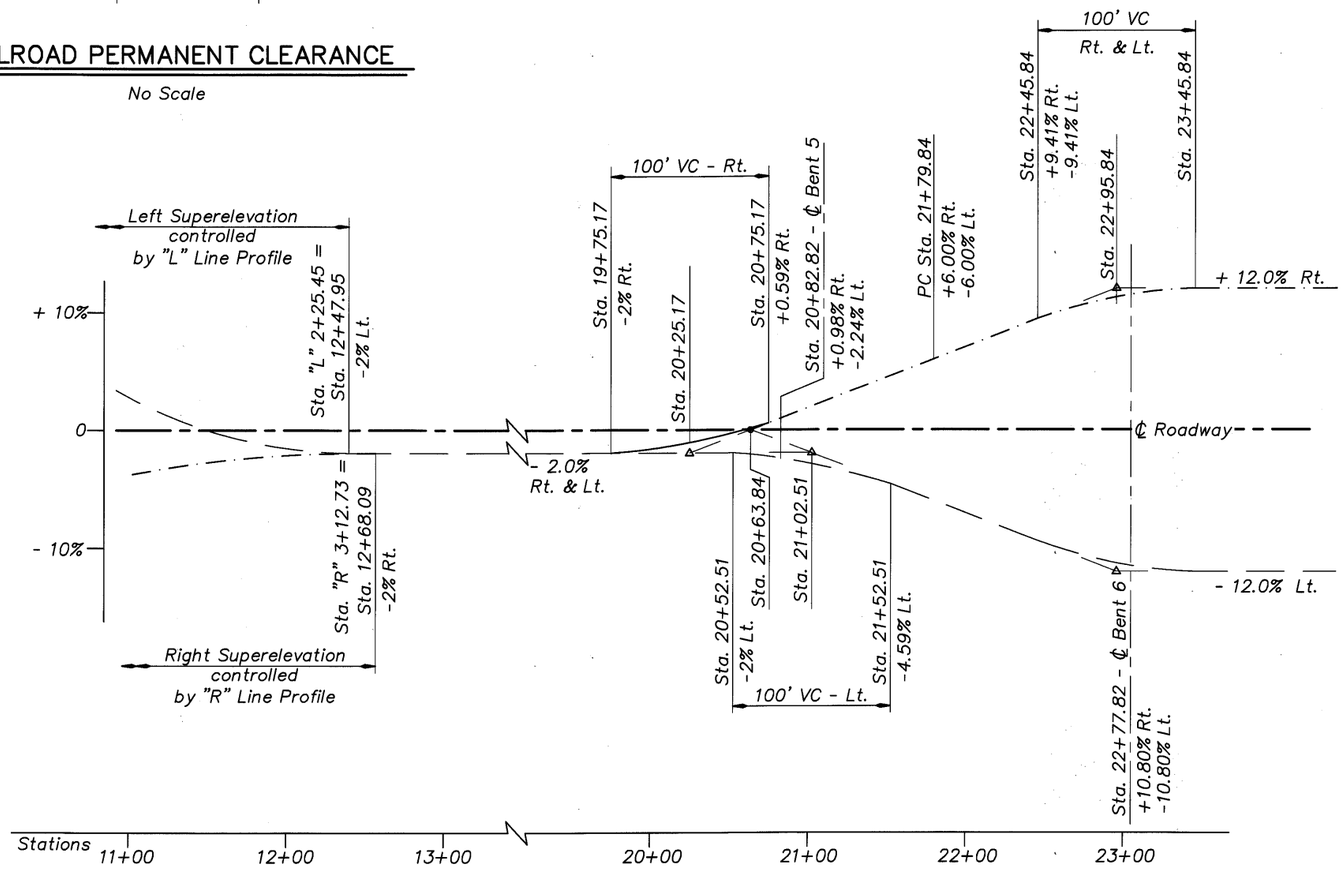
No Scale

**Note: Field verify existing roadway width.



GILLIHAN LOOP ROAD TEMPORARY CONSTRUCTION CLEARANCE

No Scale



SUPERELEVATION DIAGRAM

No Scale

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
1	08/05	Revised Larson Rd. clearance	JBT
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Joel Tubbs

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

CLEARANCE AND SUPERELEVATION DIAGRAMS

SHEET 3 OF 173
DRAWING NO. 70190

Xrefs: Odotbdr.dwg ODOT0460_GN.dwg ss_diagram.dwg clearance_diagrams.dwg ODOT0460_permitl.oods.dwg

GENERAL NOTES:

MATERIALS and CONSTRUCTION:

Provide all materials and perform all work according to the 2002 Oregon Standard Specifications for Construction.

Provide drilled shaft spiral reinforcement at Bents 1 and 6 according to ASTM Specification A706, AASHTO Specifications M31 (ASTM A615) Grade 60, AASHTO M225 (ASTM A496), or AASHTO M32 (ASTM A82).

Provide welded hoop column and drilled shaft reinforcement according to ASTM Specification A706.

Provide all other reinforcing steel according to ASTM A706, or AASHTO M31 (ASTM A615) Grade 60. Use the following splice lengths unless shown otherwise.

Reinforcing Splice Lengths (Class B) Grade 60											
Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14	#18
Uncoated	1'-0"	1'-4"	1'-8"	2'-0"	2'-8"	3'-6"	4'-4"	5'-7"	6'-9"	Not Permitted	

Splice reinforcing steel at alternate bars, staggered at least one splice length or as far as possible, unless shown otherwise.

Use uncoated reinforcing steel in the deck and bridge end panels. This includes top and bottom longitudinal bars, top and bottom transverse bars, and all bars extending into the sidewalks, curbs, and bridge rails.

All reinforcing shall have 2" of concrete cover, unless shown otherwise.

Support the bottom mat reinforcing steel on precast mortar blocks @ 2'-0" max. centers each way.
Support top mat from bottom mat with reinforcing bar supports by Dayton Superior Co. (SBU, BBU, or CHW) or approved equal @ 2'-0" centers each way.

Provide Class 5000 - ¾" concrete in post-tensioned box girder superstructure including sidewalks and curbs, and in the crossbeams at Bents 3 and 4.

Provide Class HPC 5000 -¾" concrete in post-tensioned box girder deck per Special Provisions.

Provide Class HPC 4350 -¾" concrete in Span 3 deck.

Provide Class 4350 - 1½", 1", or ¾" concrete in reinforced concrete bridge end panels.

Provide Class 3600 - ¾" concrete in columns.

Provide Class 3600 - ⅜" concrete in drilled shafts.

Provide Class 3600 - 1 ½", 1", or ¾" concrete for all other concrete.

Construction joints shall have roughened surface according to Standard Specification Section 00540.43a.

Provide prestressing steel in accordance with detail plans.

Provide permanent and temporary steel casings for drilled shafts conforming to ASTM A252.

Provide seismic restrainer cables of ¾" dia. preformed, 6x19, galvanized wire strand or independent wire rope core with a minimum breaking strength of 45,000 lbs.

Provide structural steel according to AASHTO M 270, Grade 50W (ASTM A709, Grade 50W) in all steel portions of the Span 3 tied arch, unless otherwise noted. Follow the Supplementary Requirements specified for non-fracture critical steel in the Standard Specifications Section 02530 for all steel elements, except as noted below. In addition, follow the Supplementary Requirements specified in the Standard Specifications for the following primary load-carrying members:

1. Arch Ribs
2. Floorbeams
3. Longitudinal Deck Stringers
4. Cable Hanger Plates and Supporting Diaphragms

The Span 3 knuckles and tie-girders are designated as Fracture-Critical Members (FCMs). Follow the supplementary requirements specified in the Standard Specifications Section 02530 for these Fracture Critical Members.

Include the following additional member elements to be ultrasonically inspected in accordance with the provisions of Standard Specifications Section 02530.40: Flanges of arch ribs; flanges and webs of tie-girders; flanges of knuckles; side plates of knuckles; and arch rib and tie-girder cable hanger plates.

Apply clear silicone caulking around steel plate interfaces on the exterior of the arch structure as directed by the Engineer. In general, caulking will be required along all upper edges and sides of interfaces. Leave lower edges uncaulked to allow trapped water to escape. Caulking will be required at, but not limited to, the following interfaces: around all arch rib and tie-girder splice plates; also around all connections for floorbeams, stringers, lateral bracing, traveler rails and bearings. Caulking is required whether areas are painted or unpainted.

Sandblast all interior and exterior surfaces of AASHTO M 270, Grade 50W (ASTM A 709, Grade 50W) steel elements in accordance with SSPC-SP6, "Commercial Blast Cleaning", prior to component assembly and bridge erection, in accordance with the Standard Specifications. In addition, sandblast all steel-to-steel contact surfaces within slip-critical bolted joints, and where painting is specified, to SSPC-SP10, "Near White Blast Cleaning", in accordance with the Standard Specifications, with the following exception: Steel-to-steel contact surfaces between tie-girder web and flange plates and connecting splice angles, except at field splices, need not be sandblasted to SSPC-SP10. Sandblasting of bolts is optional.
At the completion of shop fabrication of each steel arch bridge element, clean the element to remove all markings and contamination from visible steel surfaces before placing into storage or shipping to the job site. Use power washing equipment to clean the steel elements.

Paint the below listed exterior steel members in accordance with Section 00594 of the Standard Specifications. Provide top coat paint color to match Federal Standard 595b, No. 30045. Submit to the Engineer for approval color samples of brown paint color to match the weathered steel color.:

a. The exterior of arch knuckles
b. The exterior of the tie-girders
c. The outer ends of the floorbeams, as detailed in the plans.
d. The outer ends of the deck stringers, as detailed in the plans.
e. The arch hanger plate pin hole areas, as detailed in the plans.

Paint all interior surfaces of the arches, knuckles, and tie-girders, including the field splice plates, in accordance with the requirements of Section 00594 of the Standard Specifications, with the following exception: Apply two coats of zinc filled moisture-cured polyurethane primer as specified in Section 00594.11(e)(1)a. Provide the primer coats in contrasting colors, with the top (visible) coat in a light color, and submit a color sample to the Engineer for review before painting the bridge members. Do not apply any other coats of paint to the interior of these members.

Cut and fabricate steel plates so that the primary direction of rolling is in the direction of primary tensile and/or compressive stress, in accordance with the Standard Specifications. These members include the web and flange plates of the tie-girders, arch ribs, and floorbeams. Cut and fabricate other main load-carrying steel plates so that the direction of rolling is as indicated in the plans by the symbol: ◄DOR►

Fabricator shall refer to lighting details, Dwg. #70343 to #70355, and coordinate steel details as required.

Field splices of tie-girders and arch ribs are designed as slip-critical bolted connections. DO NOT finish member ends as mill-to-bear connections.

Provide hanger cables of 2.50" diameter, zinc-coated steel structural strand according to ASTM A586, with Class A zinc coating on all wires. Structural strand shall be pre-stretched to 55% of the minimum breaking strength, repeatedly, to attain the specified modulus of elasticity. The completed strand/socket assemblies shall be proof loaded to 50% of the breaking strength. Strand properties shall be:
Breaking Strength (minimum): 752,000 lbs.
Metallic Area: 3.75 sq. inches
Modulus of Elasticity: 24,000,000 psi

Provide ⅞ inch diameter high strength bolts in all structural connections according to AASHTO M164 (ASTM A325), unless otherwise noted. Provide Type 3 (weathering) bolts, nuts and washers. Bolted connections are designed as slip-critical, Class A. Follow AASHTO LRFD Bridge Design Specifications, Third Edition, for minimum center-to-center bolt spacing and minimum edge distance to centerline of bolt. Use either hex head tension control bolts or regular hex head bolts for all high strength bolts. Do not use round headed bolts. Unless noted otherwise, install bolts with heads on the outside, visible surfaces of tie-girders and knuckles. Fabricate bolted connections with the number and pattern of bolts detailed in the plans, if the bolt spacing or number of bolts is not otherwise detailed. Tension bolts in accordance with the Standard Specifications. Do not use Direct Tension Indicators (DTIs).

Where fillet weld size is not shown, minimum weld size shall be as shown in chart to right:

MINIMUM FILLET WELD SIZE	
Thickness of thicker part to be joined	Minimum fillet weld size **
¾" or less	¼"
over ¾"	5/16"
** Weld size need not exceed thickness of thinner part joined.	

Develop and obtain approval for a shop assembly plan for the steel tied arch structure. Perform the shop assembly in accordance with the Standard Specifications, utilizing the Progressive Truss or Girder Assembly method, modified as necessary for the tied arch structure. Include in the shop assembly process the arch ribs, knuckles, tie-girders, lower floor system and lateral bracing, and upper lateral bracing.

Design and construct falsework for concrete structures in accordance with the special provisions. Attention is directed to the variable subsurface conditions including deposits of soft alluvium. Construction of the new approach embankment on the island side will result in significant settlement. Design and construct falsework foundations of sufficient depth, capacity, and stiffness in span 5 to maintain line and grade and to prevent distress due to settlement.

	DATE	REVISION	BY
2	08/05	Added caulk note & revised paint note	JBT
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
Kent Cordtz
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

GENERAL NOTES (1 of 2)

SHEET 4 OF 173
DRAWING NO. 70191

Xrefs: Odotbdr.dwg 00070460_GN.dwg ss_diagrcam.dwg 00070460_permitLocds.dwg

GENERAL NOTES CONT'D:

DESIGN CODES and PERFORMANCE CRITERIA:

Bridge is designed in accordance with the AASHTO LRFD Design Specifications (Third Edition, 2004). Project specific loads are clarified under Design Loads.

The Span 3 Tied Arch structure is designed to meet a maximum live load deflection of 3.60" (L/1200).

The Span 3 Tied Arch structure is designed to be globally redundant to prevent structure collapse from fracture of any single plate or rolled shape, through use of stitch-bolted built-up tension tie-girders and knuckles. The tension tie-girder has been designed for the loss of any single web or flange plate, in accordance with the following special Extreme Event III:

η_i, γ_p per AASHTO LRFD Design Specifications, (Third Edition, 2004)
γ'_{LL} = 1.30 for HL-93 Loads
γ'_{LL} = 1.10 for Permit Loads in governing lane and HL-93 Loads in other applicable lanes

Bridge hanger cable assemblies are designed with a minimum factor of safety of 4.0 for breaking strength versus calculated unfactored DL+LL+IM loads. Bridge hanger cable assemblies are also designed for the loss of any one cable with a minimum factor of safety of 3.0 for breaking strength versus calculated DL+LL+IM loads for the remaining cables.

DESIGN LOADS:

Bridge is designed for dead loading from self-weight, utility weight of 200 lbs per lineal foot of bridge, and future wearing surface weight of 25 psf of roadway.

Bridge is designed for vehicular live load as follows:
Design lanes consist of an AASHTO HL-93 load (design truck or tandem + lane) or an ODOT Permit 1 Vehicle or an ODOT Permit 2 Vehicle for all AASHTO described limit states except Strength II and Fatigue. The Strength II design lane shall consist of an ODOT Permit 3 Vehicle or ODOT Permit 4 Vehicle or the Multnomah County Permit Vehicle plus one additional design lane as described for all other limit states. The Fatigue limit state shall utilize the code prescribed design live load. The application and number of design lanes follow the criteria described in AASHTO LRFD Design Specifications (Third Edition, 2004).

See schematics of the permit loads below.

Bridge is designed for pedestrian live loading of 75 psf for all but the local design of the cantilevered sidewalk support system in Span 3 which is designed for 85 psf.

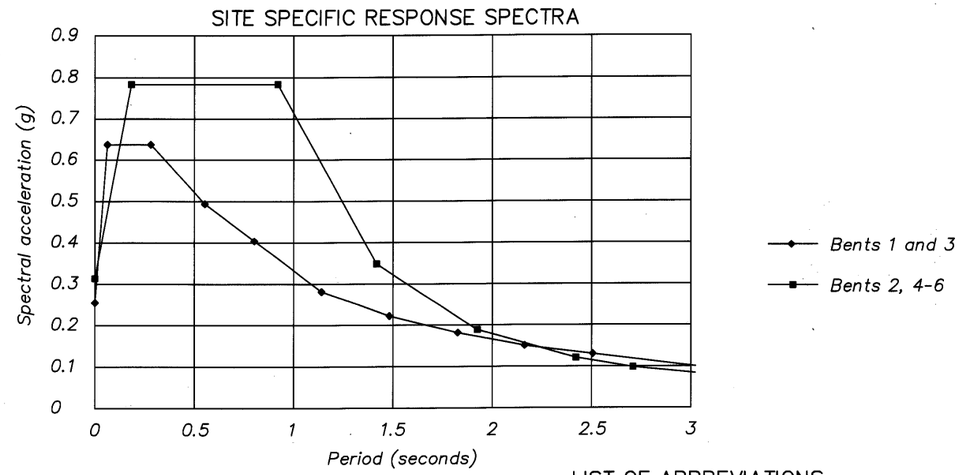
Bridge is designed for inspection and maintenance traveler loading of 36 kips (maximum gross weight). The design loading is applied to the pedestrian walk supports in arch portion of the bridge as a moving load. Traveler loading is not applied concurrently with the pedestrian live loading.

Bridge is designed for the following thermal loading:
a) Assumed erection temperature is 52 degrees F.
b) Assumed seasonal temperature variance:
Concrete portions:
12 degrees F to 82 degrees F
Steel portions:
-10 degrees F to 120 degrees F

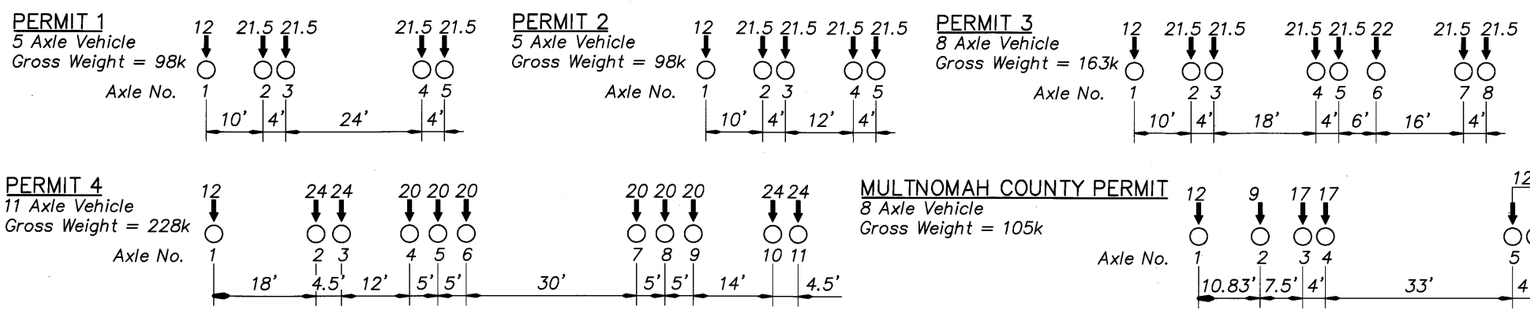
c) Assume +/- 25 degrees F temperature differential between steel members above and below top of tie-girder.

Bridge is designed for vessel collision in accordance with Method I of AASHTO "Guide Specification and Commentary for Vessel Collision Design of Highway Bridges, Volume I: Final Report," February 1991.

Seismic design is by multi-mode elastic analysis in accordance with AASHTO LRFD Design Specifications (Third Edition, 2004). The response modification factors used are R = 5.0 for column moments, R = 3.0 for drilled shaft moments, R = 0.8 for abutment connections, and R = 1.0 for other components. The 1000-year return period response spectra are as follows:



PERMIT LOADINGS: *(kips)*



LIST OF ABBREVIATIONS

AWS	American Welding Society
BC	Begin curve
BH	Borehole
Cont'd.	Continued
CSL	Crosshole Sonic Logging
DL	Dead Load
EC	End Curve
Eq.	Equal
FL	Flowline
LOL	Layout Line
LRFD	Load and Resistance Factor Design
OHW	Ordinary High Water
PGL	Profile Grade Line
P.N.W.R.	Portland & Western Railroad
SS	Stainless Steel
sq.	square
U.N.O.	Unless noted otherwise
W.P.	Working Point

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON 74549 PE MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

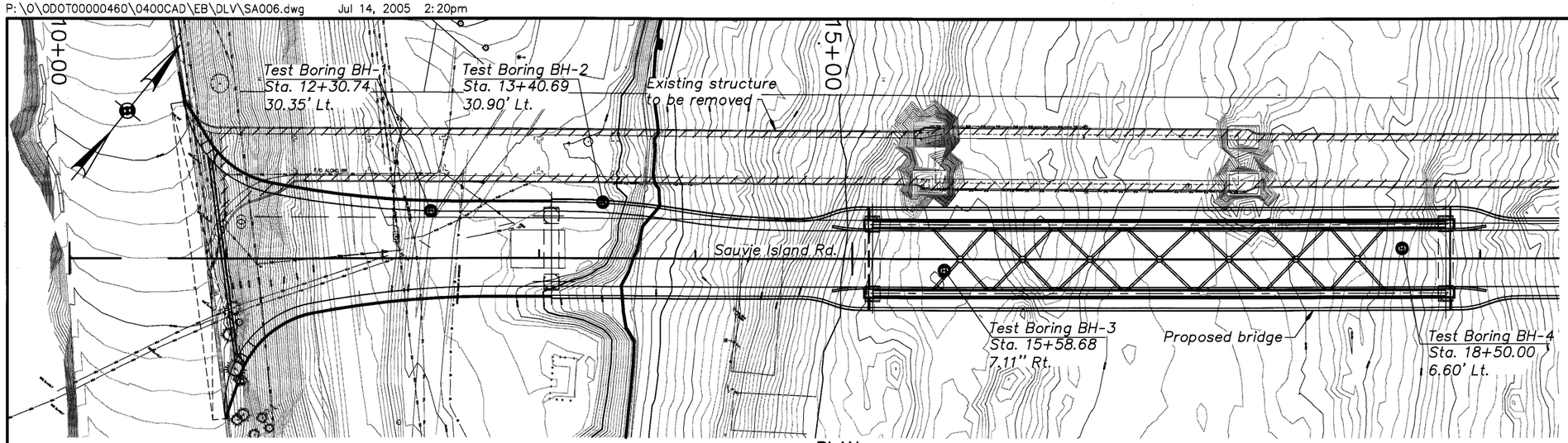
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

GENERAL NOTES (2 of 2)

SHEET 5 OF 173
DRAWING NO. 70192

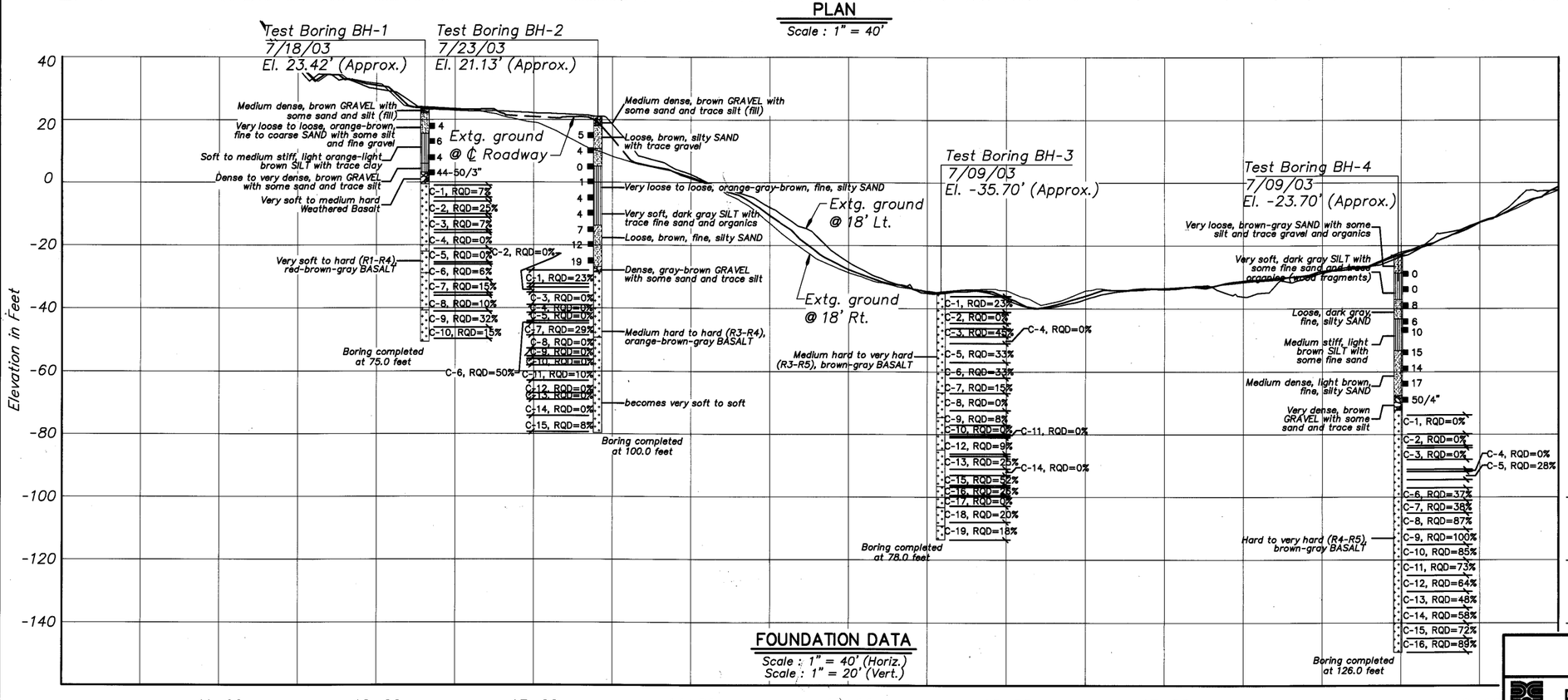
Xrefs: Odotbdr.dwg ODOT0460_GN.dwg ODOT0460_permitLoads.dwg



PLAN
Scale : 1" = 40'

LEGEND OF MATERIALS

- ASPHALT
- SILT
- BOULDERS
- SAND
- FILL
- VOLCANIC ROCK



FOUNDATION DATA
Scale : 1" = 40' (Horiz.)
Scale : 1" = 20' (Vert.)

24 Standard Penetration Test.
N value.

C = Core Sample.
P = Undisturbed Sample
RQD = Rock Quality Designation.
▽ = Elevation Groundwater Encountered

03/09 As-Constructed TDF

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

NOTE:
TEST HOLE LOCATIONS AND ELEVATIONS ARE APPROXIMATE.

FOUNDATION DATA SHOWN ON THIS DRAWING IS A CONSOLIDATION OF INFORMATION AND/OR REVISION IN TERMINOLOGY FROM THE BORING LOGS. THESE LOGS WERE USED IN COMPILING THIS DRAWING AND ARE INCLUDED IN THE GEOTECHNICAL REPORT,

DRAFTED: R. Stone
DESIGNED: Allison Pyrch
REVIEWED: Scott Mills
CHECKED:
REGISTERED PROFESSIONAL ENGINEER 56891 OREGON JULY 14, 1995 ANJV ALI
EXPIRES: 12/31/05

GEOD
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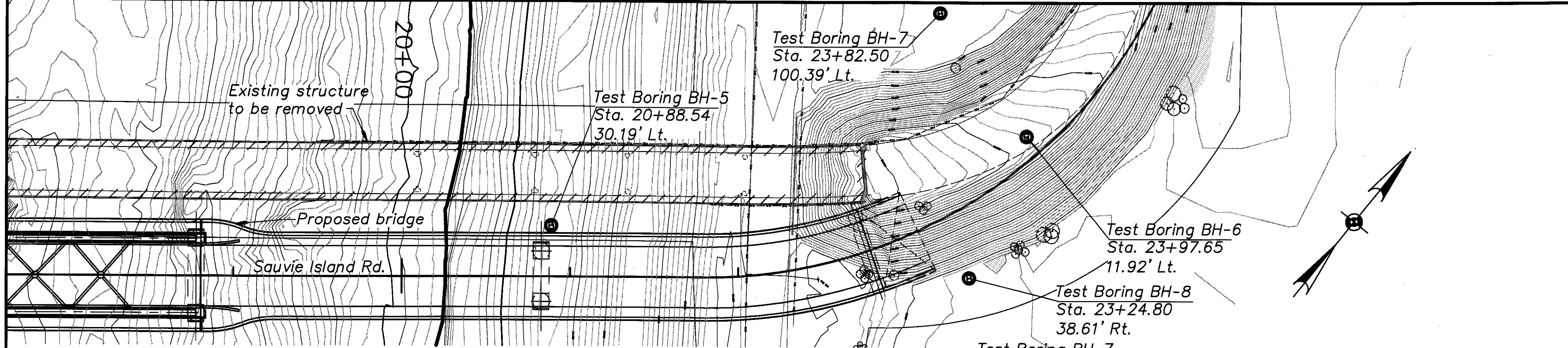
CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

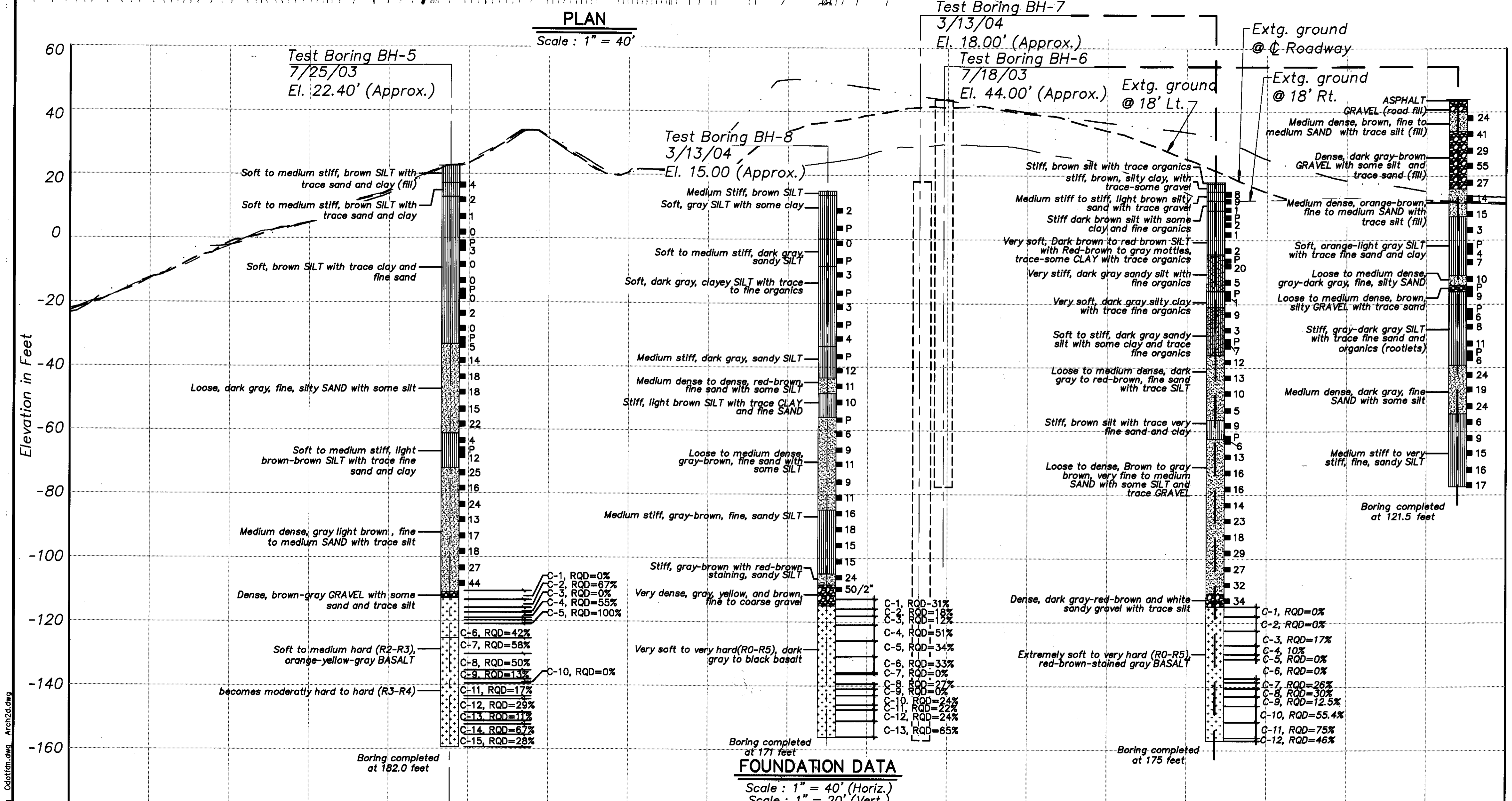
FOUNDATION DATA (1 OF 2)

SHEET 6 OF 173
DRAWING NO. 70193



PLAN

Scale : 1" = 40'



FOUNDATION DATA

Scale : 1" = 40' (Horiz.)
Scale : 1" = 20' (Vert.)

LEGEND OF MATERIALS

- ASPHALT
- SILT
- BOULDERS
- SAND
- FILL
- VOLCANIC ROCK

24 Standard Penetration Test. N value.

C = Core Sample.
P = Undisturbed Sample
RQD = Rock Quality Designation.
∇ = Elevation Groundwater Encountered

03/09 As-Constructed TDF

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

NOTE:
TEST HOLE LOCATIONS AND ELEVATIONS ARE APPROXIMATE.

FOUNDATION DATA SHOWN ON THIS DRAWING IS A CONSOLIDATION OF INFORMATION AND/OR REVISION IN TERMINOLOGY FROM THE BORING LOGS. THESE LOGS WERE USED IN COMPILING THIS DRAWING AND ARE INCLUDED IN THE GEOTECHNICAL REPORT,

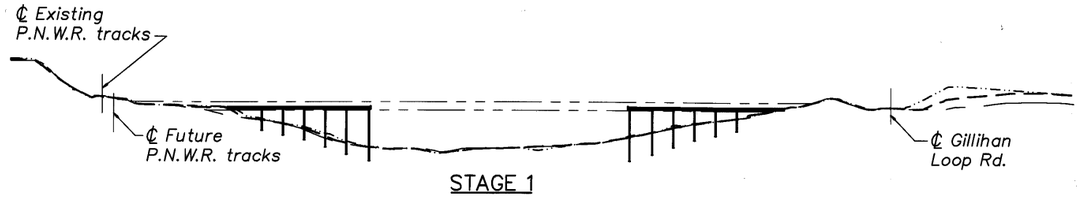
GEODESIGN INC
DAVID EVANS AND ASSOCIATES, INC. 530 Center Street N.E., Suite 605 Salem Oregon 97301 Phone: 503.361.8635

DRAFTED: R. Stone	CHECKED:	MULTNOMAH COUNTY BRIDGES — TRANSPORTATION DIVISION	BRIDGE NO. 20136	MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.
DESIGNED: Allison Pyrch		OREGON DEPARTMENT OF TRANSPORTATION BRIDGE ENGINEERING SECTION	DATE Sept. 2005	FOUNDATION DATA (2 OF 2)
REVIEWED: Scott Mills	EXPIRES:			

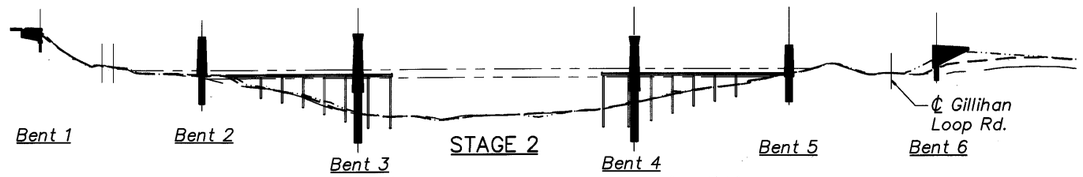
SHEET 7 OF 173

DRAWING NO. 70194

Xrefs: Sauvie_BM.DWG NEWSauvie_Arch01.dwg Odot1in.dwg Arch2d.dwg

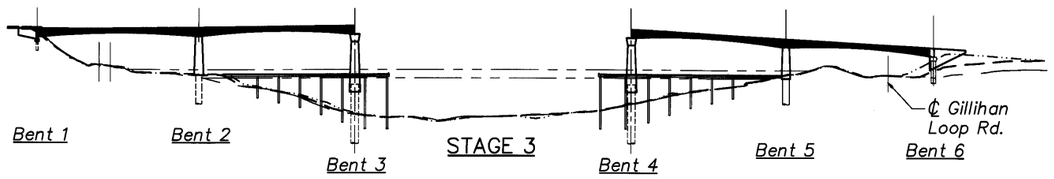


Stage 1: (In-Water Work)
Construct temporary work bridges to Bents 3 and 4.
See Temporary Work Bridge Plan Dwg. #70203.



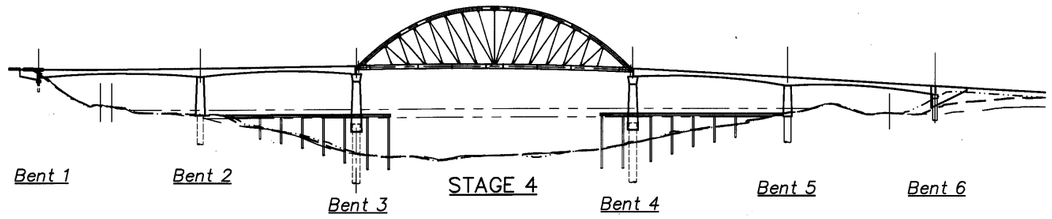
Stage 2: (A portion is In-Water Work)
Install grout tubes at existing Bents 3-4.
Stabilize existing bridge substructure at existing Bents 7-11. See Dwg. #70202 for bent locations.
Construct stone columns.
Remove existing bridge deck overhang and sidewalk (portion) as required for construction of temporary trestle, temporary roadway barrier required.
Construct temporary trestle and shift traffic.
Remove portion of existing Bent 1 and spans 1 and 2. See Dwg. #70202 for limits.
Temporary roadway barrier required.
Construct drilled shafts at Bent 1 (portion) and Bents 2-6.

Stage 2: (cont'd.)
Construct Bent 1 (portion).
Construct columns at Bents 2 and 5.
Construct columns and crossbeams at Bents 3 and 4.
Construct Bent 6 (portion).



Stage 3: (A portion is In-Water Work)
Erect falsework, span 1 (portion*), span 2, span 4, and span 5.
Construct span 1 (portion*), span 2, span 4, and span 5.
Construct Bent 1 end panel (portion).

* Longitudinal beams 1-8 and 8a.



Stage 4:
Construct arch span. See Arch Erection drawings, Dwg. #70197-#70199.
Route traffic onto new bridge. Temporary roadway barrier required.
Remove temporary trestle.
Remove existing spans 1-3 and Bents 1 & 2 (remaining portions)

Notes:
1. See Traffic Control Plan drawings for additional requirements and details.
2. See Arch Erection Schemes, Dwg. #70197-#70199, for arch erection requirements at span 3.
3. See Deck Plan - Span 1 Left Side, Dwg. #70208 for construction joint locations for staged construction.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2			
1	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON KENT WILLIAM CORDTZ MARCH 09, 2004
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

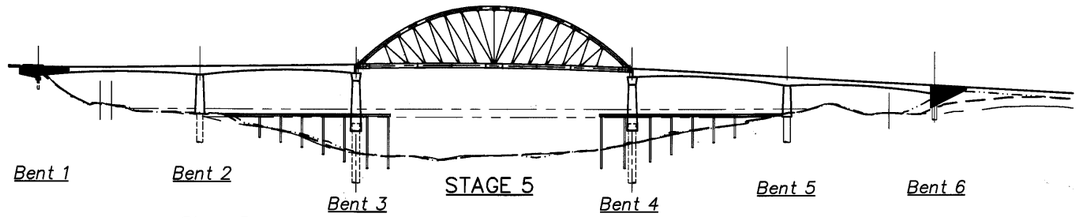
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

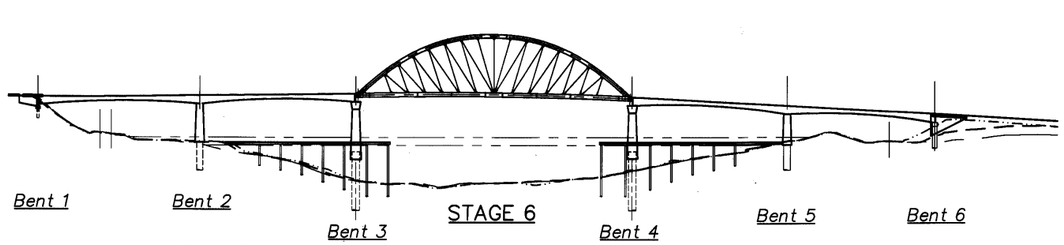
CONSTRUCTION SEQUENCE (1 OF 2)

SHEET 8 OF 173
DRAWING NO. 70195

Xrefs: Odotbdr.dwg ODOT0460_CS_02.dwg Sauvie_BM.DWG NEWSauvie_Arch01.dwg Arch2d.dwg



Stage 5:
Construct Bent 1 (remaining portion).
Erect falsework, span 1 (remaining portion).
Construct span 1 (remaining portion).
Construct Bent 6 left wingwall.



Stage 6:
Construct Bent 1 end panel (remaining portion).
Construct Bent 6 end panel.

Stage 7: *(a portion is In-Water Work)*
Remove work bridges and falsework piling.

Stage 8: *(a portion is In-Water Work)*
Remove existing bridge (remaining portion) and all remaining temporary piling.
See Conceptual Demolition Scheme, Dwg. #70202.

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	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
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TRANSPORTATION DIVISION

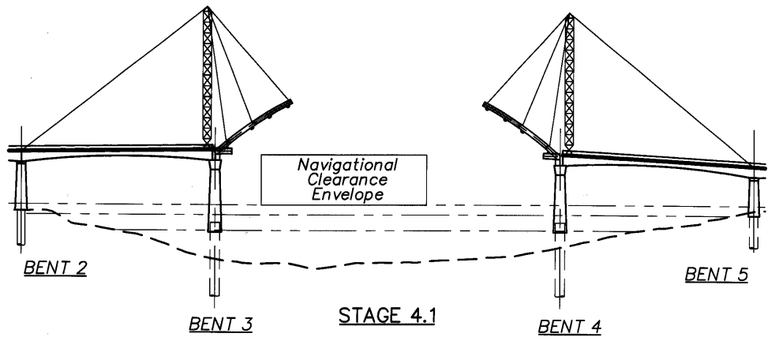
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

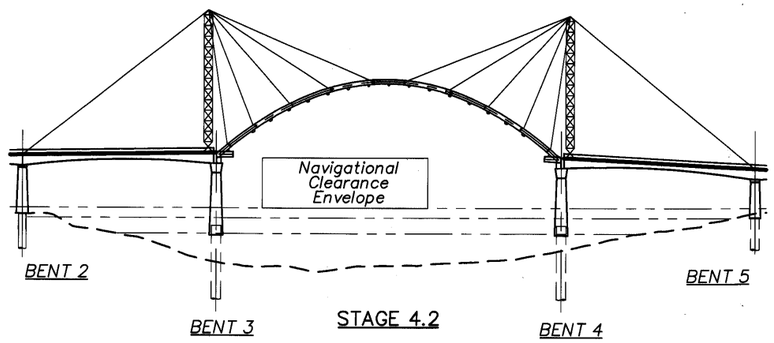
CONSTRUCTION SEQUENCE (2 OF 2)

SHEET 9 OF 173
DRAWING NO. 70196

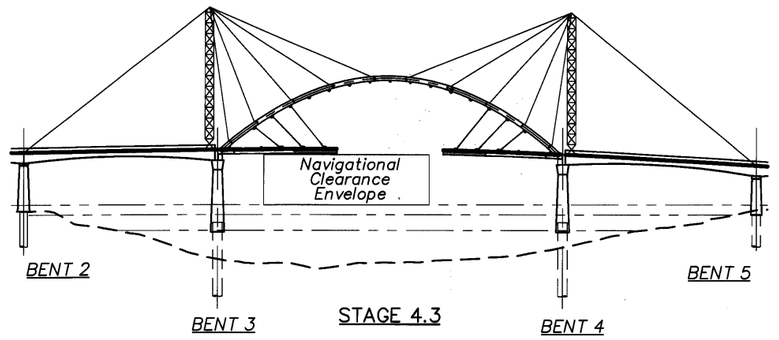


4.1a. Erect stay towers and backstay cables.

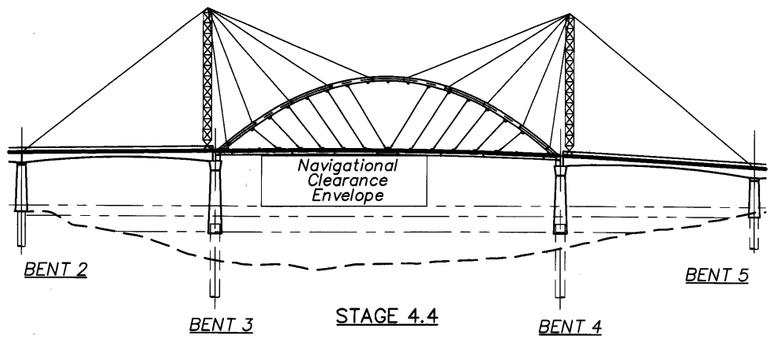
4.1b. Erect knuckles and begin arch erection, including top lateral bracing.



4.2a. Complete arch rib and top lateral bracing erection.

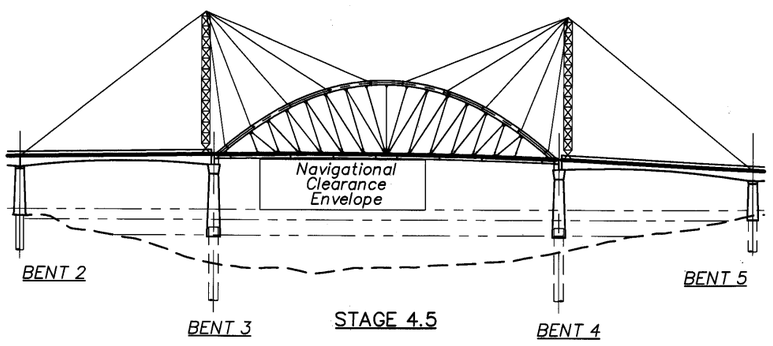


4.3a. Begin tie-girder erection, utilizing inclined cables. Include floor system.

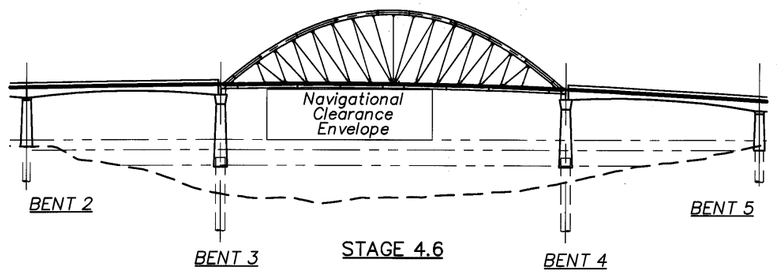


4.4a. Adjust arch geometry before closing tie-girder.

4.4b. Complete tie-girder and floor system erection.



4.5a. Install remaining cables.



4.6a. Remove stay towers and supporting cables.

4.6b. Adjust cable tensioning.

4.6c. See Dwg. #70199 for remaining stages.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

STAYED TOWER ERECTION SCHEME

No Scale

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Gernot Komar

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Kent Curtis MARCH 09, 2004 KENT WILLIAM CURTIS
EXPIRES: 12-31-05

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OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

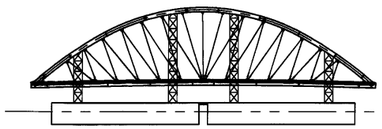
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH ERECTION SCHEMES (1 OF 3)

SHEET 10 OF 173
DRAWING NO. 70197

Xrefs: Odotbdr.dwg ODOT0460_CS_01.dwg



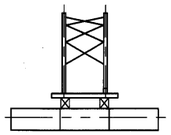
STAGE 4.1

4.1a. Fabricate tied arch structure off-site.

4.1b. Install temporary arch rib/tie-girder bracing.

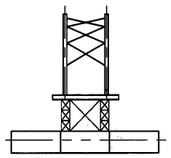
4.1c. Support completed tied arch steel superstructure on low blocking on barges.

4.1d. All cables are installed, but remain slack.



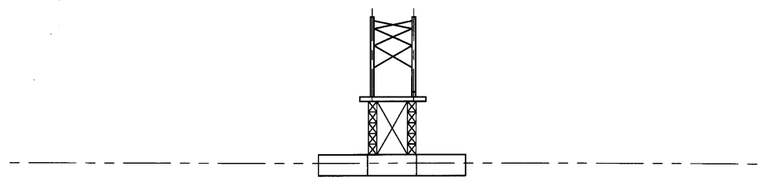
STAGE 4.2

4.2a. Prepare bridge for jacking. Add stabilizing barges as required.



STAGE 4.3

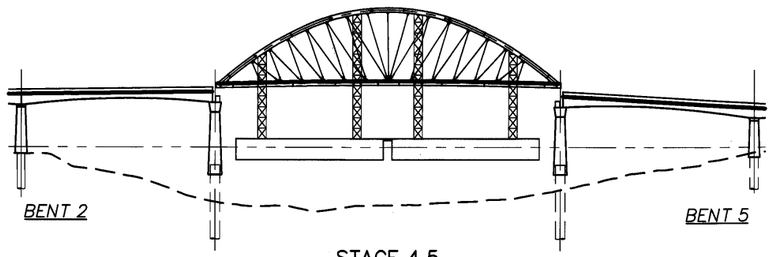
4.3a. Initiate bridge jacking and blocking operation, maintaining stability at all times.



STAGE 4.4

4.4a. Raise bridge sufficiently to clear bearing seats.

4.4b. Maneuver barges into position adjacent to main span.

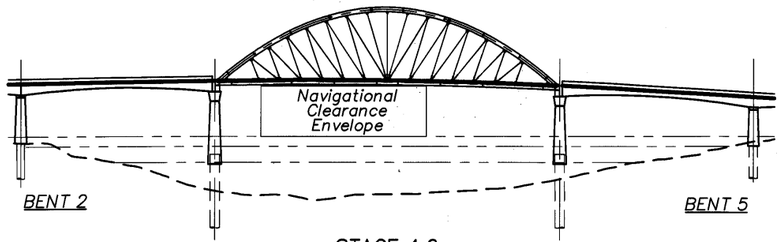


STAGE 4.5

4.5a. Maneuver bridge over bearing seats.

4.5b. Lower bridge onto bearings.

4.5c. Remove slack from cable (ZERO Tension) C2, C4, C6, C8, C10, C12, C16, C18, C20, C22, C24, and C26 (See Dwg. #70217).



STAGE 4.6

4.6a. Remove jacks, blocking, barges and temporary arch bracing. Some cables remain slack before arch rib/tie-girder bracing is removed. (See Dwg. #70217)

4.6b. Adjust cable tensioning.

4.6c. See Dwg. #70199 for remaining stages.

DROP-IN ERECTION SCHEME

No Scale

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	DATE	REVISION	BY
2			
1	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Gernot Komar

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74540 PE OREGON MARCH 09, 2005 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH ERECTION SCHEMES (2 OF 3)

SHEET 11 OF 173
DRAWING NO. 70198

Xrefs: Odotbdr.dwg ODOT0460_CS_01.dwg

SPAN 3 TIED ARCH-ERECTION NOTES

1. *Two possible methods of erecting the Span 3 steel tied arch span are shown on Dwg #70197 and #70198, as follows:*

   a) *Stayed Tower Erection Scheme involves erecting the steel superstructure in final location utilizing temporary towers set over Bents 3 and 4 to suspend the arch ribs, tie-girders, and other steel elements.*

   b) *Drop-In Erection Scheme involves off-site erection of the complete steel superstructure, then transporting it to the site on barges and erecting it onto the bents.*

2. *These two erection schemes have been shown for information only. The actual construction sequence and method of construction is the sole responsibility of the Contractor.*

3. *Erection of the tied arch span on falsework placed in the river channel is not permitted.*

4. *Develop and submit for review a complete erection scheme in advance of the beginning of steel fabrication. Do not perform the work until erection scheme has been reviewed by Engineer. Design all temporary shoring, towers, stay cables, floating barges, jacking systems, and all other temporary structures and equipment required to accomplish the proposed erection scheme. Design any required temporary bracing for the tied arch structure, and demonstrate that temporary member stresses Do Not exceed the allowable limits per the AASHTO Specifications. Obtain the endorsement seal of a Professional Engineer licensed in the State of Oregon on all drawings, calculations, and written procedures pertaining to the proposed erection scheme.*

5. *The erection data presented on Dwg. #70215, #70216, #70217, and #70218 pertains to the specific drop-in arch erection scheme, and is shown for information only. Develop and submit for review arch erection, cable tension, and deck elevation data for each stage of the Contractor's proposed erection scheme. Demonstrate that the Final Deformed Geometry is identical to that shown on Dwg. #70217.*

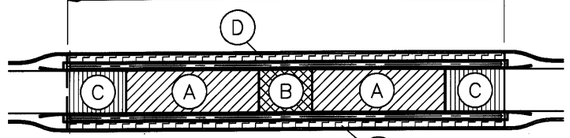
6. *Slack cables are not active in the structure, and are installed with an obvious sag. ZERO tension cables have sufficient inital tension to remove obvious kinks and sags, and become active in the structure. A minimum of 10 kips will be required to achieve the ZERO tension condition.*

7. *Major reconfiguration of designed bridge components of the steel tied arch span or the concrete approach spans to accommodate the proposed erection scheme is not permitted. Minor modifications to accommodate the proposed erection scheme may be submitted for approval by the Engineer. Do not alter the external appearance of the structure.*

8. *The Contractor is responsible for the stability of the structure and all temporary work during all stages of erection. The Contractor is responsible for the hydrodynamic stability of any floating erection scheme at all times, and under all anticipated weather conditions. Review of the proposed erection scheme will not relieve the Contractor of the responsibility for the safety of the methods or equipment used, or from carrying out the work in accordance with the plans and specifications.*

9. *Obtain copies of all project permits, and conform to all environmental, right-of-way, navigation, and other site constraints and requirements, during the erection of the bridge. Refer to the Special Provisions.*

Arch Deck Placing Sequence



STAGE 4.7

4.7. Place concrete deck in sequence indicated:

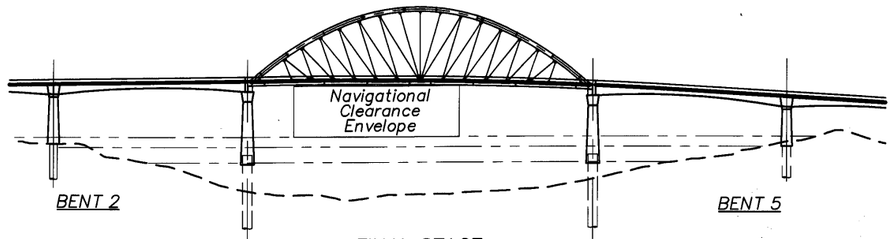
4.7a. Pour concrete deck Segment (A)

4.7b. Pour concrete deck Segment (B)

4.7c. Pour concrete deck Segment (C)

4.7d. Pour concrete sidewalk Segment (D)

Refer to Dwg #70210 and #70211 for details and specific locations of above concrete segments.



FINAL STAGE

a. Add railings.

b. Add expansion joints.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Kent Cooper MARCH 09, 2004 KENT WILLIAM COOPER
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

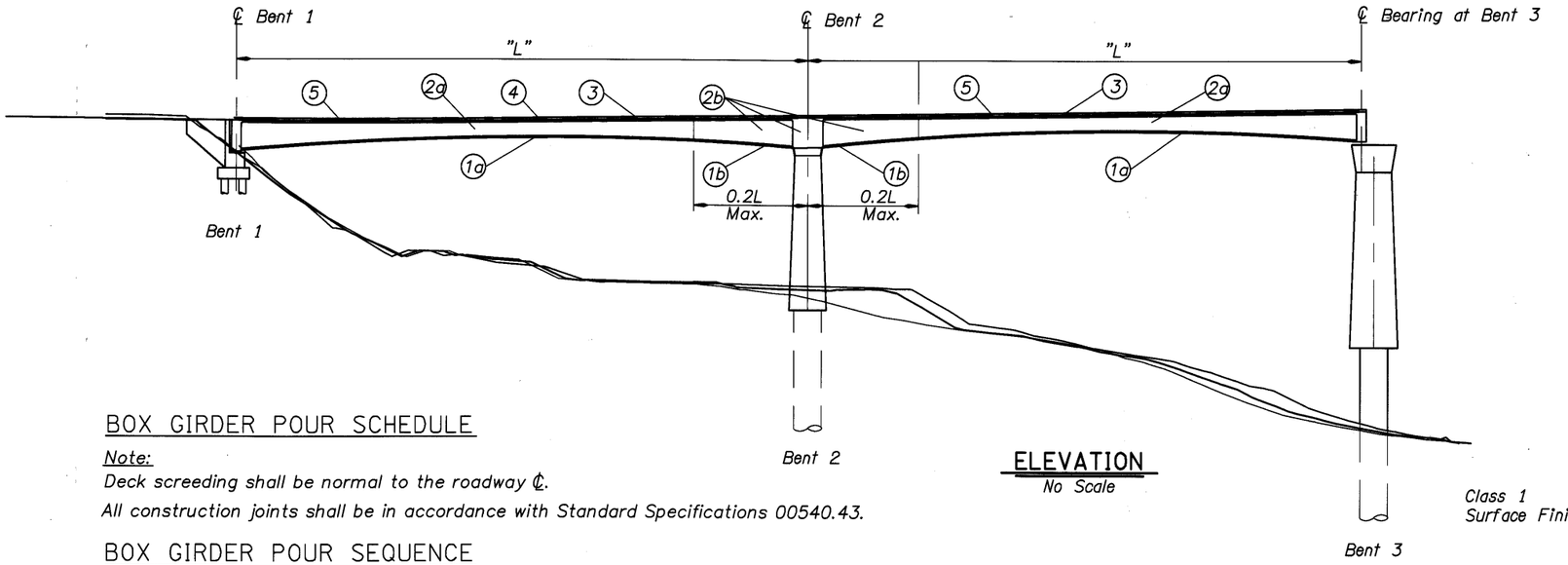
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH ERECTION SCHEMES (3 OF 3)

SHEET 12 OF 173
DRAWING NO. 70199

Xrefs: Odotbdr.dwg 00010460_GS_01.dwg



ELEVATION
No Scale

BOX GIRDER POUR SCHEDULE

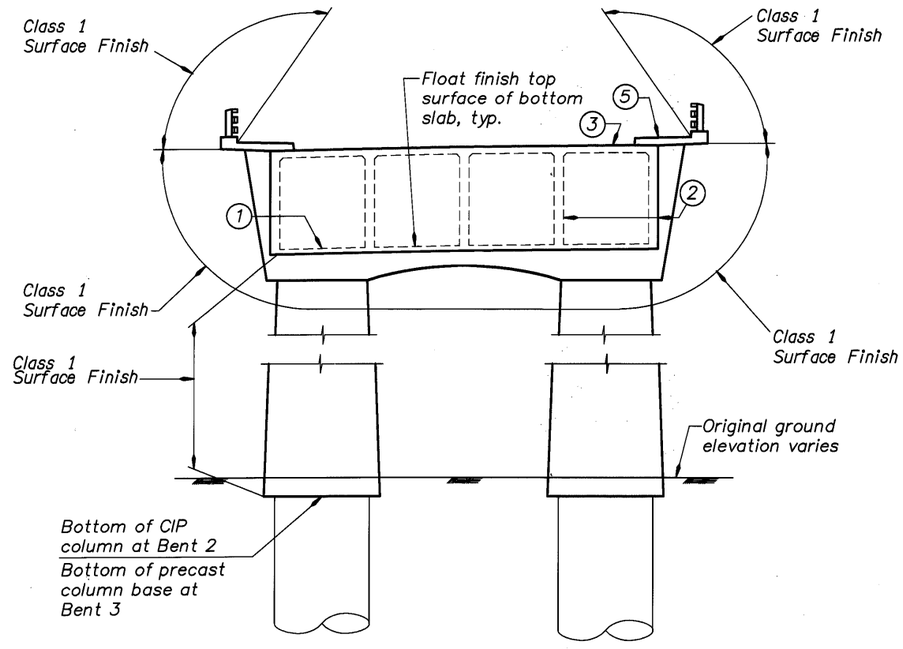
Note:
Deck screeding shall be normal to the roadway ℄.
All construction joints shall be in accordance with Standard Specifications 00540.43.

BOX GIRDER POUR SEQUENCE

1. Pours (1a) and (1b) are the bottom slab. Stop Pours (1) at falsework bent and not at a permanent bent. Delay a minimum of 3 days between adjacent Pours (1). Complete all Pours (1a) prior to starting Pours (1b). Complete all Pours (1) prior to starting Pours (2).
2. Pours (2a) and (2b) are the longitudinal and transverse beams to the bottom of the fillets. Stop (2) over a falsework bent. Delay the start of Pour (2) a minimum of 3 days after bottom slab Pours (1) are complete. Delay a minimum of 3 days between adjacent Pours (2). Complete all adjacent Pours (2a) prior to starting Pours (2b).
3. Pours (3) include the fillets and deck slab. Pours (3) to be delayed a minimum of 3 days after completetion of all Pours (2). Pours (3) may be stopped over any transverse beam, with the use of a deck construction joint. Delay a minimum of 5 days between adjacent Pour (3). Bulkheads for deck pours shall not be removed until at least 3 days after completion of the pour. Deck pours may be extended over any part of a span or spans as long as they meet these requirements.
4. Pour (4) includes the deck slab closure pour between longitudinal beams 4 and 5 in span 1. Delay a minimum of 5 days after completing all pours (3).
5. Pour (5) includes the sidewalks. Delay a minimum of 5 days after completing all pours (3).
6. Box girder pour sequence is shown for longitudinal beams 1-8 and 8a. Longitudinal beam 1a is similar.

CONSTRUCTION SEQUENCE

See Dwg. #70195 and #70196



CONCRETE FINISH DETAILS
No Scale

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	DATE	REVISION	BY
1	08/05	Revised Columns	KWC
	03/08	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Steve Thoman

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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TRANSPORTATION DIVISION

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BRIDGE ENGINEERING SECTION

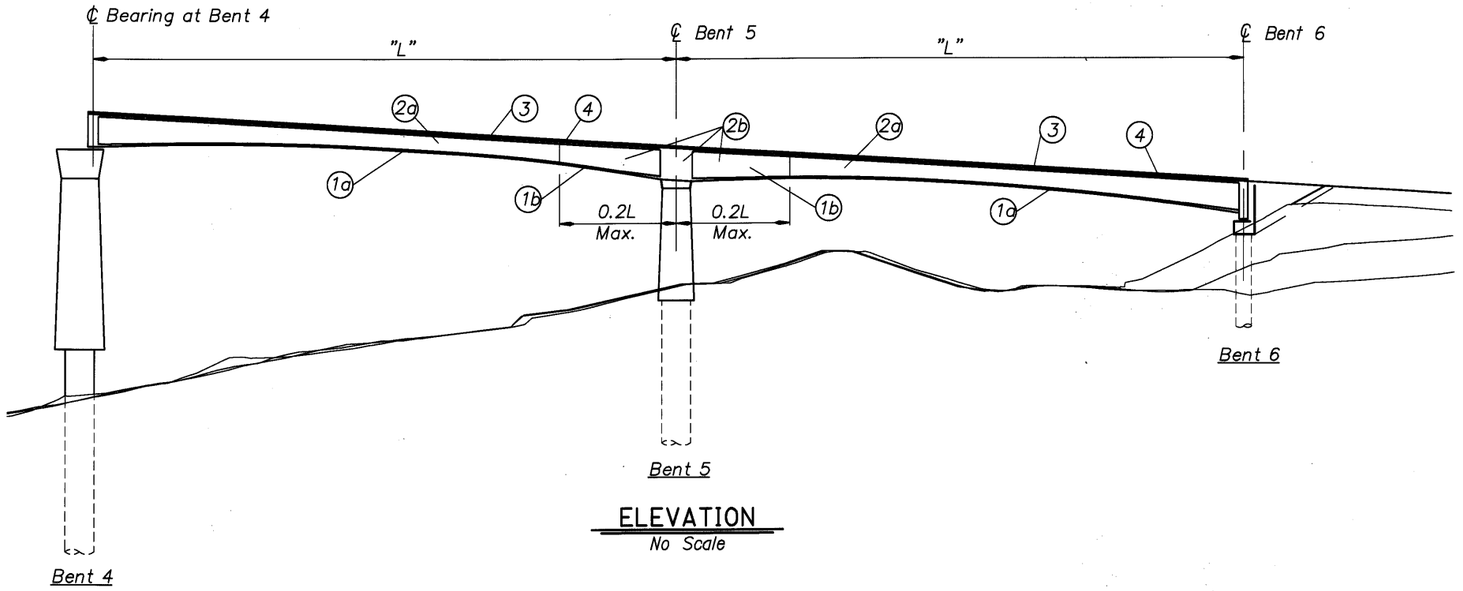
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BOX GIRDER CONCRETE PLACEMENT SPANS 1 AND 2

SHEET 13 OF 173
DRAWING NO. 70200

Xrefs: Odotbdr.dwg



ELEVATION
No Scale

BOX GIRDER POUR SCHEDULE

Note:

Deck screeding shall be normal to the roadway ℄.

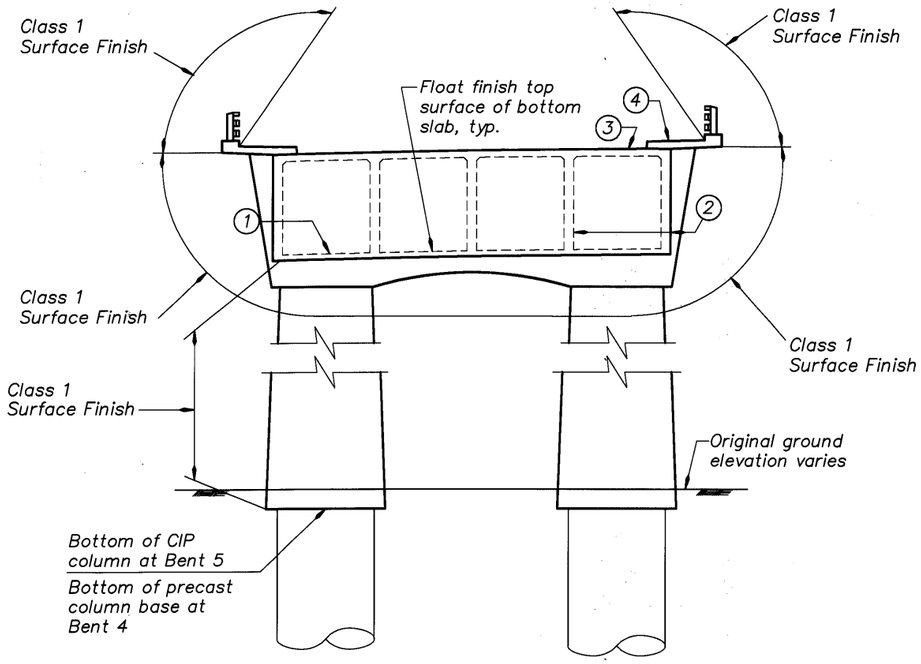
All construction joints shall be in accordance with Standard Specifications 00540.43.

BOX GIRDER POUR SEQUENCE

1. *Pours (1a) and (1b) are the bottom slab. Stop Pours (1) at falsework bent and not at a permanent bent. Delay a minimum of 3 days between adjacent Pours (1). Complete all Pours (1a) prior to starting Pours (1b). Complete all Pours (1) prior to starting Pours (2).*
2. *Pours (2a) and (2b) are the longitudinal and transverse beams to the bottom of the fillets. Stop (2) over a falsework bent. Delay the start of Pour (2) a minimum of 3 days after bottom slab Pours (1) are complete. Delay a minimum of 3 days between adjacent Pours (2). Complete all adjacent Pours (2a) prior to starting Pours (2b).*
3. *Pours (3) include the fillets and deck slab. Pours (3) to be delayed a minimum of 3 days after completetion of all Pours (2). Pours (3) may be stopped over any transverse beam, with the use of a deck construction joint. Delay a minimum of 5 days between adjacent Pour (3). Bulkheads for deck pours shall not be removed until at least 3 days after completion of the pour. Deck pours may be extended over any part of a span or spans as long as they meet these requirements.*
4. *Pour (4) includes the sidewalks, Delay a minimum of 5 days after completing all pours (3).*

CONSTRUCTION SEQUENCE

See Dwg. #70195 and #70196



CONCRETE FINISH DETAILS
No Scale

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Steve Thoman

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
Bent Cordtz
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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Salem Oregon 97301
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

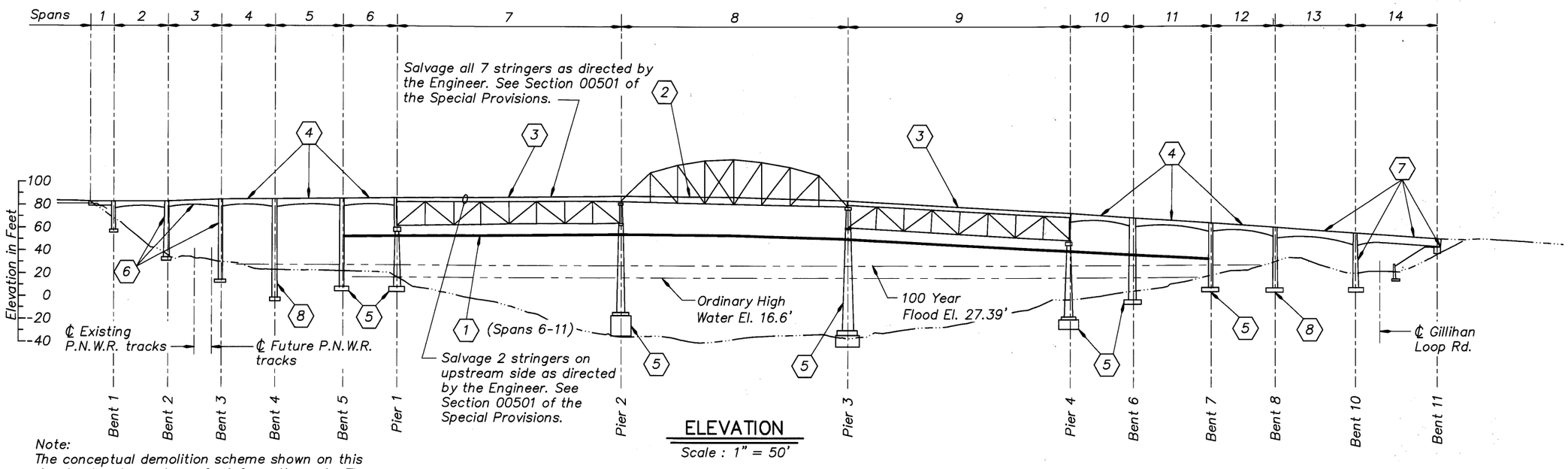
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BOX GIRDER CONCRETE PLACEMENT
SPANS 4 AND 5

SHEET 14 OF 173
DRAWING NO. 70201

Xrefs: Odotbdr.dwg



ELEVATION

Scale : 1" = 50'

Note:
The conceptual demolition scheme shown on this drawing has been shown for information only. The actual demolition sequence and method of demolition is the sole responsibility of the Contractor.

Remove existing structure to the limits specified in the Standard Specifications except as follows:
Piers 2-4 and Bent 6: Remove to existing grade.
Bent 8: Remove to 1-foot below existing grade.
See plans for additional requirements.

DEMOLITION SEQUENCE

Note: Spans 1 - 3, and bents 1 and 2, to be removed during new bridge construction stages. See Demolition Plan - Existing Spans 1-3 and Dwg. #70195 and #70196.
Coordinate construction and demolition sequences.

Stage ⟨1⟩: Place debris containment system beneath spans 6 through 11.

Stage ⟨2⟩: Remove concrete portions of deck, walks and rails, span 8. Remove remainder of span 8, intact, for disposal as hazardous materials.

Stage ⟨3⟩: Repeat Stage 2 sequence for spans 7 and 9.

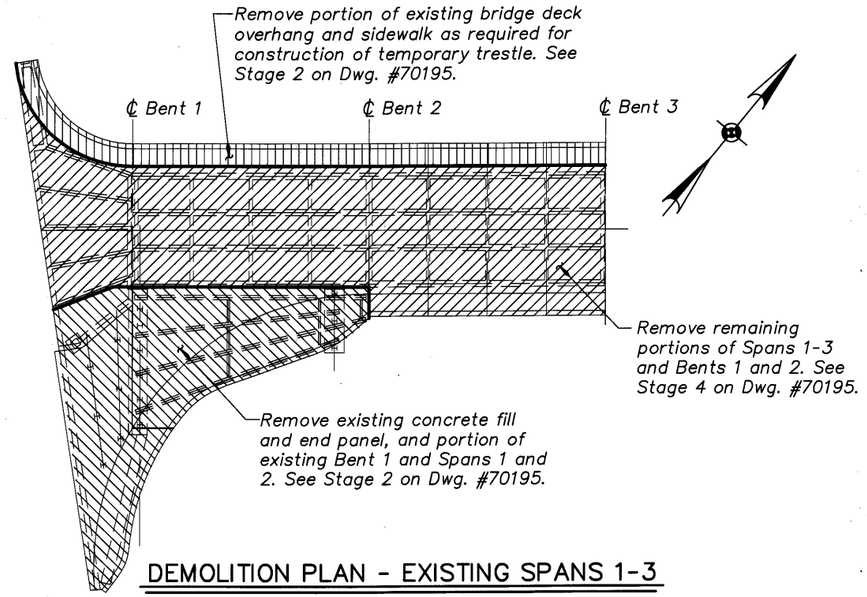
Stage ⟨4⟩: Remove superstructure, spans 4 through 6, and 10 through 12.

Stage ⟨5⟩: (A portion is In-Water Work) Remove bent 5, piers 1-4, and bents 6-7.

Stage ⟨6⟩: (48 hour P.N.W.R. Closure) Remove remaining portions of spans 1-3 and bents 1-3.

Stage ⟨7⟩: (24 hour Gillihan Loop Road Closure) Remove spans 13 and 14, and bents 10 and 11.

Stage ⟨8⟩: Remove bents 4 and 8.



DEMOLITION PLAN - EXISTING SPANS 1-3

No Scale

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	08/05	Revised salvage beam location	JBT
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Steve Thoman
REVIEWED: Kent Cordtz

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 7284 OREGON JULY 8, 2003 JOEL BRANDON TUBBS
EXPIRES: 6-30-06
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

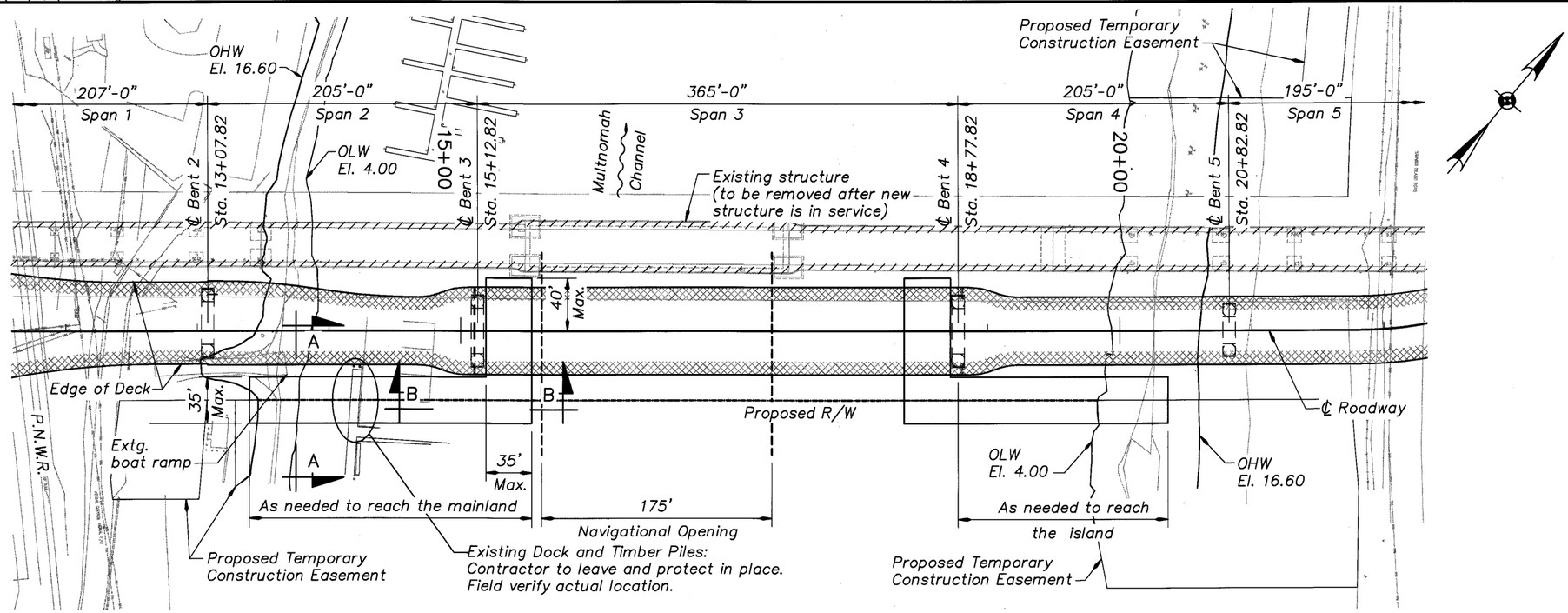
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

CONCEPTUAL DEMOLITION SCHEME

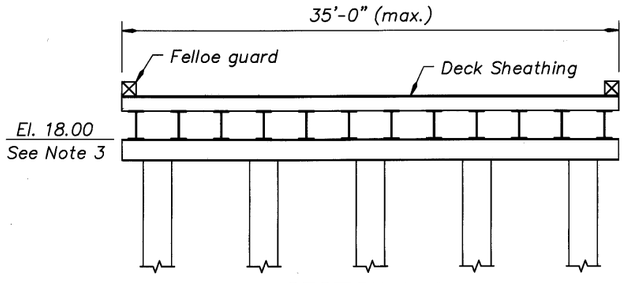
SHEET 15 OF 173
DRAWING NO. 70202

Xrefs: Sauvie_BM.DWG multi2PROP.dwg ODOT0460_DE.dwg Odotbdr.dwg



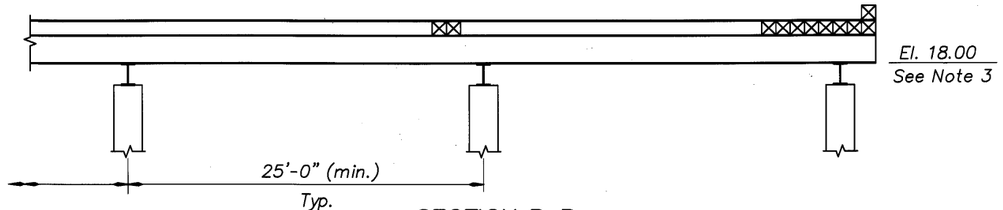
WORK BRIDGE PLAN

Scale : 1" = 50'



SECTION A-A

Scale: 3/16" = 1'-0"



SECTION B-B

Scale: 3/16" = 1'-0"

REGULATORY AGENCY RESTRICTIONS

Work bridge design shown is conceptual. Contractor's design must conform to the maximum and minimum dimensions shown as well as the following regulatory agency restrictions:

1. *Construct and remove the work bridges during In-Water Work periods specified in Special Provisions.*
2. *Limit total number of piles driven for temporary work bridges within limits of OHW to 128. Number of piles per bent shown in Section A-A is conceptual.*
3. *Surround all piles driven within the active wetted channel with bubble curtain or approved equivalent method of noise level reduction.*
4. *Provide deck sheathing and continuous felloe guard to contain leakage and spills, and to prevent their entry into the waterway. Work bridges shall be removed.*
5. *Maintain permanent opening of at least 175 feet for existing navigational clearance.*
6. *Denotes minimum bottom of stringers. Provides 1.4' clear to ordinary high water. Contractor may raise this but not lower it. See Special Provisions.*

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Steve Thoman
REVIEWED: Kent Cordtz

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 72845 PE OREGON JULY 15, 2003 NOEL BRANDON TUBBS
EXPIRES: 6-30-06

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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

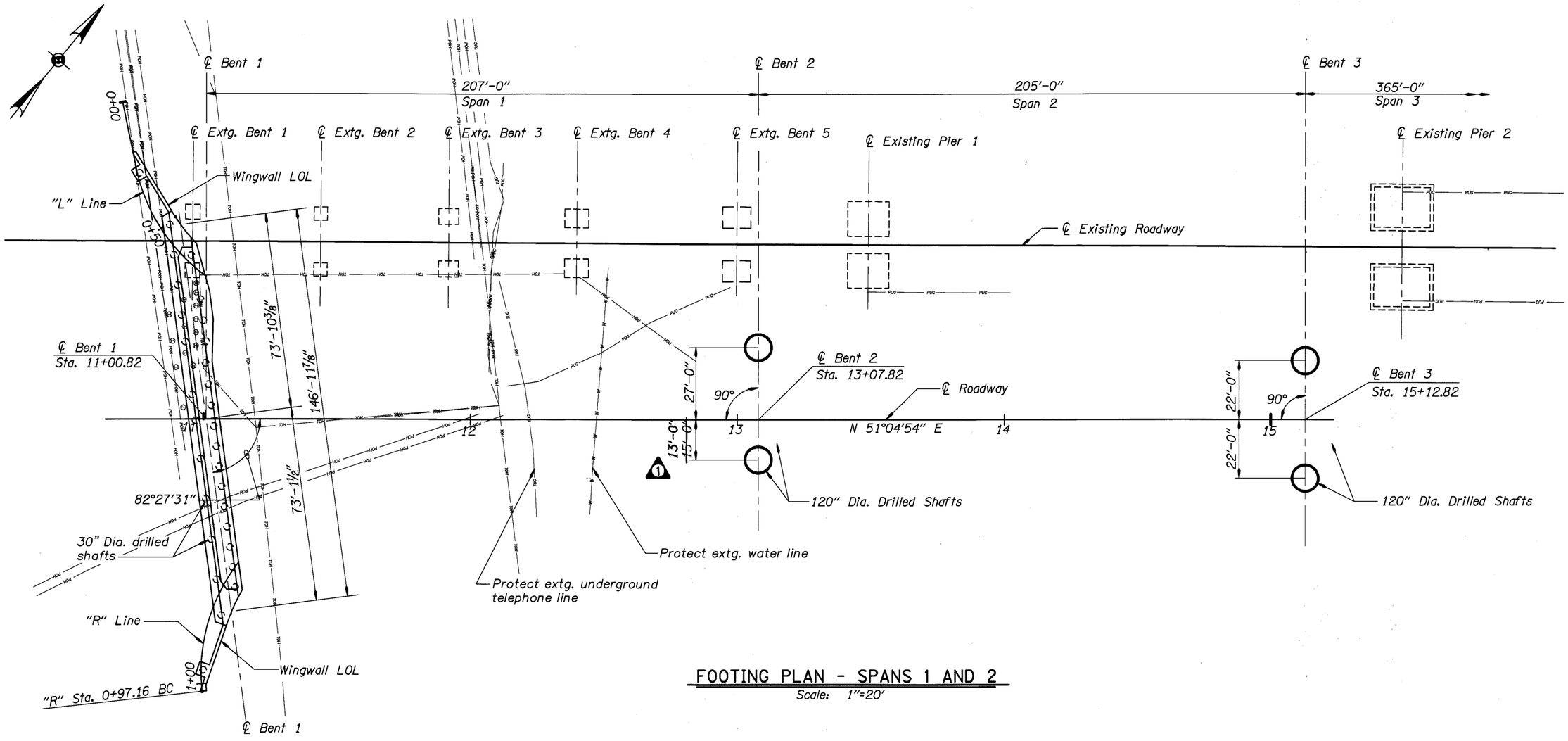
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TEMPORARY WORK BRIDGE PLAN

SHEET 16 OF 173
DRAWING NO. 70203

Xrefs: Sauvie_BM.DWG multi2PROP.dwg ODOT0460_MB.dwg Odotbdr.dwg NEWSauvie_Arch01.dwg Arch24.dwg



FOOTING PLAN - SPANS 1 AND 2

Scale: 1"=20'

Note:
See Dwg. #70300 for drilled shaft layout at Bent 1.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CONDIT
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
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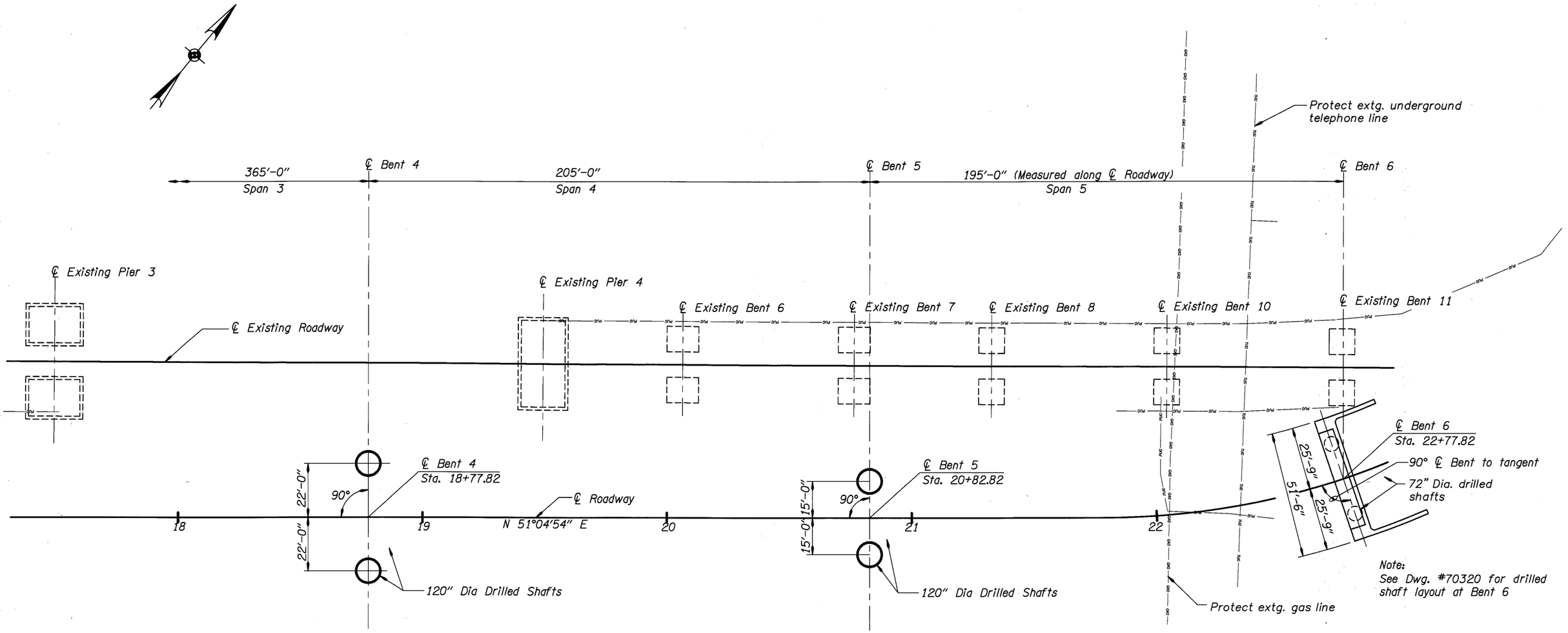
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

FOOTING PLAN (1 OF 2)

SHEET 17 OF 173
DRAWING NO. 70204

Xrefs: ODOTBDR.dwg Sauvie_BM.DWG



CURVE DATA
R = 300'
△ = 96°22'14"
L = 504.60'

FOOTING PLAN - SPANS 4 AND 5

Scale: 1"=20'

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

FOOTING PLAN (2 OF 2)

SHEET 18 OF 173.
DRAWING NO. 70205

Xrefs: OOOTBDR.dwg SA019.dwg

DECK PLAN REFERENCE NOTES

(1) Place 4" square drain hole through diaphragm beam at low point of each cell.
(2) Place 4" diameter drain hole through bottom slab at each end of spans, each cell.
(20) Deck Drain, see Dwg. #70337 for details.
(24) Sidewalk Drain, see Dwg. #70338 for details.
(38) 6" Dia. conduit for future utilities. See Dwg. #70360.
(39) 4" Dia. conduit for future utilities. See Dwg. #70360.
(40) 3" Dia. conduit for future utilities. See Dwg. #70360.
(50) Standard Concrete Bridge Rail, Type "F". See Std. Dwg. #BR200.
(52) Standard Pedestrian Rail. See Std. Dwg. #BR246.
(53) Standard 3" Tube Curb Mounted Rail (modified). See Rail Detail on Std. Dwg. #BR208.
(54) Gutterline-9" high continuous curb.
(55) Standard Sidewalk Mounted Combination Bridge Rail (Modified). See Std. Dwg. #BR216.
(56) Protective Fencing, see Dwg. #70328 and #70329.
(57) Standard 4'-6" high Flush Mounted Combination Bridge Rail, see Std. Dwg. #BR220.
(58) See Std. Dwg. #BR209 for rail connection details.
(59) Required Type "B" Joint in Std. Conc. Bridge Rail, Type "F".
(60) 3 Cell Modular Expansion Joint. See joint details on dwg. #70339
(62) Standard Single Strip Seal Expansion Joint. See Std. Dwg. #BR145.
(64) Sidewalk Sliding Plate Expansion Joint. See Dwg. #70340 and #70341
(71) Standard access hole through interior stem, see Std. Dwg. #BR135 and #BR136.
(72) Standard access hole through bottom slab, see Std. Dwg. #BR135 and #BR136.
(73) Vent tubes through stems, see Std. Dwgs. #BR135 and #BR136.
(80) Standard Bridge End Panel, L=20'-4". See Std. Dwg. #BR165.
(81) Standard Bridge End Panel, L=30'-4". See Std. Dwg. #BR165.
(82) Sidewalk Ramp. See Sidewalk Details on Dwg. #70297 and #70298.
(83) Construction joint in end panel.
(84) Construction joint in deck, bottom slab, end beam, and longitudinal beam 1a.
(85) Construction joint in sidewalk.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Clifford Coulter
REVIEWED: Oliver Mueller

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05
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530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.
DECK PLAN REFERENCE NOTES

SHEET 19 OF 173
DRAWING NO. 70206

Xrefs: Odotbdr.dwg

℄ Bent 1
Sta 11+00.82

207'-0" Span 1

℄ Bent 2
Sta 13+07.82

El. 81.69

El. 83.17

℄ Roadway

11+00

12+00

13+00

90°

12'-0" Lane

6'-0" Sdwk

6'-0" Shld

1'-9"

18'-0"

El. 82.81

82° 27' 31"

Front face of sidewalk is concentric to edge of deck unless otherwise shown.

"R" Line

3+00

2+50

6'-0" sidewalk

1'-0"

20

2+00

Curve B

Sta. 11+44.00

28.84' Rt. Sta. 11+53.82 = "R" 1+97.78 POC

Sta. 11+54.00

55 and 56

Sta. "R" 3+12.73 PT = 18.00' Rt. Sta. 12+68.09

53

See Dwg. #70327 for rail details at Bent 2.

CURVE B
R = 607.475'
△ = 10° 50' 33"
T = 57.65'
L = 114.96

62

Intersection ℄ Bent 1 and "R" Line
60.16 Rt ℄ Roadway
Sta. 11+08.78 =
Sta. "R" 1+41.29 POC
El. 78.76

Curve A

Sta. 12+99.40

Sta. 13+00.40

3'-7⅛"

31 @ 6'-0"
Post spacing for Sidewalk Mounted Combination Bridge Rail *

9'-7⅛"

15 @ 12'-0"
Post spacing for Protective Fencing *

80

82

Sta. "R" 1+42.55

Sta. "R" 1+41.46

5'-9⅜"

7'-9⅜"

CURVE A
R = 67.50'
△ = 85° 24' 16"
T = 62.29'
L = 100.61'

Center of signal pole #3
See Sidewalk Plan on Dwg. #70298

57

See Dwg. #70298 for post spacing at wingwall

1+00

Sta. "R" 0+97.16 PC

Existing Concrete Rail

DECK PLAN SPAN 1 - RIGHT SIDE

Scale: ⅛"=1'-0"

* Note: Post spacing measured 6'-0" right of "R" Line.

Notes:

See Dwg. #70206 for Deck Plan Reference Notes.

See Dwg. #70258 for additional details.

Deck elevations shown are taken at top of concrete at the intersection of ℄ Bent and ℄ Roadway and the intersection of ℄ Bent and gutterline.

Stations are along ℄ Roadway unless noted otherwise.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

Xrefs: Odotbdr.dwg SauvieDes.dwg SA0063.dwg SA0938.dwg

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 14849 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK PLAN - SPAN 1 RIGHT SIDE

SHEET 20 OF 173.
DRAWING NO. 70207

Notes:
See Dwg. #70206 for Deck Plan Reference Notes.

See Dwg. #70259 for additional details.

Deck elevations shown are taken at top of concrete at the intersection of ℄ Bent and ℄ Roadway and the intersection of ℄ Bent and gutterline.

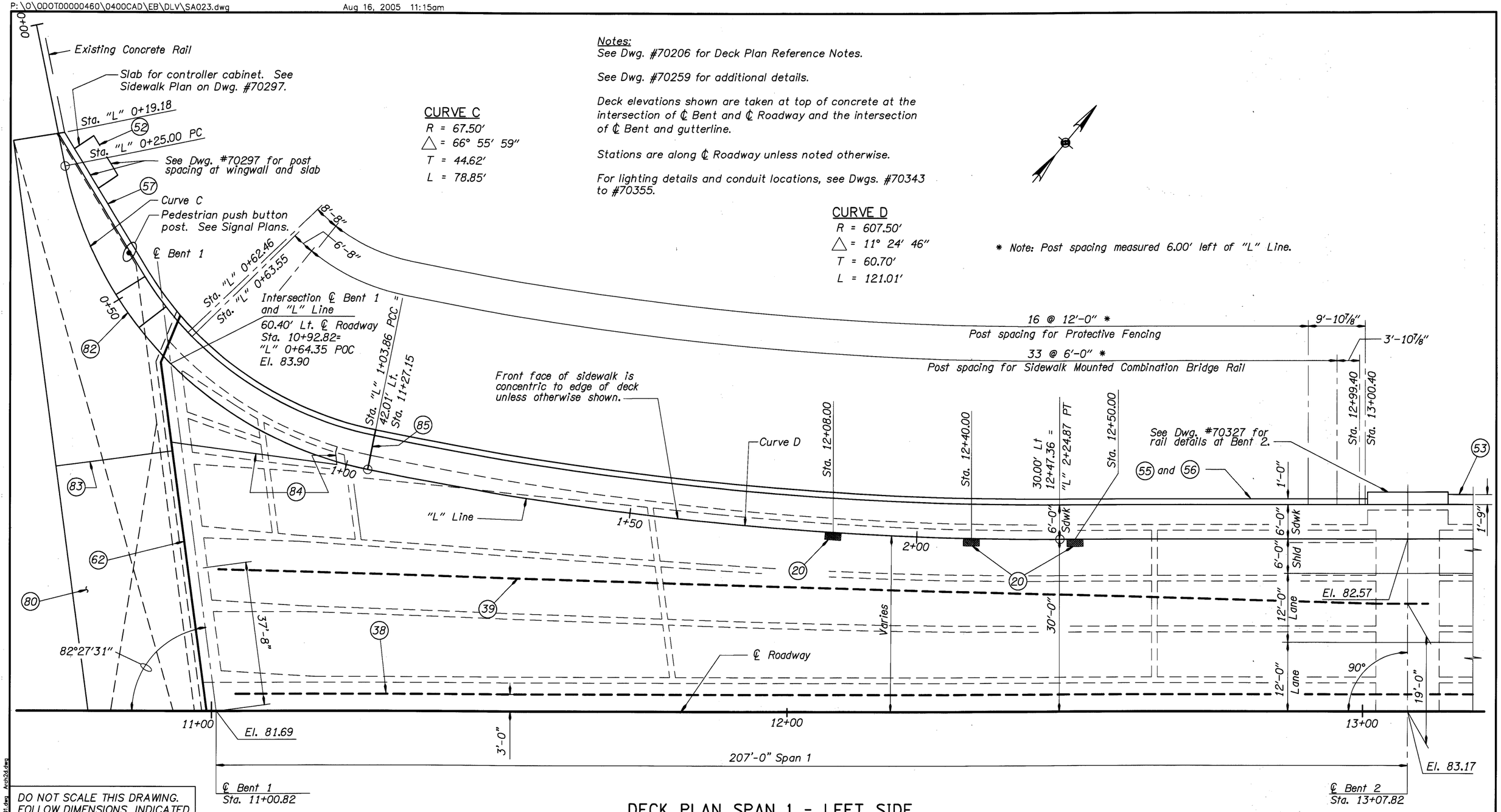
Stations are along ℄ Roadway unless noted otherwise.

For lighting details and conduit locations, see Dwgs. #70343 to #70355.

CURVE C
R = 67.50′
△ = 66° 55′ 59″
T = 44.62′
L = 78.85′

CURVE D
R = 607.50′
△ = 11° 24′ 46″
T = 60.70′
L = 121.01′

* Note: Post spacing measured 6.00′ left of "L" Line.



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DECK PLAN SPAN 1 - LEFT SIDE

Scale: ⅛″=1′-0″

△	DATE	REVISION	BY
1	08/05	Added slab & ped. push button post	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
Kent Cordtz
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

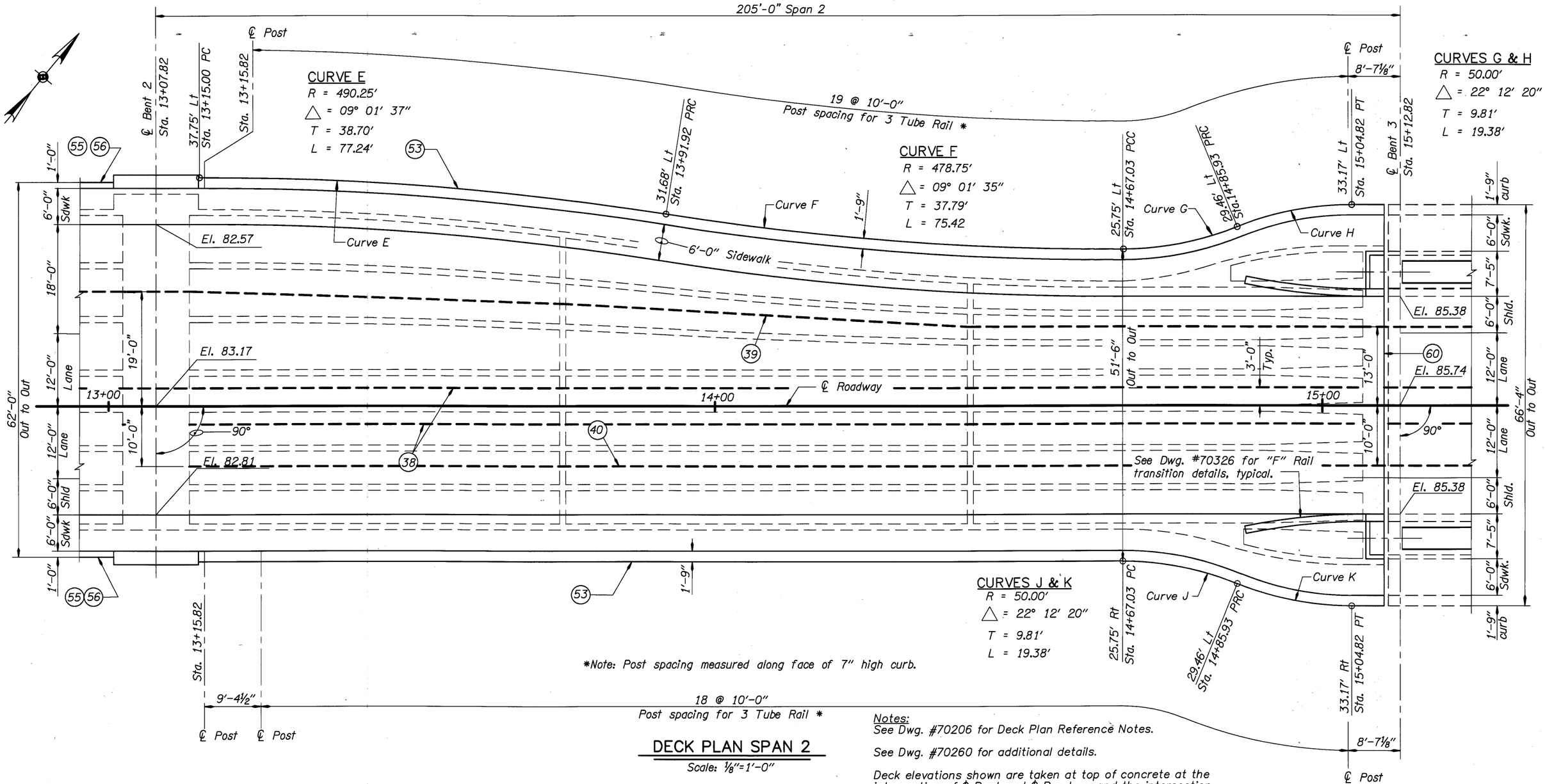
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK PLAN - SPAN 1 LEFT SIDE

SHEET 21 OF 173.
DRAWING NO. 70208

Xrefs: Octobdr.dwg SA064.dwg NEWSauvie_Arch01.dwg Arch2d.dwg



*Note: Post spacing measured along face of 7" high curb.

DECK PLAN SPAN 2

Scale: ⅛"=1'-0"

Notes:

See Dwg. #70206 for Deck Plan Reference Notes.

See Dwg. #70260 for additional details.

Deck elevations shown are taken at top of concrete at the intersection of ℄ Bent and ℄ Roadway and the intersection of ℄ Bent and gutterline.

Stations are along ℄ Roadway unless noted otherwise.

For lighting details and conduit locations, see Dwgs. #70343 to #70355.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 14549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

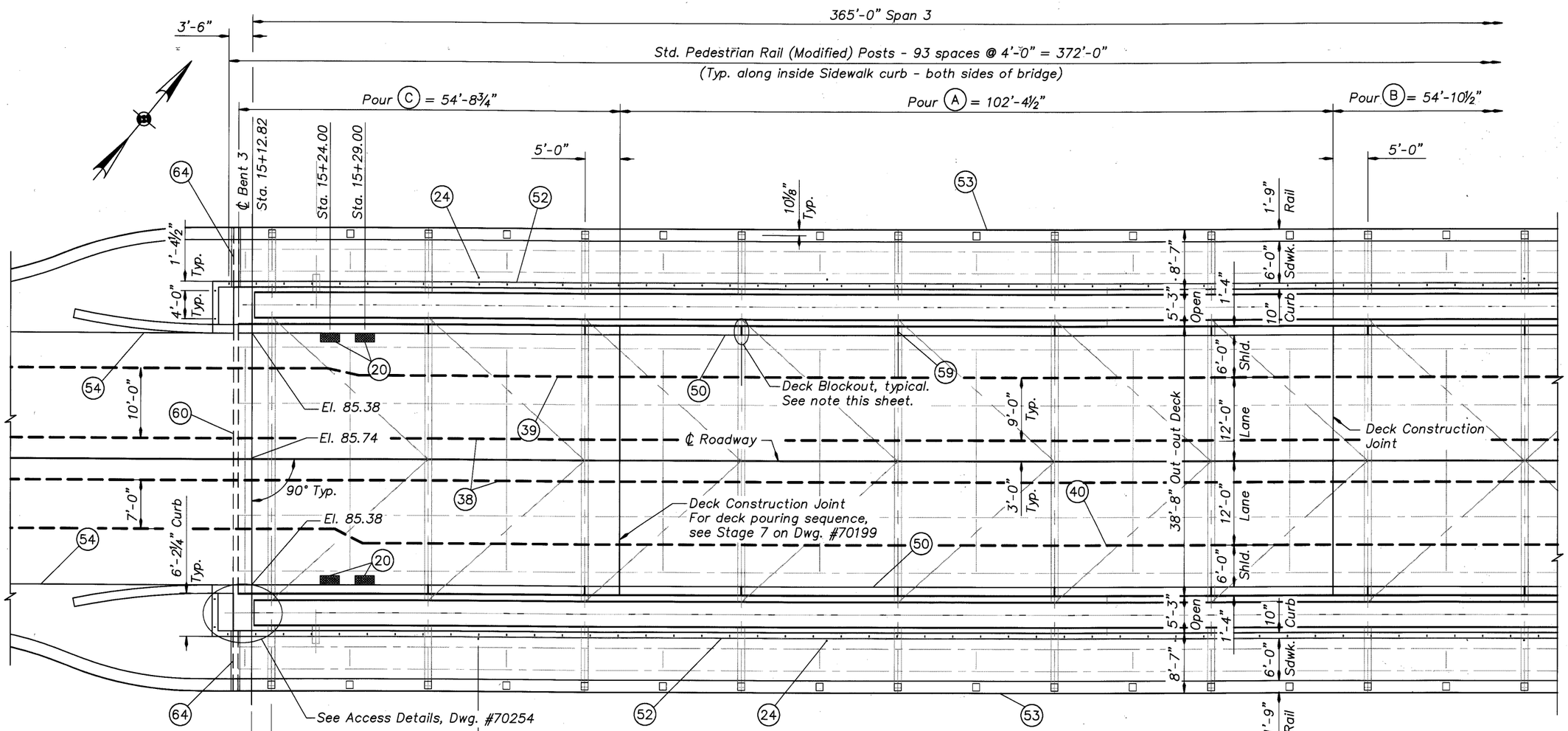
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK PLAN SPAN 2

SHEET 22 OF 173
DRAWING NO. 70209

Xrefs: Odotbdr.dwg SA023.dwg



Notes:
See Dwg. #70206 for Deck Plan Reference Notes.

Longitudinal reinforcing steel to extend from deck pour segments (A) to provide 1'-9" Min. lap splice with reinforcing in adjoining pours.

All sidewalk concrete to be included in Pour (D).

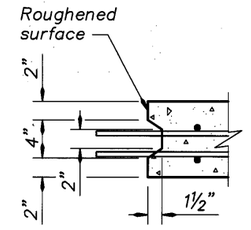
Provide deck blockout in edge of deck under rail joints at each end of each floorbeam. See Dwg. #70326 for details.

DECK PLAN - PARTIAL SPAN 3

Scale : ⅛" = 1'-0"

Notes (Cont):
Deck elevations shown are taken at top of concrete at the intersection of ℄ Bent and ℄ Roadway and the intersection of ℄ Bent and gutterline.

For lighting details and conduit locations, see Dwgs. #70343 to #70355.



DECK CONSTRUCTION JOINT DETAIL

Scale : 1½" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
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OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

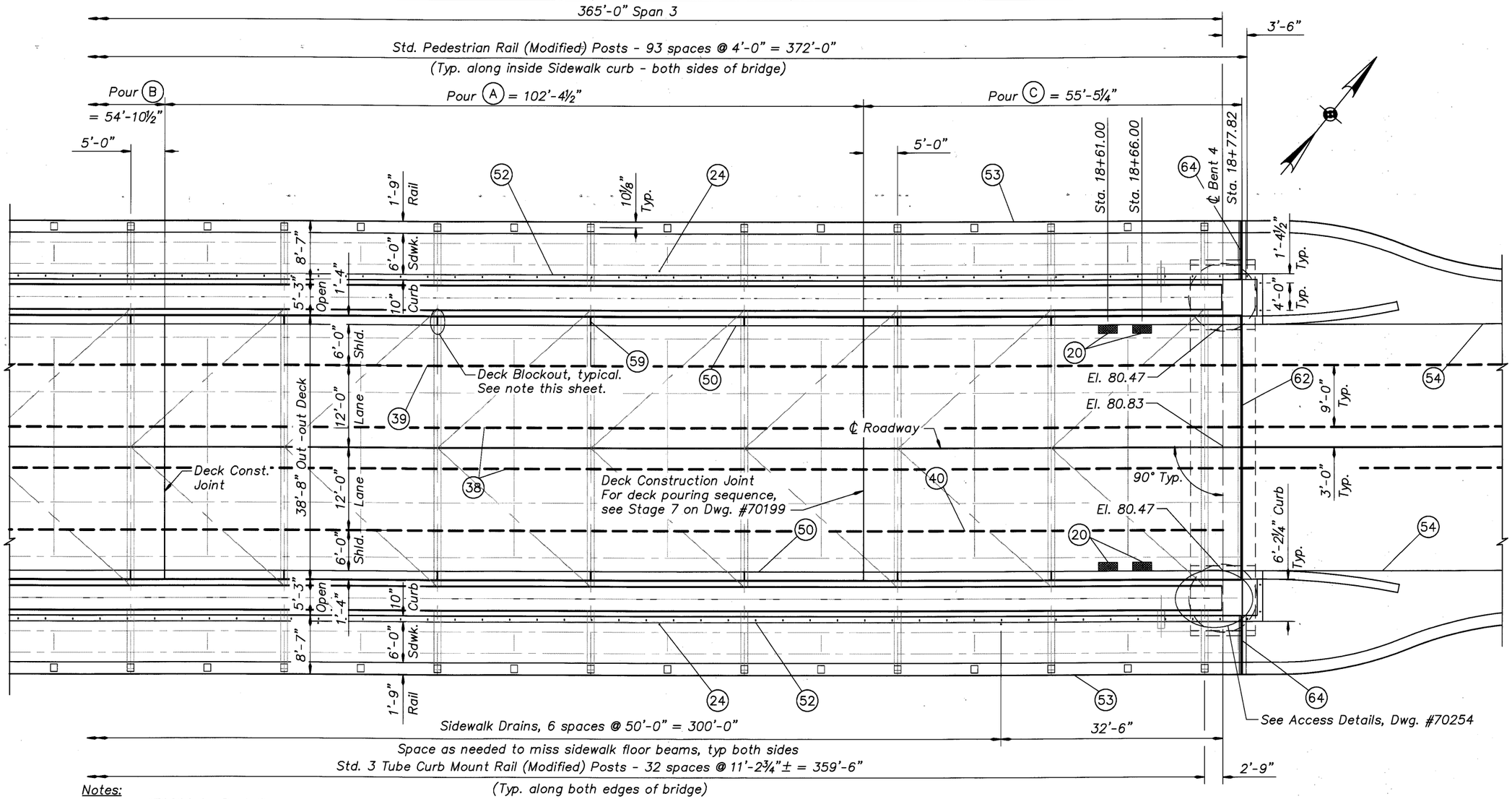
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK PLAN - SPAN 3 (1 OF 2)

SHEET 23 OF 173.
DRAWING NO. 70210

Xrefs: Odotbdr.dwg NEWSauvie_Arch01.dwg Arch2d.dwg 00010460_AF_02.dwg 00010460_DP04.dwg



Notes:
See Dwg. #70206 for Deck Plan Reference Notes.

Longitudinal reinforcing steel to extend from deck pour segments (A) to provide 1'-9" Min. lap splice with reinforcing in adjoining pours.

All sidewalk concrete to be included in Pour (D).

Provide deck blockout in edge of deck under rail joints at each end of each floorbeam. See Dwg. #70326 for details.

DECK PLAN - PARTIAL SPAN 3

Scale : ⅛" = 1'-0"

Notes (Cont):
Deck elevations shown are taken at top of concrete at the intersection of ℄ Bent and ℄ Roadway and the intersection of ℄ Bent and gutterline.

For lighting details and conduit locations, see Dwgs. #70343 to #70355.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

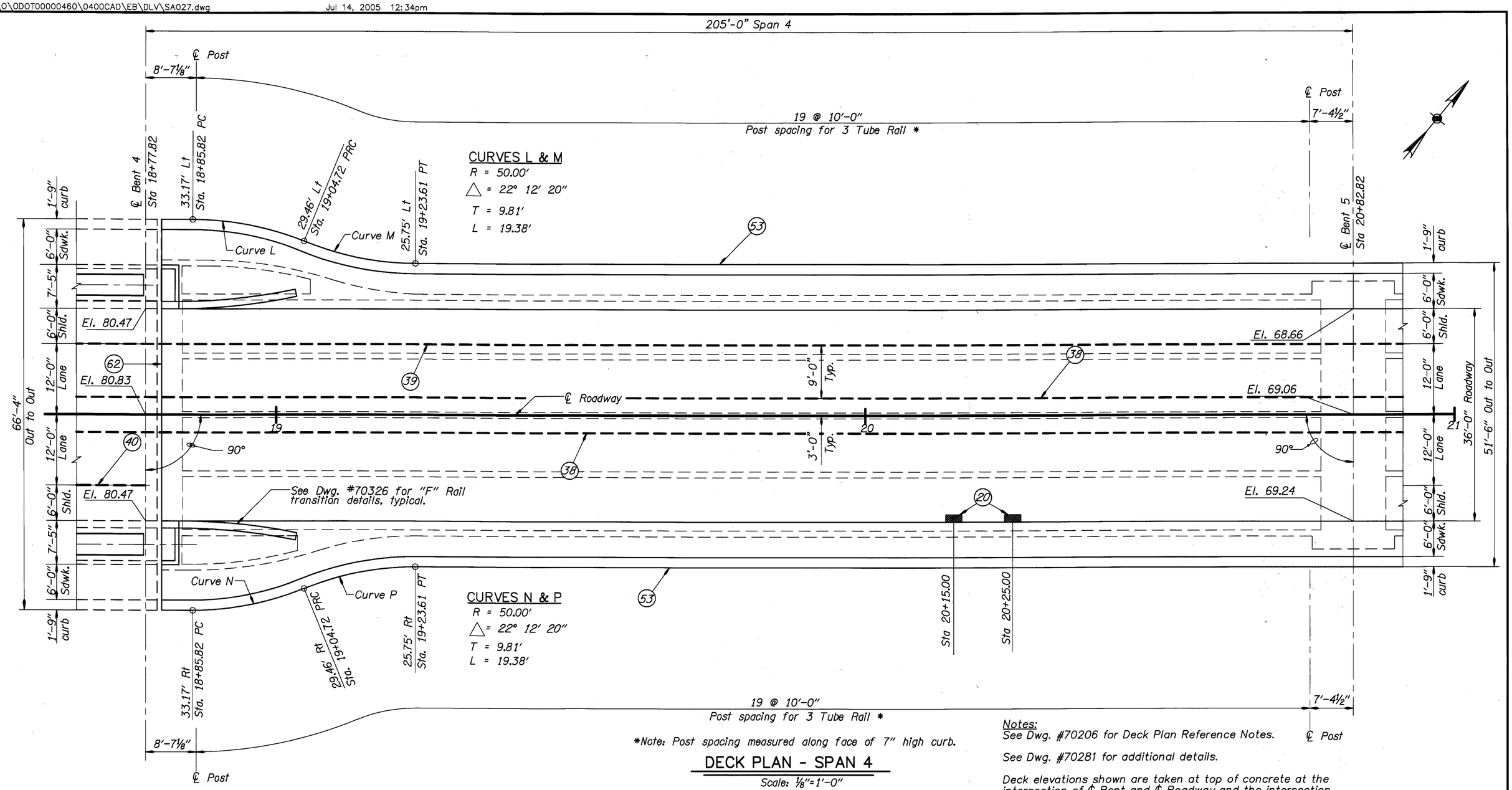
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK PLAN - SPAN 3 (2 OF 2)

SHEET 24 OF 173.
DRAWING NO. 70211

Xrefs: Odotbdr.dwg ODOT0460_DP04.dwg NEWSauvie_Arch01.dwg Arch2d.dwg ODOT0460_AF_02.dwg

P:\O\ODOT00000460\0400CAD\EB\DLV\SA027.dwg Jul 14, 2005 12:34pm



*Note: Post spacing measured along face of 7" high curb.

DECK PLAN - SPAN 4

Scale: ⅛"=1'-0"

Notes:
See Dwg. #70206 for Deck Plan Reference Notes.

See Dwg. #70281 for additional details.

Deck elevations shown are taken at top of concrete at the intersection of ℄ Bent and ℄ Roadway and the intersection of ℄ Bent and gutterline.

Stations are along ℄ Roadway unless noted otherwise.

For lighting details and conduit locations, see Dwgs. #70343 to #70355.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

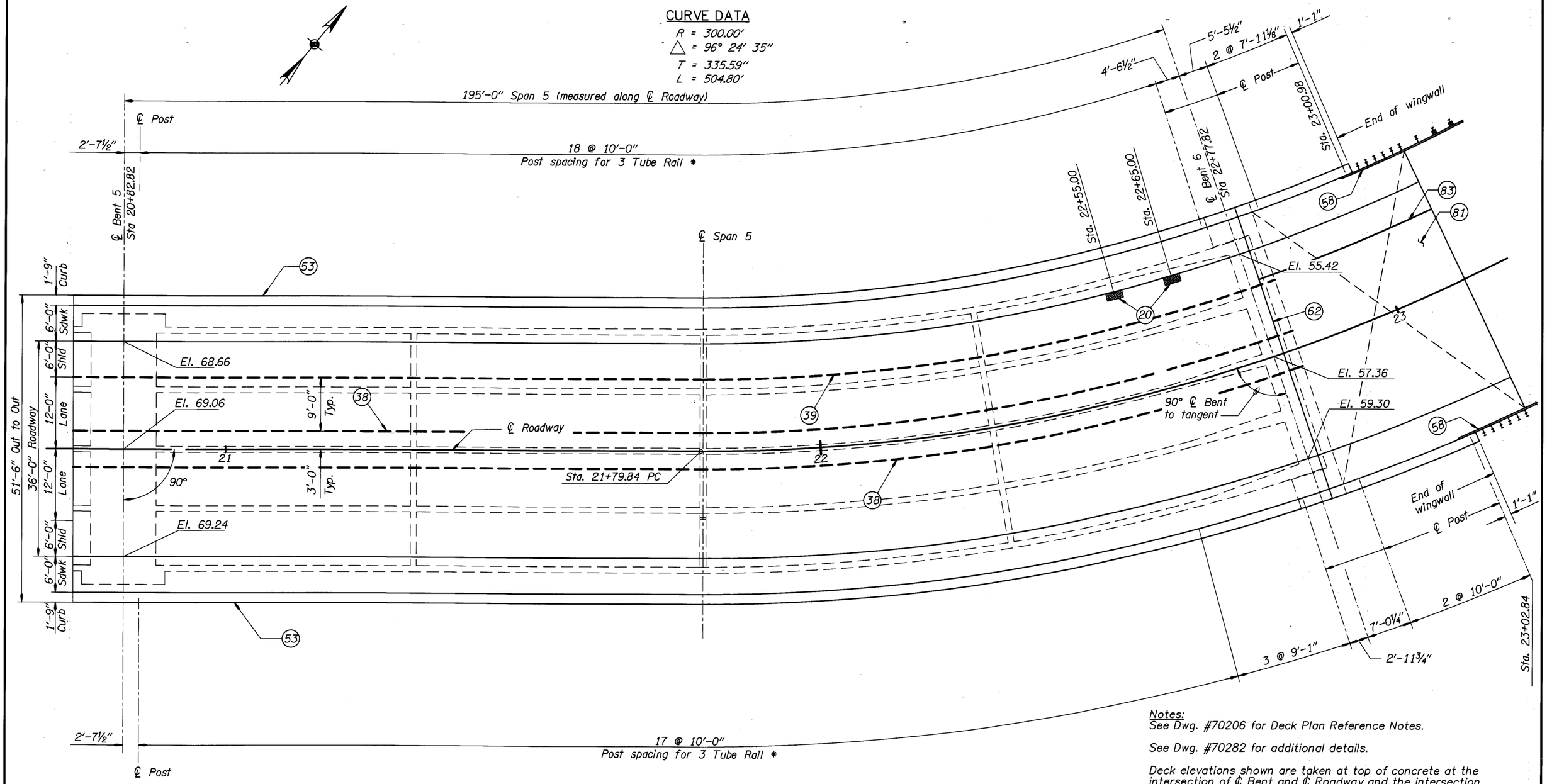
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK PLAN - SPAN 4

SHEET 25 OF 173.
DRAWING NO. 70212

Xrefs: Odotbdr.dwg SA023.dwg



* Note: Post spacing measured along face of 7" high curb.

DECK PLAN - SPAN 5

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

Notes:
See Dwg. #70206 for Deck Plan Reference Notes.

See Dwg. #70282 for additional details.

Deck elevations shown are taken at top of concrete at the intersection of ℄ Bent and ℄ Roadway and the intersection of ℄ Bent and gutterline.

Stations are along ℄ Roadway unless noted otherwise.

For lighting details and conduit locations, see Dwgs. #70343 to #70355.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
1	08/05	End panel constr. joint	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK PLAN - SPAN 5

SHEET 26 OF 173
DRAWING NO. 70213

Xrefs: Odotbdr.dwg SA027.dwg

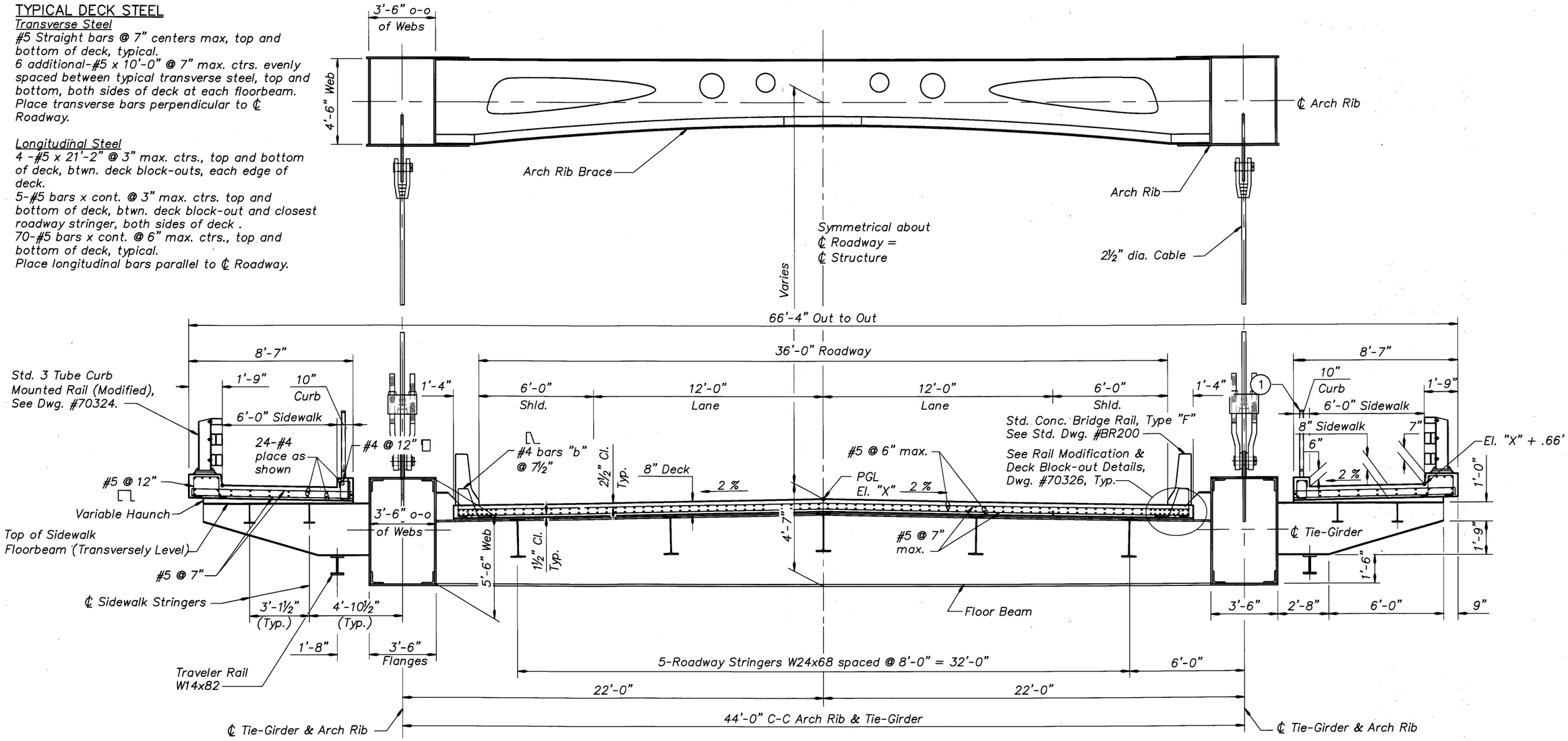
TYPICAL DECK STEEL

Transverse Steel

#5 Straight bars @ 7" centers max, top and bottom of deck, typical.
6 additional-#5 x 10'-0" @ 7" max. ctrs. evenly spaced between typical transverse steel, top and bottom, both sides of deck at each floorbeam.
Place transverse bars perpendicular to ℄ Roadway.

Longitudinal Steel

4 -#5 x 21'-2" @ 3" max. ctrs., top and bottom of deck, btwn. deck block-outs, each edge of deck.
5-#5 bars x cont. @ 3" max. ctrs. top and bottom of deck, btwn. deck block-out and closest roadway stringer, both sides of deck .
70-#5 bars x cont. @ 6" max. ctrs., top and bottom of deck, typical.
Place longitudinal bars parallel to ℄ Roadway.



TYPICAL SECTION - SPAN 3

Scale: ⅜" = 1'-0"
(For details and reinforcement not shown, see Dwgs. #70210, #70211, and #70324.)

Note: See Dwg. #70336 and #70337 for Deck Drainage details.
See Dwg. #70338 for sidewalk drainage details.
See Dwg. #70360 for utility conduit and hanger details.
See Dwg. #70343 to #70355 for lighting details and conduit locations.

(1) Std. Pedestrian Rail (Modified), (typ.) See Dwg. #70324.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TYPICAL SECTION - SPAN 3

SHEET 27 OF 173
DRAWING NO. 70214

Xrefs: Odotbdc.dwg ODOT0460_ATS_01.dwg

UNDEFORMED ARCH (FABRICATED) GEOMETRY (1)					
ARCH RIB			TIE-GIRDER		
W. P.	STATION	ELEVATION	W. P.	STATION	ELEVATION
A0	15+15.65	84.02	T0	15+15.65	84.02
A1	15+49.75	113.90	T1	15+38.11	84.41
A2	15+68.08	126.69	T2	15+60.58	84.77
A3	15+87.45	137.83	T3	15+83.04	85.03
A4	16+07.80	147.05	T4	16+05.51	85.15
A5	16+29.00	154.08	T5	16+27.97	85.15
A6	16+50.84	158.77	T6	16+50.44	85.03
A7	16+73.04	161.17	T7	16+72.90	84.83
A8	16+95.37	161.59	T8	16+95.37	84.56

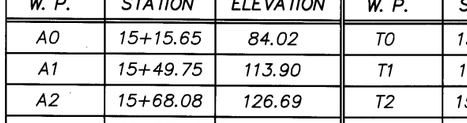
FINAL D.L. PANEL POINT DEFLECTIONS (2)					
ARCH RIB			TIE-GIRDER		
W. P.	X	Y	W. P.	X	Y
A0	-0.08	0.00	T0	-0.08	0.00
A1	0.00	-0.11	T1	-0.07	-0.10
A2	0.01	-0.13	T2	-0.07	-0.19
A3	0.01	-0.13	T3	-0.07	-0.24
A4	0.00	-0.11	T4	-0.06	-0.24
A5	-0.02	-0.07	T5	-0.06	-0.21
A6	-0.03	-0.03	T6	-0.06	-0.16
A7	-0.04	0.01	T7	-0.05	-0.11
A8	-0.05	0.02	T8	-0.05	-0.09

NOTES:

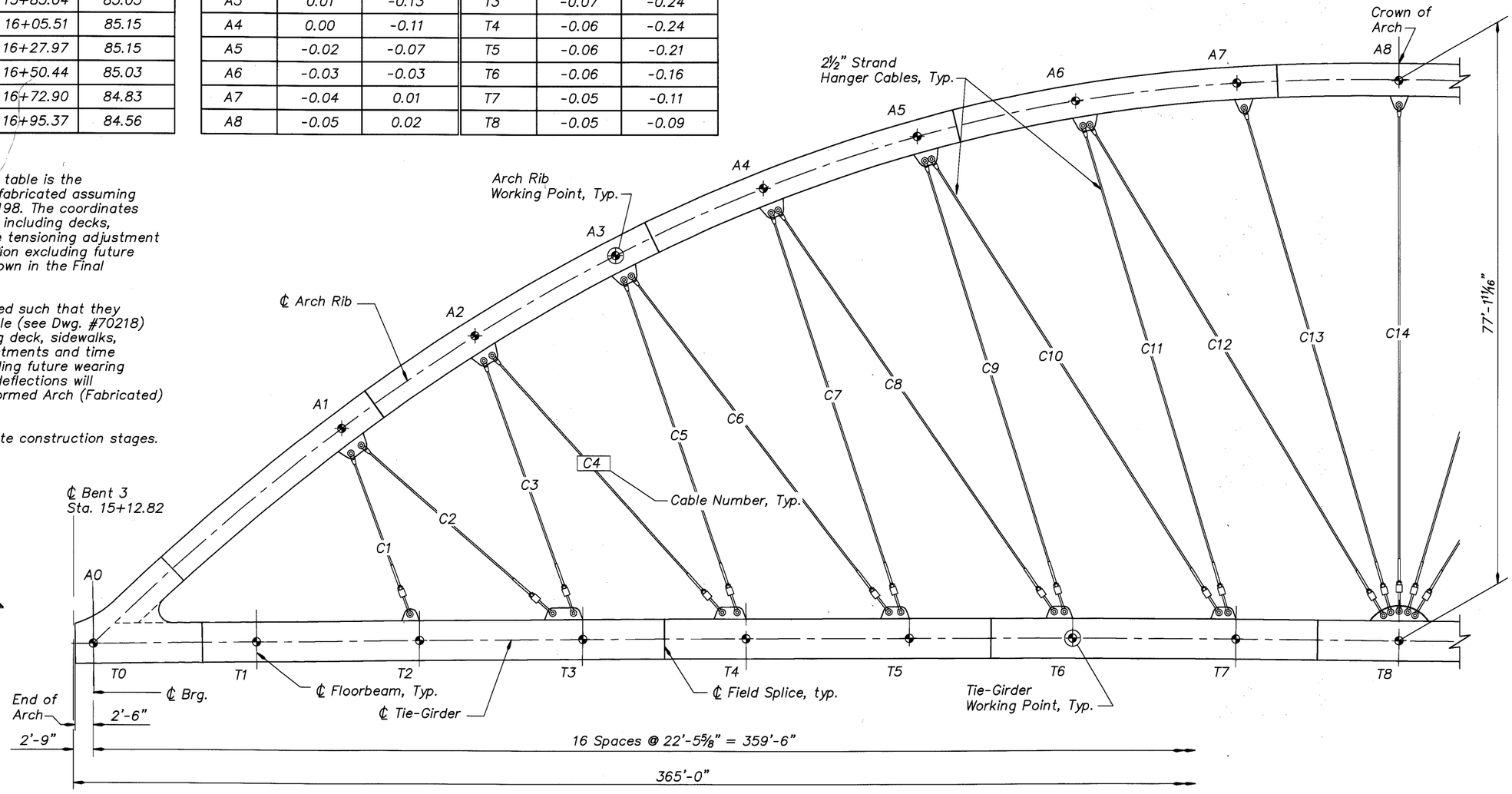
(1) The Undeformed Arch (Fabricated) Geometry table is the geometry to which the arch and tie shall be fabricated assuming drop-in erection method shown on Dwg. #70198. The coordinates allow for deformation under final dead loads, including decks, sidewalks, utilities, and railings, and for cable tensioning adjustment and time dependent effects during construction excluding future wearing surface. These deformations are shown in the Final D.L. Panel Point Deflections table.

(2) The Arch Rib and Tie-Girder shall be fabricated such that they conform to the Final Deformed Geometry table (see Dwg. #70218) after all final dead loads are placed, including deck, sidewalks, utilities, and railings and for tensioning adjustments and time dependent effects during construction excluding future wearing surface. Blocking to compensate for these deflections will produce the coordinates shown in the Undeformed Arch (Fabricated) Geometry table.

See Dwg. #70217 for Geometry at intermediate construction stages.



BLOCKING DIAGRAGM
N.T.S.



HALF ARCH ELEVATION
(Final Deformed Geometry shown)
Scale: ⅛" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Gernot Komar

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 12845 PE OREGON JULY 15, 2003 JOEL BRANDON TIBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

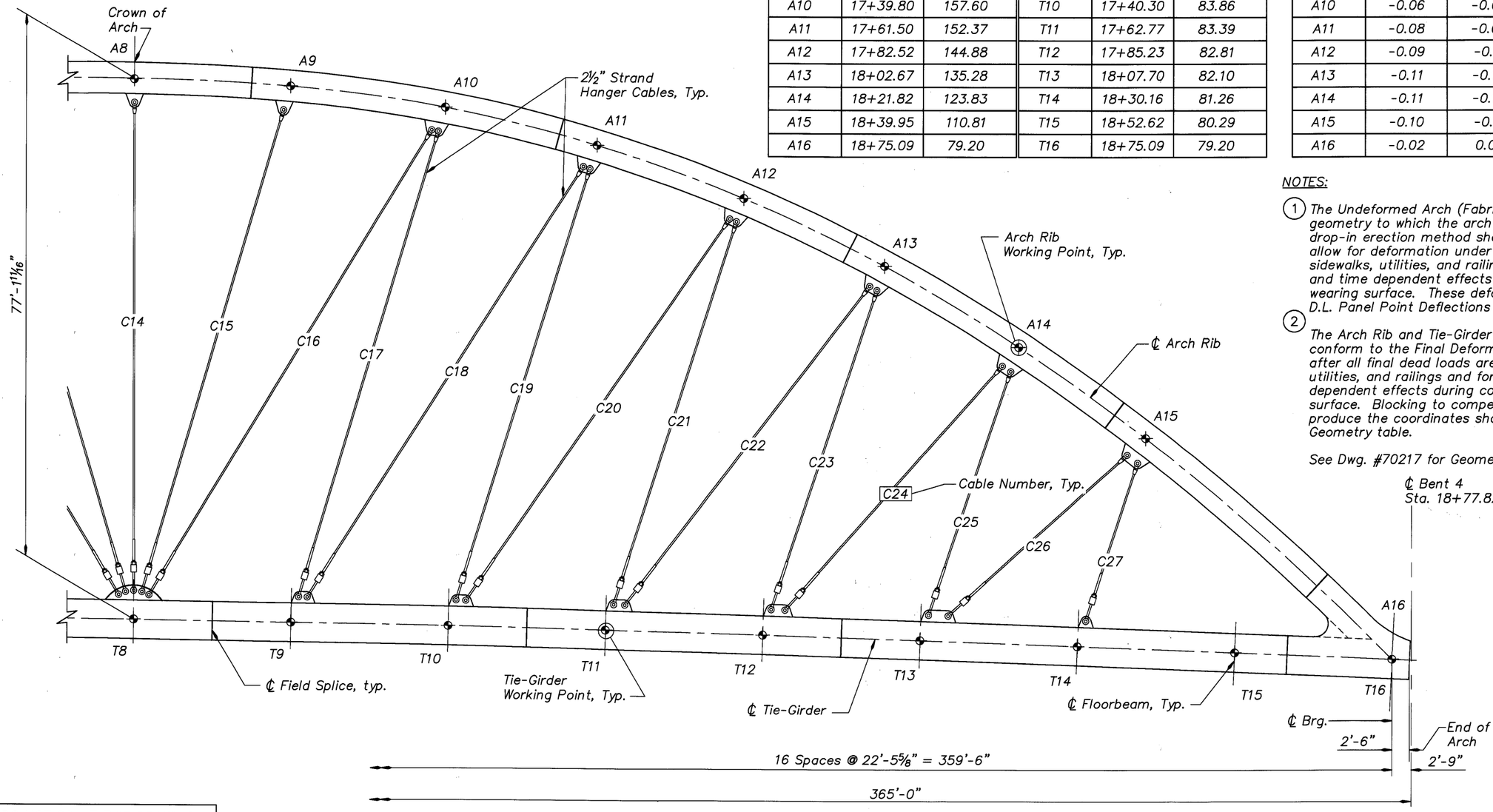
ARCH ELEVATION AND GEOMETRY (1 OF 3)

SHEET 28 OF 173
DRAWING NO. 70215

Xrefs: Odotbdr.dwg ODOT0460_AG_01.dwg ODOT0460_AG_02.dwg Arch2d.dwg

UNDEFORMED ARCH (FABRICATED) GEOMETRY (1)					
ARCH RIB			TIE-GIRDER		
W. P.	STATION	ELEVATION	W. P.	STATION	ELEVATION
A8	16+95.37	161.59	T8	16+95.37	84.56
A9	17+17.68	160.58	T9	17+17.83	84.24
A10	17+39.80	157.60	T10	17+40.30	83.86
A11	17+61.50	152.37	T11	17+62.77	83.39
A12	17+82.52	144.88	T12	17+85.23	82.81
A13	18+02.67	135.28	T13	18+07.70	82.10
A14	18+21.82	123.83	T14	18+30.16	81.26
A15	18+39.95	110.81	T15	18+52.62	80.29
A16	18+75.09	79.20	T16	18+75.09	79.20

FINAL D.L. PANEL POINT DEFLECTIONS (2)					
ARCH RIB			TIE-GIRDER		
W. P.	X	Y	W. P.	X	Y
A8	-0.05	0.02	T8	-0.05	-0.09
A9	-0.05	0.01	T9	-0.05	-0.11
A10	-0.06	-0.03	T10	-0.04	-0.16
A11	-0.08	-0.07	T11	-0.04	-0.21
A12	-0.09	-0.11	T12	-0.04	-0.24
A13	-0.11	-0.13	T13	-0.03	-0.23
A14	-0.11	-0.13	T14	-0.03	-0.19
A15	-0.10	-0.11	T15	-0.02	-0.10
A16	-0.02	0.00	T16	-0.02	0.00



HALF ARCH ELEVATION

(Final Deformed Geometry shown)

Scale: ⅛" = 1'-0"

NOTES:

(1) The Undeformed Arch (Fabricated) Geometry table is the geometry to which the arch and tie shall be fabricated assuming drop-in erection method shown on Dwg. #70198. The coordinates allow for deformation under final dead loads, including decks, sidewalks, utilities, and railings, and for cable tensioning adjustment and time dependent effects during construction excluding future wearing surface. These deformations are shown in the Final D.L. Panel Point Deflections table.

(2) The Arch Rib and Tie-Girder shall be fabricated such that they conform to the Final Deformed Geometry table (see Dwg. #70218) after all final dead loads are placed, including deck, sidewalks, utilities, and railings and for tensioning adjustments and time dependent effects during construction excluding future wearing surface. Blocking to compensate for these deflections will produce the coordinates shown in the Undeformed Arch (Fabricated) Geometry table.

See Dwg. #70217 for Geometry at intermediate construction stages.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Gernot Komar

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 22845 PE OREGON JULY 15, 2003 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

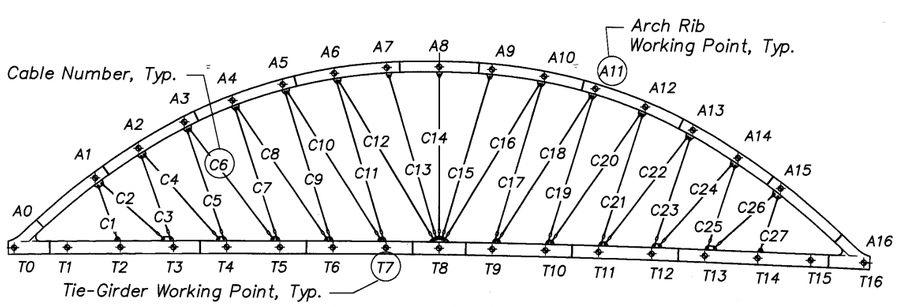
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

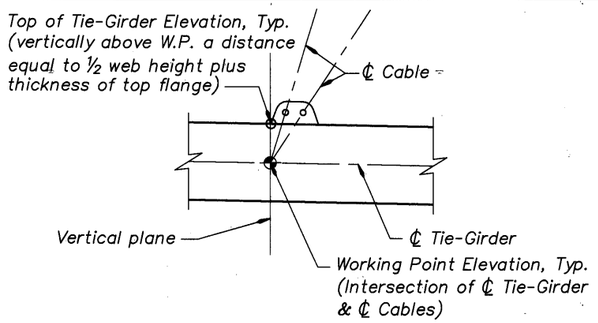
ARCH ELEVATION AND GEOMETRY (2 OF 3)

SHEET 29 OF 173
DRAWING NO. 70216

Xrefs: Odotbdr.dwg ODOT0460_AG_01.dwg ODOT0460_AG_02.dwg Arch2d.dwg



ARCH ELEVATION SCHEMATIC



DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

CONSTRUCTION STAGES:
Stages and associated values in table below represent the suggested schematic erection sequence shown on Dwg. #70198, and #70199.

Results shown are at the end of each stage. ZERO cable force is an adjustment after Stage 4.6b and must take place before deck pour, Stage 4.7a.

Refer to Arch Erection Notes on Dwg. #70199.

		STAGE 4.6a				Adjustments before STAGE 4.6b	STAGE 4.6b				STAGE 4.7a				STAGE 4.7d				FINAL DEFORMED GEOMETRY			
TIE-GIRDER W.P.	CABLE	CABLE TENSION (k)	W.P. STATION	W.P. EL.	TOP of TIE-GIRDER ELEVATION	CABLE POST-TENSION (k)	CABLE TENSION (k)	W.P. STATION	W.P. EL.	TOP of TIE-GIRDER ELEVATION	CABLE TENSION (k)	W.P. STATION	W.P. EL.	TOP of TIE-GIRDER ELEVATION	CABLE TENSION (k)	W.P. STATION	W.P. EL.	TOP of TIE-GIRDER ELEVATION	CABLE TENSION (k)	W.P. STATION	W.P. EL.	TOP of TIE-GIRDER ELEVATION
T1	——	——	15+38.08	84.35	87.19	——	——	15+38.08	84.35	87.19	——	15+38.06	84.33	87.17	——	15+38.04	84.31	87.14	——	15+38.04	84.30	87.13
T2	C1	SLACK	15+60.54	84.67	87.50	——	ZERO	15+60.54	84.67	87.50	24.7	15+60.53	84.63	87.47	65.0	15+60.51	84.59	87.43	76.5	15+60.51	84.58	87.41
T3	C2	25.6	15+83.01	84.90	87.73	——	16.6	15+83.01	84.90	87.74	34.2	15+83.00	84.85	87.68	32.5	15+82.98	84.81	87.64	34.9	15+82.98	84.79	87.62
	C3	SLACK				——	ZERO				28.0				59.0				69.4			
T4	C4	19.7	16+05.48	85.02	87.86	20.0	26.8	16+05.48	85.03	87.86	40.6	16+05.46	84.97	87.80	36.3	16+05.45	84.93	87.76	37.7	16+05.45	84.91	87.74
	C5	SLACK				——	ZERO				31.1				59.3				69.6			
T5	C6	34.2	16+27.94	85.04	87.87	20.0	42.8	16+27.94	85.04	87.87	54.5	16+27.93	84.99	87.82	51.4	16+27.92	84.95	87.78	52.7	16+27.91	84.94	87.77
	C7	SLACK				——	ZERO				32.2				58.0				68.0			
T6	C8	48.4	16+50.41	84.95	87.78	——	42.4	16+50.41	84.95	87.79	52.9	16+50.40	84.92	87.75	51.9	16+50.39	84.88	87.72	53.4	16+50.38	84.87	87.71
	C9	SLACK				——	ZERO				30.5				52.6				61.6			
T7	C10	56.3	16+72.88	84.77	87.60	——	54.6	16+72.88	84.77	87.61	65.1	16+72.87	84.75	87.59	66.9	16+72.85	84.72	87.56	68.9	16+72.85	84.72	87.55
	C11	SLACK				——	ZERO				27.3				45.5				53.3			
T8	C12	56.3	16+95.34	84.51	87.34	——	56.7	16+95.34	84.51	87.35	71.8	16+95.33	84.50	87.34	79.7	16+95.32	84.48	87.31	83.7	16+95.32	84.47	87.30
	C13	SLACK				——	ZERO				27.8				46.6				54.6			
	C14	SLACK				——	ZERO				33.1				56.3				66.0			
	C15	SLACK				——	ZERO				27.8				46.7				54.8			
	C16	55.5				——	55.9				70.9				78.9				82.7			
T9	C17	SLACK	17+17.81	84.19	87.02	——	ZERO	17+17.81	84.19	87.02	27.0	17+17.80	84.17	87.00	45.0	17+17.79	84.14	86.97	52.7	17+17.79	84.13	86.97
	C18	55.2				——	53.4				63.7				65.3				67.2			
T10	C19	SLACK	17+40.28	83.78	86.61	——	ZERO	17+40.28	83.78	86.62	30.1	17+40.27	83.75	86.58	51.9	17+40.26	83.71	86.55	60.8	17+40.26	83.70	86.54
	C20	47.1				——	41.1				51.4				50.2				51.6			
T11	C21	SLACK	17+62.75	83.28	86.11	——	ZERO	17+62.75	83.29	86.12	31.7	17+62.74	83.24	86.07	57.2	17+62.73	83.20	86.03	67.1	17+62.73	83.18	86.01
	C22	33.1				20.0	41.7				53.2				50.0				51.2			
T12	C23	SLACK	17+85.21	82.68	85.51	——	ZERO	17+85.21	82.69	85.52	30.5	17+85.21	82.63	85.46	58.4	17+85.20	82.58	85.42	68.6	17+85.20	82.57	85.40
	C24	19.4				20.0	26.4				40.4				36.0				37.4			
T13	C25	SLACK	18+07.68	81.98	84.81	——	ZERO	18+07.68	81.98	84.81	27.4	18+07.67	81.93	84.76	58.3	18+07.67	81.88	84.71	68.6	18+07.66	81.86	84.70
	C26	27.6				——	18.5				36.8				35.5				38.0			
T14	C27	SLACK	18+30.15	81.16	83.99	——	ZERO	18+30.15	81.16	83.99	24.2	18+30.14	81.12	83.95	65.0	18+30.13	81.08	83.91	76.5	18+30.13	81.07	83.90
T15	——	——	18+52.61	80.23	83.07	——	——	18+52.61	80.23	83.07	——	18+52.61	80.21	83.05	——	18+52.60	80.19	83.02	——	18+52.60	80.18	83.01

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Gernot Komar

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 72845 PE OREGON JULY 15, 2003 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

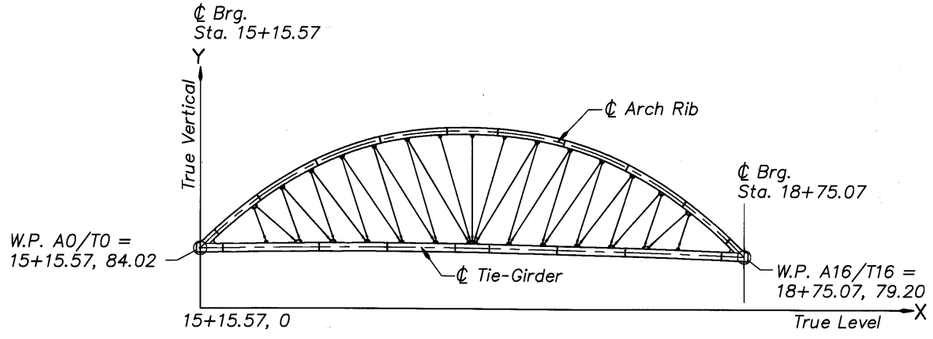
ARCH ELEVATION AND GEOMETRY (3 OF 3)

SHEET 30 OF 173
DRAWING NO. 70217

Xrefs: Odotbdr.dwg ODOT0460_AG_01.dwg Arch2d.dwg

INTERMEDIATE DEFORMED GEOMETRY (4)					
ARCH RIB			TIE-GIRDER		
W. P.	STATION	ELEVATION	W. P.	STATION	ELEVATION
A0	15+15.58	84.02	T0	15+15.58	84.02
A1	15+49.76	113.80	T1	15+38.04	84.31
A2	15+68.10	126.57	T2	15+60.51	84.59
A3	15+87.46	137.71	T3	15+82.98	84.81
A4	16+07.80	146.95	T4	16+05.45	84.93
A5	16+28.98	154.01	T5	16+27.92	84.95
A6	16+50.80	158.75	T6	16+50.39	84.88
A7	16+73.00	161.18	T7	16+72.85	84.72
A8	16+95.32	161.61	T8	16+95.32	84.48
A9	17+17.63	160.58	T9	17+17.79	84.14
A10	17+39.74	157.57	T10	17+40.26	83.71
A11	17+61.43	152.30	T11	17+62.73	83.20
A12	17+82.43	144.78	T12	17+85.20	82.58
A13	18+02.57	135.16	T13	18+07.67	81.88
A14	18+21.72	123.71	T14	18+30.13	81.08
A15	18+39.85	110.71	T15	18+52.60	80.19
A16	18+75.07	79.20	T16	18+75.07	79.20

FINAL DEFORMED GEOMETRY (5)					
ARCH RIB			TIE-GIRDER		
W. P.	STATION	ELEVATION	W. P.	STATION	ELEVATION
A0	15+15.57	84.02	T0	15+15.57	84.02
A1	15+49.76	113.79	T1	15+38.04	84.30
A2	15+68.10	126.56	T2	15+60.51	84.58
A3	15+87.46	137.70	T3	15+82.98	84.79
A4	16+07.80	146.94	T4	16+05.45	84.91
A5	16+28.98	154.01	T5	16+27.91	84.94
A6	16+50.80	158.75	T6	16+50.38	84.87
A7	16+73.00	161.18	T7	16+72.85	84.72
A8	16+95.32	161.61	T8	16+95.32	84.47
A9	17+17.62	160.58	T9	17+17.79	84.13
A10	17+39.74	157.57	T10	17+40.26	83.70
A11	17+61.42	152.30	T11	17+62.73	83.18
A12	17+82.43	144.77	T12	17+85.20	82.57
A13	18+02.56	135.15	T13	18+07.66	81.86
A14	18+21.71	123.70	T14	18+30.13	81.07
A15	18+39.84	110.70	T15	18+52.60	80.18
A16	18+75.07	79.20	T16	18+75.07	79.20



EQUATION - FINAL DEFORMED ARCH RIB

No Scale

SPAN 3

(3) Equations: For X<1695.32:

$$Y = -0.00067622\,(1695.32-X)^{2.25} - 0.01340082\,(X) + 184.33$$

For X ≥1695.32:

$$Y = -0.00067622\,(X-1695.32)^{2.25} - 0.01340082\,(X) + 184.33$$

Notes:

(3) Equations apply to arch after all superimposed dead loads are placed, including deck,sidewalks, utilities, and railings and for tensioning adjustments and time dependent effects during construction excluding future wearing surface. Refer to Final Deformed Geometry Table.

(4) The Intermediate Deformed Geometry table gives the deformed shape of the arch and tie-girder after tensioning adjustments from Stage 6b, and after placement of deck and sidewalk loads of Stage 4.7d. Refer to Dwg. #70198, and #70199 for description of stages.

(5) The Final Deformed Geometry table gives the final shape of the arch and tie-girder after all superimposed dead loads are placed, including deck, sidewalks, utilities, and railings and for tensioning adjustments and time dependent effects during construction excluding future wearing surface.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As- Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 72948 PE OREGON JULY 8, 2003 JOEL BRANDON TIBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

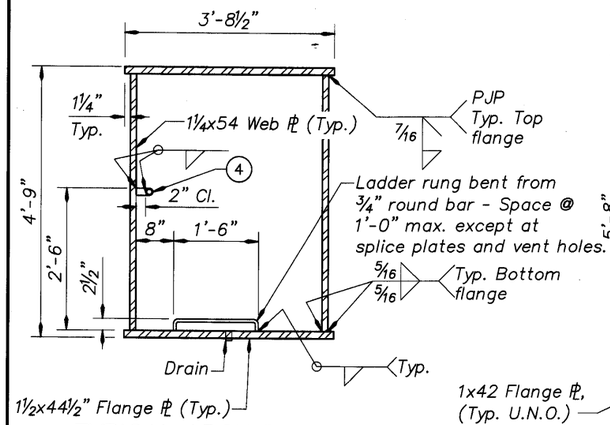
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH AND TIE-GIRDER DEFORMED GEOMETRIES

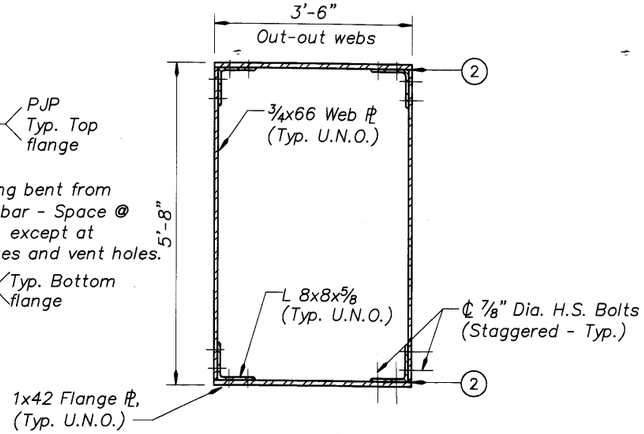
SHEET 31 OF 173.
DRAWING NO. 70218

Xrefs: Odotbdr.dwg ODOT0460_AS_02.dwg Arch2d.dwg



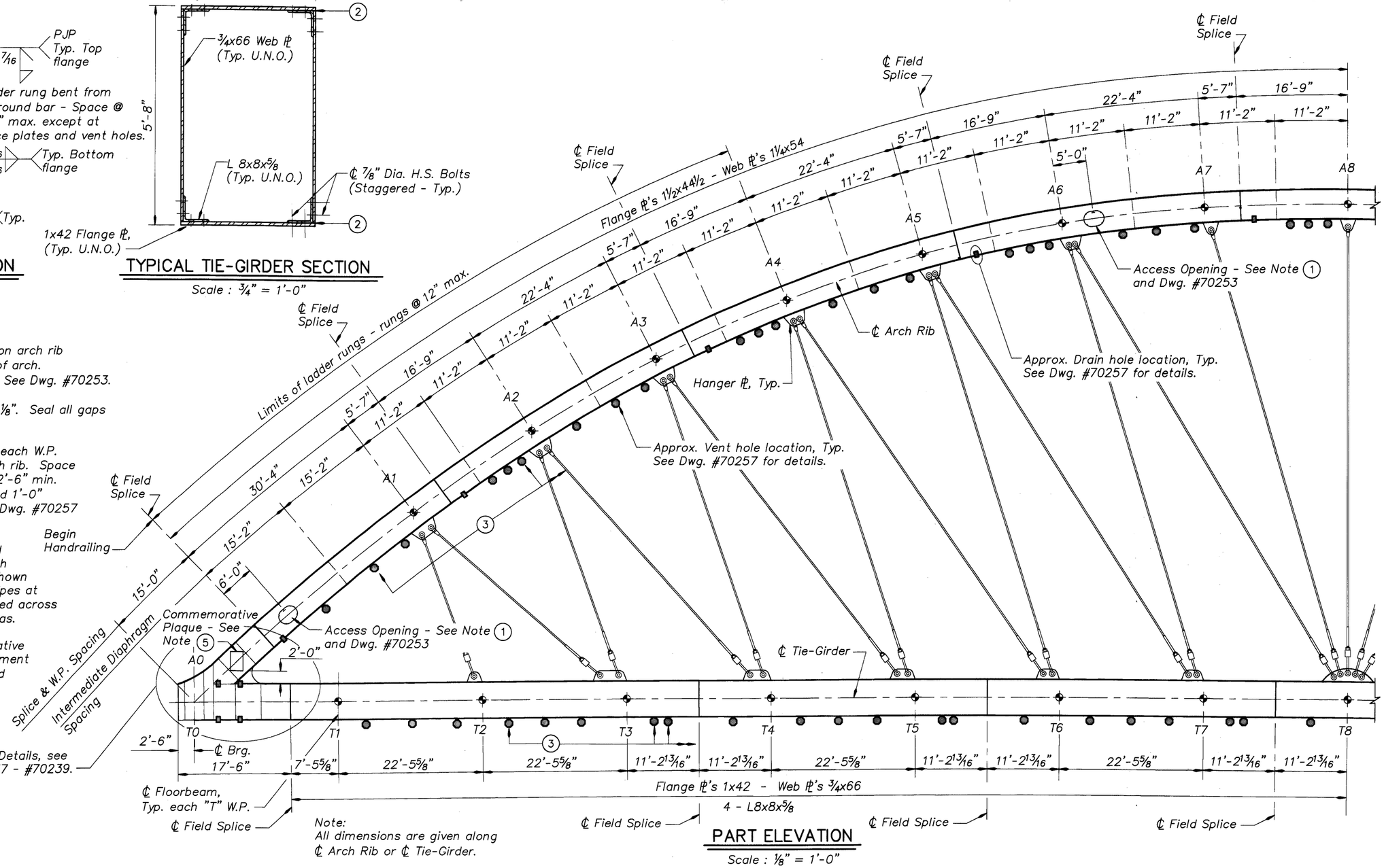
TYPICAL ARCH RIB SECTION

Scale : ¾" = 1'-0"



TYPICAL TIE-GIRDER SECTION

Scale : ¾" = 1'-0"



PART ELEVATION

Scale : ⅛" = 1'-0"

Notes:

(1) 2'-0"x3'-0" access opening centered on arch rib web face (Upper door on Traffic side of arch. Lower door on sidewalk side of arch). See Dwg. #70253.

(2) Maximum gap at edge of web plate = ⅛". Seal all gaps with clear silicone caulk.

(3) Provide 3 - 6" dia. vent hole between each W.P. in bottom flange of tie-girder and arch rib. Space approximately as shown, maintaining 2'-6" min. clearance from flange splice plates and 1'-0" min. clearance from diaphragms. See Dwg. #70257 for details.

(4) Provide 1½" dia. Std. pipe handrail and supports continuous through each arch rib, between arch knuckle splices as shown in PART ELEVATION. Space support pipes at 5'-0" maximum. No handrail is required across bolted field splices or arch hanger areas.

(5) For sizing and location of Commemorative Plaque see Specifications. For attachment use galvanized 3/16" Z-Bracket attached to existing knuckle web plate bolts.

Note: All dimensions are given along ℄ Arch Rib or ℄ Tie-Girder.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

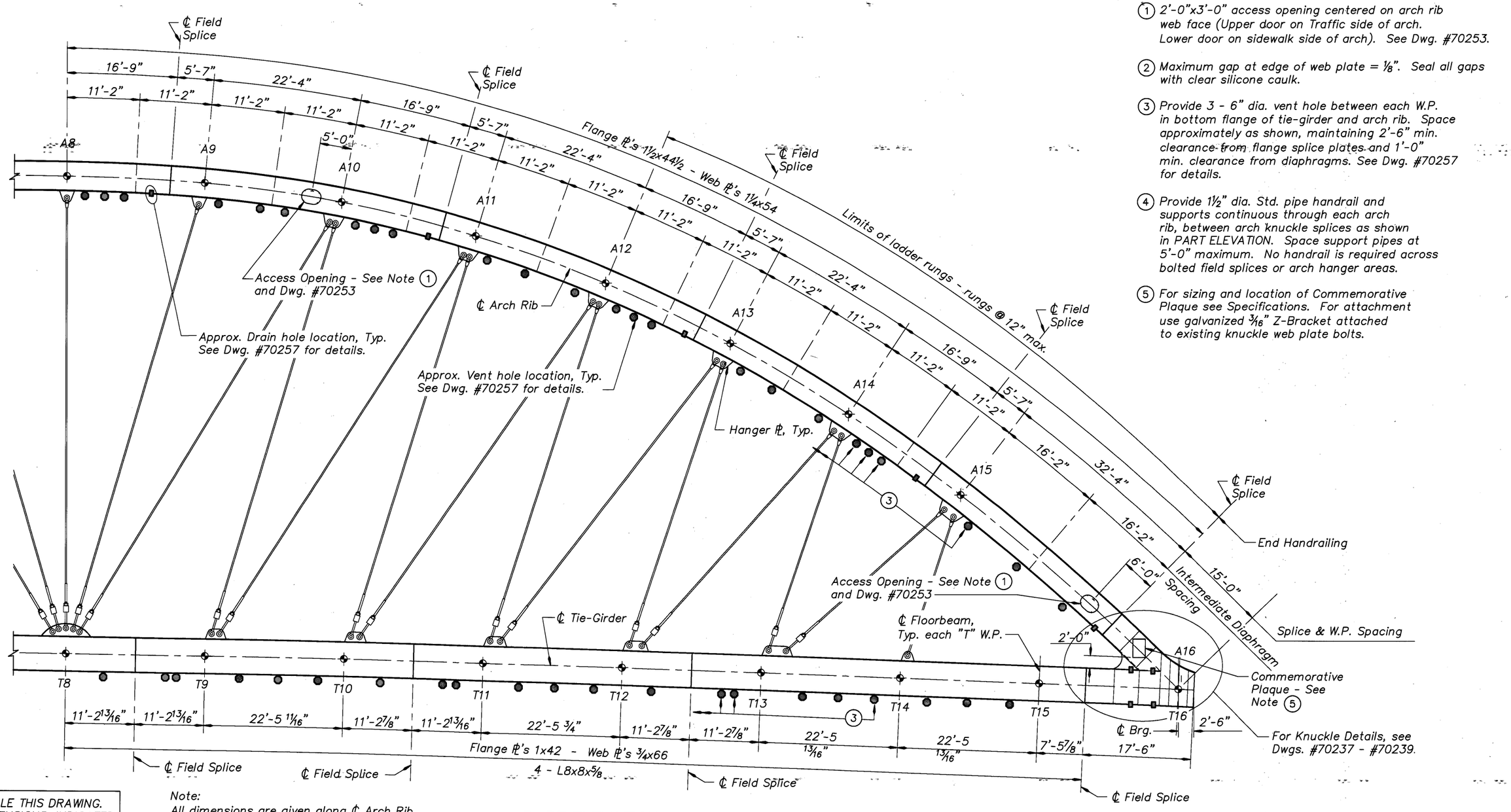
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

MEMBER TYPICAL SECTIONS (1 OF 2)

SHEET 32 OF 173
DRAWING NO. 70219

Xrefs: Odothdr.dwg Arch2d.dwg ODOT0460_AR_04.dwg



Notes:

(1) *2'-0"x3'-0" access opening centered on arch rib web face (Upper door on Traffic side of arch. Lower door on sidewalk side of arch). See Dwg. #70253.*

(2) *Maximum gap at edge of web plate = ⅛". Seal all gaps with clear silicone caulk.*

(3) *Provide 3 - 6" dia. vent hole between each W.P. in bottom flange of tie-girder and arch rib. Space approximately as shown, maintaining 2'-6" min. clearance from flange splice plates and 1'-0" min. clearance from diaphragms. See Dwg. #70257 for details.*

(4) *Provide 1½" dia. Std. pipe handrail and supports continuous through each arch rib, between arch knuckle splices as shown in PART ELEVATION. Space support pipes at 5'-0" maximum. No handrail is required across bolted field splices or arch hanger areas.*

(5) *For sizing and location of Commemorative Plaque see Specifications. For attachment use galvanized 3/16" Z-Bracket attached to existing knuckle web plate bolts.*

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

Note:
All dimensions are given along ℄ Arch Rib or ℄ Tie-Girder.

PART ELEVATION

Scale : ⅛" = 1'-0"

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

MEMBER TYPICAL SECTIONS (2 OF 2)

SHEET 33 OF 173
DRAWING NO. 70220

Xrefs: Odotbdr.dwg Arch2d.dwg 0007D460_AR_04.dwg

ARCH RIB FORCES AND PROPERTIES

MEMBER		A0-A1		A1-A2		A2-A3		A3-A4		A4-A5		A5-A6	
LENGTH (ft.)		45'-4"		22'-4"		22'-4"		22'-4"		22'-4"		22'-4"	
LOCATION		Knuckle Field Splice		A1		Mid-point		A2		Mid-point		A3	
INTERNAL FORCE		M	P	M	P	M	P	M	P	M	P	M	P
DEAD LOAD (UNFACTORED)	DC	1440	-1430	1690	-1410	1370	-1380	1630	-1370	1280	-1360	1500	-1370
	DW1	20	-20	40	-20	30	-20	30	-20	20	-20	20	-20
	DW2	70	-100	150	-100	120	-100	140	-100	100	-90	100	-90
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	890	-140	1560	-200	1450	-190	1570	-230	1400	-230	1420	-230
	MIN. M	-240	-290	-480	-250	-600	-250	-620	-230	-720	-230	-700	-220
	MIN. P	180	-440	540	-440	370	-420	540	-420	380	-420	450	-400
MAX. INTERACTION ①		2990	-2860	4360	-2830	4330	-2480	4920	-2620	4050	-2580	4420	-2580
FLANGE ℄'S		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½	
WEB ℄'S		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54	
A gross (in^2)		268		268		268		268		268		268	
I gross (in^4)		135,633		135,633		135,633		135,633		135,633		135,633	

MEMBER		A5-A6		A6-A7		A7-A8		A8-A9		A9-A10		A10-A11	
LENGTH (ft.)		22'-4"		22'-4"		22'-4"		22'-4"		22'-4"		22'-4"	
LOCATION		Mid-point		A6		Mid-point		A7		Mid-point		A8	
INTERNAL FORCE		M	P	M	P	M	P	M	P	M	P	M	P
DEAD LOAD (UNFACTORED)	DC	-300	-1370	-330	-1400	-330	-1400	-1270	-1420	-1530	-1420	-1310	-1420
	DW1	-10	-20	-10	-20	-20	-20	-10	-20	-20	-20	-10	-20
	DW2	-50	-90	-40	-100	-80	-100	-60	-100	-70	-100	-40	-100
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	260	-280	540	-300	540	-300	440	-290	230	-240	240	-230
	MIN. M	-550	-140	-850	-170	-880	-190	-830	-200	-570	-250	-300	-260
	MIN. P	0	-400	90	-410	-100	-410	-50	-420	-100	-420	20	-420
MAX. INTERACTION ①		-1300	-2460	-1740	-2560	-3090	-2580	-3190	-2640	-3240	-2710	-2490	-2720
FLANGE ℄'S		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½	
WEB ℄'S		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54	
A gross (in^2)		268		268		268		268		268		268	
I gross (in^4)		135,633		135,633		135,633		135,633		135,633		135,633	

MEMBER		A10-A11		A11-A12			
LENGTH (ft.)		22'-4"		22'-4"			
LOCATION		Mid-point		A11		Mid-point	A12
INTERNAL FORCE		M	P	M	P	M	P	M	P
DEAD LOAD (UNFACTORED)	DC	-1420	-1510	-1420	-1240	-1420	-1100	-1400	-290	-1400	-250	-1370	460	-1370	360	-1370	960	-1380
	DW1	-20	-20	-20	-10	-20	-20	-20	-10	-20	-10	-20	0	-20	0	-20	10	-20
	DW2	-100	-70	-100	-60	-100	-70	-100	-30	-100	-50	-100	0	-100	0	-100	50	-100
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	230	-240	450	-290	420	-280	550	-300	270	-280	480	-230	590	-230	1000	-230
	MIN. M	-560	-250	-820	-200	-880	-190	-850	-170	-550	-140	-330	-200	-440	-240	-570	-220
	MIN. P	-90	-420	-30	-420	-80	-410	110	-410	20	-410	250	-410	230	-410	450	-410
MAX. INTERACTION ①		-3210	-2710	-3130	-2610	-3030	-2550	-1700	-2530	-1250	-2440	1050	-2830	840	-2860	2910	-2610
FLANGE ℄'S		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½	
WEB ℄'S		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54	
A gross (in^2)		268		268		268		268		268		268		268		268	
I gross (in^4)		135,633		135,633		135,633		135,633		135,633		135,633		135,633		135,633	

① See Note 1, Dwg. #70222

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Gernot Komar

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 15, 2005 JOEL BRANDON TURBES
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH RIB MEMBER FORCES (1 OF 2)

SHEET 34 OF 173
DRAWING NO. 70221

Xrefs: Odotbdr.dwg ODOT0460_AG_03.dwg

MEMBER		A12-A13				A13-A14				A14-A15				A15-A16			
LENGTH (ft.)		22'-4"				22'-4"				22'-4"				45'-4"			
LOCATION		A12		Mid-point		A13		Mid-point		A14		Mid-point		A15		Knuckle Field Splice	
INTERNAL FORCE		M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P
DEAD LOAD (UNFACTORED)	DC	960	-1380	910	-1380	1490	-1380	1270	-1370	1610	-1390	1350	-1400	1650	-1440	1410	-1470
	DW1	10	-20	10	-20	20	-20	20	-20	30	-20	30	-20	30	-20	20	-20
	DW2	50	-100	50	-100	100	-100	100	-100	140	-100	120	-100	150	-100	70	-100
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	1000	-230	1100	-230	1400	-240	1380	-230	1550	-210	1440	-190	1540	-200	880	-120
	MIN. M	-570	-220	-690	-220	-700	-230	-710	-230	-620	-240	-590	-260	-490	-270	-260	-330
	MIN. P	450	-410	370	-410	480	-410	490	-430	620	-430	410	-430	530	-450	70	-450
MAX. INTERACTION (1)		2910	-2610	2940	-2570	4340	-2590	4000	-2490	3880	-2760	3020	-2780	4290	-3000	2580	-2810
FLANGE PL'S		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½		1½x44½	
WEB PL'S		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54		1¼x54	
A gross (in^2)		268		268		268		268		268		268		268		268	
I gross (in^4)		135,633		135,633		135,633		135,633		135,633		135,633		135,633		135,633	

(1) See Note 1.

Notes:
1. Max. interaction force effects correspond to the Strength Limit State loading combination that produces the highest combined interaction value per AASHTO LRFD Design Specifications (Third Edition, 2004) Section 6.8.2.3 and Section 6.9.2.2.
2. DC includes the dead load of structural elements and components through the end of Stage 8.
3. DW1 and DW2 include force effects from future utilities and future wearing surface, respectively.
4. Member forces are symmetrical about ℄ Roadway.

M = Moment (k-ft.)
P = Axial Force (k)
- = Compression
+ = Tension

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Gernot Komar

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 72845 PE OREGON JULY 8, 2005 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH RIB MEMBER FORCES (2 OF 2)

SHEET 35 OF 173
DRAWING NO. 70222

Xrefs: Odotbdr.dwg ODOT0460_AG_03.dwg

TIE-GIRDER FORCES AND PROPERTIES

MEMBER		T0-T1		T1-T2		T2-T3		T3-T4		T4-T5		T5-T6	
LENGTH (ft.)		22'-5⅝"		22'-5⅝"		22'-5⅝"		22'-5⅝"		22'-5⅝"		22'-5⅝"	
LOCATION		Knuckle Field Splice		T1		Mid-point		T2		Mid-point		T3	
INTERNAL FORCE		M	P	M	P	M	P	M	P	M	P	M	P
DEAD LOAD (UNFACTORED)	DC	290	1020	1560	1020	2120	950	2690	950	2790	930	2890	930
	DW1	20	10	40	10	40	10	30	10	40	10	30	10
	DW2	50	70	140	70	150	60	160	60	160	60	160	60
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	960	100	1870	110	1770	120	2210	130	2060	160	2480	160
	MIN. M	-270	200	-310	180	-420	160	-500	160	-630	140	-750	140
	MAX. P	210	310	590	310	550	280	680	280	980	270	1180	270
MAX. INTERACTION ①		790	2190	5520	1600	6010	1780	7370	1790	7350	1880	8260	1590
FLANGE ℄'S		1x42		1x42		1x42		1x42		1x42		1x42	
WEB ℄'S		¾x66		¾x66		¾x66		¾x66		¾x66		¾x66	
CONNECTION ANGLES		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝	
A gross (in^2)		222		222		222		222		222		222	
I gross (in^4)		167,197		167,197		167,197		167,197		167,197		167,197	

MEMBER		T6-T7		T7-T8		T8-T9		T9-T10		T10-T11		T11-T12	
LENGTH (ft.)		22'-5⅝"		22'-5⅝"		22'-5⅝"		22'-5 1/16"		22'-5 1/16"		22'-5¾"	
LOCATION		T6		Mid-point		T7		Mid-point		T8		Mid-point	
INTERNAL FORCE		M	P	M	P	M	P	M	P	M	P	M	P
DEAD LOAD (UNFACTORED)	DC	0	970	-820	1000	-1740	1040	-2680	1040	-3740	1040	-2670	1040
	DW1	0	10	-10	10	-30	10	-40	10	-70	10	-40	10
	DW2	20	60	-40	60	-100	60	-180	60	-270	60	-180	60
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	2080	180	1610	180	1770	140	1180	150	1330	130	1180	150
	MIN. M	-1080	120	-1190	130	-1360	150	-1400	160	-1610	190	-1410	150
	MAX. P	1230	290	810	290	540	280	120	280	-320	280	200	280
MAX. INTERACTION ①		1410	2140	-110	2180	-4720	1740	-6380	1740	-8470	1790	-6380	1740
FLANGE ℄'S		1x42		1x42		1x42		1x42		1x42		1x42	
WEB ℄'S		¾x66		¾x66		¾x66		¾x66		¾x66		¾x66	
CONNECTION ANGLES		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝	
A gross (in^2)		222		222		222		222		222		222	
I gross (in^4)		167,197		167,197		167,197		167,197		167,197		167,197	

MEMBER		T9-T10		T10-T11		T11-T12	
LENGTH (ft.)		22'-5 1/16"		22'-5 1/16"		22'-5¾"	
LOCATION		Mid-point		T10		Mid-point	
INTERNAL FORCE		M	P	M	P	M	P
DEAD LOAD (UNFACTORED)	DC	-1700	1000	-800	1000	20	970
	DW1	-30	10	-10	10	0	10
	DW2	-90	60	-40	60	30	60
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	1830	160	1620	210	2080	200
	MIN. M	-1370	120	-1200	100	-1080	100
	MAX. P	850	280	790	280	1090	280
MAX. INTERACTION ①		-4670	1630	-3180	1390	1560	2110
FLANGE ℄'S		1x42		1x42		1x42	
WEB ℄'S		¾x66		¾x66		¾x66	
CONNECTION ANGLES		L8x8x⅝		L8x8x⅝		L8x8x⅝	
A gross (in^2)		222		222		222	
I gross (in^4)		167,197		167,197		167,197	

MEMBER		T10-T11		T11-T12	
LENGTH (ft.)		22'-5 1/16"		22'-5¾"	
LOCATION		Mid-point		T11	
INTERNAL FORCE		M	P	M	P
DEAD LOAD (UNFACTORED)	DC	730	970	1350	950
	DW1	10	10	20	10
	DW2	60	60	100	60
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	1860	200	2290	190
	MIN. M	-990	110	-940	110
	MAX. P	980	280	970	270
MAX. INTERACTION ①		4300	1750	5920	1630
FLANGE ℄'S		1x42		1x42	
WEB ℄'S		¾x66		¾x66	
CONNECTION ANGLES		L8x8x⅝		L8x8x⅝	
A gross (in^2)		222		222	
I gross (in^4)		167,197		167,197	

MEMBER		Mid-point		T12	
LENGTH (ft.)		22'-5¾"			
LOCATION		Mid-point		T12	
INTERNAL FORCE		M	P	M	P
DEAD LOAD (UNFACTORED)	DC	1880	950	2360	940
	DW1	30	10	30	10
	DW2	120	60	140	60
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	2060	190	2450	170
	MIN. M	-900	120	-870	120
	MAX. P	850	270	1010	270
MAX. INTERACTION ①		6220	1680	7550	1580
FLANGE ℄'S		1x42		1x42	
WEB ℄'S		¾x66		¾x66	
CONNECTION ANGLES		L8x8x⅝		L8x8x⅝	
A gross (in^2)		222		222	
I gross (in^4)		167,197		167,197	

① See Note 1, Dwg. #70222

	DATE	REVISION	BY
2			
1	08/05	Revised Max. Interaction Values	JBT
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Gernot Komar

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 9, 2005 JOEL BRANDON TIBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TIE-GIRDER MEMBER FORCES (1 of 2)

SHEET 36 OF 173
DRAWING NO. 70223

Xrefs: Odotbdr.dwg ODOT0460_AS_03.dwg

MEMBER		T12-T13				T13-T14				T14-T15				T15-T16			
LENGTH (ft.)		22'-5¾"				22'-5 13/16"				22'-5 13/16"				22'-5⅞"			
LOCATION		T12		Mid-point		T13		Mid-point		T14		Mid-point		T15		Knuckle Field Splice	
INTERNAL FORCE		M	P	M	P	M	P	M	P	M	P	M	P	M	P	M	P
DEAD LOAD (UNFACTORED)	DC	2360	940	2610	940	2830	930	2750	930	2660	960	2130	960	1590	1020	310	1020
	DW1	30	10	30	10	30	10	40	10	30	10	40	10	40	10	20	10
	DW2	140	60	150	60	160	60	150	60	160	60	150	60	140	70	50	70
LIVE LOAD PLUS IMPACT (UNFACTORED)	MAX. M	2450	170	2140	180	2440	160	2020	170	2170	140	1770	140	1880	120	1020	120
	MIN. M	-870	120	-800	130	-750	130	-630	130	-500	140	-430	150	-350	170	-360	160
	MAX. P	1010	270	840	270	830	270	690	270	650	270	500	270	540	290	260	290
MAX. INTERACTION (1)		7550	1580	7300	1620	8110	1560	7270	1570	7380	1690	6020	1690	5530	1870	1590	2140
FLANGE PL'S		1x42		1x42		1x42		1x42		1x42		1x42		1x42		1x42	
WEB PL'S		¾x66		¾x66		¾x66		¾x66		¾x66		¾x66		¾x66		¾x66	
CONNECTION ANGLES		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝		L8x8x⅝	
A gross (in^2)		222		222		222		222		222		222		222		222	
I gross (in^4)		167,197		167,197		167,197		167,197		167,197		167,197		167,197		167,197	

(1) See Note 1, Dwg. #70222

	DATE	REVISION	BY
1	08/05	Revised Max. Interaction Values	JBT
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Gernot Komar

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 62844PE OREGON JULY 15, 2003 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

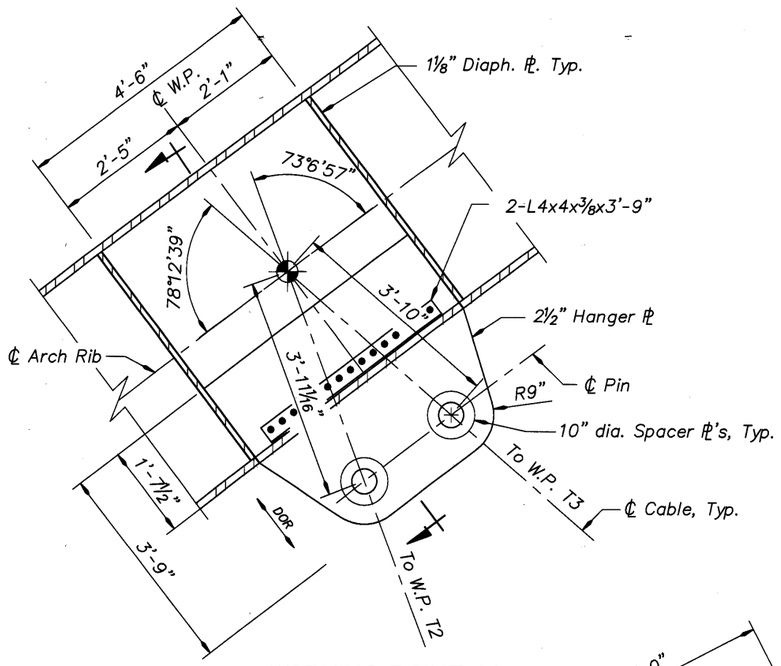
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TIE-GIRDER MEMBER FORCES (2 of 2)

SHEET 37 OF 173

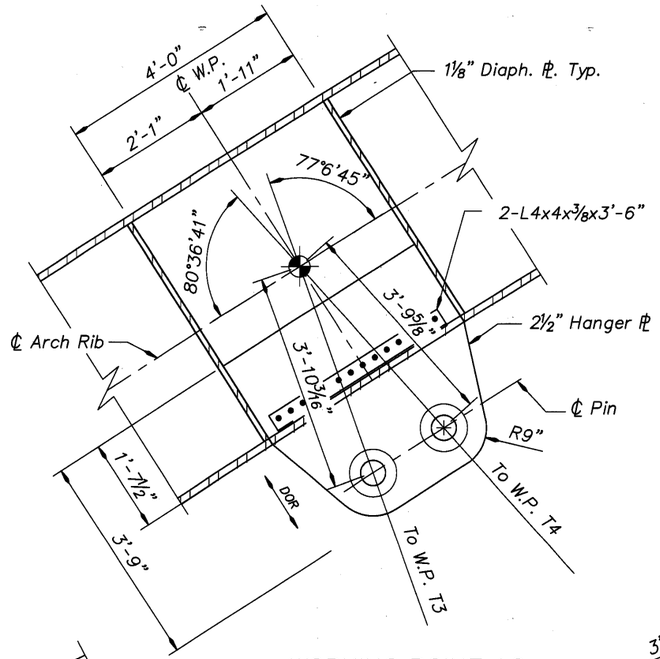
DRAWING NO. 70224

Xrefs: Odotbdr.dwg ODOT0460_AG_03.dwg



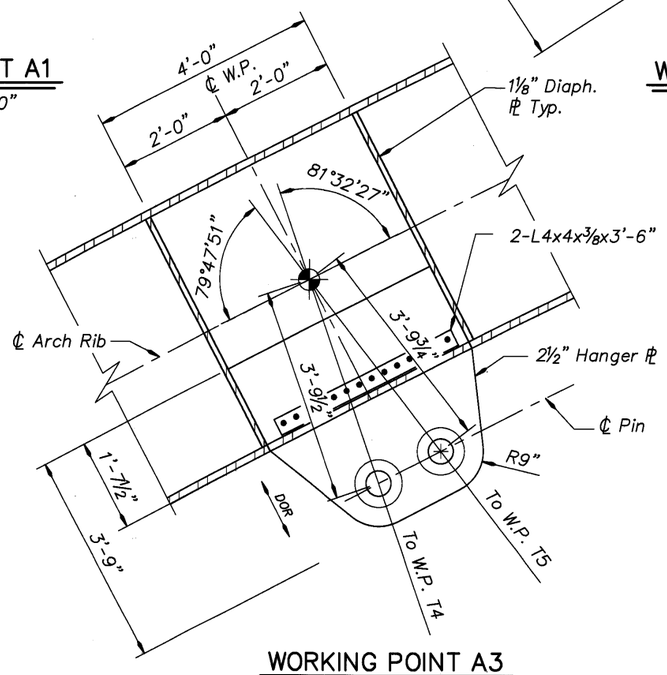
WORKING POINT A1

Scale : ¾" = 1'-0"



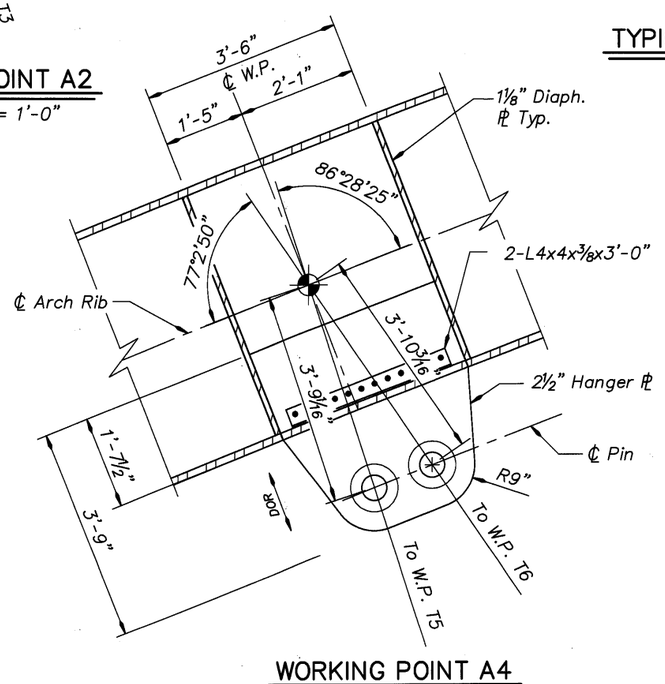
WORKING POINT A2

Scale : ¾" = 1'-0"



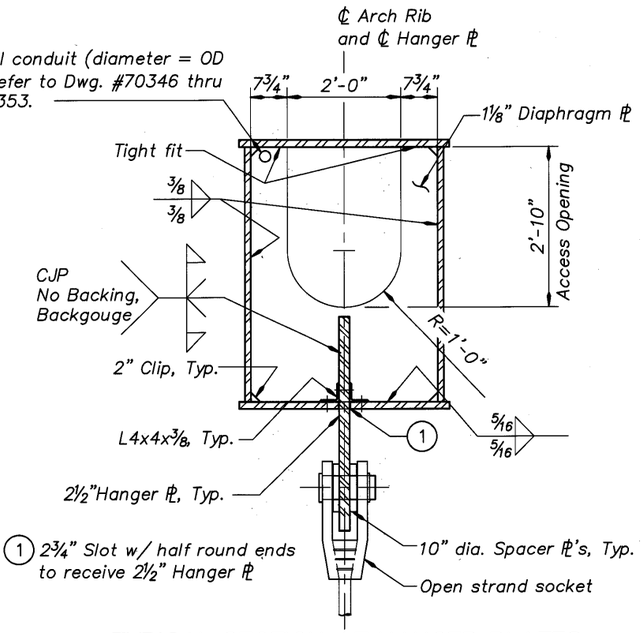
WORKING POINT A3

Scale : ¾" = 1'-0"



WORKING POINT A4

Scale : ¾" = 1'-0"



TYPICAL SECTION AT HANGER PLATES

Scale : ¾" = 1'-0"
For details not shown, see "Typical Arch Rib Section", Dwg. #70219.

Note:
Paint the hanger plate pin holes, pin hole circular spacer plates, and two inches past the outer edge of spacer plates. See General Notes, Dwg. #70191.

Notes:
All angles shown are to local tangents to ℄ Arch Rib at working points.
For Hanger Cable Details, see Dwg. #70242 and #70243.

DOR — Denotes Direction of Roll

Denotes Working Point

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

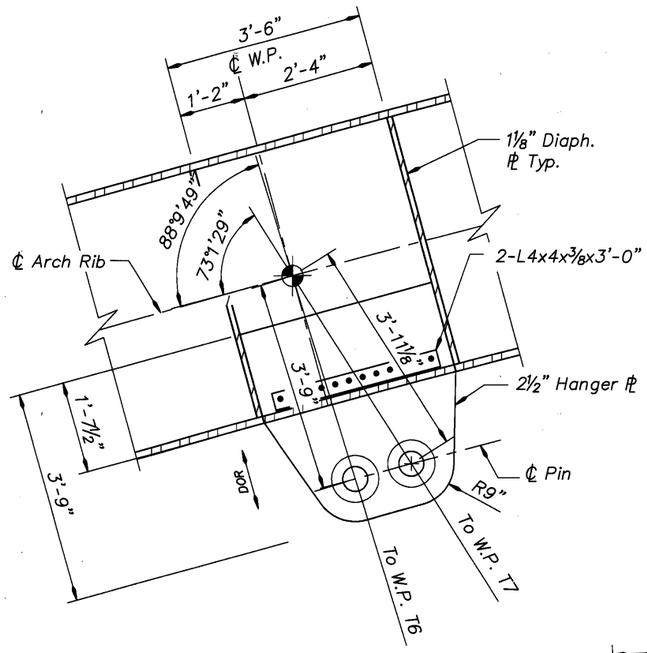
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH RIB DETAILS (1 OF 5)

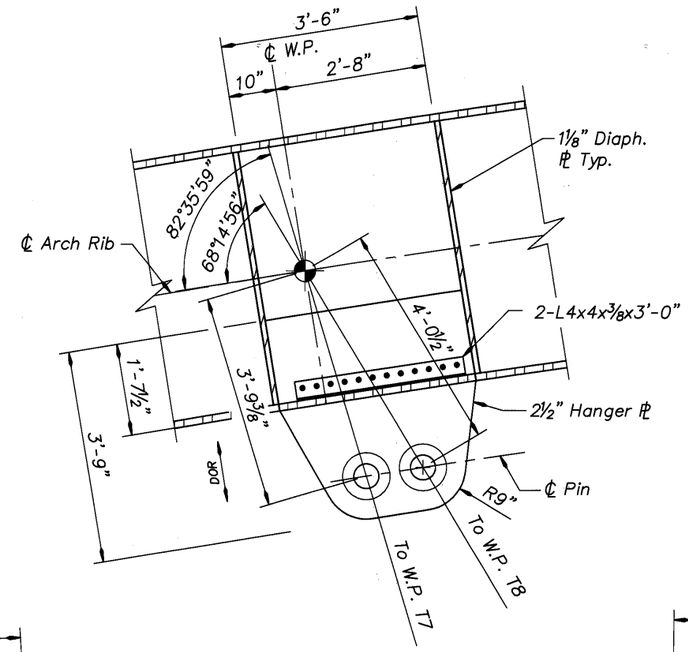
SHEET 38 OF 173
DRAWING NO. 70225

Xrefs: Odotbdr.dwg ODOT0460_AR_03.dwg



WORKING POINT A5

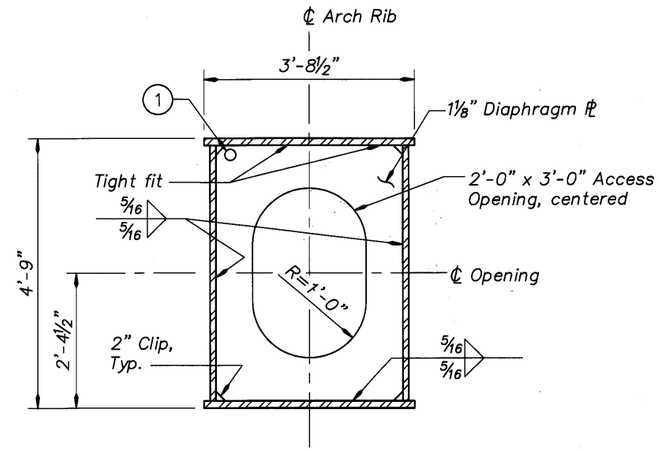
Scale : ¾" = 1'-0"



WORKING POINT A6

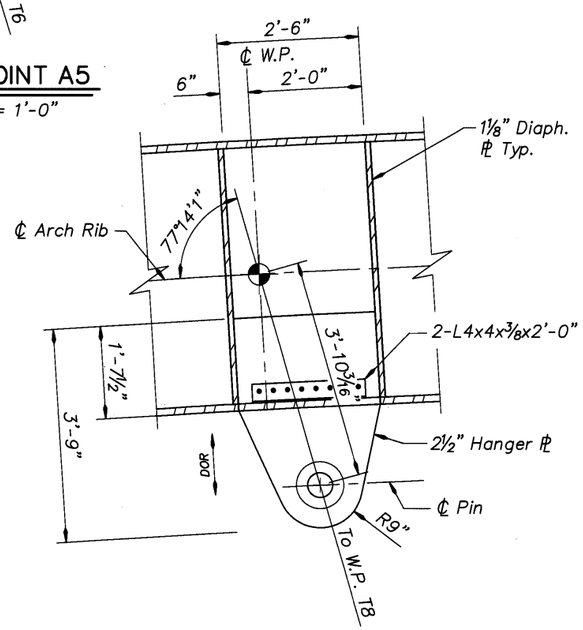
Scale : ¾"= 1'-0"

(1) Hole for electrical conduit (diameter = OD conduit + ⅛")
Refer to Dwg. #70346 thru #70349 and #70353.



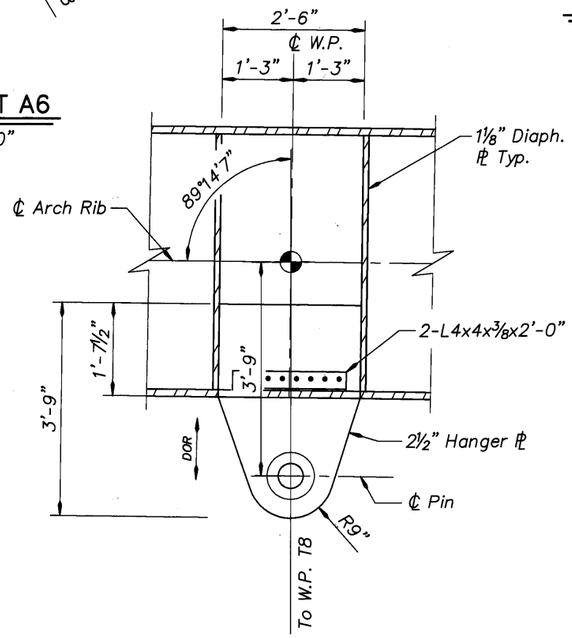
INTERMEDIATE ARCH RIB DIAPHRAGM

Scale : ¾" = 1'-0"



WORKING POINT A7

Scale : ¾" = 1'-0"



WORKING POINT A8

Scale : ¾" = 1'-0"

Notes:
All angles shown are to local tangents to ℄ Arch Rib at working points.
For Hanger Cable Details, see Dwg. #70242 and #70243.

DOR — Denotes Direction of Roll

Denotes Working Point

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM COROTT
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

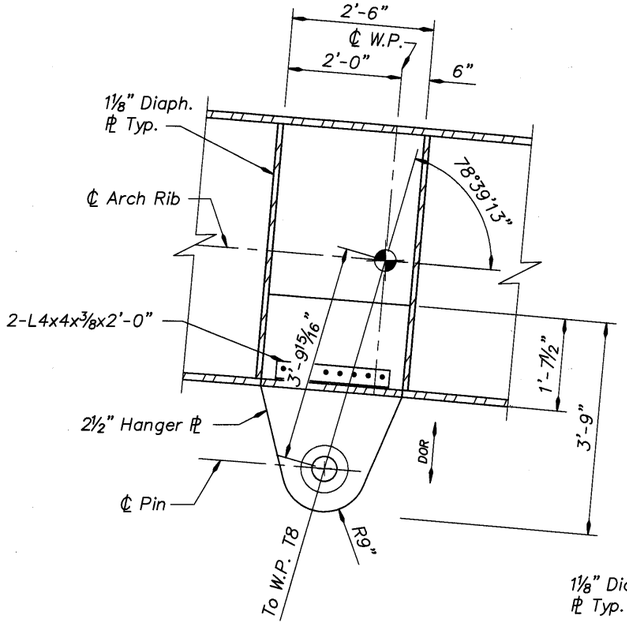
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH RIB DETAILS (2 OF 5)

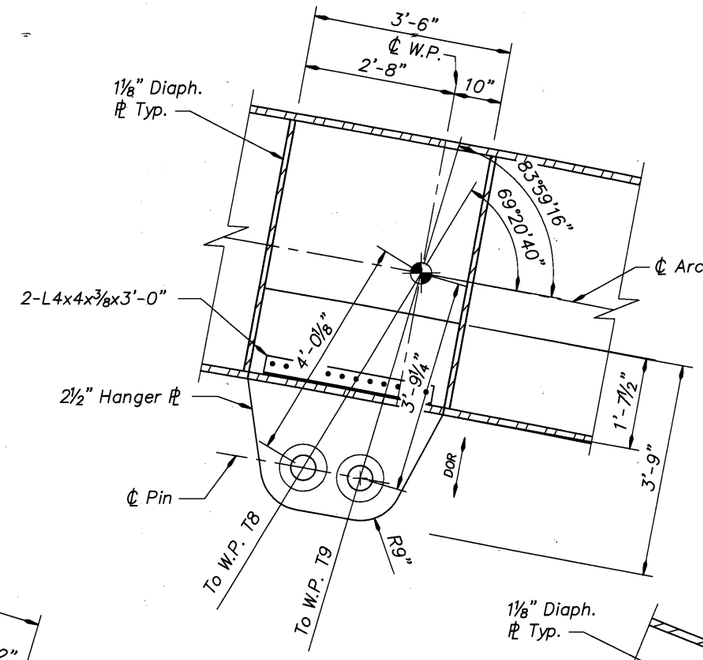
SHEET 39 OF 173
DRAWING NO. 70226

Xrefs: Odotbdr.dwg ODOT0460_AR_03.dwg



WORKING POINT A9

Scale : ¾" = 1'-0"



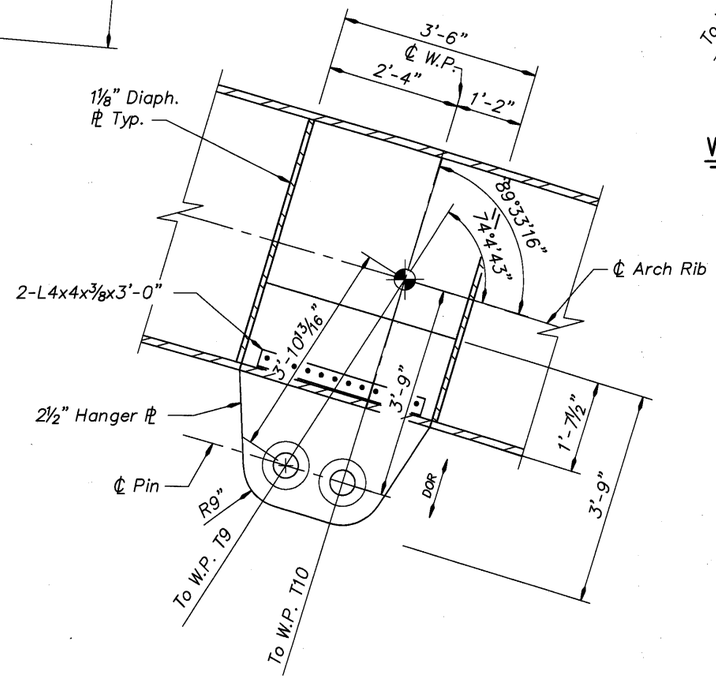
WORKING POINT A10

Scale : ¾" = 1'-0"

Notes:
All angles shown are to local tangents to ℄ Arch Rib at working points.
For Hanger Cable Details, see Dwg. #70242 and #70243.

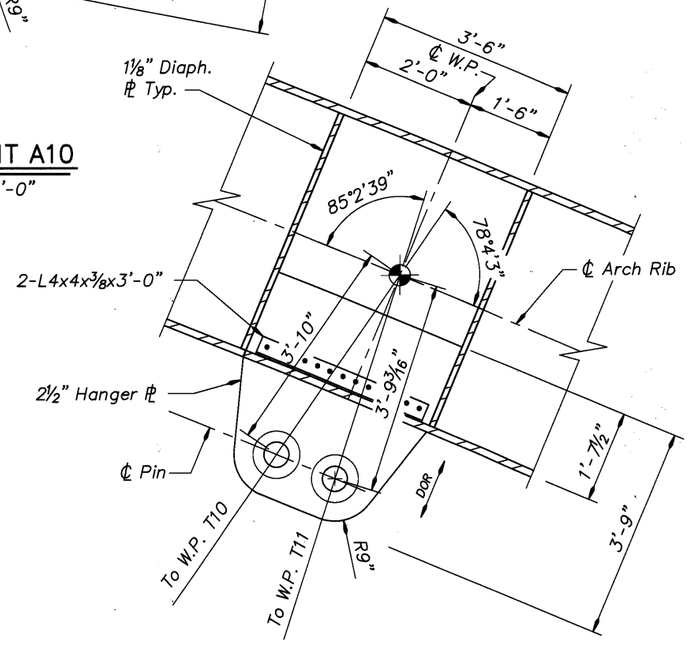
DOR — *Denotes Direction of Roll*

Denotes Working Point



WORKING POINT A11

Scale : ¾" = 1'-0"



WORKING POINT A12

Scale : ¾"= 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

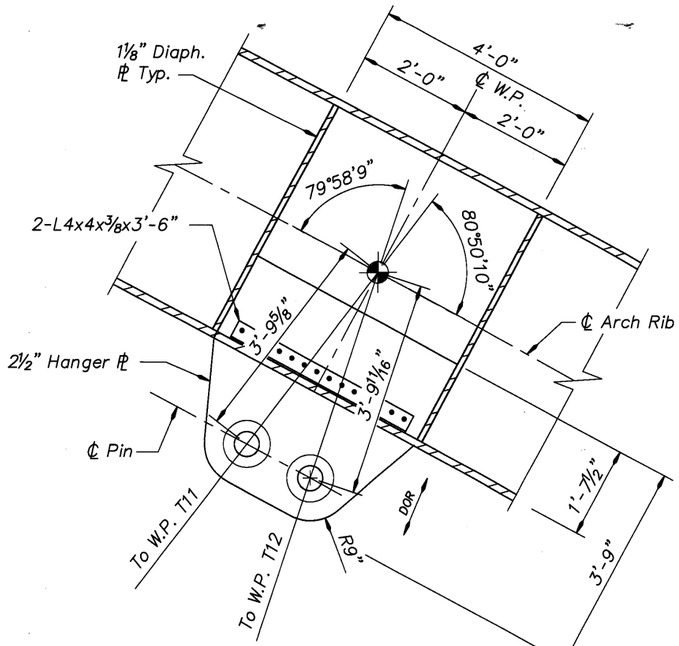
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH RIB DETAILS (3 OF 5)

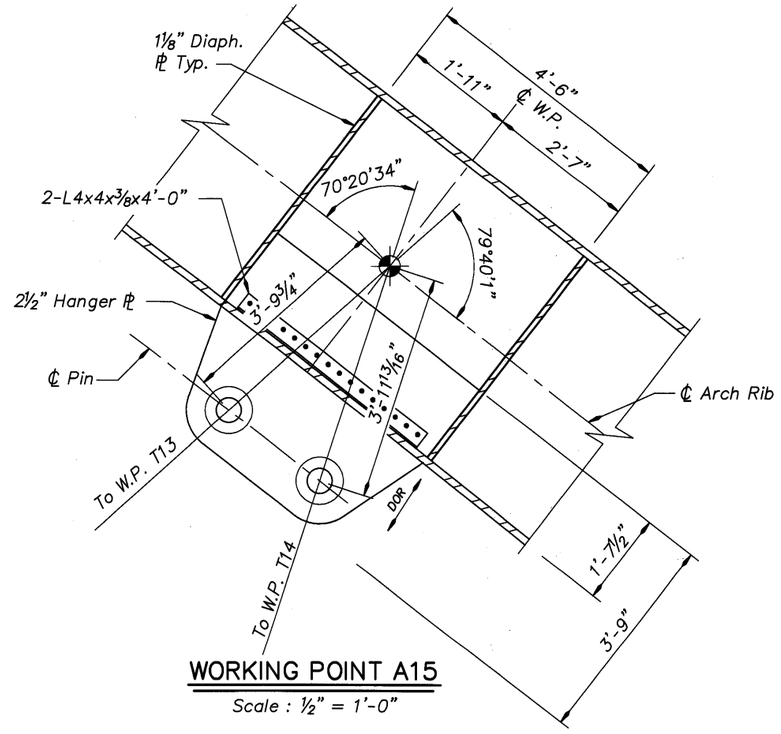
SHEET 40 OF 173
DRAWING NO. 70227

Xrefs: Odotbdr.dwg ODOT0460_AR_03.dwg



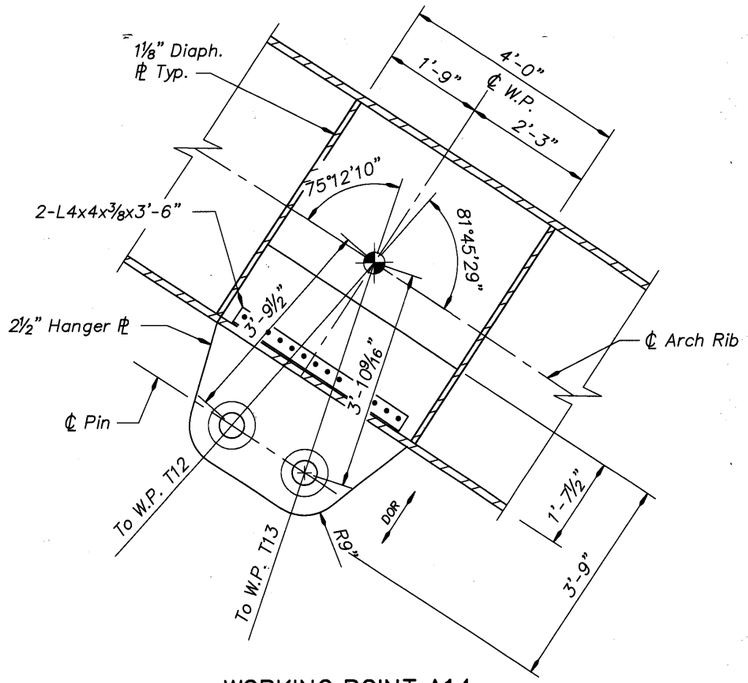
WORKING POINT A13

Scale : ¾" = 1'-0"



WORKING POINT A15

Scale : ½" = 1'-0"



WORKING POINT A14

Scale : ¾" = 1'-0"

Notes:
All angles shown are to local tangents to ℄ Arch Rib at working points.
For Hanger Cable Details, see Dwg. #70242 and #70243.

DOR — Denotes Direction of Roll

Denotes Working Point

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON KENT WILLIAM GRATZ MARCH 09, 2004
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

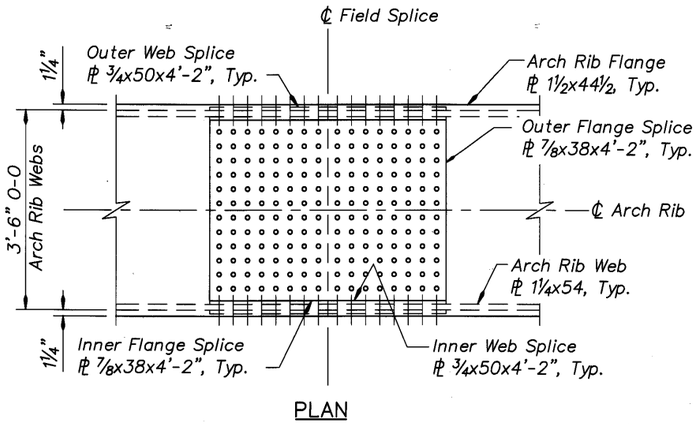
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

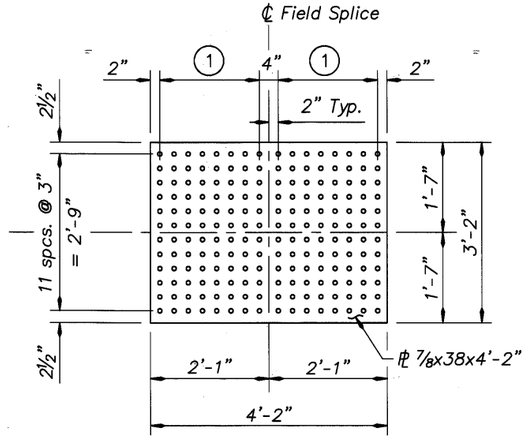
ARCH RIB DETAILS (4 OF 5)

SHEET 41 OF 173
DRAWING NO. 70228

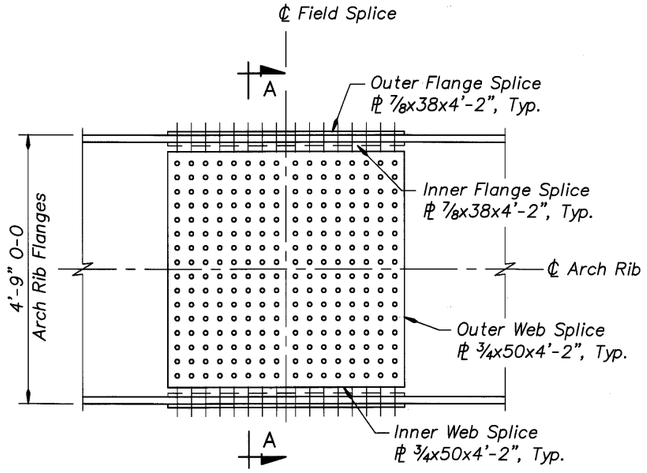
Xrefs: Odotbdr.dwg ODOT0460_AR_03.dwg



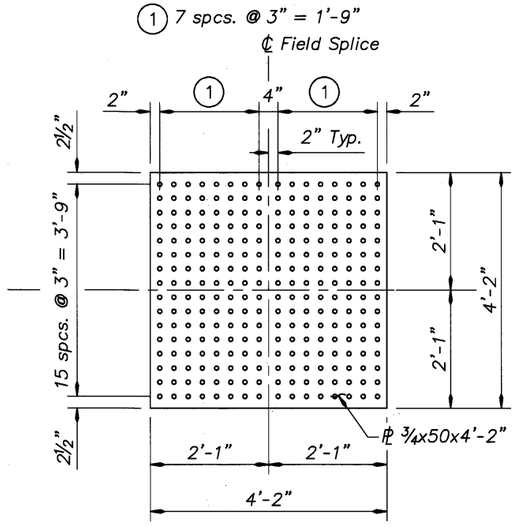
PLAN



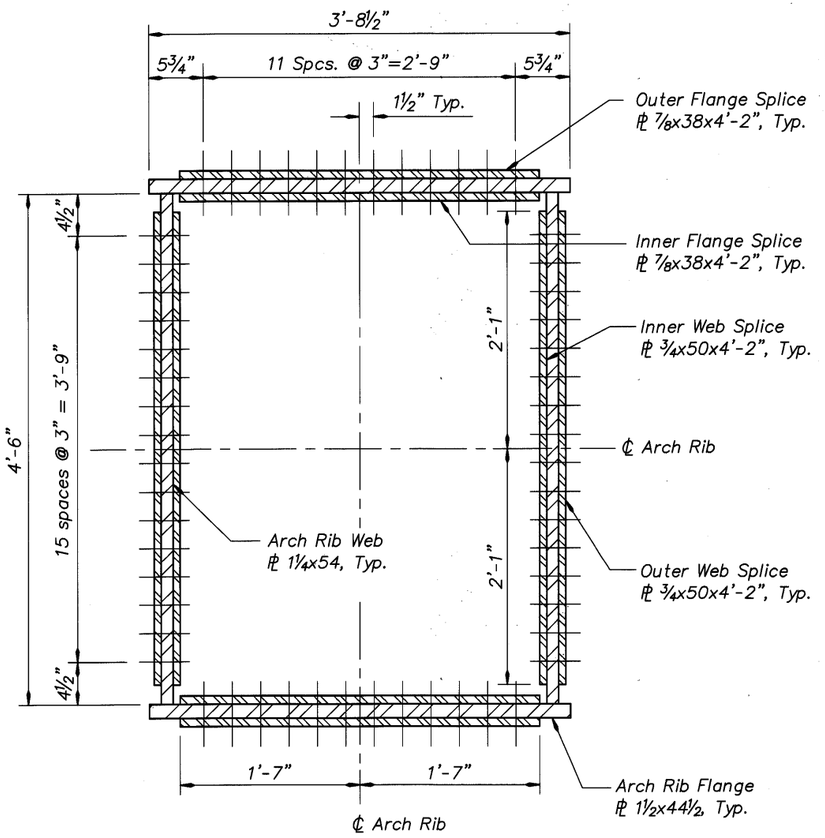
INNER AND OUTER FLANGE PLATE



ELEVATION



INNER AND OUTER WEB PLATE



SECTION A-A

Scale : 1½" = 1'-0"

Note:

1. *Typical Arch Rib splice is shown. See Dwg. #70219, and #70220 for specific locations. For Arch Rib/Knuckle splice, see Dwg. #70240.*
2. *All bolts in splice are ⅞" dia. High Strength, Type 3 (Weathering) bolts designed to meet slip-critical criteria. See General Notes for further information.*
3. *All splices are symmetrical about ℄ Field Splice and Arch Rib web and flange plates.*

ARCH RIB SPLICE DETAILS

Scale : ¾" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Eric Rau

REVIEWED
REGISTERED PROFESSIONAL ENGINEER — OREGON — JOEL BRANDON TUBBS — JULY 9, 2002
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

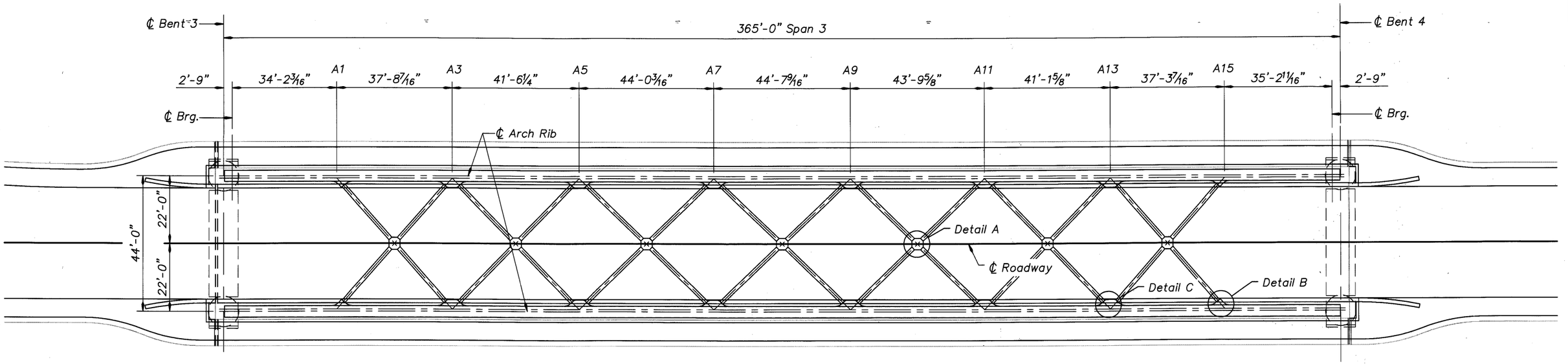
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH RIB DETAILS (5 OF 5)

SHEET 42 OF 173
DRAWING NO. 70229

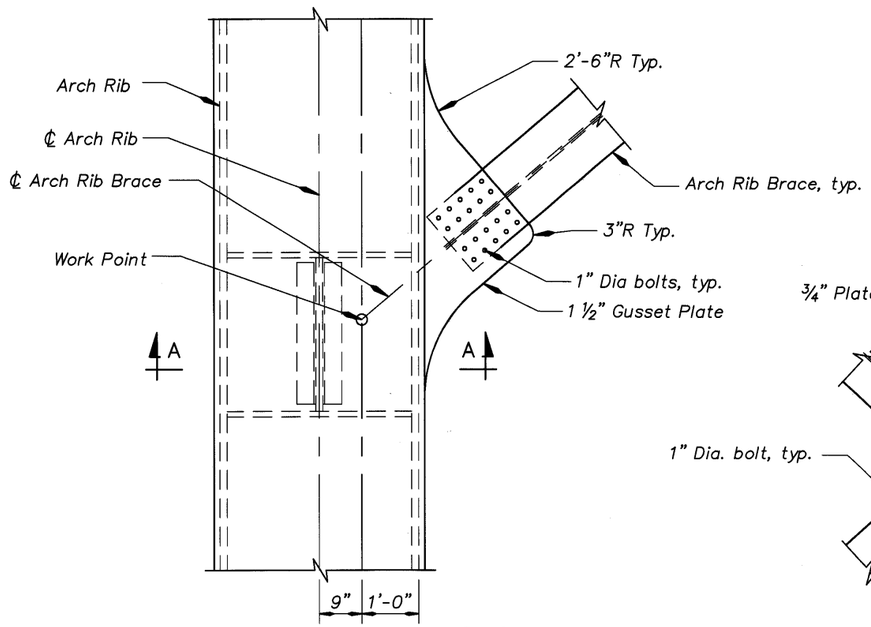
Xrefs: Odotbdr.dwg ODOT00460_AR_sp.dwg ODOT00460_AR_03.dwg



ARCH RIB BRACING PLAN

Scale: 1/16" = 1'-0"

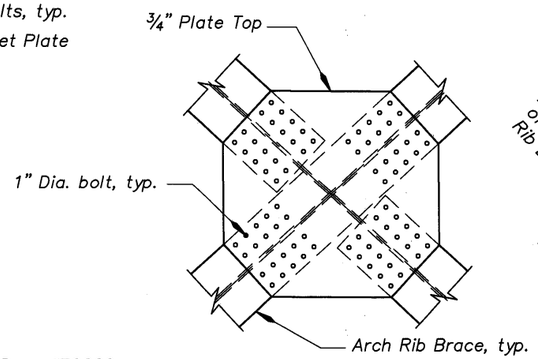
Note: All dimensions shown are true horizontal.



For Section A-A, see Dwg. #70209.

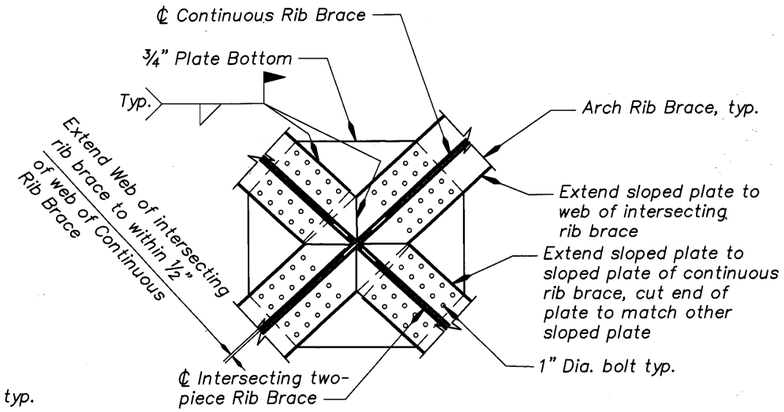
DETAIL B

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



DETAIL A TOP

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



DETAIL A BOTTOM

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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON KENT WILLIAM CORDTZ MARCH 09, 2004
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

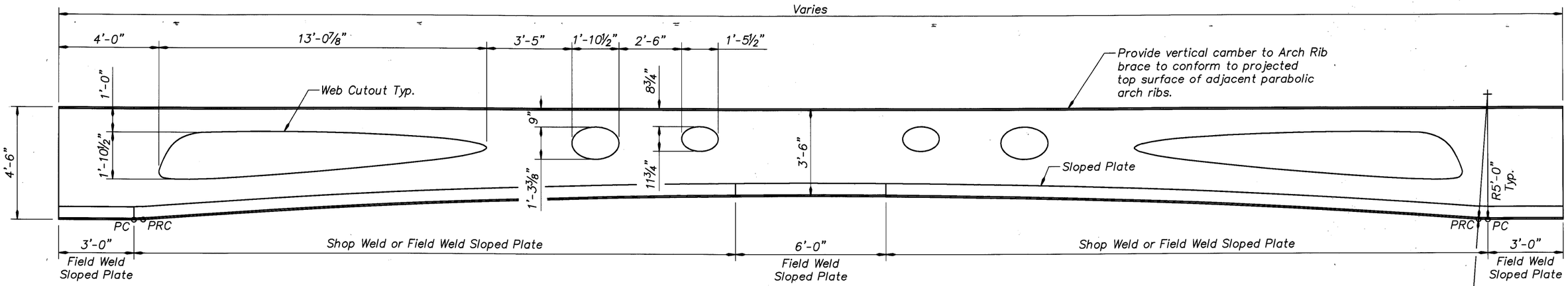
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH RIB BRACING PLAN

SHEET 43 OF 173
DRAWING NO. 70230

Xrefs: Odotblock.dwg 00070460_AF_01.dwg NEWSauvie_Arch01.dwg Arch2d.dwg 00070460_AS_10.dwg



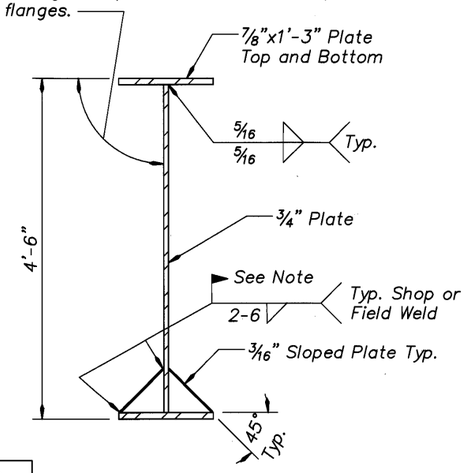
NOTE:
CADD drawing files of web cutouts will be provided to the steel fabricator. Approximate cutout dimensions are provided for information only.

ARCH RIB BRACE ELEVATION

Scale: ½" = 1'-0"

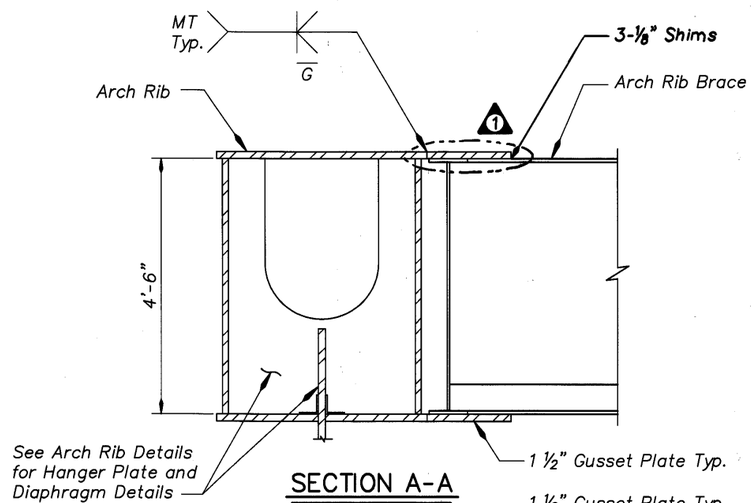
Continuous Rib Brace Shown, Two-Piece Rib Brace Similar
See Detail A Bottom for Intersecting Two-Piece Rib Brace and Sloped Plate Details

Maintain web of arch rib brace in a constant plane, determined at the intersection point of the two crossing braces. Vary the flange-to-web angle as required to conform to local arch gusset plate orientation. Increase arch gusset plate dimensions as required to fit brace flanges.



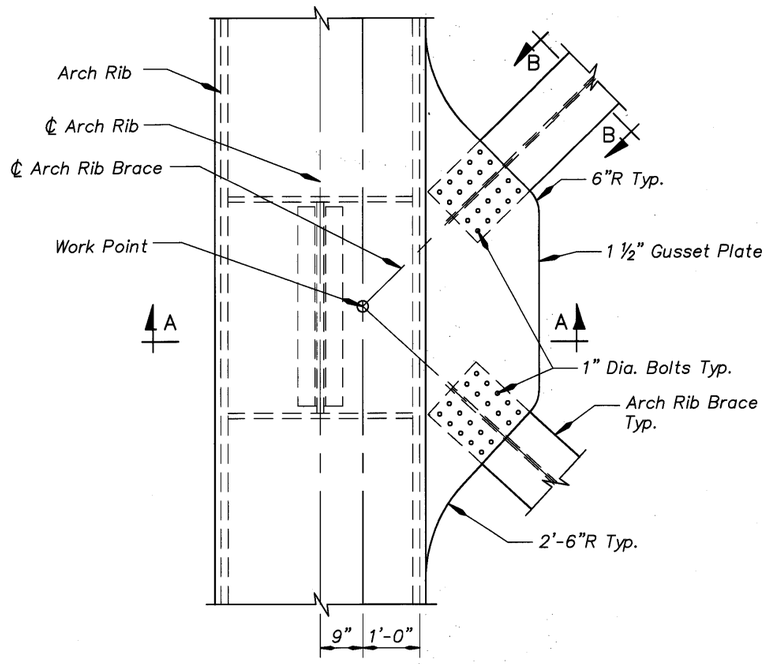
SECTION B-B

Scale: 1" = 1'-0"



SECTION A-A

Scale: ¾" = 1'-0"



DETAIL C

Scale: ¾" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: D. Gattshall
CHECKED: Oliver Mueller
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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MULTNOMAH COUNTY BRIDGES
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OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

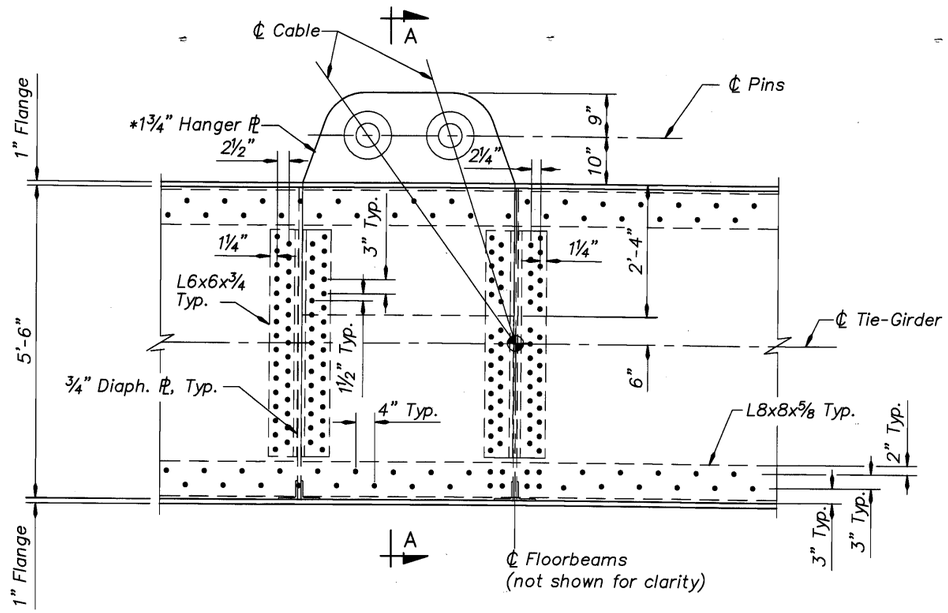
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH RIB BRACING DETAILS

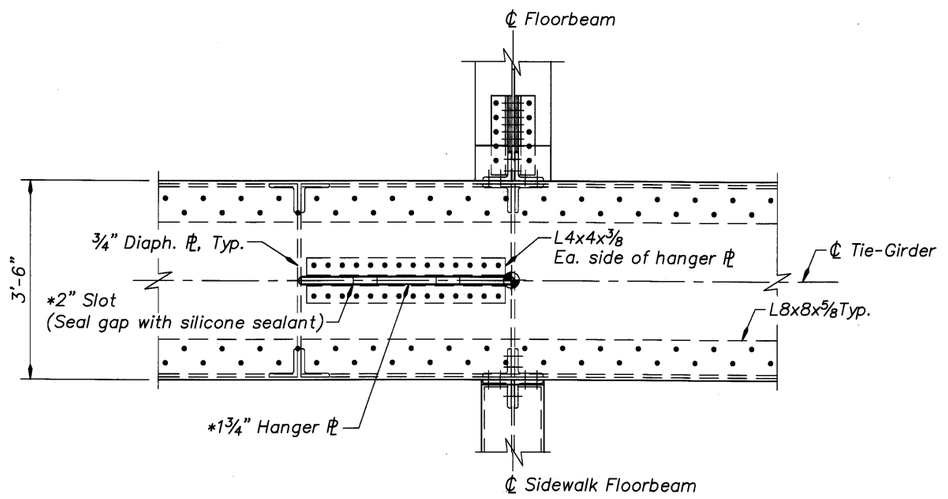
SHEET 44 OF 173
DRAWING NO. 70231

Xrefs: Odotbdr.dwg O0OT0460_AS_10.dwg



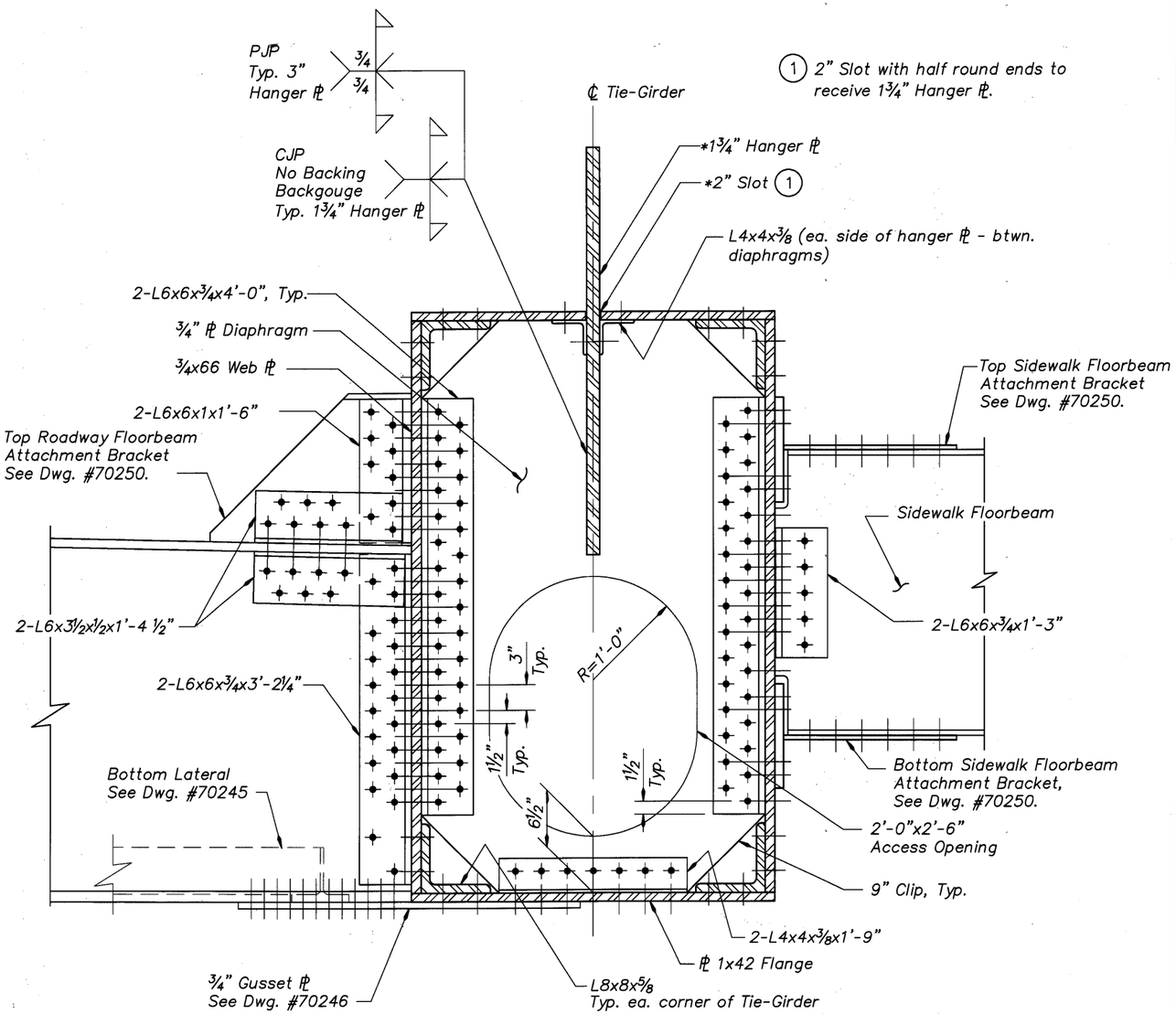
TIE-GIRDER ELEVATION

Scale : ¾" = 1'-0"



TIE-GIRDER PLAN

Scale : ¾" = 1'-0"



SECTION A-A

TYPICAL SECTION THROUGH TIE-GIRDER AT FLOORBEAM/HANGER

Scale : 1½" = 1'-0"

Section A-A applies to all Tie-Girder diaphragms except T8 center diaphragm. For details at that location, see Dwg, #70235.

*Note:
All Tie-Girder hanger plates are 1¾" thick with 2" receiving slots in the tie-girder top flange except at Working Point T8. At that location the hanger plate is 3" thick and the receiving slot in the tie-girder top flange plate is 3¼" wide. Slots shall be ½ round ends. Seal all slots with clear silicone sealer.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON KENT WILLIAM CORDTZ MARCH 09, 2004
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

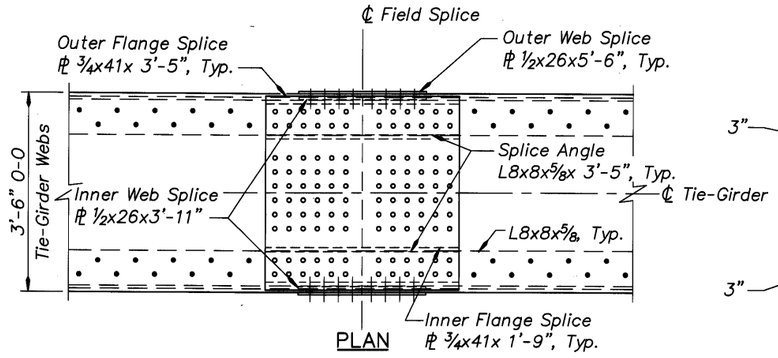
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

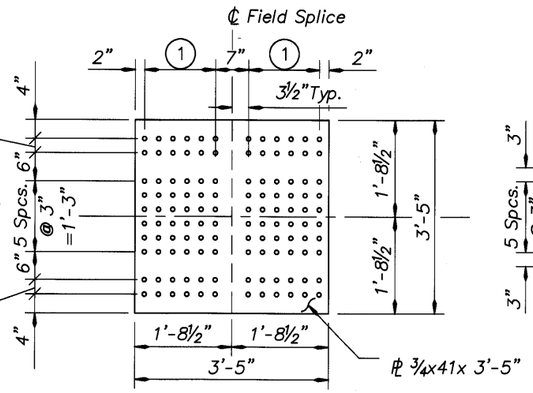
TIE GIRDER DETAILS

SHEET 45 OF 173.
DRAWING NO. 70232

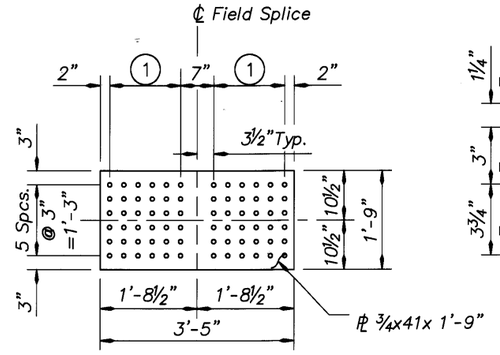
Xrefs: Odotbdr.dwg ODOT0460_AFB_02.dwg ODOT0460_AT_01.dwg



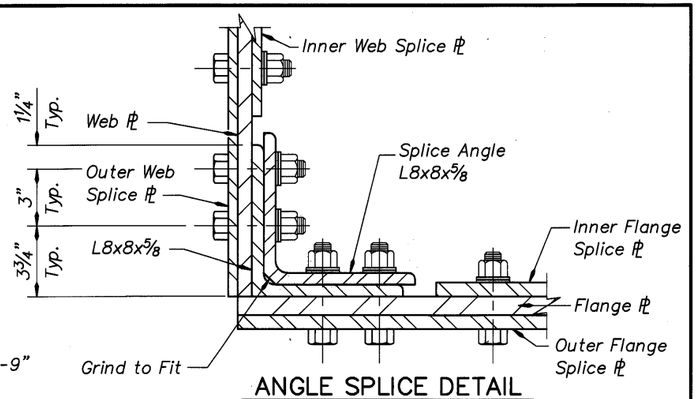
PLAN



OUTER FLANGE PLATE



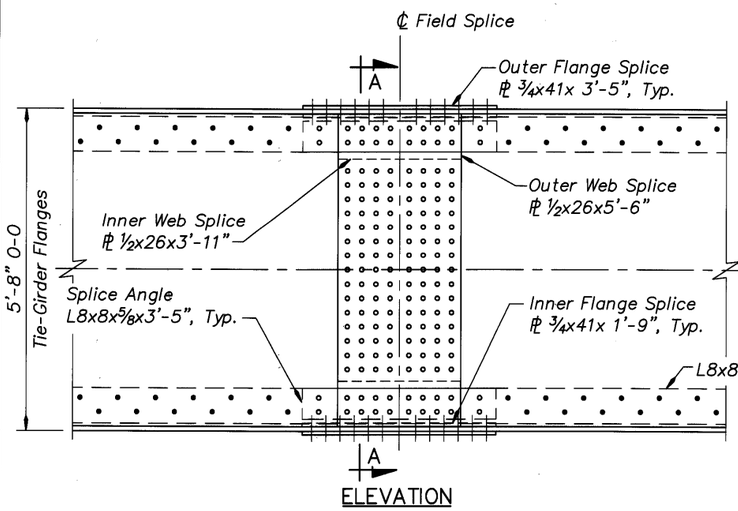
INNER FLANGE PLATE



ANGLE SPLICE DETAIL

Scale : 3" = 1'-0"

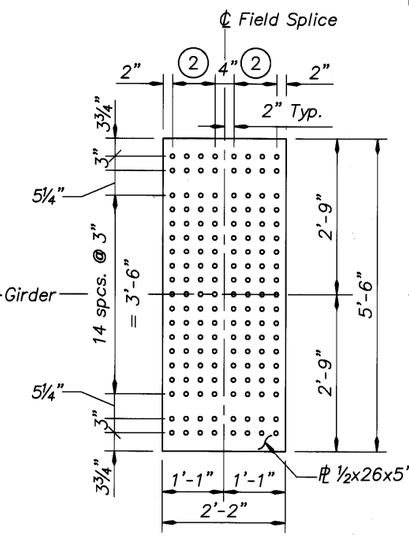
For Angle Splice Detail Notes, see Dwg. #70241.



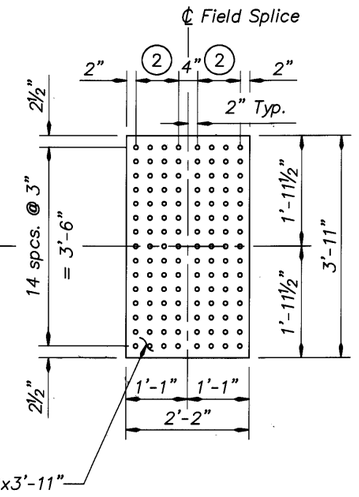
ELEVATION

1 5 spcs. @ 3" = 1'-3"

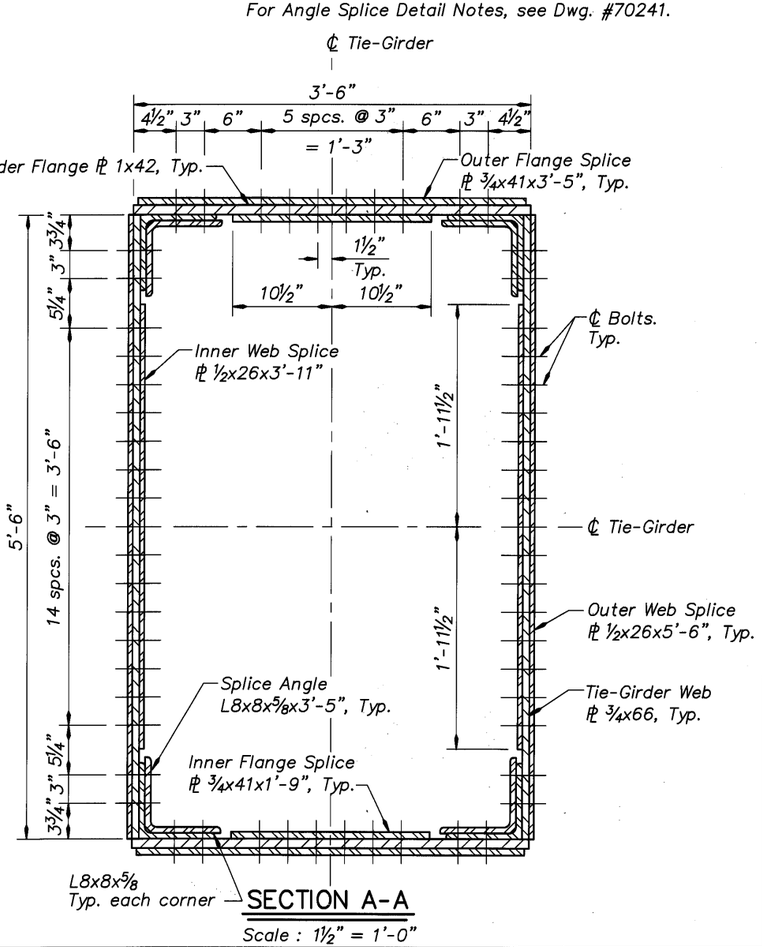
2 3 spcs. @ 3" = 9"



OUTER WEB PLATE



INNER WEB PLATE



SECTION A-A

Scale : 1½" = 1'-0"

TIE-GIRDER SPLICE DETAILS

Scale : ¾" = 1'-0"

Note:

1. Typical Tie-Girder splices are shown. See Dwg. #70219 and #70220 for specific locations. For Tie-Grider/Knuckle splice, see Dwg. #70239.
2. All bolts in splice are ⅞" dia. High Strength, Type 3 (Weathering) bolts designed to meet slip-critical criteria. See General Notes for further information.
3. All Splices are symmetrical about ℄ Field Splice and Tie-Girder web & flange plates.
4. Caulk plate interfaces. See General Notes.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2			
1	08/05	Added Note 4, removed sealant note	JBT
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Eric Rau

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 15, 2005 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

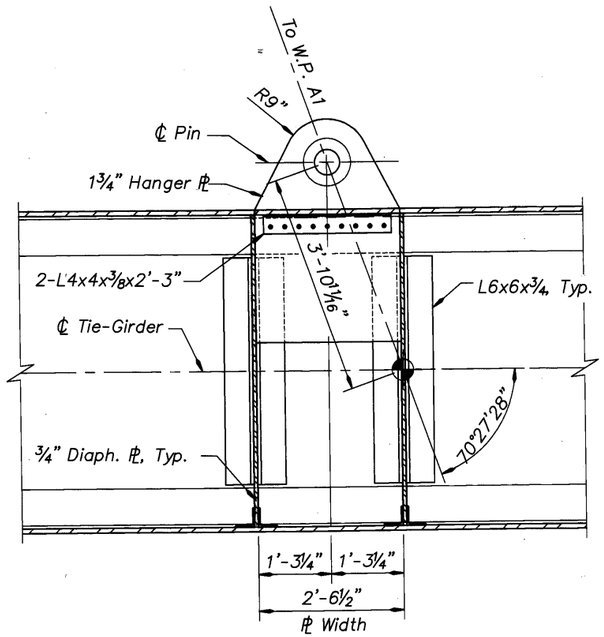
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TIE GIRDER SPLICE DETAILS

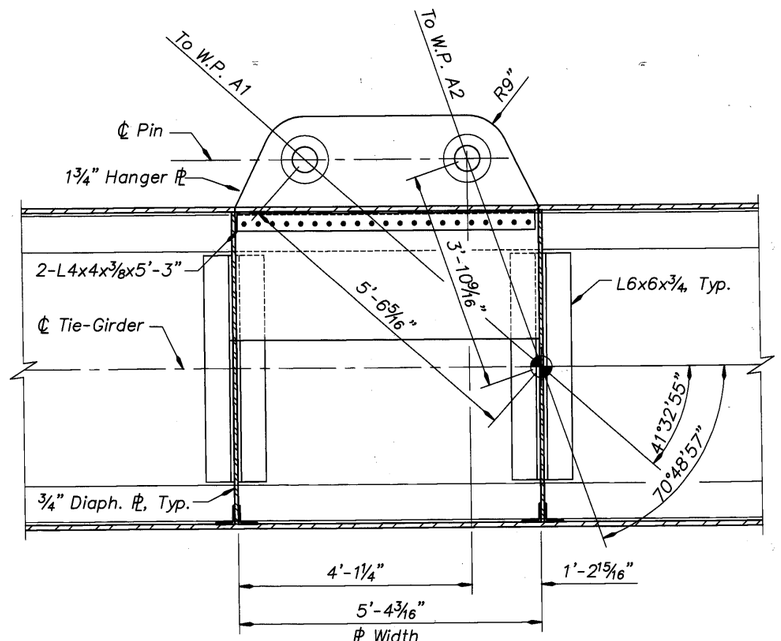
SHEET 46 OF 173
DRAWING NO. 70233

Xrefs: Odotbdr.dwg ODOT0460_A1_SP_01.dwg



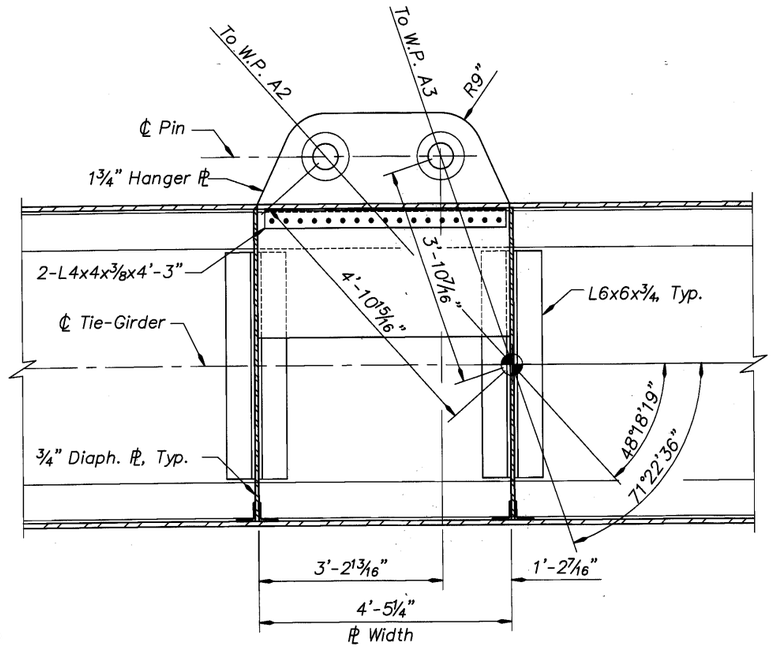
WORKING POINT T2

Scale : ¾" = 1'-0"



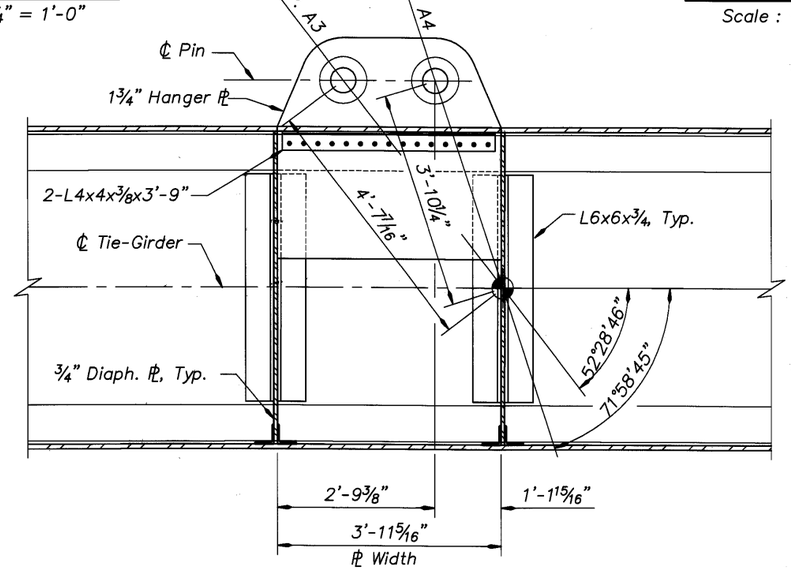
WORKING POINT T3

Scale : ¾" = 1'-0"



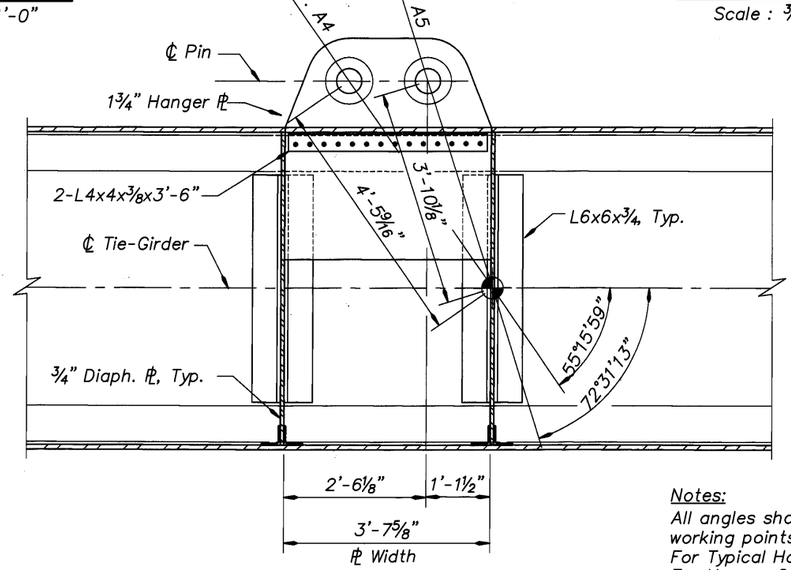
WORKING POINT T4

Scale : ¾" = 1'-0"



WORKING POINT T5

Scale : ¾" = 1'-0"



WORKING POINT T6

Scale : ¾" = 1'-0"

Notes:

All angles shown are to local tangents to ℄ Tie-Girder at working points.
For Typical Hanger Detail, see Dwg. #70235.
For Hanger Cable Details, see Dwg. #70242 and #70243.
For Tie-Grider details not shown, see Dwg. #70232.

℄ *Denotes Working Point*

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

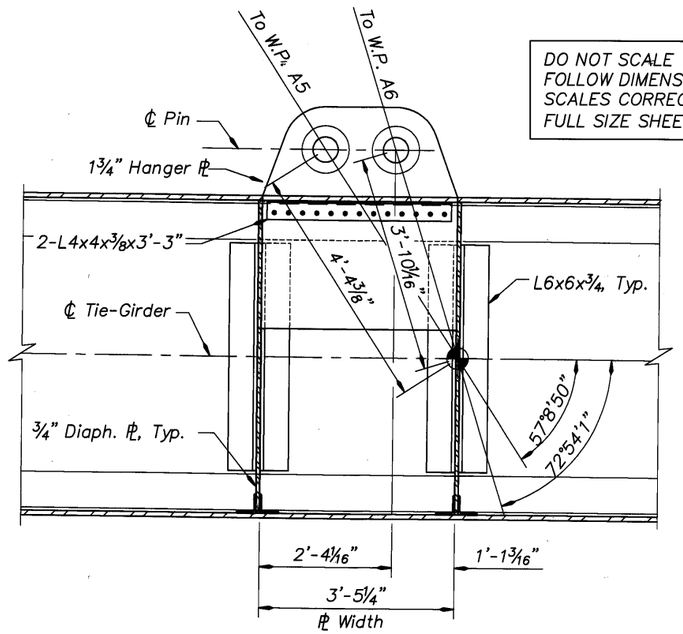
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TIE GIRDER HANGER DETAILS (1 OF 3)

SHEET 47 OF 173
DRAWING NO. 70234

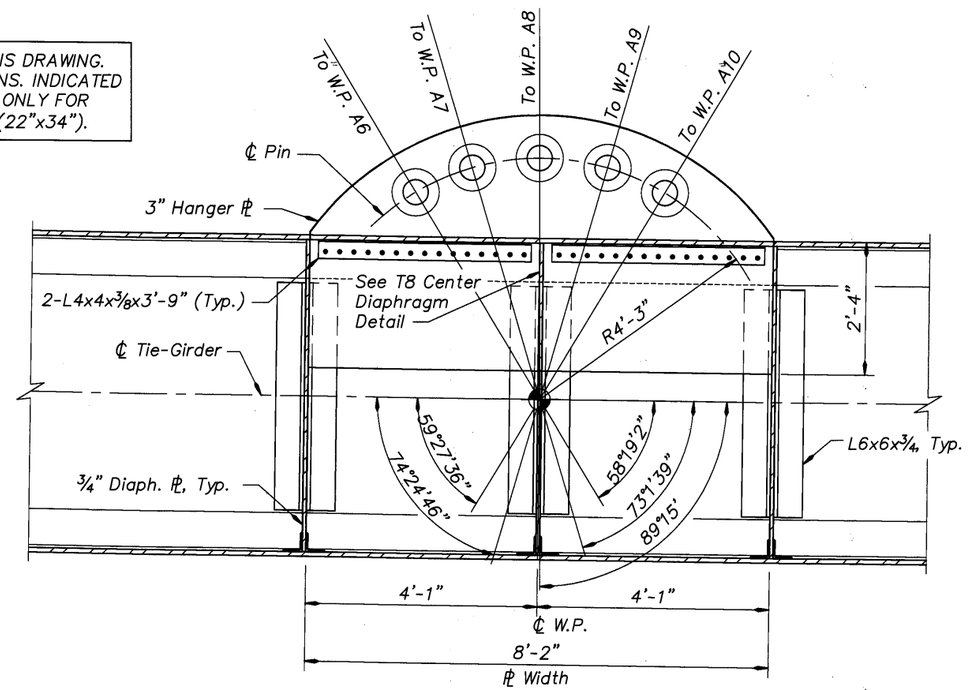
Xrefs: Odotbdr.dwg ODOT0460_AT_03.dwg

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").



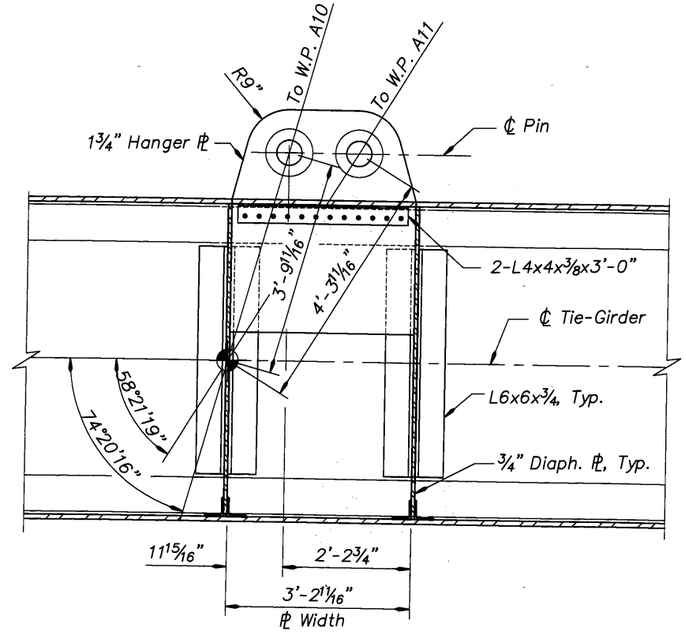
WORKING POINT T7

Scale : ¾" = 1'-0"



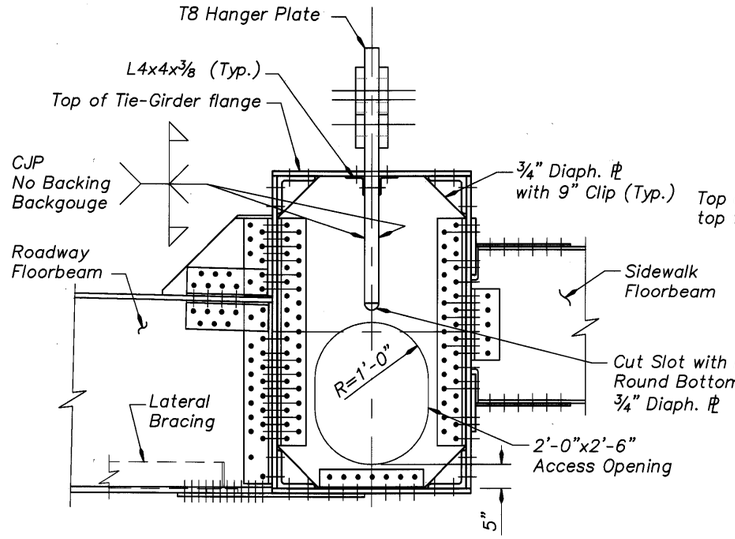
WORKING POINT T8

Scale : ¾" = 1'-0"



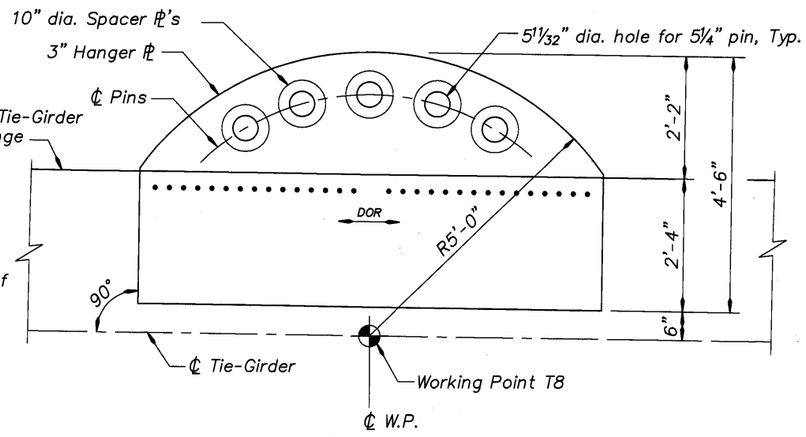
WORKING POINT T9

Scale : ¾" = 1'-0"



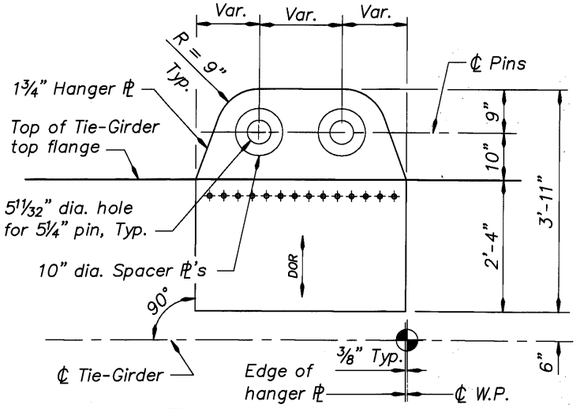
T8 CENTER DIAPHRAGM DETAIL

Scale : ¾" = 1'-0"



HANGER PLATE AT WORKING POINT T8

Scale : ¾" = 1'-0"



TYPICAL HANGER PLATE

Scale : ¾" = 1'-0"

Notes:

All angles shown are to local tangents to ℄ Tie-Girder at working points.
For Hanger Cable Details, see Dwg. #70242 and #70243.
For Tie-Grider details not shown, see Dwg. #70232.

⊕ Denotes Working Point

DOR ← Denotes Direction of Roll

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON 74549 PE
MARCH 09, 2004
BRENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

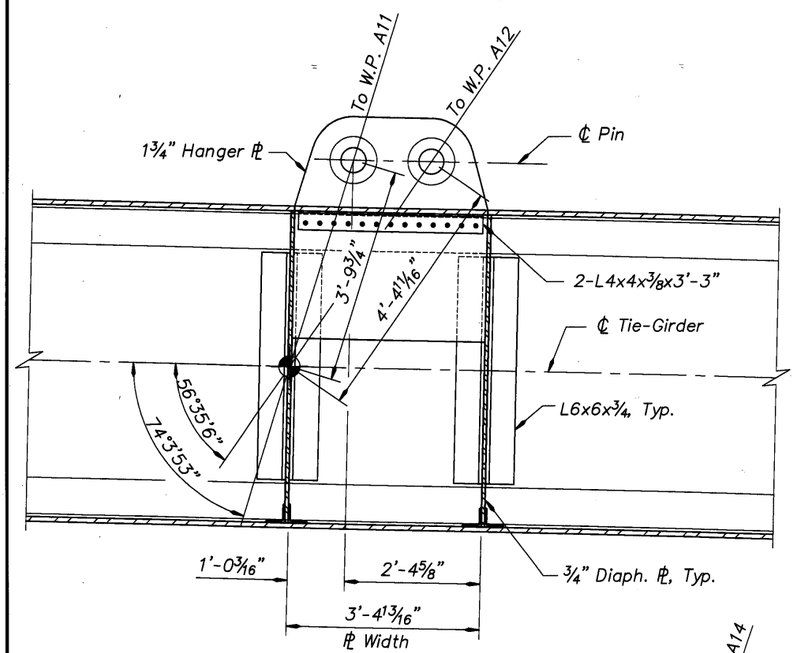
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TIE GIRDER HANGER DETAILS (2 OF 3)

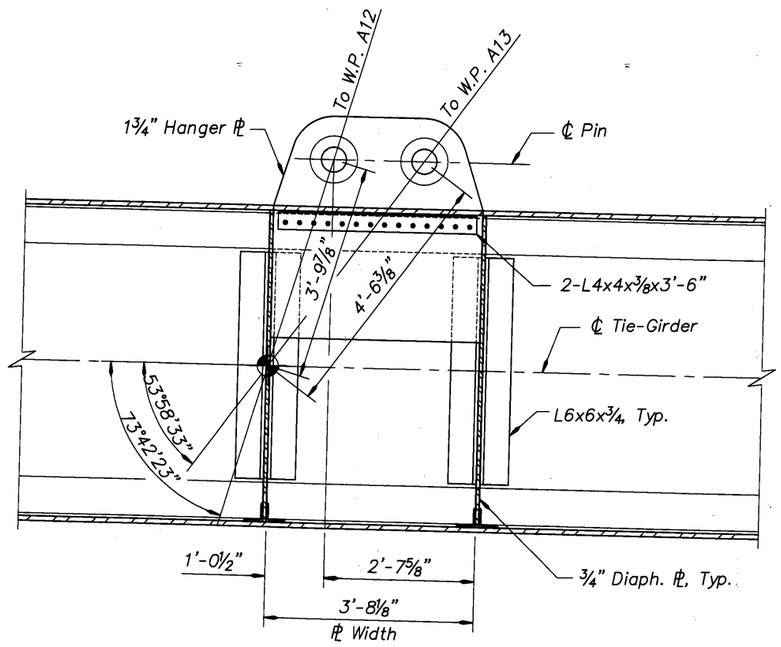
SHEET 48 OF 173
DRAWING NO. 70235

Xrefs: Odotbdr.dwg ODOT0460_AT_03.dwg



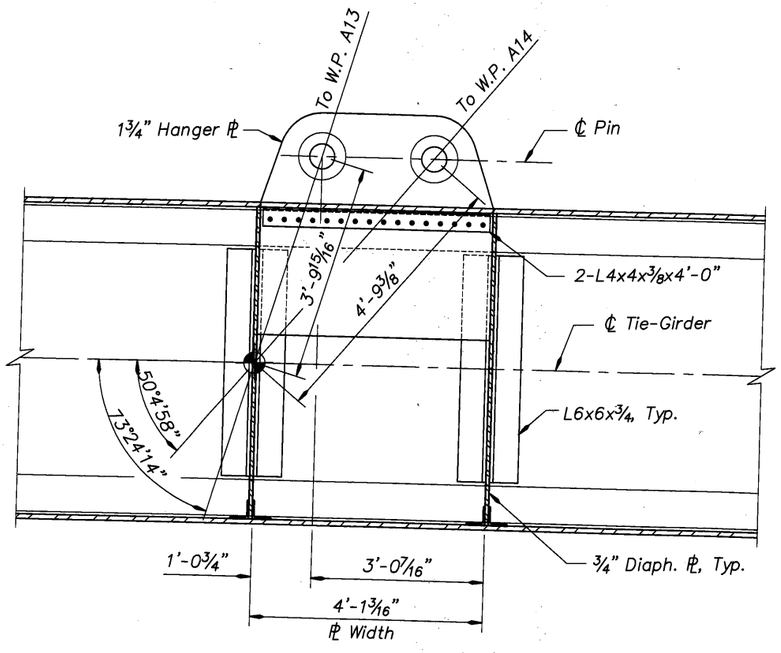
WORKING POINT T10

Scale : ¾" = 1'-0"



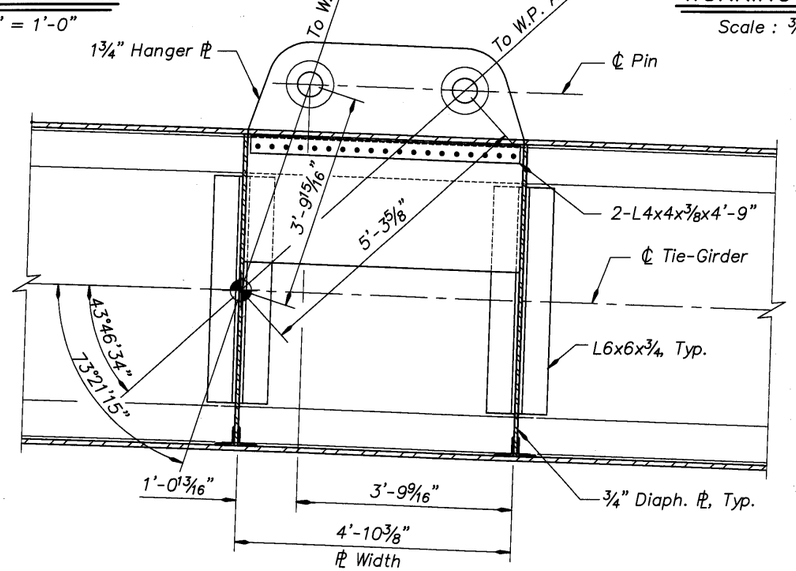
WORKING POINT T11

Scale : ¾" = 1'-0"



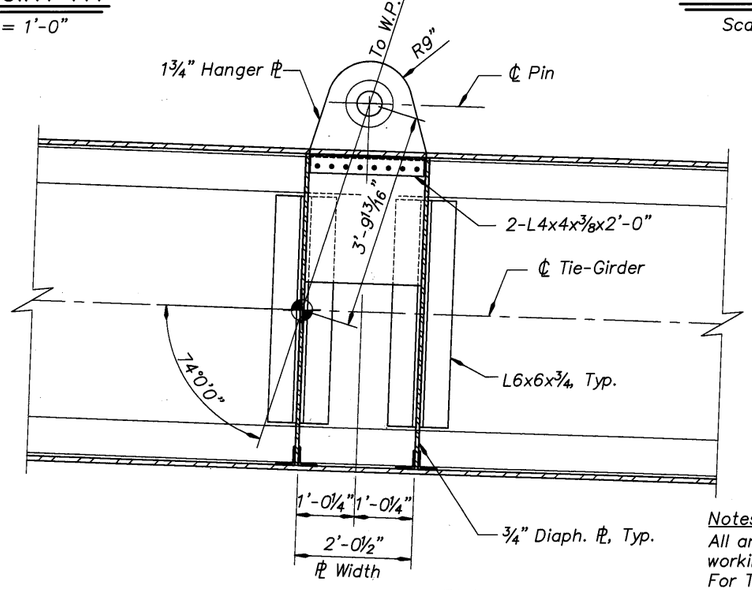
WORKING POINT T12

Scale : ¾" = 1'-0"



WORKING POINT T13

Scale : ¾" = 1'-0"



WORKING POINT T14

Scale : ¾" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

Notes:

All angles shown are to local tangents to ℄ Tie-Girder at working points.
For Typical Hanger Detail, see Dwg. #70235.
For Hanger Cable Details, see Dwg. #70242 and #70243.
For Tie-Grider details not shown, see Dwg. #70232.

℄ Denotes Working Point

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON 14549 PE Kent William Cordtz MARCH 09, 2004
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

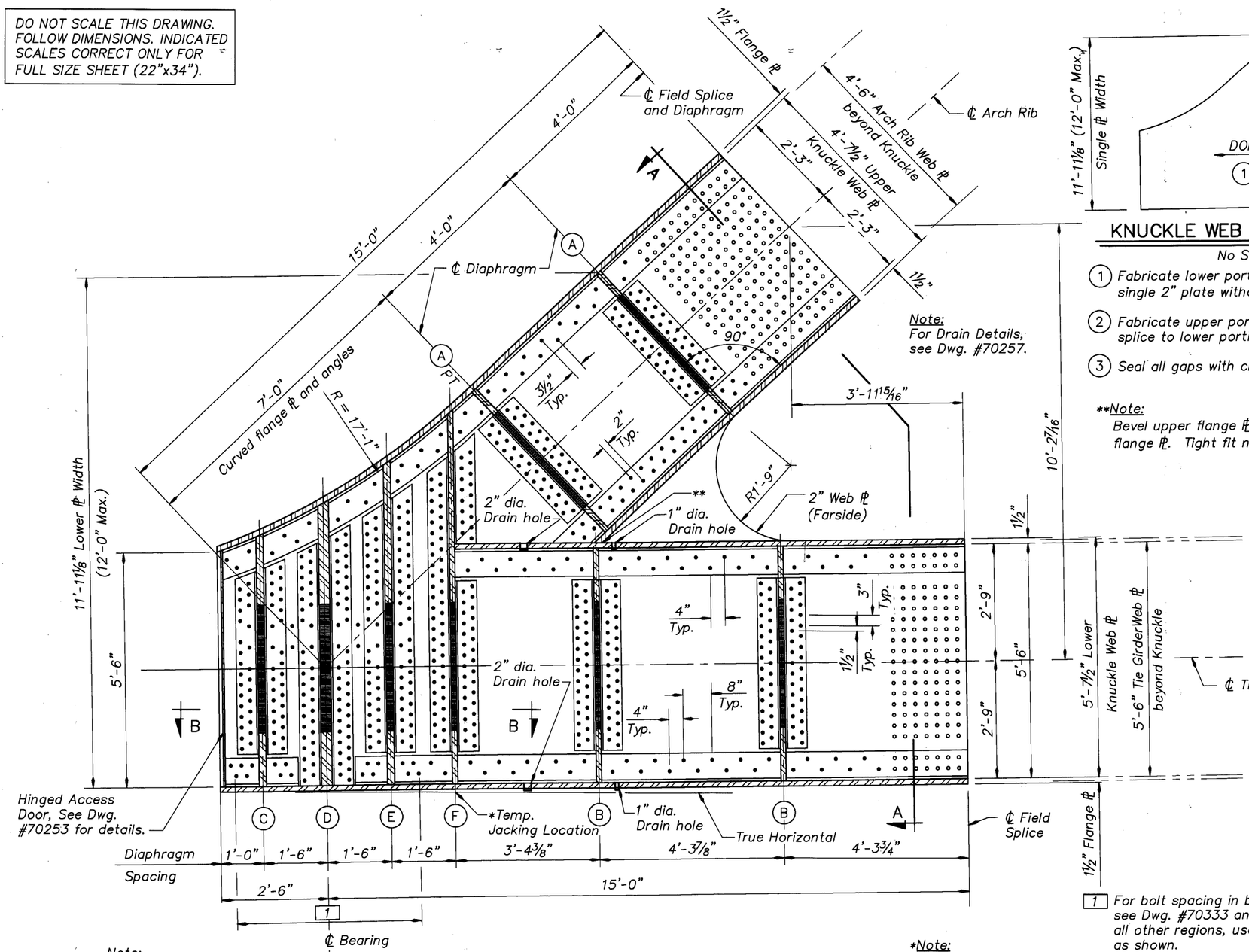
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TIE GIRDER HANGER DETAILS (3 OF 3)

SHEET 49 OF 173
DRAWING NO. 70236

Xrefs: Odotbdr.dwg ODOT0460_AT_03.dwg

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").



Note:
Dimensions shown are normal to ℄ members unless noted otherwise.

KNUCKLE SECTIONAL ELEVATION

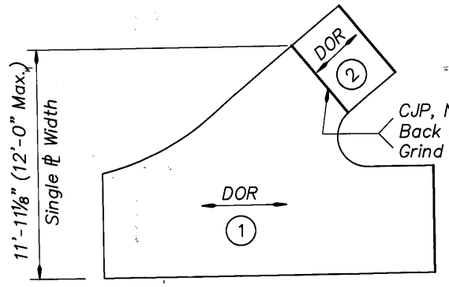
Scale : ¾" = 1'-0"

Note:
For Drain Details, see Dwg. #70257.

*Note:
Temporary jacking location. Jack under dead load only.

See Dwg. #70238, for Section B-B and additional details.

1 For bolt spacing in bearing area, see Dwg. #70333 and #70335. In all other regions, use bolt spacing as shown.

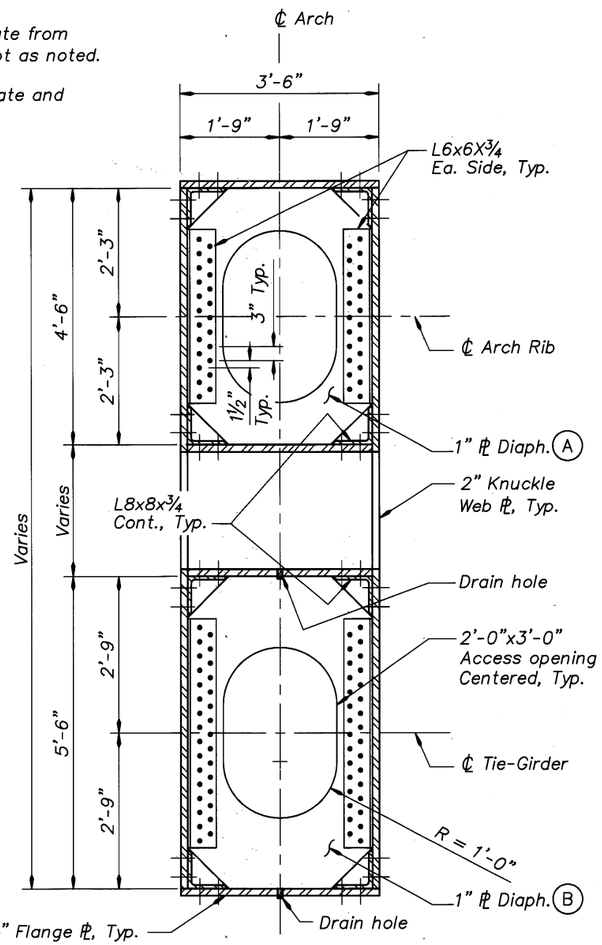


KNUCKLE WEB PLATE DETAIL

No Scale

1. Fabricate lower portion of knuckle plate from single 2" plate without splicing, except as noted.
2. Fabricate upper portion of knuckle plate and splice to lower portion of plate.
3. Seal all gaps with clear silicon caulk.

**Note:
Bevel upper flange ℄ to match lower flange ℄. Tight fit not required.



SECTION A-A

Scale : ¾" = 1'-0"

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Kent Curtis MARCH 09, 2004 KENT WILLIAM CURTIS
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

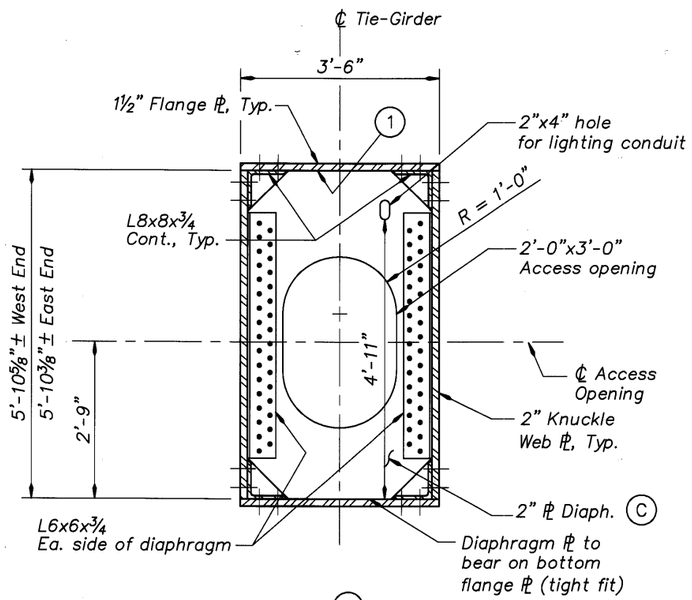
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

KNUCKLE DETAILS (1 OF 2)

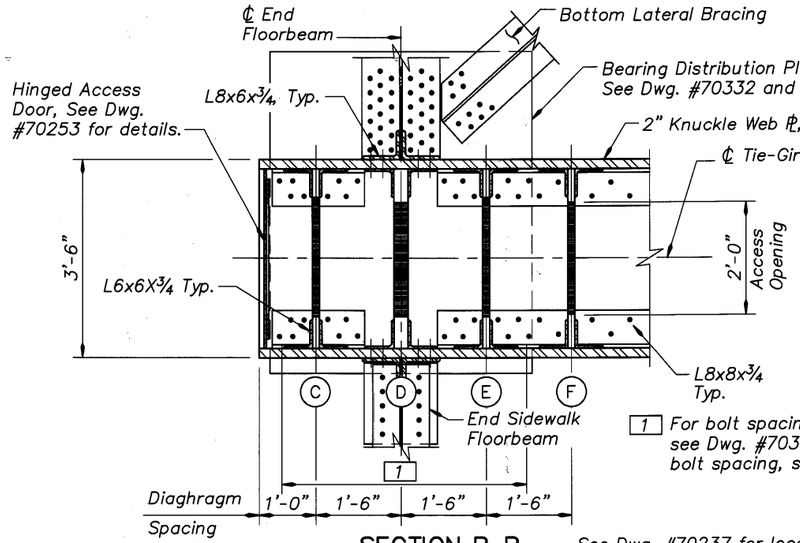
SHEET 50 OF 173
DRAWING NO. 70237

Xrefs: Odotbdr.dwg ODOT0460_AD_KN_01.dwg



DIAPHRAGM Ⓒ ELEVATION

Scale : ¾" = 1'-0"



SECTION B-B

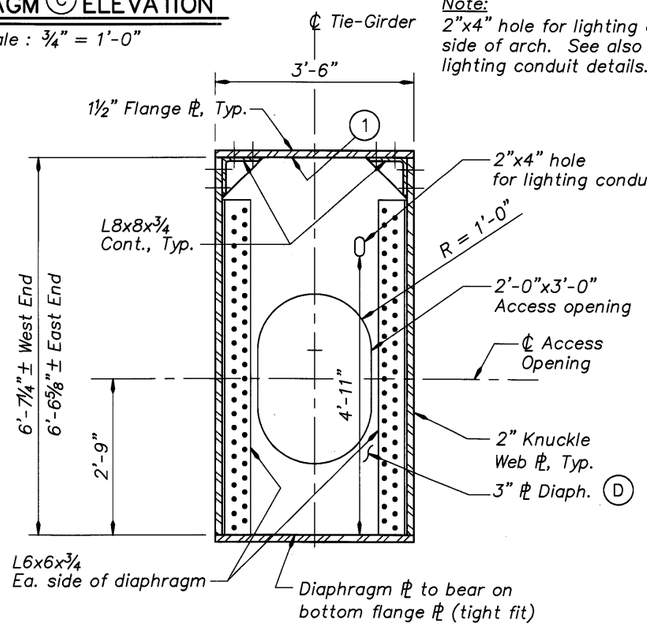
Scale : ¾" = 1'-0"

1 For bolt spacing in bearing area, see Dwg. #70334. For standard bolt spacing, see Dwg. #70237.

See Dwg. #70237 for location of Section B-B.

1 Note:
Bevel top edge of diaphragm to match local tangent to curved top flange. Tight fit not required.

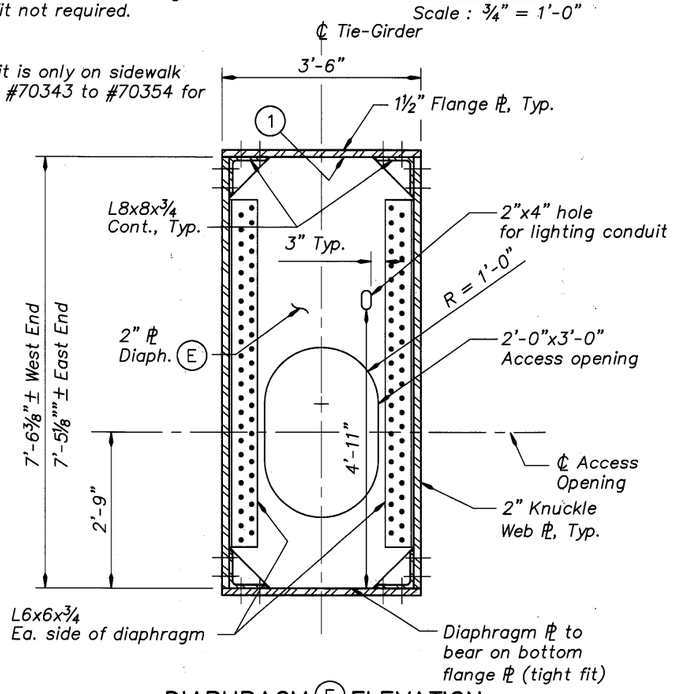
Note:
2"x4" hole for lighting conduit is only on sidewalk side of arch. See also Dwgs. #70343 to #70354 for lighting conduit details.



DIAPHRAGM Ⓓ ELEVATION

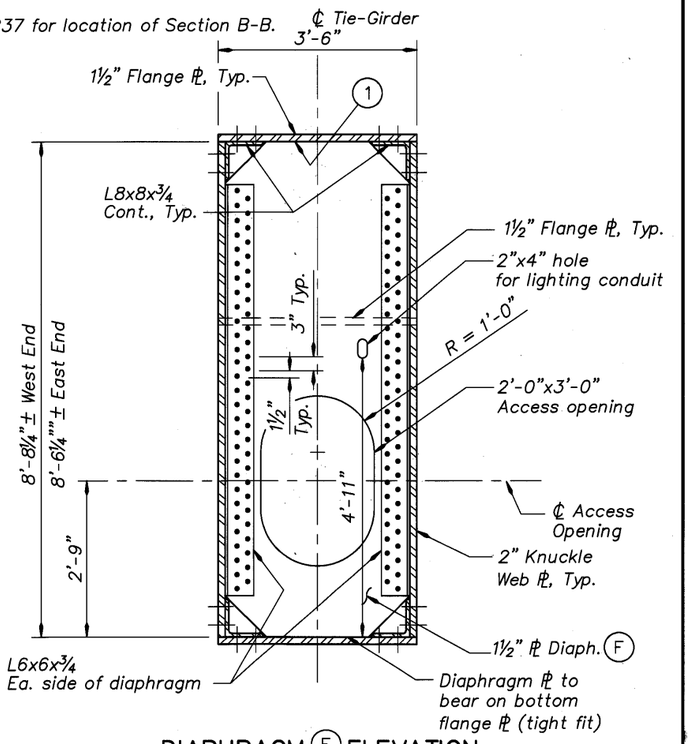
Scale : ¾" = 1'-0"

(Floorbeam connections omitted - see Dwg. #70247, #70249 & #70250)



DIAPHRAGM Ⓔ ELEVATION

Scale : ¾" = 1'-0"



DIAPHRAGM Ⓕ ELEVATION

Scale : ¾" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

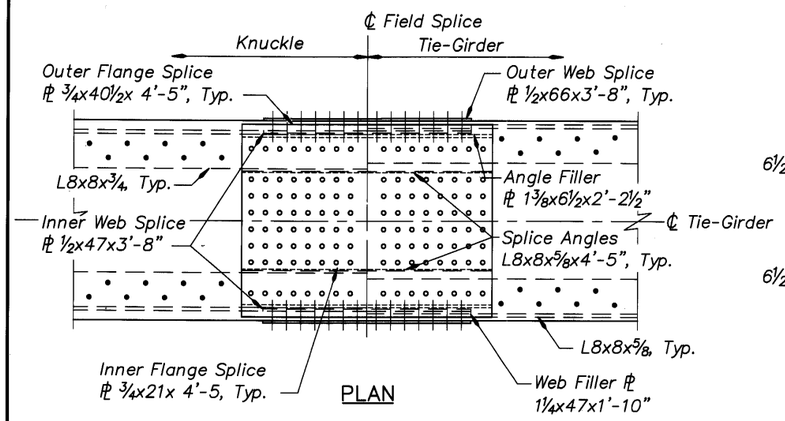
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

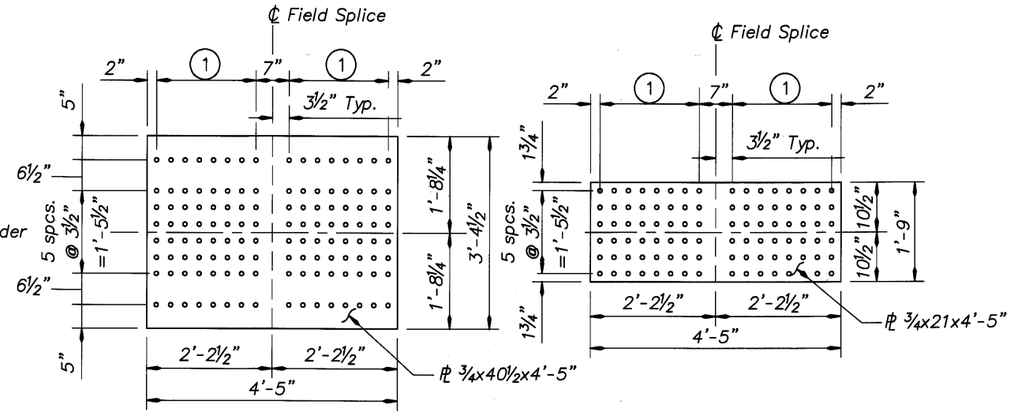
KNUCKLE DETAILS (2 OF 2)

SHEET 51 OF 173
DRAWING NO. 70238

Xrefs: Odotbdr.dwg ODOT0460_AD_KN_01.dwg



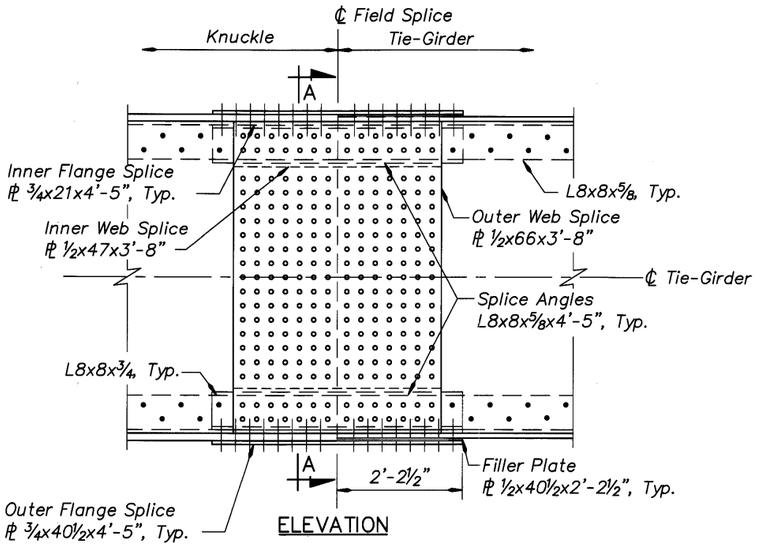
PLAN



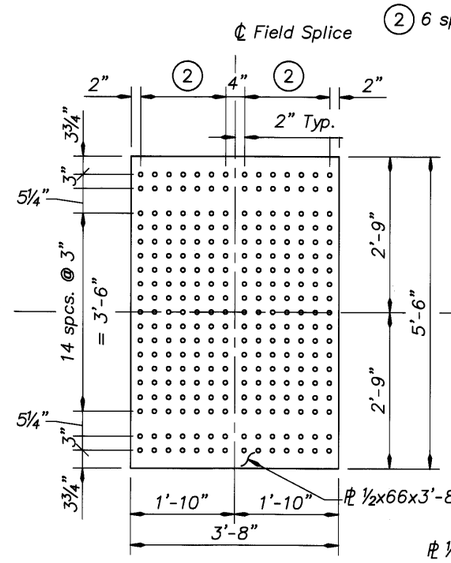
OUTER FLANGE PLATE

INNER FLANGE PLATE

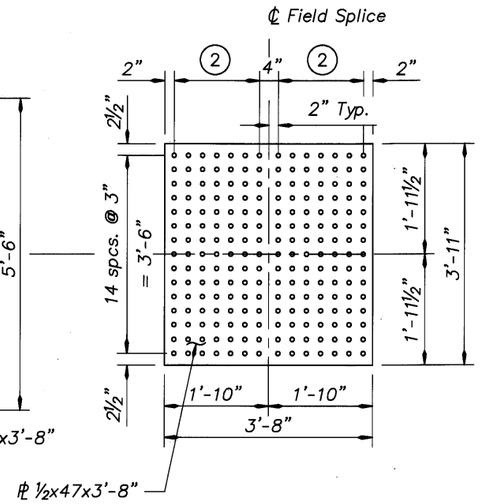
1. 7 spcs. @ 3" = 1'-9"
2. 6 spcs. @ 3" = 1'-6"



ELEVATION



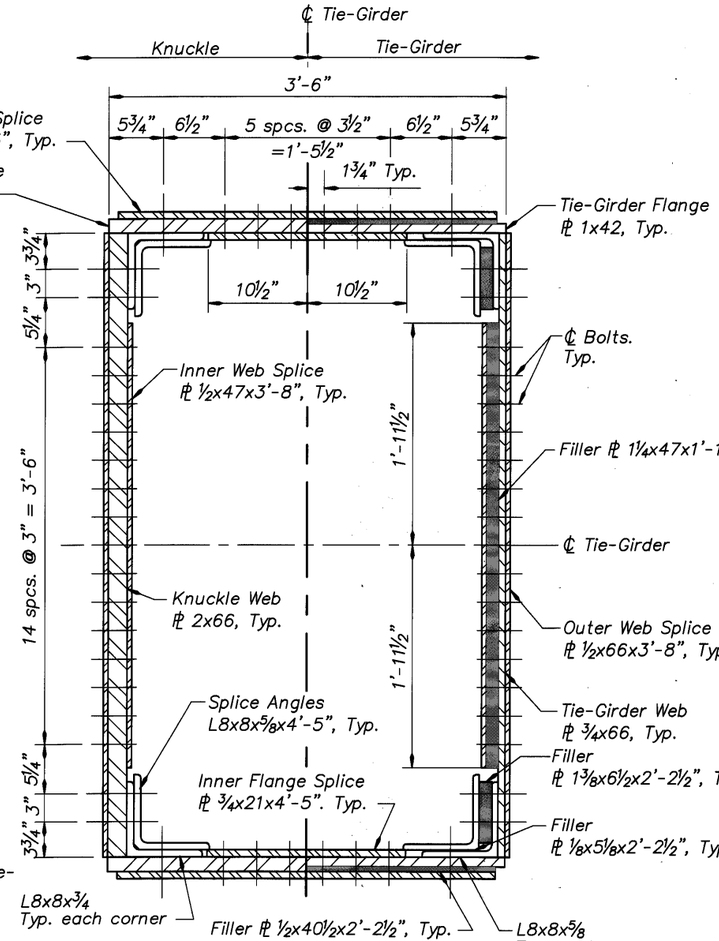
OUTER WEB PLATE



INNER WEB PLATE

KNUCKLE/TIE-GIRDER SPLICE DETAILS

Scale : ¾" = 1'-0"



SECTION A-A

Scale : 1½" = 1'-0"

Note:

1. Tie-Girder/Knuckle splice is shown. See Dwg. #70219, #70220 and #70237 for specific locations. For Typical Tie-Girder splice, see Dwg. #70233.
2. All bolts in splice are ⅞" dia. High Strength, Type 3 (Weathering) bolts designed to meet slip-critical criteria. See General Notes for further information.
3. For Angle Splice Details, see Dwg. #70241.
4. Caulk plate interfaces. See General Notes.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Added Note 4, removed sealant note	JBT
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Eric Rau

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 15, 2003 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

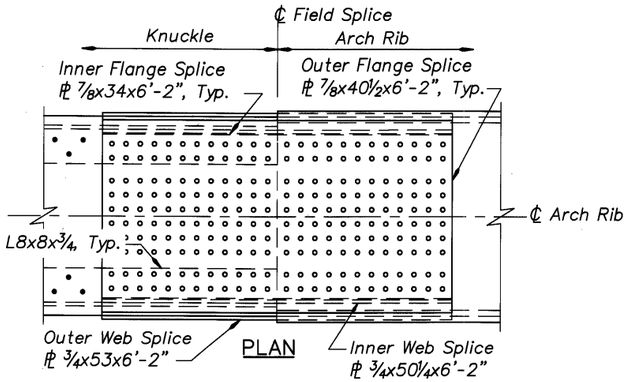
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

KNUCKLE SPLICE DETAILS (1 OF 3)

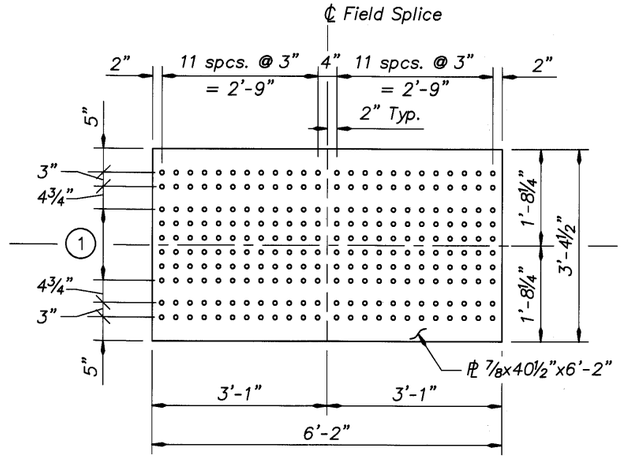
SHEET 52 OF 173
DRAWING NO. 70239

Xrefs: Odotbdr.dwg ODOT0460_ANo_SP_01.dwg

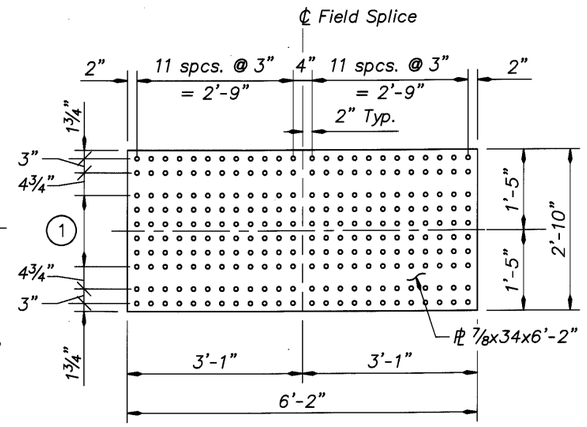


PLAN

(Filler plates not shown - See Knuckle/Arch Rib Splice Section, Dwg. #70241.)

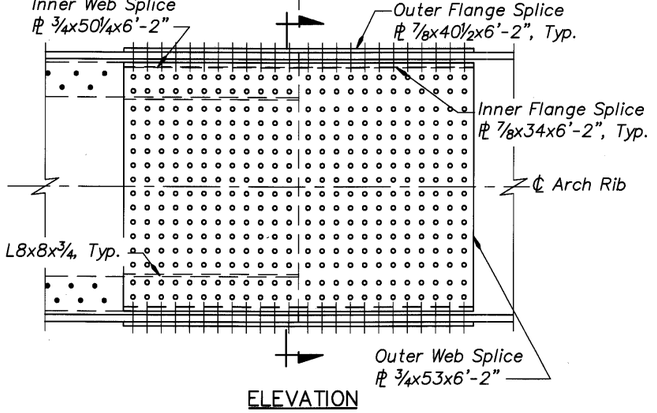


OUTER FLANGE PLATE



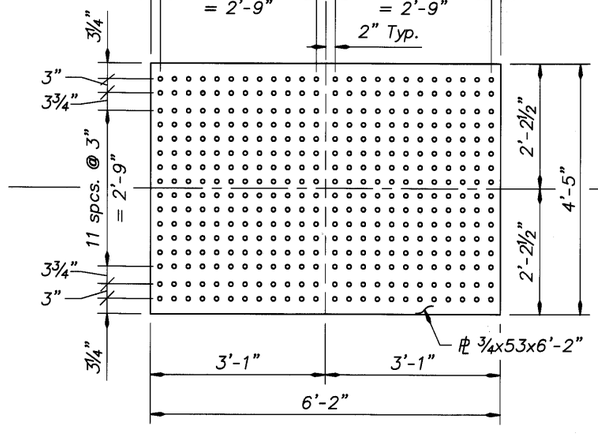
INNER FLANGE PLATE

(1) *5 spcs. @ 3" = 1'-3"*

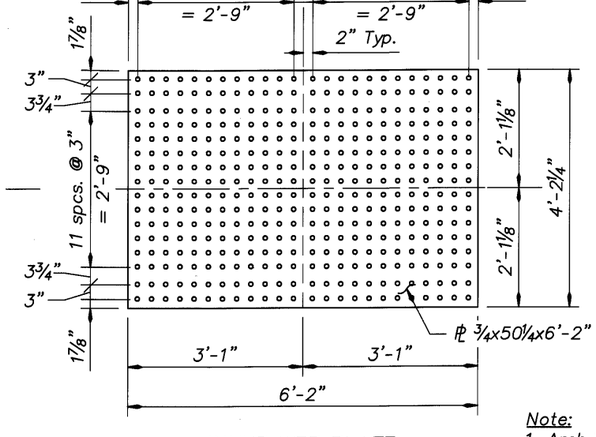


ELEVATION

(Filler plates not shown - See Knuckle/Arch Rib Splice Section, Dwg. #70241.)



OUTER WEB PLATE



INNER WEB PLATE

Note:

1. *Arch Rib/Knuckle splice is shown. See Dwg. #70219, #70220 and #70237 for specific locations. For Typical Arch Rib splice, see Dwg. #70229.*
2. *For Knuckle/Arch Rib Splice Section, see Dwg. #70241.*
3. *All bolts in splice are ⅞" dia. High Strength, Type 3 (Weathering) bolts designed to meet slip-critical criteria. See General Notes for further information.*
4. *Caulk plate interfaces. See General Notes.*

KNUCKLE/ARCH RIB SPLICE DETAILS

Scale : ¾" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	08/05	Added Note 4	JBT
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Eric Rau

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 9, 1993 JOEL BRANDON TUBBS 20849 PE
EXPIRES: 6-30-06

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Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

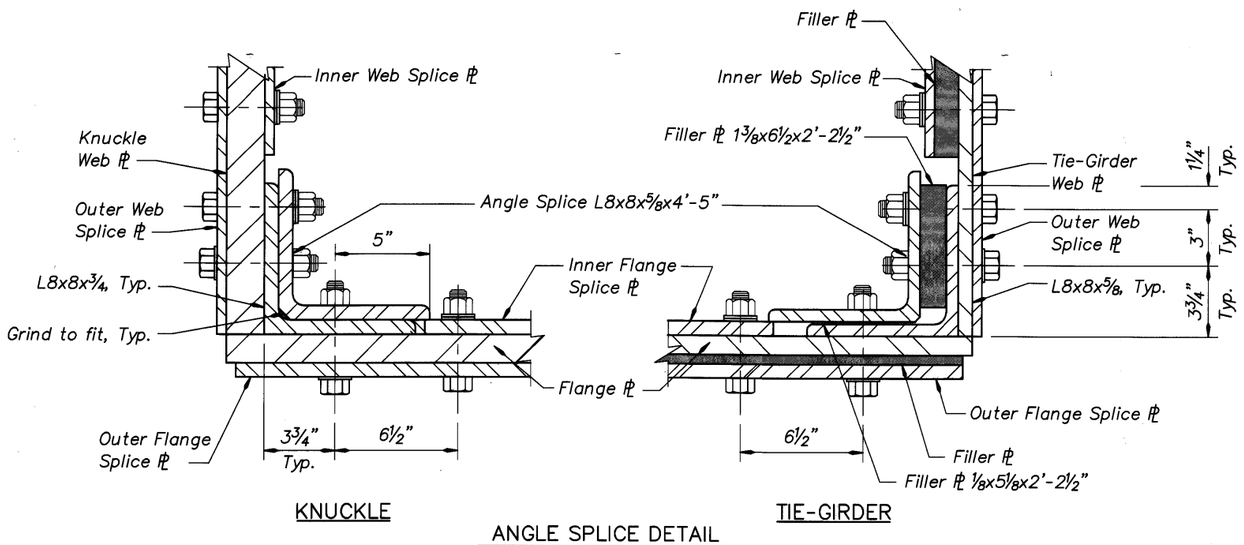
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

KNUCKLE SPLICE DETAILS (2 OF 3)

SHEET 53 OF 173
DRAWING NO. 70240

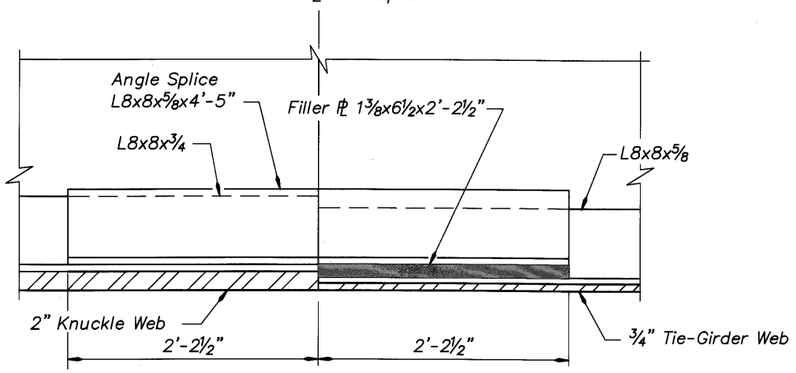
Xrefs: Odotbcb.dwg ODOT0460_AKn_SP_01.dwg



ANGLE SPLICE DETAIL

Scale : 3" = 1'-0"

Notes:
1. *Bolts and washers are shown for schematic purposes only.*
2. *Actual bolt length and number of washers must be determined to ensure threads excluded condition.*
3. *Washers must be provided under turning element (head or nut).*
4. *Caulk plate interfaces. See General Notes.*



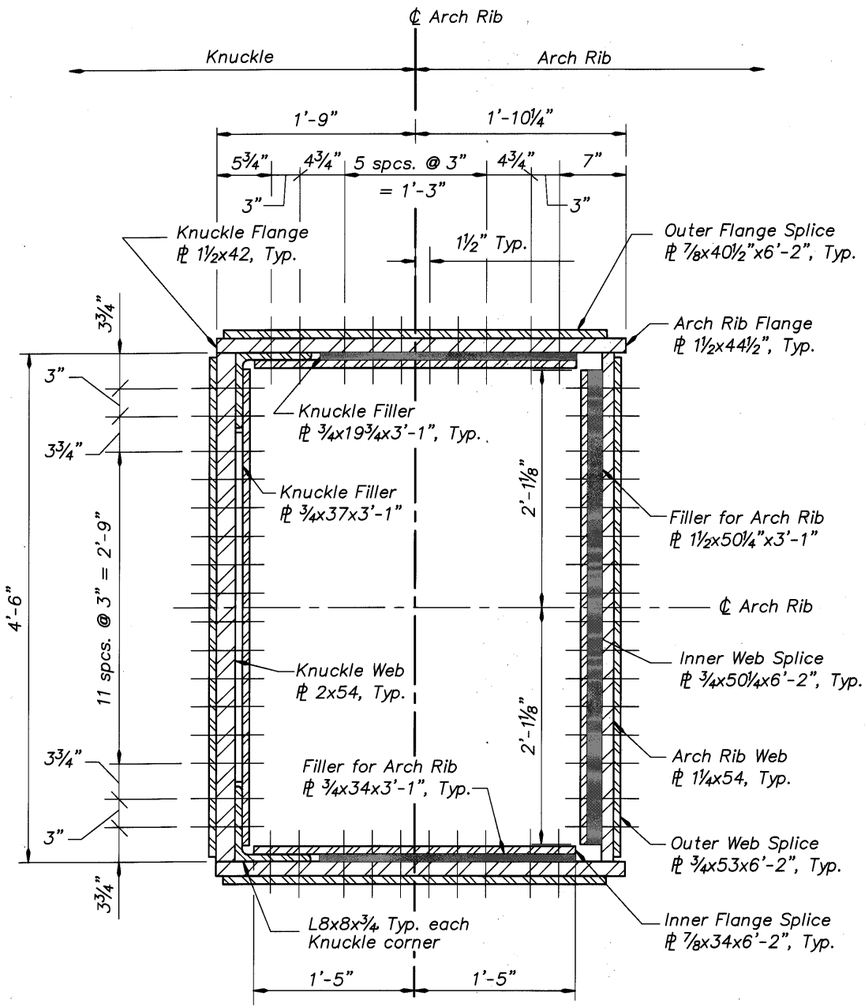
ANGLE TERMINATION DETAIL - PLAN

Scale : 1½" = 1'-0"

(Splice plates and bolts not shown.)

KNUCKLE/TIE-GIRDER ANGLE SPLICE DETAILS

Details apply only to Knuckle/Tie-girder splice.
See Dwg. #70239 for remaining Knuckle/Tie-girder splice details.



KNUCKLE/ARCH RIB SPLICE SECTION

Scale : 1½" = 1'-0"

For remaining Knuckle/Arch Rib splice details, see Dwg. #70240.

	DATE	REVISION	BY
2	08/05	Added Note 4, removed sealant note	JBT
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Eric Rau

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 9, 2003 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

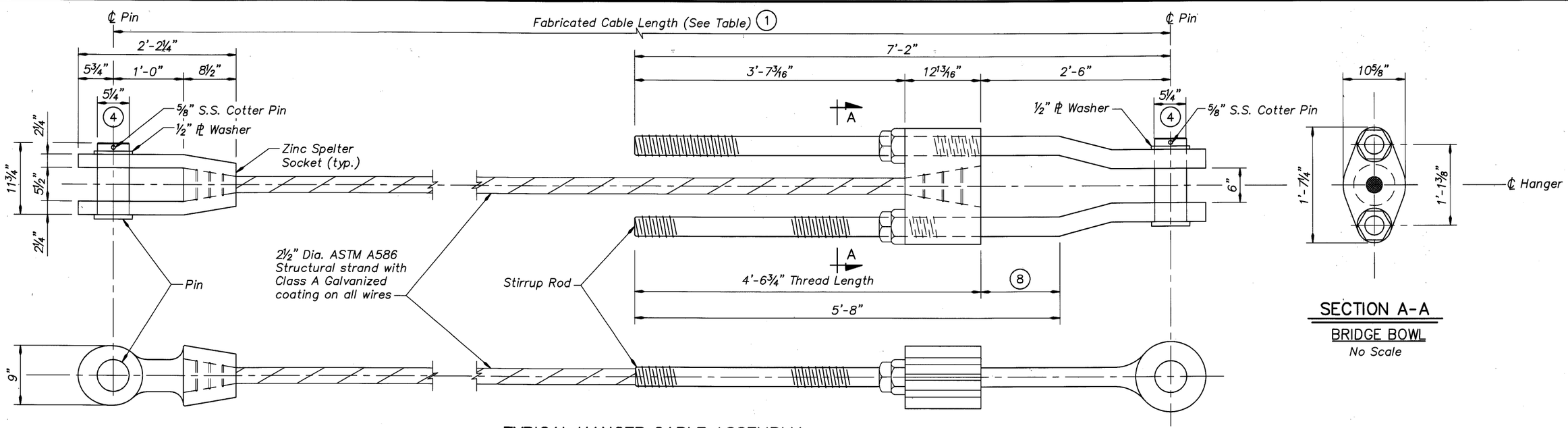
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

KNUCKLE SPLICE DETAILS (3 OF 3)

SHEET 54 OF 173
DRAWING NO. 70241

Xrefs: Oldotbdr.dwg ODOT0460_AKn_SP_01.dwg



Notes:

(1) *Cable length in undeformed arch as fabricated, prior to initial dead load deformation, at zero cable tension, measured to ℄ socket pins. These cable lengths are provided for information only, and must be verified by the Contractor prior to cable fabrication.*

(2) *Total number of cable assemblies of this length - includes both arches.*

(3) *Open strand and open bridge sockets shall be designed by the manufacturer to meet or exceed the 2½" dia. strand minimum breaking strength. All socket cross-section dimensions shown are for information only and shall be verified by the manufacturer. Overall socket dimensions and shape shall substantially conform to these details.*

(4) *Pin O.D. shall be machined to 5³⁄₁₆" prior to galvanizing. Pin hole I.D. shall be line bored to 5¹⁄₃₂" prior to galvanizing.*

(5) *All castings shall be cast steel conforming to ASTM A148 Grade 90-60. All steel forgings shall conform to ASTM A668 Class F (G). Plate washers shall be A36 steel. Sockets, washers and pins shall be galvanized per ASTM A153.*

(6) *⅝" dia. cotter pins shall conform to the requirements of ASTM A276, Type 304, or equal, with minimum yield strength of 35.0 ksi.*

(7) *All final tension adjustments shall be performed at the lower open bridge socket. Calibrated center-hole hydraulic jacks shall be employed simultaneously to tension against both threaded anchor rods. Refer to Jacking Detail on Dwg. #70243.*

(8) *Provide 12" future adjustment of bridge bowl towards pin.*

(9) *Unfactored dead load and live load plus impact cable forces in completed arch structure.*

(10) *Jacking equipment and procedure are the contractor's responsibility. Prior to jacking any cables, submit proposed equipment details and jacking procedure for review.*

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74540 PE OREGON MARCH 09, 2000 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

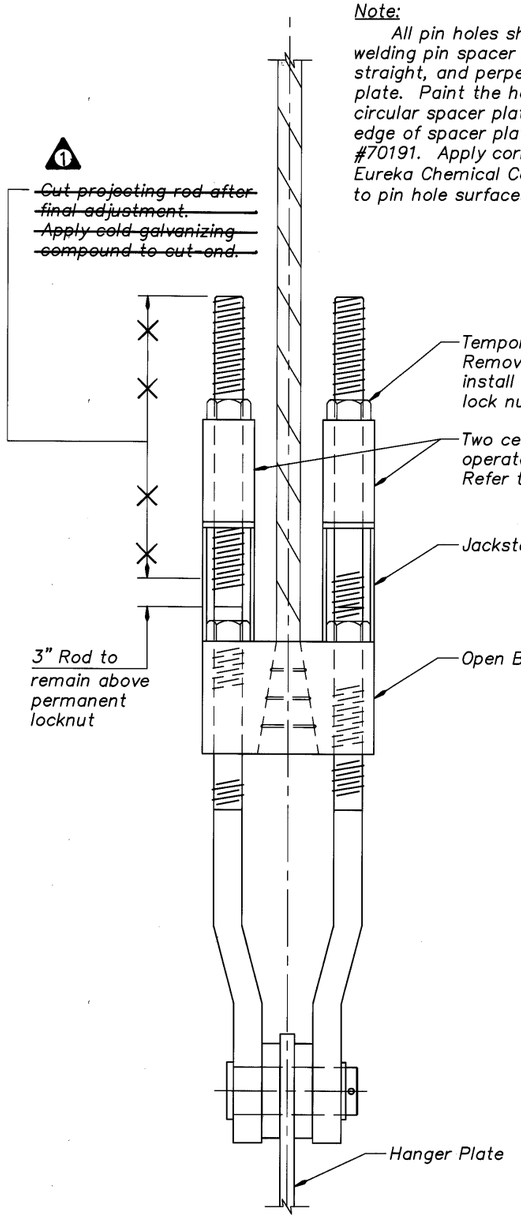
HANGER CABLE DETAILS (1 of 2)

SHEET 55 OF 173
DRAWING NO. 70242

Xrefs: Odotbdr.dwg ODOT0460_AD_01.dwg

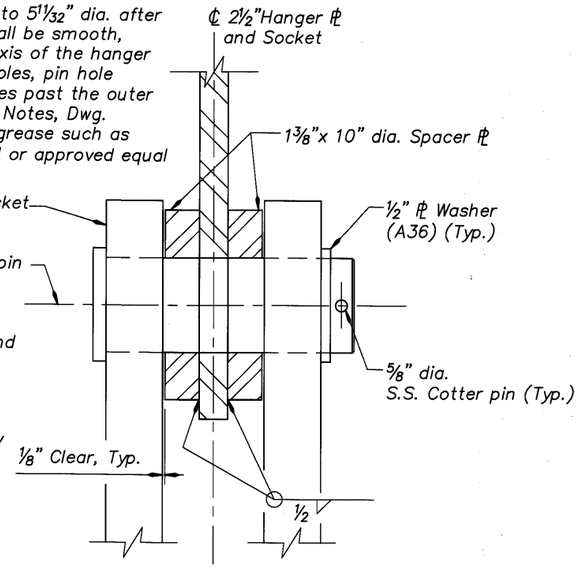
Note:

All pin holes shall be line bored to 5 1/32" dia. after welding pin spacer plates. Holes shall be smooth, straight, and perpendicular to the axis of the hanger plate. Paint the hanger plate pin holes, pin hole circular spacer plates, and two inches past the outer edge of spacer plates. See General Notes, Dwg. #70191. Apply corrosion-inhibiting grease such as Eureka Chemical Co. "Fluid Film" gel or approved equal to pin hole surfaces, after painting.



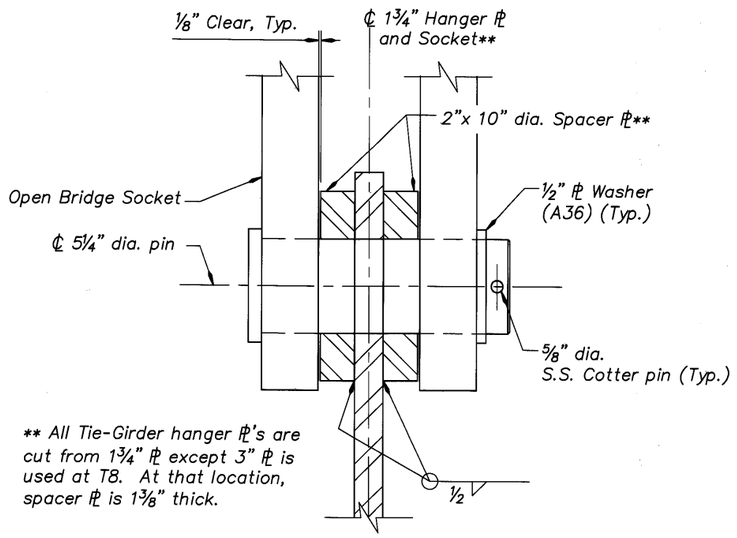
JACKING DETAIL

No Scale



HANGER PLATE DETAIL AT ARCH RIB

No Scale



** All Tie-Girder hanger ℄'s are cut from 1¾" ℄ except 3" ℄ is used at T8. At that location, spacer ℄ is 1⅜" thick.

HANGER PLATE DETAIL AT TIE-GIRDER

No Scale

HANGER CABLE ASSEMBLIES

CABLE NUMBER	CABLE W.P.'S	NO. REQ'D. (2)	FABRICATED CABLE LENGTH (ft.) (1)	TOTAL CABLE DL ELONGATIONS (ft.)	CABLE FORCES (k) (9)		
					FINAL DL	Max. DL+LL+I	Min. DL+LL+I
C1	A1-T2	2	23.30	0.02	76.5	147.5	73.3
C2	A1-T3	2	34.73	0.01	34.9	59.8	10.3
C3	A2-T3	2	36.58	0.03	69.4	134.7	60.9
C4	A2-T4	2	47.21	0.02	37.7	64.9	4.9
C5	A3-T4	2	48.08	0.03	69.6	137.0	55.2
C6	A3-T5	2	58.03	0.03	52.7	82.9	17.4
C7	A4-T5	2	57.53	0.04	68.0	136.4	48.1
C8	A4-T6	2	66.92	0.04	53.4	87.0	18.3
C9	A5-T6	2	64.73	0.04	61.6	122.6	41.5
C10	A5-T7	2	73.67	0.05	68.9	109.6	31.0
C11	A6-T7	2	69.59	0.04	53.3	91.1	48.6
C12	A6-T8	2	78.23	0.07	83.7	146.8	33.5
C13	A7-T8	2	71.75	0.04	54.6	99.1	41.7
C14	A8-T8	2	69.09	0.05	66.0	99.2	65.4
C15	A9-T8	2	71.20	0.04	54.8	99.4	41.8
C16	A10-T8	2	77.21	0.07	82.7	146.9	31.8
C17	A10-T9	2	69.03	0.04	52.7	90.7	47.4
C18	A11-T9	2	72.68	0.05	67.2	108.1	28.8
C19	A11-T10	2	64.19	0.04	60.8	122.0	39.8
C20	A12-T10	2	65.95	0.04	51.6	85.5	15.9
C21	A12-T11	2	57.04	0.04	67.1	135.5	46.5
C22	A13-T11	2	57.12	0.03	51.2	81.9	15.4
C23	A13-T12	2	47.71	0.03	68.6	136.0	53.6
C24	A14-T12	2	46.41	0.02	37.4	65.6	3.9
C25	A14-T13	2	36.40	0.02	68.6	134.4	59.8
C26	A15-T13	2	34.09	0.01	38.0	64.8	12.6
C27	A15-T14	2	23.37	0.02	76.5	147.4	73.5
TOTAL NO. CABLES REQ'D.=54							

See notes on Dwg. #70242.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON 14549 PE MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

HANGER CABLE DETAILS (2 OF 2)

SHEET 56 OF 173
DRAWING NO. 70243

Xrefs: Odotbdr.dwg ODOT0460_A0_01.dwg

℄ Bent 3

365'-0"
Span 3

Spacing Symmetrical about ℄ Span 3

2'-9"

Roadway & Sidewalk Floorbeams - 8 Spaces @ 22'-5⅝" = 179'-9"

℄ Brg.

℄ Traveler Rail WT14x82, Typ. See Dwg. #70256

Stringer Diaphragm Spacing, Typ.

11'-2 13/16"

11'-2 13/16"

Bottom Lateral Bracing WT6x48, Typ.

6'-4⅜"

End Traveler Rail Bracket, Typ.

℄ Tie-Girder

Sidewalk Floorbeam, Typ. See Dwg. #70249

3'-1½"

3'-5"

4'-10½"

6'-0"

22'-0"

4 Spaces @ 8'-0" = 32'-0"

End Floorbeam See Dwg. #70247

90° Typ.

End Diaphragm W12x35, Typ.

4'-10" End of Stringers

1

2

3

4

5

See Detail "A", Dwg. #70245

See Detail "D", Dwg. #70245

See Detail "B", Dwg. #70245

Interior Floorbeam, Typ. See Dwg. #70246

See Detail "E", Dwg. #70245

6'-0"

4'-10½"

3'-5"

3'-1½"

3'-10"

℄ Sidewalk Stringer Diaphragm C8x11.5, Typ.

℄ Stringers W24x68, Typ.

See Detail "C", Dwg. #70245

℄ Sidewalk Stringer W12x35, Typ.

℄ Stringer Diaphragm C12x20.7, Typ.

T0 T1 T2 T3 T4 T5 T6 T7 T8 T9

See Bearing Details Dwg. #70332 thru #70335.

5 Denotes Stringer number

DECK FRAMING PLAN

Scale = ⅛" = 1'-0"

Note: All dimensions shown are true horizontal.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

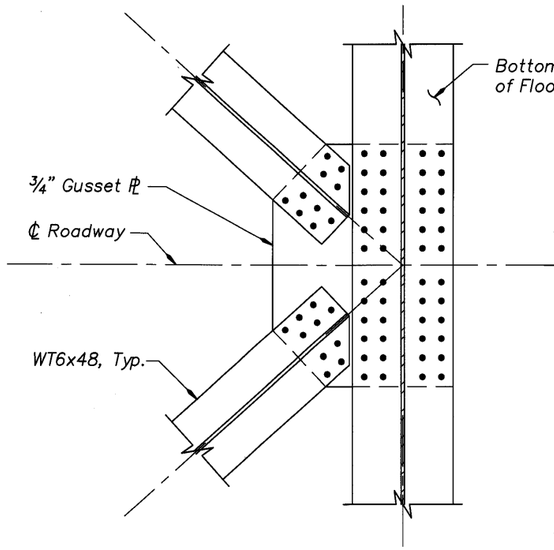
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

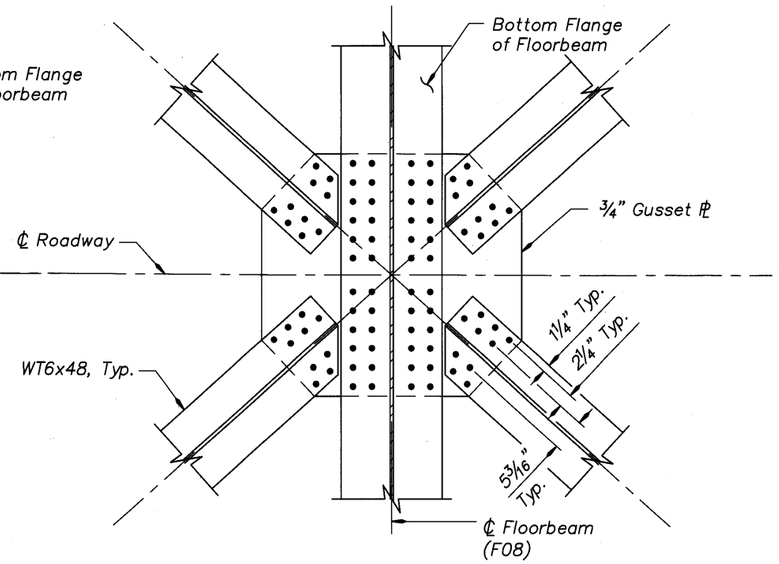
DECK FRAMING PLAN
ARCH FLOOR SYSTEM (1 OF 2)

SHEET 57 OF 173
DRAWING NO. 70244

Xrefs: Odotbdr.dwg ODOT0460_AF_02.dwg ODOT0460_AF_03.dwg NEWSauvie_Arch01.dwg Arch2d.dwg

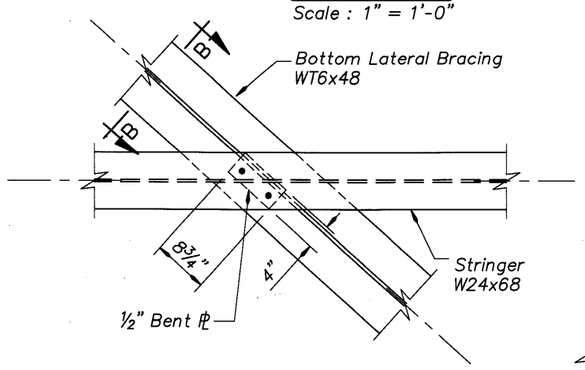


DETAIL "A"
Scale : 1" = 1'-0"

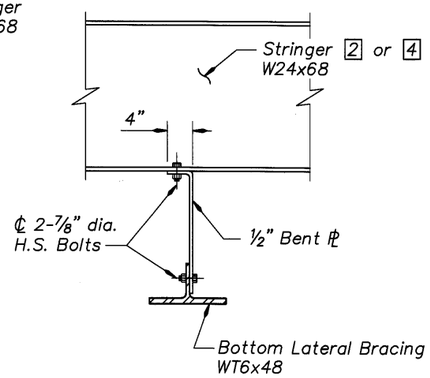


DETAIL "B"
Scale : 1" = 1'-0"

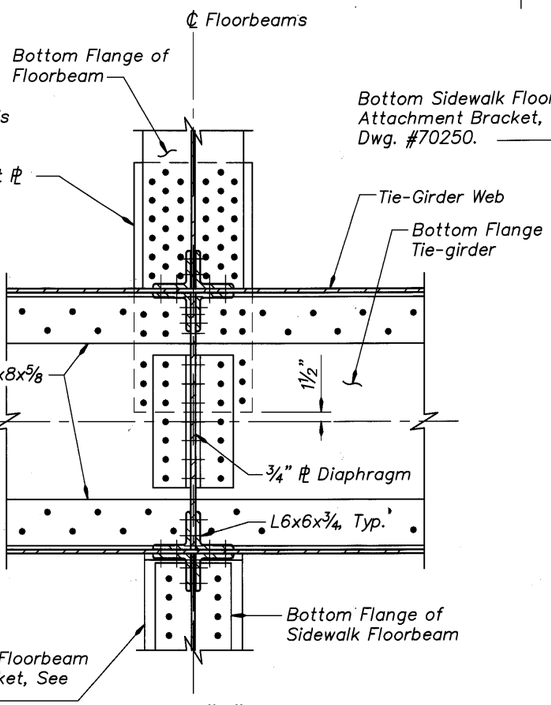
Note:
Bolt spacing shown for Bottom Lateral Bracing is typical for all similar connections.



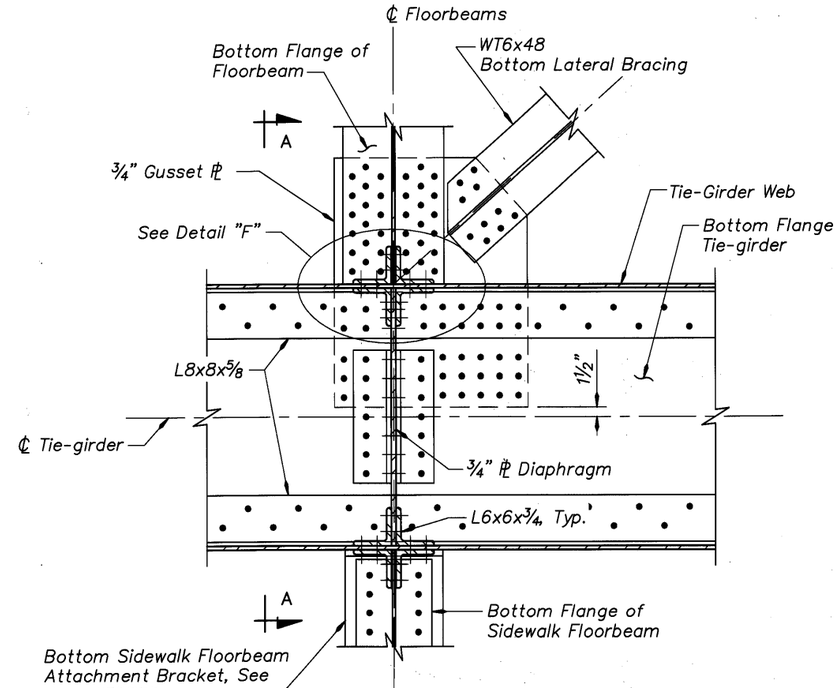
DETAIL "D"
Scale : 1" = 1'-0"



SECTION B-B
Scale : 1" = 1'-0"

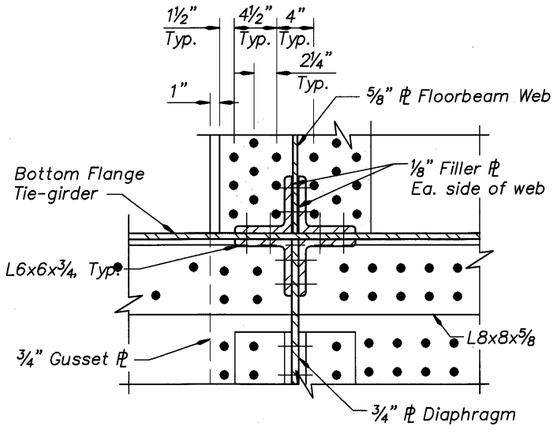


DETAIL "E"
Scale : 1" = 1'-0"



DETAIL "C"
Scale : 1" = 1'-0"

Note:
For Section A-A, see Dwg. #70232.



DETAIL "F"
Scale : 1½" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74349 PE OREGON MARCH 09, 2001 KENT WILLIAM CORDTZ
Kent Cordtz
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

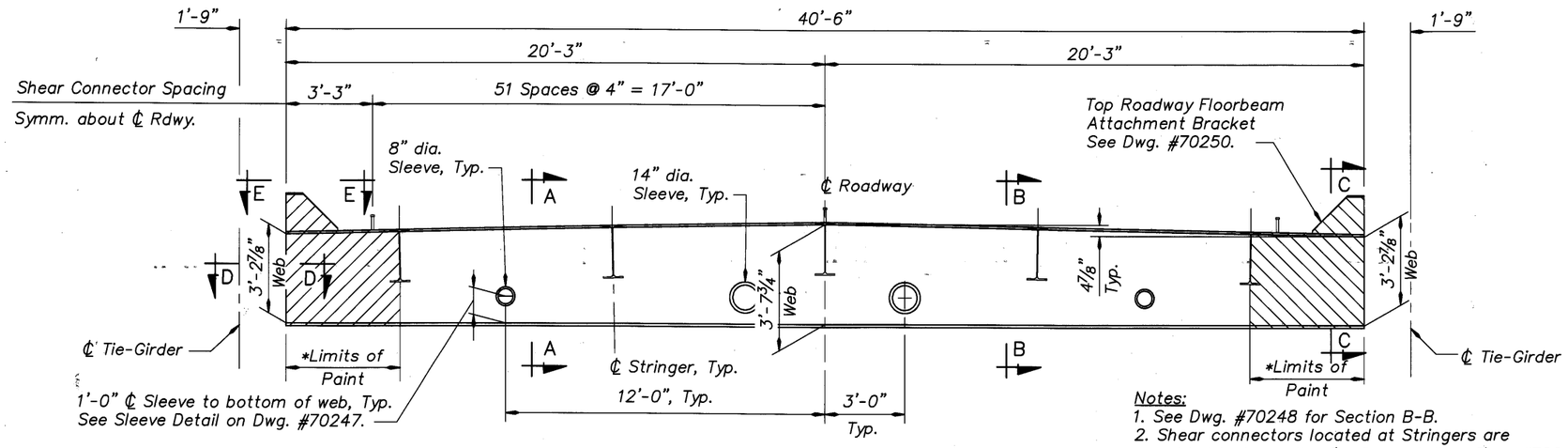
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK FRAMING PLAN
ARCH FLOOR SYSTEM (2 OF 2)

SHEET 58 OF 173
DRAWING NO. 70245

Xrefs: Odotbdr.dwg ODOT0460_AF_02.dwg ODOT0460_AF_03.dwg ODOT0460_AFB_02.dwg

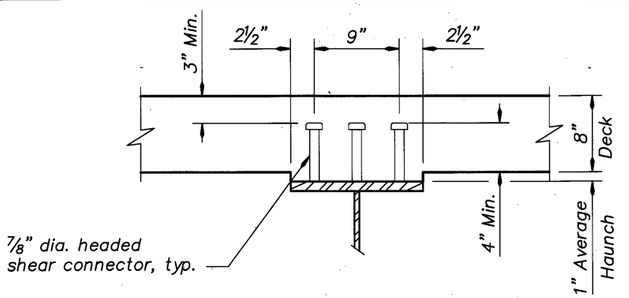


*See General Notes, Dwg. #70191.

TYPICAL FLOORBEAM ELEVATION - SPAN 3

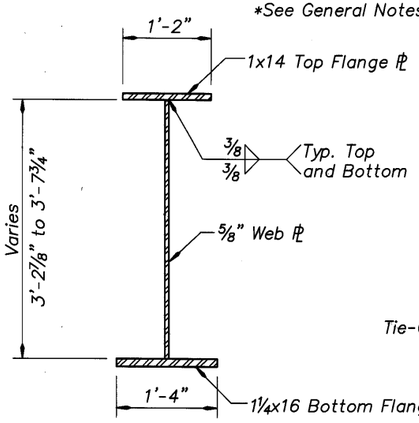
Scale : ⅜": = 1'-0"

Notes:
1. See Dwg. #70248 for Section B-B.
2. Shear connectors located at Stringers are welded to top splice ℔. See detail on Dwg. #70248.
3. ℄ Floorbeam perpendicular to ℄ Tie-Girder (not parallel to true Vertical).
4. Do not camber floorbeam. Ends of floorbeam are vertical.



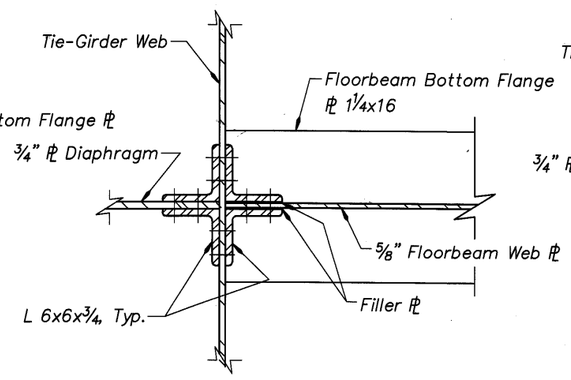
FLOORBEAM SHEAR CONNECTOR DETAIL

Scale : 1½"= 1'-0"



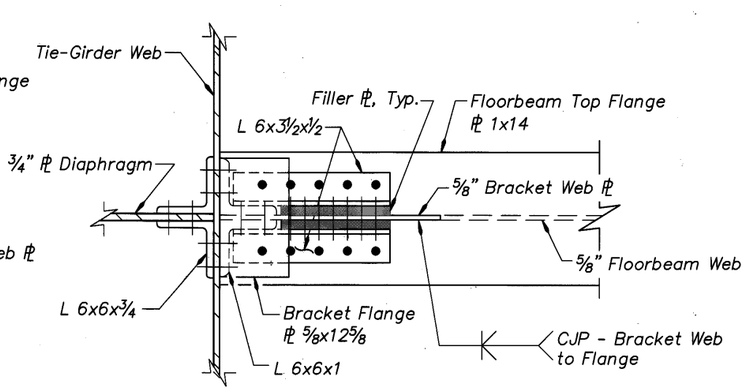
SECTION A-A

Scale : 1" = 1'-0"



SECTION D-D

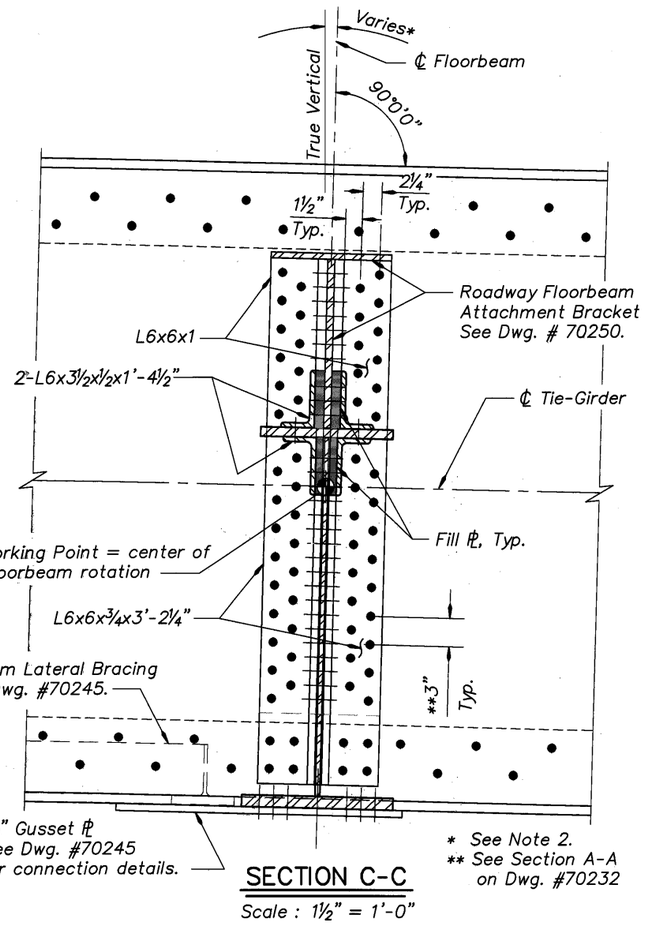
Scale : 1½" = 1'-0"



SECTION E-E

Scale : 1½" = 1'-0"

See Dwg. #70250 for Top Roadway Floorbeam Attachment Bracket Details.



SECTION C-C

Scale : 1½" = 1'-0"

* See Note 2.
** See Section A-A on Dwg. #70232

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Paul Greco

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON KENT WILLIAM CURTIS MARCH 09, 2004
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

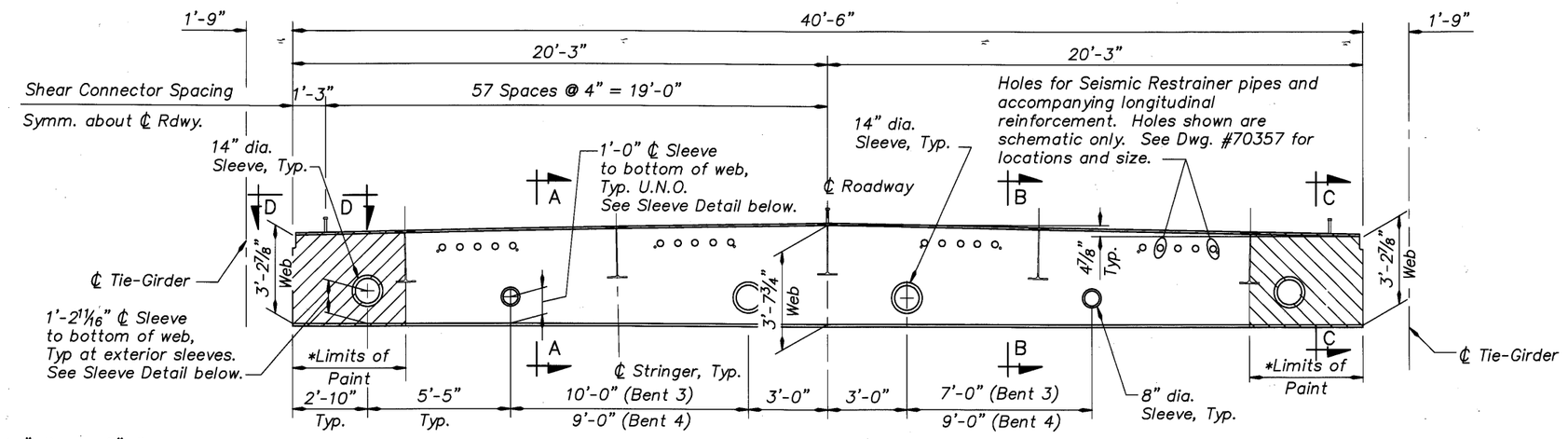
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TYPICAL FLOORBEAM DETAILS

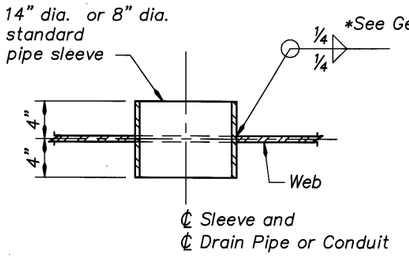
SHEET 59 OF 173.
DRAWING NO. 70246

Xrefs: Odotbdr.dwg ODOT00460_AFB_01.dwg



END FLOORBEAM ELEVATION

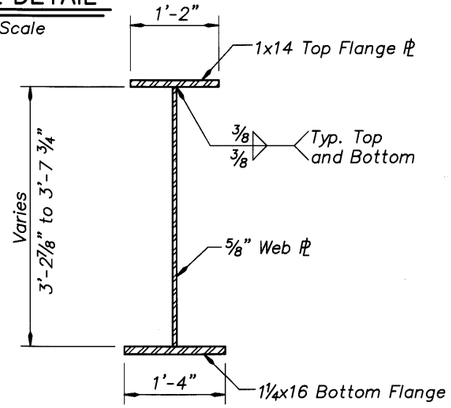
Scale : ⅜": = 1'-0"



*See General Notes, Dwg. #70191.

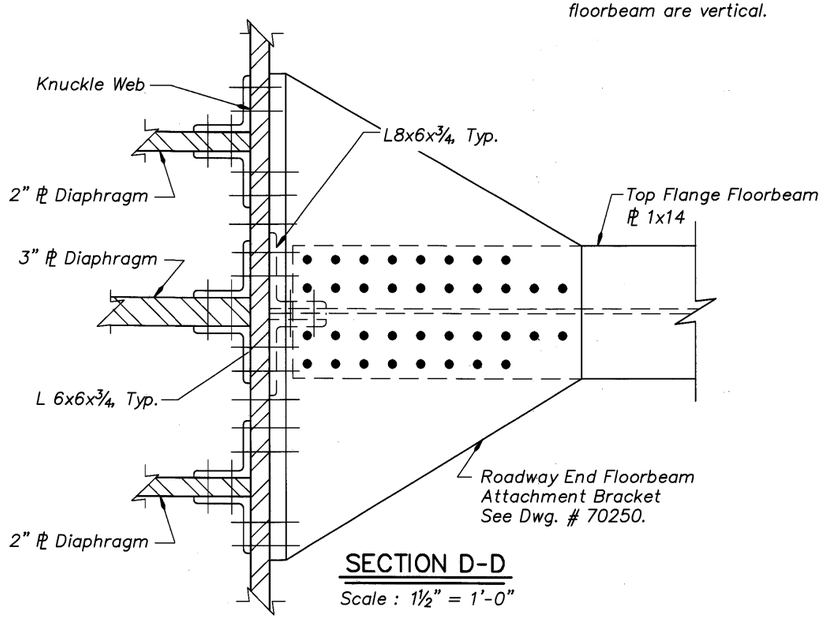
SLEEVE DETAIL

No Scale



SECTION A-A

Scale : 1" = 1'-0"

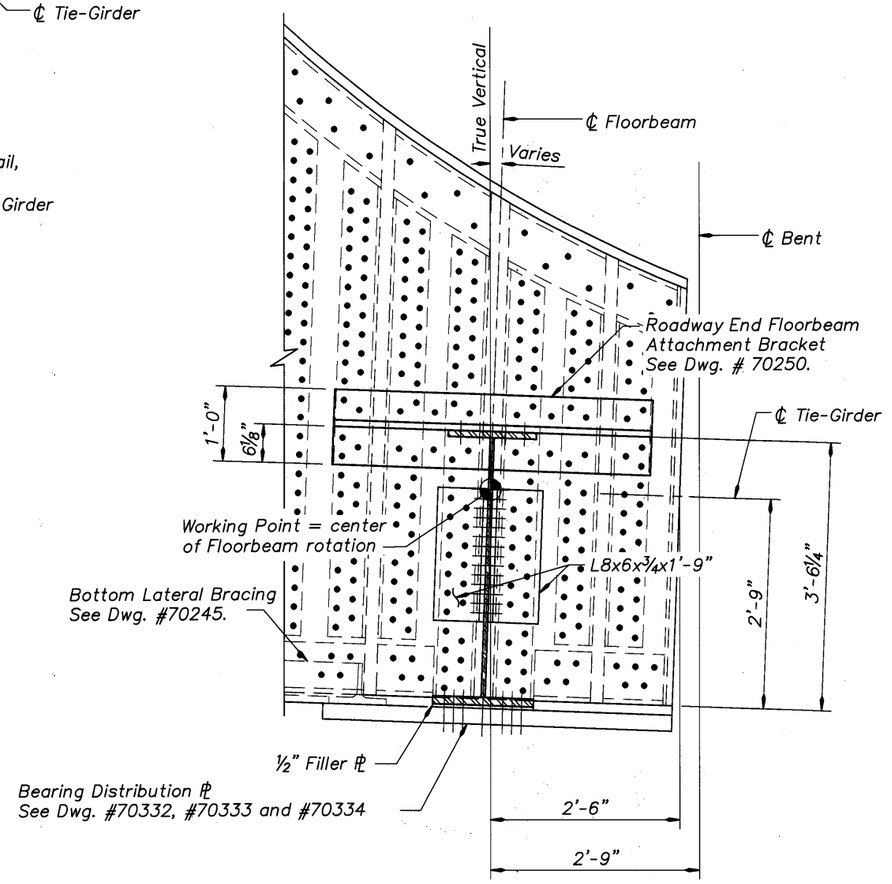


SECTION D-D

Scale : 1½" = 1'-0"

Notes:

1. See Dwg. #70248 for Section B-B.
2. For Floorbeam Shear Connector Detail, See Dwg. #70246.
3. ℄ Floorbeam perpendicular to ℄ Tie-Girder (not parallel to true Vertical).
4. Do not camber floorbeam. Ends of floorbeam are vertical.



SECTION C-C

Scale : 1" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Eric Rau

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 31, 2005 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

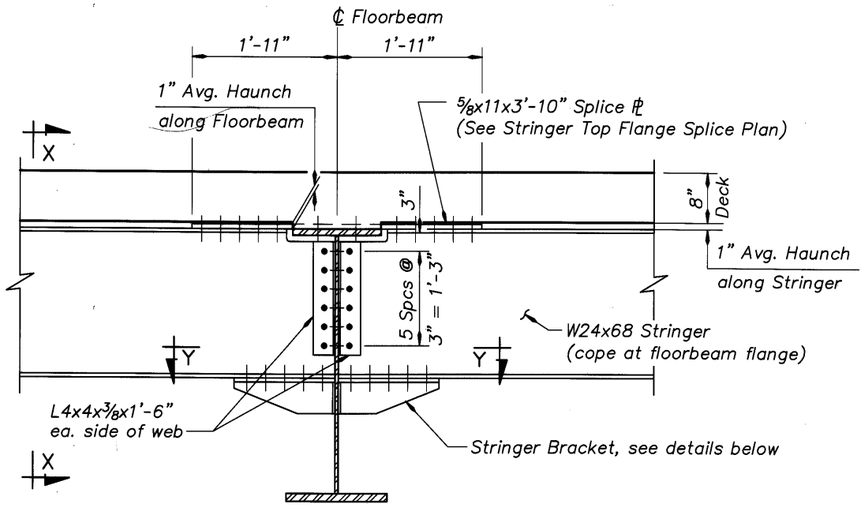
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

END FLOORBEAM DETAILS

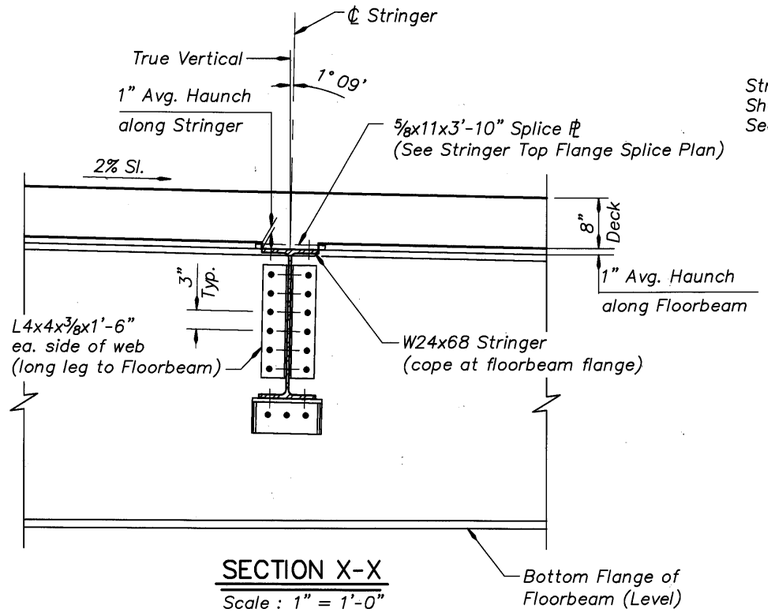
SHEET 60 OF 173
DRAWING NO. 70247

Xrefs: Odotbdr.dwg 0OOT0460_AFB_01.dwg

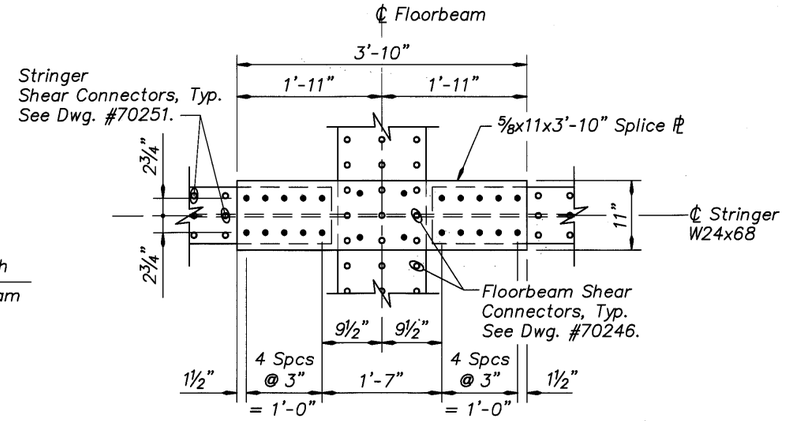


SECTION B-B
Scale : 1" = 1'-0"

Note:
For location of Section B-B, see Dwg. #70246.

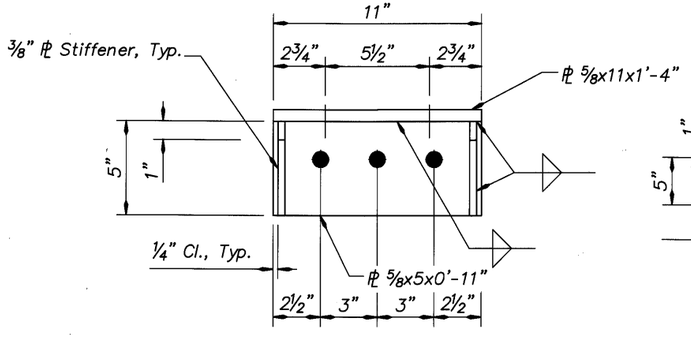


SECTION X-X
Scale : 1" = 1'-0"

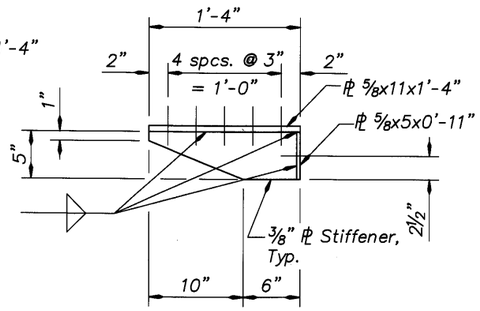


STRINGER TOP FLANGE SPLICE PLAN
Scale : 1" = 1'-0"

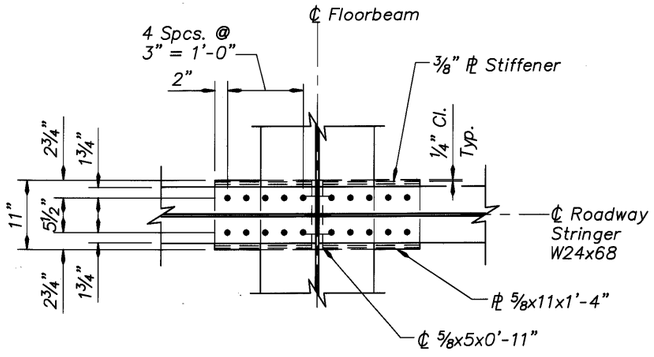
Typical Roadway Stringer (W24x68) shown
Typical Sidewalk Stringer (W12x35) splice similar - See Dwg. #70249 for details.



END ELEVATION
Scale: 3" = 1'-0"



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



SECTION Y-Y AT ROADWAY STRINGER
Scale : 1" = 1'-0"

STRINGER BRACKET DETAILS

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Eric Rau

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 31, 2003 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

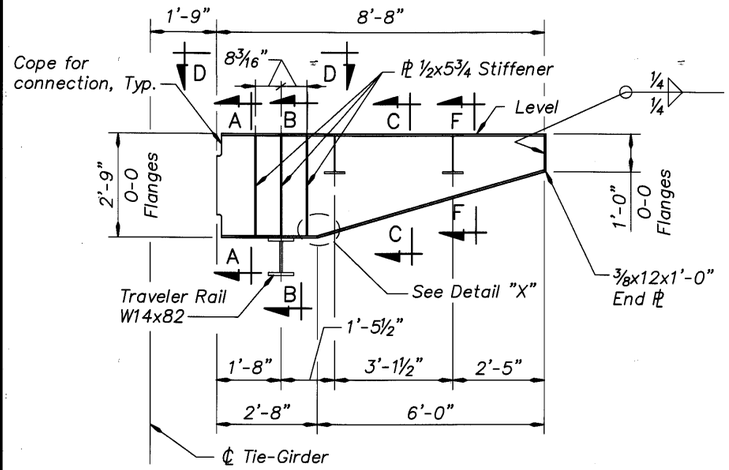
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

STRINGER AND FLOORBEAM DETAILS

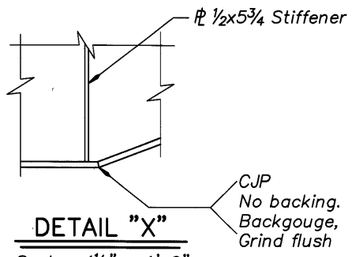
SHEET 61 OF 173
DRAWING NO. 70248

Xrefs: Odotbdr.dwg 00010460_AFB_03.dwg



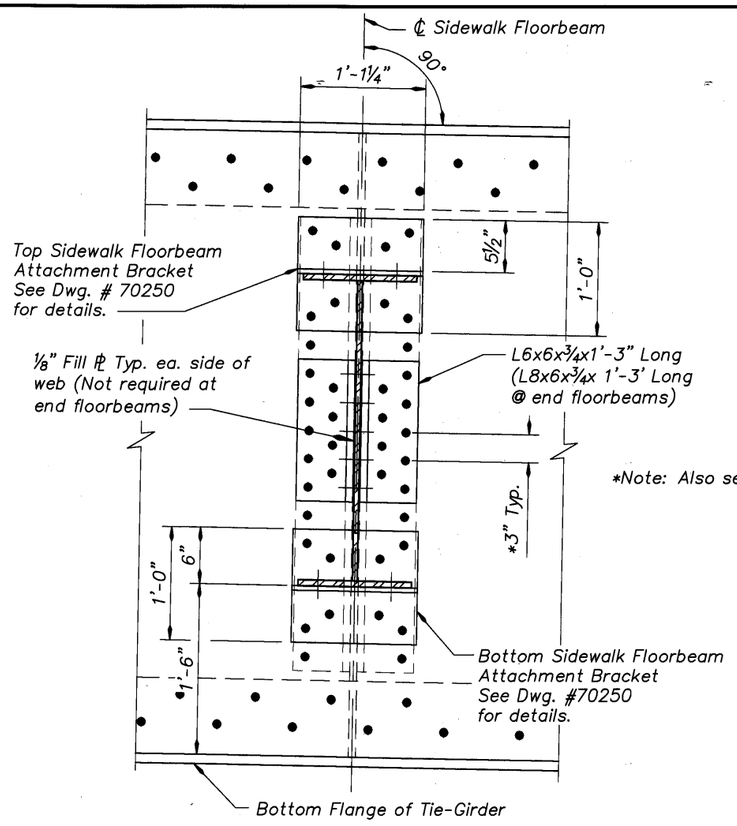
TYPICAL SIDEWALK FLOORBEAM ELEVATION - SPAN 3

Scale : ½"= 1'-0"
For Traveler Rail details, see Dwg. #70256.



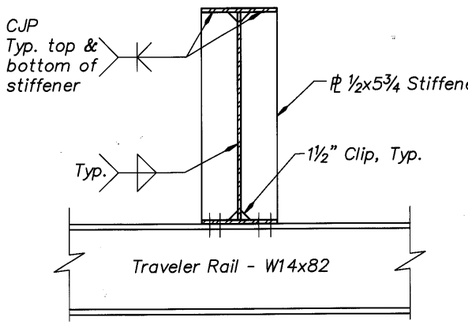
DETAIL "X"

Scale : 1½" = 1'-0"



SECTION A-A

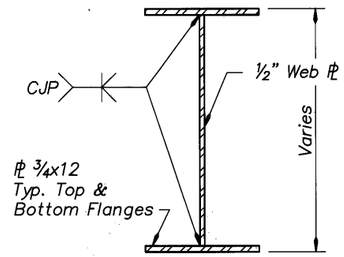
Scale : 1½" = 1'-0"



SECTION B-B

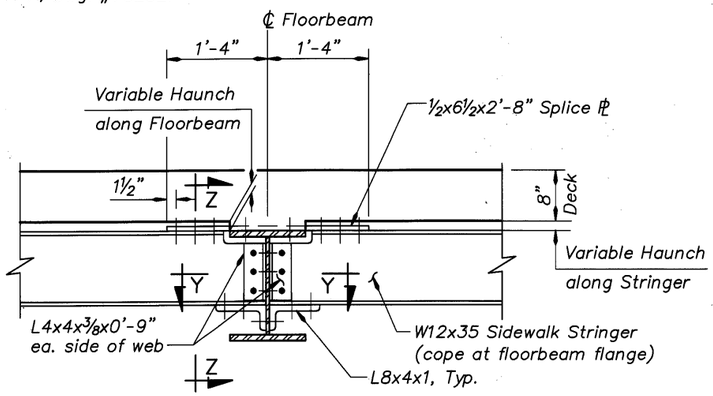
Scale : 1" = 1'-0"
(At Stiffener locations)

*Note: Also see Section A-A, Dwg. #70232.



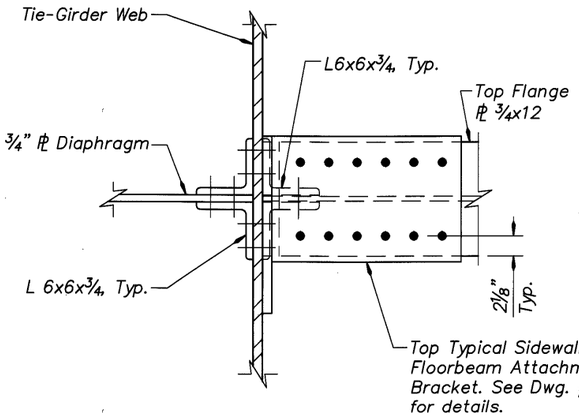
SECTION C-C

Scale : 1½" = 1'-0"

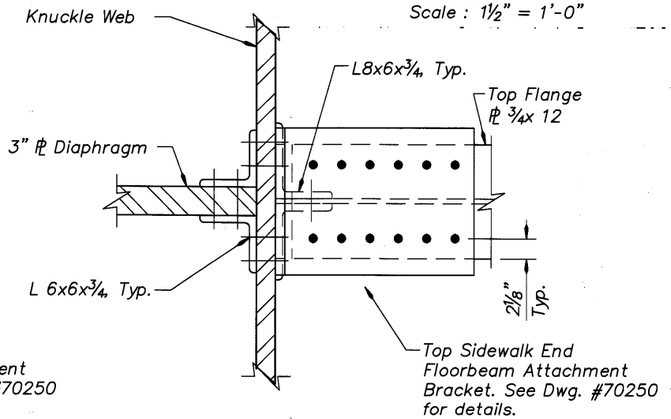


SECTION F-F

Scale : 1" = 1'-0"
(Showing Floorbeam/Stringer connection)



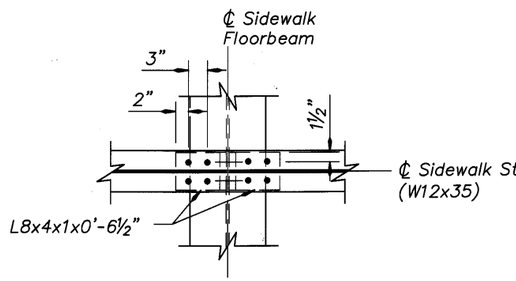
TYPICAL SIDEWALK FLOORBEAM



END SIDEWALK FLOORBEAM

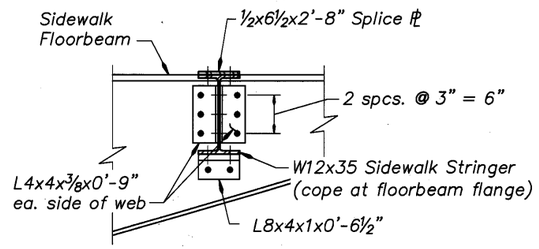
SECTION D-D

Scale : 1½" = 1'-0"



SECTION Y-Y AT SIDEWALK STRINGER

Scale : 1" = 1'-0"



SECTION Z-Z

Scale : 1" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Eric Rau

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 72946 OREGON JULY 15, 2003 MOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

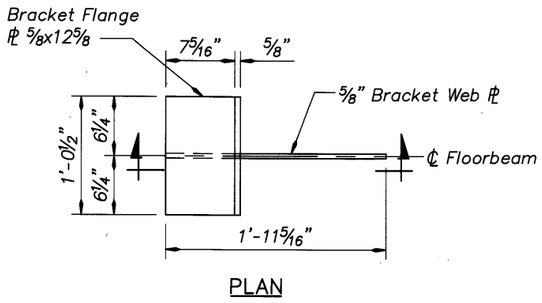
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

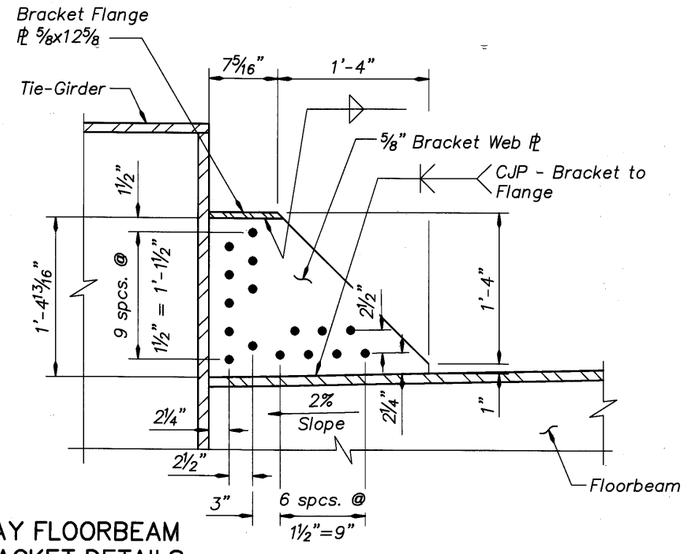
SIDEWALK STRINGER AND FLOORBEAM DETAILS

SHEET 62 OF 173
DRAWING NO. 70249

Xrefs: Odotlbdr.dwg 00070460_AFB_04.dwg



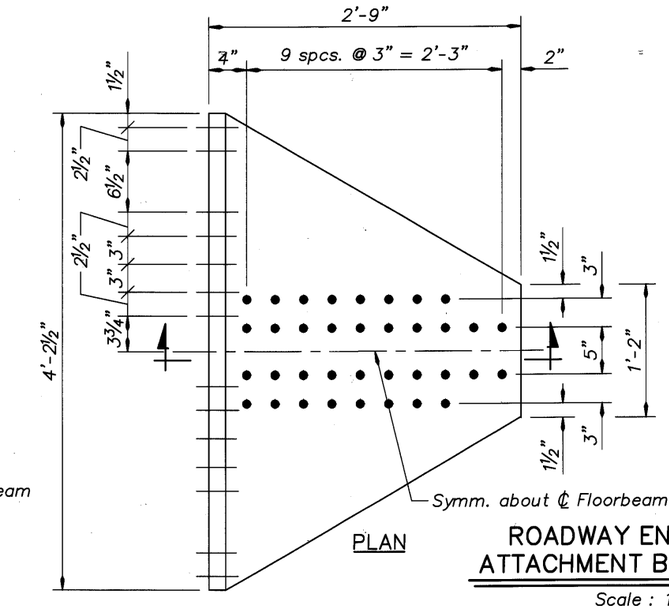
PLAN



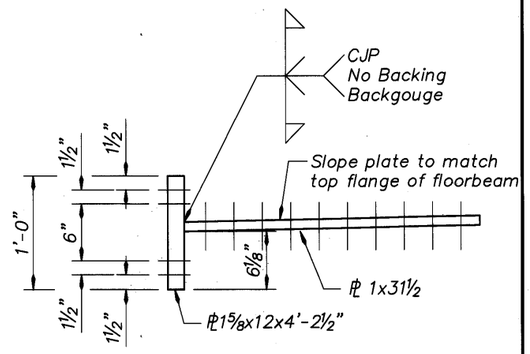
SECTION

TYPICAL ROADWAY FLOORBEAM ATTACHMENT BRACKET DETAILS

Scale : 1½"= 1'-0"



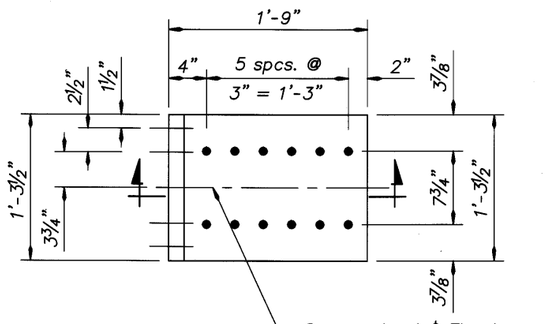
PLAN



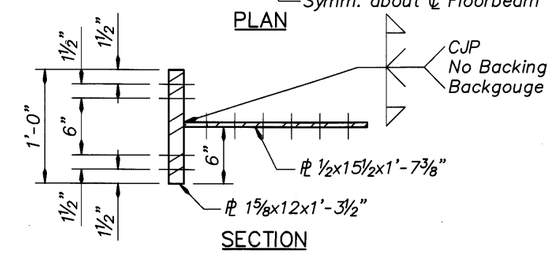
SECTION

ROADWAY END FLOORBEAM ATTACHMENT BRACKET DETAILS

Scale : 1½"= 1'-0"



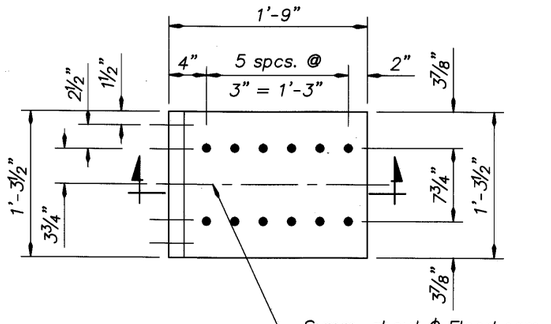
PLAN



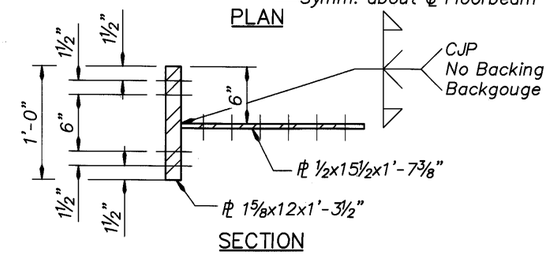
SECTION

TOP SIDEWALK END FLOORBEAM ATTACHMENT BRACKET DETAILS

Scale : 1½"= 1'-0"



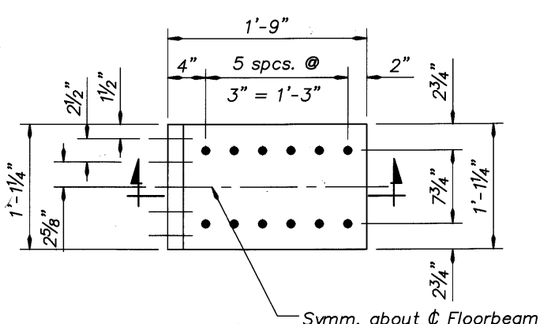
PLAN



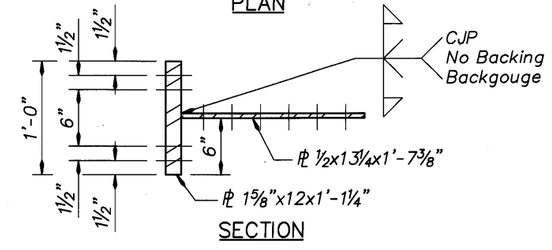
SECTION

BOTTOM SIDEWALK END FLOORBEAM ATTACHMENT BRACKET DETAILS

Scale : 1½"= 1'-0"



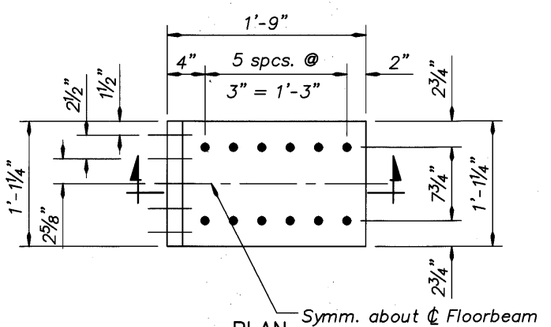
PLAN



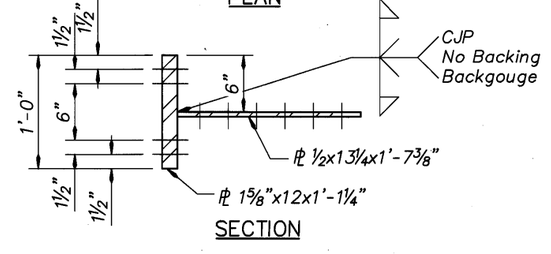
SECTION

TOP SIDEWALK TYPICAL FLOORBEAM ATTACHMENT BRACKET DETAILS

Scale : 1½"= 1'-0"



PLAN



SECTION

BOTTOM SIDEWALK TYPICAL FLOORBEAM ATTACHMENT BRACKET DETAILS

Scale : 1½"= 1'-0"

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

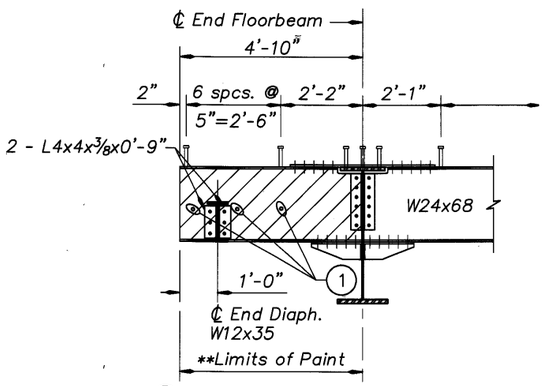
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

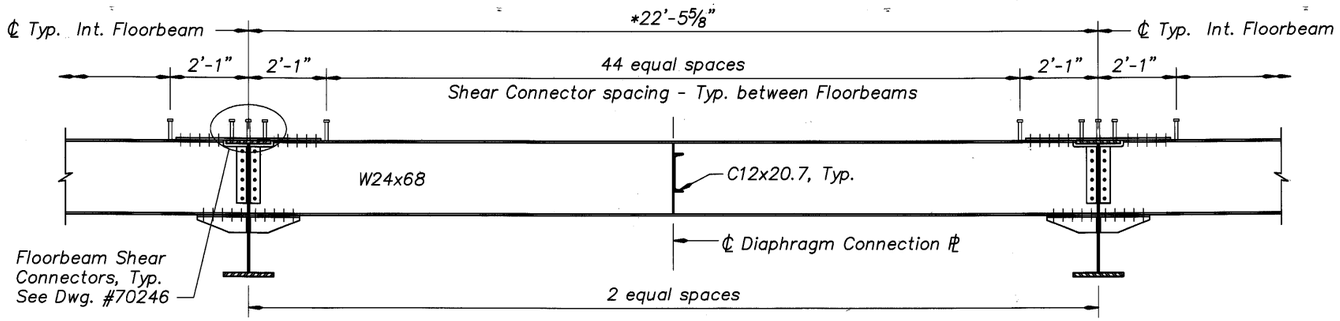
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

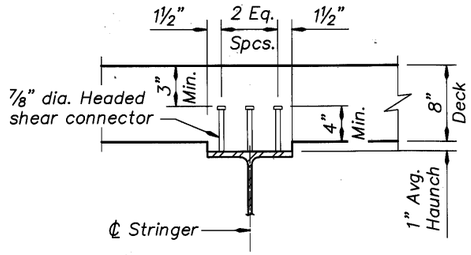
FLOORBEAM ATTACHMENT BRACKET DETAILS

SHEET 63 OF 173
DRAWING NO. 70250

Xrefs: Odotbdr.dwg ODOT0460_AFB_03.dwg







SHEAR CONNECTOR DETAIL

No Scale

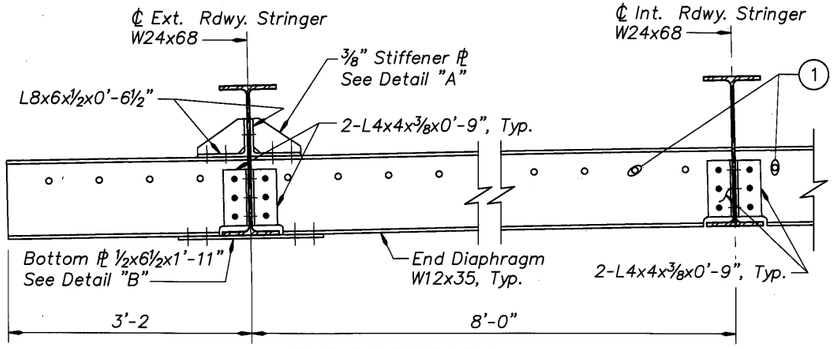
* Dimensions show are true horizontal dimensions.

(1) 1" dia. holes for expansion joint blockout reinforcement. See Dwg. #70339 for details.

**See General Notes, Dwg. #70191.

ROADWAY STRINGER ELEVATION - SPAN 3

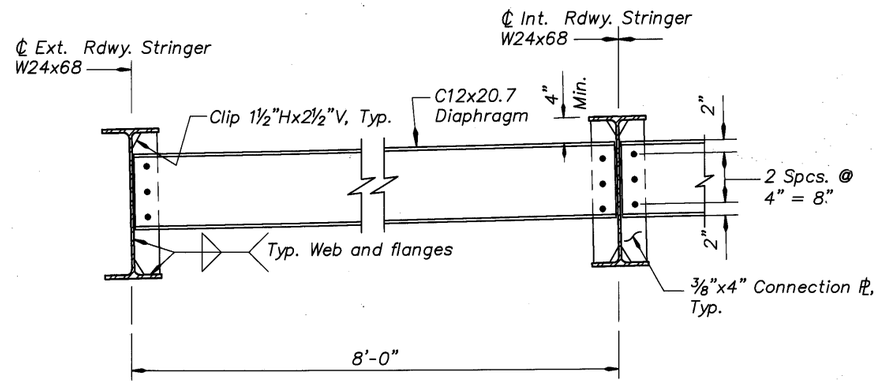
Scale : ½" = 1'-0"



END DIAPHRAGM

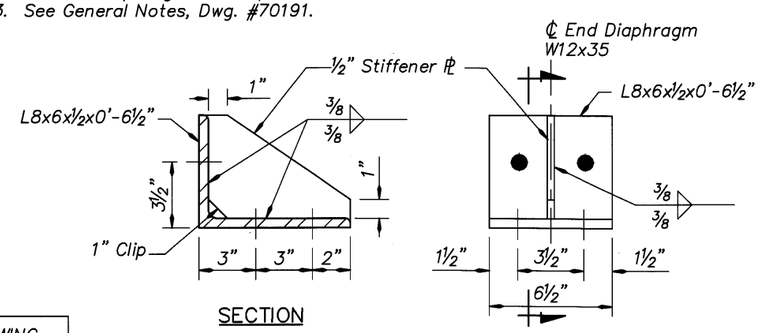
Scale : 1" = 1'-0"

Note: Entire end diaphragm will be painted at each end of span 3. See General Notes, Dwg. #70191.



TYPICAL DIAPHRAGM

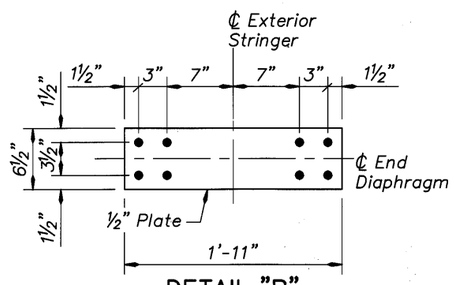
Scale : 1" = 1'-0"



DETAIL "A"

Scale : 3" = 1'-0"

Notes:
1. ℄ Floorbeam perpendicular to ℄ Tie-Girder alignment (not parallel to true vertical). Ends of stringer fabricated parallel to ℄ Floorbeam.
2. For stringer to floorbeam connections, see Dwg. #70248.



DETAIL "B"

Scale : 1½"" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Eric Rau

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON JULY 22, 2005 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

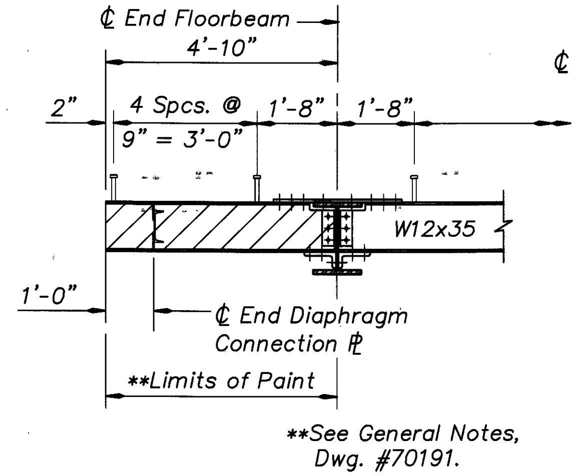
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

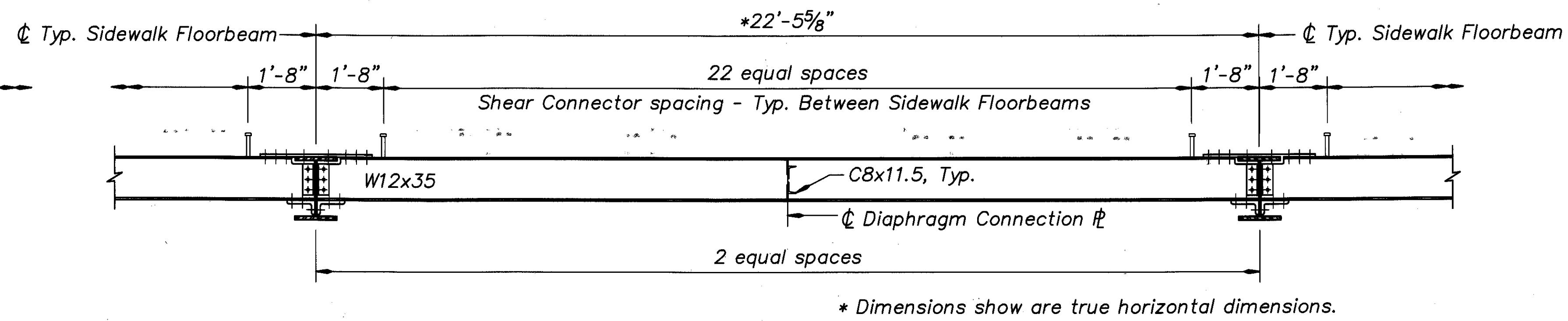
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ROADWAY STRINGER DETAILS

SHEET 64 OF 173.
DRAWING NO. 70251

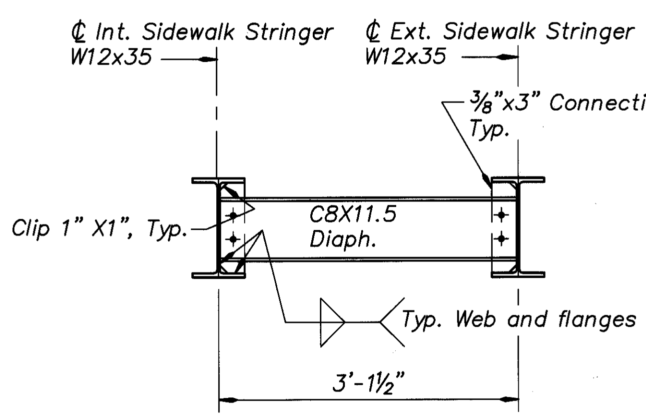
Xrefs: Odotbdr.dwg ODOT0460_AST_01.dwg ODOT0460_AST_02.dwg





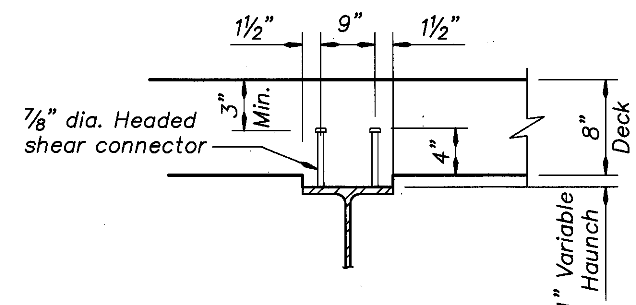
SIDEWALK STRINGER ELEVATION - SPAN 3

Scale: ½" = 1'-0"



TYPICAL DIAPHRAGM

Scale : 1" = 1'-0"



SHEAR CONNECTOR DETAIL

No Scale

Notes:
1. ₵ Floorbeam perpendicular to ₵ Tie-Girder alignment (not parallel to true vertical). Ends of stringer fabricated parallel to ₵ Floorbeam.
2. For stringer to sidewalk floorbeam connections, see Dwg. #70249.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
DESIGNED: Eric Rau

REVIEWED
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

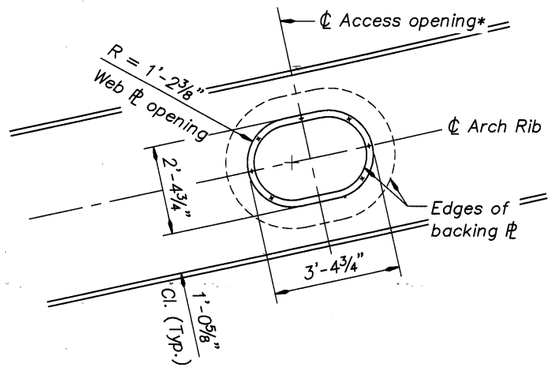
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

SIDEWALK STRINGER DETAILS

DRAWING NO. 70252

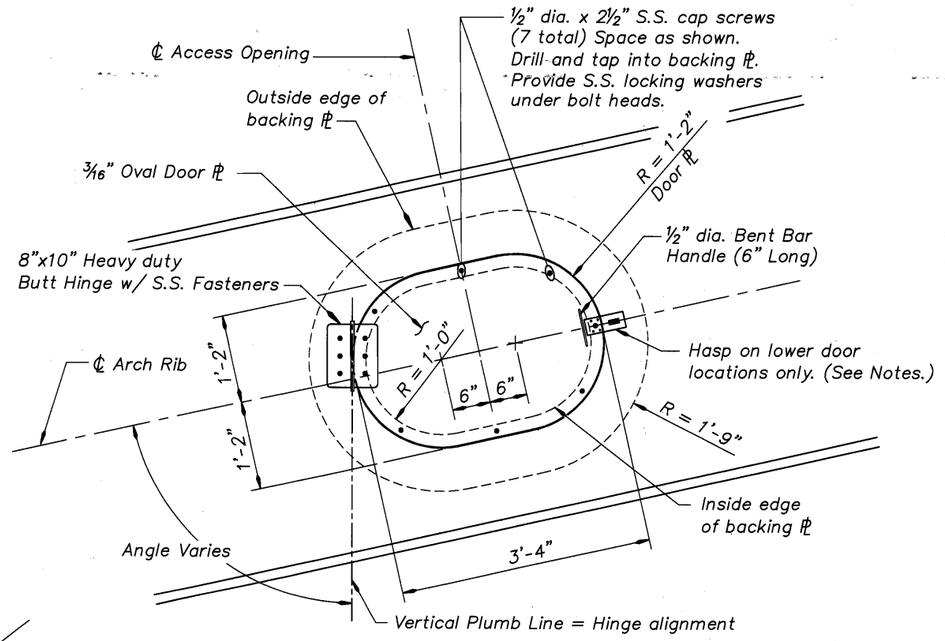
DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").



ARCH RIB WEB PLATE OPENING DETAIL

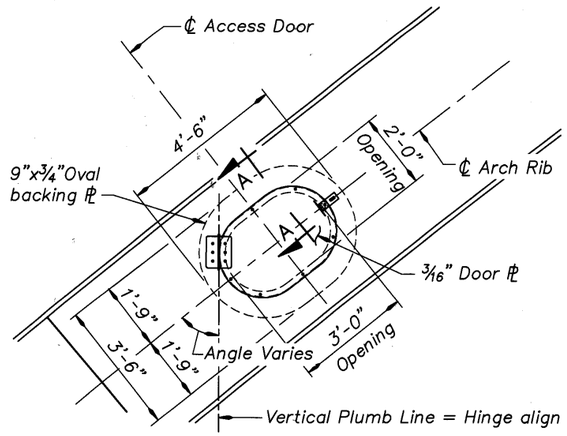
Scale : ½" = 1'-0"

* ℄ Access Opening/Door shall be perpendicular to local tangent of ℄ Arch Rib. For clarity, access door is omitted from this view. See other details this sheet for door in place.



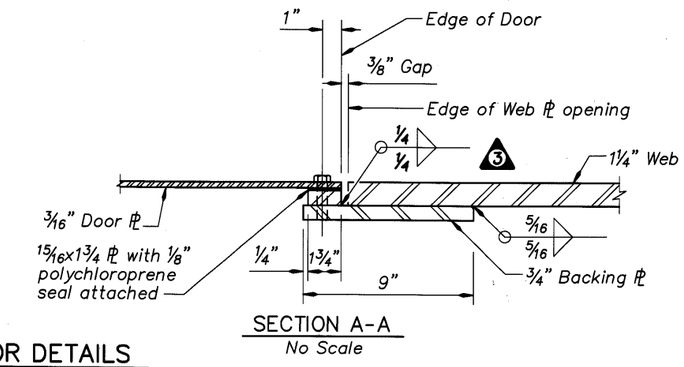
ARCH RIB ACCESS DOOR DETAIL

Scale : 1" = 1'-0"



ARCH RIB ACCESS DOOR - IN PLACE

Scale : ½" = 1'-0"

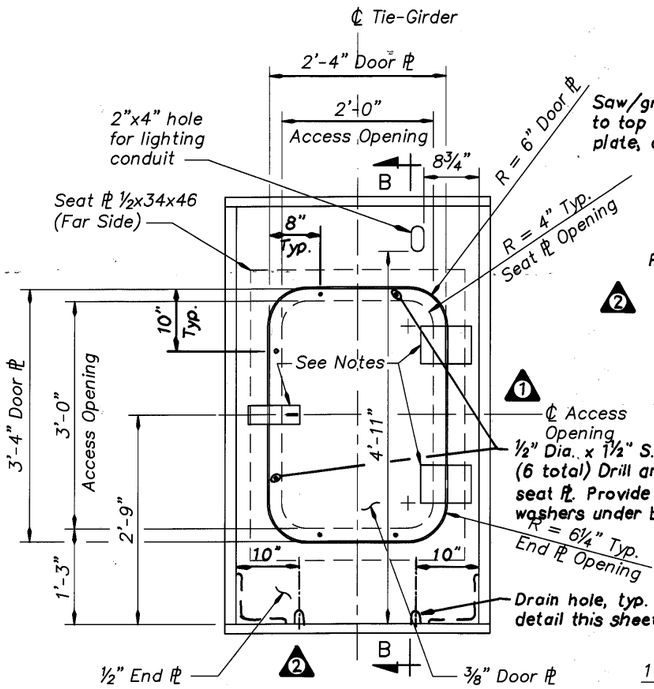


SECTION A-A

No Scale

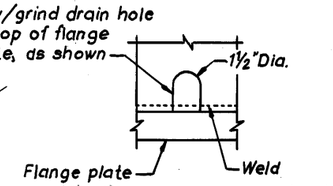
ARCH RIB ACCESS DOOR DETAILS

Note: For locations of Arch Rib Access Doors, see Dwg. #70219 and #70220.



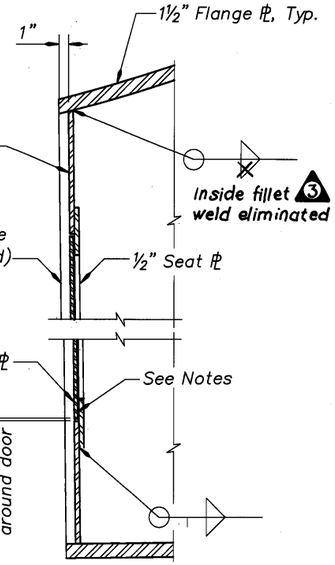
KNUCKLE END ELEVATION

Scale: 1" = 1'-0"



DRAIN HOLE DETAIL

Scale : 3" = 1'-0"



SECTION B-B

Scale : 1½" = 1'-0"

Notes:

For each Arch Rib access door, provide one 8'x10" heavy duty butt hinge. For each lower Arch Rib access door, also provide one padlock hasp. For each Knuckle access door, provide two 6-inch butt hinges and one padlock hasp. All hardware to be stainless steel. Make each hinge axis plumb.

Locate hasp towards the roadway.

Secure with stainless steel tamper-resistant fasteners.

Provide continuous ⅛"x2" polychloroprene seal bonded to seat plate in door frames.

See also Dwgs. #70343 to #70354 for lighting conduit details.

KNUCKLE/TIE-GIRDER ACCESS DOOR DETAILS

	DATE	REVISION	BY
1	11/06	REVISED KNUCKLE END ELEVATION	KWC
2	07/07	ADDED DRAIN HOLE DETAILS	KWC
3	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER OREGON 14549 PE MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

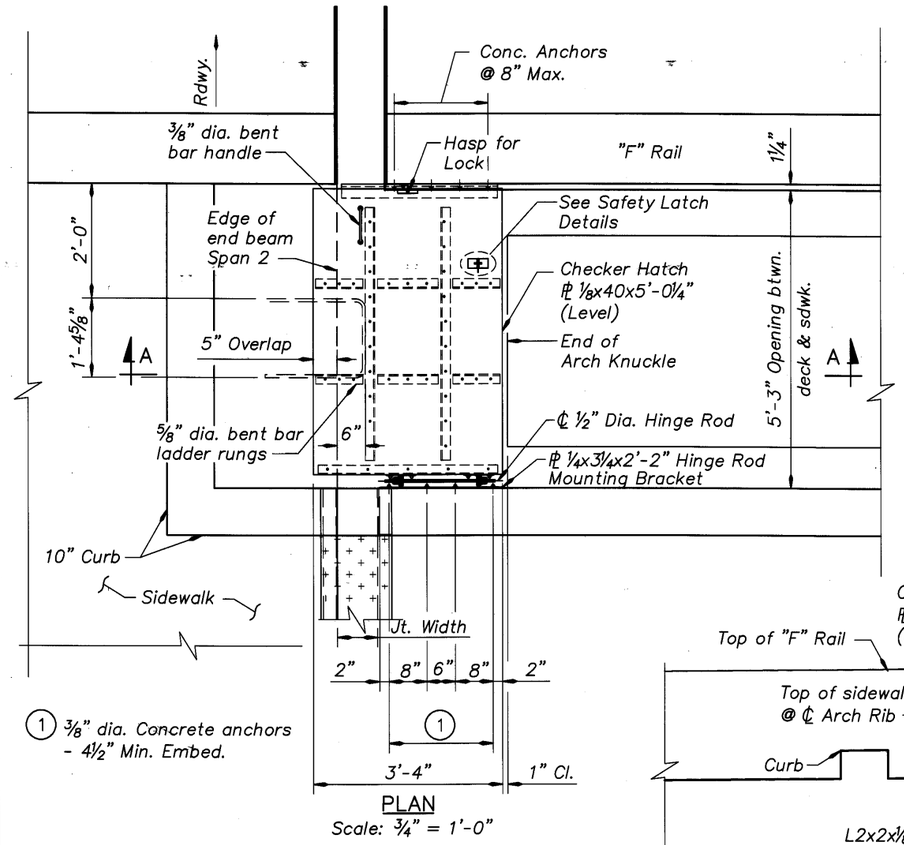
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

ARCH AND TIE GIRDER ACCESS DETAILS

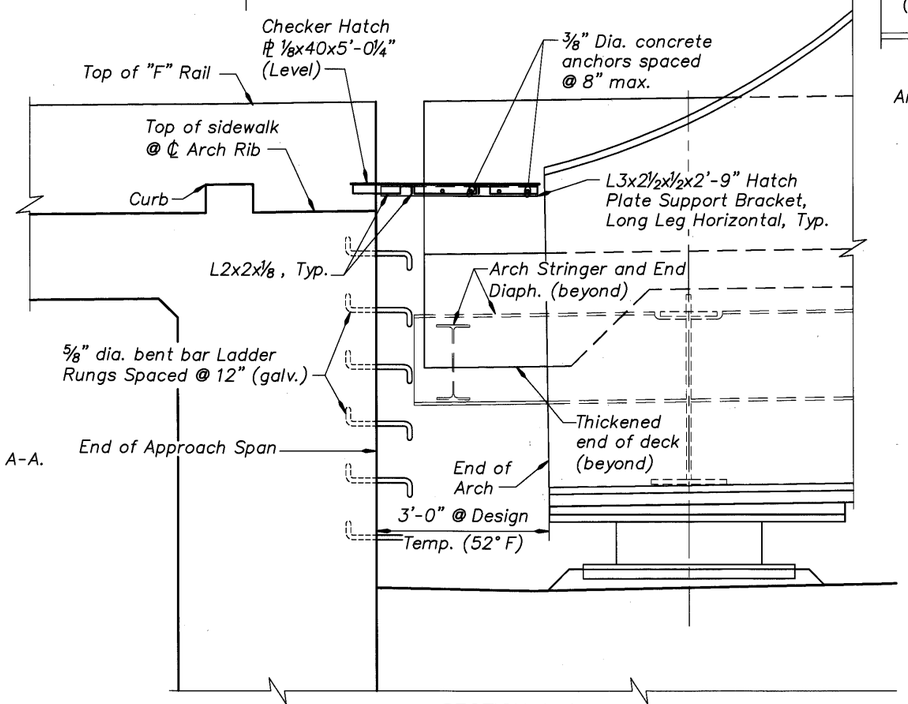
SHEET 66 OF 173
DRAWING NO. 70253

Xrefs: ODOT0460_AA_02.dwg Odotbdr.dwg ODOT0460_AD_KN_01.dwg

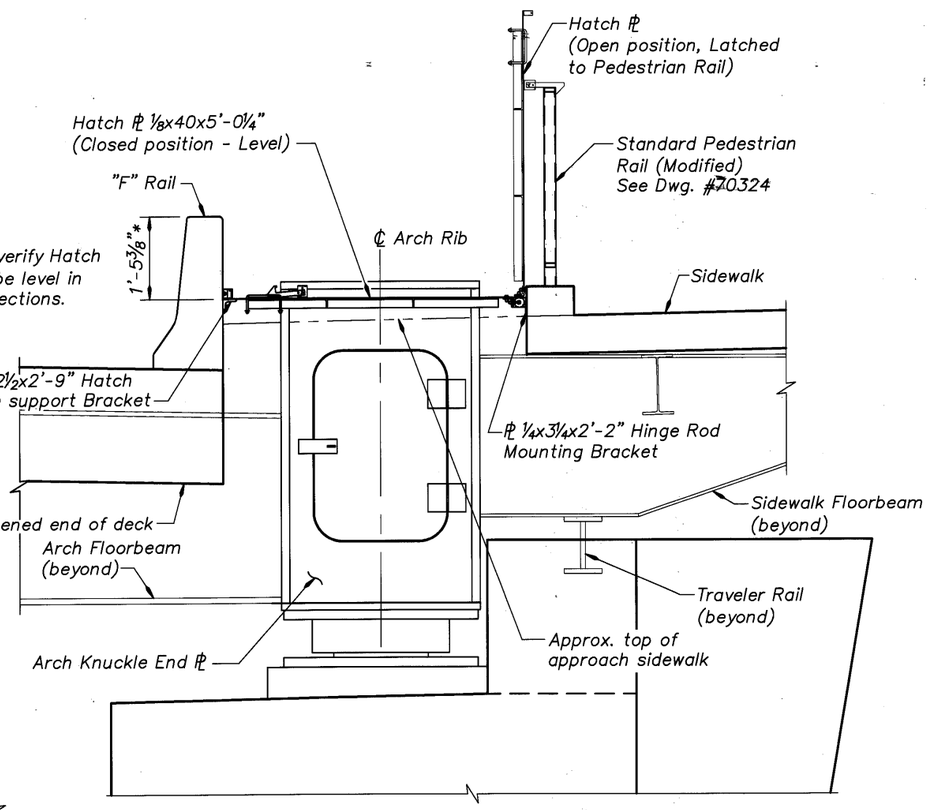


1 ⅜" dia. Concrete anchors - 4½" Min. Embed.

PLAN
Scale: ¾" = 1'-0"



SECTION A-A
Scale: ¾" = 1'-0"



ELEVATION
(Looking ahead on Station)
Scale: ¾" = 1'-0"

NOTES:
Details shown at Bent 3 - Right
All corners of arch similar.
Pedestrian rail and gate omitted from Plan and Section A-A.
For Hatch Details, see Dwg. #70255.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07
DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

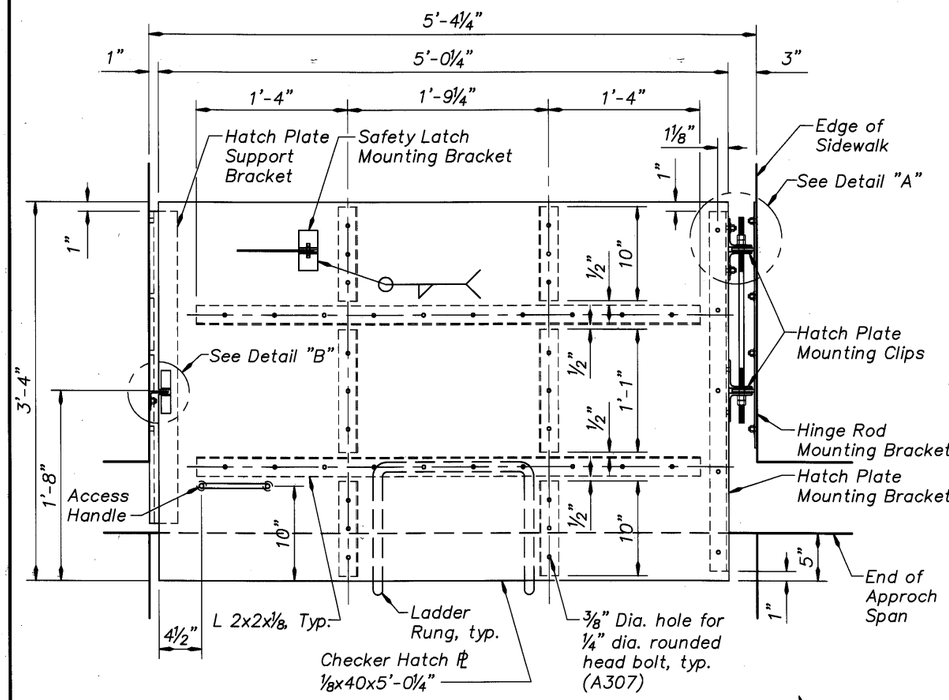
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

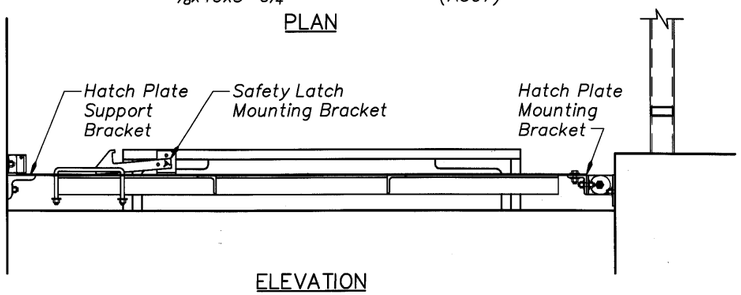
ACCESS DETAILS (1 OF 2)

SHEET 67 OF 173
DRAWING NO. 70254

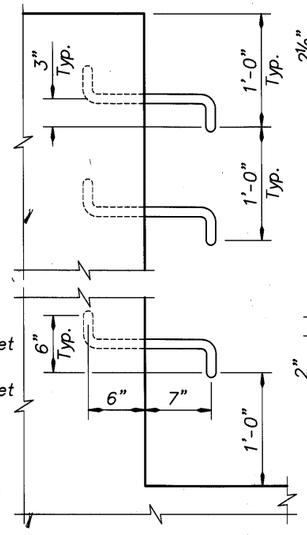
Xrefs: Odotbdr.dwg ODOT0460_AD_JT_01.dwg ODOT0460_JA_01.dwg



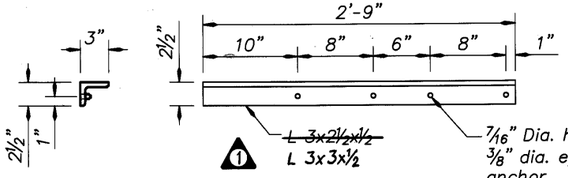
PLAN



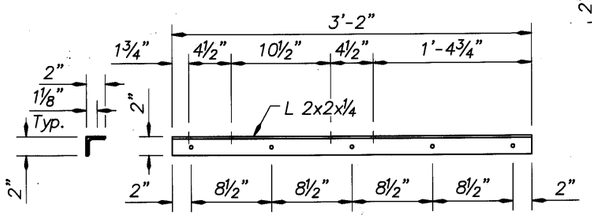
ELEVATION



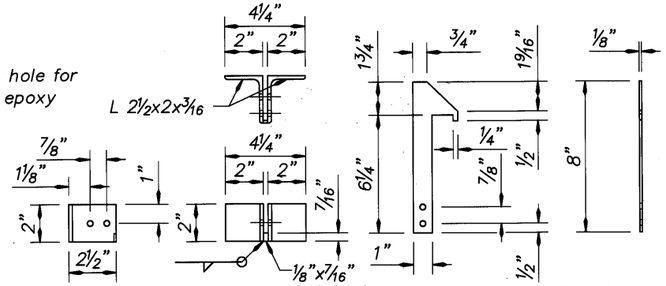
SECTION "A-A"
Scale : 1 1/2" = 1'-0"



HATCH PLATE SUPPORT BRACKET
Scale : 1 1/2" = 1'-0"

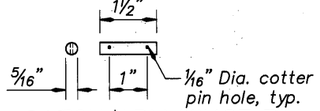


HATCH PLATE MOUNTING BRACKET
Scale : 1 1/2" = 1'-0"

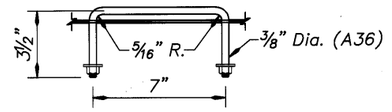


SAFETY LATCH MOUNTING BRACKET
Scale : 3" = 1'-0"

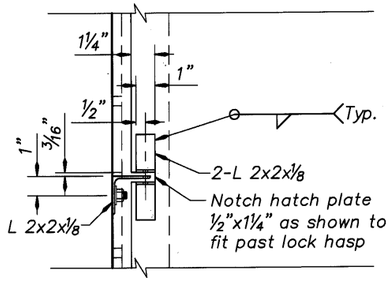
SAFETY LATCH CATCH ARM
Scale : 3" = 1'-0"



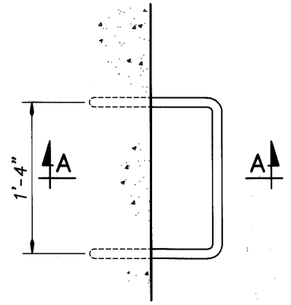
CATCH ARM HINGE PIN
Scale : 6" = 1'-0"



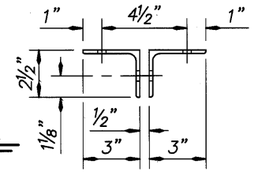
ACCESS HANDLE DETAIL
Scale : 3" = 1'-0"

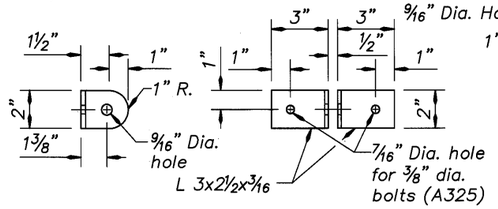


DETAIL "B"
Scale : 3" = 1'-0"

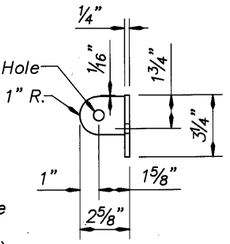


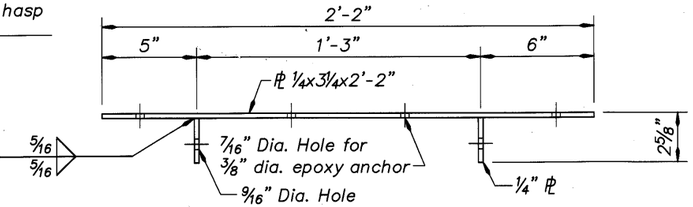
LADDER RUNG DETAIL
Scale : 1 1/2" = 1'-0"

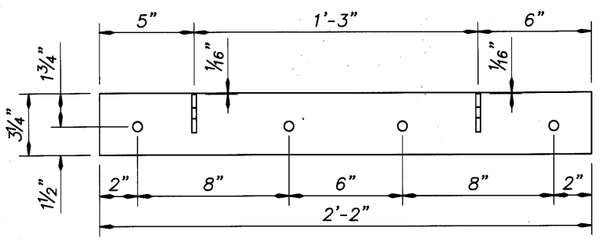




HATCH PLATE MOUNTING CLIPS
Scale : 3" = 1'-0"







HINGE ROD MOUNTING BRACKET
Scale : 3" = 1'-0"

Notes:

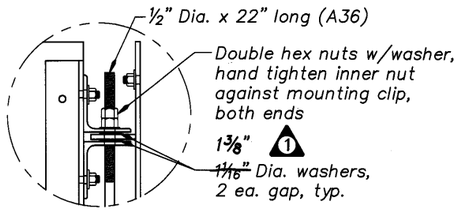
All Hatch Plate structural components and hardware shall be hot-dipped galvanized unless otherwise shown on plans.

All ⅜" dia. epoxy anchors shall have a minimum embedment of 4½" into the concrete face.

Grind down any protuberances prior to welding the safety latch and locking hasps to the top of the checker plate.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

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



DETAIL "A"
Scale : 3" = 1'-0"

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2003 RICHARD J. KING
EXPIRES: 6-30-07

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

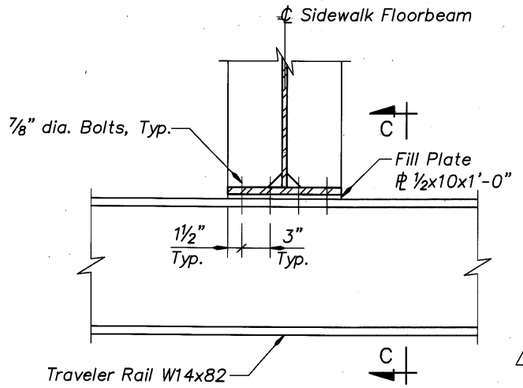
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

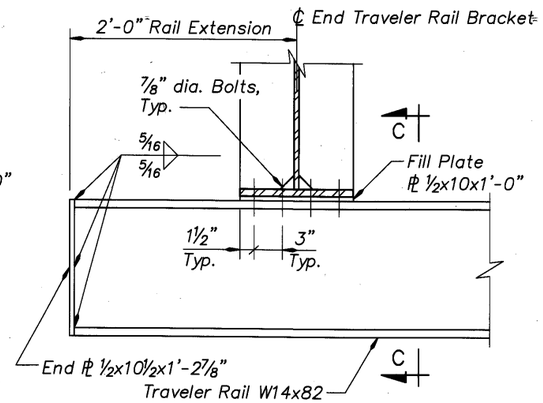
ACCESS DETAILS (2 OF 2)

SHEET 68 OF 173
DRAWING NO. 70255

Xrefs: Odotlbar.dwg ODOT0460_IA_02.dwg



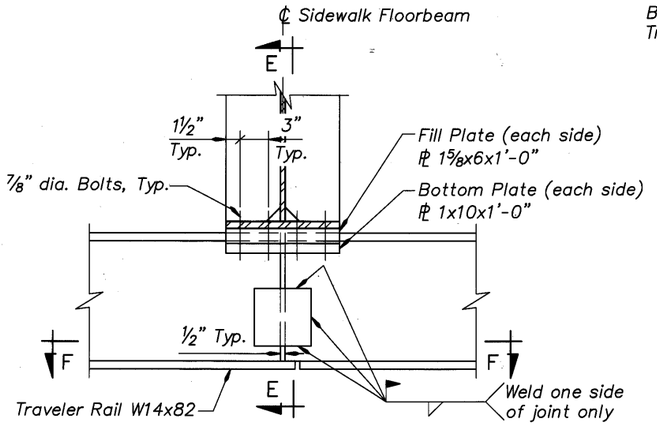
AT PANEL POINTS: T1, T3, T5, T7, T9, T11, T13, T15



AT END TRAVELER RAIL BRACKETS

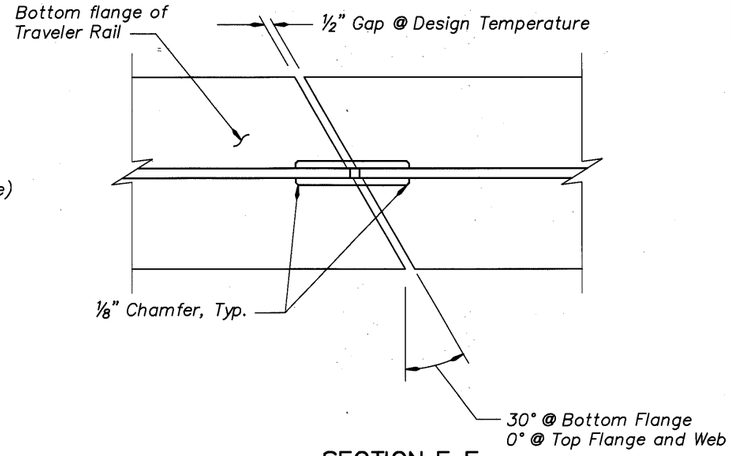
TRAVELER RAIL ELEVATION

Scale : 1½" = 1'-0"



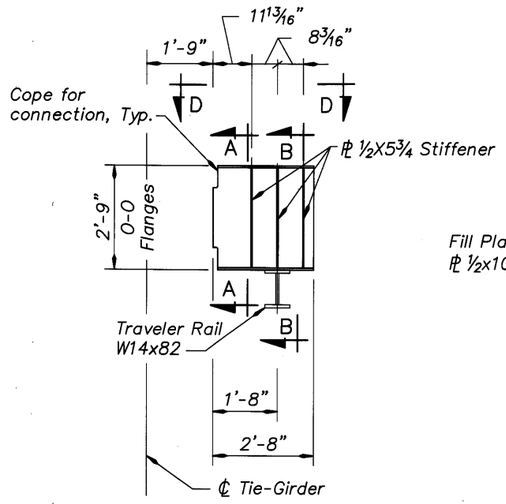
AT PANEL POINTS: T2, T4, T6, T8, T10, T12, T14

Note:
Provide continuous W14x82 Traveler Rail between even-numbered panel points, as shown. Force will be required to conform to shape of W14x82 to vertical profile of sidewalk brackets.



SECTION F-F

Scale : 3" = 1'-0"

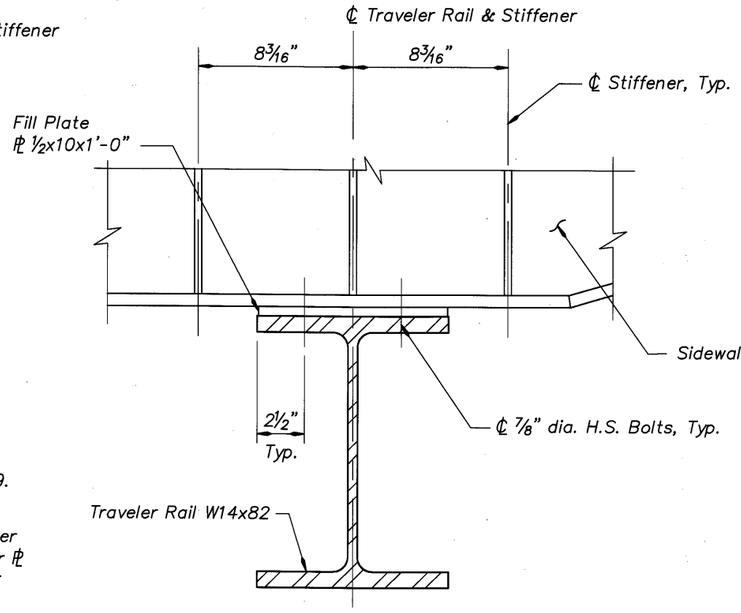


END TRAVELER RAIL BRACKET

Scale : ½"= 1'-0"

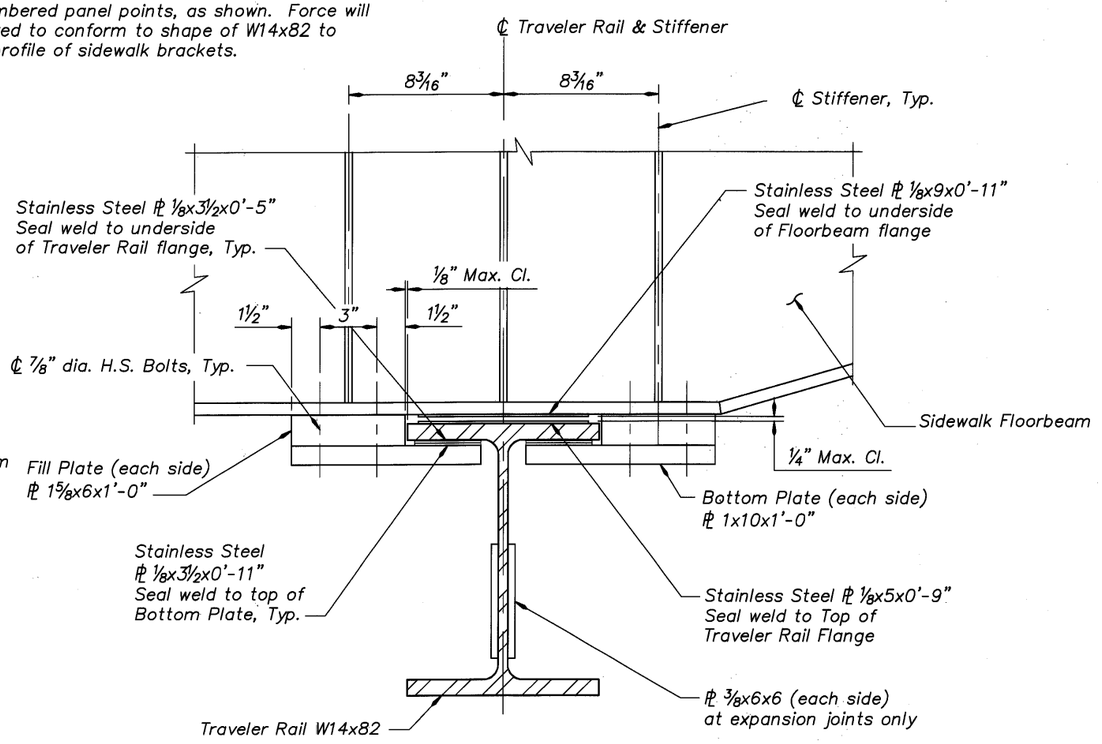
For Sections A-A, B-B, & D-D, see Dwg. #70249.

Traveler Rail Bracket connection to Knuckle is similar to typical Sidewalk Floorbeam to Tie-girder connection shown on Dwg. #70249. Add ⅛" filler PL each side of bracket web to accomodate thicker knuckle diaphragm.



SECTION C-C

Scale : 3" = 1'-0"



SECTION E-E

Scale : 3" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORTTI
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

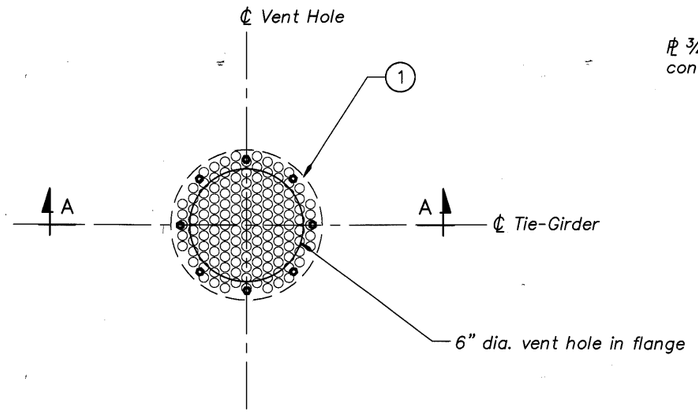
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TRAVELER RAIL DETAILS

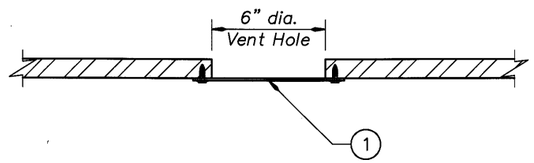
SHEET 69 OF 173
DRAWING NO. 70256

Xrefs: Odotbdr.dwg ODOT0460_AFB_04.dwg



PLAN

Viewing Top of Tie-Girder Bottom Flange

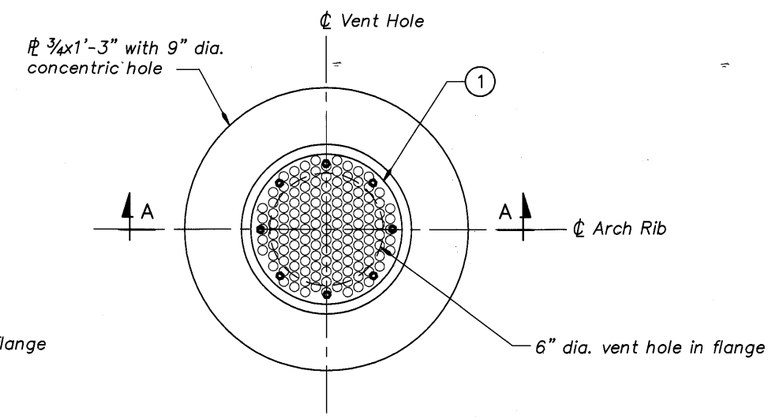


SECTION A-A

TIE-GIRDER VENT HOLE

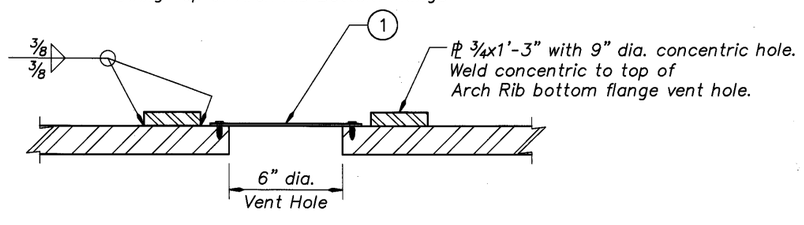
Scale : 3" = 1'-0"

(Refer to Part-Elevation on Dwg. #70219 and #70220 for vent hole locations.)



PLAN

Viewing Top of Arch Rib Bottom Flange



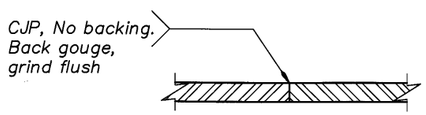
SECTION A-A

ARCH RIB VENT HOLE

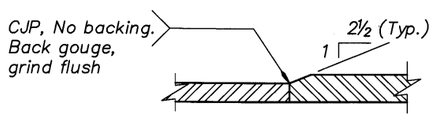
Scale : 3" = 1'-0"

(Refer to Part-Elevation on Dwg. #70219 and #70220 for vent hole locations.)

(1) *Provide 8" dia. x min ⅛" thickness stainless steel perforated plate or flattened expanded mesh. Attach with 8 - ¼" dia. x 1" S.S. cap screws, washers and lock washers drilled and tapped into flange.*



FLANGE OR WEB SPLICE



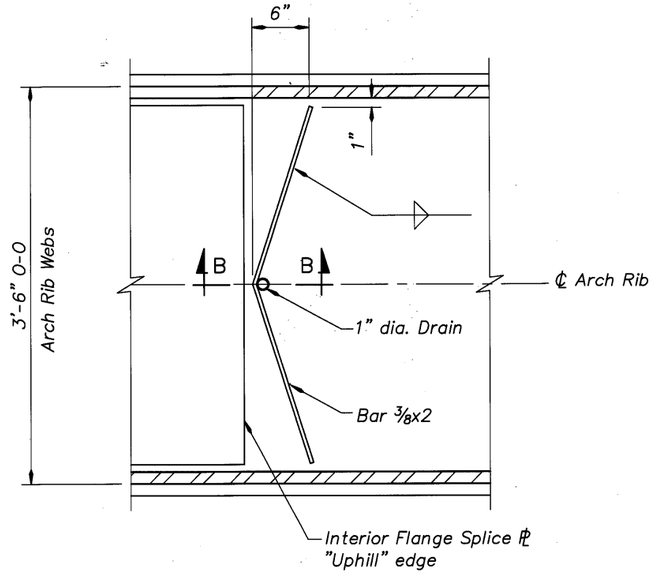
FLANGE OR WEB THICKNESS TRANSITION

SHOP SPLICE DETAILS

No Scale

Notes:

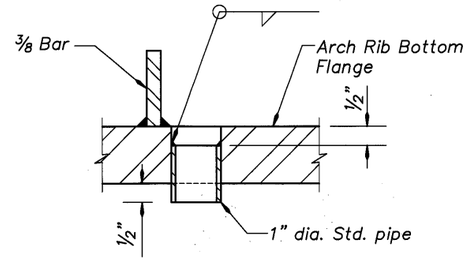
1. *Welded flange and web splices are permitted as shown in arch ribs, tie-girders, floorbeams, and top lateral bracing.*
2. *Weld splice details also apply to tie-girder L8x8.*
3. *Only one welded splice per bay (between work points) is permitted in arch rib and tie-girder web or flange plates.*
4. *Do not locate any welded splice closer than 6'-0" to an arch rib or tie-girder work point.*
5. *Refer to Dwg. #70237 for permissible location of welded splice in knuckle web plate.*
6. *Obtain approval for all welded splice locations prior to steel fabrication.*



PLAN-INTERIOR OF ARCH RIB

DRAIN DETAIL

Scale: 1½" = 1'-0"



SECTION B-B

Scale: 6" = 1'-0"

ARCH DRAINAGE DETAILS

Note:
Details shown are for 1" dia. std. pipe. 2" dia. drains required in the knuckle are similar, using 2" dia. std. pipe.

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△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
DESIGNED: Clifford Coulter

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

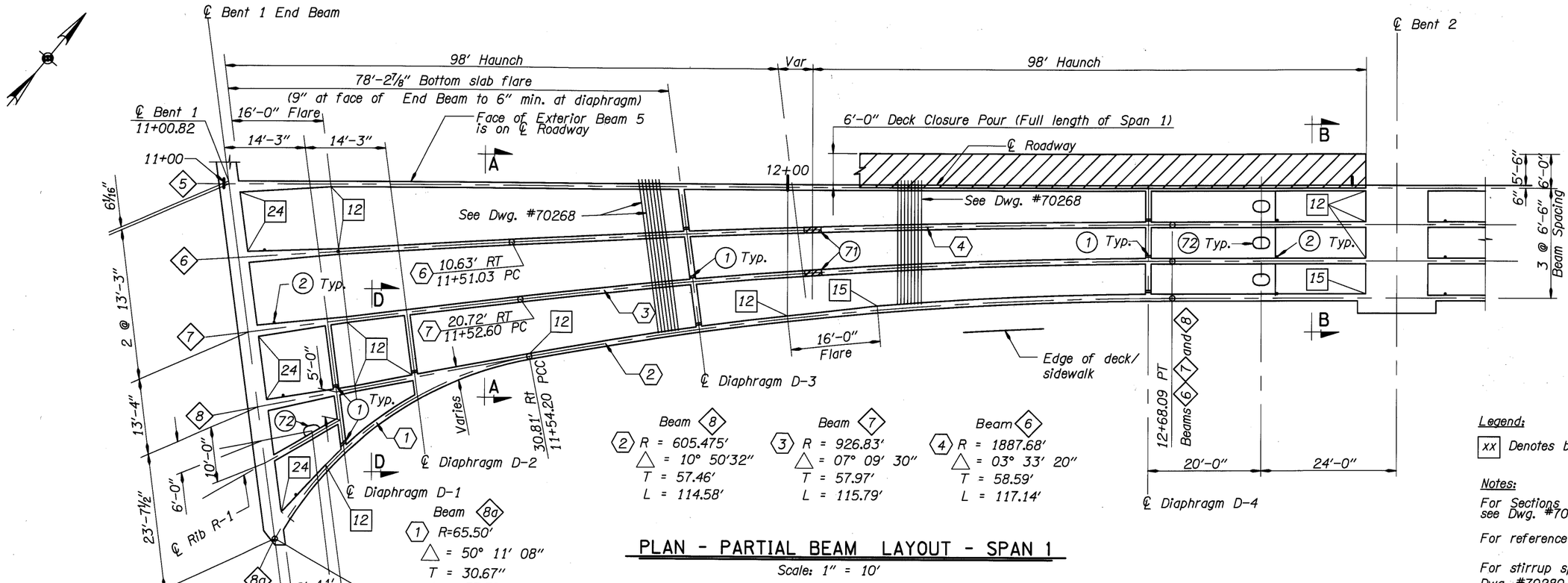
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

MISCELLANEOUS STEEL DETAILS

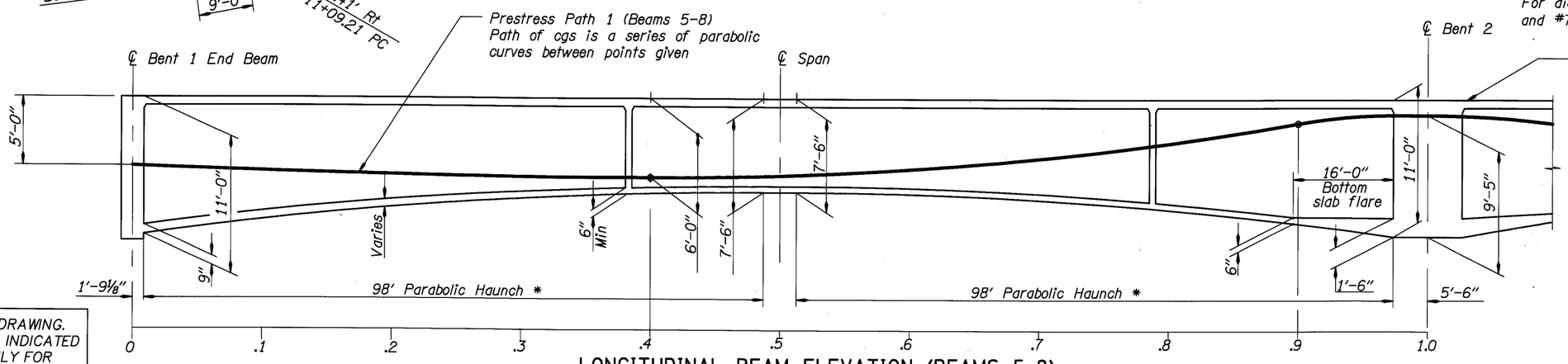
SHEET 70 OF 173
DRAWING NO. 70257

Xrefs: Odotbdr.dwg ODOT0460_AD_SP_01.dwg ODOT0460_AD_02.dwg



PLAN - PARTIAL BEAM LAYOUT - SPAN 1

Scale: 1" = 10'



* Haunch length measured parallel to ℄ Roadway, see "Plan-Partial Beam Layout-Span 1"

LONGITUDINAL BEAM ELEVATION (BEAMS 5-8)

No Scale

Legend:

[xx] Denotes beam stem width in inches

Notes:

For Sections A-A, B-B, and D-D, see Dwg. #70262.

For reference notes, see Dwg. #70206.

For stirrup spacing and Camber diagram, see Dwg. #70280.

For diaphragm details, see Dwg. #70272 and #70273.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

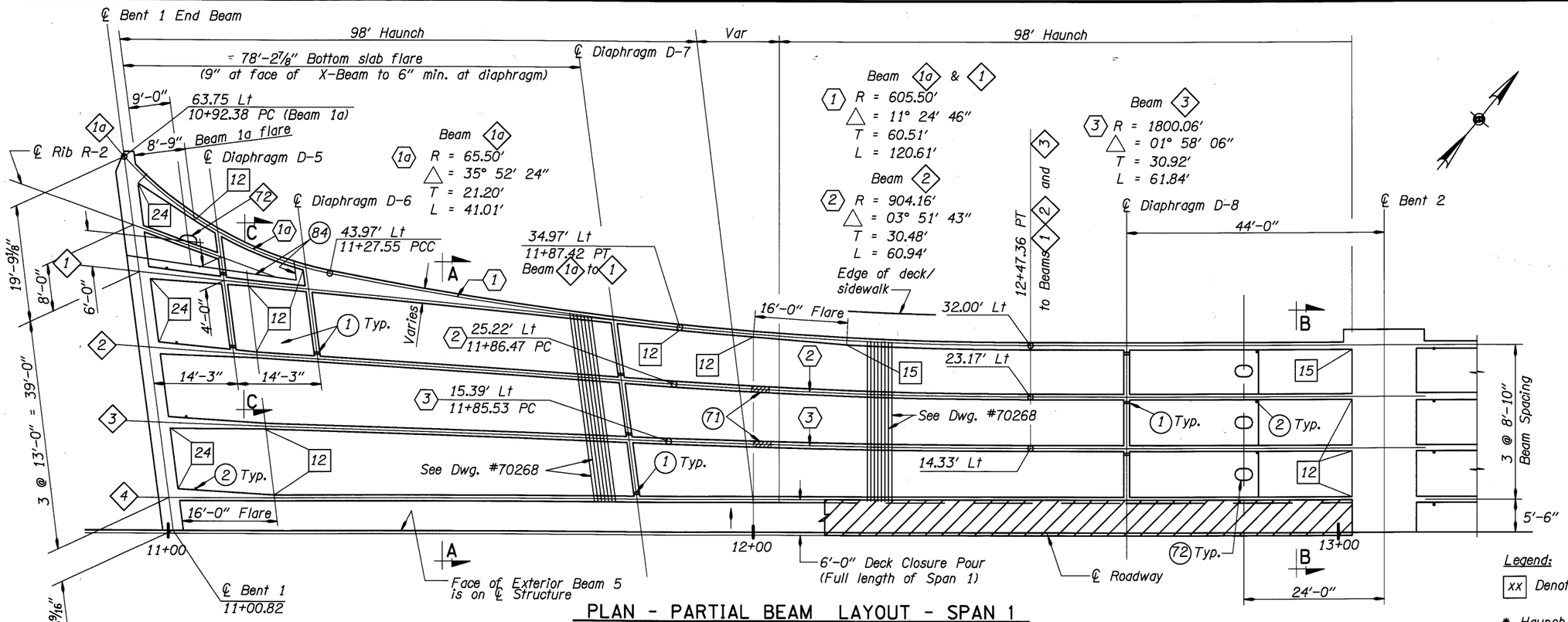
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LONGITUDINAL BEAM LAYOUT
SPAN 1 RIGHT SIDE

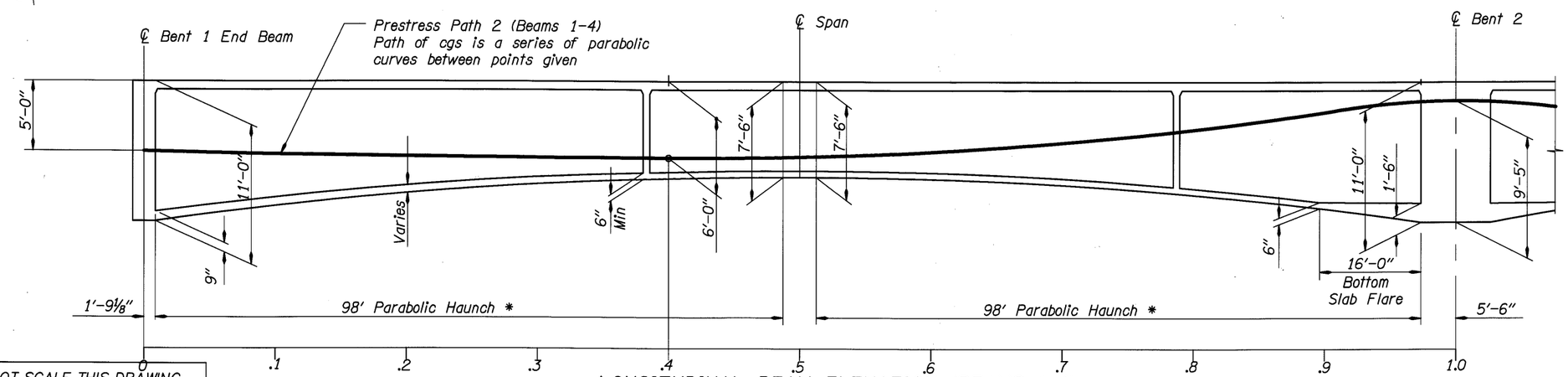
SHEET 71 OF 173
DRAWING NO. 70258

Xrefs: Odotbdr.dwg NEWSauvie_GIRDER.dwg SA064.dwg Sauvie0es.dwg



PLAN - PARTIAL BEAM LAYOUT - SPAN 1

Scale: 1″=10′



LONGITUDINAL BEAM ELEVATION (BEAMS 1-4)

No Scale

Legend:

xx Denotes beam stem width in inches

* Haunch length measured parallel to ℄ Roadway, see "Plan-Partial Beam Layout-Span 1"

Notes:

For Sections A-A, B-B, and C-C, see Dwg. #70262.

For reference notes, see Dwg. #70206.

For stirrup spacing and Camber Diagram, see Dwg. #70280.

For diaphragm details, see Dwg. #70272 and #70273.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CURTIS
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

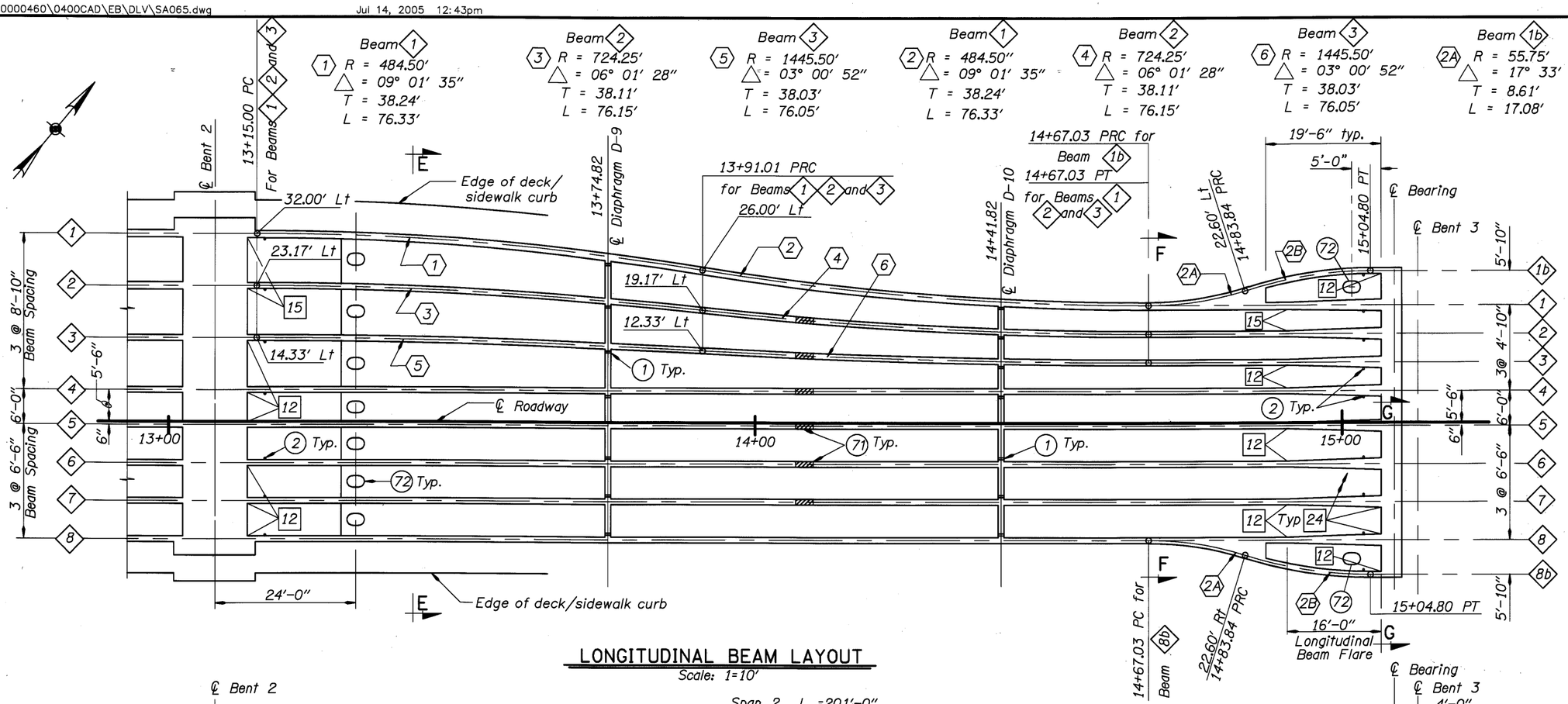
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LONGITUDINAL BEAM LAYOUT
SPAN 1 LEFT SIDE

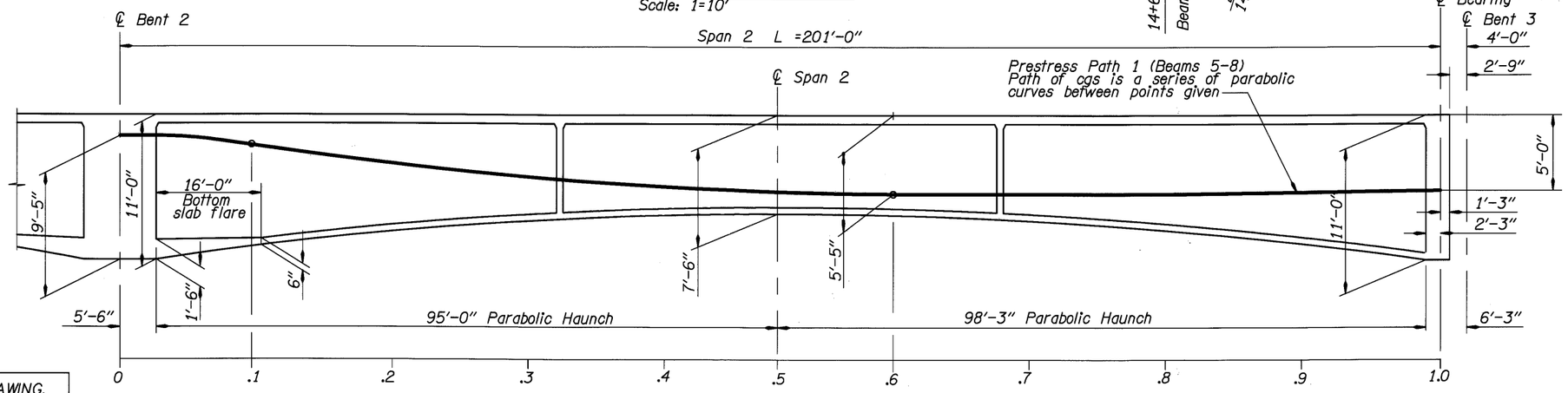
SHEET 72 OF 173
DRAWING NO. 70259

Xrefs: Odotbdr.dwg



LONGITUDINAL BEAM LAYOUT

Scale: 1=10′



LONGITUDINAL BEAM ELEVATION (BEAMS 5-8)

No Scale

Legend:

[xx] Denotes beam stem width in inches

Notes:

For Sections E-E, F-F, and G-G, see Dwg. #70264.

For reference notes, see Dwg. #70206.

For stirrup spacing and Camber Diagram, see Dwg. #70280.

For Diaphragm details, see Dwg. #70273.

For beams 9a and 13a reinforcement details, see Dwg. #70266 and #70267.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74540 PE OREGON MARCH 09, 2004 KENT WILLIAM CURTIS
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

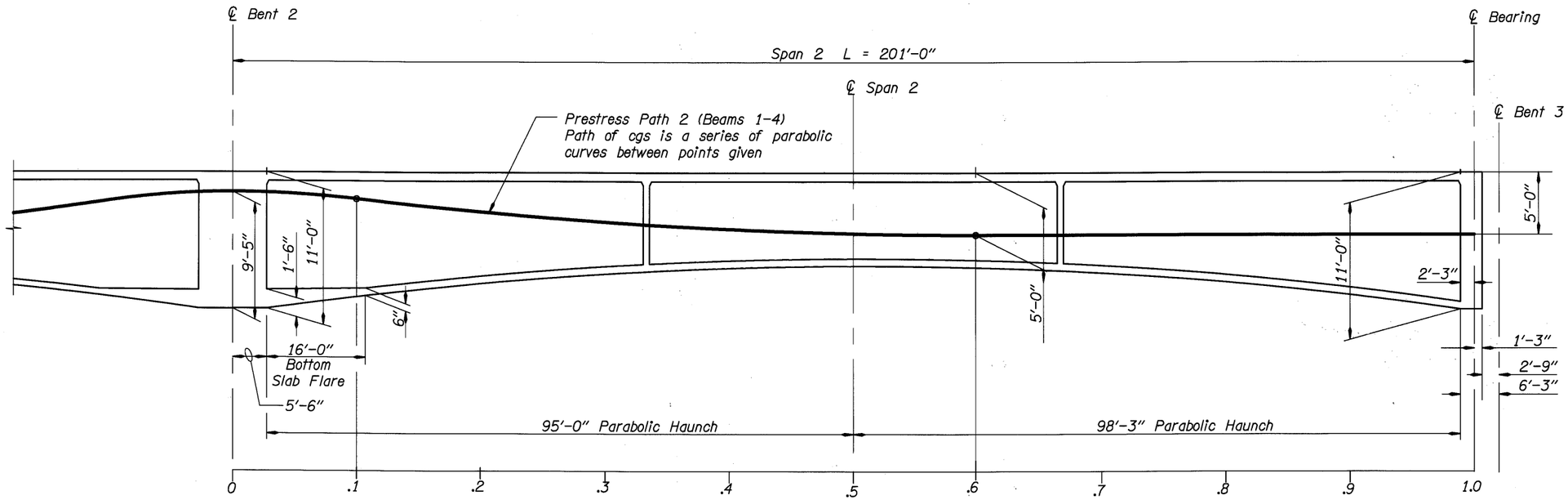
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LONGITUDINAL BEAM LAYOUT
SPAN 2 (1 OF 2)

SHEET 73 OF 173
DRAWING NO. 70260

Xrefs: Odotbdr.dwg



ELEVATION-LONGITUDINAL (BEAMS 1-4)

No Scale

Notes:

For stirrup spacing and Camber Diagram, see Dwg. #70280.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON KENT WILLIAM CORDTZ MARCH 09, 2004
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

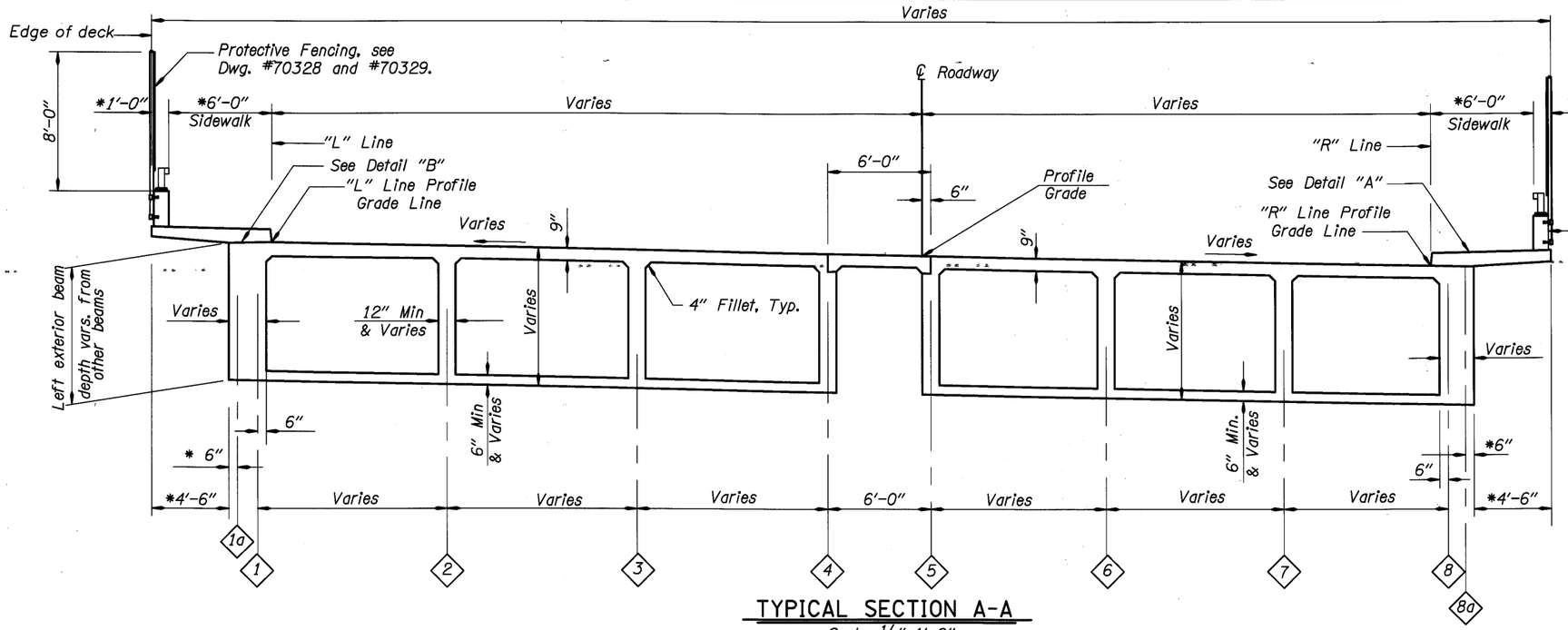
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LONGITUDINAL BEAM LAYOUT
SPAN 2 (2 OF 2)

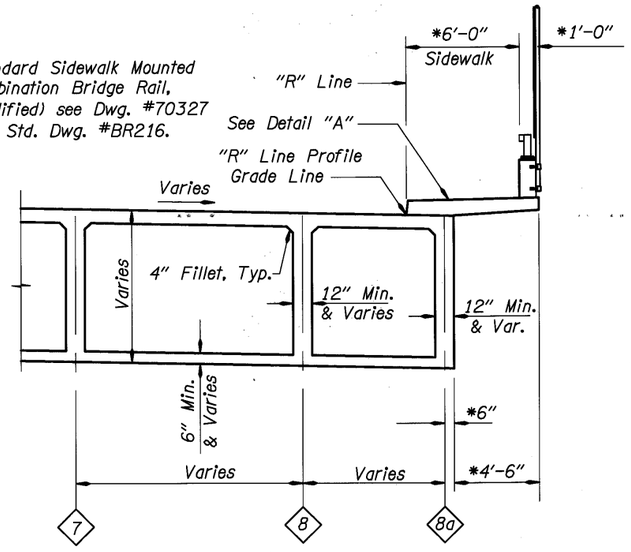
SHEET 74 OF 173
DRAWING NO. 70261

Xrefs: Odotbdr.dwg SA064.dwg



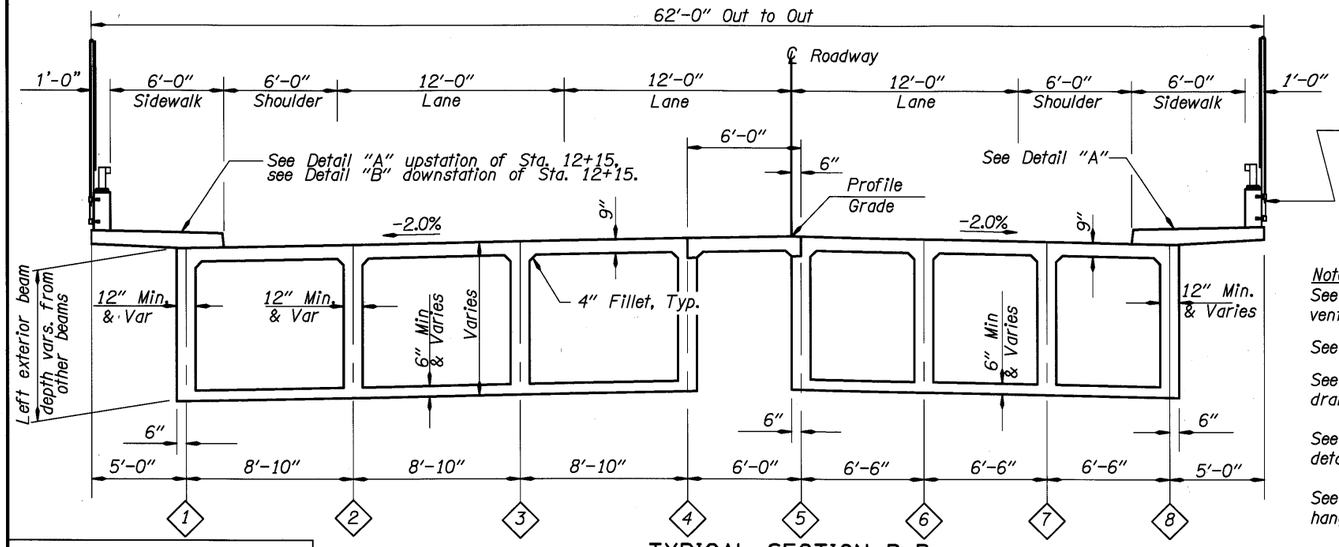
TYPICAL SECTION A-A

Scale: 1/4"=1'-0"
Section taken at Sta. 11+50±



PART TYPICAL SECTION D-D

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



TYPICAL SECTION B-B

Scale: 1/4"=1'-0"
Section taken at Sta. 12+90±

Note:
See Dwg. #BR135 and #BR136 for details of vent tube through stem.

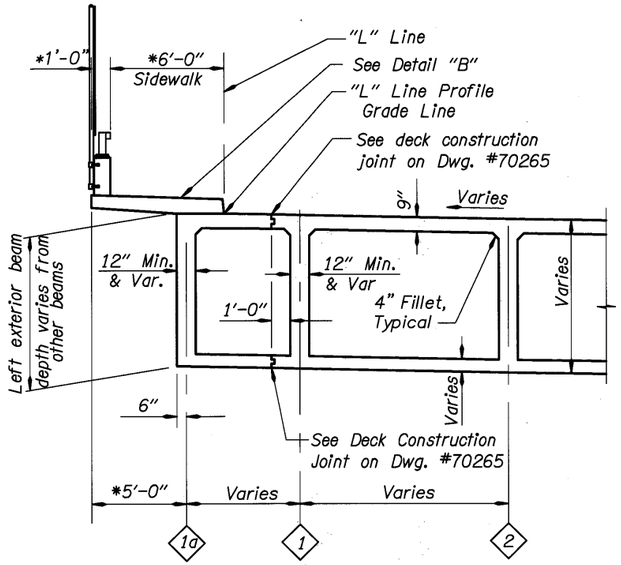
See Dwg. #70263 for Detail "A" and Detail "B"

See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.

Legend:
* x'-x" Denotes dimensions measured normal to edge of deck



PART TYPICAL SECTION C-C

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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

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	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Kent William Corbitt MARCH 09, 2004
EXPIRES: 12-31-05

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BRIDGE NO. 20136
DATE Sept. 2005
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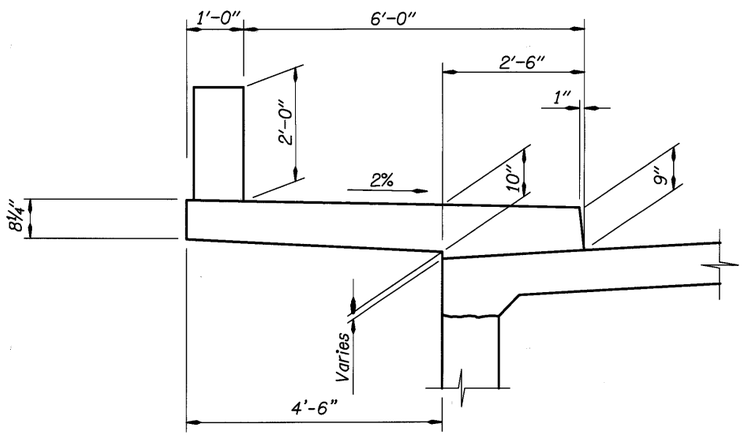
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

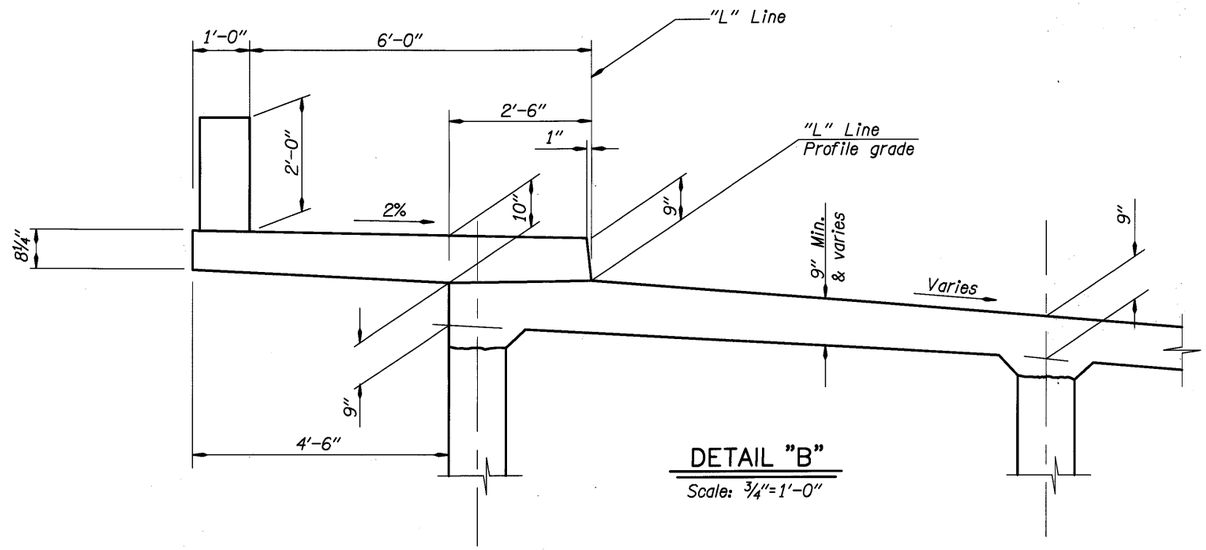
TYPICAL SECTIONS - SPAN 1 (1 OF 2)

SHEET 75 OF 173
DRAWING NO. 70262

Xrefs: Odotbdr.dwg SA080.dwg



DETAIL "A"
Scale: ¾"=1'-0"



DETAIL "B"
Scale: ¾"=1'-0"

Note:
See Dwg. #70262 for location of Detail "A" and Detail "B".

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

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DATE Sept. 2005
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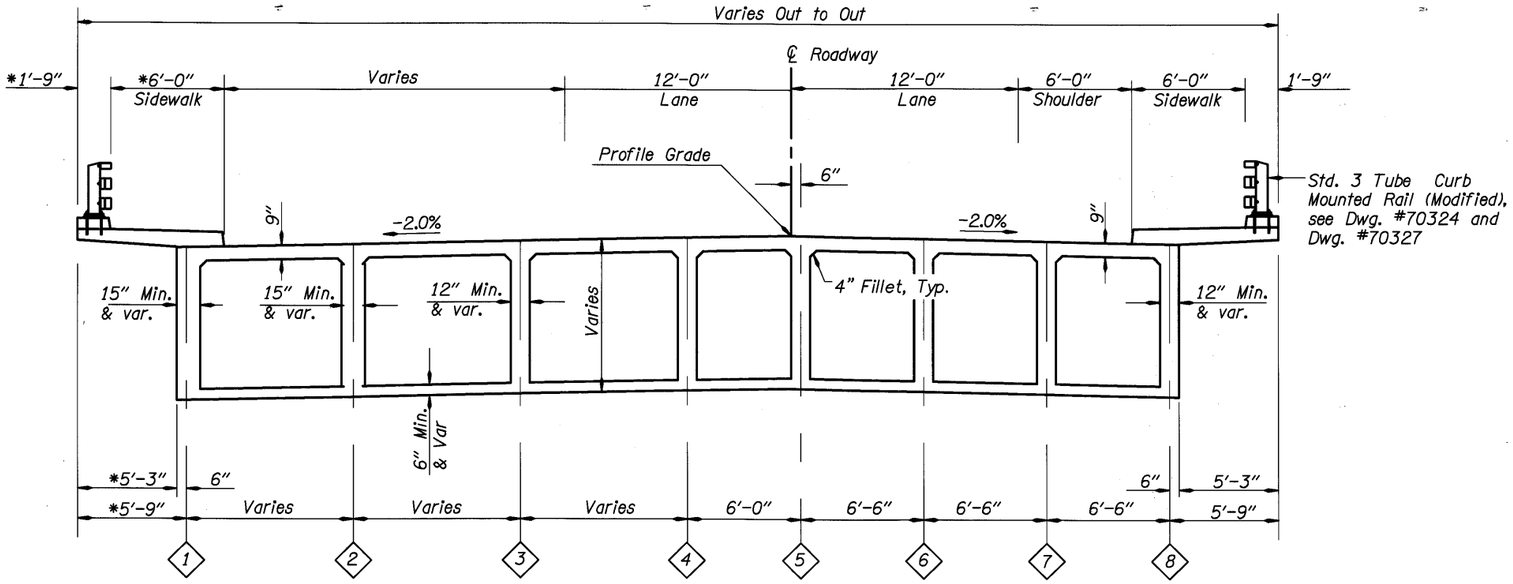
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TYPICAL SECTIONS - SPAN 1 (2 OF 2)

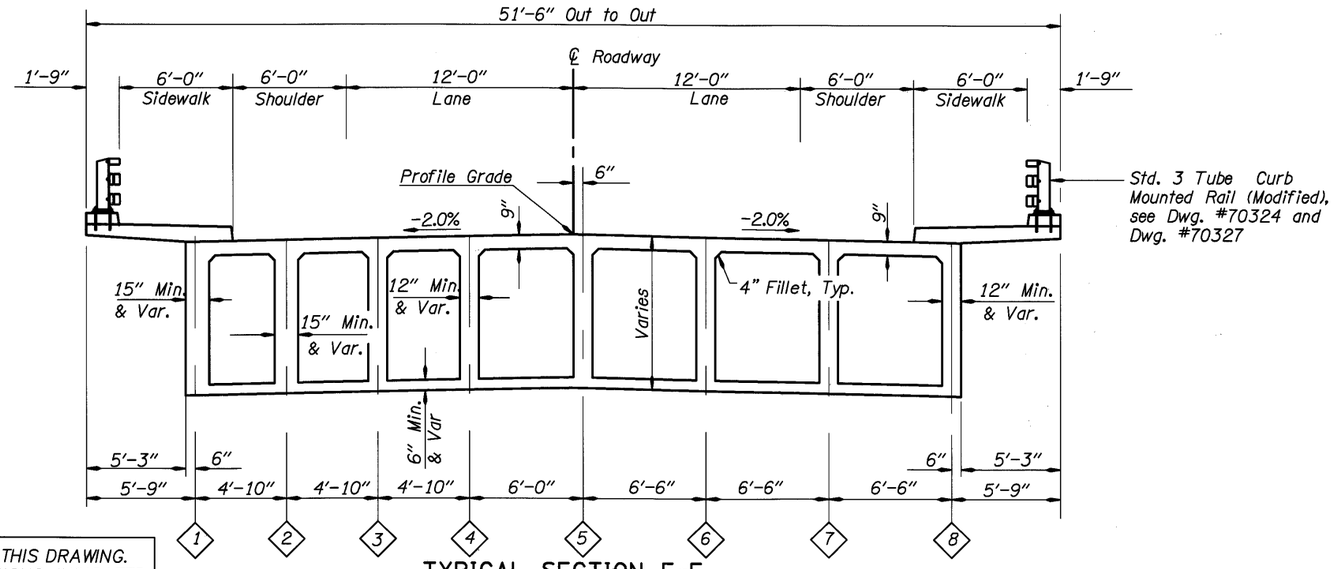
SHEET 76 OF 173
DRAWING NO. 70263

Xrefs: Odotbdr.dwg



TYPICAL SECTION E-E

Scale: 1/4"=1'-0"
Section taken at Sta. 13+35±



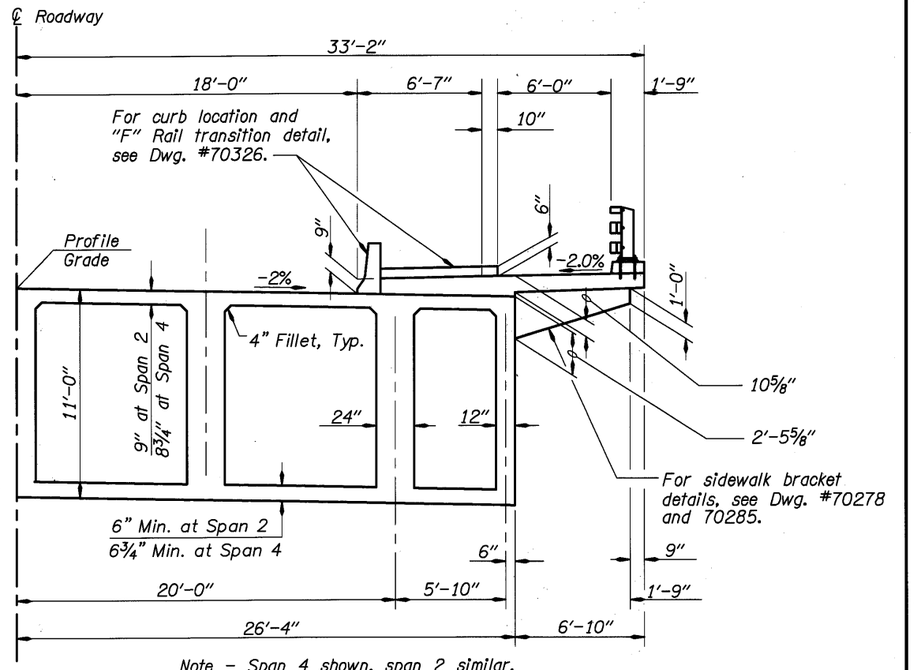
TYPICAL SECTION F-F

Scale: 1/4"=1'-0"
Section taken at Sta. 14+67.03

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

Legend:
*x'-x" Denotes dimensions measured normal to edge of deck.

Notes:
See Dwg. #BR135 and BR136 for details of vertical tubes through stems.
See Dwg. #70336 and #70337 for deck drainage details.
See Dwg. #70343 to #70355 for lighting details and conduit locations.
See Dwg. #70360 for utility conduit and hanger details.



Note - Span 4 shown, span 2 similar.

PART SECTION G-G

Scale: 1/4"=1'-0"
Section taken at face of end beam

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

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CHECKED: Gernot Komar
DESIGNED: Josh Hewes

REVIEWED
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EXPIRES: 12-31-05

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DATE Sept. 2005
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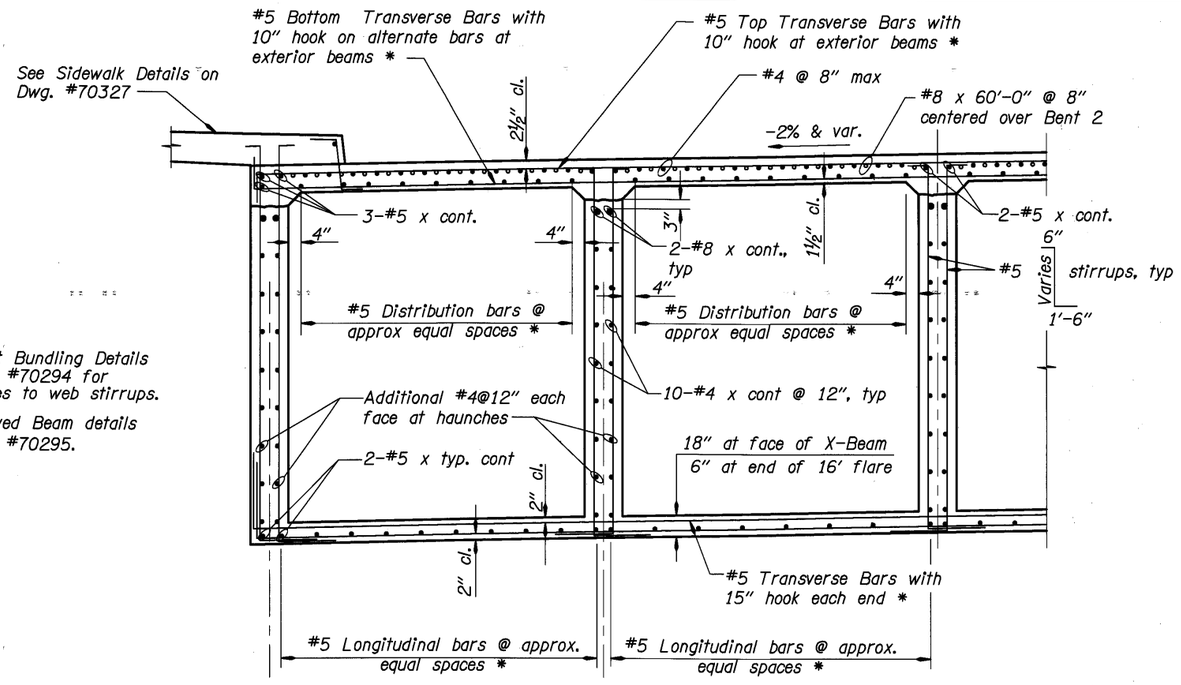
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TYPICAL SECTIONS - SPAN 2

SHEET 77 OF 173.
DRAWING NO. 70264

Xrefs: Odotbdr.dwg



TYPICAL EXTERIOR CELL TYPICAL INTERIOR CELL

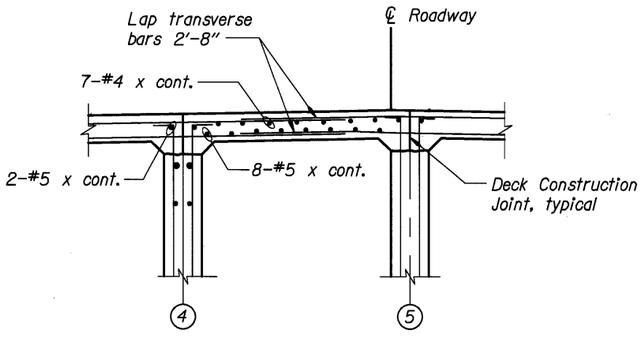
Notes:
See Duct Bundling Details on Dwg. #70294 for clearances to web stirrups.

See Curved Beam details on Dwg. #70295.

* See Table on Dwg. #70268 for bar spacing and placement.

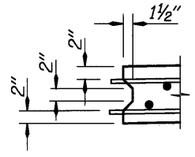
PART TYPICAL SECTION - SPANS 1 AND 2

Scale: ½" = 1'-0"



SPAN 1 DECK CLOSURE POUR

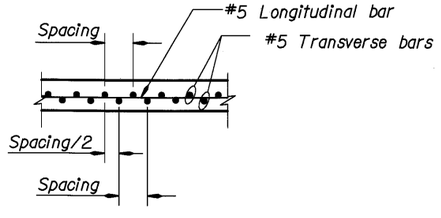
Scale: ½" = 1'-0"



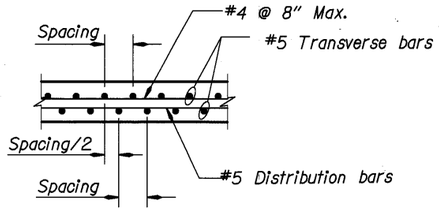
Note:
For location, see Dwg. #70208 and #70262

DECK CONSTRUCTION JOINT

No Scale



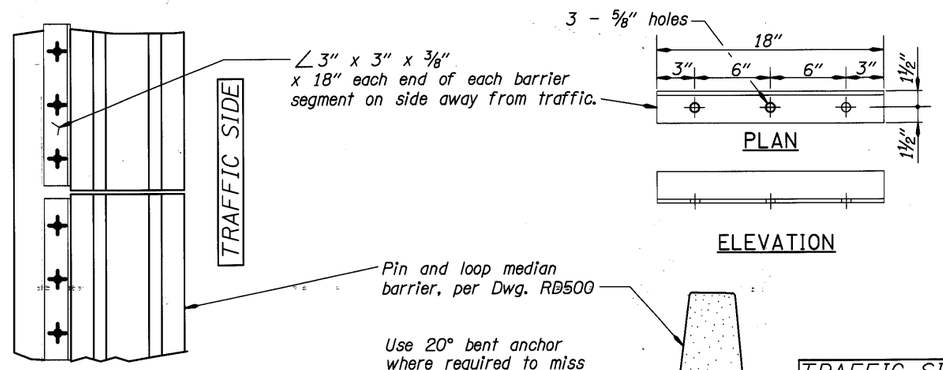
BOTTOM SLAB



DECK SLAB

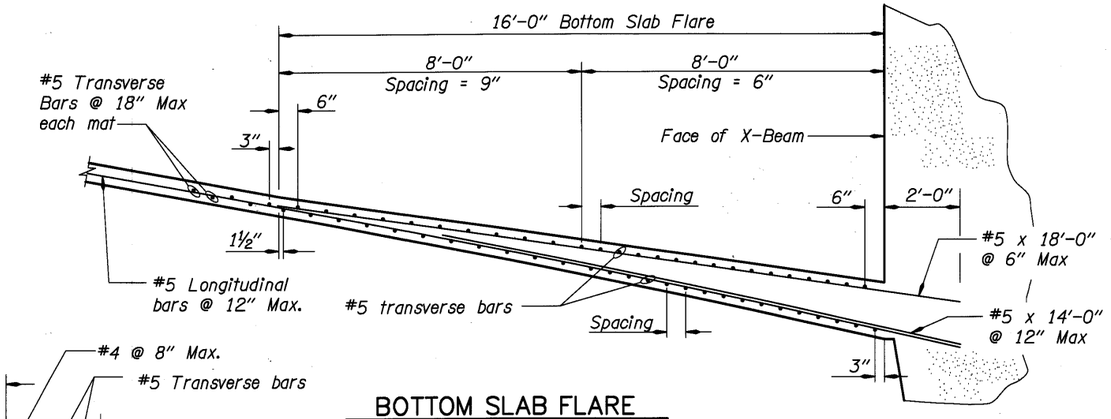
TRANSVERSE STEEL SPACING DIAGRAMS

No scale



TEMPORARY BARRIER RESTRAINT DETAIL

No Scale



BOTTOM SLAB FLARE

Scale: ½"=1'-0"

Note:
For additional reinforcement at columns, see Section A-A on Dwg. #70276

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	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CURTIS
EXPIRES: 12-31-05

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BRIDGE NO. 20136
DATE Sept. 2005
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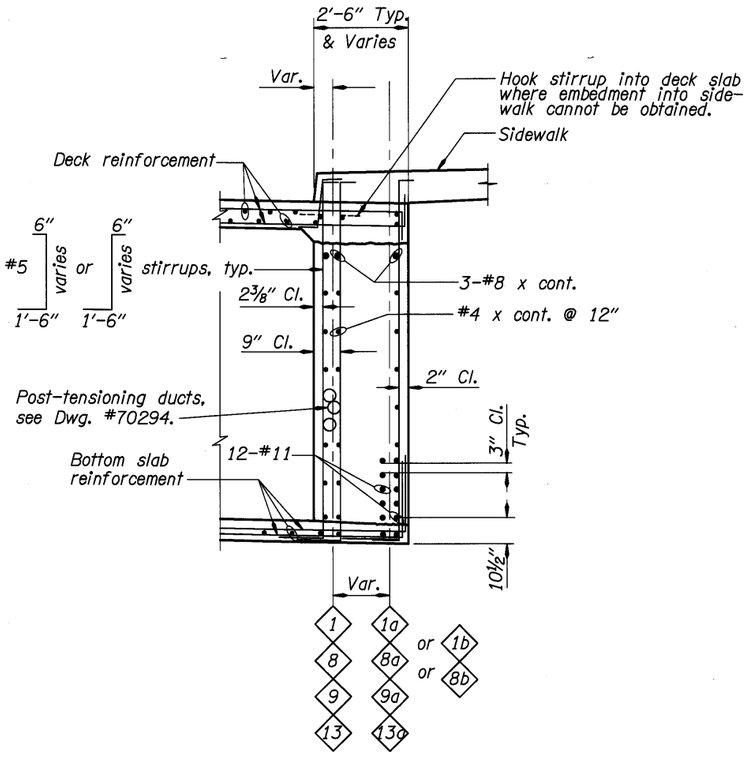
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BOX GIRDER REINFORCEMENT
SPANS 1 AND 2 (1 OF 3)

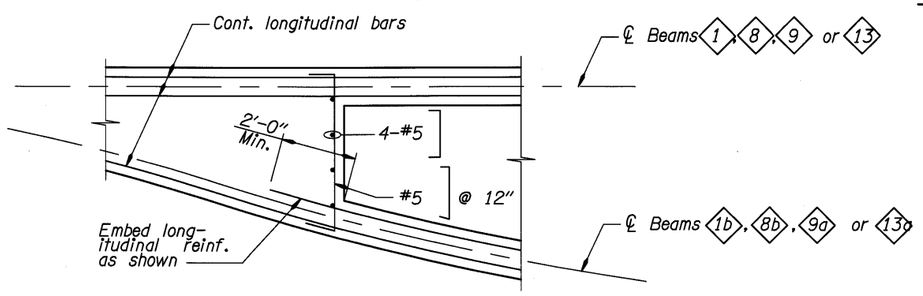
SHEET 78 OF 173.
DRAWING NO. 70265

Xrefs: Odotbdr.dwg SA080.dwg



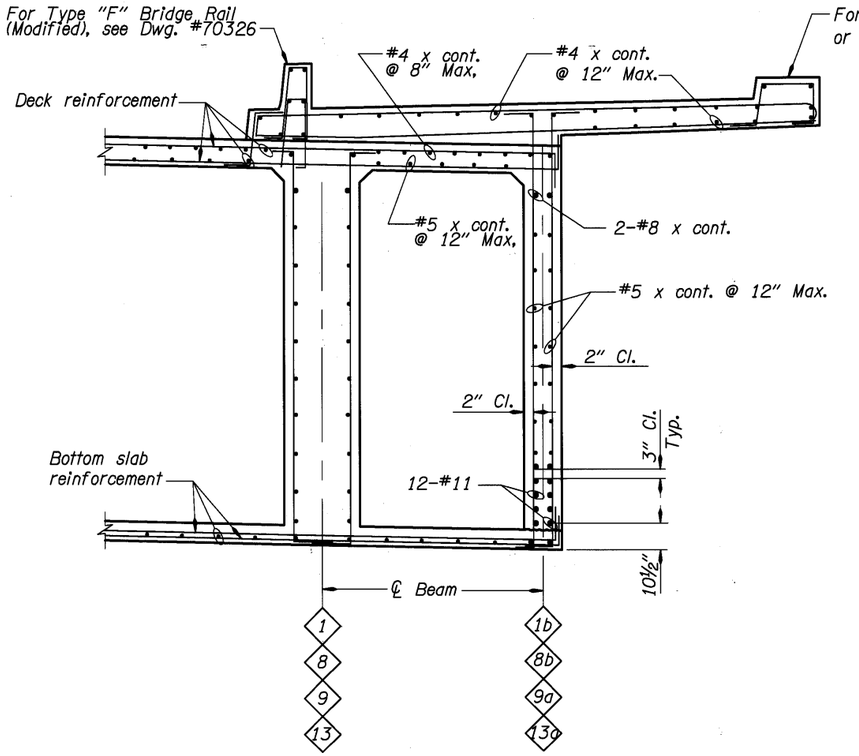
MERGING BEAM DETAIL

Scale: ½"=1'-0"



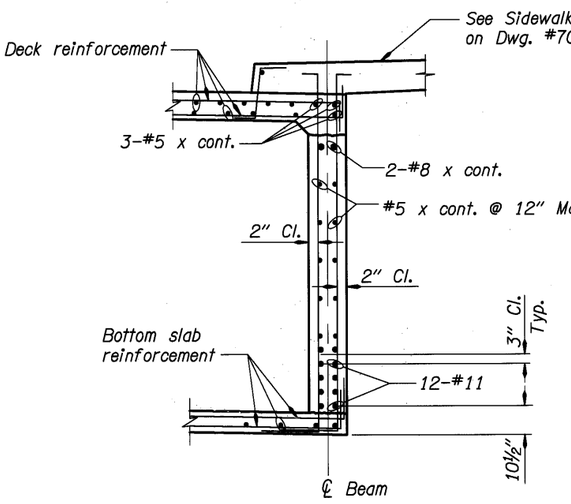
PART PLAN AT BEAM BIFURCATION

Scale: ½"=1'-0"



PART SECTION - BEAMS 1b, 8b, 9a, AND 13a

Scale: ½"=1'-0"



PART SECTION - BEAMS 1a AND 8a

Scale: ½"=1'-0"

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	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Kent Craig MARCH 09, 2004 KENT WILLIAM CRAIG
EXPIRES: 12-31-05

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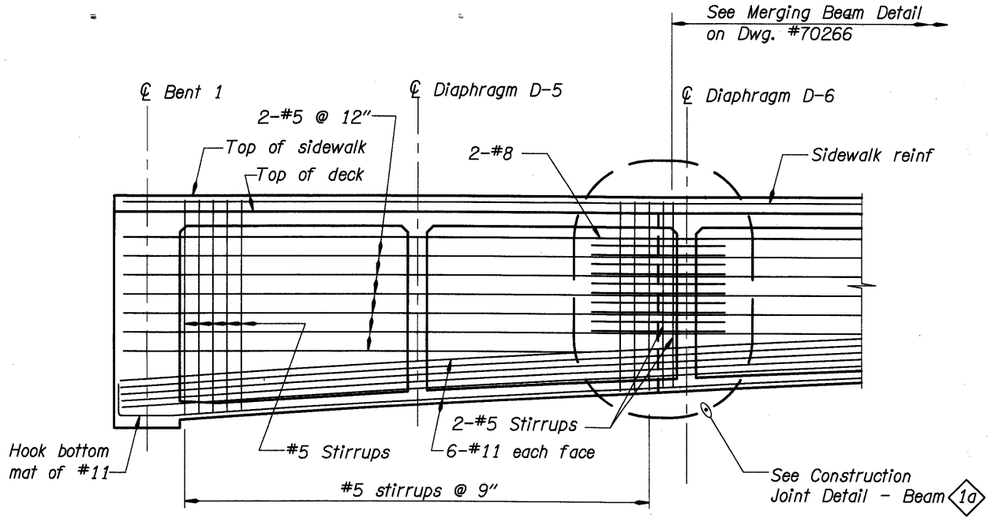
BOX GIRDER REINFORCEMENT - SPANS 1 AND 2 (2 OF 3)

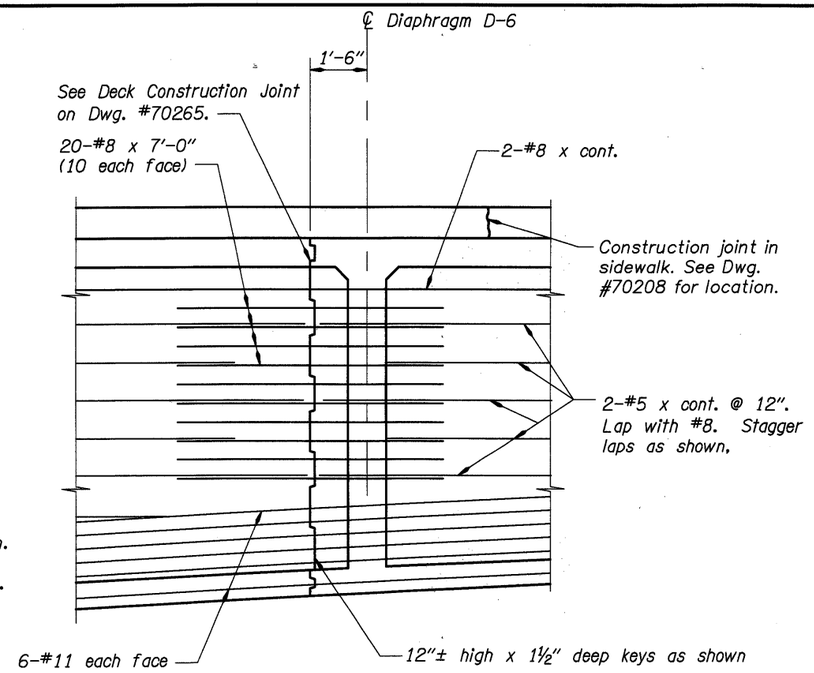
SHEET 79 OF 173
DRAWING NO. 70266

Xrefs: Odotbdr.dwg



PART ELEVATION - LONGITUDINAL BEAM 1a

Scale: ¼"=1'-0"

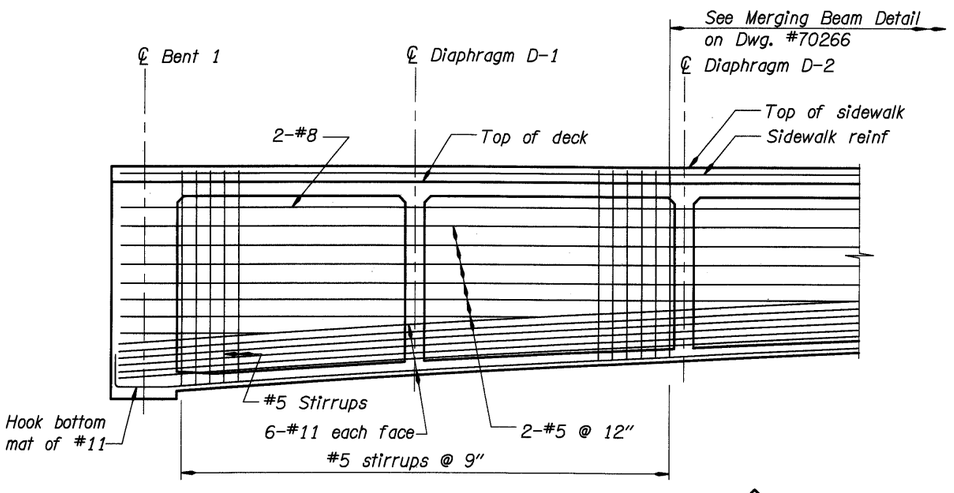


CONSTRUCTION JOINT DETAIL - BEAM 1a

Scale: ½"=1'-0"

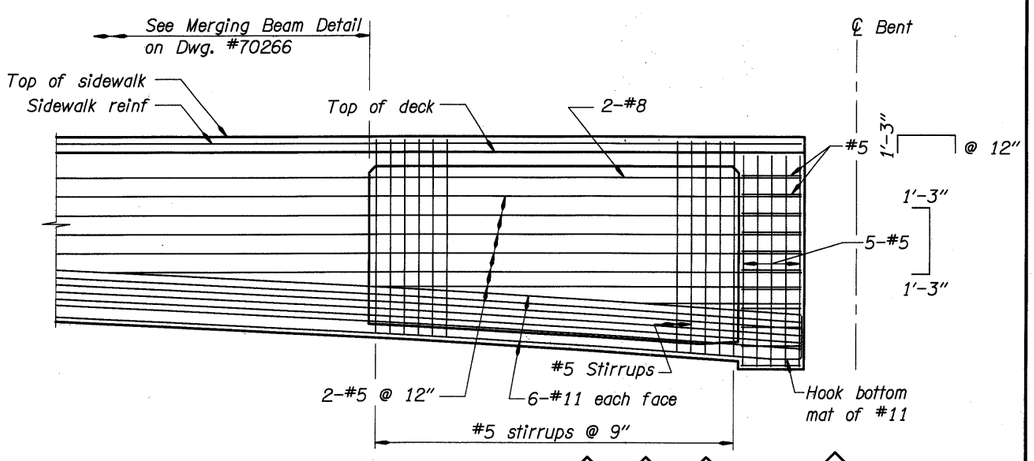
Notes:

1. All reinforcement not shown.
2. Roughen construction joints.



PART ELEVATION - LONGITUDINAL BEAM 8a

Scale: ¼"=1'-0"



PART ELEVATION - LONGITUDINAL BEAM 1b, 8b, 9a, AND 13a

Scale: ¼"=1'-0"

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DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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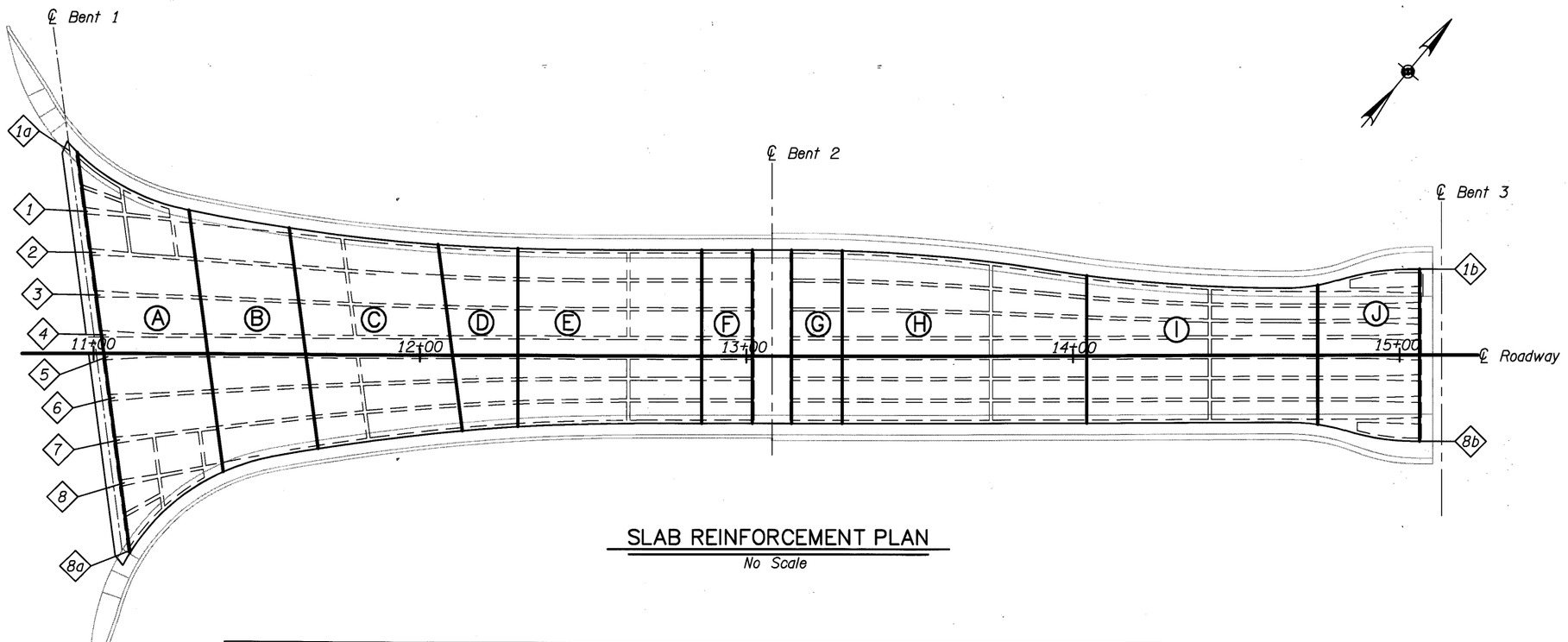
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BOX GIRDER REINFORCEMENT - SPANS 1 AND 2 (3 OF 3)

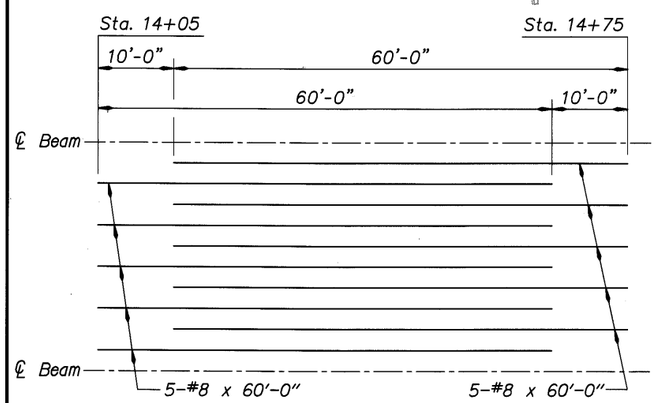
SHEET 80 OF 173
DRAWING NO. 70267

Xrefs: Odotbdr.dwg



SLAB REINFORCEMENT PLAN

No Scale



REGION I DETAIL

No Scale

Note: All reinforcement not shown

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SPANS 1 & 2 - SLAB REINFORCEMENT

Region See Note 1	Begin Station	End Station	Deck Reinforcement		Bottom Slab Reinforcement	
			Transverse Bars (Each Mat)	Distribution Bars (Bottom Mat)	Transverse Bars (Each Mat)	Longitudinal Bars (1 Mat)
Span 1						
A	Bent 1	11+35	#5@4"	#5@6" Max.	#5@12"	#5@8" Max.
B	11+35	11+65	#5@5"	#5@7½" Max	#5@15"	#5@9" Max.
C	11+65	12+10	#5@6"	#5@9" Max.	#5@18"	#5@11" Max.
D	12+10	12+30	#5@7"	#5@10½" Max.	#5@18"	#5@12" Max.
E	12+30	12+86.32	#5@8"	#5@12" Max.	#5@18"	#5@12" Max.
F	12+86.32	Bent 2	#5@8"	#5@12" Max.	See Note 2	See Note 2
Span 2						
G	Bent 2	13+29.32	#5@8"	#5@12" Max.	See Note 2	See Note 2
H	13+29.32	14+05	#5@8"	#5@12" Max.	#5@18"	#5@12" Max.
I	14+05	14+75	#5@8"	#5@12" Max.	#5@18"	See Note 8
J	14+75	Bent 3	#5@8"	#5@12" Max.	#5@18"	#5@12" Max.

NOTES

1. See Slab Reinforcement Plan for limits of each region.
2. For reinforcement at bottom slab flare, see Bottom Slab Flare details on Dwg. #70265.
3. Place transverse bars in Region A through C parallel to centerline Bent 1.
4. Place transverse bars in Region E through H parallel to centerline Bent 2.
5. Place transverse bars in Region D parallel to centerline Bent 1 at Station 12+10 and parallel to centerline Bent 2 at Station 12+30. Transition placement between these limits.
6. Space transverse bars for Beams 1-4 along centerline Beam 1 in Region D.
7. Space transverse bars for Beams 5-8 along centerline Beam 5 in Region D.
8. For longitudinal bars in bottom slab of Region I, provide 70-#8 x 60'-0" (10 per bay) in addition to #5 x cont. @ 12" max. Bundle alternate #8 bars with #5 bars. See Region I Detail.
9. For additional deck and bottom slab reinforcement adjacent to end beams, see Dwg. #70293.

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74540 PE OREGON MARCH 09, 2004 Kent William Corbitt
EXPIRES: 12-31-05

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BRIDGE NO. 20136
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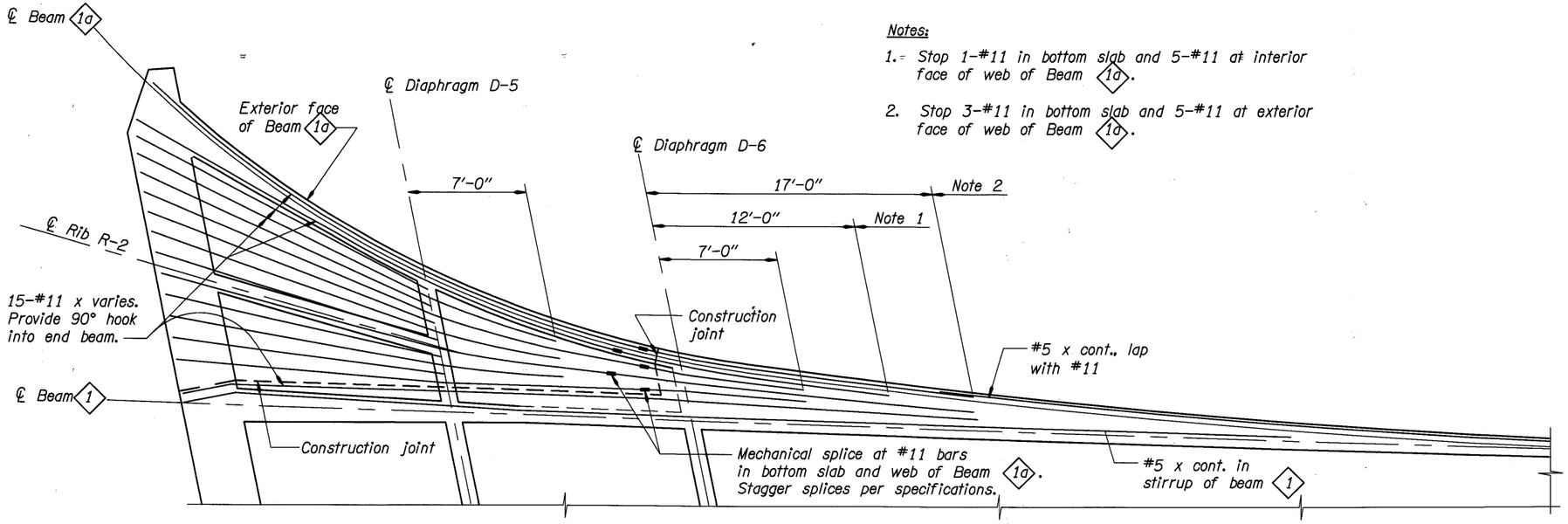
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK REINFORCEMENT
SPANS 1 AND 2 (1 OF 2)

SHEET 81 OF 173
DRAWING NO. 70268

Xrefs: Olotitbdr.dwg SA064.dwg SA063.dwg

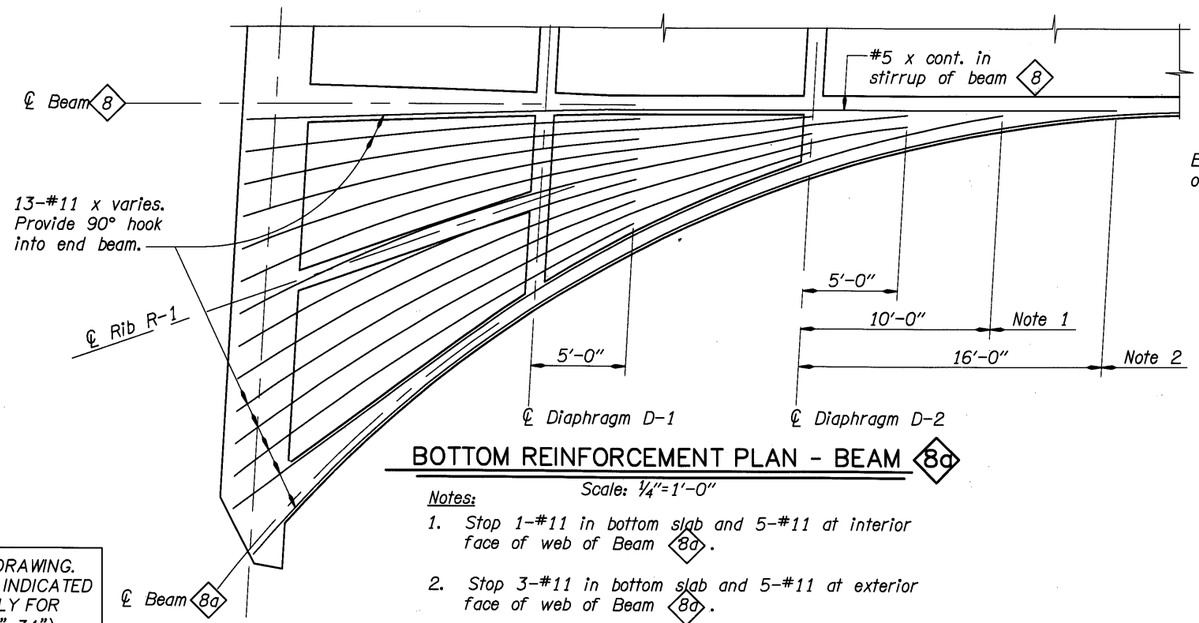


Notes:

1. Stop 1-#11 in bottom slab and 5-#11 at interior face of web of Beam 1a.
2. Stop 3-#11 in bottom slab and 5-#11 at exterior face of web of Beam 1a.

BOTTOM REINFORCEMENT PLAN - BEAM 1a

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

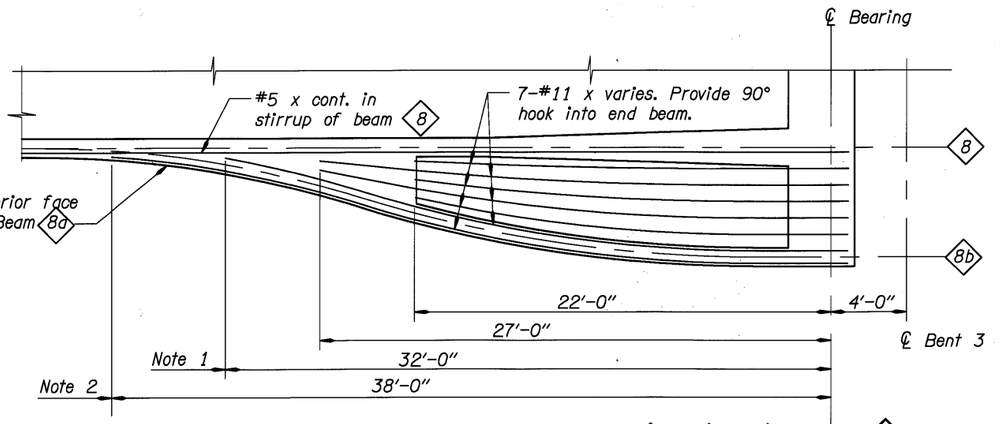


BOTTOM REINFORCEMENT PLAN - BEAM 8a

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

Notes:

1. Stop 1-#11 in bottom slab and 5-#11 at interior face of web of Beam 8a.
2. Stop 3-#11 in bottom slab and 5-#11 at exterior face of web of Beam 8a.



BOTTOM REINFORCEMENT PLAN - BEAMS 1b, 8b, 9a, AND 13a

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

1. Stop 1-#11 in bottom slab and 5-#11 at interior face of web of Beam 8b.
2. Stop 1-#11 in bottom slab and 5-#11 at exterior face of web of Beam 8b.
3. Plan shown for Beam 8b. Beams 1b, 9a, and 13a are similar

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
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OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

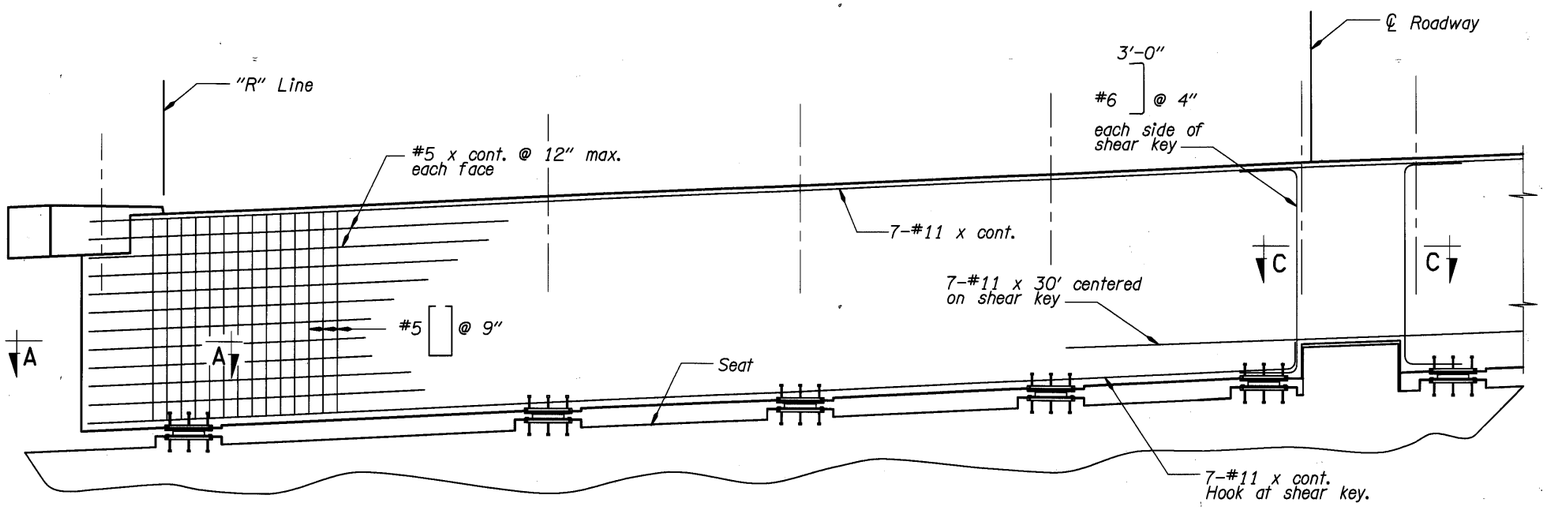
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK REINFORCEMENT - SPANS 1 AND 2 (2 OF 2)

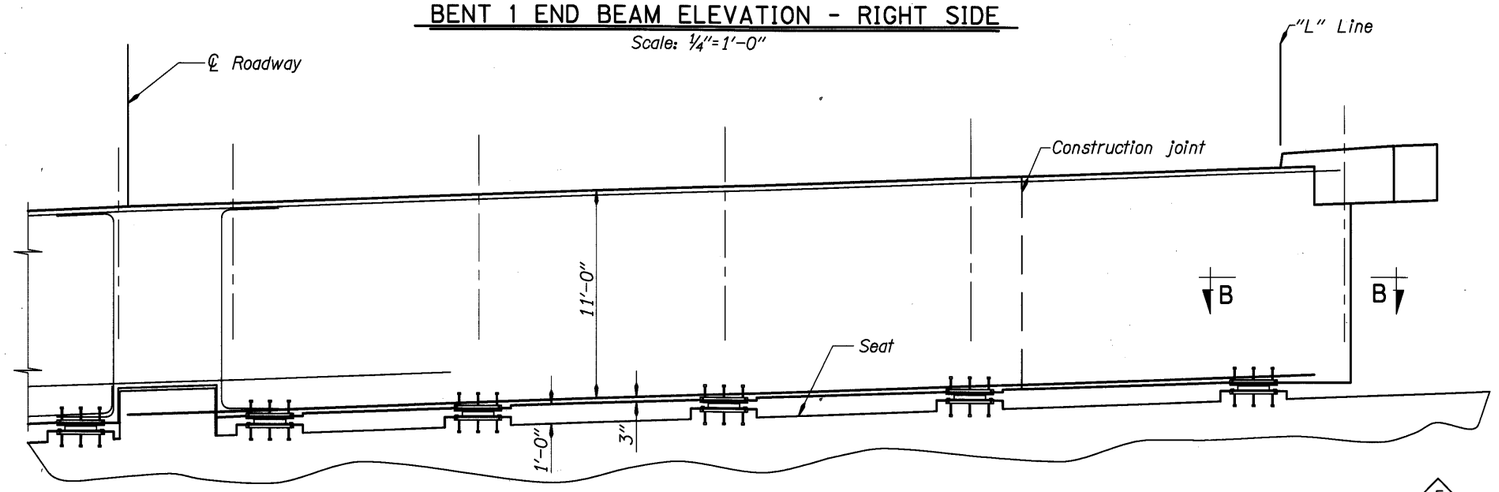
SHEET 82 OF 173
DRAWING NO. 70269

Xrefs: Odotbdr.dwg



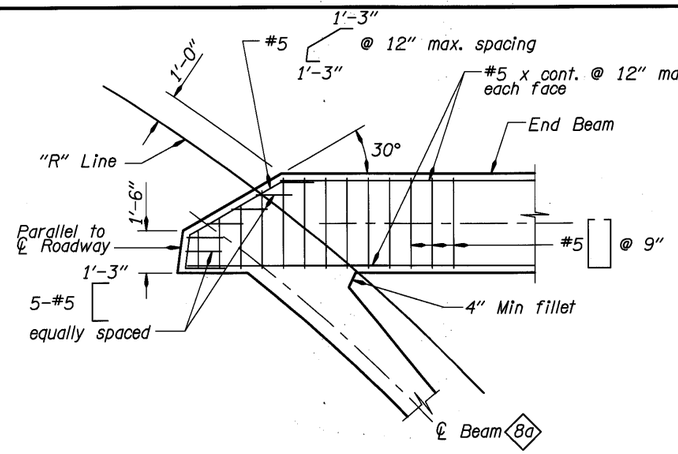
BENT 1 END BEAM ELEVATION - RIGHT SIDE

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



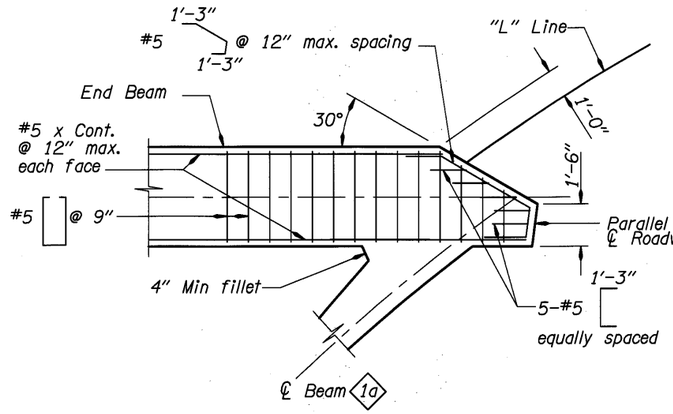
BENT 1 END BEAM ELEVATION - LEFT SIDE

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



SECTION A-A

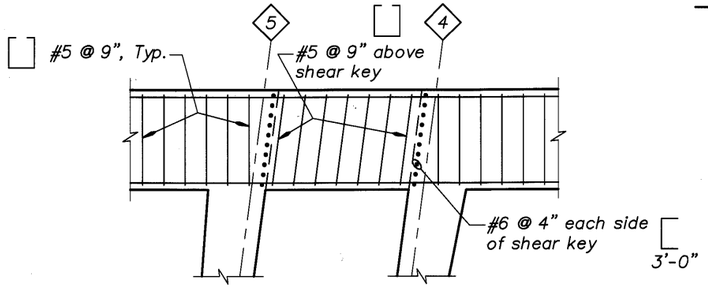
Scale: 3/8"=1'-0"



SECTION B-B

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

Note:
For end beam reinforcement and details, see Dwg. #70293.



SECTION C-C

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

Note:
See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 71549 PE OREGON MARCH 09, 2004 BRENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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BRIDGE NO. 20136
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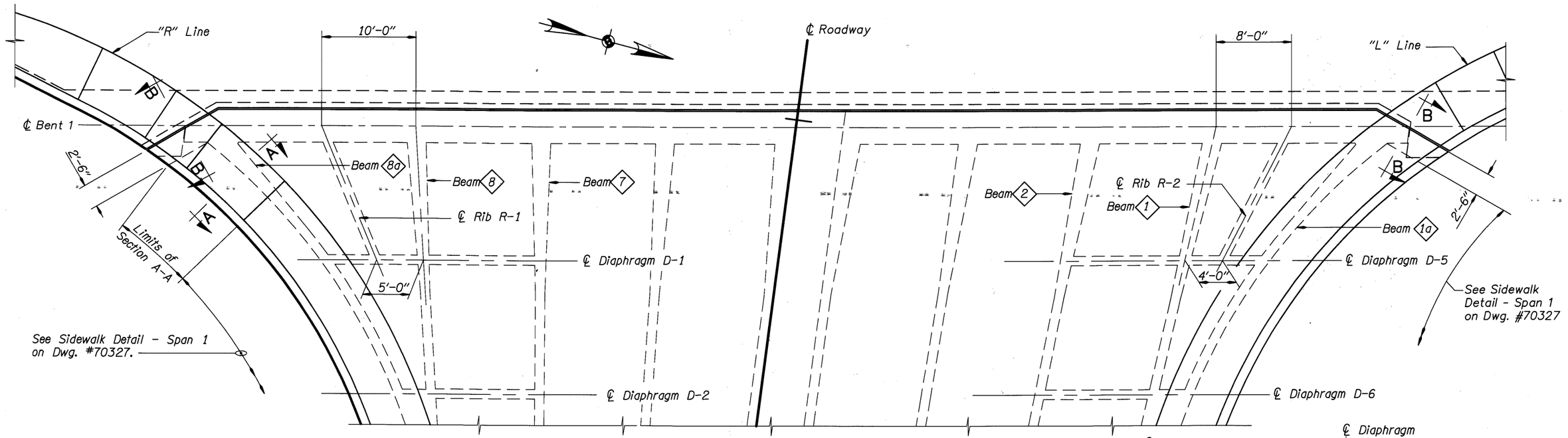
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 1 - END BEAM DETAILS

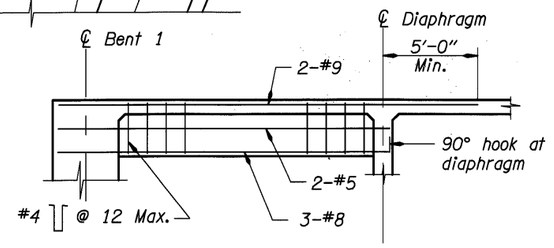
SHEET 83 OF 173
DRAWING NO. 70270

Xrefs: Odotbdr.dwg SA138.dwg



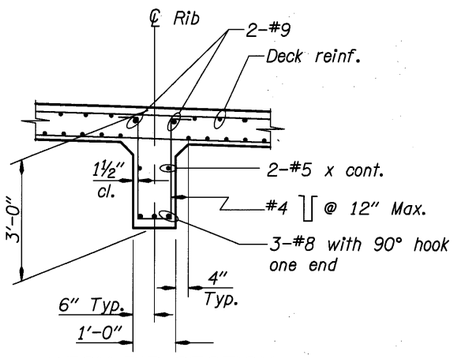
PLAN - BENT 1

Scale: 3/16"=1'-0"



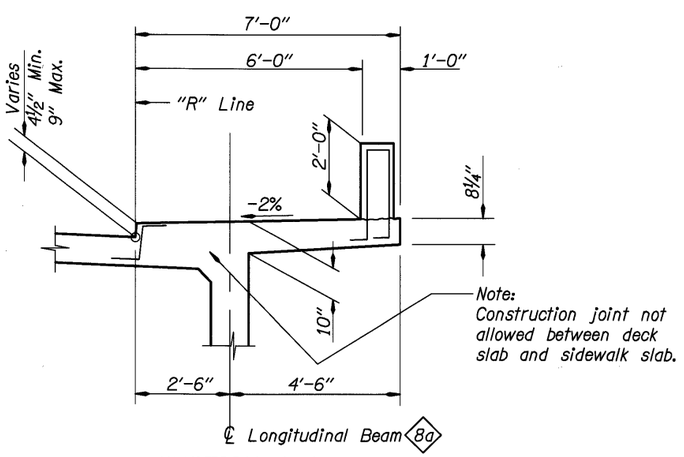
DECK RIB ELEVATION

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



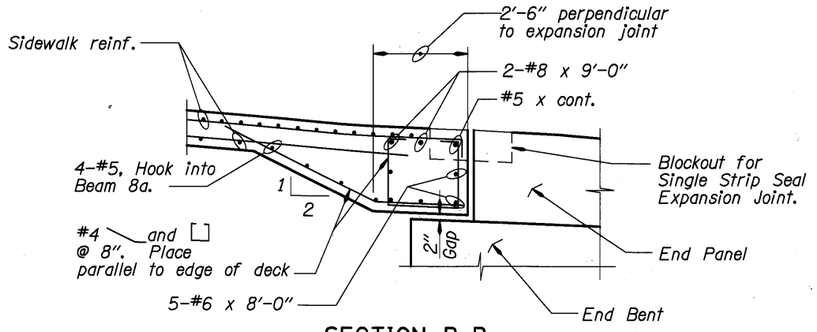
DECK RIB SECTION

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



SECTION A-A

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



SECTION B-B

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

For reinforcement, see Sidewalk Details - Span 1 on Dwg. #70327.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 08, 2000 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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BRIDGE NO. 20136
DATE Sept. 2005
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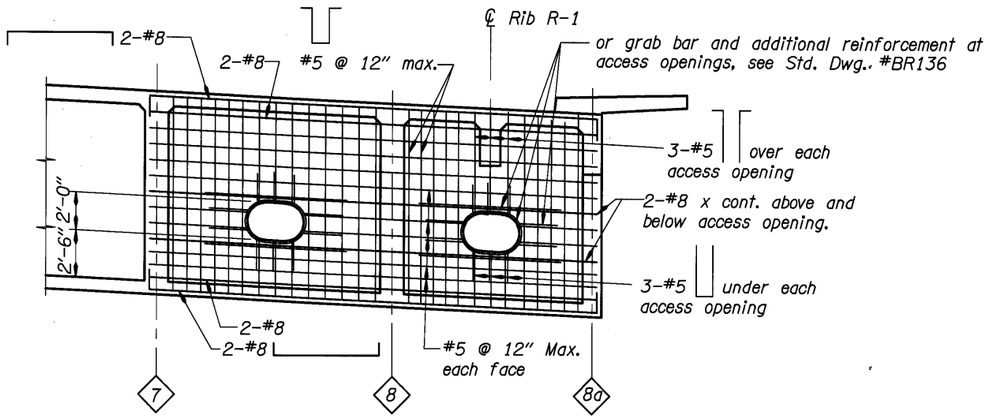
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

PART LAYOUT - SPAN 1

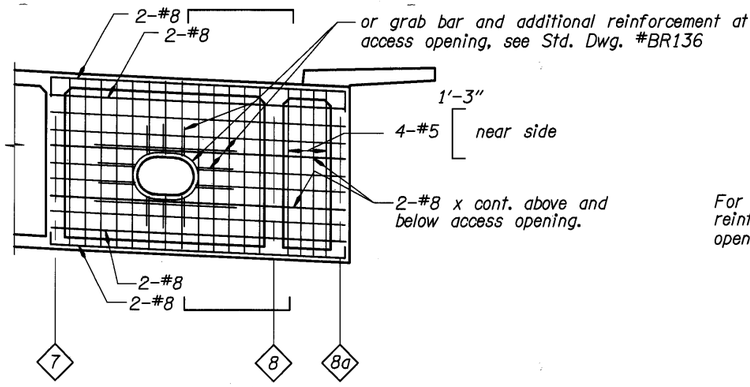
SHEET 84 OF 173
DRAWING NO. 70271

Xrefs: Odotbdr.dwg



DIAPHRAGM D-1

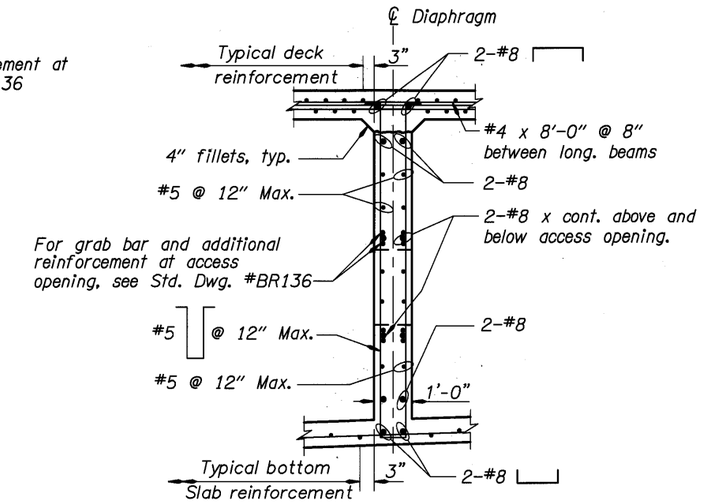
Scale: ¼"=1'-0"



DIAPHRAGM D-2

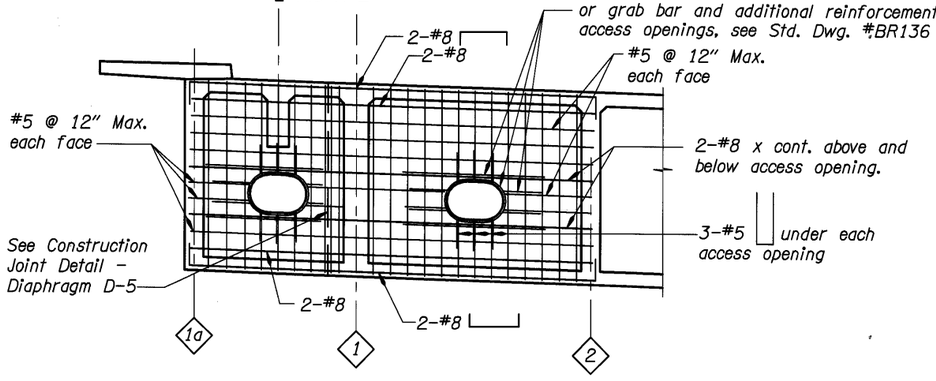
Scale: ¼"=1'-0"

For details and reinforcement not shown or noted, see Diaphragm D-1.



SECTION - DIAPHRAGMS D-1, D-2, D-5 AND D-6

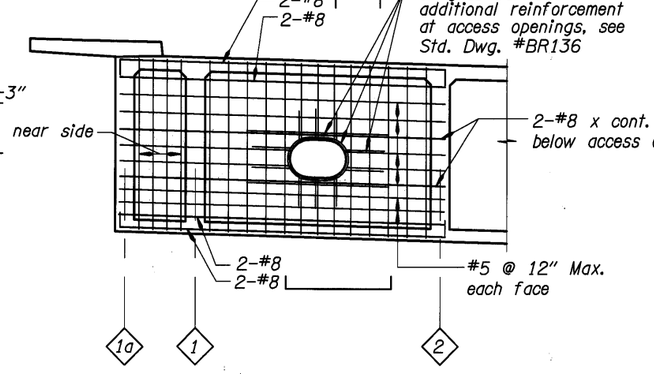
Scale: ½"=1'-0"



DIAPHRAGM D-5

Scale: ¼"=1'-0"

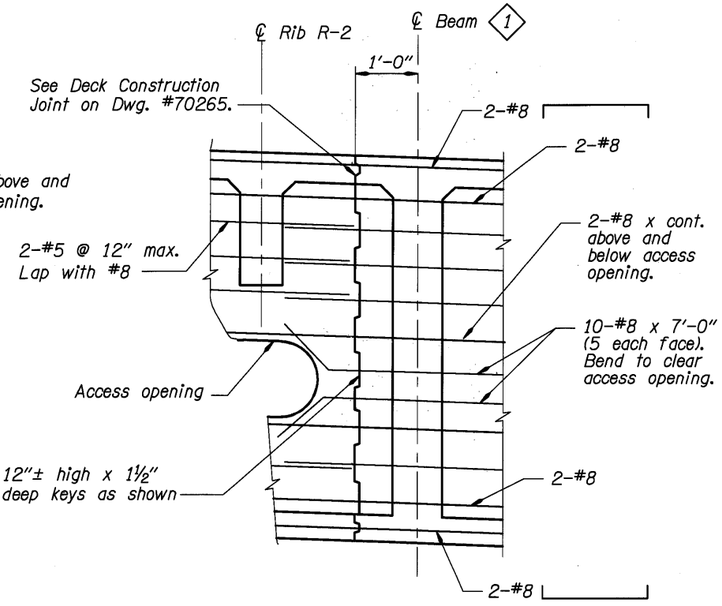
For details and reinforcement not shown or noted, see Diaphragm D-1.



DIAPHRAGM D-6

Scale: ¼"=1'-0"

For details and reinforcement not shown or noted, see Diaphragm D-1.



CONSTRUCTION JOINT DETAIL -DIAPHRAGM D-5

Scale: ½"=1'-0"

Notes:
1. All reinforcement not shown.
2. Roughen construction joints.

Note:
See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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BRIDGE ENGINEERING SECTION

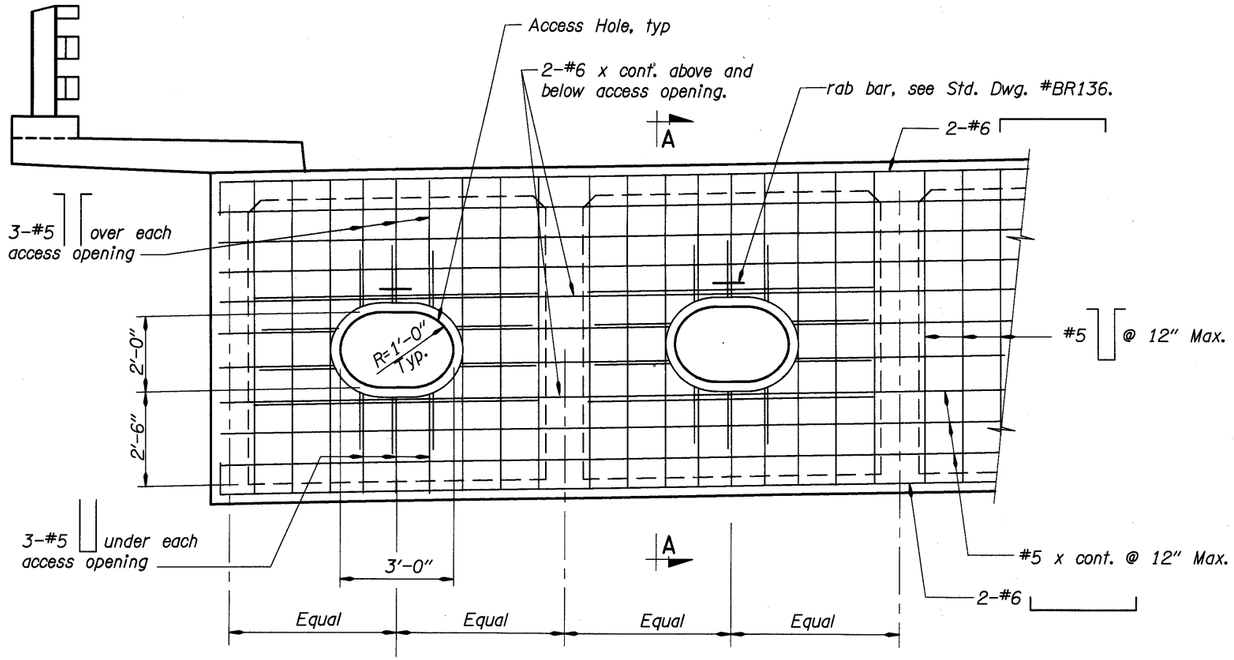
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DIAPHRAGM DETAILS

SHEET 85 OF 173
DRAWING NO. 70272

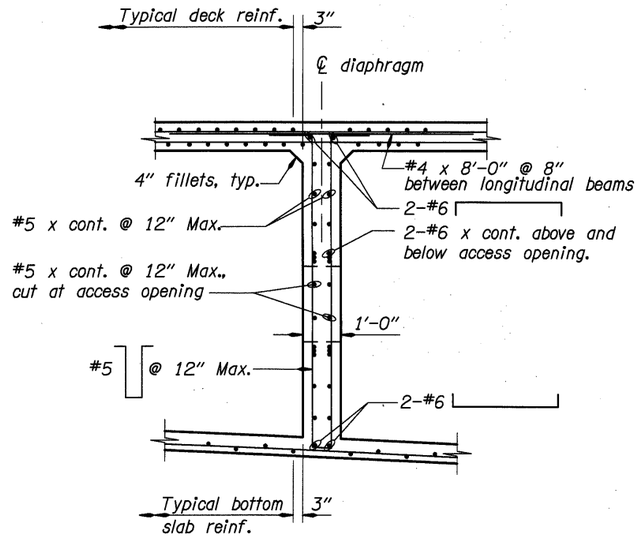
Xrefs: odotbdr.dwg



TYPICAL DIAPHRAGM ELEVATION

Scale: ½" = 1'-0"

For additional reinforcement at access opening, see Std. Dwg. #BR136.



SECTION A-A

Scale: ½" = 1'-0"

Note:

See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
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DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 08, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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BRIDGE NO. 20136
DATE Sept. 2005
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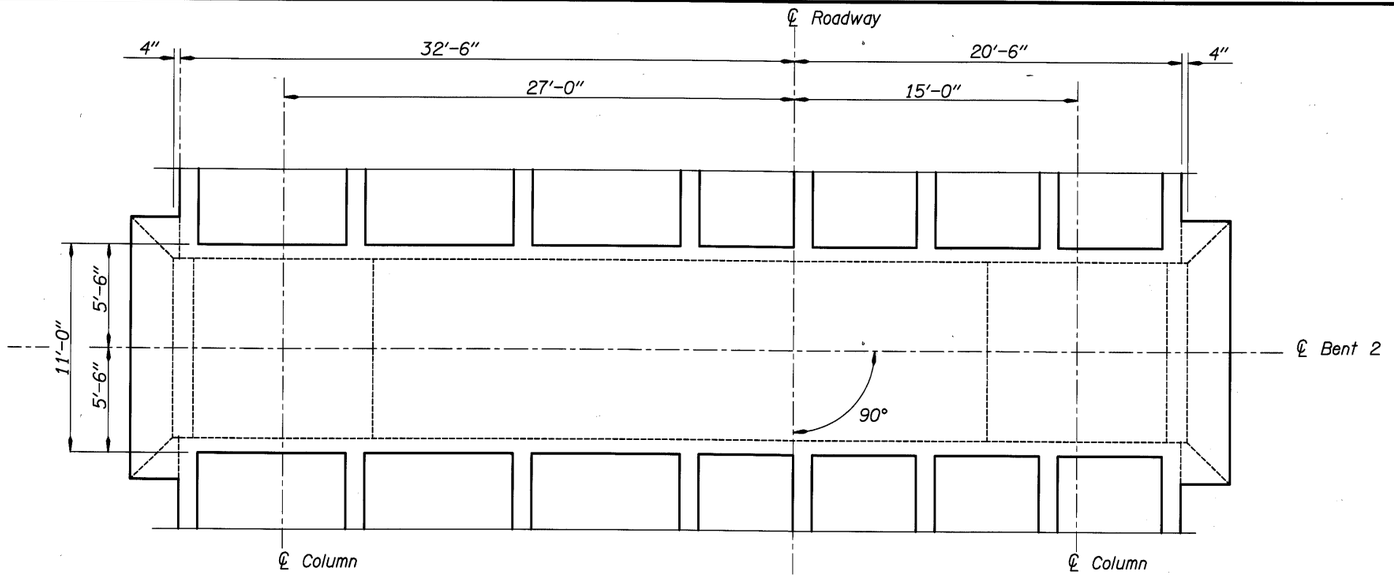
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TYPICAL DIAPHRAGM DETAILS

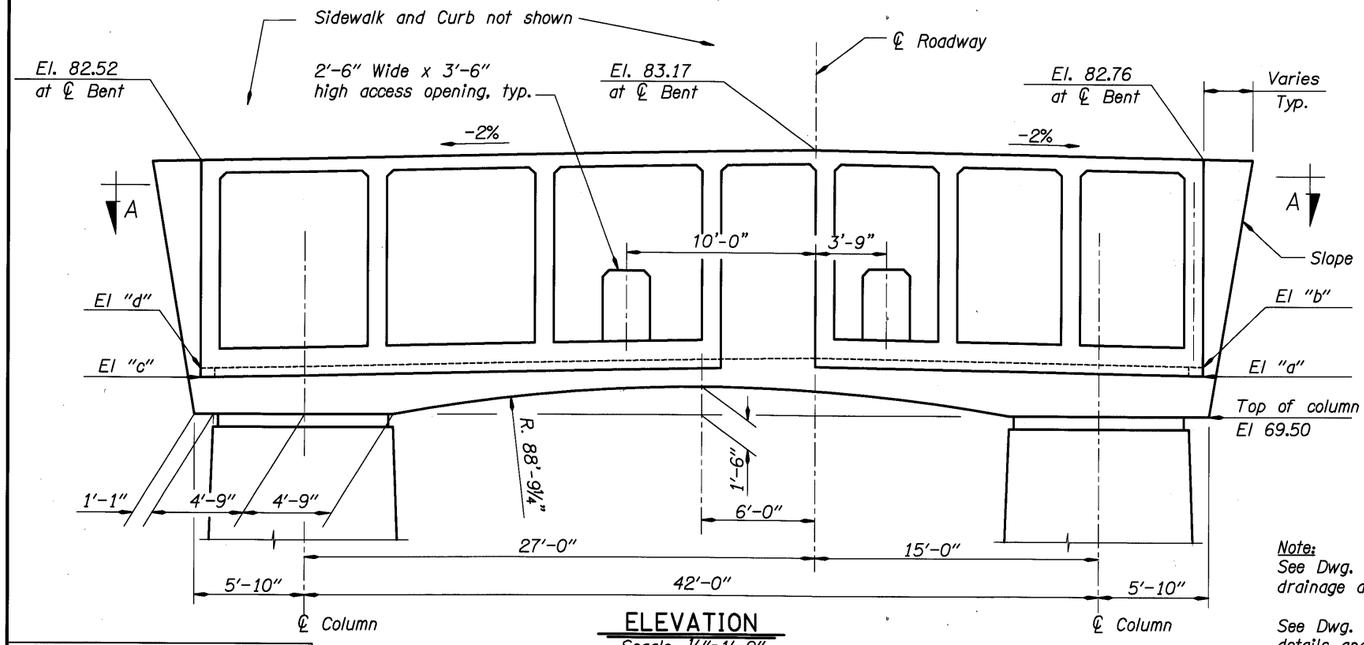
SHEET 86 OF 173
DRAWING NO. 70273

Xrefs: Odotbdc.dwg

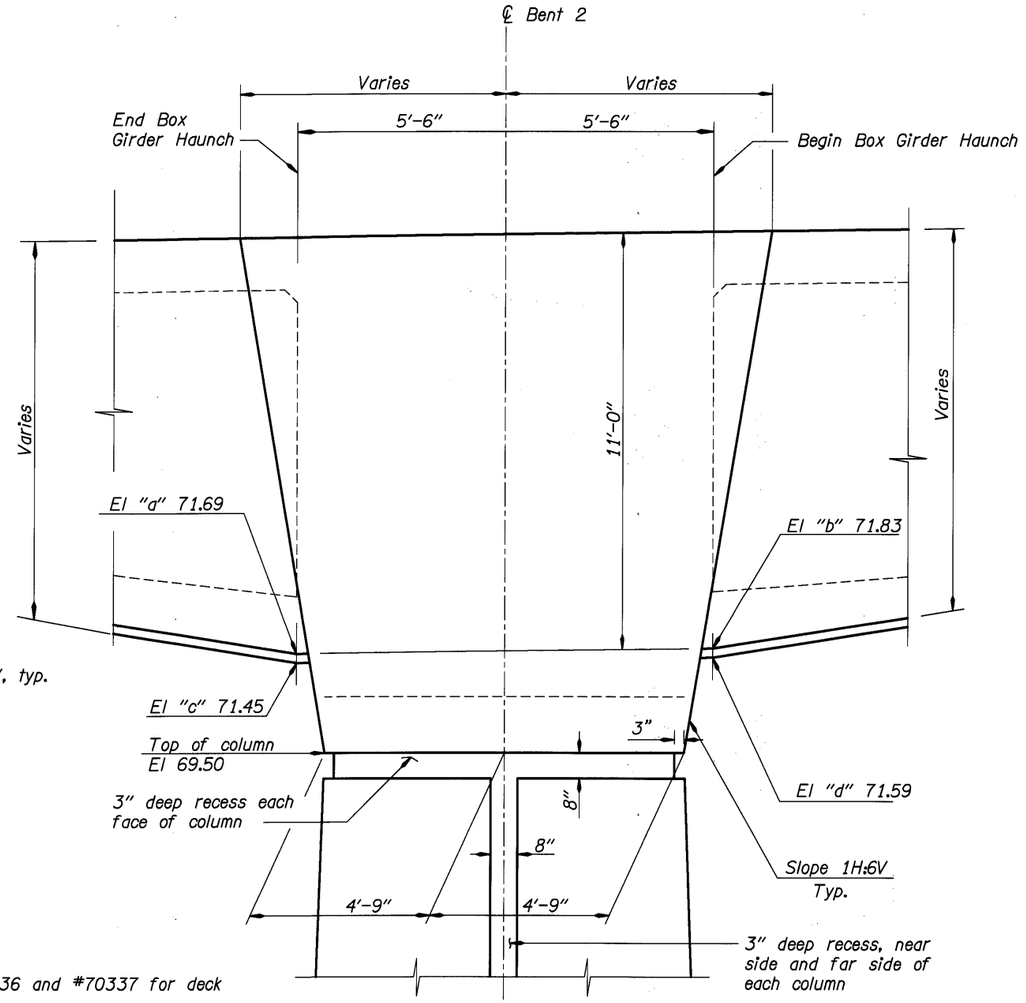
P:\0\ODOT00000460\0400CAD\EB\DLV\SA078.dwg Aug 16, 2005 11:16am



SECTION A-A
Scaale: 1/4"=1'-0"



ELEVATION
Scaale: 1/4"=1'-0"



RIGHT SIDE ELEVATON
Scaale: 1/2"=1'-0"

Note:
See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER OREGON 71458 PE Kent Cordtz MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

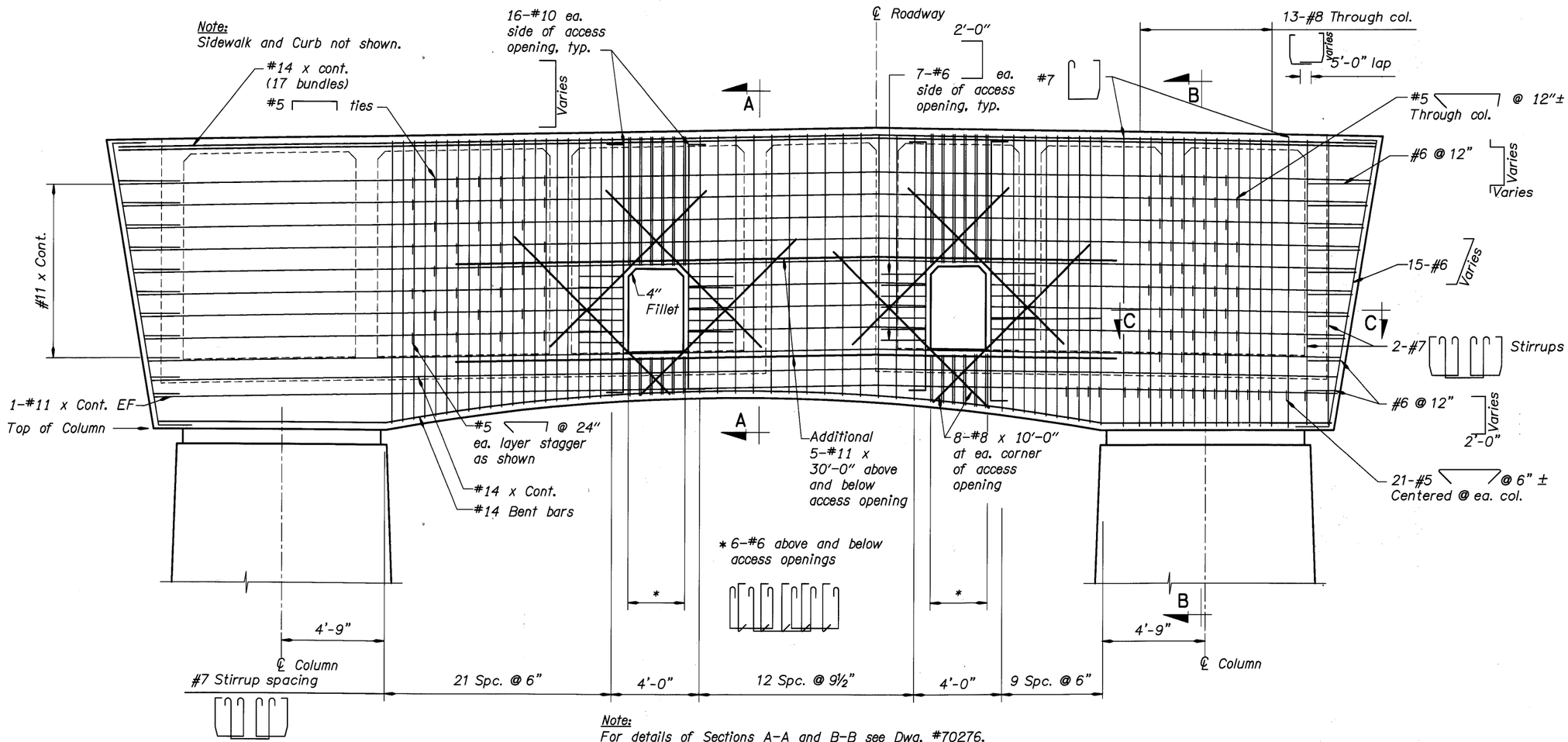
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 2 - INTEGRAL X-BEAM PLAN AND ELEVATION

SHEET 87 OF 173
DRAWING NO. 70274

Xrefs: Odotbdr.dwg



Note:
For details of Sections A-A and B-B see Dwg. #70276.
For details of Sections C-C see Dwg. #70277.

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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2			
1	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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DATE Sept. 2005
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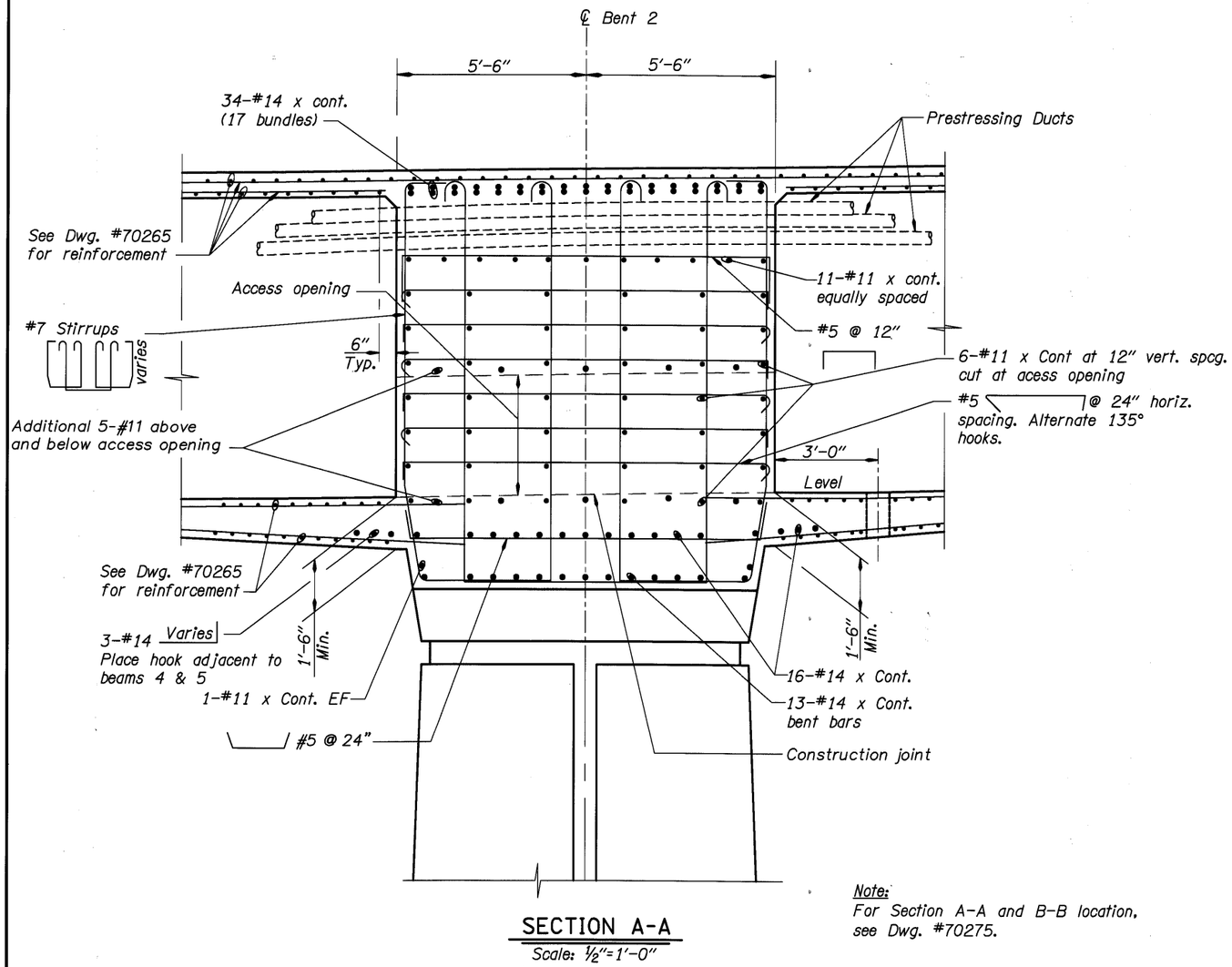
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 2 - INTEGRAL X-BEAM
DETAILS (1 OF 3)

SHEET 88 OF 173
DRAWING NO. 70275

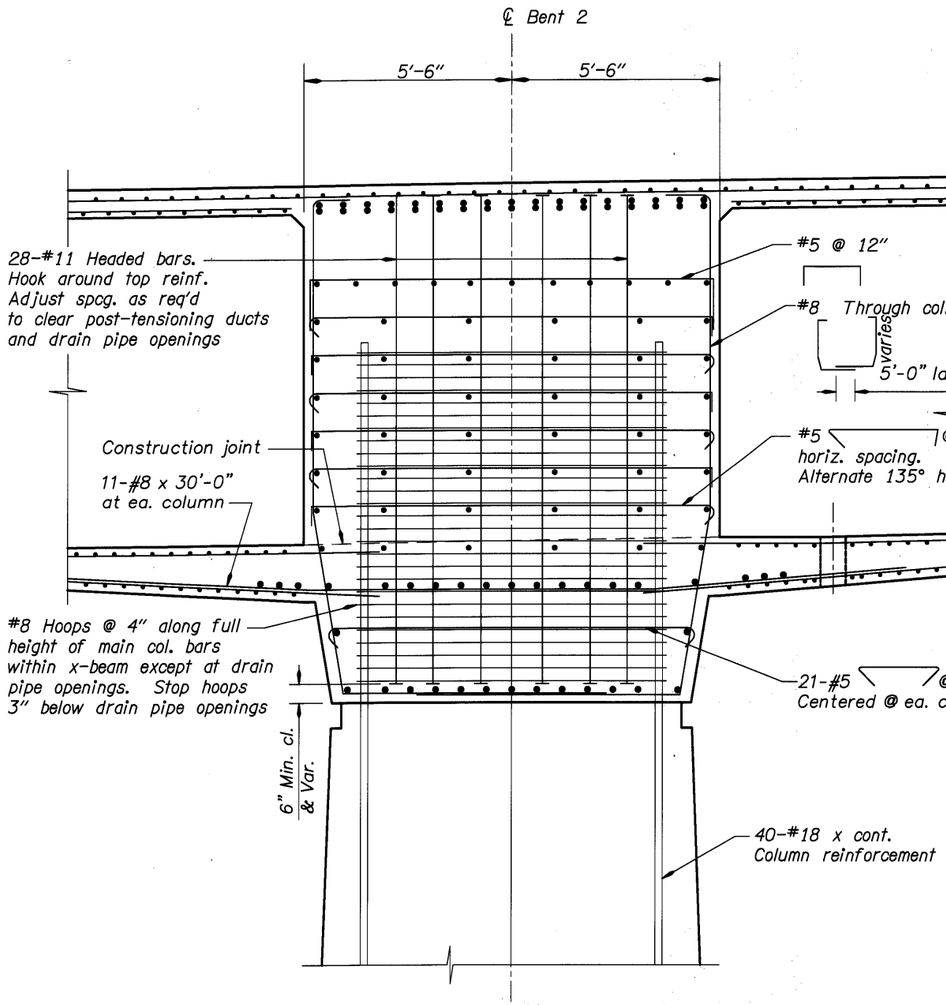
Xrefs: Odotbdr.dwg



SECTION A-A

Scale: ½"=1'-0"

Note:
For Section A-A and B-B location,
see Dwg. #70275.



SECTION B-B

Scale: ½"=1'-0"

Note:
For details not shown, see Section A-A.

DO NOT SCALE THIS DRAWING.
FOLLOW DIMENSIONS. INDICATED
SCALES CORRECT ONLY FOR
FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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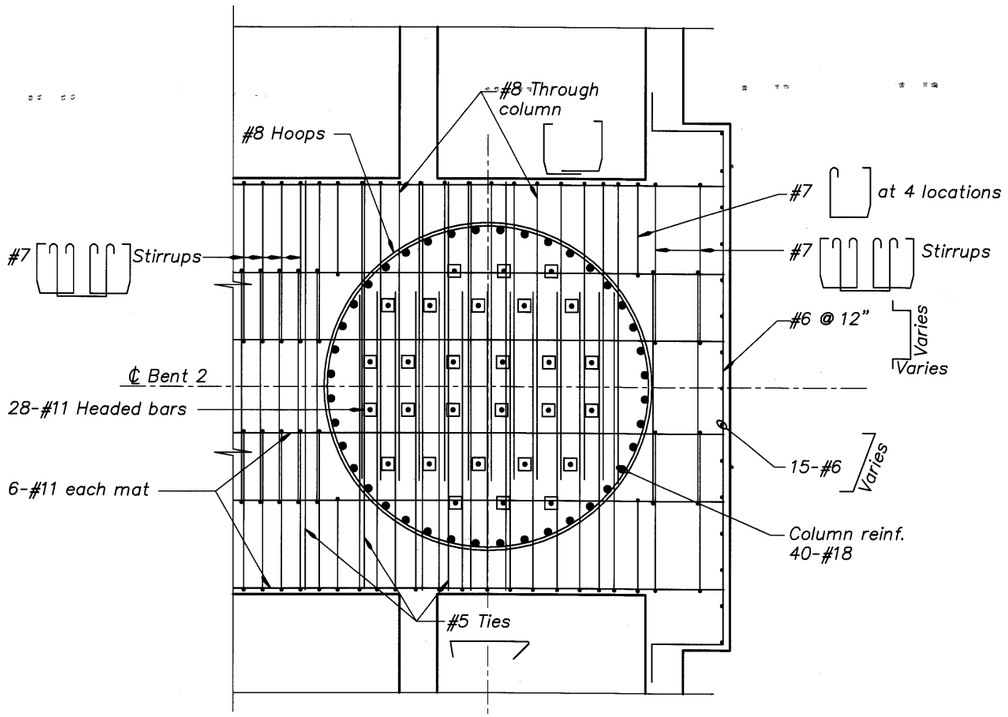
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 2 INTEGRAL X-BEAM
DETAILS (2 OF 3)

SHEET 89 OF 173
DRAWING NO. 70276

Xrefs: Odotbdr.dwg



Note:
For section C-C location, see Dwg. #70275 and #70288.

SECTION C-C

Scale: ½"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 71540 PE OREGON MARCH 09, 2004 BRENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

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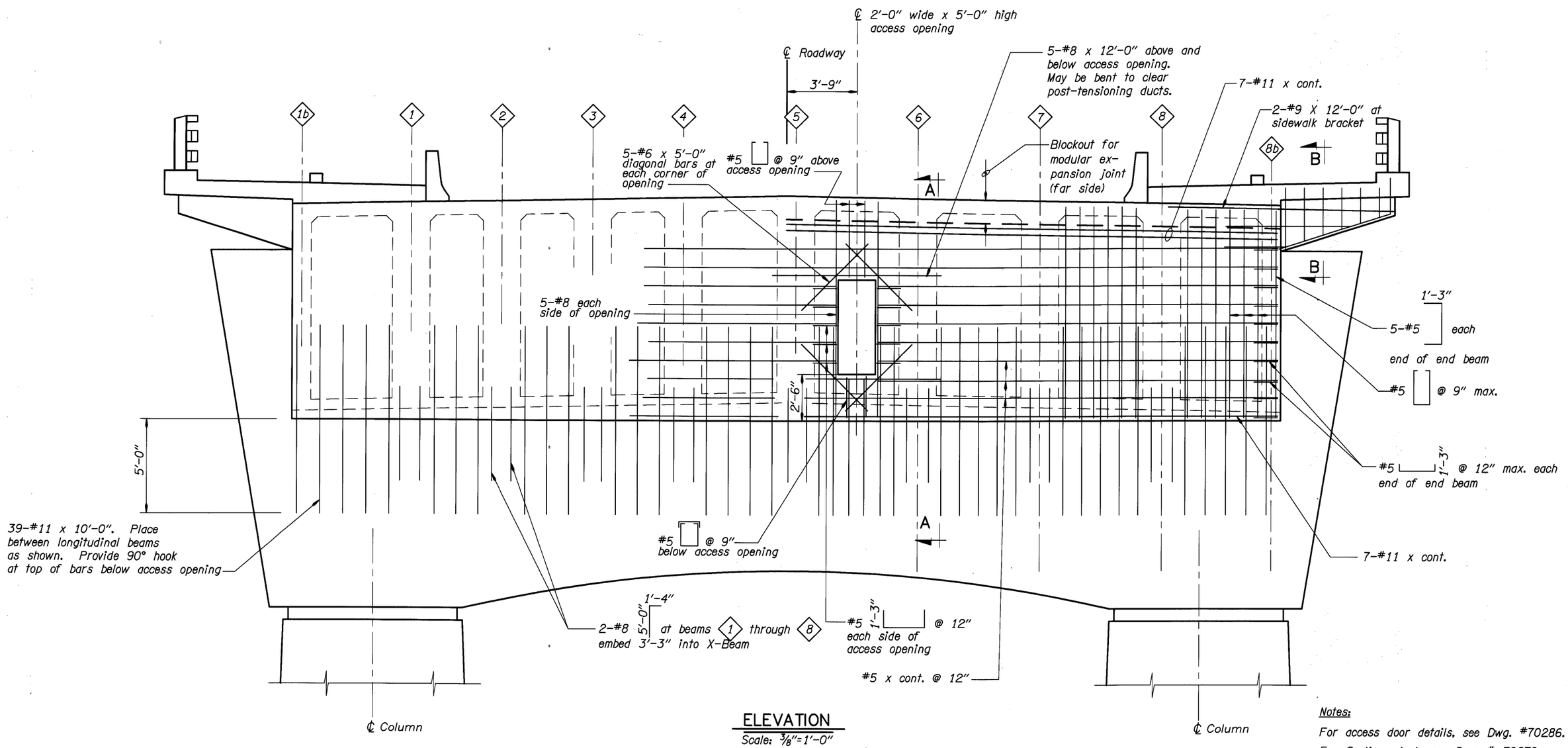
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 2 INTEGRAL X-BEAM DETAILS (3 OF 3)

SHEET 90 OF 173
DRAWING NO. 70277

Xrefs: Odotblk.dwg



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

Notes:

For access door details, see Dwg. #70286.

For Sections A-A, see Dwg. # 70279.

For Section B-B, see Dwg. #70279.

See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.

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△	DATE	REVISION	BY
1	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2006 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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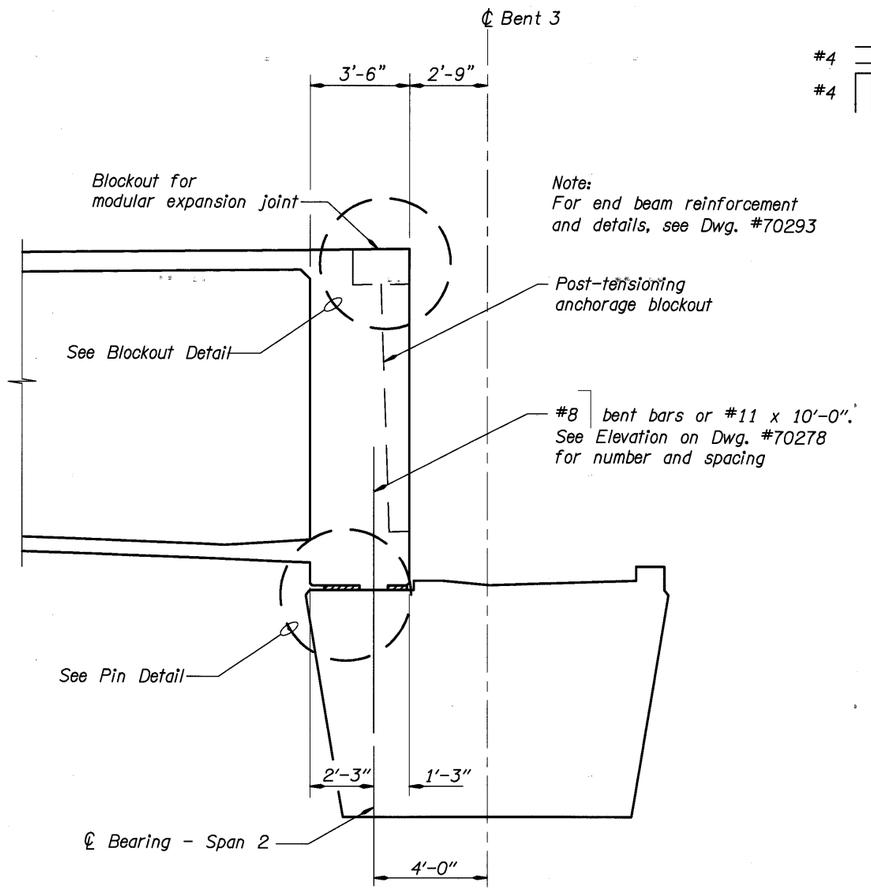
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 3 - END BEAM DETAILS (1 OF 2)

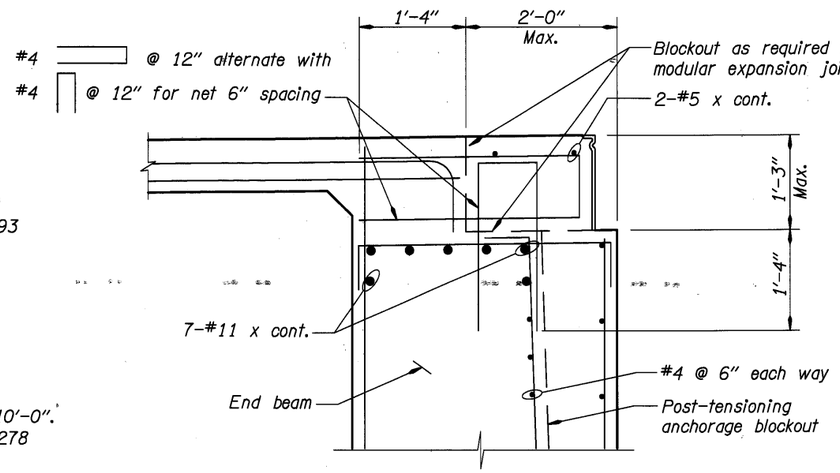
SHEET 91 OF 173
DRAWING NO. 70278

Xrefs: Odotbdr.dwg



Note:
For end beam reinforcement and details, see Dwg. #70293

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

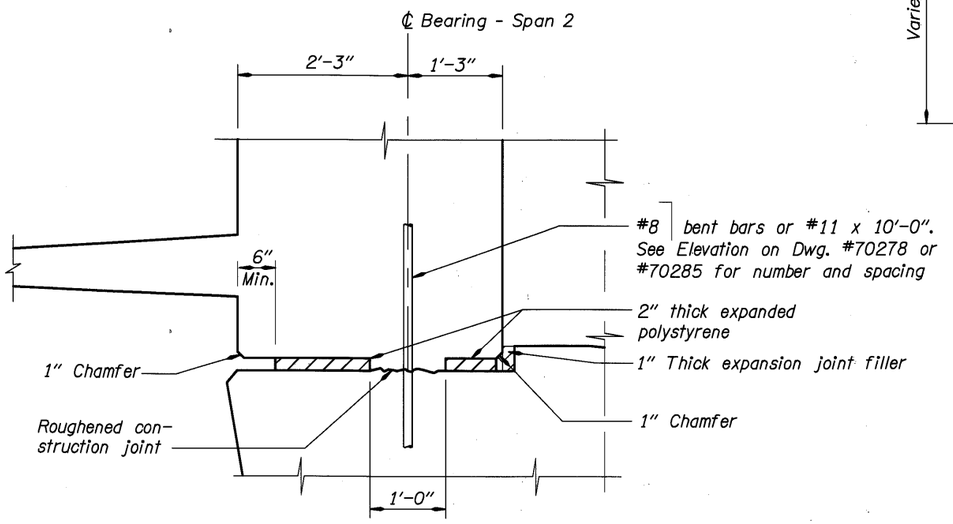


Notes:

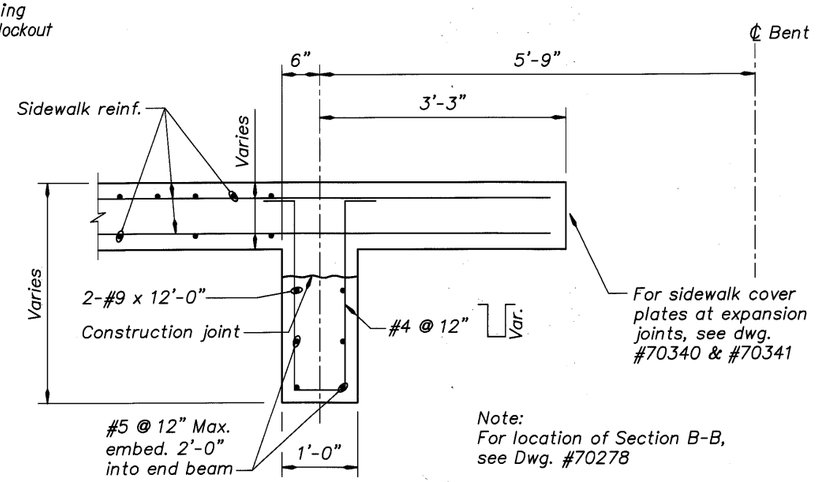
Blockout reinforcing may be manipulated as necessary to accommodate installation at the joint seal assembly upon approval of the joint shop plans and as directed by the Engineer.

For end beam reinforcement and details not shown, see Dwg. #70293.

BLOCKOUT DETAIL
Scale: 1"=1'-0"



PIN DETAIL
Scale: 1"=1'-0"
Bent 3 shown, Bent 4 similar.



Note:
For location of Section B-B, see Dwg. #70278

SECTION B-B
Scale: 1"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

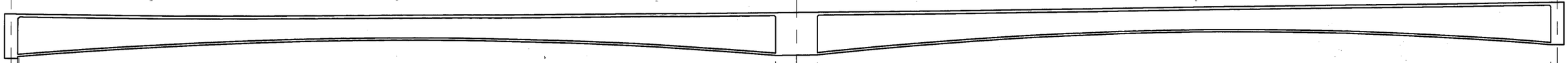
BENT 3 - END BEAM DETAILS (2 OF 2)

SHEET 92 OF 173
DRAWING NO. 70279

Xrefs: Odotbdr.dwg SA090.dwg

P:\0\ODOT00000460\0400CAD\EB\DLV\SA083.dwg Jul 14, 2005 12:44pm

℄ Bent 1 ℄ Bent 2 ℄ Bearing at Bent 3



VERTICAL STIRRUP SPACING

Beam 1	32 @ 6″	98 @ 9″		@ 6″ Max	12 @ 12″	42 @ 9″
Beam 2	32 @ 6″	16 @ 9″	52 @ 12″	@ 8″ Max.	12 @ 12″	42 @ 9″
Beam 3	32 @ 6″	16 @ 9″	52 @ 12″	@ 10″ Max.	12 @ 12″	42 @ 9″
Beam 4	32 @ 6″	16 @ 9″		@ 15″ Max.	12 @ 12″	42 @ 9″
Beam 5	32 @ 6″	16 @ 9″		@ 15″ Max.	12 @ 12″	42 @ 9″
Beam 6	32 @ 6″	16 @ 9″	52 @ 12″	@ 10″ Max.	12 @ 12″	42 @ 9″
Beam 7	32 @ 6″	16 @ 9″	52 @ 12″	@ 8″ Max.		42 @ 9″
Beam 8	32 @ 6″		98 @ 9″	@ 6″ Max		42 @ 9″

*1 *8

VERTICAL STIRRUP SPACING

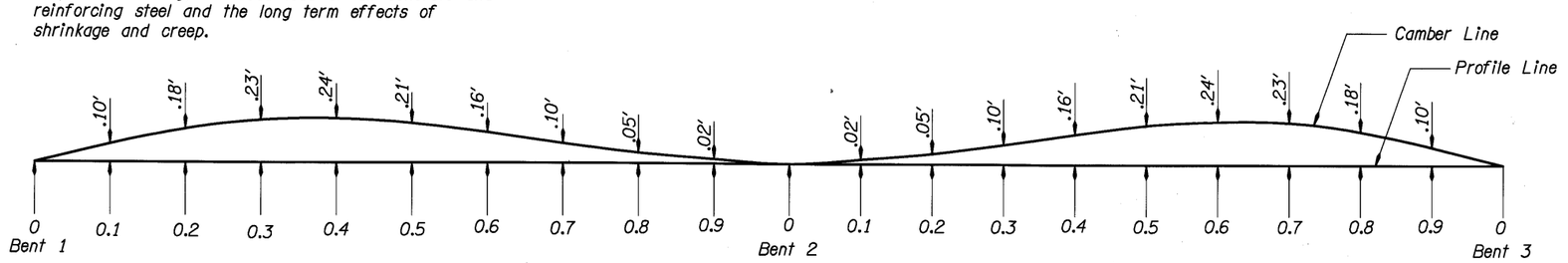
136 @ 6″		@ 9″ Max.		32 @ 6″
136 @ 6″	30 @ 9″	@ 12″ Max.		32 @ 6″
48 @ 8″		@ 12″ Max.		32 @ 6″
42 @ 9″	12 @ 12″	@ 15″ Max.	12 @ 12″	32 @ 6″
42 @ 9″	12 @ 12″	@ 15″ Max.	12 @ 12″	32 @ 6″
42 @ 9″	12 @ 12″	@ 15″ Max.	12 @ 12″	32 @ 6″
42 @ 9″	12 @ 12″	@ 15″ Max.	12 @ 12″	32 @ 6″
42 @ 9″	12 @ 12″	@ 15″ Max.	12 @ 12″	32 @ 6″

*1 *8

* Indicates limits of #5 ⌈⌈ at merging beams. See Dwg. #70258 to 70260.

LONGITUDINAL BEAM ELEVATION - SPANS 1 AND 2

No Scale



CAMBER DIAGRAM

No Scale

Note:
Camber is designed to compensate for deflection due to post-tensioning, the dead load of all concrete and reinforcing steel and the long term effects of shrinkage and creep.

Notes:

1. Spacing of #5 stirrups is measured along ℄ Beam.
2. Stirrups are #5 ⌈⌈ at Beams 1 and 8
   #5 ⌈⌈ at Beams 4 and 5 in Span 1,
   #5 ⌈⌈ at Beams 4 and 5 in Span 2,
   and #5 ⌈⌈ at Beams 2, 3, 6, and 7 unless noted otherwise.
3. For stirrup spacing at Beams 1a, 1b, 8a and 8b see Dwg. #70267.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON KENT WILLIAM CORDTZ MARCH 08, 2006
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO.	20136
DATE	Sept. 2005
CALC. BOOK	

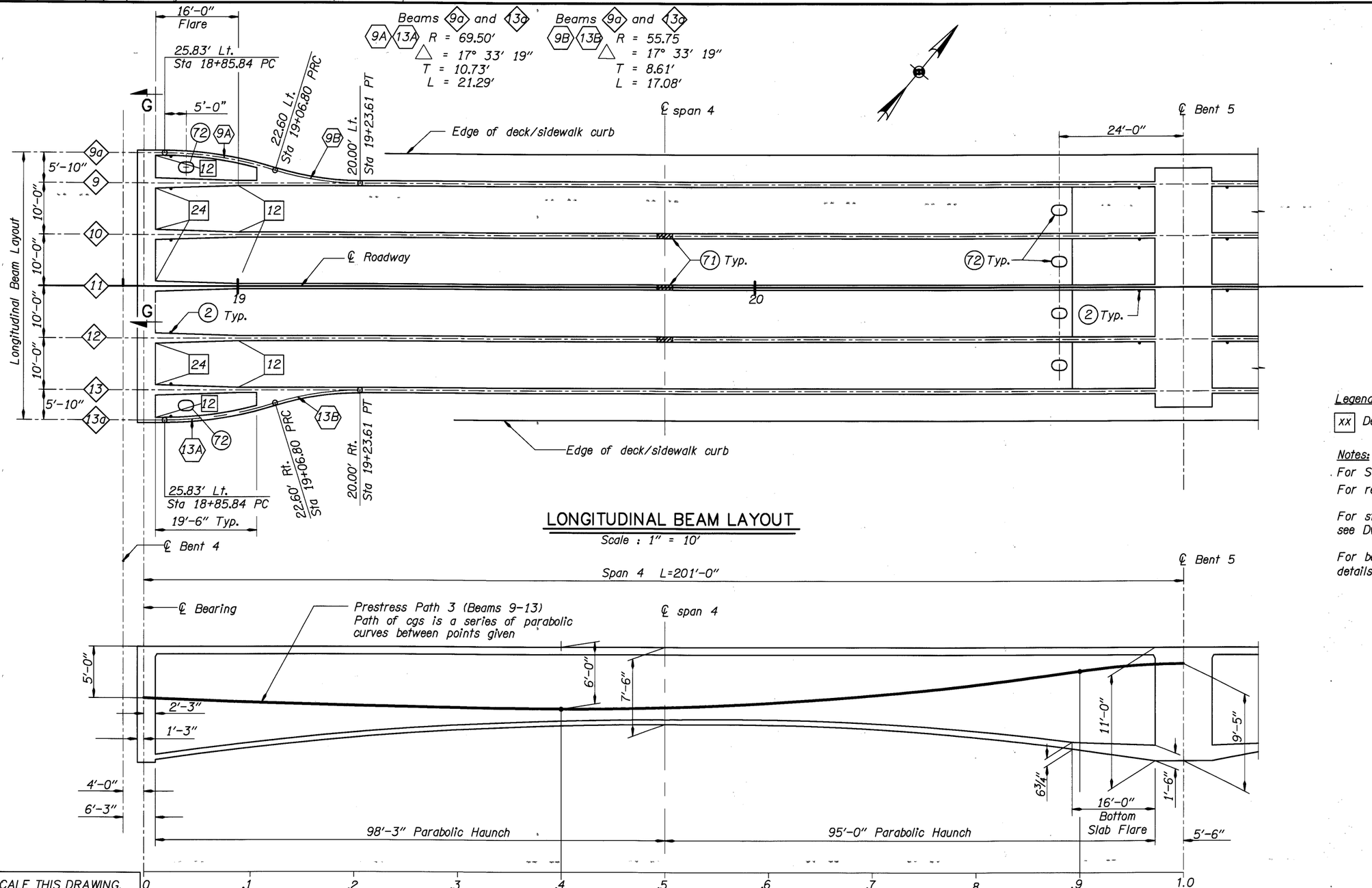
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

CAMBER DIAGRAM SPANS 1 AND 2

SHEET 93 OF 173

DRAWING NO. 70280

Xrefs: Odotbdr.dwg



LONGITUDINAL BEAM LAYOUT

Scale : 1" = 10'

LONGITUDINAL BEAM ELEVATION

No Scale

Legend:

[xx] Denotes beam stem width in inches.

Notes:

For Section G-G see Dwg. #70264.

For reference notes, see Dwg. #70206.

For stirrup spacing and Camber Diagram, see Dwg. 70292.

For beams 9a and 13a reinforcement details, see Dwg. #70266and #70267.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
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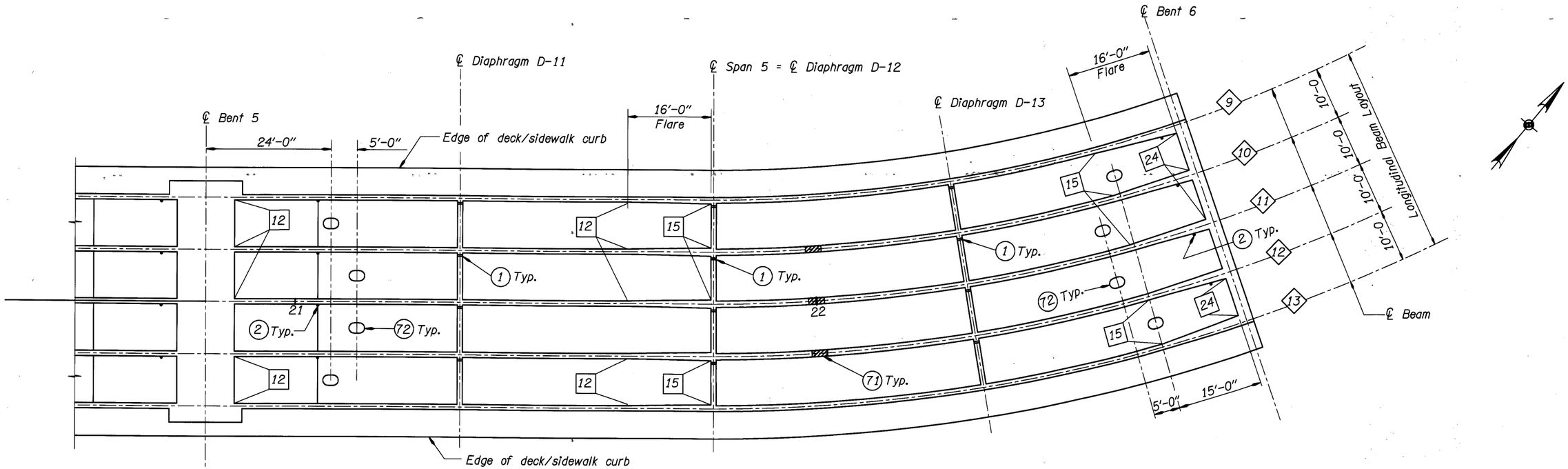
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LONGITUDINAL BEAM LAYOUT - SPAN 4

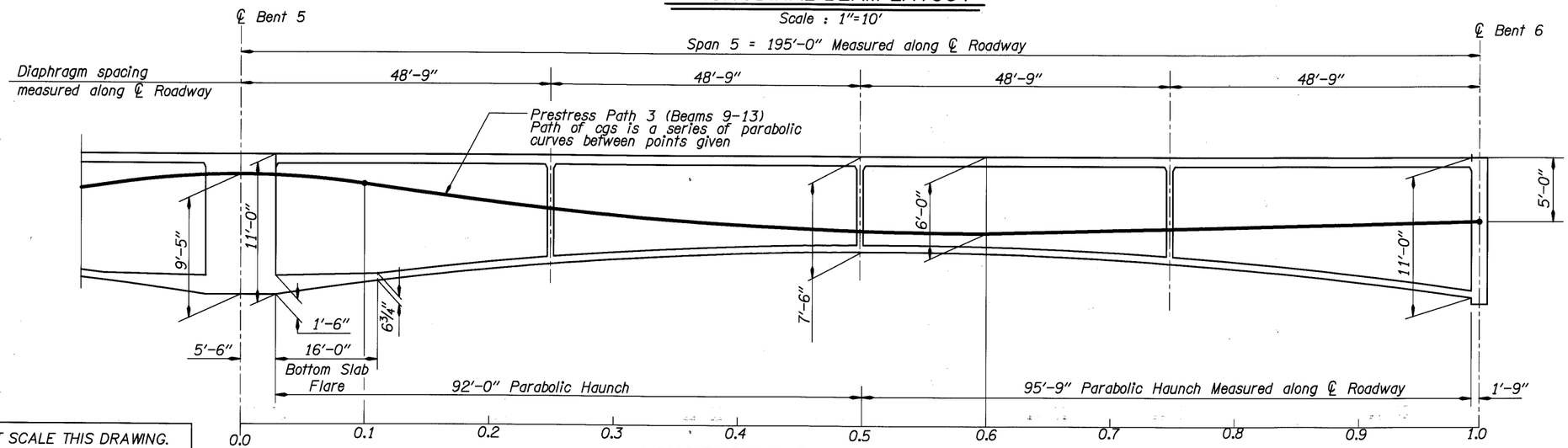
SHEET 94 OF 173.
DRAWING NO. 70281

Xrefs: Odotbdr.dwg



LONGITUDINAL BEAM LAYOUT

Scale : 1"=10'



LONGITUDINAL BEAM ELEVATION

Scale : 1"=10'

Legend:

[xx] Denotes beam stem width in inches.

Notes:

For reference notes, see Dwg. #70206.

For stirrup spacing and Camber Diagram, see Dwg. #70292.

For diaphragm details, see Dwg. #70273.

Beam	*L
9	188.47'
10	191.73'
11	195.00'
12	198.27'
13	201.53'

*Measured along ℄ Beam

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
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OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

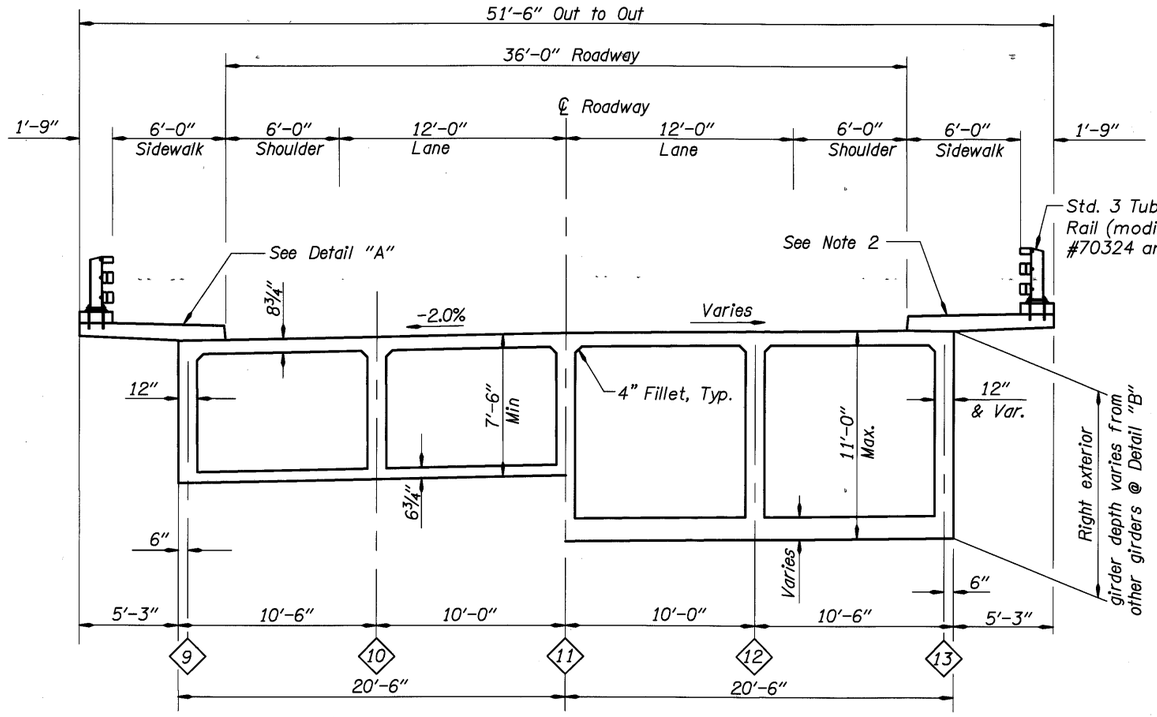
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LONGITUDINAL BEAM LAYOUT - SPAN 5

SHEET 95 OF 173
DRAWING NO. 70282

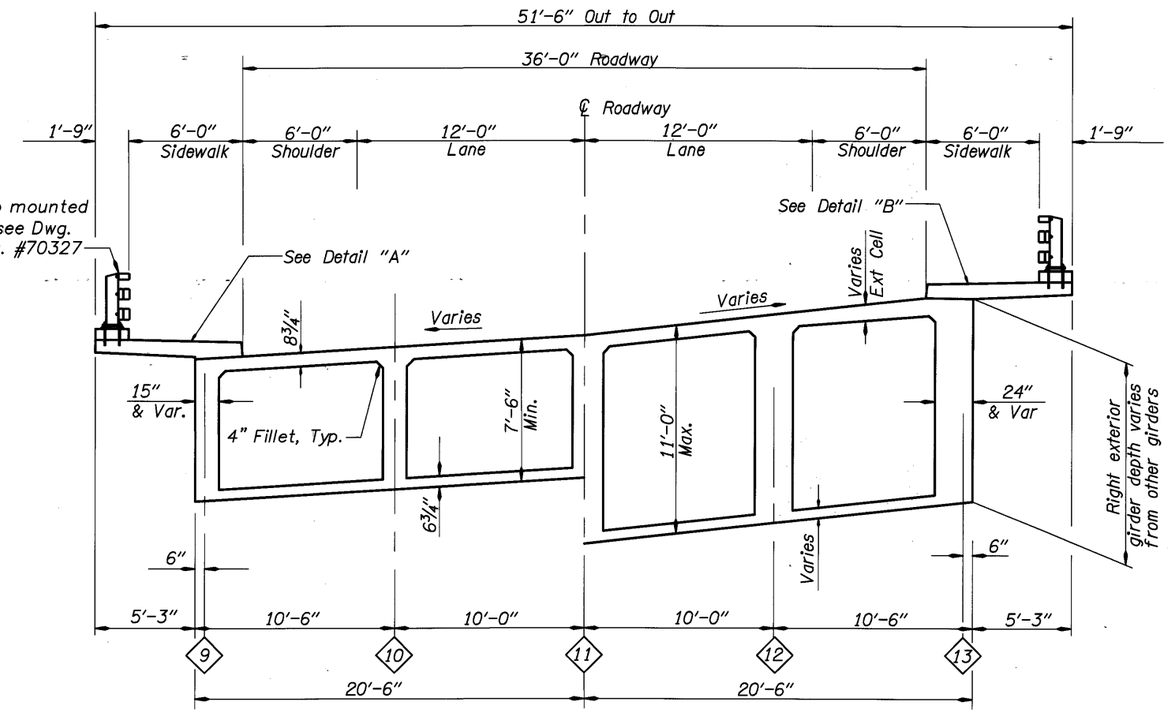
Xrefs: Odotbdr.dwg



SHOWN AT ℄ SPAN 4 SHOWN AT BENT 5

TYPICAL SECTION - SPAN 4

Scale: ¼"=1'-0"



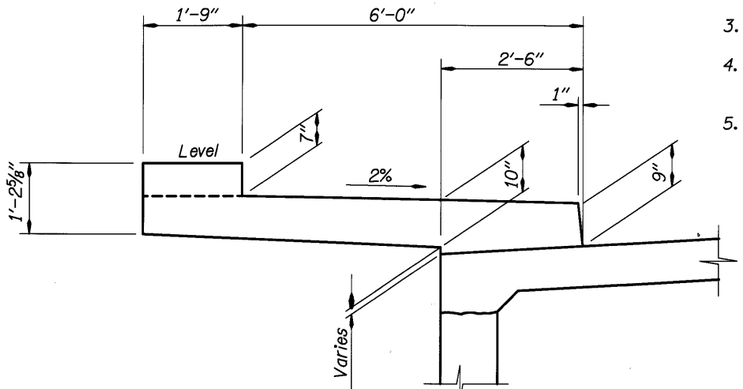
SHOWN AT ℄ SPAN 5 SHOWN AT BENT 6

TYPICAL SECTION - SPAN 5

Scale: ¼"=1'-0"

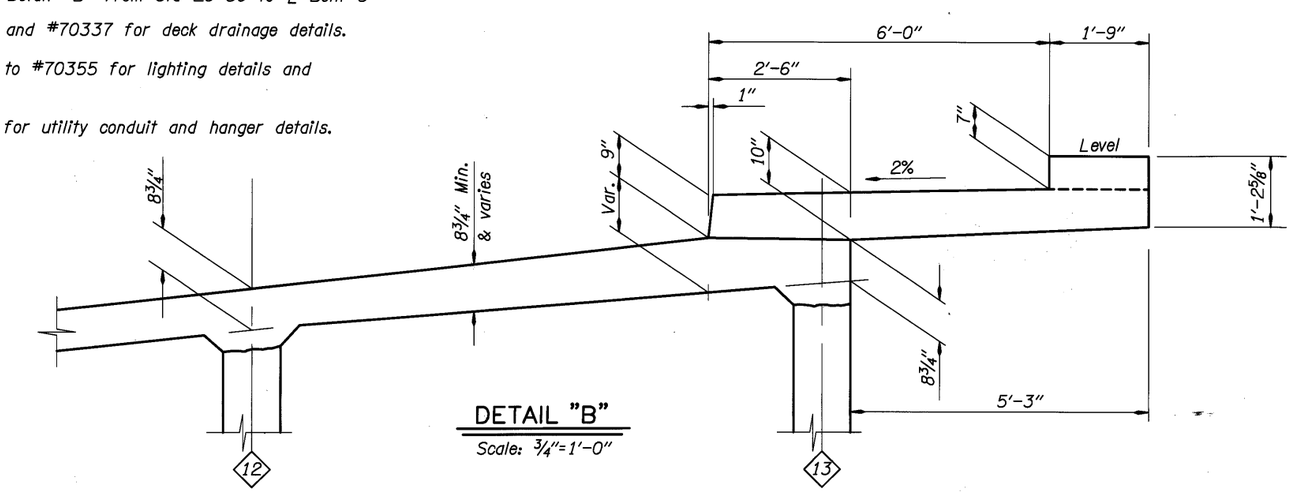
Notes:

1. See Dwg. #BR135 and BR136 for details of vent tube through stems.
2. For right sidewalk, use Detail "A" from ℄ Bent 4 to Sta 20+50 and Detail "B" from Sta 20+50 to ℄ Bent 5
3. See Dwg. #70336 and #70337 for deck drainage details.
4. See Dwg. #70343 to #70355 for lighting details and conduit locations.
5. See Dwg. #70360 for utility conduit and hanger details.



DETAIL "A"

Scale: ¾"=1'-0"



DETAIL "B"

Scale: ¾"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON KENT WILLIAM CORDTZ MARCH 09, 2005
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

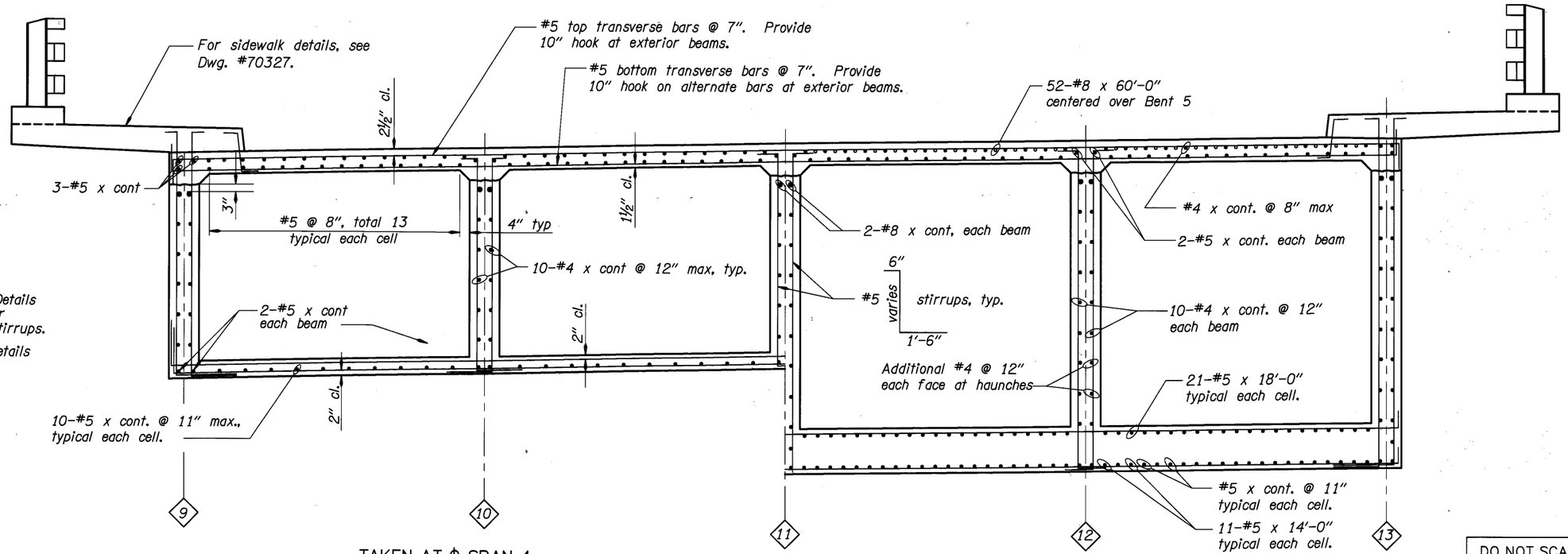
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

TYPICAL SECTIONS - SPANS 4 AND 5

SHEET 96 OF 173.
DRAWING NO. 70283

Xrefs: Odotbdr.dwg



TAKEN AT ℄ SPAN 4

TAKEN AT BENT 5

Notes:
See Duct Bundling Details on Dwg. #70294 for clearances to web stirrups.

See Curved Beam Details on Dwg. #70295.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

TYPICAL SECTION

Scale: ½"=1'-0"

TYPICAL DECK STEEL

Transverse Steel
#5 straight or bent bars at 7" centers max, top and bottom, see Transverse Steel Spacing Diagram on Dwg. #70265.
Stop transverse bars 6" clear of transverse beams.
Place transverse bars perpendicular to ℄ bridge.
Space along ℄ Beam ⟨13⟩.

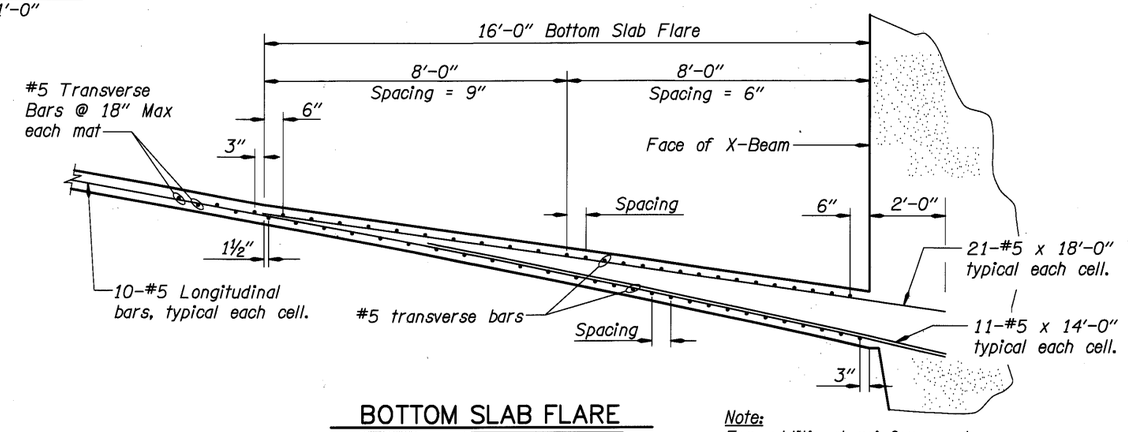
Longitudinal Steel
56-#4 bars as shown @ 8" ctrs. max top of deck
52-#5 bars as shown @ 8" ctrs. max bottom of deck
2-#5 x cont. at each interior stem.
3-#5 x cont. at each exterior stem.
Place longitudinal bars parallel to ℄ bridge.

TYPICAL BOTTOM SLAB STEEL

Transverse Steel
#5 w/ 1'-3" hook into web each end @ 18" ctrs.
Alternate above and below longitudinal bars @ 9", see Transverse Steel Spacing Diagram on Dwg. #70265.
Stagger all splices. Stop bottom transverse bars 3" clear of transverse beams.
Place transverse bars perpendicular to ℄ bridge.
Space along ℄ Beam ⟨13⟩.

Longitudinal Steel
2-#5 x cont. at each stem.
10-#5 x cont. in each cell
Extend all longitudinal bars 2'-0" into X-beam.
Place longitudinal bars parallel to ℄ bridge.

See Bottom Slab Flare for additional reinforcement at bottom slab flares at Bent 5.



BOTTOM SLAB FLARE

Scale: ½"=1'-0"

Note:
For additional reinforcement at columns, see Section A-A on Dwg. #70289

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Josh Hewes

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

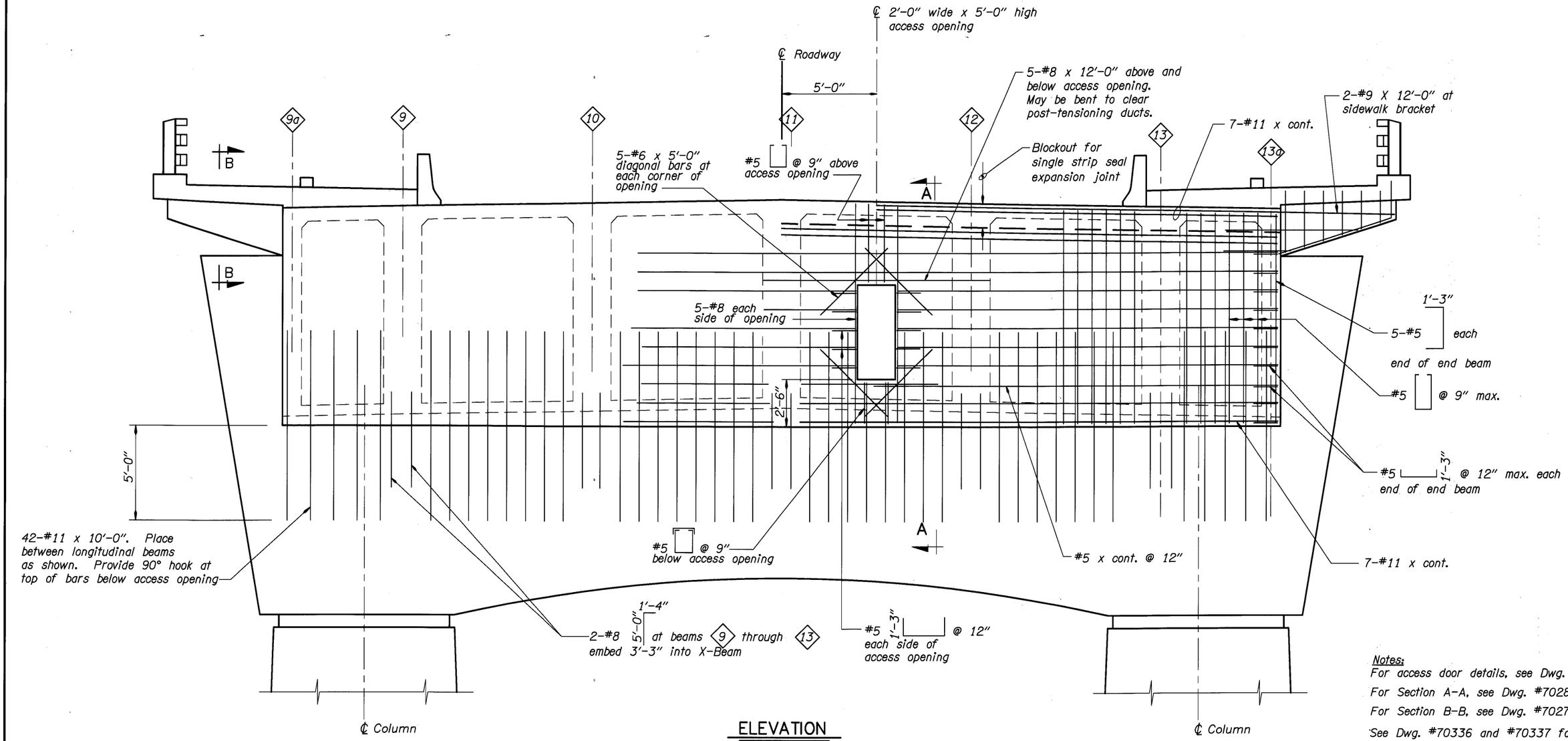
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BOX GIRDER REINFORCEMENT - SPANS 4 AND 5

SHEET 97 OF 173
DRAWING NO. 70284

Xrefs: Ootitdr.dwg



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

Notes:
For access door details, see Dwg. #70286.
For Section A-A, see Dwg. #70286.
For Section B-B, see Dwg. #70279.
See Dwg. #70336 and #70337 for deck drainage details.
See Dwg. #70343 to #70355 for lighting details and conduit locations.
See Dwg. #70360 for utility conduit and hanger details.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Josh Hewes

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05
DAVID EVANS AND ASSOCIATES INC.
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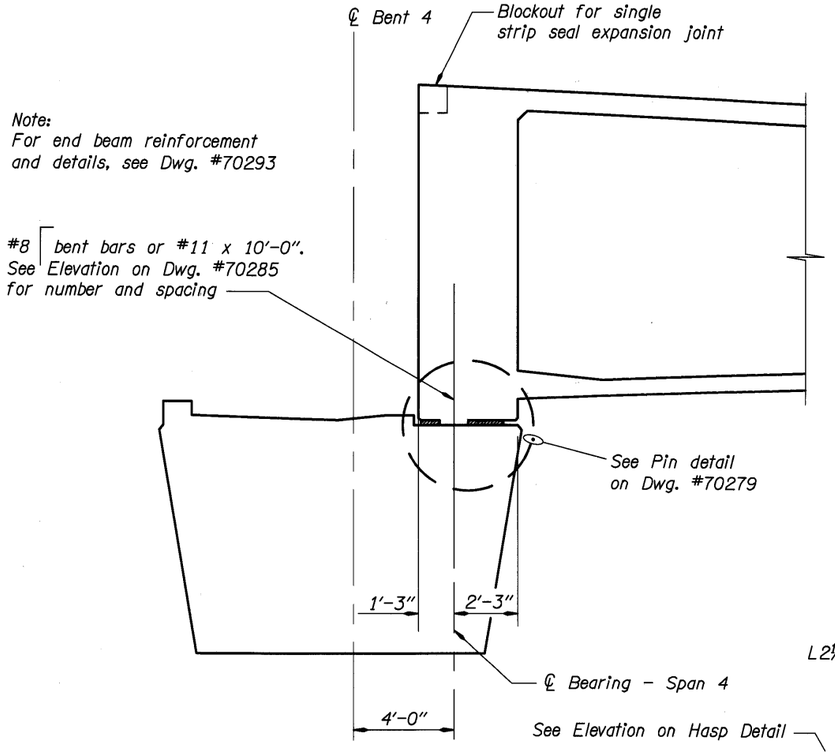
CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

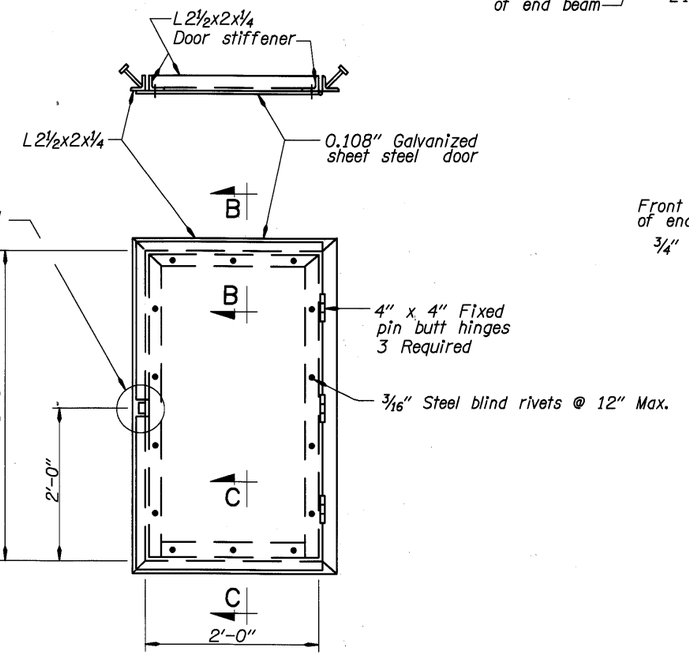
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.
BENT 4 - END BEAM DETAILS (1 OF 2)

SHEET 98 OF 173
DRAWING NO. 70285

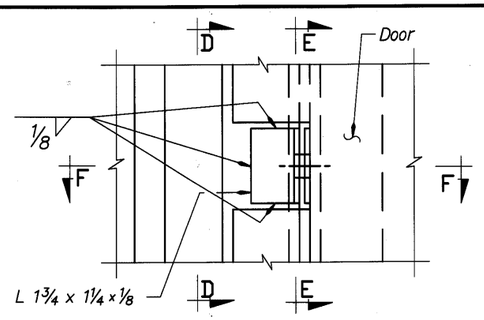
Xrefs: Odotbdr.dwg



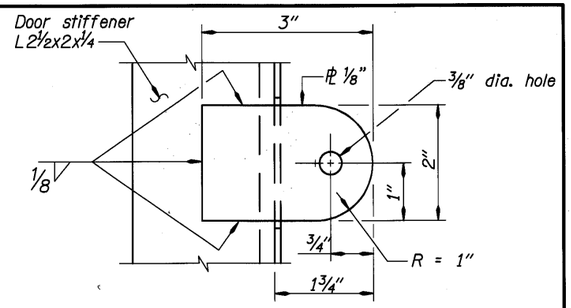
SECTION A-A
Scale: 3/8"=1'-0"



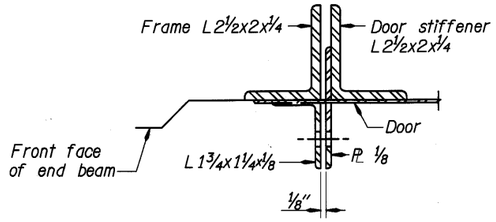
ACCESS DOOR DETAILS
No Scale



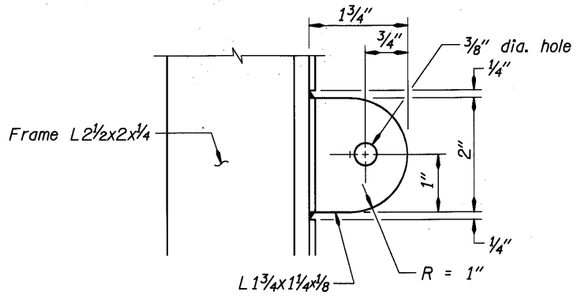
ELEVATION



SECTION E-E

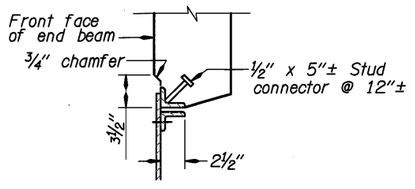


SECTION F-F

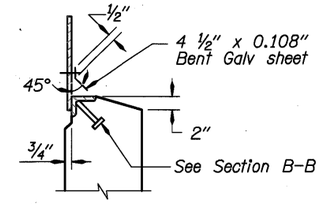


SECTION D-D

HASP DETAIL
No Scale



SECTION B-B



SECTION C-C

Notes:
Galvanize frame assemblies and door stiffener angles after welding and fabrication.
Attach door stiffener angles and bent sheet to steel door with blind rivets.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Josh Hewes

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74540 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05
DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

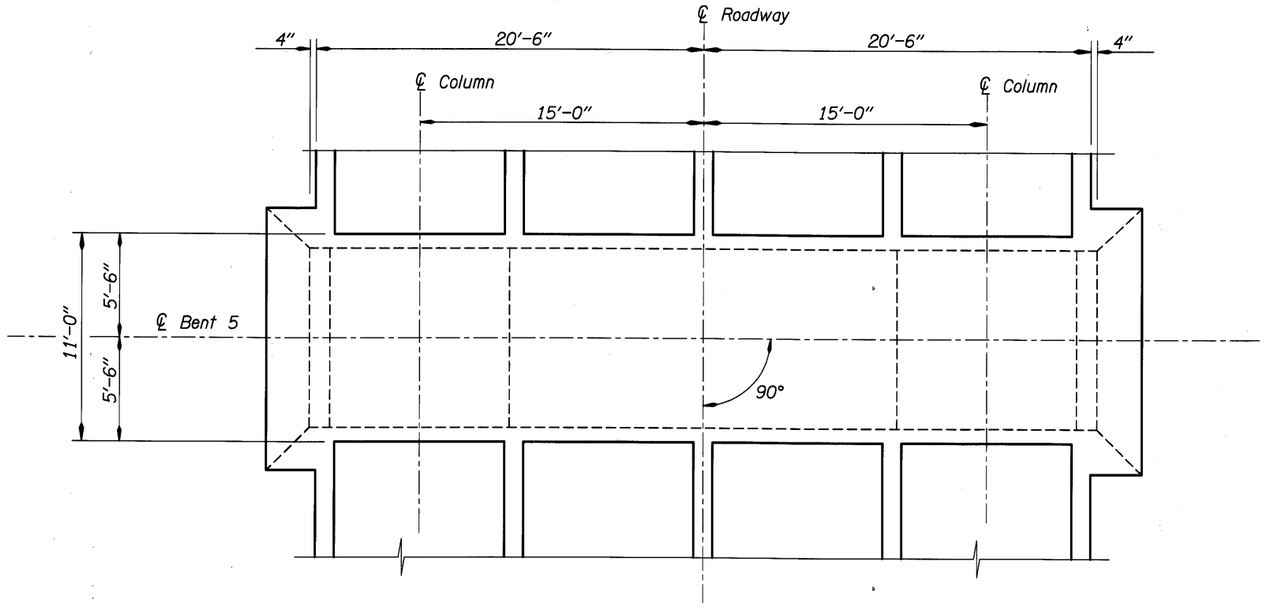
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.
BENT 4 - END BEAM DETAILS (2 OF 2)

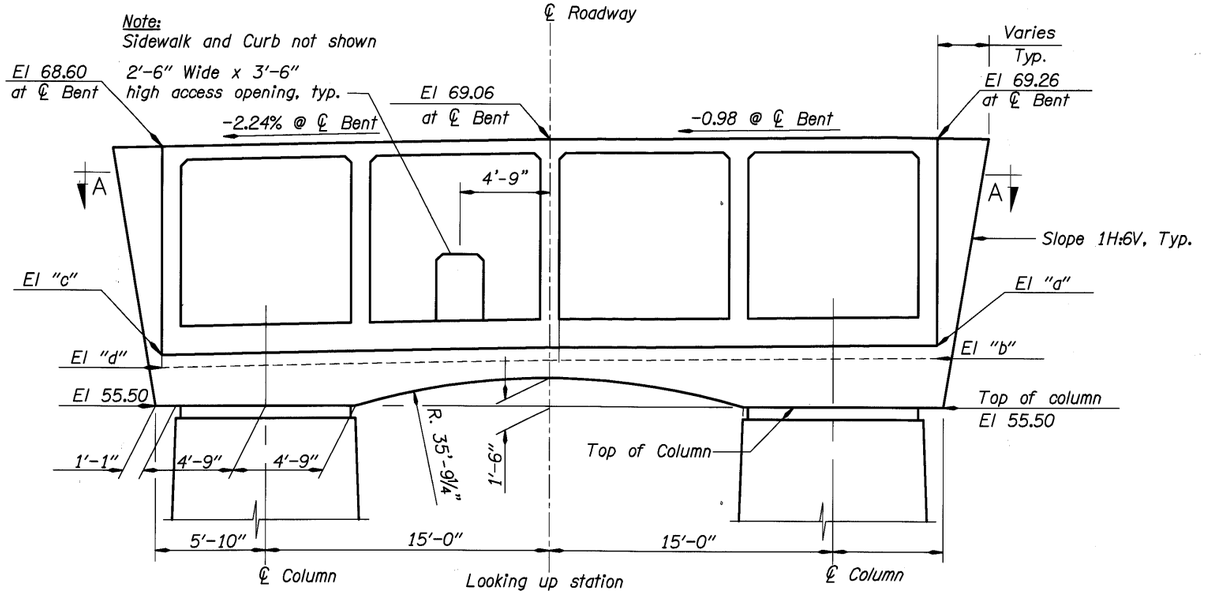
SHEET 99 OF 173
DRAWING NO. 70286

Xrefs: Odotbdr.dwg

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").



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

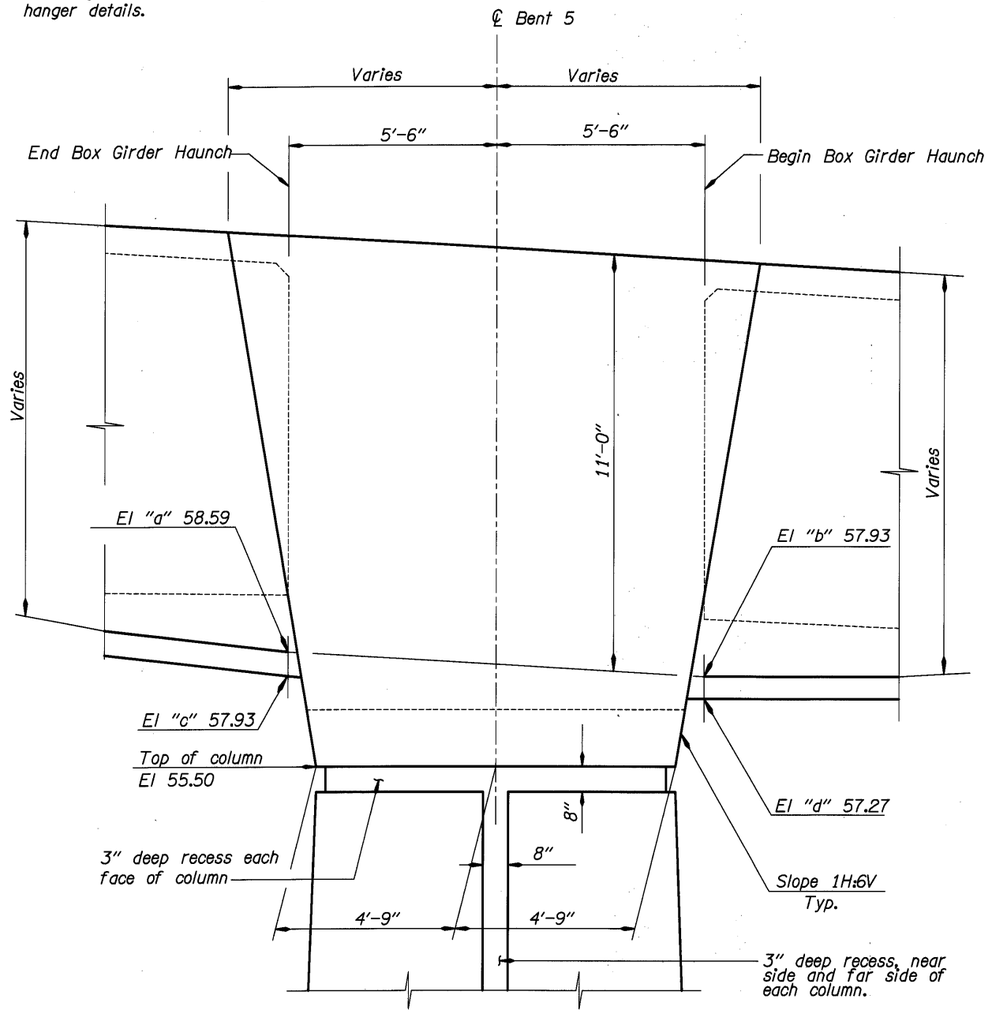


ELEVATION
Scale: 1/4"=1'-0"

Note:
See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.



RIGHT SIDE ELEVATON
Scale: 1/2"=1'-0"

	DATE	REVISION	BY
1	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Josh Hewes

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

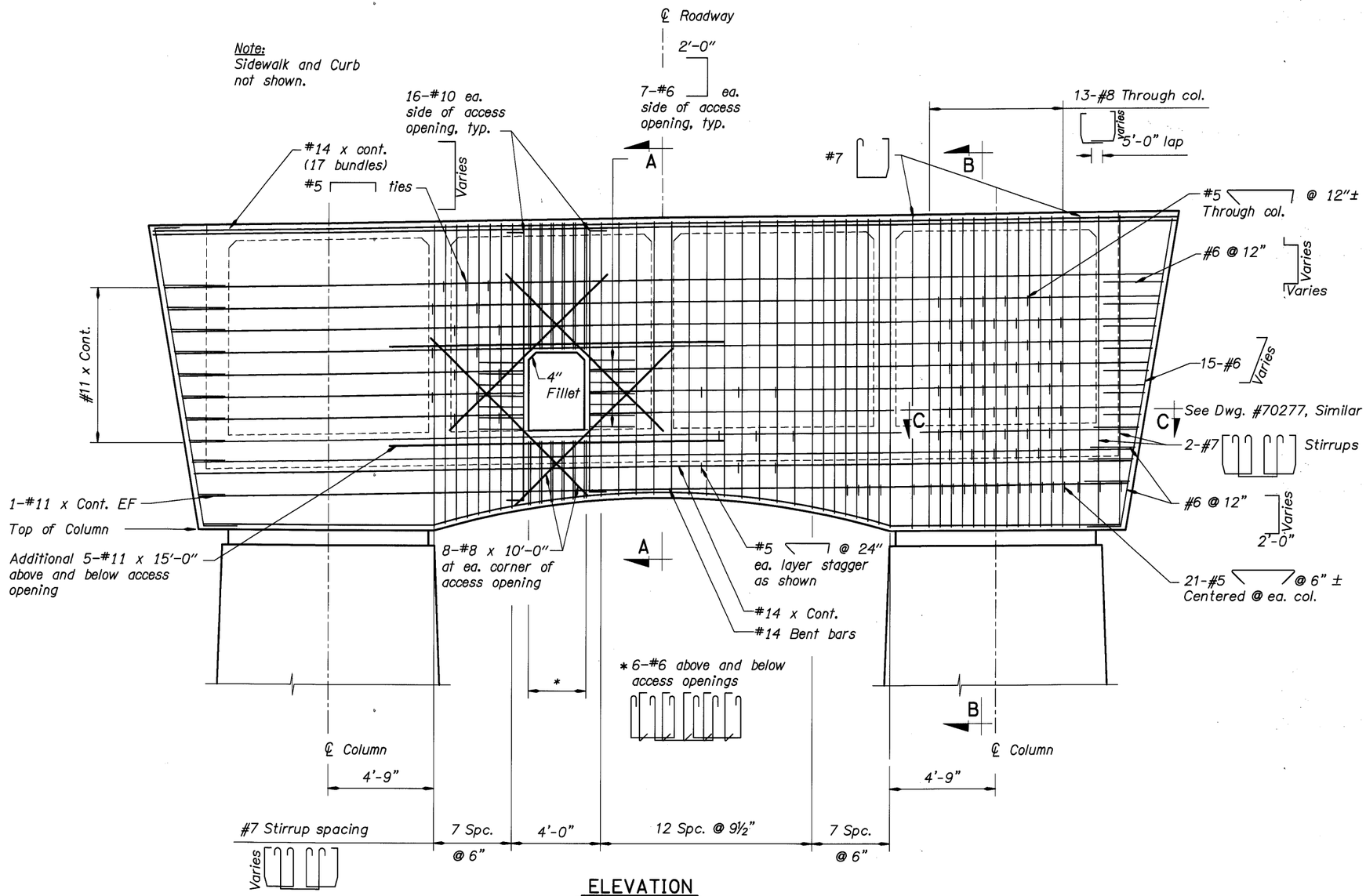
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 5 - INTEGRAL X-BEAM
PLAN AND ELEVATION

SHEET 100 OF 173
DRAWING NO. 70287

Xrefs: Odotbdr.dwg



ELEVATION

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

Note:
For details of Sections A-A and B-B see Dwg. #70289.
For details of Sections C-C see Dwg. #70277.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Josh Hewes

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Kent Curtz MARCH 09, 2004 KENT WILLIAM CURTZ
EXPIRES: 12-31-05

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BRIDGE NO. 20136
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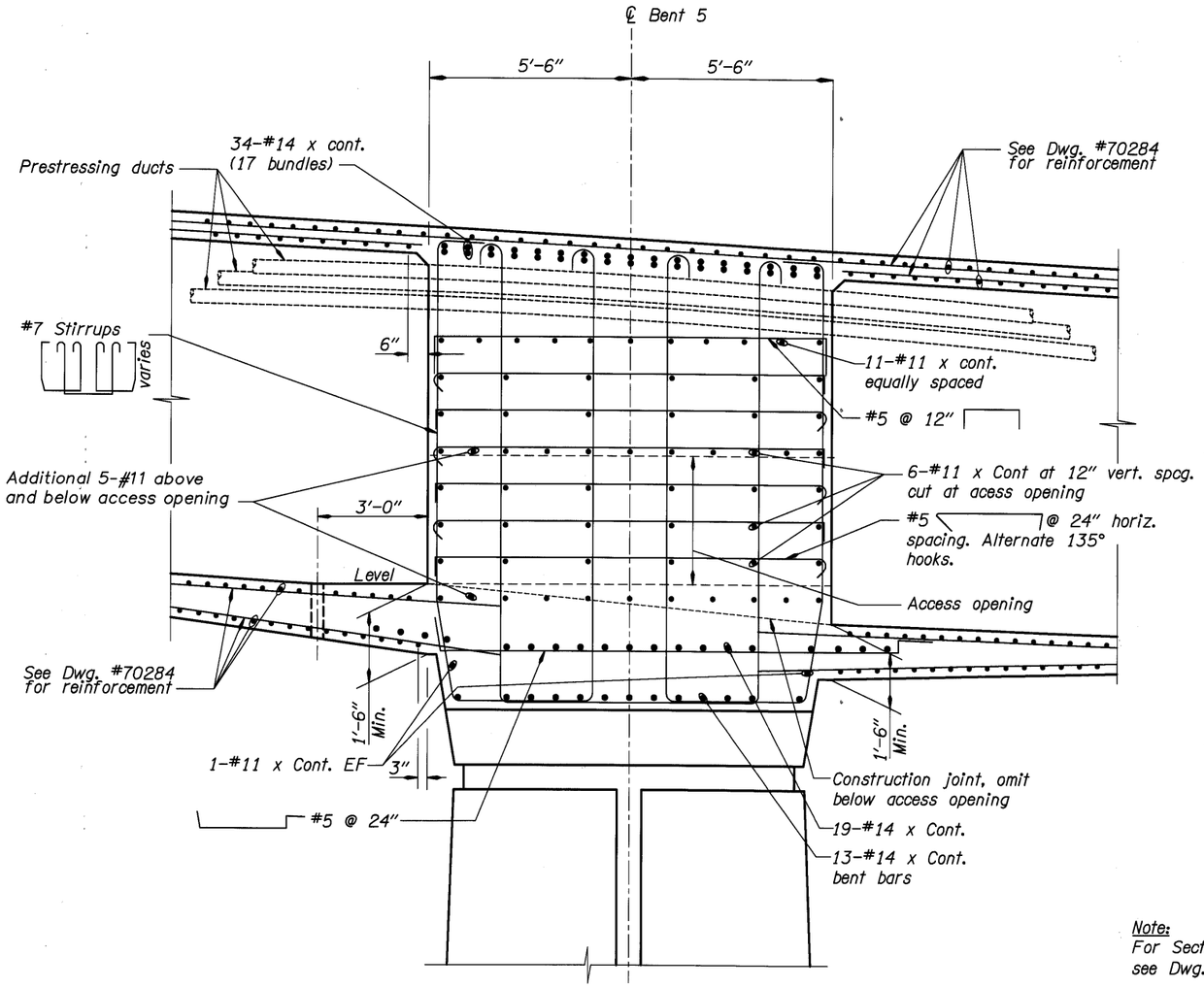
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

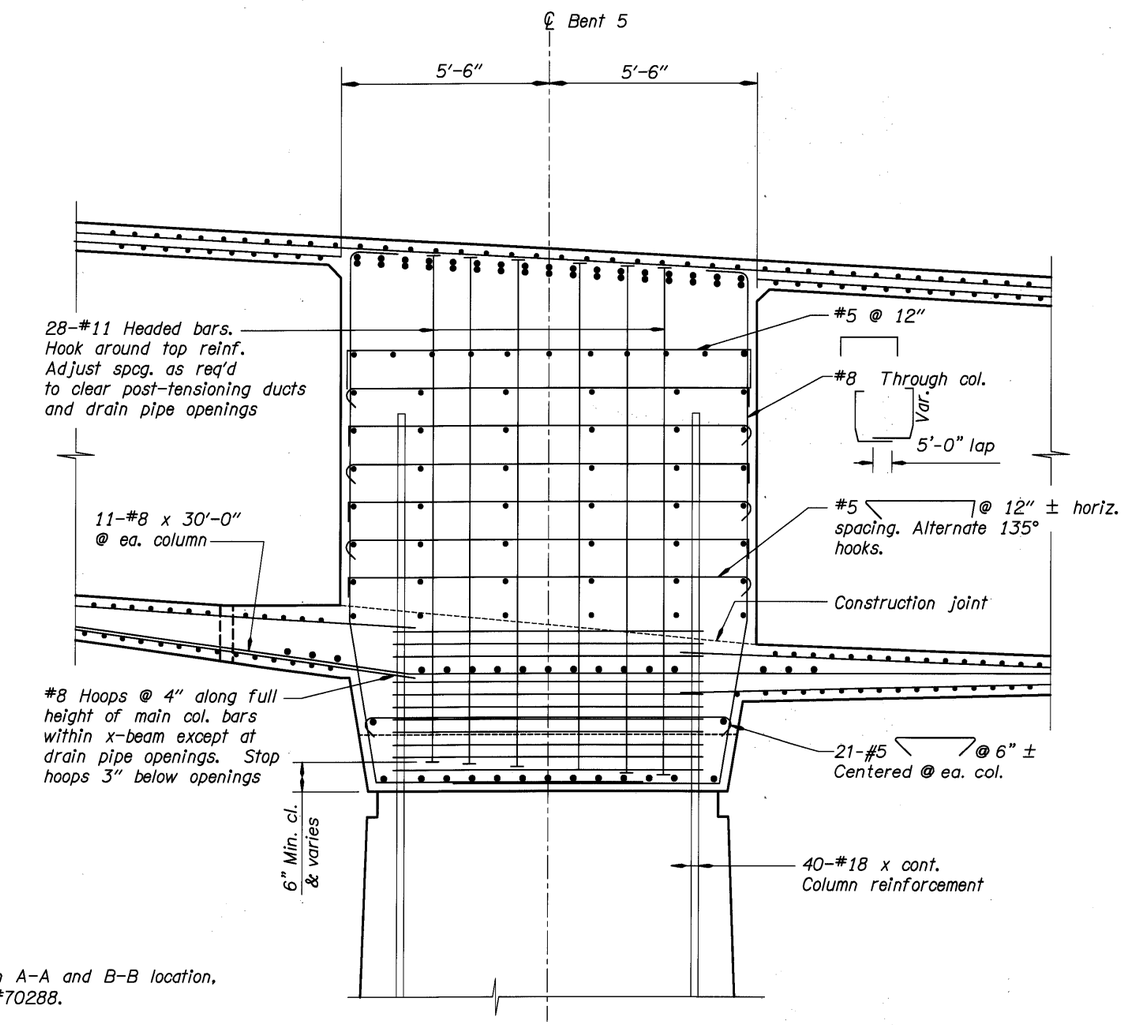
BENT 5 - INTEGRAL X-BEAM DETAILS (1 OF 2)

SHEET 101 OF 173.
DRAWING NO. 70288

Xrefs: Odotbdr.dwg



SECTION A-A
Scale: ½"=1'-0"



Note:
For Section A-A and B-B location, see Dwg. #70288.

SECTION B-B
Scale: ½"=1'-0"

Note:
For details not shown, see Sections A-A.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Josh Hewes

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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DATE Sept. 2005
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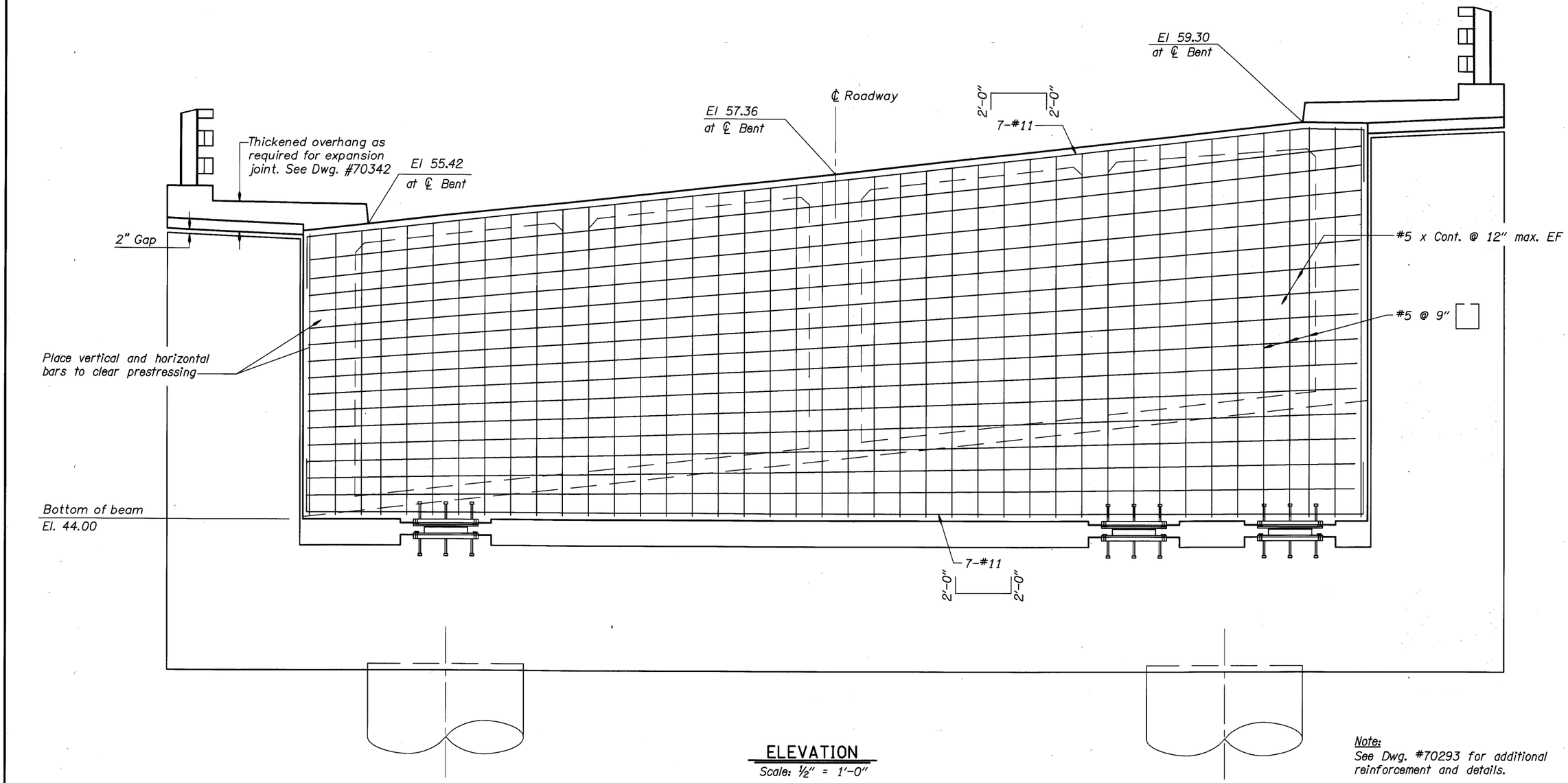
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 5- INTEGRAL X-BEAM DETAILS (2 OF 2)

SHEET 102 OF 173
DRAWING NO. 70289

Xrefs: Odotbdr.dwg SA080.dwg



ELEVATION
Scale: ½" = 1'-0"

Note:
See Dwg. #70293 for additional reinforcement and details.

See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74540 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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BRIDGE ENGINEERING SECTION

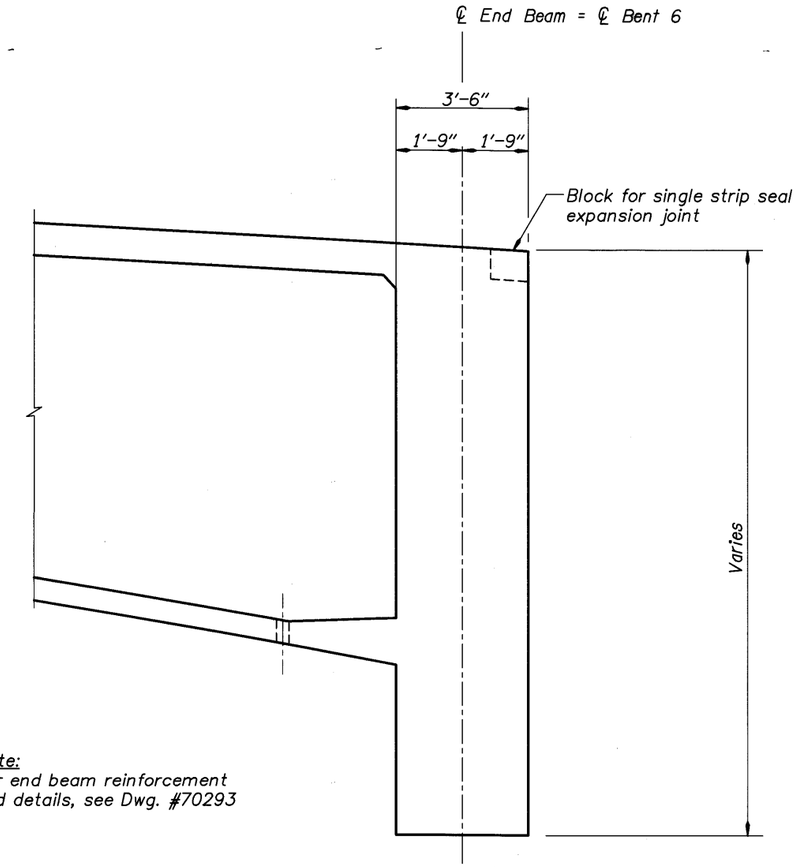
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 6 - END BEAM DETAILS (1 OF 2)

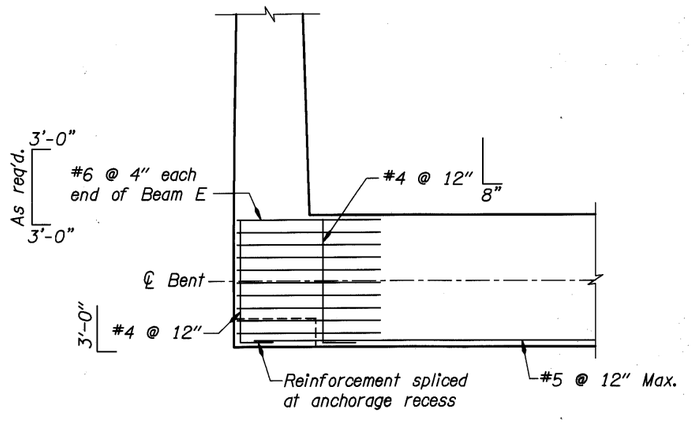
SHEET 103 OF 173
DRAWING NO. 70290

Xrefs: Odotbdr.dwg



Note:
For end beam reinforcement and details, see Dwg. #70293

END BEAM SECTION
Scale: ½"=1'-0"



PARTIAL PLAN SECTION BEAM-E END
Scale: ½"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 08, 2005 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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BRIDGE ENGINEERING SECTION

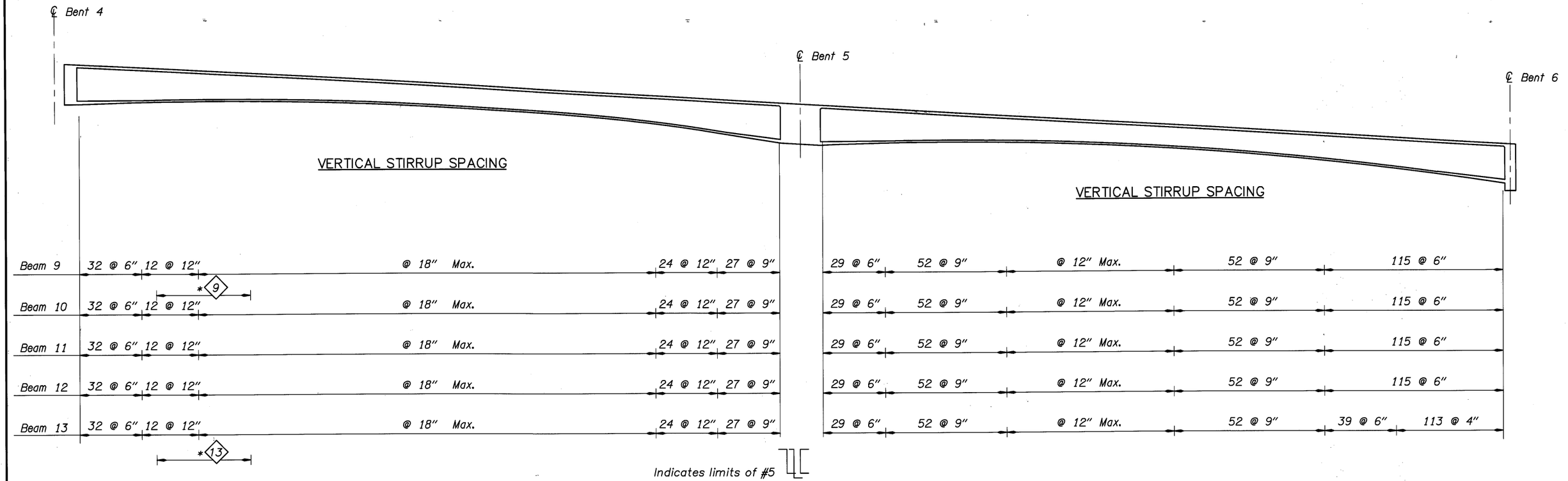
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 6 - END BEAM DETAILS (2 OF 2)

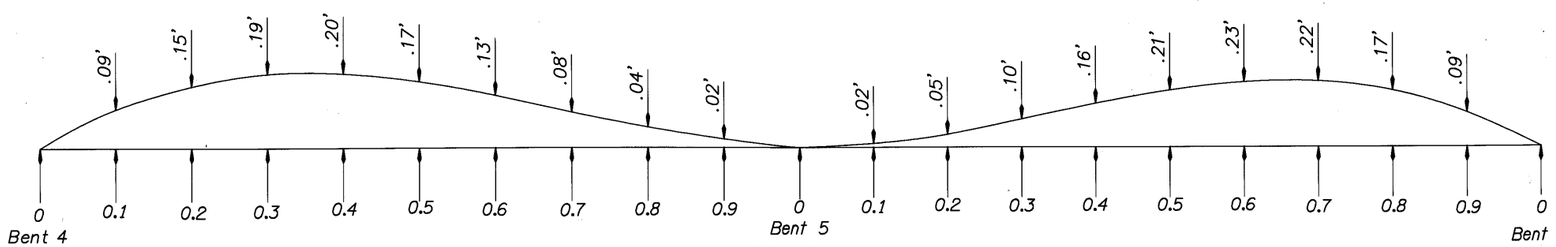
SHEET 104 OF 173
DRAWING NO. 70291

Xrefs: Odotbdr.dwg



LONGTUDINAL BEAM ELEVATION - SPANS 4 AND 5

No Scale



CAMBER DIAGRAM

No Scale

Note:
Camber is designed to compensate for deflection due to post-tensioning, the dead load of all concrete and reinforcing steel and the long term effects of shrinkage and creep.

Notes:

1. *Spacing of #5 stirrups is measured along ℄ Beam.*
2. *Stirrups are #5 [at Beams ◇9◇ and ◇13◇.*
   and #5 [at Beams ◇10◇, ◇11◇, and ◇12◇ unless noted otherwise.
3. *For stirrup spacing at beams ◇9a◇ and ◇13a◇, see Dwg. #70267.*

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CONDIT
EXPIRES: 12-31-05

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BRIDGE ENGINEERING SECTION

BRIDGE NO.	20136
DATE	Sept. 2005
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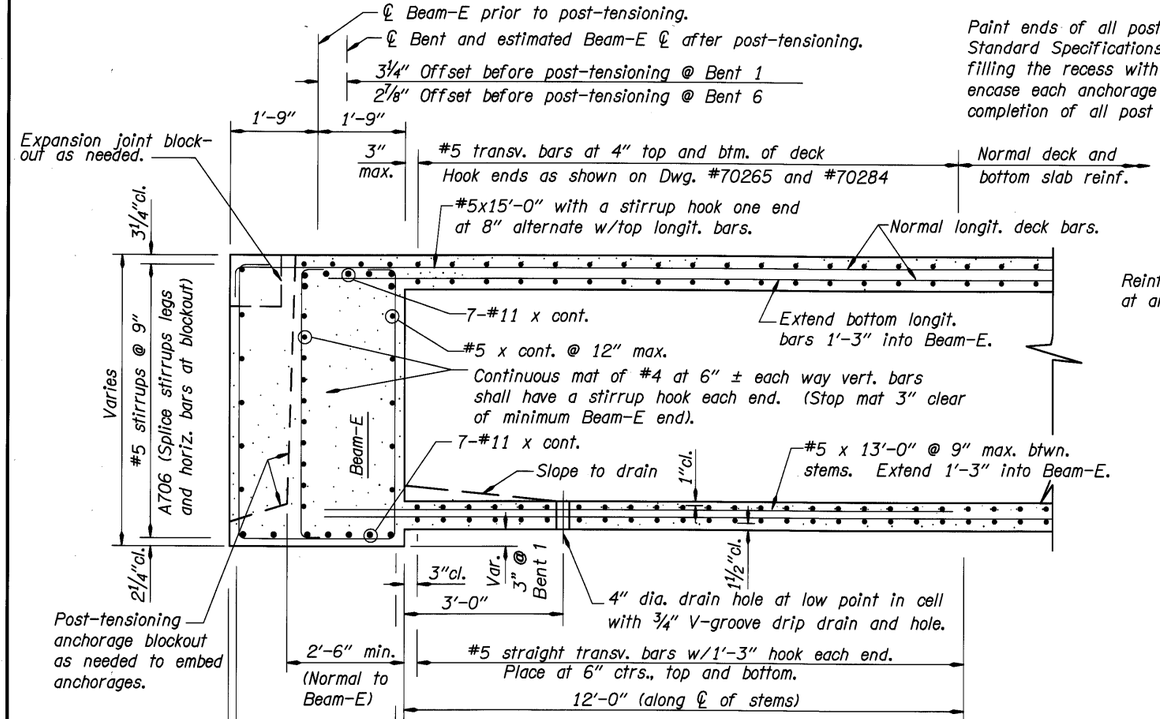
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

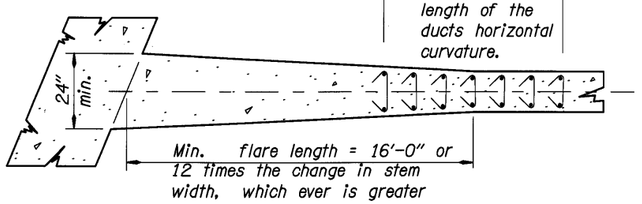
CAMBER DIAGRAM - SPANS 4 AND 5

SHEET 105 OF 173.
DRAWING NO. 70292

Xrefs: Odotbdr.dwg

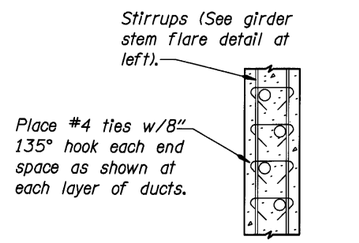


BEAM-E, DECK AND BOTTOM SLAB



GIRDER STEM FLARE

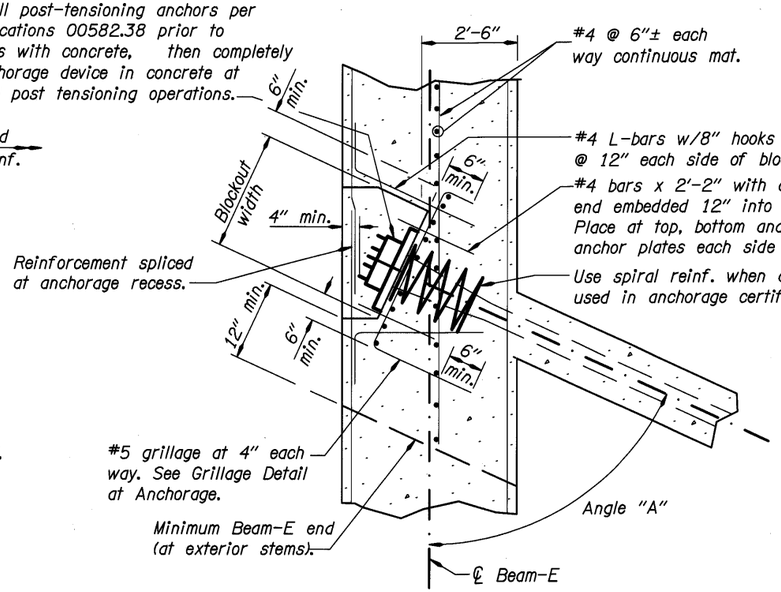
NOTE :
Flare interior face only of exterior stems.



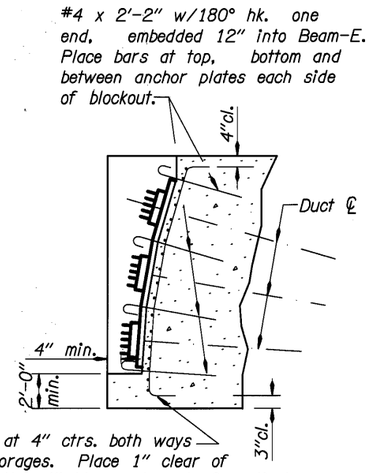
HORIZONTAL TIE DETAILS

(In areas with horizontal curved ducts)

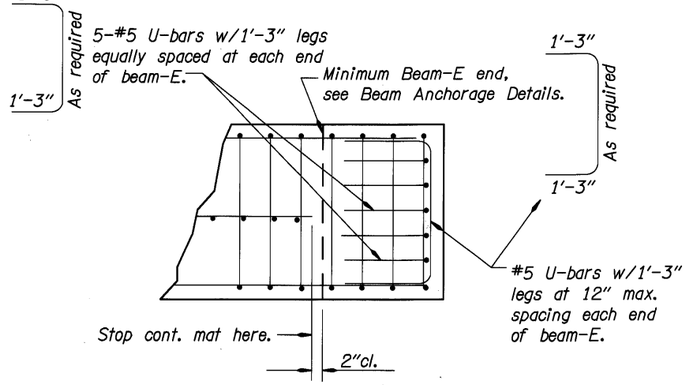
Paint ends of all post-tensioning anchors per Standard Specifications 00582.38 prior to filling the recess with concrete, then completely encase each anchorage device in concrete at completion of all post tensioning operations.



BEAM ANCHORAGE DETAILS



GRILLAGE AT ANCHORAGE



PARTIAL PLAN SECTION BEAM-E END

Typical for Bents 3, and 4.
See Dwg. #70270 for Bent 1 and Dwg. #70291 for Bent 6.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

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△	DATE	REVISION	BY
	03/09	As- Constructed	TDF

Xrefs: ODOTBDR.dwg

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON KENT WILLIAM CORDTZ MARCH 09, 2004
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

GENERAL DETAILS - POST-TENSIONING

SHEET 106 OF 173
DRAWING NO. 70293

PRESTRESSING NOTES

CONCRETE:

All concrete in post-tensioned box girder, bottom slab, stems is Class 5000 - ¾".
All concrete in deck is Class HPC 5000 - ¾".
Apply prestressing force after concrete has attained a strength of 5000 psi but not until a minimum of 14 days after final placement.

PRESTRESSING STEEL:

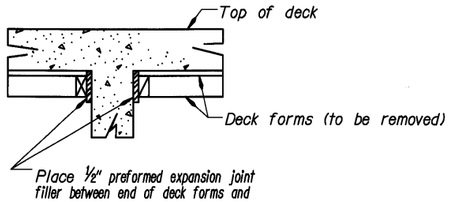
For Prestressing Force CGS Diagram, see Dwgs. #70258, #70259, #70260, #70261, #70281, and #70282.
Use low relaxation seven wire strand (bright wire) (AASHTO M203 (ASTM A416), Grade 270, Supplement 1 with a minimum ultimate strength f's = 270 ksi.
Allowable initial stress before anchor set is 0.75 f's
Allowable initial stress at anchorages and couplers after anchor set is 0.70 f's.
Allowable initial stress at any other point after anchor set is 0.74 f's.
Allowable final service load stress after losses at any point is 0.72 f's.

DUCTS:

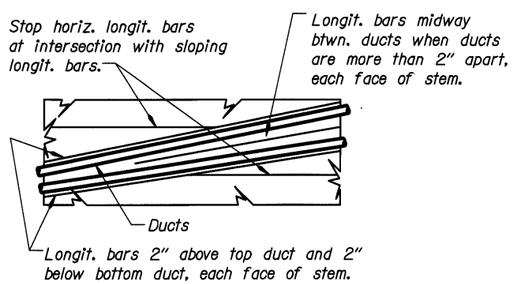
Provide ducts for prestressing steel in accordance with the specifications. Ducts may be bundled as shown. Stagger coupling locations in adjacent ducts. Securely fasten ducts to stirrups to prevent movement. The maximum permissible duct diameter is 0.4 times the minimum stem thickness. The duct area shall be at least 2.5 times the net prestessing steel contained.

GROUTING:

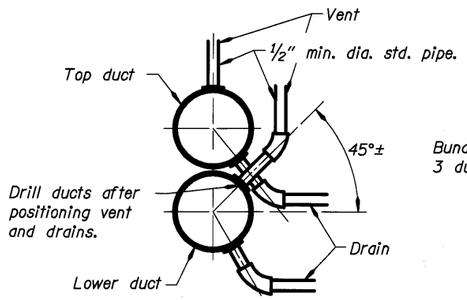
Pressure grout prestressing steel in accordance with the Specifications.



INTERIOR FORM DETAIL



LONGITUDINAL STEM REINFORCING AT DUCT
PART ELEVATION OF GIRDER STEM



GROUT VENT DETAIL FOR
HIGH POINT VENTS AND
LOW POINT DRAINS

STRESSING DETAILS:

Initial force before anchor set, Pj, is as follows:

$$As = \frac{Pj}{0.75f's.}$$

Initial force before anchor set, Pj, is as follows:

Beams	Path	Pj	Minimum final force and location
1-4	2	13,010,000 lbs	10,480,000 lbs at Bent 1 9,300,00 lbs at Bent 3
5-8	1	11,430,000 lbs	9,140,000 lbs at Bent 1 8,180,000 lbs at Bent 3
9-13	3	14,940,000 lbs	11,990,000 lbs at Bent 4 10,000,000 lbs at Bent 6

Jack tendons to (As) (0.75f's) and anchor at an equivalent anchor set of ⅜ inch. The prestress force is designed to be distributed equally to all girders unless shown otherwise. The prestress force per girder may vary by 5% from the design value provided that the total force is symmetrical about center line of structure.

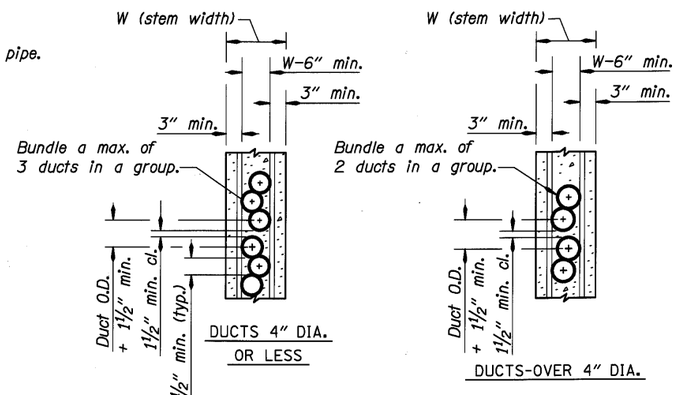
Stress each tendon as follows:

Beams	Path	
1-4	2	Stress from Bent 1 end of structure
5-8	1	Stress from Bent 1 end of structure
9-13	3	Stress from Bent 4 end of structure

Stress no more than 50% of strands in one girder before an equal number are stressed in the other girders. No more than 1/6 of total prestressing force is to be eccentric about center line of structure at any one time. Begin stressing at or near center line of section.

DESIGN DATA

Use friction factors of u = 0.25, k = 0.0002 to compute losses.
Assume loss of stress in post-tensioned prestressing steel to be 25,000 psi due to creep and shrinkage of concrete, creep of steel, and sequence of stressing.



DUCT BUNDLING DETAILS

CONSTRUCTION NOTES:

Allow for total long term structure shortening (due to effects of prestressing, elastic shortening, creep and shrinkage).
The anticipated total shortening is 3¼" at Bent 1, 2½" at Bent 3, 2⅛" at Bent 4 and 2⅞" at Bent 6.

Construct falsework to permit the superstructure to lift off the falsework and shorten during stressing operations. Other exterior forms are to be free of falsework and any interior forms in cells are not to resist shortening during stressing operation. Do not remove falsework under the bottom slab of the box girder until after stressing.

Dimensions of concrete sections and the anchorage reinforcement shown on plans determine pay quantities. Changes requested by contractor to accommodate a given post-tensioning system are not reason for extra payment.

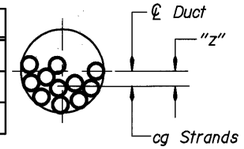
Paint ends of all post-tensioning anchors per Standard Specifications Sec. 00582.38 prior to filling the recess with concrete.

Place concrete for sidewalks prior to stressing.

Place concrete for bridge rails in Span 1 after stressing and grouting operations.

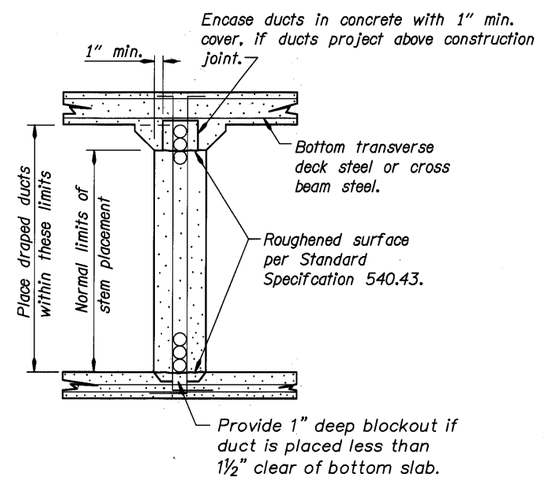
Obtain approval of the Engineer for any changes.

DUCT SIZE (in.)	"Z" (in.)
3" O.D. and less	½"
Over 3" O. D. to 4"	¾"
Over 4" O.D.	1"



Consider the amount of tendon offset ("z") within the duct as shown for the purpose of calculating the center of gravity of prestressing steel.

TENDON OFFSET DETAIL



TENDON LIMITATION DETAILS

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Gernot Komar
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

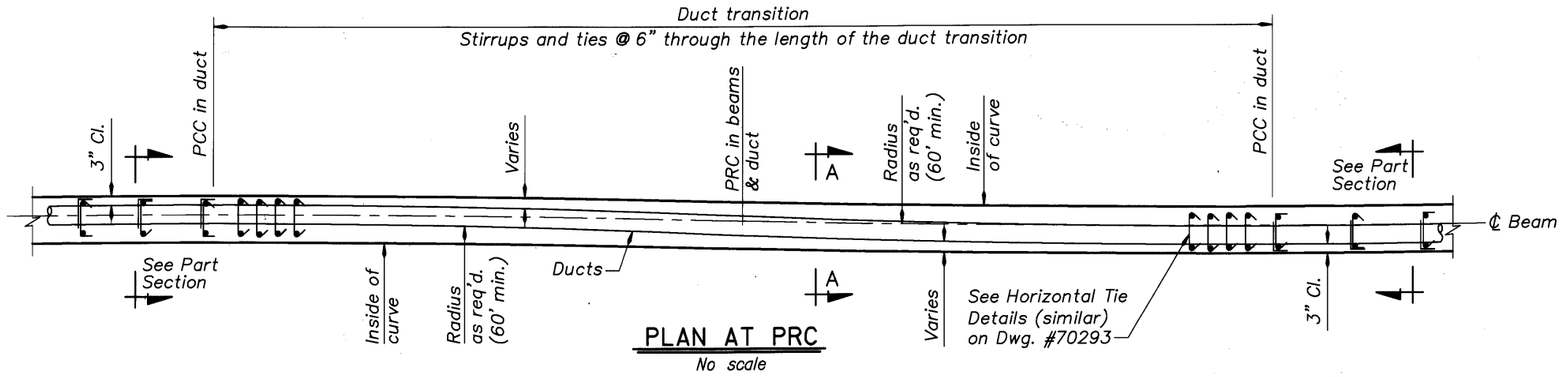
POST-TENSIONING DETAILS AND NOTES

SHEET 107 OF 173
DRAWING NO. 70294

Xrefs: 07929_11_DLV.dwg 00OTBSK.dwg 07929_12_dLV.dwg

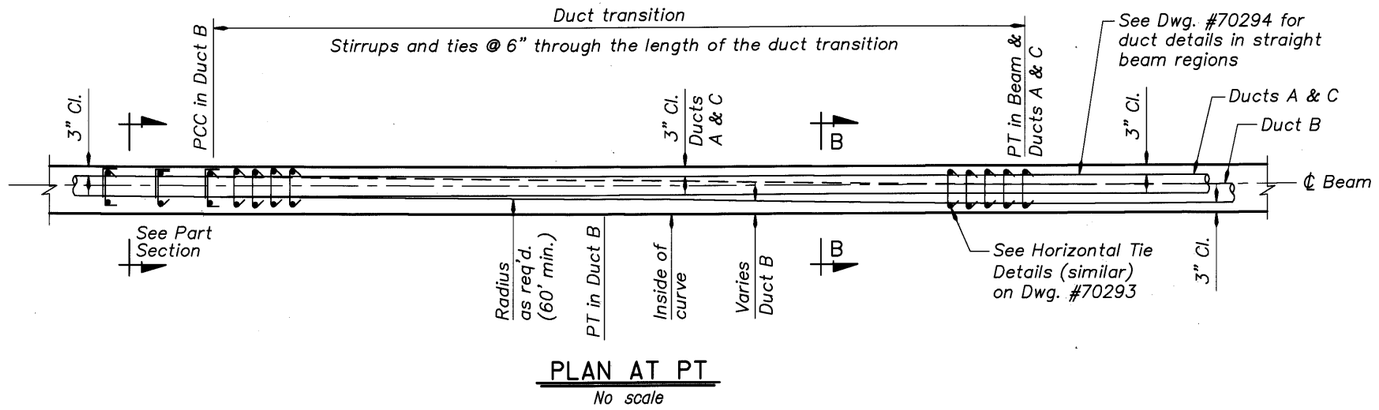
LIMITS OF CURVED BEAM DETAIL

Span No.	Beam No.	Direction	Begin Station	End Station
1	1	Left	11+87.42	12+47.36
	2	Left	11+86.47	12+47.36
	3	Left	11+85.53	12+47.36
	6	Right	11+51.03	12+68.09
	7	Right	11+52.60	12+68.09
	8	Right	11+54..20	12+68.09
2	1	Right	13+15.00	13+91.02
	1	Left	13+91.02	14+67.03
	2	Right	13+15.00	13+91.02
	2	Left	13+91.02	14+67.03
	3	Right	13+15.00	13+91.02
	3	Left	13+91.02	14+67.03
5	9	Left	21+79.84	22+76.07
	10	Left	21+79.84	22+76.07
	11	Left	21+79.84	22+76.07
	12	Left	21+79.84	22+76.07
	13	Left	21+79.84	22+76.07



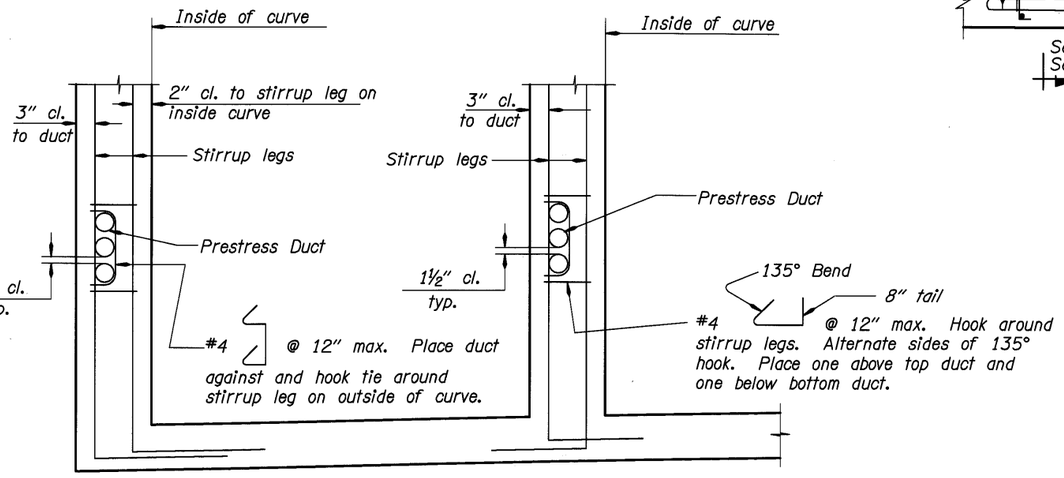
PLAN AT PRC

No scale



PLAN AT PT

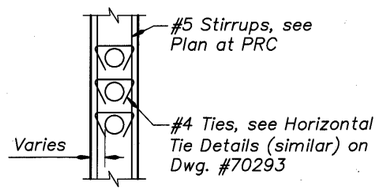
No scale



PART SECTION

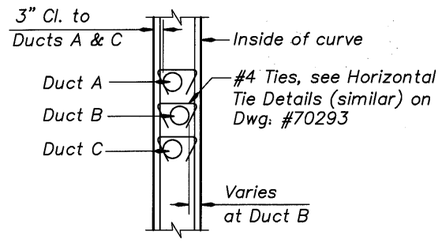
No scale

Note: Details shown are for a curve to the right with the section taken looking up station.



SECTION A-A

No scale



SECTION B-B

No scale

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ

EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES

TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

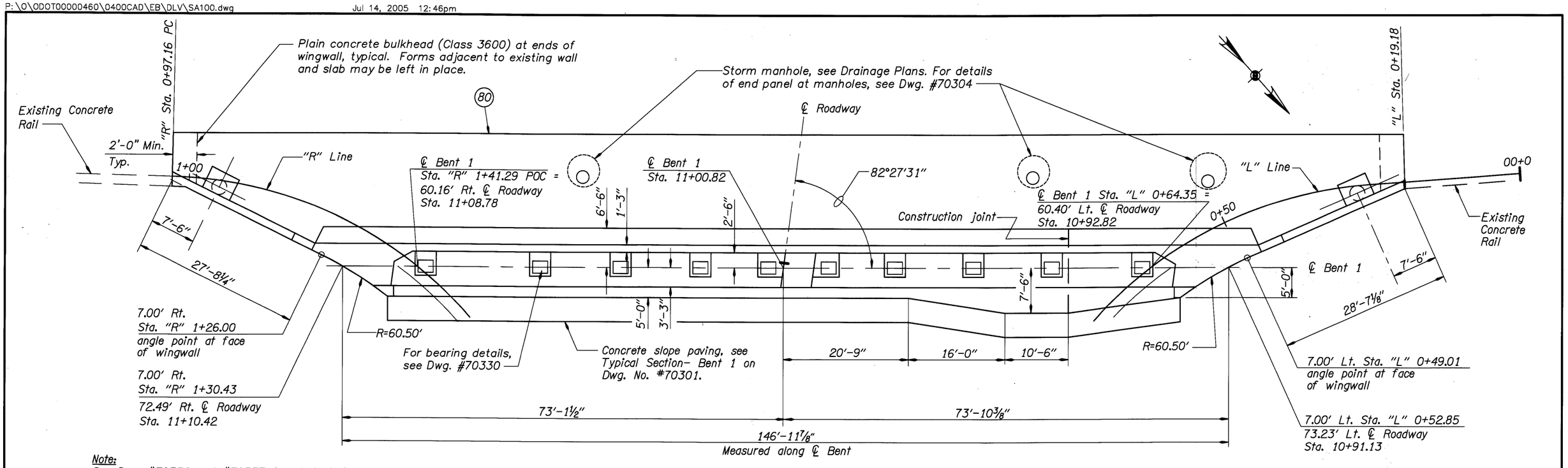
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

CURVED BEAM DETAILS

SHEET 108 OF 173

DRAWING NO. 70295

Xrefs: Odotbdr.dwg

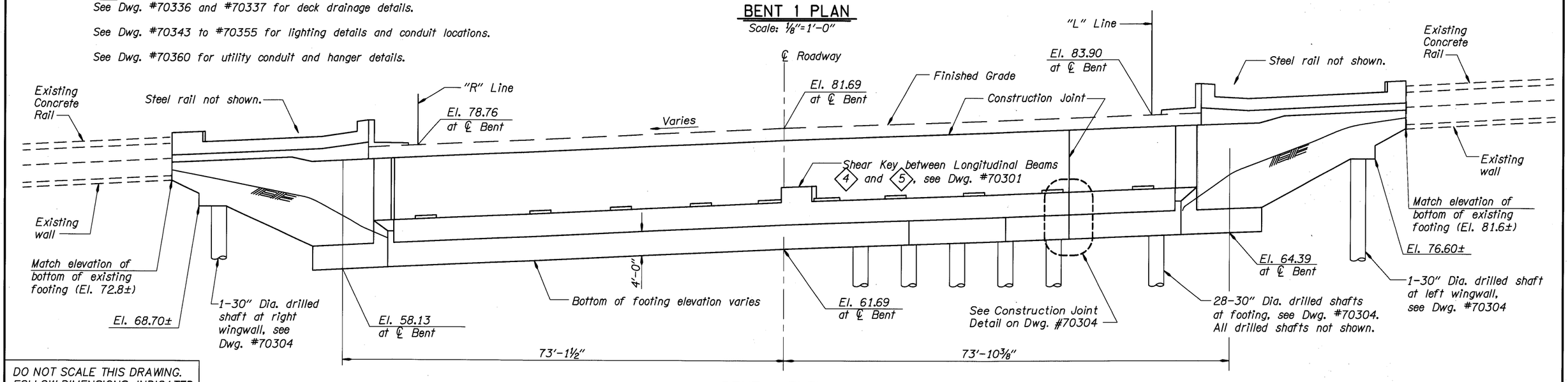


BENT 1 PLAN
Scale: ⅛"=1'-0"

Note:
See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.



BENT 1 ELEVATION
Scale: ⅛"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05
DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

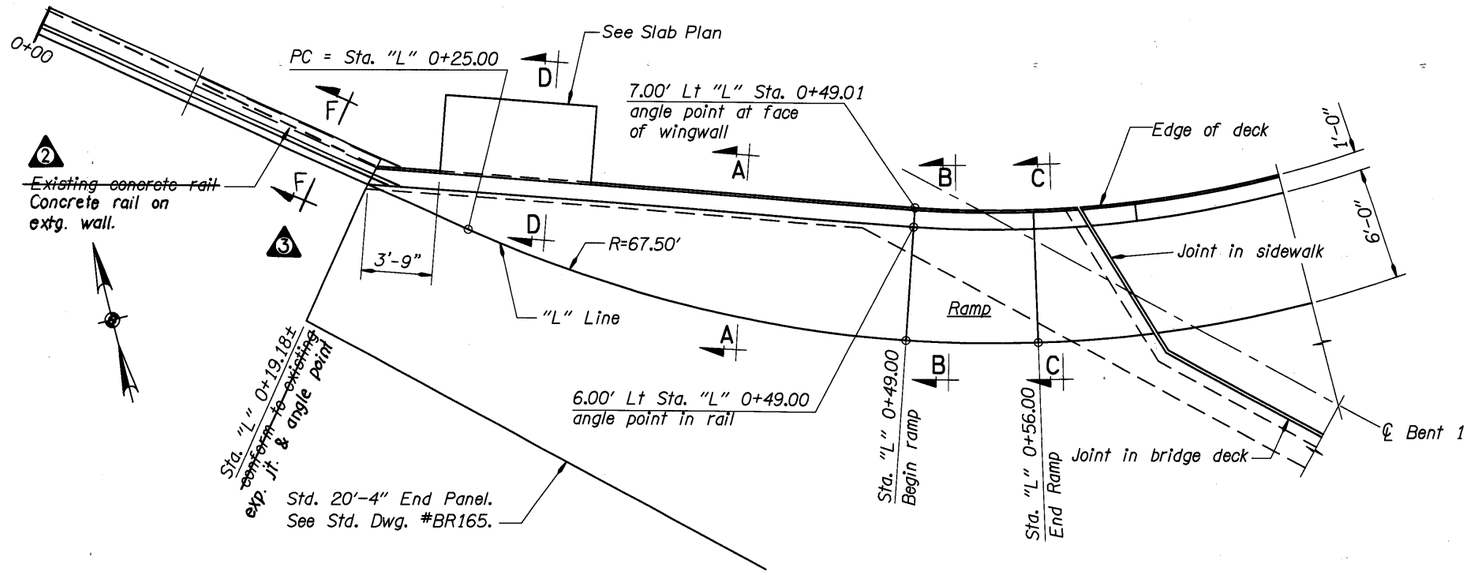
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 1 - PLAN AND ELEVATION

SHEET 109 OF 173.
DRAWING NO. 70296

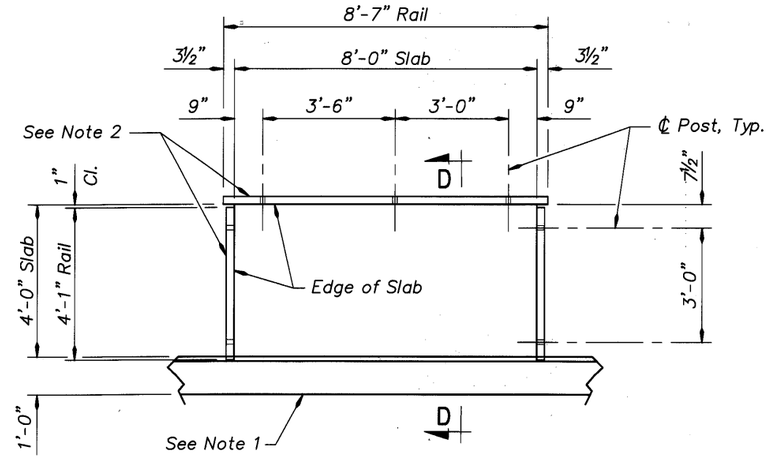
Xrefs: Odotbdr.dwg SA1000.dwg SA104.dwg



SIDEWALK PLAN

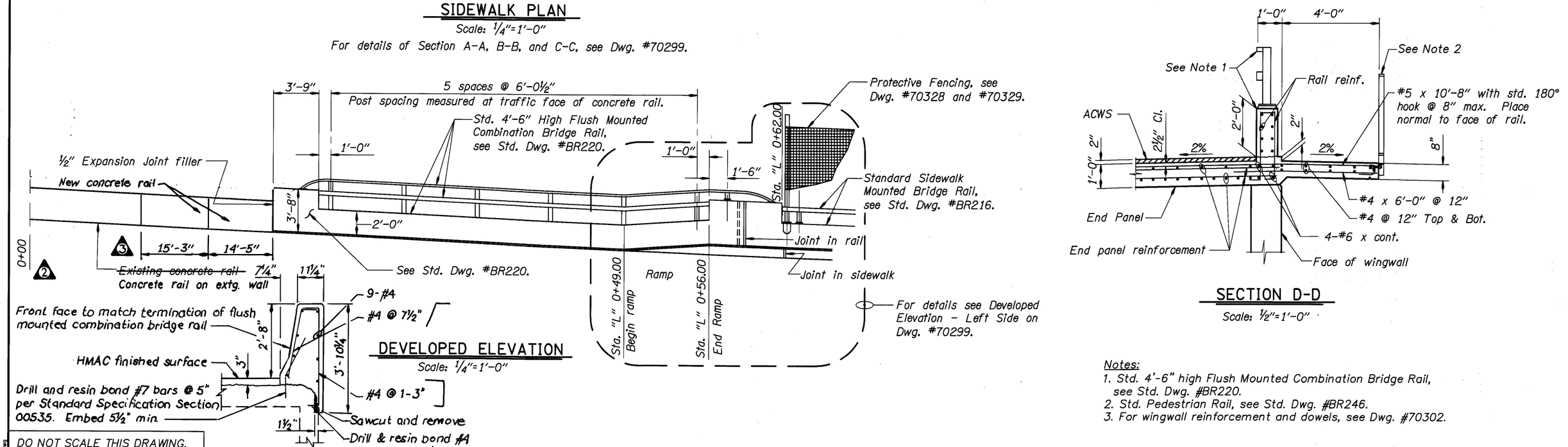
Scale: 1/4"=1'-0"

For details of Section A-A, B-B, and C-C, see Dwg. #70299.



SLAB PLAN

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



DEVELOPED ELEVATION

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

SECTION F-F

No Scale

SECTION D-D

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

Notes:
1. Std. 4'-6" high Flush Mounted Combination Bridge Rail, see Std. Dwg. #BR220.
2. Std. Pedestrian Rail, see Std. Dwg. #BR246.
3. For wingwall reinforcement and dowels, see Dwg. #70302.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	08/05	Added slab	KWC
2	10/08	Revised Rail Transition	KPBU
3	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

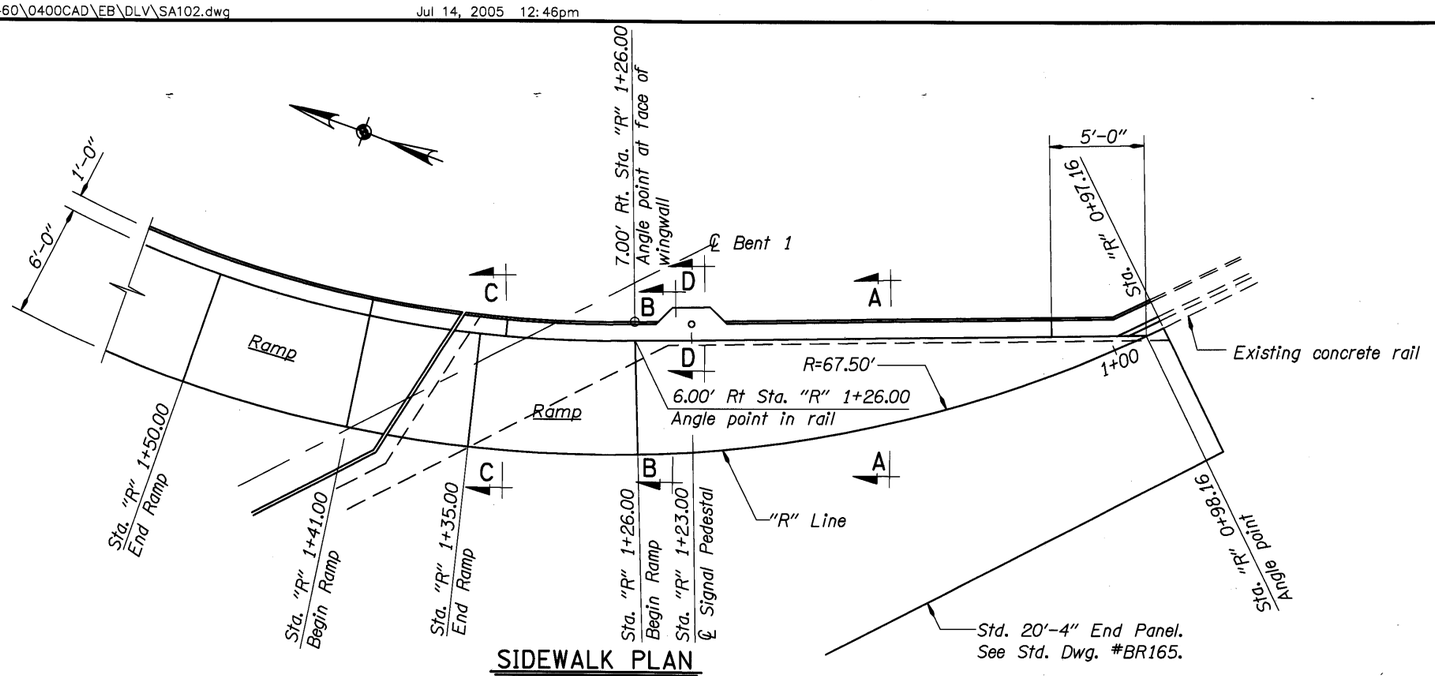
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 1 - LEFT SIDEWALK DETAILS

SHEET 110 OF 173
DRAWING NO. 70297

Xrefs: Odotbdr.dwg NEWSauvie_Arch01.dwg Arch2d.dwg

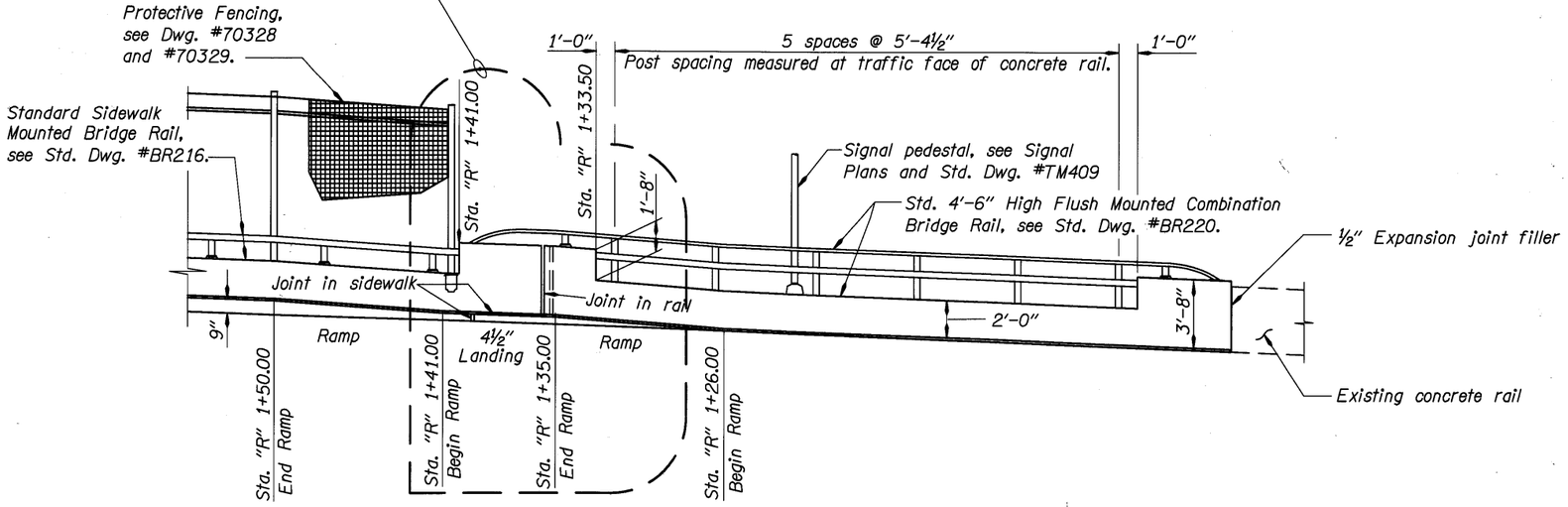


SIDEWALK PLAN

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

For details see "Developed Elevation – Right Side" on Dwg. #70299.

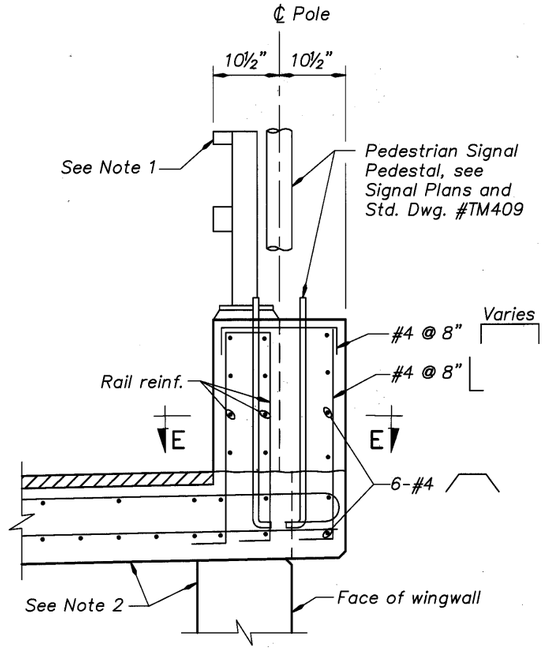
For details of Sections A-A, B-B and C-C, see Dwg. #70299.



DEVELOPED ELEVATION

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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

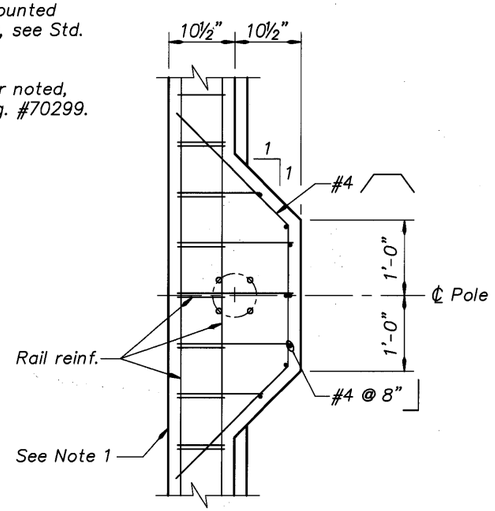


SECTION D-D

Scale: 1" = 1'-0"

Notes:

1. Std. 4'-6" high Flush Mounted Combination Bridge Rail, see Std. Dwg. #BR220.
2. For details not shown or noted, see Section A-A on Dwg. #70299.



SECTION E-E

Scale: 1" = 1'-0"

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ

EXPIRES: 12-31-05

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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

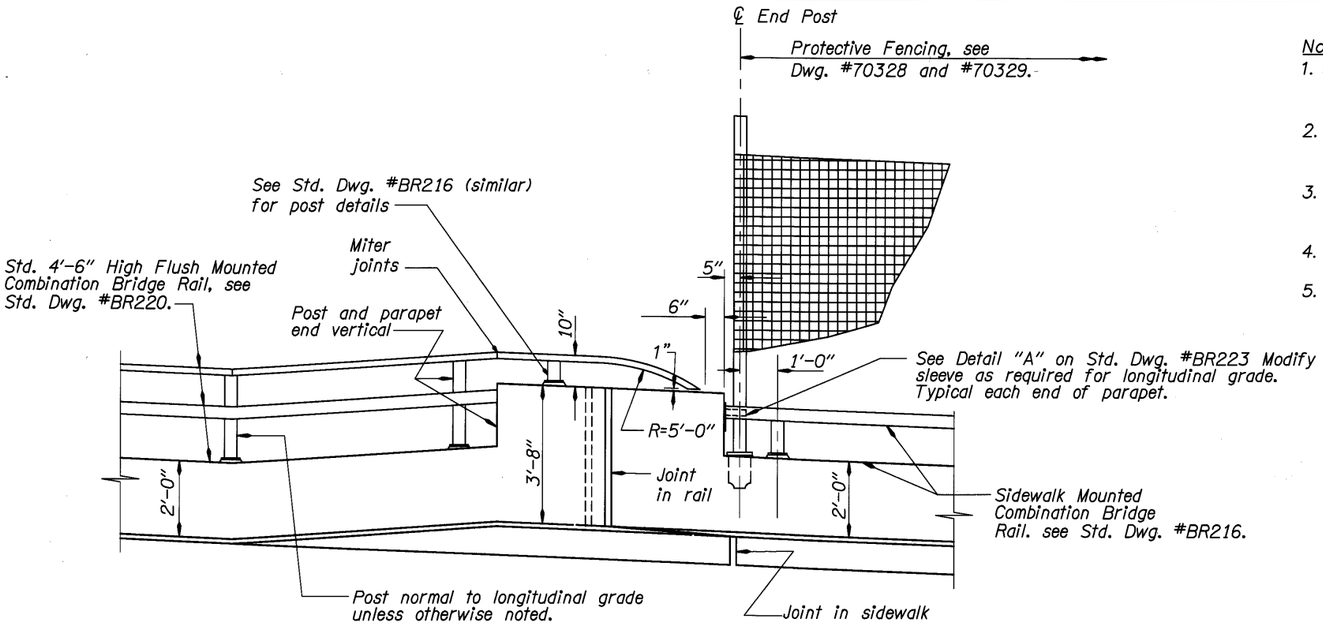
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 1 - RIGHT SIDEWALK DETAILS

SHEET 111 OF 173
DRAWING NO. 70298

Xrefs: Odotbdr.dwg

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

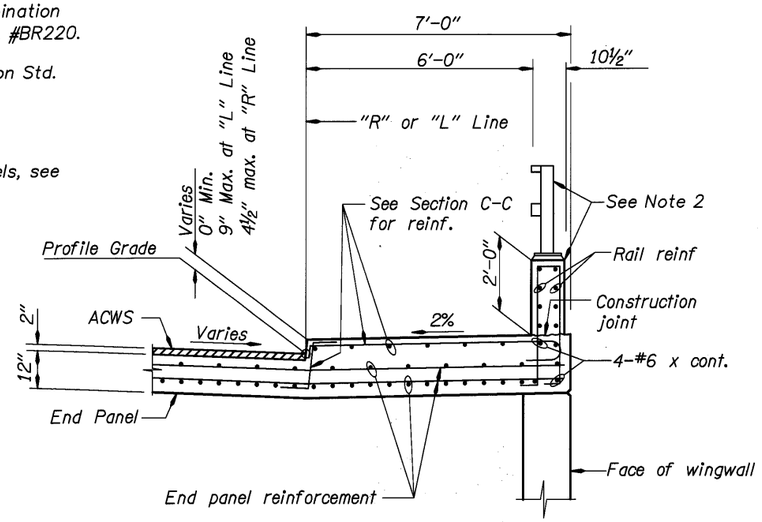


DEVELOPED ELEVATION-LEFT SIDE

Scale: ½"=1'-0"

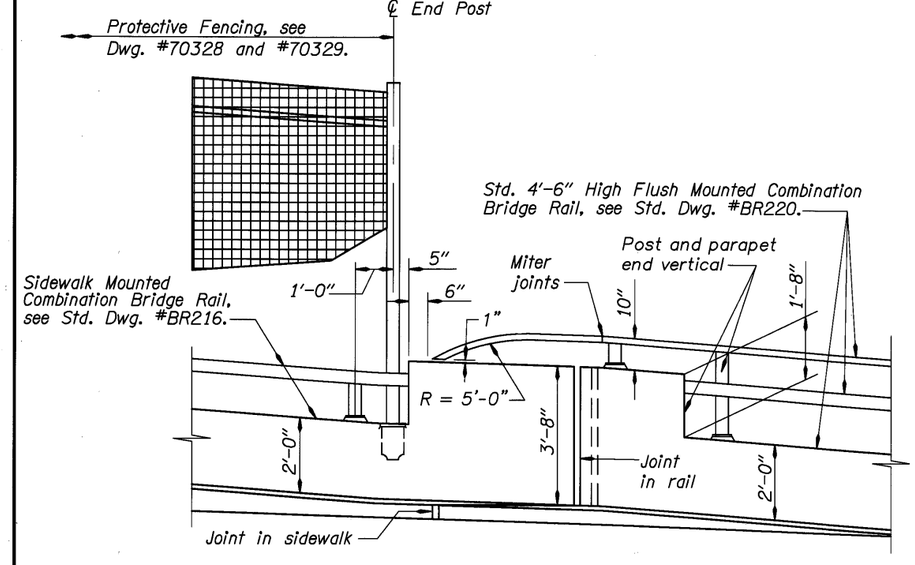
Notes:

1. Std. 4'-6" high Flush Mounted Combination Bridge Rail, see Std. Dwg. #BR220.
2. Std. 4'-6" high Flush Mounted Combination Bridge Rail (modified), see Std. Dwg. #BR220.
3. For reinforcement see Section A-A on Std. Dwg. #BR220.
4. TS3x2 Rail, see Std. Dwg. #BR220.
5. For wingwall reinforcement and dowels, see Dwg. #70302.



SECTION B-B

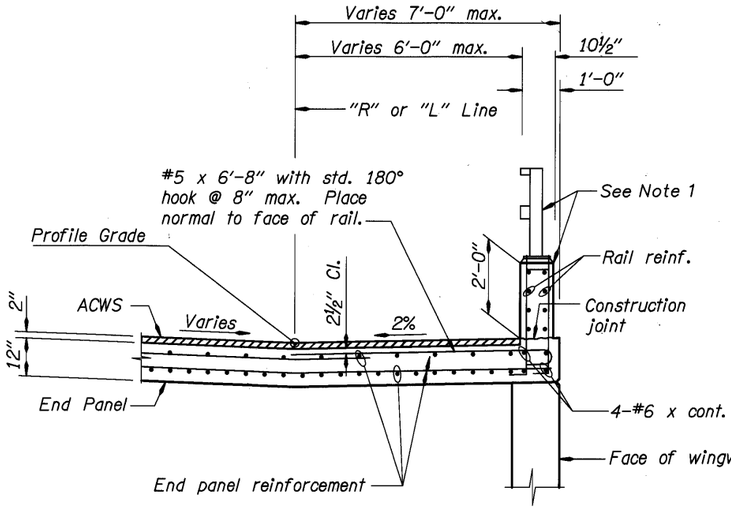
Scale: ½" = 1'-0"



DEVELOPED ELEVATION-RIGHT SIDE

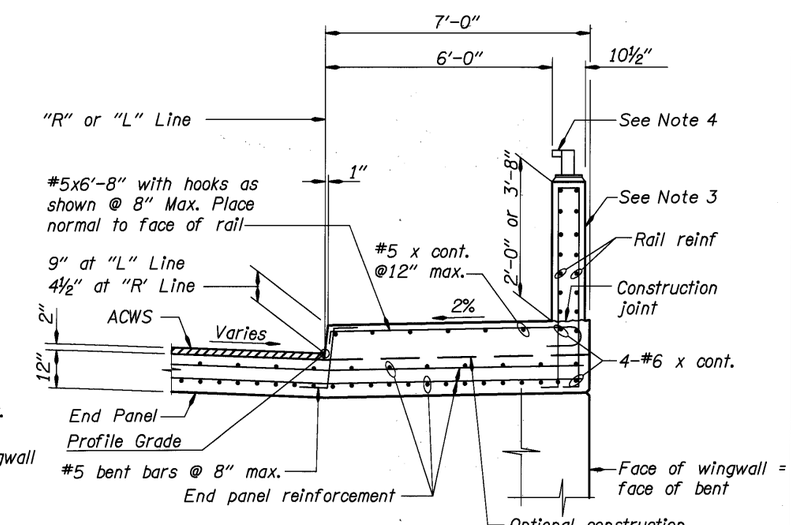
Scale: ½"=1'-0"

Note: For details not shown, see "Developed Elevation-Left Side".



SECTION A-A

Scale: ½" = 1'-0"



SECTION C-C

Scale: ½" = 1'-0"

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

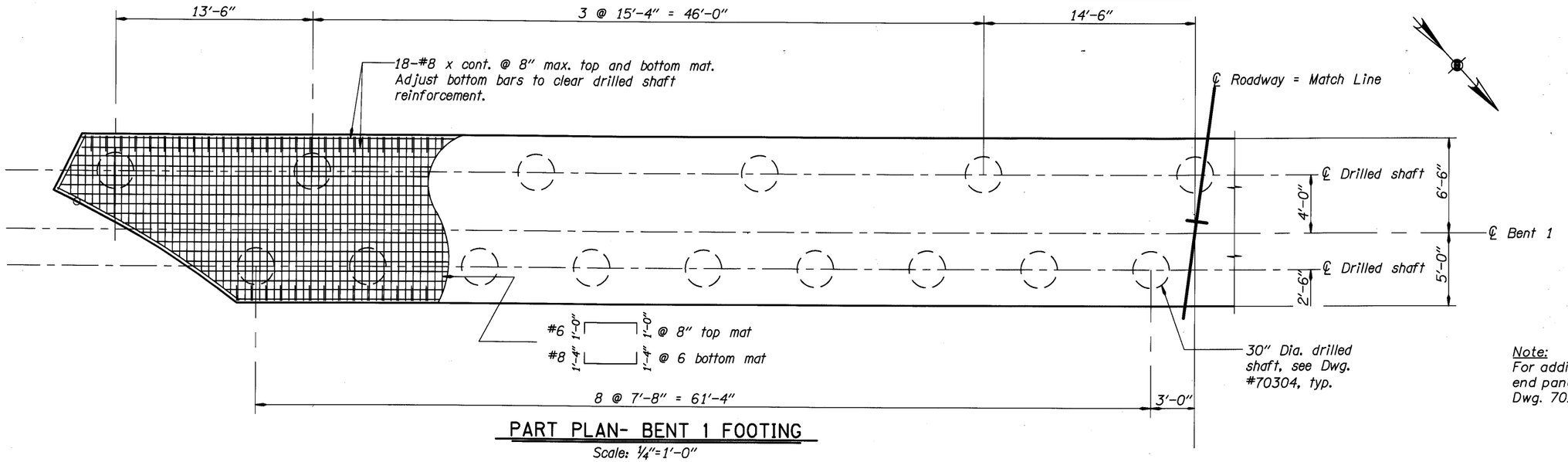
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 1 - SIDEWALK AND RAIL DETAILS

SHEET 112 OF 173
DRAWING NO. 70299

Xrefs: Odotbar.dwg SA102.dwg

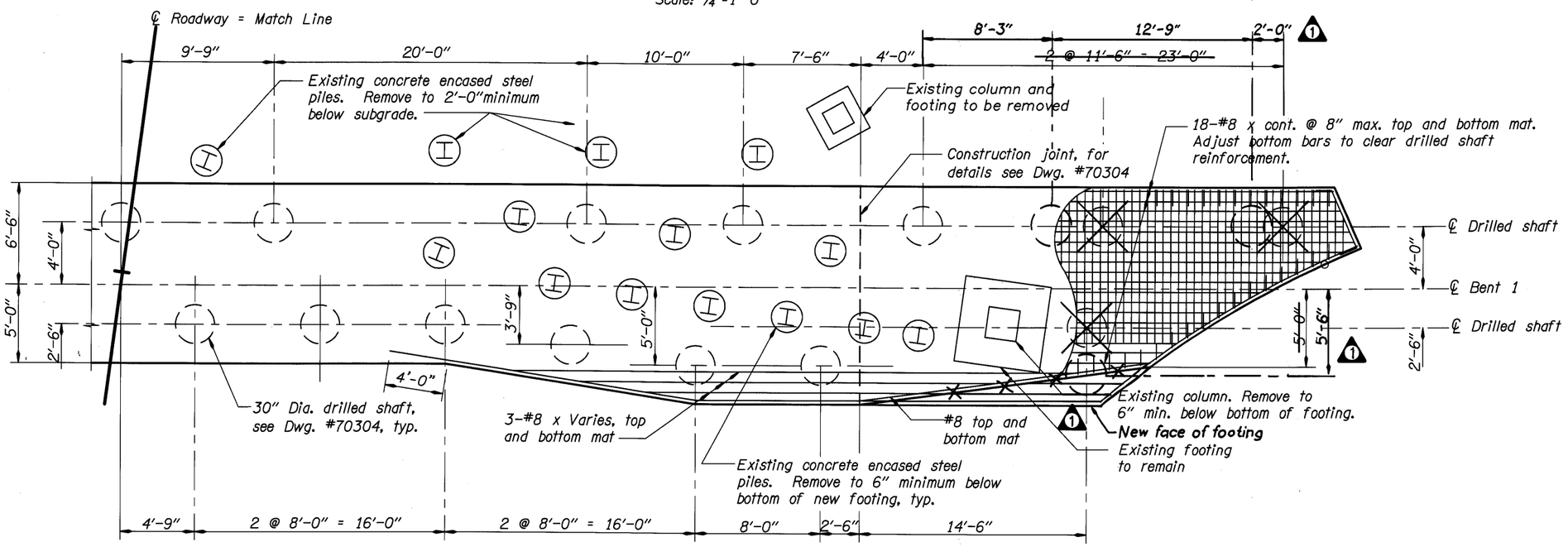
P:\O\ODOT00000460\0400CAD\EB\DLV\SA104.dwg Jul 14, 2005 12:46pm



PART PLAN- BENT 1 FOOTING

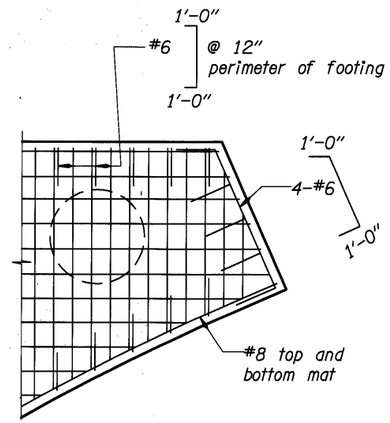
Scale: 1/4"=1'-0"

Note:
For additional bridge, concrete fill and end panel removal requirements, see Dwg. 70202.



PART PLAN- BENT 1 FOOTING

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



FOOTING CORNER DETAIL

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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

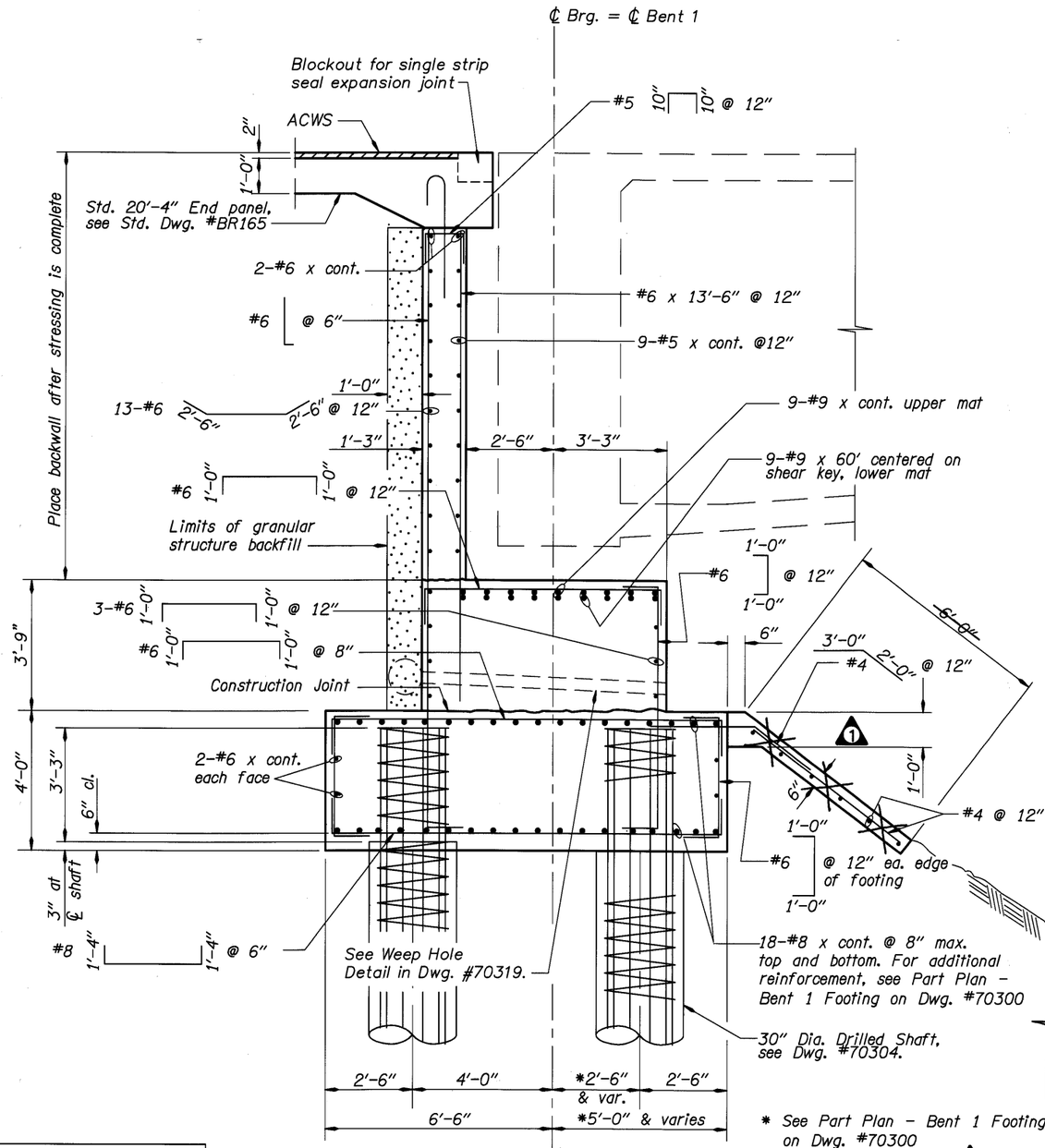
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

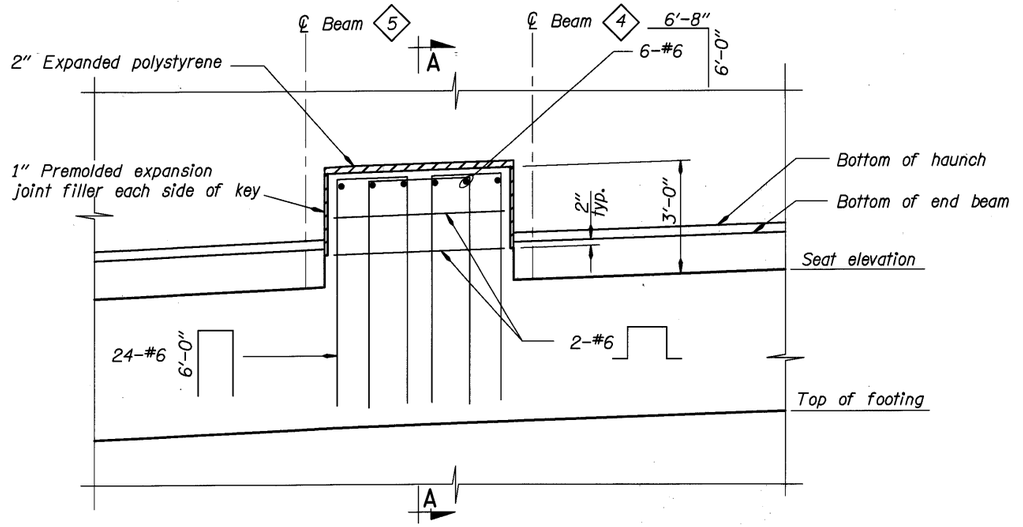
BENT 1 - FOOTING PLAN

SHEET 113 OF 173
DRAWING NO. 70300

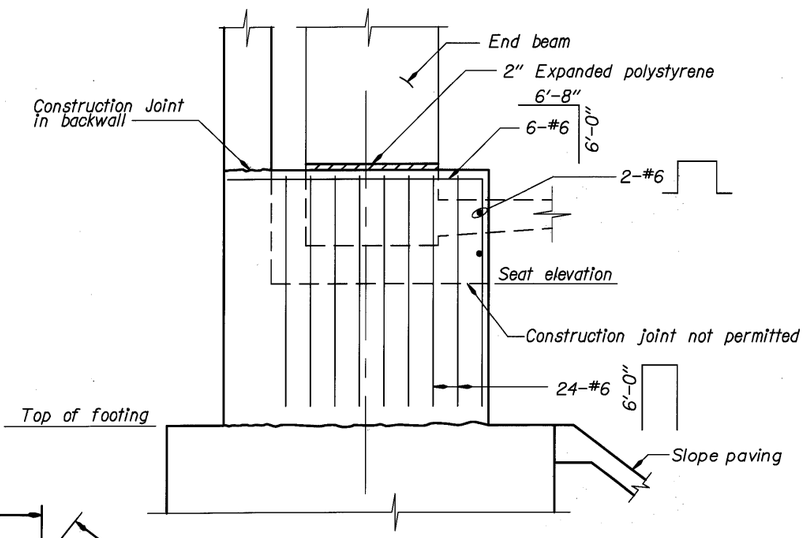
Xrefs: Odotbdr.dwg SA100.dwg Exist_Br_L0.dwg



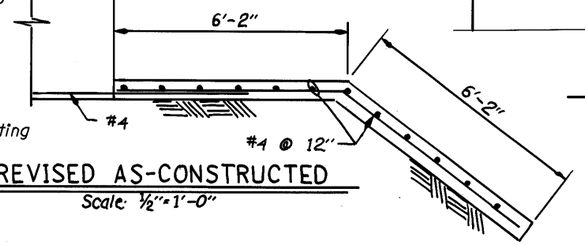
TYPICAL SECTION - BENT 1
Scale: ½"=1'-0"



BENT 1 SHEAR KEY DETAIL
Scale: ½"=1'-0"



SECTION A-A
Scale: ½"=1'-0"



1 REVISED AS-CONSTRUCTED
Scale: ½"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Brent Ortis MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

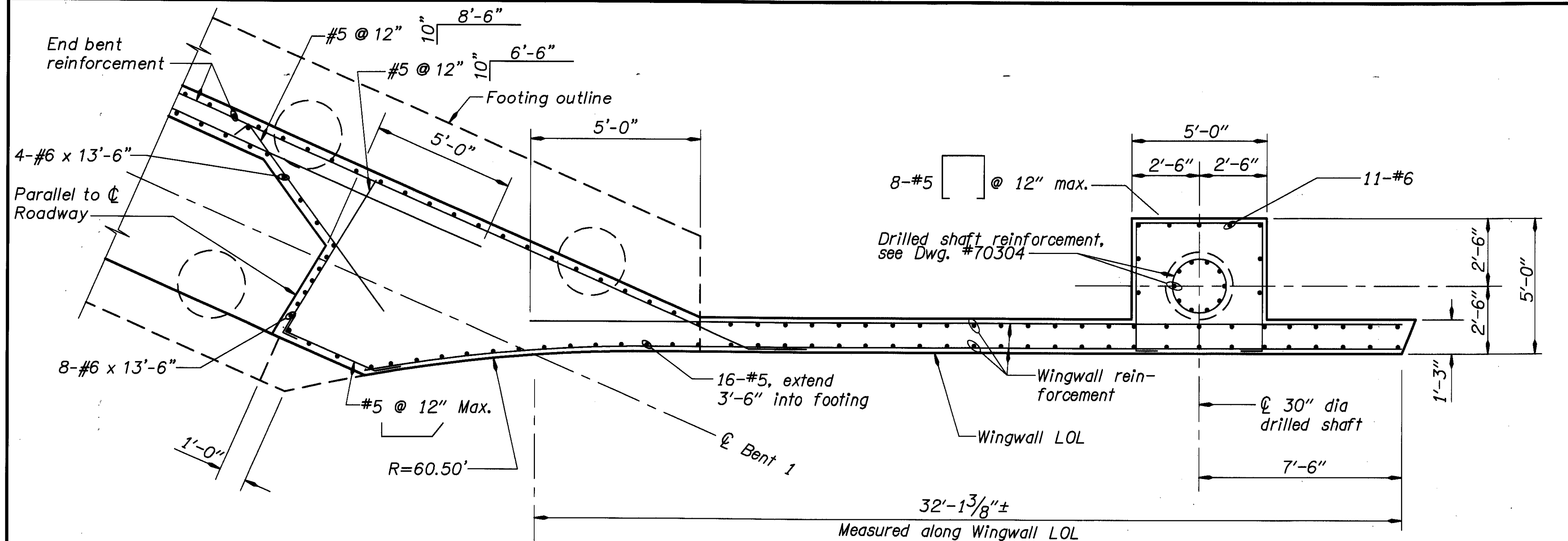
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

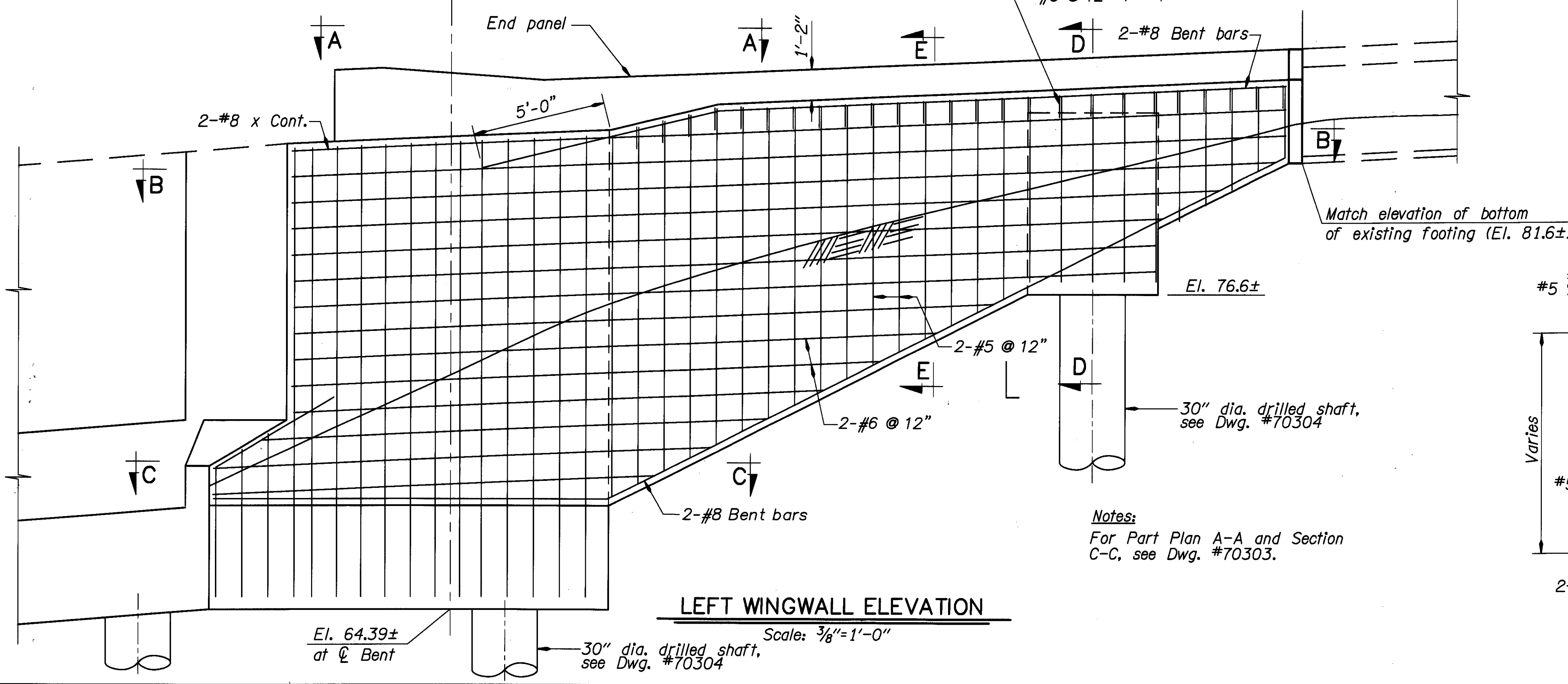
BENT 1 - TYPICAL SECTION AND DETAILS

SHEET 114 OF 173
DRAWING NO. 70301

Xrefs: Odotbdr.dwg SA100.dwg

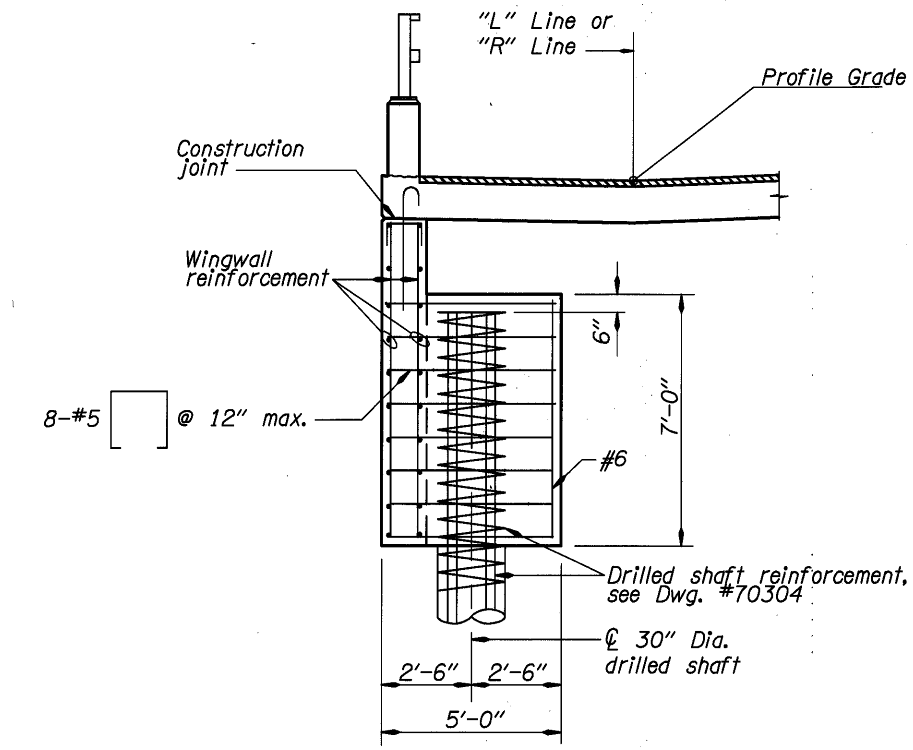


SECTION B-B
Scale: 3/8"=1'-0"

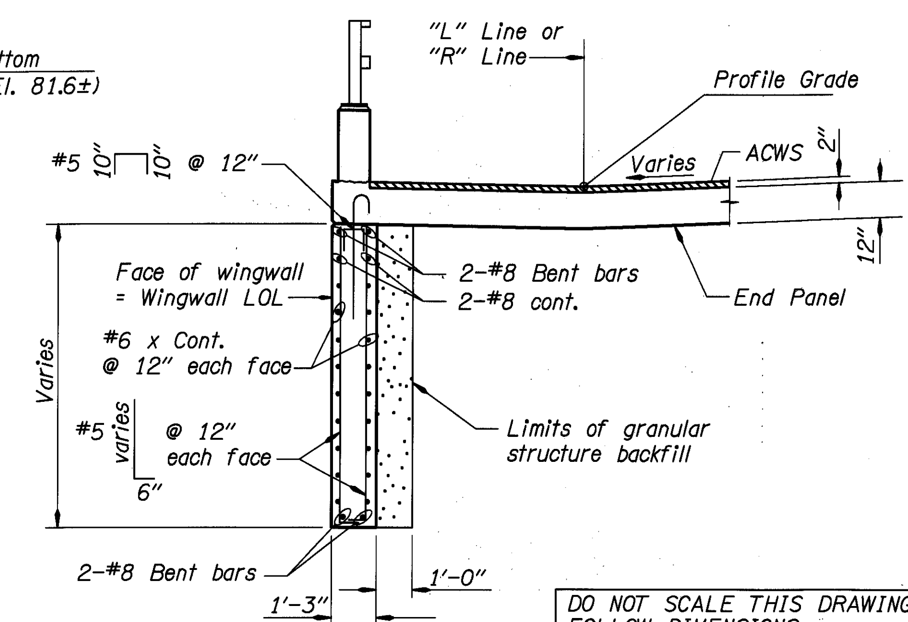


Notes:
For Part Plan A-A and Section C-C, see Dwg. #70303.

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



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



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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	08/05	Revised Sections B-B & D-D	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05
DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

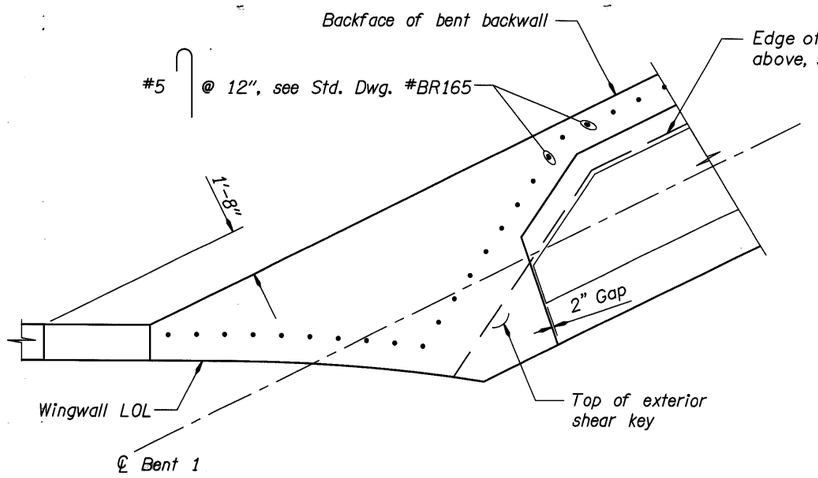
Connecting Commerce and Community
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 1 - LEFT WINGWALL PLAN AND ELEVATION

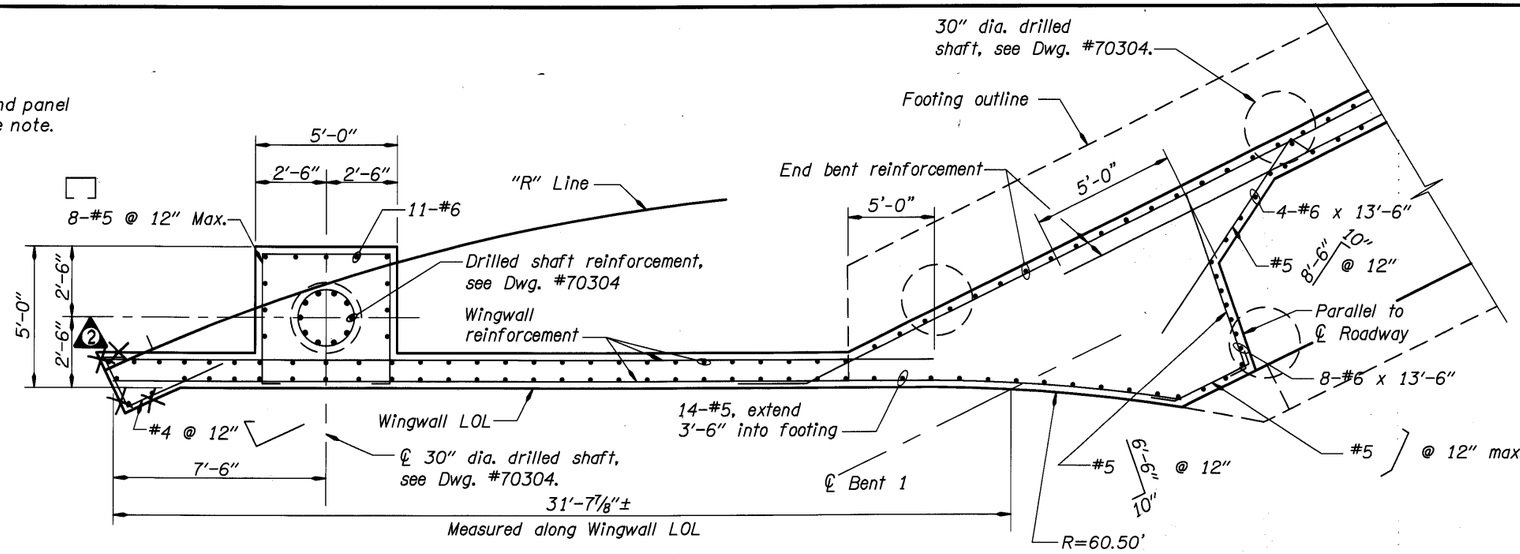
SHEET 115 OF 173
DRAWING NO. 70302



PART PLAN A-A

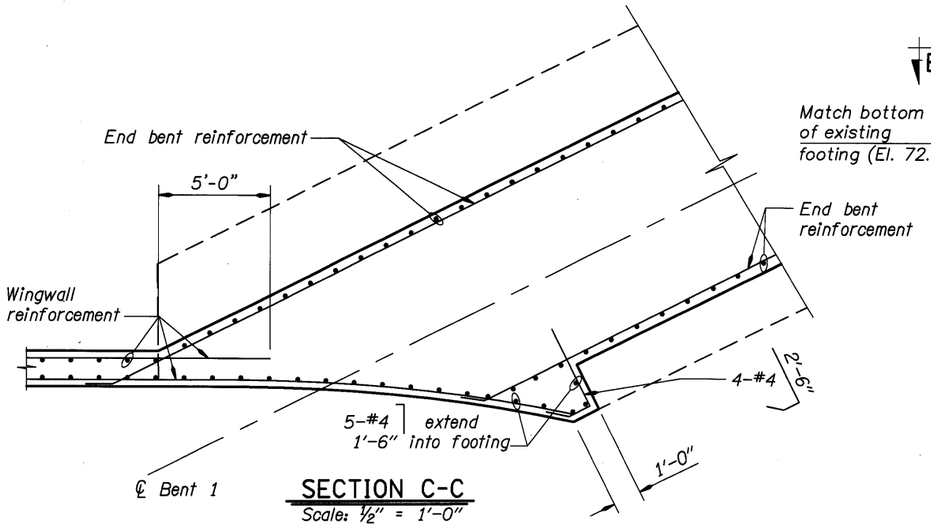
Scale: 3/8"=1'-0"

Note: View is shown with end panel not shown.



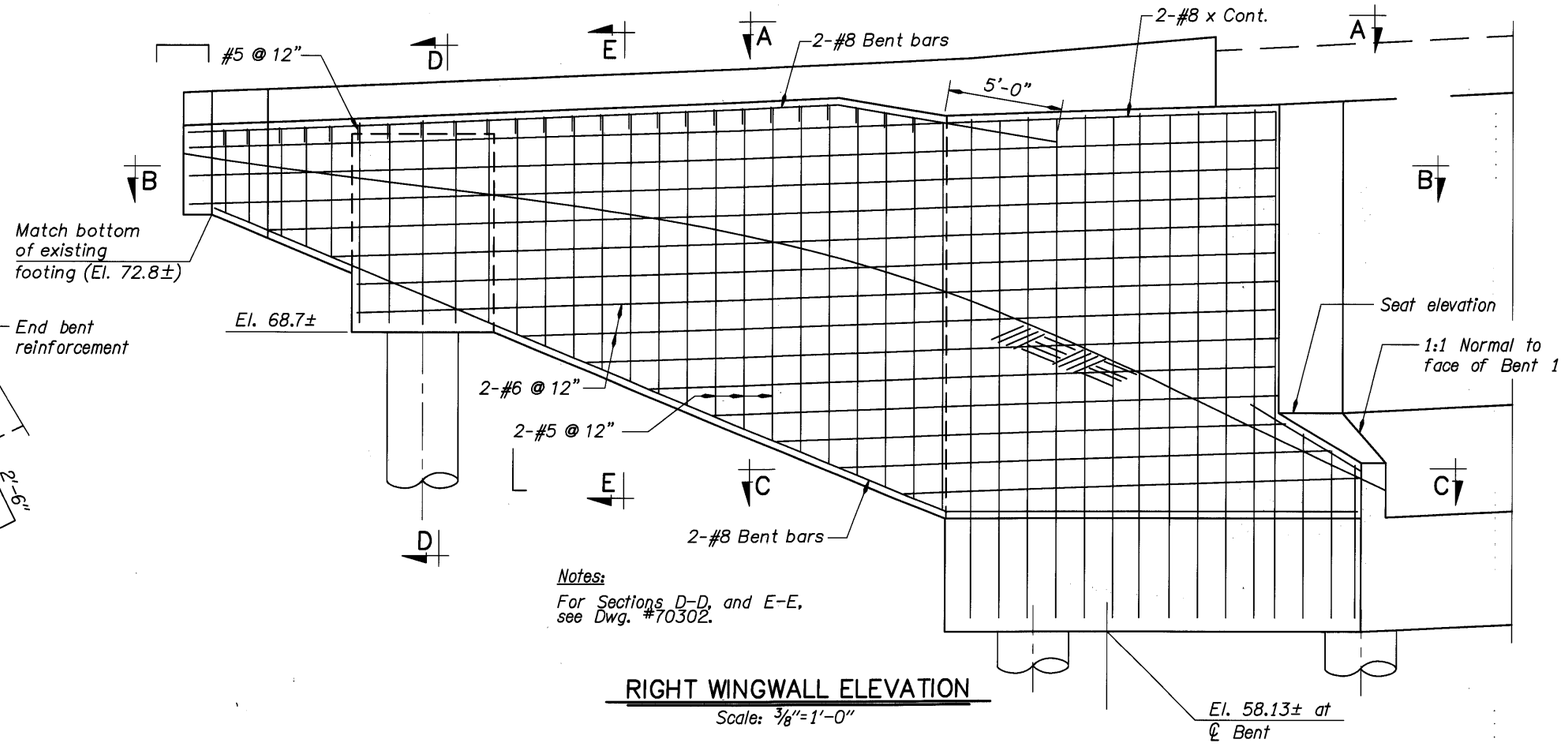
SECTION B-B

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



SECTION C-C

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



Notes:

For Sections D-D, and E-E, see Dwg. #70302.

RIGHT WINGWALL ELEVATION

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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
0			
1	08/05	Revised Sections B-B & C-C	KWC
2	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2001 KENT WILLIAM CORDTZ

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

EXPIRES: 12-31-05

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES

TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

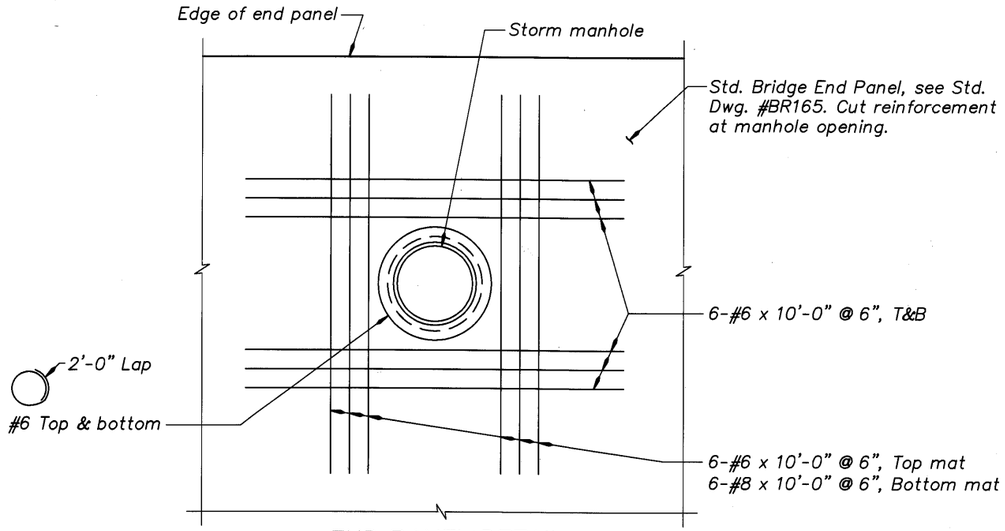
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 1 - RIGHT WINGWALL PLAN & ELEVATION

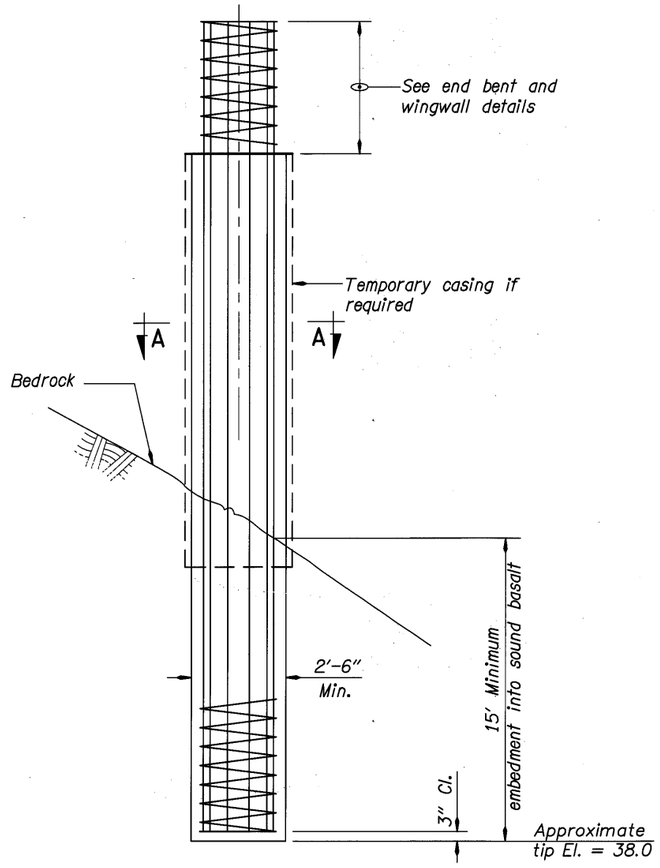
SHEET 116 OF 173
DRAWING NO. 70303

Xrefs: Odotbdr.dwg



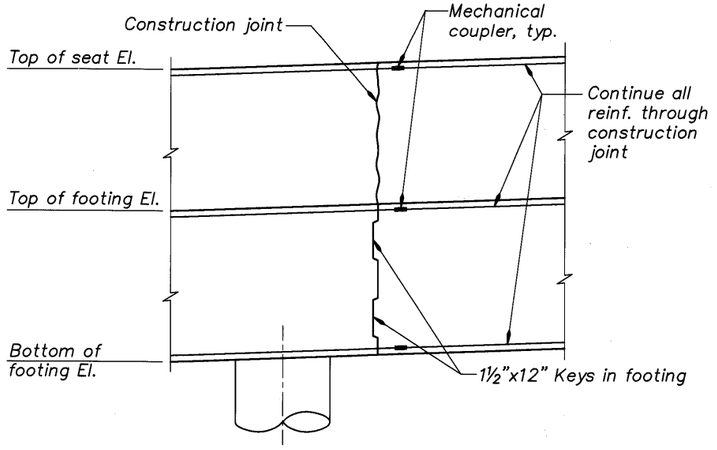
END PANEL DETAIL AT STORM MANHOLE

No Scale



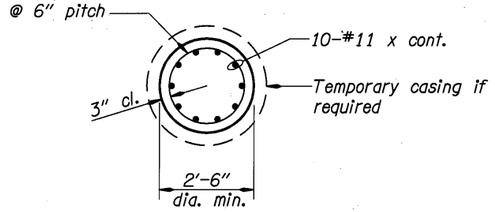
BENT 1 - DRILLED SHAFTS

No Scale



CONSTRUCTION JOINT DETAIL

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



SECTION A-A

No Scale

Note:
Do not fabricate reinforcing steel until final tip elevations have been determined in the field.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
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OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO.	20136
DATE	Sept. 2005
CALC. BOOK	

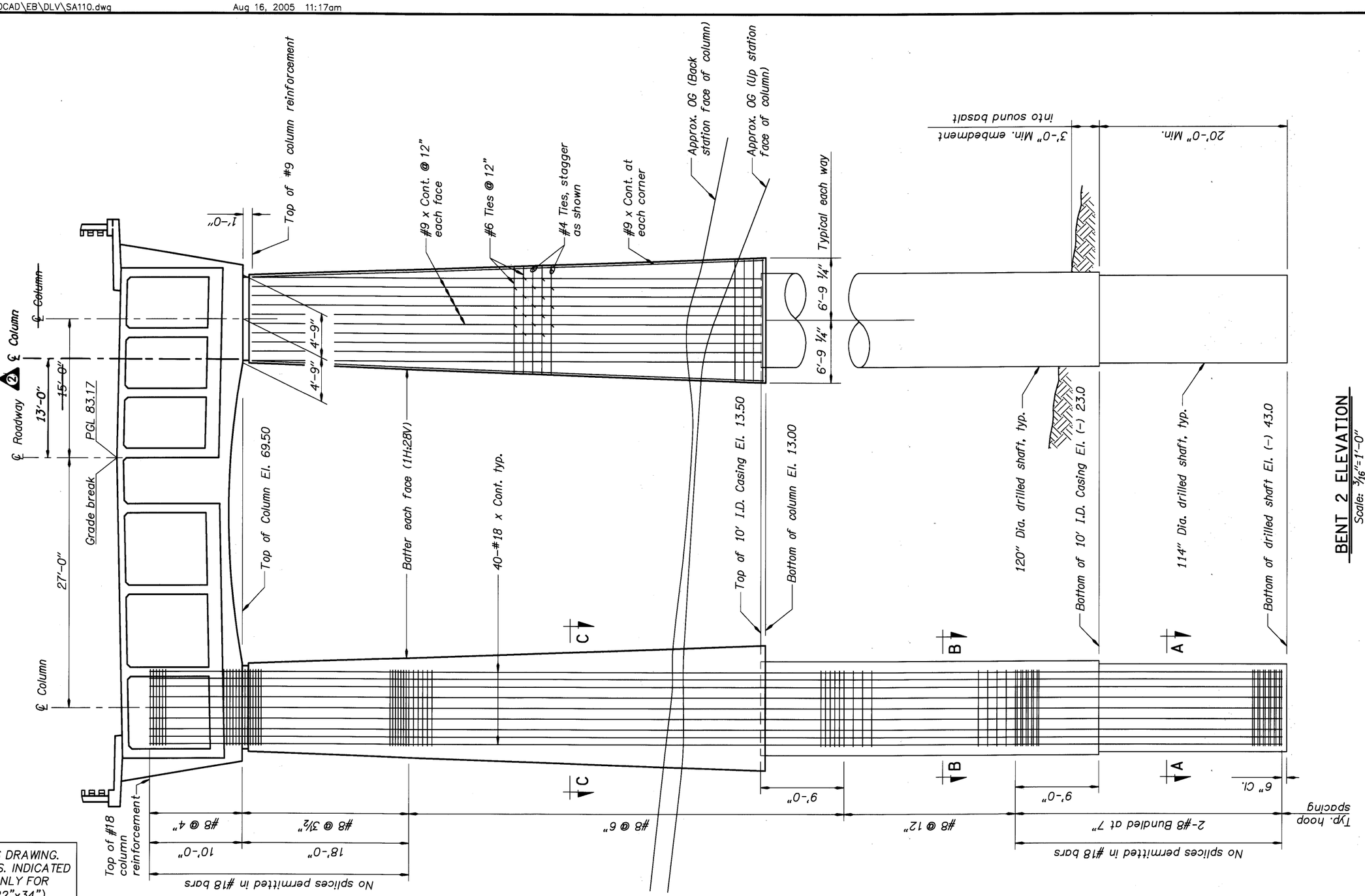
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 1 - MISCELLANEOUS DETAILS

SHEET	117 OF 173
DRAWING NO.	70304

Xrefs: Odotbdr.dwg SA100.dwg

P:\O\ODOT00000460\0400CAD\EB\DLV\SA110.dwg Aug 16, 2005 11:17am



BENT 2 ELEVATION

Scale: 3/16"=1'-0"

Note: For Sections A-A, B-B, and C-C, see Dwg. #70317

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
1	08/05	Revised Columns	KWC
2	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Steve Thoman

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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BRIDGE NO. 20136
DATE Sept. 2005
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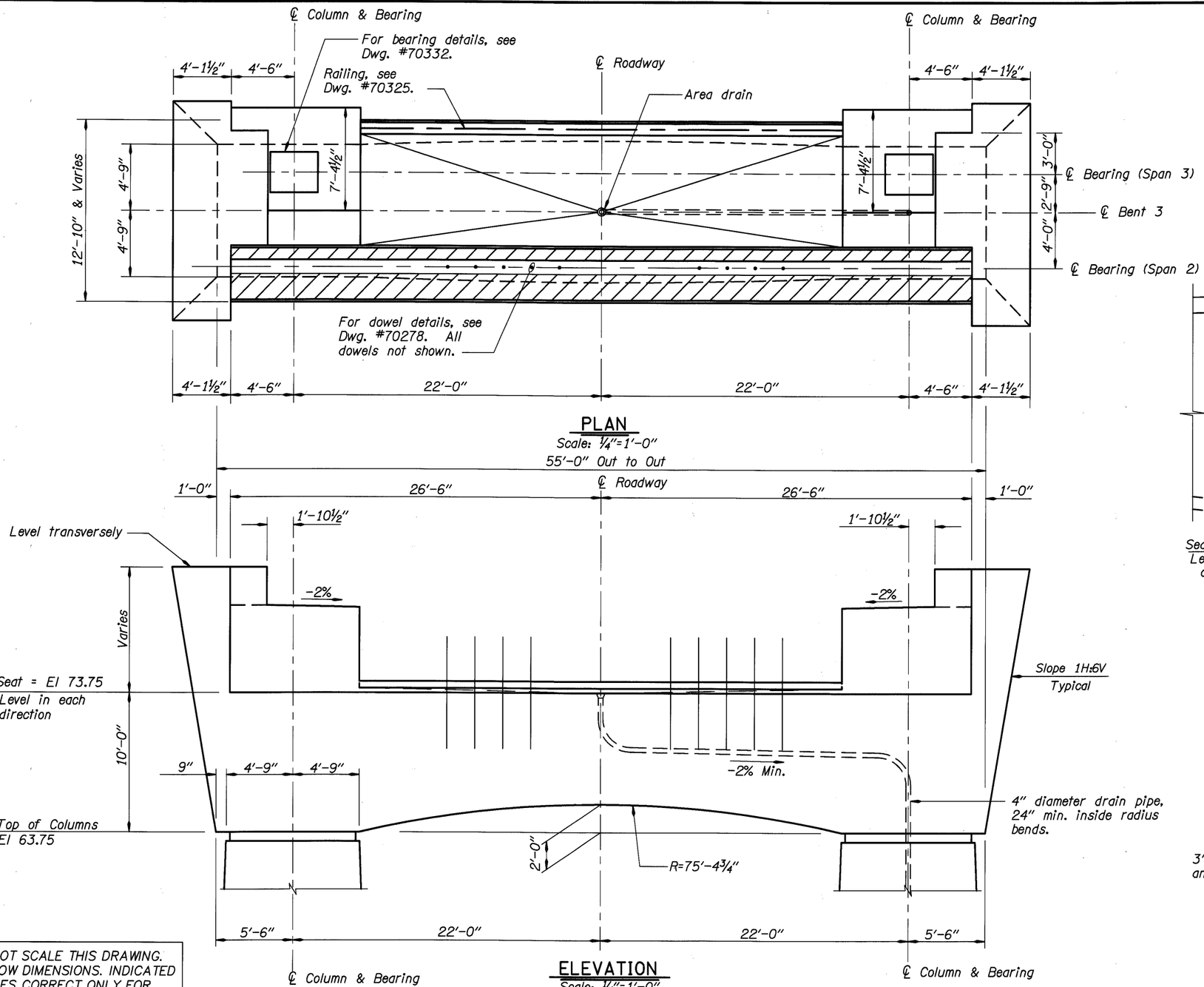
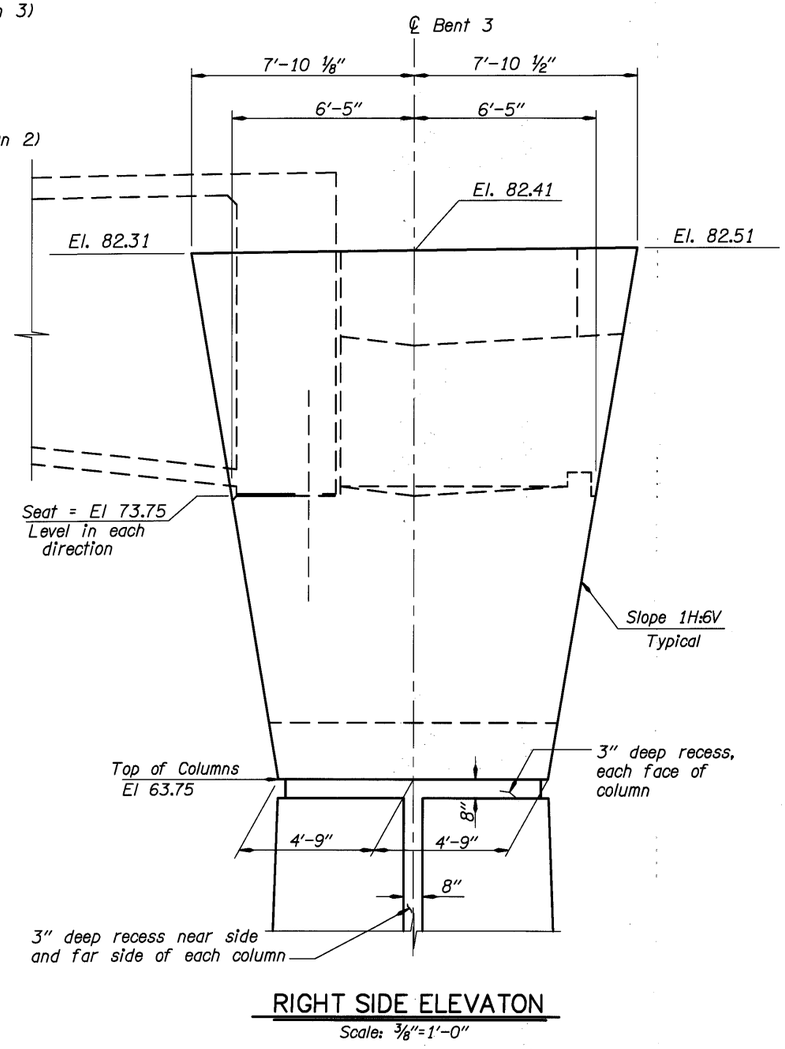
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 2 - COLUMN AND DRILLED SHAFT

SHEET 118 OF 173
DRAWING NO. 70305

Xrefs: Odotbdr.dwg





DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2			
1	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Kent William Corditt MARCH 09, 2004
EXPIRES: 12-31-05

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BRIDGE NO. 20136
DATE Sept. 2005
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MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 3 - X-BEAM PLAN AND ELEVATION

SHEET 119 OF 173
DRAWING NO. 70306

Xrefs: Odotbdr.dwg SA111.dwg SA89a.dwg

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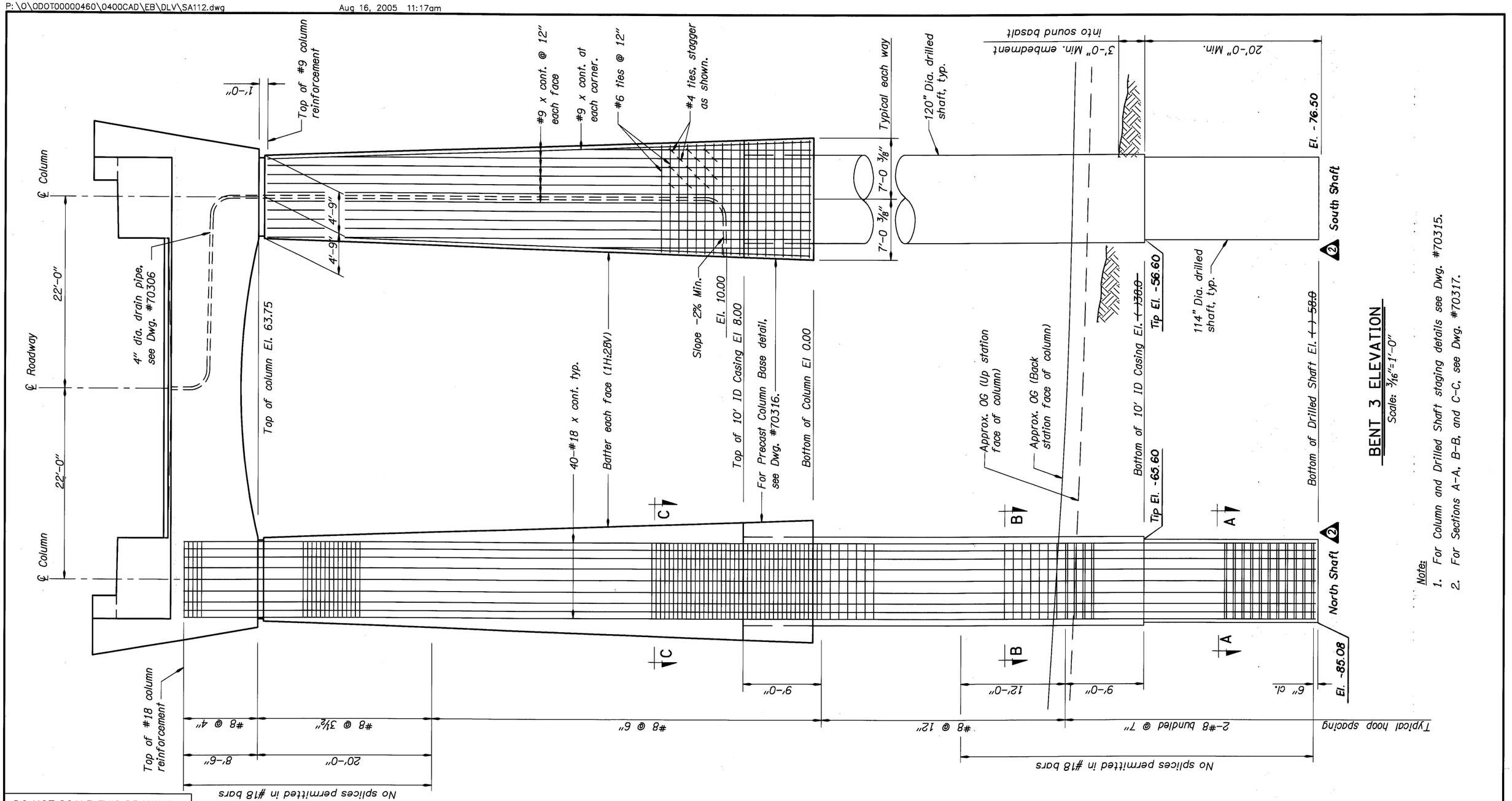

BENT 3 ELEVATION

Scale: 3/16"=1'-0"

Note:
1. For Column and Drilled Shaft staging details see Dwg. #70315.
2. For Sections A-A, B-B, and C-C, see Dwg. #70317.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	08/05	Revised Columns	KWC
2	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Steve Thoman

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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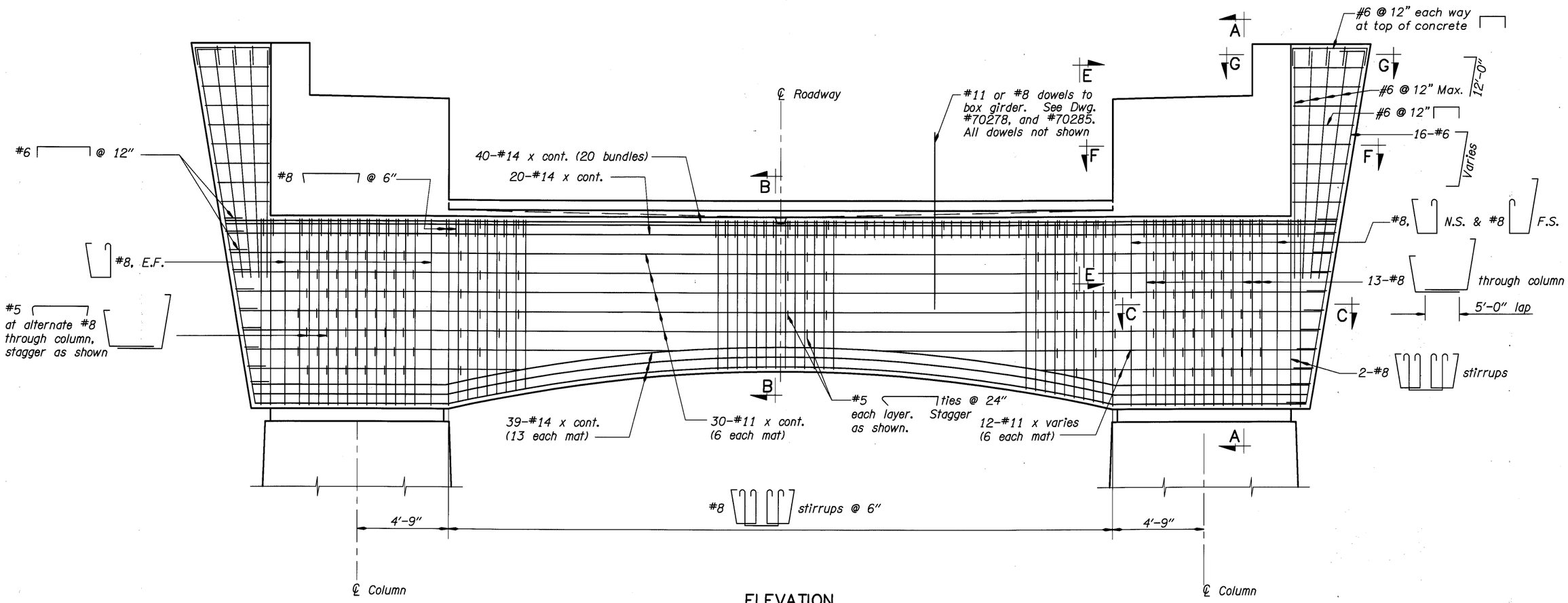
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 3 - COLUMN AND DRILLED SHAFT

SHEET 120 OF 173
DRAWING NO. 70307

Xrefs: Odotbdr.dwg SA103.dwg



ELEVATION

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

Notes:
For Sections A-A, B-B and C-C, see Dwg. #70309.
For Section E-E, see Dwg. #70310
For Sections F-F and G-G, see Dwg. #70311.
Bent 3 shown, Bent 4 similar

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Kent Cordtz MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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BRIDGE NO. 20136
DATE Sept. 2005
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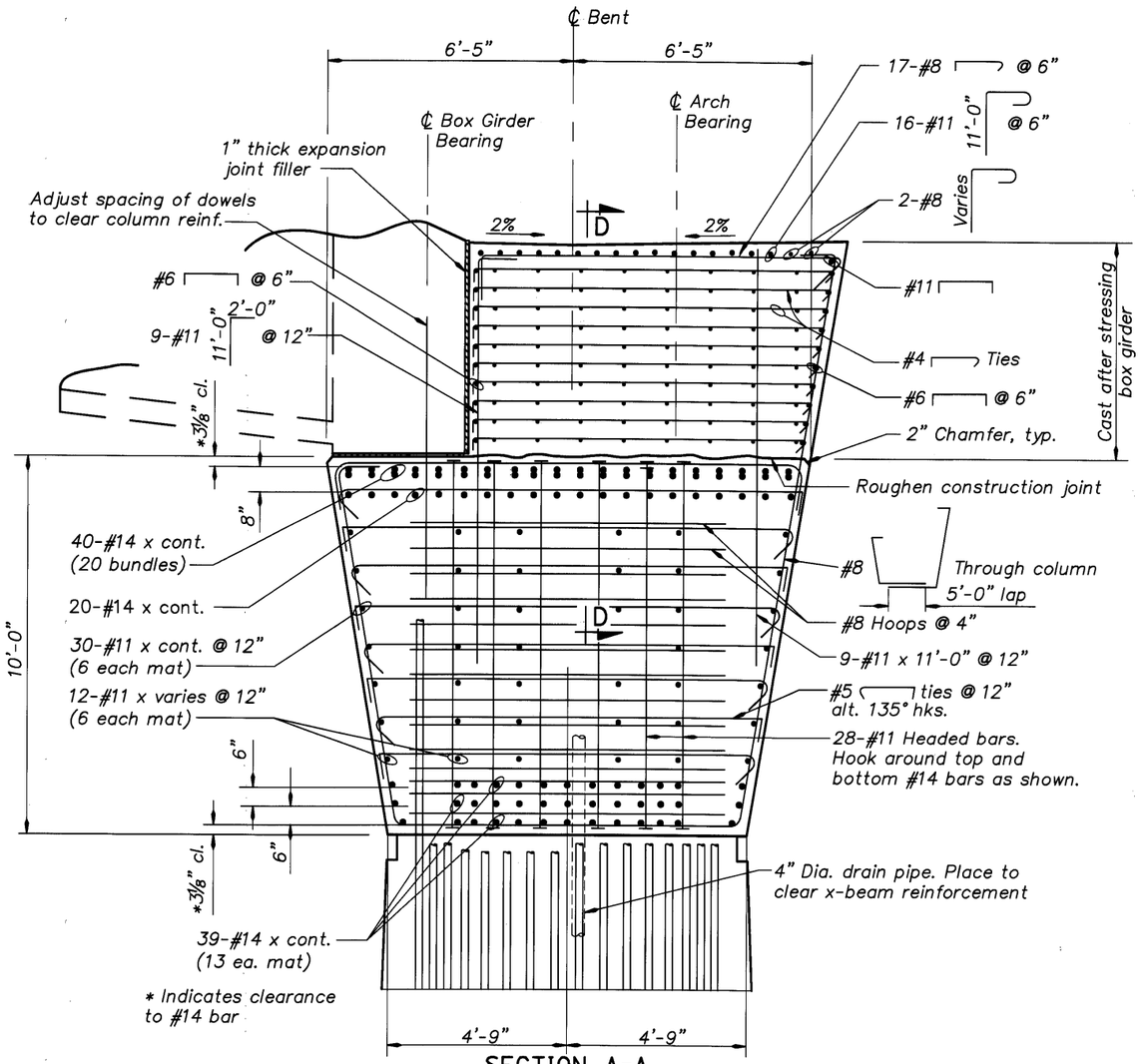
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

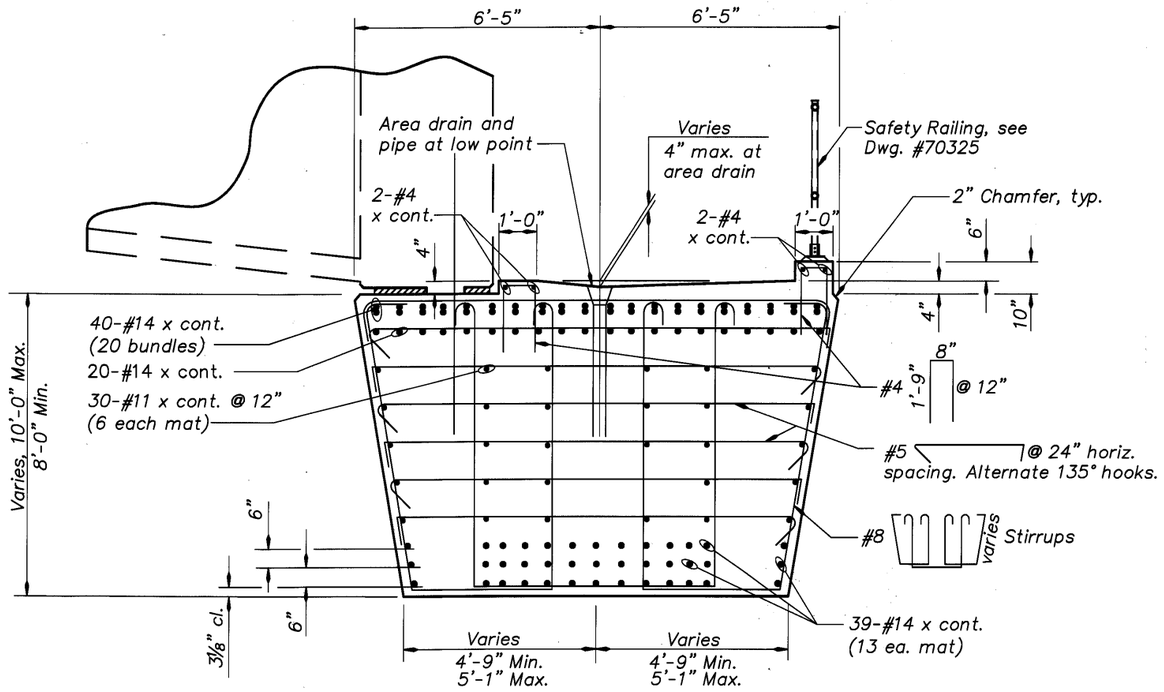
BENT 3 AND 4 - X-BEAM DETAILS (1 OF 4)

SHEET 121 OF 173
DRAWING NO. 70308

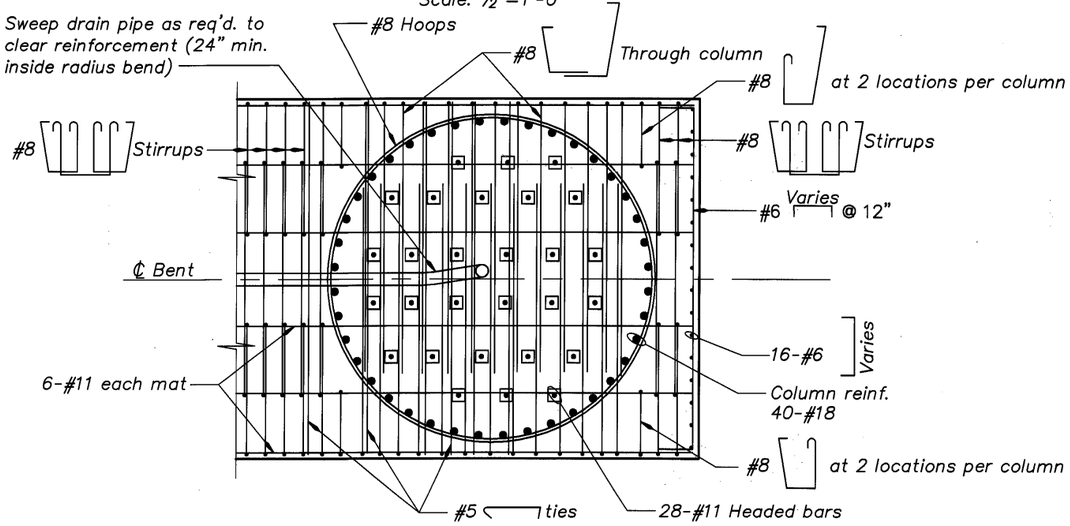
Xrefs: Octbldr.dwg SA89o.dwg SA111.dwg



SECTION A-A
Scale: ½"=1'-0"



SECTION B-B
Scale: ½"=1'-0"



SECTION C-C
Scale: ½"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

Notes:
For location of Sections A-A, B-B, and C-C, See Dwg. #70308

For Section D-D, See Dwg. #70310

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 71540 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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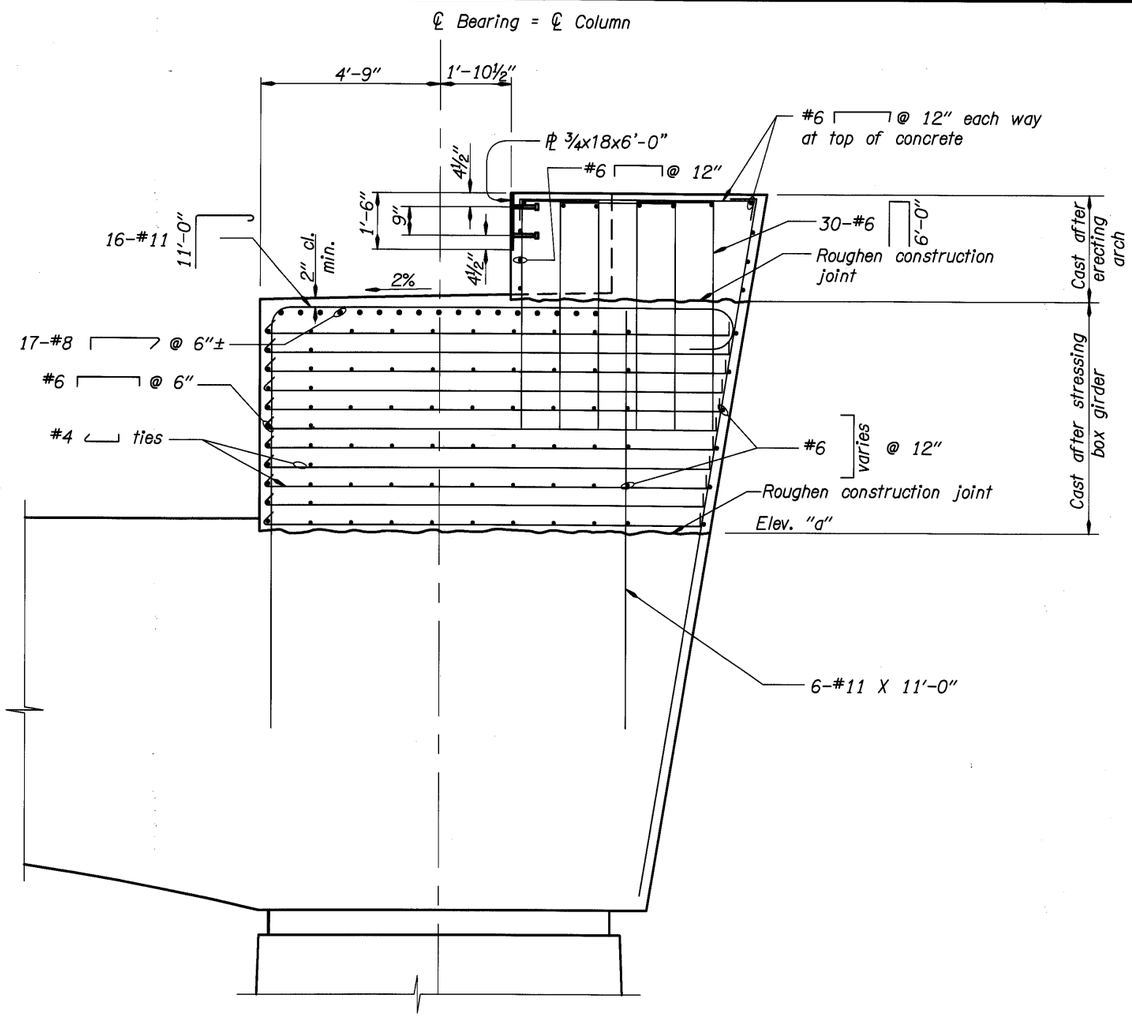
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

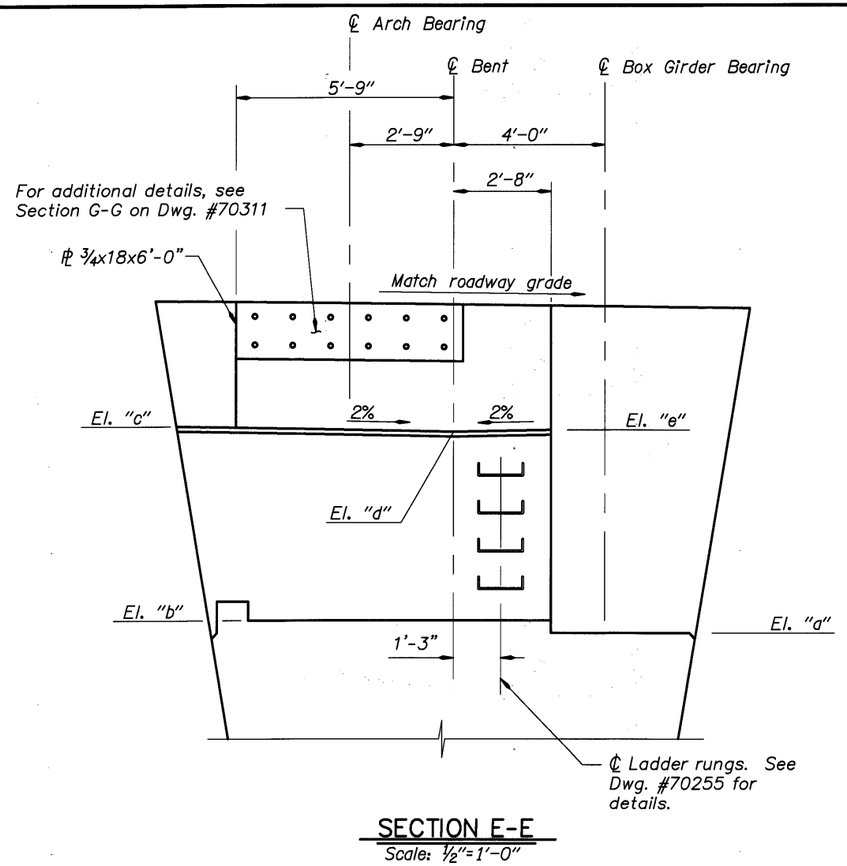
BENT 3 AND 4 - X-BEAM DETAILS (2 OF 4)

SHEET 122 OF 173
DRAWING NO. 70309

Xrefs: Odotbdr.dwg SA89o.dwg SA111.dwg



SECTION D-D
Scale: ½"=1'-0"



SECTION E-E
Scale: ½"=1'-0"

Bent No.	Elevation "a"	Elevation "b"	Elevation "c"	Elevation "d"	Elevation "e"
3	73.75	74.08	79.48	79.33	79.39
4	68.60	68.93	74.65	74.50	74.55

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

Notes:
For location of Section D-D, See Dwg. #70309

For location of Section E-E, See Dwg. #70308

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 14549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

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BRIDGE ENGINEERING SECTION

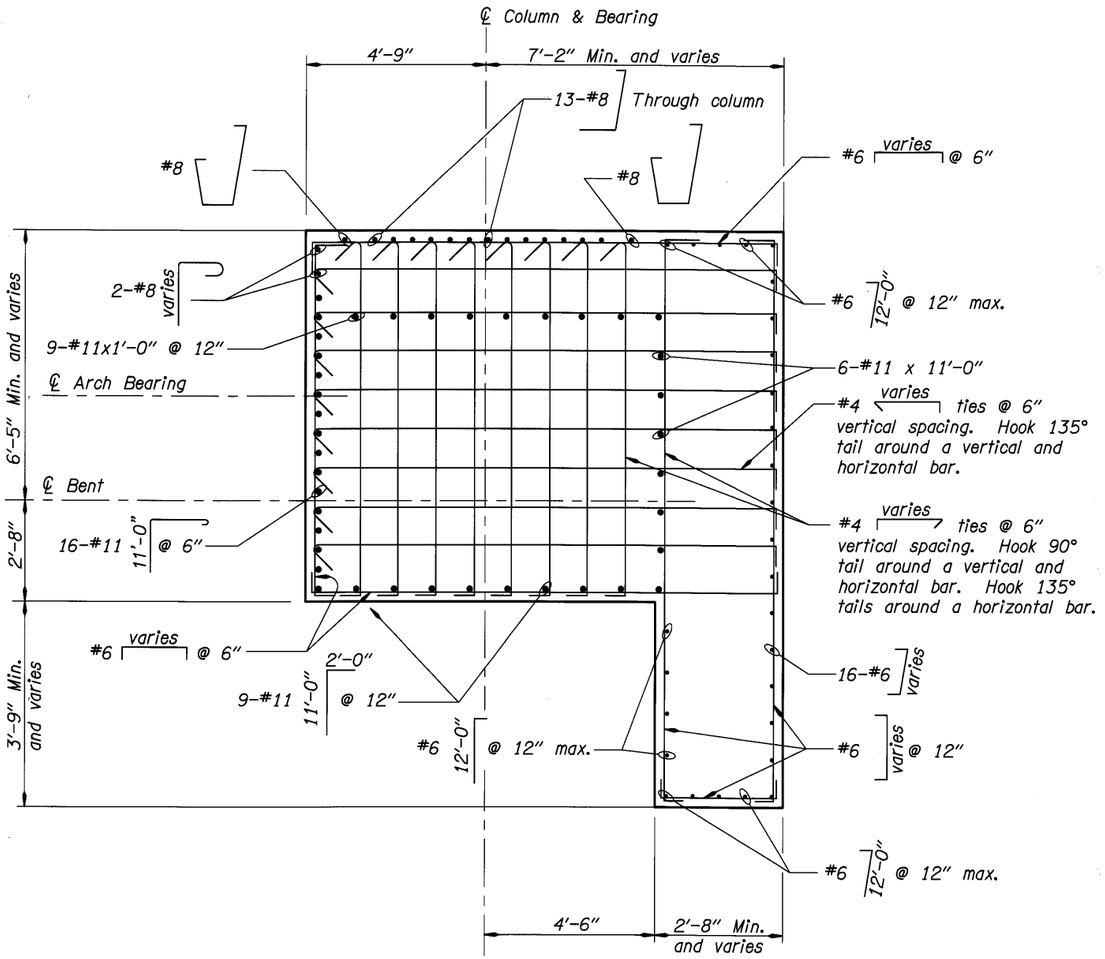
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

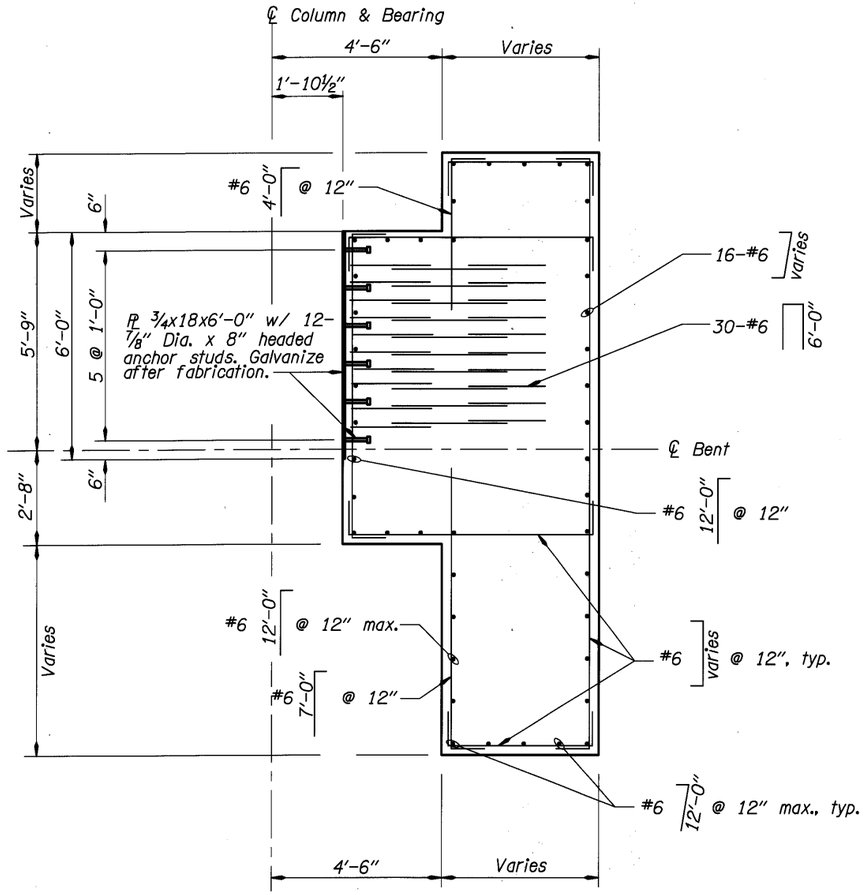
BENT 3 AND 4 - X-BEAM DETAILS (3 OF 4)

SHEET 123 OF 173
DRAWING NO. 70310

Xrefs: Odotbdr.dwg



SECTION F-F
Scale: ½"=1'-0"



SECTION G-G
Scale: ½"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
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BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 3 - X-BEAM DETAILS (4 OF 4)

SHEET 124 OF 173
DRAWING NO. 70311

Xrefs: Odotbdr.dwg

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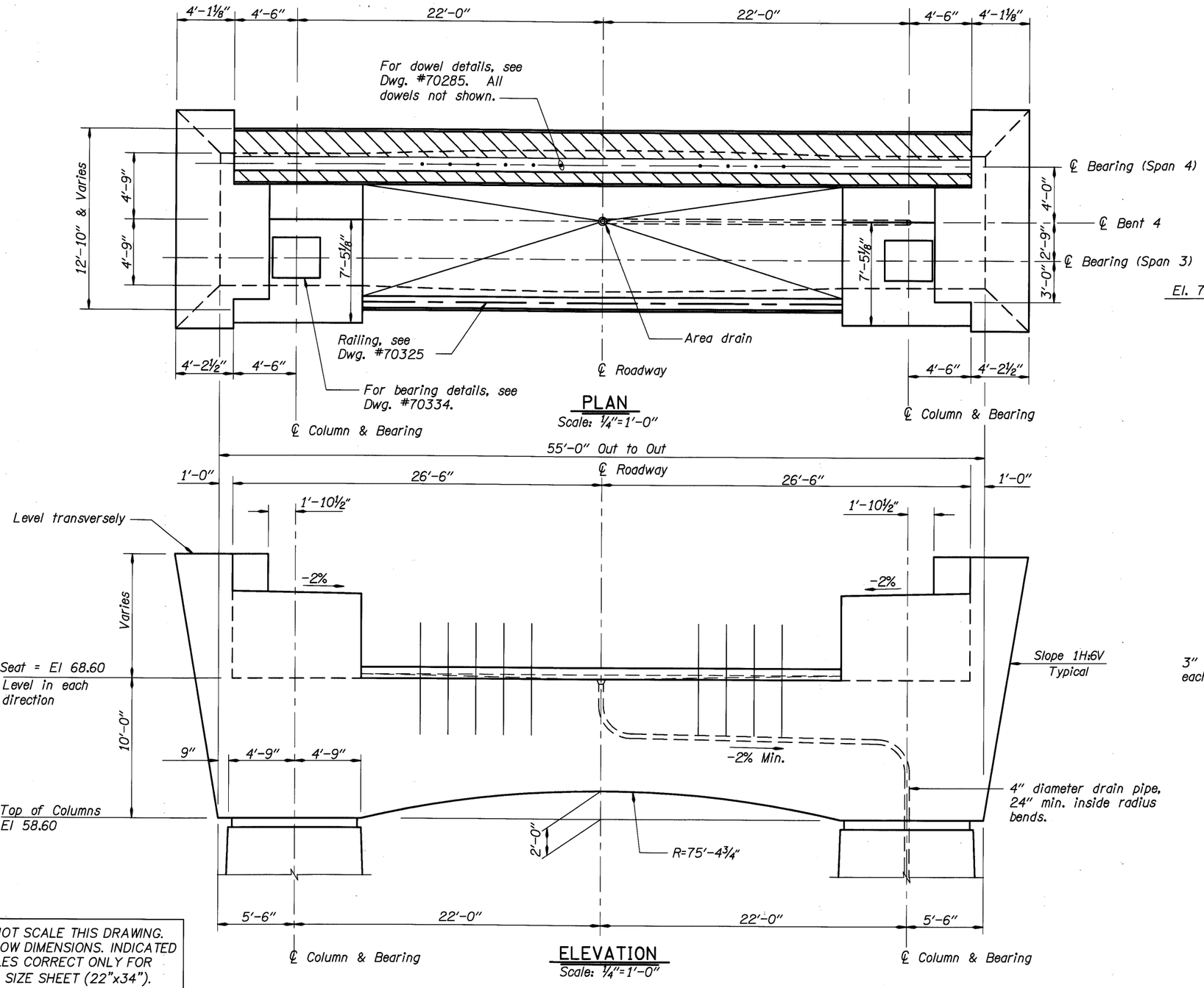

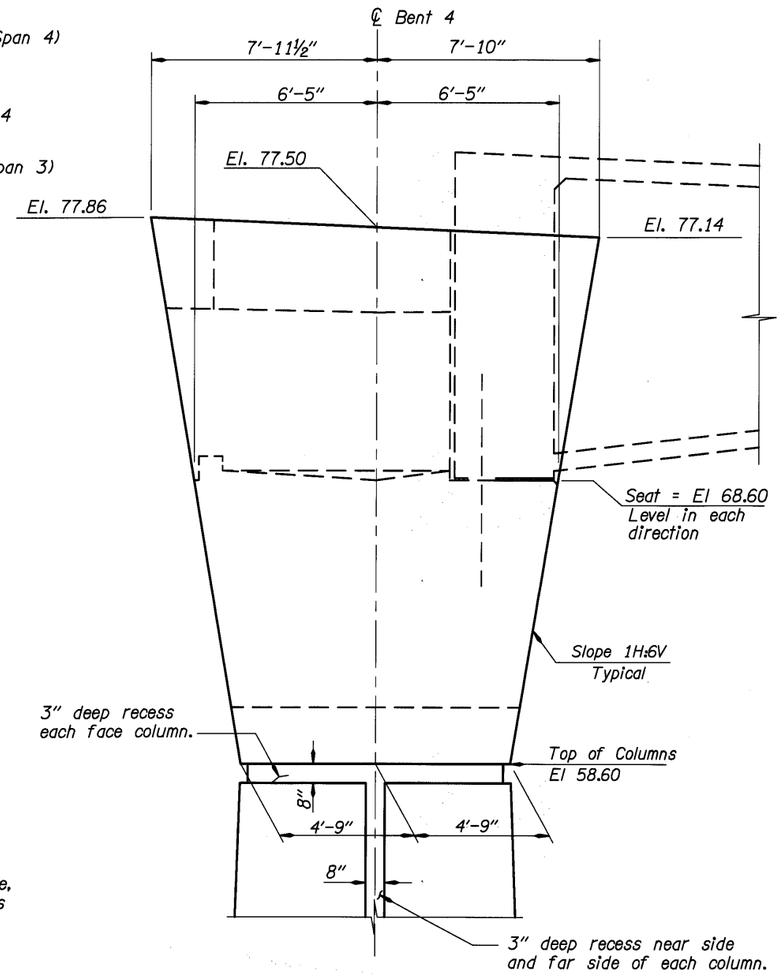

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
1	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
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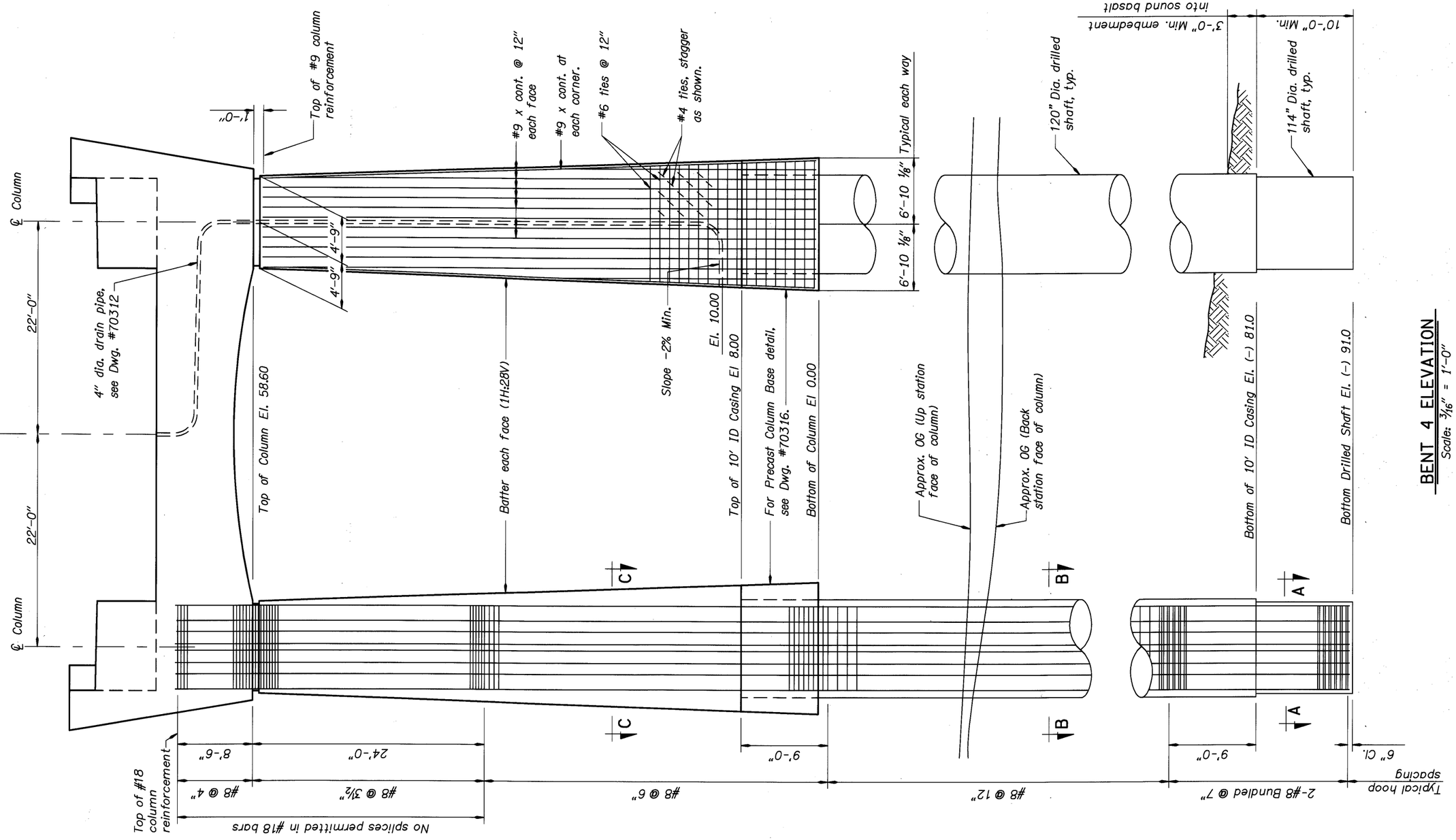
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 4 - X-BEAM PLAN AND ELEVATION

SHEET 125 OF 173
DRAWING NO. 70312

Xrefs: Odotbdr.dwg SA111.dwg



BENT 4 ELEVATION

Scale: 3/16" = 1'-0"

Note:

1. For Column and Drilled Shaft staging details see Dwg. #70315.
2. For Sections A-A, B-B, and C-C, see Dwg. #70317

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Steve Thoman

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2000 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

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BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

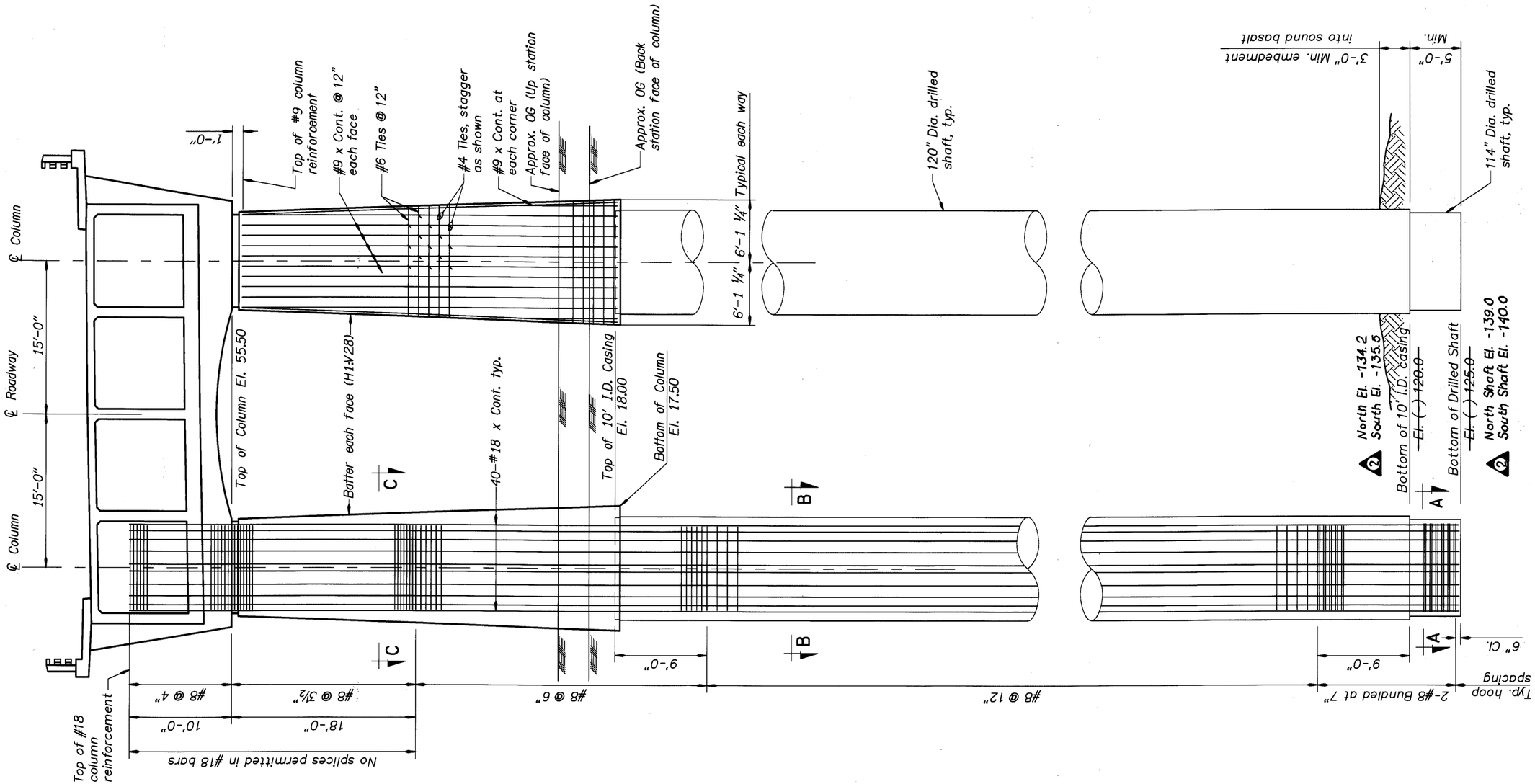
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 4 - COLUMN AND DRILLED SHAFT

SHEET 126 OF 173.
DRAWING NO. 70313

Xrefs: Odotbdr.dwg

P:\O\ODOT00000460\0400CAD\EB\DLV\SA119.dwg Aug 16, 2005 11:18am



Looking up station

BENT 5 ELEVATION

Scale: 3/16"=1'-0"

Note: For Sections A-A, B-B, and C-C, see Dwg. #70317

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
1	08/05	Revised Columns	KWC
2	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Steve Thoman

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
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BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
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MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

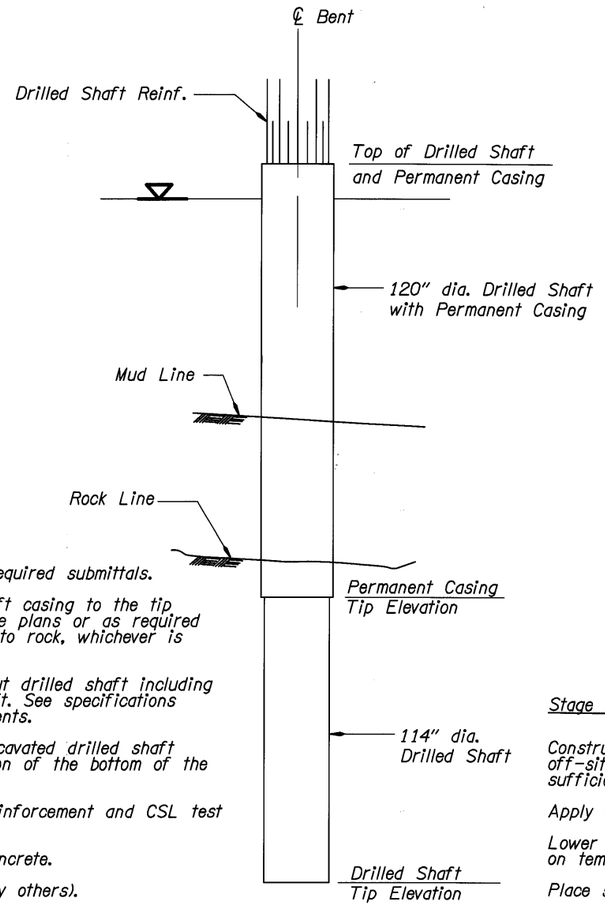
BENT 5 - COLUMN AND DRILLED SHAFT

SHEET 127 OF 173
DRAWING NO. 70314

Xrefs: Odotbdr.dwg SA115c.dwg

BENTS 3 AND 4 SUBSTRUCTURE CONSTRUCTION NOTES

1. The construction sequence shown is a possible method to construct the drilled shafts, precast column bases, and cast-in-place columns at bents 3 and 4 and is for information purposes only. The actual construction sequence and method of construction is the sole responsibility of the Contractor. Perform work in accordance with plans and specifications.
2. Temporary works to be designed by the Contractor are not shown. The Contractor is responsible for the stability of the structure and all temporary work during all stages of construction.



STAGE 1
No Scale

Stage 1:

Obtain approval for required submittals.

Install permanent shaft casing to the tip elevation shown on the plans or as required to penerate 3 feet into rock, whichever is lower.

Excavate and clean out drilled shaft including bottom of drilled shaft. See specifications for disposal requirements.

Obtain approval of excavated drilled shaft including final elevation of the bottom of the drilled shaft.

Place drilled shaft reinforcement and CSL test access tubes.

Place drilled shaft concrete.

Perform CSL tests (by others).

Obtain approval ofconstructed drilled shaft.

Grout CSL access tubes.

Stage 2:

Construct precast column base. May be constructed off-site or on temporary supports at an elevation sufficiently above water surface.

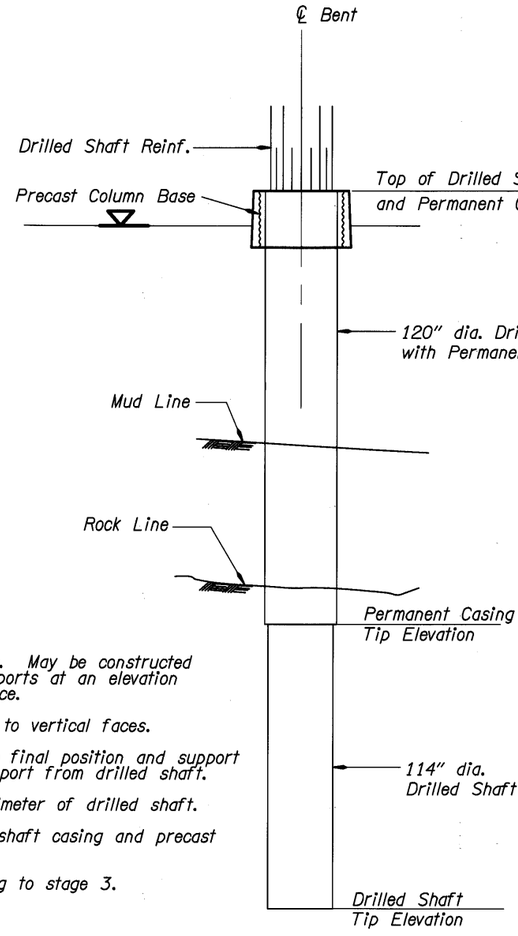
Apply Class 1 surface finish to vertical faces.

Lower precast column base to final position and support on temporary supports or support from drilled shaft.

Place soffit form around perimeter of drilled shaft.

Grout annular space between shaft casing and precast column base.

Cure grout prior to proceeding to stage 3.



STAGE 2
No Scale

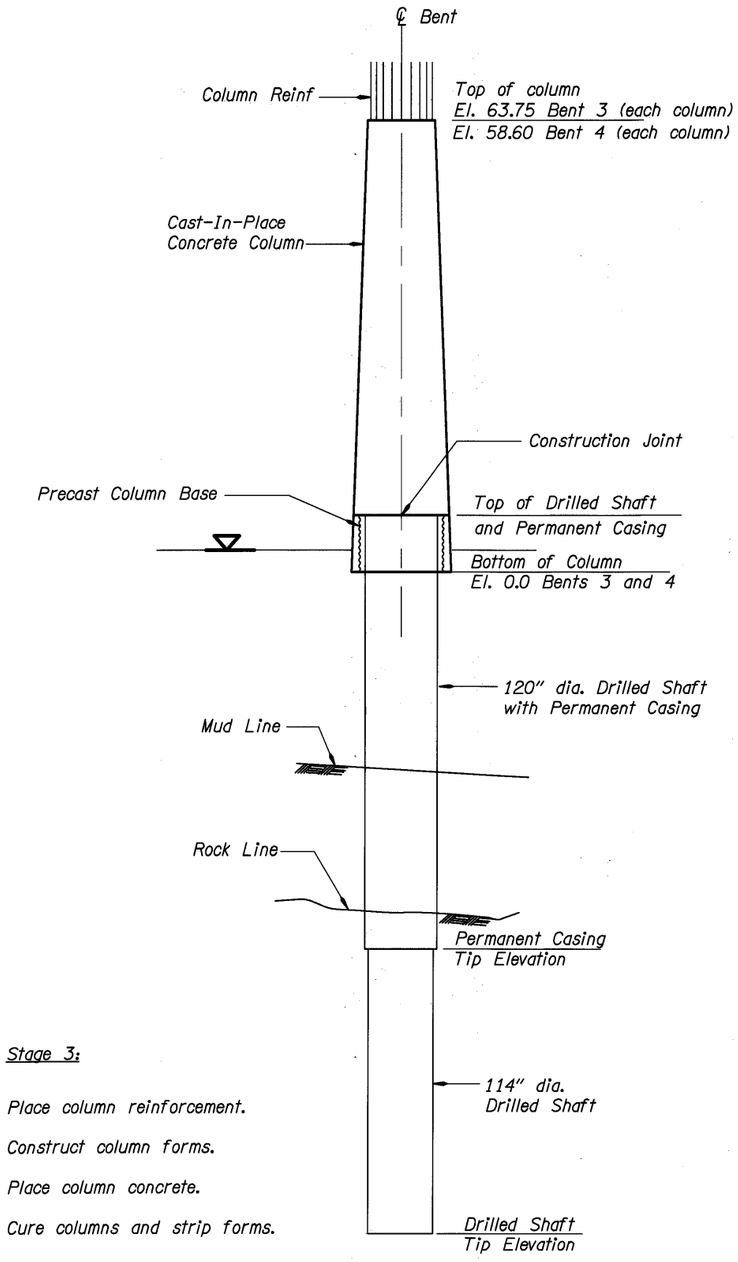
Stage 3:

Place column reinforcement.

Construct column forms.

Place column concrete.

Cure columns and strip forms.



STAGE 3
No Scale

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2			
1	08/05	Added Sheet	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Steve Thoman

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2000 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
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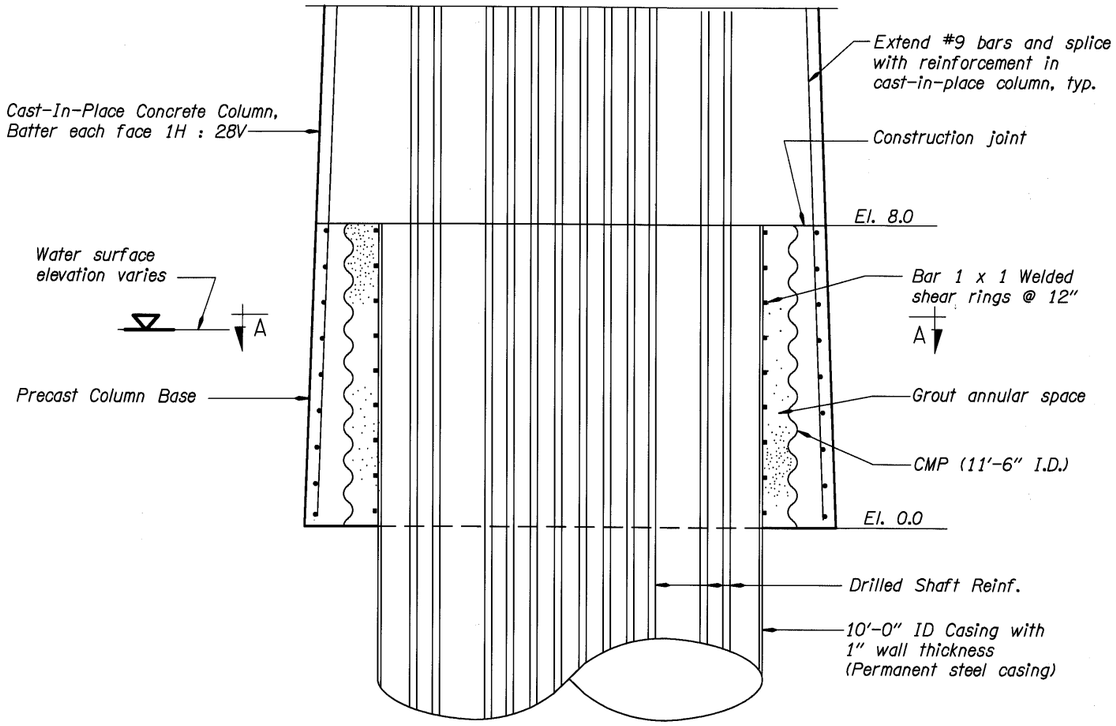
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

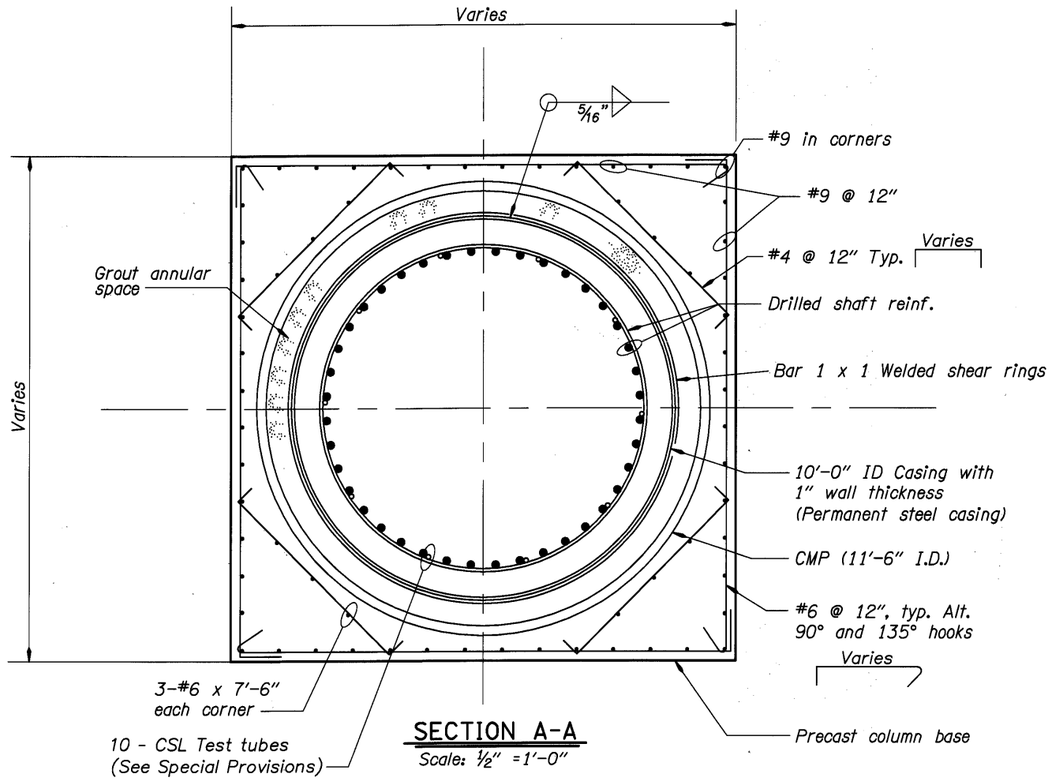
COLUMN AND DRILLED SHAFT STAGING DETAILS

SHEET 127A OF 173
DRAWING NO. 70315

Xrefs: Odotbdr.dwg



PART SECTION
PRECAST COLUMN BASE
Scale: ½" =1'-0"



SECTION A-A
Scale: ½" =1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Columns	KWC
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Steve Thoman

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

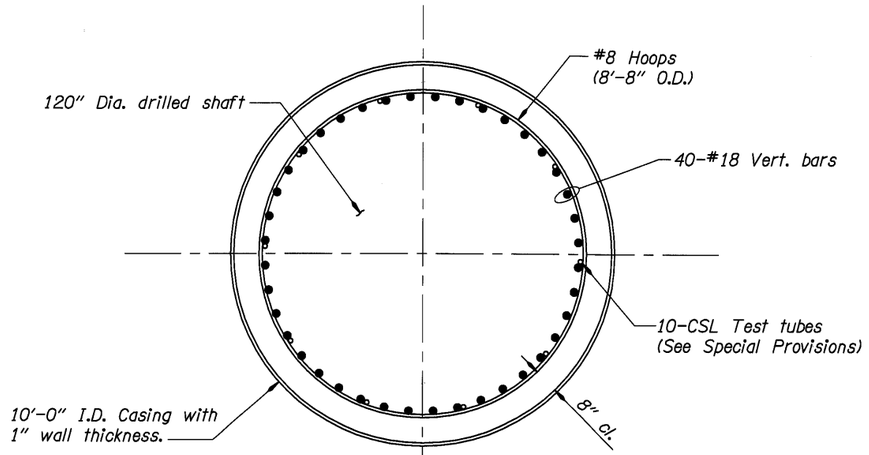
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

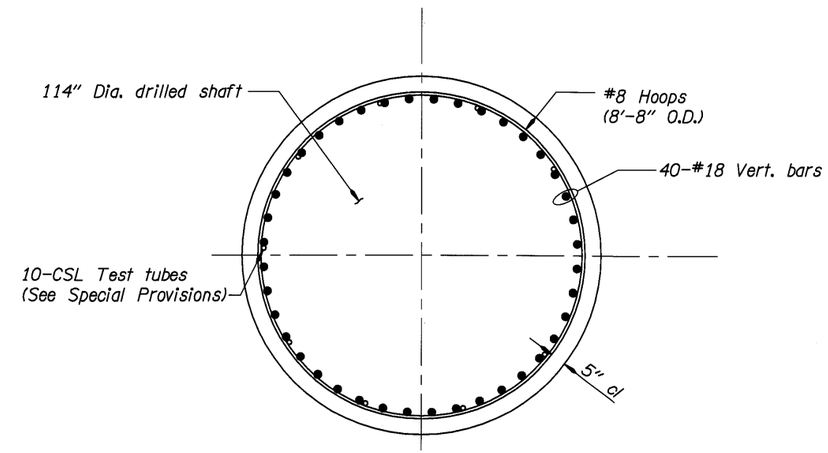
COLUMN AND DRILLED SHAFT DETAILS (1 OF 3)

SHEET 128 OF 173
DRAWING NO. 70316

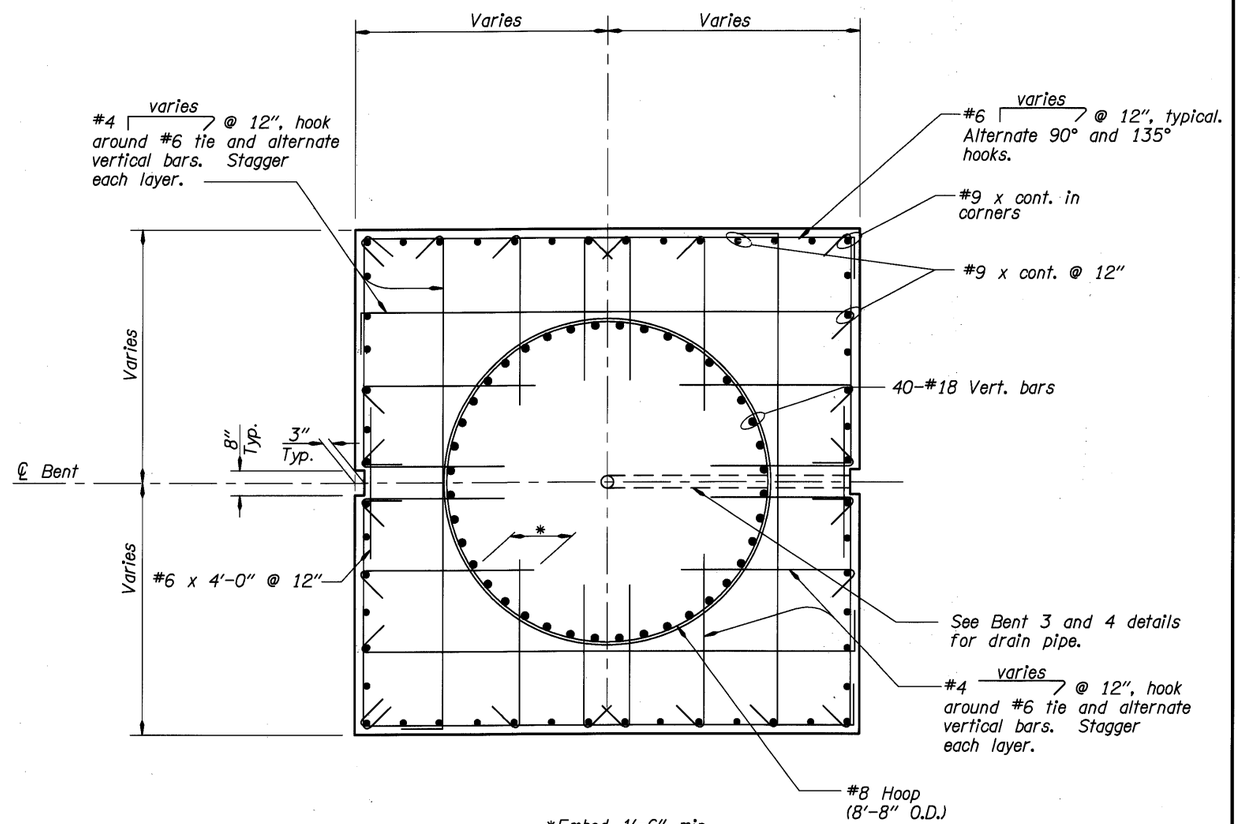
Xrefs: Odotbdr.dwg



SECTION B-B
Scale: ½" =1'-0"



SECTION A-A
Scale: ½" =1'-0"



*Embed 1'-6" min. past #8 hoop.

SECTION C-C
Scale: ½"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2			
1	08/05	Revised Columns	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

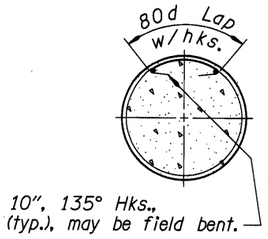
COLUMN AND DRILLED SHAFT DETAILS (2 OF 3)

SHEET 129 OF 173
DRAWING NO. 70317

Xrefs: Odotbdr.dwg

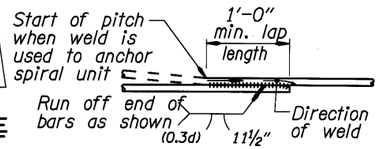
Note - A:

ASTM A706 shall be used for all welded splices, except ASTM A615 Grade 60, ASTM A82 or ASTM A496 may be used if copies of the chemical composition analysis are submitted and approved as weldable by the Engineer. Spirals shall be anchored at each end or discontinuity with one extra turn and a splice to itself as shown. Where permitted on plans closed hoops shall conform to the requirements of this detail. Lapped splice is not allowed within 1/6 the column height or max. column cross sectional dimension or 18" from top of footing or bottom of cap beam, or in columns with spirals less than 3'-0" in diameter.



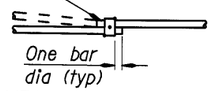
LAPPED SPLICE
See Note A

Note: Make flare weld in direction shown.



WELDED SPLICE
See Note A

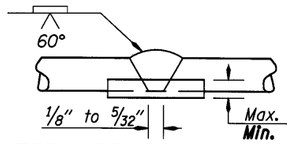
Start of pitch when mechanical splice is used to anchor spiral unit



MECHANICAL SPLICE
(Not allowed for ASTM A82 spirals)

SPIRAL SPLICE / TERMINATION DETAIL

No Scale



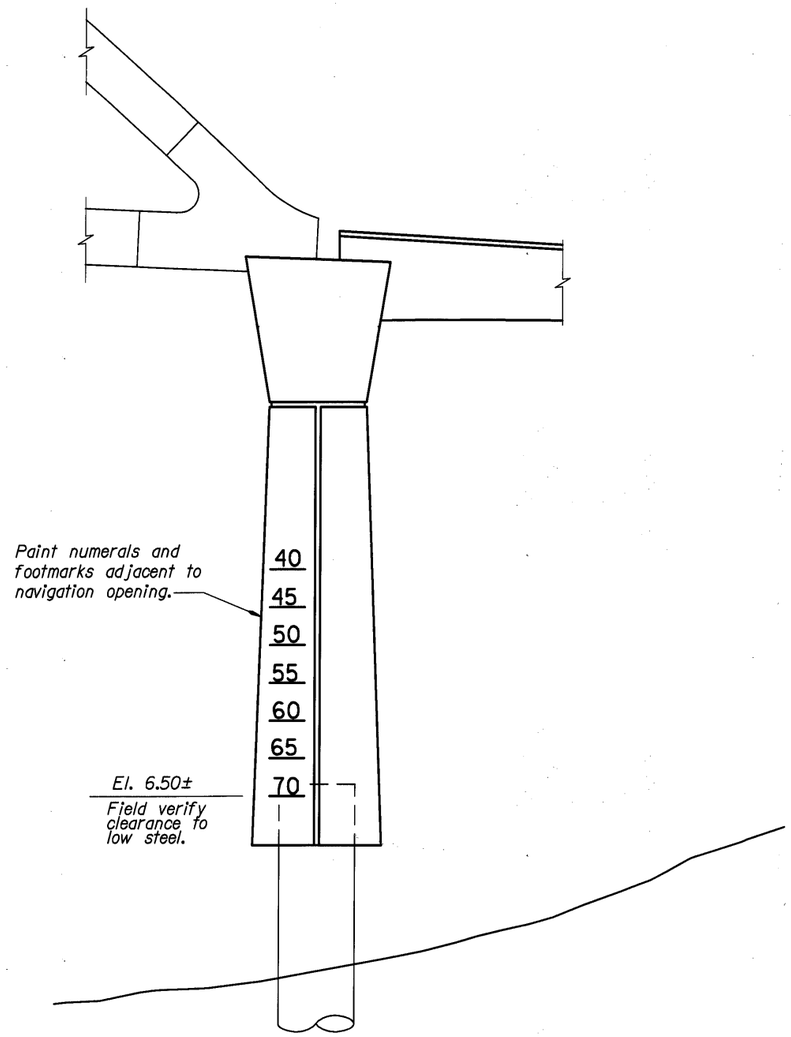
ALTERNATE WELDED SPLICE

(Except ASTM A82)

Welding of reinforcing steel splices shall be in accordance with ANSI/AWS D1.4-79. "Structural Welding Code Reinforcing Steel"

No Scale

Note:
Welded splice required for #8 hoops in columns and drilled shafts.



CLEARANCE GAUGE DETAIL

No Scale

Clearance Gauge Notes:

1. *Clearance gauges are required at the downstream face of Bent 3 and the upstream face of Bent 4.*
2. *Clearance gauges shall conform to the U.S. Coast Guard Bridge Permit Application Guide.*
3. *The size and spacing of numerals and footmarks shall match the existing bridge unless otherwise directed by the Engineer.*

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2			
1	08/05	Revised Column	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
REVIEWED: Adrianne Dietrich

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74540 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

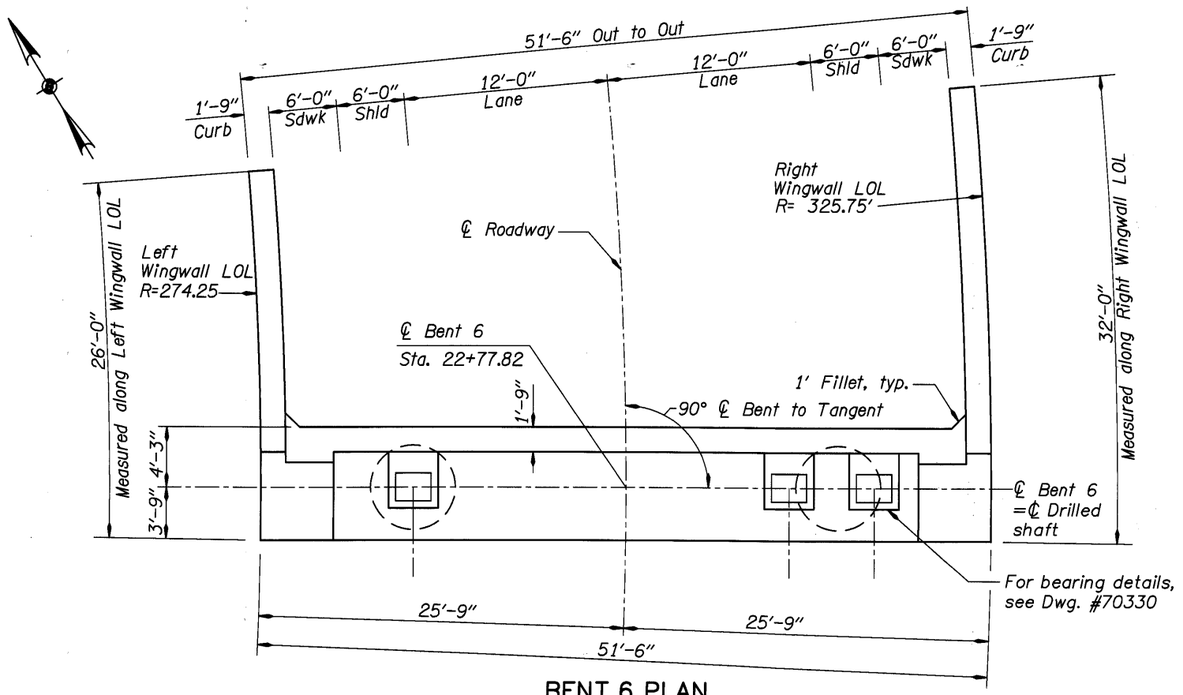
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

COLUMN AND DRILLED SHAFT DETAILS (3 OF 3)

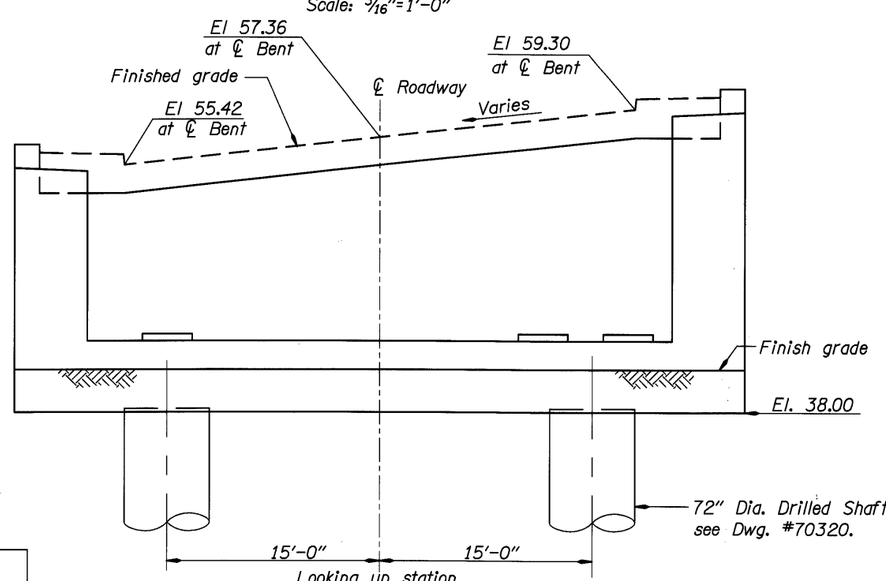
SHEET 130 OF 173
DRAWING NO. 70318

Xrefs: Odotbdr.dwg Arch_Model.dwg



BENT 6 PLAN

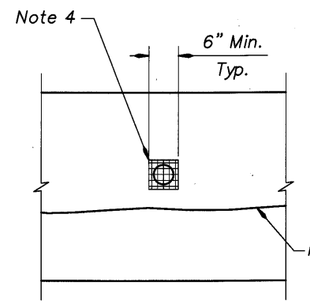
Scale: 3/16"=1'-0"



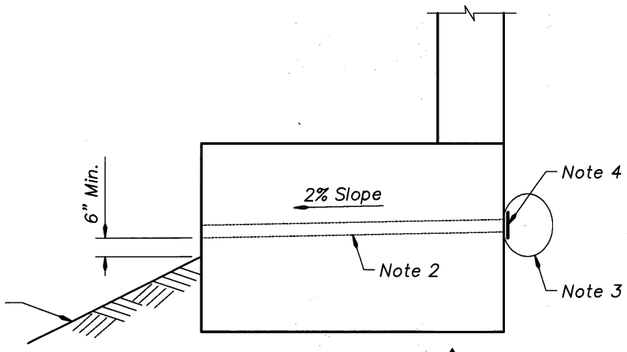
Looking up station

BENT 6 ELEVATION

Scale: 3/16"=1'-0"



ELEVATION



SECTION 1

WEEP HOLE DETAIL

No Scale

Notes:
1. Bent 6 shown, Bent 1 similar.
2. 4" dia. weep holes at 20'-0" max.
3. 2 cu. ft. of gravel drain material wrapped in drainage geotextile.
4. 6" min. square aluminum or galvanized steel wire ¼" hardware cloth (minimum wire dia. = 0.025"). Anchor firmly to backface.

Note:
See Dwg. #70336 and #70337 for deck drainage details.

See Dwg. #70343 to #70355 for lighting details and conduit locations.

See Dwg. #70360 for utility conduit and hanger details.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2			
1	08/05	Revised Weep Hole Detail view title	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON KENT WILLIAM CORDTZ MARCH 09, 2000
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
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OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

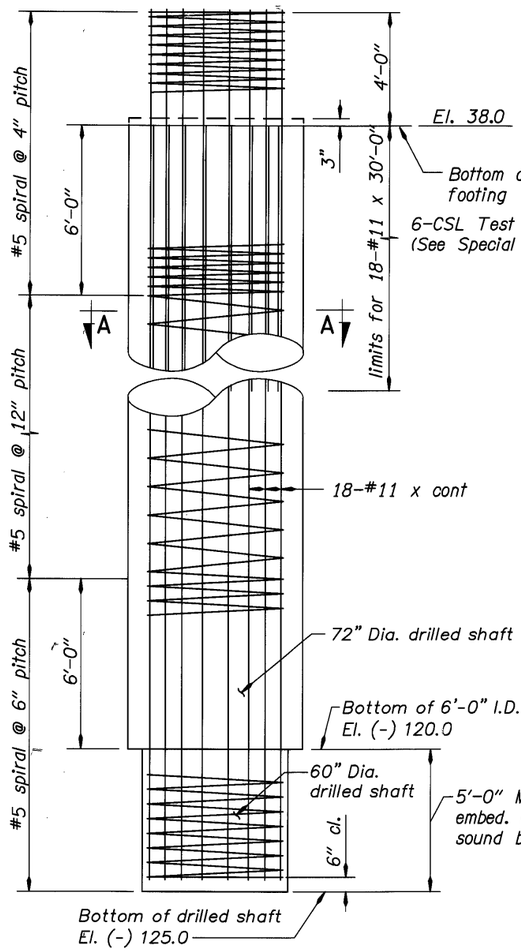
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 6 - PLAN AND ELEVATION

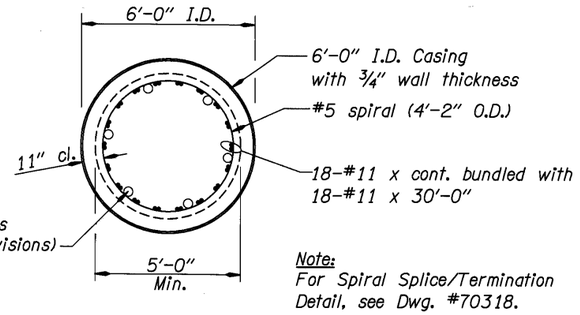
SHEET 131 OF 173
DRAWING NO. 70319

Xrefs: Odotbdr.dwg



BENT 6 - DRILLED SHAFT

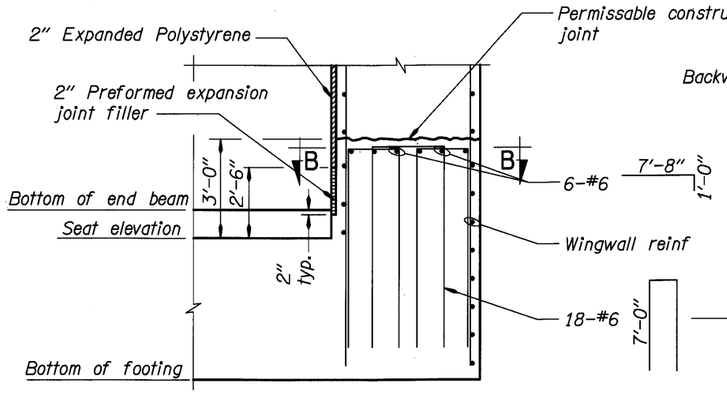
Scale: 3/8"=1'-0"



Note:
For Spiral Splice/Termination Detail, see Dwg. #70318.

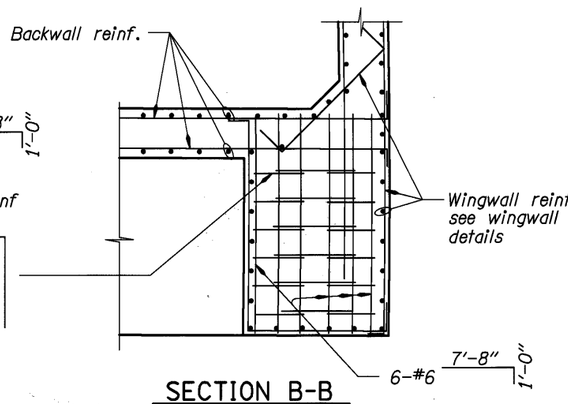
SECTION A-A

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



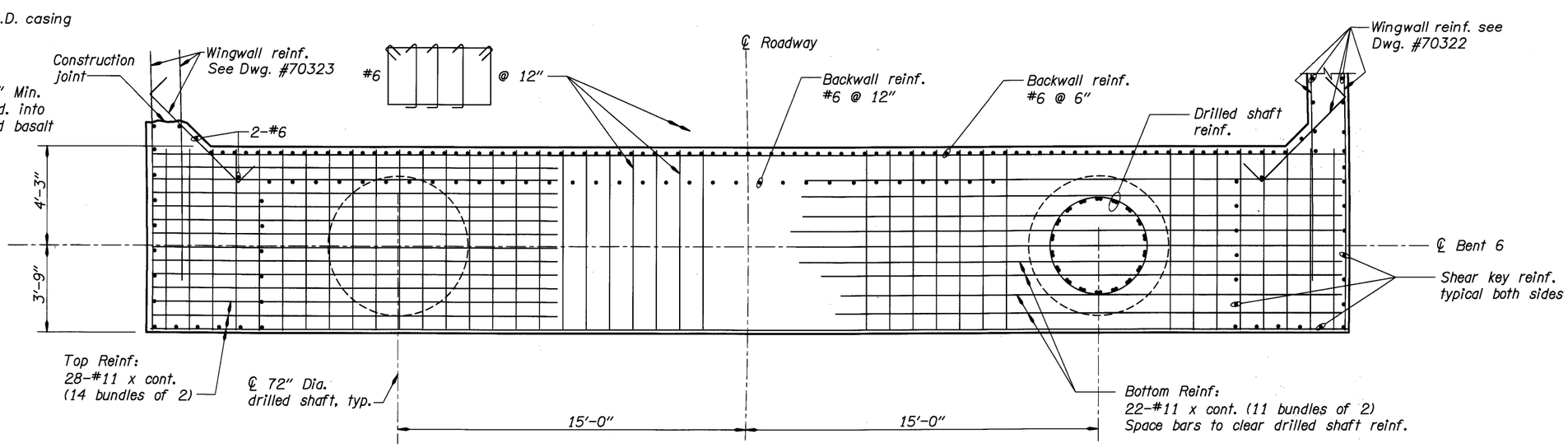
BENT 6 SHEAR KEY

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



SECTION B-B

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



BENT 6 FOOTING PLAN

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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDT
EXPIRES: 12-31-05

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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

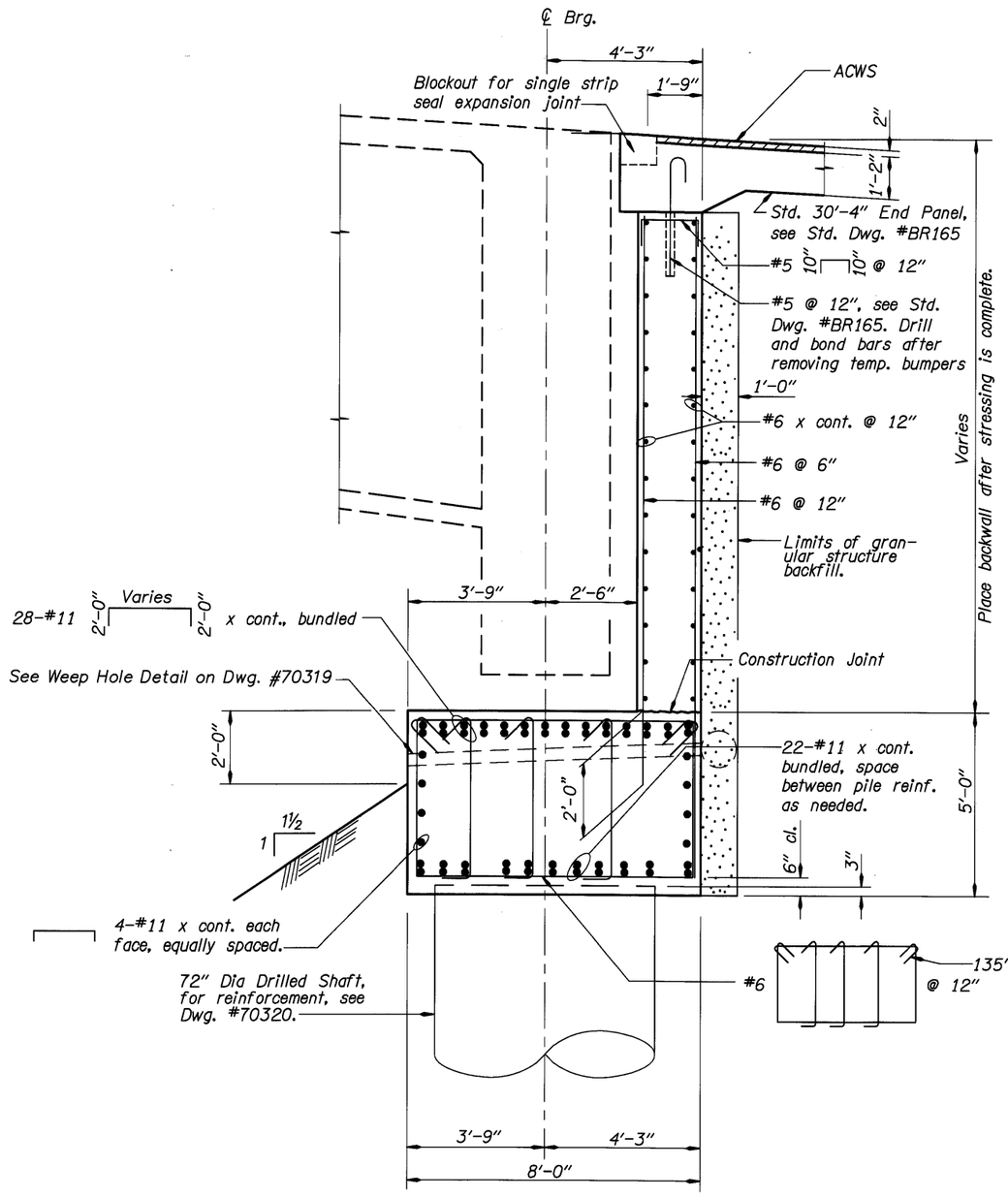
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 6 - FOOTING PLAN

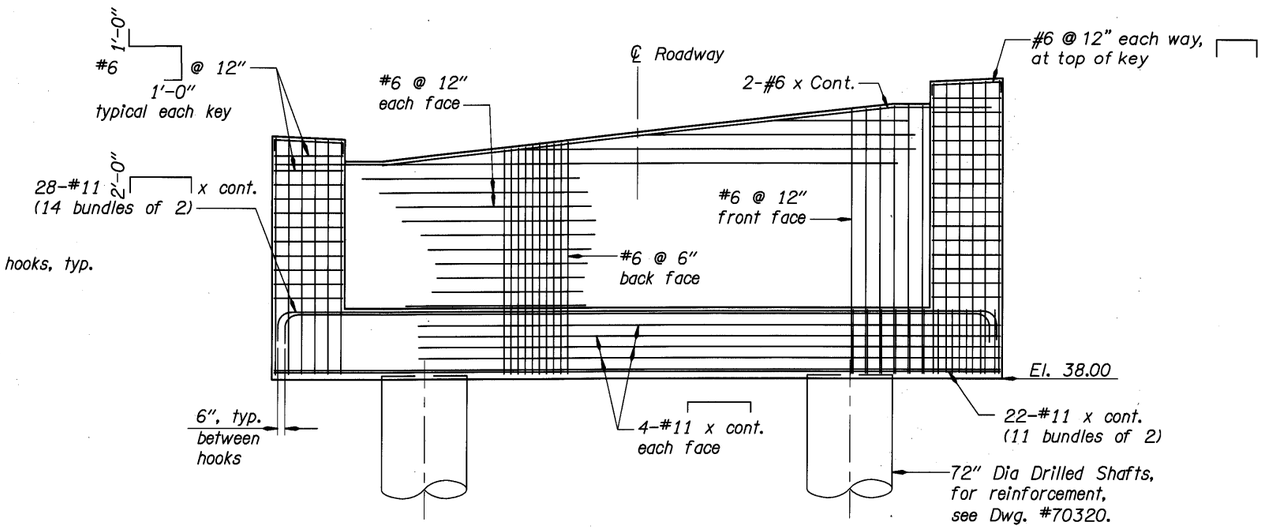
SHEET 132 OF 173
DRAWING NO. 70320

Xrefs: Odotbdr.dwg



TYPICAL SECTION - BENT 6

Scale: ½"=1'-0"



(Looking up station)

BENT 6 ELEVATION

Scale: 3/16"=1'-0"

Notes:
1. See Dwg. #70195 and #70196 for Construction Sequence.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
2	08/05	Revised Typical Section and deleted Temporary Bumper	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Kent William Curtis MARCH 09, 2004
EXPIRES: 12-31-05

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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

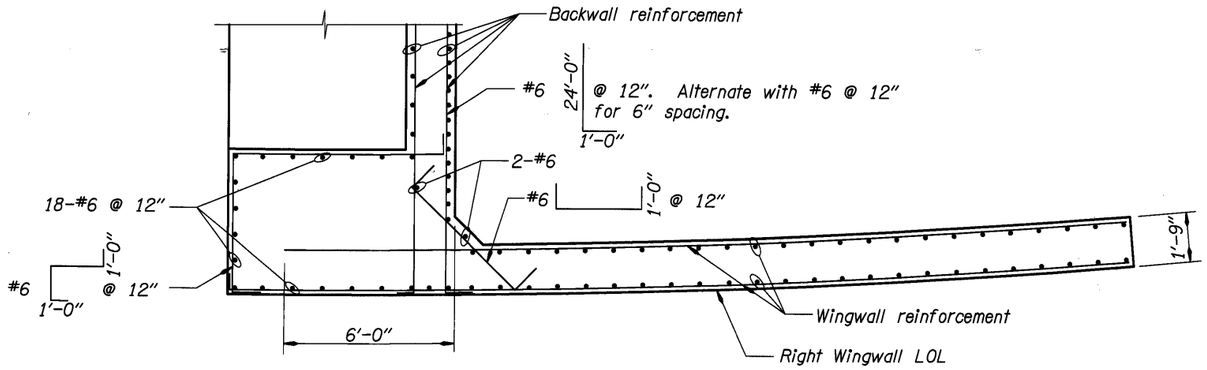
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

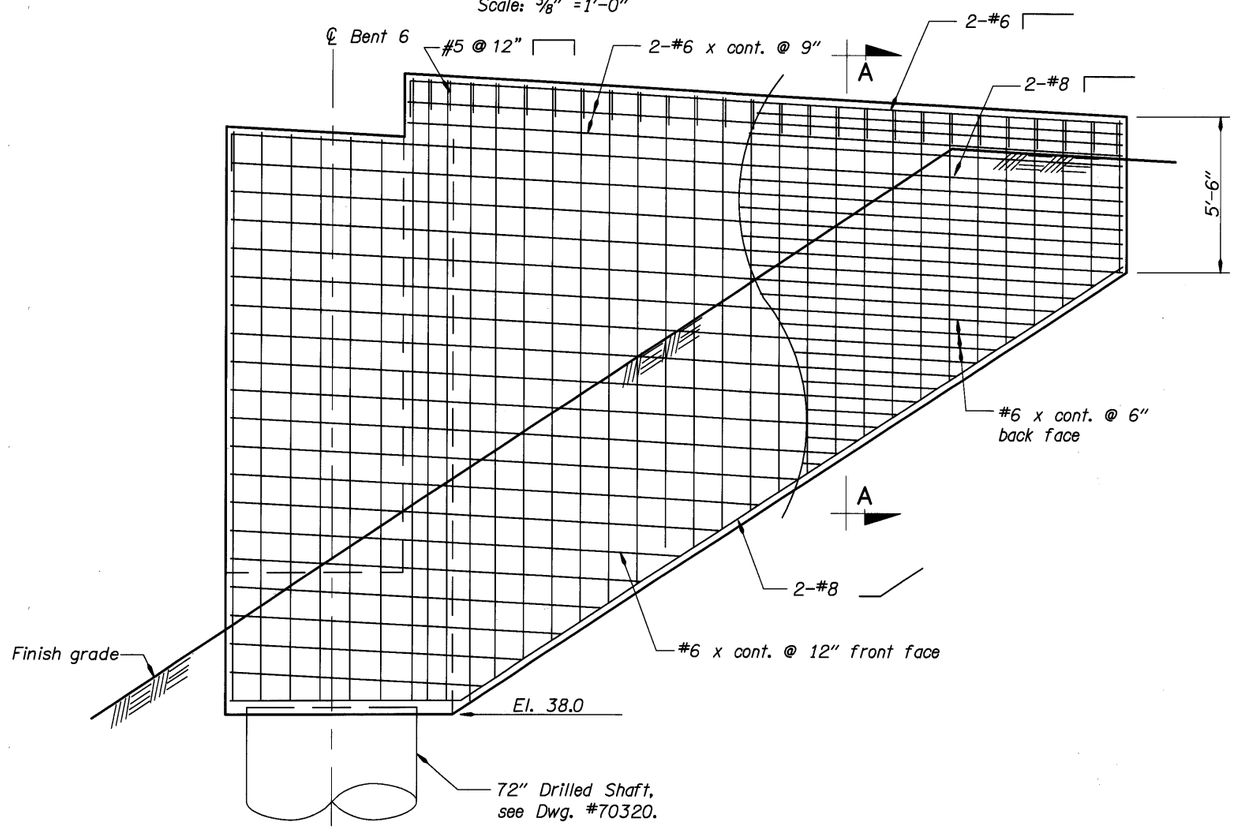
BENT 6 - TYPICAL SECTION AND DETAILS

SHEET 133 OF 173
DRAWING NO. 70321

Xrefs: Odotbdr.dwg

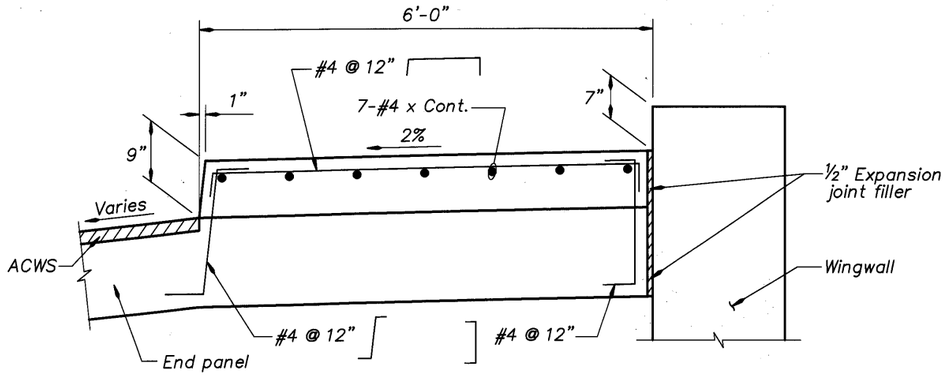


WINGWALL PLAN
Scale: 3/8" =1'-0"

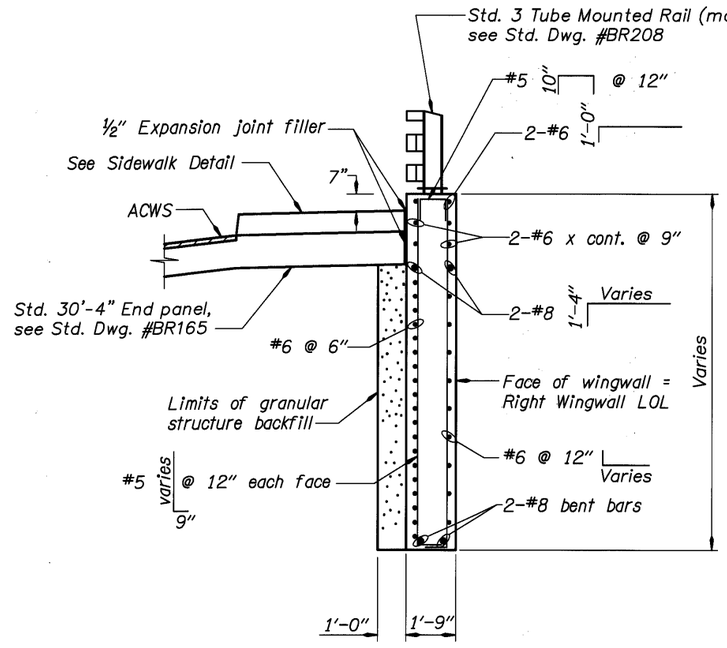


RIGHT WINGWALL ELEVATION
Scale: 3/8" =1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").



SIDEWALK DETAIL
Scale: 1" =1'-0"



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

	DATE	REVISION	BY
2			
1	08/05	Revised Wingwall Plan	KWC
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON Brent Curtis MARCH 09, 2001 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

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530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

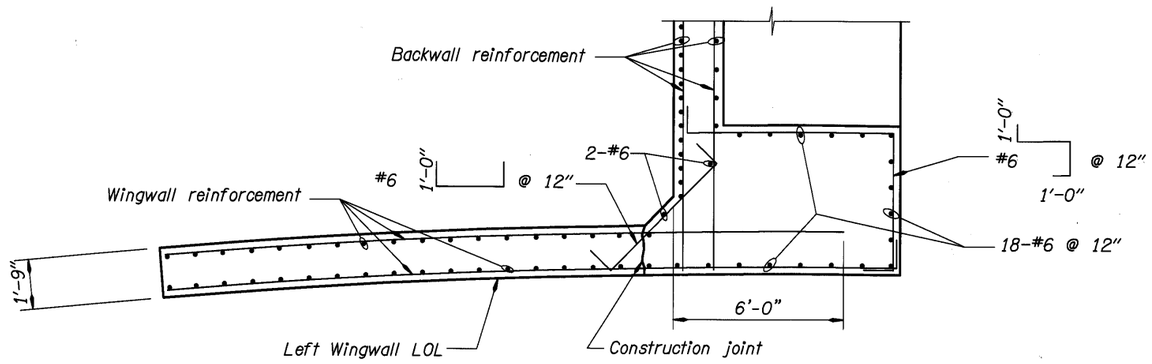
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 6 - RIGHT WINGWALL PLAN AND ELEVATION

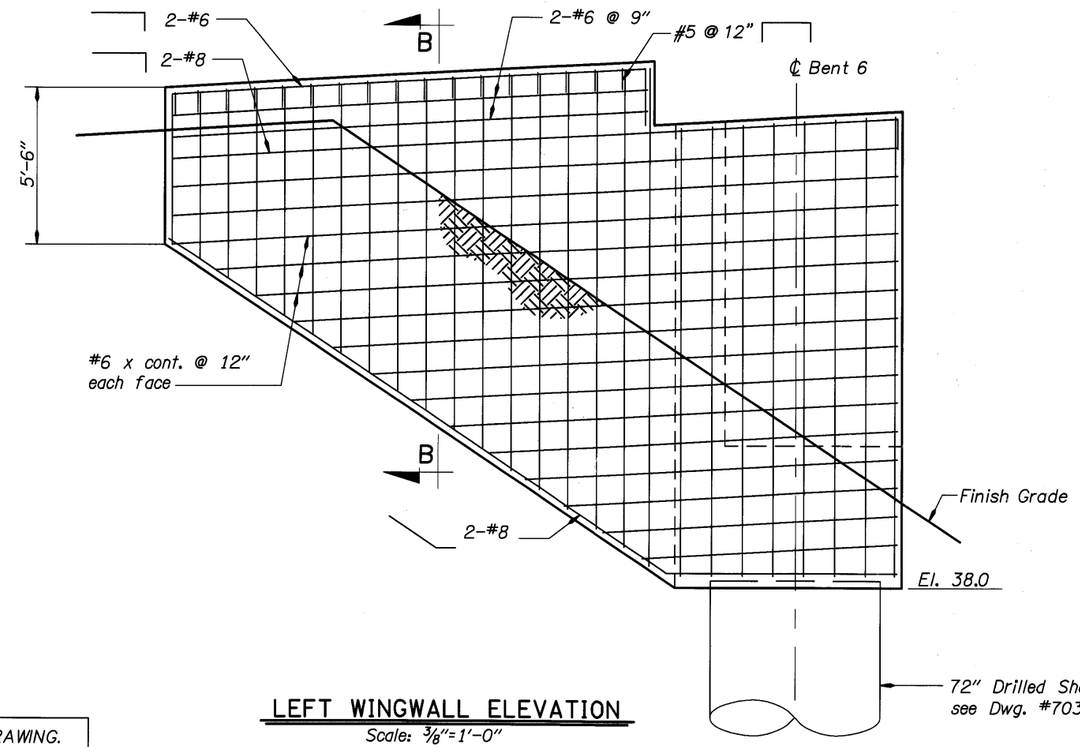
SHEET 134 OF 173
DRAWING NO. 70322

Xrefs: Odotbdr.dwg



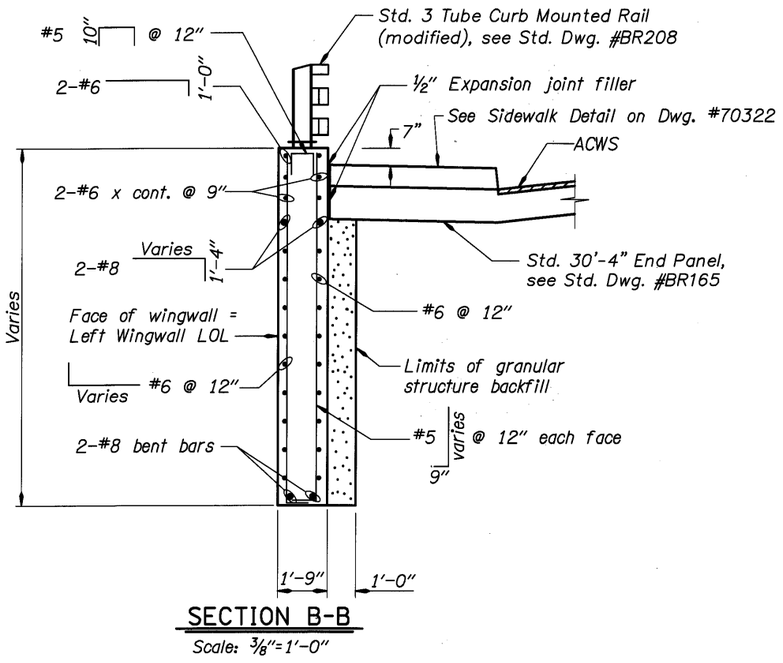
WINGWALL PLAN

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



LEFT WINGWALL ELEVATION

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



SECTION B-B

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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY

DRAFTED: Ken Johnson
CHECKED: Josh Hewes
DESIGNED: Adrianne Dietrich

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON KENT WILLIAM CORDTZ MARCH 09, 2004
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

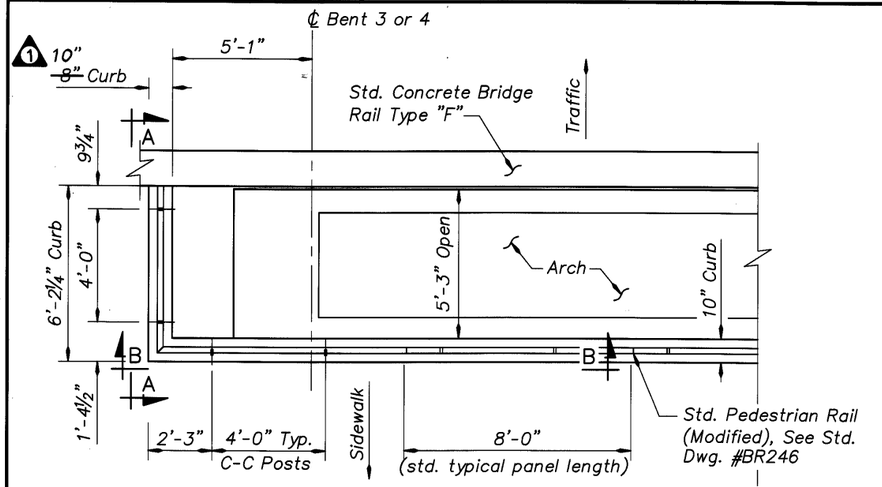
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BENT 6 - LEFT WINGWALL PLAN AND ELEVATION

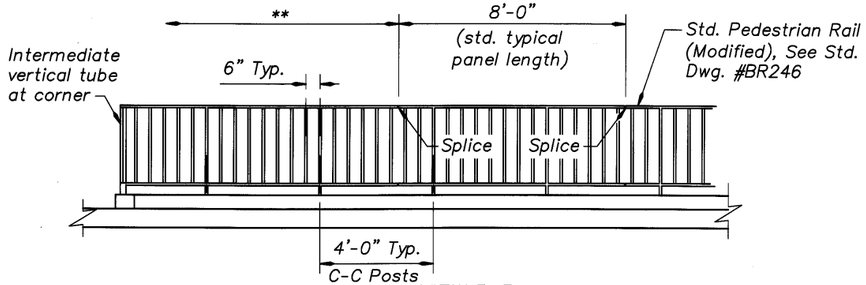
SHEET 135 OF 173
DRAWING NO. 70323

Xrefs: Ostitdr.dwg



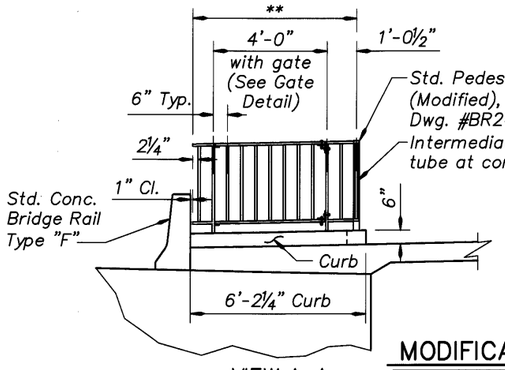
PEDESTRIAN RAIL TERMINATION PLAN

Scale : ⅜" = 1'-0"
(All corners similar)



VIEW B-B

Scale : ⅜" = 1'-0"



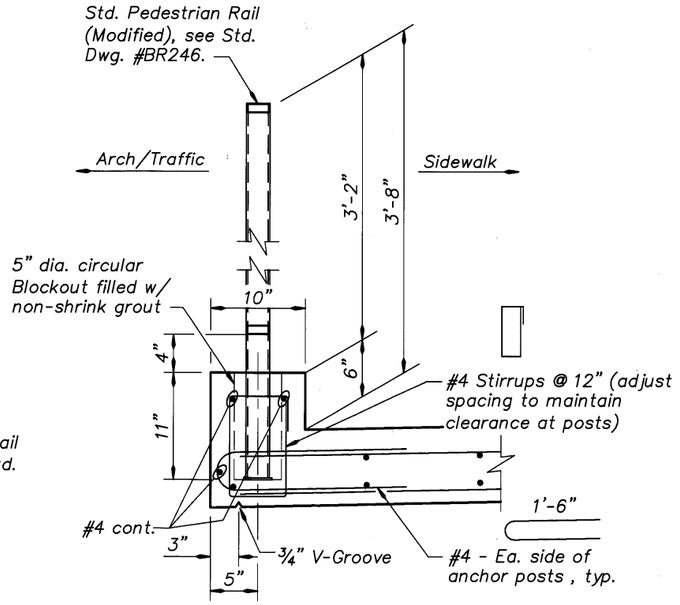
VIEW A-A

Scale : ⅜" = 1'-0"

**Special end panel with gate extends from splice around corner to within 1" clear of Std. Conc. Bridge Rail Type "F".

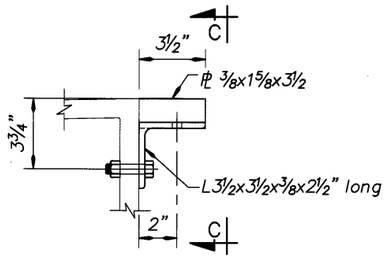
MODIFICATIONS TO STANDARD PEDESTRIAN RAIL

Notes:
For Pedestrian Rail details not shown, see Std. Dwg. #BR246.
For Sidewalk and curb details not shown, see "Typical Section" on Dwg. #70214 and "Deck Plan" on Dwgs. #70210 and #70211.



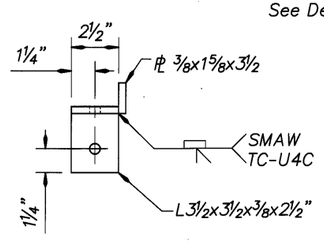
ANCHOR POST SECTION

Scale : 1½" = 1'-0"



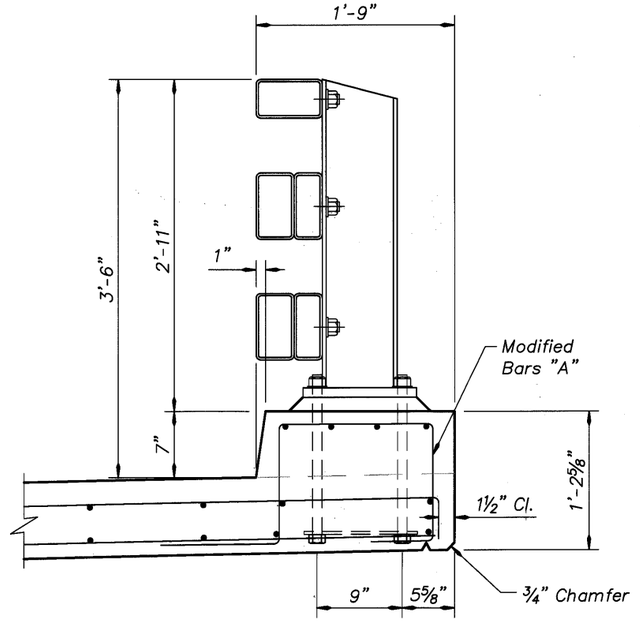
DETAIL "A"

Scale : 3" = 1'-0"



VIEW C-C

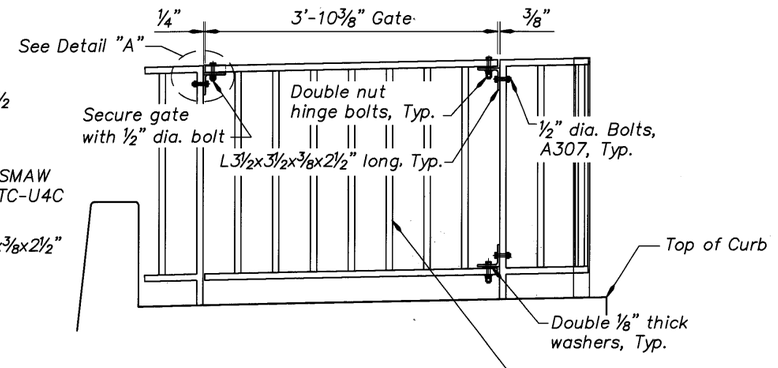
Scale : 3" = 1'-0"



MODIFICATIONS TO STANDARD 3 TUBE CURB MOUNTED RAIL

Scale : 1½" = 1'-0"

Notes:
For 3 Tube Curb Mounted Rail details not shown, see Std. Dwg. #BR208.
For Sidewalk and curb details not shown, see "Typical Section" on Dwg. #70214 and "Deck Plan" on Dwgs. #70210 and #70211.
For Modified Bars "A", see Sidewalk Detail - Spans 2, 4, and 5 on Dwg. #70327.



GATE DETAIL

Scale : 1" = 1'-0"

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Kent Cordtz

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2003 RICHARD J. KING
EXPIRES: 6-30-07

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES — TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

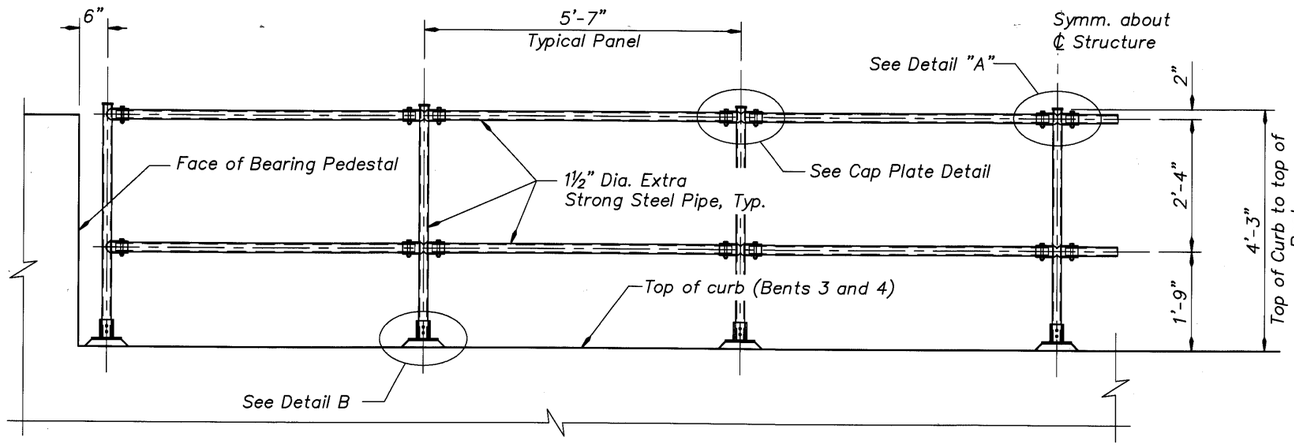
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

RAILING DETAILS (1 OF 4)

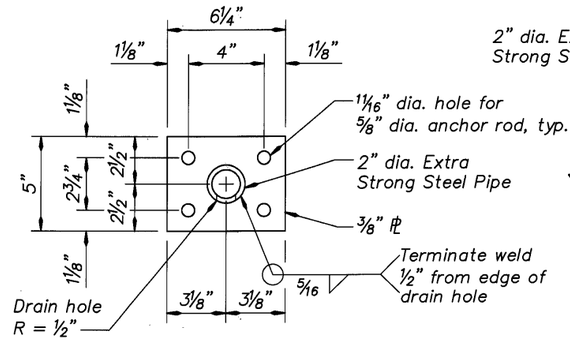
SHEET 136 OF 173
DRAWING NO. 70324

Xrefs: Odotbdr.dwg ped_Rail.dwg

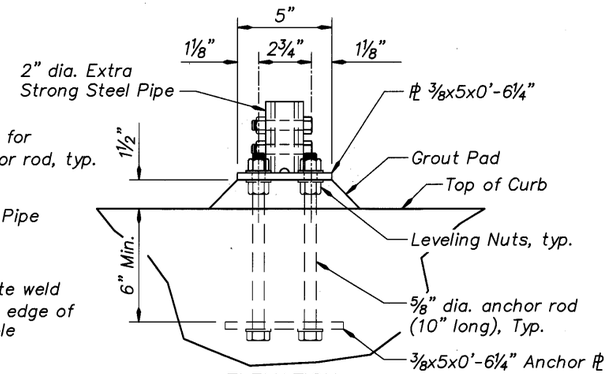


ELEVATION

Scale : ¾"= 1'-0"



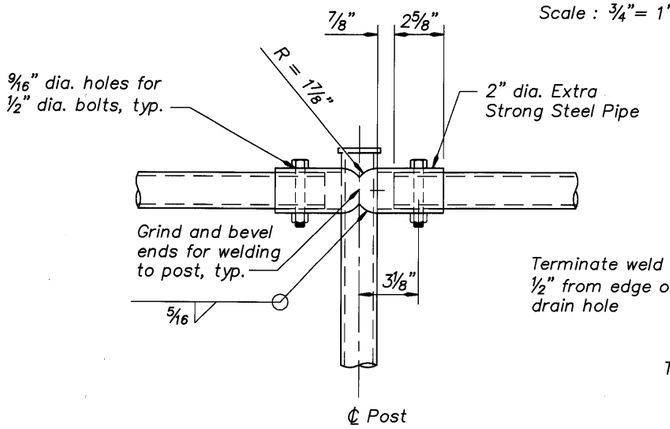
PLAN



ELEVATION

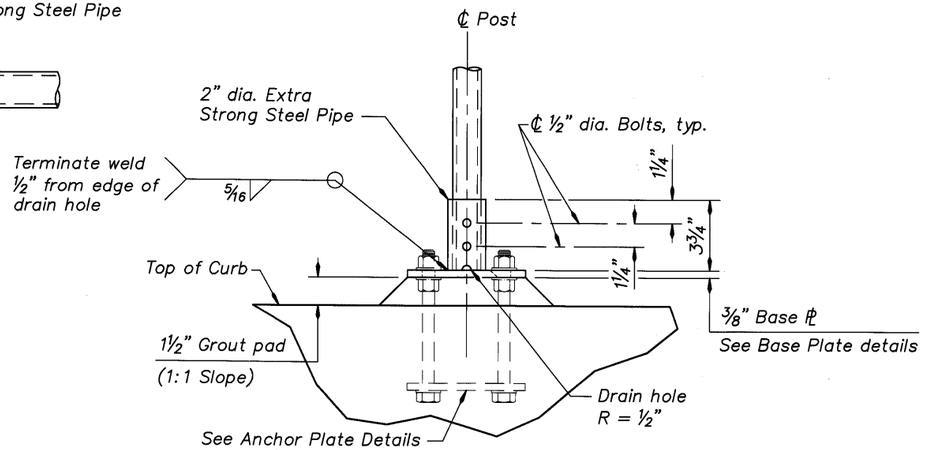
BASE PLATE DETAILS

Scale: 3" = 1'-0"



DETAIL A

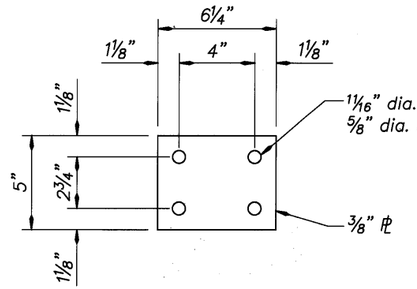
Scale: 3" = 1'-0"



DETAIL B

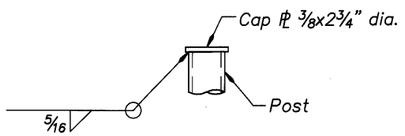
Scale: 3" = 1'-0"

BENTS 3 AND 4 SAFETY RAILING DETAILS



ANCHOR PLATE PLAN

Scale: 3" = 1'-0"



CAP PLATE DETAIL

Scale: 3" = 1'-0"

Notes:

1. See Dwg. #70306 and #70312 for rail location on Bents 3 and 4.
2. Steel pipe rails and posts shall be horizontal and plumb, respectively.
3. Anchor rods and bolts shall conform to AASHTO M314 (ASTM A307), Grade 36.
4. Rail and post elements shall conform to ASTM A53, Grade B.
5. Anchor plate and base plate shall conform to ASTM A36.
6. Nuts for anchor bolts shall conform to ASTM A563, Grade DH.
7. All structural steel including anchor rods, bolts, nuts, and washers shall be hot dip galvanized after fabrication. Provide galvanizing drain holes as required.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Kent Cordtz

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 70763 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07

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530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

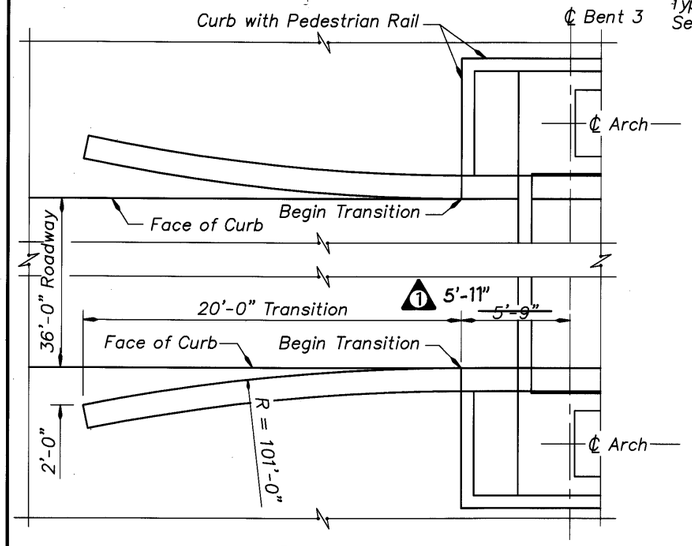
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

RAILING DETAILS (2 OF 4)

SHEET 137 OF 173
DRAWING NO. 70325

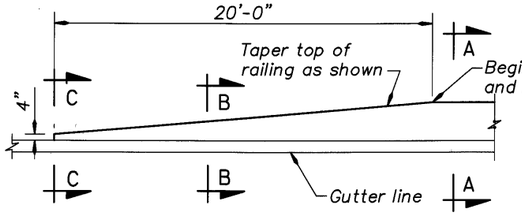
Xrefs: Odotbdr.dwg ODOT0460_RentRail.dwg



PLAN

Notes:
Sidewalk and deck reinforcement not shown for clarity.

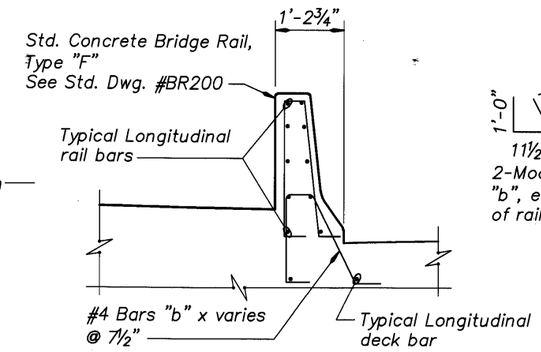
Top longitudinal rail bars follow the vertical taper through the transition. All other longitudinal rail bars do not change in relative vertical location and are to be discontinued at appropriate locations to maintain 2" min. cover on ends.



ELEVATION

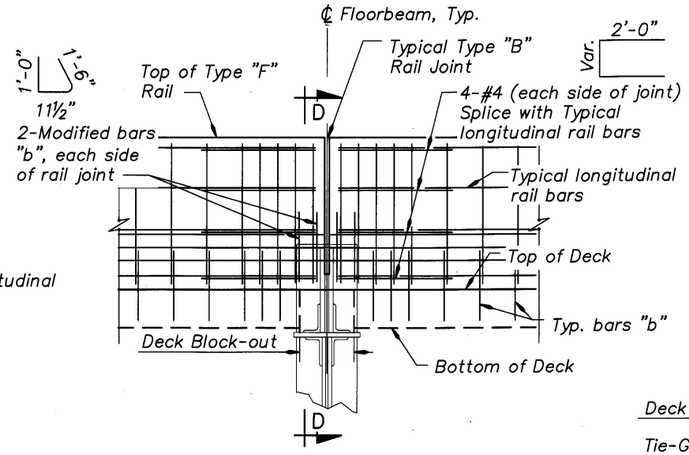
TYPE "F" RAIL TRANSITION

Scale: ¼" = 1'-0"
(Transition at Bent 3 shown - Bent 4 similar)

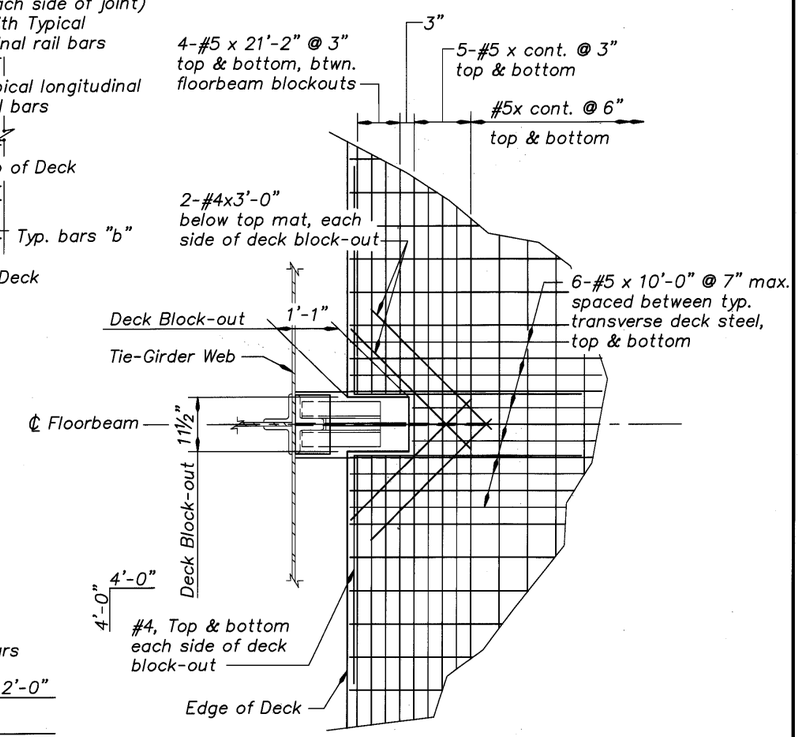


SECTION A-A

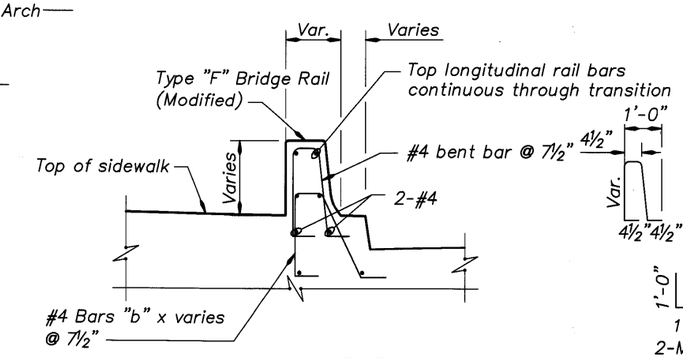
Scale : ¾" = 1'-0"



RAIL ELEVATION



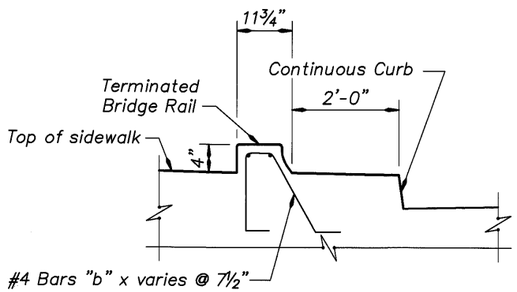
PLAN
(Rail omitted for clarity)



SECTION B-B

Scale : ¾" = 1'-0"

SECTION D-D



SECTION C-C

Scale : ¾" = 1'-0"

Note:
See Dwg. #70210 and #70211 for locations and additional notes.

RAIL MODIFICATION AND DECK BLOCK-OUT DETAILS

Scale: ¾" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 72645 PE OREGON JULY 15, 2005 JOHN BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

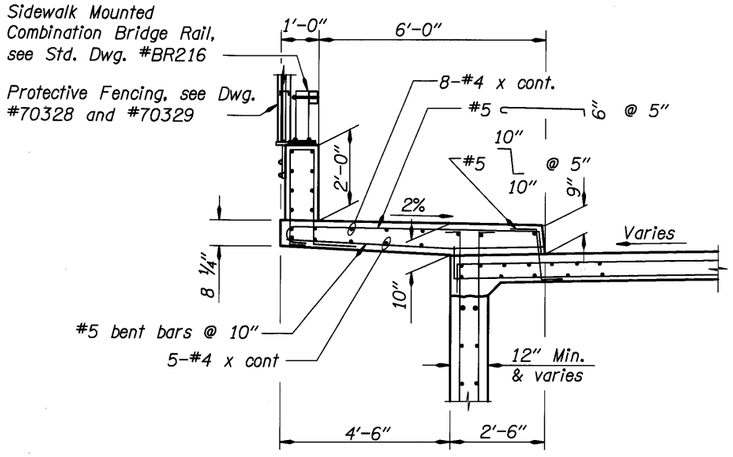
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

RAILING DETAILS (3 OF 4)

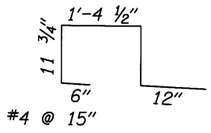
SHEET 138 OF 173
DRAWING NO. 70326

Xrefs: Odotbdr.dwg ODOT0460_RL_01.dwg

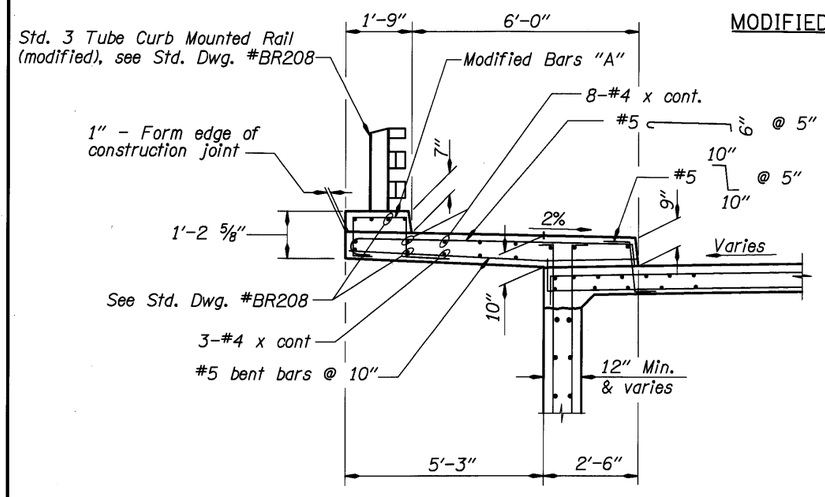


SIDEWALK DETAIL - SPAN 1

Scale: ½"=1'-0"

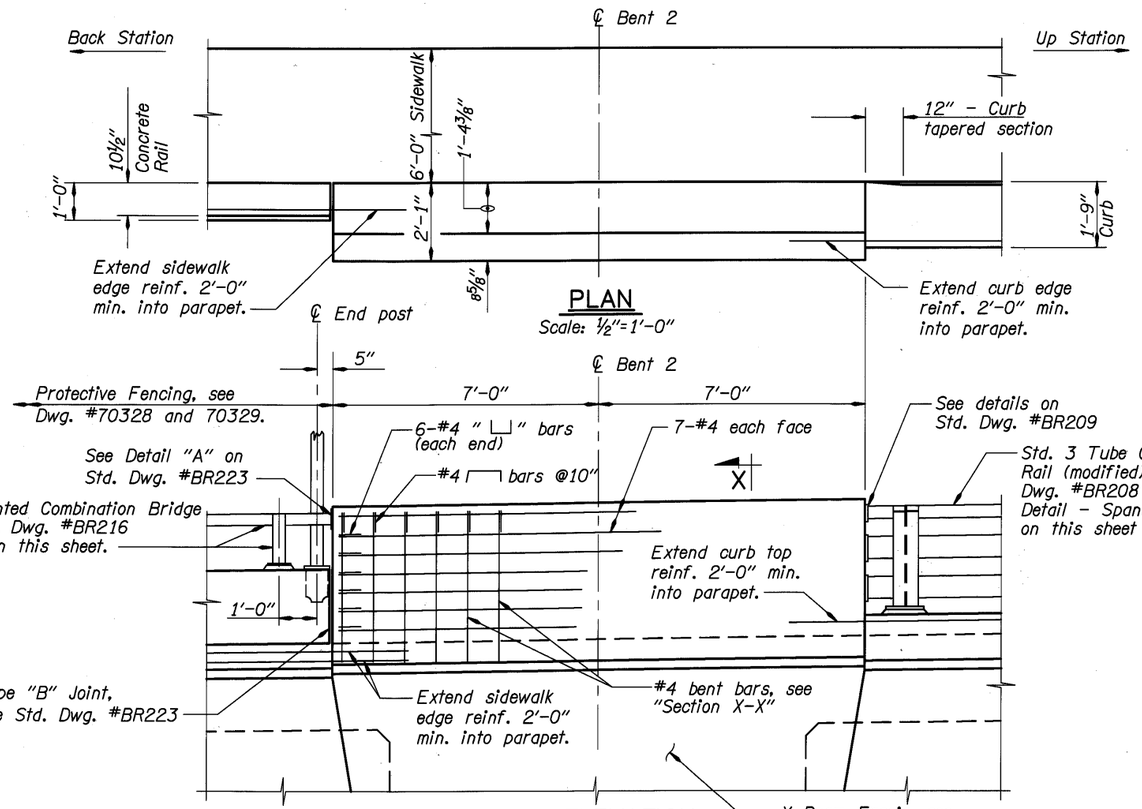


MODIFIED BARS "A"



SIDEWALK DETAIL - SPANS 2, 4, AND 5

Scale: ½"=1'-0"

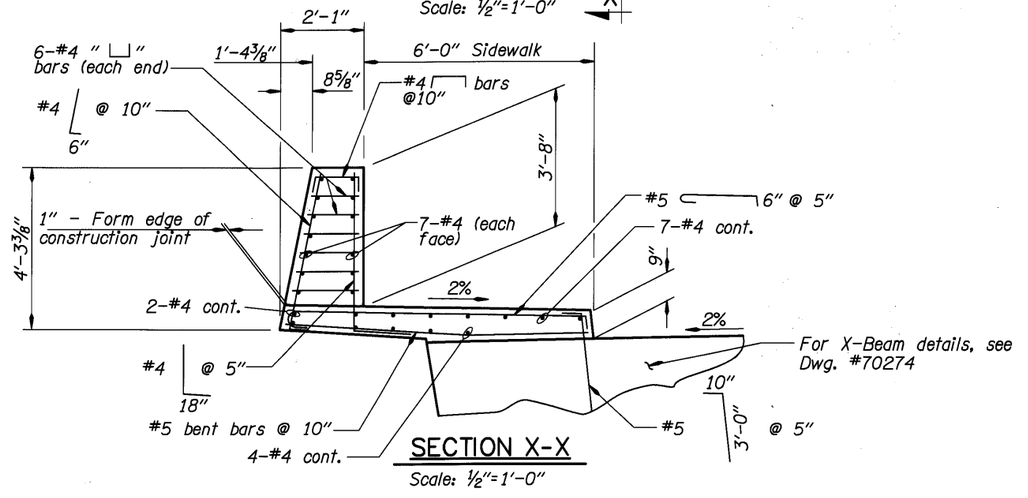


PLAN

Scale: ½"=1'-0"

ELEVATION

Scale: ½"=1'-0"



SECTION X-X

Scale: ½"=1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
DESIGNED: Josh Hewes

REVIEWED
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

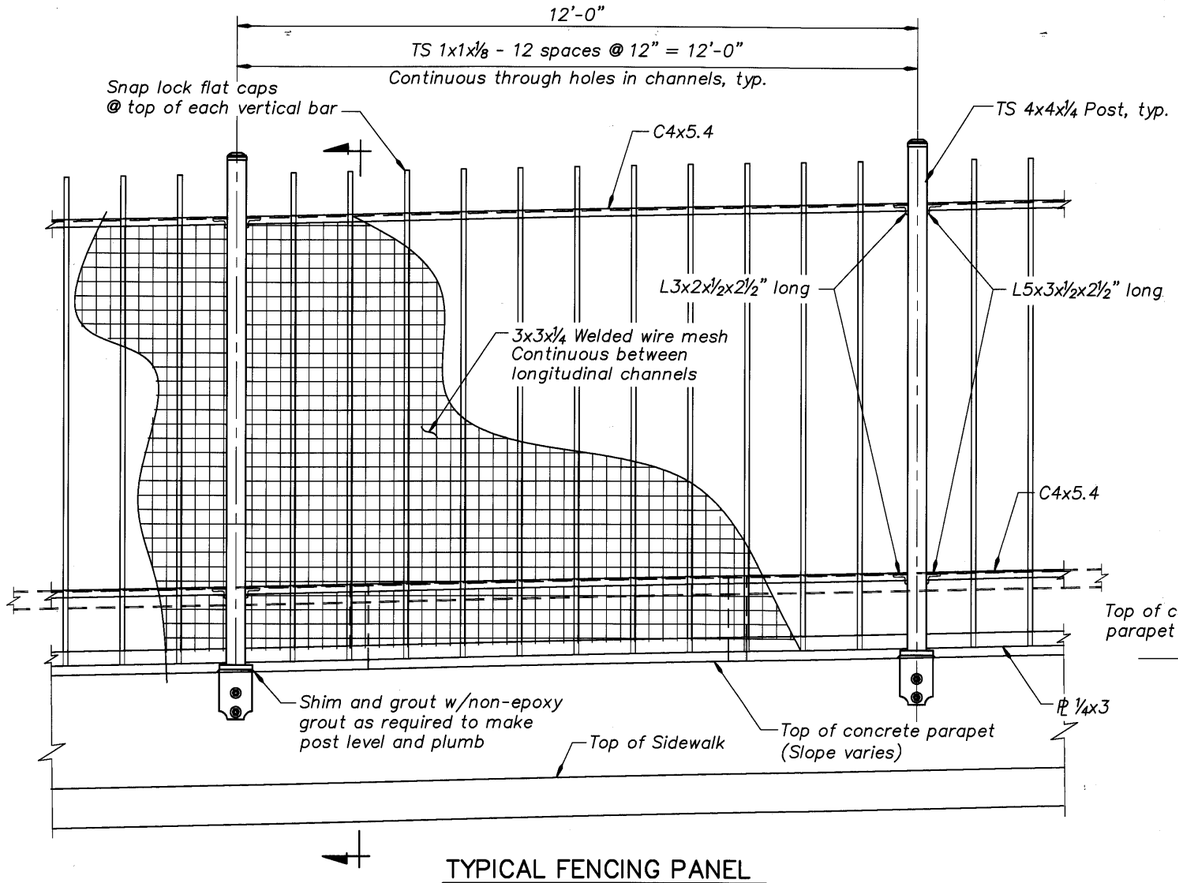
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

RAILING DETAILS (4 OF 4)

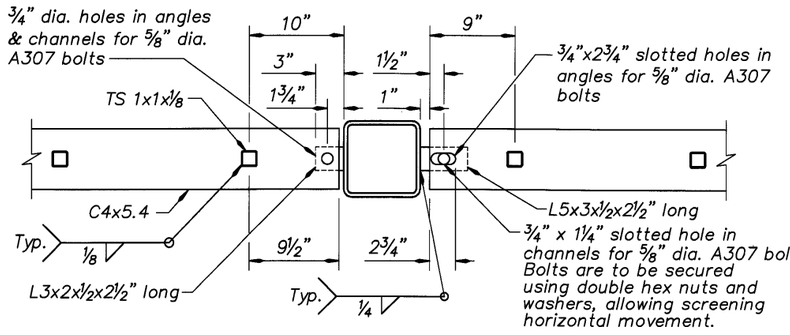
SHEET 139 OF 173
DRAWING NO. 70327

Xrefs: Odotbdr.dwg



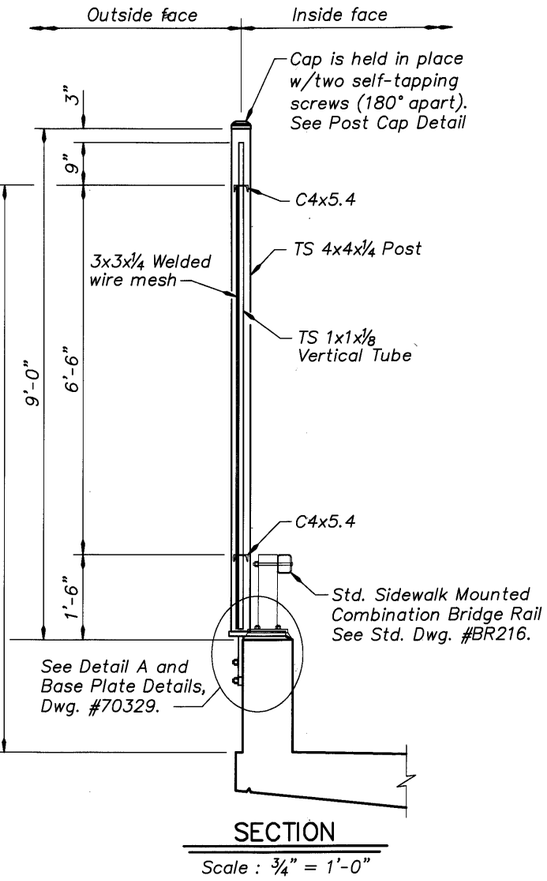
TYPICAL FENCING PANEL

Scale : ¾" = 1'-0"



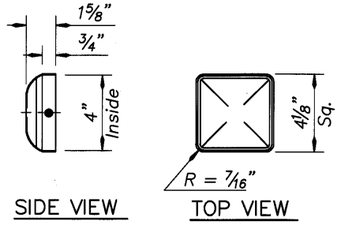
TYPICAL POST CONNECTION DETAILS

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



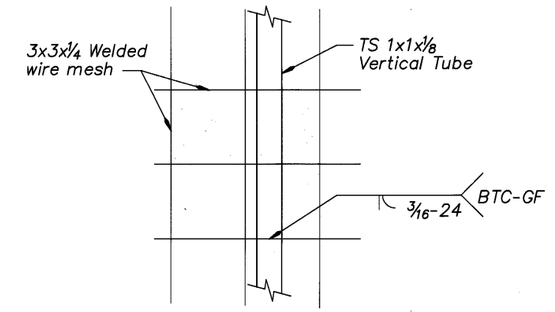
SECTION

Scale : ¾" = 1'-0"



POST CAP DETAIL

Scale : 3" = 1'-0"



WIRE MESH ATTACHMENT

No Scale

Wire Mesh Attachment Notes:

- Wire mesh to be installed parallel to 1" sq. tubing (true vertical) on outside face of the Protective Fence Panel.
- Maximum gap between wire mesh and posts shall not exceed ½".
- Provide 3/16" long, flare bevel groove welds at 24" each way to 1" sq. vertical tubes.
- For Vertical tubes nearest edge of panel, provide welds at 6" vertically.
- Provide a minimum of 2 welds to each vertical tube on mesh below bottom channel.

Notes:

1. For any given sreening panel, the difference in slope between the longitudinal channels/plates and the bridge shall not exceed 0.01 ft./ft. Maintain the vertical alignment of wire mesh and 1" square tubing.
2. Galvanize all components of protective fencing.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Joel Tubbs
REVIEWED: Kent Cordtz

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70763 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

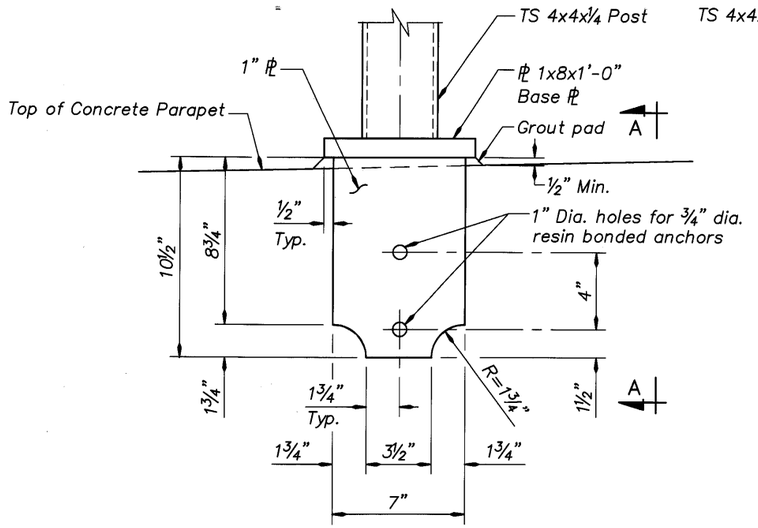
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

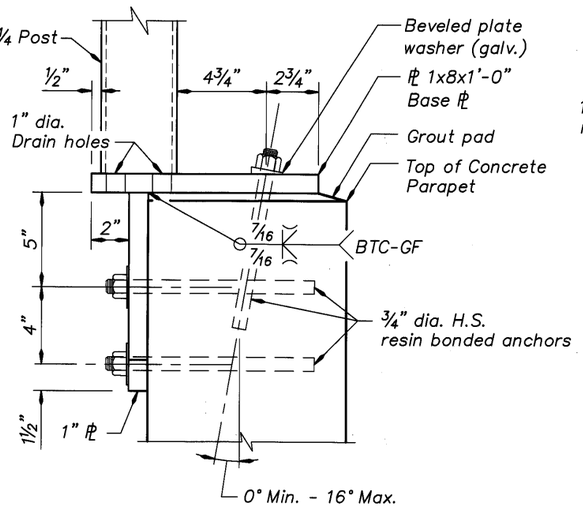
PROTECTIVE FENCING DETAILS (1 OF 2)

SHEET 140 OF 173
DRAWING NO. 70328

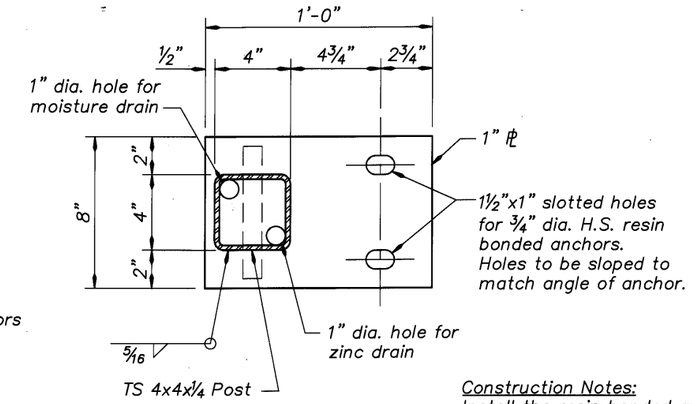
Xrefs: Odotbdr.dwg ODOT0460_RL03.dwg



ELEVATION



VIEW A-A



PLAN

BASE PLATE DETAILS

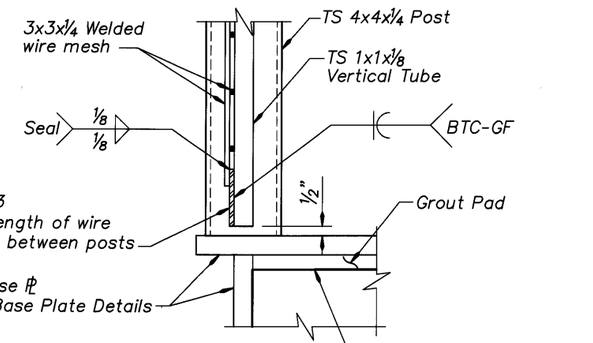
Scale : 3" = 1'-0"

<u>Construction Notes:</u>

Install the resin bonded anchors into the side of the concrete barrier first, and allow to fully cure. Install post and tighten the nuts ⅓ turn past snug tight. Drill holes for remaining anchors through holes in base plate and install anchors. After the final anchors are fully cured, install and tighten nuts ⅓ turn past snug tight.

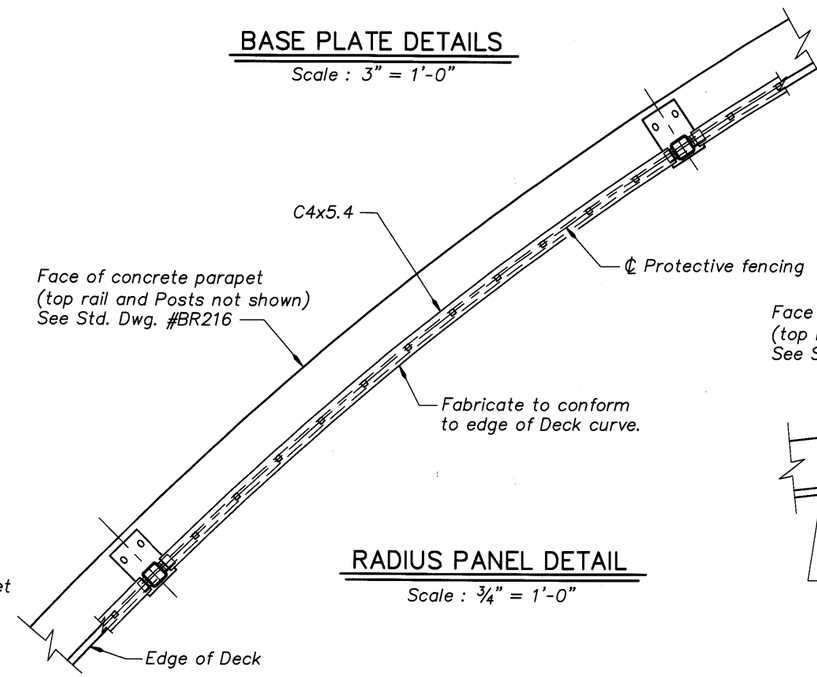
All welding shall conform to AWS D1.1 Structural Welding Code.

Posts shall be in place and all resin bonded anchors fully cured before installation of screening panels.



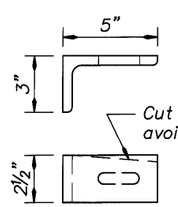
DETAIL A

No Scale



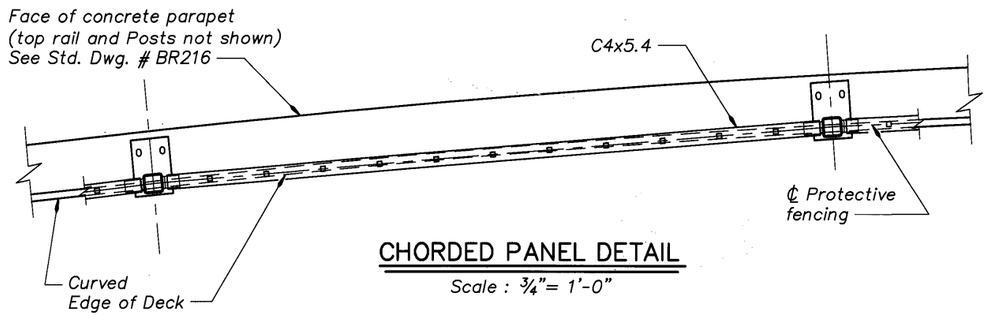
RADIUS PANEL DETAIL

Scale : ¾" = 1'-0"



<u>Note:</u>

Use larger, L5x3x½x 2½" long suppo brackets at all locations with chorded panels.



CHORDED PANEL DETAIL

Scale : ¾"= 1'-0"

<u>Note:</u>

Curved panels are required between Sta. "R" 1+41.46 and "R" 2+00.00, "L" 0+62.46 and "L" 1+03.86. Chorded panels my be used for the remainder of the Protective Fencing. See Dwg. #70207 and #70208 for post locations.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Joel Tubbs
REVIEWED: Kent Cordtz

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 70763 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07

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530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

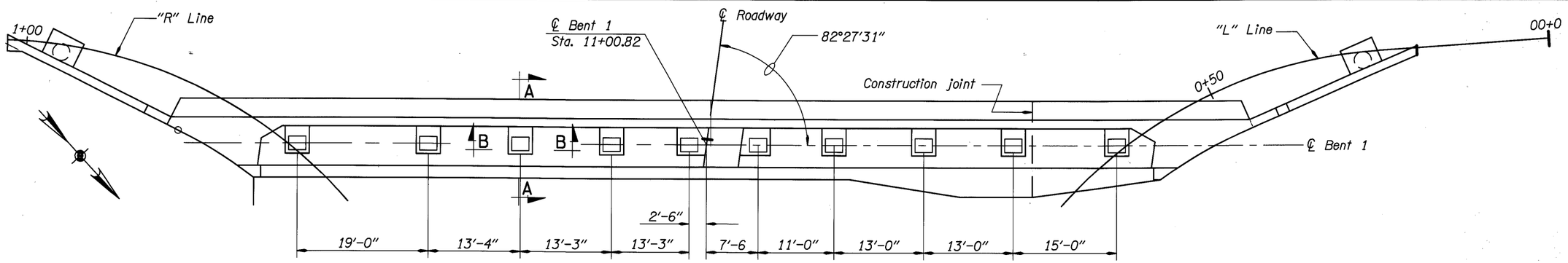
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

PROTECTIVE FENCING DETAILS (2 OF 2)

SHEET 141 OF 173
DRAWING NO. 70329

Xrefs: Odotbdr.dwg ODOT0460_R1.03.dwg

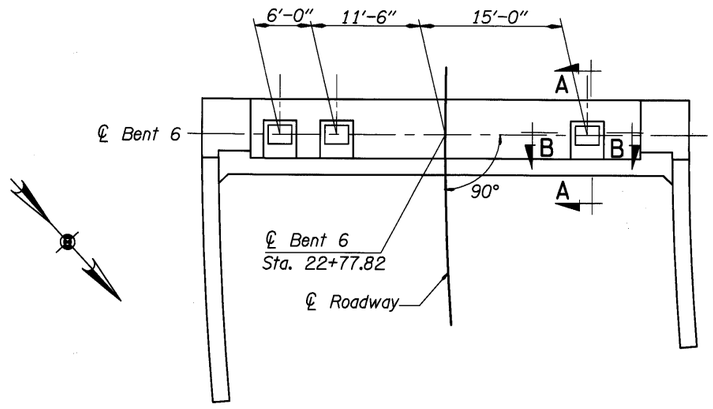
P:\0\ODOT00000460\0400CAD\EB\DLV\SA138.dwg Jul 14, 2005 12:49pm



BENT 1 BEARING PLAN

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

Note:
For bearing details and notes, see Dwg. #70331



BENT 6 BEARING PLAN

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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Rich King

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 14549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

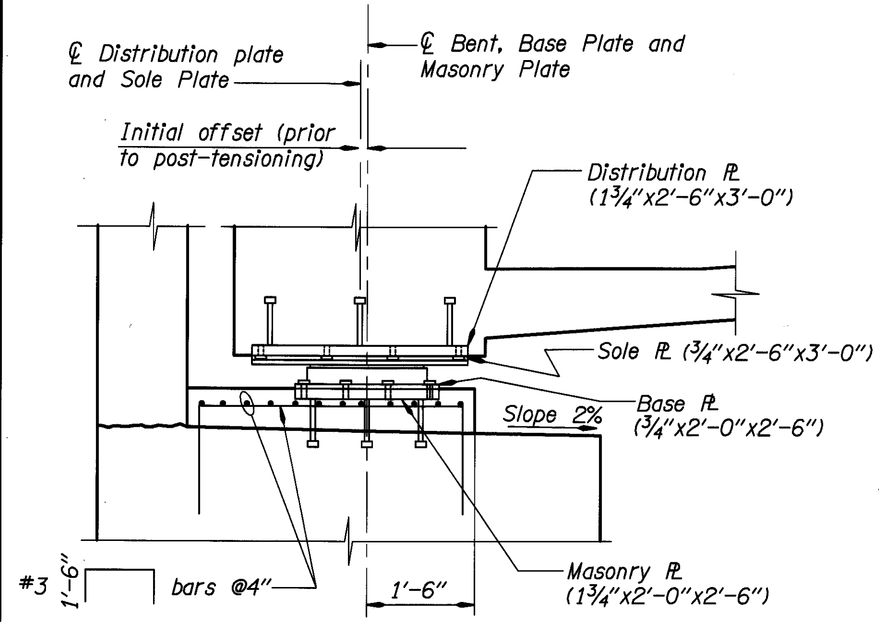
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BEARING DETAILS - BENTS 1 AND 6 (1 OF 2)

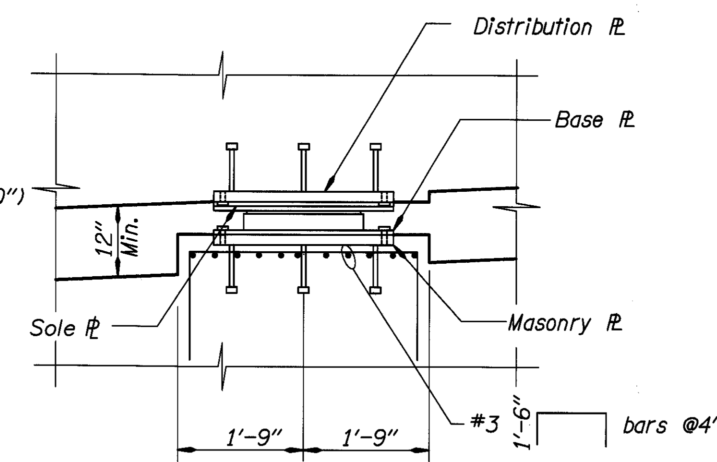
SHEET 142 OF 173
DRAWING NO. 70330

Xrefs: Odotbdr.dwg SA105.dwg



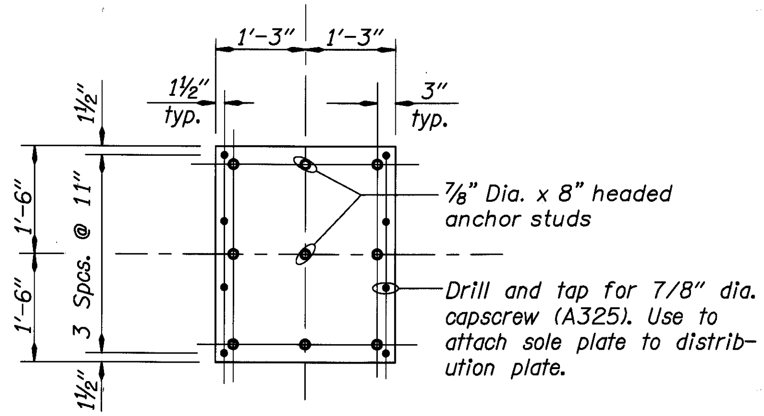
SECTION A-A

Scale: ¾"=1'-0"



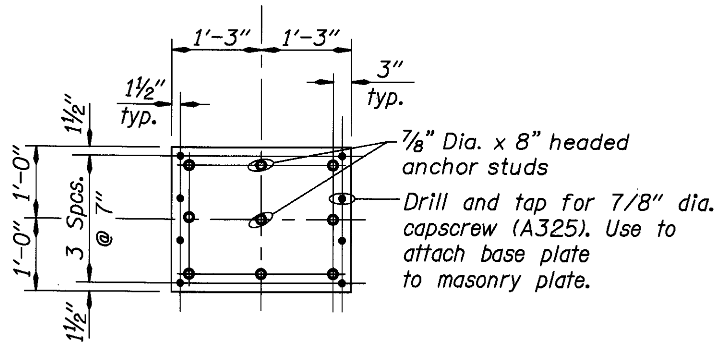
SECTION B-B

Scale: ¾"=1'-0"



DISTRIBUTION ℙ AND SOLE ℙ

Scale: ¾"=1'-0"



BASE ℙ AND MASONRY ℙ

Scale: ¾"=1'-0"

BRIDGE BEARING TABLE

Bent	No. req'd.	Type	Design Load Capacity Kip/bearing				* Movement Estimates in inches				
			Vertical		Horizontal		Calculated				
			Dead	Total	Transv.	Longit.	ES	CR + SH	TF	TR	EQ
1	10	Non-Guided	475	625	---	---	1¹⁄₁₆	2⅛	¹¹⁄₁₆	-½	7½, -7½
6	3	Non-Guided	525	650	---	---	-1	-1⅞	-⅝	½	7½, -7½

Bent	Reqd. Movement Capacity			** Initial Offset (inches)	Movement per 10°F (inches)
	EQ	1.5 (ES + CR + SH + TF)	1.5 (TR)		
1	7½, -7½	5⅞	-¹³⁄₁₆	-3¼	³⁄₁₆
6	7½, -7½	-5¹³⁄₁₆	¾	2⅞	³⁄₁₆

EXPANSION BEARING DESIGN NOTES:

Maximum allowable concrete bearing stress is 2.16 ksi.

Maximum allowable steel bending stress is 19.8 ksi.

Minimum rotational capacity is 0.015 radians.

Both upper and lower components of the bearing shall be secured to the steel plates with bolts or equivalent.

Bearing shall have load and movement capacity as shown in the chart. Movement capacity for EQ need not include other effects.

Bearings shall be either disc bearing, pot bearings or spherical bearings and shall be from ODOT Qualified Products List (July 2005).

All exposed metal bearing surfaces, except contact surface, shall be paint coated per ODOT Standard Specifications.

Bearing shall be level in full loaded conditions.

Bearing unit supplied must fit within the limits of the specified sole plate and base plate without conflicting with the cap screws. All additional plates required to limit the bearing stress on the concrete, or bending in the distribution plate and masonry plate, shall be designed, detailed and supplied by the bearing supplier.

Assumed installation temperature is 52 degrees farenheit. Adjust the bearing offset in accordance with the Bearing Data Table for variance from the assumed temperature.

Faces of adjacent steel plates shall be machined finished to match.

** Positive value indicates upper asembly offset ahead on station relative to lower assembly

* Positive value indicates upper assembly moves ahead on station.

ES = Elastic shortening

CR = Creep shortening

SH = Shrinkage shortening

TF = Temperature Fall Shortening (40°F)

TR = Temperature Rise Lengthening (30°F)

EQ = Earthquake

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Rich King

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

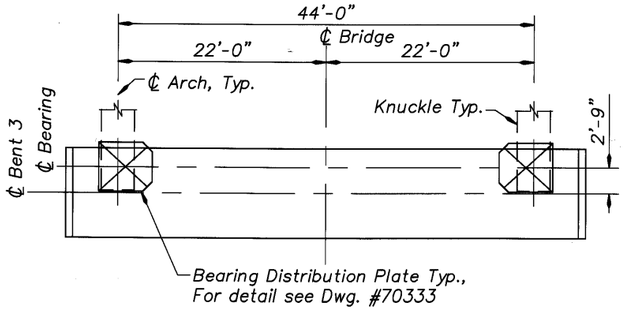
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BEARING DETAILS - BENTS 1 AND 6 (2 OF 2)

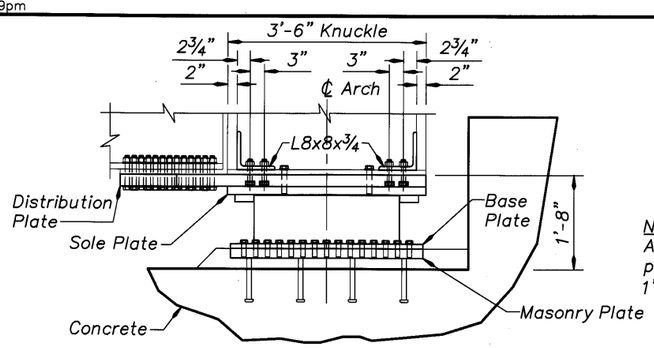
DRAWING NO. 70331

Xrefs: Odotbdr.dwg SA105.dwg



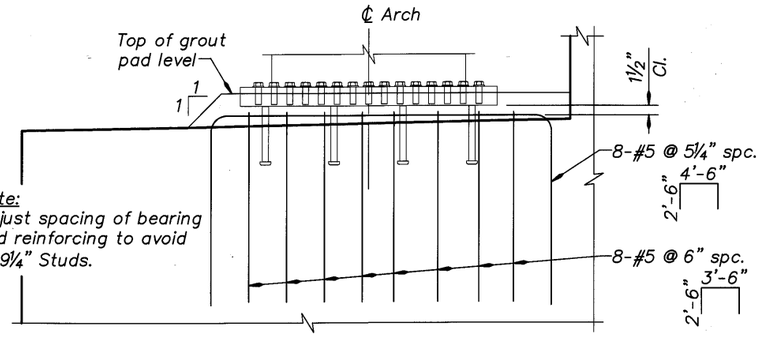
BEARING PLAN AT BENT 3

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



ELEVATION AT BENT 3

Scale : ¾" = 1'-0"



Note:
Adjust spacing of bearing pad reinforcing to avoid 1"x9¼" Studs.

BEARING PAD REINFORCING DETAIL

Scale : 1" = 1'-0"

LEGEND

- ✦ 15⁄16" Hole for 7⁄8" dia. bolt
- • 15⁄16" Drill and tap 1¾" deep for 7⁄8" dia. bolts.
- ✖ 1"x 9¼" Weld stud

Note:
Legends for Bearings at Bent 3 and for Bearings at Bent 4 are not the same.

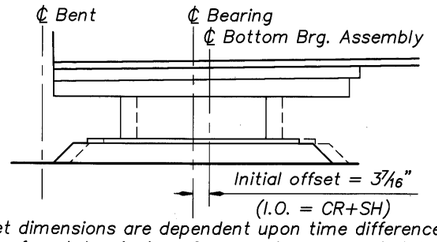
Bent	No. Req'd.	Type	Design Load Capacities in Kips/bearing				* Movement Estimates in inches			
			Vertical		Horizontal		Calculated			
			Dead	Total	Transv.	Longit.	CR+SH	TF	TR	EQ
3	2	Guided	1345	1757	540	----	3 7⁄16	2¾	2 11⁄16	±16
4	2	Fixed	1345	1757	540	1500	----	----	----	----

Req'd. Movement Capacity		** Initial Offset (inches)	Movement per 10° F (inches)
1.5 (CR+SH+TF)	1.5 (TR)		
Bent 3 9 5⁄16	4	-3 7⁄16	9⁄16
Bent 4 ----	---	---	---

** Positive value indicates upper assembly offset ahead on station relative to lower assembly.

* Positive value indicates upper assembly moves ahead on station.
CR = Creep
SH = Shrinkage Shortening
TF = Temperature Fall (Concrete) (40°F)
Temperature Fall (Steel) (62°F)
TR = Temperature Rise (Concrete) (30°F)
Temperature Rise (Steel) (68°F)

BEARING DATA TABLE



Note:
Initial offset dimensions are dependent upon time difference between completion of post-tensioning of approach spans and placement of main arch structure. Offset dimension should be verified with Engineer prior to setting the lower bearing assembly locations at Bent 3.

INITIAL BOTTOM BEARING ASSEMBLY OFFSET DIAGRAM

Scale : ¾" = 1'-0"

BEARING DESIGN NOTES:

Maximum allowable concrete bearing stress is 2.16 ksi.

Maximum allowable steel bending stress is 19.80 ksi.

Minimum rotational capacity is 0.015 radians.

Both upper and lower components of the bearing shall be secured to the steel plates with bolts or equivalent.

Bearing shall have load and movement capacity as shown in the chart (Expansion bearing only).

Bearings shall be either disc bearings, pot bearings or spherical bearings and shall be from the ODOT Qualified Products List (July 2005).

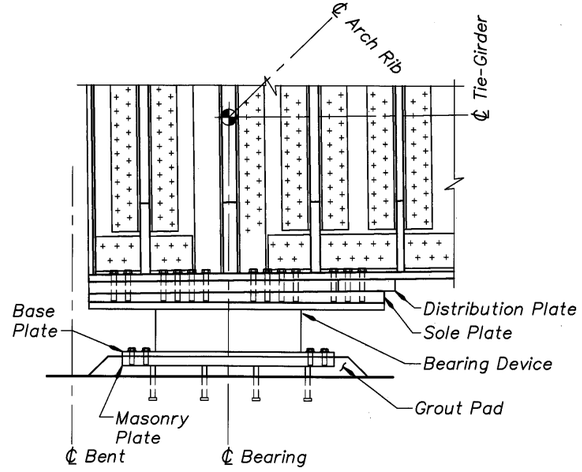
All exposed metal bearing surfaces, except contact surfaces, shall be paint coated per ODOT Standard Specifications.

Bearing shall be level in the fully loaded position.

Bearing unit supplied must fit within the limits of the specified sole plate and base plate without conflicting with the cap screws. All additional plates required to limit the bearing stress on the concrete, or bending in the distribution plate and masonry plate shall be designed, detailed and supplied by the bearing supplier.

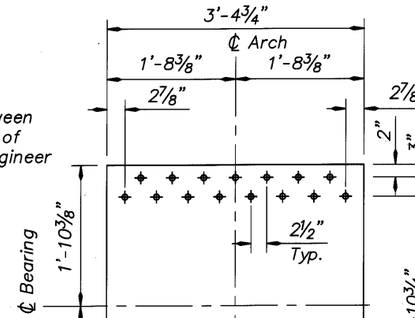
Assumed installation temperature is 52 degrees Farenheit. Adjust the bearing offset in accordance with the Bearing Data Table for variances from the assumed temperature.

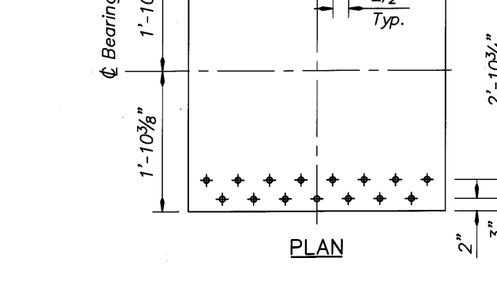
Faces of adjacent steel plates shall be machine finished to match.



CROSS SECTION AT BENT 3

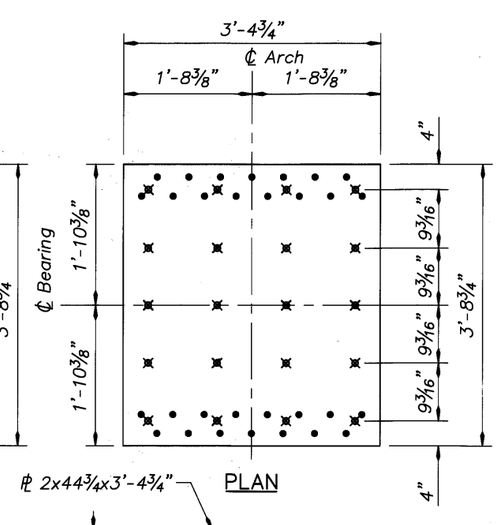
Scale : ¾" = 1'-0"





BASE PLATE

Scale : 1" = 1'-0"



MASONRY PLATE

Scale : 1" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: R. Stone
CHECKED: Shonn Mills
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70763 OREGON JULY 9, 2003 RICHARD J. KING
EXPIRES: 6-30-07

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

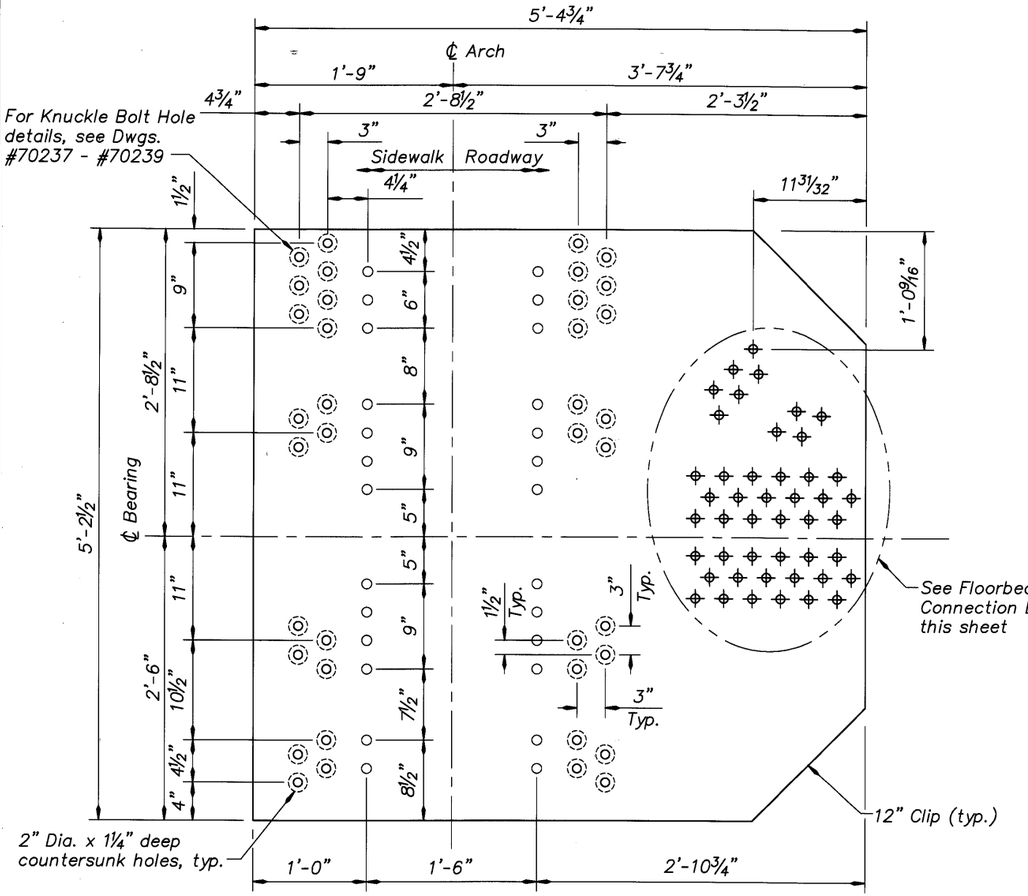
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

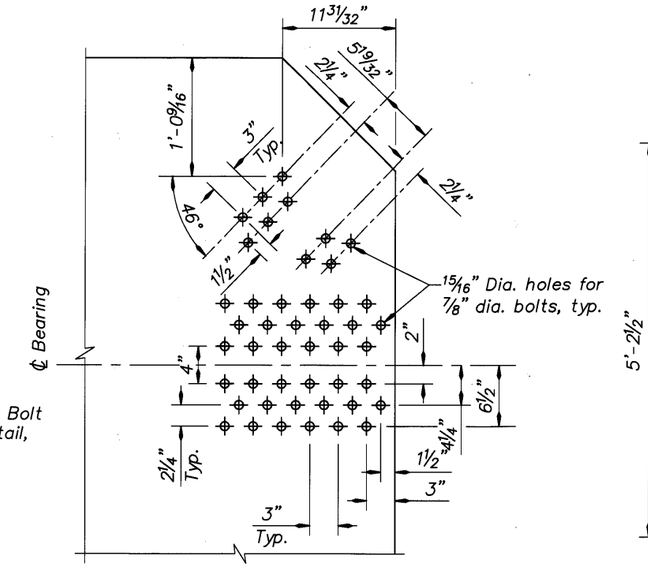
BEARING DETAILS - BENT 3 (1 OF 2)

SHEET 144 OF 173
DRAWING NO. 70332

Xrefs: Odotbdr.dwg ODOT0460_br_01.dwg

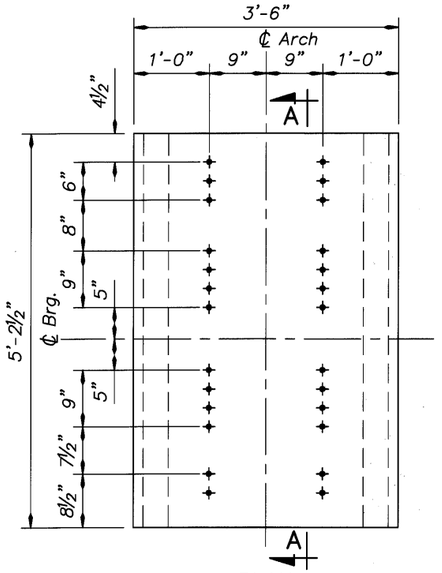


PLAN

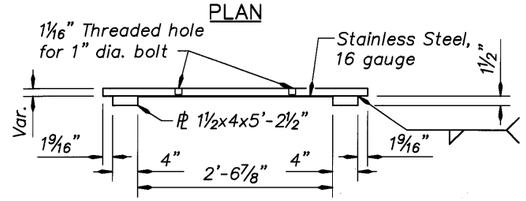


FLOORBEAM BOLT CONNECTION DETAIL

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



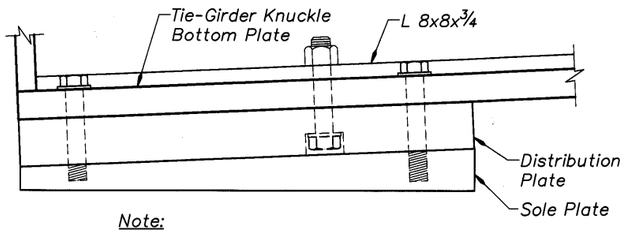
PLAN



ELEVATION

SOLE PLATE

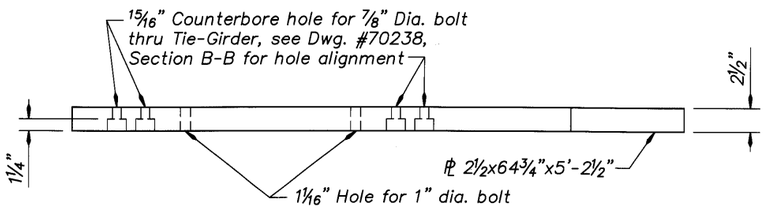
Scale : 1" = 1'-0"



Note:
Threaded holes need to be drilled and tapped perpendicular to the bolt head surface.

BOLT ALIGNMENT DETAIL

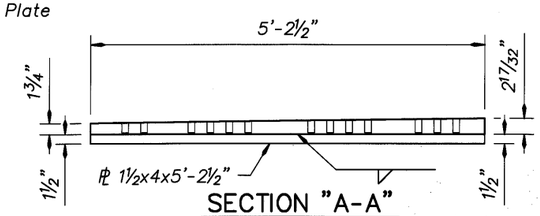
No Scale



ELEVATION

DISTRIBUTION PLATE, BENT 3

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



SECTION "A-A"

Scale : 1" = 1'-0"

LEGEND

- ◎ 15⁄16" Counterbore hole for ⅞" Dia. bolt
- ○ 1⁄16" Hole for 1" dia. bolt
- ✦ 15⁄16" Hole for ⅞" dia. bolt
- ✦ 1" Threaded hole for 1" dia. bolt

Note:
Legends for Bearings at Bent 3 and for Bearings at Bent 4 are not the same.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: R. Stone
CHECKED: Shonn Mills
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70763 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07
DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

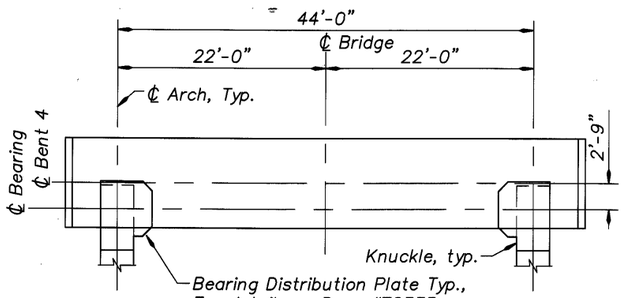
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BEARING DETAILS - BENT 3 (2 OF 2)

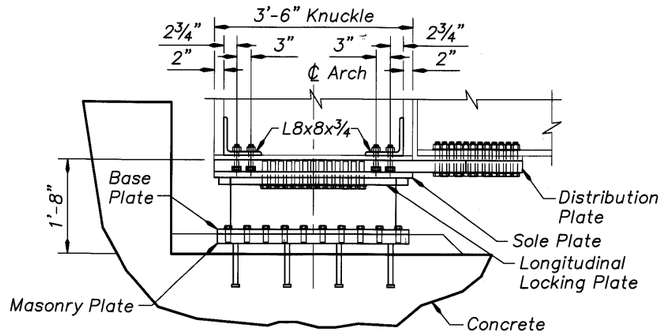
SHEET 145 OF 173
DRAWING NO. 70333

Xrefs: Octstdr.dwg ODOT0460_br_01.dwg



BEARING PLAN AT BENT 4

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



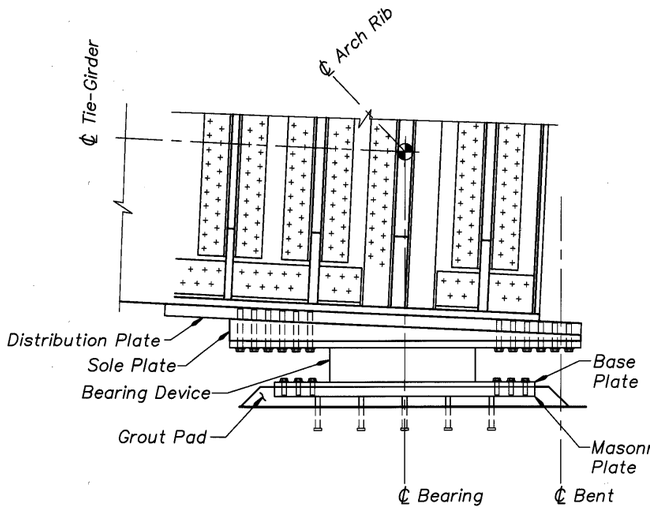
ELEVATION AT BENT 4

Scale : ¾" = 1'-0"

LEGEND

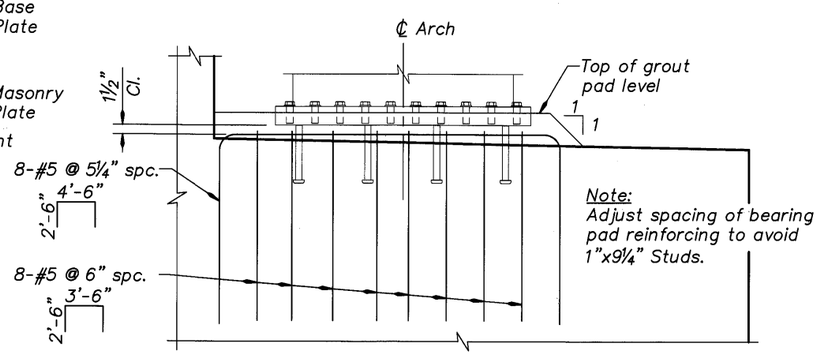
- ✦ 1 1/16" Hole for 1" dia. bolt
- • 1" Drill and tap 1¾" deep for 1" dia. bolts.
- ✖ 1"x 9¼" Weld stud

Note:
Legends for Bearings at Bent 3 and for Bearings at Bent 4 are not the same.



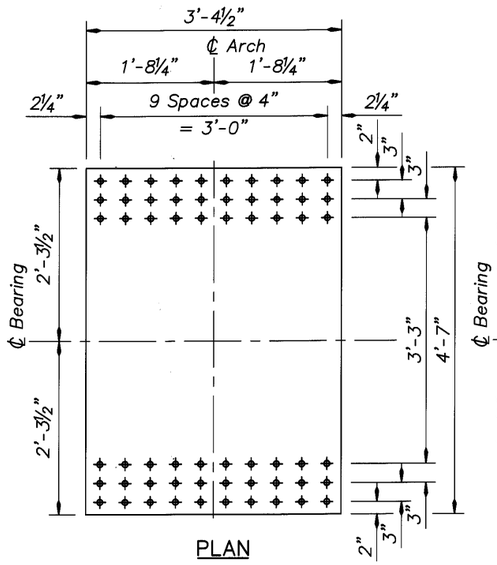
CROSS SECTION AT BENT 4

Scale : ¾" = 1'-0"

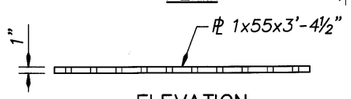


BEARING PAD REINFORCING DETAIL

Scale : 1" = 1'-0"



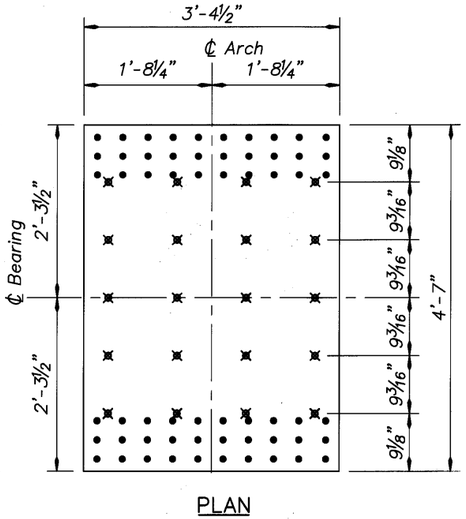
PLAN



ELEVATION

BASE PLATE

Scale : 1" = 1'-0"



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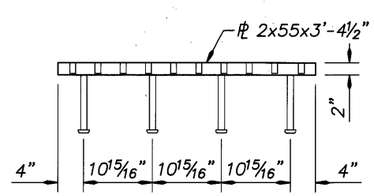

ELEVATION

MASONRY PLATE

Scale : 1" = 1'-0"

Note:
For Bearing Data Table and Expansion Bearing Notes, see Dwg. #70332.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/08	As-Constructed	TDF

DRAFTED: R. Stone
CHECKED: Shonn Mills
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07
DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
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Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

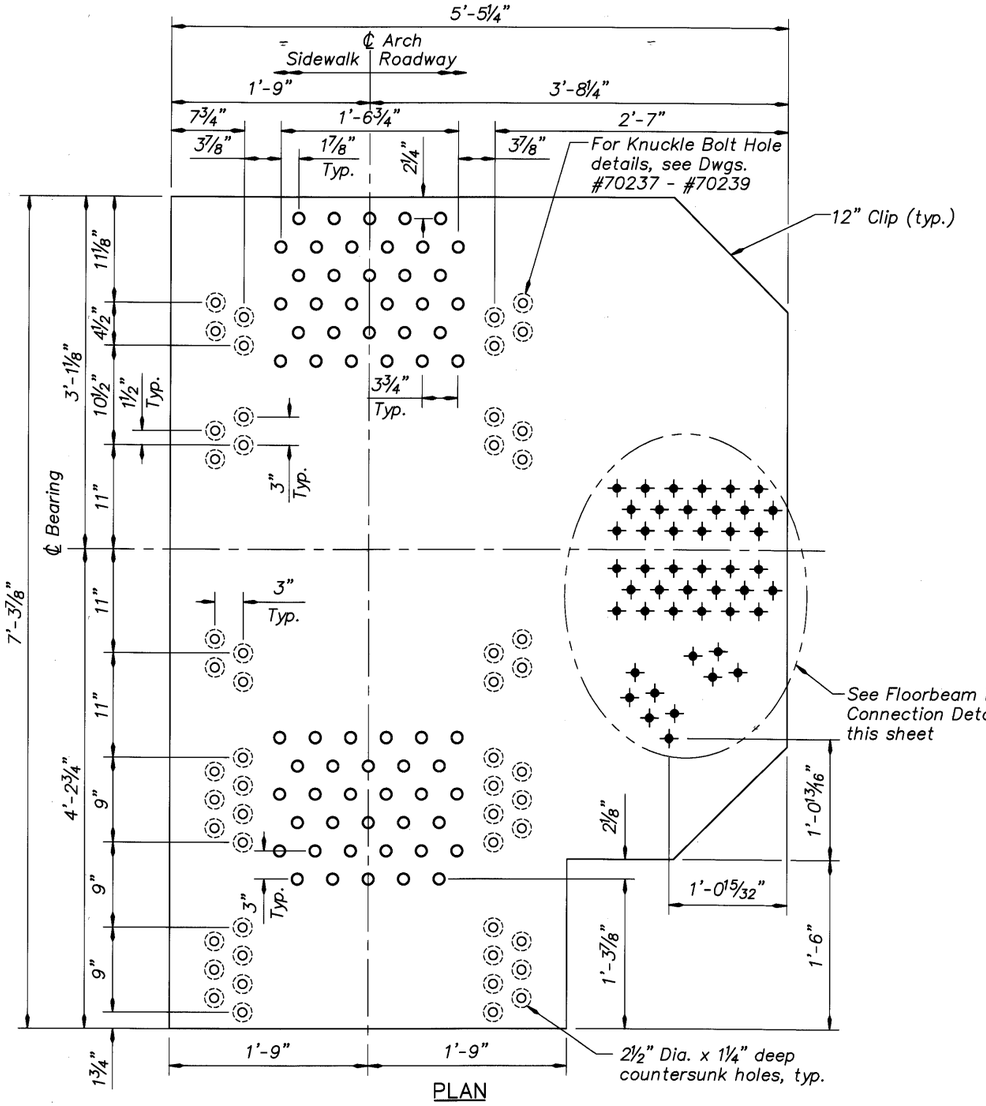
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BEARING DETAILS - BENT 4 (1 OF 2)

SHEET 146 OF 173
DRAWING NO. 70334

Xrefs: Odotbdr.dwg ODOT0460_BR_01.dwg



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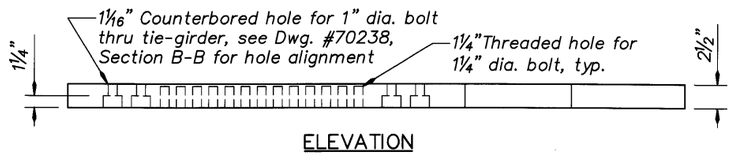
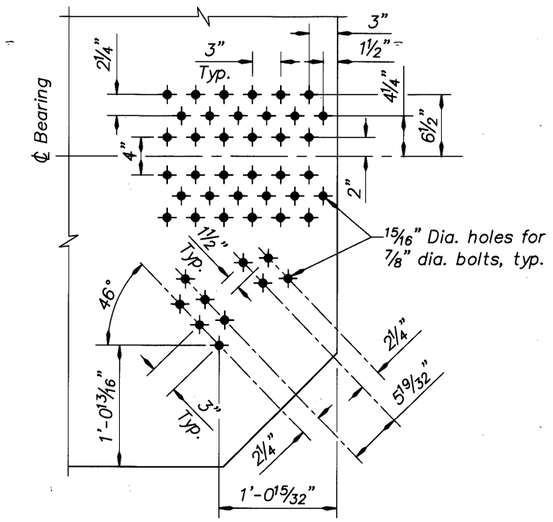


ELEVATION

DISTRIBUTION PLATE, BENT 4

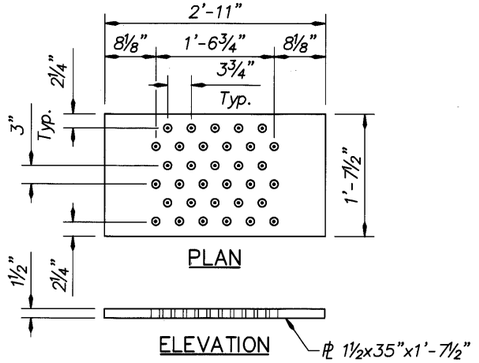
Scale : 1 1/2" = 1'-0"

Note:
For Bearing Data Table and Expansion Bearing Notes, see Dwg. #70332.



FLOORBEAM BOLT CONNECTION DETAIL

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

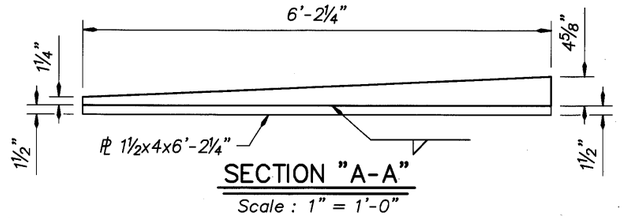


PLAN

ELEVATION

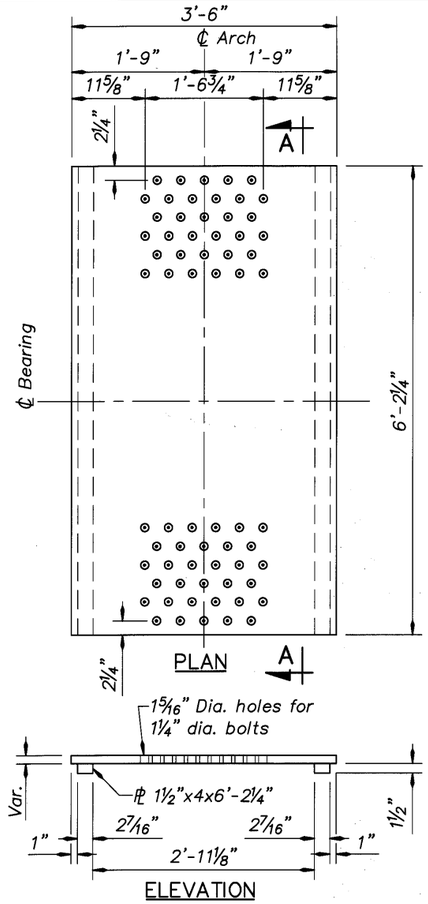
LONGITUDINAL LOCKING PLATE

Scale : 1" = 1'-0"



SECTION "A-A"

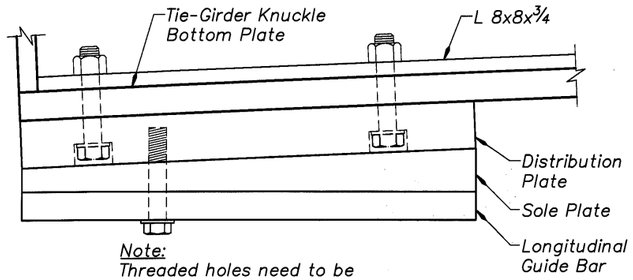
Scale : 1" = 1'-0"



ELEVATION

SOLE PLATE

Scale : 1" = 1'-0"



Note:
Threaded holes need to be drilled and tapped perpendicular to the bolt head surface.

BOLT ALIGNMENT DETAIL

No Scale

LEGEND

- ◎ 1⅛" Counterbore hole for 1" Dia. bolt
- ○ 1¼" Threaded hole for 1¼" Dia. bolt
- ⊙ 15⁄16" Dia. hole for 1¼" dia. bolt
- ✦ 15⁄16" Dia. holes for ⅞" dia. bolts, typ.

Note:
Legends for Bearings at Bent 3 and for Bearings at Bent 4 are not the same.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: R. Stone
CHECKED: Shonn Mills
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2003 RICHARD J. KING
EXPIRES: 6-30-07

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

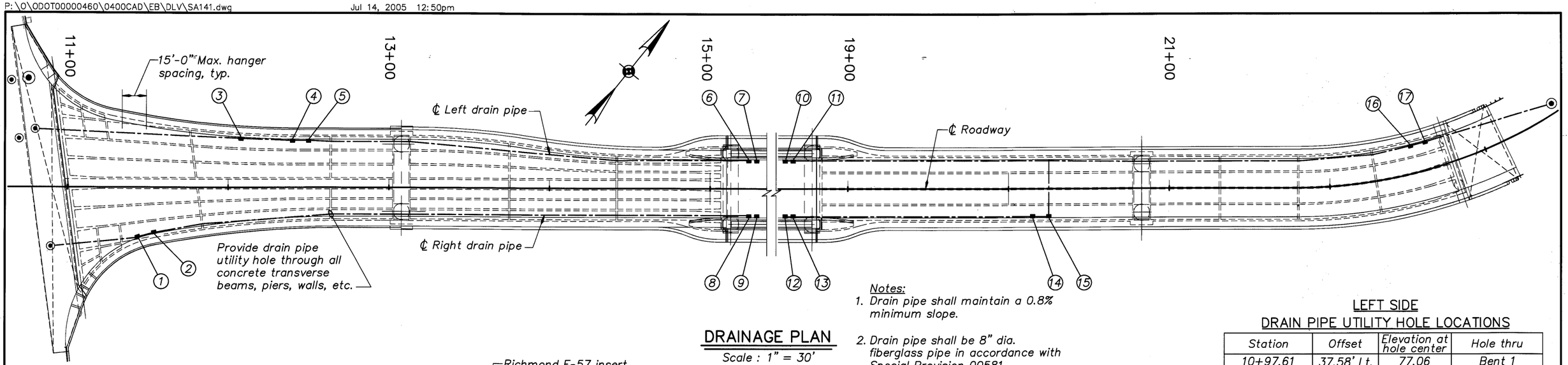
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

BEARING DETAILS - BENT 4 (2 OF 2)

SHEET 147 OF 173
DRAWING NO. 70335

Xrefs: Odotbdr.dwg ODOT0460_BR_01.dwg



DRAINAGE PLAN

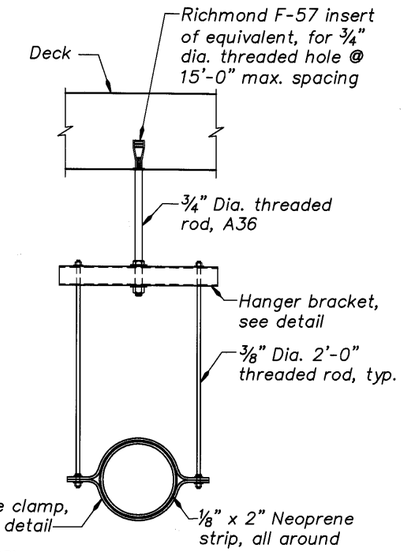
Scale : 1" = 30'

Notes:
1. Drain pipe shall maintain a 0.8% minimum slope.
2. Drain pipe shall be 8" dia. fiberglass pipe in accordance with Special Provision 00581.
3. Install expansion devices and flexible couplings in drain pipe per Special Provision 00581.

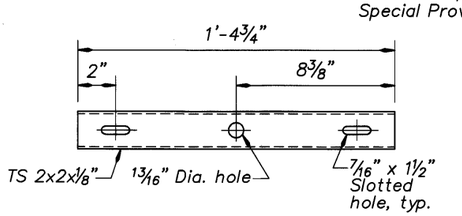
STORMWATER DRAIN LOCATIONS

Drain no.	Station	Offset	Top of grate elevation	Pipe I.E.	"D"*
1	11+44.00	31.17' Rt.	80.24	77.09	3'-1¾"
2	11+54.00	28.25' Rt.	80.49	77.23	3'-3"
3	12+08.00	30.75' Lt.	81.58	77.95	3'-7½"
4	12+40.00	29.50' Lt.	81.67	78.38	3'-3½"
5	12+50.00	29.42' Lt.	81.85	78.51	3'-4"
6	15+24.00	17.42' Lt.	85.52	82.18	3'-4"
7	15+29.00	17.42' Lt.	85.58	82.25	3'-4"
8	15+24.00	17.42' Rt.	85.52	82.18	3'-4"
9	15+29.00	17.42' Rt.	85.58	82.25	3'-4"
10	18+61.00	17.42' Lt.	81.23	77.90	3'-4"
11	18+66.00	17.42' Lt.	81.01	77.63	3'-4½"
12	18+61.00	17.42' Rt.	81.23	77.90	3'-4"
13	18+66.00	17.42' Rt.	81.01	77.63	3'-4½"
14	20+15.00	17.42' Rt.	72.85	69.51	3'-4"
15	20+25.00	17.42' Rt.	72.29	68.96	3'-4"
16	22+55.00	17.42' Lt.	56.96	51.34	5'-7½"
17	22+65.00	17.42' Lt.	56.28	50.77	5'-6"

*See Catch Basin Details on Dwg. #70337 for location of "D"

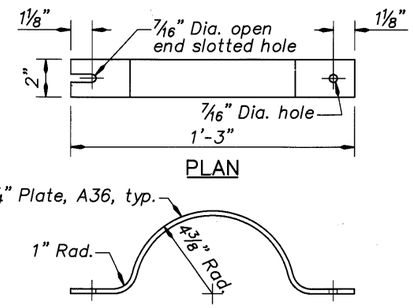


Notes:
1. Provide nuts and washers for carbon steel fasteners per section 00560 of the Standard Specifications.
2. All components and hardware are to be hot-dipped galvanized.
3. Use hanger system shown or approved equal.
4. Drain pipe hangers need to maintain a minimum of 2'-0" from the face of the utility hole opening and shall be spaced a maximum of 15'-0"



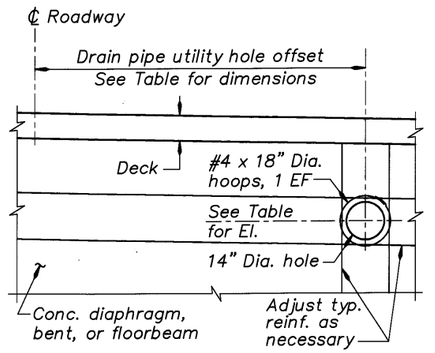
HANGER BRACKET DETAIL

Scale : 3" = 1'-0"



PIPE CLAMP DETAIL

Scale : 3" = 1'-0"



DRAIN PIPE UTILITY HOLE DETAIL

No Scale

LEFT SIDE
DRAIN PIPE UTILITY HOLE LOCATIONS

Station	Offset	Elevation at hole center	Hole thru
10+97.61	37.58' Lt.	77.06	Bent 1
11+10.79	36.75' Lt.	77.18	Span 1 Diaph.
11+25.16	35.83' Lt.	77.31	Span 1 Diaph.
11+77.24	32.67' Lt.	77.79	Span 1 Diaph.
12+63.32	29.42' Lt.	78.59	Span 1 Diaph.
13+02.32	29.42' Lt.	78.95	Bent 2
13+13.32	29.42' Lt.	79.05	Bent 2
13+75.40	24.83' Lt.	80.12	Span 2 Diaph.
14+42.40	17.42' Lt.	81.23	Span 2 Diaph.
15+06.66	17.42' Lt.	82.30	Bent 3
15+15.57	17.42' Lt.	82.41	Span 3 Flr. Bm.
18+75.07	17.42' Lt.	77.46	Span 3 Flr. Bm.
18+84.07	17.42' Lt.	76.96	Bent 4
20+77.32	17.42' Lt.	65.33	Bent 5
20+88.30	17.42' Lt.	64.66	Bent 5
21+32.08	17.42' Lt.	61.96	Span 5 Diaph.
21+79.73	17.42' Lt.	58.08	Span 5 Diaph.
22+29.60	17.42' Lt.	54.01	Span 5 Diaph.
22+75.97	17.42' Lt.	50.22	Bent 6

RIGHT SIDE
DRAIN PIPE UTILITY HOLE LOCATIONS

Station	Offset	Elevation at hole center	Hole thru
11+06.98	33.25' Rt.	76.93	Bent 1
11+19.98	32.67' Rt.	77.10	Span 1 Diaph.
11+34.11	31.83' Rt.	77.29	Span 1 Diaph.
11+84.47	23.25' Rt.	77.97	Span 1 Diaph.
12+63.32	17.42' Rt.	79.02	Span 1 Diaph.
13+02.32	17.42' Rt.	79.31	Bent 2
13+13.32	17.42' Rt.	79.45	Bent 2
13+75.40	17.42' Rt.	80.53	Span 2 Diaph.
14+42.40	17.42' Rt.	81.42	Span 2 Diaph.
15+06.65	17.42' Rt.	82.28	Bent 3
15+15.57	17.42' Rt.	82.40	Span 3 Flr. Bm.
18+75.07	17.42' Rt.	77.47	Span 3 Flr. Bm.
18+84.07	17.42' Rt.	76.98	Bent 4

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△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: R. Elwood
CHECKED: Shonn Mills
REVIEWED: Kent Cordtz

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07
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BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

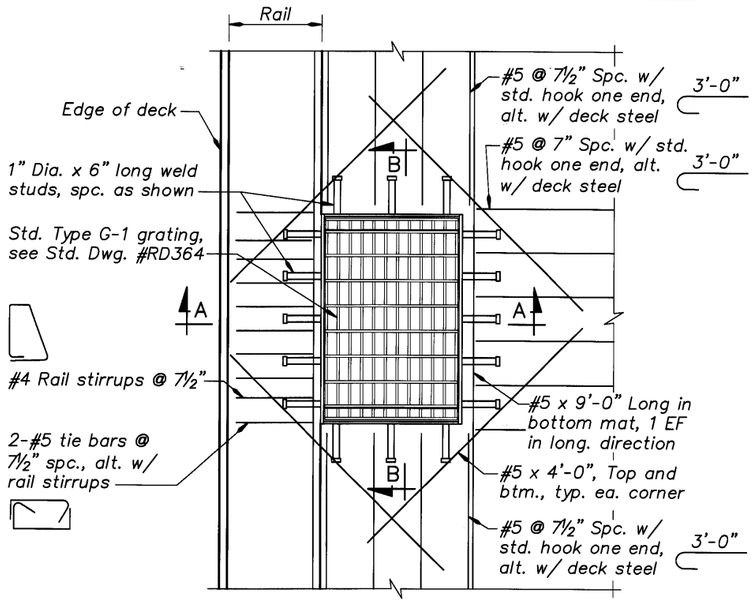
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK DRAINAGE (1 OF 2)

SHEET 148 OF 173
DRAWING NO. 70336

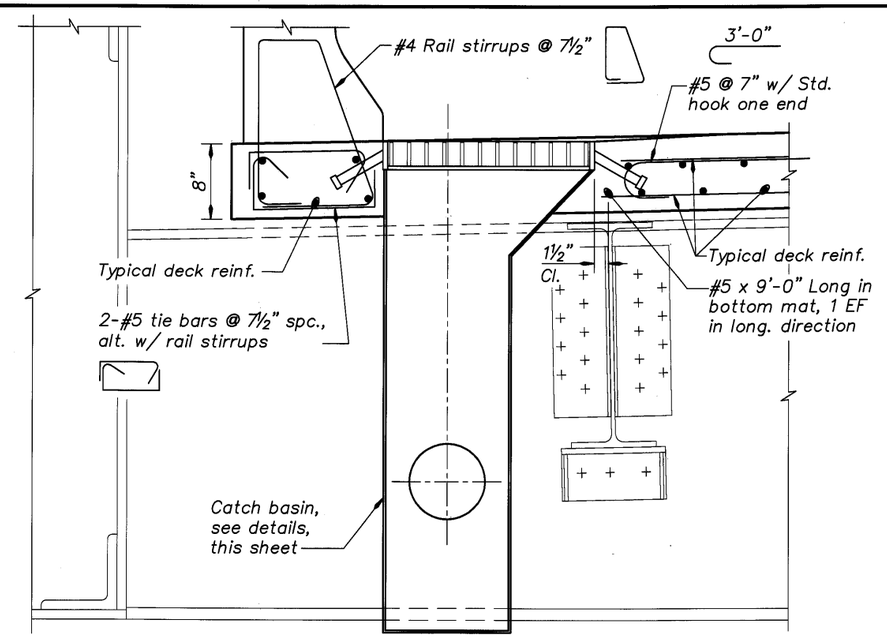
Xrefs: Odetldr.dwg ODOT0460_DR_01.dwg NEWSauvie_Arch01.dwg Arch2d.dwg

P:\0\ODOT00000460\0400CAD\EB\DLV\SA142.dwg Jul 14, 2005 12:50pm



TYPICAL SPAN 3 DRAIN PLAN

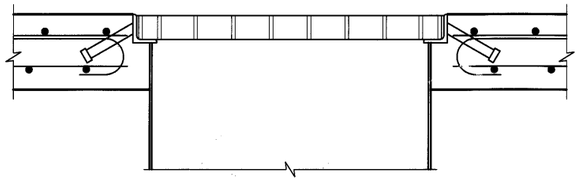
Scale : 1" = 1'-0"



SECTION A-A

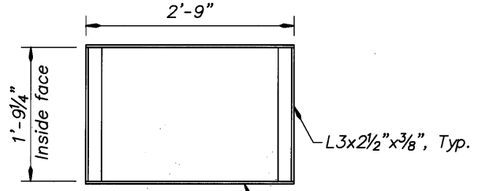
Scale : 1 1/2" = 1'-0"

Note:
All catch basin components and hardware are to be hot-dipped galvanized.

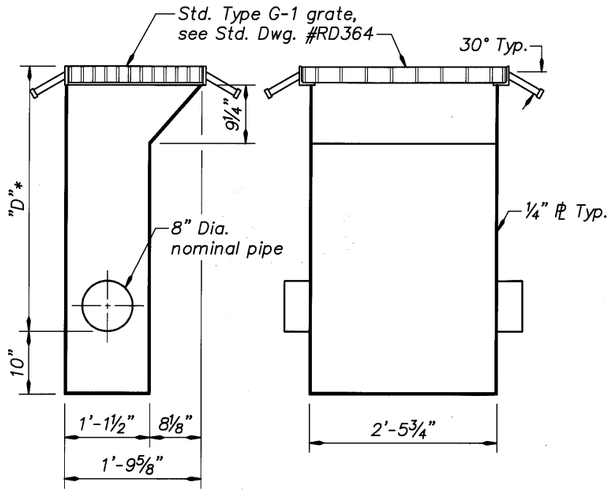


SECTION B-B

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



PLAN

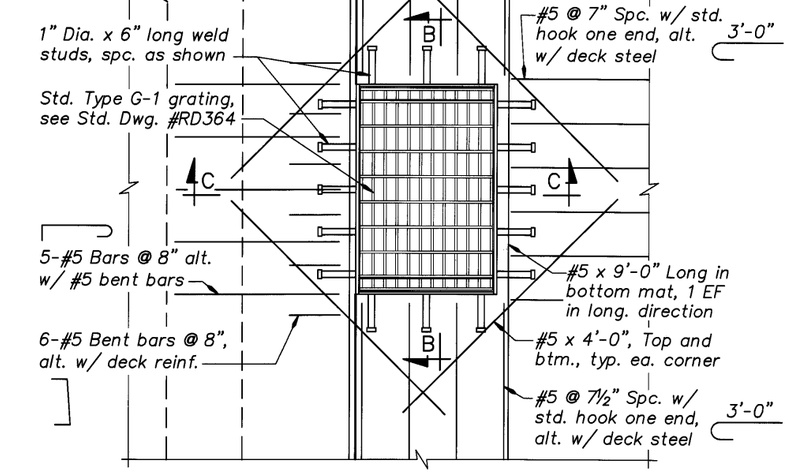


SIDE FRONT

*See "Stormwater Drain Locations" table on Dwg. #70336 for distance "D".

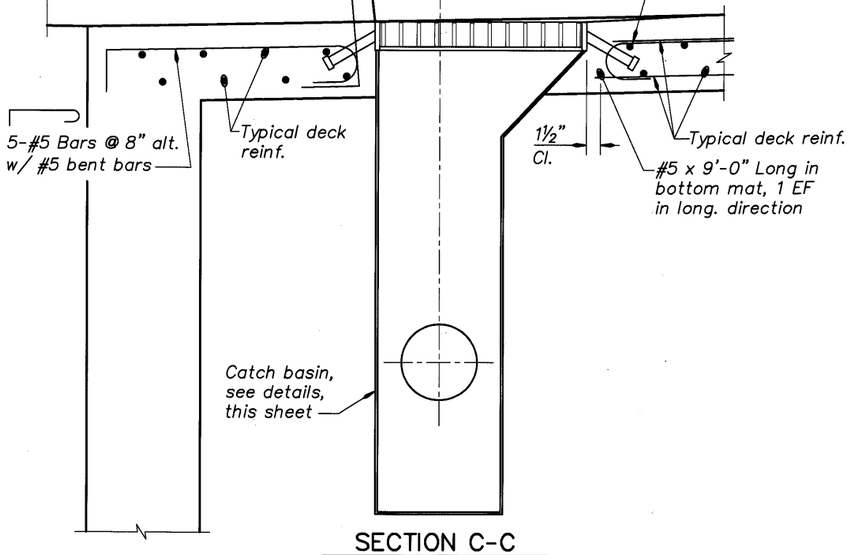
CATCH BASIN DETAILS

Scale : 1" = 1'-0"



TYPICAL SPAN 4 DRAIN PLAN

(Spans 1,2, & 5 similar)
Scale : 1" = 1'-0"



SECTION C-C

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

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	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: R. Elwood
CHECKED: Shonn Mills
REVIEWED: Kent Cordtz

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

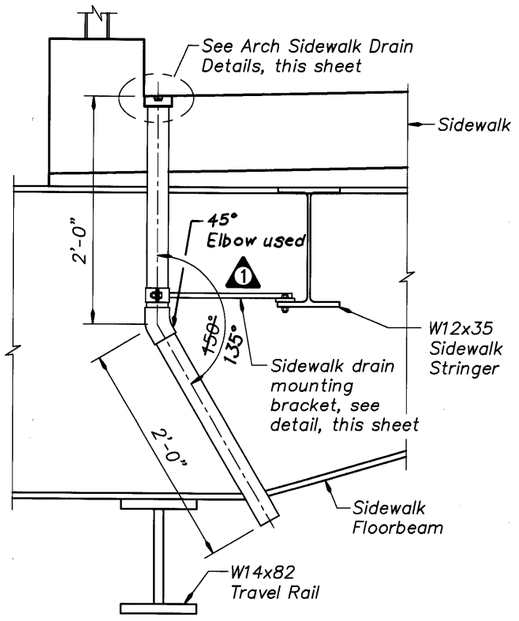
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

DECK DRAINAGE (2 OF 2)

SHEET 149 OF 173
DRAWING NO. 70337

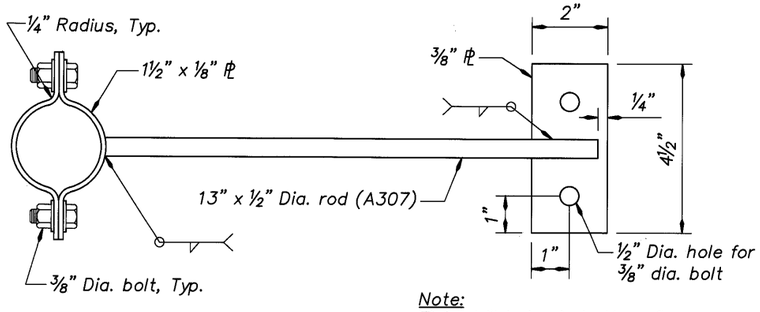
Xrefs: Odotbdr.dwg ODOT0460_DR_02.dwg



SIDEWALK DRAIN PIPE ELEVATION

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

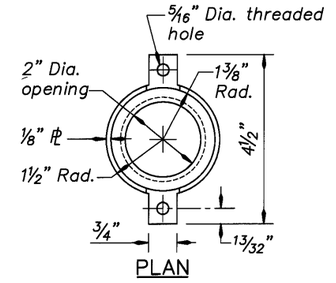
Note:
Adjust typical sidewalk reinforcing steel spacing as necessary to provide 1½" clearance to drain pipe.



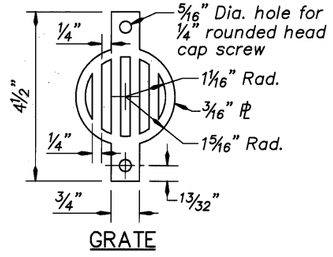
Note:
Field drill holes in bottom flange at sidewalk stringers after sidewalk drain is in place.

SIDEWALK DRAIN MOUNTING BRACKET

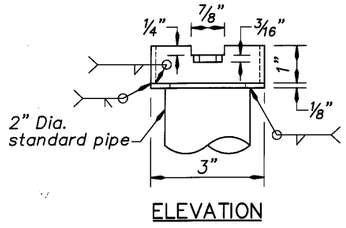
Scale : 6" = 1'-0"



PLAN



GRATE



ELEVATION

Notes:
Drain grate shall be brass ASTM B36 material.

Drain frame shall be A36 steel. All frame components and hardware shall be hot-dipped galvanized.

Drains shall be as shown or may be substituted with an approved equivalent upon approval of the Engineer.

ARCH SIDEWALK DRAIN DETAILS

Scale : 6" = 1'-0"

See Dwg. #70210 and 70211 for drain layout and locations

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	DATE	REVISION	BY
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DRAFTED: R. Elwood
CHECKED: Shonn Mills
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2003 RICHARD J. KING
EXPIRES: 6-30-07

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BRIDGE NO. 20136
DATE Sept. 2005
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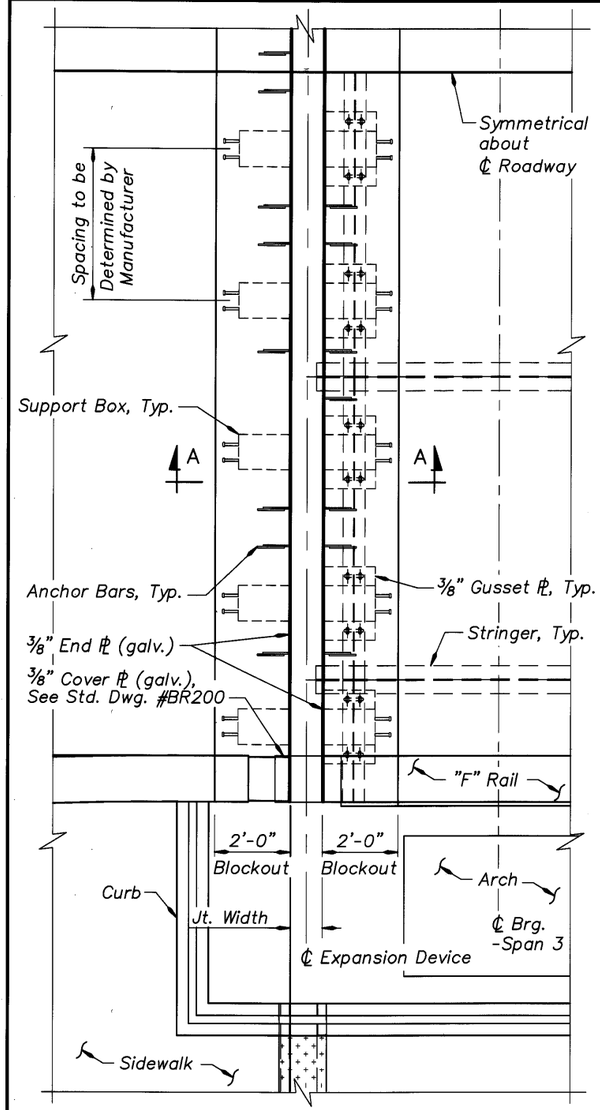
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

SPAN 3 SIDEWALK DRAINAGE

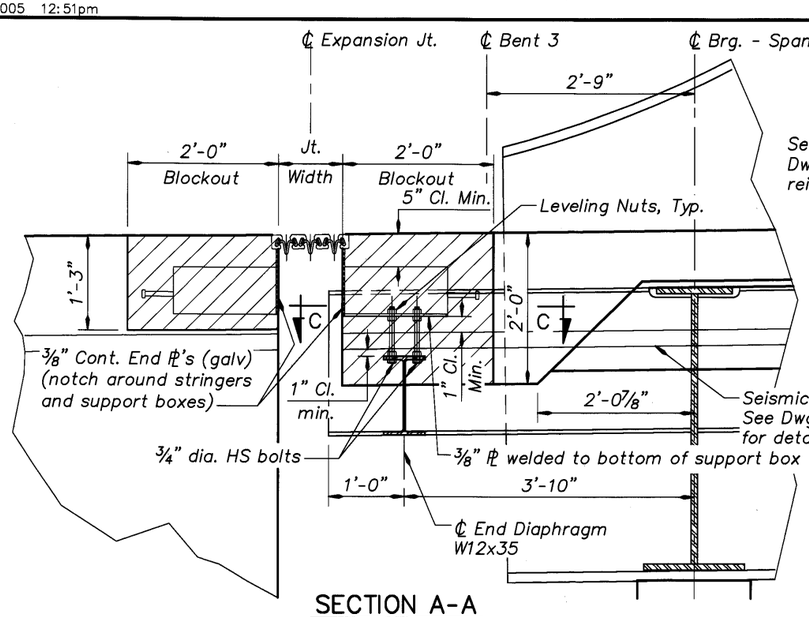
SHEET 150 OF 173
DRAWING NO. 70338

Xrefs: Oldstdsdr.dwg ODOT0460_DR_02.dwg



PART-PLAN AT BENT 3

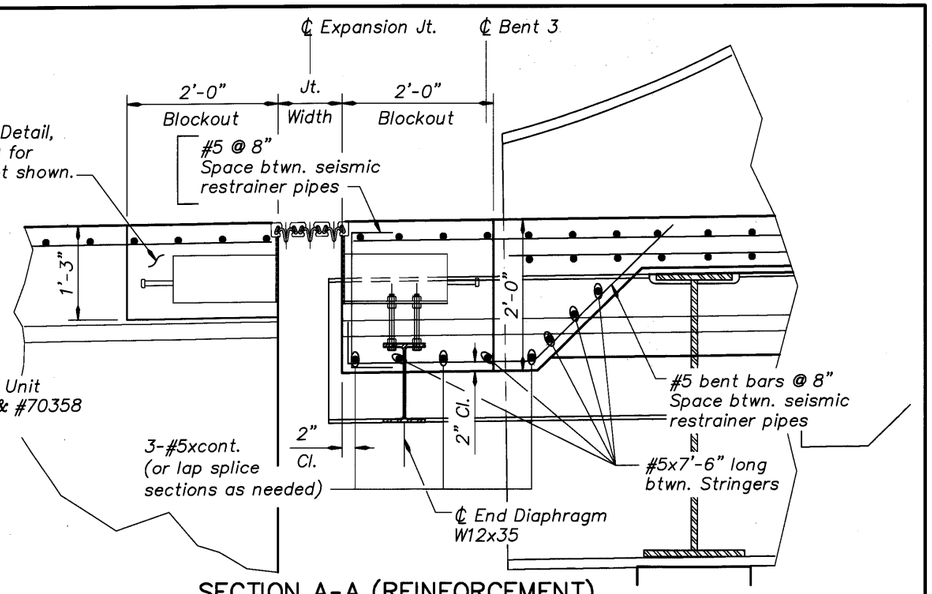
Scale : ½" = 1'-0"



SECTION A-A

Scale : 1" = 1'-0"

(Reinforcement omitted for clarity)



SECTION A-A (REINFORCEMENT)

Scale : 1" = 1'-0"

(Showing additional reinforcement at expansion joint.)

MODULAR EXPANSION DEVICE NOTES:

The acceptable Manufacturers and models of expansion device shall be as described in the Special Provisions.

Device shown is schematic only. Total number of support bars to be used as per Manufacturer's requirements.

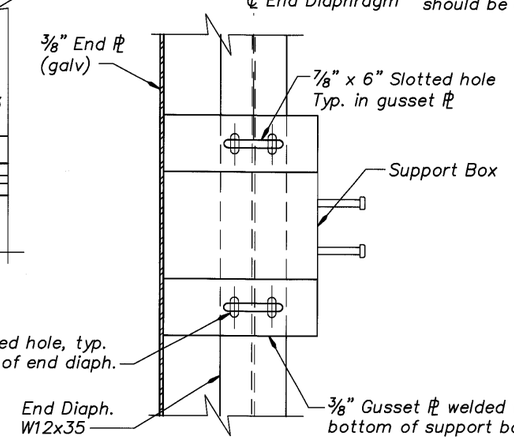
The gusset plate shown is a schematic support system and should be adjusted to meet manufacturer's requirements.

Show the position of the support boxes and modification of anchorages due to the location of the steel girders and support diaphragm in the shop drawings.

Coordinate the location of support boxes to avoid interference with the steel member shear studs.

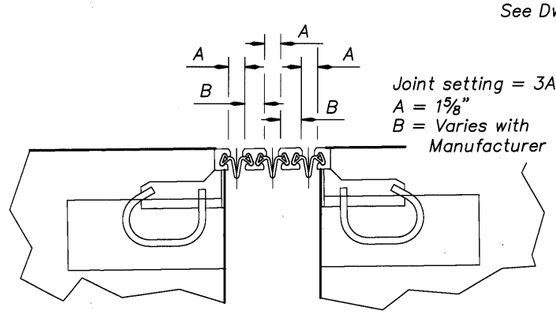
Install the expansion device on grade parallel to the slope and grade of the deck.

See Dwg. #70341 for Sidewalk Expansion Cover Plate details.



SECTION C-C

Scale : 1½" = 1'-0"

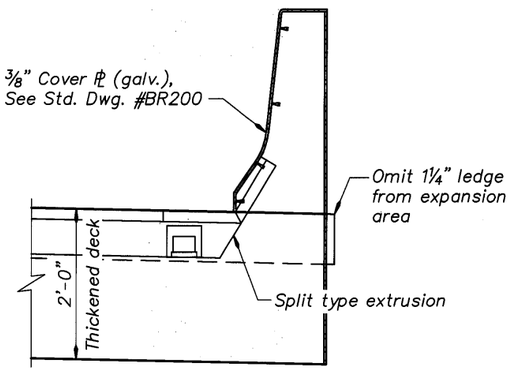


Decrease Joint setting ½ inch for every 10°F of structure temperature above 52°F.

Increase Joint setting ½ inch for every 10°F of structure temperature below 52°F.

JOINT SETTING DETAIL

No Scale



SECTION AT "F" RAIL EXPANSION JOINT

Scale : 1" = 1'-0"

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	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
REVIEWED: Clifford Coulter

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 8, 2003 RICHARD J. KING
EXPIRES: 6-30-07

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OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

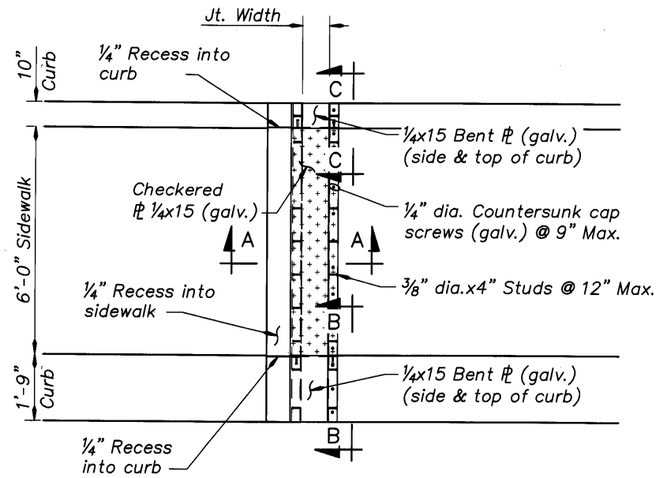
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

EXPANSION JOINT DETAILS (1 OF 4)

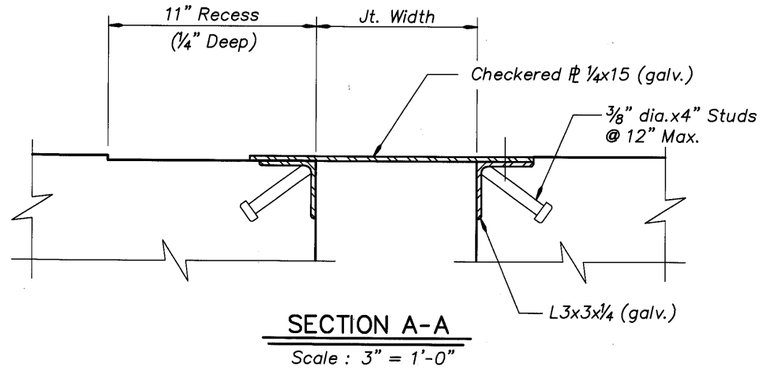
SHEET 151 OF 173
DRAWING NO. 70339

Xrefs: Odotbdr.dwg OD0T0460_AD_JT_01.dwg



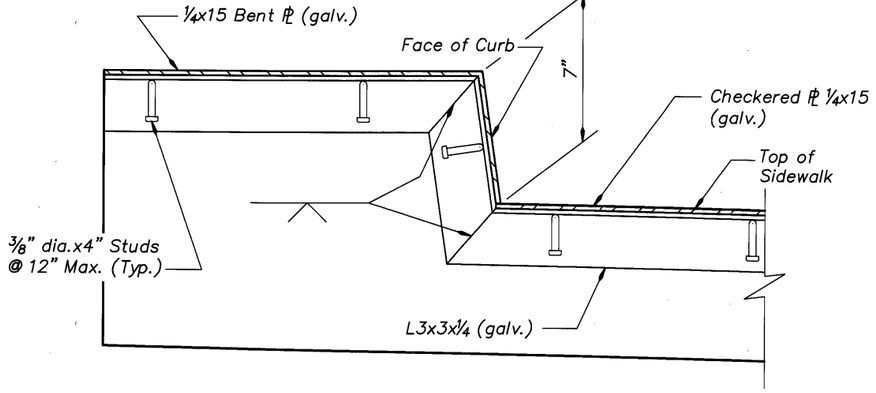
SIDEWALK COVER PLATES AT BENT 3 EXPANSION JOINT

Scale : ½" = 1'-0"



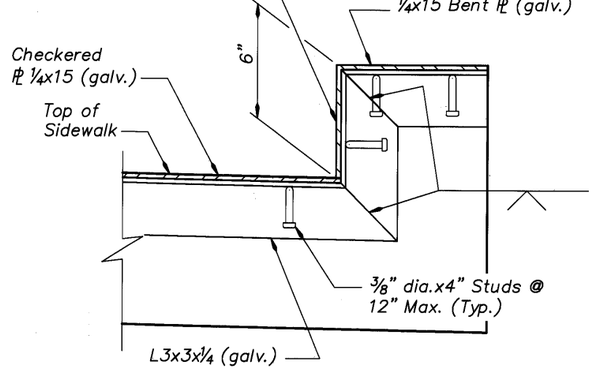
SECTION A-A

Scale : 3" = 1'-0"



SECTION B-B

Scale : 3" = 1'-0"



SECTION C-C

Scale : 3" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Oliver Mueller
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70763 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07

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CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
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DATE Sept. 2005
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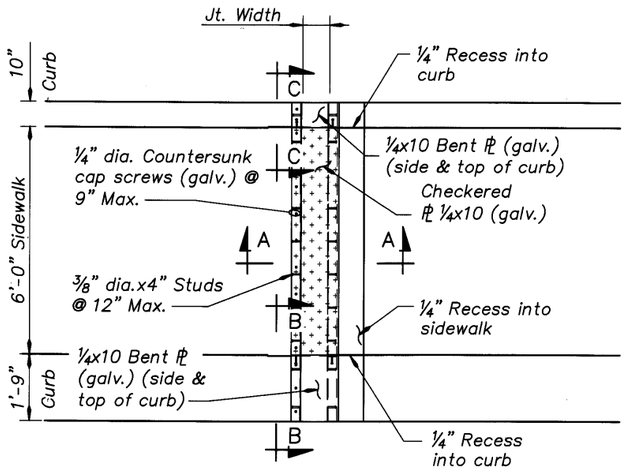
MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

EXPANSION JOINT DETAILS (2 OF 4)

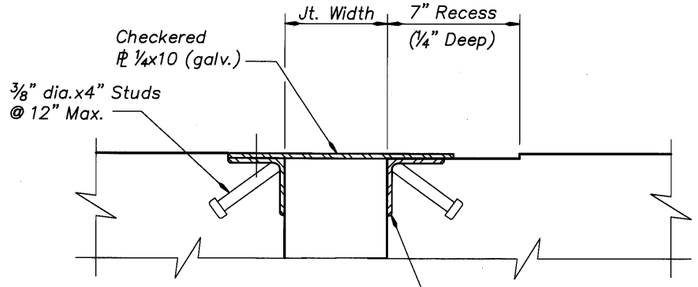
SHEET 152 OF 173
DRAWING NO. 70340

Xrefs: Odotbdr.dwg ODOT0460_FX_01.dwg



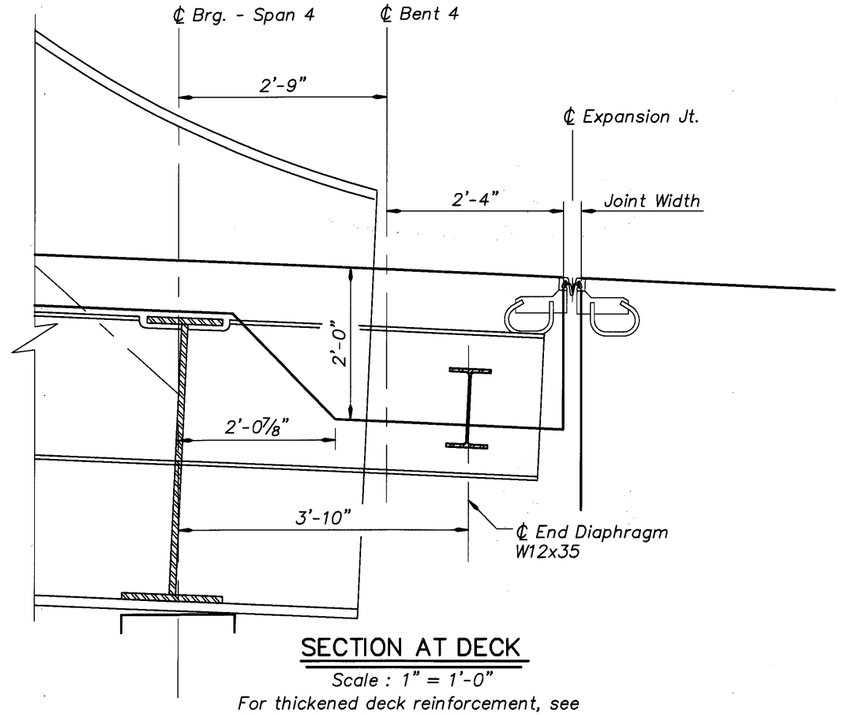
SIDEWALK COVER PLATES AT BENT 4 EXPANSION JOINT

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



SECTION A-A

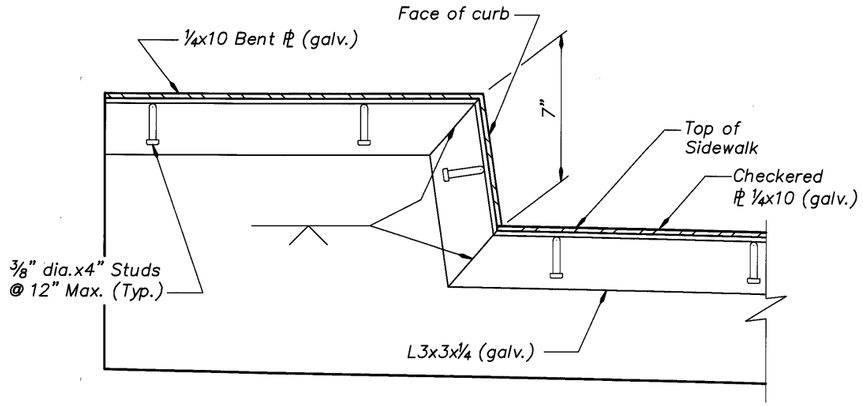
Scale : 3" = 1'-0"



SECTION AT DECK

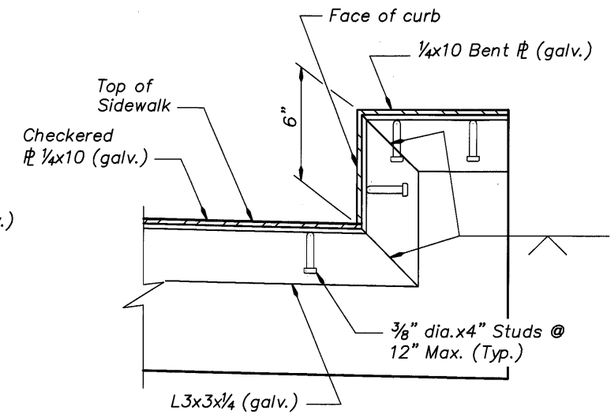
Scale : 1" = 1'-0"

For thickened deck reinforcement, see Section A-A, Dwg. #70339.



SECTION B-B

Scale : 3" = 1'-0"



SECTION C-C

Scale : 3" = 1'-0"

MODULAR EXPANSION DEVICE NOTES:

Device shown is schematic only.

Install the expansion device on grade parallel to the slope and grade of the deck.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: D. Gatshall
CHECKED: Oliver Mueller
REVIEWED: Clifford Coulter

DESIGNER
REGISTERED PROFESSIONAL ENGINEER OREGON 70763 JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

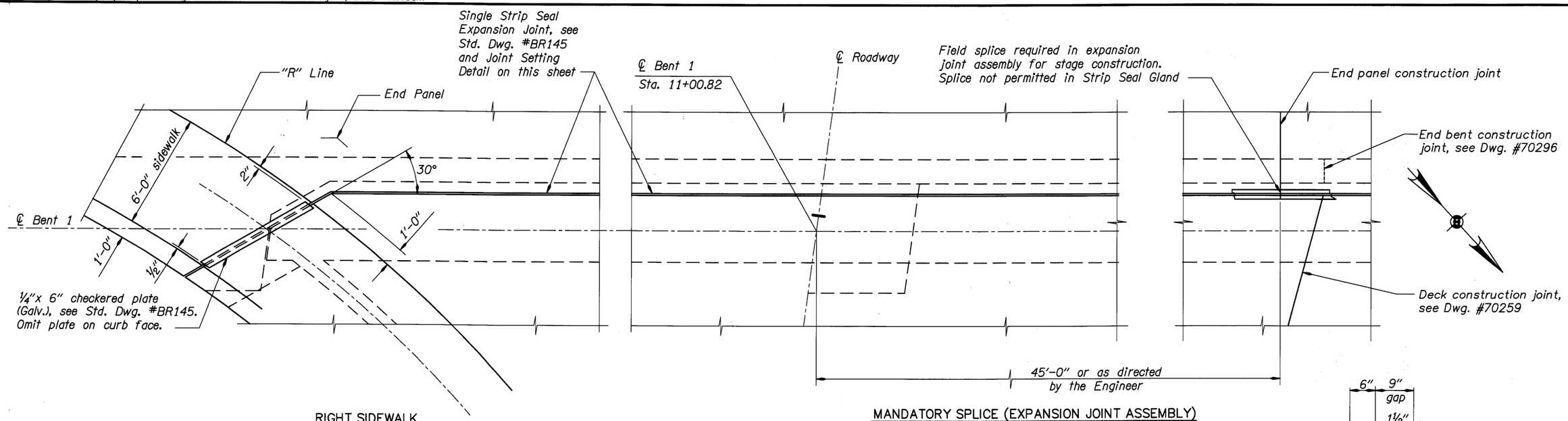
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

EXPANSION JOINT DETAILS (3 OF 4)

SHEET 153 OF 173
DRAWING NO. 70341

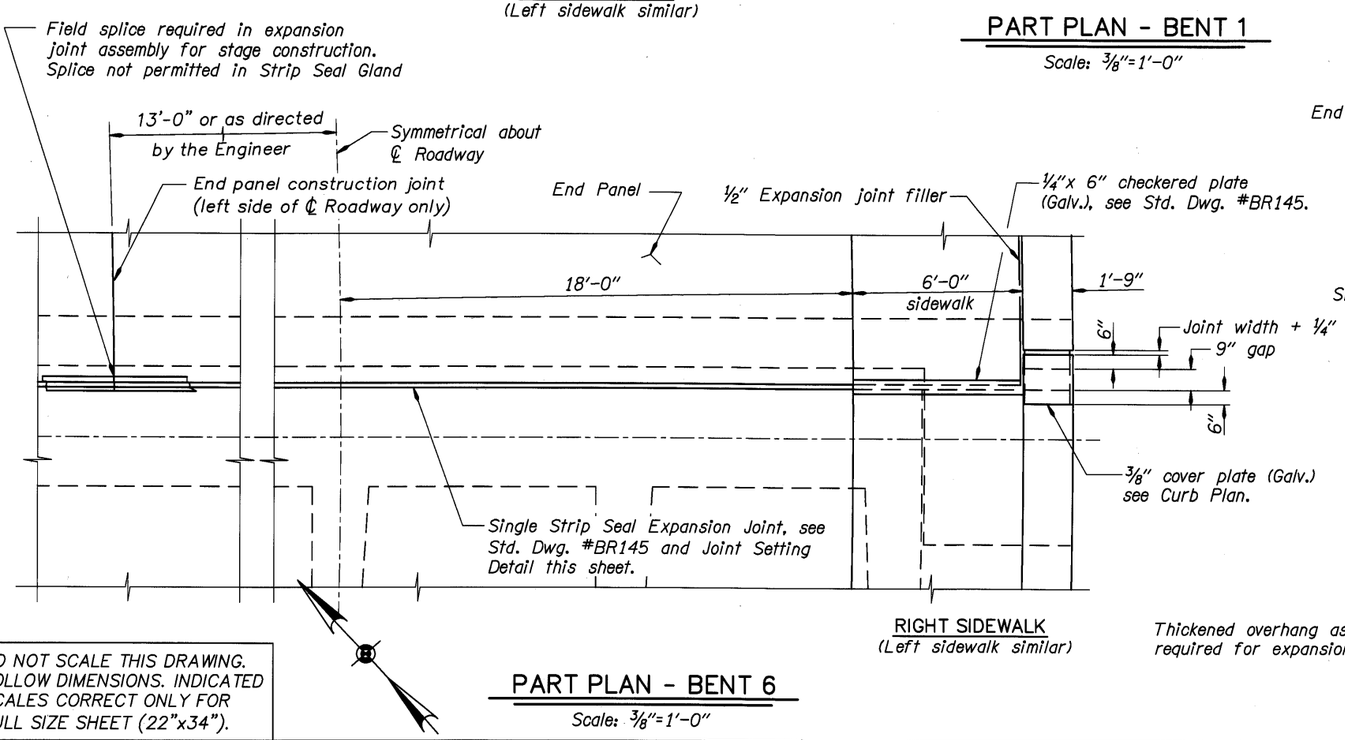
Xrefs: Octstdr.dwg ODOT0460_FX_02.dwg



RIGHT SIDEWALK
(Left sidewalk similar)

PART PLAN - BENT 1

Scale: ⅜"=1'-0"



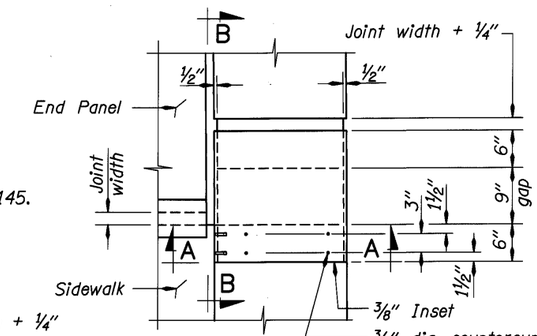
RIGHT SIDEWALK
(Left sidewalk similar)

PART PLAN - BENT 6

Scale: ⅜"=1'-0"

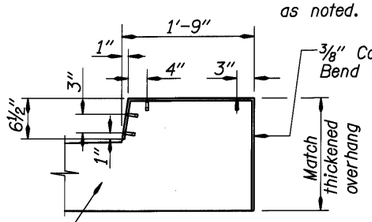
DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

MANDATORY SPLICE (EXPANSION JOINT ASSEMBLY)



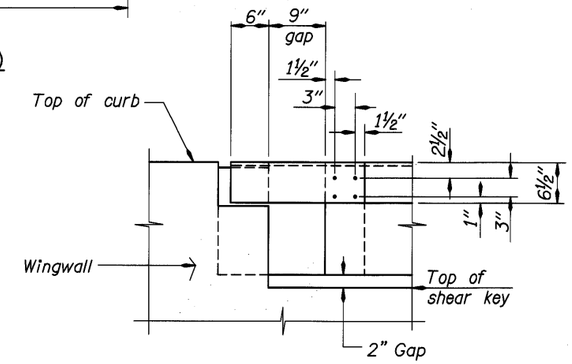
CURB PLAN

Scale: 1"=1'-0"



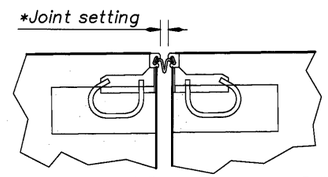
SECTION A-A

Scale: 1"=1'-0"



SECTION B-B

Scale: 1"=1'-0"



*Joint setting is 1¼" at Bent 1 and 1⅜" at Bent 6. Decrease joint setting 3/16" for every 10°F of structure temperature above 52°F. Increase joint setting 3/16" for every 10°F of structure temperature below 52°F.

JOINT SETTING DETAIL

No Scale

	DATE	REVISION	BY
2	08/05	Bent 6 end panel const. jt.	KWC
1	03/09	As-Constructed	TDF

DRAFTED: Ken Johnson
CHECKED: Adrianne Dietrich
REVIEWED: Rich King

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74548 PE OREGON Kent Curtis MARCH 09, 2006 KENT WILLIAM CURTIS
EXPIRES: 12-31-05
DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

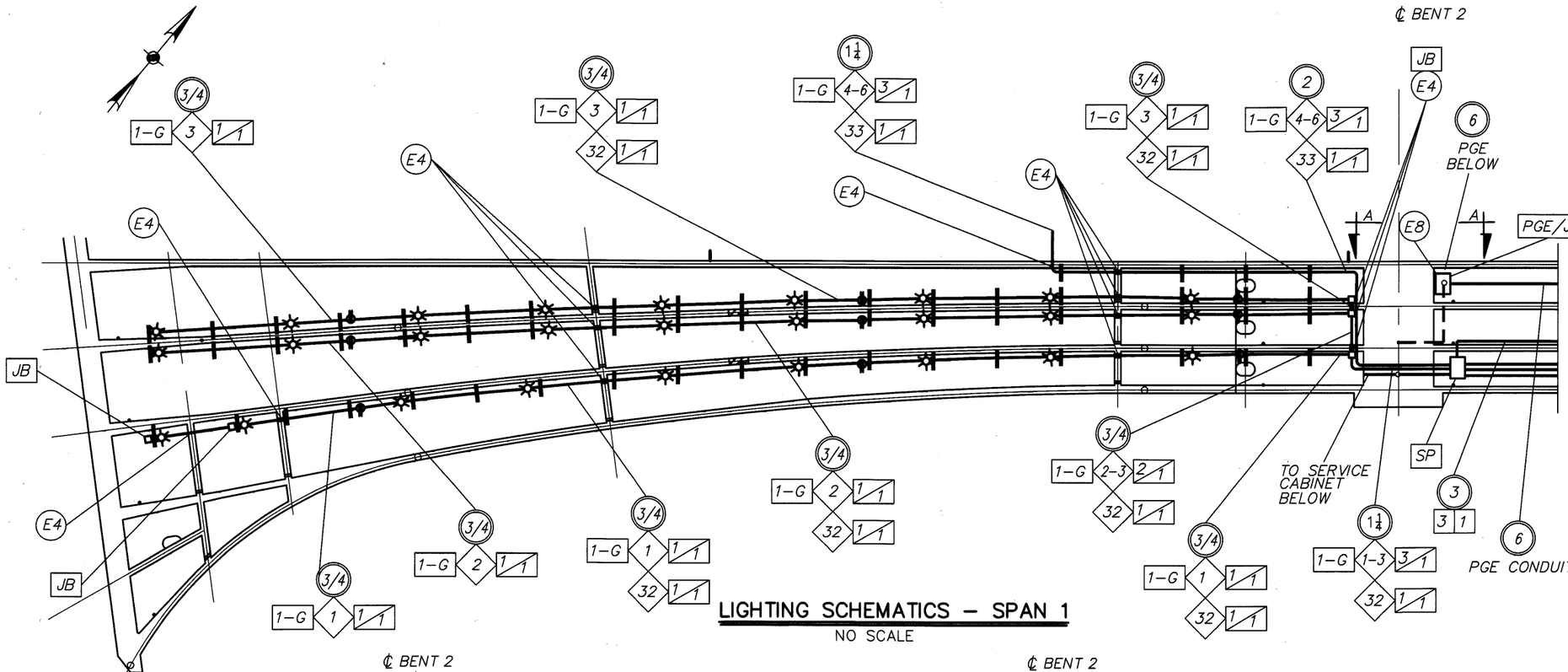
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

EXPANSION JOINT DETAILS (4 OF 4)

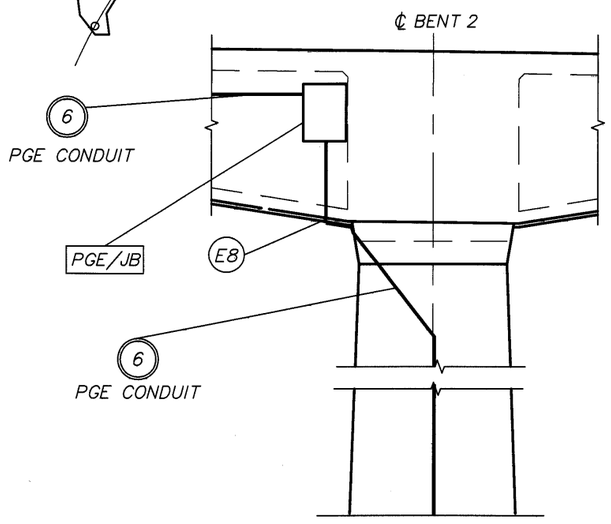
SHEET 154 OF 173
DRAWING NO. 70342

Xrefs: Odotbdr.dwg



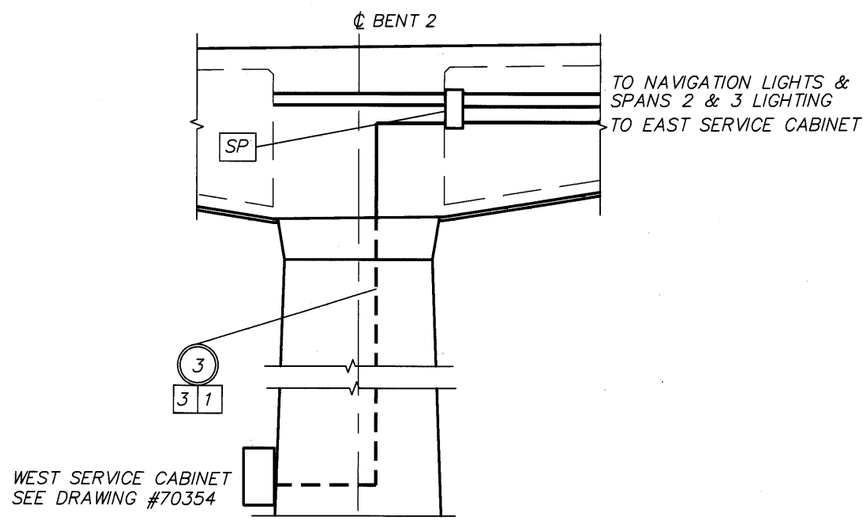
LIGHTING SCHEMATICS – SPAN 1

NO SCALE



SECTION A–A

NO SCALE



LIGHTING ELEVATION – BENT 2

No Scale

NOTES:

1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO COORDINATE WITH CONCRETE WORK TO DETERMINE THE BEST FIT FOR ALL ELEMENTS AND THEN VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. PROVIDE CONDUIT SUPPORTS SPACED A MAXIMUM OF 10'–0" O.C. AND WITHIN 3'–0" OF ALL JUNCTION BOXES AND TERMINAL POINTS. SEE DRAWING #70354 FOR DETAILS.

LEGEND:

- (EN) — (N) INCH DIA. PVC SLEEVE. INSTALL A MINIMUM OF 1'–0" FROM POST TENSIONING DUCTS WHEN GOING THROUGH STEM WALLS
- INSTALL LIGHT
- (S) — INSTALL (S) INCH ELECTRICAL CONDUIT
- N/X — INSTALL (N) NO. (8) THWN WIRES AND (X) NO. (8) NEUTRAL
- N–G — INSTALL (N) NO. 8 THWN GROUND WIRE
- JB — INSTALL JUNCTION BOX
- SC — INSTALL SERVICE CABINET
- SP — INSTALL SUB–PANEL
- N — CIRCUIT (N) NUMBER
- N | G — INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
- INSTALL OUTLET
- LIGHT SUPPORT
- PGE/JB — INSTALL 3'X3'X12" JUNCTION BOX

Co. Br. No. 2641

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 18571 OREGON JULY 10, 1998 JON P. HENRICHSEN
EXPIRES 6/30/07

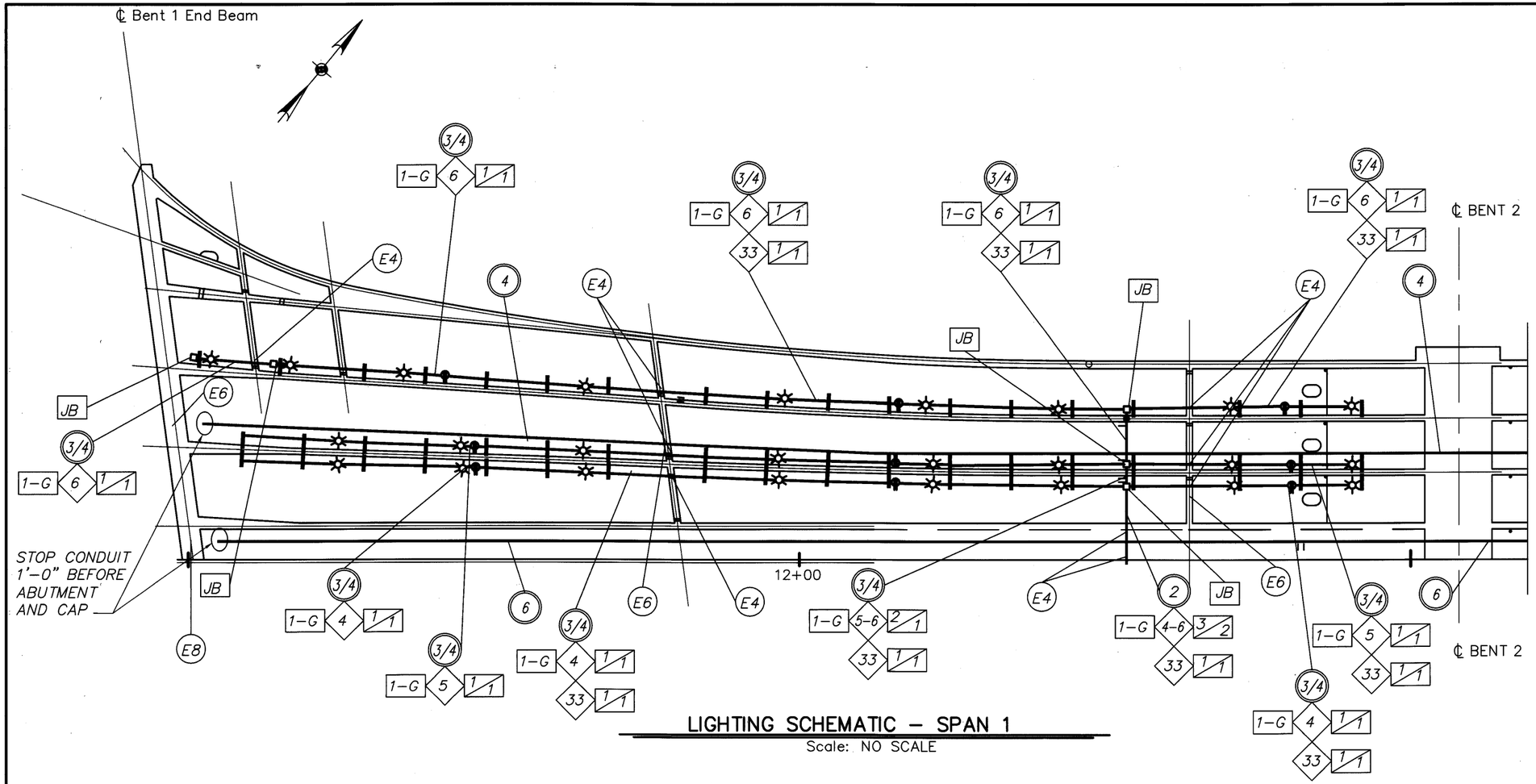
CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.
LIGHTING LAYOUT-SPAN 1 RIGHT SIDE

SHEET 155 OF 173
DRAWING NO. 70343

2005_20136_SUAVIE ISLAND REPLACEMENT_001_SPAN1 RIGHT SIDE 1



LIGHTING SCHEMATIC – SPAN 1

Scale: NO SCALE

NOTES:

1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO COORDINATE WITH CONCRETE WORK TO DETERMINE BEST FIT AND THEN VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. PROVIDE CONDUIT SUPPORTS SPACED A MAXIMUM OF 10'-0" O.C. AND WITHIN 3'-0" OF ALL JUNCTION BOXES AND TERMINAL POINTS. SEE DRAWING #70354 FOR DETAILS.

LEGEND:

- (EN) — (N) INCH PVC SLEEVE. INSTALL A MINIMUM OF 1'-0" FROM POST TENSIONING DUCTS WHEN GOING THROUGH STEM WALLS.
- INSTALL LIGHT
- (S) — INSTALL (S) INCH ELECTRICAL CONDUIT
- N/X — INSTALL (N) NO. (8) THWN WIRES AND (X) NO. (8) NEUTRAL
- N-G — INSTALL (N) NO. 8 THWN GROUND WIRE
- JB — INSTALL JUNCTION BOX
- SC — INSTALL SERVICE CABINET
- SP — INSTALL SUB-PANEL
- N — CIRCUIT (N) NUMBER
- N | G — INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
- INSTALL OUTLET
- LIGHT SUPPORT

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

Co. Br. No. 2641

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 19827 OREGON JULY 10, 1998 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING LAYOUT-SPAN 1 LEFT SIDE

SHEET 156 OF 173
DRAWING NO. 70344

2005_20136_SUAVIE ISLAND REPLACEMENT_002_SPAN 1 LEFT SIDE

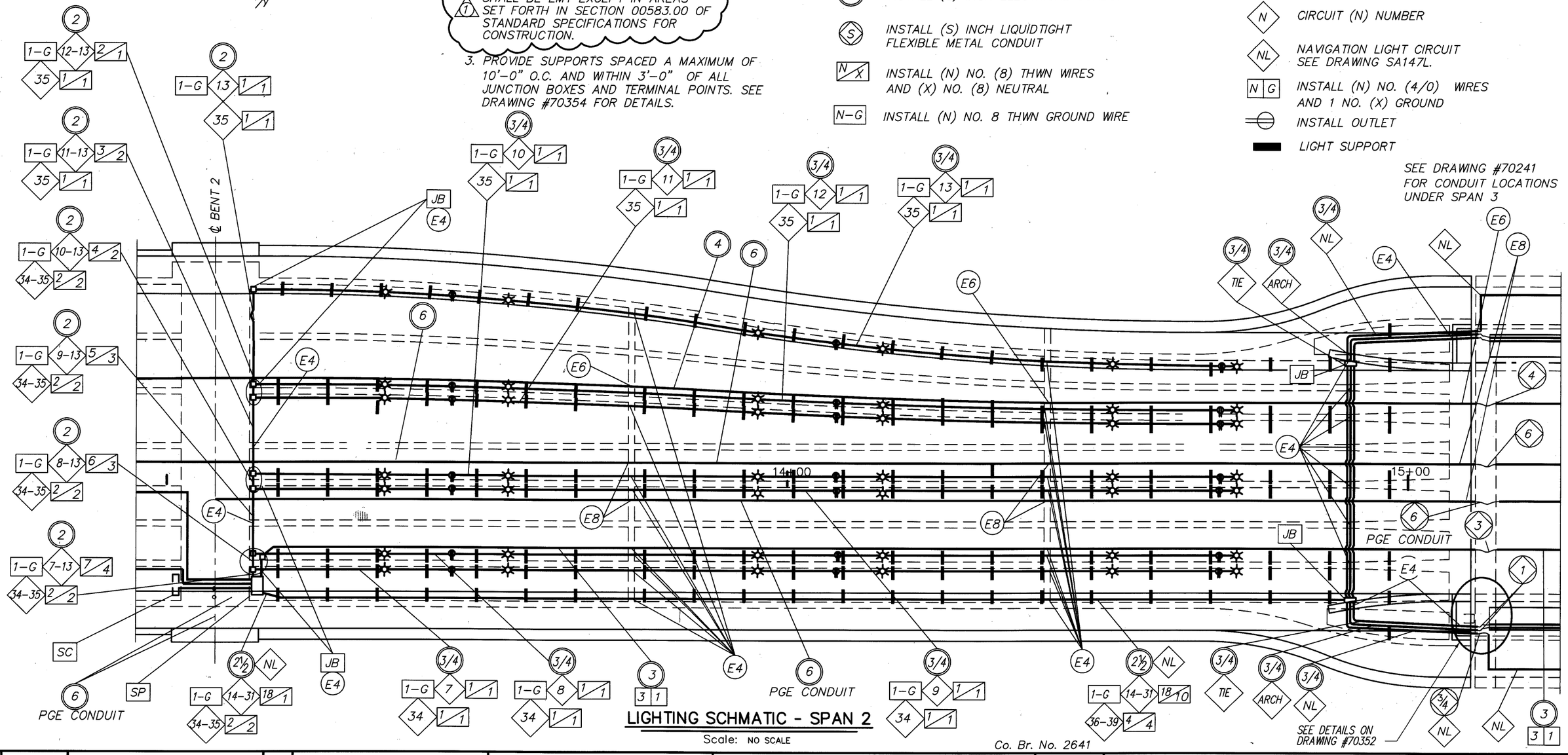
DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

NOTES:

1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO COORDINATE WITH CONCRETE WORK TO DETERMINE BEST FIT AND THEN VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS (1) SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. PROVIDE SUPPORTS SPACED A MAXIMUM OF 10'-0" O.C. AND WITHIN 3'-0" OF ALL JUNCTION BOXES AND TERMINAL POINTS. SEE DRAWING #70354 FOR DETAILS.

LEGEND:

- (EX) — (X) INCH PVC SLEEVE. INSTALL A MINIMUM OF 1'-0" FROM POST TENSIONING DUCTS WHEN GOING THROUGH STEM WALLS
- INSTALL LIGHT
- (S) — INSTALL (S) INCH ELECTRICAL CONDUIT
- (S) — INSTALL (S) INCH LIQUIDTIGHT FLEXIBLE METAL CONDUIT
- N/X — INSTALL (N) NO. (8) THWN WIRES AND (X) NO. (8) NEUTRAL
- N-G — INSTALL (N) NO. 8 THWN GROUND WIRE
- JB — INSTALL JUNCTION BOX
- WJB — INSTALL NEMA TYPE R12 20X20X8" SINGLE DOOR JUNCTION BOX
- SC — INSTALL SERVICE CABINET
- SP — INSTALL SUB-PANEL
- N — CIRCUIT (N) NUMBER
- NL — NAVIGATION LIGHT CIRCUIT SEE DRAWING SA147L.
- N | G — INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
- INSTALL OUTLET
- LIGHT SUPPORT



LIGHTING SCHMATIC - SPAN 2

Scale: NO SCALE

Co. Br. No. 2641

△	DATE	REVISION	BY
1	9/14/05	NOTE 2 CORRECTED: FROM PVC TO EMT CONDUIT	JPH
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER

REGISTERED PROFESSIONAL ENGINEER 18627 OREGON JULY 10, 1998 JON P. HENRICHSEN EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES

TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING LAYOUT - SPAN 2

SHEET 157 OF 173

DRAWING NO. 70345

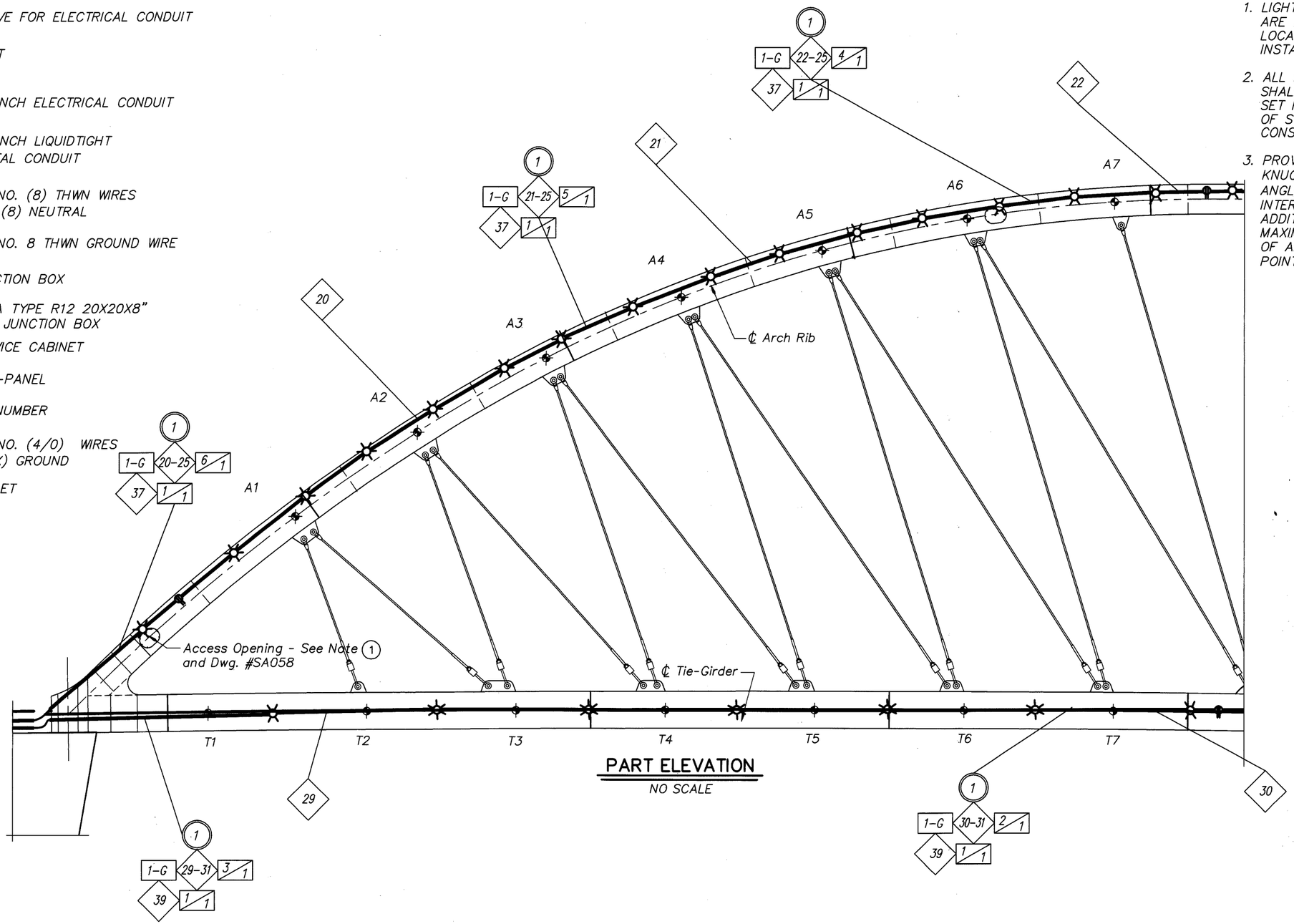
2005_20136_SUAVIE ISLAND REPLACEMENT_003_SPAN 2 LIGHTING

LEGEND:

- (E4) 4" PVC SLEEVE FOR ELECTRICAL CONDUIT
- INSTALL LIGHT
- (S) INSTALL (S) INCH ELECTRICAL CONDUIT
- (S) INSTALL (S) INCH LIQUIDTIGHT FLEXIBLE METAL CONDUIT
- N/X INSTALL (N) NO. (8) THWN WIRES AND (X) NO. (8) NEUTRAL
- N-G INSTALL (N) NO. 8 THWN GROUND WIRE
- JB INSTALL JUNCTION BOX
- WJB INSTALL NEMA TYPE R12 20X20X8" SINGLE DOOR JUNCTION BOX
- SC INSTALL SERVICE CABINET
- SP INSTALL SUB-PANEL
- N CIRCUIT (N) NUMBER
- N | G INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
- INSTALL OUTLET

NOTES:

1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. PROVIDE SUPPORT ANGLES IN ARCH RIB, KNUCKLE SECTION AND TIE GIRDERS. ANGLES TO BE CENTERED BETWEEN INTERMEDIATE DIAPHRAGMS, WITH ADDITIONAL SUPPORTS SPACED A MAXIMUM OF 10'-0" O.C. AND WITHIN 3'-0" OF ALL JUNCTION BOXES AND TERMINAL POINTS. SEE DRAWING #70353 FOR DETAILS.



PART ELEVATION
NO SCALE

SEE DRAWING #70214 FOR CONDUIT LOCATIONS UNDER SPAN 3

NAVIGATION CONDUIT INSTALLED IN SIDEWALK. SEE DRAWING #70355

Co. Br. No. 2641

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 18527 OREGON JULY 10, 1996 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

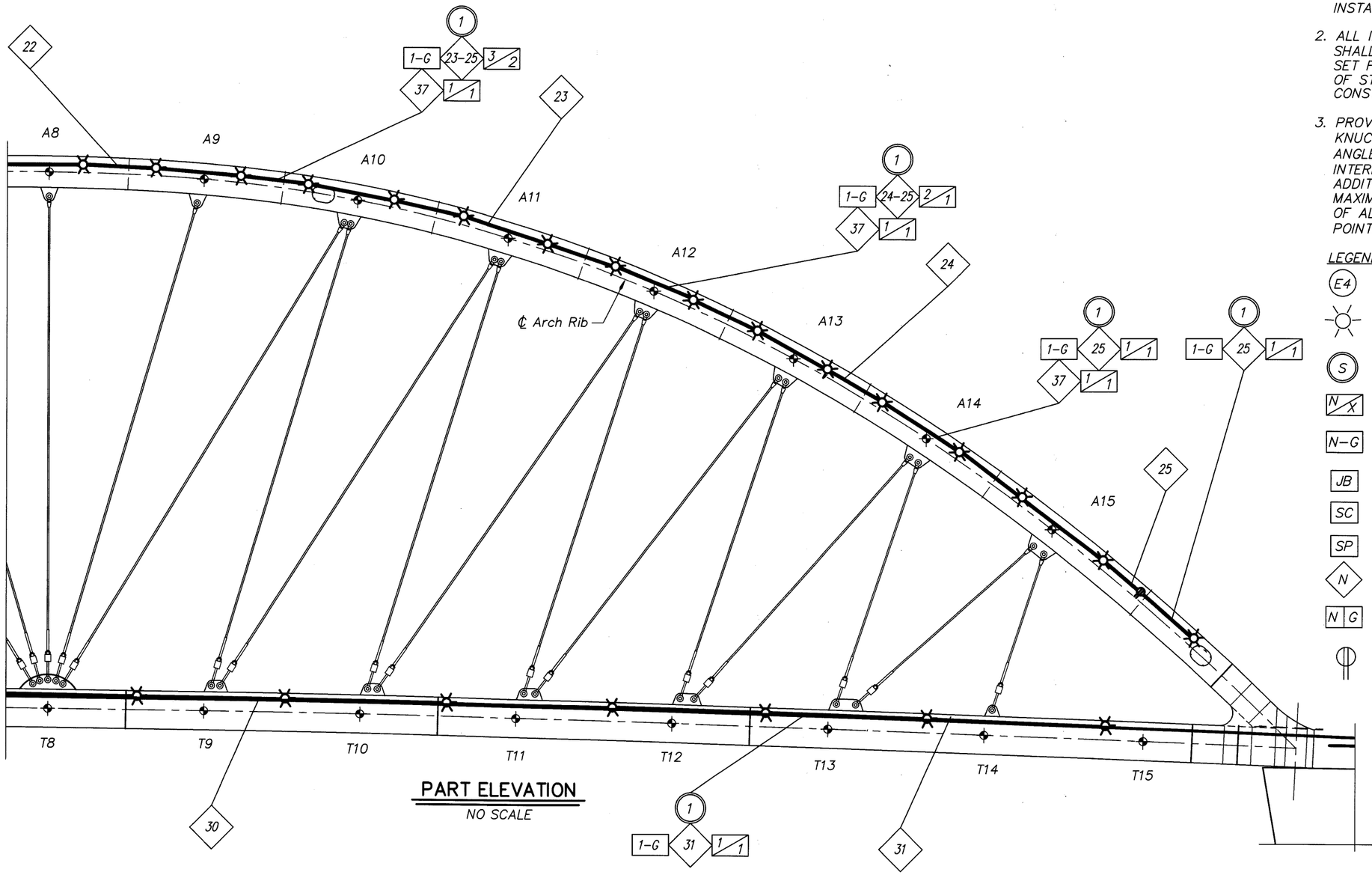
BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING LAYOUT-SPAN 3 RIGHT SIDE-1

SHEET 158 OF 173
DRAWING NO. 70346

2005_20136_SUAVIE ISLAND REPLACEMENT_004_ARCH MEMBER RIGHT SIDE LIGHTING 1



PART ELEVATION

NO SCALE

NOTES:

1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. PROVIDE SUPPORT ANGLES IN ARCH RIB, KNUCKLE SECTION AND TIE GIRDERS. ANGLES TO BE CENTERED BETWEEN INTERMEDIATE DIAPHRAGMS, WITH ADDITIONAL SUPPORTS SPACED A MAXIMUM OF 10'-0" O.C. AND WITHIN 3'-0" OF ALL JUNCTION BOXES AND TERMINAL POINTS. SEE DRAWING #70353 FOR DETAILS.

LEGEND:

- (E4) 4" PVC SLEEVE FOR ELECTRICAL CONDUIT
- INSTALL LIGHT
- (S) INSTALL (S) INCH ELECTRICAL CONDUIT
- N/X INSTALL (N) NO. (8) THWN WIRES AND (X) NO. (8) NEUTRAL
- N-G INSTALL (N) NO. 8 THWN GROUND WIRE
- JB INSTALL JUNCTION BOX
- SC INSTALL SERVICE CABINET
- SP INSTALL SUB-PANEL
- N CIRCUIT (N) NUMBER
- N | G INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
- INSTALL OUTLET

SEE DRAWING #70214 FOR CONDUIT LOCATIONS UNDER SPAN 3

NAVIGATION CONDUIT INSTALLED IN SIDEWALK. SEE DRAWING #70355.

Co. Br. No. 2641

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 10027 OREGON JULY 10, 1998 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING LAYOUT-SPAN 3 RIGHT SIDE-2

SHEET 159 OF 173
DRAWING NO. 70347

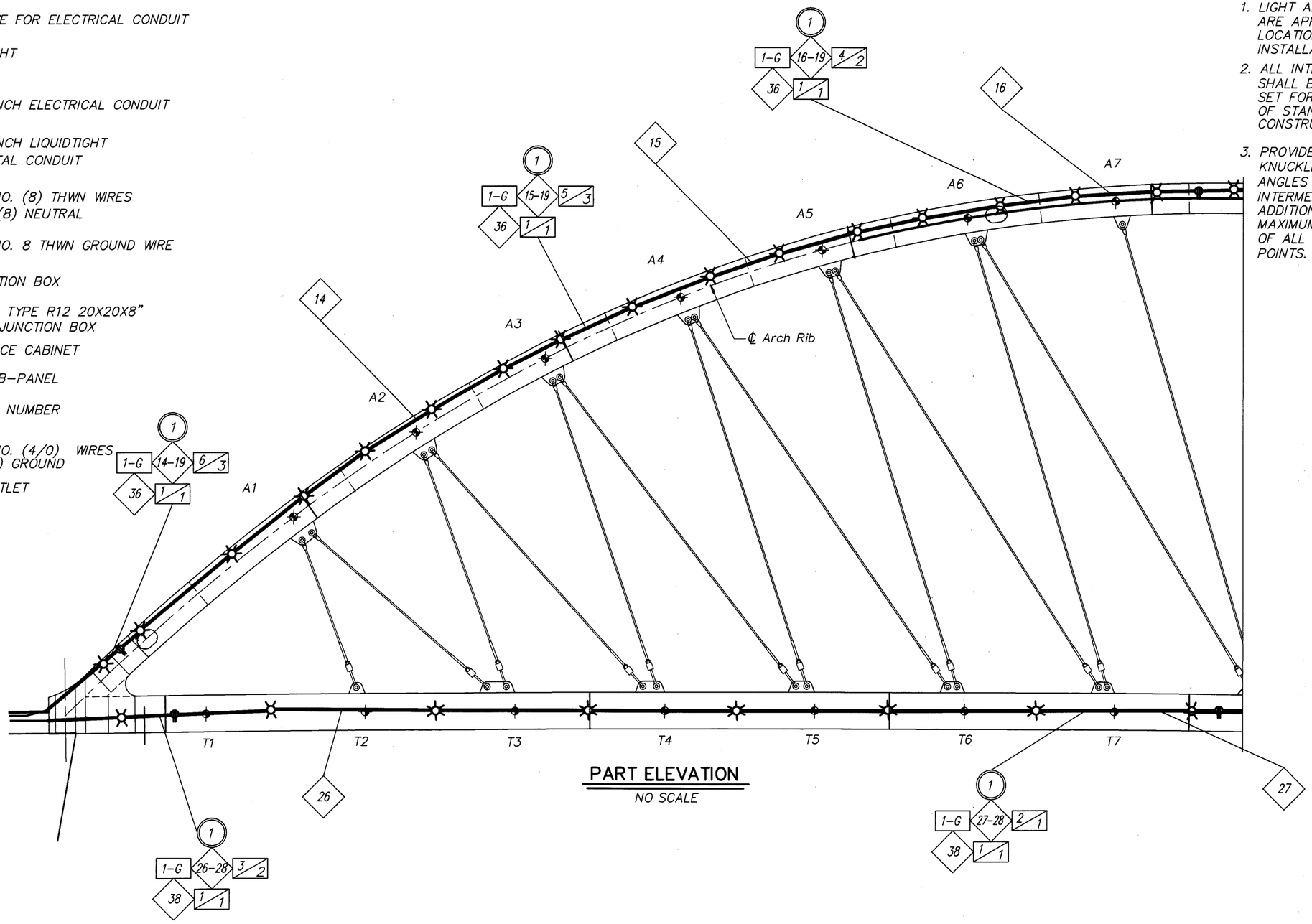
2005_20136_SUAVIE ISLAND REPLACEMENT_005_ ARCH MEMBER RIGHT SIDE LIGHTING 2

LEGEND:

- (E4) 4" PVC SLEEVE FOR ELECTRICAL CONDUIT
- INSTALL LIGHT
- (S) INSTALL (S) INCH ELECTRICAL CONDUIT
- (S) INSTALL (S) INCH LIQUIDTIGHT FLEXABLE METAL CONDUIT
- N/X INSTALL (N) NO. (8) THWN WIRES AND (X) NO. (8) NEUTRAL
- N-G INSTALL (N) NO. 8 THWN GROUND WIRE
- JB INSTALL JUNCTION BOX
- WJB INSTALL NEMA TYPE R12 20X20X8" SINGLE DOOR JUNCTION BOX
- SC INSTALL SERVICE CABINET
- SP INSTALL SUB-PANEL
- N CIRCUIT (N) NUMBER
- N | G INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
- INSTALL OUTLET

NOTES:

1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. PROVIDE SUPPORT ANGLES IN ARCH RIB, KNUCKLE SECTION AND TIE GIRDERS. ANGLES TO BE CENTERED BETWEEN INTERMEDIATE DIAPHRAGMS, WITH ADDITIONAL SUPPORTS SPACED A MAXIMUM OF 10'-0" O.C. AND WITHIN 3'-0" OF ALL JUNCTION BOXES AND TERMINAL POINTS. SEE DRAWING #70353 FOR DETAILS.



PART ELEVATION
NO SCALE

SEE DRAWING #70214 FOR CONDUIT LOCATIONS UNDER SPAN 3

NAVIGATION CONDUIT INSTALLED IN SIDEWALK. SEE DRAWING #70355

Co. Br. No. 2641

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 15627 OREGON JULY 10, 1998 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

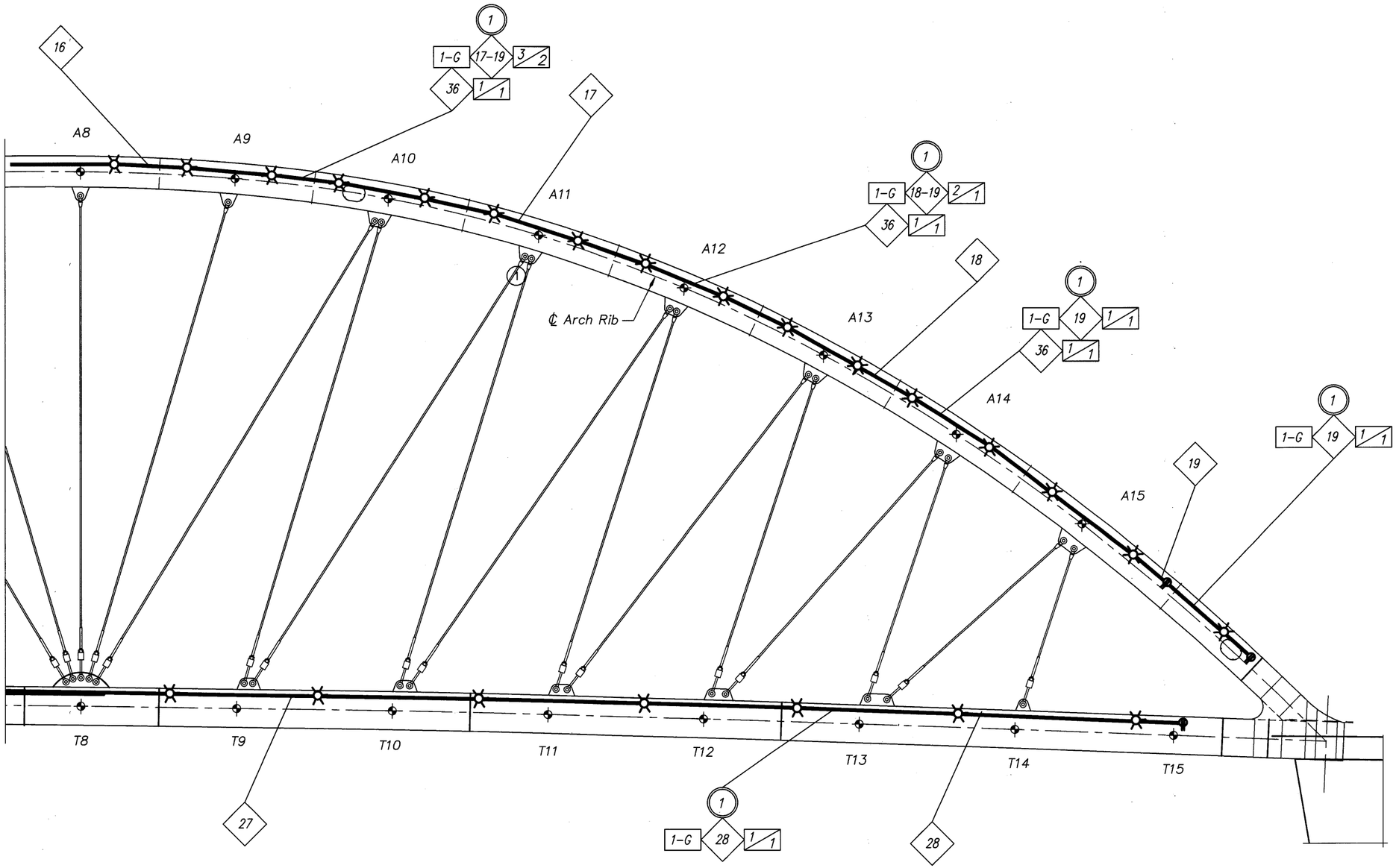
BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING LAYOUT-SPAN 3 LEFT SIDE-1

SHEET 160 OF 173
DRAWING NO. 70348

2005_20136_SUAVIE ISLAND REPLACEMENT_006_ARCH MEMBER LEFT SIDE LIGHTING 1



NOTES:

1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. PROVIDE SUPPORT ANGLES IN ARCH RIB, KNUCKLE SECTION AND TIE GIRDERS. ANGLES TO BE CENTERED BETWEEN INTERMEDIATE DIAPHRAGMS, WITH ADDITIONAL SUPPORTS SPACED A MAXIMUM OF 10'–0" O.C. AND WITHIN 3'–0" OF ALL JUNCTION BOXES AND TERMINAL POINTS. SEE DRAWING #70353 FOR DETAILS.

LEGEND:

E4	4" PVC SLEEVE FOR ELECTRICAL CONDUIT
	INSTALL LIGHT
S	INSTALL (S) INCH ELECTRICAL CONDUIT
S	INSTALL (S) INCH LIQUIDTIGHT FLEXIBLE METAL CONDUIT
N/X	INSTALL (N) NO. (8) THWN WIRES AND (X) NO. (8) NEUTRAL
N–G	INSTALL (N) NO. 8 THWN GROUND WIRE
JB	INSTALL JUNCTION BOX
WJB	INSTALL NEMA TYPE R12 20X20X8" SINGLE DOOR JUNCTION BOX
SC	INSTALL SERVICE CABINET
SP	INSTALL SUB–PANEL
N	CIRCUIT (N) NUMBER
N G	INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
	INSTALL OUTLET

SEE DRAWING #70214 FOR CONDUIT LOCATIONS UNDER SPAN 3

NAVIGATION CONDUIT INSTALLED IN SIDEWALK. SEE DRAWING #70355.

Co. Br. No. 2641

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 18527 OREGON JULY 10, 1998 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

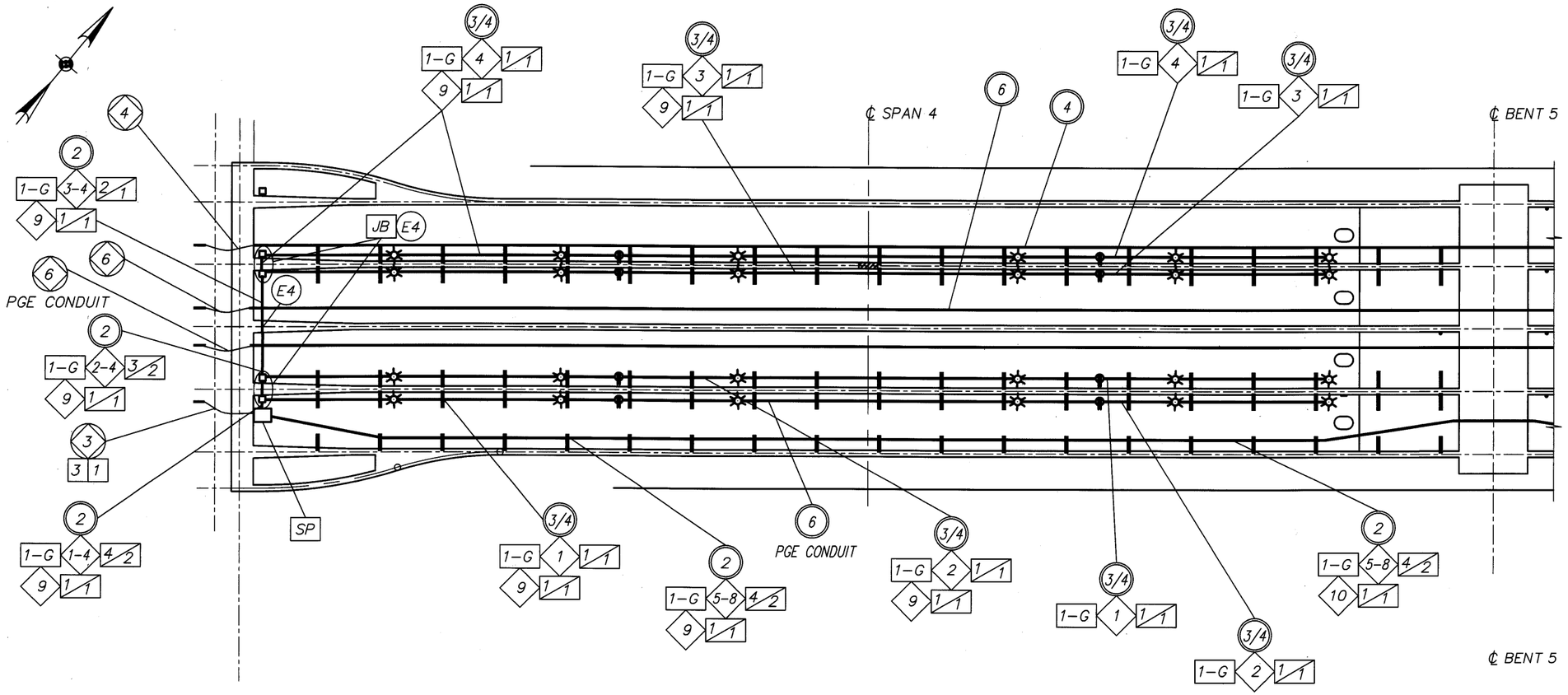
BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING LAYOUT-SPAN 3 LEFT SIDE-2

SHEET 161 OF 173
DRAWING NO. 70349

2005_20136_SUAVIE ISLAND REPLACEMENT_007_ARCH MEMBER LEFT SIDE LIGHTING 2



SEE DRAWING #70241
FOR CONDUIT LOCATIONS
UNDER SPAN 3

LIGHTING SCHEMATIC - SPAN 4

Scale : NO SCALE

NOTES:

1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO COORDINATE WITH CONCRETE WORK TO DETERMINE THE BEST FIT AND THEN VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. PROVIDE SUPPORTS SPACED A MAXIMUM OF 10'-0" O.C. AND WITHIN 3'-0" OF ALL JUNCTION BOXES AND TERMINAL POINTS. SEE DRAWING #70354 FOR DETAILS.

LEGEND:

- (EN) — (N) INCH PVC SLEEVE. INSTALL A MINIMUM OF 1'-0" FROM POST TENSIONING DUCTS WHEN GOING THROUGH STEM WALLS.
- INSTALL LIGHT
- (S) — INSTALL (S) INCH ELECTRICAL CONDUIT
- (S) — INSTALL (S) INCH LIQUIDTIGHT FLEXIBLE METAL CONDUIT
- N/X — INSTALL (N) NO. (8) THWN WIRES AND (X) NO. (8) NEUTRAL
- N-G — INSTALL (N) NO. 8 THWN GROUND WIRE
- JB — INSTALL JUNCTION BOX
- SC — INSTALL SERVICE CABINET
- SP — INSTALL SUB-PANEL
- N — CIRCUIT (N) NUMBER
- N | G — INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
- INSTALL OUTLET
- LIGHT SUPPORT

Co. Br. No. 2641

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 18577 OREGON JULY 10, 1986 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

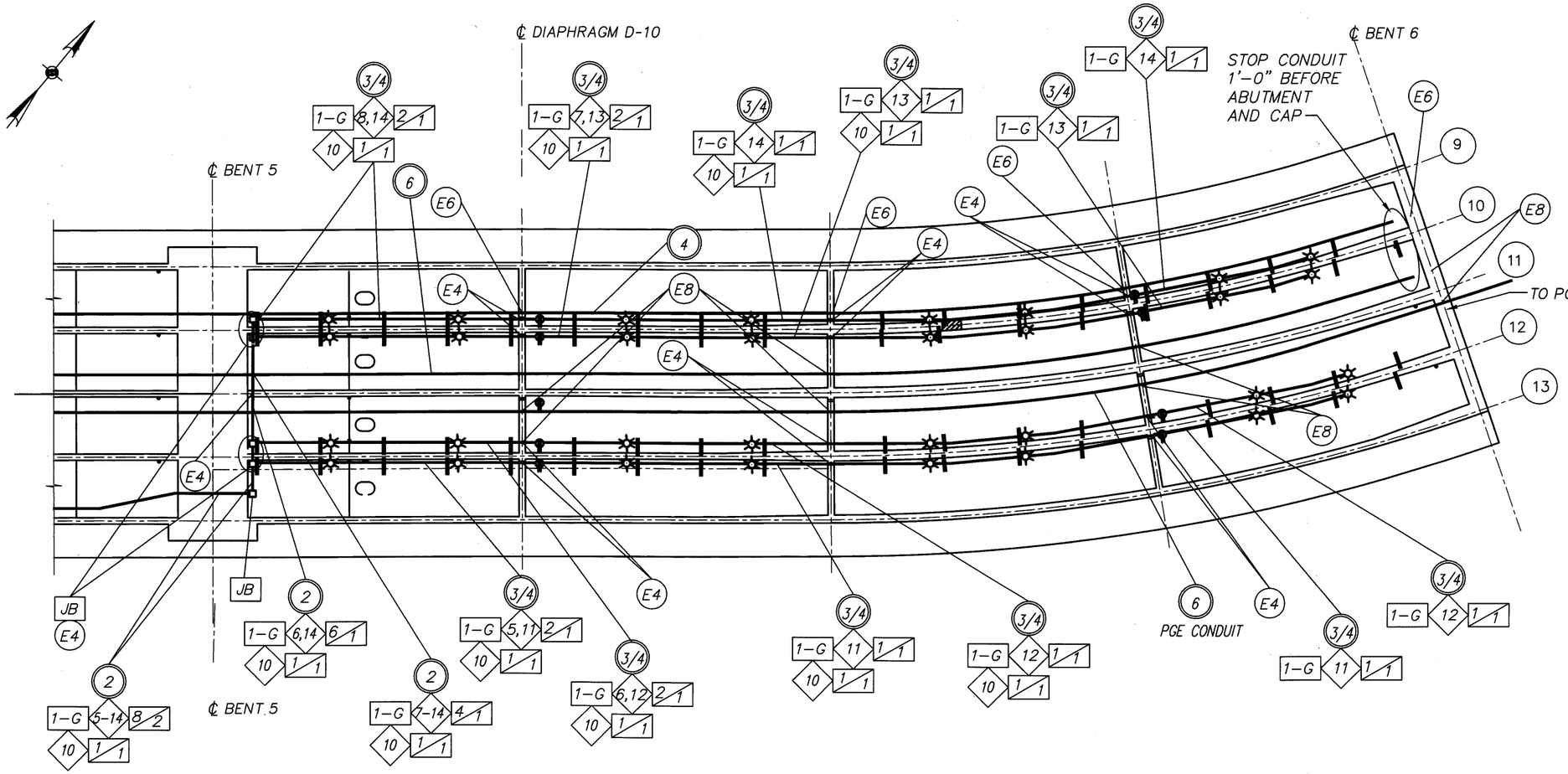
BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING LAYOUT - SPAN 4

SHEET 162 OF 173
DRAWING NO. 70350

2005_20136_SUAVIE ISLAND REPLACEMENT_008_SPAN 4 LIGHTING



LIGHTING SCHEMATIC -SPAN 5

Scale : NO SCALE

NOTES:

1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO COORDINATE WITH CONCRETE WORK TO DETERMINE THE BEST FIT FOR ALL ELEMENTS AND THEN VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. PROVIDE SUPPORTS SPACED A MAXIMUM OF 10'-0" O.C. AND WITHIN 3'-0" OF ALL JUNCTION BOXES AND TERMINAL POINTS. SEE DRAWING #70354 FOR DETAILS.

LEGEND:

- (EN) — (N) INCH PVC SLEEVE. INSTALL A MINIMUM OF 1'-0" FROM POST TENSIONING DUCTS WHEN GOING THROUGH STEM WALLS
- INSTALL LIGHT
- (S) — INSTALL (S) INCH ELECTRICAL CONDUIT
- (S) — INSTALL (S) INCH LIQUIDTIGHT FLEXIBLE METAL CONDUIT
- N/X — INSTALL (N) NO. (8) THWN WIRES AND (X) NO. (8) NEUTRAL
- N-G — INSTALL (N) NO. 8 THWN GROUND WIRE
- JB — INSTALL JUNCTION BOX
- SC — INSTALL SERVICE CABINET
- SP — INSTALL SUB-PANEL
- N — CIRCUIT (N) NUMBER
- N | G — INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
- INSTALL OUTLET
- LIGHT SUPPORT

Co. Br. No. 2641

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 18527 OREGON JULY 10, 1986 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

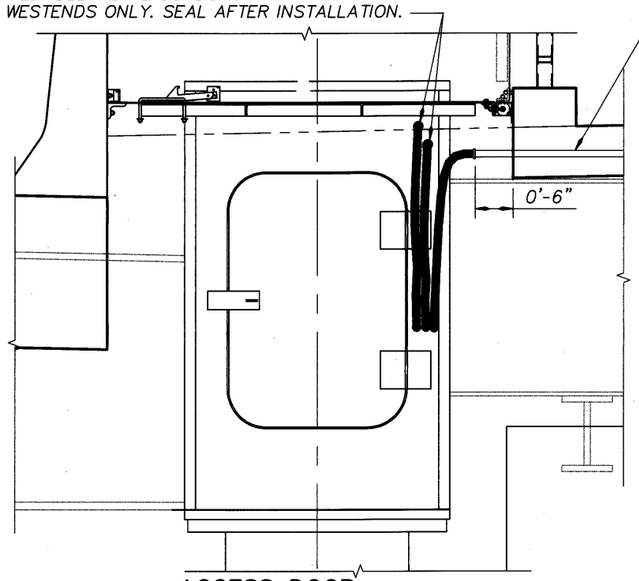
BRIDGE NO. 2641
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING LAYOUT - SPAN 5

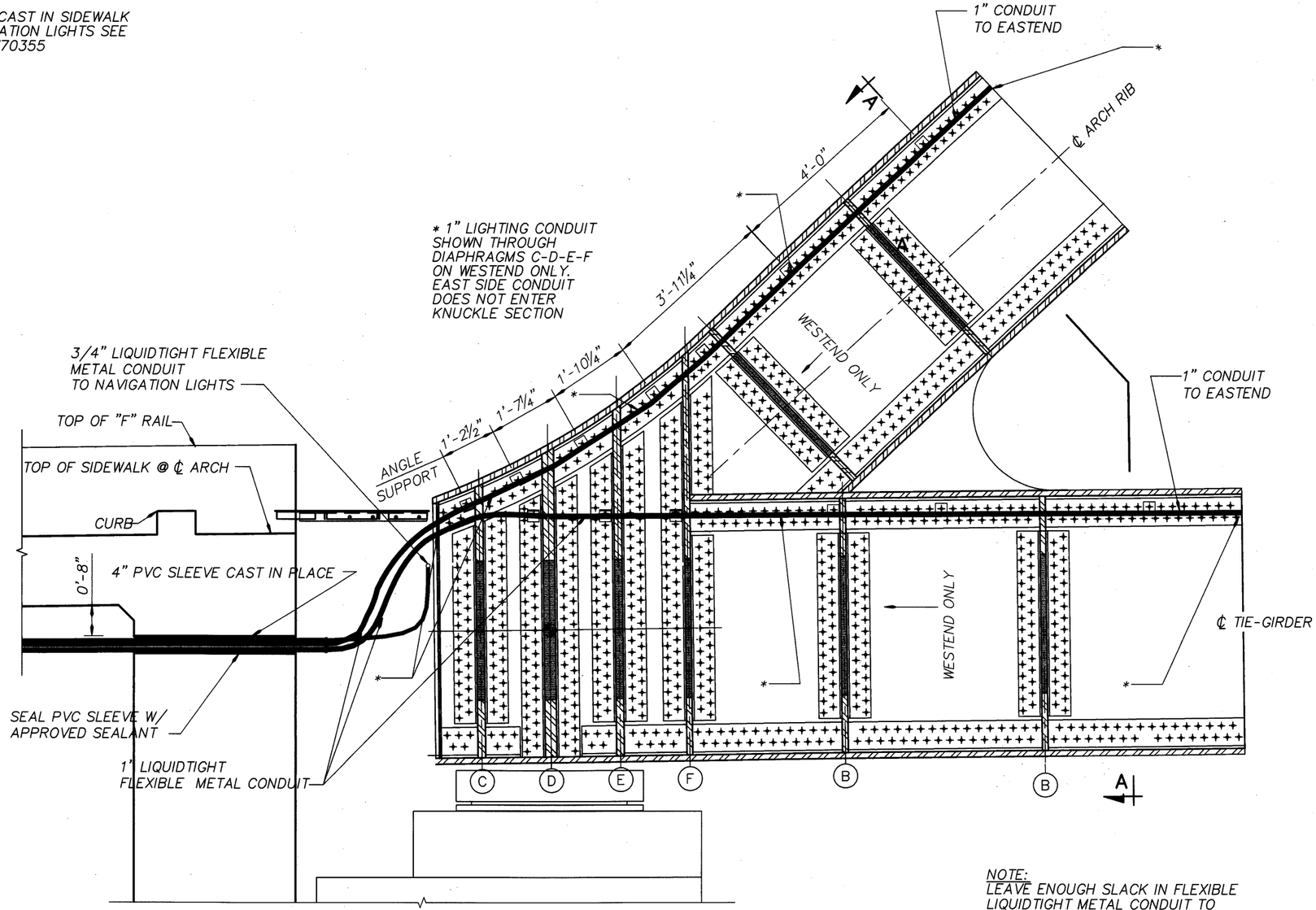
SHEET 163 OF 173
DRAWING NO. 70351

2005_20136_SUAVIE ISLAND REPLACEMENT_009_SPAN 5 LIGHTING



ACCESS DOOR

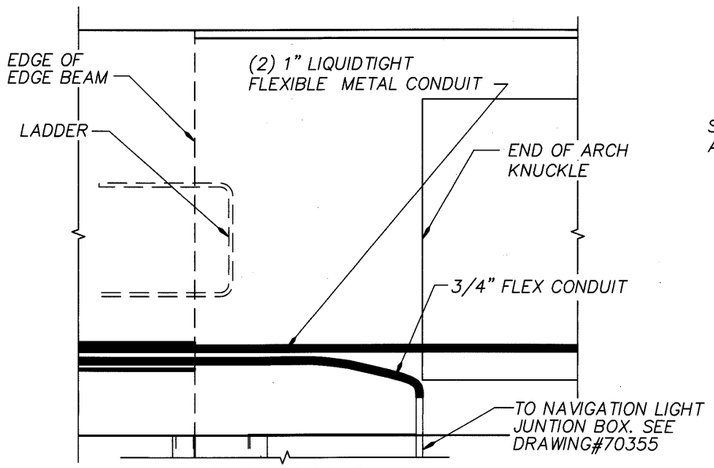
Scale: 1" = 1'–0" *RIGHT SIDE SHOWN-LEFT SIDE IDENTICAL EXCEPT OPPOSITE HAND*



KNUCKLE SECTION ELEVATION

Scale: 3/4" = 1'–0" *RIGHT SIDE SHOWN-LEFT SIDE IDENTICAL EXCEPT OPPOSITE HAND*

NOTE:
LEAVE ENOUGH SLACK IN FLEXIBLE LIQUIDTIGHT METAL CONDUIT TO TO ACCOMMODATE 9" MOVEMENT OF ARCH EXPANSION JOINT.



ACCESS AREA PLAN

Scale: 1" = 1'–0" *RIGHT SIDE SHOWN-LEFT SIDE IDENTICAL EXCEPT OPPOSITE HAND*

SEE DRAWING #70353 FOR SECTIONS AND DETAILS FOR KNUCKLE SECTION, ARCH AND TIE GIRDER

Co. Br. No. 2641

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 10867 OREGON JULY 10, 1998 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

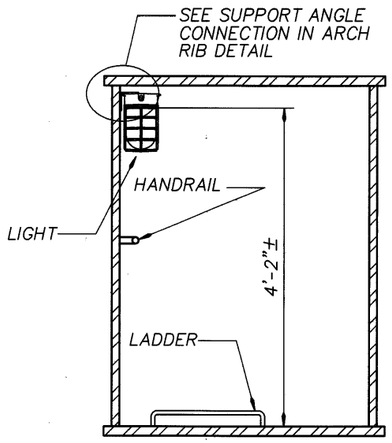
BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

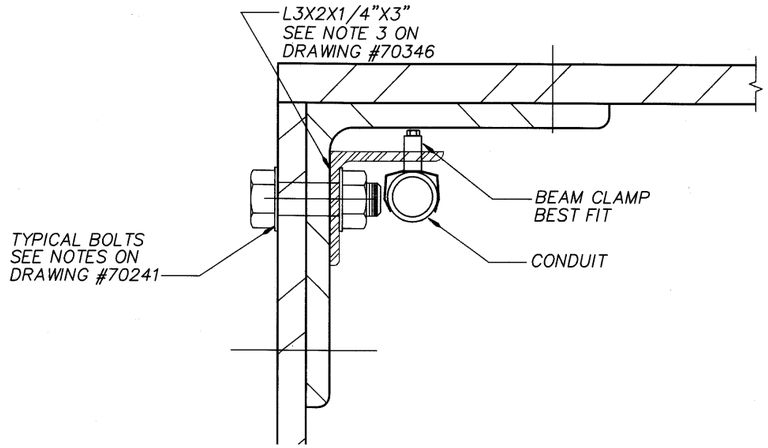
LIGHTING DETAILS - 1

SHEET 164 OF 173
DRAWING NO. 70352

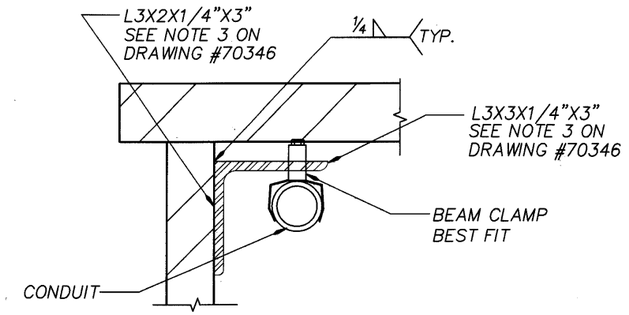
2005_20136_SUAVIE ISLAND REPLACEMENT_010_DETAILS 1



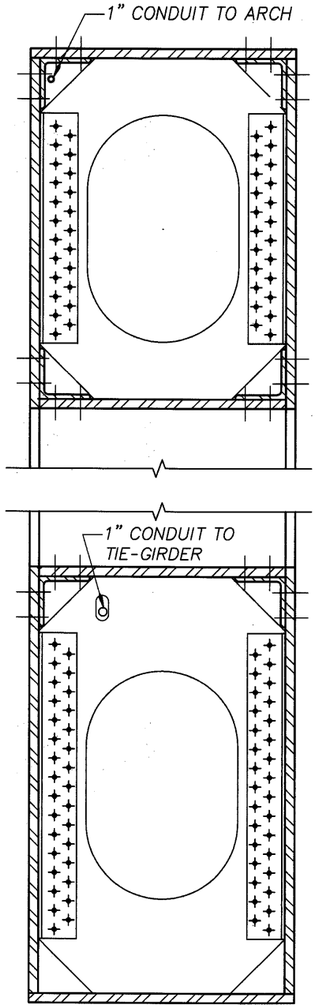
TYPICAL ARCH RIB SECTION
Scale: 1" = 1'-0"



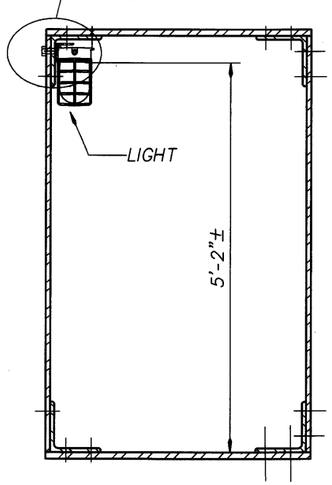
TYPICAL SUPPORT ANGLE CONNECTION IN TIE GIRDER AND KNUCKLE SECTION
Scale: 6" = 1'-0"



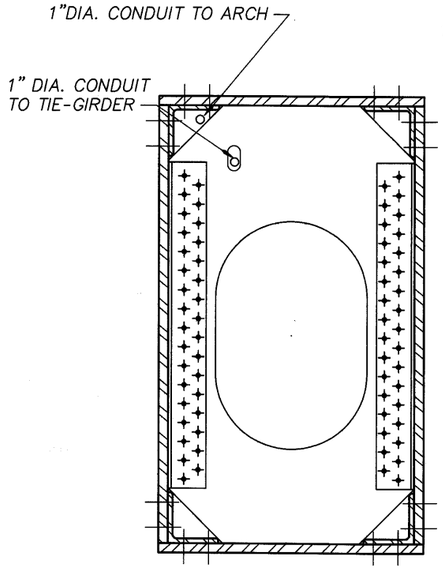
TYPICAL SUPPORT ANGLE CONNECTION IN ARCH RIB SECTION
Scale: 6" = 1'-0"



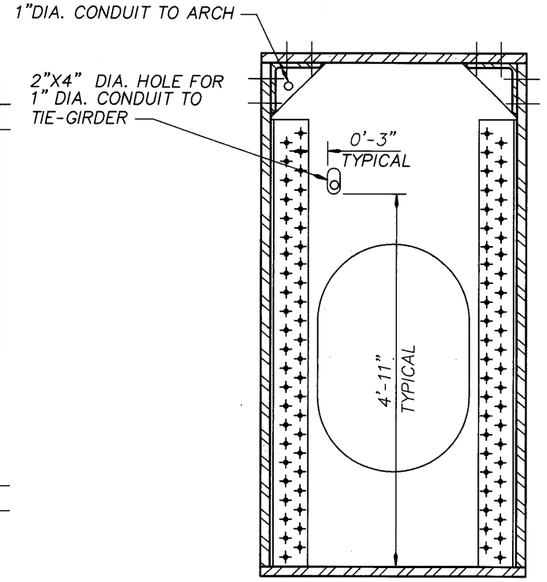
SECTION A-A
Scale: 1" =1'-0"



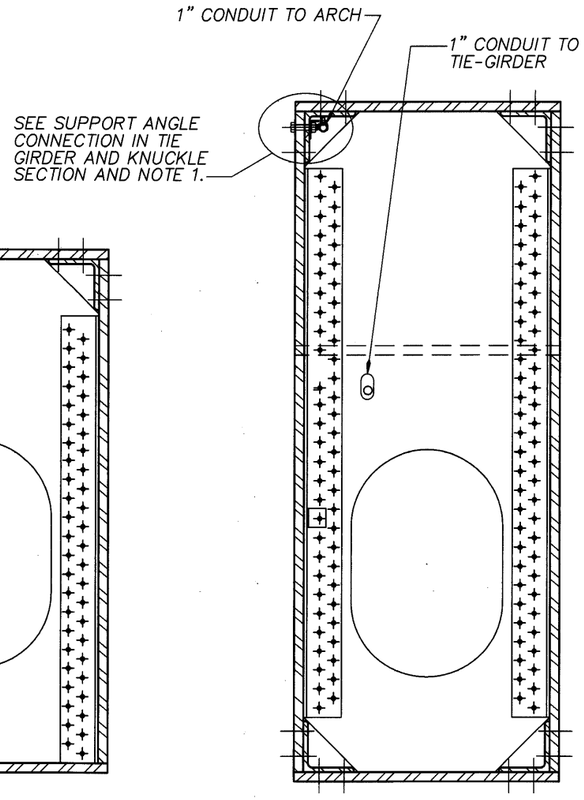
TYPICAL TIE GIRDER SECTION
Scale: 1" = 1'-0"



DIAPHRAGM C
Scale: 1" = 1'-0"



DIAPHRAGM D
Scale: 1" = 1'-0"
DIAPHRAGM E SIMILAR



DIAPHRAGM F
Scale: 1" = 1'-0"

NOTES:
1. ANGLE CONFIGURATION FOR INFORMATION ONLY. FABRICATOR TO DETERMINE BEST FIT.
2. SEE ADDITIONAL SUPPORT NOTES ON DRAWING #70346.
2. DIAPHRAGMS SHOWN LOOKING TOWARDS STATION 0+00 ON THE RIGHT SIDE. LEFT SIDE IDENTICAL EXPECT OPPOSITE HAND.

Co. Br. No. 2641

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 18527 OREGON JULY 10, 1998 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

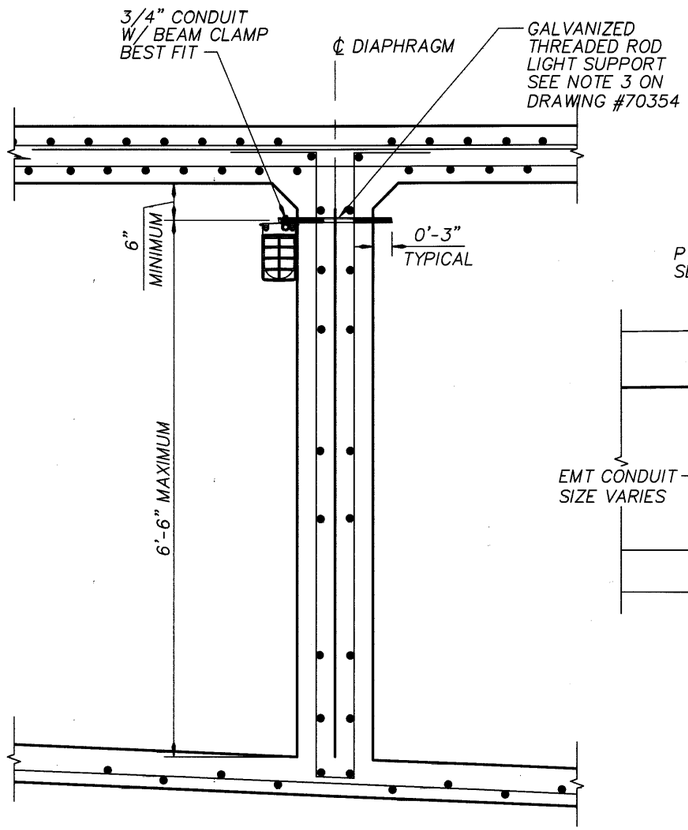
BRIDGE NO. 2641
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING DETAILS - 2

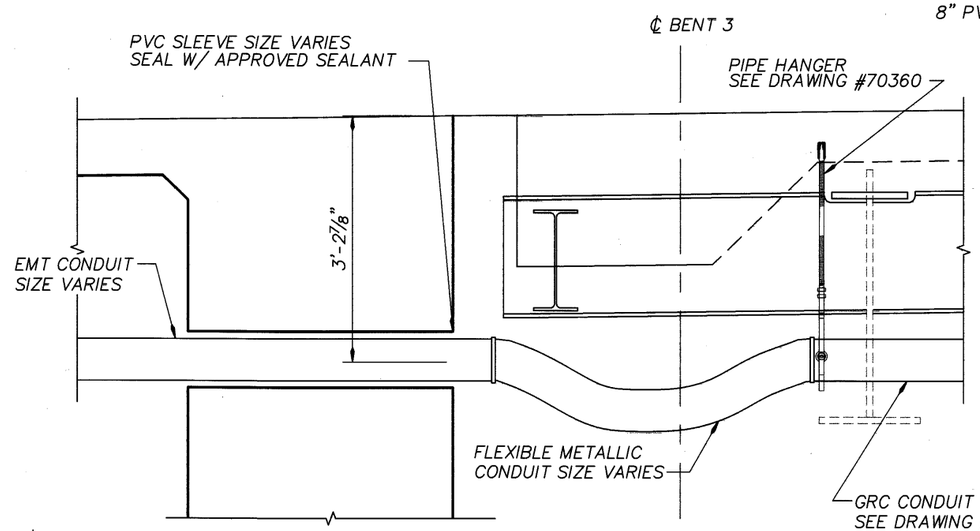
SHEET 165 OF 173
DRAWING NO. 70353

2005_20136_SUAVIE ISLAND REPLACEMENT_011_DETAIL 2



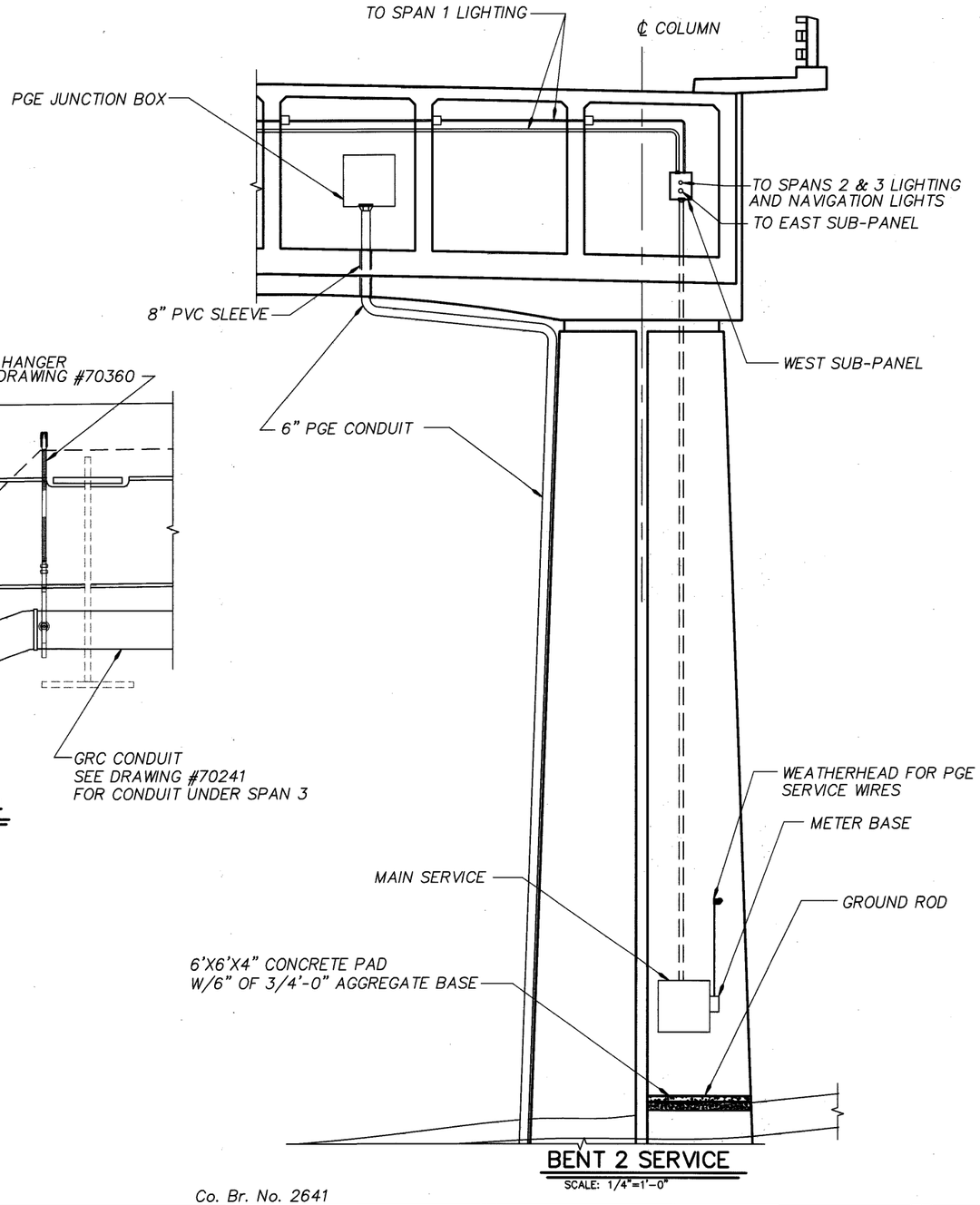
TYPICAL DIAPHRAGM SECTION LIGHTING

SCALE: 1"=1'-0"



TYPICAL CONDUIT JOINT @ BENTS 3 & BENT 4

SCALE: 1"=1'-0" BENT 3 SHOWN-BENT 4 IDENTICAL
EXPECT OPPOSITE HAND



BENT 2 SERVICE

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

Co. Br. No. 2641

2005_20136_SUAVIE ISLAND REPLACEMENT_012_DETAIL 3

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 10007 OREGON JULY 10, 1986 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 2641
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING DETAILS-3

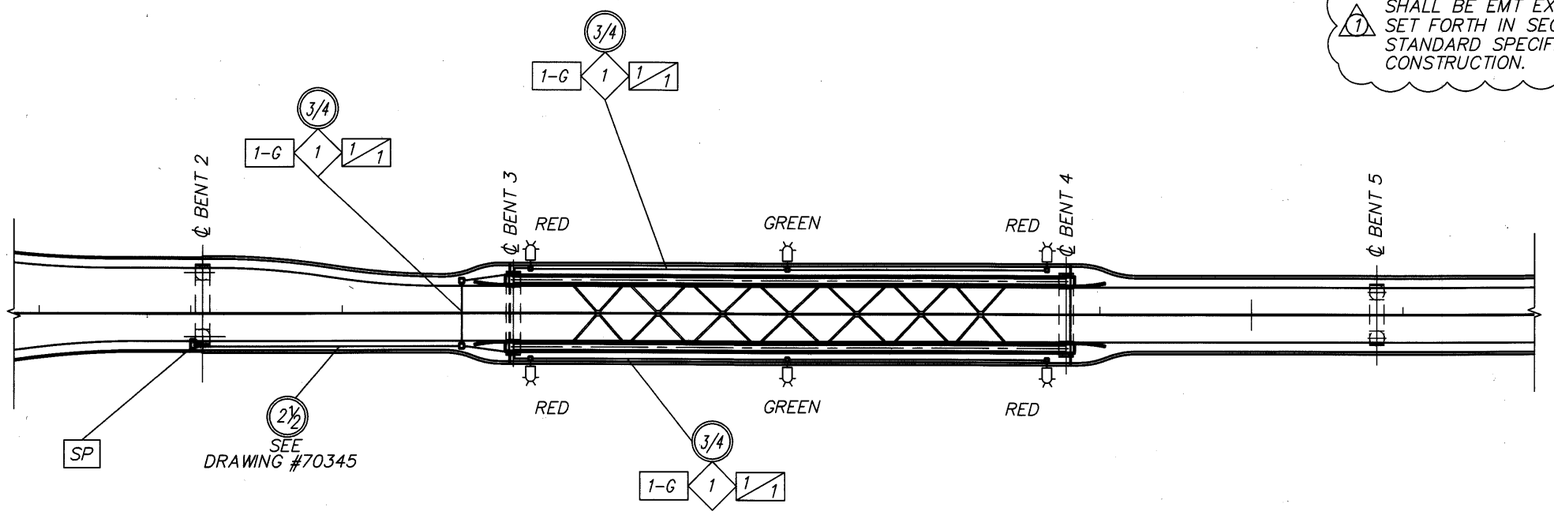
SHEET 166 OF 173
DRAWING NO. 70354

NOTES:

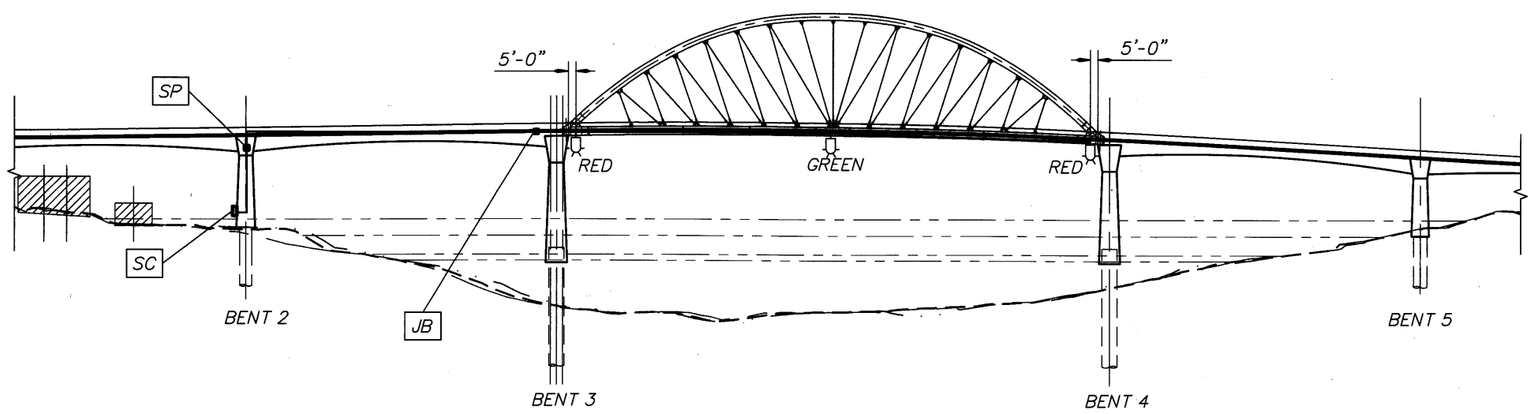
1. LIGHT AND OUTLET LOCATIONS AND SPACING ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS WITH ENGINEER BEFORE INSTALLATION.
2. ALL INTERIOR ELECTRICAL CONDUIT SHALL BE EMT EXCEPT IN AREAS (1) SET FORTH IN SECTION 00583.00 OF STANDARD SPECIFICATIONS FOR CONSTRUCTION.

LEGEND:

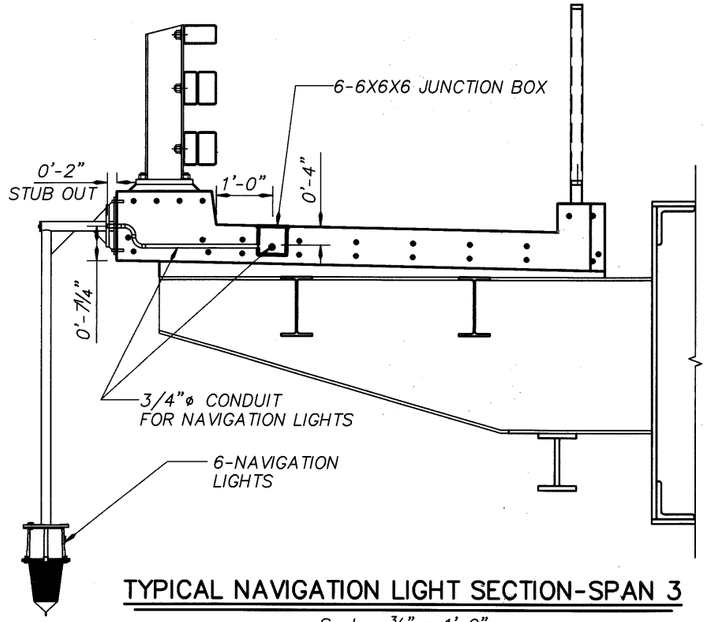
- INSTALL WALL MOUNTED LIGHT
- (S) INSTALL (S) INCH ELECTRICAL CONDUIT
- (N)/(X) INSTALL (N) NO. (8) THWN WIRES AND NO. (8) NEUTRAL
- N-G INSTALL (N) NO. 8 THWN GROUND WIRE
- JB INSTALL JUNCTION BOX
- SC INSTALL SERVICE CABINET
- SP INSTALL SUB-PANEL
- N CIRCUIT (N) NUMBER
- N | G INSTALL (N) NO. (4/0) WIRES AND 1 NO. (X) GROUND
- INSTALL NAVIGATION LIGHT



PLAN
Scale: 1" = 50'



ELEVATION
Scale: 1" = 50'



TYPICAL NAVIGATION LIGHT SECTION-SPAN 3
Scale : ¾" = 1'-0"

Co. Br. No. 2641

△	DATE	REVISION	BY
1	9/14/05	NOTE 2 CORRECTED: FROM PVC TO EMT CONDUIT	JPH
	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 18527 OREGON JULY 10, 1986 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

NAVIGATIONAL LIGHTS

SHEET 167 OF 173
DRAWING NO. 70355

2005_20136_SUAVIE ISLAND REPLACEMENT_013_NAVIGATIONAL_LIGHTS

SUB PANEL WEST FEED CIRCUIT SCHEDULE

SERVICE VOLTAGE 120/240 BUS RATING 200 AMP LOCATION INSIDE BENT 2
BUS CONNECTION 1 P ____ W DRAWING No. ____

DESCRIPTION	VOLTAMPS A	VOLTAMPS B	BREAKER AMP	BREAKER POLE	CKT No	BUS CONNECTION	CKT No	BREAKER AMP	BREAKER POLE	VOLTAMPS A	VOLTAMPS B	DESCRIPTION
SPAN 1 LIGHTING	621		20	1	1		2	20	1	621		SPAN 1 LIGHTING
SPAN 1 LIGHTING		621	20	1	3		4	20	1		552	SPAN 1 LIGHTING
SPAN 1 LIGHTING	552		20	1	5		6	20	1	552		SPAN 1 LIGHTING
SPAN 2 LIGHTING		414	20	1	7		8	20	1		414	SPAN 2 LIGHTING
SPAN 2 LIGHTING	414		20	1	9		10	20	1	414		SPAN 2 LIGHTING
SPAN 2 LIGHTING		414	20	1	11		12	20	1		414	SPAN 2 LIGHTING
SPAN 2 LIGHTING	345		20	1	13		14	20	1	483		ARCH NORTH LIGHTING
ARCH NORTH LIGHTING		276	20	1	15		16	20	1		414	ARCH NORTH LIGHTING
ARCH NORTH LIGHTING	345		20	1	17		18	20	1	276		ARCH NORTH LIGHTING
ARCH NORTH LIGHTING		276	20	1	19		20	20	1		483	ARCH SOUTH LIGHTING
ARCH SOUTH LIGHTING	414		20	1	21		22	20	1	414		ARCH SOUTH LIGHTING
ARCH SOUTH LIGHTING		345	20	1	23		24	20	1		276	ARCH SOUTH LIGHTING
ARCH SOUTH LIGHTING	276		20	1	25		26	20	1	414		TIE NORTH LIGHTING
TIE NORTH LIGHTING		345	20	1	27		28	20	1		276	TIE NORTH LIGHTING
TIE SOUTH LIGHTING	414		20	1	29		30	20	1	345		TIE SOUTH LIGHTING
TIE SOUTH LIGHTING		276	20	1	31		32	20	1		1500	SPAN 1 OUTLETS
SPAN 1 OUTLETS	1500		20	1	33		34	20	1	1500		SPAN 2 OUTLETS
SPAN 2 OUTLETS		1500	20	1	35		36	20	1		1500	TIE OUTLETS (LS)
ARCH OUTLETS (RS)	1500		20	1	37		38	20	1	1500		ARCH OUTLETS (LS)
TIE OUTLETS (RS)		1500	20	1	39		40	60			14,400	SUB-PANEL E
					41		42	60		14,400		SUB-PANEL E
TOTALS	6450	6110				S/N				20929	20229	

BUS A 27.3 3 KVA MAIN (LUGS) 200 AMP LINE AMPS 164
BUS B 26.3 KVA PHASING 1 120/240 VOLTS
FEEDER SIZE 4/0
SOURCE MAIN SERVICE

SUB PANEL EAST FEED CIRCUIT SCHEDULE

SERVICE VOLTAGE 120/240 BUS RATING 60 AMP LOCATION BENT 3 INSIDE GIRDER
BUS CONNECTION ____ P ____ W DRAWING No. ____

DESCRIPTION	VOLTAMPS A	VOLTAMPS B	BREAKER AMP	BREAKER POLE	CKT No	BUS CONNECTION	CKT No	BREAKER AMP	BREAKER POLE	VOLTAMPS A	VOLTAMPS B	DESCRIPTION
SPAN 4 LIGHTING	414		20	1	1		2	20	1	414		SPAN 4 LIGHTING
SPAN 4 LIGHTING		414	20	1	3		4	20	1		414	SPAN 4 LIGHTING
SPAN 5 LIGHTING	276		20	1	5		6	20	1	276		SPAN 5 LIGHTING
SPAN 5 LIGHTING		276	20	1	7		8	20	1		276	SPAN 5 LIGHTING
SPAN 4 OUTLETS	1500		20	1	9		10	20	1	1500		SPAN 5 OUTLETS
SPAN 5 LIGHTING		276	20	1	11		12	20	1		276	SPAN 5 OUTLETS
SPAN 5 LIGHTING	276		20	1	13		14	20	1	276		SPAN 5 OUTLETS
					15		16					
					17		18					
					19		20					
TOTALS	2466	966				S/N				966	2416	

BUS A 3.4 KVA MAIN (LUGS) 60 AMP LINE AMPS 29
BUS B 3.4 KVA PHASING 1 120/240 VOLTS
FEEDER SIZE (1) 4/0
SOURCE SUB-PANEL WEST

MAIN SERVICE

SERVICE VOLTAGE 120/240 BUS RATING 400 AMP LOCATION BASE OF BENT 2
MOUNTING ____ BUS CONNECTION 1 P ____ W DRAWING No. ____

DESCRIPTION	VOLTAMPS A	VOLTAMPS B	BREAKER AMP	BREAKER POLE	CKT No	BUS CONNECTION	CKT No	BREAKER AMP	BREAKER POLE	VOLTAMPS A	VOLTAMPS B	DESCRIPTION
NAVIGATIONAL LIGHTS	2400		20	1	1		2	20	1	60K		SUB-PANEL WEST
					3		4	20	1		60K	SUB-PANEL WEST
					5		6					
					7		8					
					9		10					
					11		12					
TOTALS	2400					S/N				60K	60K	

BUS A 62.4K MAIN (LUGS) 400 AMP LINE AMPS 220
BUS B 60K PHASING 1 120/240 VOLTS
FEEDER SIZE 250 MCM
TOTAL LOAD ____ SOURCE PGE

Co. Br. No. 2641

	DATE	REVISION	BY
(1)	03/09	As-Constructed	TDF

DRAFTED: BRENDA STROMBO
CHECKED: JON HENRICHSEN
REVIEWED: IAN CANNON

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 14857 OREGON JULY 10, 1986 JON P. HENRICHSEN
EXPIRES 6/30/07

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

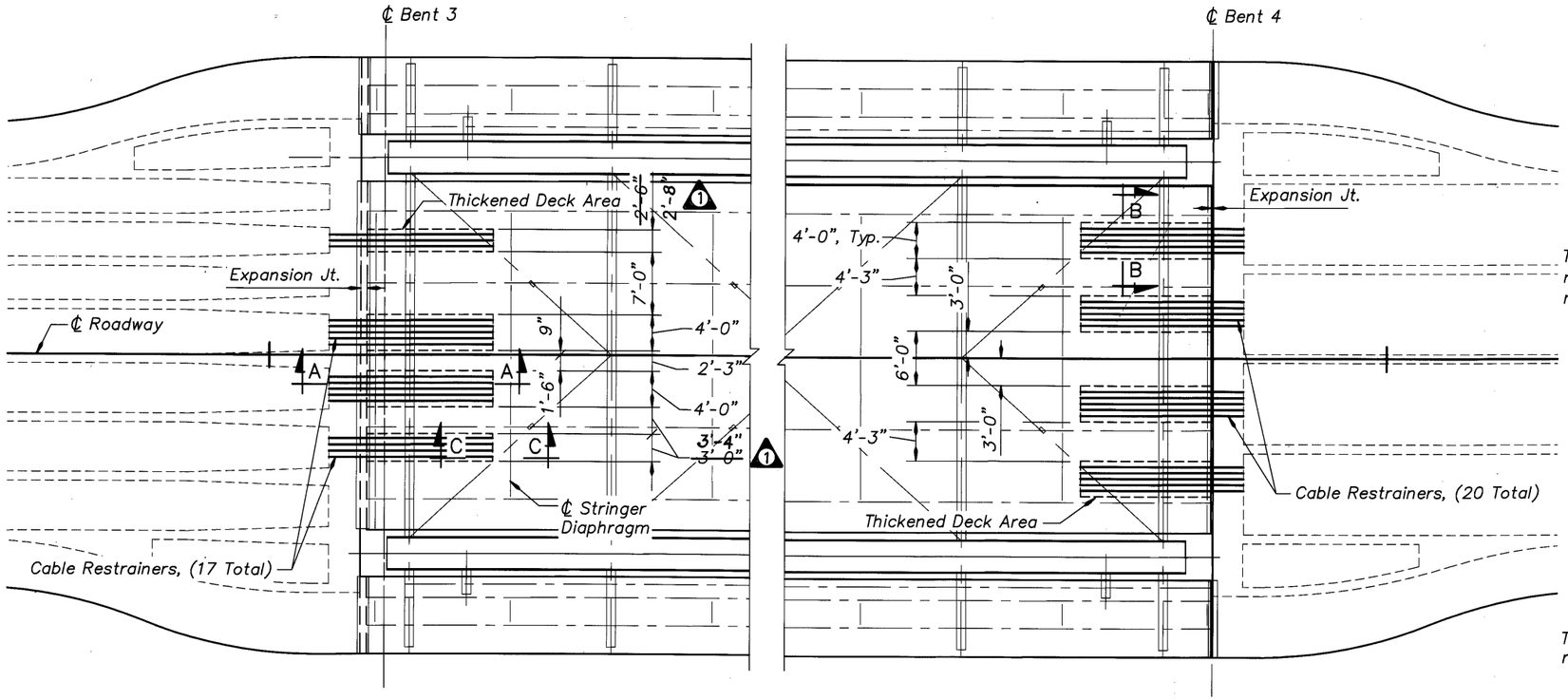
BRIDGE NO. 20136
DATE SEPT 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

LIGHTING CIRCUIT SCHEDULE

SHEET 168 OF 173
DRAWING NO. 70356

2005_20136_SUAVIE ISLAND REPLACEMENT_014_CIRCUIT PANELS

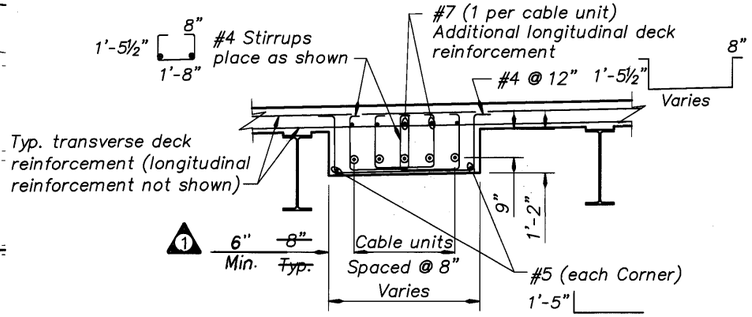


PLAN - BENT 3

Scale: ⅛" = 1'-0"

PLAN - BENT 4

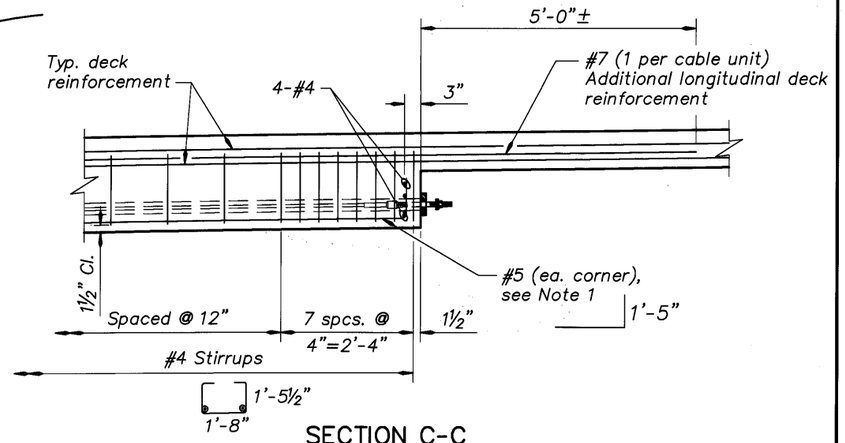
Scale: ⅛" = 1'-0"



SECTION B-B

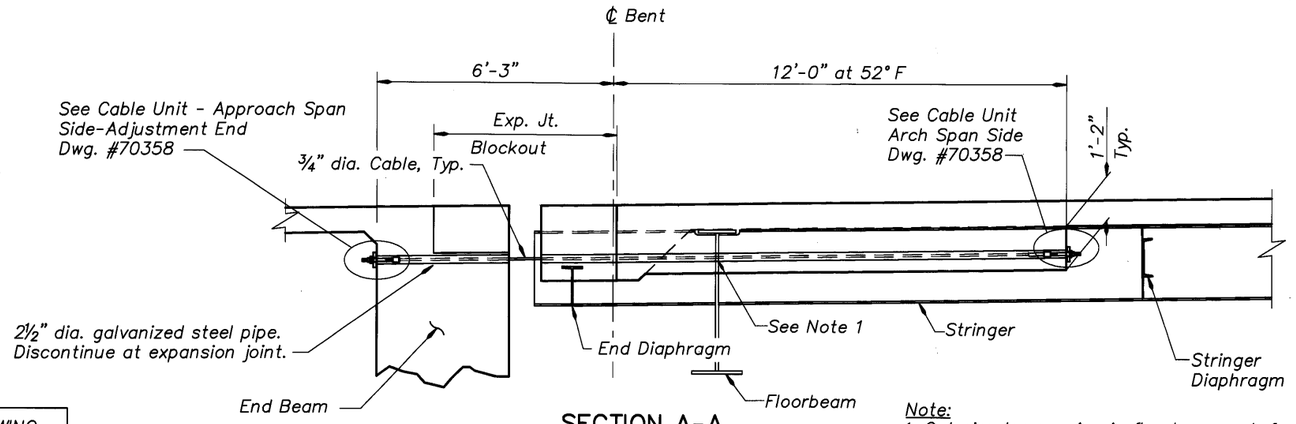
Scale: ½" = 1'-0"

Note:
See Plan views for number of cable units per location.



SECTION C-C

Scale: ¾" = 1'-0"



SECTION A-A

Scale: ½" = 1'-0"

Note: Bent 3 shown, Bent 4 similar.

Note:
1. Cut circular opening in floorbeam web for restrainer pipes and longitudinal reinforcement. Opening may exceed diameter by ½" maximum.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
1	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Paul Greco

DESIGNER
REGISTERED PROFESSIONAL ENGINEER OREGON 74548 PE Kent William Corotz MARCH 09, 2004
EXPIRES: 12-31-05
DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

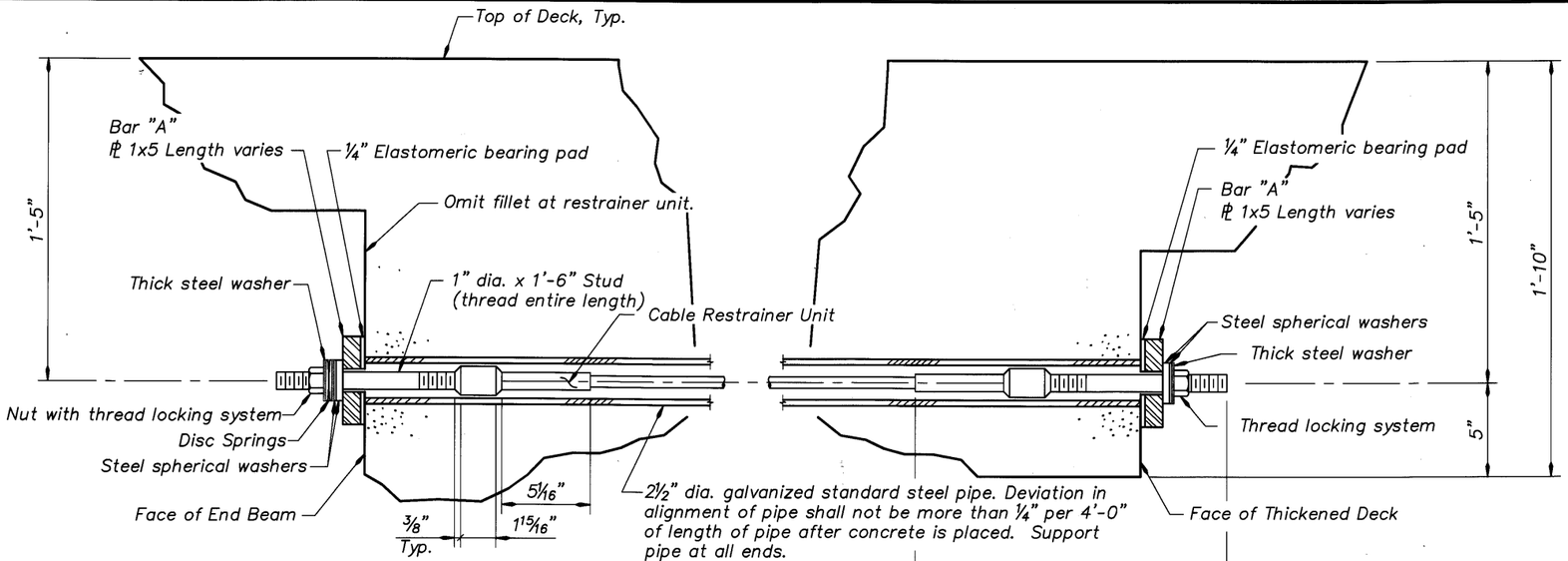
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

SEISMIC RESTRAINER DETAILS (1 OF 2)

SHEET 169 OF 173
DRAWING NO. 70357

Xrefs: 0dotbdr.dwg 0007046O_SR_01.dwg NEWSauvie_Arch01.dwg Arch2d.dwg



APPROACH SPAN SIDE
ADJUSTMENT END

ARCH SPAN SIDE

CABLE UNIT

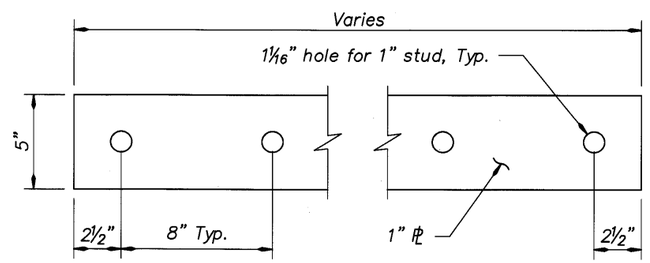
No Scale

RESTRAINER UNIT INSTALLATION PROCEDURE

1. Install sperical washers, disc springs, nut, washers on the Approach Span side of restrainers as shown in the Adjustment End Detail above. Disc springs shall be installed front to front as shown in Disc Spring Detail.
2. Place only nut and washer on Arch Span side of restrainers. Place thread locking system on Main Span side stud prior to installing nut and washers, and prior to setting the cable.
3. Tighten nut on the cable from the adjustment end of restrainer until the disc springs collapse and there is no disc gap remaining between the discs. The cable should be approximately straight with no sag.
4. Place thread locking system on Approach Span stud after tightening the cable, but before backing off the nut. Back off the nut at the approach span side a distance equal to the maxiumum amount the expansion joint is expected to open relative to the existing ambient conditions, as shown on the plans for movement rating.

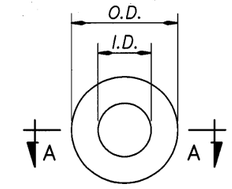
Notes:
1. The ends of pipe shall be covered or capped to prevent concrete and debris from entering the pipe until concrete is in place.
2. Care should be taken to align the pipes on each side of expansion joint.
3. All ends of pipes must be flush with or slightly recessed from the concrete. The inside edges of the pipes must be smooth to prevent fraying cables.
4. If the cable needs to be secured from turning while tightening, use double nut locking technique on the stud to protect the threads.

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

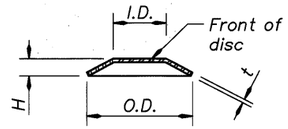


BAR "A"

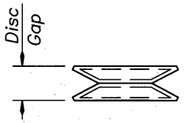
No Scale



PLAN



SECTION A-A
(Single Spring)



AS INSTALLED ON STUD

DISC SPRING

No Scale

DISC SPRINGS AND WASHERS

All dimensions in inches except as noted.

	DISC SPRING				STEEL SPHERICAL WASHER			THICK WASHER		
*L (ft.)	I.D.	O.D.	t	H	I.D.	O.D.	Nom. Thickness	I.D.	O.D.	t**
0 - 25	1	2	1/16	1/8	1.125	2.25	1/2	1	2	1/4

* For length L (ft.), see Cable Restrainer Unit Details Dwg. #SA151.
** Minimum value

Note: All OD and ID dimensions for washers and disc springs shall meet the dimensional tolerances for harden steel washers, ASTM F436.

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Paul Greco

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 74549 PE OREGON MARCH 09, 2004 KENT WILLIAM CORDTZ
EXPIRES: 12-31-05

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

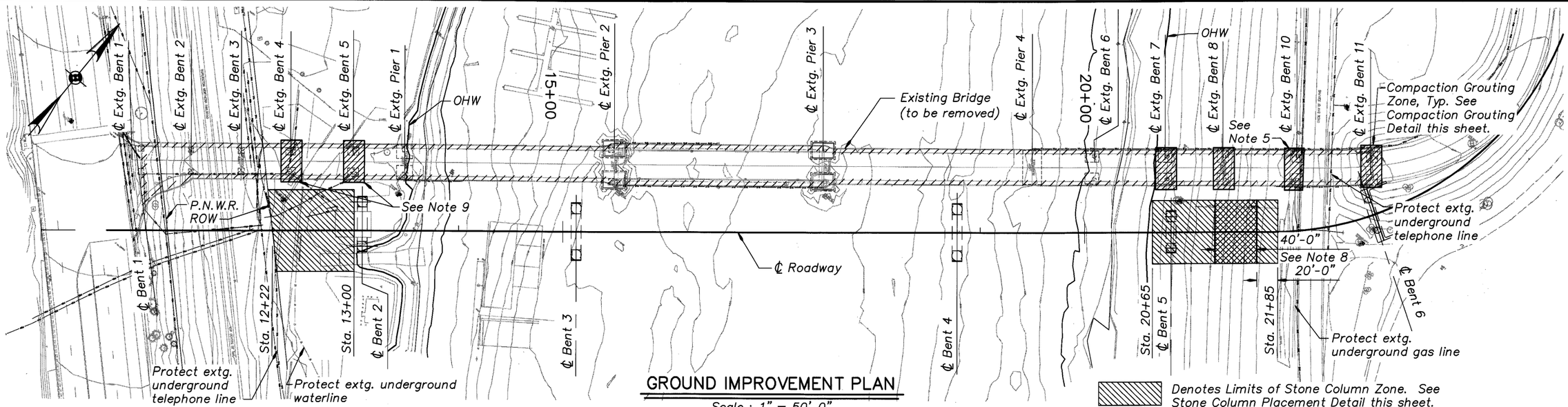
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

SEISMIC RESTRAINER DETAILS (2 OF 2)

SHEET 170 OF 173
DRAWING NO. 70358

Xrefs: Odotbdr.dwg ODOT_0460_SR.dwg



GROUND IMPROVEMENT PLAN

Scale : 1" = 50'-0"

Denotes Limits of Stone Column Zone. See Stone Column Placement Detail this sheet.

Denotes Limits of Compaction Grouting Zone. See Compaction Grouting Detail this sheet.

Denotes Limits of Cement-Bentonite Grout Zone. See Note 8.

Notes:

1. Construction of stone columns shall conform to the requirements of Section 00337 of the Special Provisions. Compaction grouting and cement-bentonite grouting shall conform to Section 00338 and Section 00339 of the Special Provisions.

2. Stone columns shall have the following properties:
   Sta. 12+22 to Sta. 13+00: Stone Column zone width = 78'-0"
   Nominal diameter = 3'-0" to 3'-6"
   Approx. spacing = 8'-0" (c-c)
   Average depth = 35'-0"
   Approx. # of columns = 126
   Sta. 20+65 to Sta. 21+85: Stone Column zone width = 60'-0"
   Nominal diameter = 3'-0" to 3'-6"
   Approx. spacing = 8'-0" (c-c)
   Average depth = 50'-0"
   Approx. # of columns = 144

3. Layout stone columns in a triangular pattern similar to the pattern shown in the Stone Column Placement Detail by offsetting adjacent rows of stone columns.

4. Place stone column material using the dry bottom-feed method.

5. Field verify limits of compaction grouting zone nearest Gillihan Loop Road. Protect existing utilities near this existing bent and maintain a minimum of 2'-0" from edge of existing pavement to compaction grouting zone limit.

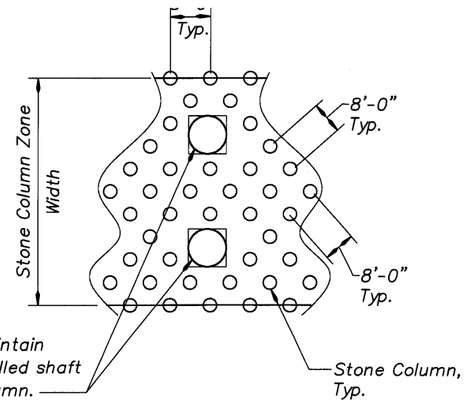
6. Contractor to field verify location of existing bridge foundations.

7. Layout compaction grouting pattern shown in the Compaction Grouting Detail. Grout to a 60'-0" depth.

8. Grout the top 15'-0" of 54 stone columns between Sta. 21+25.00 and Sta. 21+65.00 with a cement-bentonite grout to create an impermeable zone.

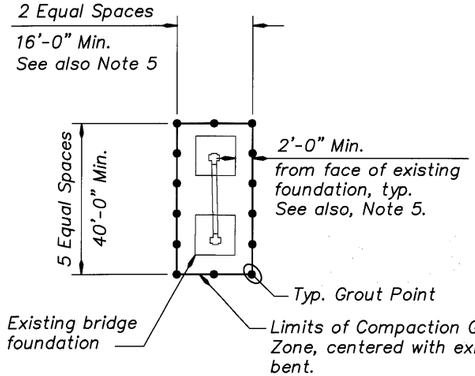
9. Install compaction grout pipes only. Install grout only if movement is observed during installation of stone columns.

10. Stone columns should be installed a minimum of 5'-0" away from the existing underground waterline.



STONE COLUMN PLACEMENT DETAIL

Not to Scale



COMPACTION GROUTING DETAIL

Not to Scale

(Typical, Existing Bents 4, 5, 7, 8, 10 & 11. See Dwg. #70202 for bent locations.)

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton
CHECKED: Shonn Mills
REVIEWED: Rajiv Ali

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 73646 PE OREGON JULY 15, 2005 JOEL BRANDON TUBBS
EXPIRES: 6-30-06

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION
OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

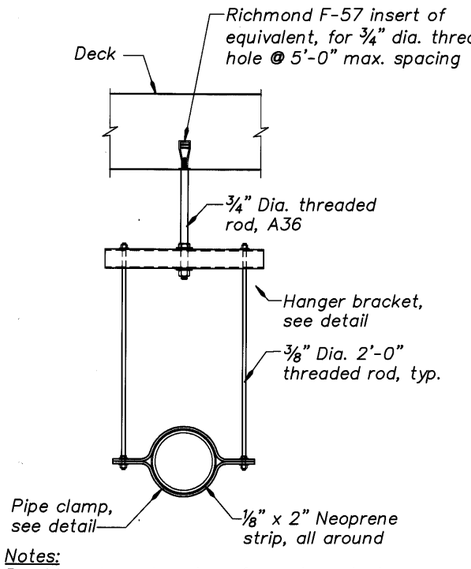
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

GROUND IMPROVEMENT DETAILS

SHEET 171 OF 173
DRAWING NO. 70359

Xrefs: Odotbdr.dwg Stone_col_layout.dwg Sauvie_BM.DWG Sauvie_ROW.dwg NEWSauvie_Arch01.dwg Arch2d.dwg

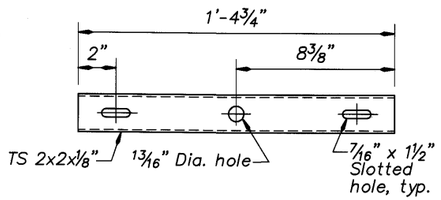


Notes:

1. Provide nuts and washers for carbon steel fasteners per section 00560 of the Standard Specifications.
2. All components and hardware are to be hot-dipped galvanized.
3. Use hanger system shown or approved equal.
4. Conduit hangers need to maintain a minimum of 3'-0" from the face of the utility hole opening and shall be spaced a maximum of 5'-0"

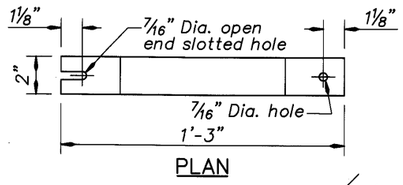
CONDUIT HANGER

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

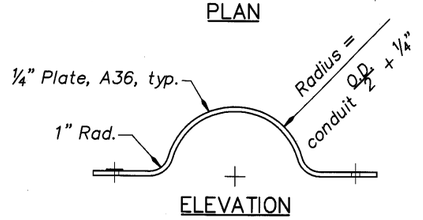


HANGER BRACKET DETAIL

Scale : 3" = 1'-0"



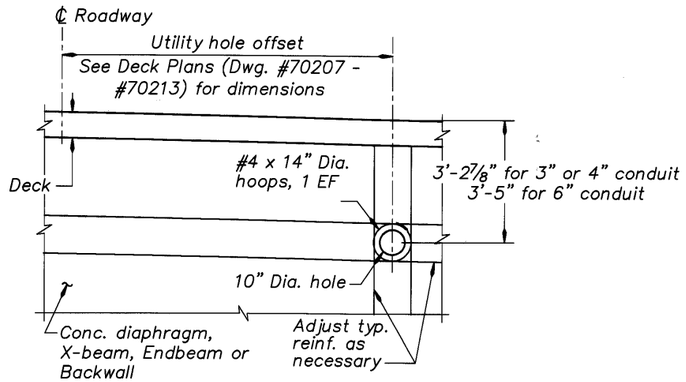
PLAN



ELEVATION

PIPE CLAMP DETAIL

Scale : 3" = 1'-0"



CONDUIT UTILITY HOLE DETAIL

No Scale

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

△	DATE	REVISION	BY
	03/09	As-Constructed	TDF

DRAFTED: J. Patton / R. Elwood
CHECKED: Joel Tubbs
REVIEWED: Eric Rau

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

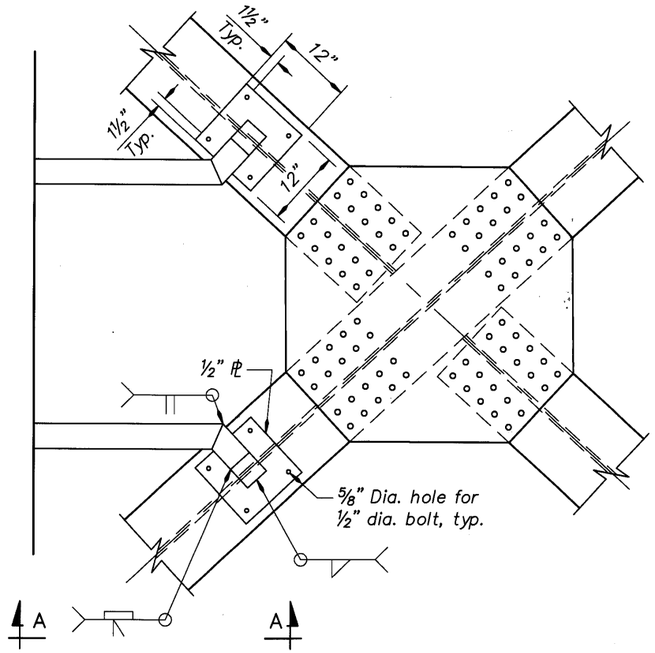
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

MISCELLANEOUS DETAILS (1 OF 2)

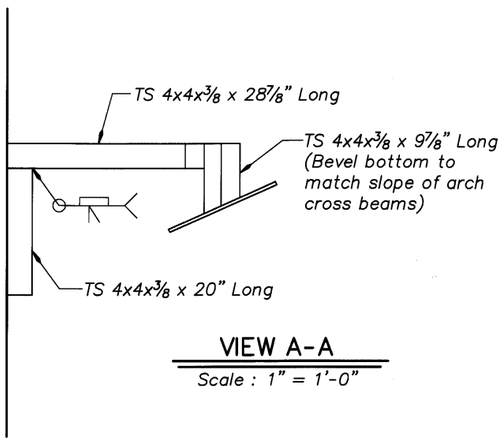
SHEET 172 OF 173
DRAWING NO. 70360

Xrefs: Odotbdr.dwg ODOT0460_PGE_01.dwg psd_Rail.dwg



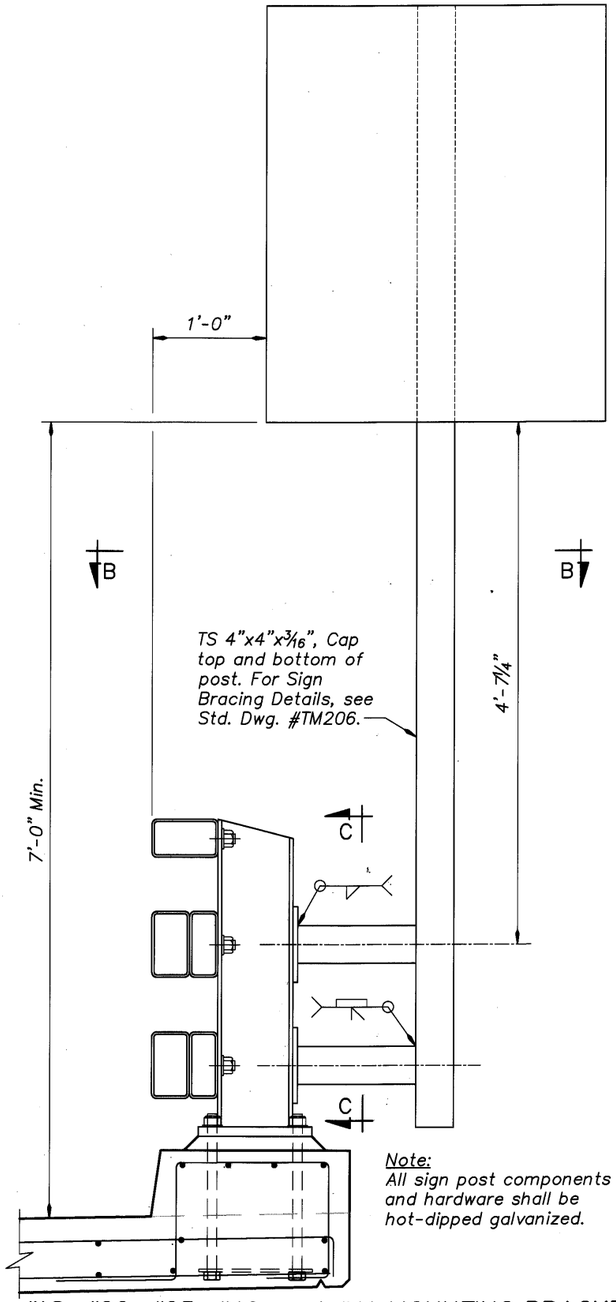
SIGN #14 MOUNTING BRACKET

Scale : 1" = 1'-0"



VIEW A-A

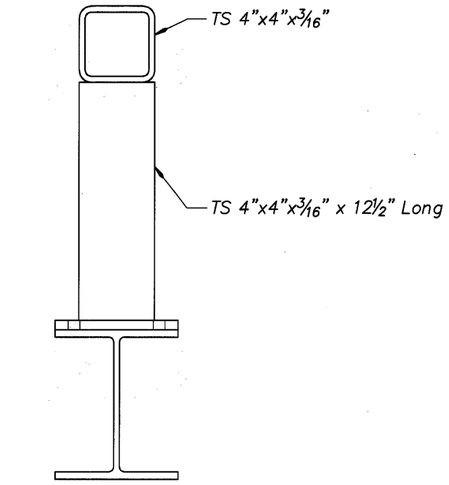
Scale : 1" = 1'-0"



Note:
All sign post components and hardware shall be hot-dipped galvanized.

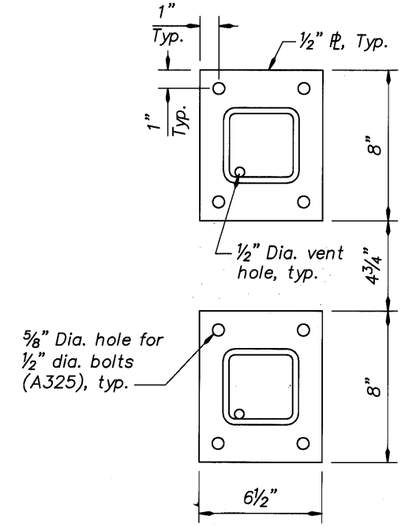
SIGN #10, #18, #22, #25, #40, and #41 MOUNTING BRACKET

Scale : 1½" = 1'-0"



SECTION B-B

Scale : 3" = 1'-0"



SECTION C-C

Scale : 3" = 1'-0"

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As- Constructed	TDF

DRAFTED: J. Patton/ R. Elwood
CHECKED: Joel Tubbs
REVIEWED: Eric Rau

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 70783 OREGON JULY 9, 2002 RICHARD J. KING
EXPIRES: 6-30-07

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

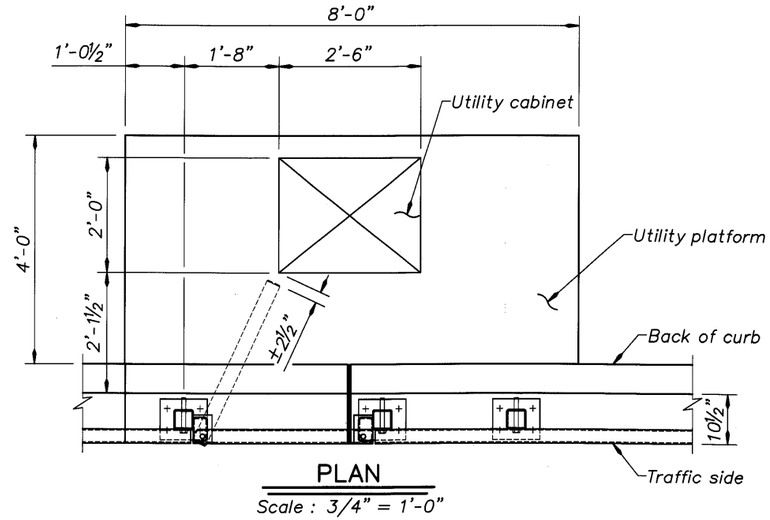
BRIDGE NO. 20136
DATE Sept. 2005
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

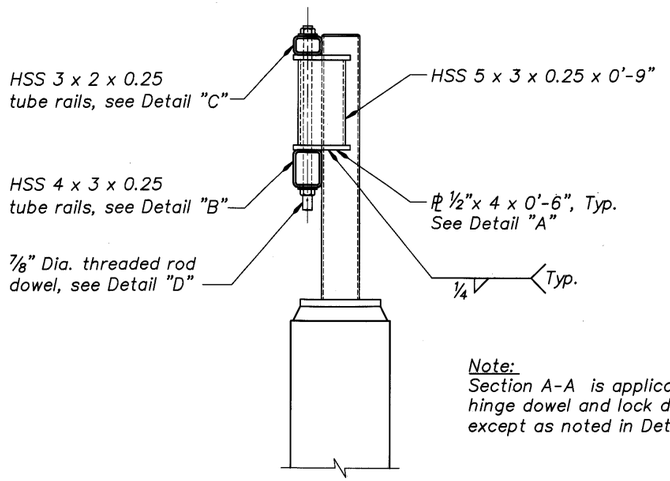
MISCELLANEOUS DETAILS (2 OF 2)

SHEET 173 OF 173
DRAWING NO. 70361

Xrefs: Obstldr.dwg 0900T0460_PGE_01.dwg ped_Rail.dwg 0900T0460_AS_10.dwg

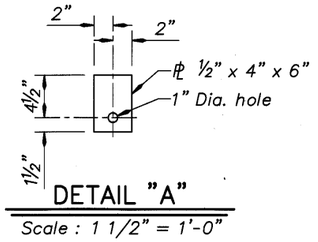


PLAN
Scale : 3/4" = 1'-0"



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

Note:
Section A-A is applicable to both hinge dowel and lock dowel posts, except as noted in Detail "D".



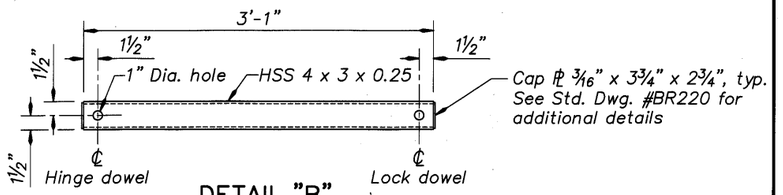
DETAIL "A"
Scale : 1 1/2" = 1'-0"

Notes:
Contractor to field verify as constructed geometry prior to fabrication.

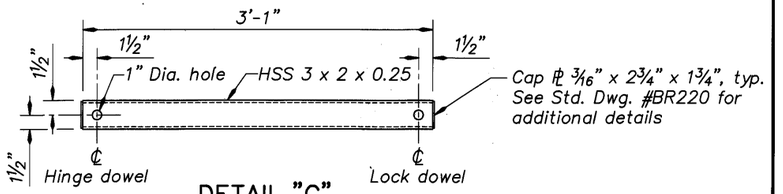
See Std. Dwg. #BR220 for additional details not shown.

Conform to the General Notes on Std. Dwg. #BR220.

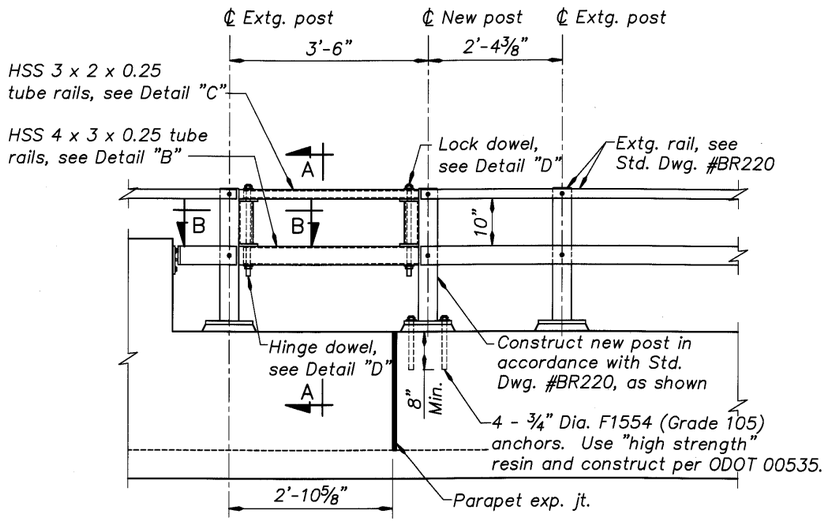
See Dwg. #70297 for location of Utility Access Gate.



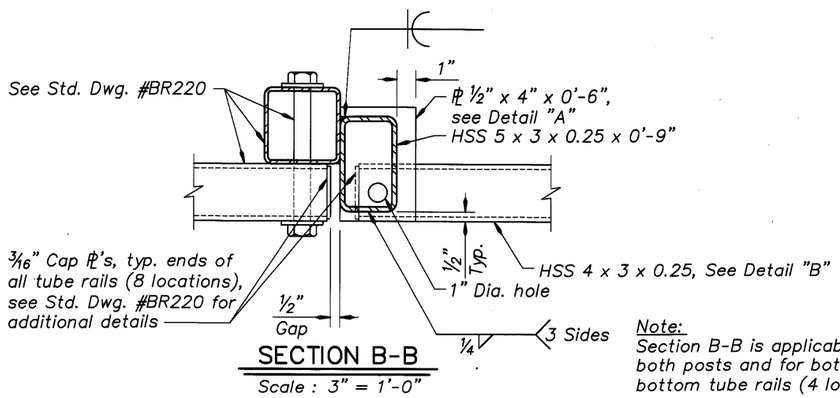
DETAIL "B"
Scale : 1 1/2" = 1'-0"



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

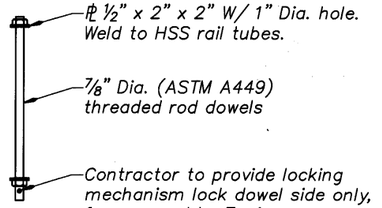


ELEVATION
Scale : 3/4" = 1'-0"



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

Note:
Section B-B is applicable to both posts and for both top and bottom tube rails (4 locations).



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

DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS. INDICATED SCALES CORRECT ONLY FOR FULL SIZE SHEET (22"x34").

	DATE	REVISION	BY
	03/09	As-Constructed	TDF

Xrefs: Odotbdr.dwg ESRA_OR.dwg

DRAFTED: R. Stone
CHECKER: Eric Rau
REVIEWER: Ken Stoneman

DESIGNER
REGISTERED PROFESSIONAL ENGINEER 8856 OREGON JULY 30, 1976 STEVEN K. STARKEY
EXPIRES: 6/30/2010

DAVID EVANS AND ASSOCIATES INC.
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CONNECTING COMMERCE AND COMMUNITY
MULTNOMAH COUNTY BRIDGES
TRANSPORTATION DIVISION

OREGON DEPARTMENT OF TRANSPORTATION
BRIDGE ENGINEERING SECTION

BRIDGE NO. 20136
DATE Mar. 2009
CALC. BOOK

MULTNOMAH CHANNEL & PNWR ETC., SAUVIE ISLAND RD.

UTILITY ACCESS GATE

SHEET 1 OF 1
DRAWING NO. 81927