



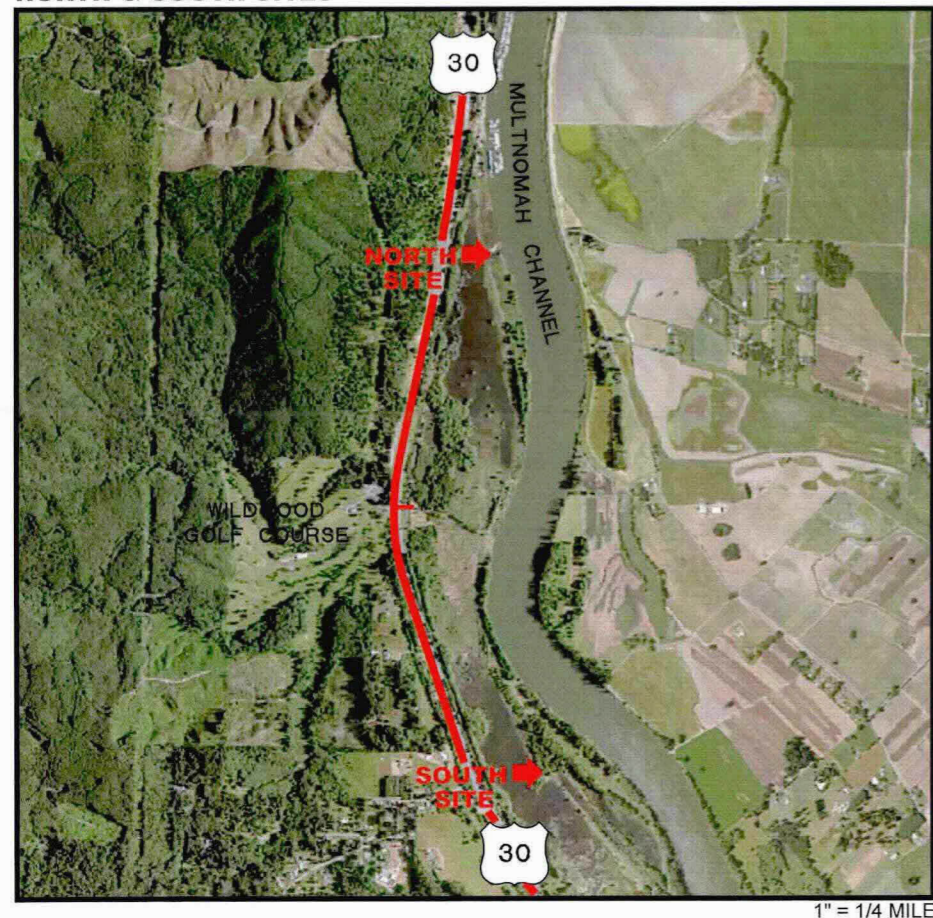
DUCKS
UNLIMITED
17700 S. E. MILL PLAIN BLVD. SUITE 100
VANCOUVER, WA. 98683
PH. (360) 885-2011

US-OR-32-8 METRO: MULTNOMAH CHANNEL & SMITH BYBEE WATER CONTROL STRUCTURES FACILITY IMPROVEMENTS



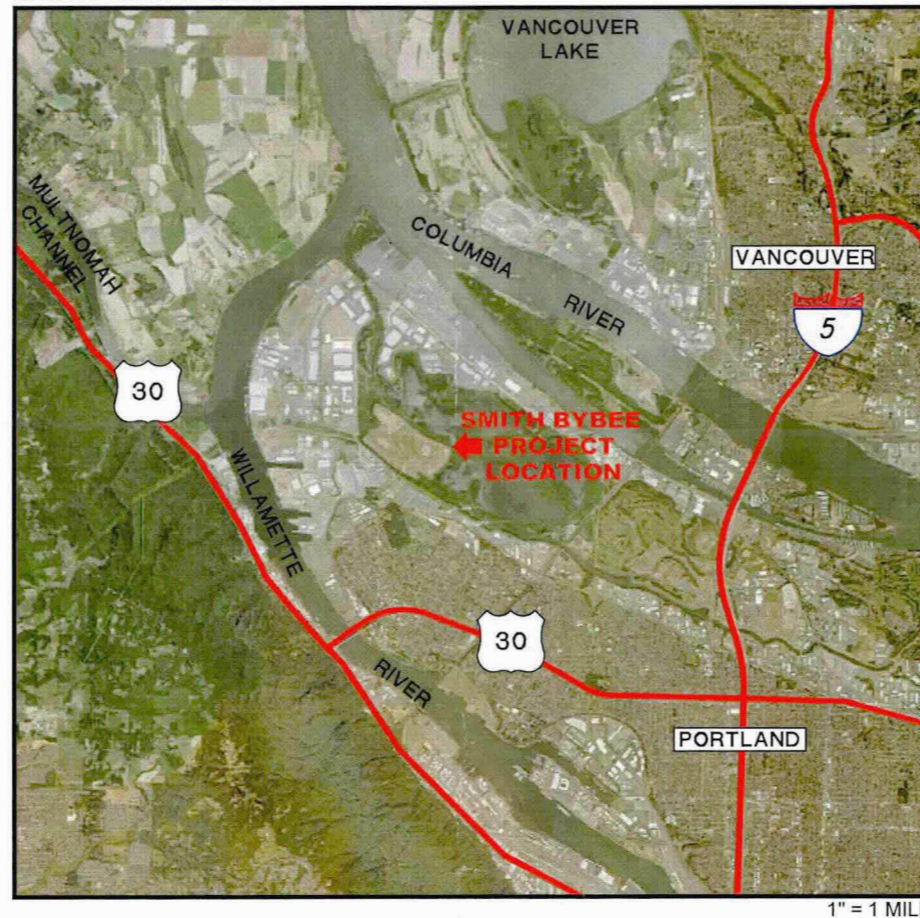
METRO

**MULTNOMAH CHANNEL
NORTH & SOUTH SITES**



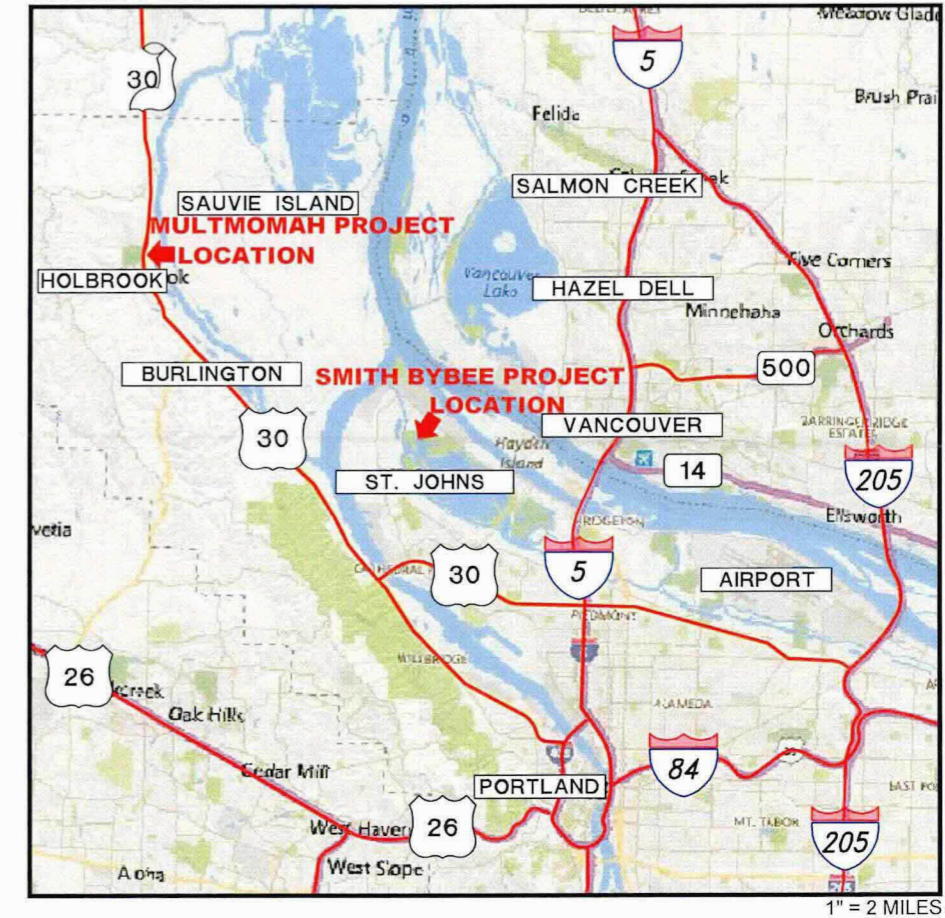
1" = 1/4 MILE

SMITH BYBEE SITE



1" = 1 MILE

VICINITY MAP



1" = 2 MILES

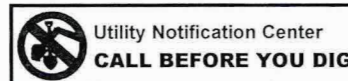
SHEET INDEX

- 1 Cover Sheet
- 2 Drawing Information
- 3 Site Access (Multnomah Channel)
- 4 Site Access (Smith & Bybee Lakes)
- 5 South Site Existing
- 6 South Site Proposed
- 7 North Site Existing
- 8 North Site Proposed
- 9 North Site Existing WCS Details
- 10 South Site Existing WCS Details
- 11 Stoplog Details
- 12 Fish Passage Details
- 13 Smith & Bybee WCS Detail
- 14 Smith & Bybee WCS Detail (Elevation)
- 15 Smith & Bybee WCS Detail (Plan View)
- 16 Existing WCS
- 17 Stoplogs & Gate Detail
- 18 Chain Rail & Grating System

100% DESIGN

Unauthorized Changes & Uses

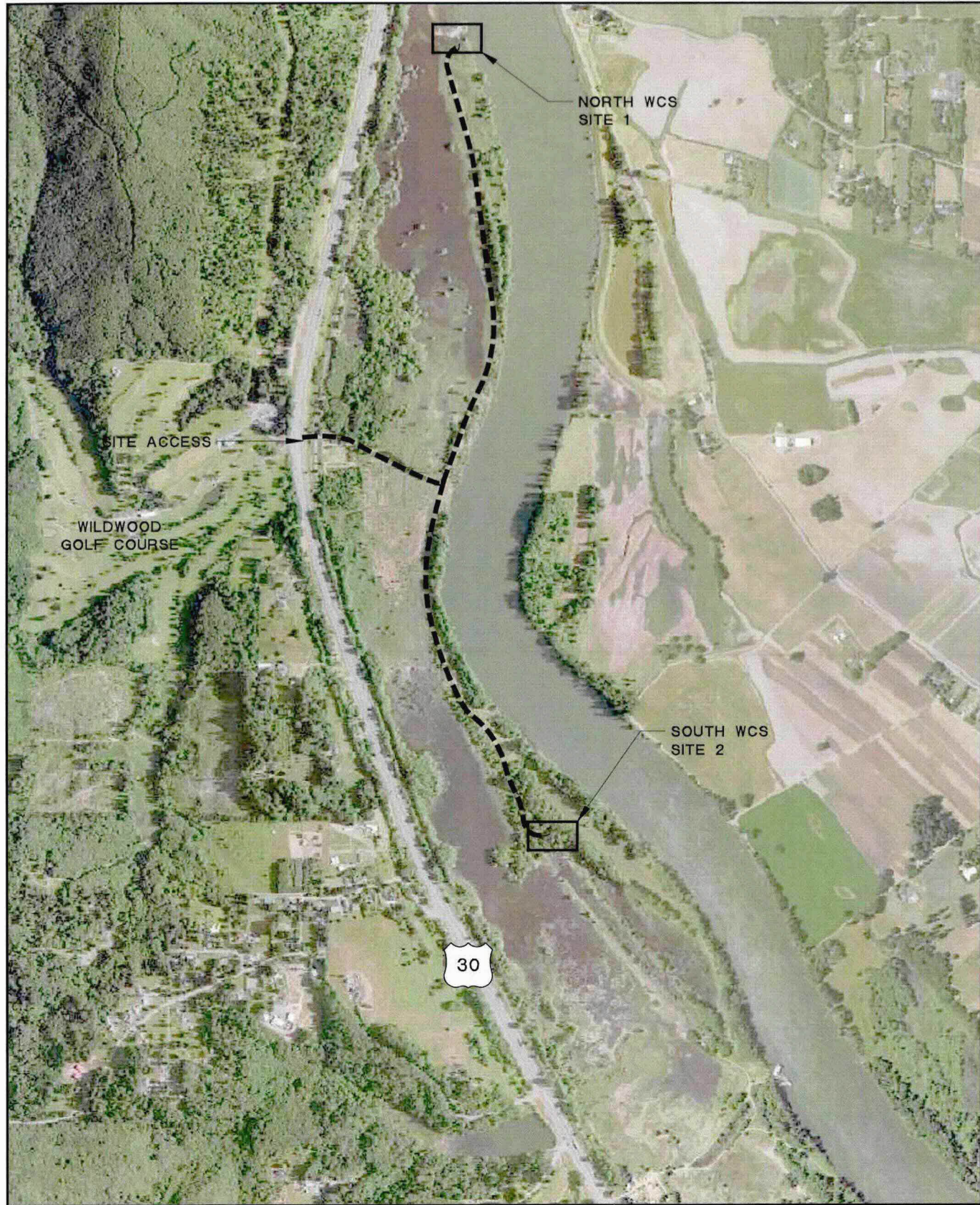
The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes must be in writing and must be approved by the preparer of these plans.



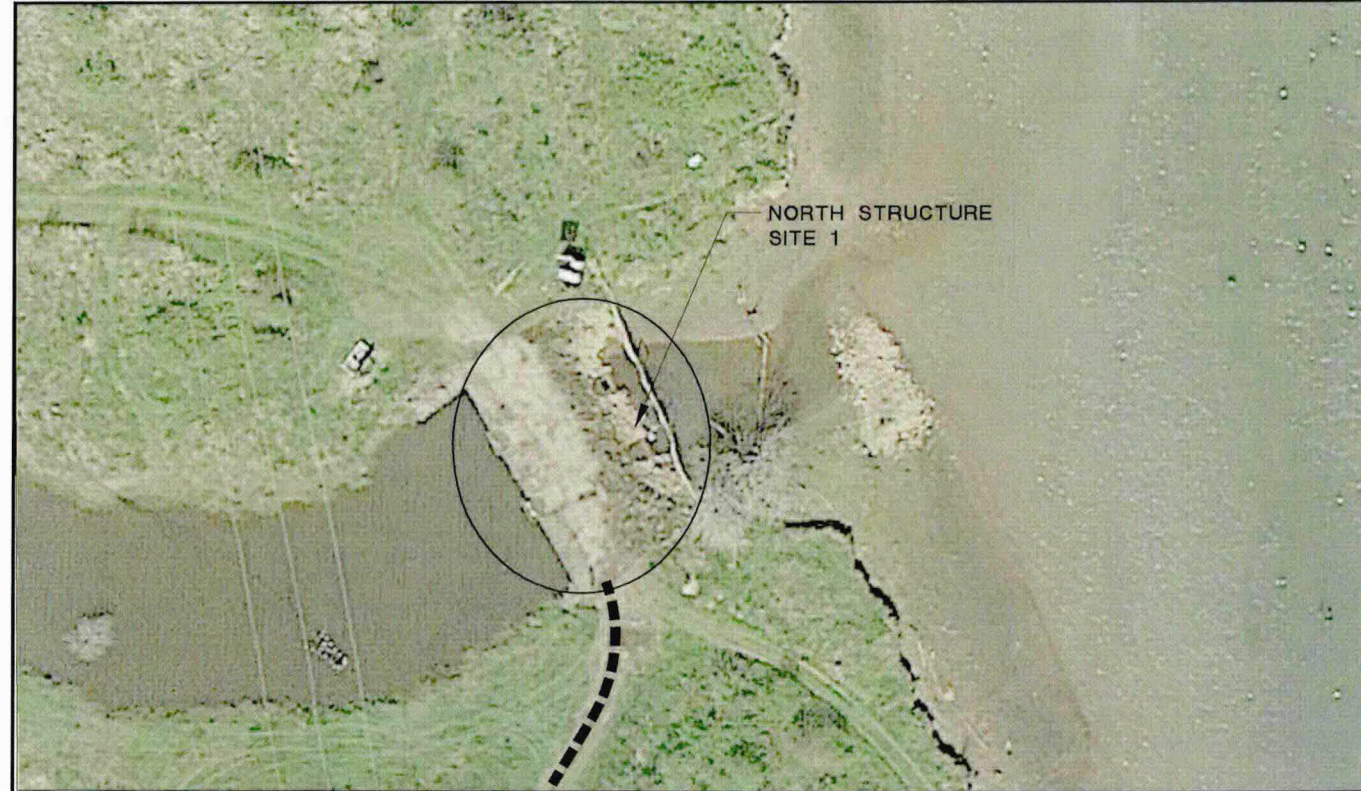
REV. NO.	DESCRIPTION	DATE	APPROVED



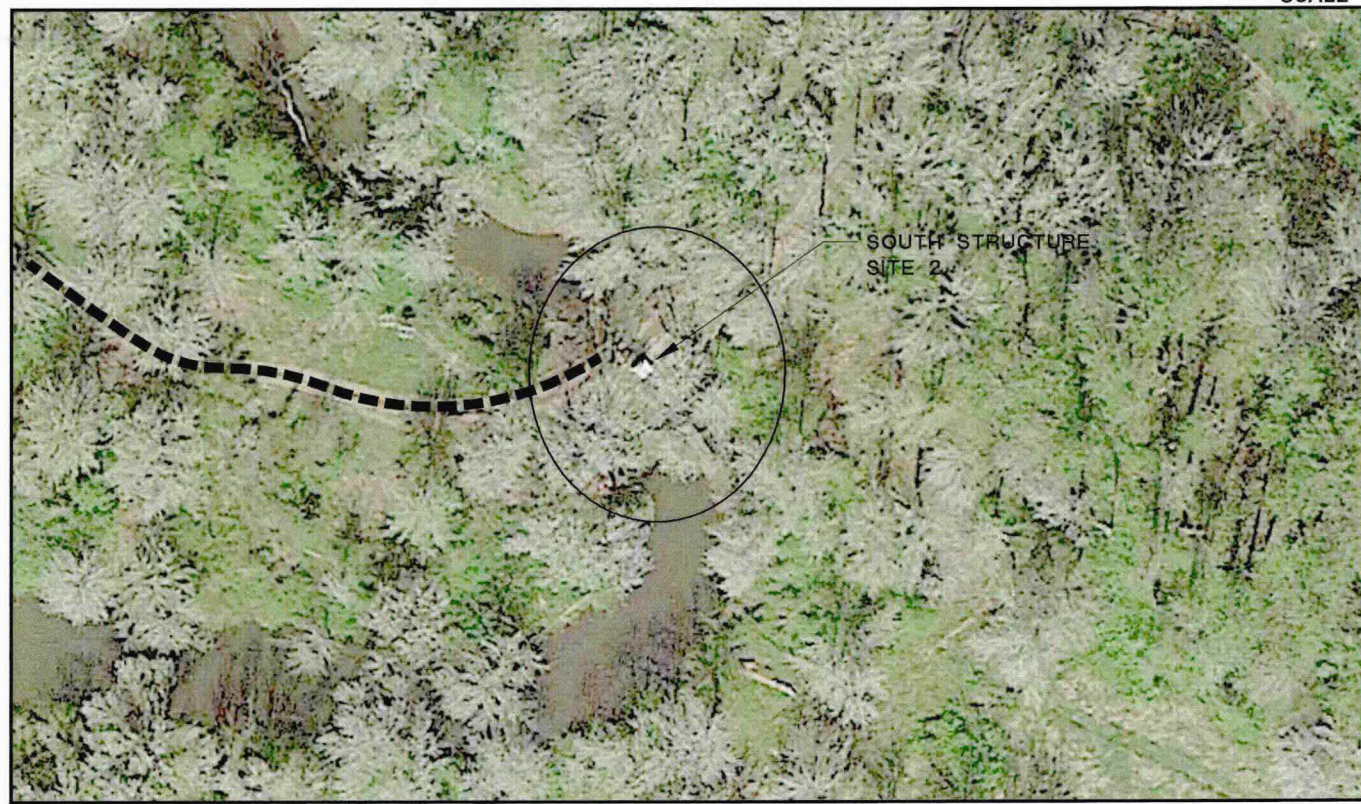
PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL & SMITH BYBEE UNITS		DRAWN BY: DMC
WATER CONTROL STRUCTURE IMPROVEMENTS		SURVEYED BY: JPS
LOCATION MAP		CHECKED BY: JPS
		SHEET NO. 1 OF 18



1 MULTNOMAH CHANNEL NORTH & SOUTH SITE
3 SITE ACCESS PLAN



2 NORTH STRUCTURE
3 SITE 1 EXISTING SITE PLAN



1 SOUTH STRUCTURE
3 SITE 2 EXISTING SITE PLAN

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PROJECT NO. US-OR-32-8	DATE: 8/2/2016	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL NORTH & SOUTH SITES		DRAWN BY: DMC
WATER CONTROL STRUCTURE IMPROVEMENTS		SURVEYED BY: JPS
SITE ACCESS		CHECKED BY: SHEET NO. 3 of 18

100% DESIGN

0 600 1,200
SCALE FEET

0 20 40
SCALE FEET

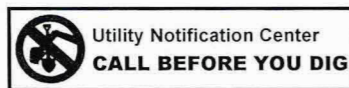


1 SMITH BYBEE
4 VICINITY MAP



2 SMITH BYBEE
4 SITE ACCESS

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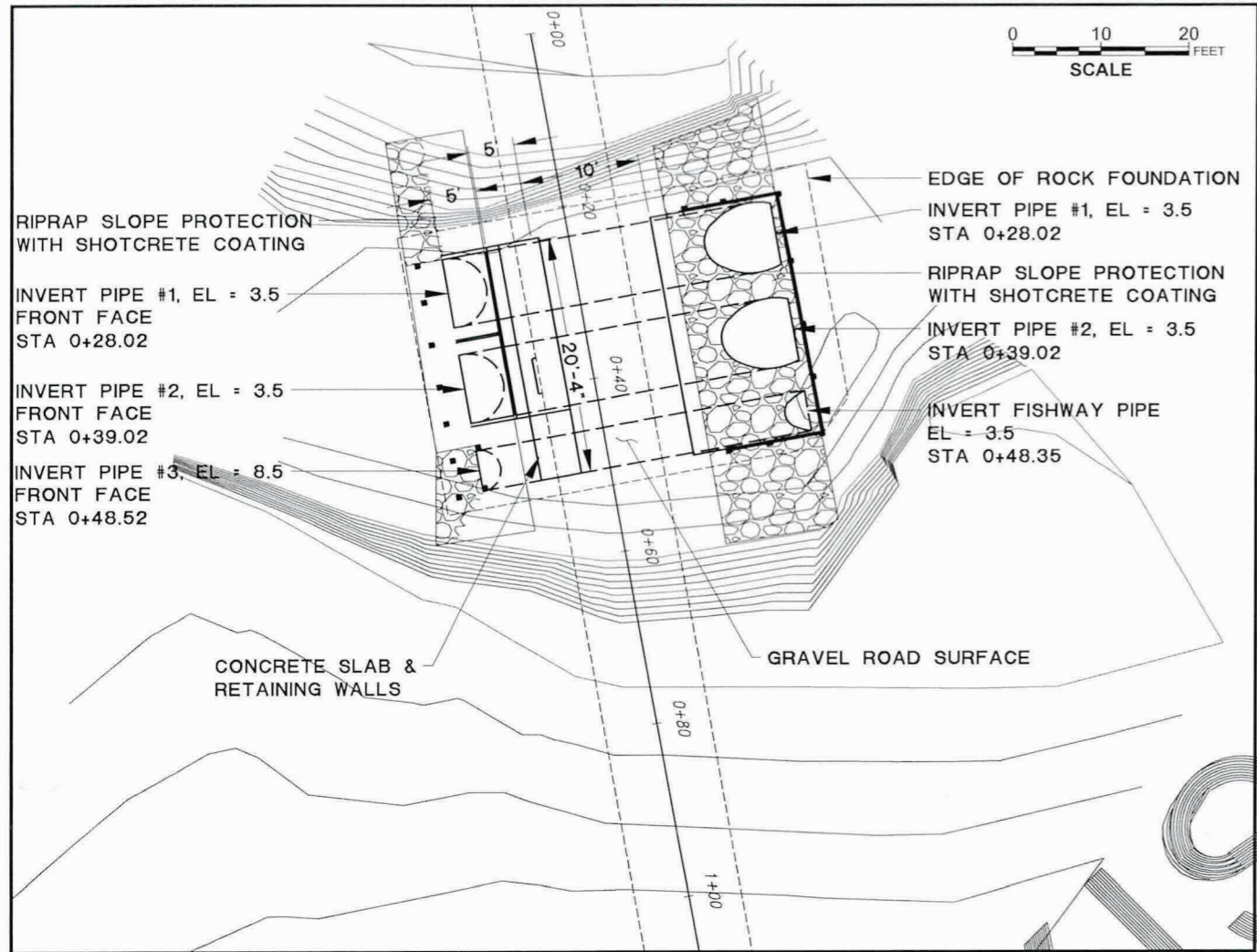


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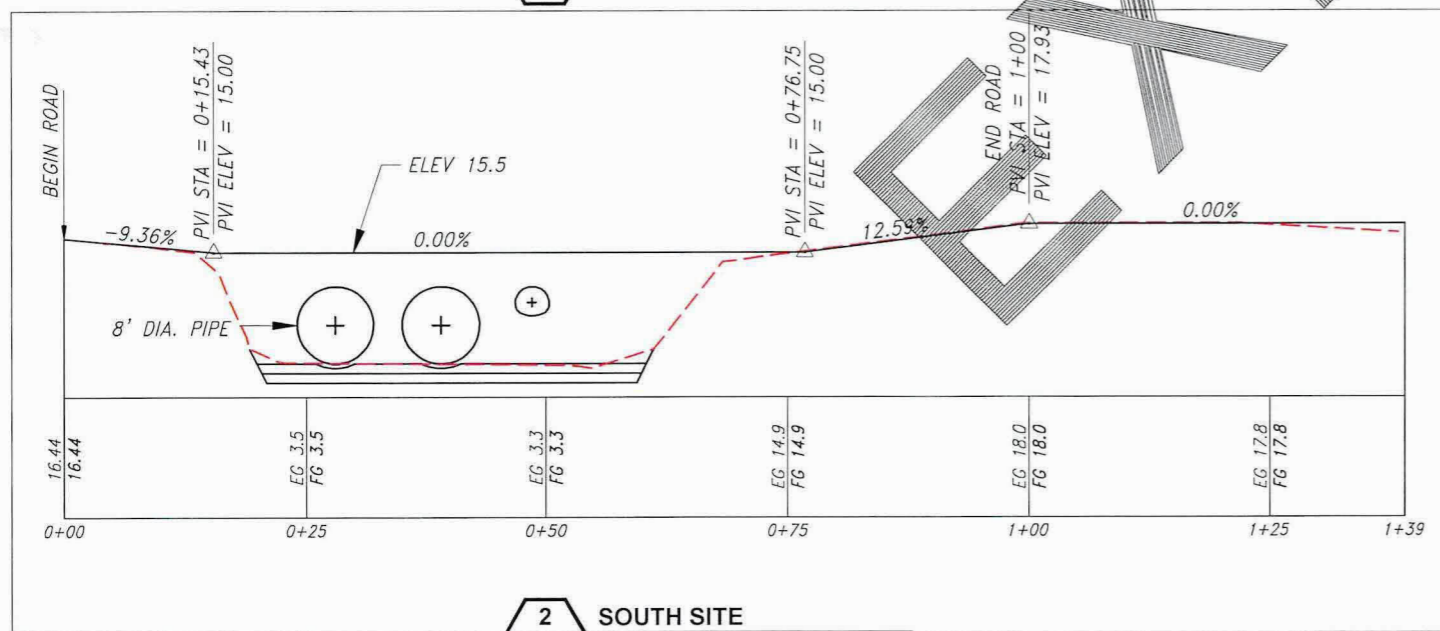


PROJECT NO. US-OR-32-8	DATE 8/2/2016	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMC
SITE ACCESS		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 4 of 18

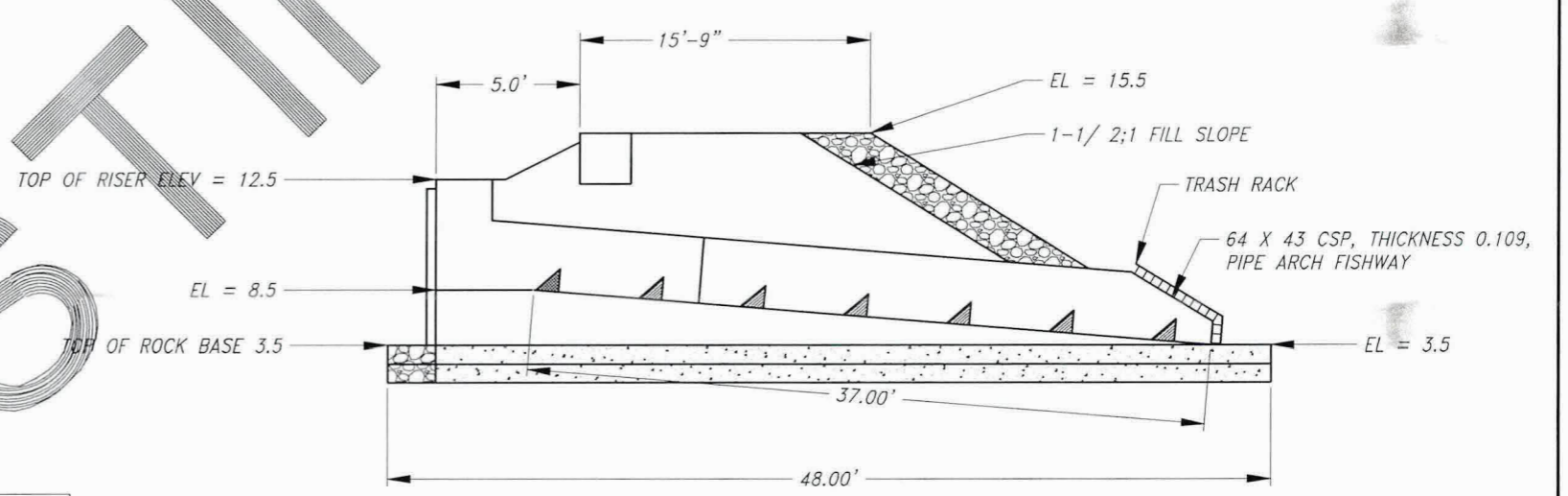
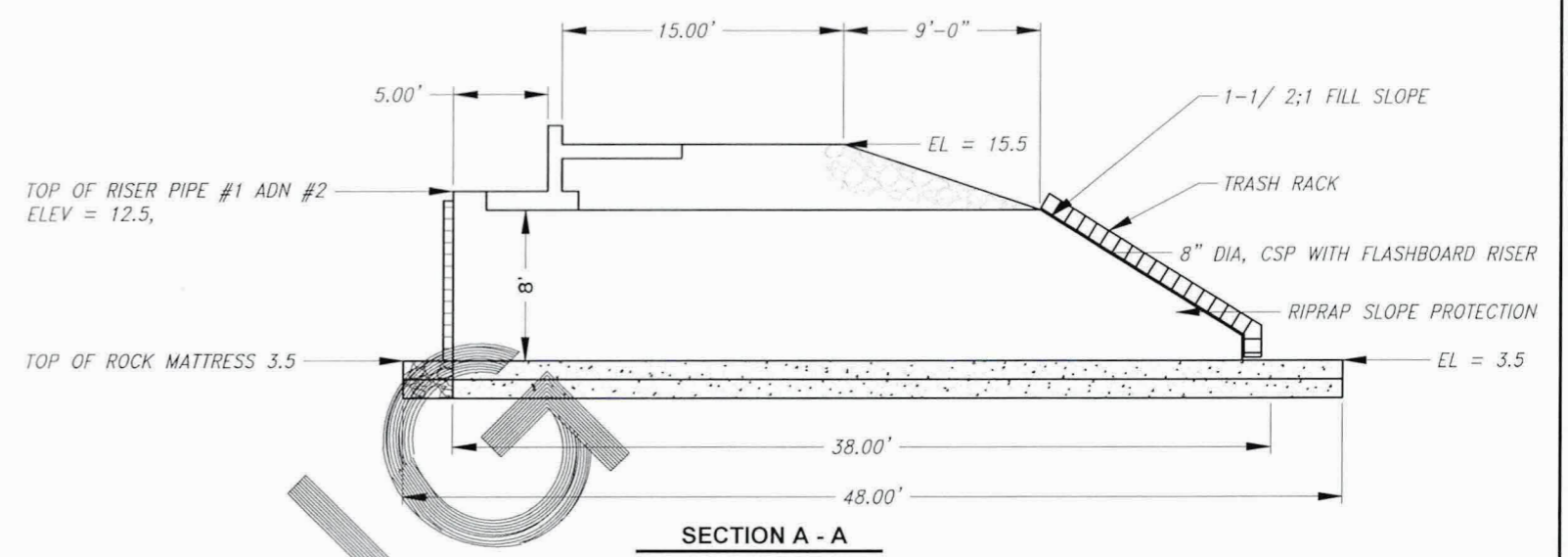
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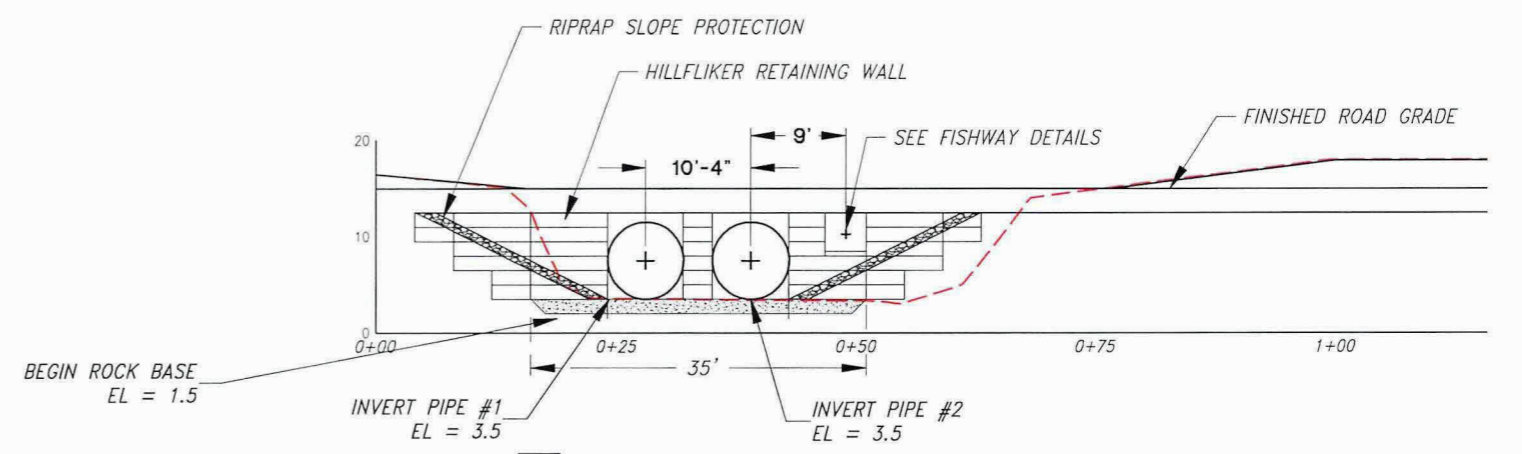
1 SOUTH SITE
5 EXISTING PLAN VIEW



2 SOUTH SITE
5 PROFILE

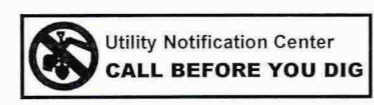


3 FRONT FACE
5 ELEVATION



3 FRONT FACE
5 ELEVATION

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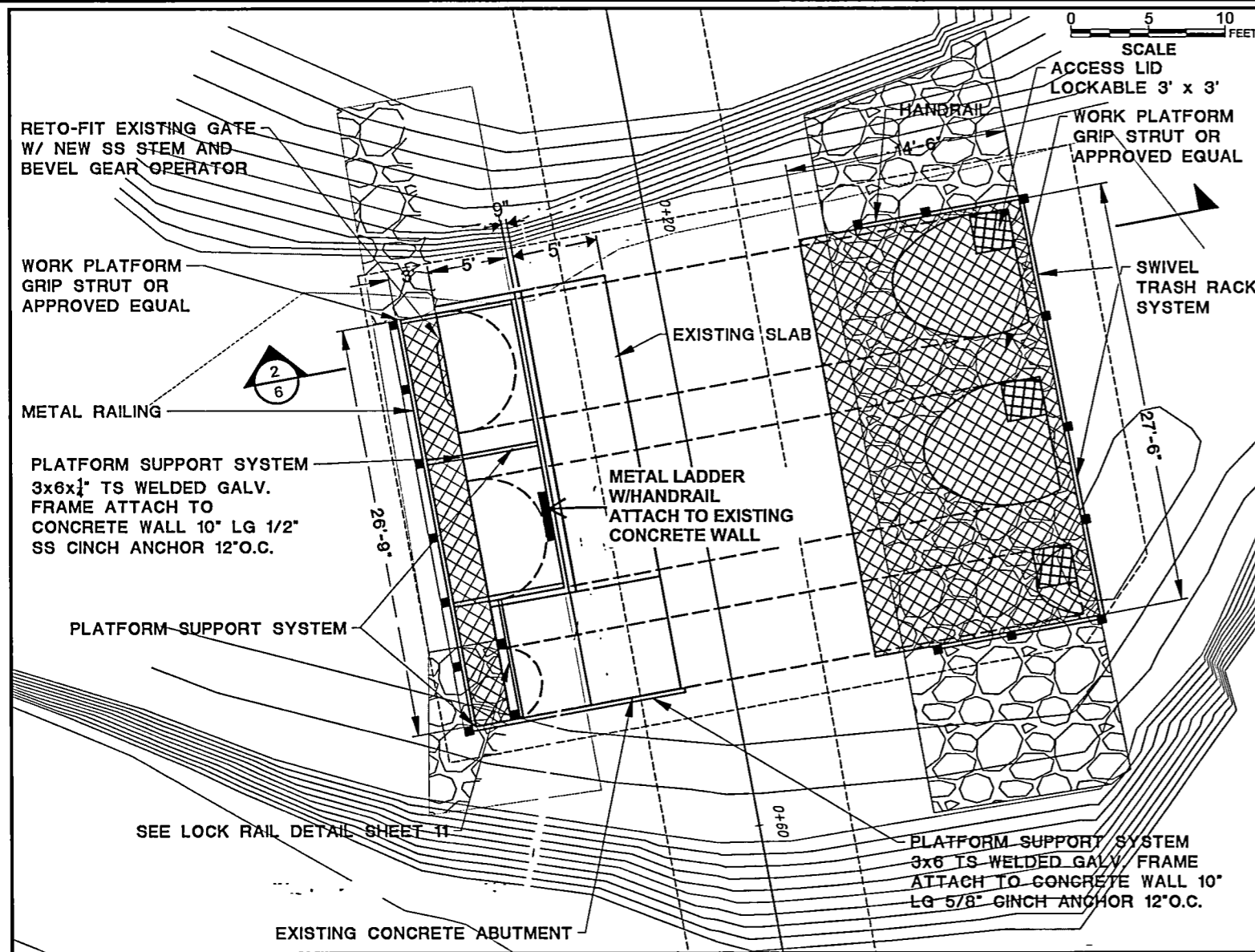


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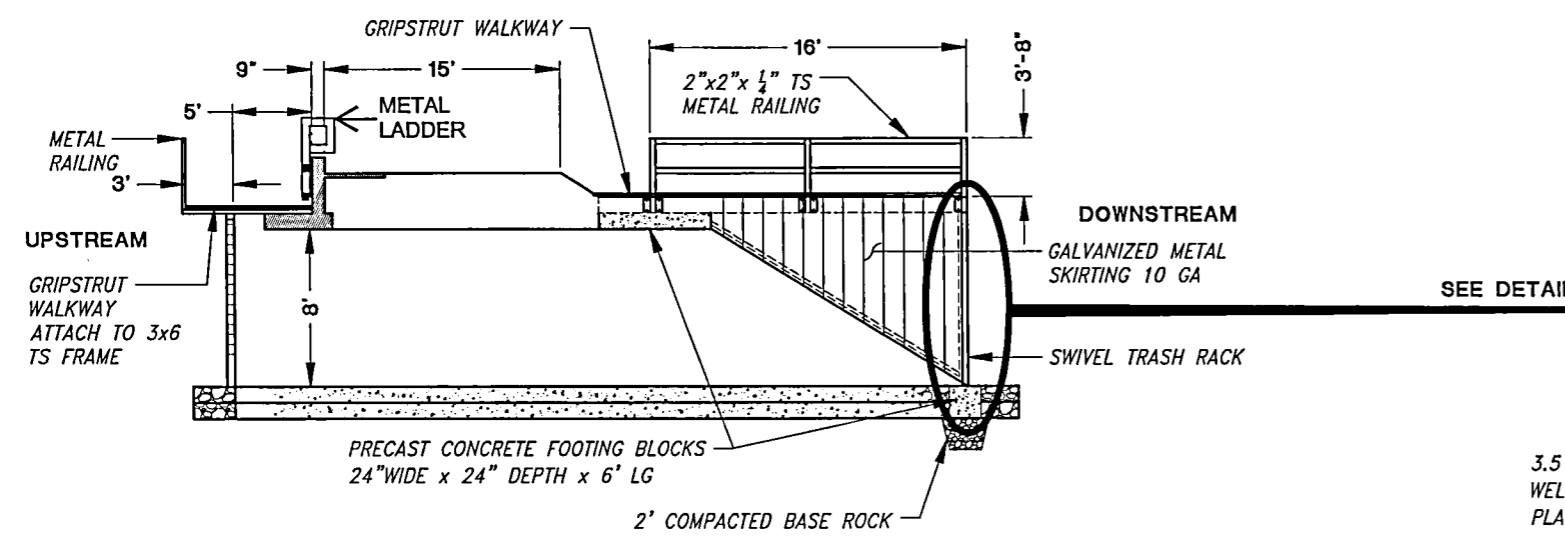
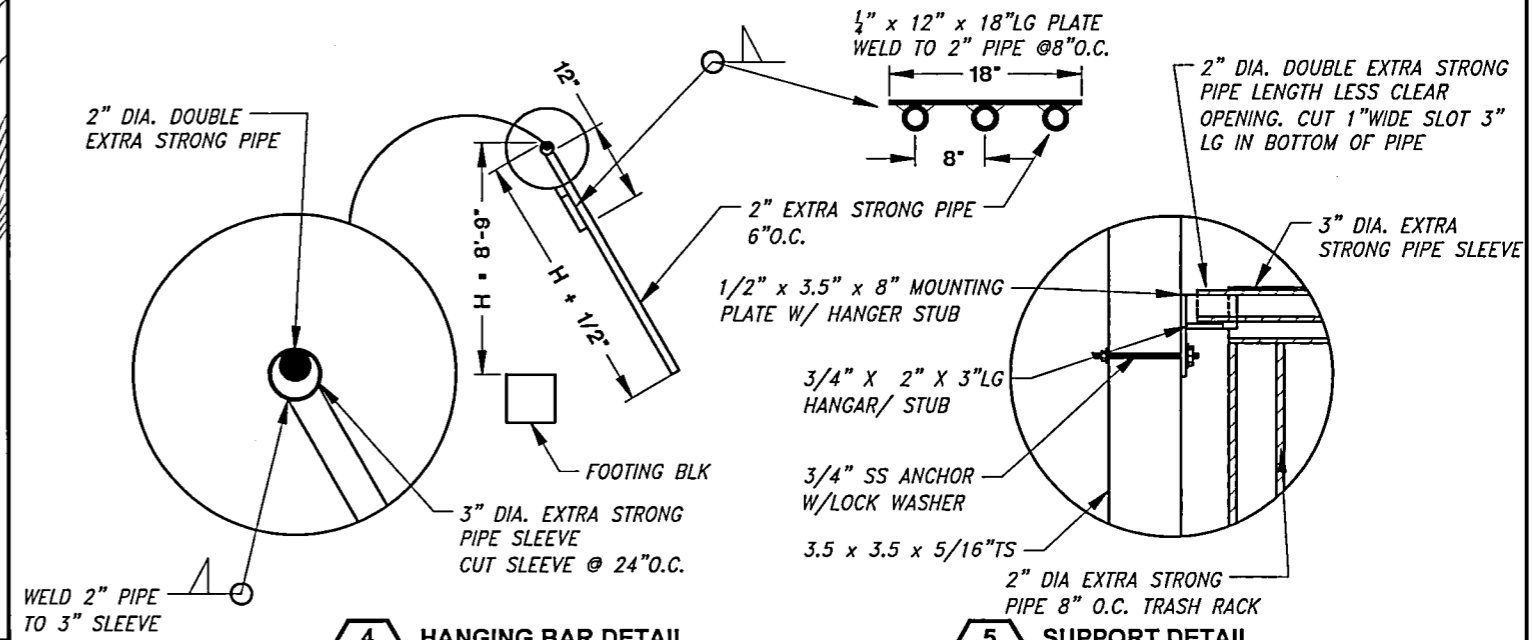
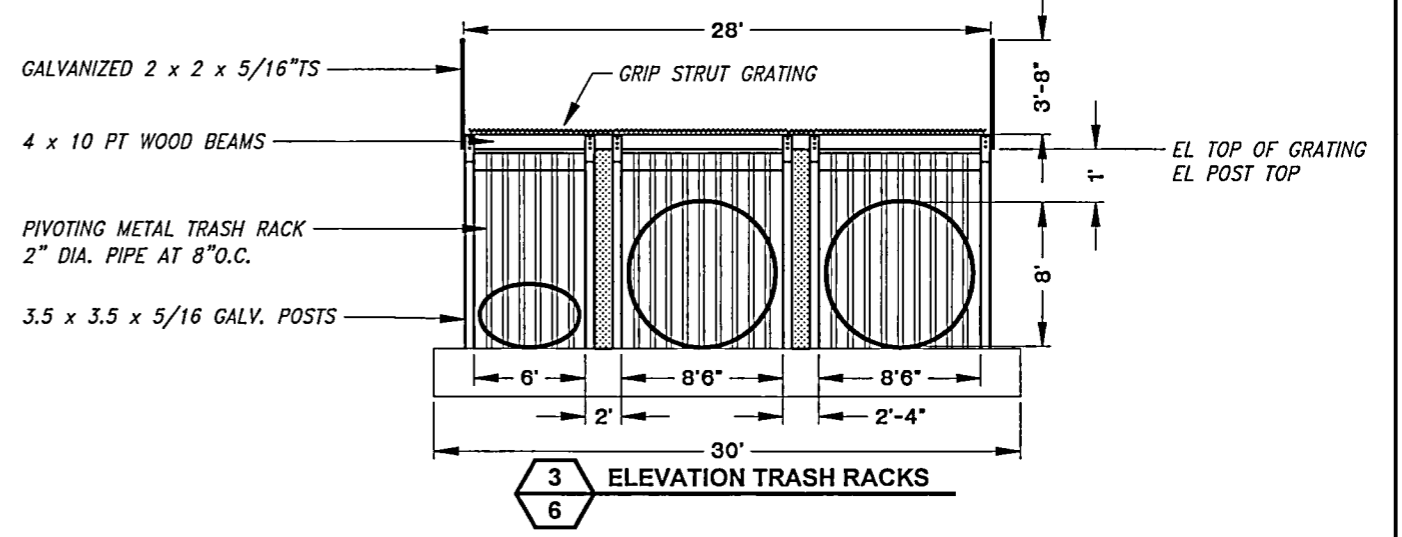


PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL SOUTH SITE		DRAWN BY: DMC
EXISTING SITE PLAN		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 5 of 18

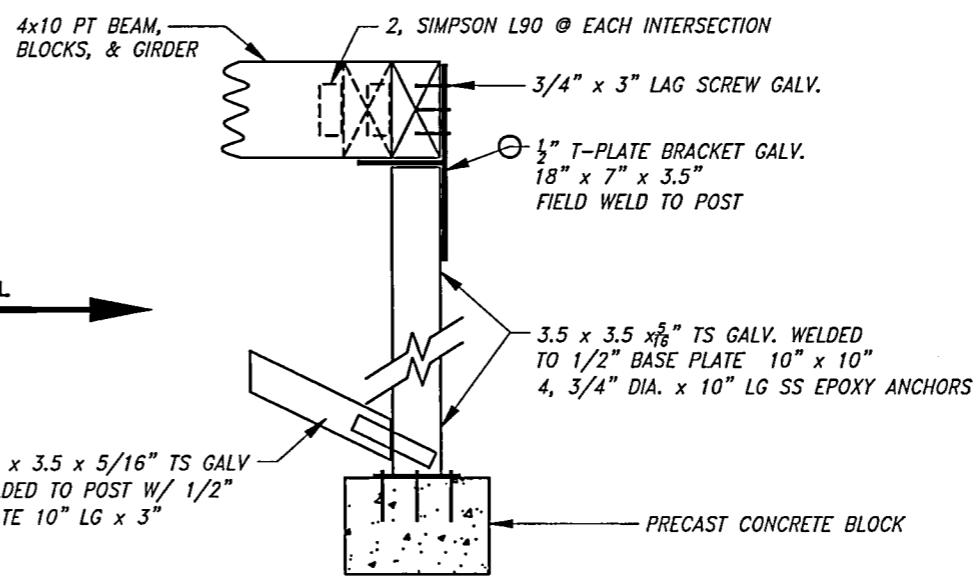
100% DESIGN



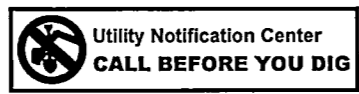
1 SOUTH SITE
6 WCS IMPROVEMENTS



2 WOOD BEAM AND METAL SUPPORT STRUCTURE
6 SECTION



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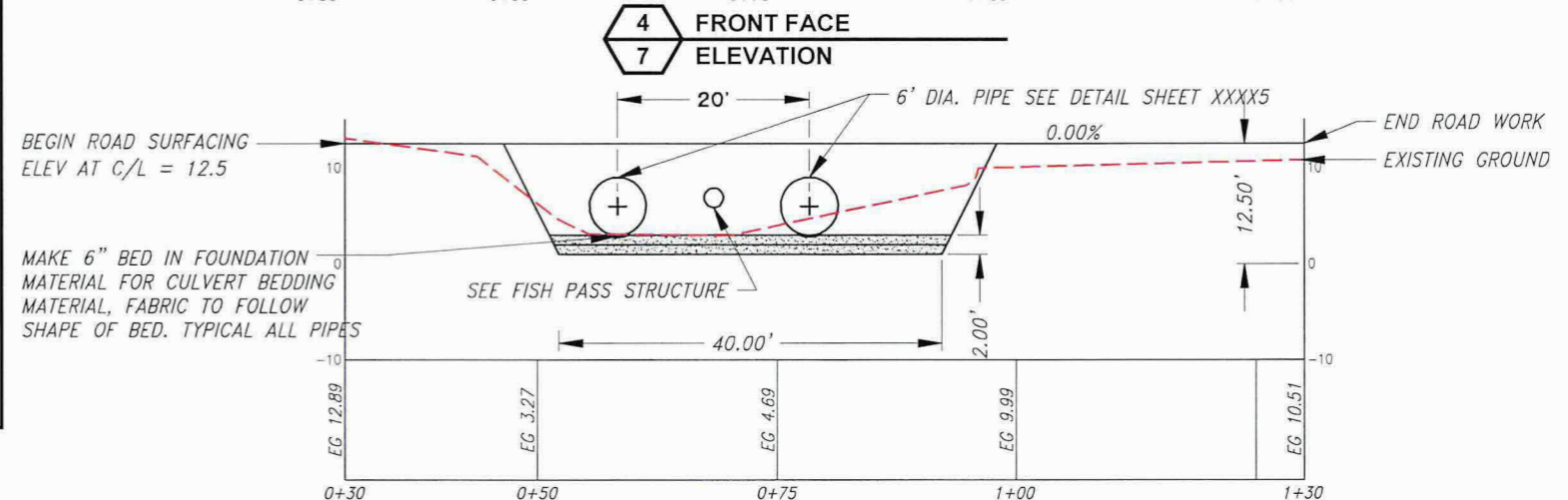
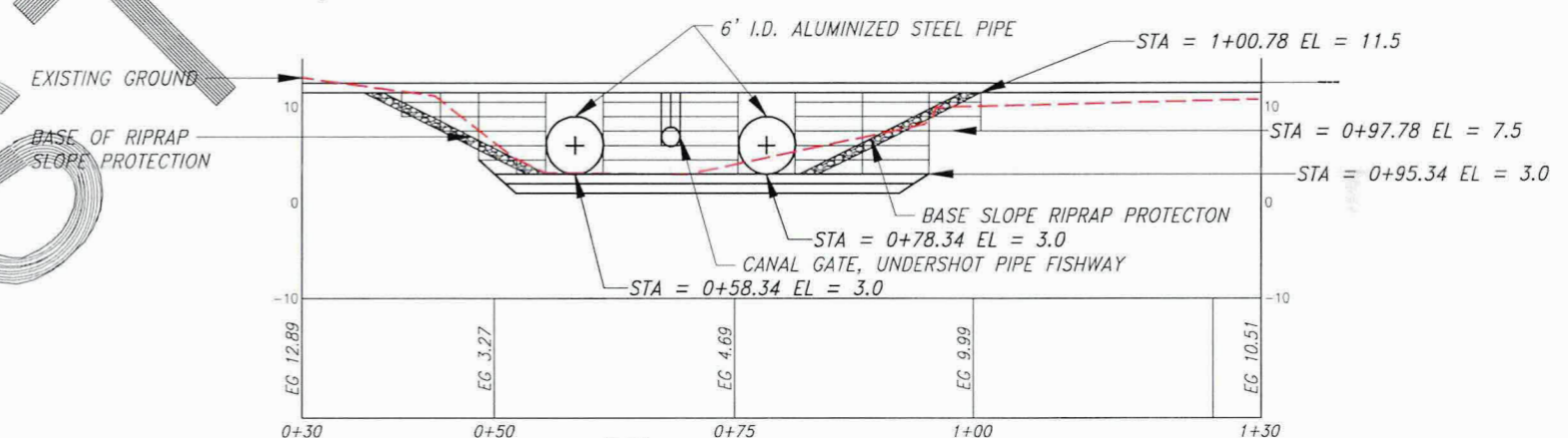
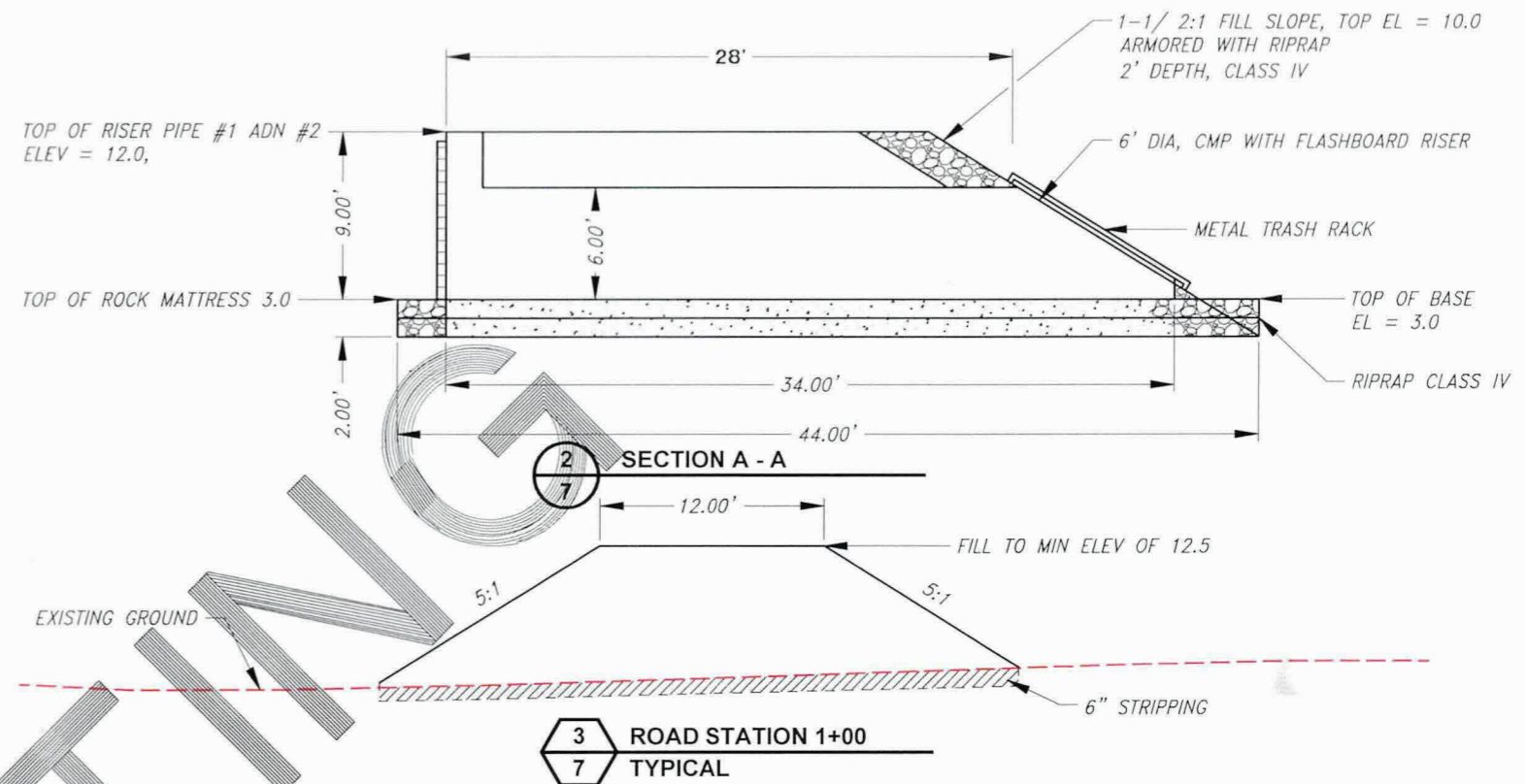
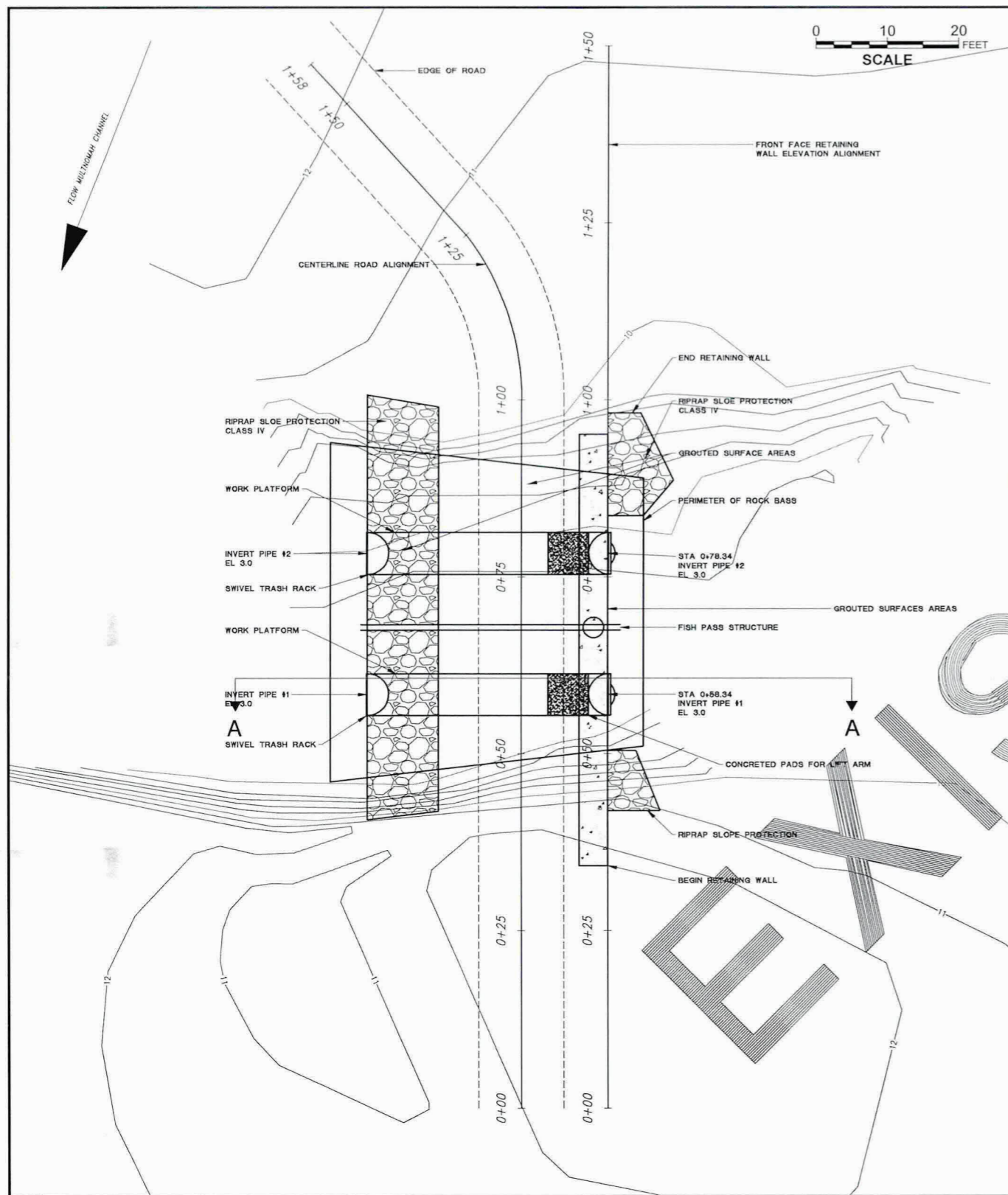


REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED

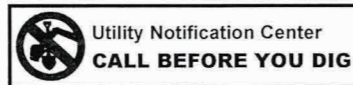


PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL SOUTH SITE		DRAWN BY: DMG
		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 6 of 18
WCS IMPROVEMENTS		

100% DESIGN



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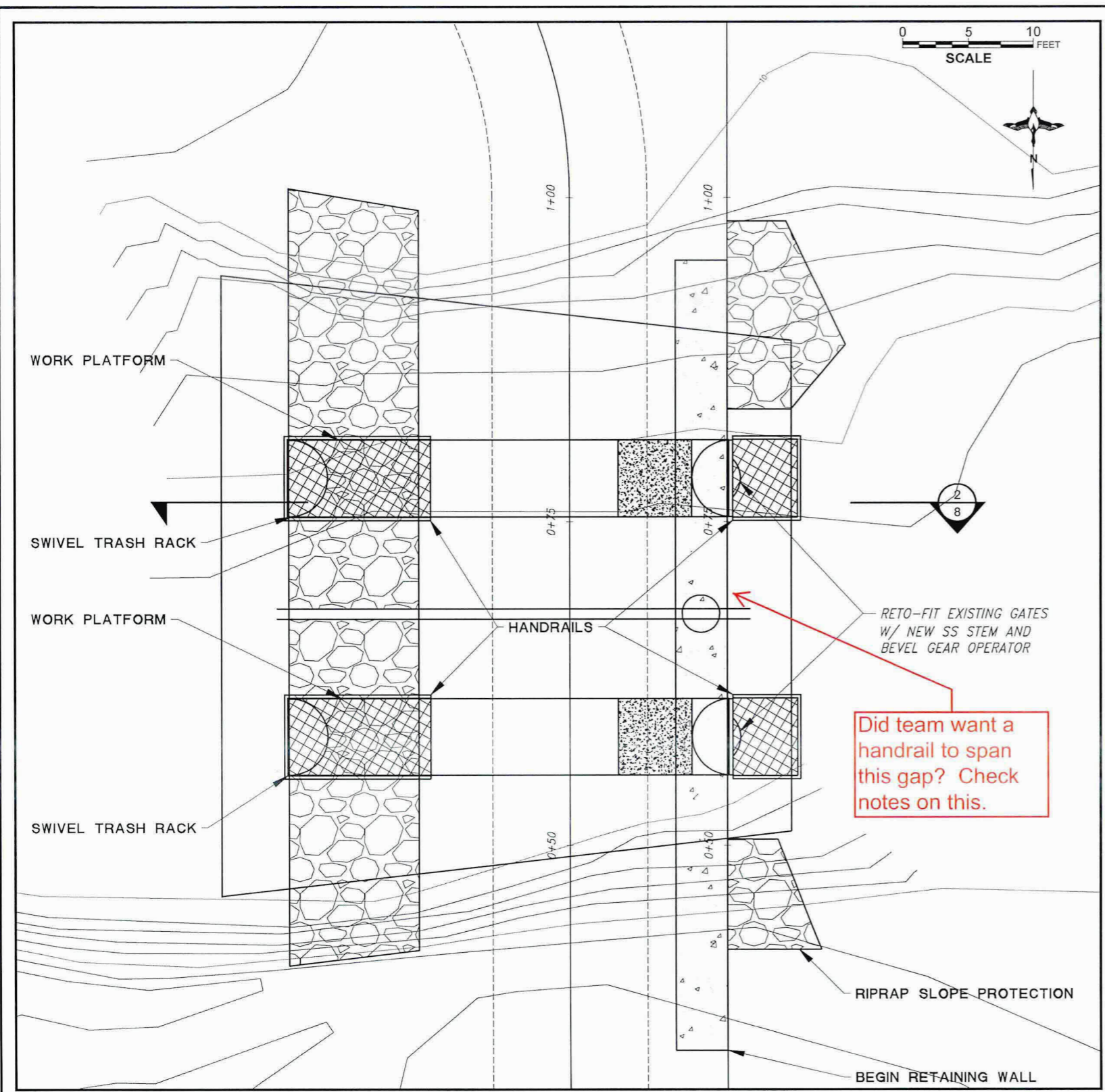


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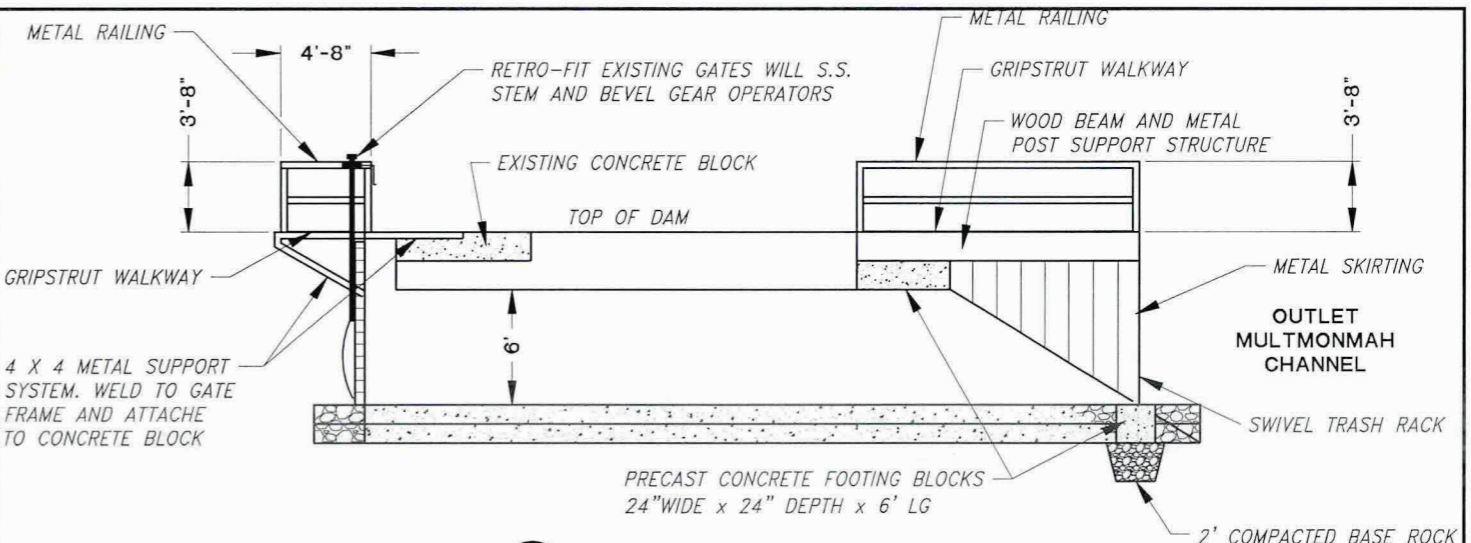


PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL NORTH SITE		DRAWN BY: DMC
EXISTING SITE PLAN		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 7 of 18

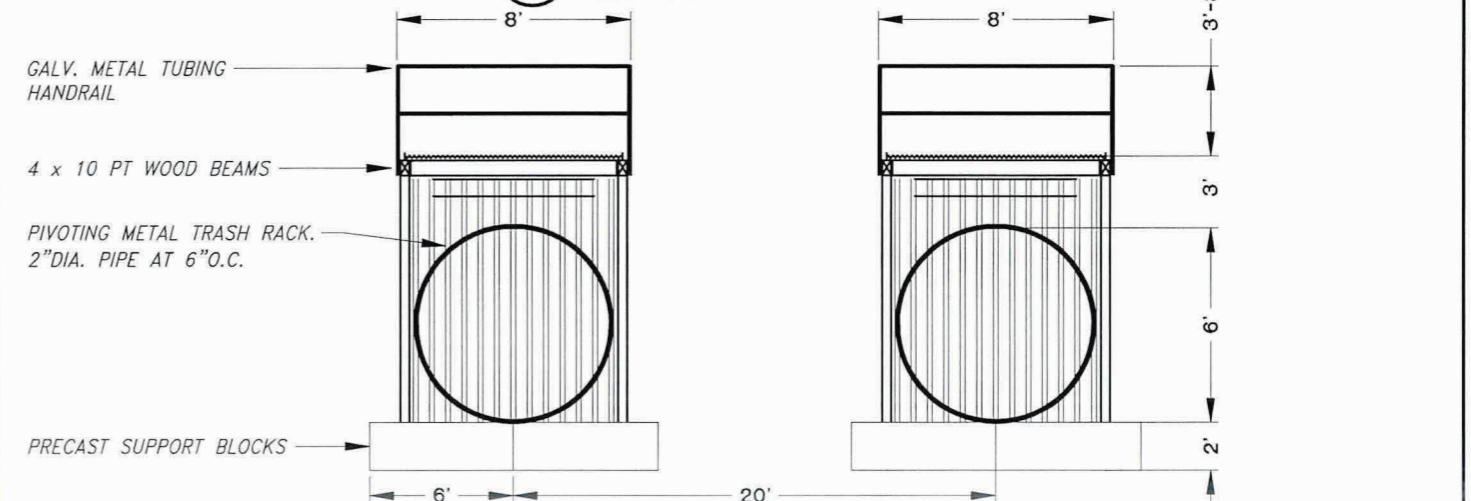
100% DESIGN



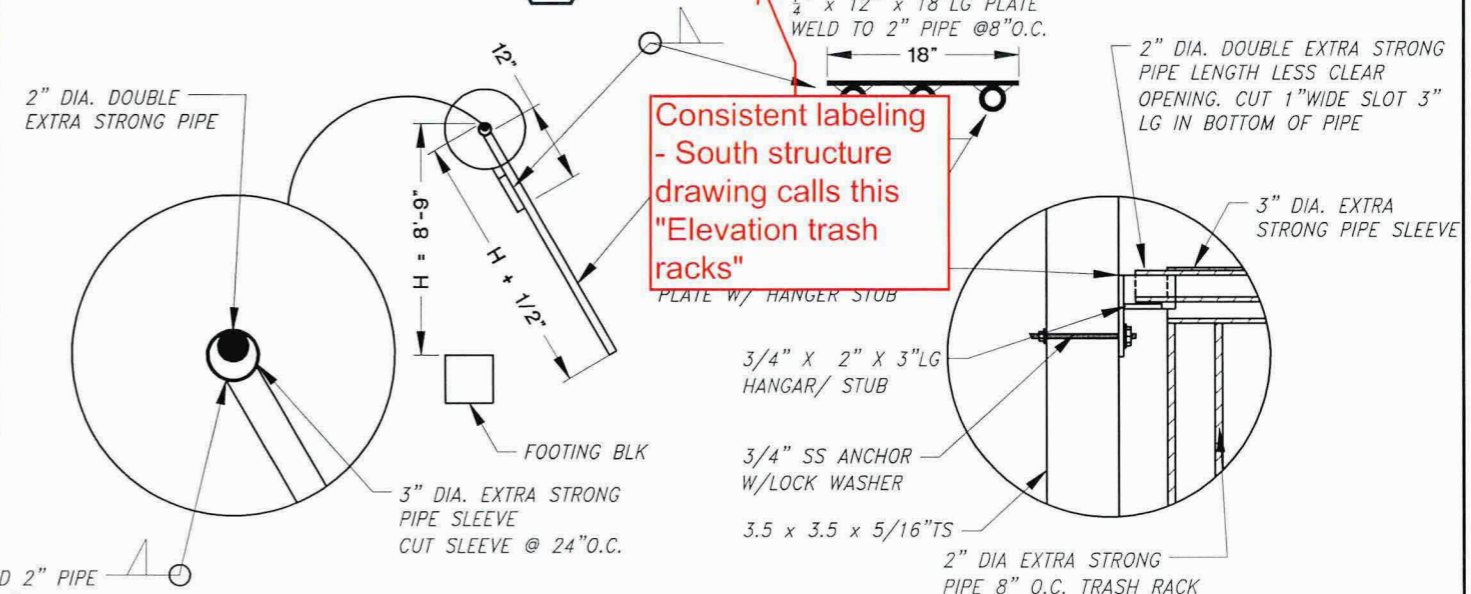
1 NORTH SITE
8 PROPOSED PLAN



2 WOOD BEAM AND METAL SUPPORT STRUCTURE
8 SECTION



3 OUTLET SWIVEL GATES
8 ELEVATION



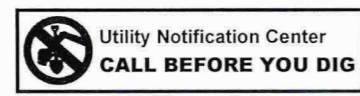
4 HANGING BAR DETAIL
8 TRASH RACK

5 SUPPORT DETAIL
8 TRASH RACK

Consistent labeling - South structure drawing calls this "Elevation trash racks"

Did team want a handrail to span this gap? Check notes on this.

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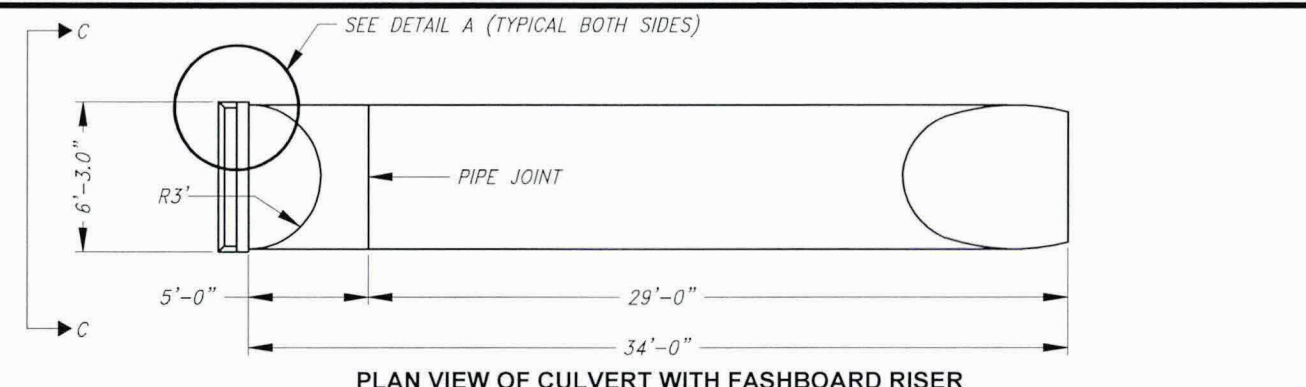
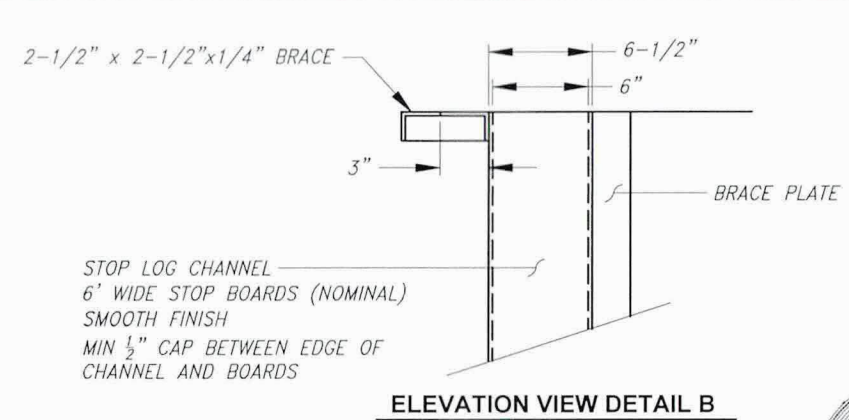
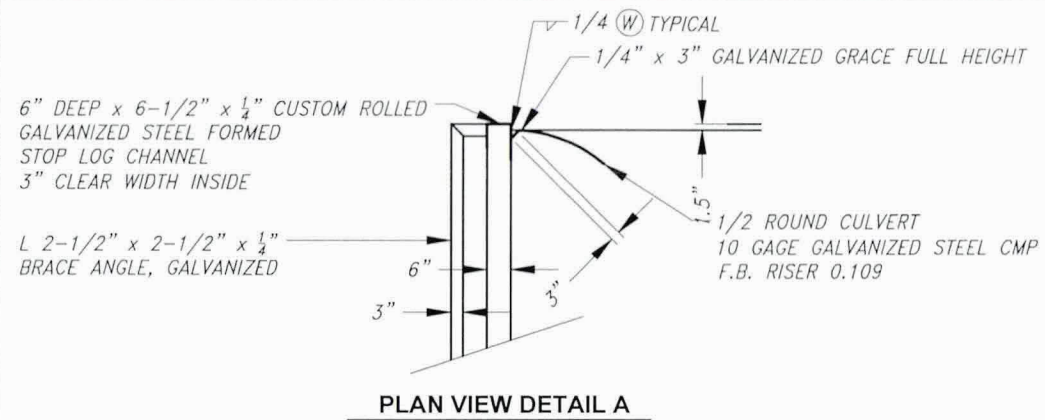


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REV. NO.	DESCRIPTION	DATE	APPROVED	

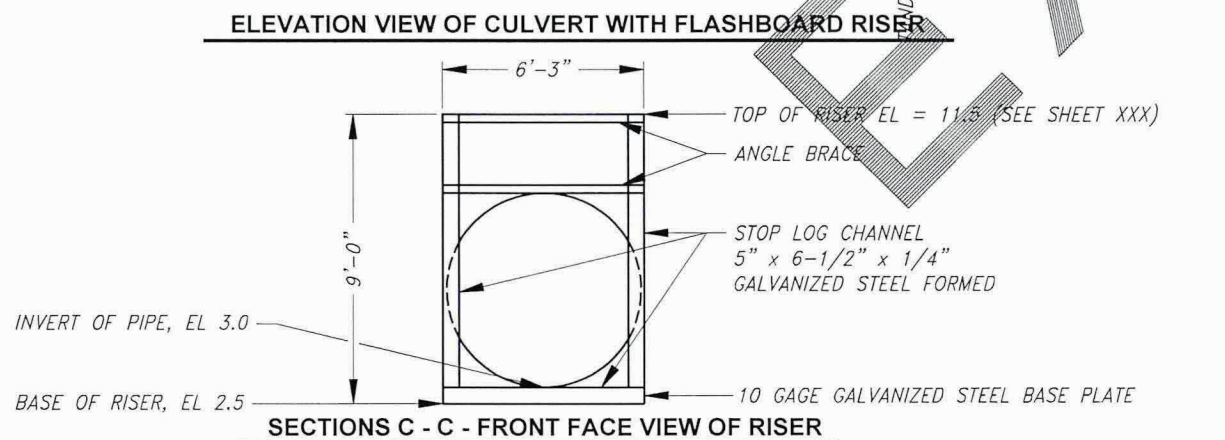
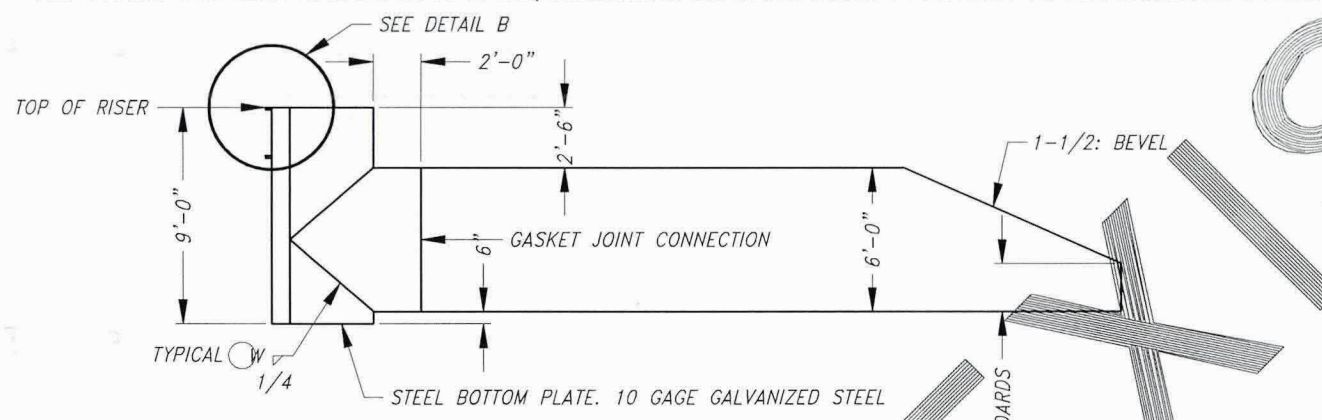


PROJECT NO: US-OR-32-8 DATE: 8/4/2016
METRO: MULTNOMAH CHANNEL NORTH SITE
 DESIGNED BY: GW
 DRAWN BY: DMC
 SURVEYED BY:
 CHECKED BY:
 SHEET NO:
WCS IMPROVEMENTS **8 of 18**

100% DESIGN



RISER AND CULVERT ARE BOTH 10 GAGE, RISER MAY BE GALVANIZED. CULVERT TO BE ALUMINUM STEEL

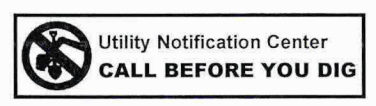


1 EXISTING DETAILS
9 NORTH SITE



9

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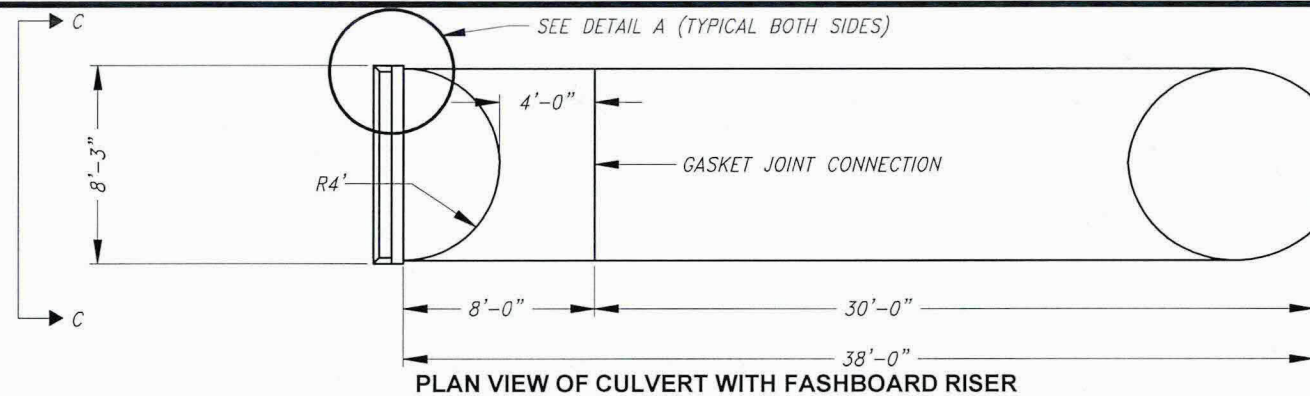
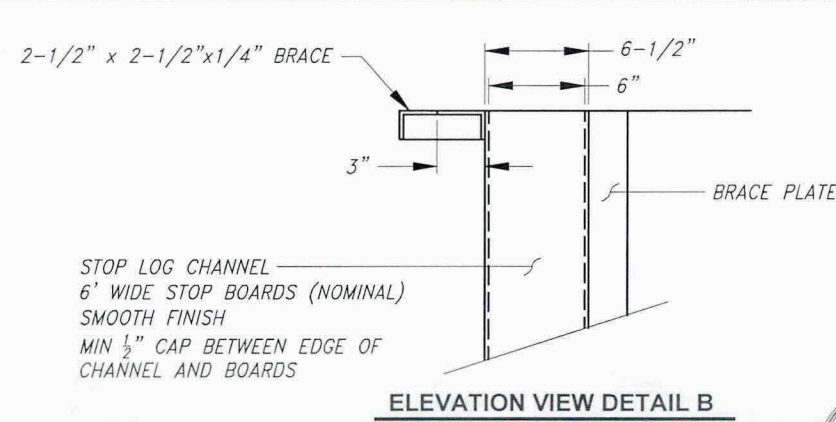
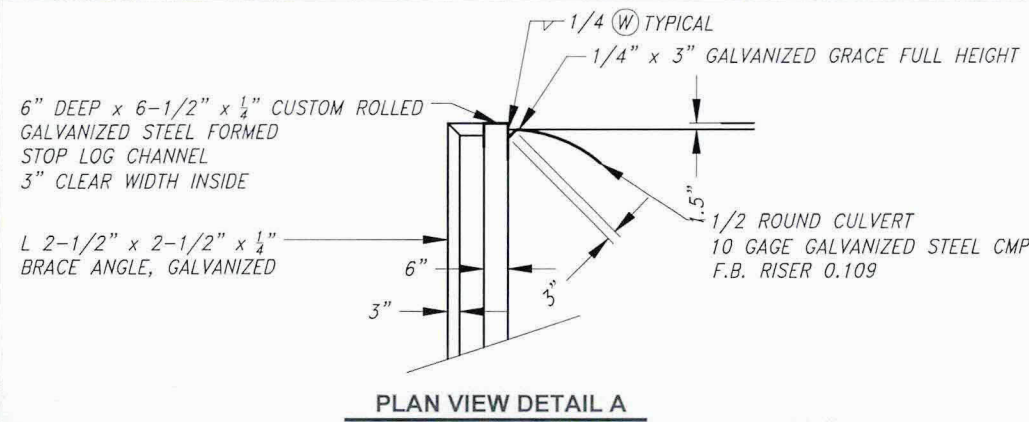


REVISIONS			
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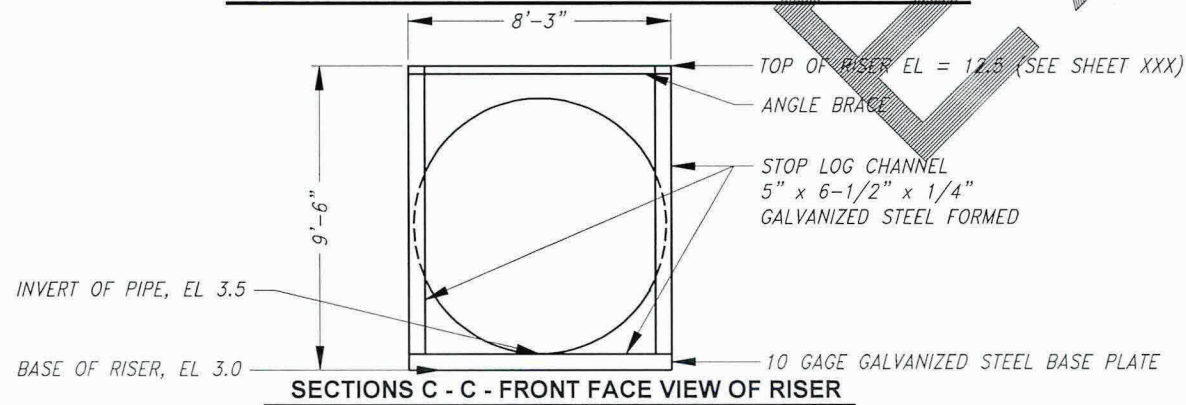
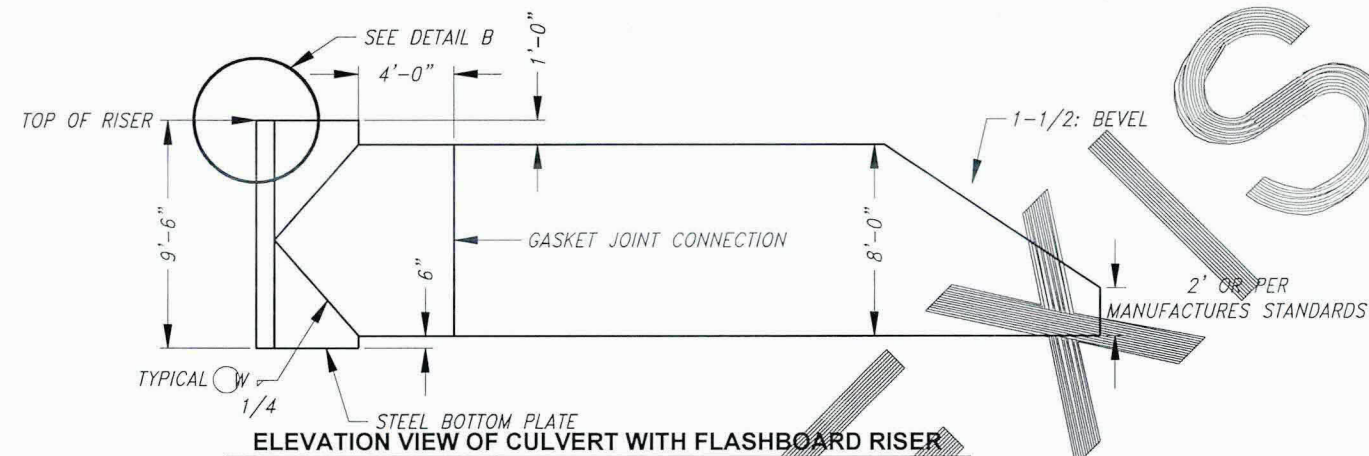


PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL NORTH SITE		DRAWN BY: DMC
EXISTING CULVERT		CHECKED BY:
		SHEET NO. 9 of 18

100% DESIGN



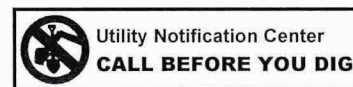
RISER AND CULVERT ARE BOTH 10 GAGE, RISER MAY BE GALVANIZED. CULVERT TO BE ALUMINUM STEEL



1 EXISTING DETAILS
10 SOUTH SITE



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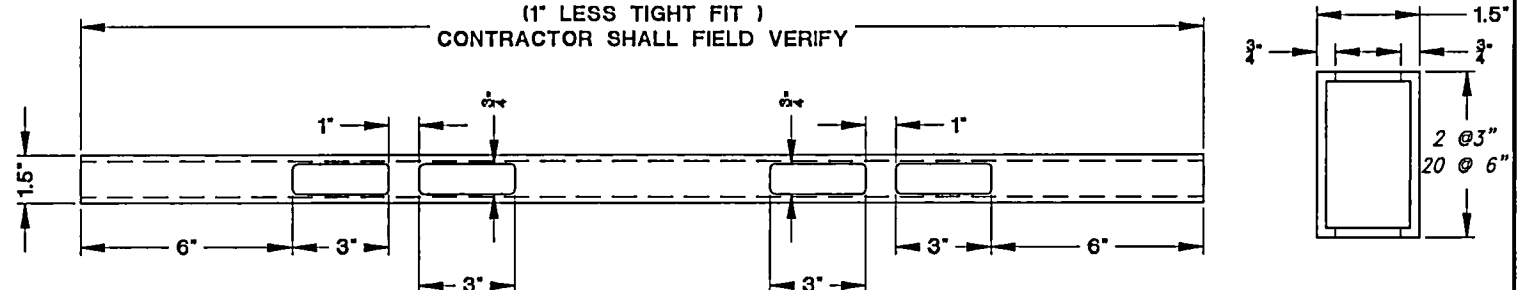
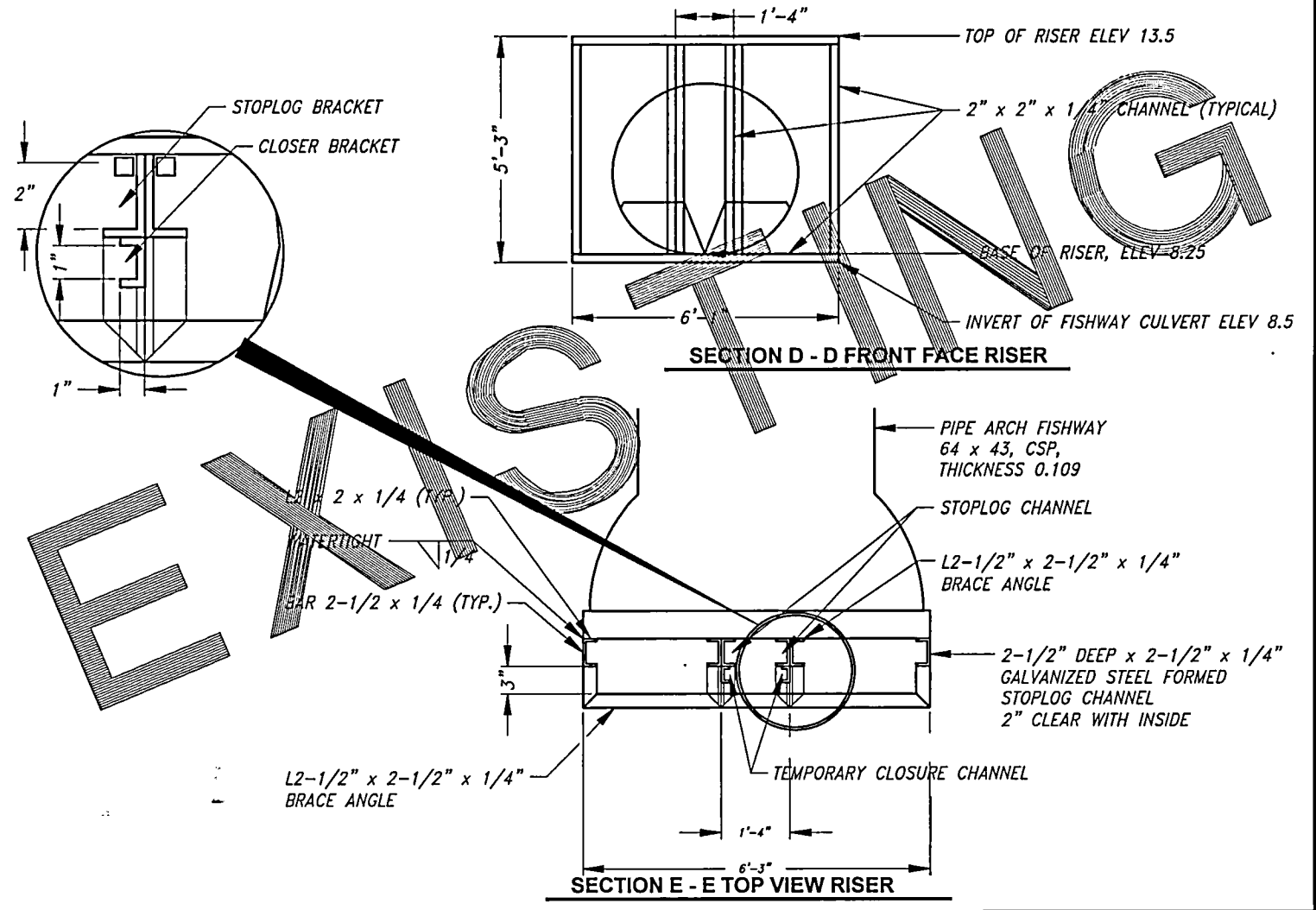


REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED
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PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL SOUTH SITE		DRAWN BY: DMC
		SURVEYED BY:
		CHECKED BY:
		SHEET NO.
EXISTING CULVERT		10 of 18

100% DESIGN

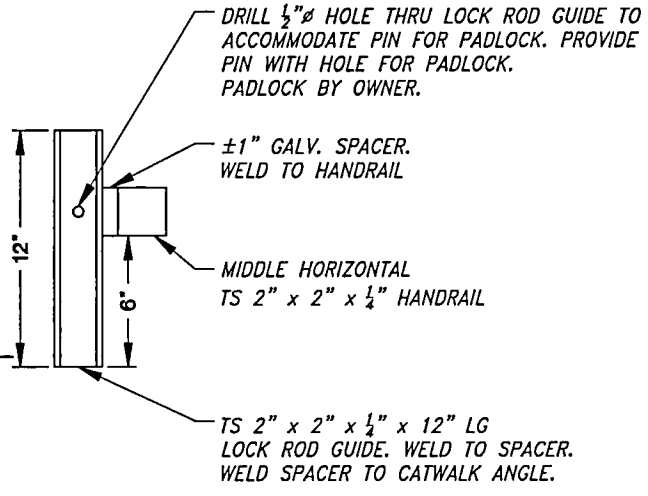


NOTE:
ALL ALUMINUM STOPLOGS SHALL BE SUPPLIED BY THE CONTRACTOR

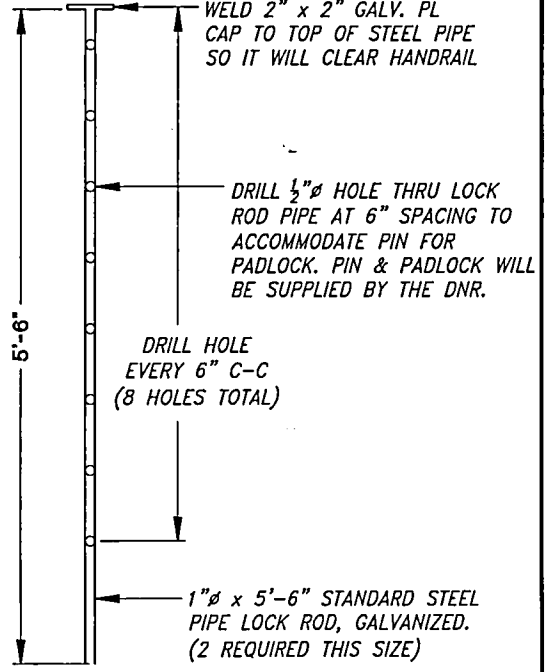
CONTRACTOR IS RESPONSIBLE FOR CUTTING STOPLOGS TO PROPER LENGTH AND FABRICATING THE HOLES IN ALL STOPLOGS AS SHOWN. THE 3/8" DIMENSION IS CRITICAL AND NEEDS TO BE CENTERED IN THE STOPLOG TO AVOID LEAKAGE. THE FINISHED SURFACE SHALL BE SMOOTH TO PROVIDE A FLAT SURFACE FOR THE STOPLOG.

ALUMINUM STOPLOGS: 2 STOPLOGS, 1.5" x 3" x 1/2"
20 STOPLOGS, 1.5" x 6" x 1/2"

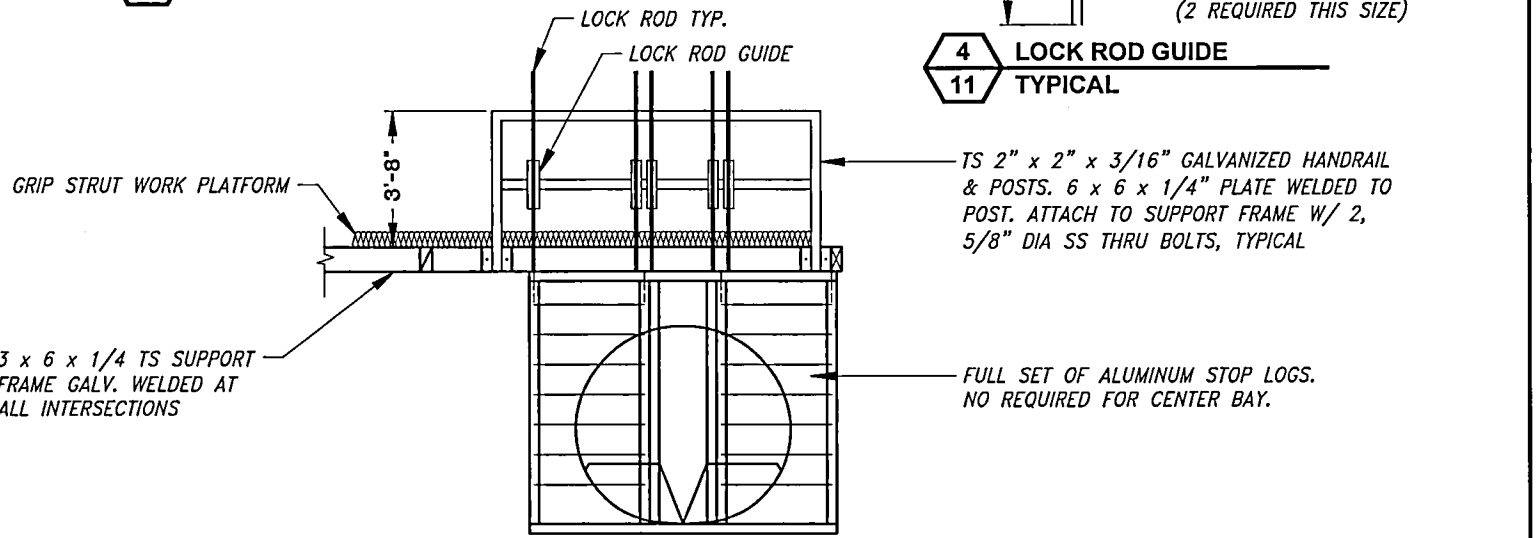
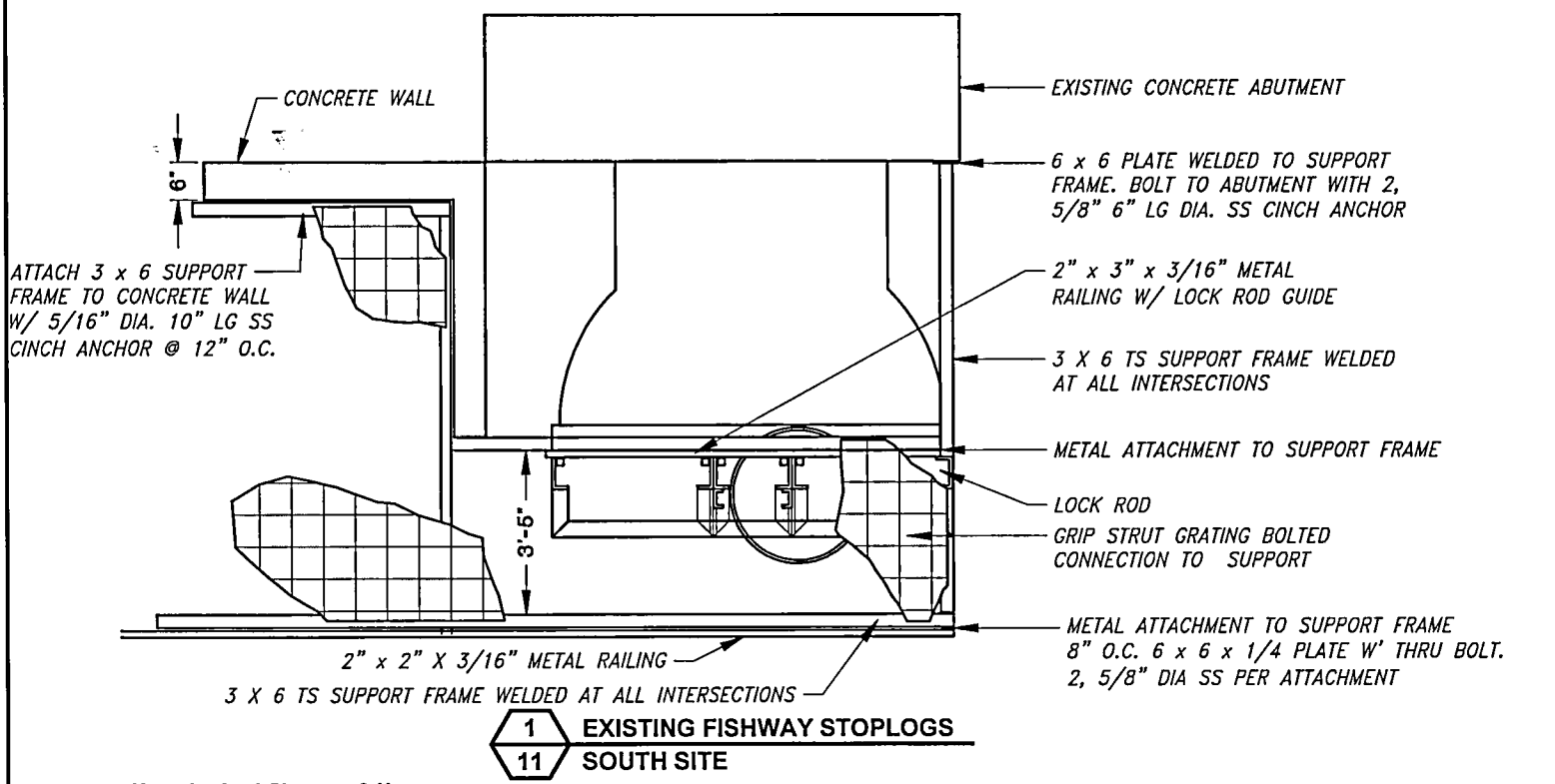
2 ALUMINUM STOPLOG
11 TYPICAL



3 LOCK ROD GUIDE
11 TYPICAL



4 LOCK ROD GUIDE
11 TYPICAL



5 STOPLOGS & LOCK RAIL SYSTEM
11 SOUTH SITE

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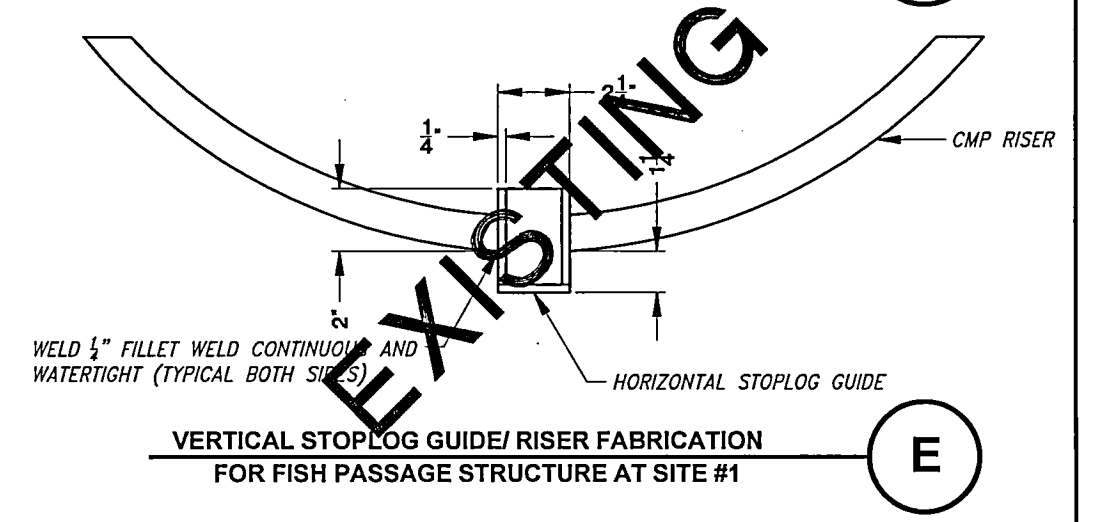
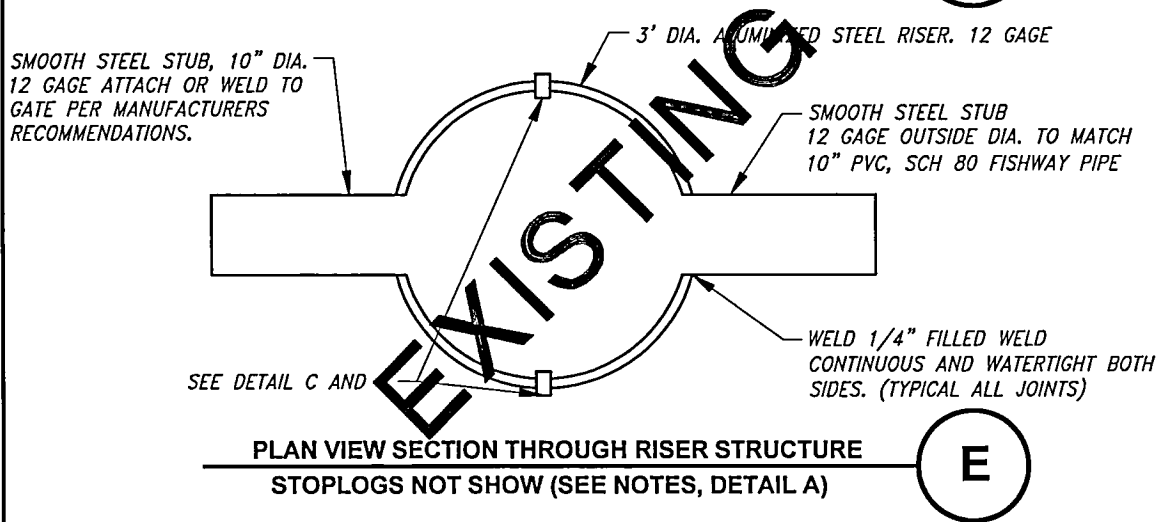
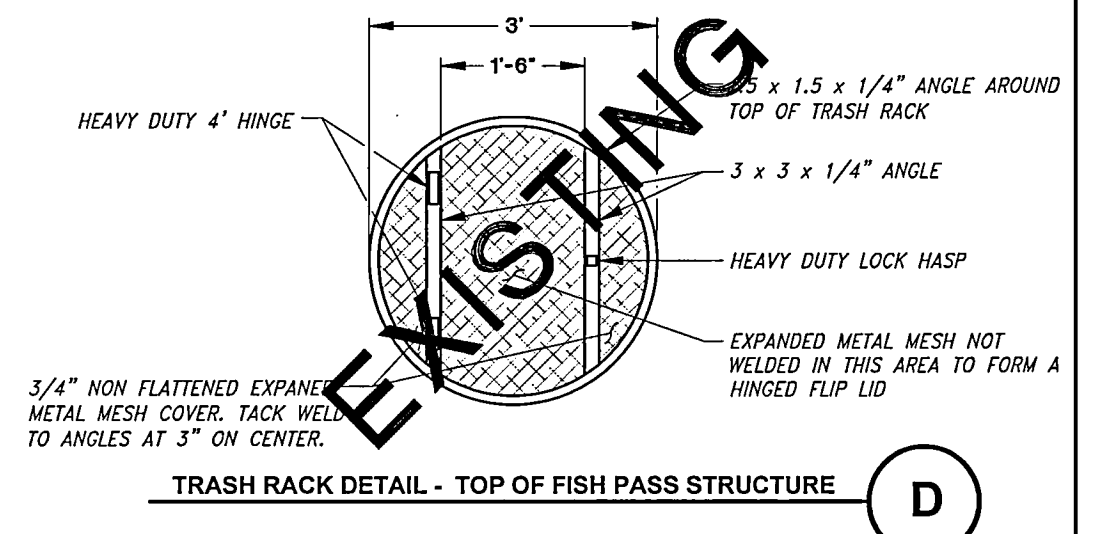
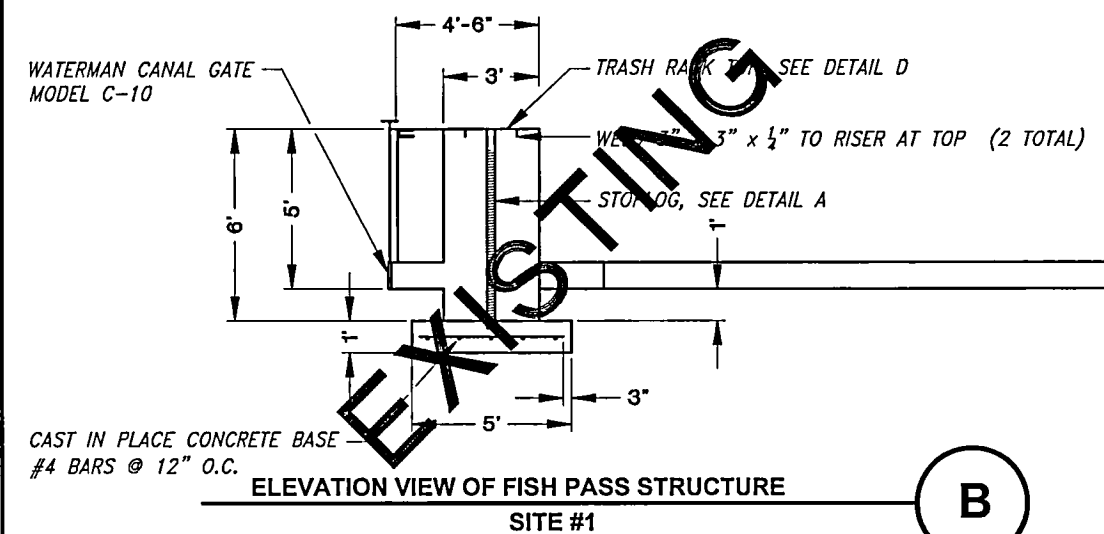
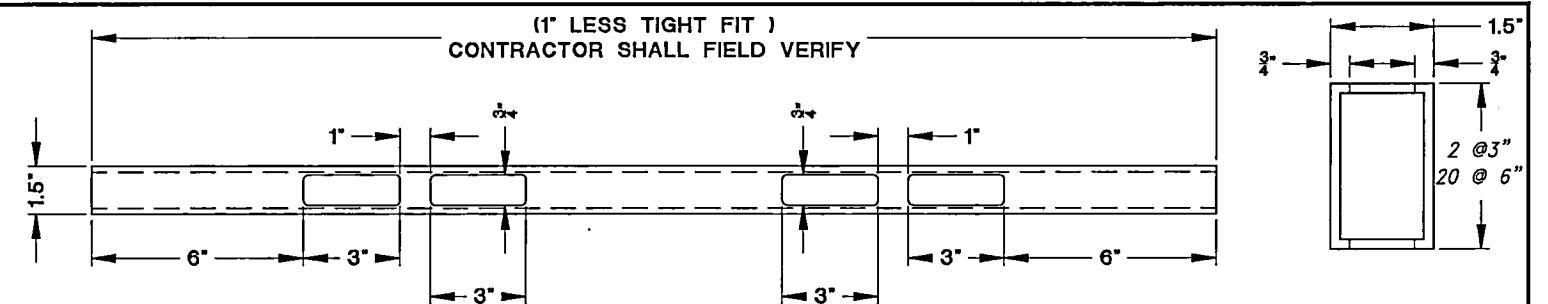
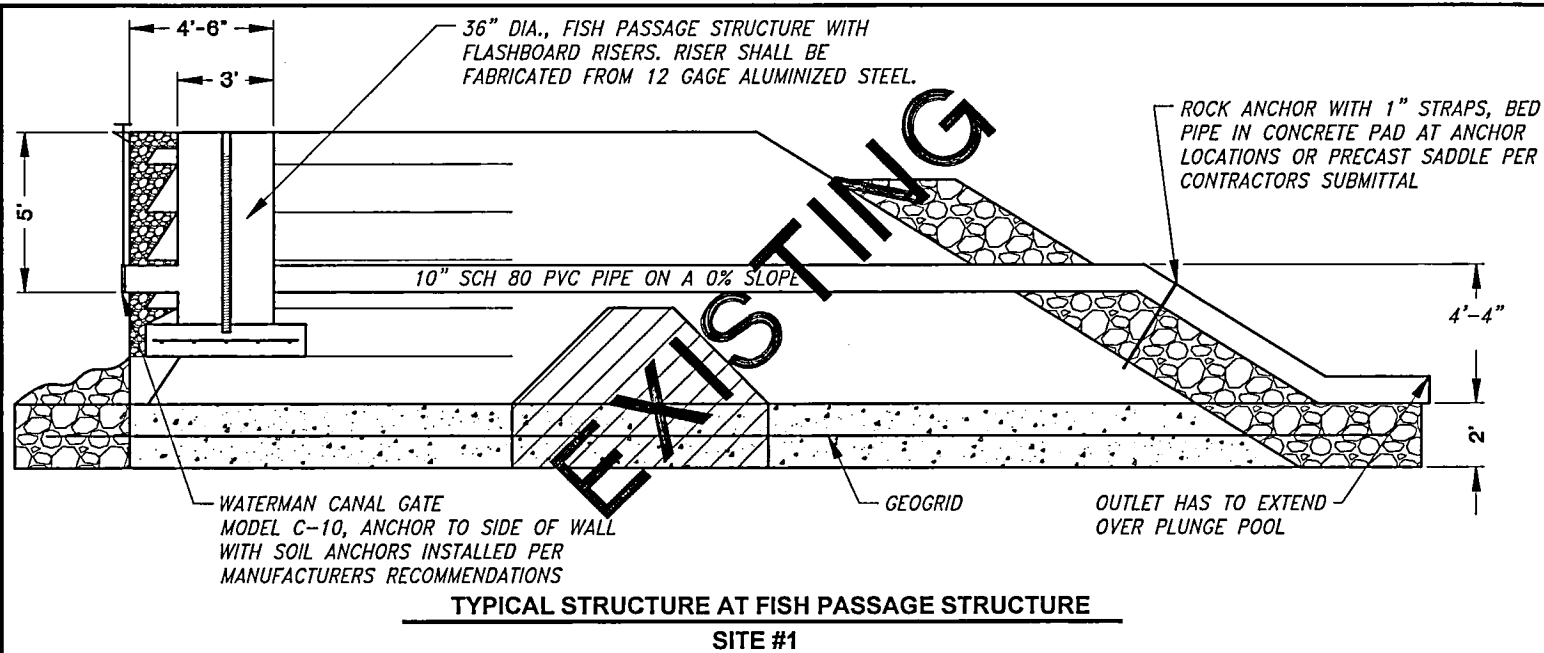


REV. NO.	DESCRIPTION	DATE	APPROVED

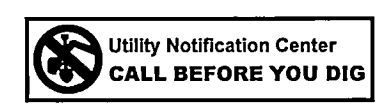


PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL SOUTH SITES UPSTREAM SIDE		DRAWN BY: DMC
WORK PLATFORM, METAL RAILING, ALUMINUM STOPLOGS & LOCK RAIL SYSTEM		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 11 of 18

100% DESIGN



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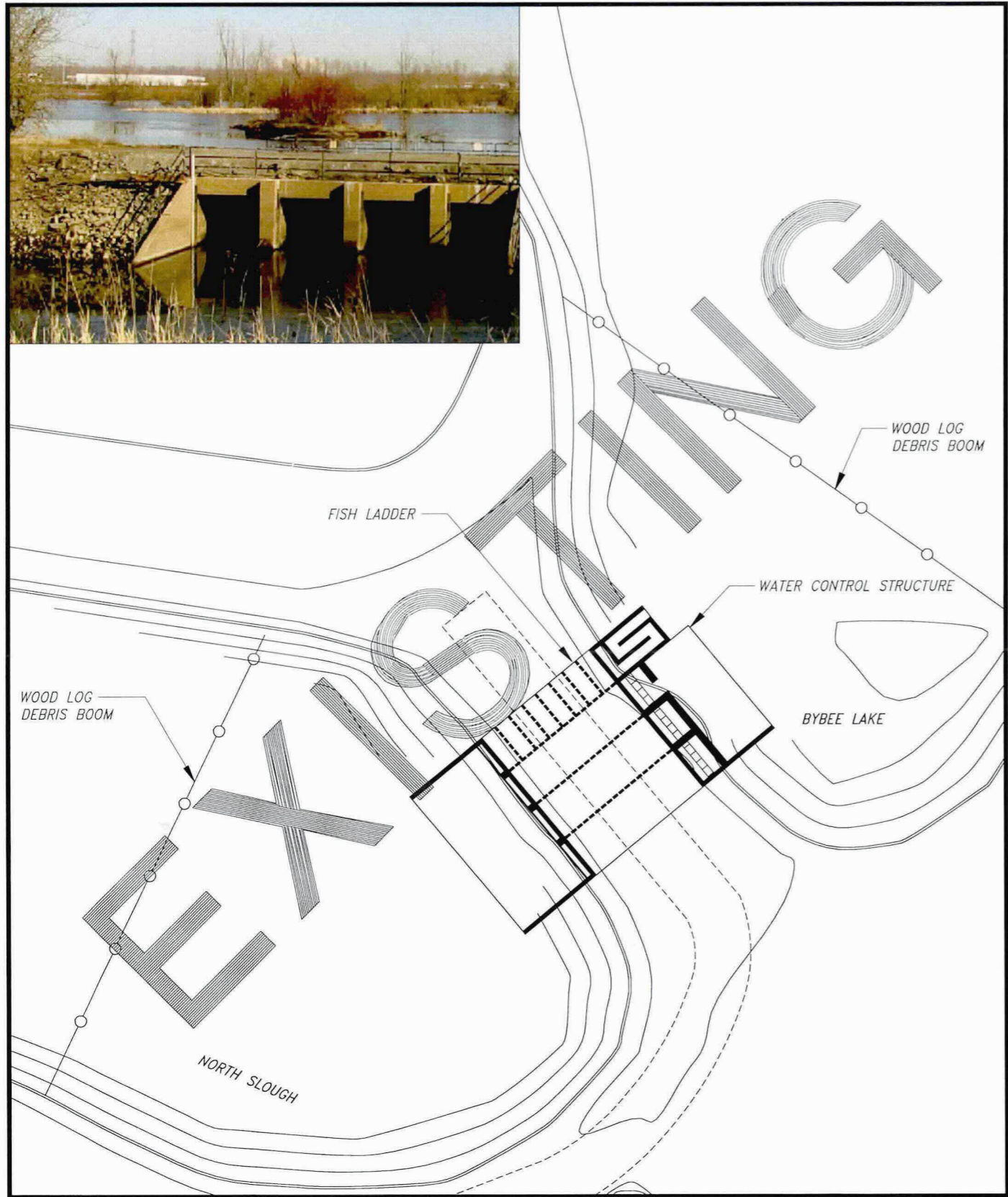


REVISIONS				
REV. NO.	DESCRIPTION	DATE	APPROVED	
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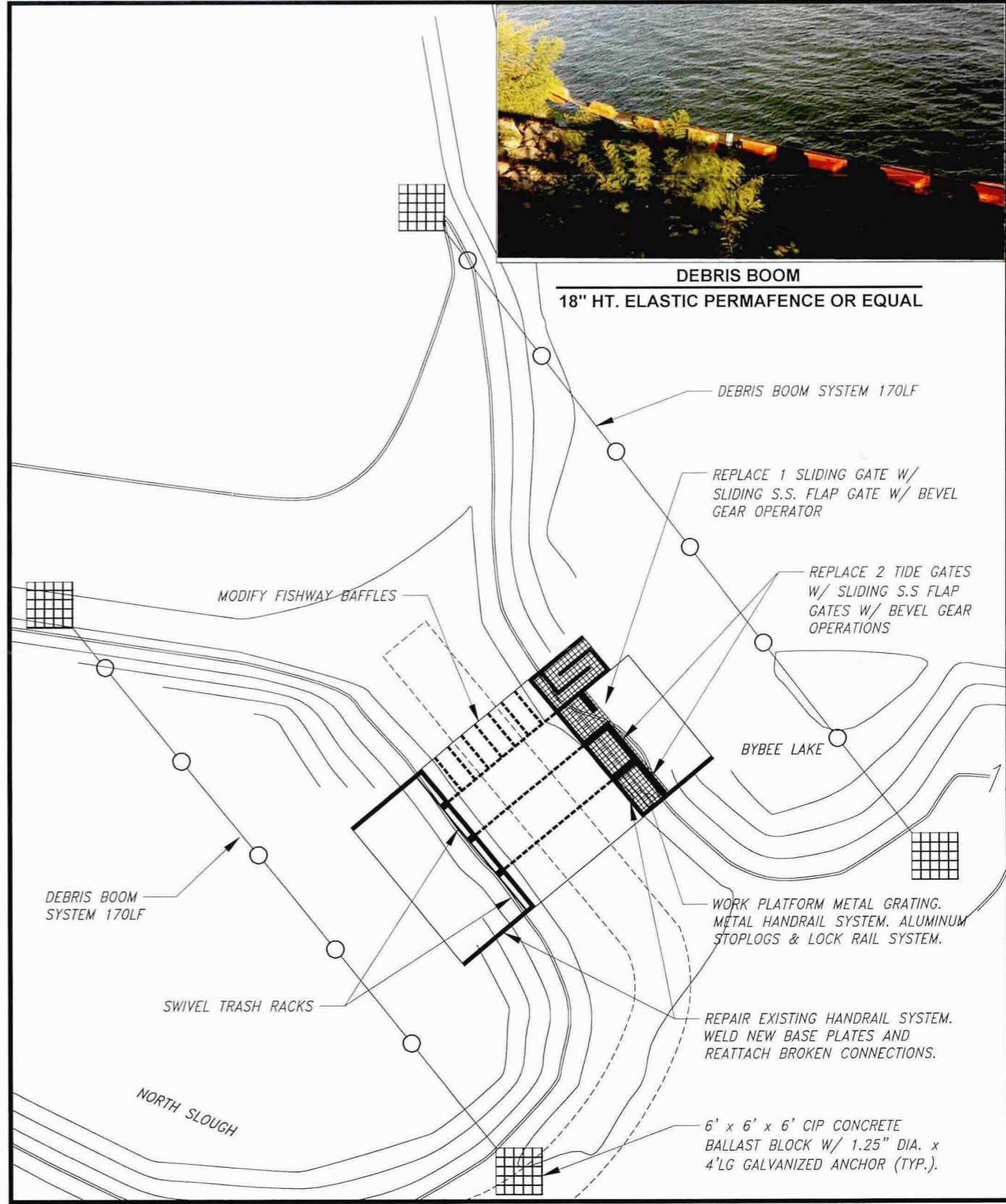
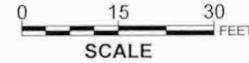


PROJECT NO. US-OR-32-B	DATE: 8/4/2016	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL NORTH SITE		DRAWN BY: DMC
FISH PASSAGE STRUCTURE ALUMINUM STOPLOGS		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 12 of 18

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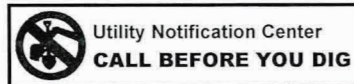
1 EXISTING SITE PLAN
13



2 WCS IMPROVEMENTS
13

100% DESIGN

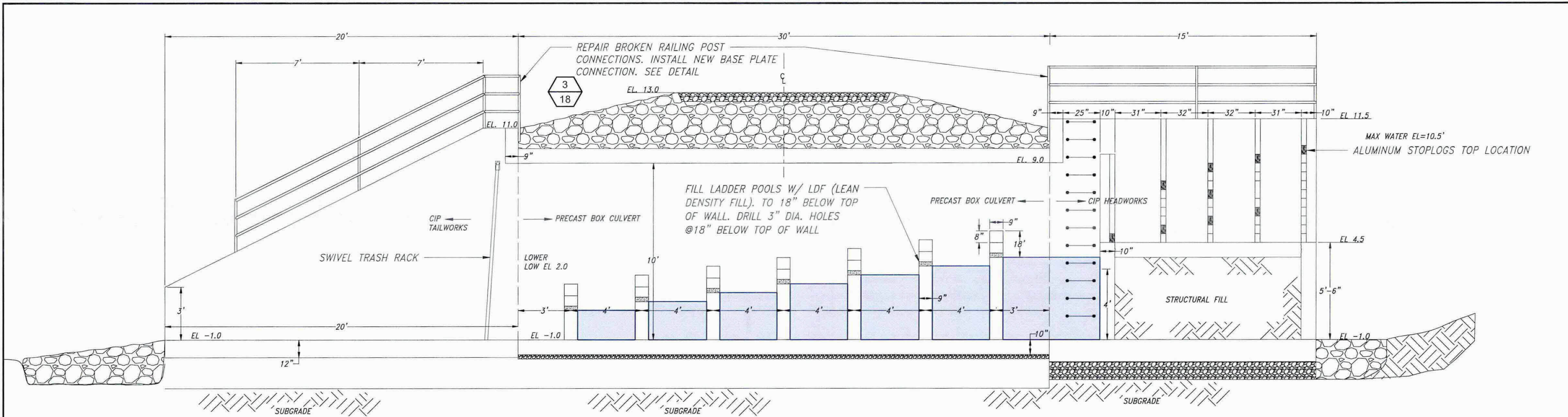
Unauthorized Changes & Uses
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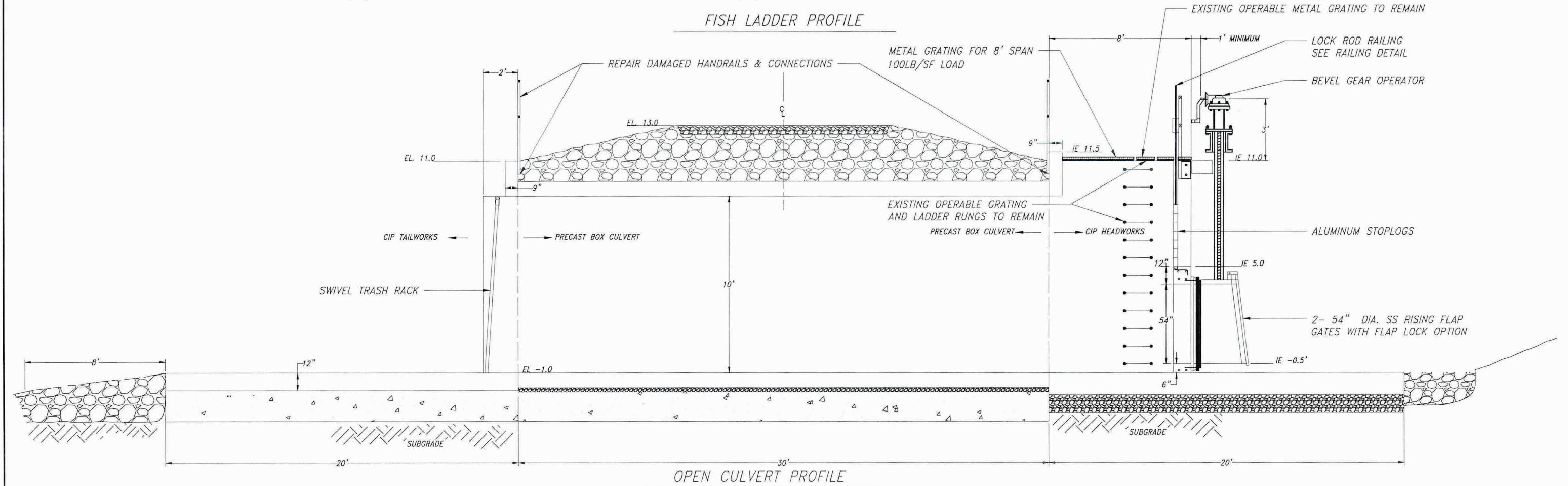
REV. NO.	DESCRIPTION	REVISIONS	DATE	APPROVED
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PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: SMITH-BYBEE PLAN		DRAWN BY: DMC
WATER CONTROL STRUCTURE (WCS) EXISTING AND IMPROVEMENTS		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 13 of 18



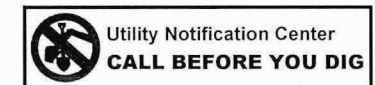
FISH LADDER PROFILE



OPEN CULVERT PROFILE

1 CHANGES TO WATER CONTROL STRUCTURE
14

Unauthorized Changes & Uses
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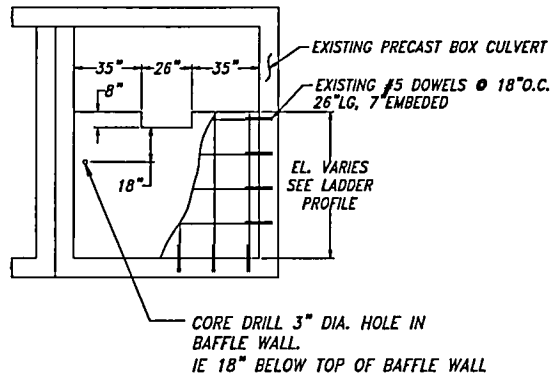
REV. NO.	DESCRIPTION	DATE	APPROVED



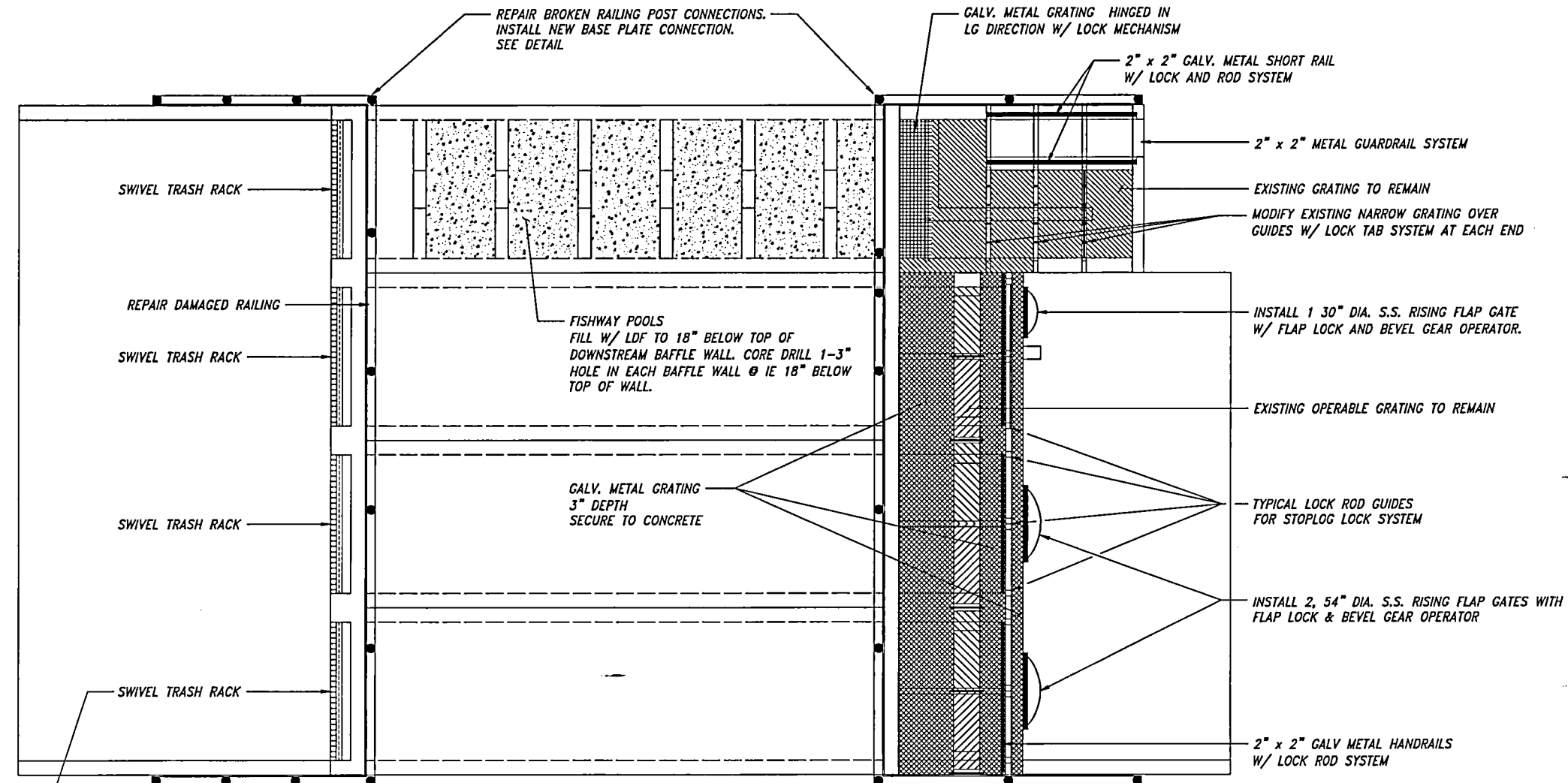
PROJECT NO. US-OR-32-8	DATE 8/4/2016	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMC
		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 14 of 18

100% DESIGN

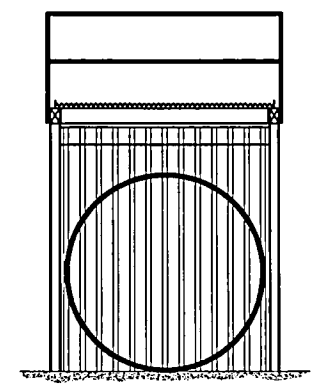
WCS IMPROVEMENTS



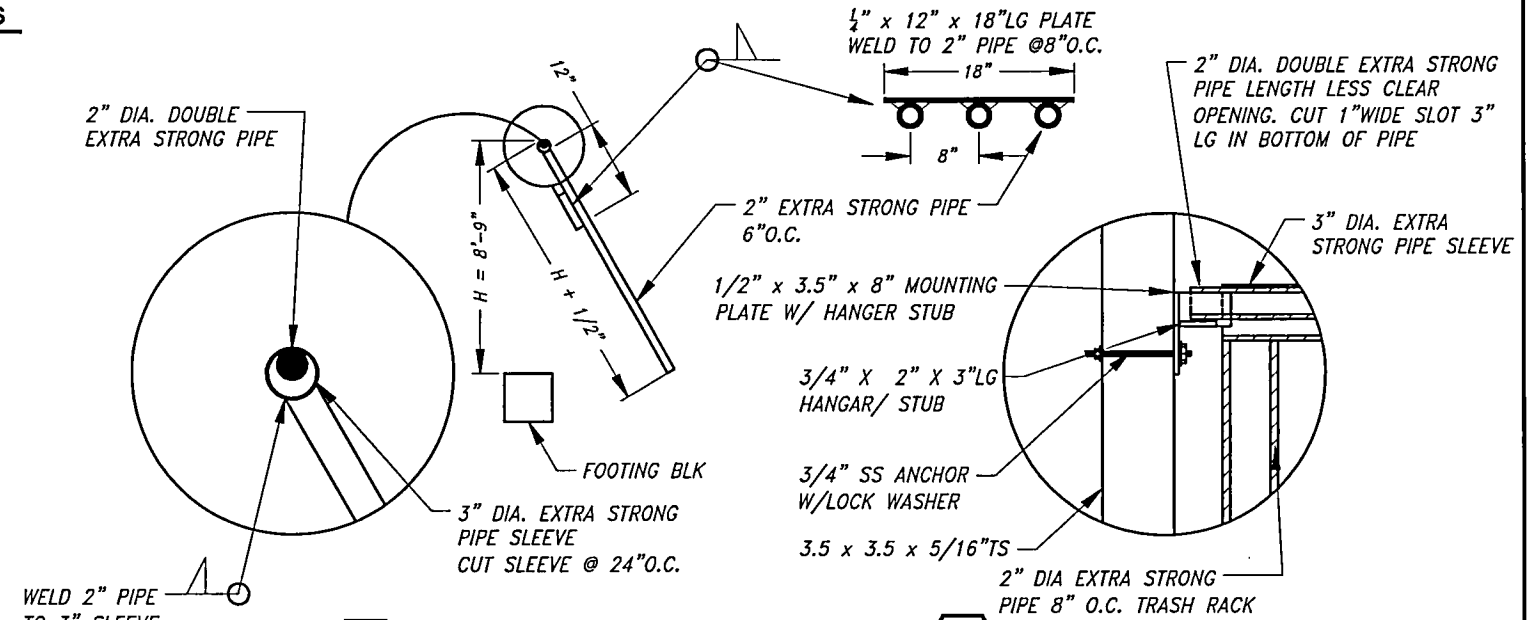
2 FISH LADDER BAFFLES
15 IMPROVEMENTS



1 WCS IMPROVEMENTS
15 WCS PLAN VIEW



3 TRASH RACK
15



4 HANGING BAR DETAIL
15 TRASH RACK

5 SUPPORT DETAIL
15 TRASH RACK

100% DESIGN

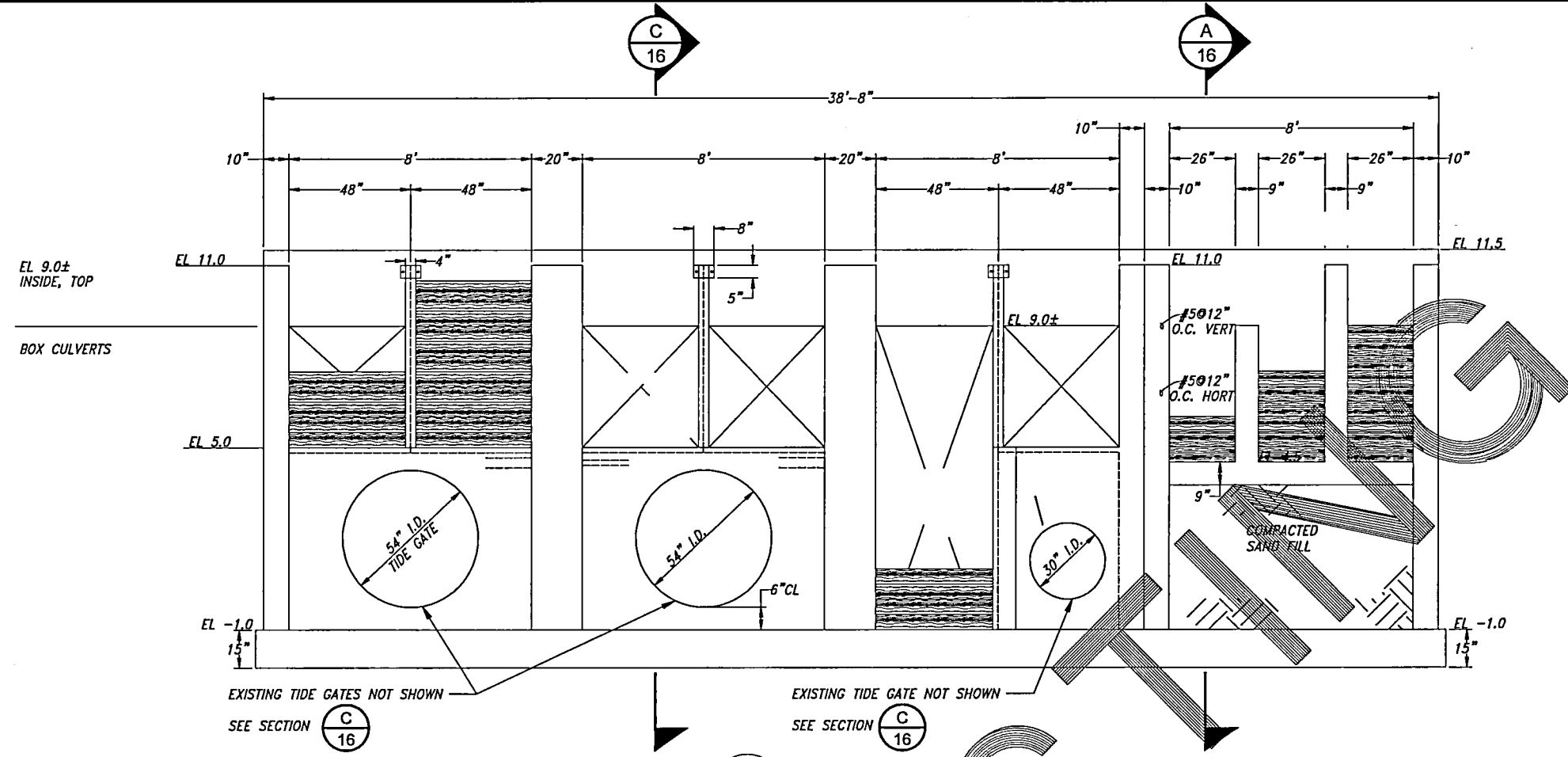
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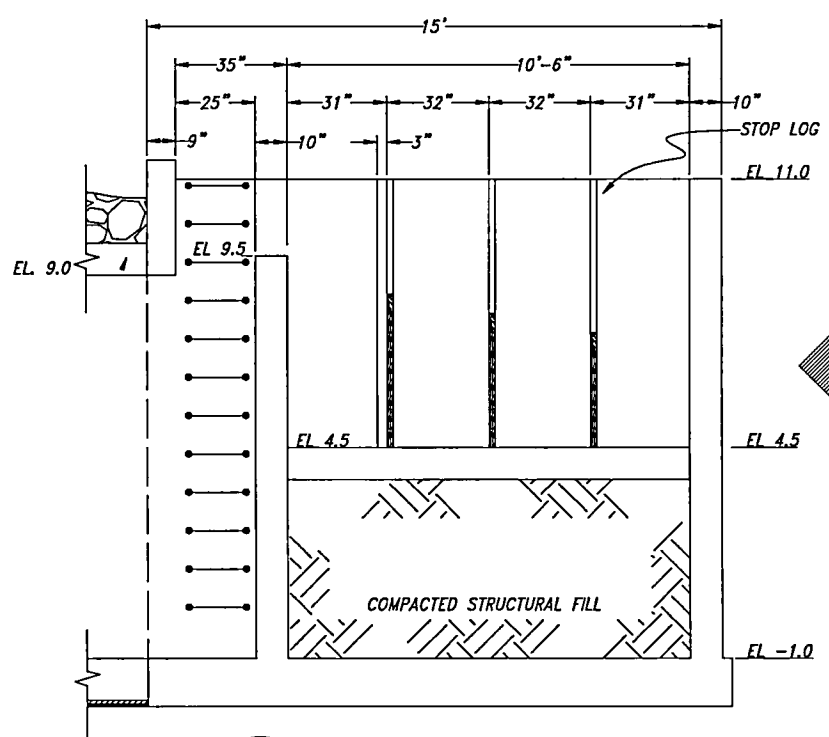
REV. NO.	DESCRIPTION	DATE	APPROVED



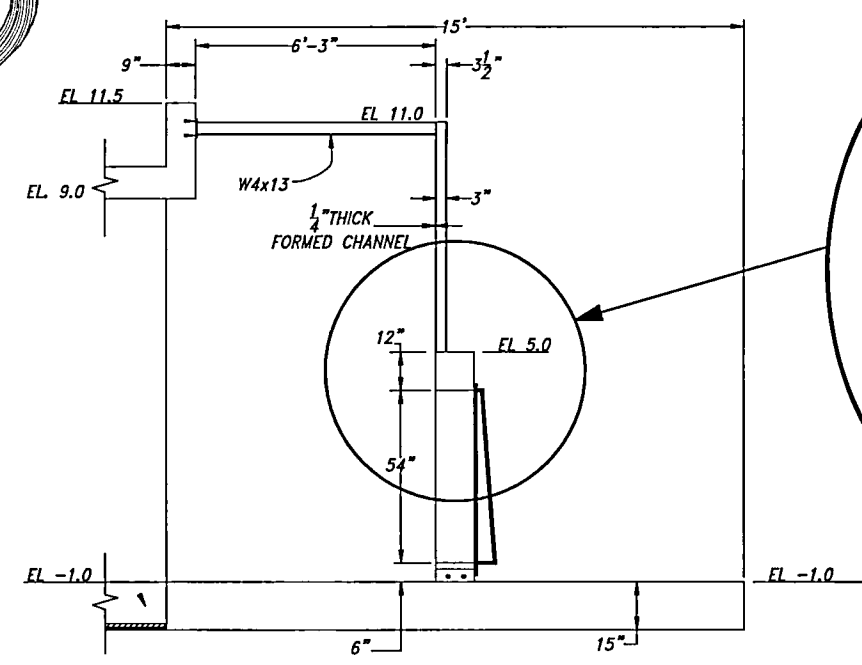
PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMC
		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 15 of 18
WCS IMPROVEMENTS		



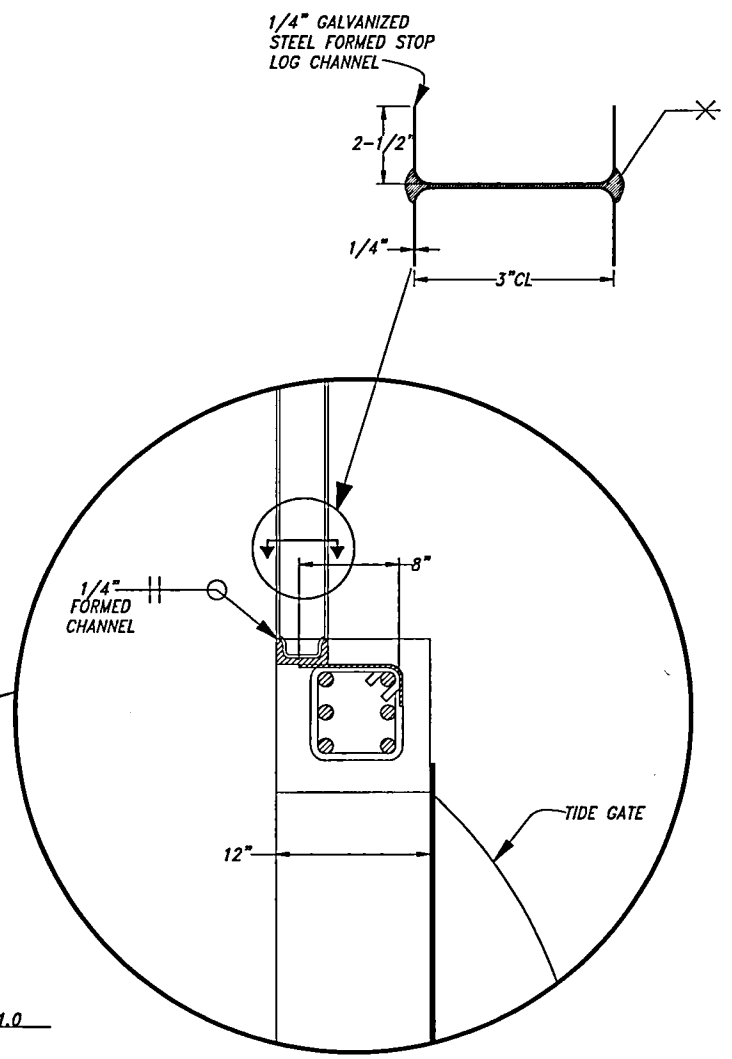
B HEADWORKS ELEVATION
16 NOT TO SCALE



A ADJUSTABLE LADDER SECTION
16 NOT TO SCALE



C TIDE GATE SECTION
16 NOT TO SCALE



1 EXISTING WATER CONTROL STRUCTURE
16

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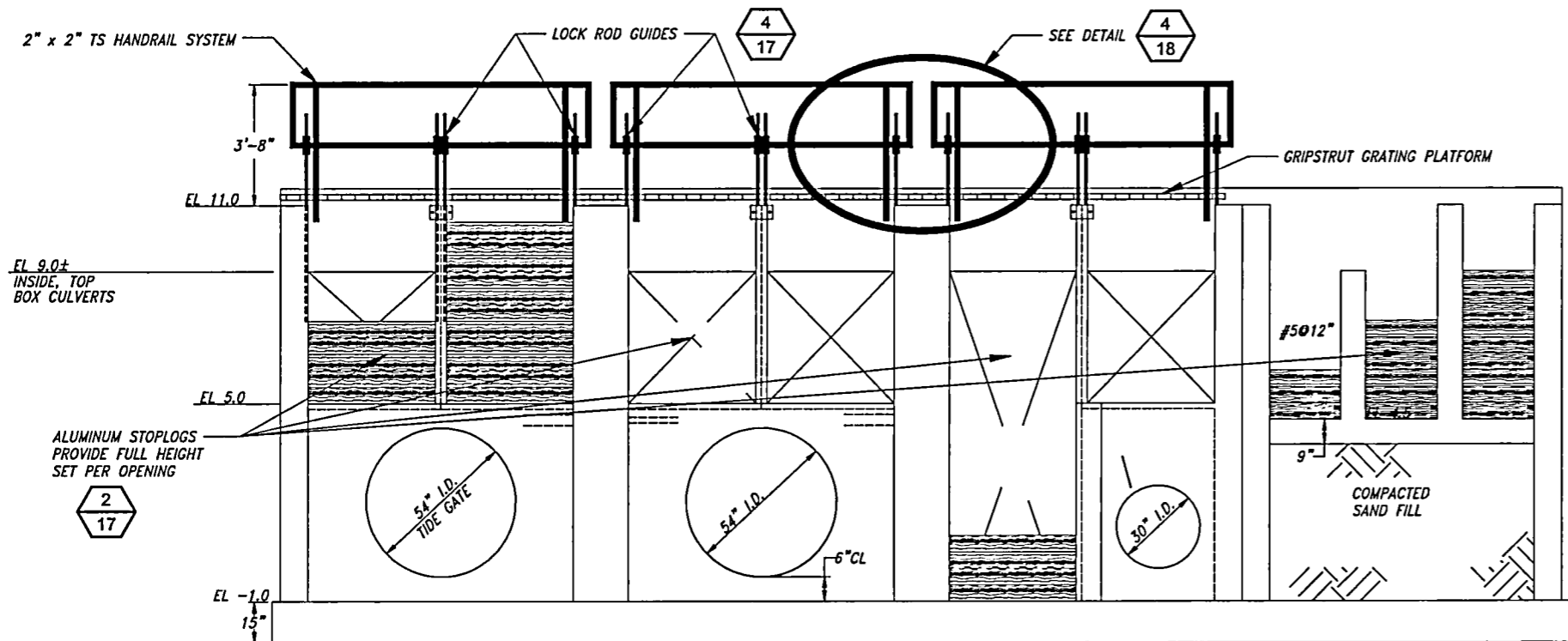


REVISIONS				
REV. NO.	DESCRIPTION	DATE	APPROVED	

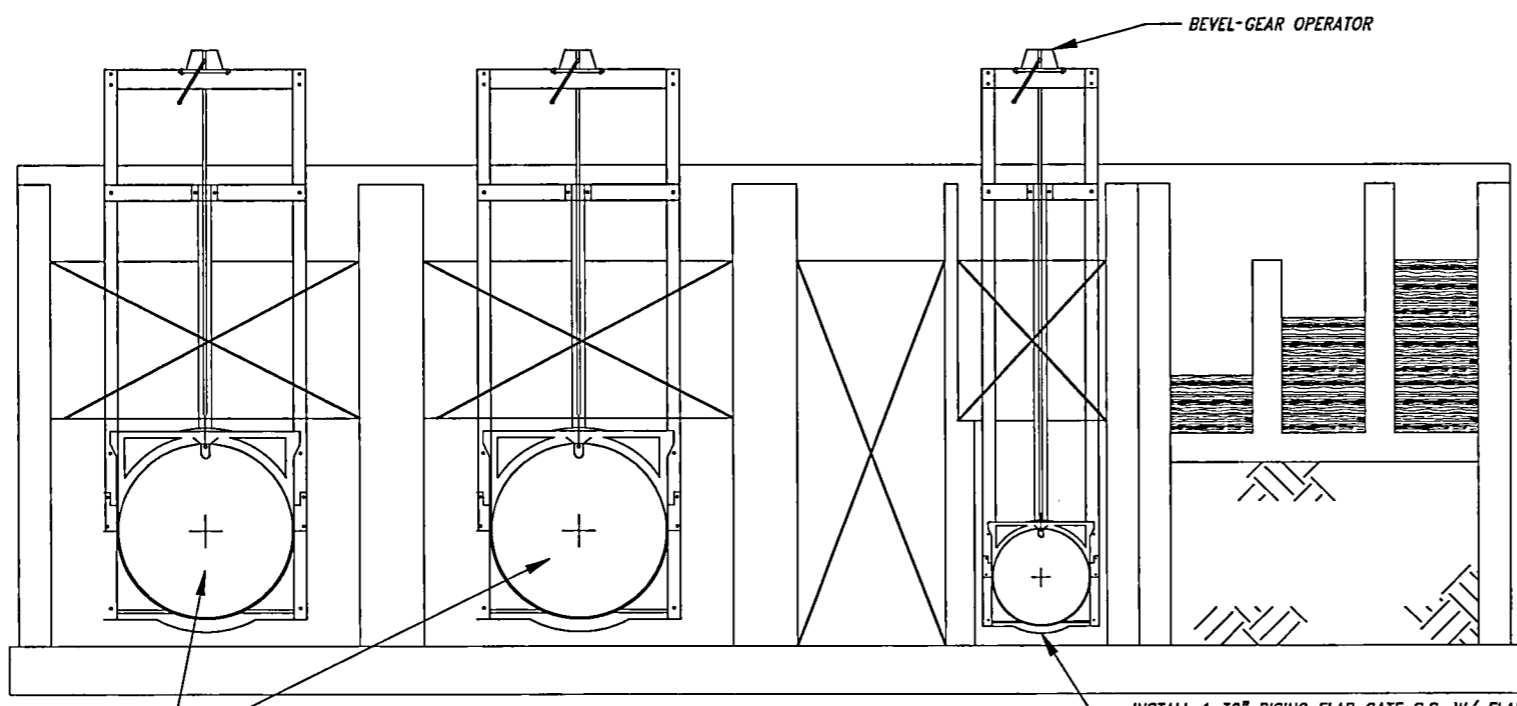


PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMC
		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 16 of 18

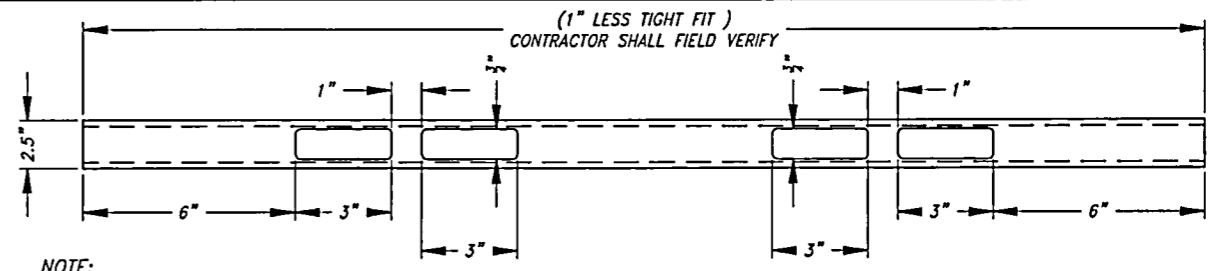
EXISTING WCS DETAILS



1 STOPLOGS & LOCK ROD RAIL SYSTEM IMPROVEMENTS
17 ELEVATION



2 GATES IMPROVEMENTS
17 ELEVATION

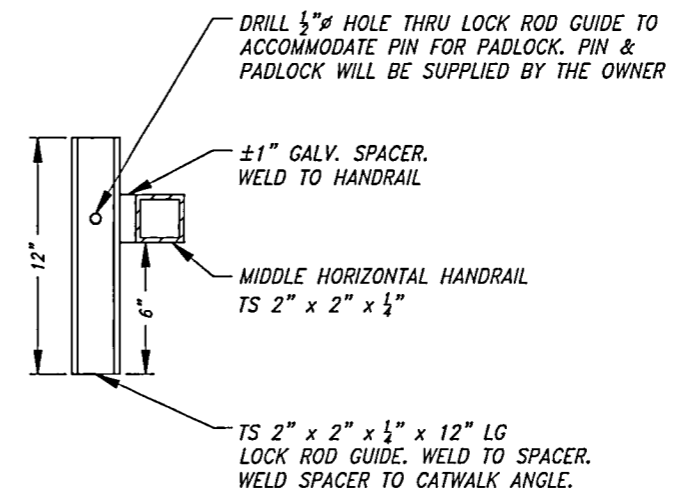
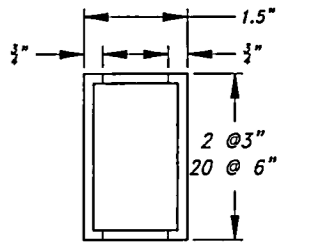


NOTE:
 ALL ALUMINUM STOPLOGS SHALL BE SUPPLIED BY THE CONTRACTOR

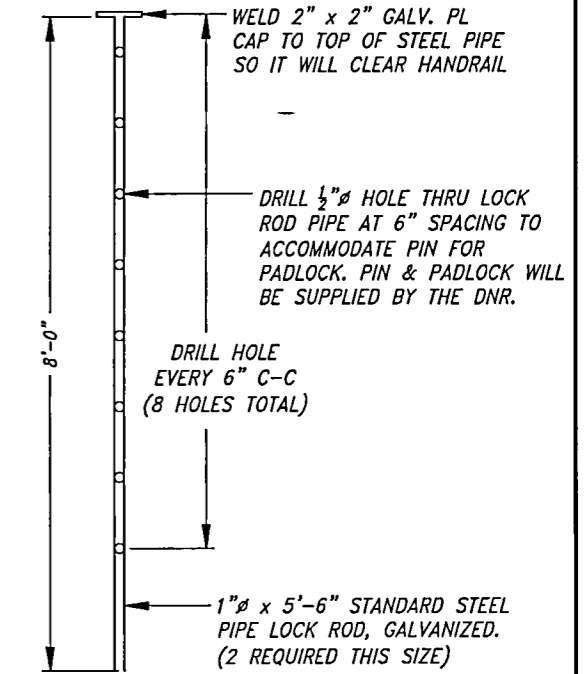
CONTRACTOR IS RESPONSIBLE FOR CUTTING STOPLOGS TO PROPER LENGTH AND FABRICATING THE HOLES IN ALL STOPLOGS AS SHOWN. THE 3/4\"/>

ALUMINUM STOPLOGS: 2 STOPLOGS, 1.5" x 3" x 1/4"
 CONTRACTOR SUPPLIES: 20 STOPLOGS, 1.5" x 6" x 1/4" WITH LIFTING HOLES

3 ALUMINUM STOPLOG
17 TYPICAL

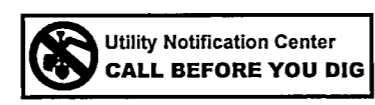


4 LOCK ROD GUIDE
17 TYPICAL



5 LOCK ROD GUIDE
17 TYPICAL

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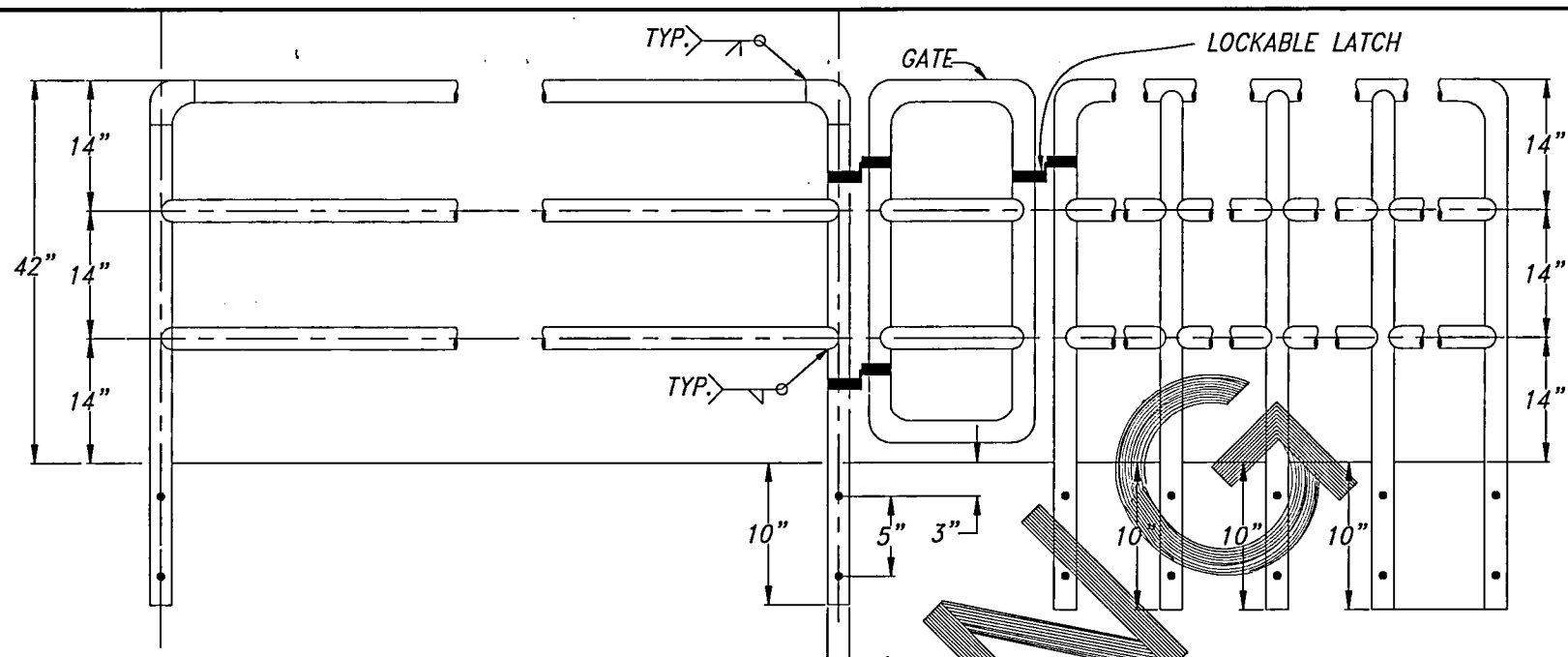


REV. NO.	DESCRIPTION	DATE	APPROVED

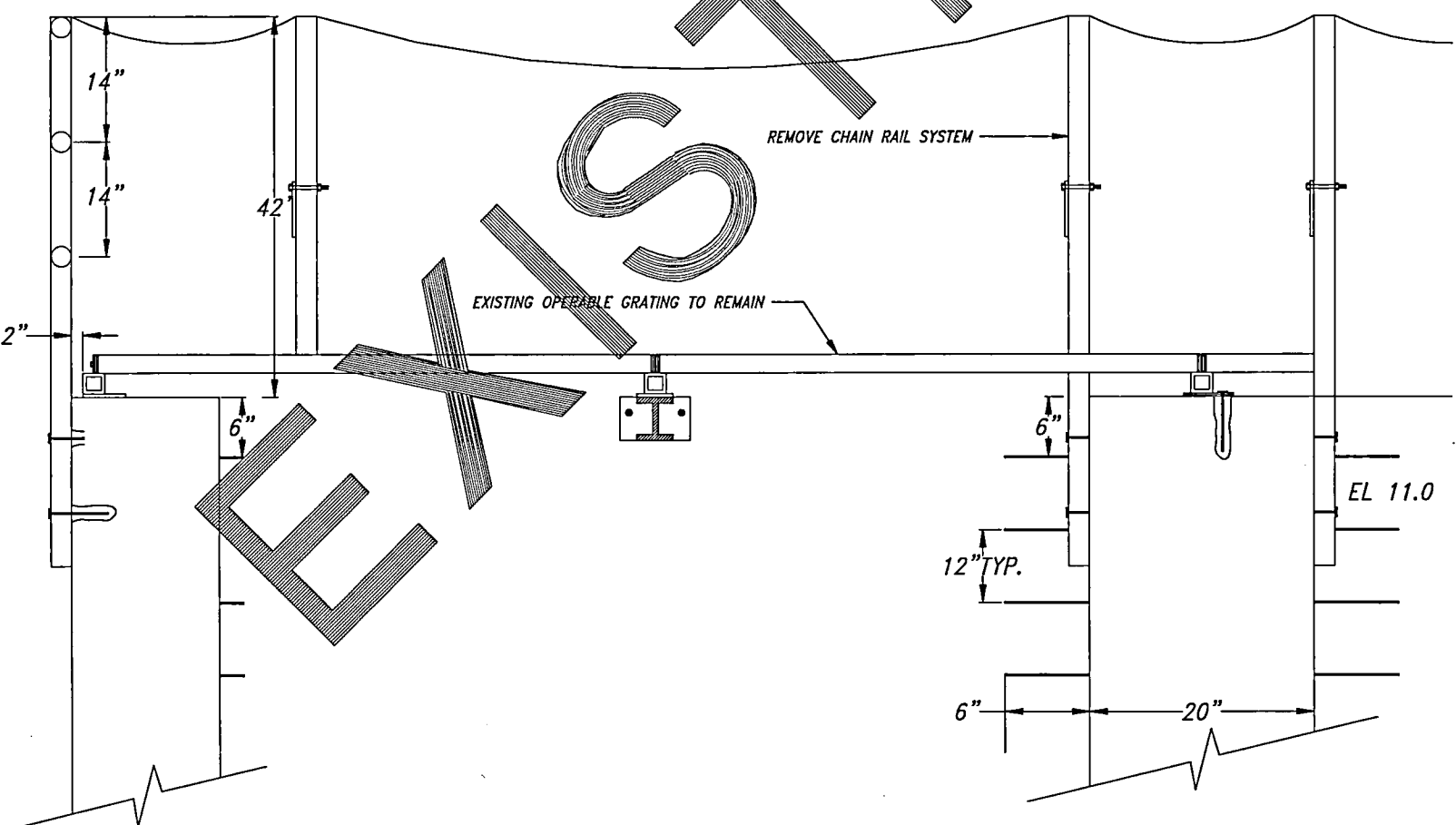


PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMC
GATES, HANDRAIL, GRATING, & STOPLOGS		SURVEYED BY:
WCS IMPROVEMENTS		CHECKED BY:
		SHEET NO. 17 of 18

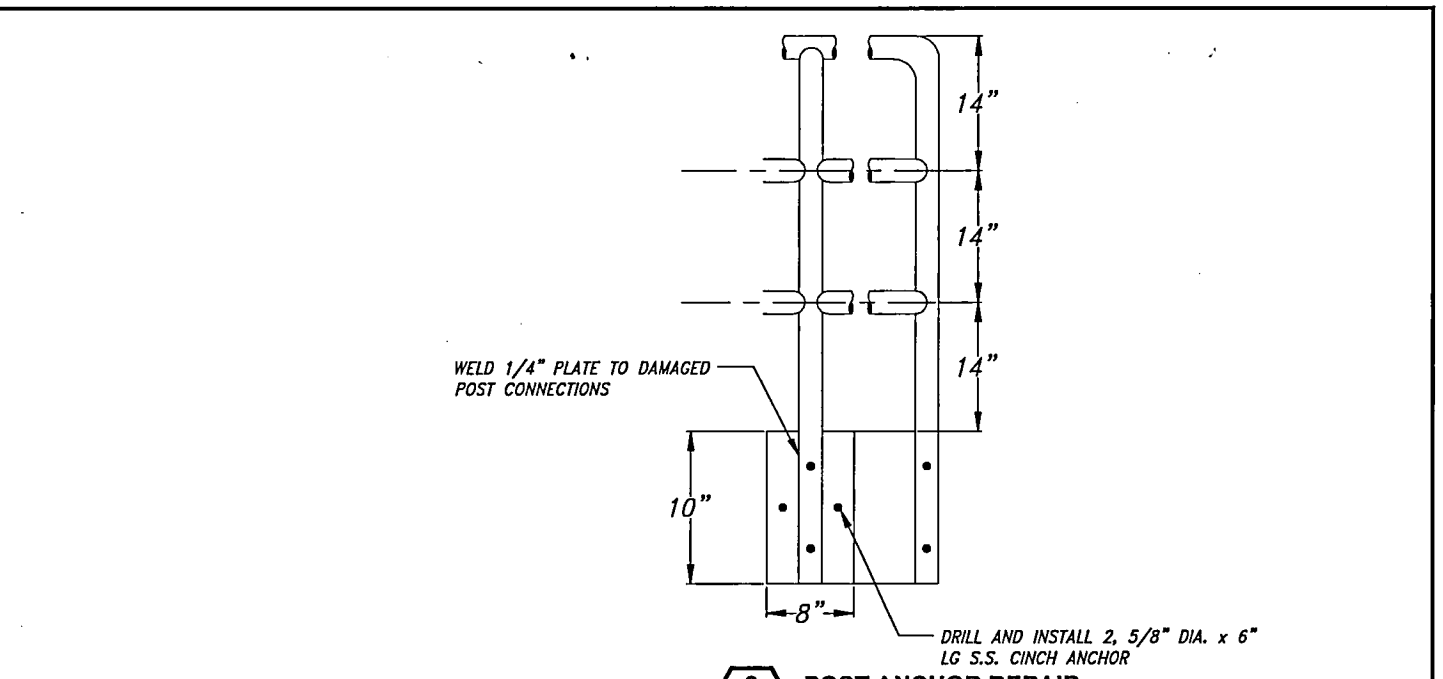
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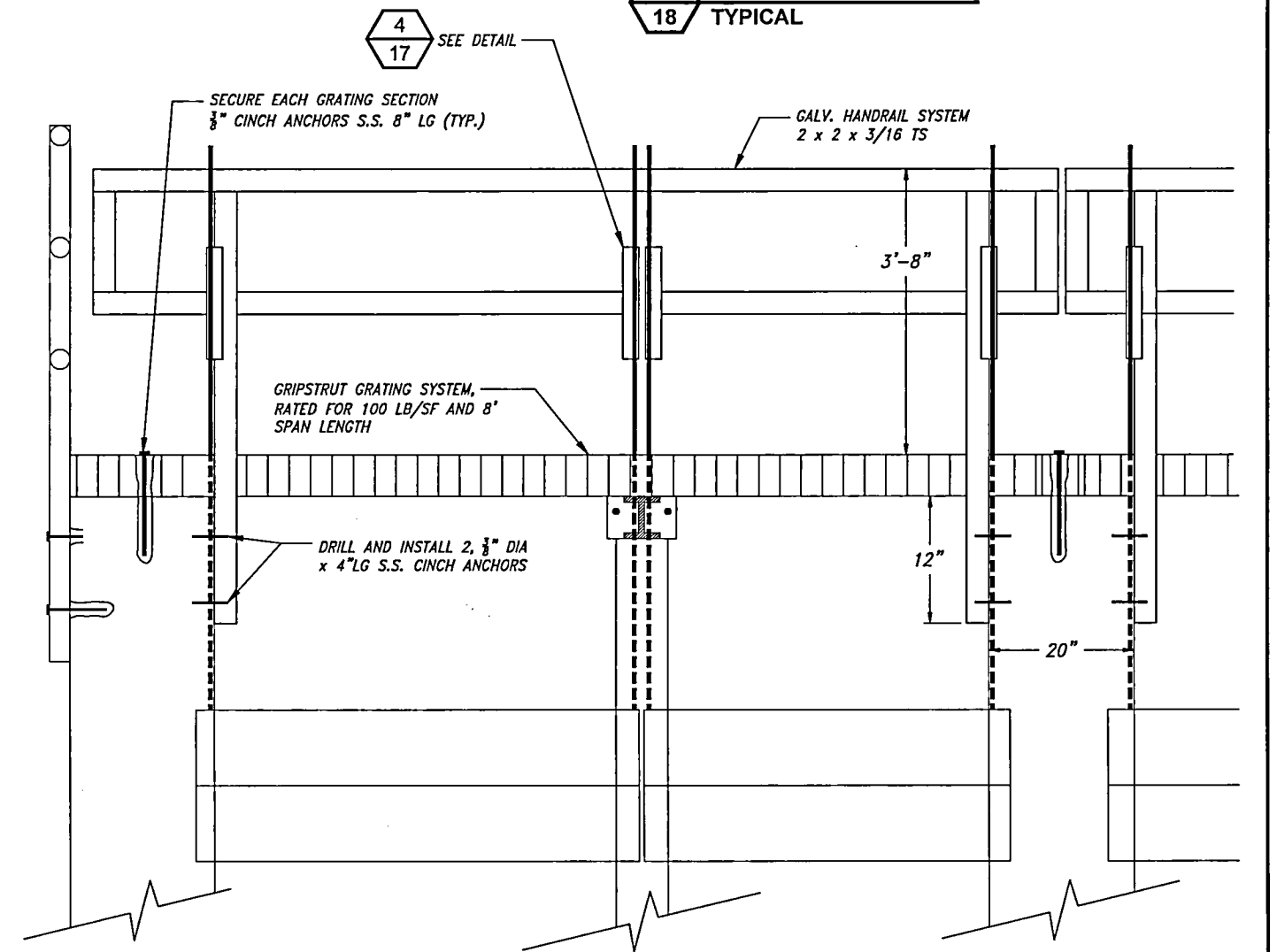
1 GUARDRAIL SYSTEM
18 EXISTING



2 CHAIN RAIL & GRATING SYSTEM
18 EXISTING



3 POST ANCHOR REPAIR
18 TYPICAL



4 METAL GRATING RAILING
18 IMPROVEMENTS

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PROJECT NO. US-OR-32-8	DATE: 8/4/2016	DESIGNED BY: GW
SMITH BYBEE		DRAWN BY: DMC
DETAILS EXISTING & IMPROVEMENTS		SURVEYED BY:
		CHECKED BY:
		SHEET NO. 18 of 18

90% DESIGN