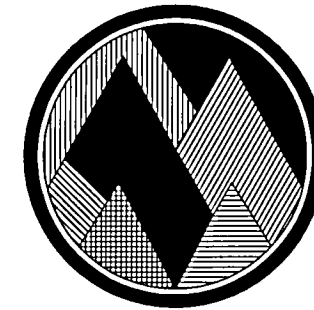




**DUCKS  
UNLIMITED**  
17700 S. E. MILL PLAIN BLVD. SUITE 100  
VANCOUVER, WA. 98683  
PH. (360) 885-2011

# US-OR-32-8 METRO: SMITH BYBEE WATER CONTROL STRUCTURES FACILITY IMPROVEMENTS

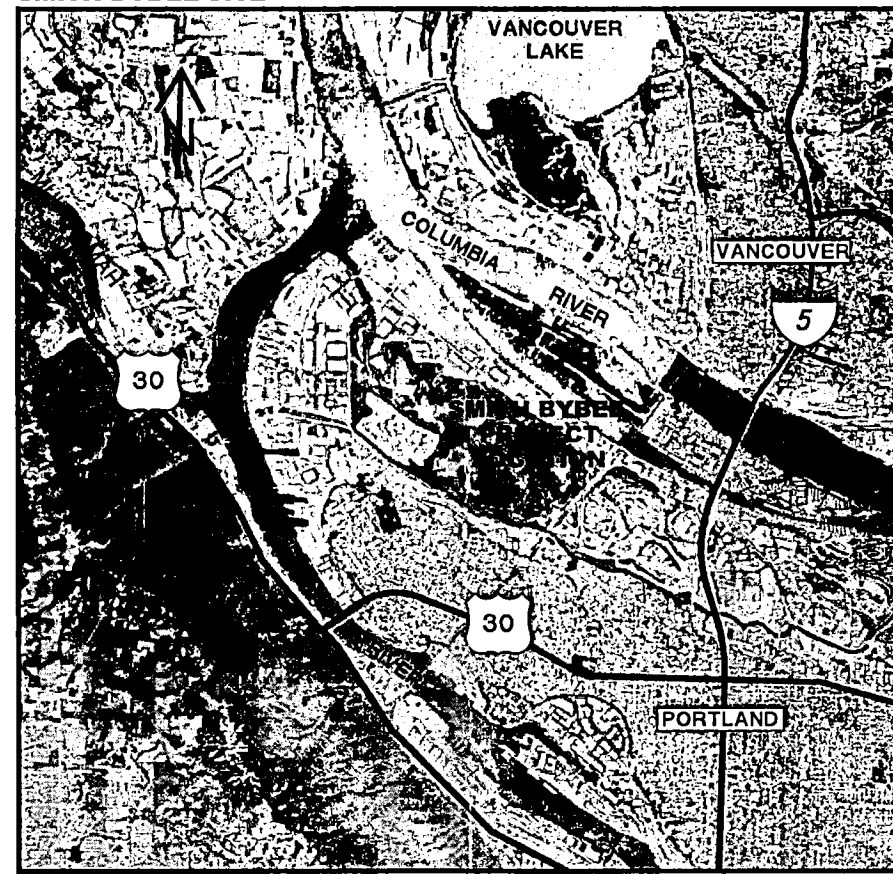


METRO

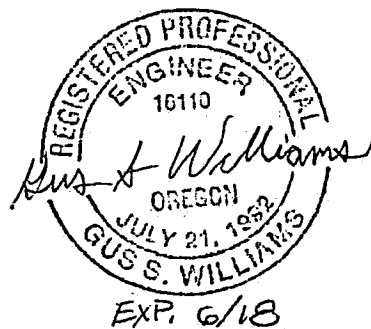
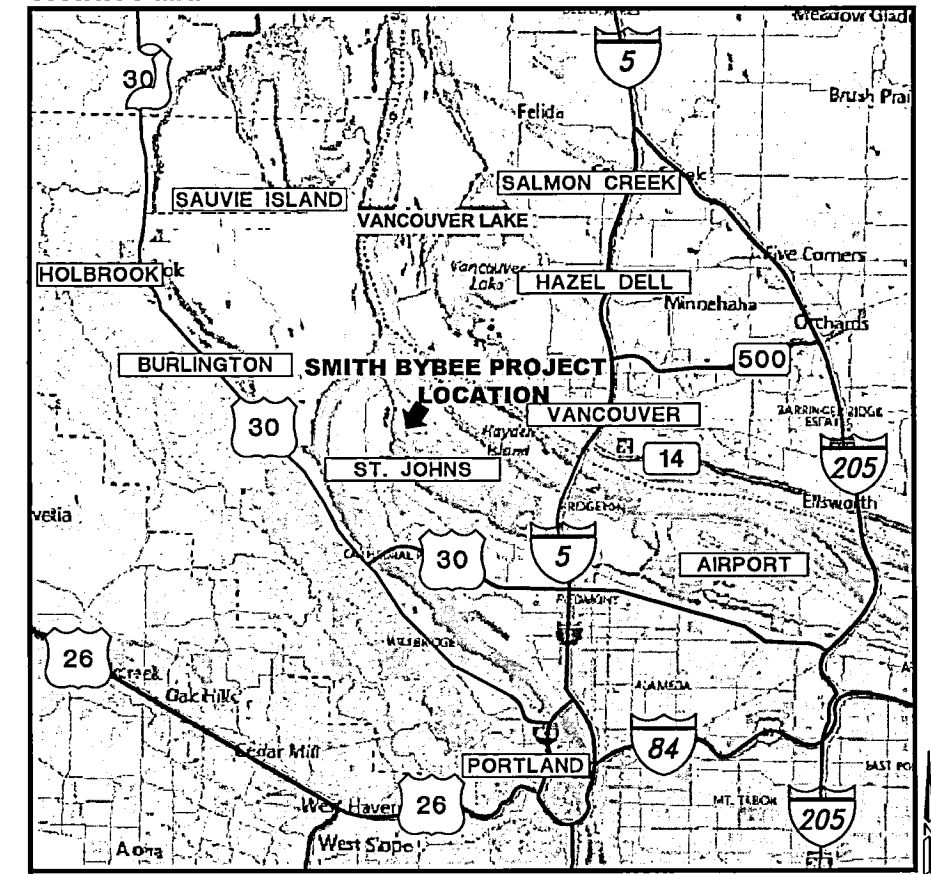
**WORK ITEMS:**

1. GATE MODIFICATION AND REPLACEMENTS.
2. ALUMINUM STOP LOGS.
3. METAL GRATING SYSTEM.
4. RAILINGS & LOCK ROD SYSTEMS.
5. FISH LADDER MODIFICATIONS.
6. DEBRIS BOOM AND ANCHORAGE.

**SMITH BYBEE SITE**



**VICINITY MAP**



**SHEET INDEX**

- 1 COVER SHEET LOCATION AND VICINITY MAPS, SHEET INDEX
- 2 DRAWING INFORMATION
- 3 SITE ACCESS SMITH-BYBEE
- 4 SMITH-BYBEE MODIFICATIONS SITE PLAN
- 5 SMITH-BYBEE MODIFICATIONS STRUCTURE PLAN VIEW
- 6 SMITH-BYBEE MODIFICATIONS STRUCTURE ELEVATION VIEW
- 7 SMITH-BYBEE EXISTING INFORMATION
- 8 SMITH-BYBEE MODIFICATIONS GATES, PLATFORM, RAILINGS, LOCKRODS & STOPLOGS
- 9 SMITH-BYBEE MODIFICATIONS PLATFORM, RAILINGS, LOCKRODS & STOPLOGS

*Final*

**RECORD SET**

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REV. NO.	DESCRIPTION	DATE	APPROVED



PROJECT NO. US-OR-32-8	DATE: 10/15/17	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL & SMITH BYBEE UNITS		DRAWN BY: DMC
WATER CONTROL STRUCTURE IMPROVEMENTS		SURVEYED BY: JPS
		CHECKED BY:
LOCATION MAP		SHEET NO. 1 of 9

**GENERAL NOTES:**

1. Ducks Unlimited makes no representations as to the existence or nonexistence of utilities. It is the responsibility of the contractor to comply with the provisions of all applicable utility notification regulations. The contractor will be liable for any damage to utilities caused by construction activities.
2. The engineer does not represent that the location of utilities shown on the plans are exact or complete. It shall be the responsibility of the contractor to determine the presence of, actual locations of and make provisions for all watercourses and utilities. The contractor shall verify location, depth and height. Their verification shall be coordinated by the contractor with the appropriate utility company.
3. The contractor shall exercise extreme caution when working in the vicinity of overhead power lines. Verify location in the field and protect in place.
4. The contractor shall comply with all local and state requirements relative to the notification of the applicable underground service alert.
5. At least 2 working days prior to beginning any digging or excavation work, the contractor shall notify underground service alert.
6. In accordance with generally accepted construction practices, the contractor will be solely and completely responsible for the conditions of the job site including safety of all persons and property during performance of the work. The contractor shall ensure that all work is performed in accordance with occupational safety laws, including the design and construction of proper shoring of trenches. The duties of the project engineer do not include review of the adequacy of the contractor's safety in, on, or near the job site.
7. It is the responsibility of the contractor to be knowledgeable about the project specifications and permits. All work shall be completed in compliance with the contract documents. The contractor shall have copies of the most current approved plans, specifications and permit conditions on site during all work operations.
8. The project site and adjacent areas contain sensitive habitat areas for protected wildlife, and may include endangered species. The contractor shall protect wildlife and water quality, and minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
9. Should it appear that the work to be done, or any matter relative thereto, is not sufficiently detailed or explained on these plans or in the specifications, the contractor shall contact the construction manager for such further explanations as may be necessary.
10. Should the contractor find any discrepancies between the conditions existing in the field and the information shown on the drawings, he shall notify the construction manager before proceeding with construction.

**SURVEY POINT DESCRIPTORS**

CTBM	Bench Mark (permanent)	RDSH	Road Shoulder
CTBT	Bench Mark (temporary)	RDSN	Road Sign
CTCP	Survey Control Point (permanent)	RDTO	Road, Toe of Slope
CTCT	Survey Control Point (temporary)	RDTP	Road, Top of Slope
DIFL	Ditch Flowline	SDMH	Storm Drain, Manhole
DIGB	Ditch Grade Break	SDPI	Storm Drain, Pipe Invert
DITO	Ditch Toe	SDPT	Storm Drain, Pipe Top
DITP	Ditch Top	SSMH	Sanitary Sewer, Manhole
ELBX	Electric, Box or Pullbox	SWFL	Swale Flowline
ELGY	Electric, Guy Wire	SWGB	Swale Grade Break
ELPP	Electric, Power Pole	SWTO	Swale Toe
ELSN	Electric, Warning Sign	SWTP	Swale Top
ELTR	Electric, Transformer	TFBL	Topo Feature, Building
ELTW	Electric, Tower	TFBR	Topo Feature, Brush
ELVT	Electric, Vault	TFCO	Topo Feature, Concrete (pad, slab, etc.)
FNAP	Fence Angle Point	TFFL	Topo Feature, Flowline
FNCR	Fence Corner	TFGB	Topo Feature, Grade Break
FNGT	Fence Gate	TFGS	Topo Feature, Ground Shot
FNLN	Fence Line	TFRK	Topo Feature, Rock Or Rocky Area Boundary
IRCO	Irrigation Concrete Pad	TFTL	Topo Feature, Tree line
IRCP	Irrigation Control Panel	TFTO	Topo Feature, Grade Break at Toe
IRPI	Irrigation Pipe Invert	TFTP	Topo Feature, Grade Break at Top
IRPM	Irrigation Pump	TFTR	Topo Feature, Tree
IRPT	Irrigation Pipe Top	WAEW	Edge of Water
IRVL	Irrigation Valve	WAHW	High Water Mark
IRWL	Irrigation Well	WALW	Under Water Ground Shot
LVCL	Levee Centerline	WAWW	Water Surface
LVGB	Levee Grade Break	WCFL	Water Control Structure, Flowline/Invert at Structure
LVTO	Levee Toe of Slope	WCFR	Water Control Structure, Frame Top
LVTP	Levee Top of Slope	WCHW	Water Control Structure, Headwall
RDCL	Road, Centerline	WCPI	Water Control Structure, Pipe Invert at Outlet
RDED	Road, Edge of Dirt Road	WCPT	Water Control Structure, Pipe Top at Outlet
RDEG	Road, Edge of Gravel Road	WCST	Water Control Structure, Top of Structure
RDEP	Road, Edge of Paved Road	WCWW	Water Control Structure, Wing Wall
RDBG	Road Grade Break		

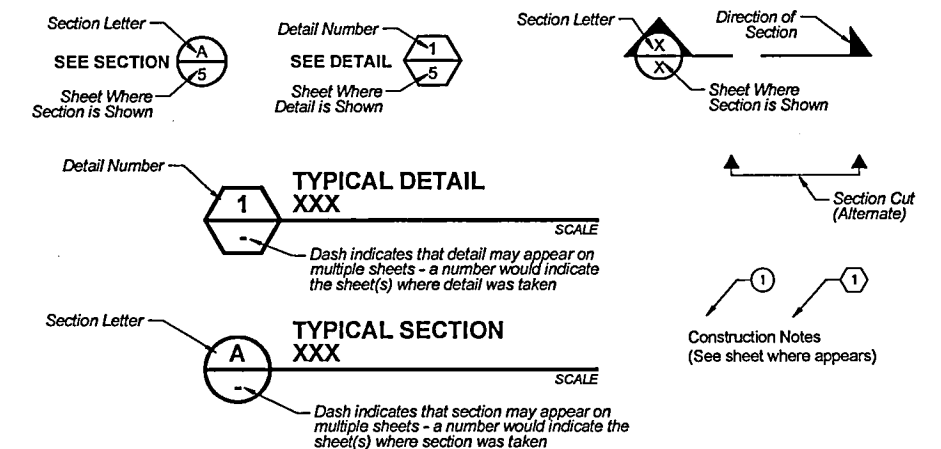
**ABBREVIATIONS**

AB	Aggregate Base	(N)	New
AC	Acre	N	North
APPROX	Approximate	NIC	Not In Contract
BM	Benchmark	NTS	Not To Scale
CAP	Corrugated Aluminum Pipe	OC	On Center
CC	Center to Center	OD	Outside Diameter
CF	Cubic Foot	PIP	Pressure Irrigation Pipe
CFS	Cubic Foot Per Second	PP	Power Pole
CL	Centerline	PSI	Pounds per Square Inch
CMP	Corrugated Metal Pipe	PVC	Polyvinyl Chloride
CMPA	Corrugated Metal Arch Pipe	QTY	Quantity
CONC	Concrete	R	Right
CP	Control Point	RCB	Reinforced Concrete Box
CY	Cubic Yard	RD	Road
DEMO	Demolish	REF	Reference Dimension
DIA	Diameter	REQD	Required
Dp	Pipe Diameter	ROW	Right Of Way
Dr	Riser Diameter	S	South
DU	Ducks Unlimited, Inc.	SCH	Schedule
D/S	Downstream	SS	Stainless Steel
E	East	SDR	Standard Dimension Ratio
EG	Existing Ground	SF	Square Feet
EL	Elevation	SHT	Sheet
EX, EXIST	Existing	SP	Special
FRG	Final Rough Grade	SPECS	Specifications
FG	Finished Grade	SY	Square Yard
FL	Flowline	STA	Station
FT	Foot, Feet	STD	Standard
FTG	Fitting, Footing	TBD	To Be Determined by Engineer
GA	Gauge	TBM	Temporary Benchmark
GB	Grade Break	TE	Top Elevation
H	Height	TEMP	Temporary
HDPE	High-Density Polyethylene	TOL	Top of Levee
ID	Inside Diameter	TOB	Top of Berm
IE	Invert Elevation	TYP	Typical
IN	Inch, Inches	USA	Underground Service Alert
INV	Invert	U/S	Upstream
IPS	Iron Pipe Size	VLV	Valve
L	Length, Left	W	Width, West (where applicable)
LBF	Pounds-Force	W/	With
LF	Linear Feet	WCS	Water Control Structure
MAINT	Maintenance	WS	Water Surface
MAX	Maximum	WSEL	Water Surface Elevation
MIN	Minimum	WWF	Welded Wire Fabric
MISC	Miscellaneous	X:1	Slope, Horizontal/Vertical

**LEGEND & STANDARD SYMBOLS**

	CONCRETE
	DEBRIS BOOM
	NEW GRATING
	EXISTING GRATING
	FISH LADDER MODIFICATIONS

**DETAILING CONVENTIONS**



**RECORD SET**

**Unauthorized Changes & Uses**  
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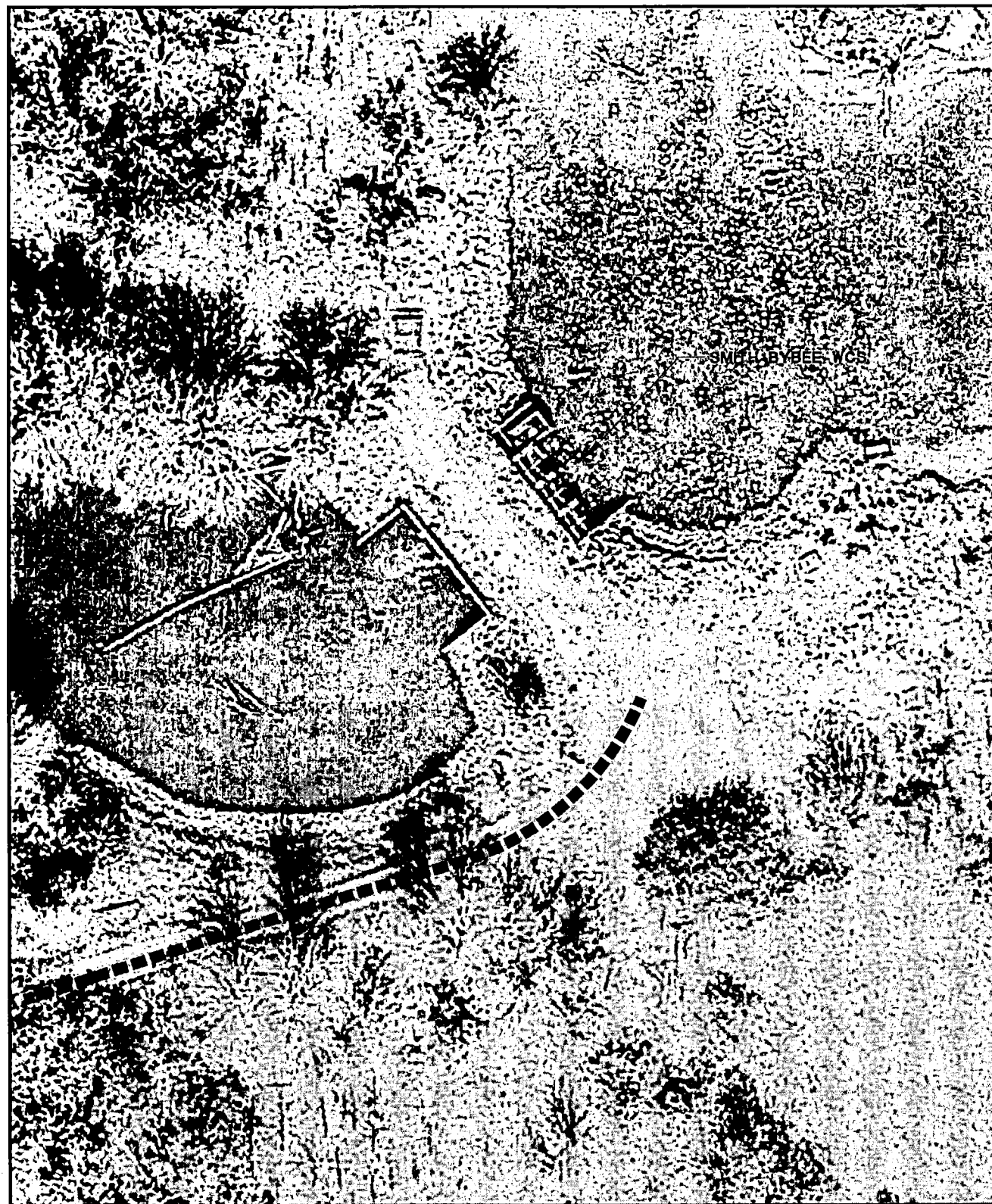
REV. NO.	DESCRIPTION	DATE	APPROVED



PROJECT NO. US-OR-32-8	DATE: 10/15/17	DESIGNED BY: GW
METRO: MULTNOMAH CHANNEL & SMITH BYBEE UNITS		DRAWN BY: DMC
WATER CONTROL STRUCTURE IMPROVEMENTS		SURVEYED BY: JPS
DRAWING INFORMATION		CHECKED BY: JPS
		SHEET NO. 2 of 9

0 600 1,200  
SCALE FEET

0 20 40  
SCALE FEET



1 SMITH BYBEE  
12 VICINITY MAP

2 SMITH BYBEE  
12 SITE ACCESS

**RECORD SET**

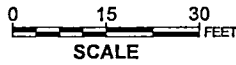
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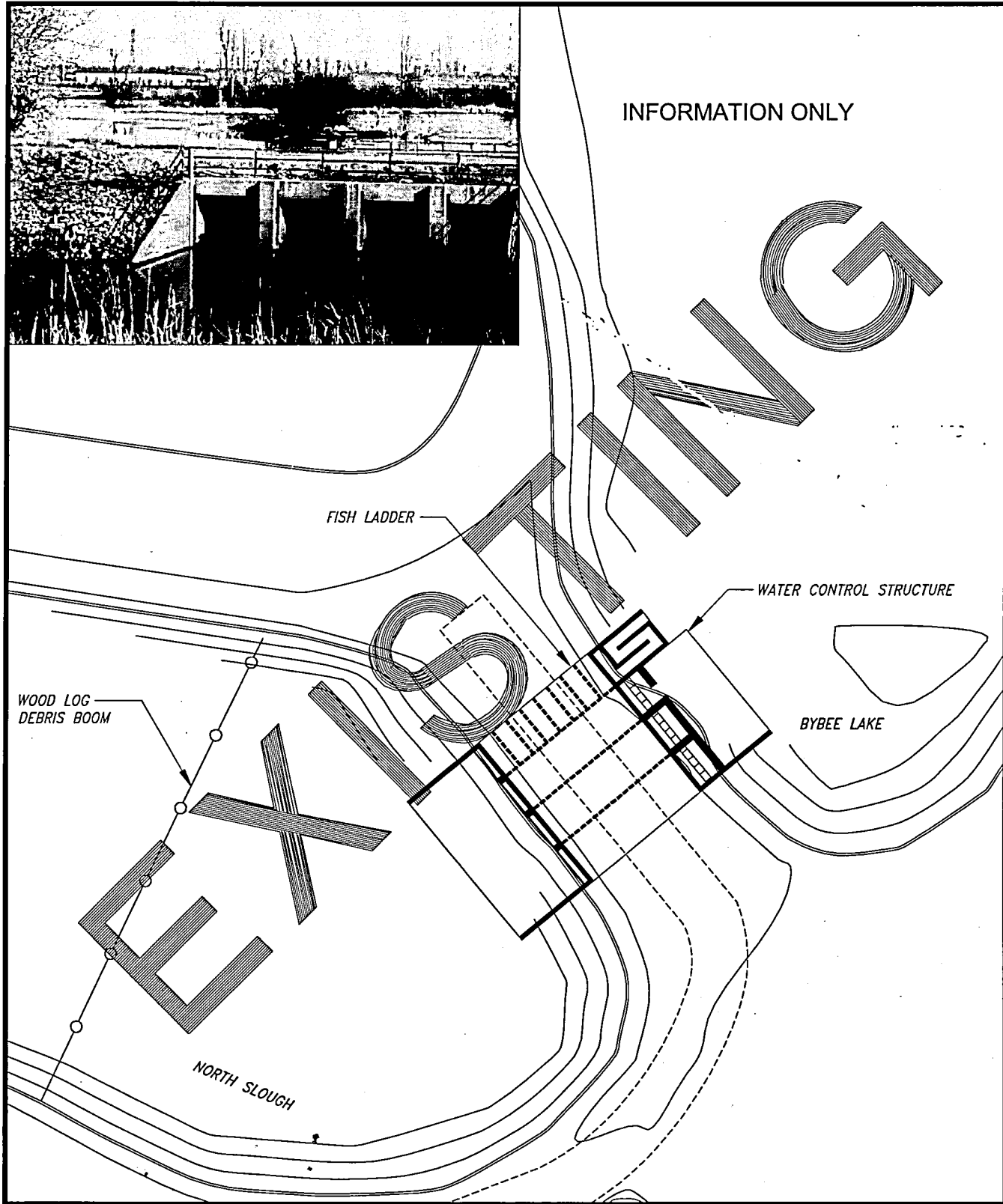
REV. NO.	DESCRIPTION	REVISIONS	DATE	APPROVED
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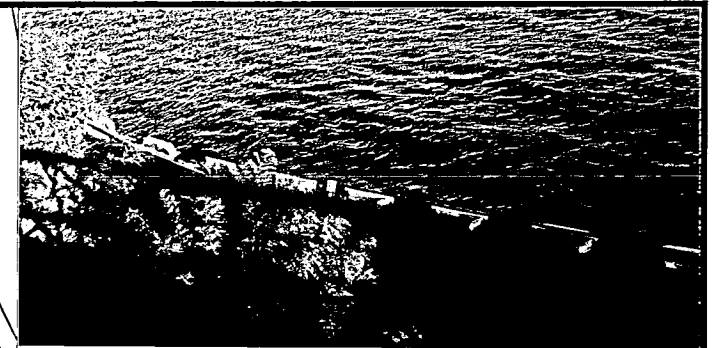
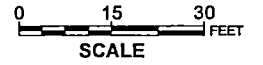
PROJECT NO. US-OR-32-8	DATE: 10/15/17	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMC
WATER CONTROL STRUCTURE IMPROVEMENTS		SURVEYED BY:
SITE ACCESS		CHECKED BY:
		SHEET NO. 3 of 9



INFORMATION ONLY



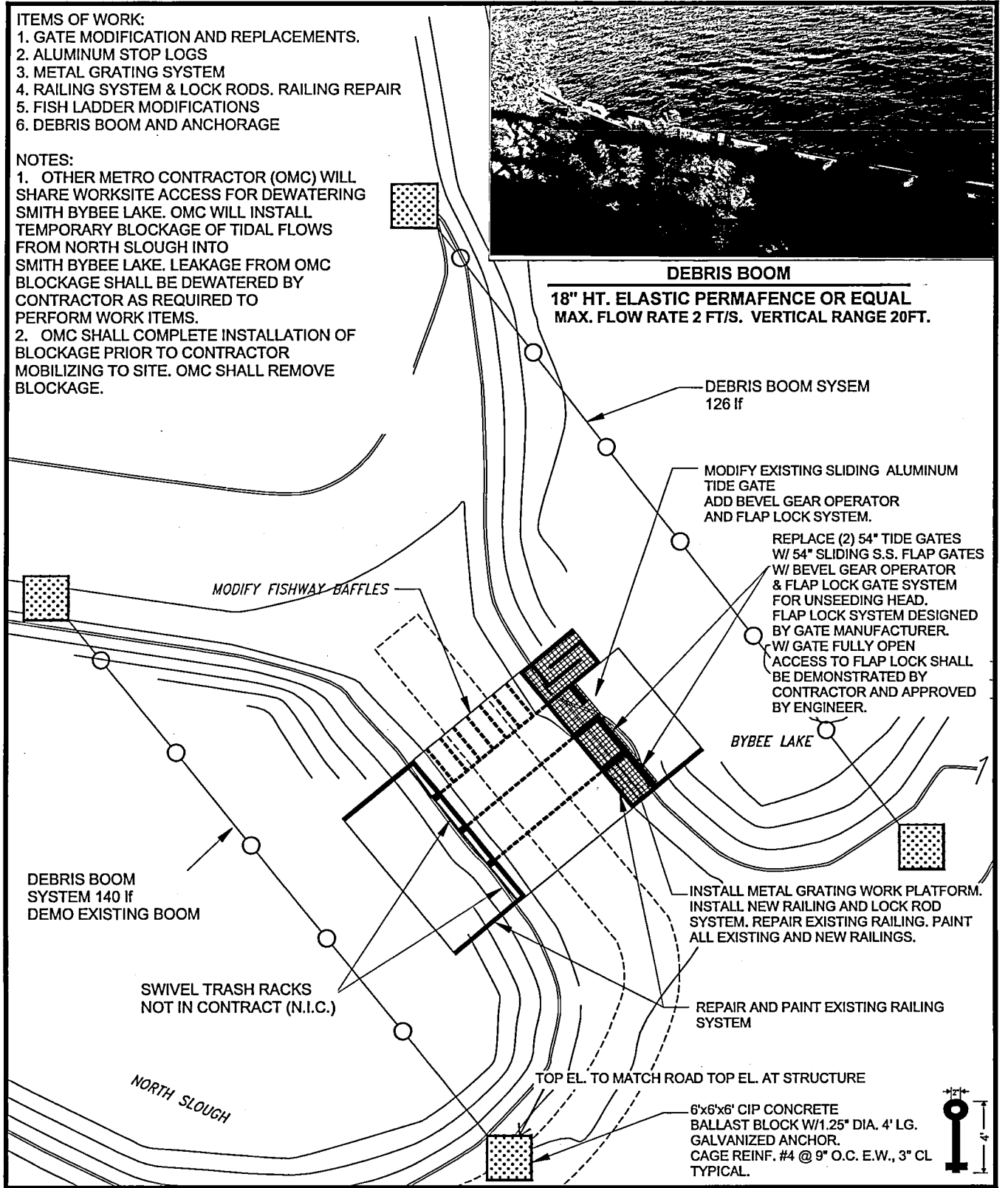
1 EXISTING SITE PLAN  
13



- ITEMS OF WORK:
1. GATE MODIFICATION AND REPLACEMENTS.
  2. ALUMINUM STOP LOGS
  3. METAL GRATING SYSTEM
  4. RAILING SYSTEM & LOCK RODS. RAILING REPAIR
  5. FISH LADDER MODIFICATIONS
  6. DEBRIS BOOM AND ANCHORAGE

NOTES:

1. OTHER METRO CONTRACTOR (OMC) WILL SHARE WORKSITE ACCESS FOR DEWATERING SMITH BYBEE LAKE. OMC WILL INSTALL TEMPORARY BLOCKAGE OF TIDAL FLOWS FROM NORTH SLOUGH INTO SMITH BYBEE LAKE. LEAKAGE FROM OMC BLOCKAGE SHALL BE DEWATERED BY CONTRACTOR AS REQUIRED TO PERFORM WORK ITEMS.
2. OMC SHALL COMPLETE INSTALLATION OF BLOCKAGE PRIOR TO CONTRACTOR MOBILIZING TO SITE. OMC SHALL REMOVE BLOCKAGE.



2 WCS IMPROVEMENTS  
13

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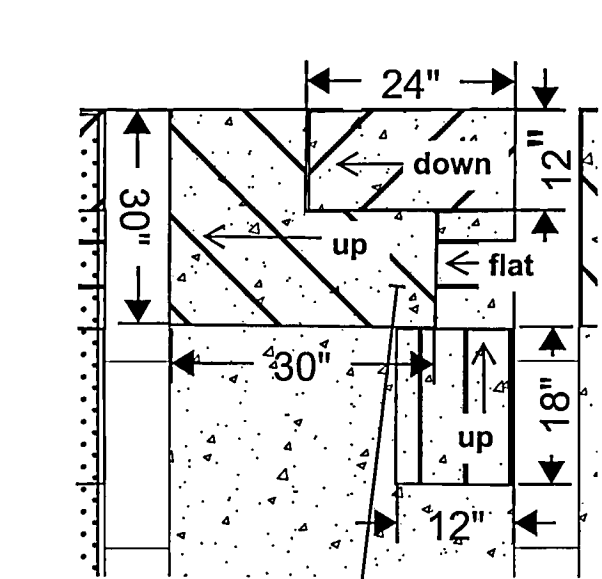
REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED



PROJECT NO. US-OR-32-8	DATE: 10/15/17	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMG
MODIFICATIONS		SURVEYED BY:
SITE PLAN DEBRIS BOOM, GATES, PLATFORM, RAILINGS & FISH LADDER		CHECKED BY:
SHEET NO. 4 of 9		

RECORD SET

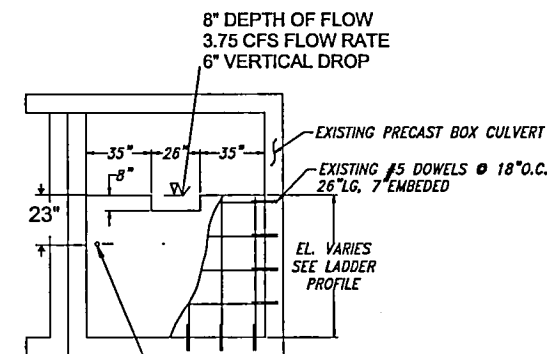




RAKE FINISH PERPENDICULAR TO SLOPE

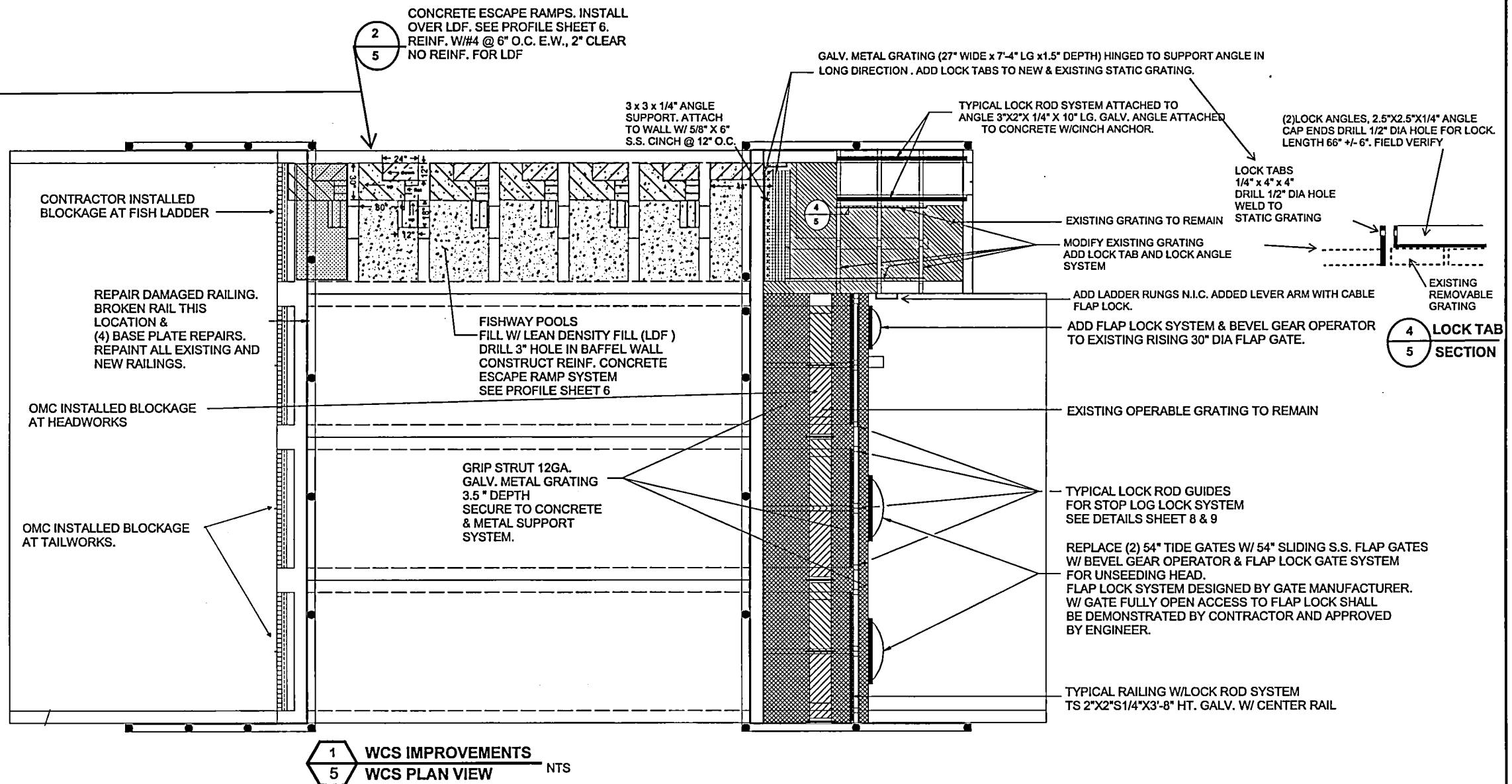
2  
5  
**DETAIL ESCAPE RAMPS  
PLAN VIEW**

SEE SHEET 6 FOR ADDITIONAL DETAILS



CORE DRILL 3" DIA. HOLE IN BAFFLE WALL  
I.E. 23" BELOW TOP OF BAFFLE WALL

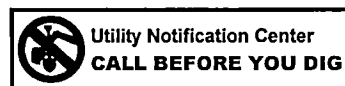
3  
5  
**CORE DRILL EXISTING FISH LADDER BAFFLES  
ELEVATION**



1  
5  
**WCS IMPROVEMENTS  
WCS PLAN VIEW** NTS

- ITEMS OF WORK:**
1. GATE MODIFICATION AND REPLACEMENTS.
  2. ALUMINUM STOP LOGS
  3. METAL GRATING SYSTEM
  4. RAILING SYSTEM & LOCK RODS. RAILING REPAIR
  5. FISH LADDER MODIFICATIONS

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REV. NO.	DESCRIPTION	DATE	APPROVED

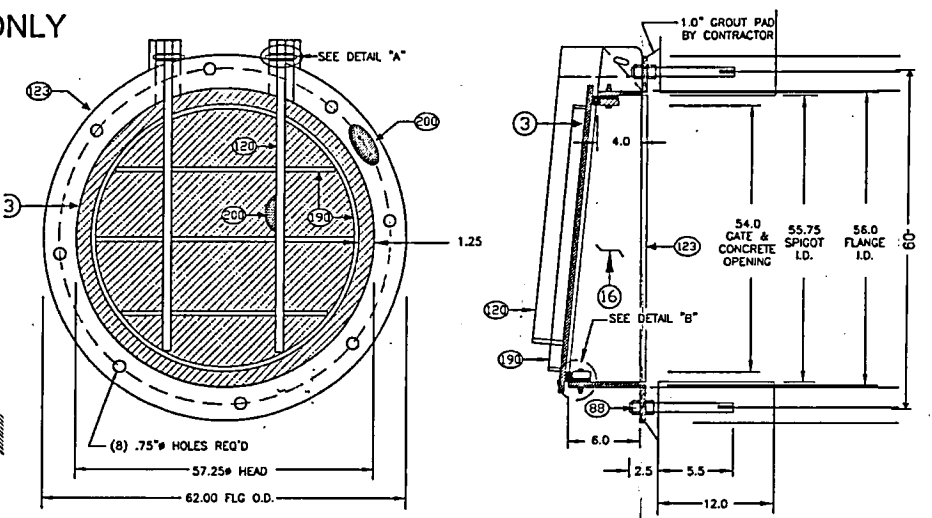
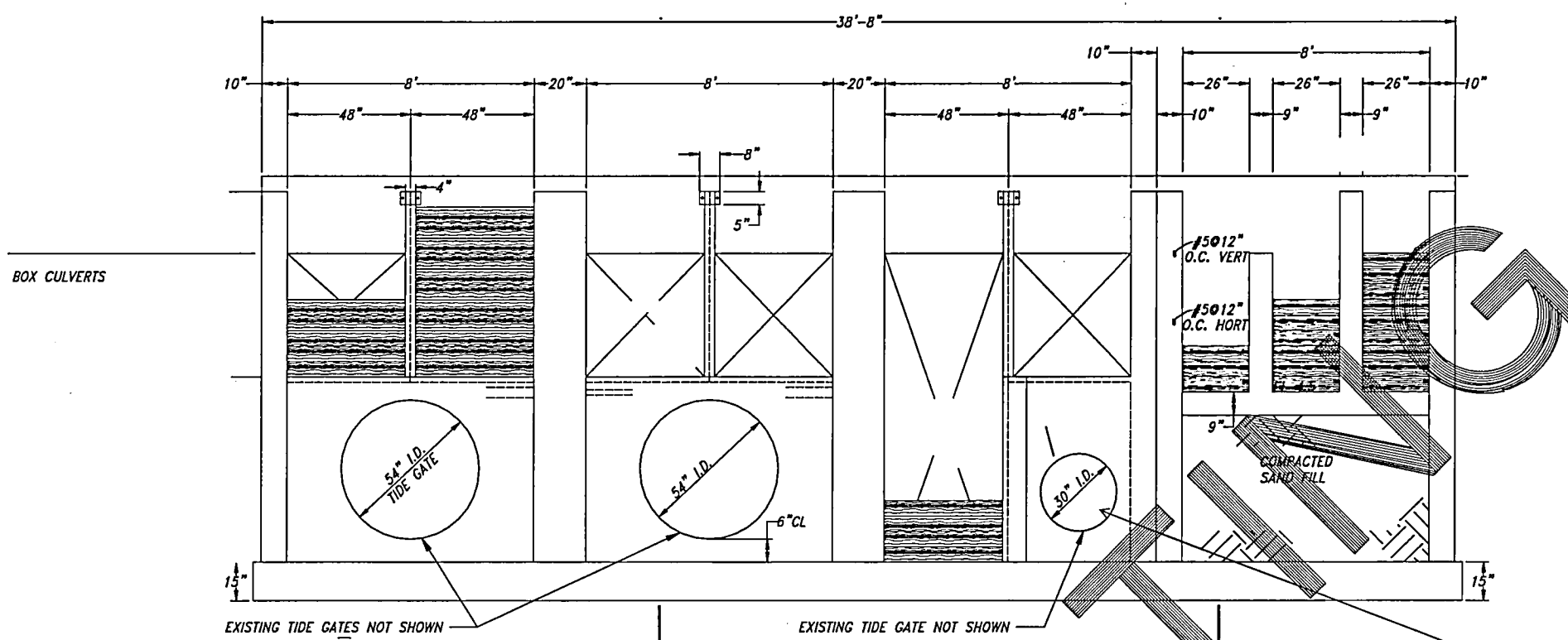


PROJECT NO. US-OR-32-8	DATE: 10/15/17	DESIGNED BY: GW
METRO: SMITH BYBEE		
MODIFICATIONS		
PLAN FISH LADDER, TRASH RACK, PLATFORM, RAILINGS, LOCKRODS & GATES		
DRAWN BY: DMC	SURVEYED BY:	CHECKED BY:
SHEET NO. 5 of 9		

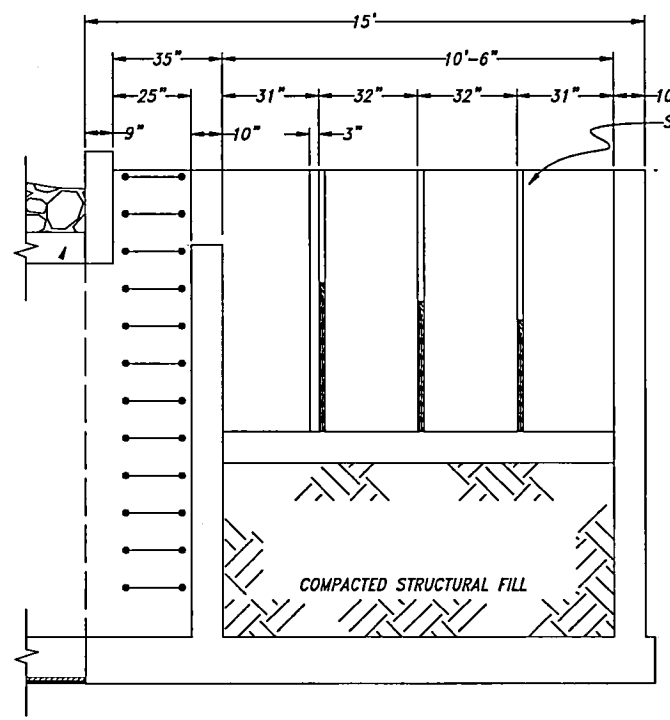
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INFORMATION ONLY



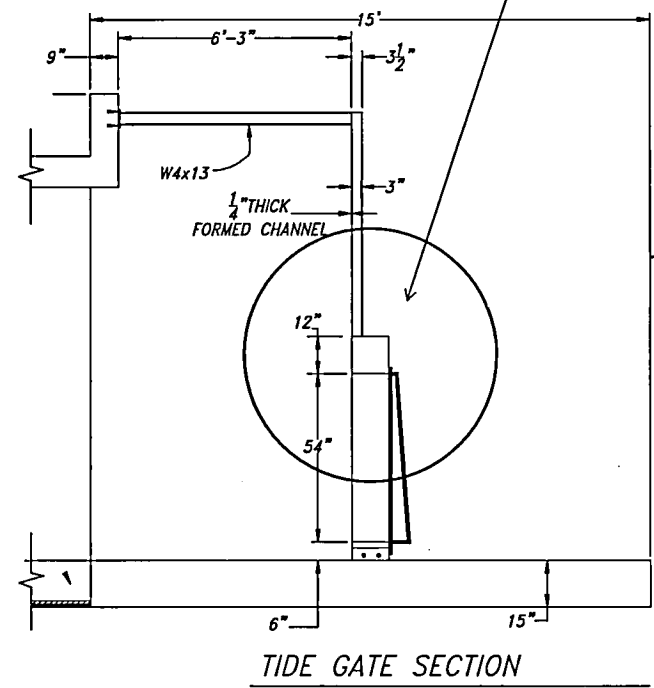
EXISTING 54" DIAMETER TIDE GATE



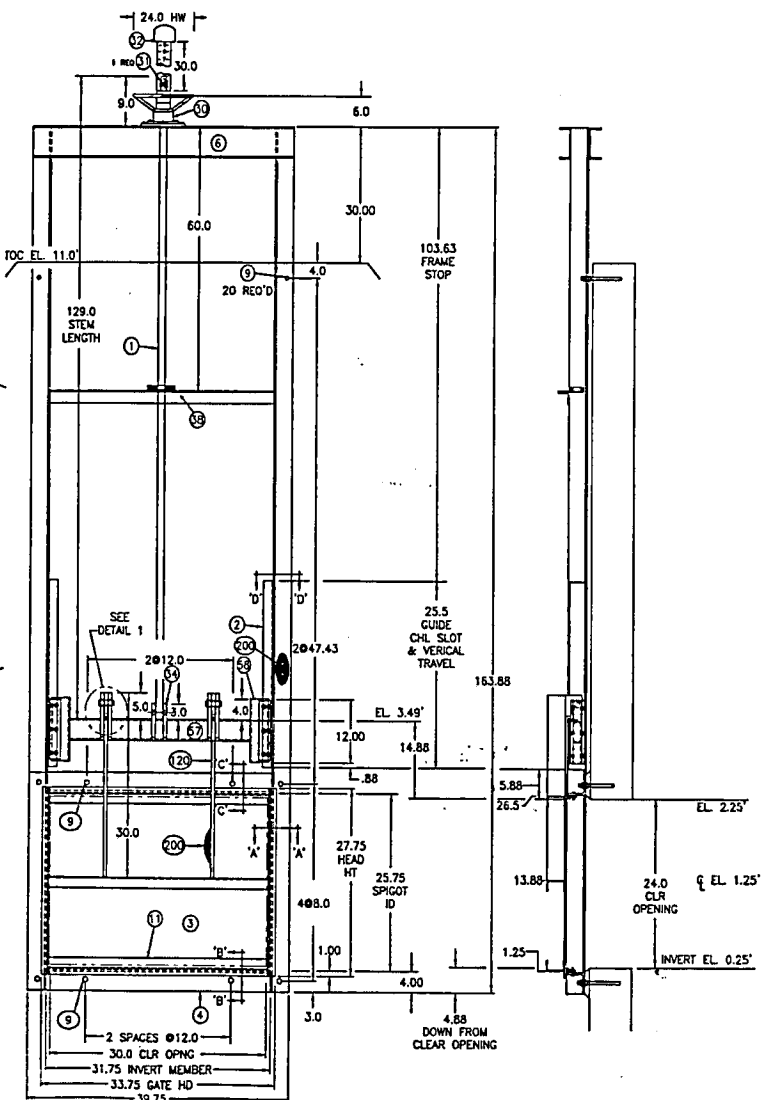
ADJUSTABLE LADDER SECTION  
NOT TO SCALE

HEADWORKS ELEVATION

EXISTING



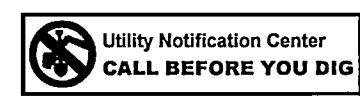
TIDE GATE SECTION  
NOT TO SCALE



EXISTING 30" SLIDE FLAP GATE

RECORD SET

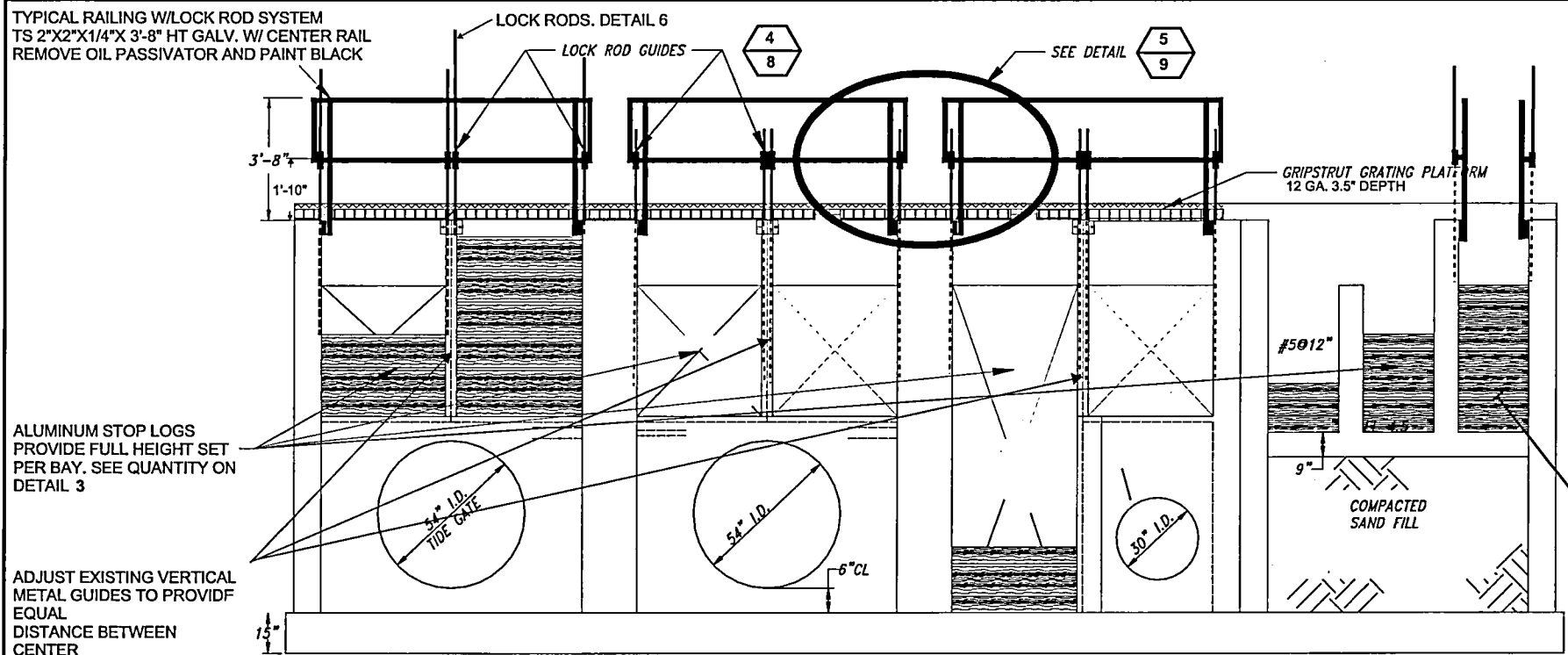
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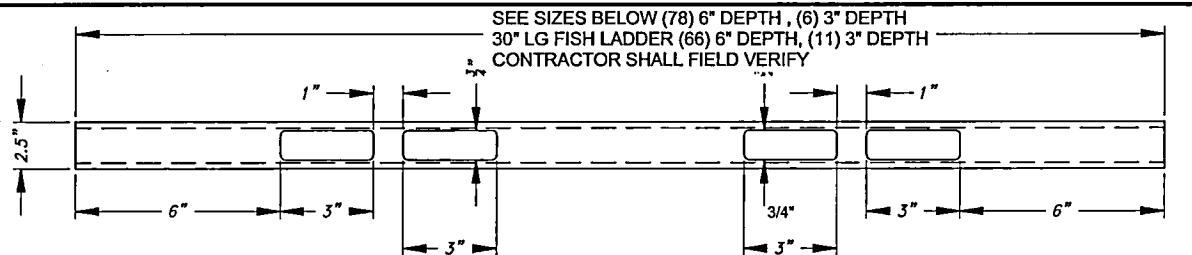
REV. NO.	DESCRIPTION	REVISIONS	DATE	APPROVED



PROJECT NO. US-OR-32-8	DATE 10/20/17	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMC
EXISTING INFORMATION		SURVEYED BY:
EXISTING WCS DETAILS		CHECKED BY:
		SHEET NO. 7 of 9



**1 STOPLOGS & LOCK ROD RAIL SYSTEM IMPROVEMENTS**  
**8 ELEVATION**

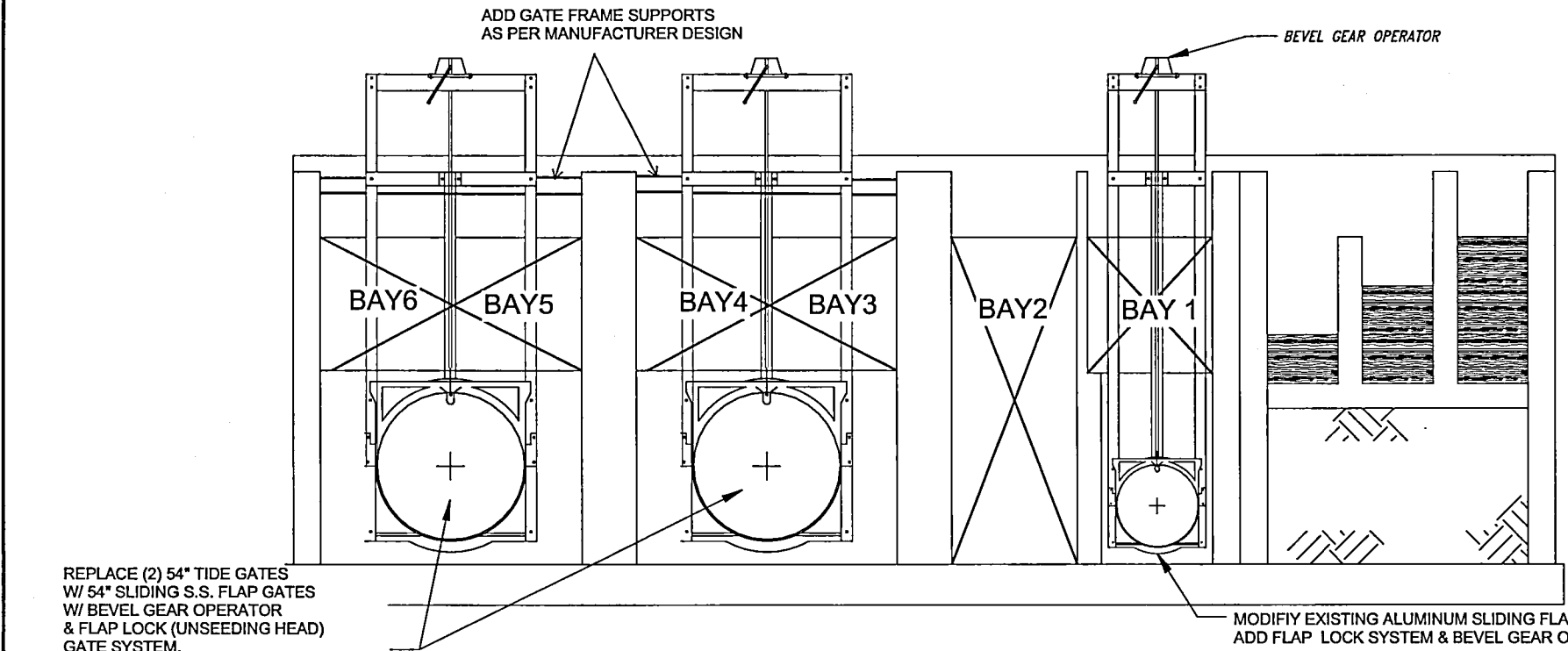
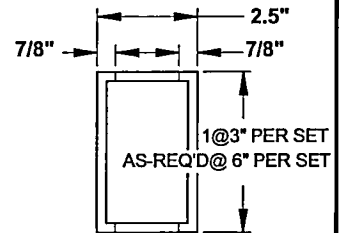


**NOTE:**  
 ALL ALUMINUM STOPLOGS SHALL BE SUPPLIED BY THE CONTRACTOR

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

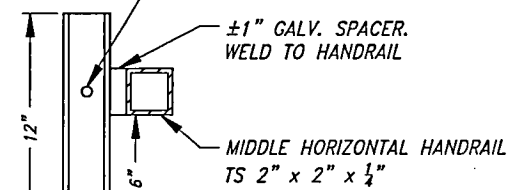
1ST SET STOPLOGS 18" FROM TOP OF WALL. DOWNSTREAM SET 6" LOWER PER POOL. EACH SET SHALL INCLUDE 6" HT STOPLOGS WITH ONE 3" HT STOPLOG. SEE SHEET 17 FOR QUANTITY

**3 ALUMINUM STOPLOG**  
**8 TYPICAL**



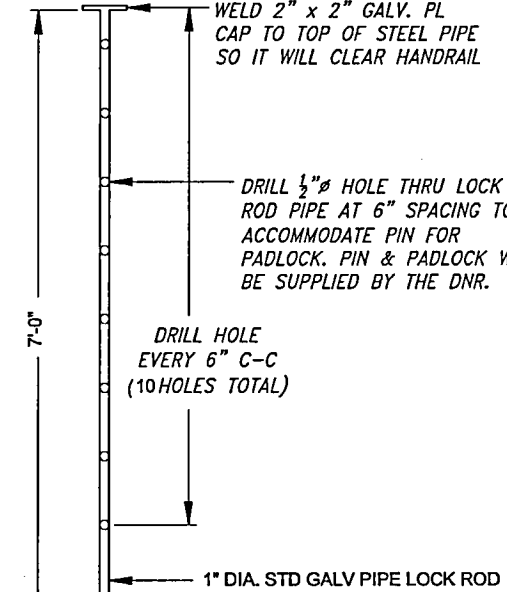
**2 GATES IMPROVEMENTS**  
**8 ELEVATION**

DRILL 1/2" Ø HOLE THRU LOCK ROD GUIDE TO ACCOMMODATE PIN FOR PADLOCK. PIN & PADLOCK WILL BE SUPPLIED BY THE OWNER



**4 LOCK ROD GUIDE**  
**8 TYPICAL**

DRILL 1/2" Ø HOLE THRU LOCK ROD PIPE AT 6" SPACING TO ACCOMMODATE PIN FOR PADLOCK. PIN & PADLOCK WILL BE SUPPLIED BY THE DNR.



**6 LOCK ROD**  
**8 TYPICAL**

**STOP LOG HT, (QUANTITY), LG SPECIFIC TO EACH BAY**

BAY 1: 6" HT (11) 48.5" LG,	3" HT (1) 48.5"
BAY 2: 6" HT (13) 49.0" LG, (4)49.875", (5)50.375,	3" HT (1) 50.375"
BAY 3: 6" HT (11) 49.25" LG,	3" HT (1) 49.25"
BAY 4: 6" HT (11) 48.625" LG,	3" HT (1) 48.625"
BAY 5: 6" HT (11) 48.5" LG,	3" HT (1) 48.5"
BAY 6: 6" HT (11) 49.0" LG,	3" HT (1) 49.0"

- ITEMS OF WORK:**
1. GATE MODIFICATION AND REPLACEMENTS.
  2. ALUMINUM STOP LOGS
  3. METAL GRATING SYSTEM
  4. RAILING SYSTEM & LOCK RODS. RAILING REPAIR
  5. FISH LADDER MODIFICATIONS

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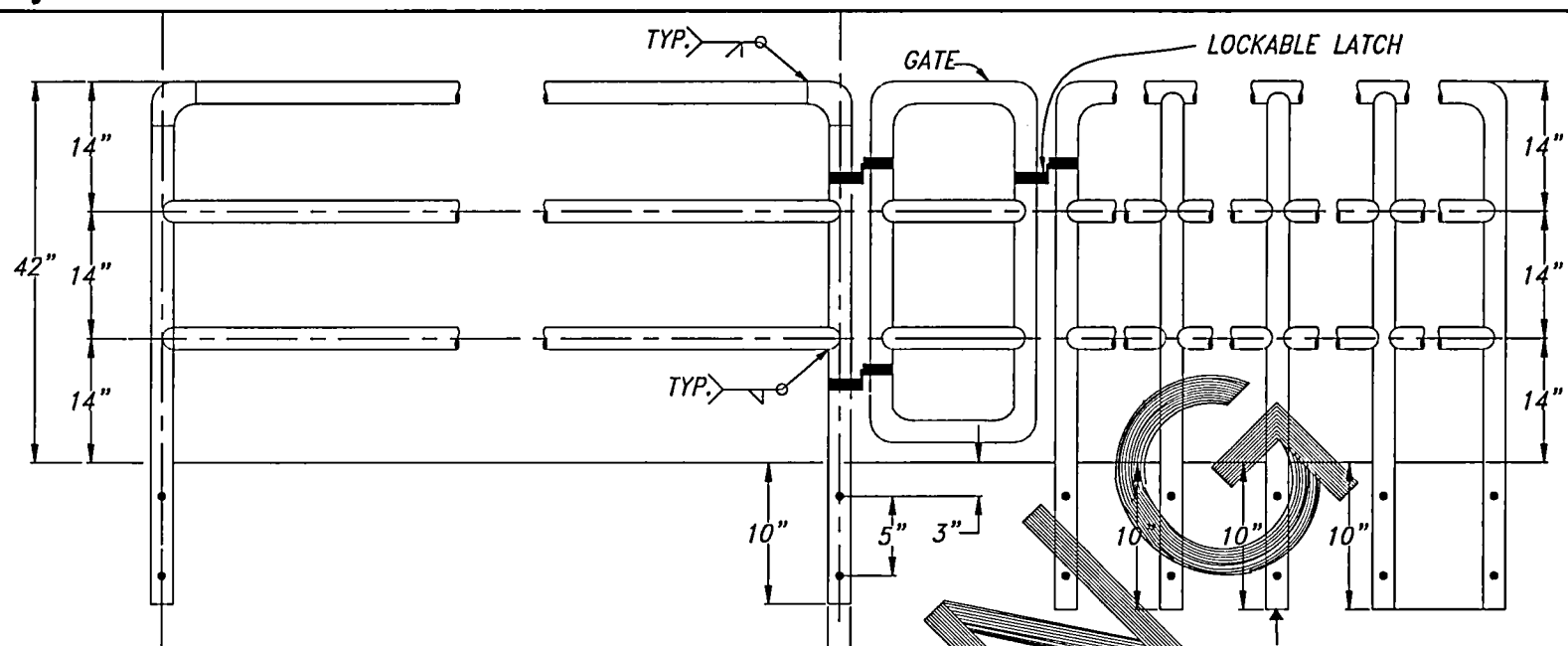
REV. NO.	DESCRIPTION	DATE	APPROVED



PROJECT NO. US-OR-32-8	DATE 10/15/17	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMC
MODIFICATIONS		SURVEYED BY:
ELEVATIONS/DETAILS		CHECKED BY:
GATES, PLATFORM, RAILINGS, LOCKRODS & STOPLOGS		SHEET NO. 8 of 9

**RECORD SET**



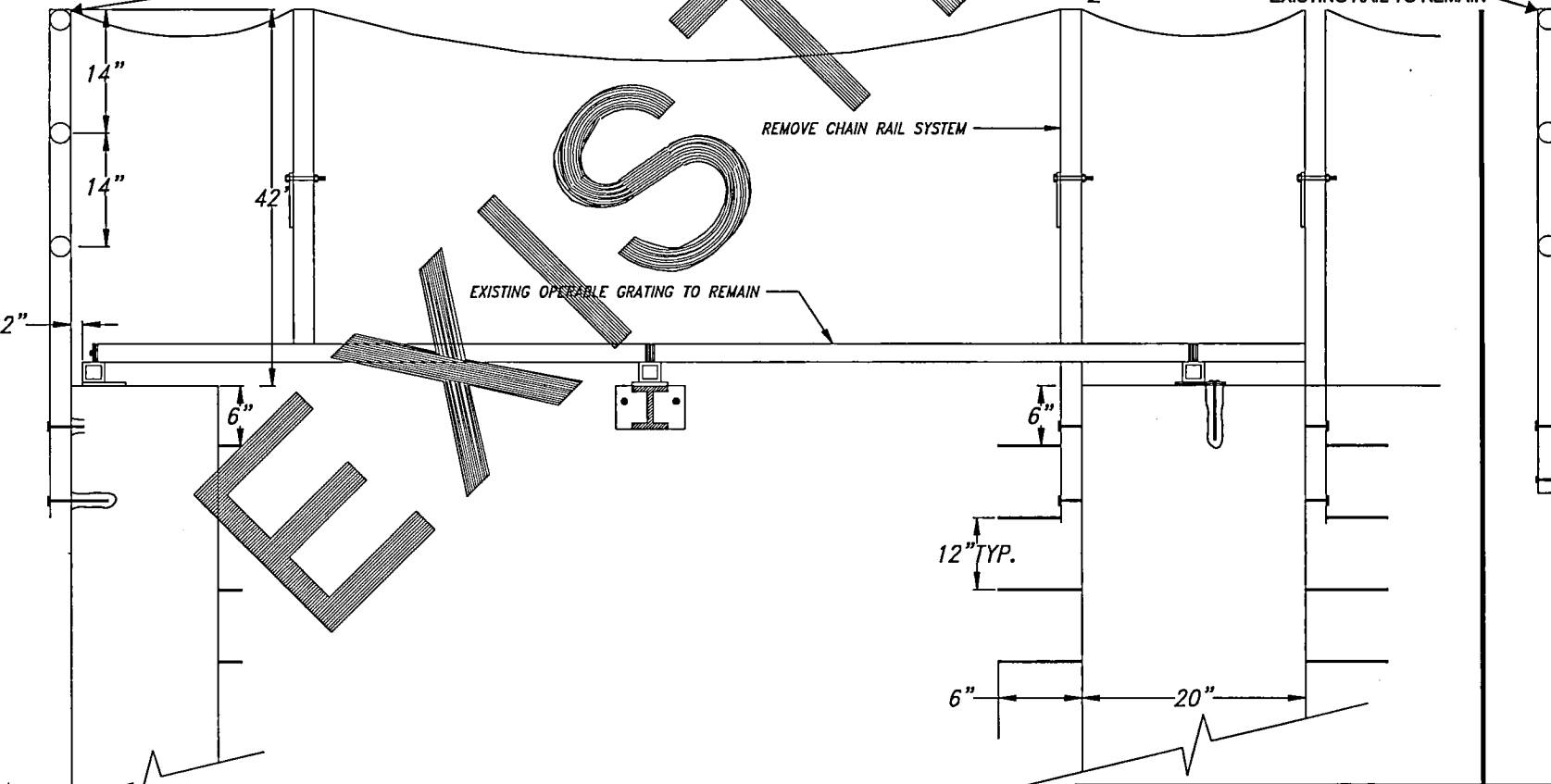


**1** GUARDRAIL SYSTEM  
**9** EXISTING

EXISTING RAILING TO REMAIN. REPAIR DAMAGED POSTS (4) LOCATIONS RAILING AT (1) LOCATION. REPAINT ENTIRE RAIL SYSTEM. SEE DETAIL 3.

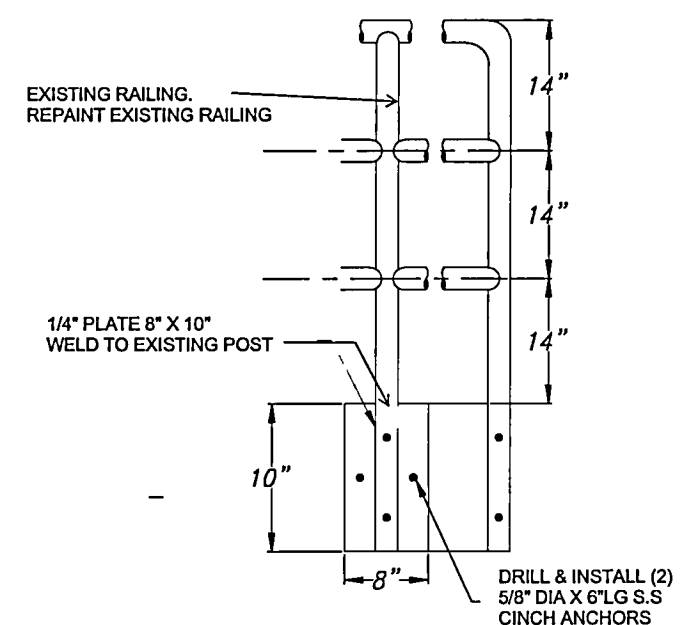
REMOVE AND DISPOSE OF EXISTING CHAIN RAIL AND POST SYSTEM

EXISTING RAIL TO REMAIN



**2** CHAIN RAIL & GRATING SYSTEM  
**8** EXISTING

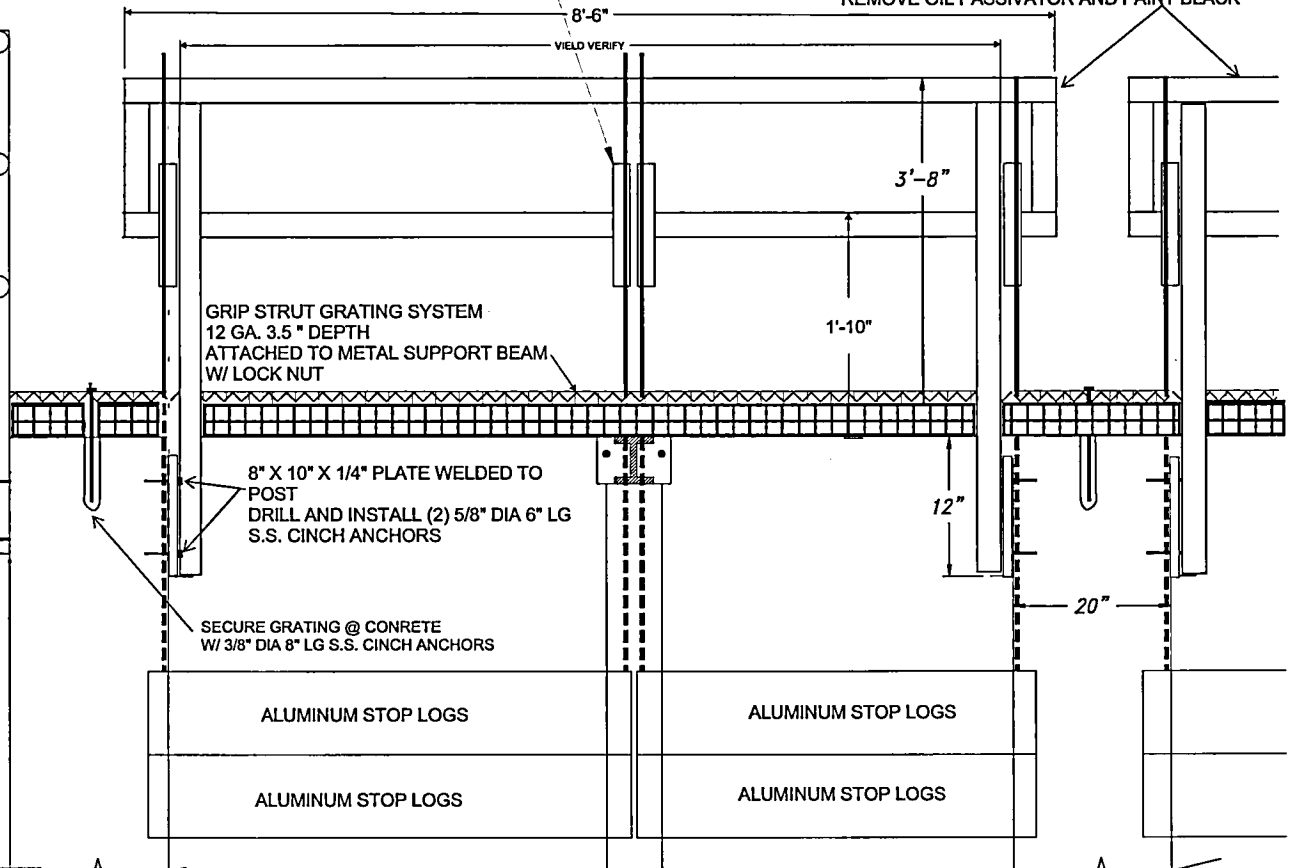
**ITEMS OF WORK:**  
 1. ALUMINUM STOP LOGS  
 2. METAL GRATING SYSTEM  
 3. RAILING SYSTEM & LOCK RODS.  
 RAILING REPAIR AND DEMOLITION.



**3** POST ANCHOR REPAIR  
**9** TYPICAL

TYPICAL RAILING W/LOCK ROD SYSTEM  
 TS 2"x2"x1/4"x 3'-8" HT GALV. W/ CENTER RAIL  
 REMOVE OIL PASSIVATOR AND PAINT BLACK

**4** SEE DETAIL  
**8**



**5** RAILING W/ LOCK RODS, GRATING & STOP LOGS  
**8** ELEVATION TYPICAL

**RECORD SET**

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REV. NO.	DESCRIPTION	DATE	APPROVED



PROJECT NO. US-OR-32-8	DATE: 10/15/17	DESIGNED BY: GW
METRO: SMITH BYBEE		DRAWN BY: DMG
MODIFICATIONS		SURVEYED BY:
ELEVATIONS/DETAILS		CHECKED BY:
PLATFORM, RAILINGS, LOCK RODS & STOPLOGS		SHEET NO. 9 of 9