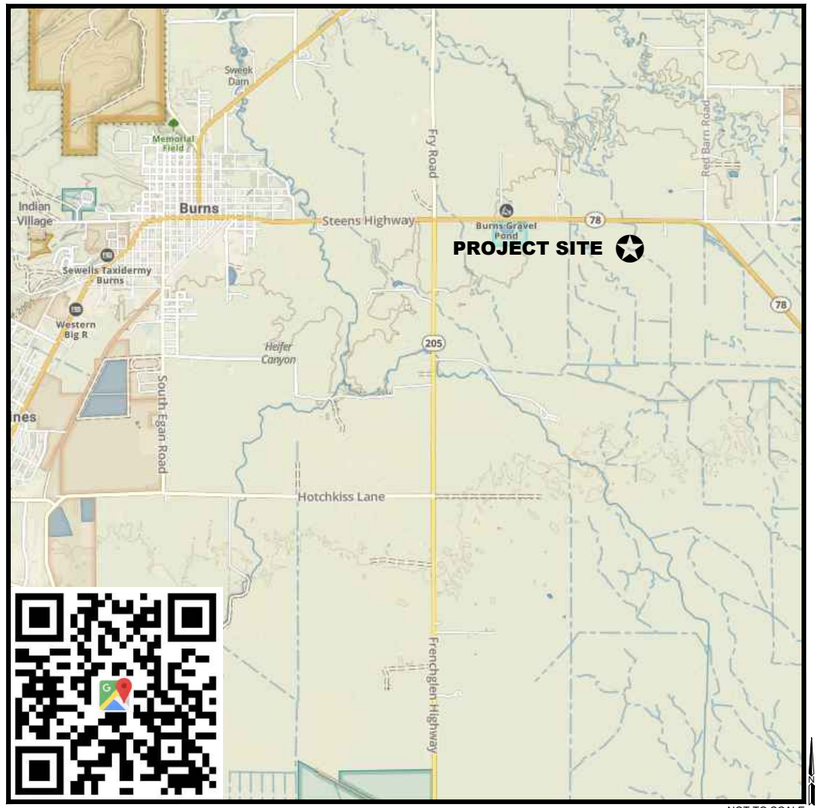
US-OR-260-7
RIGGS DAM
CHECK DAM & FISH LADDER

PROJECT DESCRIPTION

"This project includes demolition and construction of an existing water control structure, and diversions on Foley Slough, East of Burns, Oregon. The existing structure consists of an earthen dam, a concrete headwall, two (2) 60" tall x 25' long corrugated metal arch culverts, and wood stoplogs with 3" CMP diversion pipes and gates.

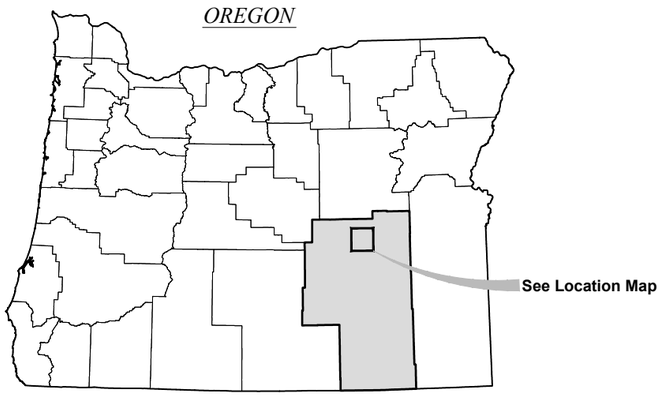
The new structure will consist of a cast-in-place concrete check dam, fish ladder and 3 diversion pipes with gates and concrete headwalls. The check dam will include steel framing to support four (4) bays of aluminum stoplogs, and a walkway above the stoplogs. The fish ladder will include concrete walls and slabs with a series of aluminum baffles. The check dam will also include a new box culvert and gravel backfill. All gates, steel, aluminum, and box culverts will be furnished to the contractor by Ducks Unlimited. Three (3) existing diversion pipes will be replaced with concrete inlet structures and new pipes. The contractor is responsible for providing the diversion pipes. If the site has water at the time of construction, dewatering with coffer dams and pumps will be required. An upstream coffer dam shall be required in either case to handle late release of upstream impoundments."

LOCATION MAP



NOT TO SCALE

VICINITY MAP



PROJECT LOCATION

Section: 15
Township: T 23 S
Range: R 31 E
Meridian: Willamette
County: Harney
State: Oregon
Latitude: 43° 34' 56.0" N
Longitude: 118° 59' 24.5" W

SURVEY DATUM

Horizontal: NAD 83
US State Plane Oregon South Zone
Vertical: NAVD88
Units: International Feet

A survey-grade GPS survey was provided by the NRCS

MAP DATA

Contour Interval: 1 Foot

Aerial Photo: Google, NAIP

REGISTERED PROFESSIONAL ENGINEER
16110
OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

SHEET INDEX

Sheet Number	Sheet Title
1	Cover Sheet
2	Definitons & Legend
3	Sheet Index
4	Site Plan Existing Stream & Check Dam
5	Plan Existing Check Dam
6	Proposed Site Plan Check Dam & Fish Ladder
7	Existing Stream Cross Sections
8	Plan View Dam, Box Culvert, & Fish Ladder
9	Plan View Foundation
10	Dam Elevation and Profile
11	Headworks Section
12	Deck and Slab Reinforcement
13	Structural Concrete Details
14	Fish Ladder & Flow Dynamics
15	Deck Framing and Walkway
16	Steel Details
17	Steel Details

EMERGENCY CONTACT INFORMATION

In case of fire: CALL 911

PROJECT DIRECTORY

Ducks Unlimited, Inc.
Pacific Northwest Office
11805 NE 99th St. Suite 1300
Vancouver Washington 98682
Ph. (360) 885-2011

Gus Williams P.E.
Regional Engineer
Ph. (541) 610-5197

ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0001 through 952-001-0100. You may obtain copies of the rules by calling the center.
NOTE: The telephone number for the Oregon Utility Notification Center is (503) 232-1987

Unauthorized Changes & Uses
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Utility Notification Center
CALL BEFORE YOU DIG

BID SET

REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED
5			
4			
3			
2			
1			

PROJECT NO. US-OR-260-7 DATE: 9/1/2026
RIGGS DAM
CHECK DAM & FISH LADDER
COVER SHEET

DESIGNED BY: GW
DRAWN BY: RGR
SURVEYED BY: BMM
CHECKED BY: -
SHEET NO. 1 of 17

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. At least 2 working days prior to beginning any digging or excavation work, the contractor shall notify underground service alert (a.k.a. USA North) at www.usanorth.org or by phone at 811 or 1-800-227-2600, to determine locations of existing utilities.

5. 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.

6. 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.

7. 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.

8. 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.

9. 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.

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SURVEY POINT DESCRIPTORS

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

ABBREVIATIONS

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

REGISTERED PROFESSIONAL ENGINEER
16110
OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

LEGEND & STANDARD SYMBOLS

(Symbols do not represent actual scale / size of object)

EXISTING CONDITIONS

- Existing Fence Line - Barbed Wire
- Existing Fence Line - Chain Link
- Existing Fence Line - Stockade
- Power / Telephone Overhead Lines
- Underground Gas Line
- Electric Line
- Force Main Line
- Sanitary Sewer Line
- Storm Drain Line
- Existing Ditch
- Existing Levee
- Existing Swale
- Existing Road - Dirt
- Existing Road - Gravel
- Existing Road - Paved
- Existing Trees / Brushline
- Existing Power / Telephone Pole
- Existing Electric Guy Wire
- Existing Electric Transformer
- Existing Electric Tower
- Existing Electric Vault
- Existing Blind
- Existing Gate Valve
- Existing Air Relief Valve
- Existing Alfalfa / Overflow Valve
- Existing Irrigation Well
- Existing Irrigation Pump
- Existing Water Meter
- Existing Fire Hydrant
- Existing Manhole
- Existing Natural Gas Meter / Valve
- Existing Sign
- Existing Pipe / Culvert
- Existing Water Control Structure (Precast Concrete)
- Existing Water Control Structure (Full Round)
- Existing Water Control Structure (Half Round)

DESIGN SYMBOLS

- Water Control Structure ID#
- Revision Number Identifier
- Cut/Borrow Area / Pothole
- Fill Area
- Ditch Cleaning
- New Ditch Centerline / Flowline
- New Swale Centerline / Flowline
- Regrade Existing Swale
- New Levee Centerline
- Improved Levee Centerline
- Regraded/Lowered Levee Centerline
- Remove Existing Levee
- Design Water Surface Elevation
- New Power Pole
- New Gate Valve
- New Air Relief Valve
- New Alfalfa / Overflow Valve
- New Irrigation Pump
- New Water Control Structure
- New Water Control Structure
- New Agri-Drain Inline Water Control Structure
- Benchmark
- Temporary Benchmark
- Control Point
- Wood Debris Pile

Grading Example

Slope Symbols

DETAILING CONVENTIONS

Section Letter — **SEE SECTION** A/5 — *Sheet Where Section is Shown*

Detail Number — **SEE DETAIL** 1/5 — *Sheet Where Detail is Shown*

Section Letter — X — *Direction of Section* — *Sheet Where Section is Shown*

Detail Number — 1 — **TYPICAL DETAIL XXX** — *SCALE*

Dash indicates that detail is typical and may appear on multiple sheets - a number would indicate the sheet(s) where detail was taken

Section Cut (Alternate)

Section Letter — A — **TYPICAL SECTION XXX** — *SCALE*

Dash indicates that section is typical and may appear on multiple sheets - a number would indicate the sheet(s) where section was taken

Construction Notes (See sheet where appears)

BID SET

REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED
5			
4			
3			
2			
1			

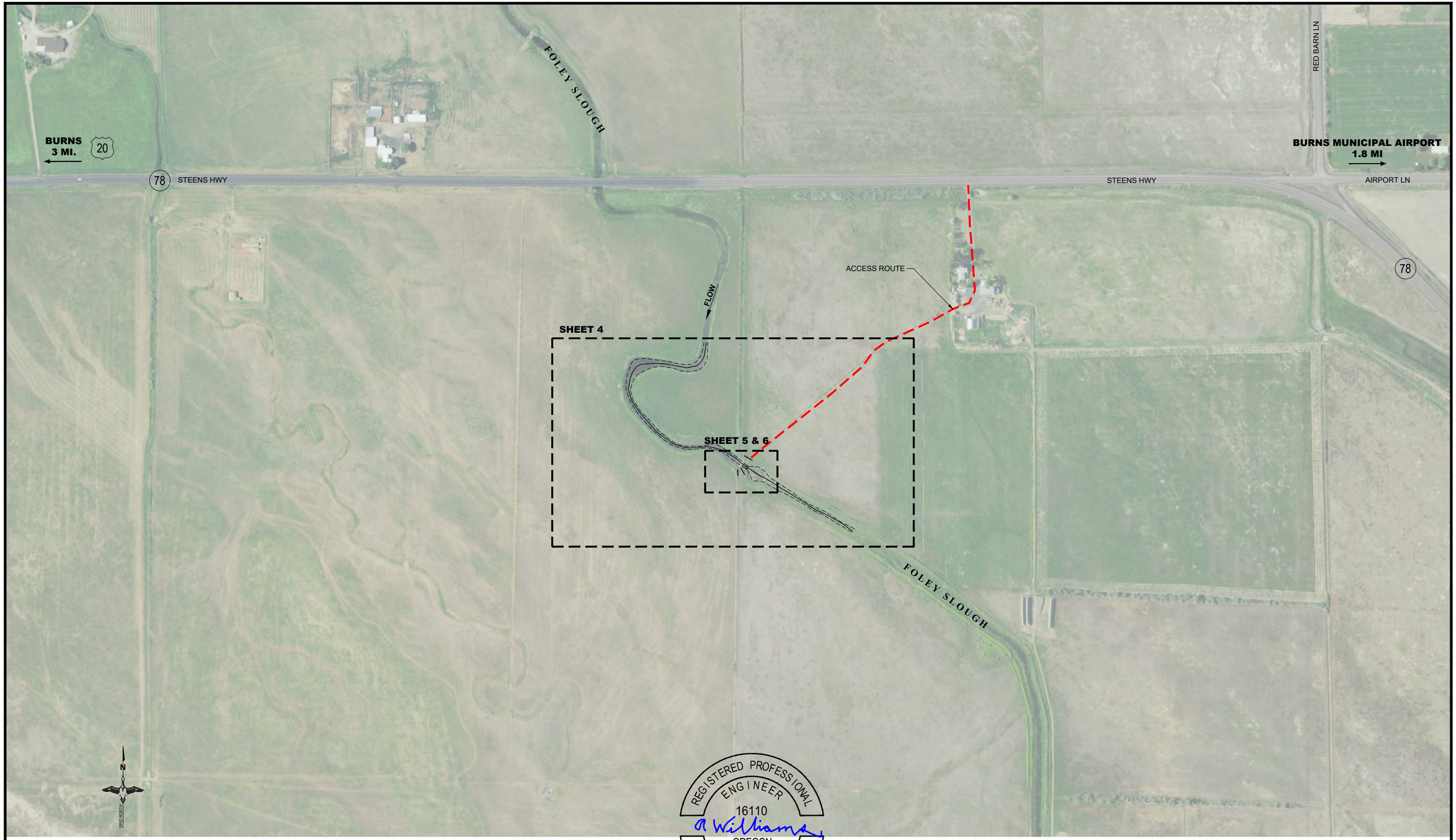
DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 9/1/2026

RIGGS DAM
CHECK DAM & FISH LADDER

DEFINITONS & LEGEND

DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	2 of 17



0 200 400 FEET

HORIZONTAL SCALE

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16110
OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

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BID SET

REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED
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4			
3			
2			
1			

DUCKS UNLIMITED

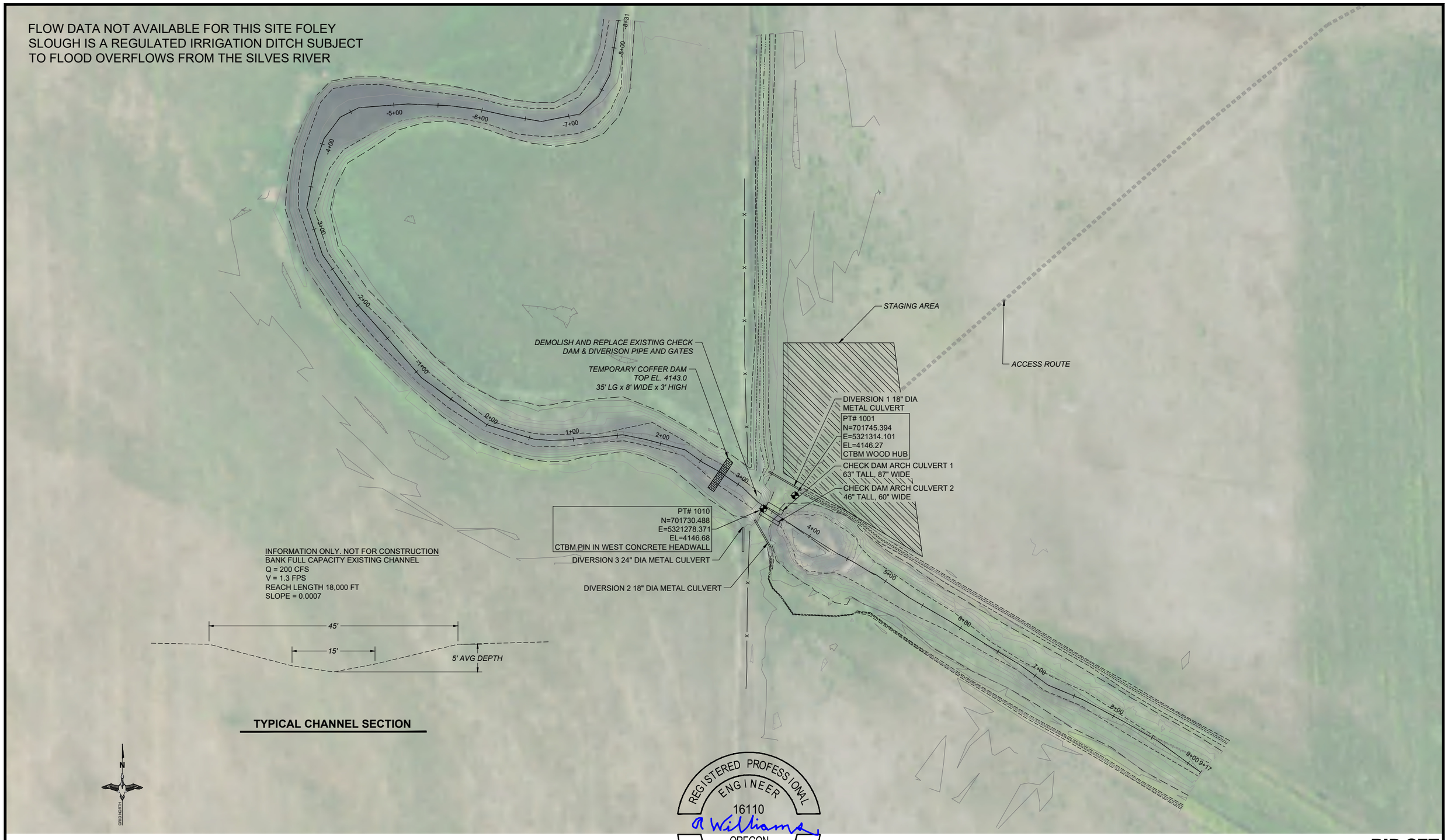
PROJECT NO. US-OR-260-7 DATE: 9/1/2026

RIGGS DAM
CHECK DAM & FISH LADDER

SHEET INDEX

DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	.
SHEET NO.	3 of 17

FLOW DATA NOT AVAILABLE FOR THIS SITE FOLEY SLOUGH IS A REGULATED IRRIGATION DITCH SUBJECT TO FLOOD OVERFLOWS FROM THE SILVES RIVER



INFORMATION ONLY. NOT FOR CONSTRUCTION
BANK FULL CAPACITY EXISTING CHANNEL
Q = 200 CFS
V = 1.3 FPS
REACH LENGTH 18,000 FT
SLOPE = 0.0007

TYPICAL CHANNEL SECTION

0 50 100 FEET
HORIZONTAL SCALE

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EXPIRES: 6/2028

BID SET

REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED
5			
4			
3			
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1			

DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 9/1/2026

RIGGS DAM
CHECK DAM & FISH LADDER

SITE PLAN EXISTING STREAM & CHECK DAM

DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	**4 of 17**

OHM = 4144.5

OHM = 4144.5

32SQ-FT OPEN AREA
66" ARCH CMP CULVERT 20LF
WCPT(NW) = 4145.4
WCPT(SE) = 4144.4
WCPI(SE) =4139.0

16SQ-FT OPEN AREA
48" ARCH CMP CULVERT 25LF
WCPT(NW) = 4143.3
WCPT(SE) = 4142.3
WCPI(SE) =4138.6

18" CULVERT 42LF
WCPI(NW) = 4143.8
WCPT(SE) = 4145.2
WCPI(SE) =4143.9

OHM = 4144.5

24" CMP CULVERT 27LF
WCPT(NORTH) = 4146.4
WCPI(NORTH) = 4144.4
WCPT(SOUTH) = 4146.4

18" CMP CULVERT 35LF
WCPT(NORTH) = 4144.4
WCPI(NORTH) = 4142.9
WCPI(SOUTH) = 4143.3
WCPT(SOUTH) = 4144.9

OHM = 4144.5

GRID NORTH

0 10 20 FEET
HORIZONTAL SCALE

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REGISTERED PROFESSIONAL ENGINEER
16110
OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

BID SET

REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED
5			
4			
3			
2			
1			

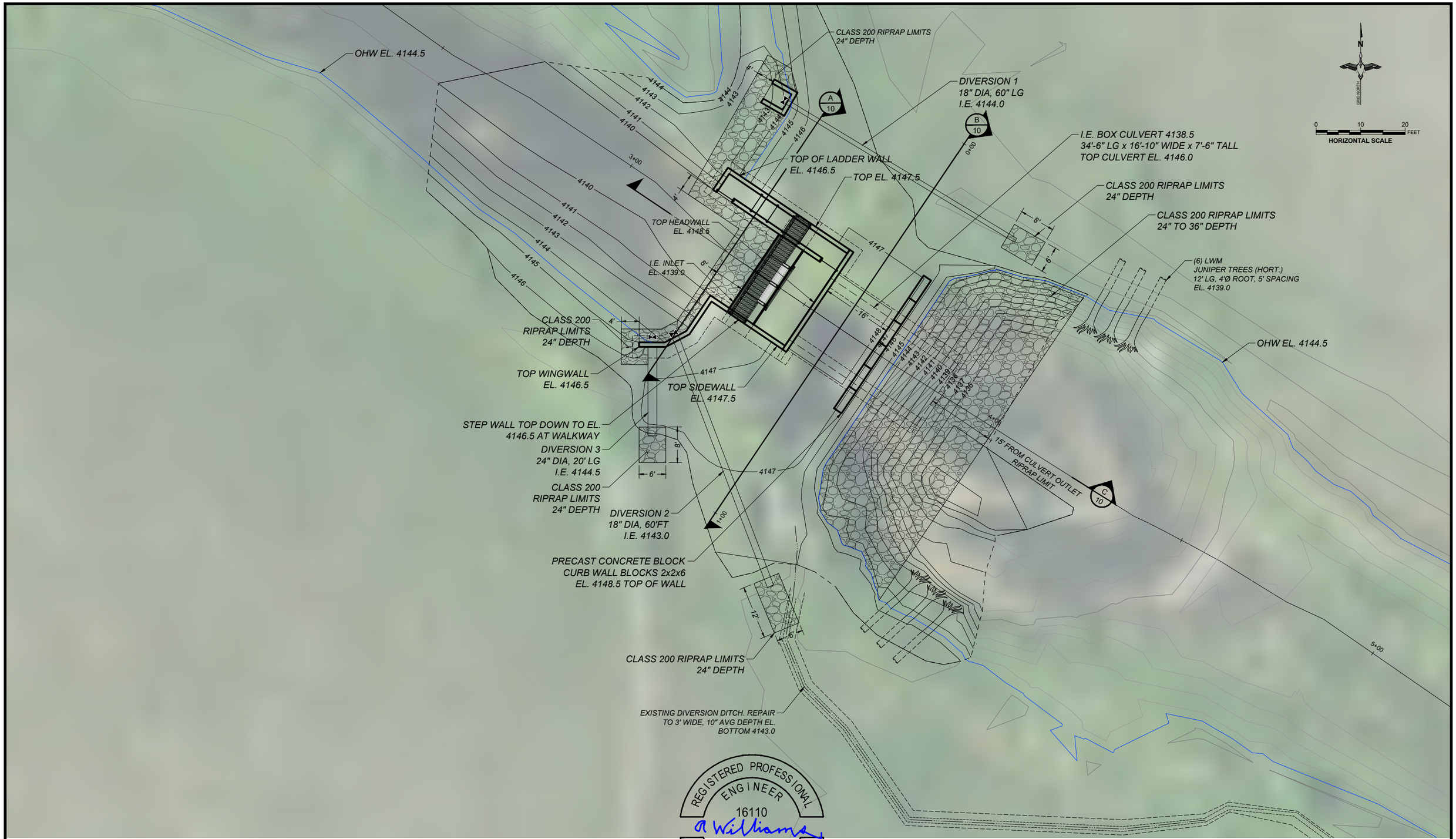
DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 9/3/2026

RIGGS DAM
CHECK DAM & FISH LADDER

PLAN EXISTING CHECK DAM

DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	**5 of 17**



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REGISTERED PROFESSIONAL ENGINEER
16110
OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

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5			
4			
3			
2			
1			

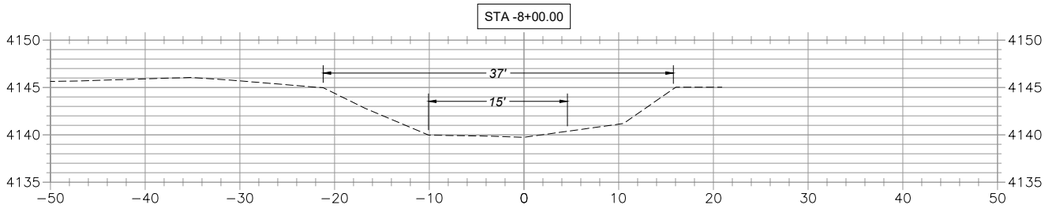
DUCKS UNLIMITED

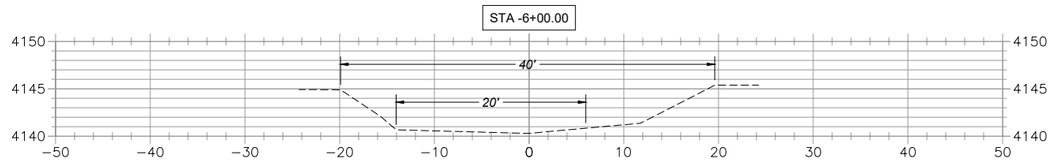
PROJECT NO. US-OR-260-7 DATE: 9/3/2026

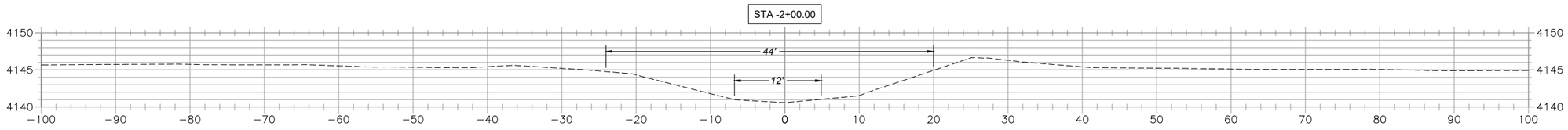
RIGGS DAM
CHECK DAM & FISH LADDER

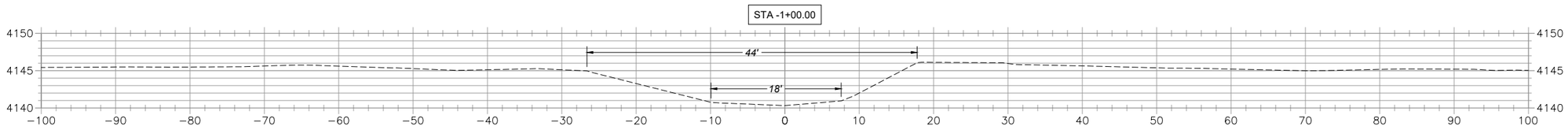
PROPOSED SITE PLAN CHECK DAM & FISH LADDER

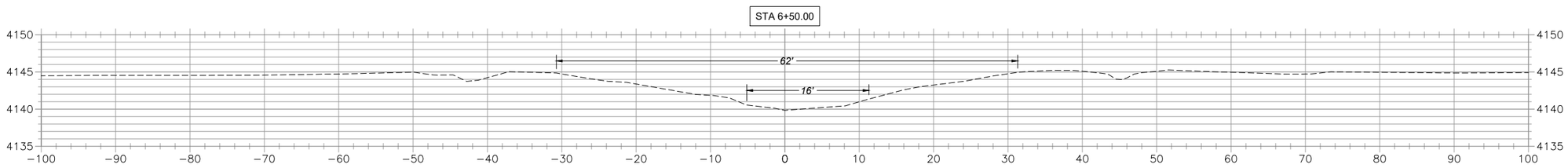
DESIGNED BY: GW
DRAWN BY: RGR
SURVEYED BY: BMM
CHECKED BY: -
SHEET NO. 6 of 17

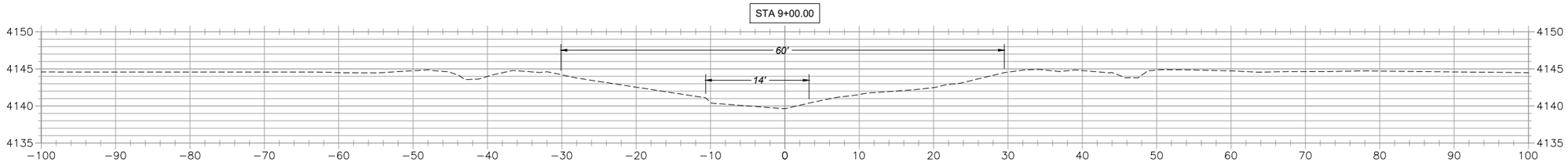


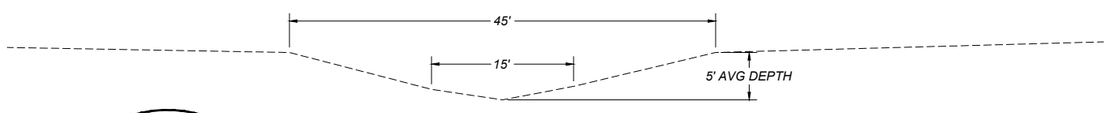












TYPICAL CHANNEL SECTION

REGISTERED PROFESSIONAL ENGINEER
16110
A Williams
OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

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BID SET

REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED
5			
4			
3			
2			
1			

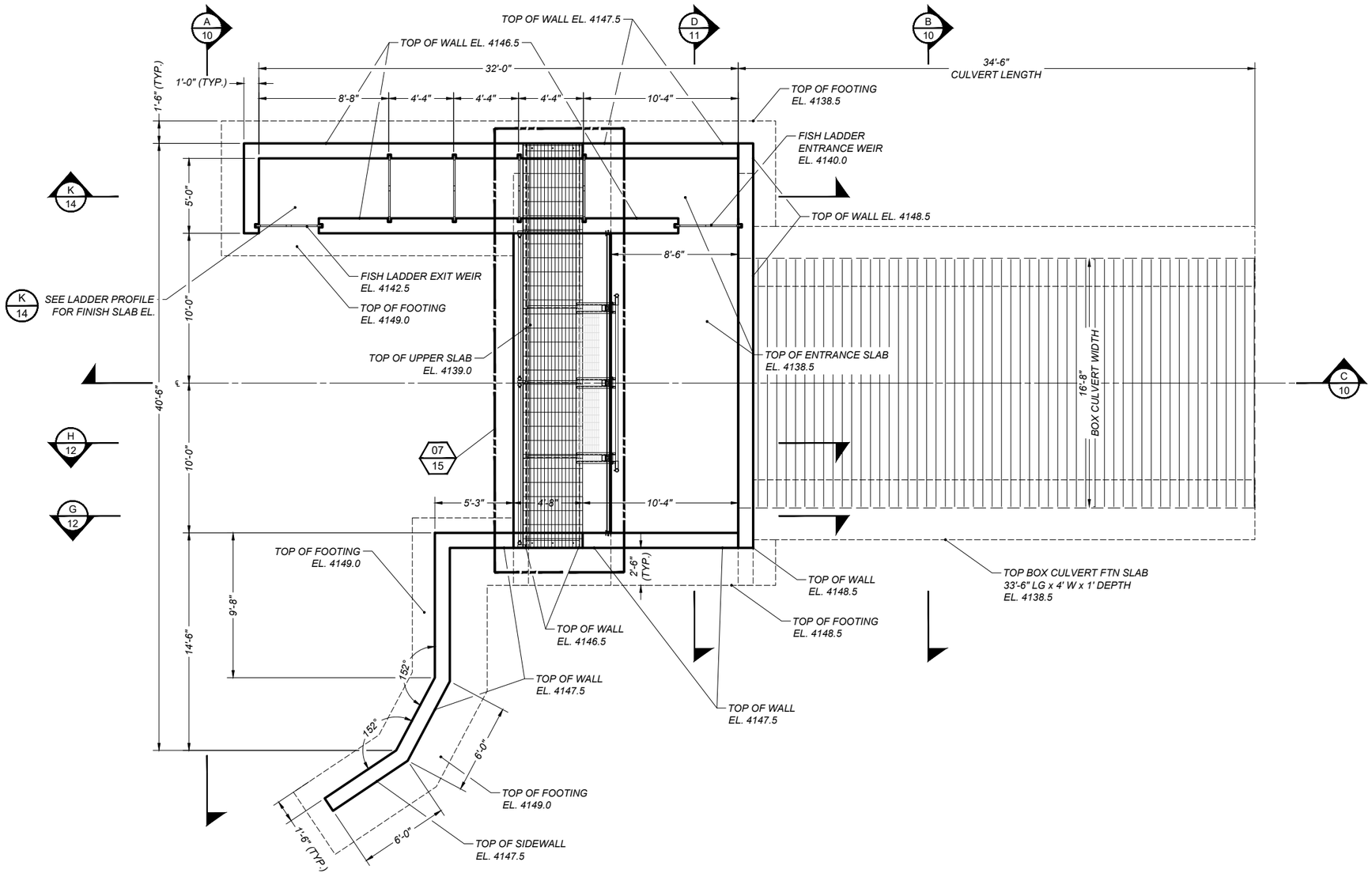
DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 7/23/2026

RIGGS DAM
CHECK DAM & FISH LADDER

EXISTING STREAM CROSS SECTIONS

DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	7 of 17



01 8 **DAM DETAIL** 1"=8'

0 4 8 FEET

HORIZONTAL SCALE

Unauthorized Changes & Uses

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EXPIRES: 6/2028

BID SET

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3			
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1			

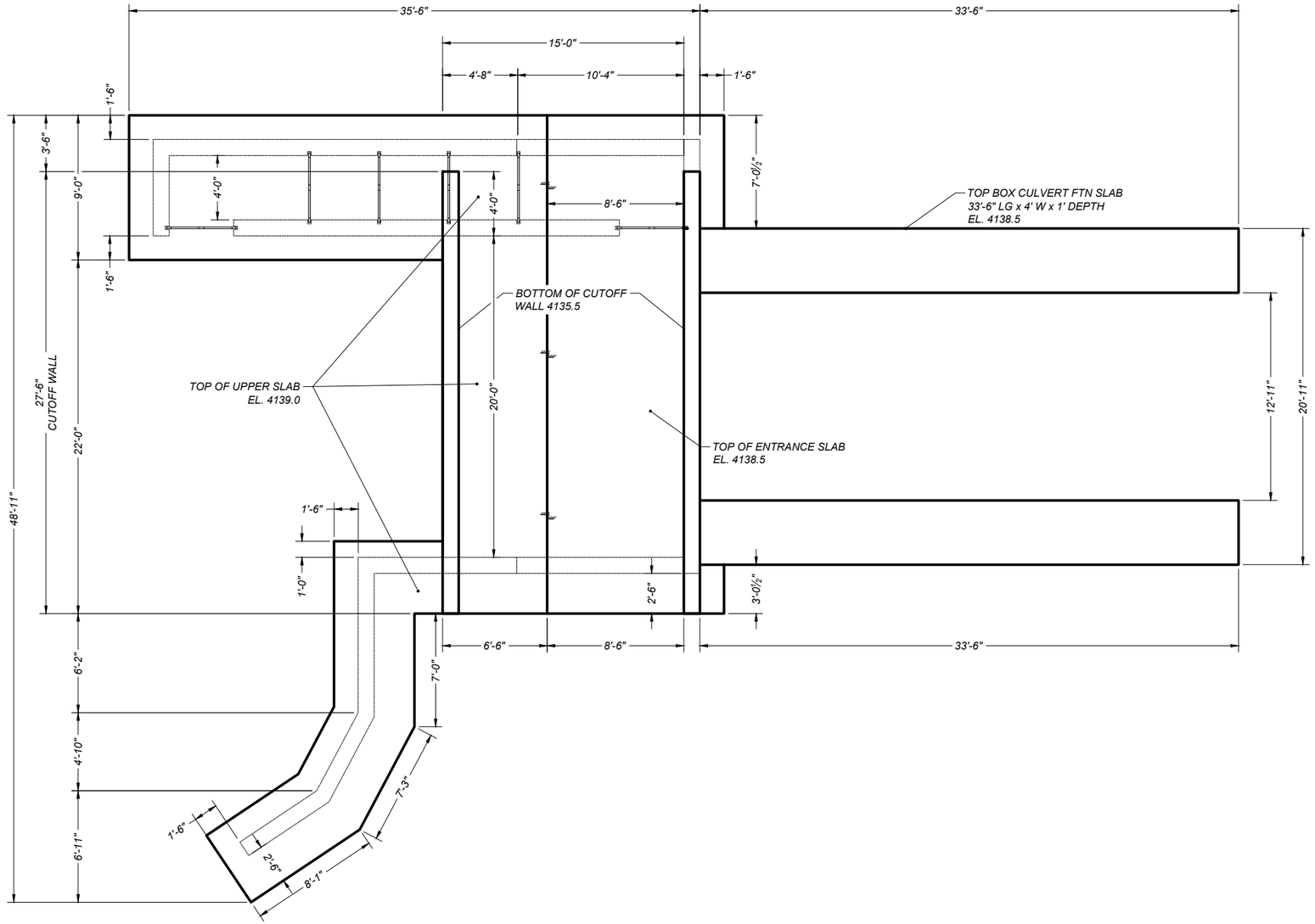
DUCKS UNLIMITED

PROJECT NO. **US-OR-260-7** DATE: **9/3/2026**

RIGGS DAM
CHECK DAM & FISH LADDER

PLAN VIEW DAM, BOX CULVERT, & FISH LADDER

DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	**8 of 17**



03
9 **DAM FOUNDATION DETAIL**
1"=8'

0 10 20 FEET
HORIZONTAL SCALE

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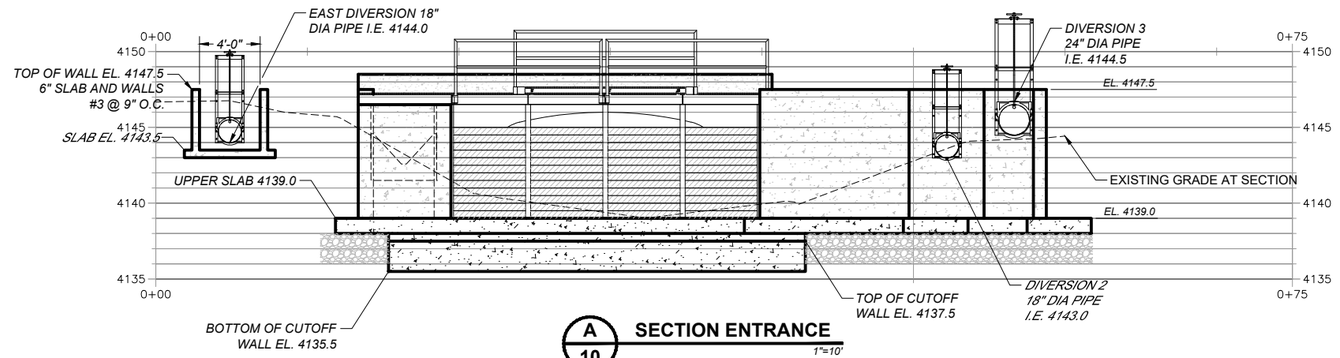
DUCKS UNLIMITED

PROJECT NO. **US-OR-260-7** DATE: **9/3/2026**

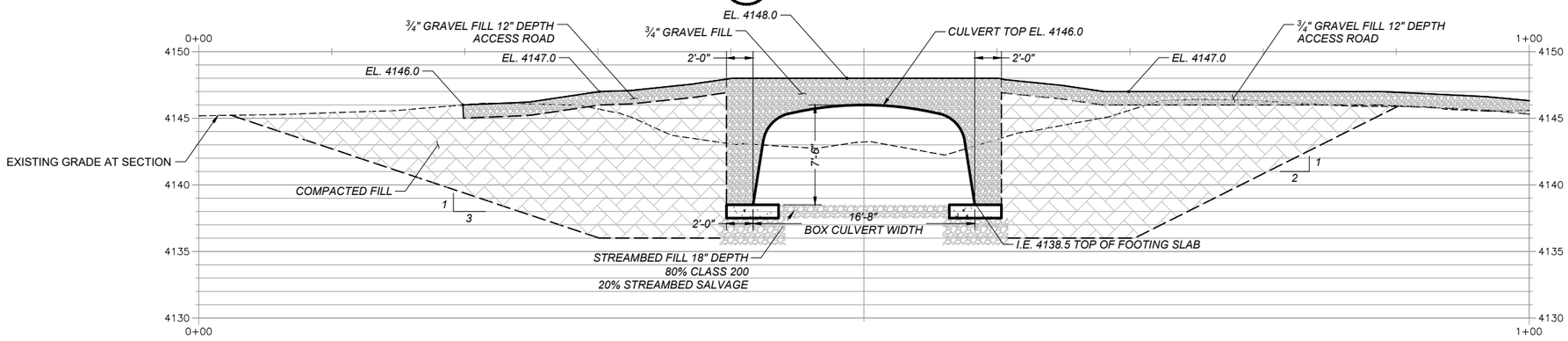
RIGGS DAM
CHECK DAM & FISH LADDER

PLAN VIEW FOUNDATION

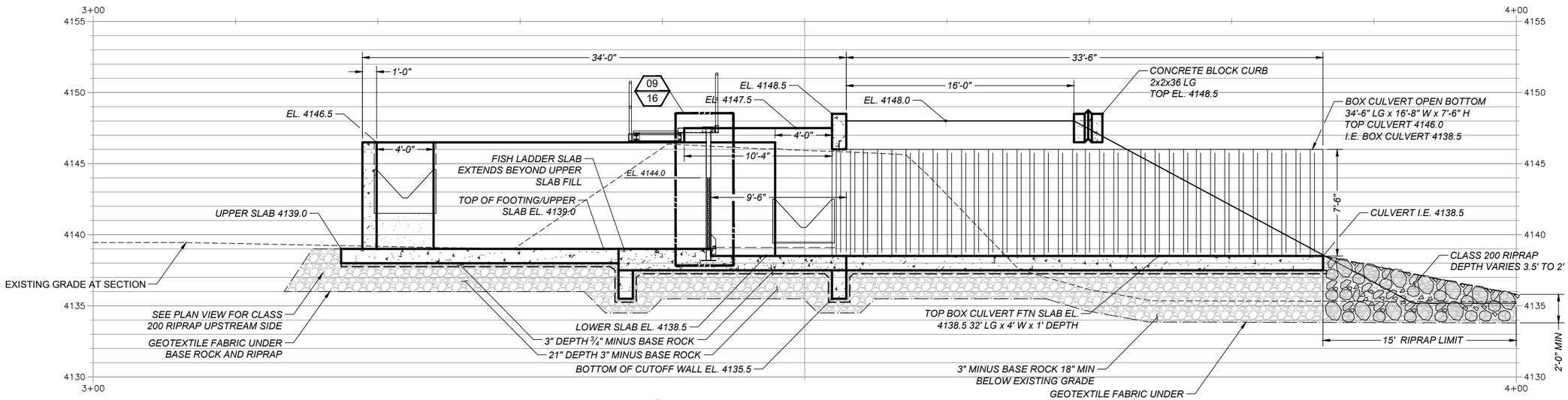
DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	**9 of 17**



A 10 SECTION ENTRANCE 1"=10'



B 10 SECTION ROAD CENTERLINE 1"=10'



C 10 SECTION VIEW WEIR STRUCTURE 1"=8'

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OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

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REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED
5			
4			
3			
2			
1			

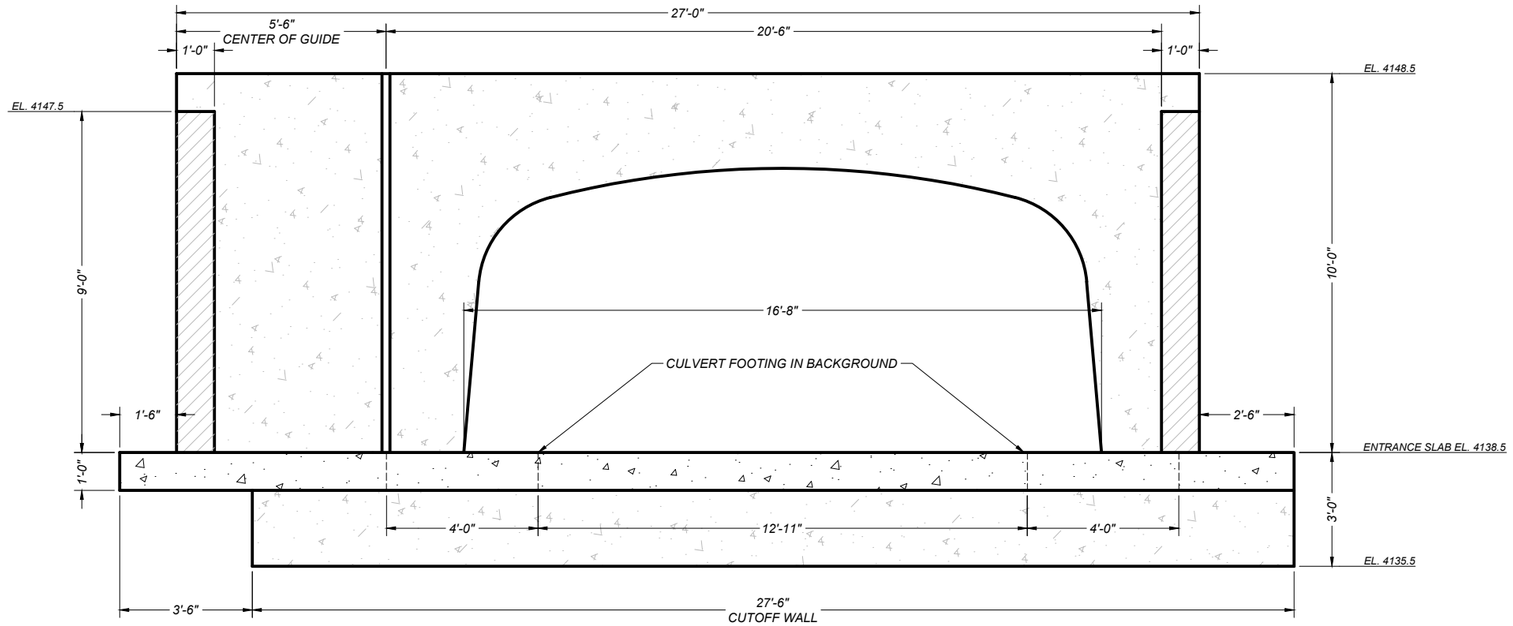
DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 9/3/2026

RIGGS DAM
CHECK DAM & FISH LADDER

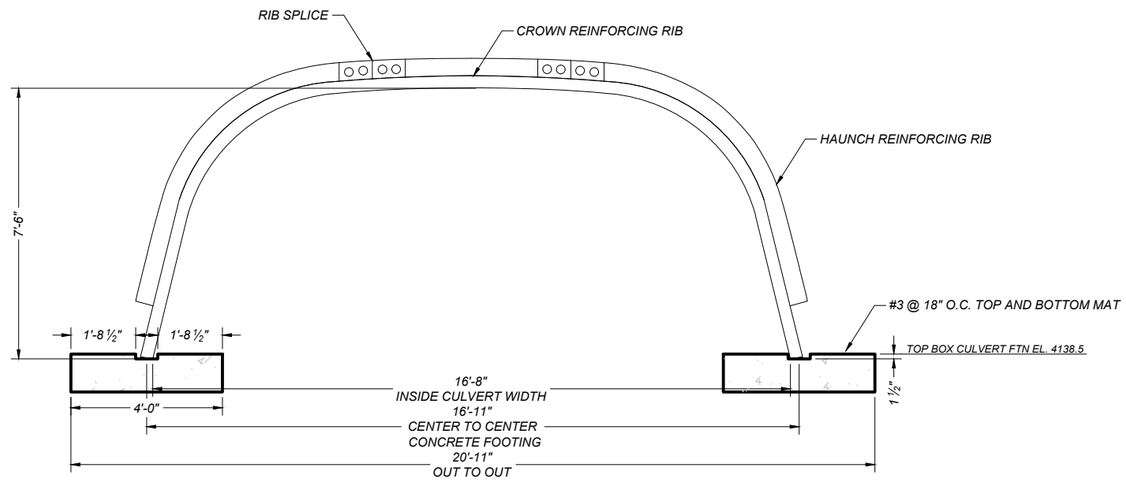
DAM ELEVATION AND PROFILE

DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	10 of 17



D 11 HEADWORKS SECTION

1"=4'



02 11 BOX CULVERT DETAIL

NOT TO SCALE

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OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

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REV. NO.	DESCRIPTION	DATE	APPROVED
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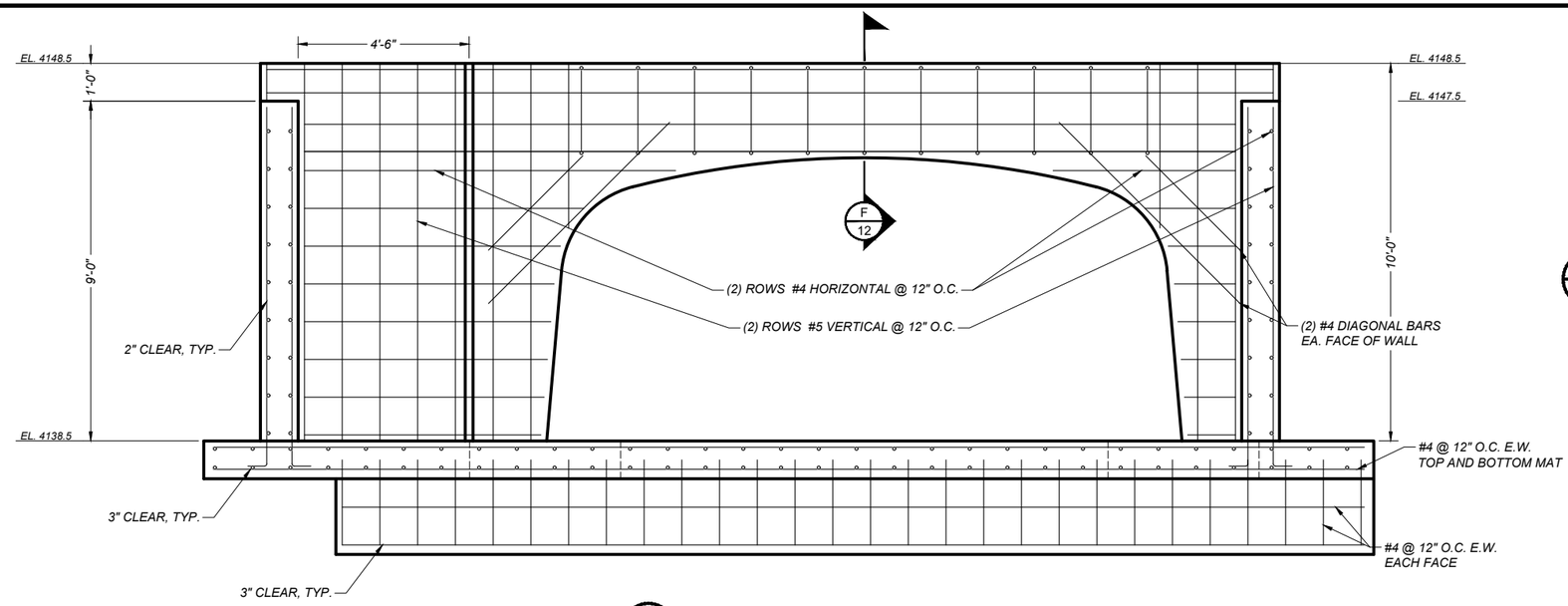
1			

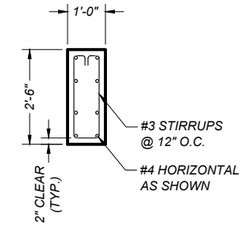
DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 9/3/2026
RIGGS DAM
CHECK DAM & FISH LADDER
HEADWORKS SECTION

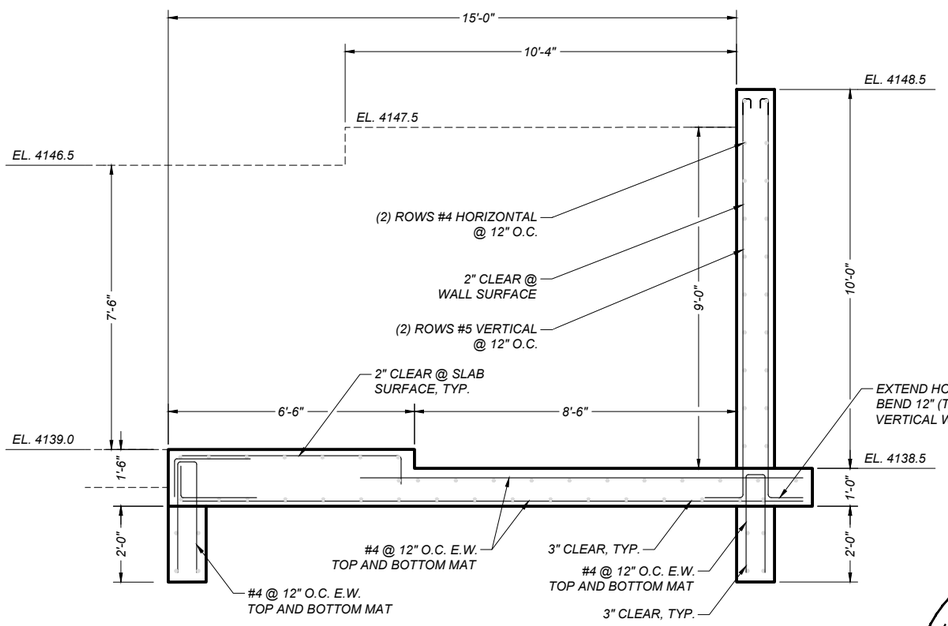
DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	11 of 17



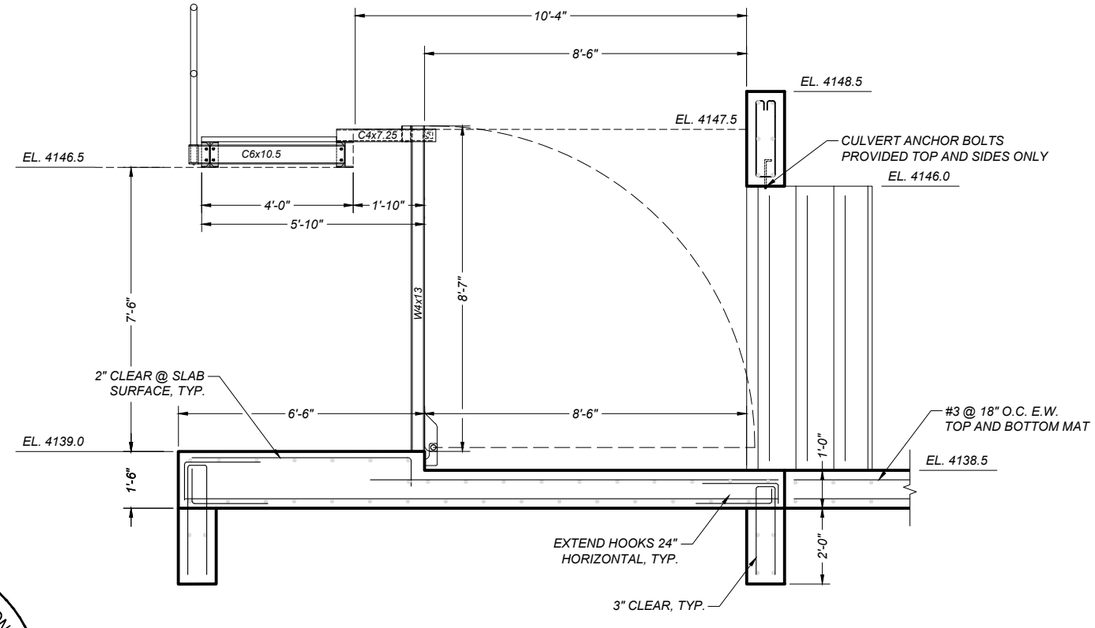
E 12 HEADWORKS REINFORCEMENT SECTION 1"=4'



F 12 BOX BEAM SECTION 1"=4'



G 12 DECK AND SLAB AT WALL INTERSECTION 1"=4'



H 12 DECK AND SLAB AT CULVERT INTERSECTION 1"=4'

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AUGUSTUS S. WILLIAMS

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DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 9/3/2026

RIGGS DAM
CHECK DAM & FISH LADDER

DECK AND SLAB REINFORCEMENT

DESIGNED BY:	GW
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SURVEYED BY:	BMM
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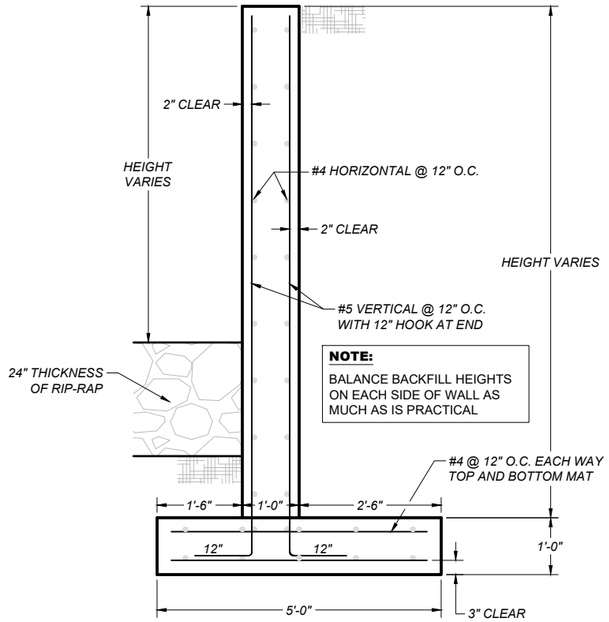
SHEET NO.	12 of 17

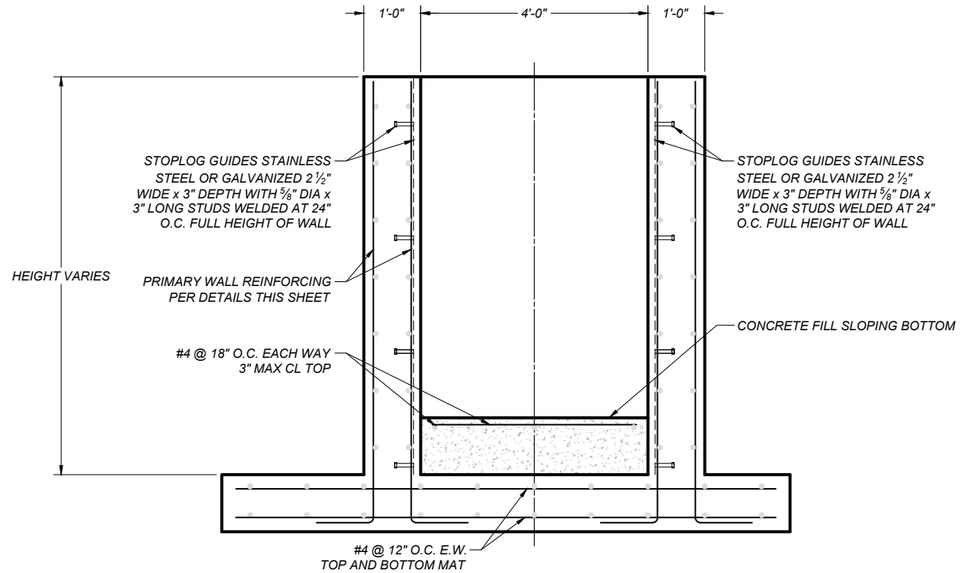


J/13 **TYPICAL SECTION WINGWALL**

SCALE AS SHOWN

0 1.33 2.66 FEET

HORIZONTAL SCALE



04/13 **TYPICAL DETAIL FISH LADDER FLOOR AND GUIDES**

SCALE AS SHOWN

0 1.33 2.66 FEET

HORIZONTAL SCALE

Unauthorized Changes & Uses

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JULY 21, 1992
AUGUSTUS S. WILLIAMS

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1			

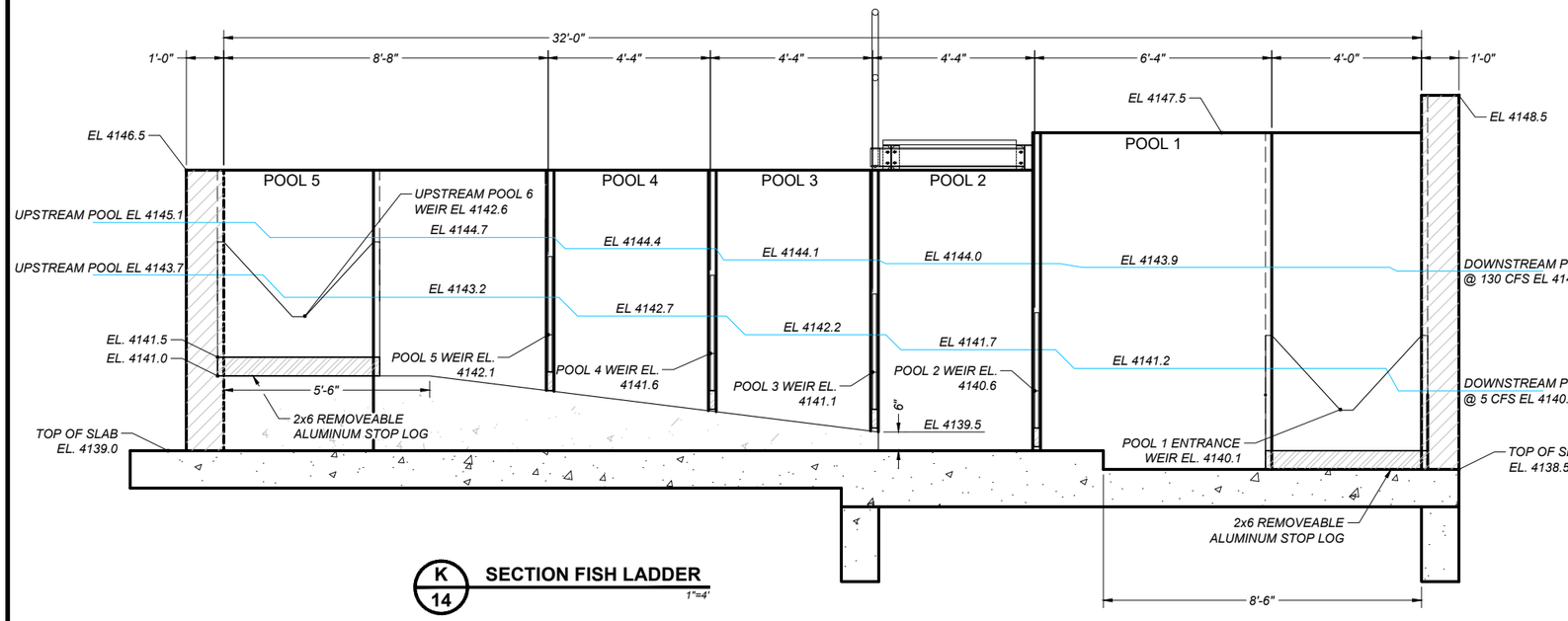
DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 9/3/2026

RIGGS DAM
CHECK DAM & FISH LADDER

STRUCTURAL CONCRETE DETAILS

DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	**13 of 17**

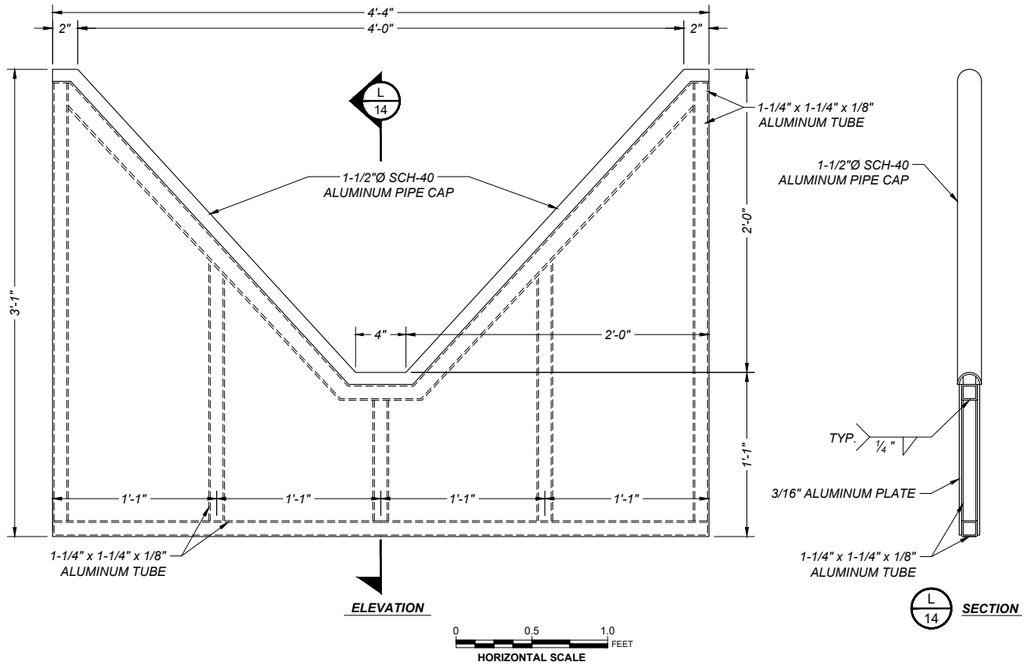


K 14 **SECTION FISH LADDER**

1"=4'

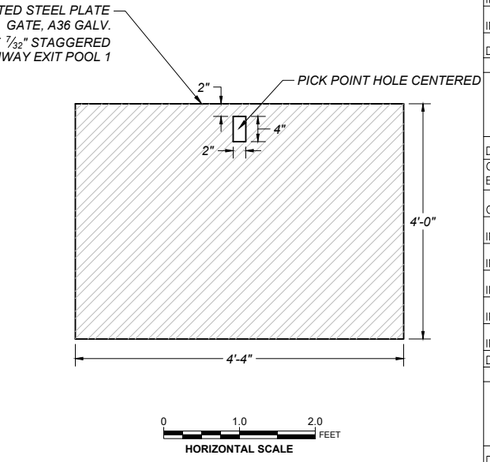
TABLE IS PERMIT INFORMATION ONLY

FLOW DYNAMICS RIGGS DAM AND FISH LADDER 1/14/2026						Gus Williams P.E. Ducks Unlimited				
MAX FLOW EXISTING AND NEW FULL OPEN	RIVER FLOW	flow Q (cfs)	DEPTH (ft)	AREA (sf)	VELOCITY (fps)	UPSTREAM WATER EL.	DOWNSTREAM WATER EL.	POOL TO POOL DROP (ft)	INVERT EL.	WEIR OR CULVERT DESCRIPTION
	*HYDROCADD	*HYDROCADD	*HYDROCADD			*HYDROCADD	*HYDROCADD			
EXISTING RIVER CHANNEL (net rise =0ft)	200.0	200.0	4.5	128.3	1.3	4145.0	4145.0	0.0	4140.5	SLOPE=.0007, n=.06, 15'bottom, 45'top, 4.5'max depth
EXISTING ARCH CULVERTS (net rise=.1')	80.0	80.0	N/A	48.0	1.7	4145.1	4145.0	-.1'	4139.0 & 4138.7	2-ARCH CULVERTS 87"W x 67"TALL, 58"WIDE x 48"TALL
NEW DAM (net rise=.1')	200.0	200.0	N/A	98.0	2.0	4145.1	4145.0	-.1'	4138.5	1-BOX CULVERT, 198"WIDE x 80"TALL
NEW CHECK DAM W/ BOARDS @ 4143.7	RIVER FLOW	flow Q (cfs)	DEPTH (ft)	AREA (sf)	VELOCITY (fps)	UPSTREAM WATER EL.	DOWNSTREAM WATER EL.	POOL TO POOL DROP (ft)	INVERT EL.	WEIR OR CULVERT DESCRIPTION
	140.0	*HYDROCADD	*HYDROCADD			*HYDROCADD	*HYDROCADD			
SUBMERGED WEIR ON DAM @ FLOWS AT/OR ABOVE 140cfs, LADDER NOT NEEDED AT 140CFS, RANGE OF OPERATION 130 TO 5 CFS										
DIVERSION 1,2,3		14.3				4145.1			4143 to 4144.5	
CHECK DAM BOARD EXIT (20'lg)		109.6	1.4	28.0	3.9	4145.1	4143.9	1.2	4143.7	.2' SUBMERGED SHARP CRESTED WEIR
POOL 5 OUTLET WEIR 6		16.1	2.5	7.1	2.3	4145.1	4144.7	0.4	4142.6	V-NOTCH WEIR 4" BY 90 DEGREES
POOL 5 INLET WEIR 5		16.1	2.6	7.6	2.1	4144.7	4144.4	0.3	4142.1	V-NOTCH WEIR 4" BY 90 DEGREES
POOL 4 INLET WEIR 4		16.1	2.8	8.8	1.8	4144.4	4144.2	0.2	4141.6	V-NOTCH WEIR 4" BY 90 DEGREES
POOL 3 INLET WEIR 3		16.1	3.1	10.6	1.5	4144.2	4144.1	0.1	4141.1	V-NOTCH WEIR 4" BY 90 DEGREES
POOL 2 INLET WEIR 2		16.1	3.5	13.4	1.2	4144.1	4144.0	0.1	4140.6	V-NOTCH WEIR 4" BY 90 DEGREES
POOL 1 INLET WEIR 1		16.1	3.9	16.5	1.0	4144.0	4143.9	0.1	4140.1	V-NOTCH WEIR 4" BY 90 DEGREES
DOWNSTREAM POOL		125.7	5.4	89.1	1.4	4143.9			4138.5	BOX CULVERT 16'-6" WIDE X 6'-8"TALL
NEW CHECK DAM W/ BOARDS @ 4143.7	RIVER FLOW	flow Q (cfs)	DEPTH (ft)	AREA (sf)	VELOCITY (fps)	UPSTREAM WATER EL.	DOWNSTREAM WATER EL.	POOL TO POOL DROP (ft)	INVERT EL.	ENERGY DISIPATION FACTOR w = 62.4, Q=15, H=.3 (short pools only)
	130.0	*HYDROCADD	*HYDROCADD			*HYDROCADD	*HYDROCADD			Vpool(req'd) = wQH / 4= 70.2cf
DIVERSION 1,2,3		13.0				4145.1			4143 to 4144.5	
CHECK DAM BOARD EXIT (20'lg)		98.4	1.4	28.0	3.5	4145.1	4143.8	1.3	4143.7	
POOL 5 OUTLET WEIR 6		15.0	2.5	7.1	2.1	4145.1	4144.7	0.4	4142.6	
POOL 5 INLET WEIR 5		15.0	2.6	7.6	2.0	4144.7	4144.4	0.3	4142.1	
POOL 4 INLET WEIR 4		15.0	2.8	8.8	1.7	4144.4	4144.1	0.3	4141.6	Vpool = (2.8+1.5)(4.33)(4.0) = 74.5cf OK
POOL 3 INLET WEIR 3		15.0	3.0	10.0	1.5	4144.1	4144.0	0.1	4141.1	
POOL 2 INLET WEIR 2		15.0	3.4	12.7	1.2	4144.0	4143.9	0.1	4140.6	Vpool = (3.4+1.5)(4.33)(4.0) = 84.9cf OK
POOL 1 INLET WEIR 1		15.0	3.8	15.7	1.0	4143.9	4143.8	0.1	4140.1	
DOWNSTREAM POOL		113.4	5.3	87.5	1.3	4143.8			4138.5	
NEW CHECK DAM W/ BOARDS @ 4143.7	RIVER FLOW	flow Q (cfs)	DEPTH (ft)	AREA (sf)	VELOCITY (fps)	UPSTREAM WATER EL.	DOWNSTREAM WATER EL.	POOL TO POOL DROP (ft)	INVERT EL.	ENERGY DISIPATION FACTOR w = 62.4, Q=3.8, H=.5 (short pools only)
	5.0	*HYDROCADD	*HYDROCADD			*HYDROCADD	*HYDROCADD			Vpool(req'd) = wQH / 4= 29.6 cf
DIVERSION 1,2,3		1.2				4143.7			4143 to 4144.5	
CHECK DAM BOARD EXIT (20'lg)		0.0	0.0	0.0	0.0	4143.7	4140.6	3.1	4143.7	
POOL 5 OUTLET WEIR 6		3.8	1.1	1.6	2.4	4143.7	4143.2	0.5	4142.6	
POOL 5 INLET WEIR 5		3.8	1.1	1.6	2.4	4143.2	4142.7	0.5	4142.1	
POOL 4 INLET WEIR 4		3.8	1.1	1.6	2.4	4142.7	4142.2	0.5	4141.6	Vpool = (1.1+1.5)(4.33)(4.0) = 45.0cf OK
POOL 3 INLET WEIR 3		3.8	1.1	1.6	2.4	4142.2	4141.7	0.5	4141.1	
POOL 2 INLET WEIR 2		3.8	1.1	1.6	2.4	4141.7	4141.2	0.5	4140.6	
POOL 1 INLET WEIR 1		3.8	1.1	1.6	2.4	4141.2	4140.6	0.6	4140.1	
DOWNSTREAM POOL		3.8	2.1	34.7	0.1	4140.6			4138.5	



05 14 **ALUMINUM WEIR DETAIL**

1"=1'



06 14 **TEMPORARY PLATE FOR FISH LADDER**

1"=2'

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JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

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4			
3			
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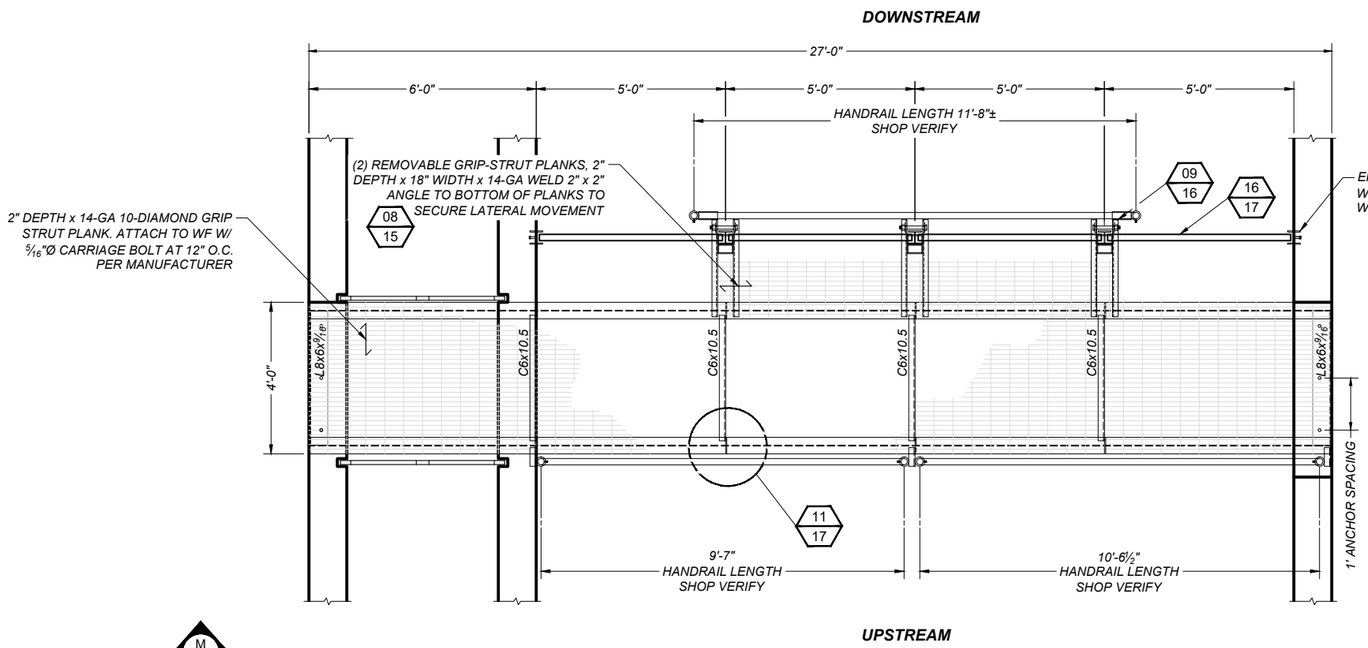
DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 9/4/2026

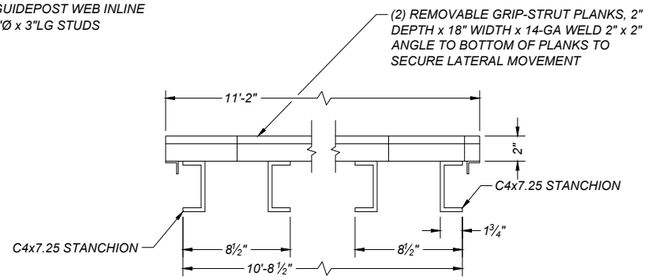
RIGGS DAM
CHECK DAM & FISH LADDER

FISH LADDER & FLOW DYNAMICS

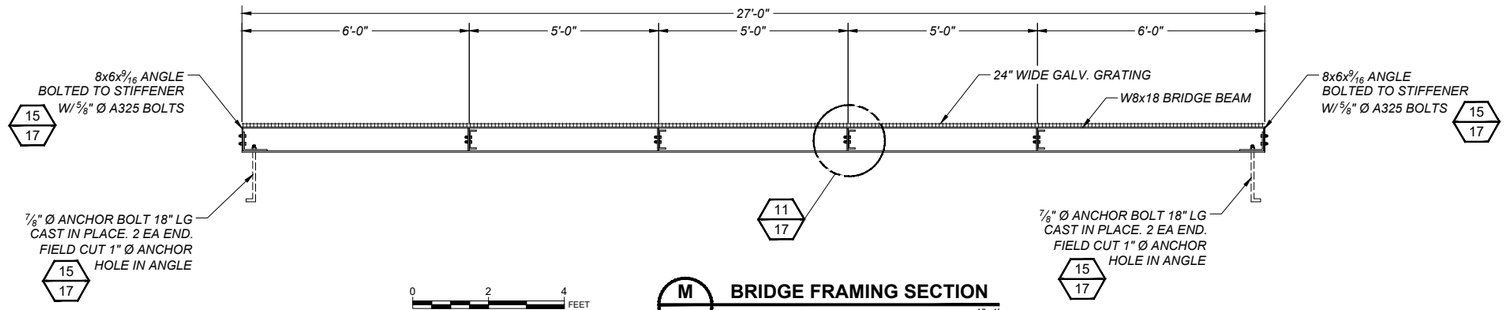
DESIGNED BY: GW
DRAWN BY: RGR
SURVEYED BY: BMM
CHECKED BY: -
SHEET NO. 14 of 17



07 15 BRIDGE FRAMING DETAIL 1"=4'



08 15 REMOVEABLE GRATING DETAIL 1"=1'



M 15 BRIDGE FRAMING SECTION 1"=4'

REGISTERED PROFESSIONAL ENGINEER
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OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

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4			
3			
2			
1			

DUCKS UNLIMITED

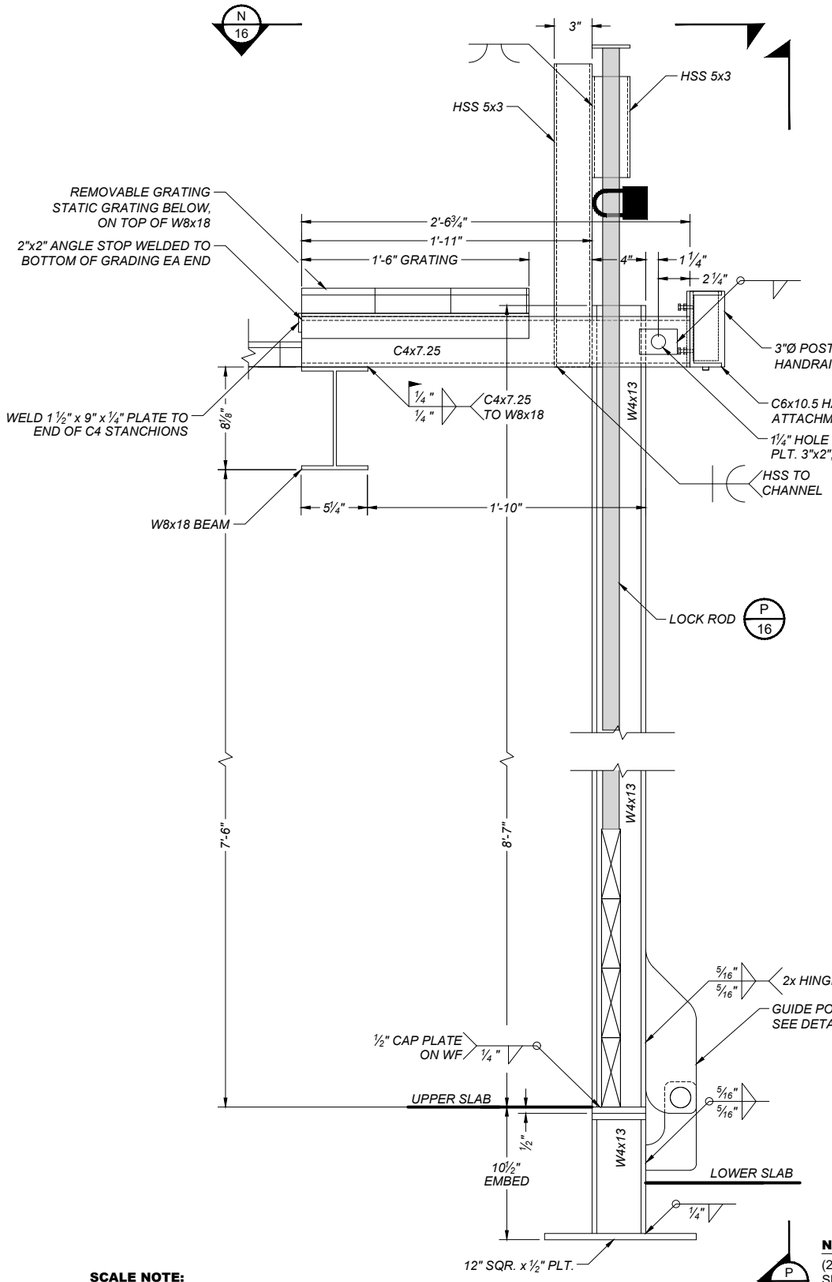
PROJECT NO. US-OR-260-7 DATE: 9/3/2026

RIGGS DAM
CHECK DAM & FISH LADDER

DECK FRAMING AND WALKWAY

DESIGNED BY:	GW
DRAWN BY:	RGR
SURVEYED BY:	BMM
CHECKED BY:	-
SHEET NO.	15 of 17

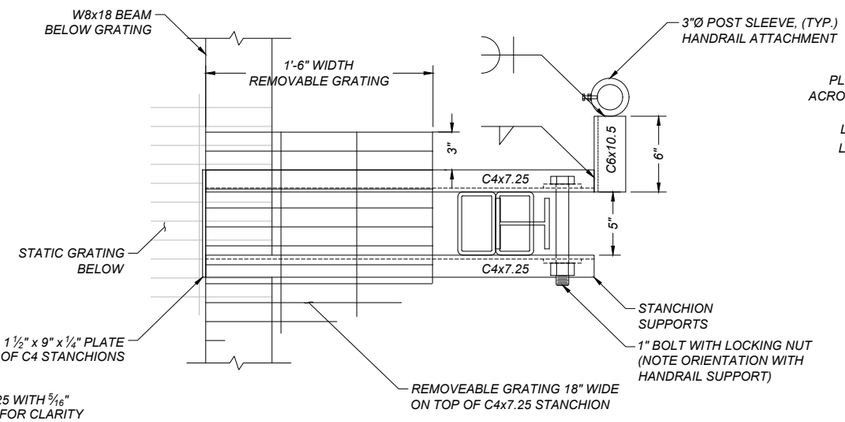
GALVANIZE ALL FERROUS METAL



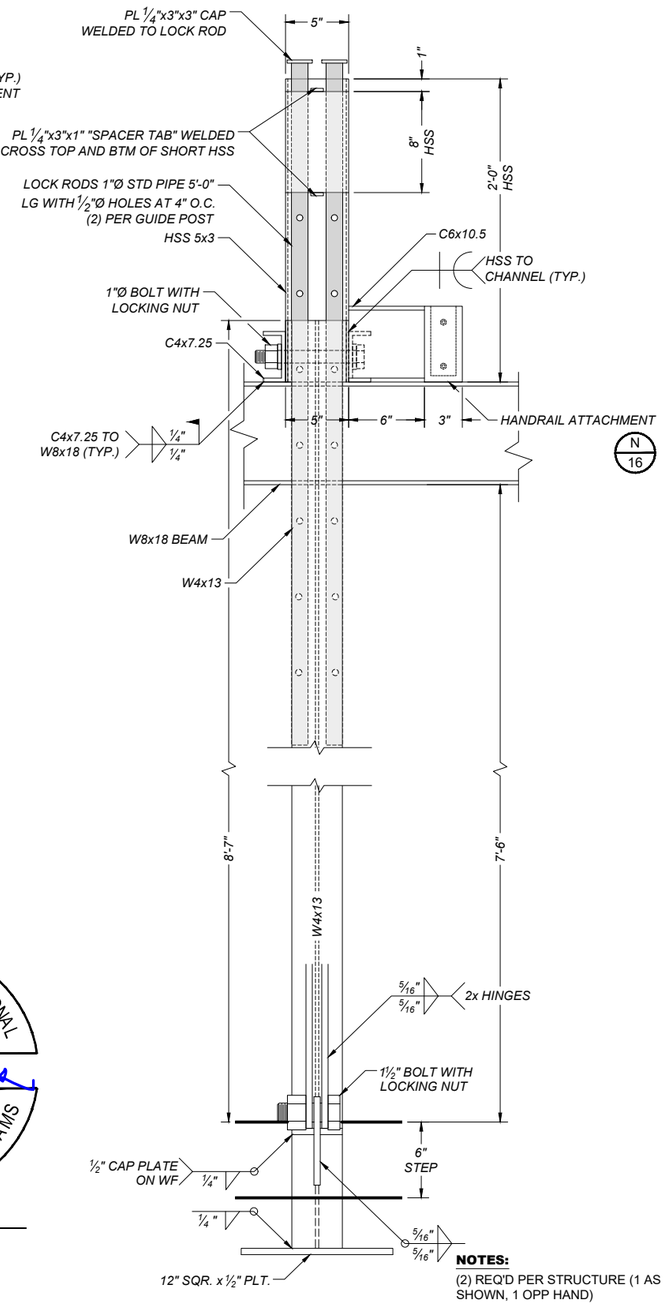
NOTE:
(2) REQ'D PER STRUCTURE (1 AS SHOWN, 1 OPP HAND)

N 16 STOPLOG GUIDE POST STANCHION PLAN VIEW

1"=1'



NOTE:
(2) REQ'D PER STRUCTURE (1 AS SHOWN, 1 OPP HAND)



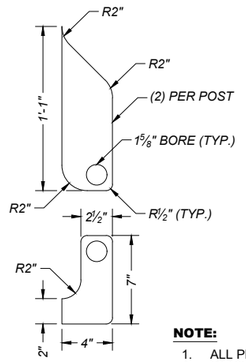
NOTES:
(2) REQ'D PER STRUCTURE (1 AS SHOWN, 1 OPP HAND)

SCALE NOTE:
ALL SECTIONS & DETAILS THIS SHEET SCALE AS SHOWN BELOW UNLESS OTHERWISE NOTED

0 .5 1 FEET
SCALE

09 16 ARTICULATING STOPLOG GUIDE POST DETAIL

1"=1'



NOTE:
1. ALL PLATES TO BE ½" A36
2. (2) HINGES REQ'D PER STRUCTURE

10 16 GUIDEPOST HINGE DETAIL

1"=1'

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OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

P 16 ARTICULATING STOPLOG GUIDE POST SECTION

1"=1'

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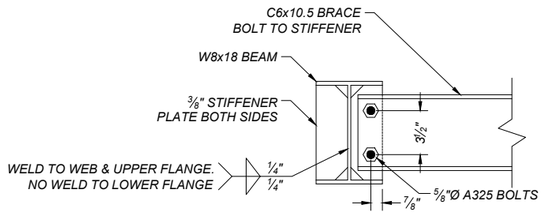
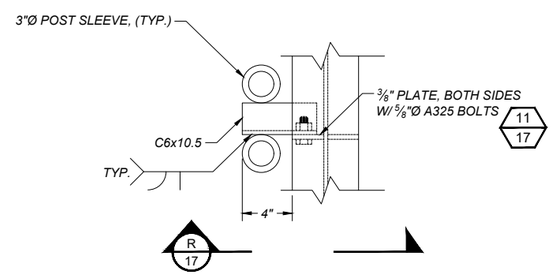
DUCKS UNLIMITED

PROJECT NO. US-OR-260-7 DATE: 9/3/2026
RIGGS DAM
CHECK DAM & FISH LADDER
STEEL DETAILS

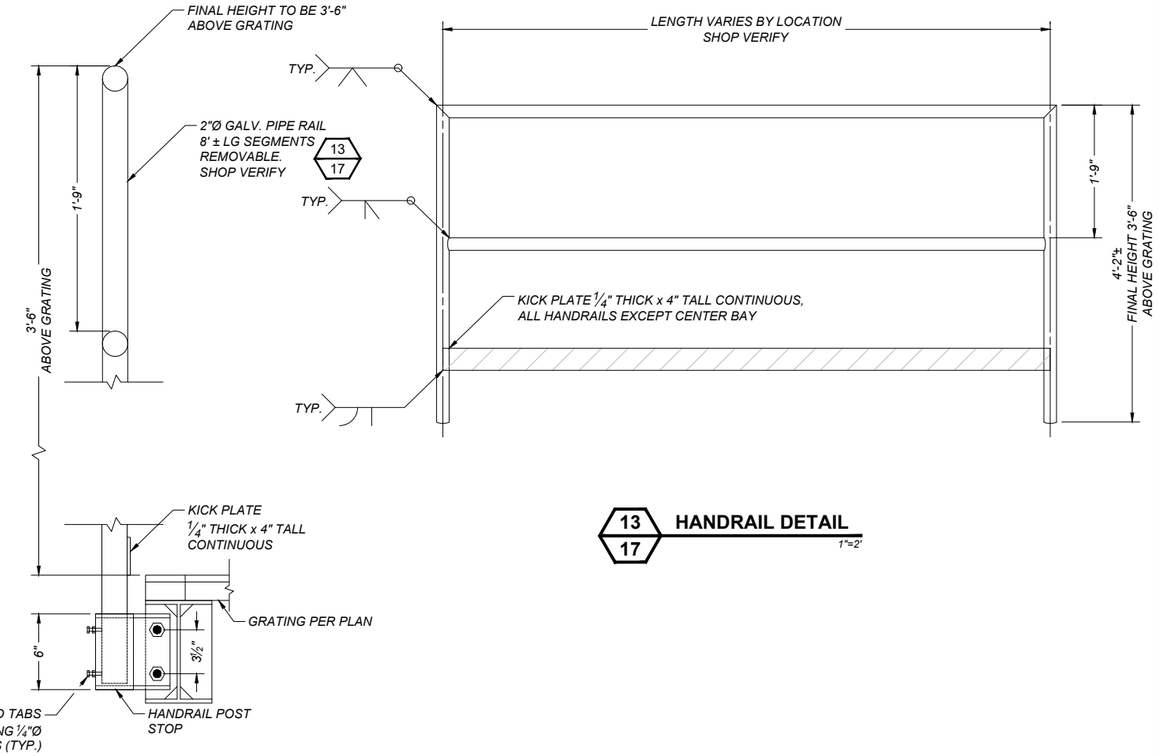
DESIGNED BY: GW
DRAWN BY: RGR
SURVEYED BY: BMM
CHECKED BY: -
SHEET NO. 16 of 17



11/17 DECKING BRACE STIFFENER DETAIL
1"=1'

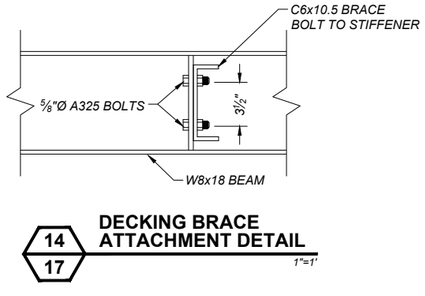


12/17 HANDRAIL ATTACHMENT
1"=1'

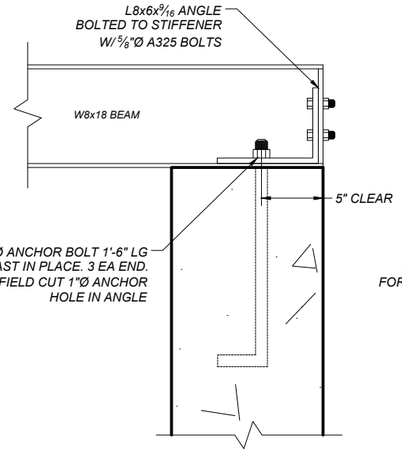


13/17 HANDRAIL DETAIL
1"=2'

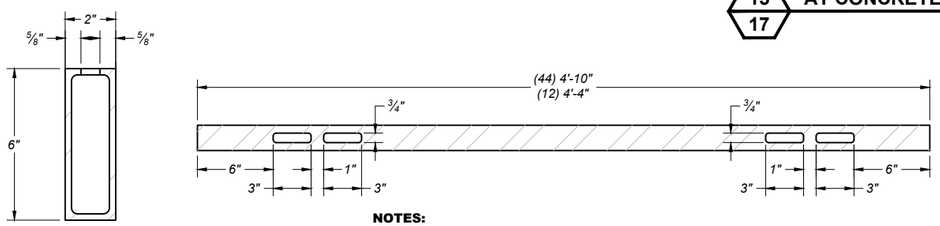
R/17 HANDRAIL SECTION
1"=1'



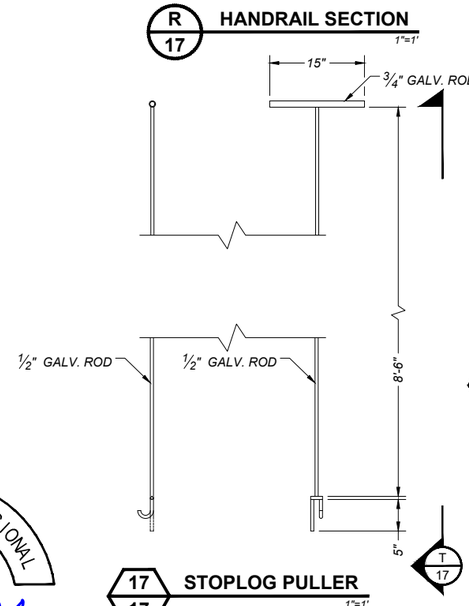
14/17 DECKING BRACE ATTACHMENT DETAIL
1"=1'



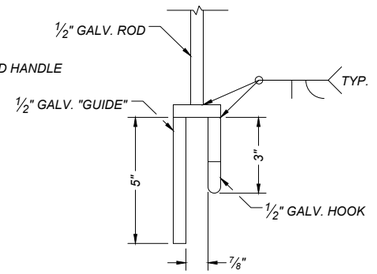
15/17 BRIDGE ATTACHMENT AT CONCRETE
1"=1'



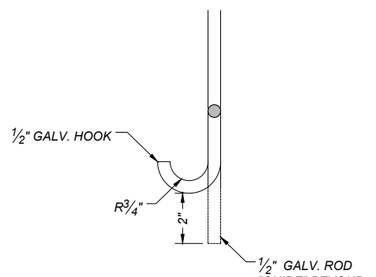
16/17 ALUMINUM STOPLOG
1"=1'



17/17 STOPLOG PULLER
1"=1'



18/17 STOPLOG PULLER DETAIL
1"=6'



T/17 STOPLOG PULLER SECTION
1"=6'

NOTES:

1. CONTRACTOR TO SUPPLY A TOTAL OF (2) STOPLOG PULLERS

NOTES:

1. THE ¾" DIMENSION IS CRITICAL AND MUST BE CENTERED IN THE STOPLOG TO AVOID LEAKAGE
2. THE FINISHED SURFACE SHALL BE SMOOTH TO PROVIDE A FLAT SURFACE FOR THE STOPLOG ABOVE.
3. ALUMINUM SHALL BE ⅛" THICK.

SCALE NOTE:
ALL SECTIONS & DETAILS THIS SHEET SCALE AS SHOWN BELOW UNLESS OTHERWISE NOTED

0 .5 1 FEET
SCALE

REGISTERED PROFESSIONAL ENGINEER
16110
OREGON
JULY 21, 1992
AUGUSTUS S. WILLIAMS

EXPIRES: 6/2028

BID SET

REVISIONS			
REV. NO.	DESCRIPTION	DATE	APPROVED
5			
4			
3			
2			
1			

DUCKS UNLIMITED

PROJECT NO. US-OR-260-7	DATE: 9/4/2026	DESIGNED BY:	GW
RIGGS DAM CHECK DAM & FISH LADDER		DRAWN BY:	RGR
		SURVEYED BY:	BMM
		CHECKED BY:	-
STEEL DETAILS		SHEET NO.	17 of 17

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.