

OGDEN BUSINESS EXCHANGE SURF WAVE PROJECT WEBER RIVER - OGDEN, UT October 2025

BID SET

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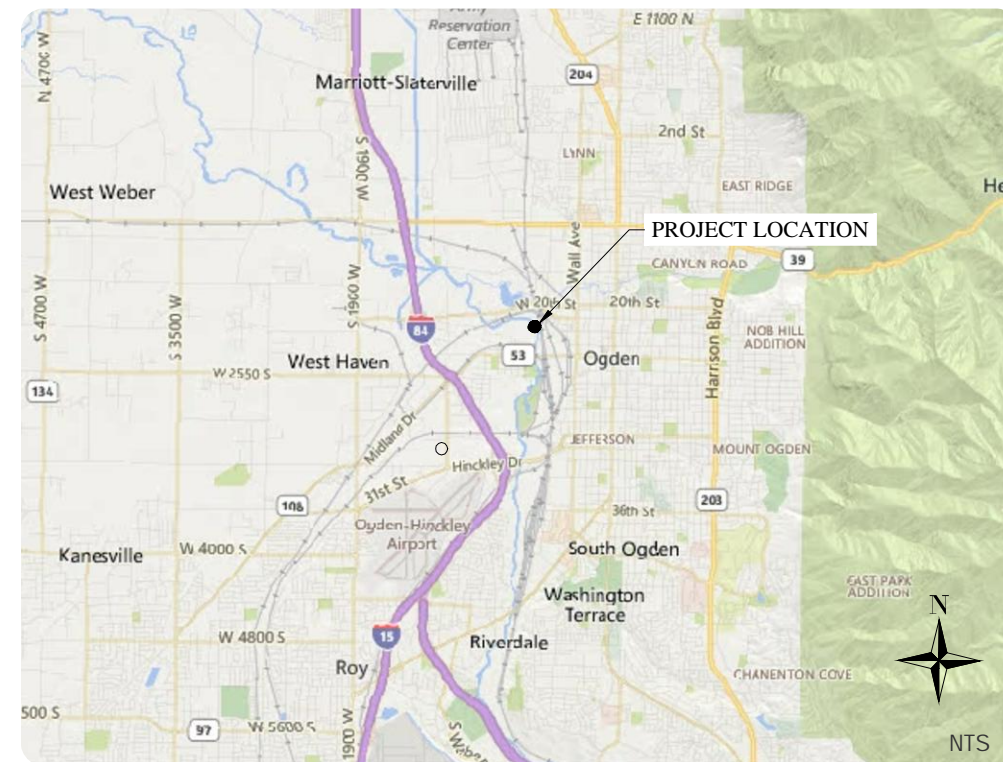
NOTE

Utilities shown on plans are approximate.
Contractor wholly responsible for field
locating & protecting in place utilities

LOCATION MAP



VICINITY MAP



PROFESSIONAL ENGINEER STAMP



OGDEN BUSINESS EXCHANGE SURF WAVE PROJECT COVER SHEET

No.	REVISION/UPDATE	Date
1	REVISION	12/2/25

CLIENT NAME AND ADDRESS



Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS



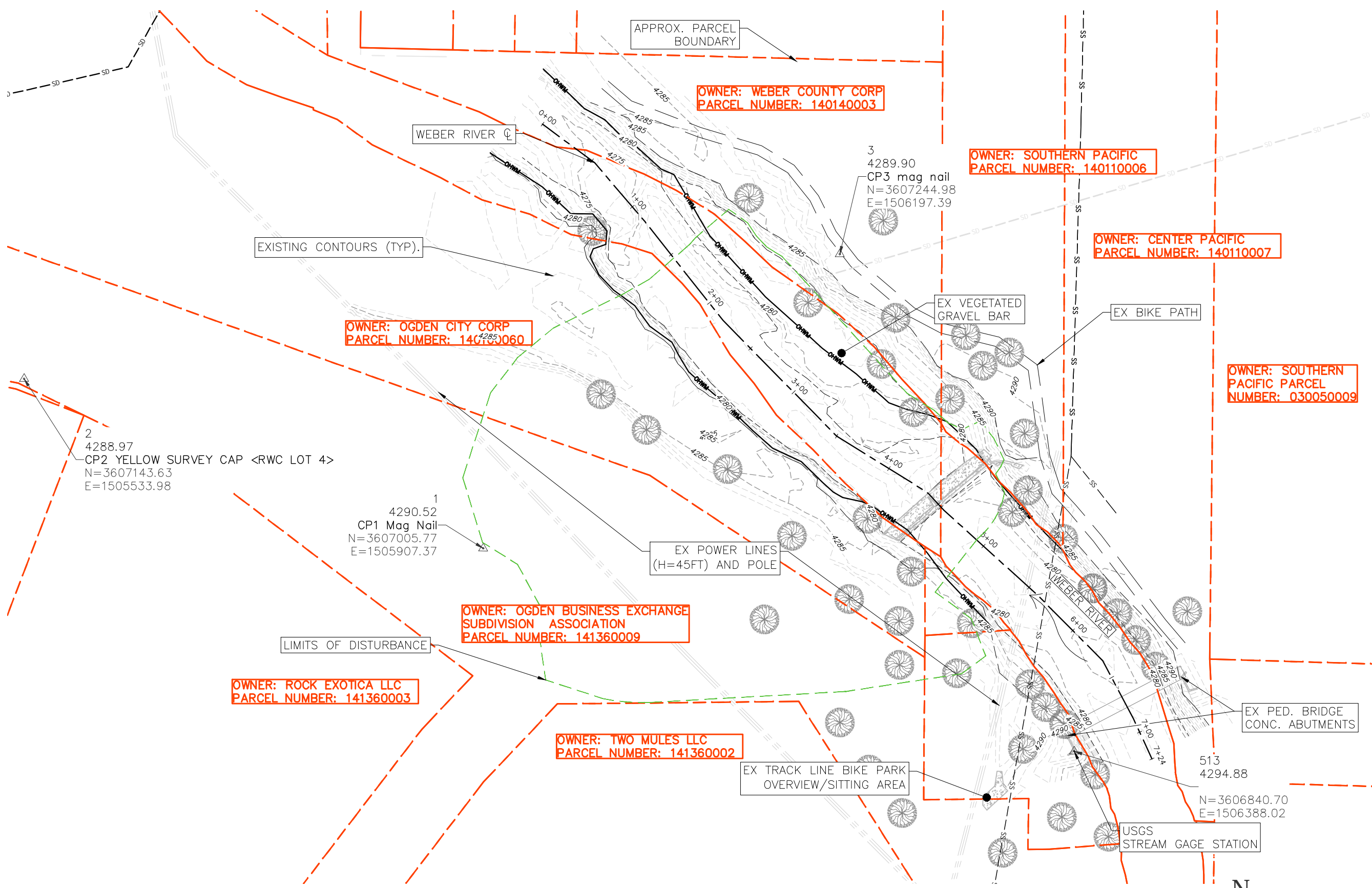
RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

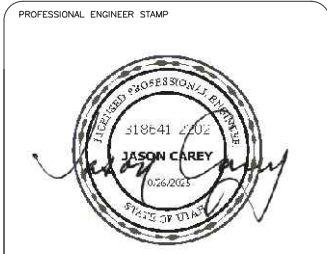
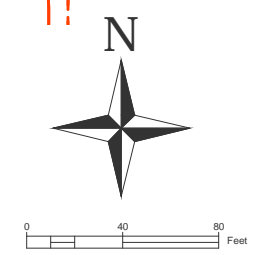
Project	Sheet
45072	G01
Date	OCTOBER 2025
Scale	NTS

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SURVEY NOTES:

1. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)
2. HORIZONTAL COORDINATE SYSTEM: UTAH STATE PLANE, NORTH AMERICAN DATUM 1983 (NAD83), NORTH ZONE, US FOOT



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
BASE MAP & HORIZONTAL
CONTROL PLAN**

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Engineering Division
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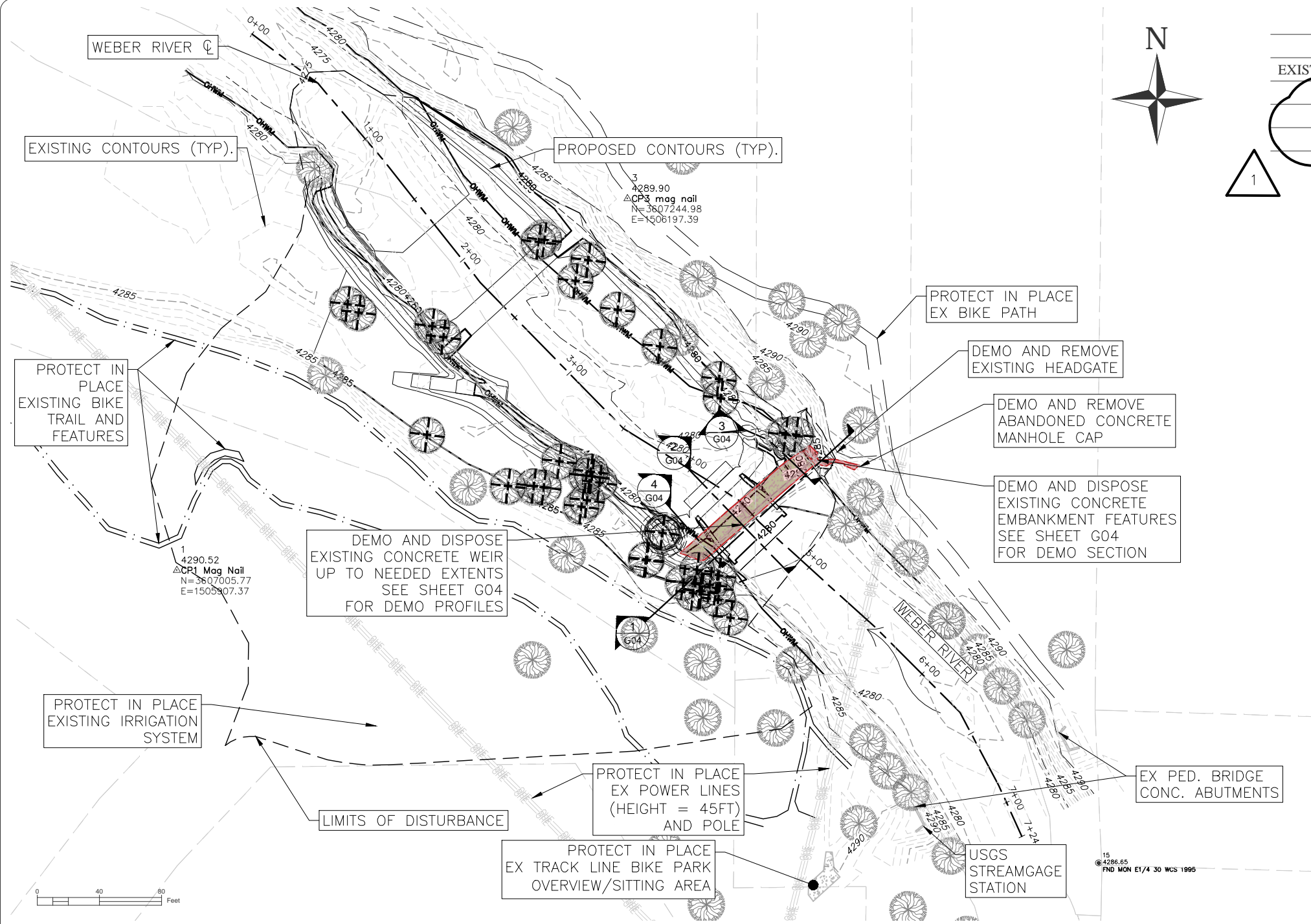
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PROJECT NAME AND ADDRESS

Weber River
Ogden, UT
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Project	45072	Sheet	G02
Date	OCTOBER 2025	Scale	
Scale	1" = 40' (FULL SIZE)		

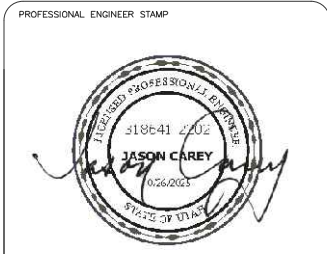
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1

DEMO ITEMS

GENERAL EXCAVATION & STOCKPILING (PROJECT TOTAL)	3980	CY
EXISTING CONCRETE DEMOLITION AND HAUL OFF AND DISPOSAL	186	CY
LARGE TREE (24"-32" DIA.)	1	EA
MEDIUM TREES (12"-23.9" DIA.)	8	EA
SMALL TREES (6"-11.9" DIA.)	30	EA



OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
DEMOLITION & PROTECT
IN PLACE PLAN



4 EXISTING ABANDONED CONCRETE MANHOLE CAP & ABANDONED HEADGATE



5 EXISTING CONCRETE WEIR AND RIVER LEFT BANK VIEW



1 EXISTING CONCRETE WEIR



2 EXISTING CONCRETE WEIR & RIVER RIGHT EMBANKMENT



3 RIVER RIGHT CONCRETE EMBANKMENT (DETAIL)

- TO BE REMOVED
- TO PROTECT IN PLACE
- REMOVE AND DISPOSE EXISTING TREE

No.	REVISION/UPDATE	Date
1	DEMO TREE UPDATES	11/21/25

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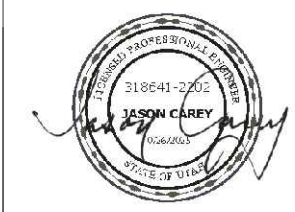
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Ogden, UT
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Project	45072	Sheet	G03
Date	OCTOBER 2025		
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OGDEN BUSINESS EXCHANGE SURF WAVE PROJECT DEMOLITION & PROTECT SECTION AND PROFILES

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
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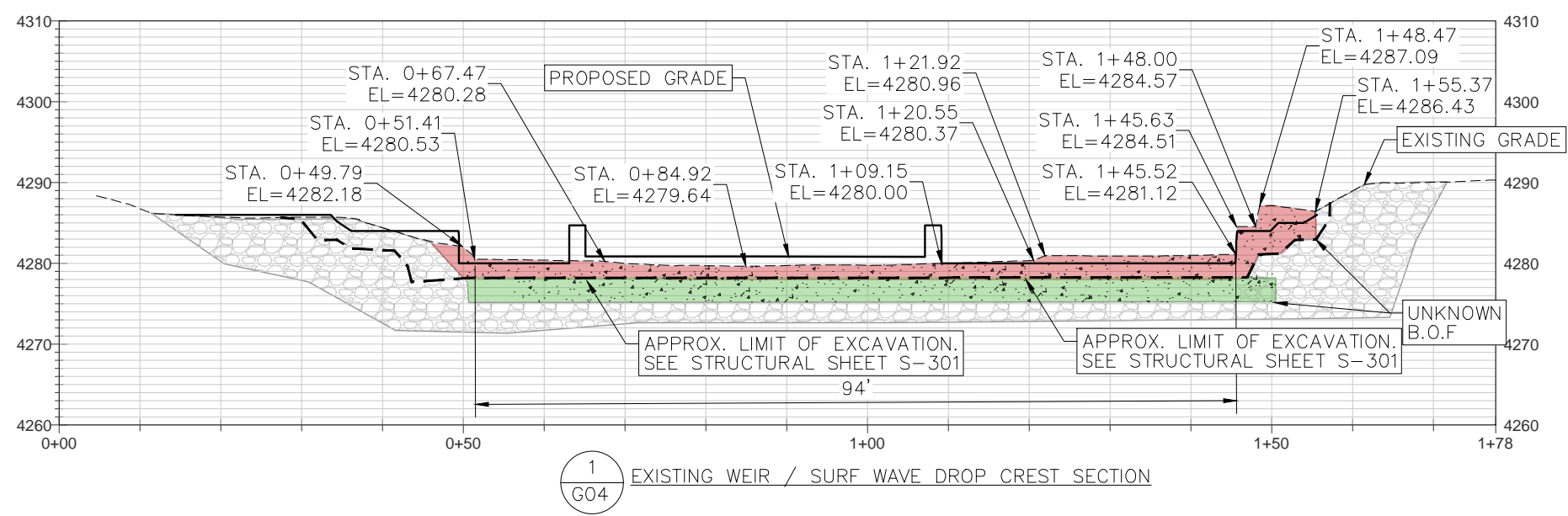
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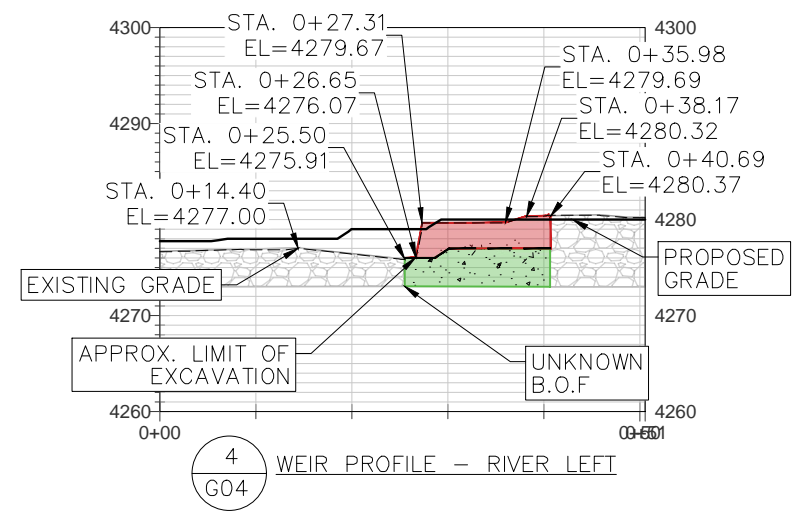
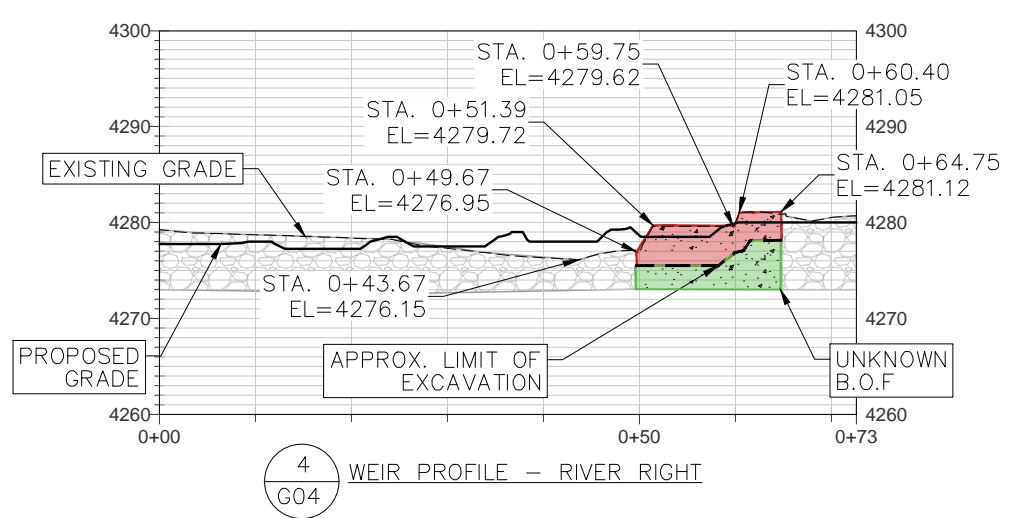
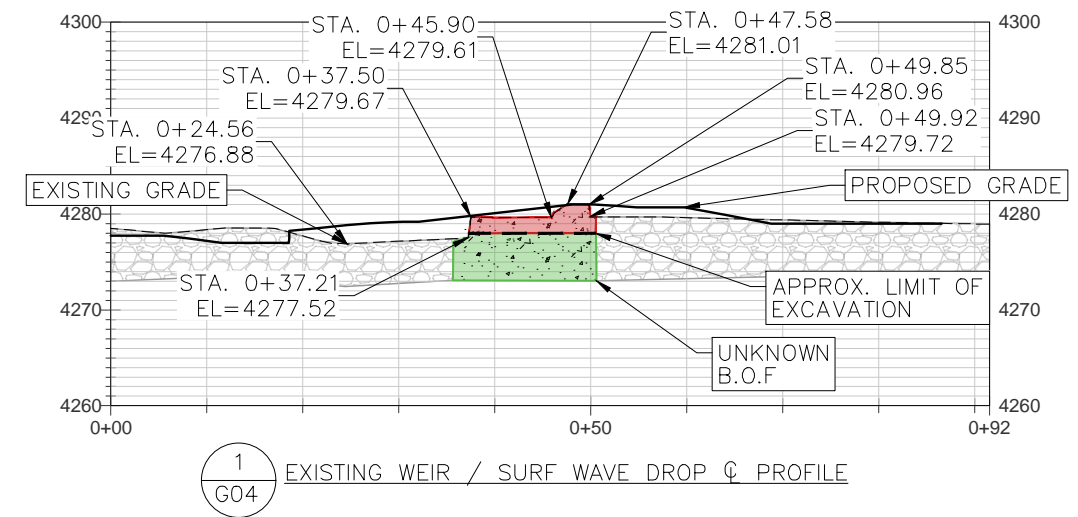
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Date	OCTOBER 2025		
Scale	1" = 10' (FULL SIZE)		

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 TO BE REMOVED
 TO PROTECT IN PLACE

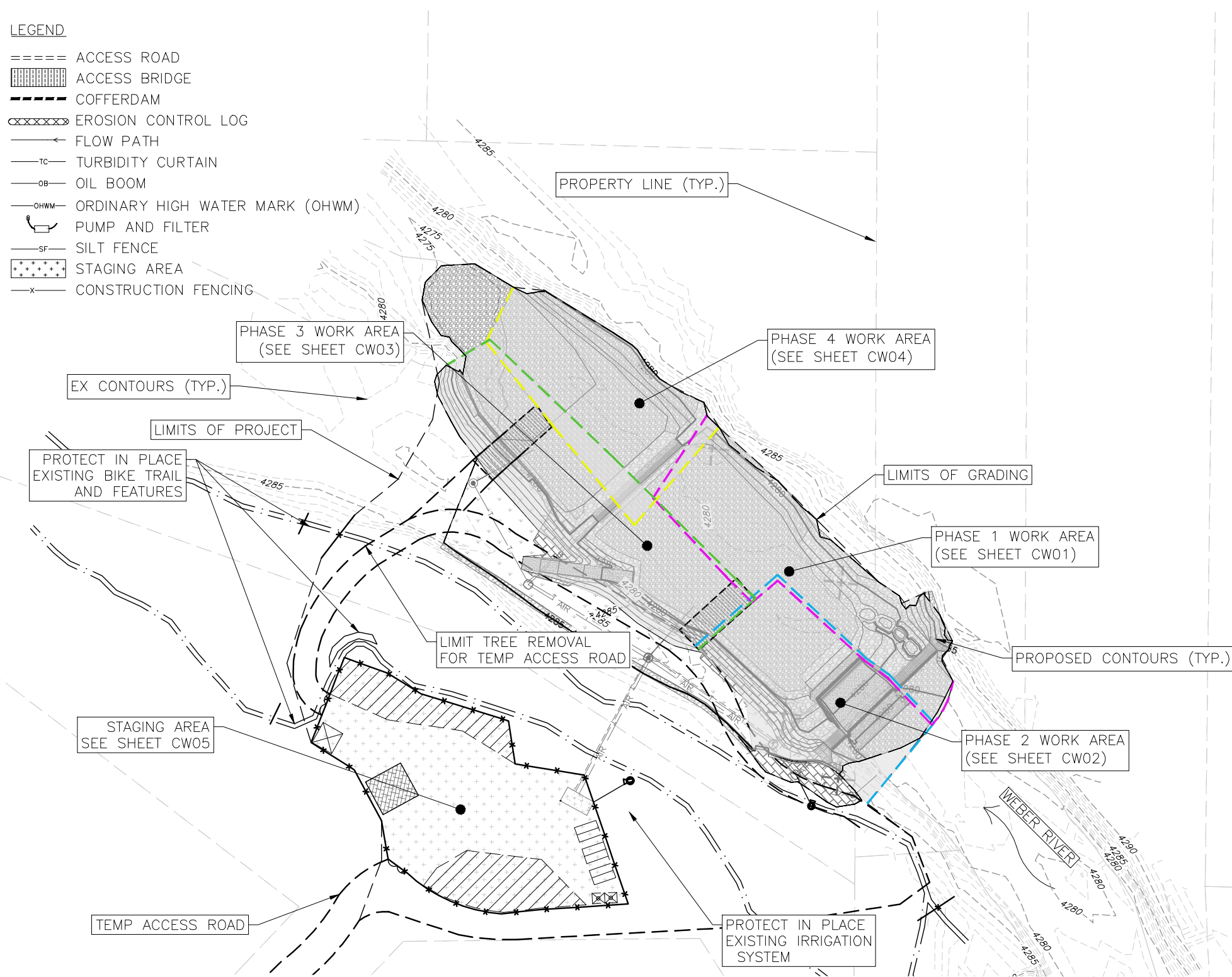


NOTE:
 ASSUMED TYPICAL EXCAVATION
 RELATIVE TO PROPOSED GRADE,
 UNLESS OTHERWISE NOTED, :
 · -2' FOR CONCRETE
 · -3' FOR BOULDER PLACEMENT
 · FOUNDATION OF RIVER RIGHT
 ABUTMENT WALL TO SEAT ON
 EXISTING CONCRETE IF SUITABLE



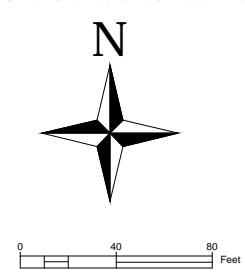
LEGEND

- ===== ACCESS ROAD
- ▨ ACCESS BRIDGE
- ▬ COFFERDAM
- ⊗ EROSION CONTROL LOG
- FLOW PATH
- TC— TURBIDITY CURTAIN
- OB— OIL BOOM
- OHWM— ORDINARY HIGH WATER MARK (OHWM)
- ⊡ PUMP AND FILTER
- SF— SILT FENCE
- ⊕ STAGING AREA
- x— CONSTRUCTION FENCING



EROSION CONTROL AND CARE OF WATER NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS AND BEST MANAGEMENT PRACTICES (BMP'S).
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPMENT OF STAGING AREAS, ACCESS, AND CARE OF WATER DURING CONSTRUCTION.
3. IF ISOLATION FROM THE FLOWING RIVER IS DESIRED DURING CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION OF ISOLATION PLAN.
4. CONTRACTOR IS RESPONSIBLE FOR DEMOBILIZATION OF EQUIPMENT TO AVOID DESTABILIZATION OF EQUIPMENT AND PARTIALLY CONSTRUCTED FEATURES. SEE SPECIFICATIONS FOR REQUIREMENTS AND DETAILS.
5. UTILITY LOCATIONS SHOWN IN PLANS ARE APPROXIMATE, CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY LOCATES INCLUDING UTILITIES NOT SHOWN IN PLANS.
6. MINIMIZE TREE CUTTING IN MATURE FOREST WITHIN DISTURBANCE AREA. ANY TREES OUTSIDE THE ITEM NUMBER IN COST OPINION WILL NEED TO BE APPROVED BEFORE CUTTING



CARE OF WATER SEQUENCE:

COW PHASE 1 (CW01):

- 1.1 SALVAGE AND REMOVE ABANDONED CONCRETE MANHOLE CAP;
- 1.2 SALVAGE AND REMOVE EXISTING HEADGATE;
- 1.3 DEMO AND DISPOSE EX. CONCRETE EMBANKMENT FEATURES;
- 1.4 DEMO AND DISPOSE RIVER RIGHT SIDE OF EXISTING CONCRETE WEIR;
- 1.5 REBUILD BANK;
- 1.6 GRAVEL BAR EXCAVATION, AND POOL GRADING;
- 1.7 BOULDER PLACEMENT FOR RIVER RIGHT BANK TIE IN AND FISH PASSAGE CHANNEL;
- 1.8 POUR CREST CONCRETE SLAB AND INSTALL OHI GATE SYSTEM;

COW PHASE 2 (CW02):

- 2.1 DEMO AND DISPOSE RIVER LEFT SIDE OF EX CONCRETE WEIR;
- 2.2 BUILD BANK AND RIVER LEFT WING;
- 2.3 POUR CREST CONCRETE SLAB AND INSTALL OHI GATE SYSTEM;
- 2.4 CAST AND POUR CONCRETE SLAB AND WALLS FOR SURF WAVE FEATURE; INSTALL OHI GATE SYSTEM;
- 2.6 SCOUR PAD, POOL AND RIVER LEFT UPSTREAM BANK IMPROVEMENTS (LAID BACK STEPS AND VIEWING PLATFORM).

COW PHASE 3 (CW03):

- 3.1 LEFT BANK AND BANK TOE RESTORATION;
- 3.2 ACCESS RAMP;
- 3.3 POOL GRADING;
- 3.4 DOWNSTREAM GRADE CONTROL STRUCTURE (G.C.S), CONCRETE AND BOULDER PLACEMENT;
- 3.5 INSTALL OHI GATE SYSTEM;

COW PHASE 4 (CW04):

- 4.1 DOWNSTREAM G.C.S & RIVER RIGHT BOULDER WING;
- 4.2 BANK TIE IN AND GRADING.

ALL OTHER WORK, AS PER RIFFLE GRADE BELOW G.C.S, IN WET WITH DOWNSTREAM OIL BOOM AND TURBIDITY CURTAIN IN PLACE AT ALL TIMES.

PROFESSIONAL ENGINEER STAMP



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
CARE OF WATER
OVERVIEW AND NOTES**

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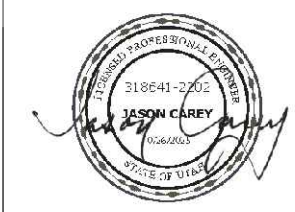
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Ogden Business Exchange Surf Wave

Project 45072	Sheet CW00
Date OCTOBER 2025	
Scale 1" = 40' (FULL SIZE)	

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OGDEN BUSINESS EXCHANGE SURF WAVE PROJECT CARE OF WATER PHASE 1

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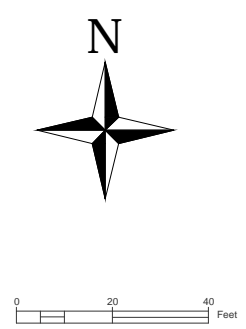
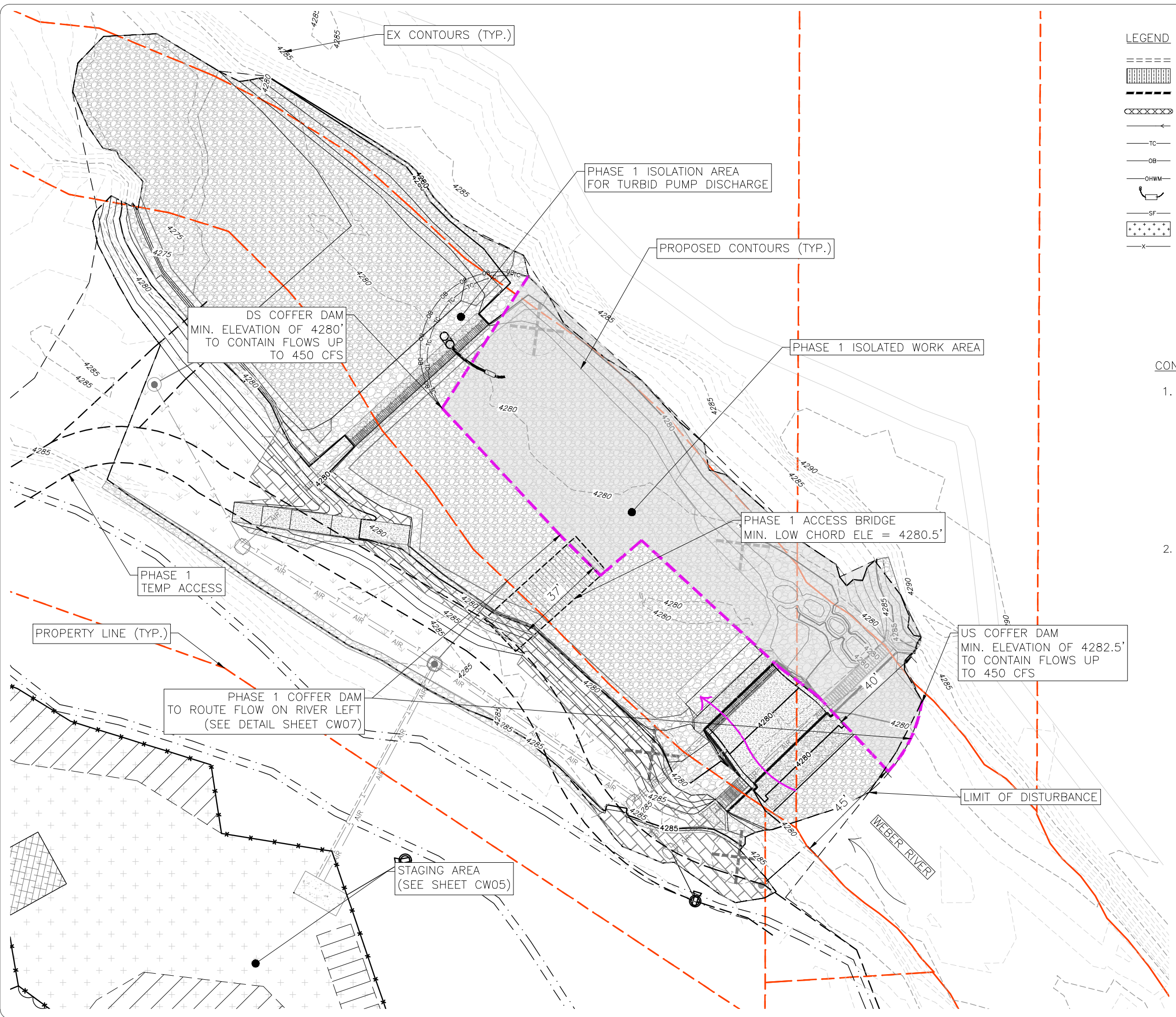
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Date	OCTOBER 2025		
Scale	1" = 20' (FULL SIZE)		

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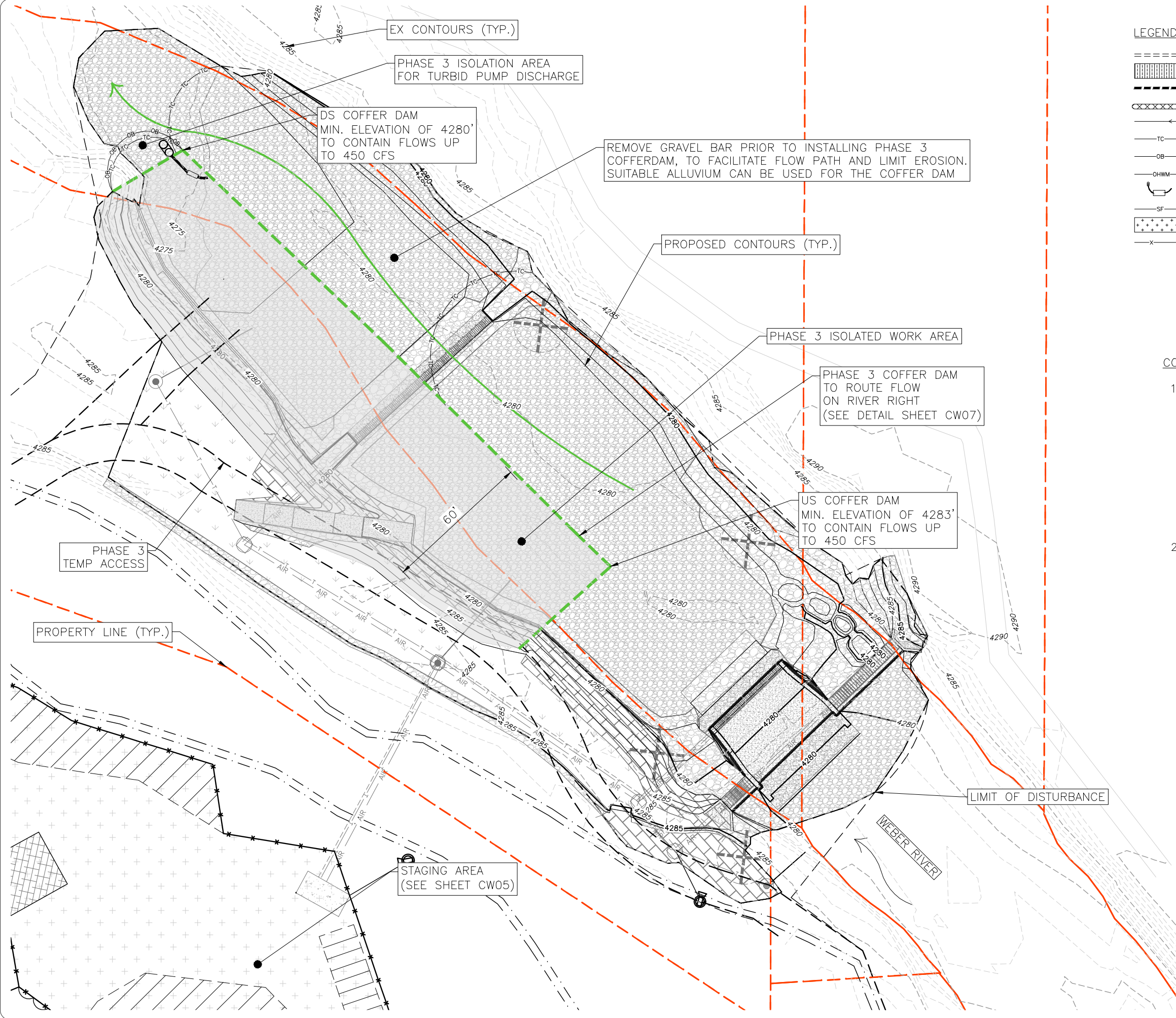
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- ⊕ STAGING AREA
- x— CONSTRUCTION FENCING

CONSTRUCTION NOTES:

- SEE SHEET CW00 AND TECHNICAL SPECIFICATIONS, SECTIONS 2 AND 3 FOR A DETAILED DESCRIPTION OF CONTRACTOR REQUIREMENTS CONCERNING EROSION CONTROL (NPDES) AND CARE OF WATER (USACE 404, UDWQ 401); & SECTION 12 FOR EXISTING PROJECT SITE HYDROLOGY AND TEMPORARY DIVERSION WATER SURFACE ELEVATIONS.
- CARE OF WATER PLAN IS SHOWN FOR PERMITTING AND COST ESTIMATING PURPOSES ONLY. CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING A CARE OF WATER PLAN TO MEET PERMITTING REQUIREMENTS AND CONSTRUCTION NEEDS. CONTRACTOR IS WHOLLY RESPONSIBLE FOR MONITORING RIVER LEVELS AND WEATHER FORECASTS AND MAKING ADJUSTMENTS TO THE PROJECT'S COFFER DAM SYSTEM OR DEMOBILIZING OUT OF THE RIVER IF FLOW CONDITIONS EXCEEDS OR IS PREDICTED TO REQUIRE SUBMERGENCE OF THE ISOLATION SYSTEM CAPACITY.



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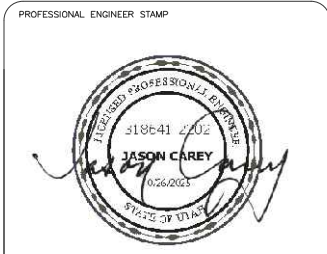
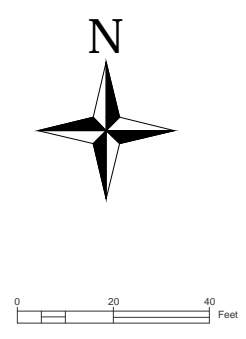


LEGEND

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**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
CARE OF WATER
PHASE 3**

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

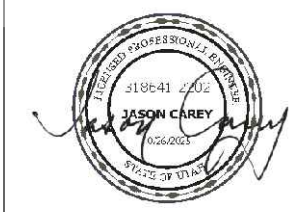
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 Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

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 P.O. Box 248
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PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

Project 45072	Sheet CW03
Date OCTOBER 2025	
Scale 1" = 20' (FULL SIZE)	

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OGDEN BUSINESS EXCHANGE SURF WAVE PROJECT CARE OF WATER STAGING AREA

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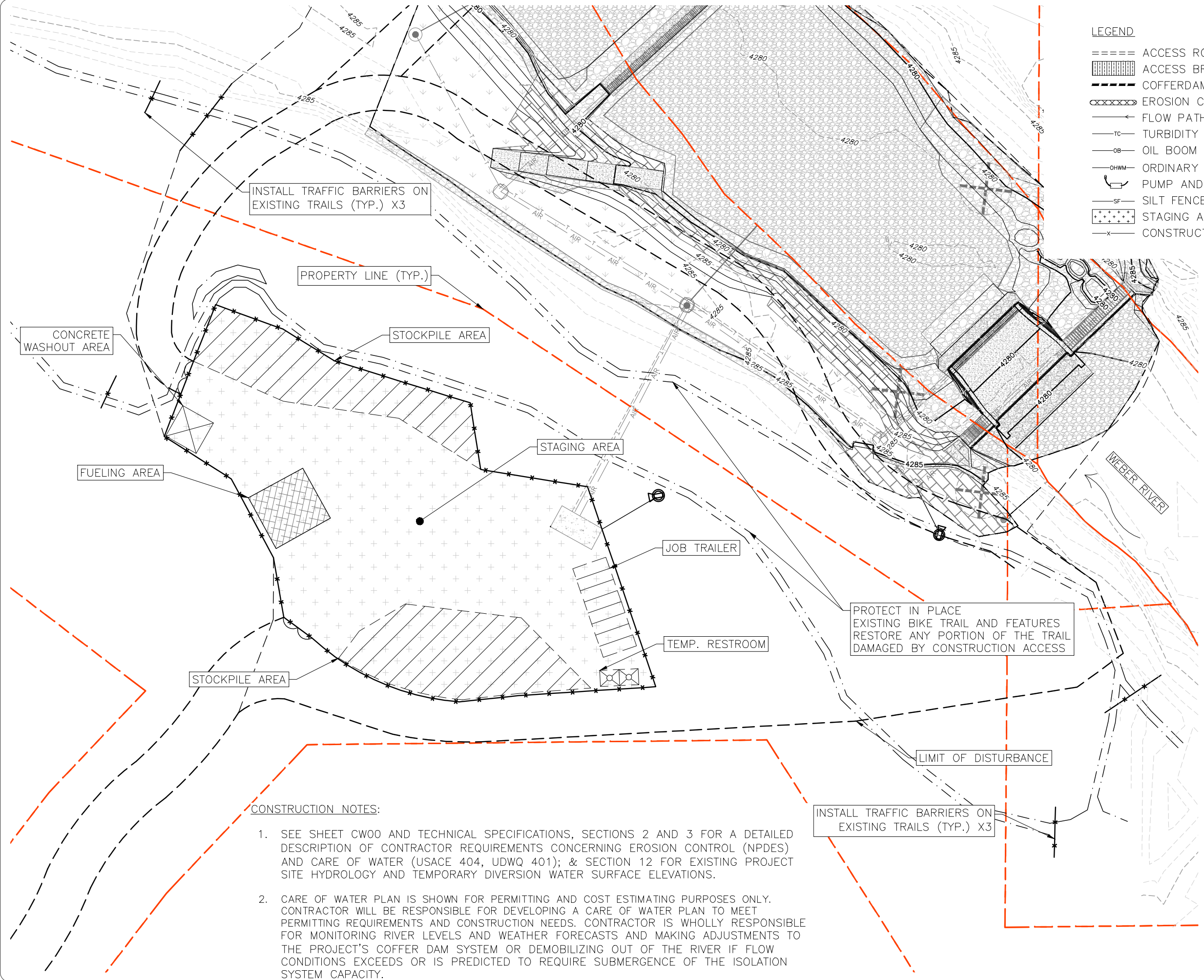
PROJECT NAME AND ADDRESS

Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project 45072	Sheet CW05
Date OCTOBER 2025	
Scale 1" = 20' (FULL SIZE)	

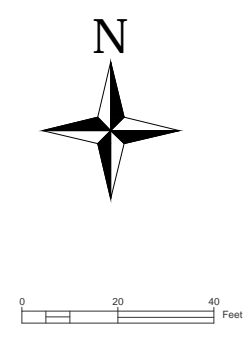
LEGEND

- ==== ACCESS ROAD
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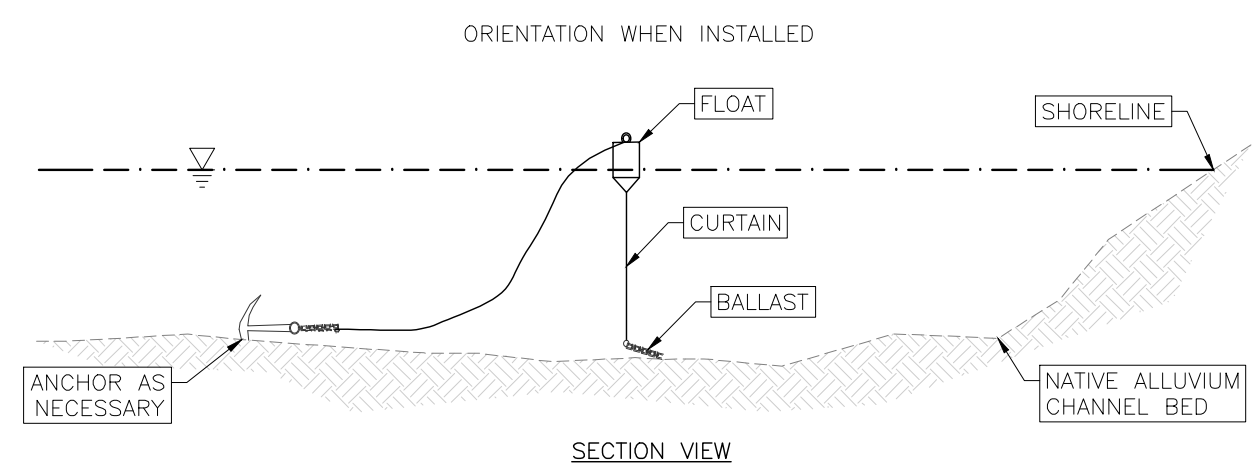


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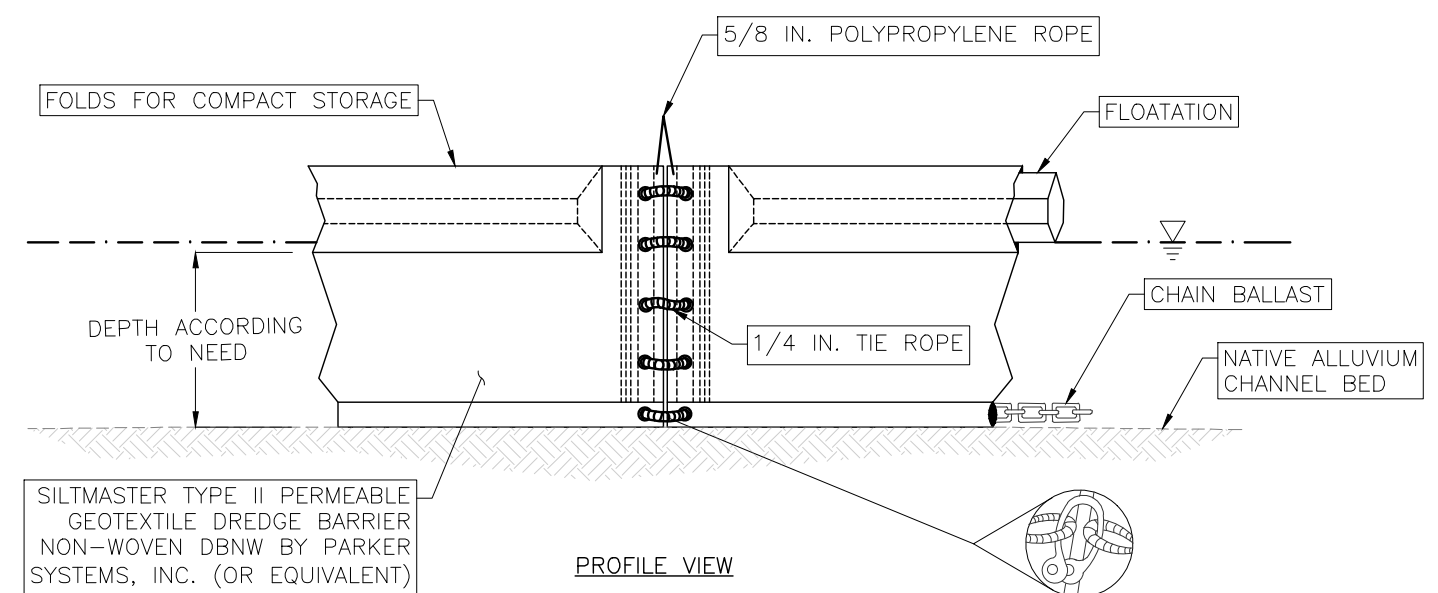


**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT**

**CARE OF WATER
DETAILS 1 OF 2**

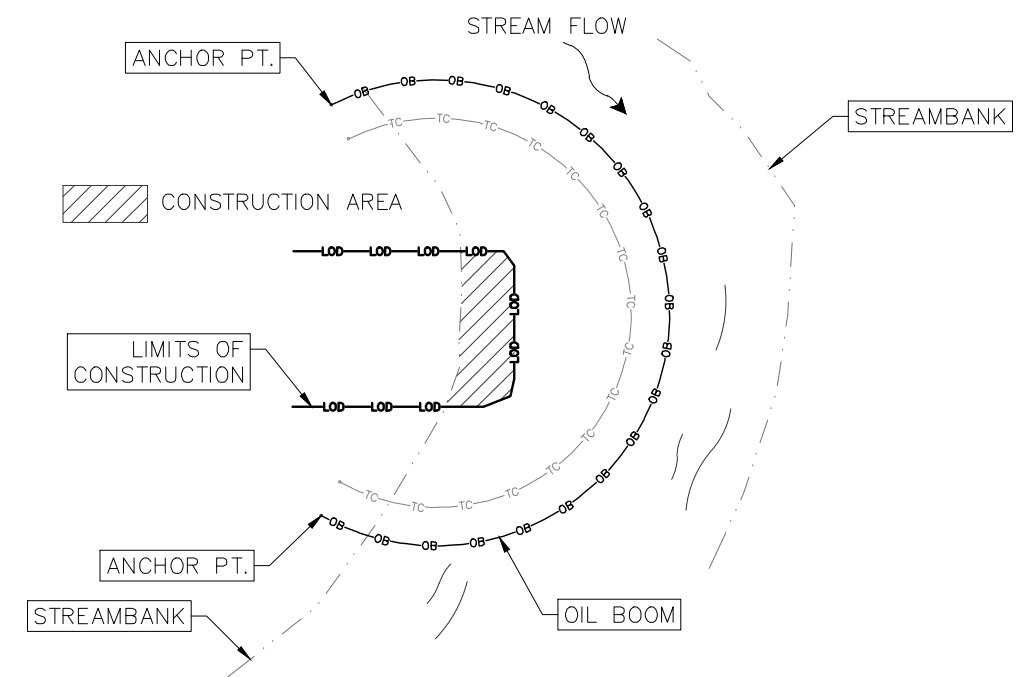


SECTION VIEW



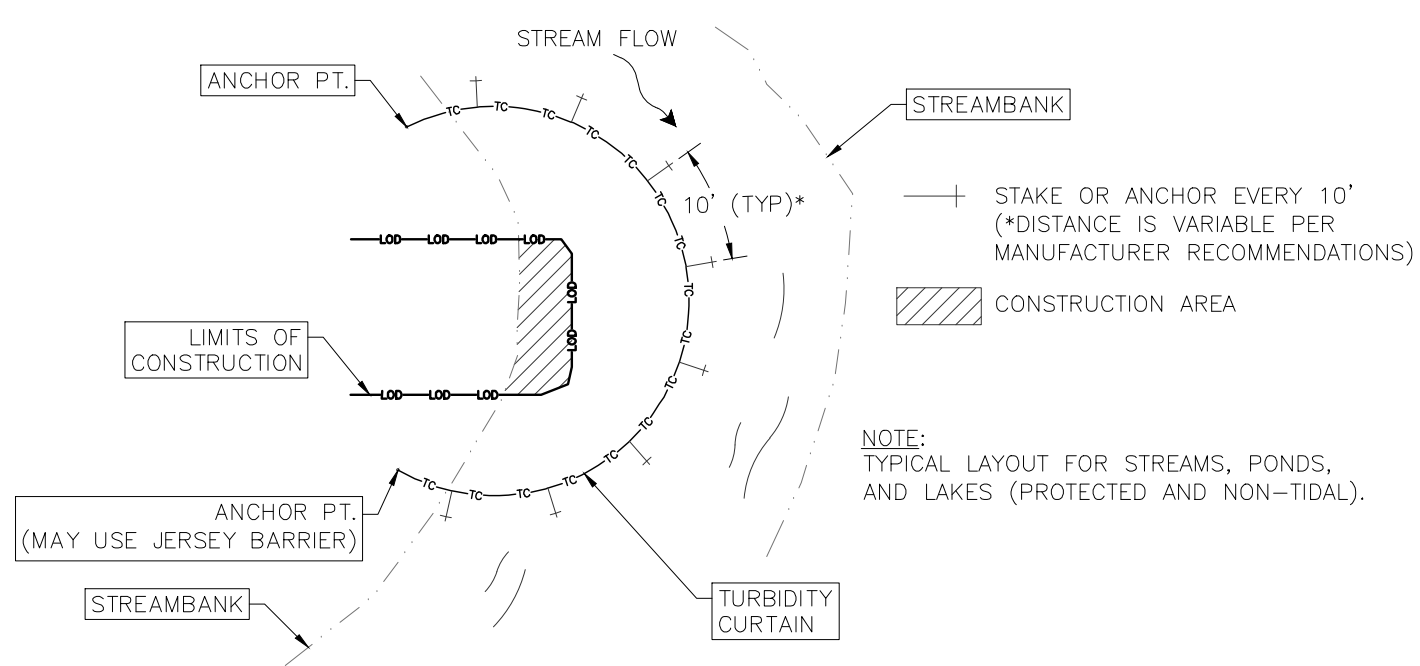
PROFILE VIEW

(BLOW-UP OF SHACKLE CONNECTION)



NOTE:
TYPICAL LAYOUT FOR STREAMS AND RIVERS.
OIL BOOM TO BE PLACED BEHIND
TURBIDITY CURTAIN AND DOWNSTREAM OF
ANY EQUIPMENT WORKING IN THE WET.

2 OIL BOOM (TYP)
CW06 PLAN VIEW - NTS



NOTE:
TYPICAL LAYOUT FOR STREAMS, PONDS,
AND LAKES (PROTECTED AND NON-TIDAL).

1 TURBIDITY CURTAIN (TYP)
CW06 PLAN VIEW - NTS

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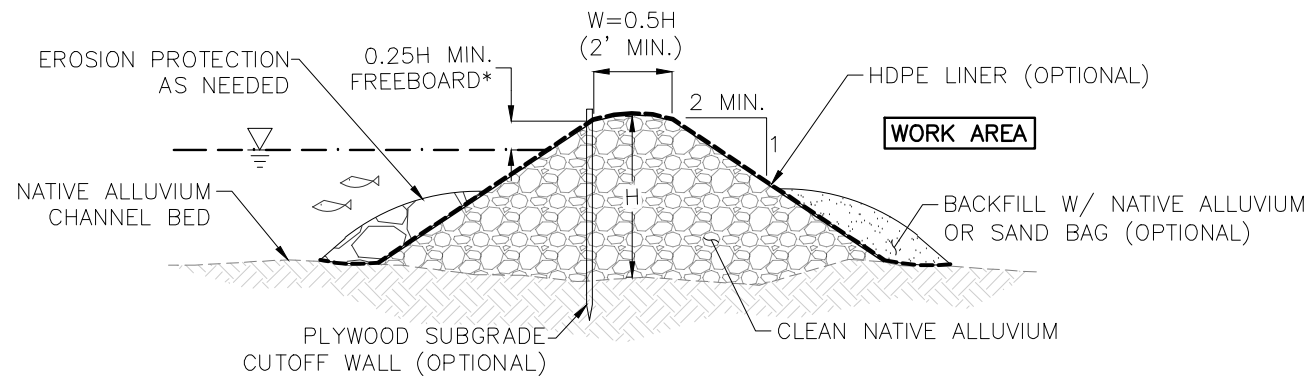
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Project	45072	Sheet	CW06
Date	OCTOBER 2025		
Scale	NTS		

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NOTE:
 HMAX=8.0'
 WMIN=0.5H; MIN FREEBOARD*=0.25H; MAX DEPTH=6'

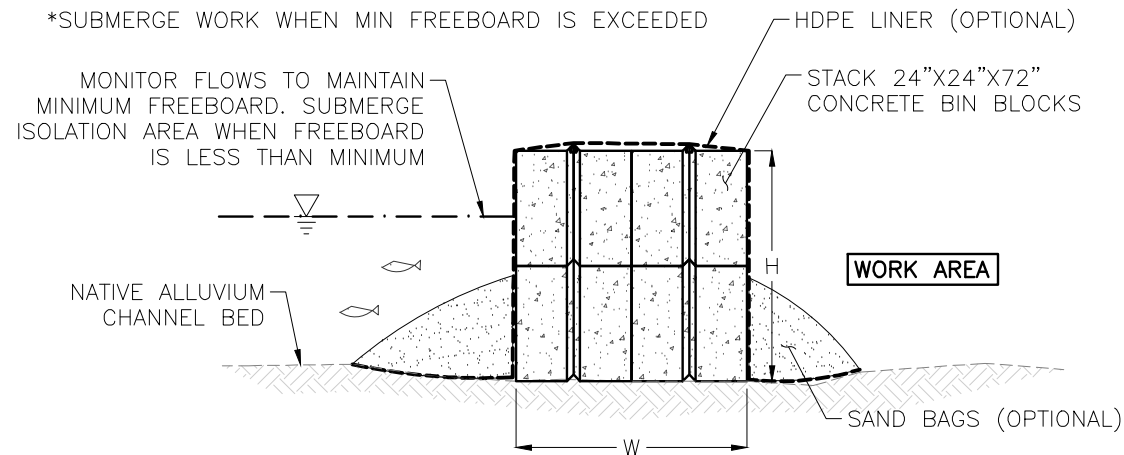
*SUBMERGE WORK WHEN MIN FREEBOARD IS EXCEEDED



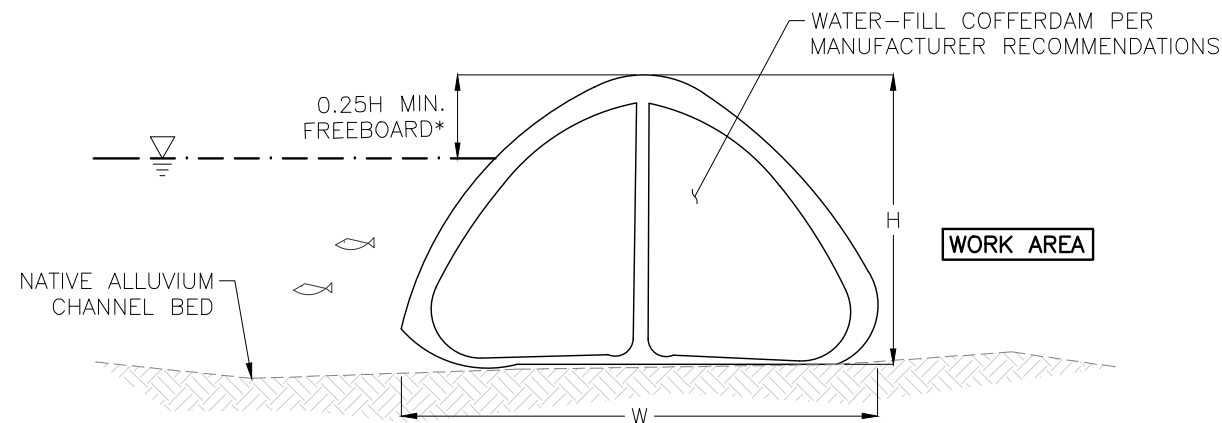
1 ALLUVIUM COFFERDAM (TYP)
 CW07 SECTION VIEW - NTS

NOTE:
 H MAX=8.0'
 MAX H=W; MIN FREEBOARD*=0.25H; MAX DEPTH=0.75H

*SUBMERGE WORK WHEN MIN FREEBOARD IS EXCEEDED



2 CONCRETE BLOCK COFFERDAM (TYP)
 CW07 SECTION VIEW - NTS



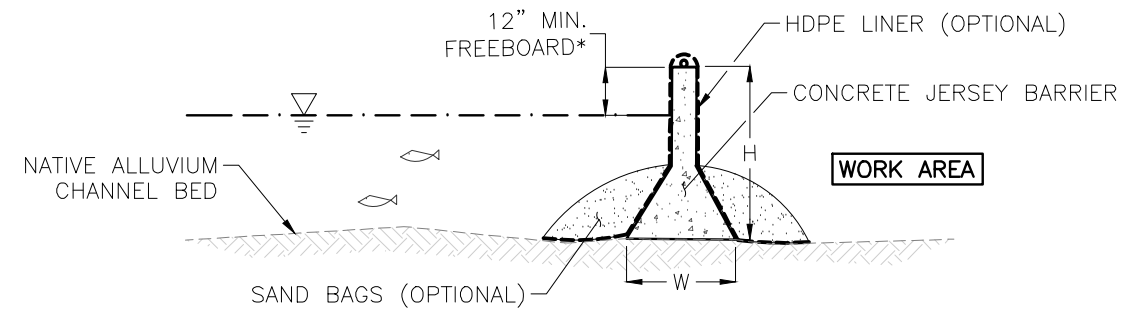
3 WATER-FILLED COFFERDAM (TYP)
 CW07 SECTION VIEW - NTS

NOTE:
 H MAX = PER MANUFACTURERS RECOMMENDATIONS.
 W MIN = PER MANUFACTURERS RECOMMENDATIONS.

*SUBMERGE WORK WHEN MINIMUM FREEBOARD IS EXCEEDED

NOTE:
 H MAX=34" (TYP. JERSEY BARRIER HEIGHT)
 W MIN=23" (TYP. JERSEY BARRIER BASE WIDTH)
 MIN FREEBOARD*=12"
 MAX DEPTH=0.75H

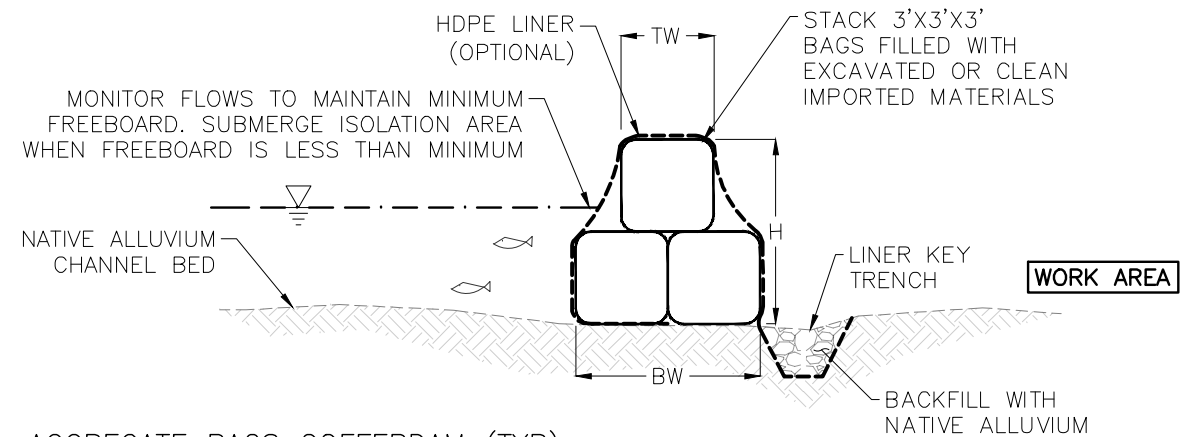
*SUBMERGE WORK WHEN MIN FREEBOARD IS EXCEEDED



4 JERSEY BARRIER COFFERDAM (TYP)
 CW07 SECTION VIEW - NTS

NOTE:
 H MAX = 8.0'
 BW MIN = H
 MIN FREEBOARD* = 0.25H
 MAX DEPTH = 0.75H
 TW = H/2

*SUBMERGE WORK WHEN MIN FREEBOARD IS EXCEEDED



5 AGGREGATE BAGS COFFERDAM (TYP)
 CW07 SECTION VIEW - NTS

PROFESSIONAL ENGINEER STAMP



OGDEN BUSINESS EXCHANGE
 SURF WAVE PROJECT
 CARE OF WATER
 DETAILS 2 OF 2

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS



Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS



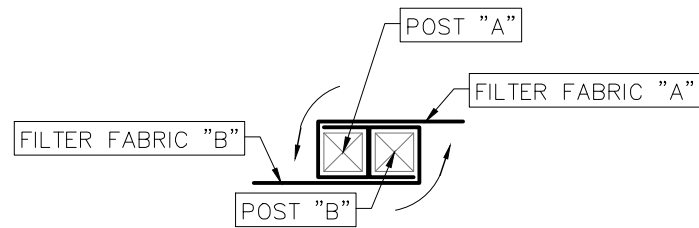
RiverRestoration
 P.O. Box 248
 Carbondale, CO 81623
 www.RiverRestoration.org

PROJECT NAME AND ADDRESS

Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

Project	Sheet
45072	CW07
Date	OCTOBER 2025
Scale	NTS

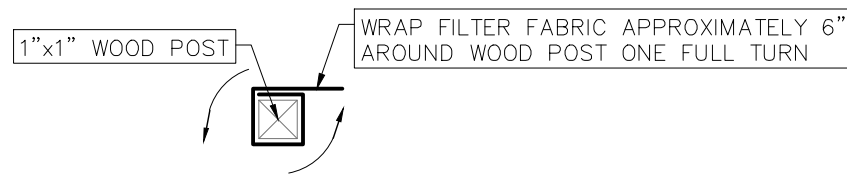
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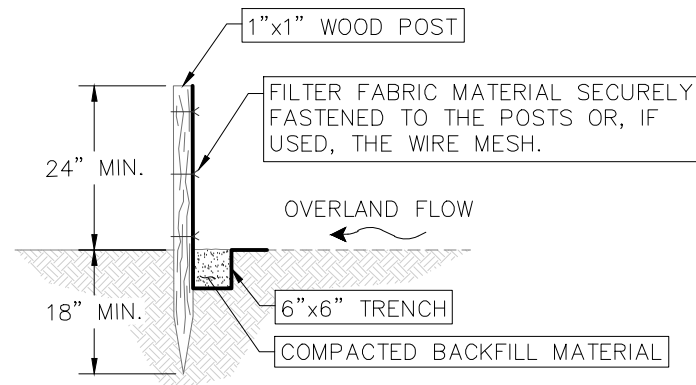
JOINING SECTION DETAIL (PLAN VIEW)

SILT FENCE JOINING NOTES:

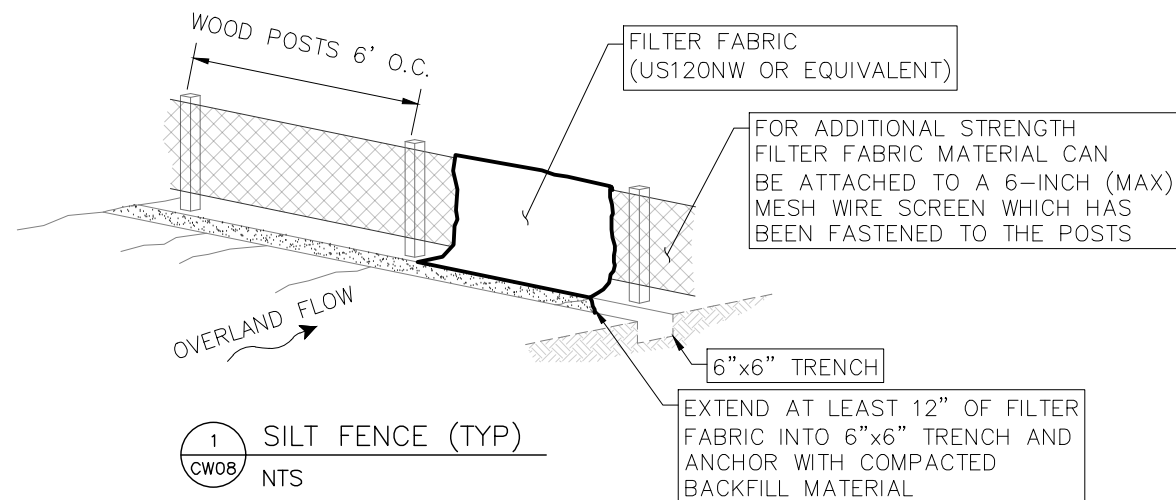
1. WRAP APPROXIMATELY 6" OF FILTER FABRIC OF EACH END AROUND A WOODEN POST ONE FULL TURN, THEN SECURED ALONG THE POST WITH HEAVY DUTY WIRE STAPLES AT LEAST 1" LONG.
2. POST SHALL BE TIGHTLY ABUTTED WITH NO GAPS TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT JOINT.



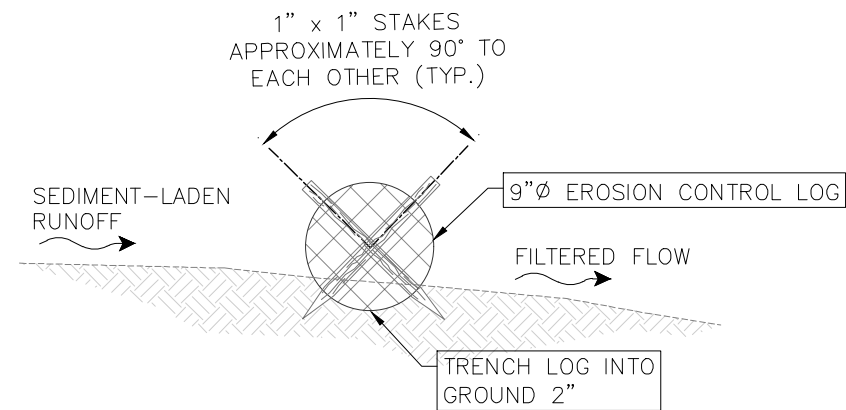
END SECTION DETAIL (PLAN VIEW)



SECTION VIEW



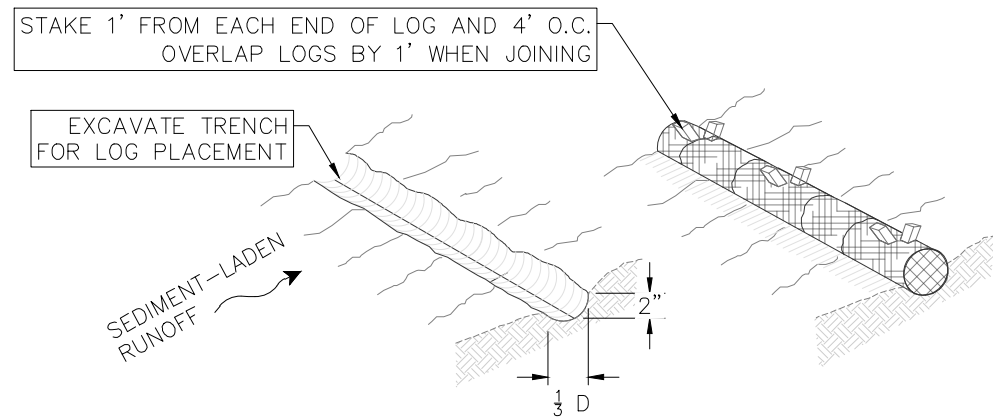
1 SILT FENCE (TYP)
CW08 NTS



SECTION VIEW

EROSION CONTROL LOG INSTALLATION NOTES:

1. EXCAVATE TRENCH 2".
2. PLACE AND STAKE EROSION CONTROL LOG.
3. PLACE SPOILS UP-SLOPE FROM LOG, KNIFE-IN AND COMPACT.



2 EROSION CONTROL LOG INSTALLATION (TYP)
CW08 NTS

PROFESSIONAL ENGINEER STAMP



OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
EROSION CONTROL
DETAILS

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS



Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS



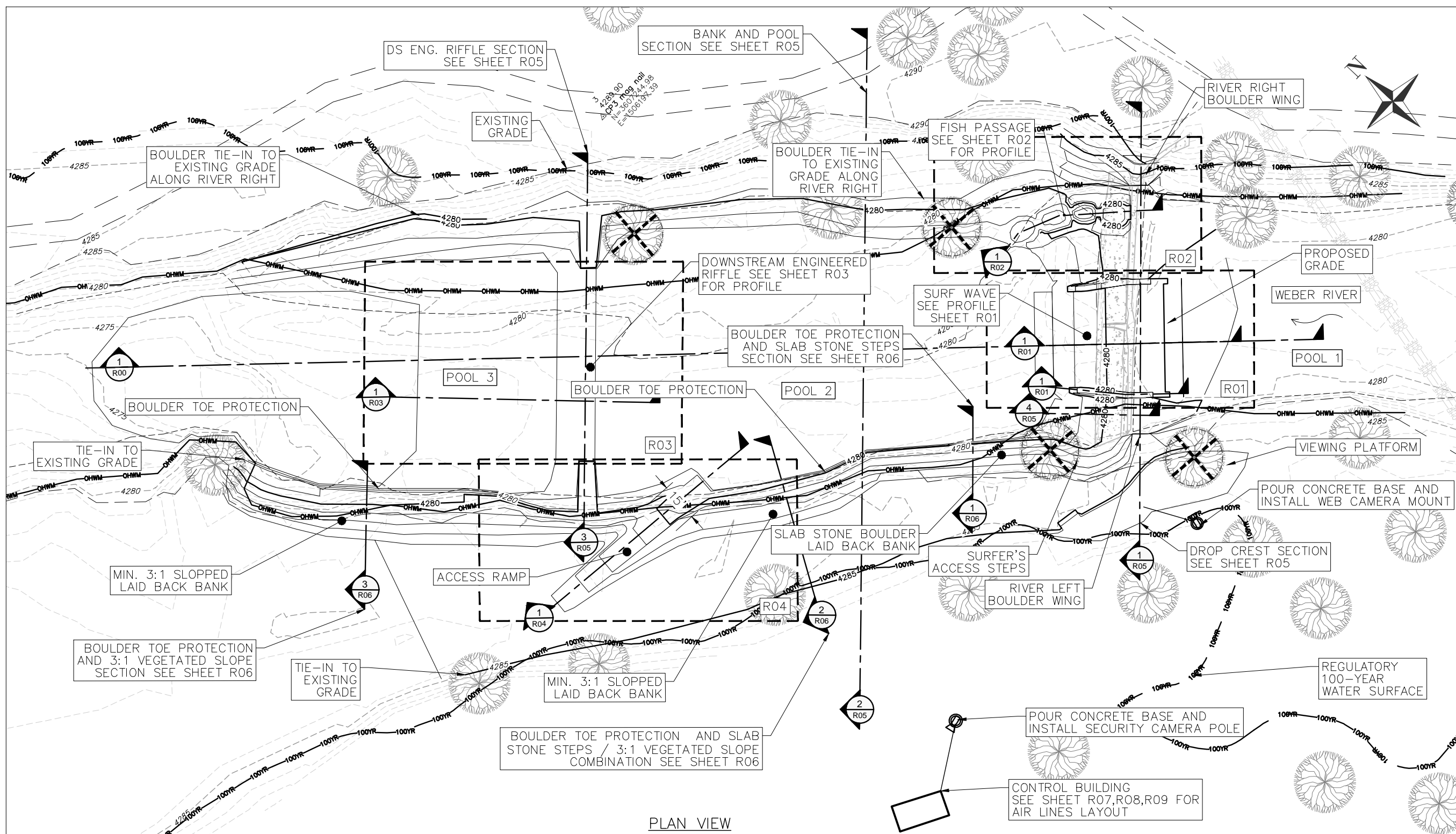
RiverRestoration
P.O. Box 248
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www.RiverRestoration.org

PROJECT NAME AND ADDRESS

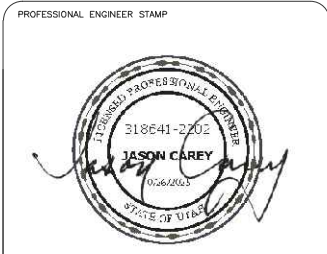
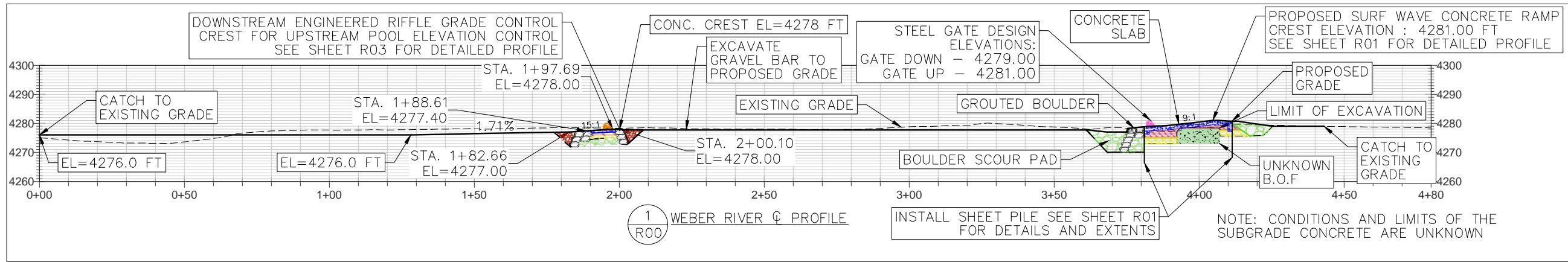
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project 45072	Sheet CW08
Date OCTOBER 2025	
Scale NTS	

BID SET



PLAN VIEW



OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
PLAN VIEW, PROFILE AND
INDEX

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

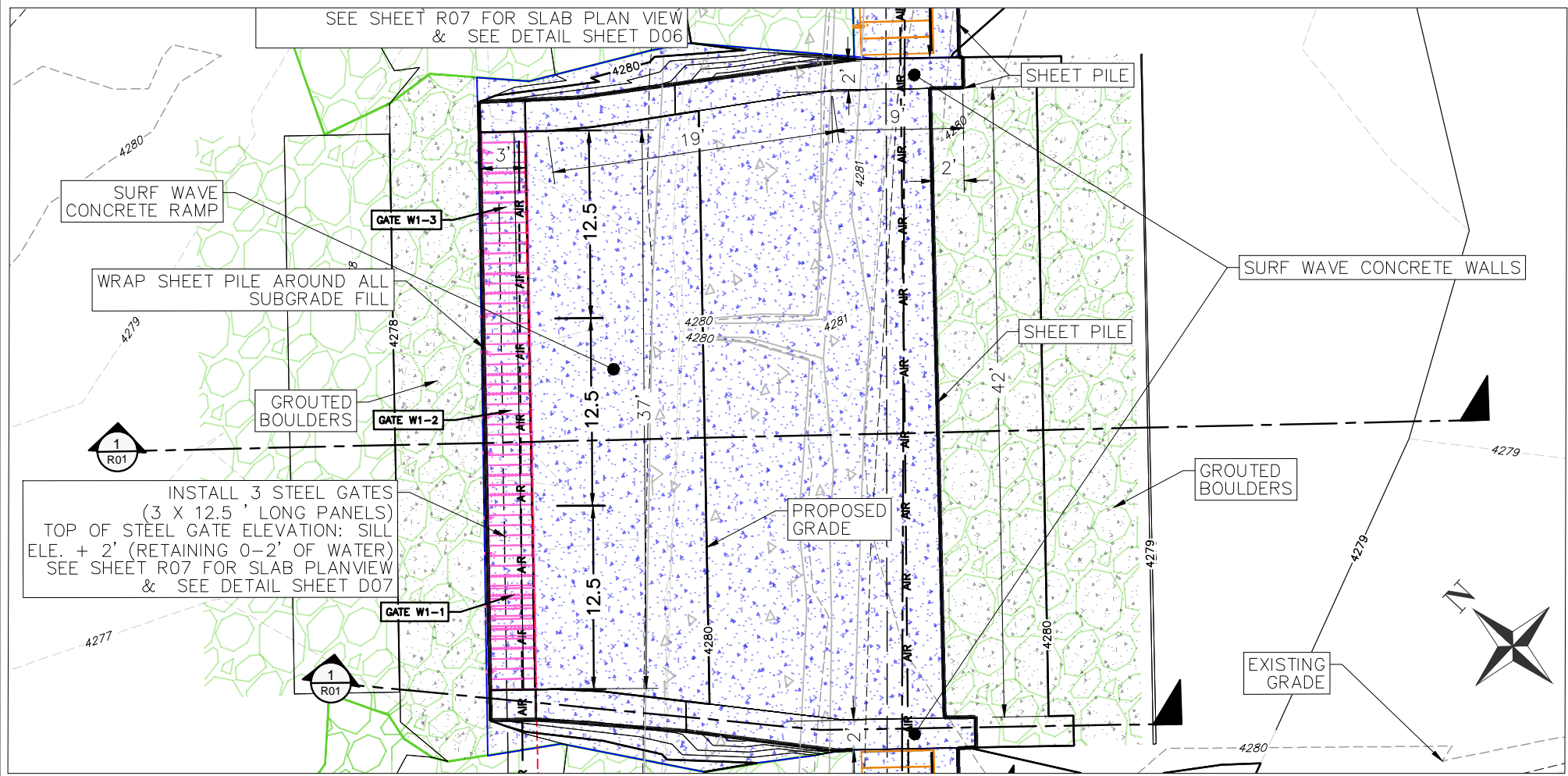
RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	45072	Sheet	R00
Date	OCTOBER 2025		
Scale	1" = 20' (FULL SIZE)		

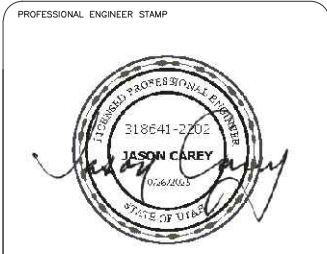
BID SET



- LEGEND:**
- CONCRETE
 - BOULDERS
 - ALLUVIAL SUBSTRATE
 - TO PROTECT IN PLACE
 - CDF OR CLSM FILL
 - FILTER FABRIC
 - SHEET PILE
 - TOPSOIL
 - GROUT
 - SLABSTONE STEPS

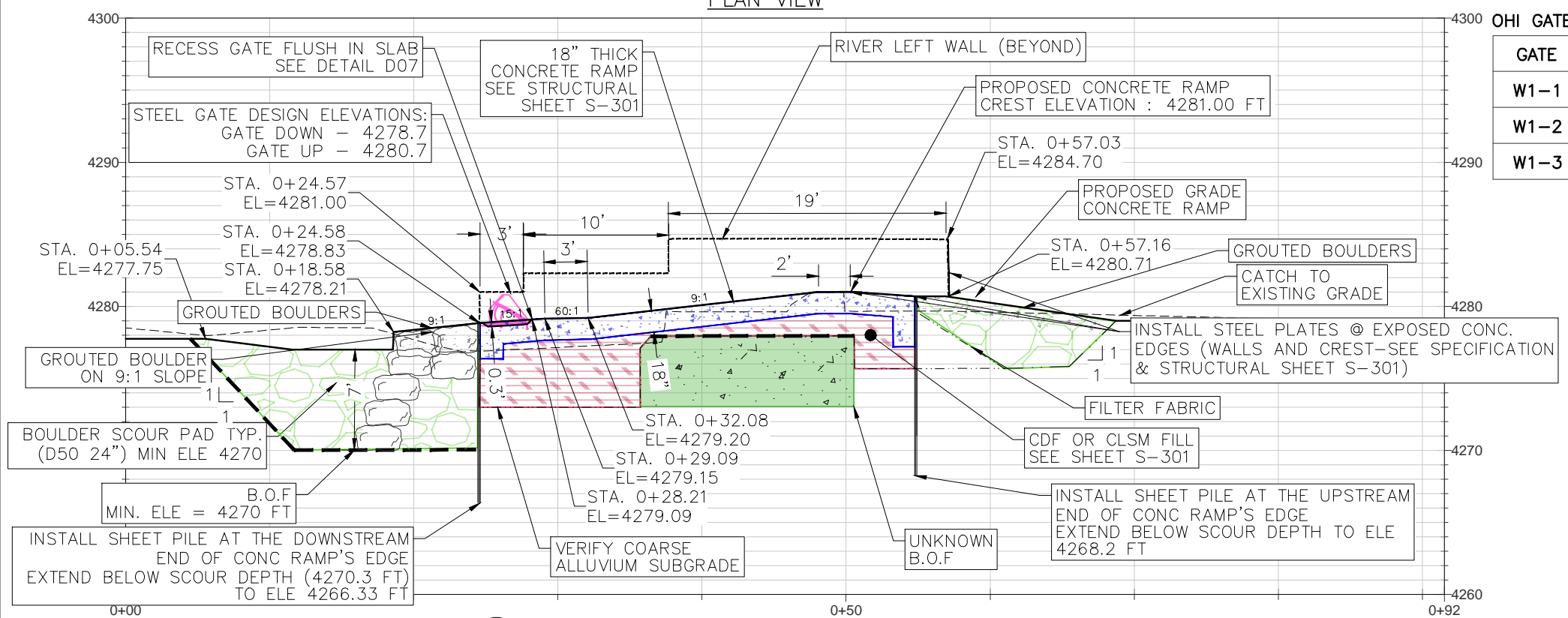
- OBERMEYER HYDRO INC. (OHI) RUBBER ROCK
- OHI STEEL GATES

- NOTES:**
- BOULDERS, OTHERWISE SPECIFIED, SHALL CONSIST OF MIN. 36" B-AXIS. SELECT BOULDERS



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
PLAN VIEW AND PROFILE
SURF WAVE**

PLAN VIEW



OHI GATE ELEVATIONS

GATE	GATE DOWN ELEVATION	GATE UP ELEVATION	Δ
W1-1	4278.7	4280.7	2.0
W1-2	4278.7	4280.7	2.0
W1-3	4278.7	4280.7	2.0

1 SURF WAVE CONCRETE RAMP AND SIDE WALL PROFILES

NOTE: CONDITIONS AND LIMITS OF THE SUBGRADE CONCRETE ARE UNKNOWN



BID SET

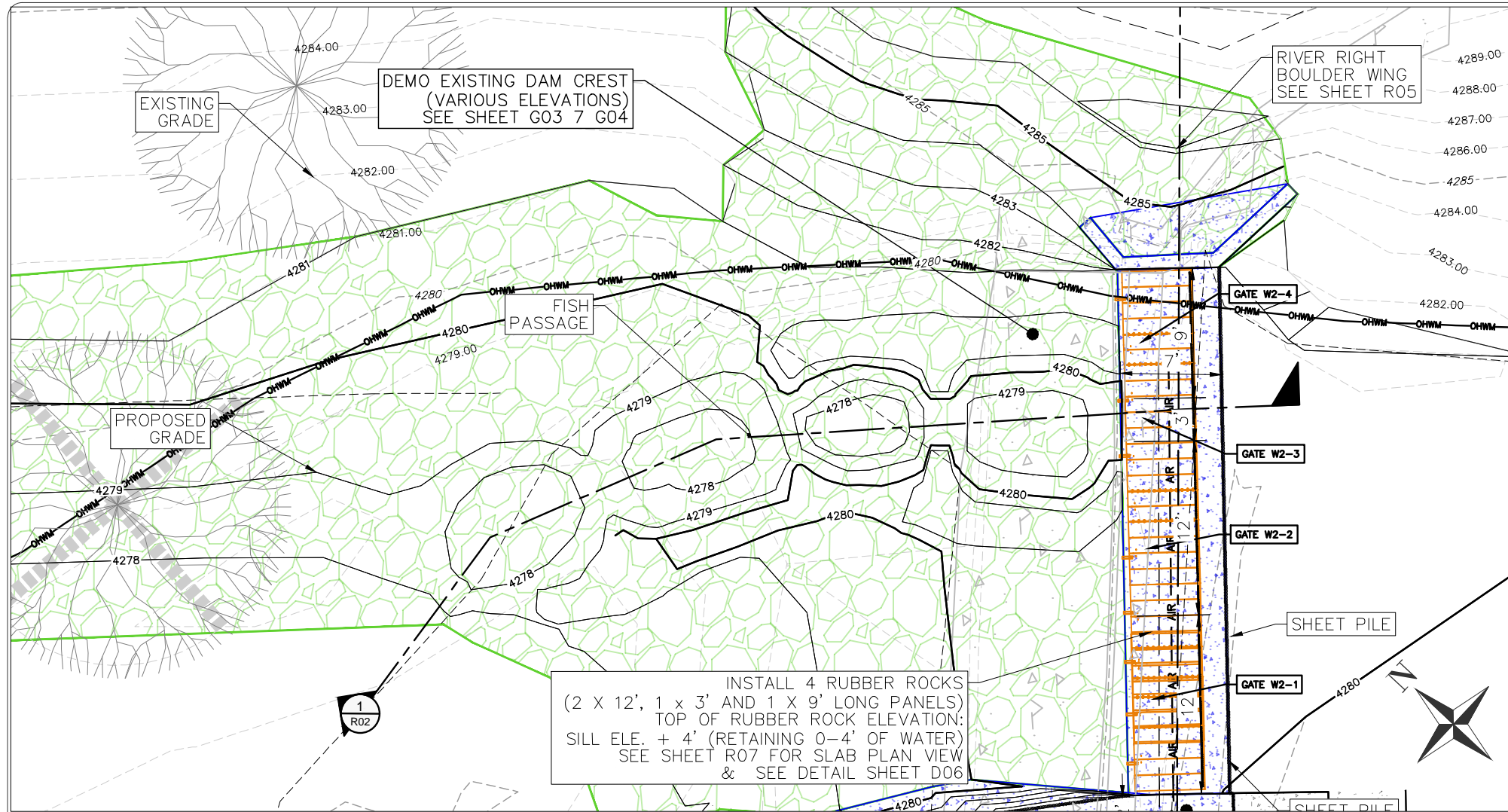
No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS
 Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS
 RiverRestoration
 P.O. Box 248
 Carbondale, CO 81623
 www.RiverRestoration.org

PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

Project 45072	Sheet R01
Date OCTOBER 2025	
Scale 1" = 5' (FULL SIZE)	



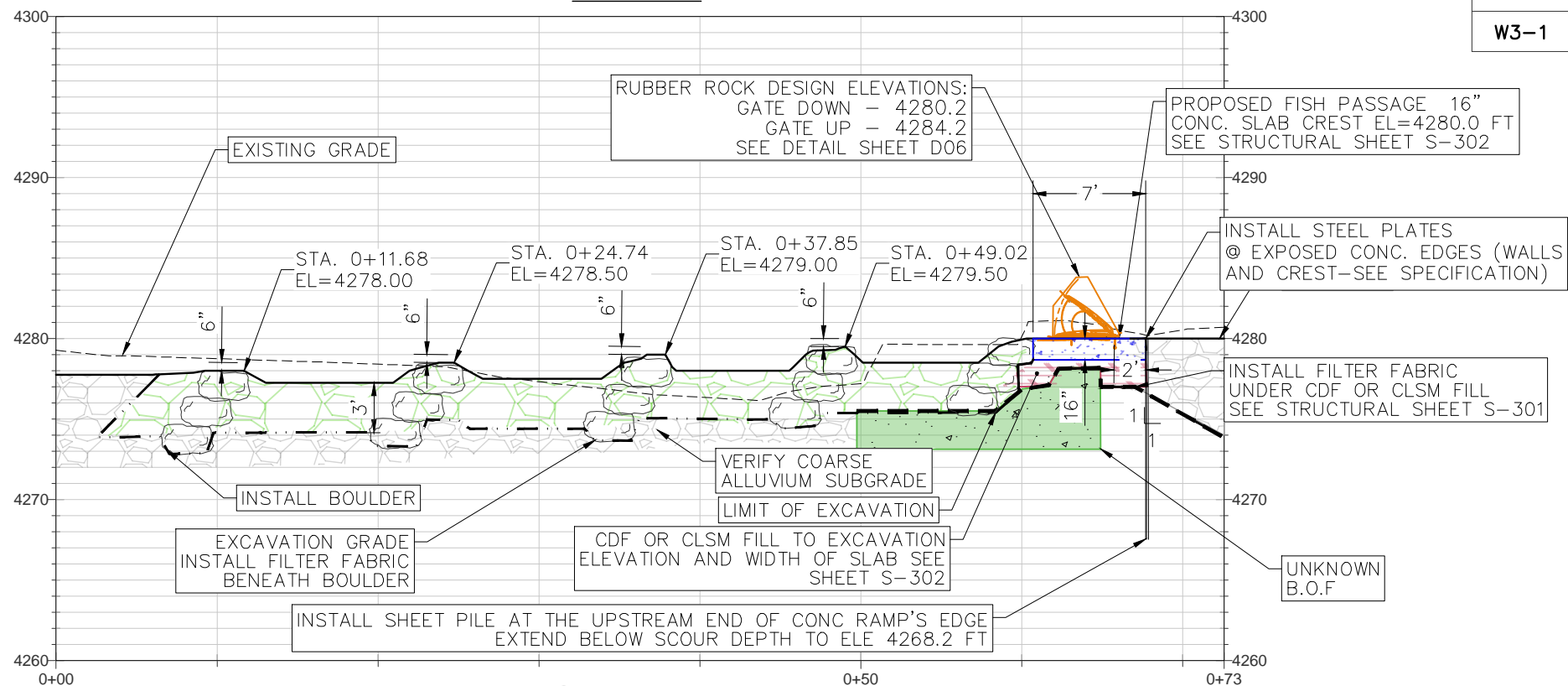
PLAN VIEW

- LEGEND:**
- CONCRETE
 - BOULDERS
 - ALLUVIAL SUBSTRATE
 - TO PROTECT IN PLACE
 - FILTER FABRIC
 - CDF OR CLSM FILL
 - SHEET PILE
 - OBERMEYER HYDRO INC. (OHI) RUBBER ROCK
 - TOPSOIL
 - GROUT
 - SLABSTONE STEF

NOTES:
 1. BOULDERS SHALL CONSIST OF MIN. 36" B-AXIS. SELECT BOULDERS

OHI GATE ELEVATIONS

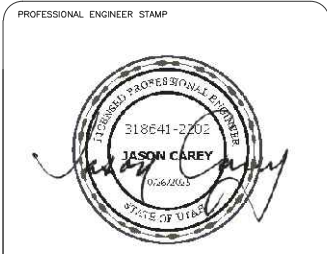
GATE	GATE DOWN ELEVATION	GATE UP ELEVATION	Δ
W2-1	4280.2	4284.2	4.0
W2-2	4280.2	4284.2	4.0
W2-3	4280.2	4284.2	4.0
W2-4	4280.2	4284.2	4.0
W3-1	4280.2	4284.2	4.0



1 FISH PASSAGE C PROFILE
R02



BID SET



**OGDEN BUSINESS EXCHANGE
 SURF WAVE PROJECT
 PLAN VIEW AND PROFILE
 FISH PASSAGE**

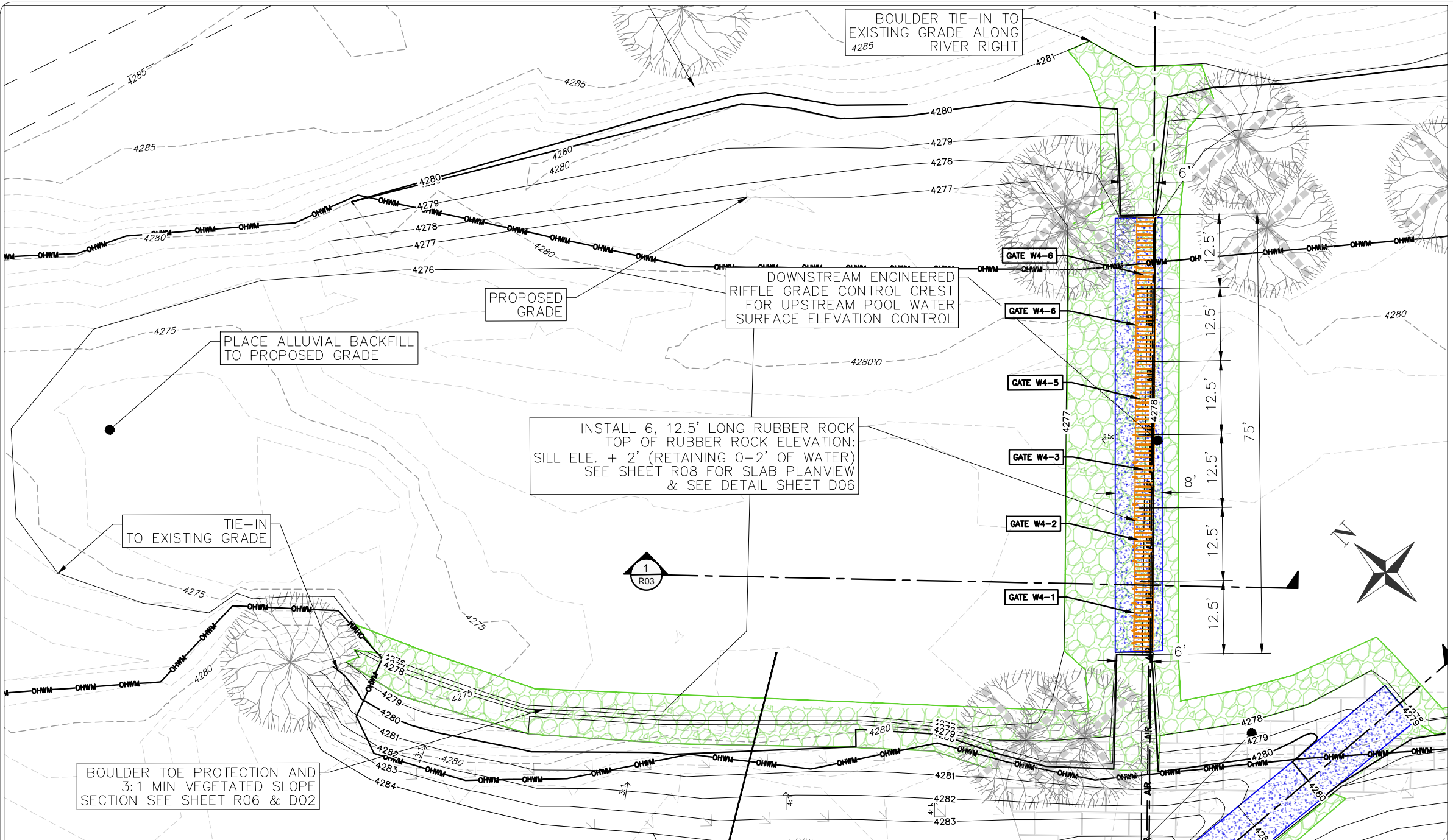
No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS
 Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS
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PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

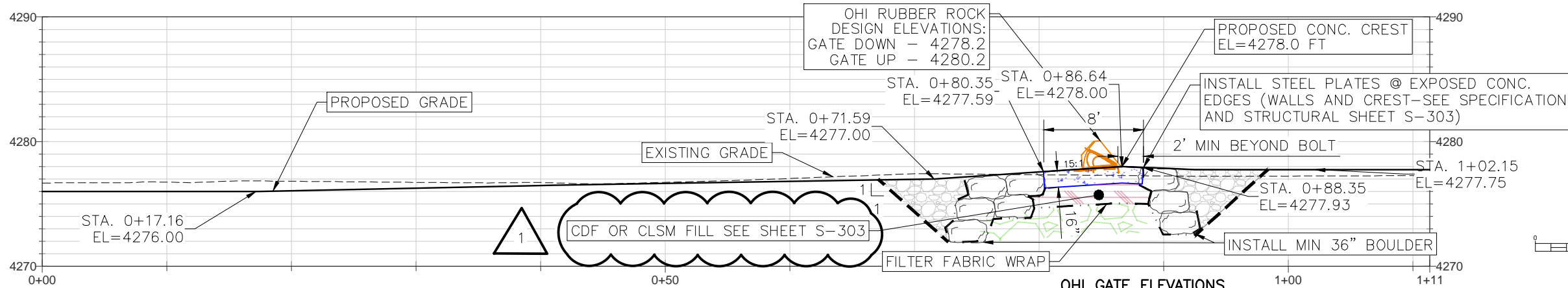
Project 45072	Sheet R02
Date OCTOBER 2025	
Scale 1" = 5' (FULL SIZE)	



PLAN VIEW

LEGEND:

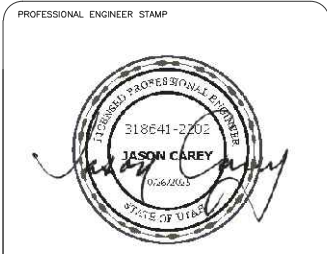
- CONCRETE
- BOULDERS
- ALLUVIAL SUBSTRATE
- TOPSOIL
- GROUT
- SLABSTONE STEPS
- CDF OR CLSM FILL
- FILTER FABRIC
- OBERMEYER HYDRO INC. (OHI) RUBBER ROCK



1 R03 DOWNSTREAM ENGINEERED RIFFLE GRADE CONTROL PROFILE

OHI GATE ELEVATIONS

GATE	GATE DOWN ELEVATION	GATE UP ELEVATION	Δ
W4-1-6	4278.2	4280.2	2.0



**OGDEN BUSINESS EXCHANGE
 SURF WAVE PROJECT
 PLAN VIEW AND PROFILE
 ENGINEERED RIFFLE
 GRADE CONTROL**

No.	REVISION/UPDATE	Date
1	CDF OR CLSM FILL TO REPLACE COMPACTED STRUCTURAL FILL	11/21/25

CLIENT NAME AND ADDRESS

Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

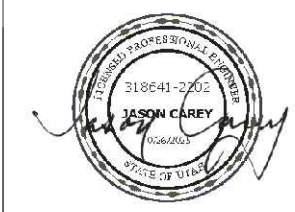
RiverRestoration
 P.O. Box 248
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PROJECT NAME AND ADDRESS

Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

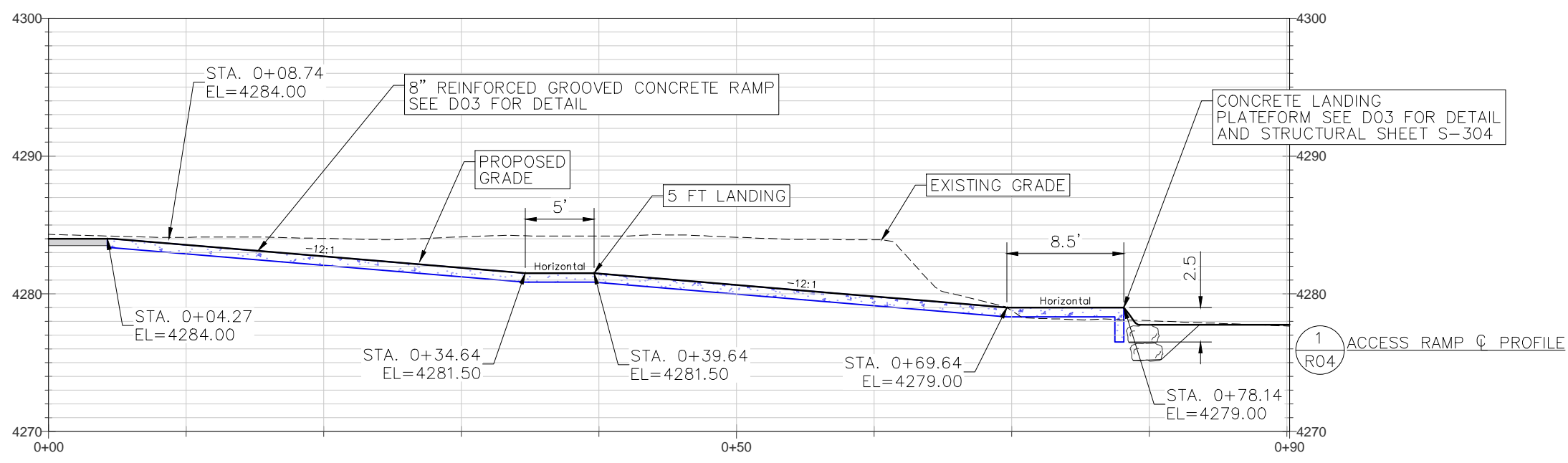
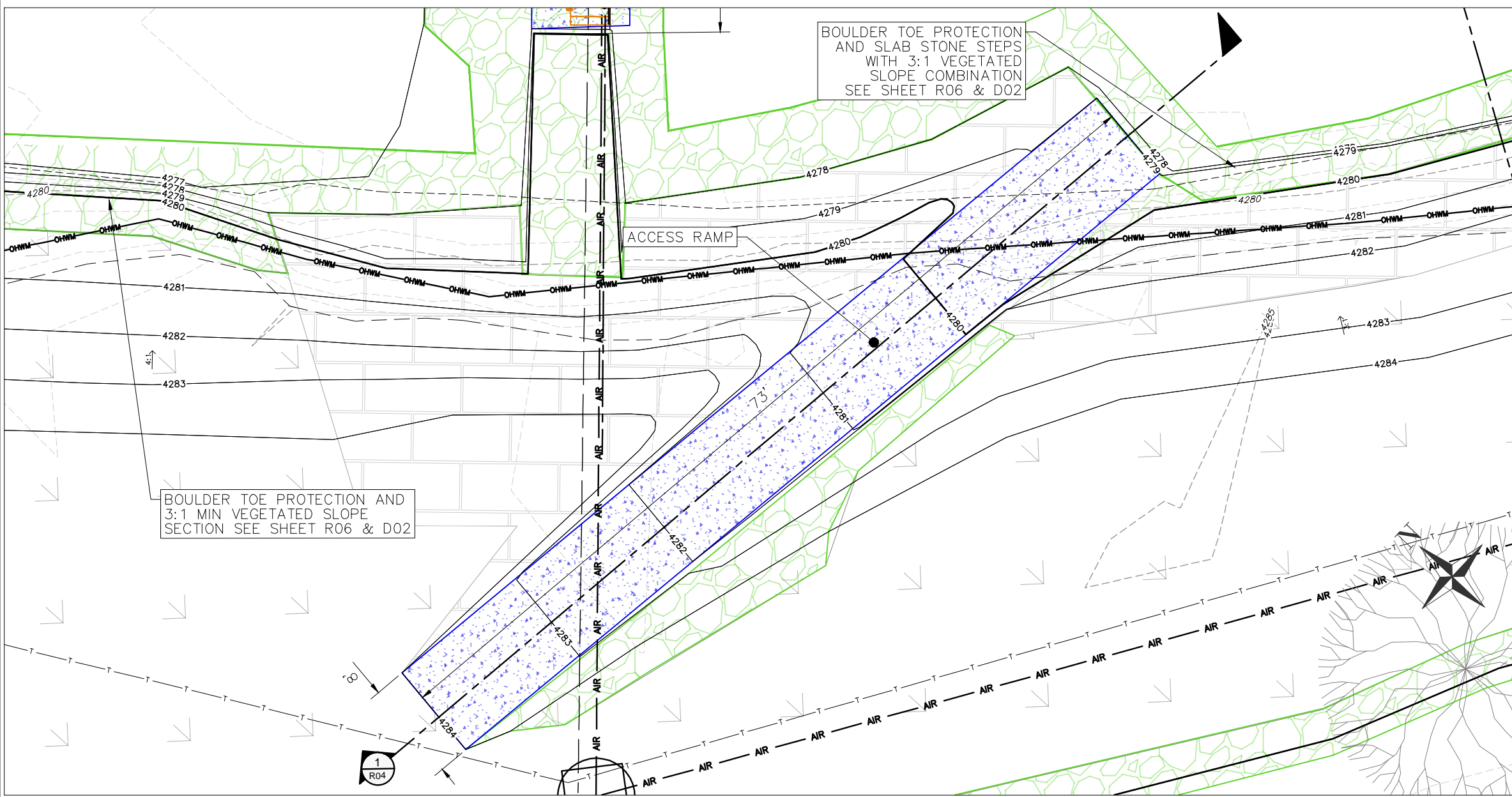
Project	45072	Sheet	R03
Date	NOVEMBER 2025		
Scale	1" = 10' (PLAN VIEW) 1" = 5' (PROFILE)		

BID SET



OGDEN BUSINESS EXCHANGE SURF WAVE PROJECT PLAN VIEW AND PROFILE ACCESS RAMP

- LEGEND:**
- CONCRETE
 - BOULDERS
 - ALLUVIAL SUBSTRATE
 - TOPSOIL
 - GROUT
 - SLABSTONE STEPS
 - FILTER FABRIC



No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

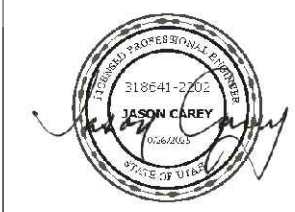
RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

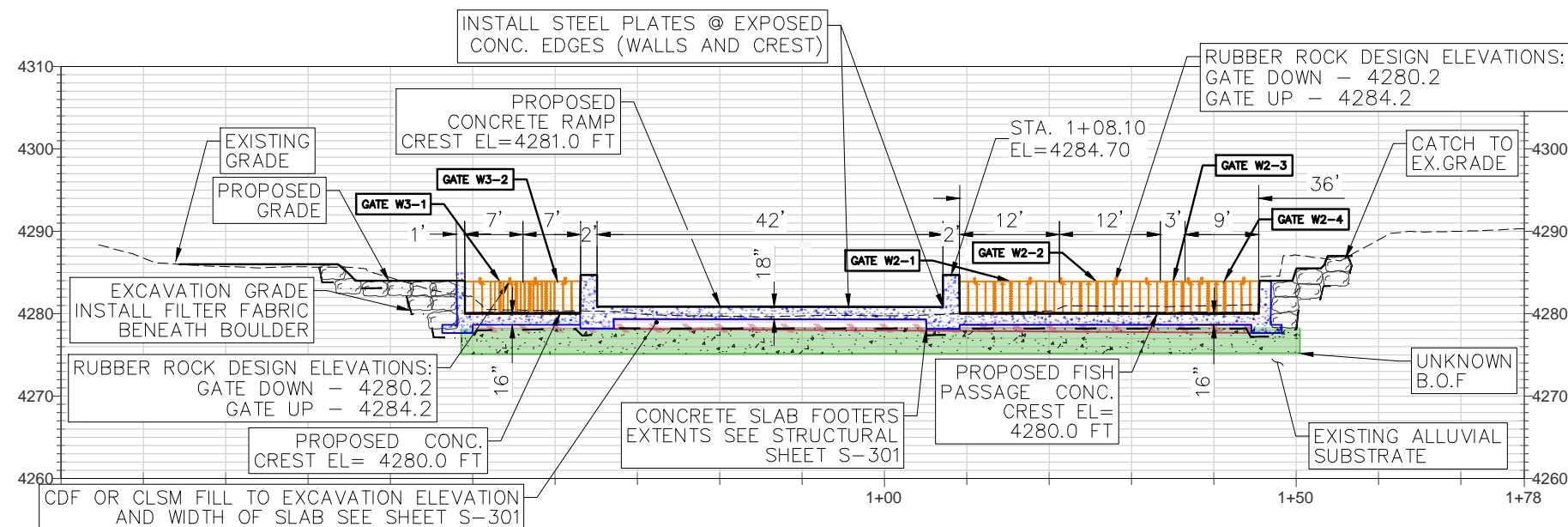
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	45072	Sheet	R04
Date	OCTOBER 2025		
Scale	1" = 5' (FULL SIZE)		

BID SET



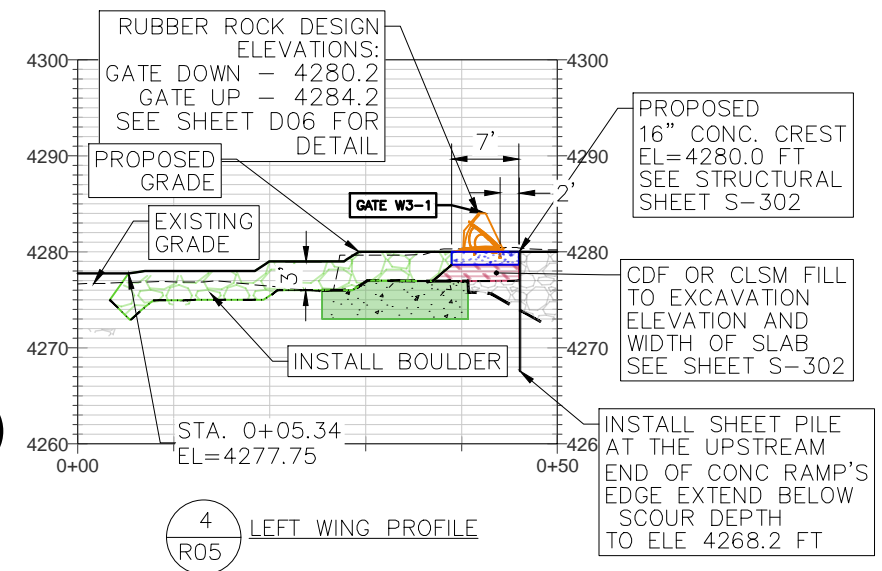
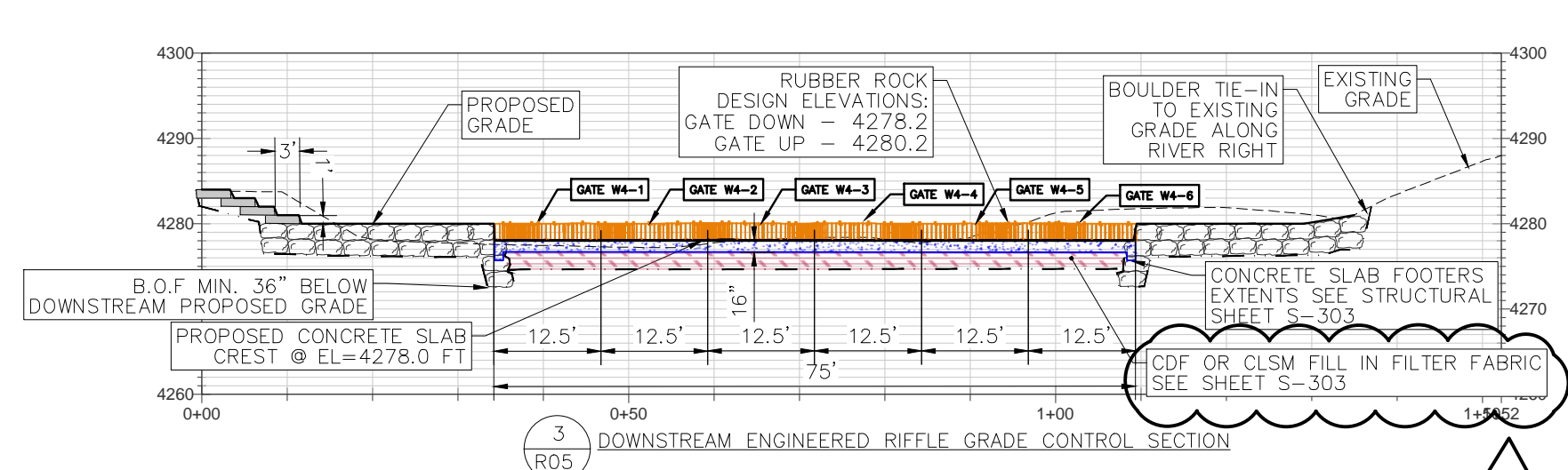
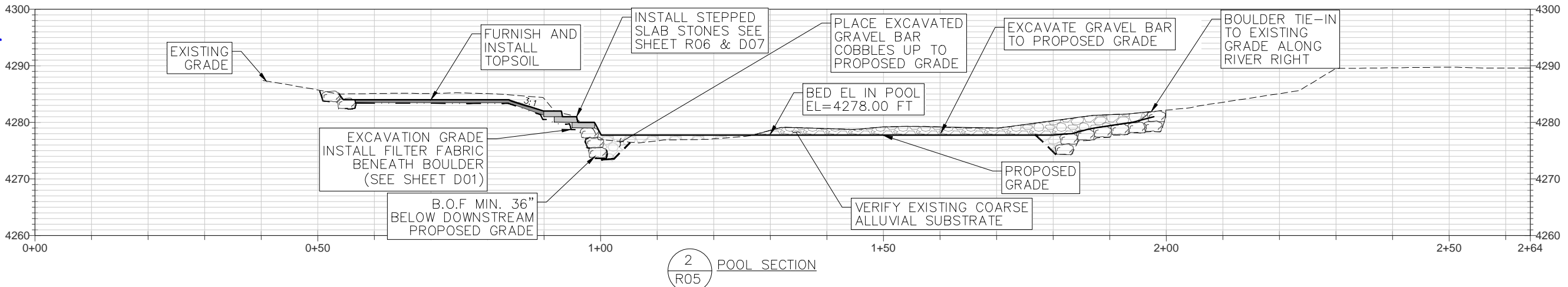
**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
PROFILE AND SECTIONS**



- LEGEND:**
- CONCRETE
 - BOULDERS
 - BOULDERS/SLABSTONE
 - TO PROTECT IN PLACE
 - ALLUVIAL SUBSTRATE
 - CDF OR CLSM FILL
 - TOPSOIL
 - SHEET PILE
 - FILTER FABRIC
 - OBERMEYER HYDRO INC. (OHI) RUBBER ROCK

OHI GATE ELEVATIONS

GATE	GATE DOWN ELEVATION	GATE UP ELEVATION	Δ
W2-1	4280.20	4284.20	4.0
W2-2	4280.20	4284.20	4.0
W2-3	4280.20	4284.20	4.0
W2-4	4280.20	4284.20	4.0
W3-1	4280.20	4284.20	4.0
W3-2	4280.20	4284.20	4.0



OHI GATE ELEVATIONS

GATE	GATE DOWN ELEVATION	GATE UP ELEVATION	Δ
W4-1-6	4278.20	4280.20	2.0

No.	REVISION/UPDATE	Date
1	CDF OR CLSM FILL TO REPLACE COMPACTED STRUCTURAL FILL	11/21/25

CLIENT NAME AND ADDRESS

 Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

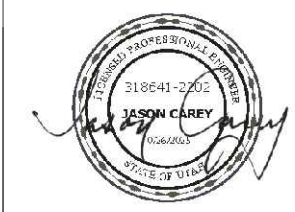
DESIGN FIRM NAME AND ADDRESS

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 Carbondale, CO 81623
 www.RiverRestoration.org

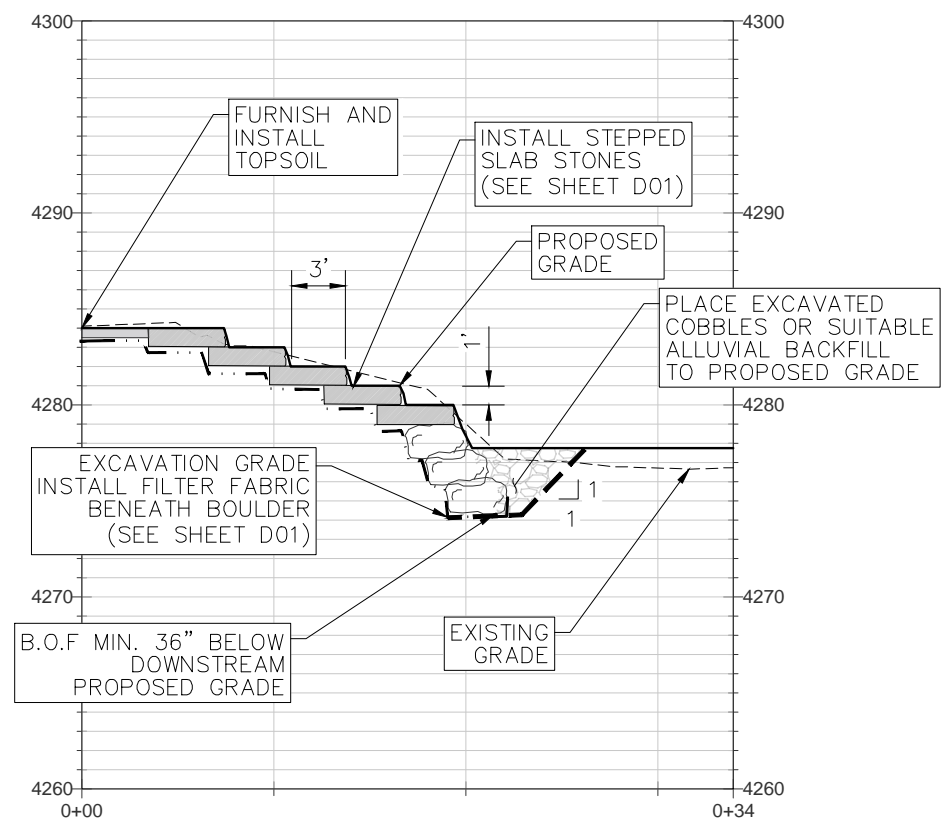
PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

Project	45072	Sheet	R05
Date	NOVEMBER 2025		
Scale	1" = 10' (FULL SIZE)		

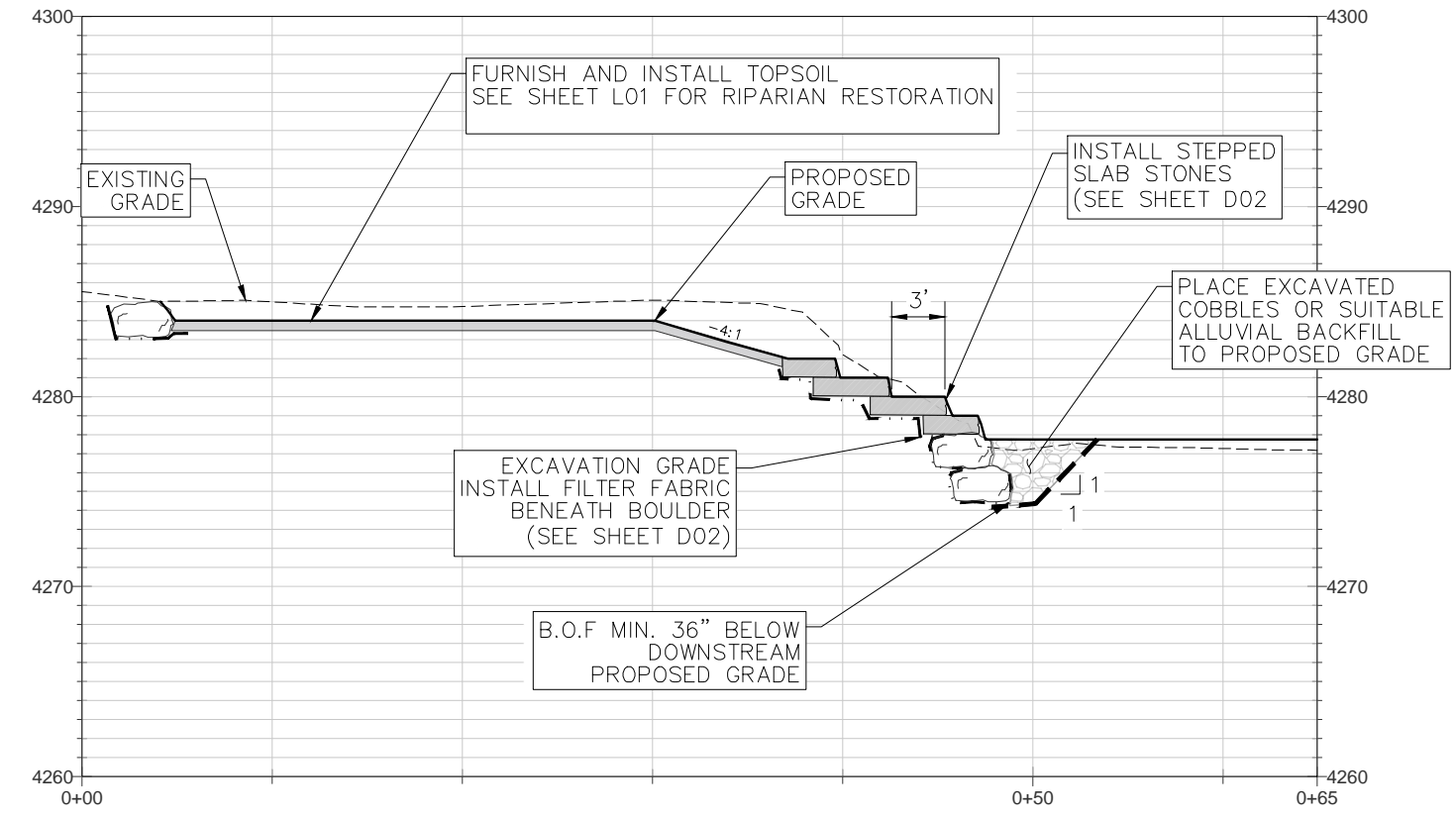
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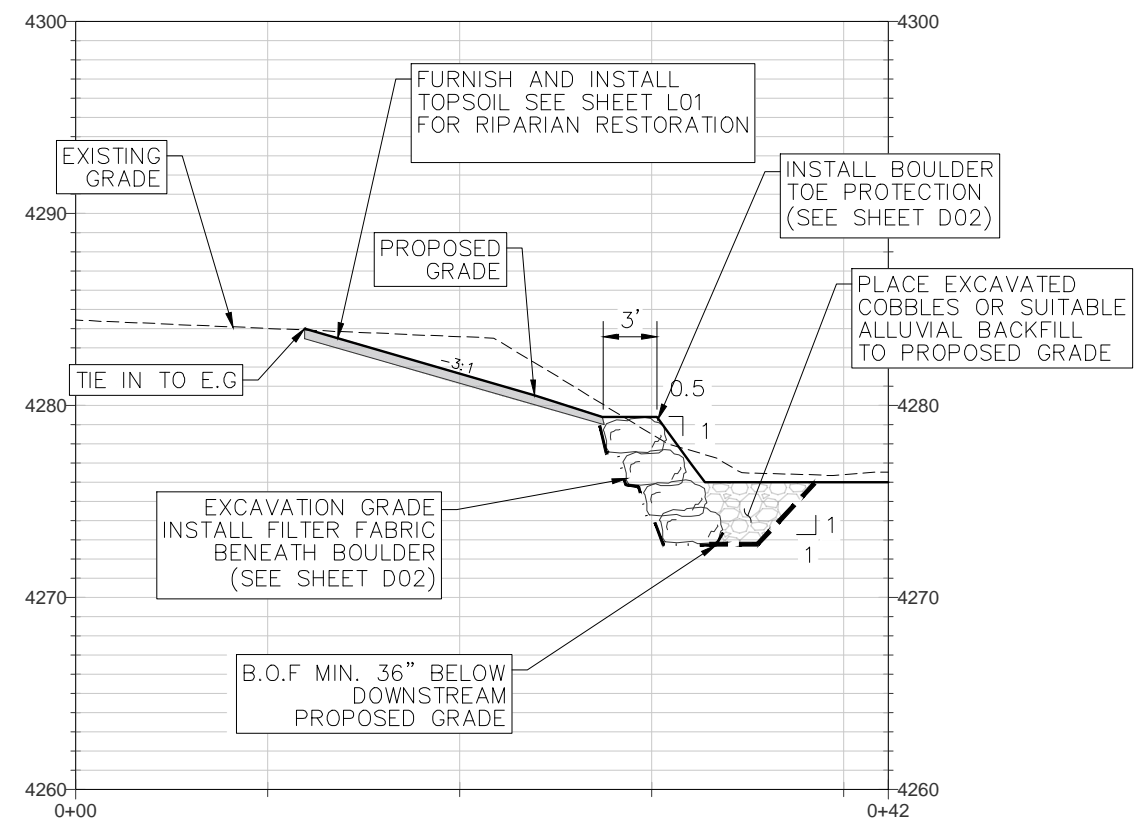
OGDEN BUSINESS EXCHANGE SURF WAVE PROJECT BANK RESTORATION TYPICAL SECTIONS



1 R06 BOULDER TOE PROTECTION/ SLAB STONE BANK TERRACING SECTION



2 R06 BOULDER TOE PROTECTION WITH SLAB STONE STEPS AND 3:1 MIN. VEGETATED SLOPE SECTION



3 R06 BOULDER TOE PROTECTION AND 3:1 VEGETATED SLOPE SECTION



No.	REVISION/UPDATE	Date

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 Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

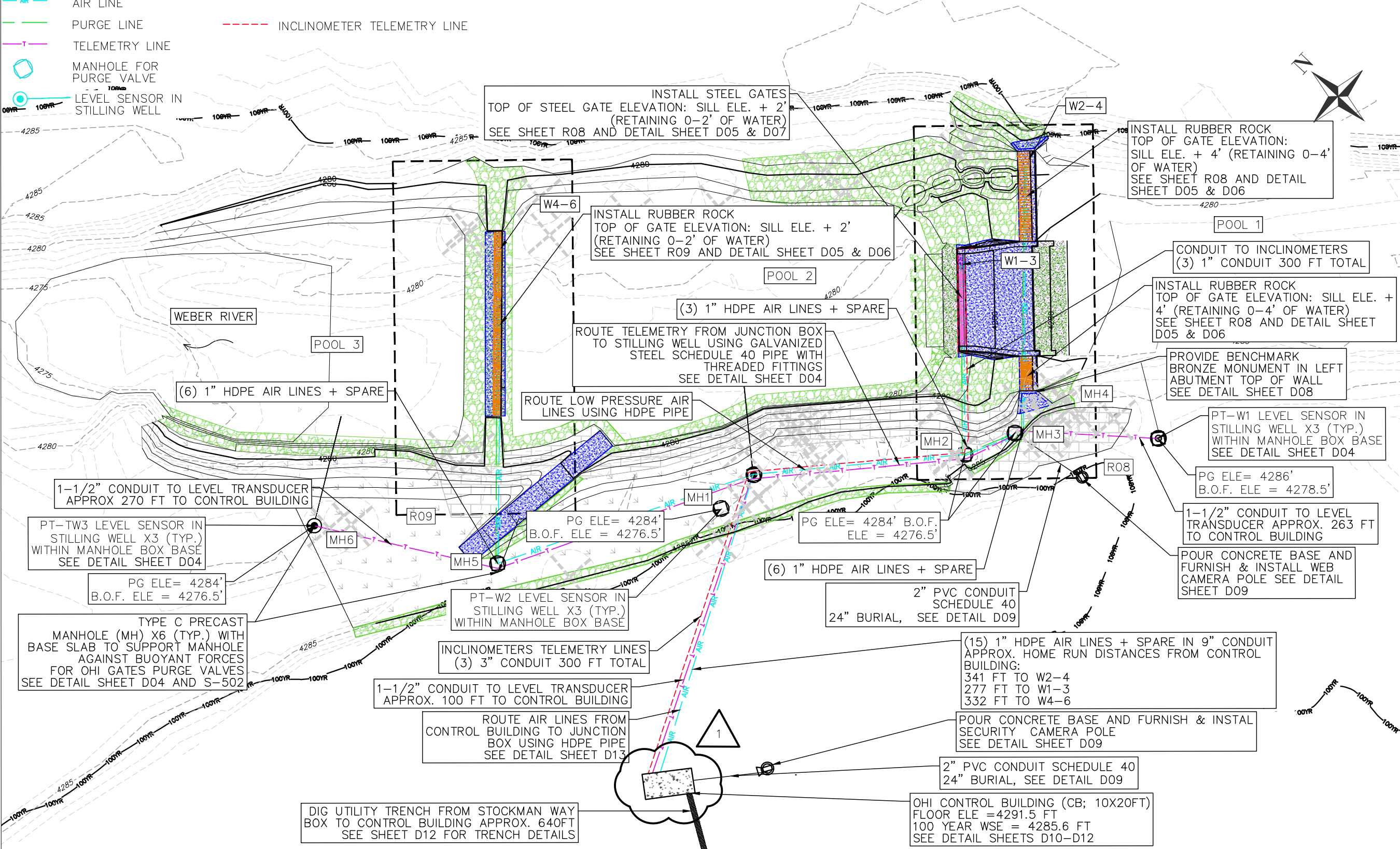
 RiverRestoration
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PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

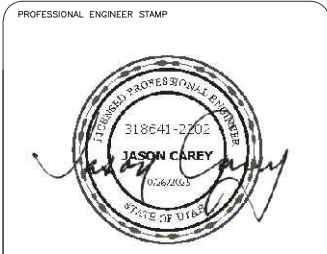
Project 45072	Sheet R06
Date OCTOBER 2025	
Scale 1" = 5' (FULL SIZE)	

BID SET

- LEGEND:**
- OBERMEYER HYDRO INC. (OHI) RUBBER ROCK
 - OHI STEEL GATES
 - AIR LINE
 - PURGE LINE
 - TELEMETRY LINE
 - MANHOLE FOR PURGE VALVE
 - LEVEL SENSOR IN STILLING WELL
 - CONCRETE
 - BOULDERS
 - ALLUVIAL SUBSTRATE
 - TOPSOIL
 - GROUT
 - SLABSTONE STEPS
 - INCLINOMETER TELEMETRY LINE



- AIR LINE NOTES:**
1. AIR LINE ROUTING IS SCHEMATIC ONLY TO SHOW APPROXIMATE LOCATION AND CONNECTIVITY.
 2. MINIMIZE THE NUMBER OF PIPE JOINTS. ALL NON ACCESSIBLE PIPE JOINTS SHALL BE FUSION WELDED.
 3. PROVIDE CONCRETE BLOCK-OUT AT BLADDER CONNECTION POINTS PER MANUFACTURERS DRAWINGS.
 4. SLAB DIMENSIONS VARY, SEE SHEETS R08-R09.
 5. STILLING WELL SHOULD BE LOCATED AS SHOWN ON PLANS, APPROXIMATELY 1-1/2 FT. OFF THE BOTTOM OF CHANNEL.
 6. BACKFILL ABOVE PIPE BEDDING SHALL BE MINUS 6" INCH ALLUVIUM FOR A MINIMUM OF 18" ABOVE BEDDING.
 7. SPARE AIR LINE IN SLAB ONLY. ROUTED CONTINUOUSLY THROUGH ALL BLOCK-OUTS - SEAL ENDS.



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
RUBBER & STEEL GATES, AIRLINE
LAYOUT PLAN**

No.	REVISION/UPDATE	Date
1	CONTROL BUILDING AND AIRLINES UPDATES	11/21/25

CLIENT NAME AND ADDRESS

Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

RiverRestoration
P.O. Box 248
Carbondale, CO 81623
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PROJECT NAME AND ADDRESS

Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	45072	Sheet	R07
Date	OCTOBER 2025		
Scale	1" = 20' (FULL SIZE)		

BID SET



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
RUBBER & STEEL GATE
SURF WAVE PLAN VIEW**

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

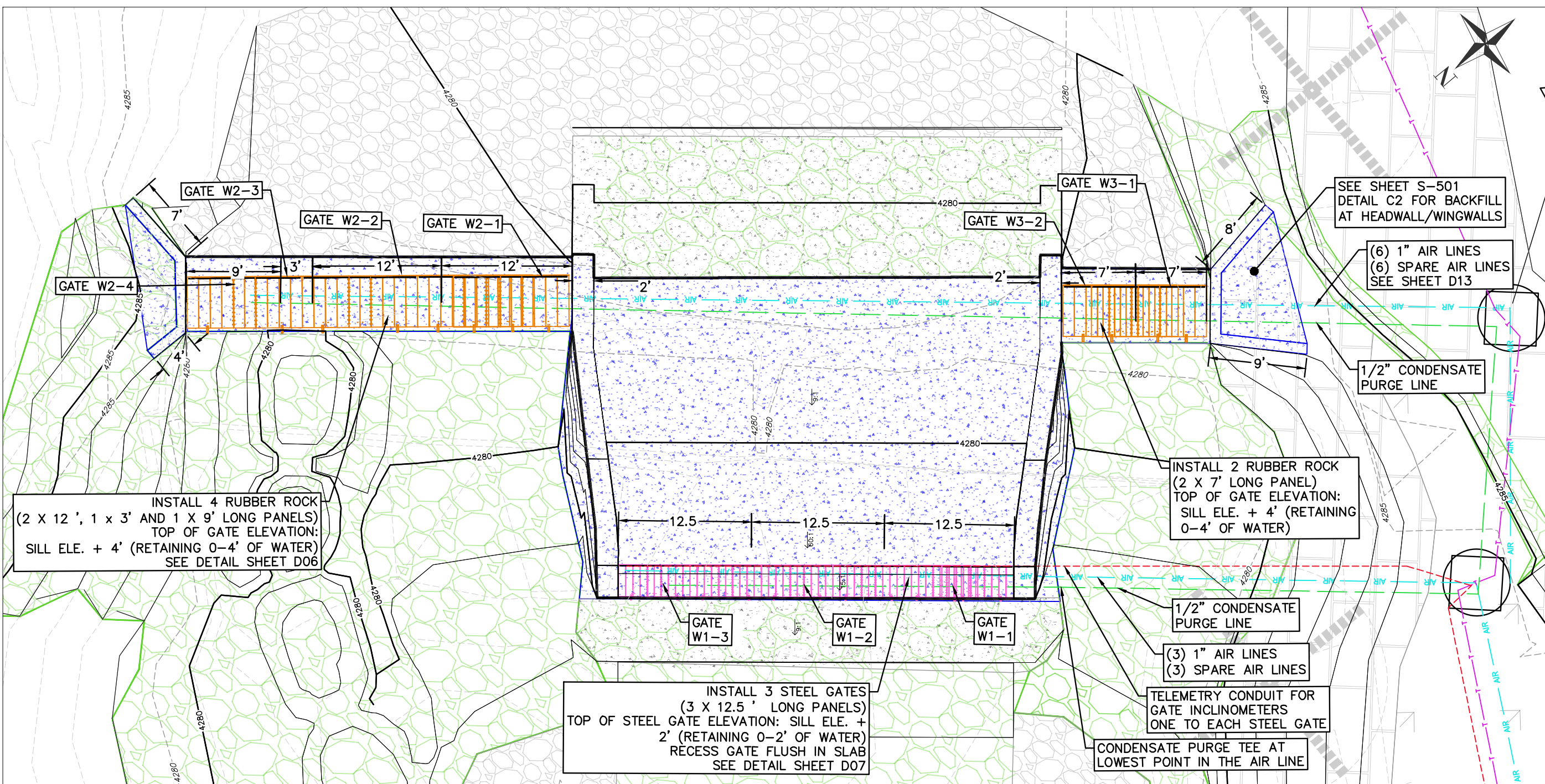
 Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

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 P.O. Box 248
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 www.RiverRestoration.org

PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

Project	45072	Sheet	R08
Date	OCTOBER 2025		
Scale	1" = 5' (FULL SIZE)		



INSTALL 4 RUBBER ROCK
 (2 X 12', 1 X 3' AND 1 X 9' LONG PANELS)
 TOP OF GATE ELEVATION:
 SILL ELE. + 4' (RETAINING 0-4' OF WATER)
 SEE DETAIL SHEET D06

INSTALL 3 STEEL GATES
 (3 X 12.5' LONG PANELS)
 TOP OF STEEL GATE ELEVATION: SILL ELE. +
 2' (RETAINING 0-2' OF WATER)
 RECESS GATE FLUSH IN SLAB
 SEE DETAIL SHEET D07

INSTALL 2 RUBBER ROCK
 (2 X 7' LONG PANEL)
 TOP OF GATE ELEVATION:
 SILL ELE. + 4' (RETAINING
 0-4' OF WATER)

SEE SHEET S-501
 DETAIL C2 FOR BACKFILL
 AT HEADWALL/WINGWALLS

(6) 1" AIR LINES
 (6) SPARE AIR LINES
 SEE SHEET D13







1/2" CONDENSATE
 PURGE LINE

1/2" CONDENSATE
 PURGE LINE

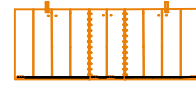
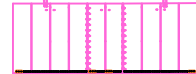
(3) 1" AIR LINES
 (3) SPARE AIR LINES

TELEMETRY CONDUIT FOR
 GATE INCLINOMETERS
 ONE TO EACH STEEL GATE

CONDENSATE PURGE TEE AT
 LOWEST POINT IN THE AIR LINE

-  AIR LINE
-  PURGE LINE
-  TELEMETRY LINE
-  MANHOLE FOR PURGE VALVE
-  LEVEL SENSOR IN STILLING WELL
-  INCLINOMETER TELEMETRY LINE

-  CONCRETE
-  BOULDERS
-  ALLUVIAL SUBSTRATE
-  TOPSOIL
-  GROUT
-  SLABSTONE STEPS

-  OBERMEYER HYDRO INC. (OHI) RUBBER ROCK
-  OHI STEEL GATES

MAXIMUM WATER PRESSURE DIFFERENTIAL IN FEET OF WATER

WHITewater COURSE FLOW	UPSTREAM W.S.E	DOWNSTREAM W.S.E.	HEAD PRESSURE
150 CFS	4282.0	4278.7	3.3
1500 CFS	4285.3	4282.2	3.2

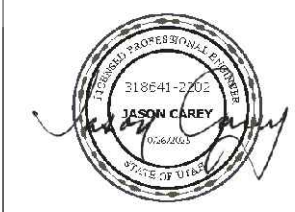
100 YEAR WATER PRESSURE DIFFERENTIAL IN FEET OF WATER

WHITewater COURSE FLOW	UPSTREAM W.S.E	DOWNSTREAM W.S.E.	HEAD PRESSURE
6205 CFS	4286.91	4285.64	1.27

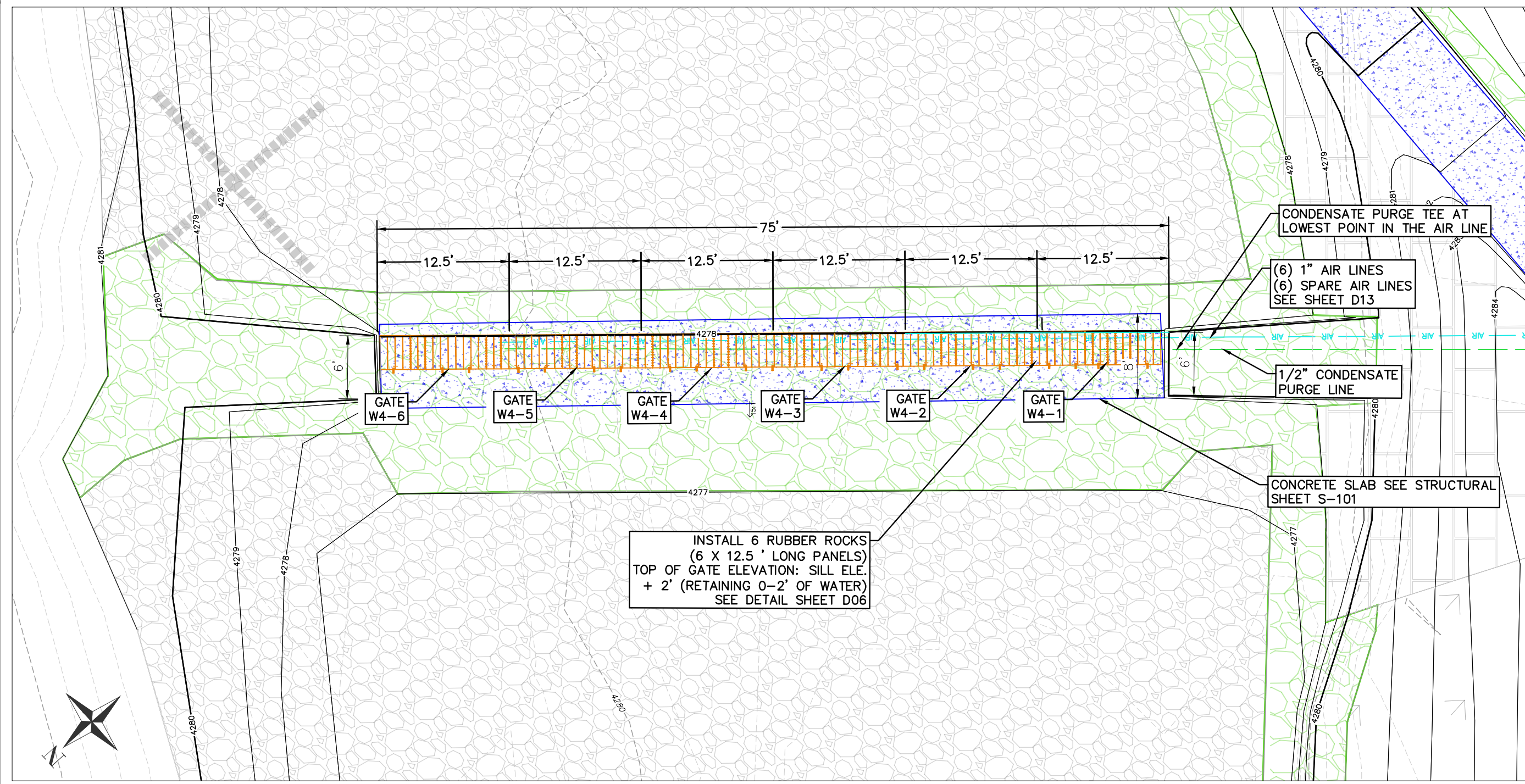
OHI GATE ELEVATIONS

GATE	GATE DOWN ELEVATION	GATE UP ELEVATION	Δ
W1-1	4278.7	4280.7	2.0
W1-2	4278.7	4280.7	2.0
W1-3	4278.7	4280.7	2.0
W2-1	4280.2	4284.2	4.0
W2-2	4280.2	4284.2	4.0
W2-3	4280.2	4284.2	4.0
W2-4	4280.2	4284.2	4.0
W3-1	4280.2	4284.2	4.0
W3-2	4280.2	4284.2	4.0

BID SET



**OGDEN BUSINESS EXCHANGE
 SURF WAVE PROJECT
 RUBBER & STEEL GATE
 ENGINEERED RIFFLE PLAN VIEW**



INSTALL 6 RUBBER ROCKS
 (6 X 12.5' LONG PANELS)
 TOP OF GATE ELEVATION: SILL ELE.
 + 2' (RETAINING 0-2' OF WATER)
 SEE DETAIL SHEET D06

CONDENSATE PURGE TEE AT
 LOWEST POINT IN THE AIR LINE

(6) 1" AIR LINES
 (6) SPARE AIR LINES
 SEE SHEET D13

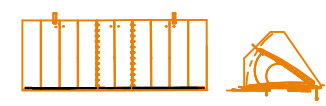
1/2" CONDENSATE
 PURGE LINE

CONCRETE SLAB SEE STRUCTURAL
 SHEET S-101

- AIR LINE
- PURGE LINE
- TELEMETRY LINE
- MANHOLE FOR PURGE VALVE
- LEVEL SENSOR IN STILLING WELL

- CONCRETE
- BOULDERS
- ALLUVIAL SUBSTRATE

- TOPSOIL
- GROUT
- SLABSTONE STE



OBERMEYER HYDRO INC.
 (OHI) RUBBER ROCK



WHITWATER COURSE FLOW	UPSTREAM W.S.E	DOWNSTREAM W.S.E.	HEAD PRESSURE
150 CFS (all gates up for tailwater control)	4280.6	4278.0	2.70

OHI GATE ELEVATIONS

GATE	GATE DOWN ELEVATION	GATE UP ELEVATION	Δ
W4-1	4278.2	4280.2	2.0
W4-2	4278.2	4280.2	2.0
W4-3	4278.2	4280.2	2.0
W4-4	4278.2	4280.2	2.0
W4-5	4278.2	4280.2	2.0
W4-6	4278.2	4280.2	2.0

BID SET

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

RiverRestoration
 P.O. Box 248
 Carbondale, CO 81623
 www.RiverRestoration.org

PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

Project 45072	Sheet R09
Date OCTOBER 2025	
Scale 1" = 5' (FULL SIZE)	

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO APPLICABLE LOCAL, COUNTY AND/OR STATE CODES, REGULATIONS AND RULES.
2. ALL WORK SHALL BE PERFORMED BY A UTAH LICENSED CONTRACTOR.
3. CONTRACTOR SHALL OBTAIN, COORDINATE, AND PAY FOR ANY AND ALL PERMITS AND AGENCY INSPECTIONS AS REQUIRED.
4. CONTRACTOR SHALL CARRY ALL WORKER' COMPENSATION, PUBLIC LIABILITY, PROPERTY DAMAGE INSURANCE AS REQUIRED BY ALL APPLICABLE CODES AND REGULATIONS AND BY THE OWNER'S REPRESENTATIVE.
5. PROPERTY LINES SHOWN ARE APPROXIMATE, BASED ON PLATTED INFORMATION, CONTRACTOR TO PROTECT INDIVIDUAL PROPERTY PINS FOUND IN FIELD.
6. CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. CALL FOR UTILITY LOCATES.
7. ALL SURFACE DRAINAGE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION PERIOD.
8. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH APPLICABLE WATER QUALITY & CONTROL REGULATIONS.
9. CONTRACTOR TO BE RESPONSIBLE FOR ALL TRAFFIC CONTROL FOR THE UTILITY CONSTRUCTION.

SITE PREPARATION NOTES

1. CONSTRUCTION FENCING TO BE PUT UP ALONG LIMITS OF WORK TO PREVENT TRAMPLING BY PEDESTRIANS. ALL CONSTRUCTION FENCE SHALL BE GREEN PLASTIC AND SUPPORTED AT ADEQUATE INTERVALS TO BE STRAIGHT AND FULL HEIGHT.
2. CONTRACTOR SHALL NOT DISTURB INTERSECTING WALKS, STAIRS, OR HANDRAILS. IF AFFECTED, CONTRACTOR IS RESPONSIBLE FOR REPAIRING TO ORIGINAL CONDITION.
3. DUE TO SITE ACCESS RESTRICTIONS, USE ALL ACCESS/STAGING AND PARKING INDICATED ON PLANS.

SEEDING ZONE A

Upland Mix Application		
Common Name	Scientific Name	pls/acre*
Sand dropseed	<i>Sporobolus cryptandrus</i>	1%
Blanket flower	<i>Gaillardia aristata</i>	6.4%
Rocky Mountain beeplant	<i>Cleome serrulata</i>	19.2%
Scarlet globemallow	<i>Sphaeralcea coccinea</i>	3.2%
Alkali sacaton	<i>Sporobolus airoides</i>	3.2%
Great Basin wildrye	<i>Leymus cinereus</i>	25.5%
Western wheatgrass	<i>Pascopyrum smithii</i>	25.5%
Sandberg bluegrass	<i>Poa secunda ssp. Sandbergii</i>	6.4%
Inland saltgrass	<i>Distichlis spicata</i>	3.2%
Lewis blue flax	<i>Linum lewisii</i>	6.4%
*Broadcast Application=60 lbs/acre		100%

SEEDING ZONE B

Emergent Riparian Mix Application		
Common Name	Scientific Name	pls/acre*
Inland saltgrass	<i>Distichlis spicata</i>	25%
Creeping spikebrush	<i>Eleocharis palustris</i>	25%
Spike muhly	<i>Muhlenbergia wrightii</i>	25%
Nuttal's alkaligrass	<i>Puccinellia nuttalliana</i>	25%
*Broadcast Application=15 lbs/acre		100%

PROFESSIONAL ENGINEER STAMP



OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
SEEDING NOTES

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS



Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS



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P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project 45072	Sheet LOO
Date OCTOBER 2025	
Scale 1" = 20' (FULL SIZE)	

BID SET

FEATURES LEGEND:

- OHI = OBERMEYER HYDRO INC.
- OHI RUBBER ROCK
- OHI STEEL GATES
- AIR LINE
- PURGE LINE
- TELEMETRY LINE
- MANHOLE FOR PURGE VALVE
- LEVEL SENSOR IN STILLING WELL
- REMOVE TREE
- DEMO CONCRETE
- CONCRETE
- BOULDERS
- GROUTED BOULDERS
- ALLUVIAL SUBSTRATE
- TOPSOIL AND SEED
- BOULDER STEPS
- SEEDING ZONE A
- SEEDING ZONE B

PROFESSIONAL ENGINEER STAMP



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
SEEDING PLAN**

No.	REVISION/UPDATE	Date
1	DEMO TREE UPDATES	11/21/25

CLIENT NAME AND ADDRESS

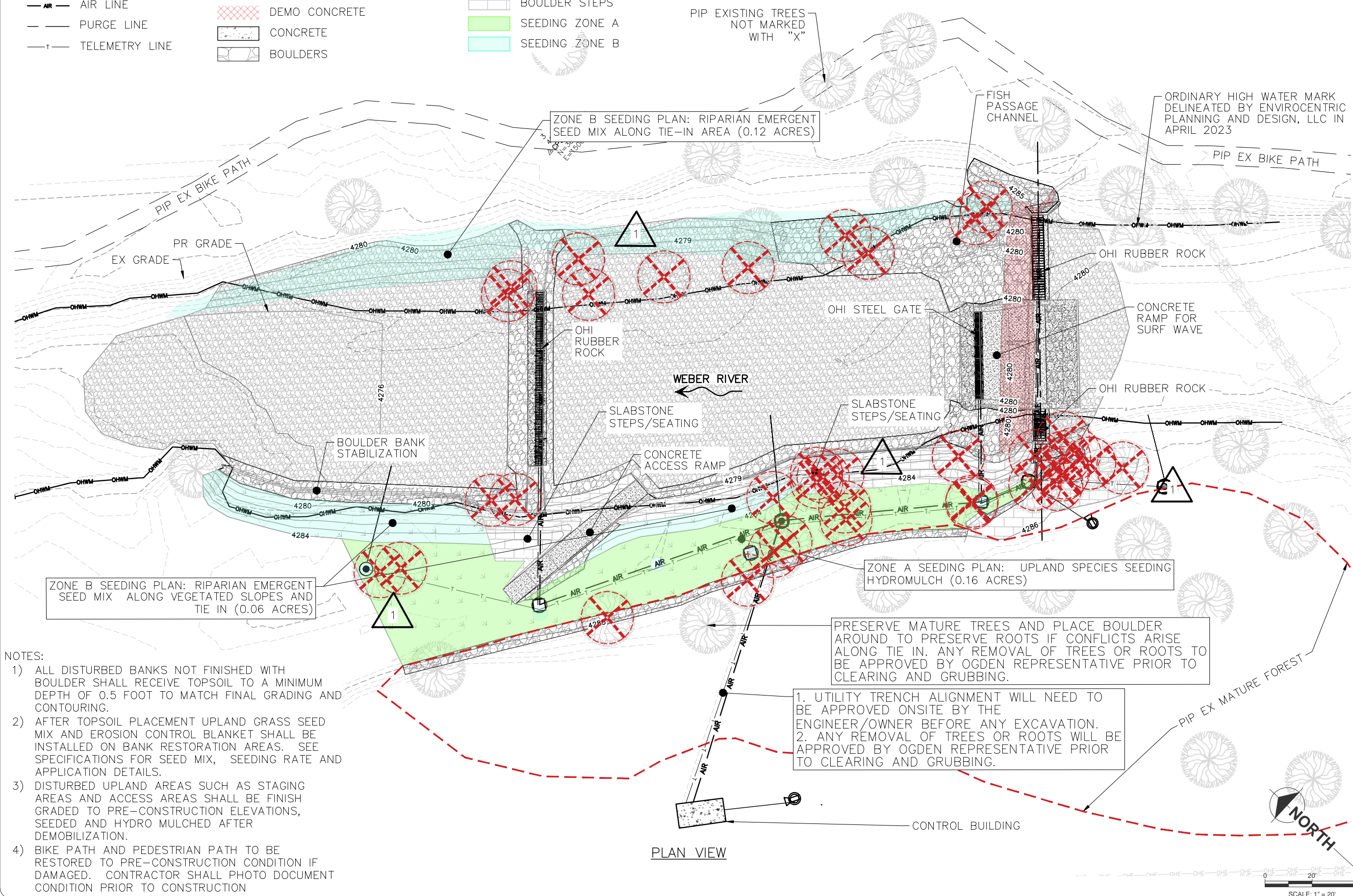
Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

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P.O. Box 248
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www.RiverRestoration.org

PROJECT NAME AND ADDRESS
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	45072	Sheet	L01
Date	NOVEMBER 2025		
Scale	1" = 20' (FULL SIZE)		



- NOTES:
- 1) ALL DISTURBED BANKS NOT FINISHED WITH BOULDER SHALL RECEIVE TOPSOIL TO A MINIMUM DEPTH OF 0.5 FOOT TO MATCH FINAL GRADING AND CONTOURING.
 - 2) AFTER TOPSOIL PLACEMENT UPLAND GRASS SEED MIX AND EROSION CONTROL BLANKET SHALL BE INSTALLED ON BANK RESTORATION AREAS. SEE SPECIFICATIONS FOR SEED MIX, SEEDING RATE AND APPLICATION DETAILS.
 - 3) DISTURBED UPLAND AREAS SUCH AS STAGING AREAS AND ACCESS AREAS SHALL BE FINISH GRADED TO PRE-CONSTRUCTION ELEVATIONS, SEEDED AND HYDRO MULCHED AFTER DEMOBILIZATION.
 - 4) BIKE PATH AND PEDESTRIAN PATH TO BE RESTORED TO PRE-CONSTRUCTION CONDITION IF DAMAGED. CONTRACTOR SHALL PHOTO DOCUMENT CONDITION PRIOR TO CONSTRUCTION

PRESERVE MATURE TREES AND PLACE BOULDER AROUND TO PRESERVE ROOTS IF CONFLICTS ARISE ALONG TIE IN. ANY REMOVAL OF TREES OR ROOTS TO BE APPROVED BY OGDEN REPRESENTATIVE PRIOR TO CLEARING AND GRUBBING.

1. UTILITY TRENCH ALIGNMENT WILL NEED TO BE APPROVED ONSITE BY THE ENGINEER/OWNER BEFORE ANY EXCAVATION.
2. ANY REMOVAL OF TREES OR ROOTS WILL BE APPROVED BY OGDEN REPRESENTATIVE PRIOR TO CLEARING AND GRUBBING.

ZONE B SEEDING PLAN: RIPARIAN EMERGENT SEED MIX ALONG TIE-IN AREA (0.12 ACRES)

ZONE B SEEDING PLAN: RIPARIAN EMERGENT SEED MIX ALONG VEGETATED SLOPES AND TIE IN (0.06 ACRES)

ZONE A SEEDING PLAN: UPLAND SPECIES SEEDING HYDROMULCH (0.16 ACRES)

PIP EXISTING TREES NOT MARKED WITH "X"

ORDINARY HIGH WATER MARK DELINEATED BY ENVIROCENTRIC PLANNING AND DESIGN, LLC IN APRIL 2023

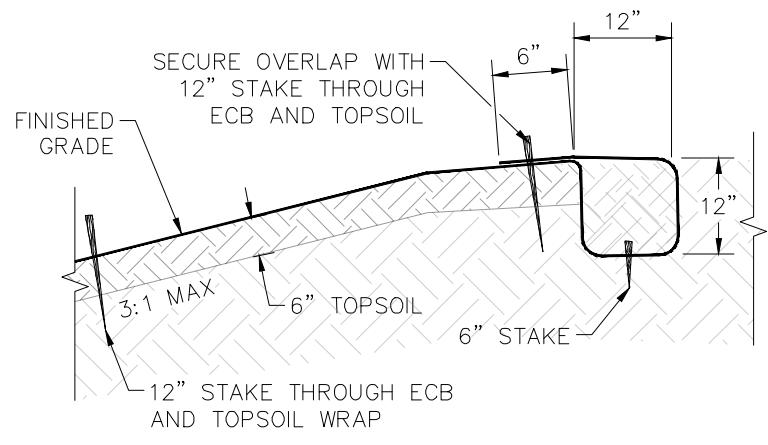
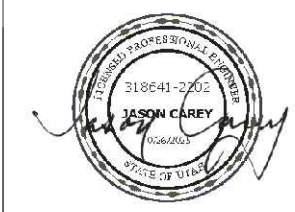


FIGURE A: SECURE ECB AT TOP OF BANK – NTS

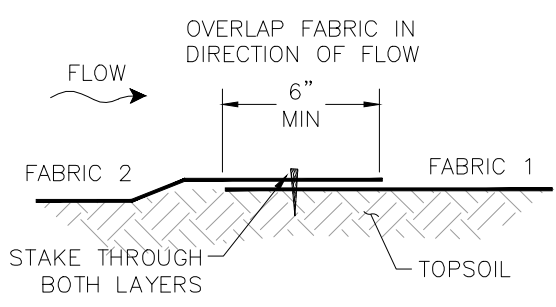


FIGURE B: CROSS SECTION VIEW OF OVERLAP – NTS

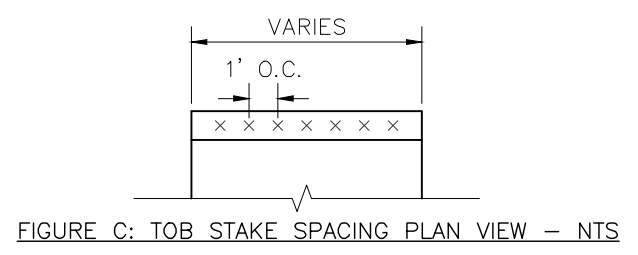
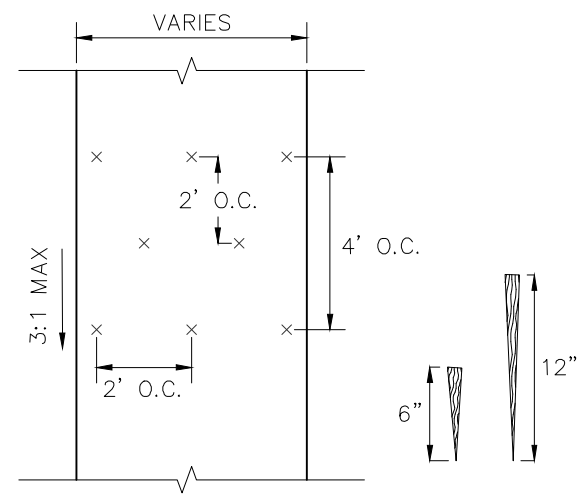


FIGURE C: TOP STAKE SPACING PLAN VIEW – NTS



× DENOTES STAKE LOCATION (APPROXIMATELY 6 STAPLES PER SY)
FIGURE D: STAKE SPACING PLAN VIEW – NTS

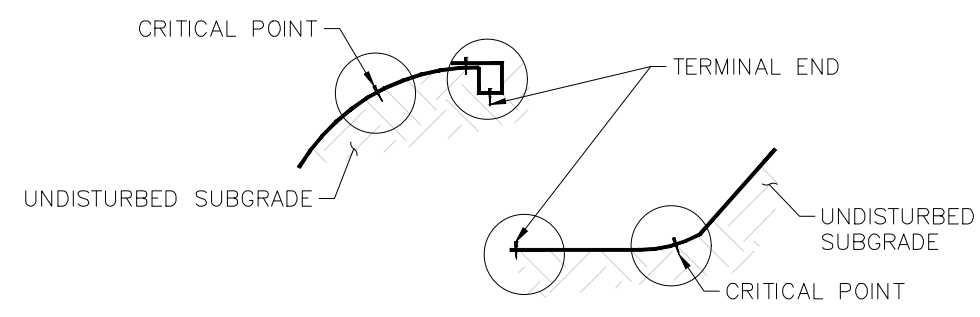
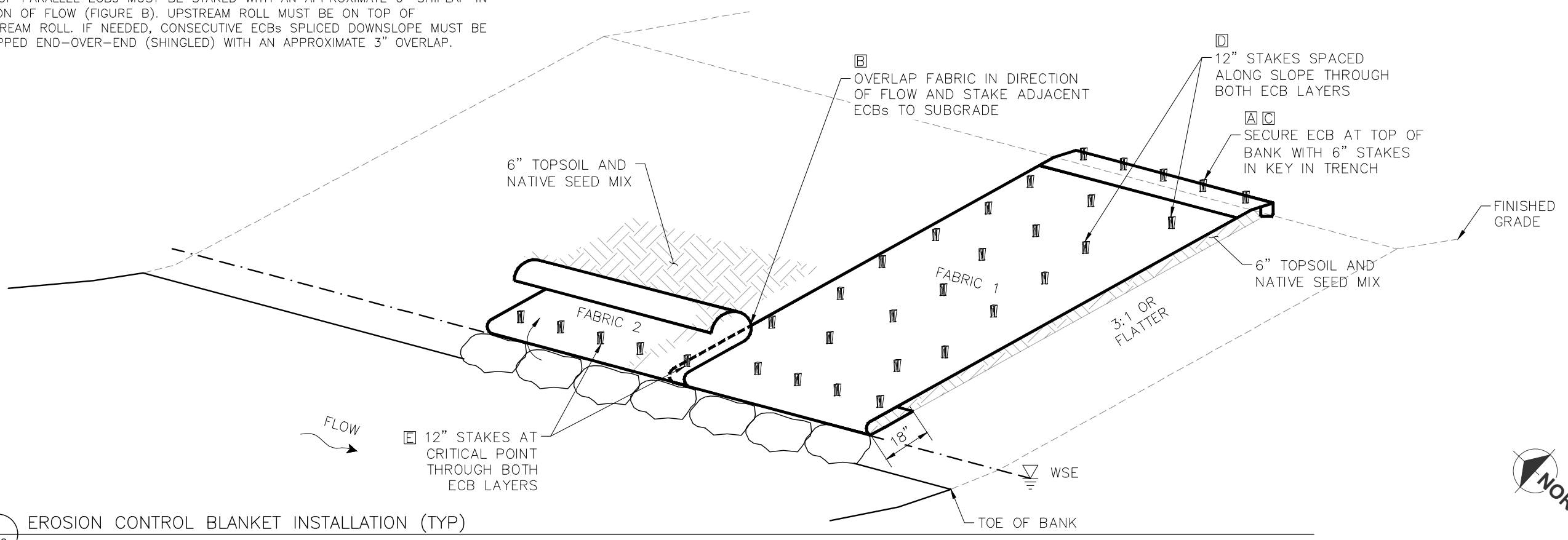


FIGURE E: CRITICAL POINT SECURING – NTS

ECB INSTALLATION NOTES:


1. CONTRACTOR SHALL USE ALL NATURAL 100% BIODEGRADABLE COIR NORTH AMERICAN GREEN C700BN EROSION CONTROL BLANKETS (ECBs) OR APPROVED EQUIVALENT. STAKES SHALL ALSO BE 100% BIODEGRADABLE. SEE SPECIFICATIONS AND MANUFACTURER'S INSTALLATION GUIDELINES FOR ADDITIONAL INFORMATION.
2. PREPARE SOIL BEFORE INSTALLATION. GROUND SURFACE MUST BE FREE OF DEBRIS, ROCKS, CLAY CLODS AND RAKED SMOOTH SUFFICIENT TO ALLOW INTIMATE CONTACT OF THE ECB WITH THE SOIL OVER THE ENTIRETY OF INSTALLATION.
3. STARTING AT THE TOE, KEY-IN 18" OF ECB BEHIND BOULDER TOE .
4. IN THE FOLLOWING ORDER, APPLY TOPSOIL, SEED MIX, THEN WRAP ECB FROM THE TOE TOWARDS THE TOP OF BANK. ECB MUST BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH. SECURE IN PLACE PER STAKING PLAN (FIGURE D).
5. EXCAVATE A 12" WIDE BY 12" DEEP TRENCH AT THE TOP. THE TRENCH SHALL RUN ALONG THE LENGTH OF THE INSTALLATION. STAKE ECB ALONG BOTTOM OF TRENCH, FILL WITH COMPACTED SOIL, OVERLAP ECB TOWARDS TOE OF SLOPE, AND SECURE WITH 6" STAKES EVERY 1.0' (FIGURES A&C).
6. EDGES OF PARALLEL ECBs MUST BE STAKED WITH AN APPROXIMATE 6" SHIPLAP IN DIRECTION OF FLOW (FIGURE B). UPSTREAM ROLL MUST BE ON TOP OF DOWNSTREAM ROLL. IF NEEDED, CONSECUTIVE ECBs SPLICED DOWNSLOPE MUST BE OVERLAPPED END-OVER-END (SHINGLED) WITH AN APPROXIMATE 3" OVERLAP.




1 EROSION CONTROL BLANKET INSTALLATION (TYP)
L02 NTS

OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
EROSION CONTROL
BLANKET INSTALLATION

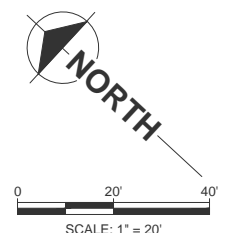
No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

 Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

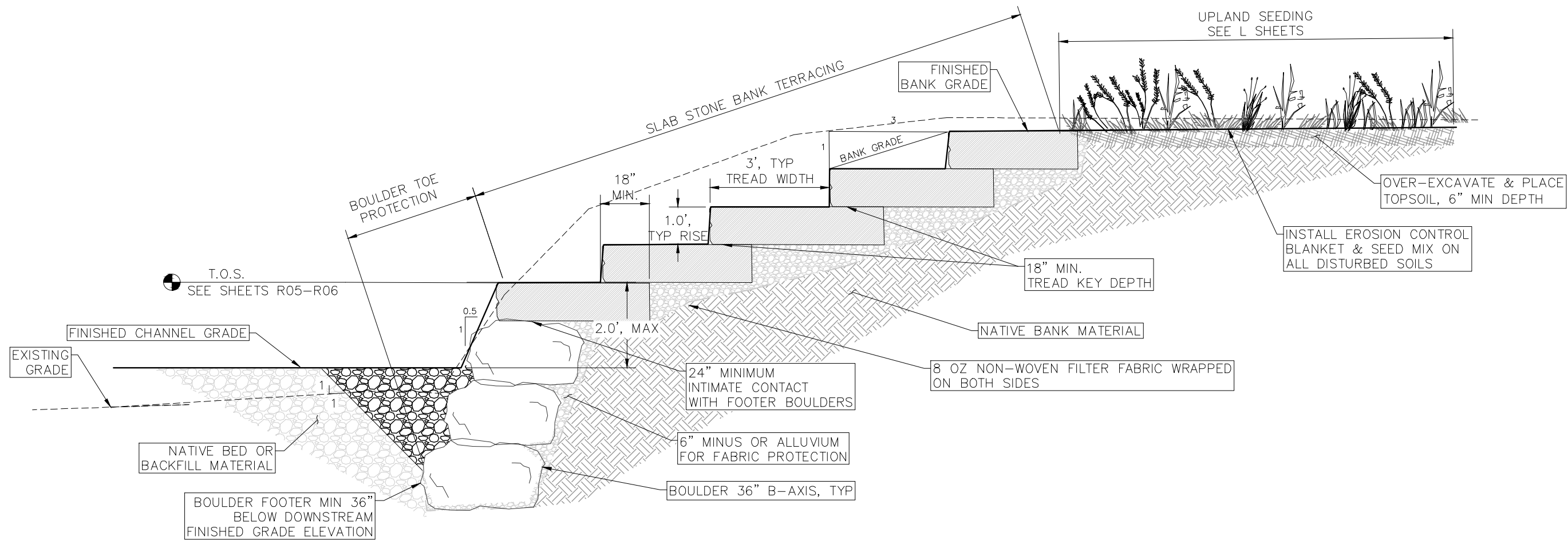
DESIGN FIRM NAME AND ADDRESS

 RiverRestoration
 P.O. Box 248
 Carbondale, CO 81623
 www.RiverRestoration.org

PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

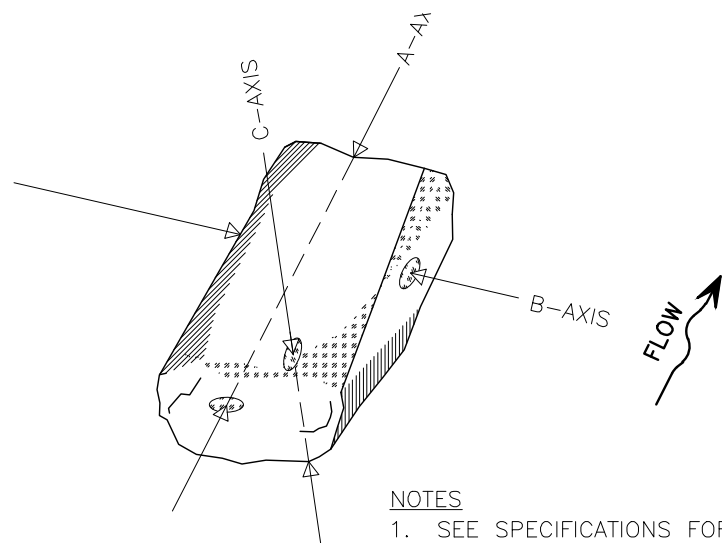
Project 45072	Sheet L02
Date OCTOBER 2025	Scale 1" = 20' (FULL SIZE)



BID SET



1 BOULDER TOE PROTECTION WITH SLAB STONE BANK TERRACING, TYP.
D01 NTS



2 BOULDER AXIAL PLACEMENT (TYP)
D01 NTS

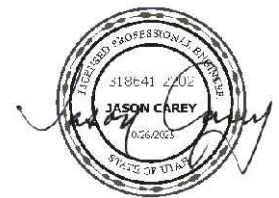
SLAB STONE NOTES

- CONTRACTOR SHALL LEVEL, FIT, AND STACK INDIVIDUAL SLABS TO MAXIMIZE AESTHETIC VALUE OF FINISHED STEPS AND TERRACING. REFER TO TECHNICAL SPECIFICATIONS FOR MATERIAL AND CONSTRUCTION REQUIREMENTS.

BOULDER NOTES:

- CONSTRUCTION OF BOULDER BANK SHALL INCLUDE SELECTION, ROTATION, PLACEMENT, AND ADJUSTMENT OF EACH INDIVIDUAL BOULDER TO MINIMIZE VOID SPACE AND MAXIMIZE INTIMATE CONTACT BETWEEN BOULDERS.
- SEE SPECIFICATIONS FOR ACCEPTABLE AS-BUILT VARIANCES ON ELEVATIONS OF BOULDER AND ALLUVIAL BACKFILL.
- HORIZONTAL CONTROL INFORMATION, INCLUDING COORDINATES OF ALIGNMENTS AND CROSS SECTIONS WILL BE PROVIDED ELECTRONICALLY.

PROFESSIONAL ENGINEER STAMP



OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
BOULDER TOE - SLAB STONE
BANK TERRACING DETAIL

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS



Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS



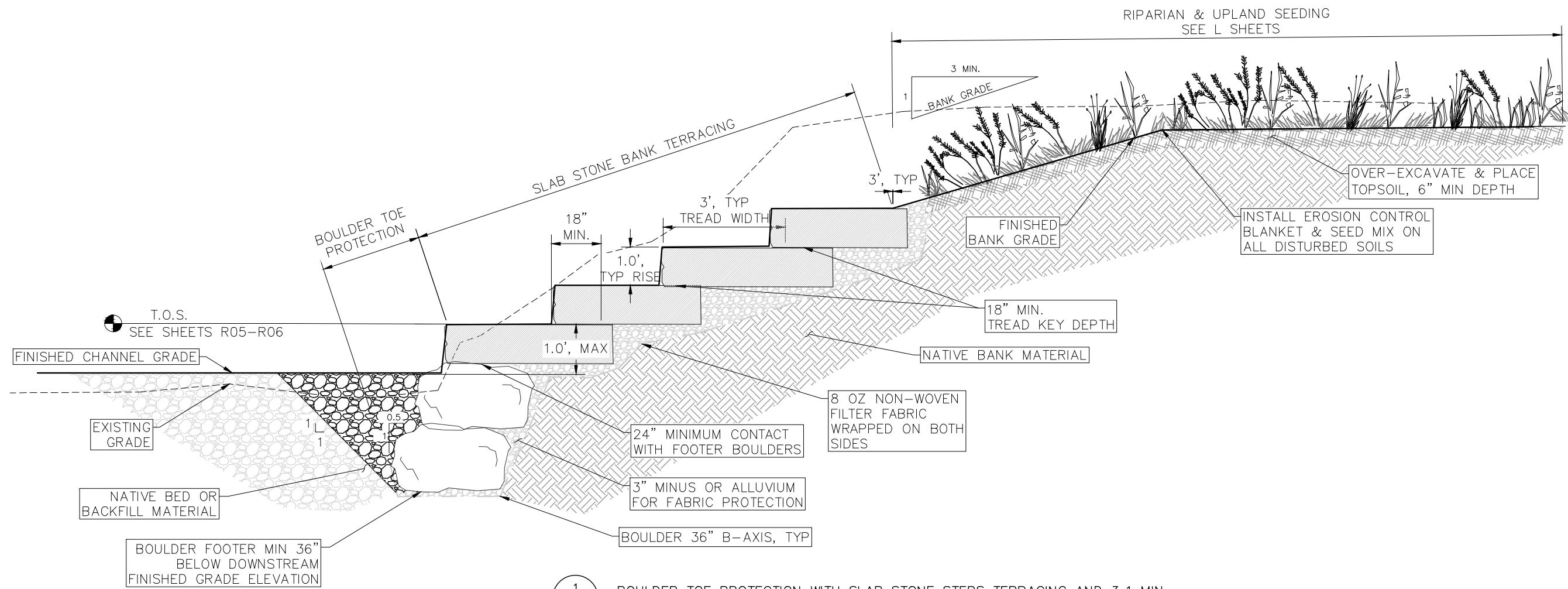
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PROJECT NAME AND ADDRESS

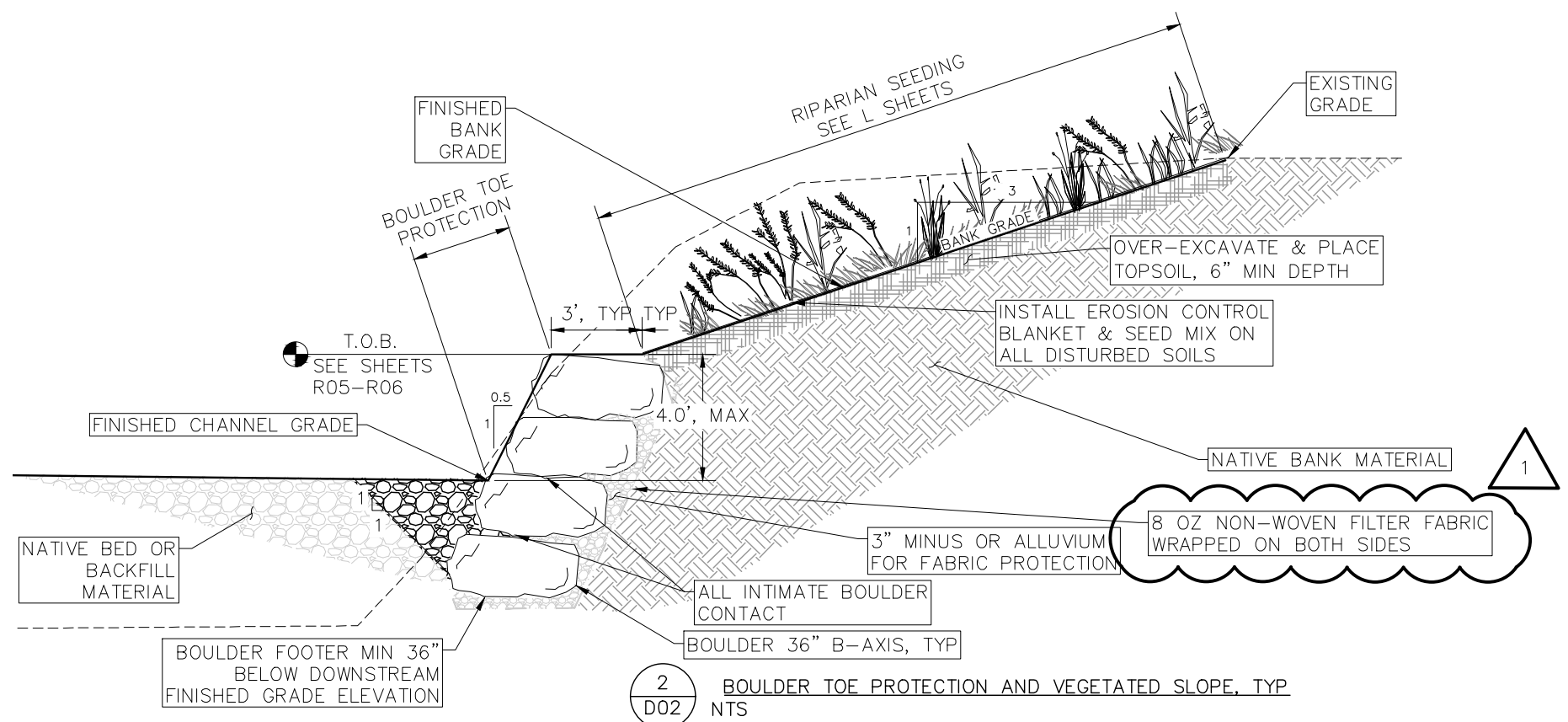
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project 45072	Sheet D01
Date OCTOBER 2025	
Scale NTS	

BID SET

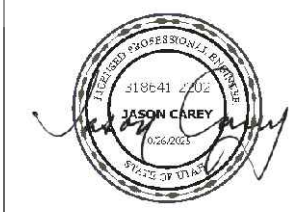


1
D02 BOULDER TOE PROTECTION WITH SLAB STONE STEPS TERRACING AND 3:1 MIN. VEGETATED SLOPE, TYP NTS



2
D02 BOULDER TOE PROTECTION AND VEGETATED SLOPE, TYP NTS

PROFESSIONAL ENGINEER STAMP



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
BOULDER TOE PROTECTION /
SLAB STONE BANK TERRACING
3:1 VEGETATED SLOPE DETAIL**

No.	REVISION/UPDATE	Date
1	CALL OUT UPDATE ON 2 D02	11/21/25

CLIENT NAME AND ADDRESS

 Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

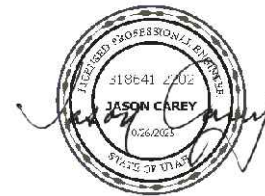
DESIGN FIRM NAME AND ADDRESS

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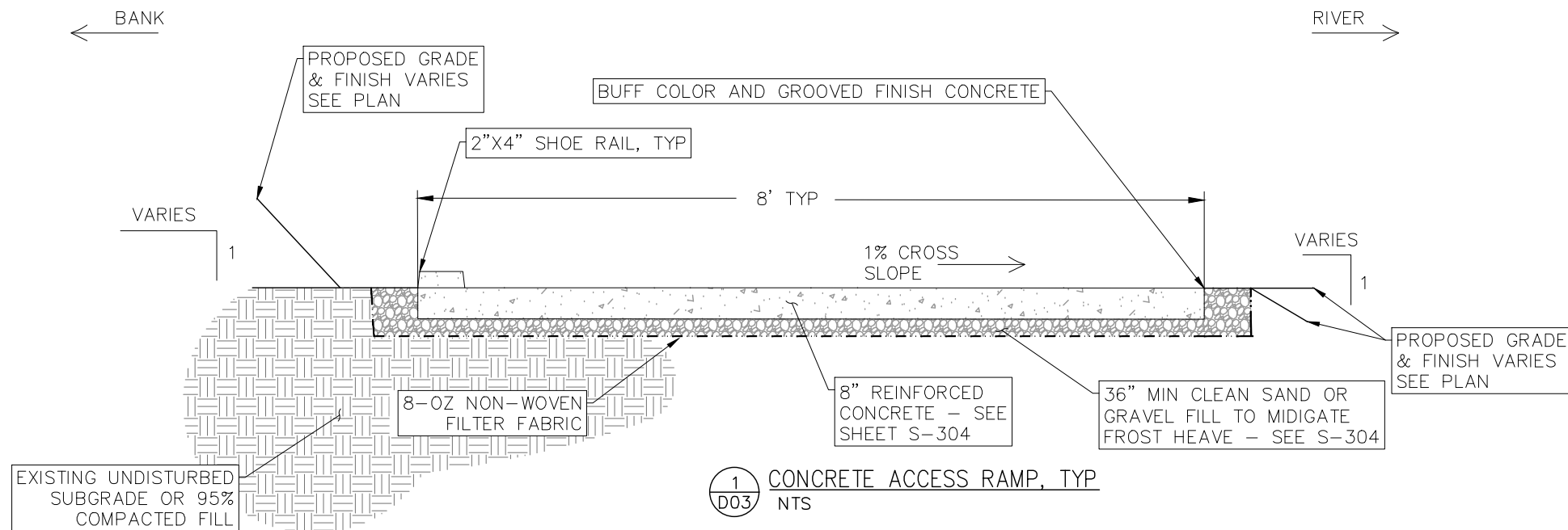
PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

Project 45072	Sheet D02
Date NOVEMBER 2025	
Scale NTS	

BID SET



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
CONCRETE ACCESS
RAMP DETAIL**



1
D03 CONCRETE ACCESS RAMP, TYP
NTS

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS



Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS



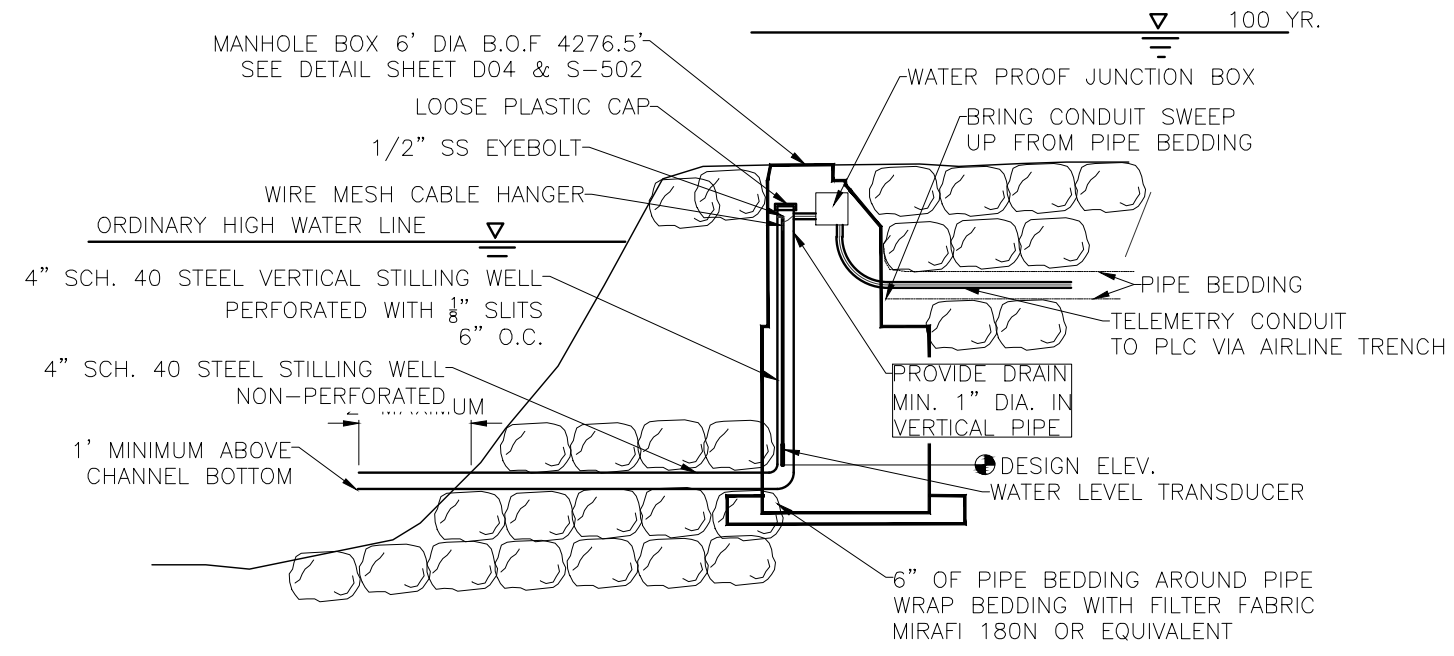
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PROJECT NAME AND ADDRESS

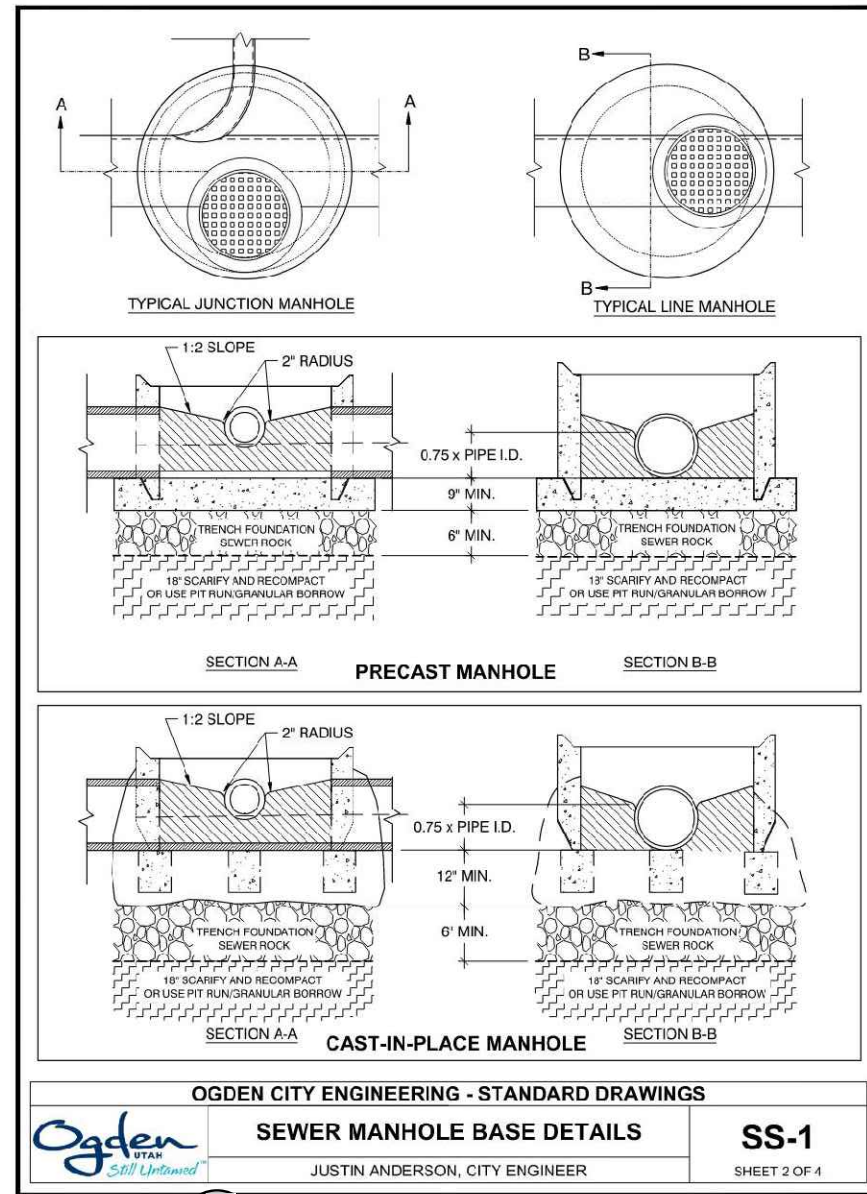
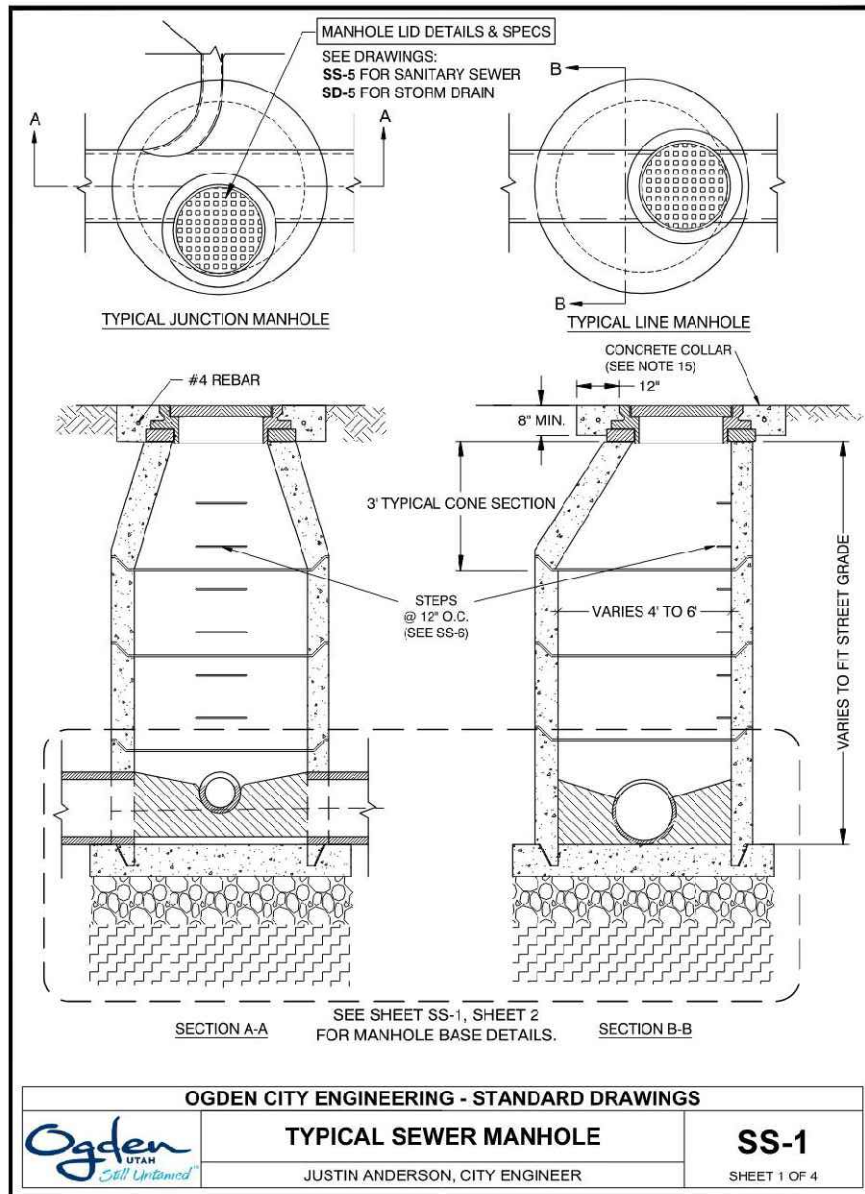
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project 45072	Sheet D03
Date OCTOBER 2025	D03
Scale NTS	

BID SET



1
D04 TYPICAL WATER LEVEL TRANSDUCER INSTALLATION DETAIL
NTS (PROVIDE SHOP DRAWINGS)



NOTES:

- BACKFILL: PROVIDE AND PLACE PER APWA SECTION 31 23 23.
 - COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8" WHEN USING RIDING AND 6" WHEN USING HAND COMPACTION EQUIPMENT.
 - SEWER ROCK SHALL BE PER APWA SECTION 31 05 13.
- CONCRETE CLASS 4000 PER APWA SECTION 03 30 04. PLACE CONCRETE PER APWA 03 30 10.
- MANHOLE SIZE
 - 4" DIAMETER FOR SEWER PIPES UNDER 12" IN DIAMETER AND NOT SUBJECT TO ANY CONDITIONS LISTED FOR THE 5' MANHOLE.
 - 5" DIAMETER FOR THE FOLLOWING:
 - DEFLECTION ANGLE IS GREATER THAN OR EQUAL TO 45°
 - WHEN THE MANHOLE HAS THREE OR MORE LINES
 - FOR SEWERS WITH A PIPE DIAMETER OF 12" OR GREATER
 - WHEN THE COVER IS GREATER THAN 14.
- SEE SS-5 FOR MANHOLE LID SPECIFICATIONS.
- OUTLET PIPE TO BE A MINIMUM OF 1" BELOW INLET PIPE FLOW LINES EXCEPT AS NOTED BELOW IN FIG. 1 (BELOW).
- STEEL FRAMES: USE ASTM A 36 STEEL.
- LOW PROFILE LIDS WILL NOT BE ALLOWED IN ANY OGDEN CITY RIGHT OF WAY.
- REINFORCEMENT: USE ASTM A 615, GRADE 60. REFER TO APWA 03 20 00.
 - CAST IN PLACE REBAR SCHEDULE MUST BE STAMPED BY A STRUCTURAL ENGINEER.
- COATINGS: EXCEPT MACHINED SURFACES, COAT ALL METAL WITH ASPHALTUM PAINT.
- GROUT ALL PIPE OPENINGS WITH 2:1 SAND/CEMENT MORTAR.
- PLACE FLEXIBLE GASKET-TYPE SEALANT IN ALL MANHOLE JOINTS. SEAL MUST MEET THE REQUIREMENTS OF SS-S-00210 (210A), AASHTO M-198, AND ASTM C990.
- PRECAST REINFORCED CONCRETE WALLS MUST BE 5" THICK.
- CAST-IN-PLACE CONCRETE WALLS MUST BE A MINIMUM OF 8" THICK.
- CONTRACTOR SHALL CONTACT SEWER DEPARTMENT PRIOR TO ENTRANCE INTO MANHOLE
 - ENTRANCE INTO MANHOLE SHALL BE PER OSHA STANDARDS
- MINIMUM PIPE SLOPE: REFER TO TABLE 1 - MINIMUM SEWER MAIN PIPE SLOPE, OF THE OGDEN CITY ENGINEERING STANDARDS FOR MINIMUM SEWER MAIN PIPE SLOPE.

INLET SIZE	8"	10"	12"	15"	18"
8"	0.10	---	---	---	---
10"	0.17	0.10	---	---	---
12"	0.33	0.17	0.10	---	---
15"	0.58	0.42	0.25	CL	---
18"	0.80	0.71	0.63	0.50	CL

FIGURE 1 CL INDICATES THE DROP THROUGH THE MANHOLE SHALL BE THE EXISTING FLOWLINE BASED ON THE PIPE SLOPE

OGDEN CITY ENGINEERING - STANDARD DRAWINGS

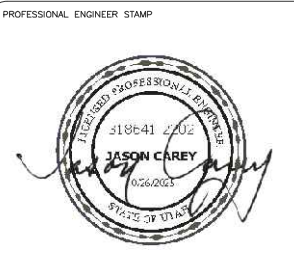
SEWER MANHOLE

SS-1

JUSTIN ANDERSON, CITY ENGINEER

SHEET 3 OF 4

2
D04 MANHOLE (TELEMETRY - AIRLINES - TYP.)
SEE SHEET S-502 FOR PRECAST MANHOLE FOOTING DETAIL



OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
OBERMEYER HYDRO INC
DETAIL

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

Ogden City Corporation
Engineering Division
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Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

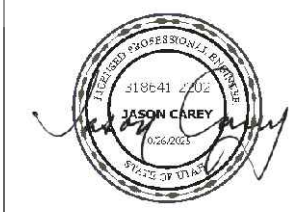
RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	45072	Sheet	D04
Date	OCTOBER 2025	Scale	
Scale	NTS		

BID SET



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
OBERMEYER HYDRO INC
DETAIL**

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

 Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

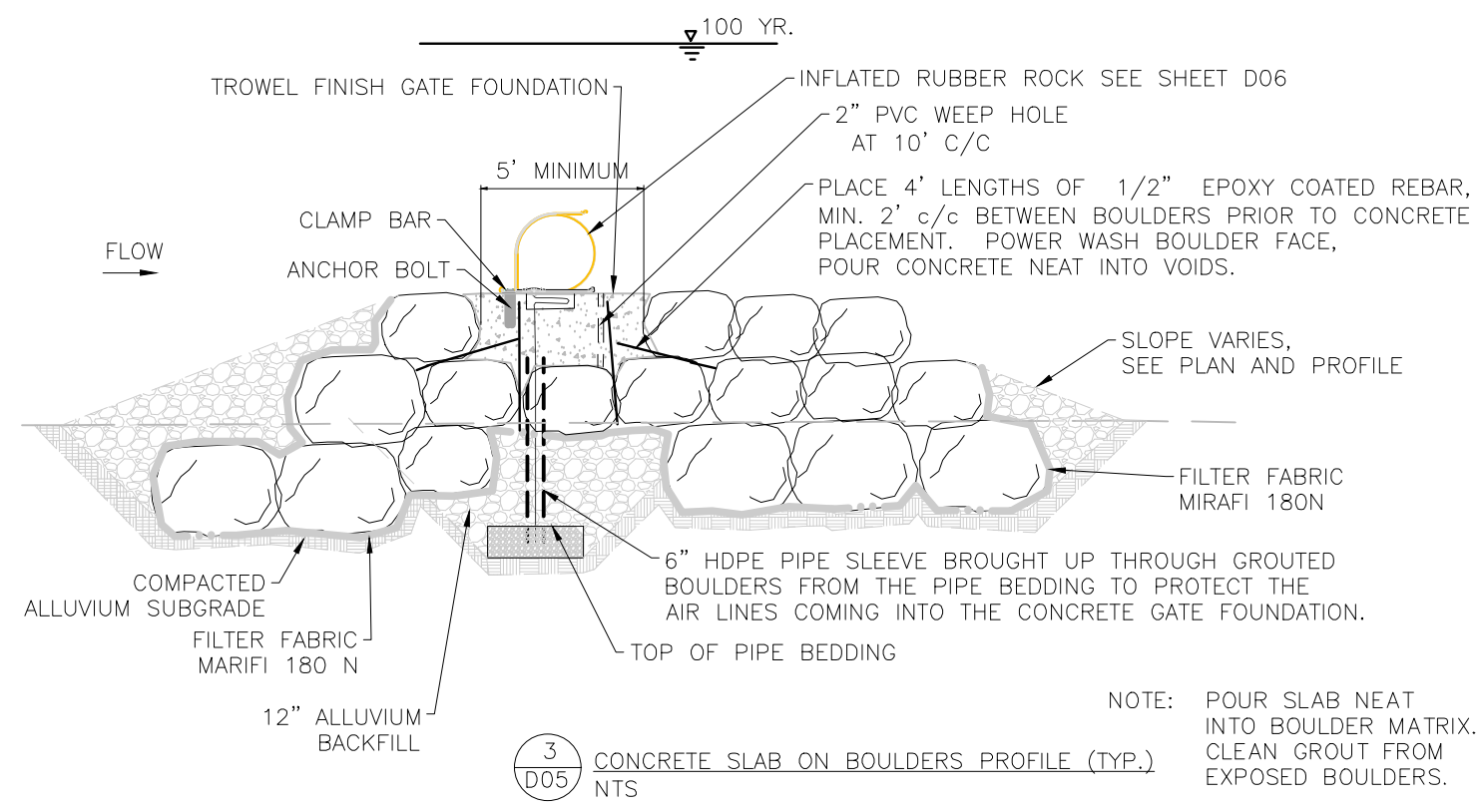
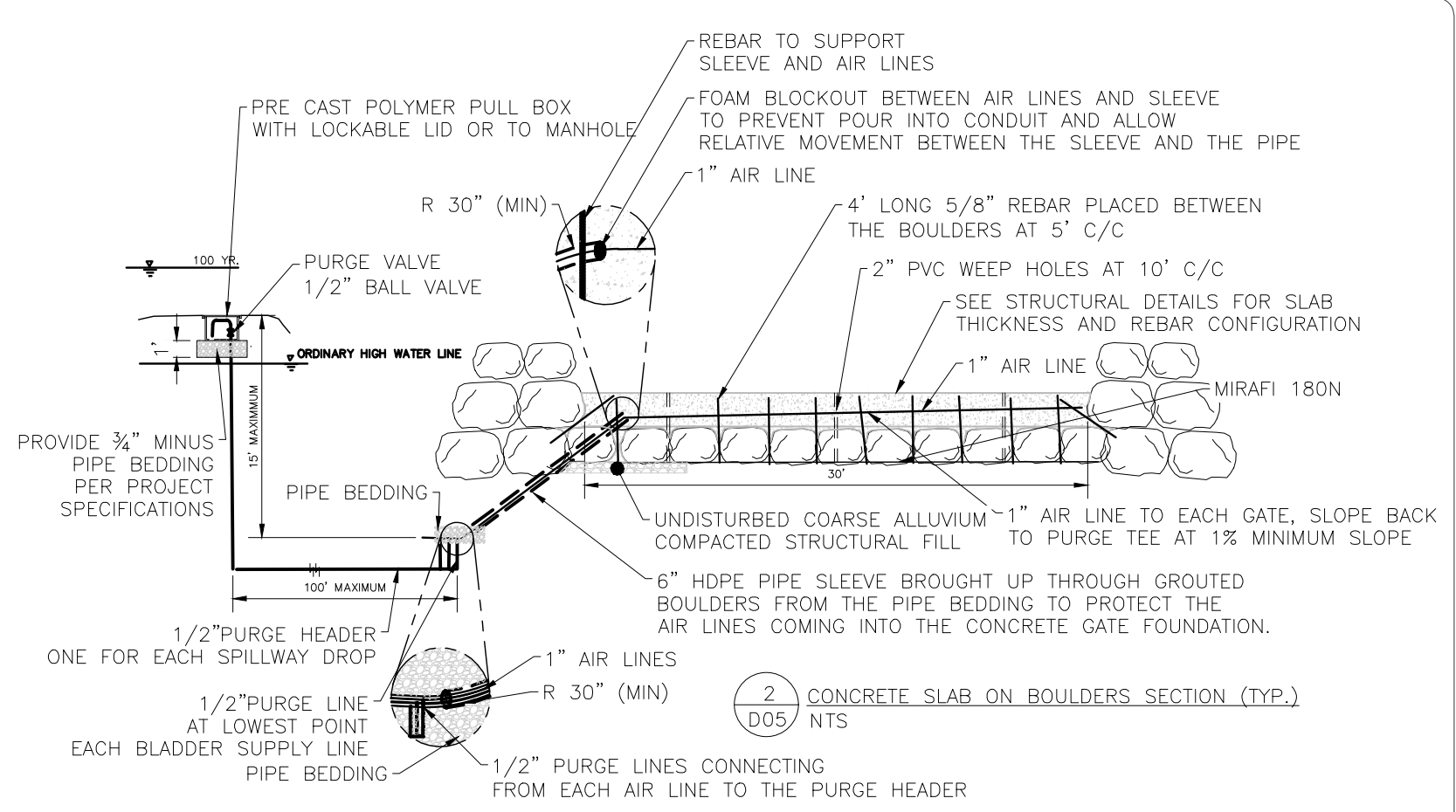
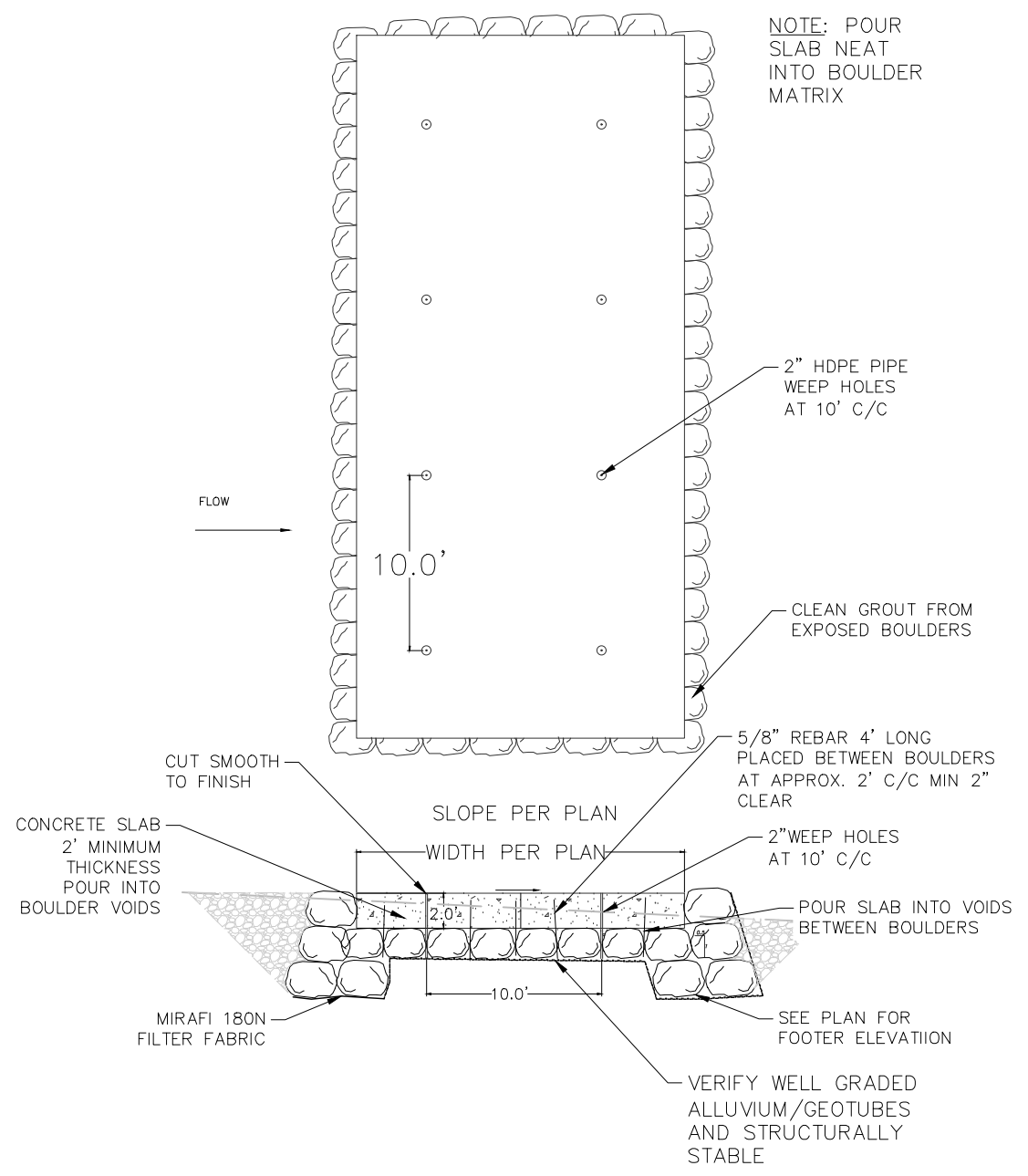
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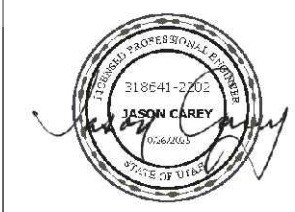
PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

Project 45072	Sheet D05
Date OCTOBER 2025	
Scale NTS	

BID SET



- NOTES:**
1. CONCRETE UNDER GATE SYSTEM, GRIND HIGH SPOTS FLUSH AND FILL VOIDS. SURFACE SHOULD BE FREE FROM ANY SHARP SURFACES AND SHOULD BE LEVEL WITHIN 1/4".
 2. ALL DIMENSIONS TO WITHIN ±1/8" OF TRUE POSITION UNLESS OTHERWISE DIMENSIONED OR NOTED ON PART DRAWING.
 3. ANCHOR BOLTS TO BE PERPENDICULAR TO WITHIN ±1/8" OVER LENGTH OF ANCHOR BOLTS AS COMPARED TO THE HORIZONTAL CONCRETE CLAMPING SURFACE.
 4. CONTRACTOR RESPONSIBLE FOR ALL CONCRETE CUTTING, GROUTING, GROUT, AIR PIPE, AIR PIPE FITTINGS/WELDING, VALVING, ELECTRICAL CONDUIT, CONDUIT FITTINGS, ASSOCIATED TOOLS, REBAR, ANCHORING AND SURFACE EPOXY, AND ANYTHING ELSE PERTAINING TO COMPONENTS NOT SUPPLIED BY OBERMEYER HYDRO, INC. OR OUTLINED IN THE OBERMEYER BILL OF MATERIAL.
 5. ALL DIMENSIONS IN FEET UNLESS OTHERWISE NOTED.



OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
OBERMEYER HYDRO INC
RUBBER ROCK DETAIL

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS



Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS



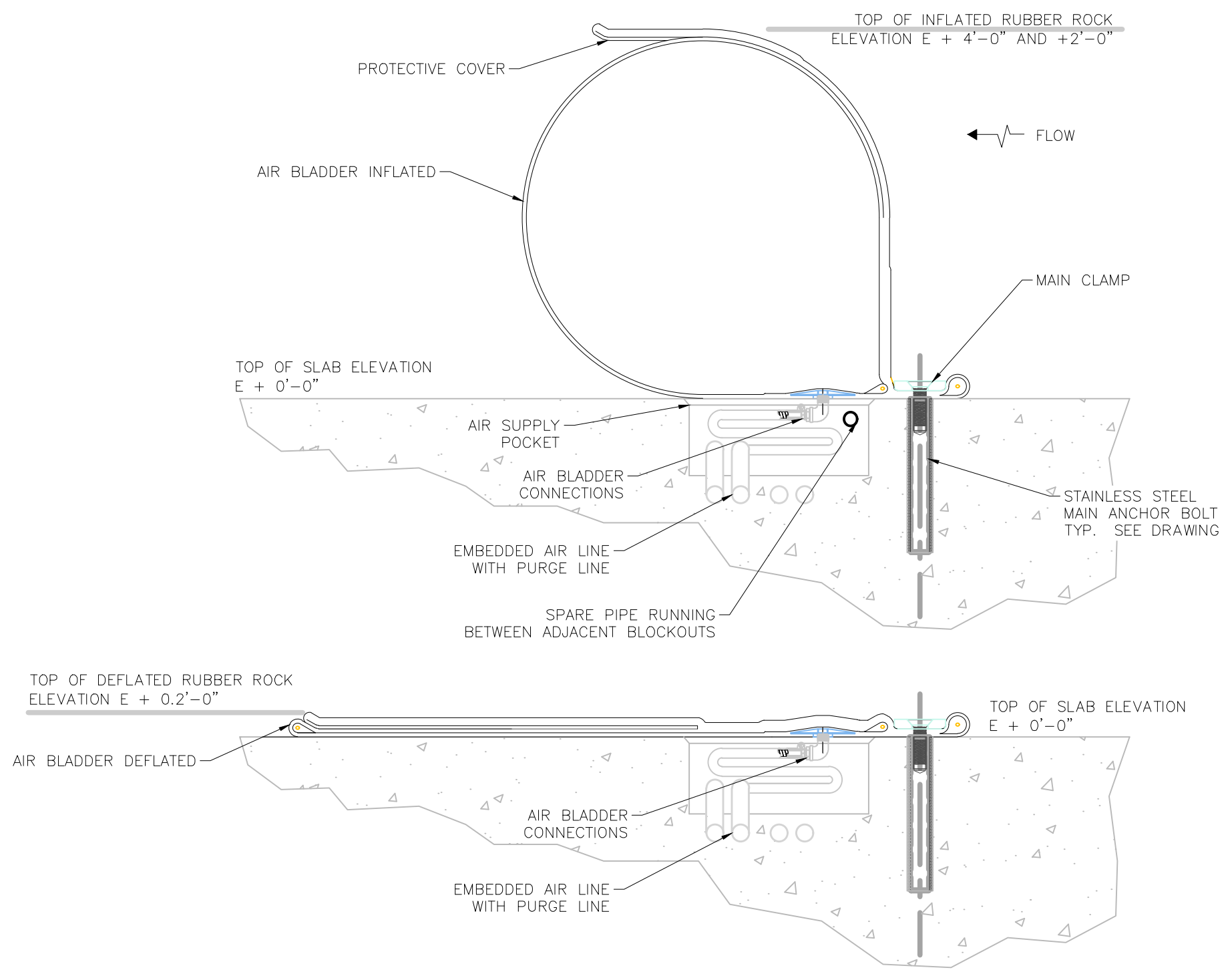
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P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS

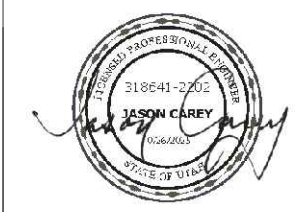
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	45072	Sheet	D06
Date	OCTOBER 2025		
Scale	NTS		

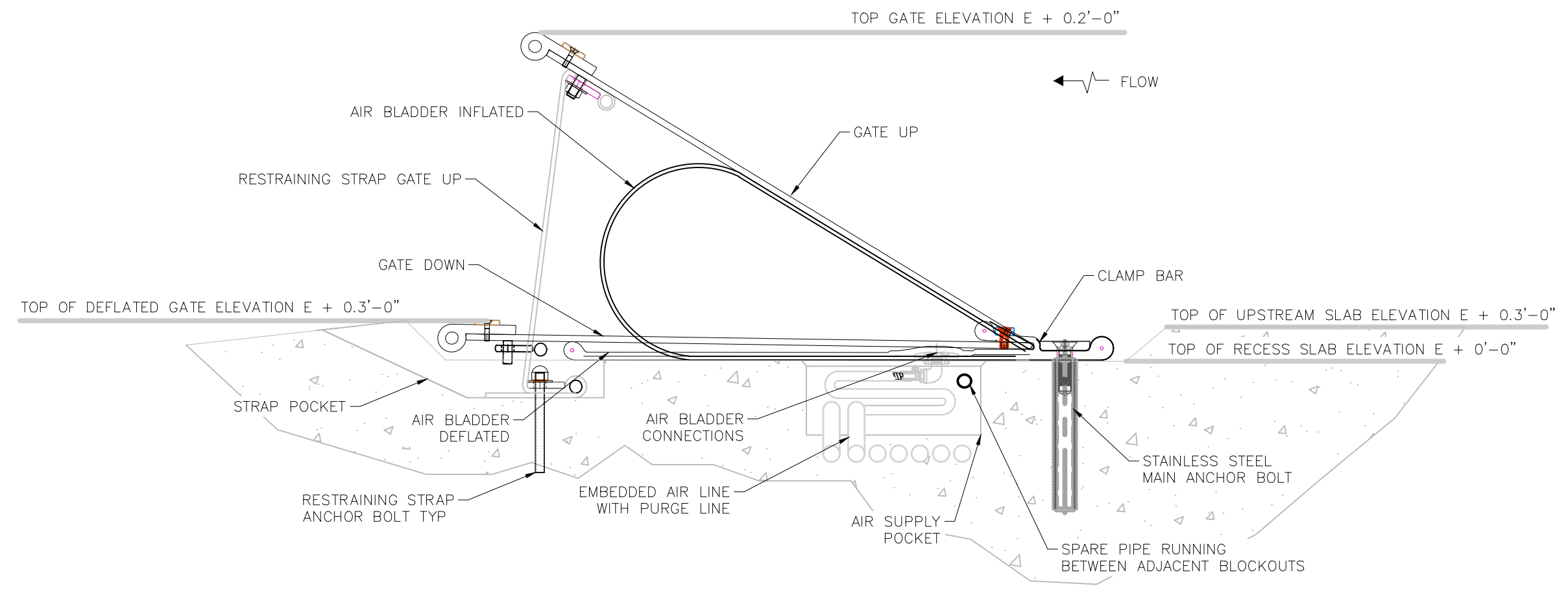
BID SET



1
D06 OHI RUBBER ROCK DETAIL - SECTION ELEVATION 2-4 FT HIGH
(NTS - NOT FOR CONSTRUCTION PROVIDE SHOP DRAWINGS)



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
OBERMEYER HYDRO INC
STEEL GATE DETAIL**



1 / D07 OHI STEEL GATE DETAIL - SECTION ELEVATION 2.0 FT HIGH
(NTS - NOT FOR CONSTRUCTION PROVIDE SHOP DRAWINGS)

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

 Ogden City Corporation
 Engineering Division
 2549 Washington Blvd
 Ogden, UT 84401

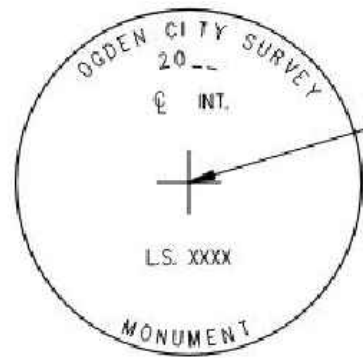
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 RiverRestoration
 P.O. Box 248
 Carbondale, CO 81623
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PROJECT NAME AND ADDRESS
 Weber River
 Ogden, UT
 Ogden Business Exchange Surf Wave

Project	45072	Sheet	D07
Date	OCTOBER 2025		
Scale	NTS		

BID SET

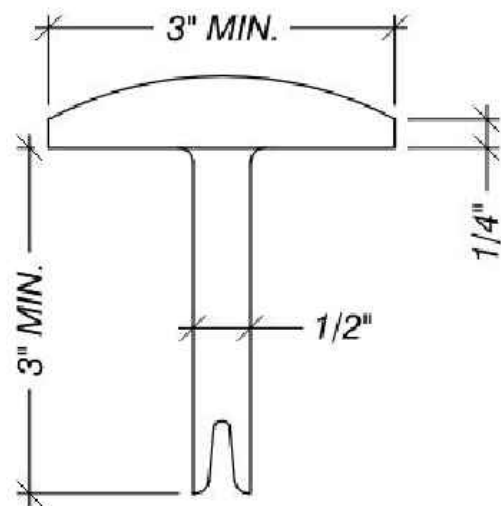


CAP PLAN

CAP CAN BE PURCHASED FROM ENGINEERS OFFICE

ABBREVIATIONS:

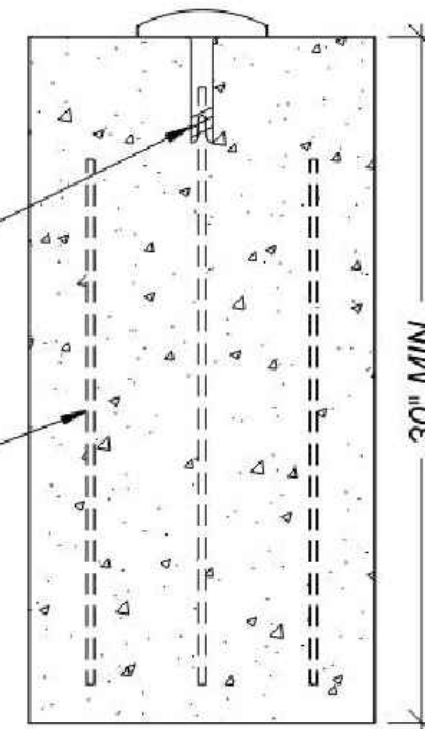
- INT - INTERSECTION
- ML INT - MONUMENT LINE INTERSECTION
- P.C. - POINT OF CURVATURE
- P.C.C. - POINT OF COMPOUND CURVATURE
- P.I. - POINT OF INTERSECTION
- P.O.C. - POINT ON CURVE
- P.O.T. - POINT ON TANGENT
- P.R.C. - POINT OF REVERSE CURVE
- P.T. - POINT OF TANGENCY
- S.C. - SECTION CORNER
- W.C. - WITNESS CORNER



CAP SECTION

ATTACH CAP TO REBAR WITH WIRE FOR INITIAL PLACEMENT

REINFORCEMENT (3) #5 @ 24"



SECTION OF BASE
(TYPICAL SETTING)

NOTES:

1. DATE: SHOW MONTH, DAY, AND YEAR WHEN CAP WAS MARKED.
2. LICENCE: SHOW LICENCE NUMBER OF LAND SURVEYOR WHO MARKED THE CAP.
3. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04.
4. REINFORCEMENT: ASTM A 615, GRADE 60, DEFORMED STEEL REBAR.

PROFESSIONAL ENGINEER STAMP



**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
OGDEN CITY DETAILS -
SURVEY MONUMENT**

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS



Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS



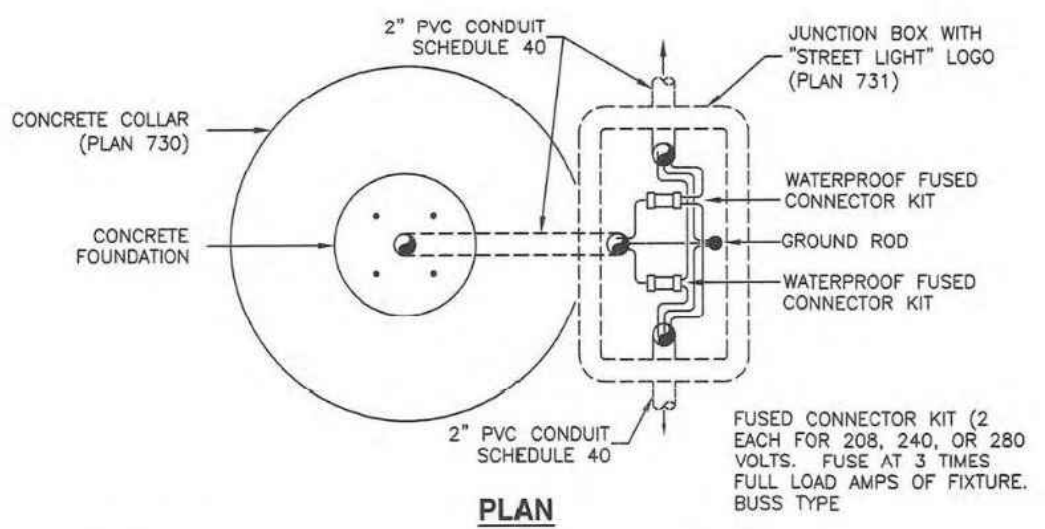
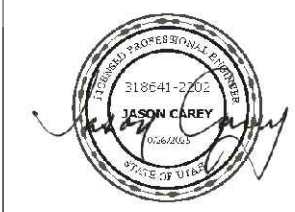
RiverRestoration
P.O. Box 248
Carbondale, CO 81623
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PROJECT NAME AND ADDRESS

Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

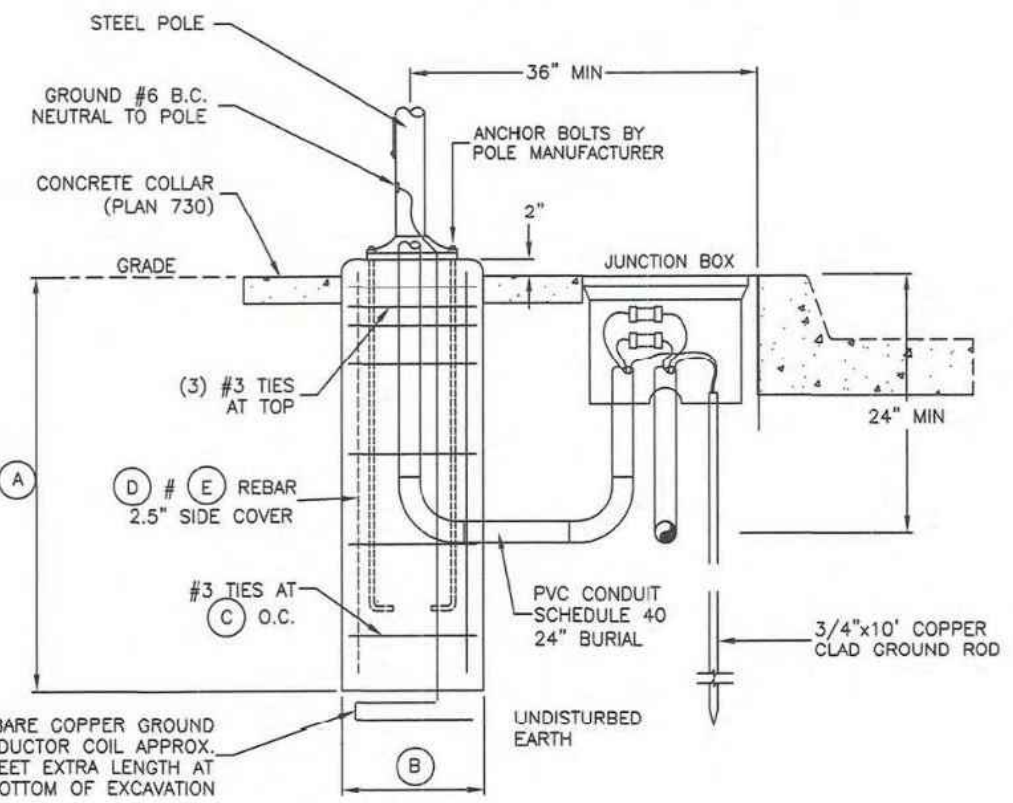
Project	45072	Sheet	D08
Date	OCTOBER 2025		
Scale	NTS		

BID SET



Concrete base for street light pole

1. **GENERAL**
 - A. Match longitudinal grades of foundation cap with top of existing curb.
 - 1) Existing Curb and No Sidewalk: Grade is 1/4-inch per foot sloped upward from the top of the back of curb.
 - 2) Existing Curb and Sidewalk: Straight grade from top back of curb to near edge of sidewalk.
 - 3) Inside of Existing Median: Straight grade between top of back of one curb to top of back of other curb.
 - C. When foundation cap is located in an area to be paved, the cap is to be placed below grade with bolts extending above top of cap to accommodate paving surface.
2. **PRODUCTS**
 - A. Reinforcement: Galvanized or epoxy coated, deformed, 60 ksi yield grade steel, ASTM A615.
 - B. Anchor Bolt: Galvanized steel with galvanized washer and nut, APWA Section 05 05 23.
 - C. Concrete: Class 4000, APWA Section 03 30 04.
3. **EXECUTION**
 - A. Keyhole to verify pole placement and protect utilities, APWA Section 31 23 16.
 - B. Excavation. Use vacuum extraction or excavate by hand if utilities are in the site vicinity.
 - C. Formwork: Use a circular form for the top 18-inches of foundation. If ground water is encountered, excavate additional depth and install sewer rock. Pump out water and provide a circular form for full length of foundation.
 - D. Before Concrete Placement:
 - 1) Do not weld reinforcing steel, anchor bolts, or galvanized steel conduit.
 - 2) Place all conduits in same trench.
 - 3) Use a template to hold anchor bolts in the proper positions and to the proper heights until concrete is placed and sets.
 - 4) Protect conduits from plugging by sealing conduit ends before concrete placement.
 - E. Concrete Placement: APWA Section 03 30 10. Provide 1/2-inch radius edges. Cure concrete for 7 days before erecting pole.



POLE LENGTH	DEPTH (A)	DIAMETER (B)	REBAR (C)	VIRTUAL (D)	REBAR (E)
10'-15'	4'-0"	18"	1 1/4"	8.6"	14
16'-25'	6'-0"	24"	1"	8.6"	14
26'-50'	9'-0"	30"	1"	6.6"	12

ELEVATION

Concrete base for street light pole



Plan
743
January 2011

743

**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
OGDEN CITY DETAILS -
CONCRETE BASE FOR
CAMERA POLE**

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

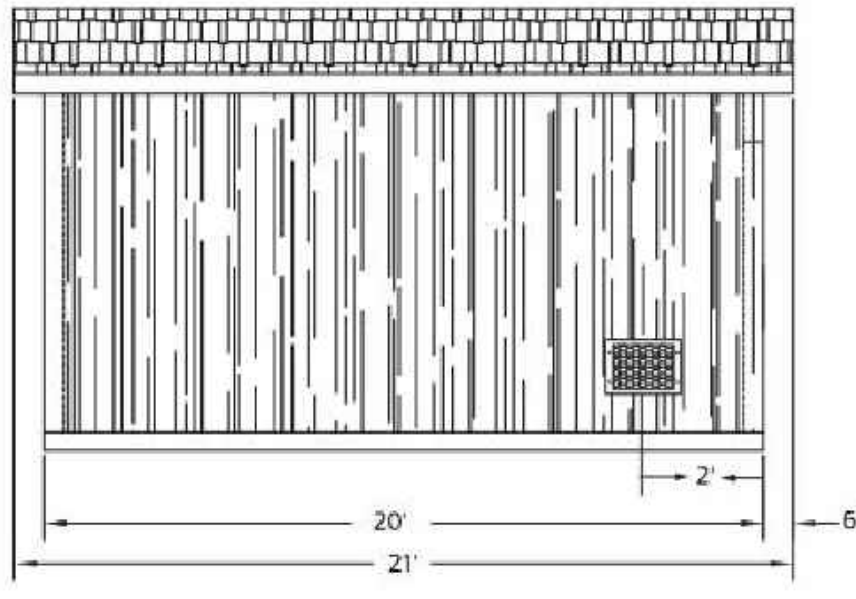
DESIGN FIRM NAME AND ADDRESS

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Carbondale, CO 81623
www.RiverRestoration.org

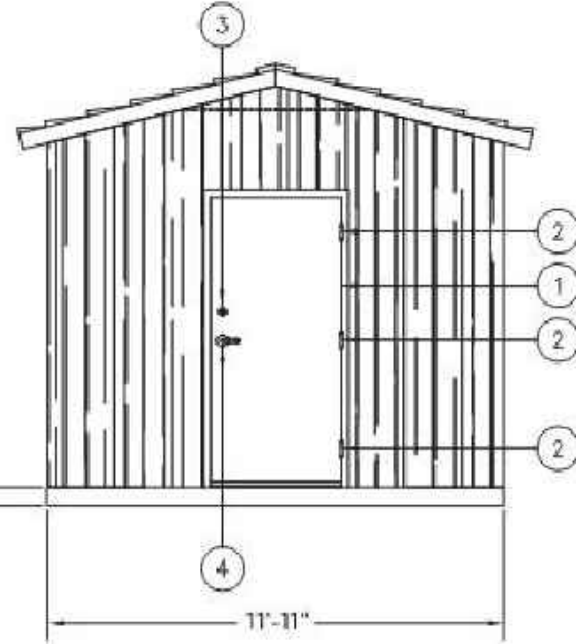
PROJECT NAME AND ADDRESS
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	45072	Sheet	D09
Date	OCTOBER 2025		
Scale	NTS		

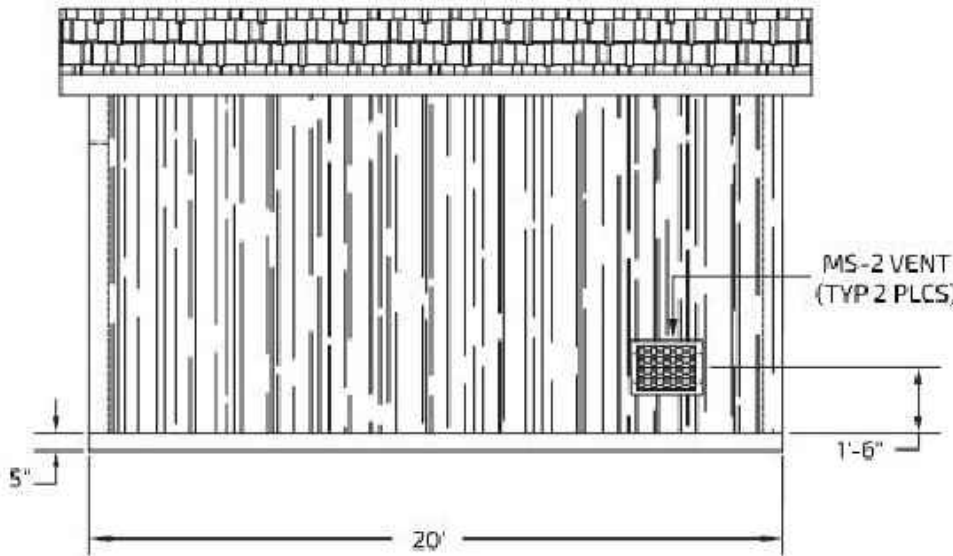
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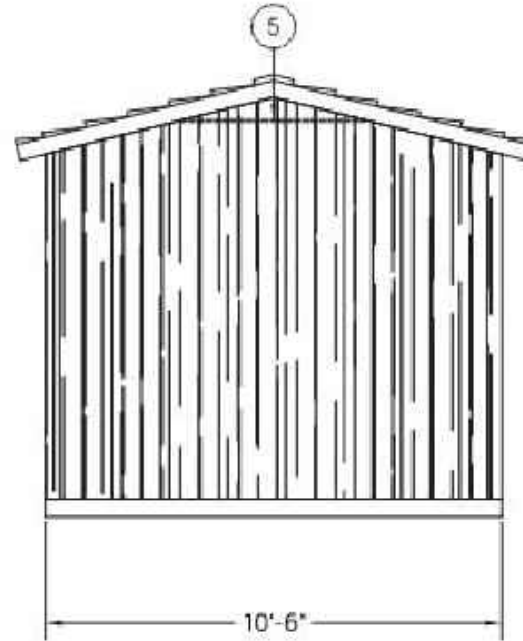
LH SIDE ELEVATION



FRONT ELEVATION



RH SIDE ELEVATION



REAR ELEVATION

DESIGN CRITERIA:

GENERAL NOTES APPLY TO ALL PANELS UNLESS SPECIFICALLY NOTED OTHERWISE

1997 UBC

LOADS:

WIND: 120 MPH EXP D
SEISMIC: ZONE 4
SNOW: 250 PSF ROOF LOAD
FLOOR LIVE LOAD: 400 PSF

MATERIALS:

CONCRETE: F'ci = 2500 PSI
F'C = 5000 PSI

STEEL:

REBAR=ASTM A615 GRADE 60
WELDING NOT ALLOWED
MIN LAP SPLICE IS 40 DIAMETERS
ALL MESH IS 4x4xWBxWB
MIN. MESH LAP IS TWO SQUARES
MESH IS TO BE CENTERED IN PANEL
PLATES & BARS=ASTM A36 Fy=36 KSI

PANEL THICKNESS:

FLOOR = 5"
WALLS = 4"
ROOF = 4 1/2"

COLOR: SEE MI

TEXTURE: WALLS - BARNWOOD
ROOF - CEDAR SHAKE

CASTING TOLERANCES:

OVERALL LENGTH OR WIDTH	10 FT OR UNDER = ± 1/8"
	10 TO 20 FT = +1/8", -3/16"
	20 TO 40 FT = ± 1/4"
TOTAL THICKNESS	= -1/8, ± 1/4
VARIATION FROM SQUARE	= ± 1/8 PER 6 FT OF DIAGONAL
LOCAL SMOOTHNESS	= 1/4" IN 10 FT
SWEEP	= ± 1/4"
POSITION OF TENDONS	= ± 1/4"
POSITION OF BLOKOUTS	= ± 1/4"
SIZE OF BLOKOUTS	= ± 1/4"
POSITION OF EMBEDS	= ± 1/4"
TIPPING AND FLUSHNESS OF PLATES	= +0, -1/4
BOWING	= LENGTH/360
END SQUARENESS	= ± 1/8"

BILL OF MATERIALS			
ITEM	QTY	DESCRIPTION	
1	1	3068 DOOR ASSEMBLY	
		PREP FOR DEAD BOLT	
		OPENS OUT	
		AUTOMATIC DOOR BTM	
		3" THRESHOLD	
2	3	SPRING HINGE 4.5 x 4.5	
3	1	SCHLAGE DEAD BOLT LOCK	
4	1	CLASS ROOM LEVER	
5	3	FLAT BAR 1/2" x 5/8" x 4'-2"	
			APPROPRIATE NOTED



PROJECT TITLE
10.5' x 20' SCHWEITZER
CXT STANDARD BUILDING

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CXT Incorporated

REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/4"=1'-0"	DATE	06-05-06
DRAWN	DBRESSLER	FILE NO.	PD-SW01
CHECKED		PLOT	4B

BUILDING ELEVATIONS

DWG NO.	SHEET	REV.
10.520-01		

PROFESSIONAL ENGINEER STAMP



OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
CXT Precast Products
10.5' x 20' CONTROL BUILDING

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS



Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS



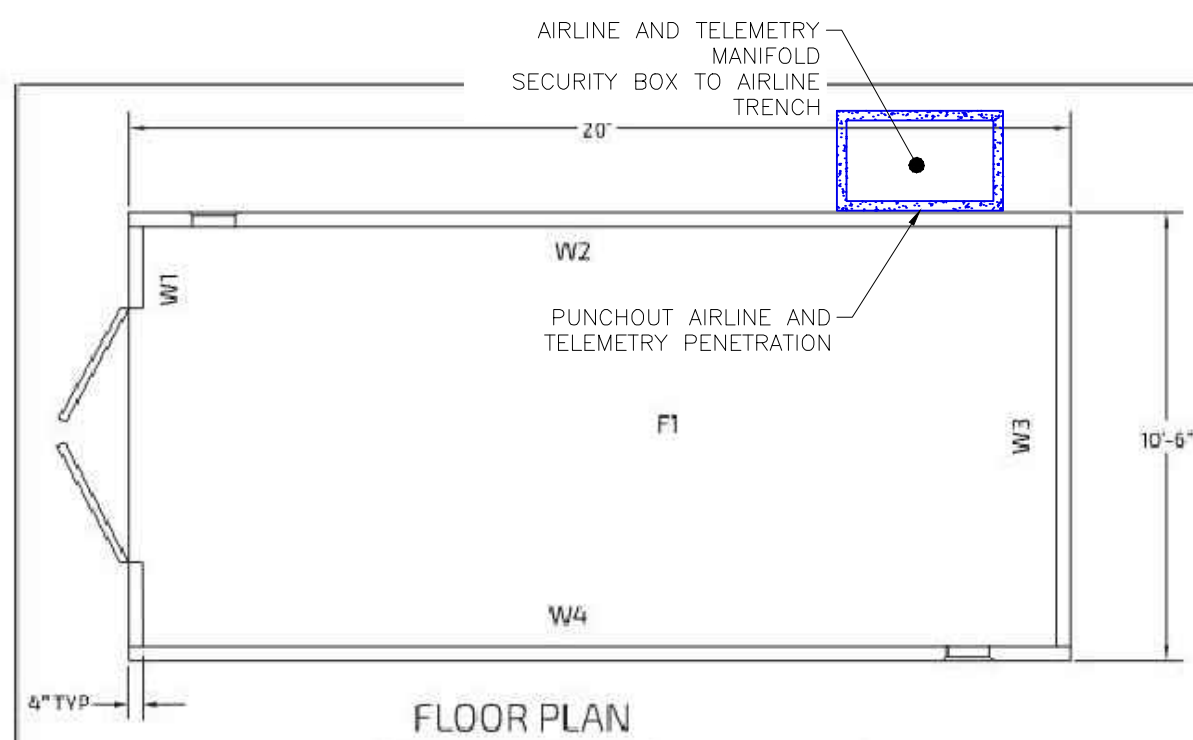
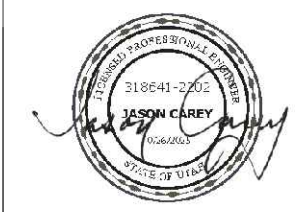
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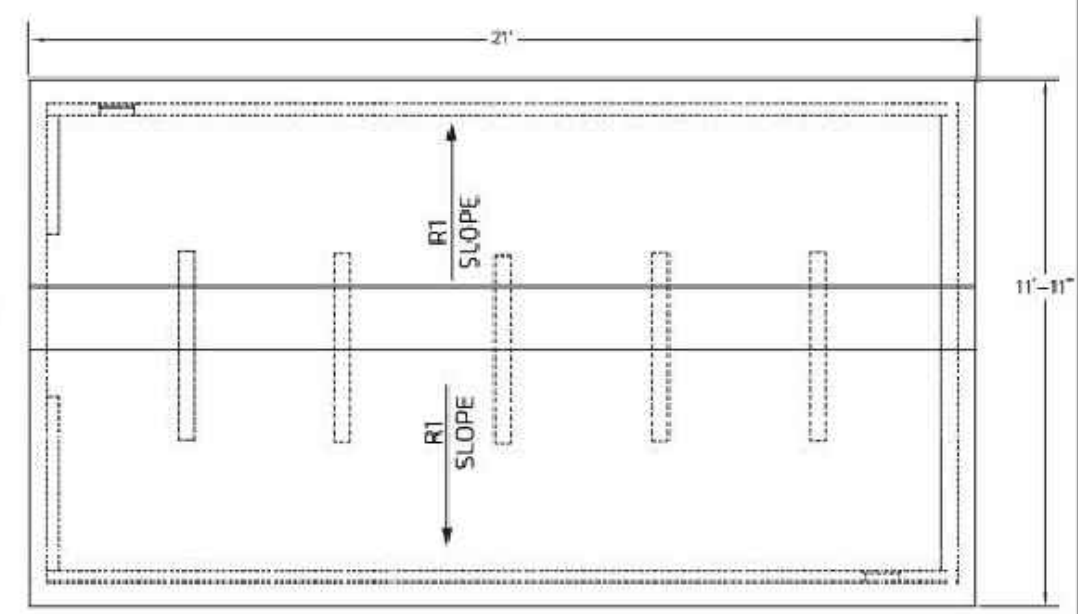
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	Sheet
45072	D10
Date	
OCTOBER 2025	
Scale	
NTS	

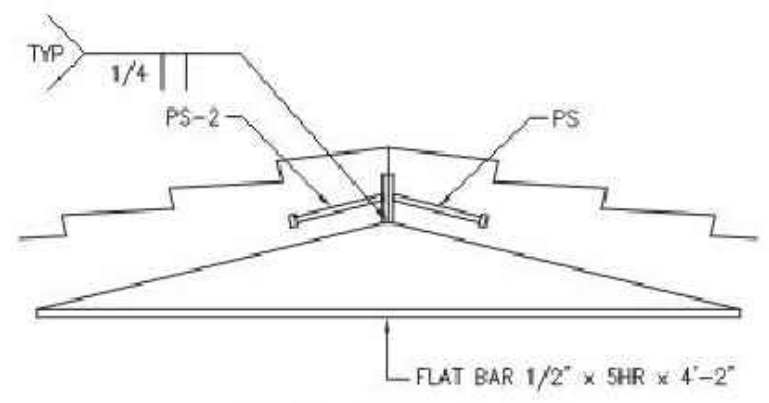
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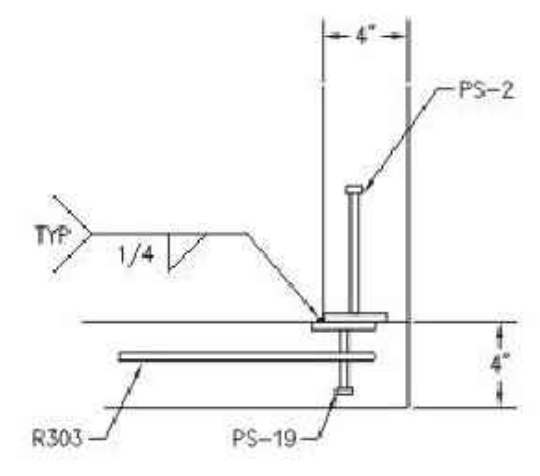
FLOOR PLAN



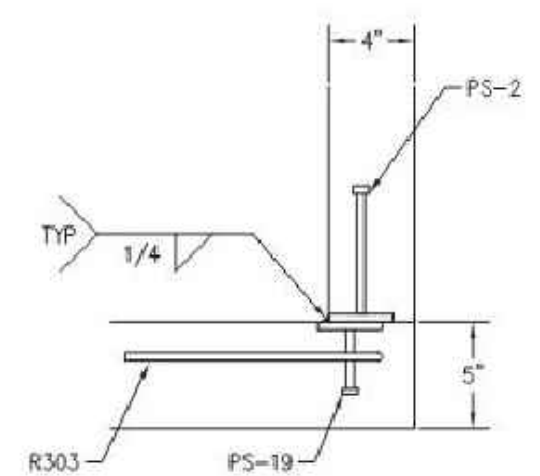
ROOF PLAN



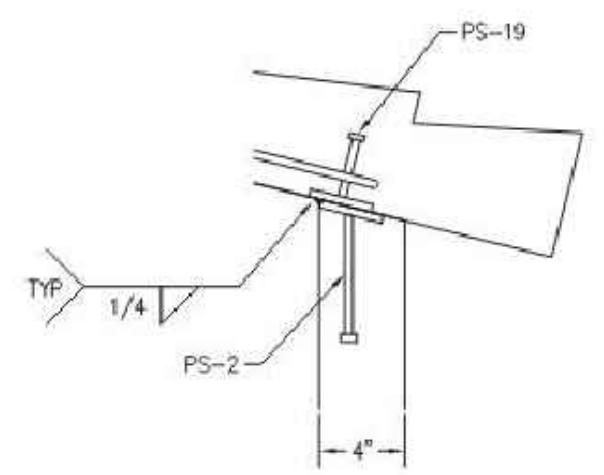
RIDGE CONNECTION



WALL TO WALL CONNECTION



WALL TO FLOOR CONNECTION



WALL TO ROOF CONNECTION



PROJECT TITLE
10.5' x 20' SCHWEITZER
CXT STANDARD BUILDING

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REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/4"=1'-0"	DATE	06-05-06
DRAWN	DBRESSLER	FILE NO.	PD-SW02
CHECKED		PLOT	48

PLAN VIEW

DWG. NO.	SHEET	REV.
10.520-02		

OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
CXT Precast Products
10.5' x 20' CONTROL BUILDING

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS
 Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

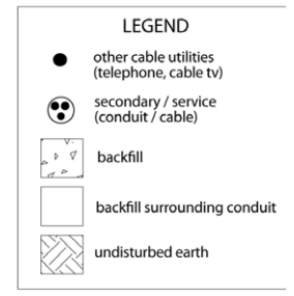
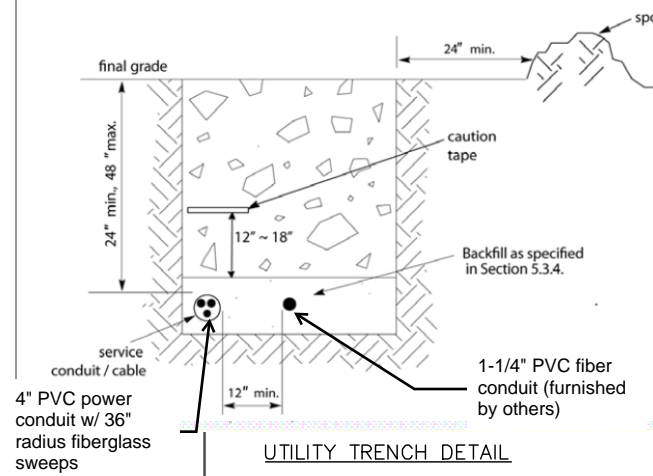
DESIGN FIRM NAME AND ADDRESS
 RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	Sheet
45072	D11
Date	
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FOR REFERENCE ONLY



NOTE:

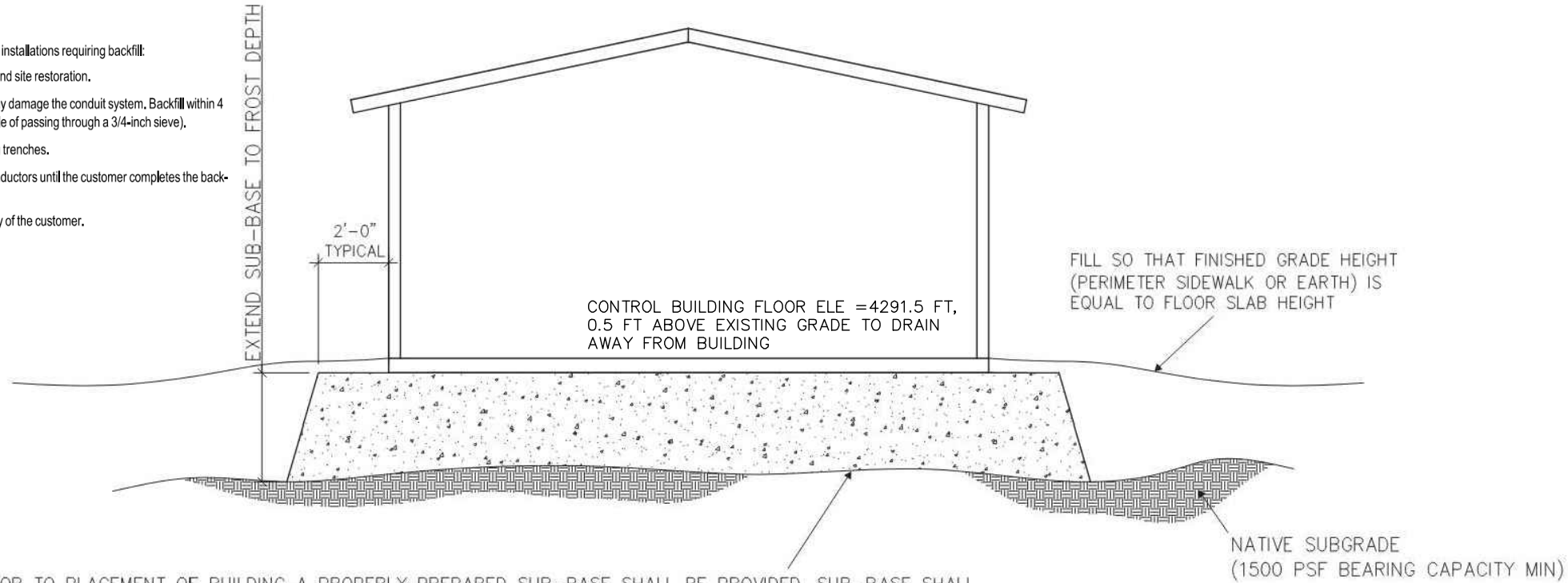
THE "FOUNDATION" FOR THIS STRUCTURE IS ESSENTIALLY THE COMBINATION OF THE COMPACTED SUB-BASE MATERIAL AND THE BUILDING'S REINFORCED SLAB. THE COMBINATION OF THE COMPACTED SUB-BASE MATERIAL AND THE BUILDING'S REINFORCED SLAB NEED TO BE AT LEAST 12" THICK AND THE COMPACTED SUB-BASE MATERIAL SHALL EXTEND BELOW THE LOCAL FROST DEPTH.

THIS FACTORY ASSEMBLED BUILDING, AS CONSTRUCTED, PROVIDES A RIGID BOX TYPE STRUCTURAL SYSTEM. VERTICAL LOADS ARE TRANSFERRED PRIMARILY THROUGH BEARING WALLS TO THE STRUCTURAL SLAB FLOOR OF THE BUILDING. THE VERTICAL LOADS ARE THEN DISTRIBUTED THROUGH THE REINFORCED CONCRETE FLOOR TO THE PREPARED GRANULAR, NON-FROST SUSCEPTIBLE (NFS) SUB-BASE WHICH DISTRIBUTES THE VERTICAL LOADS IN RELATIVELY UNIFORM FASHION TO THE NATIVE SUB-GRADE. AS WITH MOST CONSTRUCTION, THIS DOES REQUIRE THE NATIVE SUB-GRADE TO BE STRIPPED OF VEGETATION AND TOP SOIL PRIOR TO PLACEMENT OF THE PREPARED GRANULAR SUB-BASE. DUE TO THE INHERENT STIFFNESS OF THE BUILDING, IT WILL REMAIN SAFE AND STRUCTURALLY SOUND IN THE UNLIKELY EVENT OF FREEZING ACTION BELOW THE BUILDING REGARDLESS OF ANTICIPATED NATURAL FREEZE/ THAW CYCLES.

LATERAL LOADS ARE TRANSFERRED TO THE GROUND THROUGH FRICTIONAL RESISTANCE WITHOUT SLIDING OR SHIFTING BETWEEN THE BUILDING FLOOR SLAB AND THE PREPARED SOIL AND GRAVEL SUB-BASE ON WHICH THE BUILDING RESTS. SEISMIC ANALYSES ARE BASED ON LOADS DETERMINED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE USING PARAMETERS, WHICH MEET OR EXCEED THE CODE PRESCRIBED REQUIREMENTS FOR THIS INSTALLATION.

THIS BUILDING AS DESIGNED, RESTING ON A PROPERLY PREPARED GRANULAR SUB-BASE WILL BE SAFE AND STRUCTURALLY SOUND FOR VERTICAL AND LATERAL LOADS AS DISCUSSED ABOVE. A FULL DEPTH FOUNDATION WALL AT THE BUILDING PERIMETER AND AN ANCHORAGE SYSTEM, TYPICAL FOR OTHER TYPES OF BUILDING CONSTRUCTION, ARE NOT REQUIRED FOR THIS BUILDING.

- 5.3.4 Backfill Requirements**
- The following list of requirements applies to all installations requiring backfill:
1. The customer shall provide trench backfill and site restoration.
 2. All backfill shall be free of materials that may damage the conduit system. Backfill within 4 inches of the conduit shall be select (capable of passing through a 3/4-inch sieve).
 3. Extra caution should be taken when refilling trenches.
 4. The Power Company may not energize conductors until the customer completes the backfill to Power Company satisfaction.
- The cost to repair a conduit is the responsibility of the customer.



PRIOR TO PLACEMENT OF BUILDING A PROPERLY PREPARED SUB-BASE SHALL BE PROVIDED. SUB-BASE SHALL EXTEND TO FROST DEPTH (36" BELOW GRADE) AND CONSIST OF 3/4" MINUS CRUSHED ROCK (ROAD BASE MATERIAL) COMPACTED TO 95% OF OPTIMUM DENSITY IN ACCORDANCE WITH ASTM D 1557. FINISHED SURFACE OF SUB-BASE SHALL BE FLAT AND LEVEL, WITH A MAXIMUM DEVIATION OF -1/2", +0" FROM A TRUE HORIZONTAL PLANE. (FOUNDATION PREP NOT BY CXT).



6707 E. Flamingo Ave. Bldg 300, Nampa, ID 83687
901 N. Highway 77 Hillsboro, TX 76645
362 Waverly Road Williamstown, WV 26187

PROJECT FILE
XXXX
BUILDING NUMBER XXXX

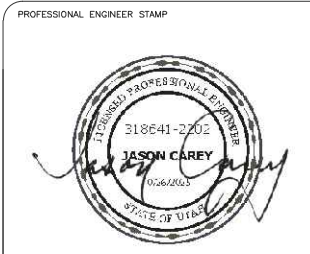
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REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/4"=1'-0"	DATE	-
DRAWN	M. TOLMAN	FILE NO.	-
CHECKED	N. FENNER	PLOT	48

FOUNDATION DETAIL

DWG NO.	-	SHEET	24	REV.	0
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**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
CXT Precast Products
10.5' x 20' CONTROL BUILDING**

No.	REVISION/UPDATE	Date

CLIENT NAME AND ADDRESS

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DESIGN FIRM NAME AND ADDRESS

RiverRestoration
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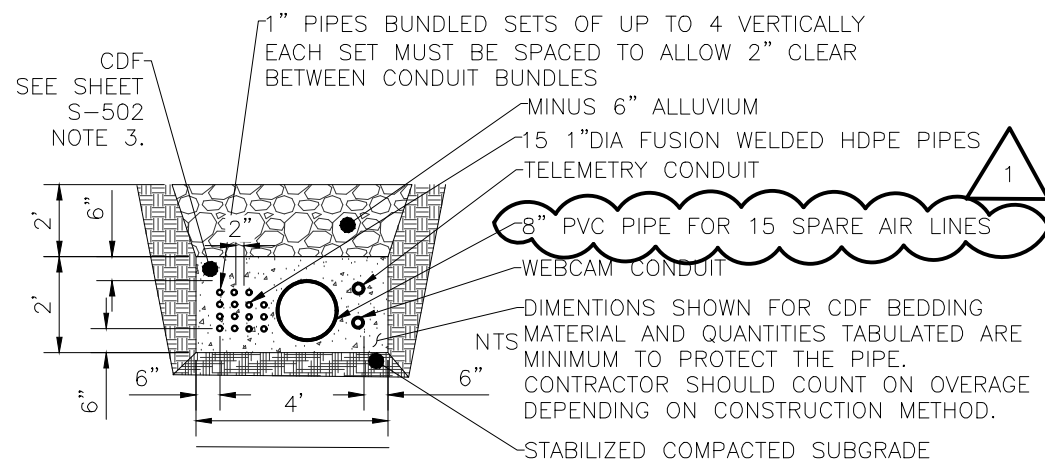
PROJECT NAME AND ADDRESS
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

Project	45072	Sheet	D12
Date	OCTOBER 2025		
Scale	NTS		

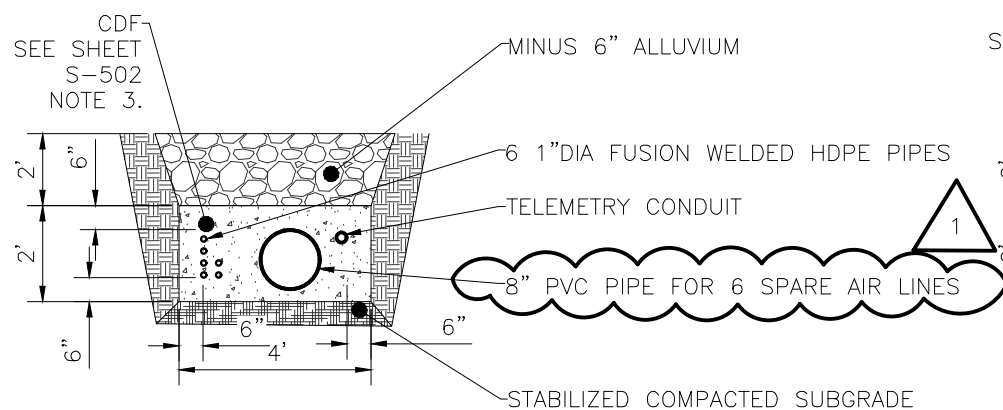
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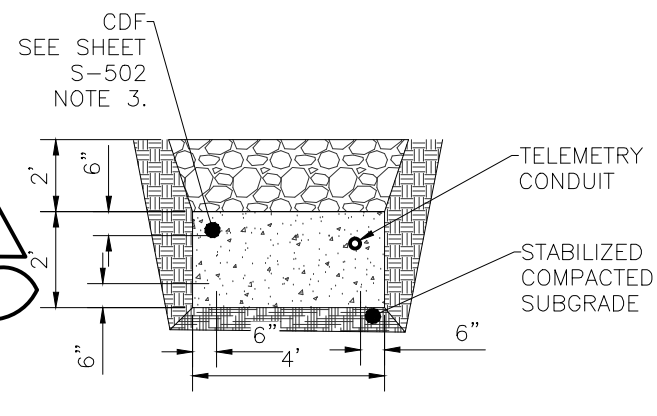
**OGDEN BUSINESS EXCHANGE
SURF WAVE PROJECT
AIR LINE BEDDING DETAIL**



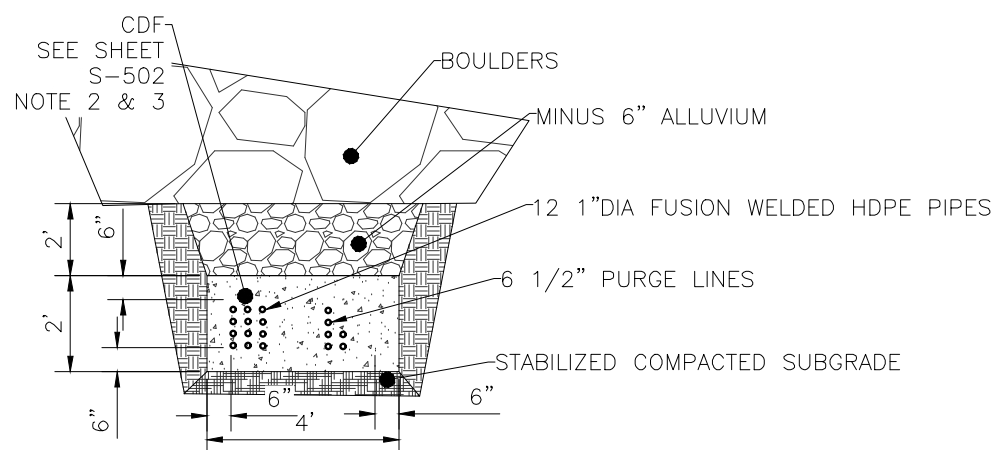
1 AIR LINE BEDDING DETAIL (CB TO MH1)
D13



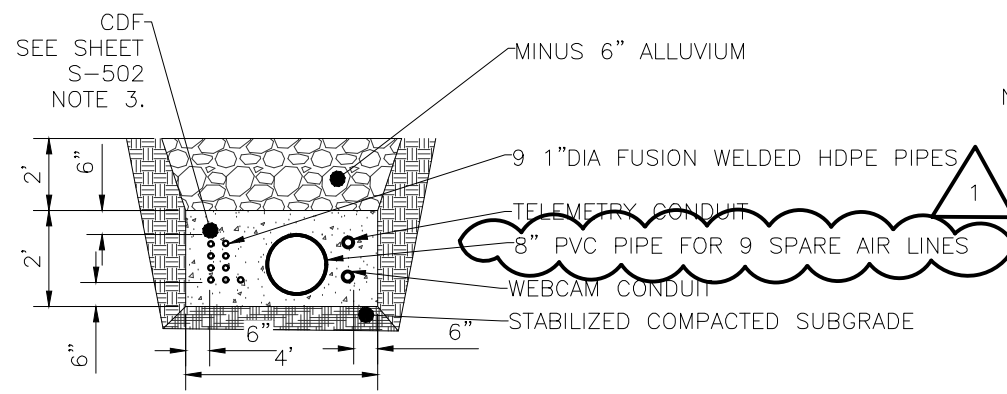
2 AIR LINE BEDDING DETAIL (MH1 TO MH5)
D13 NTS



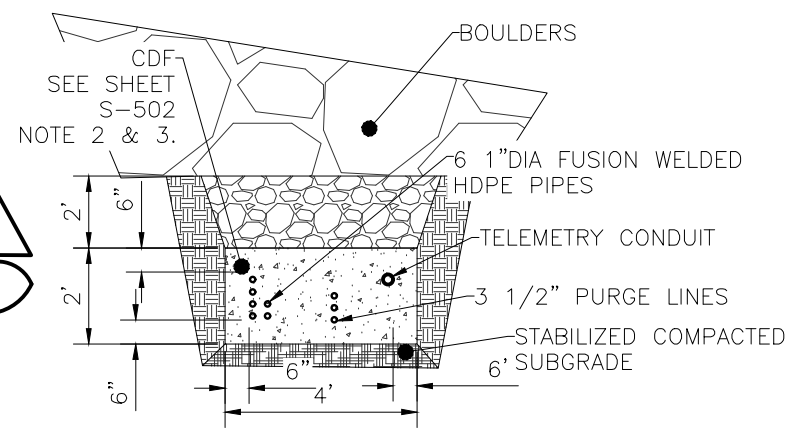
3 AIR LINE BEDDING DETAIL (MH5 TO MH6)
D13 NTS



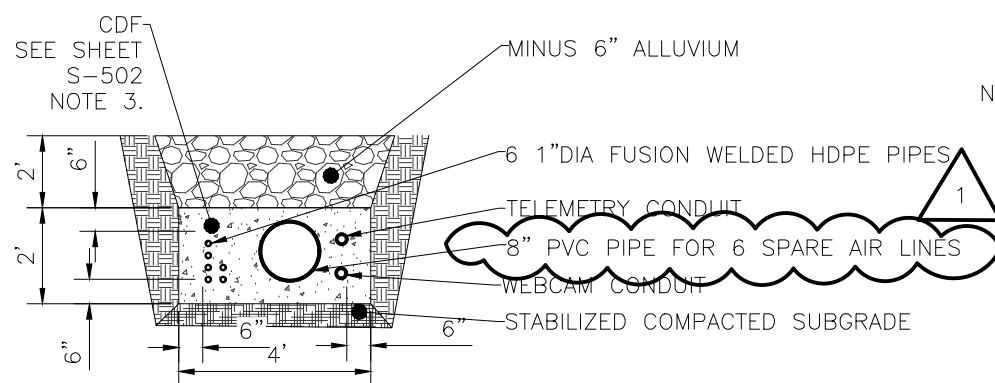
4 AIR LINE BEDDING DETAIL (MH5 TO W4 GATES)
D13 NTS - SEE DETAIL A1 SHEET S-502 NOTE 2 FOR REINFORCED CONCRETE CONDUIT ENCASEMENT WHEN PLACED UNDER CONCRETE STRUCTURES



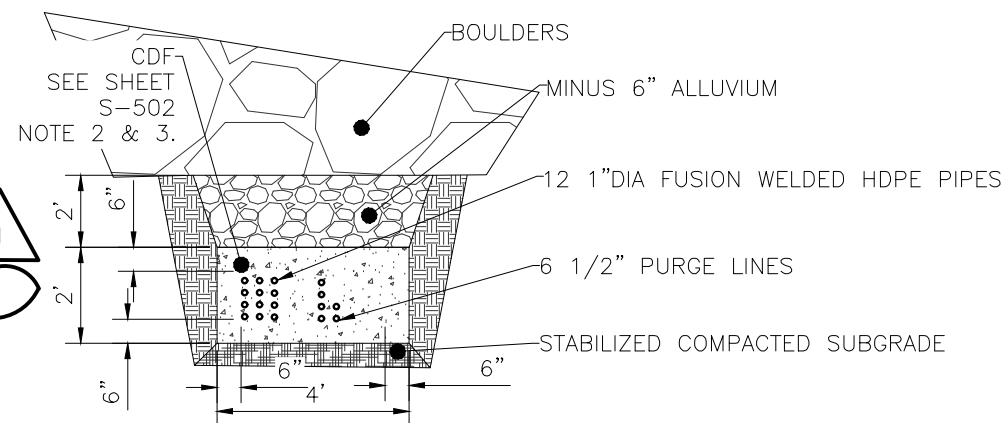
5 AIR LINE BEDDING DETAIL (MH1 TO MH2)
D13 NTS



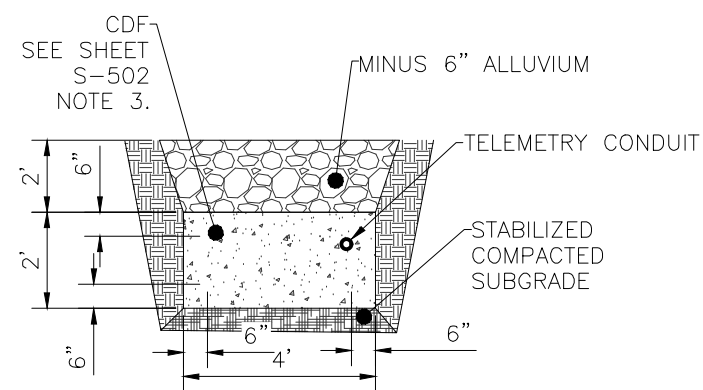
6 AIR LINE BEDDING DETAIL (MH2 TO W1 GATES)
D13 NTS - SEE DETAIL A1 S-502 NOTE 2 FOR REINFORCED CONCRETE CONDUIT ENCASEMENT WHEN PLACED UNDER CONCRETE STRUCTURES



7 AIR LINE BEDDING DETAIL (MH2 TO MH3)
D13 NTS



8 AIR LINE BEDDING DETAIL (MH5 TO W2-W3 GATES)
D13 NTS - SEE DETAIL A1 SHEET S-502 NOTE 2 FOR REINFORCED CONCRETE CONDUIT ENCASEMENT WHEN PLACED UNDER CONCRETE STRUCTURES



9 AIR LINE BEDDING DETAIL (MH5 TO MH6)
D13 NTS

- NOTE:**
- THE USE OF STRUCTURAL CONCRETE WITH REINFORCEMENT IS REQUIRED FOR ALL CONDUIT ENCASEMENT PASSING UNDER CONCRETE STRUCTURES. SEE STRUCTURAL DETAILS.
 - USE CDF FOR ALL OTHER TRENCH LOCATIONS.
 - JUNCTION AT MANHOLE,
 - CAP AND SWEEP REDUNDANT LINES IN MANHOLE AND AT BLOCK-OUT
 - SPACING BETWEEN AIRLINES = 1" PIPES BUNDLED SETS OF UP TO 4 VERTICALLY SPACED AT 2" O.C HORIZONTAL

BID SET

No.	REVISION/UPDATE	Date
1	8" PVC PIPE UPDATE	11/21/25

CLIENT NAME AND ADDRESS

Ogden City Corporation
Engineering Division
2549 Washington Blvd
Ogden, UT 84401

DESIGN FIRM NAME AND ADDRESS

RiverRestoration
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

PROJECT NAME AND ADDRESS
Weber River
Ogden, UT
Ogden Business Exchange Surf Wave

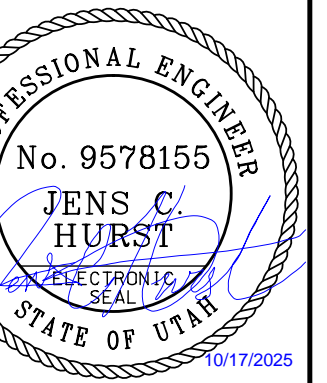
Project 45072	Sheet D13
Date NOVEMBER 2025	
Scale NTS	



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1047 South 100 West
Suite 180
Logan, UT 84321
Phone: 435.713.9514
www.jub.com

BID SET

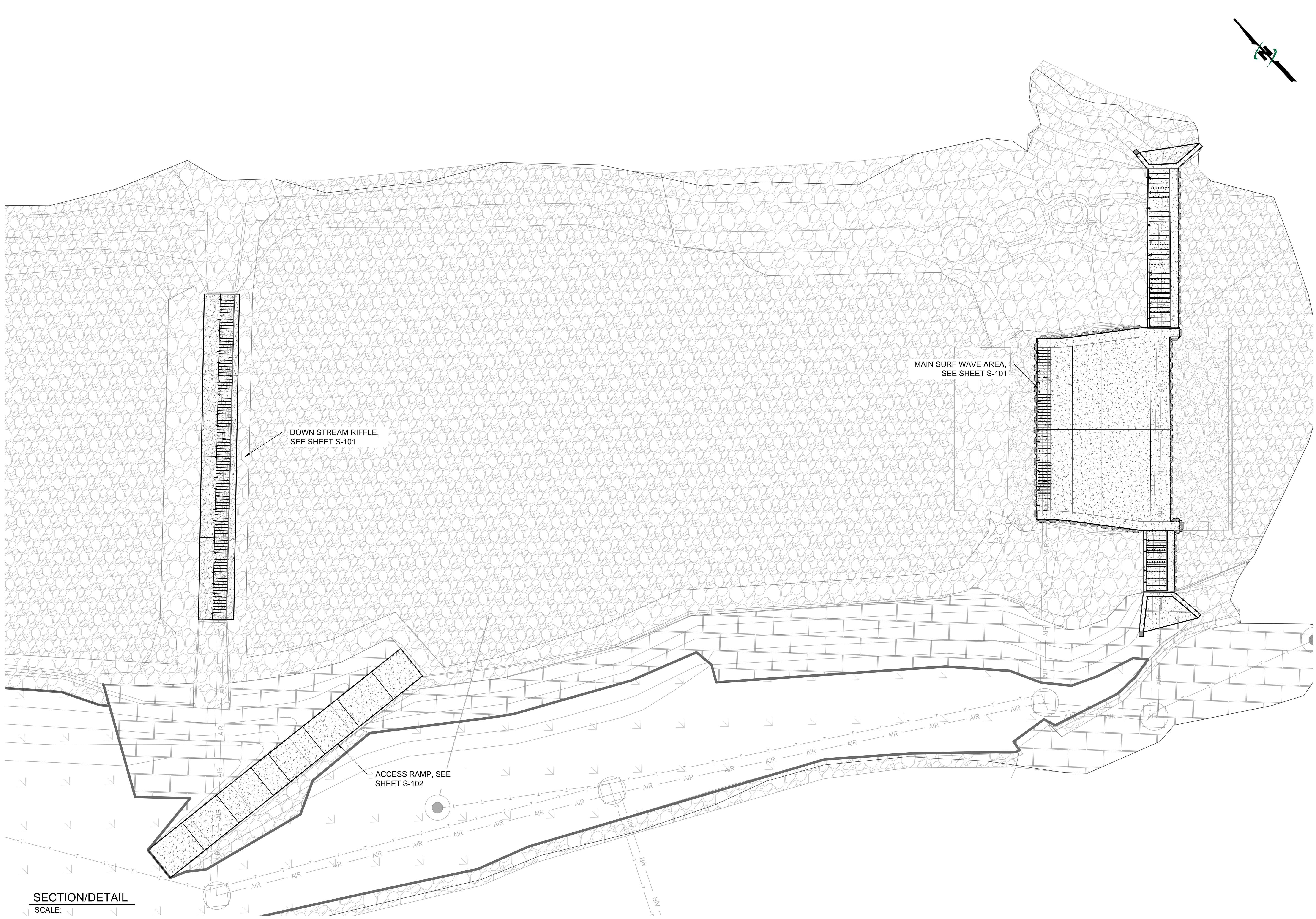
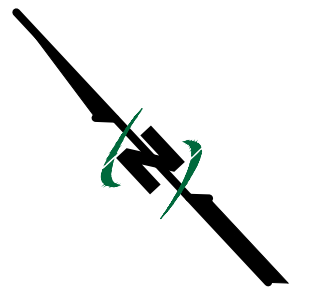


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OGDEN BUSINESS EXCHANGE SURF WAVE
OGDEN CITY
OVERALL PLAN

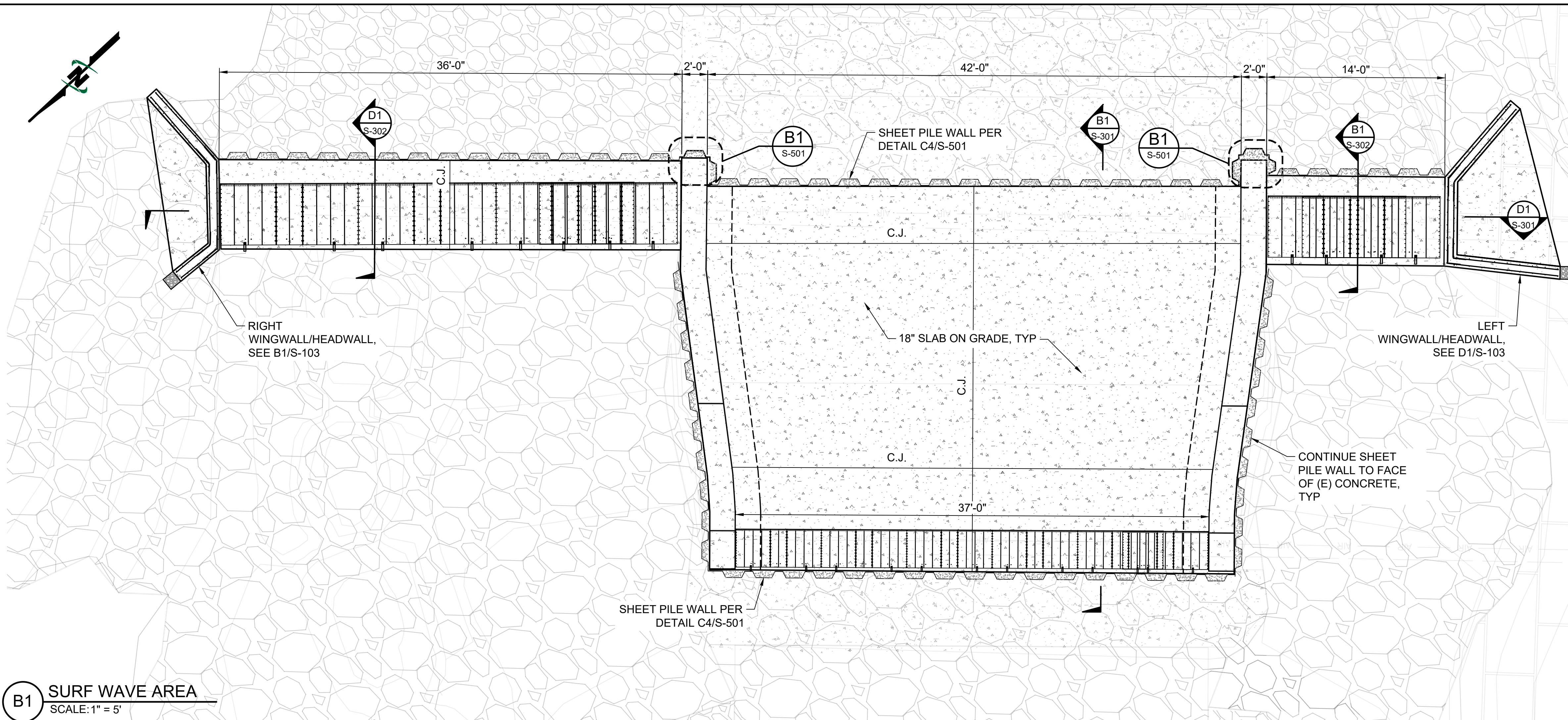
FILE: 57-23-033 S-101X
JUB PROJ. #: 57-23-033
DRAWN BY: EM
DESIGN BY: KJH
CHECKED BY: JCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY
LAST UPDATED: 10/16/2025

SHEET NUMBER:
S-100

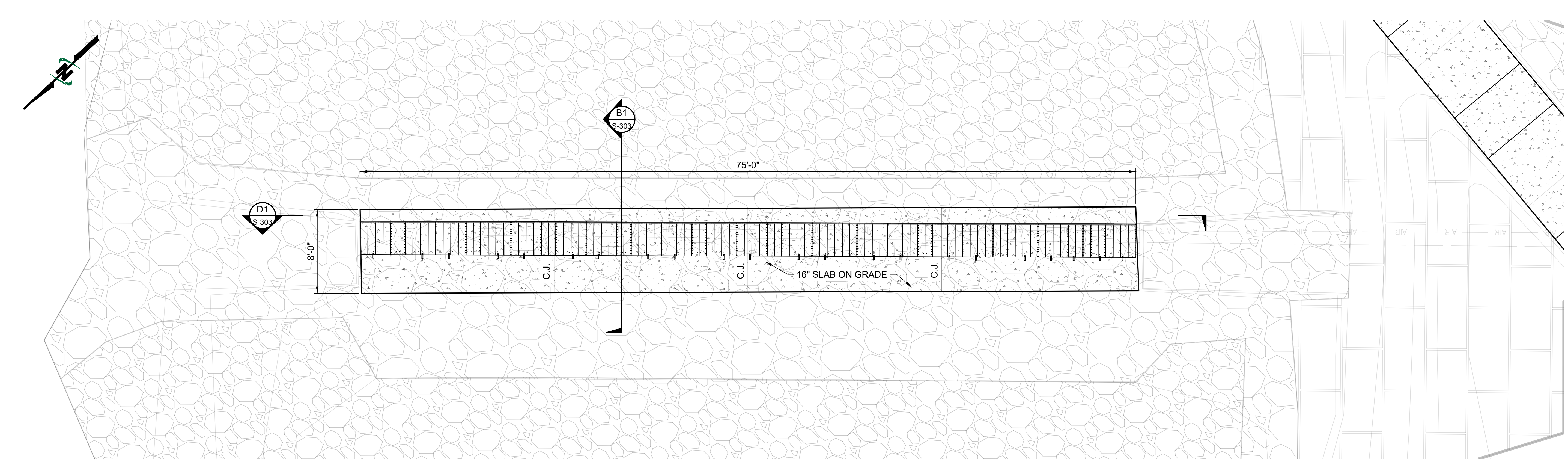


SECTION/DETAIL
SCALE: _____

Plot Date: 10/16/2025 5:18 PM Plotted By: Emiliano Morales
Date Created: 10/16/2025 10:11:11 AM Project: 57-23-033 OGDEN SURF WAVE DESIGN CAD SHEET: 57-23-033 S-101X.DWG



B1 SURF WAVE AREA
SCALE: 1" = 5'



D1 DOWNSTREAM RIFFLE AREA
SCALE: 1" = 5'

- SHEET NOTES**
- C.J. = CONTROL JOINT OR OPTIONAL CONSTRUCTION JOINT. SEE DETAIL A3/S-901.
 - WHERE APPLICABLE CONCRETE TURNDOWNS SHALL BE POURED USING THE SHEET PILE WALL AS PART OF THE FORMING. REINFORCEMENT SHALL BE PLACED CONTINUOUS WITH 3" MIN CLR BETWEEN THE INNER PILE FACE AND THE BAR.
 - SURF RAMP JOINTS ARE TO LINE UP WITH CHANGE IN SLOPE OF MAIN SURF RAMP PERPENDICULAR TO RIVER FLOW AND CENTERED IN SLAB PARALLEL TO RIVER FLOW.
 - ALL OTHER JOINTS TO BE CENTERED OR EVENLY SPACED AS SHOWN.
 - ALL GATE ANCHORS HAVE BEEN DESIGNED BY AND ARE TO BE SPECIFIED BY THE MANUFACTURER/SUPPLIER.

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Suite 180
Logan, UT 84321
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BID SET

PROFESSIONAL ENGINEER
No. 9578155
JENS C. HURST
REGISTERED PROFESSIONAL ENGINEER
STATE OF UTAH
10/17/2025

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NO.	REVISION	DESCRIPTION	BY	DATE

OGDEN BUSINESS EXCHANGE SURF WAVE
OGDEN CITY

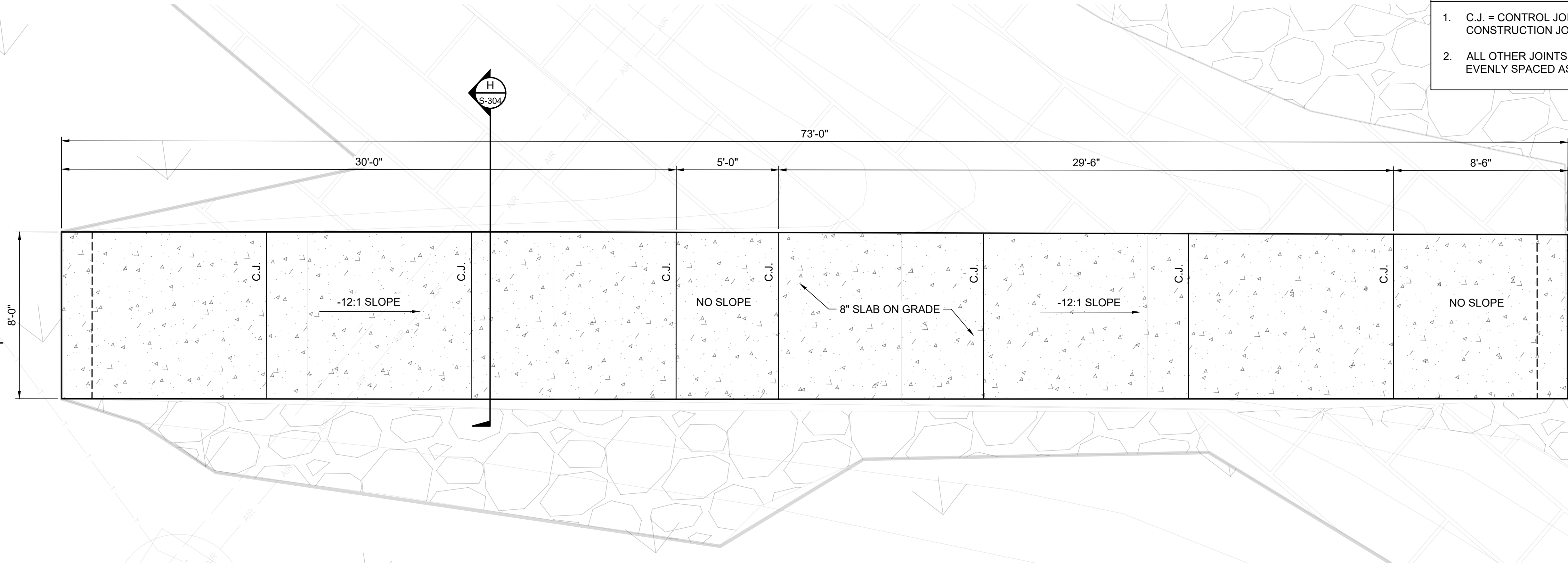
SURF WAVE AREA AND RIFFLE

FILE: 57-23-033 S-101X
JUB PROJ. #: 57-23-033
DRAWN BY: EM
DESIGN BY: KJH
CHECKED BY: JCH
ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY
LAST UPDATED: 10/16/2025
SHEET NUMBER:
S-101

Plot Date: 10/16/2025 5:18 PM Plotted By: Emiliano Morales
 Date Created: 10/16/2025 5:18 PM Project: OGDEN SURF WAVE DESIGN (CAD) SHEET 57-23-033 S-101X.DWG

Plot Date: 10/16/2025 5:18 PM Plotted By: Emiliano Morales
 Date Created: 10/16/2025 2:05 PM JUB.COM/CENTRAL/CIENT/SUT/REVERESTORATION/PROJECTS/57-23-033_OGDEN SURF WAVE DESIGN/CAO/SHEETS/57-23-033_S-101X.DWG

B1 ACCESS RAMP
 SCALE: 1" = 3'



- SHEET NOTES**
- C.J. = CONTROL JOINT OR OPTIONAL CONSTRUCTION JOINT. SEE DETAIL A3/S-901.
 - ALL OTHER JOINTS TO BE CENTERED OR EVENLY SPACED AS SHOWN.

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JENS C. HURST
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 10/17/2025

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NO.	REVISION	DESCRIPTION	BY	DATE

**OGDEN BUSINESS EXCHANGE SURF WAVE
 OGDEN CITY**

ACCESS RAMP

FILE: 57-23-033_S-101X
 JUB PROJ. #: 57-23-033
 DRAWN BY: EM
 DESIGN BY: KJH
 CHECKED BY: JCH

ONE INCH
 AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
 LAST UPDATED: 10/16/2025

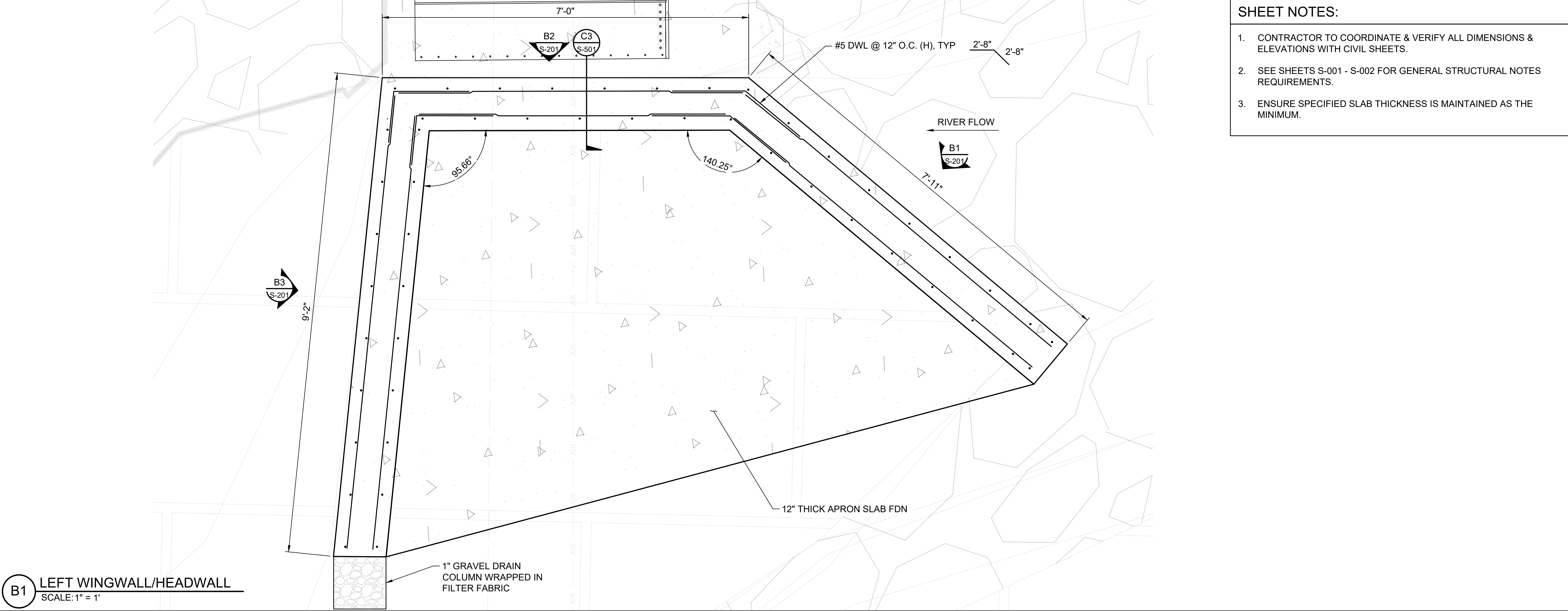
SHEET NUMBER:
S-102

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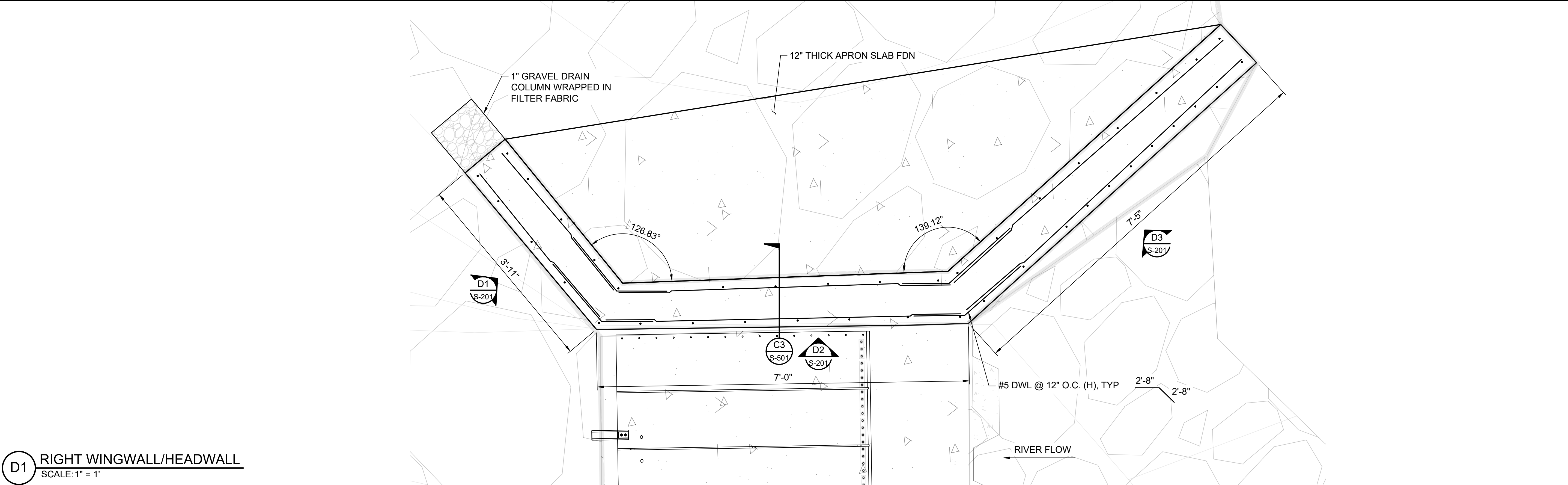
NO.	REVISION	DESCRIPTION	BY	DATE

SHEET NOTES:

1. CONTRACTOR TO COORDINATE & VERIFY ALL DIMENSIONS & ELEVATIONS WITH CIVIL SHEETS.
2. SEE SHEETS S-001 - S-002 FOR GENERAL STRUCTURAL NOTES REQUIREMENTS.
3. ENSURE SPECIFIED SLAB THICKNESS IS MAINTAINED AS THE MINIMUM.



B1 LEFT WINGWALL/HEADWALL
SCALE: 1" = 1'

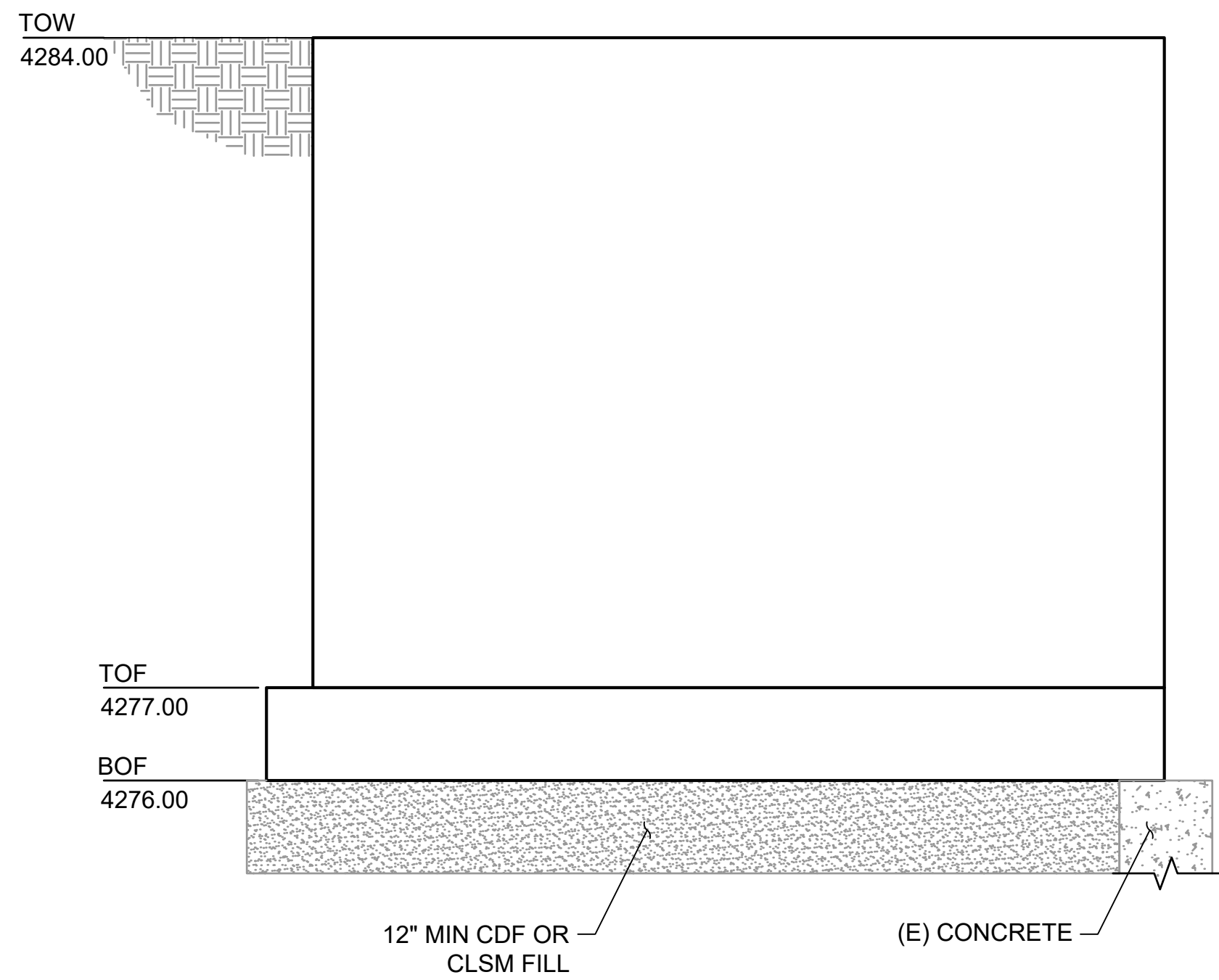


D1 RIGHT WINGWALL/HEADWALL
SCALE: 1" = 1'

OGDEN BUSINESS EXCHANGE SURF WAVE
OGDEN CITY
WINGWALL & HEADWALL PLANS

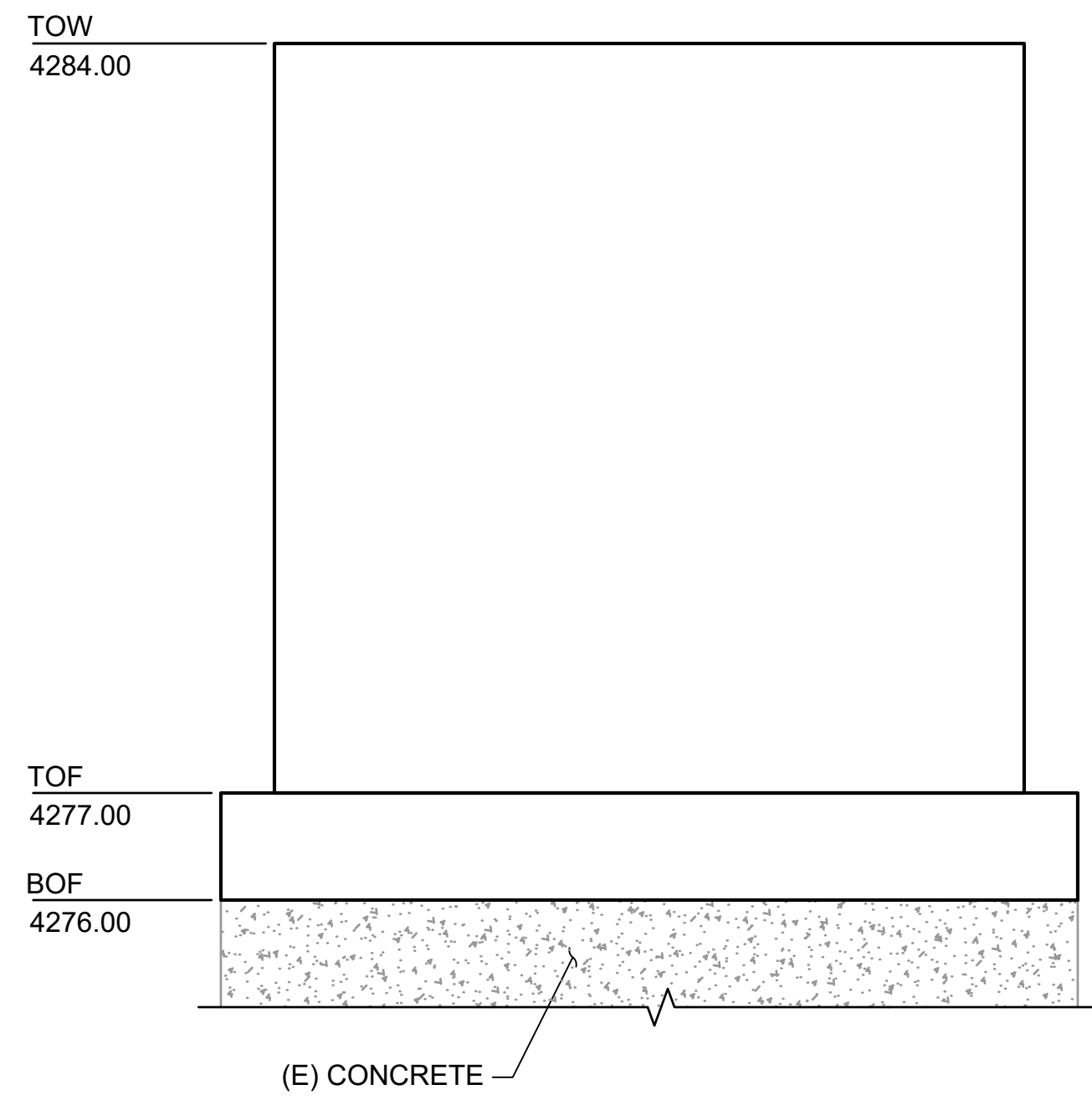
FILE: 57-23-033_S-101X
JUB PROJ. #: 57-23-033
DRAWN BY: EM
DESIGN BY: KJH
CHECKED BY: JCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY
LAST UPDATED: 10/16/2025
SHEET NUMBER:
S-103

NOTE:
PRIOR TO FORMING NEW CONCRETE
FOUNDATION, EXISTING CONCRETE SHALL BE
ROUGHENED TO 1/4" DEPTH FOR BETTER
BONDING OF NEW AND EXISTING CONCRETE.



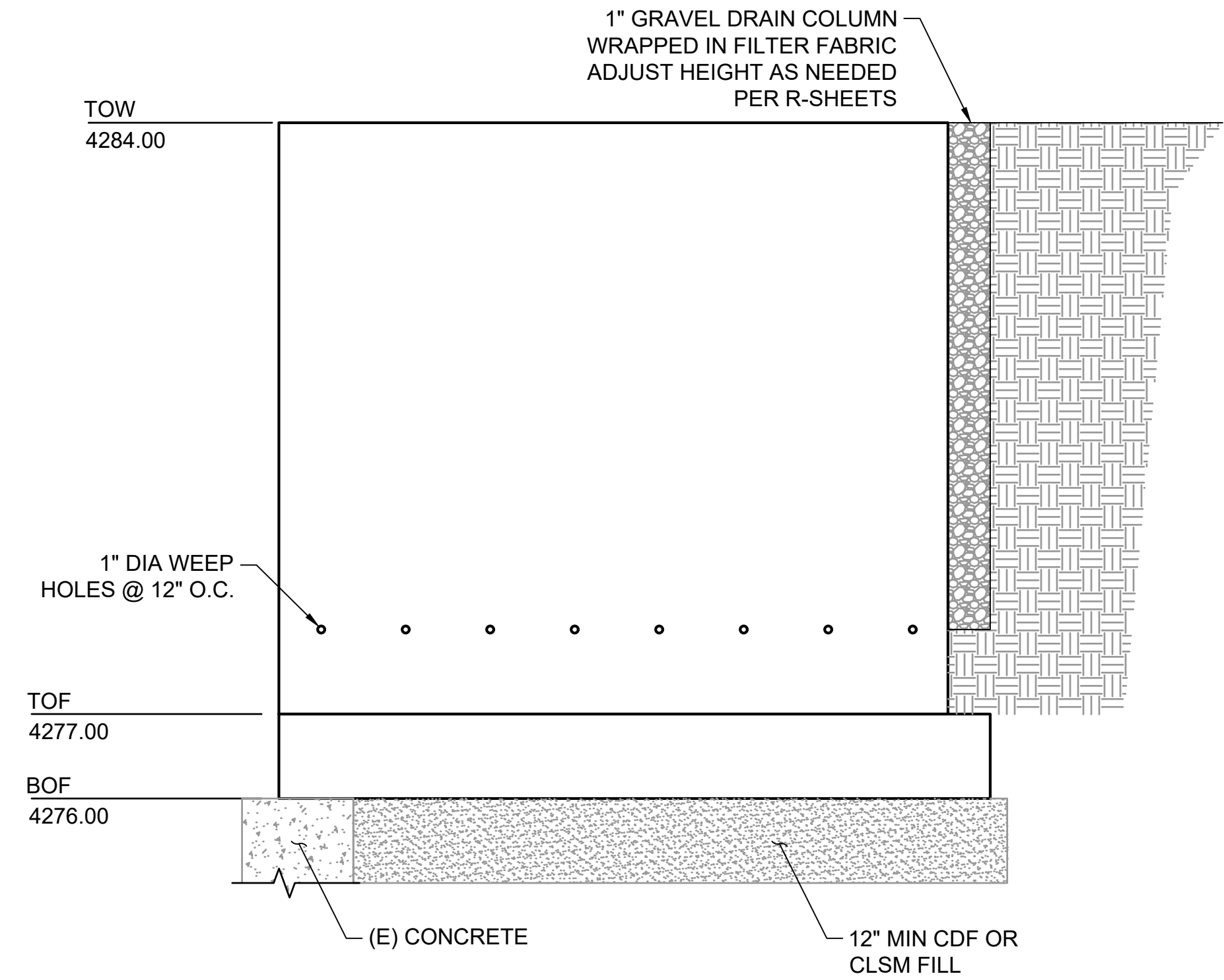
B1 RIVER LEFT UPSTREAM WINGWALL
SCALE: 1 1/2" = 1'-0"

NOTE:
PRIOR TO FORMING NEW CONCRETE
FOUNDATION, EXISTING CONCRETE SHALL BE
ROUGHENED TO 1/4" DEPTH FOR BETTER
BONDING OF NEW AND EXISTING CONCRETE.



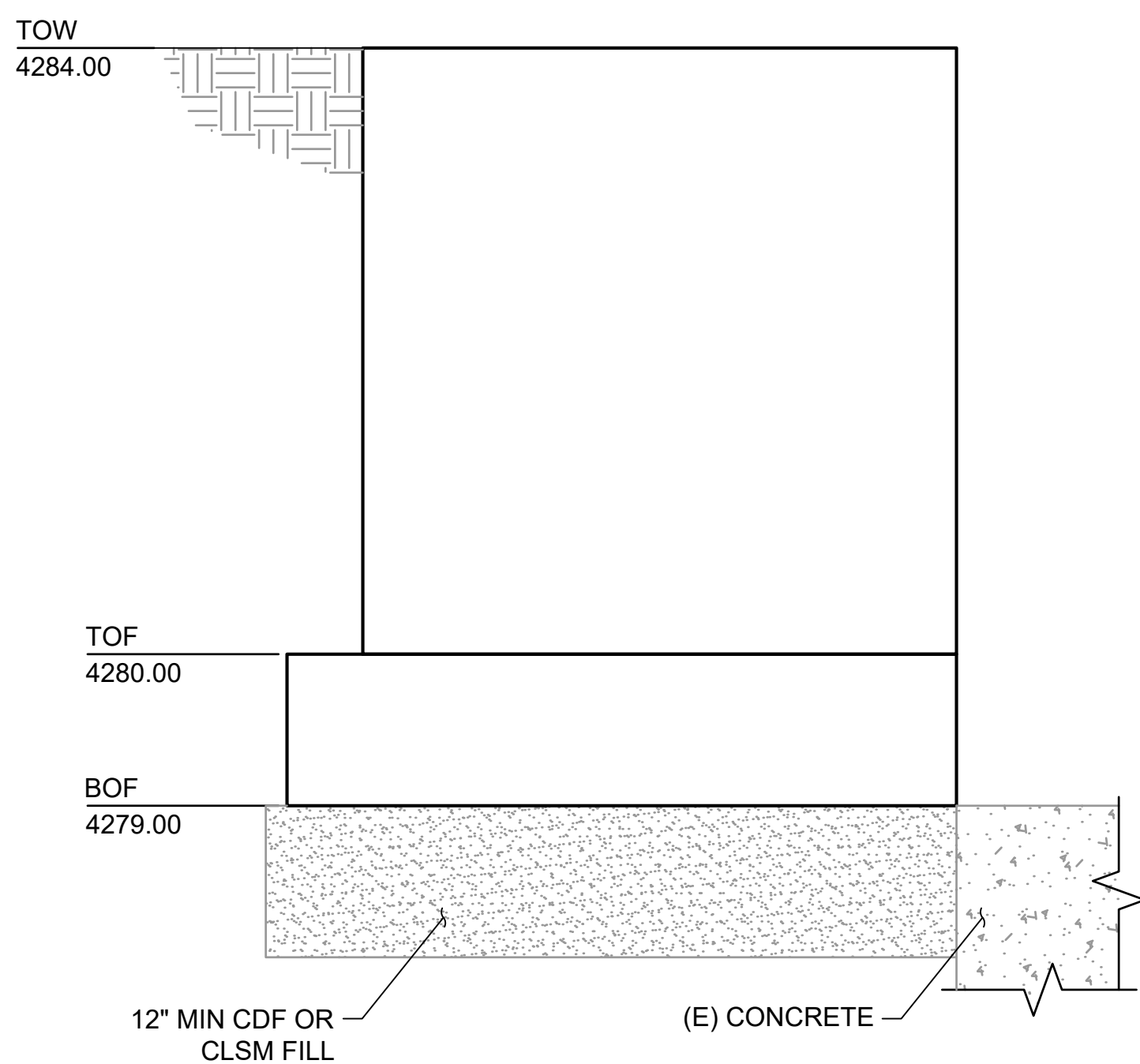
B2 RIVER LEFT HEADWALL
SCALE: 1 1/2" = 1'-0"

NOTE:
PRIOR TO FORMING NEW CONCRETE
FOUNDATION, EXISTING CONCRETE SHALL BE
ROUGHENED TO 1/4" DEPTH FOR BETTER
BONDING OF NEW AND EXISTING CONCRETE.

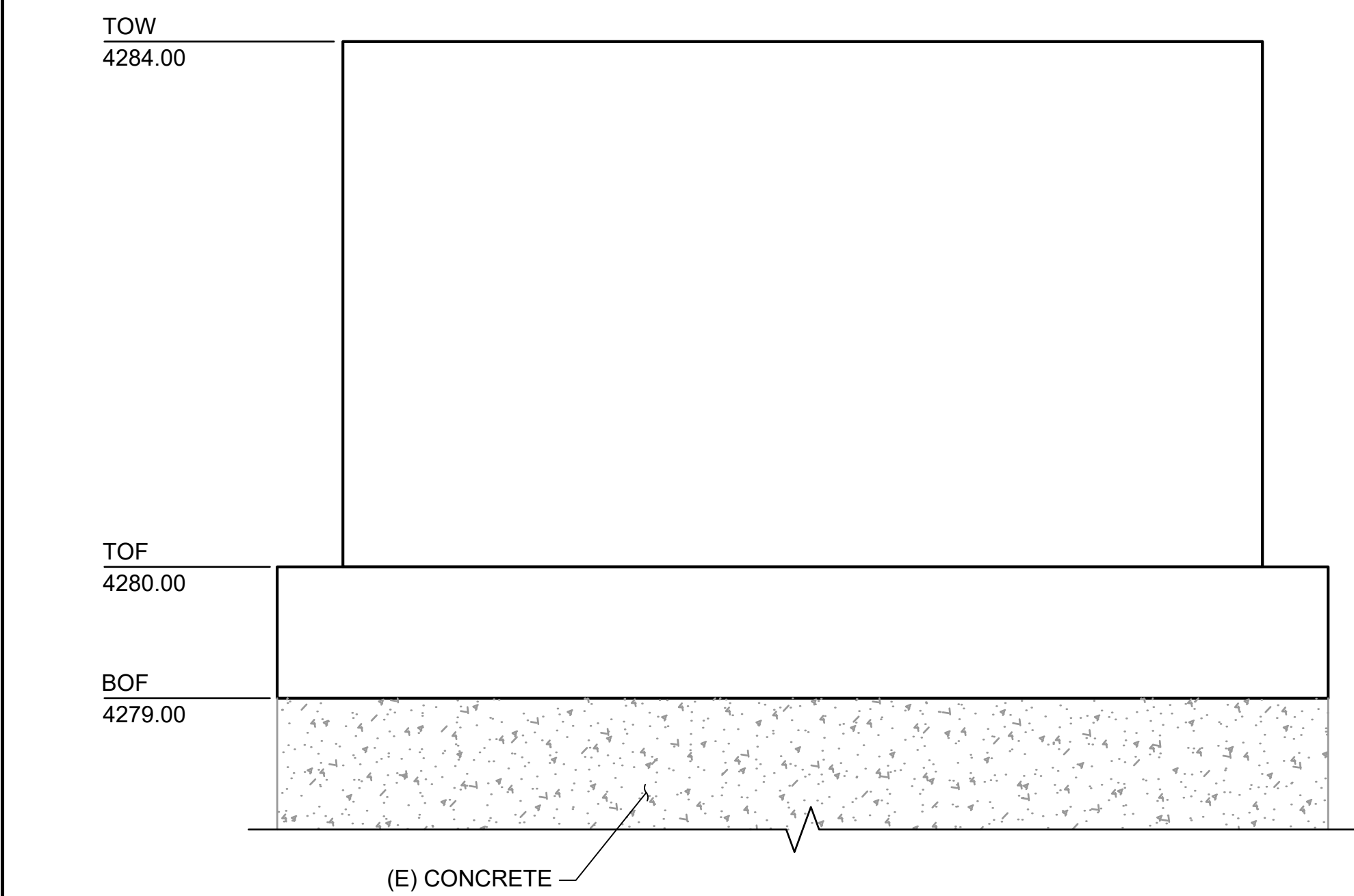


B3 RIVER LEFT DOWNSTREAM WINGWALL
SCALE: 1 1/2" = 1'-0"

NOTE:
PRIOR TO FORMING NEW CONCRETE
FOUNDATION, EXISTING CONCRETE SHALL BE
ROUGHENED TO 1/4" DEPTH FOR BETTER
BONDING OF NEW AND EXISTING CONCRETE.

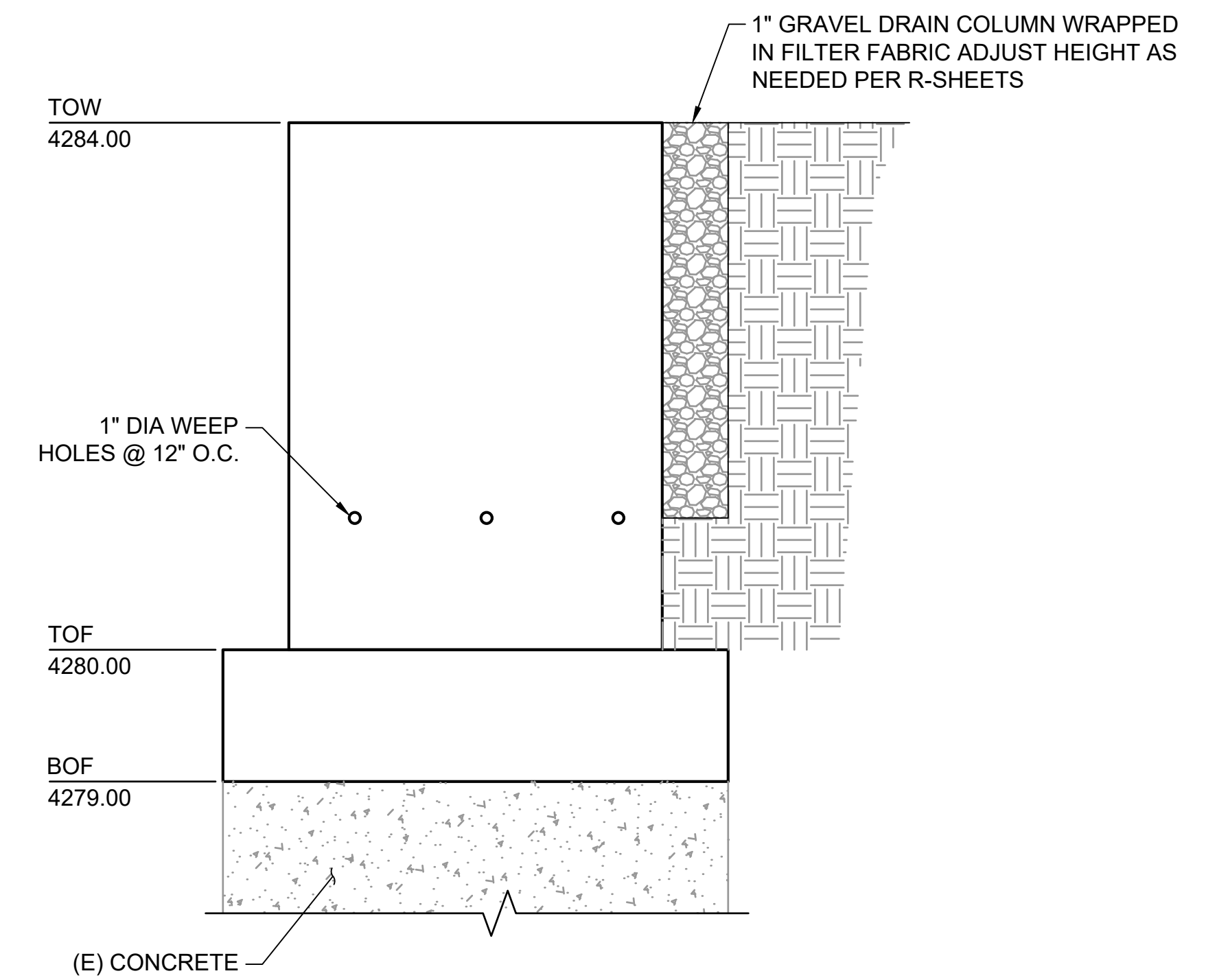


D1 RIVER RIGHT UPSTREAM WINGWALL
SCALE: 1" = 1'

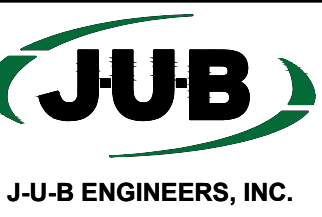


D2 RIVER RIGHT HEADWALL
SCALE: 1" = 1'

NOTE:
PRIOR TO FORMING NEW CONCRETE
FOUNDATION, EXISTING CONCRETE SHALL BE
ROUGHENED TO 1/4" DEPTH FOR BETTER
BONDING OF NEW AND EXISTING CONCRETE.



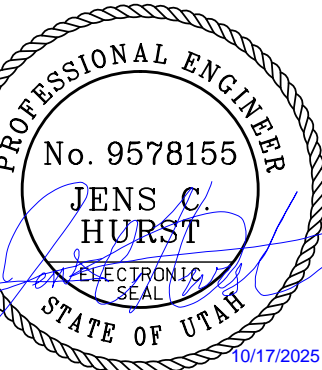
D3 RIVER RIGHT DOWNSTREAM WINGWALL
SCALE: 1" = 1'



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NO.	REVISION	DESCRIPTION	BY	DATE

OGDEN BUSINESS EXCHANGE SURF WAVE
OGDEN CITY
HEADWALL & WINGWALL ELEVATIONS

FILE: 57-23-033_S-101X
JUB PROJ. #: 57-23-033
DRAWN BY: EM
DESIGN BY: KJH
CHECKED BY: JCH
ONE INCH
AT FULL SIZE, IF NOT ONE
INCH, SCALE ACCORDINGLY
LAST UPDATED: 10/16/2025

SHEET NUMBER:

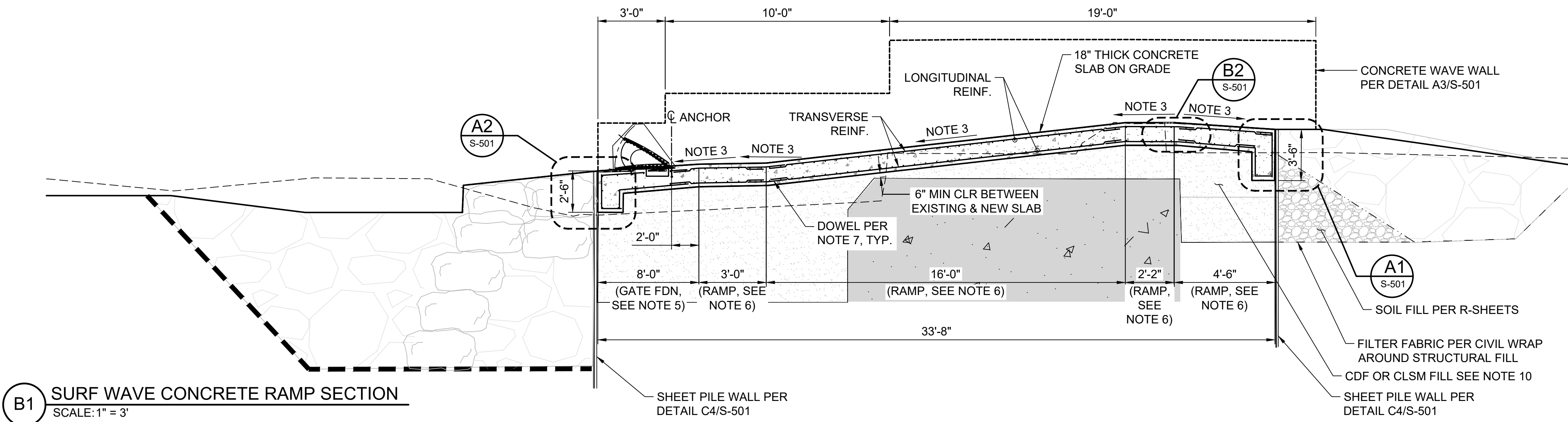
S-201

REUSE OF DRAWINGS

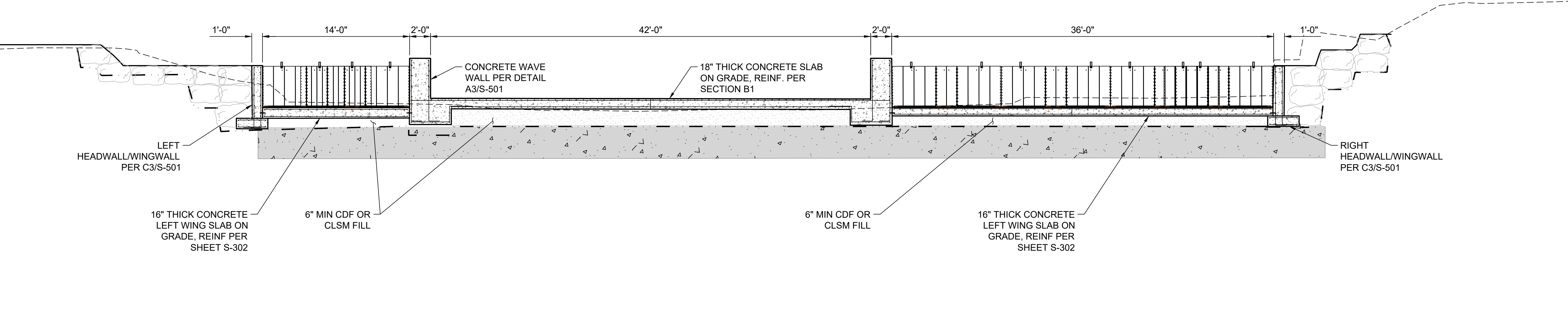
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NO.	REVISION	DESCRIPTION	BY	DATE

- SHEET NOTES:**
- CONTRACTOR TO COORDINATE & VERIFY ALL DIMENSIONS & ELEVATIONS WITH CIVIL SHEETS.
 - SEE SHEETS S-001 - S-002 FOR GENERAL STRUCTURAL NOTES REQUIREMENTS.
 - SEE RIVER RESTORATION SHEET R01 FOR SLOPE REQUIREMENTS. ENSURE SPECIFIED SLAB THICKNESS IS MAINTAINED AS THE MINIMUM.
 - GATE SHOWN IN B1 IS OHI 2FT STEEL GATE, AND GATE(S) SHOWN IN D1 IS OHI 4FT RUBBER ROCK GATE INSTALL PER MFR RECOMMENDATIONS
 - GATE FOUNDATION REINFORCEMENT:
 - LONGITUDINAL BARS: #6 @ 8" O.C., TOP & BOTTOM
 - TRANSVERSE BARS: #6 @ 6" O.C., TOP & BOTTOM
 - RAMP REINFORCEMENT:
 - LONGITUDINAL BARS: #6 @ 6" O.C., TOP & BOTTOM
 - TRANSVERSE BARS: #6 @ 6" O.C., TOP & BOTTOM
 - DOWELS SHALL BE USED WHERE CONCRETE SLOPE CHANGES. ENSURE ALL DOWELS ARE LAPPED WITH CONTINUOUS REINFORCEMENT PER DETAIL A1/S-901.
 - ALL IN-RIVER CONCRETE STRUCTURES SHALL HAVE 3" CLEAR COVER FOR ADDITIONAL WEAR PROTECTION FOR THE TOP REINFORCEMENT MAT.
 - PRIOR TO FORMING NEW CONCRETE FOUNDATION, EXISTING CONCRETE SHALL BE ROUGHENED TO 1/4" DEPTH FOR BETTER BONDING OF NEW AND EXISTING CONCRETE.
 - APPLY FILL OVER & AROUND EXISTING CONCRETE STRUCTURE AND IN AREA BETWEEN SHEET PILE WALLS. EXTEND TO EXCAVATION DEPTH AS RQR'D BY DEMO PLAN.
 - SHEET PILE WALL TO FRAME IN END OF TURNDOWN.



B1 SURF WAVE CONCRETE RAMP SECTION
 SCALE: 1" = 3"



D1 SURF WAVE DROP CREST SECTION
 SCALE: 1" = 5"

OGDEN BUSINESS EXCHANGE SURF WAVE
 OGDEN CITY
 STRUCTURAL SECTIONS

FILE: 57-23-033 S-101X
 JUB PROJ. #: 57-23-033
 DRAWN BY: EM
 DESIGN BY: KJH
 CHECKED BY: JCH
 AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY
 LAST UPDATED: 10/16/2025

SHEET NUMBER:
S-301

SHEET NOTES:

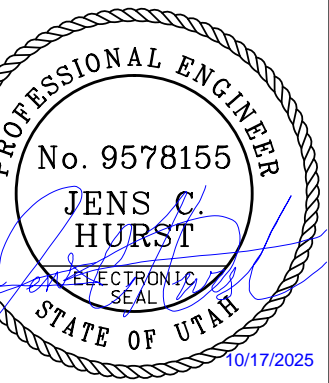
1. CONTRACTOR TO COORDINATE & VERIFY ALL DIMENSIONS & ELEVATIONS WITH CIVIL SHEETS.
2. SEE SHEETS S-001 - S-002 FOR GENERAL STRUCTURAL NOTES REQUIREMENTS.
3. SEE RIVER RESTORATION SHEET R01 FOR SLOPE REQUIREMENTS. ENSURE SPECIFIED SLAB THICKNESS IS MAINTAINED AS THE MINIMUM.
4. GATE SHOWN IS OHI 4FT RUBBER ROCK GATE INSTALL PER MFR RECOMMENDATIONS.
8. ALL IN-RIVER CONCRETE STRUCTURES SHALL HAVE 3" CLEAR COVER FOR ADDITIONAL WEAR PROTECTION FOR THE TOP REINFORCEMENT MAT.



J-U-B ENGINEERS, INC.

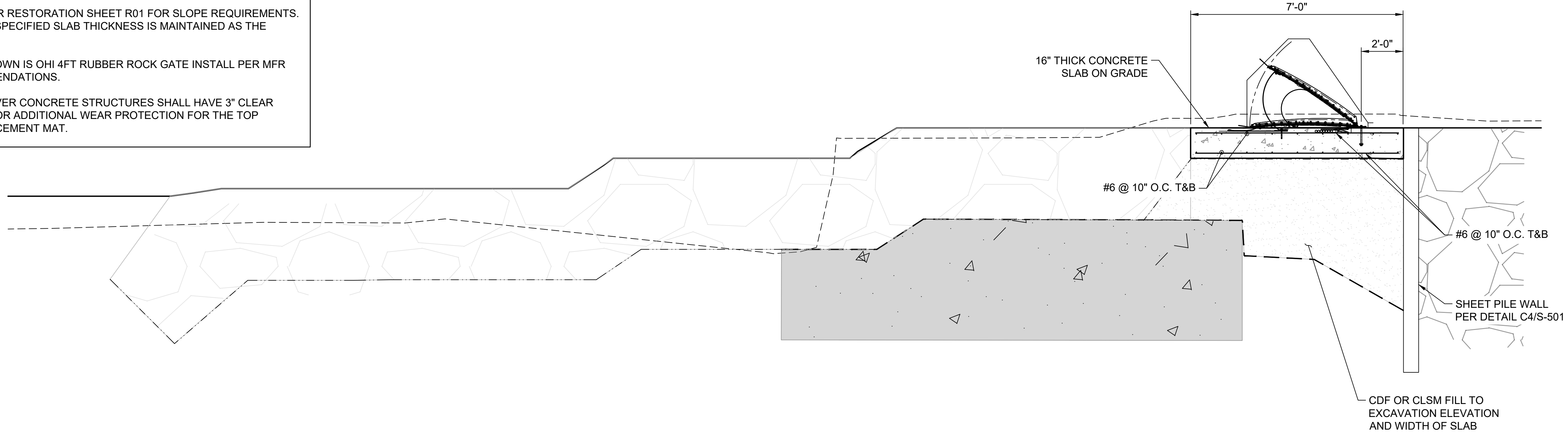
J-U-B ENGINEERS, INC.
 1047 South 100 West
 Suite 180
 Logan, UT 84321
 Phone: 435.713.9514
 www.jub.com

BID SET



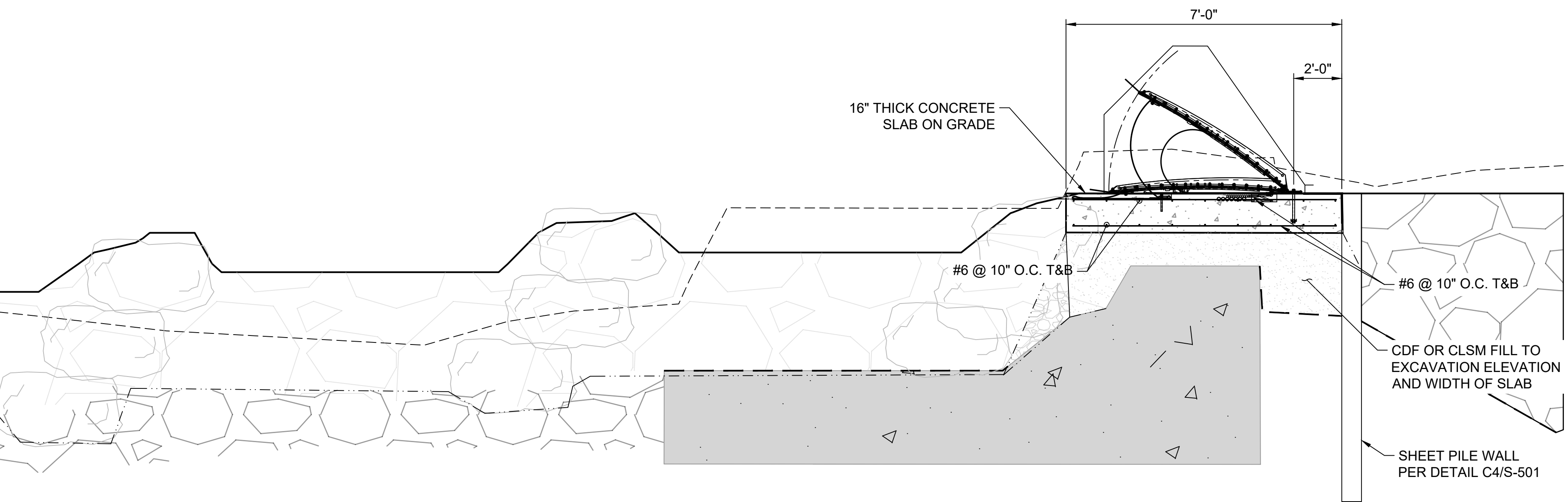
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NO.	REVISION	DESCRIPTION	BY	DATE



B1 LEFT WING SECTION
 SCALE: 1" = 2'

Plot Date: 10/16/2025 5:18 PM Plotted By: Emiliano Morales
 Date Created: 10/16/2025 2:08 PM JUB.COM/CENTRAL/CALIENT/SURVEY/RESTORATION/PROJECTS/57-23-033_OGDEN SURF WAVE DESIGN/CAD/SHEET/57-23-033_S-101X.DWG



D1 RIGHT WING SECTION
 SCALE: 1" = 2'

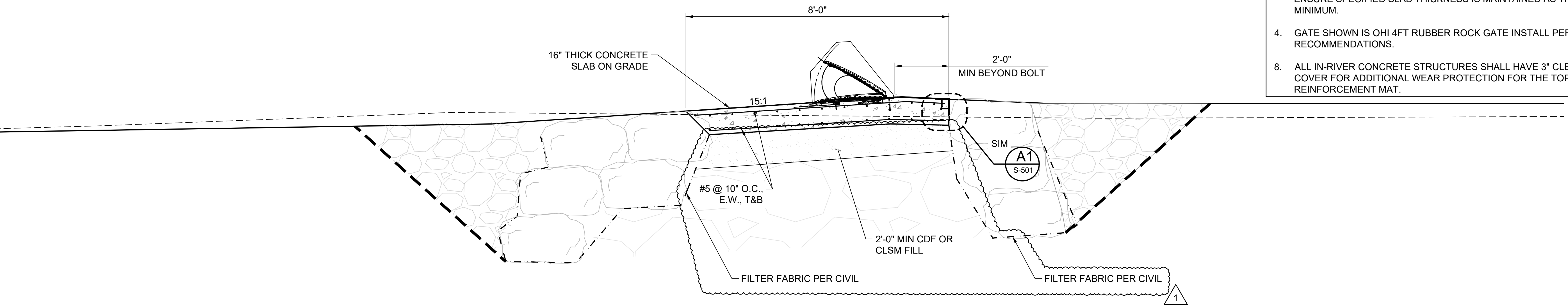
**OGDEN BUSINESS EXCHANGE SURF WAVE
 OGDEN CITY**
 STRUCTURAL SECTIONS

FILE: 57-23-033_S-101X
 JUB PROJ. #: 57-23-033
 DRAWN BY: EM
 DESIGN BY: KJH
 CHECKED BY: JCH
 AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY
 LAST UPDATED: 10/16/2025

SHEET NUMBER:
S-302

- SHEET NOTES:**
1. CONTRACTOR TO COORDINATE & VERIFY ALL DIMENSIONS & ELEVATIONS WITH CIVIL SHEETS.
 2. SEE SHEETS S-001 - S-002 FOR GENERAL STRUCTURAL NOTES REQUIREMENTS.
 3. SEE RIVER RESTORATION SHEET R03 FOR SLOPE REQUIREMENTS. ENSURE SPECIFIED SLAB THICKNESS IS MAINTAINED AS THE MINIMUM.
 4. GATE SHOWN IS OHI 4FT RUBBER ROCK GATE INSTALL PER MFR RECOMMENDATIONS.
 8. ALL IN-RIVER CONCRETE STRUCTURES SHALL HAVE 3" CLEAR COVER FOR ADDITIONAL WEAR PROTECTION FOR THE TOP REINFORCEMENT MAT.

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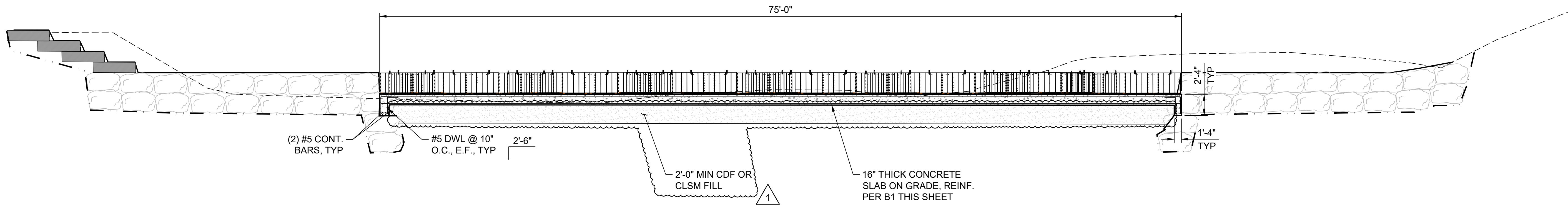


B1 DOWNSTREAM RIFFLE SECTION
 SCALE: 1" = 2'

BID SET
 PROFESSIONAL ENGINEER
 No. 9578155
JENS C. HURST
 STATE OF UTAH
 12/01/2025

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NO.	REVISION	DESCRIPTION	DATE
1	FOUNDATION/FILL UPDATE	EM, KJH	12/1/25



D1 DOWNSTREAM RIFFLE SECTION
 SCALE: 1" = 5'

OGDEN BUSINESS EXCHANGE SURF WAVE
OGDEN CITY
 STRUCTURAL SECTIONS

FILE: 57-23-033 S-101X
 JUB PROJ. #: 57-23-033
 DRAWN BY: EM
 DESIGN BY: KJH
 CHECKED BY: JCH
 AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY
 LAST UPDATED: 12/1/2025
 SHEET NUMBER:
S-303

Plot Date: 12/1/2025 1:35 PM, Plotted By: Emiliano Morales
 Date Created: 10/16/2025 10:00 AM, Project: 57-23-033, OGDEN SURF WAVE DESIGN, CAD SHEET: 57-23-033 S-101X.DWG

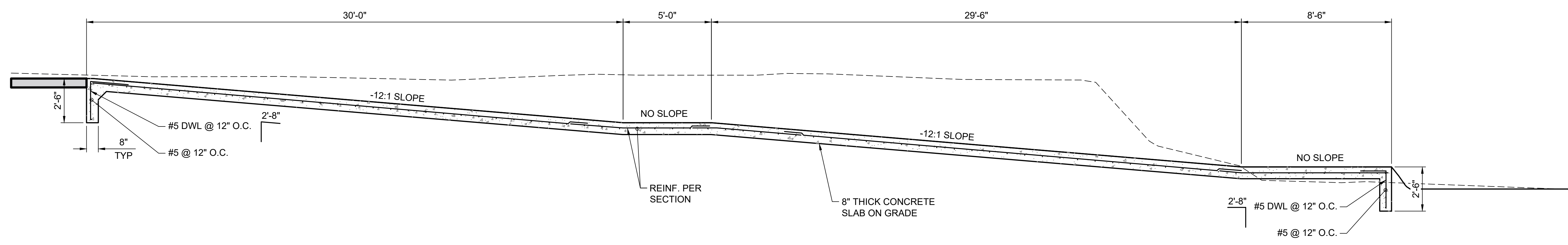
- SHEET NOTES:**
1. CONTRACTOR TO COORDINATE & VERIFY ALL DIMENSIONS & ELEVATIONS WITH CIVIL SHEETS.
 2. SEE SHEETS S-001 - S-002 FOR GENERAL STRUCTURAL NOTES REQUIREMENTS.
 3. ENSURE SPECIFIED SLAB THICKNESS IS MAINTAINED AS THE MINIMUM.

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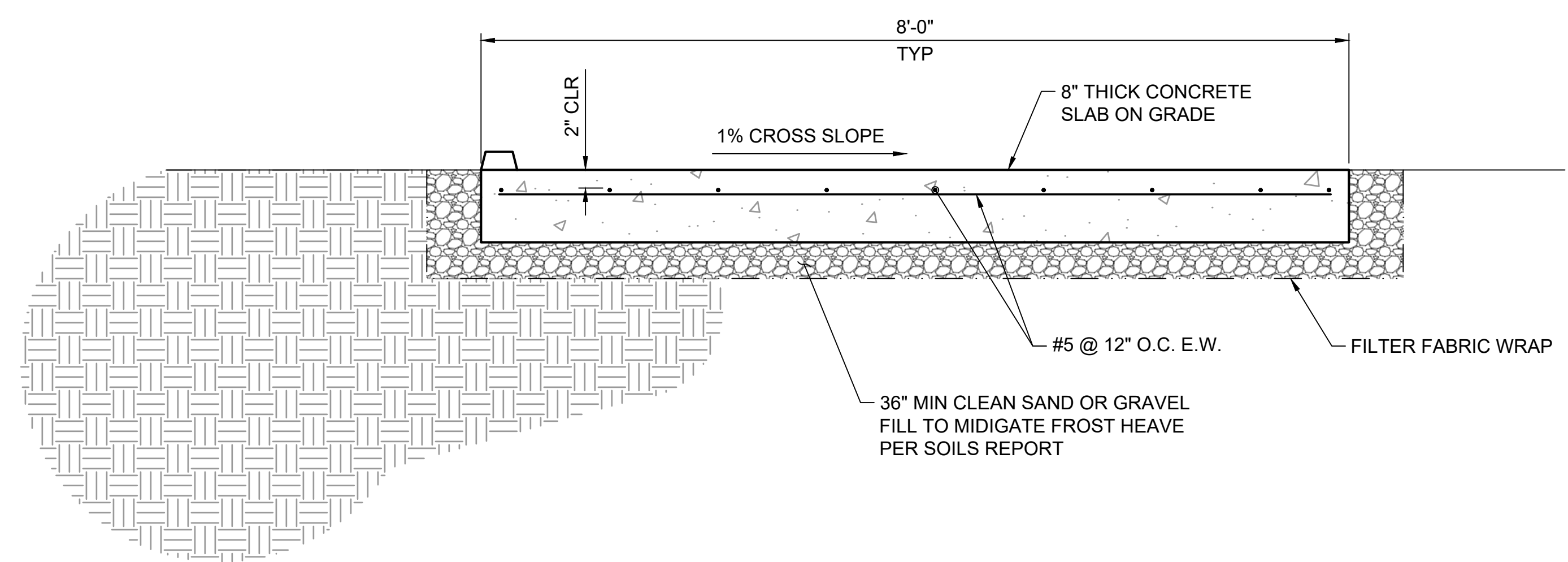
BID SET
 PROFESSIONAL ENGINEER
 No. 9578155
JENS C. HURST
 STATE OF UTAH
 10/17/2025

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G ACCESS RAMP SECTION
 SCALE: 1" = 3'



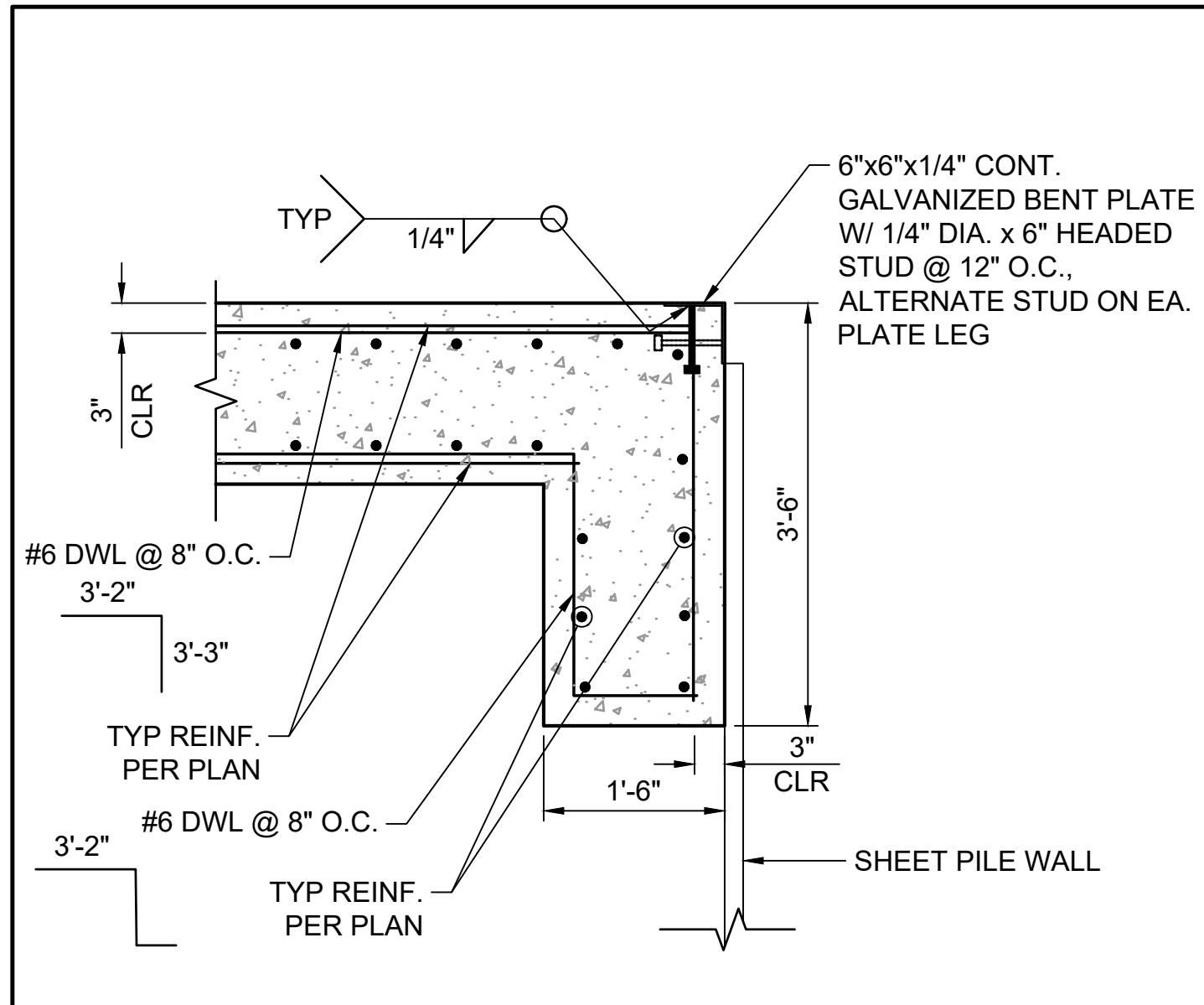
H ACCESS RAMP SECTION
 SCALE: 1" = 1'

OGDEN BUSINESS EXCHANGE SURF WAVE
OGDEN CITY
 STRUCTURAL SECTIONS

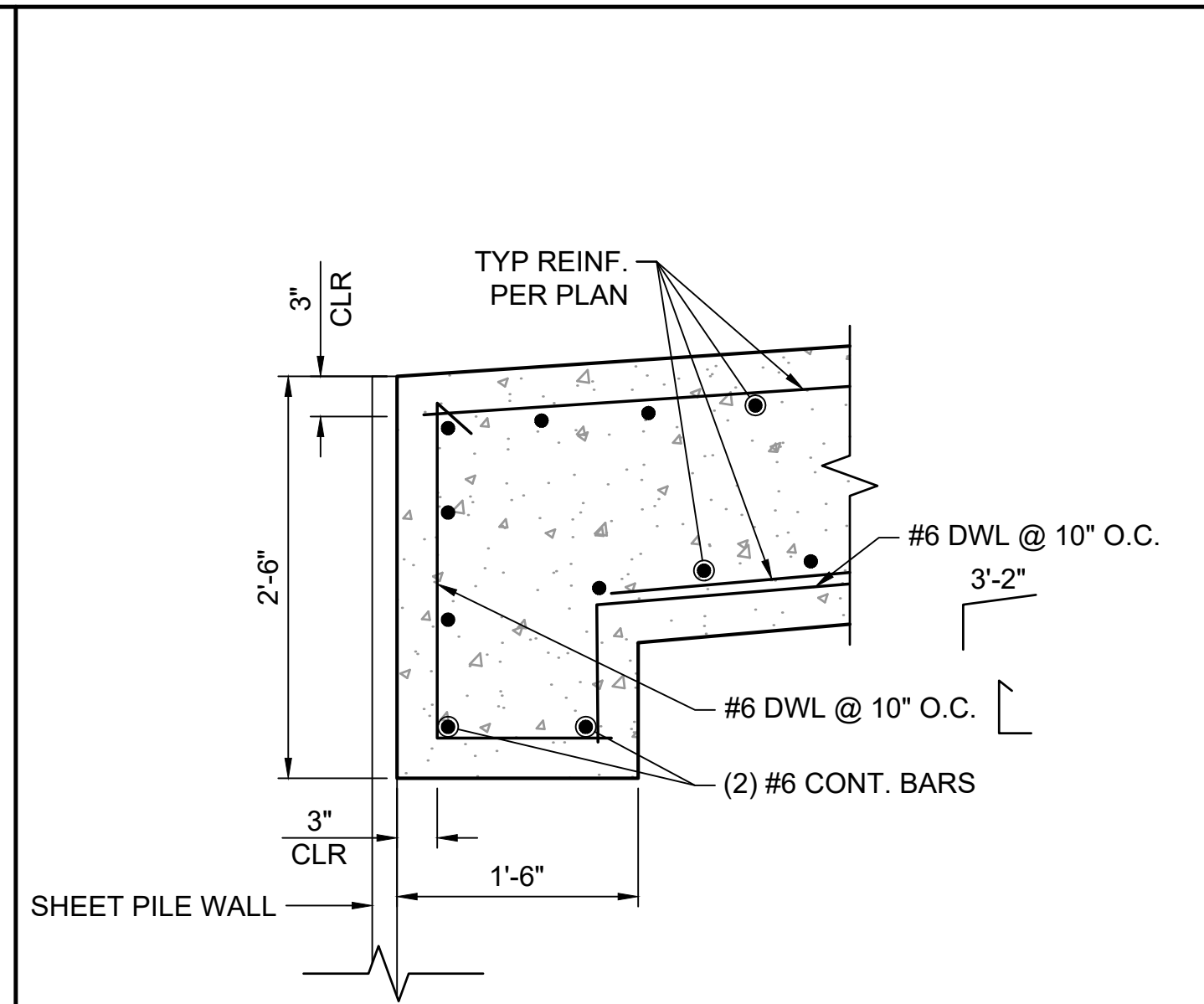
FILE: 57-23-033, S-101X
 JUB PROJ. #: 57-23-033
 DRAWN BY: EM
 DESIGN BY: KJH
 CHECKED BY: JCH
 AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
 LAST UPDATED: 10/16/2025

SHEET NUMBER:
S-304

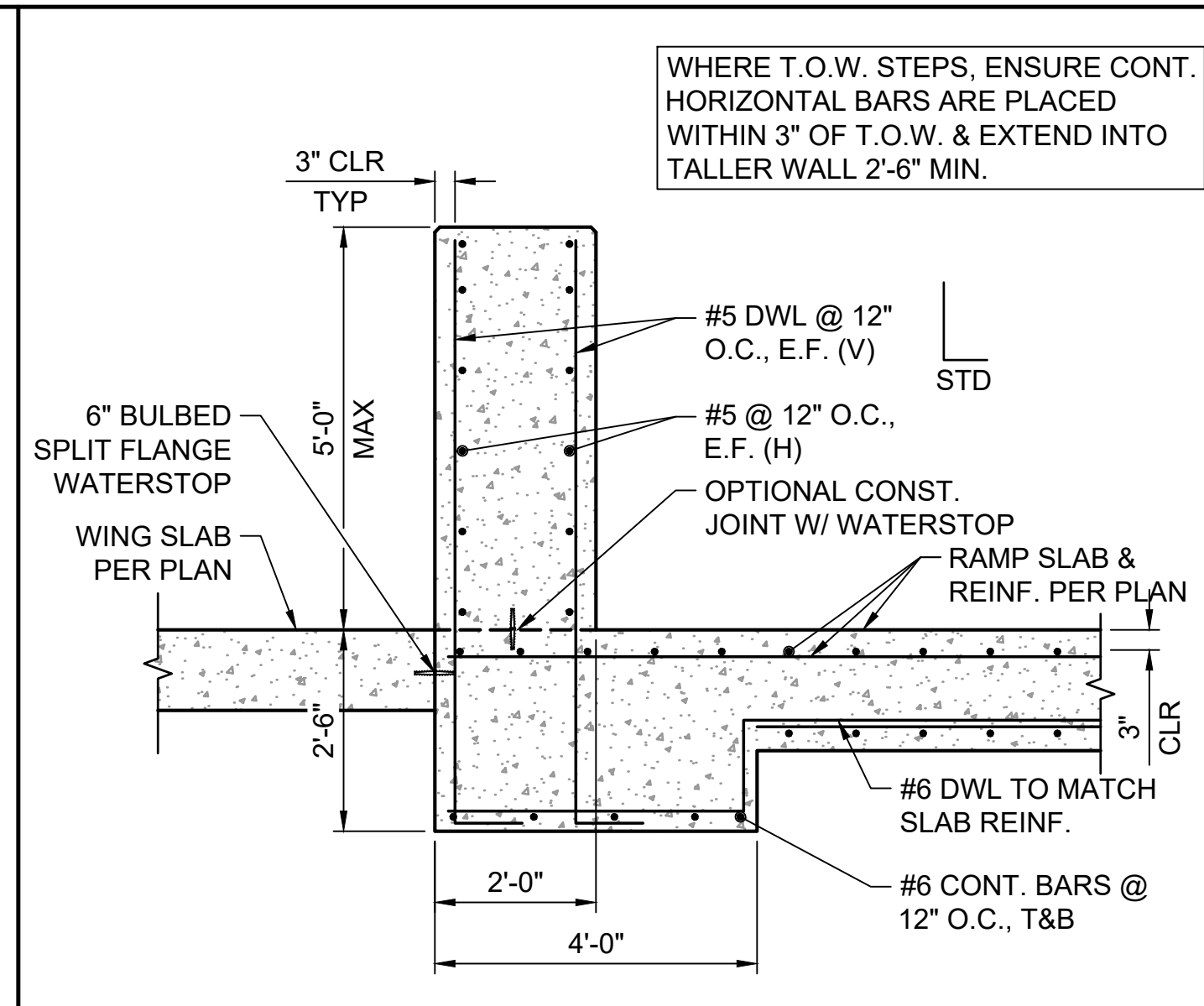
Plot Date: 10/16/2025 5:18 PM Plotted By: Emiliano Morales
 Date Created: 10/16/2025 2:00 PM JUB: COMMERCIAL CLIENT SUIT REVERESTORATION PROJECTS 57-23-033 OGDEN SURF WAVE DESIGN CAD SHEET 57-23-033 S-101X.DWG



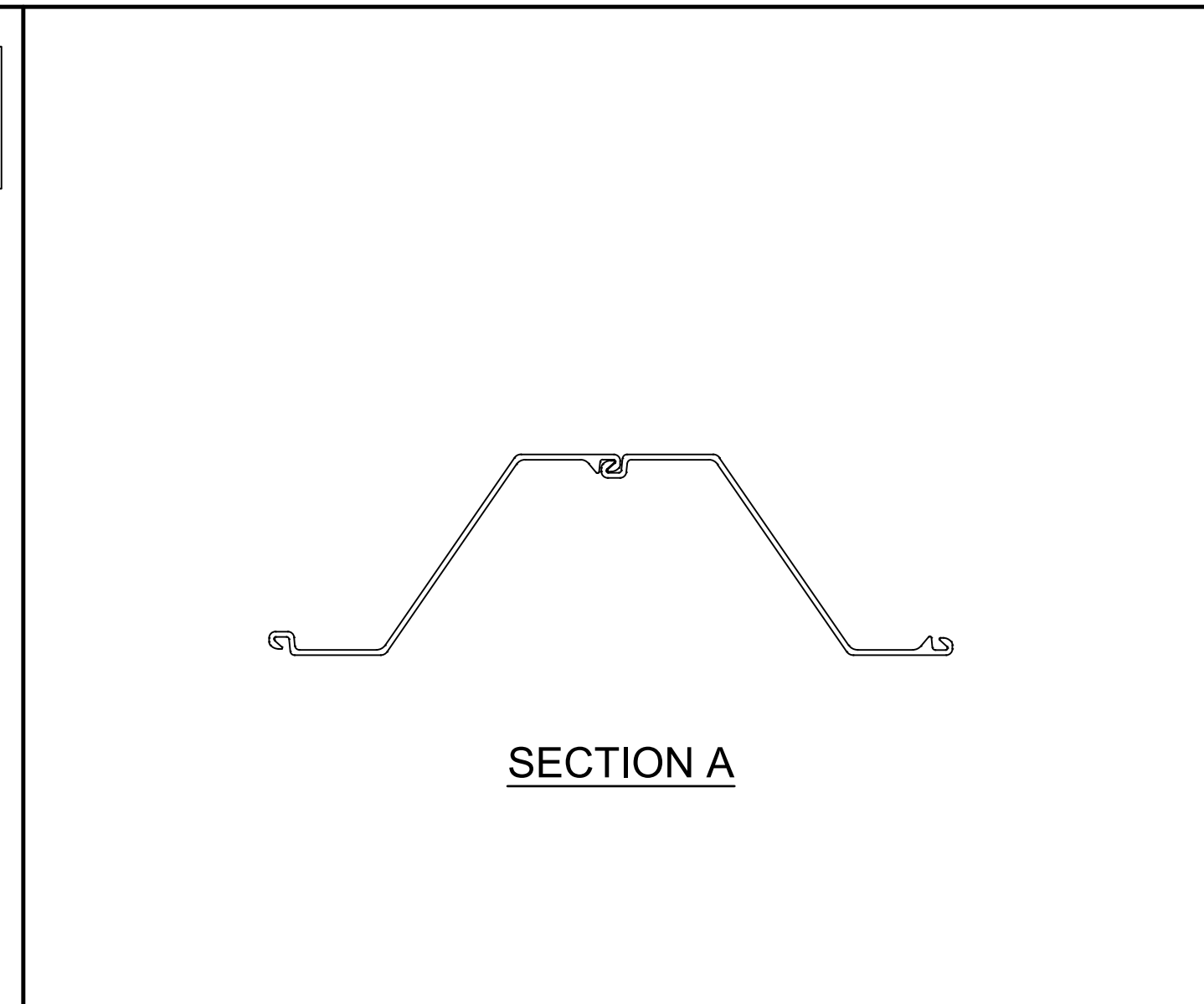
A1 UPSTREAM SURF RAMP TURNDOWN
SCALE: NTS



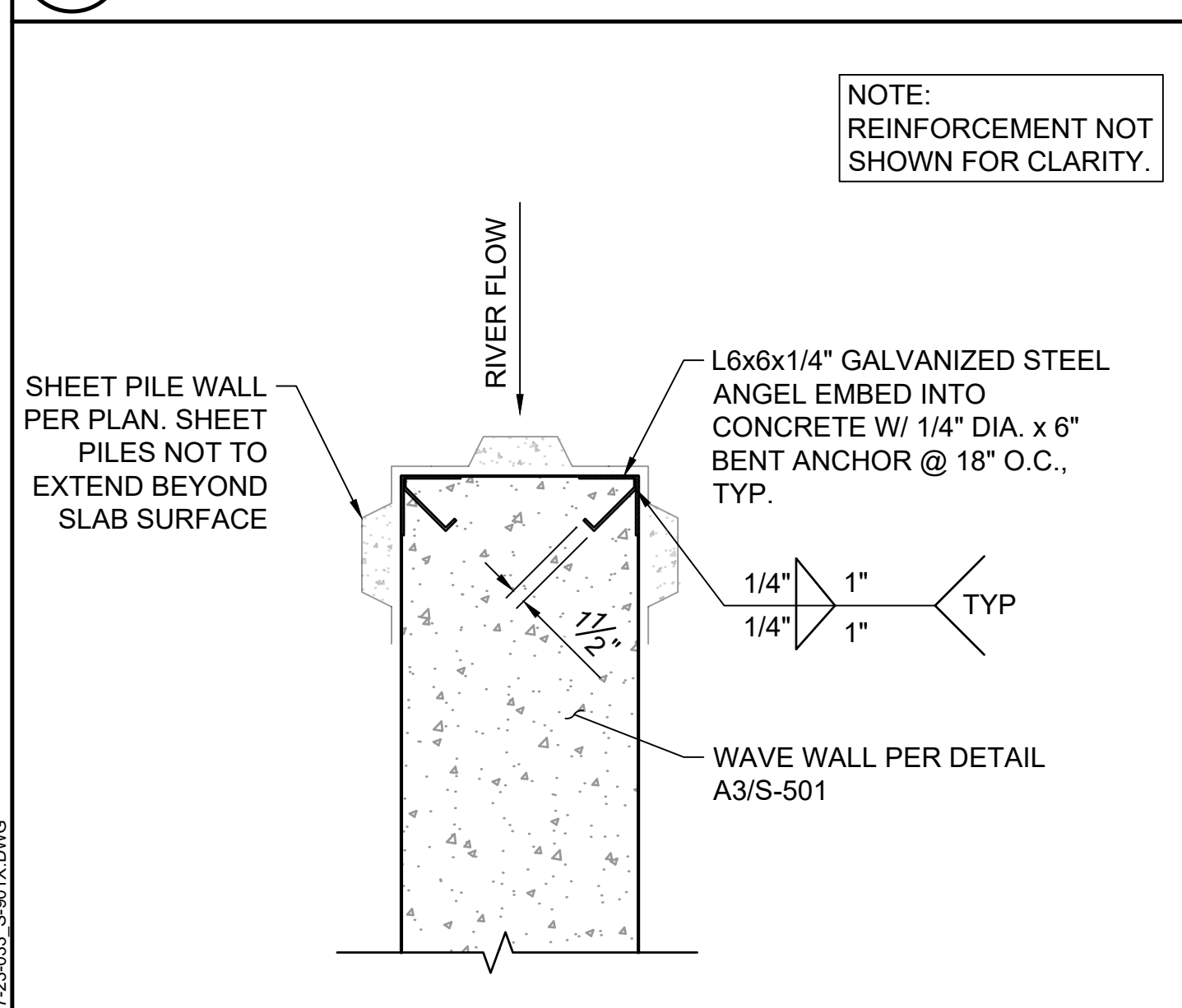
A2 DOWNSTREAM SURF RAMP TURNDOWN
SCALE: NTS



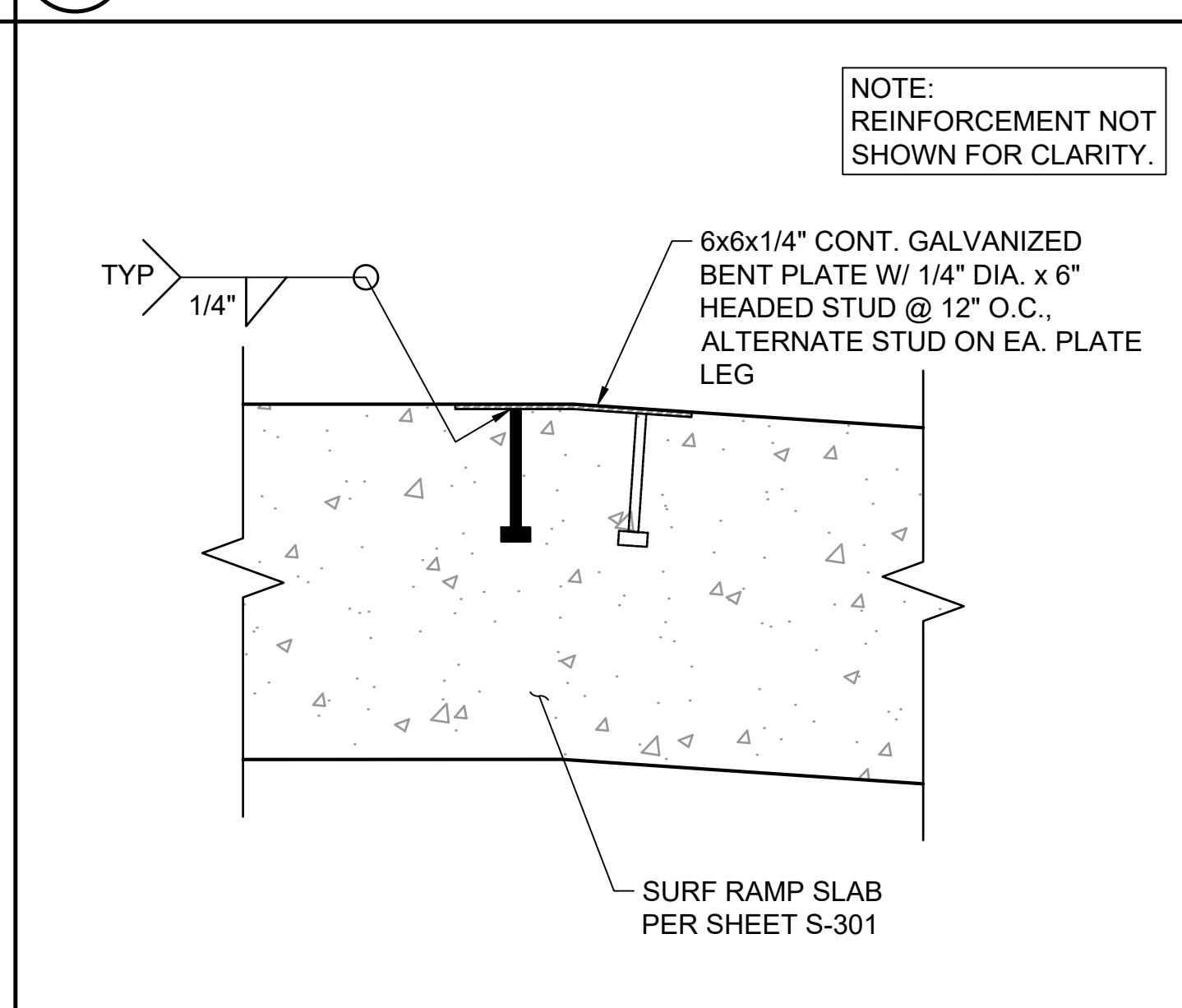
A3 WAVE WALL DETAIL
SCALE: NTS



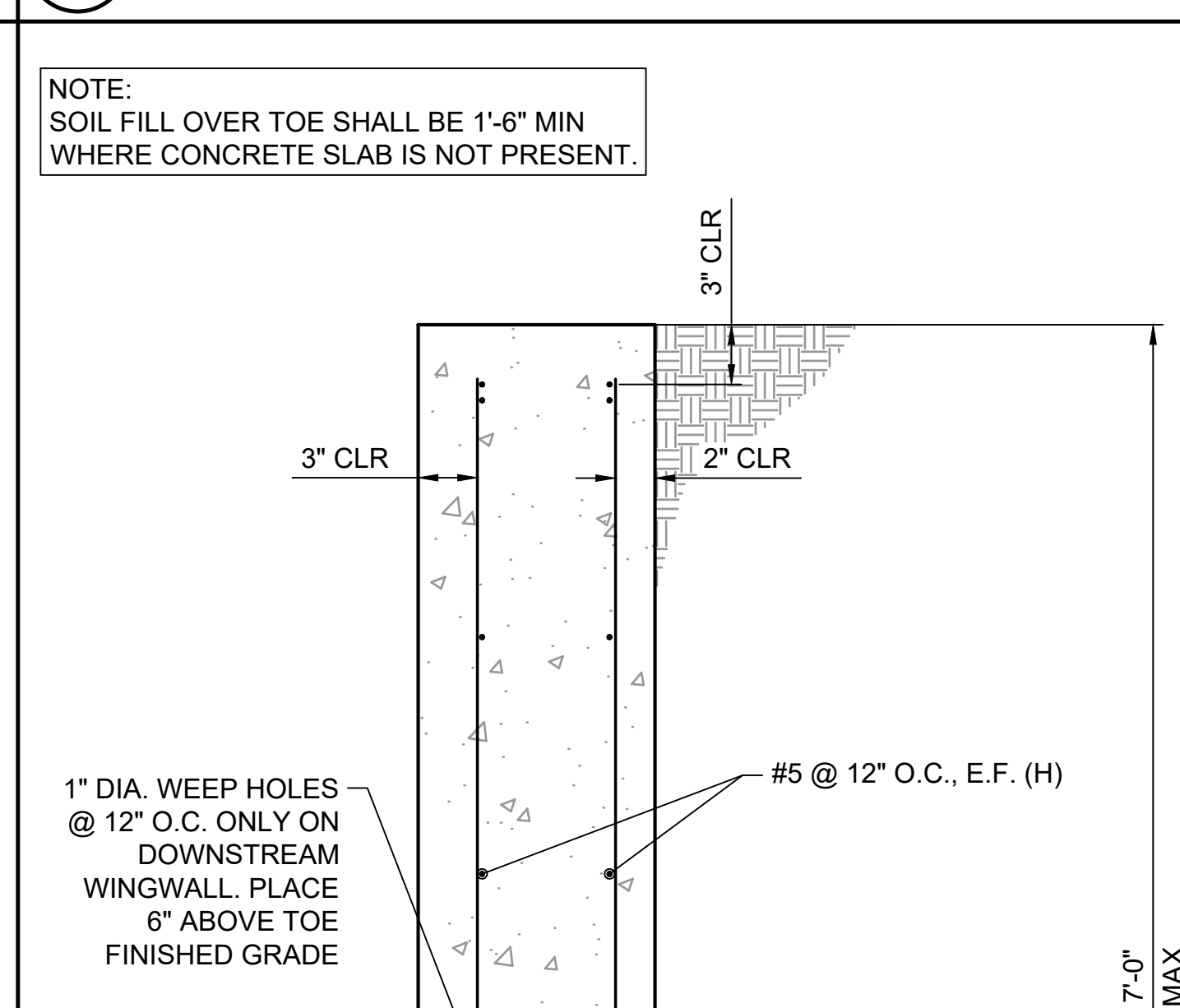
A4 SECTION A
SCALE: NTS



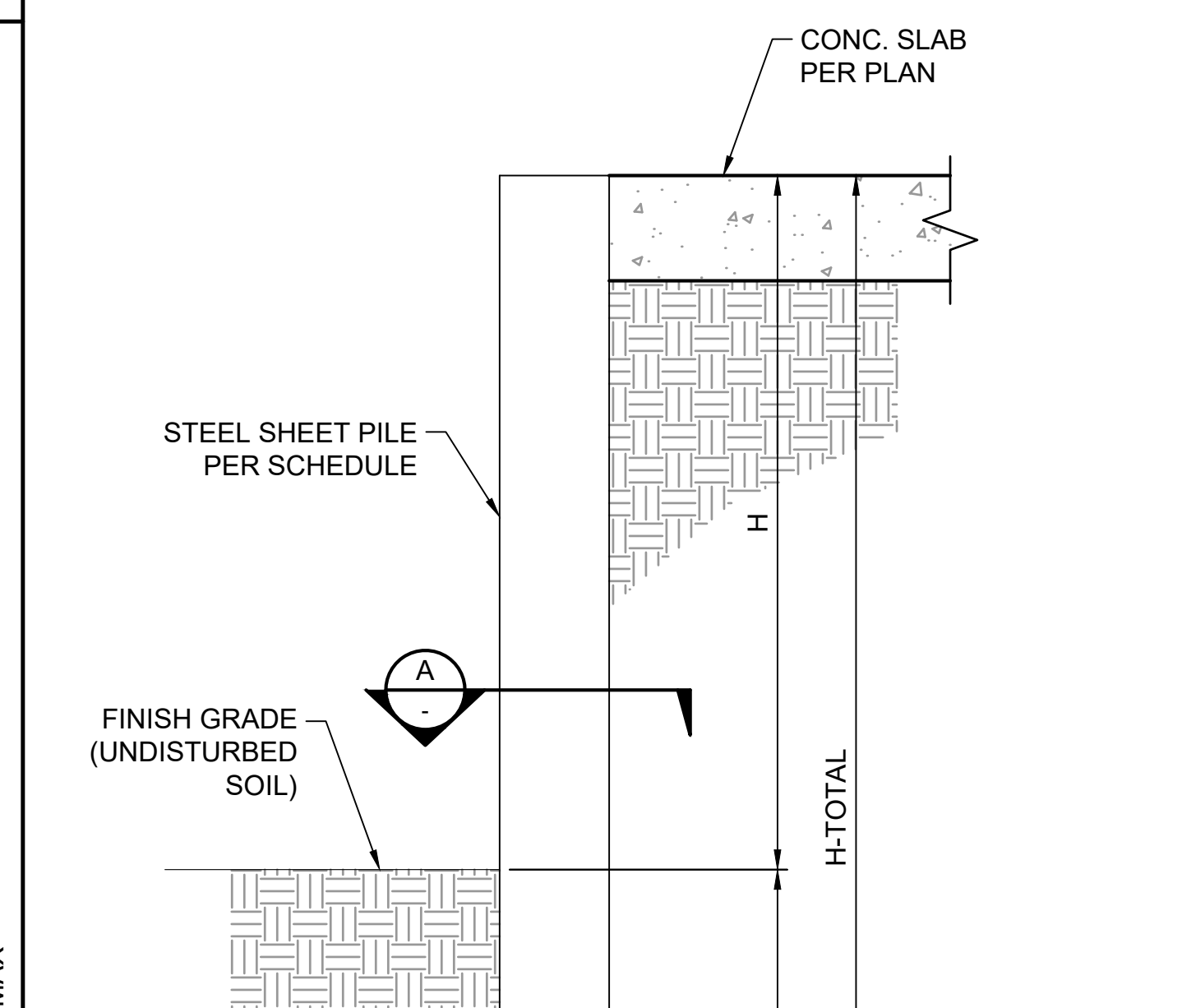
B1 UPSTREAM WAVE WALL CORNER PROTECTION DTL
SCALE: NTS



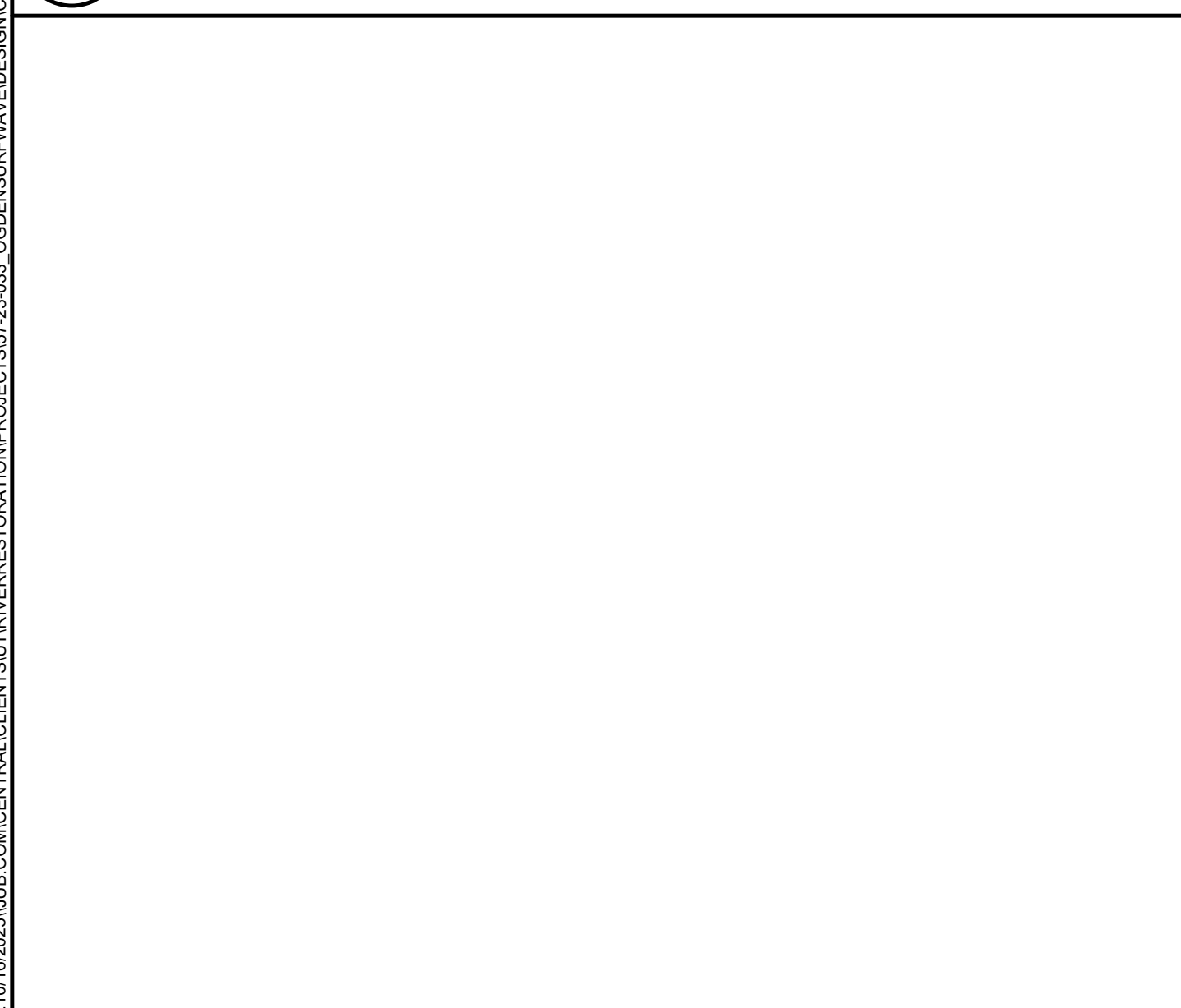
B2 UPSTREAM CREST CORNER PROTECTION DTL
SCALE: NTS



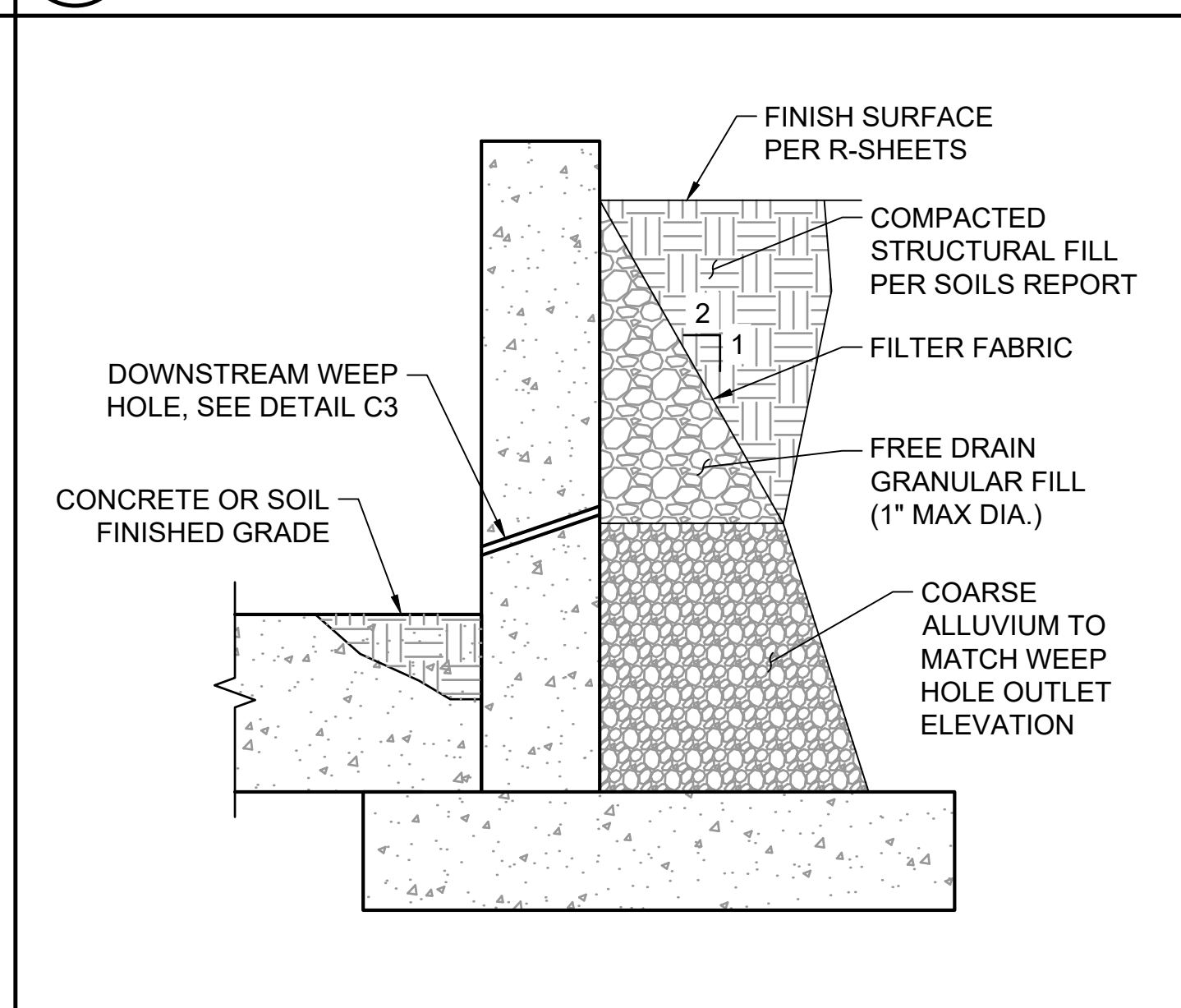
B3 HEADWALL/WINGWALL DETAIL
SCALE: NTS



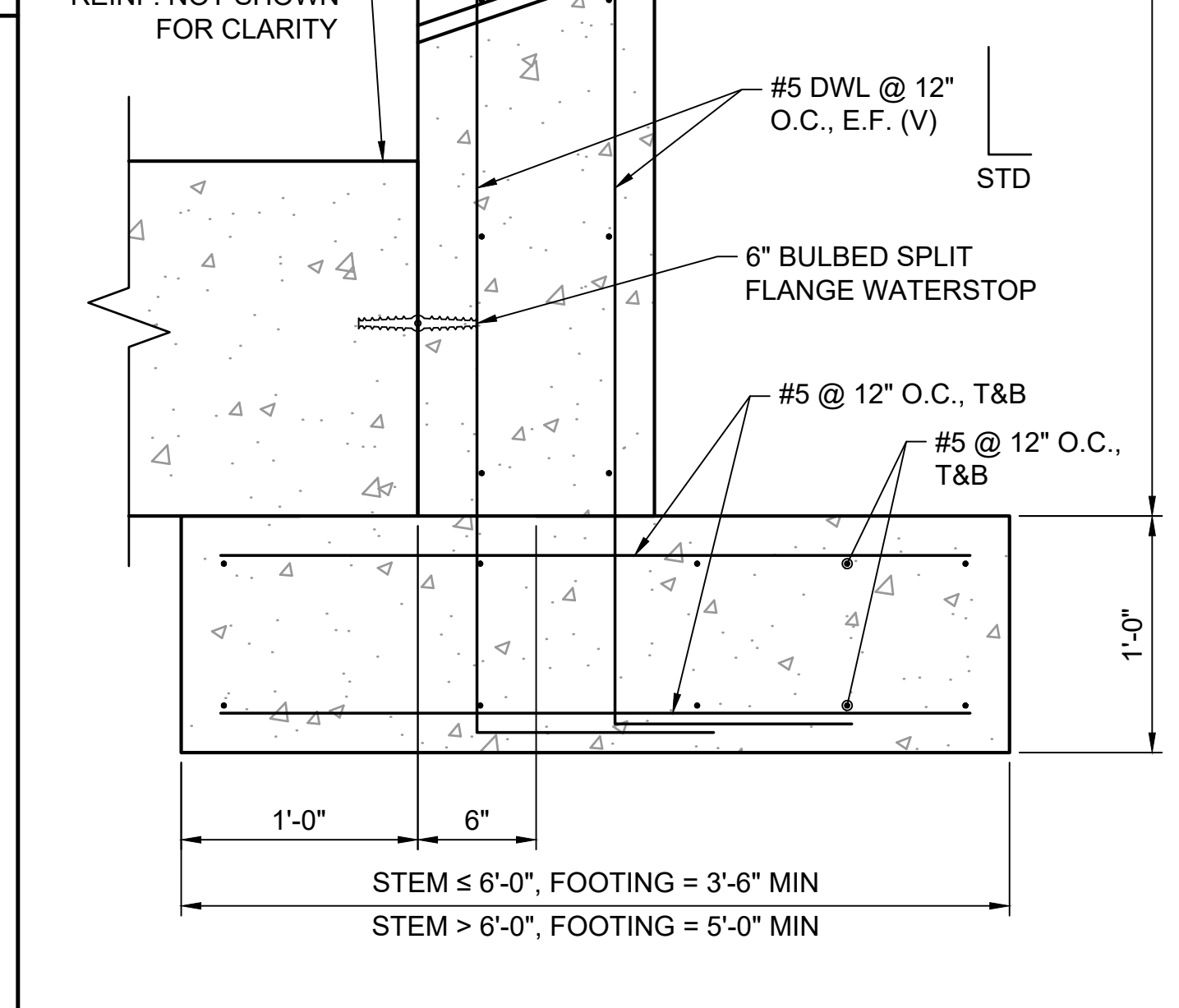
B4 SHEET PILE WALL DETAIL
SCALE: NTS



C2 SOIL BACKFILL AT HEADWALL/WINGWALLS
SCALE: NTS



C3 HEADWALL/WINGWALL DETAIL
SCALE: NTS



C4 SHEET PILE WALL DETAIL
SCALE: NTS

SHEET PILE SCHEDULE

H	D	H-TOTAL	SECTION MODULOUS (IN ³)	SHEET PILE DESIGNATION
5'-0"	7'-10"	12'-10"	0.54	*NZ 14
8'-0"	12'-6"	20'-6"	2.23	*NZ 14

*NUCOR HOT ROLLED STEEL SHEET PILE OR APPROVED EQUAL.

NOTES:
 1. SHEET PILE SPECIFICATION & DESIGN ARE DEPENDANT ON DIMENSION "H".
 2. DIMENSION "H" IS A MAXIMUM VALUE. WHERE CONDITIONS ARE GREATER THAN WHAT IS PROVIDED IN THE SCHEDULE, CONTRACTOR SHALL CONTACT ENGINEER FOR UPDATED DESIGN OF NEEDED SHEET PILE.

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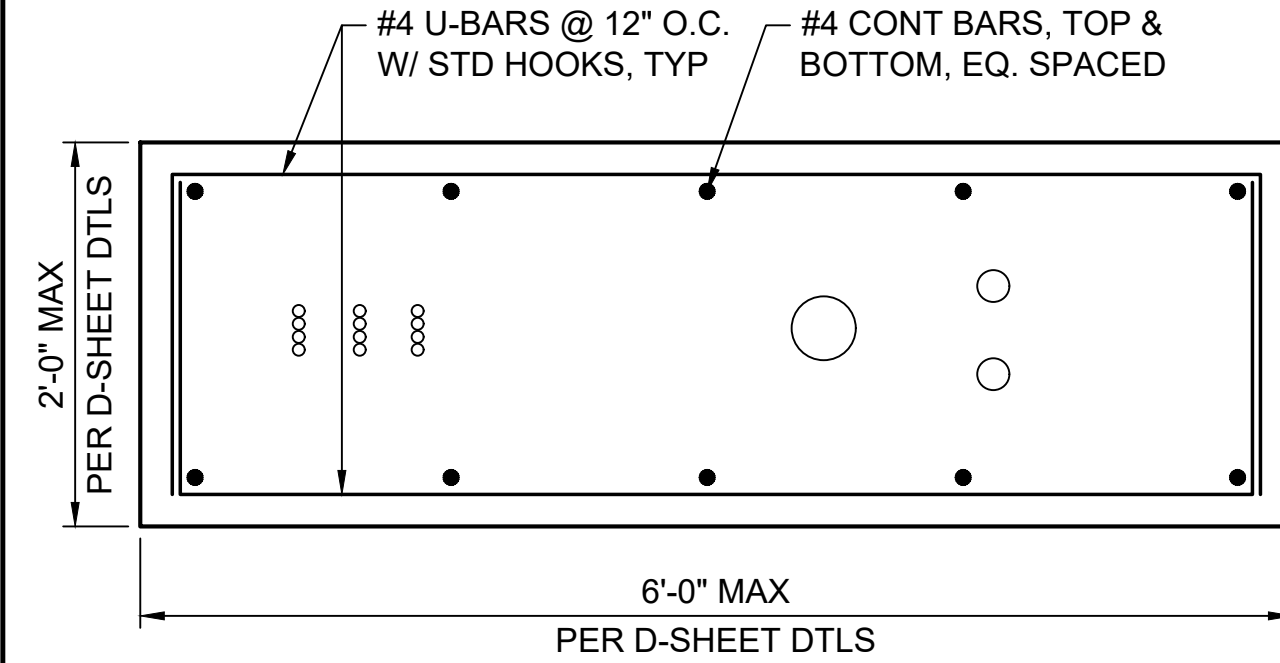
OGDEN BUSINESS EXCHANGE SURF WAVE
OGDEN CITY

STRUCTURAL DETAILS

FILE: 57-23-033 S-901X
 JUB PROJ. #: 57-23-033
 DRAWN BY: EM
 DESIGN BY: KJH
 CHECKED BY: JCH
 AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
 LAST UPDATED: 10/16/2025
 SHEET NUMBER:
S-501

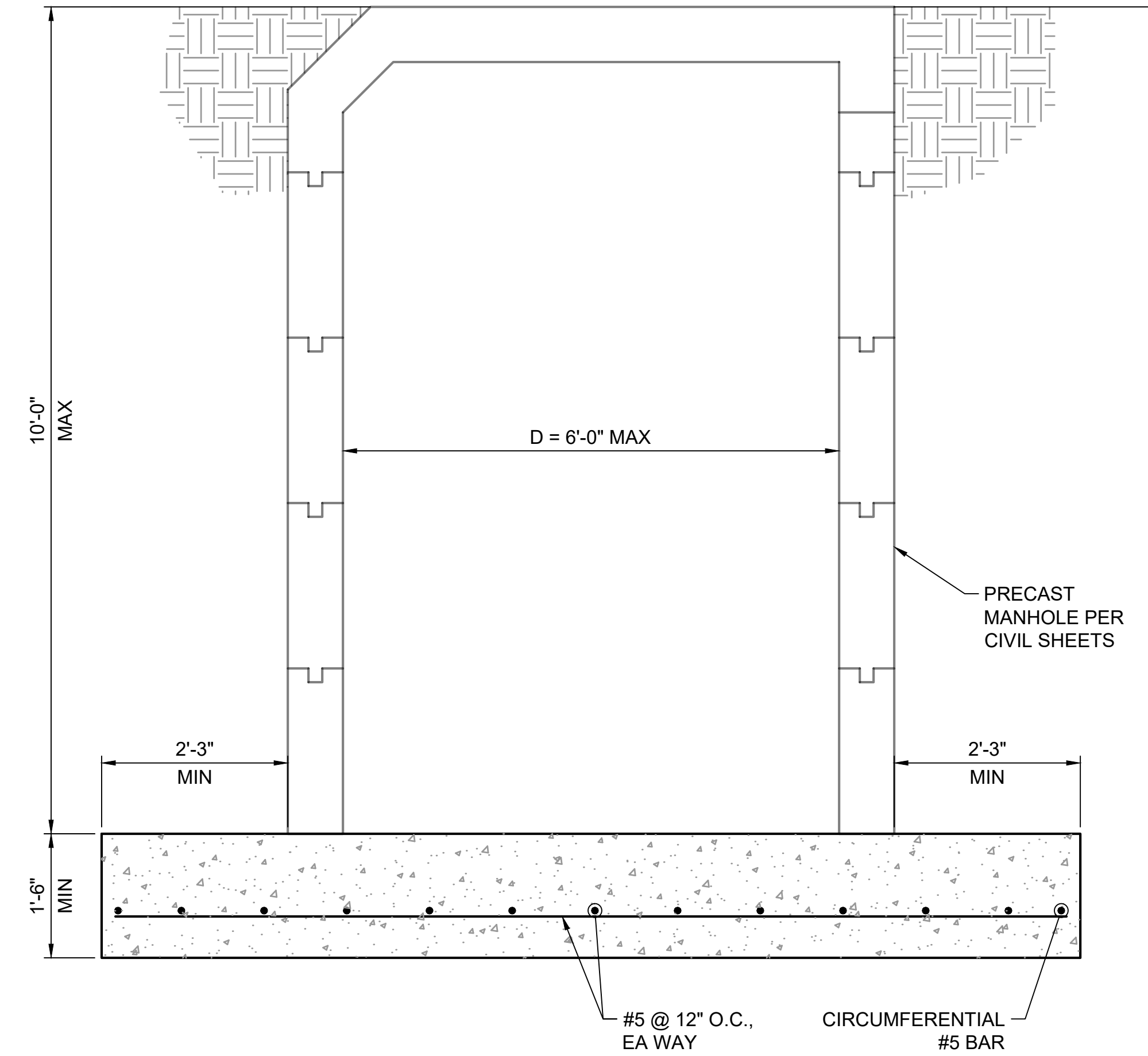
Plot Date: 10/16/2025 5:18 PM Plotted By: Emiliano Morales
 Date Created: 10/16/2025 2:00 PM JUB-CENTRAL CLIENT SUIT-REVEGETATION PROJECTS/57-23-033_OGDEN SURF WAVE DESIGN/CA/SHEET/57-23-033_S-901X.DWG

- NOTES:
- LAYOUT OF CONDUIT IS REPRESENTATIVE. REFER TO D-SHEETS FOR ACTUAL LAYOUTS.
 - M-3000-UTL MIX SHALL BE USED WHEN PLACED UNDER CONCRETE STRUCTURES AND SHALL CONTAIN REINFORCEMENT AS DETAILED.
 - M-CDF WITH MAXIMUM COARSE AGGREGATE OF 0.5" SHALL BE USED IN ALL OTHER LOCATIONS. NO REINFORCEMENT REQUIRED.
 - 1" DIA. CONDUIT MAY BE BUNDLED IN STRAIGHT ROWS OF UP TO 4 CONDUITS. EACH SET MUST BE SPACED TO ALLOW FOR 2" CLEAR BETWEEN CONDUIT BUNDLES.



A1 CONDUIT ENCASEMENT DETAIL
SCALE: NTS

NOTE:
USE DESIGNED BASE SLAB TO SUPPORT MANHOLE AGAINST BOUYANT FORCES.



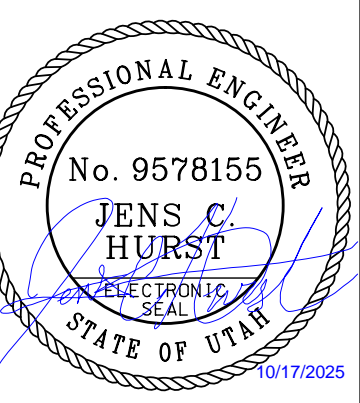
A2 PRECAST MANHOLE FOOTING DETAIL
SCALE: NTS



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OGDEN BUSINESS EXCHANGE SURF WAVE
OGDEN CITY

STRUCTURAL DETAILS

FILE: 57-23-033_S-901X
JUB PROJ. #: 57-23-033
DRAWN BY: EM
DESIGN BY: KJH
CHECKED BY: JCH
ONE INCH
AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY
LAST UPDATED: 10/16/2025

SHEET NUMBER:
S-502

