

# BID DRAWINGS for MOORHEN MARSH LOW ENERGY AQUATIC PLANT SYSTEM (LEAPS™)



**BID  
2020030**

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PREPARED FOR INDIAN RIVER COUNTY

CIVIL AND MECHANICAL DESIGN BY  
**PUBLIC WORKS STORMWATER DIVISION**

1801 27th STREET, VERO BEACH, FLORIDA 32960

STRUCTURAL DESIGN BY KIMLEY-HORN AND ASSOCIATES, INC.

445 24TH STREET, SUITE 200, VERO BEACH, FL 32960

ELECTRICAL DESIGN BY TREASURE COAST ENGINEERING, INC.

4925 13TH LANE, VERO BEACH, FL 32966

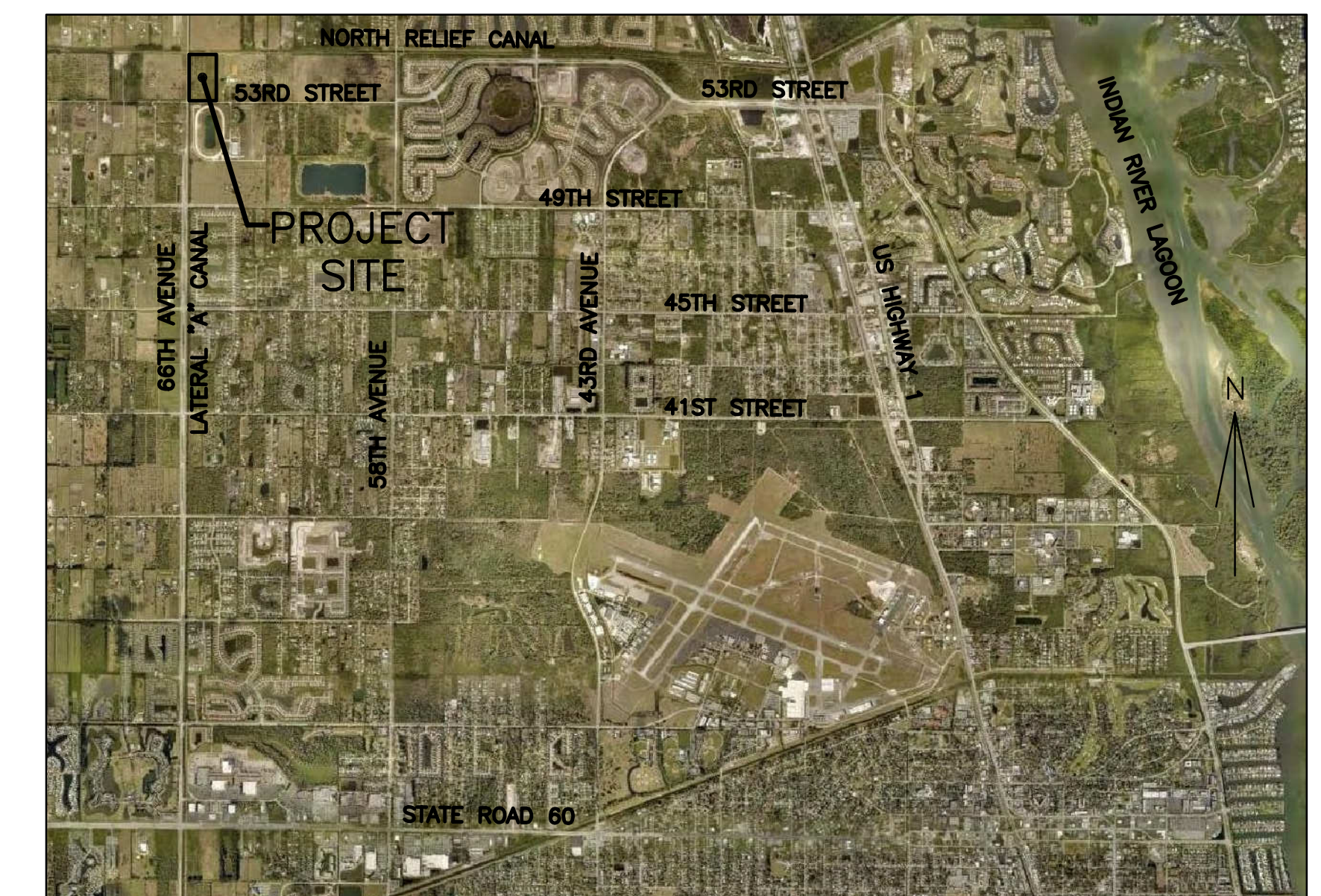
APRIL 2020

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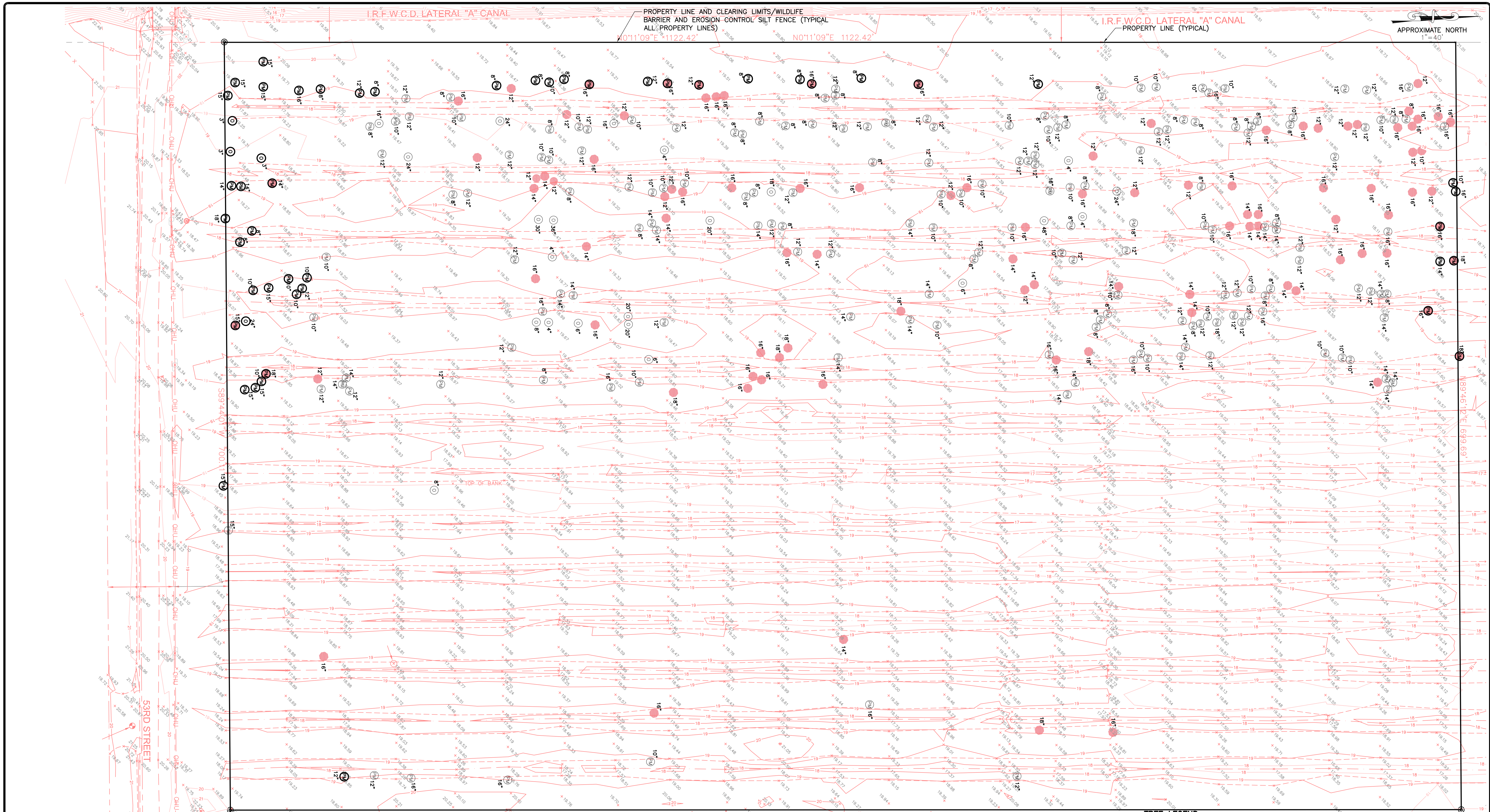
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**LOCATION MAP**  
NOT TO SCALE

NOT FOR CONSTRUCTION: FOR BIDDING PURPOSES ONLY  
NAVD88 DATUM IS USED FOR ALL ELEVATIONS ON THIS PROJECT.

THIS SHEET IS PREPARED FOR INFORMATIONAL PURPOSES ONLY.



**NOTES:**

- FOR NATIVE TREES TO REMAIN, ADJUST CONTOURS AND/OR FENCE AS NECESSARY TO AVOID DAMAGE TO TREE. IF NECESSARY TO ENSURE TREE SURVIVAL, CONSTRUCT PROTECTIVE "U"-SHAPED PLANTING BOX AROUND TREE. IF QUESTIONS, CONSULT WITH ENGINEER.
- SABLE PALM CLEAR TRUNK DISTANCES FIELD DETERMINED BY KEITH McCULLY, P.E. AND MIKE THORNE ON 12/23/2019.
- ALL RELOCATED PALMS SHALL BE GUARANTEED 100 PERCENT HEALTHY SURVIVAL FOR ONE-YEAR AFTER FINAL PROJECT ACCEPTANCE BY COUNTY COMMISSION. PALMS NOT MEETING THIS REQUIREMENT SHALL BE REPLACED AND MAINTAINED FOR AN ADDITIONAL YEAR AFTER REPLACEMENT, ALL AT THE CONTRACTOR'S EXPENSE.
- NO EXISTING NATIVE VEGETATION IN 53RD STREET RIGHT-OF-WAY SHALL BE DISTURBED OR DESTROYED. DAMAGED OR DESTROYED NATIVE VEGETATION SHALL BE REPLACED AND THEN MAINTAINED FOR ONE-YEAR AFTER FINAL ACCEPTANCE, ALL AT THE CONTRACTOR'S EXPENSE.

**TREE LEGEND:**

- = SABLE PALM WITH A CLEAR TRUNK DISTANCE ≥10 FEET (QUANTITY = 100). 88 OF THESE PALMS ARE TO BE RELOCATED - SEE SHEET L1 FOR NEW LOCATIONS.
- ⊙ = EXISTING TREE OR PALM TO REMAIN IN EXISTING LOCATION
- = EXISTING PALM WITH CLEAR TRUNK DISTANCE ≥10 FEET TO BE RELOCATED
- ⊙ = EXISTING TREE OR PALM TO BE REMOVED
- ⊙ = SABLE (CABBAGE) PALM; ⊙ = OAK

NAVD88 DATUM IS USED FOR ALL ELEVATIONS ON THIS PROJECT.

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				KM	KM	KM	KM

**INDIAN RIVER COUNTY  
STORMWATER DIVISION**  
1801 27TH STREET  
VERO BEACH, FLORIDA 32960  
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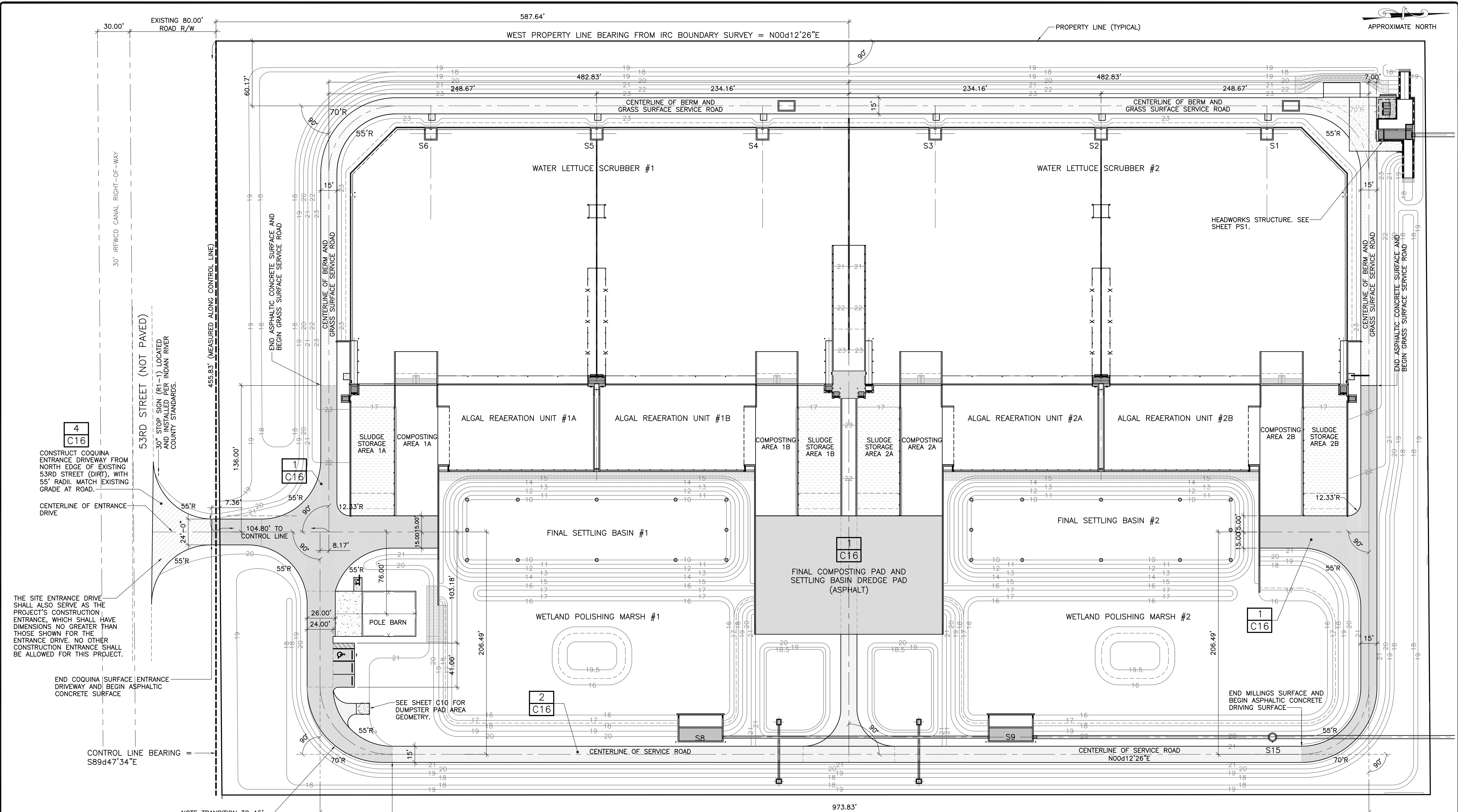
**MOORHEN MARSH LEAPS™**

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CONSTRUCTION  
UNLESS  
ORIGINALLY  
SIGNED AND  
SEALED

W. KEITH McCULLY, P.E.  
FLORIDA P.E. NO. 32007  
DATE:

**PLAN VIEW: EXISTING  
TREES AND LIMITS OF  
CLEARING**

PROJECT NO.  
DATE 2/19/2020  
SCALE 1"=40'  
SHEET **C1a**



4  
C16  
CONSTRUCT COQUINA ENTRANCE DRIVEWAY FROM NORTH EDGE OF EXISTING 53RD STREET (DIRT), WITH 55' RADI. MATCH EXISTING GRADE AT ROAD.

CENTERLINE OF ENTRANCE DRIVE  
THE SITE ENTRANCE DRIVE SHALL ALSO SERVE AS THE PROJECT'S CONSTRUCTION ENTRANCE, WHICH SHALL HAVE DIMENSIONS NO GREATER THAN THOSE SHOWN FOR THE ENTRANCE DRIVE. NO OTHER CONSTRUCTION ENTRANCE SHALL BE ALLOWED FOR THIS PROJECT.

END COQUINA SURFACE ENTRANCE DRIVEWAY AND BEGIN ASPHALTIC CONCRETE SURFACE

CONTROL LINE BEARING = S89d47'34"E

NOTE TRANSITION TO 15' WIDE DRIVING SURFACE IN CURVED SECTION

END ASPHALTIC CONCRETE SURFACE AND BEGIN MILLINGS DRIVING SURFACE TO THE NORTH

- ASPHALTIC CONCRETE DRIVING SURFACE
- MILLINGS DRIVING SURFACE
- GRASSED DRIVING SURFACE

PLAN VIEW: ROADS AND BASIC GEOMETRY  
SCALE: 1" = 40'-0"

NAVD88 DATUM IS USED FOR ALL ELEVATIONS ON THIS PROJECT.

GEOMETRY NOTES:  
1. ALL EAST-WEST CENTERLINES BEAR S89d47'34"E  
2. ALL NORTH-SOUTH CENTERLINES BEAR N00d12'26"E

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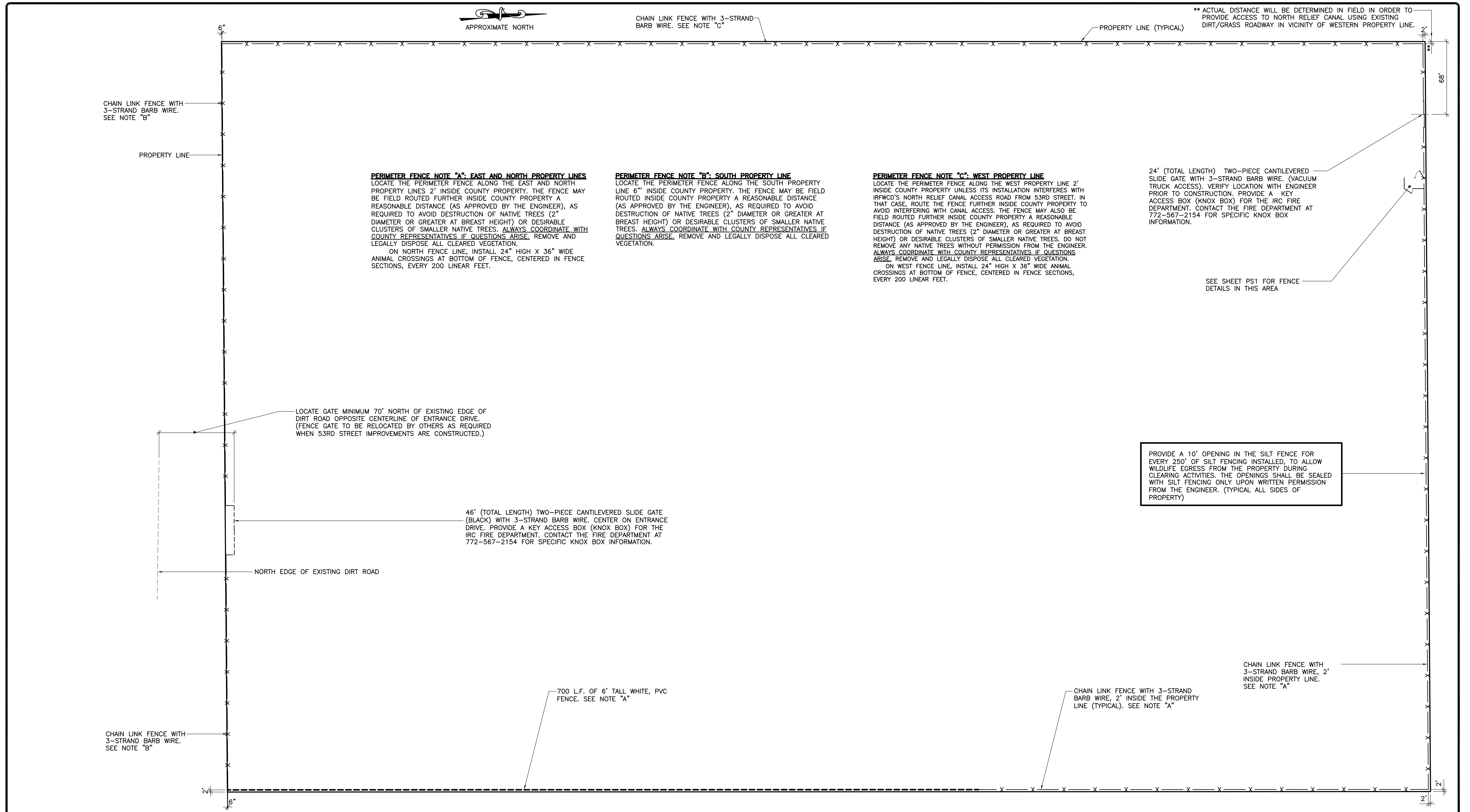
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FLORIDA P.E. NO. 32007  
DATE:

ROADS AND BASIC GEOMETRY

PROJECT NO.  
DATE: 3/10/2020  
SCALE: 1" = 40'  
SHEET C16



PLAN VIEW: PERIMETER FENCING  
 SCALE: 1" = 40'-0"

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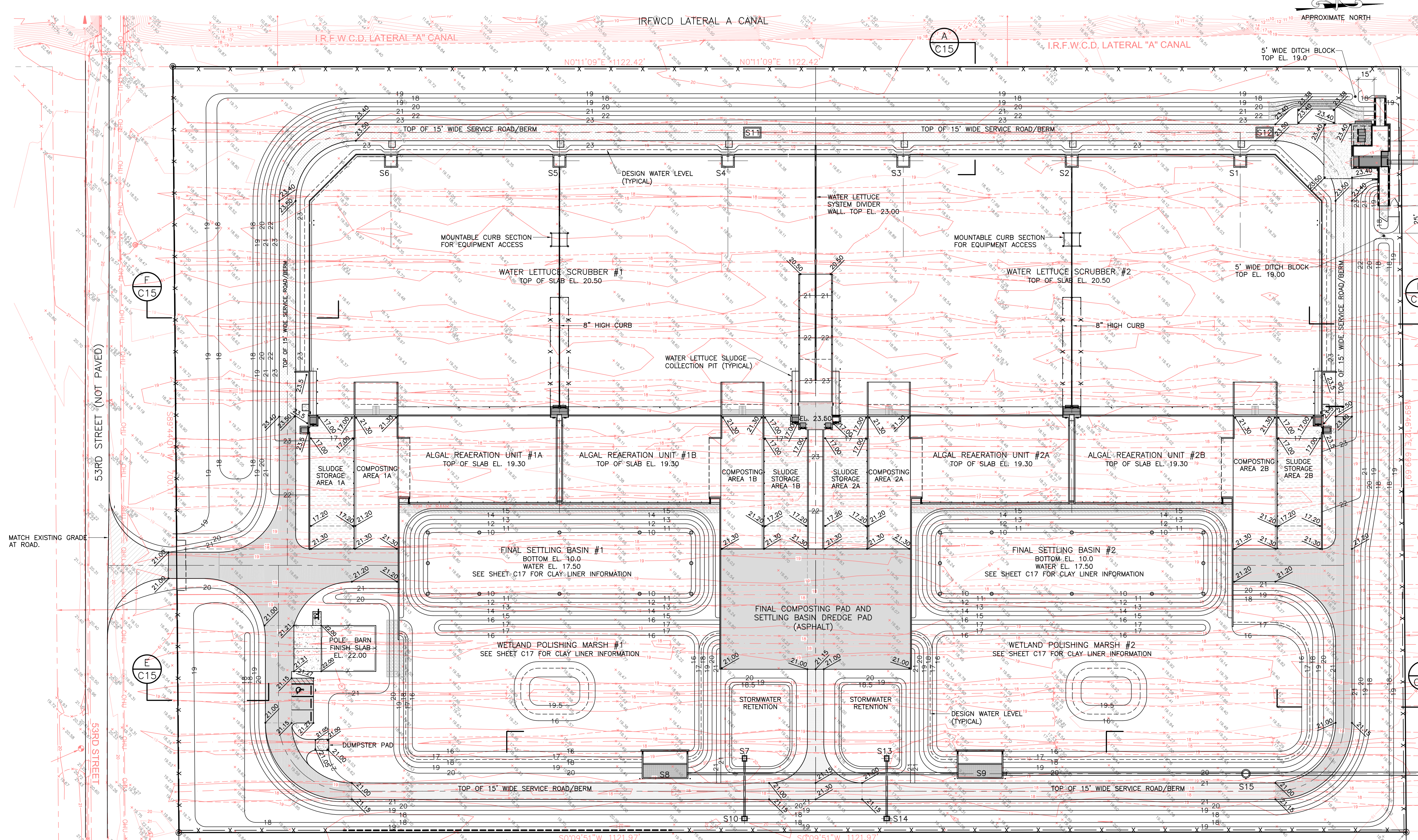
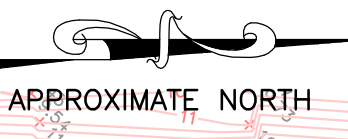
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 FLORIDA P.E. NO. 32007  
 DATE:

PERIMETER FENCING

NAVD88 DATUM IS USED FOR ALL  
 ELEVATIONS ON THIS PROJECT.

PROJECT NO.	
DATE	5/29/2020
SCALE	1" = 40'
SHEET	C1c



53RD STREET (NOT PAVED)

53RD STREET

I.R.F.W.C.D. LATERAL "A" CANAL

I.R.F.W.C.D. LATERAL "A" CANAL

IRFWCD LATERAL A CANAL

5' WIDE DITCH BLOCK  
TOP EL. 19.0

5' WIDE DITCH BLOCK  
TOP EL. 19.00

MOUNTABLE CURB SECTION  
FOR EQUIPMENT ACCESS

MOUNTABLE CURB SECTION  
FOR EQUIPMENT ACCESS

WATER LETTUCE SCRUBBER #1  
TOP OF SLAB EL. 20.50

WATER LETTUCE SCRUBBER #2  
TOP OF SLAB EL. 20.50

8" HIGH CURB

8" HIGH CURB

WATER LETTUCE SLUDGE  
COLLECTION PIT (TYPICAL)

ALGAL REAERATION UNIT #1A  
TOP OF SLAB EL. 19.30

ALGAL REAERATION UNIT #1B  
TOP OF SLAB EL. 19.30

ALGAL REAERATION UNIT #2A  
TOP OF SLAB EL. 19.30

ALGAL REAERATION UNIT #2B  
TOP OF SLAB EL. 19.30

SLUDGE STORAGE  
AREA 1A

COMPOSTING  
AREA 1A

COMPOSTING  
AREA 1B

SLUDGE STORAGE  
AREA 1B

SLUDGE STORAGE  
AREA 2A

COMPOSTING  
AREA 2A

COMPOSTING  
AREA 2B

SLUDGE STORAGE  
AREA 2B

FINAL SETTLING BASIN #1  
BOTTOM EL. 10.0  
WATER EL. 17.50  
SEE SHEET C17 FOR CLAY LINER INFORMATION

FINAL SETTLING BASIN #2  
BOTTOM EL. 10.0  
WATER EL. 17.50  
SEE SHEET C17 FOR CLAY LINER INFORMATION

WETLAND POLISHING MARSH #1  
SEE SHEET C17 FOR CLAY LINER INFORMATION

WETLAND POLISHING MARSH #2  
SEE SHEET C17 FOR CLAY LINER INFORMATION

FINAL COMPOSTING PAD AND  
SETTLING BASIN DREDGE PAD  
(ASPHALT)

POLE BARN  
FINISH SLAB  
EL. 22.00

DUMPSTER PAD

STORMWATER  
RETENTION

STORMWATER  
RETENTION

DESIGN WATER LEVEL  
(TYPICAL)

TOP OF 15' WIDE SERVICE ROAD/BERM

TOP OF 15' WIDE SERVICE ROAD/BERM

D C15

D C15

F C15

E C15

B C15

C C15

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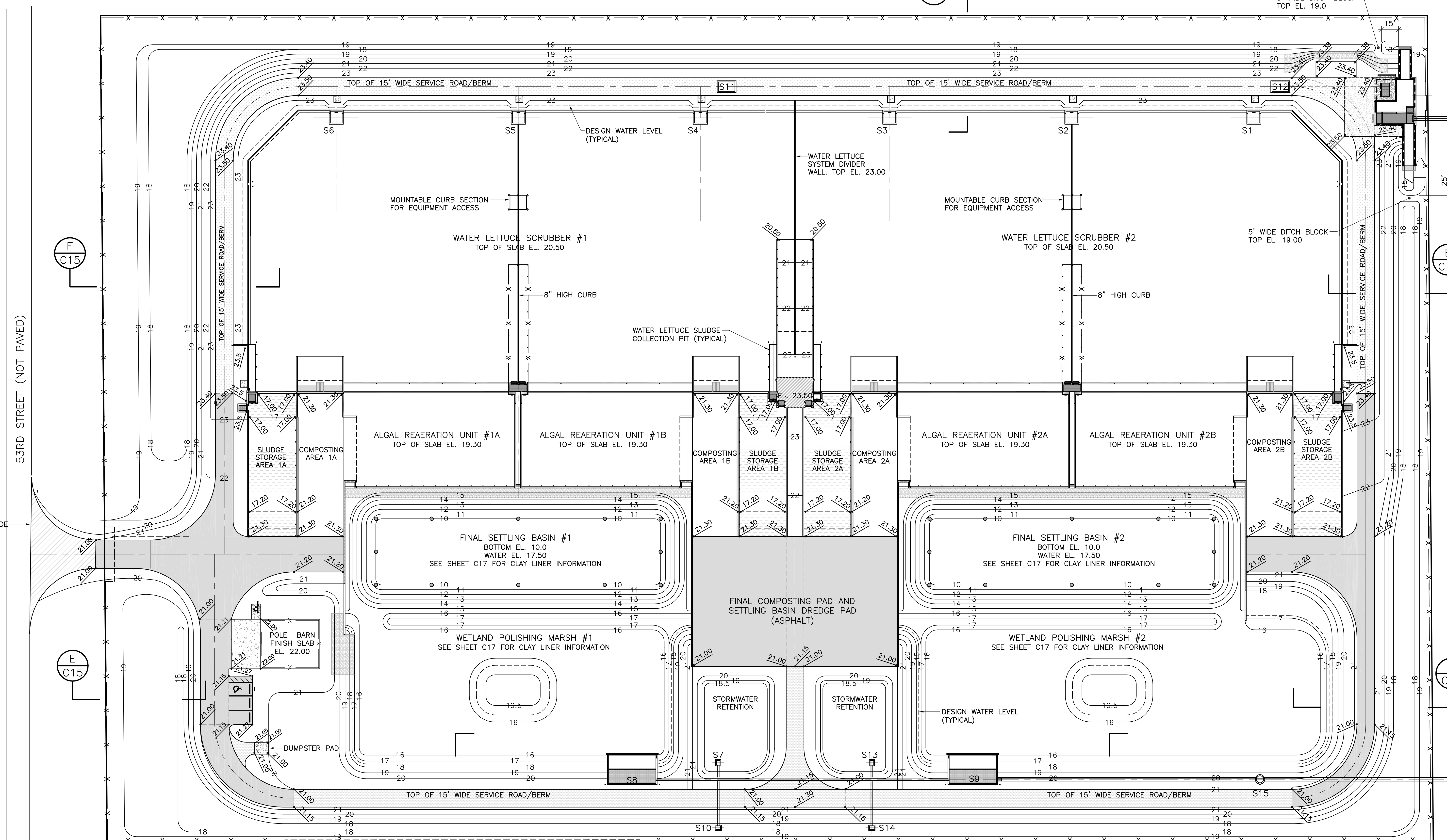
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W. KEITH McCULLY, P.E.  
FLORIDA P.E. NO. 32007  
DATE:

SITE GRADING WITH  
EXISTING TOPOGRAPHY

PROJECT NO.  
DATE 3/30/2020  
SCALE 1"=40'  
SHEET C2a

NAVD88 DATUM IS USED FOR ALL  
ELEVATIONS ON THIS PROJECT.



53RD STREET (NOT PAVED)

MATCH EXISTING GRADE AT ROAD.

F  
C15

E  
C15

D  
C15

D  
C15

A  
C15

B  
C15

C  
C15

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SITE GRADING WITHOUT  
EXISTING TOPOGRAPHY

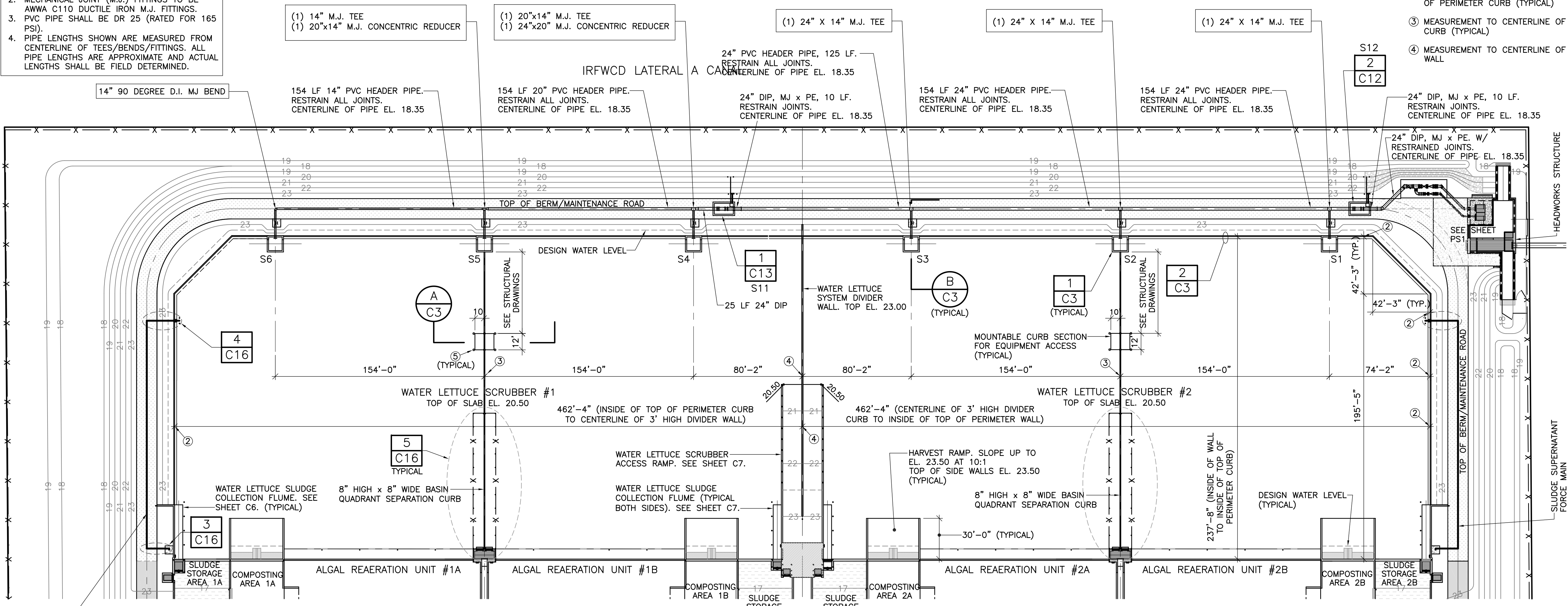
PROJECT NO.  
DATE 3/10/2020  
SCALE 1"=40'  
SHEET C2b

NAVD88 DATUM IS USED FOR ALL  
ELEVATIONS ON THIS PROJECT.

- NOTES:**
1. ALL PIPE, VALVES, AND FITTINGS TO HAVE RESTRAINED JOINTS.
  2. MECHANICAL JOINT (M.J.) FITTINGS TO BE AWWA C110 DUCTILE IRON M.J. FITTINGS.
  3. PVC PIPE SHALL BE DR 25 (RATED FOR 165 PSI).
  4. PIPE LENGTHS SHOWN ARE MEASURED FROM CENTERLINE OF TEES/BENDS/FITTINGS. ALL PIPE LENGTHS ARE APPROXIMATE AND ACTUAL LENGTHS SHALL BE FIELD DETERMINED.



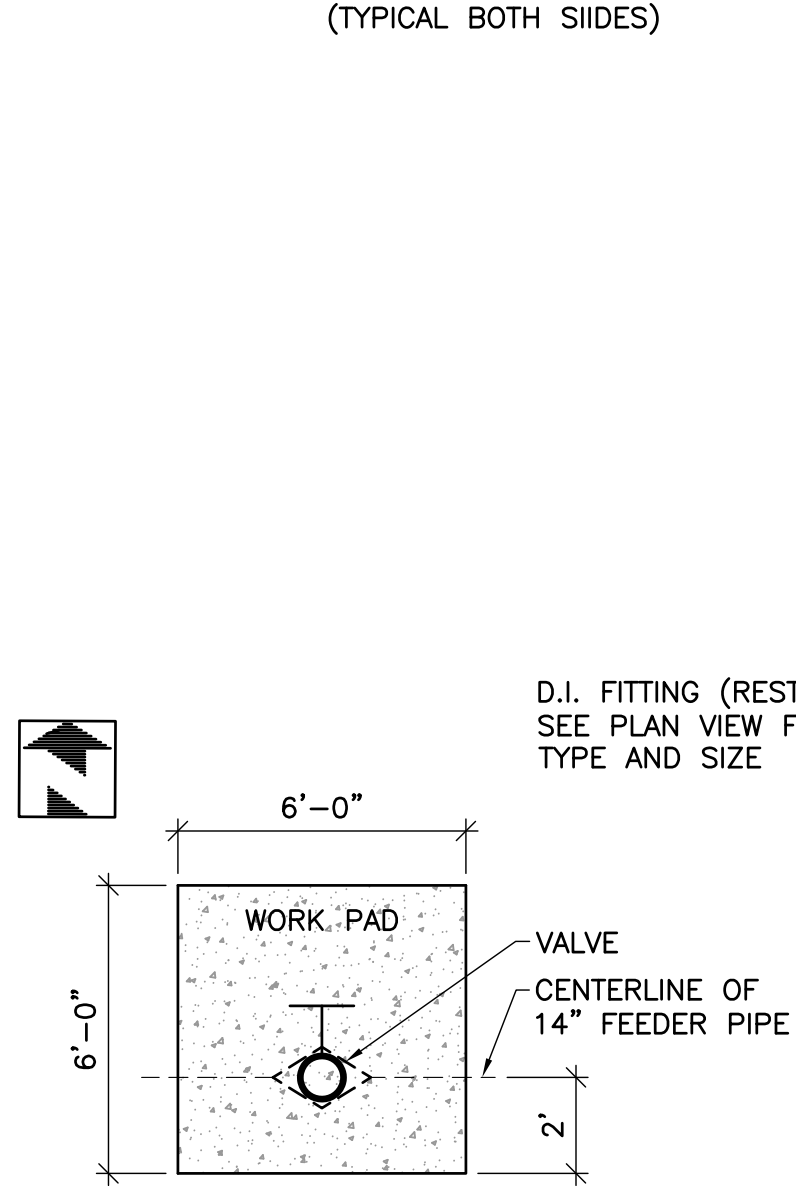
- LEGEND**
- ② MEASUREMENT TO INSIDE OF TOP OF PERIMETER CURB (TYPICAL)
  - ③ MEASUREMENT TO CENTERLINE OF CURB (TYPICAL)
  - ④ MEASUREMENT TO CENTERLINE OF WALL



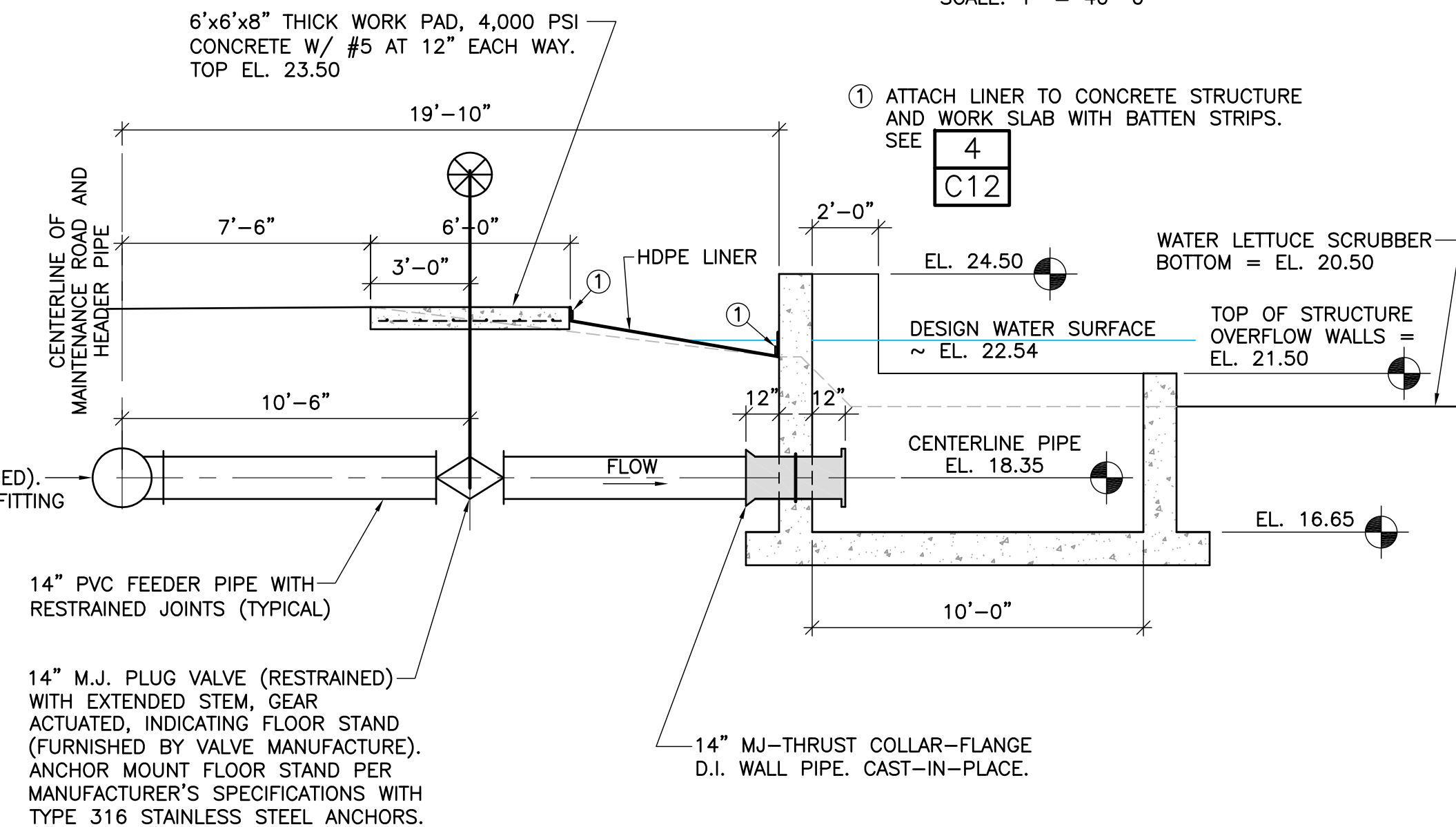
168 LF 4" DIP WATER LETTUCE SLUDGE SUPERNATANT FORCE MAIN WITH RESTRAINED JOINTS ENTIRE LENGTH. IT IS CRITICAL THAT THE TOP OF PIPE = EL. 19.40 UNLESS SHOWN OTHERWISE ON DETAILS ON SHEET C16. IF NOT, THE INSTALLATION WILL BE REJECTED. (TYPICAL BOTH SIDES)

**PLAN VIEW: WATER LETTUCE SCRUBBERS AND INFLUENT PIPING**  
SCALE: 1" = 40'-0"

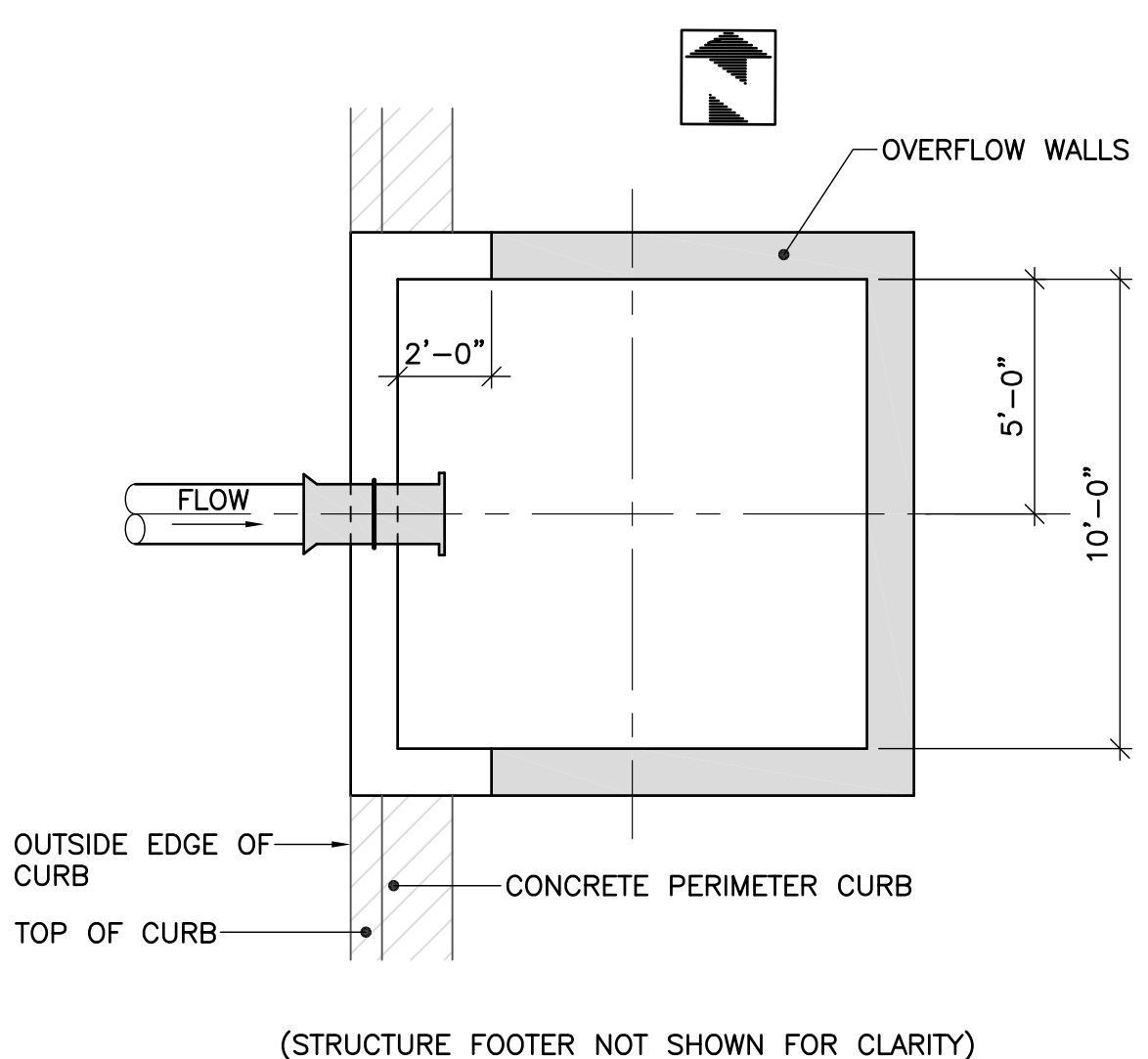
- LEGEND (CONTINUED)**
- ⑤ NATIONAL TRAFFIC SIGNS, INC. SURFACE MOUNT FLEXIBLE TRAFFIC DELINEATOR (ITEM #IRS36SM-R-HP, 36" TUFF POST HIGH PERFORMANCE CHANNELIZER) WITH 8"x8" SQUARE BASE (ITEM #42HIGHVIS-SM-BASE). POST COLOR = YELLOW, REFLECTIVE SHEETING COLOR = RED. MOUNT TO CONCRETE WITH APPROPRIATELY SIZED TYPE 316 STAINLESS STEEL RED HEAD TRUBOLT WEDGE ANCHORS, MINIMUM 2-1/2" EMBEDMENT. SIX DELINEATORS REQUIRED PER EACH MOUNTABLE CURB LOCATION.



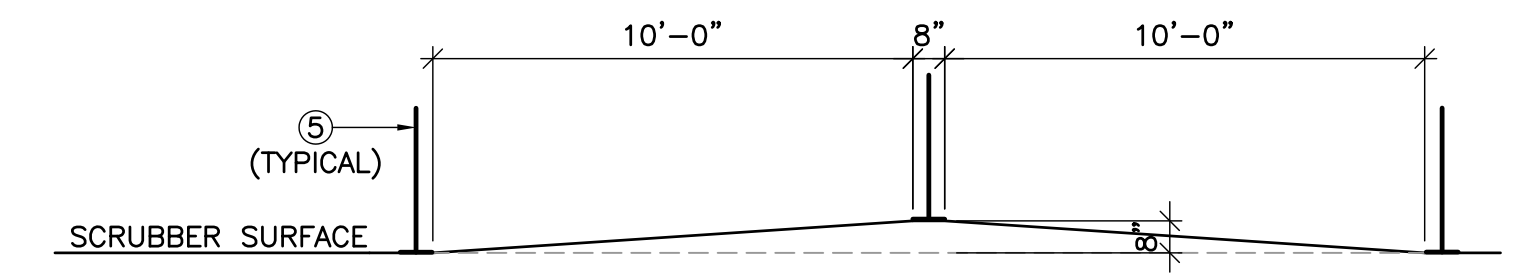
**DETAIL: WORK SLAB LAYOUT PLAN VIEW**  
SCALE: 1" = 4'-0"



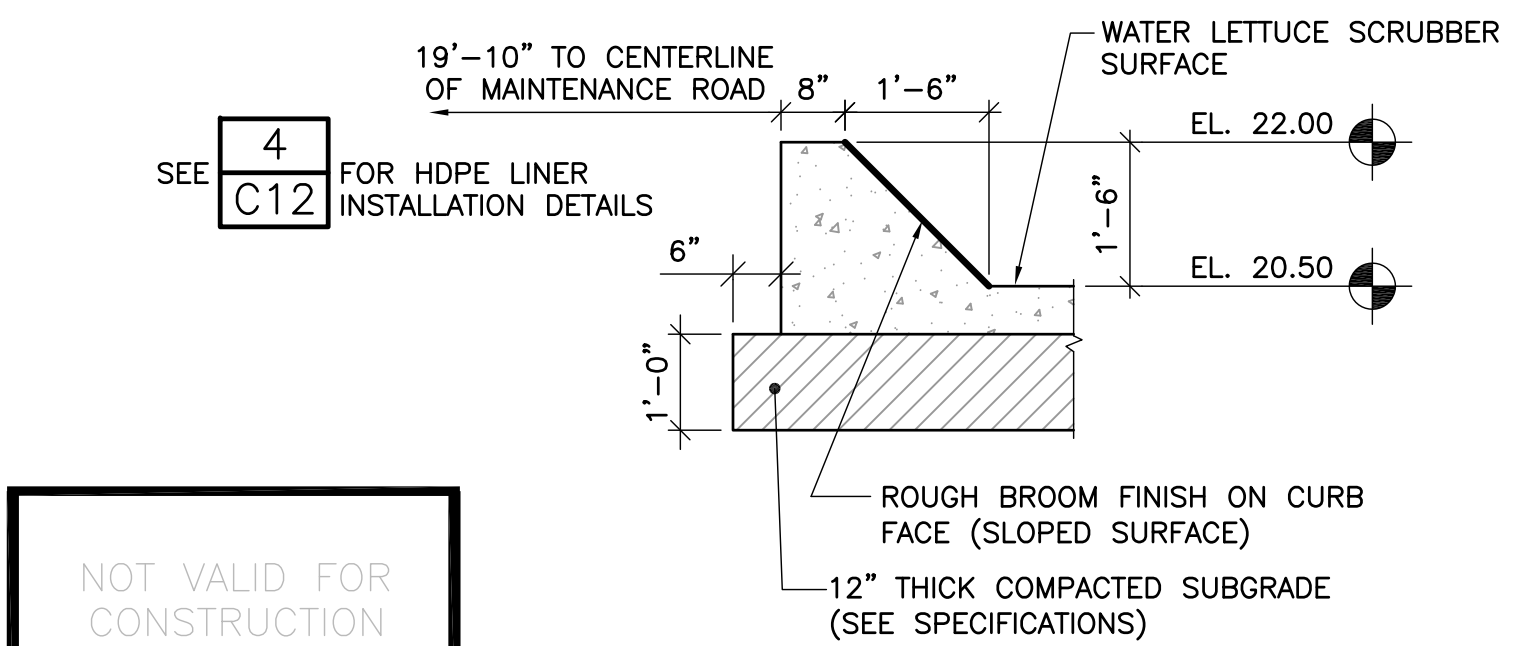
**B SECTION: STRUCTURES S1 THROUGH S6 AND FEEDER PIPE**  
SCALE: 1" = 4'-0"



**1 PLAN VIEW: STRUCTURES S1 THROUGH S6**  
SCALE: 1" = 4'-0"



**A SECTION: MOUNTABLE CURB**  
SCALE: 1" = 4'-0"



**2 DETAIL: WATER LETTUCE SCRUBBER PERIMETER CURB**  
NOT TO SCALE

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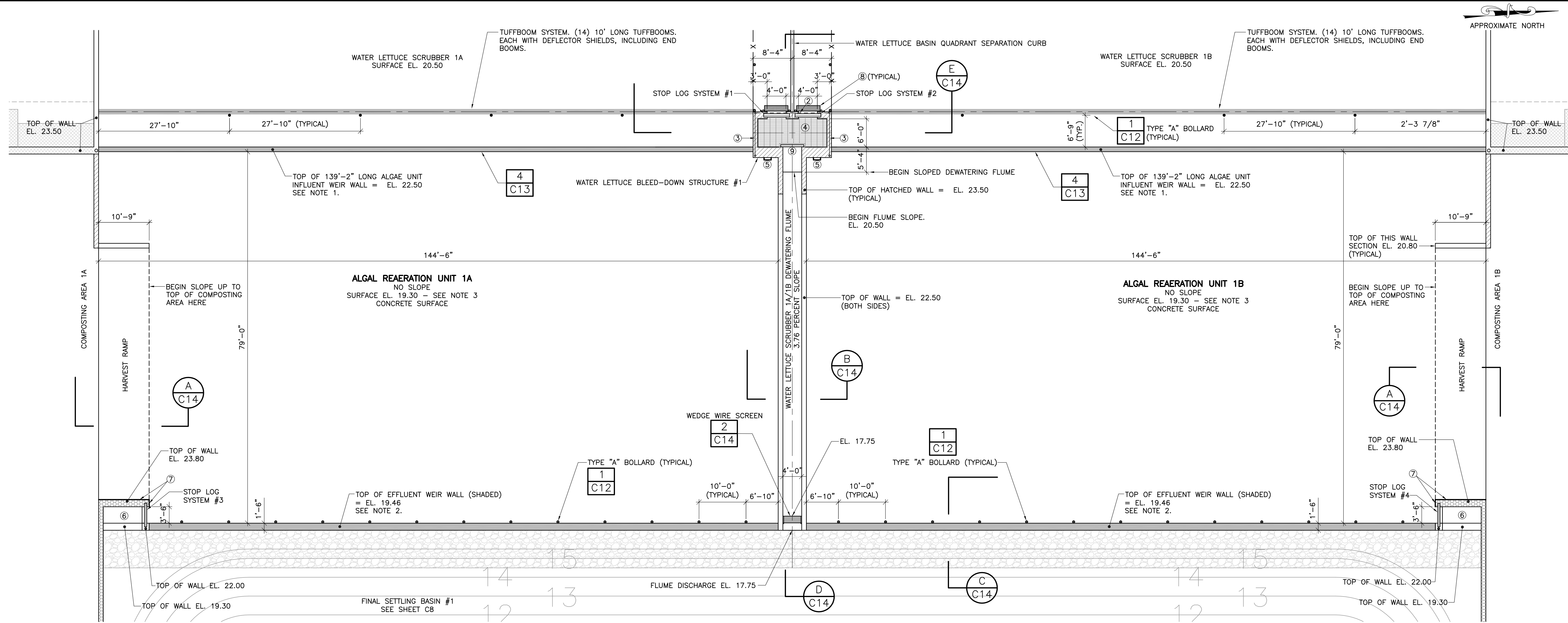
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MOORHEN MARSH LEAPS™

W. KEITH McCULLY, P.E.  
FLORIDA P.E. NO. 32007  
DATE:

WATER LETTUCE  
SCRUBBERS AND  
INFLUENT FORCE MAIN

PROJECT NO.  
DATE 3/9/2020  
SCALE AS NOTED  
SHEET C3



**PLAN VIEW: ALGAL REAERATION UNITS 1A & 1B**

SCALE: 1" = 10'-0"

**NOTES:**

- REGARDING ALGAL REAERATION UNIT INFLUENT WEIRS: IT IS CRITICAL THAT EACH PAIR OF ALGAL REAERATION UNIT INFLUENT WEIRS ARE CONSTRUCTED AT THE EXACT SAME ELEVATION. IF THE TOP OF EITHER PAIR OF WEIRS DEVIATES FROM THE DESIGN ELEVATION BY MORE THAN PLUS OR MINUS 1/8", THEN THE WEIRS WILL BE REJECTED AND THE ENGINEER WILL DETERMINE A REMEDY THAT WILL BE IMPLEMENTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THIS WORK REQUIRES PRECISION ABOVE THAT NORMALLY PROVIDED BY CONSTRUCTION CONTRACTORS IN THIS AREA.
- REGARDING ALGAL REAERATION UNIT EFFLUENT LIP/SHALLOW WEIRS: IT IS CRITICAL THAT THE ALGAL REAERATION UNIT EFFLUENT LIP/SHALLOW WEIRS ARE CONSTRUCTED ONE-INCH HIGH. IF THE TOP ELEVATION DEVIATES FROM THE DESIGN ELEVATION BY MORE THAN PLUS OR MINUS 1/8", THEN THE LIP/WEIR WILL BE REJECTED AND THE ENGINEER WILL DETERMINE A REMEDY THAT WILL BE IMPLEMENTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THIS WORK REQUIRES PRECISION ABOVE THAT NORMALLY PROVIDED BY CONSTRUCTION CONTRACTORS IN THIS AREA.
- THE TOLERANCE FOR THE FINAL GRADE OF THE ALGAL REAERATION UNIT FLOORS IS PLUS OR MINUS 1/4" BASED ON 50' GRIDS.
- ALL NUTS, BOLTS, WASHERS, AND OTHER HARDWARE TO BE TYPE 316 STAINLESS STEEL.
- SEE SHEET C14 FOR ADDITIONAL LADDER LENGTH INFORMATION.
- INSTALL ALL STOP LOG FRAMES ACCURATELY AND AT PROPER SEPARATIONS SO THAT LEAKAGE DOES NOT EXCEED SPECIFICATIONS OR ELSE INSTALLATION WILL BE REJECTED. (TYPICAL FOR ALL STOP LOG SYSTEMS ON THIS PROJECT).

**SHEET LEGEND**

- ITEM OMITTED
- TWO ROWS OF 3/8" DIAMETER TYPE 316 STAINLESS STEEL SAFETY CHAIN ATTACHED TO ALUMINUM HANDRAIL POSTS WITH TYPE 316 STAINLESS STEEL SAFETY CLIPS
- ALUMINUM HANDRAIL SYSTEM
- TRAFFIC BEARING ALUMINUM GRATING. NOTCH GRATING AS REQUIRED FOR PROPER SLIDE GATE OPERATION.
- ALGAL REAERATION UNIT EGRESS LADDER WITH 42" HIGH HANDRAIL OPTION
- ALGAL UNIT DRAIN SUMP WITH ALUMINUM STOP LOG SYSTEM. SLAB BOTTOM ELEVATION AT STOP LOGS = EL. 19.30. SUMP BOTTOM EL. 17.30
- PAINT OUTSIDE FACE OF WALL AS INDICATED WITH TNEPEC PAINT:  
PRIMER = TNEPEC SERIES 130 ENVIROFILL. COLOR = OFF-WHITE (130-6602). APPLY PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.  
TOP COAT = TNEPEC SERIES 113 H.B. TNEPEC-TUFCOAT. COLOR = CANDY APPLE RED/SAFETY (06SF). APPLY 2 COATS PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
- 5' LONG TUFFBOOM. CENTER AT STOP LOG OPENING. MOUNT ON TWO TIDESLIDES.
- SLIDE GATE NO. 1

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DESIGNED BY	KM	DRAWN BY	KM	CHECKED BY	JG	APPROVED BY	KM
NUMBER	REVISIONS	REVISED BY	CHECKED BY				

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MOORHEN MARSH LEAPS™

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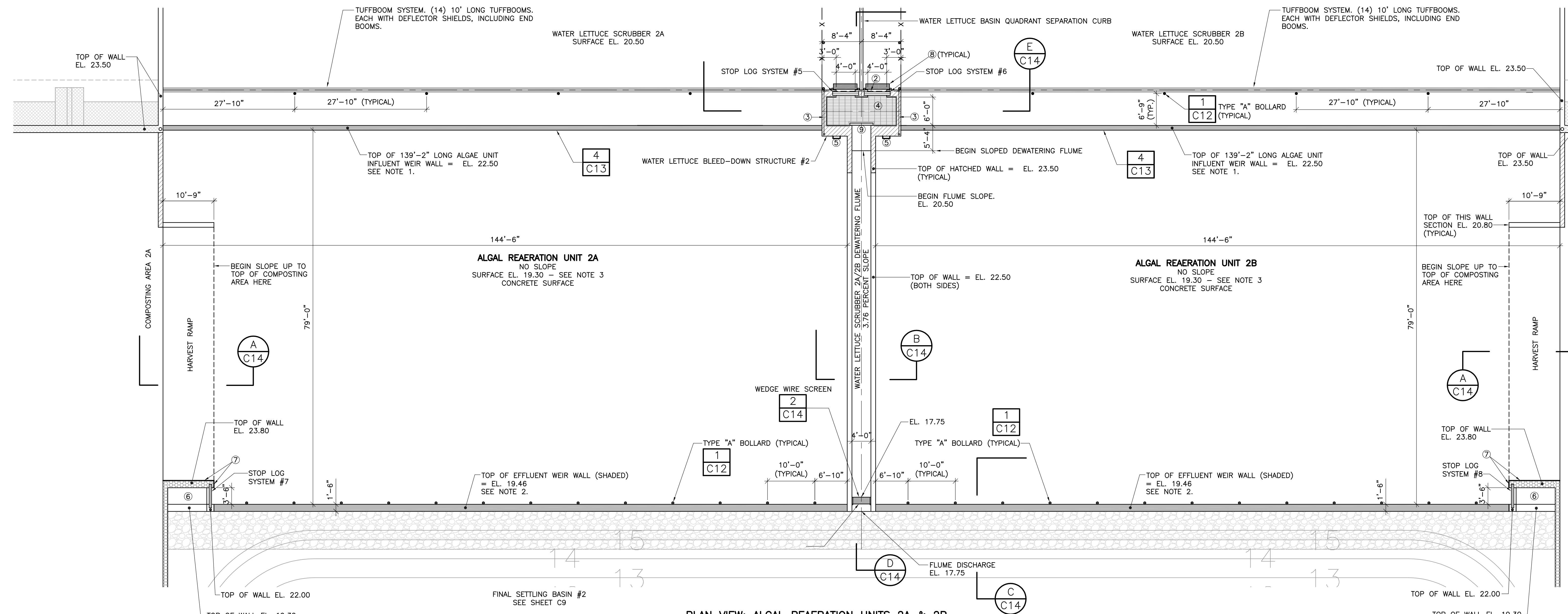
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DATE:

ALGAL REAERATION  
UNITS 1A & 1B

NAVD88 DATUM IS USED FOR ALL  
ELEVATIONS ON THIS PROJECT.

PROJECT NO.	
DATE	3/10/2020
SCALE	1"=10'
SHEET	C4





**PLAN VIEW: ALGAL REAERATION UNITS 2A & 2B**  
SCALE: 1" = 10'-0"

- NOTES:**
- REGARDING ALGAL REAERATION UNIT INFLUENT WEIRS: IT IS CRITICAL THAT EACH PAIR OF ALGAL REAERATION UNIT INFLUENT WEIRS ARE CONSTRUCTED AT THE EXACT SAME ELEVATION. IF THE TOP OF EITHER PAIR OF WEIRS DEVIATES FROM THE DESIGN ELEVATION BY MORE THAN PLUS OR MINUS 1/8", THEN THE WEIRS WILL BE REJECTED AND THE ENGINEER WILL DETERMINE A REMEDY THAT WILL BE IMPLEMENTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THIS WORK REQUIRES PRECISION ABOVE THAT NORMALLY PROVIDED BY CONSTRUCTION CONTRACTORS IN THIS AREA.
  - REGARDING ALGAL REAERATION UNIT EFFLUENT LIP/SHALLOW WEIRS: IT IS CRITICAL THAT THE ALGAL REAERATION UNIT EFFLUENT LIP/SHALLOW WEIRS ARE CONSTRUCTED ONE-INCH HIGH. IF THE TOP ELEVATION DEVIATES FROM THE DESIGN ELEVATION BY MORE THAN PLUS OR MINUS 1/8", THEN THE LIP/WEIR WILL BE REJECTED AND THE ENGINEER WILL DETERMINE A REMEDY THAT WILL BE IMPLEMENTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THIS WORK REQUIRES PRECISION ABOVE THAT NORMALLY PROVIDED BY CONSTRUCTION CONTRACTORS IN THIS AREA.
  - THE TOLERANCE FOR THE FINAL GRADE OF THE ALGAL REAERATION UNIT FLOORS IS PLUS OR MINUS 1/4" BASED ON 50' GRIDS.
  - ALL NUTS, BOLTS, WASHERS, AND OTHER HARDWARE TO BE TYPE 316 STAINLESS STEEL.
  - SEE SHEET C14 FOR ADDITIONAL LADDER LENGTH INFORMATION.
  - INSTALL ALL STOP LOG FRAMES ACCURATELY AND AT PROPER SEPARATIONS SO THAT LEAKAGE DOES NOT EXCEED SPECIFICATIONS OR ELSE INSTALLATION WILL BE REJECTED. (TYPICAL FOR ALL STOP LOG SYSTEMS ON THIS PROJECT).

- SHEET LEGEND**
- ITEM OMITTED
  - TWO ROWS OF 3/8" DIAMETER TYPE 316 STAINLESS STEEL SAFETY CHAIN ATTACHED TO ALUMINUM HANDRAIL POSTS WITH TYPE 316 STAINLESS STEEL SAFETY CLIPS
  - ALUMINUM HANDRAIL SYSTEM
  - TRAFFIC BEARING ALUMINUM GRATING
  - ALGAL REAERATION UNIT EGRESS LADDER WITH 42" HIGH HANDRAIL OPTION
  - ALGAL UNIT DRAIN SUMP WITH ALUMINUM STOP LOG SYSTEM. SLAB BOTTOM ELEVATION AT STOP LOGS = EL. 19.30. SUMP BOTTOM EL. 17.30
  - PAINT OUTSIDE FACE OF WALL AS INDICATED WITH TNEMEC PAINT: PRIMER = TNEMEC SERIES 130 ENVIROFILL. COLOR = OFF-WHITE (130-6602). APPLY PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. TOP COAT = TNEMEC SERIES 113 H.B. TNEME-TUFCOAT. COLOR = CANDY APPLE RED/SAFETY (06SF). APPLY 2 COATS PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
  - 5' LONG TUFFBOOM. CENTER AT STOP LOG OPENING. MOUNT ON TWO TIDESLIDES.
  - SLIDE GATE NO. 2

**NOT FOR CONSTRUCTION:  
BIDDING PURPOSES ONLY**

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NUMBER	REVISIONS	REVISED BY	CHECKED BY	DESIGNED BY	KM	DRAWN BY	KM

**INDIAN RIVER COUNTY  
STORMWATER DIVISION**  
1801 27TH STREET  
VERO BEACH, FLORIDA 32960  
(772) 226-1562

**MOORHEN MARSH LEAPS™**

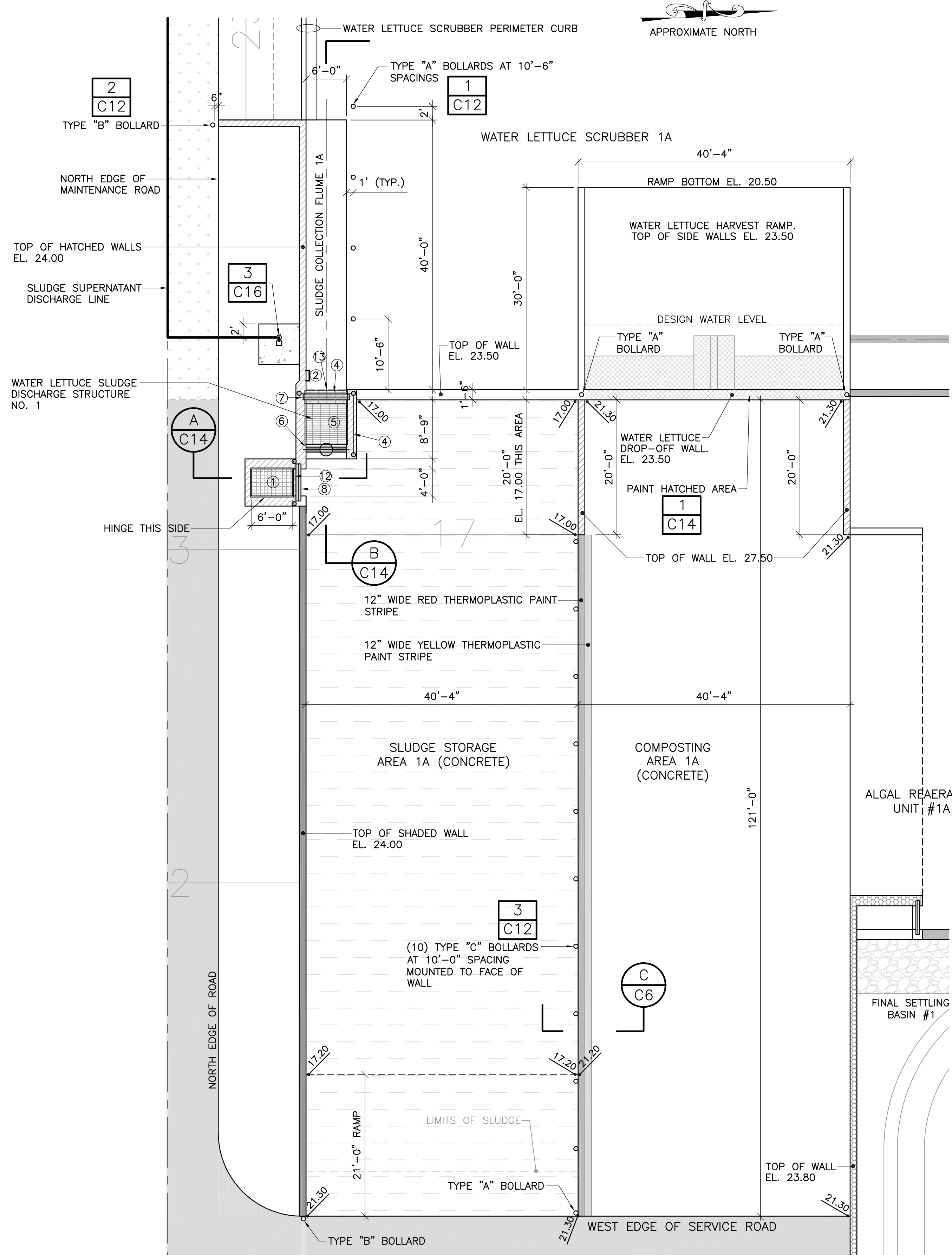
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FLORIDA P.E. NO. 32007  
DATE:

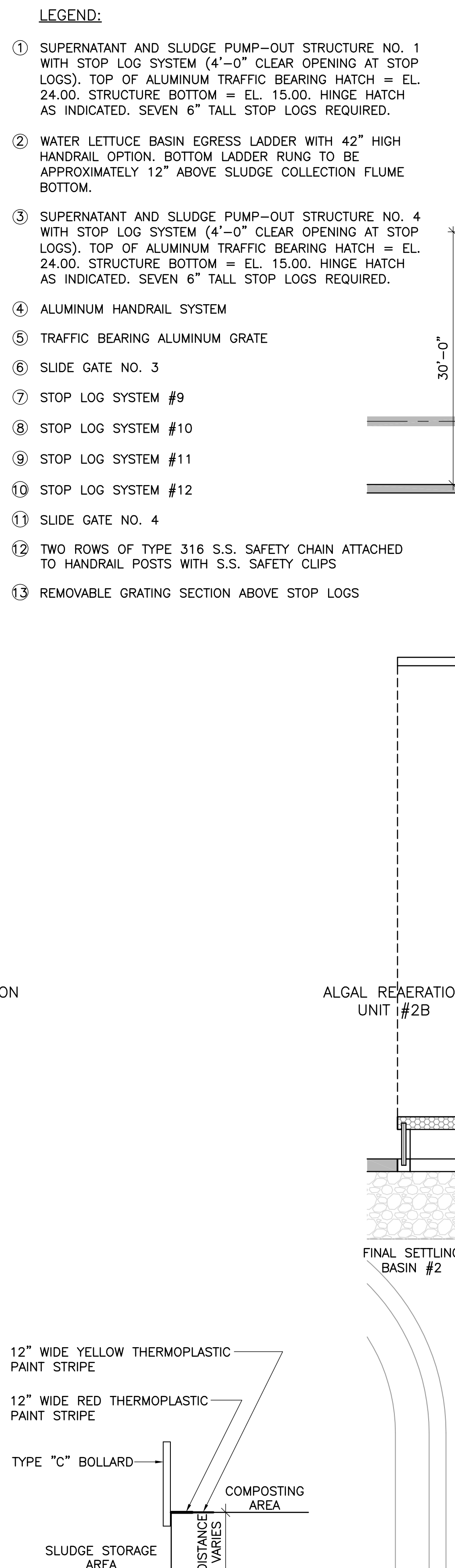
**ALGAL REAERATION  
UNITS 2A & 2B**

NAVD88 DATUM IS USED FOR ALL  
ELEVATIONS ON THIS PROJECT.

PROJECT NO.	
DATE	3/10/2020
SCALE	1"=10'
SHEET	<b>C5</b>



PLAN VIEW: COMPOSTING AREA 1A & SLUDGE STORAGE AREA 1A  
SCALE: 1" = 10'-0"



PLAN VIEW: COMPOSTING AREA 2B & SLUDGE STORAGE AREA 2B  
SCALE: 1" = 10'-0"

- LEGEND:**
- ① SUPERNATANT AND SLUDGE PUMP-OUT STRUCTURE NO. 1 WITH STOP LOG SYSTEM (4'-0" CLEAR OPENING AT STOP LOGS). TOP OF ALUMINUM TRAFFIC BEARING HATCH = EL. 24.00. STRUCTURE BOTTOM = EL. 15.00. HINGE HATCH AS INDICATED. SEVEN 6" TALL STOP LOGS REQUIRED.
  - ② WATER LETTUCE BASIN EGRESS LADDER WITH 42" HIGH HANDRAIL OPTION. BOTTOM LADDER RUNG TO BE APPROXIMATELY 12" ABOVE SLUDGE COLLECTION FLUME BOTTOM.
  - ③ SUPERNATANT AND SLUDGE PUMP-OUT STRUCTURE NO. 4 WITH STOP LOG SYSTEM (4'-0" CLEAR OPENING AT STOP LOGS). TOP OF ALUMINUM TRAFFIC BEARING HATCH = EL. 24.00. STRUCTURE BOTTOM = EL. 15.00. HINGE HATCH AS INDICATED. SEVEN 6" TALL STOP LOGS REQUIRED.
  - ④ ALUMINUM HANDRAIL SYSTEM
  - ⑤ TRAFFIC BEARING ALUMINUM GRATE
  - ⑥ SLIDE GATE NO. 3
  - ⑦ STOP LOG SYSTEM #9
  - ⑧ STOP LOG SYSTEM #10
  - ⑨ STOP LOG SYSTEM #11
  - ⑩ STOP LOG SYSTEM #12
  - ⑪ SLIDE GATE NO. 4
  - ⑫ TWO ROWS OF TYPE 316 S.S. SAFETY CHAIN ATTACHED TO HANDRAIL POSTS WITH S.S. SAFETY CLIPS
  - ⑬ REMOVABLE GRATING SECTION ABOVE STOP LOGS

**PROFILE: SLUDGE STORAGE AREAS 1A&2A/COMPOSTING AREAS 1A&2A**  
SCALE: 1" = 4'-0"  
(SIMILAR FOR SLUDGE STORAGE AREAS 1B&2B/COMPOSTING AREAS 1B&2B)

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REVISIONS							

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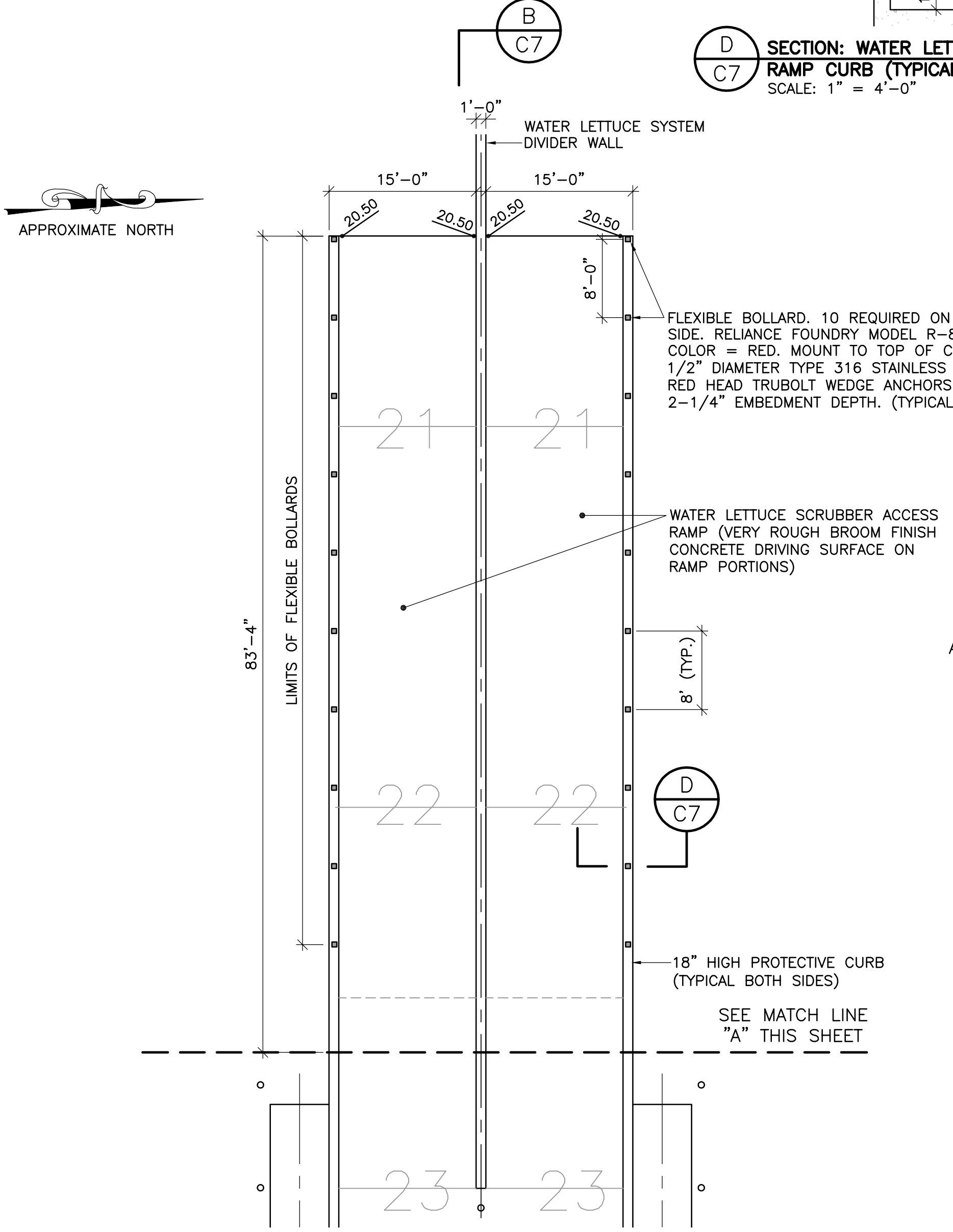
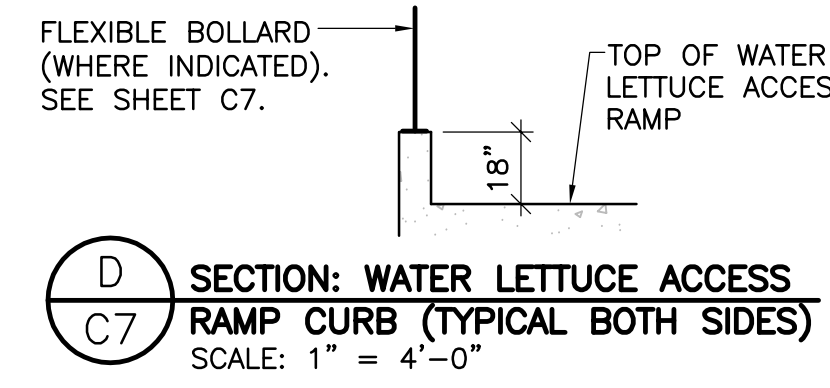
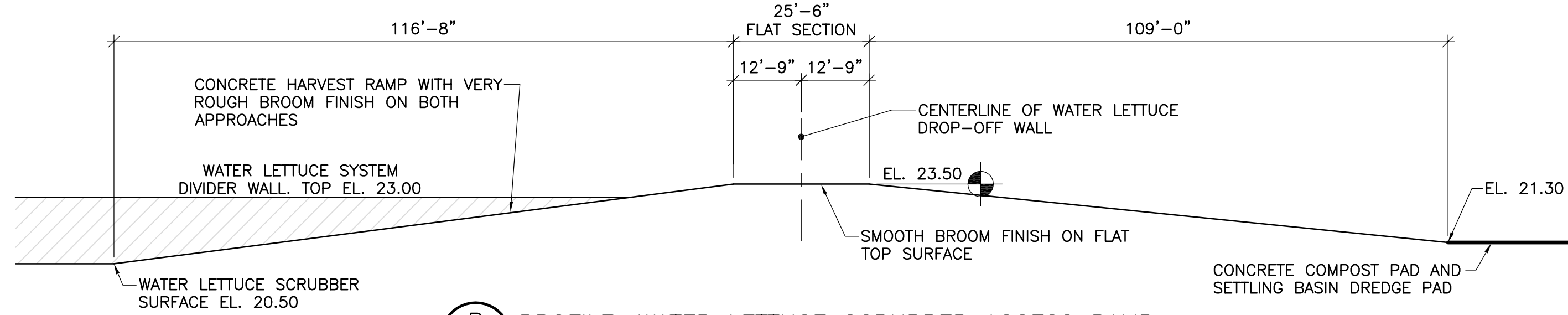
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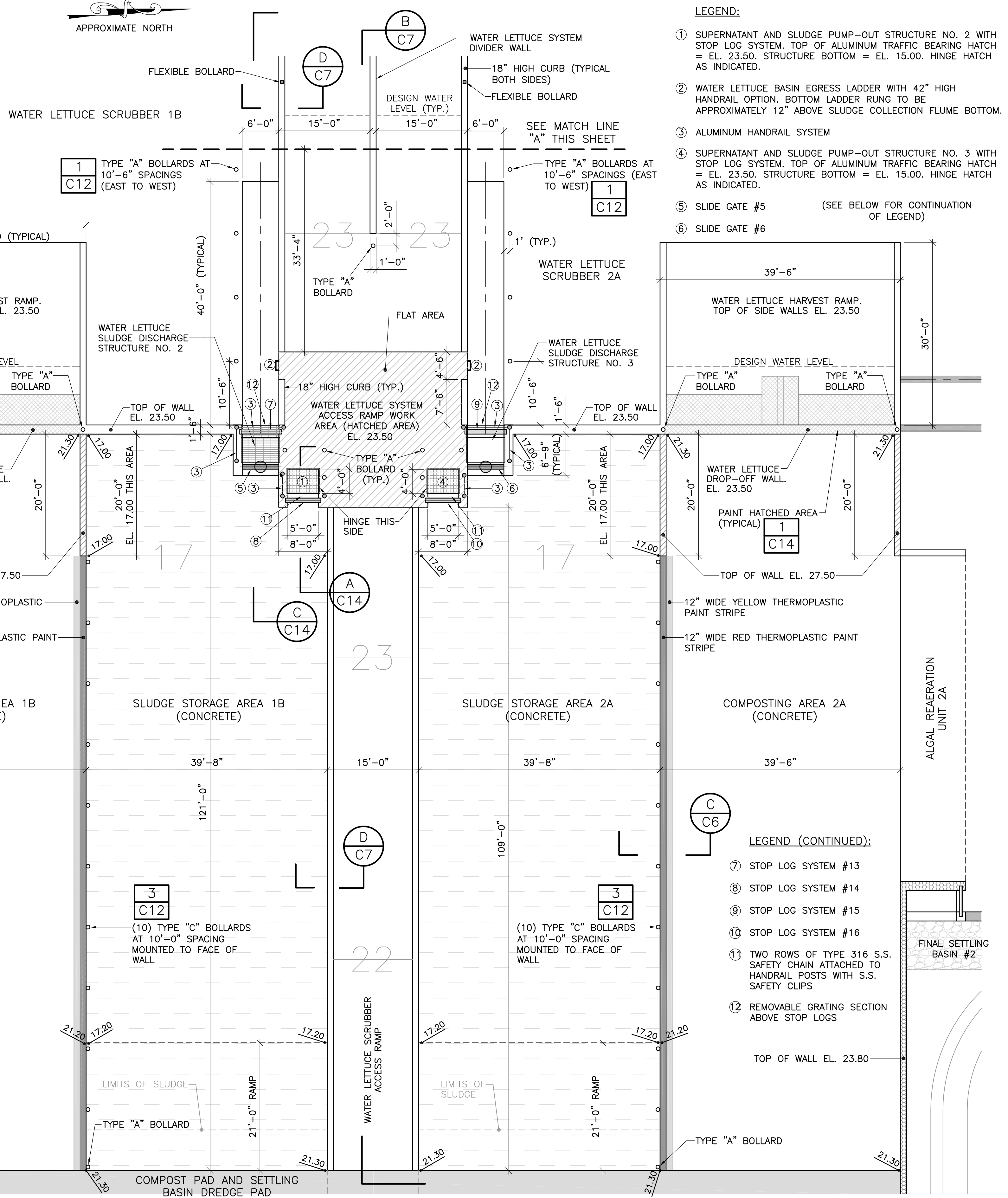
COMPOSTING AND SLUDGE  
STORAGE AREAS 1A AND 2B

NAV88 DATUM IS USED FOR ALL  
ELEVATIONS ON THIS PROJECT.

PROJECT NO.  
DATE 3/10/2020  
SCALE AS NOTED  
SHEET C6



**PLAN VIEW CONTINUATION: WATER LETTUCE SCRUBBER ACCESS RAMP**  
SCALE: 1" = 10'-0"



**PLAN VIEW: COMPOSTING AREAS 1B AND 2A & SLUDGE STORAGE AREAS 1B AND 2A**  
SCALE: 1" = 10'-0"

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NUMBER	REVISIONS	REVISED BY	CHECKED BY	DESIGNED BY	KM	DRAWN BY	KM

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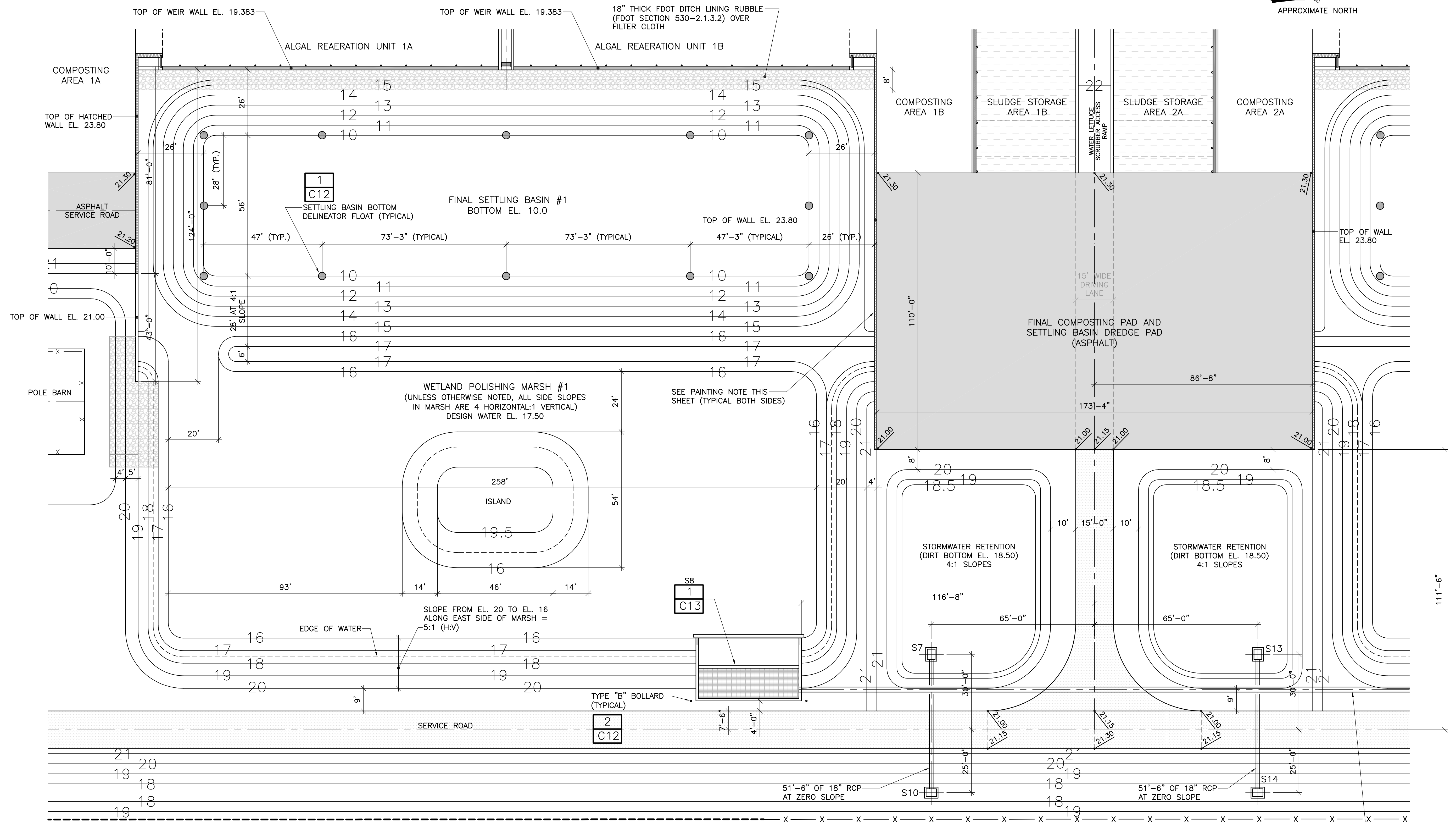
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**COMPOSTING AND SLUDGE STORAGE AREAS 1B AND 2A**

PROJECT NO.	
DATE	3/10/2020
SCALE	AS NOTED
SHEET	<b>C7</b>



A GEOTEXTILE CLAY LINER WILL BE INSTALLED BELOW THE FINAL SETTLING BASINS AND WETLAND POLISHING MARSHES. SEE SHEET C17 FOR SECTION CUTS AND GCL LINER INFORMATION.

**PLAN VIEW: FINAL SETTLING BASIN #1, WETLAND POLISHING MARSH #1, AND FINAL COMPOSTING PAD/SETTLING BASIN DREDGE PAD**  
SCALE: 1" = 20'-0"

**NOTES REGARDING STRUCTURES S7, S10, S13, AND S14**

- STRUCTURES S7 AND S13  
TOP = EL. 19.50  
PIPE INVERT = EL. 11.75
- STRUCTURES S10 AND S14  
TOP = EL. 18.50  
PIPE INVERT = EL. 11.75
- ALL STRUCTURES TO HAVE H-20 TRAFFIC BEARING GRATE AND FRAME.
- STRUCTURES TO BE TYPE "D" DITCH BOTTOM INLETS PER FDOT INDEX NO. 232 WITH 8" MINIMUM THICK WALLS. STRUCTURES TO BE PRECAST - SEE ADDITIONAL PRECAST STRUCTURE NOTES ON SHEET C16. NOTE STRUCTURE ORIENTATION ON PLANS - STRUCTURES NOT INSTALLED TO CORRECT ORIENTATION WILL BE REJECTED.

248 LF OF 24" RCP PIPE AT 0.0024 FT/FT SLOPE (S8 TO S9)

**PAINTING NOTE:**  
PAINT A 1" WIDE VERTICAL PAINT STRIPE ON WATER SIDE OF WALL ABOVE EL. 10 DEPTH FROM EL. 17.50 TO TOP OF WALL.  
1. PRIMER = TNEC SERIES 130 ENVIROFILL. COLOR = OFF-WHITE (130-6602). APPLY PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.  
2. TOP COAT = TNEC SERIES 113 H.B. TNEC-TUF COAT. COLOR = CANDY APPLE RED/SAFETY (06SF). APPLY 2 COATS PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

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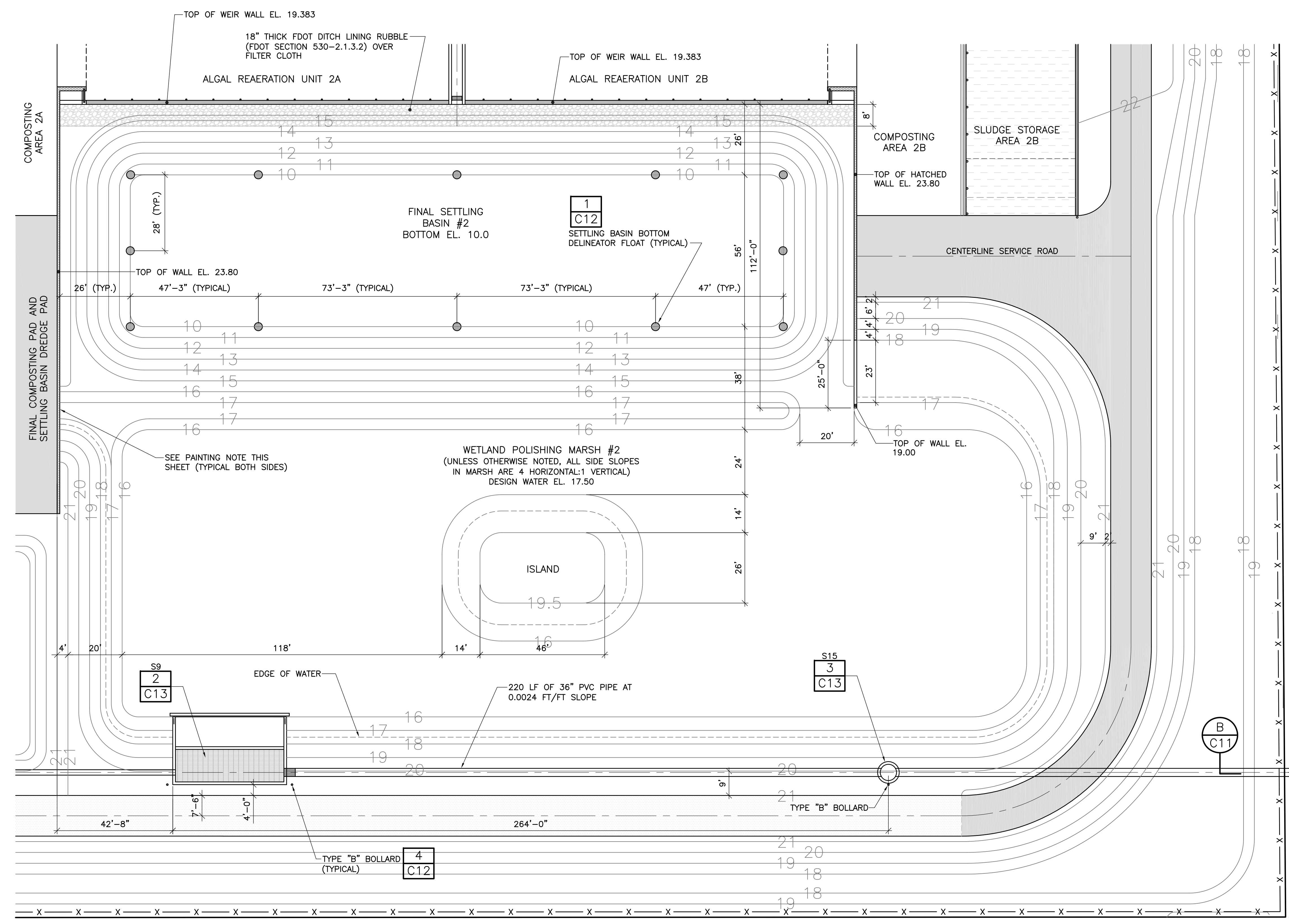
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**FINAL SETTLING #1, WETLAND POLISHING MARSH #1 & FINAL COMPOSTING/DREDGE PAD**

PROJECT NO.  
DATE 3/10/2020  
SCALE 1" = 20'  
SHEET **C8**

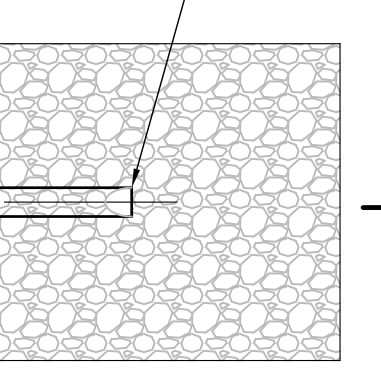


**PAINTING NOTE:**  
 PAINT A 1" WIDE VERTICAL PAINT STRIPE ON WATER SIDE OF WALL ABOVE EL. 10' DEPTH FROM EL. 17.50 TO TOP OF WALL.  
 1. PRIMER = TNESEC SERIES 130 ENVIROFILL. COLOR = OFF-WHITE (130-6602). APPLY PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.  
 2. TOP COAT = TNESEC SERIES 113 H.B. TNESEC-TUF-COAT. COLOR = CANDY APPLE RED/SAFETY (06SF). APPLY 2 COATS PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

IRFWCD NORTH  
 RELIEF CANAL

SEE SHEET C11 FOR EXISTING TOPOGRAPHY AND DETAILS IN THIS AREA

245 LF OF 36" CAP AT 0.0022 FT/FT SLOPE



0.750" DIAMETER TYPE 6061T6 ROUND ALUMINUM BAR. EXTEND 1" BEYOND PIPE EACH SIDE. INSTALL MIN. 2" INSIDE PIPE. (TYPICAL)

TYPE 316 STAINLESS STEEL STRONG-HOLD HAIRPIN COTTER PIN, 3/16" WIRE DIA., 1-1/8" EYE DIA., 4-1/8" LONG (TYPICAL)

**DETAIL: END-OF-PIPE ANIMAL GUARD**  
 NOT TO SCALE

A GEOTEXTILE CLAY LINER WILL BE INSTALLED BELOW THE FINAL SETTLING BASINS AND WETLAND POLISHING MARSHES. SEE SHEET C17 FOR SECTION CUTS AND GCL LINER INFORMATION.

**PLAN VIEW: FINAL SETTLING BASIN #2, WETLAND POLISHING MARSH #2, AND FINAL DISCHARGE TO NORTH RELIEF CANAL**  
 SCALE: 1" = 20'-0"

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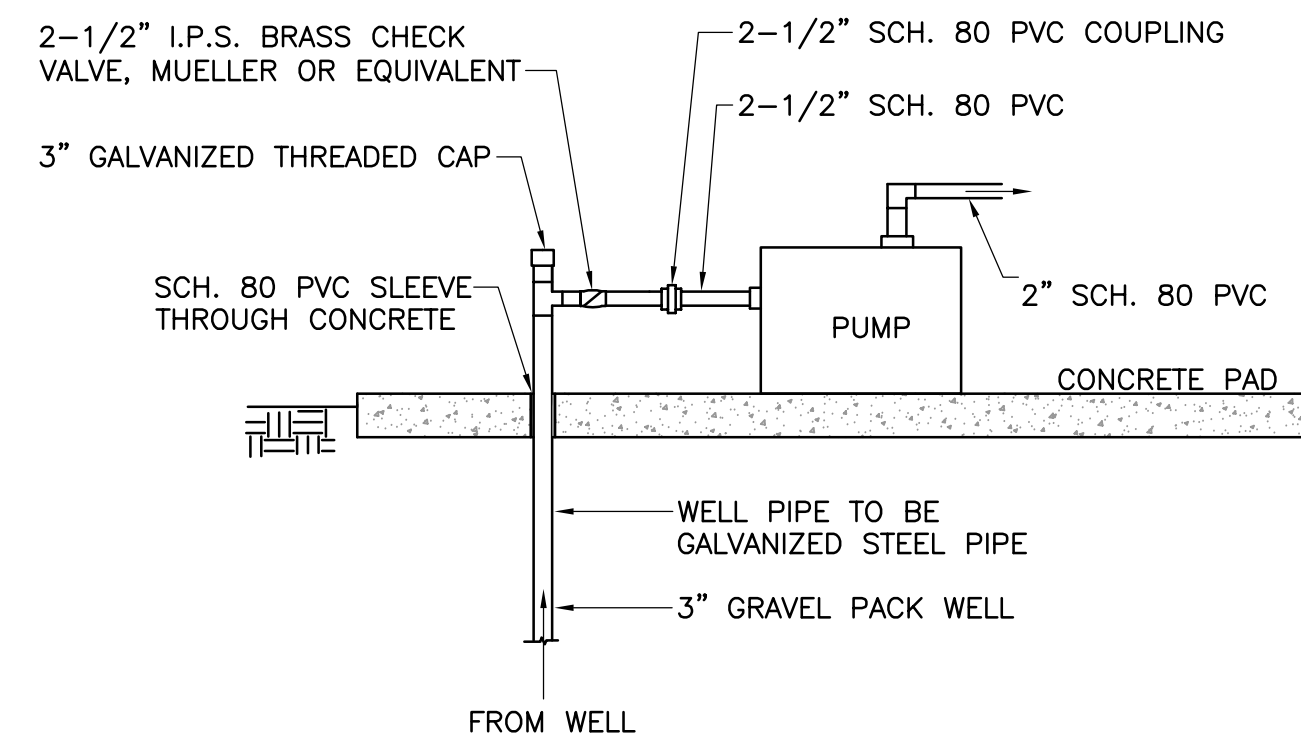
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FINAL SETTLING #2, WETLAND POLISHING MARSH #2, AND FINAL DISCHARGE

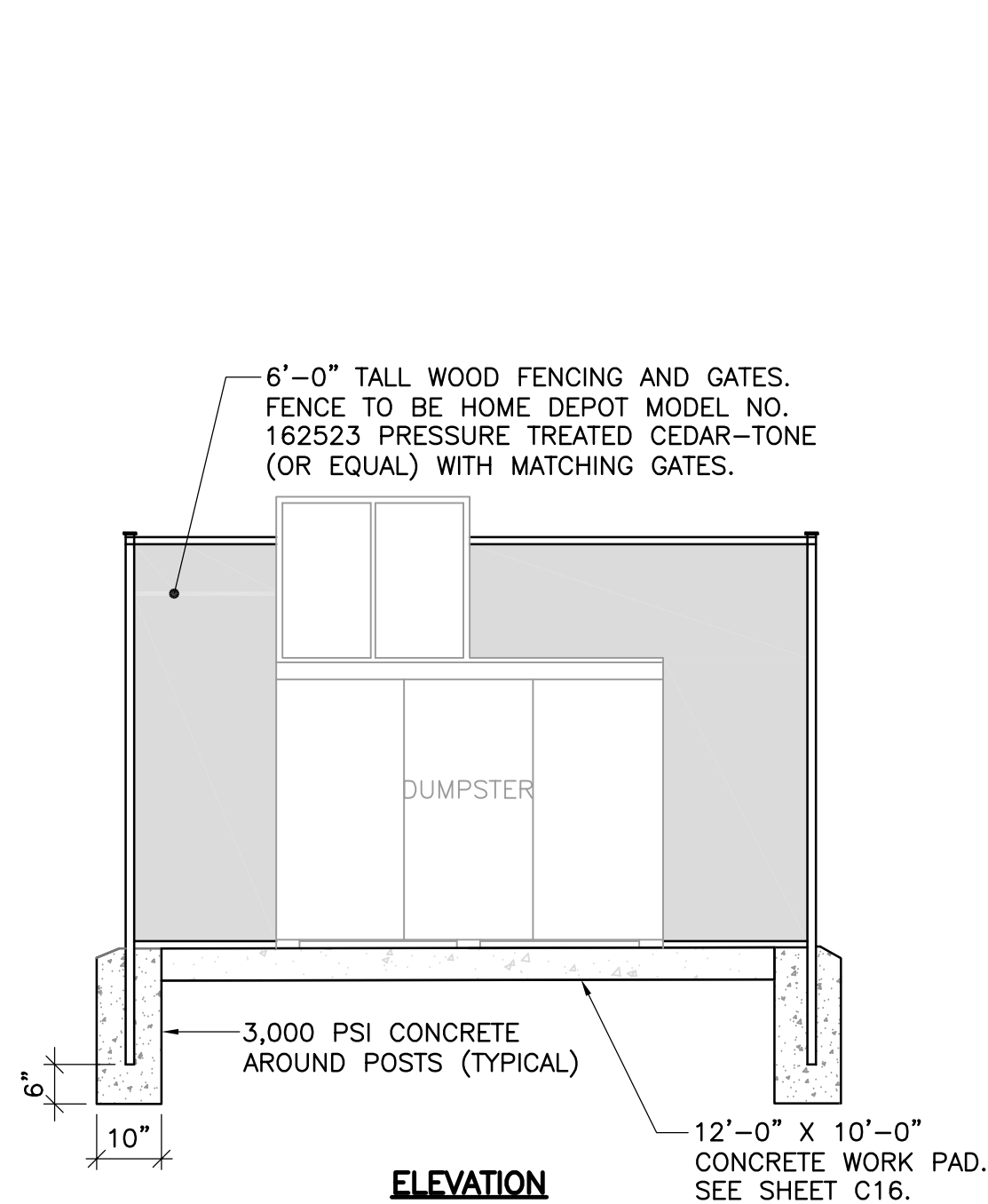
PROJECT NO.  
 DATE: 4/29/2020  
 SCALE: 1" = 20'  
 SHEET: C9



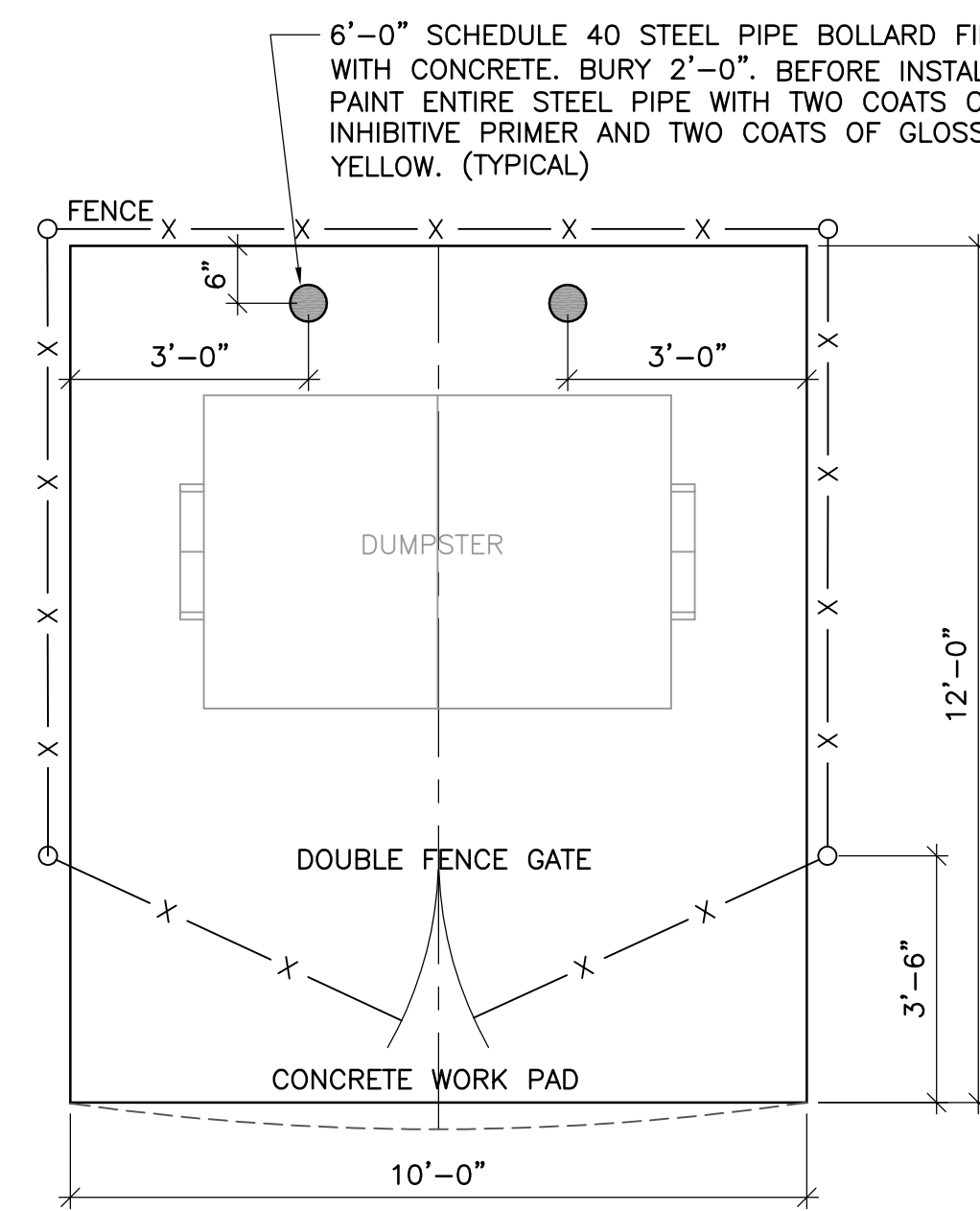
**1** DETAIL: NONPOTABLE WATER WELL, PUMP, AND NOTES  
**C10** NOT TO SCALE

**NONPOTABLE WATER SYSTEM NOTES:**

1. PUMP = GOULDS PRIMELINE SP MODEL 30SPM3 OR APPROVED EQUAL.
2. THE TWO DIAPHRAM TANKS ARE GOULDS V350 HYDRO-PRO DIAPHRAM TANKS OR APPROVED EQUAL.
3. THE PUMP ON/OFF SWITCH SHALL BE SET FOR 40/60 PSIG
4. REDUCE 2" SCH. 80 PIPE TO 1" AT HOSE BIB AND PROVIDE 1" BRASS HOSE BIB WITH LEVER HANDLE.
5. FURNISH 75 FEET OF 1" DIAMETER FLEXIBLE INDUSTRIAL GRADE HOSE WITH INDUSTRIAL GRADE BRASS ADJUSTABLE SPRAY NOZZLE.
6. CONSTRUCT WELL TO SUFFICIENT DEPTH SO THAT THE WELL WATER IS SUITABLE FOR EQUIPMENT WASHDOWN WITH NO ADDITIONAL TREATMENT, LEAVING NO RUST STAIN OR OTHER RESIDUE/FILM. WELL DEPTH NOT MEETING THIS CRITERIA SHALL BE ADJUSTED TO A DEPTH THAT PROVIDES GOOD QUALITY WASHDOWN WATER AT NO ADDITIONAL EXPENSE TO OWNER.



**ELEVATION**



**PLAN VIEW**

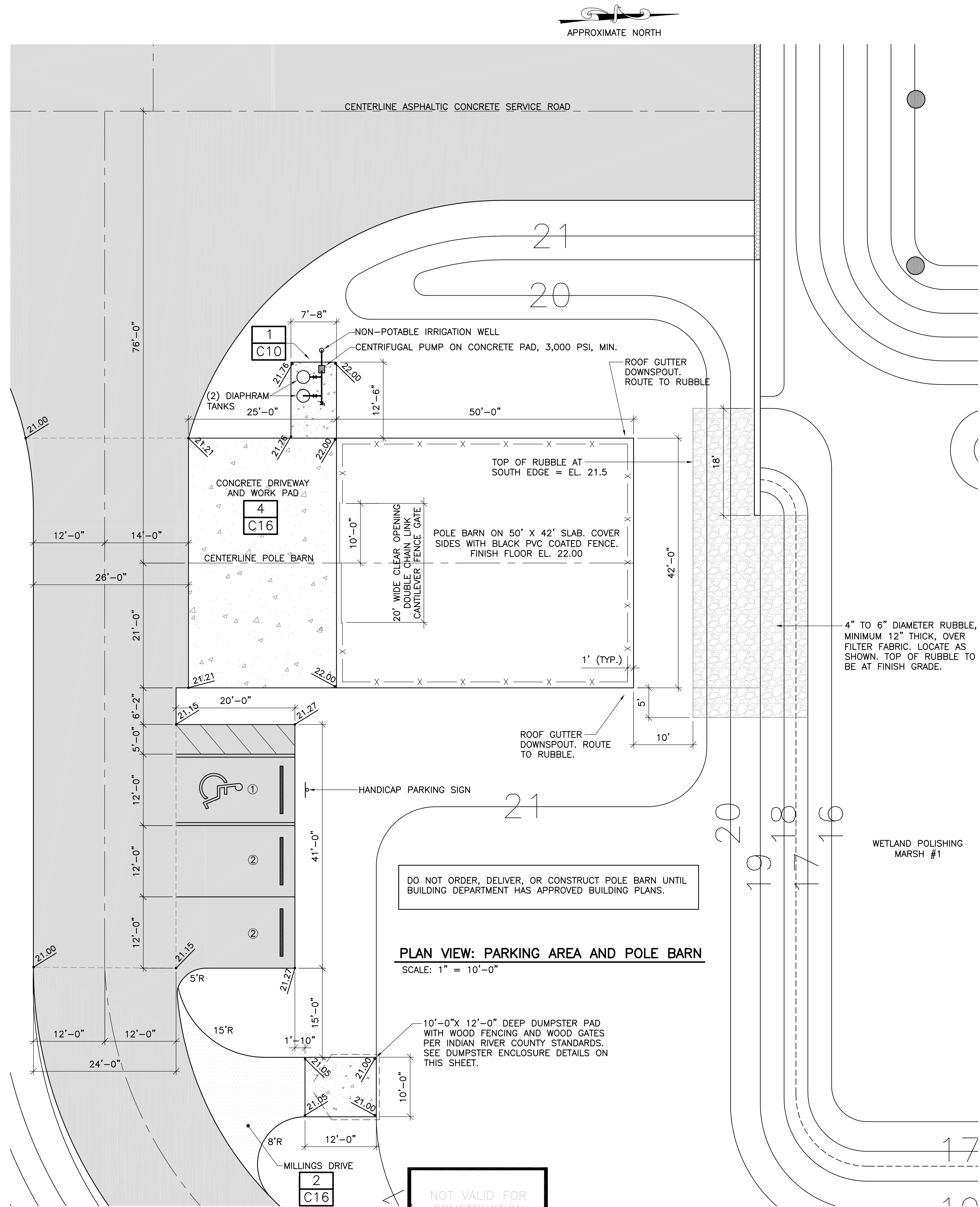
**DETAILS: DUMPSTER ENCLOSURE AND PAD**  
 NOT TO SCALE

**PARKING LEGEND**

- ① HANDICAP PARKING SPACE. PROPERLY SIGN (FTP-21-06 AND FTP-22-06), MARK, AND STRIPE IN ACCORDANCE WITH THE FDOT FY 2018-19 STANDARD PLANS, INDEX 711-001, SHEET 13 OF 14.
- ② 12' x 20' PARKING STALL PER INDIAN RIVER COUNTY SPECIFICATIONS. STRIPE IN WHITE, RETRO-REFLECTIVE TRAFFIC PAINT PER FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 710, LATEST EDITION.

**PARKING STALL NOTES**

1. ALL PARKING SPACES, WITH THE EXCEPTION OF THE HANDICAPPED PARKING SPACE, SHALL BE STRIPED IN WHITE, RETRO-REFLECTIVE TRAFFIC PAINT AND SHALL BE IN ACCORDANCE WITH THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION, SECTION 710.
2. PARKING STALL WIDTHS SHALL BE DIMENSIONED FROM CENTERLINE TO CENTERLINE OF THE WHITE STRIPES. THIS APPLIES TO HANDICAP PARKING STALLS ALSO.



**PLAN VIEW: PARKING AREA AND POLE BARN**  
 SCALE: 1" = 10'-0"

DO NOT ORDER, DELIVER, OR CONSTRUCT POLE BARN UNTIL BUILDING DEPARTMENT HAS APPROVED BUILDING PLANS.

10'-0" X 12'-0" DEEP DUMPSTER PAD WITH WOOD FENCING AND WOOD GATES PER INDIAN RIVER COUNTY STANDARDS. SEE DUMPSTER ENCLOSURE DETAILS ON THIS SHEET.

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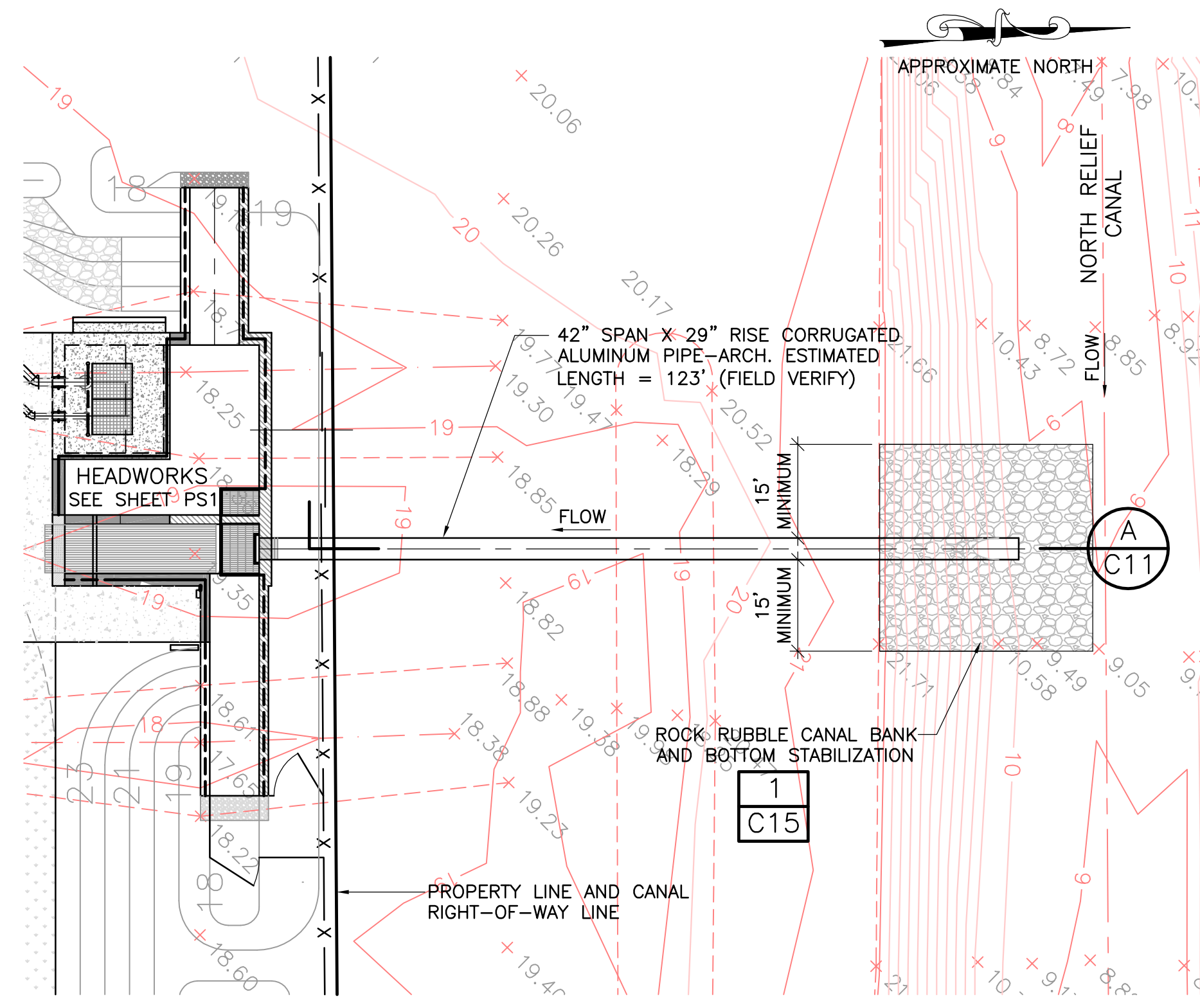
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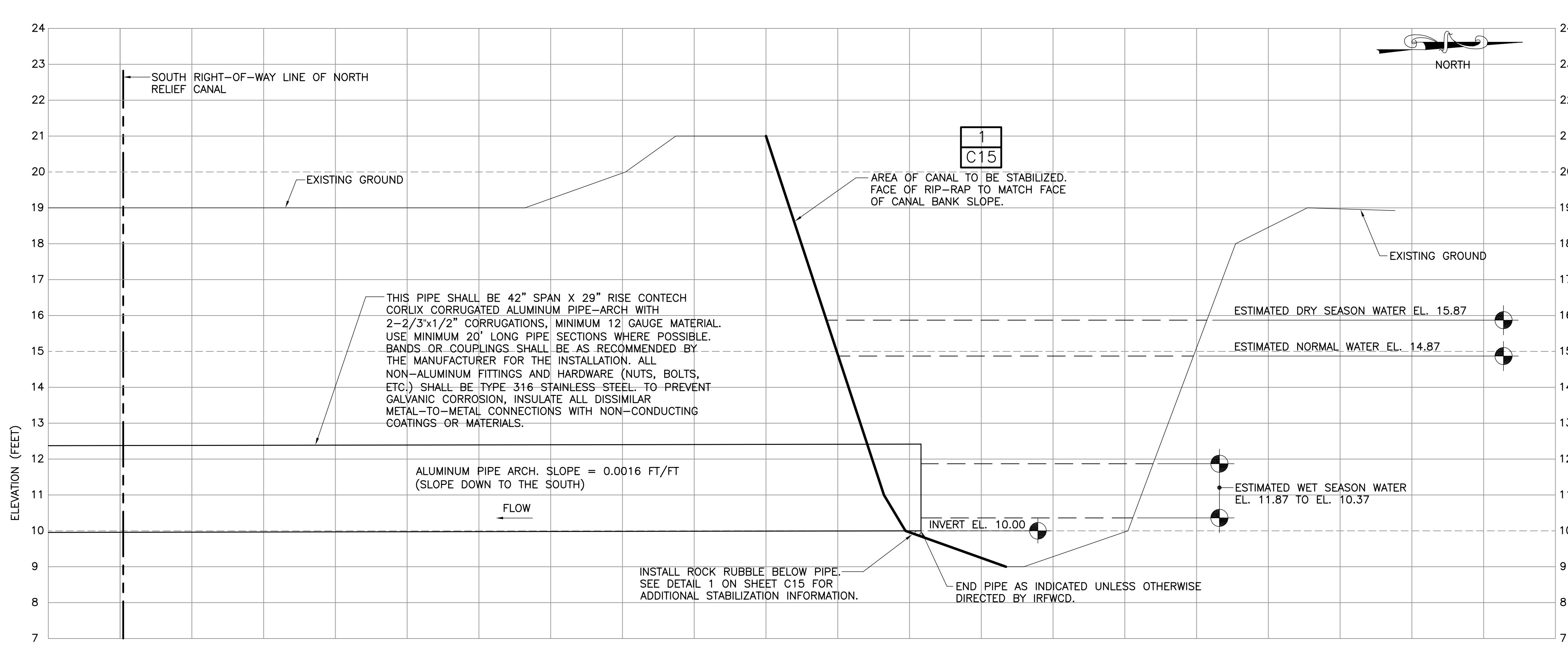
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PARKING AND POLE BARN AREA

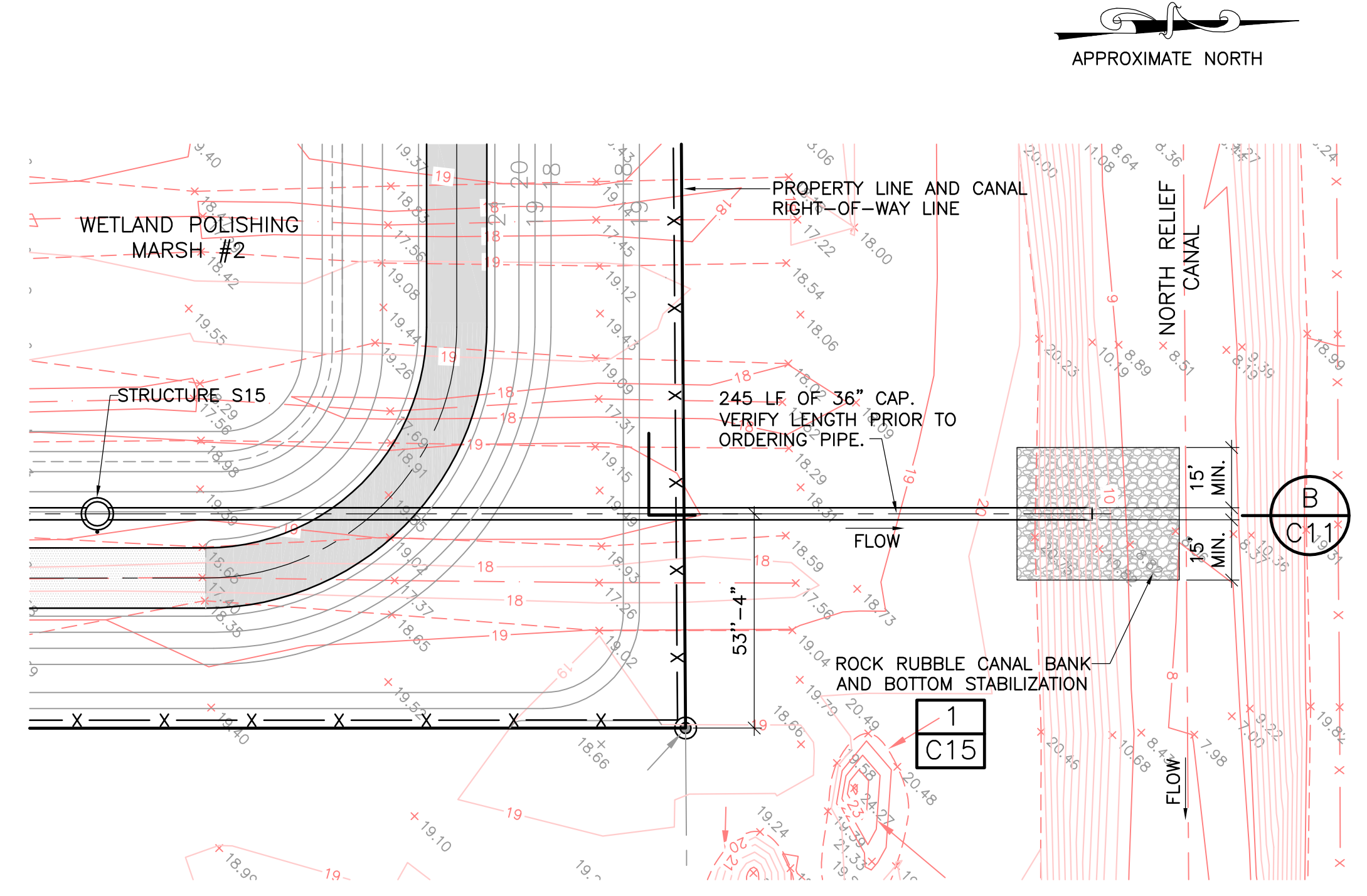
PROJECT NO.	
DATE	3/10/2020
SCALE	AS NOTED
SHEET	C10



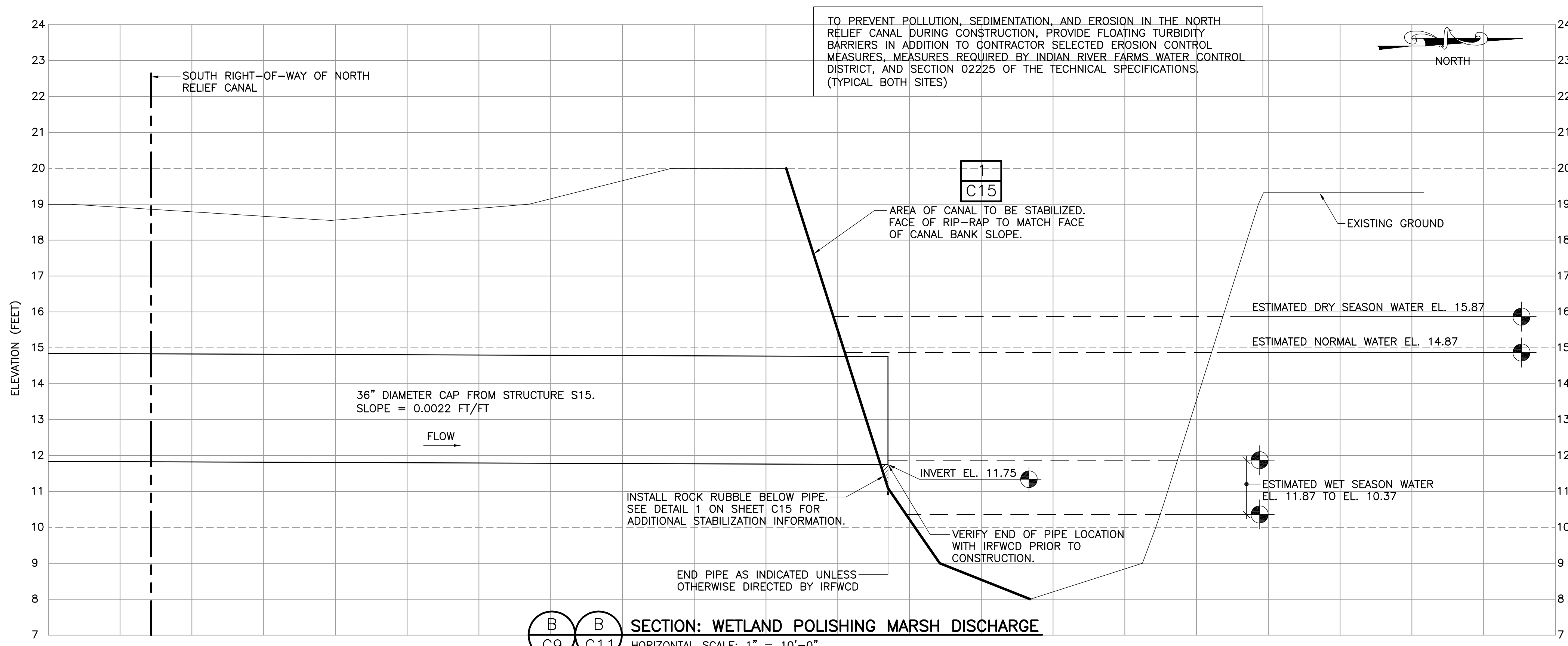
**PLAN VIEW: HEADWORKS STRUCTURE INFLUENT FROM NORTH RELIEF CANAL**  
SCALE: 1" = 20'-0"



**A** SECTION: HEADWORKS STRUCTURE INFLUENT PIPE AT CANAL  
HORIZONTAL SCALE: 1" = 10'-0"  
VERTICAL SCALE: 1" = 2'-0"



**PLAN VIEW: WETLAND POLISHING MARSH DISCHARGE INTO NORTH RELIEF CANAL**  
SCALE: 1" = 30'-0"



**B** SECTION: WETLAND POLISHING MARSH DISCHARGE  
HORIZONTAL SCALE: 1" = 10'-0"  
VERTICAL SCALE: 1" = 2'-0"

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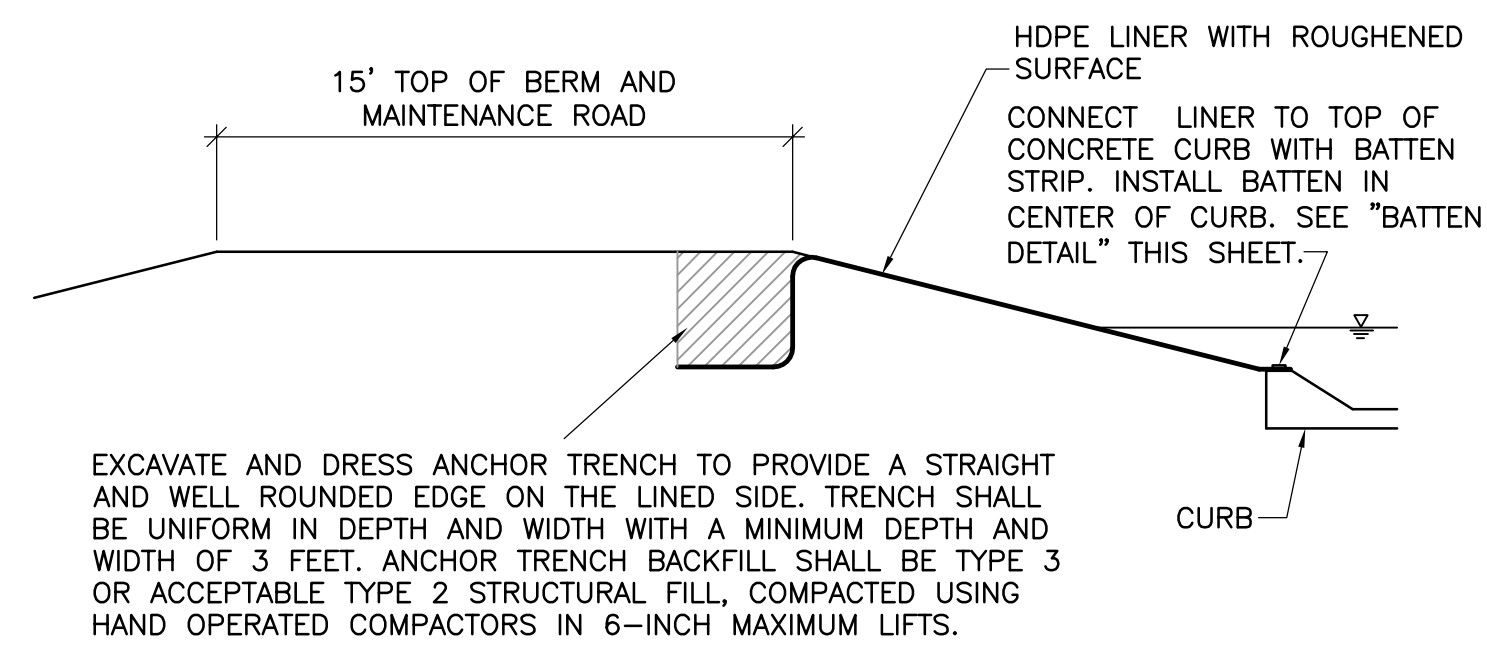
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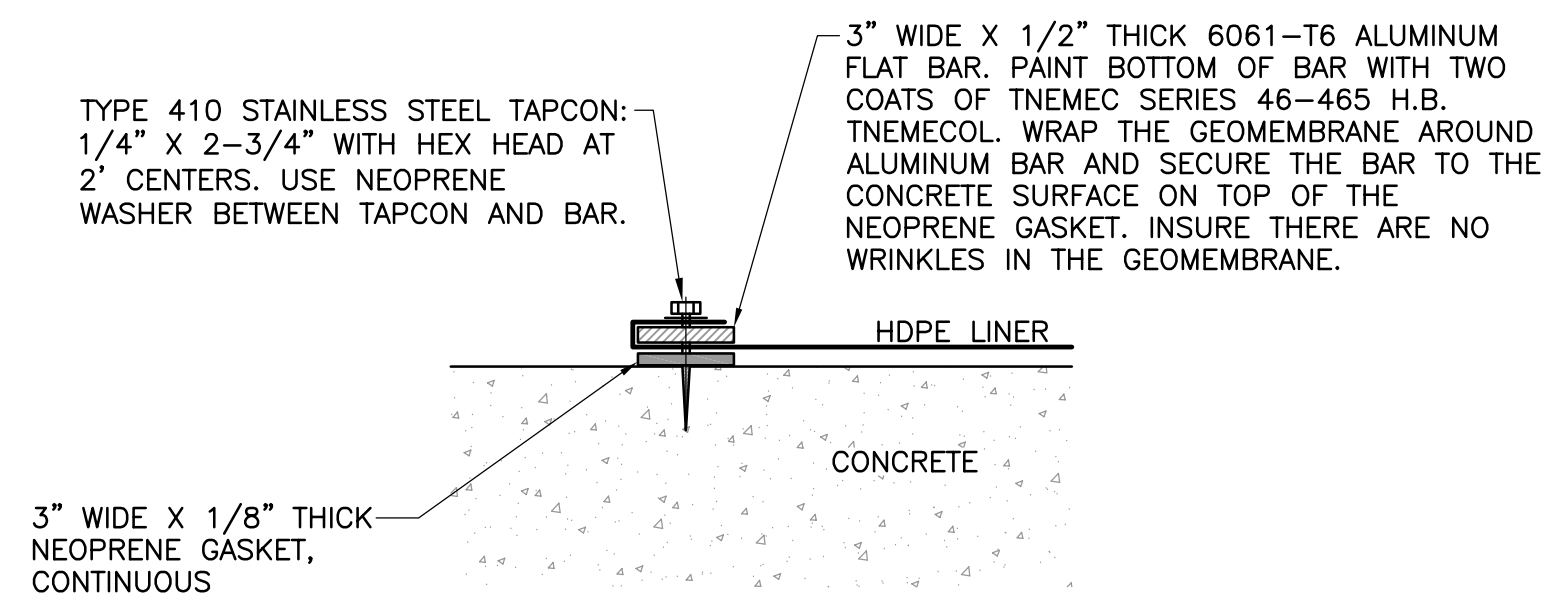
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DATE:

CONNECTIONS TO  
NORTH RELIEF CANAL

PROJECT NO.  
DATE 3/10/2020  
SCALE 1" = 20'  
SHEET C11

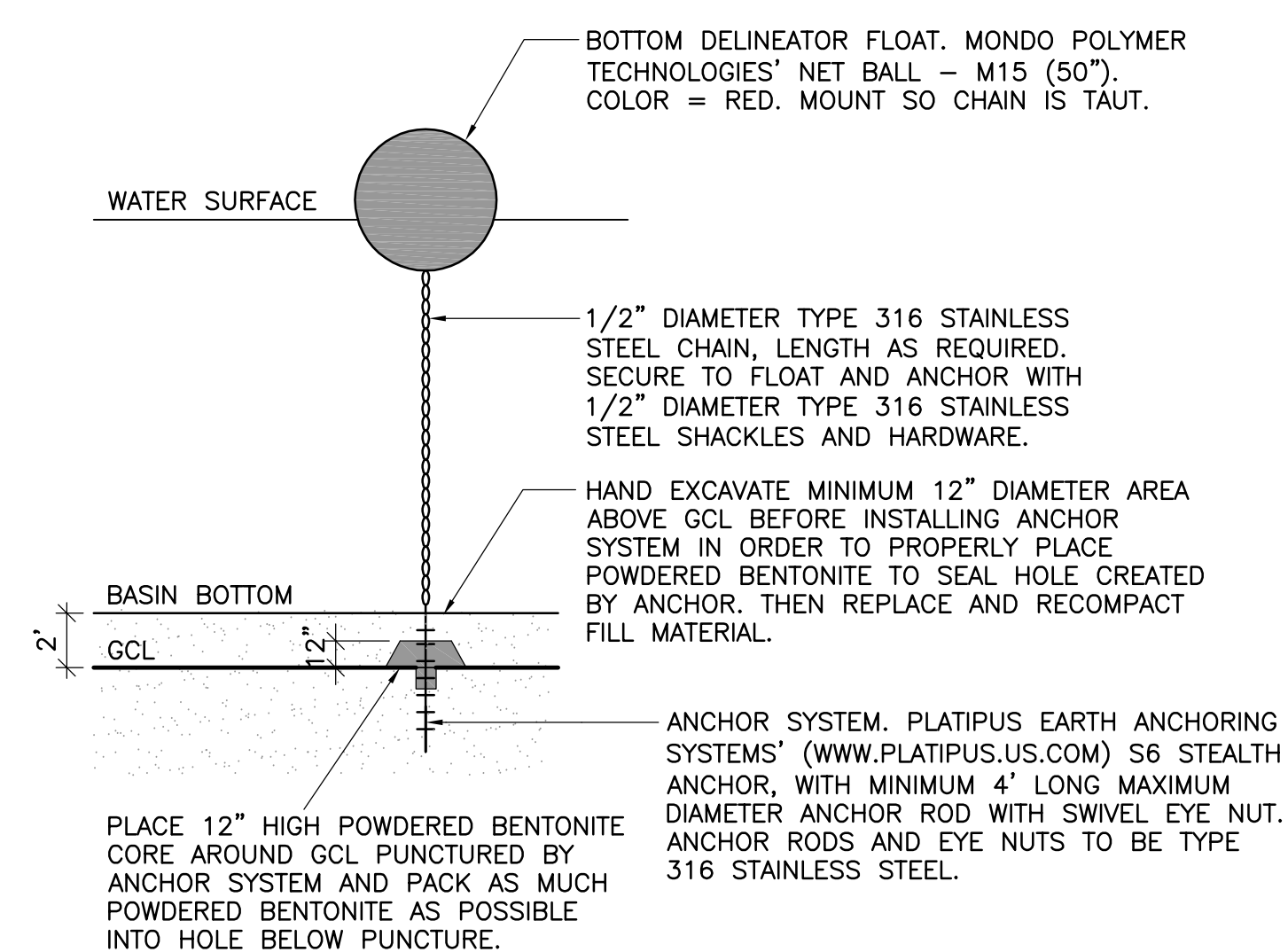


DETAIL: HDPE INSTALLATION AT PERIMETER CURB AND TOP OF MAINTENANCE ROAD/BERM



BATTEN DETAIL: HDPE LINER-TO-CONCRETE CONNECTION

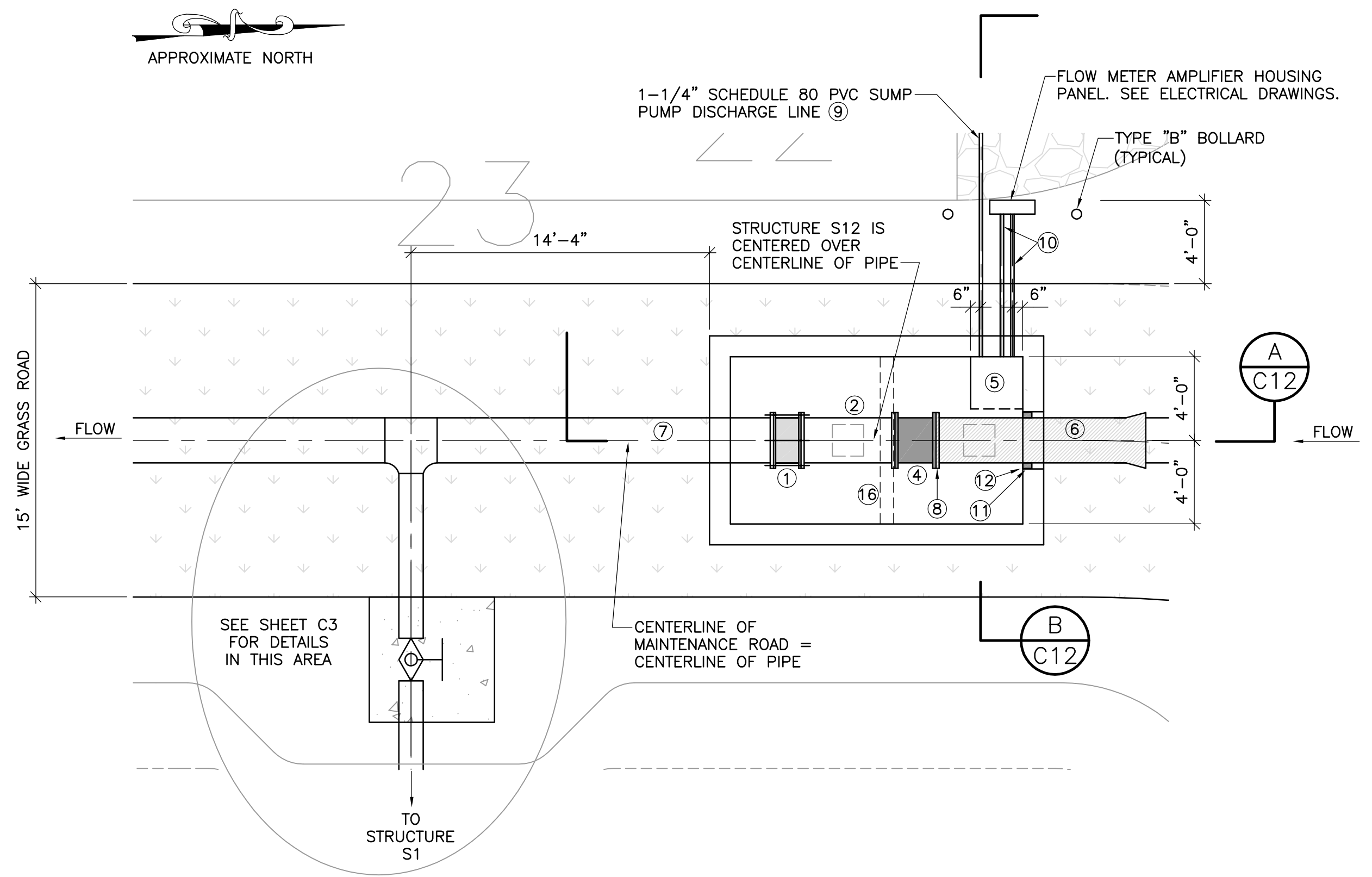
4	2	DETAIL: HDPE LINER INSTALLATION DETAILS
C3	C15	NOT TO SCALE



1	1	DETAIL: BOTTOM DELINEATOR FLOAT
C8	C9	NOT TO SCALE

FLOW METER NO. 1 AND STRUCTURE S12 LEGEND

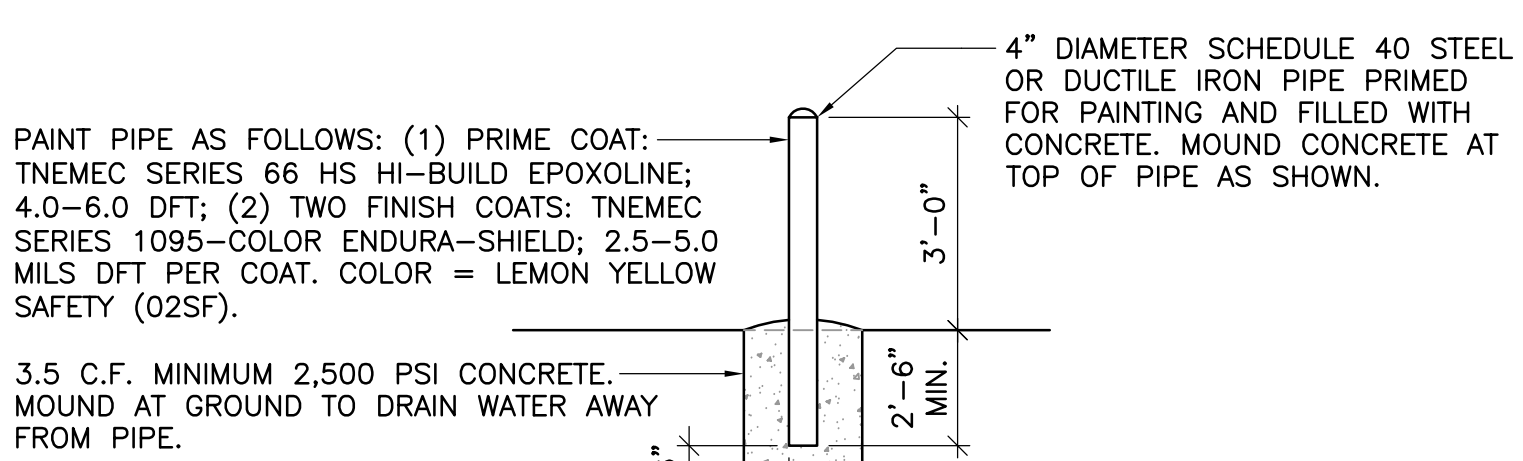
- ① 24" DISMANTLING JOINT. ROMAC INDUSTRIES, INC. MODEL DJ400
- ② 24" DIAMETER DIP FLANGED SPOOL PIECE
- ③ ITEM OMITTED
- ④ FLOW METER NO. 1, 24" DIAMETER, FLANGED
- ⑤ 2'-6" x 2'-6" x 18" DEEP SUMP WITH SUMP PUMP. SUMP PUMP TO BE DAYTON 1/4 HP, 1-1/4" DISCHARGE SUBMERSIBLE PUMP, 115V, VERTICAL, MANUFACTURER'S NO. 3YU69. SLOPE STRUCTURE FLOOR TO DRAIN INTO SUMP. SUMP PUMP TO BE PLUGGED INTO FLOW METER ENCLOSURE OUTLET VIA 1-1/4" PVC SLEEVE SWEEPED TO GREATER THAN 6" ABOVE FINISH GRADE.
- ⑥ 24" DIP FORCE MAIN, MJ x PE, 10' LONG, RESTRAIN JOINTS.
- ⑦ 24" DIP FORCE MAIN, FLG x PE. RESTRAIN JOINTS.
- ⑧ 24" FLANGE ADAPTER FOR PLAIN END OF PIPE ⑥. STAR PIPE PRODUCTS SERIES 400 OR EQUIVALENT.
- ⑨ INSTALL 2" DIAMETER SCH. 80 PVC SLEEVE IN WALL FOR 1-1/4" SCH. 80 PVC SUMP PUMP DISCHARGE PIPE AT INVERT EL. 20.00 AND SEAL AROUND 2" SLEEVE AND WALL WITH NON-SHRINK GROUT. SEAL BETWEEN 2" AND 1-1/4" PIPES WITH APPROPRIATE SEALANT.
- ⑩ INSTALL CONDUIT(S) IN VAULT WALL FOR SUMP PUMP AND FLOW METER ELECTRICAL AND CONTROL LINES AND RUN CONDUITS TO FLOW METER AMPLIFIER PANEL. INVERT EL. 20.00 (VERIFY INVERTS WITH ELECTRICAL ENGINEER). SEAL AROUND CONDUIT AND WALL WITH NON-SHRINK GROUT AND SEAL BETWEEN CONDUIT AND CABLES/WIRES WITH APPROPRIATE SEALANT TO PREVENT ENTRY OF MOISTURE OR INSECTS. VERIFY NUMBER OF CONDUITS NEEDED WITH ELECTRICAL ENGINEER AND ELECTRICAL DRAWINGS.
- ⑪ LINK-SEAL MODULAR SEAL (BLACK) MODEL "S-316" MANUFACTURED BY PIPELINE SEAL & INSULATOR, INC.
- ⑫ WHEN FORMING THE STRUCTURE WALLS FOR CONCRETE PLACEMENT, INSTALL APPROPRIATELY SIZED CELL-CAST DISKS MANUFACTURED BY PIPELINE SEAL & INSULATOR, INC., TO PROVIDE A ROUND HOLE IN CONFORMANCE WITH LINK-SEAL MODULAR SEAL SIZING REQUIREMENTS.
- ⑬ 24" PVC FORCE MAIN
- ⑭ TRAFFIC BEARING ALUMINUM LID
- ⑮ PIPE SUPPORT. CARPENTER AND PATTERSON, INC. FIGURE 101 ADJUSTABLE PIPE SUPPORT WITH FIGURE 138 THREADED BASE STAND. MOUNT BASE TO FLOOR WITH FOUR TYPE 316 STAINLESS STEEL RED HEAD TRUBOLT EXPANSION ANCHORS, 1" DIAMETER, 4-1/2" EMBEDMENT.
- ⑯ HATCH SUPPORT BEAM.



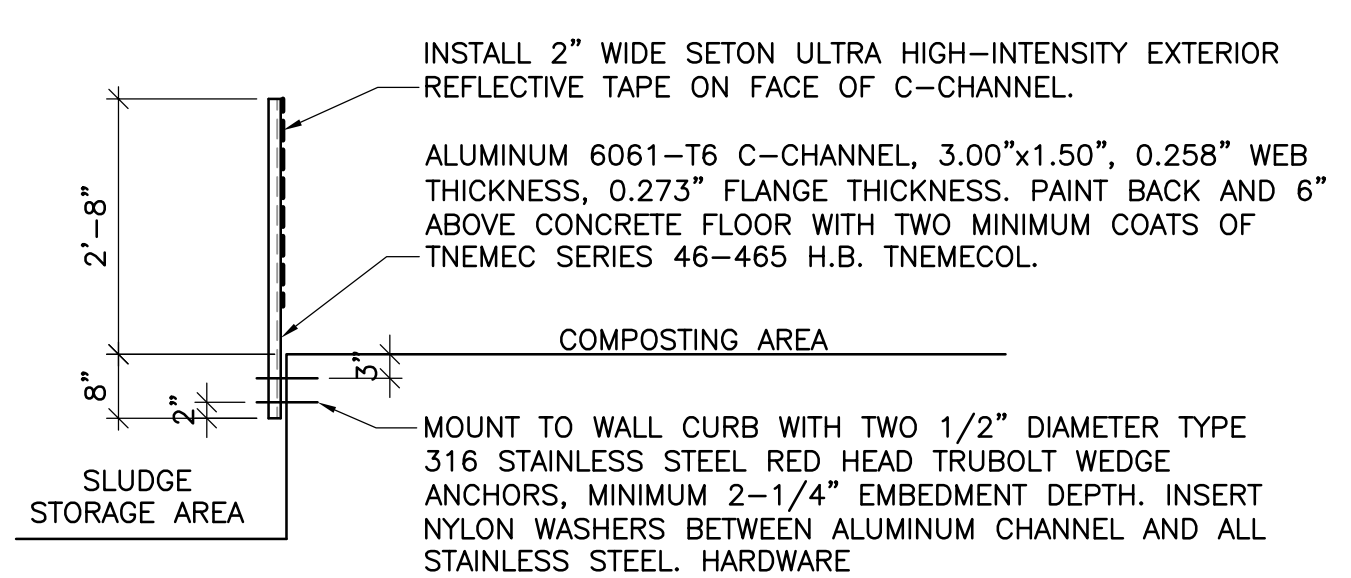
2 PLAN VIEW: FLOW METER NO. 1 AND STRUCTURE S12  
C3 SCALE: 1" = 5'-0"

TYPE "A" BOLLARDS TO BE 36" TALL, 4" BASEPLATE MOUNTED TYPE 316 STAINLESS STEEL BOLLARDS, SCHEDULE 40 WALL THICKNESS (0.237"), WITH DOME CAP. 1-800-BOLLARDS, INC. PRODUCT CODE BSS4000. MOUNT TO CONCRETE WITH (4) TYPE 316 STAINLESS STEEL 5/8" DIAMETER RED HEAD TRUBOLT WEDGE ANCHORS, 4-1/8" EMBEDMENT DEPTH.

1	1	1	1	1	DETAIL: TYPE "A" BOLLARD
C4	C5	C6	C7	C16	

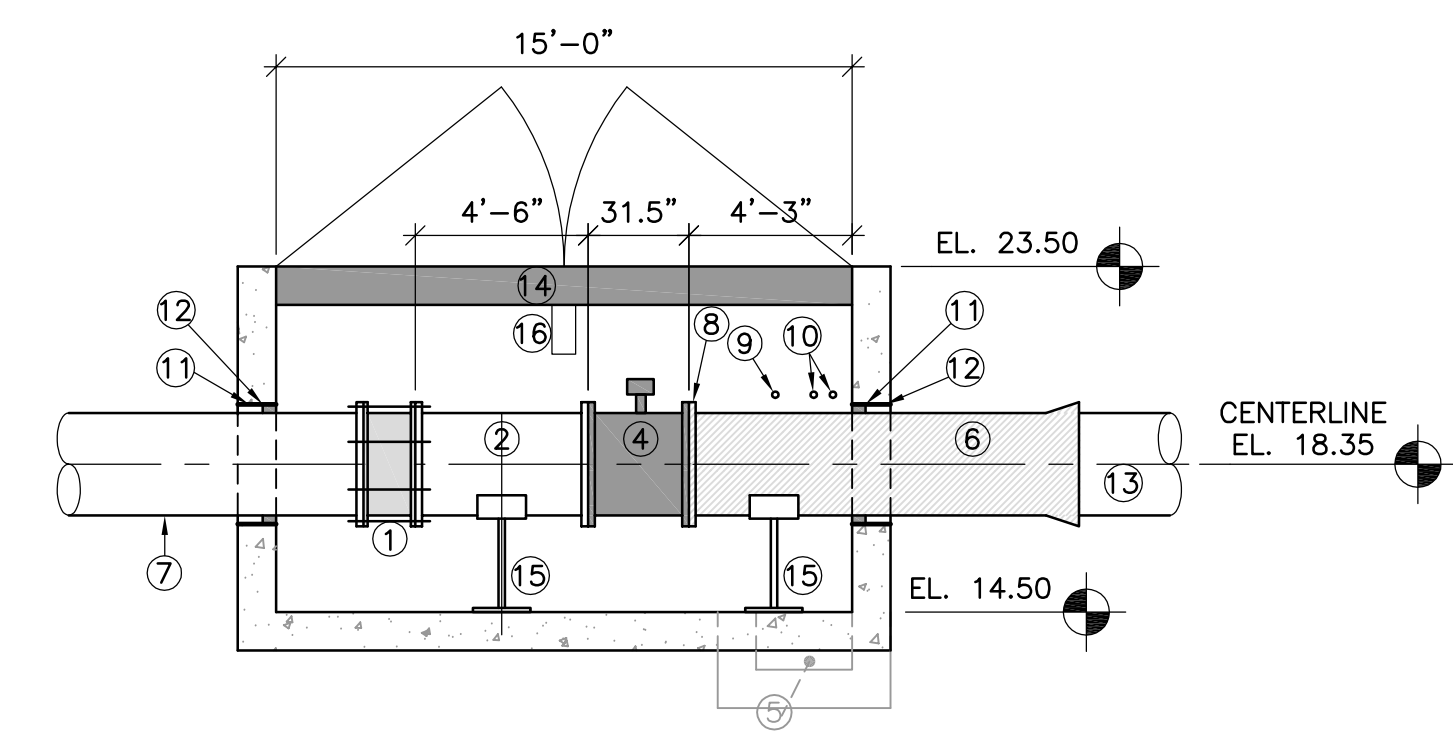


2	1	5	2	2	4	DETAIL: TYPE "B" BOLLARD
PS1	C13	C12	C6	C8	C9	NOT TO SCALE

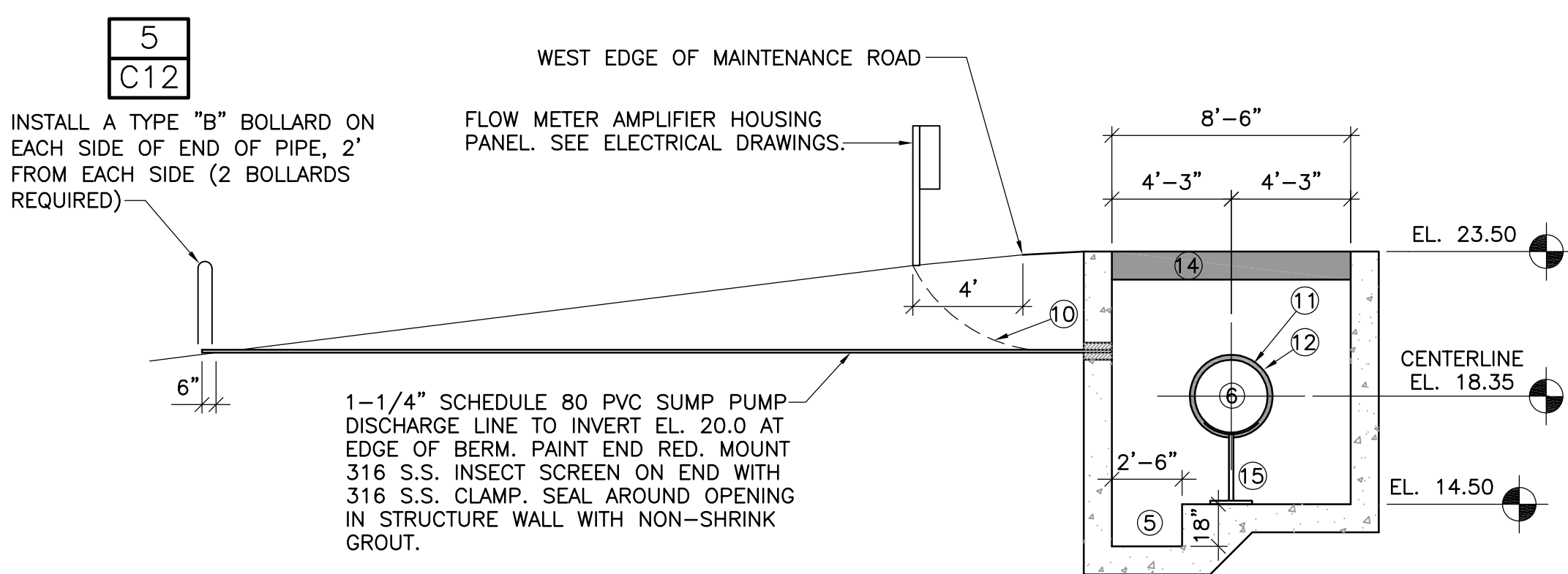


3	3	DETAIL: TYPE "C" BOLLARD
C6	C7	SCALE: 1" = 2'-0"

NOTE REGARDING PAINT: ALL UNUSED PAINT ON THIS PROJECT SHALL BE TURNED OVER IN PROPERLY SEALED ORIGINAL CONTAINERS TO INDIAN RIVER COUNTY UPON COMPLETION OF THE PROJECT. PAINT IS TO BE INCLUDED IN SHOP DRAWING SUBMITTALS. PRIOR TO ANY ONSITE PAINT APPLICATION, THE PAINT TYPE IS TO BE VERIFIED BY THE OWNER. APPLICATION OF PAINT WITHOUT SAID VERIFICATION WILL RESULT IN A DEDUCT IN PAYMENT FOR THE PAINT.



A SECTION: STRUCTURE S12  
C12 SCALE: 1" = 5'-0"



B SECTION: STRUCTURE S12  
C12 SCALE: 1" = 5'-0"

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NUMBER	REVISIONS	REVISED BY	CHECKED BY

INDIAN RIVER COUNTY  
STORMWATER DIVISION  
1801 27TH STREET  
VERO BEACH, FLORIDA 32960  
(772) 226-1562  
DESIGNED BY: KM DRAWN BY: KM CHECKED BY: JG APPROVED BY: KM

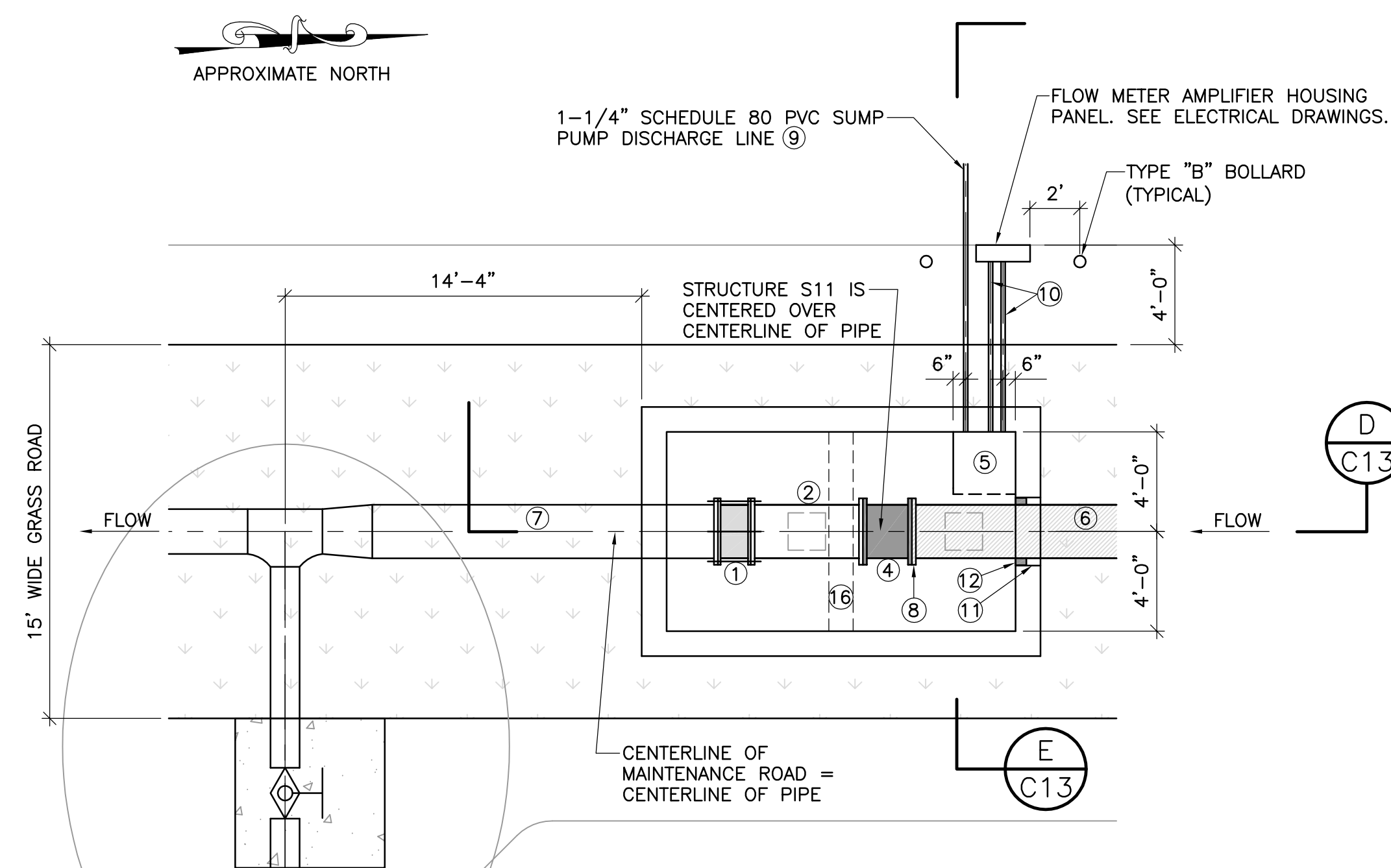
MOORHEN MARSH LEAPS™

W. KEITH McCULLY, P.E.  
FLORIDA P.E. NO. 32007  
DATE:

SECTIONS AND DETAILS

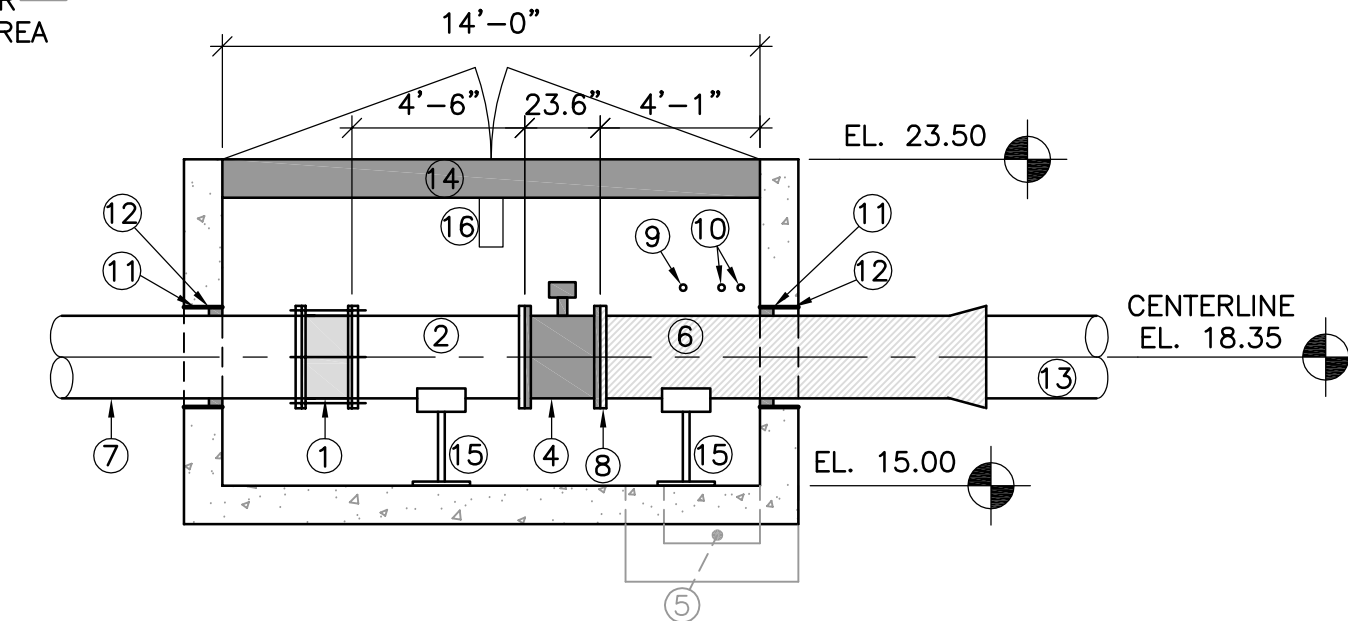
PROJECT NO.  
DATE 3/10/2020  
SCALE 1" = 20"  
SHEET C12



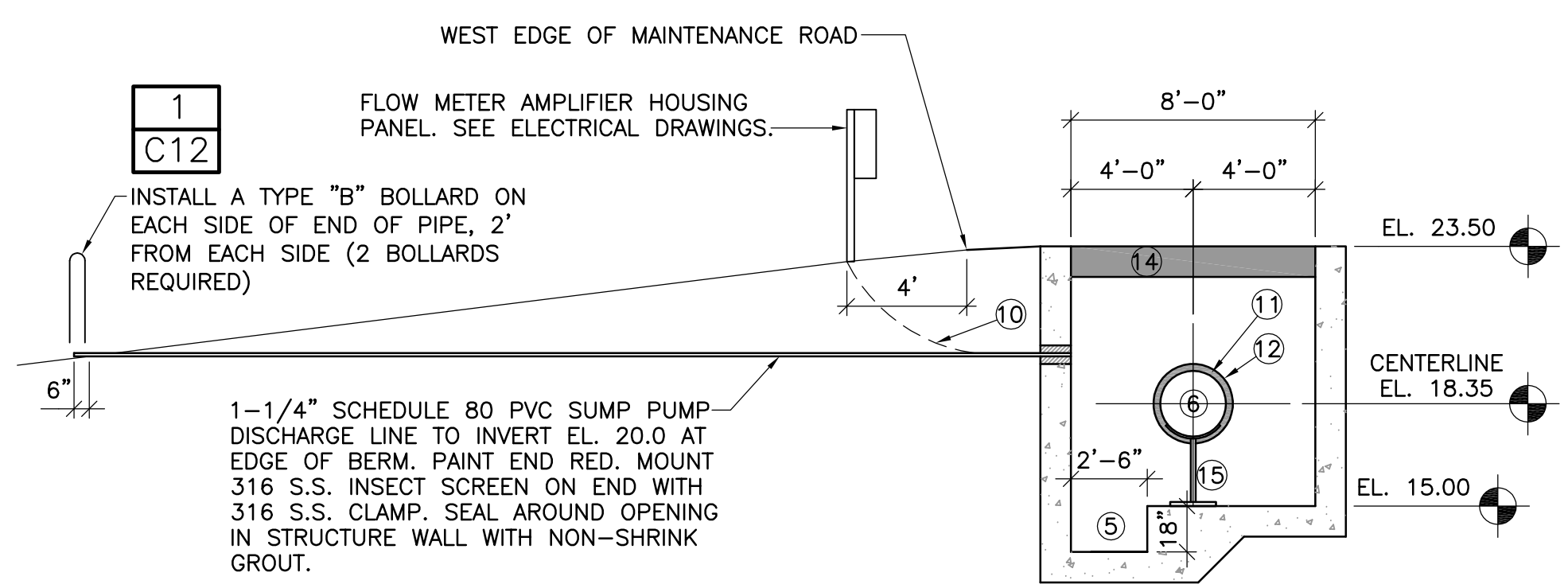


**1 PLAN VIEW: FLOW METER NO. 2 AND STRUCTURE S11**  
 C3 SCALE: 1" = 5'-0"

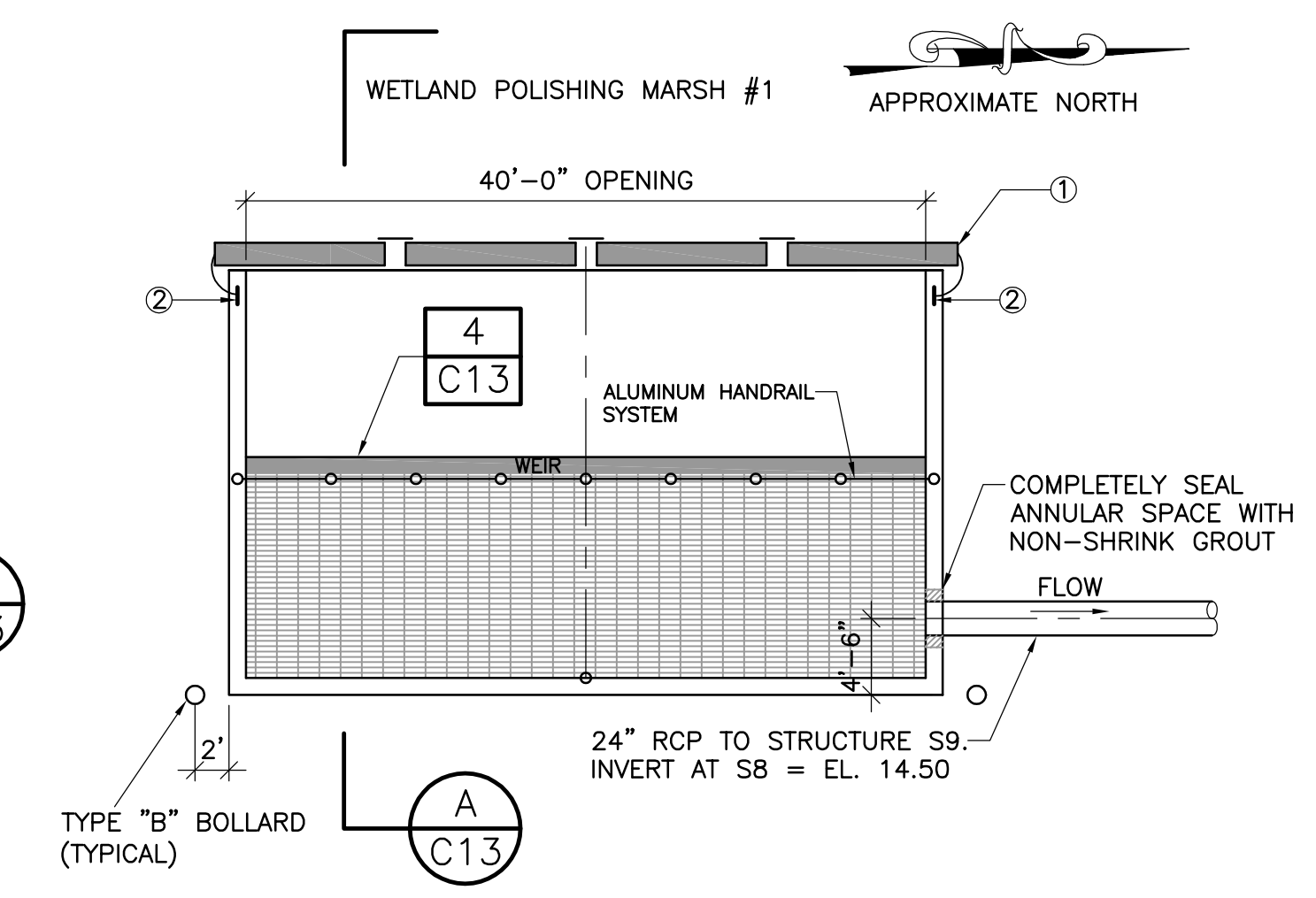
SEE SHEET C3 FOR DETAILS IN THIS AREA



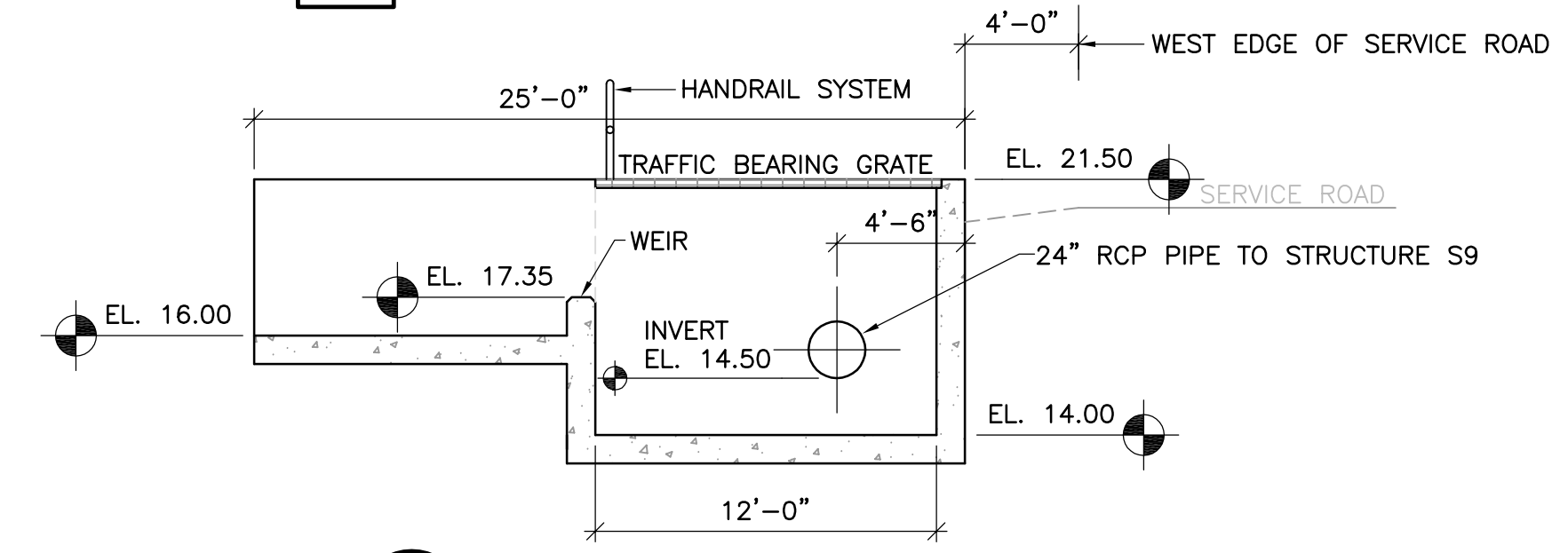
**D SECTION: STRUCTURE S11**  
 C13 SCALE: 1" = 5'-0"



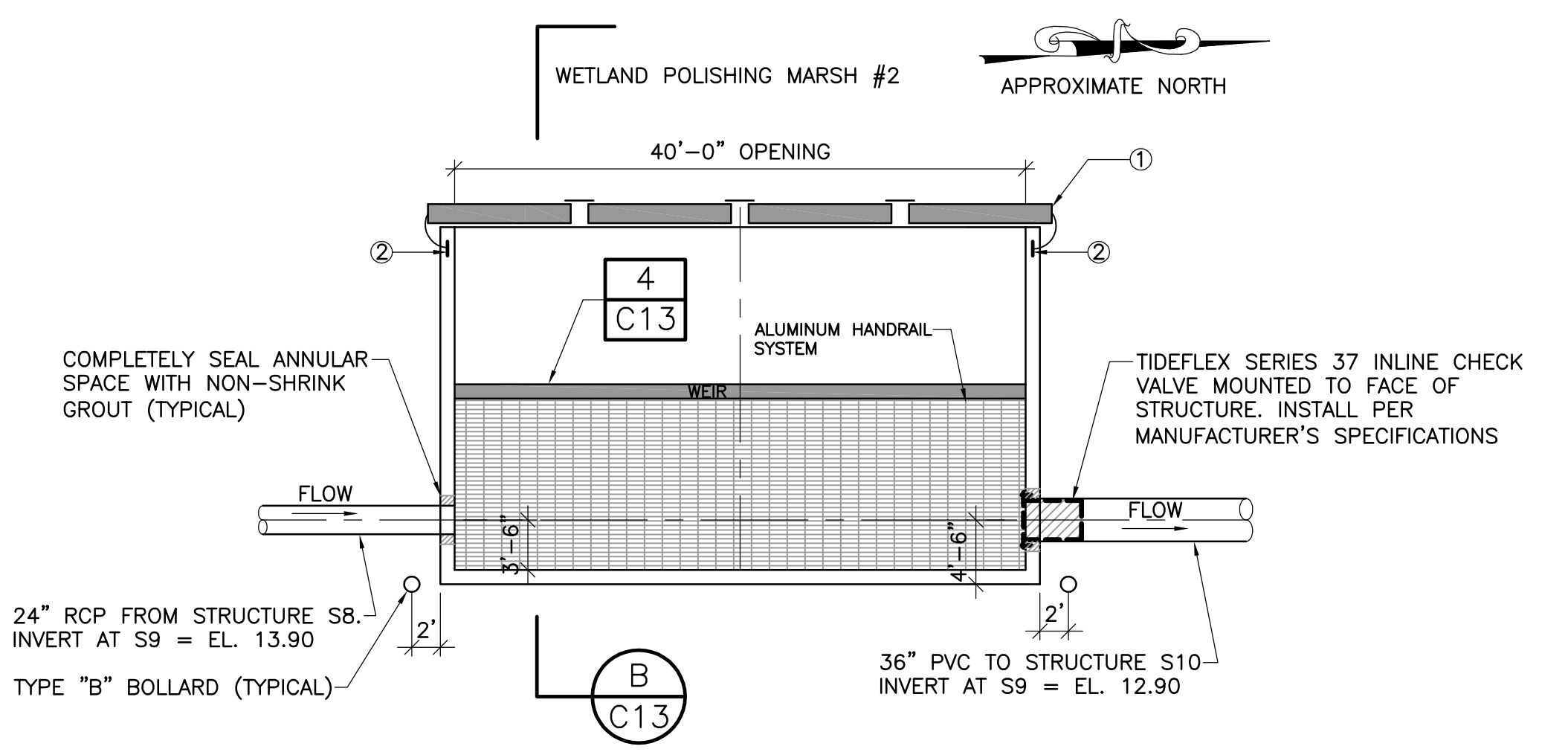
**E SECTION: STRUCTURE S11**  
 C13 SCALE: 1" = 5'-0"



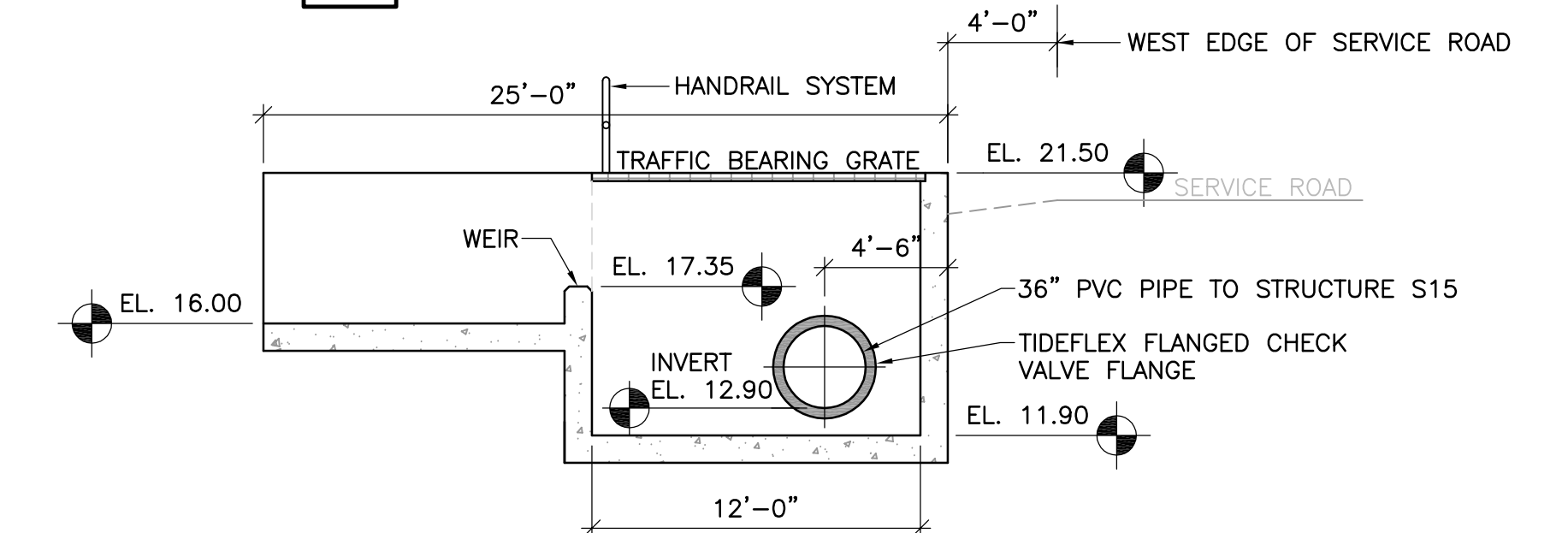
**1 PLAN VIEW: STRUCTURE S8**  
 C8 SCALE: 1" = 10'-0"



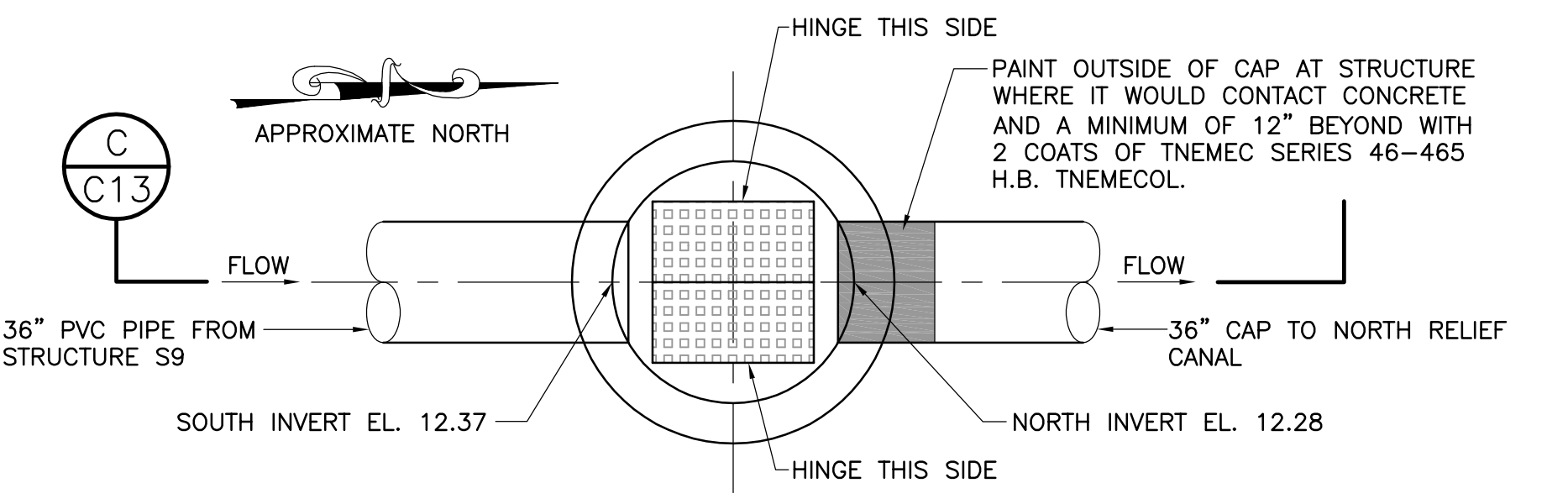
**A SECTION: STRUCTURE S8**  
 C13 SCALE: 1" = 6'-0"



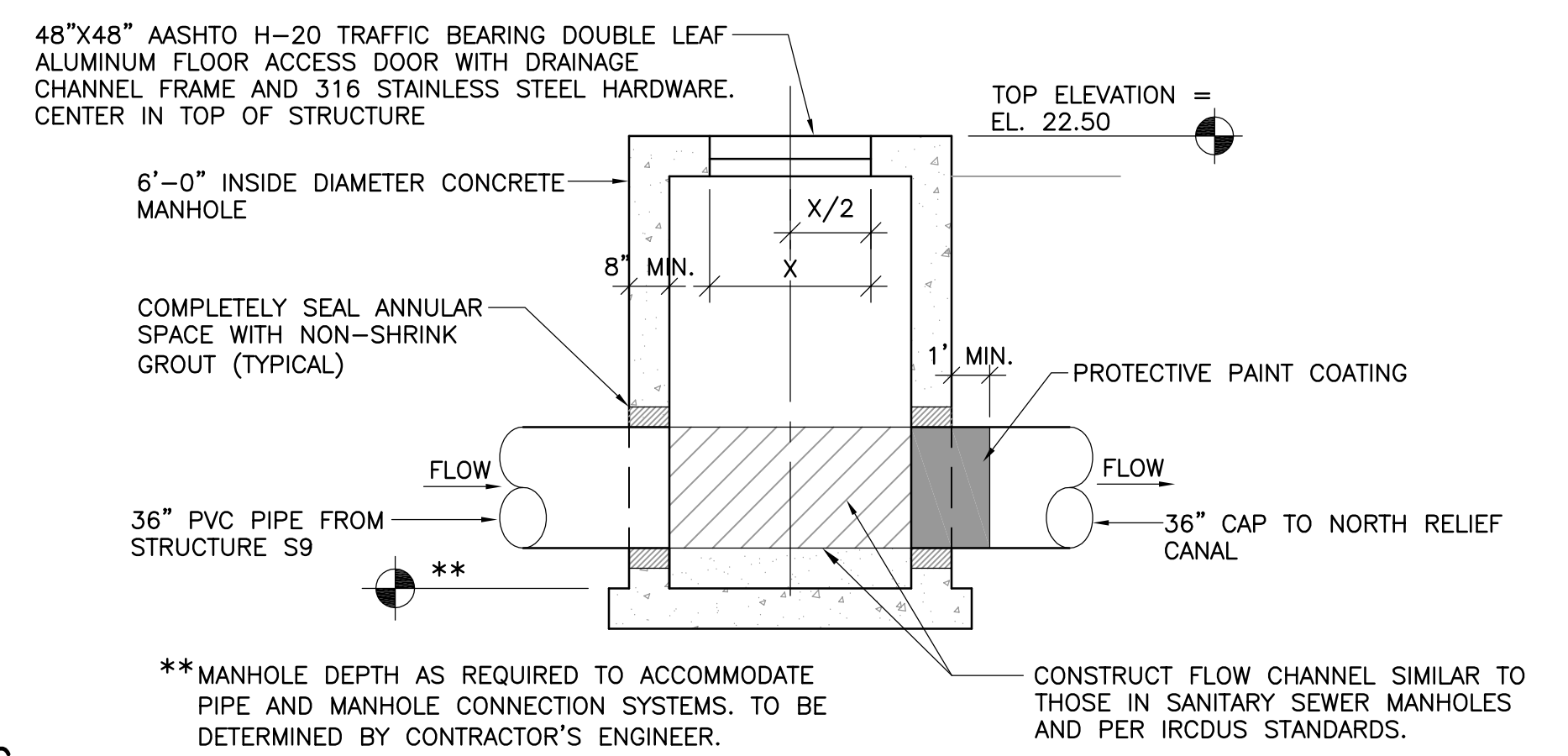
**2 PLAN VIEW: STRUCTURE S9**  
 C9 SCALE: 1" = 10'-0"



**B SECTION: STRUCTURE S9**  
 C13 SCALE: 1" = 6'-0"



**3 PLAN VIEW: STRUCTURE S15**  
 C9 SCALE: 1" = 4'-0"



**C SECTION: STRUCTURE S15 (PRECAST)**  
 C13 NOT TO SCALE

**FLOW METER NO. 2 AND STRUCTURE S11 LEGEND**

- 1 24" DISMANTLING JOINT. ROMAC INDUSTRIES, INC. MODEL DJ400
- 2 24" DIAMETER DIP FLANGED SPOOL PIECE
- 3 ITEM OMITTED
- 4 FLOW METER NO. 2, 24" DIAMETER, FLANGED
- 5 2'-6" x 2'-6" x 18" DEEP SUMP WITH SUMP PUMP. SUMP PUMP TO BE DAYTON 1/4 HP, 1-1/4" DISCHARGE SUBMERSIBLE PUMP, 115V, VERTICAL, MANUFACTURER'S NO. 3YU69. SLOPE STRUCTURE FLOOR TO DRAIN INTO SUMP. SUMP PUMP TO BE PLUGGED INTO FLOW METER ENCLOSURE OUTLET VIA 1-1/4" PVC SLEEVE SWEEPED TO GREATER THAN 6" ABOVE FINISH GRADE.
- 6 24" DIP FORCE MAIN, MJ x PE, 10' LONG, RESTRAIN JOINTS.
- 7 24" DIP FORCE MAIN, FLG x PE. RESTRAIN JOINTS.
- 8 24" FLANGE ADAPTER FOR PLAIN END OF PIPE 6. STAR PIPE PRODUCTS SERIES 400 OR EQUIVALENT.
- 9 INSTALL 2" DIAMETER SCH. 80 PVC SLEEVE IN WALL FOR 1-1/4" SCH. 80 PVC SUMP PUMP DISCHARGE PIPE AT INVERT EL. 20.00 AND SEAL AROUND 2" SLEEVE AND WALL WITH NON-SHRINK GROUT. SEAL BETWEEN 2" AND 1-1/4" PIPES WITH APPROPRIATE SEALANT.
- 10 INSTALL CONDUIT(S) IN VAULT WALL FOR SUMP PUMP AND FLOW METER ELECTRICAL AND CONTROL LINES AND RUN CONDUITS TO FLOW METER AMPLIFIER PANEL. INVERT EL. 20.00 (VERIFY INVERTS WITH ELECTRICAL ENGINEER). SEAL AROUND CONDUIT AND WALL WITH NON-SHRINK GROUT AND SEAL BETWEEN CONDUIT AND CABLES/WIRES WITH APPROPRIATE SEALANT TO PREVENT ENTRY OF MOISTURE OR INSECTS. VERIFY NUMBER OF CONDUITS NEEDED WITH ELECTRICAL ENGINEER AND ELECTRICAL DRAWINGS.
- 11 LINK-SEAL MODULAR SEAL (BLACK) MODEL "S-316" MANUFACTURED BY PIPELINE SEAL & INSULATOR, INC.
- 12 LINK-SEAL CENTURY LINE MODEL CS SLEEVE, MANUFACTURED BY PIPELINE SEAL & INSULATOR, INC. DIAMETER AND LENGTH AS REQUIRED.
- 13 24" PVC FORCE MAIN
- 14 TRAFFIC BEARING ALUMINUM LID
- 15 PIPE SUPPORT. CARPENTER AND PATTERSON, INC. FIGURE 101 ADJUSTABLE PIPE SUPPORT WITH FIGURE 138 THREADED BASE STAND. MOUNT BASE TO FLOOR WITH FOUR TYPE 316 STAINLESS STEEL RED HEAD TRUBOLT EXPANSION ANCHORS, 1" DIAMETER, 4-1/2" EMBEDMENT.
- 16 HATCH SUPPORT BEAM.

**STRUCTURE S8 AND S9 LEGEND**

- 1 AT EACH WEIR: FOUR TUFFBOOMS WITH DEFLECTOR PANELS BETWEEN EACH BOOM. SECURE ENDS TO BOAT CLEATS WITH 3/4" DIAMETER NYLON ROPE. WRAP ENDS OF ROPE WITH APPROPRIATE WRAPPING TO PREVENT FRAYING.
- 2 8" LONG TYPE 316 STAINLESS STEEL BOAT CLEAT. MOUNT WITH MAXIMUM DIAMETER RED HEAD TRUBOLT WEDGE ANCHORS. (TYPICAL)

TOP OF WEIR TO BE VERY SMOOTH AND LEVEL OR WORK WILL NOT BE ACCEPTED. SEE NOTE BELOW.

THIS DETAIL IS TYPICAL FOR ALL WEIRS EXCEPT ALGAL REGENERATION UNIT EFFLUENT WEIRS.

THE WEIR CONSTRUCTION REQUIRES PRECISION ABOVE THAT NORMALLY PROVIDED BY CONSTRUCTION CONTRACTORS IN THIS AREA. IT IS CRITICAL THAT THE WEIRS BE CONSTRUCTED AT THE SAME ELEVATIONS. IF THE TOP OF A WEIR DEVIATES FROM THE DESIGN ELEVATION BY MORE THAN 1/8", THEN THE WEIR WILL BE REJECTED. REMEDIES WILL BE DETERMINED BY THE ENGINEER AND IMPLEMENTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

**4 WEIR SURFACE FINISHING**  
 C4 C5 C13 NOT TO SCALE

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W. KEITH McCULLY, P.E.  
 FLORIDA P.E. NO. 32007  
 DATE:

**SECTIONS AND DETAILS**

PROJECT NO.  
 DATE 2/27/2020  
 SCALE 1" = 20'  
 SHEET C13

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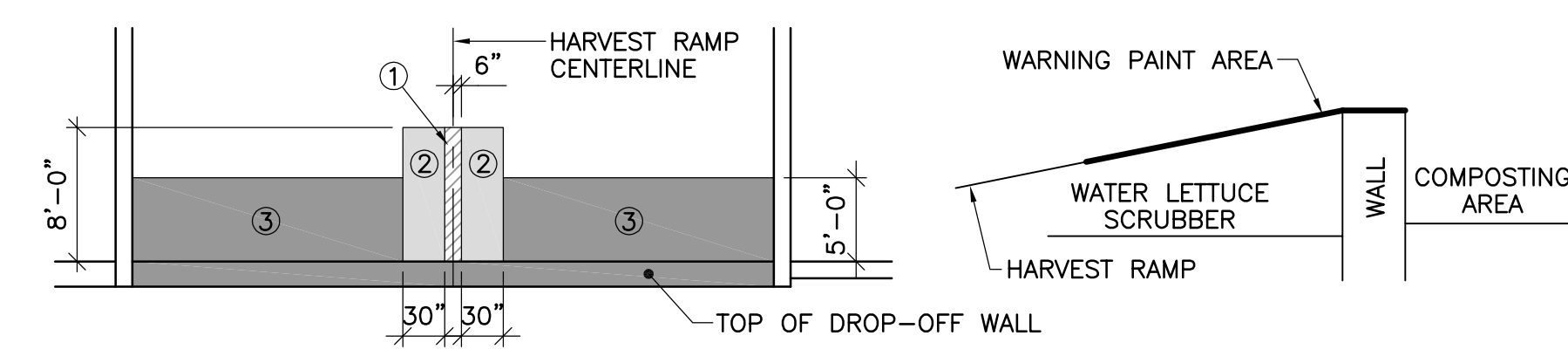
NUMBER	REVISIONS	REVISED BY	CHECKED BY

INDIAN RIVER COUNTY  
 STORMWATER DIVISION  
 1801 27TH STREET  
 VERO BEACH, FLORIDA 32960  
 (772) 226-1562

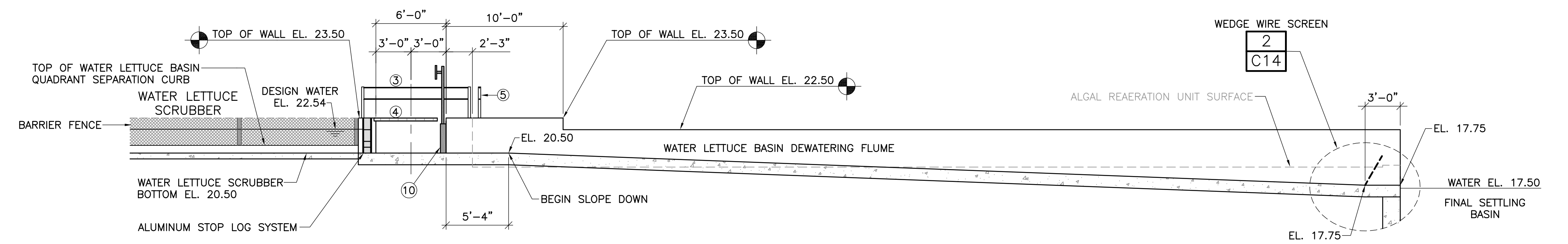
**MOORHEN MARSH LEAPS™**

DESIGNED BY KM  
 DRAWN BY KM  
 CHECKED BY KM  
 APPROVED BY KM

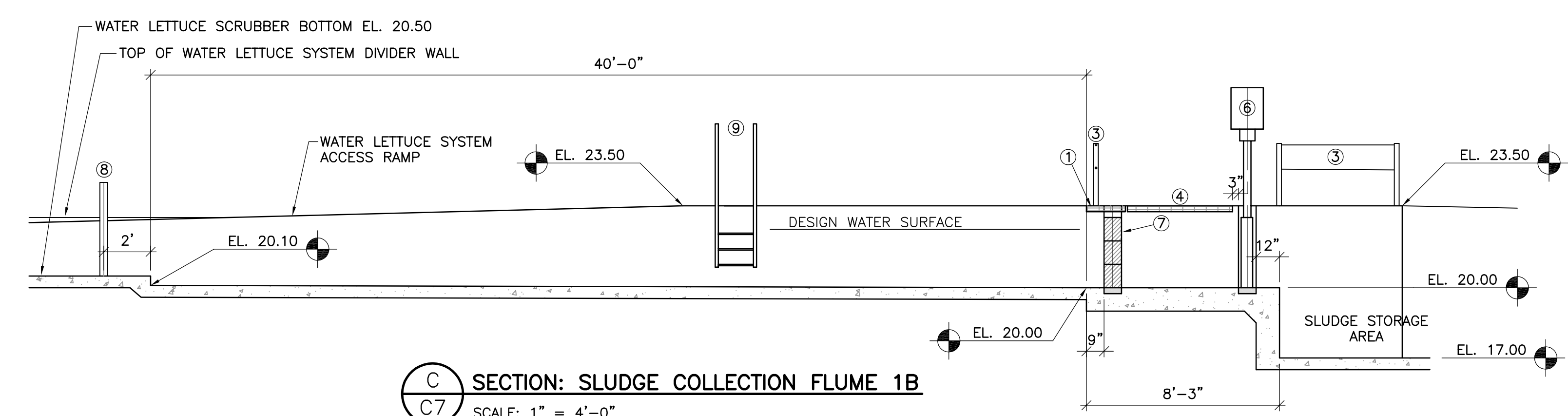
**PAINT:**  
 1. PRIMER (ALL AREAS) = TNEPEC SERIES 130 ENVIROFILL. COLOR = OFF-WHITE (130-6602). APPLY PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.  
 2. TOP COAT = TNEPEC SERIES 113 H.B. TNEME-TUF-COAT. APPLY 2 COATS PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. COLOR ① = BLACK (35GR); COLOR ② = CANARY YELLOW (14YW); COLOR ③ = CANDY APPLE RED/SAFETY POOL (P045).



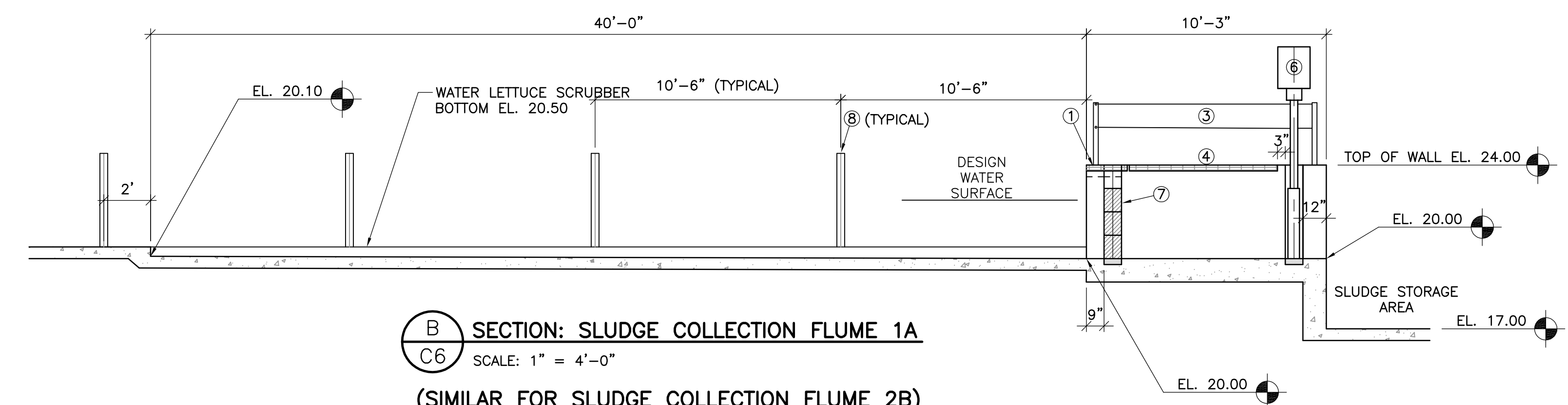
**1 1** **DETAIL: WATER LETTUCE HARVEST RAMP WARNING PAINT**  
**C6 C7** SCALE: NOT TO SCALE



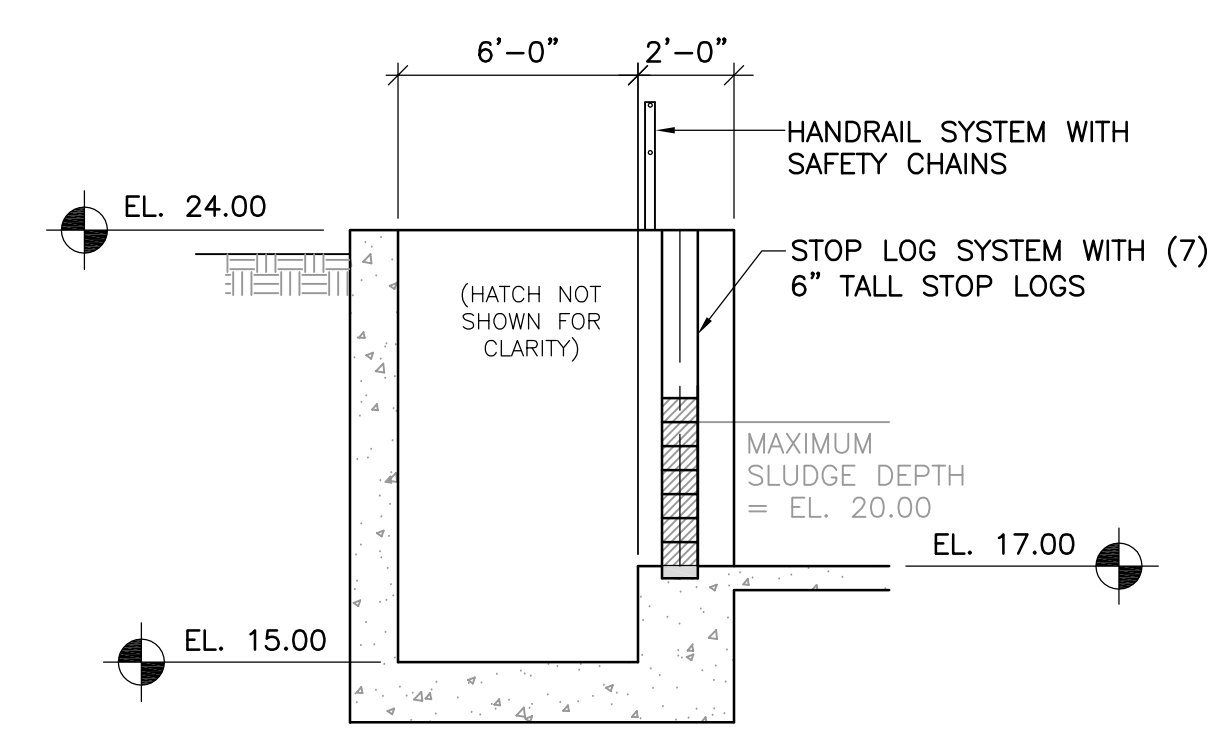
**D D** **SECTION: WATER LETTUCE BASIN DEWATERING FLUME**  
**C4 C5** SCALE: 1" = 6'-0"



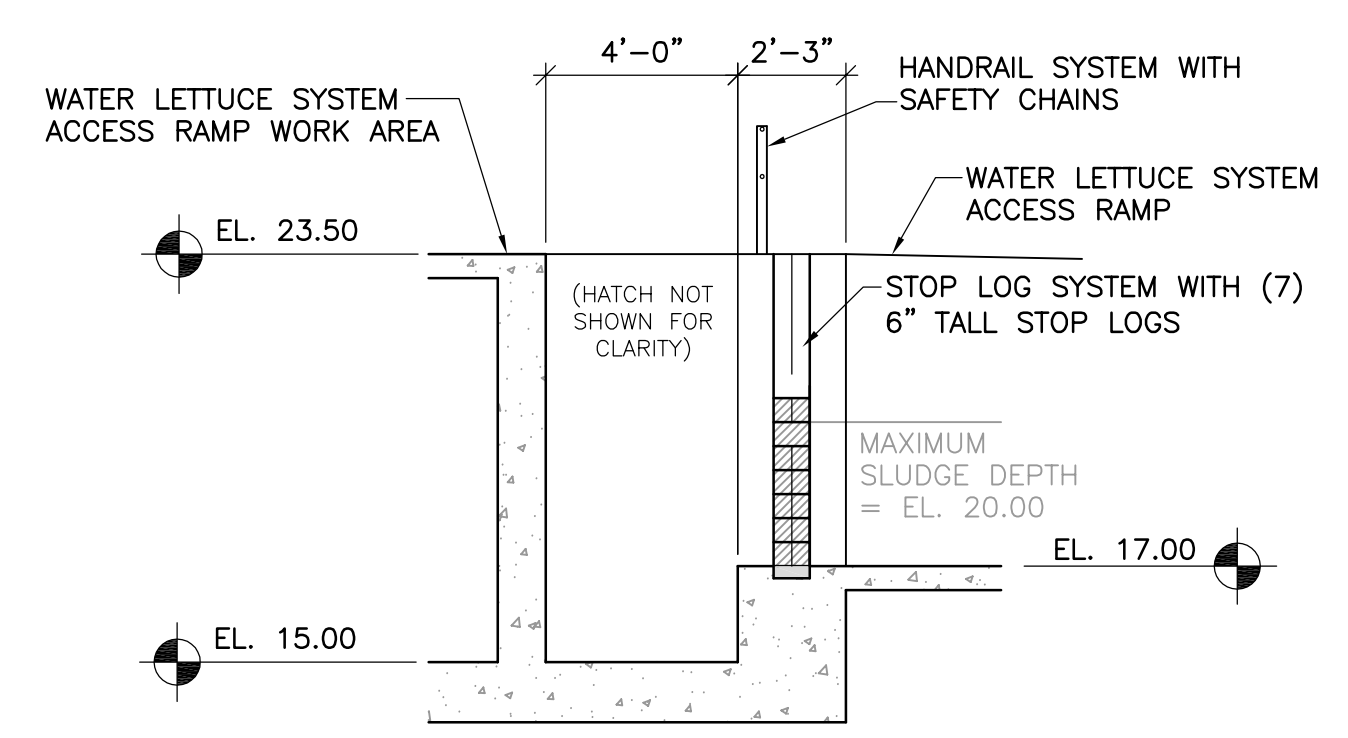
**C** **SECTION: SLUDGE COLLECTION FLUME 1B**  
**C7** SCALE: 1" = 4'-0"  
 (SIMILAR FOR SLUDGE COLLECTION FLUME 2A)



**B** **SECTION: SLUDGE COLLECTION FLUME 1A**  
**C6** SCALE: 1" = 4'-0"  
 (SIMILAR FOR SLUDGE COLLECTION FLUME 2B)

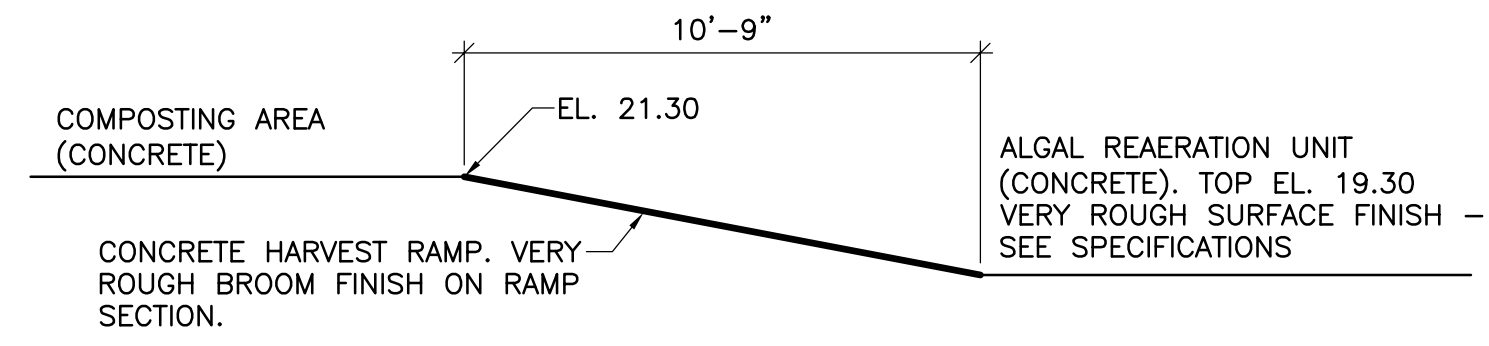


**A** **SECTION: SUPERNATANT AND SLUDGE PUMP-OUT STRUCTURE NO. 1**  
**C6** SCALE: 1" = 4'-0"  
 (SIMILAR FOR SUPERNATANT AND SLUDGE PUMP-OUT STRUCTURE NO. 4)

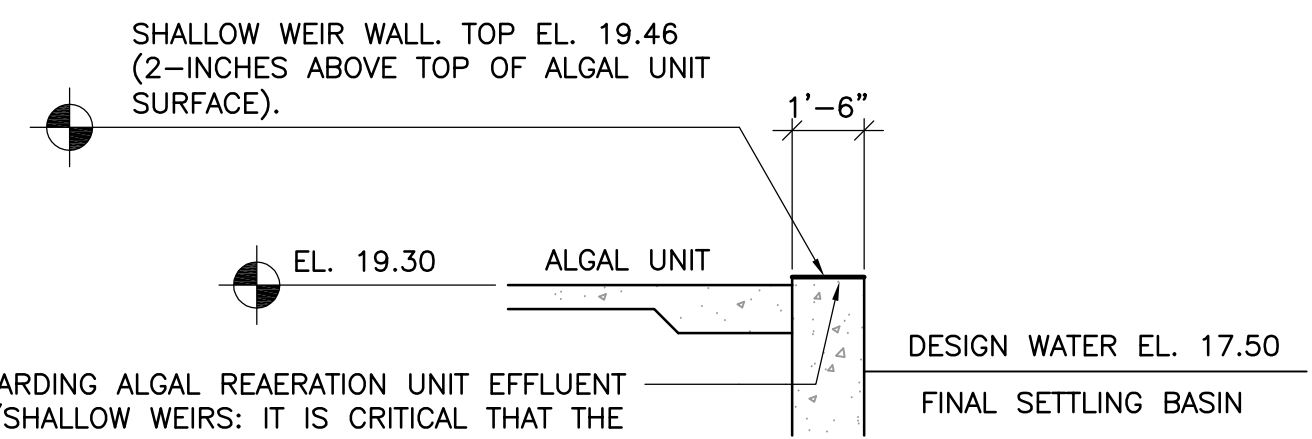


**A** **SECTION: SUPERNATANT AND SLUDGE PUMP-OUT STRUCTURE NO. 2**  
**C7** SCALE: 1" = 4'-0"  
 (SIMILAR FOR SUPERNATANT AND SLUDGE PUMP-OUT STRUCTURE NO. 3)

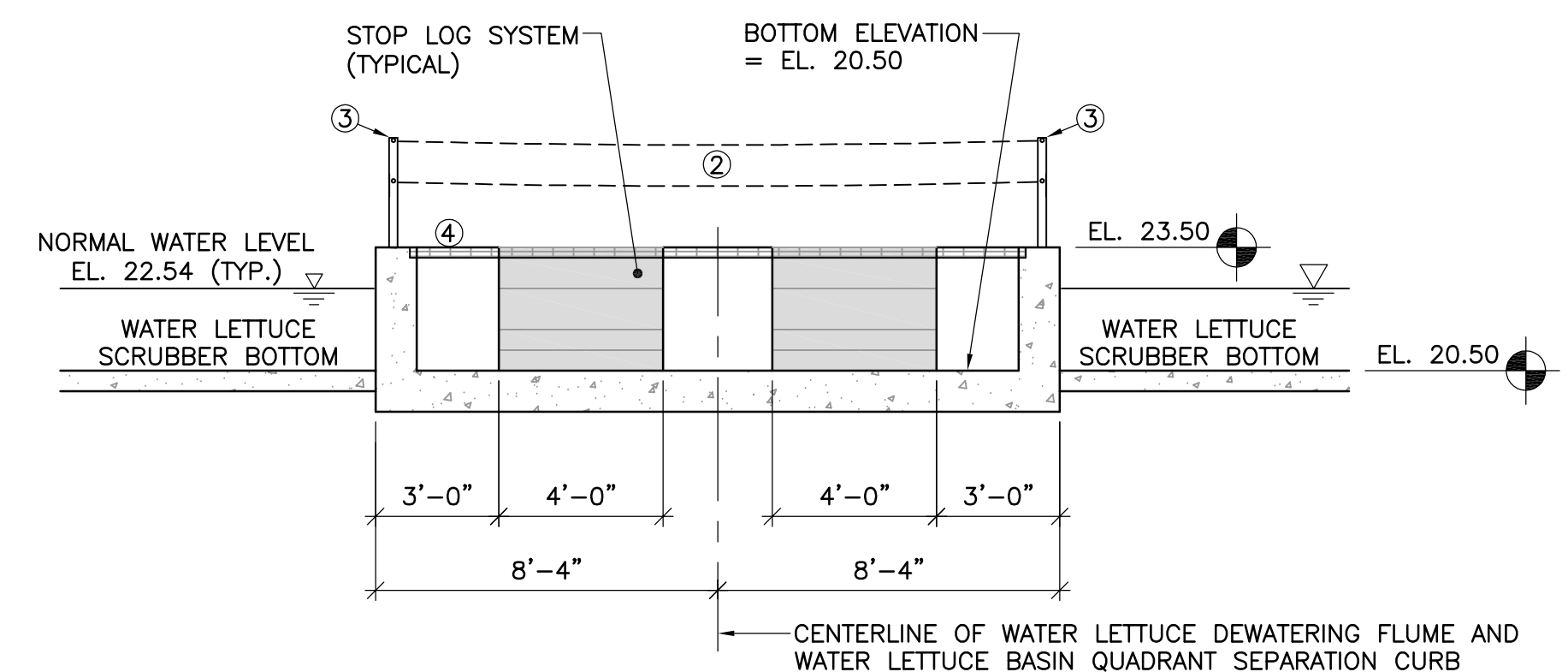
- SHEET LEGEND**
- ① REMOVABLE GRATING
  - ② TWO ROWS OF 3/8" DIAMETER TYPE 316 STAINLESS STEEL SAFETY CHAIN ATTACHED TO ALUMINUM HANDRAIL POSTS WITH TYPE 316 STAINLESS STEEL SAFETY CLIPS
  - ③ ALUMINUM HANDRAIL SYSTEM
  - ④ TRAFFIC BEARING ALUMINUM GRATING. PROVIDE OPENING AS NECESSARY FOR PROPER SLIDE GATE OPERATION.
  - ⑤ ALGAL REAERATION UNIT EGRESS LADDER WITH 42" HIGH HANDRAIL OPTION. BOTTOM RUNG TO BE 12" ABOVE BASIN BOTTOM.
  - ⑥ DRILL OPERATED SLIDE GATE, SIDE MOUNTED, FLUSH BOTTOM
  - ⑦ ALUMINUM STOP LOG SYSTEM
  - ⑧ TYPE 'A' BOLLARD
  - ⑨ ALUMINUM EGRESS LADDER. SEE SHEET C7
  - ⑩ FACE MOUNTED SLIDE GATE WITH FLUSH BOTTOM AND HANDWHEEL OPERATOR



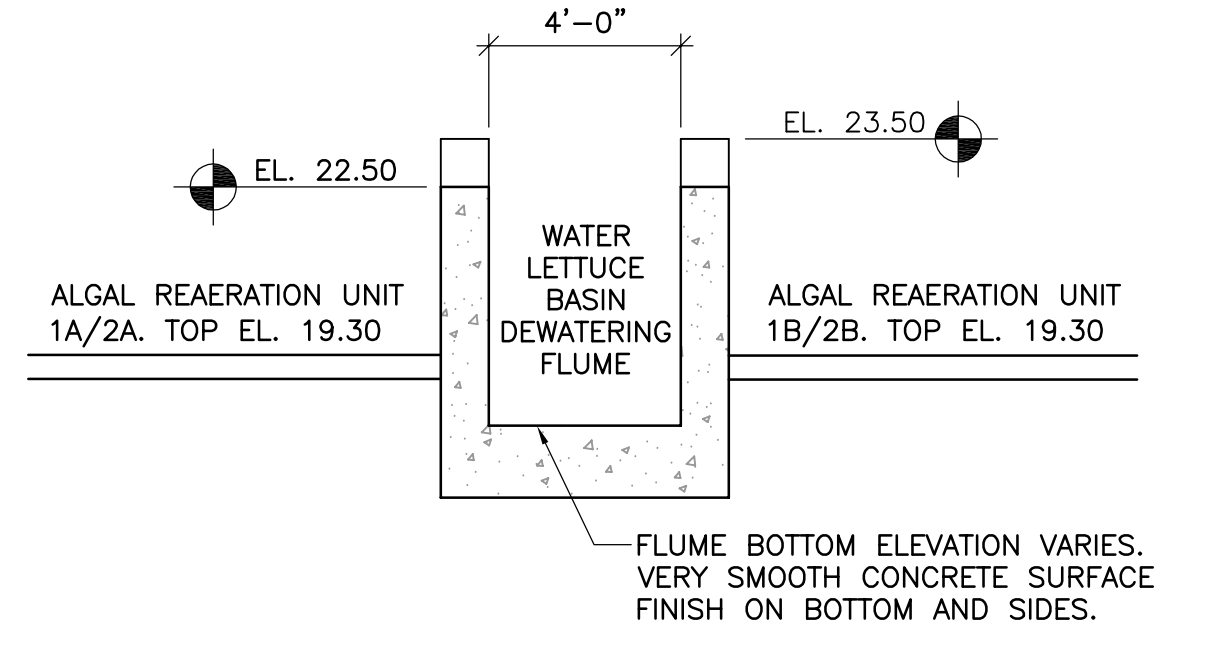
**A A** **SECTION: ALGAE HARVEST RAMP SURFACE PROFILE**  
**C4 C5** SCALE: 1" = 4'-0"



**C C** **SECTION: ALGAL REAERATION UNIT EFFLUENT WEIR**  
**C4 C5** SCALE: 1" = 4'-0"



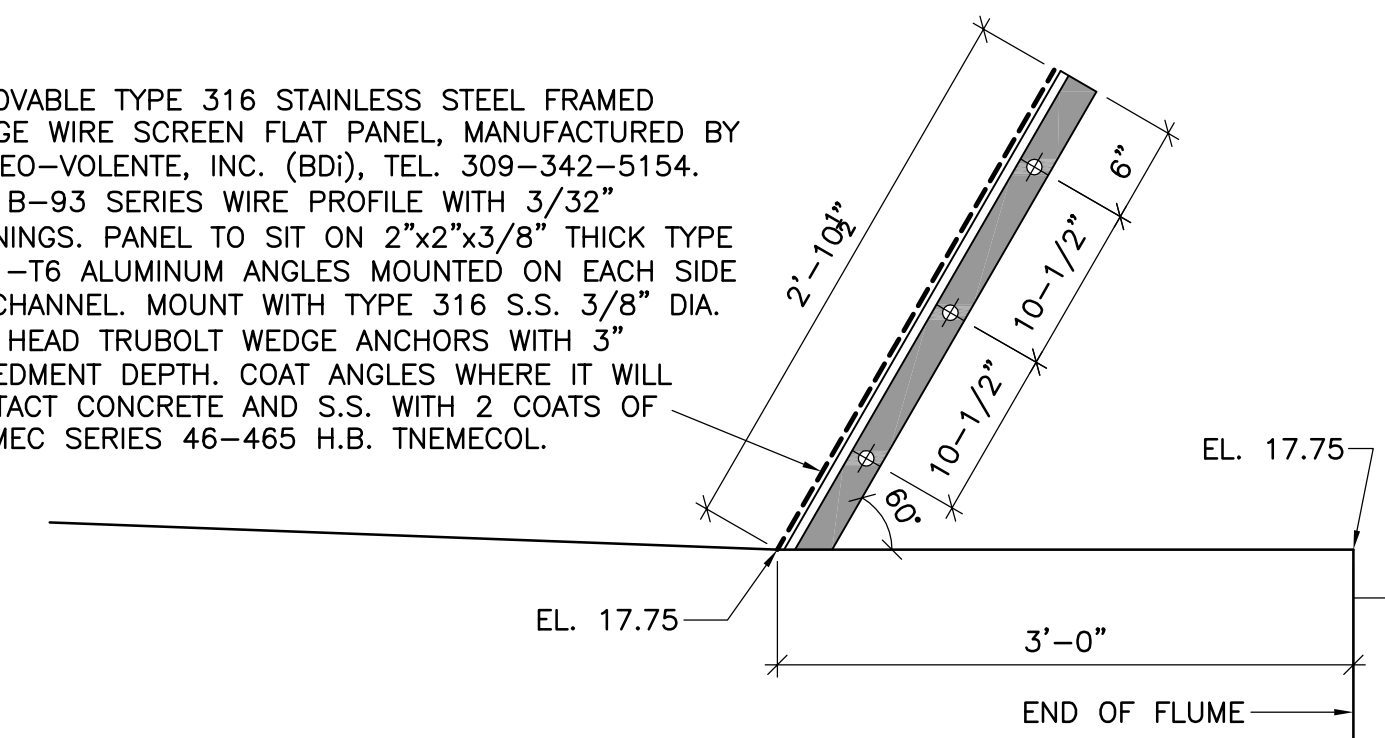
**E E** **SECTION: WATER LETTUCE BASIN DEWATERING SYSTEM**  
**C4 C5** SCALE: 1" = 4'-0"



**B B** **SECTION: WATER LETTUCE BASIN DEWATERING FLUME**  
**C4 C5** SCALE: 1" = 4'-0"

REGARDING ALGAL REAERATION UNIT EFFLUENT LIP/SALLOW WEIRS: IT IS CRITICAL THAT THE ALGAL REAERATION UNIT EFFLUENT LIP/SALLOW WEIRS ARE CONSTRUCTED ONE-INCH HIGH. IF THE TOP ELEVATION DEVIATES FROM THE DESIGN ELEVATION BY MORE THAN PLUS OR MINUS 1/8", THEN THE LIP/WEIR WILL BE REJECTED AND THE ENGINEER WILL DETERMINE A REMEDY THAT WILL BE IMPLEMENTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THIS WORK REQUIRES PRECISION ABOVE THAT NORMALLY PROVIDED BY CONSTRUCTION CONTRACTORS IN THIS AREA.

REMOVABLE TYPE 316 STAINLESS STEEL FRAMED WEDGE WIRE SCREEN FLAT PANEL, MANUFACTURED BY B. DEO-VOLANTE, INC. (BDI), TEL. 309-342-5154. USE B-93 SERIES WIRE PROFILE WITH 3/32" OPENINGS. PANEL TO SIT ON 2"x2"x3/8" THICK TYPE 6061-T6 ALUMINUM ANGLES MOUNTED ON EACH SIDE OF CHANNEL. MOUNT WITH TYPE 316 S.S. 3/8" DIA. RED HEAD TRUBOLT WEDGE ANCHORS WITH 3" EMBEDMENT DEPTH. COAT ANGLES WHERE IT WILL CONTACT CONCRETE AND S.S. WITH 2 COATS OF TNEPEC SERIES 46-465 H.B. TNEPECOL.



**2 2 2** **DETAIL: WEDGE WIRE SCREEN**  
**C4 C5 C14** SCALE: 1" = 1'-0"

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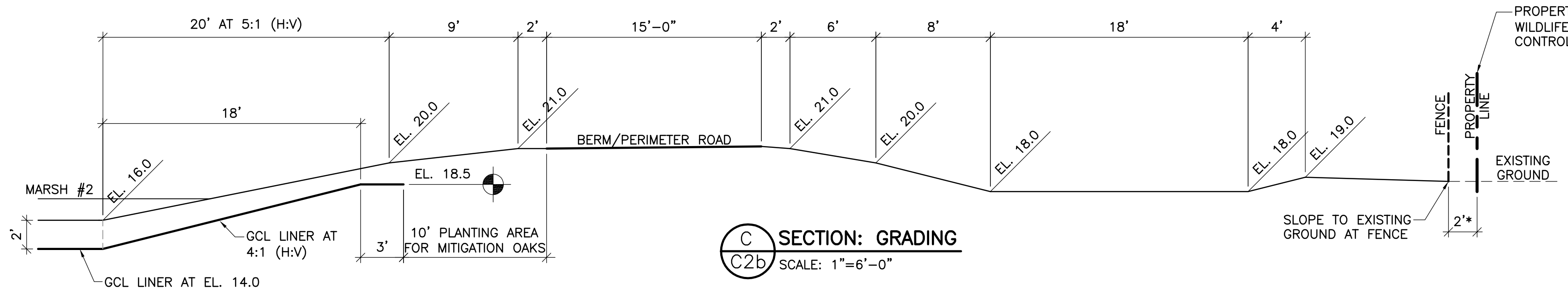
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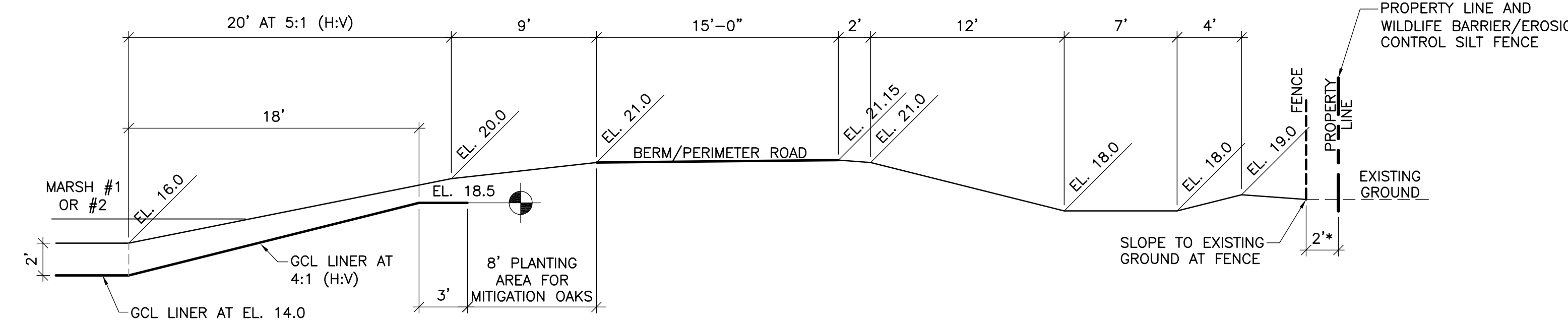
W. KEITH McCULLY, P.E.  
 FLORIDA P.E. NO. 32007  
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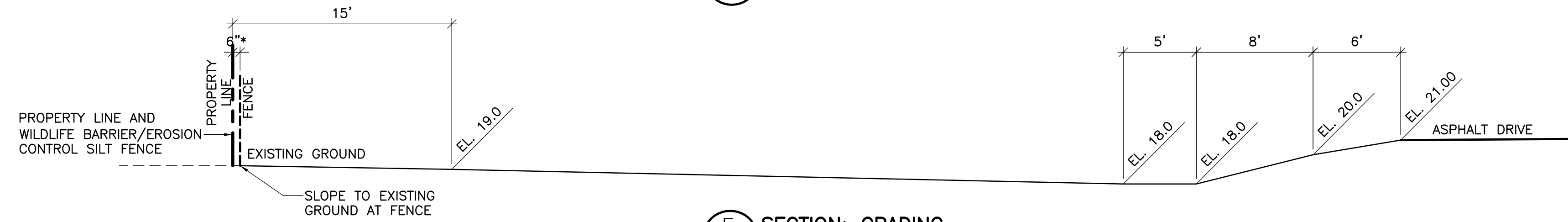
PROJECT NO.  
 DATE 3/10/2020  
 SCALE AS NOTED  
 SHEET C14



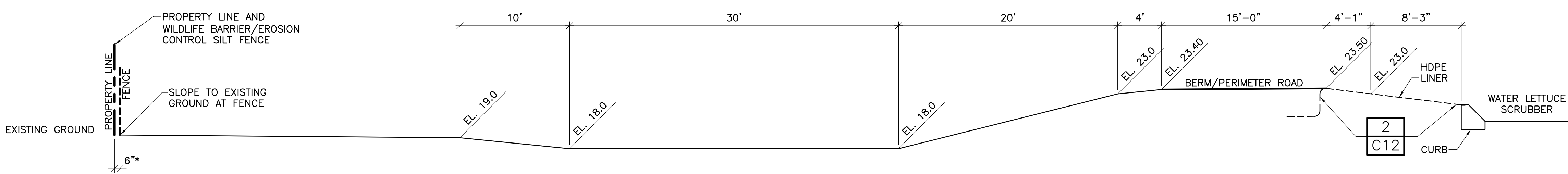
**C SECTION: GRADING**  
C2b SCALE: 1"=6'-0"



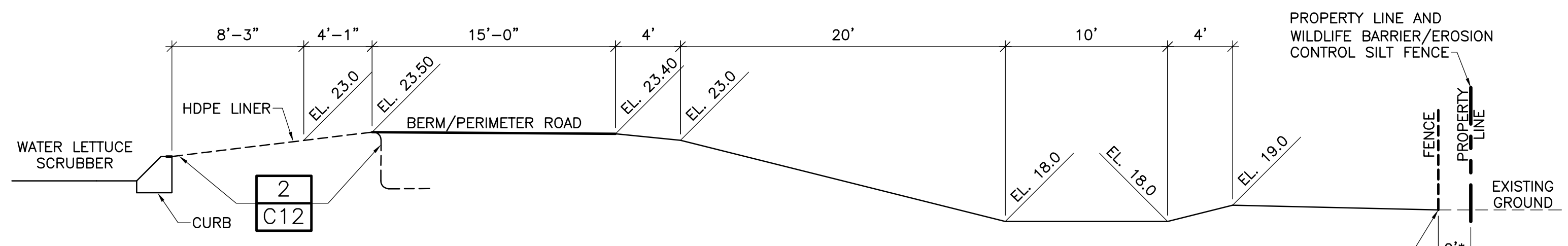
**D SECTION: GRADING**  
C2b SCALE: 1"=6'-0"



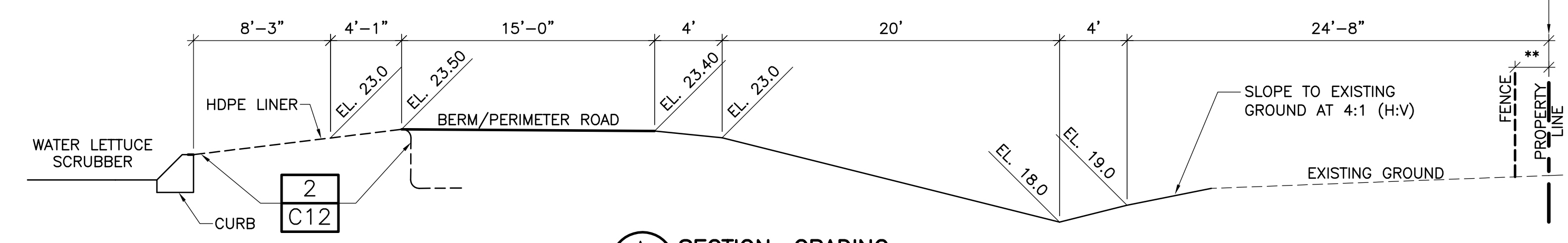
**E SECTION: GRADING**  
C2b SCALE: 1"=6'-0"



**F SECTION: GRADING**  
C2b SCALE: 1"=6'-0"



**B SECTION: GRADING**  
C2b SCALE: 1"=6'-0"

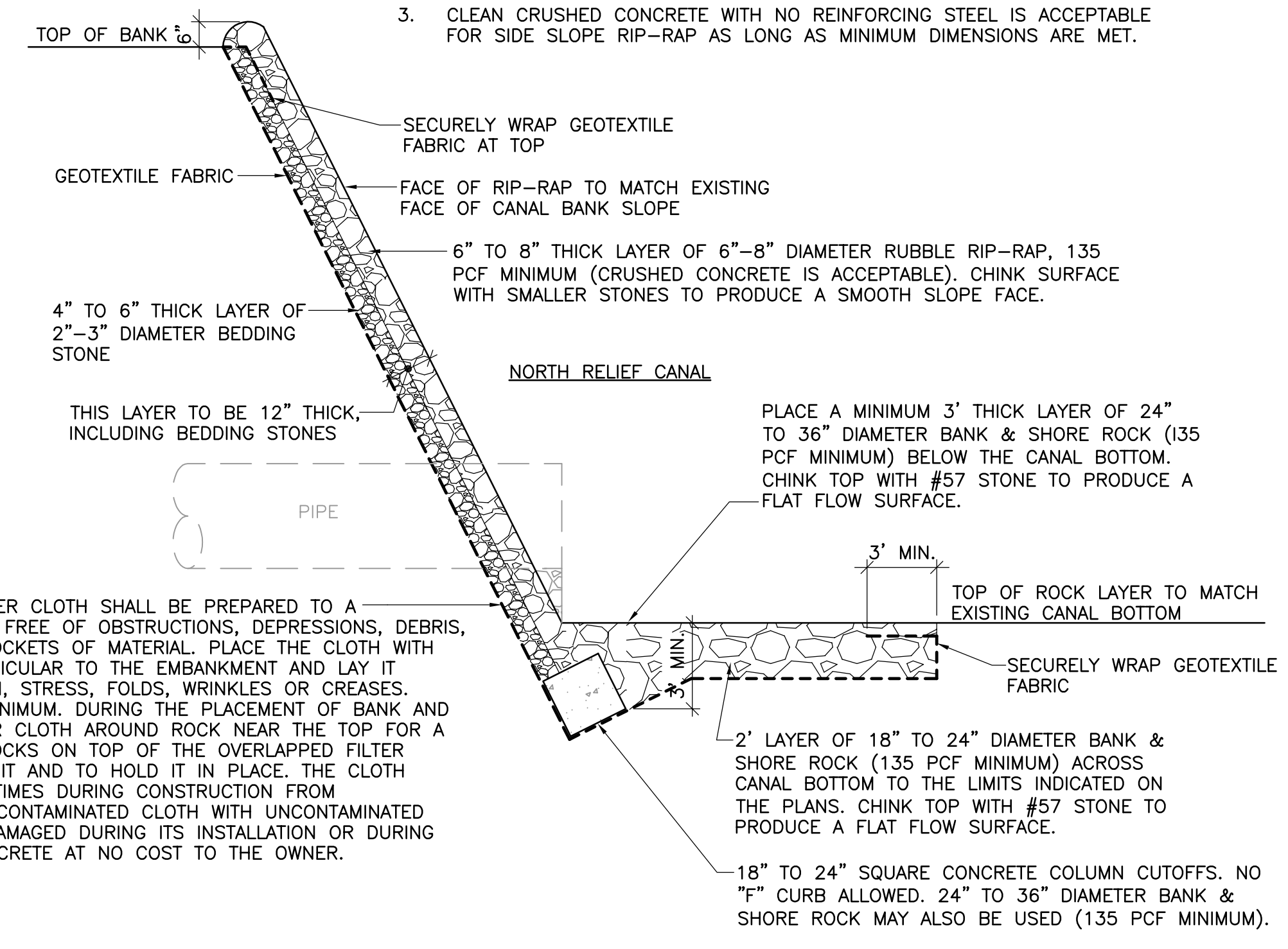


**A SECTION: GRADING**  
C2b SCALE: 1"=6'-0"

TO PREVENT POLLUTION, SEDIMENTATION, AND EROSION IN THE NORTH RELIEF CANAL DURING CONSTRUCTION, PROVIDE FLOATING TURBIDITY BARRIERS (INSTALLED PARALLEL TO THE CANAL BANK) IN ADDITION TO CONTRACTOR SELECTED EROSION CONTROL MEASURES, MEASURES REQUIRED BY INDIAN RIVER FARMS WATER CONTROL DISTRICT, AND SECTION 02225 OF THE TECHNICAL SPECIFICATIONS.

**NORTH RELIEF CANAL BANK STABILIZATION NOTES (CANAL SIDE AND BOTTOM):**

1. ALL WORK WITHIN THE INDIAN RIVER FARMS WATER CONTROL DISTRICT RIGHT-OF-WAY MUST BE APPROVED BY INDIAN RIVER COUNTY AND INDIAN RIVER FARMS WATER CONTROL DISTRICT (IRFWCD).
2. GEOTEXTILE FABRIC SHALL BE CONTECH PROPEX GEOTEX 117F WOVEN GEOTEXTILE OR EQUAL AS APPROVED BY OWNER AND IRFWCD.
3. CLEAN CRUSHED CONCRETE WITH NO REINFORCING STEEL IS ACCEPTABLE FOR SIDE SLOPE RIP-RAP AS LONG AS MINIMUM DIMENSIONS ARE MET.



THE SURFACE TO RECEIVE FILTER CLOTH SHALL BE PREPARED TO A RELATIVELY SMOOTH CONDITION FREE OF OBSTRUCTIONS, DEPRESSIONS, DEBRIS, AND SOFT OR LOW DENSITY POCKETS OF MATERIAL. PLACE THE CLOTH WITH THE LONG DIMENSION PERPENDICULAR TO THE EMBANKMENT AND LAY IT SMOOTH AND FREE OF TENSION, STRESS, FOLDS, WRINKLES OR GREASES. OVERLAP STRIPS BY 3 FEET MINIMUM. DURING THE PLACEMENT OF BANK AND SHORE ROCK, FOLD THE FILTER CLOTH AROUND ROCK NEAR THE TOP FOR A MINIMUM OF 3 FEET. PLACE ROCKS ON TOP OF THE OVERLAPPED FILTER CLOTH TO COMPLETELY COVER IT AND TO HOLD IT IN PLACE. THE CLOTH SHALL BE PROTECTED AT ALL TIMES DURING CONSTRUCTION FROM CONTAMINATION. REPLACE ANY CONTAMINATED CLOTH WITH UNCONTAMINATED CLOTH. REPLACE ANY CLOTH DAMAGED DURING ITS INSTALLATION OR DURING PLACEMENT OF STONE OR CONCRETE AT NO COST TO THE OWNER.

PLACE A MINIMUM 3' THICK LAYER OF 24" TO 36" DIAMETER BANK & SHORE ROCK (135 PCF MINIMUM) BELOW THE CANAL BOTTOM. CHINK TOP WITH #57 STONE TO PRODUCE A FLAT FLOW SURFACE.

18" TO 24" SQUARE CONCRETE COLUMN CUTOFFS. NO "F" CURB ALLOWED. 24" TO 36" DIAMETER BANK & SHORE ROCK MAY ALSO BE USED (135 PCF MINIMUM).

**1 CANAL SIDE SLOPE AND BOTTOM STABILIZATION**  
C11 NOT TO SCALE SEE SHEET C11 FOR ADDITIONAL INFORMATION

\* ADJUST FENCE LOCATION AS NECESSARY TO AVOID NATIVE TREES. CONSULT WITH ENGINEER IF QUESTIONS ARISE. KEEP FENCE ON COUNTY PROPERTY.

SEE SHEET C1a FOR EXISTING TREES THAT ARE TO REMAIN IN PLACE OR BE RELOCATED. ALL SUCH TREES DAMAGED OR DESTROYED BY CONTRACTOR'S OPERATIONS SHALL BE REPLACED PER THE TECHNICAL SPECIFICATIONS, AT NO COST TO THE OWNER.

\*\* ACTUAL DISTANCE WILL BE DETERMINED IN FIELD IN ORDER TO PROVIDE ACCESS TO NORTH RELIEF CANAL USING EXISTING DIRT/GRASS ROADWAY IN VICINITY OF WESTERN PROPERTY LINE.

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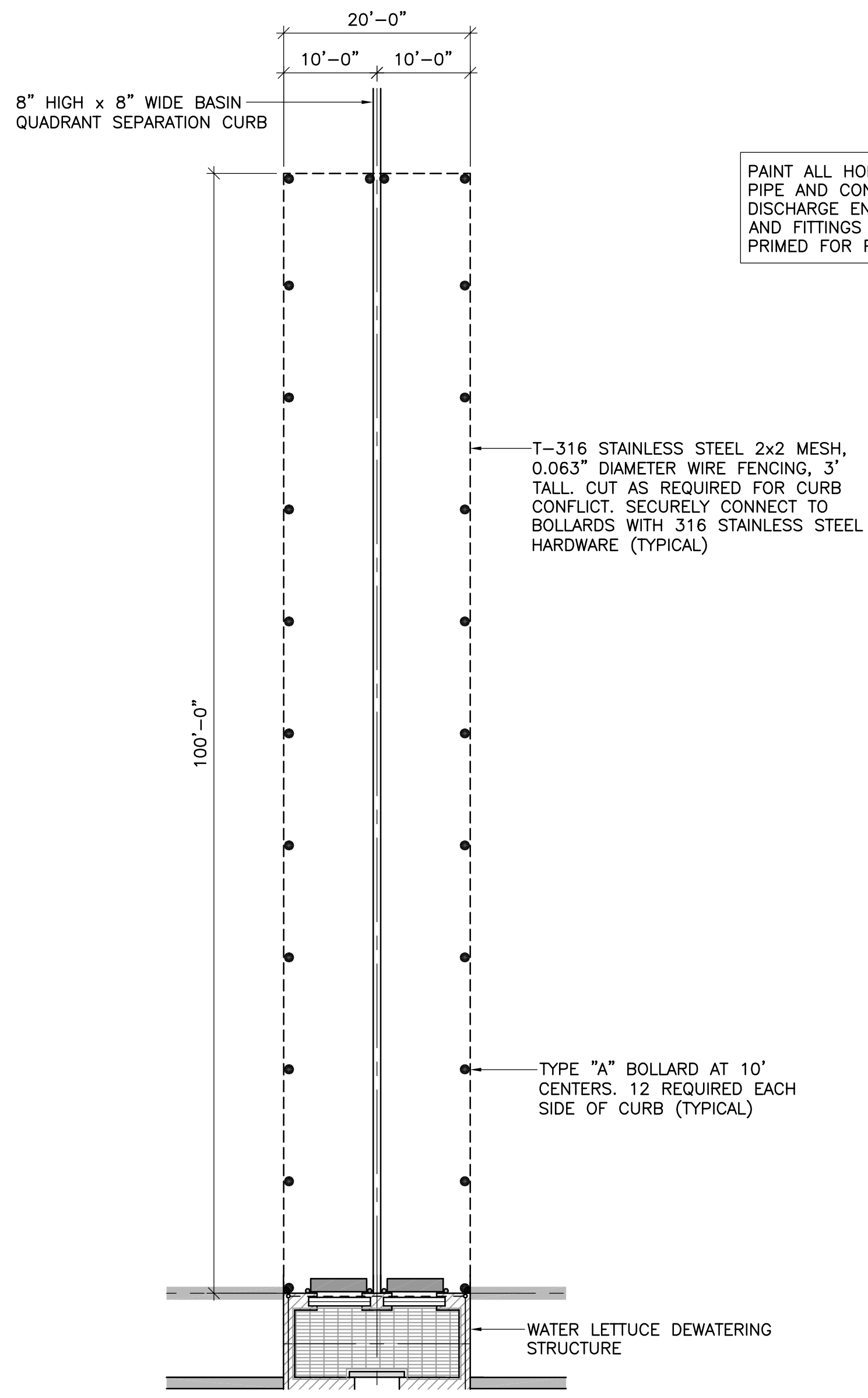
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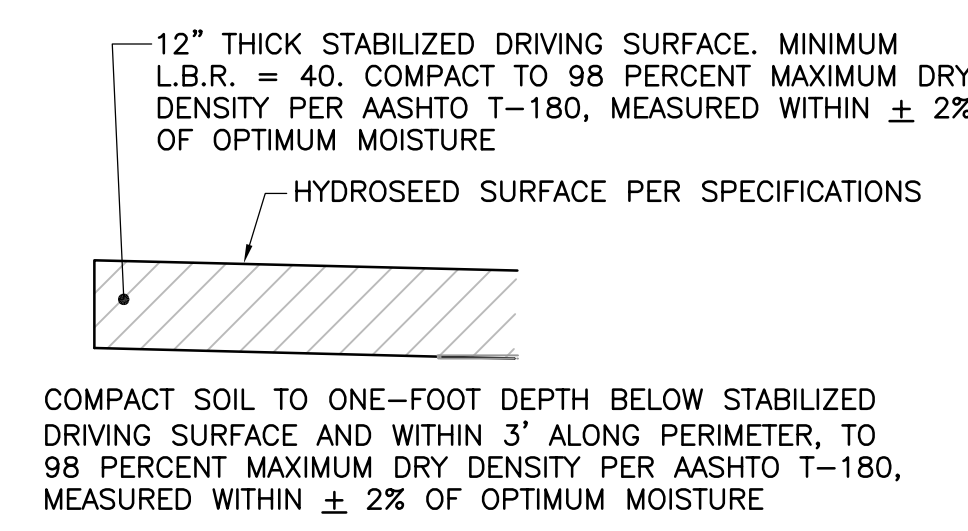
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SECTIONS AND  
DETAILS

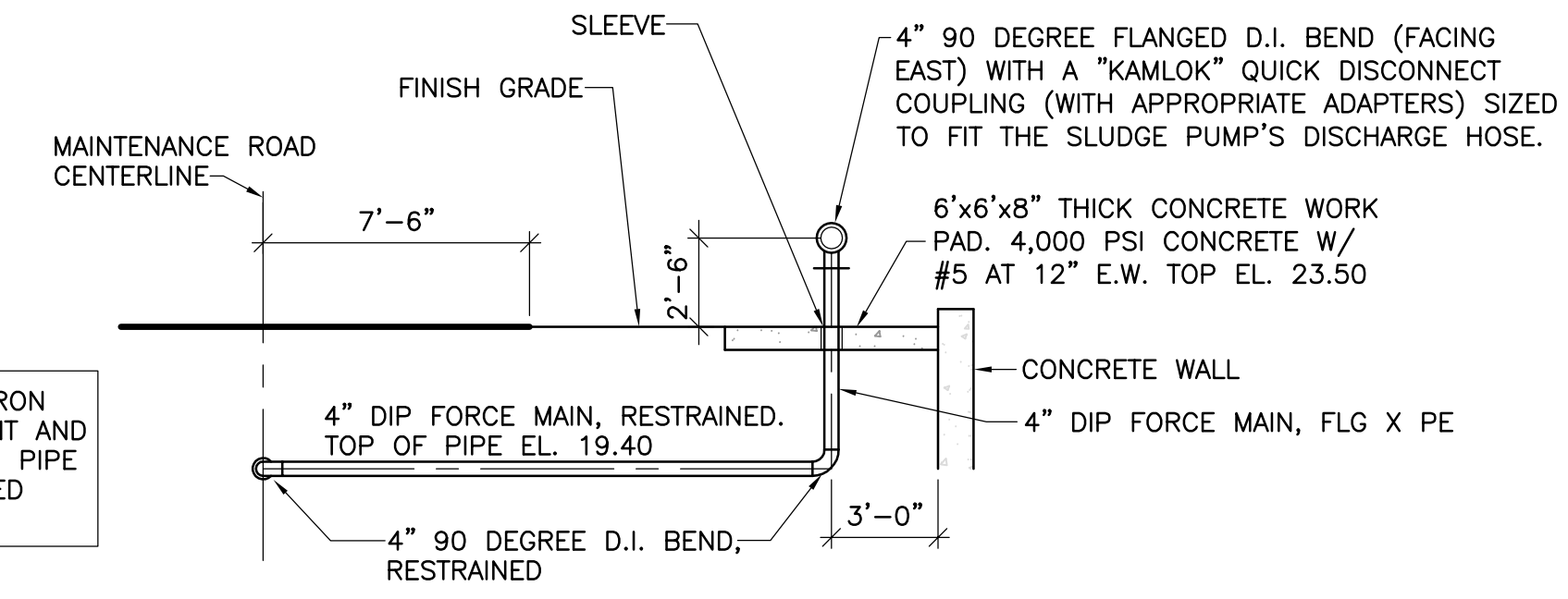
PROJECT NO.  
DATE 3/10/2020  
SCALE AS NOTED  
SHEET C15



**5** **DETAIL: WATER LETTUCE SCREENING FENCING**  
**C3** SCALE: 1" = 10'-0"



**3** **DETAIL: GRASSED SERVICE ROAD**  
**C1b** NOT TO SCALE

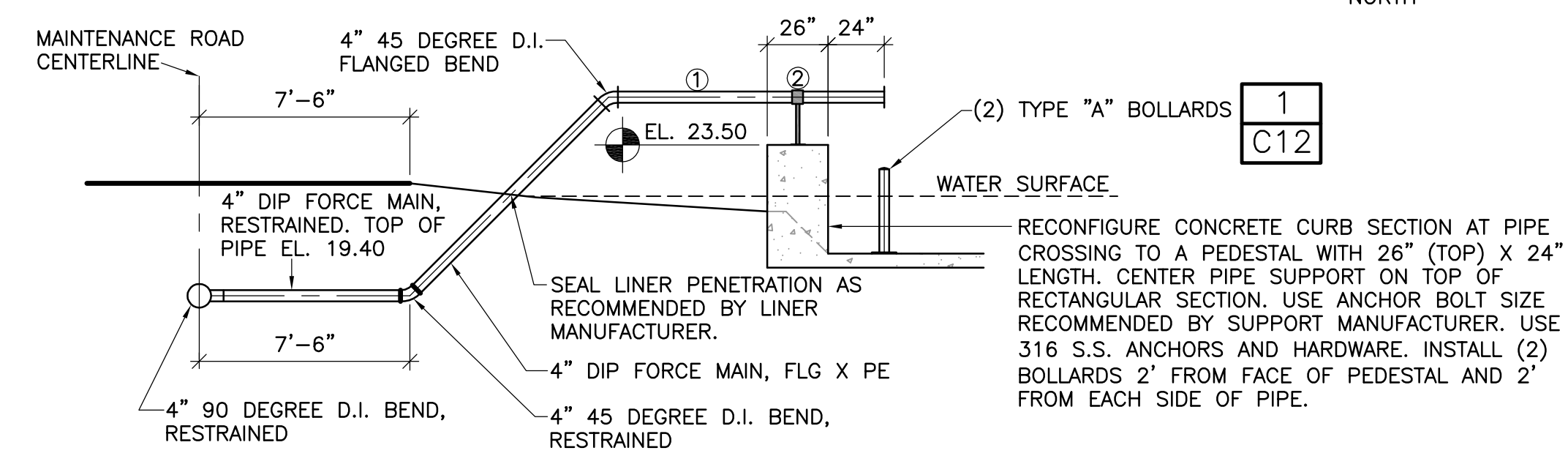


PAINT ALL HORIZONTAL EXPOSED DUCTILE IRON PIPE AND CONNECTING FITTINGS AT INFLUENT AND DISCHARGE ENDS PER SPECIFICATIONS. THIS PIPE AND FITTINGS TO BE DELIVERED TO SITE RED PRIMED FOR PAINTING.

**3** **3** **SLUDGE STORAGE AREA 1A SUPERNATANT FORCE**  
**C3** **C6** **MAIN INFLUENT END**  
 NOT TO SCALE

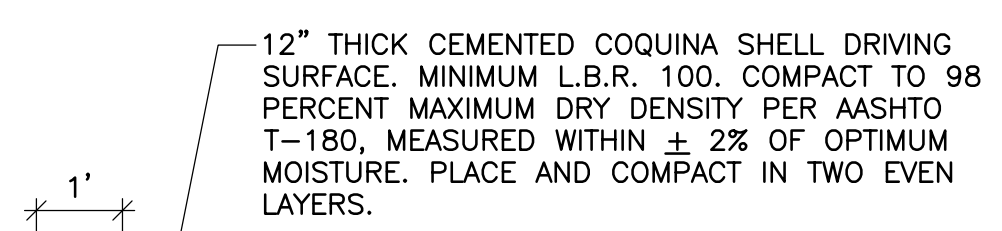
(SLUDGE STORAGE AREA 2B FORCE MAIN PIPING IS A MIRROR IMAGE)

- ① 4" DIP FORCE MAIN, FLG X FLG. TOP OF PIPE EL. 24.57
- ② PIPE SUPPORT, CARPENTER AND PATERSON "CP WITCH PIPE SUPPORT SYSTEM": FIGURE 125 PIPE SADDLE WITH YOKE WITH FIGURE 138 THREADED BASE STAND. ALL PAINTED.



**4** **SLUDGE STORAGE AREA 1A SUPERNATANT FORCE**  
**C3** **MAIN DISCHARGE END**  
 NOT TO SCALE

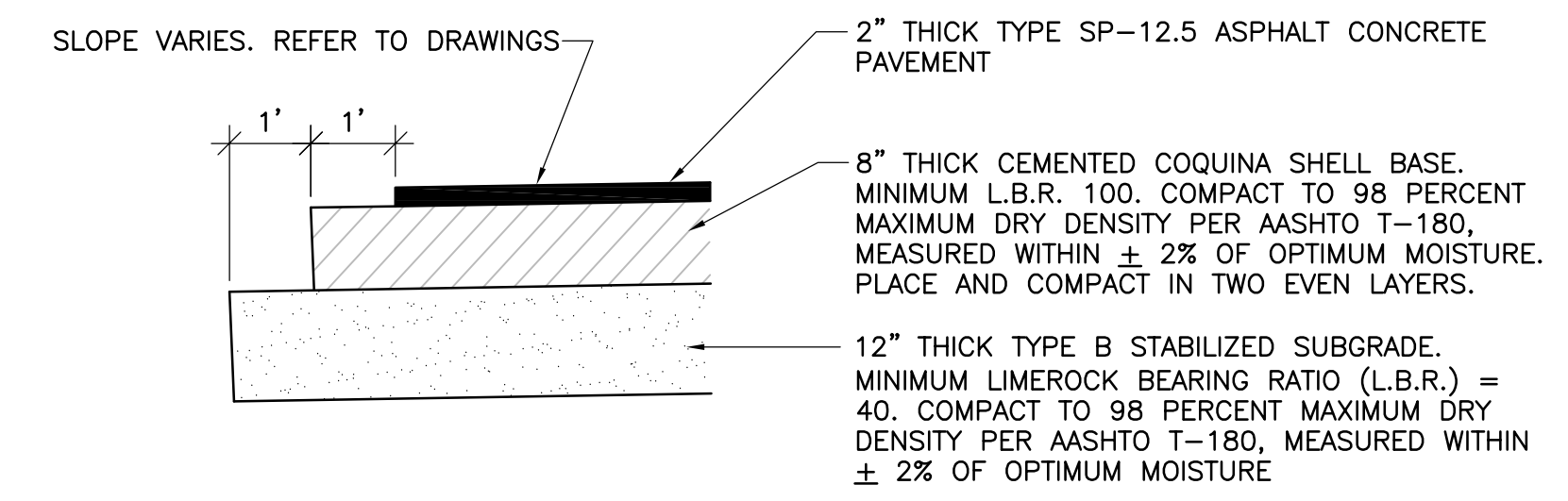
(SLUDGE STORAGE AREA 2B FORCE MAIN PIPING IS A MIRROR IMAGE)



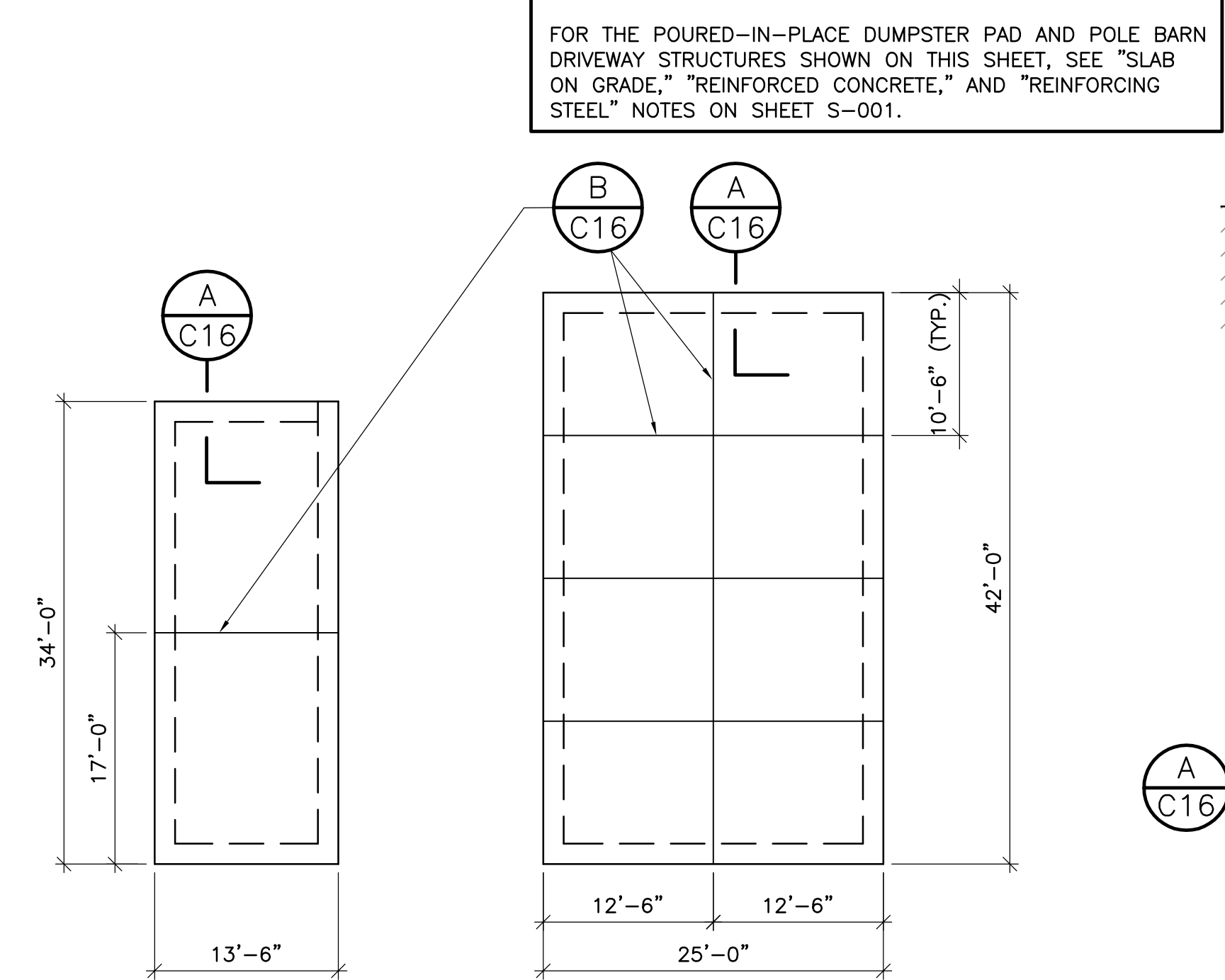
12" THICK TYPE B STABILIZED SUBGRADE. MINIMUM LIMEROCK BEARING RATIO (L.B.R.) = 40. COMPACT TO 98 PERCENT MAXIMUM DRY DENSITY PER AASHTO T-180, MEASURED WITHIN ± 2% OF OPTIMUM MOISTURE

COMPACT SOIL TO ONE-FOOT DEPTH BELOW SUBGRADE AND WITHIN 6' ALONG PERIMETER, TO 98 PERCENT MAXIMUM DRY DENSITY PER AASHTO T-180, MEASURED WITHIN ± 2% OF OPTIMUM MOISTURE

**4** **DETAIL: ENTRANCE DRIVEWAY AT 53RD STREET**  
**C1b** NOT TO SCALE

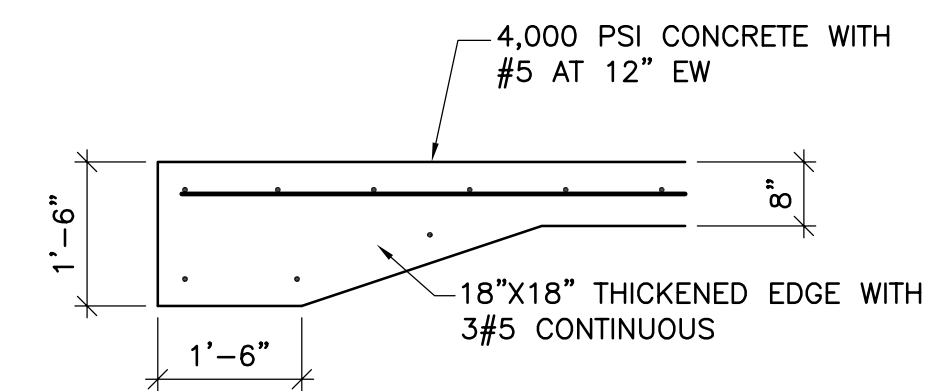


**1** **DETAIL: ASPHALT DRIVES, PARKING AREA, FINAL COMPOSTING**  
**C1b** **PAD/SETTLING BASIN DREDGE PAD**  
 NOT TO SCALE

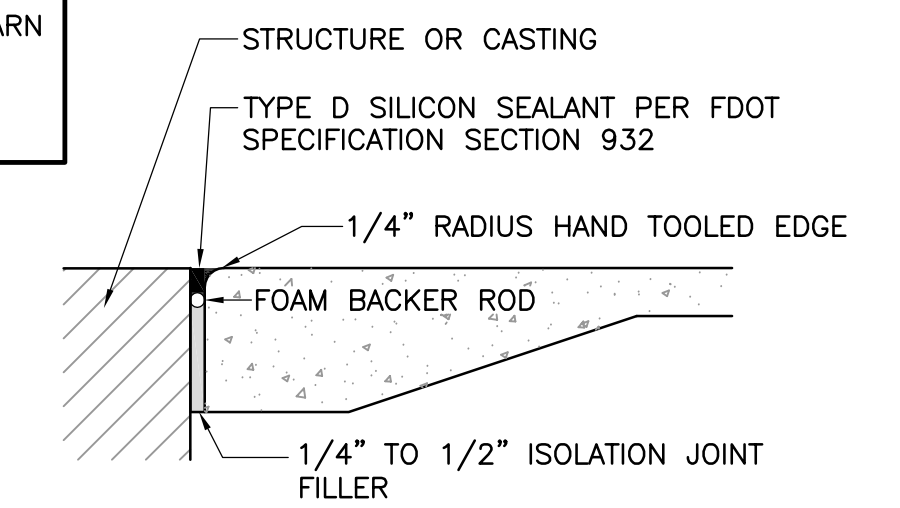


**3** **PIPING AREA WORK PAD**  
**PS1** SCALE: 1" = 10'-0"

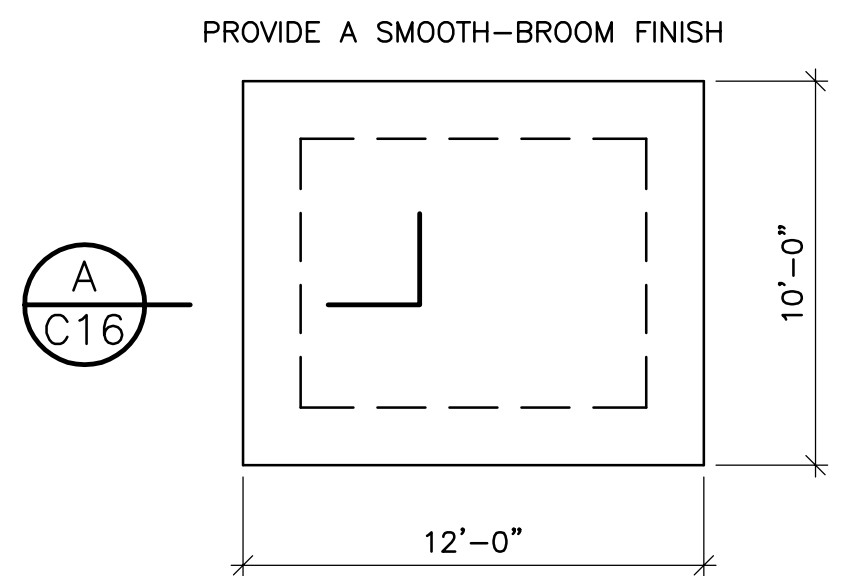
**4** **POLE BARN DRIVEWAY**  
**C10** SCALE: 1" = 10'-0"



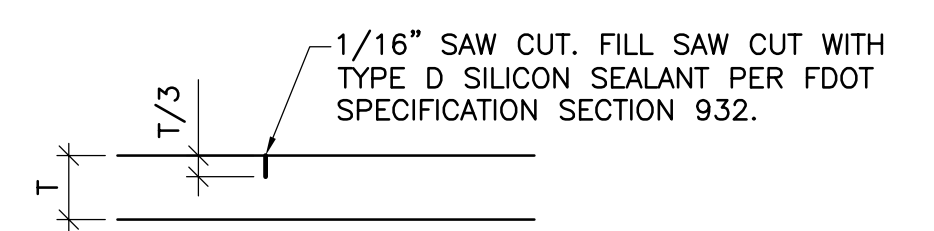
**A** **TYPICAL THICKENED EDGE DETAIL**  
**C16** NOT TO SCALE



**ISOLATION JOINT DETAIL**  
 NOT TO SCALE



**2** **PLAN: DUMPSTER PAD**  
**C10** SCALE: 1" = 5'-0"



**B** **SAW CUT SLAB JOINT DETAIL**  
**C16** NOT TO SCALE

1. SAW CUT SLAB AS SOON AS THE CONCRETE HAS HARDENED ENOUGH SO THAT THE AGGREGATE DOES NOT DISLODGE AND THE CONCRETE CAN SUPPORT THE CREW AND EQUIPMENT, AND NO LATER THAN 18 HOURS AFTER THE CONCRETE IS PLACED.
2. HAND TOOL JOINT TO FACE OF WALL OR EDGE OF FORM WHERE SAW CUT DOES NOT REACH.
3. MAXIMUM SPACING = 15'-0" UNLESS OTHERWISE NOTED. MAXIMUM ASPECT RATIO (LENGTH BETWEEN CUTS DIVIDED BY WIDTH BETWEEN CUTS) WITH CONSTRUCTION JOINT SPACING = 1.5

**NOTES REGARDING ALL PRECAST STRUCTURES**

1. THE FOLLOWING STRUCTURES MAY BE PRECAST: S1, S2, S3, S4, S5, S6, S7, S10, S13, S14, AND S15
2. ALL PRECAST STRUCTURES SHALL USE 4,000 PSI, 28-DAY STRENGTH CONCRETE.
3. ALL PRECAST CONCRETE UNITS SHALL BE DESIGNED BY A FLORIDA LICENSED PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR (OR CERTIFIED TO MEET FDOT STANDARDS, WITH MINIMUM 8" WALL, TOP, AND BOTTOM THICKNESS). IN EITHER INSTANCE, ALL ITEMS IN THESE NOTES SHALL BE COMPLIED WITH.
4. PROVIDE THE CONCRETE MIX DESIGN FOR THE STRUCTURES. NOTE THAT THE CHLORIDE CONCENTRATION IN THE CANAL WATER CAN BE UP TO 750 PPM AND THIS SHALL BE TAKEN INTO CONSIDERATION DURING DESIGN.
5. SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED, SEALED, AND DATED BY THE ENGINEER.
6. ALL COSTS (INCLUDING ENGINEERING COSTS) SHALL BE INCLUDED IN THE BID ITEM FOR EACH STRUCTURE.
7. MINIMUM STRUCTURE WALL, TOP, AND FLOOR THICKNESS = 8 INCHES.
8. ALL PRECAST STRUCTURES SHALL HAVE TRAFFIC BEARING GRATES (OR LIDS) AND FRAMES.
9. AT THE CONTRACTOR'S OPTION, THE STRUCTURES LISTED IN ITEM NO. 1 MAY BE POURED-IN-PLACE. HOWEVER, THE STRUCTURE DESIGN SHALL BE PERFORMED BY THE CONTRACTOR'S ENGINEER AND ALL REQUIREMENTS DISCUSSED ABOVE SHALL BE APPLICABLE TO THE POURED-IN-PLACE STRUCTURES.

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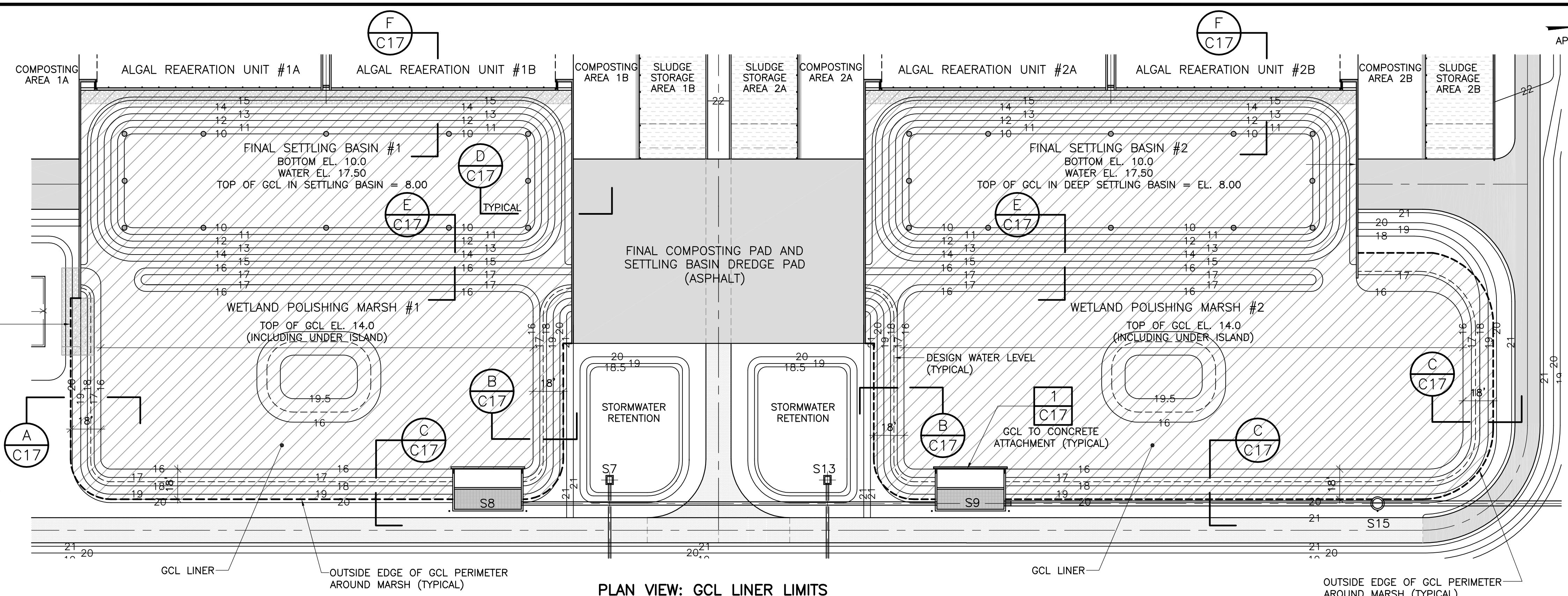
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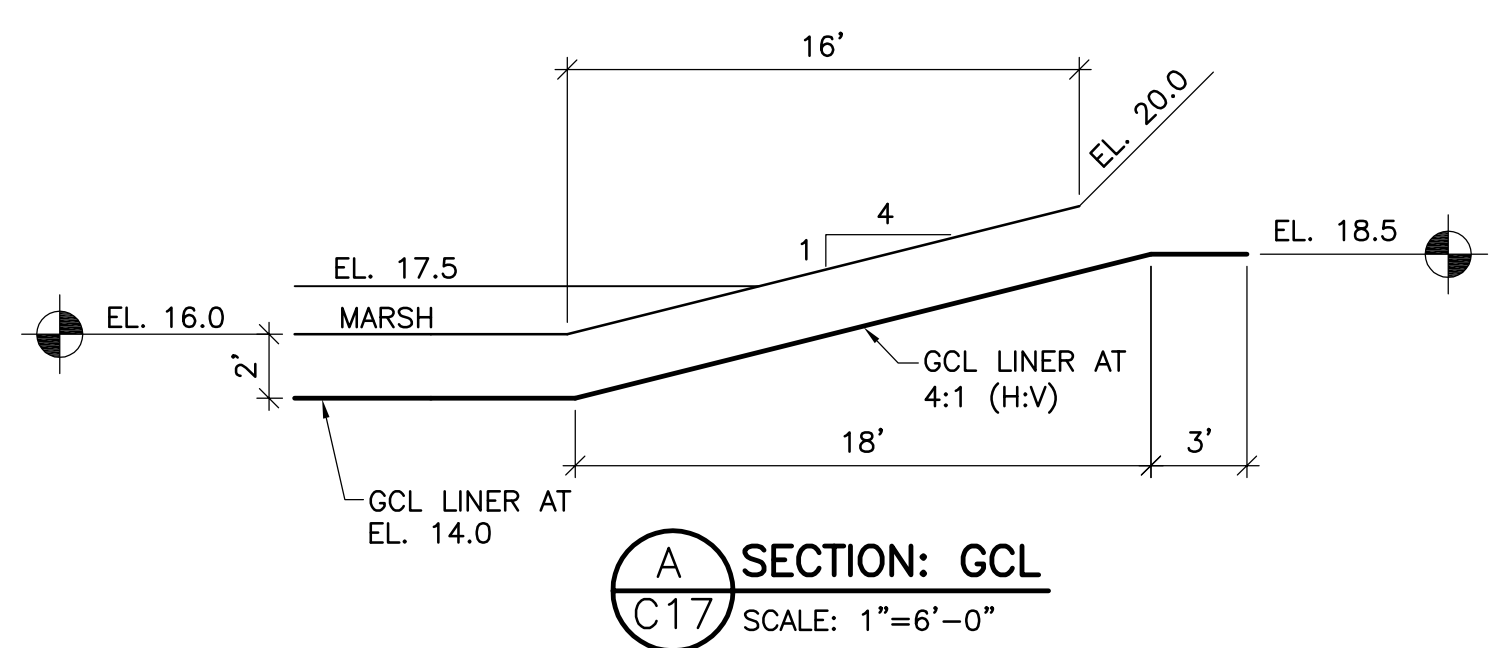
W. KEITH McCULLY, P.E.  
 FLORIDA P.E. NO. 32007  
 DATE:

SECTIONS AND  
 DETAILS

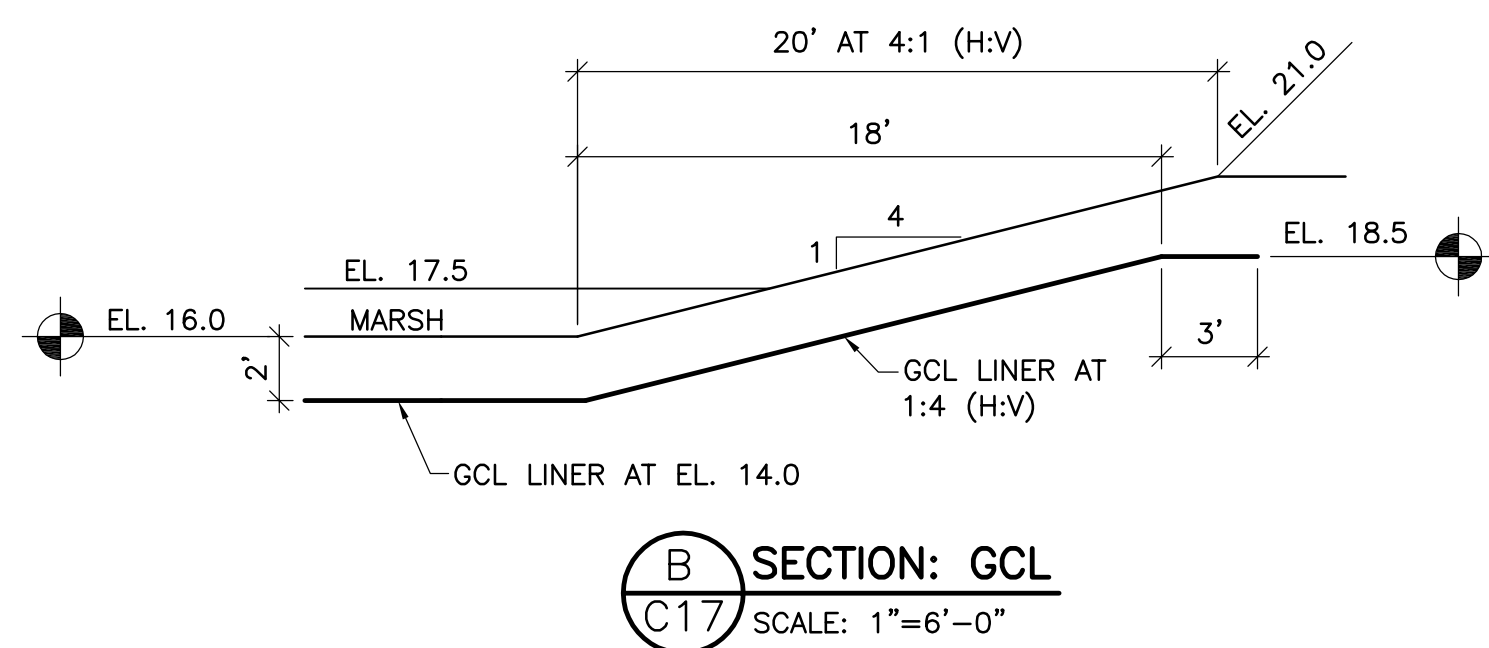
PROJECT NO.  
 DATE 3/10/2020  
 SCALE AS NOTED  
 SHEET **C16**



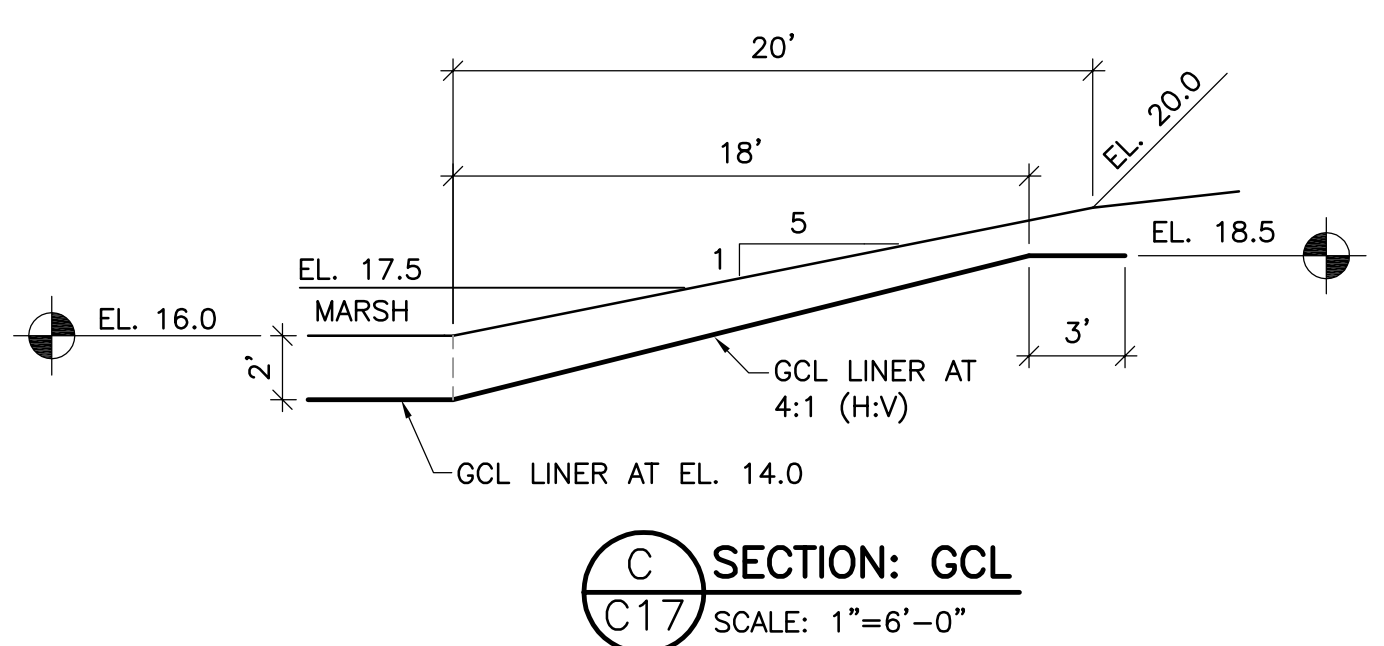
**PLAN VIEW: GCL LINER LIMITS**  
SCALE: 1" = 40'-0"



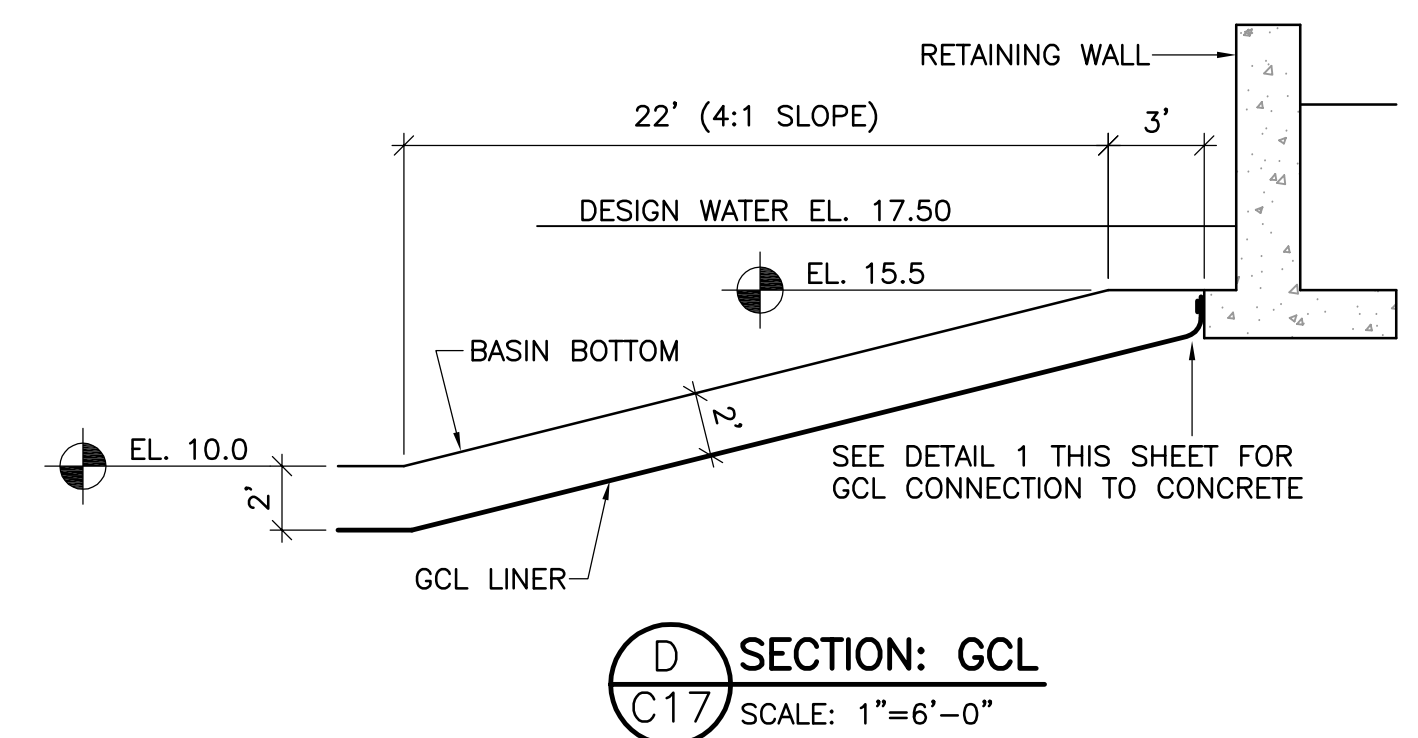
**A SECTION: GCL**  
SCALE: 1"=6'-0"



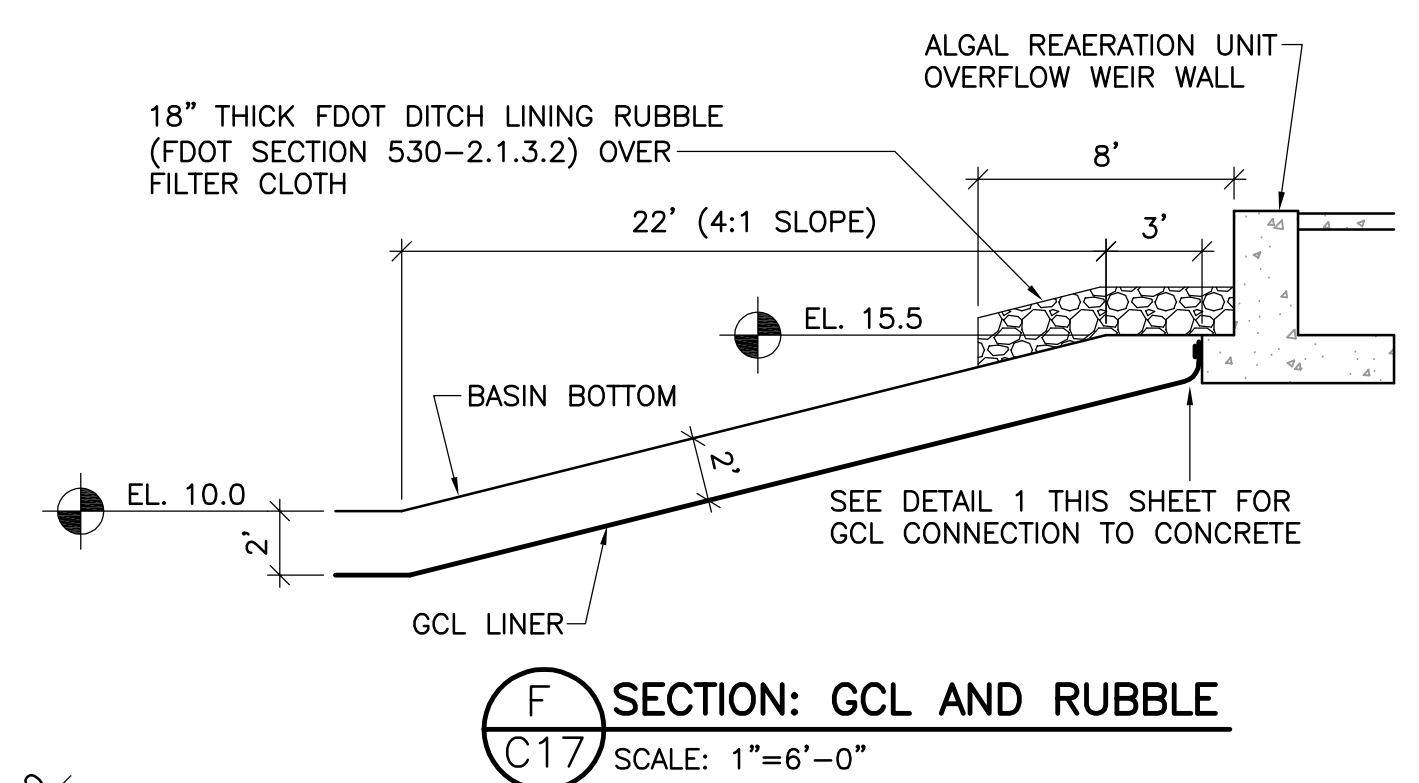
**B SECTION: GCL**  
SCALE: 1"=6'-0"



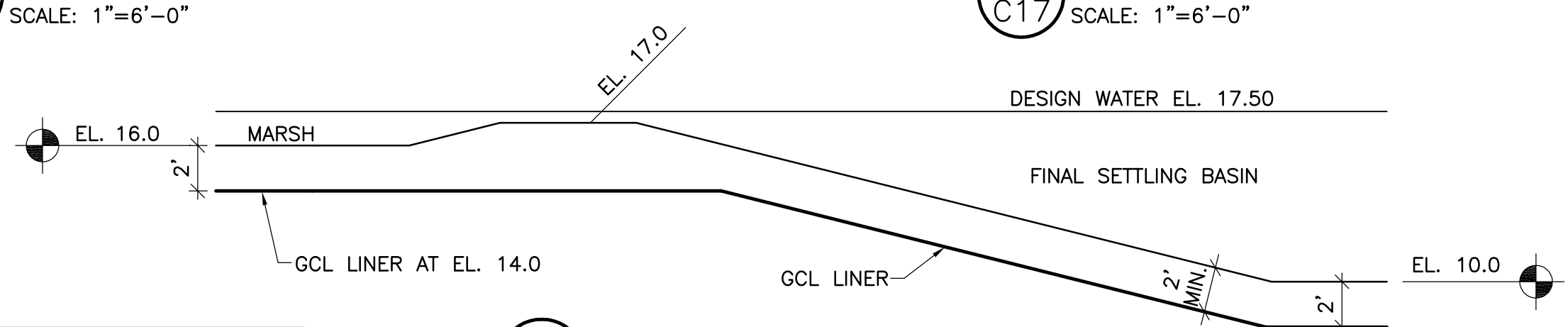
**C SECTION: GCL**  
SCALE: 1"=6'-0"



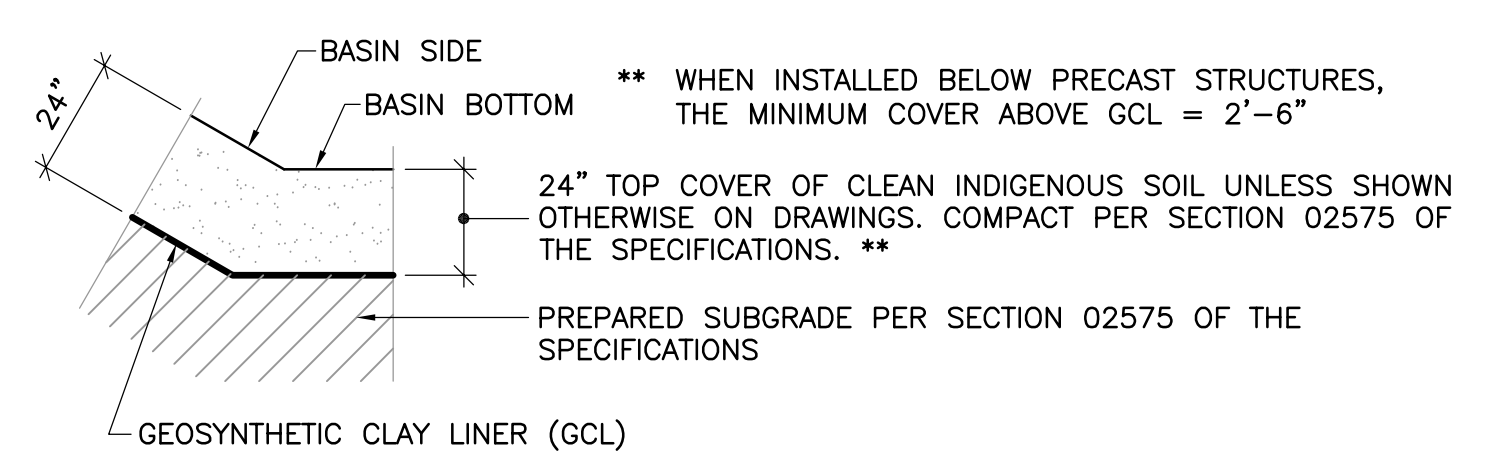
**D SECTION: GCL**  
SCALE: 1"=6'-0"



**F SECTION: GCL AND RUBBLE**  
SCALE: 1"=6'-0"

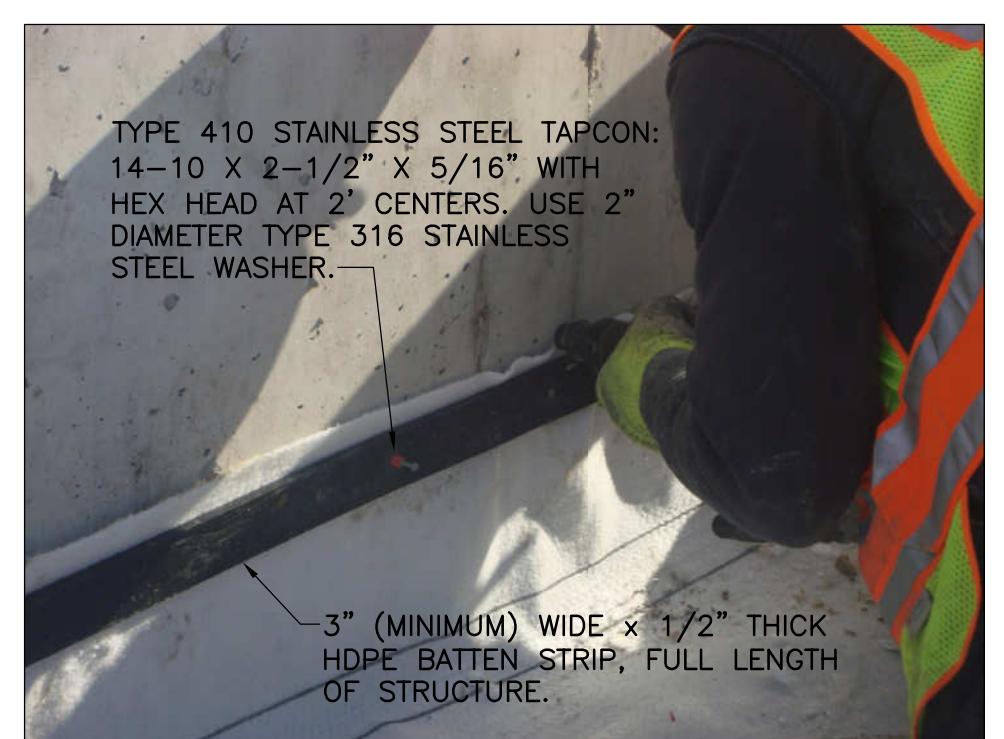
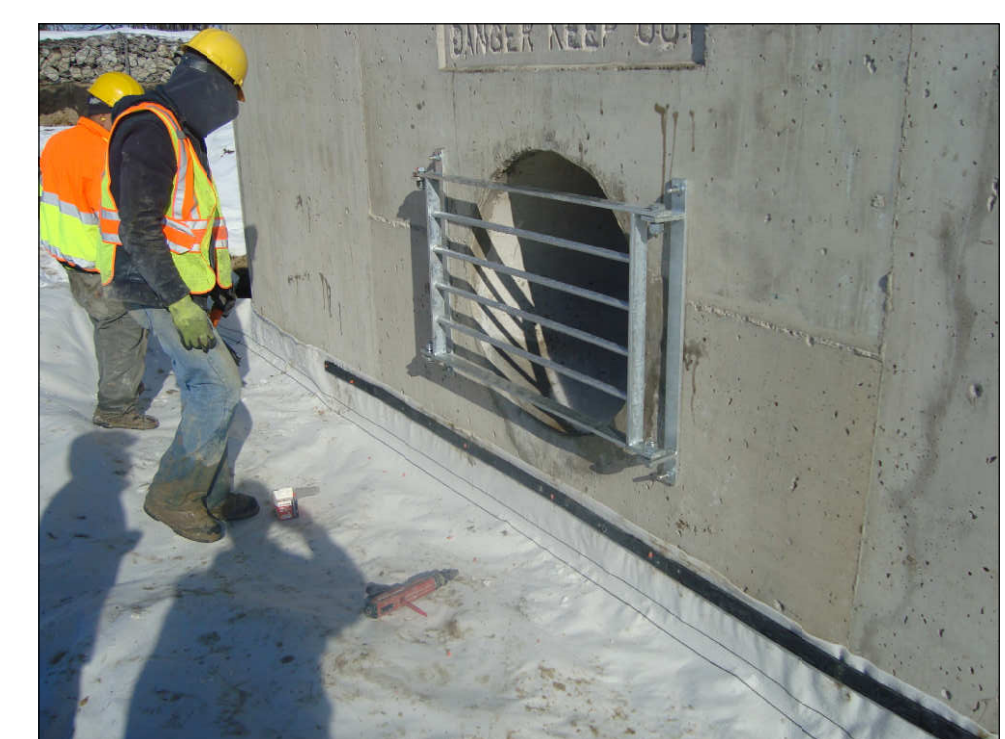


**E SECTION: GCL**  
SCALE: 1"=6'-0"



NOTE: IN ALL INSTANCES, THE COVER MATERIAL SHALL BE PLACED OVER THE LINER IN THE DIRECTION RECOMMENDED BY THE LINER MANUFACTURER.

**DETAIL: GEOSYNTHETIC CLAY LINER**  
NOT TO SCALE



**1 DETAIL: GCL CONNECTION TO CONCRETE STRUCTURES AND SLABS**  
NOT TO SCALE



APPLY LOOSE GCL AROUND THE ENTIRE STRUCTURE BETWEEN OVERLAPS AND HEAT FUSE OVERLAPS TOGETHER WITH A PROPANE TORCH TO ENSURE OVERLAPS ARE NOT OVERTURNED DURING SOIL PLACEMENT. SECURE TO STRUCTURE SIDES AS DETAILED.

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				KM	KM		KM

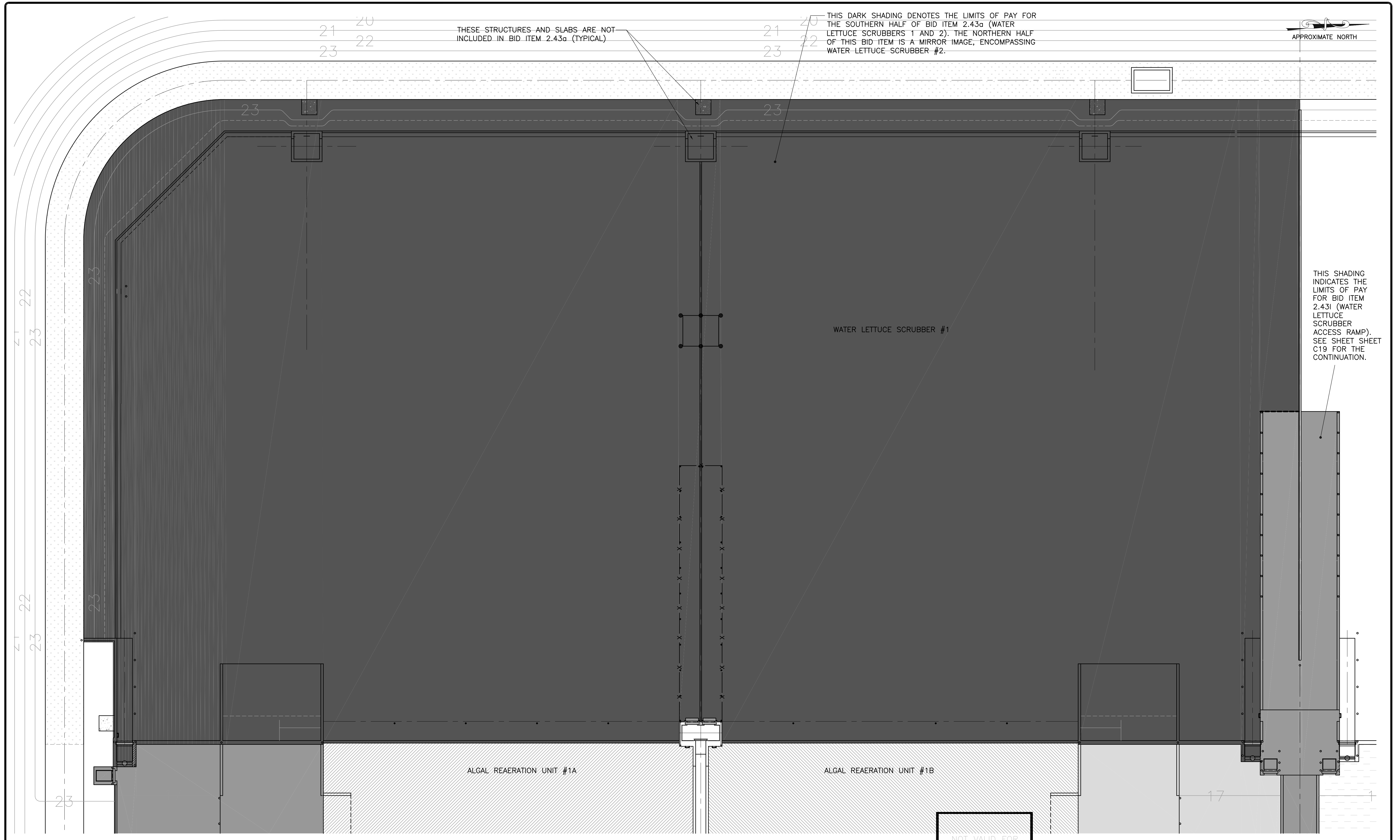
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FLORIDA P.E. NO. 32007  
DATE:

**GCL LINER PLAN, SECTION, AND DETAILS**

PROJECT NO.	
DATE	3/10/2020
SCALE	1"=40'
SHEET	C17



THESE STRUCTURES AND SLABS ARE NOT INCLUDED IN BID ITEM 2.43a. (TYPICAL)

THIS DARK SHADING DENOTES THE LIMITS OF PAY FOR THE SOUTHERN HALF OF BID ITEM 2.43a (WATER LETTUCE SCRUBBERS 1 AND 2). THE NORTHERN HALF OF THIS BID ITEM IS A MIRROR IMAGE, ENCOMPASSING WATER LETTUCE SCRUBBER #2.

APPROXIMATE NORTH

WATER LETTUCE SCRUBBER #1

THIS SHADING INDICATES THE LIMITS OF PAY FOR BID ITEM 2.43I (WATER LETTUCE SCRUBBER ACCESS RAMP). SEE SHEET SHEET C19 FOR THE CONTINUATION.

ALGAL REAERATION UNIT #1A

ALGAL REAERATION UNIT #1B

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DATE:

BID ITEM 2.43 a and I  
LIMITS OF PAY

PROJECT NO.  
DATE 2/19/2020  
SCALE AS NOTED  
SHEET C18



WATER LETTUCE SCRUBBER #1A

WATER LETTUCE SCRUBBER #1B

ALGAL REAERATION UNIT #1A

ALGAL REAERATION UNIT #1B

SLUDGE STORAGE AREA 1A

COMPOSTING AREA 1A

COMPOSTING AREA 1B

SLUDGE STORAGE AREA 1B

SLUDGE STORAGE AREA 2A

THIS SHADING INDICATES THE LIMITS OF PAY FOR BID ITEM 2.43d (ALGAL REAERATION UNIT 1A). THE LIMITS OF PAY FOR BID ITEM 2.43f (ALGAL REAERATION UNIT 2A) IS IDENTICAL.

THIS SHADING INDICATES THE LIMITS OF PAY FOR BID ITEM 2.43e (ALGAL REAERATION UNIT 1B). THE LIMITS OF PAY FOR BID ITEM 2.43g (ALGAL REAERATION UNIT 2B) IS IDENTICAL.

THIS DASHED LINE INDICATES THE LIMITS OF PAY FOR BID ITEM 2.43b (WATER LETTUCE SCRUBBER 1A/1B DEWATERING FLUME). THE LIMITS OF PAY FOR BID ITEM 2.43c (WATER LETTUCE SCRUBBER 2A/2B DEWATERING FLUME) IS IDENTICAL.

THIS DARK SOLID SHADING REPRESENTS THE LIMITS OF PAY FOR THE FINAL SETTLING BASIN 1 WALLS, WHICH ARE PART OF BID ITEM 2.43m (WALLS FOR FINAL SETTLING BASINS 1 AND 2). THE LIMITS OF PAY FOR THE FINAL SETTLING BASIN 2 WALL (ALSO PART OF BID ITEM 2.43m) IS SIMILAR, ALTHOUGH THE TOTAL LENGTH OF THAT WALL IS DIFFERENT.

THIS SHADING INDICATES THE LIMITS OF PAY FOR BID ITEM 2.43h (SLUDGE STORAGE AREA 1A AND COMPOSTING AREA 1A). THE LIMITS OF PAY FOR BID ITEM 2.43k (SLUDGE STORAGE AREA 2B AND COMPOSTING AREA 2B) IS A MIRROR IMAGE.

THIS SHADING INDICATES THE LIMITS OF PAY FOR BID ITEM 2.43i (SLUDGE STORAGE AREA 1B AND COMPOSTING AREA 1B). THE LIMITS OF PAY FOR BID ITEM 2.43j (SLUDGE STORAGE AREA 2A AND COMPOSTING AREA 2A) IS A MIRROR IMAGE.

THIS SHADING INDICATES THE LIMITS OF PAY FOR BID ITEM 2.43l (WATER LETTUCE SCRUBBER ACCESS RAMP). SEE SHEET C18 FOR THE CONTINUATION.

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BID ITEM 2.43 b through m  
LIMITS OF PAY

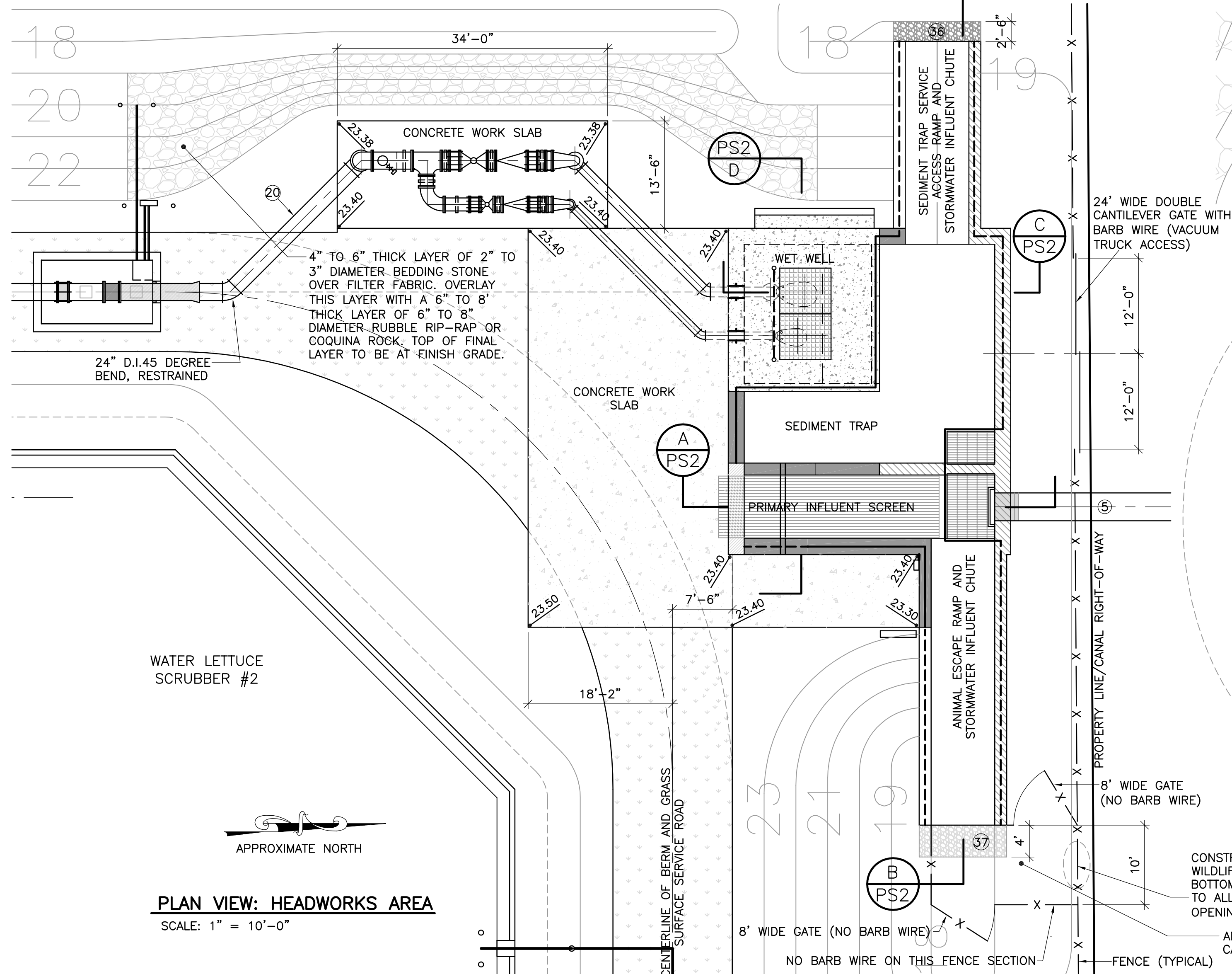
PROJECT NO.  
DATE 2/19/2020  
SCALE AS NOTED  
SHEET C19

**LEGEND AND NOTES:**

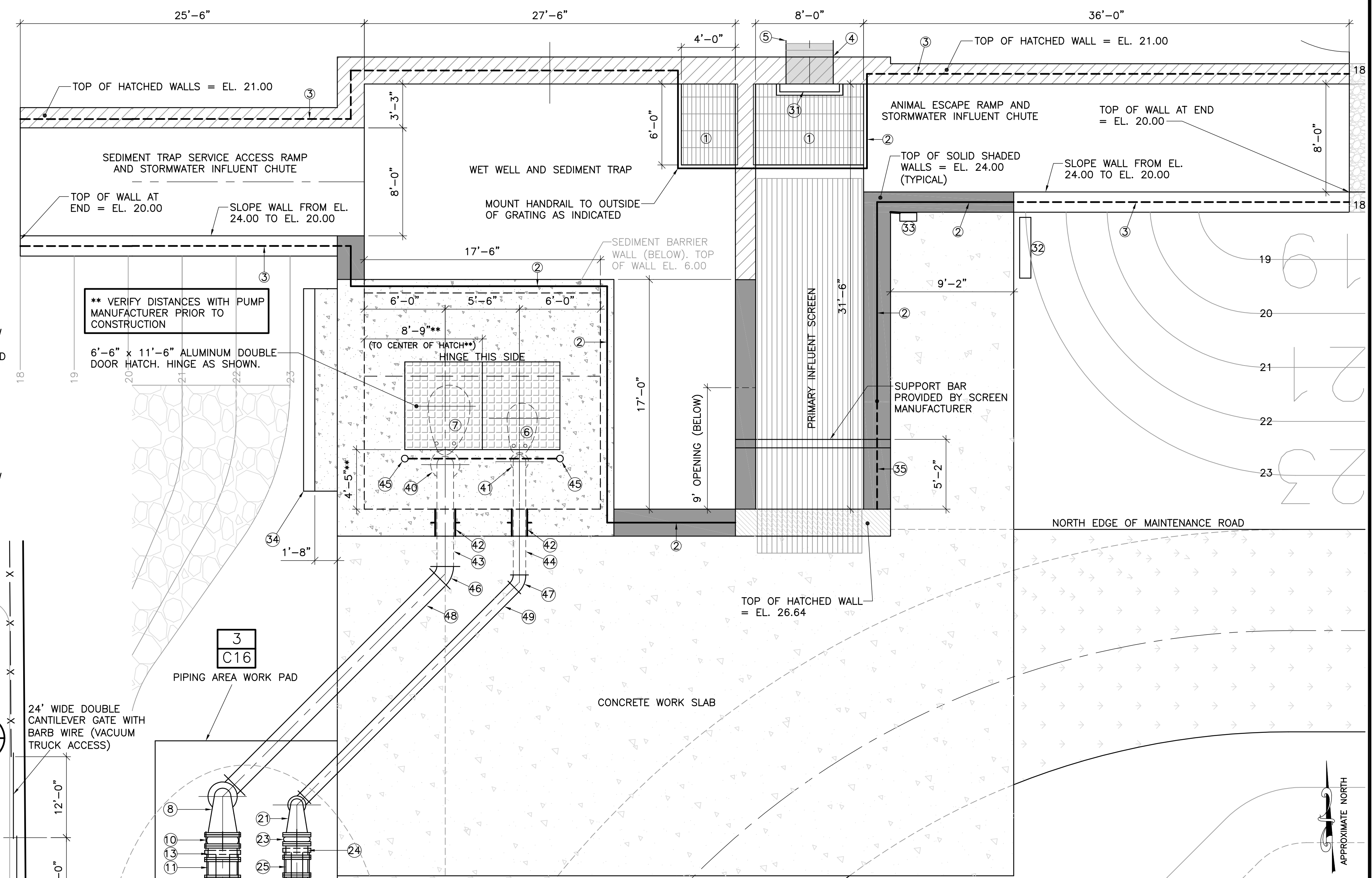
- ① ALUMINUM TRAFFIC BEARING GRATING. PROVIDE OPENING AS REQUIRED FOR PROPER OPERATION AND ACCESS TO SLIDE GATE.
- ② ALUMINUM HANDRAIL SYSTEM WITH 12" TALL SOLID TOE PLATE. SEE ④
- ③ ALUMINUM HANDRAIL SYSTEM WITH NO TOE PLATE. SEE ④
- ④ COAT ALL ALUMINUM THAT WILL COME IN CONTACT WITH CONCRETE AND FOR ALUMINUM PIPE, FOR 12" MINIMUM BEYOND, WITH TWO COATS OF TNEPEC SERIES 46-465 H.B. TNEPECOL.
- ⑤ 42" SPAN X 29" RISE CAP-ARCH INFLUENT PIPE
- ⑥ PUMP 1 - SMALL PUMP. SEE TECHNICAL SPECIFICATIONS.
- ⑦ PUMP 2 - LARGE PUMP. SEE TECHNICAL SPECIFICATIONS.
- ⑧ 24" X 14" D.I. 90 DEGREE LONG RADIUS REDUCING BEND, FLANGED. (14" D.I. 90 DEGREE BEND BELOW, RESTRAINED. CONNECT TO ⑧ WITH P.E. x FLG. D.I.P.)
- ⑨ 24" D.I. SPOOL PIECE, FLANGED, LENGTH AS REQUIRED
- ⑩ 24" METRAFLEX MODEL 711 - WIDE ARCH EXPANSION JOINT (FLANGED) WITH (4) TYPE 316 STAINLESS STEEL THREADED CONTROL RODS WITH 316 STAINLESS STEEL NUTS AND WASHERS, MOUNTED AT 90 DEGREE SEPARATIONS. SECURE CONTROL RODS TO EXPANSION JOINT USING ROMAC INDUSTRIES STYLE 490 HARNESS LUGS. USE NYLON WASHERS BETWEEN STAINLESS STEEL AND HARNESS LUGS TO PREVENT GALVANIC CORROSION.
- ⑪ 24" ROMAC INDUSTRIES, INC. MODEL DJ400 DISMANTLING JOINT, FLANGED
- ⑫ 24" VAL-MATIC RESILIENT HINGE CHECK VALVE (A.K.A. SWING-FLEX CHECK VALVE), FLANGED
- ⑬ 24" D.I. SPOOL PIECE, 12" LONG, FLANGED, WITH PIPE SUPPORT BELOW.
- ⑭ 24" PLUG VALVE WITH 24" DIAMETER HAND WHEEL OPERATOR, FLANGED
- ⑮ 24" X 18" D.I. TEE, FLANGED
- ⑯ 24" D.I. SPOOL PIECE, 12" LONG, FLANGED, WITH PIPE SUPPORT BELOW

**LEGEND AND NOTES (CONTINUED):**

- ⑰ 2" A.R.I. D-025 COMBINATION AIR VALVE FOR WASTEWATER - SHORT VERSION, WITH 2" TYPE 316 STAINLESS STEEL FULL PORT BALL VALVE, MOUNTED NEAR DOWNSTREAM END OF 24" SPOOL PIECE. TAP SPOOL PIECE FOR INSTALLATION.
- ⑱ 24" D.I. 90 DEGREE LONG RADIUS BEND, FLANGED
- ⑲ 24" D.I. 90 DEGREE BEND, M.J., RESTRAINED
- ⑳ 24" D.I.P. WITH RESTRAINED JOINTS
- ㉑ 18" X 10" 90 DEGREE D.I. LONG RADIUS REDUCING BEND, FLANGED. (10" D.I. 90 DEGREE BEND BELOW, RESTRAINED. CONNECT TO ㉑ WITH P.E. x FLG. D.I.P.)
- ㉒ 18" D.I. SPOOL PIECE, FLANGED, LENGTH AS REQUIRED
- ㉓ 18" METRAFLEX MODEL 711 - WIDE ARCH EXPANSION JOINT (FLANGED) WITH (4) TYPE 316 STAINLESS STEEL THREADED CONTROL RODS WITH 316 STAINLESS STEEL NUTS AND WASHERS, MOUNTED AT 90 DEGREE SEPARATIONS. SECURE CONTROL RODS TO EXPANSION JOINT USING ROMAC INDUSTRIES STYLE 490 HARNESS LUGS. USE NYLON WASHERS BETWEEN STAINLESS STEEL AND HARNESS LUGS TO PREVENT GALVANIC CORROSION.
- ㉔ 18" D.I. SPOOL PIECE, 12" LONG, FLANGED, WITH PIPE SUPPORT BELOW
- ㉕ 18" ROMAC INDUSTRIES, INC. MODEL DJ400 DISMANTLING JOINT, FLANGED
- ㉖ 18" VAL-MATIC RESILIENT HINGE CHECK VALVE (A.K.A. SWING-FLEX CHECK VALVE), FLANGED
- ㉗ 18" PLUG VALVE WITH 14" DIAMETER HAND WHEEL OPERATOR, FLANGED. MOUNT ACTUATOR 90 DEGREES FROM STANDARD (FACING EAST).
- ㉘ 18" D.I. 90 DEGREE LONG RADIUS BEND, FLANGED
- ㉙ 18" D.I. SPOOL PIECE, 12" LONG, FLANGED, WITH PIPE SUPPORT BELOW
- ㉚ PIPE SUPPORT
- ㉛ SLIDE GATE NO. 7



**PLAN VIEW: HEADWORKS AREA**  
SCALE: 1" = 10'-0"



**PLAN VIEW: INFLUENT SCREEN, WET WELL & SEDIMENT TRAP, AND PIPING**  
SCALE: 1" = 5'-0"

**LEGEND AND NOTES (CONTINUED):**

- ㉜ INFLUENT SCREEN CONTROL PANEL (SEE ELECTRICAL DRAWINGS)
- ㉝ INFLUENT SCREEN REMOTE ON/OFF/REVERSE/EMERGENCY DISCONNECT CONTROLS (SEE ELECTRICAL DRAWINGS)
- ㉞ PUMP CONTROL PANELS (SEE ELECTRICAL DRAWINGS). CONSTRUCT CONCRETE WORK PAD BETWEEN CONTROL PANEL AND HEADWORKS STRUCTURE AS INDICATED. LENGTH TO BE DETERMINED IN FIELD BASED ON CONTROL PANEL SIZE.
- ㉟ TWO ROWS OF TYPE 316 STAINLESS STEEL SAFETY CHAIN ATTACHED TO HANDRAIL POSTS WITH S.S. SAFETY CLIPS. INCLUDES 12" TALL SOLID TOE PLATE.
- ㊱ 2'-6" WIDE BED OF 2" TO 4" DIAMETER WASHED RIVER ROCK OVER FILTER CLOTH, MINIMUM 6" DEEP
- ㊲ 4'-0" WIDE BED OF 2" TO 4" DIAMETER WASHED RIVER ROCK OVER FILTER CLOTH, MINIMUM 6" DEEP

- 38. ALL ABOVEGROUND DUCTILE IRON PIPE AND FITTINGS SHALL BE DELIVERED RED PRIMED FOR PAINTING. NEATLY PAINT PER SPECIFICATIONS.
- 39. INSTALL A 0-20 PSI PRESSURE GAUGE (EING OFF THE COMBINATION AIR VALVE'S 2" PIPE CONNECTION, BELOW THE AIR RELEASE VALVE'S BALL VALVE. PROVIDE A SHUTOFF VALVE FOR THE PRESSURE GAUGE.
- 40. 14" LONG RADIUS 90 DEGREE BEND, FLANGED.
- 41. 10" LONG RADIUS 90 DEGREE BEND, FLANGED.
- 42. LINK SEAL MODULAR SEAL AND CENTURY LINE SLEEVE. SEE SHEET PS2.
- 43. 14" D.I.P., FLANGED x P.E.
- 44. 10" D.I.P., FLANGED x P.E.
- 45. TYPE 7A BOLLARD (SEE DETAIL SHEET C12). ATTACH TWO ROWS OF TYPE 316 S.S. SAFETY CHAIN TO BOLLARDS WITH TYPE 316 S.S. EYEBOLTS AND SAFETY CLIPS. FIELD LOCATE TO AVOID HATCH FRAME.
- 46. 14" D.I. 45 DEGREE BEND, RESTRAINED.
- 47. 10" D.I. 45 DEGREE BEND, RESTRAINED.
- 48. 14" D.I.P. WITH RESTRAINED JOINTS.
- 49. 10" D.I.P. WITH RESTRAINED JOINTS.

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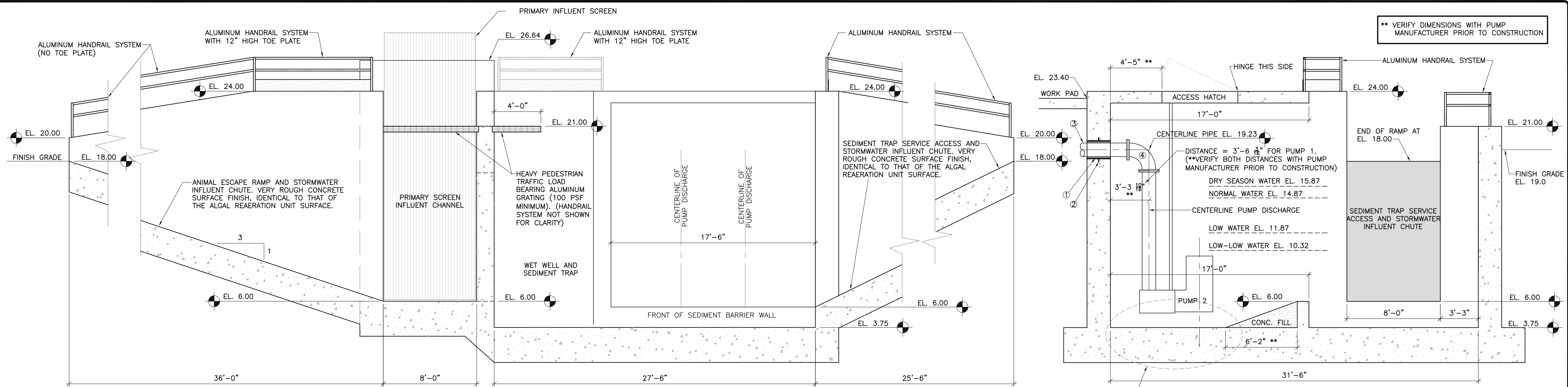
W. KEITH McCULLY, P.E.  
FLORIDA P.E. NO. 32007  
DATE:

**HEADWORKS AREA  
(SCREENING AND  
PUMPING)**

PROJECT NO.  
DATE: 3/10/2020  
SCALE: AS NOTED  
SHEET **PS1**

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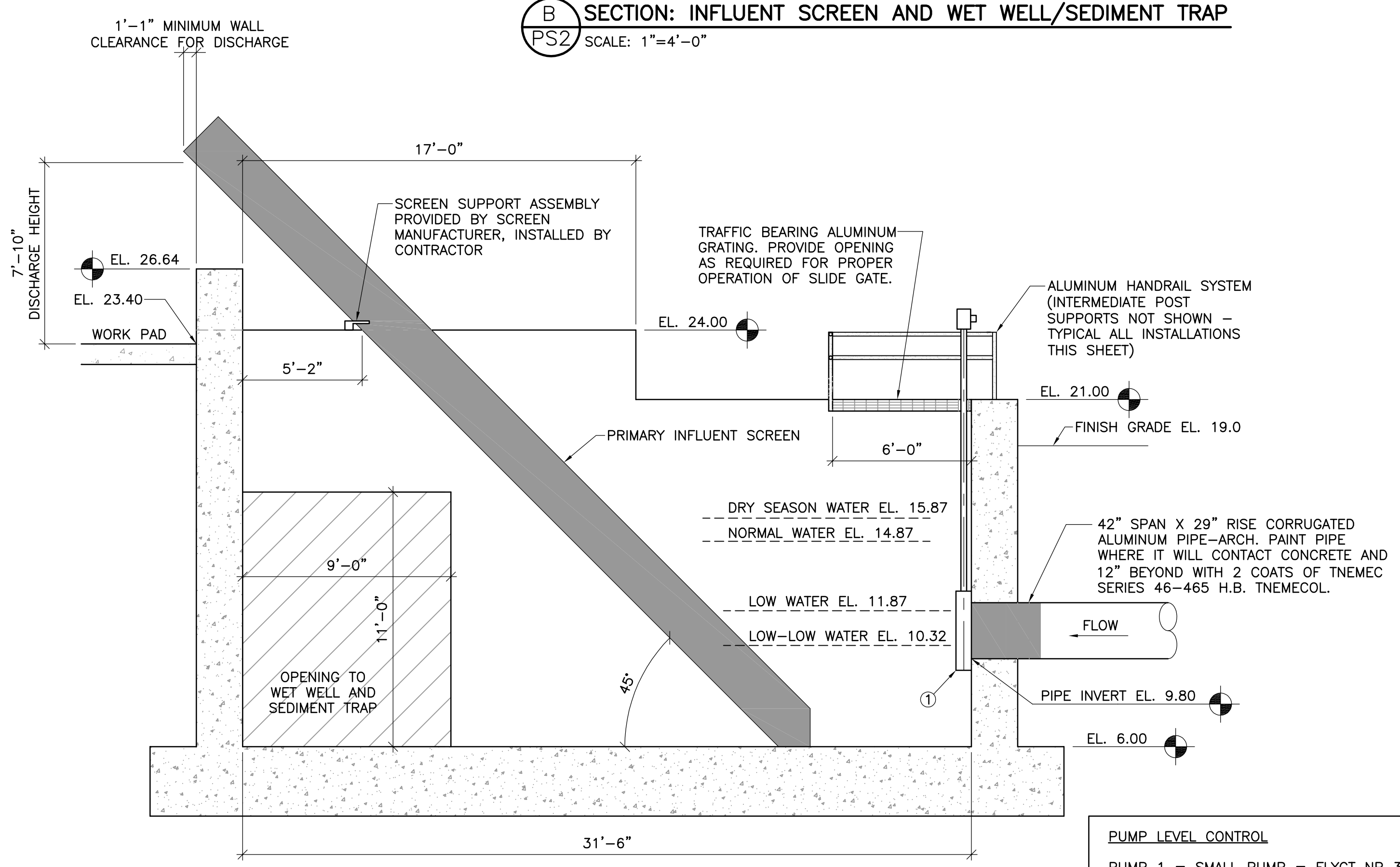


**B SECTION: INFLUENT SCREEN AND WET WELL/SEDIMENT TRAP**  
 PS2 SCALE: 1"=4'-0"

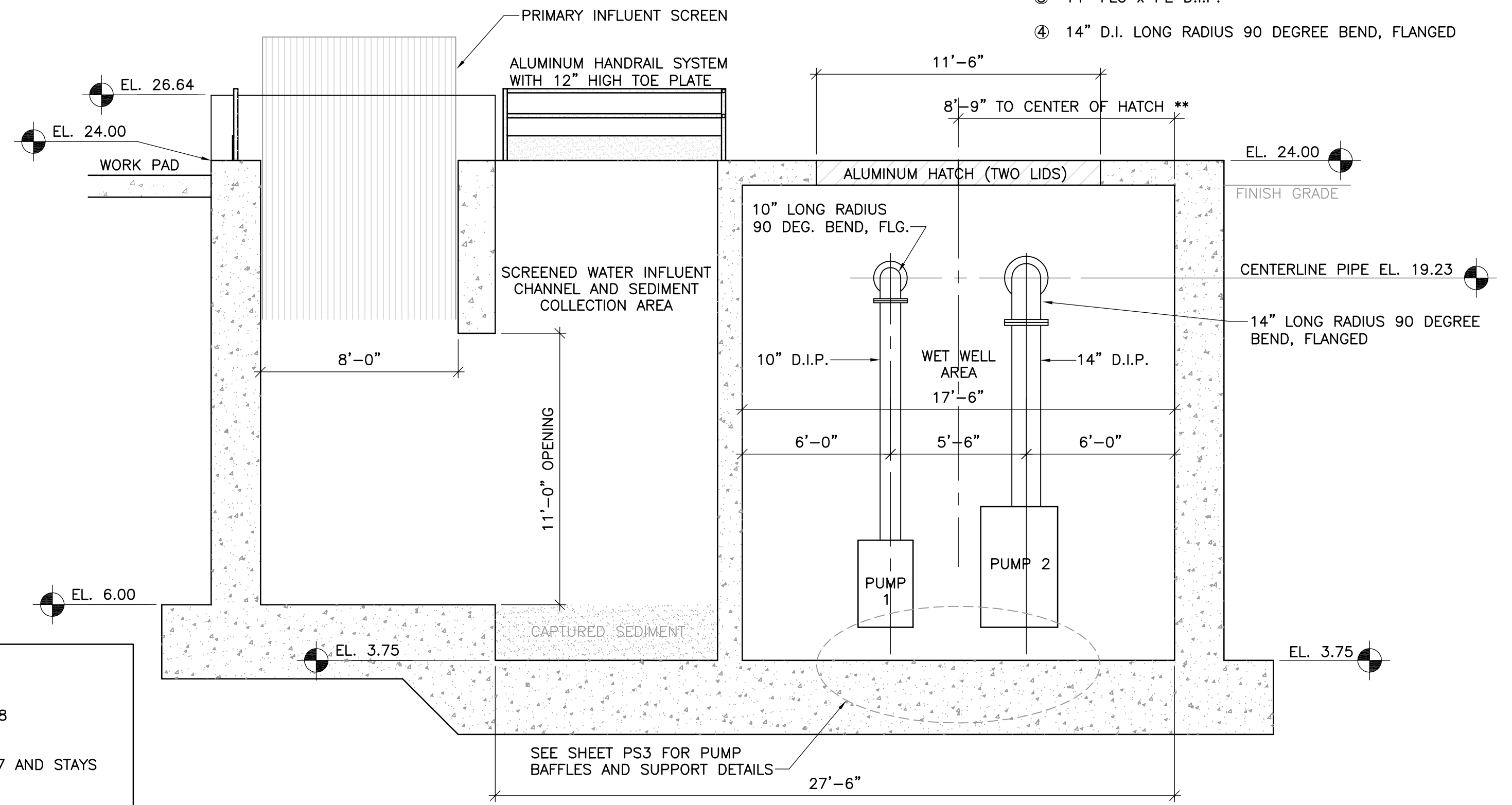
**C SECTION: WET WELL**  
 PS2 SCALE: 1"=4'-0"

LEGEND (SIMILAR FOR 10" PUMP DISCHARGE PIPING)

- ① LINK-SEAL MODULAR SEAL (BLACK) MODEL "C" OR "L" AS RECOMMENDED BY MANUFACTURER. (BOLTS AND NUTS = TYPE 316 STAINLESS STEEL)
- ② LINK-SEAL CENTURY LINE MODEL CS SLEEVE, DIAMETER AND LENGTH AS REQUIRED.
- ③ 14" FLG x PE D.I.P.
- ④ 14" D.I. LONG RADIUS 90 DEGREE BEND, FLANGED



**A SECTION: INFLUENT SCREEN**  
 PS2 SCALE: 1"=4'-0"



**D SECTION: INFLUENT SCREEN AND WET WELL**  
 PS2 SCALE: 1"=4'-0"

**PUMP LEVEL CONTROL**

PUMP 1 = SMALL PUMP = FLYGT NP 3171 LT~64  
 PUMP 2 = LARGE PUMP = FLYGT NP 3301 LT~818

1. PUMP 2 NORMALLY ON
2. PUMP 2 OFF WHEN WATER DROPS TO EL. 11.87 AND STAYS OFF UNTIL MANUALLY RESET.
3. PUMP 1 ON (AT 60 HZ) AT EL. 11.87
4. PUMP 1 OFF WHEN WATER DROPS TO EL. 6.00
5. PUMP 1 RESTARTS WHEN WATER RISES TO EL. 10.00 AND CONTINUES IN THIS MODE (STEPS 4 AND 5) UNTIL PUMP 2 IS PLACED BACK INTO SERVICE MANUALLY.

BOTH PUMPS CANNOT RUN AT THE SAME TIME.

NOT VALID FOR CONSTRUCTION UNLESS ORIGINALLY SIGNED AND SEALED

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				KM	KM		KM

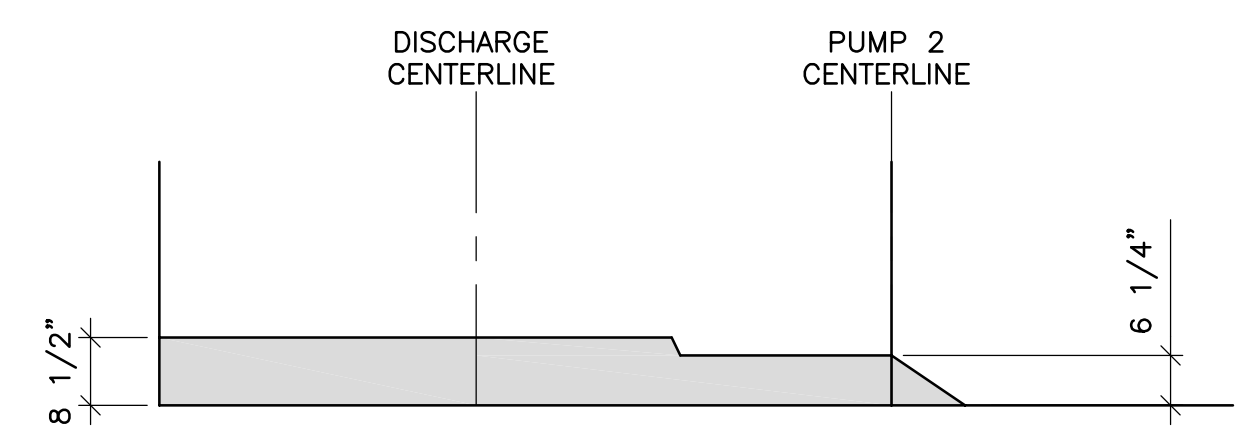
INDIAN RIVER COUNTY  
 STORMWATER DIVISION  
 1801 27TH STREET  
 VERO BEACH, FLORIDA 32960  
 (772) 226-1562

MOORHEN MARSH LEAPS™

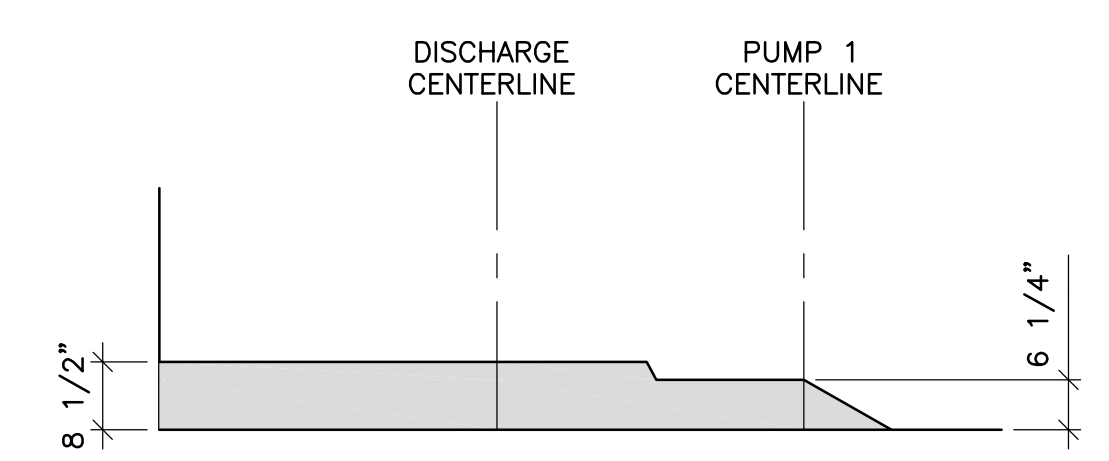
W. KEITH McCULLY, P.E.  
 FLORIDA P.E. NO. 32007  
 DATE:

HEADWORKS AREA  
 SECTIONS AND DETAILS

PROJECT NO.  
 DATE 3/10/2020  
 SCALE AS NOTED  
 SHEET PS2

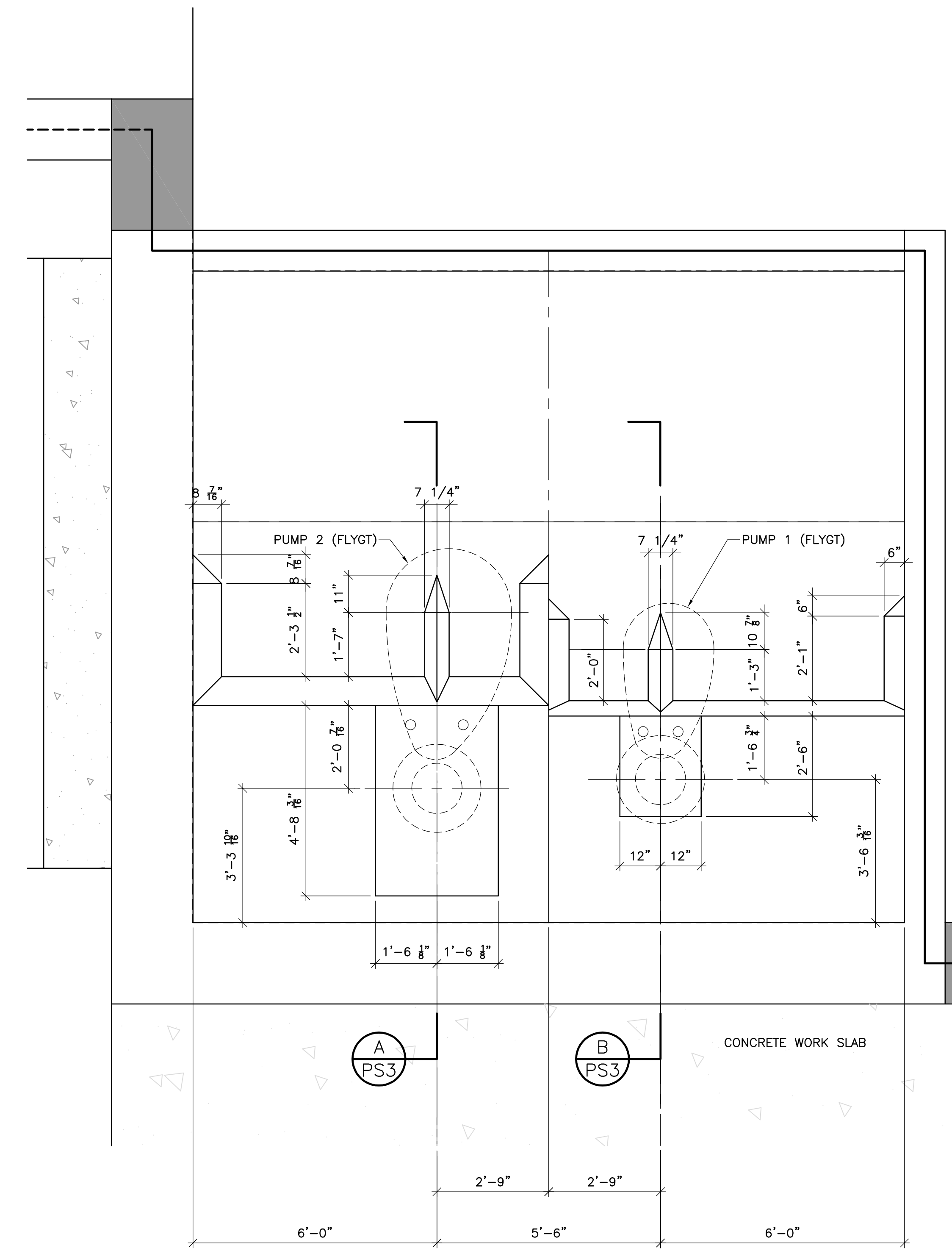


**A**  
PS3 SECTION: PUMP NO. 2 (FLYGT NP 3301 LT~818)  
SCALE: 1" = 2'-0"



**B**  
PS3 SECTION: PUMP NO. 1 (FLYGT NP 3171 LT~614)  
SCALE: 1" = 2'-0"

IMPORTANT - VERIFY ALL DIMENSIONS THIS PAGE WITH PUMP MANUFACTURER BEFORE CONSTRUCTING PUMP BAFFLES.



**PLAN VIEW: PUMP BAFFLE LAYOUT**  
SCALE: 1" = 2'-0"

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FLORIDA P.E. NO. 32007  
DATE:

PUMP BAFFLE DETAILS  
AND SECTIONS

NAVD88 DATUM IS USED FOR ALL  
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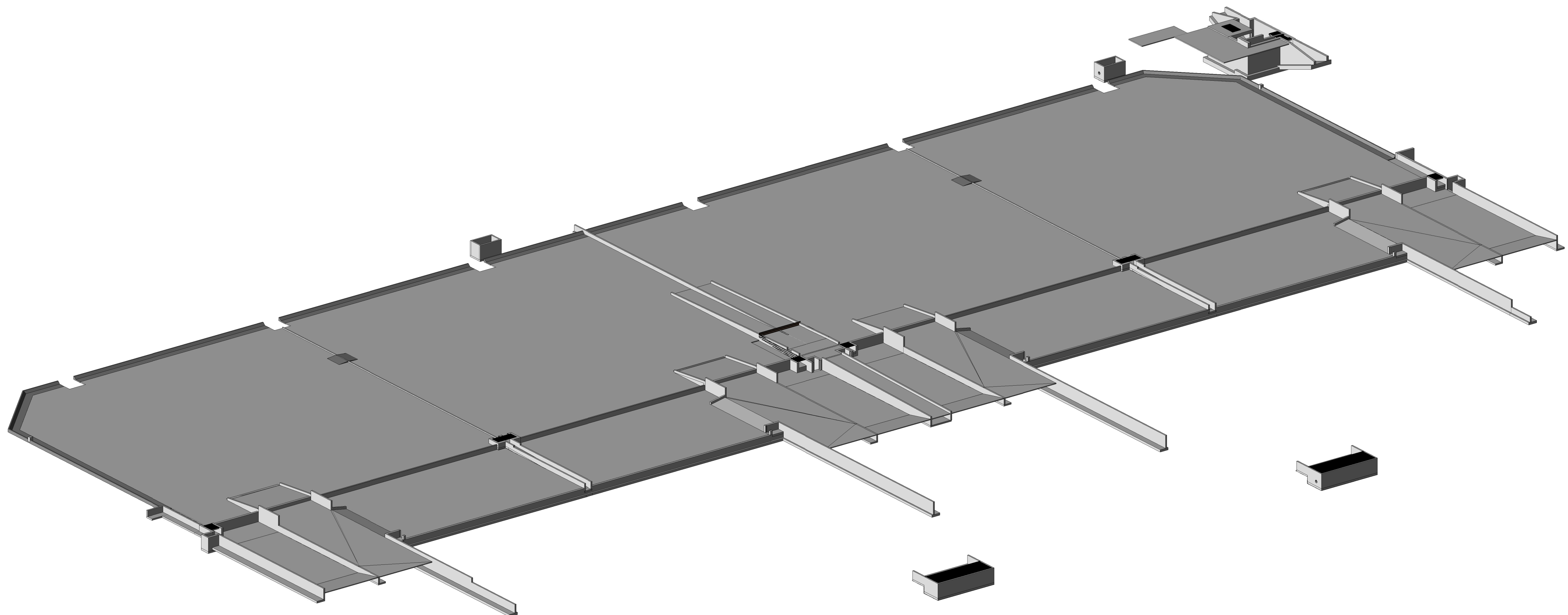
PROJECT NO.	
DATE	3/10/2020
SCALE	AS NOTED
SHEET	PS3

INDIAN RIVER COUNTY  
BOARD OF COUNTY COMMISSIONERS

STRUCTURAL PLANS

MOORHEN MARSH LEAPS

66TH AVENUE AND 53RD STREET VERO BEACH,  
INDIAN RIVER COUNTY, FLORIDA



Sheet List		
Sheet Number	Sheet Name	Current Revision
S-000	COVER	
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S-002	GENERAL NOTES (2 OF 2)	
S-011	SITE PLAN (KEY SHEET)	
S-012	SITE PLAN A	
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S-015	COMPOSTING AREA RAMPS	
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S-017	W.L.S. ACCESS RAMP WORK AREA - GRATING	
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S-019	SLUDGE PUMPOUT STRUCTURE - GRATING	
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S-054	HEADWORKS SECTIONS	
S-055	HEADWORKS SECTIONS AND DETAILS	
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S-061	FINAL SETTLING BASIN WALLS (1 OF 2)	
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S-101	TYPICAL DETAILS (1 OF 2)	
S-102	TYPICAL DETAILS (2 OF 2)	
S-103	RAILING DETAILS	

PREPARED FOR



DEPARTMENT OF PUBLIC WORKS  
RICHARD B. SZPYRKA P.E., DIRECTOR

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TEL: 561-845-0665 FAX: 561-8638175 WWW.KIMLEY-HORN.COM CA 00000696

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
GNH	CL	AGF	JP3

MOORHEN MARSH LEAPS™

JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

COVER

PROJECT NO.
DATE 2/20/2020
SCALE AS NOTED
SHEET S-000



**FOOTINGS/FOUNDATIONS:**

- FOUNDATION CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH GEOTECHNICAL REPORT RECOMMENDATIONS. UNLESS OTHERWISE NOTED IN THE GEOTECHNICAL REPORT, THE FOLLOWING MINIMUM CRITERIA SHALL APPLY.
- SOILS BELOW FOOTINGS/FOUNDATIONS SHALL BE COMPACTED TO MEET THE FOLLOWING BEARING PRESSURE CRITERIA:
  - HEADWORKS - 1800 PSF
  - ALL OTHER FOOTINGS/FOUNDATIONS - 2500 PSF
- SOILS WITHIN TWO FEET BELOW THE BOTTOM OF THE FOUNDATION AND WITHIN THE FILL AREA SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D1557).

**FORM WORK AND SHORING:**

- PROVIDE, AS A PACKAGE, SHORING DRAWINGS PREPARED BY OR UNDER THE DIRECT SUPERVISION OF A DELEGATED ENGINEER.
- FORMS SHALL CONFORM TO THE SHAPE, LINES AND DIMENSIONS OF THE MEMBERS AS CALLED FOR IN THE PLANS, AND SHALL BE SUBSTANTIAL AND SUFFICIENTLY TIGHT TO PREVENT LEAKAGE OF MORTAR. THEY SHALL BE PROPERLY BRACED OR TIED TOGETHER SO AS TO MAINTAIN POSITION AND SHAPE.
- DESIGN FORMS AND SHORES FOR HORIZONTAL CONCRETE MEMBERS FOR ALL IMPOSED DEAD AND LIVE LOADS, BUT NOT LESS THAN DEAD LOAD (INCLUDING FILL HEIGHTS IF APPLICABLE) PLUS AASHTO HS20-44 TRUCK OR CONSTRUCTION LIVE LOAD, WHERE APPLICABLE.
- REMOVAL OF FORMWORK IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. HOWEVER FORMS SHALL NOT BE REMOVED LESS THAN 24 HOURS AFTER CONCRETE PLACEMENT. REMOVE FORMS IN SUCH A MANNER AS TO INSURE JOB SAFETY AND TO PREVENT DAMAGE TO AND CREEP DEFLECTION OF THE STRUCTURE.
- THE SHORING IS TO BE INSPECTED BY THE DELEGATED ENGINEER OR HIS AUTHORIZED REPRESENTATIVE. PRIOR TO EACH CONCRETE POUR, HE SHALL SUBMIT A WRITTEN INSPECTION REPORT TO THE SPECIAL INSPECTOR AND CONTRACTOR STATING THAT THE WORK IS IN GENERAL COMPLIANCE WITH THE SHORING DRAWINGS. THE FIELD REPORTS SHALL BE SIGNED BY THE INDIVIDUAL CONDUCTING THE INSPECTION. COPIES OF THE FIELD REPORTS SHALL BE SUBMITTED EVERY WEEK TO THE ENGINEER, SPECIAL INSPECTOR AND BUILDING OFFICIAL UNDER A COVER LETTER SIGNED, SEALED AND DATED BY THE DELEGATED ENGINEER.
- THE SHORING REPORT SHALL CONTAIN, AS A MINIMUM, THE FOLLOWING:
  - NAME AND LOCATION OF PROJECT, NAME OF DELEGATED ENGINEER AND FIELD REPRESENTATIVE, PERMIT NUMBER, DATE, TIME OF DAY, WORKING CONDITIONS (INCLUDING WEATHER AND TEMPERATURE).
  - ITEMS REQUIRING CORRECTIONS.
  - ACCEPTED DEVIATIONS FROM SHORING DRAWINGS.
  - AREAS ACCEPTED AND RELEASED FOR CONCRETE POURS.
- AS SOON AS FORMS ARE REMOVED, ALL IRREGULAR PROJECTIONS SHALL BE CHIPPED OFF FLUSH WITH THE CONCRETE SURFACES. ALL VOIDS OR HONEYCOMBING SHALL BE POINTED UP WITH GROUT AND TROWELED FLUSH WITH THE CONCRETE SURFACE. ALL FORM TIES SHALL BE REMOVED TO A DEPTH OF 1-1/2 INCHES MINIMUM AND GROUTED FLUSH WITH THE CONCRETE SURFACE.

**STRUCTURAL METALS:**

- REFER TO STRUCTURAL DETAIL SHEETS FOR MATERIAL REQUIREMENTS FOR HATCHES, GRATES, AND HANDRAILS, AND SUPPORT MEMBERS.

**TEMPORARY WALLS:**

- CONTRACTOR SHALL SUBMIT, IN THE FORM OF A SHOP DRAWING, THE DESIGN AND LAYOUT OF ANY TEMPORARY SHEET PILE WALLS REQUIRED FOR CONSTRUCTION. SUBMITTED DOCUMENTS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF FLORIDA.

**AS BUILT DRAWINGS:**

- CONTRACTOR SHALL PREPARE AND MAINTAIN CURRENT A SET OF REDLINED AS-BUILT DRAWINGS SHOWING ALL DEVIATIONS AND CHANGES MADE TO THE CONSTRUCTION DRAWINGS.
- AS-BUILT DRAWINGS SHALL BE MADE AVAILABLE TO THE ENGINEER FOR REVIEW UPON REQUEST AT ANY TIME DURING THE COURSE OF THE PROJECT.
- CONTRACTOR SHALL SUBMIT THE ORIGINAL AS-BUILT DRAWINGS TO THE ENGINEER WITHIN ONE WEEK FROM THE DATE OF FINAL COMPLETION, AND PRIOR TO OWNER'S ACCEPTANCE OF CONTRACTOR'S FINAL INVOICE.
- SUBMITTED AS-BUILT DRAWINGS WILL REMAIN THE PROPERTY OF THE ENGINEER.

**BID ITEMS:**

- PAYMENT FOR ALL INCIDENTALS IS TO BE INCLUDED IN THE PRICE BID FOR CONTRACT ITEMS. COST FOR REMOVAL AND DISPOSAL OF VARIOUS MATERIALS, WHERE REQUIRED, SHALL BE INCLUDED IN THE PRICE BID FOR CONTRACT ITEMS.
- THE APPROXIMATE QUANTITIES SHOWN IN THE PLANS ARE FOR REFERENCE ONLY AND DO NOT RELIEVE THE CONTRACTOR FROM ANY OVERAGES OR OTHER DISCREPANCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALCULATING THEIR OWN QUANTITIES IN THE PREPARATION OF THEIR BIDS. CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF ANY QUANTITY DISCREPANCIES IN EXCESS OF 10% PRIOR TO BID SUBMITTAL.

**ABBREVIATIONS**

- A.F.F ABOVE FINISH FLOOR
- CONT. CONTINUOUS
- C.J CONSTRUCTION JOINT
- EA. EACH
- E.F. EACH FACE
- E.J EXPANSION JOINT
- EL. ELEVATION
- E.W. EACH WAY
- I.J. ISOLATION JOINT
- MAX. MAXIMUM
- MIN. MINIMUM
- NTS. NOT TO SCALE
- O.C. ON CENTER
- T&B TOP & BOTTOM
- TYP. TYPICAL
- U.O.N UNLESS OTHERWISE NOTED
- W.L.S. WATER LETTUCE SCRUBBER

**REFERENCE:**

SUBSURFACE SOIL EXPLORATION AND GEOTECHNICAL ENGINEERING EVALUATION MOORHEN MARSH LOW ENERGY AQUATIC PLANT SYSTEM (LEAPS) PROJECT PREPARED BY ANDERSON ANDRE CONSULTING ENGINEERING DATED OCTOBER 9, 2019 AND ADDENDUM 1 DATED MARCH 10, 2020 (AACE FILE 19-140)

**DESIGN CRITERIA:**

2017 FLORIDA BUILDING CODE  
ACI 350

**LIVE LOADS:**

GRATING	100 PSF
HATCHES	300 PSF OR H-20 (SEE PLANS)
HANDRAILS	200 lb. OR 50 plf

**DEAD LOAD:**

WATER	62.4 PCF
CONCRETE	150 PCF
FILL MATERIAL	120 PCF

**CONSTRUCTION/MAINTENANCE LOAD ALLOWANCE:**

LL SURCHARGE (WALLS RETAINING SLABS ON GRADE, EXCEPT HEADWORKS) - 4 FT  
LL SURCHARGE (HEADWORKS, STRUCTURES S8, S9, S11, S12, AND REMAINING WALLS) - 2 FT

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DESIGNED BY	JP3	DRAWN BY	CL	CHECKED BY	AGF	APPROVED BY	JP3
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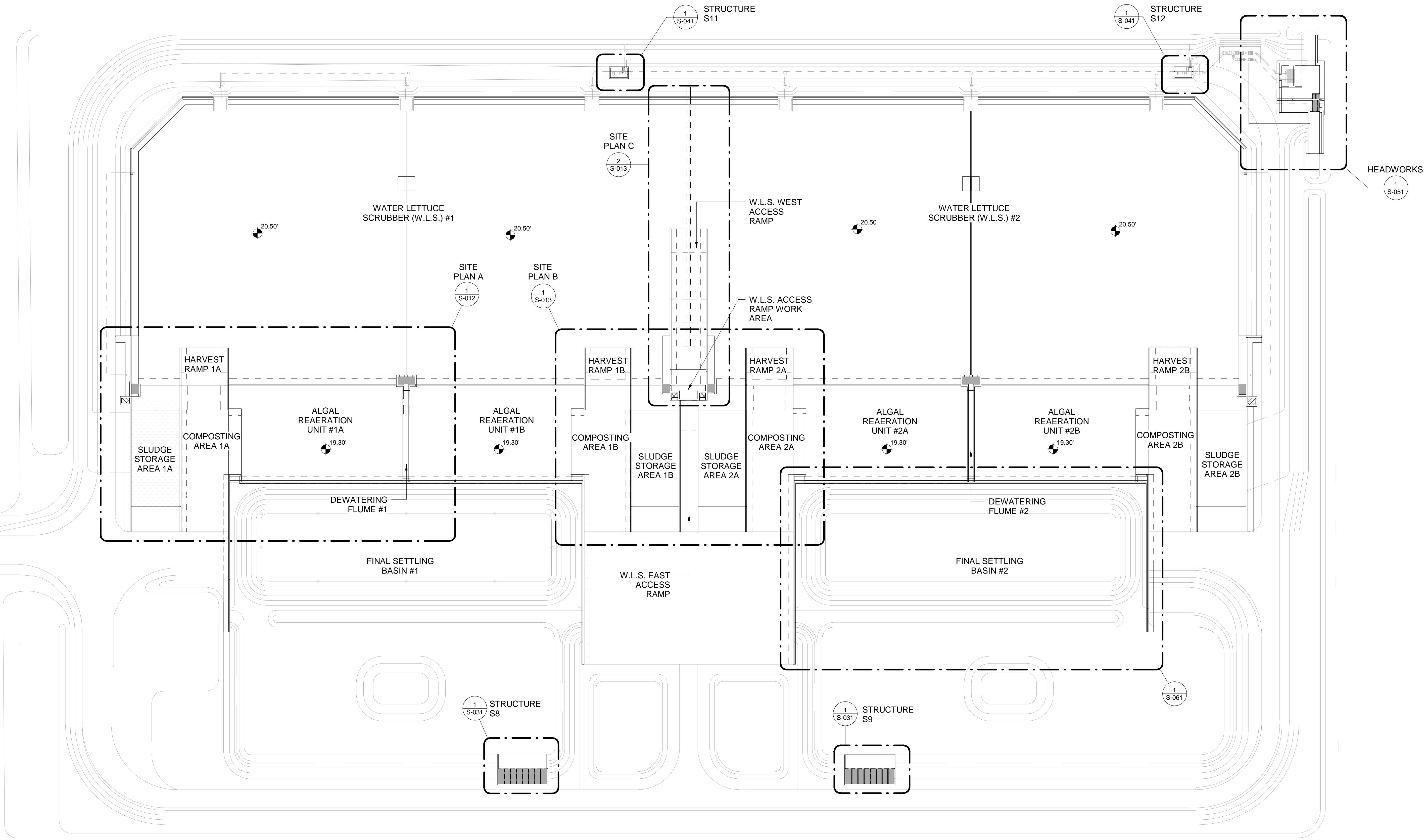
JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

**GENERAL NOTES**  
(2 of 2)

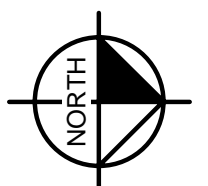
PROJECT NO.
DATE 2/20/2020
SCALE AS NOTED
SHEET <b>S-002</b>

IRFWCD LATERAL A CANAL

53RD STREET (NOT PAVED)



1 SITE PLAN (KEY SHEET)  
S-011 1" = 40'-0"



NOTES:  
1) THESE PLANS SHALL BE COORDINATED WITH CIVIL PLANS FOR ALL DIMENSIONS AND ELEVATIONS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY LAYOUT DISCREPANCIES.

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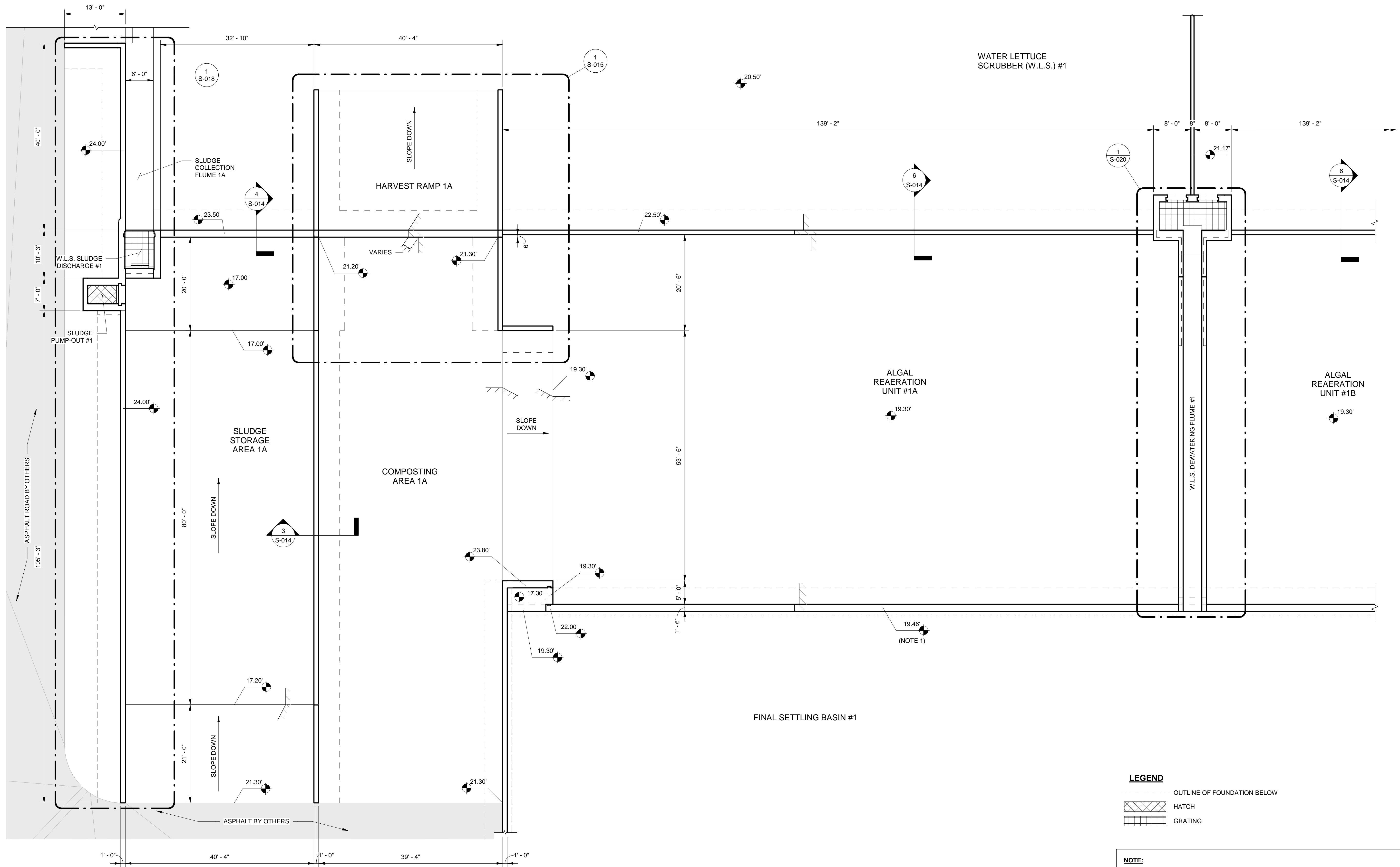
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JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

SITE PLAN (KEY SHEET)

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-011



- LEGEND**
- OUTLINE OF FOUNDATION BELOW
  - ▣ HATCH
  - ▣ GRATING

**NOTE:**  
 1) SEE CIVIL DRAWINGS SHEETS C-4 AND C-5 FOR TOP OF WALL CONSTRUCTION TOLERANCE CRITERIA. WORK NOT MEETING THE TOLERANCE CRITERIA WILL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

**1** SITE PLAN A  
 S-012 1" = 10'-0" (SOUTH SHOWN, NORTH SIMILAR BY OPPOSITE HAND)

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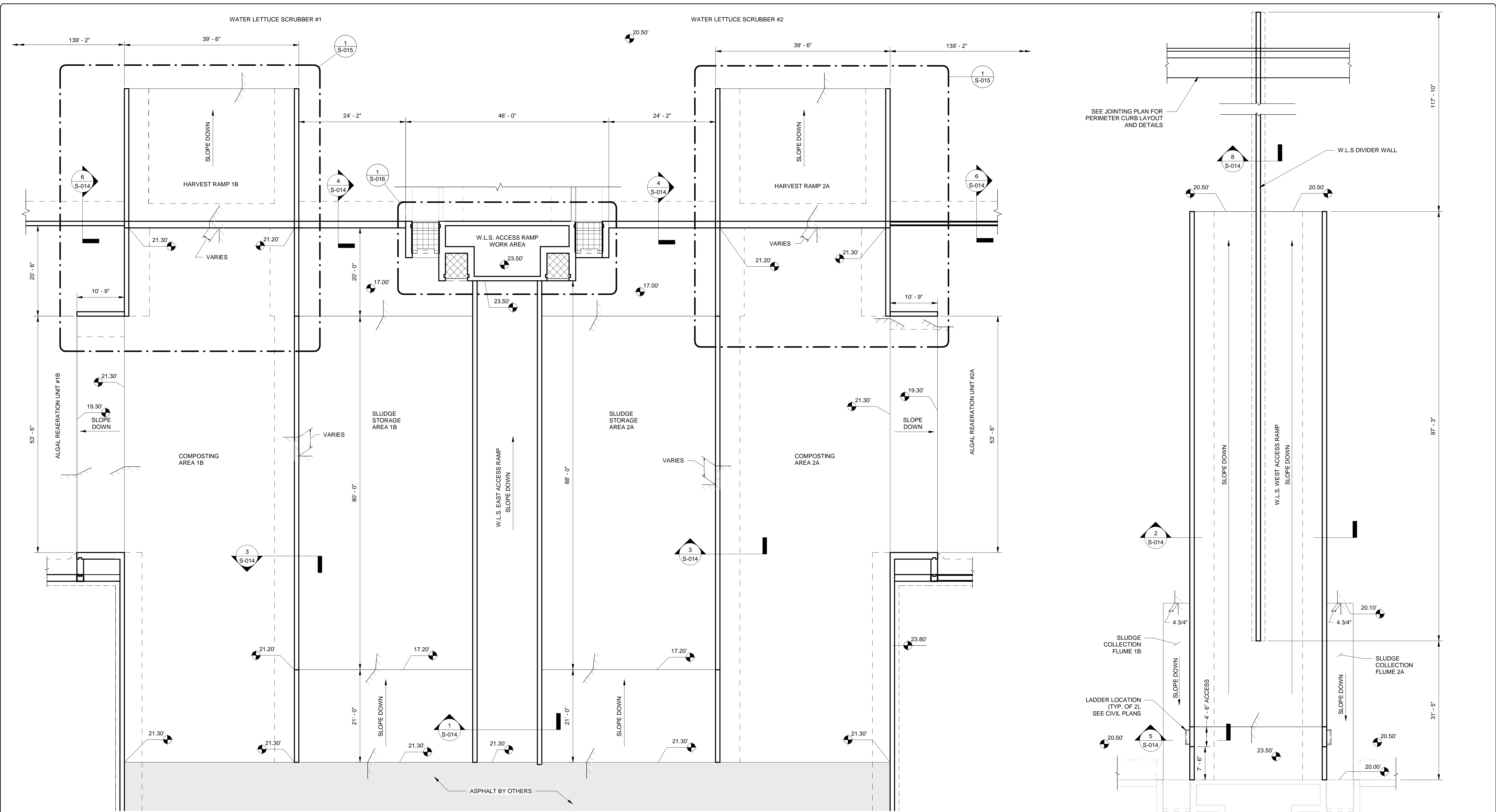
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 FLORIDA P.E. NO. 80484  
 DATE:

**SITE PLAN A**

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	<b>S-012</b>



1 SITE PLAN B  
S-013 1" = 10'-0"

2 SITE PLAN C  
S-013 1" = 10'-0"

- LEGEND**
- OUTLINE OF FOUNDATION BELOW
  - [Hatched Box] HATCH
  - [Grated Box] GRATING

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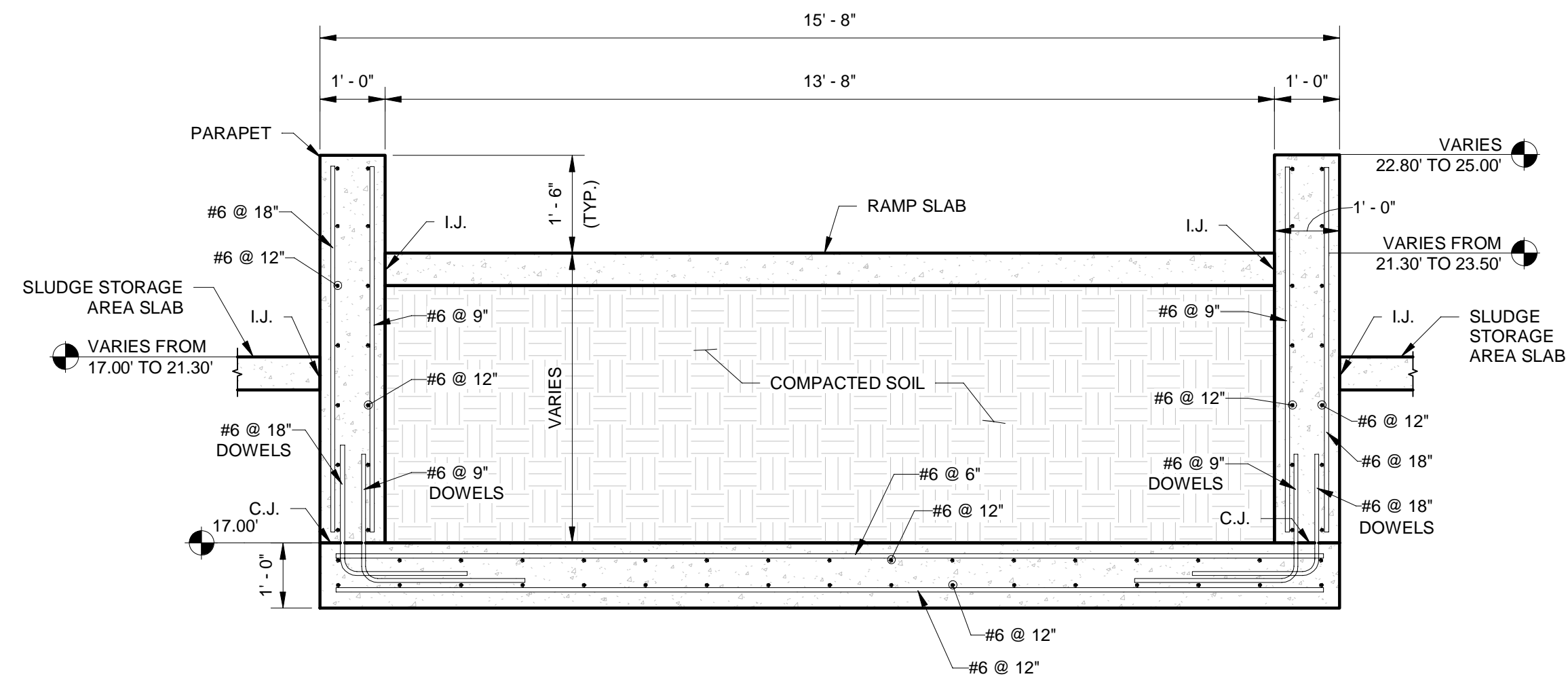
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DATE:

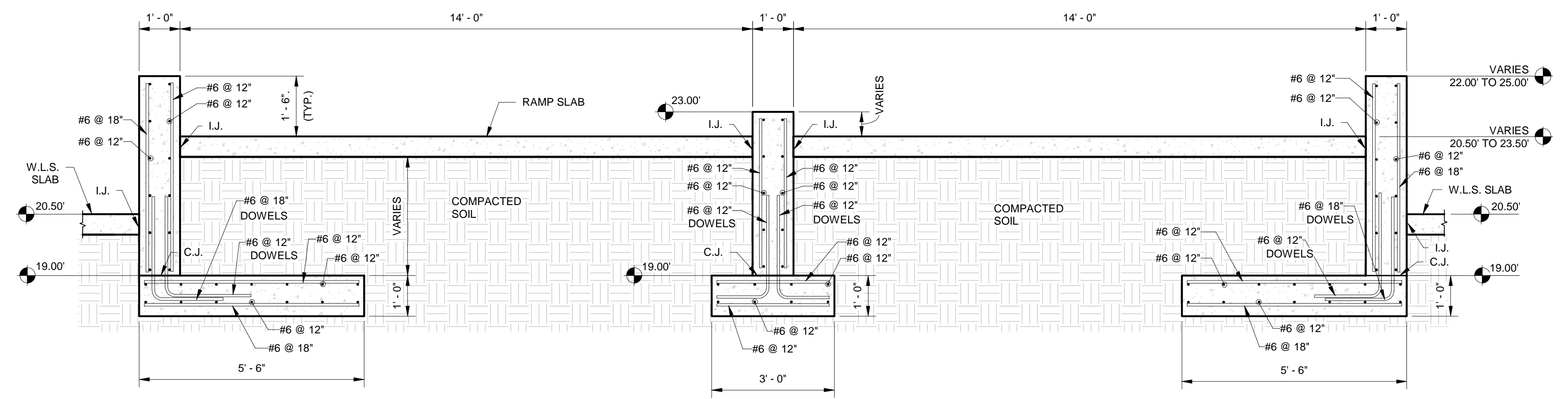
SITE PLAN B & C

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-013

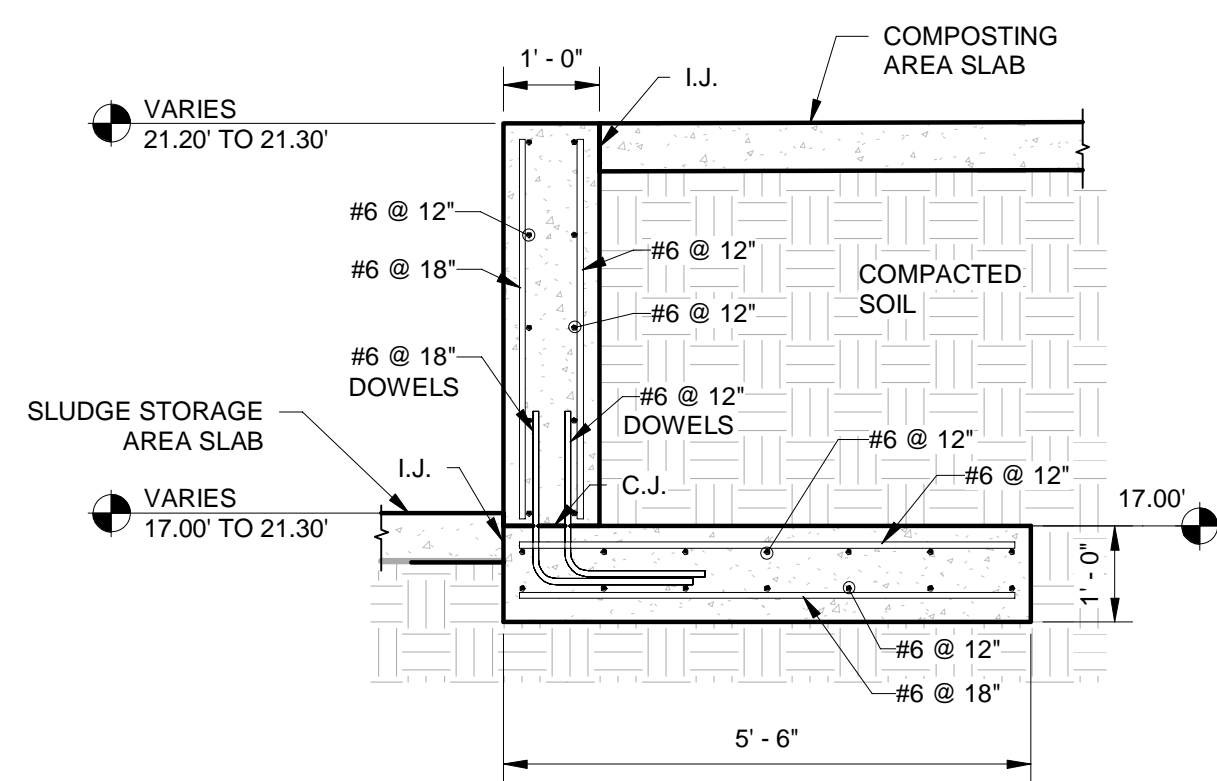




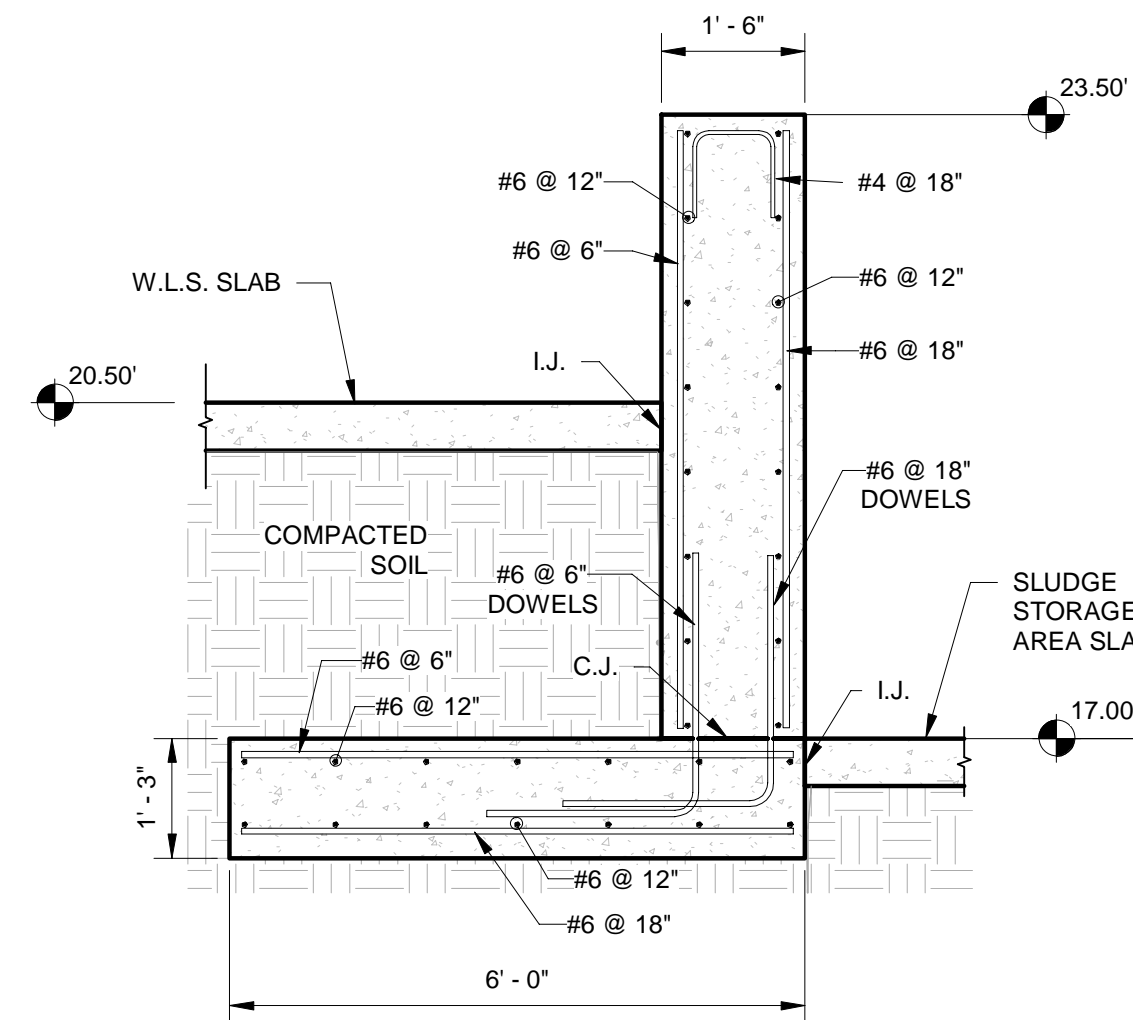
1 W.L.S. EAST ACCESS RAMP  
S-014 1/2" = 1'-0"



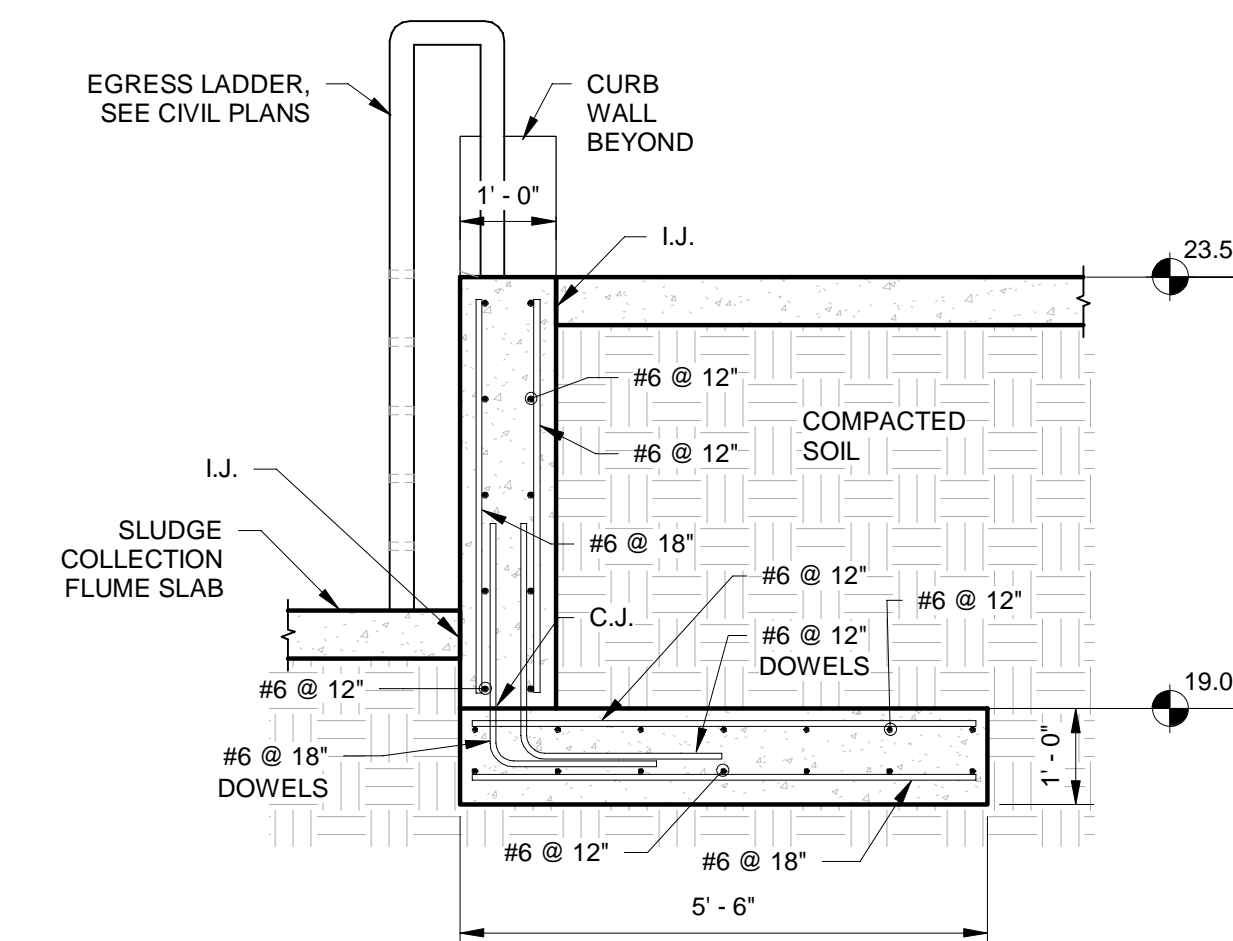
2 W.L.S. WEST ACCESS RAMP  
S-014 1/2" = 1'-0"



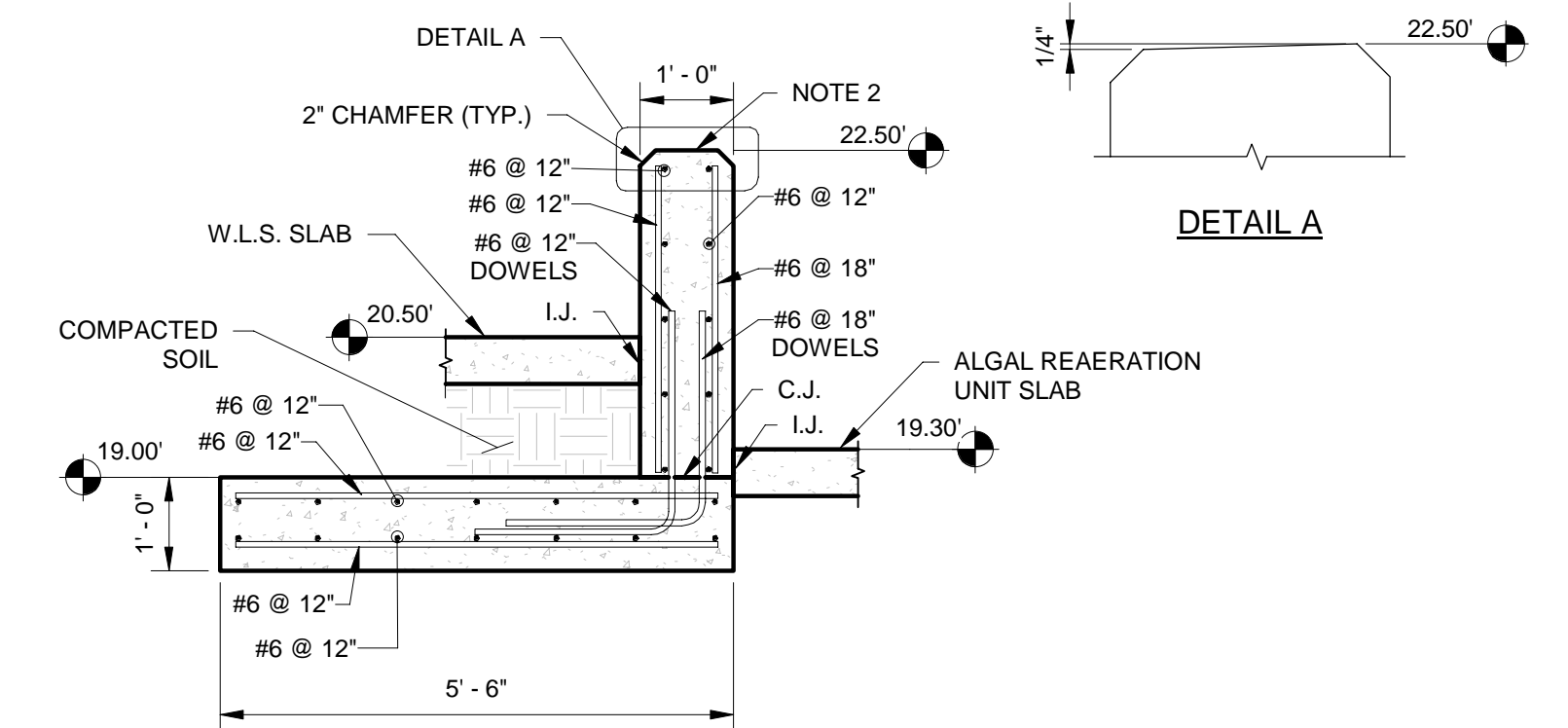
3 SLUDGE STORAGE / COMPOSTING AREA WALL  
S-014 1/2" = 1'-0"



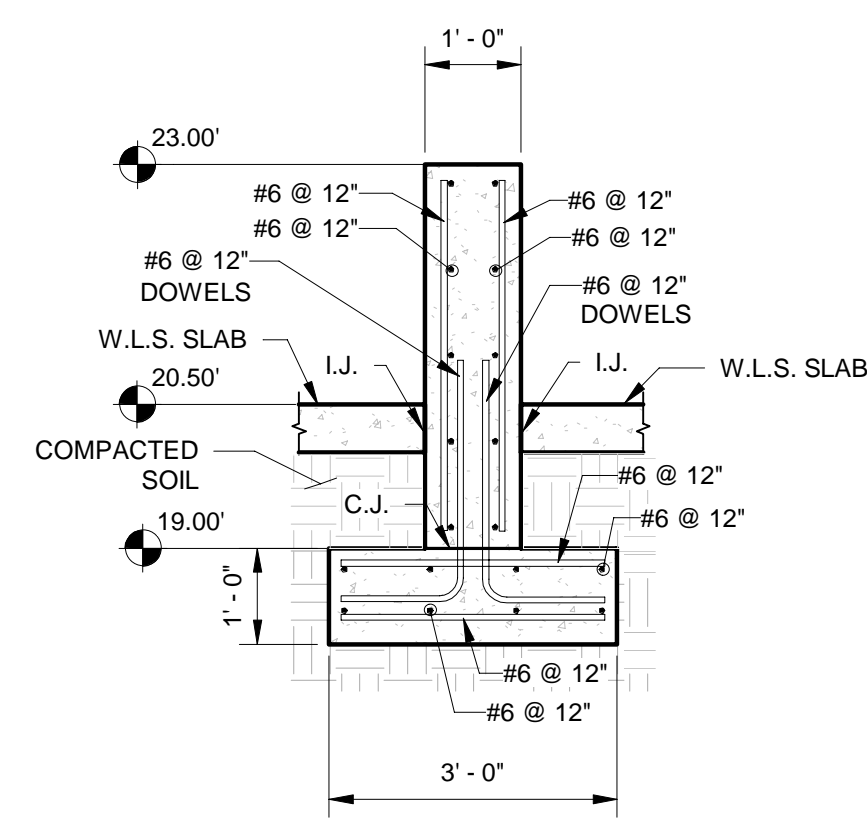
4 SLUDGE STORAGE AREAS WEST WALL  
S-014 1/2" = 1'-0"



5 W.L.S. WEST RAMP AT EGRESS LADDER  
S-014 1/2" = 1'-0"



6 W.L.S. / ALGAL REAERATION UNIT WALLS  
S-014 1/2" = 1'-0"



8 W.L.S. DIVIDER WALL  
S-014 1/2" = 1'-0"

**NOTES:**  
1) SEE TYPICAL DETAILS SHEETS FOR WALL JOINTING CRITERIA, ISOLATION JOINT DETAILS AND CONSTRUCTION JOINT DETAILS.  
2) SEE CIVIL DRAWINGS SHEETS C-4 AND C-5 FOR TOP OF WALL CONSTRUCTION TOLERANCE CRITERIA. WORK NOT MEETING THE TOLERANCE CRITERIA WILL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

APPROXIMATE QUANTITIES *			
STRUCTURE / WALL	LENGTH	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
W.L.S. EAST ACCESS RAMP	109'-0"	118	30,000
W.L.S. WEST ACCESS RAMP (BOTH NORTH AND SOUTH WALL)	128'-8"	97	18,000
W.L.S. DIVIDER WALL	117'-10"	31	6,000
SLUDGE STORAGE/COMPOSTING AREA 1A	101'-0"	37	7,000
SLUDGE STORAGE/COMPOSTING AREA 1B	101'-0"	37	7,000
SLUDGE STORAGE/COMPOSTING AREA 2A	101'-0"	37	7,000
SLUDGE STORAGE/COMPOSTING AREA 2B	101'-0"	37	7,000
SLUDGE STORAGE AREA 1A WEST WALL	32'-10"	21	3,000
SLUDGE STORAGE AREA 1B WEST WALL	24'-2"	16	2,400
SLUDGE STORAGE AREA 2A WEST WALL	24'-2"	16	2,400
SLUDGE STORAGE AREA 2B WEST WALL	32'-10"	21	3,000
W.L.S./ALGAL REAERATION UNIT 1A WALL	139'-2"	47	8,700
W.L.S./ALGAL REAERATION UNIT 1B WALL	139'-2"	47	8,700
W.L.S./ALGAL REAERATION UNIT 2A WALL	139'-2"	47	8,700
W.L.S./ALGAL REAERATION UNIT 2B WALL	139'-2"	47	8,700

\* SEE BID ITEM NOTES ON SHEET S-002

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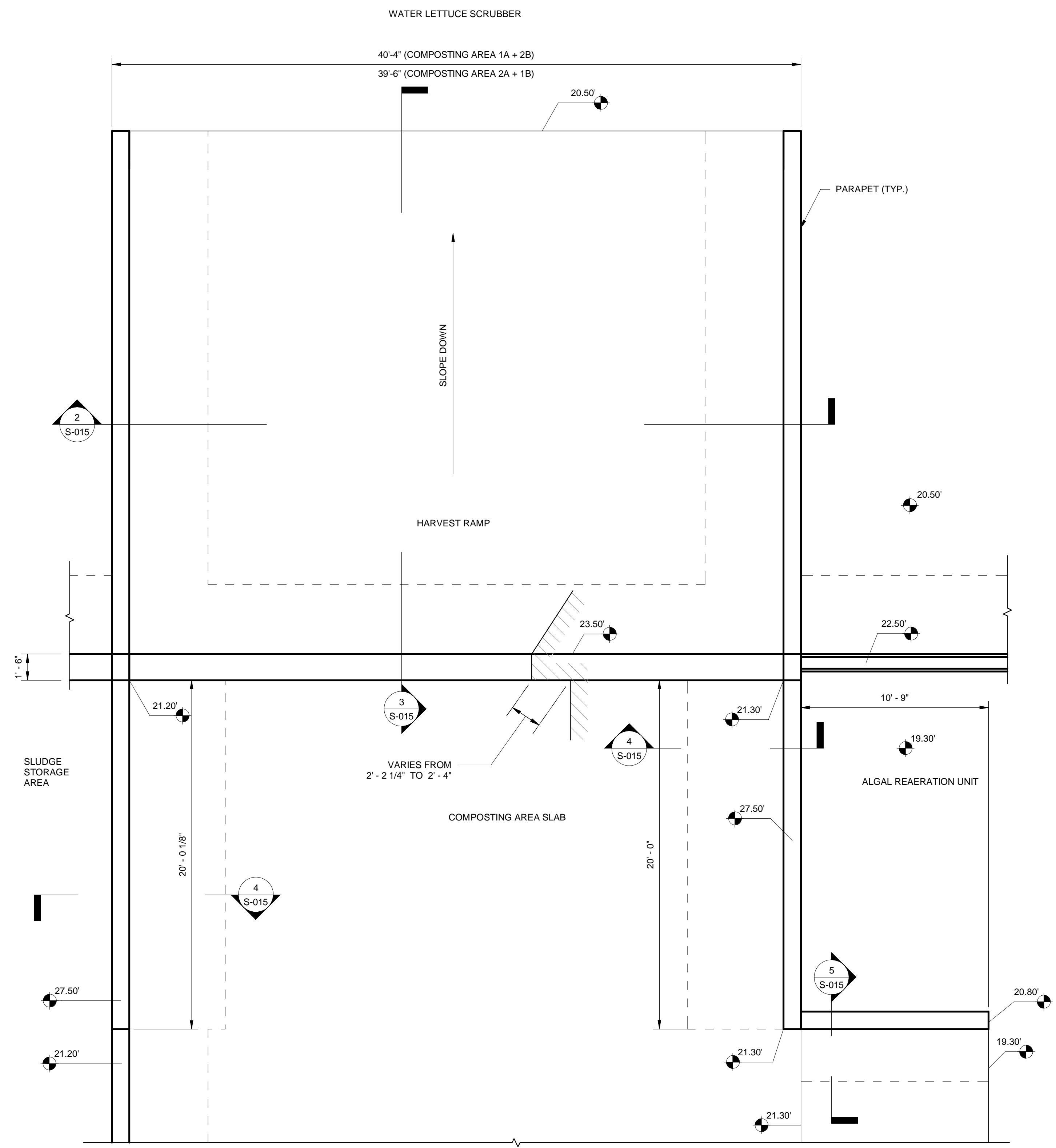
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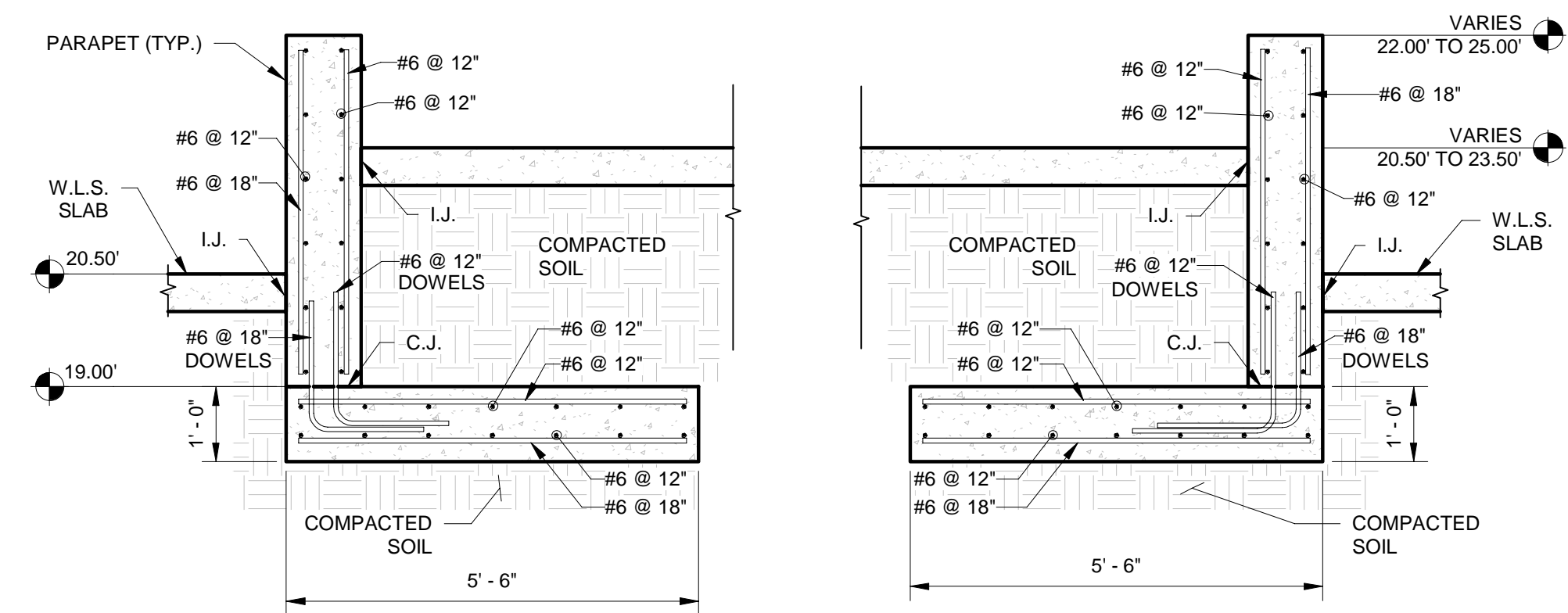
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FLORIDA P.E. NO. 80484  
DATE:

WALL AND RAMP  
SECTIONS

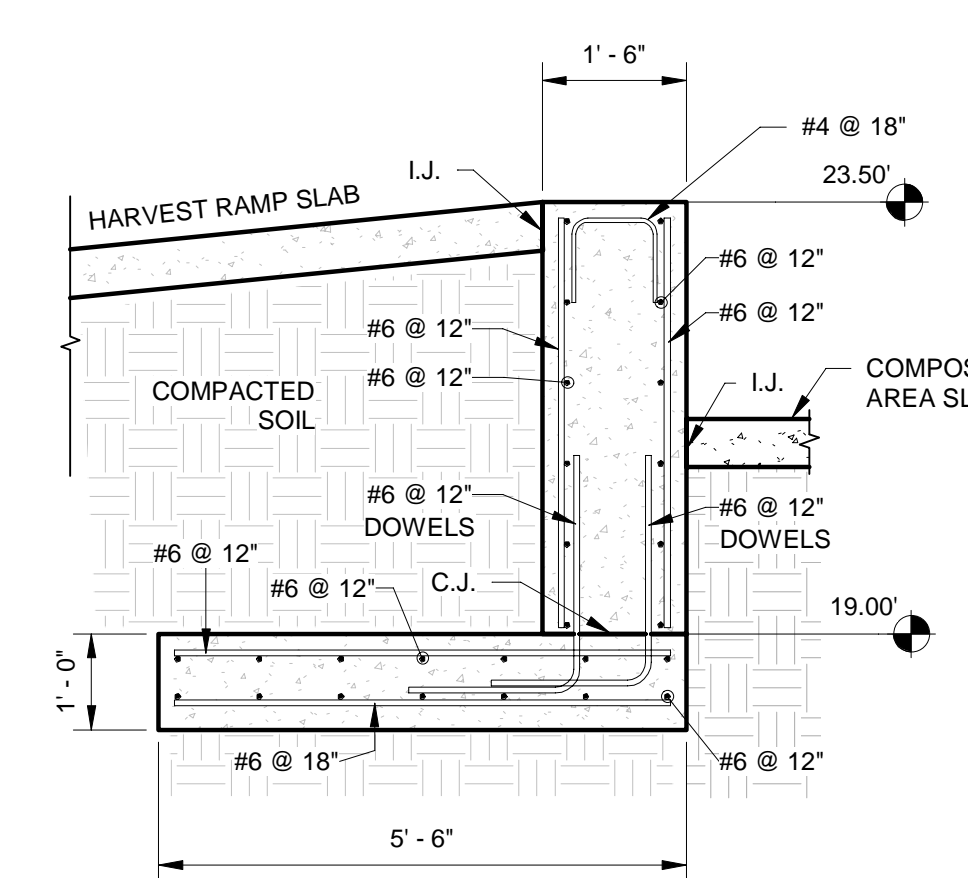
PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-014



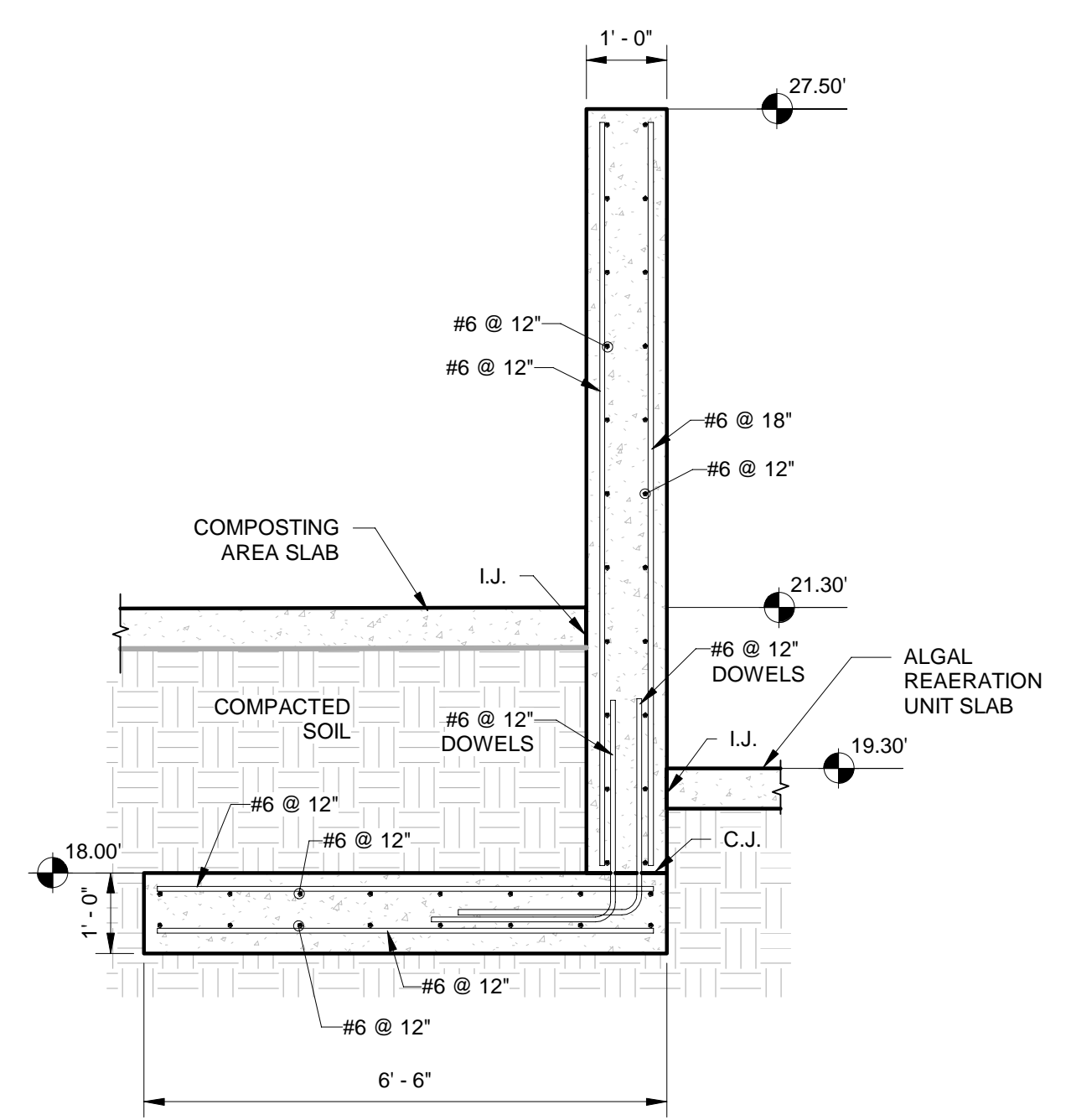
1 COMPOSTING AREA HARVEST RAMP PLAN  
1/4" = 1'-0"



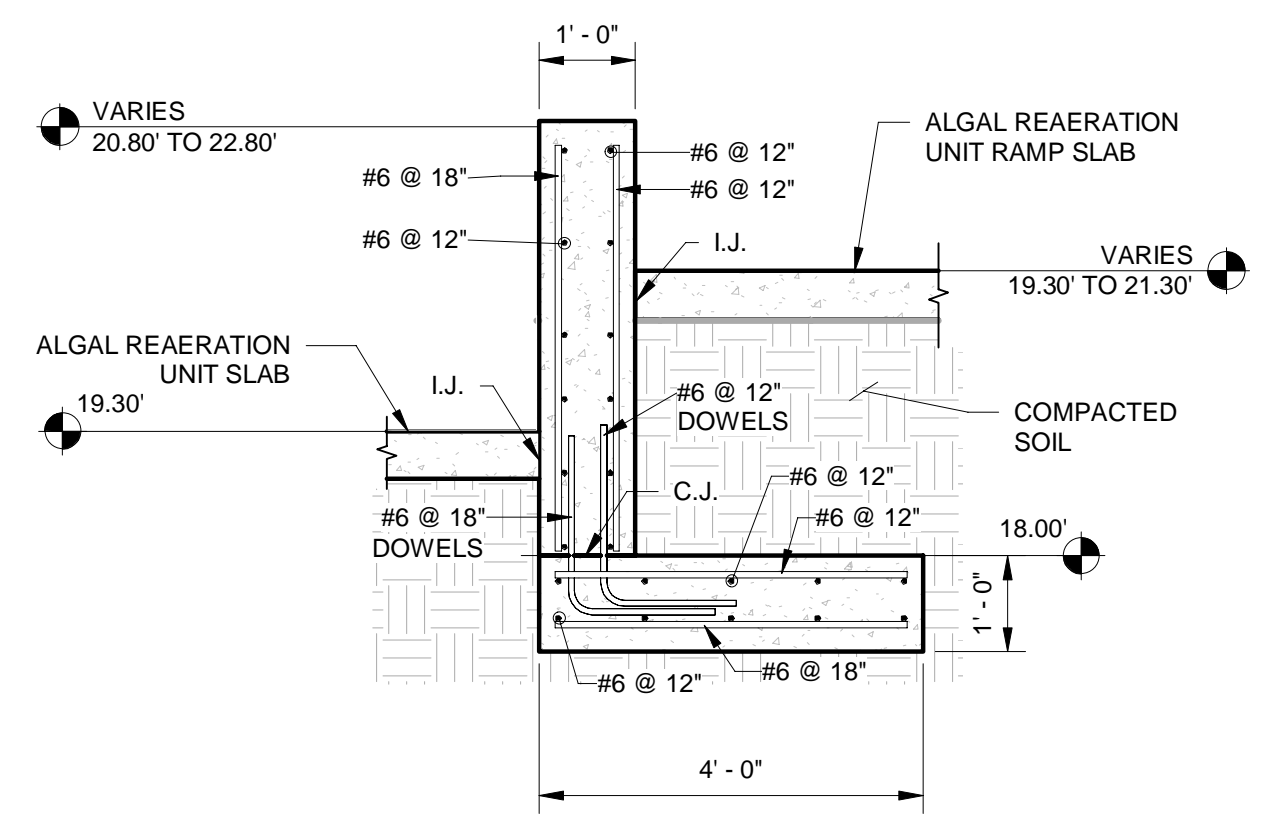
2 COMPOSTING AREA HARVEST RAMP SECTION LOOKING WEST  
1/2" = 1'-0"



3 COMPOSTING AREA HARVEST RAMP SECTION LOOKING NORTH  
1/2" = 1'-0"



4 COMPOSTING AREA HARVEST WALL  
1/2" = 1'-0"



5 ALGAL REAERATION UNIT RAMP WALL  
1/2" = 1'-0"

APPROXIMATE QUANTITIES *			
STRUCTURE	LENGTH	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
COMPOSTING AREA 1A HARVEST RAMP	100'-4"	39	7,300
COMPOSTING AREA 1B HARVEST RAMP	99'-6"	39	7,300
COMPOSTING AREA 2A HARVEST RAMP	99'-6"	39	7,300
COMPOSTING AREA 2B HARVEST RAMP	100'-4"	39	7,300
COMPOSTING AREA 1A HARVEST WALL SOUTH	20'-0"	13	2,500
COMPOSTING AREA 1A HARVEST WALL NORTH	20'-0"	13	2,500
COMPOSTING AREA 1B HARVEST WALL SOUTH	20'-0"	13	2,500
COMPOSTING AREA 1B HARVEST WALL NORTH	20'-0"	13	2,500
COMPOSTING AREA 2A HARVEST WALL SOUTH	20'-0"	13	2,500
COMPOSTING AREA 2A HARVEST WALL NORTH	20'-0"	13	2,500
COMPOSTING AREA 2B HARVEST WALL SOUTH	20'-0"	13	2,500
COMPOSTING AREA 2B HARVEST WALL NORTH	20'-0"	13	2,500
ALGAL REAERATION UNIT 1A RAMP WALL	10'-9"	4	800
ALGAL REAERATION UNIT 1B RAMP WALL	10'-9"	4	800
ALGAL REAERATION UNIT 2A RAMP WALL	10'-9"	4	800
ALGAL REAERATION UNIT 2B RAMP WALL	10'-9"	4	800

\* SEE BID ITEM NOTES ON SHEET S-002

NOTES:  
1) SEE TYPICAL DETAILS SHEETS FOR WALL JOINTING CRITERIA, ISOLATION JOINT DETAILS, AND CONSTRUCTION JOINT DETAILS.

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 1920 WEXVA WAY SUITE 200, WEST PALM BEACH, FLORIDA 33411  
 TEL: 561-845-0665 FAX: 561-8638175 WWW.KIMLEY-HORN.COM CA 00000696

DESIGNED BY: GNH    DRAWN BY: CL    CHECKED BY: AGF    APPROVED BY: JP3

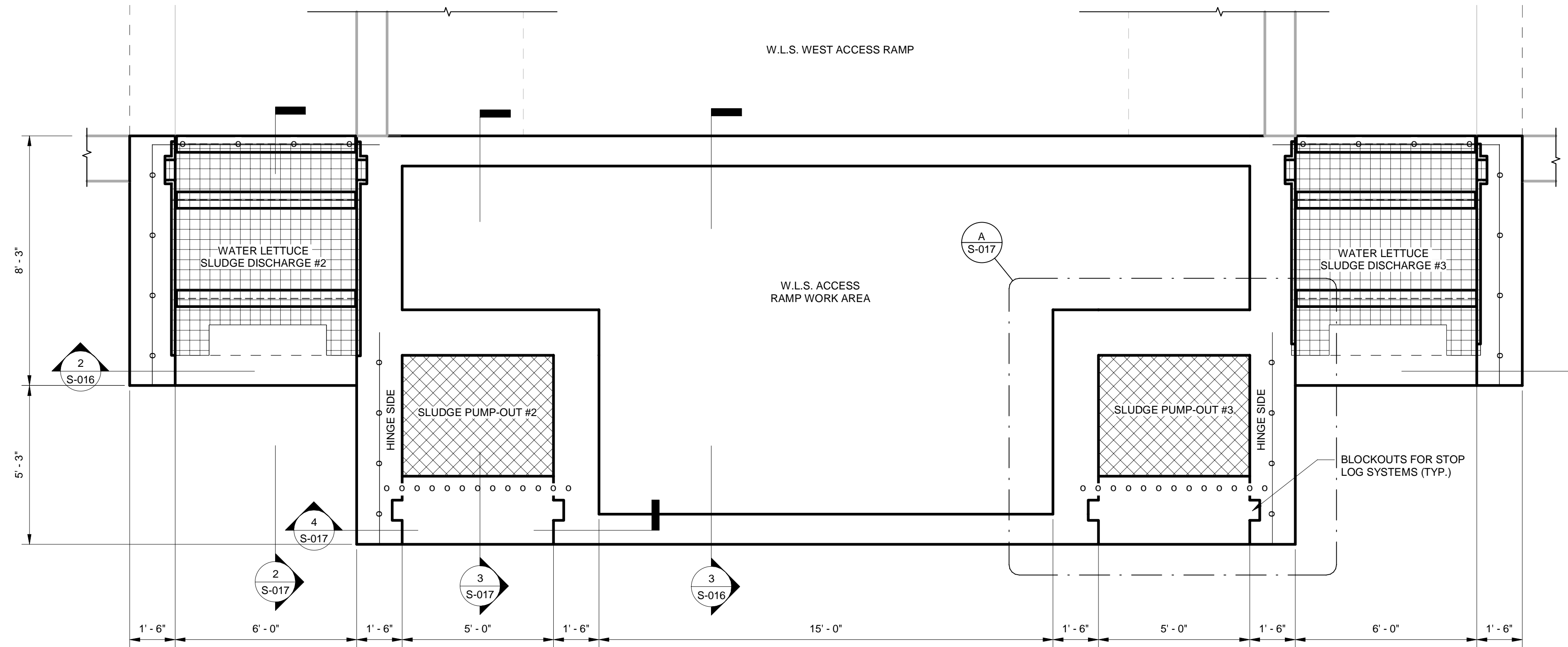
MOORHEN MARSH LEAPS™

JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

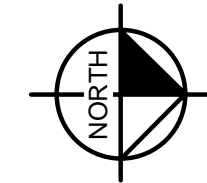
COMPOSTING AREA  
RAMPS

NAVD88 DATUM IS USED FOR ALL ELEVATIONS ON THIS PROJECT.

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-015



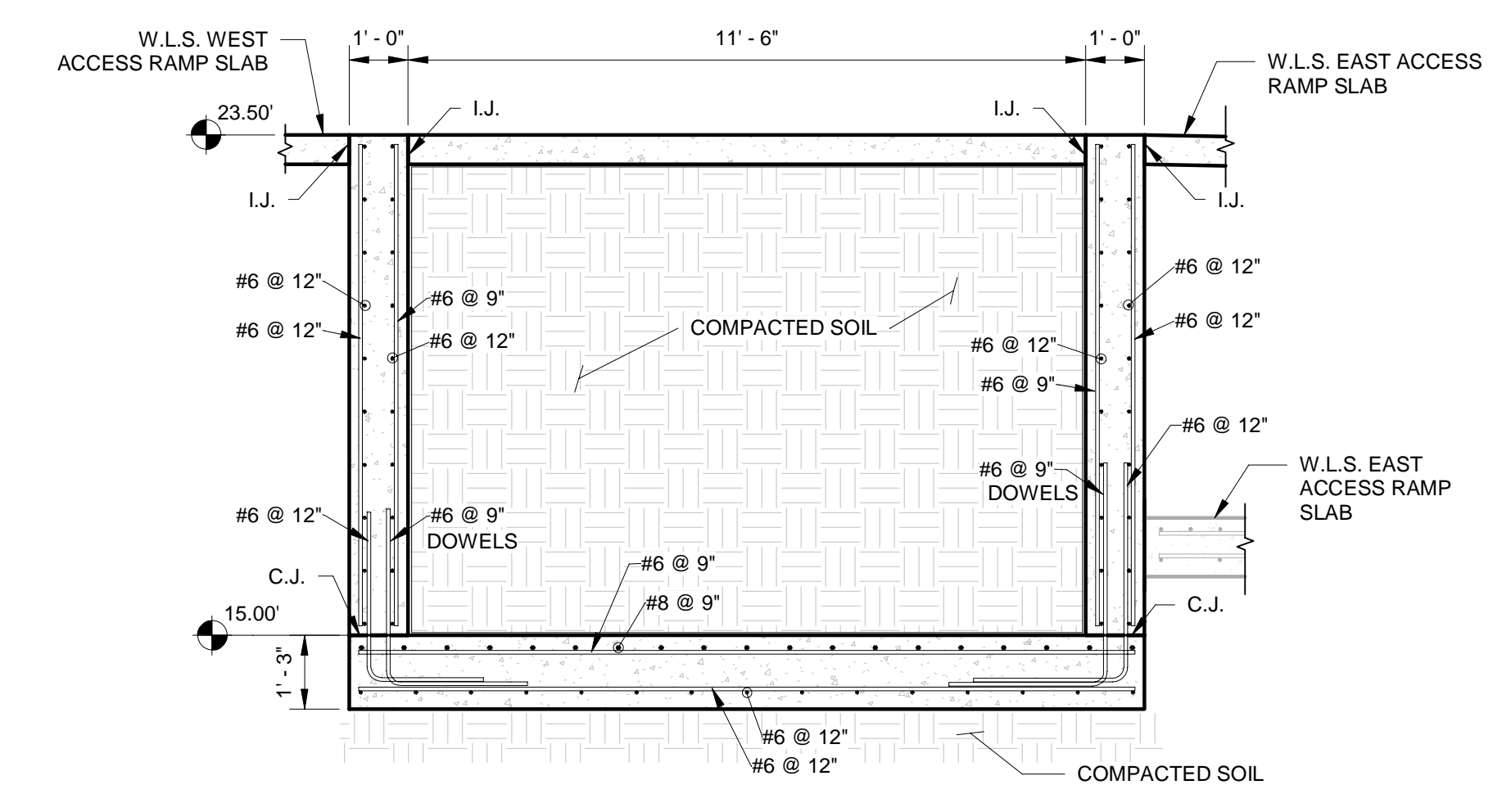
1 W.L.S. ACCESS RAMP WORK AREA - PLAN VIEW  
S-016 3/8" = 1'-0"



**NOTE:**  
1) SEE TYPICAL DETAILS SHEETS FOR WALL JOINTING CRITERIA, ISOLATION JOINT DETAILS, CONSTRUCTION JOINT DETAILS, AND STOP LOG BLOCKOUT DETAILS.

**LEGEND**

- OUTLINE OF FOUNDATION
- ○ ○ LIMITS OF RAILING SYSTEM WITHOUT TOE PLATES (SEE CIVIL PLANS)
- ○ ○ STAINLESS STEEL (316) CHAINS, CONNECTED TO RAILING POST (SEE CIVIL PLANS)
- ▨ HATCH
- ▩ GRATING

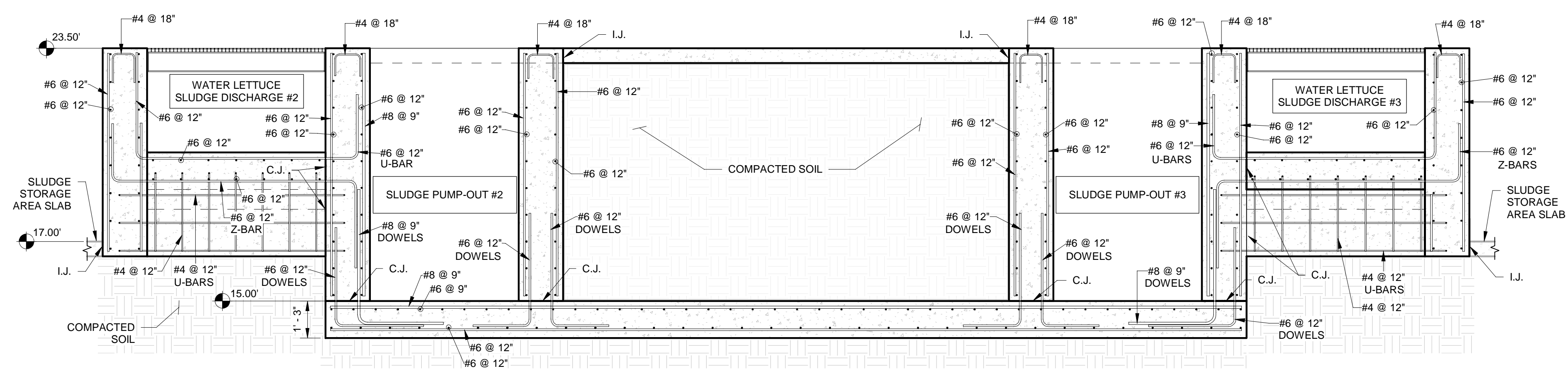


3 W.L.S. ACCESS RAMP WORK AREA - SECTION LOOKING NORTH  
S-016 3/8" = 1'-0"

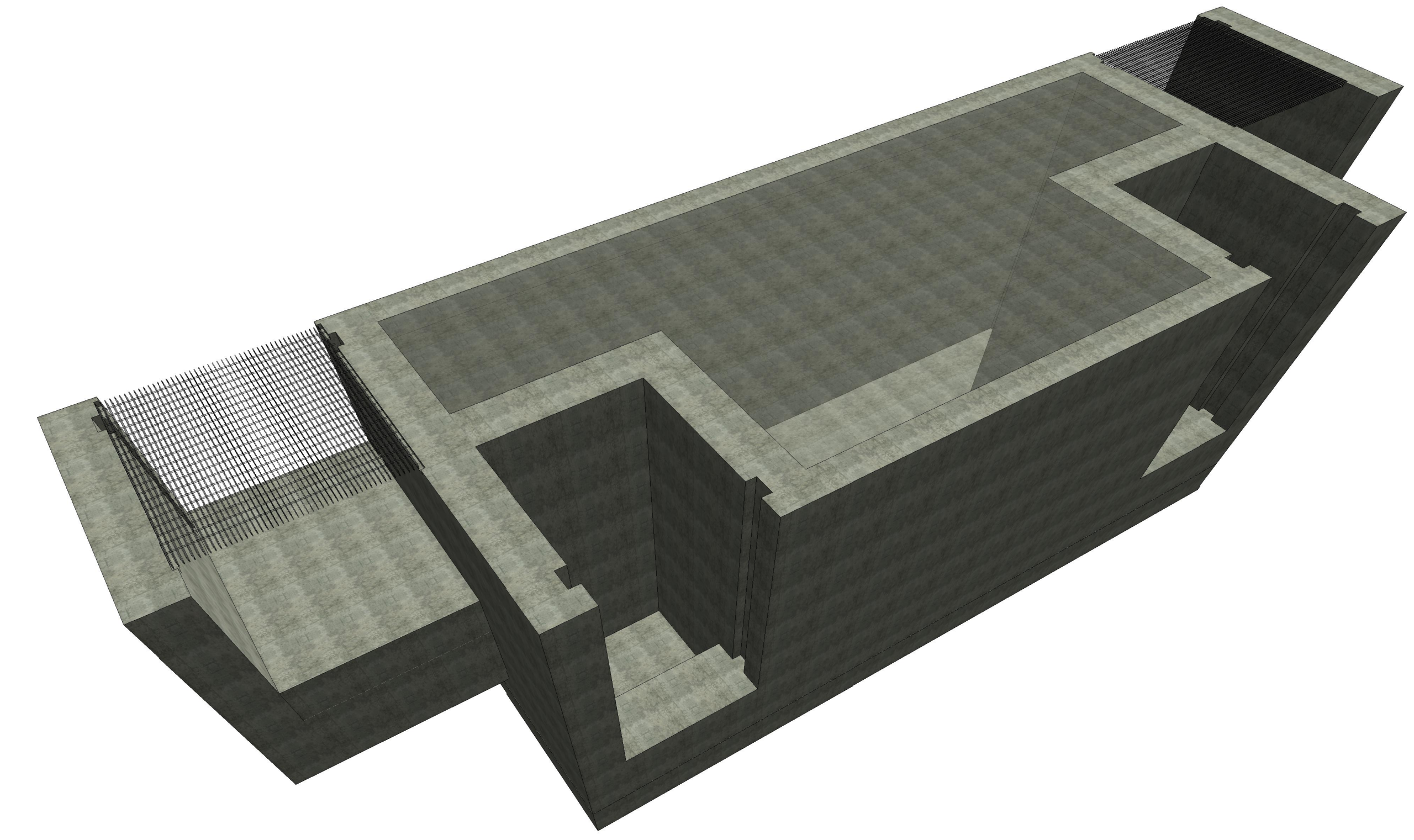
**APPROXIMATE QUANTITIES \***

STRUCTURE	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
W.L.S. ACCESS RAMP WORK AREA	70	14,000

\* SEE BID ITEM NOTES ON SHEET S-002



2 W.L.S. ACCESS RAMP WORK AREA - SECTION LOOKING WEST  
S-016 3/8" = 1'-0"



4 W.L.S. ACCESS RAMP WORK AREA - ISOMETRIC  
S-016

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DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
GNH	CL	AGF	JP3

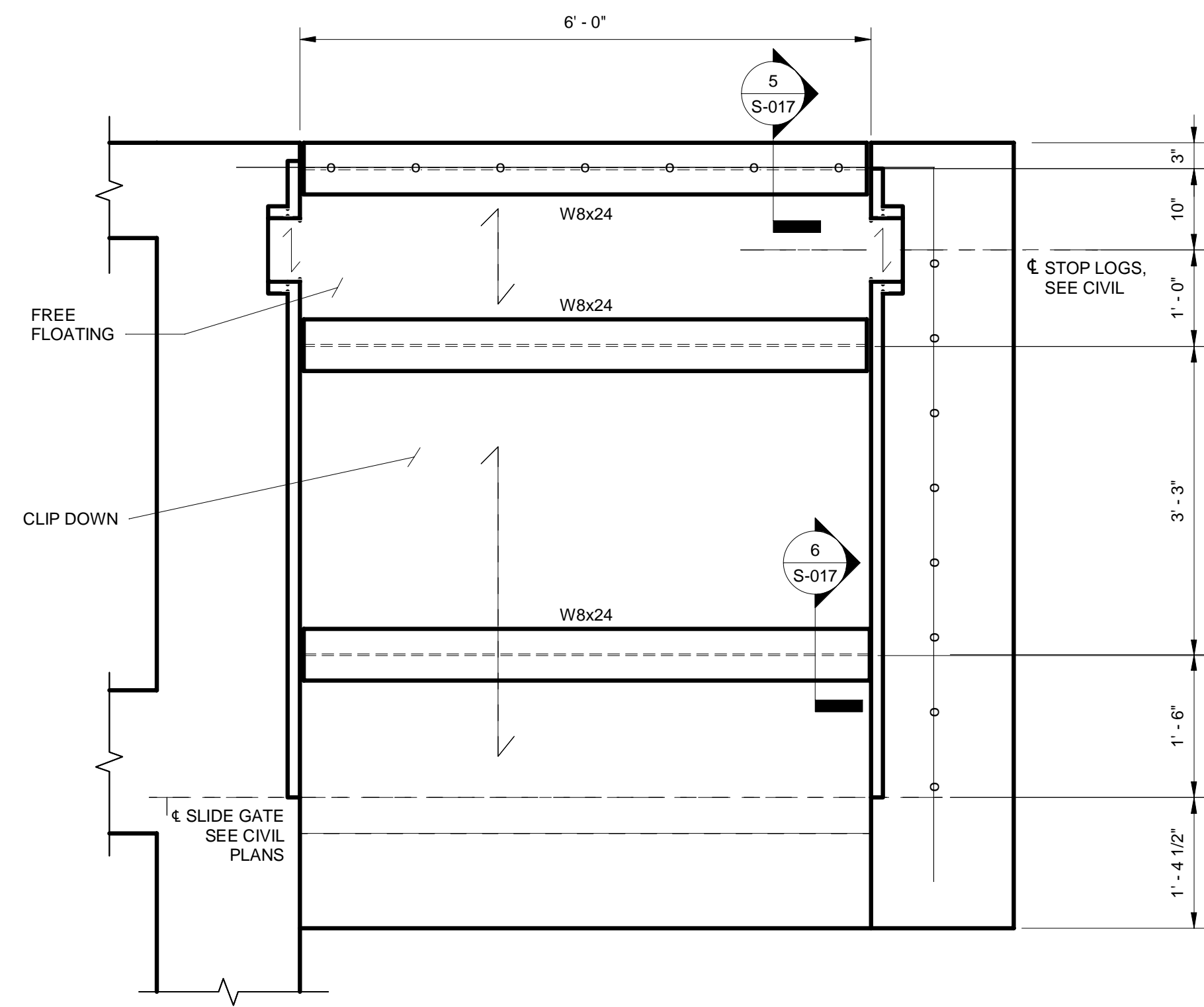
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FLORIDA P.E. NO. 80484  
DATE:

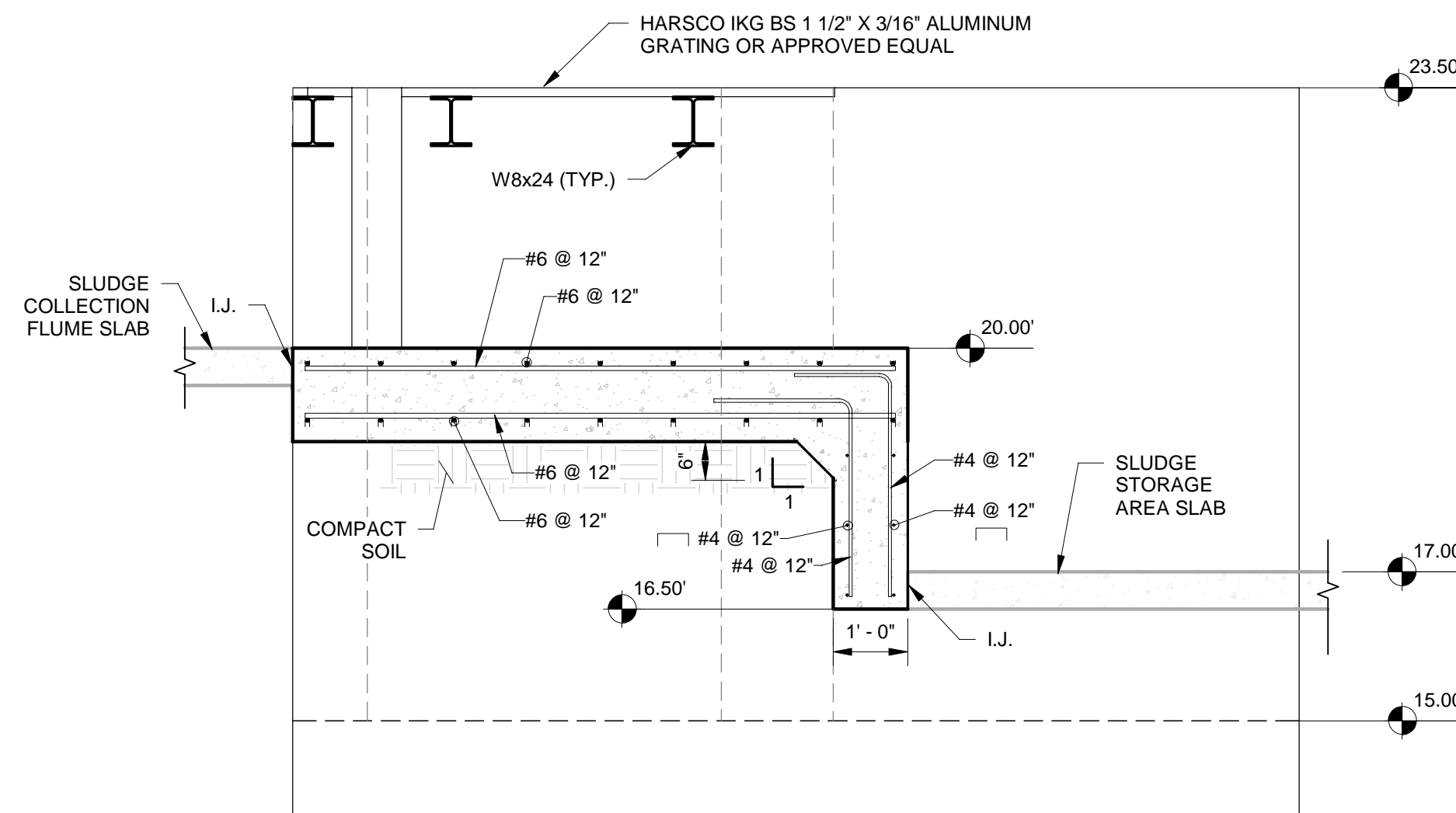
W.L.S. ACCESS RAMP  
WORK AREA

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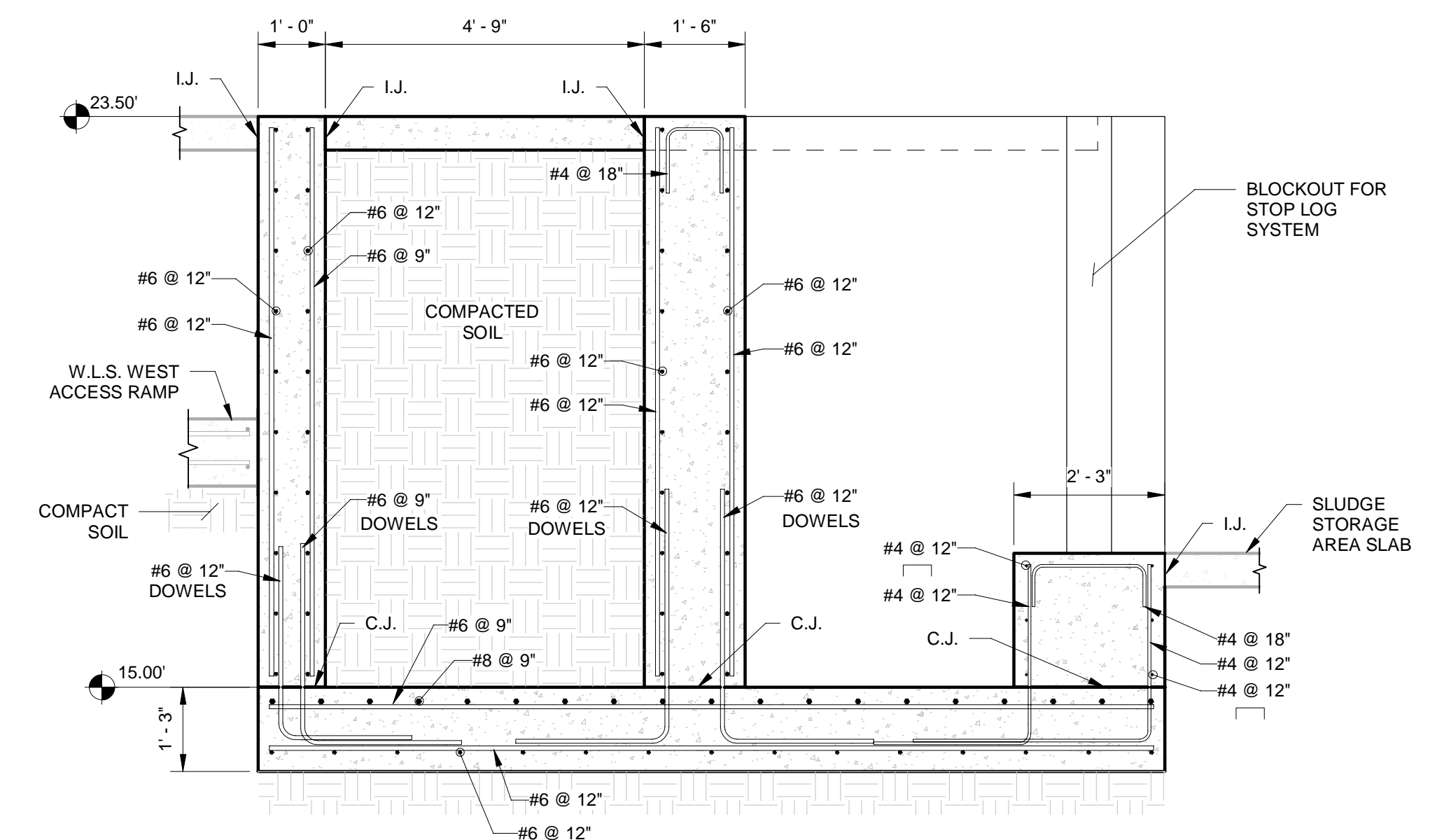
PROJECT NO.
DATE 2/20/2020
SCALE AS NOTED
SHEET S-016



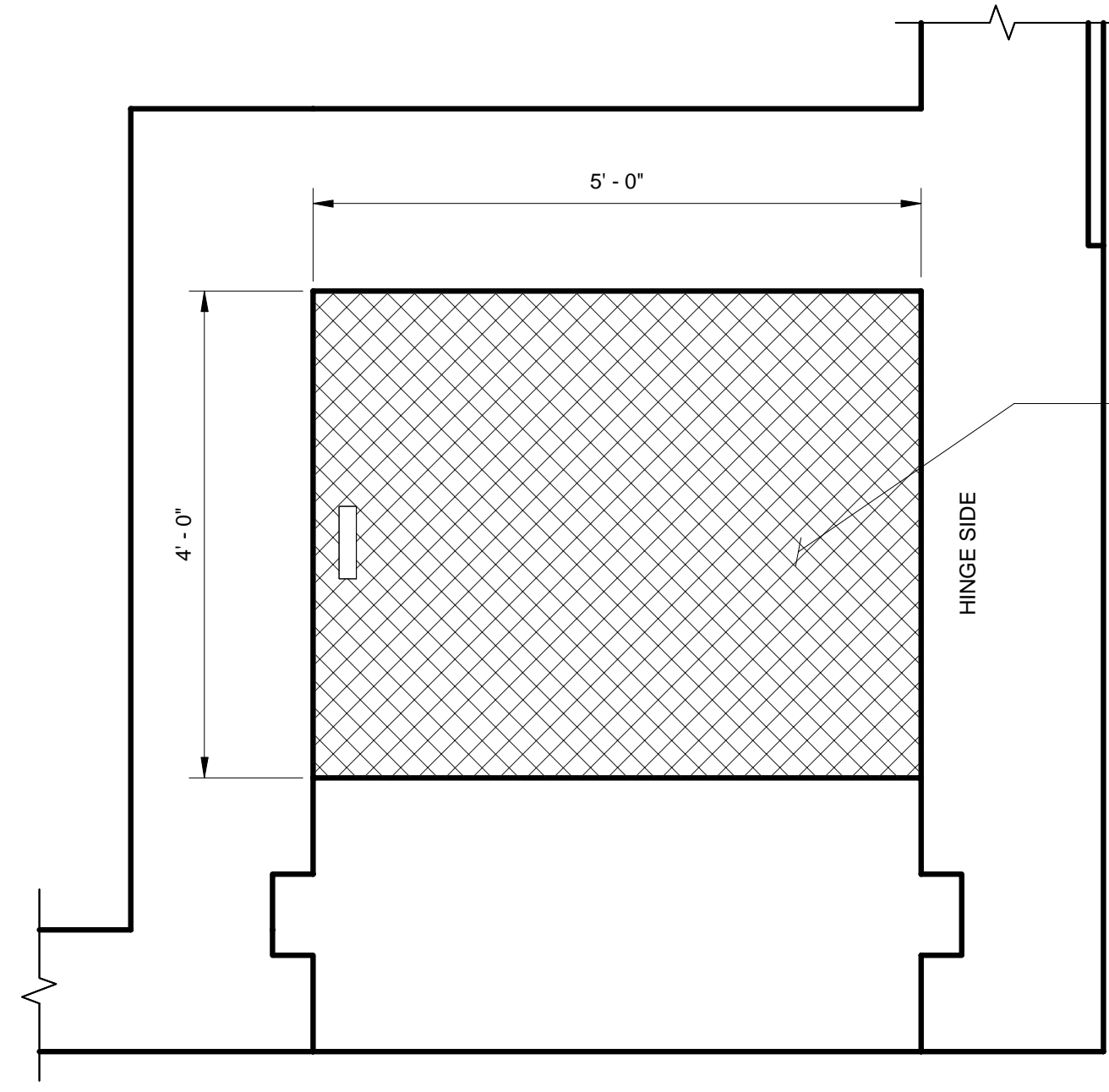
**1 GRATING FRAMING PLAN**  
 S-017 3/4" = 1'-0"  
 (WATER LETTUCE SLUDGE DISCHARGE #3 SHOWN, #2 SIMILAR)



**2 WATER LETTUCE SLUDGE DISCHARGE - #2 & #3 SECTION**  
 S-017 1/2" = 1'-0"

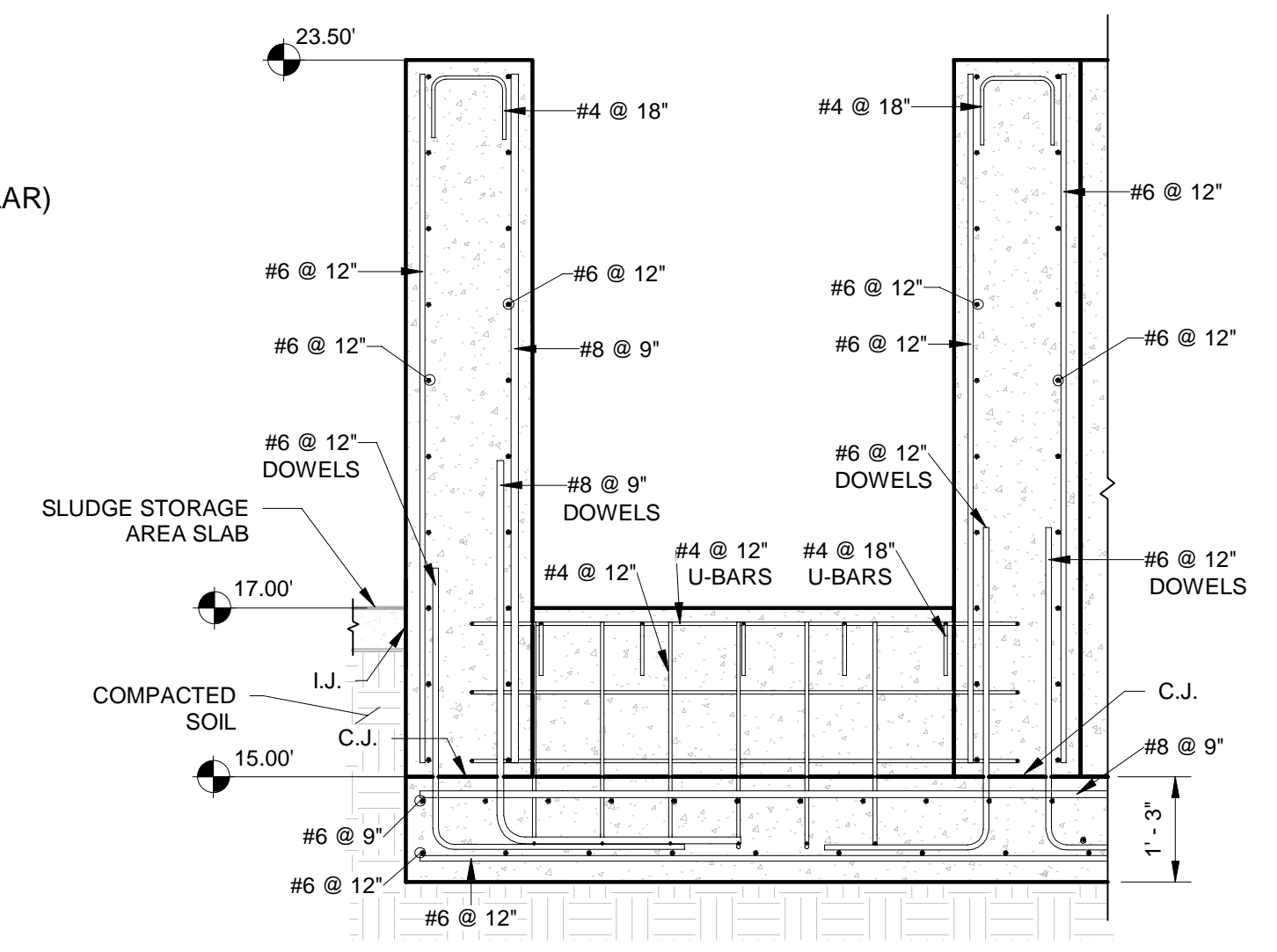


**3 SLUDGE PUMP-OUT #2 & #3 SECTION**  
 S-017 1/2" = 1'-0"

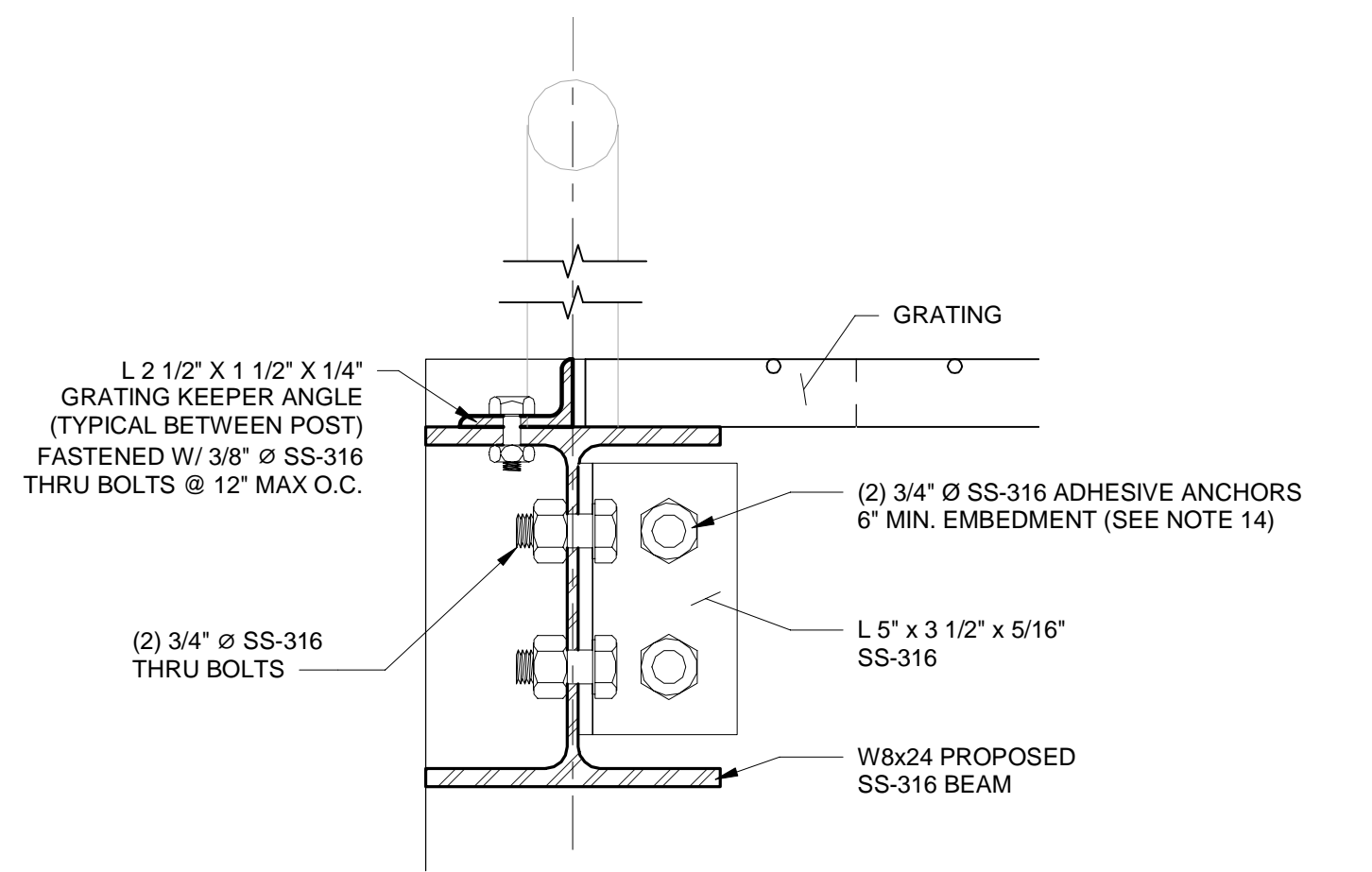


**HATCH NOTES:**  
 1) HATCH MATERIAL SHALL CONSIST OF STAINLESS STEEL TYPE 316 OR ALUMINUM.  
 2) HATCH SHALL BE DESIGNED TO WITHSTAND 300 PSF LIVE LOADING.  
 3) HATCH SHALL HAVE AUTOMATIC HOLD-OPEN DEVICE AND LIFT ASSIST SYSTEM.  
 4) COVER SHALL HAVE DIAMOND PLATE FINISH.

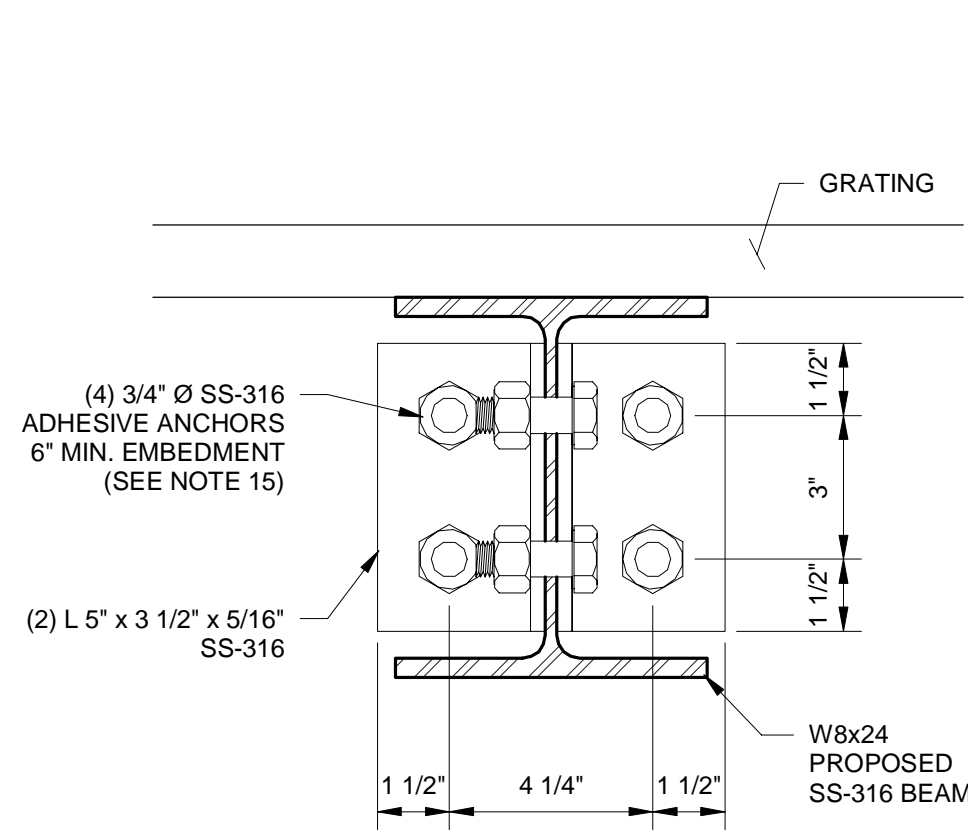
**A HATCH PLAN**  
 S-017 3/4" = 1'-0"  
 (SLUDGE PUMP OUT #3 SHOWN, SLUDGE PUMP OUT #2 SIMILAR BY OPPOSITE HAND)



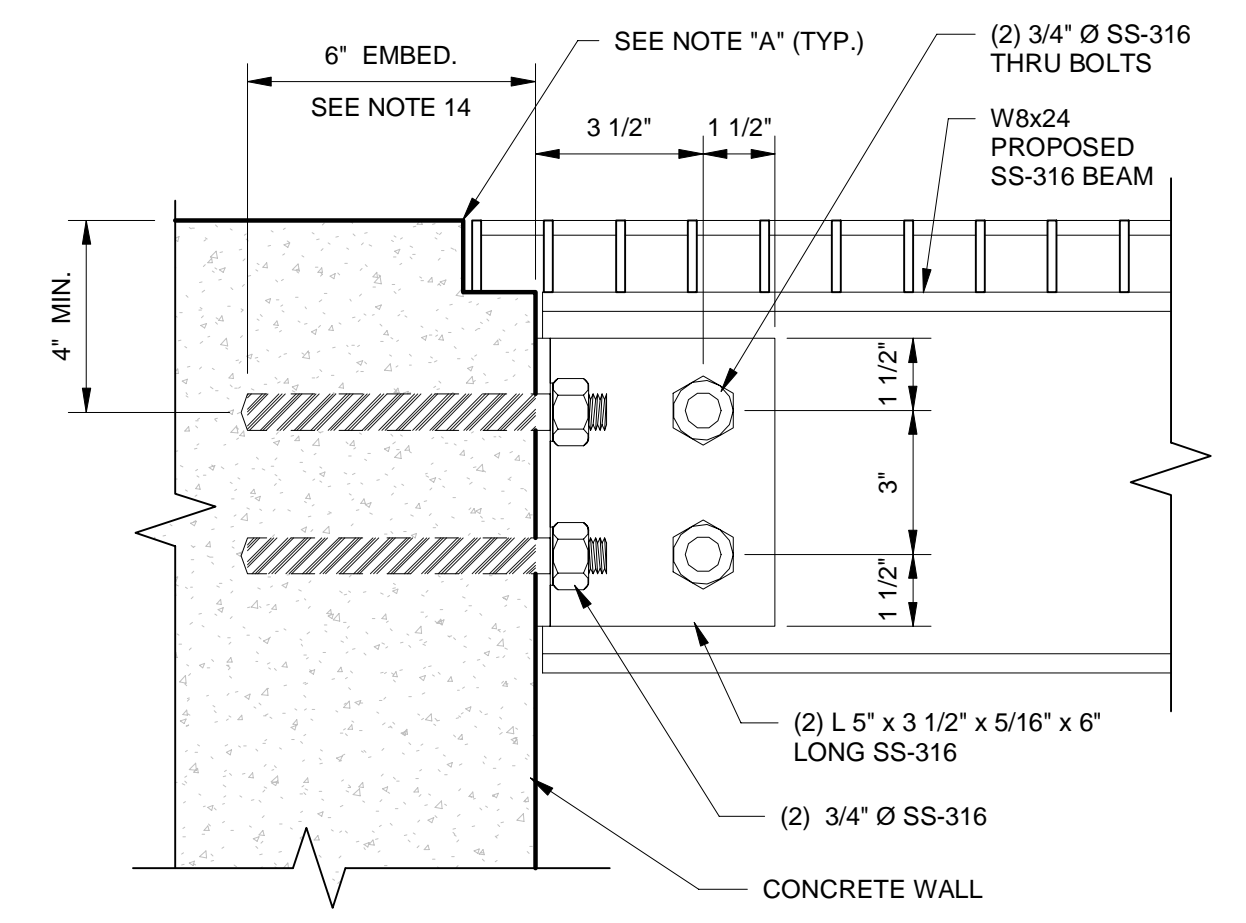
**4 WATER LETTUCE SLUDGE DISCHARGE STRUCTURE #2 AND #3**  
 S-017 1/2" = 1'-0"



**5 WEST W-BEAM TO EDGE OF WALL CONNECTION**  
 S-017 3" = 1'-0"



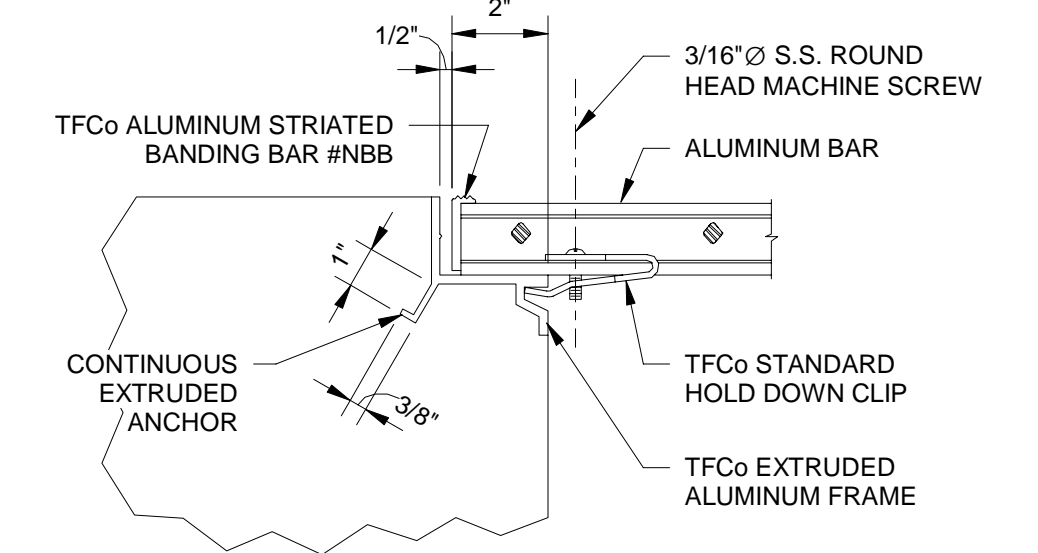
**6 W-BEAM TO WALL CONNECTION**  
 S-017 3" = 1'-0"



**7 GRATING CORNER**  
 S-017 3" = 1'-0"

**NOTE A:**  
 CONTRACTOR SHALL COORDINATE DIMENSIONS WITH GRATING MANUFACTURER TO ADJUST TOP OF WALL HEIGHT, AS NEEDED, TO PROVIDE FLUSH WALKING SURFACES BETWEEN CONCRETE AND ALUMINUM GRATING AND HATCHES.

- FABRICATION NOTES:**
- ALUMINUM GRATING SHALL BE, ALLOY 6063-T6, WITH SWAGED CROSS BARS SPACED ON 4" CENTERS. BEARING BARS SHALL BE SPACED ON 1 3/16" CENTERS. TOP SURFACE OF BEARING BARS SHALL BE STRIATED TO PROVIDE A NON-SLIP SURFACE.
  - GRATING SHALL BE DESIGNED TO SUPPORT A MINIMUM UNIFORM LOAD OF 100 POUNDS PER SQUARE FOOT WITH A MAXIMUM DEFLECTION OF 1/4". THE MAXIMUM FIBER STRESS SHALL NOT EXCEED THAT WHICH IS ALLOWED BY THE ALUMINUM ASSOCIATION.
  - STANDARD INSTALLATION CLEARANCES AND TOLERANCES SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT METAL BAR GRATING MANUAL PUBLISHED BY THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS.
  - ALUMINUM FRAMES EMBEDDED IN CONCRETE SHALL INCORPORATE A RECESS UNDER THE HORIZONTAL BEARING LEG TO RECEIVE THE HOLD DOWN FASTENERS. THE FRAMES SHALL BE TF1.25A THRU TF2.50A AS MANUFACTURED BY THOMPSON FABRICATING, LLC (BIRMINGHAM, AL), OR APPROVED EQUAL.
  - INSTALL ALUMINUM CLAMPS OR CLIPS TO ANCHOR THE GRATING SECURELY TO SUPPORTS. A MINIMUM OF 4 FASTENERS PER PANEL SHALL BE PROVIDED, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
  - CUTOUPS FOR CIRCULAR OBSTRUCTIONS ARE TO BE AT LEAST 2" LARGER IN DIAMETER THAN THE OBSTRUCTION. CUTOUPS FOR ALL PIPING 2" IN DIAMETER OR LESS SHALL BE MADE IN THE FIELD. BAND ALL ENDS OF GRATING.
  - PAINT ALL STAINLESS STEEL SURFACES IN CONTACT DISSIMILAR METALS WITH A SHOP COAT OF BITUMINOUS PAINT.
  - ALL ANGLES SHALL BE STAINLESS STEEL 316.
  - STAINLESS STEEL BOLTS: ASTM F593, TYPE 316
  - ADHESIVE ANCHORS: ASTM A193 GRADE B8M, STAINLESS STEEL THREADED ROD.
  - STAINLESS STEEL NUTS: ASTM F94 TYPE 316
  - STAINLESS STEEL WASHERS: COMPATIBLE WITH BOLTS, NUTS AND THREADED RODS
  - STAINLESS STEEL 316 MATERIALS REQUIRED AT ALL BOLTED CONNECTIONS.
  - ADHESIVE BONDING MATERIAL SHALL BE TYPE HV IN ACCORDANCE WITH FDOT STANDARD SPECIFICATION SECTION 937.



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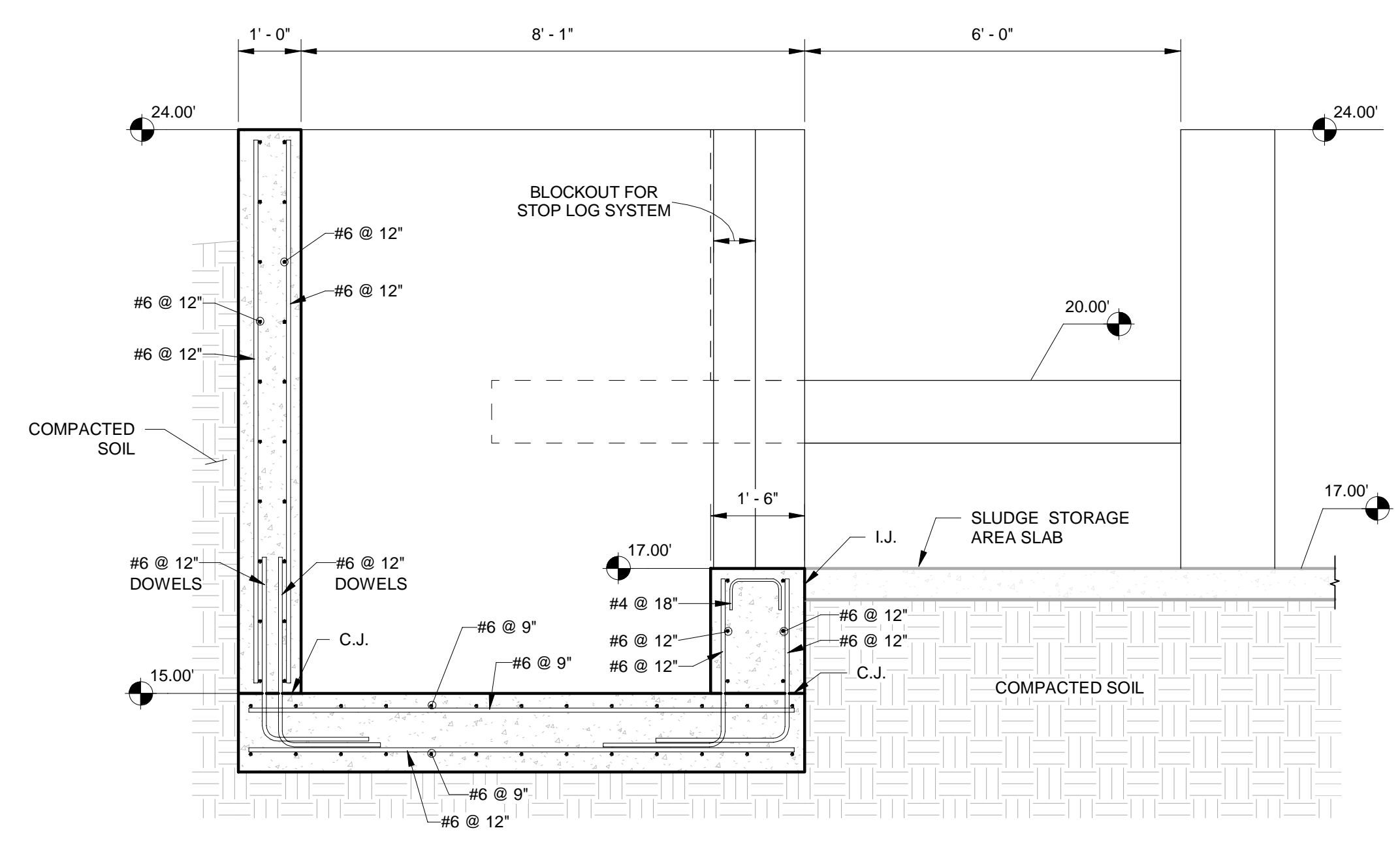
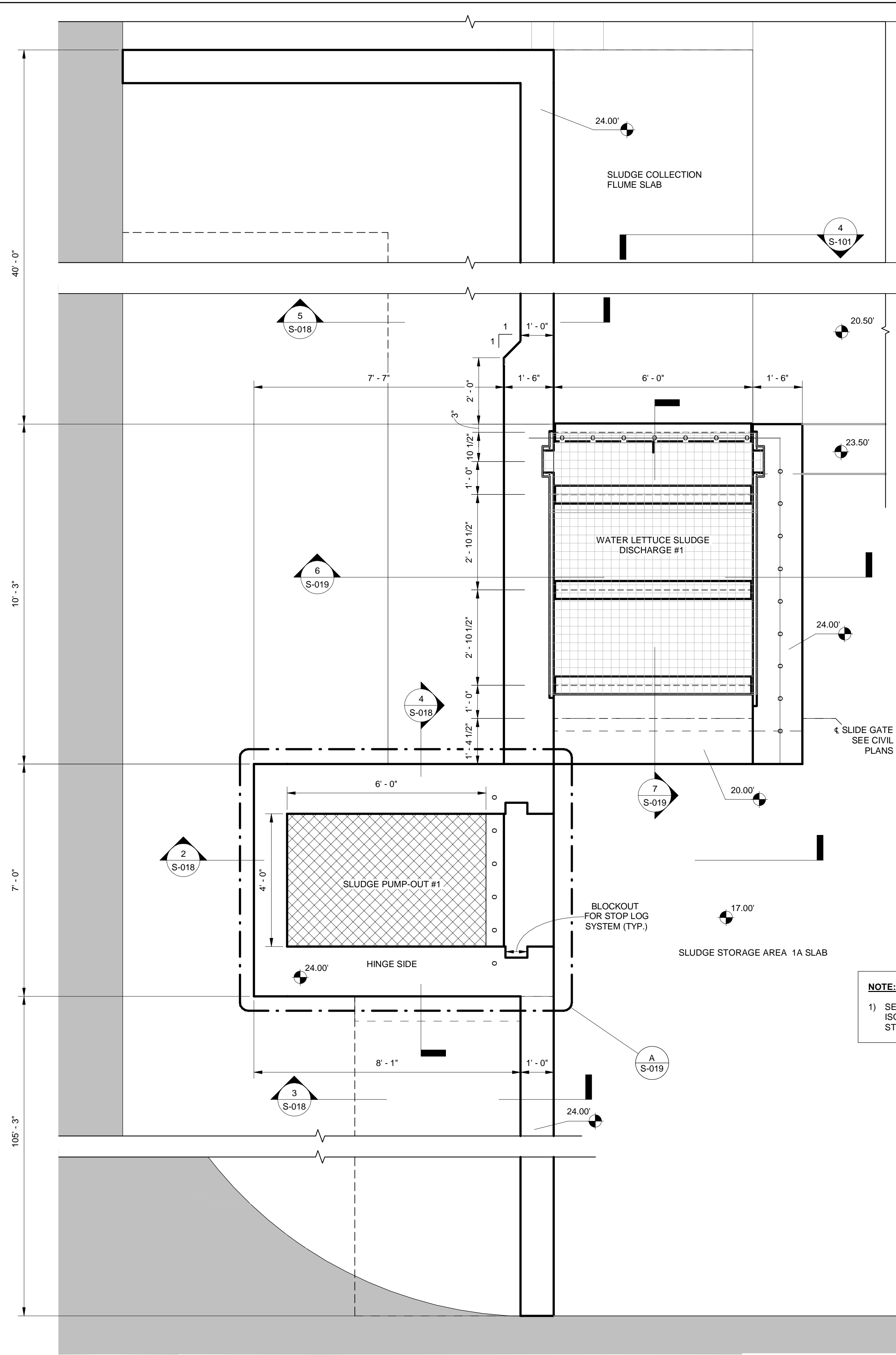
**Kimley Horn**  
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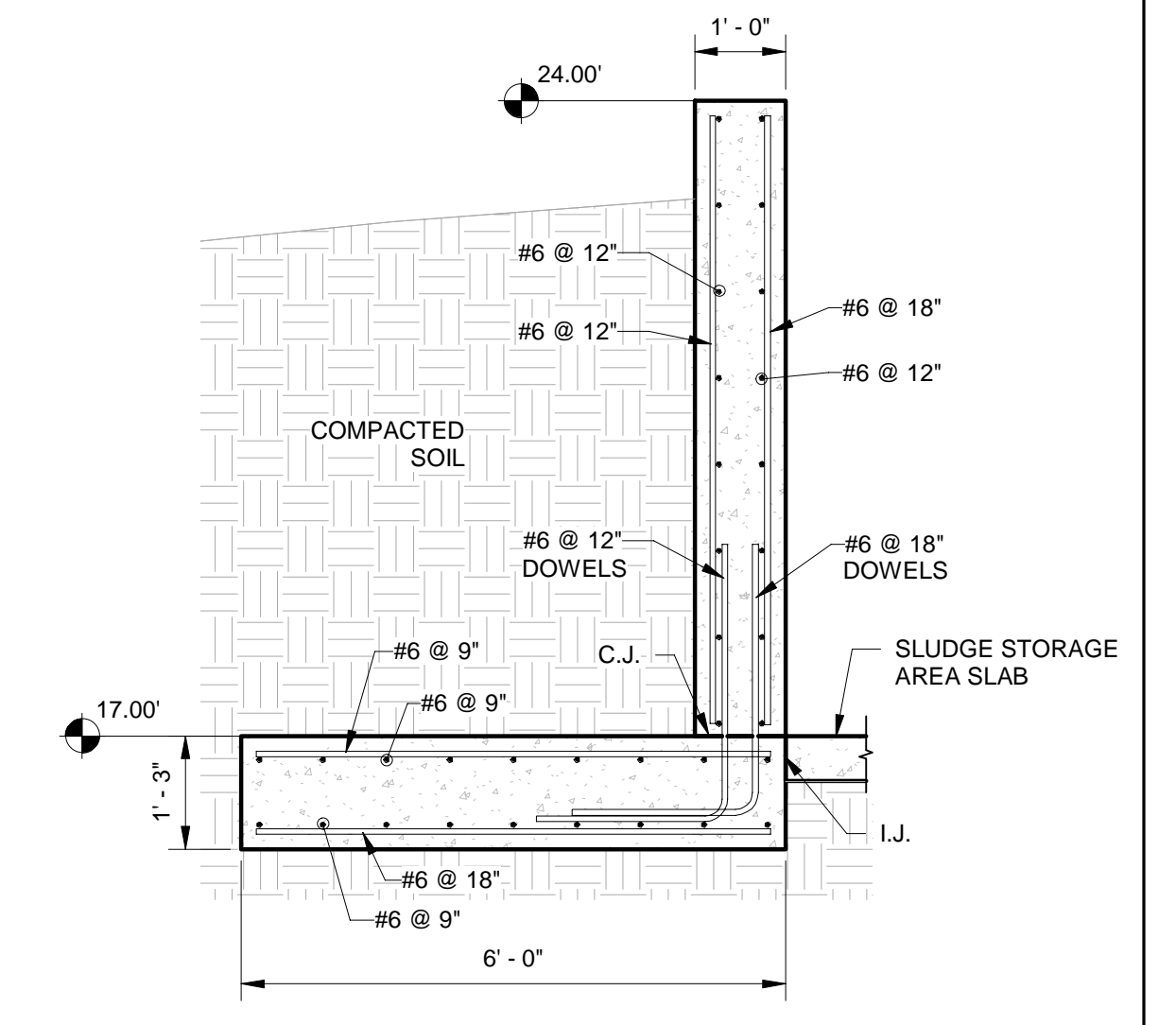
JERRY MARCUS PICCOLO, P.E.  
 FLORIDA P.E. NO. 80484  
 DATE:

**W.L.S. ACCESS RAMP  
 WORK AREA -  
 GRATING**

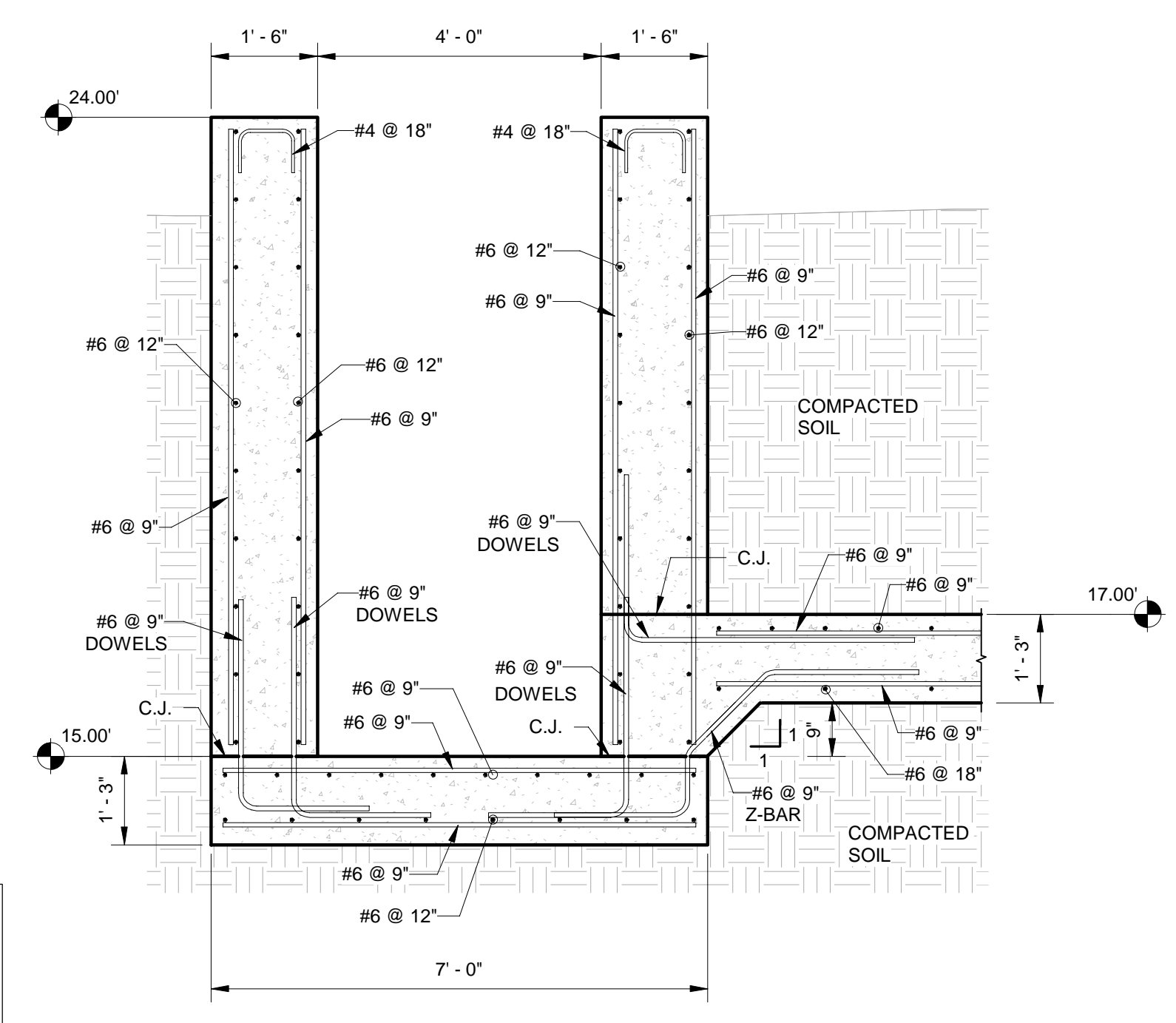
PROJECT NO.  
 DATE 2/20/2020  
 SCALE AS NOTED  
 SHEET **S-017**



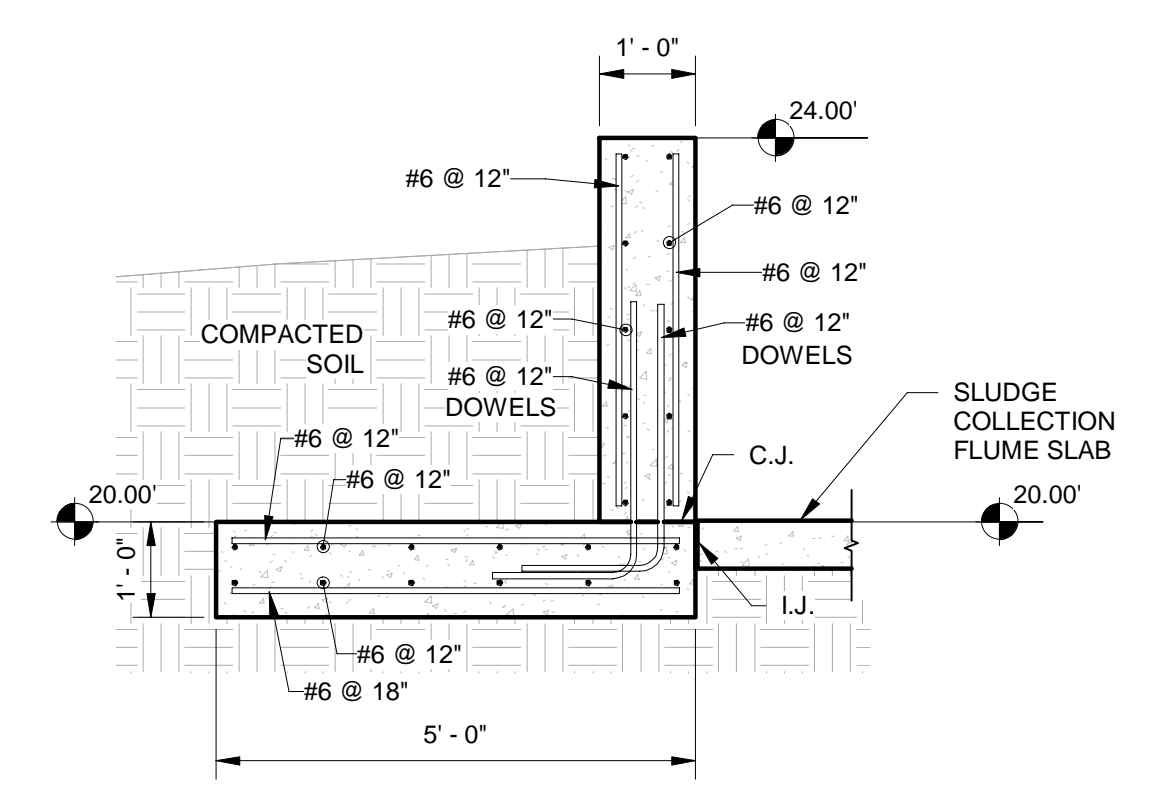
2 SLUDGE PUMP-OUT #1 STRUCTURE  
S-018 1/2" = 1'-0" (SECTION LOOKING WEST)



3 SLUDGE PUMP OUT #1 WALL  
S-018 1/2" = 1'-0"



4 SLUDGE PUMP-OUT #1 STRUCTURE  
S-018 1/2" = 1'-0" (SECTION LOOKING NORTH)



5 WATER LETTUCE SLUDGE DISCHARGE #1 WALL  
S-018 1/2" = 1'-0"

**NOTE:**  
1) SEE TYPICAL DETAILS SHEETS FOR WALL JOINTING CRITERIA, ISOLATION JOINT DETAILS, CONSTRUCTION JOINT DETAILS, AND STOP LOG BLOCKOUT DETAILS.

- LEGEND**
- OUTLINE OF FOUNDATION
  - ○ ○ LIMITS OF RAILING SYSTEM WITHOUT TOE PLATES (SEE CIVIL PLANS)
  - ○ ○ STAINLESS STEEL (316) CHAINS, CONNECTED TO RAILING POST (SEE CIVIL PLANS)
  - ▨ HATCH
  - ▧ GRATING

1 SLUDGE PUMP-OUT #1 AND SLUDGE DISCHARGE #1 STRUCTURES  
S-018 1/2" = 1'-0" (SOUTH STRUCTURES SHOWN, NORTH STRUCTURES SIMILAR)

APPROXIMATE QUANTITIES *			
STRUCTURE / WALL	LENGTH	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
WATER LETTUCE SLUDGE DISCHARGE #1 AND WALL	50'-3"	32	6,000
WATER LETTUCE SLUDGE DISCHARGE #4 AND WALL	50'-3"	32	6,000
SLUDGE PUMP-OUT #1 AND WALL	112'-3"	71	14,000
SLUDGE PUMP-OUT #4 AND WALL	112'-3"	71	14,000

\* SEE BID ITEM NOTES ON SHEET S-002

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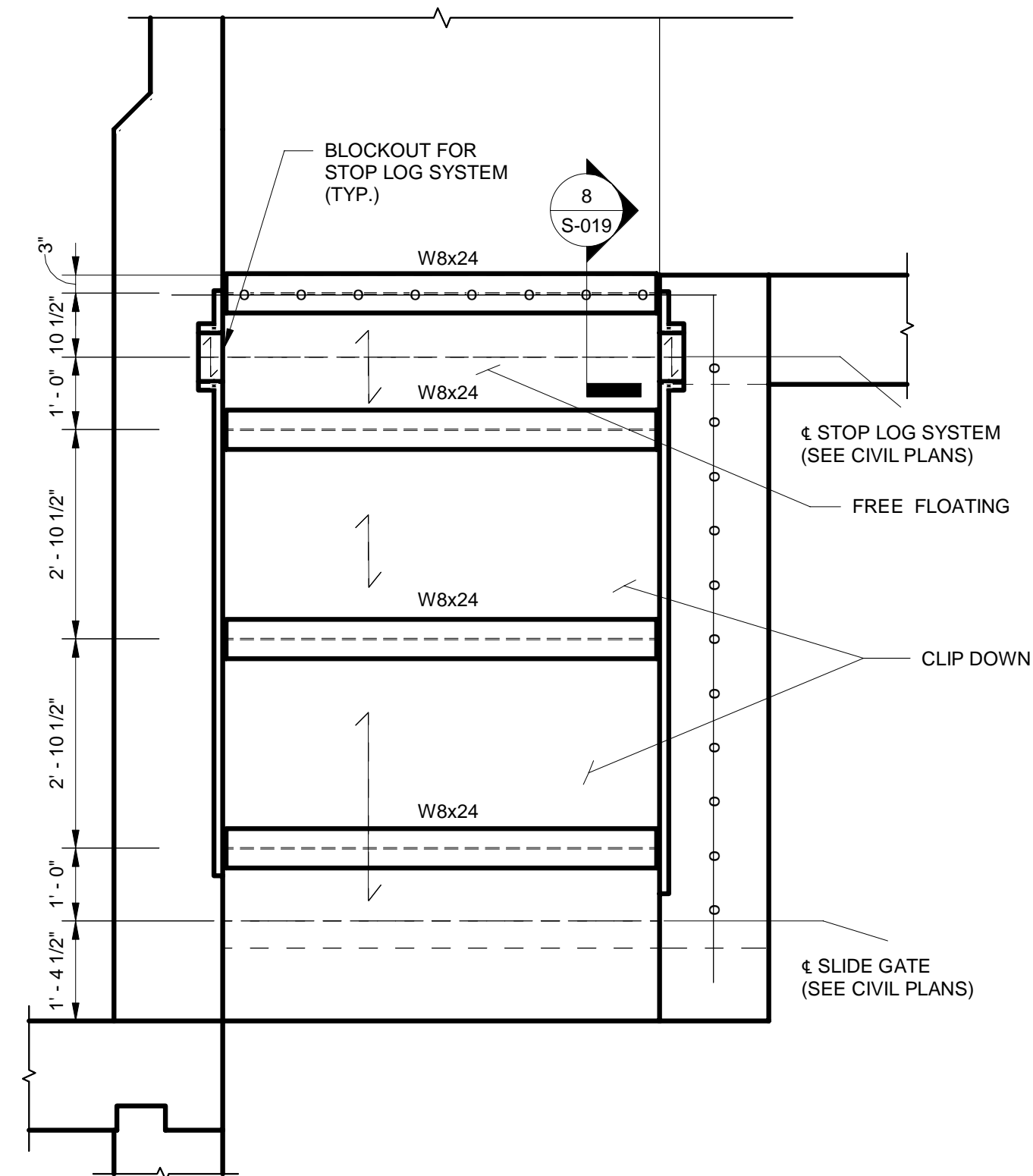
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JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

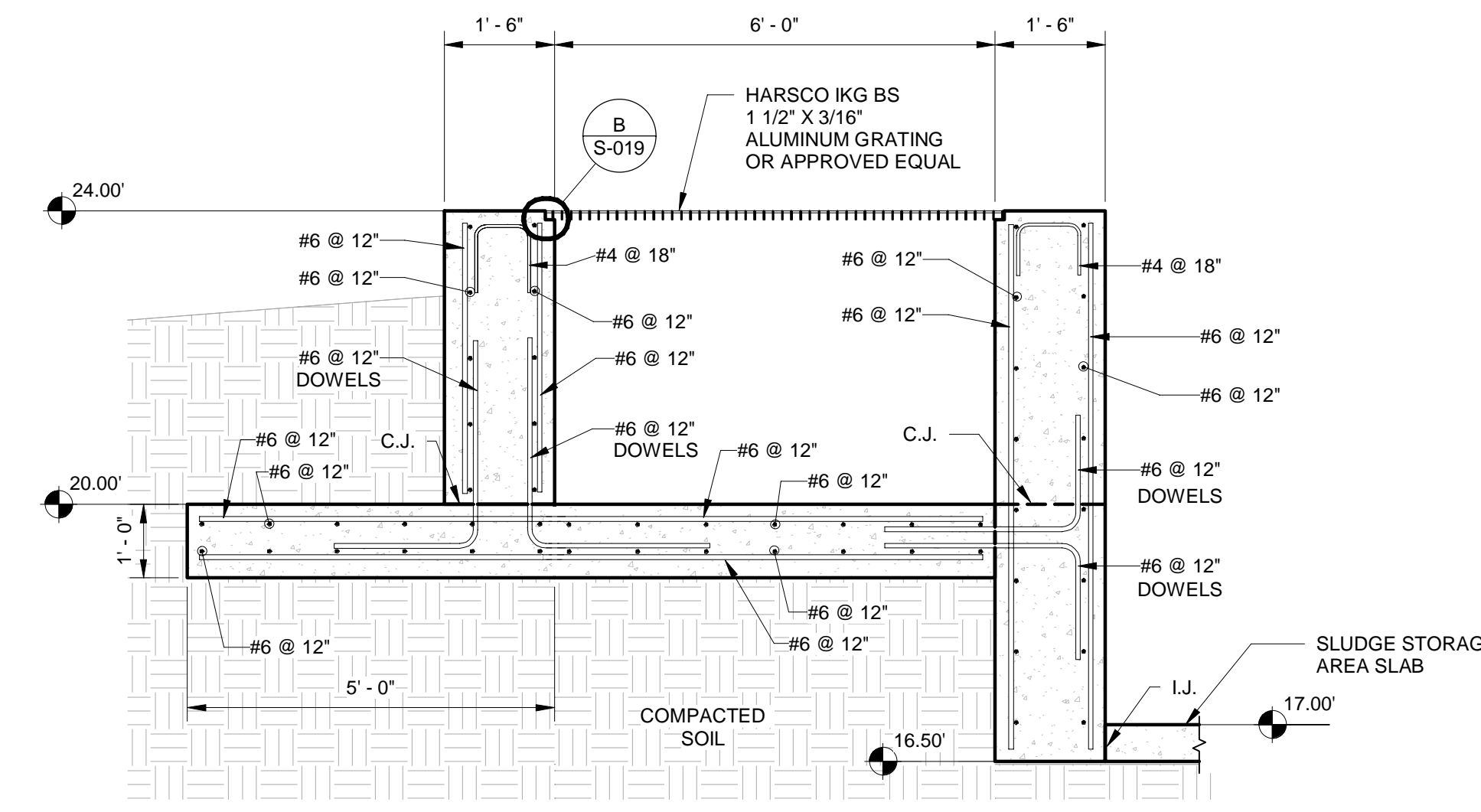
SLUDGE PUMPOUT  
STRUCTURE

PROJECT NO.
DATE 2/20/2020
SCALE AS NOTED
SHEET S-018

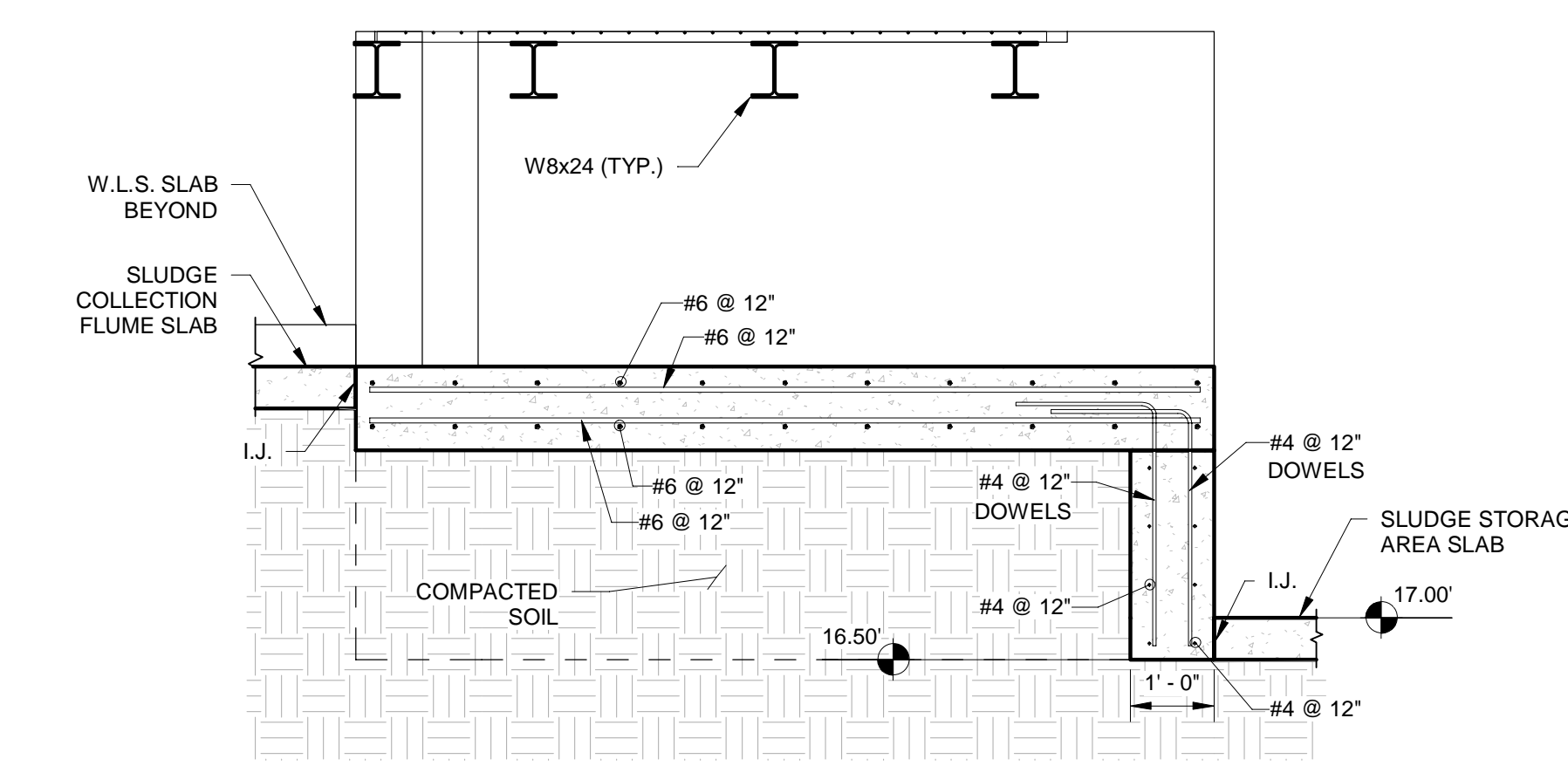
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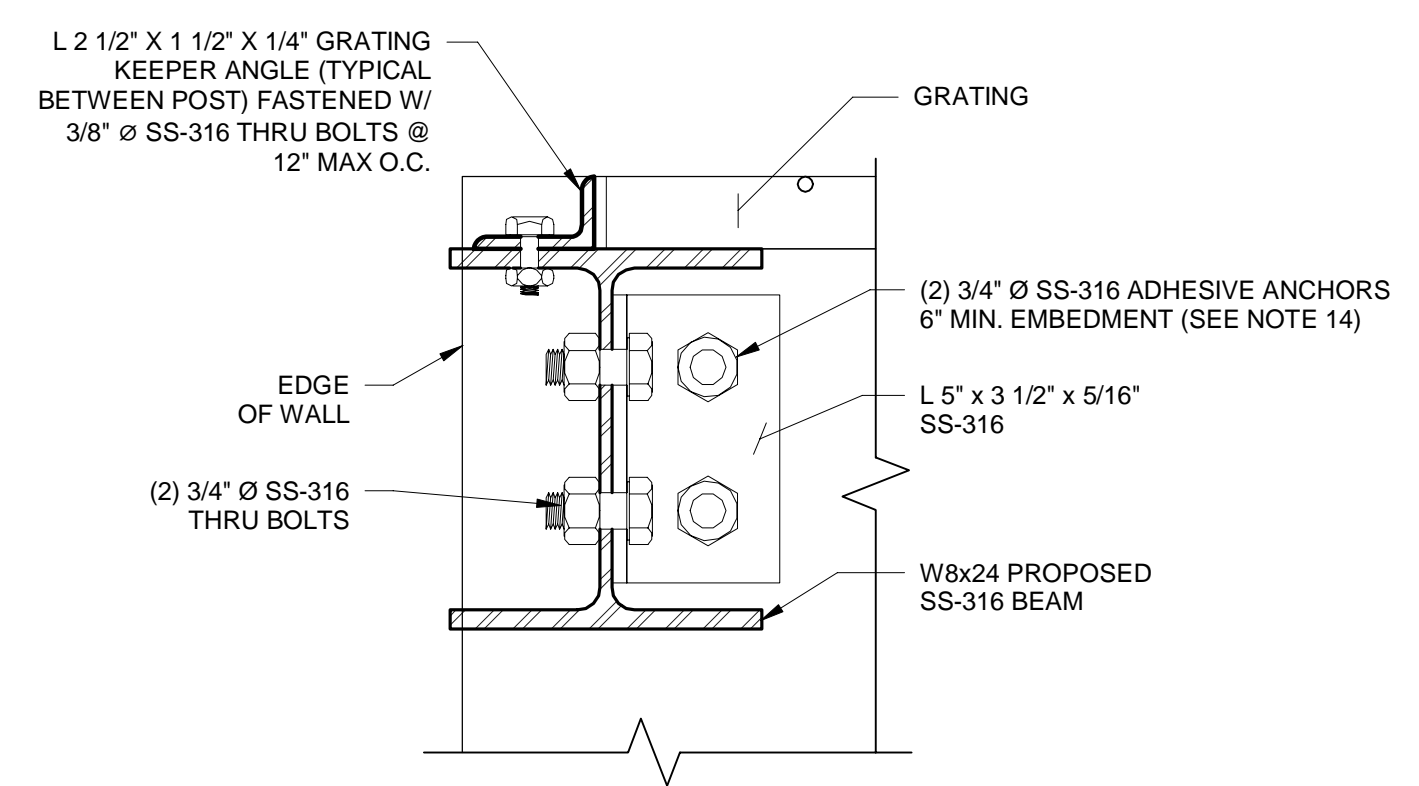
**1** WATER LETTUCE SLUDGE DISCHARGE #1 GRATING - FRAMING PLAN  
 S-019 1/2" = 1'-0"  
 (WATER LETTUCE SLUDGE DISCHARGE #1 SHOWN, WATER LETTUCE SLUDGE DISCHARGE #4 SIMILAR)



**6** W.L.S. DISCHARGE STRUCTURE SECTION  
 S-019 1/2" = 1'-0"  
 (LOOKING WEST)



**7** W.L.S. DISCHARGE STRUCTURE SECTION  
 S-019 1/2" = 1'-0"  
 (LOOKING NORTH)

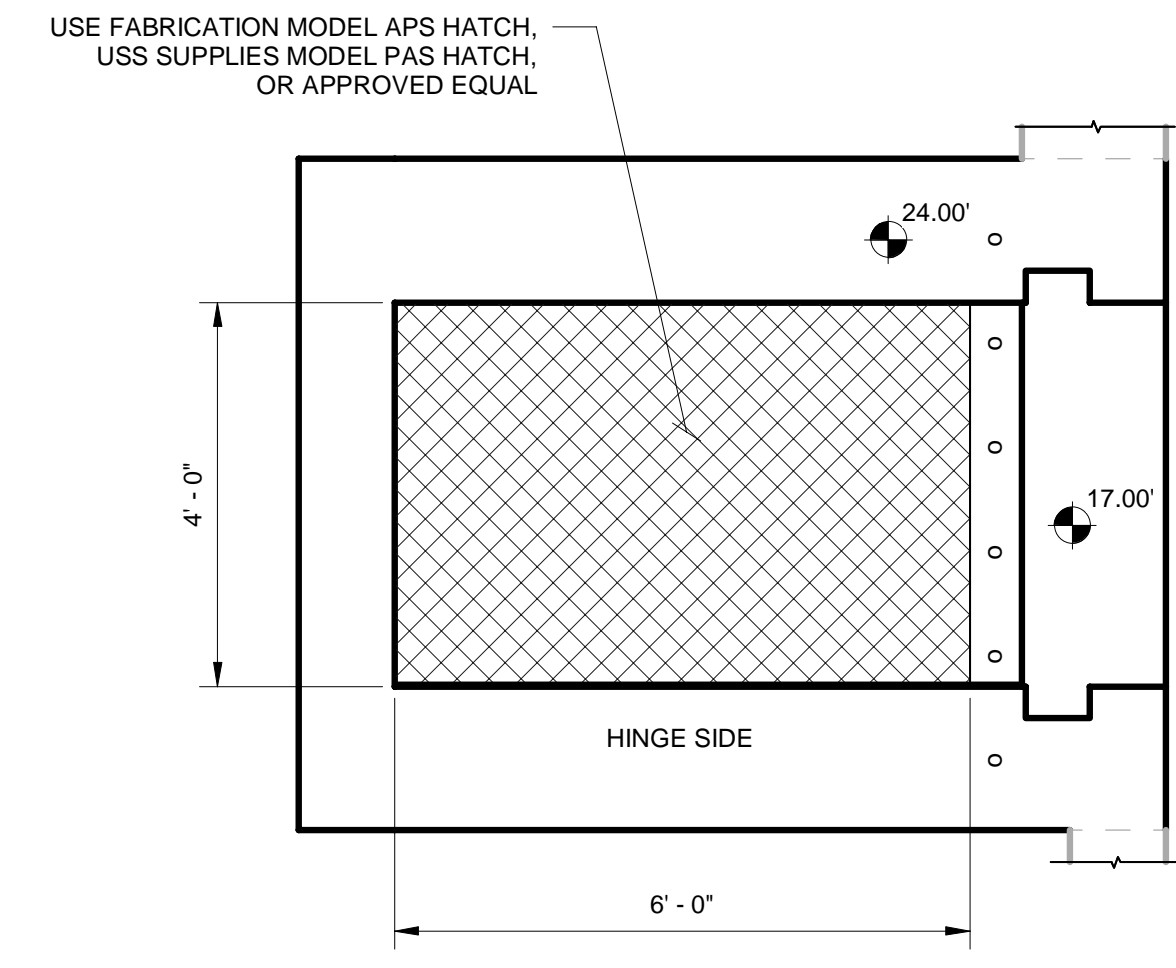


**8** WEST W-BEAM TO WALL CONNECTION  
 S-019 3" = 1'-0"

**NOTE:**  
 SEE TYPICAL DETAILS SHEETS FOR CONSTRUCTION JOINT DETAILS, ISOLATION JOINTS DETAILS, AND STOP LOG BLOCKOUT DETAILS.

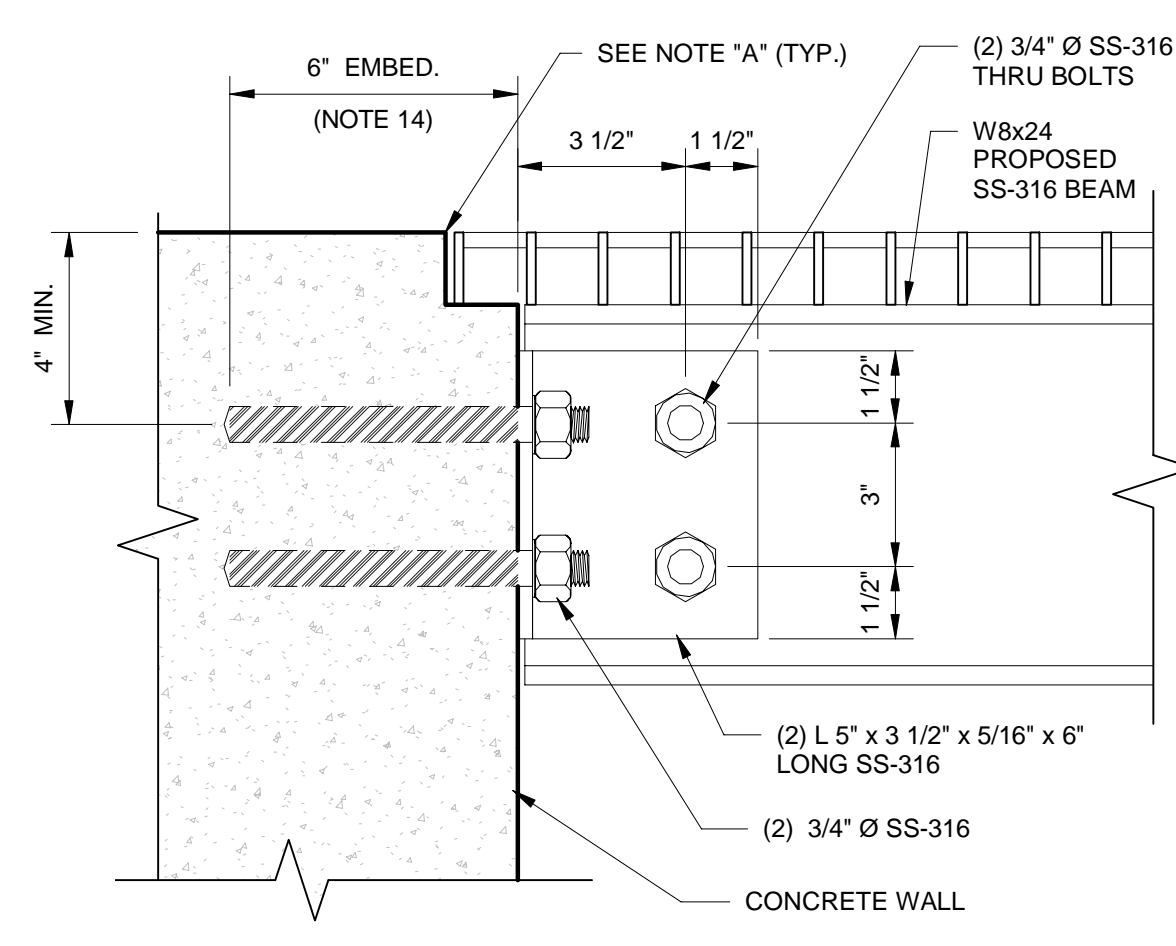
- FABRICATION NOTES:**
- 1) ALUMINUM GRATING SHALL BE, ALLOY 6063-T6, WITH SWAGED CROSS BARS SPACED ON 4" CENTERS. BEARING BARS SHALL BE SPACED ON 1 3/16" CENTERS. TOP SURFACE OF BEARING BARS SHALL BE STRIATED TO PROVIDE A NON-SLIP SURFACE.
  - 2) GRATING SHALL BE DESIGNED TO SUPPORT A MINIMUM UNIFORM LOAD OF 100 POUNDS PER SQUARE FOOT WITH A MAXIMUM DEFLECTION OF 1/4". THE MAXIMUM FIBER STRESS SHALL NOT EXCEED THAT WHICH IS ALLOWED BY THE ALUMINUM ASSOCIATION.
  - 3) STANDARD INSTALLATION CLEARANCES AND TOLERANCES SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT METAL BAR GRATING MANUAL PUBLISHED BY THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS.
  - 4) ALUMINUM FRAMES EMBEDDED IN CONCRETE SHALL INCORPORATE A RECESS UNDER THE HORIZONTAL BEARING LEG TO RECEIVE THE HOLD DOWN FASTENERS. THE FRAMES SHALL BE TF1.25A THRU TF2.50A AS MANUFACTURED BY THOMPSON FABRICATING, LLC (BIRMINGHAM, AL), OR APPROVED EQUAL.
  - 5) INSTALL ALUMINUM CLAMPS OR CLIPS TO ANCHOR THE GRATING SECURELY TO SUPPORTS. A MINIMUM OF 4 FASTENERS PER PANEL SHALL BE PROVIDED, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
  - 6) CUTOUTS FOR CIRCULAR OBSTRUCTIONS ARE TO BE AT LEAST 2" LARGER IN DIAMETER THAN THE OBSTRUCTION. CUTOUTS FOR ALL PIPING 2" IN DIAMETER OR LESS SHALL BE MADE IN THE FIELD. BAND ALL ENDS OF GRATING.
  - 7) PAINT ALL STAINLESS STEEL SURFACES IN CONTACT DISSIMILAR METALS WITH A SHOP COAT OF BITUMINOUS PAINT.
  - 8) ALL BRACING ANGLES, SHALL BE STAINLESS STEEL 316.
  - 9) STAINLESS STEEL BOLTS: ASTM F593, TYPE 316
  - 10) ADHESIVE ANCHORS: ASTM A193 GRADE B8M, STAINLESS STEEL THREADED ROD.
  - 11) STAINLESS STEEL NUTS: ASTM F594 TYPE 316
  - 12) STAINLESS STEEL WASHERS: COMPATIBLE WITH BOLTS, NUTS AND THREADED RODS
  - 13) STAINLESS STEEL 316 WASHERS REQUIRED AT ALL BOLTED CONNECTIONS.
  - 14) ADHESIVE BONDING MATERIAL SHALL BE TYPE HV IN ACCORDANCE WITH FOOT STANDARD SPECIFICATION SECTION 937.

**NOTE A:**  
 CONTRACTOR SHALL COORDINATE DIMENSIONS WITH GRATING MANUFACTURER TO ADJUST TOP OF WALL HEIGHT, AS NEEDED, TO PROVIDE FLUSH WALKING SURFACES BETWEEN CONCRETE AND ALUMINUM GRATING AND HATCHES.

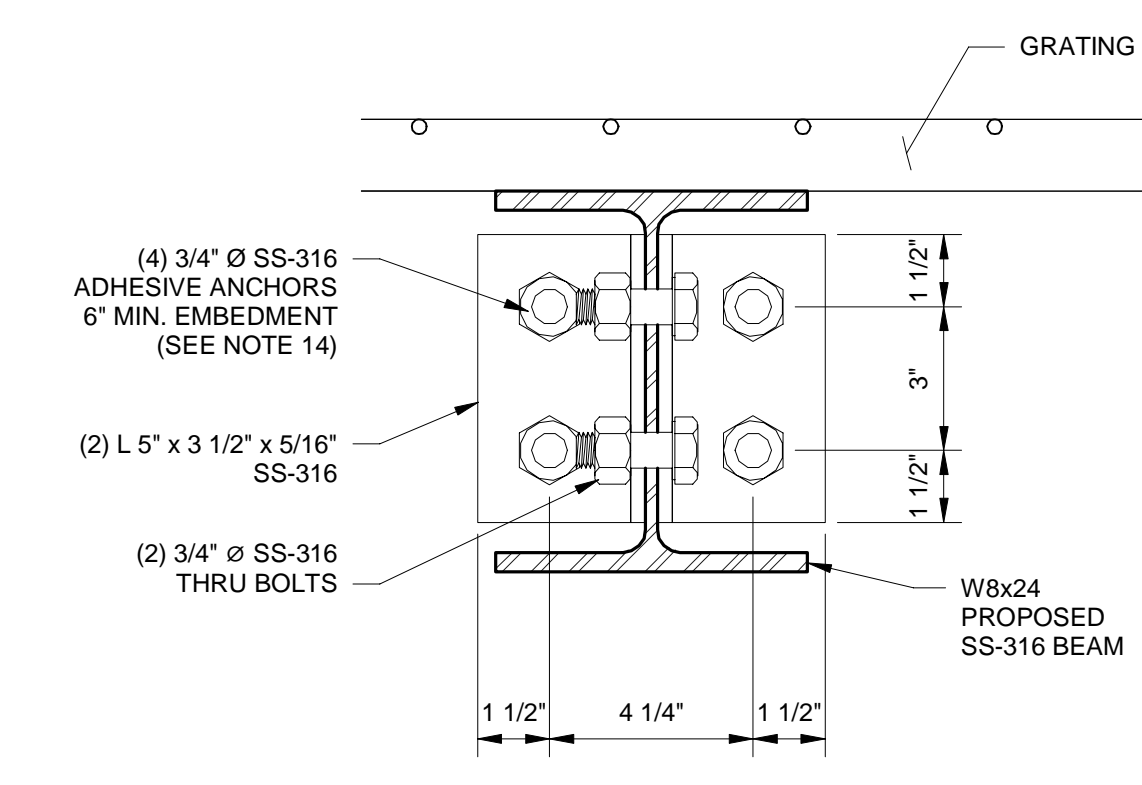


- HATCH NOTES:**
- 1) HATCH MATERIAL SHALL CONSIST OF STAINLESS STEEL TYPE 316 OR ALUMINUM.
  - 2) HATCH SHALL BE DESIGNED TO WITHSTAND 300 PSF LIVE LOADING.
  - 3) HATCH SHALL HAVE AUTOMATIC HOLD-OPEN DEVICE AND LIFT ASSIST SYSTEM.
  - 4) COVER SHALL HAVE DIAMOND PLATE FINISH.

**A** HATCH  
 S-019 1/2" = 1'-0"  
 (SLUDGE PUMP-OUT #1 SHOWN, SLUDGE PUMP-OUT #4 SIMILAR)



**9** W-BEAM TO WALL CONNECTION  
 S-019 3" = 1'-0"



**B** GRATING CORNER  
 S-019 3" = 1'-0"

- LEGEND**
- OUTLINE OF FOOTING OR WALL BELOW OR BEYOND
  - o o LIMITS OF RAILING SYSTEM WITHOUT TOE PLATES (SEE CIVIL PLANS)
  - o o STAINLESS STEEL (316) CHAINS, CONNECTED TO RAILING POST (SEE CIVIL PLANS)
  - XXXX HATCH

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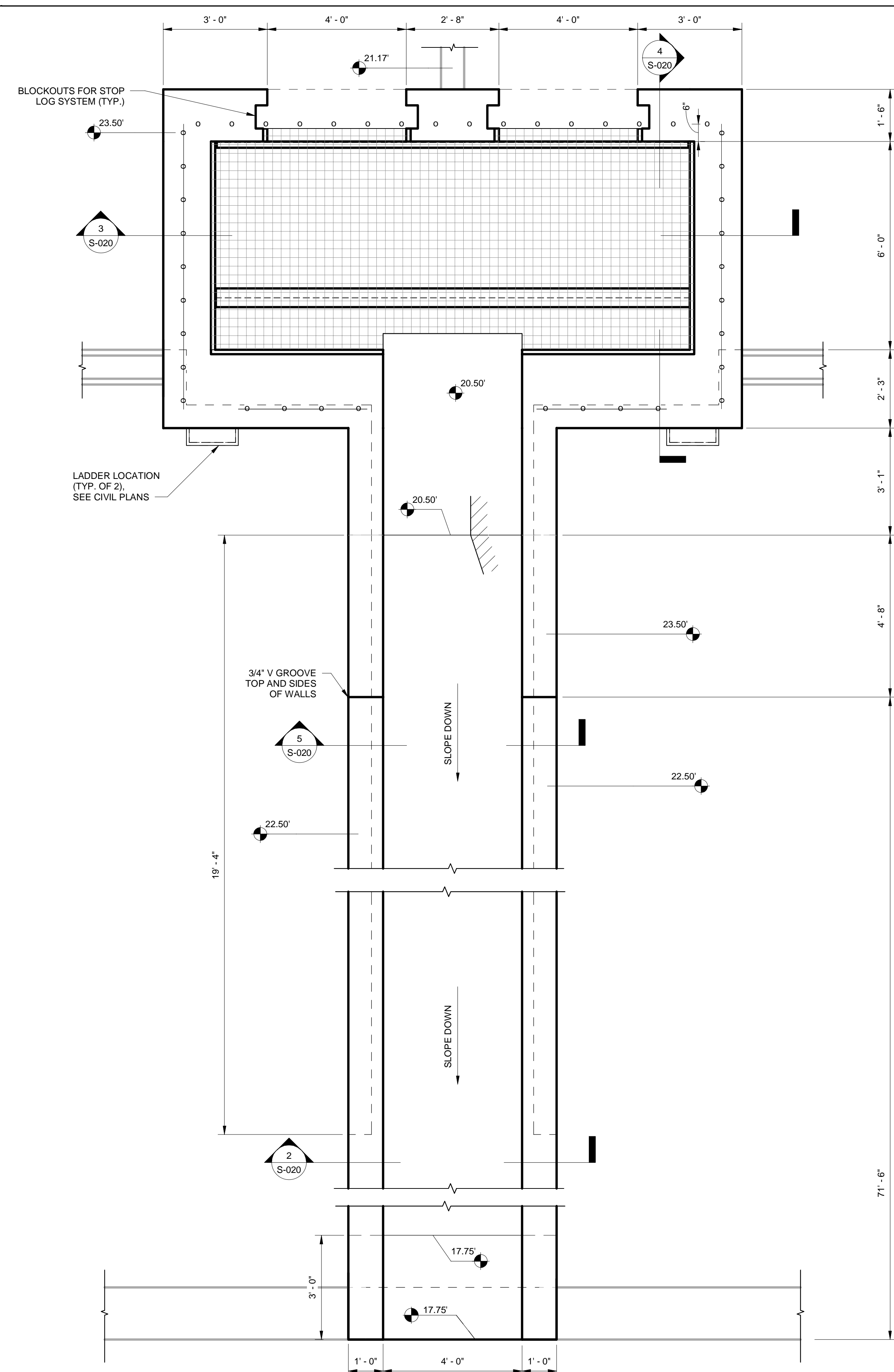
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 TEL: 561-845-0665 FAX: 561-8638175 WWW.KIMLEY-HORN.COM CA 00000696

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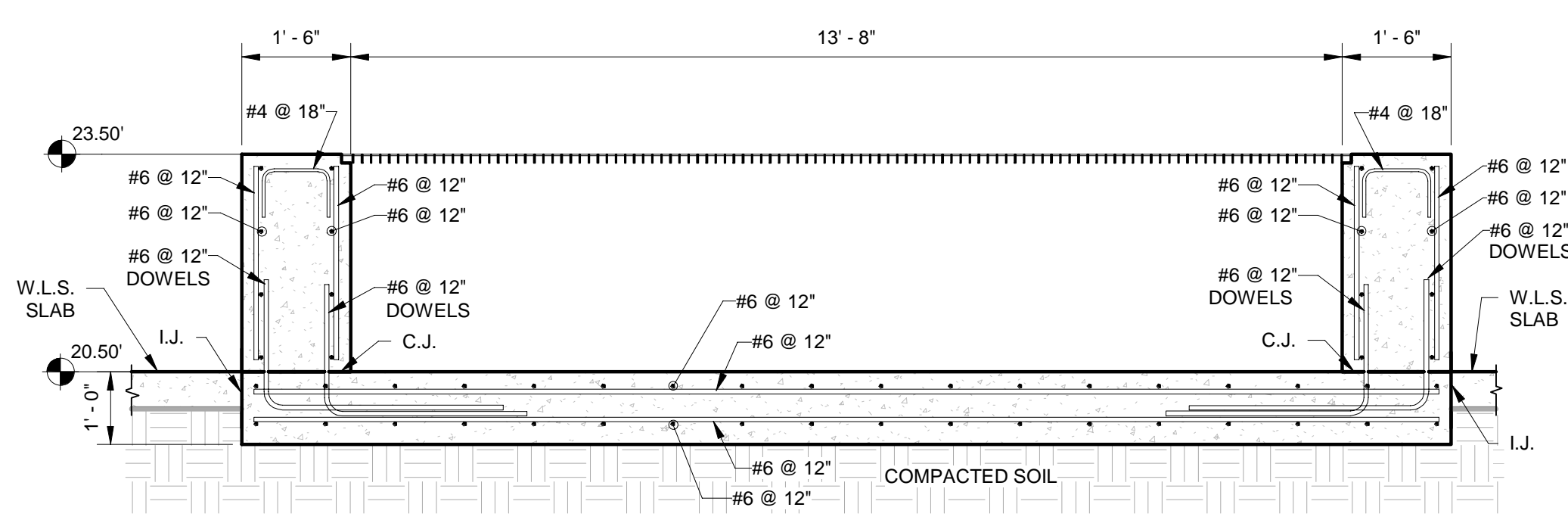
JERRY MARCUS PICCOLO, P.E.  
 FLORIDA P.E. NO. 80484  
 DATE:

**SLUDGE PUMP-OUT STRUCTURE - GRATING**

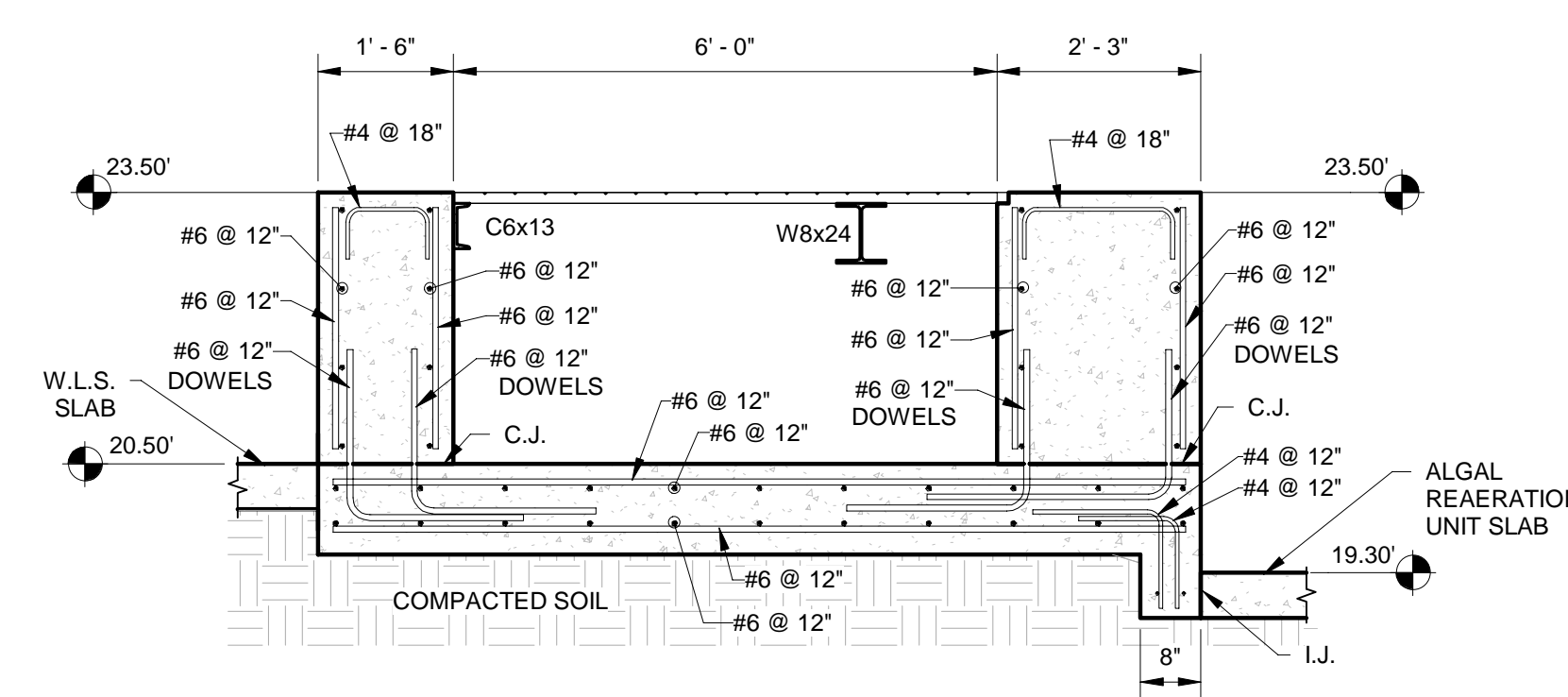
PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-019



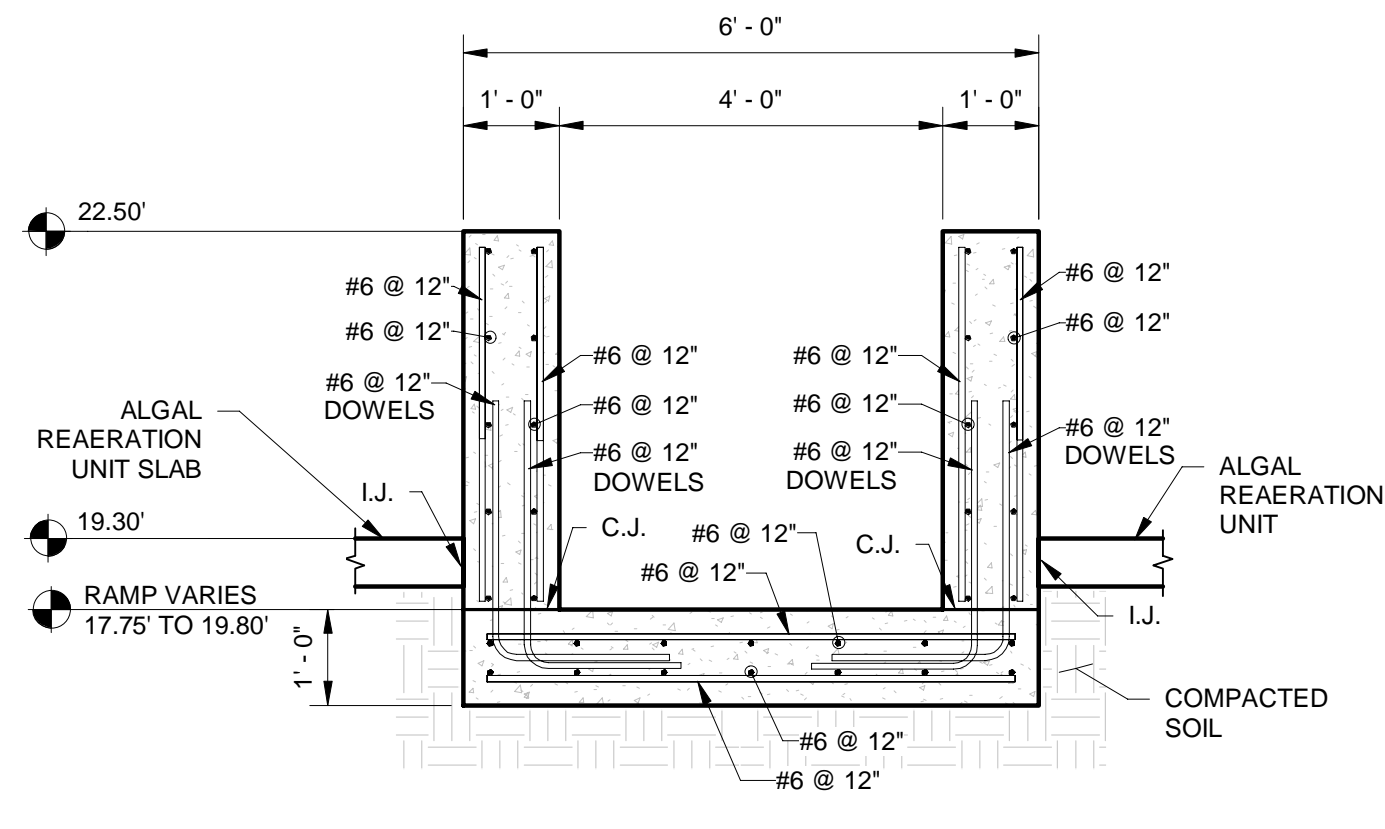
**1** W.L.S. DEWATERING FLUME-PLAN  
S-020 1/2" = 1'-0"



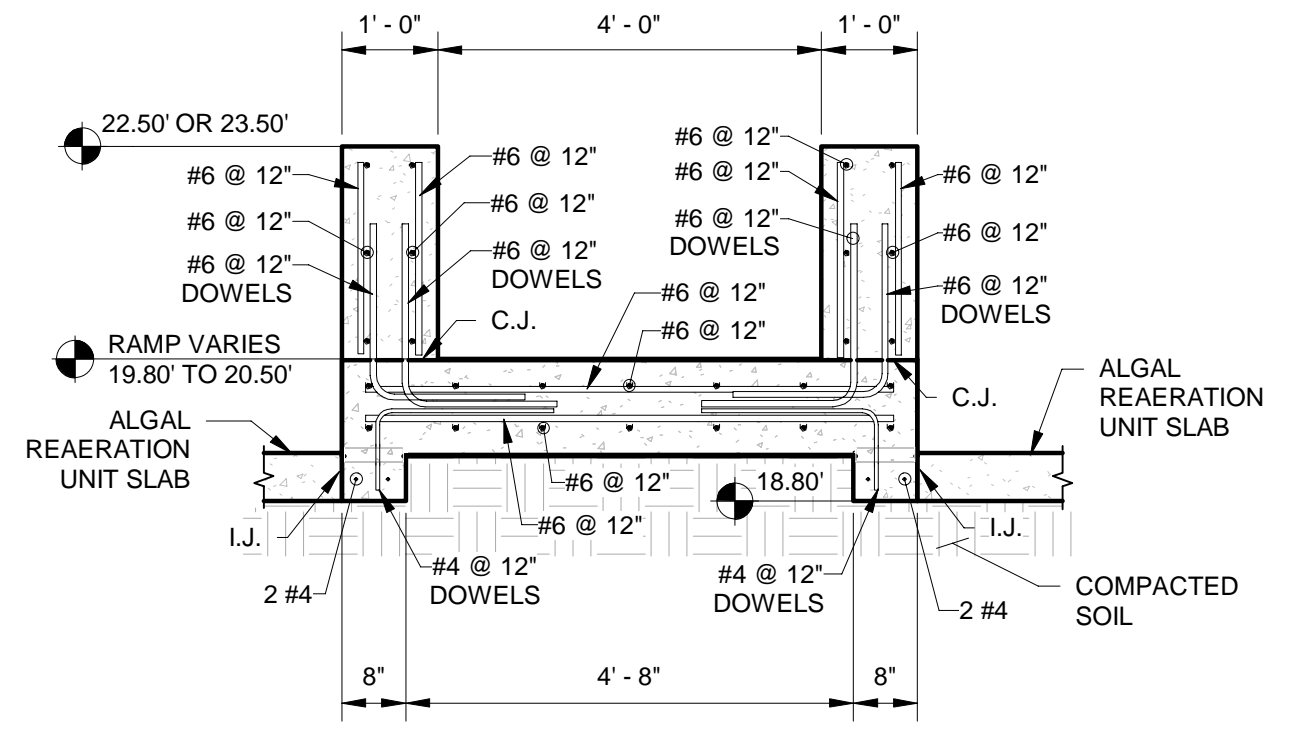
**3** SECTION LOOKING WEST  
S-020 1/2" = 1'-0"



**4** SECTION LOOKING NORTH  
S-020 1/2" = 1'-0"



**2** SECTION  
S-020 1/2" = 1'-0"



**5** SECTION  
S-020 1/2" = 1'-0"

APPROXIMATE QUANTITIES *		
STRUCTURE	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
W.L.S. DEWATERING FLUME #1	52	9,800
W.L.S. DEWATERING FLUME #2	52	9,800

\* SEE BID ITEM NOTES ON SHEET S-002

- LEGEND**
- LIMITS OF RAILING SYSTEM WITHOUT TOE PLATES (SEE CIVIL PLANS)
  - STAINLESS STEEL (316) CHAINS, CONNECTED TO RAILING POST (SEE CIVIL PLANS)
  - GRATING

**NOTE:**  
1) SEE TYPICAL DETAILS SHEETS FOR WALL JOINTING CRITERIA, ISOLATION JOINT DETAILS, CONSTRUCTION JOINT DETAILS, AND STOP LOG BLOCKOUT DETAILS.

NOT FOR CONSTRUCTION:  
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TEL: 561-845-0665 FAX: 561-8638175 WWW.KIMLEY-HORN.COM CA 00000696

DESIGNED BY: GNH DRAWN BY: CL CHECKED BY: AGF APPROVED BY: JP3

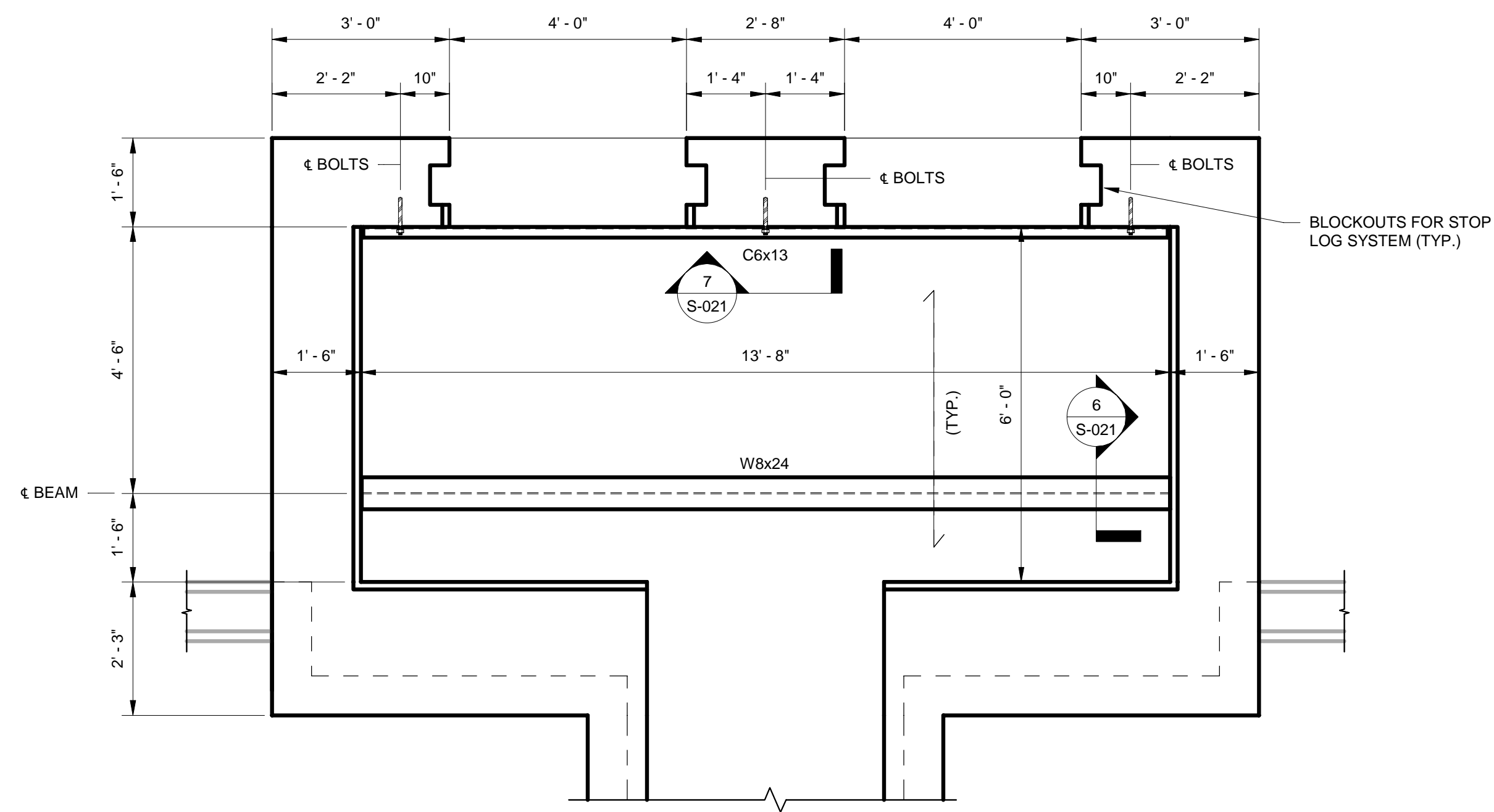
MOORHEN MARSH LEAPS™

JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

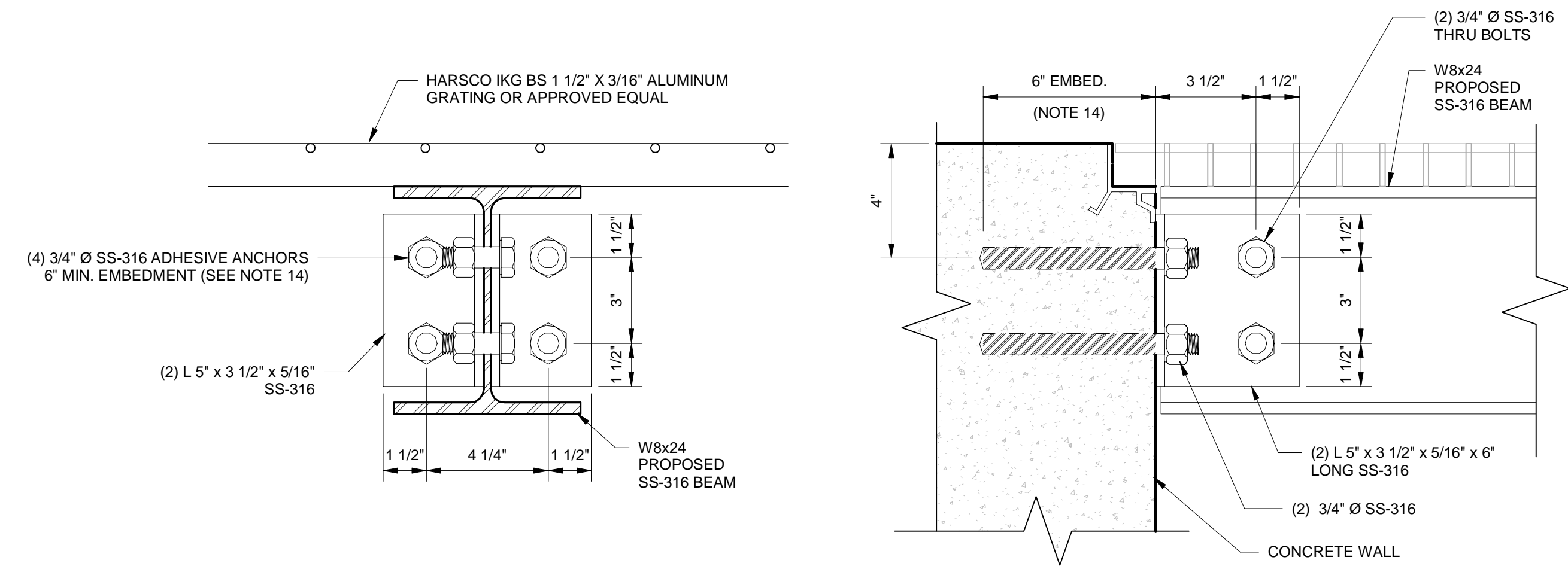
W.L.S. DEWATERING  
FLUME

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ALL ELEVATIONS ON THIS PROJECT.

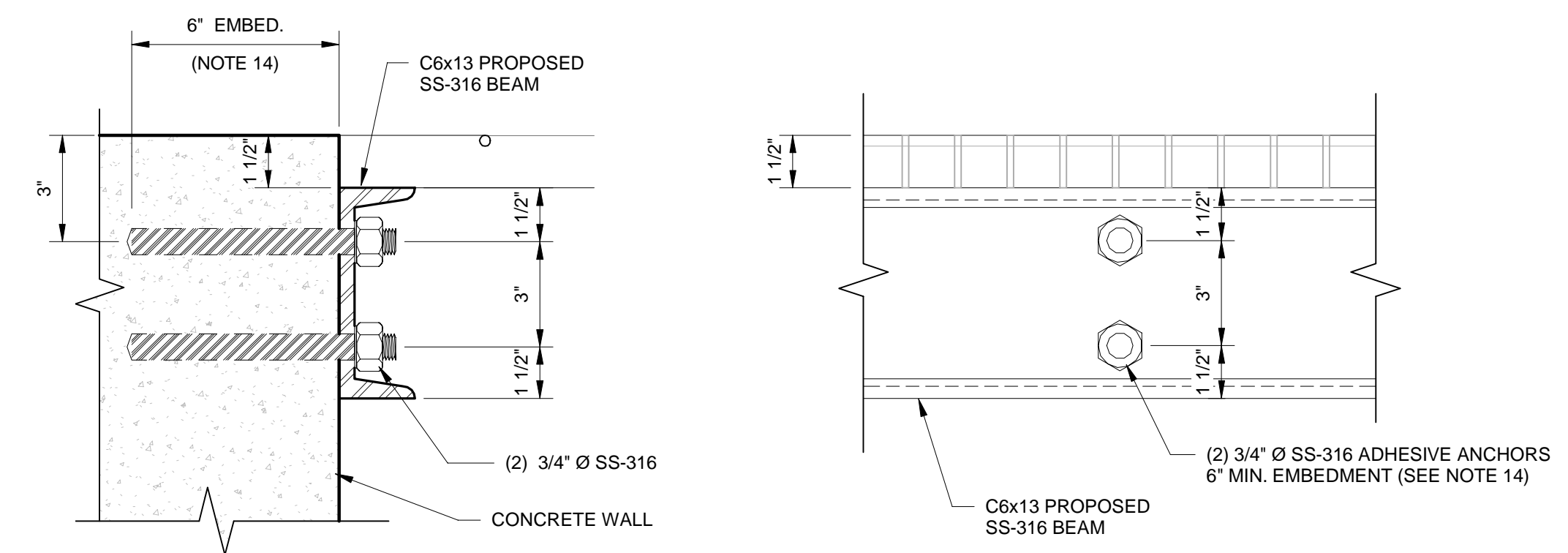
PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-020



**1** W.L.S. DEWATERING FLUME GRATING - FRAMING PLAN  
S-021 1/2" = 1'-0"



**6** W-BEAM TO WALL CONNECTION DETAILS  
S-021 3" = 1'-0"



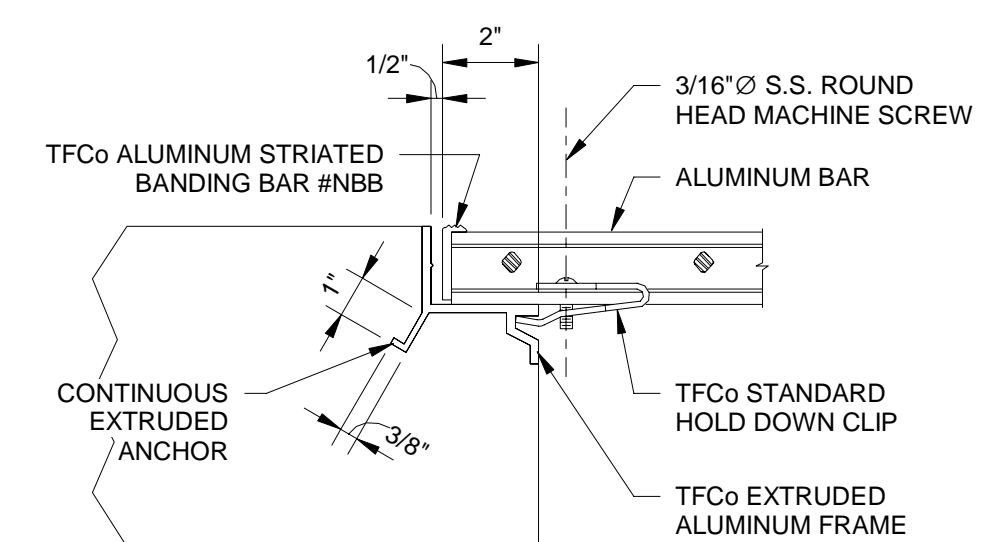
**7** C-CHANNEL TO WALL CONNECTION DETAILS  
S-021 3" = 1'-0"

**FABRICATION NOTES:**

- 1) ALUMINUM GRATING SHALL BE, ALLOY 6063-T6, WITH SWAGED CROSS BARS SPACED ON 4" CENTERS. BEARING BARS SHALL BE SPACED ON 1 3/16" CENTERS. TOP SURFACE OF BEARING BARS SHALL BE STRIATED TO PROVIDE A NON-SLIP SURFACE.
- 2) GRATING SHALL BE DESIGNED TO SUPPORT A MINIMUM UNIFORM LOAD OF 100 POUNDS PER SQUARE FOOT WITH A MAXIMUM DEFLECTION OF 1/4". THE MAXIMUM FIBER STRESS SHALL NOT EXCEED THAT WHICH IS ALLOWED BY THE ALUMINUM ASSOCIATION.
- 3) STANDARD INSTALLATION CLEARANCES AND TOLERANCES SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT METAL BAR GRATING MANUAL PUBLISHED BY THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS.
- 4) ALUMINUM FRAMES EMBEDDED IN CONCRETE SHALL INCORPORATE A RECESS UNDER THE HORIZONTAL BEARING LEG TO RECEIVE THE HOLD DOWN FASTENERS. THE FRAMES SHALL BE TF1.25A THRU TF2.50A AS MANUFACTURED BY THOMPSON FABRICATING, LLC (BIRMINGHAM, AL), OR APPROVED EQUAL.
- 5) INSTALL ALUMINUM CLAMPS OR CLIPS TO ANCHOR THE GRATING SECURELY TO SUPPORTS. A MINIMUM OF 4 FASTENERS PER PANEL SHALL BE PROVIDED, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- 6) CUTOUTS FOR CIRCULAR OBSTRUCTIONS ARE TO BE AT LEAST 2" LARGER IN DIAMETER THAN THE OBSTRUCTION. CUTOUTS FOR ALL PIPING 2" IN DIAMETER OR LESS SHALL BE MADE IN THE FIELD. BAND ALL ENDS OF GRATING.
- 7) PAINT ALL STAINLESS STEEL SURFACES IN CONTACT DISSIMILAR METALS WITH A SHOP COAT OF BITUMINOUS PAINT.
- 8) ALL BRACING ANGLES, SHALL BE STAINLESS STEEL 316.
- 9) STAINLESS STEEL BOLTS: ASTM F593, TYPE 316
- 10) ADHESIVE ANCHORS: ASTM A193 GRADE B8M, STAINLESS STEEL THREADED ROD.
- 11) STAINLESS STEEL NUTS: ASTM F594 TYPE 316
- 12) STAINLESS STEEL WASHERS: COMPATIBLE WITH BOLTS, NUTS AND THREADED RODS
- 13) STAINLESS STEEL 316 WASHERS REQUIRED AT ALL BOLTED CONNECTIONS.
- 14) ADHESIVE BONDING MATERIAL SHALL BE TYPE HV IN ACCORDANCE WITH FDOT STANDARD SPECIFICATION SECTION 937.

**NOTE A:**

CONTRACTOR SHALL COORDINATE DIMENSIONS WITH GRATING MANUFACTURER TO ADJUST TOP OF WALL HEIGHT, AS NEEDED, TO PROVIDE FLUSH WALKING SURFACES BETWEEN CONCRETE AND ALUMINUM GRATING AND HATCHES.



**8** GRATING CORNER  
S-021 3" = 1'-0"

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								GNH				CL				AGF				JP3			

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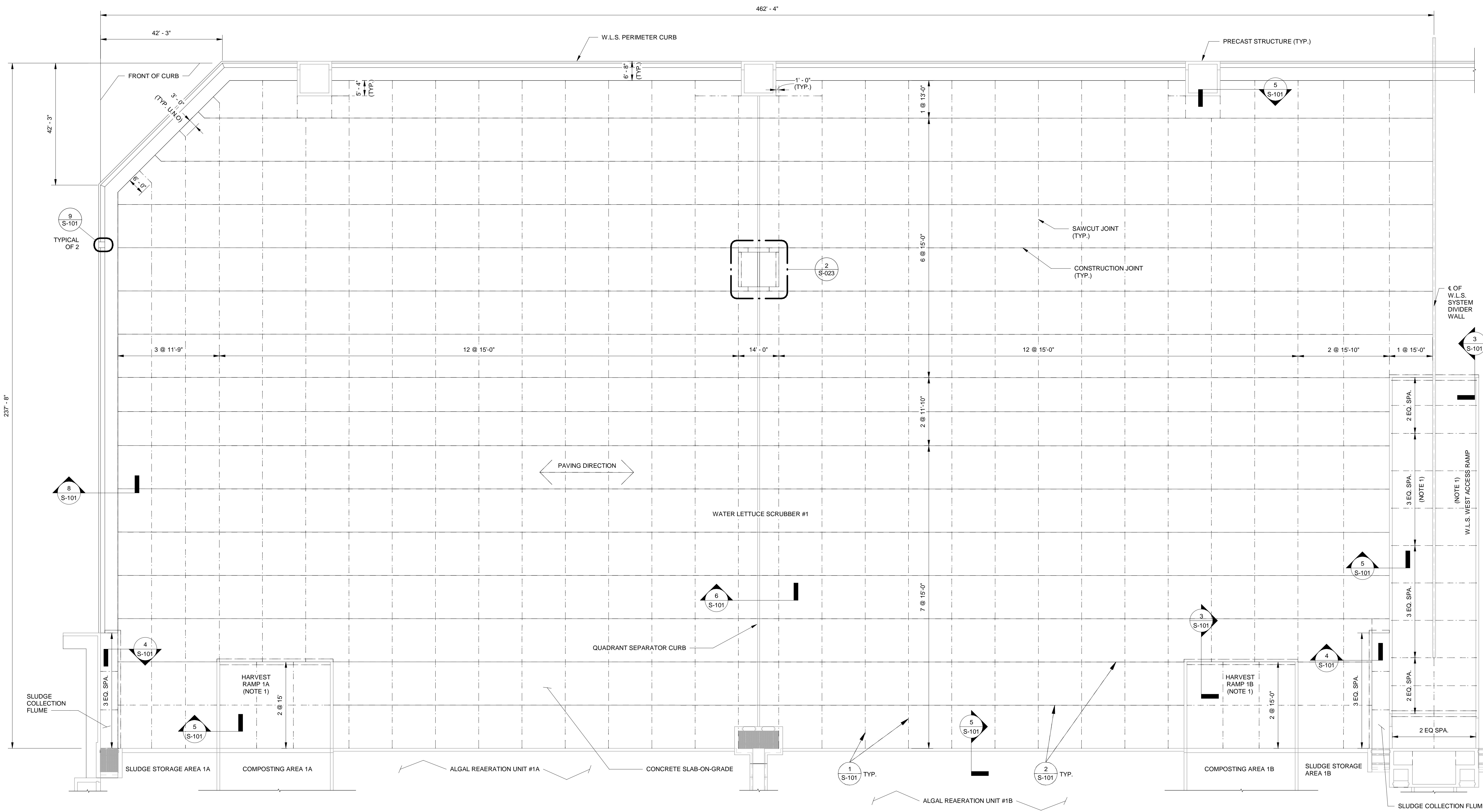
JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

W.L.S. - DEWATERING  
FLUME - GRATING

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PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-021





1 WATER LETTUCE SCRUBBER - JOINTING PLAN  
 S-022 1/16" = 1'-0" (SOUTH AREA SHOWN, NORTH AREA SIMILAR)

NOTES:  
 1) RAMP SURFACE SHALL RECEIVE A ROUGHENED SURFACE WITH A 1/4" AMPLITUDE.

LEGEND  
 - - - - - SAWCUT JOINT  
 - - - - - CONSTRUCTION JOINT  
 - - - - - THICKENED EDGE AT CONSTRUCTION JOINT

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GNH				CL				AGF				JP3			
NUMBER	REVISIONS	REVISED BY	CHECKED BY	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	NUMBER	REVISIONS	REVISED BY	CHECKED BY	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY

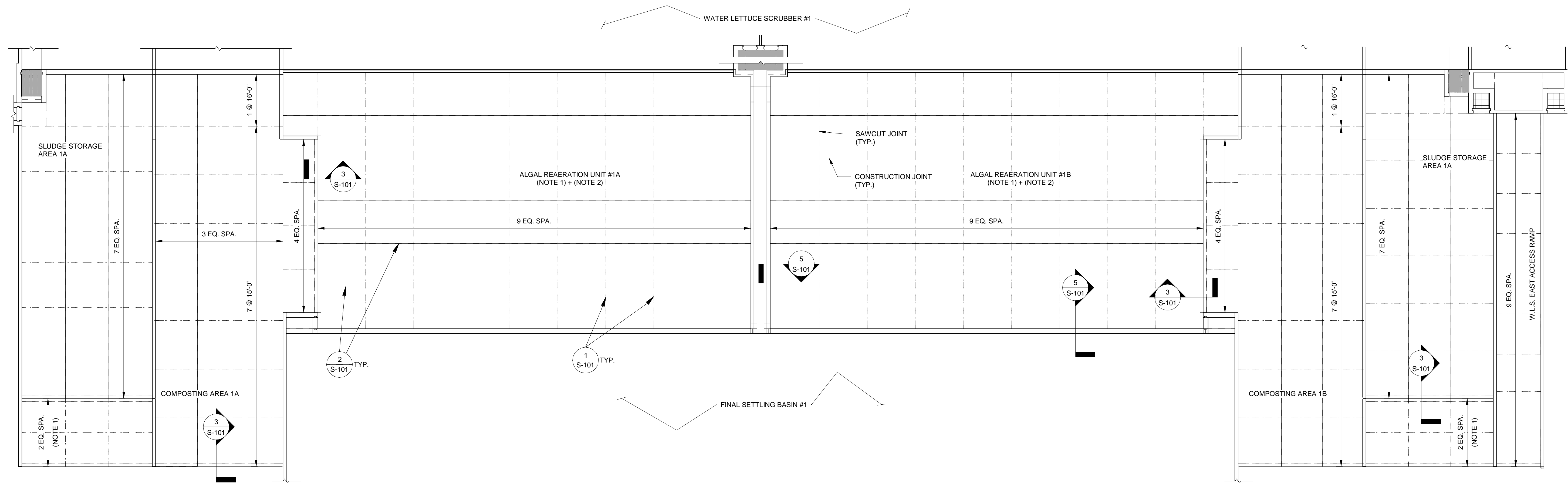
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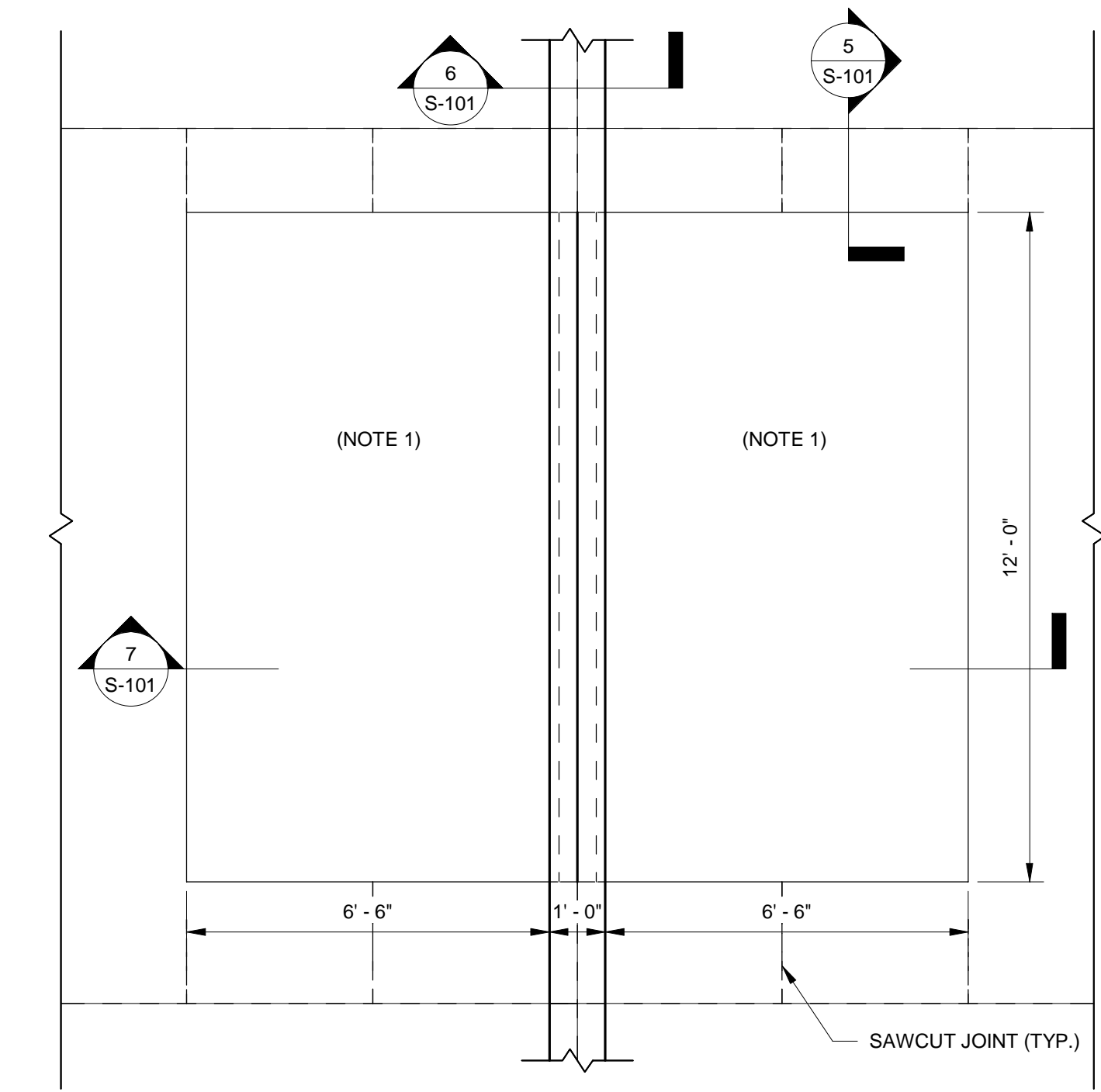
JERRY MARCUS PICCOLO, P.E.  
 FLORIDA P.E. NO. 80484  
 DATE:

W.L.S. JOINTING PLAN  
 (1 OF 2)

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-022



**1** SLUDGE STORAGE AREAS / COMPOSTING AREAS / ALGAL REAERATION UNITS - JOINTING PLAN  
 S-023 1/16" = 1'-0" (SOUTH AREAS SHOWN, NORTH AREAS SIMILAR)



**2** W.L.S. MOUNTABLE CURB PLAN  
 S-023 3/8" = 1'-0"

**LEGEND**

- SAWCUT JOINT
- CONSTRUCTION JOINT
- THICKENED EDGE AT CONSTRUCTION JOINT

**APPROXIMATE SLAB QUANTITIES \***

SLAB	# OF SLABS	AREA PER SLAB (SF)
WATER LETTUCE SCRUBBER	2	105,000
SLUDGE STORAGE AREA	4	4,800
COMPOSTING AREA	4	6,600
ALGAL REAERATION UNIT	4	10,700
W.L.S. EAST ACCESS RAMP	1	1,500
W.L.S. WEST ACCESS RAMP	1	3,800
SLUDGE COLLECTION FLUME	4	240
W.L.S. ACCESS RAMP WORK AREA	1	240

\* SEE BID ITEM NOTES ON SHEET S-002

**APPROXIMATE CURB QUANTITIES \***

CURB	LENGTH	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
W.L.S. PERIMETER CURB	1200'	292	22,000
W.L.S. MOUNTABLE CURB	N/A	14	1,060

\* SEE BID ITEM NOTES ON SHEET S-002

**NOTES:**  
 1) RAMP AND ALGAL REAERATION UNIT SLAB SURFACES SHALL RECEIVE A ROUGHENED SURFACE WITH A 1/4" AMPLITUDE.  
 2) SEE CIVIL DRAWINGS SHEETS C-4 AND C-5 FOR ALGAL REAERATION UNIT SLAB CONSTRUCTION TOLERANCE CRITERIA. WORK NOT MEETING THE TOLERANCE CRITERIA WILL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

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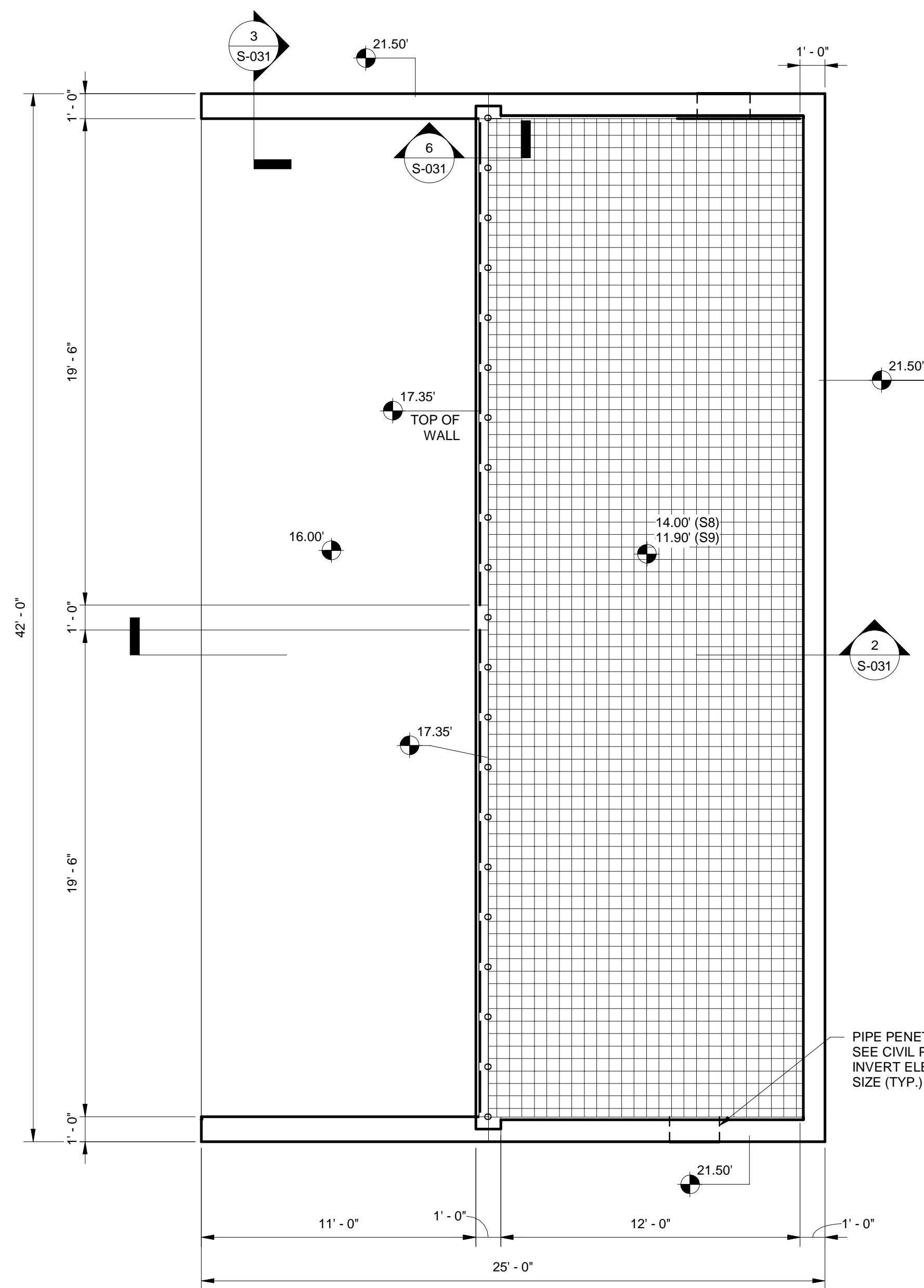
DESIGNED BY	GNH	DRAWN BY	CL	CHECKED BY	AGF	APPROVED BY	JP3
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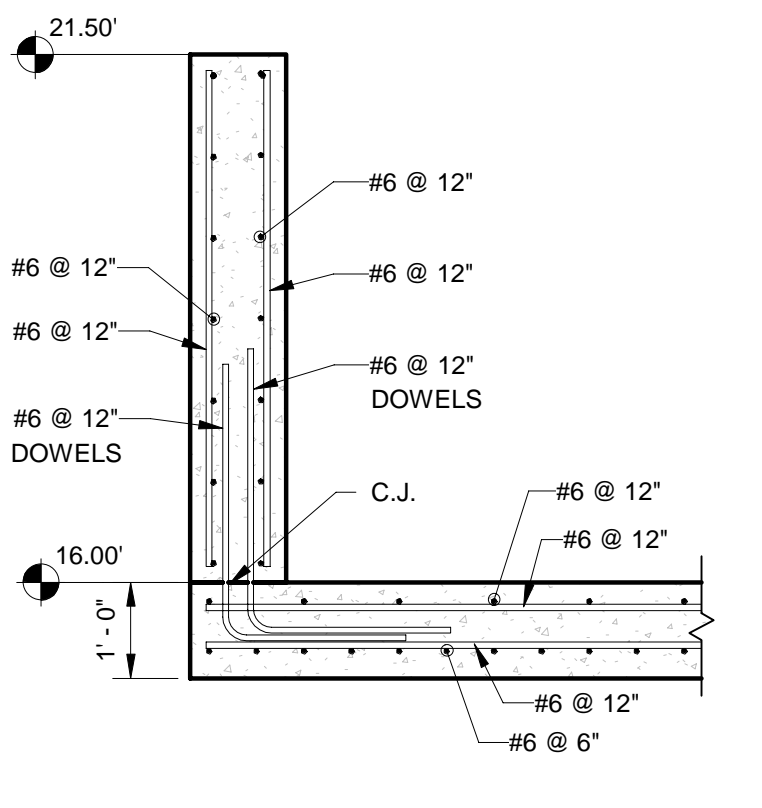
JERRY MARCUS PICCOLO, P.E.  
 FLORIDA P.E. NO. 80484  
 DATE:

**W.L.S. JOINTING PLAN  
 (2 OF 2)**

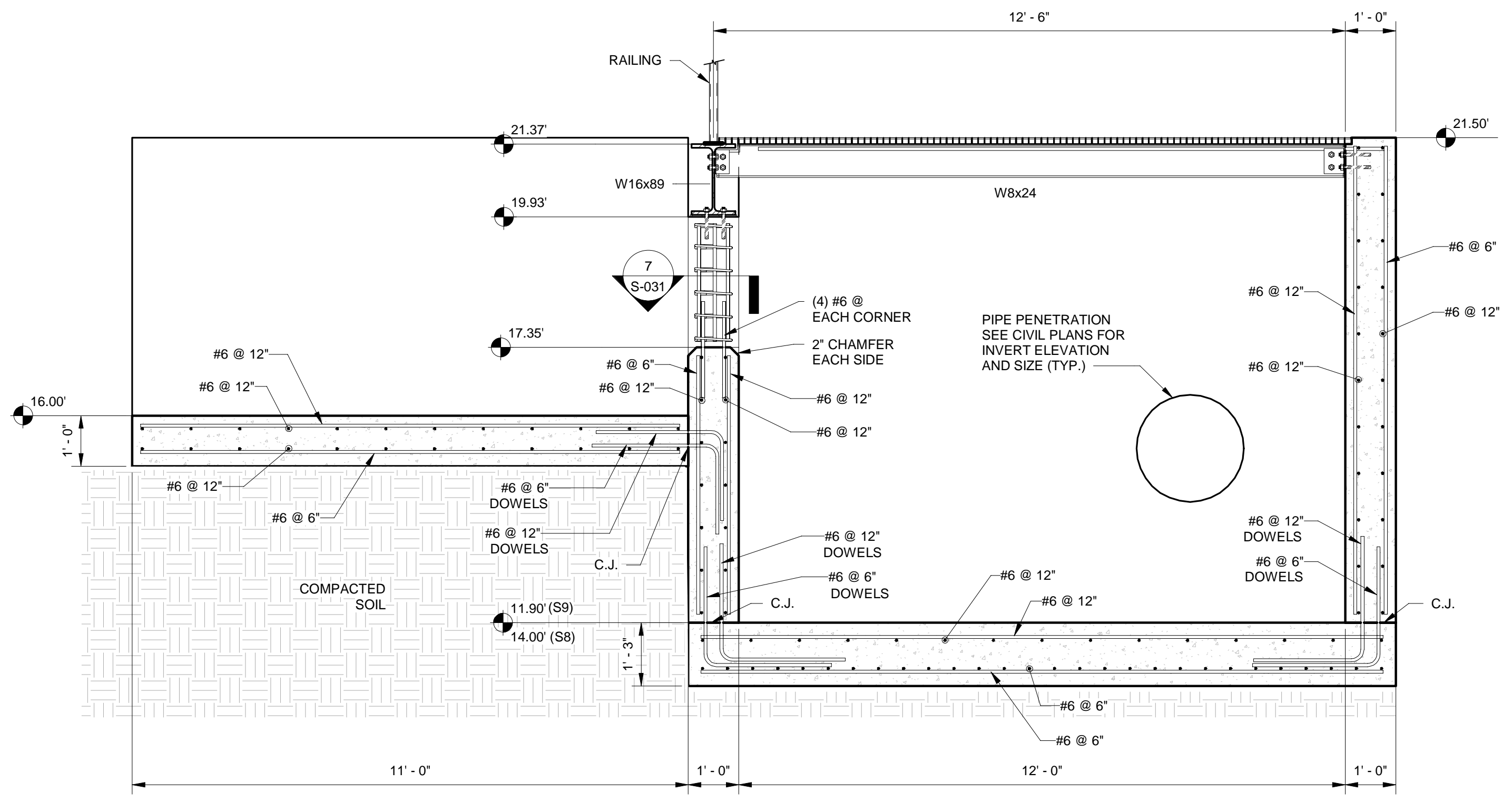
PROJECT NO.	DATE 2/20/2020
SCALE AS NOTED	SHEET S-023



**1** TOP VIEW  
S-031 1/4" = 1'-0"



**3** S8 / S9 - WALL SECTION  
S-031 1/2" = 1'-0"



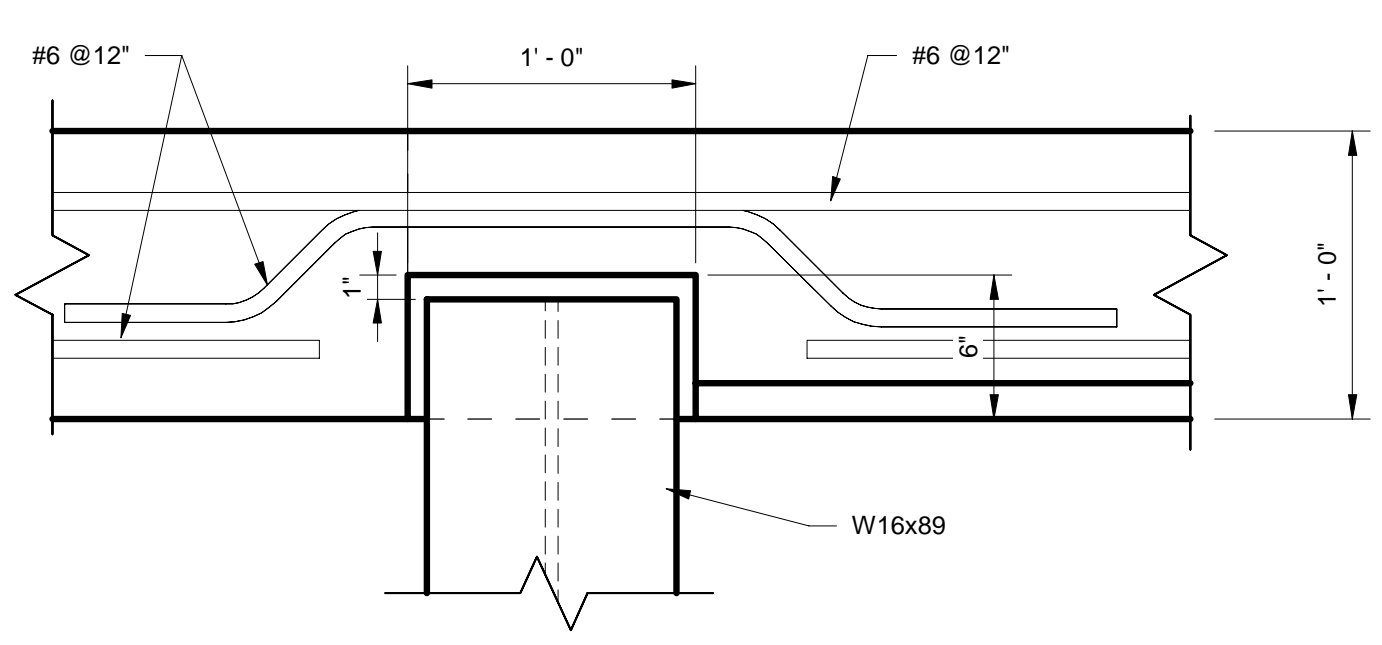
**2** S8 / S9 - SECTION LOOKING NORTH  
S-031 1/2" = 1'-0"

**NOTE:**  
1) SEE TYPICAL DETAILS SHEETS FOR WALL JOINTING CRITERIA, ISOLATION JOINT DETAILS, CONSTRUCTION JOINT DETAILS, AND WALL PENETRATION DETAILS.

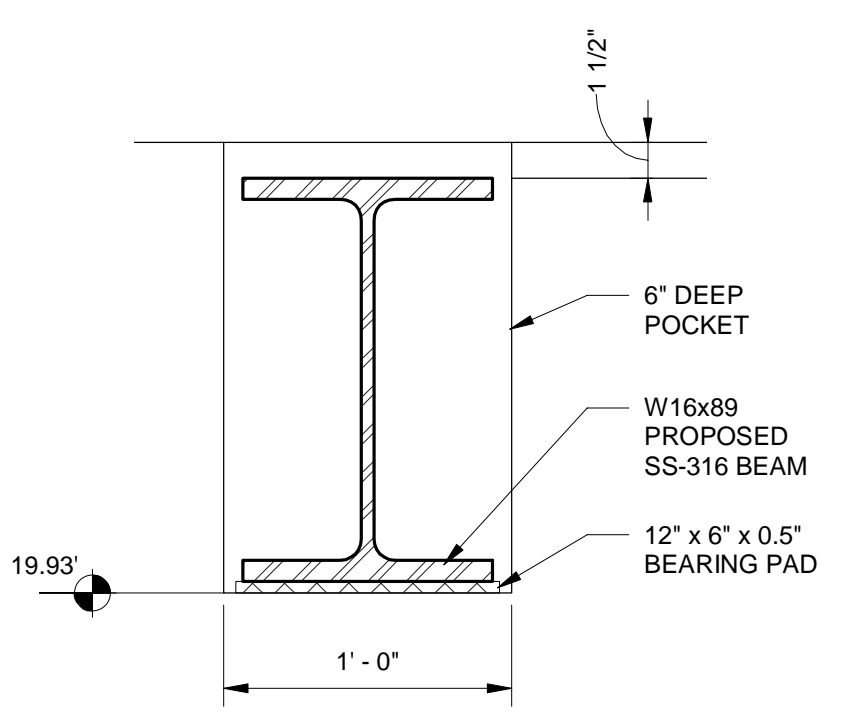
APPROXIMATE QUANTITIES *		
STRUCTURE	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
S8	73	19,000
S9	81	21,000

\* SEE BID ITEM NOTES ON SHEET S-002

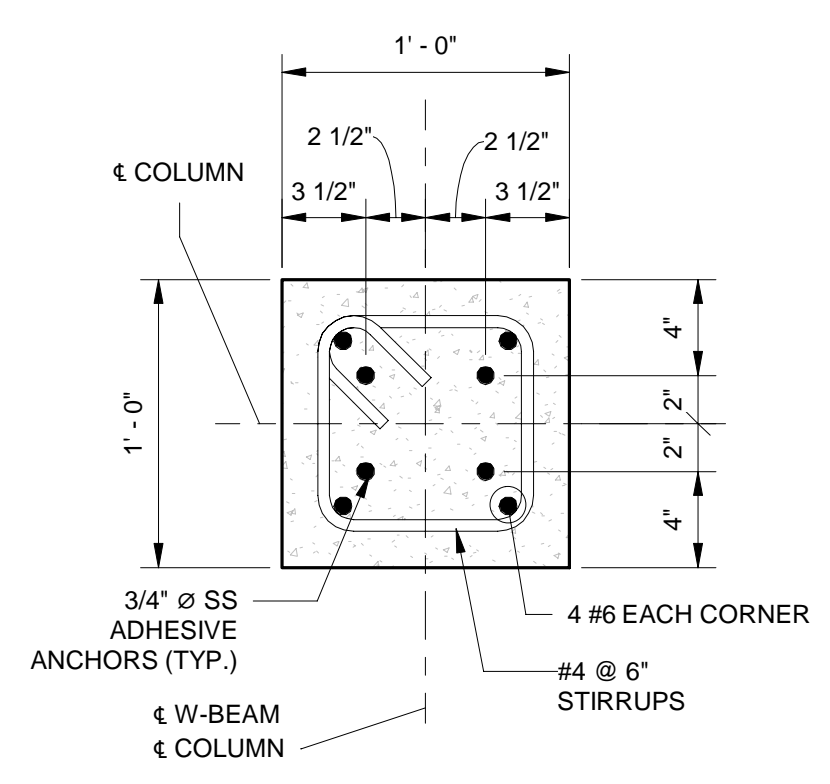
**LEGEND**  
 - - - - - LIMITS OF RAILING SYSTEM WITHOUT TOE PLATES (SEE CIVIL PLANS)  
 [Grid Pattern] GRATING



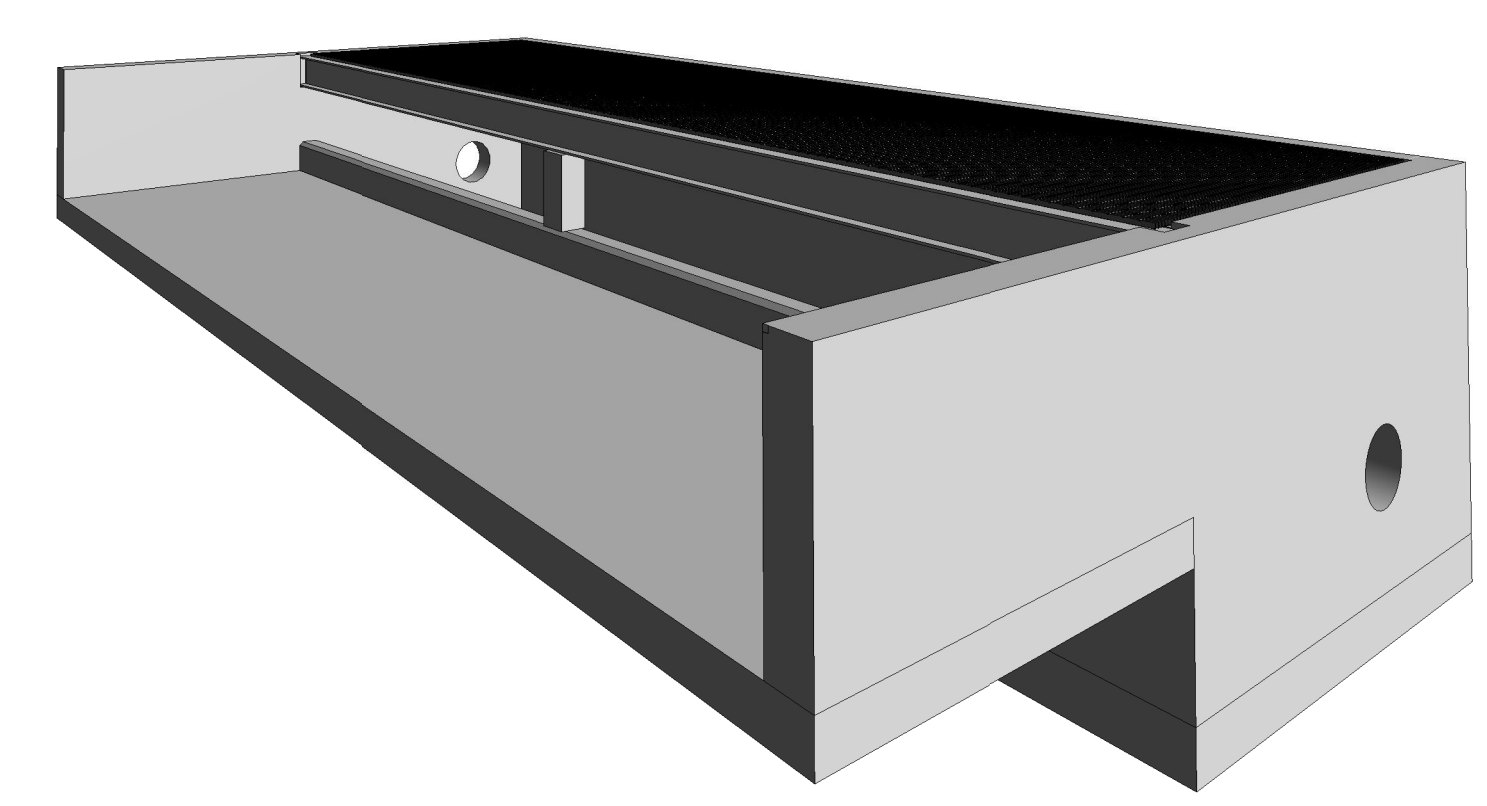
**5** S8 / S9 BEAM POCKET DETAIL  
S-031 1 1/2" = 1'-0"



**6** BEAM POCKET VIEW  
S-031 1 1/2" = 1'-0"



**7** SUPPORTING COLUMN  
S-031 1 1/2" = 1'-0"



**4** ISOMETRIC VIEW S8 / S9  
S-031

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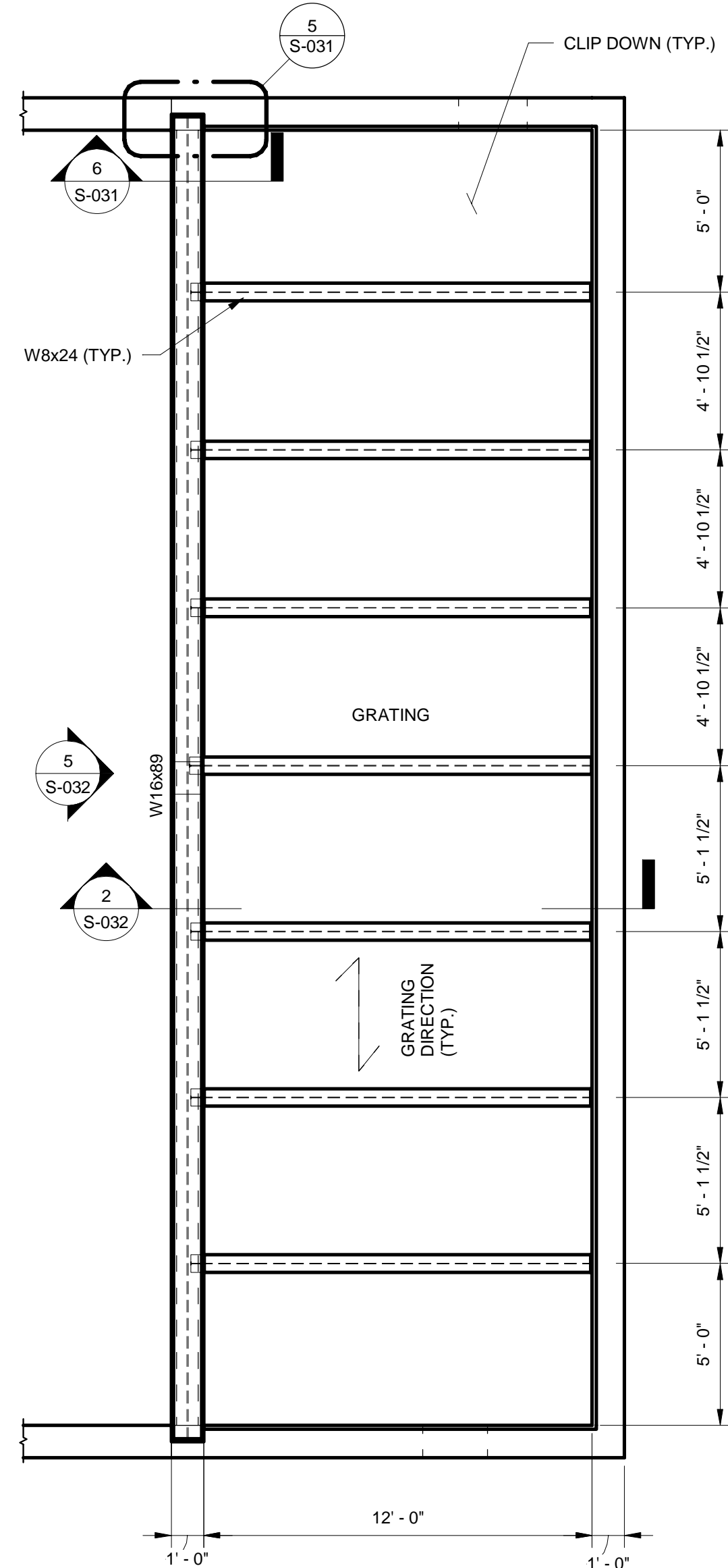
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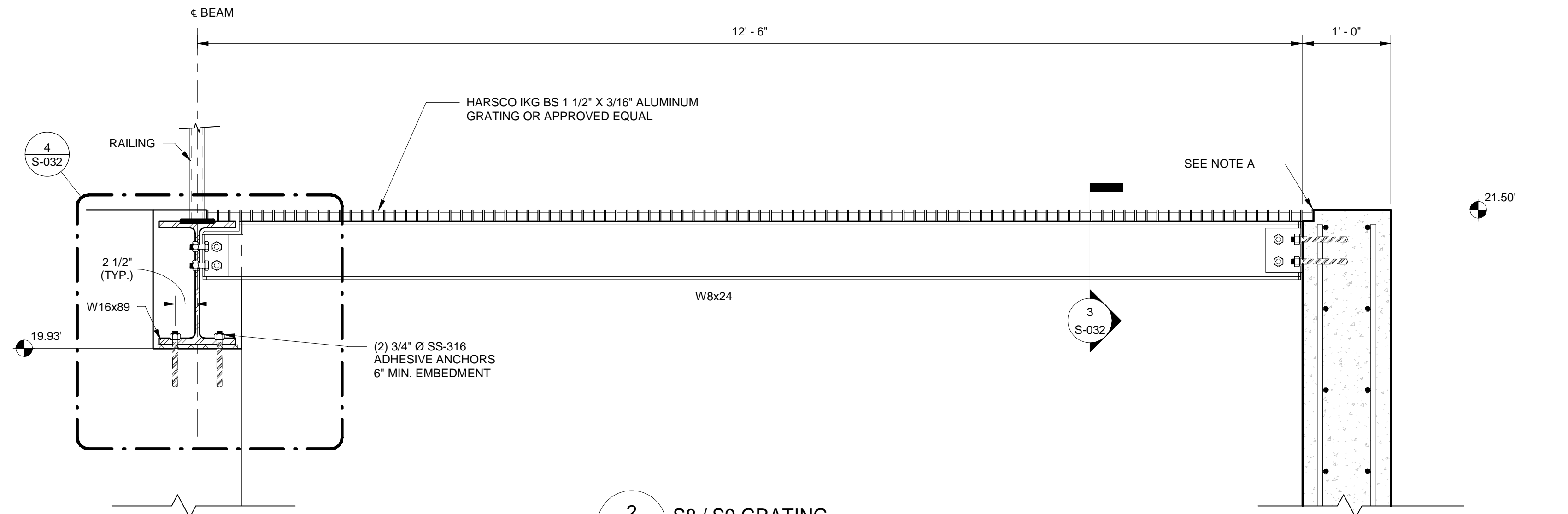
JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

**STRUCTURES S8 / S9**

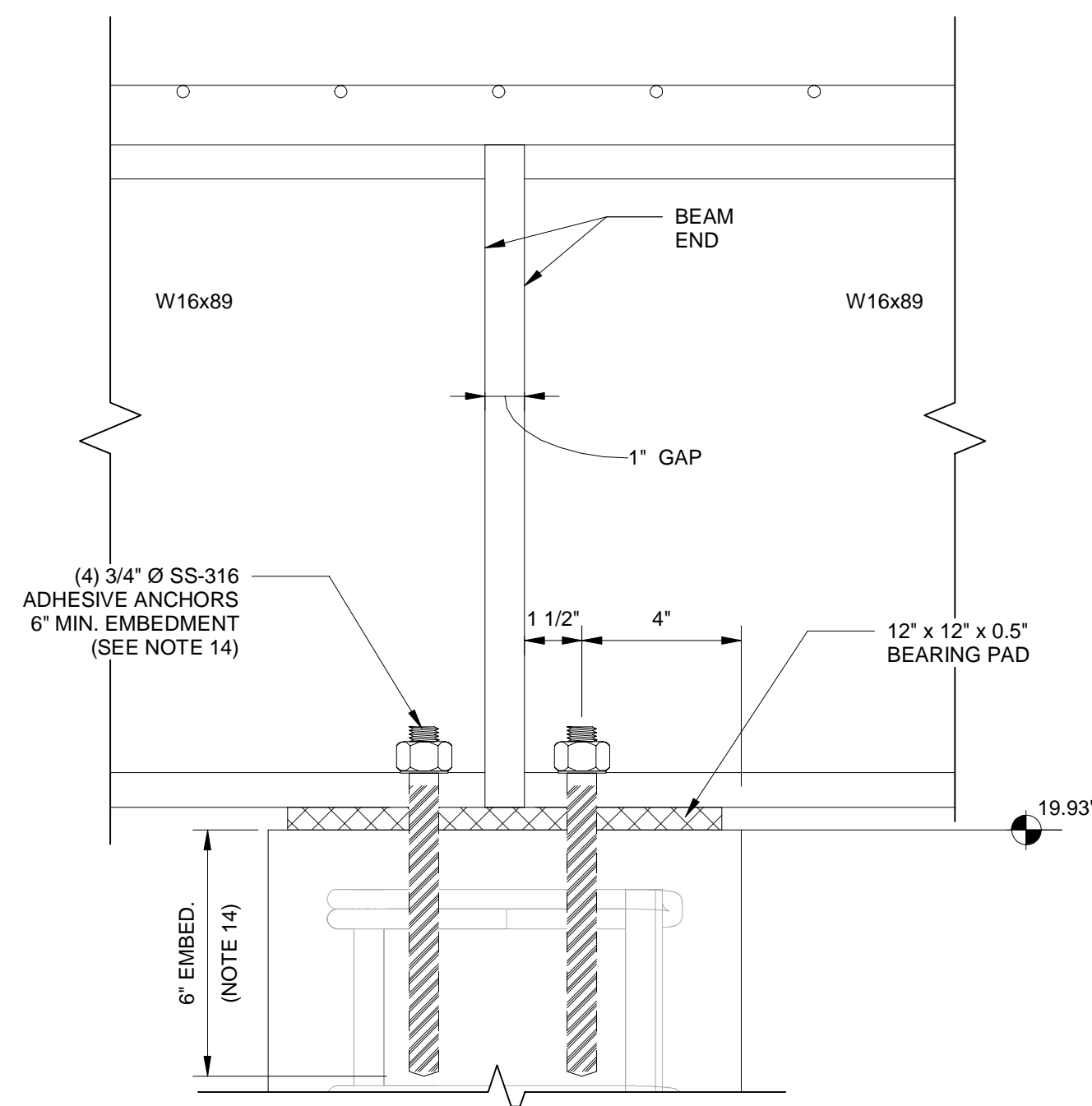
PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	<b>S-031</b>



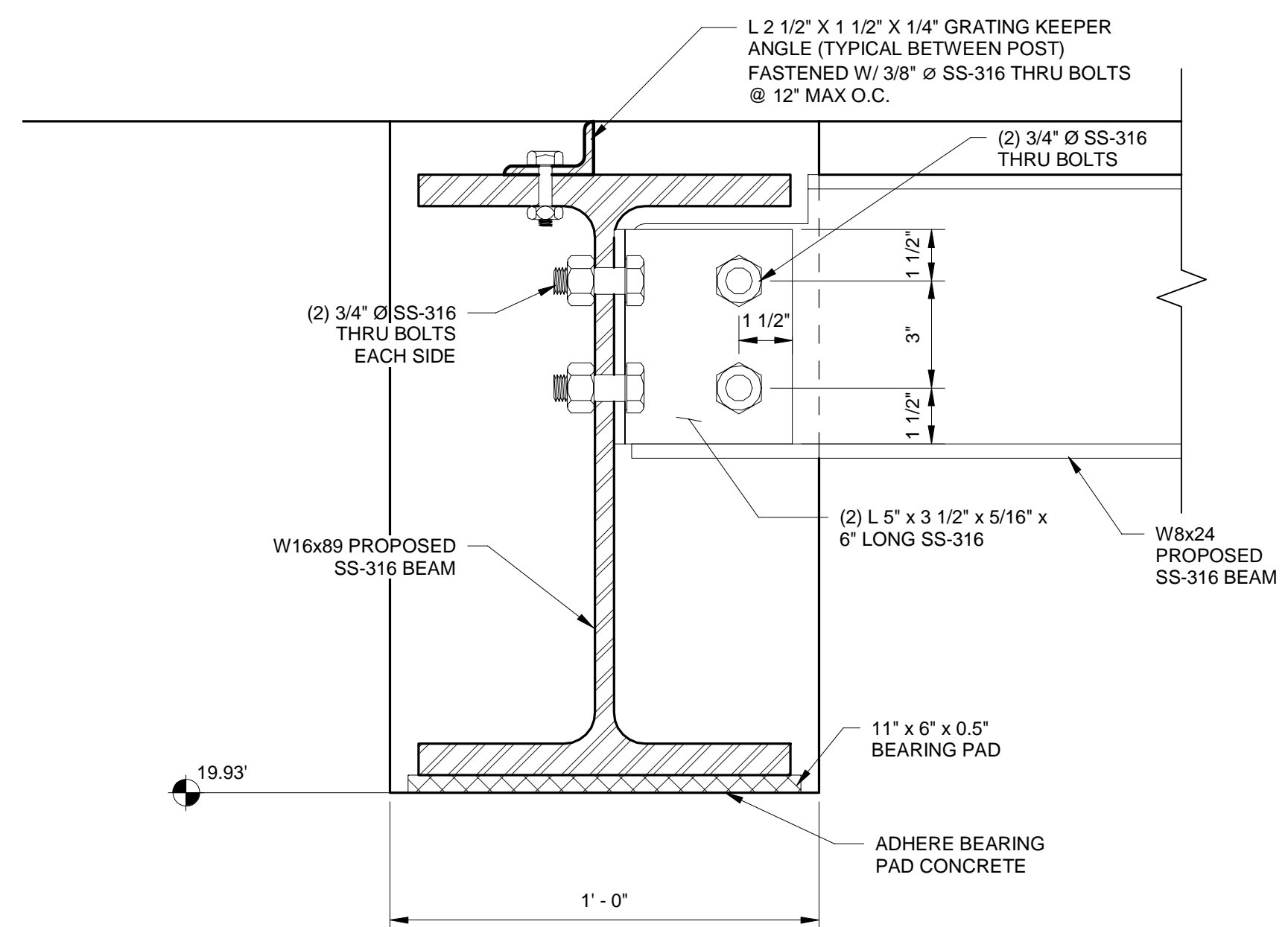
1 TOP VIEW  
1/4" = 1'-0"



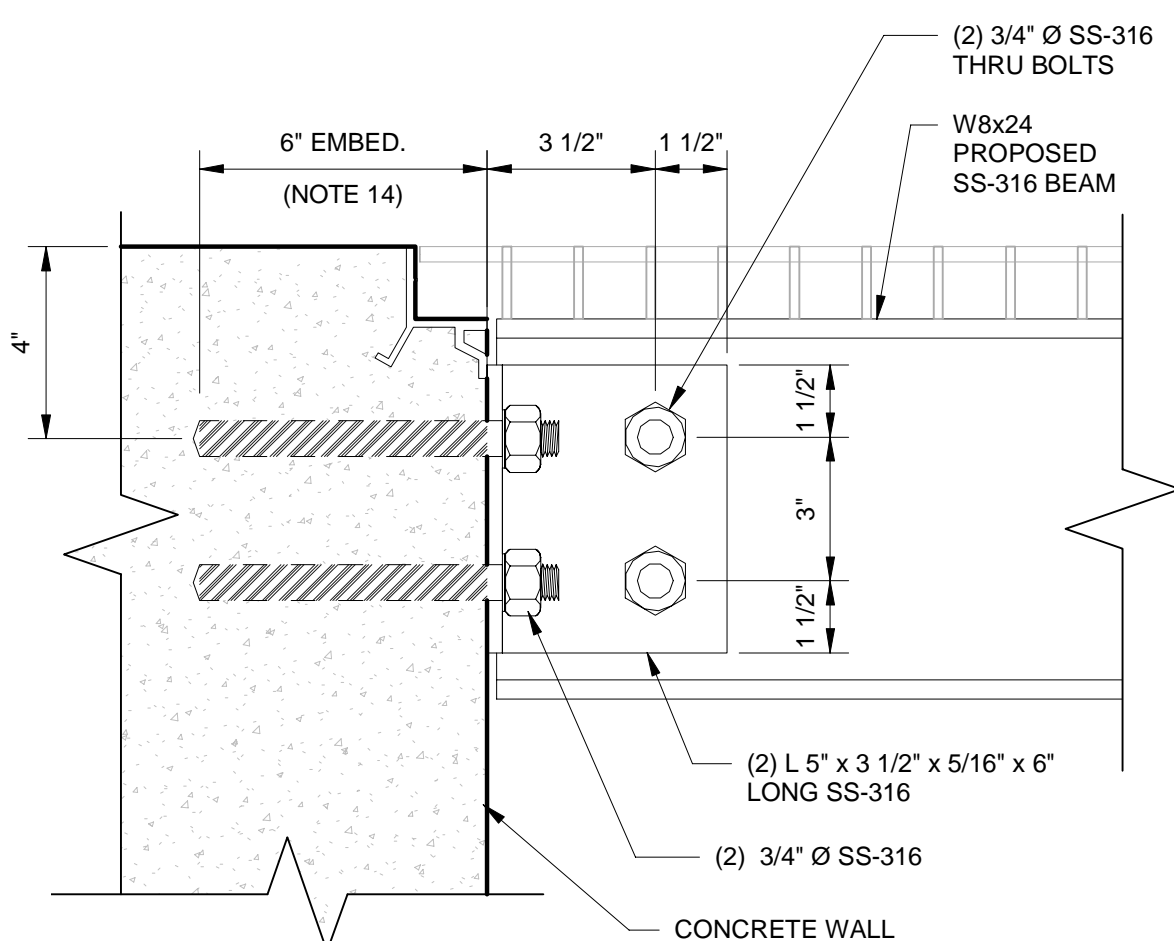
2 S8 / S9 GRATING  
1" = 1'-0"



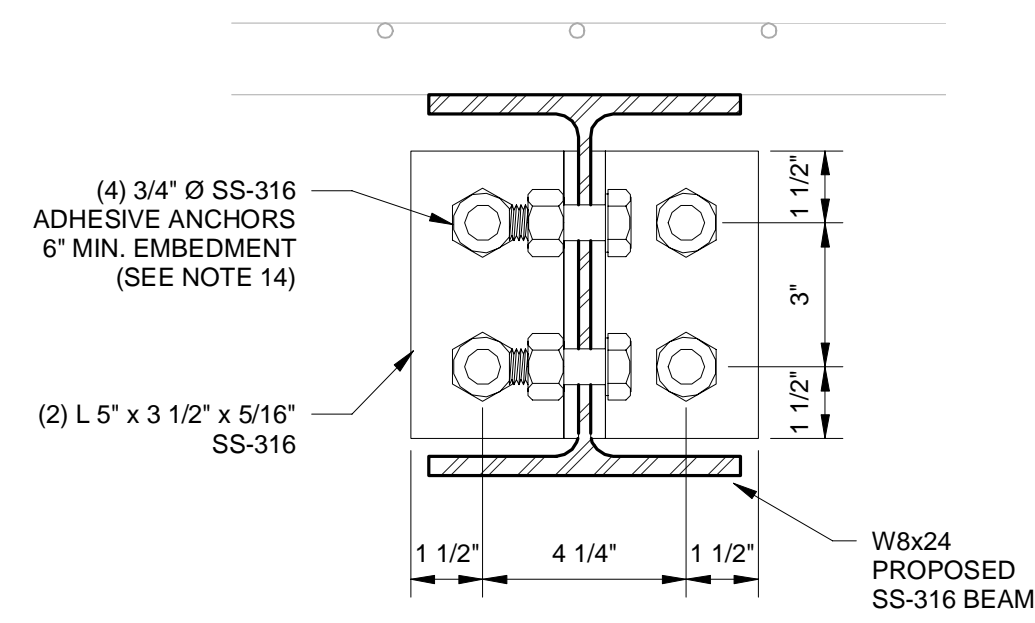
5 CENTER COLUMN DETAIL  
3" = 1'-0"



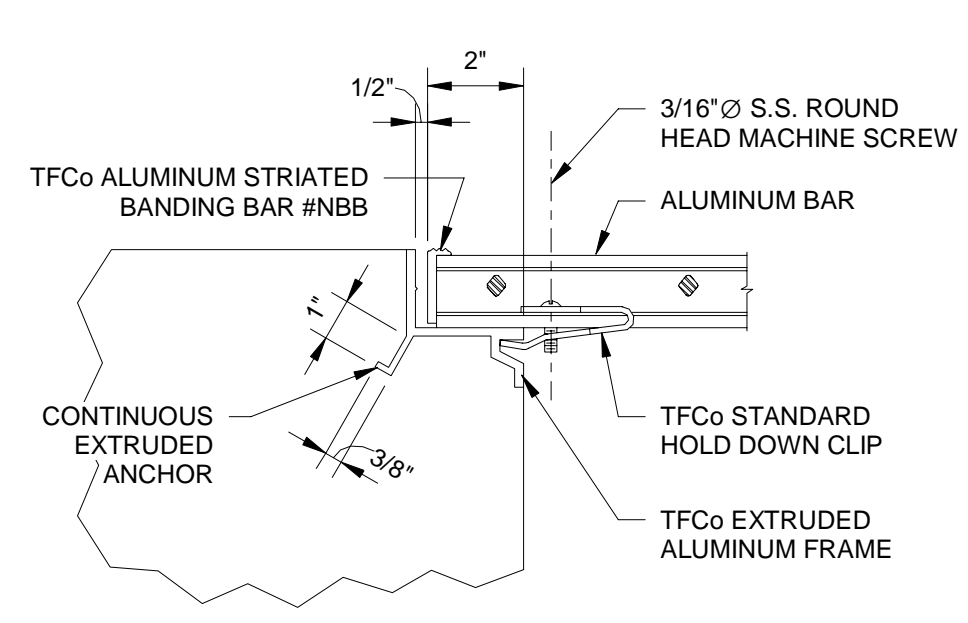
4 TYP. W8x24 TO W16x89 BEAM CONNECTION  
3" = 1'-0"



3 W-BEAM TO WALL CONNECTION S8/S9  
3" = 1'-0"



5 CENTER COLUMN DETAIL  
3" = 1'-0"



6 GRATING CORNER  
3" = 1'-0"

**NOTE A:**  
CONTRACTOR SHALL COORDINATE DIMENSIONS WITH GRATING MANUFACTURER TO ADJUST TOP OF WALL HEIGHT, AS NEEDED, TO PROVIDE FLUSH WALKING SURFACES BETWEEN CONCRETE AND ALUMINUM GRATING AND HATCHES.

- FABRICATION NOTES:**
- ALUMINUM GRATING SHALL BE, ALLOY 6063-T6, WITH SWAGED CROSS BARS SPACED ON 4" CENTERS. BEARING BARS SHALL BE SPACED ON 1 3/16" CENTERS. TOP SURFACE OF BEARING BARS SHALL BE STRIATED TO PROVIDE A NON-SLIP SURFACE.
  - GRATING SHALL BE DESIGNED TO SUPPORT A MINIMUM UNIFORM LOAD OF 100 POUNDS PER SQUARE FOOT WITH A MAXIMUM DEFLECTION OF 1/4". THE MAXIMUM FIBER STRESS SHALL NOT EXCEED THAT WHICH IS ALLOWED BY THE ALUMINUM ASSOCIATION.
  - STANDARD INSTALLATION CLEARANCES AND TOLERANCES SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT METAL BAR GRATING MANUAL PUBLISHED BY THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS.
  - ALUMINUM FRAMES EMBEDDED IN CONCRETE SHALL INCORPORATE A RECESS UNDER THE HORIZONTAL BEARING LEG TO RECEIVE THE HOLD DOWN FASTENERS. THE FRAMES SHALL BE TP1.25A THRU TP2.50A AS MANUFACTURED BY THOMPSON FABRICATING, LLC (BIRMINGHAM, AL), OR APPROVED EQUAL.
  - INSTALL ALUMINUM CLAMPS OR CLIPS TO ANCHOR THE GRATING SECURELY TO SUPPORTS. A MINIMUM OF 4 FASTENERS PER PANEL SHALL BE PROVIDED, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
  - CUTOUTS FOR CIRCULAR OBSTRUCTIONS ARE TO BE AT LEAST 2" LARGER IN DIAMETER THAN THE OBSTRUCTION. CUTOUTS FOR ALL PIPING 2" IN DIAMETER OR LESS SHALL BE MADE IN THE FIELD. BAND ALL ENDS OF GRATING.
  - PAINT ALL STAINLESS STEEL SURFACES IN CONTACT DISSIMILAR METALS WITH A SHOP COAT OF BITUMINOUS PAINT.
  - ALL ANGLES, SHALL BE STAINLESS STEEL 316.
  - STAINLESS STEEL BOLTS: ASTM F593, TYPE 316
  - ADHESIVE ANCHORS: ASTM A193 GRADE B8M, STAINLESS STEEL THREADED ROD.
  - STAINLESS STEEL NUTS: ASTM F594 TYPE 316
  - STAINLESS STEEL WASHERS: COMPATIBLE WITH BOLTS, NUTS AND THREADED RODS
  - STAINLESS STEEL 316 WASHERS REQUIRED AT ALL BOLTED CONNECTIONS.
  - ADHESIVE BONDING MATERIAL SHALL BE TYPE HV IN ACCORDANCE WITH FDOT STANDARD SPECIFICATION SECTION 937.

- BEARING PAD NOTES:**
- BEARING PAD SHALL BE AN UNREINFORCED PLAIN ELASTOMERIC PAD.
  - BEARING PAD SHALL HAVE SHEAR MODULUS (G) OF 95 PSI AND HAVE A SHORING A HARDNESS OF 50.

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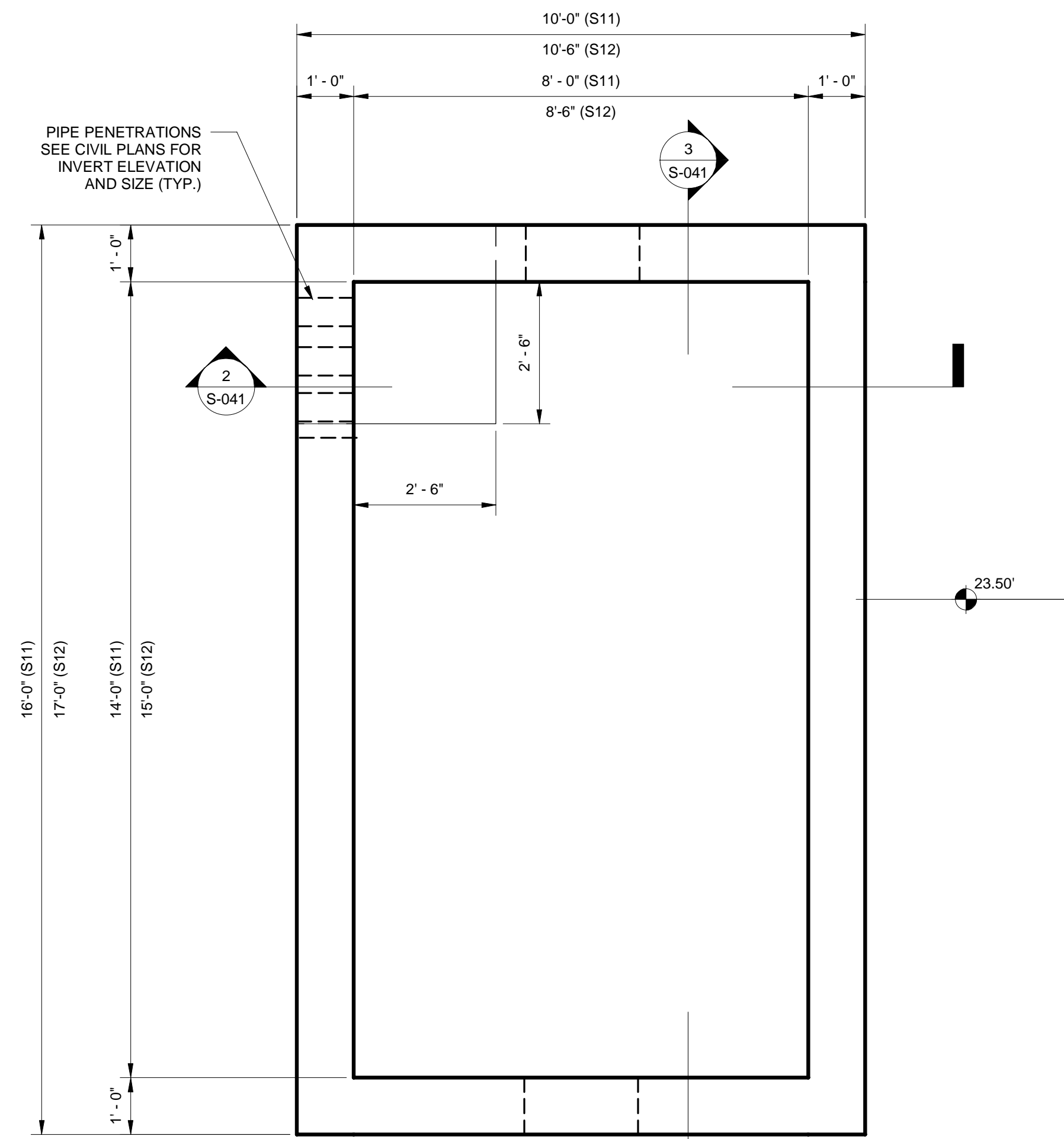
DESIGNED BY: GNH DRAWN BY: CL CHECKED BY: AGF APPROVED BY: JP3

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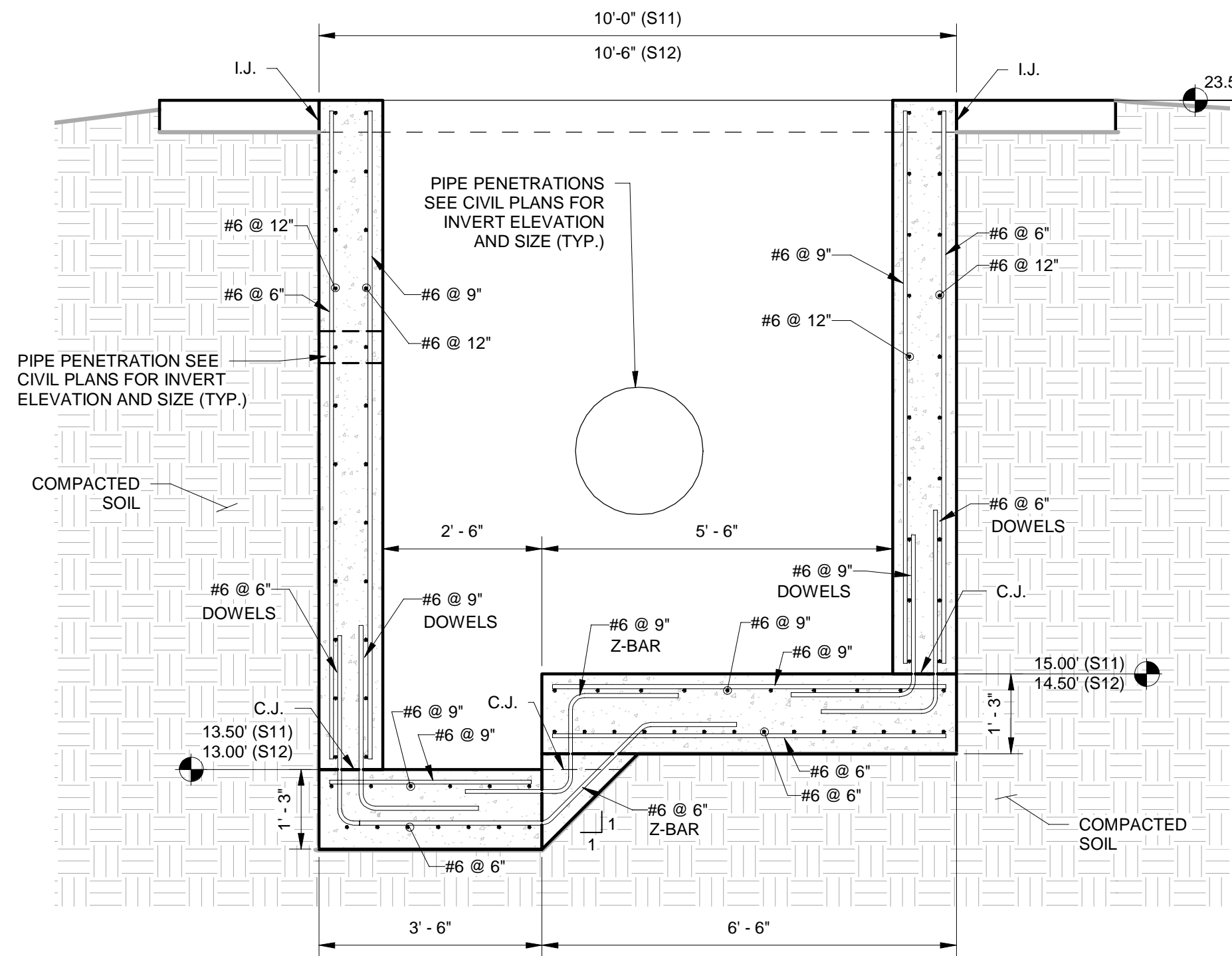
JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

STRUCTURES S8/S9 -  
GRATING

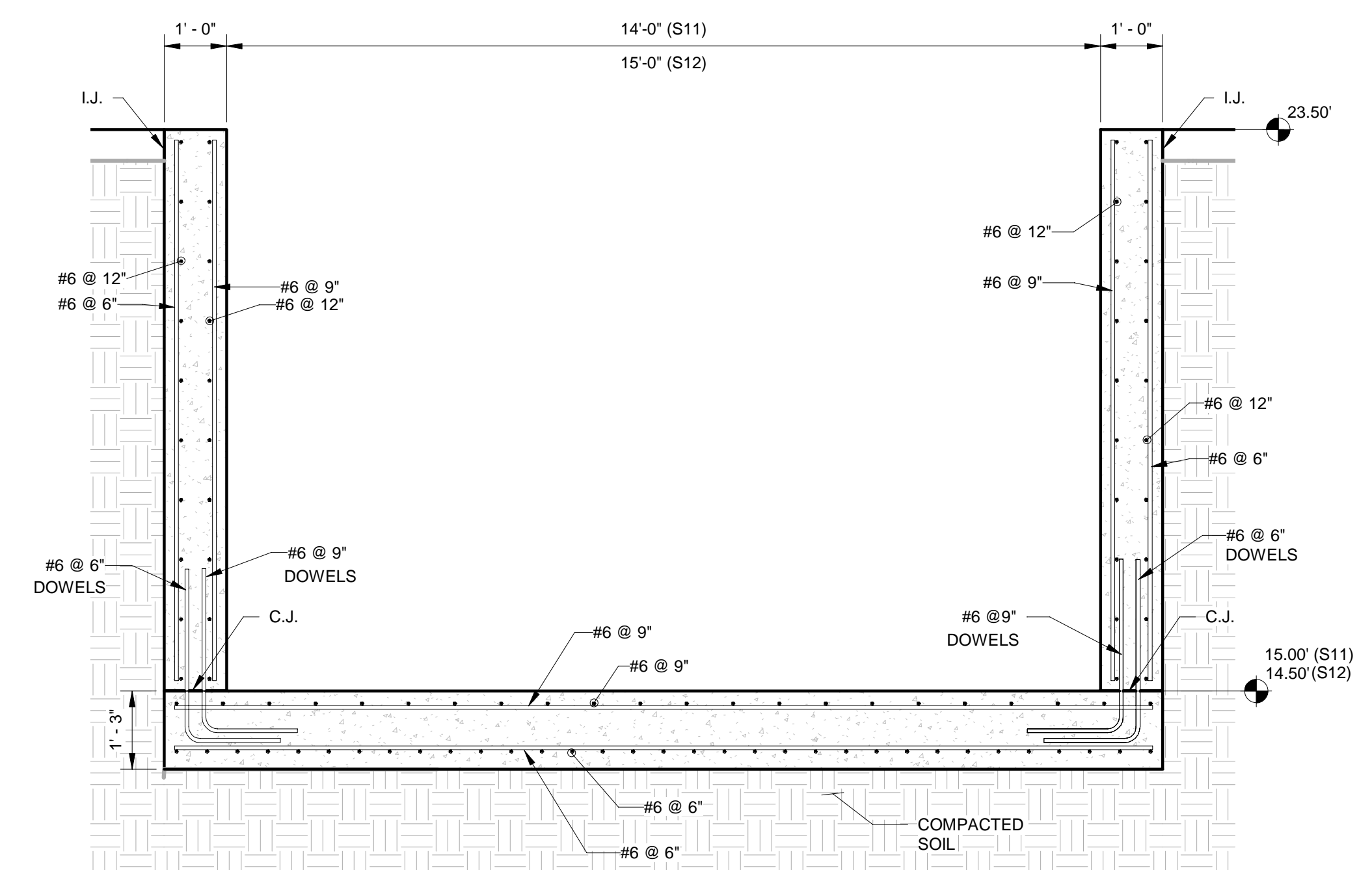
PROJECT NO.
DATE 2/20/2020
SCALE AS NOTED
SHEET S-032



1 TOP VIEW  
S-041 1/2" = 1'-0"



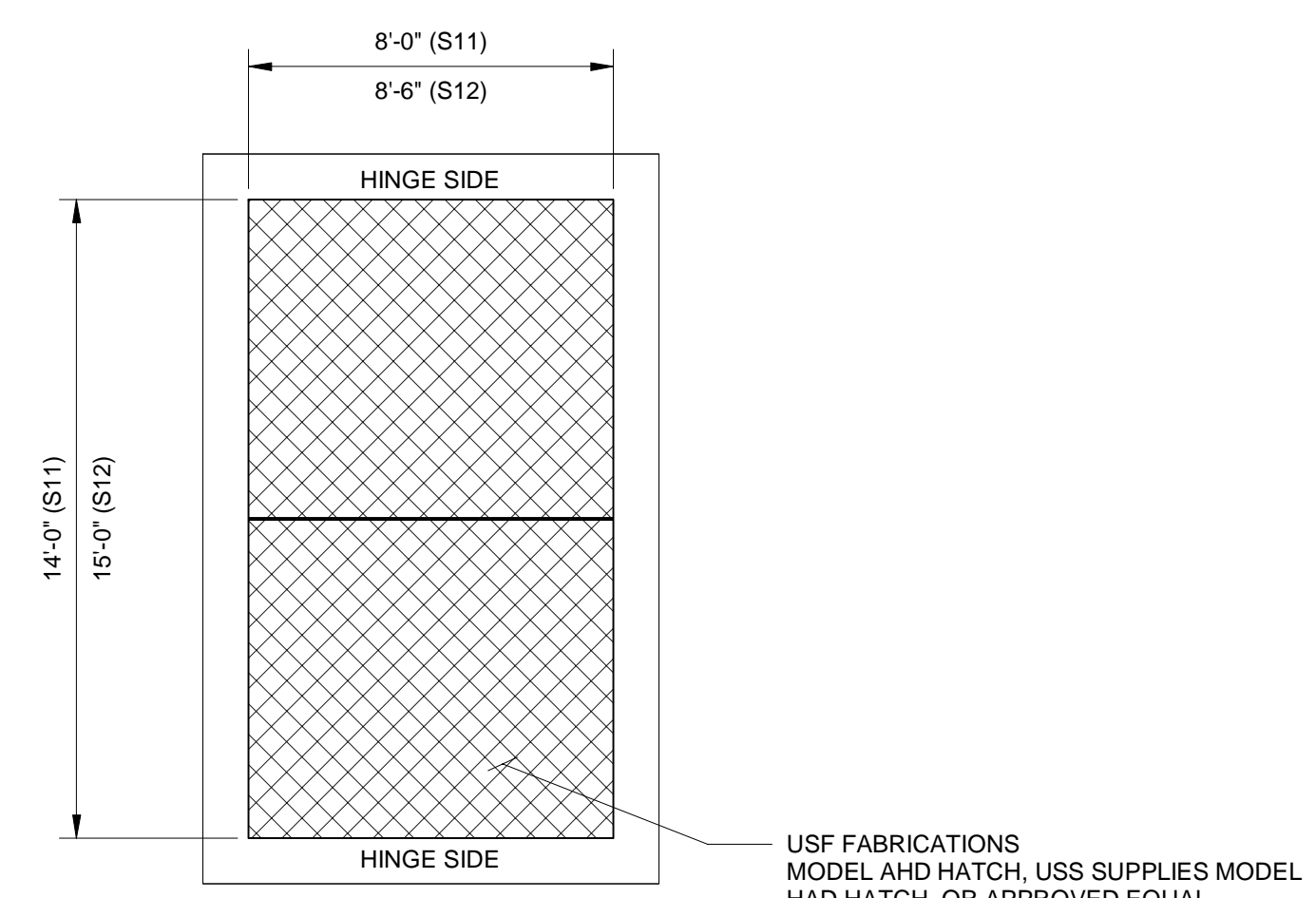
2 S11 / S12  
S-041 1/2" = 1'-0"



3 S11 / S12  
S-041 1/2" = 1'-0"

APPROXIMATE QUANTITIES *		
STRUCTURE	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
S11	23	5,800
S12	26	6,500

\* SEE BID ITEM NOTES ON SHEET S-002

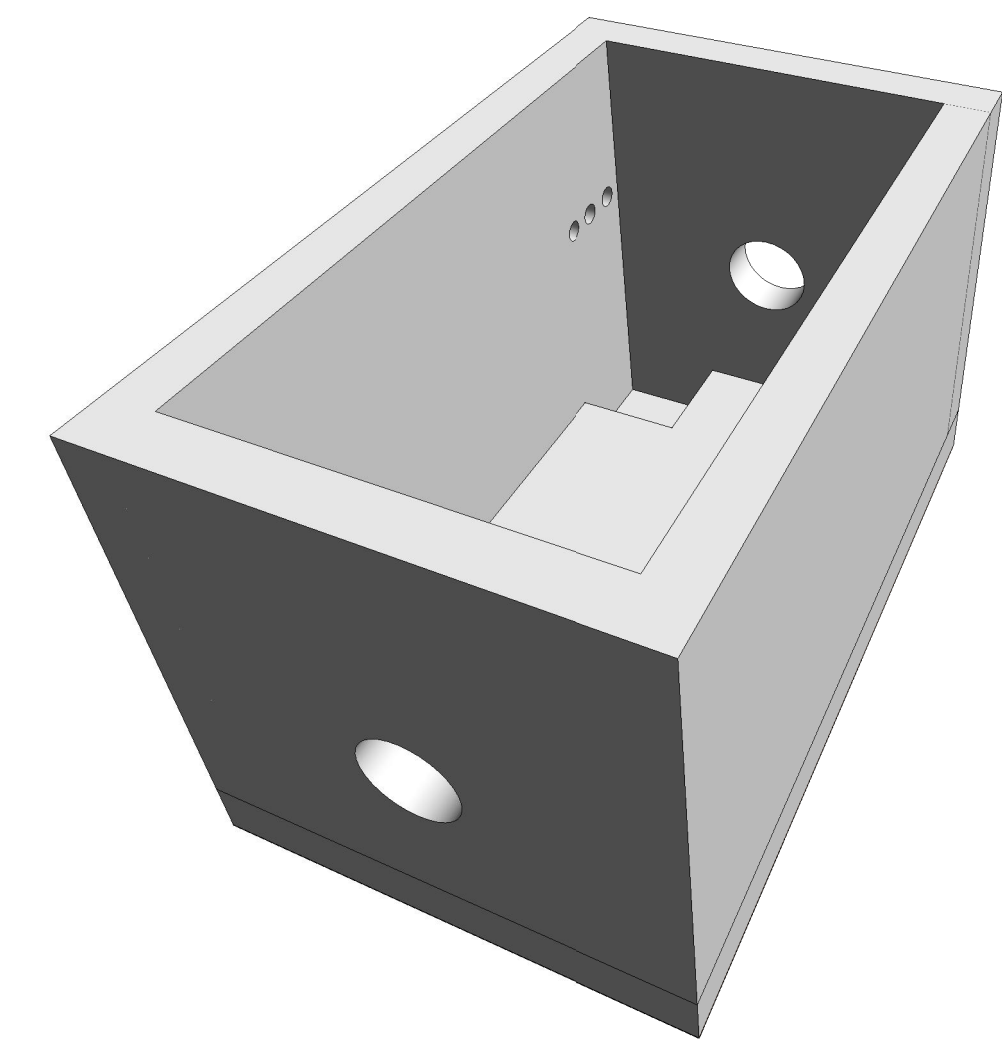


4 HATCH  
S-041 1/4" = 1'-0"

HATCH NOTES:

- 1) HATCH MATERIAL SHALL CONSIST OF STAINLESS STEEL TYPE 316 OR ALUMINUM.
- 2) HATCH SHALL BE DESIGNED TO WITHSTAND H-20 LOADING.
- 3) HATCH SHALL HAVE AUTOMATIC HOLD-OPEN DEVICE AND LIFT ASSIST SYSTEM.
- 4) COVER SHALL HAVE DIAMOND PLATE FINISH.

**NOTE:**  
1) SEE TYPICAL DETAILS SHEETS FOR WALL JOINTING CRITERIA, ISOLATION JOINT DETAILS, CONSTRUCTION JOINT DETAILS, AND WALL PENETRATION DETAILS.



5 ISOMETRIC S11/S12  
S-041

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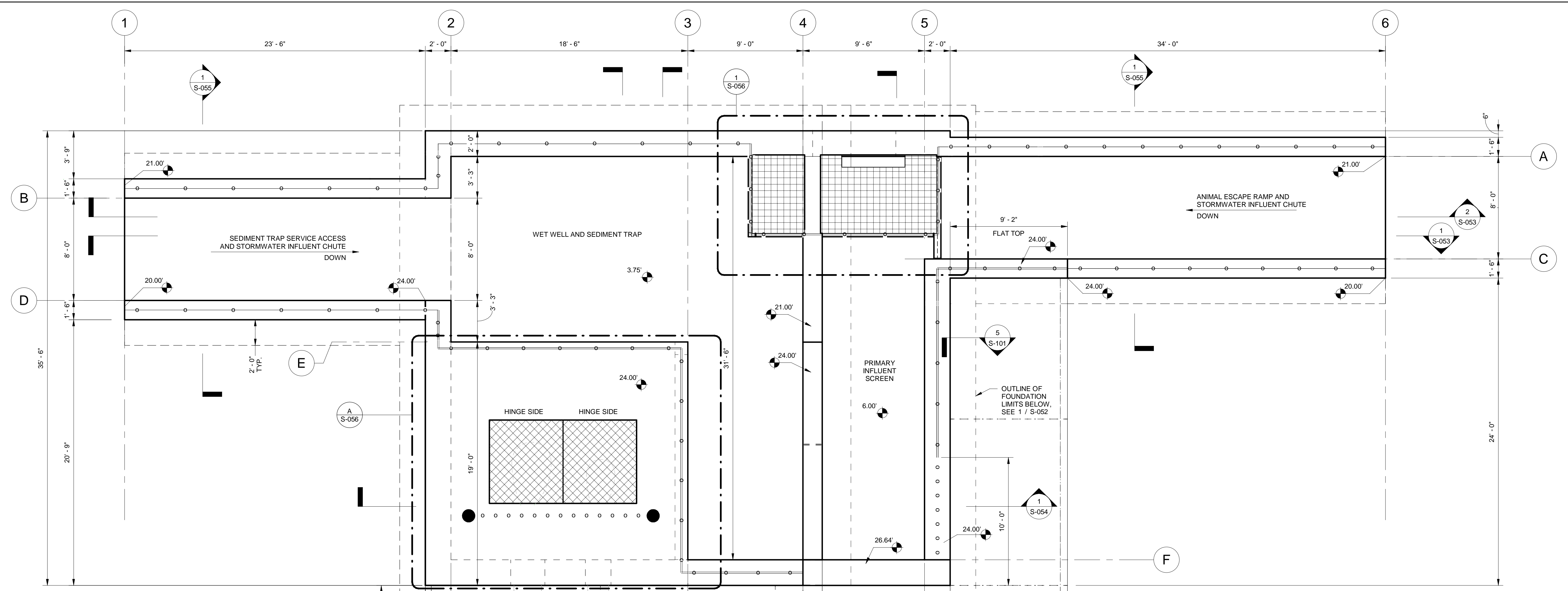
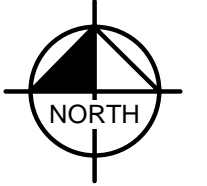
DESIGNED BY: GNH DRAWN BY: CL CHECKED BY: AGF APPROVED BY: JP3

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FLORIDA P.E. NO. 80484  
DATE:

STRUCTURES S11 / S12

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-041



**APPROXIMATE SLAB QUANTITY \***

SLAB	# OF SLABS	AREA PER SLAB (SF)
HEADWORKS WORK SLAB	1	1495
EQUIPMENT SLAB	1	460

\* SEE BID ITEM NOTES ON SHEET S-002

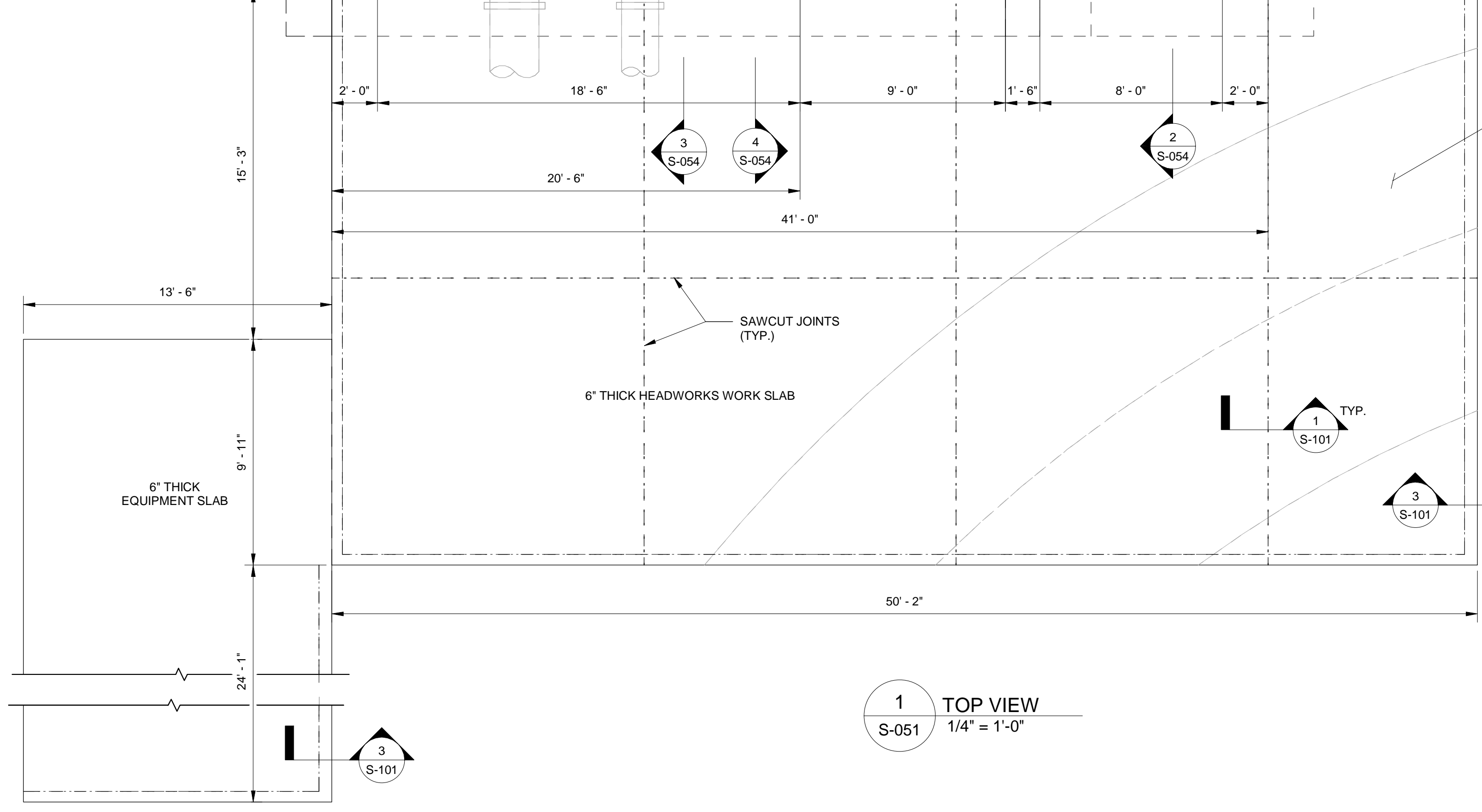
**APPROXIMATE QUANTITIES \***

STRUCTURE	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
HEADWORKS	570	180,000

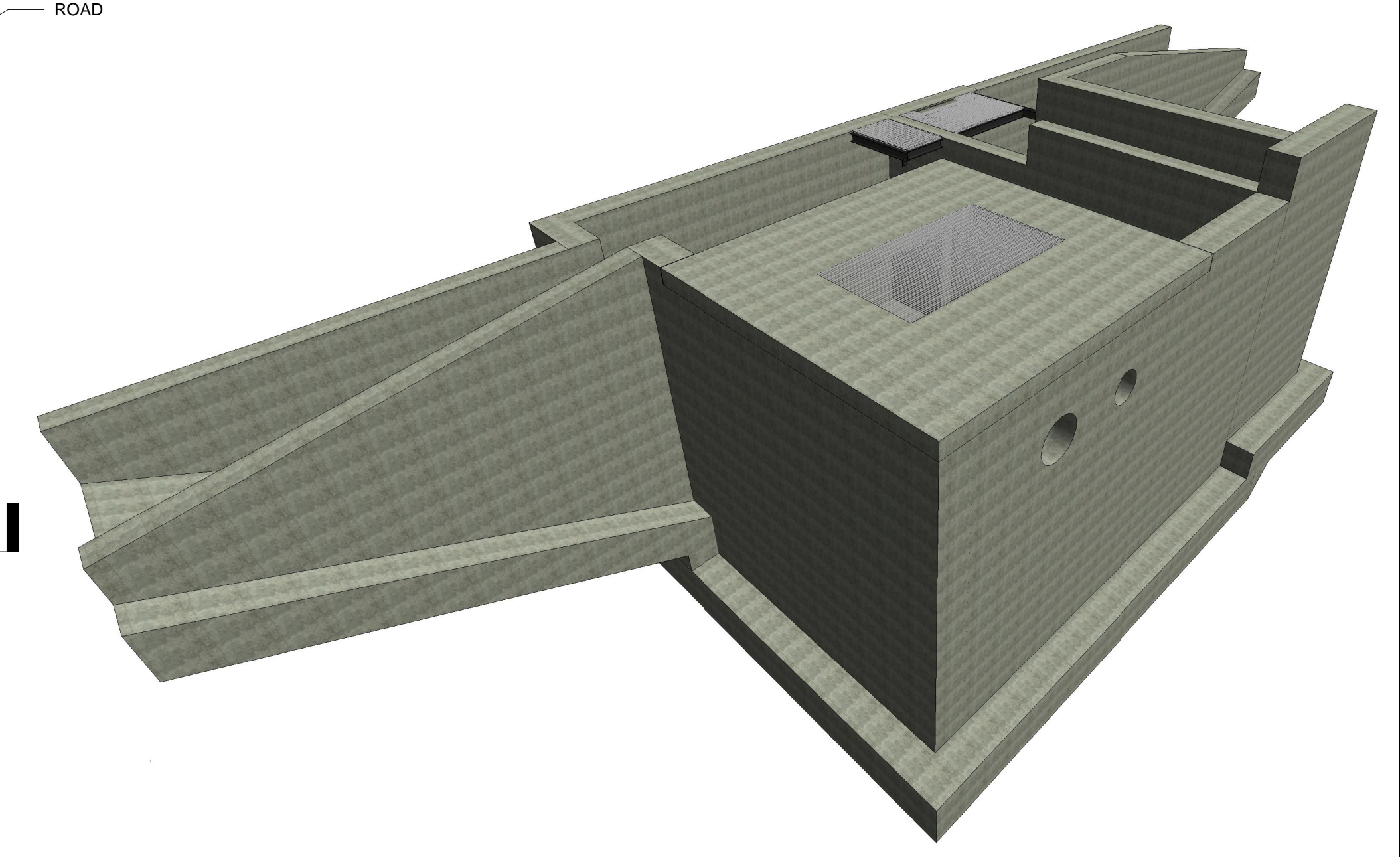
\* SEE BID ITEM NOTES ON SHEET S-002

- NOTES:**
- SEE CIVIL PLAN FOR PROPOSED GRADES.
  - SAWCUT HEADWORKS WORK SLAB AND EQUIPMENT SLAB AS SHOWN AT 15'-0" MAX. SPACING IN BOTH DIRECTIONS. SEE TYPICAL DETAILS FOR SLAB JOINTS

- LEGEND**
- OUTLINE OF FOUNDATION
  - LIMITS OF RAILING SYSTEM WITHOUT TOE PLATES (SEE CIVIL PLANS)
  - LIMITS OF RAILING SYSTEM WITH 12" TOE PLATES (SEE CIVIL PLANS)
  - STAINLESS STEEL (316) CHAINS, CONNECTED TO RAILING POST OR BOLLARD (SEE CIVIL PLANS)
  - ▨ HATCH
  - ▧ GRATING
  - - - SAWCUT JOINT
  - THICKENED EDGE AT CONSTRUCTION JOINT
  - TYPE A BOLLARD (SEE CIVIL PLANS)



1 TOP VIEW  
S-051  
1/4" = 1'-0"



2 ISOMETRIC VIEW - HEADWORKS  
S-051  
(RAILING NOT SHOWN FOR CLARITY)

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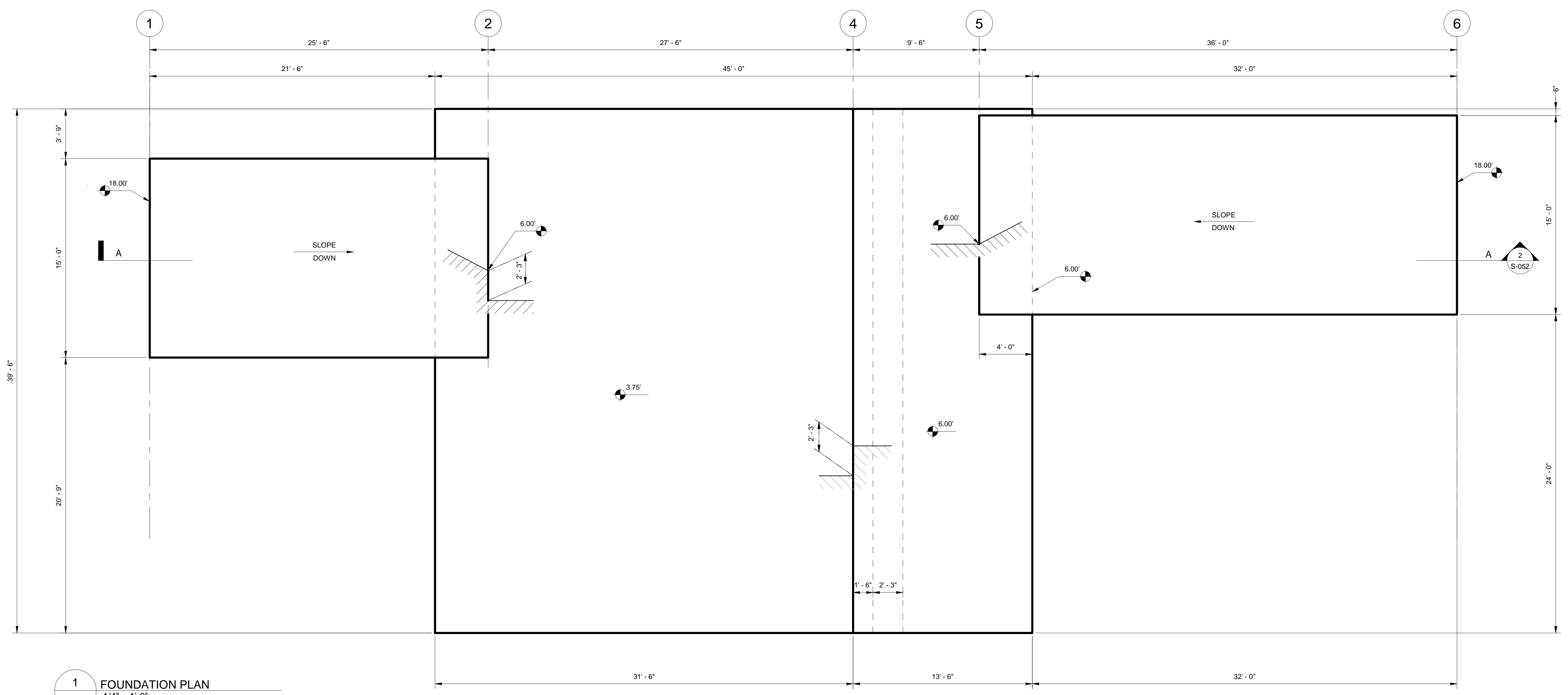
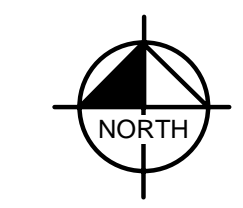
DESIGNED BY: GNH DRAWN BY: CL CHECKED BY: AGF APPROVED BY: JP3

**MOORHEN MARSH LEAPS™**

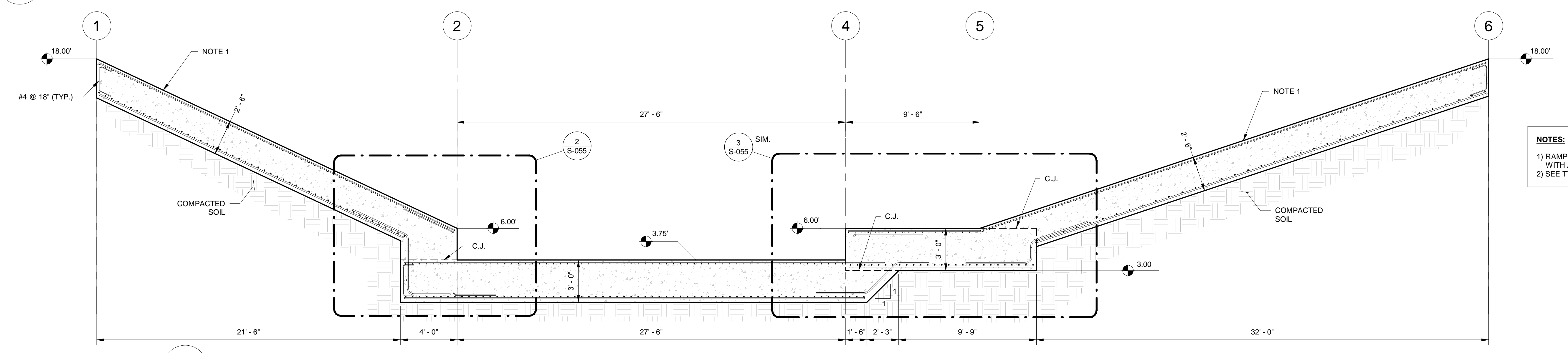
**HEADWORKS TOP VIEW**

JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

PROJECT NO.
DATE 2/20/2020
SCALE AS NOTED
SHEET S-051



1 FOUNDATION PLAN  
S-052 1/4" = 1'-0" (WALLS NOT SHOWN FOR CLARITY)



2 A - A  
S-052 1/4" = 1'-0" (WALLS NOT SHOWN FOR CLARITY)

- NOTES:**
- 1) RAMP SURFACE SHALL RECEIVE A ROUGHENED SURFACE WITH A MINIMUM 1/4" AMPLITUDE.
  - 2) SEE TYPICAL DETAILS SHEETS FOR CONSTRUCTION JOINT DETAILS.

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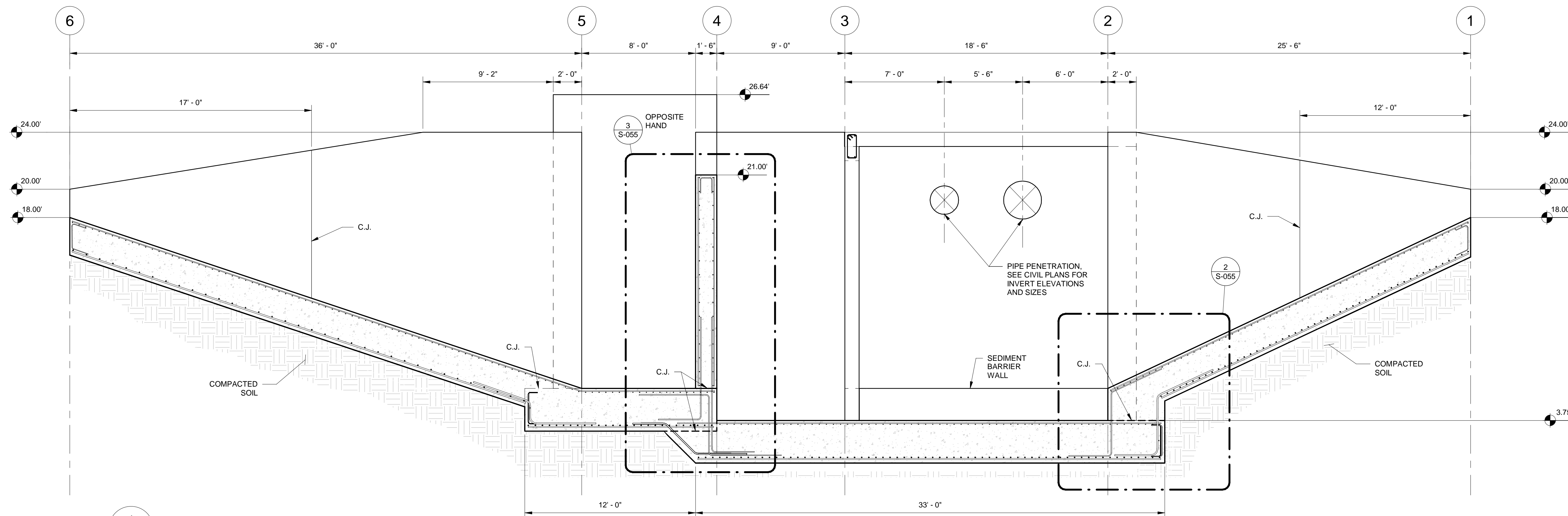
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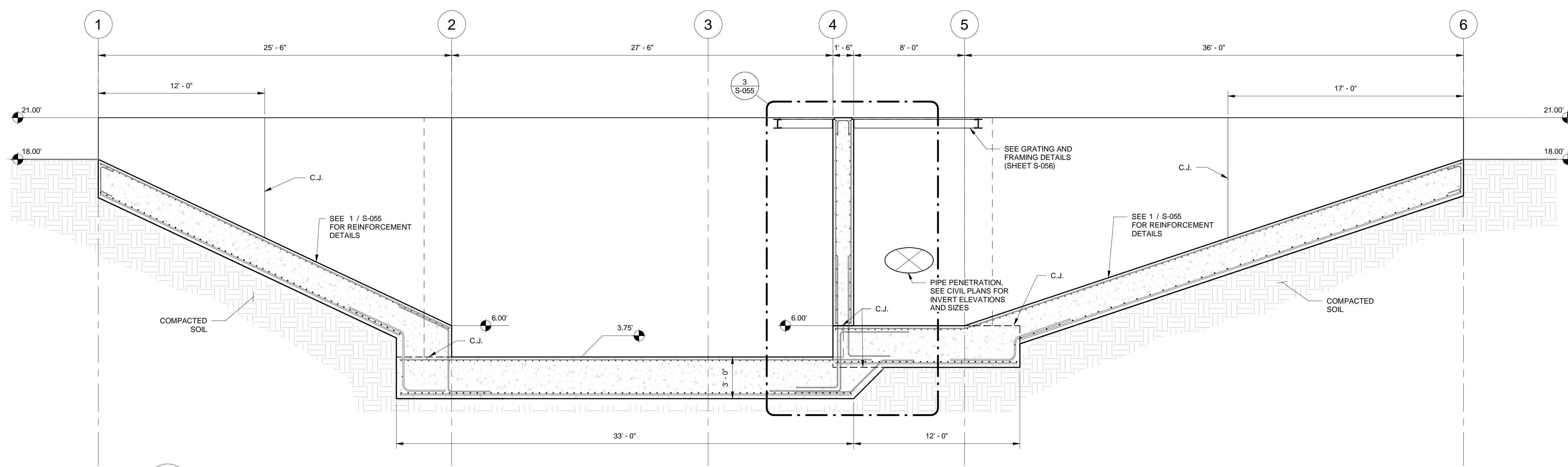
JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

HEADWORKS  
FOUNDATION PLAN  
AND SECTION

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-052



1 RAMP ELEVATION LOOKING SOUTH  
S-053 1/4" = 1'-0"



2 RAMP ELEVATION LOOKING NORTH  
S-053 1/4" = 1'-0"

**NOTE:**  
1) SEE TYPICAL DETAIL SHEETS FOR CONSTRUCTION JOINT DETAILS AND WALL PENETRATION DETAILS.

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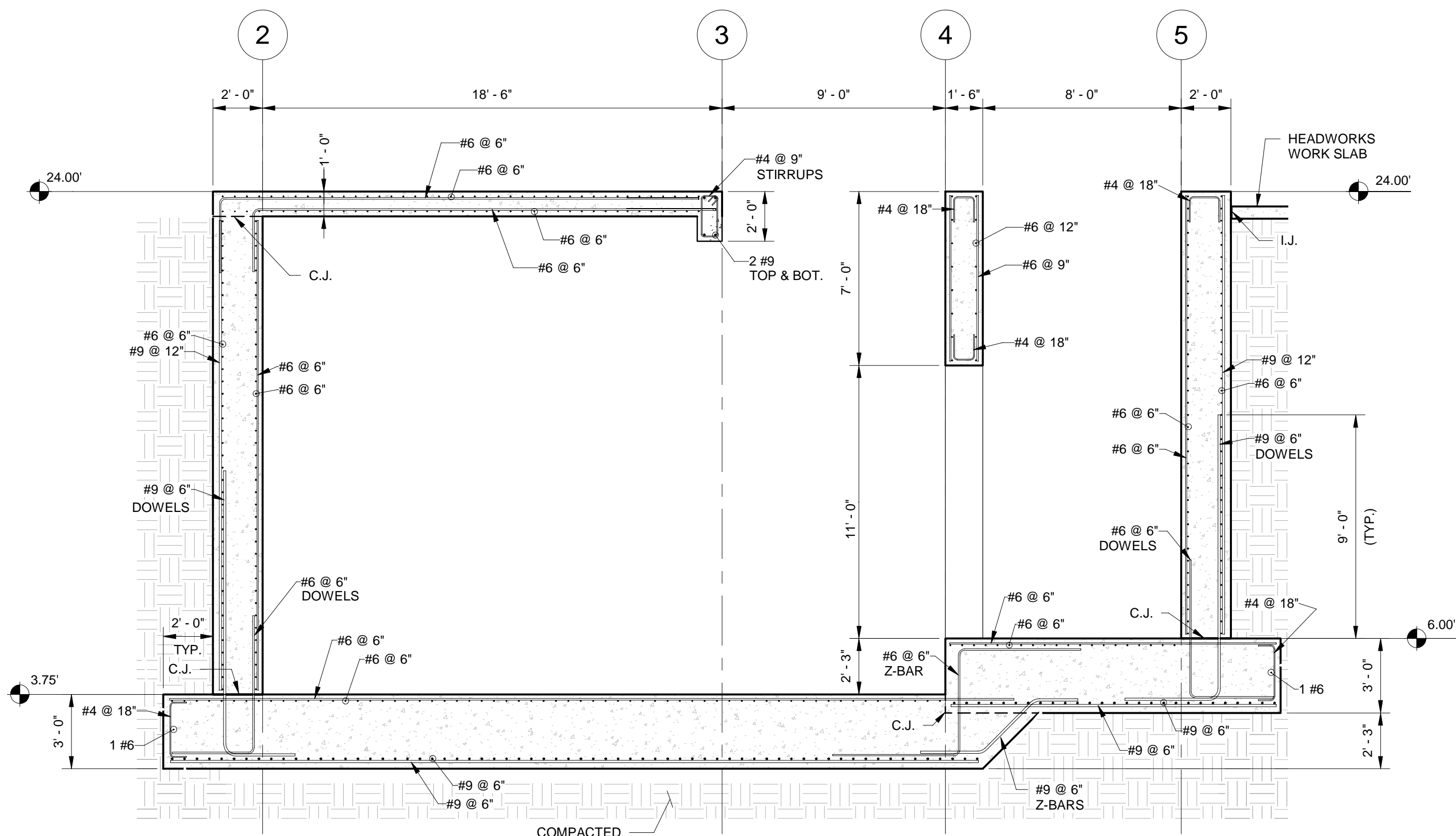
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 FLORIDA P.E. NO. 80484  
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HEADWORKS RAMP  
 ELEVATIONS

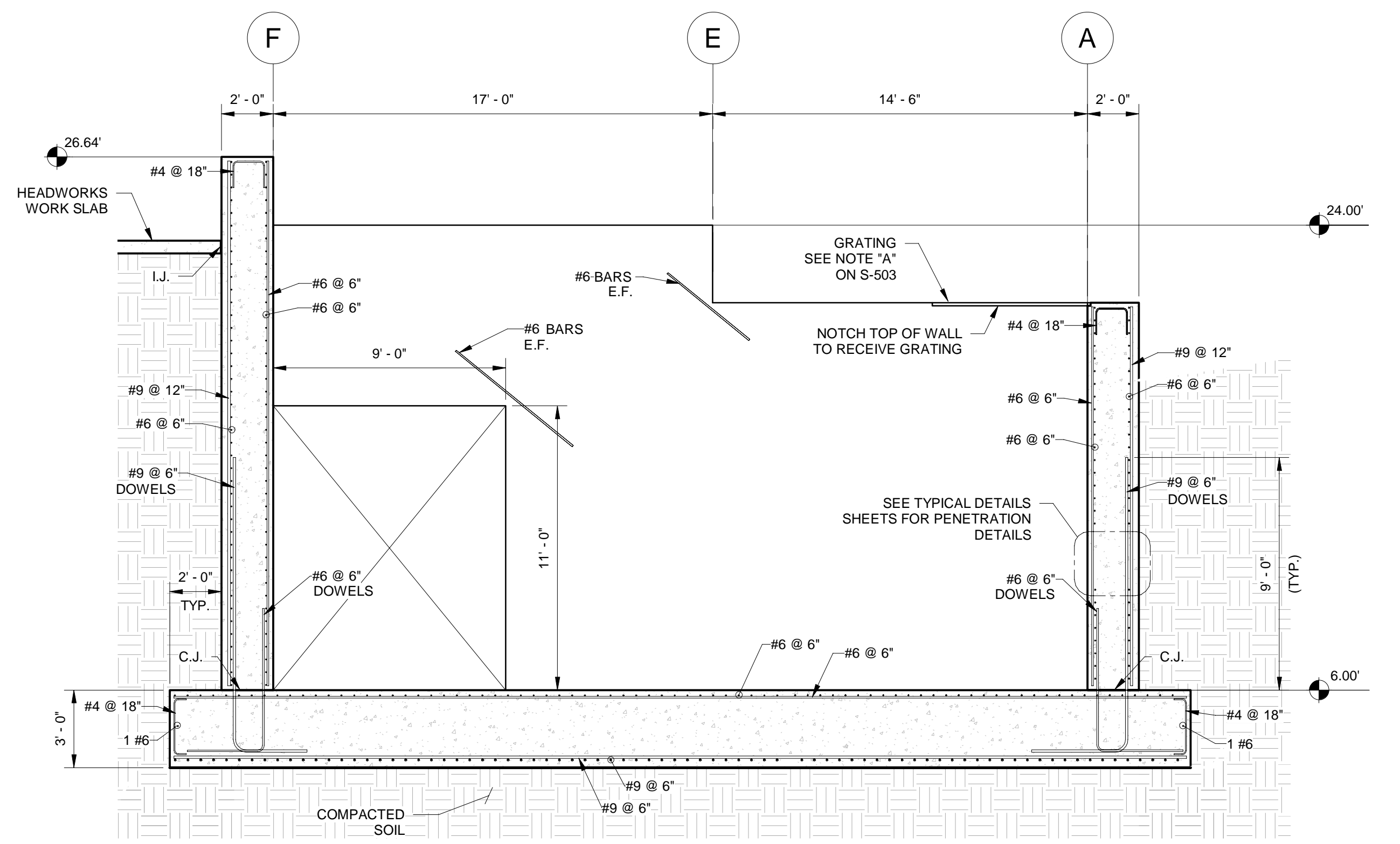
PROJECT NO.
DATE 2/20/2020
SCALE AS NOTED
SHEET S-053



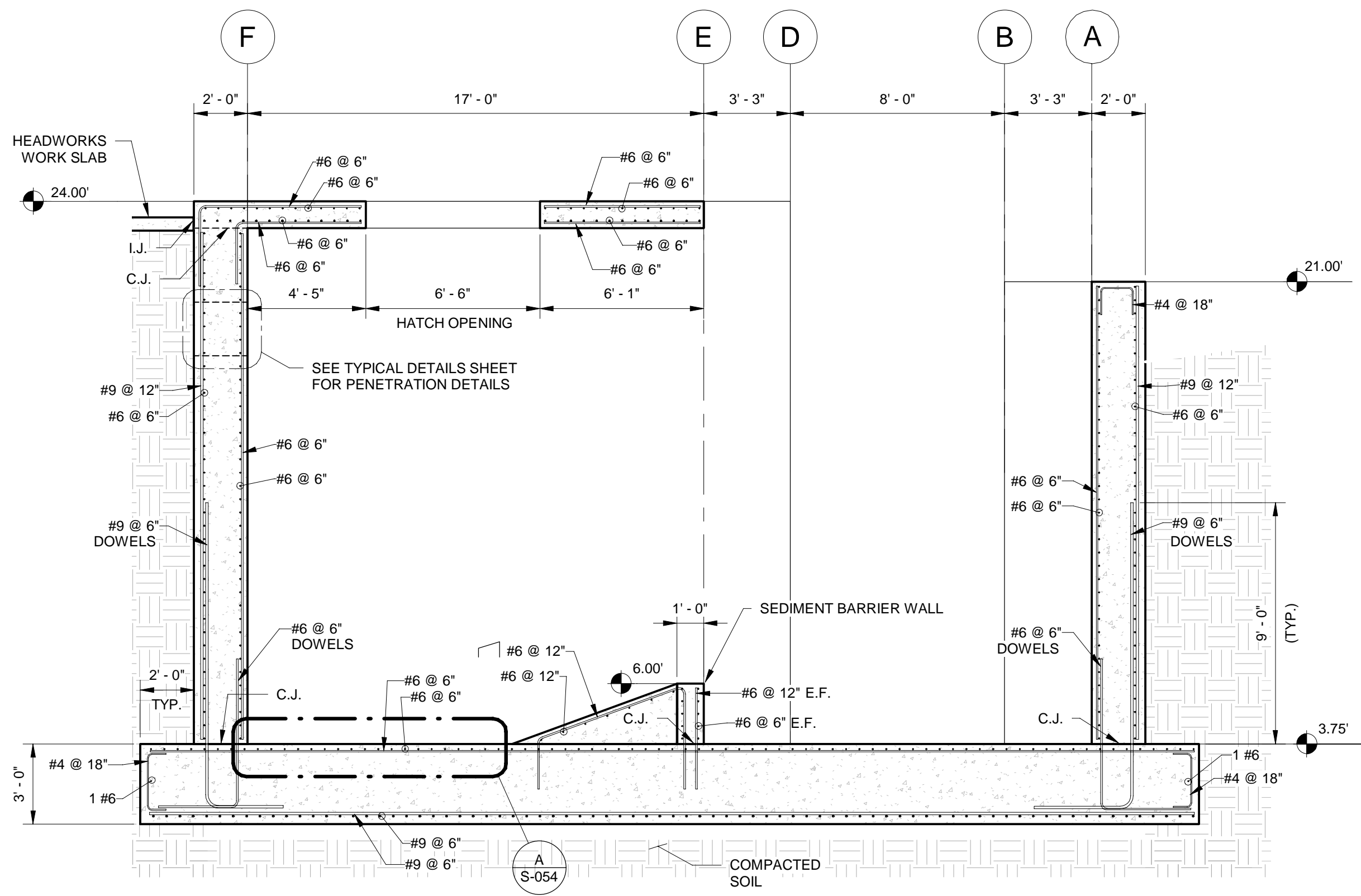


1 PRIMARY INFLUENT SCREEN, WET WELL, & SEDIMENT TRAP LOOKING NORTH - SECTION  
S-054 1/4" = 1'-0"

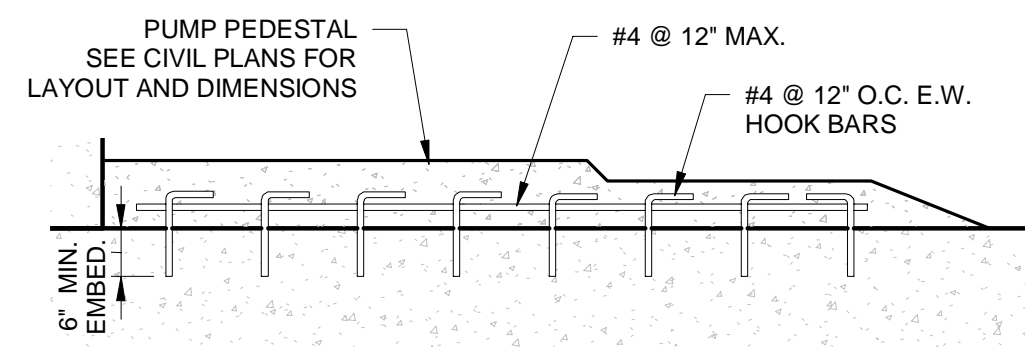
NOTE:  
SEE TYPICAL DETAILS SHEETS FOR CONSTRUCTION JOINT DETAILS, ISOLATION JOINT DETAILS, AND WALL PENETRATION DETAILS.



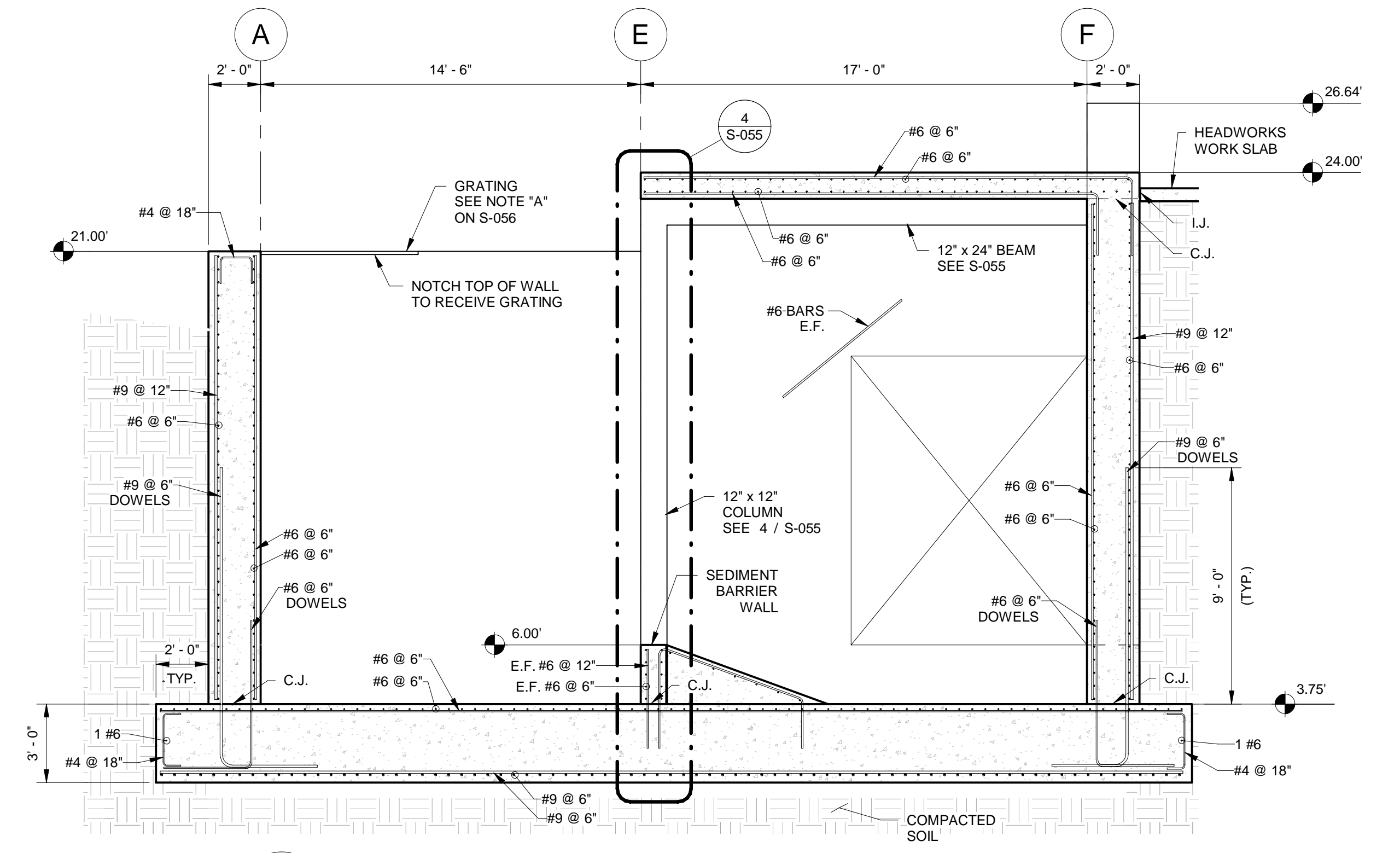
2 PRIMARY INFLUENT SCREEN LOOKING WEST - SECTION  
S-054 1/4" = 1'-0"



3 WET WELL & SEDIMENT TRAP LOOKING WEST - SECTION  
S-054 1/4" = 1'-0"



A PEDESTAL DETAIL  
S-054 1/2" = 1'-0"



4 WET WELL & SEDIMENT TRAP LOOKING EAST - SECTION  
S-054 1/4" = 1'-0"

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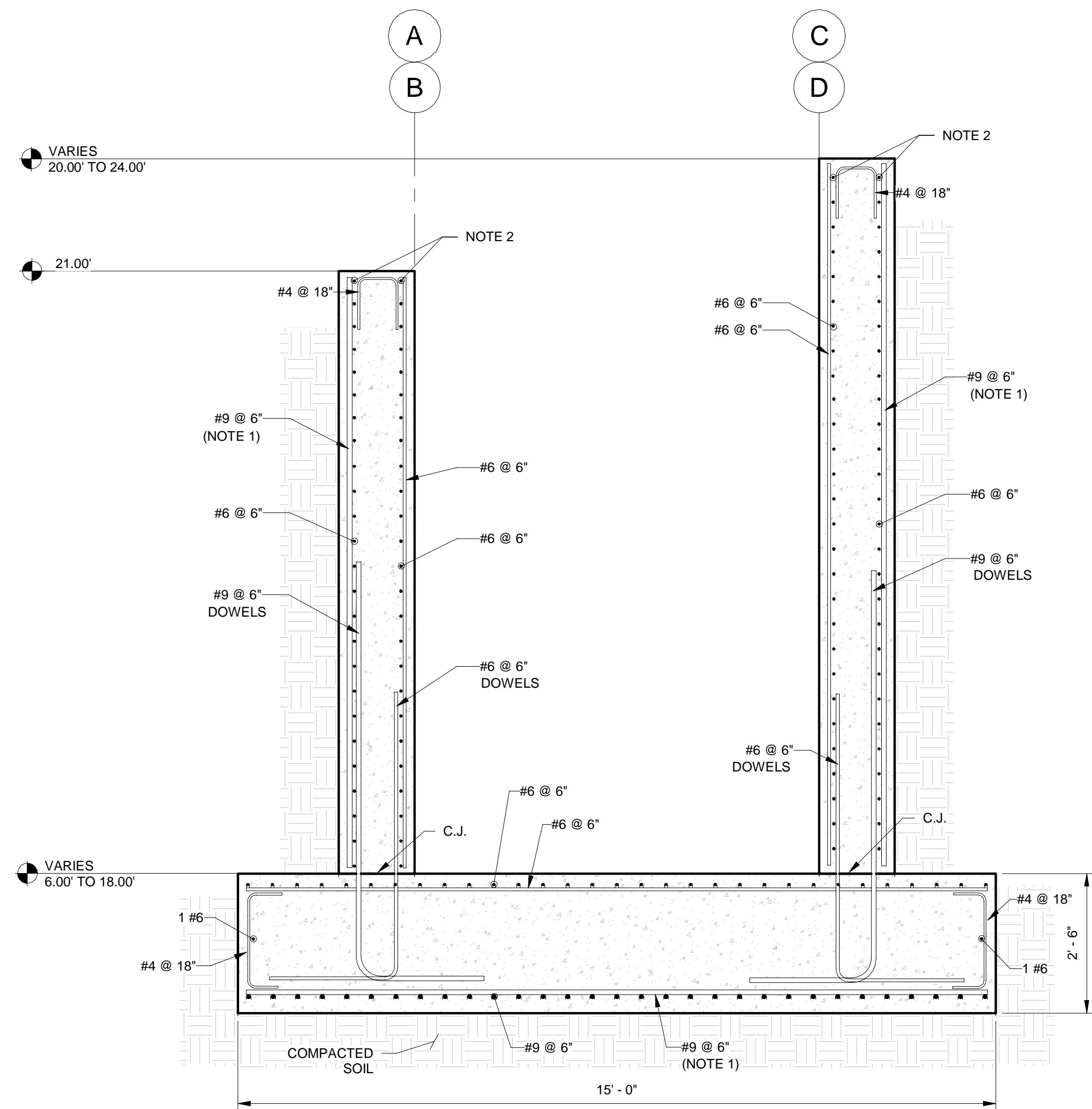
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HEADWORKS  
SECTIONS

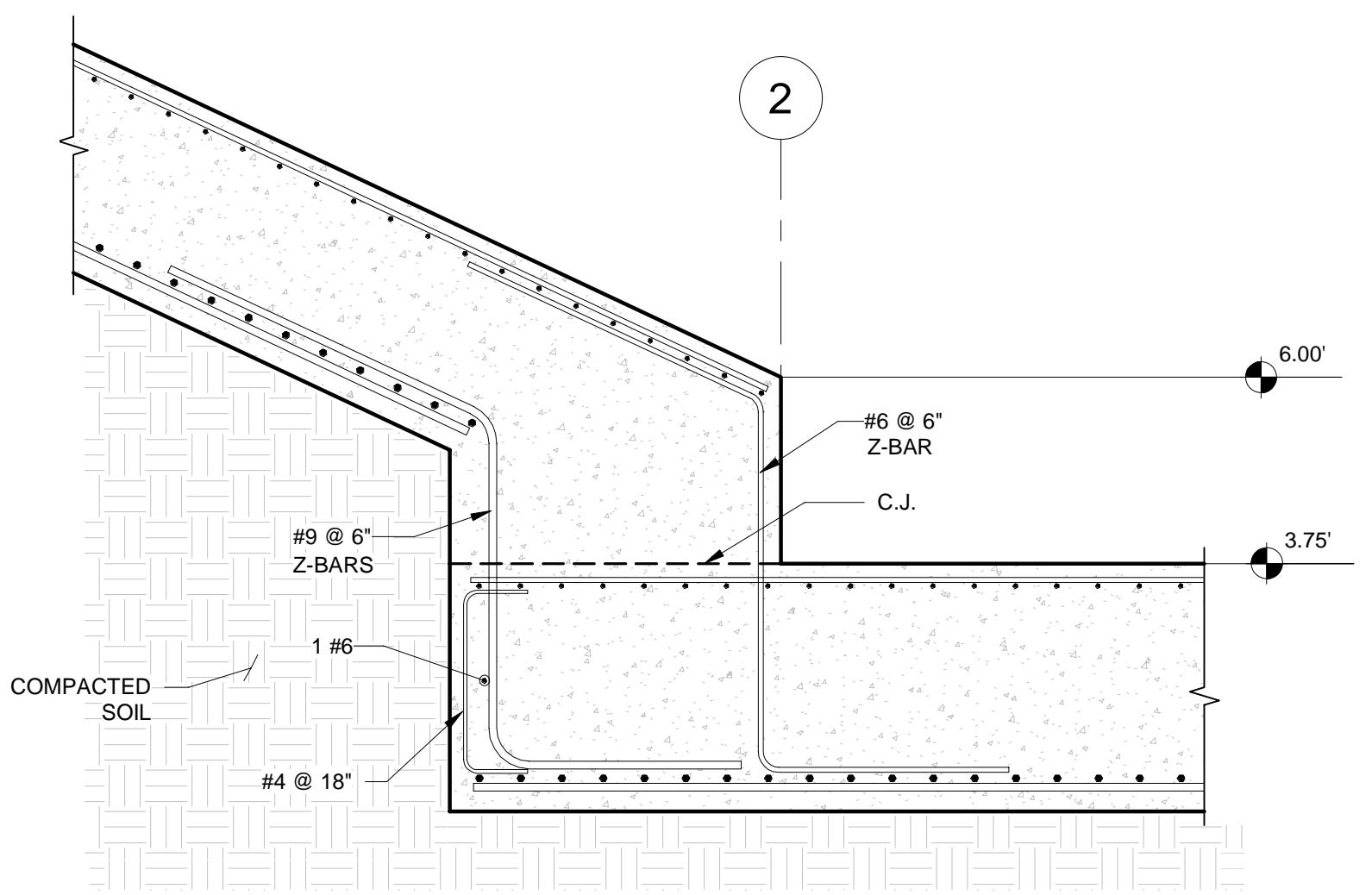
PROJECT NO.
DATE 2/20/2020
SCALE AS NOTED
SHEET S-054



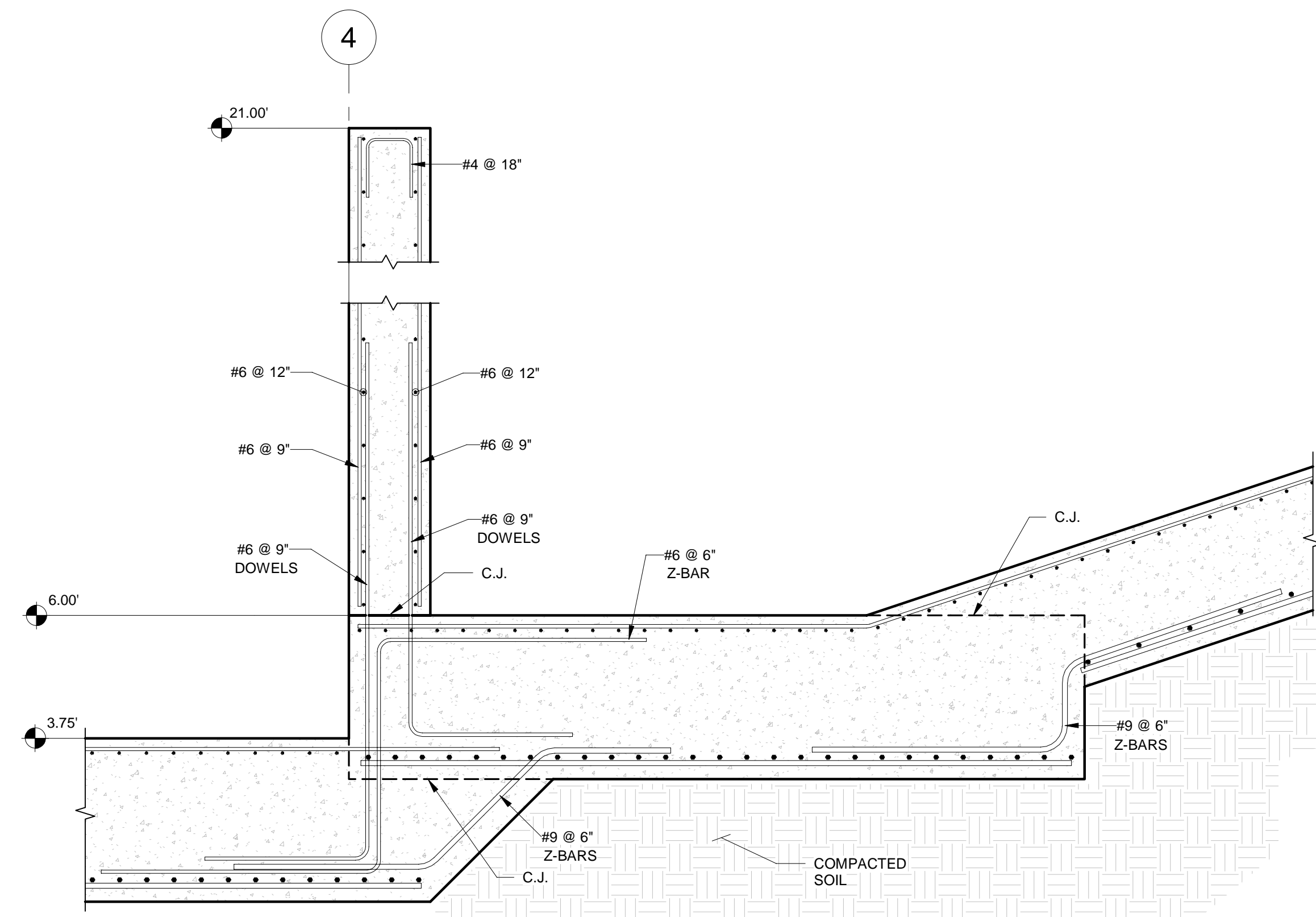
NOTES:  
 1) WHERE RAMP WALL HEIGHT (TOP OF RAMP TO TOP OF WALL) IS LESS THAN 12 FEET, VERTICAL REINFORCEMENT SPACING INCREASES TO 12".  
 2) RUN TOP REINFORCEMENT PARALLEL TO TOP OF WALL.

1 RAMP - TYPICAL SECTION  
 S-055 1/2" = 1'-0"

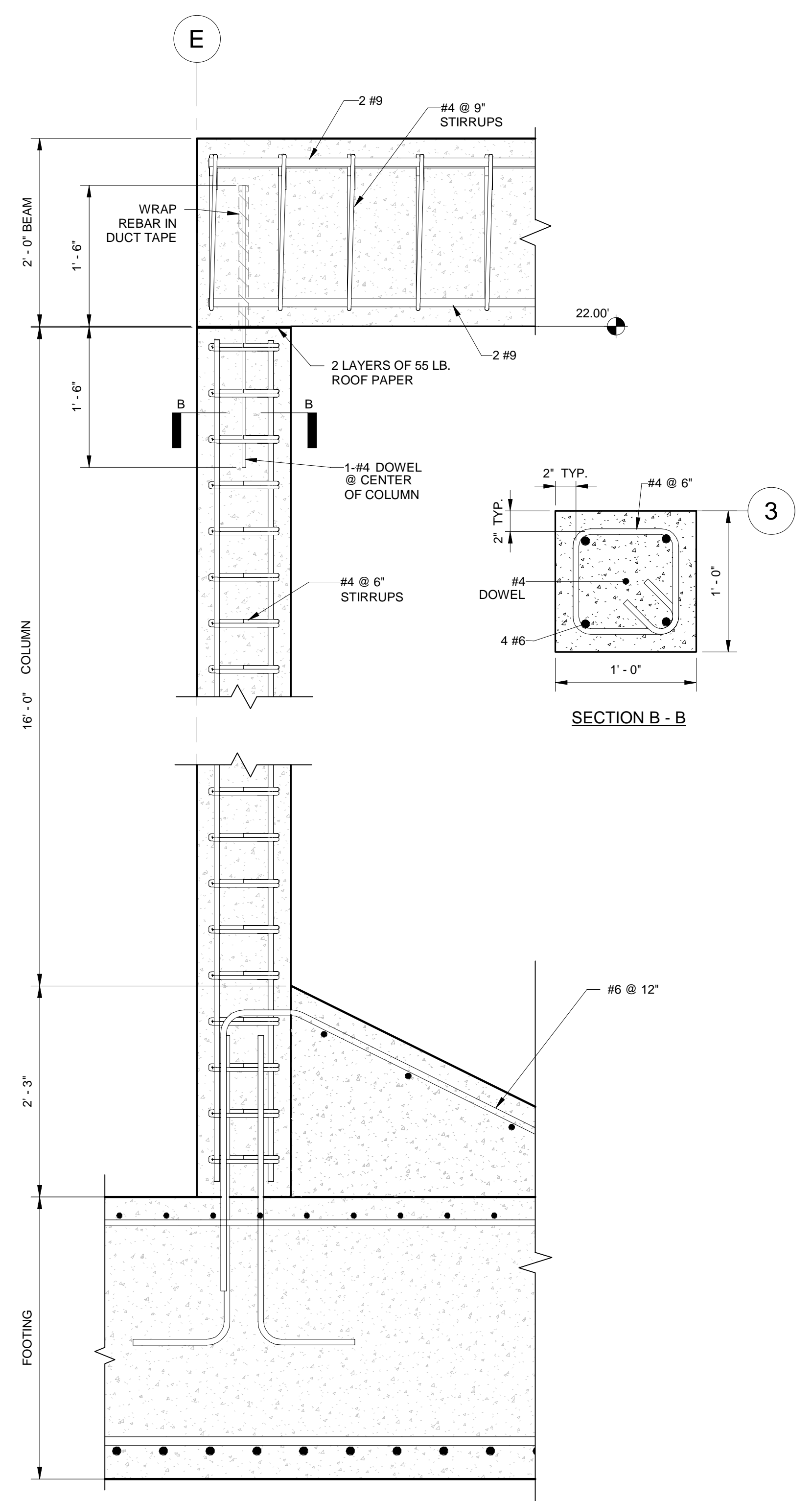
NOTE:  
 SEE TYPICAL DETAILS SHEETS FOR CONSTRUCTION JOINT DETAILS.



2 FOUNDATION REINFORCEMENT DETAIL  
 S-055 1/2" = 1'-0"



3 FOUNDATION AND INTERIOR WALL REINFORCEMENT DETAIL  
 S-055 1/2" = 1'-0"



4 COLUMN DETAIL  
 S-055 1" = 1'-0"

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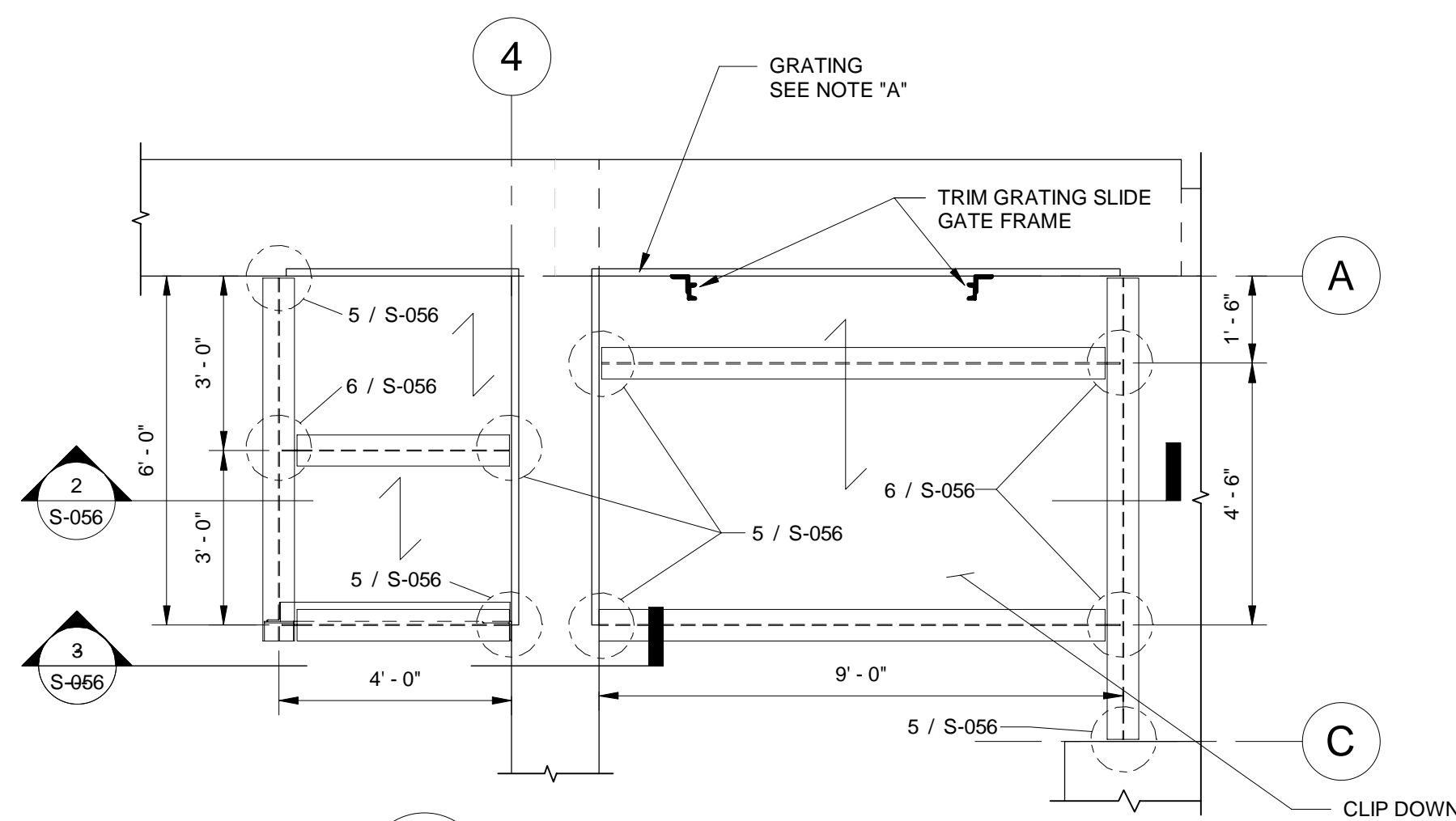
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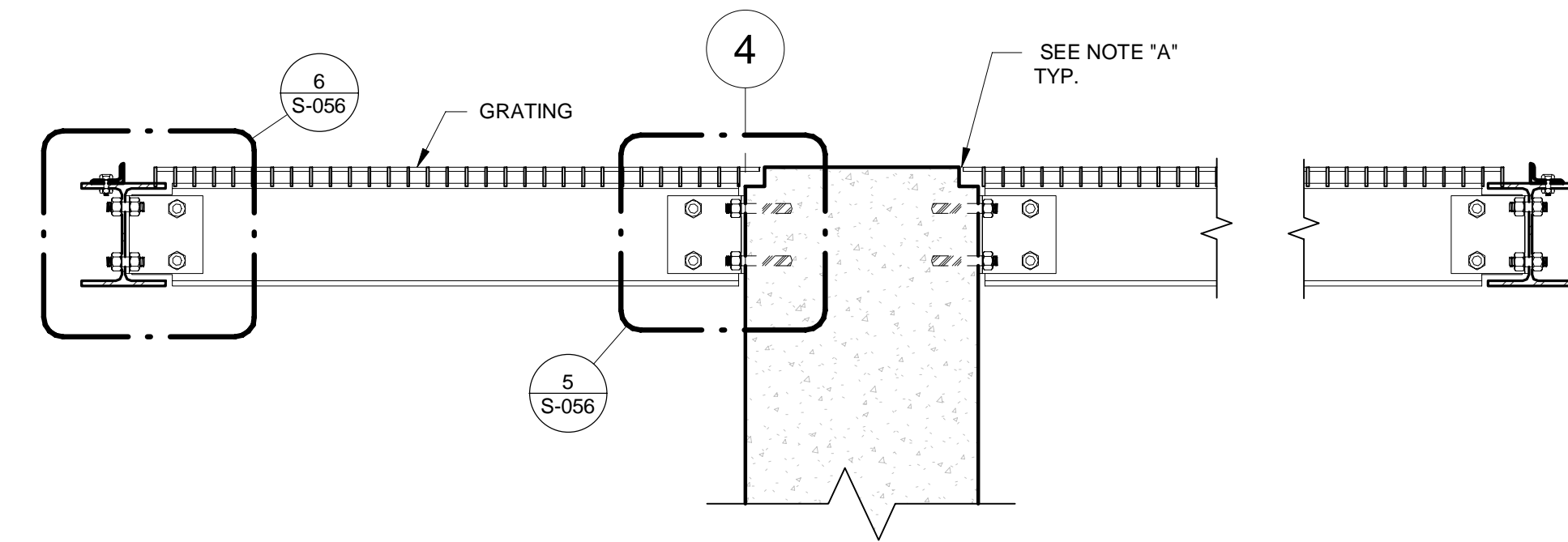
**HEADWORKS  
 SECTIONS AND  
 DETAILS**

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-055



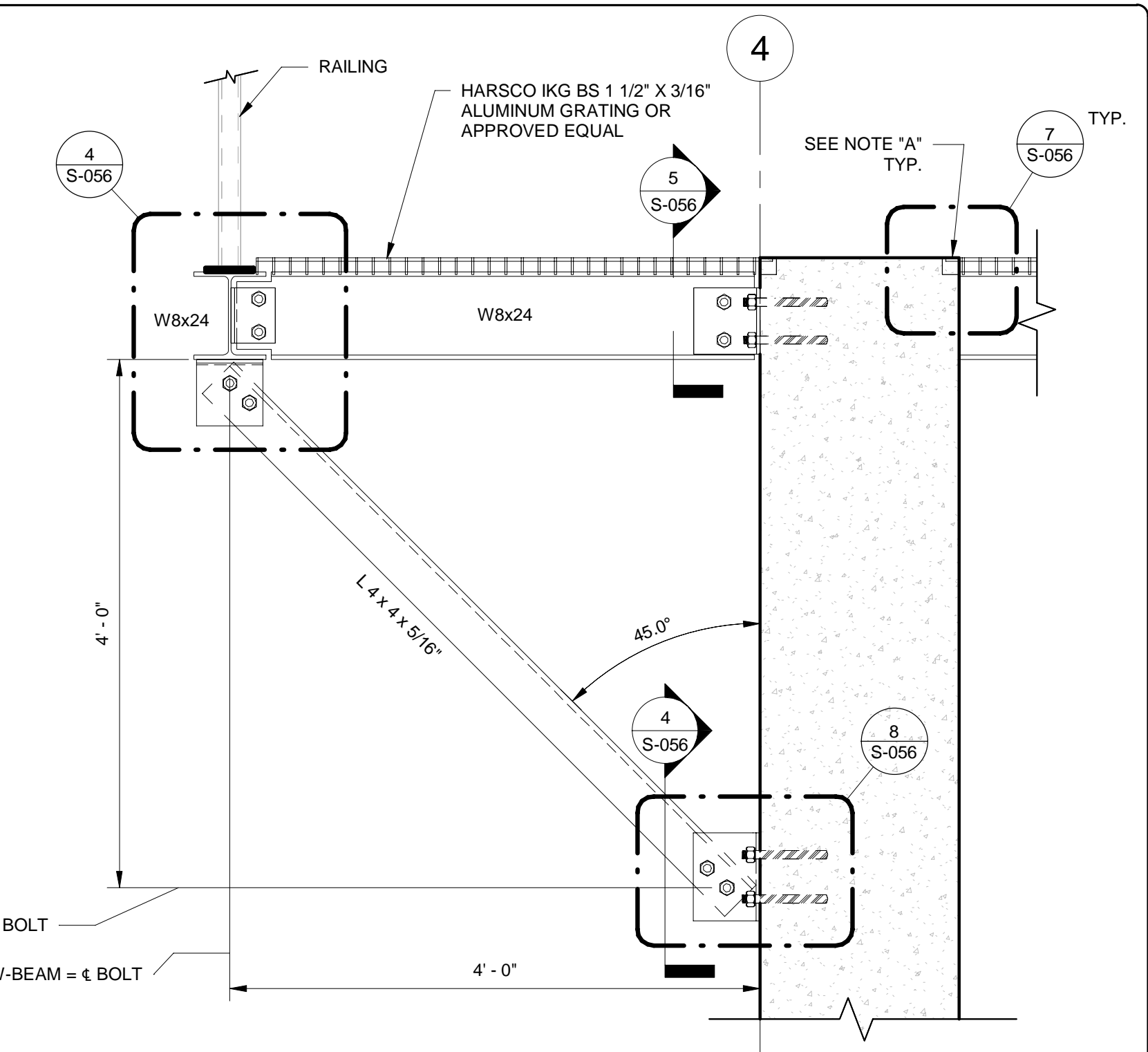
**1 FRAMING PLAN**  
S-056 3/8" = 1'-0" (GRATING NOT SHOWN FOR CLARITY)

- FABRICATION NOTES:**
- 1) ALUMINUM GRATING SHALL BE, ALLOY 6063-T6, WITH SWAGED CROSS BARS SPACED ON 4" CENTERS. BEARING BARS SHALL BE SPACED ON 1 3/16" CENTERS. TOP SURFACE OF BEARING BARS SHALL BE STRIATED TO PROVIDE A NON-SLIP SURFACE.
  - 2) GRATING SHALL BE DESIGNED TO SUPPORT A MINIMUM UNIFORM LOAD OF 100 POUNDS PER SQUARE FOOT WITH A MAXIMUM DEFLECTION OF 1/4". THE MAXIMUM FIBER STRESS SHALL NOT EXCEED THAT WHICH IS ALLOWED BY THE ALUMINUM ASSOCIATION.
  - 3) STANDARD INSTALLATION CLEARANCES AND TOLERANCES SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT METAL BAR GRATING MANUAL PUBLISHED BY THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS.
  - 4) ALUMINUM FRAMES EMBEDDED IN CONCRETE SHALL INCORPORATE A RECESS UNDER THE HORIZONTAL BEARING LEG TO RECEIVE THE HOLD DOWN FASTENERS. THE FRAMES SHALL BE TF1.25A THRU TF2.50A AS MANUFACTURED BY THOMPSON FABRICATING, LLC (BIRMINGHAM, AL), OR APPROVED EQUAL.
  - 5) INSTALL ALUMINUM CLAMPS OR CLIPS TO ANCHOR THE GRATING SECURELY TO SUPPORTS. A MINIMUM OF 4 FASTENERS PER PANEL SHALL BE PROVIDED, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
  - 6) CUTOUTS FOR CIRCULAR OBSTRUCTIONS ARE TO BE AT LEAST 2" LARGER IN DIAMETER THAN THE OBSTRUCTION. CUTOUTS FOR ALL PIPING 2" IN DIAMETER OR LESS SHALL BE MADE IN THE FIELD. BAND ALL ENDS OF GRATING.
  - 7) PAINT ALL STAINLESS STEEL SURFACES IN CONTACT DISSIMILAR METALS WITH A SHOP COAT OF BITUMINOUS PAINT.
  - 8) ALL BRACING ANGLES, SHALL BE STAINLESS STEEL 316.
  - 9) STAINLESS STEEL BOLTS: ASTM F893, TYPE 316.
  - 10) ADHESIVE ANCHORS: ASTM A193 GRADE B8M, STAINLESS STEEL THREADED ROD.
  - 11) STAINLESS STEEL NUTS: ASTM F94 TYPE 316.
  - 12) STAINLESS STEEL WASHERS: COMPATIBLE WITH BOLTS, NUTS AND THREADED RODS.
  - 13) STAINLESS STEEL 316 WASHERS REQUIRED AT ALL BOLTED CONNECTIONS.
  - 14) ADHESIVE BONDING MATERIAL SHALL BE TYPE HV IN ACCORDANCE WITH FOOT STANDARD SPECIFICATION SECTION 937.

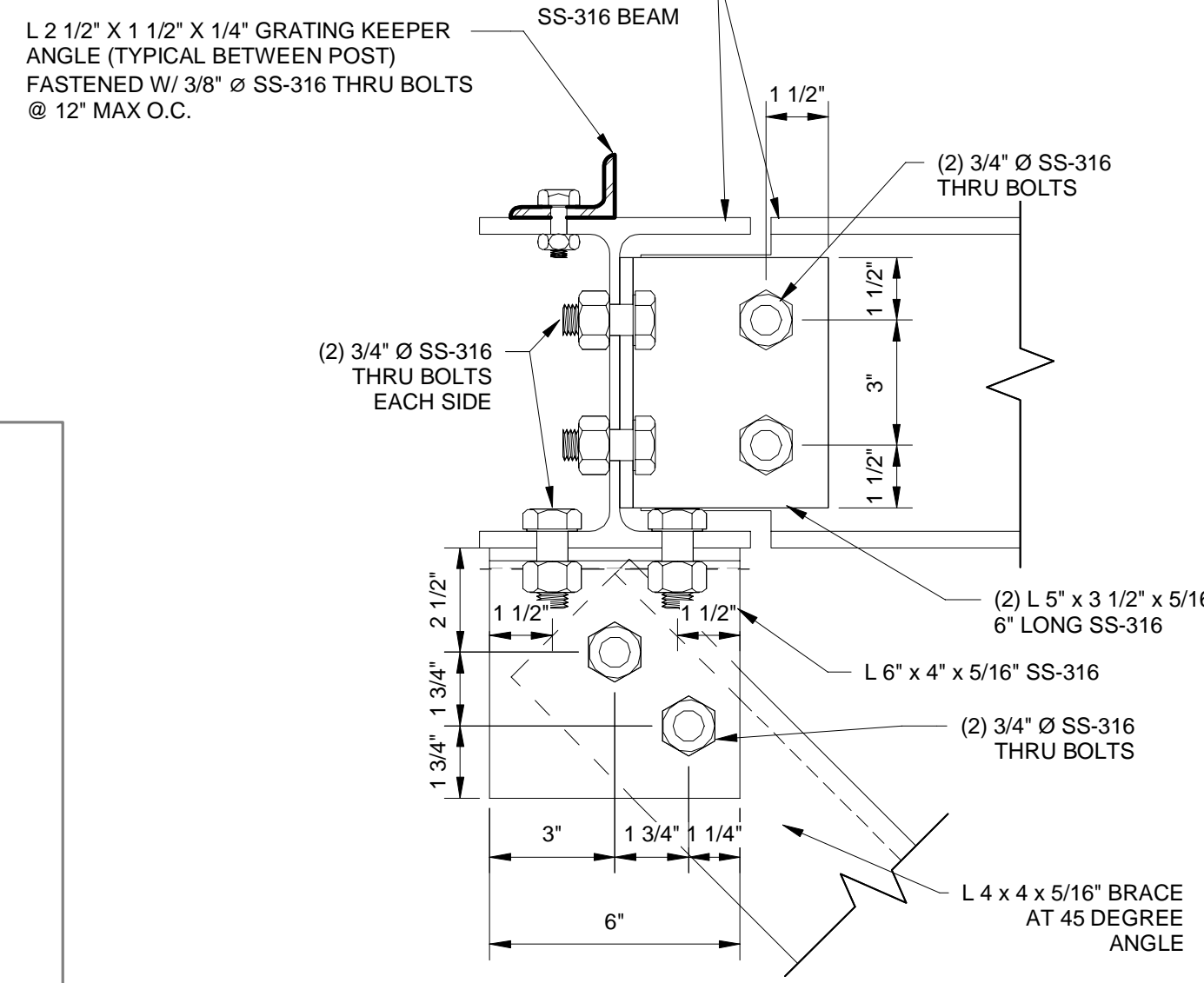


**2 SECTION**  
S-056 1" = 1'-0"

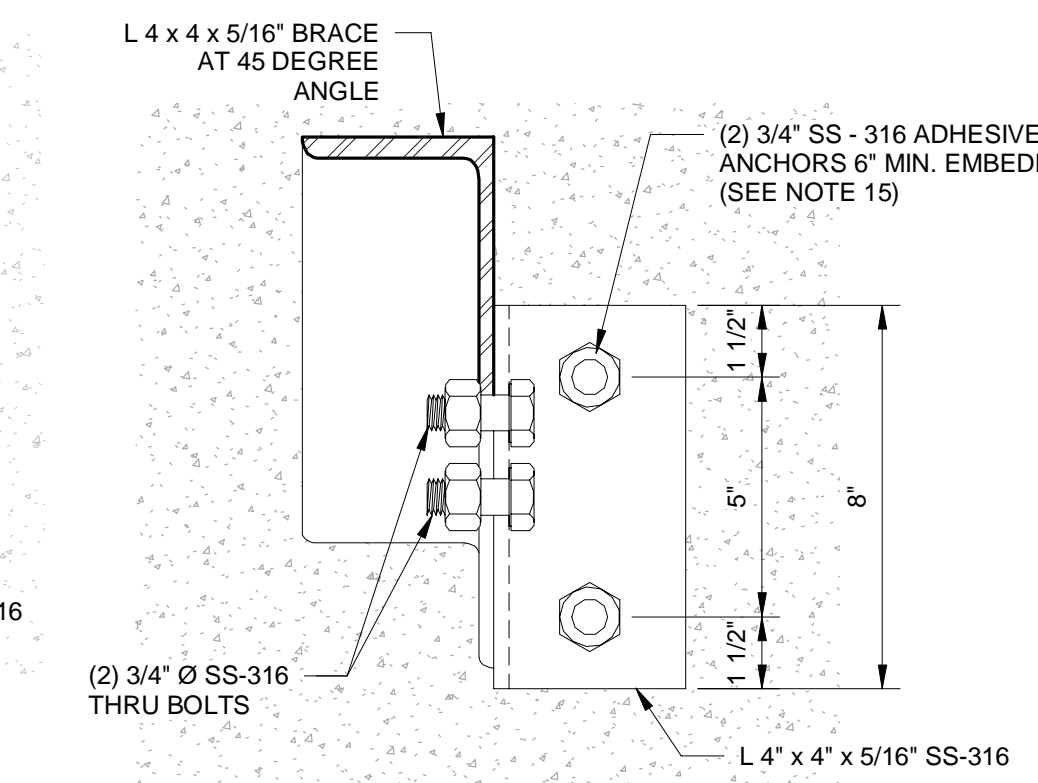
**NOTE A:**  
CONTRACTOR SHALL COORDINATE DIMENSIONS WITH GRATING MANUFACTURER TO ADJUST TOP OF WALL HEIGHT, AS NEEDED, TO PROVIDE FLUSH WALKING SURFACES BETWEEN CONCRETE AND ALUMINUM GRATING AND HATCHES.



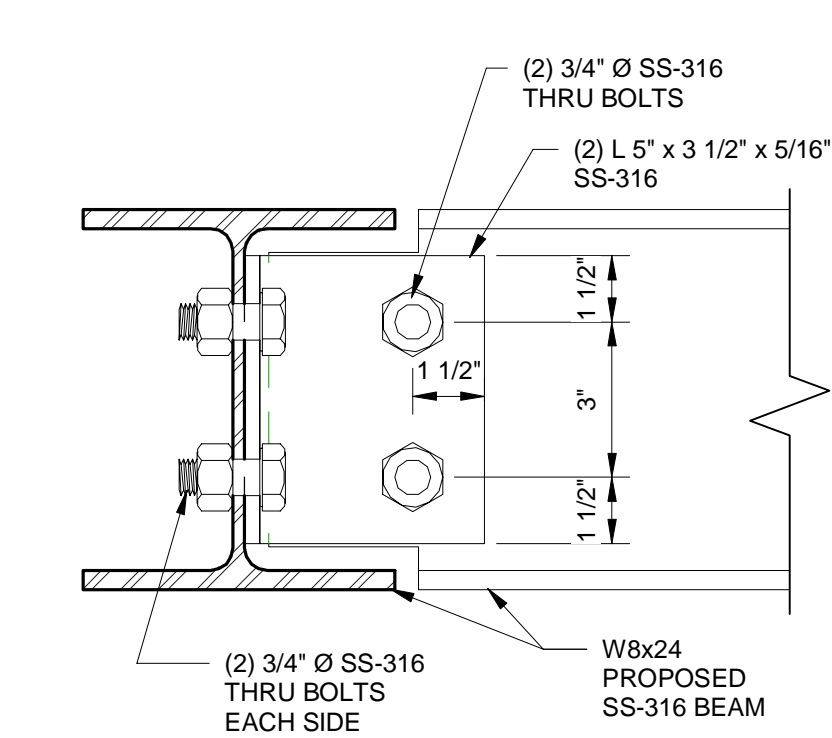
**3 BRACE ELEVATION**  
S-056 1" = 1'-0"



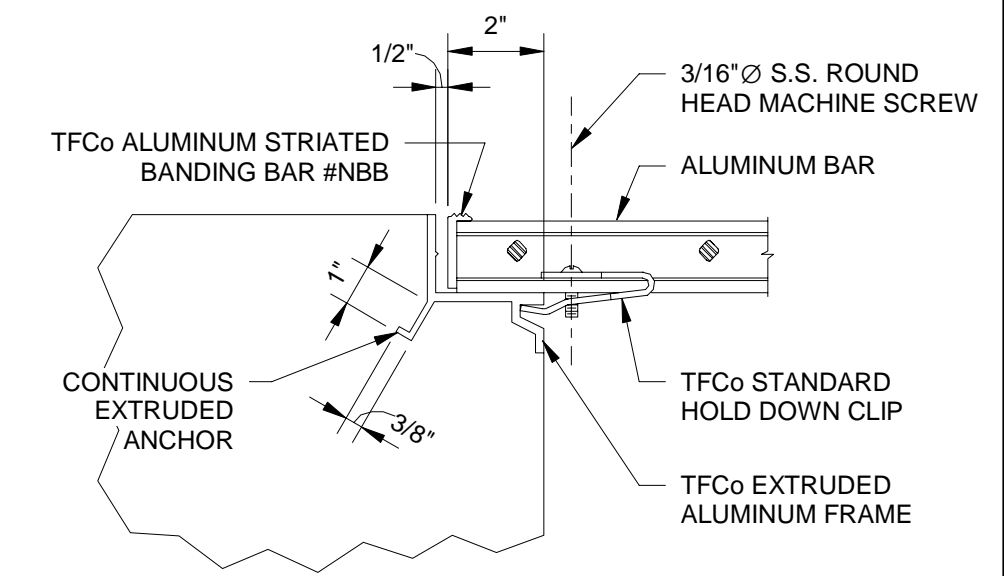
**4 BRACE CONNECTIONS**  
S-056 3" = 1'-0"



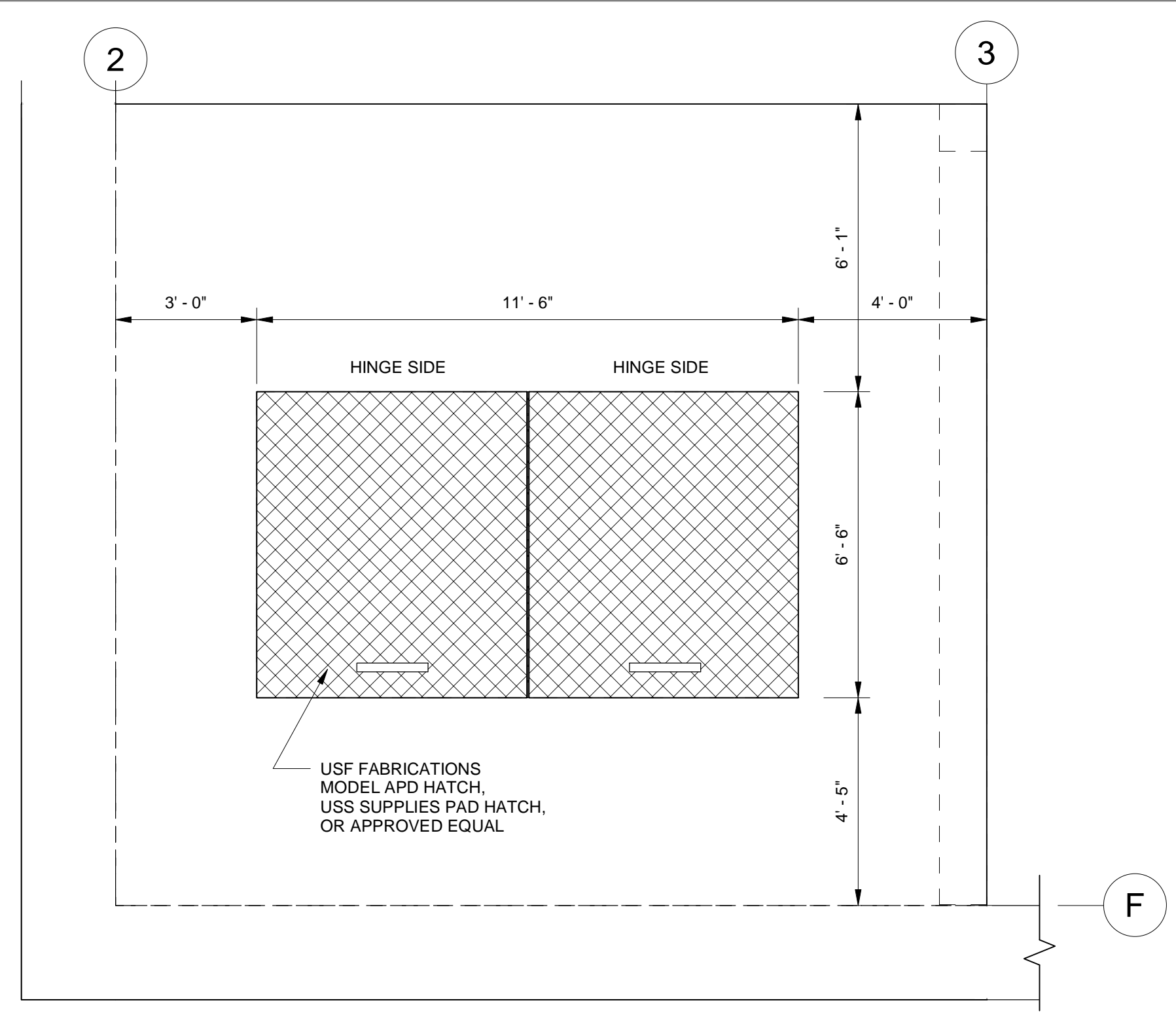
**5 TYP. STEEL TO WALL CONNECTION**  
S-056 3" = 1'-0"



**6 TYP. STEEL TO STEEL CONNECTION**  
S-056 3" = 1'-0"



**7 GRATING CORNER**  
S-056 3" = 1'-0"



**A HATCH PLAN VIEW**  
S-056 3/8" = 1'-0" (BOLLARD AND CHAINS NOT SHOWN FOR CLARITY)

- HATCH NOTES:**
- 1) HATCH MATERIAL SHALL CONSIST OF STAINLESS STEEL 316 OR ALUMINUM.
  - 2) HATCH SHALL BE DESIGNED TO WITHSTAND MINIMUM 300 PSF LIVE LOAD.
  - 3) HATCH SHALL HAVE AUTOMATIC HOLD-OPEN DEVICE AND LIFT ASSIST SYSTEM.
  - 4) COVER SHALL HAVE DIAMOND PLATE FINISH.

- NOTES:**
1. CONTRACTOR TO COPE BEAM AS NECESSARY.
  2. CONTRACTOR TO PROVIDE SHORING AS REQUIRED FOR INSTALLATION OF PROPOSED BEAMS

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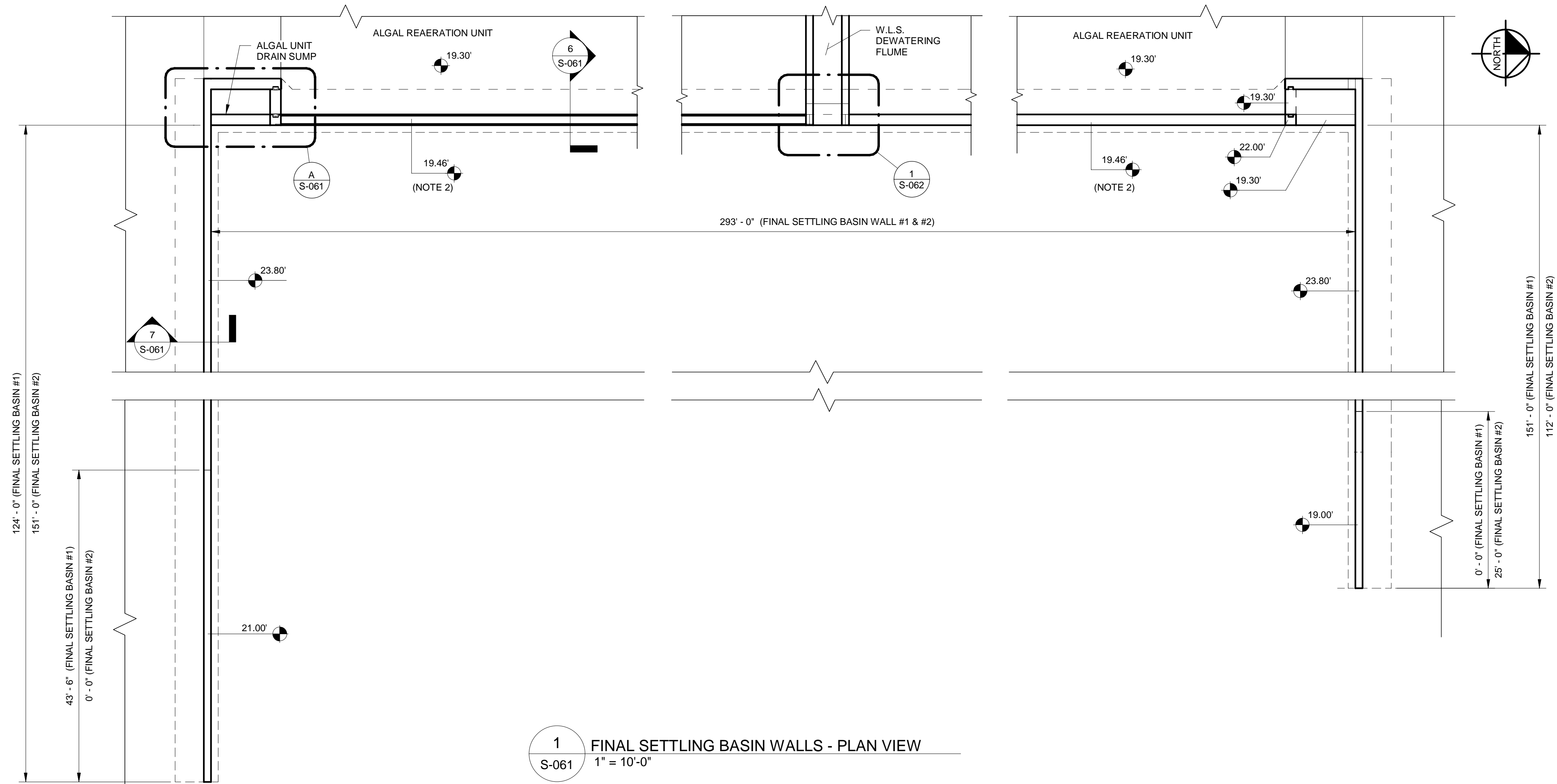
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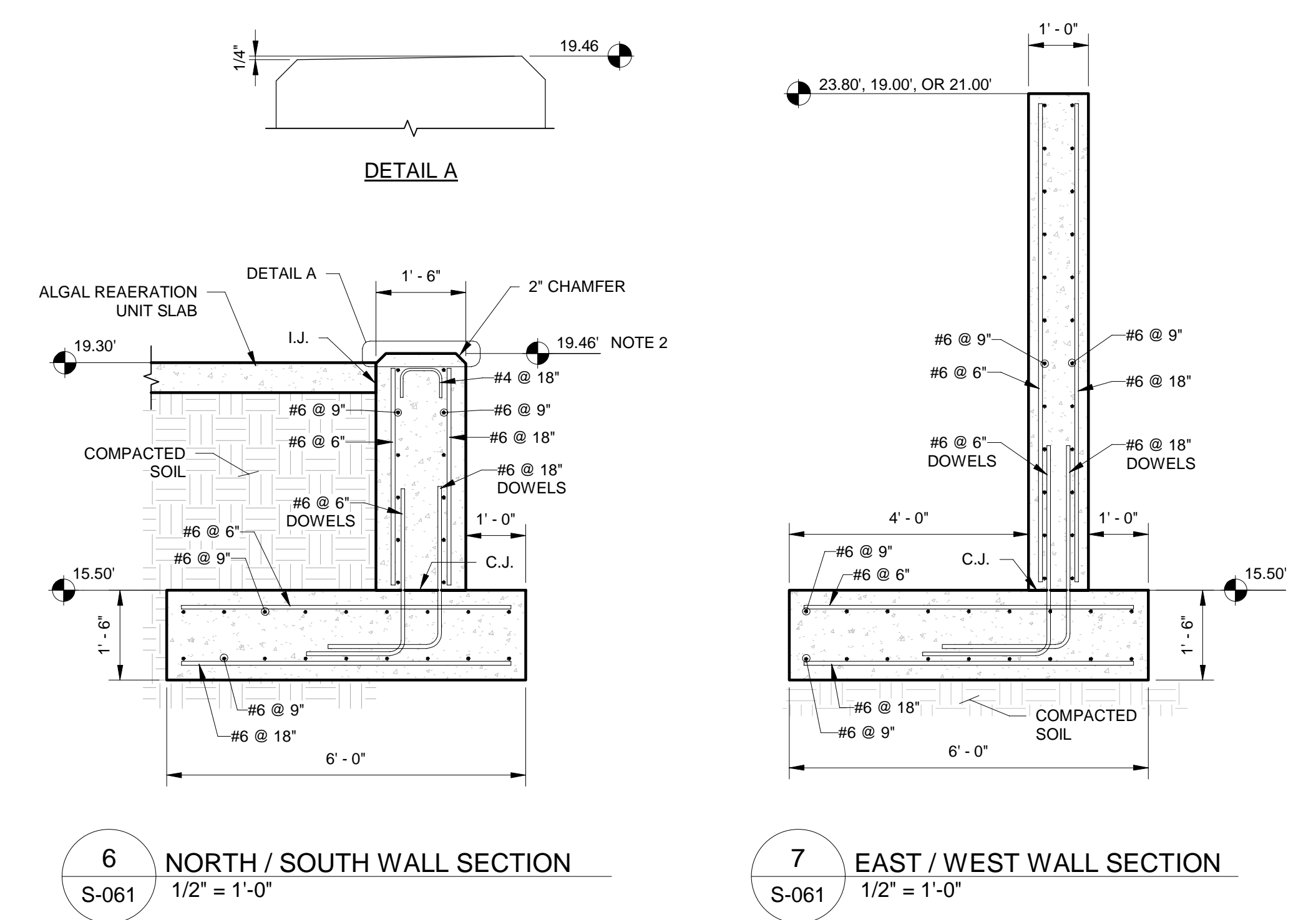
JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

**HEADWORKS -  
GRATING**

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	<b>S-056</b>



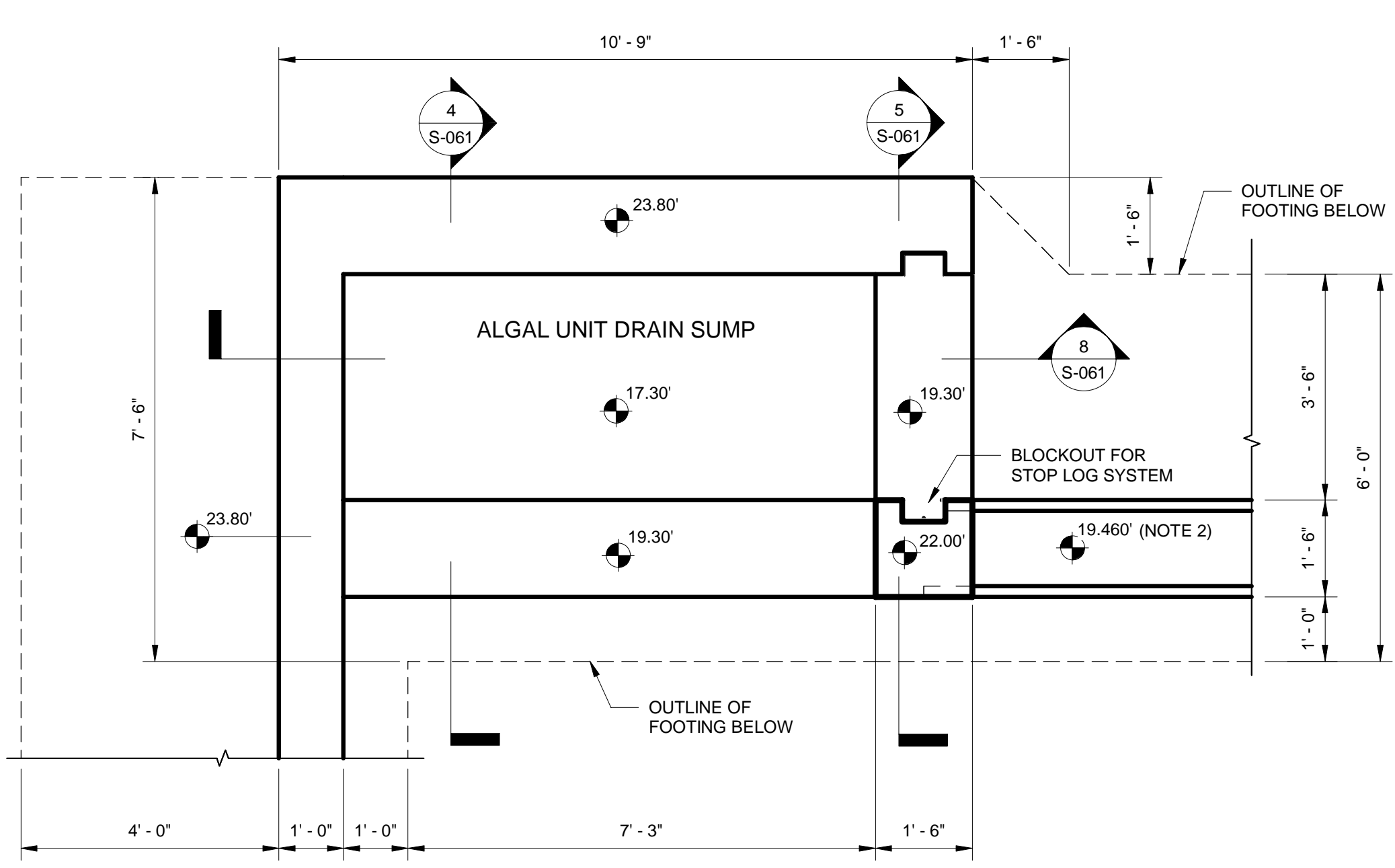
1 FINAL SETTLING BASIN WALLS - PLAN VIEW  
S-061 1" = 10'-0"



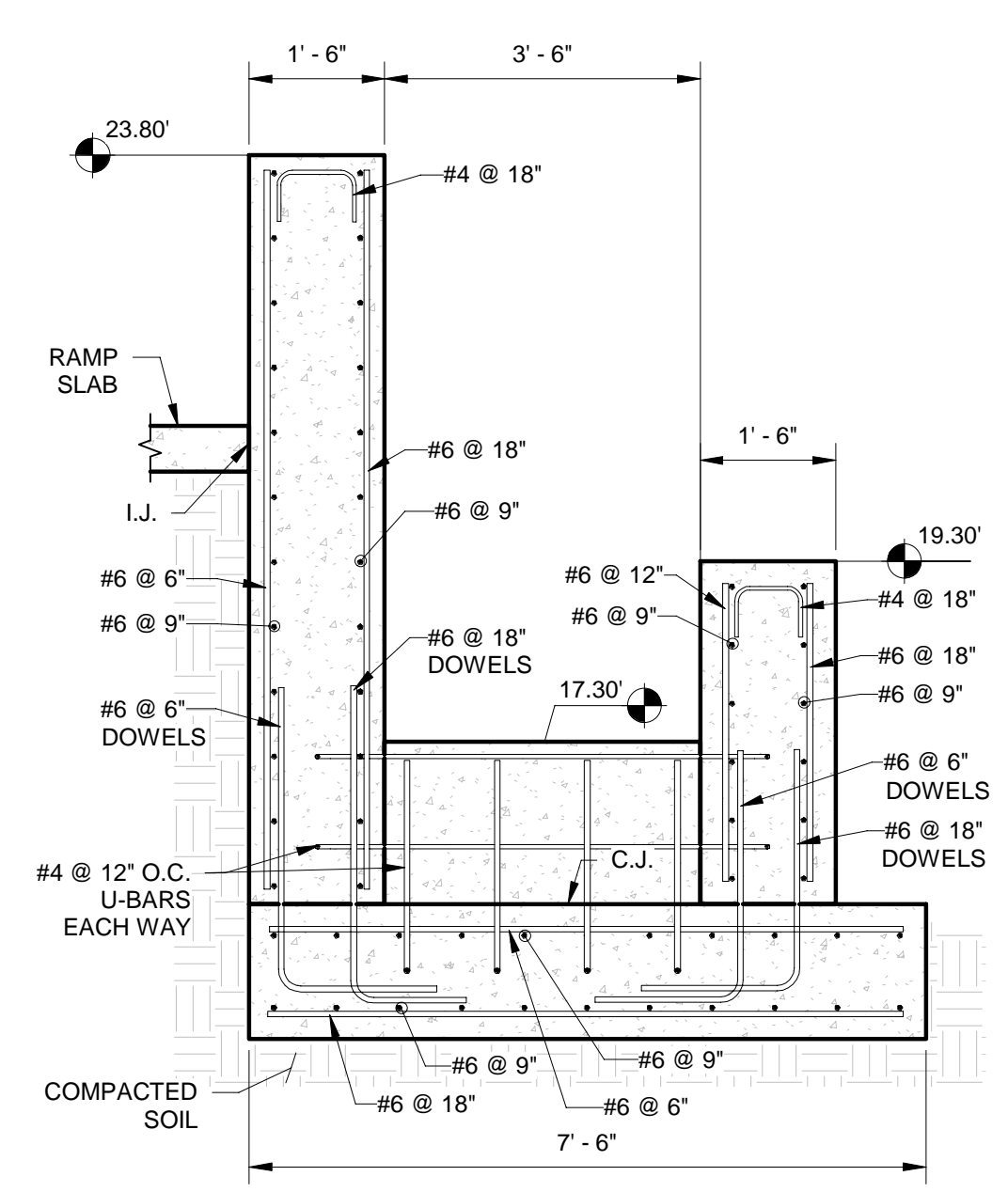
6 NORTH / SOUTH WALL SECTION  
S-061 1/2" = 1'-0"

7 EAST / WEST WALL SECTION  
S-061 1/2" = 1'-0"

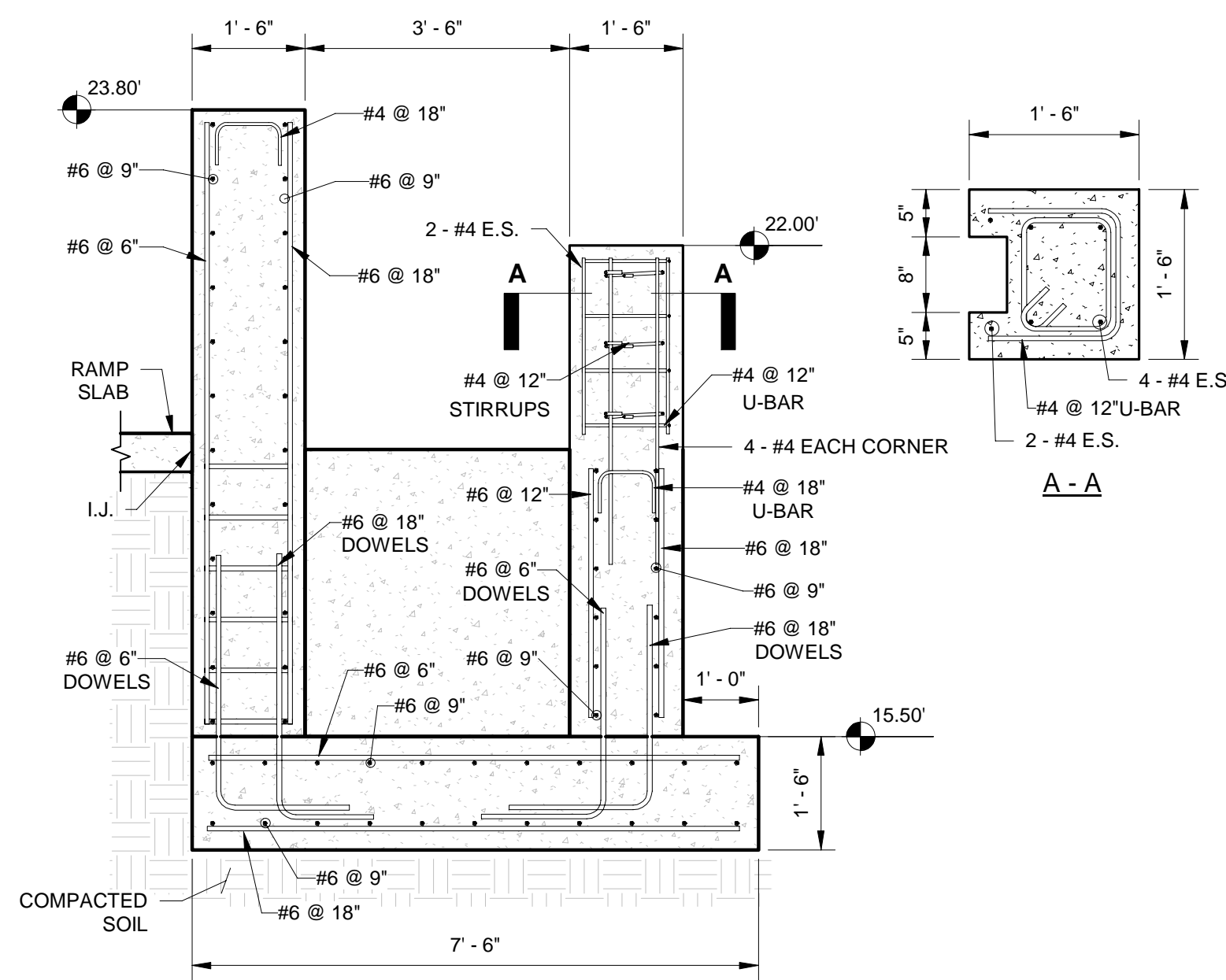
- NOTES:**
- SEE TYPICAL DETAILS SHEETS FOR WALL JOINING CRITERIA, CONSTRUCTION JOINT DETAILS, ISOLATION JOINT DETAILS, AND BLOCKOUT FOR STOP LOG SYSTEM.
  - SEE CIVIL DRAWINGS SHEETS C-4 AND C-5 FOR TOP OF WALL CONSTRUCTION TOLERANCE CRITERIA. WORK NOT MEETING THE TOLERANCE CRITERIA WILL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.



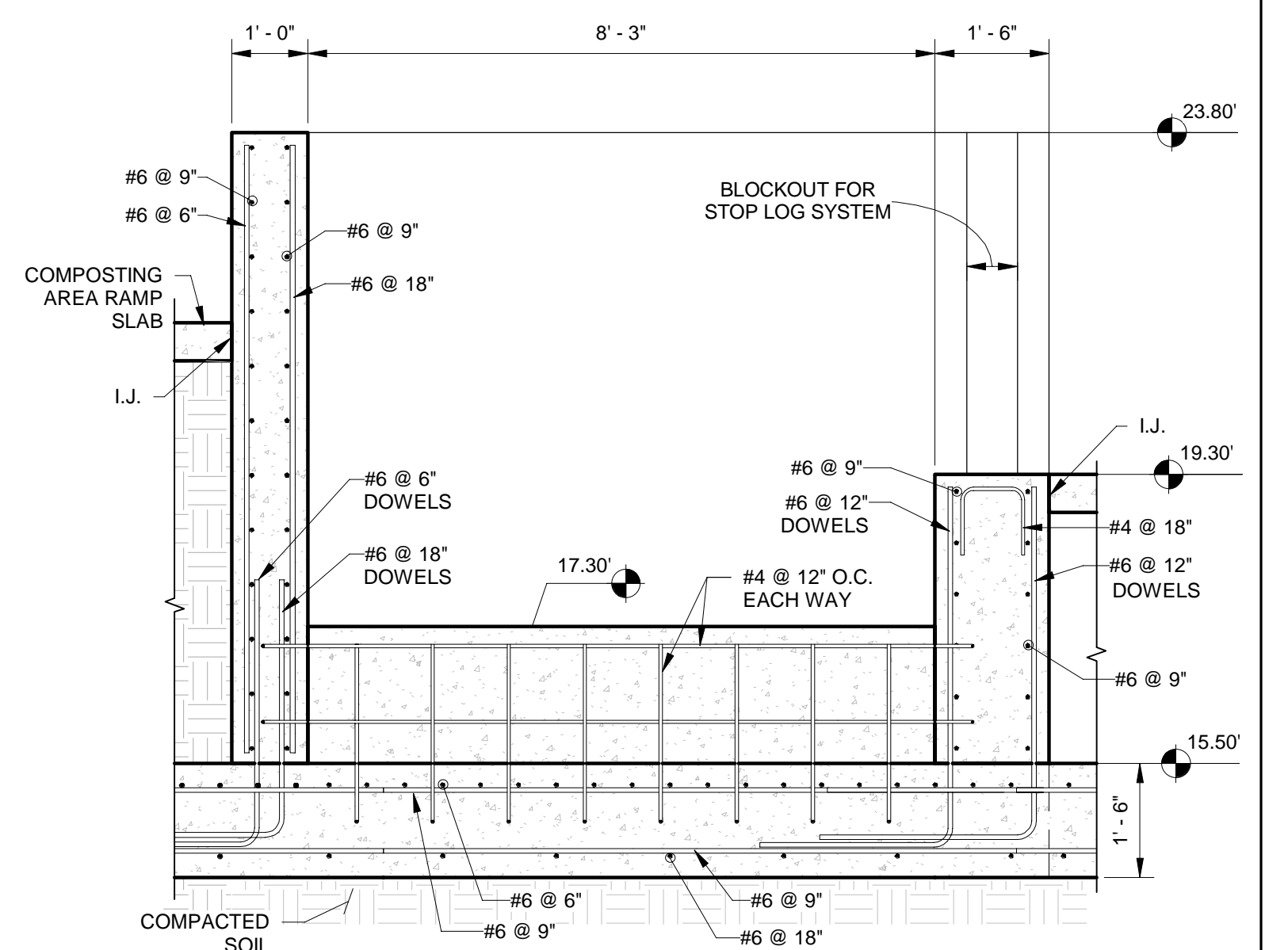
A ALGAL UNIT DRAIN SUMP - PLAN VIEW  
S-061 1/2" = 1'-0"



4 ALGAL UNIT DRAIN SUMP - SECTION  
S-061 1/2" = 1'-0" (LOOKING NORTH)



5 ALGAL UNIT DRAIN SUMP - SECTION AT COLUMN  
S-061 1/2" = 1'-0" (LOOKING NORTH)



8 ALGAL UNIT DRAIN SUMP - SECTION  
S-061 1/2" = 1'-0" (LOOKING WEST)

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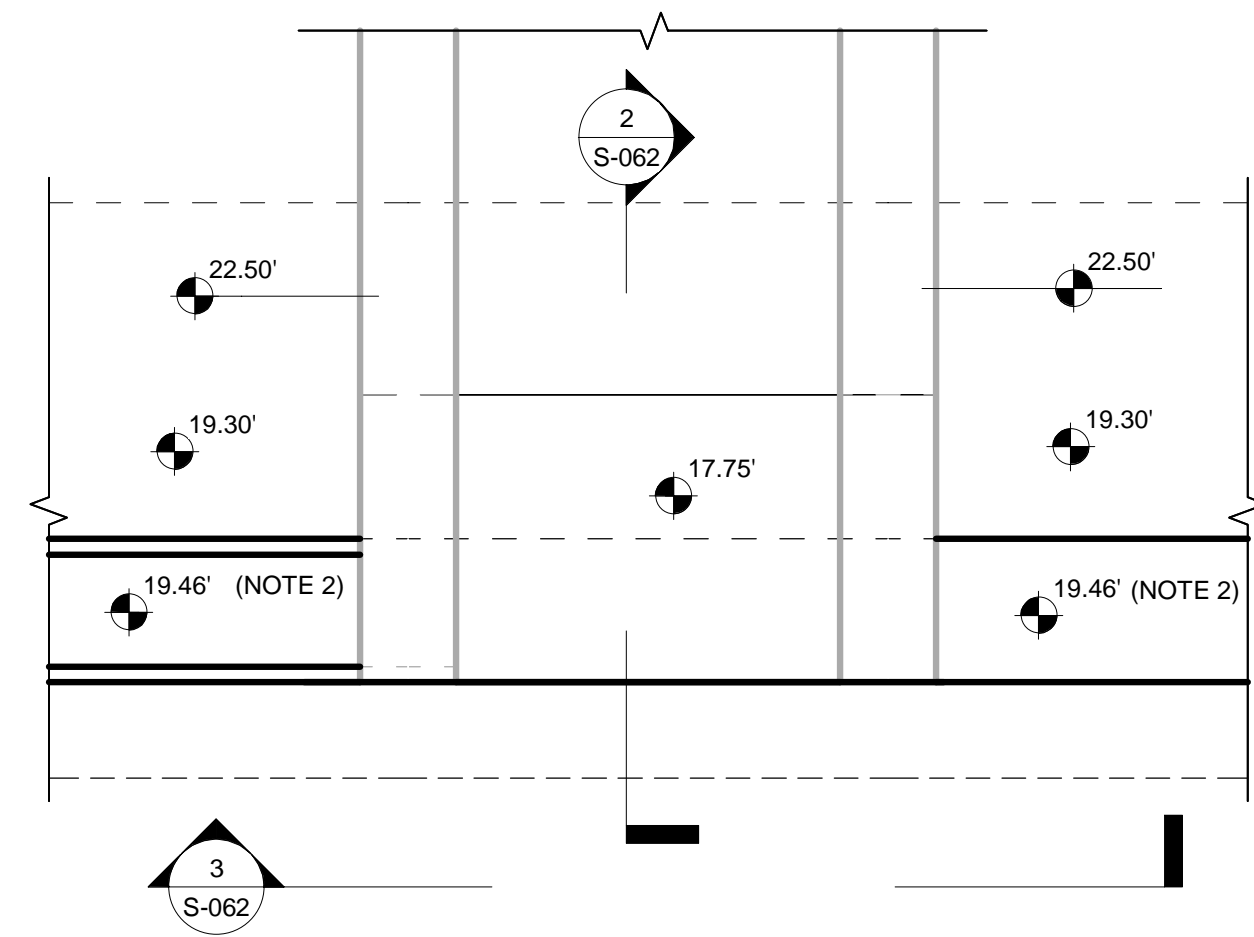
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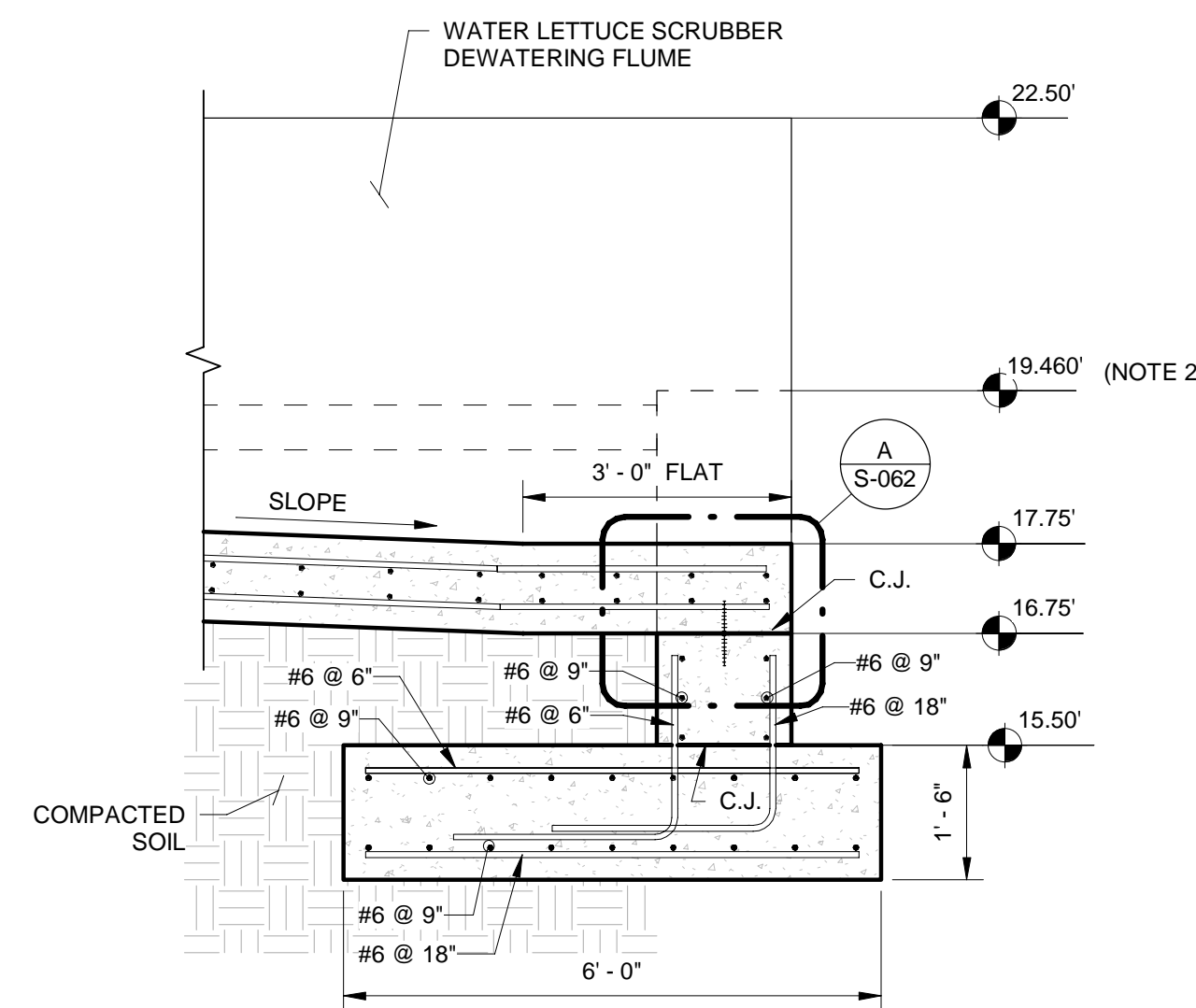
JERRY MARCUS PICCOLO, P.E.  
 FLORIDA P.E. NO. 80484  
 DATE:

FINAL SETTLING BASIN  
 WALLS (1 OF 2)

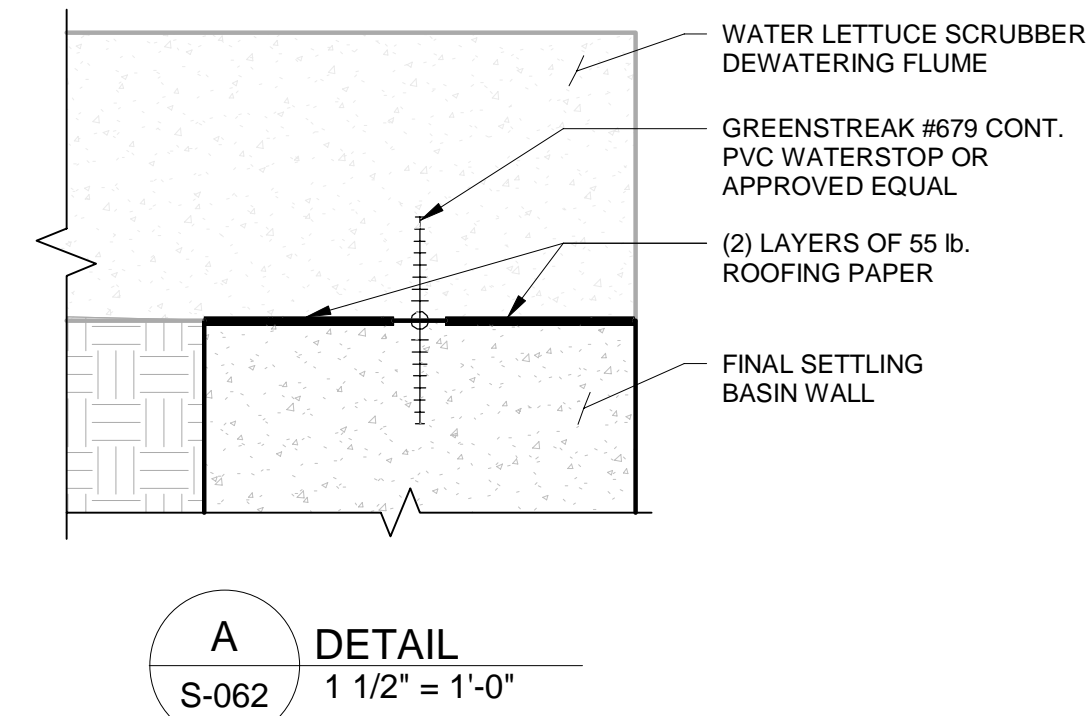
PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-061



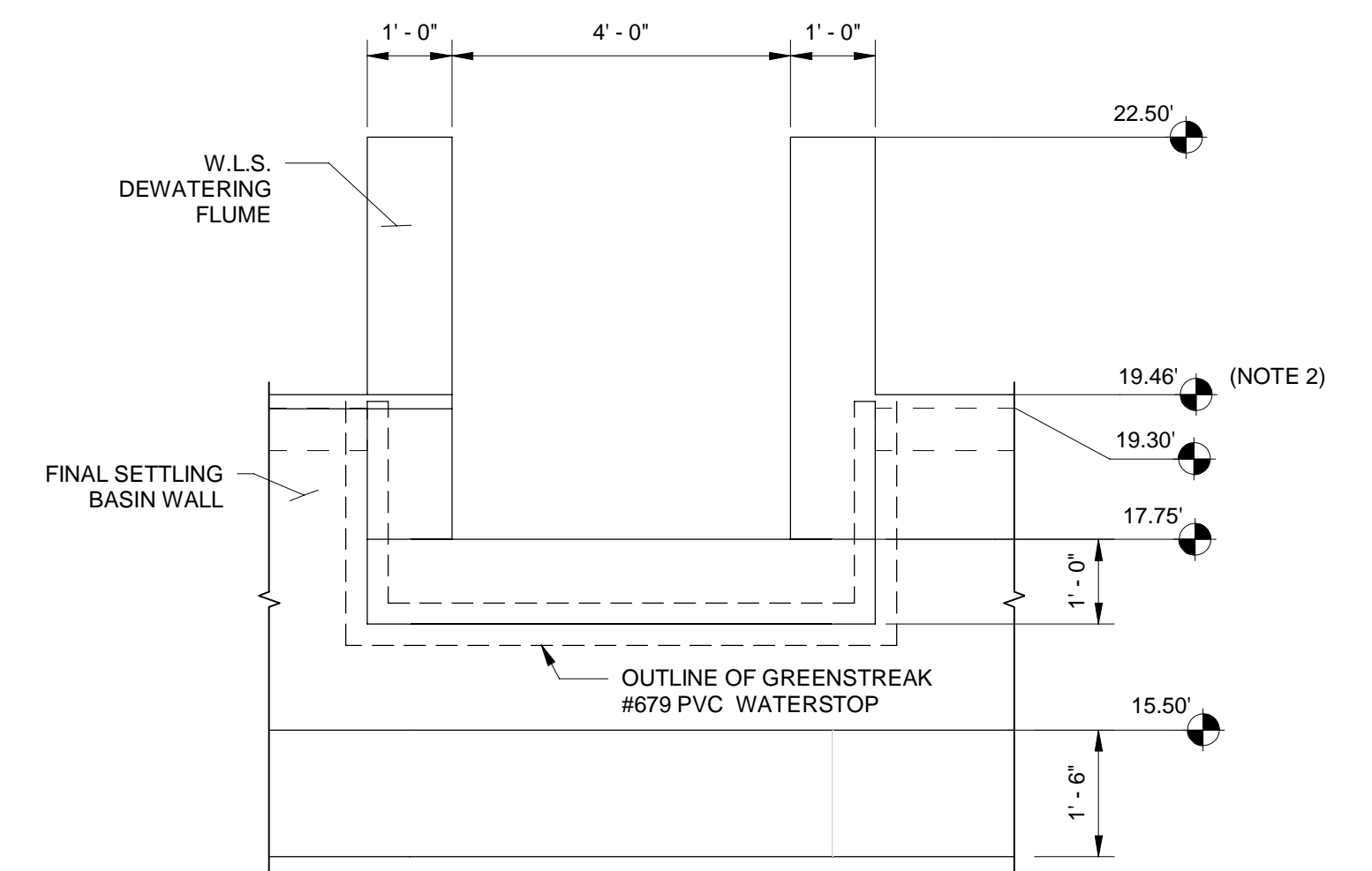
1 FINAL SETTLING BASIN WALLS / W.L.S. DEWATERING FLUME - PLAN  
S-062 1/2" = 1'-0"



2 FINAL SETTLING BASIN WALL AT W.L.S. DEWATERING FLUME  
S-062 1/2" = 1'-0"



A DETAIL  
S-062 1 1/2" = 1'-0"



3 VIEW AT W.L.S. DEWATERING FLUME  
S-062 1/2" = 1'-0"

APPROXIMATE QUANTITIES *			
STRUCTURE	LENGTH	VOLUME OF CONCRETE (CY)	LB. OF STEEL (LBS)
FINAL SETTLING BASIN WALL #1	568'-0"	355	76,000
FINAL SETTLING BASIN WALL #2	556'-0"	347	75,000

\* SEE BID ITEM NOTES ON SHEET S-002

- NOTES:**
- SEE TYPICAL DETAILS SHEETS FOR WALL JOINTING CRITERIA, CONSTRUCTION JOINT DETAILS, AND BLOCKOUT FOR STOP LOG SYSTEM.
  - SEE CIVIL DRAWINGS SHEETS C-4 AND C-5 FOR TOP OF WALL CONSTRUCTION TOLERANCE CRITERIA. WORK NOT MEETING THE TOLERANCE CRITERIA WILL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

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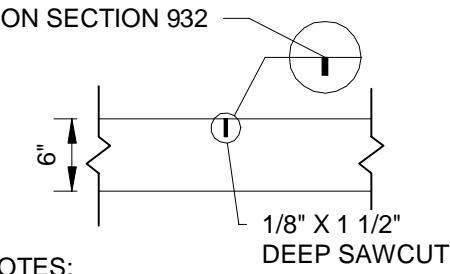
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 FLORIDA P.E. NO. 80484  
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FINAL SETTLING BASIN  
 WALLS (2 OF 2)

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 ALL ELEVATIONS ON THIS PROJECT.

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-062

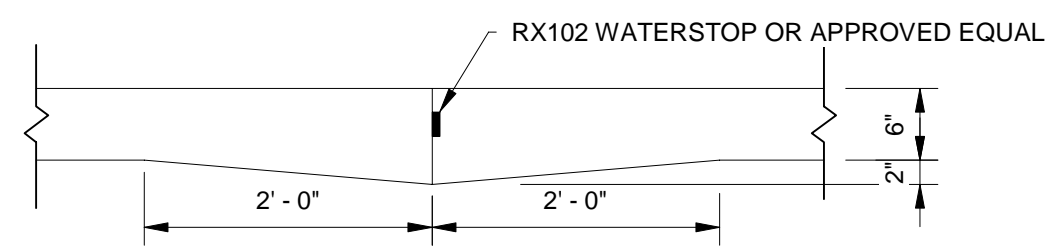
FILL SAWCUT WITH TYPE D SILICONE SEALANT IN ACCORDANCE WITH FDOT SPECIFICATION SECTION 932



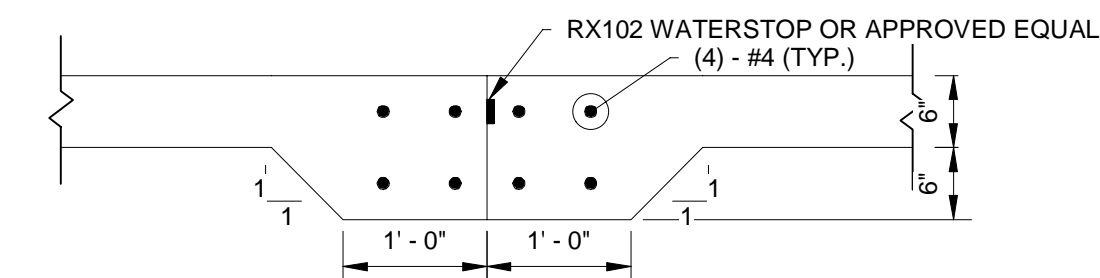
SAWCUT NOTES:

1) SAWCUT JOINTS AS SOON AS THE CONCRETE HAS HARDENED ENOUGH THAT THE AGGREGATE DOES NOT DISLODGE, AND THE CONCRETE CAN SUPPORT THE CREW AND EQUIPMENT.

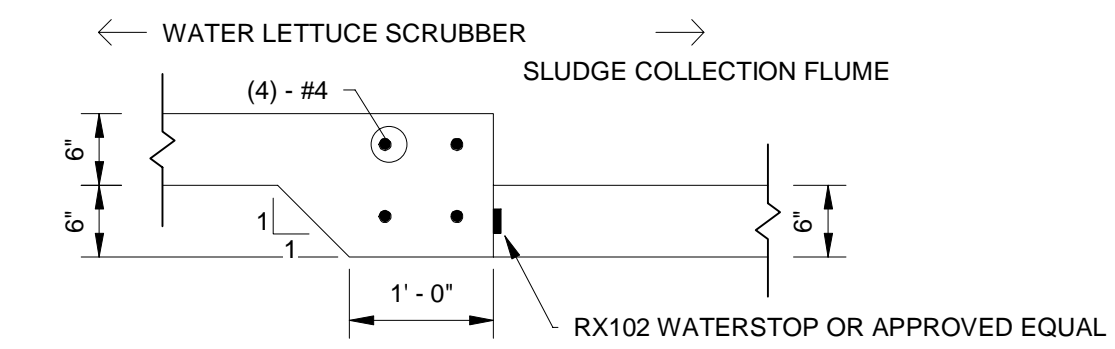
**1** SAWCUT JOINT  
S-101 3/4" = 1'-0"



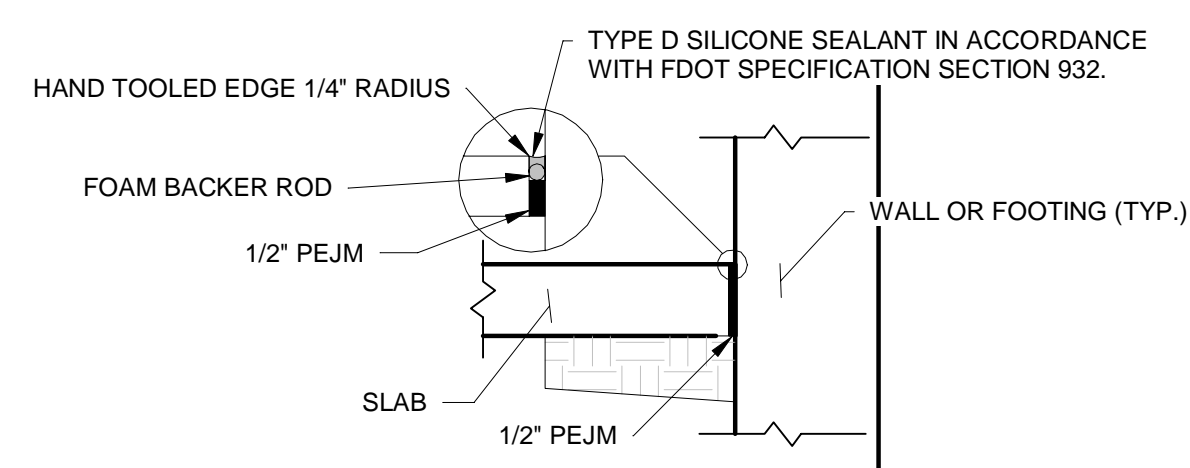
**2** CONSTRUCTION JOINT  
S-101 3/4" = 1'-0"



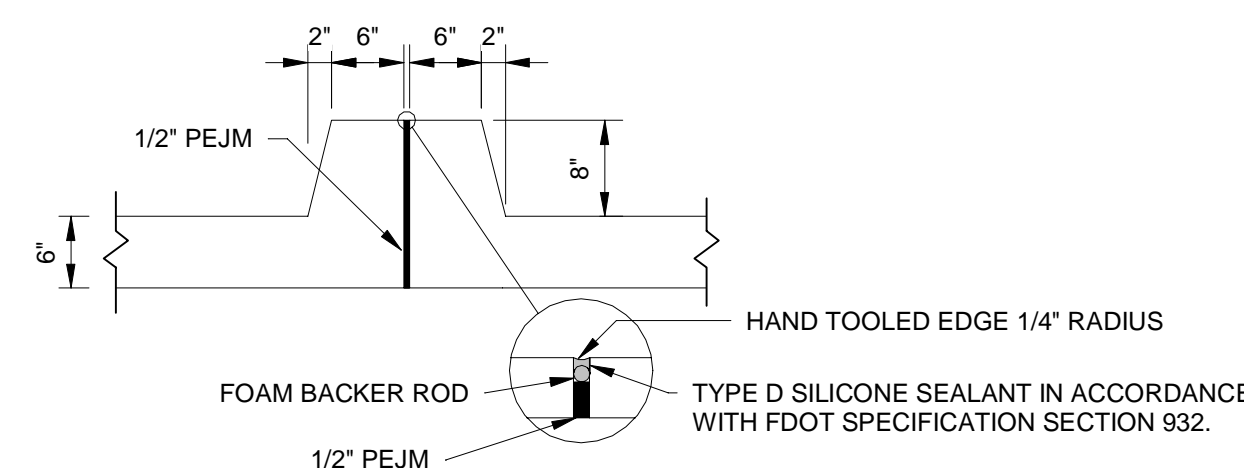
**3** THICKENED EDGE AT CONSTRUCTION JOINT  
S-101 3/4" = 1'-0"



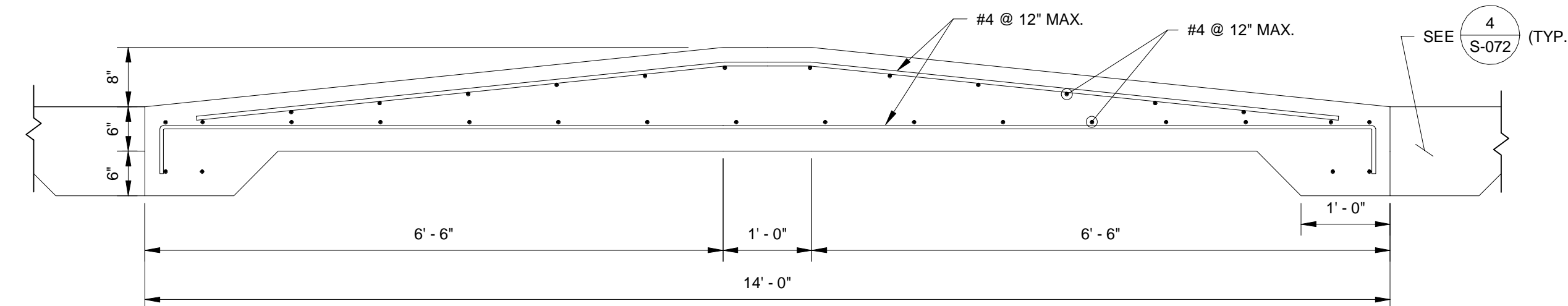
**4** W.L.S. AND SLUDGE COLLECTION FLUME JOINT DETAIL  
S-101 3/4" = 1'-0"



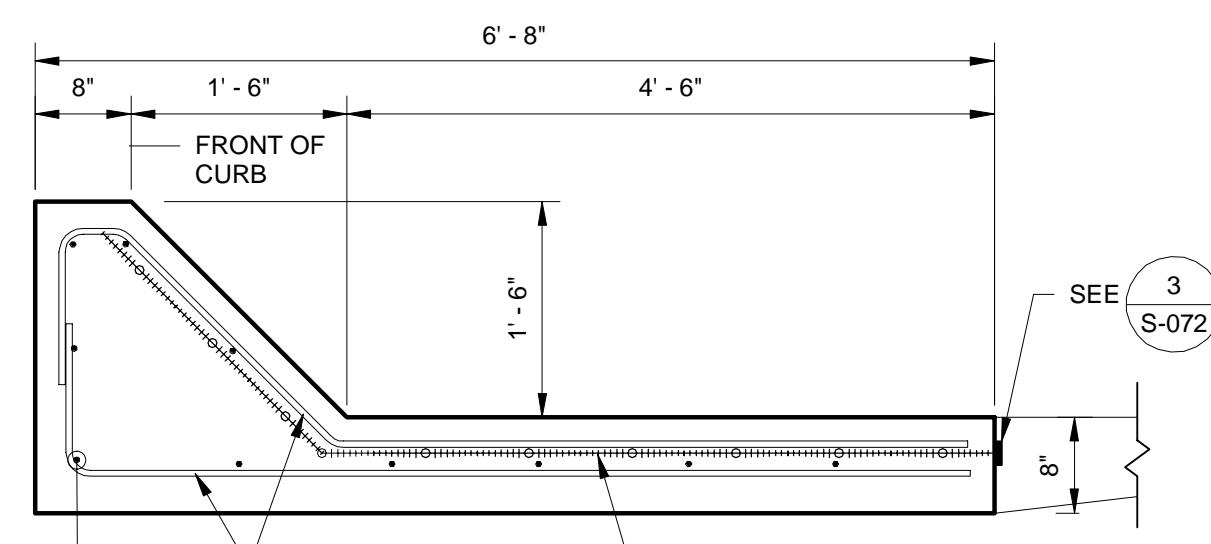
**5** ISOLATION JOINT  
S-101 3/4" = 1'-0"



**6** W.L.S. QUADRANT SEPARATION CURB  
S-101 3/4" = 1'-0"



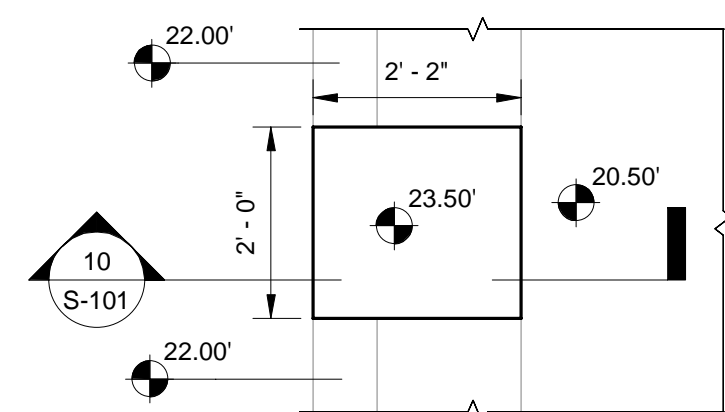
**7** W.L.S. MOUNTABLE CURB - SECTION  
S-101 3/4" = 1'-0"



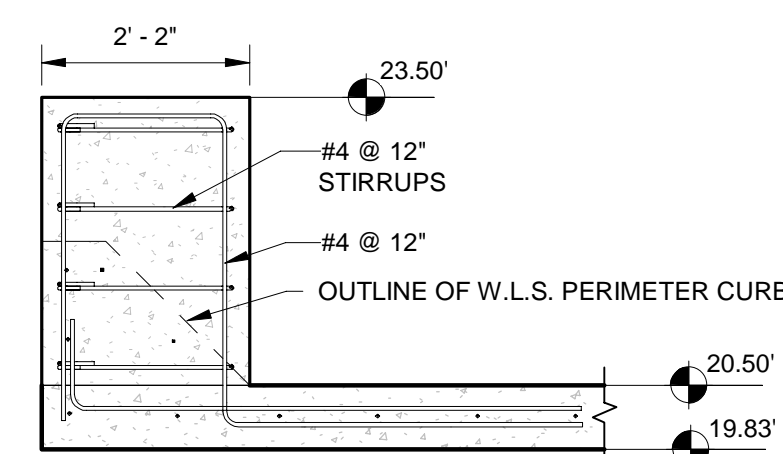
W.L.S. PERIMETER CURB NOTES:

1) WALL JOINTING CRITERIA SHALL BE APPLIED TO W.L.S. PERIMETER CURB.

**8** W.L.S. PERIMETER CURB  
S-101 3/4" = 1'-0"



**9** PIPE SUPPORT PEDESTAL PLAN VIEW  
S-101 1/2" = 1'-0"



**10** PIPE SUPPORT PEDESTAL SECTION  
S-101 1/2" = 1'-0"

NOT FOR CONSTRUCTION:  
BIDDING PURPOSES ONLY

NUMBER	REVISIONS	REVISED BY	CHECKED BY

**Kimley»Horn**

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1920 WEXIVA WAY SUITE 200, WEST PALM BEACH, FLORIDA 33411  
TEL: 561-845-0665 FAX: 561-8638175 WWW.KIMLEY-HORN.COM CA 00000696

DESIGNED BY: GNH DRAWN BY: CL CHECKED BY: AGF APPROVED BY: JP3

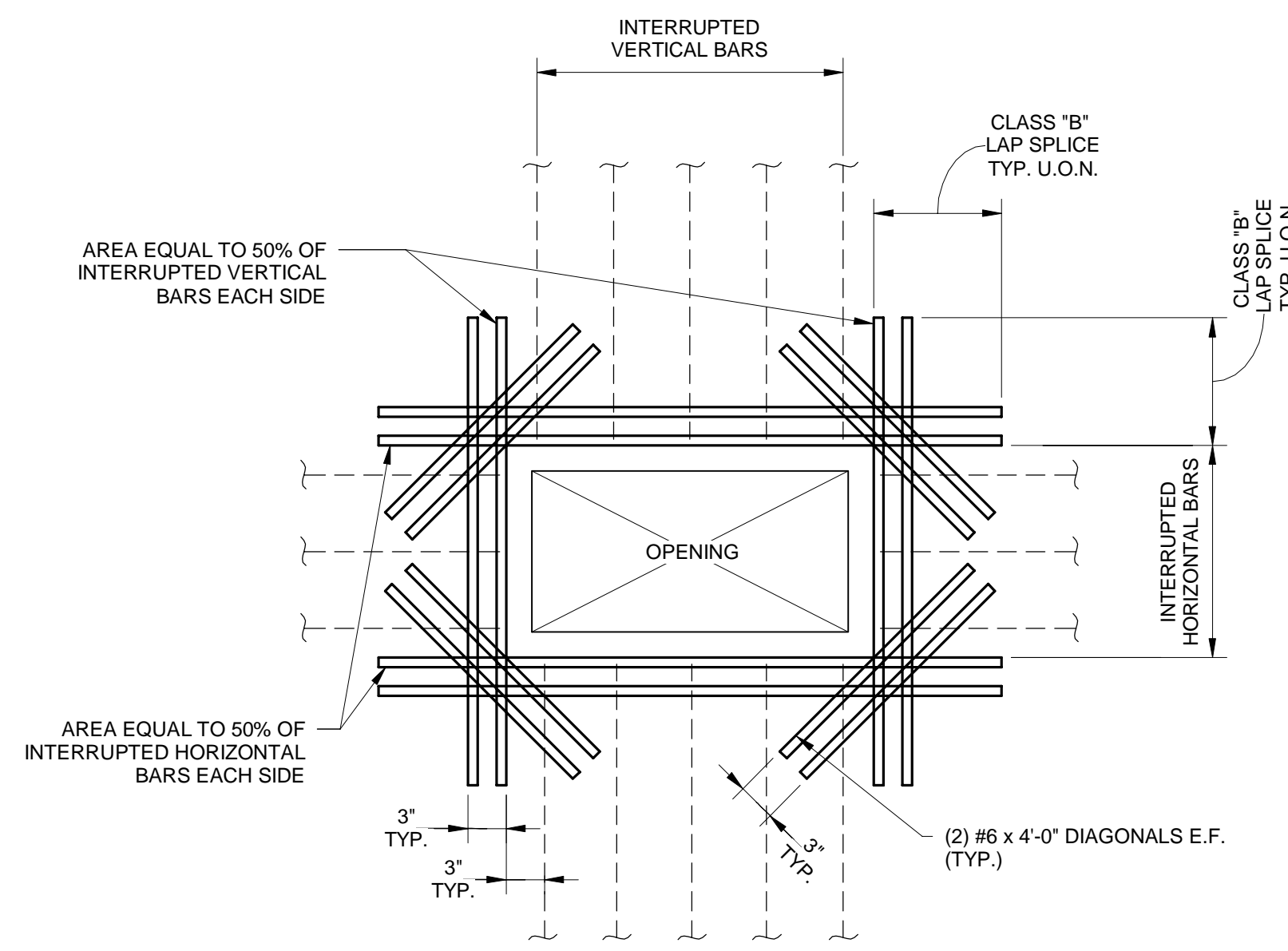
MOORHEN MARSH LEAPS™

NAVD88 DATUM IS USED FOR ALL ELEVATIONS ON THIS PROJECT.

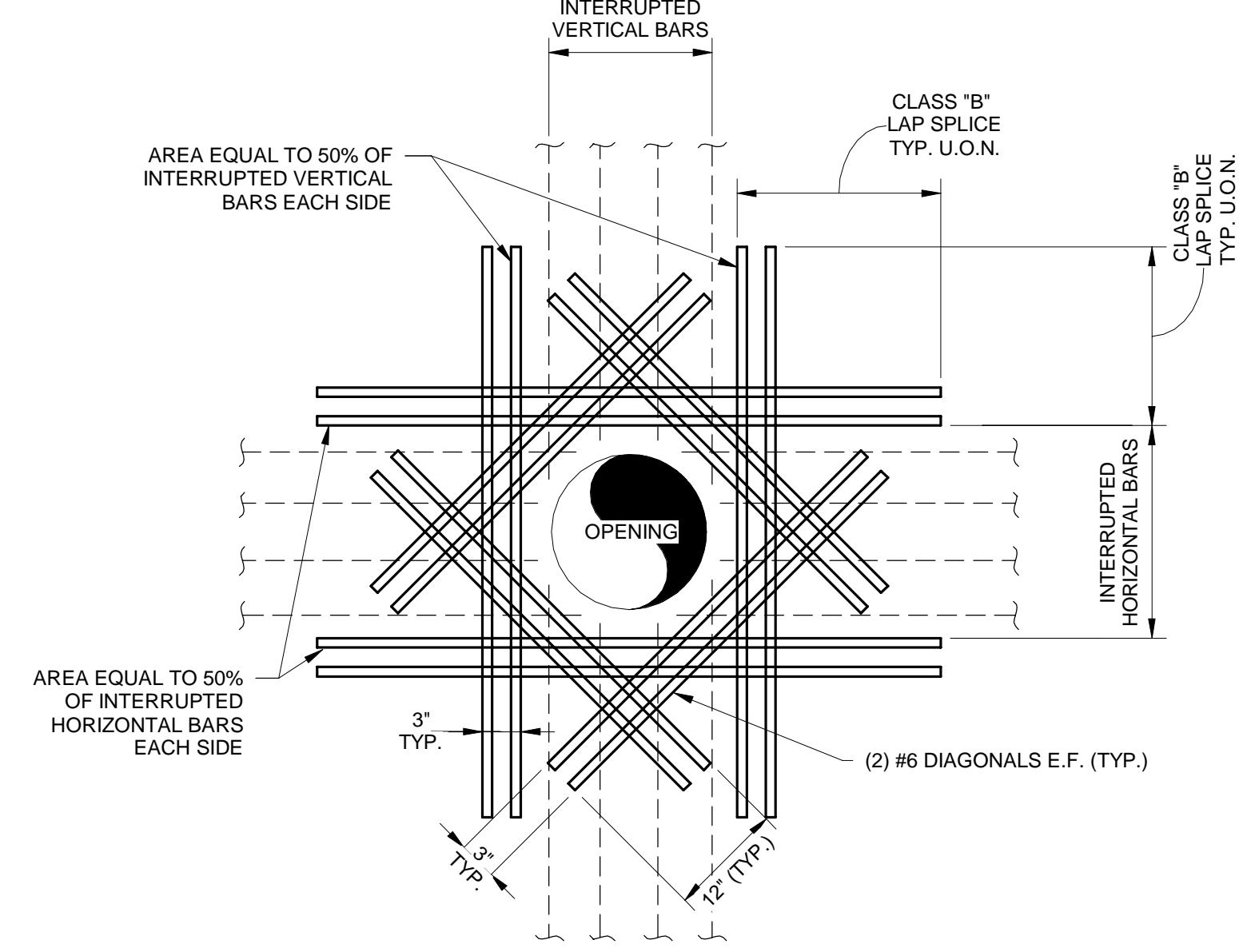
TYPICAL DETAILS (1  
OF 2)

JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

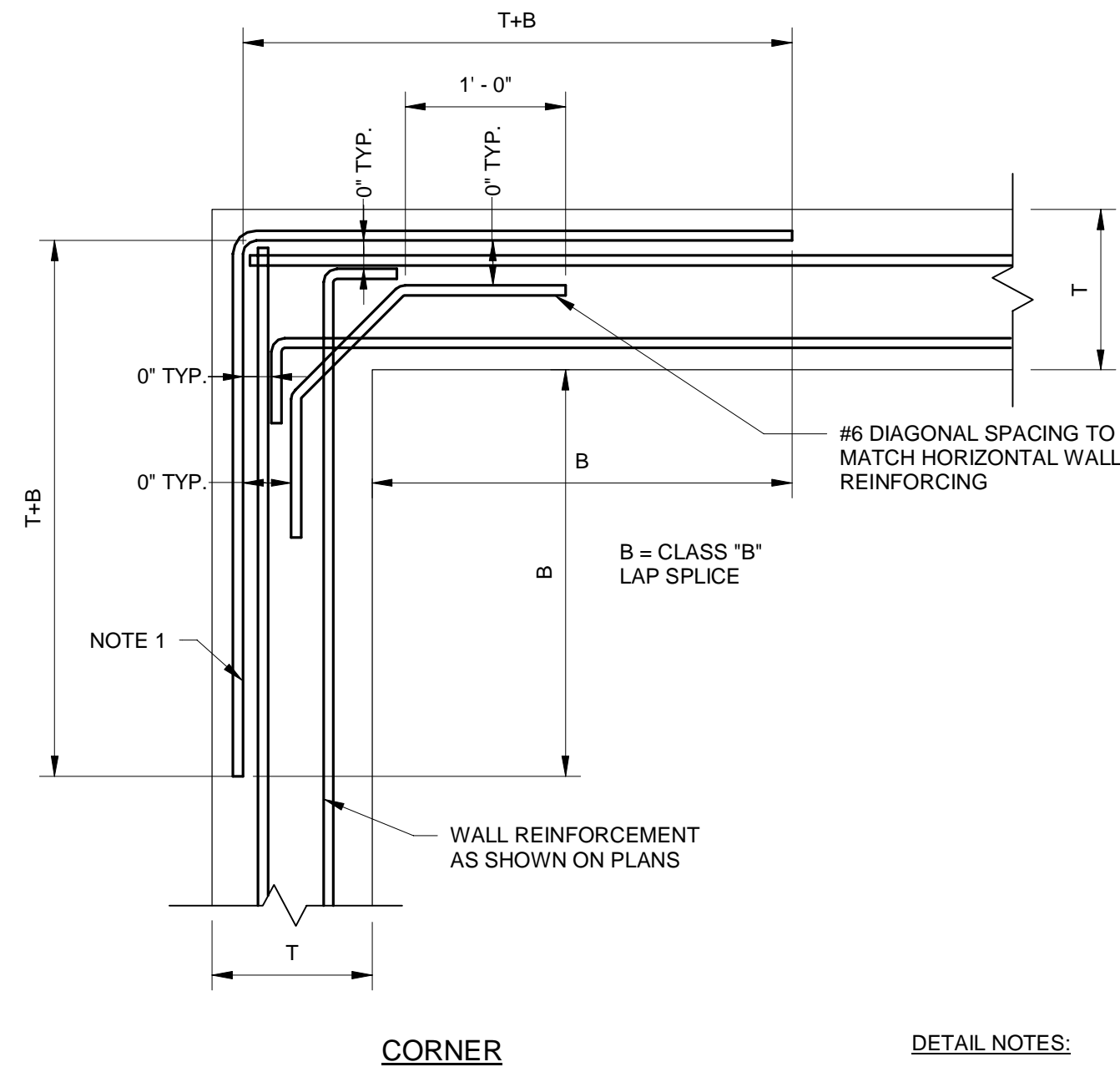
PROJECT NO.  
DATE 2/20/2020  
SCALE AS NOTED  
SHEET S-101



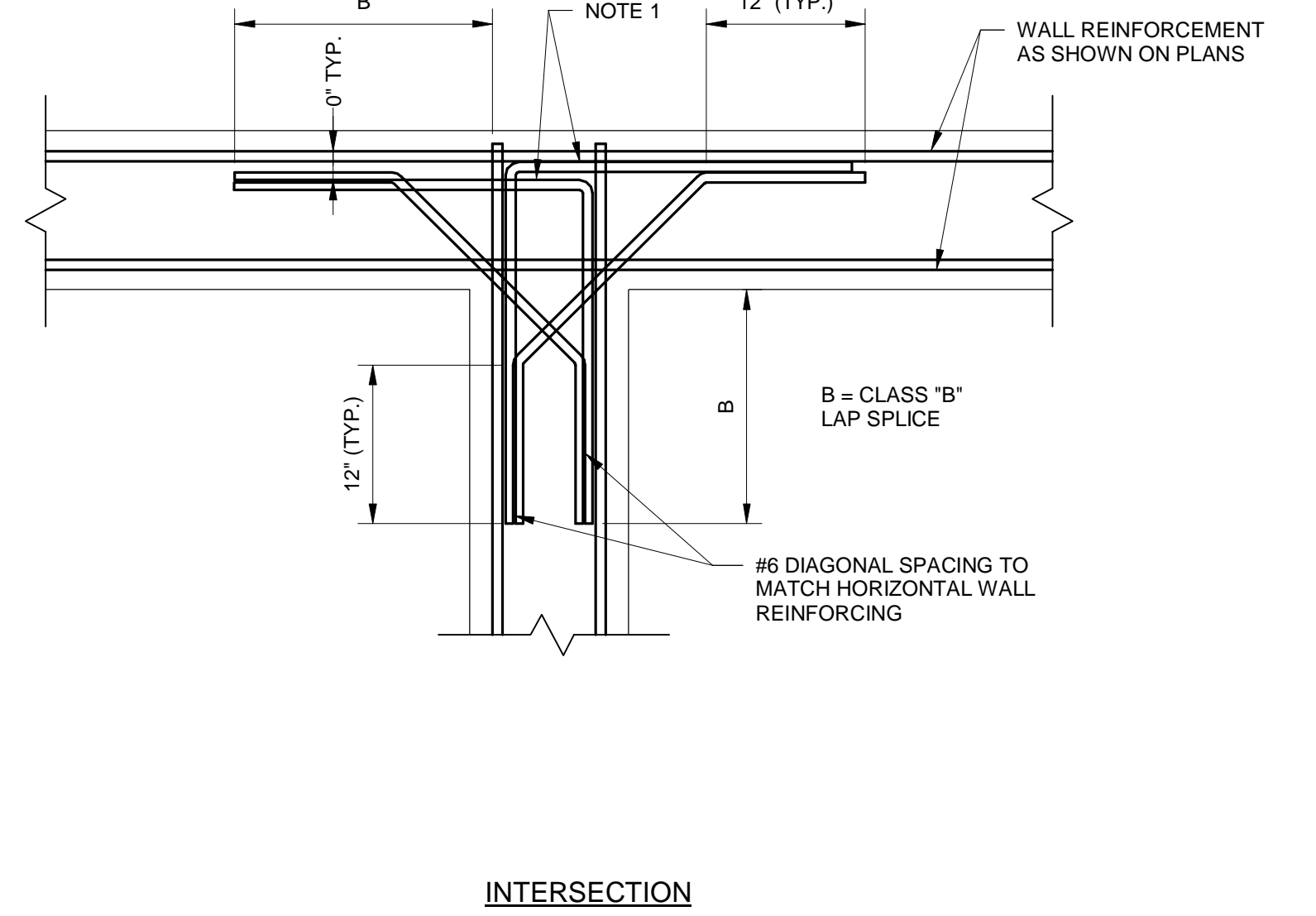
**1** TYPICAL RECTANGULAR OPENING REINFORCEMENT DETAIL  
S-102 1" = 1'-0"



**2** TYPICAL CIRCULAR OPENING REINFORCEMENT DETAIL  
(ELLIPTICAL SIMILAR)  
S-102 1" = 1'-0"



**CORNER**

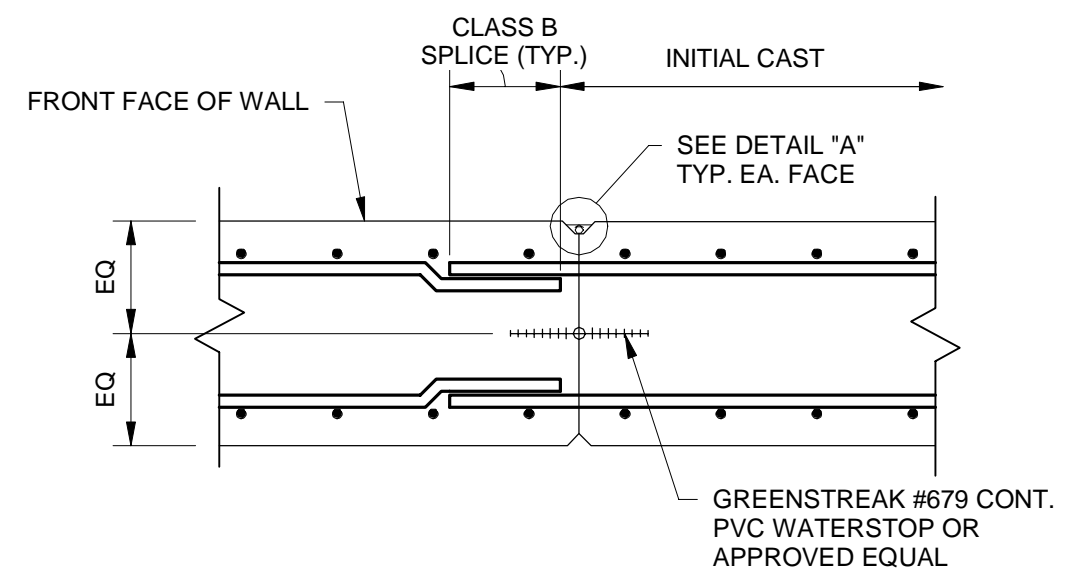


**INTERSECTION**

DETAIL NOTES:

1. SIZE AND SPACING OF TYPICAL INTERSECTION AND CORNER BARS TO MATCH HORIZONTAL WALL REINFORCEMENT UNLESS NOTED OTHERWISE.

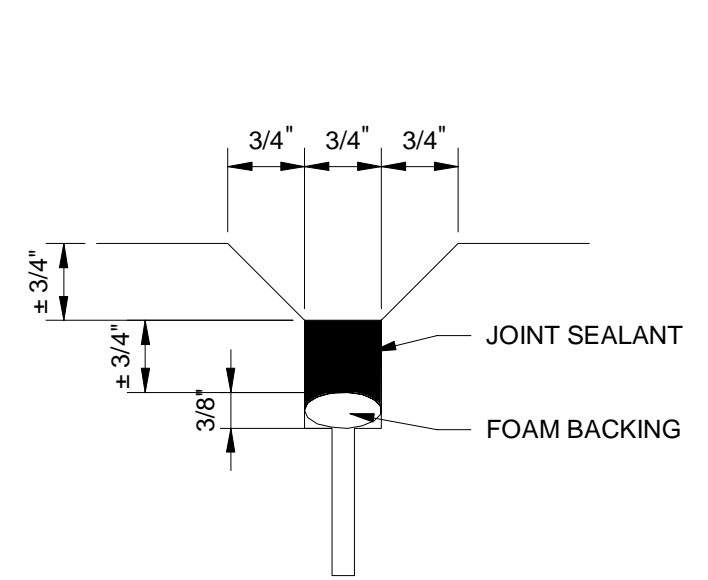
**3** TYPICAL WALL REINFORCEMENT DETAILS  
S-102 1" = 1'-0"



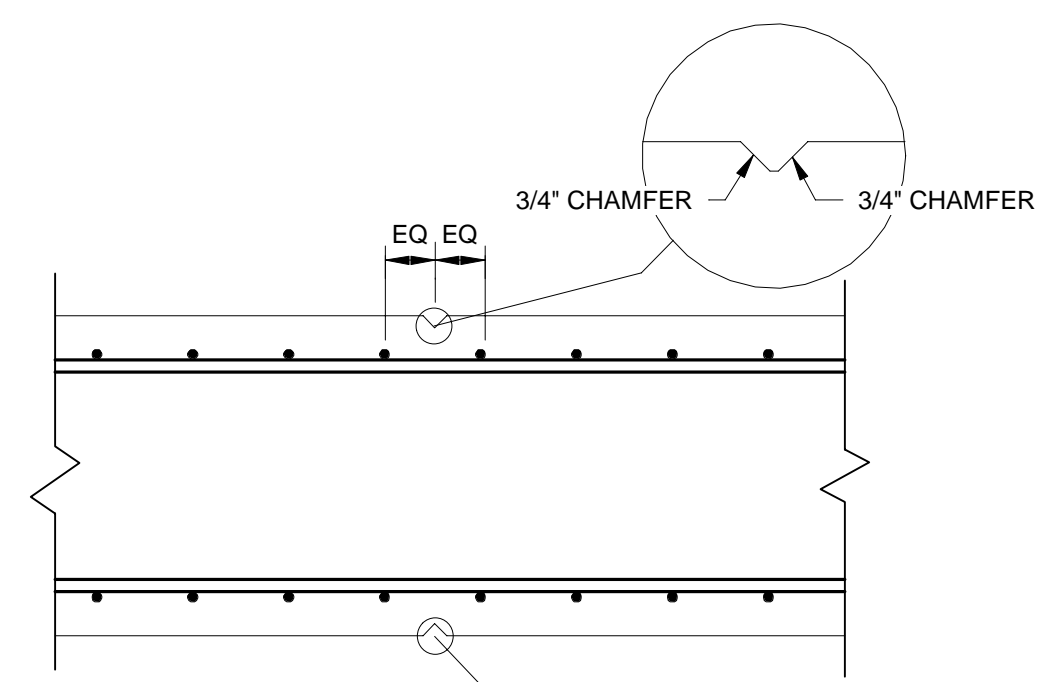
DETAIL NOTES:

1. STOP WATERSTOP 6" BELOW TOP OF WALL.
2. CONTRACTOR SUBMIT LOCATION IF NOT SPECIFIED.

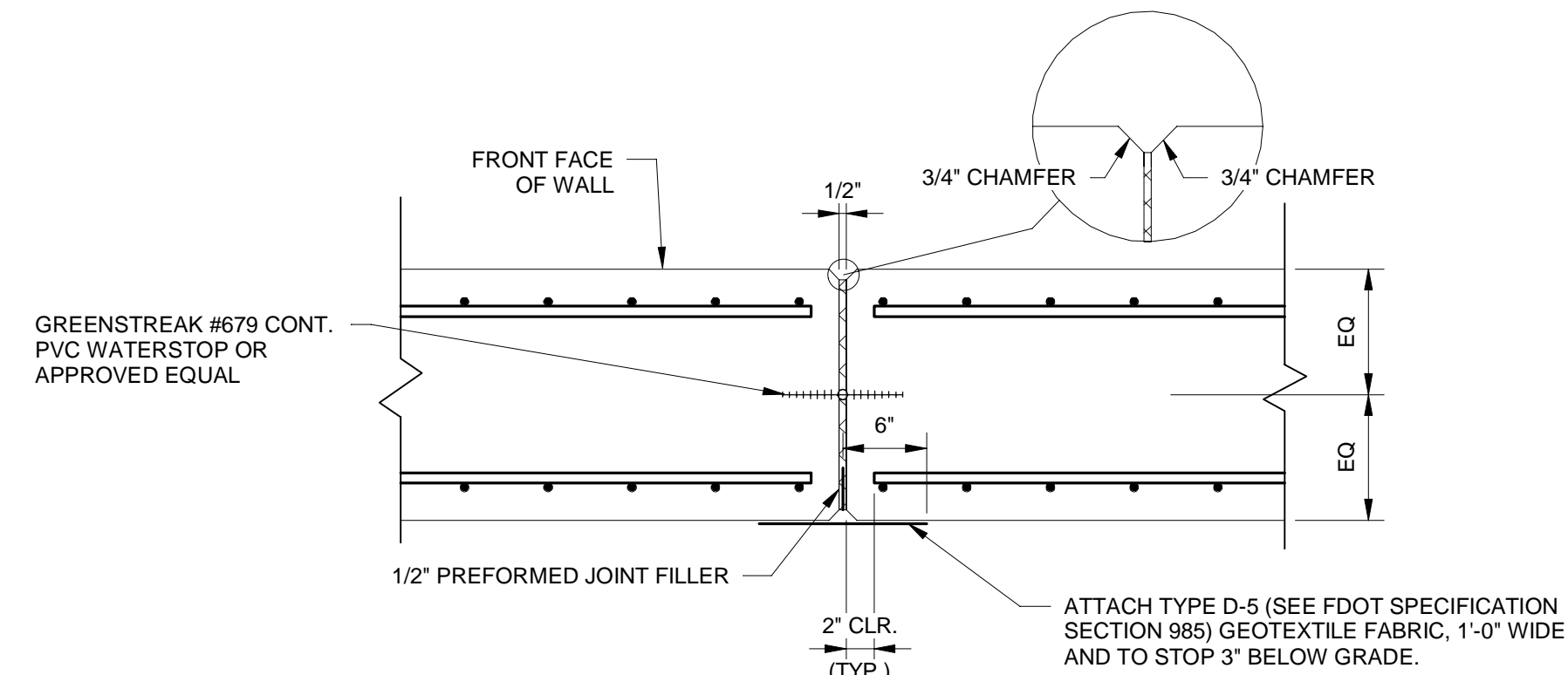
**4** WALL CONSTRUCTION JOINT  
S-102 1" = 1'-0"



**DETAIL "A"**



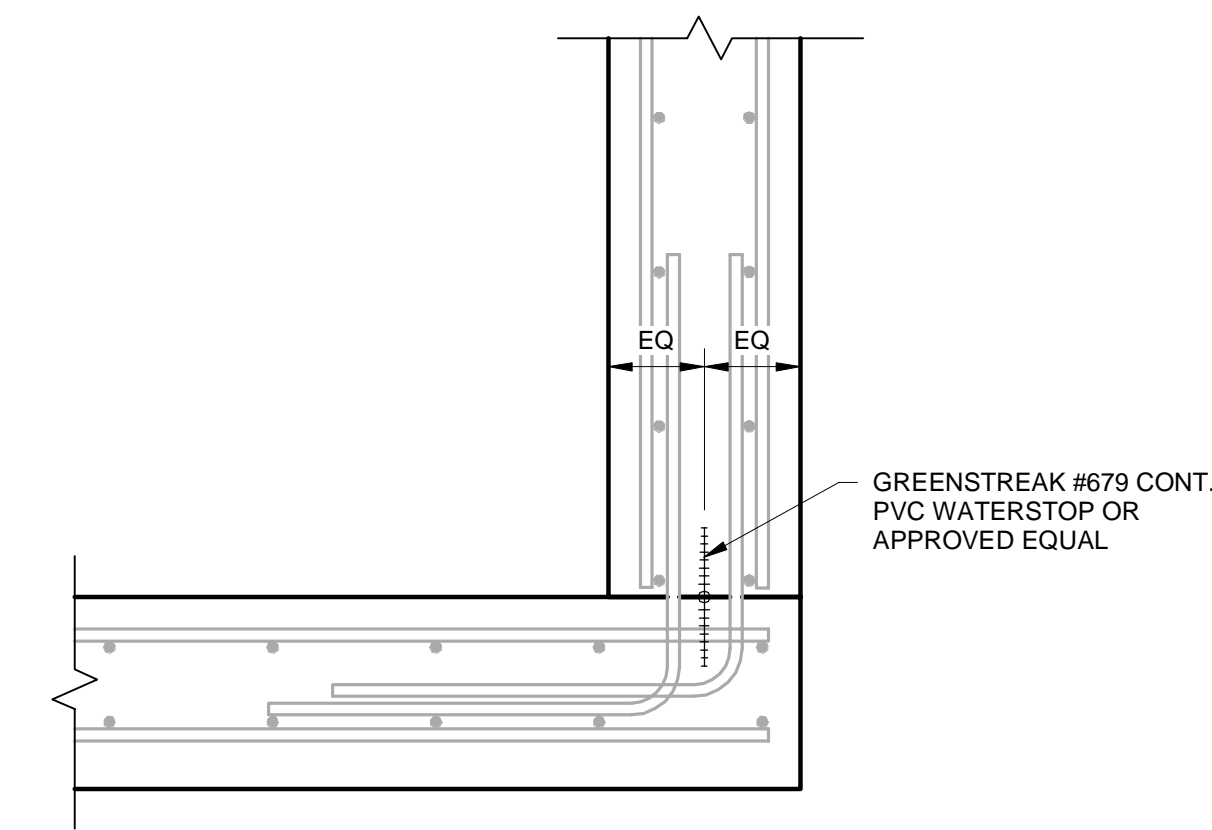
**6** WALL CONTROL JOINT DETAIL  
S-102 1" = 1'-0"



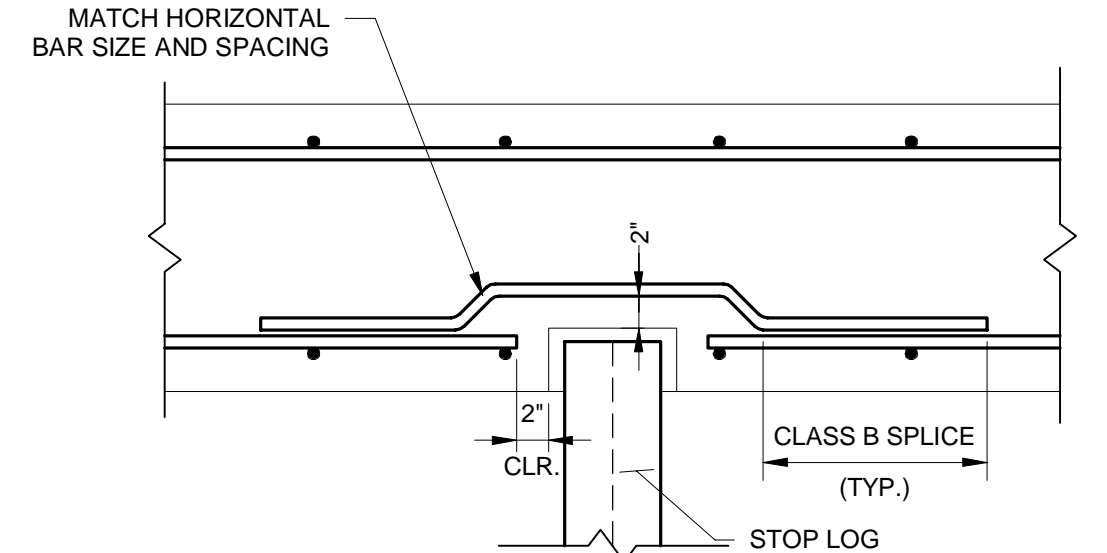
**7** WALL EXPANSION JOINT DETAIL  
S-102 1" = 1'-0"

WALL JOINTING CRITERIA:

- 1) CONTROL JOINTS SHALL BE AT 25'-0" MAX. SPACING.
- 2) EXPANSION JOINTS SHALL BE AT 100'-0" SPACING.
- 3) EXPANSION JOINTS SHALL BE MINIMUM 25'-0" FROM WALL CORNERS.
- 4) EXPANSION JOINTS SHALL NOT BE CONTINUOUS THROUGH FOOTINGS.

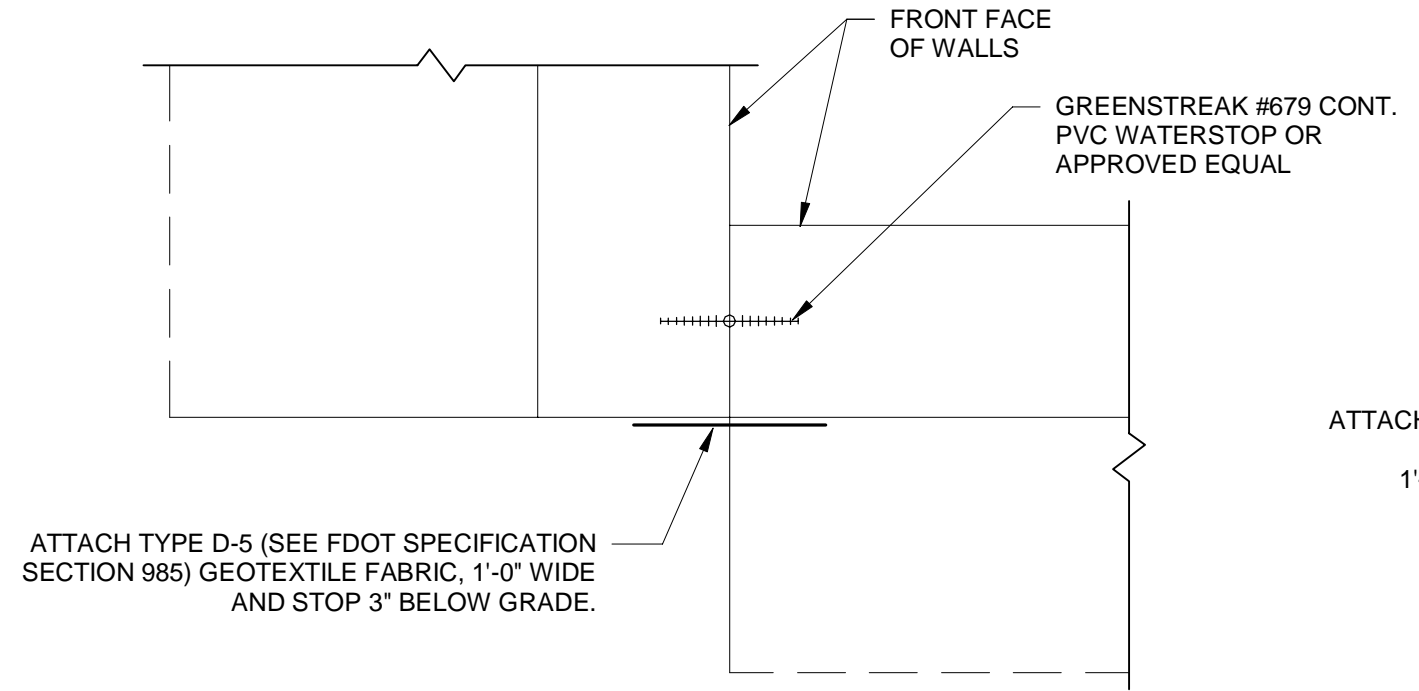


**8** FOOTING/WALL CONSTRUCTION JOINT  
S-102 1" = 1'-0"

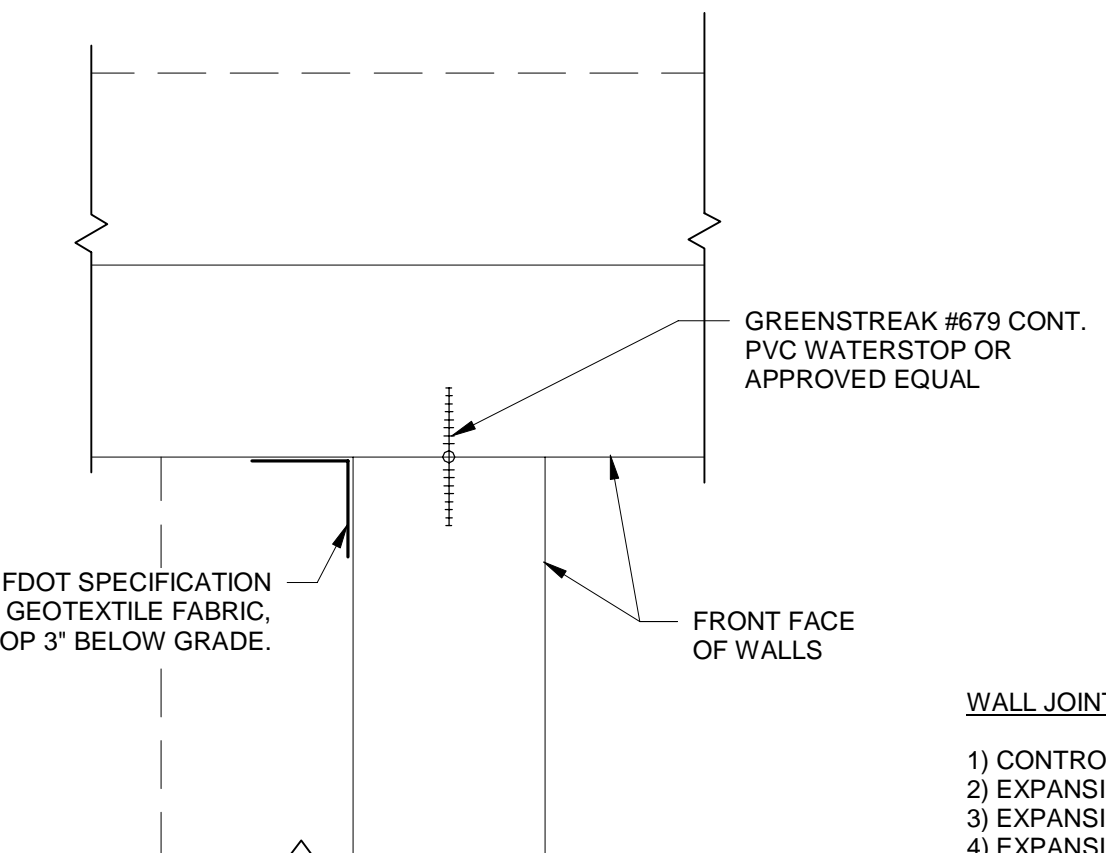


**9** TYP. STOP LOG BLOCKOUT DETAIL  
S-102 1" = 1'-0"

NOTES:  
1) CONFIRM DIMENSIONS OF STOP LOG BLOCKOUT WITH MANUFACTURER.



**10** TYP. WALL CORNER JOINT DETAIL  
S-102 1" = 1'-0"



**11** TYP. WALL INTERSECTION JOINT DETAIL  
S-102 1" = 1'-0"

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NUMBER	REVISIONS	REVISED BY	CHECKED BY	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
				GNH	CL	AGF	JP3

**Kimley Horn**

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TEL: 561-845-0665 FAX: 561-8638175 WWW.KIMLEY-HORN.COM CA 00000696

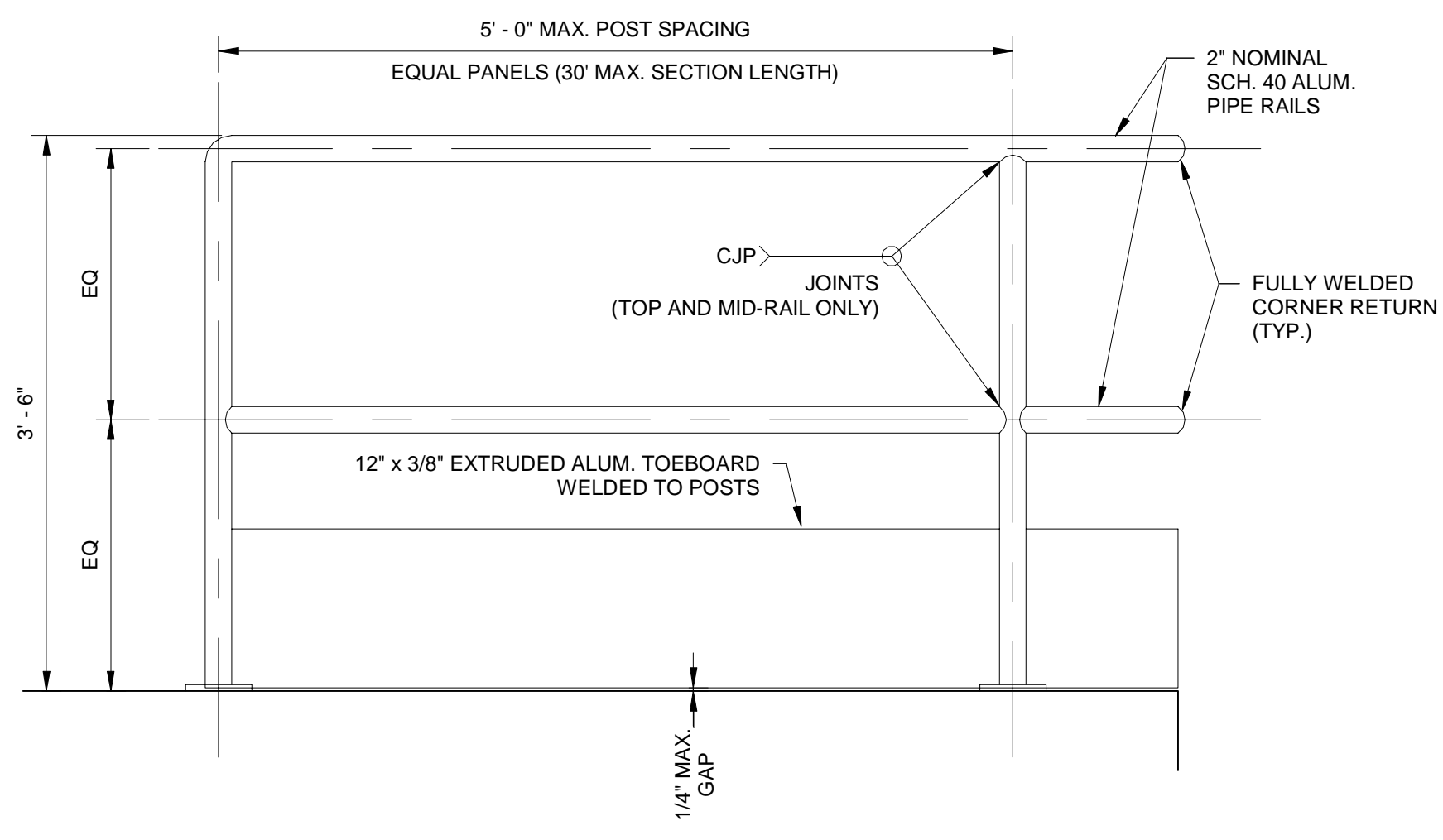
MOORHEN MARSH LEAPS™

JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

TYPICAL DETAILS (2  
OF 2)

NAVD88 DATUM IS USED FOR  
ALL ELEVATIONS ON THIS PROJECT.

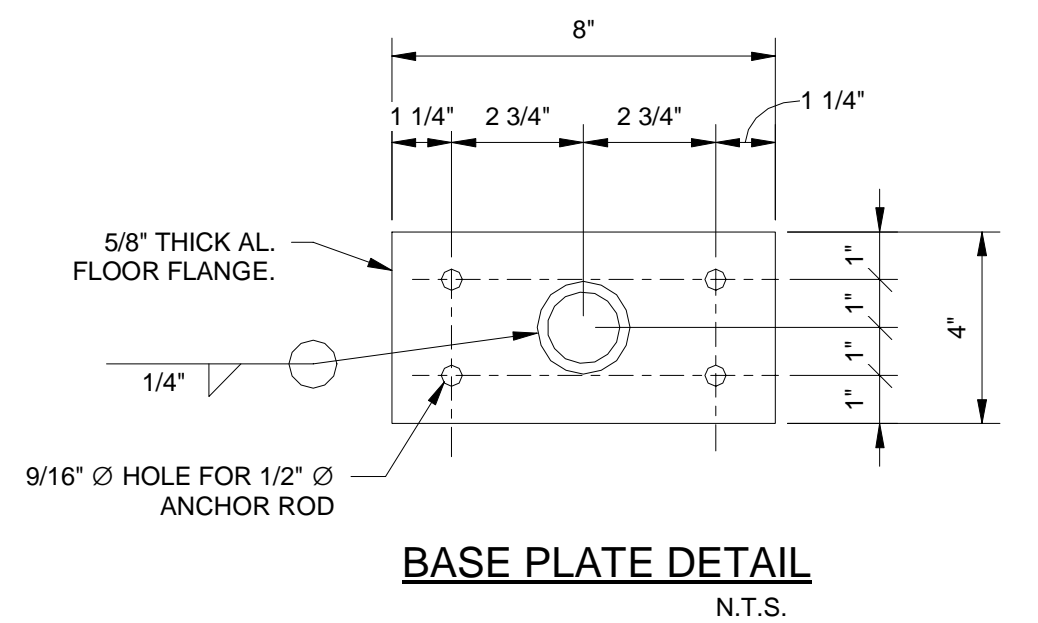
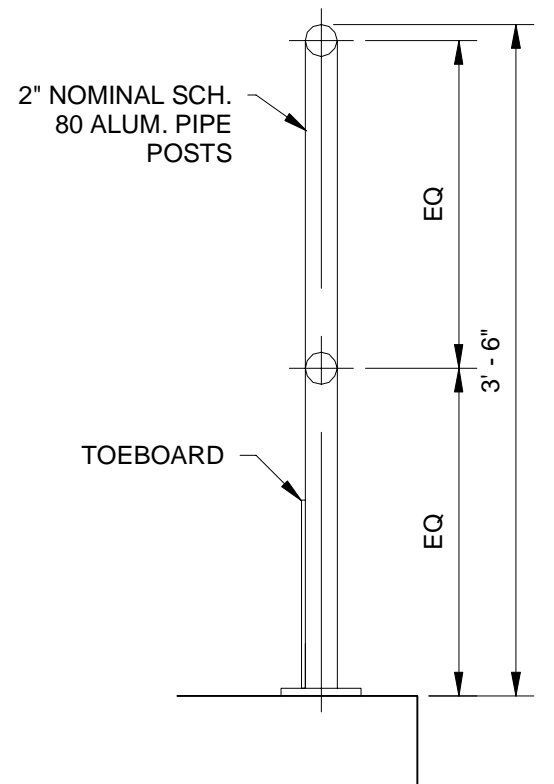
PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-102



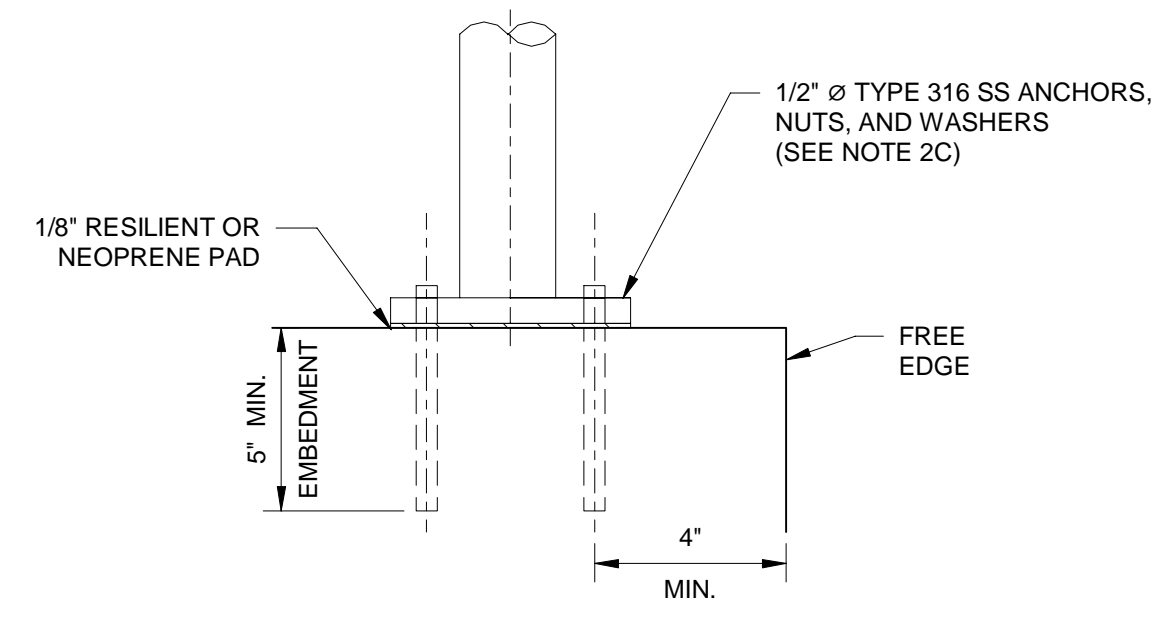
**RAILING**  
N.T.S.

**RAILING NOTES:**

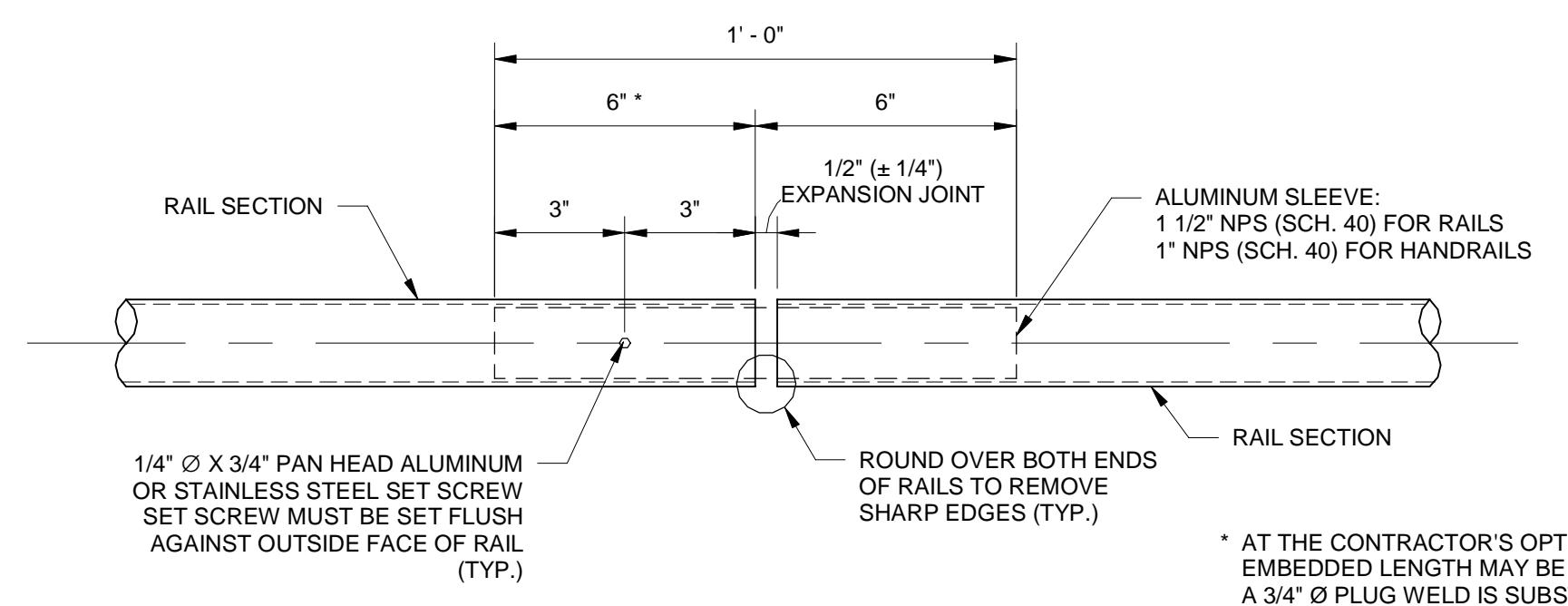
1) WHERE RAILING POSTS ARE USED TO SUPPORT SAFETY CHAINS SPACING SHALL NOT EXCEED 6'-0".



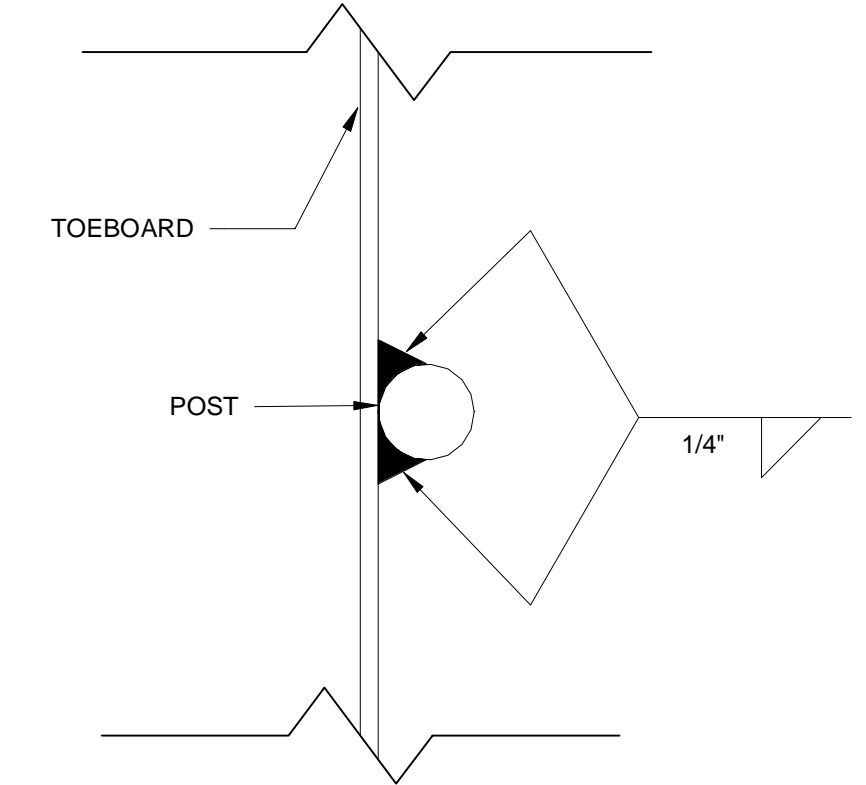
**BASE PLATE DETAIL**  
N.T.S.



**BASE PLATE ELEVATION**  
N.T.S.



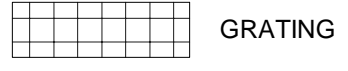
**EXPANSION JOINT DETAIL**  
N.T.S.



**TOEBOARD CONNECTION PLAN**  
N.T.S.

**1 RAILING ELEVATION, SECTION AND DETAILS**  
N.T.S.

**LEGEND**

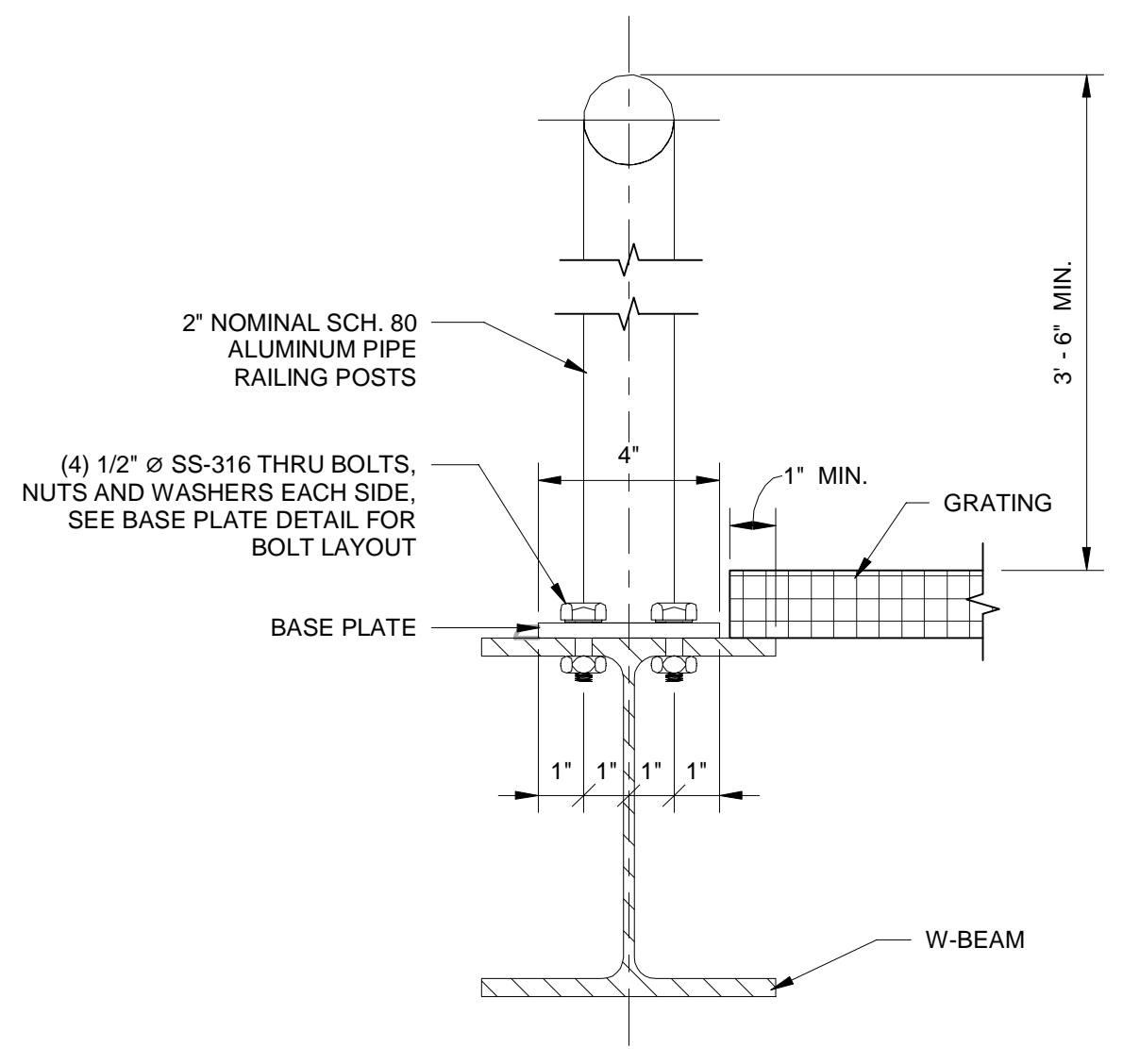


**NOTES:**

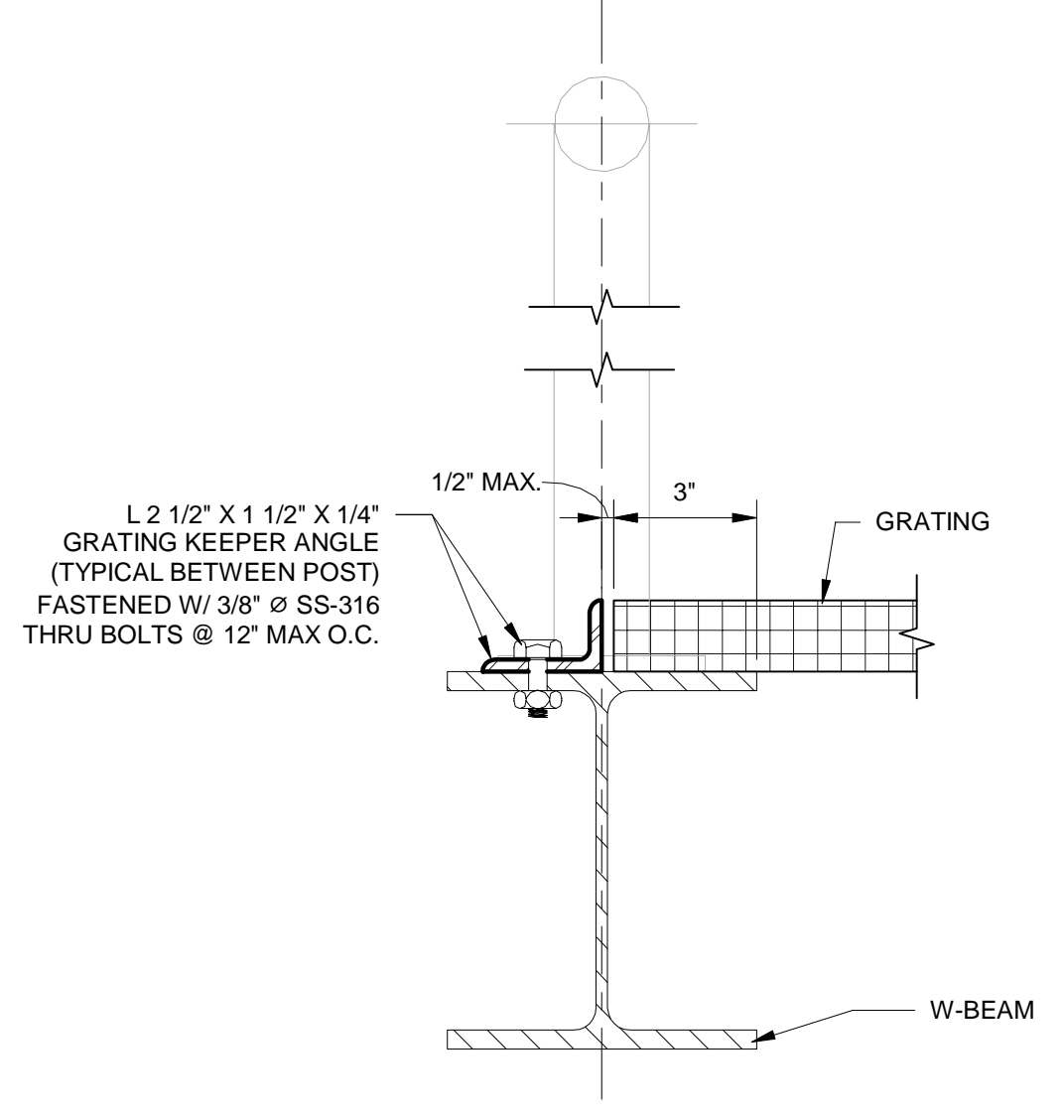
- 1. MATERIALS:**  
A. BASE PLATE AND CAP PLATES: ASTM B209, ALLOY 6061-T6  
B. STRUCTURAL PIPE TUBE AND BARS: ASTM B221 OR ASTM B429, ALLOY 6061-T6  
C. TOEBOARD: ALLOY 6061-T6

RAILING MEMBER DIMENSIONS TABLE			
MEMBER	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS
POSTS	2" NPS (SCH. 80)	2.375"	0.218"
RAILS	2" NPS (SCH. 40)	2.375"	0.154"
RAIL SPLICE SLEEVE	1 1/2" NPS (SCH. 40)	1.900"	0.145"

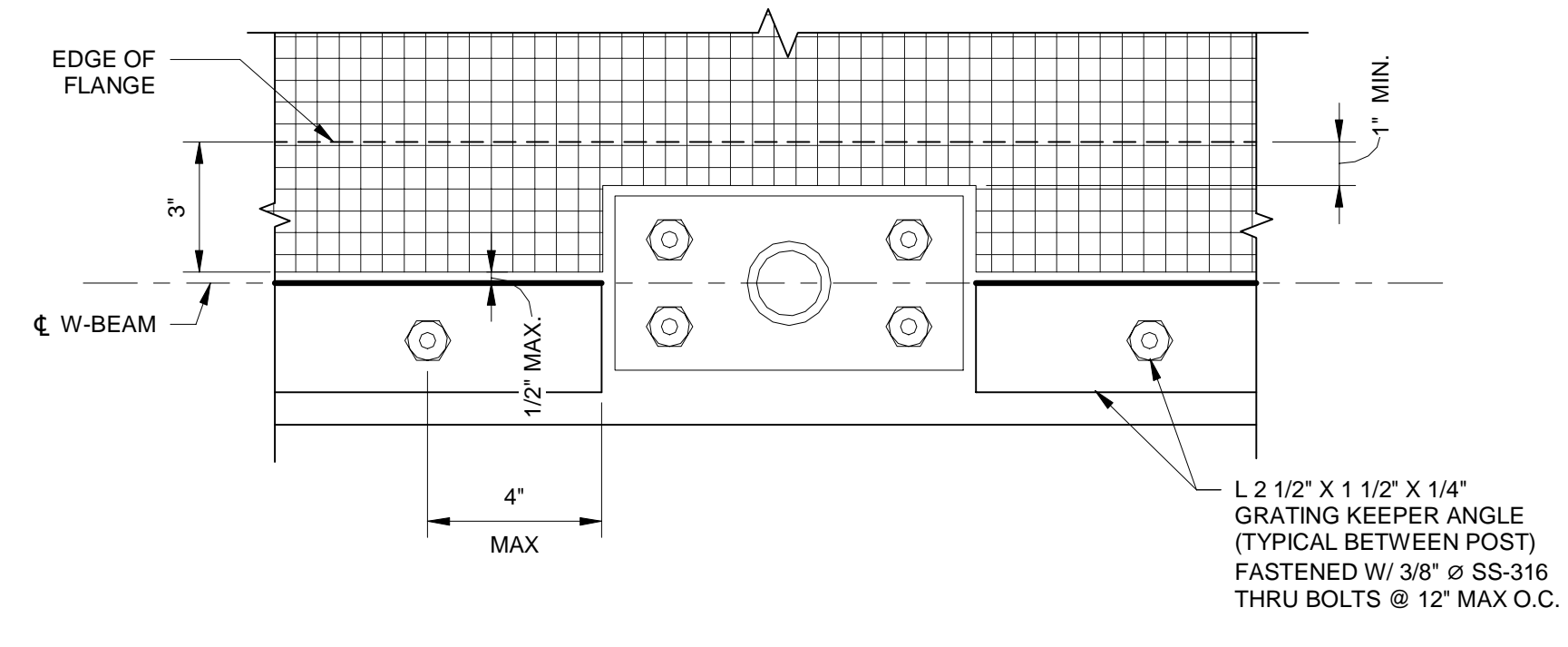
- D. STAINLESS STEEL FASTENERS:**  
a. STAINLESS STEEL BOLTS: ASTM F593, TYPE 316  
b. ANCHOR RODS: ASTM A193 GRADE B8M, STAINLESS STEEL THREADED ROD  
c. STAINLESS STEEL NUTS: ASTM F594 TYPE 316  
d. STAINLESS STEEL WASHERS: COMPATIBLE WITH BOLTS, NUTS AND THREADED RODS
- 2. FABRICATION:**  
A. PLACE EXPANSION JOINTS AT A MAXIMUM OF 30'-0".  
B. WELDING SHALL BE IN ACCORDANCE WITH ANSI AND AWS D1.2 'STRUCTURAL WELDING CODE-ALUMINUM'. FILLER MATERIAL SHALL BE EITHER ER 5356, ER 5183, OR ER 5556.  
C. ADHESIVE BONDING MATERIAL SHALL BE TYPE HV IN ACCORDANCE WITH FDOT STANDARD SPECIFICATIONS SECTION 937.  
D. NO FIELD WELDING PERMITTED.  
E. ANODIZED FINISH TO BE PROVIDED FOR ALL ALUMINUM RAILING AND FITTINGS.



**2 RAILING ON W-BEAM AT POST**  
3" = 1'-0"



**3 RAILING ON W-BEAM BETWEEN POST**  
3" = 1'-0"



**4 RAILING ON W-BEAMS PLAN VIEW**  
3" = 1'-0"

NAVD88 DATUM IS USED FOR ALL ELEVATIONS ON THIS PROJECT.

NOT FOR CONSTRUCTION:  
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NUMBER	REVISIONS	REVISED BY	CHECKED BY	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
				GNH	CL	AGF	JP3

**Kimley Horn**

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1920 WEKIVA WAY SUITE 200, WEST PALM BEACH, FLORIDA 33411  
TEL: 561-845-0665 FAX: 561-8638175 WWW.KIMLEY-HORN.COM CA 00000696

MOORHEN MARSH LEAPS™

JERRY MARCUS PICCOLO, P.E.  
FLORIDA P.E. NO. 80484  
DATE:

RAILING DETAILS

PROJECT NO.	
DATE	2/20/2020
SCALE	AS NOTED
SHEET	S-103



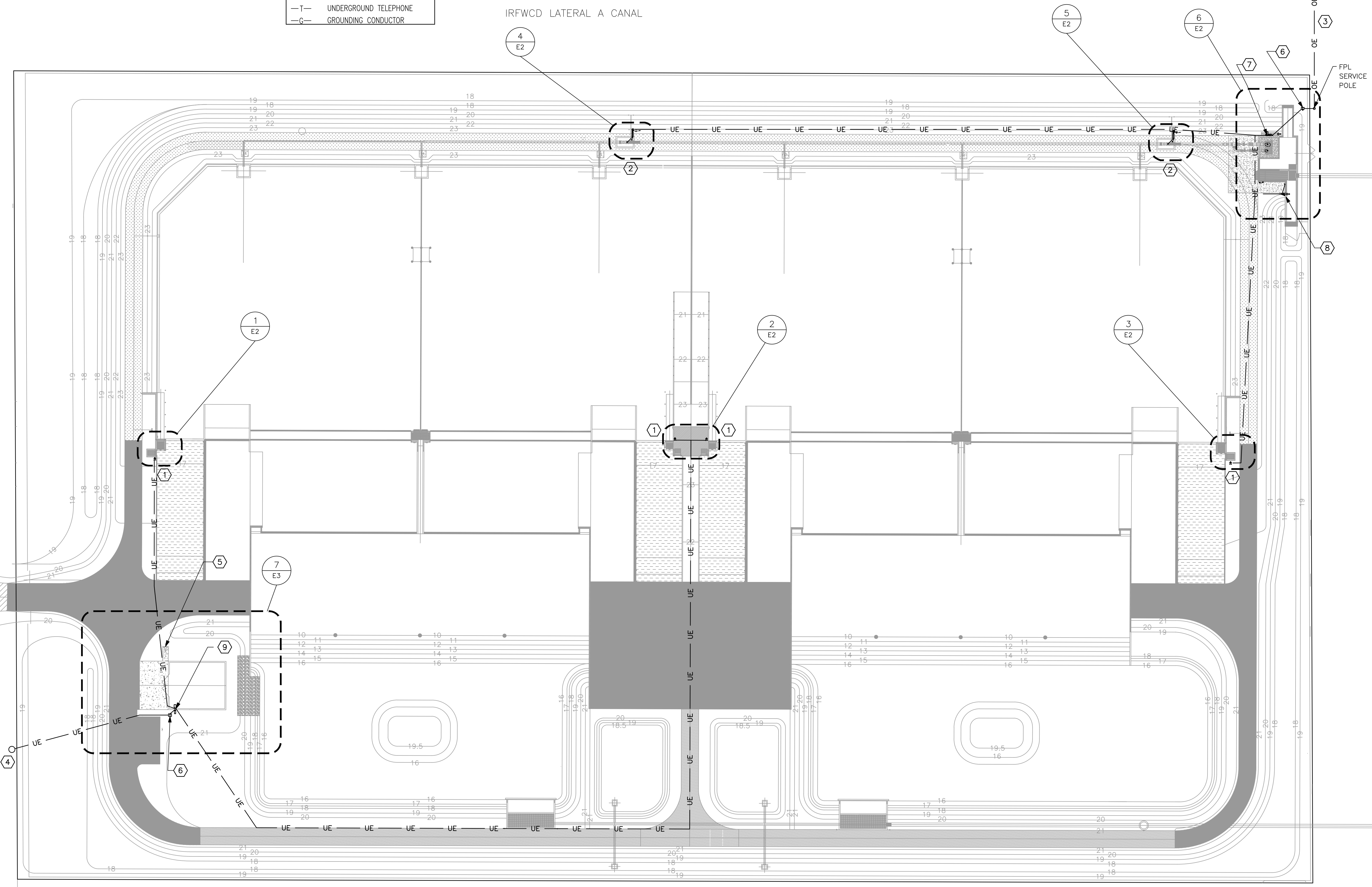
KEYNOTES	
1	GFCI IN TYPE 316 SS PEDESTAL FOR PORTABLE PUMPS
2	MAGNETIC FLOW METER & AMPLIFIER W/ OUTLET IN SS 316 ENCLOSURE
3	FPL DISTRIBUTION NORTH SIDE OF 66TH AVE. COORDINATE FOR NEW 480/277V 3 PHASE SERVICE.
4	FIELD LOCATED EXISTING FPL DISTRIBUTION POLES.
5	WELL PUMP
6	NEW FPL PADMOUNT TRANSFORMERS.
7	WASTE WATER PUMPS CONTROL PANEL WITH DISTRIBUTION AND 120V TRANSFORMER.
8	FLEXRAKE CONTROL PANEL WITH SERVICE OUTLET NEXT TO IT.
9	POLE BARN ELECTRICAL PANEL.

CONDUIT LEGEND	
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	CONDUIT STUB
	CONDUIT CONTINUED
	FLEXIBLE CONDUIT
	UNDERGROUND ELECTRICAL
	UNDERGROUND CONDUIT
	UNDERGROUND TELEPHONE
	GROUNDING CONDUCTOR

**SUNSHINE STATE ONE CALL OF FLORIDA (SSOCOF)**  
 CALL BEFORE DIGGING: CONTRACTOR MUST CALL 811, (800) 432-4770 OR (386) 575-2025 BEFORE BEGINNING ANY EXCAVATION OR DEMOLITION SO SSOCOF CAN NOTIFY ITS MEMBERS WITH UNDERGROUND FACILITIES NEAR THE JOB SITE TO MARK OFF THE AREA OF WORK.

66TH AVENUE  
 IRFWCD LATERAL A CANAL

53RD STREET (NOT PAVED)



**ELECTRICAL PLAN VIEW**  
 SCALE = 40' = 1"

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DATE	DESCRIPTION

DATE	MARK	DESCRIPTION

TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THESE PLANS AND SPECIFICATIONS COMPLY WITH THE 2017 FLORIDA BUILDING CODE, 2014 IBC AND THE 2012 FLORIDA FIRE PREVENTION CODE (WITH AMENDMENTS).

**BID SET**

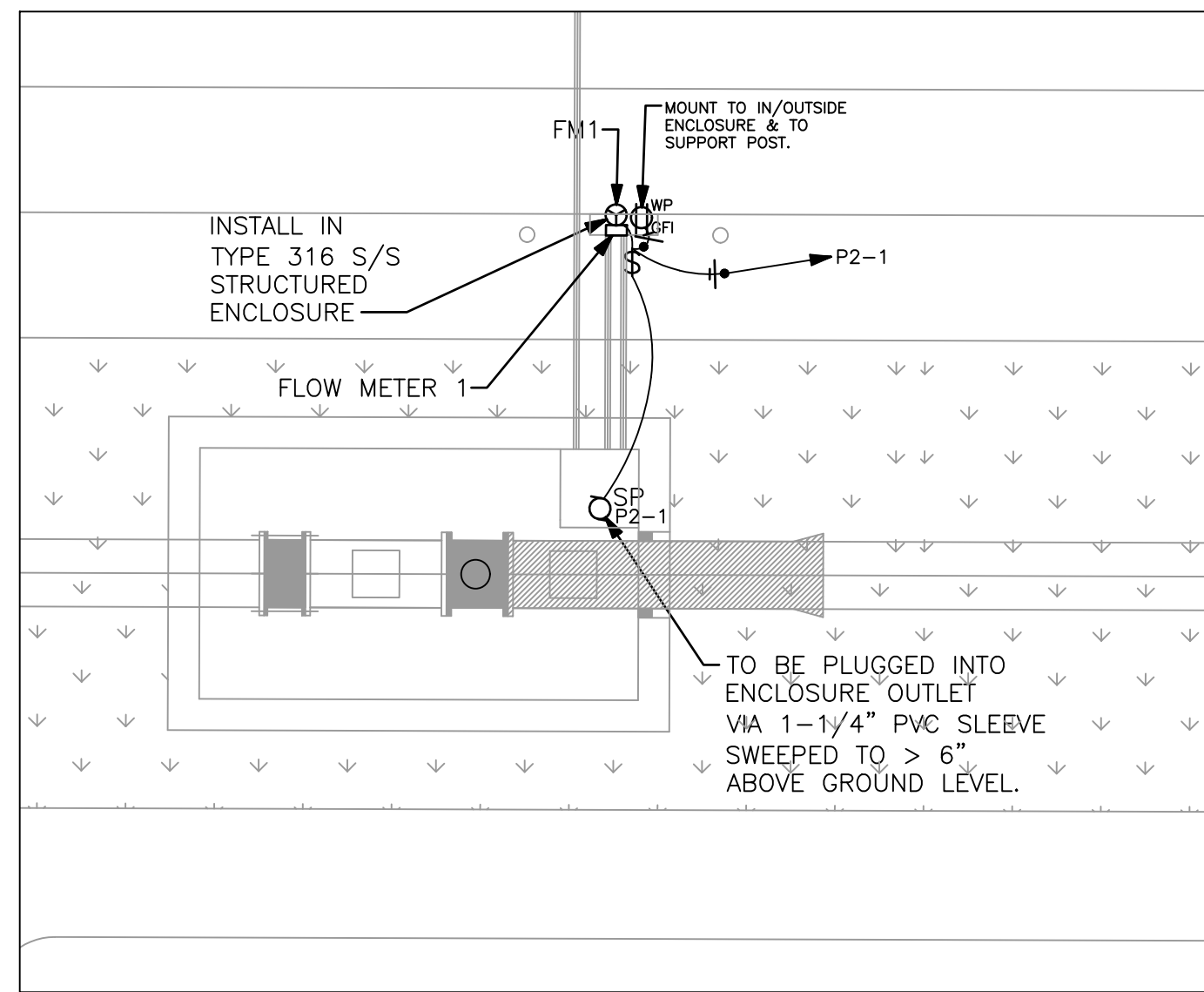
TREASURE COAST ENGINEERING, INC.  
 CERTIFICATE OF AUTHORIZATION# 27181  
 4925 13TH LANE, VERO BEACH, FL 32966  
 TEL: 772-567-1007 FAX: 772-567-1084  
 WWW.TCE.ENG.PRO

**ELECTRICAL SITE**

MOORHEN MARSH LEAPS  
 ELECTRICAL SCREENING & PUMPING  
 OPERATIONS BUILDING  
 INDIAN RIVER COUNTY FL

ENGINEER CERTIFICATION  
 ALBERT B. JENKS JR.  
 FL. REG. NO. 65650

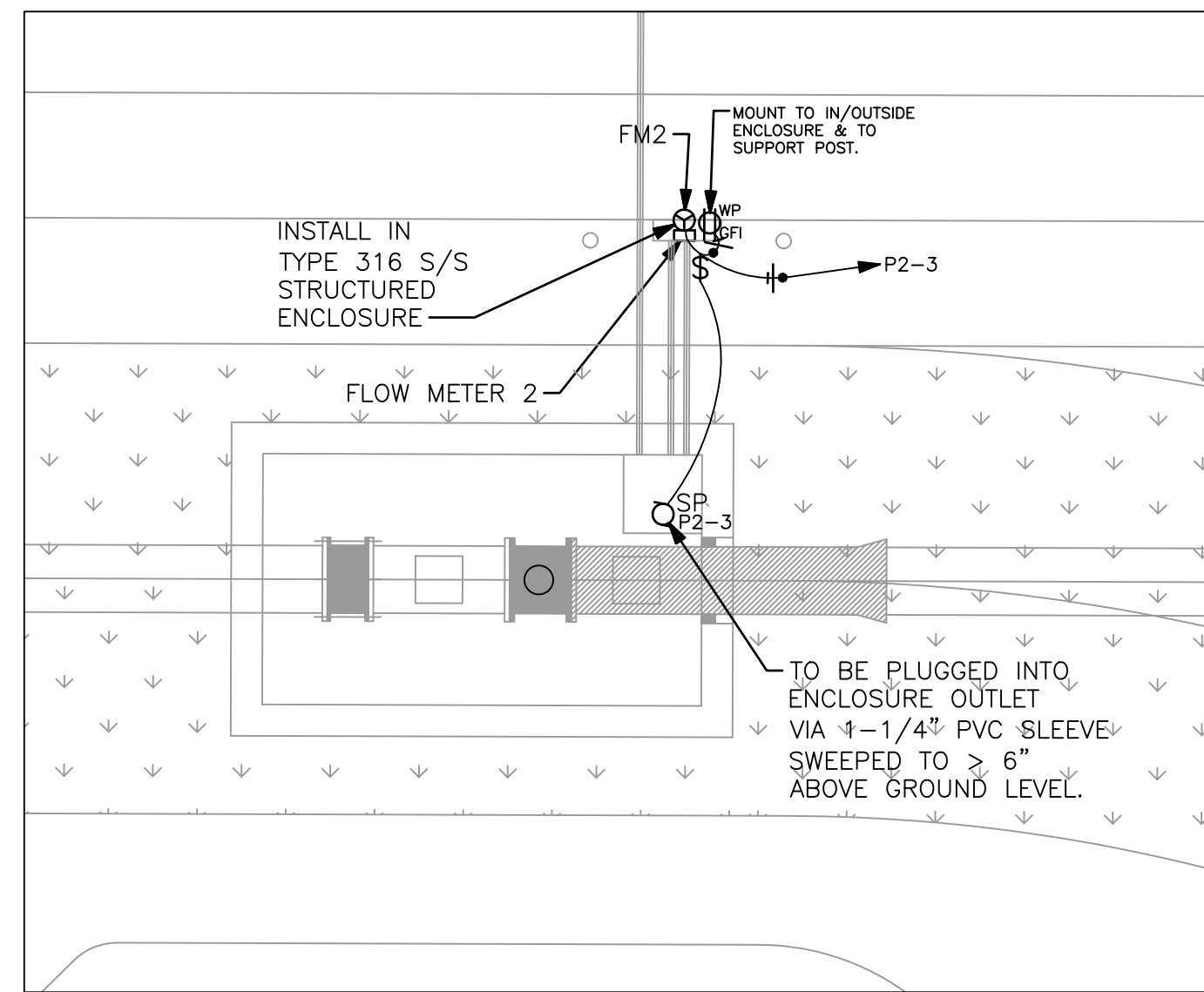
DATE: 3/3/20  
 SHEET: E1  
 PROJECT NO.: TC19032



FLOW METER 1 DETAIL VIEW

3/16" = 1"

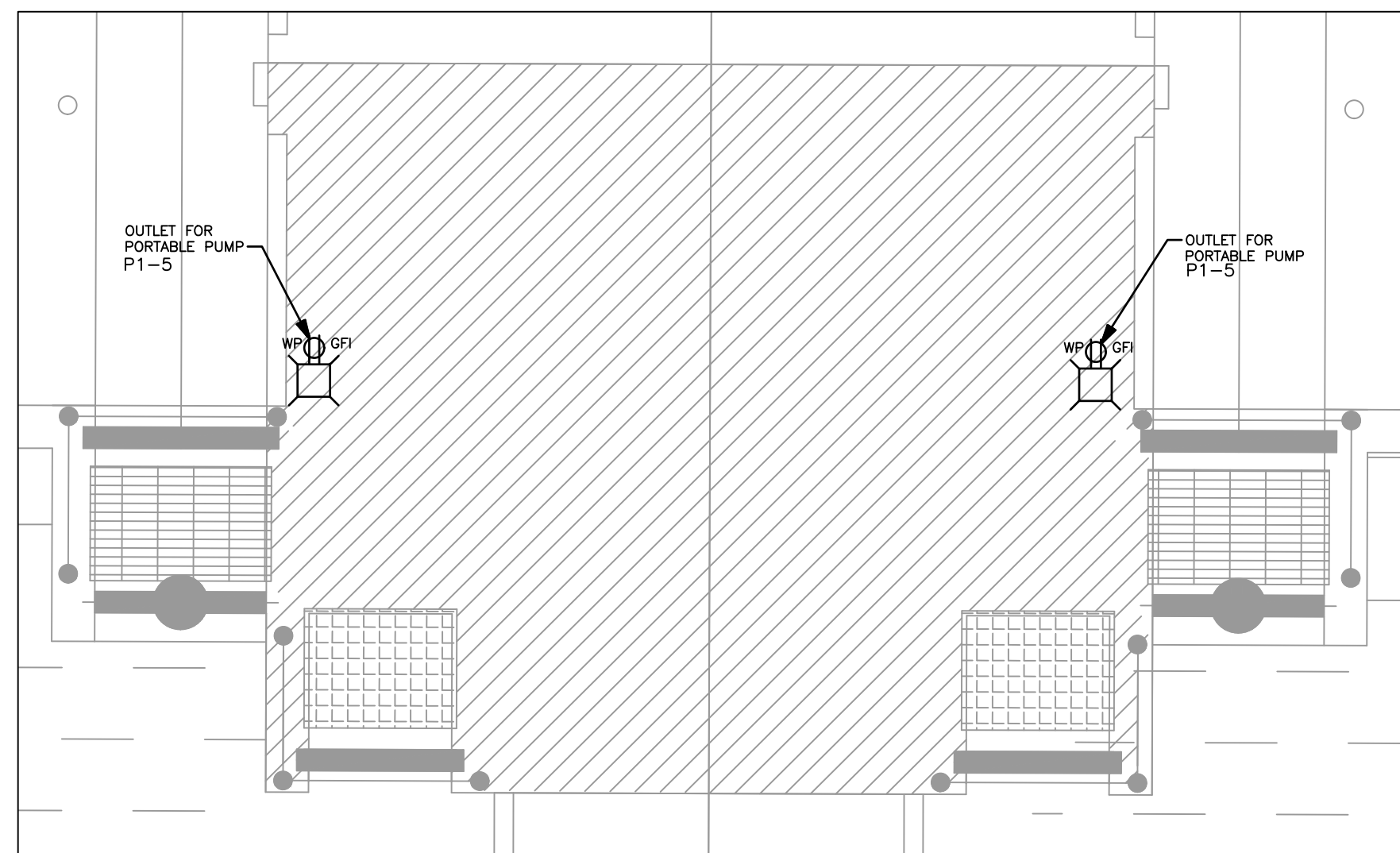
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FLOW METER 2 DETAIL VIEW

3/16" = 1"

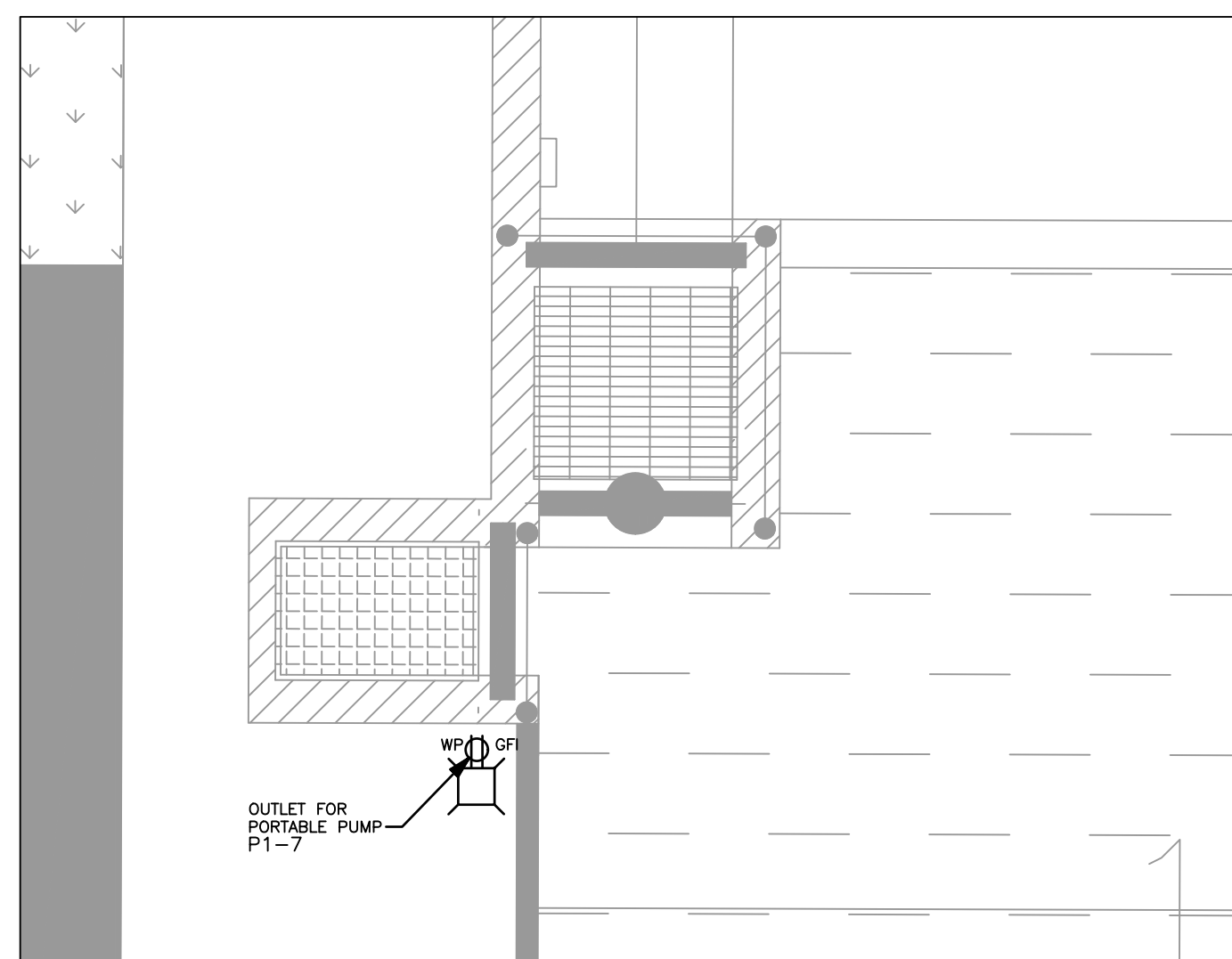
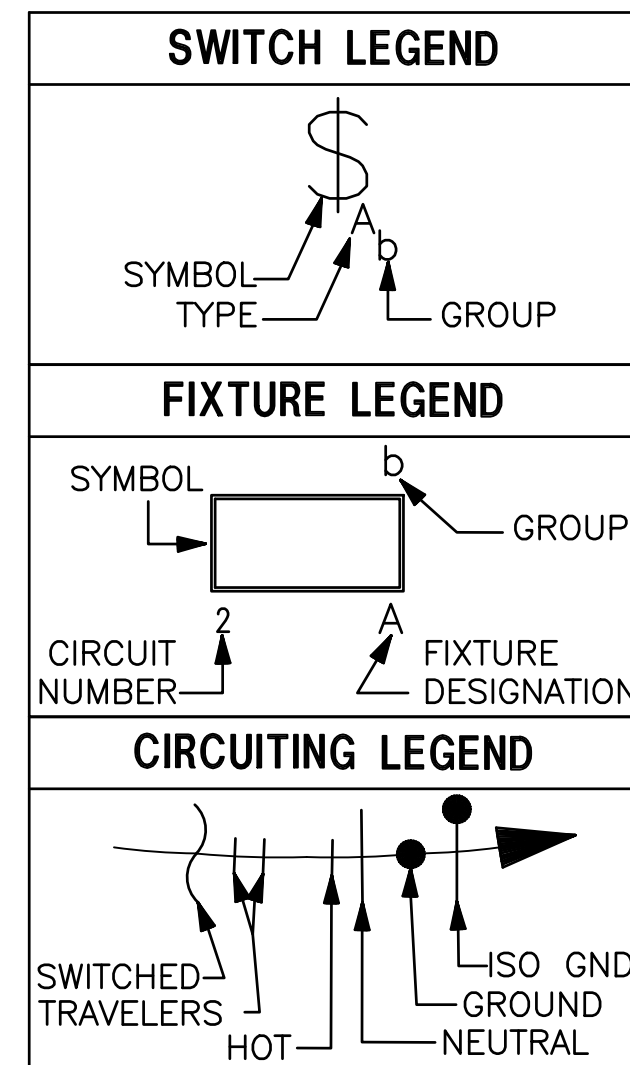
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CENTRAL RECEPT DETAIL VIEW

SCALE = 3/16" = 1"

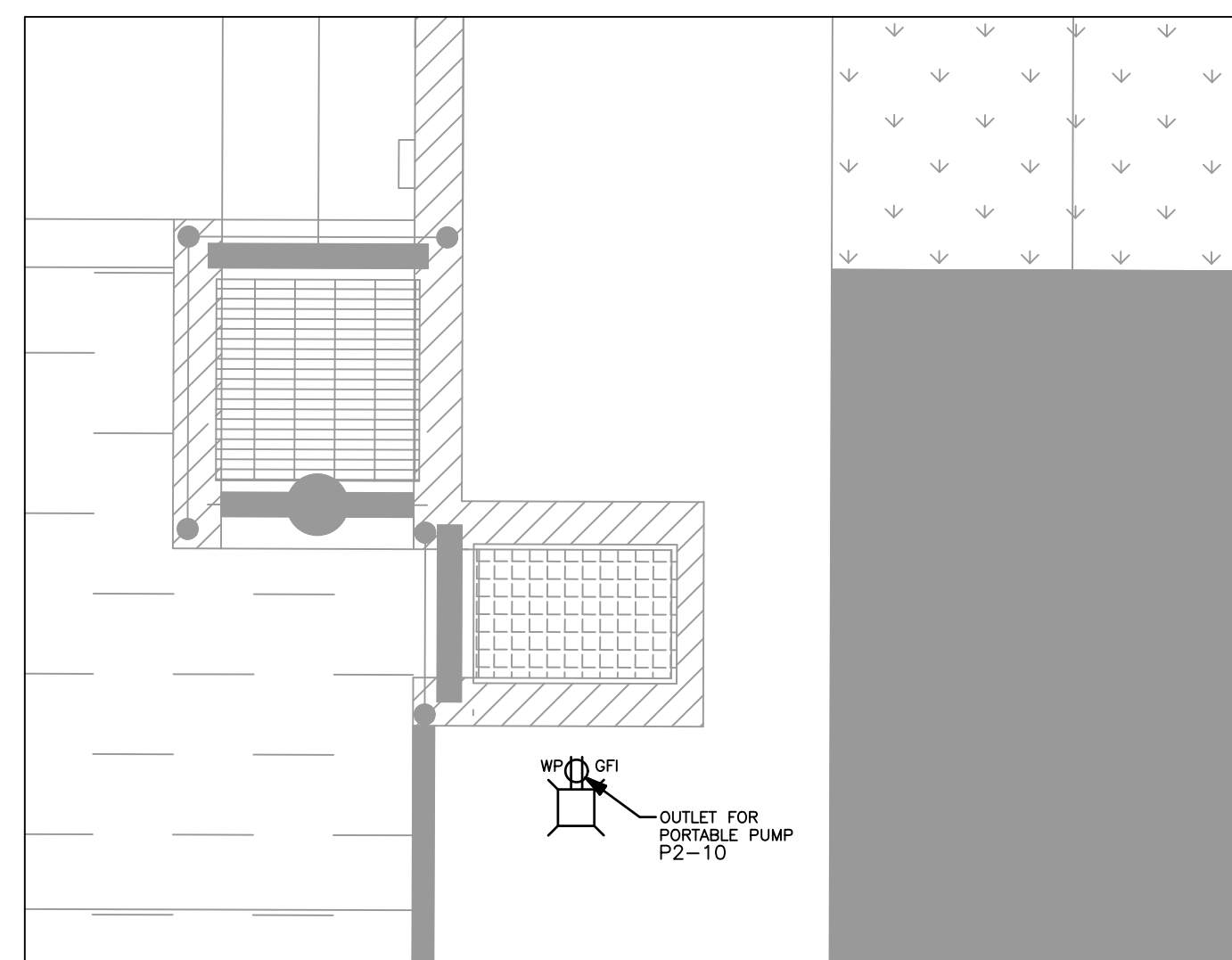
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SOUTH RECEPT DETAIL VIEW

3/16" = 1"

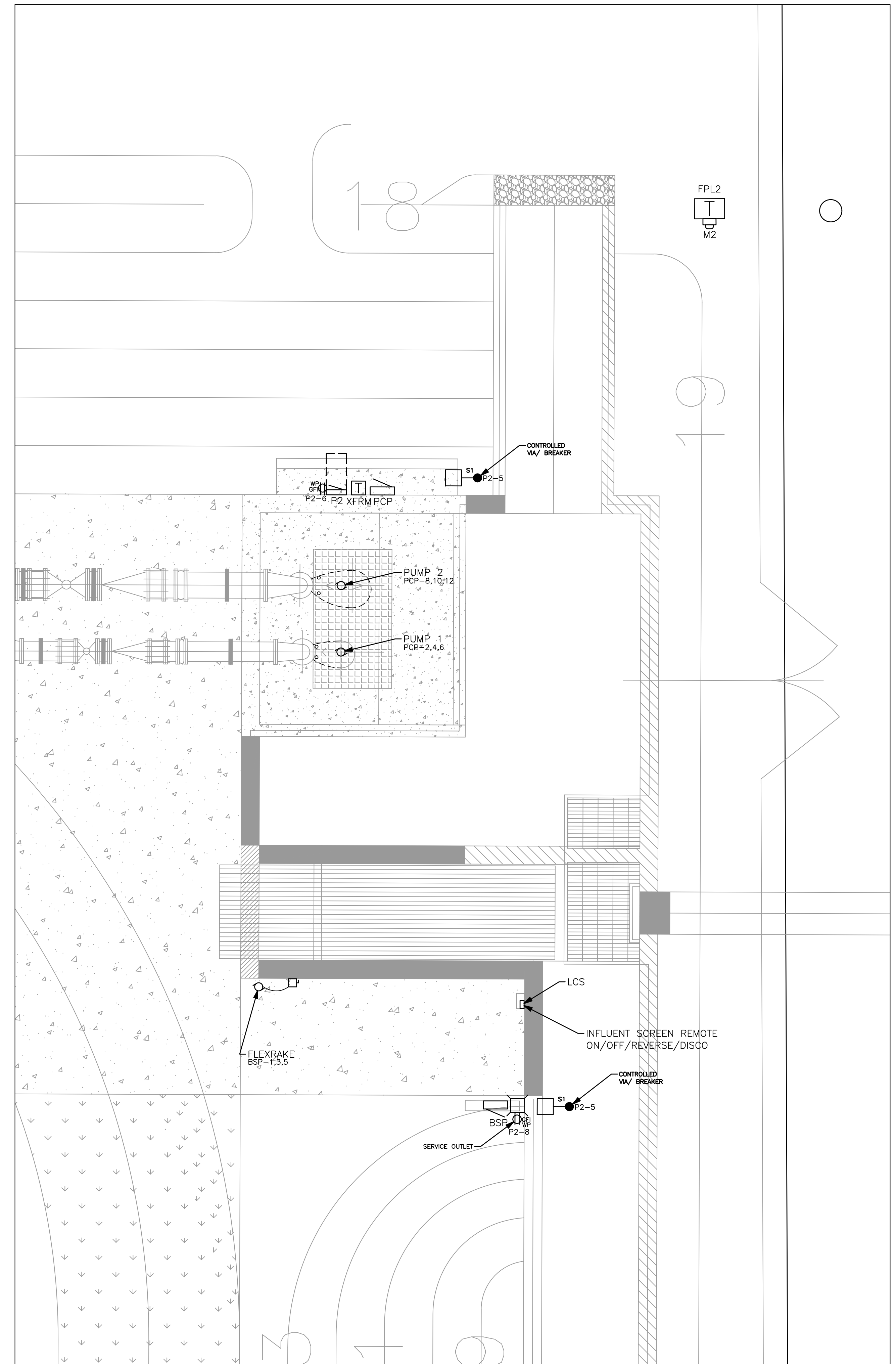
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NORTH RECEPT DETAIL VIEW

3/16" = 1"

3

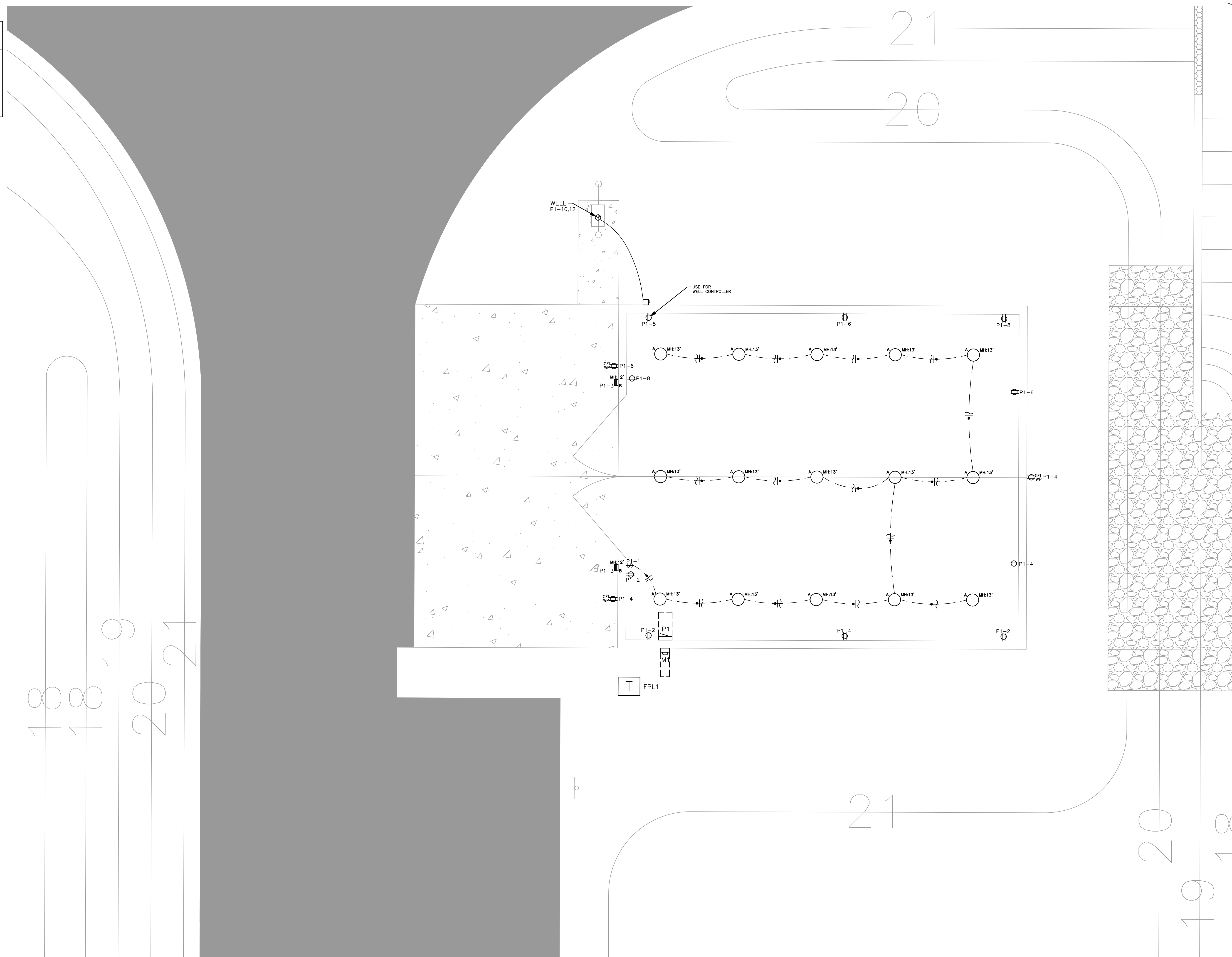
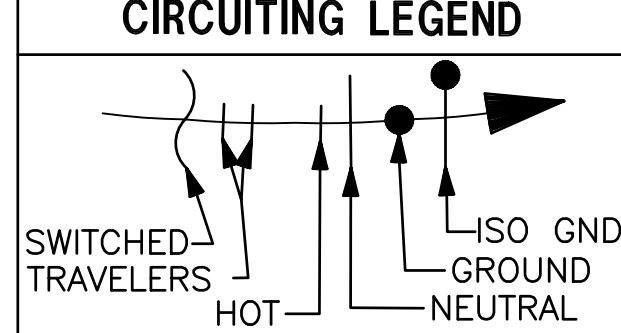
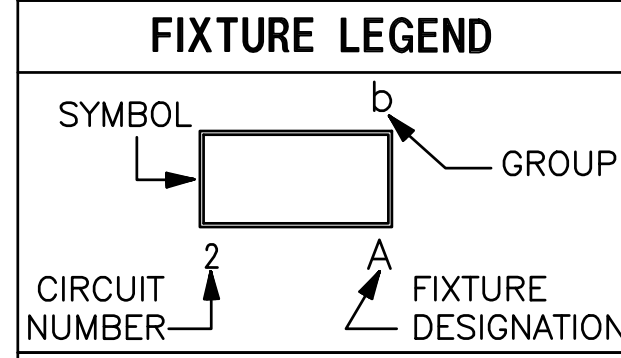
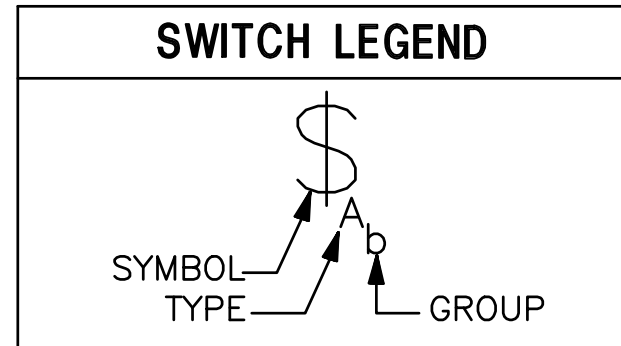
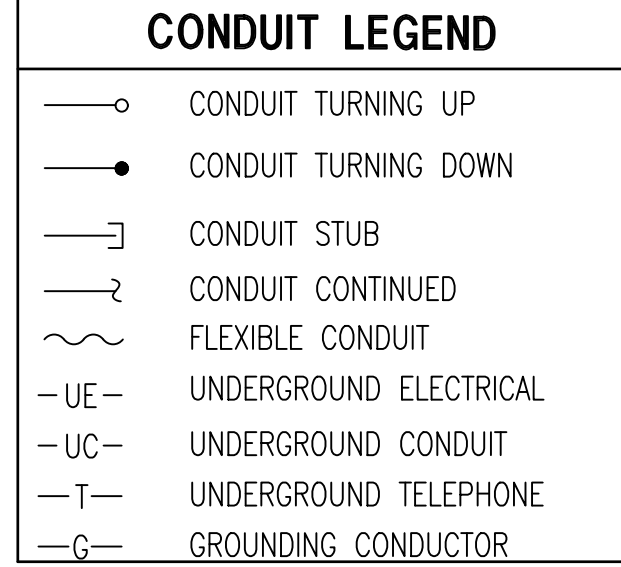


WASTE WATER PUMP DETAIL VIEW

SCALE = 3/16" = 1"

6

SUNSHINE STATE ONE CALL  
OF FLORIDA (SSOCOF)  
CALL BEFORE DIGGING: CONTRACTOR  
MUST CALL 811, (800) 432-4770 OR  
(386) 575-2025 BEFORE BEGINNING ANY  
EXCAVATION OR DEMOLITION SO SSOCOF  
CAN NOTIFY ITS MEMBERS WITH  
UNDERGROUND FACILITIES NEAR THE JOB  
SITE TO MARK OFF THE AREA OF WORK.



POLE BARN DETAIL VIEW  
SCALE = 3/16" = 1"

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DATE	DESCRIPTION	MARK	DESIGNER	CHECKER	SCALE	ISSUE DATE
			DESIGNED: ABJ	CHECKED: ABJ	1/4"=1"	3/3/20

TO THE BEST OF THE  
ENGINEER'S KNOWLEDGE  
THESE PLANS AND  
SPECIFICATIONS COMPLY  
WITH THE BUILDING  
CODE, 2014 FLORIDA BUILDING  
CODE, 2014 FLORIDA FIRE PREVENTION  
CODE (FBC) (FPI) (FPI) (FPI)

**BID SET**

TREASURE COAST ENGINEERING, INC.  
CERTIFICATE OF AUTHORIZATION# 27181  
4925 13TH LANE, VERO BEACH, FL 32966  
TEL: 772-567-1007 FAX: 772-567-1084  
WWW.TCE.ENG.PRO

**TREASURE COAST ENGINEERING**  
Your MEP Design Consultant

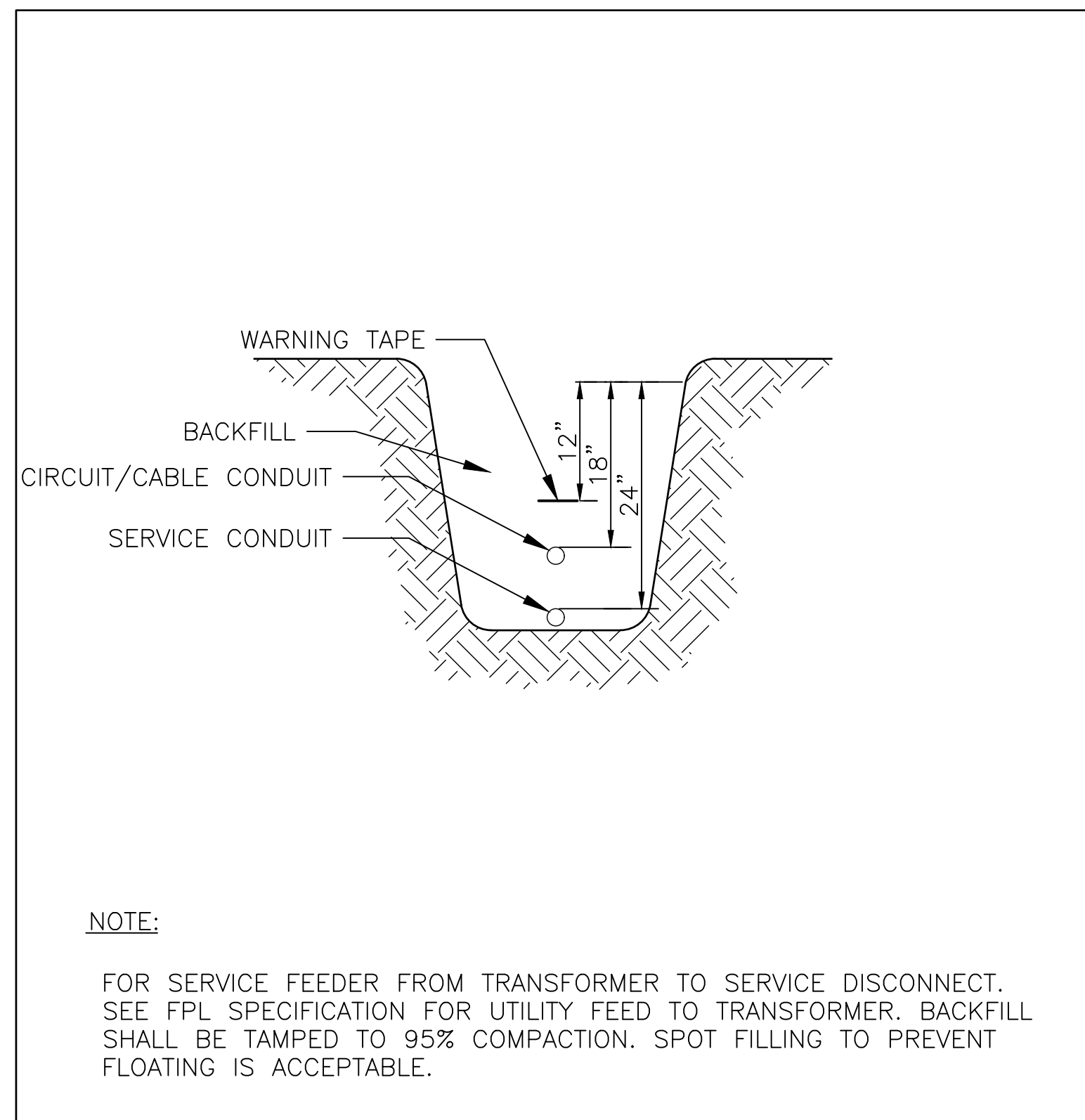
**ELECTRICAL PLAN POLE BARN**

MOORHEN MARSH LEAPS  
ELECTRICAL SCREENING & PUMPING  
OPERATIONS BUILDING  
INDIAN RIVER COUNTY FL

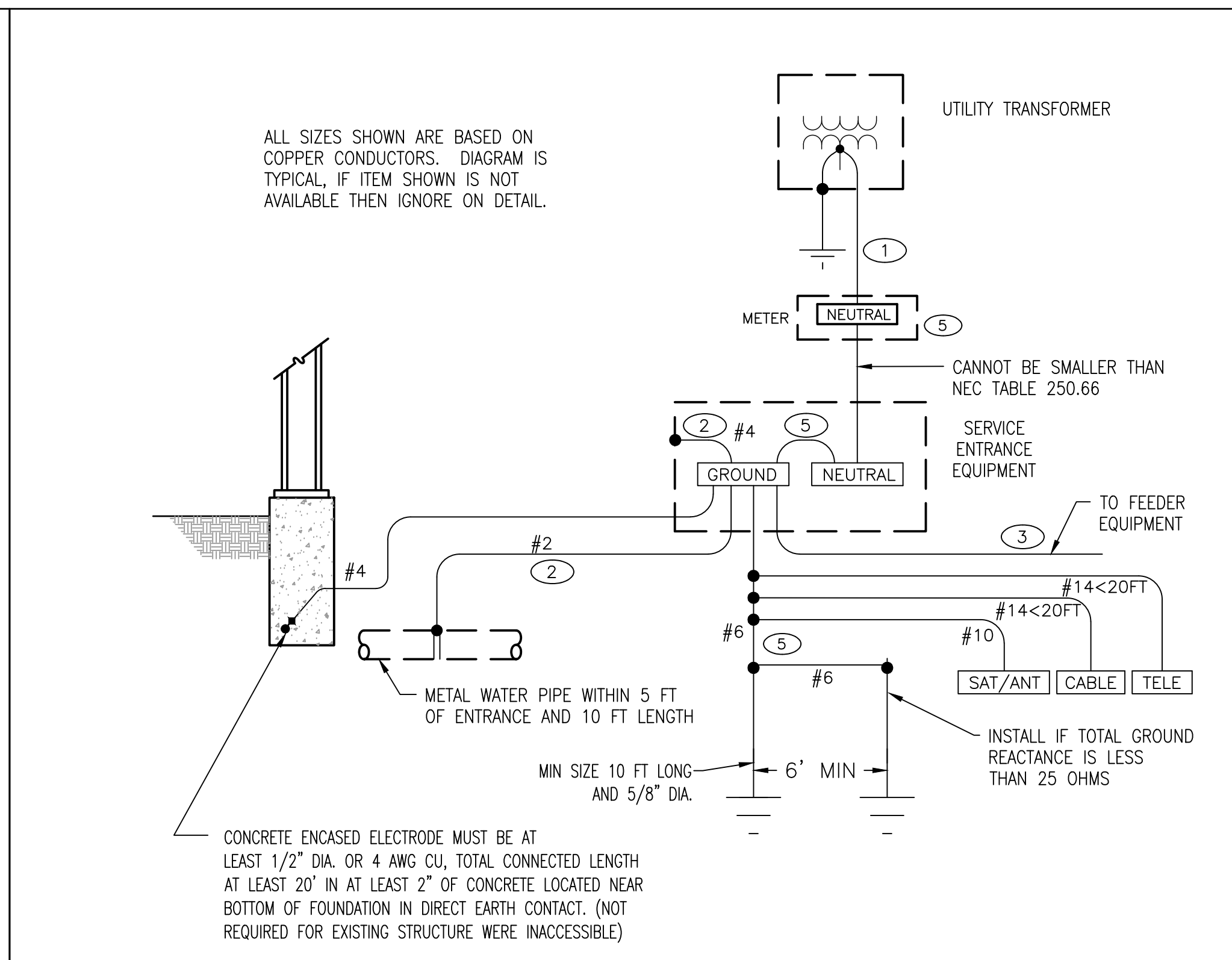
ENGINEER CERTIFICATION  
ALBERT B. JENKS JR.  
FL. REG. NO. 65650

DATE: 3/3/20  
SHEET: E3  
PROJECT NO. TC19032





TRENCHING DETAIL (TYPICAL)  
SCALE: NONE



SERVICE ENTRANCE GROUNDING SYSTEM DETAIL  
SCALE: NONE

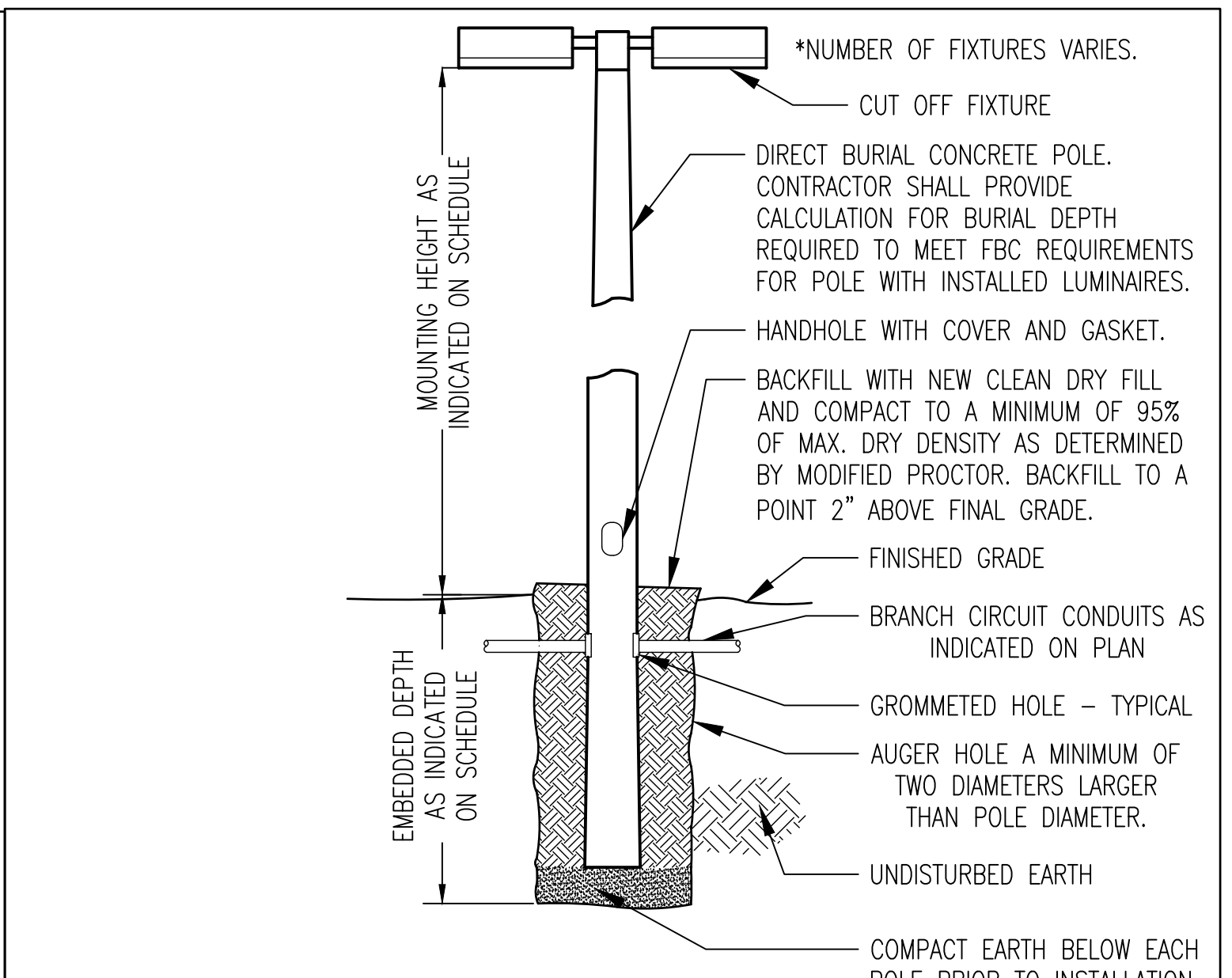
**KEYED NOTES**

- INSTALL GROUNDED (NEUTRAL) CONDUCTOR WITHOUT EGC. NEUTRAL CONDUCTOR CANNOT BE SMALLER THAN NEC TABLE 250.66. SEE ELECTRICAL ONE-LINE FOR SIZE.
- INSTALL BONDING JUMPER THAT IS SIZED BASED ON NEC TABLE 250.66 USING THE SERVICE OR SEPARATELY-DERIVED SYSTEM PHASE CONDUCTOR SIZE.
- INSTALL EQUIPMENT GROUNDING CONDUCTOR SIZED BASED ON NEC TABLE 250.122 USING THE FEEDER OVER CURRENT DEVICE SIZE. IF THE FEEDER SUPPLIES A SEPARATE STRUCTURE THEN DRIVE AN ADDITIONAL GROUND ROD AT STRUCTURE AND GROUND TO PANEL, BUT ISOLATE NEUTRAL.
- INSTALL GROUNDING ELECTRODE CONDUCTOR THAT IS SIZED BASED ON NEC TABLE 250.66 USING THE SEPARATELY DERIVED SYSTEM PHASE CONDUCTOR SIZE.
- GROUND ROD CAN BE CONNECTED TO NEUTRAL OF METER INSTEAD OF SE GROUND. MIN SIZE SHALL BE 5/8" X 10'

**GENERAL NOTES**

- EACH GROUNDING ELECTRODE SHOWN SHALL ONLY BE USED IF PRESENT AT EACH STRUCTURE/BUILDING SERVED. IF NONE ARE PART OF THE STRUCTURE/BUILDING THAN AT MINIMUM A GROUND ROD ELECTRODE SHALL BE INSTALLED. A METAL WATER PIPE SHALL NOT BE USED AS THE SOLE GROUNDING ELECTRODE SYSTEM (GES).
- BOND GAS PIPE ON THE BUILDING SIDE OF THE GAS METER THAT IS SIZED BASED ON THE OCPD SERVING THE STRUCTURE/BUILDING USING NEC TABLE 250.122 WITH A MINIMUM SIZE OF #6 CU.
- CONDUCTOR SIZES SHOWN ARE MINIMUM AND MAY BE LARGER THAN THE MINIMUM SIZES REQUIRED BY NEC.
- INSTALL GROUNDING CONNECTIONS TO BUILDING STRUCTURE AND WATER PIPES AT LOCATIONS THAT ARE VISIBLE AND ACCESSIBLE FOR INSPECTION, MAINTENANCE, AND TESTING.
- INSTALL AN INSULATED THROAT GROUNDING BUSHING ON EACH METALLIC SERVICE ENTRANCE CONDUIT. BOND TO GROUND BUS USING CONDUCTOR THAT IS SIZED BASED ON NEC TABLE 250.66 USING THE SERVICE PHASE CONDUCTOR SIZE.
- INSTALL AN INSULATED THROAT GROUNDING BUSHING ON EACH METALLIC FEEDER CONDUIT. BOND TO GROUND BUS USING CONDUCTOR THAT IS SIZED BASED ON NEC TABLE 250.122 USING THE FEEDER CIRCUIT OVER CURRENT DEVICE SIZE OR THE SEPARATELY DERIVED SYSTEM OVER CURRENT DEVICE SIZE.
- BOND HOT AND COLD WATER PIPING SYSTEMS.
- INSTALL LISTED IRREVERSIBLE COMPRESSION CONNECTOR WITH TAMPER PROOF HARDWARE OR INSTALL EXOTHERMIC WELD FOR CONNECTIONS.
- INSTALL 5/8" X 10' GROUND ROD.
- OTHER METAL PIPING OR EXPOSED STRUCTURAL METALS THAT ARE LIKELY TO BE ENERGIZED SHALL BE BONDED TO THE SERVICE EQUIPMENT ENCLOSURE USING THE LARGEST GROUND WIRE.

2



**GENERAL DESCRIPTION:**

- DIRECT BURIAL CONCRETE POLE WITH HANDHOLE COVER.
- PROVIDE SIGN AND SEALED SHOP DRAWING SIGNED BY A STRUCTURAL ENGINEER DEMONSTRATING POLE AND FIXTURE SUPPORT COMPLIES WITH FBC WIND LOAD REQUIREMENTS.

**ELECTRICAL:**  
CONNECT 1 #12 AWG INSULATED (TW GREEN) STRANDED CU BOND WIRE CONNECTING LUMINAIRE WITH GROUNDING LUG AT TOP AND BASE OF POLE THEN TO CIRCUIT EQUIPMENT GROUND CONDUCTOR.

LIGHTING POLE WITHOUT GROUND ROD DETAIL (TYPICAL)  
SCALE: NONE

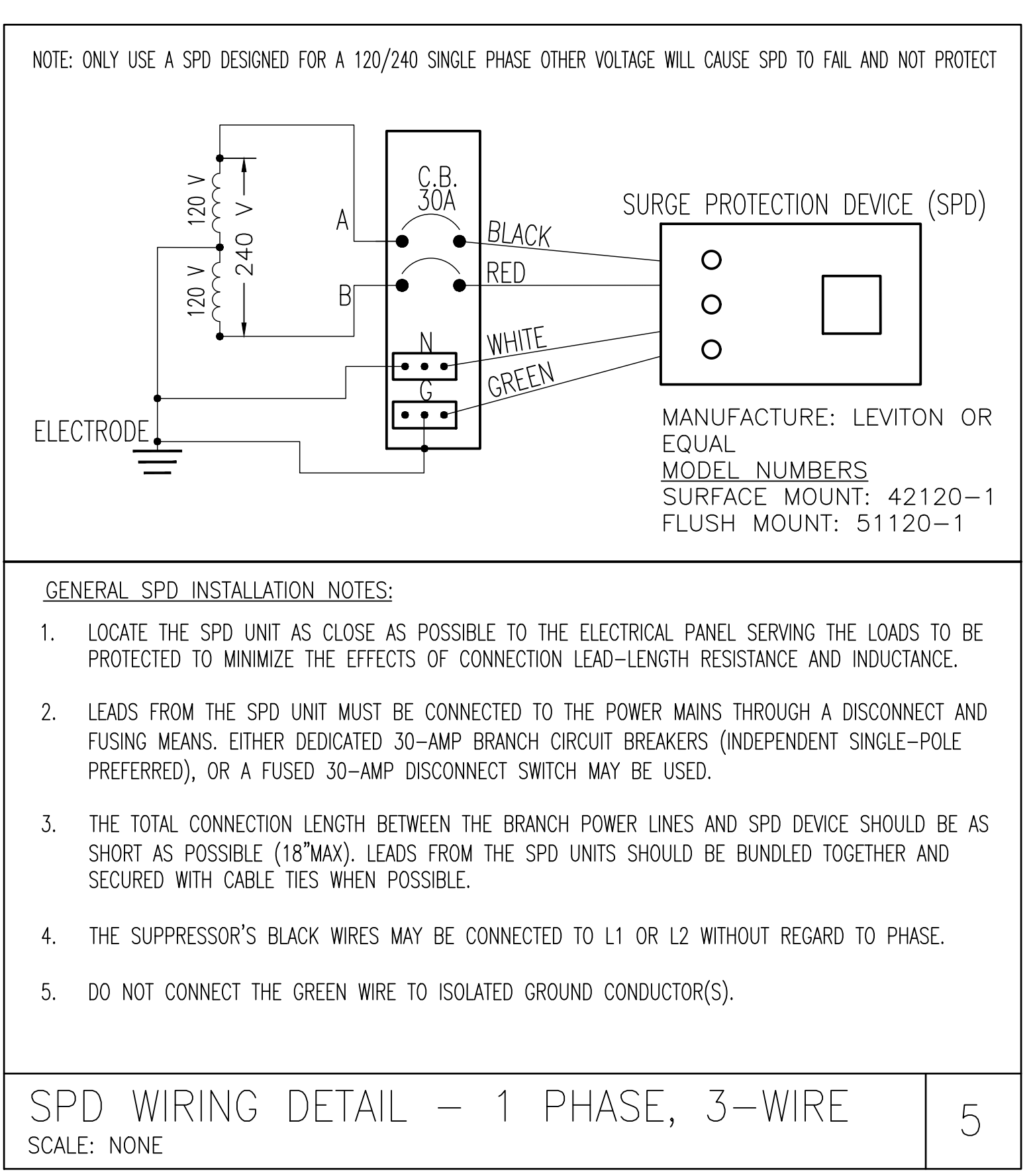
CALLOUT	SYMBOL	DESCRIPTION	VOLTS	AMPS	KVA	HP	CIRCUIT	WIRE CALLOUT	NOTES
FLEXRAKE		DUPERON FLEXRAKE MOTOR	480	1.1	0.91	1/2 HP	BSP-1,3,5	3#12,#12G	SUPPLY A LOCAL DISCONNECT.
FM1		BADGER METER M-SERIES M2000 REMOTE AMPLIFIER	120	0.22	0.03		P2-1	1#10,#10N,#10G	SUPPLIED WITH THREE WIRE-SHEATHED CABLE WITH OVERALL CABLE DIAMETER OF 0.2-0.45 INCH. RUN FACTORY SUPPLIED DATA CABLE TO DETECTOR IN 1" CONDUIT. INSTALL IN TYPE 316 STAINLESS STEEL ENCLOSURE WITH SNAP SWITCH AS DISCONNECT.
FM2		BADGER METER M-SERIES M2000 REMOTE AMPLIFIER	120	0.22	0.03		P2-3	1#10,#10N,#10G	SUPPLIED WITH THREE WIRE-SHEATHED CABLE WITH OVERALL CABLE DIAMETER OF 0.2-0.45 INCH. RUN FACTORY SUPPLIED DATA CABLE TO DETECTOR IN 1" CONDUIT. INSTALL IN TYPE 316 STAINLESS STEEL ENCLOSURE WITH SNAP SWITCH AS DISCONNECT.
PUMP 1		FLYTE NP N-3171.095	480	34	28.27	25 HP	PCP-2,4,6	3/4"C,3#8,#10G	
PUMP 2		FLYTE NP N-3301.185/095	480	77	64.02	60 HP	PCP-8,10,12	1-1/2"C,3#1,#8G	
SP		DAYTON 3YU69: 1/4 HP SUBMERSIBLE SUMP PUMP, VERTICAL SWITCH TYPE POLYPROPYLENE BASE MATERIAL.	120	1.5	0.18		P2-3	1#10,#10N,#10G	RUN POWER CORD TO TYPE 316 STAINLESS STEEL ENCLOSURE WITH SNAP SWITCH AS DISCONNECT.
SP		DAYTON 3YU69: 1/4 HP SUBMERSIBLE SUMP PUMP, VERTICAL SWITCH TYPE POLYPROPYLENE BASE MATERIAL.	120	1.5	0.18		P2-1	1#10,#10N,#10G	RUN POWER CORD TO TYPE 316 STAINLESS STEEL ENCLOSURE WITH SNAP SWITCH AS DISCONNECT.
WELL			240	28	6.72	5 HP	P1-10,12	3/4"C,2#6,#10G	

SEE COUNTY SPECS FOR EXACT DESCRIPTION AND REQUIREMENTS.

SYMBOL	NEMA	VOLTS	FEATURES	NOTE 1	NOTE 2
	5-15-2R	120V 1P 2W	GND	STANDARD WALL RECEPTACLE MOUNTED 48" AFF	
	5-15/20R	120V 1P 2W	WP, GFI, GND	PEDESTAL RECEPTACLE	PEDOC POWER SOLUTIONS 1P24V S/S OUTLET BOX W/INTEGRAL BASE MOUNTED TO CONCRETE PAD.
	5-15/20R	120V 1P 2W	GFI, GND	STANDARD WALL RECEPTACLE MOUNTED 18" AFF (WEATHER PROOF PER NEC, GFCI)	

CALLOUT	SYMBOL	LAMP	DESCRIPTION	MOUNTING	MODEL	INPUT WATTS	VOLTS	NOTE 1
A		(1) 77W LED	LOW BAY PENDENT-TOP BAY LED	JBOX/HOOK /PIPE MOUNT	METALUX TBLED-LD1-8-W-UNV-L840-CD1-U	77	120V 1P 2W	
B		(1) 58W LED	WALL MOUNT LED LUMINAIRE W/PHOTOCELL	WALL	LUMARK XTOR6B-PC1	58	120V 1P 2W	
S1		(1) 191W LED	LED SITE LUMINAIRE	POLE	MCGRAW EDISON GLEON-AF-03-LED-E1-5MQ-FINISH	191	120V 1P 2W	MOUNTED ON VALMONT INDUSTRIES POLE # 1108-3060-5-T-E P2-FINISH

SYMBOL	NOTE 1
\$	DECORA TYPE, SPECIFICATION GRADE, RATED 20 AMPS.



TO THE BEST OF THE DESIGNER'S KNOWLEDGE, THESE PLANS AND SPECIFICATIONS COMPLY WITH THE 2017 FLORIDA BUILDING CODE, 2014 INC. AND THE 2017 FLORIDA FIRE PREVENTION CODE (FBC) (2017).  
 TREASURE COAST ENGINEERING, INC. CERTIFICATE OF AUTHORIZATION# 27181 4825 13TH LANE, VERO BEACH, FL 32966 TEL: 772-567-1007 FAX: 772-567-1084 WWW.TCE.ENG.PRO  
 ENGINEER CERTIFICATION ALBERT B. JENKS JR. FL. REG. NO. 65650  
 DATE: 3/3/20 SHEET E5 PROJECT NO. TC19032  
 BID SET  
 ELECTRICAL EQUIPMENT SCHEDULES & DETAILS  
 MOORHEN MARSH LEAPS OPERATIONS BUILDING INDIAN RIVER COUNTY FL  
 COPYRIGHT © 2019 BY TREASURE COAST ENGINEERING, INC. - ENGINEER EXPRESSLY RESERVES HIS EXCLUSIVE COMMON LAW COPYRIGHT AND PROPERTY RIGHTS TO THESE DRAWINGS WHICH MAY NOT BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER, NOR ARE THEY TO BE ASSIGNED TO ANY PARTY WITHOUT THE ENGINEER'S WRITTEN CONSENT.

**INTERIOR TREES**

**PROTECTION OF EXISTING TREES:**

NUMBER OF EXISTING TREES: SABLE PALMS WITH GREATER THAN OR EQUAL 10' CLEAR TRUNK DISTANCE = 100; OTHER SABLE PALMS = 211. TOTAL SABLE PALMS = 311. OAKS: 48"=1; 36"=1; 30"=1; 24"=4; 20"=3; 18"=1; 16"=2; 8"=2; 6"=3; 4"=5; 3"=3. TOTAL OAKS = 26. TOTAL SABLE PALMS AND OAKS = 337.

EXISTING TREES TO BE LEFT UNDISTURBED: SABLE PALMS: 48 (12 OF THESE WITH CLEAR TRUNK DISTANCE >= 10'). OAKS: 24"=1; 3"=3. TOTAL OAKS = 4.

EXISTING TREES TO BE RELOCATED (ALL SABLE PALMS WITH CLEAR TRUNK DISTANCES >= 10') = 88

NUMBER OF EXISTING TREES THAT WILL BE DESTROYED: SABLE PALMS = 175 (ALL HAVING CLEAR TRUNK DISTANCES LESS THAN 10'). OAKS: 48"=1; 36"=1; 30"=1; 24"=3; 20"=3; 18"=1; 16"=2; 8"=2; 6"=3; 4"=5. TOTAL OAKS = 22. TOTAL SABLE PALMS AND OAKS = 197.

**MITIGATION OF EXISTING TREES THAT WILL BE DESTROYED: (927.11(4)(3))**

SABLE PALM MITIGATION: NUMBER OF SABLE PALMS WITH CLEAR TRUNK DISTANCE >= 10' IS 100. NONE OF THESE PALMS WILL BE DESTROYED - THEY WILL EITHER REMAIN IN PLACE UNDISTURBED OR WILL BE RELOCATED. THEREFORE, NO MITIGATION SABLE PALMS ARE REQUIRED.

OAK MITIGATION: TOTAL CIRCUMFERENCE (DBH) OF DESTROYED OAKS (>12" DIA. AT DBH) = [(48)(1)+(36)(1)+(30)(1)+(24)(3)+(20)(3)+(18)(1)+(16)(2)](2) = 592" DBH MITIGATION TREES. PROVIDE (148) 4" DBH LIVE OAKS (*Quercus virginiana*)

**NONVEHICULAR AREA LANDSCAPING: REFERENCE INDIAN RIVER COUNTY CODE SECTION 926.10.**

(2)(b) PER COMMUNITY DEVELOPMENT, THE STORMWATER TREATMENT FACILITY MUST PROVIDE 1 TREE PER 3,000 SQUARE FEET OF NONVEHICULAR OPEN SPACE. NONVEHICULAR OPEN SPACE IS SPACE THAT IS NOT COVERED BY BUILDINGS, PAVING, OR OTHER STRUCTURES. PER IRC COMMUNITY DEVELOPMENT, WATER BODIES ARE NOT INCLUDED IN THE NONVEHICULAR OPEN SPACE CALCULATION. THEREFORE, NONVEHICULAR OPEN SPACE = 6.12 ACRES = 266,587.2 SF ---> NUMBER TREES REQUIRED = (266,587.2/3,000)\*1 = 89 TREES. ---> 89 TREES PROVIDED ---> 39 SOUTHERN RED CEDAR, (24) 3-PALM CLUSTERS, 17 SLASH PINES, 6 LARGE CANOPY LIVE OAKS, 3 WAX MYRTLES.

(3) CANOPY TREES AROUND LAKES/PONDS/STORMWATER RETENTION/DETENTION AREAS, MITIGATION TREES AND RELOCATED TREES ARE NOT INCLUDED IN THESE TOTALS; PROVIDE THREE NATIVE TREES PER 100 FEET OF SHORELINE. USE SMALL CANOPY TREES. WETLAND POLISHING MARSH #1 - 505 L.F. SHORELINE ---> NUMBER TREES REQUIRED = (505/100)\*3 = 16 TREES ---> 14 SOUTHERN RED CEDARS AND (3) WAX MYRTLES WILL BE PLANTED IN THE VICINITY OF THE WETLAND TO MEET THIS REQUIREMENT. WETLAND POLISHING MARSH #2 - 646 L.F. SHORELINE ---> NUMBER TREES REQUIRED = (646/100)\*3 = 20 TREES ---> 22 SOUTHERN RED CEDARS WILL BE PLANTED IN THE VICINITY OF THE WETLAND TO MEET THIS REQUIREMENT. STORMWATER DETENTION BASINS - SHORELINE/BASIN = 271 FEET ---> NUMBER TREES/BASIN = (271/100)\*3 = 9 TREES/BASIN ---> 6 WAX MYRTLES AND 3 LIVE OAKS WILL BE PROVIDED FOR EACH BASIN TO MEET THIS REQUIREMENT. NOTE REGARDING PLANTING ALONG THE WETLANDS: A GEOSYNTHETIC CLAY LINER (GCL) WILL BE PLACED BELOW THE WETLANDS AND SETTLING BASINS TO PREVENT HORIZONTAL EXFILTRATION FROM THESE AREAS FROM POTENTIALLY DAMAGING THE NORTH RELIEF CANAL'S SOUTHERN BANK. THE GCL WILL ALSO PREVENT THE BASINS FROM DRYING DURING PROLONGED PERIODS WHEN CANAL WATER CANNOT BE PUMPED INTO THE FACILITY. TREES CANNOT BE PLANTED ABOVE THIS LINER.

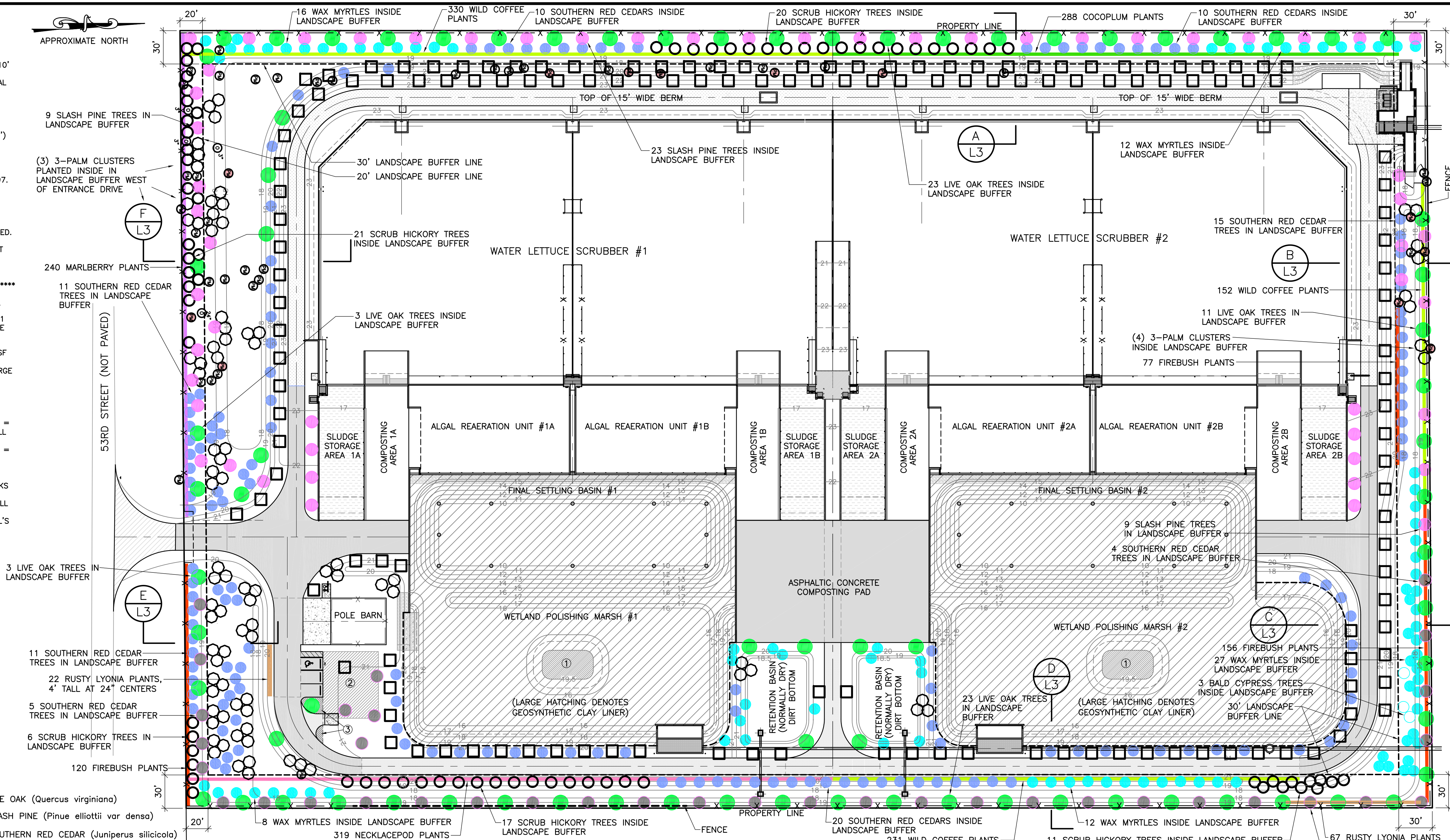
FOR NATIVE TREES TO REMAIN, ADJUST CONTOURS AND/OR FENCE AS NECESSARY TO AVOID DAMAGE TO TREE. IF NECESSARY TO ENSURE TREE SURVIVAL, CONSTRUCT PROTECTIVE "U"-SHAPED PLANTING BOX AROUND TREE. IF QUESTIONS, CONSULT WITH ENGINEER.

TREE AND SHRUB LOCATIONS ARE SHOWN FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS SHALL BE FIELD DETERMINED BY CONTRACTOR'S LANDSCAPER TO AVOID CONFLICT OR INTERFERENCE WITH SWALE SYSTEMS AND OTHER IMPROVEMENTS. TREES MAY BE CLUSTERED.

**LANDSCAPING LEGEND**

- SHRUBS**
- Orange line = RUSTY LYONIA (*Lyonia ferruginea*)<sup>1</sup>
  - Yellow line = WILD COFFEE (*Pyschotria nervosa*)<sup>2</sup>
  - Green line = COCOPLUM (*Chrysobalanus icaco*)<sup>2</sup>
  - Red line = FIREBUSH (*Hamelia patens*)<sup>2</sup>
  - Purple line = MARLBERRY (*Ardisia escalloniodes*)<sup>2</sup>
  - Pink line = NECKLACEPOD (*Sophora tomentosa*)<sup>2</sup>
- TREES**
- Green circle = LARGE CANOPY TREE = LIVE OAK (*Quercus virginiana*)
  - Pink circle = SMALL CANOPY TREE = SLASH PINE (*Pinus elliottii* var *densa*)
  - Blue circle = SMALL CANOPY TREE = SOUTHERN RED CEDAR (*Juniperus silicicola*)
  - Light blue circle = SMALL CANOPY TREE = BALD CYPRESS (*Taxodium distichum*)
  - Dark blue circle = UNDERSTORY TREE = WAX MYRTLE (*Myrica cerifera*)
  - Light purple circle = UNDERSTORY TREE = SOUTHERN RED CEDAR (*Juniperus silicicola*)
  - White circle = UNDERSTORY TREE = SCRUB HICKORY (*Carya floridana*)
  - Black square = MITIGATION LIVE OAK (*Quercus virginiana*), 4" MINIMUM DBH
  - Circle with dot = RELOCATED SABLE PALM (HAVING A 10' OR GREATER CLEAR TRUNK DISTANCE)
  - Circle with cross = EXISTING SABLE PALM TO REMAIN (HAVING A 10' OR GREATER CLEAR TRUNK DISTANCE)
  - Circle with 'X' = EXISTING TREE (OR PALM) TO REMAIN
- 1 = 48" HIGH AT TIME OF PLANTING  
2 = 24" HIGH AT TIME OF PLANTING

- NOTES:**
- LARGE CANOPY TREES ARE 4" MINIMUM DIAMETER AT 0.5 FEET ABOVE GRADE AND MINIMUM 18 FEET HIGH.
  - SMALL CANOPY TREES ARE 2" MINIMUM DIAMETER AT 0.5 FEET ABOVE GRADE AND MINIMUM 12 FEET HIGH.
  - UNDERSTORY TREES ARE 2" MINIMUM DIAMETER AT 0.5 FEET ABOVE GRADE AND MINIMUM 6 FEET HIGH.
  - SPREAD PERIMETER TREES AND SHRUBS IN STAGGERED, OFFSET PATTERN TO ESTABLISH A FULL AND OPAQUE BUFFER.
  - 100 PERCENT SURVIVABILITY IS REQUIRED FOR ONE-YEAR FOR ALL RELOCATED TREES. BEGINNING ON THE DATE OF FINAL ACCEPTANCE OF THE PROJECT BY THE OWNER, THE ONE-YEAR PERIOD SHALL BEGIN. IF DEATHS OCCUR OR TREES ARE NOT HEALTHY, CONTRACTOR SHALL REPLACE THEM WITH LIKE KIND OF SAME SIZE OR LARGER AND CONTINUE TO MAINTAIN THEM AS SPECIFIED IN SECTION 02235.
  - FOR ALL TREES PLANTED WITHIN 7' OF A PIPE, PROVIDE ROOT BARRIERS BETWEEN PIPE AND TREE. USE DEEPROOT MODEL "UB 48-2" OR EQUAL.



**PERIMETER LANDSCAPE BUFFER REQUIREMENTS** REFERENCE: INDIAN RIVER COUNTY CODE SECTIONS 926.08 AND 926.09

REQUIRED TREES/SHRUBS	NEW TREES/SHRUBS PROVIDED (NOT INCLUDING MITIGATION OR REPLACEMENT TREES)
<b>NORTH PERIMETER (IRFWCD NORTH RELIEF CANAL R/W) - SEC. 926.08 - TYPE 'B' BUFFER WITH 6' OPAQUE FEATURES, 30' WIDTH, 699.69' LONG</b>	
LARGE CANOPY TREES	2/100 LINEAL FEET = 14
SMALL CANOPY TREES	2/100 LINEAL FEET = 14
UNDERSTORY TREES	6/100 LINEAL FEET = 42
SHRUBS	55/100 LINEAL FEET = 385
<b>EAST PERIMETER (A-1 ZONING, AG-1 LAND USE) - SEC. 926.08 - TYPE 'B' BUFFER WITH 6' OPAQUE FEATURES, 30' WIDTH, 1121.97' LONG</b>	
LARGE CANOPY TREES	2/100 LINEAL FEET = 23
SMALL CANOPY TREES	2/100 LINEAL FEET = 23
UNDERSTORY TREES	6/100 LINEAL FEET = 68
SHRUBS	55/100 LINEAL FEET = 617
<b>SOUTH PERIMETER (53RD STREET FRONTAGE) - SEC. 926.09 - TYPE 'C' BUFFER, 20' MINIMUM WIDTH, 675.11' LONG (N.I.C. 25' DRIVEWAY)</b>	
CANOPY TREES	4/100 LINEAL FEET = 27
UNDERSTORY TREES	5/100 LINEAL FEET = 34
SHRUBS	50/100 LINEAL FEET = 338
<b>WEST PERIMETER (IRFWCD LATERAL "A" CANAL R/W) - SEC. 926.08 - TYPE 'B' BUFFER WITH 6' OPAQUE FEATURES, 30' WIDTH, 1122.42' LONG</b>	
LARGE CANOPY TREES	2/100 LINEAL FEET = 23
SMALL CANOPY TREES	2/100 LINEAL FEET = 23
UNDERSTORY TREES	6/100 LINEAL FEET = 68
SHRUBS	55/100 LINEAL FEET = 618

**OPAQUE FEATURES** REFERENCE: INDIAN RIVER COUNTY CODE SECTIONS 926.08(4)(a) --- PLANT THE SHRUBS IN AN OFFSET DOUBLE ROW.

**REQUIRED LANDSCAPING ADJACENT TO RIGHTS-OF-WAY** REFERENCE: INDIAN RIVER COUNTY CODE SECTIONS 926.09 --- PLANT THE SHRUBS IN AN OFFSET DOUBLE ROW.

**REQUIRED LANDSCAPING ADJACENT TO RIGHTS-OF-WAY** REFERENCE: INDIAN RIVER COUNTY CODE SECTIONS 926.09 (1)(b) PLANT A FOUR-FOOT HIGH VISUAL SCREEN BETWEEN PARKING AREA AND 53RD STREET. PLANT SHRUBS ON 24" TO 30" CENTERS. ---> 22 RUSTY LYONIA (*Lyonia ferruginea*) PLANTS PROVIDED.

(3) **PARKING AREA INTERIOR LANDSCAPING:** PLANTING AREA >= 12% OF TOTAL PAVED AREA (DRIVING ISLES, DRIVEWAYS, PARKING SPACES). AREA TO BE PLANTED = 23,847 SF \* 0.12 = 2,862 SF TO BE PLANTED. PROVIDE AT LEAST ONE TREE IN MINIMUM 12'x12' PLANTING AREA. ONE LIVE OAK PROVIDED ADJACENT TO PARKING AREA. REST OF PLANTING AREA TO BE LANDSCAPING MATERIAL <= 3' HIGH. ---> 334 PINK MUHLY GRASS (*Muhlenbergia capillaris*) PROVIDED.

- ADDITIONAL LANDSCAPING NOTES**
- PLANT 60 SALT MARSH CORDGRASS (*Spartina patens*) AND 60 SAND CORDGRASS (*Spartina bakeri*), ALL 3-GALLON, IN TWO SEPARATE MONOLITHIC GROUPINGS ON EACH ISLAND TOP AT 3' CENTERS.
  - 334 PINK MUHLY GRASS (*Muhlenbergia capillaris*) PLANTS, 3-GALLON SIZE AT 3' CENTERS (3,000 SF)
  - FILL HATCHED AREA WITH MINIMUM 3 GALLON SILVER SAW PALMETTOS (*Serenoa repens*) AT 3' CENTERS (~322 SF), 36 PLANTS TOTAL

ALL PLANTINGS SHALL MEET THE INDIAN RIVER LANDSCAPE ORDINANCE.

NOT VALID FOR CONSTRUCTION UNLESS ORIGINALLY SIGNED AND SEALED

W. KEITH McCULLY, P.E.  
FLORIDA P.E. NO. 32007  
DATE:

**CANOPY TREES, PERIMETER AND MISCELLANEOUS LANDSCAPING**

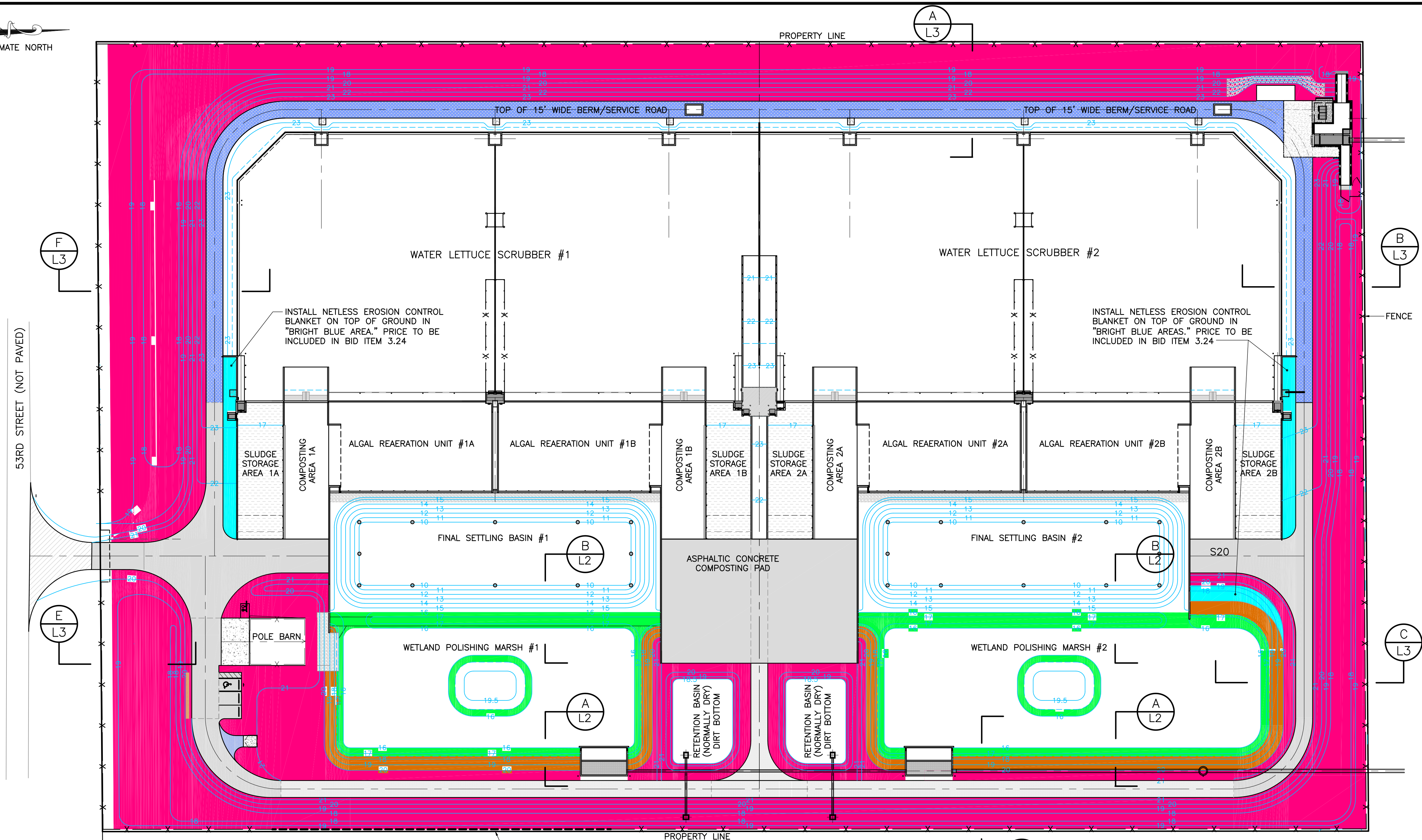
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DATE: 4/20/2020  
SCALE: 1"=50'  
SHEET: L1

NOT FOR CONSTRUCTION: BIDDING PURPOSES ONLY

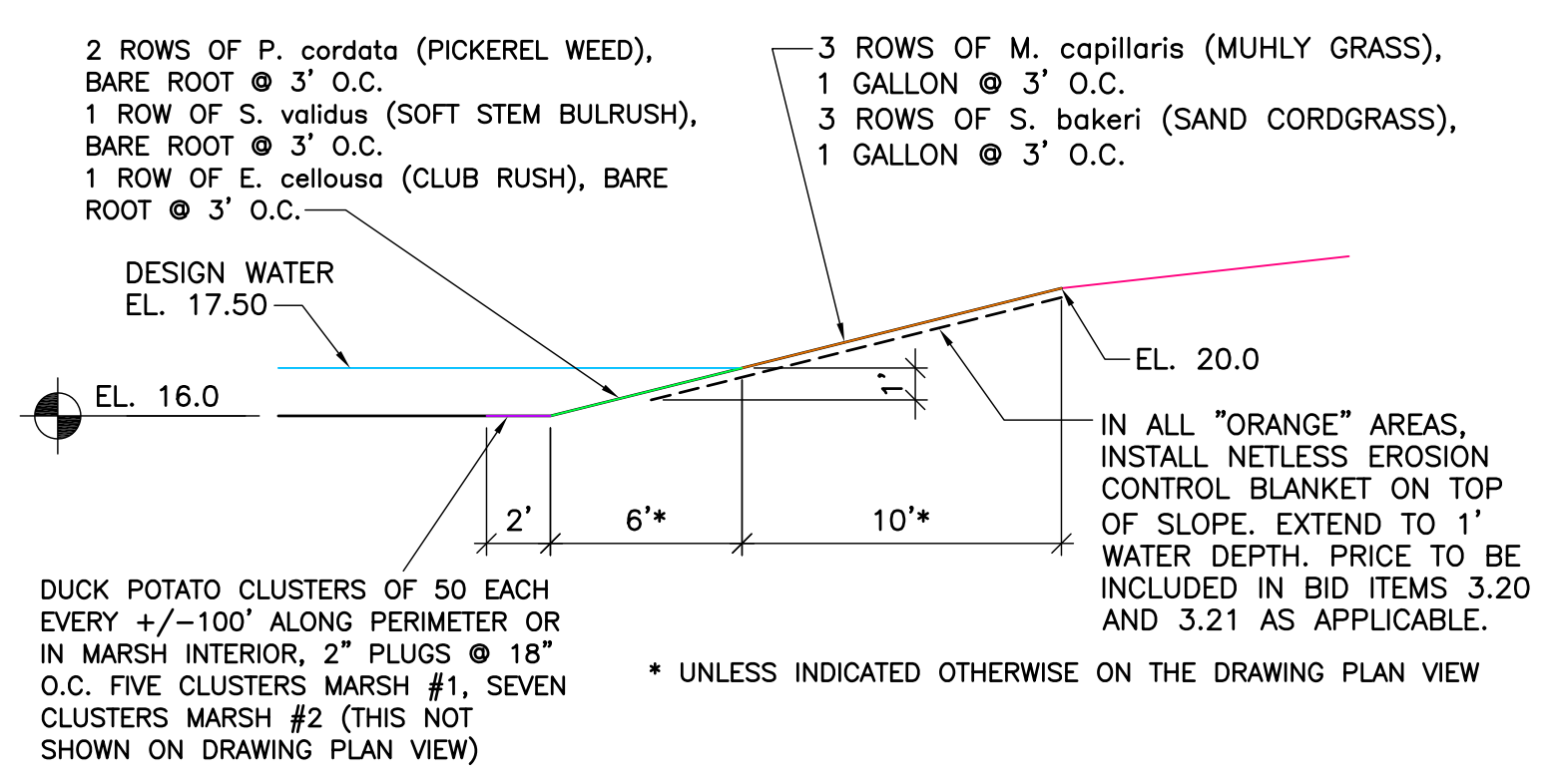
**INDIAN RIVER COUNTY STORMWATER DIVISION**  
1801 27TH STREET  
VERO BEACH, FLORIDA 32960  
(772) 226-1562

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
KM	KM	KM	KM

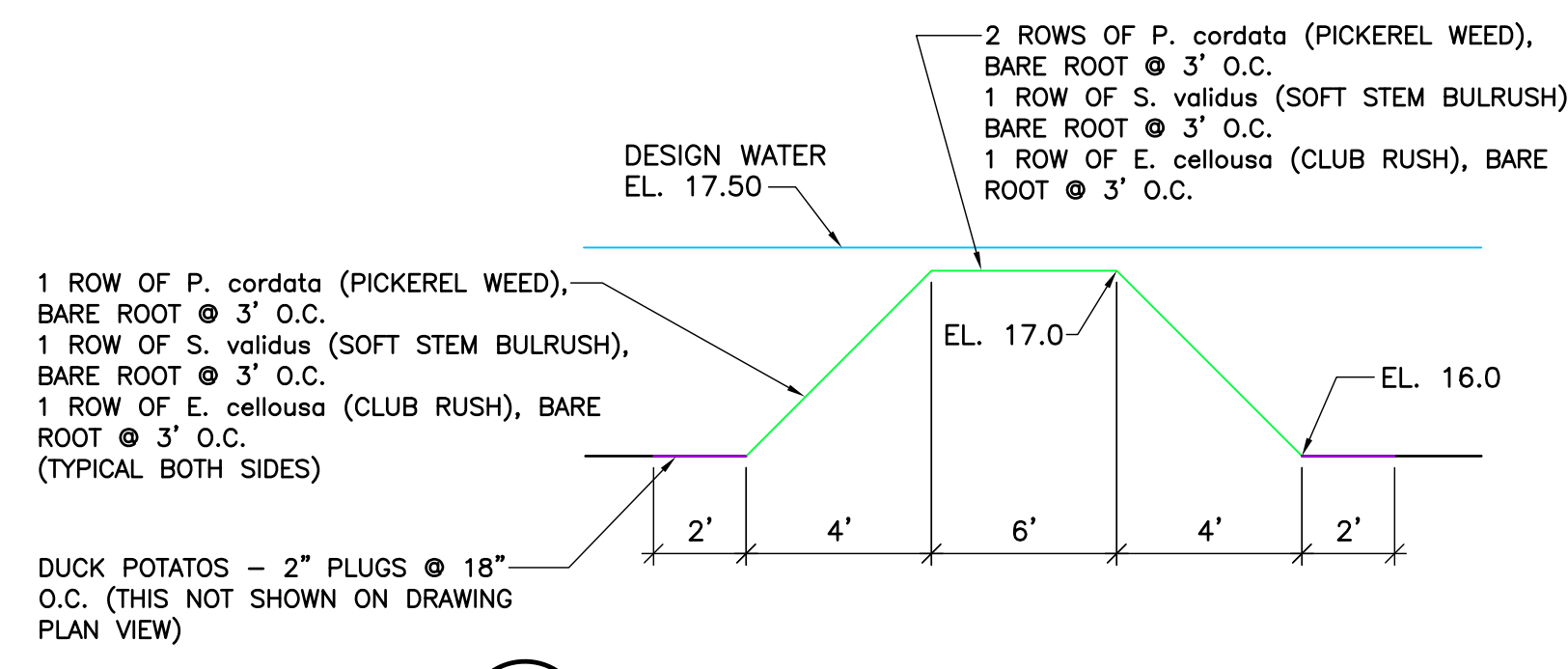
**MOORHEN MARSH LEAPS™**



**PLAN VIEW: GROUNDCOVER AND LITTORAL PLANTINGS**  
SCALE: 1" = 40'-0"



**A SECTION: WETLAND POLISHING MARSH LITTORAL AND SLOPE PLANTINGS (SIMILAR FOR ISLANDS)**  
LOCATIONS AS INDICATED ON PLAN VIEW  
NOT TO SCALE



**B SECTION: FINAL SETTLING TO WETLAND POLISHING MARSH TRANSITION**  
NOT TO SCALE

USE CAUTION WHEN PLANTING - DO NOT PUNCTURE GCL LINER. PUNCTURES WILL BE REPAIRED AT CONTRACTOR'S EXPENSE

- LANDSCAPING LEGEND**
- = 172,000 SF (3.94 ACRES) - NATIVE GRASS HYDROSEED MIX
  - = 4,940 SF MARSH #1, 7,300 SF MARSH #2 - SEE SECTION "A" FOR PLANT TYPES
  - = 9,140 SF MARSH #1, 10,100 SF MARSH #2 - SEE SECTIONS "A" AND "B" FOR PLANT TYPES
  - = 4,900 SF - 50% M. capillaris (MULHY GRASS), 50% S. bakeri (SAND CORDGRASS) MIX, 1 GALLON EACH @ 3' CENTERS
  - = DUCK POTATO CLUSTERS - SEE SECTIONS "A" AND "B"
  - = 21,280 SF - NATIVE GRASS HYDROSEED MIX FOR 15' WIDE BERM/SERVICE ROAD

- NOTES**
1. AFTER TREES ARE ESTABLISHED, TREE WELLS TO BE KNOCKED DOWN SMOOTH AND THE DISTURBED AREAS TO BE HYDROSEED PER SPECIFICATIONS. (THIS WORK SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.)

NOT FOR CONSTRUCTION:  
BIDDING PURPOSES ONLY

DESIGNED BY	KM	DRAWN BY	KM	CHECKED BY	KM	APPROVED BY	KM
NUMBER	REVISIONS	REVISED BY	CHECKED BY	DESIGNED BY	KM	DRAWN BY	KM

INDIAN RIVER COUNTY  
STORMWATER DIVISION  
1801 27TH STREET  
VERO BEACH, FLORIDA 32960  
(772) 226-1562

MOORHEN MARSH LEAPS™

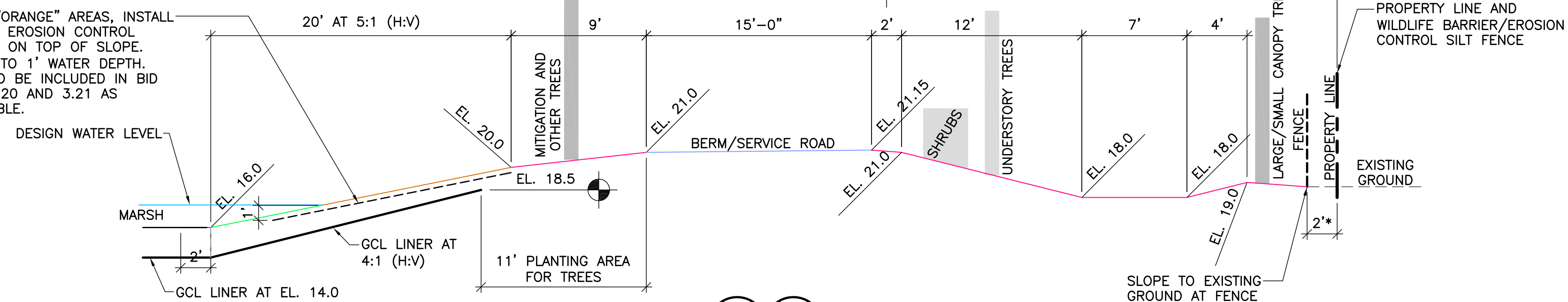
NOT VALID FOR  
CONSTRUCTION  
UNLESS  
ORIGINALLY  
SIGNED AND  
SEALED

W. KEITH McCULLY, P.E.  
FLORIDA P.E. NO. 32007  
DATE:

GROUNDCOVER AND  
LITTORAL PLANTINGS

PROJECT NO.  
DATE 5/18/2020  
SCALE 1"=50'  
SHEET L2

IN ALL "ORANGE" AREAS, INSTALL NETLESS EROSION CONTROL BLANKET ON TOP OF SLOPE. EXTEND TO 1' WATER DEPTH. PRICE TO BE INCLUDED IN BID ITEMS 3.20 AND 3.21 AS APPLICABLE.



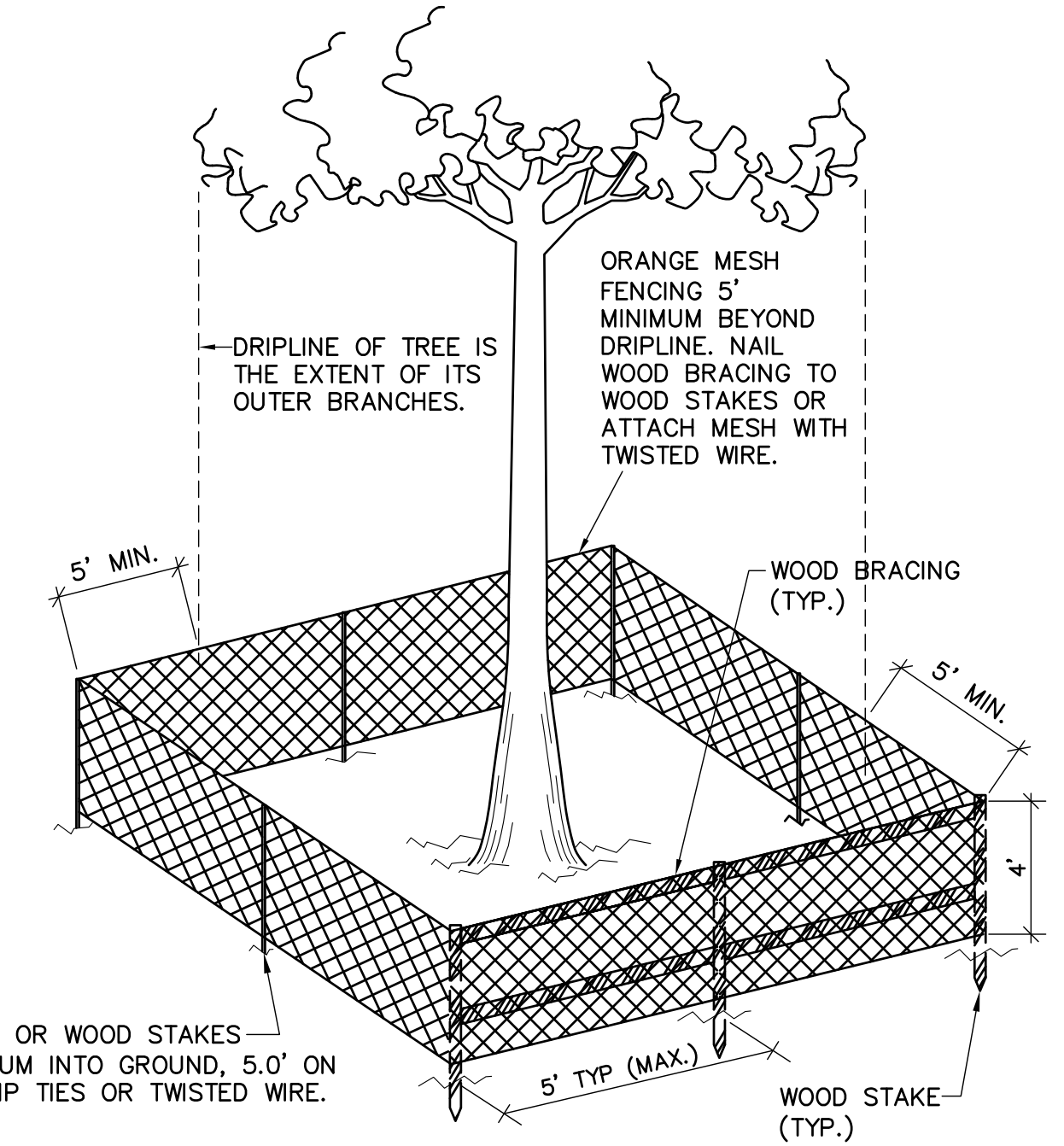
SECTION D  
L1 L2 SCALE: 1"=6'-0"

**LANDSCAPING LEGEND**

- = NATIVE GRASS AND NATIVE WILDFLOWER HYDROSEED MIX
- = SEE SECTION "A" ON SHEET L2 FOR PLANT TYPES
- = SEE SECTIONS "A" AND "B" ON SHEET L2 FOR PLANT TYPES
- = DUCK POTATO CLUSTERS - SEE SECTIONS "A" AND "B" ON SHEET L2
- = NATIVE GRASS HYDROSEED MIX FOR 15' WIDE BERM/SERVICE ROAD

NOTE: BARBED WIRE FENCING IS NOT PERMISSIBLE

NOTE: ALL TREES TO REMAIN SHALL BE PROTECTED BEFORE CONSTRUCTION ACTIVITIES BEGIN. OWNER'S REPRESENTATIVE SHALL APPROVE ALL TREE BARRICADES. TREE BARRICADES ARE REQUIRED FOR ALL EXISTING NATIVE TREES, INCLUDING PALM TREES. THE FENCE REPRESENTS THE ALLOWABLE LIMITS OF DISTURBED SOIL AROUND TREE ROOTS.

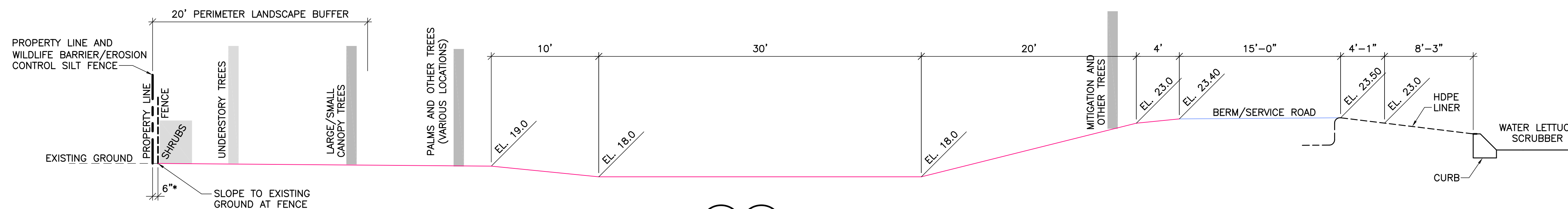


**TREE PROTECTION BARRICADE**  
NOT TO SCALE

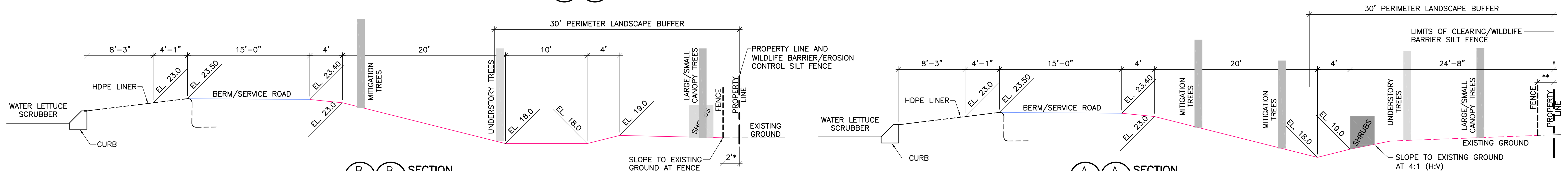


SECTION E  
L1 L2 SCALE: 1"=6'-0"

\* ADJUST FENCE LOCATION AS NECESSARY TO AVOID NATIVE TREES. CONSULT WITH ENGINEER IF QUESTIONS ARISE. KEEP FENCE ON COUNTY PROPERTY.



SECTION F  
L1 L2 SCALE: 1"=6'-0"

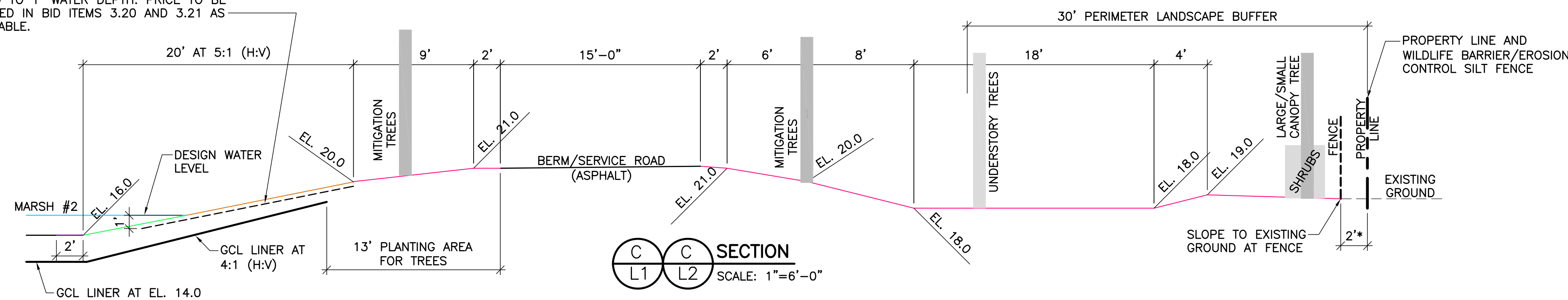


SECTION B  
L1 L2 SCALE: 1"=6'-0"

SECTION A  
L1 L2 SCALE: 1"=6'-0"

\*\* ACTUAL DISTANCE WILL BE DETERMINED IN FIELD IN ORDER TO PROVIDE ACCESS TO NORTH RELIEF CANAL USING EXISTING DIRT/GRASS ROADWAY IN VICINITY OF WESTERN PROPERTY LINE.

IN ALL "ORANGE" AREAS, INSTALL NETLESS EROSION CONTROL BLANKET ON TOP OF SLOPE. EXTEND TO 1' WATER DEPTH. PRICE TO BE INCLUDED IN BID ITEMS 3.20 AND 3.21 AS APPLICABLE.



SECTION C  
L1 L2 SCALE: 1"=6'-0"

SEE SHEET C1a FOR EXISTING TREES THAT ARE TO REMAIN IN PLACE OR BE RELOCATED. ALL SUCH TREES DAMAGED OR DESTROYED BY CONTRACTOR'S OPERATIONS SHALL BE REPLACED PER THE TECHNICAL SPECIFICATIONS, AT NO COST TO THE OWNER.

NOT VALID FOR CONSTRUCTION UNLESS ORIGINALLY SIGNED AND SEALED

NOT FOR CONSTRUCTION:  
BIDDING PURPOSES ONLY

NUMBER	REVISIONS	REVISED BY	CHECKED BY	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
				KM	KM		KM

INDIAN RIVER COUNTY  
STORMWATER DIVISION  
1801 27TH STREET  
VERO BEACH, FLORIDA 32960  
(772) 226-1562

MOORHEN MARSH LEAPS™

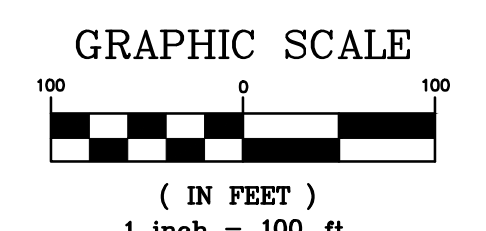
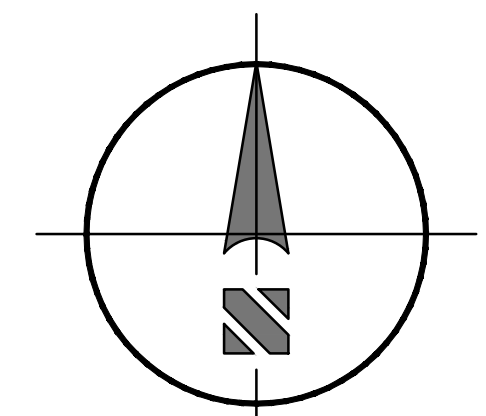
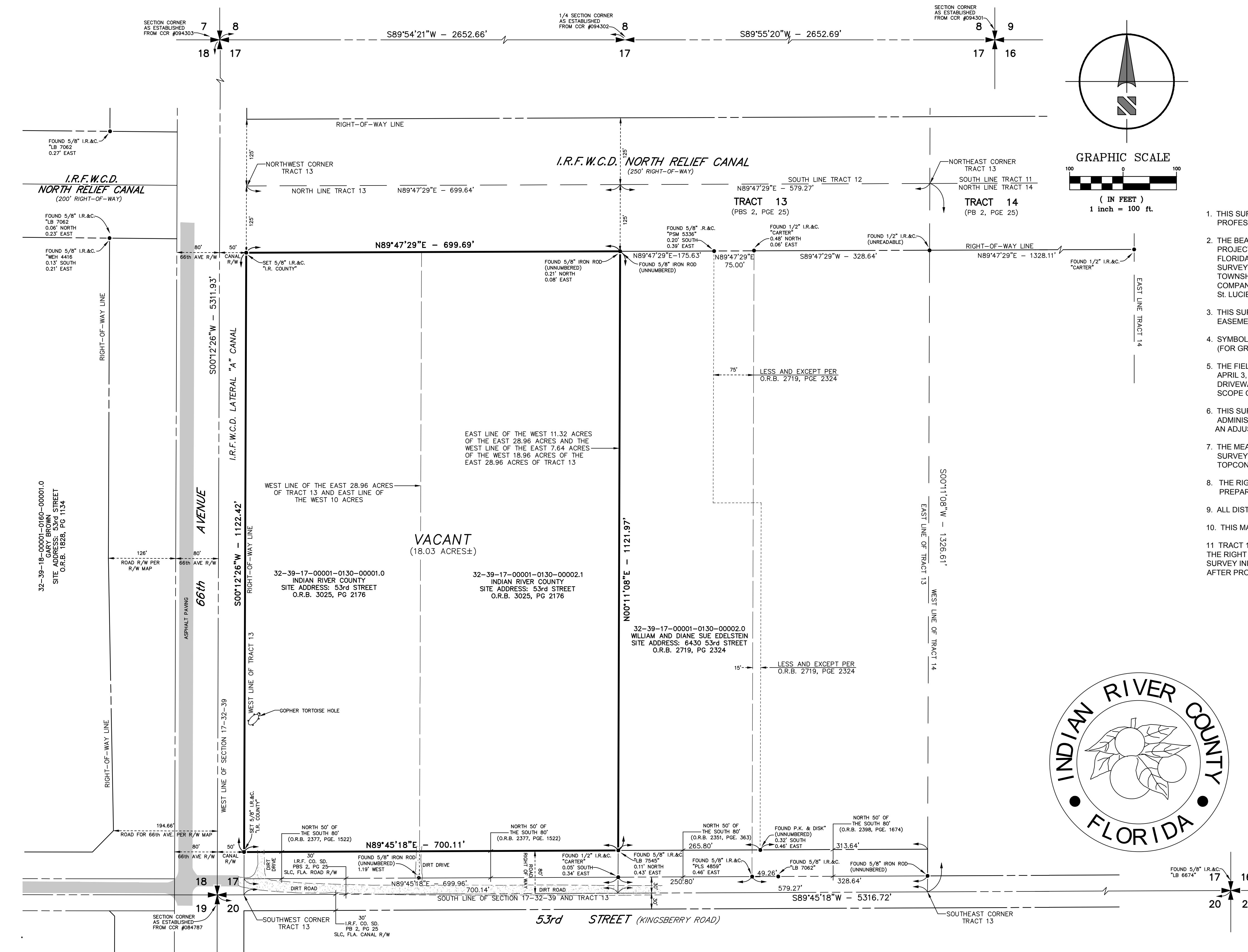
W. KEITH McCULLY, P.E.  
FLORIDA P.E. NO. 32007  
DATE:

LANDSCAPING SECTIONS  
AND DETAILS

PROJECT NO.  
DATE 5/18/2020  
SCALE AS NOTED  
SHEET L3



# Boundary Survey For: INDIAN RIVER COUNTY ENGINEERING DIVISION SURVEY SECTION



**LEGAL DESCRIPTION**

**PARCEL 1:**  
THE WEST 10 ACRES OF TRACT 13, SECTION 17, TOWNSHIP 32 SOUTH, RANGE 39 EAST, ACCORDING TO THE LAST GENERAL PLAT OF THE INDIAN RIVER FARMS COMPANY AS RECORDED IN PLAT BOOK 2, PAGE 25, PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA; SAID LAND NOW LYING IN AND BEING IN INDIAN RIVER COUNTY, FLORIDA, LESS AND EXCEPT THE NORTH 125 FEET AND ALSO LESS AND EXCEPT THE SOUTH 80 FEET THEREOF.

**PARCEL 2:**  
THE WEST 11.32 ACRES OF THE EAST 28.96 ACRES OF TRACT 13, SECTION 17, TOWNSHIP 32 SOUTH, RANGE 39 EAST, ACCORDING TO THE LAST GENERAL PLAT OF THE INDIAN RIVER FARMS COMPANY AS RECORDED IN PLAT BOOK 2, PAGE 25, PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA; SAID LAND NOW LYING IN AND BEING IN INDIAN RIVER COUNTY, FLORIDA, LESS AND EXCEPT THE NORTH 125 FEET AND ALSO LESS AND EXCEPT THE SOUTH 80 FEET THEREOF.

- SURVEYOR'S NOTES:**
- THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED PROFESSIONAL SURVEYOR AND MAPPER.
  - THE BEARINGS SHOWN HEREON ARE BASED ON THE 1983 NORTH AMERICAN DATUM, 2011 ADJUSTMENT, AND PROJECTED IN THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE. THIS SURVEY WAS TIED TO THE FLORIDA PERMANENT REFERENCE NETWORK (MAINTAINED BY THE FLORIDA DEPARTMENT OF TRANSPORTATION'S SURVEY DEPARTMENT) DERIVING A GRID BEARING OF S00°12'26"W ALONG THE WEST LINE OF TRACT 13, SECTION 17, TOWNSHIP 32 SOUTH, RANGE 39 EAST, OF THE LAST GENERAL PLAT OF THE LANDS OF THE INDIAN RIVER FARMS COMPANY (I.R.F.C. LAST GENERAL PLAT), AS RECORDED IN PLAT BOOK 2, PAGE 25, OF THE PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA.
  - THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE POLICY. THEREFORE THERE MAY BE EASEMENTS, RESTRICTIONS AND/OR RESERVATIONS NOT SHOWN HEREON, BUT FOUND IN THE PUBLIC RECORDS.
  - SYMBOLS SHOWN HEREON DEPICT THE HORIZONTAL POSITION OF THAT SPECIFIC IMPROVEMENT. THE SYMBOLS (FOR GRAPHICAL PURPOSE) ARE NOT DRAWN TO SCALE.
  - THE FIELD WORK FOR THIS SURVEY WAS COMPLETED BY INDIAN RIVER COUNTY PERSONNEL ON THE DATE OF APRIL 3, 2017. THE SUBJECT PROPERTY IS AN OLD CITRUS GROVE, WITH THE EXCEPTION OF 53rd STREET AND THE DRIVEWAY ENTERING THE PROPERTY, TOPOGRAPHIC FEATURES AND IMPROVEMENTS WERE NOT LOCATED PER THE SCOPE OF THIS SURVEY.
  - THIS SURVEY MEETS AND/OR EXCEEDS THE ACCURACY REQUIREMENTS PER CHAPTER 5J-17, FLORIDA ADMINISTRATIVE CODE. THE HORIZONTAL CONTROL POINTS USED TO CREATE THIS SURVEY WERE PART OF AN ADJUSTED CLOSED LOOP TRAVERSE THAT HAD A RELATIVE ERROR OF CLOSURE EXCEEDING 1 PART IN 131,000.
  - THE MEASUREMENTS FOR THIS SURVEY WERE MADE UTILIZING CONVENTIONAL AND REAL TIME KINEMATIC SURVEYING METHODS WITH THE FOLLOWING EQUIPMENT: LEICA VIVA GLOBAL POSITIONING SYSTEM AND A TOPCON GTS 500 ROBOTIC TOTAL STATION WITH MAGNET SOFTWARE.
  - THE RIGHT OF WAY FOR 66th AVENUE WAS ESTABLISHED USING THE 66th AVENUE (S.R. 505) RIGHT OF WAY MAP PREPARED BY ARCADIS U.S. INC., FOR THE INDIAN RIVER COUNTY ENGINEERING DEPARTMENT, PROJECT JOB NO. 0545.
  - ALL DISTANCES SHOWN HEREON ARE EXPRESSED IN U.S. SURVEY FEET.
  - THIS MAP IS INTENDED TO BE DISPLAYED AT A SCALE OF 1"=100' OR SMALLER.
  - TRACT 13, SECTION 17, TOWNSHIP 32 SOUTH, RANGE 39 EAST (WHICH INCLUDES THE RIGHT OF WAY OF 53rd STREET AND THE RIGHT OF WAY OF THE NORTH RELIEF CANAL) CONTAINS 38.96 ACRES AS PER THE I.R.F.C. LAST GENERAL PLAT. THIS SURVEY INDICATES THE TRACT IS 38.967 ACRES. THE SUBJECT PROPERTY CONTAINS 21.32 ACRES PER DEEDS (21.324 ACRES AFTER PRORATING THE ACREAGE) AND THE SUBJECT PROPERTY LESS RIGHT OF WAY = 18.03 ACRES, MORE OR LESS.

**SYMBOLS AND ABBREVIATIONS:**

A/C = AIR CONDITIONER	I.R.F.W.C.D. = INDIAN RIVER FARMS WATER CONTROL DISTRICT
C.B.S. = CONCRETE BLOCK STRUCTURE	L = ARC LENGTH
C.C.R. = CERTIFIED CORNER RECORD	(M) = FIELD MEASURED
C/L = CENTERLINE	O.R.B. = OFFICIAL RECORDS BOOK
C.M. = CONCRETE MONUMENT	O/S = OFFSET
CONC = CONCRETE	(P) = PLATTED COURSE
COR. = CORNER	P.B. = PLAT BOOK
(D) = COURSE PER DEED	P.B.S. = ST. LUCIE COUNTY PLAT BOOK
D/WY = DRIVEWAY	P.O.B. = POINT OF BEGINNING
E/P = EDGE OF PAVEMENT	P.O.C. = POINT OF COMMENCEMENT
ESMT = EASEMENT	P.S.M. = PROFESSIONAL SURVEYOR AND MAPPER
(F) = FIELD MEASURED COURSE	P.U. = PUBLIC UTILITY
FNC = FENCE	PVC = POLYVINYL CHLORIDE
FND = FOUND	R = RADIUS
H/W = HEADWALL	R/W = RIGHT OF WAY
I.P. = IRON PIPE	SLC = ST. LUCIE COUNTY
I.R. = IRON ROD	SWK = SIDEWALK
I.R.&C. = IRON ROD AND CAP	



**CERTIFICATION**  
(NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER)

I HEREBY CERTIFY THAT THE BOUNDARY SURVEY SHOWN HEREON WAS COMPLETED UNDER MY DIRECTION AND SAID TOPOGRAPHIC SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

I FURTHER CERTIFY THAT THIS BOUNDARY SURVEY MEETS THE REQUIREMENTS FOR THE STANDARDS OF PRACTICE, AS ESTABLISHED IN CHAPTER 5J-17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027 FLORIDA STATE STATUTES.

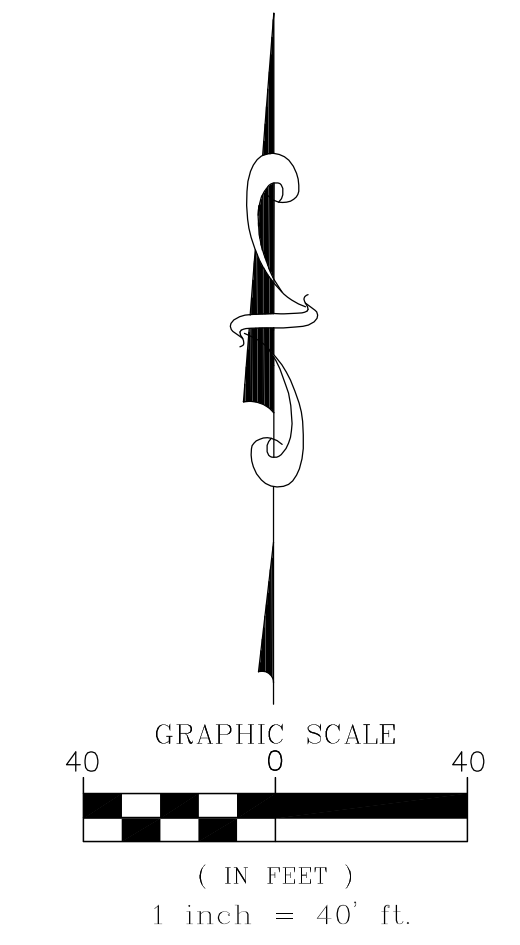
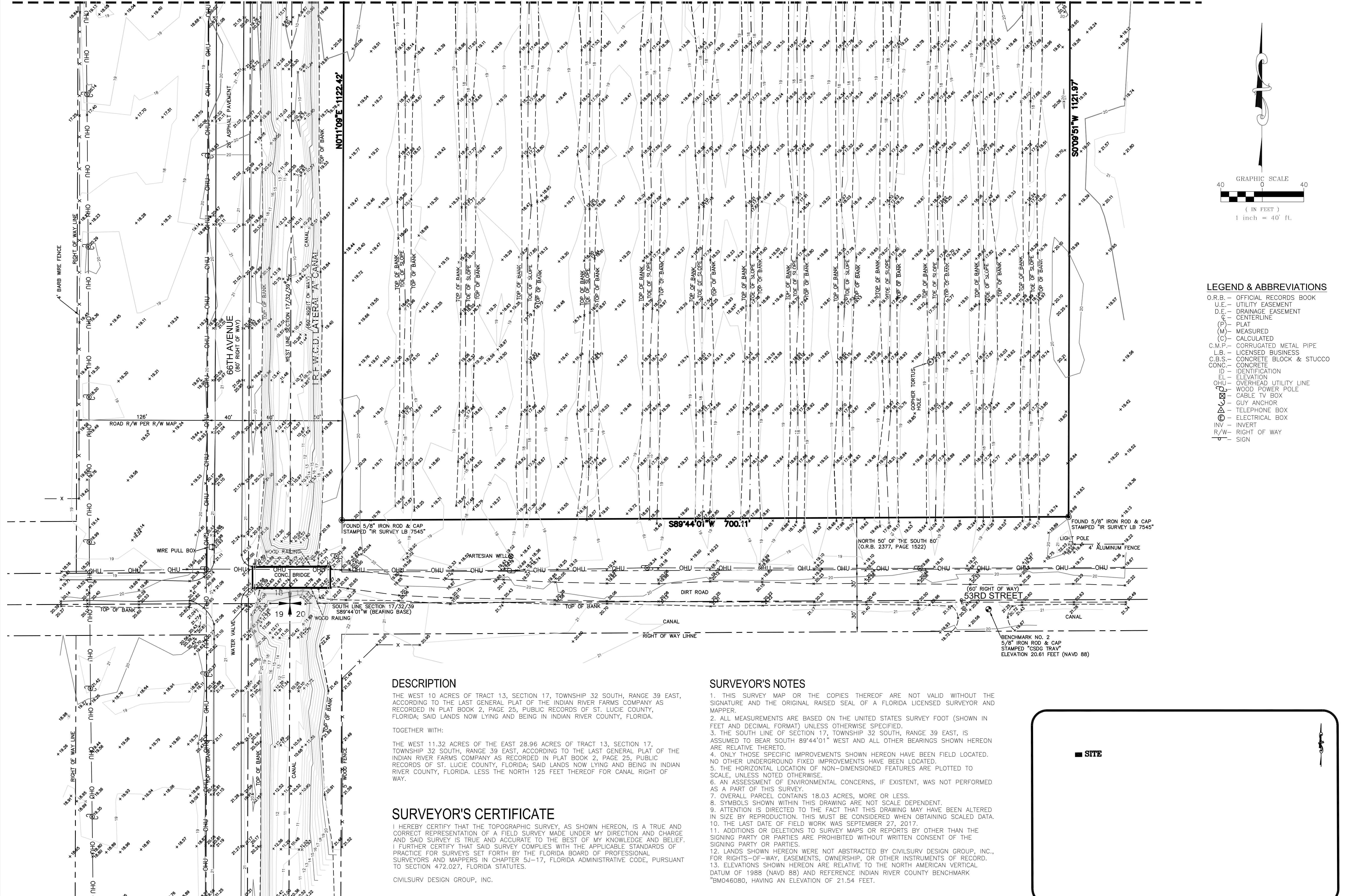
DATE OF SIGNATURE \_\_\_\_\_

DAVID M. SILON  
INDIAN RIVER ASSISTANT COUNTY SURVEYOR  
FLORIDA CERTIFICATE NO. 6139

NO.	REVISION	DATE	BY	INDIAN RIVER COUNTY	DESIGNED BY:	SECTION: 17	FIELD BOOK:	DATE:	53rd Street - Greene Boundary Survey	SHEET
1	UPDATED OWNERS NAME AND RECORDING INFORMATION ON THE SUBJECT PROPERTY	1/06/2020	RLI	1801 27TH STREET VERO BEACH, FL 32960 (772) 567-8000	R. INGLETT	TOWNSHIP: 32S	STANTON 2	4-04-2017	Tract 13	1
2	REVISE LEGAL DESCRIPTION	2/07/2020	RLI		APPROVED BY: D. SILON	RANGE: 39E	PAGE: 27-29	PROJECT NUMBER 1714	Sec. 17, Township 32 South, Range 39 East	OF 1

F:\Public Works\ENGINEERING DIVISION\PROJECTS\1714-Greene Boundary Survey\Survey\Draw\1714-Greene\_Bnd\_Srv.dwg, 27/02/2020 10:54:01 AM

MATCH LINE (SEE SHEET 2 OF 2)



LEGEND & ABBREVIATIONS

- O.R.B. - OFFICIAL RECORDS BOOK
U.E. - UTILITY EASEMENT
D.E. - DRAINAGE EASEMENT
C.L. - CENTERLINE
PLAT
(M) - MEASURED
(C) - CALCULATED
C.M.P. - CORRUGATED METAL PIPE
L.B. - LICENSED BUSINESS
C.B.S. - CONCRETE BLOCK & STUCCO
CONC. - CONCRETE
ID - IDENTIFICATION
EL - ELEVATION
OHU - OVERHEAD UTILITY LINE
W.U.P. - WOOD POWER POLE
C.T.V. - CABLE TV BOX
G.A. - GUY ANCHOR
T.B. - TELEPHONE BOX
E.B. - ELECTRICAL BOX
INV - INVERT
R/W - RIGHT OF WAY
SIGN

DESCRIPTION

THE WEST 10 ACRES OF TRACT 13, SECTION 17, TOWNSHIP 32 SOUTH, RANGE 39 EAST, ACCORDING TO THE LAST GENERAL PLAT OF THE INDIAN RIVER FARMS COMPANY AS RECORDED IN PLAT BOOK 2, PAGE 25, PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA; SAID LANDS NOW LYING AND BEING IN INDIAN RIVER COUNTY, FLORIDA.

TOGETHER WITH:

THE WEST 11.32 ACRES OF THE EAST 28.96 ACRES OF TRACT 13, SECTION 17, TOWNSHIP 32 SOUTH, RANGE 39 EAST, ACCORDING TO THE LAST GENERAL PLAT OF THE INDIAN RIVER FARMS COMPANY AS RECORDED IN PLAT BOOK 2, PAGE 25, PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA; SAID LANDS NOW LYING AND BEING IN INDIAN RIVER COUNTY, FLORIDA. LESS THE NORTH 125 FEET THEREOF FOR CANAL RIGHT OF WAY.

SURVEYOR'S CERTIFICATE

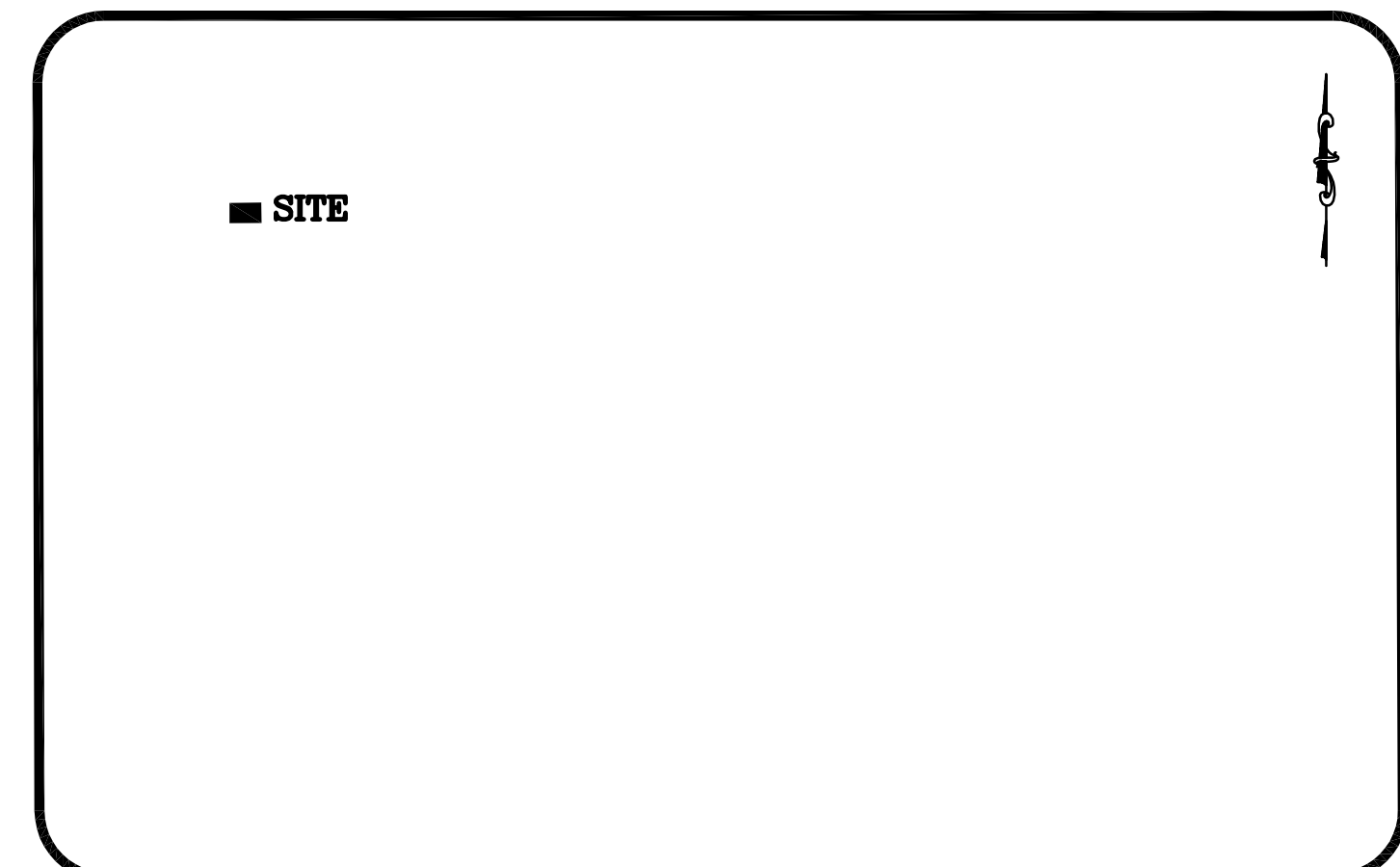
I HEREBY CERTIFY THAT THE TOPOGRAPHIC SURVEY, AS SHOWN HEREON, IS A TRUE AND CORRECT REPRESENTATION OF A FIELD SURVEY MADE UNDER MY DIRECTION AND CHARGE AND SAID SURVEY IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT SAID SURVEY COMPLIES WITH THE APPLICABLE STANDARDS OF PRACTICE FOR SURVEYS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS IN CHAPTER 54-17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

CIVILSURV DESIGN GROUP, INC.

BY: BRIAN C. KIERNAN PROFESSIONAL SURVEYOR & MAPPER FLORIDA REGISTRATION NO. 6101 DATE OF SIGNATURE

SURVEYOR'S NOTES

- 1. THIS SURVEY MAP OR THE COPIES THEREOF ARE NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
2. ALL MEASUREMENTS ARE BASED ON THE UNITED STATES SURVEY FOOT (SHOWN IN FEET AND DECIMAL FORMAT) UNLESS OTHERWISE SPECIFIED.
3. THE SOUTH LINE OF SECTION 17, TOWNSHIP 32 SOUTH, RANGE 39 EAST, IS ASSUMED TO BEAR SOUTH 89°44'01" WEST AND ALL OTHER BEARINGS SHOWN HEREON ARE RELATIVE THERETO.
4. ONLY THOSE SPECIFIC IMPROVEMENTS SHOWN HEREON HAVE BEEN FIELD LOCATED. NO OTHER UNDERGROUND FIXED IMPROVEMENTS HAVE BEEN LOCATED.
5. THE HORIZONTAL LOCATION OF NON-DIMENSIONED FEATURES ARE PLOTTED TO SCALE, UNLESS NOTED OTHERWISE.
6. AN ASSESSMENT OF ENVIRONMENTAL CONCERNS, IF EXISTENT, WAS NOT PERFORMED AS A PART OF THIS SURVEY.
7. OVERALL PARCEL CONTAINS 18.03 ACRES, MORE OR LESS.
8. SYMBOLS SHOWN WITHIN THIS DRAWING ARE NOT SCALE DEPENDENT.
9. ATTENTION IS DIRECTED TO THE FACT THAT THIS DRAWING MAY HAVE BEEN ALTERED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.
10. THE LAST DATE OF FIELD WORK WAS SEPTEMBER 27, 2017.
11. ADDITIONS OR DELETIONS TO SURVEY MAPS OR REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES ARE PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.
12. LANDS SHOWN HEREON WERE NOT ABSTRACTED BY CIVILSURV DESIGN GROUP, INC., FOR RIGHTS-OF-WAY, EASEMENTS, OWNERSHIP, OR OTHER INSTRUMENTS OF RECORD.
13. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AND REFERENCE INDIAN RIVER COUNTY BENCHMARK "BMO46080, HAVING AN ELEVATION OF 21.54 FEET.



REVISIONS

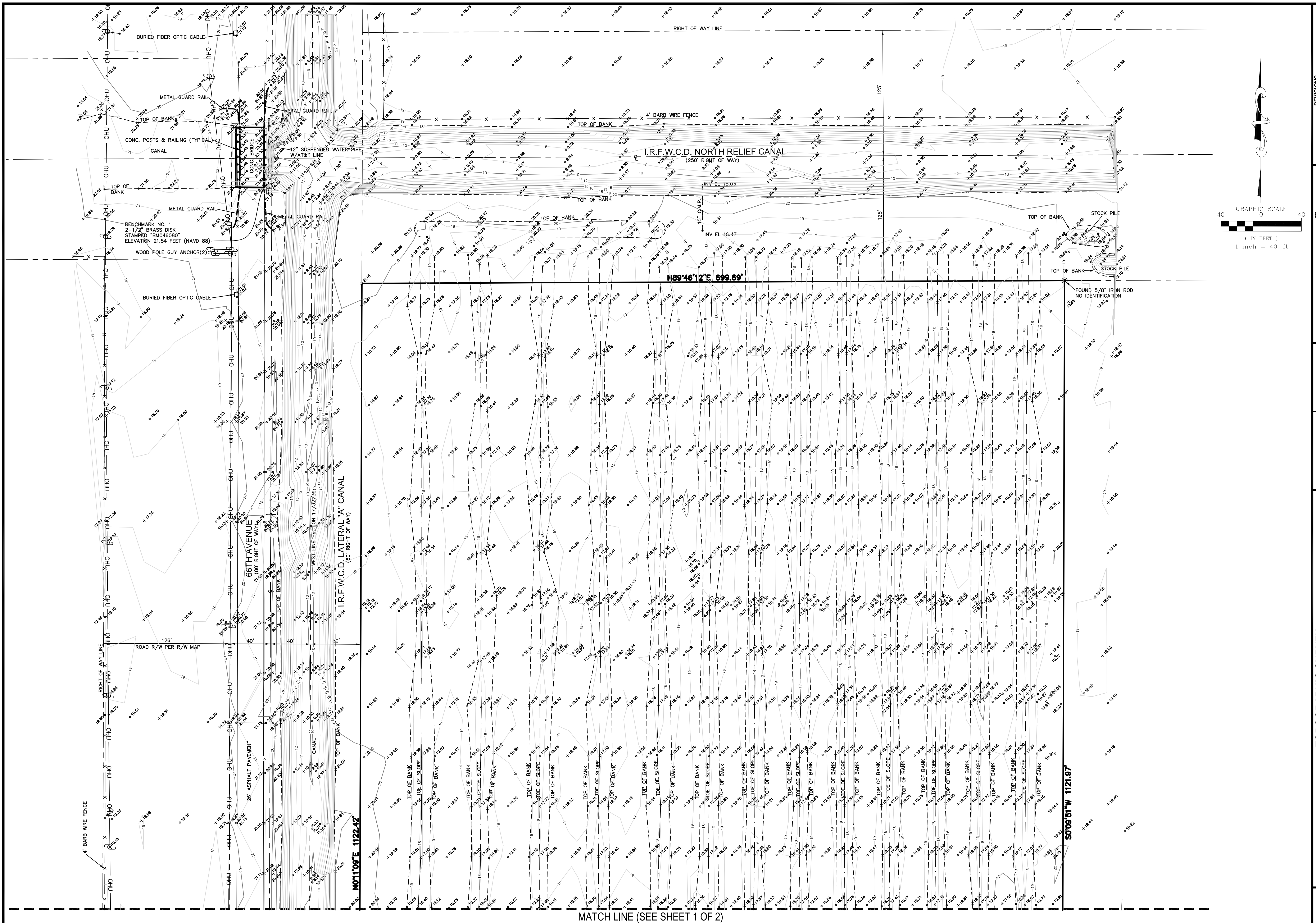
CIVILSURV CIVILSURV DESIGN GROUP, INC. 2400 Rhode Island Avenue Ft. Pierce, FL 33950 Tel: 772-323-2244

DATE: 10/02/17 FIELD BOOK(S): 834
SCALE: 1"=40' DRAWN BY: BK
PROJECT NO.: CHECKED BY: SW
I/Rc Grove Topo.dwg LB NUMBER: 7805

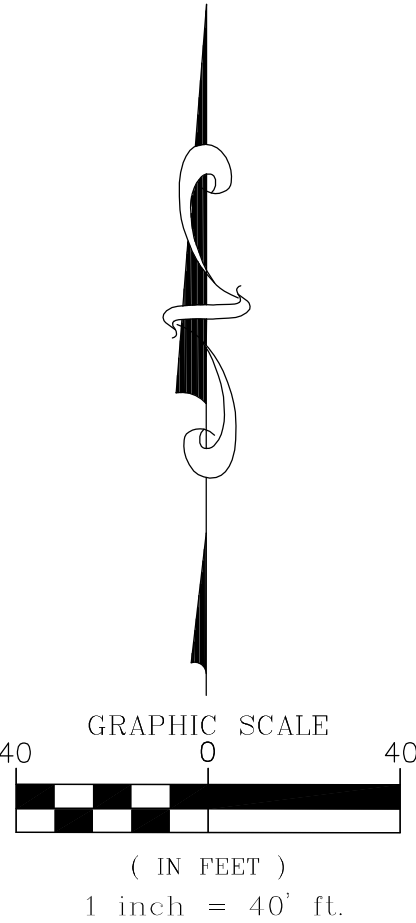
TOPOGRAPHIC SURVEY
53RD STREET NORTH RELIEF CANAL MANAGED AQUATIC PLANT SYSTEM
LYING IN A PORTION OF SECTION 17, TOWNSHIP 32 SOUTH, RANGE 39 EAST
INDIAN RIVER COUNTY, FLORIDA

SHEET NO.
1
OF
2

LOCATION MAP (NOT TO SCALE)



MATCH LINE (SEE SHEET 1 OF 2)



<p><b>TOPOGRAPHIC SURVEY</b></p> <p><b>53RD STREET NORTH RELIEF CANAL MANAGED AQUATIC PLANT SYSTEM</b></p> <p><b>LYING IN A PORTION OF SECTION 17, TOWNSHIP 32 SOUTH, RANGE 39 EAST</b></p> <p><b>INDIAN RIVER COUNTY, FLORIDA</b></p>	<p>REVISIONS</p> <p><b>CIVILSURVY</b> CIVILSURVY DESIGN GROUP, INC. 2400 Rhode Island Avenue Ft. Pierce, FL 33950 Tel: 772-323-2244</p> <p>DATE: 10/02/17 SCALE: 1"=40' PROJECT NO: IFC Grow Topo.dwg LB NUMBER: 7205</p> <p>FIELD BOOK(S): 834 DRAWN BY: BK CHECKED BY: SW</p>
<p>SHEET NO.</p> <p>2</p> <p>OF</p> <p>2</p>	