GENERAL STRUCTURAL NOTES

1. APPLICABLE CODES:

A. These general notes apply to all structural drawings. This project is designed in accordance with the International Building Code (IBC), 2015 Edition, and the 'Minimum Design Loads for Buildings and Other Structures" (ASCE 7-10) and The Pikes Peak Regional Building Code. (2017 Edition).

B. All material and workmanship shall be in accordance with applicable provisions of the codes specified above.

2. COORDINATION:

A. DO NOT SCALE. The layout shown is based solely on architectural plans and other written documentation by **RMG**, for **4770 Granby Circle**, last dated **4-04-22**. Changes affecting the layout shown must be specific and clearly conveyed to **Rocky Mountain Group** in written form as a change for inclusion into these plans. **Contractor and/or client shall verify all dimensions and layout prior to construction**. All dimensions on structural drawings shall be checked against architectural drawings and any discrepancies shall be brought to the attention of the Architect and Engineer immediately. Refer to mechanical, electrical and architectural drawings for openings not shown on structural drawings.

B. Shop drawings shall be prepared by the fabricator. Copying of these construction documents for use as shop drawings will not be permitted. General contractor shall review shops prior to submitting to design team. Design team shall have 10 working days to review and return shop drawings for acceptance or resubmittal.

C. All temporary shoring shall be the responsibility of the contractor.

D. Design is void after two years from original date of issue, unless updated to acceptable codes and practices at that time.

E. A preconstruction meeting with personnel of **Rocky Mountain Group**, the architect, contractor and appropriate subcontractors is strongly recommended prior to construction to discuss structural plans.

3. CONCRETE:

A. Concrete has been designed and shall be constructed in accordance with the American Concrete Institute "Building Code Requirement Reinforced Concrete" and "Specifications for Structural Concrete for Buildings" (ACI 318 and ACI 301) latest editions. Section 1.3 "Inspection" of ACI 318 is deleted in its entirety, see "Field Observations" paragraph. All concrete shall be of stone aggregate, unless noted otherwise.

B. Concrete mixes:

See specifications for any additional durability requirements.

Mix 'A' For interior slabs on grade:
4,000 psi minimum compressive strength at age of 28 days.
Type I/II Cement, minimum of 540 pounds per cubic yard.
Fly ash not allowed.
3/4" maximum aggregate size.
3% Maximum air.
4" (8" with superplasticizer) maximum slump.
Water reducing agent:
Use in accordance with manufacturer's recommendations.

Mix 'B' For footings, grade beams, and miscellaneous concrete:
3,000 psi minimum compressive strength at age of 28 days.
Type I/II Cement, minimum of 470 pounds per cubic yard.
3/4" maximum aggregate size.
6% ± 1½% Entrained air.
4" (8" with superplasticizer) maximum slump.

C. Reinforcing is to be new billet steel ASTM A615, Grade-60, except ties and bars to be welded shall be Grade-40. Provide not less than (2) #5 around all sides of all openings in concrete and extend 2'-0" past edges of openings. No splices of reinforcement are permitted except as detailed or authorized by structural engineer. Where permitted, use contact lap splices,per detail **5/S1**. Welded Wire Fabric (W.W.F.) shall be in accordance with ASTM A185. Lap (1) full mesh minimum at splices. No welding of reinforcement permitted unless detailed.

D. Placing of Reinforcement: Provide chairs, bolsters, additional reinforcement, and accessories necessary to support reinforcement at position shown on drawings. Support of reinforcement on form ties, wood, brick, brickbat or other unacceptable material, will not be permitted.

E. Reinforcement shall be placed so that the following minimum concrete protection is provided, unless noted otherwise:

1) Concrete surfaces poured against ground . . . .3" Clear
2) Formed surfaces exposed to ground or weather:
a) Bars #6 and larger . . . . 2" Clear
b) Bars # 5 and smaller . . . . 1 1/2" Clear
3) Slabs . . . . .at center (u.n.o.)
4) Concrete not exposed to earth or weather . . .3/4"
5) Beams, Columns, Ties, Stirrups or spirals around primary reinforcement, or primary reinforcement with no ties, stirrups or spirals . . . . 1 1/2"

F. Foundation elements below grade shall have backfill placed equally on both sides until the required levels are reached. Walls shall be appropriately shored when backfill is placed on one side only.

G. Additional (2) #5 bars (one each face) with a 2'-0" projection shall be placed diagonally across the corners of all openings and vertical steps in walls unless otherwise detailed on plans.

H. The contractor is responsible for determining when it is safe to remove forms and/or shoring. Forms and shoring must not be removed until the walls are strong enough to carry their own weight and any anticipated superimposed loads. For foundation walls, this typically requires at least 12 hours of cumulative curing time at a temperature of 50°F or more. Concrete must be adequately covered during cold periods to maintain this surface temperature. Due to varying weather conditions, alternative curing processes, and the use of Type I/II cement, Rocky Mountain Group suggests forms remain in place a minimum of 3 days to assure this performance specification has been met. When forms are stripped there must be no excessive deflection or distortion or discoloration and no evidence of damage to the concrete. Adequate thermal protection of the concrete shall be continued after stripping for a cumulative period of 48 hours at 50°F, or more, after the initial pour. See applicable notes for specifications on when to backfill foundation walls.

I. Field quality control:

1) Reference standard: ACI 301 Chapters 16 and 17, latest edition.

2) Slump tests: The general contractor shall provide necessary equipment and shall make test in conformity with ASTM C143. The contractor shall make slump tests on the first truck of each pour and as often as deemed necessary by the contractor to maintain the required slump tests when directed by the Architect or Engineer.

3) Control tests:

a. Control tests of concrete work shall be made on every 50 cubic yards or fraction thereof of concrete placed and, in any case, minimum of once during each day's pour.

b. Each test shall consist of four standard 6" test cylinders cast and cured in accordance with ASTM C31 and ASTM C172.

c. Sample concrete at point of placement.

d. One cylinder shall be broken at end of seven days after placing, two cylinders shall be broken at end of 28 days after placing, and remaining cylinder shall be stored until its disposition is determined by Architect.

e. In general, remaining cylinder will be broken only when previous test reports indicated unsatisfactory results.

f. Tests on remaining cylinder shall be at expense of the contractor.

g. Architect and/or Engineer reserves right to stop future concrete work when seven or 28 day tests indicate unsatisfactory results until, in the opinion of the Architect and/or the Engineer of Record, proper corrective measures have been taken to insure quality concrete in future work and corrections deemed necessary have been made.

h. Tests shall be made at time control tests are taken and so stated in reports to determine slump, air content, unit weight and temperature of concrete.

i. All tests shall be made in accordance with ASTM C138 or ASTM C231.

4) Slab tolerance: Maintain surface flatness with maximum variation of 1/8 inch in 20 feet.

4. SPREAD FOOTING FOUNDATIONS:

A. The foundation design has been completed in accordance with pertinent standards, recommended design soil parameters, accepted engineering design procedures, and is based on the best information available at the time of completion. The design is intended to minimize differential movement as described in the reference Geotechnical Report. It must be recognized that foundation components will undergo movement. It shall be the responsibility of the contractor and/or present owner to inform any subsequent owners of the soil condition and advised to maintain good practices in the future with regard to surface and subsurface drainage, framing of partitions above floor slabs, and finish work above the floor slabs, etc.

B. Foundation design is based on soil report No. **180649,** prepared by **RMG - Rocky Mountain Group,** dated **February 23, 2021**. The Contractor shall thoroughly review and understand all pertinent construction aspects of this report before beginning any work.

C. Foundation Design parameters include an allowable bearing pressure of **2,500,** psf with no minimum dead load requirement and with soil preparation per soil report.

D. A representative of the Geotechnical engineer shall observe the open excavation to determine that the soil type and conditions are consistent with design criteria of the soil report. If the soil properties are found to be different from this criteria, the foundation engineer shall be promptly notified so that the foundation design may be reviewed.

E. The contractor shall be responsible to coordinate the location of mechanical openings, floor drains, inserts, depressions, buried cables and utilities, etc. with architectural, civil, mechanical and electrical drawings.

F. Locate beam pockets and windows per structural / architectural plans. No beam pocket shall be within 16" clear of window frame. Drape horizontal reinforcing below pockets as required.

G. Mechanically compact all interior and exterior backfill per Geotechnical engineers recommendations. It will also be necessary to adjust and maintain the grade immediately against foundations periodically to avoid the creation of a water trap as the backfill settles over time.

H. Slope backfill away from the building a minimum of 10% for the first 10 feet (2% at paved areas) unless a more stringent requirement is specified by the Geotchnical engineer. Carry roof drains across the backfilled areas. Do not allow water to stand or pond near the building. Do not flood the backfill.

5. STRUCTURAL STEEL:

A. Structural steel, including cast in angles, plates or other sections shall be detailed and erected in accordance with the American Institute of Steel Construction (AISC) Specifications and Code of Standard Practice, latest edition.

B. All wide flange and channel structural steel shall conform to ASTM A992. All other structural shapes and miscellaneous steel shall conform to ASTM A36 unless otherwise noted. Tube steel columns shall conform to ASTM A500, Grade-B. Pipe columns shall conform to ASTM A53.

C. Column base plates shall be set on 1 1/2" non-shrink grout with a minimum of (4) 3/4" diameter x 1'-0" anchor bolts, unless noted otherwise.

D. Shop connections shall be welded with E70xx electrodes and ground smooth where exposed. Field connections shall be made with bolts conforming to ASTM A325N unless otherwise noted. Field welds shall be made with E70xx electrodes. All welding shall be in accordance with AWS "Structural Welding Code", latest edition and performed by certified, licensed welder.

E. All beam connections not detailed on the drawings shall be standard framed beam connections as shown in Table II and III of the AISC "Manual of Steel Construction", latest edition, designed to carry the full capacity of the uniformly loaded member, unless noted otherwise.

F. Headed stud anchors shall conform to AWS D1.1 and shall be automatically end welded.

G. Steel stairs to be detailed and designed by others unless noted otherwise. Stair detailer shall provide shop drawings and calculations prepared and stamped by a structural engineer registered in the state of Colorado, for review by the Engineer of Record to verify they conform to the requirements of the basic structure. Fabrication shall not proceed until completion of shop drawing review by the Engineer of Record.

H. Field Quality Control: Inspect in accordance with AISC specifications. Certified Materials Inspector shall be AWS certified and shall visually inspect all field welded connections (100%) and visually inspect all bolted connections (100%) to ascertain that all welds, bolts, nuts and required washers have been installed and are of proper type and that all faying surfaces have been brought into snug contact. Testing agency shall inspect 10% of the bolts (minimum of 2) in each high strength bolted and slip critical (SC) connections. Provide 10% magnetic particle testing of all penetration welds and moment frame connections.

EPC STORMWATER REVIEW COMMENTS IN ORANGE BOXES WITH BLACK TEXT

REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	REMARKS
1. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT	X		ACI 318: 3.5, 7.1-7.7	
2. INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1705.2.2 ITEM 2B		X	AWS D1.4, ACI 318: 3.5.2	
3. INSPECT BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED	X		ACI 318: 318 8.1.3, 21.2.8	
4. VERIFY USE OF REQUIRED DESIGN MIX		X	ACI 318: CH 4, 5.2-5.4	
5. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X		ASTM C162, ASTM C31, ACI 318: 5.6, 5.8	
6. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X		ACI 318: 5.9, 5.10	
7. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		X	ACI 318: 5.11, 5.13	
8. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		X	ACI 318: 6.1.1	

Note: Regional Building Department permit required for all retaining walls greater than or equal to 4 ft in height.

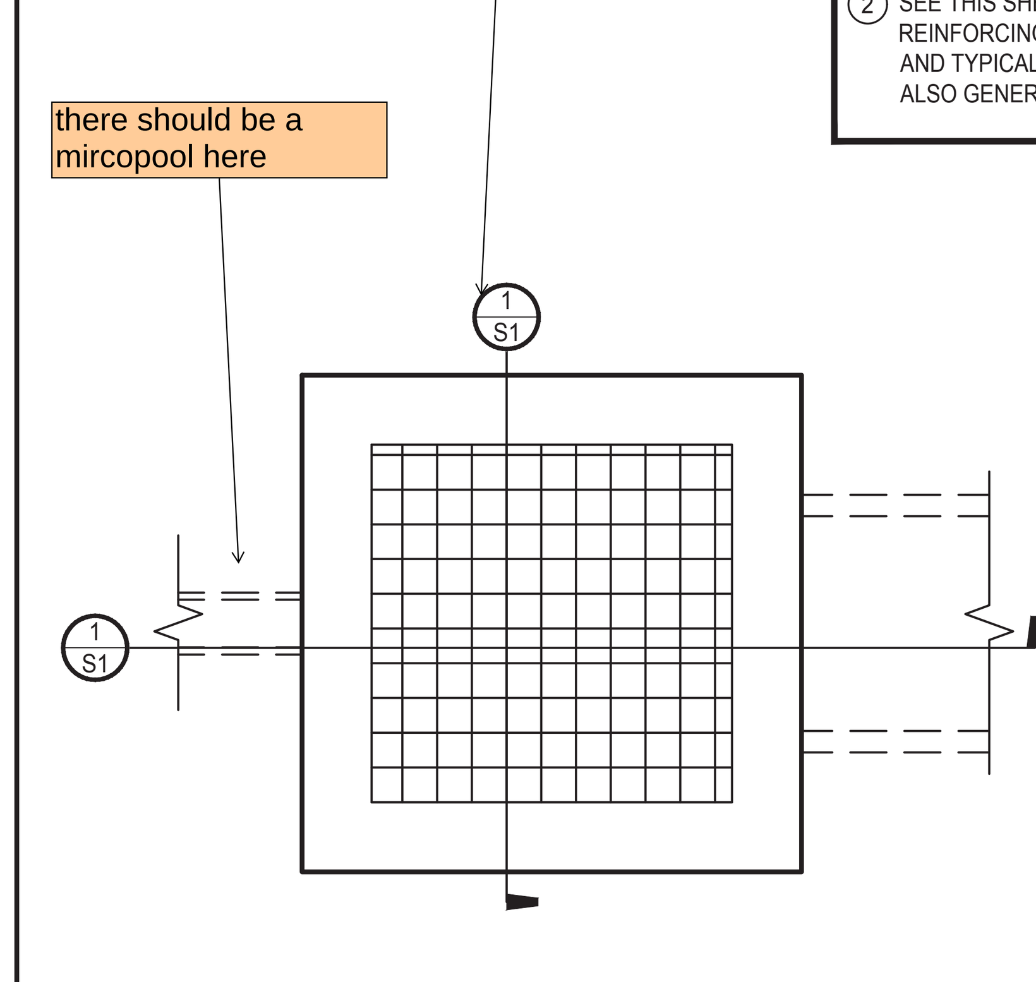
micropool is missing

PLAN NOTES

1. SEE CIVIL DRAWINGS FOR ALL DIMENSIONS AND INFORMATION NOT SHOWN. CONTRACTOR SHALL VERIFY **ALL** DIMENSIONS **PRIOR** TO CONSTRUCTION.
2. SEE THIS SHEET FOR TYPICAL DETAILS FOR REINFORCING AT CORNERS AND INTERSECTIONS AND TYPICAL BENDS AND LAP SPLICES. SEE ALSO GENERAL NOTES ON THIS SHEET.

i dont see this cross section provided

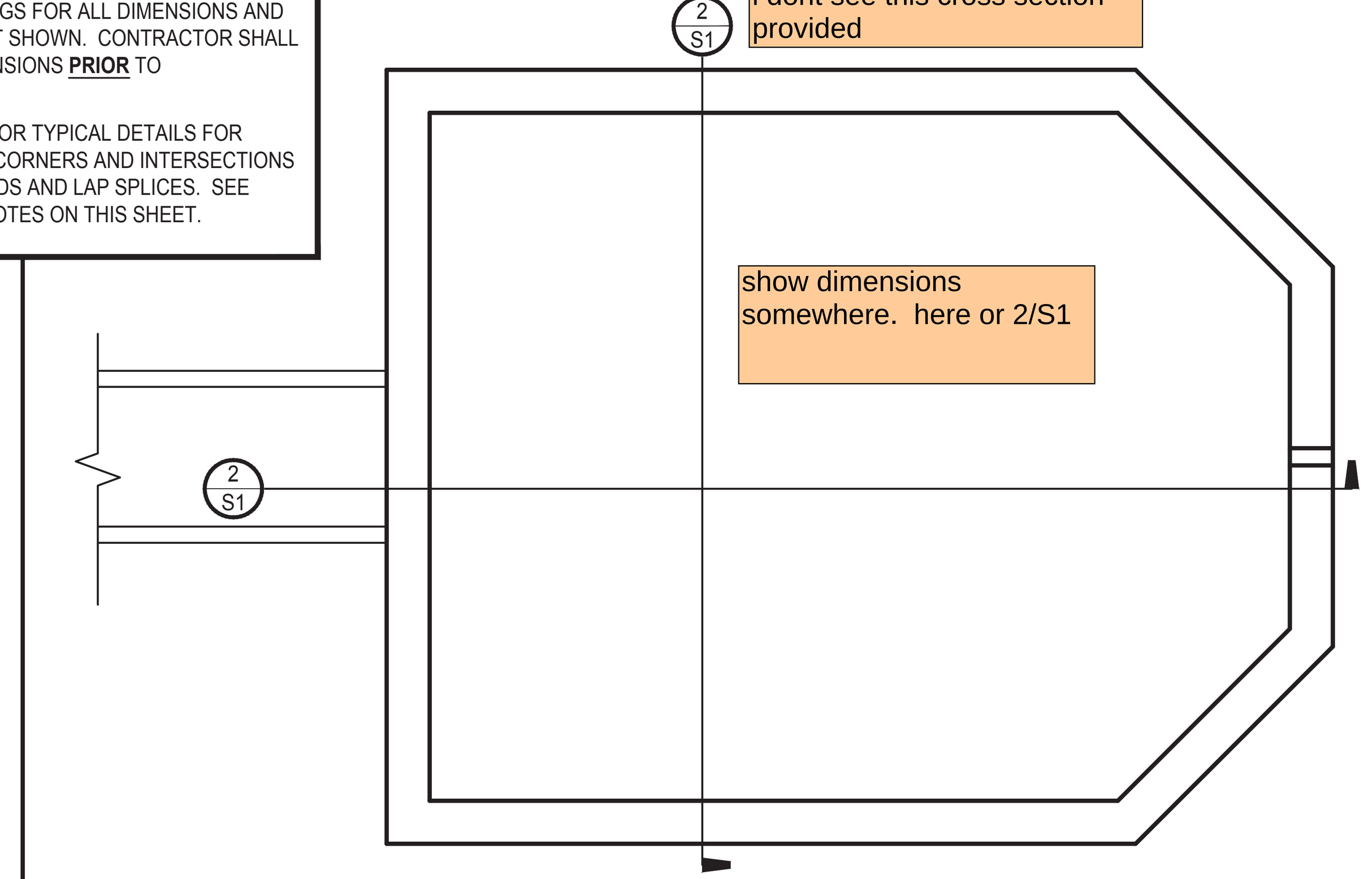
there should be a micropool here



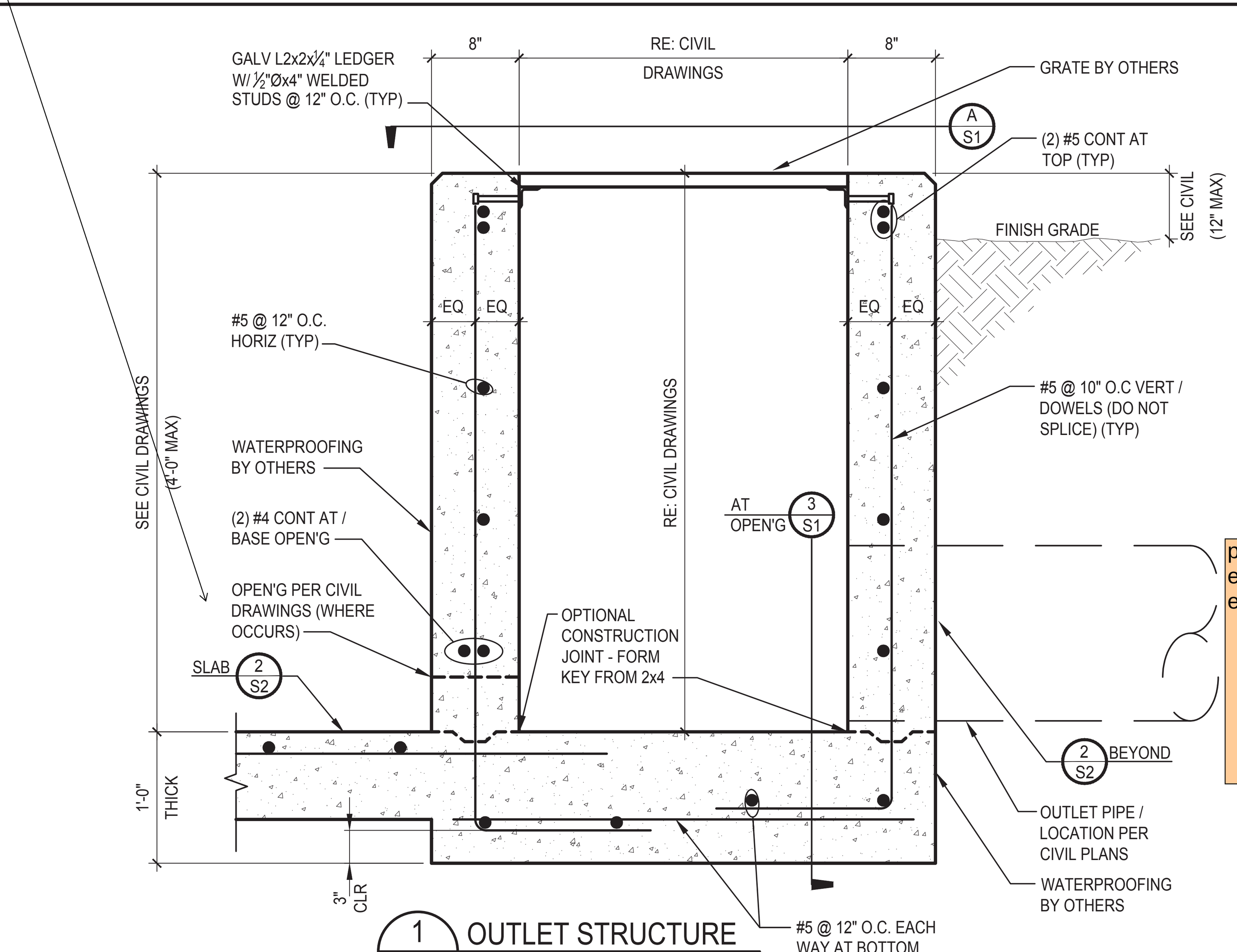
A OUTLET STRUCTURE PLAN
S1 SCALE: 3/4" = 1'-0"

i dont see this cross section provided

show dimensions somewhere. here or 2/S1



B FOREBAY STRUCTURE
S1 SCALE: NOT TO SCALE

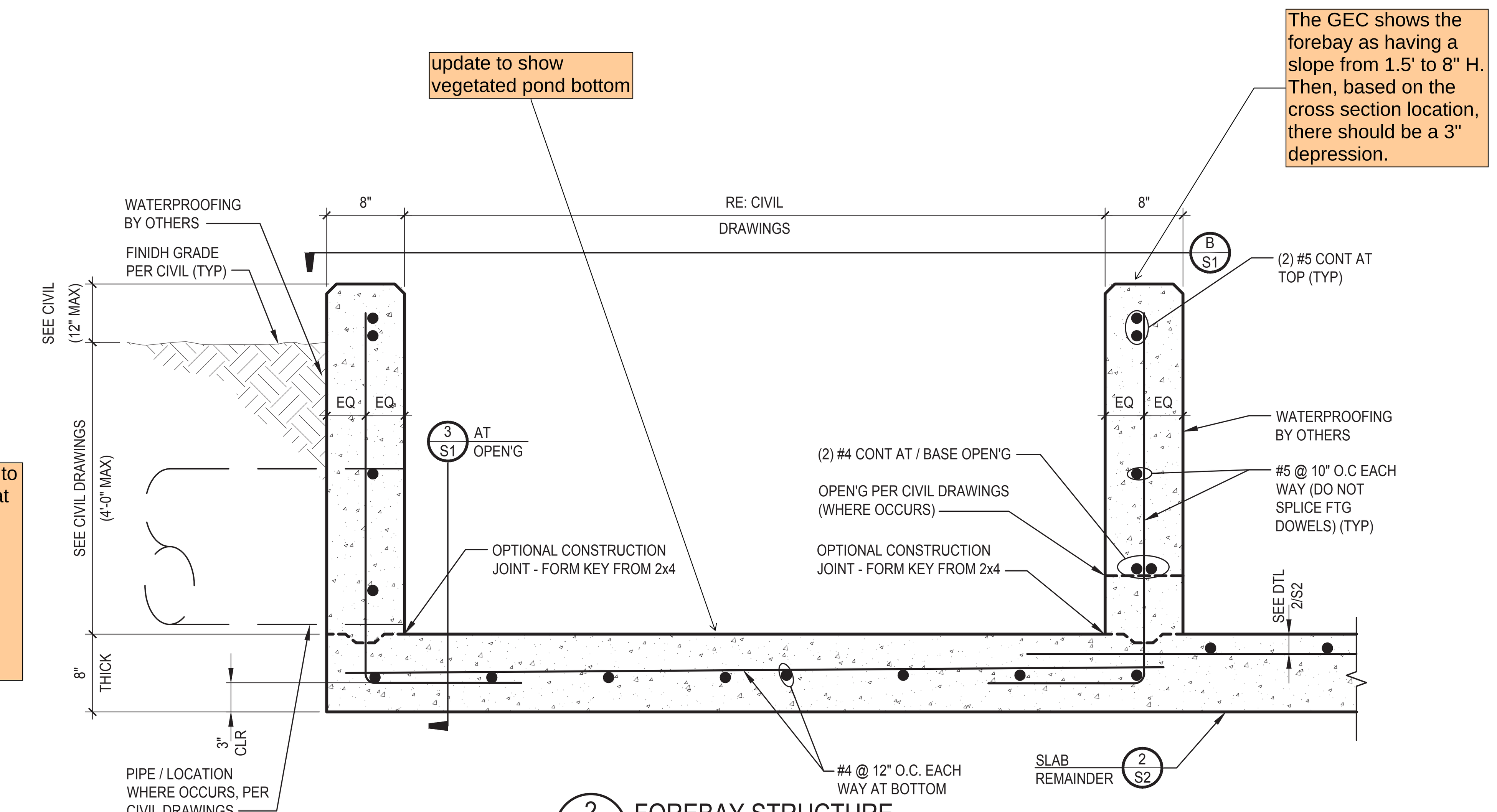


1 OUTLET STRUCTURE
S1 SCALE: 1" = 1'-0"

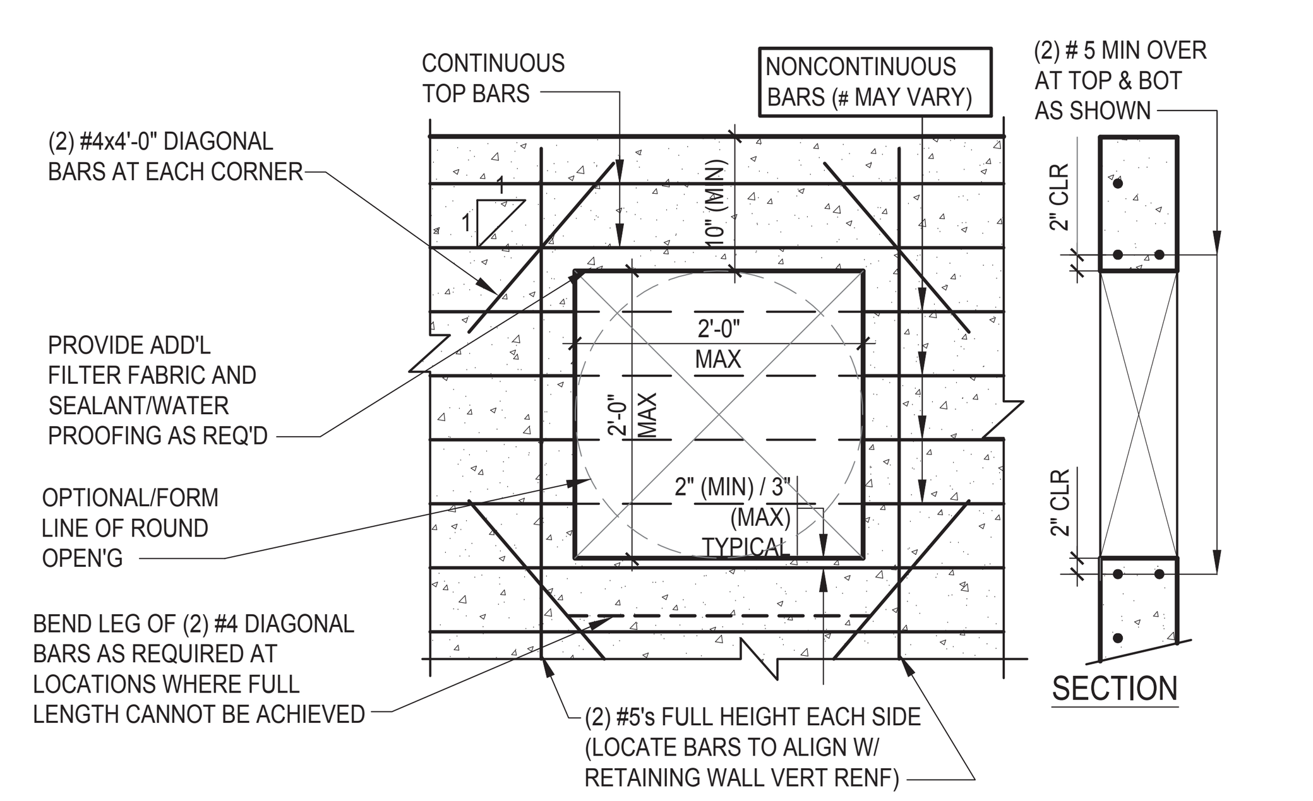
provide details for tie in to existing inlet and at what elevation

update to show vegetated pond bottom

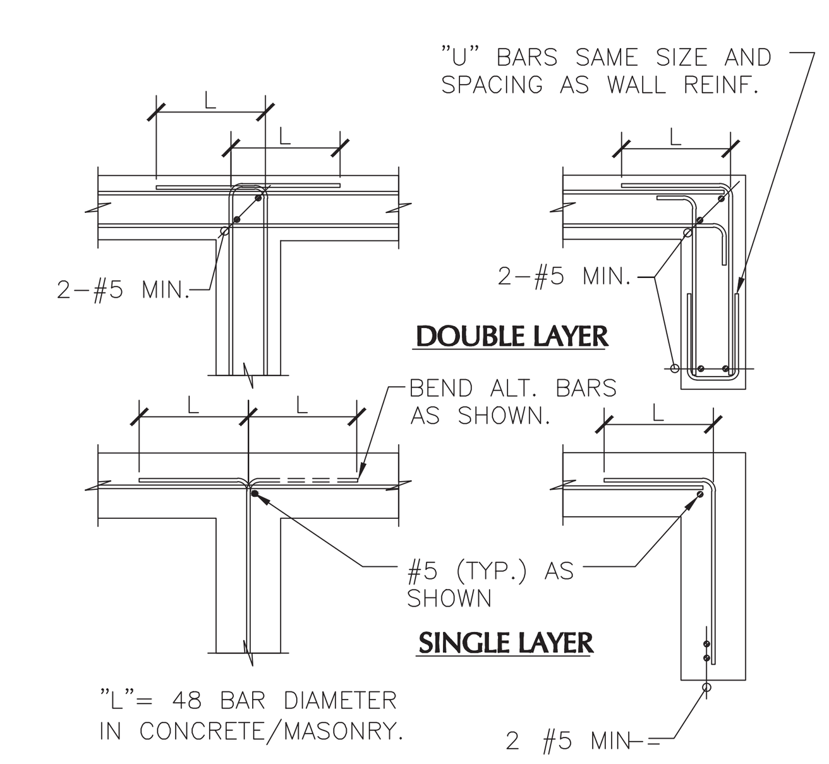
The GEC shows the forebay as having a slope from 1.5' to 8" H. Then, based on the cross section location, there should be a 3" depression.



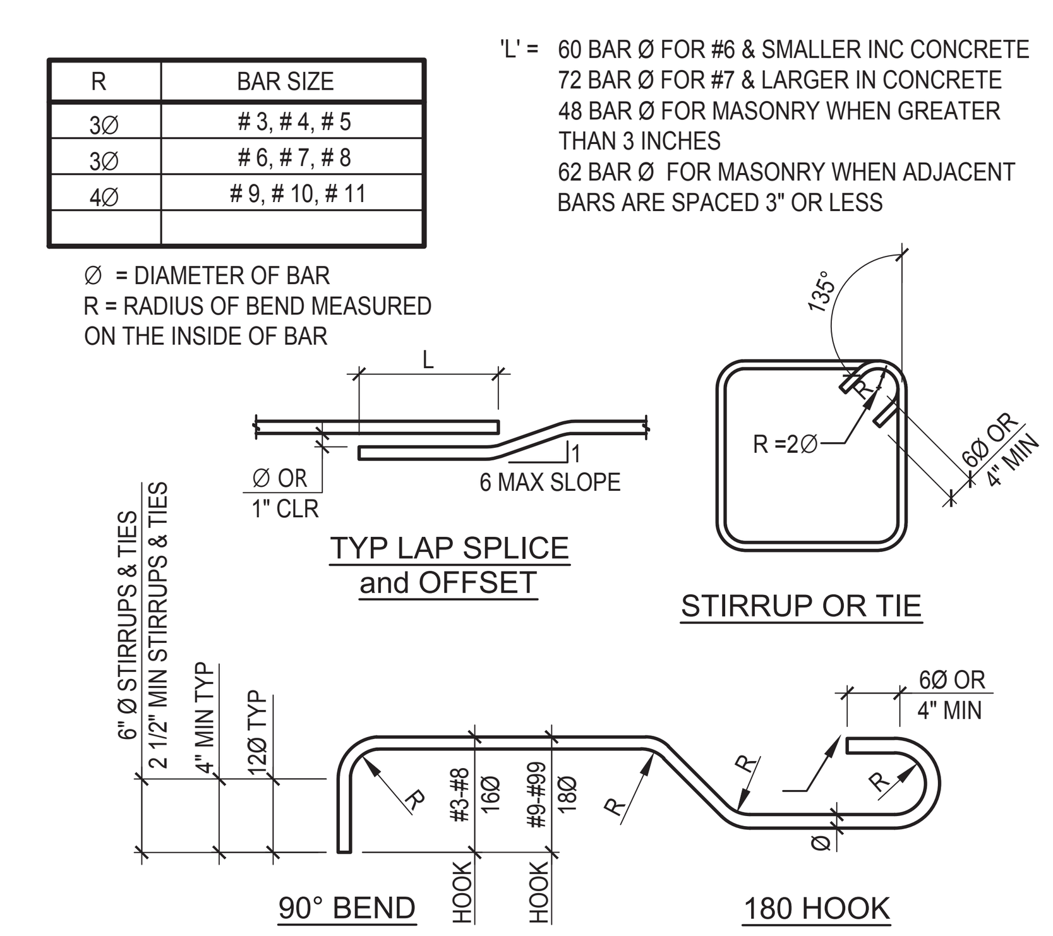
2 FOREBAY STRUCTURE
S1 SCALE: 1" = 1'-0"



3 TYPICAL OPENING
S1 SCALE: N.T.S (AS REQUIRED)



4 TYPICAL CORNER WALL REINF'G DETAIL
S1 SCALE: 1/2" = 1'-0"



5 TYPICAL CORNER WALL REINF'G DETAIL
S1 SCALE: 1/2" = 1'-0"

RMG Engineers / Architects
Architecture Structural Geotechnical
Materials Testing Forensics Civil / Planning
SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY, SUITE 100, COLORADO SPRINGS, CO 80918
(719) 548-0600 • WWW.RMGENGINEERS.COM
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

COLORADO LICENSED PROFESSIONAL ENGINEER
8/02/22
55591

NORTHWEST CENTER
2510 CANADA DRIVE
COLORADO SPRINGS, CO

LEISURE CONSTRUCTION

SHEET NAME: STRUCTURAL PLANS, GENERAL NOTES, INSPECTIONS, AND DETAILS

PROJECT STATUS: SUBMITTAL

ARCH/ENG:	MDT
DRAWN:	CL
CHECKED:	MDT
DATE	8-02-22

#	REVISION	DATE

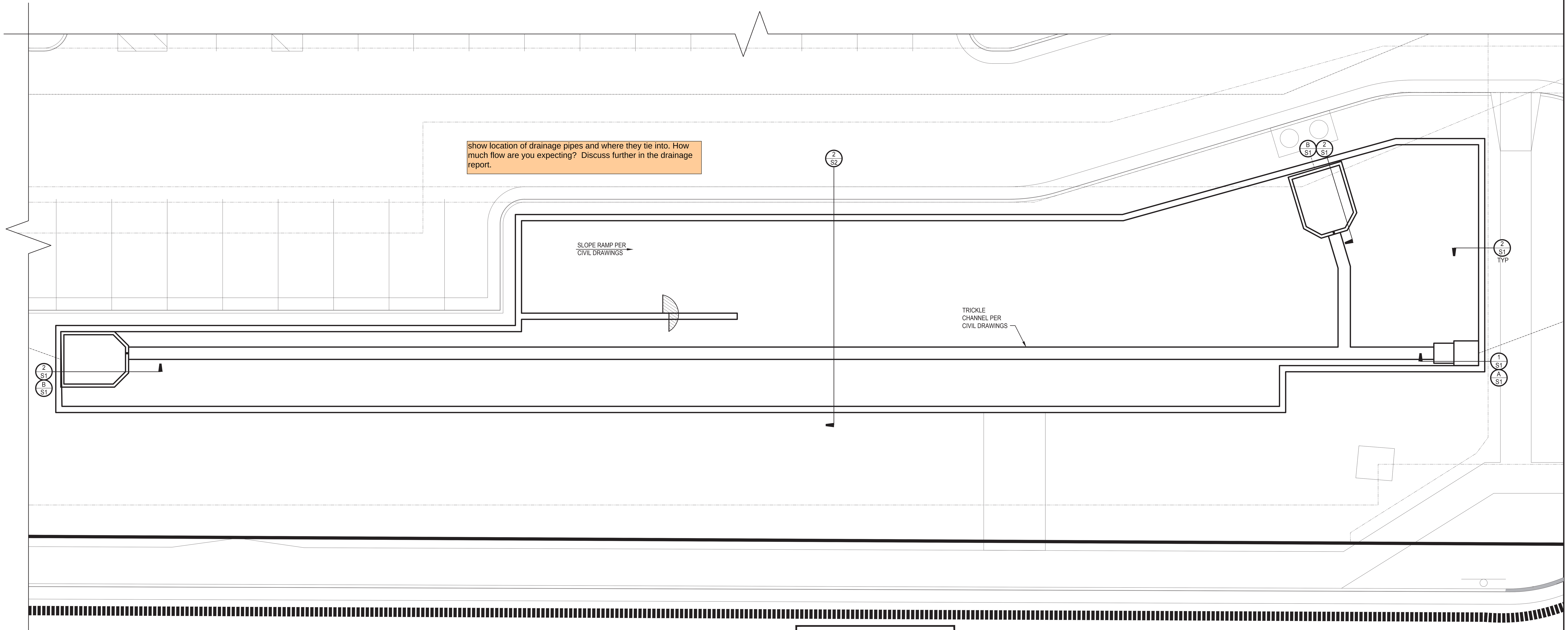
JOB NO. 180649

SHEET NO. S1

1 of 2

C:\Users\CLang\AppData\Local\Temp\AcPublish_18948\180649 Drain Outlet.dwg Aug 02, 2022 - 2:50pm

show location of drainage pipes and where they tie into. How much flow are you expecting? Discuss further in the drainage report.



1 S2 DETENTION BASIN STRUCTURAL PLAN
SCALE: 1/8" = 1'-0"

PLAN NOTES
1. SEE CIVIL AND OR ACH'L DRAWINGS FOR ALL DIMENSIONS NOT SHOWN
2. SEE SHEET S1 FOR GENERAL NOTES AND TYPICAL DETAILS

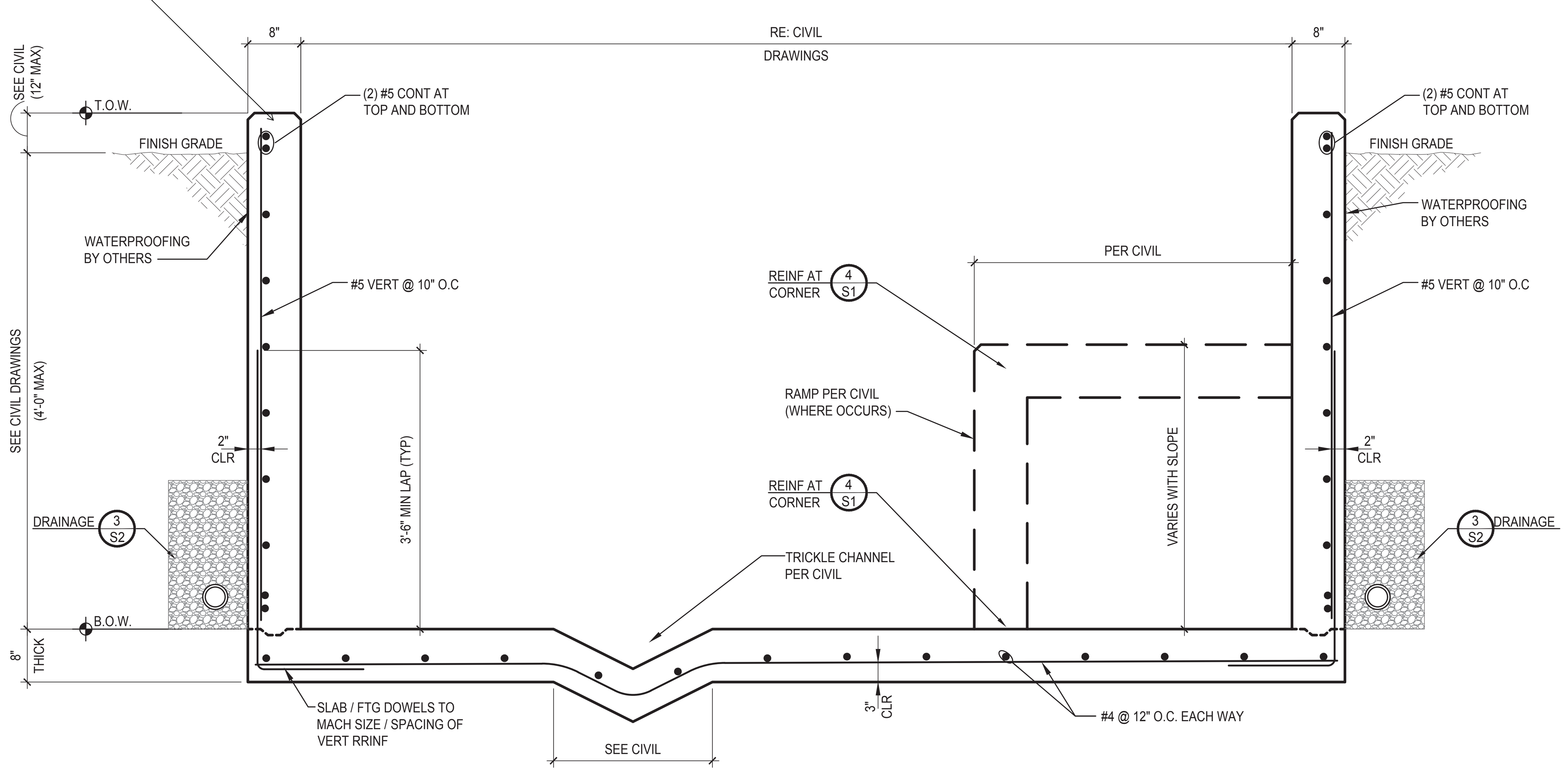
show handrails

Per ECM 2.6.7.E Please add pedestrian safety metal railing along sidewalk area and along parking areas.
Pedestrian railing height shall be a minimum of 42 inches, measured from the walkway surface (See Figure 2-45). Railings shall not have openings large enough to pass a 4-inch sphere.

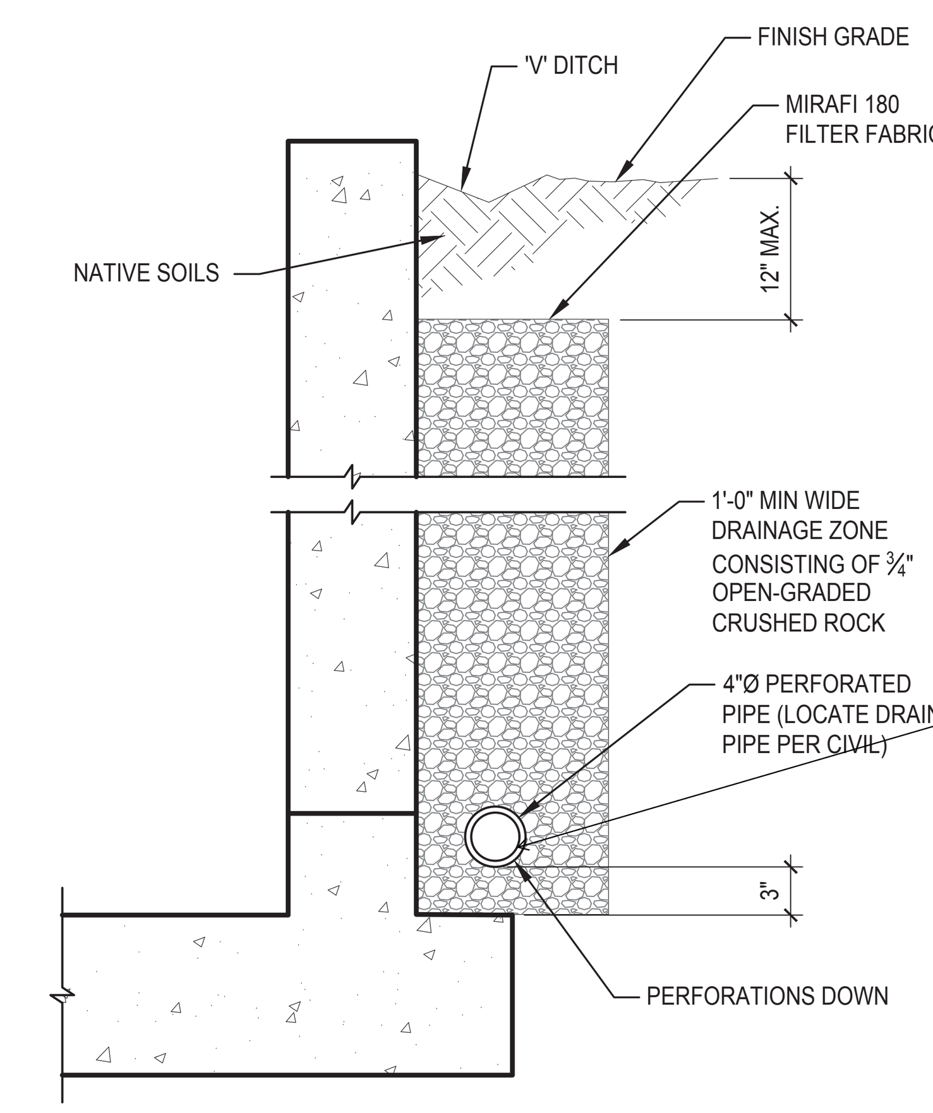
Please show design detail of the steel railing to be used and indicate either on the SDP, GEC plan or the pond design CDs the where railing will be placed.

The cedar split rail fence may be used on the south side of the detention pond

Pending pond design V6 showing grass lined bottom. Spoke with RMG Architect on 12/14/22



2 S2 TYPICAL DETENTION BASIN SECTION
SCALE: 3/4" = 1'-0"



where does this daylight?

3 S2 RETAINING WALL DRAINAGE DETAIL
SCALE: 1" = 1'-0"

C:\Users\CLang\AppData\Local\Temp\AcPublish_18948\180649 Drain Outlet.dwg Aug 02, 2022 - 2:50pm

Architecture
Structural
Geotechnical

RMG Engineers / Architects

Materials Testing
Forensics
Civil / Planning

SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY, SUITE 100, COLORADO SPRINGS, CO 80918
(719) 548-0600 ~ WWW.RMGENGINEERS.COM
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

COLORADO LICENSED PROFESSIONAL ENGINEER
MICHAEL D. THOMPSON
8/02/22
55591

NORTHWEST CENTER
2510 CANADA DRIVE
COLORADO SPRINGS, CO

LEISURE CONSTRUCTION

SHEET NAME: DETENTION PLAN AND DETAILS

PROJECT STATUS: SUBMITTAL

ARCH/ENG:	MDT
DRAWN:	CL
CHECKED:	MDT
DATE	8-02-22

#	REVISION	DATE

JOB NO. 180649

SHEET NO. S2