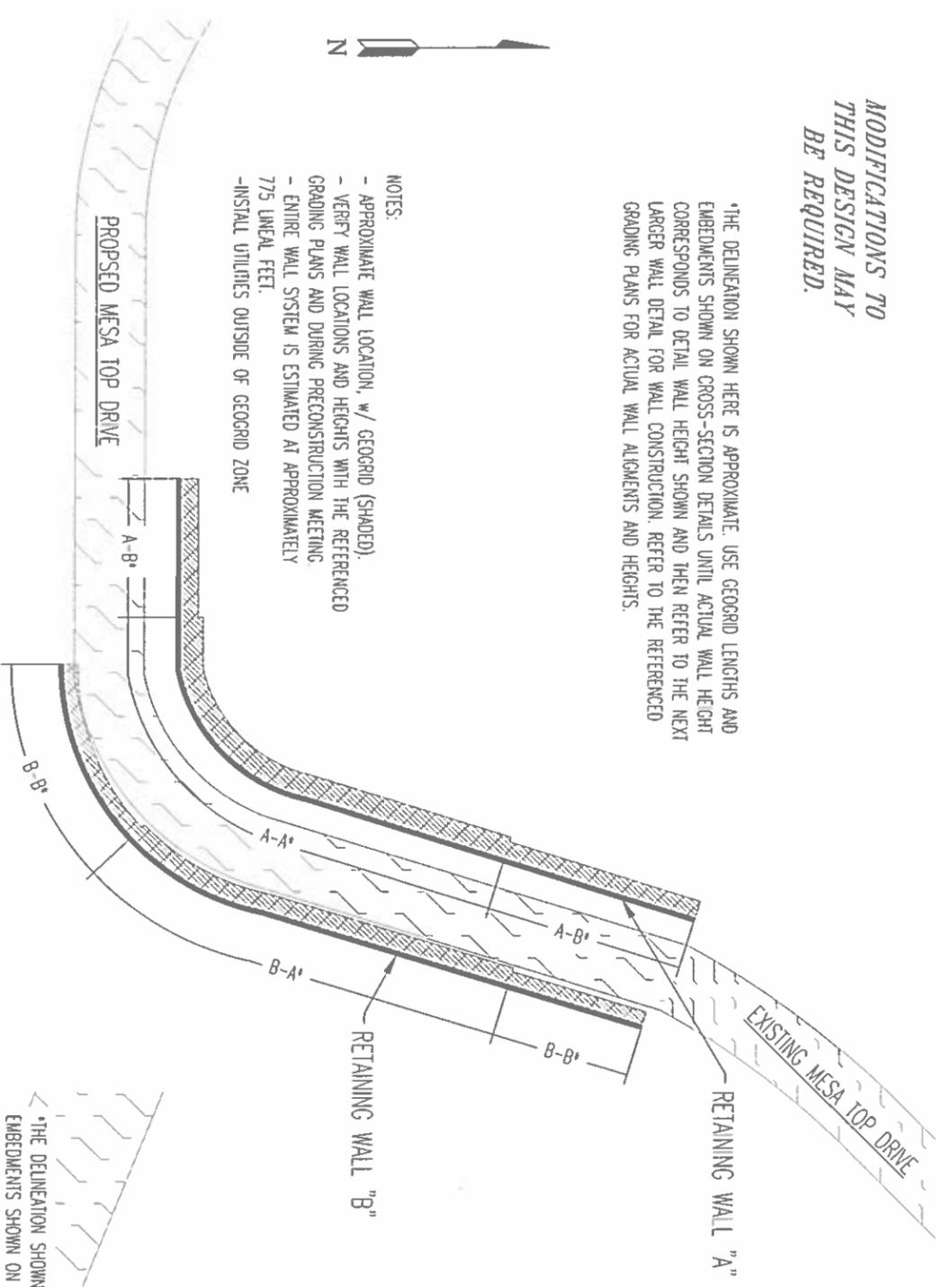


# REDI-ROCK RETAINING WALL FOREST LAKES - FILINGS 5, 6, & 7

*MODIFICATIONS TO  
THIS DESIGN MAY  
BE REQUIRED.*

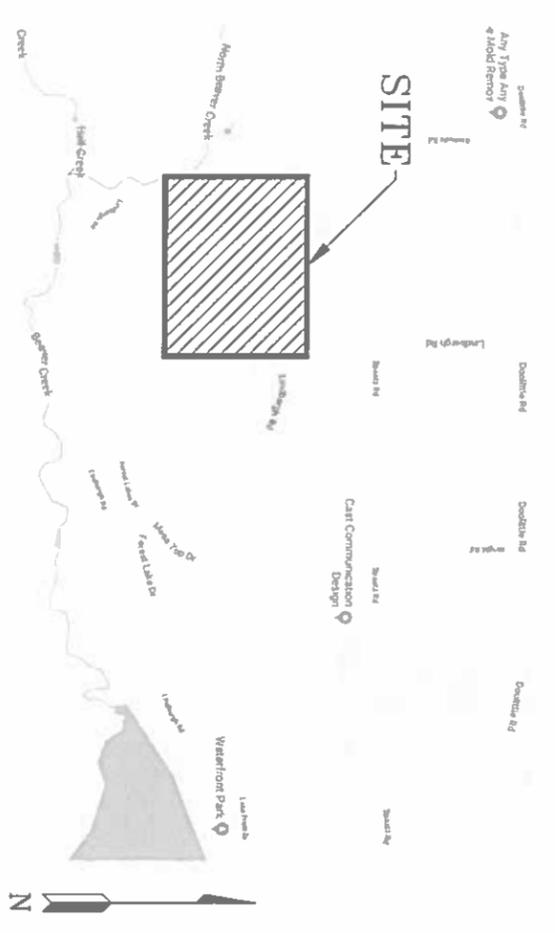
\*THE DELINEATION SHOWN HERE IS APPROXIMATE. USE GEOGRID LENGTHS AND EMBEDMENTS SHOWN ON CROSS-SECTION DETAILS UNTIL ACTUAL WALL HEIGHT CORRESPONDS TO DETAIL WALL HEIGHT SHOWN AND THEN REFER TO THE NEXT LARGER WALL DETAIL FOR WALL CONSTRUCTION. REFER TO THE REFERENCED GRADING PLANS FOR ACTUAL WALL ALIGNMENTS AND HEIGHTS.

- NOTES:
- APPROXIMATE WALL LOCATION, w/ GEOGRID (SHADED).
  - VERIFY WALL LOCATIONS AND HEIGHTS WITH THE REFERENCED GRADING PLANS AND DURING PRECONSTRUCTION MEETING.
  - ENTIRE WALL SYSTEM IS ESTIMATED AT APPROXIMATELY 775 LINEAL FEET.
  - INSTALL UTILITIES OUTSIDE OF GEOGRID ZONE



**CONCEPTUAL PLAN VIEW  
WALLS "A" & "B"**  
N.T.S.

NOTE: THIS DESIGN WAS BASED ON GRADING PLANS BY CLASSIC CONSULTING ENGINEERS, DATED MAY 21, 2018, AND THE SUBSURFACE SOILS INVESTIGATION BY ENTECH ENGINEERING, INC. DATED APRIL 13, 2018, ENTECH JOB NO. 180465. CONTRACTOR TO VERIFY RETAINING WALL DESIGN TO FINAL PLANS. IF THE RETAINED SOILS DIFFER FROM OUR ASSUMED SOIL TYPES, THEN THE ENGINEER MUST BE NOTIFIED AND MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED.



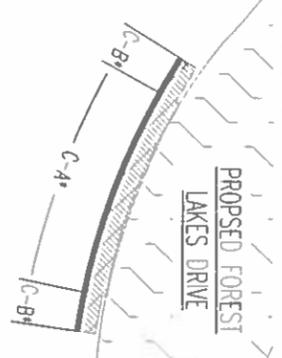
**VICINITY MAP**  
N.T.S.

PLAN SHEET NO.

- 1
- 2
- 3
- 4
- 5
- 6

**INDEX OF SHEETS  
PLAN AND COVER SHEET  
GENERAL NOTES  
TYPICAL DETAILS  
WALL "A" ELEVATION & SECTIONS  
WALL "B" ELEVATION & SECTIONS  
WALL "C" ELEVATION & SECTIONS**

\*THE DELINEATION SHOWN HERE IS APPROXIMATE. USE GEOGRID LENGTHS AND EMBEDMENTS SHOWN ON CROSS-SECTION DETAILS UNTIL ACTUAL WALL HEIGHT CORRESPONDS TO DETAIL WALL HEIGHT SHOWN AND THEN REFER TO THE NEXT LARGER WALL DETAIL FOR WALL CONSTRUCTION. REFER TO THE REFERENCED GRADING PLANS FOR ACTUAL WALL ALIGNMENTS AND HEIGHTS.



**CONCEPTUAL PLAN VIEW  
WALL "C"**  
N.T.S.

- NOTES:
- APPROXIMATE WALL LOCATION, w/ GEOGRID (SHADED).
  - VERIFY WALL LOCATIONS AND HEIGHTS WITH THE REFERENCED GRADING PLANS AND DURING PRECONSTRUCTION MEETING.
  - ENTIRE WALL SYSTEM IS ESTIMATED AT APPROXIMATELY 145 LINEAL FEET.
  - INSTALL UTILITIES OUTSIDE OF GEOGRID ZONE



REVISIONS	BY

**ENTECH**  
ENGINEERING, INC.

505 ELKTON DRIVE  
COLORADO SPRINGS, CO 80907 (719) 531-5599

**REDI-ROCK RETAINING WALL  
PLAN AND COVER SHEET  
FOREST LAKES FILING 5, 6, & 7  
COLORADO SPRINGS, CO  
FOR: FLRD #2**

DESIGNED BY: JAM	DATE: 12/11/2019
CHECKED BY: JAM	SCALE: N.T.S.
JOB NO: 191638	SHEET NO: 1
	OF 6 SHEETS

**GENERAL NOTES**

**A. GENERAL CONDITIONS**

1. These notes shall be read in conjunction with the drawings. In the event of a conflict, notify the Engineer for clarification.
2. Before executing anything herein shown, examine actual job conditions. Report any discrepancy, dimensional or otherwise, and any other error, omission, or difficulty affecting the work to the Engineer for review.
3. These retaining wall plans have been prepared to represent specific design parameters. It is the responsibility of the Project Owner/General Contractor to resolve construction problems due to changed conditions encountered during the progress of the work. The Project Owner/General Contractor is responsible for contacting the Engineer prior to making any changes to this design. This design addresses local retaining wall stability including internal and external stability and does not include a slope or global stability analysis for areas beyond the retaining wall.
4. Groundwater at footing level was not considered in the design of this retaining wall. If groundwater is encountered, contact the Engineer immediately.
5. The Owner or his representative reserve the right to inspect any material, fabrication, or workmanship of any line in the field or shop for conformance to the specifications, general notes, and drawings.
6. All details and sections are intended to be typical and shall be construed to apply to any similar situation elsewhere, except where a different detail is shown.
7. The Contractor shall make submittals as noted herein to the Engineer in a timely manner as to allow a ten business day review period. Quantities and dimensions are the responsibility of the Contractor. The Contractor shall make resubmittals as necessary until the concurrence of the Engineer and his Consultants is obtained.
8. Substitutions will not be considered by the Engineer or his Consultants unless submitted two weeks prior to time of installation, and complete documentation is provided substantiating compliance with the Contract Documents. Submit product data and samples as required. Substitutions will not be considered when acceptance will require substantial revision of the Contract Documents. The Engineer and his Consultants will determine acceptability of proposed substitution.
9. The Contractor shall obtain a copy of and understand all applicable manufacturer's specifications. If discrepancies occur between manufacturer's specifications and those shown on the details, contact the Engineer immediately.
10. Backfill areas shall be sloped to avoid ponding water and to allow for surface drainage to flow away from the walls.
11. This design is valid only for the proposed retaining wall at the specified address. This retaining wall has been designed according to the grading plans by Classic Consulting Engineering, dated May 21, 2018, and the Subsurface Soils Investigation by Entech Engineering, Inc., dated April 13, 2018, Entech Job No. 180465.

**B. BLOCK UNITS**

1. Redi-Rock: It shall be the contractor's responsibility to ensure that all units are erected in undamaged condition. Units with cracks or other imperfections which, in the opinion of the Engineer, are unacceptable shall not be placed in the wall. Rejected units shall be removed from the site with no additional compensation.

**C. WALL LAYOUT AND BASE PREPARATION**

1. Excavation to sound soil material shall be made at the base of the wall. Expansive Material may be encountered. Based on information obtained in the Subsurface Soils Investigation, expansive material should be removed and replaced per the recommendations provided in the Subsurface Soils Investigation. Unless shown otherwise, the benches shall be made horizontal in the line of the wall.
2. Contractor shall provide sufficient notice to the Engineer for observations, testing, and approval of the excavation prior to placing the granular bedding. If structural fill is used to obtain base elevation, the base soil shall be compacted to a minimum 95% of the Modified Proctor Dry Density (ASTM D 1557).
3. Finished base excavation shall be within 0.5 inches of the base elevation and shall include vertical steps where the base of the wall is to step.

**D. LEVELING PAD**

1. After approval of a base soil, a continuous gravel pad (see plans) shall be placed below the first course of the concrete block to be used as a leveling pad. This pad shall consist of a minimum of 6-inch deep, U.N.O., CDOT No. 57 or 67 coarse aggregate (CDOT Standard Specifications Table 703-2). The wall is indicated by placing the first course of concrete block directly onto the leveling pad.

**E. WALL UNIT INSTALLATION**

1. The units in the base course shall be checked for level alignment.
2. Capstones used on the top course shall be attached with adhesive on a clean, dry surface as specified by the Manufacturer.

**F. DRAINAGE MATERIAL PLACEMENT**

1. Place and compact drainage fill material behind wall units.
2. Material shall consist of No. 57 or 67 coarse aggregate (CDOT Standard Specifications Table 703-2).
3. Maximum stacked vertical height of wall units prior to fill placement shall not exceed 2 courses.

**G. BACKFILL MATERIAL**

1. Backfill materials used behind the wall shall consist of select granular structural backfill, compliant with CDOT Class 1 backfill requirements or CDOT 57 or 67 Aggregate per plans.
2. Backfill materials shall be placed in lifts not exceeding 8 inches in loose thickness and compacted to a minimum

**H. LOW PERMEABLE SOIL CAP**

1. Soil used for low permeable soils cap such as clayey sand (SC) soils or import approved by the engineer. Materials shall be placed in lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 95% of the Modified Proctor Dry Density (ASTM D 1557).
2. 4" of topsoil is to be placed on top of the impermeable layer. The top 6" from the surface down shall be tilled or mixed to ensure cohesion of the impermeable and topsoil layers.

**I. CONSTRUCTION PRECAUTIONS**

1. During construction, Contractor shall slope last backfill lift of each day away from wall units and shall not allow runoff from adjacent areas to enter construction area.
2. Construction excavation shall comply with OSHA standards and regulations.

**J. PRECONSTRUCTION**

1. Contractor must schedule a preconstruction meeting with the Engineer prior to the initiation of any excavation, with at least 24 hours of advanced notice.

**K. WALL GEOMETRY**

1. Design Wall Height (ft): See Plans
2. Embankment Wall Height (ft): See Plans
3. Exposed Wall Design Height (ft): See Plans
4. Wall Inclination (Deg.): See Plans

**L. SEGMENTAL UNIT DATA - VERIFY w/ MANUFACTURER SPECS.**

1. Segmental Unit Name: Redi-Rock 28"
2. Cap Height (inches): 18
3. Unit Height (Hu)(inches): 18
4. Unit Width (Wu)(inches): 27.75
5. Unit Length (inches): 46
6. Setback (inches): 1.625
7. Weight (pcf): 130

**M. GEOSYNTHETIC REINFORCEMENT**

Supplier: TenCate Wroth  
Product Name: Miragrid 3XT

**N. WALL GRADES**

1. Top Slope: See Plans
2. Toe Slope: See Plans

**O. RETAINING WALL DESIGN PARAMETERS**

1. Distributed Surcharges
  - a. Live Load (psf): 100 Pedestrian (As Req'd)
  - b. Traffic Load (psf): 250 (As Req'd)
2. Minimum Factors of Safety
  - a. External Stability
    1. Sliding: 1.5
    2. Overturning: 2.0
    3. Bearing Capacity: 2.0
  - b. Internal Stability
    1. Overstress: 1.5
    2. Pullout: 1.5

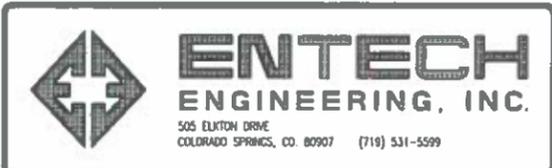
SOIL DATA				
Soil Zone	Description	Cohesion (c) (psf)	Friction Angle (Deg.)	Unit Weight (pcf)
Structural Soil	Silty Sand	0.00	32.00	120.00
Retained Soil	Silty Sand	0.00	32.00	120.00
Leveling Pad Soil	Gravel	0.00	36.00	125.00
Foundation Soil	Silty Sand	0.00	30.00	120.00

**MODIFICATIONS TO  
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BE REQUIRED.**



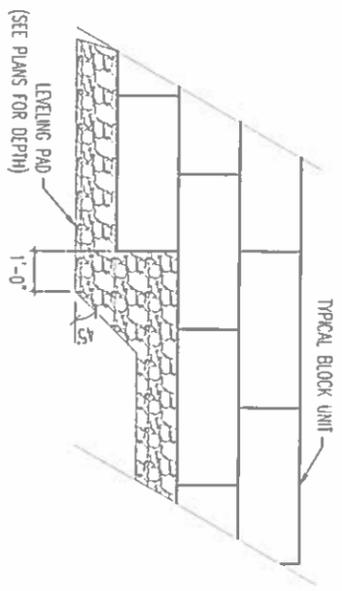
STATE OF COLORADO P.E.

REVISIONS	BY:

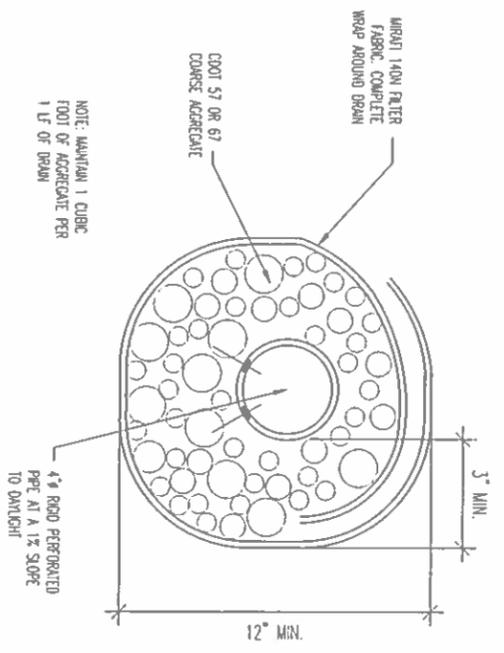


**REDI-ROCK RETAINING WALL  
GENERAL NOTES  
FOREST LAKES FILING 5, 6, & 7  
COLORADO SPRINGS, CO  
FOR: FOR: FLRD #2**

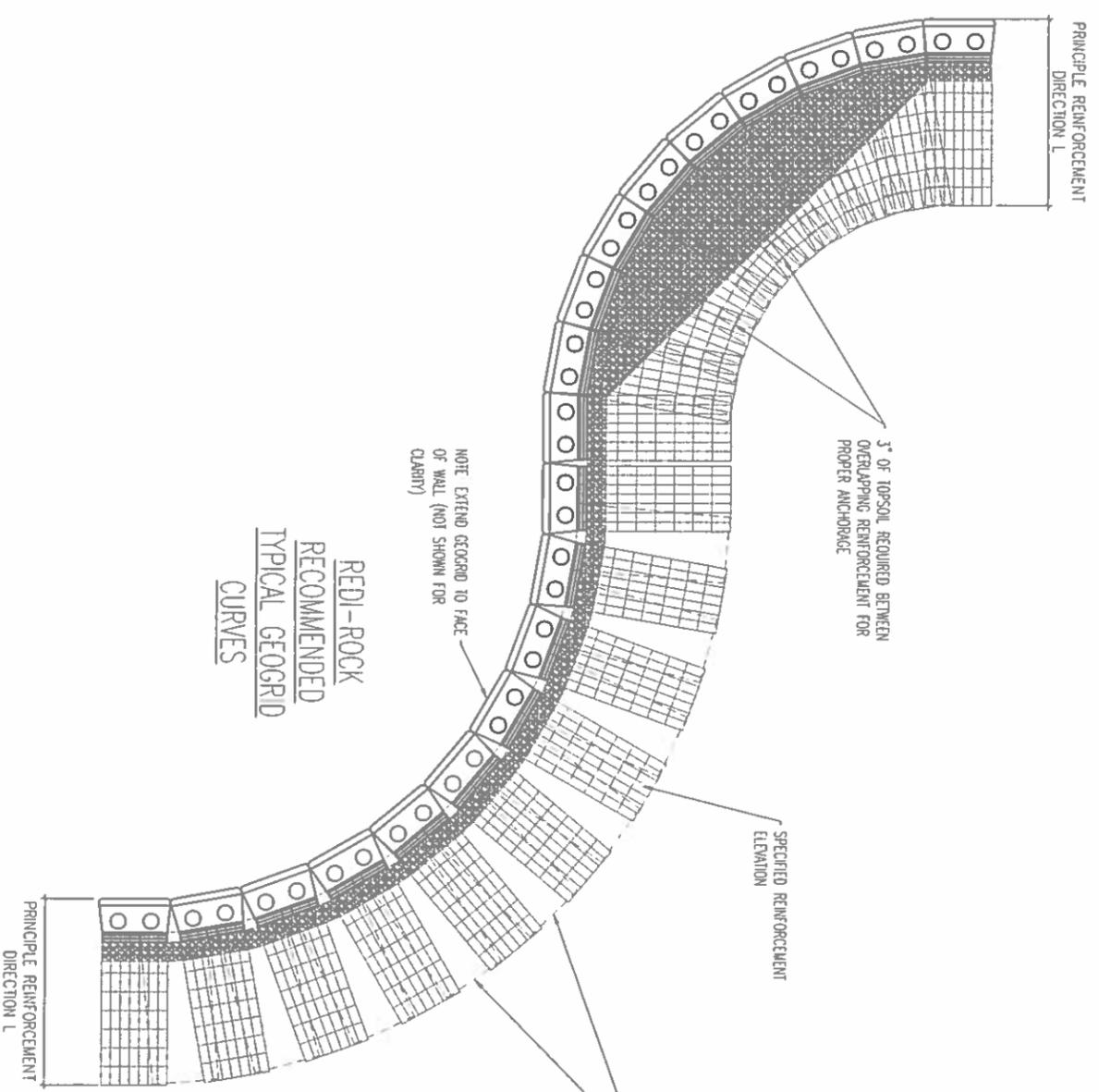
DESIGNED BY: AMW
CHECKED BY: AMW
DATE: 12/11/2019
SCALE: N.T.S.
JOB NO: 191638
SHEET NO: 2
OF 6 SHEETS



GRAVEL LEVELING PAD STEP



DRAIN DETAIL



TO COMPLETE PLACEMENT OF REINFORCEMENT FOR A SPECIFIED ELEVATION, PLACE ADDITIONAL REINFORCEMENT ON NEXT COURSE OF SEGMENTAL UNITS IMMEDIATELY ABOVE THE SPECIFIED PLACEMENT ELEVATION, IN A MANNER THAT ELIMINATES GAPS LEFT BY PREVIOUS LAYER OF GEOSYNTHETIC AT SPECIFIED REINFORCEMENT ELEVATION. IF REINFORCEMENT PLACEMENT IS SPECIFIED FOR SUCCESSIVE LIFTS, ENSURE GAPS IN REINFORCEMENT ARE COVERED WITH REINFORCEMENT PRIOR TO BACKFILLING.

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED.



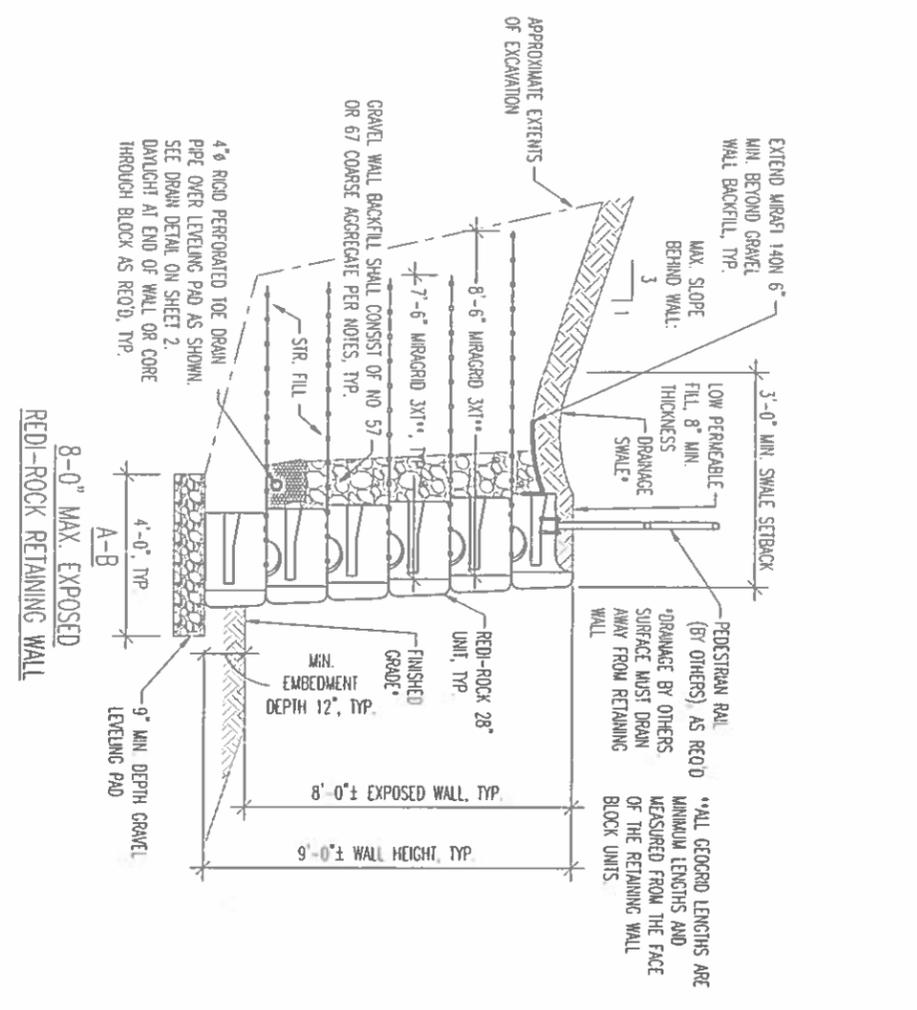
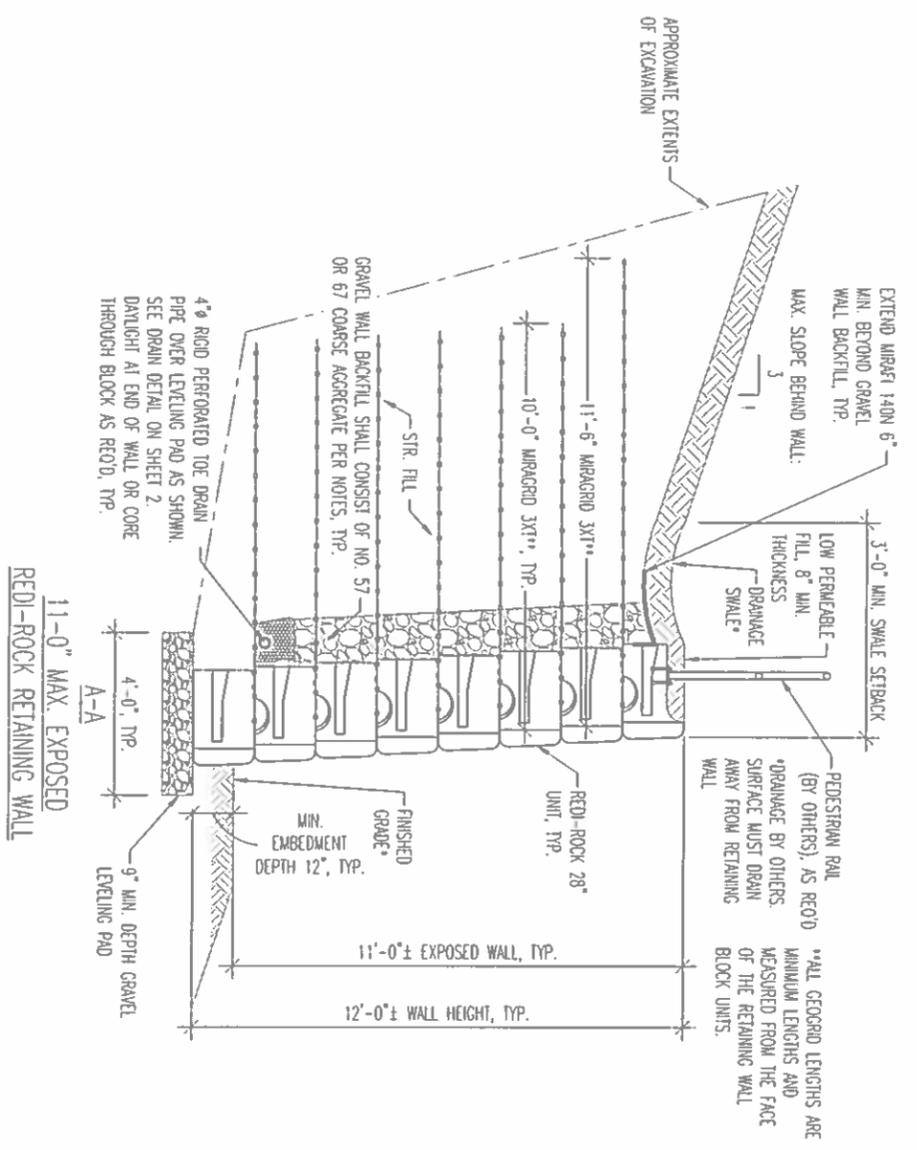
STATE OF COLORADO P.E.

REVISIONS	BY

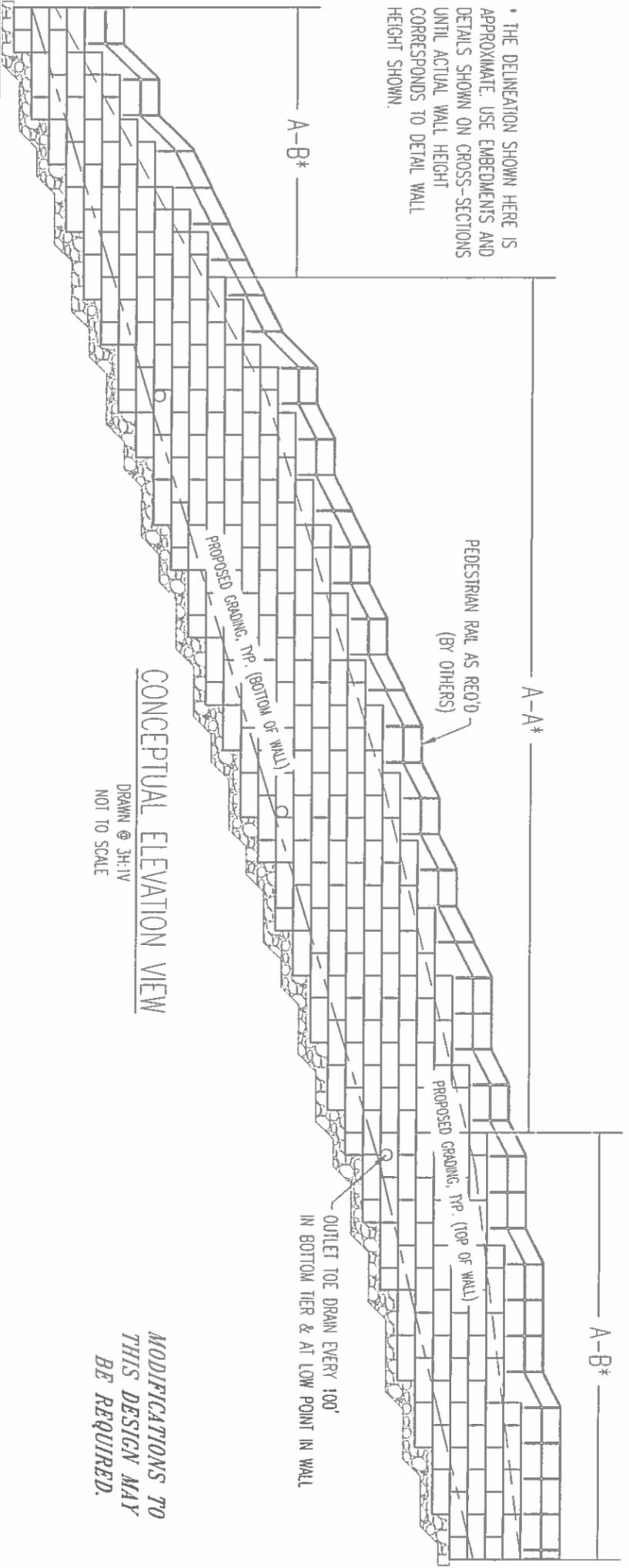
**ENTECH ENGINEERING, INC.**  
505 ELKTON DRIVE  
COLORADO SPRINGS, CO. 80907 (719) 531-5599

REDI-ROCK RETAINING WALL  
TYPICAL DETAILS  
FOREST LAKES FILING 5, 6, & 7  
COLORADO SPRINGS, CO  
FOR: FOR: FLRD #2

DESIGNED BY: AJM  
CHECKED BY: AJM  
DATE: 12/11/2019  
SCALE: N.T.S.  
JOB NO. 191638  
SHEET NO. 3  
OF 6 SHEETS



\* THE DELINEATION SHOWN HERE IS APPROXIMATE. USE EMBEDMENTS AND DETAILS SHOWN ON CROSS-SECTIONS UNTIL ACTUAL WALL HEIGHT CORRESPONDS TO DETAIL WALL HEIGHT SHOWN.



CONCEPTUAL ELEVATION VIEW  
DRAWN @ 3/8"=1'  
NOT TO SCALE

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED.

NOTE: INSTALL UTILITIES OUTSIDE OF GEORGRID ZONE

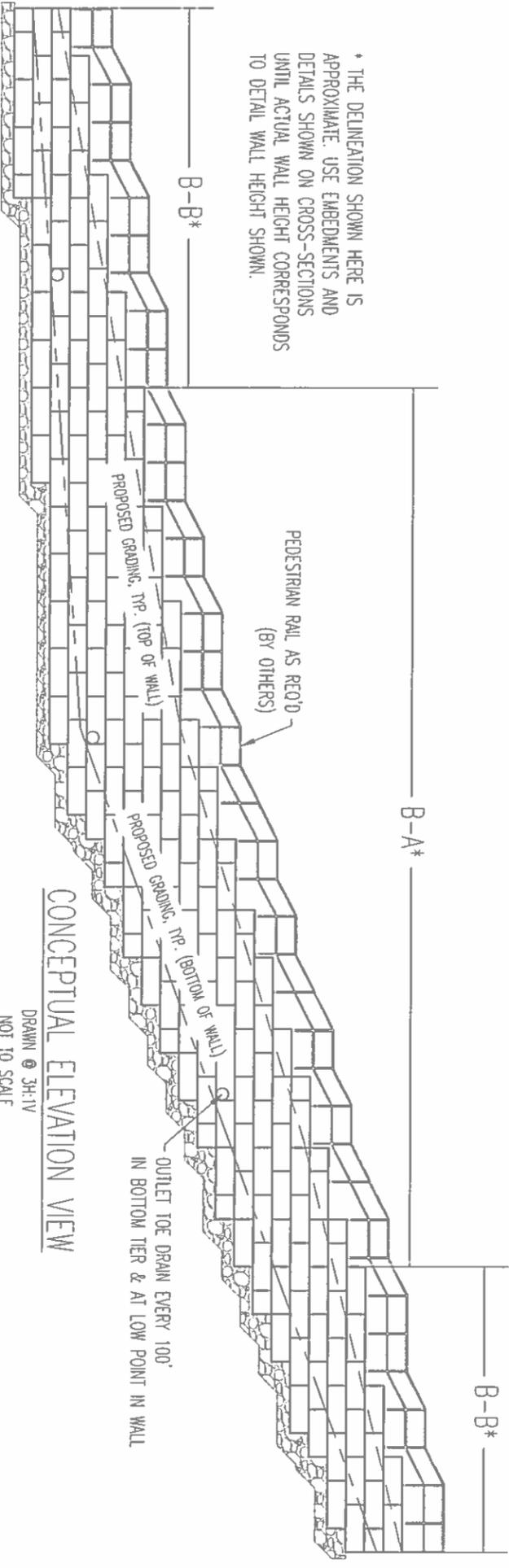
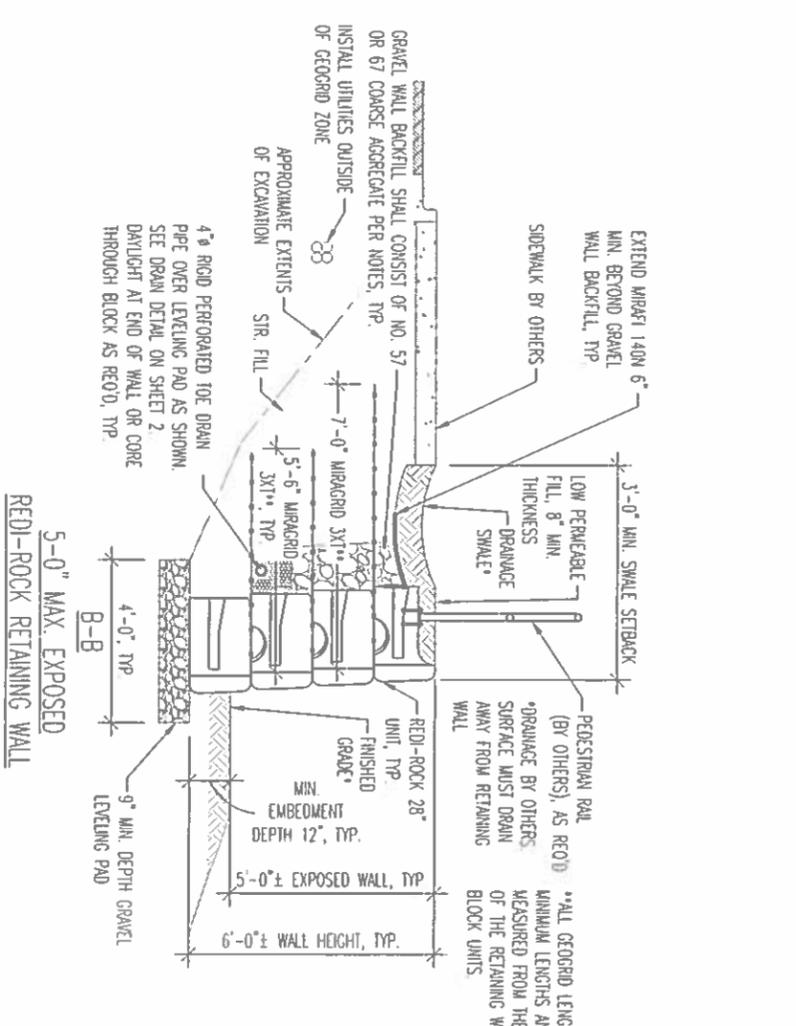
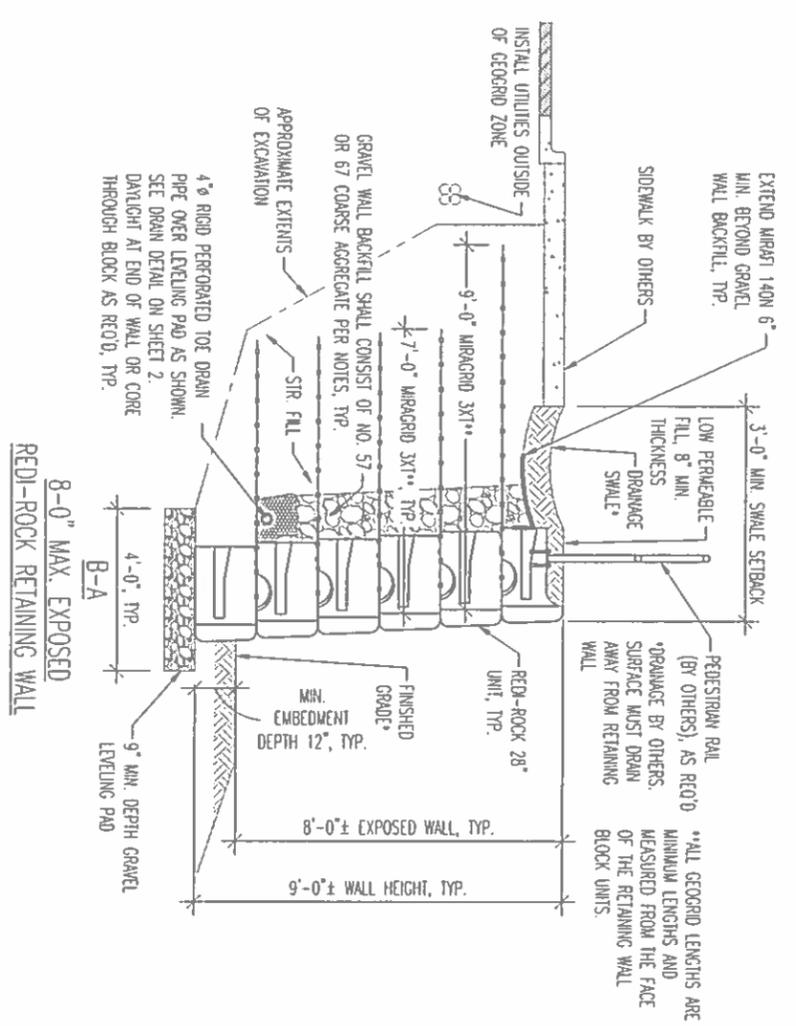


DESIGNED BY: AMV	DATE: 12/11/2019
CHECKED BY:	SCALE: N.T.S.
100 NO. 191538	SHEET NO.
4	6
OF	SHEETS

REDI-ROCK RETAINING WALL  
WALL "A" ELEVATION & SECTIONS  
FOREST LAKES FILING 5, 6, & 7  
COLORADO SPRINGS, CO  
FOR: FOR: FLRD #2

**ENTECH**  
ENGINEERING, INC.  
505 ELKTON DRIVE  
COLORADO SPRINGS, CO. 80907 (719) 531-5599

REVISIONS	BY:



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CONCEPTUAL ELEVATION VIEW

DRAWN @ 3/4"=1'  
NOT TO SCALE

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED.

NOTE: INSTALL UTILITIES OUTSIDE OF GEOGRID ZONE

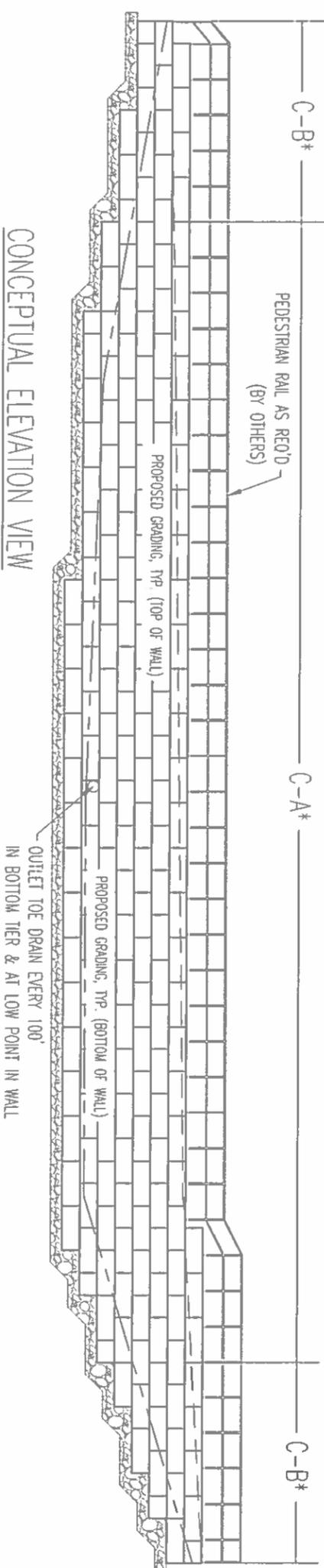
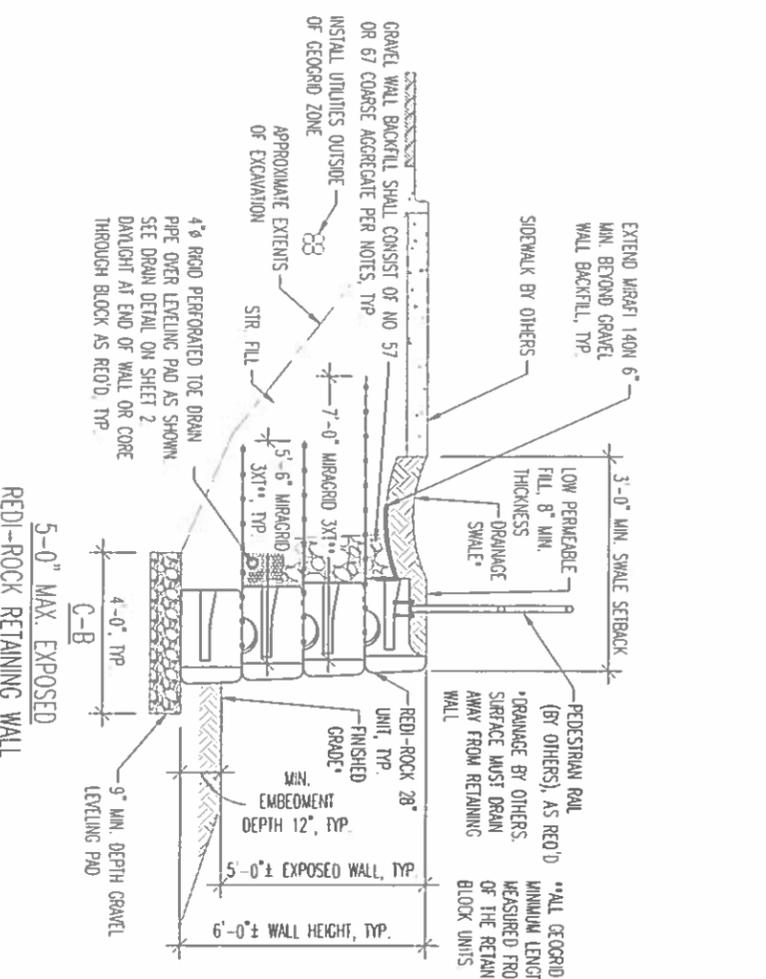
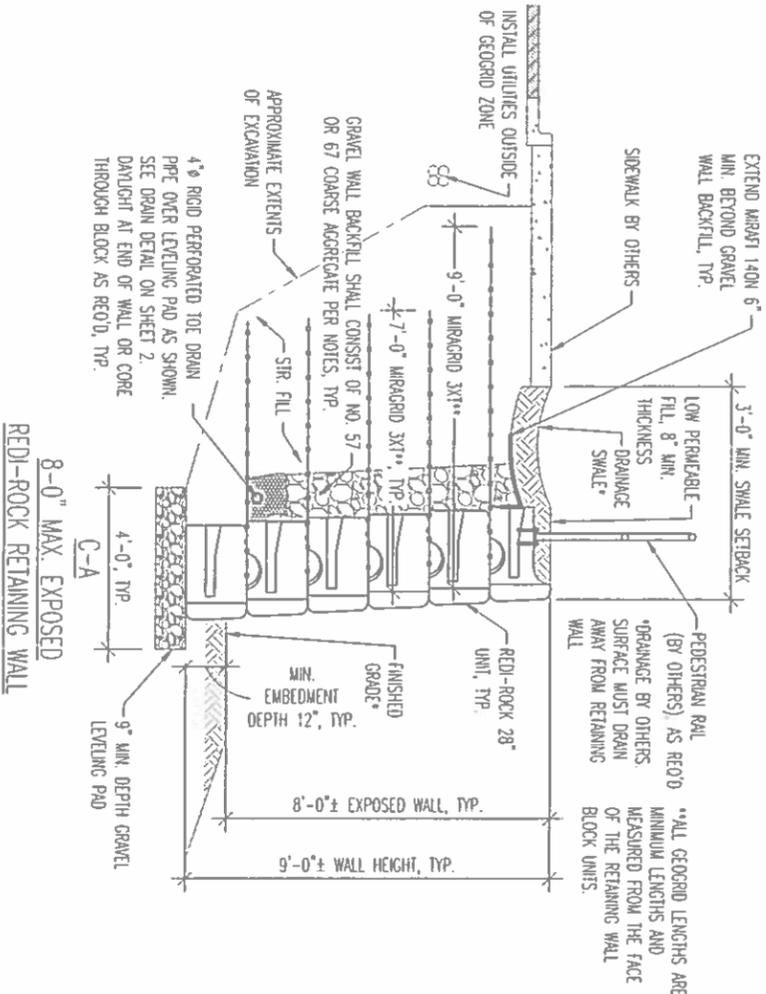


REVISIONS	BY

**ENTECH ENGINEERING, INC.**  
505 ELKTON DRIVE  
COLORADO SPRINGS, CO. 80907 (719) 531-5599

**REDI-ROCK RETAINING WALL WALL "B" ELEVATION & SECTIONS**  
FOREST LAKES FILING 5, 6, & 7  
COLORADO SPRINGS, CO  
FOR: FOR: FLRD #2

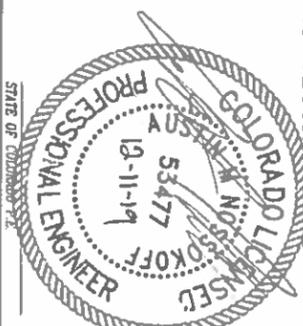
DESIGNED BY: AMY	CHECKED BY: AMY
DATE: 12/11/2019	SCALE: N.T.S.
DWG NO: 191638	SHEET NO. 5 OF 6



\* THE DELINEATION SHOWN HERE IS APPROXIMATE. USE EMBEDMENTS AND DETAILS SHOWN ON CROSS-SECTIONS UNTIL ACTUAL WALL HEIGHT CORRESPONDS TO DETAIL WALL HEIGHT SHOWN.

MODIFICATIONS TO THIS DESIGN MAY BE REQUIRED.

NOTE: INSTALL UTILITIES OUTSIDE OF GEOGRID ZONE



REVISIONS	BY

**ENTECH ENGINEERING, INC.**  
 525 ELITCH DRIVE  
 COLORADO SPRINGS, CO. 80907 (719) 531-5599

**REDI-ROCK RETAINING WALL WALL "C" ELEVATION & SECTIONS**  
 FOREST LAKES FILING 5, 6, & 7  
 COLORADO SPRINGS, CO  
 FOR: FOR: FLRD #2

DESIGNED BY: AM
CHECKED BY: AM
DATE: 12/11/2019
SCALE: N.T.S.
JOB NO. 191638
SHEET NO. 6
OF 6 SHEETS

CONCEPTUAL ELEVATION VIEW

DRAWN @ 1/8"=1'-0"  
 NOT TO SCALE