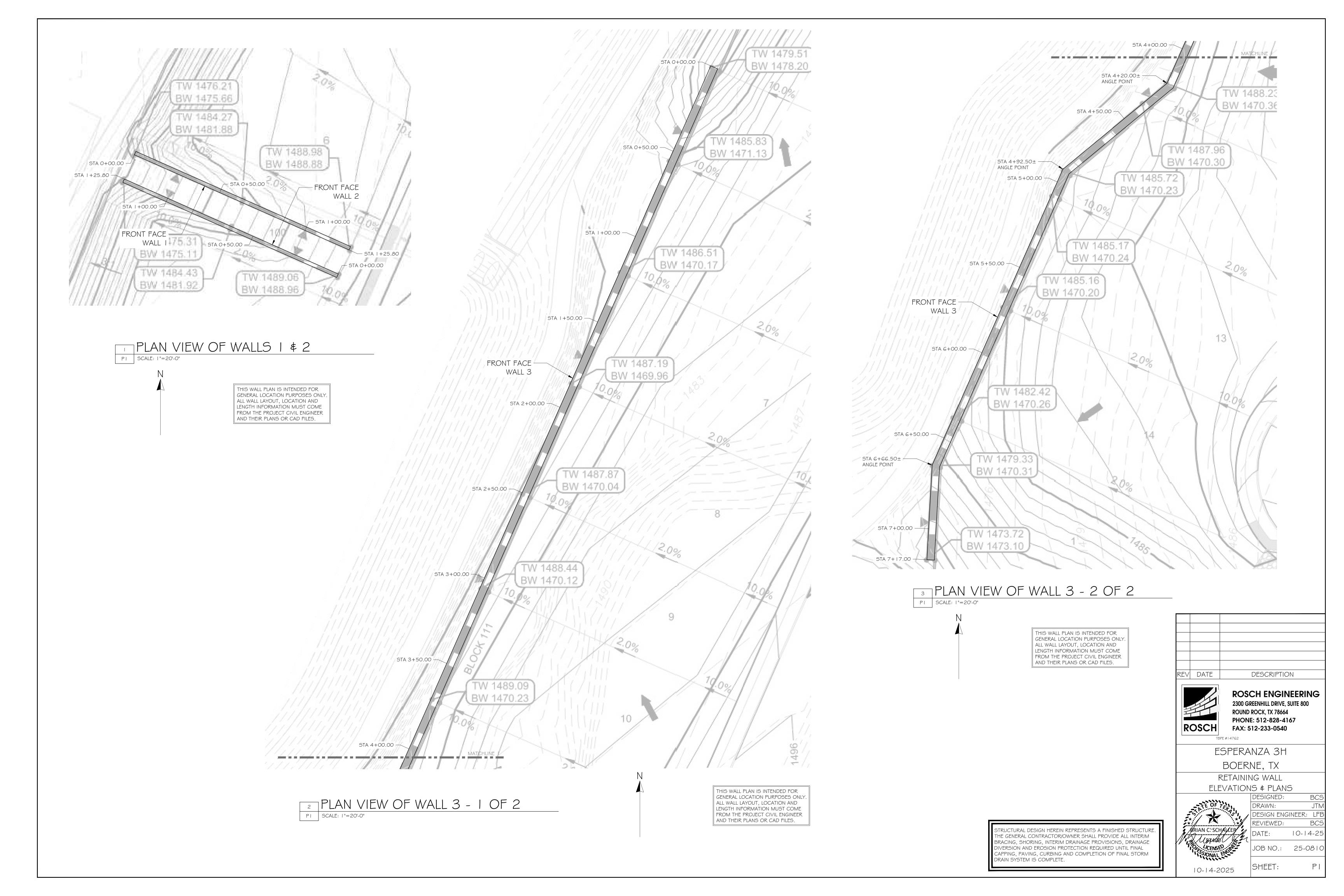
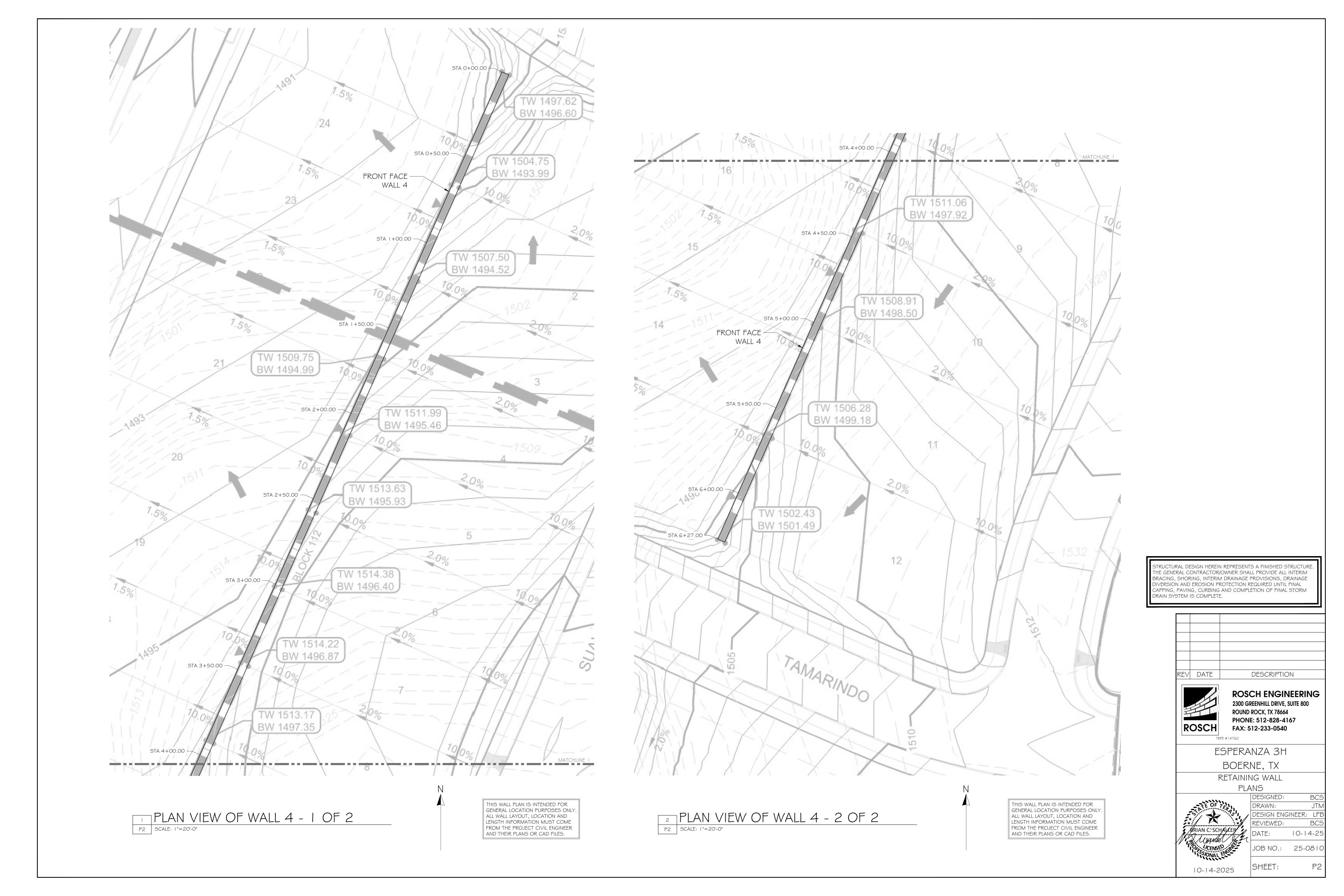
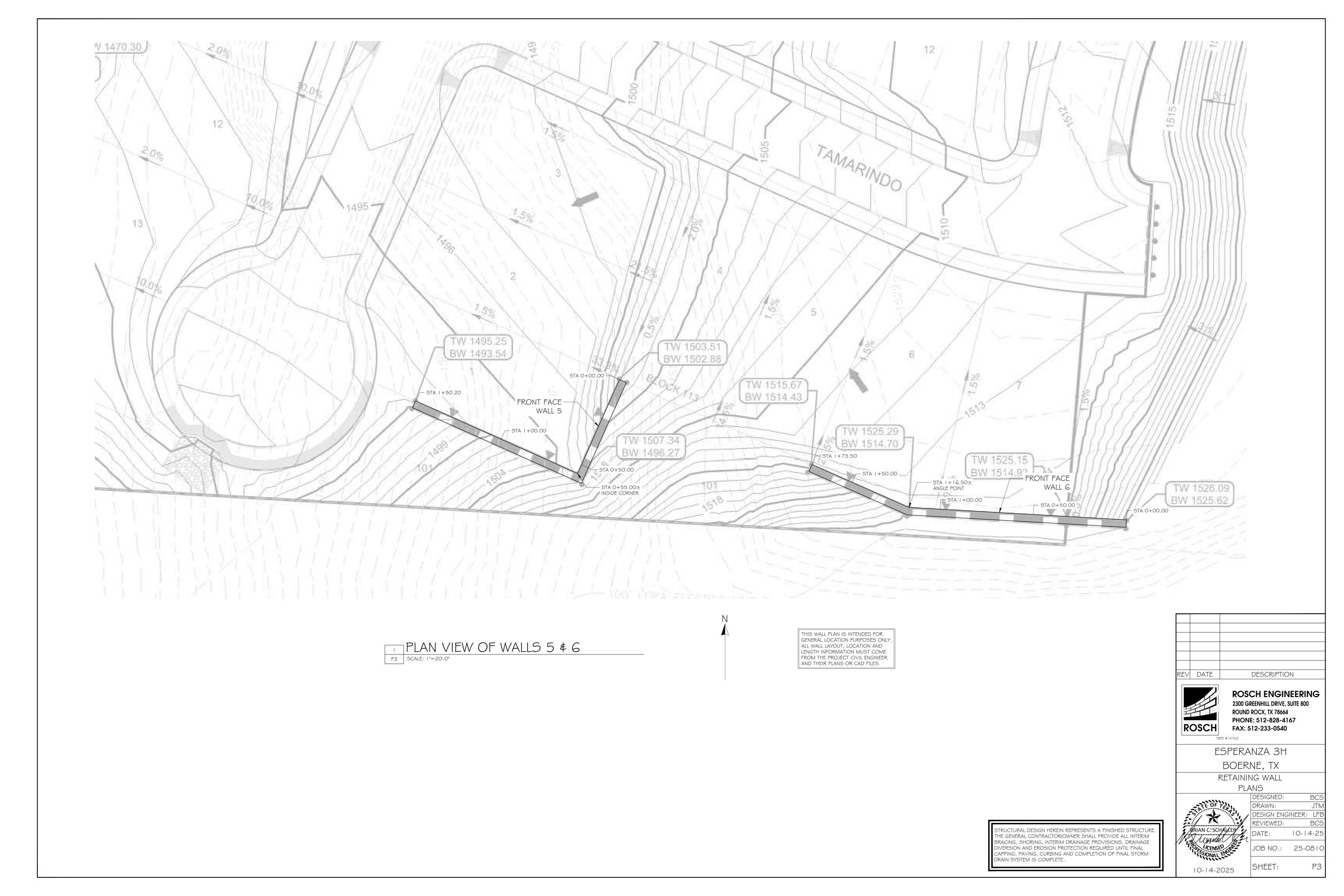
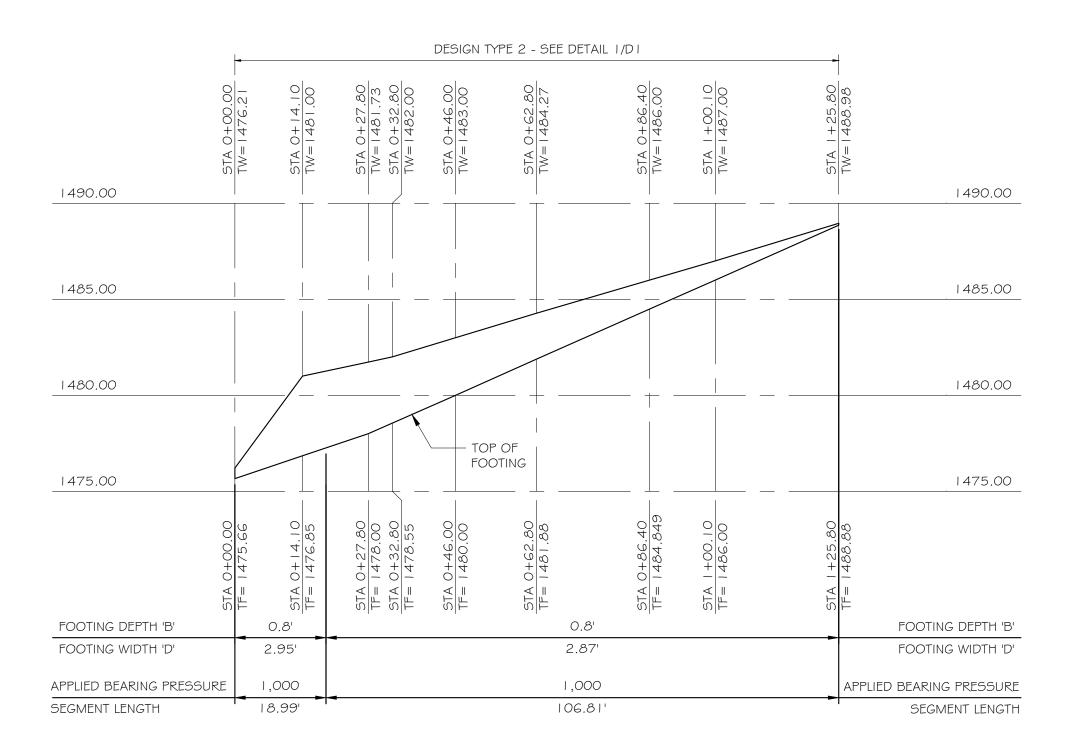
# ESPERANZA 3H RETAINING WALLS REV DATE DESCRIPTION ROSCH ENGINEERING ROUND ROCK, TX 78664 PHONE: 512-828-4167 ROSCH FAX: 512-233-0540 ESPERANZA 3H BOERNE, TX RETAINING WALL COVER SHEET



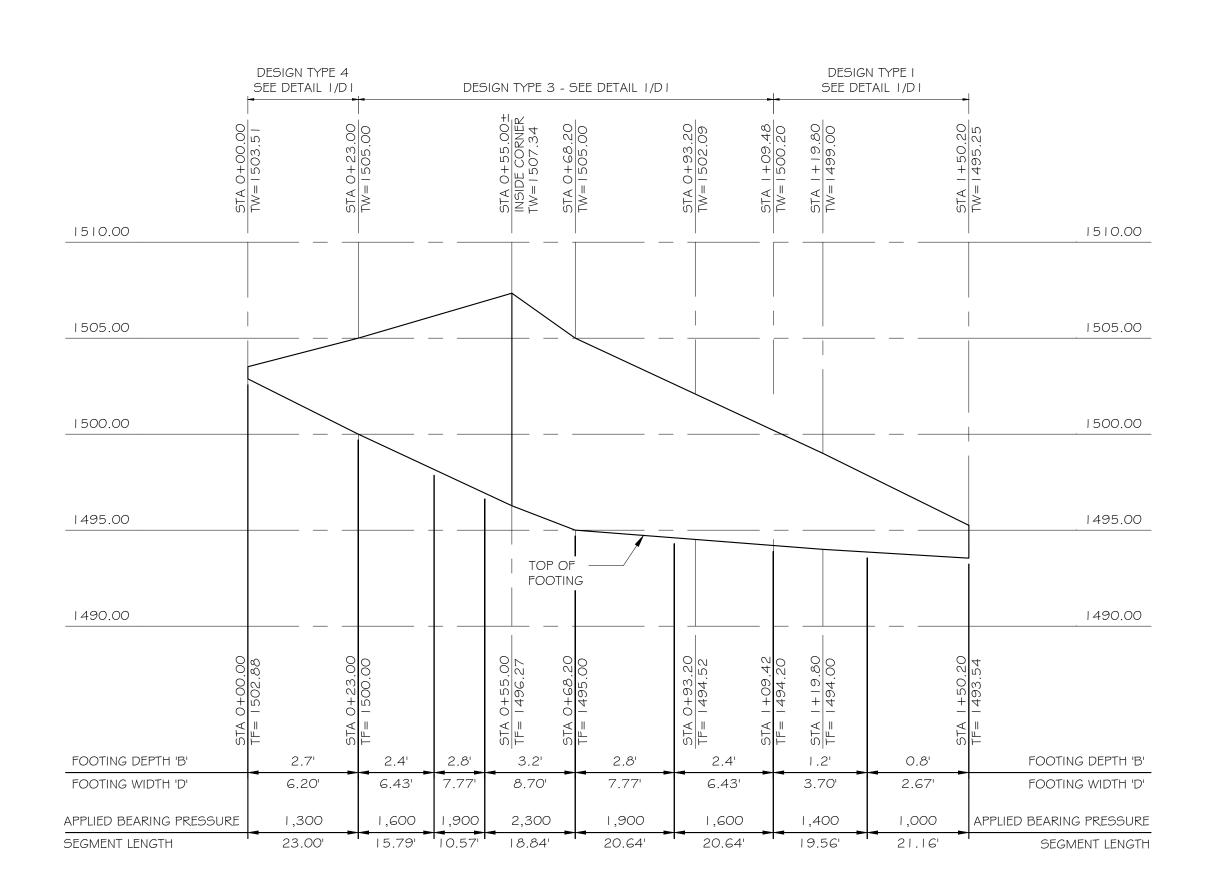






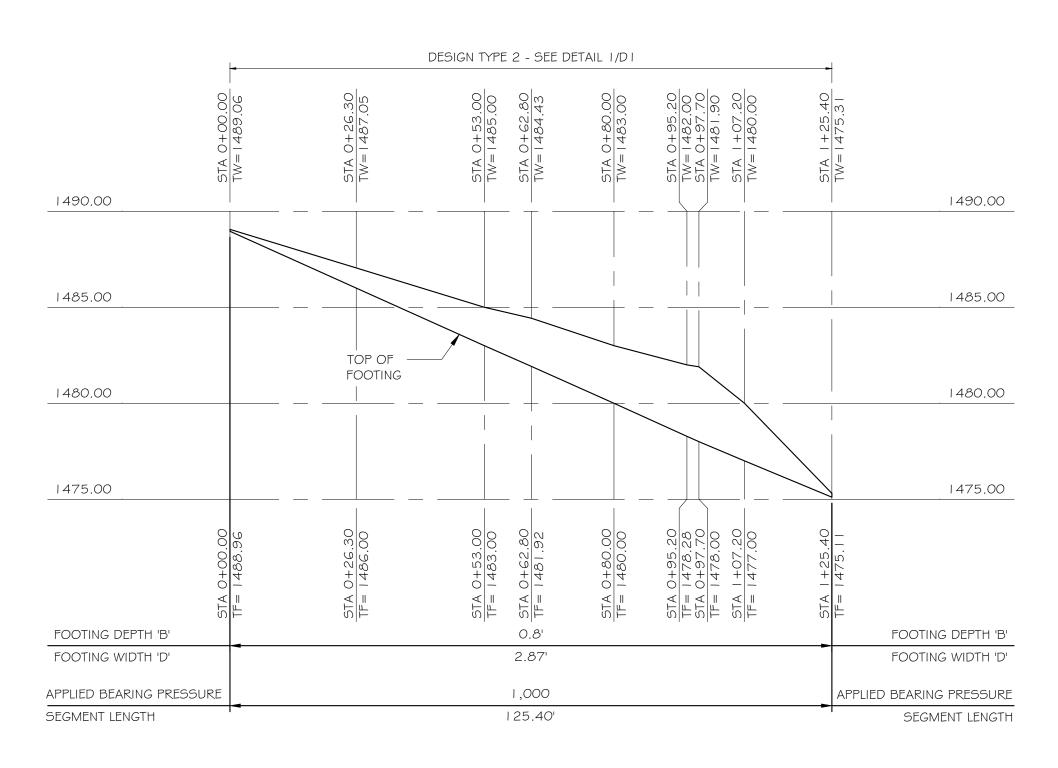
# WALL I ELEVATION

P4 SCALE: I"=20'-0" HORIZONTAL SCALE: I"=5'-0" VERTICAL



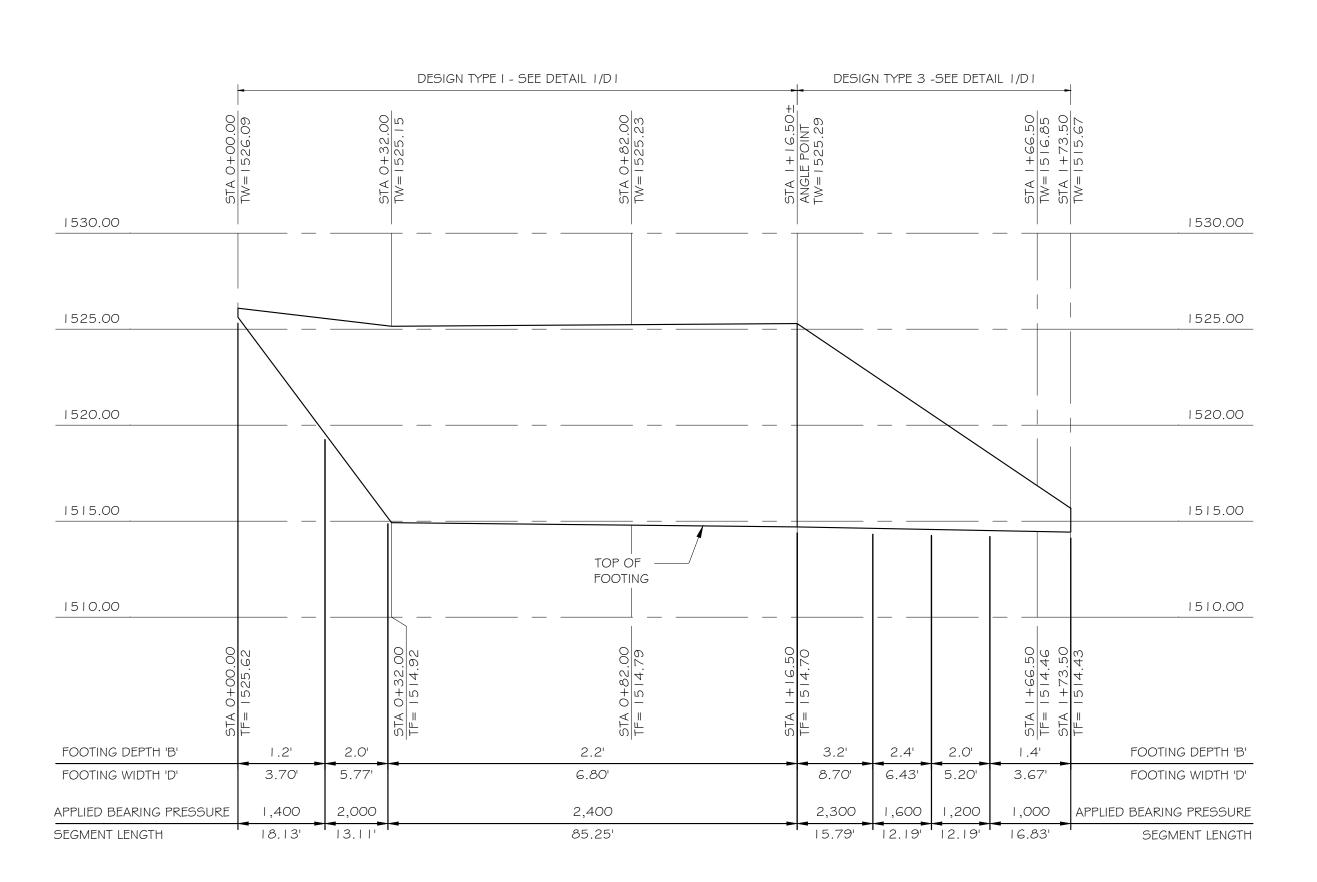
# WALL 5 ELEVATION

P4 SCALE: I "= 20'-0" HORIZONTAL SCALE: I "=5'-0" VERTICAL



# <sup>2</sup> WALL 2 ELEVATION

P4 SCALE: I"=20'-0" HORIZONTAL SCALE: I"=5'-0" VERTICAL



# WALL 6 ELEVATION

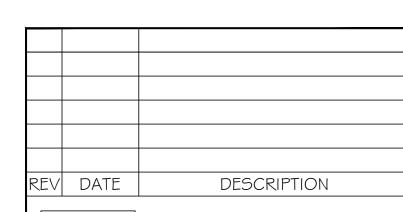
P4 SCALE: I "= 20'-0" HORIZONTAL SCALE: I "= 5'-0" VERTICAL

#### WALL ELEVATION NOTES:

- I. FOOTING DEPTH 'B' IS MEASURED FROM TOP OF FOOTING TO BOTTOM OF FOOTING. SEE DETAILS
- FOR ADDITIONAL INFORMATION.

  2. FOOTING WIDTH 'D' IS MEASURED FROM THE FRONT FACE OF WALL TO THE BACK OF FOOTING.
- FRONT FACE OF WALL TO THE BACK OF FOOTING.
  SEE DETAILS FOR ADDITIONAL INFORMATION.
  3. APPLIED BEARING PRESSURE IS IN PSF.

 APPLIED BEARING PRESSURE IS IN PSF.
 SEGMENT LENGTH IS THE DISTANCE BETWEEN DESIGN SECTION TRANSITIONS. STRUCTURAL DESIGN HEREIN REPRESENTS A FINISHED STRUCTURE. THE GENERAL CONTRACTOR/OWNER SHALL PROVIDE ALL INTERIM BRACING, SHORING, INTERIM DRAINAGE PROVISIONS, DRAINAGE DIVERSION AND EROSION PROTECTION REQUIRED UNTIL FINAL CAPPING, PAVING, CURBING AND COMPLETION OF FINAL STORM DRAIN SYSTEM IS COMPLETE.





ROSCH ENGINEERING
2300 GREENHILL DRIVE, SUITE 800
ROUND ROCK, TX 78664
PHONE: 512-828-4167
FAX: 512-233-0540

TBPE #14762

ESPERANZA 3H

BOERNE, TX

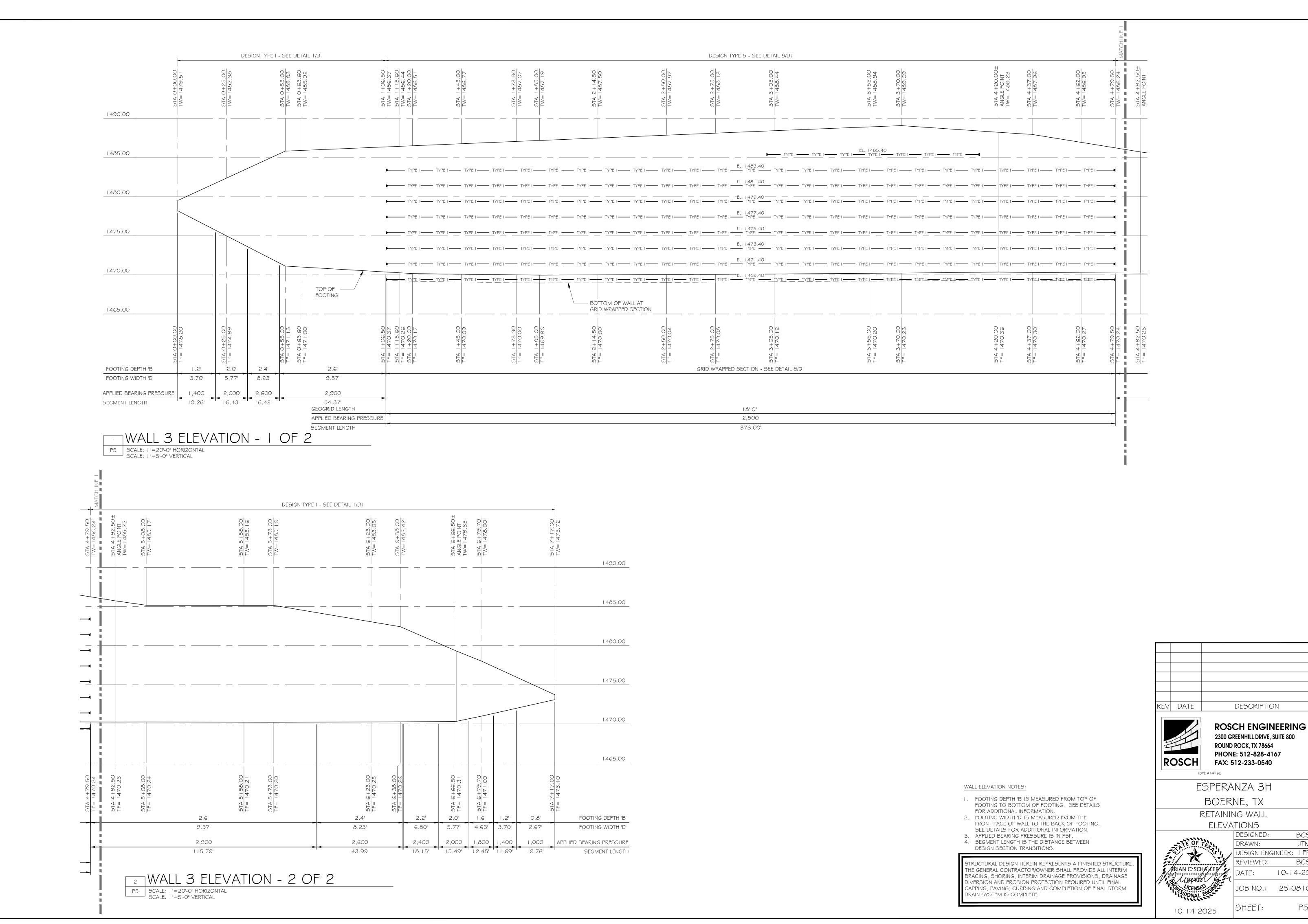
RETAINING WALL ELEVATIONS

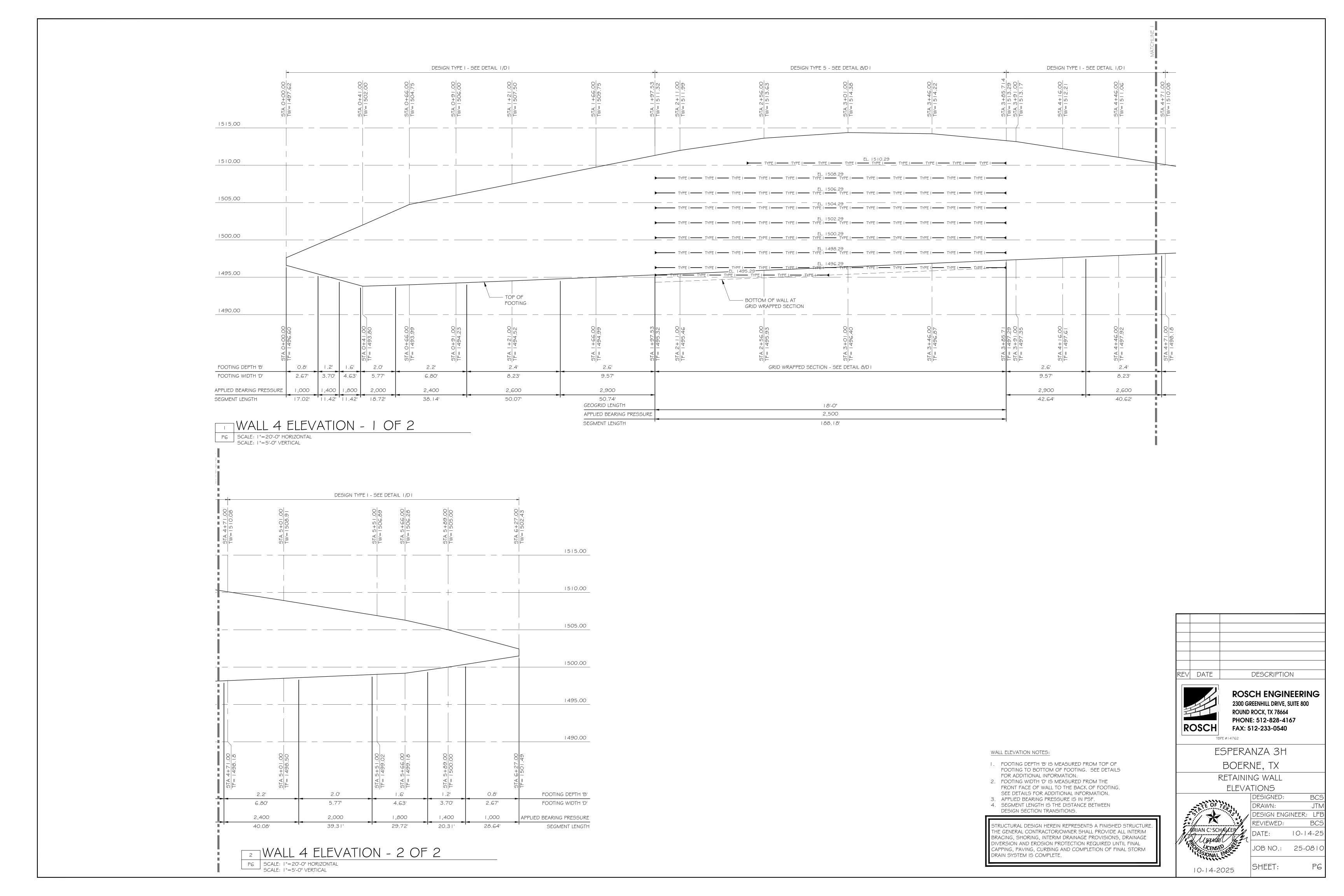


DESIGNED: BCS
DRAWN: JTN
DESIGN ENGINEER: LFE
REVIEWED: BCS
DATE: 10-14-25
JOB NO.: 25-0810

JOB NO.: 25-0810

10-14-2025 SHEET:





### GENERAL NOTES:

- RETAINING WALL DESIGN:
- 1.1. STRUCTURAL DESIGN HEREIN REPRESENTS A FINISHED STRUCTURE. THE GENERAL CONTRACTOR/OWNER SHALL PROVIDE ALL INTERIM BRACING, SHORING, INTERIM DRAINAGE PROVISIONS, DRAINAGE DIVERSION AND EROSION PROTECTION REQUIRED UNTIL FINAL CAPPING, PAVING, CURBING AND COMPLETION OF FINAL STORM DRAIN SYSTEM IS COMPLETE.
- I.I.I. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR/OWNER TO ENSURE THAT THE FINISHED SITE DRAINAGE IS DIRECTED AWAY FROM THE RETAINING WALL SYSTEM.
- I.I.2. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR/OWNER TO ENSURE THAT THE SURFACE WATER RUNOFF FROM ADJACENT CONSTRUCTION AREAS IS NOT ALLOWED TO ENTER THE RETAINING WALL AREA OF THE CONSTRUCTION SITE.
- 1.2. THE PROJECT GEOTECHNICAL ENGINEER SHALL REVIEW THESE DRAWINGS TO CONFIRM THE ASSUMPTIONS MEET THE INTENT OF THE GEOTECHNICAL REPORT. ADDITIONALLY, THE PROJECT GEOTECHNICAL ENGINEER SHALL REVIEW GLOBAL STABILITY OF THE RETAINING WALLS AND PROVIDE RECOMMENDATIONS AS NEEDED.
- 1.3. THE DESIGN OF THE RETAINING WALLS IS IN ACCORDANCE WITH ACCEPTED SOIL MECHANICS PRINCIPLES AND PROCEDURES AS WELL AS ACI 530. I -02 SPECIFICATION FOR MASONRY STRUCTURES AND INCLUDES EXTERNAL STABILITY; SLIDING AND OVERTURNING. THE APPLIED BEARING PRESSURES ARE LISTED IN THE DETAILS.
- 1.4. THE DESIGN OF THE RETAINING WALLS IS BASED ON THE FOLLOWING DOCUMENTS:

DRAWINGS 20 \$ 2 | DATED 7/28/2025 PREPARED BY KIMLEY-HORN AND ASSOCIATES, INC.

GEOTECHNICAL REPORT DATED 7/11/2025 PREPARED BY INTEC OF SAN ANTONIO. INTEC PROJECT NO. S251149

1.5. THE DESIGN OF THE RETAINING WALL IS BASED ON THE INDIVIDUAL SOIL PROPERTIES AS LISTED ON THE DETAILS AS WELL AS THE FOLLOWING CRITERIA:

SEISMIC ACCELERATION = N/A

HYDROSTATIC LOADING = NONE

SURCHARGE LOADING = 100 PSF LOCATED 2'-0" FROM FACE OF WALL UNO. \*\*NOTE, IF ANY PROPOSED SURCHARGE LOADS EXCEED THOSE NOTED IN THESE DRAWINGS PLEASE NOTIFY ROSCH ENGINEERING PRIOR TO CONSTRUCTION OF ANY WALLS.

2.1. SETTLEMENT SENSITIVE RIGID MASSES FOUNDED ON OR ABOVE ANY RETAINING WALL SHOULD BE REVIEWED AND, IF REQUIRED, A SETTLEMENT ANALYSIS SHOULD BE PERFORMED BY THE PROJECT GEOTECHNICAL ENGINEER.

SETTLEMENT ANALYSIS IS OUTSIDE OF ROSCH ENGINEERING'S SCOPE OF WORK.

#### 3. MATERIAL PROPERTIES:

3.1. PORTLAND CEMENT MORTAR. 3.1.1. PORTLAND CEMENT MORTAR SHALL HAVE THE FOLLOWING PROPORTIONS PER CUBIC YARD OF MORTAR. THE PORTLAND CEMENT MORTAR SUPPLIER SHALL PROVIDE BATCH TICKETS CLEARLY INDICATING THE APPROPRIATE AMOUNT OF MATERIAL ARE PROVIDED IN EACH LOAD. THE BATCH TICKETS SHALL CLEARLY INDICATE THE AMOUNT BATCHED, THE DATE, THE PROJECT NAME AND SHALL BE PROVIDED TO ROSCH ENGINEERING FOR REVIEW.

MATERIAL	AMOUNT PER CUBIC YARD	
TYPE I PORTLAND CEMENT	376	LBS
TYPE F FLY ASH	94	LBS
FINE AGGREGATE	3,250	LBS
POTABLE WATER	235	LBS
RETARDER (BASED ON EUCON 100)	48	OZ AVERAGE

- 3.1.2. CONCRETE RETARDERS SUCH AS EUCON 100 MAY BE USED AT THE DISCRETION OF THE WALL CONTRACTOR. DURING HOT WEATHER A GREATER AMOUNT OF RETARDER IS TYPICALLY NECESSARY AND DURING COLD WEATHER A LESSOR AMOUNT IF TYPICALLY NECESSARY. FOLLOW MANUFACTURERS RECOMMENDATIONS. 3.1.3. THE ABOVE PROPORTIONS WILL PROVIDE A PORTLAND CEMENT MORTAR WITH A COMPRESSIVE STRENGTH OF
- APPROXIMATELY 1,500 PSI. ROSCH ENGINEERING DOES NOT REQUIRE ANY TESTING OF THE MORTAR PROVIDED THE ABOVE PROPORTIONS ARE VERIFIED BY WAY OF THE BATCH TICKETS. 3.1.4. ALTERNATE MIX DESIGNS ARE ACCEPTABLE. ANY ALTERNATE DESIGNS MUST BE SUBMITTED TO ROSCH
- 3.2. DRAINAGE ROCK SHALL BE A CLEAN CRUSHED STONE OR GRANULAR FILL SUCH AS I " CLEAN MEETING THE

FOLLOWING GRADATION AS DETERMINED IN ACCORDANCE WITH ASTM D 422:

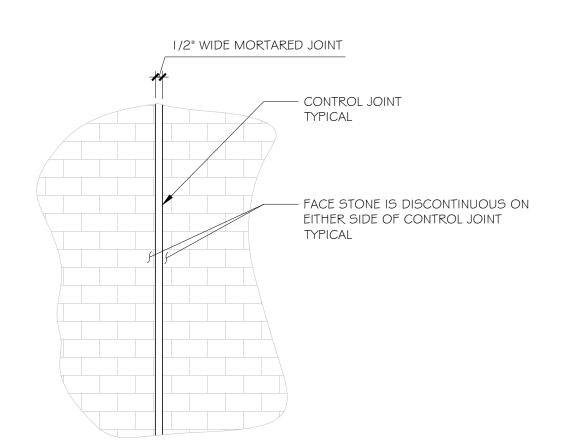
SIEVE SIZE	PERCENT PASSING
IINCH	100
3/4 INCH	75-100
NO. 4	0-60
NO. 40	0-50
NO. 200	0-5

ENGINEERING FOR APPROVAL PRIOR TO USE.

- 3.3. LOW PERMEABLE SOIL SHALL CONSIST OF MATERIAL HAVING A MINIMUM PLASTICITY INDEX OF 10. NO MORE THAN I 0% SHALL BE RETAINED ON A NO. 4 SIEVE AND NO LESS THAN 35% SHALL PASS A NO. 200 SIEVE. MATERIAL WITH A USC DESIGNATION OF ML, CL, OR OL ARE ACCEPTABLE FOR USE AS LOW PERMEABLE SOIL.
- 3.4. THE GEOGRID SHALL BE A HIGH DENSITY POLYETHYLENE EXPANDED SHEET OR POLYESTER WOVEN FIBER MATERIAL, SPECIFICALLY FABRICATED FOR USE AS SOIL REINFORCEMENT. ACCEPTABLE GEOGRID TYPES AND MANUFACTURER AS FOLLOWS:

SF35 BY SYNTEEN TECHNICAL FABRICS, INC. SGU 60 BY STRATA SYSTEMS. INC.

- MIRAGRID 3XT AS MANUFACTURED BY TENCATE GEOSYNTHETICS HP200 AS MANUFACTURED BY GEOSTAR TECHNOLOGIES, LLC.
- 3.5. GEOTEXTILE FILTER FABRIC SHALL BE A NONWOVEN GEOTEXTILE COMPOSED OF POLYPROPYLENE FIBERS WITH A MINIMUM FLOW RATE OF 140 GPM/FT2 WHEN TESTED ACCORDING TO ASTM D 4491.
- 3.6. DRAINAGE PIPE SHALL BE A 4"Ø PERFORATED, SLOTTED PVC OR CORRUGATED HDPE PIPE. DRAINAGE PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM F 405 OR ASTM F 758.



PROVIDE VERTICAL CONTROL JOINTS IN FACING AT 16'-0" OC

CONTROL JOINT DETAIL

EXCAVATION.

3.1. THE CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE PLANS. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO MINIMIZE OVER-EXCAVATION.

3.2. EXCAVATION SUPPORT, INCLUDING THE STABILITY OF THE EXCAVATION AND ITS INFLUENCE ON ADJACENT PROPERTY IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

FOUNDATION SOIL PREPARATION:

4.1. FOLLOWING EXCAVATION FOR THE FOOTING, FOUNDATION SOIL SHALL BE EXAMINED BY THE OWNER'S GEOTECHNICAL ENGINEER TO ASSURE THE ACTUAL FOUNDATION SOIL STRENGTH MEETS OR EXCEEDS THE ASSUMED DESIGN BEARING STRENGTH. SOIL NOT MEETING THE REQUIRED STRENGTH SHALL BE REMOVED AND REPLACED WITH SOIL MEETING THE DESIGN CRITERIA, AS DIRECTED BY THE OWNER'S GEOTECHNICAL ENGINEER

- 4.2. FOUNDATION SOIL IS DEFINED AS THE SOIL UNDER THE FOOTING.
- 4.3. FOUNDATION SOIL IS ASSUMED TO BE AS DESCRIBED IN "DESIGN TYPE" NOTATIONS, THIS SHEET.

#### BACKFILL PLACEMENT:

5.1. DRAINAGE ROCK SHALL BE CONSOLIDATED WITH A MINIMUM OF 2 PASSES OF A VIBRATORY COMPACTOR. FIELD DENSITY TESTING WILL NOT BE REQUIRED FOR DRAINAGE ROCK.

- 5.2. AT THE END OF EACH DAY'S OPERATION, SLOPE THE LAST LEVEL OF BACKFILL AWAY FROM THE INTERIOR
- (CONCEALED) FACE OF THE WALL TO DIRECT SURFACE WATER AWAY FROM THE WALL. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO ENSURE THAT THE FINISHED SITE DRAINAGE IS DIRECTED AWAY FROM ALL RETAINING WALLS.
- IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO ENSURE THAT THE SURFACE WATER RUNOFF FROM ADJACENT CONSTRUCTION AREAS IS NOT ALLOWED TO ENTER THE RETAINING WALL AREA OF THE CONSTRUCTION SITE.

6.1. DRAINAGE COLLECTION PIPES SHALL BE INSTALLED TO MAINTAIN GRAVITY FLOW OF WATER OUTSIDE OF THE DRAINAGE ROCK ZONE. THE DRAINAGE COLLECTION PIPE SHOULD CONNECT INTO A STORM SEWER MANHOLE OR DAYLIGHT THROUGH THE FACE OF THE WALL AS SHOWN IN THE DETAILS.

#### FIELD QUALITY CONTROL

- 7.1. THE OWNER OR OWNER'S REPRESENTATIVE IS RESPONSIBLE FOR ENGAGING THE SERVICES OF AN INDEPENDENT THIRD PARTY INSPECTOR TO OBSERVE AND VERIFY ALL SOIL PROPERTIES AS WELL AS VERIFY CORRECT INSTALLATION OF ALL SYSTEM COMPONENTS TO MEET THE REQUIREMENTS OF THESE GENERAL NOTES AND DRAWINGS.
- 7.2. TESTING METHODS, FREQUENCY AND VERIFICATION OF MATERIAL SPECIFICATIONS SHALL BE THE RESPONSIBILITY OF THE INDEPENDENT THIRD PARTY INSPECTOR.

7 PIPE PENETRATION DETAIL

#### ABBREVIATIONS:

FGE FINISHED GRADE EXTERIOR FGI FINISHED GRADE INTERIOR FL FLOW LINE

FACTOR OF SAFETY

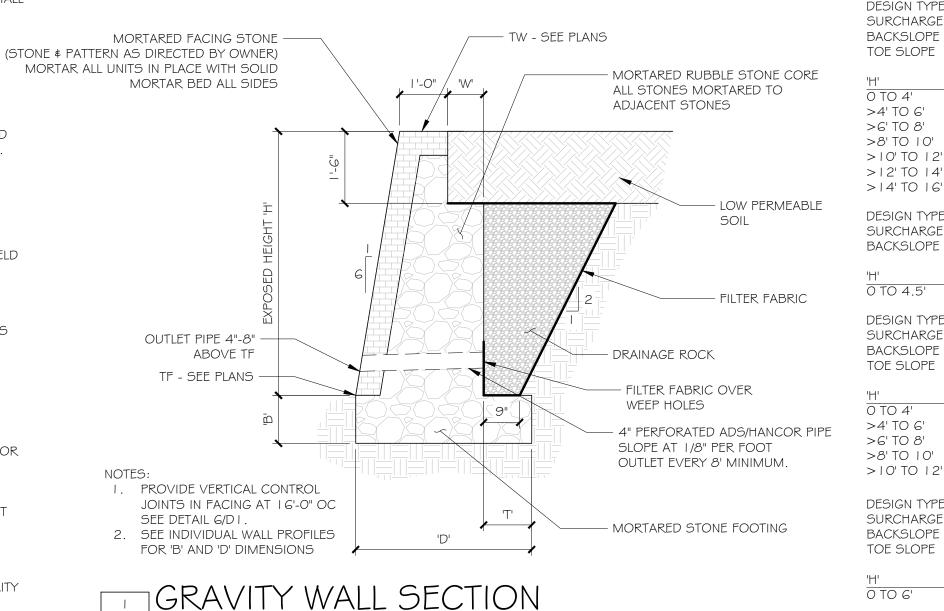
MIN MULMINIM ON CENTER PROPERTY LINE

STA STATION TOP OF FOOTING ELEVATION TOP OF WALL ELEVATION

UNLESS NOTED OTHERWISE

ANALYSIS RESULTS: REQUIRED FS MIN CALCULATED FS CONDITION OVERTURNING 2.12 SLIDING 1.5 1.62

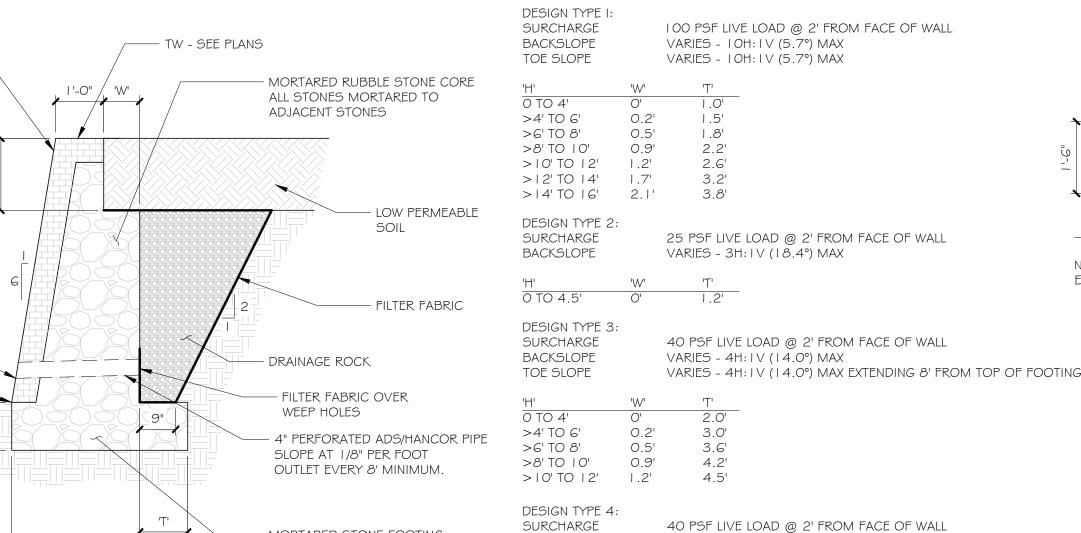
ROSCH ENGINEERING HAS PERFORMED DESIGN CALCULATIONS BASED ON THE DESIGN CRITERIA, ASSUMED SOIL PARAMETERS, AND KNOWN LOADING CONDITIONS AS LISTED IN THESE DRAWINGS. THE OWNERS REPRESENTATIVE, INDEPENDENT THIRD PARTY SPECIAL INSPECTOR AND INSTALLER SHALL NOTIFY ROSCH ENGINEERING OF ANY CHANGES OR DIFFERENCES IN ACTUAL SITE CONDITIONS WHICH VARY FROM THOSE LISTED, PRIOR TO CONSTRUCTING THE WALL.



WELL GRADED GRANULAR

MATERIAL IS ACCEPTABLE

GRID WRAPPED WALL SECTION



RETAINED SOIL

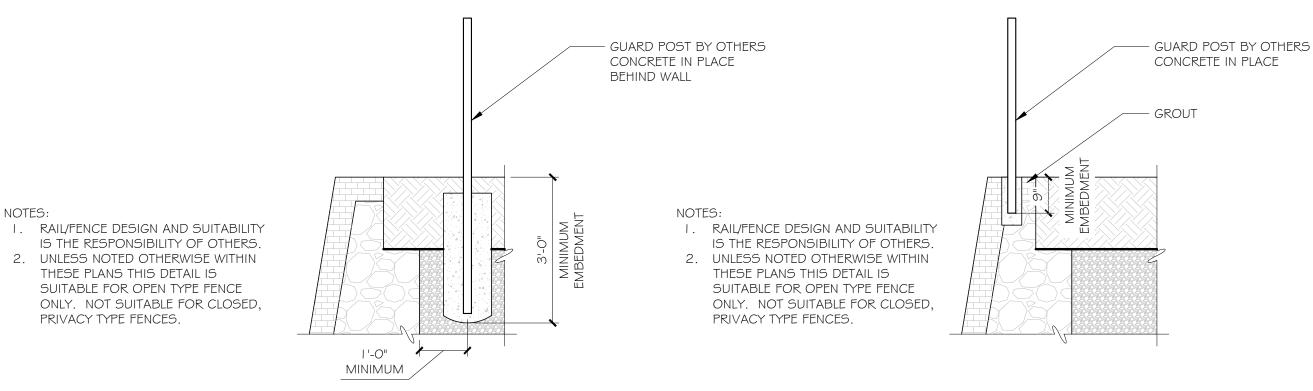
ALL DESIGNS USE THE FOLLOWING SOIL PROPERTIES UNLESS NOTED OTHERWISE:

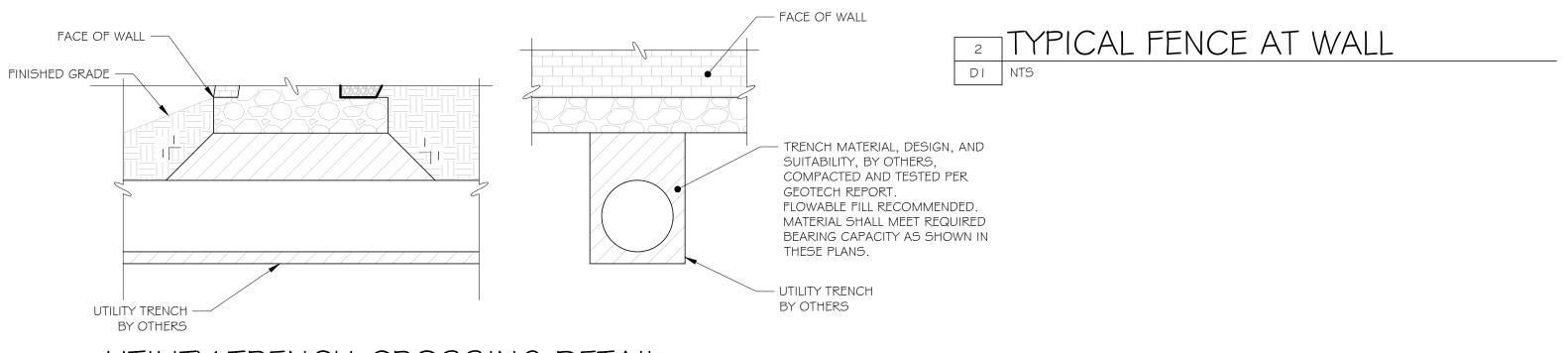
VARIES - 4H: IV (14.0°) MAX

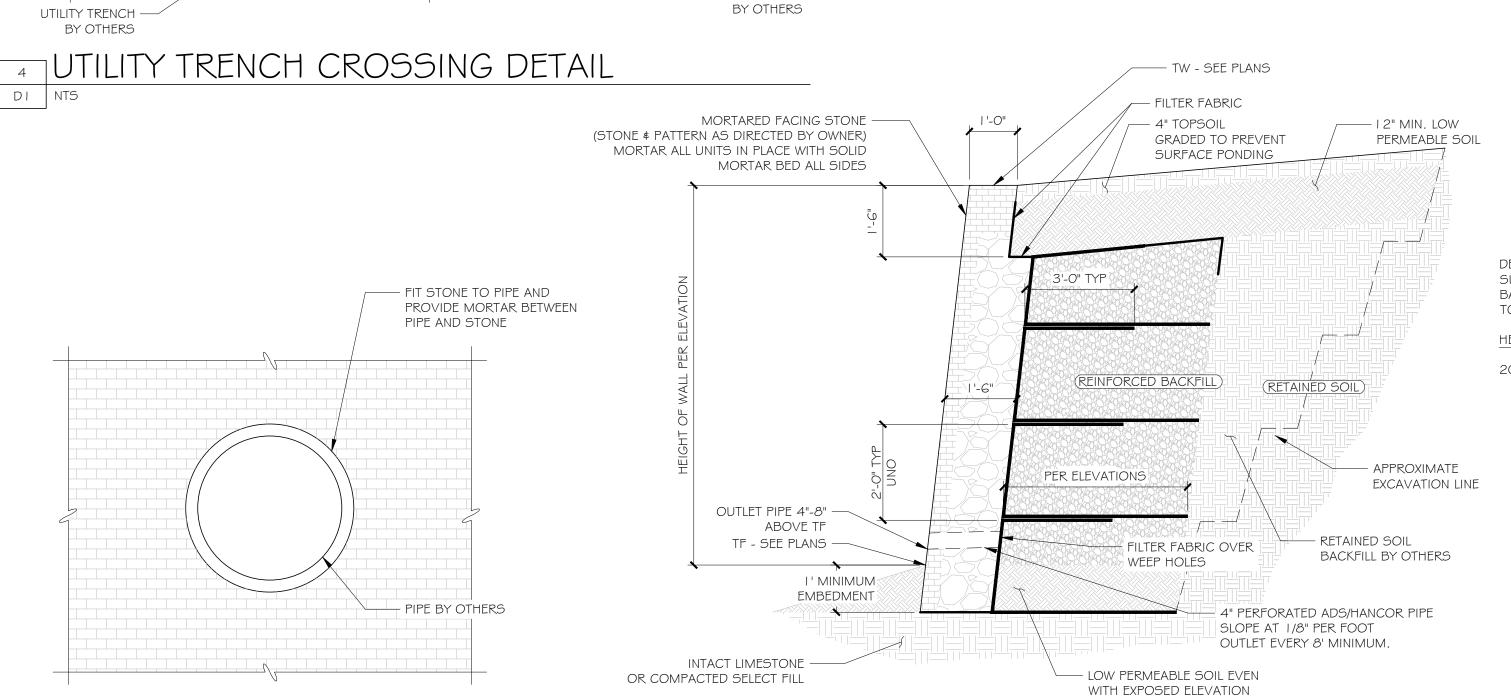
VARIES - 3H: IV (18.4°) MAX EXTENDING 12' FROM TOP OF FOOTING

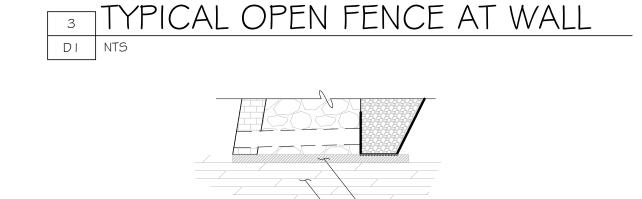
FOUNDATION SOIL CALCAREOUS CLAY TO MARL (28° FRICTION ANGLE 120 PCF UNIT WEIGHT c=0 PSF)

DRAINAGE ROCK (36° FRICTION ANGLE 105 PCF UNIT WEIGHT)









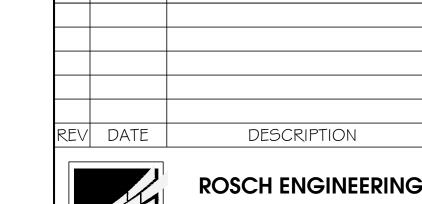
— INTACT LIMESTONE THIS CONDITION APPLIES WHERE INTACT LIMESTONE IS ENCOUNTERED AT THE BOTTOM OF FOOTING. REMOVE ALL LOOSE MATERIAL, THOROUGHLY CLEAN THE SURFACE, THEN PLACE A 2" MORTAR BED

# **5 LIMESTONE FOUNDATION DETAIL**

DESIGN TYPE 5: SURCHARGE 100 PSF LIVE LOAD @ 2' FROM FACE OF WALL BACKSLOPE VARIES - 10H:1V (5.7°) MAX TOE SLOPE VARIES - IOH: IV (5.7°) MAX HEIGHT (FT) GRID LENGTH

18'-0"

ON INTACT LIMESTONE.



NOTE: THIS CONDITION OCCURS WHERE TOP OF WALL

EXTENDS ABOVE FINISHED GRADE.

ALTERNATE TOP OF WALL



- 2" MORTAR BED ON EXISTING LIMESTONE

2300 GREENHILL DRIVE, SUITE 800 **ROUND ROCK, TX 78664** PHONE: 512-828-4167 FAX: 512-233-0540

> ESPERANZA 3H BOERNE, TX

RETAINING WALL

DESIGNED: DRAWN:

STRUCTURAL DESIGN HEREIN REPRESENTS A FINISHED STRUCTURI HE GENERAL CONTRACTOR/OWNER SHALL PROVIDE ALL INTERIM BRACING, SHORING, INTERIM DRAINAGE PROVISIONS, DRAINAGE DIVERSION AND EROSION PROTECTION REQUIRED UNTIL FINAL CAPPING, PAVING, CURBING AND COMPLETION OF FINAL STORM DRAIN SYSTEM IS COMPLETE.

NOTES & DETAILS ÆRIAN C:SCHÆÆE USTAGOV CENSED CHIEF

DESIGN ENGINEER: LF 10-14-25 JOB NO.: 25-08 l