

MSE STRUCTURE SHOP DRAWINGS PREPARED FOR

PROPOSED RIVERSIDE APARTMENTS

CROTON ON HUDSON, NEW YORK

MSE WALL SYSTEM:
TENSAR MESA® RETAINING WALL SYSTEM



SOIL REINFORCEMENT TYPE:
TENSAR UNIAXIAL STRUCTURAL GEOGRID

FACING TYPE:
MESA® SEGMENTAL BLOCK

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Drawings prepared under the direct supervision of:

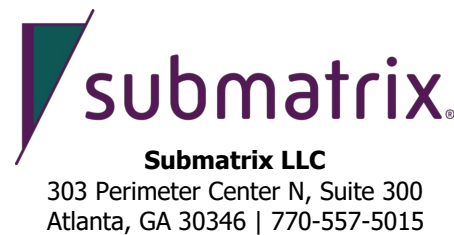
ROBERT C. JOHNSON, JR., P.E. NO. 101643
SUBMATRIX LLC
303 PERIMETER CENTER N, SUITE 300
ATLANTA, GA 30346



4/15/2025

SEAL APPLIES TO ALL SHEETS WITHIN INDEX

File Name: 141140001_COVER PAGE.DWG
Plot Date: April 15, 2025 By: ROBERT JOHNSON



PROJECT NO.: 141140001

| NO. | DATE | REVISION | BY |
|-----|----------|--|----|
| 1 | 10/14/24 | WALL GEOMETRIES REVISED PER COMMENTS RECEIVED ON 10/11/2024. | RJ |
| 2 | 4/15/25 | WALLS 1 & 2: ALIGNMENT AND DESIGN CHANGES WALLS 5 & 6: ADDED PER SITE CHANGES | RJ |

CUSTOMER: CROTON RIVERSIDE LLC
MANUFACTURER: PALUMBO BLOCK CO, INC.
THIS DRAWING IS BEING FURNISHED FOR USE ON THIS SPECIFIC PROJECT ONLY. ANY PARTY ACCEPTING THIS DOCUMENT DOES SO IN CONFIDENCE AND AGREES THAT IT SHALL NOT BE DUPLICATED, MODIFIED, OR DISCLOSED TO OTHERS WITHOUT WRITTEN CONSENT OF SUBMATRIX LLC.

PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS
COVER PAGE

SHEET
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1. PROJECT DESCRIPTION

- 1.1. PROJECT NAME: PROPOSED RIVERSIDE APARTMENTS.
- 1.2. THE PROJECT CONSISTS OF FOUR MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TWO ANCHORED MSE WALLS USING THE TENSAR MESA® RETAINING WALL SYSTEM. THE RETAINING WALL SYSTEM CONSISTS OF SEGMENTAL CONCRETE BLOCKS, HAVING DIMENSIONS OF 8”(H)x18”(L)x11”(W), TENSAR STANDARD CONNECTORS, 8 OZ. NONWOVEN AASHTO M288 CLASS 1 GEOTEXTILE, AND TENSAR UNIAXIAL STRUCTURAL GEOGRID REINFORCEMENT.
- 1.3. SUBMATRIX LLC (“SUBMATRIX”) HAS PREPARED THE DESIGN SUBMITTAL FOR CROTON RIVERSIDE LLC (CLIENT) UNDER CONTRACT.

2. DESIGN CRITERIA

- 2.1. DESIGN REFERENCES (LISTED IN ORDER OF PRECEDENCE):
 - 2.1.1. “DESIGN MANUAL FOR SEGMENTAL RETAINING WALLS”, NATIONAL CONCRETE MASONRY ASSOCIATION, 3RD EDITION.
 - 2.1.2. “MECHANICALLY STABILIZED EARTH WALLS AND REINFORCED SOIL SLOPES, DESIGN & CONSTRUCTION GUIDELINES”, U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION, FHWA-NHI-00-043.
- 2.2. SOIL PROPERTIES (WALLS 2 & 4)
 - 2.2.1. THE SOIL PROPERTIES LISTED BELOW HAVE BEEN ASSUMED AND SHALL BE REVIEWED BY THE GEOTECHNICAL ENGINEER FOR APPROPRIATENESS. THE MOIST UNIT WEIGHT ARE MAXIMUM VALUES AND SHALL BE NO LESS THAN 5% FROM THE LISTED VALUES. THE EFFECTIVE FRICTION ANGLE AND COHESION ARE MINIMUM VALUES.

WALLS 1 & 3 (NO. 57 STONE):

| SOIL ZONE | MOIST UNIT WEIGHT (PCF) | EFFECTIVE FRICTION ANGLE (DEGREES) | EFFECTIVE COHESION (PSF) |
|------------|-------------------------|------------------------------------|--------------------------|
| REINFORCED | 110 | 34 | 0 |

WALLS 2, 4, 5, AND 6:

| SOIL ZONE | MOIST UNIT WEIGHT (PCF) | EFFECTIVE FRICTION ANGLE (DEGREES) | EFFECTIVE COHESION (PSF) |
|------------|-------------------------|------------------------------------|--------------------------|
| REINFORCED | 125 | 34 | 0 |
| RETAINED | 125 | 34 | 0 |
| FOUNDATION | 125 | 38 | 0 |

2.3. GEOGRID REINFORCEMENT:

| GEOGRID TYPE | T _{ULT} (LB/FT) | RF _{CR} | RF _{ID} | RF _D | T _{AL} (LB/FT) |
|--------------|--------------------------|------------------|------------------|-----------------|-------------------------|
| TPG45D | 3600 | 1.51 | 1.10 | 1.15 | 1885 |
| TPG60D | 5000 | 1.51 | 1.63 | 1.15 | 1766 |

- T_{ULT}: ULTIMATE TENSILE STRENGTH
- RF_{CR}: CREEP REDUCTION FACTOR
- RF_{ID}: INSTALLATION DAMAGE REDUCTION FACTOR (VARIES BASED ON BACKFILL AND GEOGRID TYPES)
- RF_D: DURABILITY REDUCTION FACTOR
- T_{AL}: LONG-TERM ALLOWABLE DESIGN TENSILE STRENGTH
- 2.3.1. SOIL-GEOGRID INTERACTION COEFFICIENT (PULLOUT) C_i = 0.80
- 2.3.2. SOIL-GEOGRID INTERACTION COEFFICIENT (SLIDING) C_ds = 0.80
- 2.3.3. GEOGRID COVERAGE RATIO, R_c = 0.857 (WALLS 1 & 3), = 1.0 (WALLS 2, 4, 5, AND 6)
- 2.3.4. DESIGN LIFE = 75 YEARS

2.4. LOADING CONDITIONS (WALLS 2 & 4)

- 2.4.1. MAINTENANCE LIVE LOAD SURCHARGE = 100 PSF

2.5. HYDROSTATIC PARAMETERS

- 2.5.1. THE MSE STRUCTURES WERE DESIGNED ASSUMING NO HYDROSTATIC FORCES WITHIN THE REINFORCED/RETAINED SOIL ZONES. THE GEOTECHNICAL REPORT, REFERENCED IN NOTE 6.2.2 INDICATES A SHALLOW GROUNDWATER TABLE. ADDITIONAL SOIL EXPLORATIONS ARE RECOMMENDED WITHIN THE VICINITY OF THE RETAINING WALL TO CONFIRM THE ELEVATION OF THE GROUNDWATER TABLE AND VALIDATE THE SHEAR STRENGTH PROPERTIES FOR THE RETAINED AND FOUNDATION ZONES.

2.6. BEARING CAPACITY

- 2.6.1. THE MAXIMUM UNFACTORED APPLIED BEARING PRESSURE BENEATH THE WALL BASE IS 2,400 PSF AND 3,000 FOR WALLS 2 & 4, RESPECTIVELY. THE PROJECT GEOTECHNICAL ENGINEER IS RESPONSIBLE FOR VERIFYING THAT THE FOUNDATION SOILS CAN SAFELY SUPPORT THE MSE STRUCTURES.

2.7. SETTLEMENT

- 2.7.1. TOTAL AND DIFFERENTIAL SETTLEMENT SHALL BE DETERMINED BY THE PROJECT ENGINEER. THE MSE STRUCTURE CAN ACCOMMODATE DIFFERENTIAL SETTLEMENT OF UP TO 1/200 (UNITLESS) ALONG THE WALL FACE.

3. WALL MATERIALS

3.1. BACKFILL

- 3.1.1. BACKFILL PLACED IN THE REINFORCED AND RETAINED SOIL ZONES SHALL BE FREE OF EXCESS MOISTURE, ROOTS, MUCK, SOD, SNOW, FROZEN LUMPS, ORGANIC MATERIAL, OR OTHER DELETERIOUS MATERIAL. ALL ROCK PARTICLES AND HARD-EARTH CLODS SHALL BE LESS THAN 4 INCHES IN THE LONGEST DIMENSION. BACKFILL WHICH DOES NOT MEET THESE REQUIREMENTS SHALL BE CONSIDERED UNSUITABLE AND SHALL BE REMOVED.
- 3.1.2. REINFORCED BACKFILL FOR WALLS 1 & 3 SHALL BE NO. 57 STONE. REINFORCED BACKFILL FOR WALLS 2 & 4 SHALL BE ON-SITE OR IMPORTED SOILS THAT MEET THE SHEAR STRENGTH PROPERTIES LISTED IN 2.2.1 AND THE GRADATION LIMITS BELOW. THE PORTION PASSING THE NO. 40 SIEVE SHALL HAVE A LIQUID LIMIT LESS THAN 20 AND PLASTICITY INDEX LESS THAN 6. REINFORCED BACKFILL SHALL BE CLASSIFIED PER THE UNIFIED SOIL CLASSIFICATION SYSTEM AS NON-PLASTIC SOIL.

| SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 2" | 100 |
| No. 40 | 0-60 |
| No. 200 | 0-15 |

- 3.1.3. RETAINED BACKFILL SHALL HAVE A PLASTICITY INDEX LESS THAN 20 AND SHALL NOT CONTAIN SHALE, MICA, GYPSUM, SMECTITE, MONTMORILLONITE, OR OTHER SOFT PARTICLES OF POOR DURABILITY. THE SHEAR STRENGTH PROPERTIES LISTED IN 2.2.1 SHALL BE MET AND VERIFIED BY THE PROJECT ENGINEER.

- 3.1.4. CRUSHED STONE FILL INSTALLED WITHIN AND BEHIND THE FACING UNITS SHALL HAVE THE FOLLOWING GRADATION:

| SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 2" | 100 |
| 1" | 90-100 |
| 1/2" | 0-60 |
| No. 4 | 0-10 |
| No. 8 | 0-5 |
| No. 200 | 0-2 |

3.2. GEOGRID REINFORCEMENT & CONNECTORS

- 3.2.1. TENSAR UNIAXIAL STRUCTURAL GEOGRID REINFORCEMENT AND STANDARD CONNECTORS SHALL BE MANUFACTURED BY TENSAR INTERNATIONAL CORPORATION, MORROW, GEORGIA, USA.

3.3. GEOTEXTILE

- 3.3.1. GEOTEXTILE USED TO SEPARATE SEGMENTAL BLOCKS AND REINFORCED BACKFILL SHALL BE 8 OZ. NONWOVEN AASHTO M288 CLASS 1.

3.4. FACING MATERIAL

- 3.4.1. MESA® SEGMENTAL BLOCK UNITS SHALL BE PRODUCED BY PALUMBO BLOCK CO., INC. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI, CONFORM TO ASTM C1372, AND MAXIMUM ABSORPTION OF 6% BY WEIGHT.

4. INSTALLATION REQUIREMENTS

- 4.1. ALL REQUIREMENTS DEFINED IN SECTIONS 2 AND 3 SHALL BE VERIFIED BY THE PROJECT ENGINEER PRIOR TO INSTALLATION.
- 4.2. A COMPLETE SET OF APPROVED SHOP DRAWINGS SHALL BE ON-SITE AT ALL TIMES DURING ERECTION OF THE MSE STRUCTURE.
- 4.3. INSTALLATION OF THE MSE STRUCTURE SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION AND QUALITY CONTROL MANUAL PROVIDED BY TENSAR OR ITS REPRESENTATIVE.
- 4.4. FOUNDATION PREPARATION
 - 4.4.1. PRIOR TO THE CONSTRUCTION OF THE MSE STRUCTURE, THE FOUNDATION SHALL BE CLEARED AND GRUBBED FOR THE EXTENTS OF THE REINFORCED SOIL ZONE. ANY UNSUITABLE SOILS (HIGHLY-PLASTIC SOILS, UNDOCUMENTED FILL, ORGANICS, ETC.) SHALL BE OVER-EXCAVATED AND REPLACED WITH COMPACTED BACKFILL MATERIAL WITH PROPERTIES MATCHING (OR EXCEEDING THE SHEAR STRENGTH REQUIREMENTS OF) THOSE LISTED IN 2.2.1. THE PROJECT GEOTECHNICAL ENGINEER SHALL CONFIRM THAT THE FOUNDATION HAS BEEN PREPARED PROPERLY.
- 4.5. MSE FACING
 - 4.5.1. THE CONTRACTOR IS RESPONSIBLE TO SURVEY AND LAYOUT THE MSE STRUCTURE FACING AS SHOWN HEREIN, AND IN ACCORDANCE WITH THE CONTRACT PLANS. STATIONS AND OFFSETS ARE PROVIDED TO THE TOPMOST FACING UNIT COURSE. SUBSEQUENT COURSE LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR USING AN OFFSET OF 1/16" PER COURSE FOR AN OVERALL BATTER OF 0.45°.
 - 4.5.2. PLACE THE MESA UNIT WITH THE SIDES TOUCHING AND THE TEXTURED FACE OUTWARD. THE FIRST COURSE MUST BE ACCURATELY PLACED, CAREFULLY SPACED, AND LEVELED TO FACILITATE CONSTRUCTION. STACK MESA UNITS IN A RUNNING BOND (VERTICAL JOINTS OFFSET ONE-HALF BLOCK EVERY BLOCK COURSE) CONFIGURATION. INSTALL MESA STANDARD CONNECTORS IN EVERY BLOCK TO ENGAGE ALL TEETH (LOWER PORTION OF CONNECTOR) IN LOWER BLOCK, AND ORIENTING FLAGS (UPPER PORTION OF CONNECTOR) FOR WALL BATTER STATED HEREIN. GRINDING AND/OR SHIMMING OF MESA BLOCKS MAY BE NECESSARY TO MAINTAIN FRONT-TO-BACK LEVEL. THE CONTRACTOR IS RESPONSIBLE TO CHECK HORIZONTAL AND VERTICAL ALIGNMENT EVERY 50 FEET AND 4 FEET, RESPECTIVELY, TO MAINTAIN PROPER WALL CONFIGURATION.

- 4.5.3. MESA CAPS SHALL BE PERMANENTLY SECURED TO THE MESA UNITS USING A CONSTRUCTION ADHESIVE APPROVED BY THE BLOCK MANUFACTURER.

4.6. GEOGRID INSTALLATION

- 4.6.1. GEOGRIDS SHALL BE INSTALLED AT THE LENGTHS AND LOCATIONS SHOWN HEREIN. CHANGES TO THE GEOGRID LAYOUT ARE NOT PERMISSIBLE WITHOUT THE WRITTEN CONSENT OF SUBMATRIX.
- 4.6.2. GEOGRID REINFORCEMENT SHALL BE CONTINUOUS THROUGHOUT THEIR EMBEDMENT LENGTH. NO CONNECTIONS (MECHANICAL OR FRICTIONAL) OR SPLICES ARE PERMITTED, EXCEPT AS DETAILED HEREIN FOR WALLS 1 & 3.
- 4.6.3. PRIOR TO PLACING BACKFILL, THE GEOGRID REINFORCEMENT SHALL BE PLACED OVER THE SLOT (IN THE TOP OF THE MESA BLOCK). THE CONNECTOR TEETH SHALL BE DRIVEN THROUGH THE GEOGRID APERTURES DIRECTLY BEHIND THE FIRST TRANSVERSE GEOGRID BAR INTO THE BLOCK SLOT. REFER TO SECTION 5.4.2 FOR PROPER STANDARD CONNECTOR INSTALLATION. MESA STANDARD CONNECTORS SHALL BE USED IN BLOCK COURSES THAT REQUIRE GEOGRID REINFORCEMENT. THE GEOGRID SHALL BE TENSIONED BY HAND TO ELIMINATE SLACK AND ANCHORED BY PINNING OR PLACING SOIL ON THE GEOGRID AT THE BACK OF THE REINFORCED ZONE.
- 4.6.4. TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON GEOGRID REINFORCEMENT. A MINIMUM BACKFILL THICKNESS OF 6" IS REQUIRED FOR OPERATION OF TRACKED EQUIPMENT OVER THE GEOGRID REINFORCEMENT. TURNING SHOULD BE KEPT TO A MINIMUM TO PREVENT DISPLACEMENT OF BACKFILL AND GEOGRID REINFORCEMENT. RUBBER-TIRED EQUIPMENT MAY PASS OVER THE GEOGRID REINFORCEMENT AT SPEEDS LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.
- 4.6.5. A MINIMUM OF 3" SOIL COVER SHALL BE PLACED BETWEEN OVERLAPPING GEOGRID REINFORCEMENT.

4.7. REINFORCED BACKFILL PLACEMENT

- 4.7.1. BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 10" OR 6" IN UNCOMPACTED THICKNESS FOR HEAVY OR LIGHTWEIGHT COMPACTION EQUIPMENT, RESPECTIVELY. ONLY LIGHTWEIGHT EQUIPMENT IS PERMITTED WITHIN A 3' ZONE MEASURED FROM THE BACK OF WALL FACING.
- 4.7.2. BACKFILL SHALL BE PLACED PERPENDICULAR TO THE GEOGRID REINFORCEMENT AND SPREAD FROM THE BACK OF THE WALL FACING TOWARDS THE TERMINAL ENDS OF THE GEOGRID REINFORCEMENT TO PROMOTE FURTHER TENSIONING.
- 4.7.3. BACKFILL SHALL BE PLACED AT A MOISTURE CONTENT NO GREATER THAN 2% WET AND NO LESS THAN 2% DRY OF OPTIMUM MOISTURE CONTENT AND COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DRY DENSITY OR AS SPECIFIED BY THE PROJECT SPECIFICATIONS.
- 4.7.4. AT THE END OF EACH WORKDAY, THE BACKFILL SURFACE SHALL BE GRADED AWAY FROM THE WALL FACING AND COMPACTED SMOOTH TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL. A TEMPORARY SOIL BERM SHALL BE CONSTRUCTED NEAR THE CREST OF THE MSE STRUCTURE TO PREVENT SURFACE WATER RUNOFF FROM OVERTOPPING THE MSE STRUCTURE. PLASTIC SHEETING MAY ALSO BE USED TO PROTECT THE BACKFILL SURFACE.

5. SPECIAL PROVISIONS

- 5.1. THE DESIGN PRESENTED HEREIN IS BASED ON SOIL PROPERTIES, FOUNDATION CONDITIONS, GROUNDWATER CONDITIONS, AND LOADINGS STATED IN SECTION 2.
- 5.2. WALL LAYOUTS SHALL BE REVIEWED AND APPROVED PRIOR TO CONSTRUCTION.
- 5.3. SUBMATRIX ASSUMES NO LIABILITY FOR INFORMATION SUPPLIED BY OTHERS, SUCH AS SITE PLAN, GRADING, GEOTECHNICAL DATA, OR GROUNDWATER DATA.
- 5.4. IF ANY PROBLEMATIC ROCK FORMATIONS AND/OR GROUNDWATER ARE ENCOUNTERED DURING THE CONSTRUCTION OF THE MSE STRUCTURES, CONTACT SUBMATRIX IMMEDIATELY AT 770-557-5015 AND THE OWNER'S REPRESENTATIVE.
- 5.5. ANY REVISIONS TO THE DESIGN CRITERIA WILL REQUIRE DESIGN MODIFICATIONS PRIOR TO CONSTRUCTION.
- 5.6. ALL NEWLY PLACED PIPES AND UTILITIES WITHIN 100' OF THE MSE STRUCTURE SHALL BE CONSTRUCTED WITH WATERTIGHT JOINTS.
- 5.7. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING QUALITY ASSURING AND QUALITY CONTROL PROGRAMS THAT ENSURE THE CONSTRUCTION OF THE MSE STRUCTURE HAS BEEN PERFORMED IN ACCORDANCE WITH THESE DRAWINGS. SUBMATRIX IS NOT RESPONSIBLE FOR CERTIFYING THAT CONSTRUCTION HAS BEEN PERFORMED IN COMPLIANCE WITH THESE DRAWINGS.
- 5.8. SUBMATRIX IS NOT RESPONSIBLE FOR HAVING PERSONNEL ON-SITE UNLESS SPECIFICALLY PROVIDED IN A WRITTEN CONTRACT SIGNED BY SUBMATRIX. ANY SUBMATRIX PERSONNEL ON-SITE DOES NOT HAVE THE AUTHORITY TO STOP OR START CONSTRUCTION OF THE MSE STRUCTURE OR ANY OTHER WORK.

6. REFERENCES

- 6.1. THE DESIGN CALCULATIONS PREPARED BY SUBMATRIX ARE SUBMITTED UNDER A SEPARATE COVER AND ARE DATED APRIL 15, 2025.
- 6.2. THE FOLLOWING DOCUMENTS WERE USED TO PREPARE THE SHOP DRAWINGS AND CALCULATIONS:
 - 6.2.1. "LIMITED SUPPORT OF EXCAVATION & PROPOSED RETAINING WALL PLANS" FOR PROJECT "PROPOSED RIVERSIDE APARTMENTS", PREPARED BY JZN ENGINEERING PC, DATED SEPTEMBER 16, 2022.
 - 6.2.2. "SOE CALCULATION PACKAGE" FOR PROJECT "PROPOSED RIVERSIDE APARTMENTS", PREPARED BY JZN ENGINEERING PC, DATED NOVEMBER 22, 2022.
 - 6.2.3. ELECTRONIC CAD FILE "2022_0916_SOE&RETAININGWALL_CLIENT.DWG", PROVIDED BY CROTON RIVERSIDE LLC ON SEPTEMBER 12, 2024.

File Name: 141140001_DESIGN AND CONSTRUCTION REQUIREMENTS.DWG
Plot Date: April 15, 2025 By: ROBERT JOHNSON



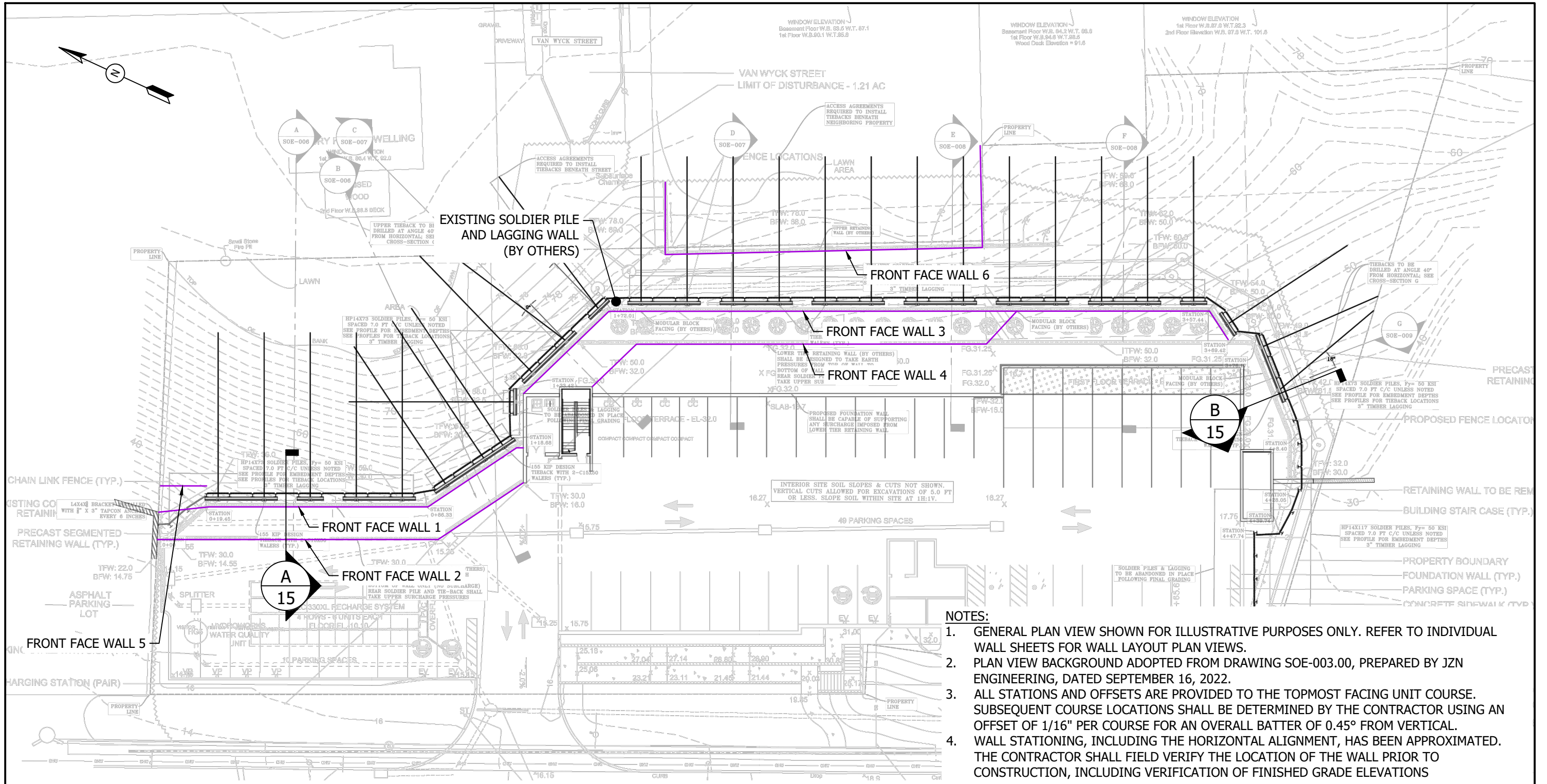
PROJECT NO.: 141140001

| NO. | DATE | REVISION | BY |
|-----|---------|--|----|
| 2 | 4/15/25 | WALLS ADDED, DESIGN CALCULATIONS UPDATED | RJ |

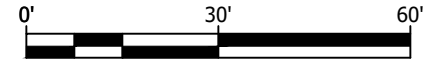
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PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS
DESIGN AND CONSTRUCTION REQUIREMENTS

SHEET
2
OF
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- NOTES:**
1. GENERAL PLAN VIEW SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. REFER TO INDIVIDUAL WALL SHEETS FOR WALL LAYOUT PLAN VIEWS.
 2. PLAN VIEW BACKGROUND ADOPTED FROM DRAWING SOE-003.00, PREPARED BY JZN ENGINEERING, DATED SEPTEMBER 16, 2022.
 3. ALL STATIONS AND OFFSETS ARE PROVIDED TO THE TOPMOST FACING UNIT COURSE. SUBSEQUENT COURSE LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR USING AN OFFSET OF 1/16" PER COURSE FOR AN OVERALL BATTER OF 0.45° FROM VERTICAL.
 4. WALL STATIONING, INCLUDING THE HORIZONTAL ALIGNMENT, HAS BEEN APPROXIMATED. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE WALL PRIOR TO CONSTRUCTION, INCLUDING VERIFICATION OF FINISHED GRADE ELEVATIONS



▲ ENTIRE SHEET REVISED
▲ ENTIRE SHEET REVISED

File Name: 141140001_GENERAL PLAN VIEW.DWG
Plot Date: April 15, 2025 By: ROBERT JOHNSON

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303 Perimeter Center N, Suite 300
Atlanta, GA 30346 | 770-557-5015

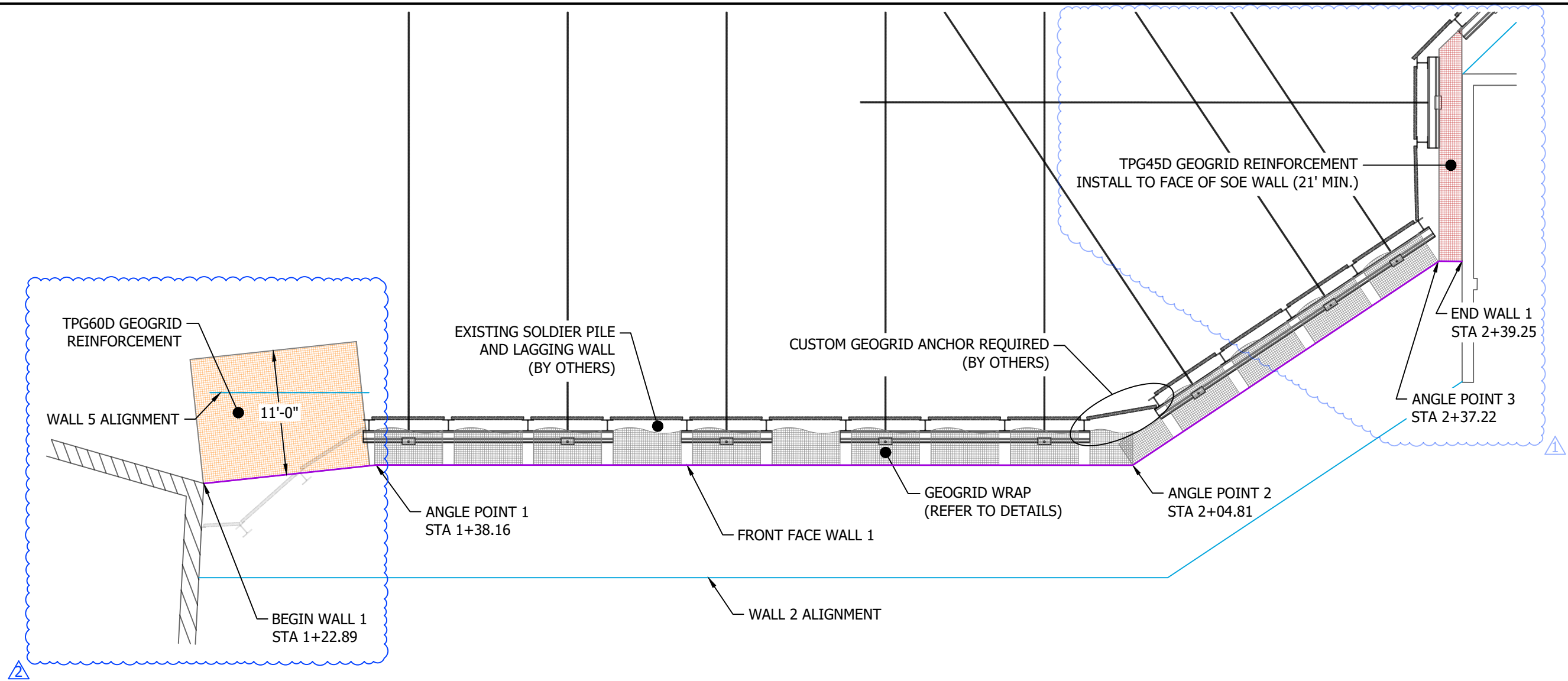
| NO. | DATE | REVISION | BY |
|-----|----------|--|----|
| 1 | 10/14/24 | WALLS 1 AND 4 ALIGNMENT MODIFIED | RJ |
| 2 | 4/15/25 | WALLS 1 & 2 ALIGNMENT MODIFIED, WALLS 5 & 6 ADDED | RJ |

CUSTOMER: CROTON RIVERSIDE LLC
MANUFACTURER: PALUMBO BLOCK CO, INC.

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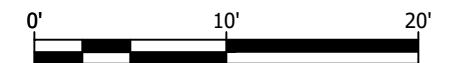
PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS
GENERAL PLAN VIEW

SHEET
3
OF
19



NOTES:

1. WALL STATIONING AND ELEVATIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
2. CONSTRUCT WALLS 1 AND 2 CONCURRENTLY AT STA 1+23.22.
3. REFER TO TRANSITION AT STRUCTURE DETAIL AT THE END OF WALL 1.



File Name: 141140001_WALL 1.DWG
Plot Date: April 15, 2025 By: ROBERT JOHNSON

submatrix
Submatrix LLC
303 Perimeter Center N, Suite 300
Atlanta, GA 30346 | 770-557-5015

PROJECT NO.: 141140001

| NO. | DATE | REVISION | BY |
|-----|----------|-------------------------------------|----|
| 1 | 10/14/24 | END OF WALL 1 MODIFIED | RJ |
| 2 | 4/15/25 | REVISED WALL 1 ALIGNMENT AND DESIGN | RJ |
| | | | |
| | | | |

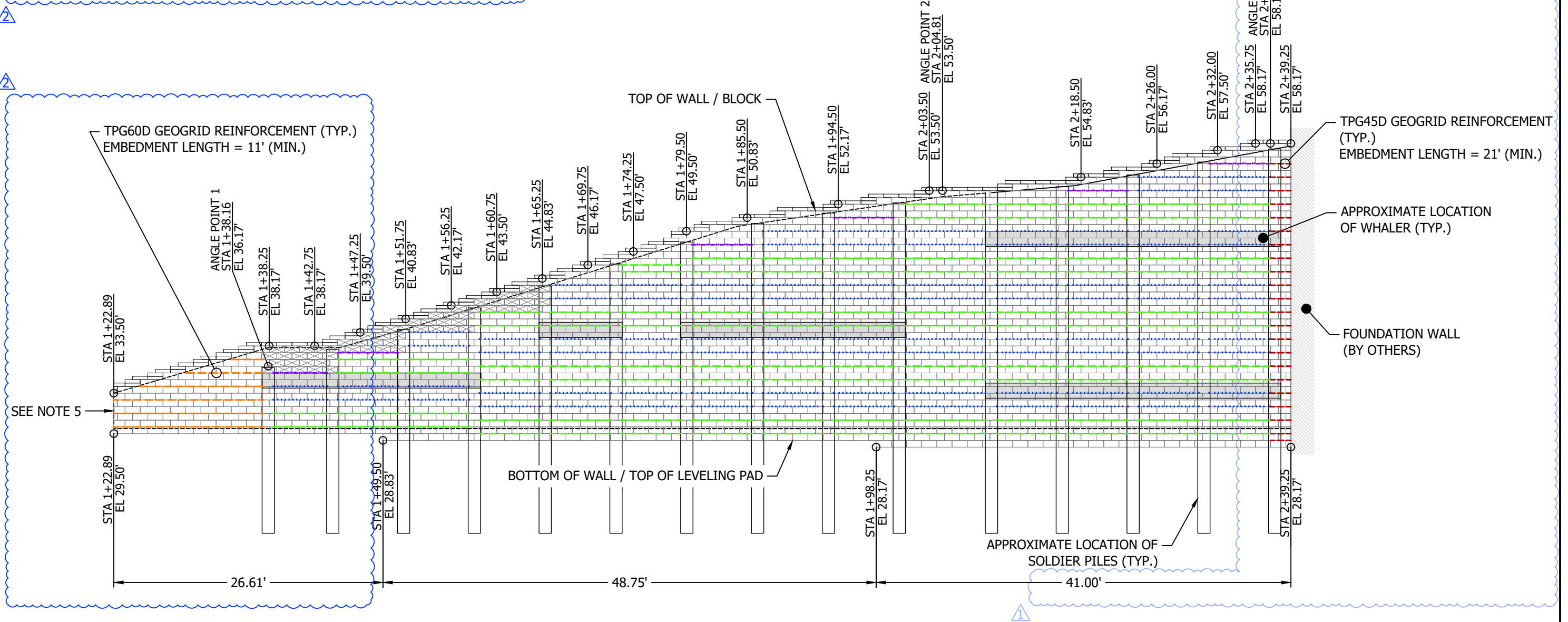
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PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS
WALL 1 PLAN VIEW

SHEET
4
OF
19

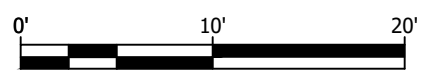
NOTES:

1. WALL STATIONING AND ELEVATIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
2. REFER TO TRANSITION AT STRUCTURE DETAIL AT THE END OF WALL 1.
3. FOR GROUTED MESA UNITS, REFER TO DETAIL ON SHEET 17.
4. INSTALL GEOGRID ANCHORS AT THE LOCATION RELATIVE TO THE GEOGRID WRAP LOCATIONS AS SHOWN ON SHEET 18.
5. EXTEND WALL TO EXISTING GRADE OR PLACE FILL TO PROTECT WALL BACKFILL.



LEGEND

| | | | |
|-------|--------------------|-------|-------------------------------|
| ----- | FINISHED GRADE | ----- | TPG45D GEOGRID REINFORCEMENT |
| ▭ | MESA CAP UNIT | ----- | TPG60D GEOGRID REINFORCEMENT |
| ▭ | MESA STANDARD UNIT | ----- | TPG60D GEOGRID WRAP (GROUP A) |
| ⊗ | GROUTED UNIT | ----- | TPG60D GEOGRID WRAP (GROUP B) |
| | | ----- | TPG60D GEOGRID WRAP (SINGLE) |



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| NO. | DATE | REVISION | BY |
|-----|----------|-------------------------------------|----|
| 1 | 10/14/24 | END OF WALL 1 MODIFIED | RJ |
| 2 | 4/15/25 | REVISED WALL 1 ALIGNMENT AND DESIGN | RJ |

CUSTOMER: CROTON RIVERSIDE LLC
MANUFACTURER: PALUMBO BLOCK CO, INC.

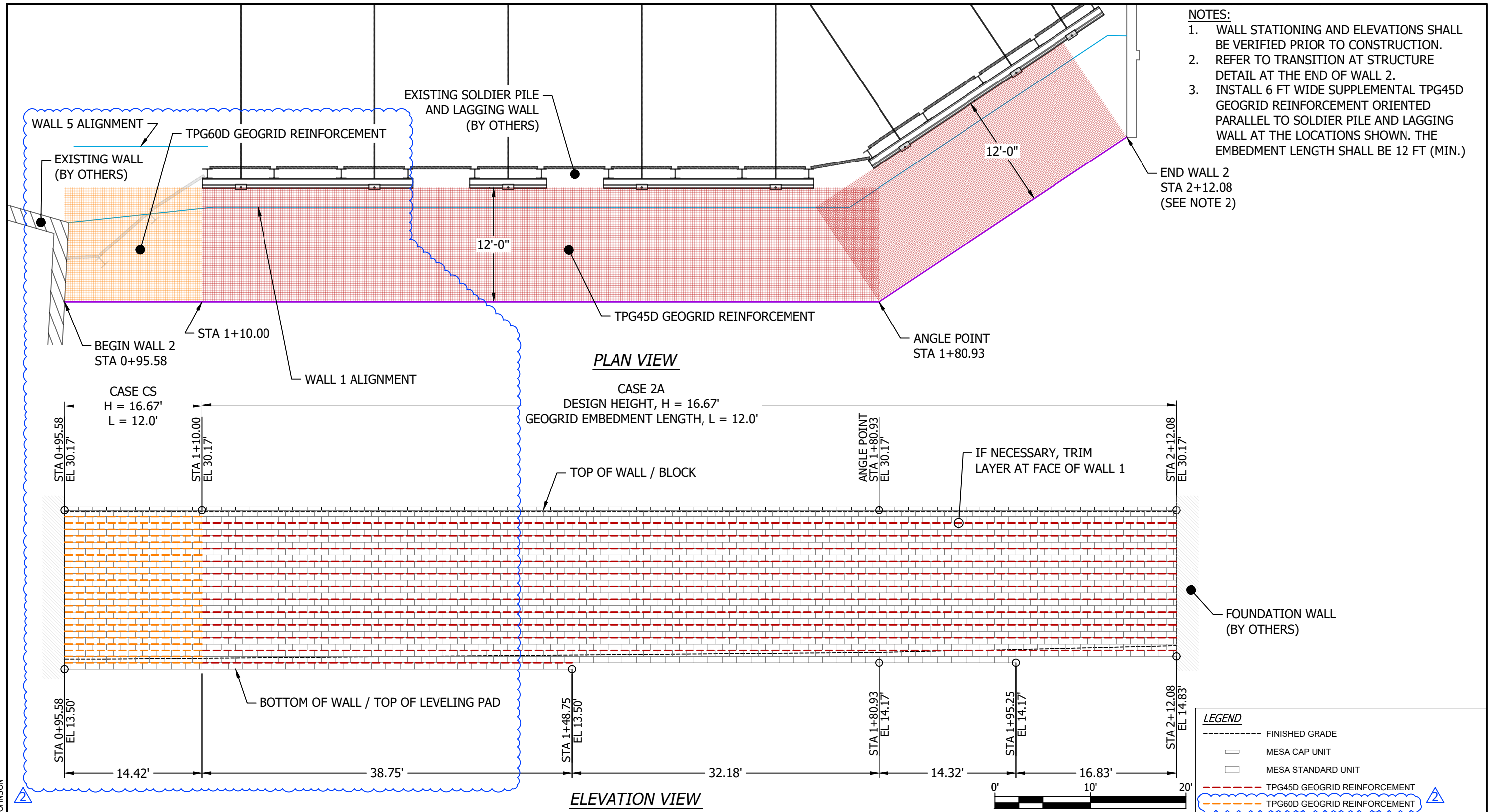
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PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS

WALL 1 ELEVATION VIEW

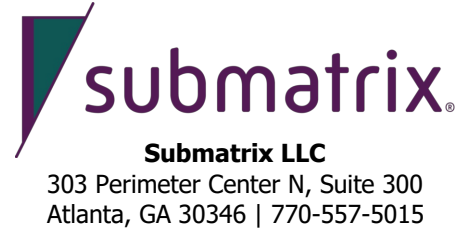
SHEET
5
OF
19

PROJECT NO.: 141140001



- NOTES:**
1. WALL STATIONING AND ELEVATIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
 2. REFER TO TRANSITION AT STRUCTURE DETAIL AT THE END OF WALL 2.
 3. INSTALL 6 FT WIDE SUPPLEMENTAL TPG45D GEOGRID REINFORCEMENT ORIENTED PARALLEL TO SOLDIER PILE AND LAGGING WALL AT THE LOCATIONS SHOWN. THE EMBEDMENT LENGTH SHALL BE 12 FT (MIN.)
- END WALL 2
STA 2+12.08
(SEE NOTE 2)

File Name: 141140001_WALL 2.DWG
Plot Date: April 15, 2025 By: ROBERT JOHNSON



| NO. | DATE | REVISION | BY |
|-----|---------|----------------------|----|
| 2 | 4/15/25 | REVISED PER COMMENTS | RJ |

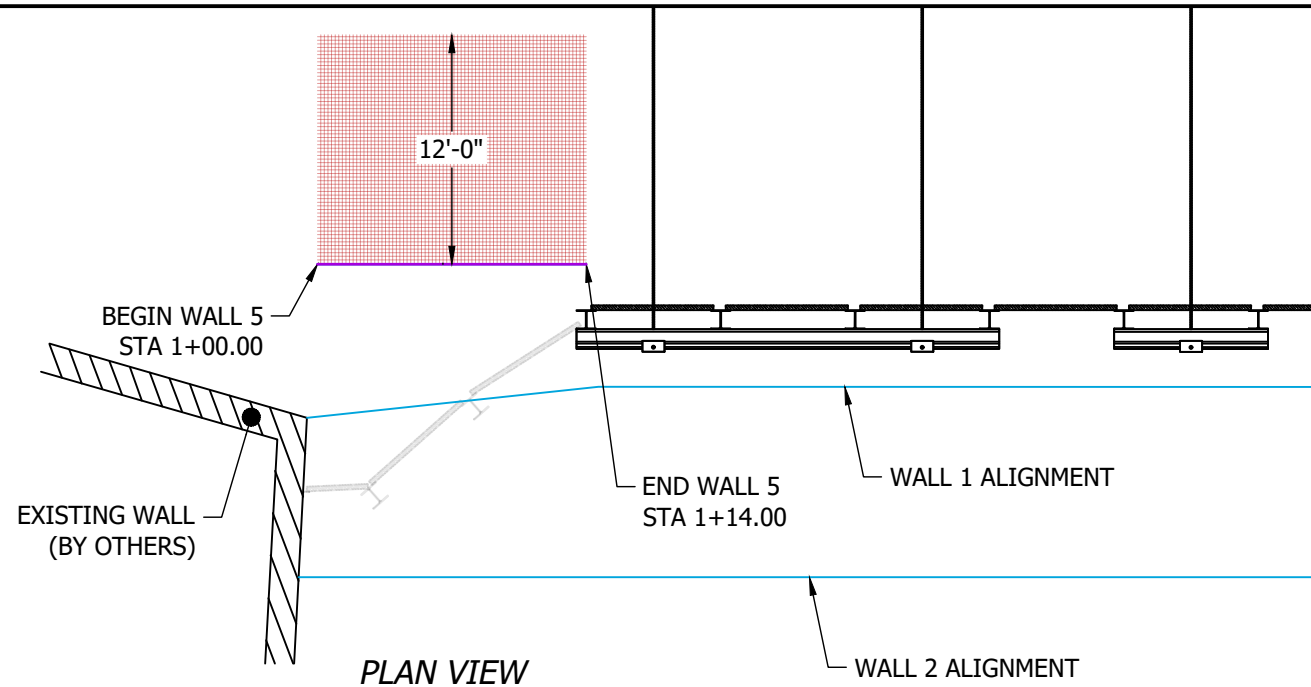
CUSTOMER: CROTON RIVERSIDE LLC
MANUFACTURER: PALUMBO BLOCK CO, INC.

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PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS
WALL 2 PLAN & ELEVATION VIEW

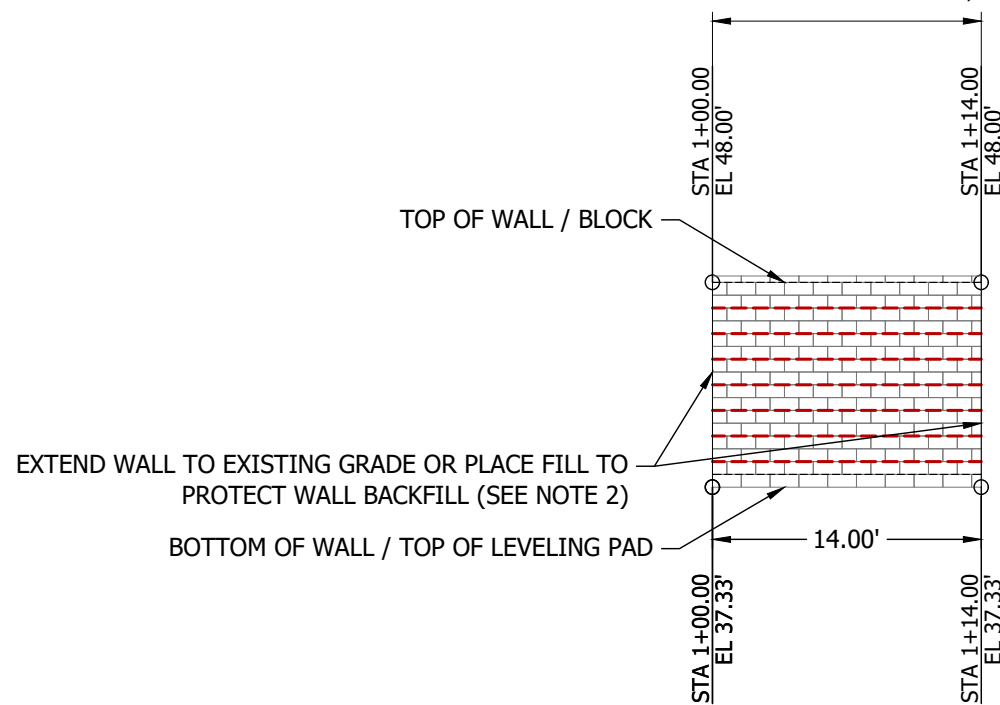
SHEET
6
OF
19

PROJECT NO.: 141140001



PLAN VIEW

CASE 5
 DESIGN HEIGHT, H = 10.67'
 GEOGRID EMBEDMENT LENGTH, L = 10.0'



ELEVATION VIEW

NOTES:

1. WALL LOCATION, STATIONING, AND ELEVATIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
2. CONTRACTOR MAY MODIFY HORIZONTAL EXTENTS OF WALL AS NEEDED; HOWEVER, NO INCREASE IN WALL HEIGHT IS PERMISSIBLE WITHOUT WRITTEN CONSENT FROM SUBMATRIX LLC.

LEGEND

- FINISHED GRADE
- ▭ MESA CAP UNIT
- ▭ MESA STANDARD UNIT
- - - - - TPG45D GEOGRID REINFORCEMENT



NEW SHEET

File Name: 141140001_WALL 5.DWG
 Plot Date: April 15, 2025 By: ROBERT JOHNSON

| NO. | DATE | REVISION | BY |
|-----|---------|--------------------|----|
| 2 | 4/15/25 | WALL ADDED TO SITE | RJ |
| | | | |
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 MANUFACTURER: PALUMBO BLOCK CO, INC.
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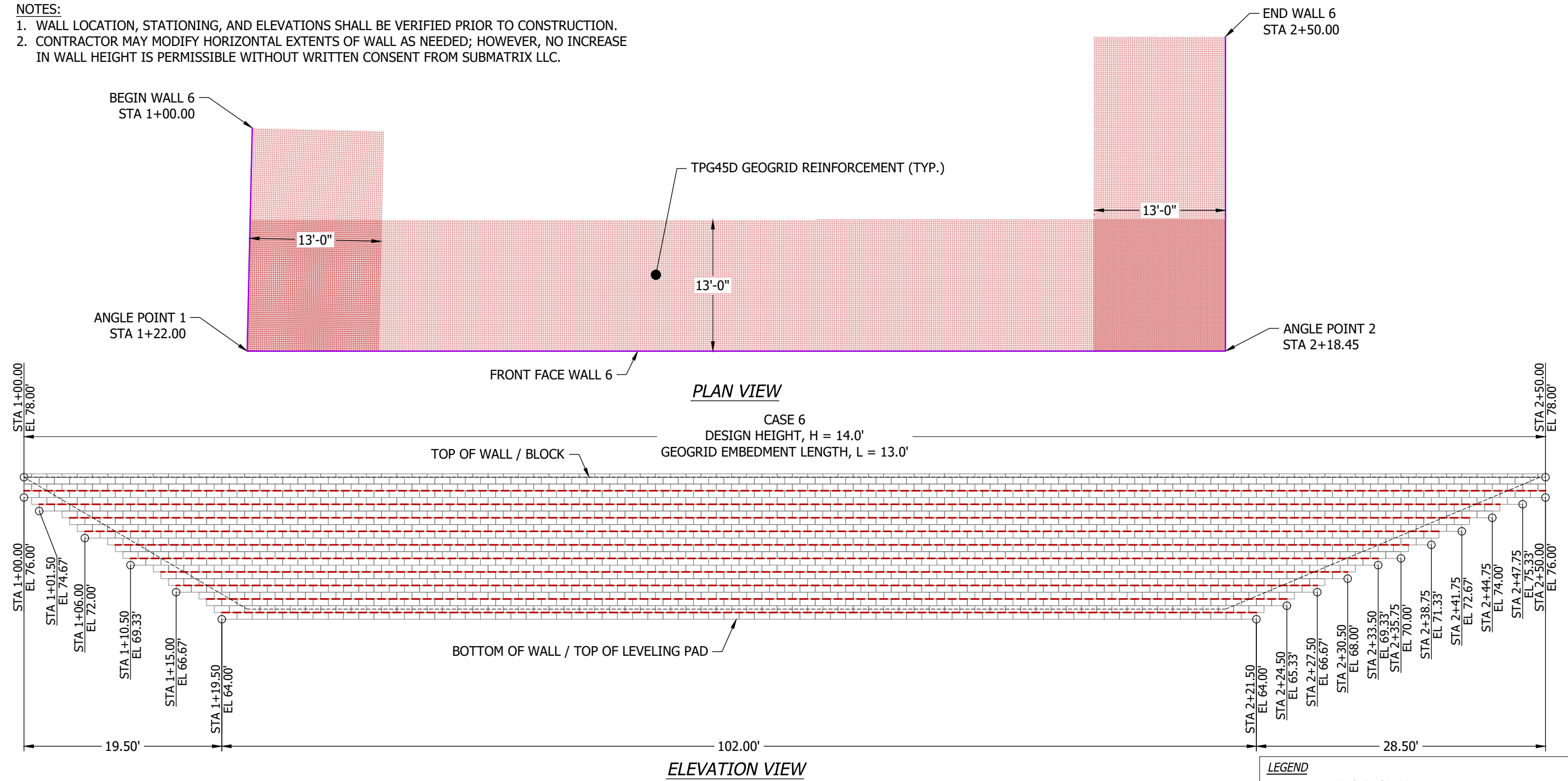
PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS
WALL 5 PLAN & ELEVATION VIEW

SHEET
14A
 OF
19

PROJECT NO.: 141140001

NOTES:

1. WALL LOCATION, STATIONING, AND ELEVATIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
2. CONTRACTOR MAY MODIFY HORIZONTAL EXTENTS OF WALL AS NEEDED; HOWEVER, NO INCREASE IN WALL HEIGHT IS PERMISSIBLE WITHOUT WRITTEN CONSENT FROM SUBMATRIX LLC.



File Name: 141140001_WALL 6.DWG
Plot Date: April 15, 2025 By: ROBERT JOHNSON

NEW SHEET

submatrix
Submatrix LLC
303 Perimeter Center N, Suite 300
Atlanta, GA 30346 | 770-557-5015

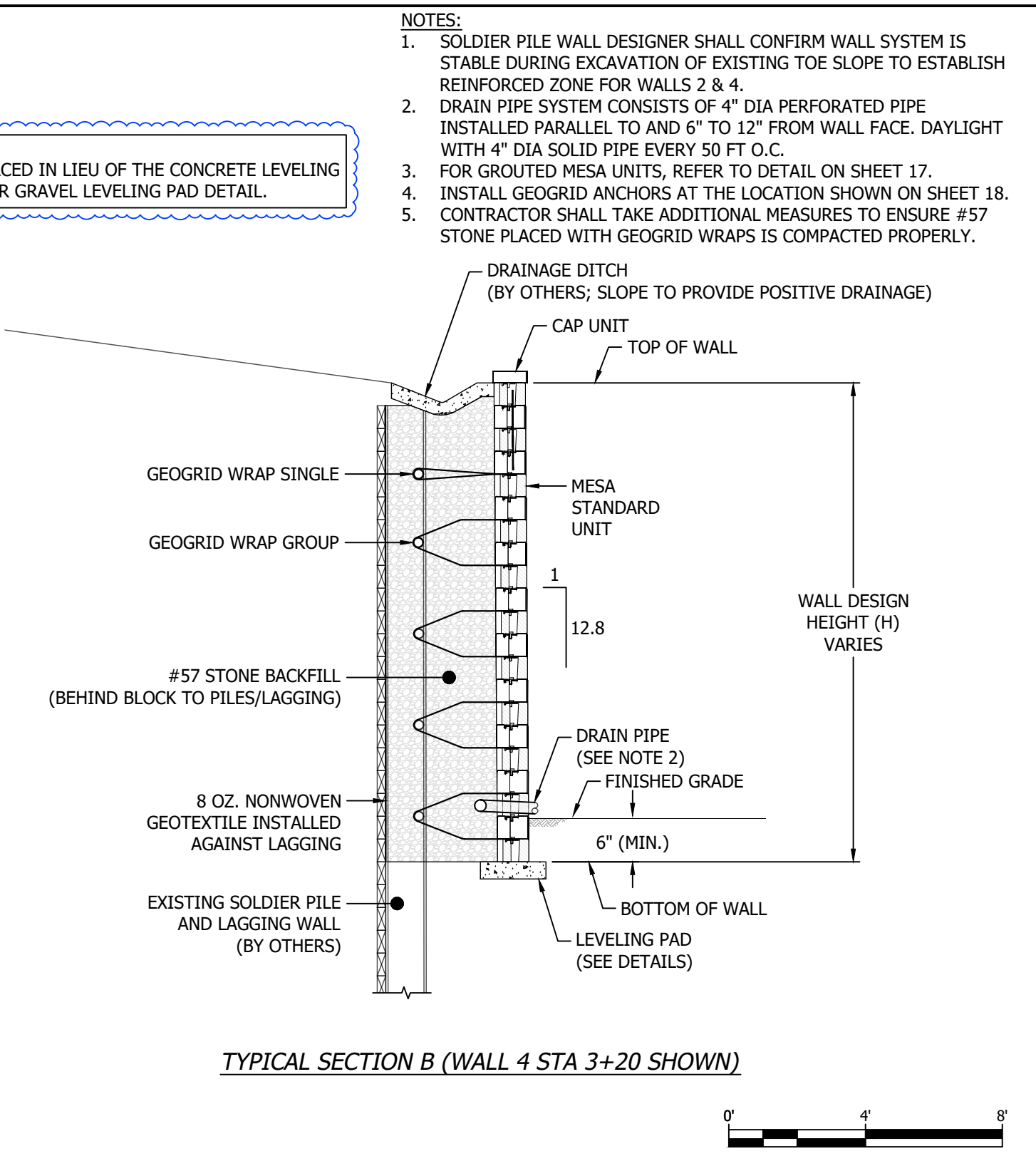
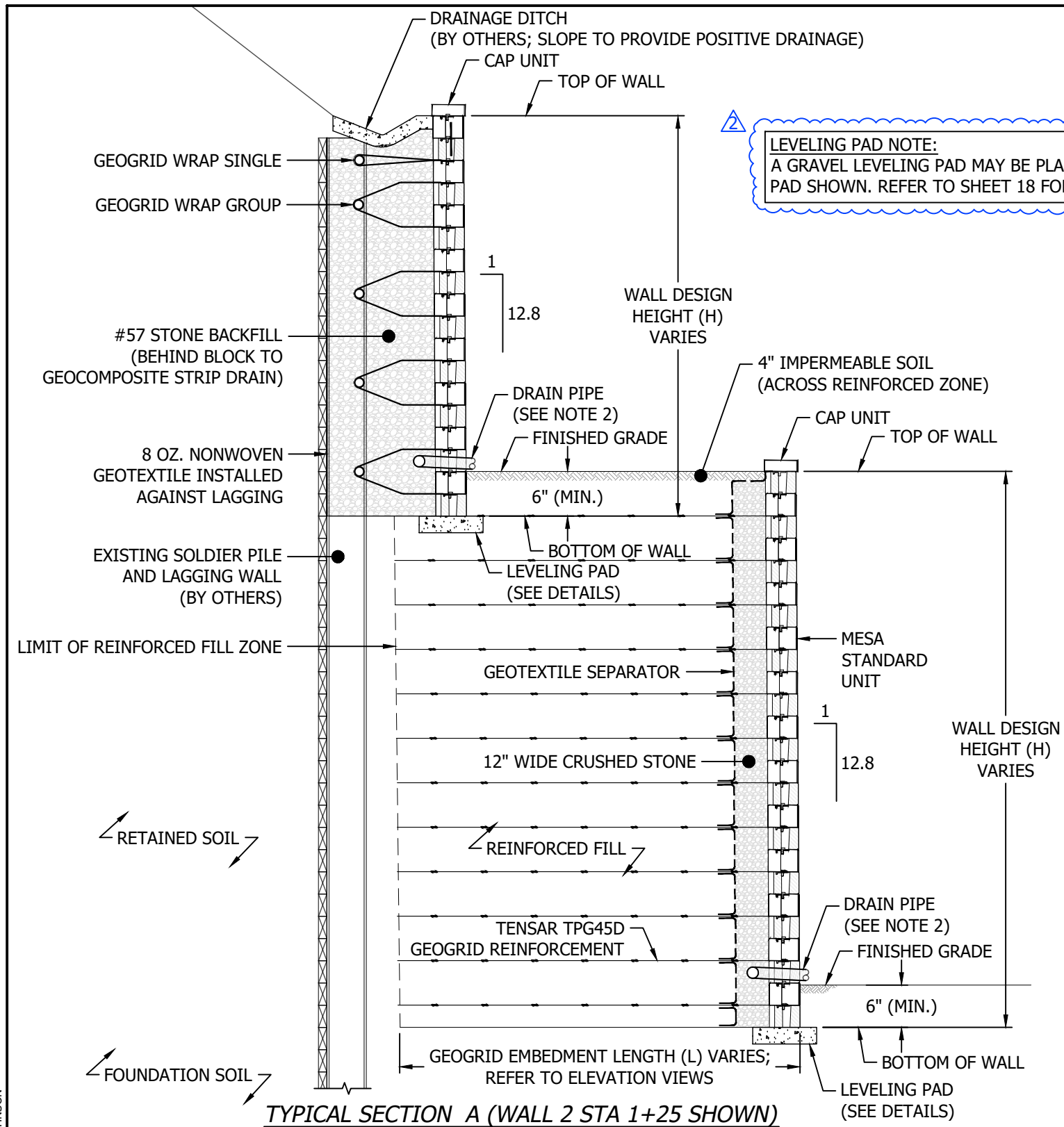
PROJECT NO.: 141140001

| NO. | DATE | REVISION | BY |
|-----|---------|--------------------|----|
| 2 | 4/15/25 | WALL ADDED TO SITE | RJ |
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PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS
WALL 6 PLAN & ELEVATION VIEW

SHEET
14B
OF
19



- NOTES:**
1. SOLDIER PILE WALL DESIGNER SHALL CONFIRM WALL SYSTEM IS STABLE DURING EXCAVATION OF EXISTING TOE SLOPE TO ESTABLISH REINFORCED ZONE FOR WALLS 2 & 4.
 2. DRAIN PIPE SYSTEM CONSISTS OF 4" DIA PERFORATED PIPE INSTALLED PARALLEL TO AND 6" TO 12" FROM WALL FACE. DAYLIGHT WITH 4" DIA SOLID PIPE EVERY 50 FT O.C.
 3. FOR GROUDED MESA UNITS, REFER TO DETAIL ON SHEET 17.
 4. INSTALL GEOGRID ANCHORS AT THE LOCATION SHOWN ON SHEET 18.
 5. CONTRACTOR SHALL TAKE ADDITIONAL MEASURES TO ENSURE #57 STONE PLACED WITH GEOGRID WRAPS IS COMPACTED PROPERLY.



File Name: 141140001_SECTIONS.DWG
Plot Date: April 15, 2025 By: ROBERT JOHNSON

Submatrix LLC
303 Perimeter Center N, Suite 300
Atlanta, GA 30346 | 770-557-5015

| NO. | DATE | REVISION | BY |
|-----|---------|-----------------------------|----|
| 2 | 4/15/25 | NOTE ADDED RE: LEVELING PAD | RJ |

CUSTOMER: CROTON RIVERSIDE LLC
MANUFACTURER: PALUMBO BLOCK CO, INC.

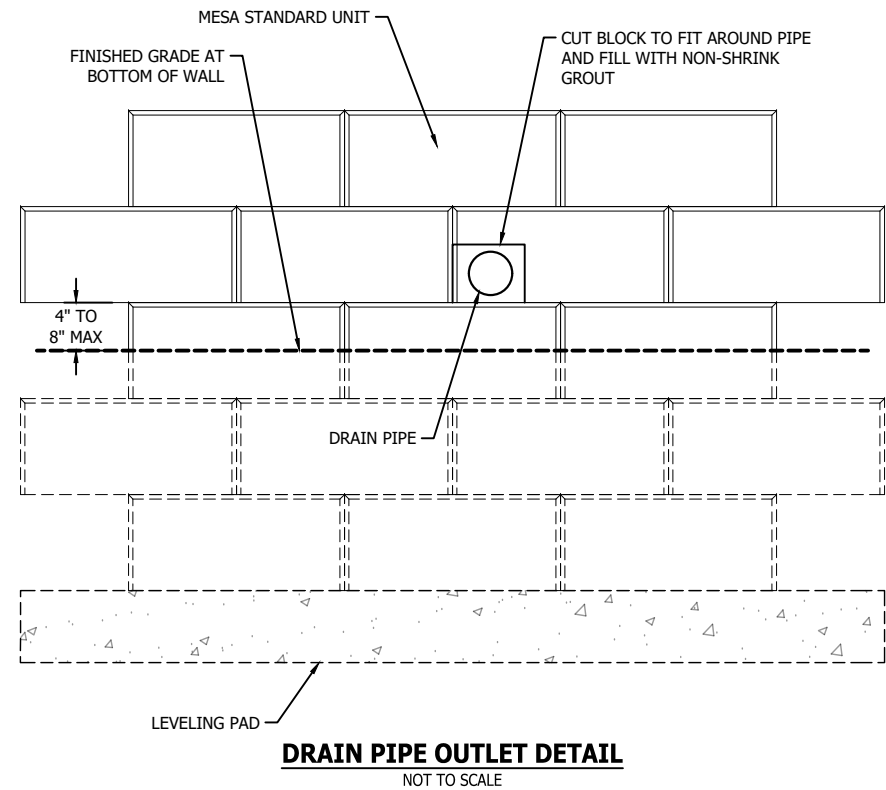
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PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS

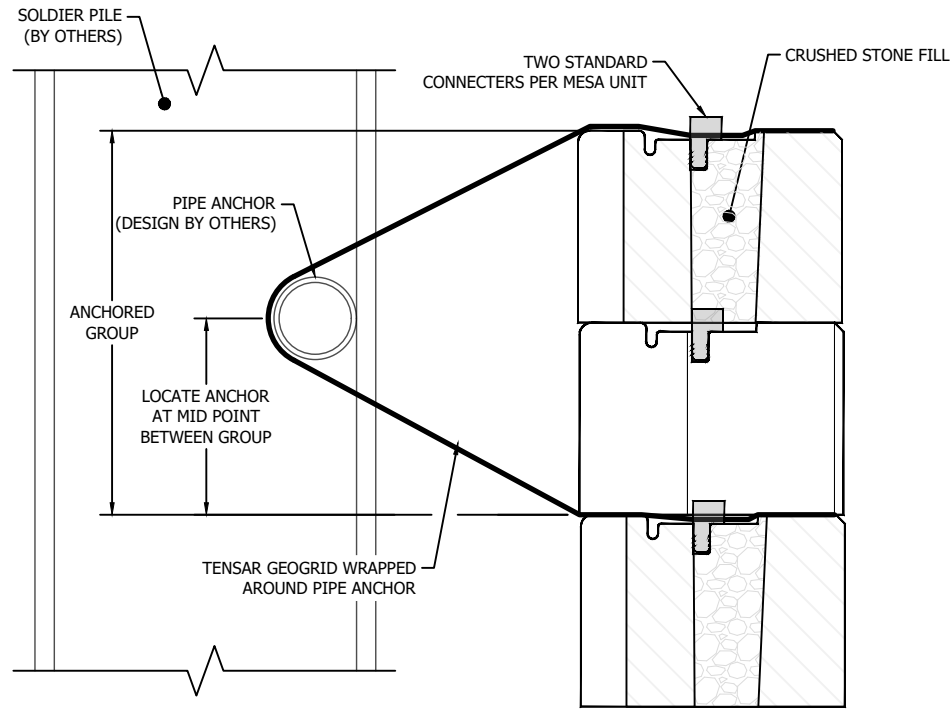
TYPICAL SECTIONS

SHEET
15
OF
19

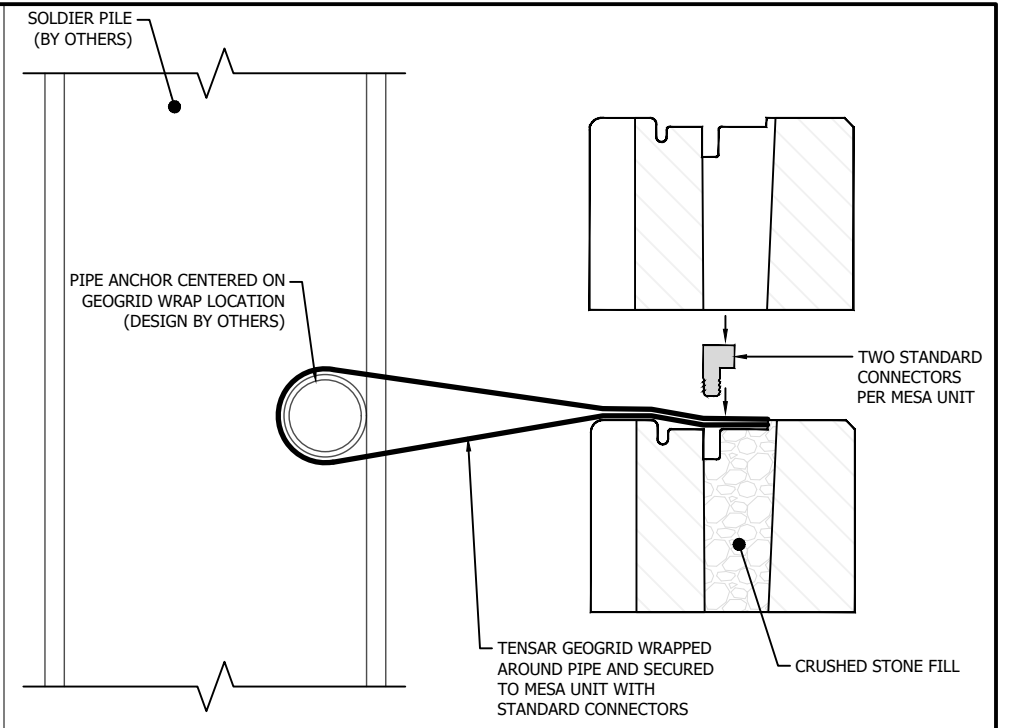
PROJECT NO.: 141140001



DRAIN PIPE OUTLET DETAIL
NOT TO SCALE

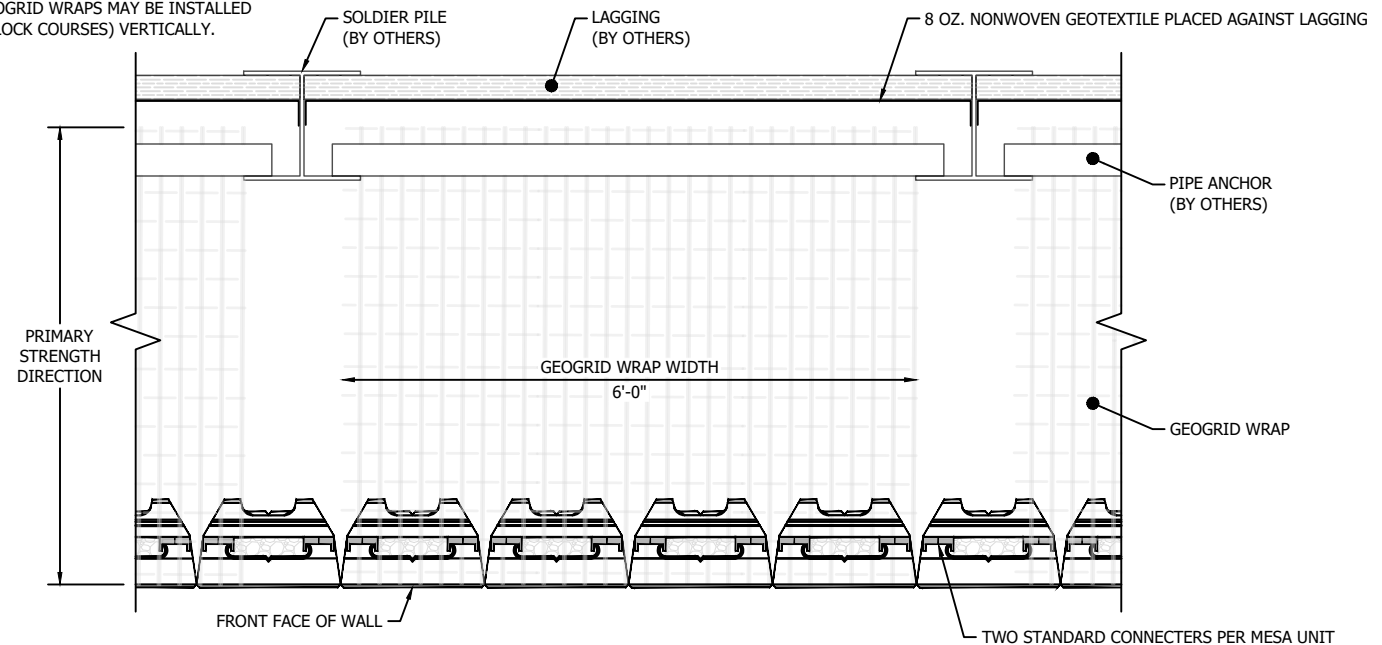


GEOGRID WRAP AND ANCHOR (GROUP)
NOT TO SCALE

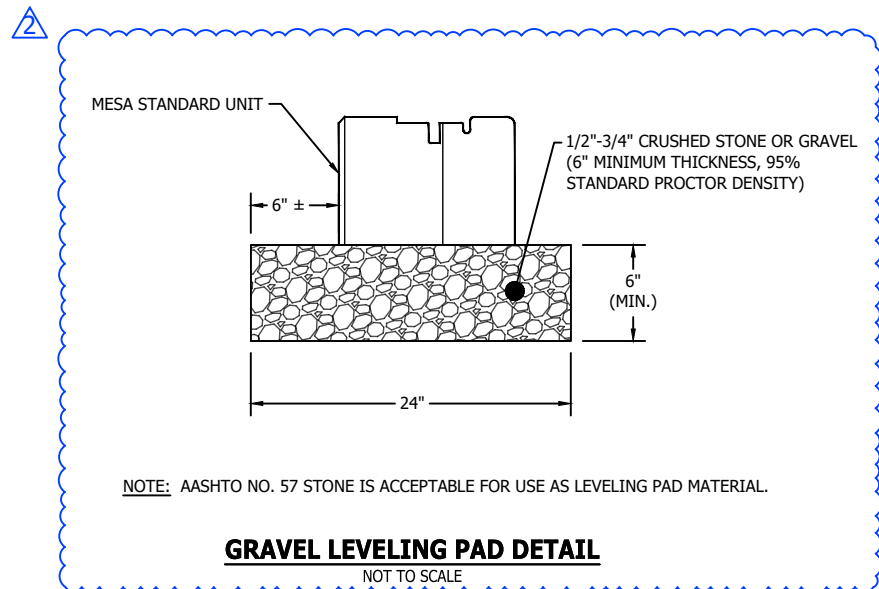


GEOGRID WRAP AND ANCHOR (SINGLE BLOCK)
NOT TO SCALE

NOTE: IF WHALER CONFLICTS WITH GEOGRID WRAP, DEFLECT GEOGRID AS NECESSARY. ENSURE GEOGRID IS NOT IN CONTACT WITH WHALER OR OTHER COMPONENTS. WHERE DEFLECTION IS NOT POSSIBLE, USE SINGLE BLOCK GEOGRID WRAP. GEOGRID WRAPS MAY BE INSTALLED NO MORE THAN 16" APART (TWO BLOCK COURSES) VERTICALLY.



GEOGRID WRAP AND ANCHOR - PLAN VIEW
NOT TO SCALE



NOTE: AASHTO NO. 57 STONE IS ACCEPTABLE FOR USE AS LEVELING PAD MATERIAL.

GRAVEL LEVELING PAD DETAIL
NOT TO SCALE

File Name: 141140001_TYPICAL DETAILS.DWG
Plot Date: April 15, 2025 By: ROBERT JOHNSON

PROJECT NO.: 141140001

| NO. | DATE | REVISION | BY |
|-----|---------|--------------|----|
| 2 | 4/15/25 | DETAIL ADDED | RJ |
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CUSTOMER: CROTON RIVERSIDE LLC
MANUFACTURER: PALUMBO BLOCK CO, INC.

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PROJECT & SHEET TITLE:
PROPOSED RIVERSIDE APARTMENTS
TYPICAL DETAILS (3 OF 4)

SHEET
18
OF
19