

SHOP DRAWINGS

PRECAST MODULAR BLOCK RETAINING WALLS

NC DOT



PROJECT NO. R-2100B

ASHE COUNTY, NORTH CAROLINA

| Approximate Quantities | | |
|------------------------|---------|-----------|
| Wall No. | Grid SY | Facing SF |
| Wall 1 | | 3,192 |
| Wall 2 | | 3,402 |
| Wall 3 | | 4,965 |
| Wall 4 | | 1,164 |
| Total | 0 | 12,723 |
| Block Type | # Units | Facing % |
| 24 SF Units | 226 | 50% |
| 24 SF Top Units | 167 | 37% |
| 6 SF Units | 135 | 7% |
| 6 SF Top Units | 56 | 3% |
| 3 SF Units | 14 | 0% |
| 3 SF Top Units | 7 | 0% |
| Corner Units | 4 | |
| End Units (Top/Corner) | 14 | |

PREPARED FOR:



STAY-RIGHT PRECAST CONCRETE, INC.
 P.O. BOX 580
 FRANKLINTON, NORTH CAROLINA
 919/494-7600

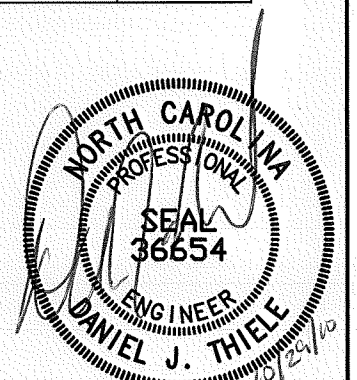
SHEET NUMBER

SHEET TITLE

| | |
|----------------|--|
| R1 | TITLE PAGE |
| R2 | WALL LAYOUT PLAN WALL 1 |
| R3 | WALL ELEVATION WALL 1 |
| R4 | WALL ELEVATION (CONTINUED) WALL 1 |
| R5 | WALL LAYOUT PLAN WALL 2 |
| R6 | WALL ELEVATION WALL 2 |
| R7 | WALL ELEVATION (CONTINUED) WALL 2 |
| R8 | WALL LAYOUT PLAN-WALL 3 |
| R9 | WALL ELEVATION-WALL 3 |
| R10 | WALL ELEVATION (CONTINUED)-WALL 3 |
| R11 | WALL ELEVATION (CONTINUED)-WALL 3 |
| R12 | WALL LAYOUT PLAN & ELEVATION WALL 4 |
| R13 | DETAILS |
| R14 | DETAILS (CONTINUED) |
| R15 | DETAILS (CONTINUED) |
| R16 | COMPONENTS |
| R17 | GENERAL NOTES |

NOTE:
 LAYOUT AND ELEVATION ARE BASED UPON SITE/GRADING PLAN BY OTHERS.

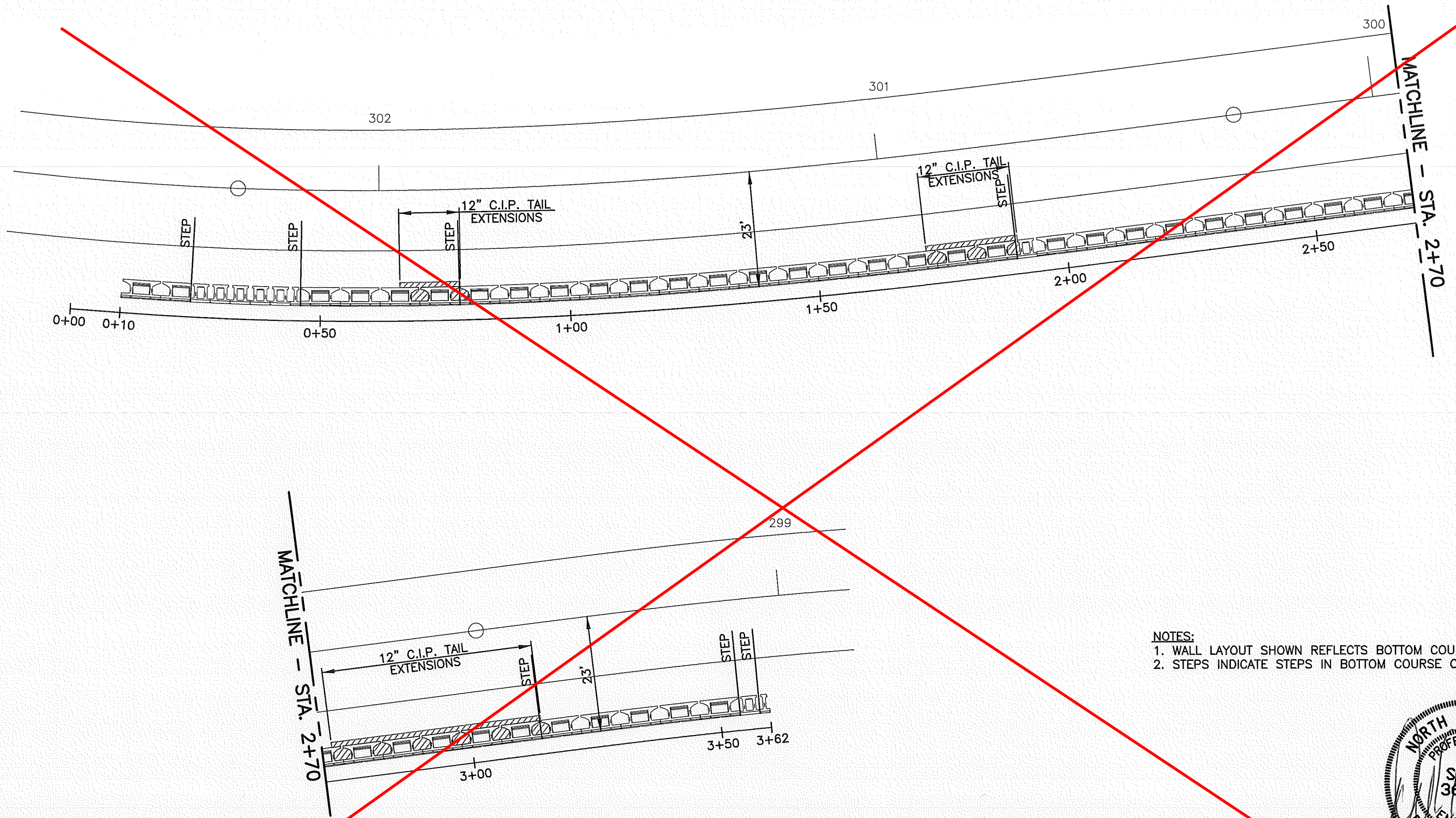
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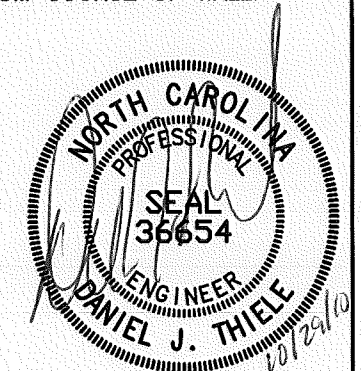
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|------------|-------------------|--|--|---|-----------------------------|
| REVISIONS: | TITLE PAGE | NC DOT PROJECT NO. R-2100B ASHE COUNTY, NORTH CAROLINA | 13478 CHANDLER ROAD OMAHA, NEBRASKA 68138 402/556-2171 www.thielegeotech.com GEOTECHNICAL ■ MATERIAL ■ ENVIRONMENTAL ■ ENGINEERING | SHEET: R1 DATE: 10/29/10 DB: MDS | JOB NO: 10445.00 CB: KAJ |
|------------|-------------------|--|--|---|-----------------------------|



- NOTES:**
1. WALL LAYOUT SHOWN REFLECTS BOTTOM COURSE OF WALL.
 2. STEPS INDICATE STEPS IN BOTTOM COURSE OF WALL.



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REVISIONS:

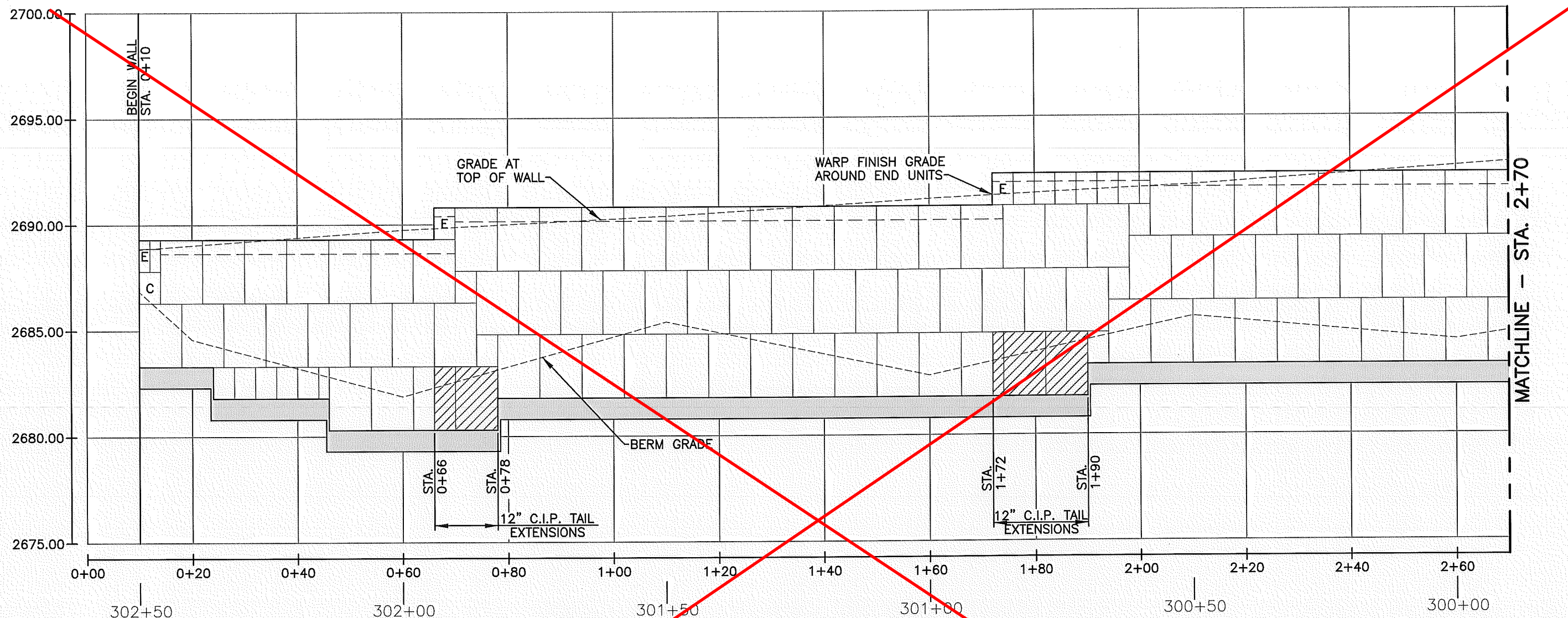
**WALL LAYOUT PLAN
 WALL 1**

**NC DOT
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| | |
|----------------|------------------|
| SHEET: R2 | |
| DATE: 10/29/10 | JOB NO: 10445.00 |
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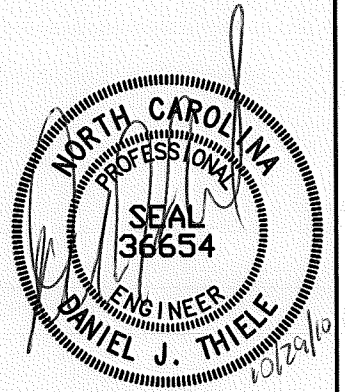


NOTES:
 1. GRADE AT TOP OF WALL IS FROM CHART ON NC DOT PLAN SHEET.
 2. BERM GRADE IS FROM FIELD SURVEY, 2' IN FRONT OF WALL.

STONE STRONG BLOCK LEGEND:

- | | | | | | |
|--|----------------|--|---------------|--|------------------------------------|
| | 24 SF UNIT | | 6 SF UNIT | | END UNIT |
| | 24 SF TOP UNIT | | 6 SF TOP UNIT | | CORNER UNIT |
| | 3 SF UNIT | | 3 SF TOP UNIT | | DENOTES 12" C.I.P. TAIL EXTENSIONS |

ELEVATION SCALES:
 HORIZ. - 1" = 20'
 VERT. - 1" = 5'



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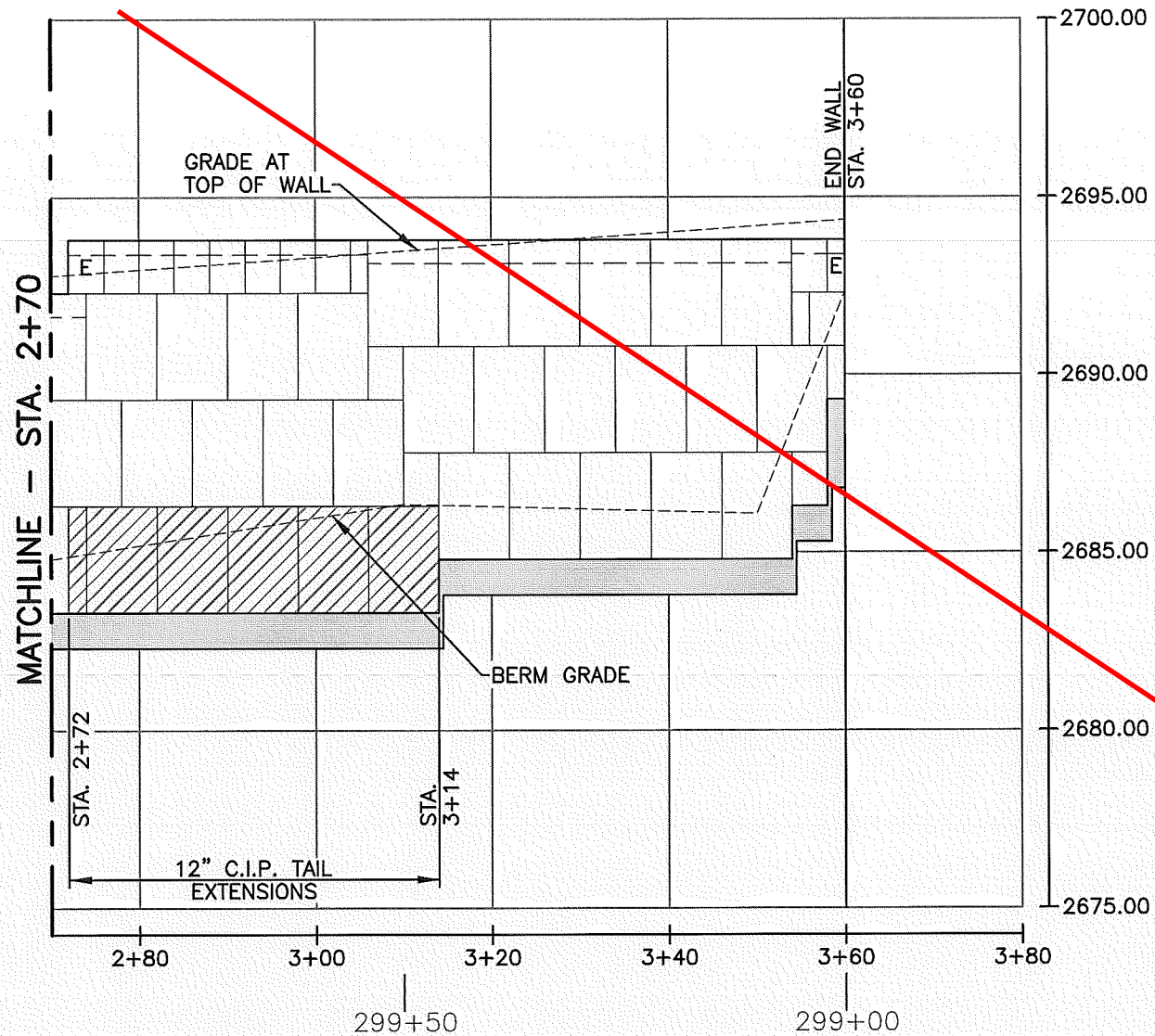
REVISIONS:

**WALL ELEVATION
 WALL 1**

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SHEET: R3
DATE: 10/29/10 **JOB NO:** 10445-00
DB: MDS **CB:** KAJ



- NOTES:**
 1. GRADE AT TOP OF WALL IS FROM CHART ON NC DOT PLAN SHEET.
 2. BERM GRADE IS FROM FIELD SURVEY, 2' IN FRONT OF WALL.

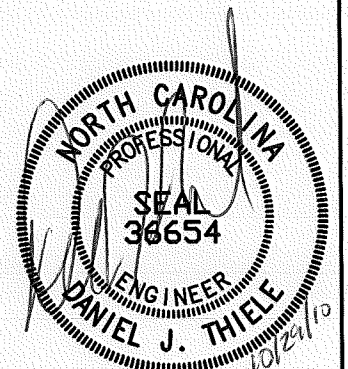
| Facing Schedule-Wall 1 | | | |
|------------------------|----------|------------------|----------|
| Station | TOF Elev | Station | TOW Elev |
| 0+10.0 to 0+24.0 | 2683.30 | 0+10.0 to 0+66.0 | 2689.30 |
| 0+24.0 to 0+46.0 | 2681.80 | 0+66.0 to 1+72.0 | 2690.80 |
| 0+46.0 to 0+78.0 | 2680.30 | 1+72.0 to 2+72.0 | 2692.30 |
| 0+78.0 to 1+90.0 | 2681.80 | 2+72.0 to 3+60.0 | 2693.80 |
| 1+90.0 to 3+14.0 | 2683.30 | | |
| 3+14.0 to 3+54.0 | 2684.80 | | |
| 3+54.0 to 3+58.0 | 2686.30 | | |
| 3+58.0 to 3+60.0 | 2689.30 | | |

| Approximate Quantities Wall 1 | | |
|-------------------------------|---------|----------|
| Total Facing (SF) | 3,192 | |
| Block Type | # Units | Facing % |
| 24 SF Units | 88 | 66% |
| 24 SF Top Units | 35 | 26% |
| 6 SF Units | 14 | 3% |
| 6 SF Top Units | 14 | 3% |
| 3 SF Units | 3 | 0% |
| 3 SF Top Units | 3 | 0% |
| Corner Units | 1 | |
| End Units (Top/Corner) | 5 | |

STONE STRONG BLOCK LEGEND:

| | | | | | |
|--|----------------|--|---------------|--|------------------------------------|
| | 24 SF UNIT | | 6 SF UNIT | | END UNIT |
| | 24 SF TOP UNIT | | 6 SF TOP UNIT | | CORNER UNIT |
| | | | 3 SF UNIT | | DENOTES 12" C.I.P. TAIL EXTENSIONS |
| | | | 3 SF TOP UNIT | | |

ELEVATION SCALES:
 HORIZ. - 1"=20'
 VERT. - 1"=5'



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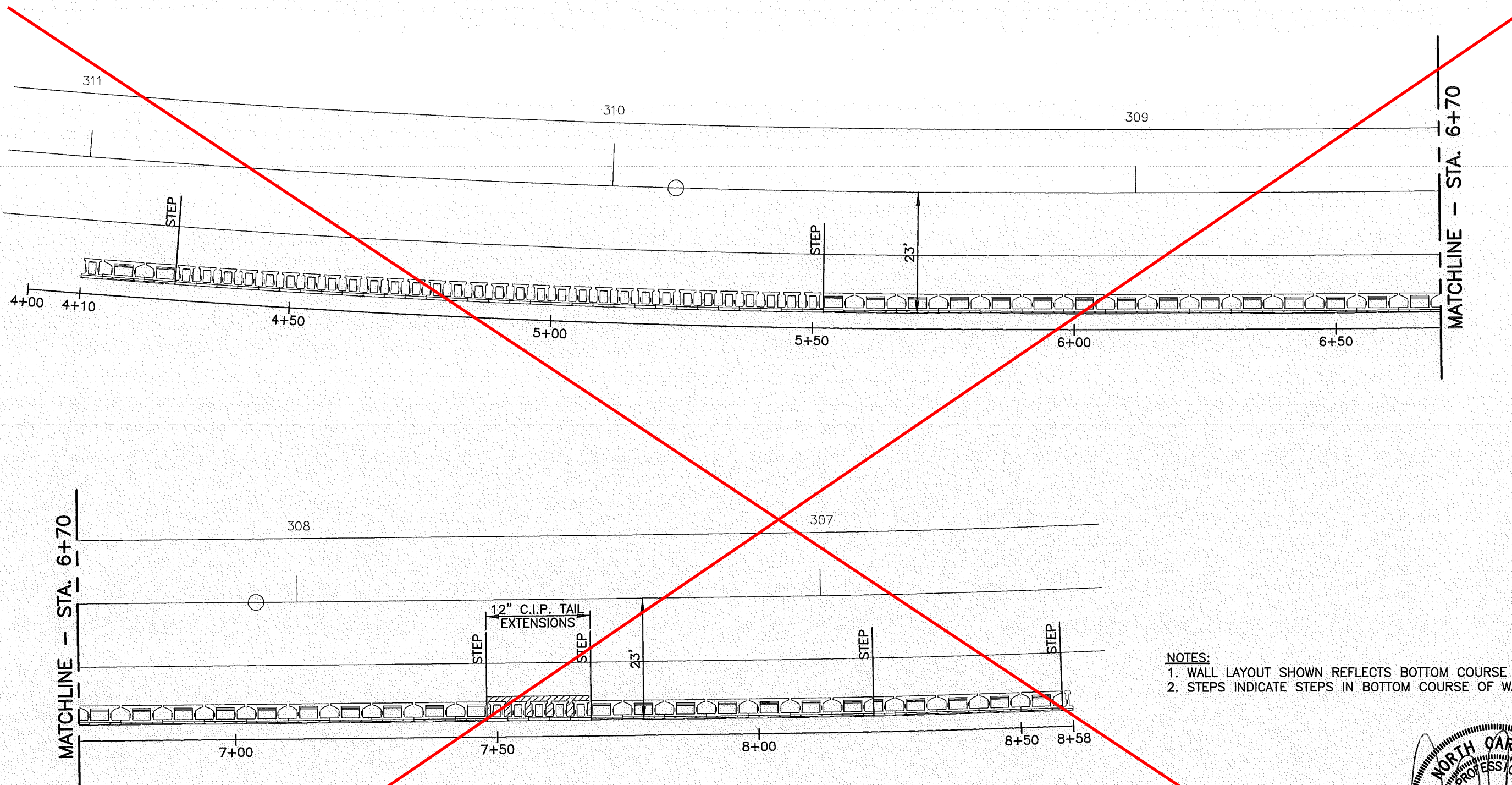
**WALL ELEVATION (CONTINUED)
 WALL 1**

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| | |
|----------------|------------------|
| SHEET: R4 | |
| DATE: 10/29/10 | JOB NO: 10445.00 |
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NOTES:
 1. WALL LAYOUT SHOWN REFLECTS BOTTOM COURSE OF WALL.
 2. STEPS INDICATE STEPS IN BOTTOM COURSE OF WALL.



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REVISIONS:

**WALL LAYOUT PLAN
 WALL 2**

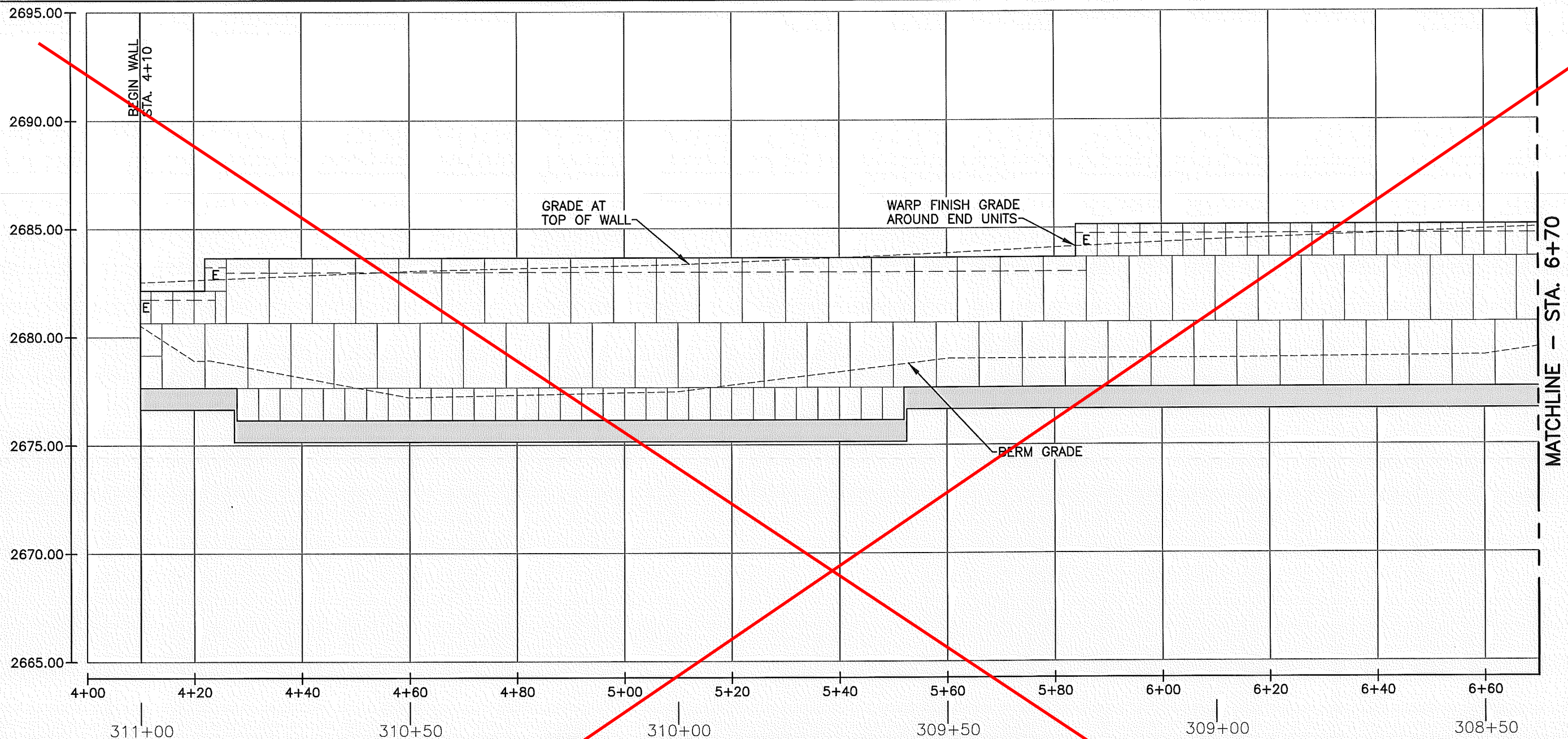
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| | |
|------------------|------------------|
| SHEET: R5 | |
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| DB: MDS | CB: KAJ |

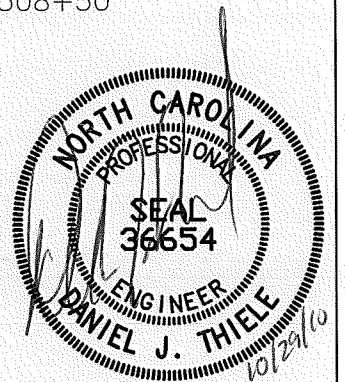


NOTES:
 1. GRADE AT TOP OF WALL IS FROM CHART ON NC DOT PLAN SHEET.
 2. BERM GRADE IS FROM FIELD SURVEY, 2' IN FRONT OF WALL.

STONE STRONG BLOCK LEGEND:

| | | | | | |
|--|----------------|--|---------------|--|------------------------------------|
| | 24 SF UNIT | | 6 SF UNIT | | END UNIT |
| | 24 SF TOP UNIT | | 6 SF TOP UNIT | | CORNER UNIT |
| | 3 SF UNIT | | 3 SF TOP UNIT | | DENOTES 12" C.I.P. TAIL EXTENSIONS |

ELEVATION SCALES:
 HORIZ - 1"=20'
 VERT. - 1"=5'



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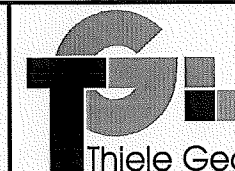
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**WALL ELEVATION
 WALL 2**

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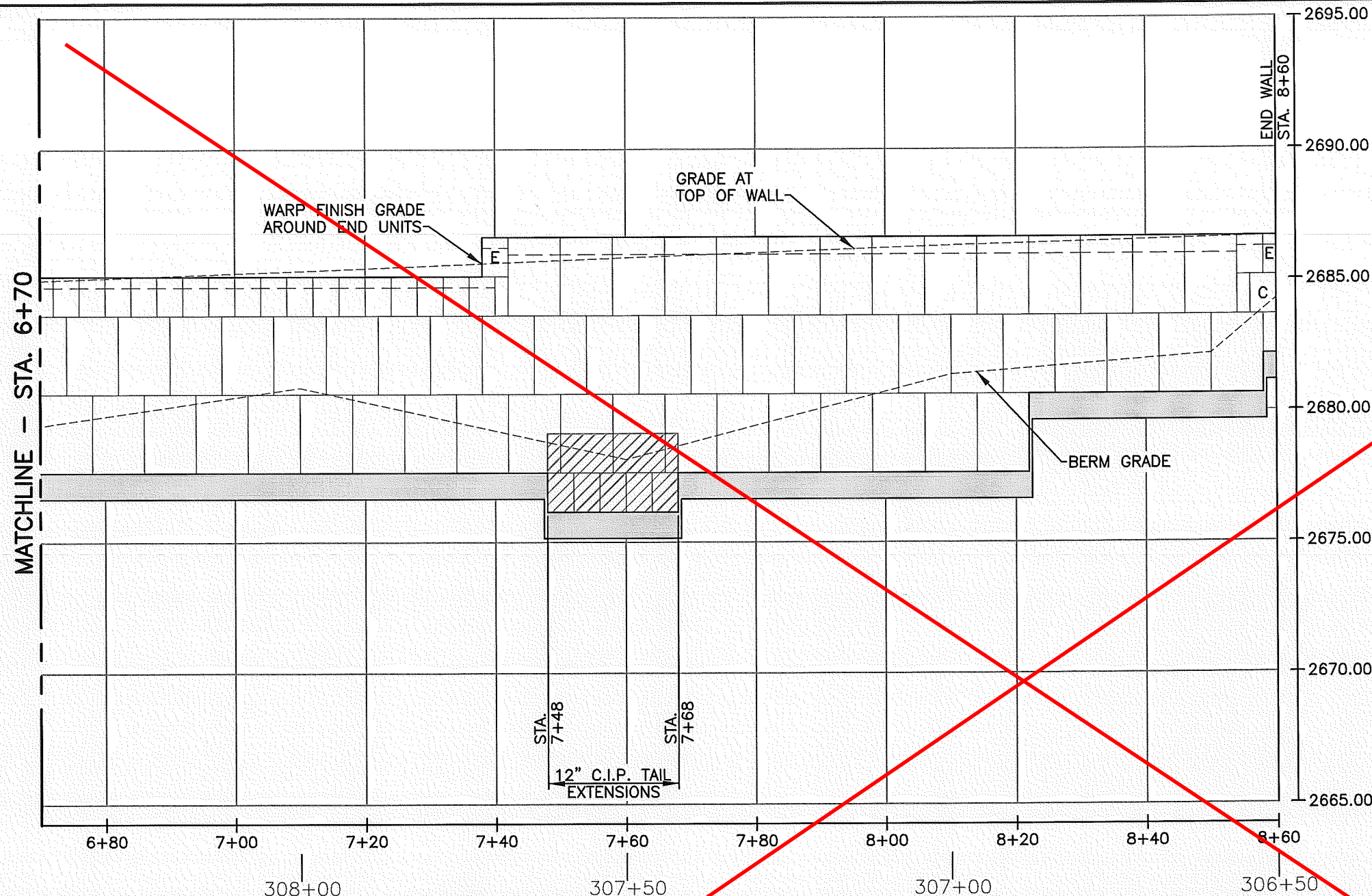
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SHEET: **R6**

DATE: 10/29/10 JOB NO: 10445.00

DB: MDS CB: KAJ

MATCHLINE - STA. 6+70



| Facing Schedule-Wall 2 | | | |
|------------------------|----------|------------------|----------|
| Station | TOF Elev | Station | TOW Elev |
| 4+10.0 to 4+28.0 | 2677.65 | 4+10.0 to 4+22.0 | 2682.15 |
| 4+28.0 to 5+52.0 | 2679.15 | 4+22.0 to 5+84.0 | 2683.65 |
| 5+52.0 to 7+48.0 | 2677.65 | 5+84.0 to 7+38.0 | 2685.15 |
| 7+48.0 to 7+68.0 | 2676.15 | 7+38.0 to 8+60.0 | 2686.65 |
| 7+68.0 to 8+22.0 | 2677.65 | | |
| 8+22.0 to 8+58.0 | 2680.65 | | |
| 8+58.0 to 8+60.0 | 2682.15 | | |

| Approximate Quantities Wall 2 | | |
|----------------------------------|---------|----------|
| Total Facing (SF) | 3,402 | |
| Block Type | # Units | Facing % |
| 24 SF Units | 85 | 60% |
| 24 SF Top Units | 34 | 24% |
| 6 SF Units | 38 | 7% |
| 6 SF Top Units | 42 | 7% |
| 3 SF Units | 4 | 0% |
| Corner Units | 1 | |
| End Units (Top/Corner) | 5 | |

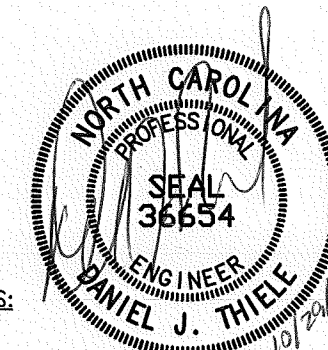
NOTES:

1. GRADE AT TOP OF WALL IS FROM CHART ON NC DOT PLAN SHEET.
2. BERM GRADE IS FROM FIELD SURVEY, 2' IN FRONT OF WALL.

STONE STRONG BLOCK LEGEND:

| | | | | | |
|--|----------------|--|---------------|--|------------------------------------|
| | 24 SF UNIT | | 6 SF UNIT | | END UNIT |
| | 24 SF TOP UNIT | | 6 SF TOP UNIT | | CORNER UNIT |
| | | | 3 SF UNIT | | DENOTES 12" C.I.P. TAIL EXTENSIONS |
| | | | 3 SF TOP UNIT | | |

ELEVATION SCALES:
HORIZ. - 1"=20'
VERT. - 1"=5'



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**WALL ELEVATION (CONTINUED)
WALL 2**

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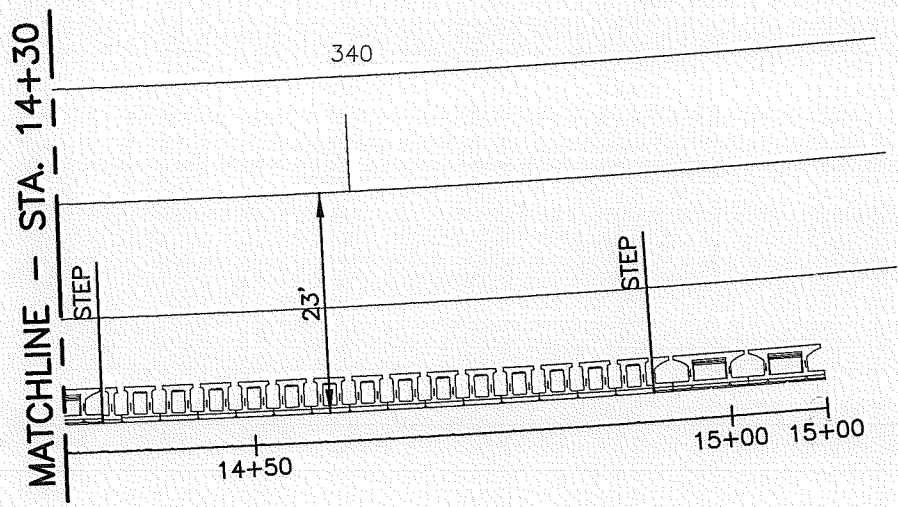
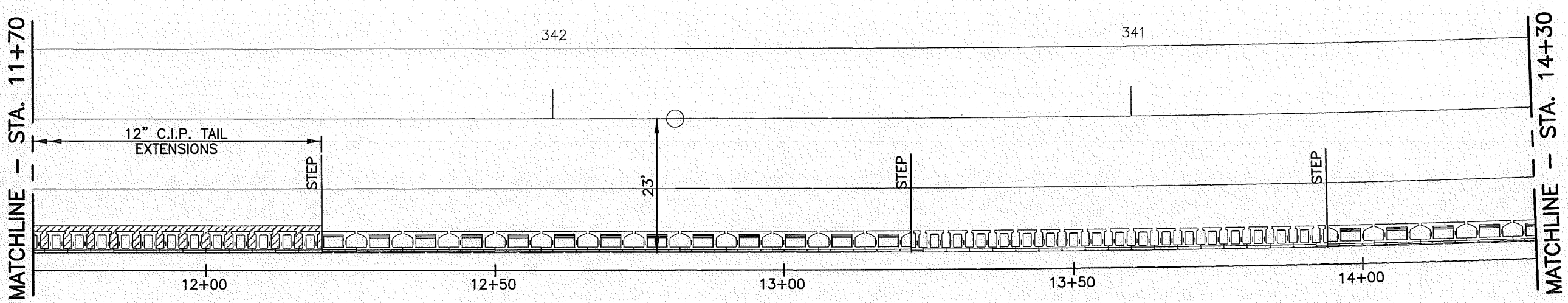
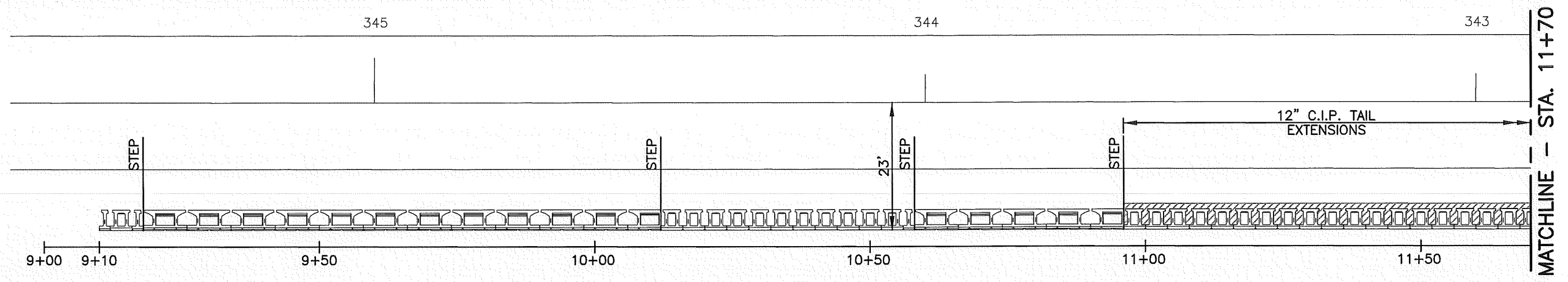
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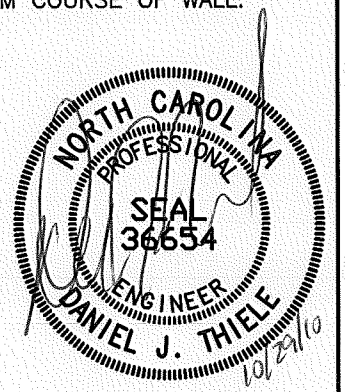
SHEET: R7

DATE: 10/29/10 JOB NO: 10445.00

DB: MDS CB: KAJ



- NOTES:**
 1. WALL LAYOUT SHOWN REFLECTS BOTTOM COURSE OF WALL.
 2. STEPS INDICATE STEPS IN BOTTOM COURSE OF WALL.



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**WALL LAYOUT PLAN
 WALL 3**

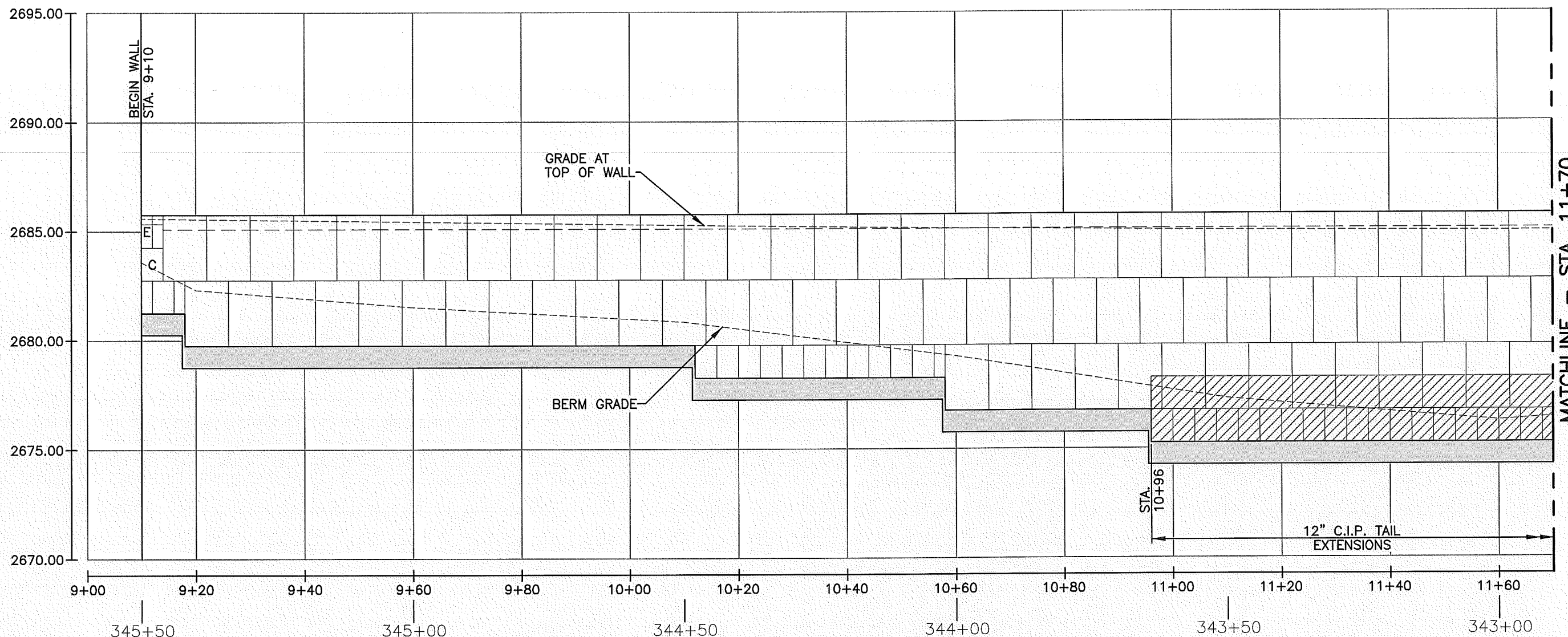
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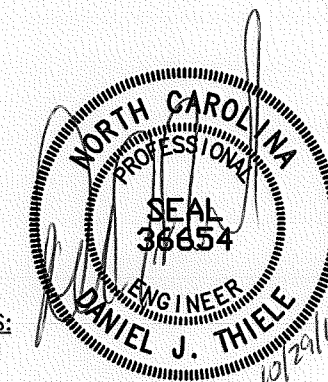


NOTES:
 1. GRADE AT TOP OF WALL IS FROM CHART ON NC DOT PLAN SHEET.
 2. BERM GRADE IS FROM FIELD SURVEY, 2' IN FRONT OF WALL.

STONE STRONG BLOCK LEGEND:

| | | | | | |
|--|----------------|--|---------------|--|-------------|
| | 24 SF UNIT | | 6 SF UNIT | | END UNIT |
| | 24 SF TOP UNIT | | 6 SF TOP UNIT | | CORNER UNIT |
| | 3 SF UNIT | | 3 SF TOP UNIT | | |

ELEVATION SCALES:
 HORIZ. - 1" = 20'
 VERT. - 1" = 5'



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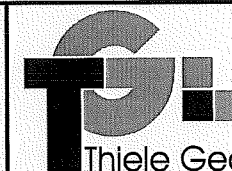
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**WALL ELEVATION
 WALL 3**

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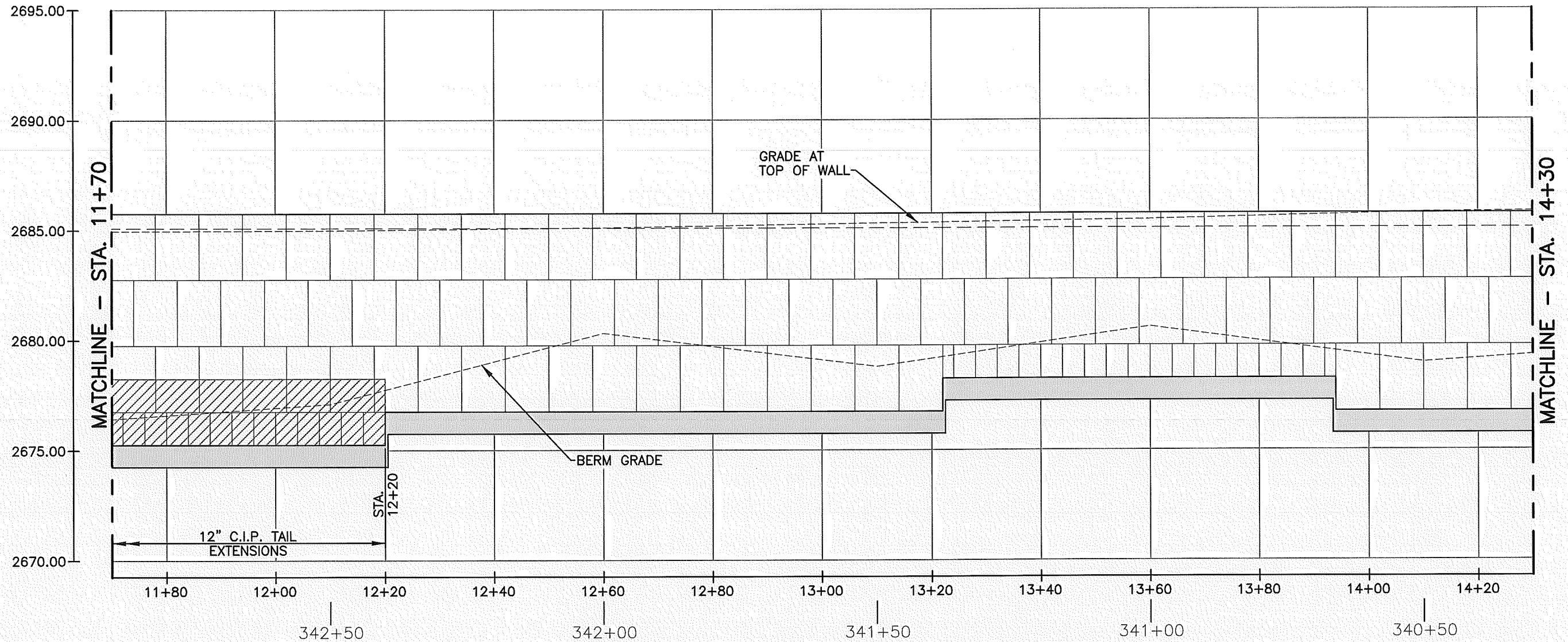
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SHEET: **R9**

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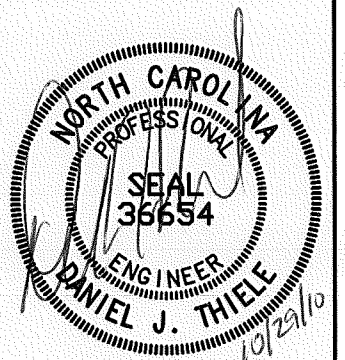


- NOTES:**
 1. GRADE AT TOP OF WALL IS FROM CHART ON NC DOT PLAN SHEET.
 2. BERM GRADE IS FROM FIELD SURVEY, 2' IN FRONT OF WALL.

STONE STRONG BLOCK LEGEND:

| | | | | | |
|--|----------------|--|---------------|--|-------------|
| | 24 SF UNIT | | 6 SF UNIT | | END UNIT |
| | 24 SF TOP UNIT | | 6 SF TOP UNIT | | CORNER UNIT |
| | 3 SF UNIT | | 3 SF TOP UNIT | | |

ELEVATION SCALES:
 HORIZ. - 1"=20'
 VERT. - 1"=5'



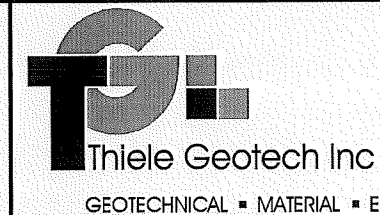
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**WALL ELEVATION (CONTINUED)
 WALL 3**

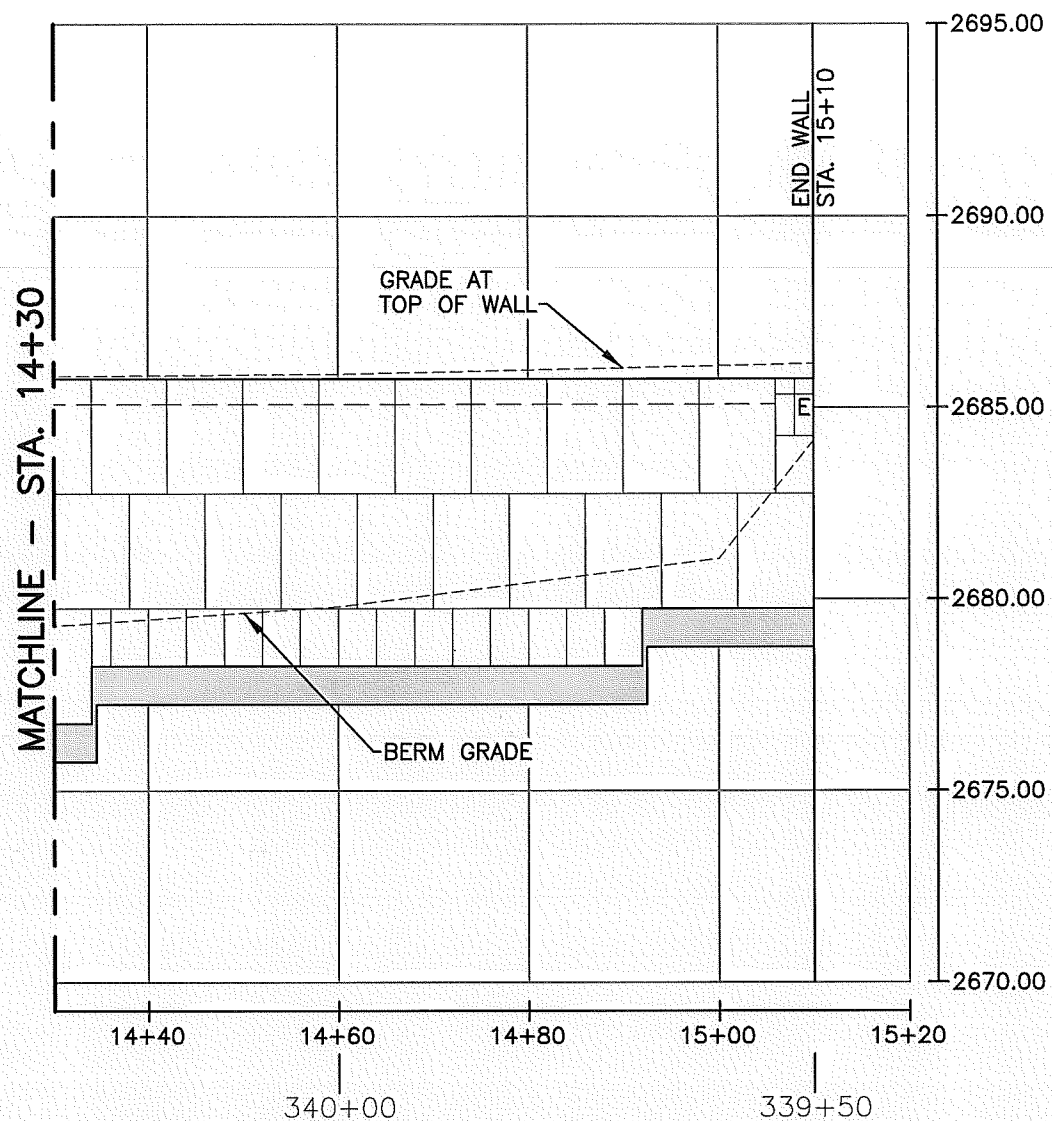
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- NOTES:**
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 2. BERM GRADE IS FROM FIELD SURVEY, 2' IN FRONT OF WALL.

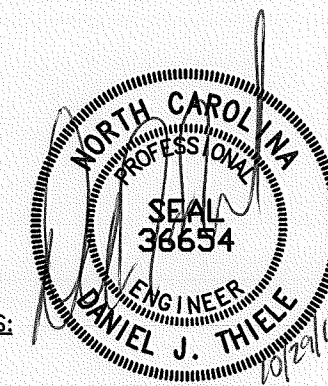
| Facing Schedule-Wall 3 | | | |
|------------------------|----------|-------------------|----------|
| Station | TOF Elev | Station | TOW Elev |
| 9+10.0 to 9+18.0 | 2681.25 | 9+10.0 to 15+10.0 | 2685.75 |
| 9+18.0 to 10+12.0 | 2679.75 | | |
| 10+12.0 to 10+58.0 | 2678.25 | | |
| 10+58.0 to 10+96.0 | 2676.75 | | |
| 10+96.0 to 12+20.0 | 2675.25 | | |
| 12+20.0 to 13+22.0 | 2676.75 | | |
| 13+22.0 to 13+94.0 | 2678.25 | | |
| 13+94.0 to 14+34.0 | 2676.75 | | |
| 14+34.0 to 14+92.0 | 2678.25 | | |
| 14+92.0 to 15+10.0 | 2679.75 | | |

| Approximate Quantities Wall 3 | | |
|-------------------------------|---------|----------|
| Total Facing (SF) | 4,965 | |
| Block Type | # Units | Facing % |
| 24 SF Units | 112 | 54% |
| 24 SF Top Units | 74 | 36% |
| 6 SF Units | 75 | 9% |
| 3 SF Units | 6 | 0% |
| 3 SF Top Units | 2 | 0% |
| Corner Units | 1 | |
| End Units (Top/Corner) | 2 | |

STONE STRONG BLOCK LEGEND:

| | | | | | |
|--|----------------|--|---------------|--|------------------------------------|
| | 24 SF UNIT | | 6 SF UNIT | | END UNIT |
| | 24 SF TOP UNIT | | 6 SF TOP UNIT | | CORNER UNIT |
| | | | 3 SF UNIT | | DENOTES 12" C.I.P. TAIL EXTENSIONS |
| | | | 3 SF TOP UNIT | | |

ELEVATION SCALES:
 HORIZ. - 1"=20'
 VERT. - 1"=5'



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REVISIONS:

**WALL ELEVATION (CONTINUED)
 WALL 3**

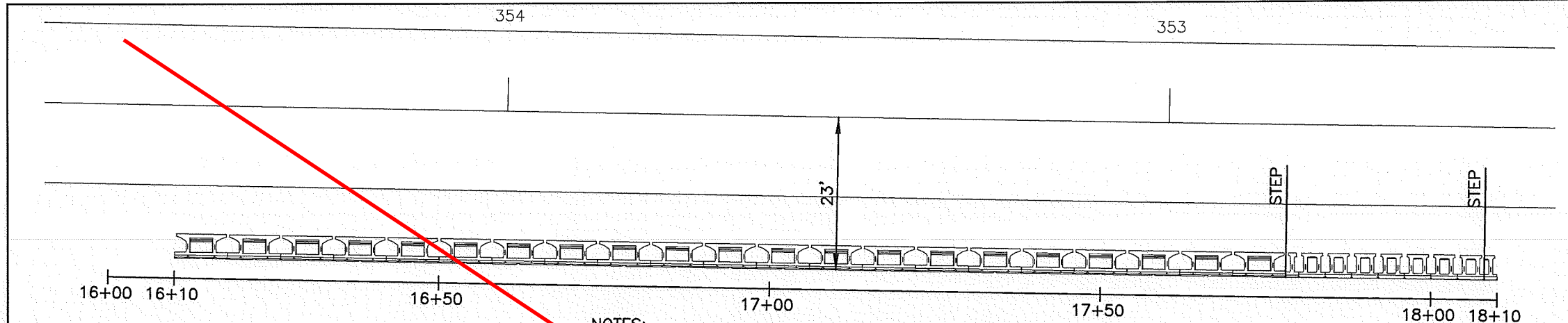
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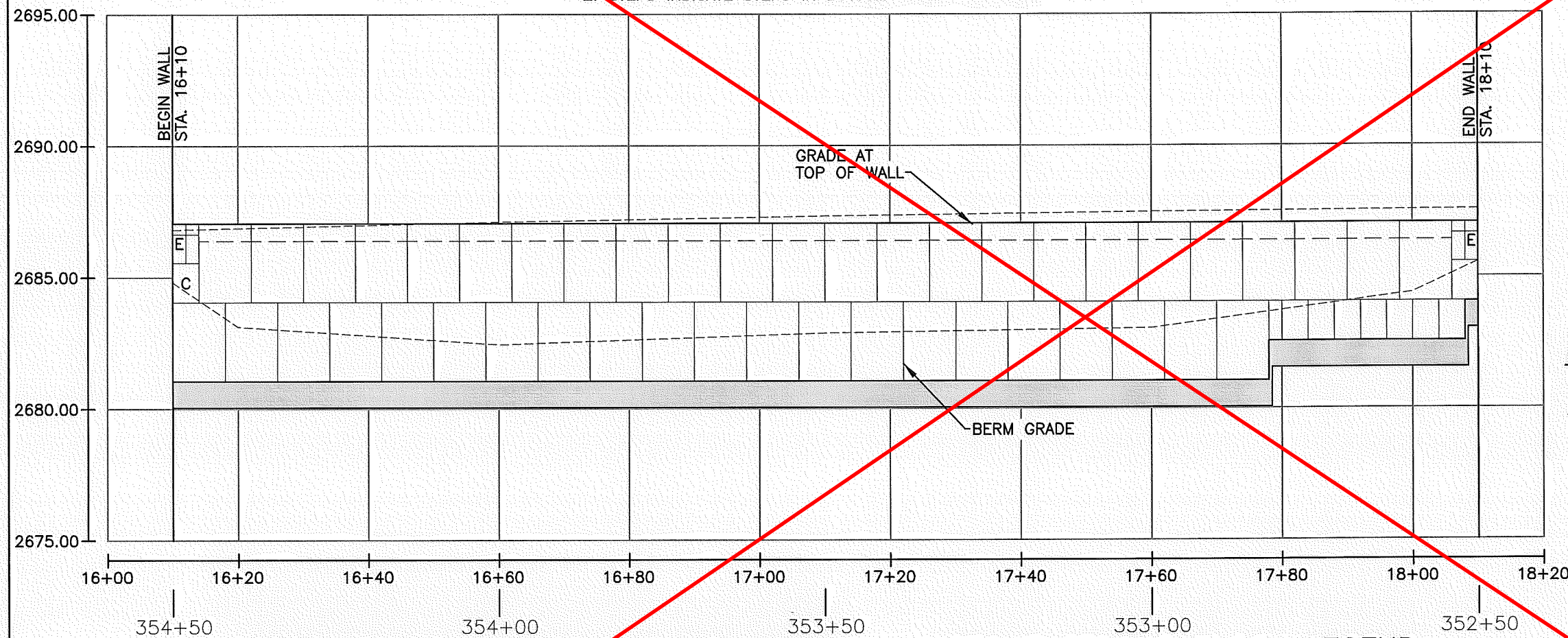
SHEET: **R11**

| | |
|-------------------|---------------------|
| DATE: 10/29/10 | JOB NO: 10445.00 |
| DB: MDS | CB: KAJ |



NOTES:
 1. WALL LAYOUT SHOWN REFLECTS BOTTOM COURSE OF WALL.
 2. STEPS INDICATE STEPS IN BOTTOM COURSE OF WALL.

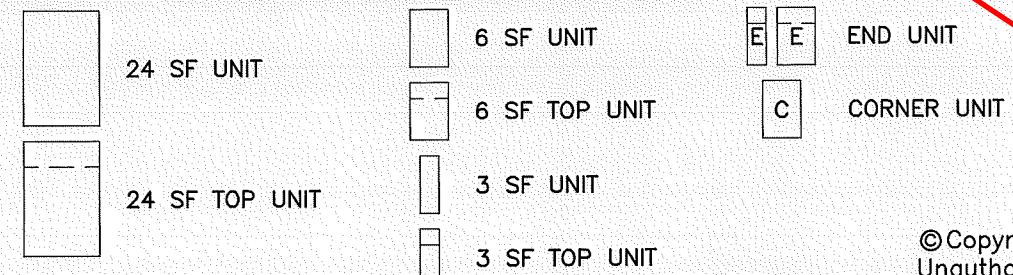
| Approximate Quantities Wall 4 | | |
|----------------------------------|---------|----------|
| Total Facing (SF) | 1,164 | |
| Block Type | # Units | Facing % |
| 24 SF Units | 21 | 43% |
| 24 SF Top Units | 24 | 49% |
| 6 SF Units | 8 | 4% |
| 3 SF Units | 1 | 0% |
| 3 SF Top Units | 2 | 1% |
| Corner Units | 1 | |
| End Units (Top/Corner) | 2 | |



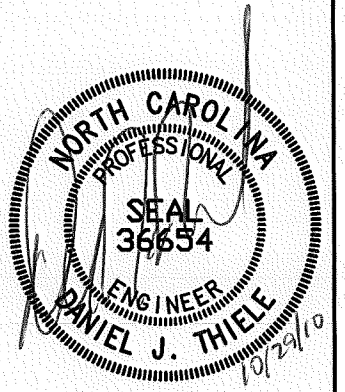
NOTES:
 1. GRADE AT TOP OF WALL IS FROM CHART ON NC DOT PLAN SHEET.
 2. BERM GRADE IS FROM FIELD SURVEY, 2' IN FRONT OF WALL.

| Facing Schedule-Wall 4 | | | |
|------------------------|----------|--------------------|----------|
| Station | TOF Elev | Station | TOW Elev |
| 16+10.0 to 17+78.0 | 2681.05 | 16+10.0 to 18+10.0 | 2687.05 |
| 17+78.0 to 18+08.0 | 2682.55 | | |
| 18+08.0 to 18+10.0 | 2684.05 | | |

STONE STRONG BLOCK LEGEND:



ELEVATION SCALES:
 HORIZ - 1"=20'
 VERT. - 1"=5'



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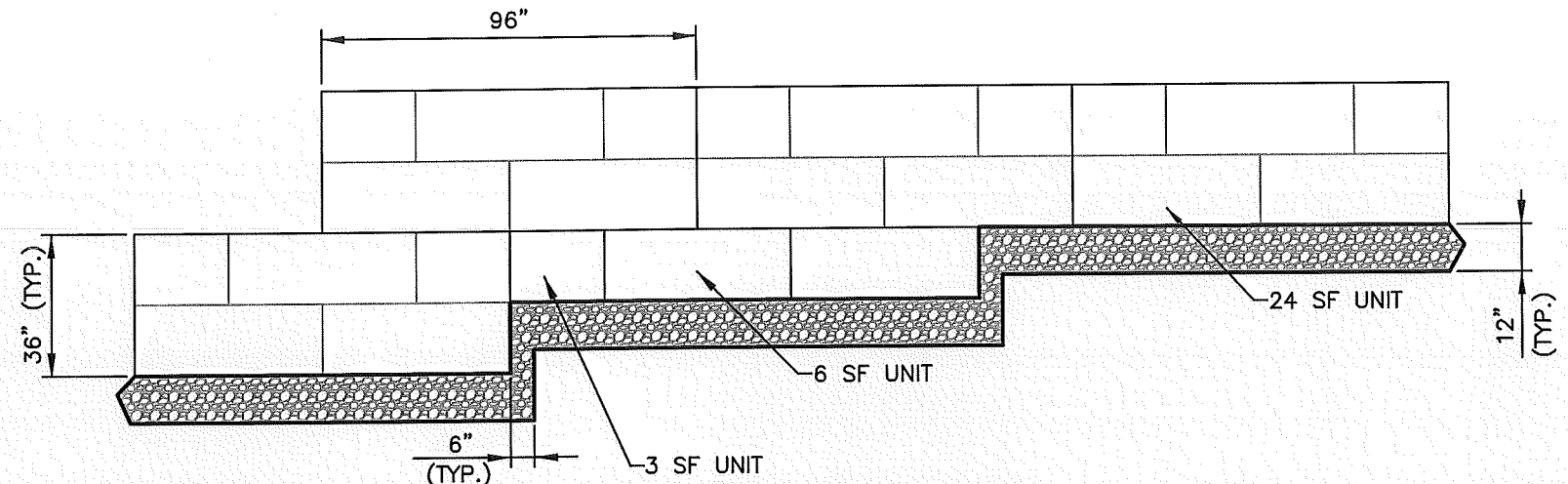
REVISIONS:

**WALL LAYOUT PLAN & ELEVATION
WALL 4**

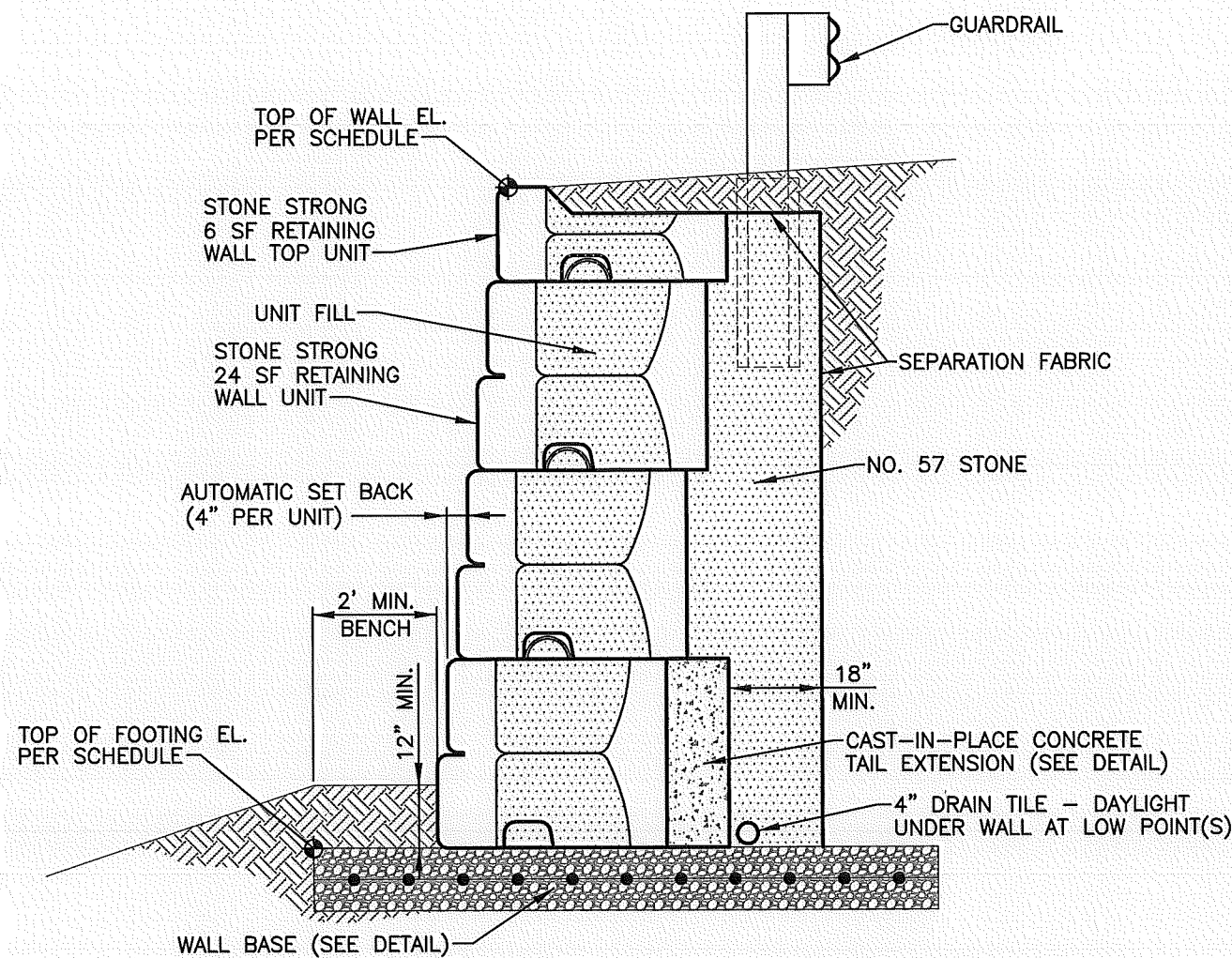
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SHEET: R12

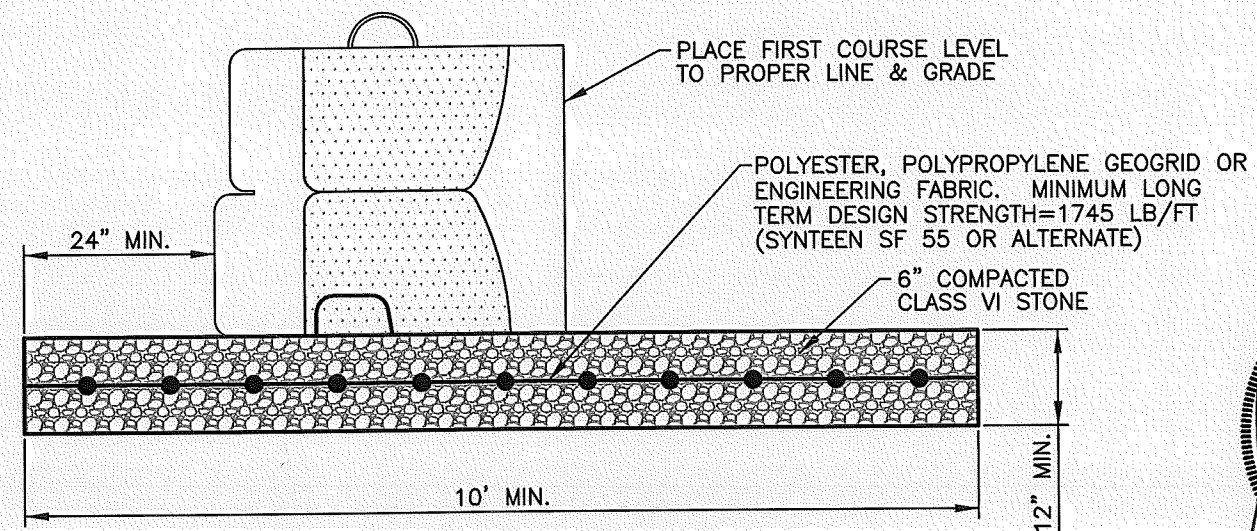
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WALL BASE STEP
NOT TO SCALE

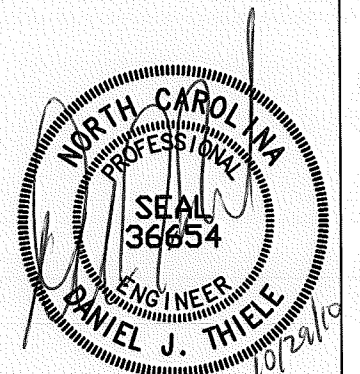


TYPICAL GRAVITY WALL CROSS SECTION
NOT TO SCALE



NOTE: BEARING CONDITIONS SHALL BE OBSERVED BY THE SITE GEOTECHNICAL ENGINEER. BASE DIMENSIONS MAY BE INCREASED TO ADDRESS DEFICIENT BEARING CONDITIONS

WALL BASE
NOT TO SCALE



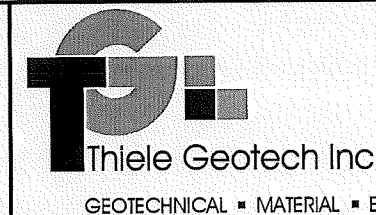
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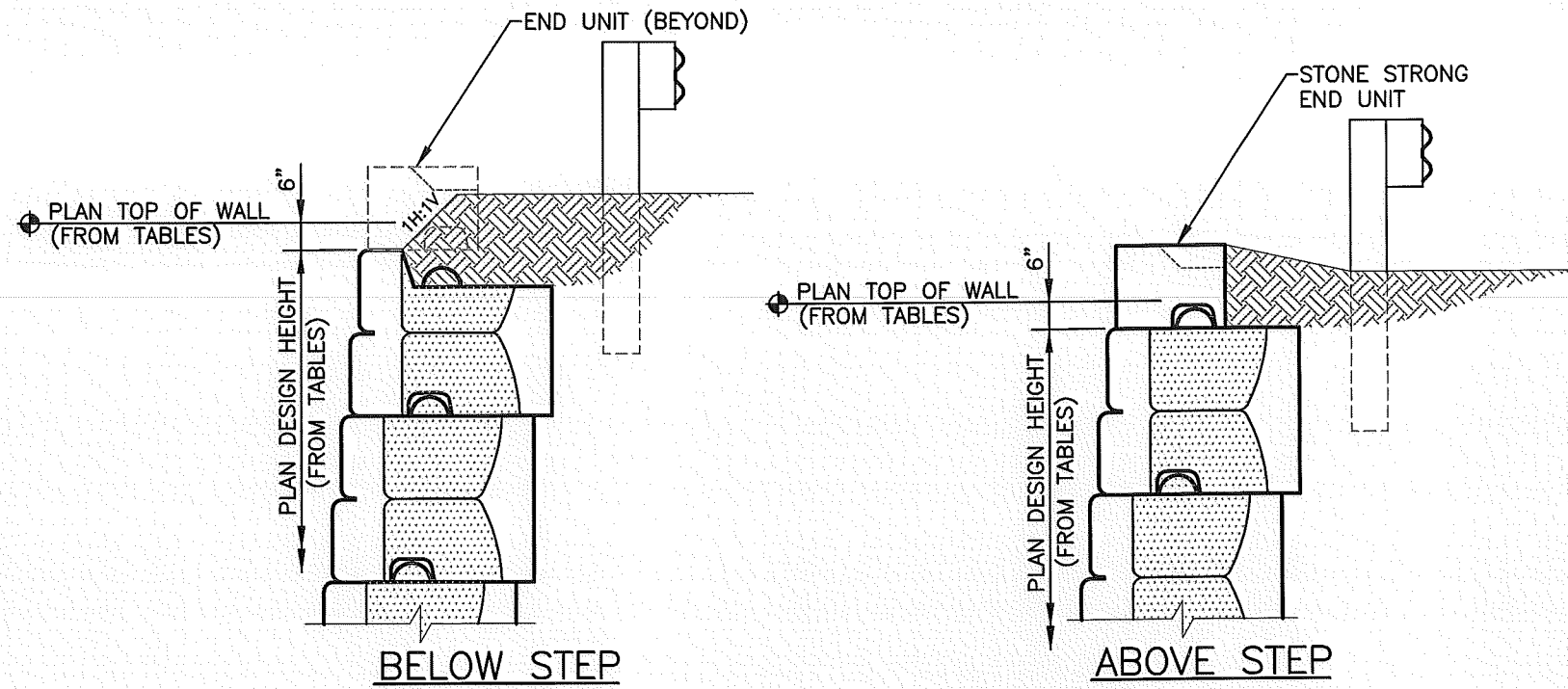
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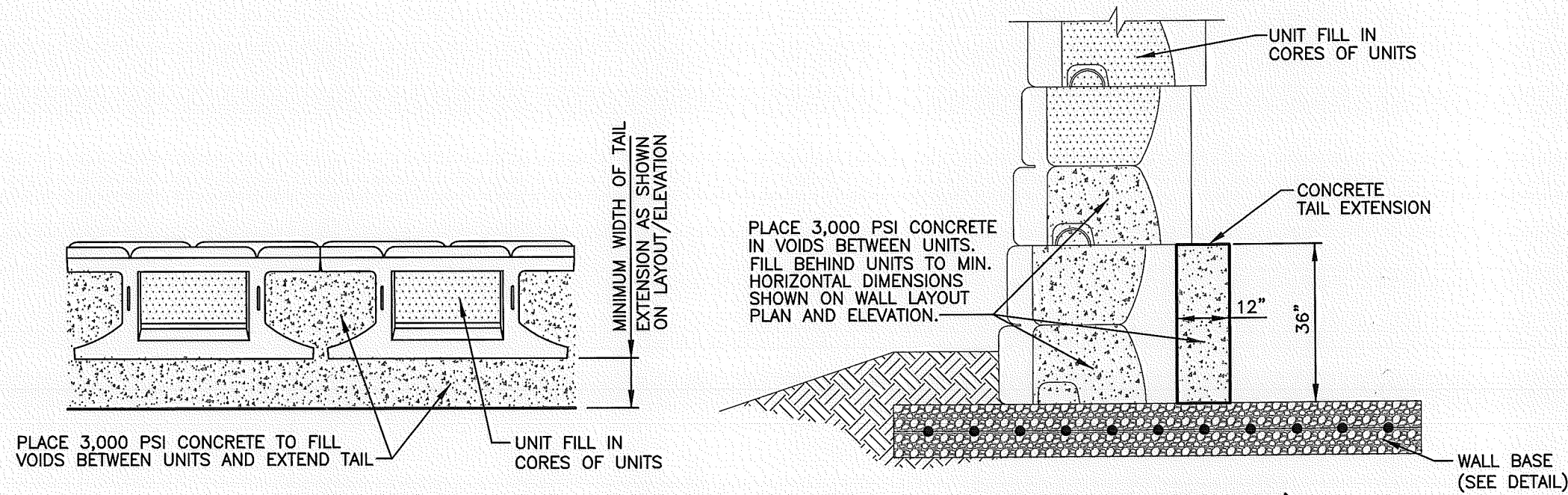
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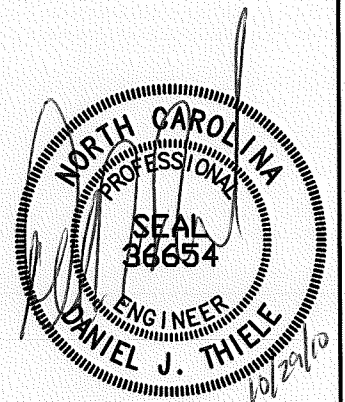
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**TOP OF WALL TREATMENT
AT 18" WALL STEPS**
NOT TO SCALE



CONCRETE TAIL EXTENSION DETAIL (CAST-IN-PLACE)
NOT TO SCALE



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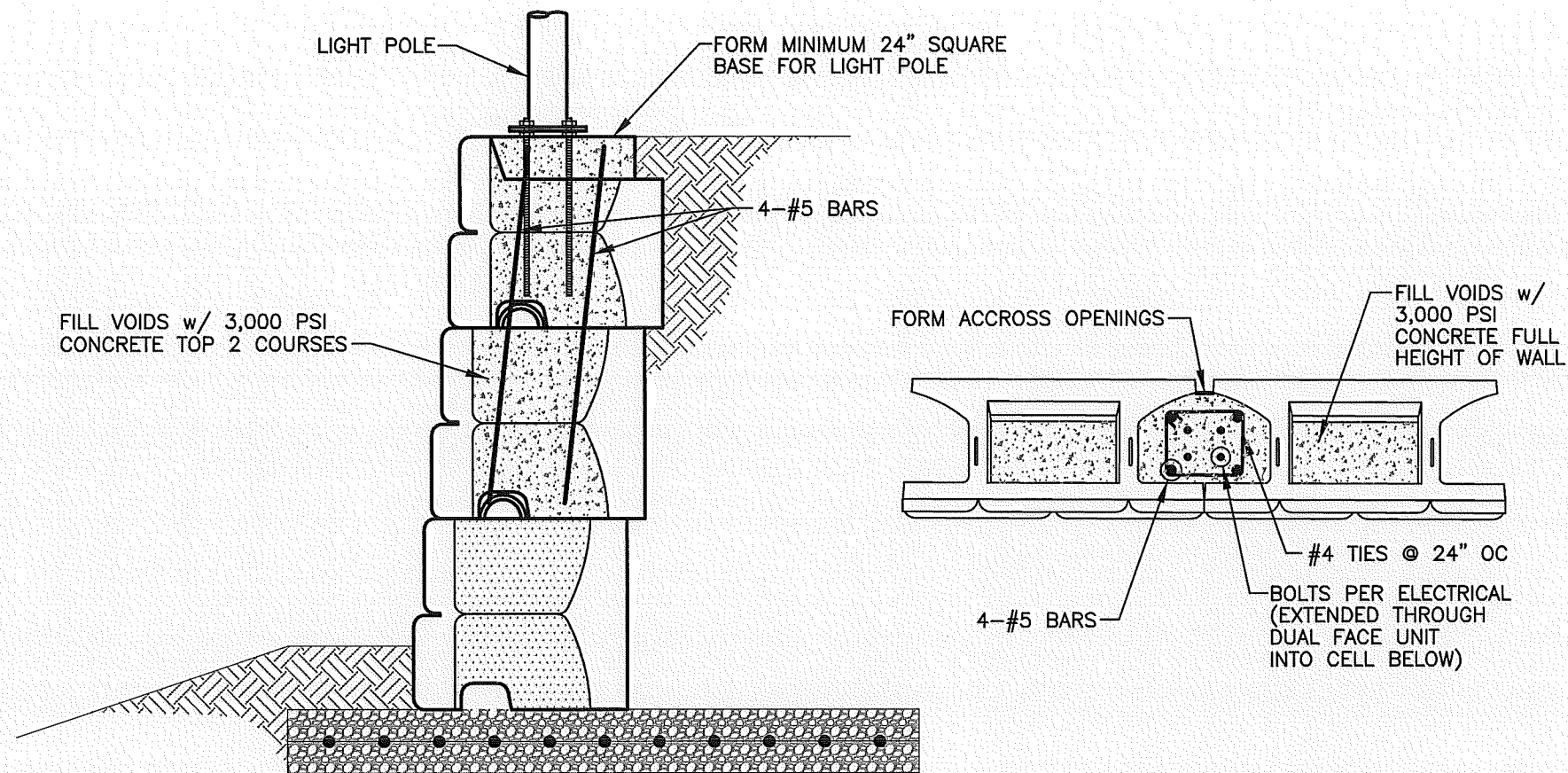
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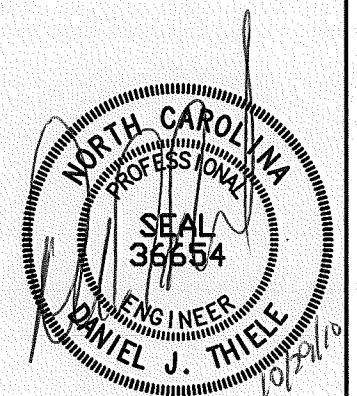


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LIGHT POLE BASE
NOT TO SCALE



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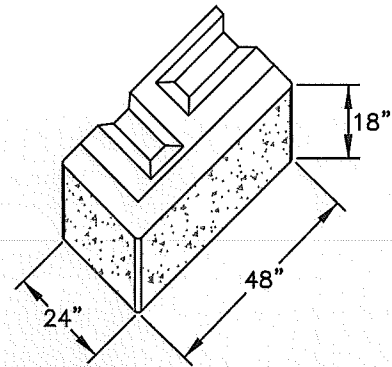


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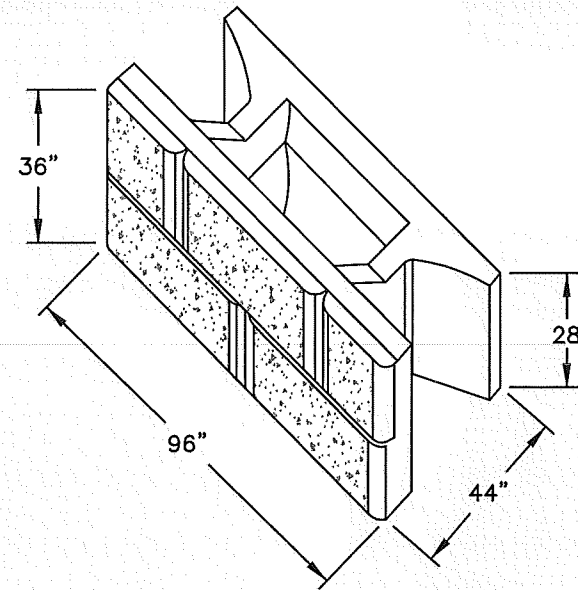
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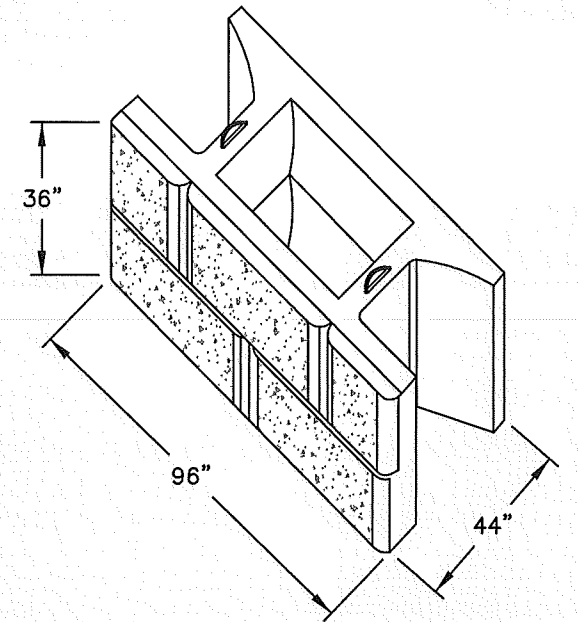
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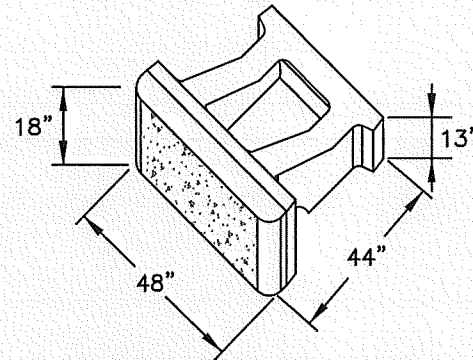
**STONE STRONG
CORNER UNIT**
NOT TO SCALE



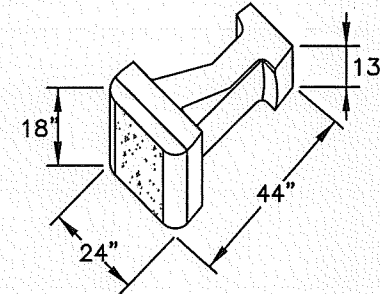
**STONE STRONG
24 SF TOP UNIT**
NOT TO SCALE



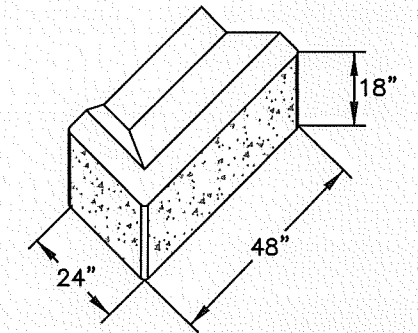
**STONE STRONG
24 SF UNIT**
NOT TO SCALE



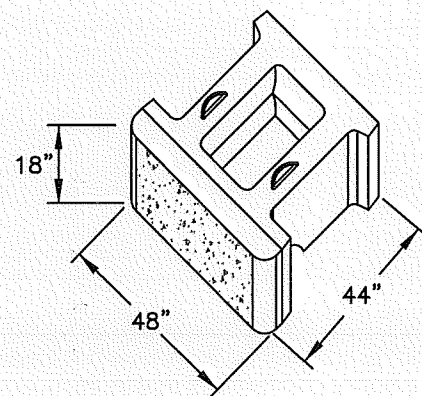
**STONE STRONG
6 SF TOP UNIT**
NOT TO SCALE



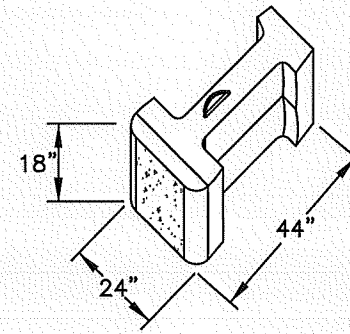
**STONE STRONG
3 SF TOP UNIT**
NOT TO SCALE



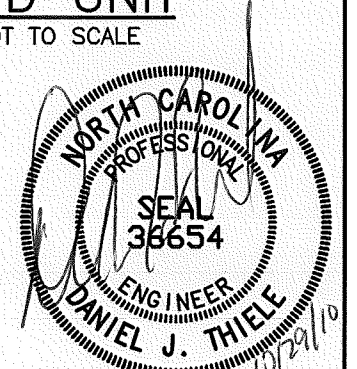
**STONE STRONG
END UNIT**
NOT TO SCALE



**STONE STRONG
6 SF UNIT**
NOT TO SCALE



**STONE STRONG
3 SF UNIT**
NOT TO SCALE



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COMPONENTS

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SHEET: R16

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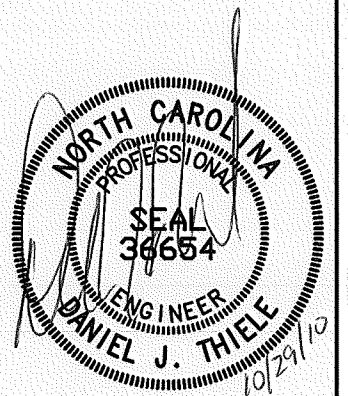
1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION SITE SAFETY. THIELE GEOTECH, INC. (TG) SHALL NOT BE RESPONSIBLE FOR MEANS OR METHODS OF CONSTRUCTION OR FOR SAFETY OF WORKERS OR OF THE PUBLIC.
2. THIS DESIGN IS BASED ON THE FOLLOWING SOIL PROPERTIES:

| PROPERTY | RETAINED SOIL | FOUNDATION SOIL |
|-------------------------|---------------|-----------------|
| FRICTION ANGLE - ϕ | 32° | 28° |
| UNIT WEIGHT - γ | 120 PCF | 120 PCF |
| COHESION - C | 0 | 0 |
| SOIL TYPE | SAND/GRAVEL | SAND/GRAVEL |

SOIL PROPERTIES ARE BASED ON CONSTRUCTION DRAWINGS PREPARED BY THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (PRECAST GRAVITY DETAILS SHEET 1 OF 1, 1/21/10). A SURCHARGE LOAD OF 250 PSF WAS APPLIED FOR PAVED SURFACES ABOVE THE WALL.

3. THE WALL BASE DESIGN ASSUMES A NET ALLOWABLE BEARING PRESSURE OF 2,000 PSF. THE SITE GEOTECHNICAL ENGINEER SHOULD OBSERVE THE BEARING CONDITIONS AND ADJUST THE THICKNESS OF THE GRANULAR BASE TO ACCOMMODATE SOFT CONDITIONS, IF NECESSARY.
4. THIS DESIGN IS FOR STABILITY OF THE PRECAST MODULAR RETAINING WALL SYSTEM ONLY. SITE STABILITY (GLOBAL STABILITY), IS THE RESPONSIBILITY OF THE SITE DESIGN ENGINEER OR SITE GEOTECHNICAL ENGINEER
5. STATIONS AND LAYOUT DIMENSIONS ARE MEASURED ALONG FACE OF THE WALL AT THE BOTTOM COURSE
6. PRECAST UNITS SHALL BE STONE STRONG RETAINING WALL UNITS MANUFACTURED UNDER LICENSE FROM STONE STRONG SYSTEMS. UNITS SHALL HAVE A MOLDED GRANITE FACE. THE BLOCKS MAY BE STAINED IN PLACE TO ACHIEVE THE DESIRED COLOR.
7. THE WALL BASE SHALL CONSIST OF CLASS VI STONE. THE WALL BASE SHALL BE PLACED AS SHOWN ON THE DRAWINGS. THE BASE SHALL BE COMPACTED SO AS TO PROVIDE A LEVEL AND HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS. GRANULAR BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 95 PERCENT OF STANDARD PROCTOR (ASTM D698). FOOTING SHALL BE SMOOTHED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH BASE. SURFACE OF GRANULAR BASE MAY BE DRESSED WITH FINER AGGREGATE TO AID LEVELING. THE THICKNESS OF DRESSING LAYER SHOULD NOT EXCEED 3 TIMES THE MAXIMUM PARTICLE SIZE USED.

8. UNIT FILL SHALL BE NO. 57 STONE. UNIT FILL SHALL FILL CAVITIES WITHIN AND BETWEEN THE UNITS, AND SHALL EXTEND A MINIMUM OF 18 INCHES BEHIND THE FACING UNITS.
9. EXCAVATED ON-SITE SOILS FREE FROM ORGANIC MATTER AND DEBRIS MAY BE USED AS BACKFILL MATERIAL. OFF-SITE BORROW SHALL BE A CLEAN GRANULAR MATERIAL WITH LESS THAN 10 PERCENT PASSING THE #200 SIEVE. BACKFILL MATERIAL SHALL BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO USE. BACKFILL SHALL BE PLACED IN MAXIMUM 8 INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95 PERCENT OF STANDARD PROCTOR (ASTM D698).
10. ENSURE EACH COURSE IS COMPLETELY FILLED AND BACKFILL IS PLACED TO THE SAME LEVEL PRIOR TO PROCEEDING TO NEXT COURSE. ENSURE ADJACENT UNITS ARE IN CONTACT SO THAT UNIT FILL MAY NOT ESCAPE THROUGH THE JOINT BETWEEN UNITS. GAPS GREATER THAN 1/4" BETWEEN UNITS SHALL NOT BE ALLOWED. AT INTERSECTIONS WITH STRUCTURES, CUT UNITS TO OBTAIN A NEAT FIT. PULL BLOCK UNITS FORWARD TO ENGAGE THE ALIGNMENT LOOPS ON THE UNIT BELOW.
11. MAINTAIN TEMPORARY GRADES TO DIVERT SURFACE WATER AWAY FROM THE RETAINING WALL EXCAVATION. SLOPE FINAL BACKFILL TO PROVIDE POSITIVE DRAINAGE AND TO ELIMINATE PONDING.



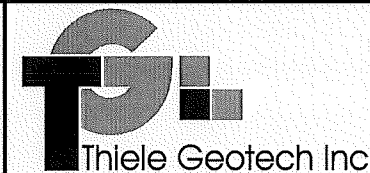
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