

GENERAL NOTES:

- 1. THIS ALTA/NSPS LAND TITLE SURVEY WAS PREPARED FOR THE BENEFIT OF WALLBROOK LANDCO, LLC, ITS SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR, AND INVESTORS TITLE INSURANCE COMPANY.
2. THE PROPERTY AS SHOWN HEREON IS BASED ON A FIELD-RUN BOUNDARY SURVEY WITH A REW CLOSURE OF 1:34,600.
3. THE IMPROVEMENTS SHOWN HEREON ARE BASED ON A FIELD-RUN PLANIMETRIC SURVEY PERFORMED BY JOHNSON, MIRMIRAN & THOMPSON FROM DECEMBER 2019 THROUGH MARCH 2020 AND REFLECTS SITE CONDITIONS AS OF THAT DATE.
4. ELEVATIONS ARE BASED ON NAVD88 DATUM.
5. THE SURVEY IS REFERENCED TO THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM (NCSPCS), NORTH AMERICAN DATUM, 1983, 2001 ADJUSTMENT, NAD83(2001).
6. THE USE OF THE WORD CERTIFY OR CERTIFICATION CONSTITUTES AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THOSE FACTS OR FINDINGS WHICH ARE THE SUBJECT OF THE UNDERSIGNED PROFESSIONAL'S KNOWLEDGE, INFORMATION AND BELIEF, AND IN ACCORDANCE WITH THE COMMONLY ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE EITHER EXPRESSED OR IMPLIED.
7. THE SUBJECT PROPERTY IS LOCATED IN FLOOD ZONE X, AREA OF MINIMAL FLOODING, AS SHOWN ON NATIONAL FLOOD INSURANCE RATE MAP (FIRM), WAKE COUNTY, NORTH CAROLINA, PANEL 1758, MAP NO. 3720175800J, EFFECTIVE DATE: MAY 2, 2006.
8. AT THE TIME OF THE SURVEY, THERE WERE NO PARKING SPACES.
9. AT THE TIME OF THE SURVEY, THERE WAS NO OBSERVABLE EVIDENCE OF THE SITE BEING USED AS A SOLID WASTE DUMP, SUMP OR LANDFILL.
10. AT THE TIME OF THE SURVEY, THERE WAS NO OBSERVABLE EVIDENCE OF A CEMETERY.
11. AT THE TIME OF THE SURVEY, THERE WAS NO OBSERVABLE EVIDENCE OF BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

AREA TABULATION

Table with 4 columns: PARCEL, PIN#, NET (AC.), GROSS (AC.). Rows include parcels A, B, C, D and a TOTALS row.

RECORD LEGAL DESCRIPTIONS FOR TAX PARCELS 1758-48-9229 & 1758-58-2090:

PER INVESTORS TITLE INSURANCE COMPANY, TITLE COMMITMENT NO. 201800776CA2, WITH AN EFFECTIVE DATE OF SEPTEMBER 14, 2018 AT 5:00 P.M.

IN THE STATE OF NC, COUNTY OF WAKE,

PARCEL ONE (REID #: 0224145) (PIN #1758-58-2090) (PARCEL 'B'):

BEING LOT 2-3, CONTAINING 10.723 NET ACRES, AS THE SAME IS SHOWN ON THAT PLAT RECORDED IN BOOK OF MAPS 1996, PAGE 1582, WAKE COUNTY REGISTRY.

PARCEL TWO (REID #: 0092211) (PIN #1758-48-9229) (PARCEL 'A'):

BEING THAT PARCEL DESCRIBED AS FOLLOWS:

BEGINNING AT A STAKE IN THE EDGE OF THE ROLESVILLE-WALKERS CROSSROAD ROAD, CORNER OF O. V. WIGGINS, THENCE IN A SOUTHWESTERN DIRECTION ABOUT 300 FEET TO A STAKE AND W. H. MARSHALL'S LINE; THENCE IN A NORTHWESTERN DIRECTION 246 FEET WITH MARSHALL'S LINE TO THE EDGE OF THE ROAD; THENCE IN AN EASTERN DIRECTION WITH SAID ROAD ABOUT 410 FEET TO THE POINT OF BEGINNING, CONTAINING 1/8 OF AN ACRE BY ESTIMATION. BEING A PART OF THE LAND FORMERLY OWNED BY JAMES WALL.

RECORD LEGAL DESCRIPTIONS FOR TAX PARCELS 1758-56-8976 & 1758-45-8905:

PER INVESTORS TITLE INSURANCE COMPANY, TITLE COMMITMENT NO. 201800751CA2, WITH AN EFFECTIVE DATE OF SEPTEMBER 10, 2018 AT 5:00 P.M.

IN THE STATE OF NC, COUNTY OF WAKE,

TRACT 1 (PIN #1758-56-8976) (PARCEL 'C'):

BEING ALL OF TRACT 2A (2.894 ACRES) AND TRACT 3 (41.221 ACRES) AS SHOWN ON PLAT ENTITLED "RECOMBINATION SURVEY FOR TOMMY TWITTY," DATED NOVEMBER 17, 1995, PREPARED BY W. GRAHAM CAWTHORNE, JR., RLS AND RECORDED IN BOOK OF MAPS 1995, PAGE 2034, WAKE COUNTY REGISTRY.

LESS AND EXCEPT FROM TRACT 1 THAT 0.175 ACRE PORTION AS CONVEYED TO THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION IN DEED RECORDED IN BOOK 14395, PAGE 2080, WAKE COUNTY REGISTRY.

TRACT 2 (PIN #1758-45-8905) (PARCEL 'D'):

BEING ALL OF TRACT 2 (15.057 ACRE) AS SHOWN ON PLAT ENTITLED "RECOMBINATION MAP OF BOBBY L. MURRAY TRUST, TRACTS 1 & 2" DATED NOVEMBER 7, 2002, PREPARED BY MICHAEL D. GOODFRED, RLS, AND RECORDED IN BOOK OF MAPS 2005, PAGES 1195 AND 1196, WAKE COUNTY REGISTRY.

LESS AND EXCEPT FROM TRACT 2 THAT 0.03 ACRE PORTION AS CONVEYED TO CARLTON GROUP OF NORTH CAROLINA, LLC IN DEED RECORDED IN BOOK 13993, PAGE 2591, WAKE COUNTY REGISTRY.

SCHEDULE B, PART II EXCEPTIONS:

PER INVESTORS TITLE INSURANCE COMPANY, TITLE COMMITMENT NO. 201800776CA2, WITH AN EFFECTIVE DATE OF SEPTEMBER 14, 2018 AT 5:00 P.M.

1. (ITEM 3) MATTERS SHOWN ON RECORDED BOOK OF MAPS 1996 AT PAGE 1582 SHOWS THE FOLLOWING LOCATED ON THE LAND:

- (a) OVERHEAD LINES [PLOTTED HEREON]
(b) POWER POLE [PLOTTED HEREON]
(c) RIGHT OF WAY FOR U.S. HWY 401 LOUISBURG ROAD [PLOTTED HEREON]

2. (ITEM 4) EASEMENT(S) AND/OR RIGHT(S) OF WAY RECORDED IN BOOK 3868 AT PAGE 917 (PARCEL ONE). [PLOTTED HEREON]

SCHEDULE B, PART II EXCEPTIONS:

PER INVESTORS TITLE INSURANCE COMPANY, TITLE COMMITMENT NO. 201800751CA2, WITH AN EFFECTIVE DATE OF SEPTEMBER 10, 2018 AT 5:00 P.M.

3. (ITEM 2) TITLE TO THAT PORTION OF THE LAND WITHIN THE RIGHT-OF-WAY OF U.S. HIGHWAY 401 (LOUISBURG ROAD). [PLOTTED HEREON]

4. (ITEM 3) RIGHTS OF OTHERS THERETO ENTITLED IN AND TO THE CONTINUED UNINTERRUPTED FLOW OF THE CREEK, LOCATED ON THE LAND. [CREEK LOCATION PLOTTED HEREON]

5. (ITEM 4) ELECTRIC LINE RIGHT-OF-WAY EASEMENT TO WAKE ELECTRIC MEMBERSHIP CORPORATION RECORDED IN BOOK 3868 AT PAGE 917. [PLOTTED HEREON]

AS TO TRACT 1 ONLY (PIN #1758-56-8976):

6. (ITEM 8) SUBJECT TO MATTERS SHOWN ON RECORDED BOOK OF MAPS 1995 AT PAGE 2034 SHOWS THE FOLLOWING LOCATED ON THE LAND:

- (a) OVERHEAD LINE [PLOTTED HEREON]
(b) POWER POLE [PLOTTED HEREON]

7. (ITEM 9) EASEMENT(S) TO WAKE ELECTRIC MEMBERSHIP CORPORATION RECORDED IN BOOK 863 AT PAGES 211 AND 212. [BLANKET EASEMENT - EXISTING ELECTRIC LINES PLOTTED HEREON]

8. (ITEM 10) RURAL LINE PERMIT TO CAROLINA TELEPHONE AND TELEGRAPH COMPANY RECORDED IN BOOK 1338 AT PAGES 143 AND 145. [LOCATIONS CANNOT BE DETERMINED FROM THE RECORD DOCUMENT, EXISTING POLES AND GUY WIRES PLOTTED HEREON]

9. (ITEM 11) SLOPE EASEMENT RECORDED IN BOOK 14395 AT PAGE 2087 AS SHOWN ON PLAT RECORDED IN BOOK OF MAPS 2011 AT PAGE 383. [PLOTTED HEREON]

AS TO TRACT 2 ONLY (PIN #1758-45-8905):

10. SUBJECT TO MATTERS SHOWN ON RECORDED BOOK OF MAPS 2005 AT PAGES 1195 AND 1196 SHOWS THE FOLLOWING LOCATED ON THE LAND:

- (a) UNDERGROUND SEWER MAIN MARKER [NOT FOUND]
(b) POWER BOX [NOT FOUND]
(c) RIGHTS OF OTHERS IN AND TO THE USE OF THE SOIL PATH (TO BE ABANDONED) [PATH NO LONGER VISIBLE]

11. (ITEM 13) DEED OF EASEMENT WITH GENERAL WARRANTY FOR WATERLINE EASEMENT TEMPORARY CONSTRUCTION EASEMENT RECORDED IN BOOK 16679 AT PAGE 132. [WATERLINE EASEMENT PLOTTED HEREON, TEMPORARY CONSTRUCTION EASEMENT NOT PLOTTED]

12. (ITEM 14) SANITARY SEWER EASEMENT RECORDED IN BOOK 10071 AT PAGE 2179 AS SHOWN ON PLAT RECORDED IN BOOK OF MAPS 2003 AT PAGE 647. [PLOTTED HEREON]

13. (ITEM 15) RESERVATION OF EASEMENT RECORDED IN BOOK 13993 AT PAGE 2591. [PLOTTED HEREON]

14. (ITEM 16) TITLE TO THAT PORTION OF THE LAND WITHIN THE RIGHT-OF-WAY OF S.R. 2226. [RIGHT OF WAY OF S.R. 2226 PLOTTED HEREON - PROPERTY DOES NOT EXTEND INTO RIGHT OF WAY]

15. (ITEM 17) RIGHT OF WAY AGREEMENT TO STATE HIGHWAY COMMISSION RECORDED IN BOOK 2052 AT PAGE 545. [RIGHT OF WAY OF S.R. 2226 PLOTTED HEREON]

16. (ITEM 18) RIGHTS OF OTHERS THERETO ENTITLED IN AND TO THE CONTINUED UNINTERRUPTED FLOW OF BRANCH/CREEK, LOCATED ON THE LAND. [BRANCH/CREEK LOCATION PLOTTED HEREON]

CURRENT ZONING SETBACK REQUIREMENTS:

TAX PARCEL 1758-48-9229: R-1 (SINGLE FAMILY RESIDENTIAL)
TAX PARCEL 1758-58-2090: R-1-SUD (SINGLE FAMILY RESIDENTIAL SPECIAL USE DISTRICT)
TAX PARCEL 1758-56-8976: CO-SUD (COMMERCIAL OUTLYING SPECIAL USE DISTRICT)
TAX PARCEL 1758-45-8905: CO-SUD

Table with 4 columns: FRONT, SIDE, CORNER, REAR. Rows for R-1 and CO-SUD zoning districts.

NOTE: ZONING INFORMATION BASED ON INFORMATION AS PROVIDED BY CURRENT COUNTY ZONING DEPARTMENT, NO ZONING REPORT OR LETTER WAS PROVIDED TO SURVEYOR AT TIME OF SURVEY.

NEW LEGAL DESCRIPTIONS

PARCEL 'A' (PIN #1758-48-9229)

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE TOWN OF ROLESVILLE, COUNTY OF WAKE, STATE OF NORTH CAROLINA, DESCRIBED AS FOLLOWS:

BEGINNING AT A FOUND IRON PIPE MARKING THE NORTHWEST CORNER OF LOT 2-3 AS SAID LOT IS SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "RECOMBINATION SURVEY FOR TOMMY TWITTY, TRACTS 2-2 & 2-3, TWITTY PROP.", BY W. GRAHAM CAWTHORNE, JR., RLS, DATED NOVEMBER 17, 1995, REVISED JANUARY 12, 1996 AND RECORDED IN BOOK OF MAPS 1996, PAGE 1582, WAKE COUNTY RECORDS, SAID PIPE ALSO BEING ON THE EAST LINE OF TRACT #3 AS SAID TRACT IS SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "W. H. MARSHALL ESTATE", BY C. W. RUSSUM, RLS, DATED JULY, 1961 AND RECORDED IN BOOK OF MAPS 1961, PAGE 97, WAKE COUNTY RECORDS; THENCE ALONG SAID EAST LINE OF TRACT 3 N01°11'04"W 240.24' TO AN IRON PIPE ON THE SOUTHWEST RIGHT OF WAY LINE OF BURLINGTON MILLS ROAD (S.R. 2051); THENCE ALONG SAID SOUTHWEST RIGHT OF WAY LINE THE FOLLOWING FOUR COURSES: (1) S47°12'51"E 130.81'; (2) ALONG THE ARC OF A TANGENT CURVE TO THE LEFT, CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 600.00', THROUGH A CENTRAL ANGLE OF 26°22'04", AN ARC LENGTH OF 276.12' AND BEING SUBTENDED BY A CHORD BEARING S60°23'53"E 273.69'; (3) S75°02'10"E 50.12'; AND (4) S77°31'31"E 22.85' TO THE NORTH LINE OF AFORESAID LOT 2-3; THENCE ALONG SAID NORTH LINE OF LOT 2-3 N89°45'02"W 399.74' TO THE POINT OF BEGINNING.

CONTAINING 0.828 ACRES, MORE OR LESS.

PARCEL 'B' (PIN #1758-58-2090)

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE TOWN OF ROLESVILLE, COUNTY OF WAKE, STATE OF NORTH CAROLINA, DESCRIBED AS FOLLOWS:

BEGINNING AT A FOUND IRON PIPE MARKING THE SOUTHWEST CORNER OF PARCEL 2 AS SAID PARCEL IS DESCRIBED IN DEED BOOK 15498, PAGE 1302, WAKE COUNTY RECORDS; THENCE ALONG THE SOUTH LINE OF SAID PARCEL 2 S89°45'02"E 399.74' TO THE SOUTHWEST RIGHT OF WAY LINE OF BURLINGTON MILLS ROAD (S.R. 2051); THENCE CONTINUING S89°45'02"E 200.72' TO THE NORTHWEST CORNER OF LOT 2-4 AS SAID LOT IS SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "RECOMBINATION SURVEY FOR TOMMY TWITTY, TRACTS 2-2 & 2-3, TWITTY PROP.", BY W. GRAHAM CAWTHORNE, JR., RLS, DATED NOVEMBER 17, 1995, REVISED JANUARY 12, 1996 AND RECORDED IN BOOK OF MAPS 1996, PAGE 1582, WAKE COUNTY RECORDS; THENCE ALONG THE SOUTHWEST LINE OF SAID LOT 2-4 S37°53'38"E 39.01' TO A FOUND BENT IRON PIPE AT AN ANGLE POINT IN THE SOUTH RIGHT OF WAY LINE OF BURLINGTON MILLS ROAD; THENCE CONTINUING S37°53'38"E 454.70' TO A FOUND IRON PIPE AT AN ANGLE POINT IN THE NORTHWEST RIGHT OF WAY LINE OF LOUISBURG ROAD (U.S. 401); THENCE CONTINUING S37°53'38"E 45.31' TO THE CENTERLINE OF LOUISBURG ROAD; THENCE ALONG THE CENTERLINE OF SAID ROAD, ALONG THE ARC OF A CURVE TO THE LEFT, CONCAVE TO THE SOUTHEAST, HAVING A RADIUS OF 3,750.00', THROUGH A CENTRAL ANGLE OF 08°13'06", AN ARC LENGTH OF 537.89' AND BEING SUBTENDED BY A CHORD BEARING S41°12'09"W 537.43'; THENCE LEAVING SAID CENTERLINE, ALONG THE NORTHEAST LINE OF LOTS 1 AND 2 AS SAID LOTS ARE SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "SURVEY FOR GRAND PARK PROPERTIES, LOTS 1 AND 2", BY CAWTHORNE, MOSS & PANCIERA, P.C., DATED OCTOBER 7, 1998 AND RECORDED IN BOOK OF MAPS 1999, PAGE 1039, WAKE COUNTY RECORDS, N49°16'09"W 479.09' TO A FOUND IRON PIPE MARKING AN ANGLE POINT IN SAID LOT 2; THENCE CONTINUING ALONG THE NORTHEAST LINE OF SAID LOT 2 N66°40'58"W 215.40' TO A FOUND IRON PIPE AT THE NORTHWEST CORNER THEREOF, SAID PIPE ALSO BEING ON THE EAST LINE OF TRACT #3 AS SAID TRACT IS SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "W. H. MARSHALL ESTATE", BY C. W. RUSSUM, RLS, DATED JULY, 1961 AND RECORDED IN BOOK OF MAPS 1961, PAGE 97, WAKE COUNTY RECORDS; THENCE ALONG SAID EAST LINE OF TRACT 3 N01°36'18"W 428.68' TO THE POINT OF BEGINNING.

THIS PARCEL IS THE SAME AS LOT 2-3 AS SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "RECOMBINATION SURVEY FOR TOMMY TWITTY, TRACTS 2-2 & 2-3, TWITTY PROP.", BY W. GRAHAM CAWTHORNE, JR., RLS, DATED NOVEMBER 17, 1995, REVISED JANUARY 12, 1996 AND RECORDED IN BOOK OF MAPS 1996, PAGE 1582, WAKE COUNTY RECORDS.

CONTAINING 11.168 ACRES, MORE OR LESS.

NEW LEGAL DESCRIPTIONS

PARCEL 'C' (PIN #1758-56-8976)

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE TOWN OF ROLESVILLE, COUNTY OF WAKE, STATE OF NORTH CAROLINA, DESCRIBED AS FOLLOWS:

BEGINNING AT A FOUND IRON PIPE MARKING THE NORTHEAST CORNER OF TRACT 2 AS SAID TRACT IS SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "RECOMBINATION MAP OF BOBBY L. MURRAY TRUST, TRACTS 1+2", BY KENNETH CLOSE, INC., DATED NOVEMBER 7, 2002 AND RECORDED IN BOOK OF MAPS 2005, PAGES 1195 AND 1196, WAKE COUNTY RECORDS; THENCE ALONG THE NORTH LINE OF SAID TRACT 2 N75°27'01"W 704.12' TO A FOUND IRON PIPE ON THE SOUTHEAST RIGHT OF WAY LINE OF LOUISBURG ROAD (U.S. 401); THENCE CONTINUING N75°27'01"W 32.34' TO THE CENTERLINE OF LOUISBURG ROAD; THENCE ALONG THE CENTERLINE OF SAID ROAD N36°33'22"E 1,116.98'; THENCE CONTINUING ALONG SAID CENTERLINE, ALONG THE ARC OF A TANGENT CURVE TO THE RIGHT, CONCAVE TO THE SOUTHEAST, HAVING A RADIUS OF 3,750.00', THROUGH A CENTRAL ANGLE OF 18°18'05", AN ARC LENGTH OF 1,197.82' AND BEING SUBTENDED BY A CHORD BEARING N45°42'25"E 1,192.73'; THENCE LEAVING SAID CENTERLINE S89°44'38"E 134.33' TO AN ANGLE POINT IN THE SOUTHWEST LINE OF THAT CERTAIN PARCEL DESCRIBED IN DEED BOOK 6821, PAGE 005, WAKE COUNTY RECORDS; THENCE ALONG THE SOUTHWEST LINE OF SAID PARCEL AND ALONG THE WEST LINE OF WALL CREEK SUBDIVISION, PHASES 2, 4 AND 5-A AS RECORDED IN BOOK OF MAPS 1997, PAGE 1162, BOOK OF MAPS 2001, PAGE 628 AND BOOK OF MAPS 2002, PAGE 825, WAKE COUNTY RECORDS, S03°05'32"W 2,131.93' TO A POINT ON THE NORTH LINE OF CARLTON POINTE SUBDIVISION, PHASE I AS RECORDED IN BOOK OF MAPS 2008, PAGES 5 TO 10, WAKE COUNTY RECORDS; THENCE ALONG SAID NORTH LINE OF CARLTON POINTE SUBDIVISION N75°27'01"W 852.86' TO THE POINT OF BEGINNING.

THIS PARCEL IS THE SAME AS TRACTS 2A AND 3 AS SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "RECOMBINATION SURVEY FOR TOMMY TWITTY", BY W. GRAHAM CAWTHORNE, JR., RLS, DATED NOVEMBER 17, 1995 AND RECORDED IN BOOK OF MAPS 1995, PAGE 2034, WAKE COUNTY RECORDS.

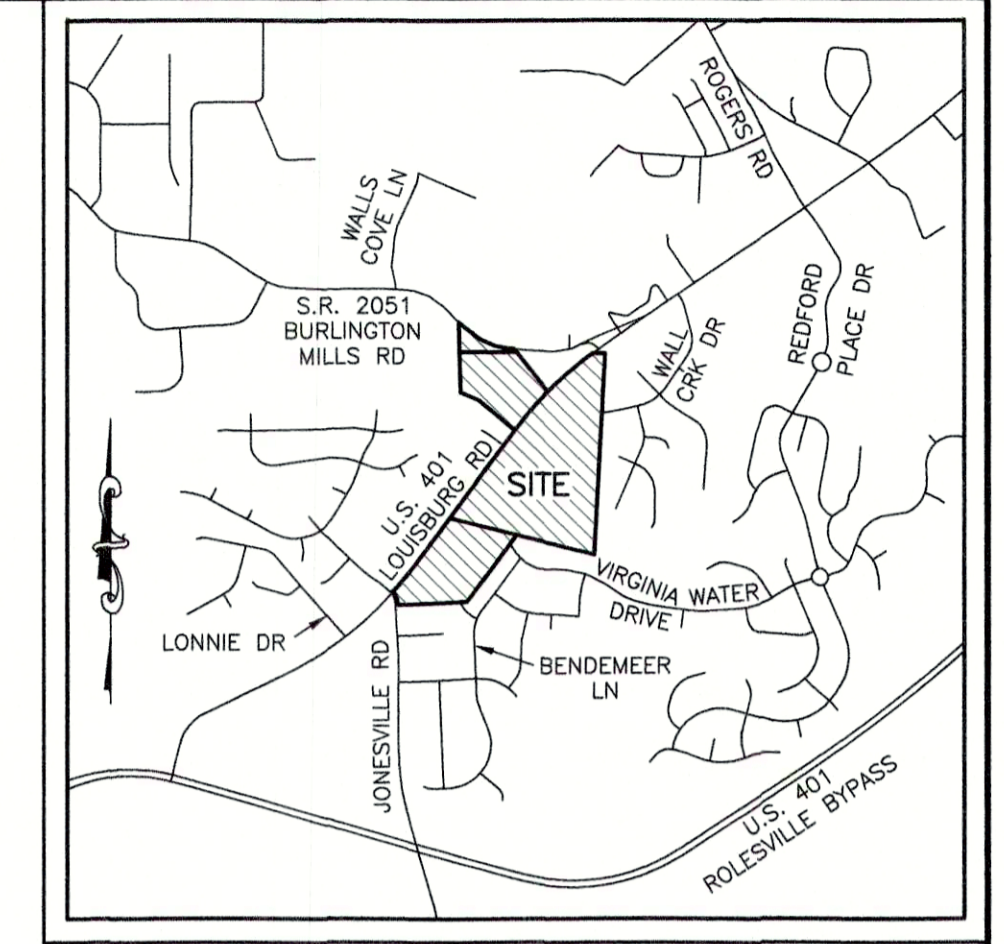
CONTAINING 44.100 ACRES, MORE OR LESS.

PARCEL 'D' (PIN #1758-45-8905)

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE TOWN OF ROLESVILLE, COUNTY OF WAKE, STATE OF NORTH CAROLINA, DESCRIBED AS FOLLOWS:

BEGINNING AT A FOUND IRON PIPE ON THE SOUTH LINE OF TRACT 3 AS SAID TRACT IS SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "RECOMBINATION SURVEY FOR TOMMY TWITTY", BY W. GRAHAM CAWTHORNE, JR., RLS, DATED NOVEMBER 17, 1995 AND RECORDED IN BOOK OF MAPS 1995, PAGE 2034, WAKE COUNTY RECORDS, SAID PIPE ALSO BEING AN ANGLE POINT IN THE NORTHWEST LINE OF CARLTON POINTE SUBDIVISION, PHASE I AS RECORDED IN BOOK OF MAPS 2008, PAGES 5 TO 10, WAKE COUNTY RECORDS; THENCE ALONG THE NORTHWEST LINE OF SAID CARLTON POINTE SUBDIVISION S36°44'45"W 877.98' TO AN ANGLE POINT; THENCE CONTINUING ALONG SAID NORTHWEST LINE AND ALONG THE NORTH LINE OF LOTS 1, 2 AND 3 AS SAID LOTS ARE SHOWN AND SO DESIGNATED ON THAT CERTAIN PLAT ENTITLED "SUBDIVISION PLAT FOR BARRETT VENTURES, LLC", BY CAWTHORNE, MOSS & PANCIERA, P.C., DATED APRIL 4, 2007 AND RECORDED IN BOOK OF MAPS 2008, PAGE 702, WAKE COUNTY RECORDS, S87°10'58"W 737.24' TO AN ANGLE POINT IN THE EAST RIGHT OF WAY LINE OF JONESVILLE ROAD (S.R. 2226) AND THE SOUTHEAST CORNER OF THAT CERTAIN PARCEL DESCRIBED IN DEED BOOK 13993, PAGE 2591, WAKE COUNTY RECORDS; THENCE ALONG THE EAST LINE OF SAID PARCEL N02°07'15"W 48.32'; THENCE CONTINUING ALONG SAID EAST LINE, ALONG THE ARC OF A CURVE TO THE LEFT, CONCAVE TO THE WEST, HAVING A RADIUS OF 123.92', THROUGH A CENTRAL ANGLE OF 30°27'05", AN ARC LENGTH OF 65.86' AND BEING SUBTENDED BY A CHORD BEARING N17°21'49"W 65.09' TO THE EAST RIGHT OF WAY LINE OF JONESVILLE ROAD; THENCE ALONG SAID EAST RIGHT OF WAY LINE N03°10'03"W 17.67' TO THE SOUTHEAST RIGHT OF WAY LINE OF LOUISBURG ROAD (U.S. 401); THENCE ALONG SAID SOUTHEAST RIGHT OF WAY LINE THE FOLLOWING EIGHT COURSES: (1) N41°10'16"E 41.30'; (2) N40°37'47"E 49.15'; (3) N39°31'43"E 50.83'; (4) N38°52'58"E 49.80'; (5) N38°22'04"E 50.40'; (6) N37°17'31"E 50.37'; (7) N36°44'45"E 304.20'; AND (8) N36°27'57"E 396.53' TO A FOUND IRON PIPE ON THE SOUTH LINE OF THE AFORESAID TRACT 3; THENCE ALONG SAID SOUTH LINE OF TRACT 3 S75°27'01"E 704.12' TO THE POINT OF BEGINNING.

CONTAINING 15.024 ACRES, MORE OR LESS.



VICINITY MAP SCALE: 1"=2000'

LEGEND

- (1) = RECORD DATA PER BM 1996 PG 1582
(2) = RECORD DATA PER BM 2011 PG 383
(3) = RECORD DATA PER BM 1995 PG 2034
(4) = RECORD DATA PER BM 2002 PG 825
(5) = RECORD DATA PER BM 2005 PG 1195-1196
(6) = RECORD DATA PER DB 13993 PG 2591
● = FOUND MONUMENT AS NOTED
○ = SET IRON PIN
\* = NCOS MONUMENT
+ = DIMENSION POINT (NOTHING SET)
R = PROPERTY LINE
R/W = RIGHT OF WAY
C&G = CURB AND GUTTER
C&G = CABLE TV PEDESTAL
DI = DROP INLET
ELEC = ELECTRIC BOX
EM = ELECTRIC METER
F/O = FIBER OPTIC
FH = FIRE HYDRANT
GV = GAS VALVE
H = HAND BOX
LP = LIGHT POLE
PP = POWER POLE
G = GUY WIRE
RCP = REINFORCED CONCRETE PIPE
S.F. = SQUARE FEET (AREA)
S = SIGN
T = TRAFFIC SIGNAL POLE
SM = SANITARY SEWER MANHOLE
SFMV = SANITARY SEWER FORCE MAIN VALVE
SDM = STORM DRAIN MANHOLE
TEP = TELEPHONE PEDESTAL
TB = TRAFFIC BOX
WB = WATER BOX
WM = WATER METER
WMH = WATER MANHOLE
WV = WATER VALVE
W = WELL
X-WALK = PEDESTRIAN X-WALK POLE
E = ELECTRIC LINE
FM = SANITARY SEWER FORCE MAIN
FO = FIBER OPTIC LINE
G = GAS LINE
O-E = OVERHEAD ELECTRIC LINE
S = SANITARY SEWER LINE
T = TELEPHONE LINE
TV = CABLE TV LINE
W = WATER LINE

MATCH LINE

MATCH LINE

MATCH LINE

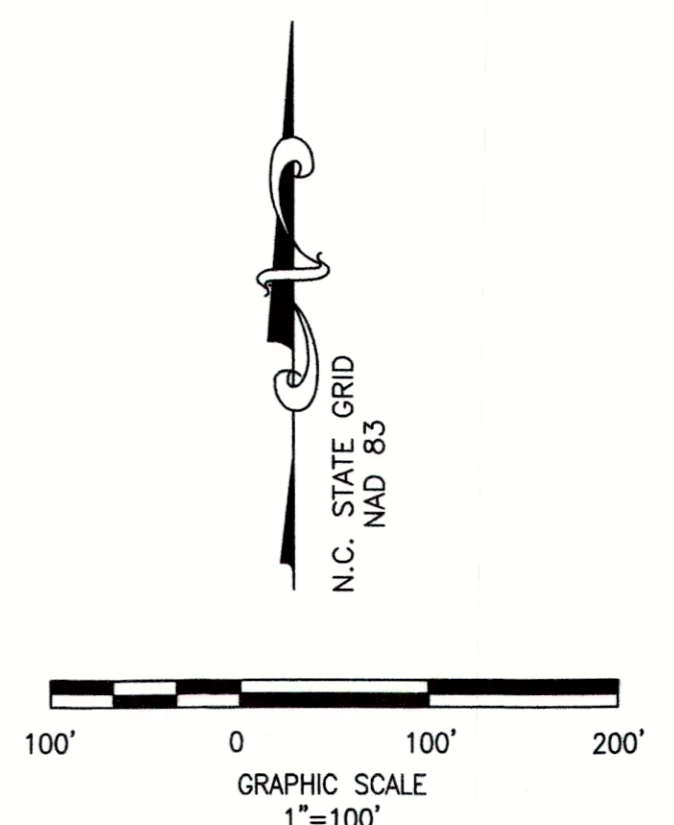
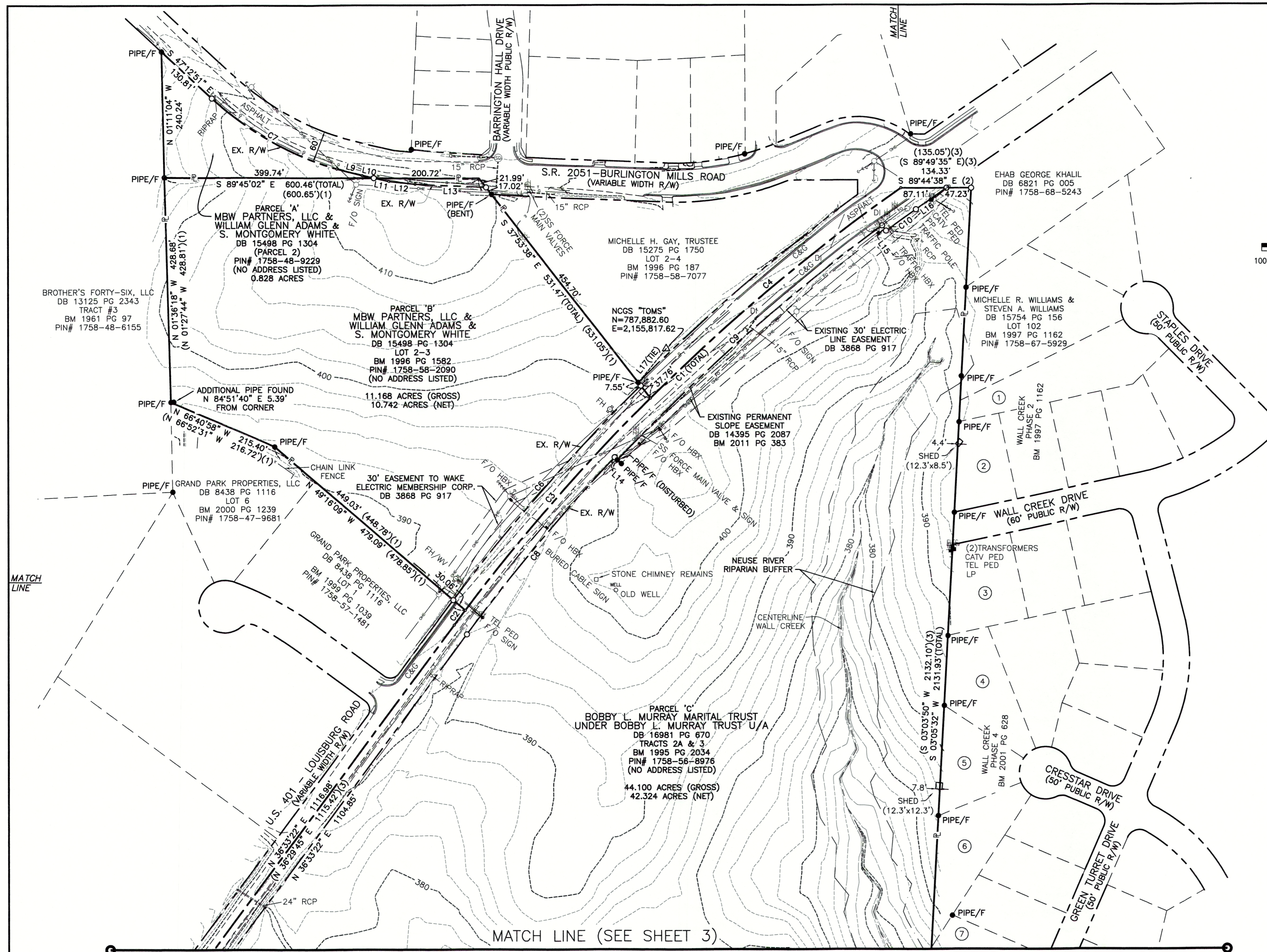
JOHNSON, MIRMIRAN & THOMPSON Engineering A Brighter Future logo and contact information.

Table with 3 columns: REVISION #, DATE, REASON FOR REVISION. Row 1: 1, 10/01/2020, ADDED RIPARIAN BUFFER ALONG WALL CREEK.

ALTA/NSPS LAND TITLE SURVEY PREPARED FOR WALLBROOK LANDCO, LLC WAKE FOREST TOWNSHIP TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA. Includes drawing and project details.



Signature of William T. Robbins, II and date 10/1/2020.



**ADJOINING PROPERTY OWNERS**

- ① RODERICK BLACKWELL & CHRISTINE BLACKWELL DB 8769 PG 1894 LOT 101 BM 1997 PG 1162 PIN# 1758-67-6836
- ② CHARLES CULBERTSON & TERESA CULBERTSON DB 17393 PG 896 LOT 96 BM 1997 PG 1162 PIN# 1758-67-4619
- ③ ANTONIO G. CATTARUZZA & SHEILA B. CATTARUZZA DB 8149 PG 422 LOT 92 BM 1997 PG 1162 PIN# 1758-67-4416
- ④ JOHN DANIEL BONO, III & SABRINA MICHELE BONO DB 13369 PG 2170 LOT 85 BM 2001 PG 628 PIN# 1758-67-4204
- ⑤ RONALD G. PATTERSON & LAURA A. PATTERSON DB 10087 PG 2409 LOT 84 BM 2001 PG 628 PIN# 1758-67-4100
- ⑥ MICHAEL A. HADDER & JENNIFER H. HADDER DB 16143 PG 2477 LOT 83 BM 2001 PG 628 PIN# 1758-66-3984
- ⑦ JOSEPH L. KEELEY, III & SARAH E. KEELEY DB 10496 PG 1314 LOT 79 BM 2002 PG 825 PIN# 1758-66-4723

- LEGEND**
- (1) = RECORD DATA PER BM 1996 PG 1582
  - (2) = RECORD DATA PER BM 2011 PG 383
  - (3) = RECORD DATA PER BM 1995 PG 2034
  - (4) = RECORD DATA PER BM 2002 PG 825
  - (5) = RECORD DATA PER BM 2005 PG 1195-1196
  - (6) = RECORD DATA PER DB 13993 PG 2591
  - = FOUND MONUMENT AS NOTED
  - = SET IRON PIN
  - △ = NCGS MONUMENT
  - = DIMENSION POINT (NOTHING SET)
  - ▭ = PROPERTY LINE
  - R/W = RIGHT OF WAY

- C&G = CURB AND GUTTER
- CAV = CABLE TV PEDESTAL
- DI = DROP INLET
- ELEC = ELECTRIC BOX
- EM = ELECTRIC METER
- F/O = FIBER OPTIC
- FH = FIRE HYDRANT
- GV = GAS VALVE
- HBX = HAND BOX
- LP = LIGHT POLE
- PP = POWER POLE
- ← = GUY WIRE
- RCP = REINFORCED CONCRETE PIPE
- S.F. = SQUARE FEET (AREA)
- SIGN = SIGN
- TS = TRAFFIC SIGNAL POLE
- SSM = SANITARY SEWER MANHOLE
- SSFM = SANITARY SEWER FORCE MAIN VALVE
- SDM = STORM DRAIN MANHOLE
- TEP = TELEPHONE PEDESTAL
- TBOX = TRAFFIC BOX
- WB = WATER BOX
- WM = WATER METER
- WMH = WATER MANHOLE
- WV = WATER VALVE
- WELL = WELL
- PE = PEDESTRIAN X-WALK POLE
- EL = ELECTRIC LINE
- SSFM = SANITARY SEWER FORCE MAIN
- FO = FIBER OPTIC LINE
- GL = GAS LINE
- OEL = OVERHEAD ELECTRIC LINE
- SSL = SANITARY SEWER LINE
- TL = TELEPHONE LINE
- CLV = CABLE TV LINE
- WL = WATER LINE

LINE	BEARING	DISTANCE
L1	N 02°07'15" W	48.32'
L2	N 03°10'03" W	17.67'
L3	N 41°10'16" E	41.30'
L4	N 40°37'47" E	49.15'
L5	N 39°31'43" E	50.83'
L6	N 38°52'58" E	49.80'
L7	N 38°22'04" E	50.40'
L8	N 37°17'31" E	50.37'
L9	S 75°02'10" E	50.12'
L10	S 77°31'31" E	22.85'
L11	S 77°31'31" E	29.16'
L12	S 84°03'28" E	50.67'
L13	S 87°10'20" E	135.52'
L14	S 46°39'44" E	7.50'
L15	S 36°12'58" E	12.50'
L16	N 55°13'38" E	70.99'
L17	N 39°21'58" E	83.92'

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	1197.82'	3750.00'	18°18'05"	S 45°42'25" W	1192.73'
C2	35.15'	3750.00'	0°32'13"	S 36°49'29" W	35.15'
C3	537.89'	3750.00'	8°13'06"	S 41°12'09" W	537.43'
C4	624.78'	3750.00'	9°32'45"	S 50°05'04" W	624.06'
C5	65.86'	123.92'	30°27'05"	S 17°21'49" E	65.09'
C6	543.86'	3780.00'	8°14'37"	S 41°14'38" W	543.40'
C7	276.12'	600.00'	26°22'04"	N 60°23'53" W	273.69'
C8	440.32'	3720.00'	6°46'55"	S 39°56'50" W	440.07'
C9	675.86'	3712.50'	10°25'52"	S 48°33'13" W	674.95'
C10	70.31'	3700.00'	1°05'20"	S 54°18'48" W	70.31'

(R=3750.00', L=1199.06')(3)

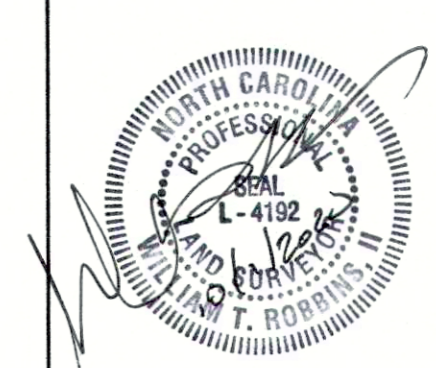
(2)

**JMT JOHNSON, MIRMIRAN & THOMPSON**  
 Engineering A Brighter Future  
 9201 Arboretum Parkway Suite 310 Richmond, Virginia 23236  
 PHONE: (804)-323-9900 FAX: (804)-323-0596  
 EMAIL: jmtva@jmt-engineering.com

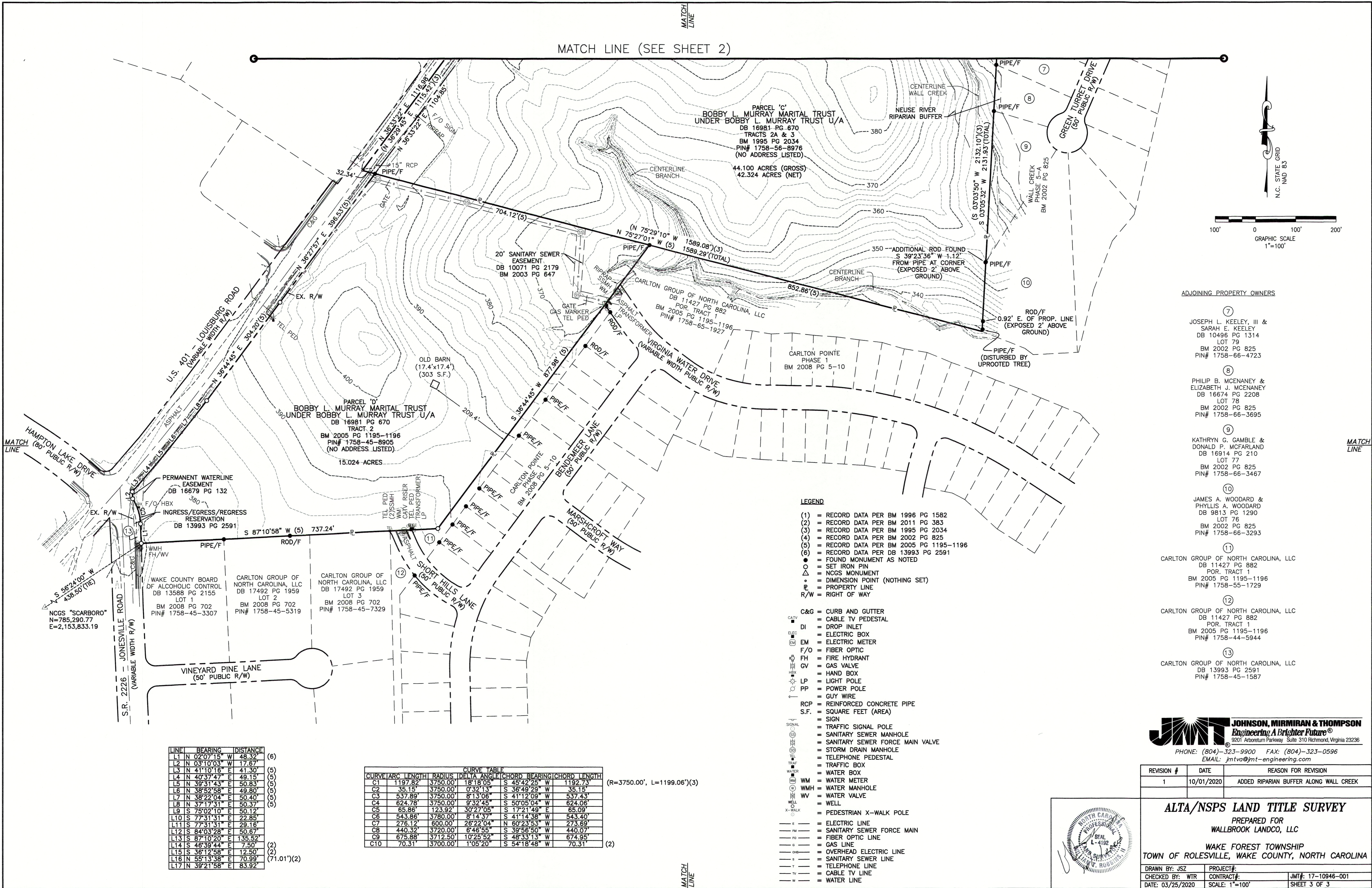
REVISION #	DATE	REASON FOR REVISION
1	10/01/2020	ADDED RIPARIAN BUFFER ALONG WALL CREEK

**ALTA/NSPS LAND TITLE SURVEY**  
 PREPARED FOR  
**WALLBROOK LANDCO, LLC**  
 WAKE FOREST TOWNSHIP  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

DRAWN BY: JSZ PROJECT#: JMT# 17-10946-001  
 CHECKED BY: WTR CONTRACT#: SHEET 2 OF 3  
 DATE: 03/25/2020 SCALE: 1"=100'



MATCH LINE (SEE SHEET 2)



ADJOINING PROPERTY OWNERS

- (7) JOSEPH L. KEELEY, III & SARAH E. KEELEY  
DB 10496 PG 1314  
LOT 79  
BM 2002 PG 825  
PIN# 1758-66-4723
- (8) PHILIP B. MCENANEY & ELIZABETH J. MCENANEY  
DB 16674 PG 2208  
LOT 78  
BM 2002 PG 825  
PIN# 1758-66-3695
- (9) KATHRYN G. GAMBLE & DONALD P. MCFARLAND  
DB 16914 PG 210  
LOT 77  
BM 2002 PG 825  
PIN# 1758-66-3467
- (10) JAMES A. WOODARD & PHYLLIS A. WOODARD  
DB 9813 PG 1290  
LOT 76  
BM 2002 PG 825  
PIN# 1758-66-3293
- (11) CARLTON GROUP OF NORTH CAROLINA, LLC  
DB 11427 PG 882  
POR. TRACT 1  
BM 2005 PG 1195-1196  
PIN# 1758-55-1729
- (12) CARLTON GROUP OF NORTH CAROLINA, LLC  
DB 11427 PG 882  
POR. TRACT 1  
BM 2005 PG 1195-1196  
PIN# 1758-44-5944
- (13) CARLTON GROUP OF NORTH CAROLINA, LLC  
DB 13993 PG 2591  
PIN# 1758-45-1587

LEGEND

- (1) = RECORD DATA PER BM 1996 PG 1582
- (2) = RECORD DATA PER BM 2011 PG 383
- (3) = RECORD DATA PER BM 1995 PG 2034
- (4) = RECORD DATA PER BM 2002 PG 825
- (5) = RECORD DATA PER BM 2005 PG 1195-1196
- (6) = RECORD DATA PER DB 13993 PG 2591
- (7) = FOUND MONUMENT AS NOTED
- (8) = SET IRON PIN
- (9) = NCGS MONUMENT
- (10) = DIMENSION POINT (NOTHING SET)
- (11) = PROPERTY LINE
- R/W = RIGHT OF WAY

- C&G = CURB AND GUTTER
- DI = DROP INLET
- ELEC = ELECTRIC BOX
- EM = ELECTRIC METER
- F/O = FIBER OPTIC
- FH = FIRE HYDRANT
- GV = GAS VALVE
- HB = HAND BOX
- LP = LIGHT POLE
- PP = POWER POLE
- GUY = GUY WIRE
- RCP = REINFORCED CONCRETE PIPE
- S.F. = SQUARE FEET (AREA)
- SIGN = SIGN
- TRAFFIC SIGNAL POLE = TRAFFIC SIGNAL POLE
- SANITARY SEWER MANHOLE = SANITARY SEWER MANHOLE
- SANITARY SEWER FORCE MAIN VALVE = SANITARY SEWER FORCE MAIN VALVE
- STORM DRAIN MANHOLE = STORM DRAIN MANHOLE
- TELEPHONE PEDESTAL = TELEPHONE PEDESTAL
- TRAFFIC BOX = TRAFFIC BOX
- WATER BOX = WATER BOX
- WM = WATER METER
- WMH = WATER MANHOLE
- WV = WATER VALVE
- WELL = WELL
- X-WALK POLE = PEDESTRIAN X-WALK POLE
- E = ELECTRIC LINE
- FM = SANITARY SEWER FORCE MAIN
- FO = FIBER OPTIC LINE
- G = GAS LINE
- OE = OVERHEAD ELECTRIC LINE
- S = SANITARY SEWER LINE
- T = TELEPHONE LINE
- TV = CABLE TV LINE
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C8	440.32'	3720.00'	6°46'55"	S 39°56'50" W	440.07'
C9	675.88'	3712.50'	10°25'52"	S 48°33'13" W	674.95'
C10	70.31'	3700.00'	1°05'20"	S 54°18'48" W	70.31'

(R=3750.00', L=1199.06')(3)

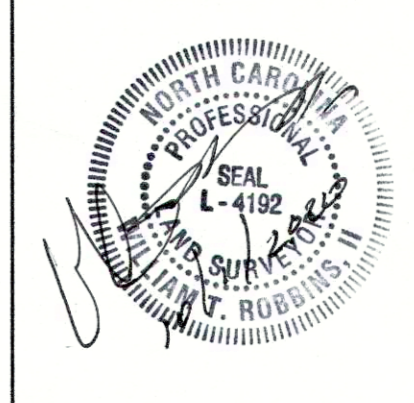
(2)

**JMT JOHNSON, MIRMIRAN & THOMPSON**  
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 PHONE: (804)-323-9900 FAX: (804)-323-0596  
 EMAIL: jmtvo@jmt-engineering.com

REVISION #	DATE	REASON FOR REVISION
1	10/01/2020	ADDED RIPARIAN BUFFER ALONG WALL CREEK

**ALTA/NSPS LAND TITLE SURVEY**  
 PREPARED FOR  
**WALLBROOK LANDCO, LLC**  
 WAKE FOREST TOWNSHIP  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

DRAWN BY: JSZ PROJECT#: JMT#: 17-10946-001  
 CHECKED BY: WTR CONTRACT#: JMT#: 17-10946-001  
 DATE: 03/25/2020 SCALE: 1"=100' SHEET 3 OF 3



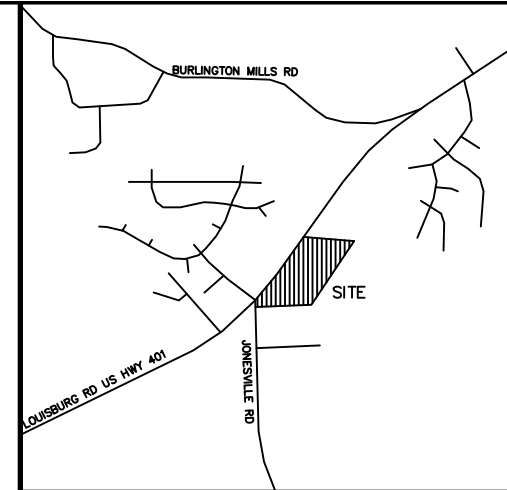
I DECLARE THAT THIS SURVEY COMPLIES WITH THE NORTH CAROLINA STANDARDS OF PRACTICE FOR SURVEYING, (SECTION 1600) FOR CLASS A SURVEYS AND HAS THE CALCULATED RATIO OF PRECISION BEFORE ADJUSTMENTS IS 1:10,000+. FURTHERMORE, PROPERTY CORNERS SHOWN ARE PRIMARY CONTROL MONUMENTATION FOR THE RE-ESTABLISHMENT OF PROPERTY CORNERS IN THE ABSENCE OF GRID MONUMENTS AND OTHER SUBDIVISION PROPERTY CORNERS. THIS SURVEY IS NOT TO BE RECORDED WITHOUT THE WRITTEN AUTHORIZATION OF THE SURVEYOR.

**PRELIMINARY**  
FOR REVIEW PURPOSE ONLY

PROFESSIONAL LAND SURVEYOR L-

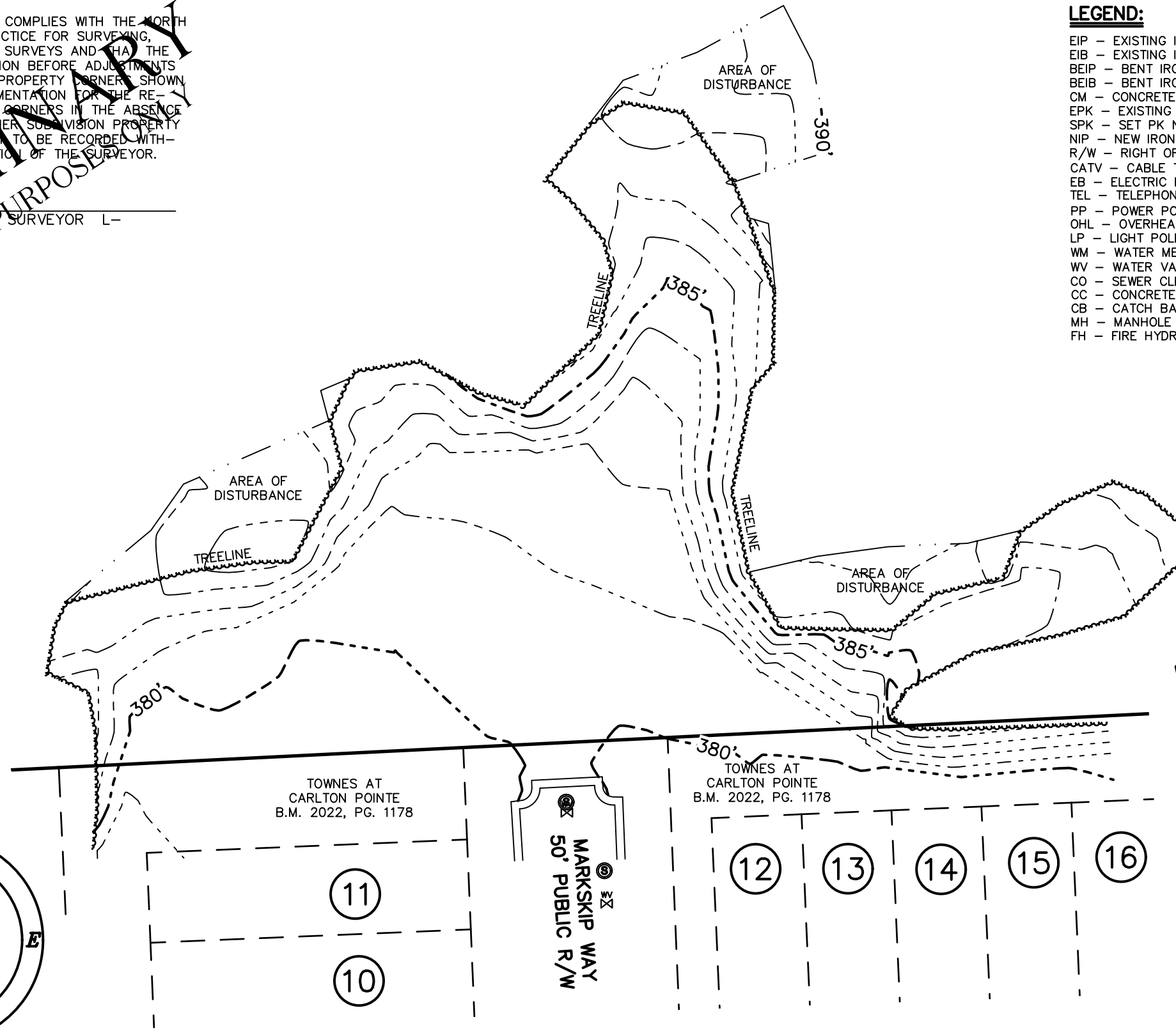
**LEGEND:**

- EIP - EXISTING IRON PIPE
- EIB - EXISTING IRON BAR
- BEIP - BENT IRON PIPE
- BEIB - BENT IRON BAR
- CM - CONCRETE MONUMENT
- EPK - EXISTING PK NAIL
- SPK - SET PK NAIL
- NIP - NEW IRON PIPE SET
- R/W - RIGHT OF WAY
- CATV - CABLE TV BOX
- EB - ELECTRIC BOX
- TEL - TELEPHONE PEDESTAL
- PP - POWER POLE
- OHL - OVERHEAD LINE
- LP - LIGHT POLE
- WM - WATER METER
- WV - WATER VALVE
- CO - SEWER CLEAN-OUT
- CC - CONCRETE
- CB - CATCH BASIN
- MH - MANHOLE
- FH - FIRE HYDRANT

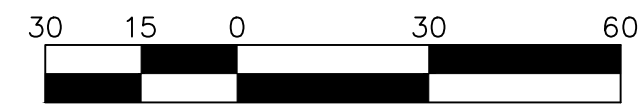


VICINITY MAP  
LINE TYPE LEGEND

	PROPERTY LINE - LINE SURVEYED
	RIGHT-OF-WAY
	ADJOINING LINE - LINE NOT SURVEYED
	OVERHEAD LINE
	BUILDING SETBACK
	EASEMENT
	BUFFER
	FLOOD HAZARD SOILS

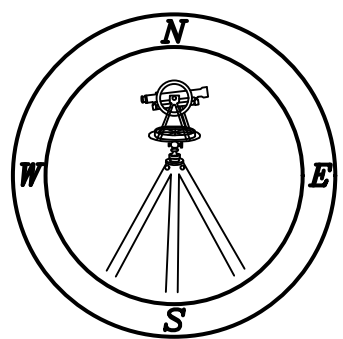


TOPOGRAPHIC SURVEY FOR  
**WALLBROOK LANDCO, LLC**  
OWNER: WALLBROOK LANDCO, LLC  
REF: DEED BOOK 18103, PAGE 1563  
REF: B.M. 1995, PG. 2034  
TOWN OF ROLESVILLE  
WAKE COUNTY, NORTH CAROLINA



SCALE 1"=30'

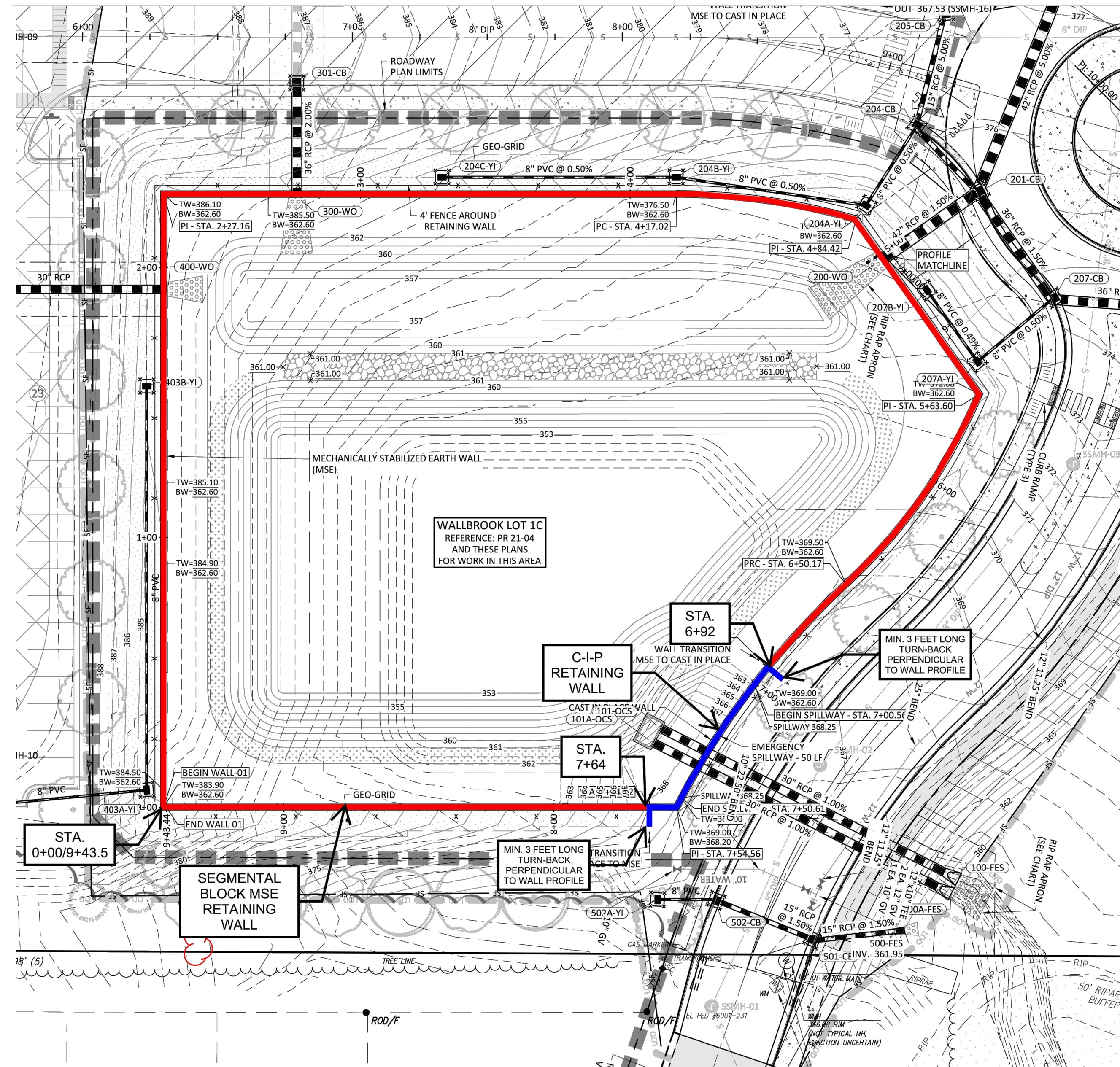
JULY 7, 2022  
REVISED JULY 13, 2022  
ZONED GC-CZ  
PIN #1758.01-45-8905



PROFESSIONAL LAND SURVEYORS, C-1525, 333 S. WHITE STREET, P.O. BOX 1253, WAKE FOREST N.C., 27588, (919) 556-3148

(CARLTON TOWNHOMES-TOPO AREA.DWG - TW)





Note: This site plan was provided to NV5 Engineers & Consultants, Inc. by Crosland Southeast. This site plan is for general reference only and is not intended to be used for construction layout of the retaining walls. Actual retaining wall layout shall be staked in the field by a qualified surveyor and approved by the Site/Civil Engineer of Record prior to construction. Top-of-Wall elevations to be dictated by site/civil drawings, within the maximum height parameters described, herein.

### General Notes

This retaining wall has been designed using active earth pressure theory. Therefore, outward movement at the top of the wall should be expected. Some cracks could develop at the ground surface due to lateral movement of the wall. These cracks should be filled in as soon as they are observed to help protect the soils below the ground surface from softening related to water infiltration that could affect the support characteristics for nearby construction.

External stability analyses for bearing capacity, global stability, and total and differential settlement was performed based on soil parameters derived from our previous Report of Subsurface Investigation and Geotechnical Engineering Evaluation.

The Engineer requests that representatives of the owner and/or general contractor arrange a pre-construction meeting with all pertinent parties involved for the construction of the retaining wall shown on these plans. The Engineer's responsibility is limited to providing only the design services of the project's retaining wall contained herein. Retaining wall construction monitoring and retaining wall certifying are beyond the scope of these design services. The Engineer shall not be required to sign any document, no matter by whom requested, in which the Engineer is required to certify, guarantee, or warrant conditions of which the Engineer has not or cannot ascertain.

This wall has been designed as a reinforced concrete wall considering the maximum expected soil backfill and lowest planned (during construction) bottom-of-wall grades (EL. 362.6). A live load surcharge of 250 psf was utilized at appropriate setbacks so as to model the planned asphalt pavement loading conditions. With the exception of these conditions no additional dead loading conditions, no live loading, and no additional lateral loading conditions were considered. Structures such as light poles, handrail, guardrail, or drainage structures to be installed in the vicinity of the retaining wall shall be designed and constructed to resist imposing additional lateral loads on the retaining wall. If future construction alters the assumed loading conditions of the retaining wall, NV5 Engineers & Consultants, Inc. shall be notified to review the design criteria for the imposed loads.

This reinforced concrete retaining wall shall include a turn-back at 90 degrees from the path of the wall at either end to facilitate connection with the adjacent MSE retaining wall. See Site Layout Figure for minimum acceptable turn-back distances. We understand that flow over the weir portion of this wall, from the adjacent SCM, is expected to occur periodically. It is imperative that the Site/Civil Engineer provide specifications for suitable scour protection at and around the weir portion of this wall so as to prevent loss of soils at any portion of the wall. We also note that this retaining wall design is intended to address ONLY the geotechnical and structural design characteristics of the wall. We have not performed design services related to the hydrologic components of the weir or SCM. It is also imperative that, prior to construction, the Site/Civil Engineer perform design substantiation to verify that this design submittal complies with the required storm water and hydrologic components of the weir wall system and pond, as a whole.

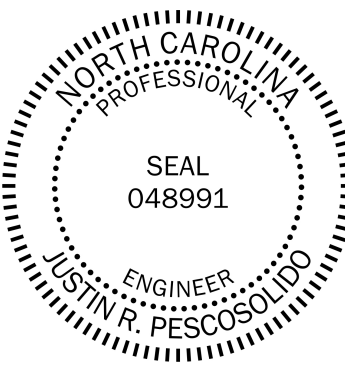
### Construction Notes

1. Prior to construction, confirmation of the distances to property lines, buffers of any kind, curb and gutter, and/or buildings to the face of the proposed walls shall be performed.
2. Prior to construction, confirmation of existing utility line locations (Stormwater, Sewer, Water, Electrical, Communications, and Gas) and the locations of future utility lines shall be performed.
3. Prior to construction, confirmation of the in-situ and proposed grades shall be performed.
4. During construction, care must be exercised to prevent the undermining of any existing structures. Construction of nearby structures, after construction of this wall, shall be carried out in such a way as to avoid damaging and/or undermining of this wall system.
5. After construction, heavy equipment should not be operated within 3 feet of the completed walls.
6. After construction, surface water drainage from adjacent yard areas and roadways shall be directed to the stormwater drainage system, and away from the retaining walls.
7. The project civil engineer shall be consulted for recommendations related to environmental requirements for finished slopes.

## NV5 Engineers & Consultants, Inc.

4905 Professional Court  
 Raleigh, North Carolina 27609  
 Phone: (919) 876-9799 Fax: (919) 876-8291  
 North Carolina Corporate License No. F-1333

Seal

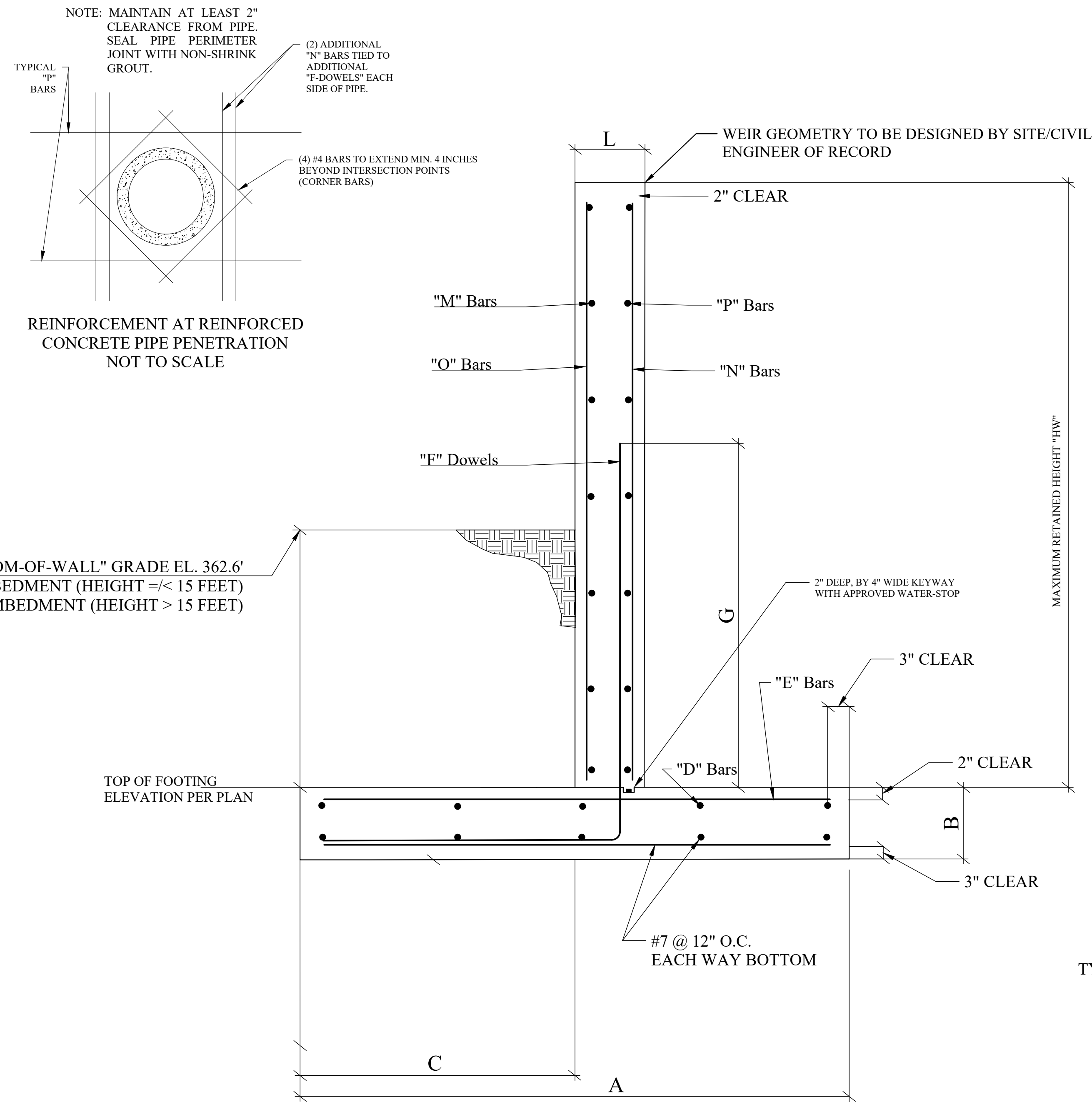


Wallbrook Shopping Center  
 Rolesville, North Carolina  
 Our Project Number: 121-22-108262

REV	DATE	DESCRIPTION	BY
1	8/9/2022	ADDED TO RCW EXTENTS	JRP
2	2/21/2023	CHANGE TO RCW EXTENTS	JRP

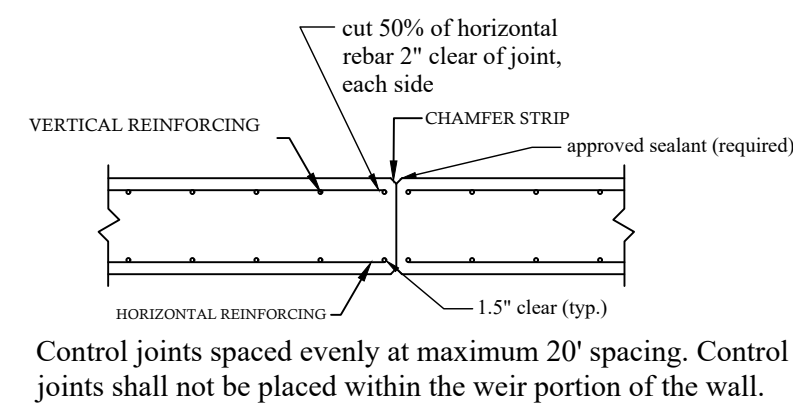
## Retaining Wall Layout

Designed by: Justin R. Pescosolido, P.E.	Date: 5-26-22	SHEET <b>RW-2</b>
Drawn By: Jalen Deatherage	Date: 5-26-22	
Reviewed By: Brock Horsley, P.E.	Date: 5-26-22	
Retaining Wall Design		

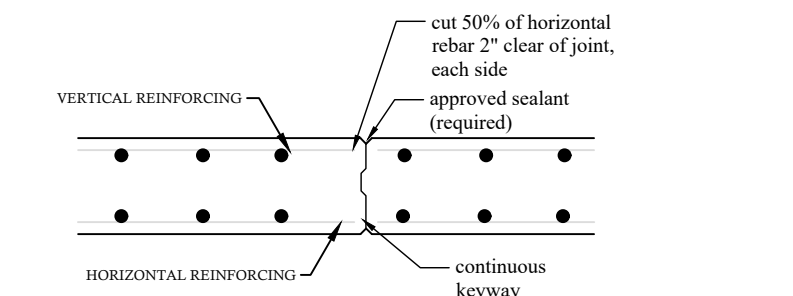


## TYPICAL CONCRETE WALL CROSS-SECTION

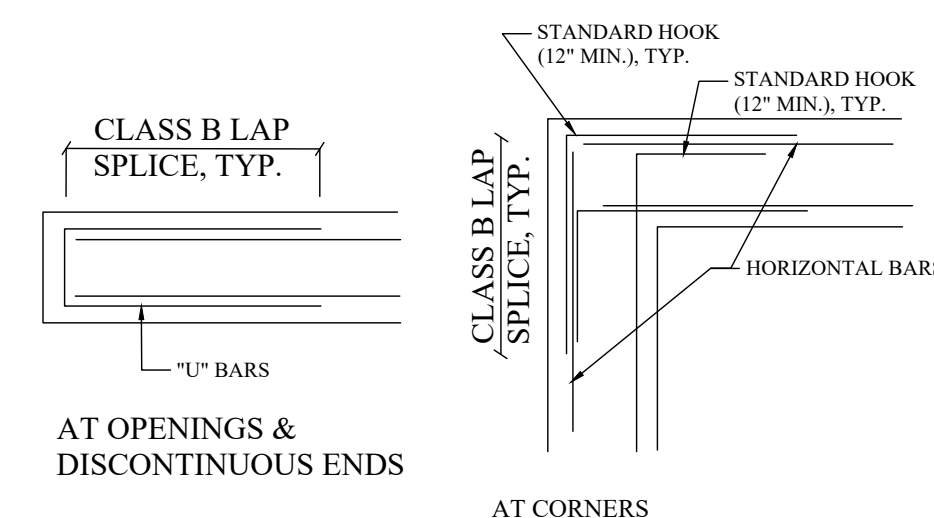
Concrete Retaining Wall Schedule																
Mark	Max. Height	Footing							Footing Key				Wall			
		A	B	C	"D" bars	"E" bars	"F" dowels	G	H	J	L	"M" bars	"N" bars	"O" bars	"P" bars	
Type-A	10'	8'-10"	12"	1'-4"	6-#7	#7 @ 16"	#7 @ 12"	48"	NO KEY		12"	NONE	#7 @ 12"	#7 @ 12"	#7 @ 18"	
Type-B	15'	14'-3"	16"	2'-9"	8-#7	#9 @ 10"	#9 @ 18"	60"	NO KEY		18"	NONE	#9 @ 9"	#9 @ 9"	#7 @ 18"	
Type-C	20'	20'-9"	18"	3'-9"	15-#7	#9 @ 8"	#9 @ 16"	66"	NO KEY		24"	#7 @ 18"	#9 @ 8"	#9 @ 8"	#7 @ 18"	
Type-D	27'	28'	26"	5'-6"	20-#9	#10 @ 8"	#10 @ 16"	72"	NO KEY		30"	#7 @ 18"	#10 @ 8"	#10 @ 8"	#7 @ 18"	



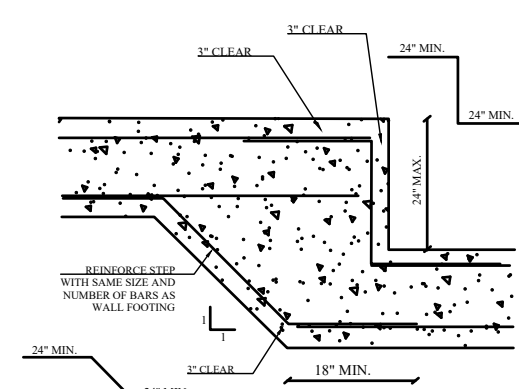
TYPICAL CONTROL JOINT DETAIL  
NOT TO SCALE



TYPICAL CONSTRUCTION JOINT DETAIL  
NOT TO SCALE



TYPICAL WALL INTERSECTION DETAILS  
NOT TO SCALE



TYPICAL FOOTING STEP  
NOT TO SCALE

### General Specifications:

- These drawings are the sole property of NV5 Engineers & Consultants, Inc. (NV5) for use on this project, and shall not be copied, reproduced or used for other purposes without permission of NV5.
- This retaining wall has been designed as a reinforced concrete retaining wall. The details on this page shall be considered applicable to the construction of this retaining wall.
- Dimensions and structural components shown on these drawings are based on information provided by others. Construction shall not begin until Site/Civil Engineer has provided design substantiation and Contractor has reviewed existing conditions and verified all items that may affect new construction. NV5 shall be made aware of all discrepancies.
- The wall is only stable in its completed form. Contractor shall provide all temporary bracing during construction to stabilize the structure. Design of temporary shoring and bracing is not the responsibility of NV5 and is beyond the scope of these drawings.
- These drawings should be used in conjunction with architectural, structural, and civil drawings. Any discrepancies should be brought to the attention of NV5 prior to construction.
- All construction shall be in accordance with applicable sections of the 2018 North Carolina Building Code and local building codes, including Special Inspections.
- Contractor is responsible for obtaining all required building permits or other required legal documents.
- Both sides of control joints and construction joints shall be sealed with elastomeric sealant approved by NV5.
- Waterproofing shall be applied to both sides of the wall along the entirety of the wall face.

### Foundations:

- The scope of services provided by NV5 begins from the bottom of the footing. The foundation systems shown on these drawings are based on an available bearing pressure of 4,000 pounds per square foot. Verification of bearing capacity is the responsibility of the contractor, owner and/or owner's agent.
- Top of all footings shall be at least 24 inches below grade. See wall design details for embedment requirements. The bottom-of-wall elevation (lowest exposed elevation) for the concrete wall shall be maintained at Elevation 362.6' UNO.
- Excavate to elevations specified on site civil drawings (or as described in item 2 above) and to the specified dimensions within a tolerance of 1 inch. Do not disturb soils in the bottom of footing excavations. Excavate by hand to final elevations. All excavations should be performed so as not to undermine existing footings or damage existing structures. The contractor is responsible for locating all underground utilities and other structures, and for maintaining excavations in a safe condition in accordance with all OSHA guidelines.
- Excavation for footings shall be temporarily lined with a 6 MIL polyethylene if placement of concrete does not occur within 24 hours of excavation.
- No concrete shall be placed on any subgrade containing standing water, ice, frost or loose soil.

### Soils and Wall Backfill:

- Any fill that will support the wall and wall backfill shall be placed under the direction or recommendation of a licensed professional engineer using suitable soils. Scarify, bench or break up sloped surfaces steeper than 1(V) to 4(H) so that soils bond with existing materials, except where these operations could undermine existing construction. Place fill soils in layers not more than 8 inches in loose depth for materials to be compacted by heavy compaction equipment and 4 inches loose depth for materials compacted by hand operated equipment. Compact soil to at least 95 percent of the standard Proctor (ASTM D-698) maximum dry density. Minimum soil wet density shall be 120 pounds per cubic foot.
- Retaining wall backfill shall have a minimum compacted unit weight of 120 pounds per cubic foot.
- Minimum 12" wide drainage layer of washed No. 57 stone to be constructed at rear face of RW in maximum 8 inch lifts (loose measurement) and consolidated utilizing 2 passes (minimum) of suitable compaction equipment.
- Geotextile fabric, such as Amoco 2006 or equivalent, shall be placed between soil and washed #57 stone when such materials are placed adjacent to each other.

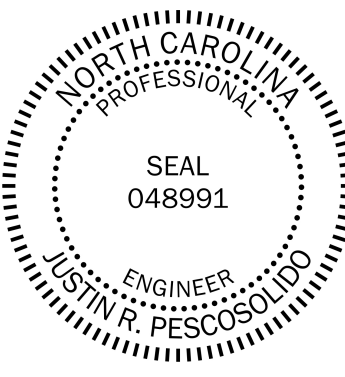
### Concrete:

- Concrete shall be proportioned, mixed, placed, consolidated and tested in accordance with ACI 318, ACI 301, ACI 350, and ACI 117.
- Reinforcing steel shall comply with ASTM A615, grade 60, deformed.
- No admixtures or fly ash shall be added to wall concrete without written permission from NV5. A concrete mixture design (with a w/c ratio of < 0.45) shall be submitted to NV5 for approval prior to construction.
- Concrete shall have the following properties: 28-day compressive strength of 4,000 psi; maximum slump of 4.5 inches; air content of 4% +/- 1%.
- Comply with CRSI Manual of Standard Practice for fabricating, placing and supporting reinforcement.
- Provide clear cover of reinforcement of at least 3 inches or as shown on drawings.
- Splice reinforcement as detailed or authorized by NV5. Make bars continuous around corners. Splices shall be made by contact tension lap splices unless otherwise noted.
- Welding of reinforcement not permitted.
- Placing of sleeves through concrete elements not permitted unless shown on drawings.
- Field bending of reinforcement partially embedded in concrete is not permitted unless approved by NV5.
- Chamfer exposed concrete corners 3/4 inch by 3/4 inch, minimum, unless otherwise noted.
- Water may be added to concrete at the project site, subject to the limitations of ACI 301.
- See architectural drawings for finishing requirements of formed concrete surfaces.
- Cure formed and unformed concrete for at least 7 days by one of the following methods; Moist curing, moisture retaining cover, application of curing compound, or application of curing and sealing compound.

**NV5 Engineers & Consultants, Inc.**

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North Carolina Corporate License No. F-1333

Seal



**Wallbrook Shopping Center**  
**Rolesville, North Carolina**  
**Our Project Number: 121-22-108262**

REV	DATE	DESCRIPTION	BY
1	8/9/2022	ADDED TO RCW EXTENTS	JRP
2	2/21/2023	CHANGE TO RCW EXTENTS	JRP

**Concrete Retaining Wall Details**

Designed by: Justin R. Pescosolido, P.E. Date: 5-26-22  
Drawn By: Jalen Deatherage Date: 5-26-22  
Reviewed By: Brock Horsley, P.E. Date: 5-26-22  
**RW-3**  
Retaining Wall Design

# RETAINING WALL DESIGN FOR WALLBROOK SHOPPING CENTER ROLESVILLE, NORTH CAROLINA

## Plan Sheet Index:

- RW-1** Title Sheet
- RW-2** Retaining Wall Layout
- RW-3** Retaining Wall Profile Part 1
- RW-4** Retaining Wall Profile Part 2
- RW-5** Retaining Wall Profile Part 3
- RW-6** Retaining Wall Profile Part 4
- RW-7** Retaining Wall Profile Part 5
- RW-8** Retaining Wall Profile Part 6
- RW-9** Retaining Wall Profile Part 7
- RW-10** Retaining Wall Profile Part 8
- RW-11** Anchor Diamond Pro PS Unit Details
- RW-12** Anchor Diamond Pro PS Unit Details (Cont'd)
- RW-13** Specifications

**2018 APPENDIX B  
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS  
(EXCEPT LAND-FAMILY DWELLINGS AND TOWNHOUSES)**  
(Reproduce the following data on the building plan sheet 1 or 2)

Name of Project: Wallbrook Shopping Center  
Address: Rolesville, NC Zip Code: 27221  
Owner: Latham Asset Mgmt. LLC, P.E. Phone: (919) 876-9799 Email: info@nv5.com  
Created By: JRP  
Code Enforcement Jurisdiction: City

**CONTACT:**

PERSONA	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architect					
Civil					
Electrical					
Fire Alarm					
Heating					
Mechanical					
Plumbing					
Structural					
Other					

**2018 NC BUILDING CODE: Addition** Section: Select one  
**2018 NC EXISTING BUILDING CODE: Addition** Section: Select one

CONSTRUCTION: (Date) CURRENT OCCUPANCY (C.S. 7):  
RENOVATION: (Date) PROPOSED OCCUPANCY (C.S. 7):  
OCCUPANCY CATEGORY (Table 104.5): Current: Select one Proposed: Select one

**BASIC BUILDING DATA**  
Construction Type: Select one  
Significance: Select one  
Seismic: Select one  
Fire Hazard Area: Select one  
Special Inspection Required: Yes (Check the local jurisdiction for additional provisions and requirements)

Green Building: See Table 104.5  
Floor: Existing (C.S. 7) New: Select one  
Site: Total

2018 NC Administrative Code and Policies

**ALLOWABLE AREA**

Primary Occupancy Classification: Select one  
Accessory Occupancy Classification: Select one  
Special Use (Chapter 4 - Land Code Section):  
Special Provisions (Chapter 7 - Land Code Section):  
Miscellaneous: Select one Separation: Select one Exception: Select one

Actual Area of Occupancy A: \_\_\_\_\_  
Alternative Area of Occupancy B: \_\_\_\_\_

TYPE	DESCRIPTION	NO.	AREA	PERCENTAGE	REMARKS

**ALLOWABLE HEIGHT**

TYPE	DESCRIPTION	HEIGHT	REMARKS

2018 NC Administrative Code and Policies

**Special Inspection and Material Testing Items**

**IT-4 MODULAR RETAINING WALLS (NCSBC SECTION 1610 AND 1704.13)**

Item	Continuous	Periodic	Detailed Instructions and Frequencies
Verify the properties of the in-place and proposed soil materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Materials shall meet the assumed design values in the "Back Fill Materials" and "Soil Properties" sections of the Specifications
Verify the suitability of in-place and proposed soil materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Materials shall meet the requirements of the "Soil Properties", "Unsuitable Material", "Foundation Requirements", and "Structural Fill Placement" sections of the Specifications
Verify subgrade is adequate to achieve design bearing capacity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Bearing capacity of foundation and reinforced zone shall be in accordance with the "Foundation Load" and "Foundation Requirements" sections of the Specifications
Verify leveling pad material and proper depth	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Materials shall meet requirements of the "Leveling Pad" section of the Specifications
Verify placement, setback, and connection method of units	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Retaining Wall Plans Detail and "Wall Batter", "Retaining Wall Shear Connections", "First Block Course" and "Retaining Wall Cap Units" sections of the Specifications
Verify installation of drainage tile and drainage system	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Retaining Wall Plans Detail and "Unit Fill" and "Hydrostatic Pressure Potential" sections of the Specifications
Verify geogrid material, length, and elevation placement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Materials shall be as indicated on the RW Profile and meet the requirements of the "Geogrid Reinforcement", "Geogrid Installation", and "Acceptable Geogrid" sections of the Specifications
Verify density, moisture content, and lift thickness for wall fill	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Placement of fill shall meet requirements of the "Structural Fill Placement" and "Soil Testing" sections of the Specifications

A summary of testing services, signed and sealed by a registered professional engineer shall be provided to the Registered Design Professional prior to issuance of the final inspection report.

4905 Professional Court  
Raleigh, North Carolina 27609  
Phone (919) 876-9799 Fax (919) 876-8291  
[www.nv5.com](http://www.nv5.com)

*Justin R. Pescosolido, P.E.*  
Registered Design Professional

**FIRE PROTECTION REQUIREMENTS**

REQUIREMENT	TYPE	STATUS	REMARKS
Fire Alarm	Required	Not Provided	
Fire Extinguishers	Required	Not Provided	
Fire Sprinklers	Required	Not Provided	
Fire Staircases	Required	Not Provided	
Fire Escape	Required	Not Provided	
Fire Exit	Required	Not Provided	
Fire Exit Sign	Required	Not Provided	
Fire Exit Door	Required	Not Provided	
Fire Exit Window	Required	Not Provided	
Fire Exit Staircase	Required	Not Provided	
Fire Exit Signage	Required	Not Provided	
Fire Exit Door	Required	Not Provided	
Fire Exit Window	Required	Not Provided	
Fire Exit Staircase	Required	Not Provided	
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Fire Exit Window	Required	Not	



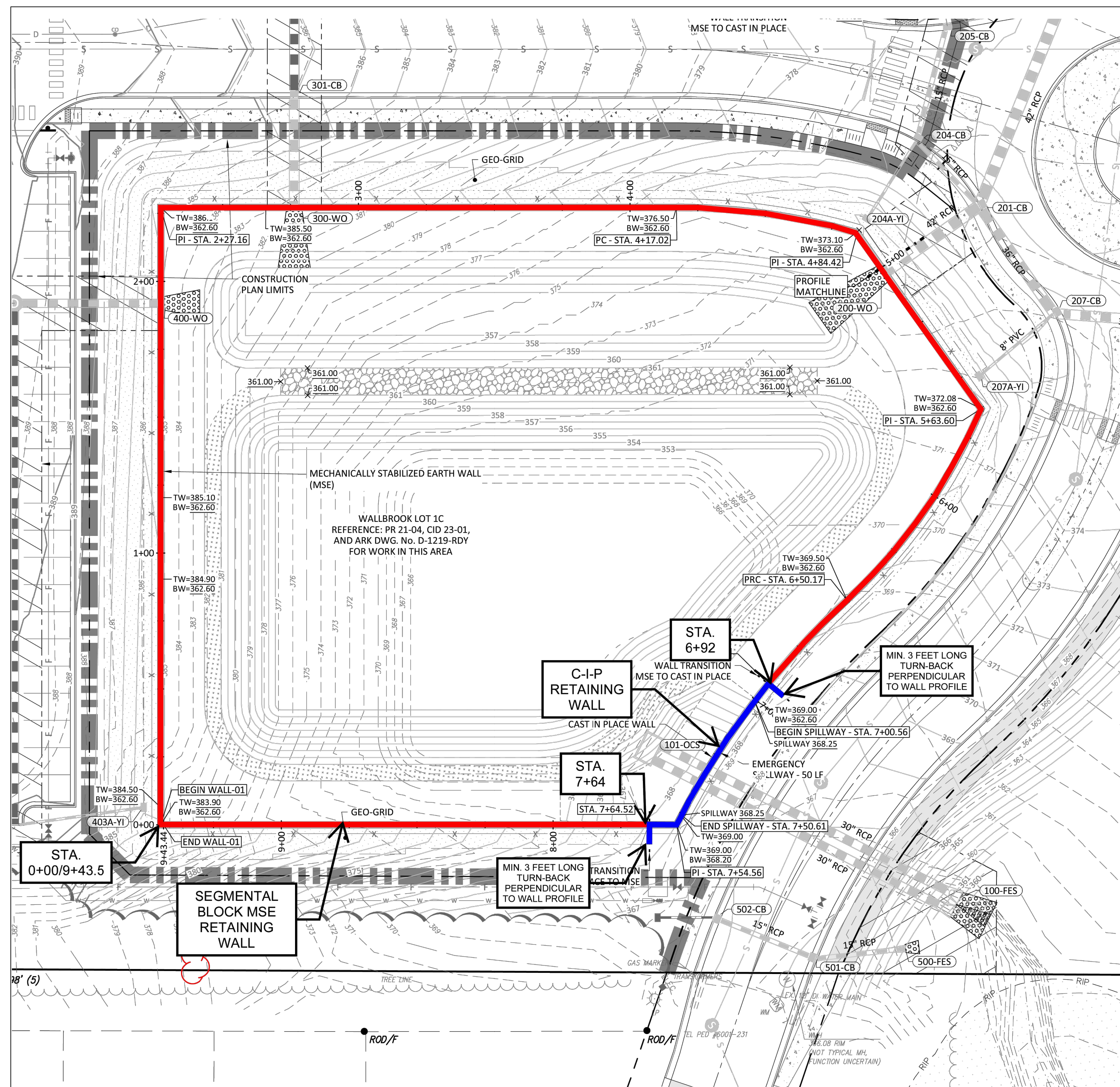


IMAGE FROM PROVIDED SITE PLAN. THIS SITE LAYOUT FIGURE IS APPROXIMATE. STAKING OF THE ACTUAL WALL LOCATIONS IN THE FIELD BASED ON SITE/CIVIL DRAWINGS IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

### General Notes

The retaining wall(s) contained herein have been designed using active earth pressure theory. Therefore, outward movement at the top of the wall(s) should be expected. Some cracks could develop at the ground surface due to lateral movement of the wall(s). These cracks should be filled in as soon as they are observed to help protect the soils below the ground surface from softening related to water infiltration that could affect the support characteristics for adjacent construction.

Preliminary analyses for global stability and total and differential settlement were performed as part of the design services for the segmental retaining wall(s). Our analyses were based, in part, on assumed in-situ soil properties derived from our previous experience with similar conditions in close geographic proximity to this site. If soil conditions encountered during construction are significantly different than those assumed herein, NV5 Engineers and Consultants, Inc. shall be contacted immediately for review of and possible alterations to this design.

The Engineer requests that representatives of the owner and/or general contractor arrange a pre-construction meeting with all pertinent parties involved for the construction of the retaining wall(s) shown on these plans. The Engineer's responsibility is limited to providing only the design services of the project's retaining wall(s) contained herein. Retaining wall construction monitoring and retaining wall certifying are beyond the scope of these design services. The Engineer shall not be required to sign any document, no matter by whom requested, in which the Engineer is required to certify, guarantee, or warrant conditions of which the Engineer has not or cannot ascertain.

The retaining wall was designed using a live load surcharge of 250 pounds per square foot (psf) at the appropriate setback distances so as to model the planned roadway and parking lot pavement structures. Structures such as light poles, handrail, guardrail, or drainage structures to be installed in the vicinity of the retaining wall(s) shall be designed and constructed to resist imposing additional lateral loads on the retaining wall(s). If future construction alters the assumed loading conditions of the retaining wall(s), NV5 Engineers and Consultants, Inc. shall be notified to review the design criteria for the imposed loads.

Scour protection shall be included at all bottom-of-wall areas at which water from the pond pool and/or surface flow over the top of the wall, is expected to be present/occur, even temporarily, during the service life of the wall. Scour protection design shall be specified by the site/civil engineer of record.

### Construction Notes

- Prior to construction, confirmation of the distances to property lines, Tree Buffers, roadways, sidewalks, and/or curb and gutter to the face(s) of the proposed wall(s) shall be performed.
- Prior to construction, confirmation of existing utility line locations (Stormwater, Sewer, Water, Electrical, and Gas) and the locations of future utility lines shall be performed.
- Prior to construction, confirmation of the in-situ and proposed grades shall be performed by a qualified surveyor. NV5 Engineers and Consultants, Inc. shall be notified if the site grades are different than those shown on these drawings.
- During construction, care must be exercised to prevent the undermining of any existing structures.
- Utility structures and underground lines located within the reinforced zone of the retaining wall(s) shall be installed prior to or during construction of the retaining wall(s) to prevent damage to the reinforcement layers. If the presence of utility structures interferes with the integrity of the reinforcement, NV5 Engineers and Consultants, Inc. shall be notified during construction to recommend suitable remedial measures that will ensure proper operation of the retaining wall(s).
- After construction, heavy equipment should not operate within 3 feet of the top portion of the wall(s) to prevent adverse impacts to the structural integrity of the retaining wall(s).
- After construction, care must be exercised to prevent damage to the upper layers of reinforcement and degrading of the retained soils of the retaining wall(s). Installation of light poles, signs, handrails, guardrails, shrubs, or trees (etc.) in the reinforced zone of this retaining wall(s) shall not damage the upper layers of reinforcement. Any damaged reinforcement shall be repaired.
- Surface water drainage shall be designed by others to discharge surface water away from the wall face(s) and away from the foundations of adjacent construction at all times during and after construction of the retaining wall(s). All downspouts from the surrounding structures should be directed away from the wall(s) and slope(s) above the wall(s).
- Regular inspection and maintenance of the planned stormwater pond(s) is critical to long term performance of the retaining wall(s). Improper or irregular stormwater pond maintenance could negatively impact wall stability.

**NV5 Engineers and Consultants, Inc.**

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 Raleigh, North Carolina 27609  
 Phone: (919) 876-9799 Fax: (919) 876-8291  
 North Carolina Corporate License No. F-1333

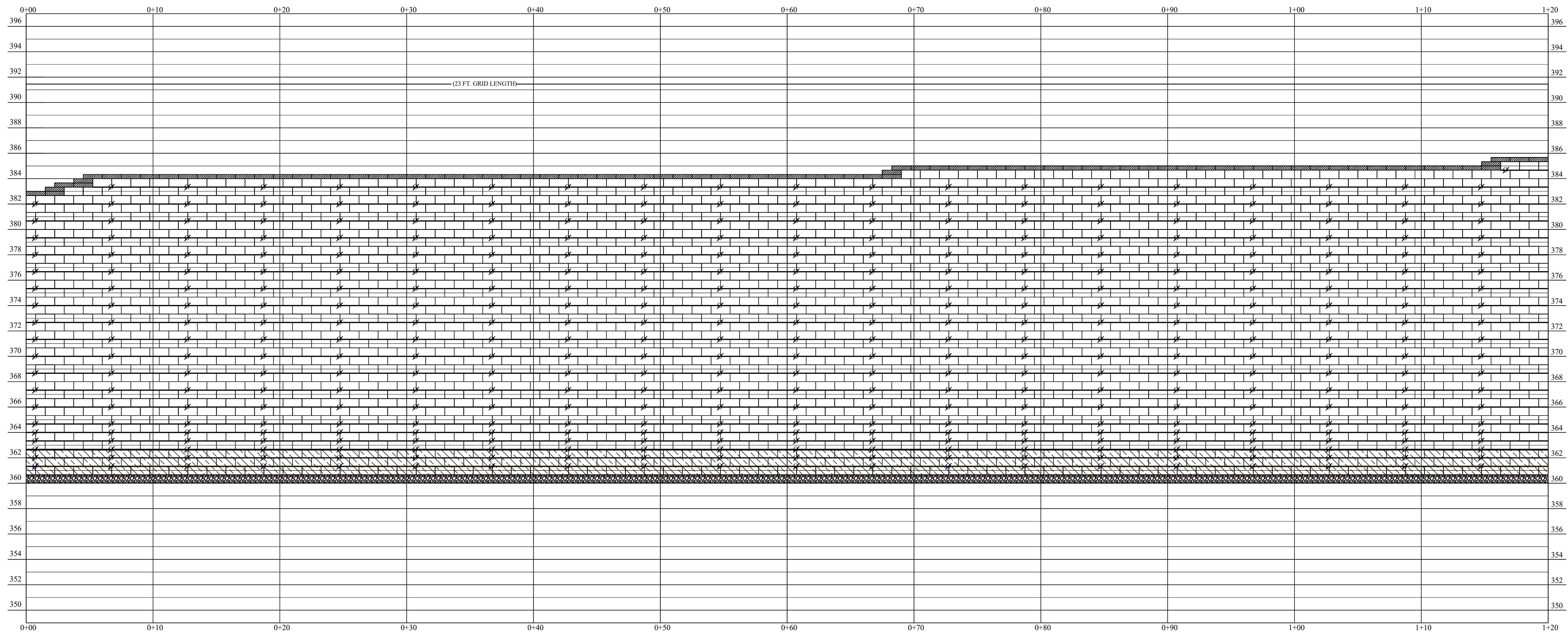
Seal



**Wallbrook Shopping Center**  
**Rolesville, North Carolina**  
**Our Project Number: 121-22-108262**

REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

Retaining Wall Layout		SHEET
Designed by: Justin R. Pescosolido, P.E.	Date: 6/7/23	<b>RW-2</b>
Designed by: Jalen G. Deatherage	Date: 6/7/23	
Reviewed by: Justin R. Pescosolido, P.E.	Date: 6/7/23	
<b>Segmental Retaining Wall Design</b>		



NOTE: SIX (6) GRID LAYERS ARE UTILIZED WITHIN FIRST SEVEN (7) COURSES WHERE GRID LENGTHS ARE GREATER THAN OR EQUAL TO 19 FEET.

NOTE: WASHED #57 STONE USED IN REINFORCED ZONE BELOW ELEVATION 370'. SELECT FILL USED IN REINFORCED ZONE ABOVE ELEVATION 370'. REFER TO DETAILS.

### RETAINING WALL PROFILE - PART 1

- LEGEND:**  
 1) MIRAFI 3XT GEOGRID DESIGNATION  
 2) EMBEDDED BLOCK DESIGNATION  
 3) LEVELING PAD DESIGNATION

**NV5 Engineers and Consultants, Inc.**

4905 Professional Court  
 Raleigh, North Carolina 27609  
 Phone: (919) 876-9799 Fax: (919) 876-8291  
 North Carolina Corporate License No. F-1333

Seal



**Wallbrook Shopping Center**  
**Rolesville, North Carolina**  
**Our Project Number: 121-22-108262**

REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

Retaining Wall Profile - Part 1

Designed by: Justin R. Pescosolido, P.E. Date: 6/7/23

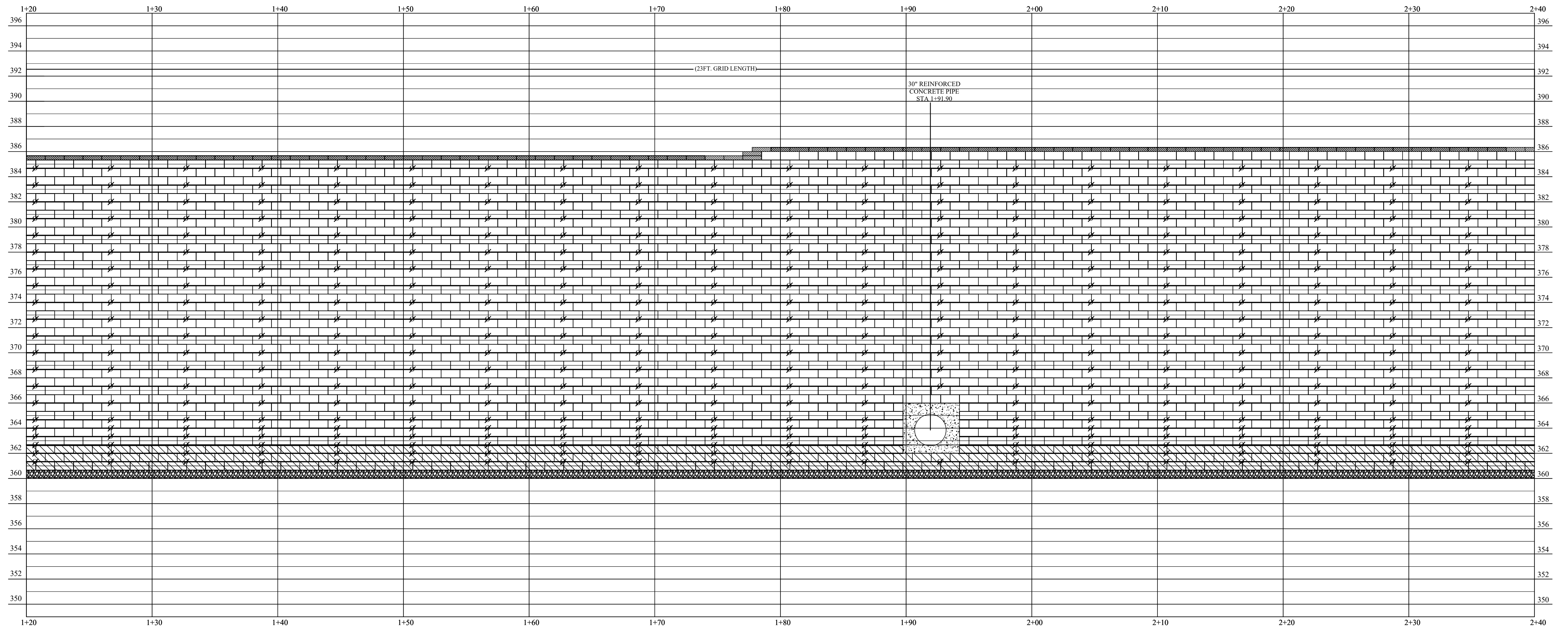
Designed by: Jalen G. Deatherage Date: 6/7/23

Reviewed by: Justin R. Pescosolido, P.E. Date: 6/7/23

SHEET

**RW-3**

Segmental Retaining Wall Design



NOTE: SIX (6) GRID LAYERS ARE UTILIZED WITHIN FIRST SEVEN (7) COURSES WHERE GRID LENGTHS ARE GREATER THAN OR EQUAL TO 19 FEET.

NOTE: WASHED #57 STONE USED IN REINFORCED ZONE BELOW ELEVATION 370'. SELECT FILL USED IN REINFORCED ZONE ABOVE ELEVATION 370'. REFER TO DETAILS.

### RETAINING WALL PROFILE - PART 2

- LEGEND:**
- 1) MIRAFI 3XT GEOGRID DESIGNATION
  - 2) EMBEDDED BLOCK DESIGNATION
  - 3) LEVELING PAD DESIGNATION

**NV5 Engineers and Consultants, Inc.**

4905 Professional Court  
 Raleigh, North Carolina 27609  
 Phone: (919) 876-9799 Fax: (919) 876-8291  
 North Carolina Corporate License No. F-1333

Seal



**Wallbrook Shopping Center**  
**Rolesville, North Carolina**  
**Our Project Number: 121-22-108262**

REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

Retaining Wall Profile - Part 2

Designed by: Justin R. Pescosolido, P.E. Date: 6/7/23

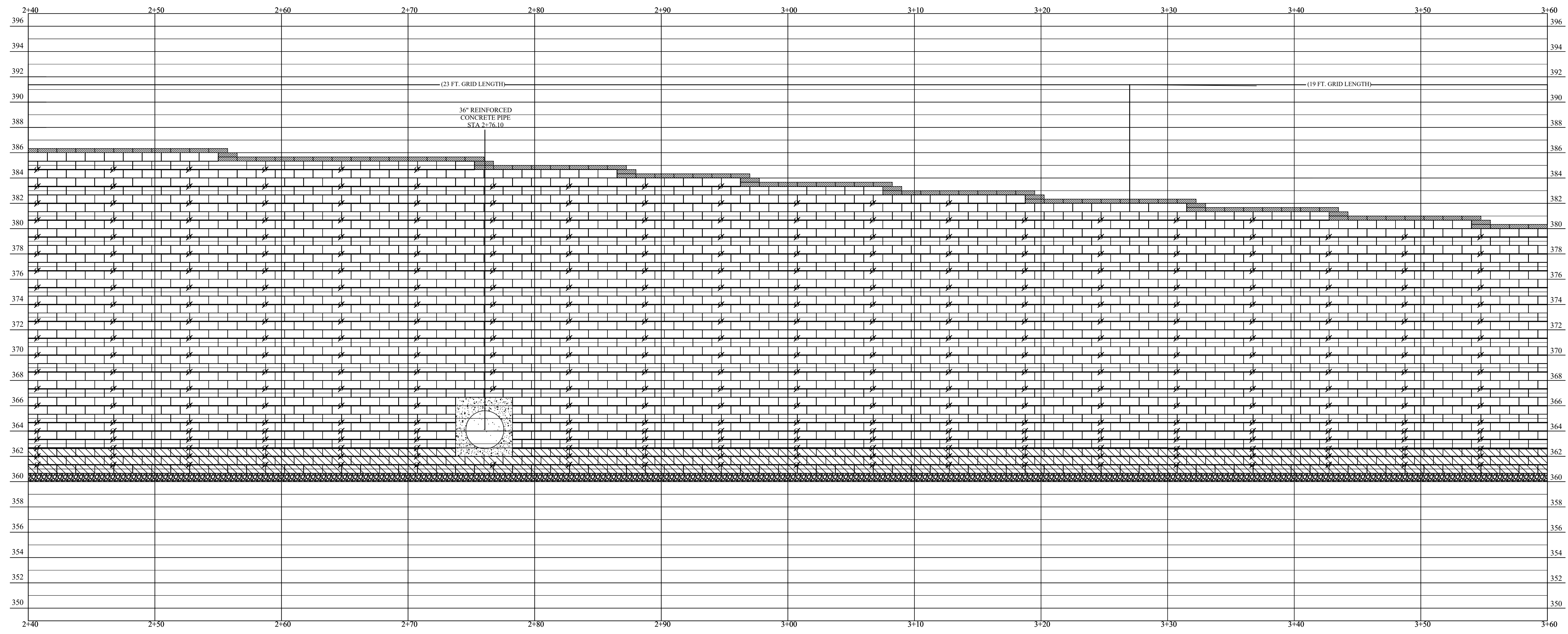
Designed by: Jalen G. Deatherage Date: 6/7/23

Reviewed by: Justin R. Pescosolido, P.E. Date: 6/7/23

SHEET

**RW-4**

Segmental Retaining Wall Design



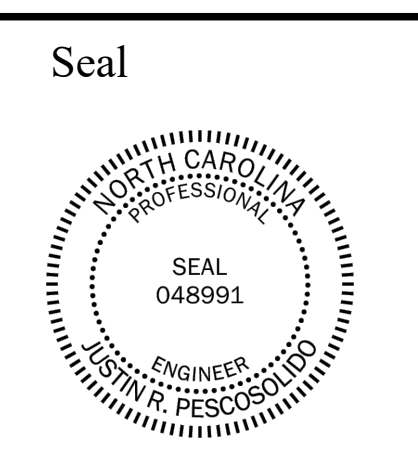
NOTE: SIX (6) GRID LAYERS ARE UTILIZED WITHIN FIRST SEVEN (7) COURSES WHERE GRID LENGTHS ARE GREATER THAN OR EQUAL TO 19 FEET.

NOTE: WASHED #57 STONE USED IN REINFORCED ZONE BELOW ELEVATION 370'. SELECT FILL USED IN REINFORCED ZONE ABOVE ELEVATION 370'. REFER TO DETAILS.

- LEGEND:
- 1) MIRAFI 3XT GEOGRID DESIGNATION
  - 2) EMBEDDED BLOCK DESIGNATION
  - 3) LEVELING PAD DESIGNATION

RETAINING WALL PROFILE - PART 3

**NV5 Engineers and Consultants, Inc.**  
 4905 Professional Court  
 Raleigh, North Carolina 27609  
 Phone: (919) 876-9799 Fax: (919) 876-8291  
 North Carolina Corporate License No. F-1333



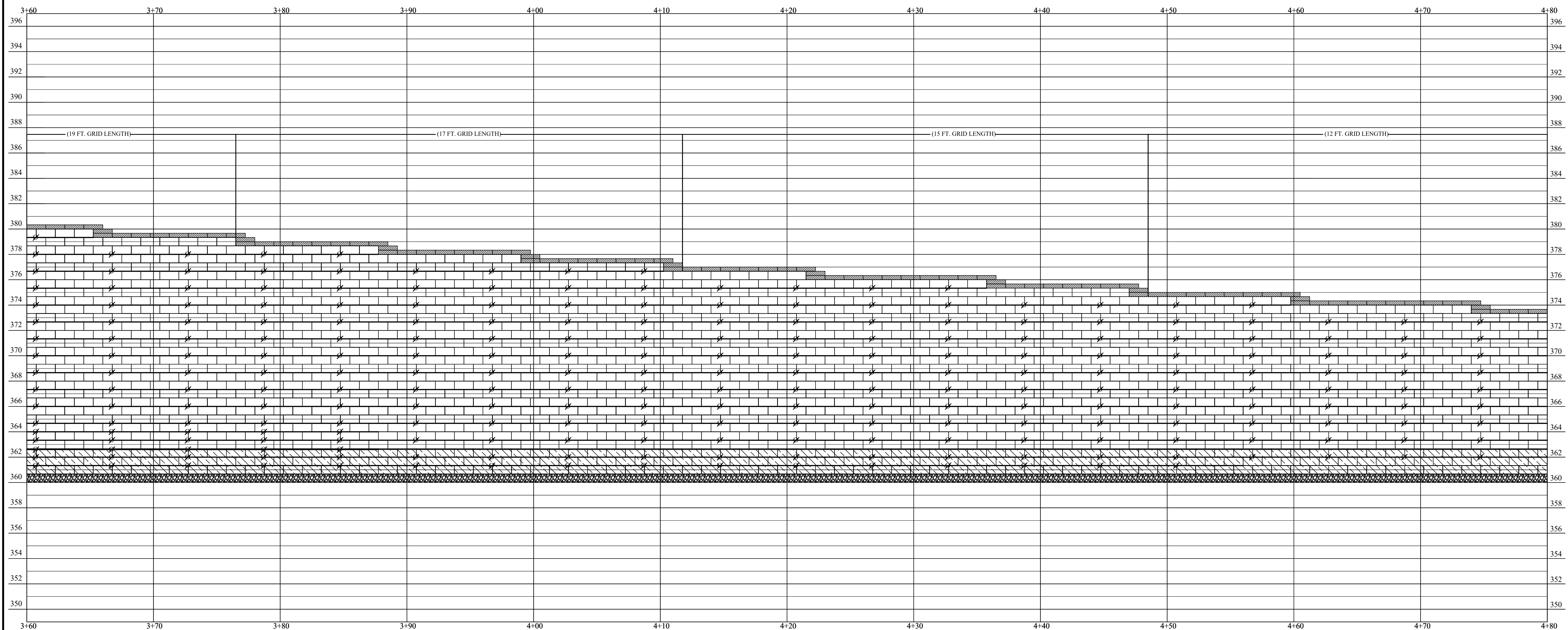
Wallbrook Shopping Center  
 Rolesville, North Carolina  
 Our Project Number: 121-22-108262

REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

Retaining Wall Profile - Part 3

Designed by: Justin R. Pescosolido, P.E. Date: 6/7/23  
 Designed by: Jalen G. Deatherage Date: 6/7/23  
 Reviewed by: Justin R. Pescosolido, P.E. Date: 6/7/23

SHEET  
**RW-5**  
 Segmental Retaining Wall Design



NOTE: TWO (2) GRID LAYERS ARE UTILIZED WITHIN FIRST THREE (3) COURSES WHERE GRID LENGTHS ARE GREATER THAN OR EQUAL TO 15 FEET.

NOTE: SIX (6) GRID LAYERS ARE UTILIZED WITHIN FIRST SEVEN (7) COURSES WHERE GRID LENGTHS ARE GREATER THAN OR EQUAL TO 19 FEET.

NOTE: WASHED #57 STONE USED IN REINFORCED ZONE BELOW ELEVATION 370'. SELECT FILL USED IN REINFORCED ZONE ABOVE ELEVATION 370'. REFER TO DETAILS.

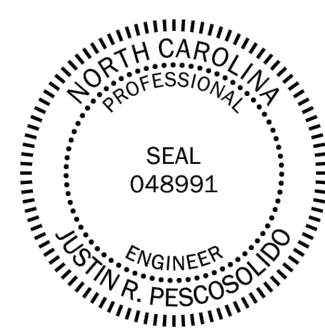
### RETAINING WALL PROFILE - PART 4

- LEGEND:
- 1) MIRAFI 3XT GEOGRID DESIGNATION
  - 2) EMBEDDED BLOCK DESIGNATION
  - 3) LEVELING PAD DESIGNATION

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Seal

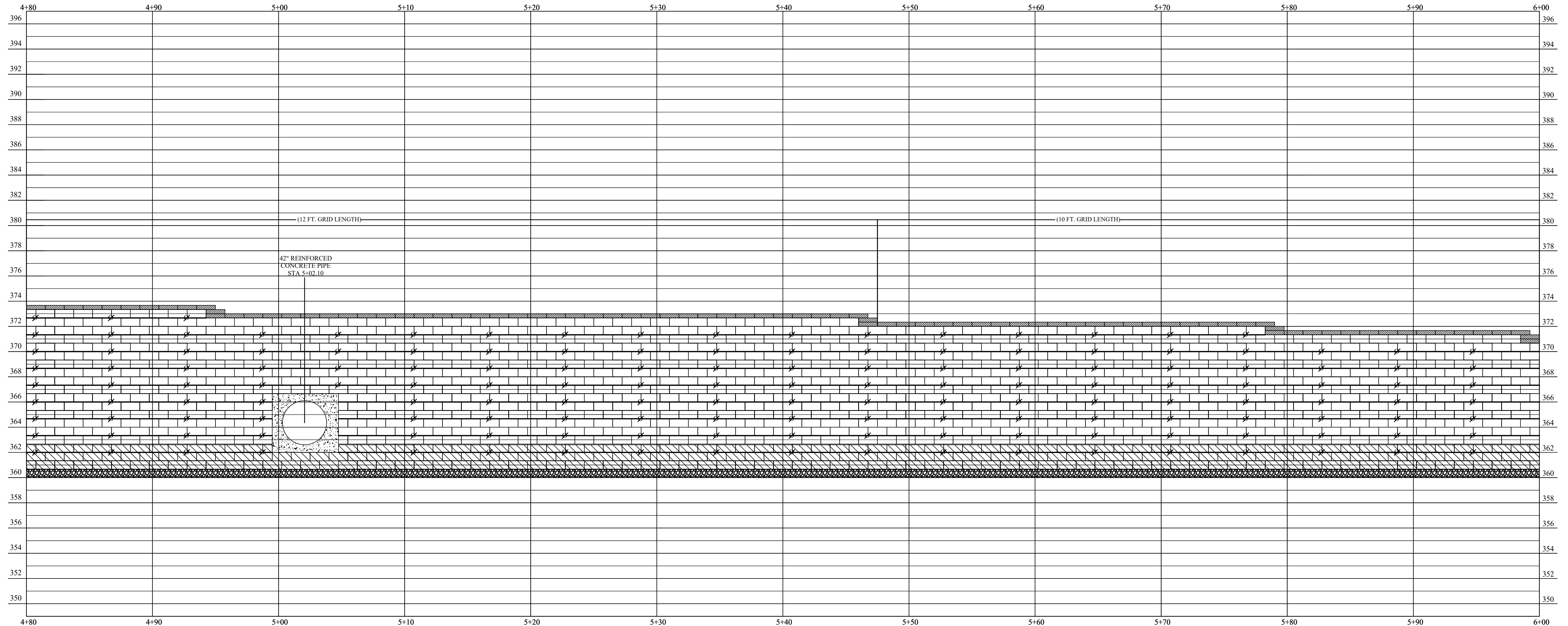


**Wallbrook Shopping Center**  
**Rolesville, North Carolina**  
**Our Project Number: 121-22-108262**

REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

Retaining Wall Profile - Part 4

Designed by: Justin R. Pescosolido, P.E.	Date: 6/7/23	SHEET <b>RW-6</b>
Designed by: Jalen G. Deatherage	Date: 6/7/23	
Reviewed by: Justin R. Pescosolido, P.E.	Date: 6/7/23	
Segmental Retaining Wall Design		



NOTE: WASHED #57 STONE USED IN REINFORCED ZONE BELOW ELEVATION 370'. SELECT FILL USED IN REINFORCED ZONE ABOVE ELEVATION 370'. REFER TO DETAILS.

### RETAINING WALL PROFILE - PART 5

- LEGEND:**  
 1) MIRAFI 3XT GEOGRID DESIGNATION  
 2) EMBEDDED BLOCK DESIGNATION  
 3) LEVELING PAD DESIGNATION

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REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

Retaining Wall Profile - Part 5

Designed by: Justin R. Pescosolido, P.E. Date: 6/7/23

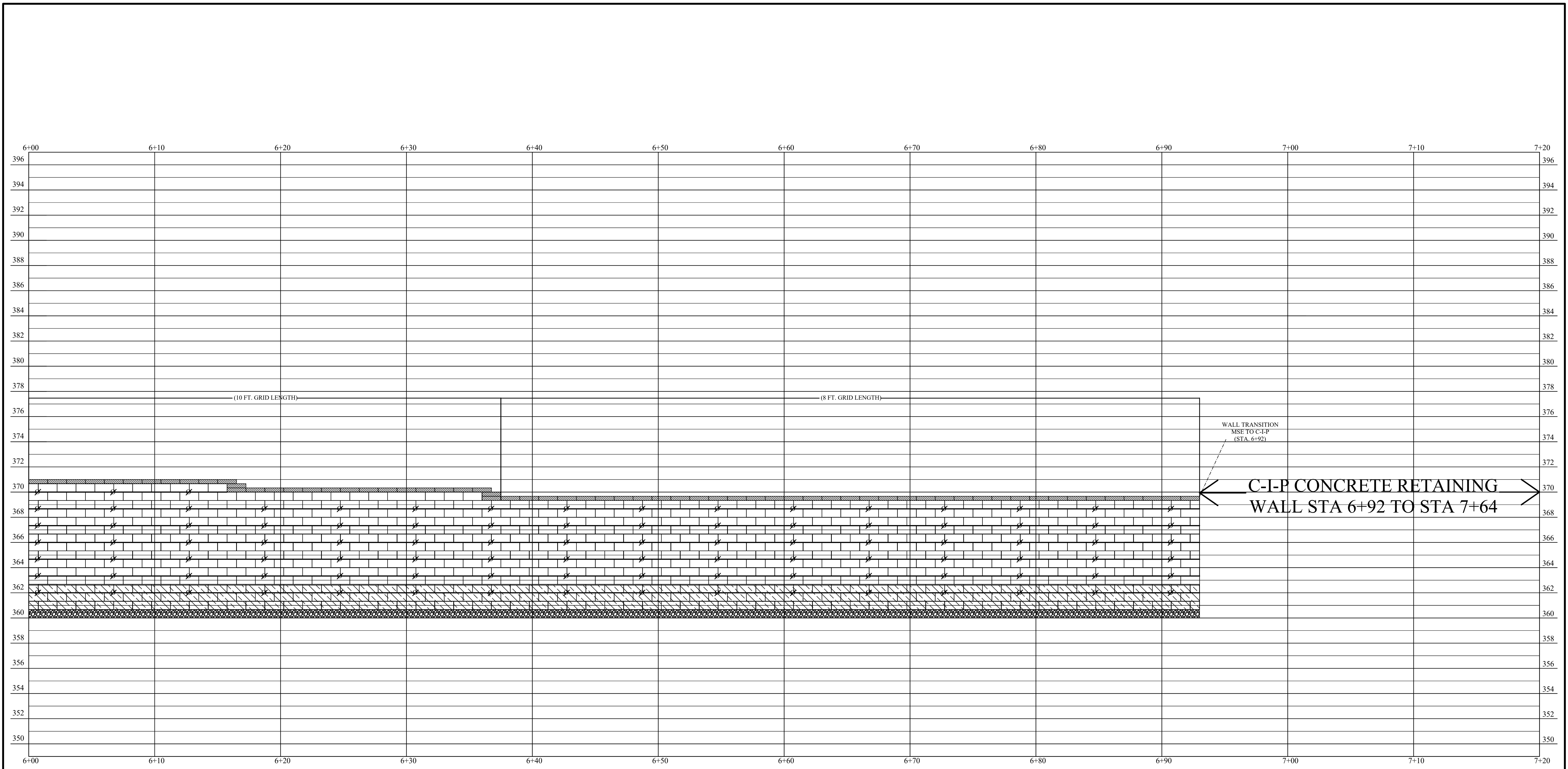
Designed by: Jalen G. Deatherage Date: 6/7/23

Reviewed by: Justin R. Pescosolido, P.E. Date: 6/7/23

SHEET

**RW-7**

Segmental Retaining Wall Design

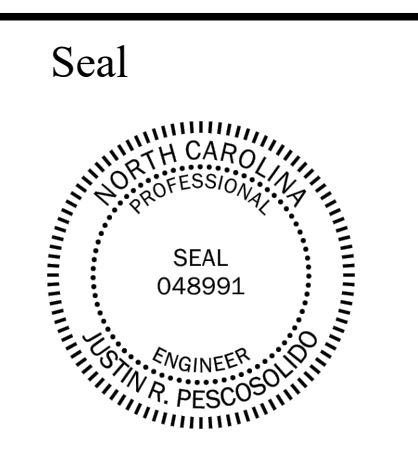


NOTE: WASHED #57 STONE USED IN REINFORCED ZONE BELOW ELEVATION 370'. SELECT FILL USED IN REINFORCED ZONE ABOVE ELEVATION 370'. REFER TO DETAILS.

RETAINING WALL PROFILE - PART 6

- LEGEND:  
 1) MIRAFI 3XT GEOGRID DESIGNATION  
 2) EMBEDDED BLOCK DESIGNATION  
 3) LEVELING PAD DESIGNATION

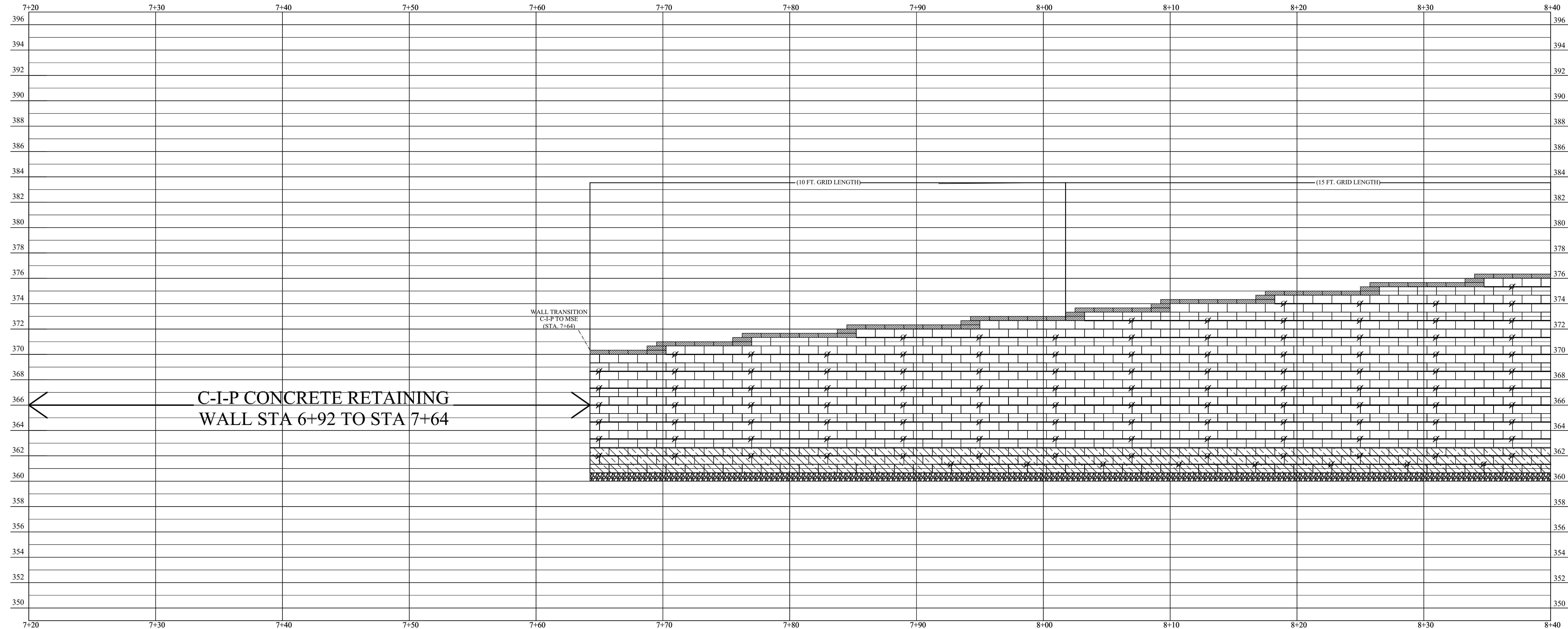
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 Our Project Number: 121-22-108262

REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

Retaining Wall Profile - Part 6  
 SHEET  
**RW-8**  
 Designed by: Justin R. Pescosolido, P.E. Date: 6/7/23  
 Designed by: Jalen G. Deatherage Date: 6/7/23  
 Reviewed by: Justin R. Pescosolido, P.E. Date: 6/7/23  
 Segmental Retaining Wall Design



NOTE: TWO (2) GRID LAYERS ARE UTILIZED WITHIN FIRST THREE (3) COURSES WHERE GRID LENGTHS ARE GREATER THAN OR EQUAL TO 15 FEET.

NOTE: WASHED #57 STONE USED IN REINFORCED ZONE BELOW ELEVATION 370'. SELECT FILL USED IN REINFORCED ZONE ABOVE ELEVATION 370'. REFER TO DETAILS.

RETAINING WALL PROFILE - PART 7

- LEGEND:  
 1) MIRAFI 3XT GEOGRID DESIGNATION  
 2) EMBEDDED BLOCK DESIGNATION  
 3) LEVELING PAD DESIGNATION

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REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

Retaining Wall Profile - Part 7

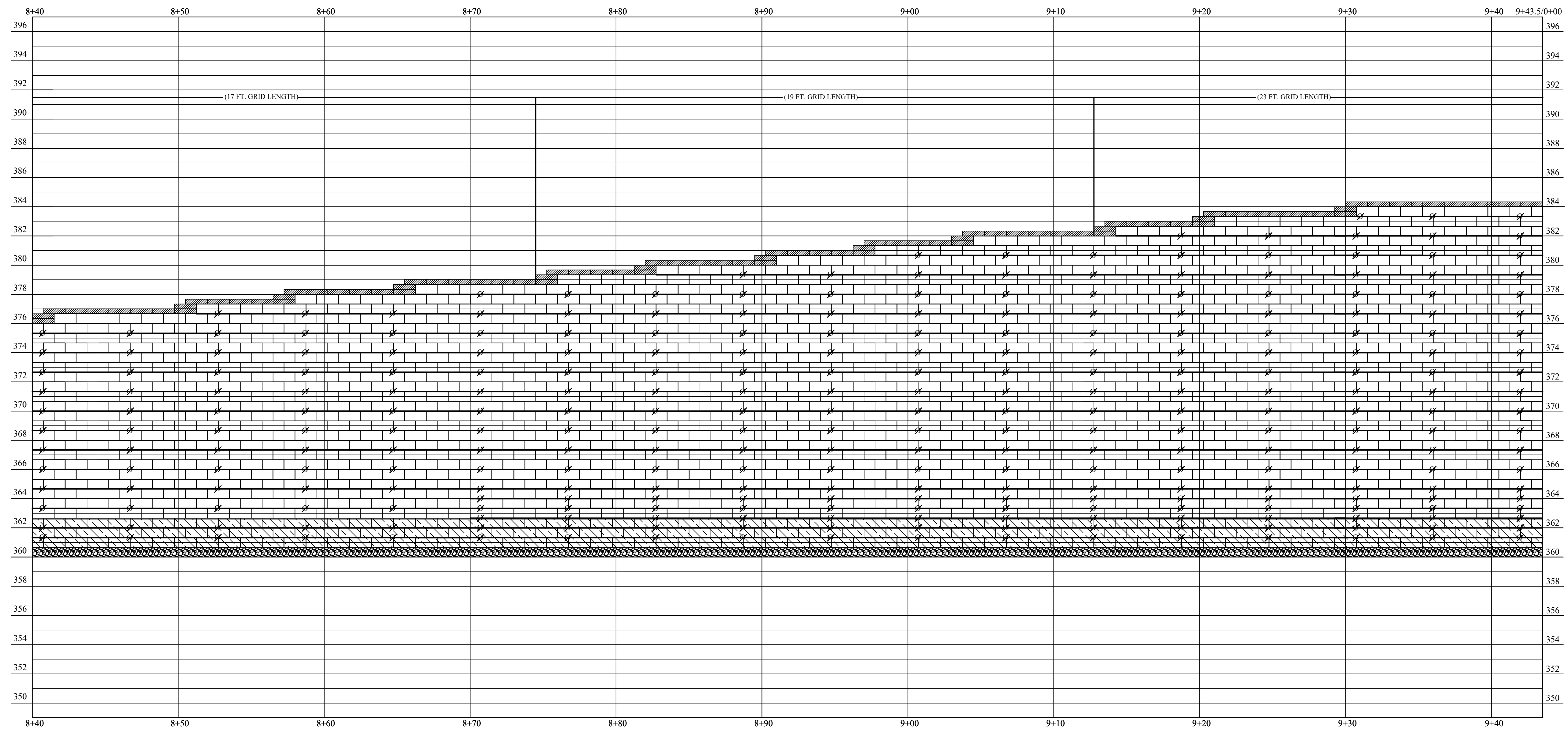
Designed by: Justin R. Pescosolido, P.E. Date: 6/7/23  
 Designed by: Jalen G. Deatherage Date: 6/7/23  
 Reviewed by: Justin R. Pescosolido, P.E. Date: 6/7/23

SHEET

**RW-9**

Segmental Retaining Wall Design





NOTE: TWO (2) GRID LAYERS ARE UTILIZED WITHIN FIRST THREE (3) COURSES WHERE GRID LENGTHS ARE GREATER THAN OR EQUAL TO 15 FEET.

NOTE: SIX (6) GRID LAYERS ARE UTILIZED WITHIN FIRST SEVEN (7) COURSES WHERE GRID LENGTHS ARE GREATER THAN OR EQUAL TO 19 FEET.

NOTE: WASHED #57 STONE USED IN REINFORCED ZONE BELOW ELEVATION 370'. SELECT FILL USED IN REINFORCED ZONE ABOVE ELEVATION 370'. REFER TO DETAILS.

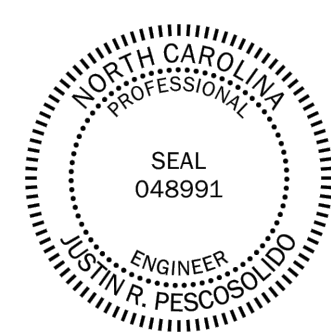
### RETAINING WALL PROFILE - PART 8

- LEGEND:
- 1) MIRAFI 3XT GEOGRID DESIGNATION
  - 2) EMBEDDED BLOCK DESIGNATION
  - 3) LEVELING PAD DESIGNATION

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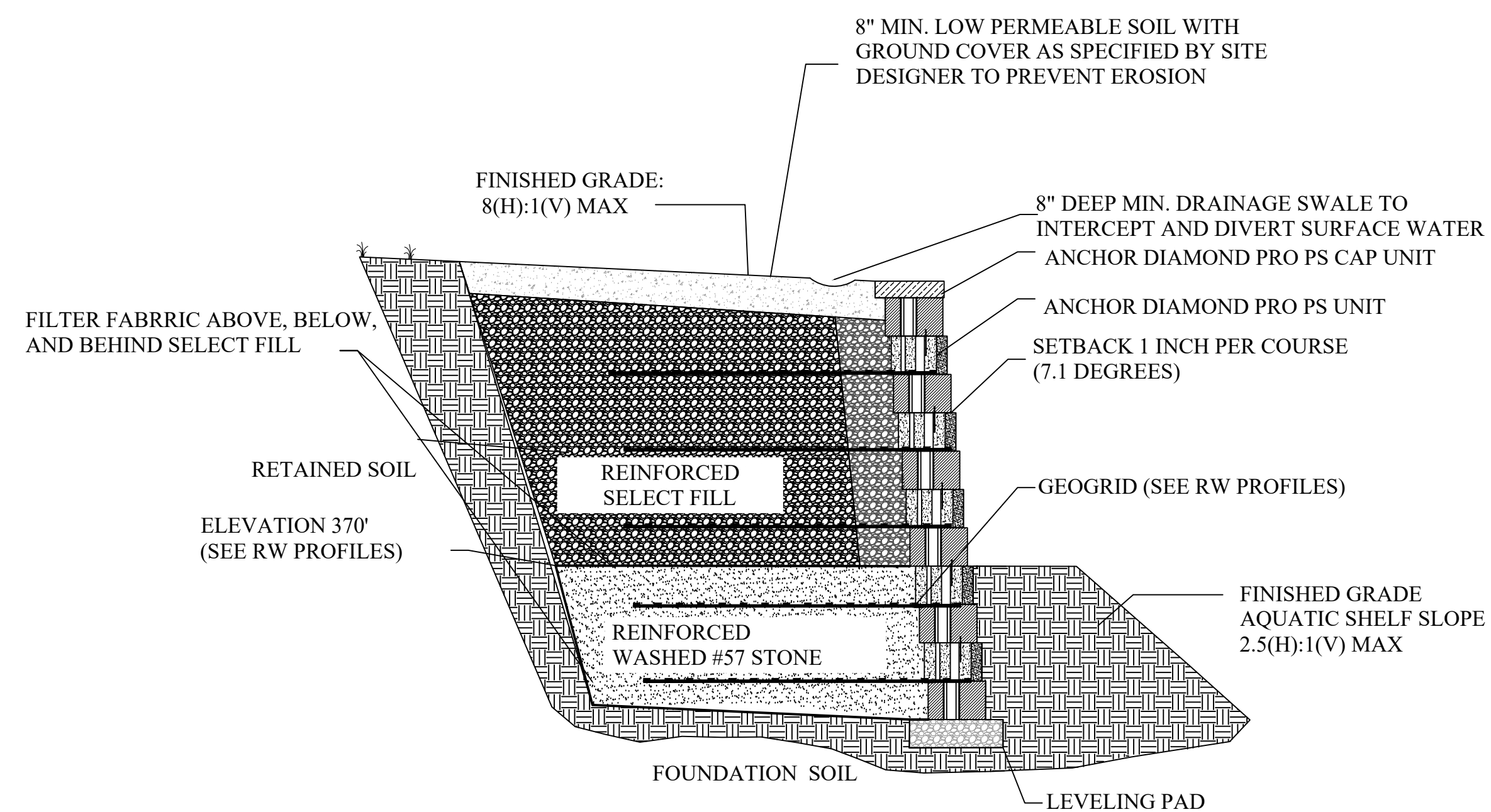


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**Rolesville, North Carolina**  
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REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

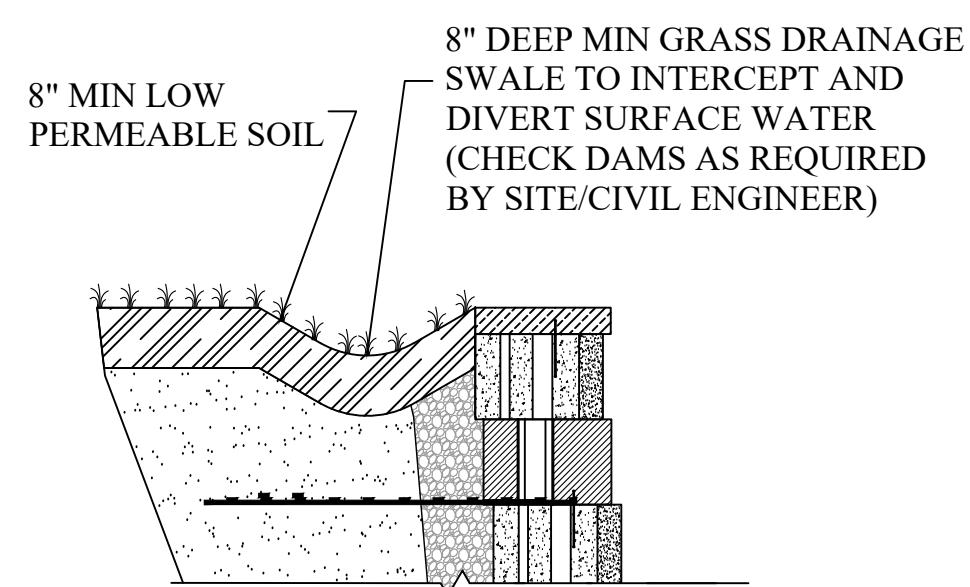
Retaining Wall Profile - Part 8

Designed by: Justin R. Pescosolido, P.E.	Date: 6/7/23	SHEET <b>RW-10</b>
Designed by: Jalen G. Deatherage	Date: 6/7/23	
Reviewed by: Justin R. Pescosolido, P.E.	Date: 6/7/23	Segmental Retaining Wall Design



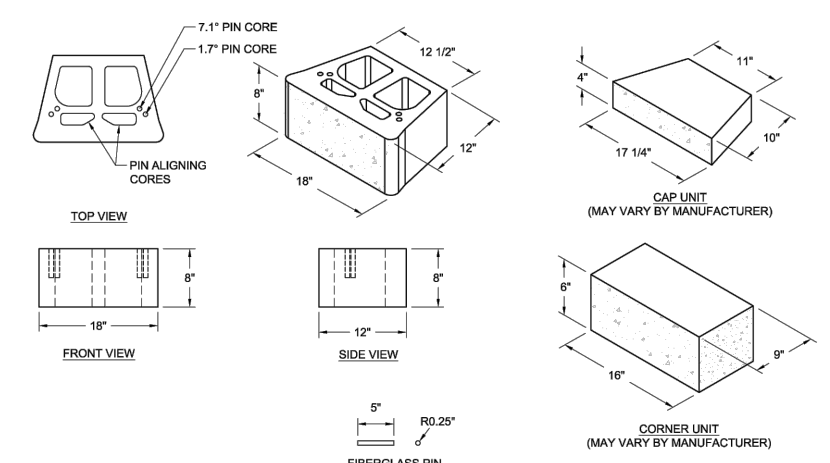
**ANCHOR DIAMOND PRO PS RETAINING WALL DETAIL (WALL #1)**

SCALE: NONE



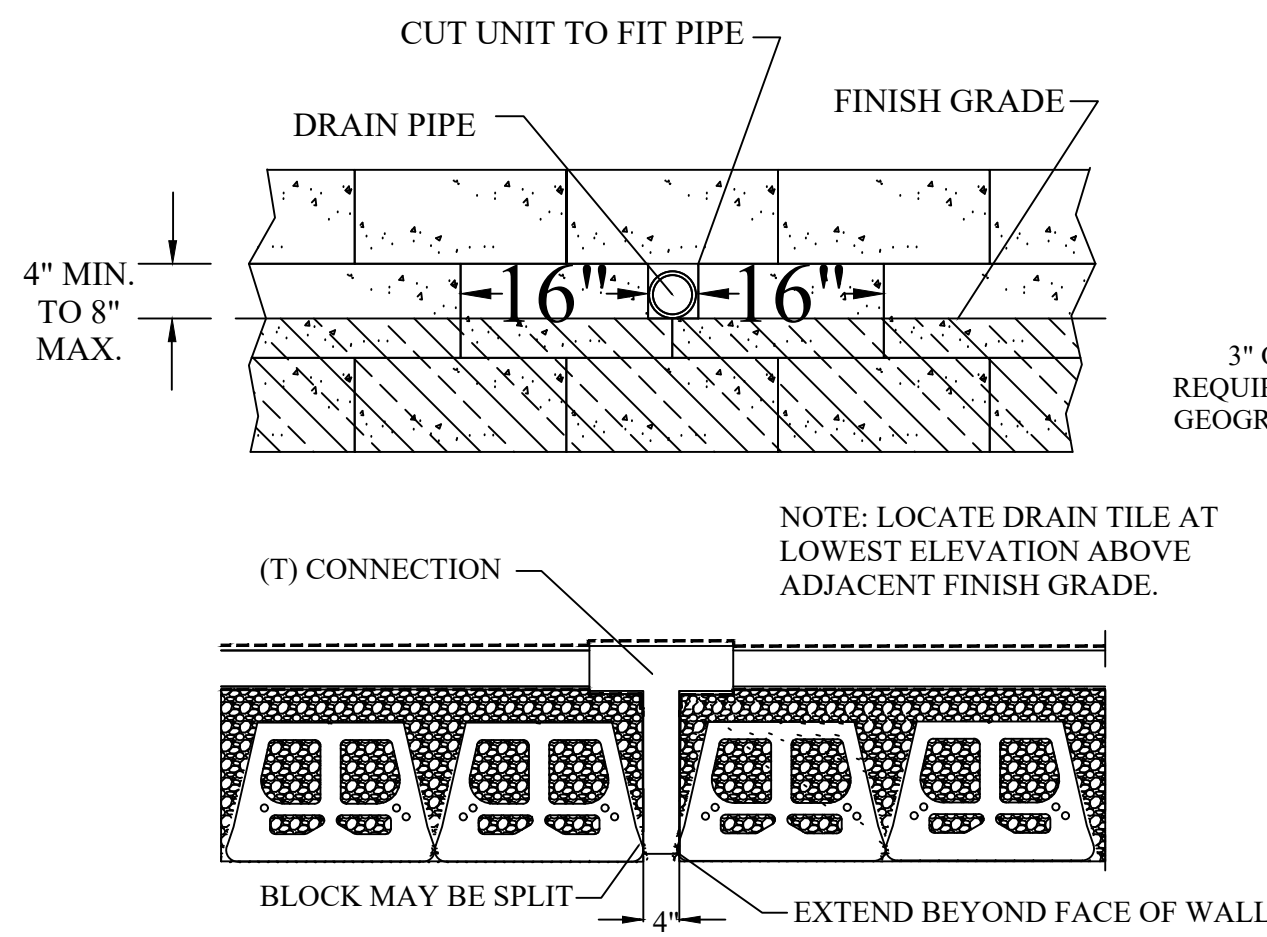
**DRAINAGE SWALE DETAIL**

SCALE: NONE



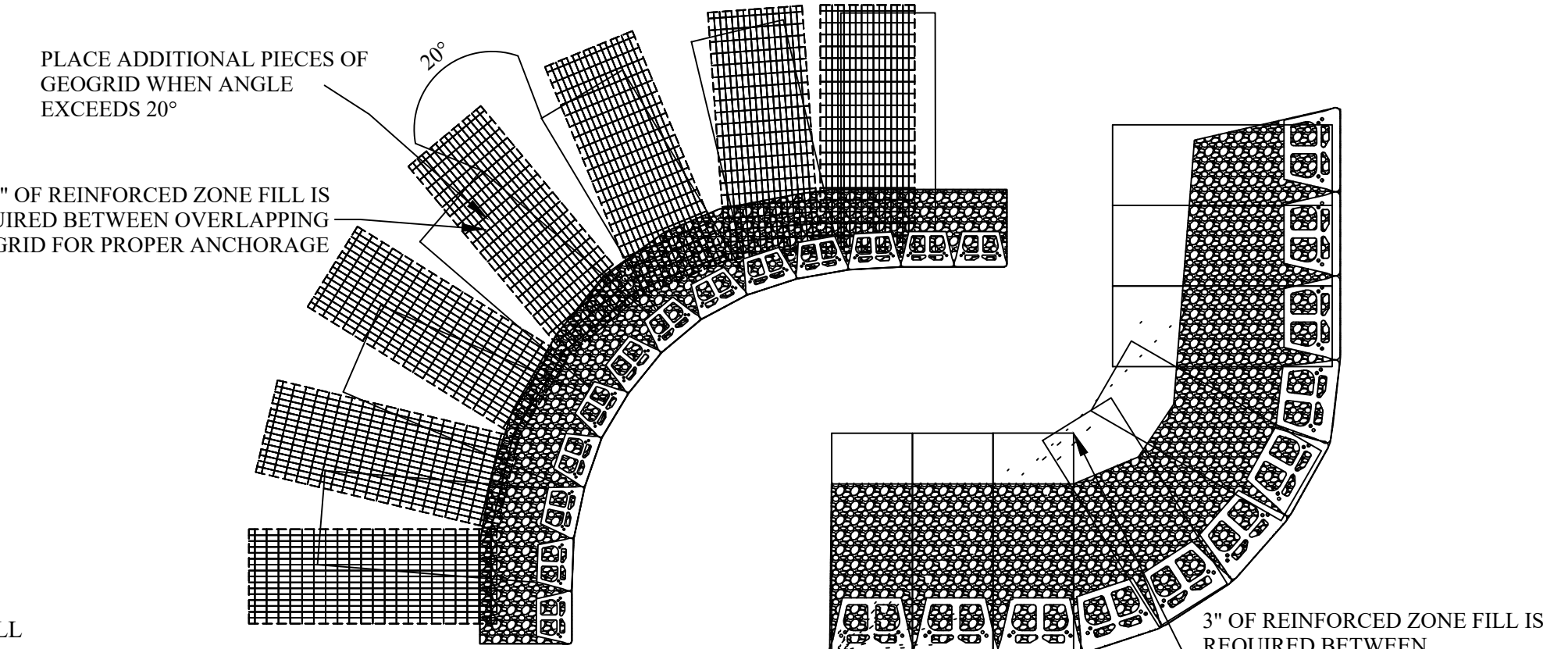
**DIAMOND PRO PS UNIT DETAILS**

SCALE: NONE



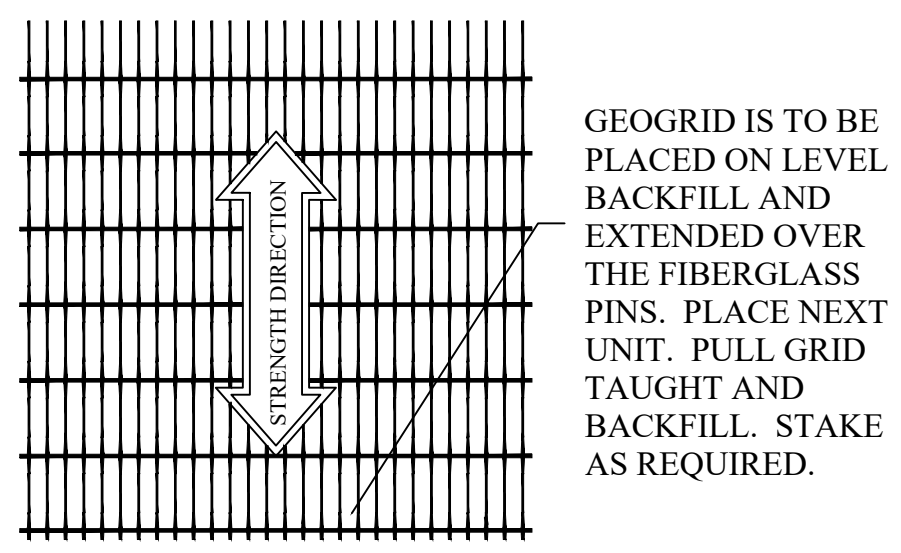
**FACE OUTLET DRAIN DETAIL**

SCALE: NONE



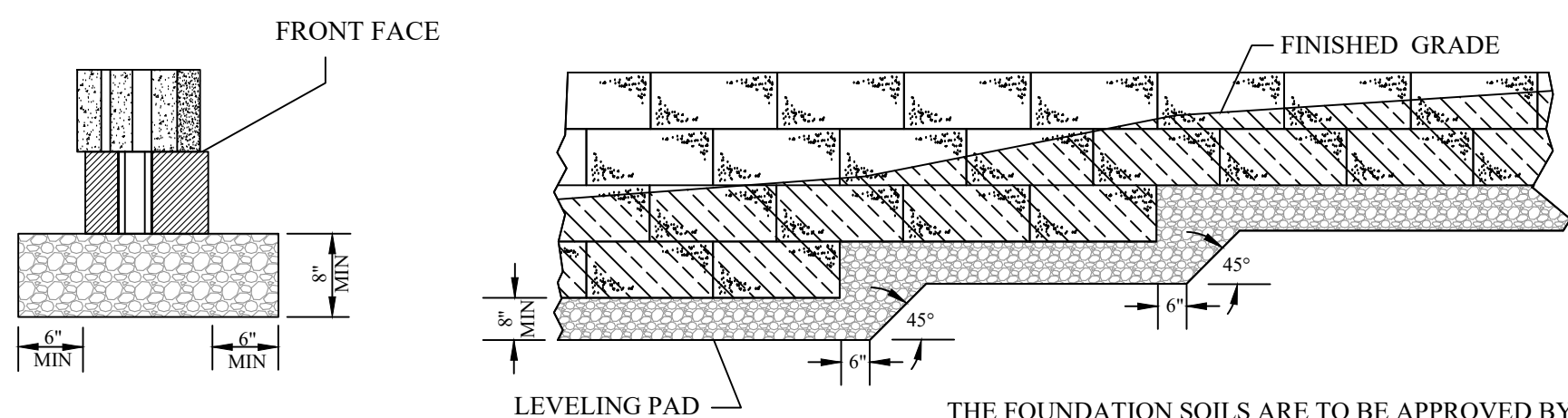
**GEOGRID INSTALLATION AT CURVES**

SCALE: NONE



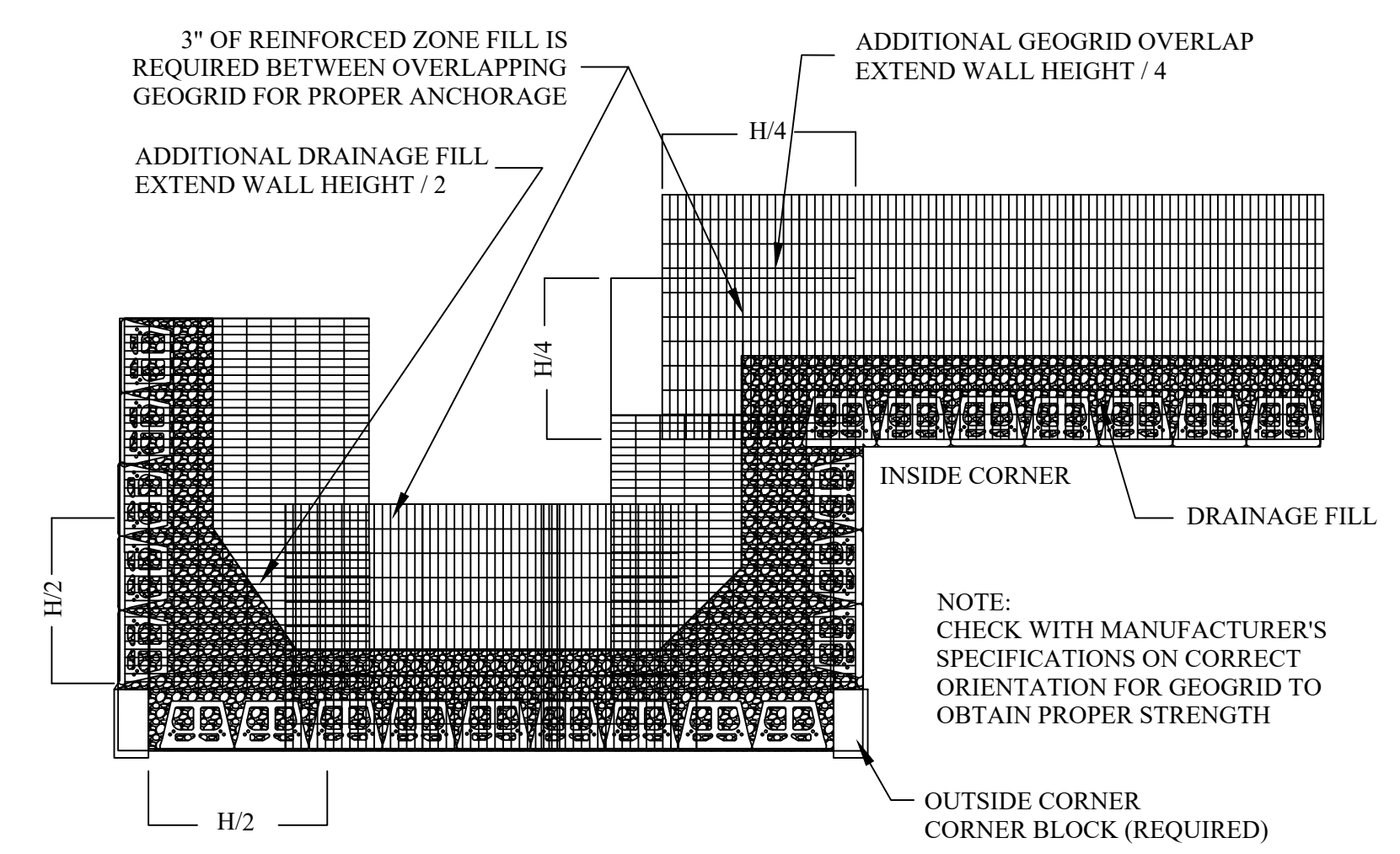
**GRID AND PIN CONNECTION**

SCALE: NONE



**LEVELING PAD DETAILS**

SCALE: NONE

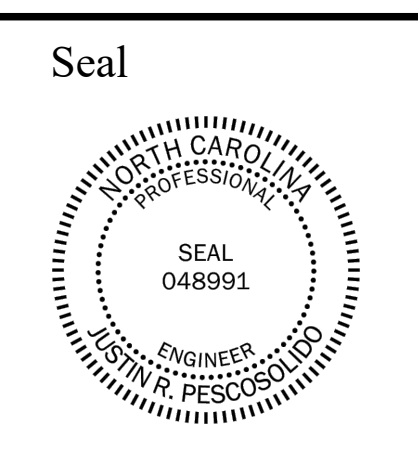


**GEOGRID INSTALLATION AT CORNERS**

SCALE: NONE

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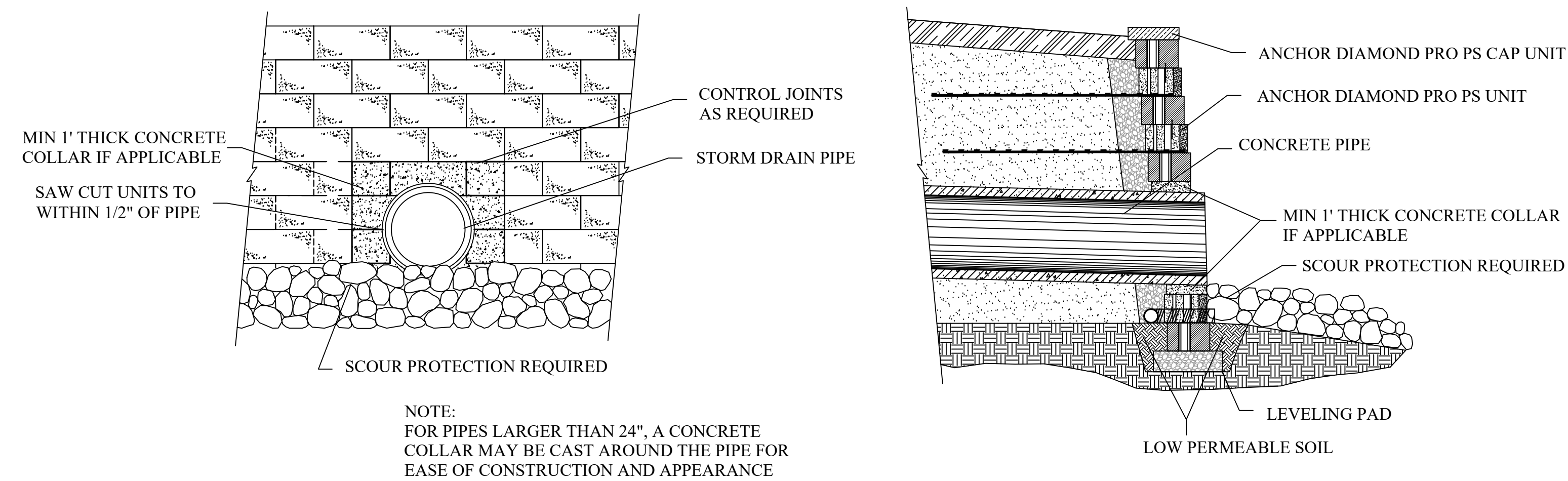
**Anchor Diamond Pro PS Unit Details**

Designed by: Justin R. Pescosolido, P.E. Date: 6/7/23  
 Designed by: Jalen G. Deatherage Date: 6/7/23  
 Reviewed by: Justin R. Pescosolido, P.E. Date: 6/7/23

**Segmental Retaining Wall Design**

SHEET

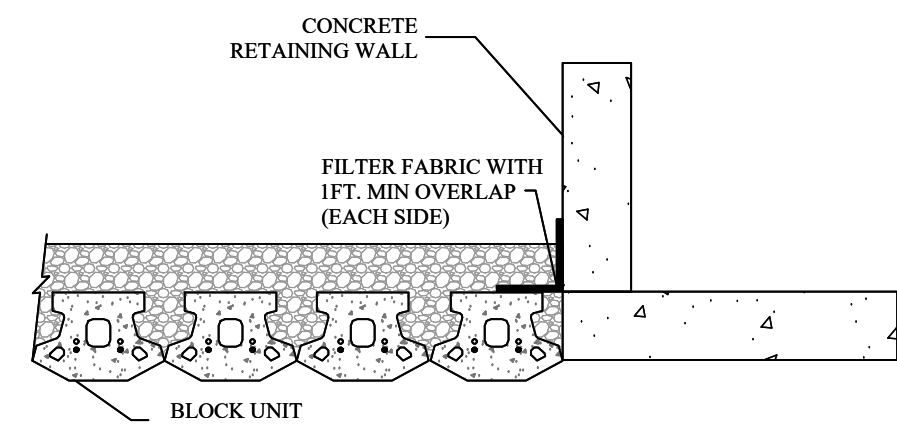
**RW-11**



NOTE:  
FOR PIPES LARGER THAN 24", A CONCRETE COLLAR MAY BE CAST AROUND THE PIPE FOR EASE OF CONSTRUCTION AND APPEARANCE

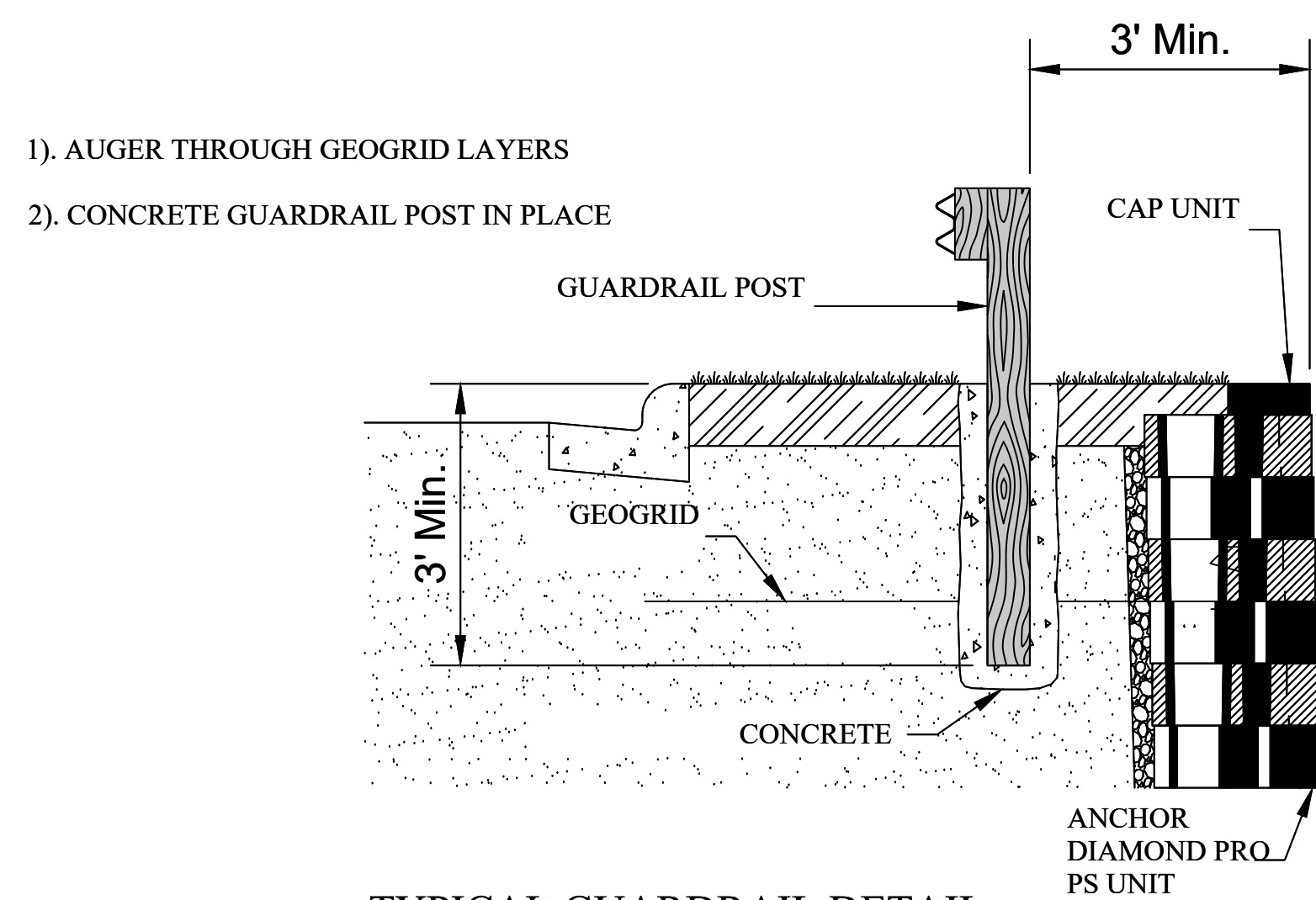
**ANCHOR DIAMOND PRO PS WALL PIPE OUTLET**

SCALE: NONE



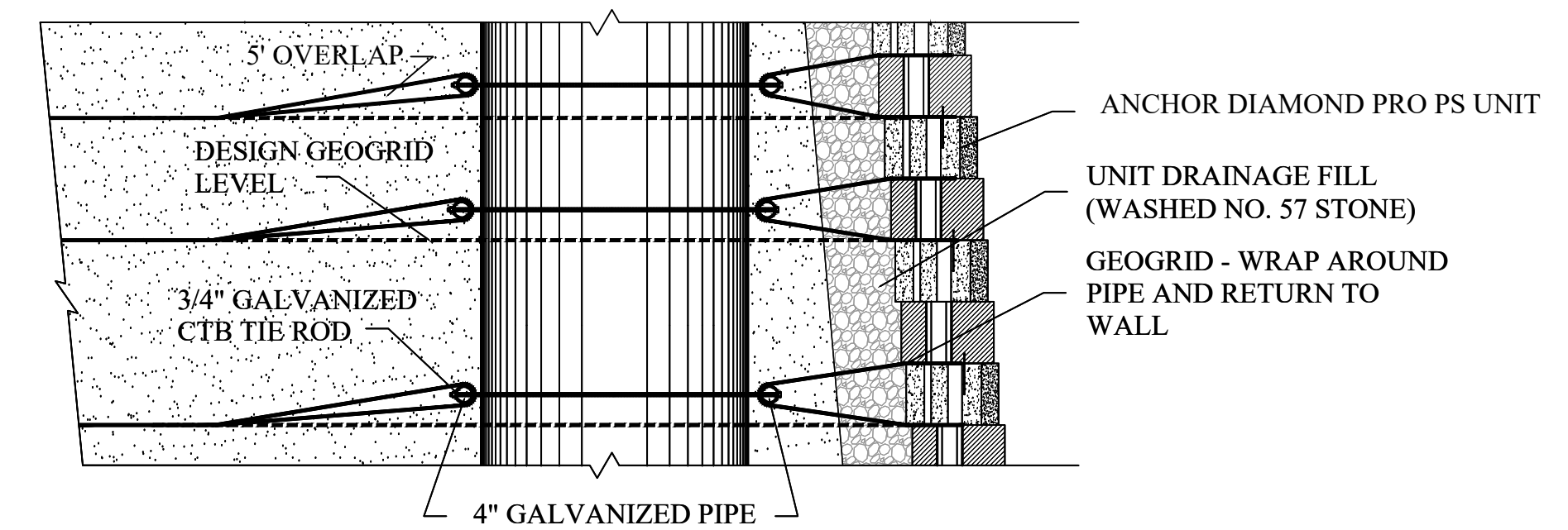
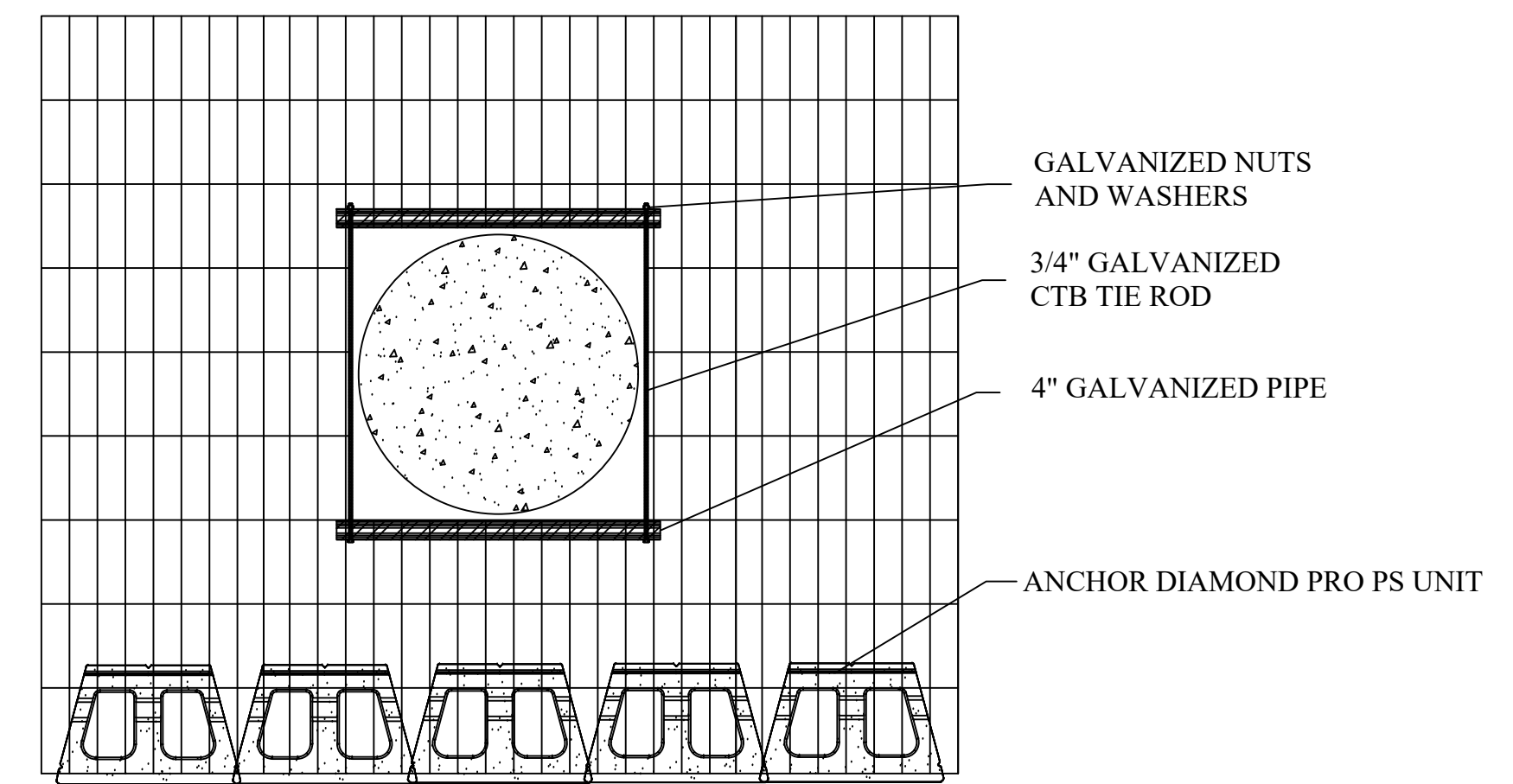
**MSE TO CONCRETE WALL CONNECTION DETAIL**

SCALE: NONE



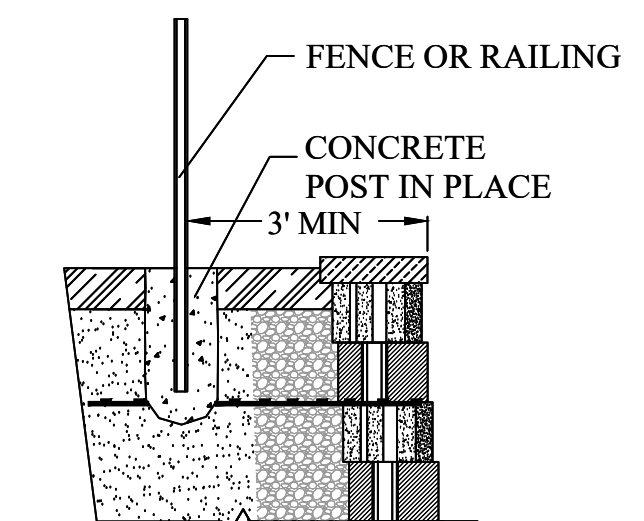
**TYPICAL GUARDRAIL DETAIL**

SCALE: NONE

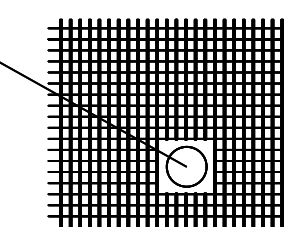


**ANCHOR DIAMOND PRO PS WALL AT PIER / MANHOLE**

SCALE: NONE



CUT GRID AND PLACE TUBE OR FORMS PRIOR TO PLACING ADDITIONAL FILL



CUT SUCCESSIVE LAYERS OF GEOGRID AROUND PROPOSED FENCE POST INSTALLATION POINTS AND SET CONCRETE TUBE OR FORMS DURING WALL CONSTRUCTION. CHECK FENCE DESIGN FOR EMBEDMENT DEPTH OF FENCE POST

RAILING REQUIREMENTS FOR THE RETAINING WALL SHALL BE DETERMINED BY THE GENERAL CONTRACTOR. THE RAILING SHOULD BE DESIGNED IN ACCORDANCE WITH THE NORTH CAROLINA BUILDING CODE BY A REGISTERED DESIGN PROFESSIONAL. THE RAILING SHOULD BE DESIGNED SUCH THAT IT DOES NOT ADD ANY ADDITIONAL LATERAL FORCES TO THE RETAINING WALL. THE CONCRETE TUBES OR SLEEVE-IT FORMS FOR THE RAILINGS SHALL BE INSTALLED BY THE SITE CONTRACTOR AND COORDINATED WITH THE RETAINING WALL CONTRACTOR DURING CONSTRUCTION OF THE RETAINING WALL.

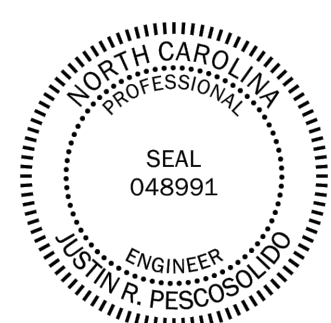
**TYPICAL HAND RAILING DETAIL**

SCALE: NONE

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**Wallbrook Shopping Center**  
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REV	DATE	DESCRIPTION	BY
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP

**Anchor Diamond Pro PS Unit Details (Cont'd)**

Designed by: Justin R. Pescosolido, P.E.	Date: 6/7/23	SHEET <b>RW-12</b>
Designed by: Jalen G. Deatherage	Date: 6/7/23	
Reviewed by: Justin R. Pescosolido, P.E.	Date: 6/7/23	

**Segmental Retaining Wall Design**

**1.0 GENERAL**

SEGMENTAL RETAINING WALL SYSTEMS ARE DESIGNED AS GRAVITY RETAINING WALLS WHICH UTILIZES A HIGH DENSITY POLYESTER GEOGRID TO REINFORCE THE SOIL ZONE BEHIND THE WALL. THE GEOGRID IS POSITIVELY CONNECTED TO THE MODULAR CONCRETE BLOCK CREATING A REINFORCED SOIL MASS CAPABLE OF RESISTING LATERAL EARTH PRESSURES AND SURCHARGE LOADS. ALL REFERENCES TO THE ENGINEER REFER TO NV5 ENGINEERS AND CONSULTANTS, INC.

**1.1 QUALITY ASSURANCE**

WORK SHALL BE PERFORMED ONLY BY AN EXPERIENCED CONTRACTOR. CONTRACTOR SHALL SUBMIT TO THE CERTIFYING ENGINEER EVIDENCE OF QUALIFICATIONS AND REFERENCES ON PROJECTS OF SIMILAR SCOPE. THE CERTIFYING ENGINEER RESERVES THE RIGHT TO REJECT ANY AND ALL QUALIFICATIONS SUBMITTALS. THE OWNER AND/OR GENERAL CONTRACTOR SHOULD PROVIDE AN INSPECTOR AS A FULL-TIME, CONTINUOUS MONITOR OF WORK QUALITY.

**1.2 BACK FILL MATERIALS**

THE SOIL MATERIAL ASSOCIATED WITH THE RETAINING WALL(S) IN THE REINFORCED ZONE, THE RETAINED ZONE, OR THE FOUNDATION BEDDING SHALL HAVE, AT A MINIMUM, THE FOLLOWING PROPERTIES:

- A.) FOUNDATION SOILS  $\phi = 34$  DEGREES, COHESION = 0 PSF, WET UNIT WEIGHT = 125 LBS/CU.FT
- B.) RETAINED SOILS  $\phi = 30$  DEGREES, COHESION = 0 PSF, WET UNIT WEIGHT = 120 LBS/CU.FT
- D.) REINFORCED WASHED NO. 57 STONE  $\phi = 34$  DEGREES, COHESION = 0 PSF, WET UNIT WEIGHT = 105 LBS/CU.FT (BELOW Elevation 370')
- E.) REINFORCED SELECT FILL  $\phi = 32$  DEGREES, COHESION = 0 PSF, WET UNIT WEIGHT = 120 LBS/CU.FT (ABOVE Elevation 370')

LABORATORY TESTING OF THE ACTUAL SOIL TO BE USED SHALL BE PERFORMED PRIOR TO CONSTRUCTION OF THE RETAINING WALL. IF THE ASSUMED VALUES DO NOT REPRESENT THE ACTUAL SOIL CONDITIONS, THE ENGINEER SHALL BE NOTIFIED PRIOR CONSTRUCTION FOR POSSIBLE ALTERATIONS TO THIS DESIGN.

**1.3 FOUNDATION LOADS**

MAXIMUM DESIGN BEARING PRESSURES: **3 KIPS/SQ.FT WHERE WALL HEIGHT IS LESS THAN 18 FEET**  
**5 KIPS/SQ.FT WHERE WALL HEIGHT IS GREATER THAN OR EQUAL TO 18 FEET**

**1.4 WALL BATTER**

BATTER FOR THE ENTIRETY OF THE WALL SHALL BE MAINTAINED AT 7.1 DEGREES (REAR-PIN SETTING).

**2.0 CONCRETE MASONRY WALL UNITS**

CONCRETE WALL UNITS SHALL BE SEGMENTAL UNITS MANUFACTURED IN ACCORDANCE WITH ASTM C-1372 AND ASTM C-140, AND SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI. UNITS SHALL BE INTERLOCKED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

**2.1 RETAINING WALL SHEAR CONNECTIONS**

SEGMENTAL UNITS SHALL BE INTERLOCKED WITH SUITABLE SHEAR PINS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

**2.2 GEOGRID REINFORCEMENT**

GEOSYNTHETIC REINFORCEMENT FOR THE WALL SHALL CONSIST OF HIGH TENACITY GEOGRIDS MANUFACTURED FOR SOIL REINFORCEMENT APPLICATIONS. THE TYPE, LENGTH, AND PLACEMENT OF THE REINFORCING GEOSYNTHETIC SHALL BE AS SHOWN ON THE PLANS.

**2.3 GEOTEXTILE FILTER FABRIC**

GEOTEXTILE FILTER FABRIC (IF REQUIRED) SHALL CONSIST OF NEEDLE PUNCHED NON-WOVEN POLYPROPYLENE MATERIAL WHICH MEETS THE AASHTO M288-2006 CLASS 3 STRENGTH CRITERIA. IT SHALL HAVE A MAXIMUM AVERAGE ROLL VALUE OF 0.25 MM FOR ITS APPARENT OPENING SIZE AND PERMITTIVITY OF AT LEAST 0.2/SEC. PRE-APPROVED NON-WOVEN GEOTEXTILES INCLUDE AMOCO 4546, CARTHAGE MILLS FX-40HS, SYNTHETIC INDUSTRIES GEOTEX 401, AND TENCATE MIRAFI 140N.

**2.4 LEVELING PAD**

MATERIAL SHALL CONSIST OF COMPACTED AGGREGATE BASE COURSE (ABC) STONE, WASHED NO. 57 STONE, OR UNREINFORCED CONCRETE. THE LEVELING PAD SHALL BE AT LEAST 8" IN DEPTH. IF ABC STONE IS USED, IT SHALL BE COMPACTED TO 95% OF THE MODIFIED PROCTOR (ASTM D-698) MAXIMUM DRY DENSITY. AGGREGATE MATERIAL SHALL RECEIVE A MINIMUM OF ONE PASS OF THE COMPACTION EQUIPMENT. THE LEVELING PAD TOP FOR THE WALL SECTIONS SHALL BE MAINTAINED AS SHOWN ON THE RETAINING WALL PROFILES.

**2.5 UNIT FILL**

THE VOID WITHIN AND BETWEEN EACH UNIT SHALL BE FILLED WITH WASHED (NO. 57) STONE HAVING 100% OF THE AGGREGATE PASSING THE 2" SIEVE. MINIMUM 3/8" WASHED STONE SIZE IS REQUIRED (NO MORE THAN 5% PASSING THE NO. 200 SIEVE). A MINIMUM OF 12 INCHES OF THIS SAME MATERIAL SHALL BE PLACED AT THE BACK OF EACH BLOCK AS INDICATED ON THE ROCKWOOD CLASSIC 8 UNIT DETAILS SHEET. EACH COURSE SHALL BE COMPLETELY FILLED AND EXCESS MATERIAL SWEEP CLEAN FROM THE TOP BLOCK BEFORE INSTALLING THE NEXT COURSE.

**2.6 SOIL PROPERTIES**

THE FILL MATERIALS IN THE UPPER REINFORCED ZONE (ABOVE EL 370') SHALL CONSIST OF SELECT FILL. THE FILL MATERIALS IN THE LOWER REINFORCED ZONE (BELOW EL. 370') WASHED NO. 57 STONE (BELOW ELEVATION 370') (REFER TO DETAILS). ABC STONE SHALL BE UTILIZED BELOW POND BASIN ELEVATION. "SELECT FILL" SHALL CLASSIFY AS GM, GP, SP, SP-SM, SM OR SC WITH NO MORE THAN 30% FINES (W/W). THE MINIMUM INTERNAL ANGLE OF FRICTION, COHESION, AND WET UNIT WEIGHT SHALL BE EQUAL TO OR GREATER THAN THE DESIGN VALUES PROVIDED IN SECTION 1.2. LABORATORY TESTING OF THE PROPOSED FILL MATERIALS SHALL BE PERFORMED PRIOR TO PLACEMENT TO VERIFY DESIGN CRITERIA. COPIES OF ALL LABORATORY TESTING SHALL BE PROVIDED TO THE CERTIFYING ENGINEER PRIOR TO USE IN CONSTRUCTION OF THE RETAINING WALL.

**2.7 UNSUITABLE MATERIAL**

SOILS CONTAINING ROOTS, BRUSH, SOD, OR OTHER ORGANIC MATERIAL SHALL NOT BE PERMITTED AS FILL. FROZEN SOILS, SNOW, ICE, HEAVY CLAYS, OR WET SOILS SHALL NOT BE PERMITTED AS FILL. MATERIAL PASSING THE NO. 40 SIEVE SHALL NOT HAVE A LIQUID LIMIT GREATER THAN 40 AND A PLASTICITY INDEX OF GREATER THAN 15, UNLESS WRITTEN CONSENT IS OBTAINED FROM THE DESIGN ENGINEER PRIOR TO PLACEMENT.

**3.0 FOUNDATION REQUIREMENTS**

THE FOUNDATION BEARING CAPACITY ASSUMED FOR THIS DESIGN SHALL BE VERIFIED IN THE FIELD AND COPIES OF THE TESTS PROVIDED TO THE CERTIFYING ENGINEER. THE FOUNDATION SURFACE SHALL BE CLEARED OF ALL DEBRIS AND LOOSE SOIL. FOUNDATION SOILS NOT MEETING THE MINIMUM DESIGN CRITERIA, SHALL BE REMOVED AND REPLACED UTILIZING AGGREGATE BASE COURSE (ABC) STONE, PLACED IN LIFTS NOT EXCEEDING 9", AND COMPACTED TO AT LEAST 95% OF THE MODIFIED PROCTOR (ASTM D-698) MAXIMUM DRY DENSITY.

**3.1 FIRST BLOCK COURSE**

THE FIRST COURSE OF BLOCK SHALL BE PLACED ON TOP OF AND IN FULL CONTACT WITH THE LEVELING PAD. THE UNITS SHALL MAINTAIN A MINIMUM DISTANCE OF 6" FROM THE FRONT AND BACK OF THE LEVELING PAD. PROPER ALIGNMENT MAY BE ACHIEVED WITH THE AID OF A STRING LINE. PROCEED TO THE NEXT COURSE OF BLOCK. EACH UNIT SHALL BE IN CONTACT WITH THE UNITS ON BOTH SIDES AS WELL AS ABOVE AND BELOW. SOME ADJUSTMENTS MAY BE REQUIRED FOR WALLS WITH CURVES AND A BATTER.

**3.2 GEOGRID INSTALLATION**

THE GEOGRID REINFORCEMENT SHALL BE LAID HORIZONTALLY ON COMPACTED FILL AND CONNECTED TO THE CONCRETE WALL UNITS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. GEOGRID SHALL BE PULLED TAUT REMOVING ALL SLACK FROM THE MATERIAL AND ANCHORED BEFORE ADDING FILL. GEOGRID SHALL BE INSTALLED AT THE ELEVATIONS AND LENGTHS REQUIRED AS SHOWN ON THE PLANS. THE SOIL SURFACE SHALL BE SMOOTH AND LEVEL AND HAVE BEEN COMPACTED BEFORE INSTALLING THE GEOGRID.

**3.3 REINFORCED ZONE FILL PLACEMENT**

SELECT FILL (OR ABC STONE) SHALL BE PLACED IN A MAXIMUM 8" LOOSE LIFT THAT IS COMPACTED TO AT LEAST 95% OF THE STANDARD (MODIFIED) PROCTOR MAXIMUM DRY DENSITY AT A MOISTURE CONTENT WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT. CLEAN STONE FILL SHALL RECEIVE AT LEAST 3 PASSES OF SUITABLE COMPACTION EQUIPMENT. ONLY HAND OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN 3 FEET OF THE SEGMENTAL UNITS. FILL SHALL BE PLACED FROM THE WALL REARWARD TO INSURE TAUTNESS OF THE GEOGRID. CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID.

**3.4 RETAINING WALL CAPS**

APPLY A CONSTRUCTION ADHESIVE TO THE UNITS TO PREVENT THEIR REMOVAL.

**4.0 SOIL TESTING**

FOR ABC STONE FILL MATERIALS, AT LEAST ONE COMPACTION TEST SHALL BE PERFORMED FOR EVERY 100 LINEAR FEET, FOR EVERY LIFT ELEVATION REQUIRING GEOGRID OR EVERY 3RD LIFT AT A MINIMUM. TEST RESULTS SHALL BE PROVIDED TO THE CERTIFYING ENGINEER.

**5.0 HYDROSTATIC PRESSURE POTENTIAL**

THE ENGINEER SHALL BE NOTIFIED IF ANY OF THE FOLLOWING SHOULD BECOME EVIDENT: WATER OR WETNESS FROM OR IN A CUT BANK; LOCAL SPRINGS, LOCAL STORM DRAINS, SEWER, OR WATER LINES UNDER OR BEHIND THE WALL.

**6.0 ACCEPTABLE BLOCK**

SEGMENTAL BLOCK UNITS SHALL BE USED AND KEPT FREE OF DEFECTS THAT WOULD INTERFERE WITH THE PLACING OR POSITIONING OF THE UNIT OR IMPAIR ITS STRENGTH. THE CONTRACTOR SHALL PREVENT EXCESS MUD, WET CEMENT, EPOXY, AND THE LIKE MATERIALS FROM COMING IN CONTACT WITH AND AFFIXING TO THE UNITS. MINOR CRACKS INCIDENTAL TO THE USUAL METHOD MANUFACTURING OR MINOR CHIPPING RESULTING FROM SHIPMENT AND DELIVERY ARE NOT GROUNDS FOR REJECTION.

**7.0 ACCEPTABLE GEOGRID**

GEOGRID SHALL BE REJECTED IF 20% OR MORE OF A STRUCTURAL RIB HAS BEEN CUT OR RIPPED. THE CONTRACTOR SHALL INSPECT ALL GEOGRID DELIVERED TO THE SITE AND REJECT MATERIALS THAT MEET THIS CRITERIA. THE CONTRACTOR SHALL PREVENT EXCESS MUD, WET CEMENT, EPOXY, AND THE LIKE MATERIALS FROM COMING IN CONTACT WITH AND AFFIXING TO THE GEOGRID MATERIAL. IF THE GEOGRID IS DAMAGED ONSITE, IT SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.

**8.0 DRAINAGE COMPOSITE**

DRAINAGE COMPOSITE IS NOT REQUIRED.

**9.0 SPECIAL PROVISIONS**

- A). MAINTAIN DRAINAGE AWAY FROM THE WALL FACE AT ALL TIMES DURING CONSTRUCTION OF THE RETAINING WALL.
- B). THE ENGINEER SHALL BE NOTIFIED BY THE INSTALLING CONTRACTOR IF THE EMBEDMENT DEPTH OF THE RETAINING WALL(S) IS LESS THAN THAT SHOWN ON THE RETAINING WALL PROFILES.
- C). AS PER THE NORTH CAROLINA STATE BUILDING CODE, A BUILDING PERMIT MUST BE OBTAINED PRIOR TO WALL CONSTRUCTION. THE CONTRACTOR SHALL CONTACT THE LOCAL MUNICIPALITY CODE ENFORCEMENT DIVISION TO OBTAIN A BUILDING PERMIT.
- D). PLACEMENT OF STRUCTURAL FILL SOILS IS EXPECTED TO OCCUR AT PORTIONS OF THE LOW-SIDE OF THE RETAINING WALL TO ACCOMMODATE THE PLANNED EMERGENCY SPILLWAY. RIP-RAP SCOUR PROTECTION (DESIGNED BY OTHERS) SHALL BE PLACED AT THE BASE OF THE WALL IN THESE AREAS. ADDITIONALLY, RIP-RAP SCOUR PROTECTION (DBO) SHOULD BE INSTALLED AS PER SHEET RW-2.
- E). PLACEMENT OF LOW PERMEABLE SOILS AND CONSTRUCTION OF THE TOP-OF-WALL DRAINAGE SWALE SHALL OCCUR IMMEDIATELY AFTER WALL CONSTRUCTION. IF LOCALIZED LOW-LYING AREAS ARE PRESENT AT THE BOTTOM OF THE WALL, SCOUR PROTECTION SHALL BE COORDINATED WITH NV5.
- F). IF ANY PORTION OF THE REINFORCED ZONE OF THIS WALL IS EXPECTED TO ENCROACH INTO ANY ADJACENT PROPERTY, BUILDING AREA, OR PAVEMENT AREA, A PERMANENT CONSTRUCTION EASEMENT SHALL BE FILED FOR THE AFFECTED ENTITIES.
- G). LARGE VEGETATION WITHIN FIVE FEET OF THE TOP OF THE WALL SHALL BE COORDINATED WITH NV5 TO PREVENT DAMAGE TO THE REINFORCED ZONE OF THE RETAINING WALL.
- H). PROPER FUNCTIONALITY OF THE ADJACENT STORMWATER POND IS CRITICAL TO LONG-TERM WALL PERFORMANCE. REGULAR MAINTENANCE OF THE POND IS SOLELY THE RESPONSIBILITY OF THE OWNER.

**10.0 QUALIFICATION OF DESIGN**

- A). STABILITY OF ANY TEMPORARY SLOPES REQUIRED BY THE INSTALLATION OF A SEGMENTAL RETAINING WALL SHALL BE ADDRESSED BY A QUALIFIED GEOTECHNICAL ENGINEER. RESPONSIBILITY OF THESE TEMPORARY SLOPES RESTS WITH THE OWNER AND/OR THE CONTRACTOR OF THE PROJECT. ALL SLOPES SHALL MEET CURRENT OSHA STANDARDS.
- B). HANDRAIL/GUARDRAIL REQUIREMENTS SHALL BE DETERMINED BY THE ARCHITECT OR GENERAL CONTRACTOR.
- C). NOTIFY THE DESIGN ENGINEER PRIOR TO MODIFYING WALL CONSTRUCTION IF EXISTING SITE CONDITIONS DEVIATE FROM CONDITIONS OUTLINED ON THE RETAINING WALL PROFILE.

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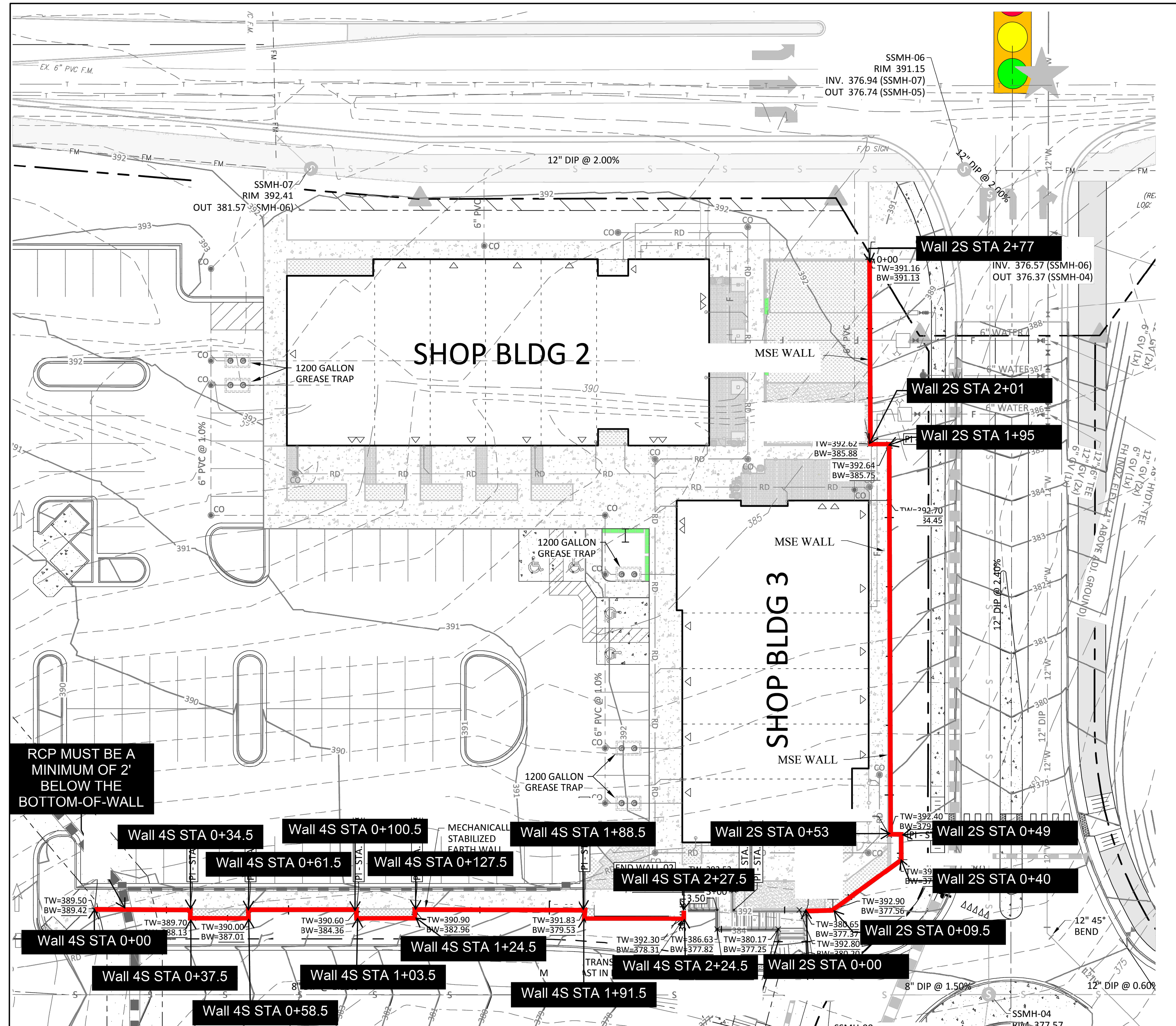
**Wallbrook Shopping Center**  
**Rolesville, North Carolina**  
**Our Project Number: 121-22-108262**

REV	DATE	DESCRIPTION	BY	Specifications	
1	4-26-23	WALL TYPE/LAYOUT SCHEME 2	JRP		
				Designed by: Justin R. Pescosolido, P.E.	Date: 6/7/23
				Designed by: Jalen G. Deatherage	Date: 6/7/23
				Reviewed by: Justin R. Pescosolido, P.E.	Date: 6/7/23
				<b>Segmental Retaining Wall Design</b>	

SHEET

**RW-13**





WE NOTE THAT THIS SITE LAYOUT IS APPROXIMATE. STAKING OF THE ACTUAL WALL LOCATIONS IN THE FIELD IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR AND SHOULD BE PERFORMED BASED ON THE APPROVED SITE/CIVIL DRAWINGS. OUR REPRESENTATIVE SHOULD BE ALLOWED TO REVIEW STAKING PRIOR TO WALL CONSTRUCTION.

### General Notes

The retaining wall(s) contained herein have been designed using active earth pressure theory. Therefore, outward movement at the top of the wall(s) should be expected. Outward movement of the retaining wall(s) may be limited by using high quality fill soils with a low fines content within the reinforced zone of the wall(s). Some cracks could develop at the ground surface due to lateral movement of the wall(s). These cracks should be filled in as soon as they are observed to help protect the soils below the ground surface from softening related to water infiltration that could affect the support characteristics for adjacent construction.

Preliminary analyses for global stability and total and differential settlement were performed as part of the design services for the segmental retaining wall(s). Our analyses were based, in part, on assumed in-situ soil properties derived from our previous Report of Subsurface Investigation and Geotechnical Engineering Evaluation and our previous experience with similar conditions in close geographic proximity to this site. If soil conditions encountered during construction are significantly different than those assumed herein, NV5 Engineers and Consultants, Inc. shall be contacted immediately for review of and possible alterations to this design.

The Engineer requests that representatives of the owner and/or general contractor arrange a pre-construction meeting with all pertinent parties involved for the construction of the retaining wall(s) shown on these plans. The Engineer's responsibility is limited to providing only the design services of the project's retaining wall(s) contained herein. Retaining wall construction monitoring and retaining wall certifying are beyond the scope of these design services. The Engineer shall not be required to sign any document, no matter by whom requested, in which the Engineer is required to certify, guarantee, or warrant conditions of which the Engineer has not or cannot ascertain.

Retaining Wall 4S was designed considering an additional 250 pounds per square foot (psf) live load at a setback of approximately 10 feet from top-of-wall to account for vehicle traffic in the planned parking lot and drive aisles. Retaining Wall 2S was designed considering foundation surcharge loads as provided to us by the structural engineer of record. No other dead load surcharge conditions were considered in the wall design. Structures such as light poles, handrail, guardrail, or drainage structures to be installed in the vicinity of the retaining wall(s) shall be designed and constructed to resist imposing additional lateral loads on the retaining wall(s). If future construction alters the assumed loading conditions of the retaining wall(s), NV5 Engineers and Consultants, Inc. shall be notified to review the design criteria for the imposed loads.

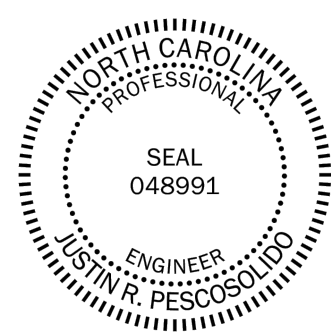
### Construction Notes

1. Prior to construction, confirmation of the distances to property lines, Tree Buffers, roadways, sidewalks, and/or curb and gutter to the face(s) of the proposed wall(s) shall be performed.
2. Prior to construction, confirmation of existing utility line locations (Stormwater, Sewer, Water, Electrical, and Gas) and the locations of future utility lines shall be performed.
3. Prior to construction, confirmation of the in-situ and proposed grades shall be performed by a qualified surveyor. NV5 Engineers and Consultants, Inc. shall be notified if the site grades are different than those shown on these drawings.
4. During construction, care must be exercised to prevent the undermining of any existing structures.
5. Utility structures and underground lines located within the reinforced zone of the retaining wall(s) shall be installed prior to or during construction of the retaining wall(s) to prevent damage to the reinforcement layers. If the presence of utility structures interferes with the integrity of the reinforcement, NV5 Engineers and Consultants, Inc. shall be notified during construction to recommend suitable remedial measures that will ensure proper operation of the retaining wall(s).
6. After construction, heavy equipment should not operate within 3 feet of the top portion of the wall(s) to prevent adverse impacts to the structural integrity of the retaining wall(s).
7. After construction, care must be exercised to prevent damage to the upper layers of reinforcement and degrading of the retained soils of the retaining wall(s). Installation of light poles, signs, handrails, guardrails, shrubs, or trees (etc.) in the reinforced zone of this retaining wall(s) shall not damage the upper layers of reinforcement. Any damaged reinforcement shall be repaired.
8. Surface water drainage shall be designed by others to discharge surface water away from the wall face(s) and away from the foundations of adjacent construction at all times during and after construction of the retaining wall(s). All downspouts from the nearby structures should be directed away from the wall(s) and slope(s) above the wall(s).

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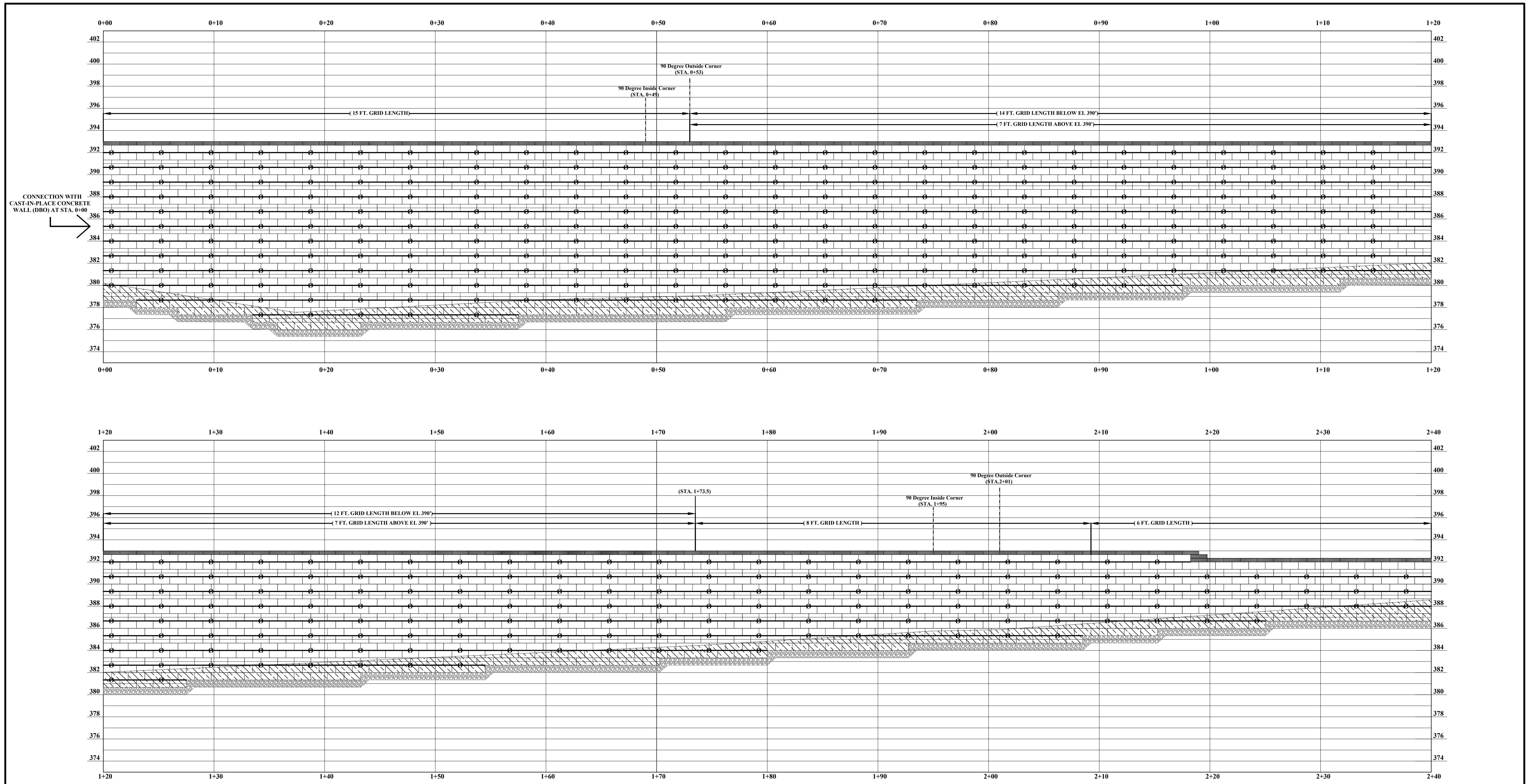


**Wallbrook Shopping Center**  
**Rolesville, North Carolina**  
**Our Project Number 121-23-108265**

REV	DATE	DESCRIPTION	BY
1	6/14/23	Wall 2S, Site Layout, Details	JGD

Retaining Wall Layout	
Designed by: Justin R. Pescosolido, P.E.	Date: 1-17-23
Drawn By: Jaxon Dean	Date: 1-17-23
Reviewed By: Justin R. Pescosolido, P.E.	Date: 1-17-23
<b>Retaining Wall Design</b>	

SHEET  
**RW-2**



NOTE: CONNECTION TO CAST-IN-PLACE CONCRETE WALL (CONCRETE WALL DESIGNED BY OTHERS)  
 NOTE: TOP 2 GRID LAYERS (ABOVE EL 390') 7 FEET  
 REMAINING GRID LAYERS (BELOW EL 390') 14 FEET (FROM STA 0+53 TO STA 1+20)  
 NOTE: TOP 2 GRID LAYERS (ABOVE EL 390') 7 FEET  
 REMAINING GRID LAYERS (BELOW EL 390') 12 FEET (FROM STA 1+20 TO STA 1+73.5)

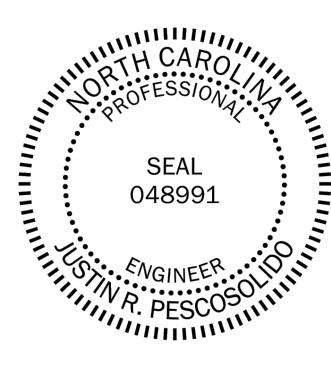
### RETAINING WALL 2S PROFILE Part 1

- LEGEND:  
 1) MIRAFI 3XT GEOGRID DESIGNATION  
 2) EMBEDDED BLOCK DESIGNATION  
 3) LEVELING PAD DESIGNATION

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Wallbrook Shopping Center  
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REV	DATE	DESCRIPTION	BY
1	6/14/23	Wall 2S, Site Layout, Details	JGD

### Retaining Wall 2S Profile Part 1

Designed by: Justin R. Pescosolido, P.E. Date: 1-17-23  
 Drawn By: Jaxon Dean Date: 1-17-23  
 Reviewed By: Justin R. Pescosolido, P.E. Date: 1-17-23

SHEET  
**RW-3**

Retaining Wall Design



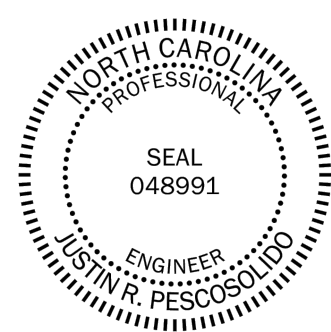
**RETAINING WALL 2S PROFILE Part 2**

- LEGEND:**  
 1) MIRAFIXT GEOGRID DESIGNATION  
 2) EMBEDDED BLOCK DESIGNATION  
 3) LEVELING PAD DESIGNATION

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**Wallbrook Shopping Center  
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 Our Project Number 121-23-108265**

REV	DATE	DESCRIPTION	BY
1	6/14/23	Wall 2S, Site Layout, Details	JGD

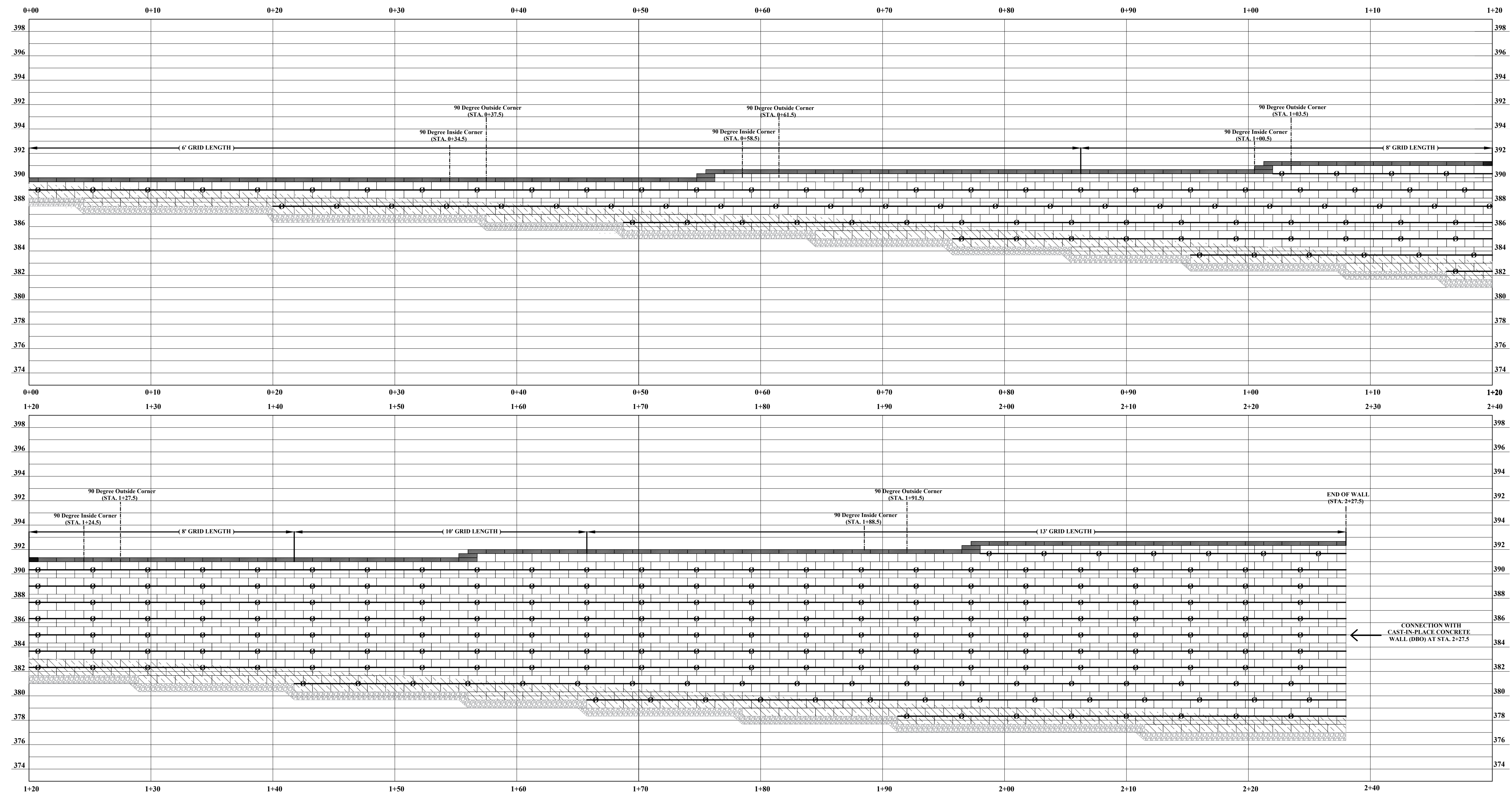
**Retaining Wall 2S Profile Part 2**

Designed by: Justin R. Pescosolido, P.E. Date: 1-17-23  
 Drawn By: Jaxon Dean Date: 1-17-23  
 Reviewed By: Justin R. Pescosolido, P.E. Date: 1-17-23

SHEET  
**RW-4**

Retaining Wall Design





NOTE: CONNECTION TO CAST-IN-PLACE CONCRETE WALL (CONCRETE WALL DESIGNED BY OTHERS)

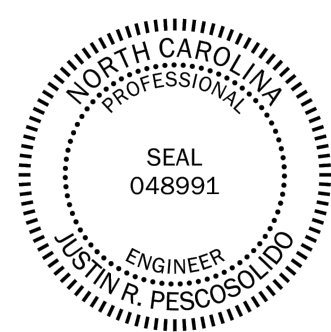
- LEGEND:
- 1) MIRAFI 3XT GEOGRID DESIGNATION
  - 2) EMBEDDED BLOCK DESIGNATION
  - 3) LEVELING PAD DESIGNATION

### RETAINING WALL #4S

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**Rolesville, North Carolina**  
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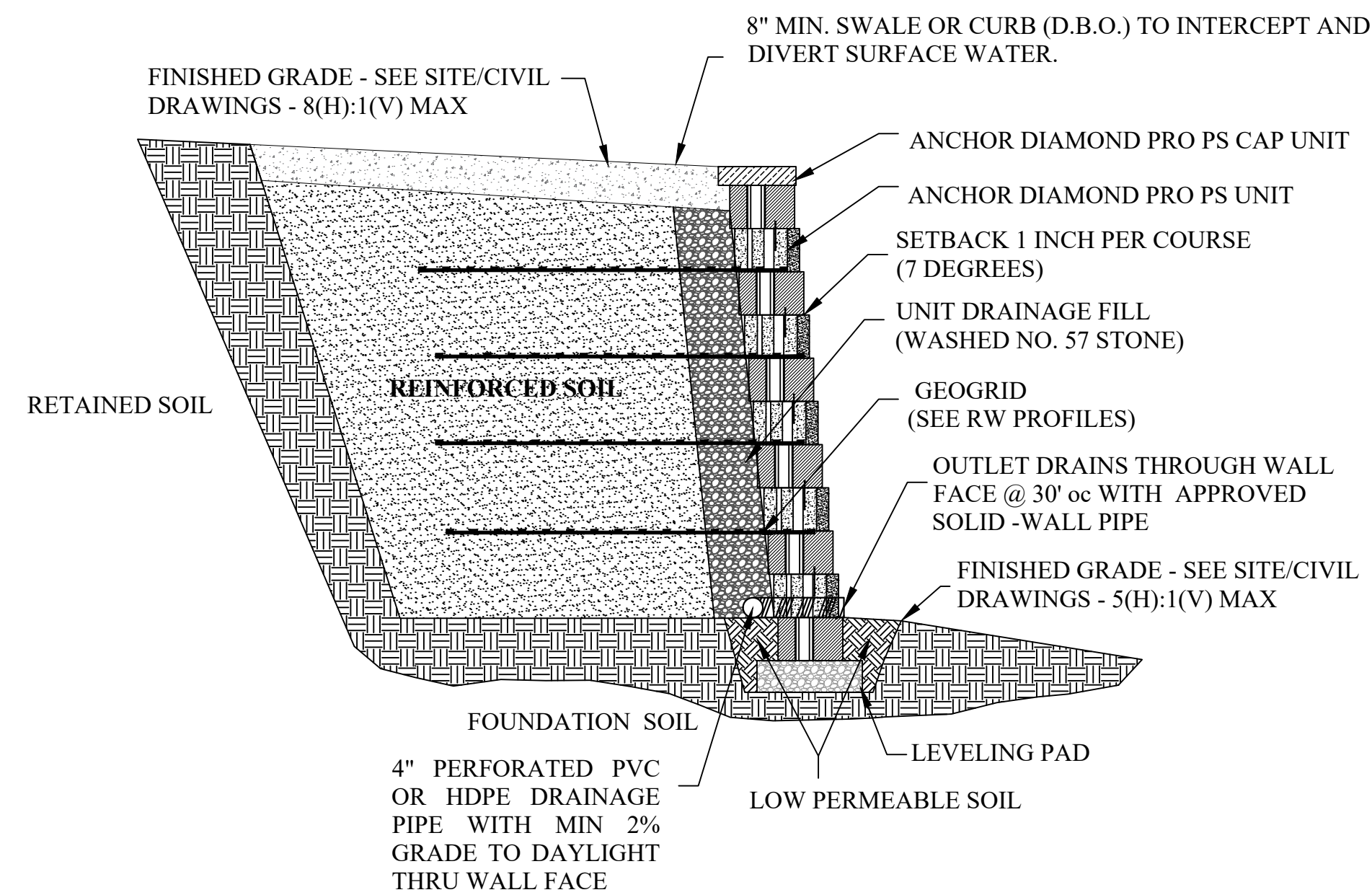
REV	DATE	DESCRIPTION	BY
1	6/14/23	Wall 2S, Site Layout, Details	JGD

### Retaining Wall 4S Profile

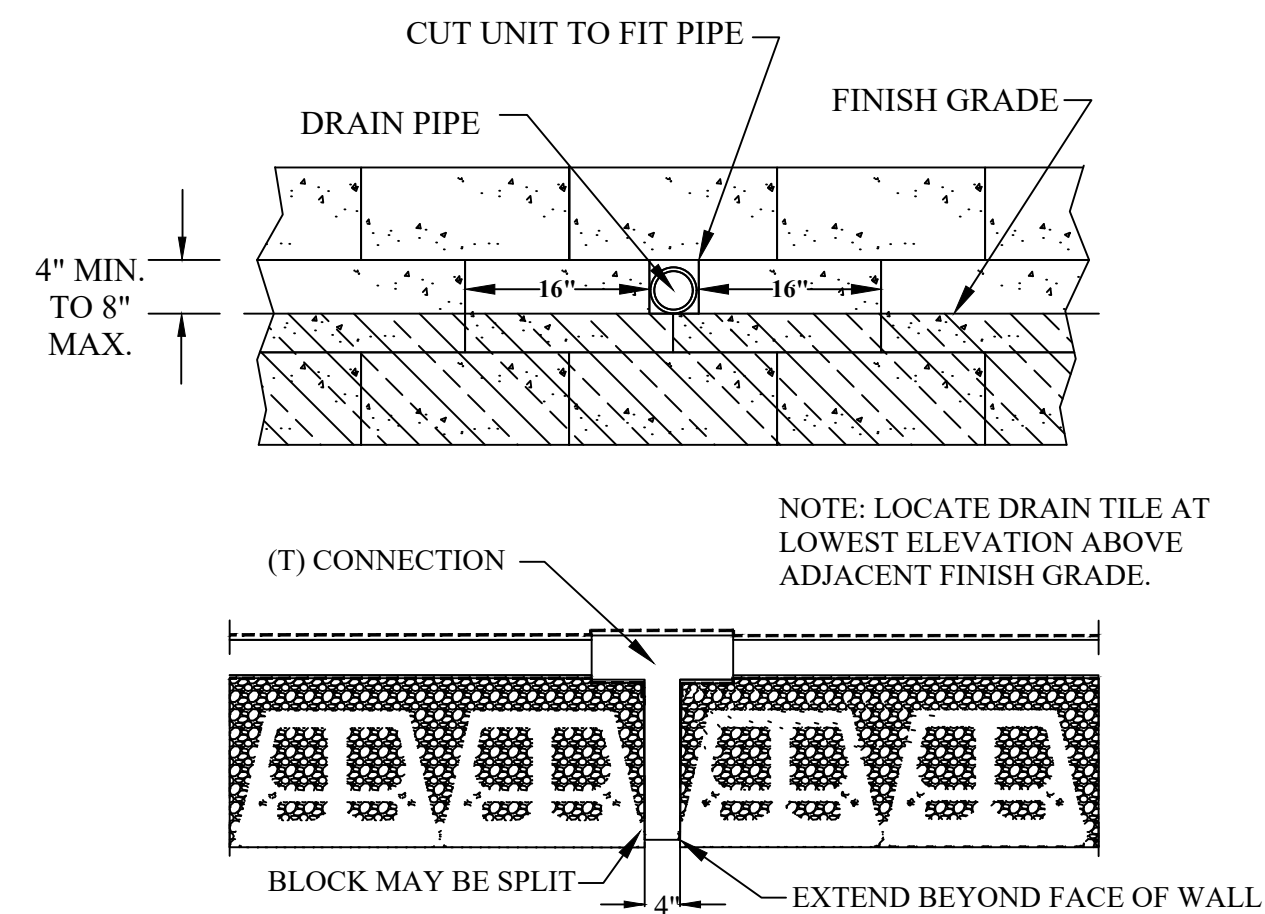
Designed by: Justin R. Pescosolido, P.E. Date: 1-17-23  
 Drawn By: Jaxon Dean Date: 1-17-23  
 Reviewed By: Justin R. Pescosolido, P.E. Date: 1-17-23

SHEET  
**RW-5**

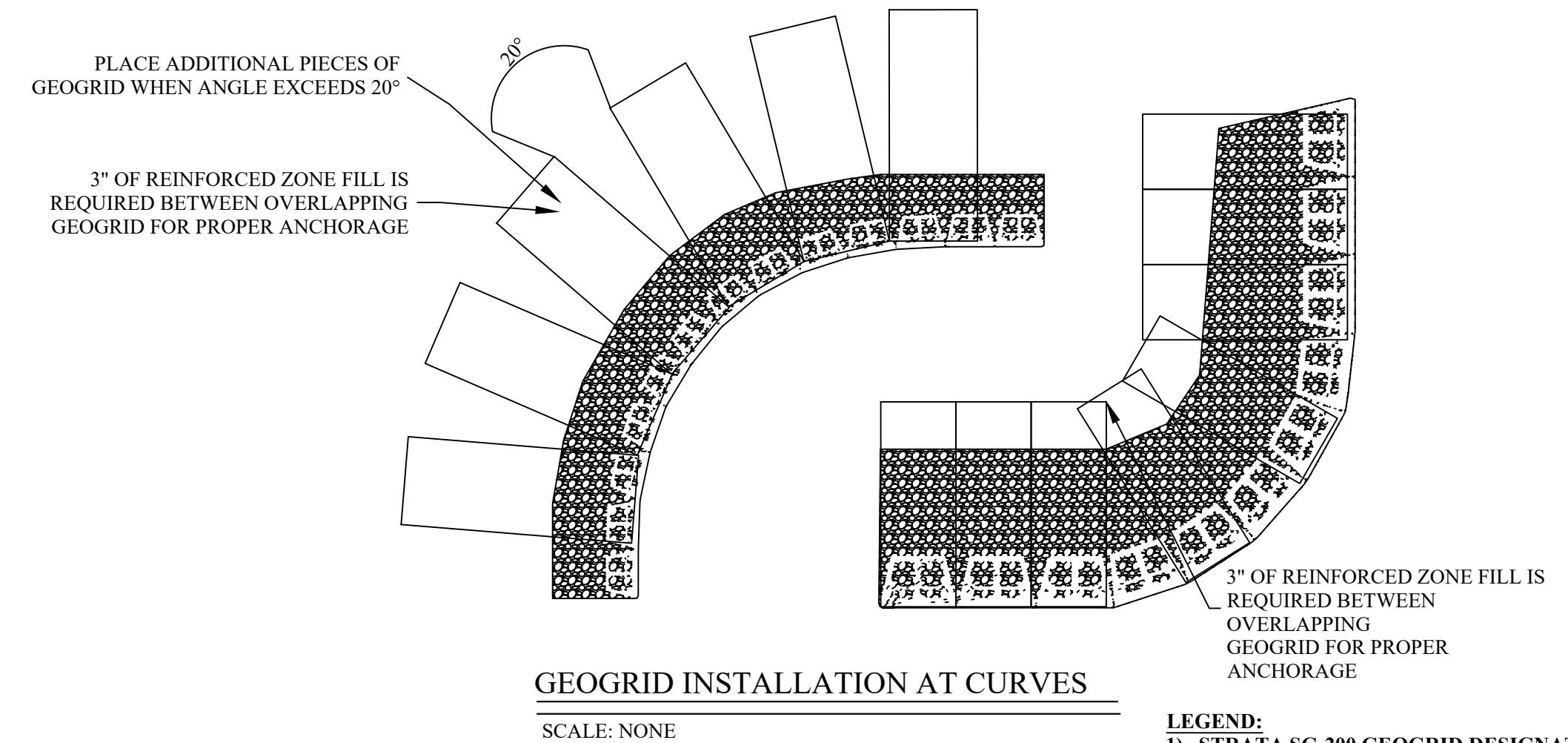
Retaining Wall Design



**ANCHOR DIAMOND PRO PS RETAINING WALL DETAIL**  
SCALE: NONE

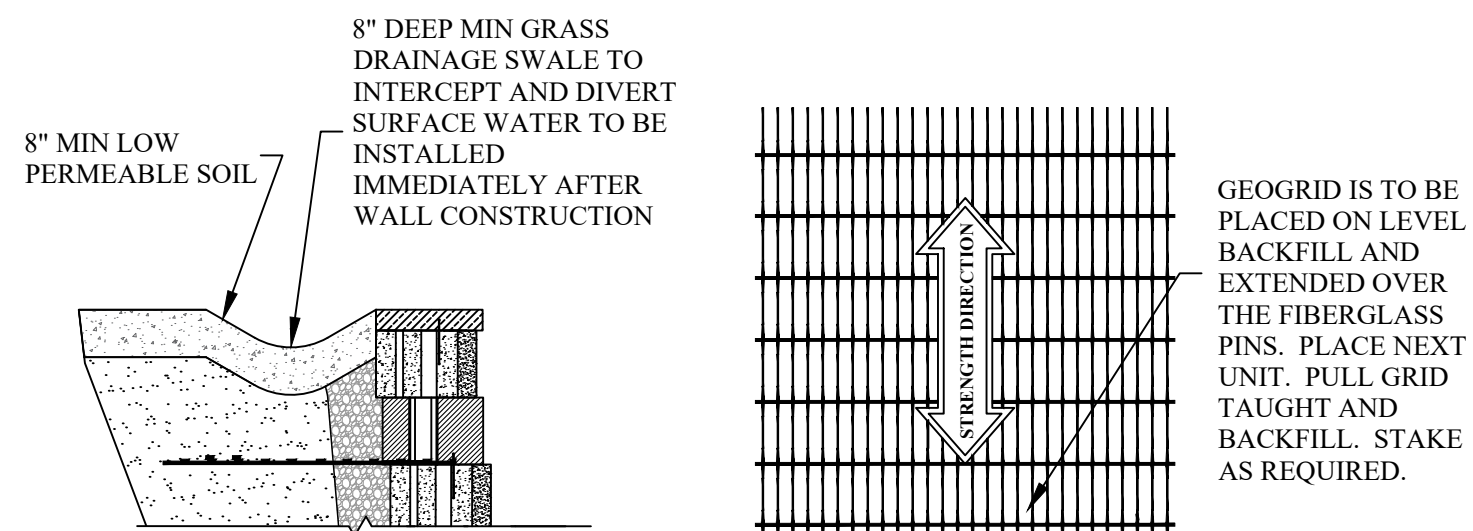


**FACE OUTLET DRAIN DETAIL**  
SCALE: NONE



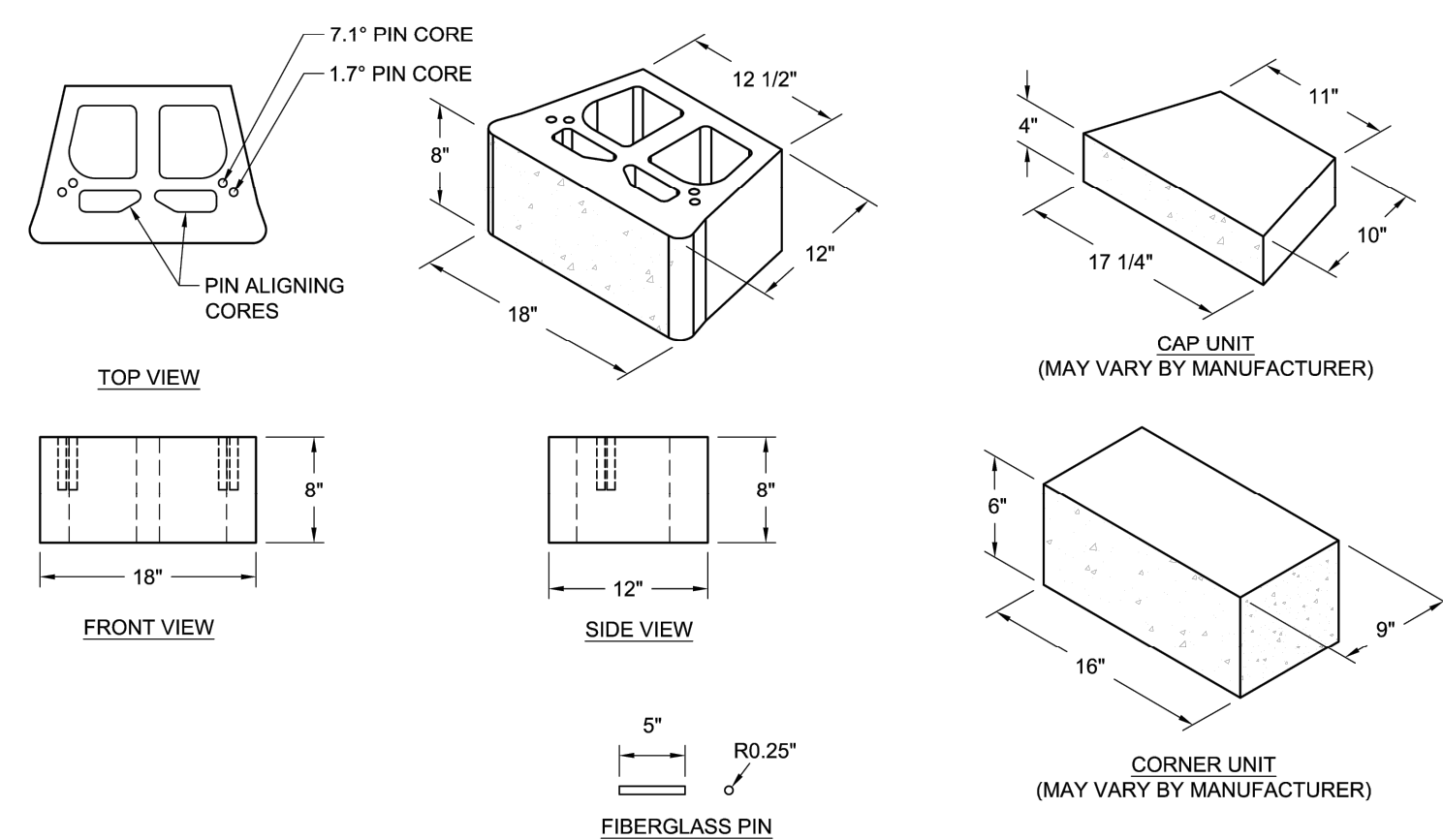
**GEOGRID INSTALLATION AT CURVES**  
SCALE: NONE

- LEGEND:**
- 1). STRATA SG-200 GEOGRID DESIGNATION
  - 2). EMBEDDED BLOCK DESIGNATION
  - 3). LEVELING PAD DESIGNATION

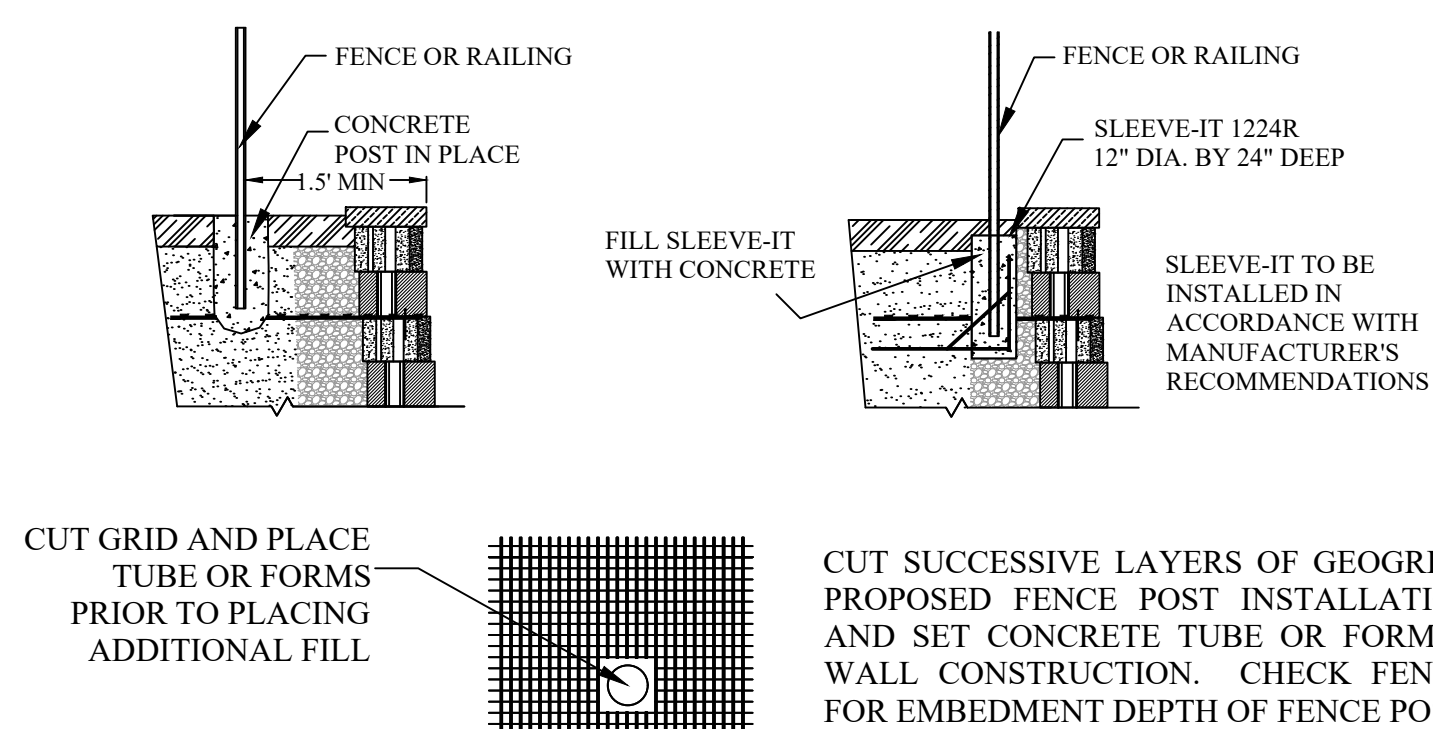


**DRAINAGE SWALE DETAIL**  
SCALE: NONE

**GRID AND PIN CONNECTION**  
SCALE: NONE

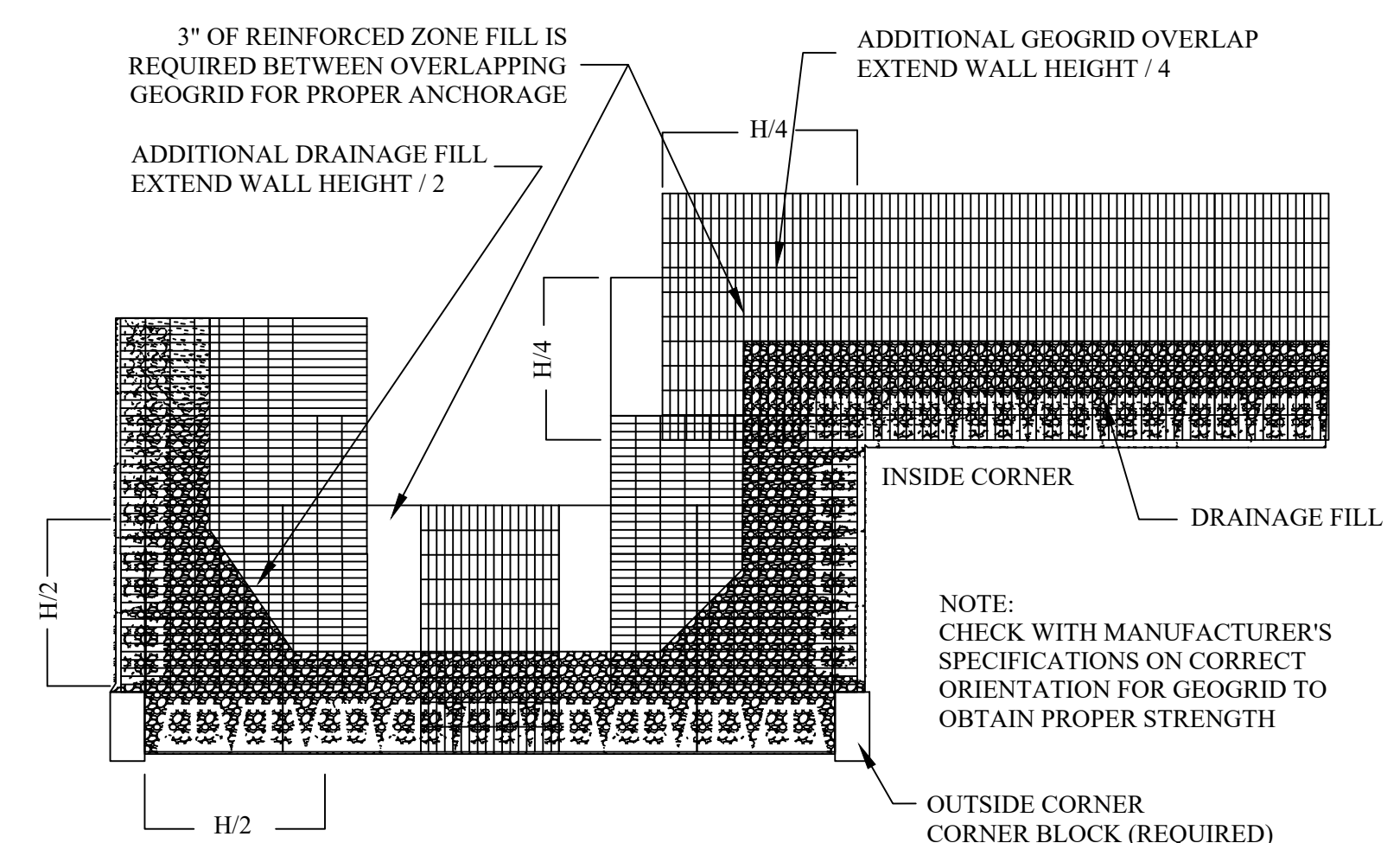


**DIAMOND PRO UNIT DETAILS**  
SCALE: NONE



RAILING REQUIREMENTS FOR THE RETAINING WALL SHALL BE DETERMINED BY THE SITE DESIGNER. THE RAILING SHOULD BE DESIGNED IN ACCORDANCE WITH THE NORTH CAROLINA BUILDING CODE BY A REGISTERED DESIGN PROFESSIONAL. THE RAILING SHOULD BE DESIGNED SUCH THAT IT DOES NOT ADD ANY ADDITIONAL LATERAL FORCES TO THE RETAINING WALL. THE CONCRETE TUBES OR SLEEVE-IT FORMS FOR THE RAILINGS SHALL BE INSTALLED BY THE SITE CONTRACTOR AND COORDINATED WITH THE RETAINING WALL CONTRACTOR DURING CONSTRUCTION OF THE RETAINING WALL.

**TYPICAL HAND RAILING DETAIL**  
SCALE: NONE

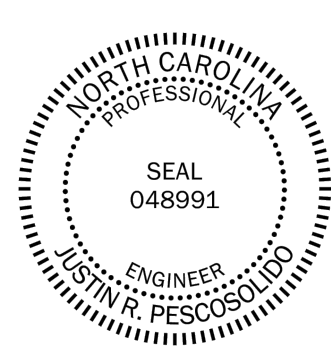


**GEOGRID INSTALLATION AT CORNERS**  
SCALE: NONE

**NV5 Engineers and Consultants, Inc.**

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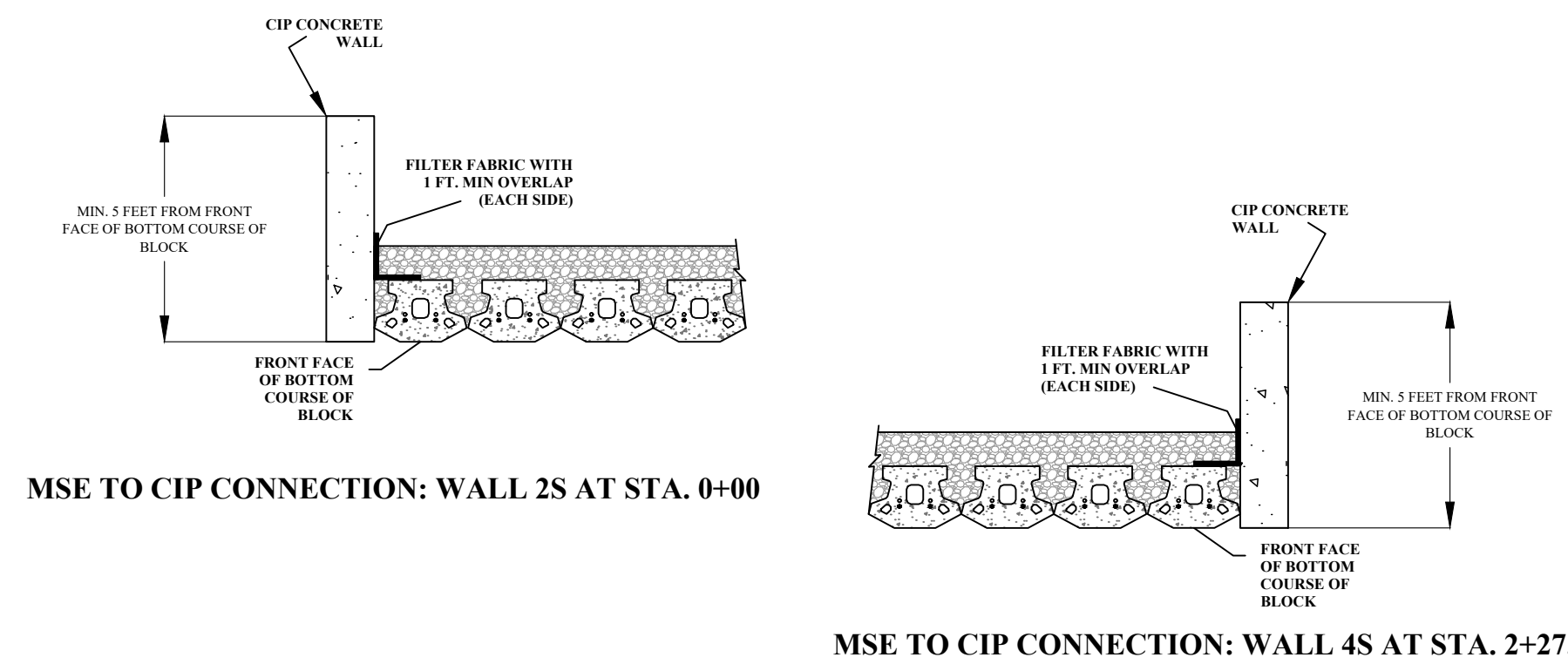
REV	DATE	DESCRIPTION	BY
1	6/14/23	Wall 2S, Site Layout, Details	JGD

**Anchor Diamond Pro PS Unit Details**

Designed by: Justin R. Pescosolido, P.E. Date: 1-17-23  
Drawn By: Jaxon Dean Date: 1-17-23  
Reviewed By: Justin R. Pescosolido, P.E. Date: 1-17-23

SHEET  
**RW-6**

Retaining Wall Design

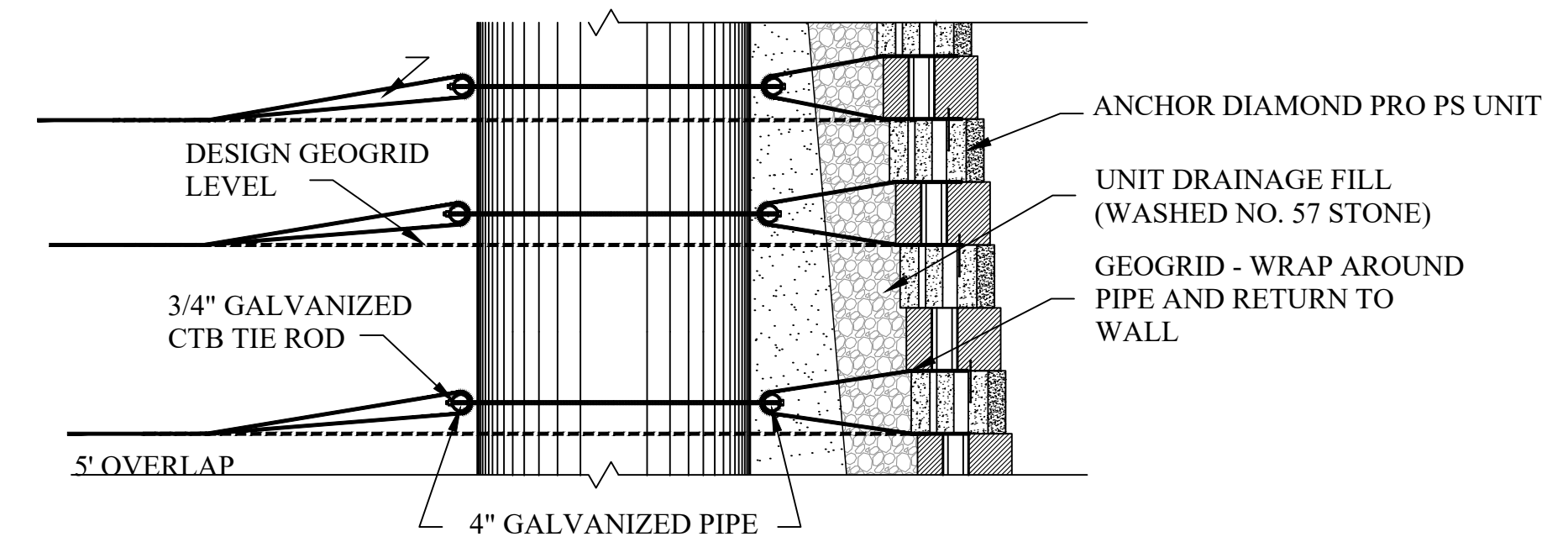


MSE TO CIP CONNECTION: WALL 2S AT STA. 0+00

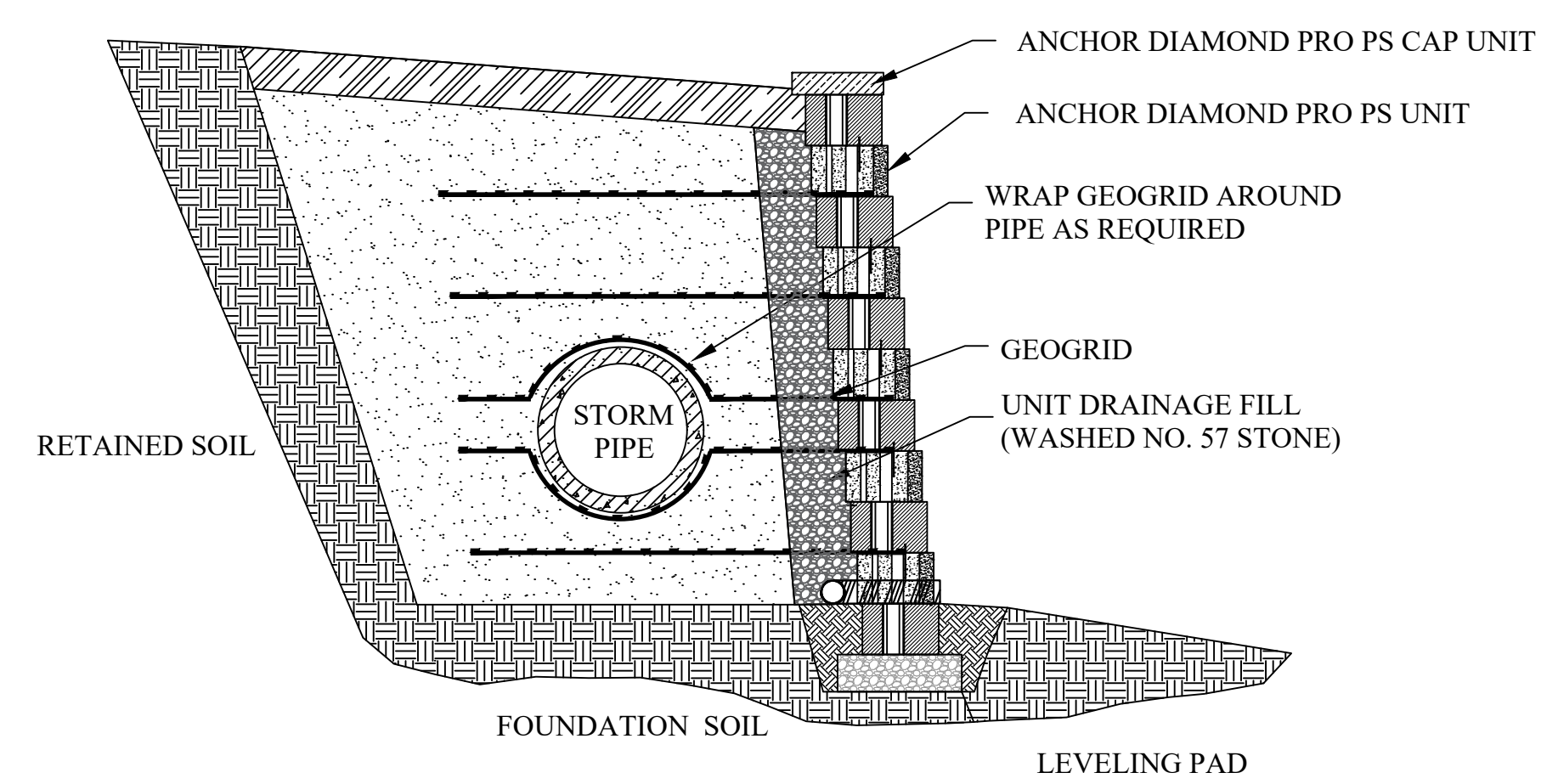
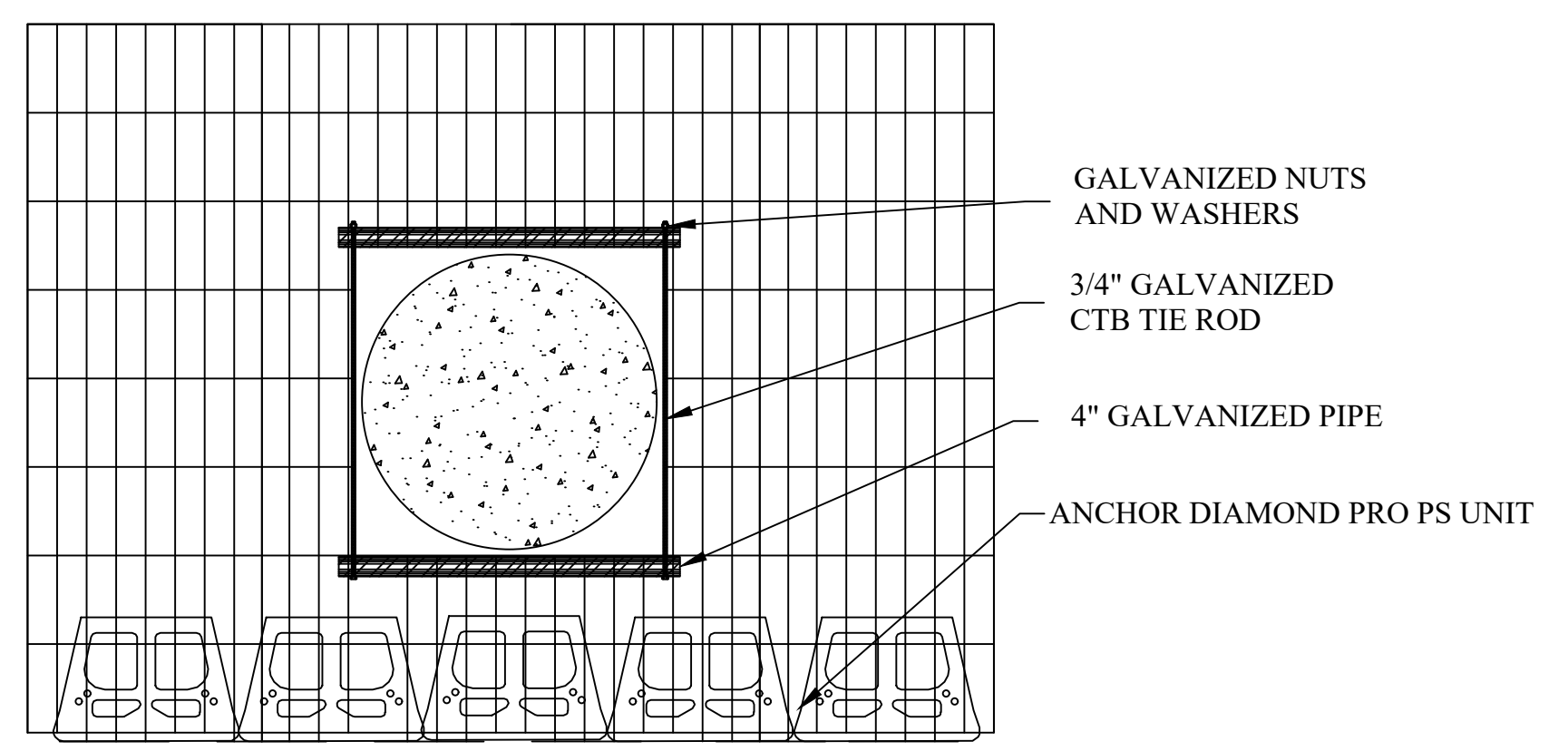
MSE TO CIP CONNECTION: WALL 4S AT STA. 2+27.5

**MSE WALL & CIP WALL CONNECTION DETAIL**

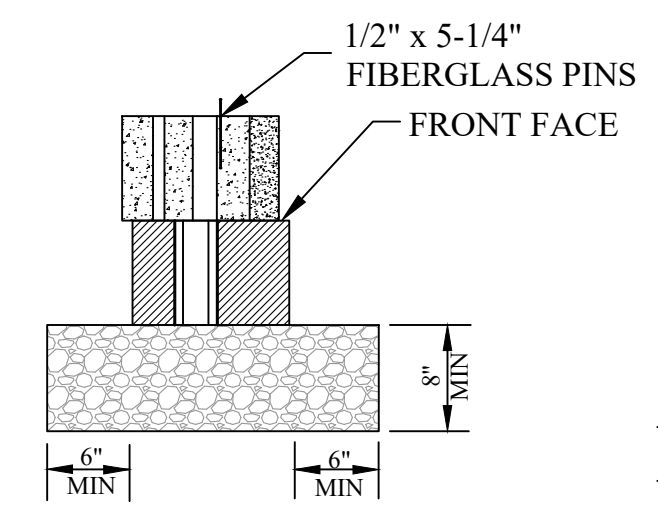
SCALE: NONE



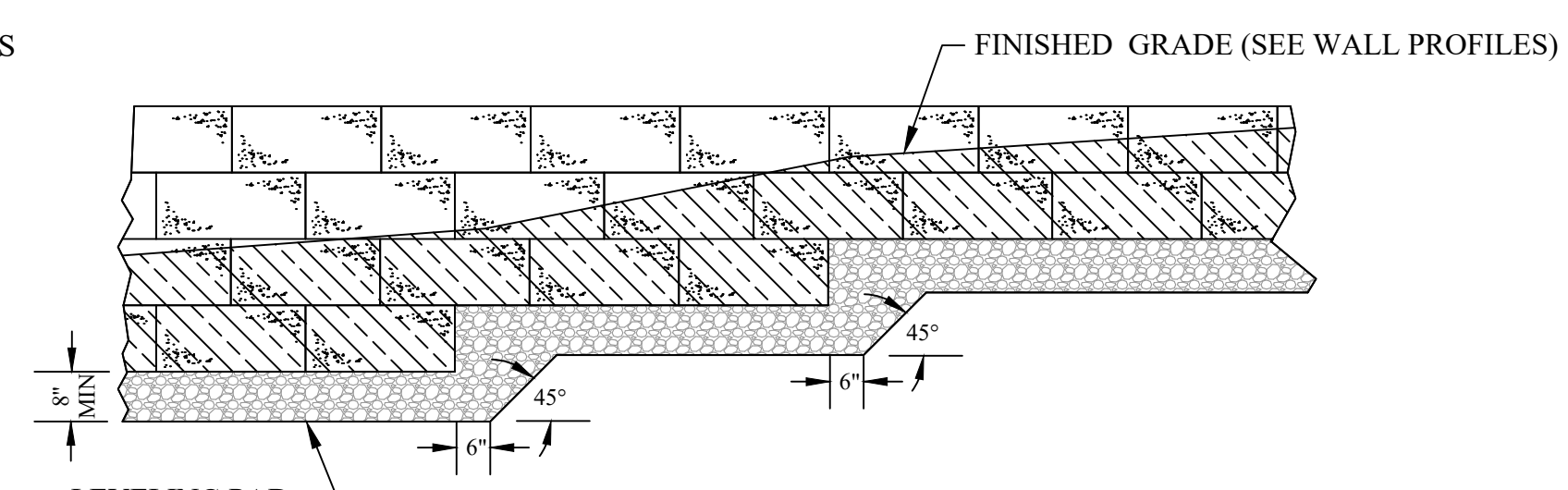
**WALL AT PIER / MANHOLE**



**WALL WITH PIPE IN REINFORCED ZONE**



THE LEVELING PAD IS TO BE CONSTRUCTED OF WASHED NO. 57 STONE, ABC STONE, OR UNREINFORCED CONCRETE.



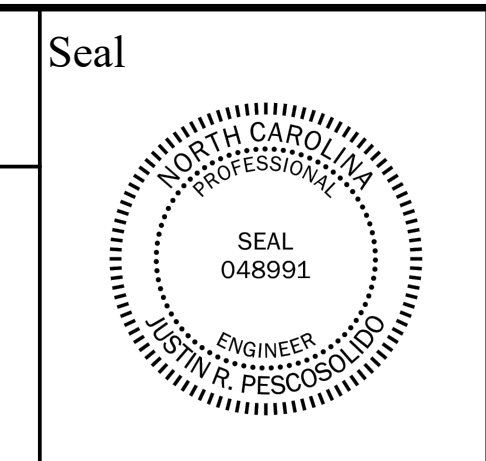
THE FOUNDATION SOILS ARE TO BE APPROVED BY THE SITE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF THE LEVELING PAD

**LEVELING PAD DETAILS**

SCALE: NONE

**NV5 Engineers and Consultants, Inc.**

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**Wallbrook Shopping Center**  
**Rolesville, North Carolina**  
**Our Project Number 121-23-108265**

REV	DATE	DESCRIPTION	BY
1	6/14/23	Wall 2S, Site Layout, Details	JGD

Additional Details	
Designed by: Justin R. Pescosolido, P.E.	Date: 1-17-23
Drawn By: Jaxon Dean	Date: 1-17-23
Reviewed By: Justin R. Pescosolido, P.E.	Date: 1-17-23
<b>Retaining Wall Design</b>	

SHEET  
**RW-6**

**1.0 GENERAL**

SEGMENTAL RETAINING WALL SYSTEMS ARE DESIGNED AS GRAVITY RETAINING WALLS UTILIZING A HIGH DENSITY POLYESTER GEOGRID TO REINFORCE THE SOIL ZONE BEHIND THE WALL. THE GEOGRID IS POSITIVELY CONNECTED TO THE MODULAR CONCRETE BLOCK CREATING A REINFORCED SOIL MASS CAPABLE OF RESISTING CERTAIN LATERAL EARTH PRESSURES AND SURCHARGED LOADS. ALL REFERENCES TO THE ENGINEER REFER TO NV5 ENGINEERS AND CONSULTANTS, INC.

**1.1 QUALITY ASSURANCE**

WORK SHALL BE PERFORMED ONLY BY AN EXPERIENCED CONTRACTOR. CONTRACTOR SHALL SUBMIT TO THE CERTIFYING ENGINEER EVIDENCE OF QUALIFICATIONS AND REFERENCES ON PROJECTS OF SIMILAR SCOPE. THE CERTIFYING ENGINEER RESERVES THE RIGHT TO REJECT ANY AND ALL QUALIFICATIONS SUBMITTALS. THE OWNER AND/OR GENERAL CONTRACTOR SHOULD PROVIDE AN INSPECTOR AS A FULL-TIME CONTINUOUS MONITOR OF WORK QUALITY.

**1.2 BACK FILL MATERIALS**

THE SOIL MATERIAL ASSOCIATED WITH THE RETAINING WALL(S) IN THE REINFORCED ZONE, THE RETAINED ZONE, OR THE FOUNDATION BEDDING SHALL HAVE, AT A MINIMUM, THE FOLLOWING PROPERTIES:

- A.) FOUNDATION SOILS                       $\Phi$  = 26 DEGREES, COHESION = 0 PSF, WET UNIT WEIGHT = 115 LBS/CU.FT
- B.) RETAINED SOILS                          $\Phi$  = 26 DEGREES, COHESION = 0 PSF, WET UNIT WEIGHT = 115 LBS/CU.FT
- B.) REINFORCED SOILS                       $\Phi$  = 30 DEGREES, COHESION = 0 PSF, WET UNIT WEIGHT = 125 LBS/CU.FT

SEE PROFILE SHEETS FOR BOTTOM OF WALL ELEVATIONS. IF THE ASSUMED VALUES DO NOT REPRESENT THE ACTUAL SOIL CONDITIONS, THE ENGINEER SHALL BE NOTIFIED AND THE WALL(S) SHALL BE REDESIGNED.

**1.3 FOUNDATION LOADS**

THE MAXIMUM APPLIED FOUNDATION LOAD FOR THE WALL(S) IS **2.5 KIPS/SQ.FT.**

**1.4 WALL BATTER**

BATTER FOR THE ENTIRE WALL SHALL BE MAINTAINED AT 1-INCH PER COURSE.

**2.1 CONCRETE MASONRY WALL UNITS**

CONCRETE WALL UNITS SHALL BE SEGMENTAL UNITS MANUFACTURED IN ACCORDANCE WITH ASTM C-1372 AND ASTM C-140, AND SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI.

**2.2 RETAINING WALL SHEAR CONNECTIONS**

SEGMENTAL WALL UNITS SHALL BE INTERLOCKED UTILIZING MANUFACTURER SPECIFIED FIBERGLASS SHEAR PINS AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

**2.3 GEOGRID REINFORCEMENT**

GEOSYNTHETIC REINFORCEMENT SHALL CONSIST OF HIGH TENACITY GEOGRIDS MANUFACTURED FOR SOIL REINFORCEMENT APPLICATIONS. THE TYPE, LENGTH, AND PLACEMENT OF THE REINFORCING GEOSYNTHETIC SHALL BE AS SHOWN ON THE PLANS.

**2.4 LEVELING PAD**

MATERIAL SHALL CONSIST OF COMPACTED AGGREGATE BASE COURSE (ABC) STONE, WASHED NO. 57 STONE, OR UNREINFORCED CONCRETE AND BE A MINIMUM OF 8" THICK (UNO). ABC STONE SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR (ASTM D-698) MAXIMUM DRY DENSITY. AGGREGATE MATERIAL SHALL RECEIVE A MINIMUM OF ONE PASS OF THE COMPACTION EQUIPMENT. THE TOP OF THE LEVELING PAD FOR THE WALL SECTIONS SHALL BE MAINTAINED AS INDICATED ON THE RETAINING WALL PROFILE.

**2.5 UNIT FILL**

THE VOID WITHIN EACH UNIT SHALL BE FILLED WITH WASHED NO. 57 STONE HAVING 100% OF THE AGGREGATE PASSING THE 2" SIEVE WITH A MINIMUM OF 3/8" WASHED STONE SIZE AND NO MORE THAN 5% PASSING THE NO. 200 SIEVE. THE UNIT FILL SHALL EXTEND AT LEAST 12" BEHIND THE UNITS. GRAVITY FILL ZONE SHALL CONSIST OF WASHED #57 STONE.

**2.6 SOIL PROPERTIES**

REINFORCED ZONE SELECT FILL MATERIALS SHALL CLASSIFY AS GM, GP, SP, SP-SM, SM OR SC WITH NO MORE THAN 20% FINES. THE MINIMUM INTERNAL ANGLE OF FRICTION, COHESION, AND WET UNIT WEIGHT SHALL BE EQUAL TO OR GREATER THAN THE DESIGN VALUES PROVIDED IN SECTION 1.2.

**2.7 UNSUITABLE MATERIAL**

SOILS CONTAINING ROOTS, BRUSH, SOD, OR OTHER ORGANIC MATERIAL SHALL NOT BE PERMITTED AS FILL. FROZEN SOILS, SNOW, ICE, HEAVY CLAYS, OR WET SOILS SHALL NOT BE PERMITTED AS FILL. MATERIAL PASSING THE NO. 40 SIEVE SHALL NOT HAVE A LIQUID LIMIT OF GREATER THAN 40 AND A PLASTICITY INDEX OF GREATER THAN 15, UNLESS WRITTEN CONSENT IS OBTAINED FROM THE DESIGN ENGINEER PRIOR TO PLACEMENT.

**3.1 FOUNDATION REQUIREMENTS**

THE FOUNDATION BEARING CAPACITY THAT WAS ASSUMED FOR THE DESIGN SHALL BE VERIFIED IN THE FIELD WITH A MINIMUM FACTOR OF SAFETY OF 2.0, AND COPIES OF THE TESTS PROVIDED TO THE CERTIFYING ENGINEER. THE FOUNDATION ZONE SHALL BE CLEARED OF ALL DEBRIS AND LOOSE SOIL. FOUNDATION SOILS NOT MEETING THE MINIMUM DESIGN CRITERIA, SHALL BE REMOVED AND REPLACED UTILIZING AGGREGATE BASE COURSE (ABC) STONE, PLACED IN LIFTS NOT EXCEEDING 8", AND COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR (ASTM D-698) MAXIMUM DRY DENSITY.

**3.2 FIRST BLOCK COURSE**

THE FIRST COURSE OF BLOCK SHALL BE PLACED ON TOP OF AND IN FULL CONTACT WITH THE LEVELING PAD. THE UNITS SHALL MAINTAIN A MINIMUM DISTANCE OF 6" FROM THE FRONT AND BACK OF THE LEVELING PAD. PROPER ALIGNMENT MAY BE ACHIEVED WITH THE AID OF A STRING LINE. PROCEED TO THE NEXT COURSE OF BLOCK. EACH UNIT SHALL BE IN CONTACT WITH THE UNITS ON BOTH SIDES AS WELL AS ABOVE AND BELOW. SOME ADJUSTMENTS MAY BE REQUIRED FOR WALLS WITH CURVES AND A BATTER.

**3.3 GEOGRID INSTALLATION**

THE GEOGRID REINFORCEMENT SHALL BE LAID HORIZONTALLY ON COMPACTED REINFORCED ZONE FILL AND POSITIVELY CONNECTED TO THE CONCRETE WALL UNITS IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. GEOGRID SHALL BE PULLED TAUT, REMOVING ALL SLACK, AND ANCHORED BEFORE ADDING FILL. GEOGRID SHALL BE INSTALLED AT THE ELEVATIONS AND LENGTHS INDICATED ON THE RETAINING WALL PROFILE. THE SOIL SURFACE SHALL BE SMOOTH AND LEVEL AND HAVE BEEN COMPACTED BEFORE INSTALLING THE GEOGRID.

**3.4 REINFORCED ZONE FILL PLACEMENT**

REINFORCED ZONE SELECT FILL OR ABC STONE SHALL BE PLACED IN A MAXIMUM 6" LIFT THAT IS COMPACTED TO 95% OF THE STANDARD OR NCDOT MODIFIED PROCTOR MAXIMUM DRY DENSITY AT A MOISTURE CONTENT WITHIN 3% OF THE OPTIMUM MOISTURE CONTENT. ONLY HAND OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN 3 FEET OF THE SEGMENTAL UNITS. FILL SHALL BE PLACED FROM THE WALL REARWARD TO INSURE TAUTNESS OF THE GEOGRID. CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID.

**3.5 RETAINING WALL CAP UNITS**

RETAINING WALL CAPS TO BE SECURED TO TOP COURSE OF BLOCK WITH APPROPRIATE ADHESIVE.

**4.0 SOIL TESTING**

WHERE REINFORCED PROCESSED FILL OR ABC STONE MATERIALS ARE PLACED, COMPACTION TESTING SHALL BE PERFORMED FOR EVERY LIFT ELEVATION REQUIRING GEOGRID OR EVERY THIRD LIFT AS A MINIMUM. TEST RESULTS SHALL BE PROVIDED TO THE CERTIFYING ENGINEER. VERIFICATION OF SUFFICIENT COMPACTIVE EFFORT SHOULD BE PERFORMED FOR CLEAN AGGREGATE PLACEMENT.

**5.0 HYDROSTATIC PRESSURE POTENTIAL**

ANY SURFACE RUNOFF OR STORMWATER SHALL BE DISCHARGED AWAY FROM THE WALL FOUNDATION AND ANY ADJACENT FOUNDATION SYSTEMS. FOUNDATION DRAINS FOR ADJACENT STRUCTURES SHOULD BE ADEQUATELY PIPED AWAY FROM THE RETAINING WALL. ROOF DRAINAGE SYSTEMS SHOULD BE DESIGNED TO PREVENT ROOF RUNOFF FROM BEING DISCHARGED BEHIND THE RETAINING WALL. SURFACE WATER COLLECTION AND PIPING SYSTEMS SHALL BE DESIGNED BY OTHERS FOR YARD AREAS BEHIND THE RETAINING WALL. DRAINAGE SYSTEMS SHALL BE DESIGNED AND MAINTAINED TO AVOID EROSION OF THE SOILS AT THE AREA BELOW THE WALL.

**6.0 ACCEPTABLE BLOCK**

SEGMENTAL BLOCK UNITS SHALL BE USED AND KEPT FREE OF DEFECTS THAT WOULD INTERFERE WITH THE PLACING OR POSITIONING OF THE UNIT OR IMPAIR ITS STRENGTH. THE CONTRACTOR SHALL PREVENT EXCESS MUD, WET CEMENT, EPOXY, AND THE LIKE MATERIALS FROM COMING IN CONTACT WITH AND AFFIXING TO THE UNITS. MINOR CRACKS INCIDENTAL TO THE USUAL METHOD OF MANUFACTURING OR MINOR CHIPPING RESULTING FROM SHIPMENT AND DELIVERY ARE NOT GROUNDS FOR REJECTION.

**7.0 ACCEPTABLE GEOGRID**

GEOGRID SHALL BE REJECTED IF 20% OR MORE OF A STRUCTURAL RIB HAS BEEN CUT OR RIPPED. THE CONTRACTOR SHALL INSPECT ALL GEOGRID DELIVERED TO THE SITE AND REJECT MATERIALS THAT MEET THIS CRITERIA. THE CONTRACTOR SHALL PREVENT EXCESS MUD, WET CEMENT, EPOXY, AND THE LIKE MATERIALS FROM COMING IN CONTACT WITH AND AFFIXING TO THE GEOGRID MATERIAL. IF THE GEOGRID IS DAMAGED ONSITE, IT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

**8.0 DRAINAGE COMPOSITE**

DRAINAGE COMPOSITE REQUIREMENTS TO BE DETERMINED BY PROJECT GEOTECHNICAL ENGINEER AT TIME OF CONSTRUCTION.

**9.0 SPECIAL PROVISIONS**

- A). MAINTAIN THE DIRECTION OF DRAINAGE AWAY FROM THE WALL FACE AT ALL TIMES DURING CONSTRUCTION OF THE RETAINING WALL(S) AND FINISHED GRADING AS SHOWN ON THE DRAINAGE PLANS TO BE PREPARED BY OTHERS.
- B). NV5 ENGINEERS SHALL BE CONTACTED FOR REVIEW OF THE ADJOINING REINFORCED CONCRETE WALL DESIGNS AS THEY BECOME AVAILABLE.
- C). THE ENGINEER SHALL BE NOTIFIED BY THE INSTALLING CONTRACTOR SHOULD THE EMBEDMENT DEPTH OF THE RETAINING WALL BE LESS THAN THAT WHICH IS SHOWN ON THE RETAINING WALL PROFILE.
- D). AS PER THE NORTH CAROLINA STATE BUILDING CODE, A BUILDING PERMIT MUST BE OBTAINED PRIOR TO WALL CONSTRUCTION. THE CONTRACTOR SHALL CONTACT THE LOCAL MUNICIPALITY CODE ENFORCEMENT DIVISION TO OBTAIN A BUILDING PERMIT.

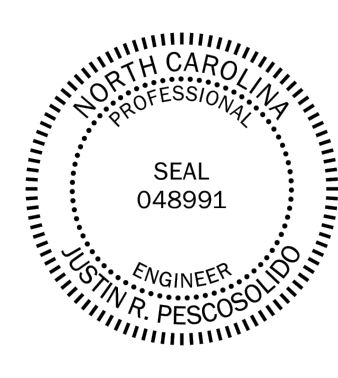
**10.0 QUALIFICATION OF DESIGN**

- A). STABILITY OF ANY TEMPORARY SLOPES REQUIRED BY THE INSTALLATION OF A SEGMENTAL RETAINING WALL SHALL BE ADDRESSED BY A QUALIFIED GEOTECHNICAL ENGINEER. RESPONSIBILITY OF THESE TEMPORARY SLOPES RESTS WITH THE OWNER AND/OR THE CONTRACTOR OF THE PROJECT. ALL SLOPES SHALL MEET CURRENT OSHA STANDARDS.
- B). HANDRAIL/GUARDRAIL REQUIREMENTS SHALL BE DETERMINED BY THE ARCHITECT OR GENERAL CONTRACTOR.
- C). NOTIFY THE DESIGN ENGINEER PRIOR TO MODIFYING WALL CONSTRUCTION IF EXISTING SITE CONDITIONS DEVIATE FROM CONDITIONS OUTLINED ON THE RETAINING WALL PROFILE.

**NV5 Engineers and Consultants, Inc.**

4905 Professional Court  
 Raleigh, North Carolina 27609  
 Phone: (919) 876-9799 Fax: (919) 876-8291  
 North Carolina Corporate License No. F-1333

Seal



**Wallbrook Shopping Center  
 Rolesville, North Carolina  
 Our Project Number 121-23-108265**

REV	DATE	DESCRIPTION	BY
1	6/14/23	Wall 2S, Site Layout, Details	JGD

**Specifications**

Designed by: Justin R. Pescosolido, P.E.	Date: 1-17-23	<b>SHEET RW-8</b>
Drawn By: Jaxon Dean	Date: 1-17-23	
Reviewed By: Justin R. Pescosolido, P.E.	Date: 1-17-23	

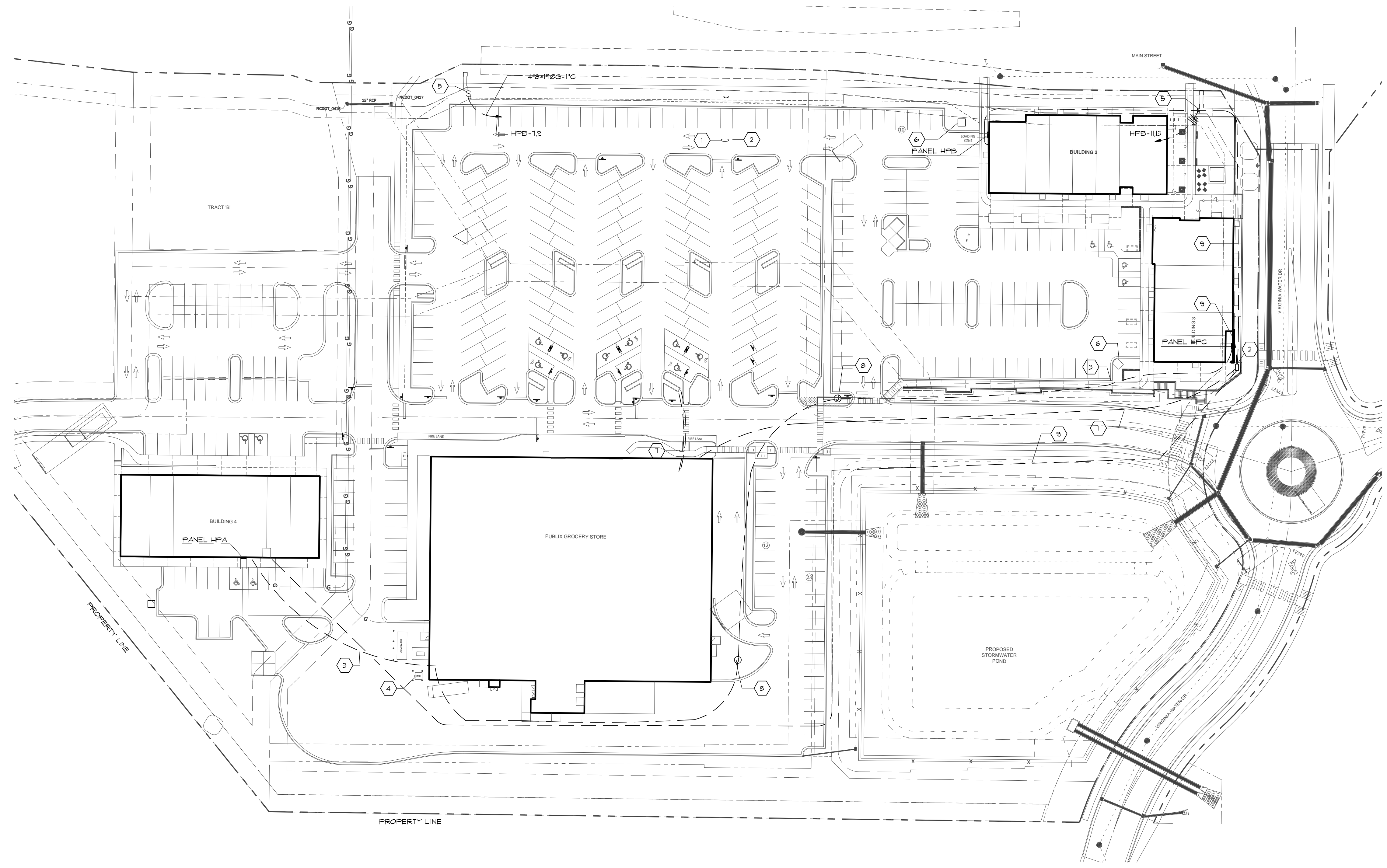
**Retaining Wall Design**



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PROJECT: **WALLBROOK**  
 US-401 at Virginia Water Drive  
 WAKE COUNTY, NORTH CAROLINA  
 FOR: CAROLAND SOUTHEAST  
 CHARLOTTE, NC

SHEET TITLE:  
**ELECTRICAL SITE PLAN**



**LEGEND NOTES:**

- 1 (2) 3" PVC CONDUITS TO TELEPHONE UTILITY CONNECTION. LOCATION COORDINATE LOCATION AND REQUIREMENTS WITH TELEPHONE COMPANY. PRIOR TO BID, TERMINATE 3 FEET OUTSIDE BUILDING FOR CONTINUATION BY PUBLIC BLDG CONTRACTOR. COORDINATE TERMINATION LOCATION AT PUBLIC WITH PUBLIC CONTRACTOR WITH UTILITY PROVIDER.
- 2 COMMUNICATION DEMARC LOCATION. COORDINATE EXACT LOCATION WITH UTILITY PROVIDER.
- 3 PROVIDE 4" IC WITH FULL WIRE FROM CONTACTOR CABINET TO EMS PANEL IN PUBLIC ELECTRICAL ROOM. FOR FUTURE EXTENSION TO PUBLIC EMS. COORDINATE LOCATION AND REQUIREMENTS WITH PUBLIC, PRIOR TO ROUGH IN.
- 4 PUBLIC DEDICATED TRANSFORMER
- 5 20A/2P NEMA 3R DISCONNECT FOR PYLON SIGN AND CONVENIENCE OUTLET. PROVIDE A GFCI RECEPTACLE AT SIGN. COORDINATE LOCATION OF SWITCH AND SIGN WITH ARCHITECT. MAKE ALL CONNECTIONS.
- 6 120Y/120V PAD MOUNTED POWER COMPANY TRANSFORMER.
- 7 (2) 2" SCHEDULE 40 PVC CONDUITS FROM PANEL 'S' INSIDE PUBLIC, TO A 12" X 12" IN GRADE, WATERTIGHT JUNCTION BOX IN THE ISLAND. PROVIDE FULLSTRINGS AND LABELS.
- 8 12"X24"X12"D PULL BOX FOR PUBLIC CONTROL WIRING. INSTALL FLUSH IN GRADE.
- 9 (2) 4" PVC CONDUITS FROM COMMUNICATION CABINET TO COMMUNICATION UTILITY DEMARC LOCATION. COORDINATE EXACT LOCATION WITH UTILITY PROVIDER.

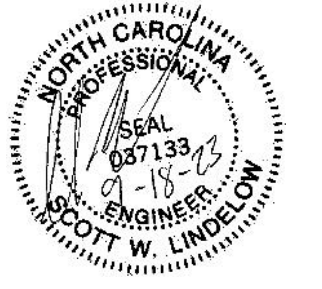
**GENERAL NOTES:**

- 1. 2"Ø #12G-12"Ø MINIMUM IN ALL EXTERIOR CIRCUITING
- 2. CIRCUITS HFA-2-4 AND 13-15 SHALL BE DUSK ON / DRAIN OFF.
- 3. ALL OTHER POLE LIGHTS SHALL BE DUSK ON/TIMER OFF.

**ELECTRICAL SITE PLAN**  
 SCALE 1"=50'-0"

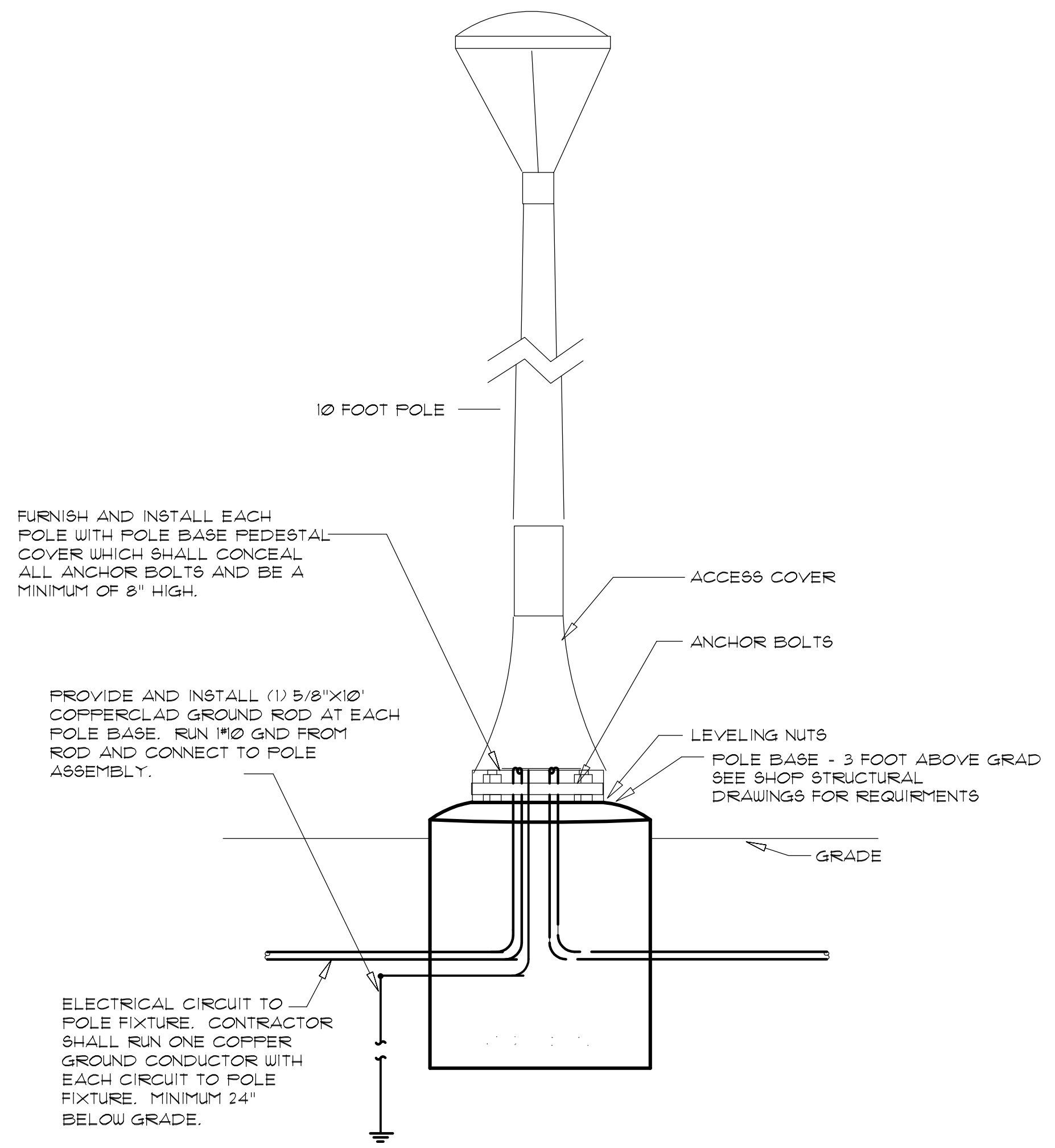
**Savant Engineering, PLLC**  
 5064 Roswell Road, Suite D-301  
 Sandy Springs GA 30342 770.319.7400  
 ©2022 Firm #P-1854 Project 22922

ISSUE DATE: 05/05/2022  
 PROJECT NO: **20-117**  
 FILE: **22922SE11**  
 DRAWN BY: **NJJ**  
 SHEET OF  
**SE-1.1**

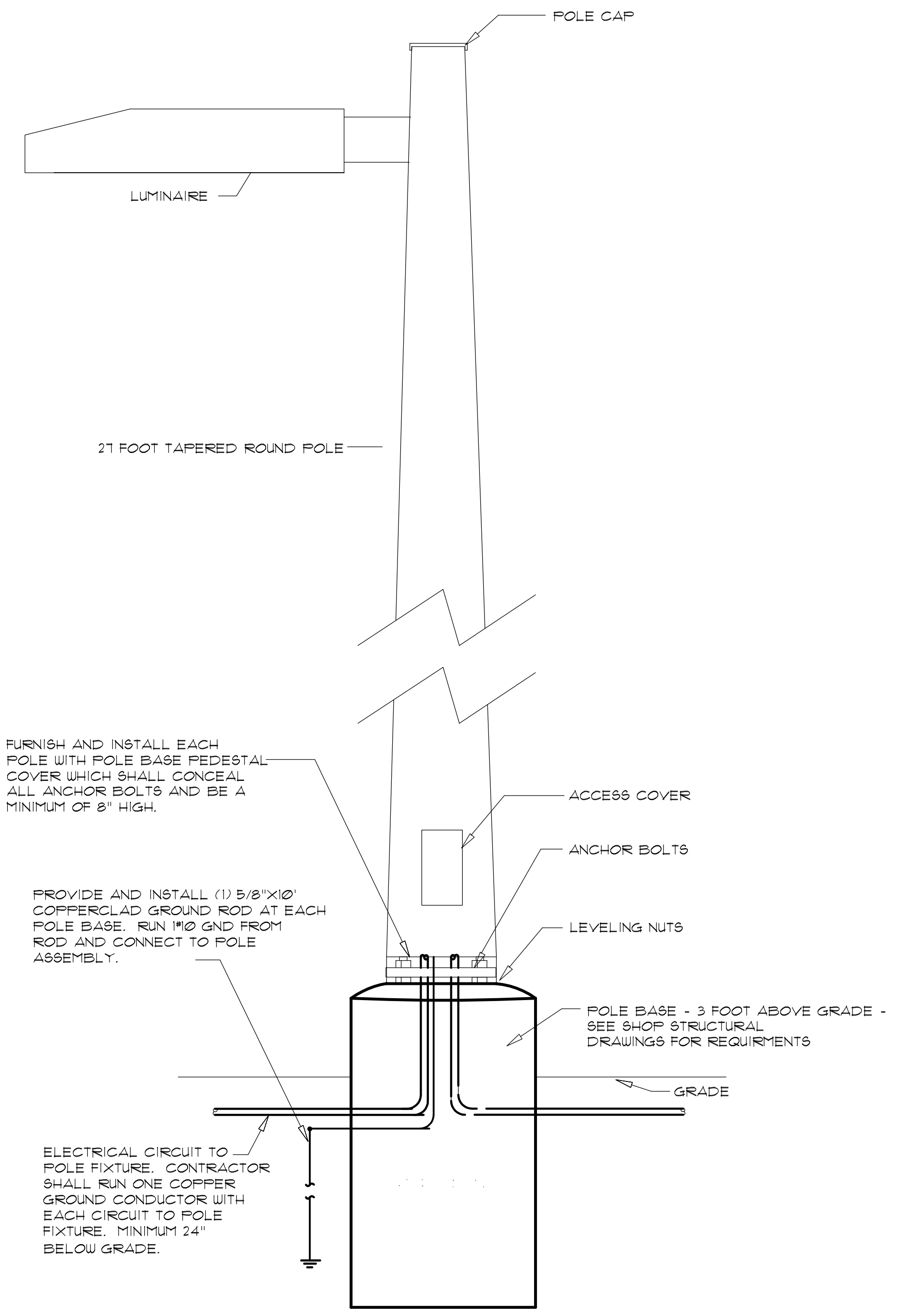


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ISSUE DATE: 05/05/2022  
 05/05/2022: REVISIONS & DRAWING  
 04/28/2022: REVISED PER COMMENTS FROM ARCHITECT  
 04/28/2022: REVISED PER COMMENTS FROM ARCHITECT



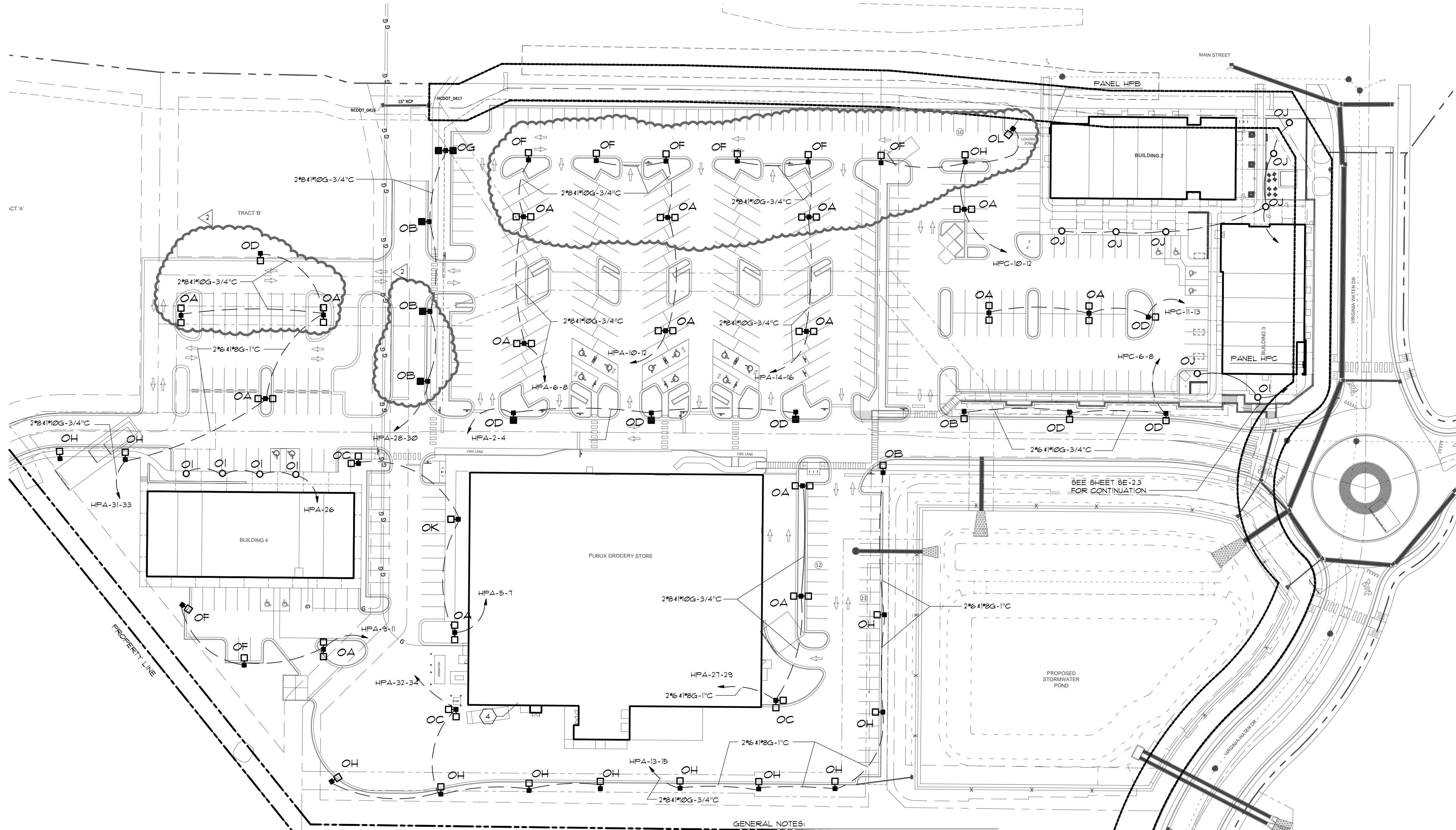
**3** POLE BASE DETAIL - POLE MOUNTED FIXTURE  
 SE-2.1 NOT TO SCALE  
 FLUSH POLE BASE



**2** POLE BASE DETAIL - POLE MOUNTED FIXTURE  
 SE-2.1 NOT TO SCALE  
 ELEVATED POLE BASE

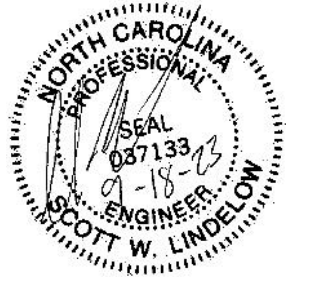
MARK	DESCRIPTION	MOUNTING	VOLT	LAMPS		WATTS	MANUFACTURER
				TYPE	NO.		
OA	DUAL HEAD LED POLE LIGHT ON 27.0 FOOT TAPERED STEEL POLE. BACK TO BACK. BRONZE.	DETAIL 2/SE-1.1	208	LED, 4000K	2	558	McGraw Edison (2)GLEDN-SASC-740-U-5WQ-B2B-BZ
OB	SINGLE HEAD LED POLE LIGHT ON 27.0 FOOT TAPERED STEEL POLE. BRONZE.	DETAIL 2/SE-1.1	208	LED, 4000K	1	279	McGraw Edison GLEDN-SASC-740-U-5WQ-BZ
OC	DUAL HEAD LED POLE LIGHT ON 27.0 FOOT TAPERED STEEL POLE. BRONZE.	DETAIL 2/SE-1.1	208	LED, 4000K	2	558	McGraw Edison (2)GLEDN-SASC-740-U-5WQ-2B90-BZ
OD	SINGLE HEAD LED POLE LIGHT ON 27.0 FOOT TAPERED STEEL POLE. BRONZE.	DETAIL 2/SE-1.1	208	LED, 4000K	1	279	McGraw Edison GLEDN-SASC-740-U-T4W-BZ
OE	SINGLE HEAD LED POLE LIGHT ON 27.0 FOOT TAPERED STEEL POLE. BRONZE.	DETAIL 2/SE-2.1	208	LED, 4000K	1	279	McGraw Edison GLEDN-SASC-740-U-SL2-BZ
OF	SINGLE HEAD LED POLE LIGHT ON 12.0 FOOT TAPERED STEEL POLE. BRONZE.	DETAIL 2/SE-2.1	208	LED, 4000K	1	113	McGraw Edison (2)GLEDN-SA2C-740-U-T4FT-BZ
OG	DUAL HEAD LED POLE LIGHT ON 12.0 FOOT TAPERED STEEL POLE. BACK TO BACK. BRONZE.	DETAIL 2/SE-2.1	208	LED, 4000K	2	226	McGraw Edison (2)GLEDN-SA2C-740-U-5WQ-B2B-BZ
OH	SINGLE HEAD LED POLE LIGHT ON 12.0 FOOT TAPERED STEEL POLE. BACK TO BACK. BRONZE.	DETAIL 2/SE-2.1	208	LED, 4000K	1	113	McGraw Edison GLEDN-SA2C-740-U-T4W-BZ
OI	PEDESTRIAN FIXTURE ON 10 FOOT POLE. BRONZE FINISH.	DETAIL 3/SE-2.1	208	LED, 4000K	1	48	INVUE LXS-VA-2-740-U-AST-S-BZ WITH ARP-S-L-6-10-A-BZ-S POLE
OJ	PEDESTRIAN FIXTURE ON 10 FOOT POLE. BRONZE FINISH.	DETAIL 3/SE-2.1	208	LED, 4000K	1	41	INVUE LXS-VA-2-740-U-SYM-S-BZ WITH ARP-S-L-6-10-A-BZ-S POLE
OK	SINGLE HEAD LED POLE LIGHT ON 27.0 FOOT TAPERED STEEL POLE. BRONZE.	DETAIL 2/SE-2.1	208	LED, 4000K	1	279	McGraw Edison GLEDN-SASC-740-U-T4FT-BZ
OL	SINGLE HEAD LED POLE LIGHT ON 27.0 FOOT TAPERED STEEL POLE. BRONZE.	DETAIL 2/SE-2.1	208	LED, 4000K	1	279	McGraw Edison GLEDN-SASC-740-U-SL3-BZ

LIGHTING FIXTURE SCHEDULE NOTES:  
 1. ALTERNATE SUPPLIERS OF SPECIFIED EQUIPMENT WILL BE ACCEPTABLE ONLY BY FORMAL SUBMITTAL 10 DAYS PRIOR TO BID, WITH PHOTOMETRIC PLAN.  
 2. POLES BY KW INDUSTRIES.



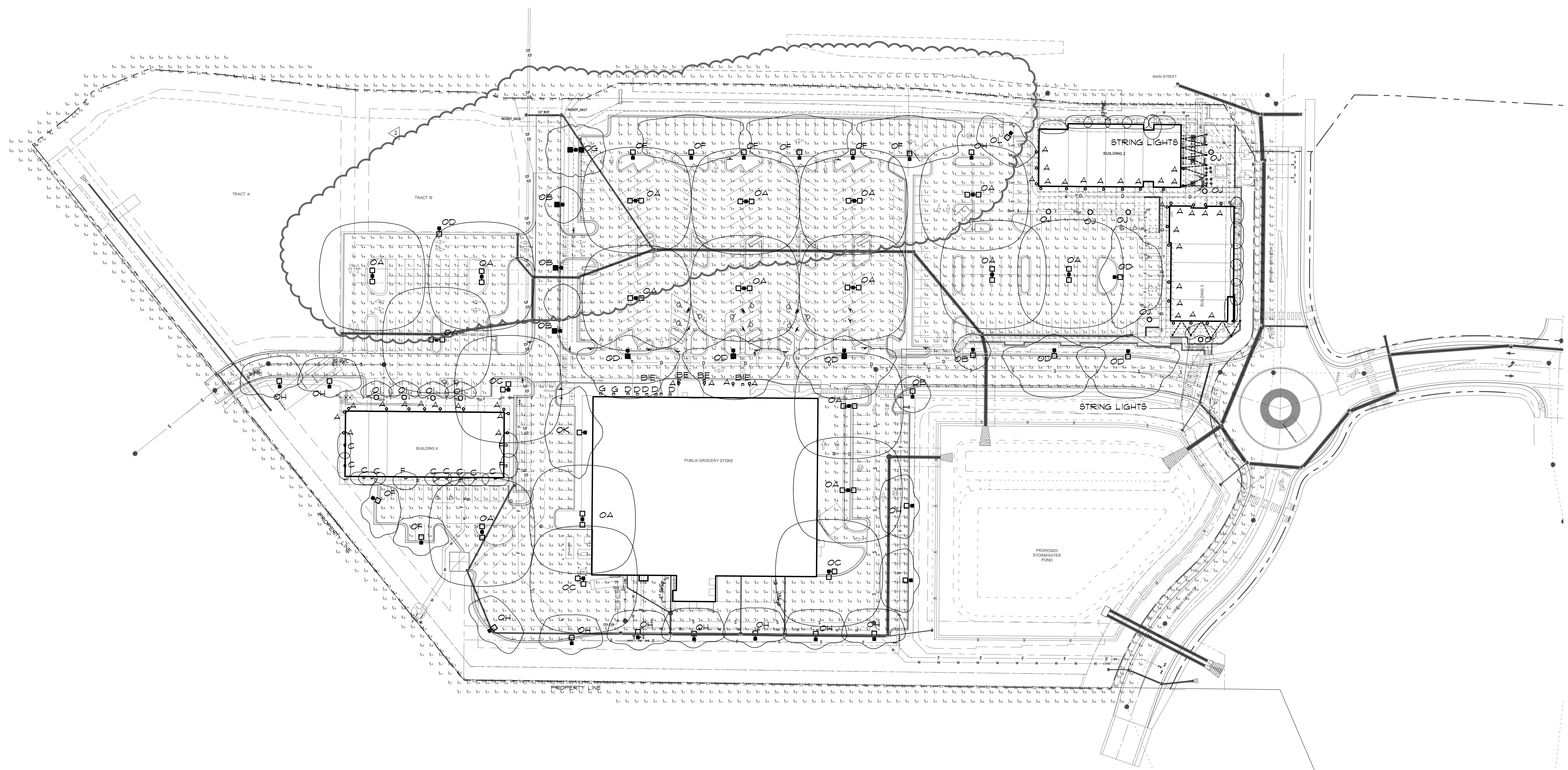
**1** SITE LIGHTING PLAN  
 SE-2.1 SCALE 1\"/>

GENERAL NOTES:  
 1. 2\"/>



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Calculation Summary									
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	PIBpLr	PIBpTb
Slip & Parking Lot	Illuminance	Fc	8.47	8.3	2.7	2.40	3.07	10	10
Property Line	Illuminance	Fc	0.16	0.5	0.0	N.A.	N.A.	10	N.A.
20' Beyond Property Line	Illuminance	Fc	0.10	0.5	0.0	N.A.	N.A.	10	10
Entrance Drive & Parking	Illuminance	Fc	5.12	9.0	0.2	25.60	45.00	10	10
Public Drive-Thru	Illuminance	Fc	6.03	8.9	5.1	1.18	1.75	10	10
Public Front Parking & Drives	Illuminance	Fc	5.35	8.8	0.7	7.64	12.57	10	10
Public & Retail 4 Rear & Sides	Illuminance	Fc	5.14	9.7	0.1	51.40	97.00	10	10
Retail Walkway Area	Illuminance	Fc	1.88	5.5	0.0	N.A.	N.A.	6	6
Retail Parking	Illuminance	Fc	5.16	9.8	2.5	2.06	3.84	10	10
SITE	Illuminance	Fc	5.34	9.7	0.1	53.40	97.00		



**PHOTOMETRIC SITE PLAN**  
 SCALE 1"=50'-0"

PROJECT:  
**WALLBROOK**  
 US-401 at Virginia Water Drive  
 WAKE COUNTY, NORTH CAROLINA  
 FOR:  
 CROSSLAND SOUTHEAST  
 CHARLOTTE, NC

SHEET TITLE:  
**PHOTOMETRIC SITE PLAN**

ISSUE DATE:  
 05/01/2022  
 05/01/2022  
 05/01/2022  
 05/01/2022

PROJECT NO: **20-117**  
 FILE: **22909SE22**  
 DRAWN BY: **NJJ**

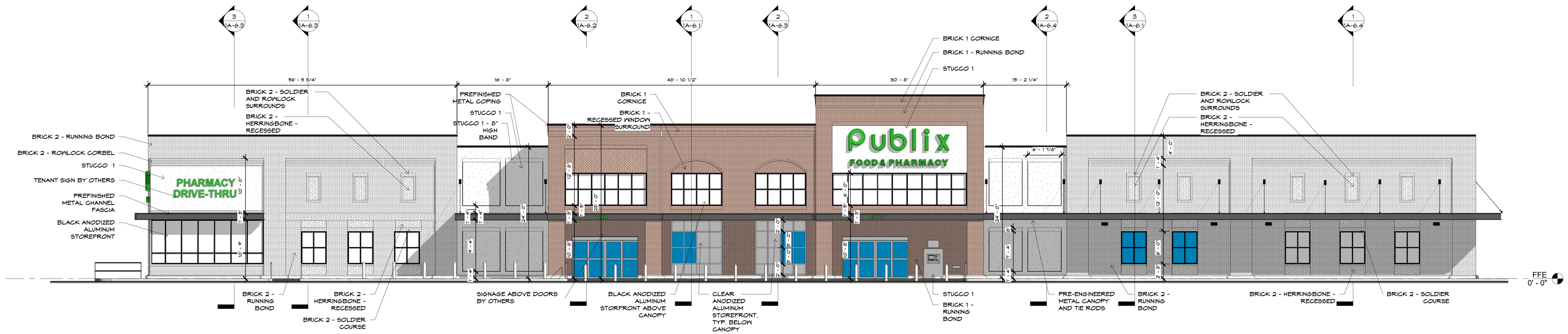
SHEET OF  
**SE-2.2**

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 5064 Roswell Road, Suite D-301  
 Sandy Springs GA 30342 770.319.7400  
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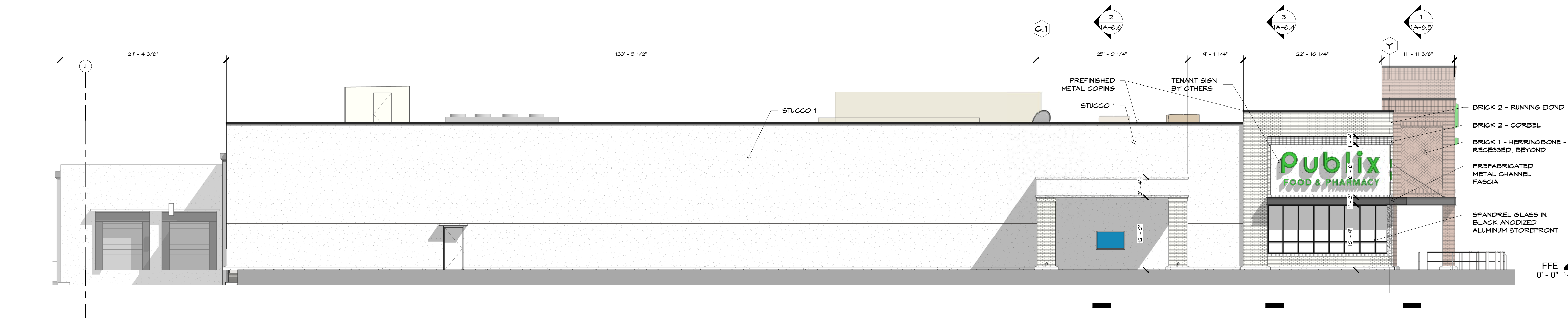
ISSUED FOR CONSTRUCTION







1 FRONT ELEVATION  
SCALE 1/8" = 1'-0"



2 LEFT ELEVATION  
SCALE 1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE			
MATERIAL DESCRIPTION	MANUFACTURER	COLOR	REMARKS:
BR-1 - BRICK 1	CHEROKEE BRICK	"MELROSE"	MODULAR
BR-2 - BRICK 2	CHEROKEE BRICK	"BROOKHAVEN"	MODULAR
BR-2 - BRICK 3	CHEROKEE BRICK	"MELROSE"	MODULAR THIN BRICK
BRICK MORTAR	CEMEX	"IVORY"	
STC-1 - FIELD STUCCO	FINESTONE STUCCO	MATCH DRYVIT 110 "VAN DYKE"	SAND FINE
SF-1 - ALUMINUM STOREFRONT FRAME 1		CLEAR ANODIZED FRAME	
SF-2 ALUMINUM STOREFRONT FRAME 2		BLACK ANODIZED FRAME	
PREFINISHED ALUMINUM SCUPPERS & DOWNSPOUTS	PAC-GLAD	"MATTE BLACK"	
MTL-1 - PREFINISHED METAL PANEL	PAC-GLAD	"WEATHERED STEEL"	FLUSH PANELS
MTL-2 - PREFINISHED METAL CANOPY & COPING	PAC-GLAD	"MATTE BLACK"	STANDING SEAM JOINTS
MTL-3 - PREFINISHED METAL COPING	PAC-GLAD	"BONE WHITE"	STANDING SEAM JOINTS

FINISH MATERIAL NOTES:

- SUBMIT AND OBTAIN APPROVED SAMPLES BEFORE PROCEEDING WITH WORK.
- ALL MASONRY VENEER SHALL BE OBTAINED FROM SAME MANUFACTURER'S RUN FOR COLOR CONSISTENCY. MASON TO BREAK APART AND MIX PALETTES ON JOB SITE FOR CONSISTENT COLOR MIXING. NO EXCEPTIONS.
- A MOCK UP PANEL IS REQUIRED TO BE APPROVED BY ARCHITECT AND/OR OWNER'S REPRESENTATIVE BEFORE FINISH WORK MAY BEGIN.

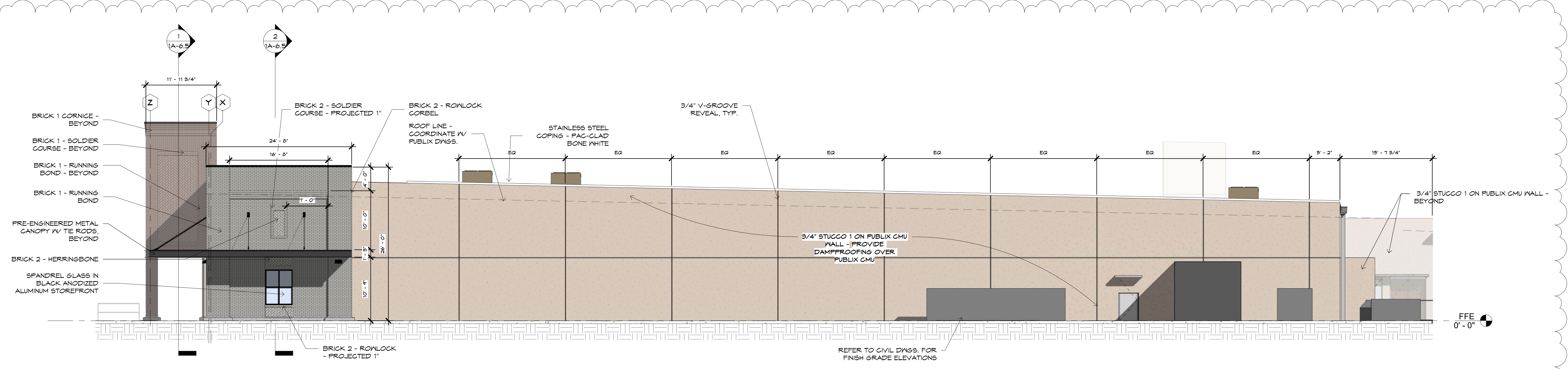
PROJECT: **PUBLIX CANOPY at WALLBROOK**  
US-401 at Virginia Water Drive  
WAKE COUNTY, NORTH CAROLINA  
FOR: CROSLAND SOUTHEAST  
CHARLOTTE, NC

SHEET TITLE:  
EXTERIOR ELEVATIONS

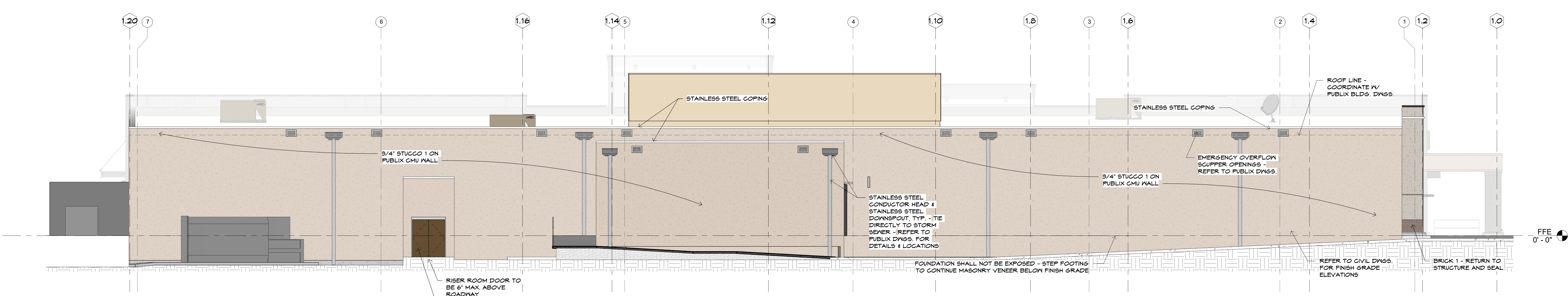
ISSUE DATE:  
1 3/04/22  
2 5/04/22  
4 6/23/22  
PUBLIX SUBMITTAL  
PUBLIX COMMENTS  
PUBLIX COMMENTS

PROJECT NO: 20-117  
FILE: 20-117  
DRAWN BY: SML

SHEET OF  
**1A-4.1**



**1 RIGHT ELEVATION**  
SCALE 1/8" = 1'-0"



**2 REAR ELEVATION**  
SCALE 1/8" = 1'-0"

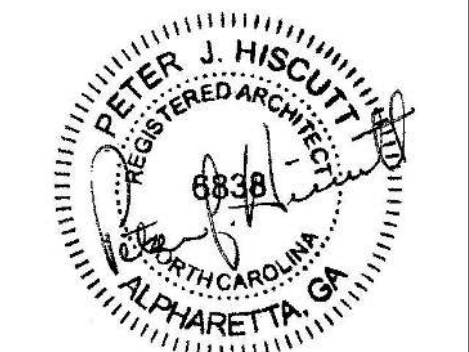
PROJECT: **PUBLIX CANOPY at WALLBROOK**  
US 401 at Virginia Water Drive  
WAKE COUNTY, NORTH CAROLINA  
FOR: CROSLAND SOUTHEAST  
CHARLOTTE, NC

SHEET TITLE:  
**EXTERIOR ELEVATIONS**

ISSUE DATE:  
1 3/04/22 PUBLIX SUBMITTAL  
7 01/16/23 PUBLIX SHIFT REVISION

PROJECT NO: 20-117  
FILE: 20-117  
DRAWN BY: SML

SHEET OF  
**1A-4.2**



01/17/23  
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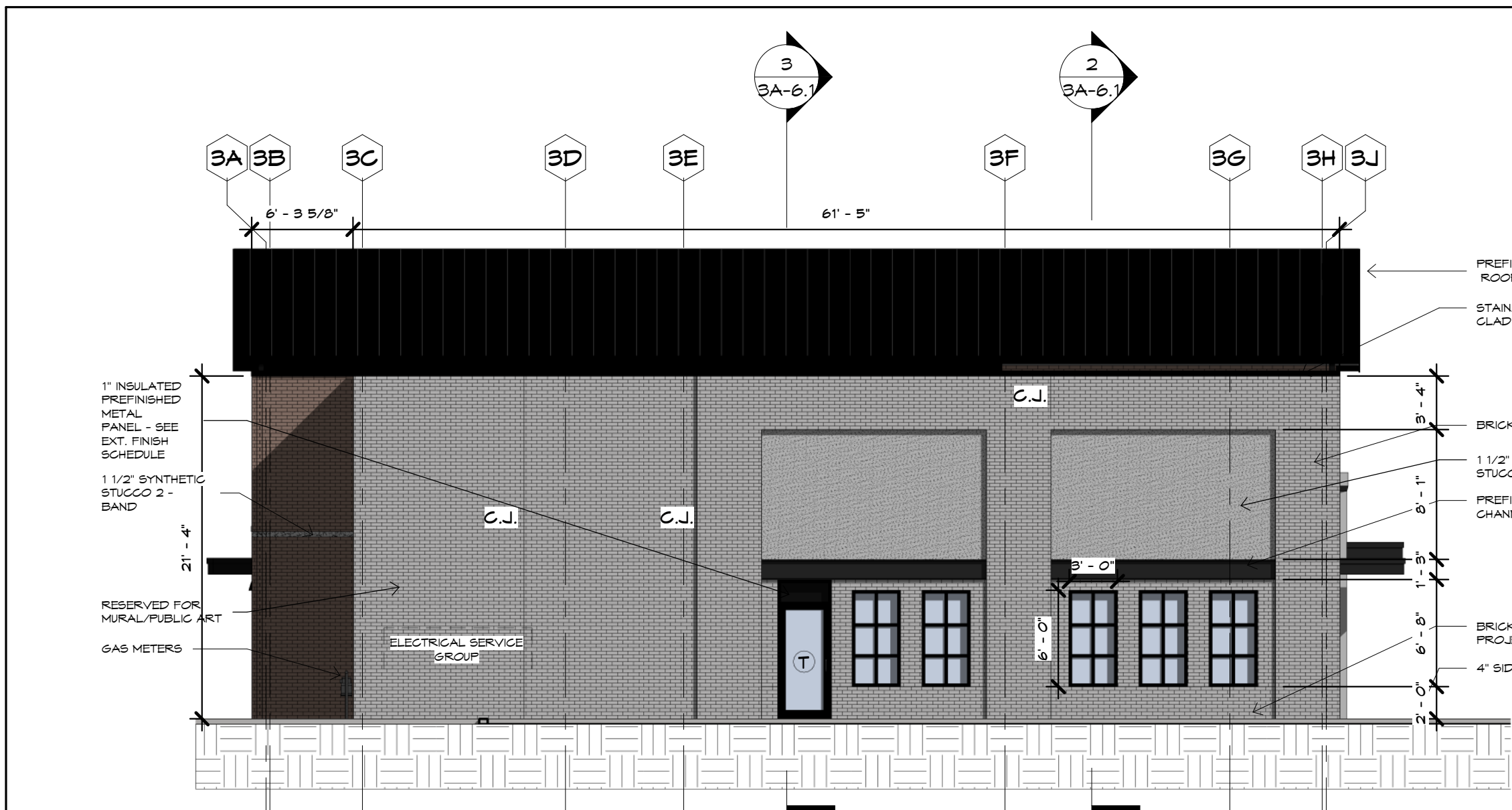
PROJECT: **BLDG.2 SHOPS at WALLBROOK**  
US 401 at Virginia Water Drive  
WAKE COUNTY, NORTH CAROLINA  
FOR: **CROSLAND SOUTHEAST**  
CHARLOTTE, NC

SHEET TITLE: **BLDG.2 FLOOR PLAN & ELEVATIONS**

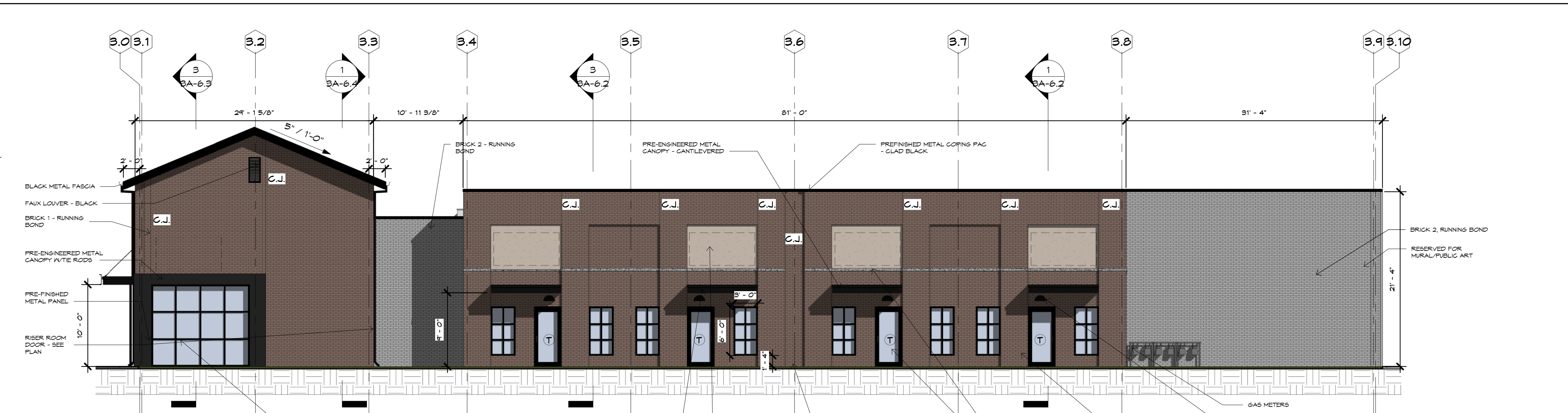
ISSUE DATE: 8/1/17/23  
OWNER'S COMMENTS

PROJECT NO: 20-117  
FILE: 20-117  
DRAWN BY: KDM

SHEET OF 3A-1.1



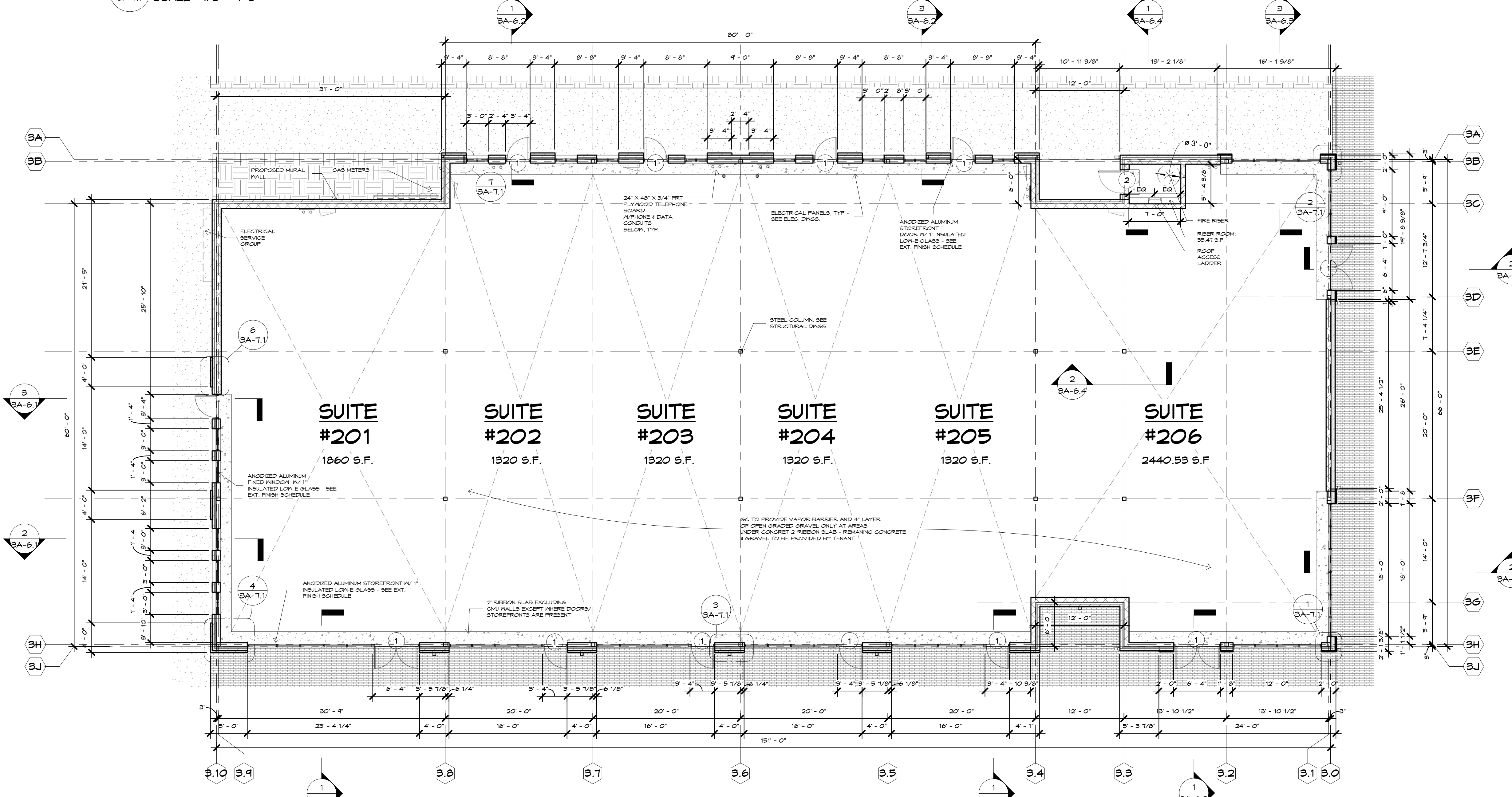
**4 LEFT ELEVATION**  
3A-1.1 SCALE 1/8" = 1'-0"



**2 STREET ELEVATION**  
3A-1.1 SCALE 1/8" = 1'-0"

MATERIAL DESCRIPTION	MANUFACTURER	COLOR	REMARKS:
BR-1 - BRICK 1	TRIANGLE BRICK	"SAVANNAH"	MODULAR
BR-2 - BRICK 2	LEE BRICK	"459 WILLIAMSBURG"	PAINTED - COLOR TBD
BRICK MORTAR	CEMEX	"IVORY"	
SYNTHETIC STUCCO 1	DRYVIT	110 "VAN DYKE"	SAND FINE
SYNTHETIC STUCCO 2	DRYVIT	192 "MOUNTAIN FOG"	SAND FINE
ALUMINUM STOREFRONT FRAME	KAWNEER, YKK	BLACK ANODIZED FRAME	
PREFINISHED ALUMINUM SCUFFERS & DOWNSPOUTS	PAC-GLAD	"MATTE BLACK"	
MTL-2 - PREFINISHED METAL CANOPY & COPING	PAC-GLAD	"BONE WHITE"	
MTL-3 - PREFINISHED METAL CANOPY & COPING	PAC-GLAD	"MATTE BLACK"	STANDING SEAM JOINTS
MTL-4 - PREFINISHED METAL PANEL	PAC-GLAD	"MATTE BLACK"	FLUSH PANELS

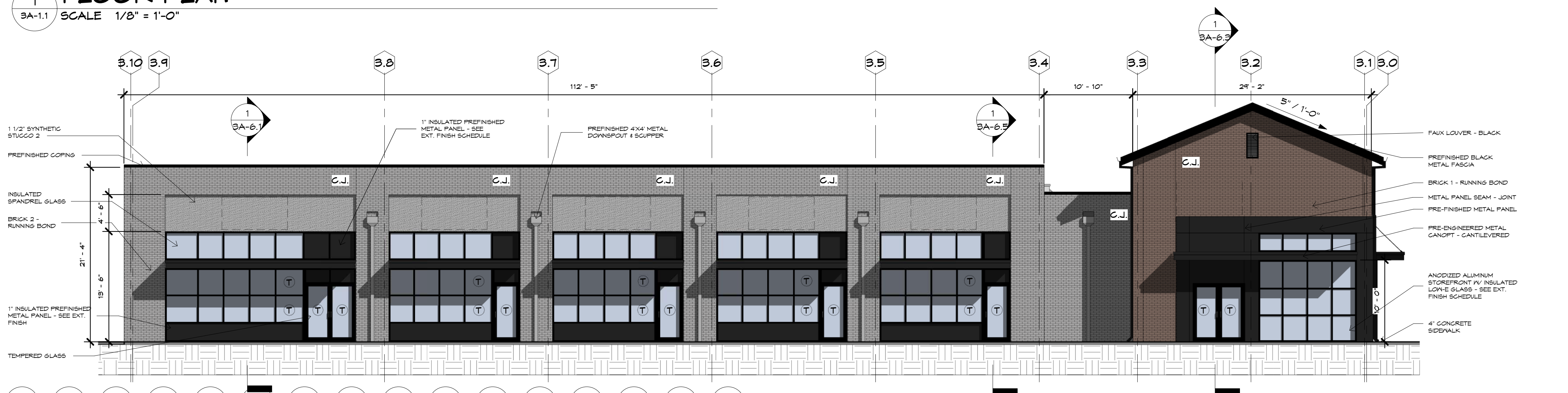
- FINISH MATERIAL NOTES:**
- SUBMIT AND OBTAIN APPROVED SAMPLES BEFORE PROCEEDING WITH WORK.
  - ALL MASONRY VENEER SHALL BE OBTAINED FROM SAME MANUFACTURER'S RUN FOR COLOR CONSISTENCY. MASON TO BREAK APART AND MIX PALETTES ON JOB SITE FOR CONSISTENT COLOR MIXING. NO EXCEPTIONS.
  - A MOCK UP PANEL IS REQUIRED TO BE APPROVED BY ARCHITECT AND/OR OWNER'S REPRESENTATIVE BEFORE FINISH WORK MAY BEGIN.



**1 FLOOR PLAN**  
3A-1.1 SCALE 1/8" = 1'-0"



**5 RIGHT ELEVATION**  
3A-1.1 SCALE 1/8" = 1'-0"

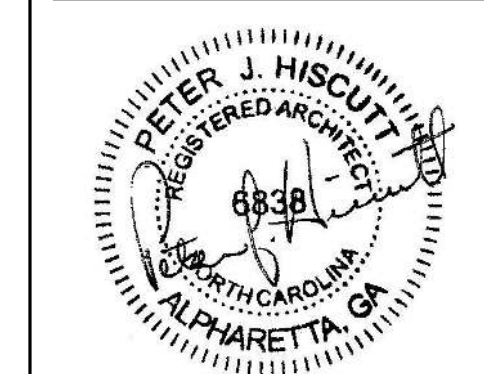


**3 PARKING LOT ELEVATION**  
3A-1.1 SCALE 1/8" = 1'-0"

○ DENOTES AREA OF 4'x8' PLYWOOD BACKING FOR SIGNAGE ATTACHMENT

○ PROVIDE TEMPERED GLASS AS REQUIRED BY CODE

NOTE: ELEVATIONS ARE BASED ON DESIGN GRADES AND G.C. IS RESPONSIBLE FOR ADJUSTING EXTERIOR FINISHES TO MEET FINAL GRADES



02/06/23  
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PROJECT: **BLDG.3 SHOPS at WALLBROOK**  
US 401 at Virginia Water Drive  
WAKE COUNTY, NORTH CAROLINA  
FOR: **CROSLAND SOUTHEAST**  
CHARLOTTE, NC

SHEET TITLE: **BLDG. 3 FLOOR PLAN & ELEVATIONS**

OWNER'S COMMENTS

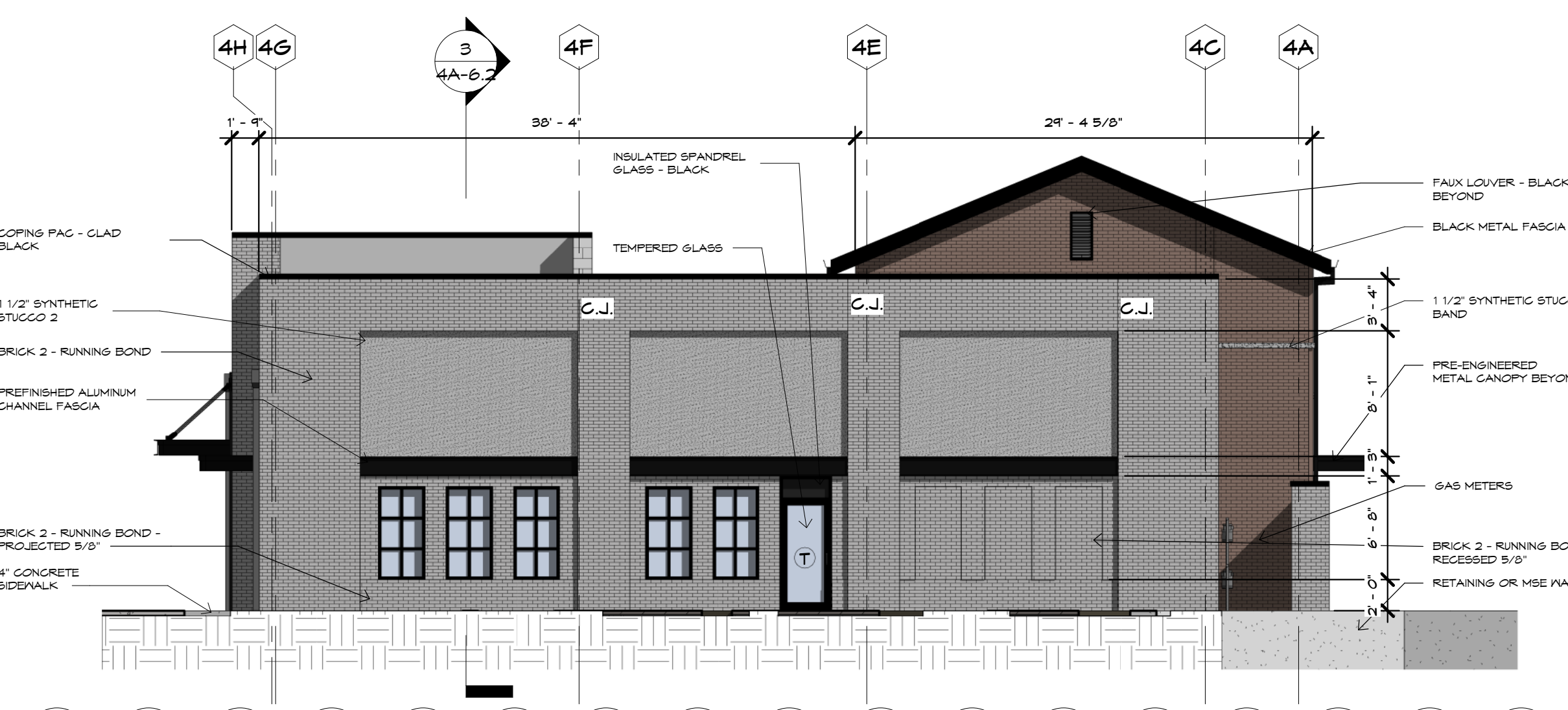
ISSUE DATE: 8/17/23

PROJECT NO: 20-117  
FILE: 20-117  
DRAWN BY: KDM

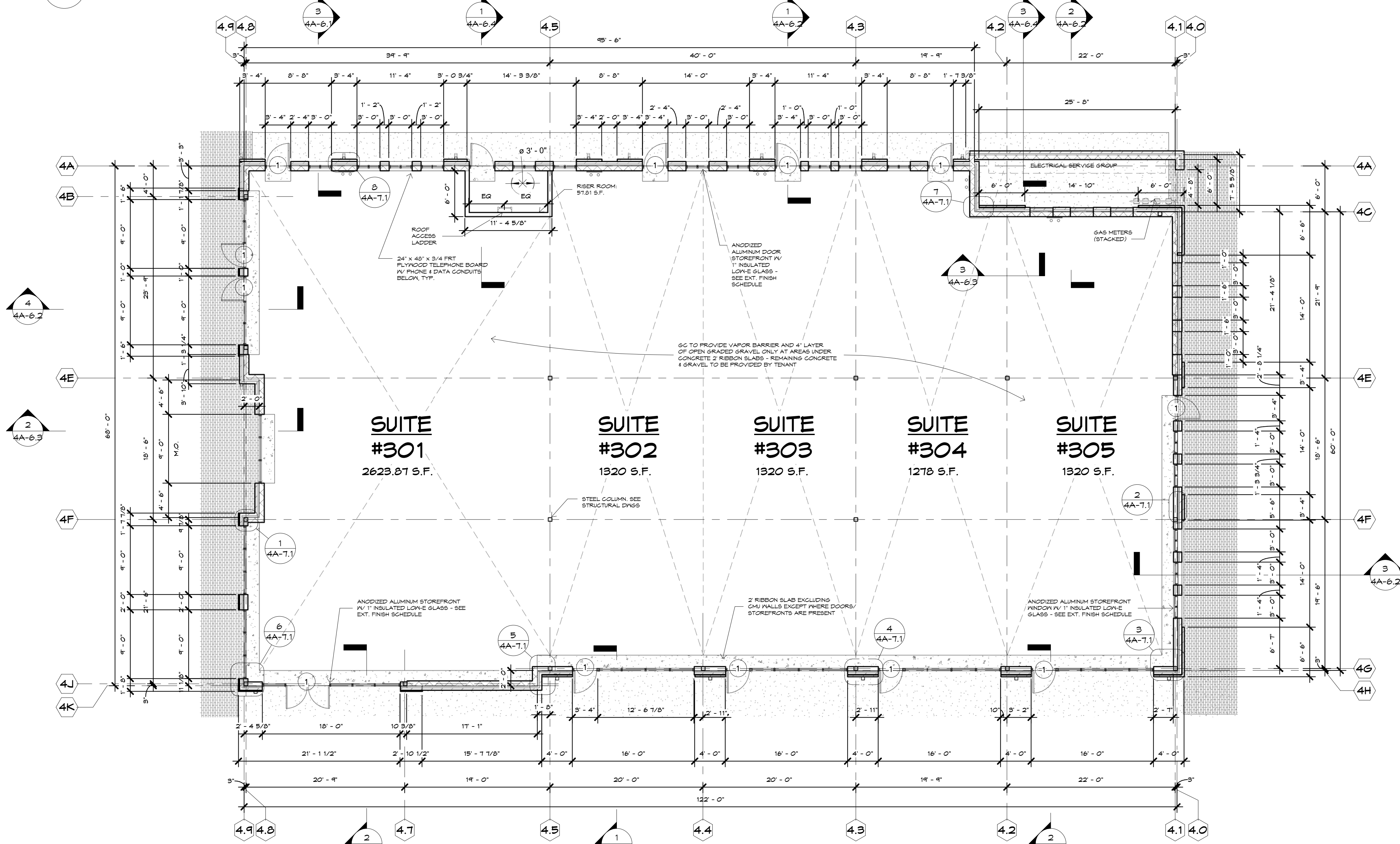
SHEET OF 4A-1.1



**3 Street Elevation**  
4A-1.1 SCALE 1/8" = 1'-0"



**4 Right Elevation**  
4A-1.1 SCALE 1/8" = 1'-0"



**1 Floor Plan**  
4A-1.1 SCALE 1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE			
MATERIAL DESCRIPTION	MANUFACTURER	COLOR	REMARKS:
BR-1 - BRICK 1	TRIANGLE BRICK	"SAVANNAH"	MODULAR
BR-2 - BRICK 2	LEE BRICK	"459 WILLIAMSBURG"	PAINTED - COLOR TBD
BRICK MORTAR	CEMEX	"IVORY"	
SYNTHETIC STUCCO 1	DRYVIT	110 "VAN DYKE"	SAND FINE
SYNTHETIC STUCCO 2	DRYVIT	192 "MOUNTAIN FOG"	SAND FINE
ALUMINUM STOREFRONT FRAME	KAWNEER, YKK	BLACK ANODIZED FRAME	
PREFINISHED ALUMINUM SCUPPERS & DOWNPOUTS	PAC-GLAD	"MATTE BLACK"	
MTL-2 - PREFINISHED METAL CANOPY & COPING	PAC-GLAD	"BONE WHITE"	
MTL-3 - PREFINISHED METAL CANOPY & COPING	PAC-GLAD	"MATTE BLACK"	STANDING SEAM JOINTS
MTL-4 - PREFINISHED METAL PANEL	PAC-GLAD	"MATTE BLACK"	FLUSH PANELS

**FINISH MATERIAL NOTES:**

- SUBMIT AND OBTAIN APPROVED SAMPLES BEFORE PROCEEDING WITH WORK.
- ALL MASONRY VENEER SHALL BE OBTAINED FROM SAME MANUFACTURER'S RUN FOR COLOR CONSISTENCY. MASON TO BREAK APART AND MIX PALETTES ON JOB SITE FOR CONSISTENT COLOR MIXING. NO EXCEPTIONS.
- A MOCK UP PANEL IS REQUIRED TO BE APPROVED BY ARCHITECT AND/OR OWNER'S REPRESENTATIVE BEFORE FINISH WORK MAY BEGIN.



**2 Parking Lot Elevation**  
4A-1.1 SCALE 1/8" = 1'-0"

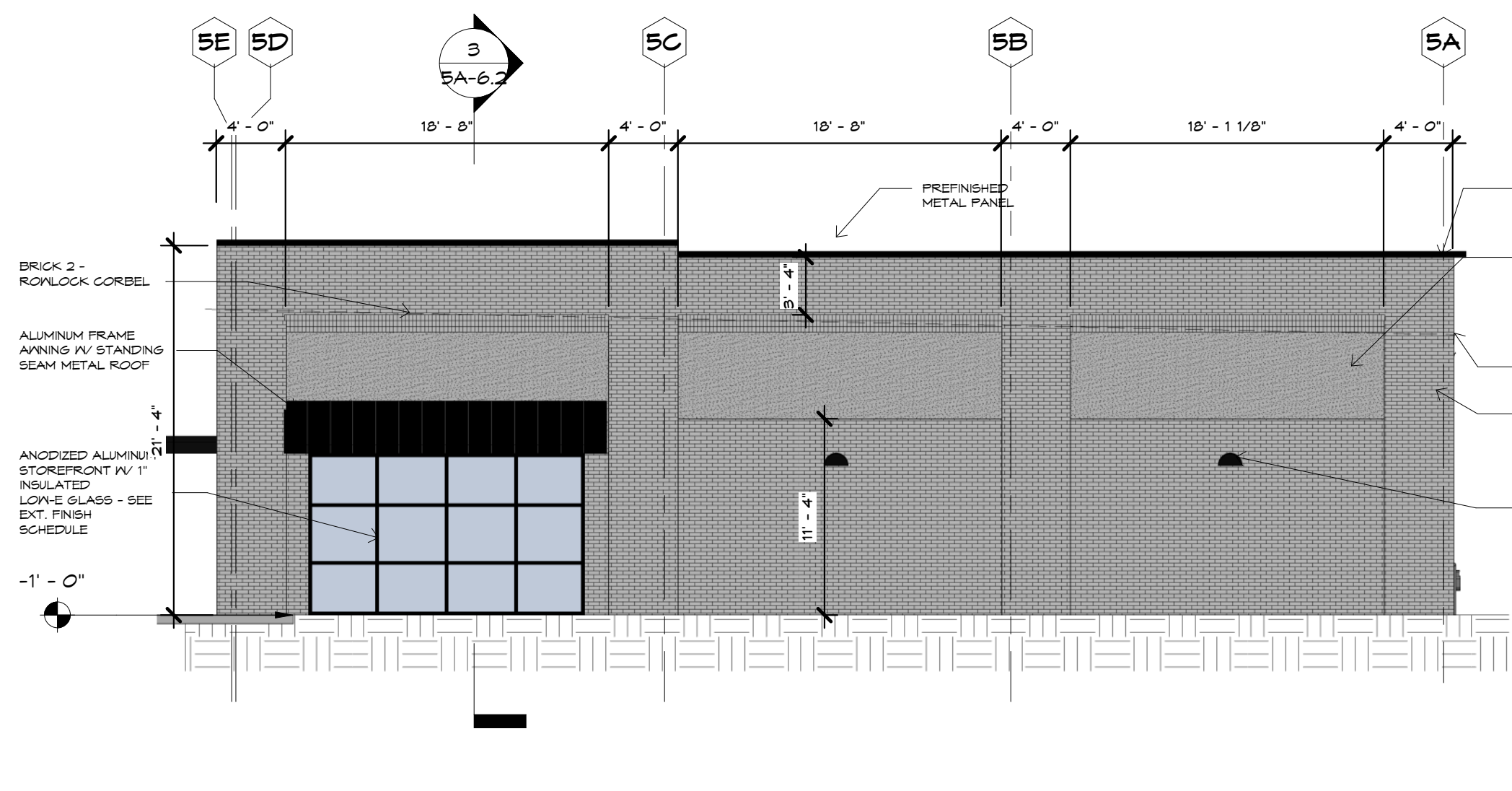


**5 Left Elevation**  
4A-1.1 SCALE 1/8" = 1'-0"

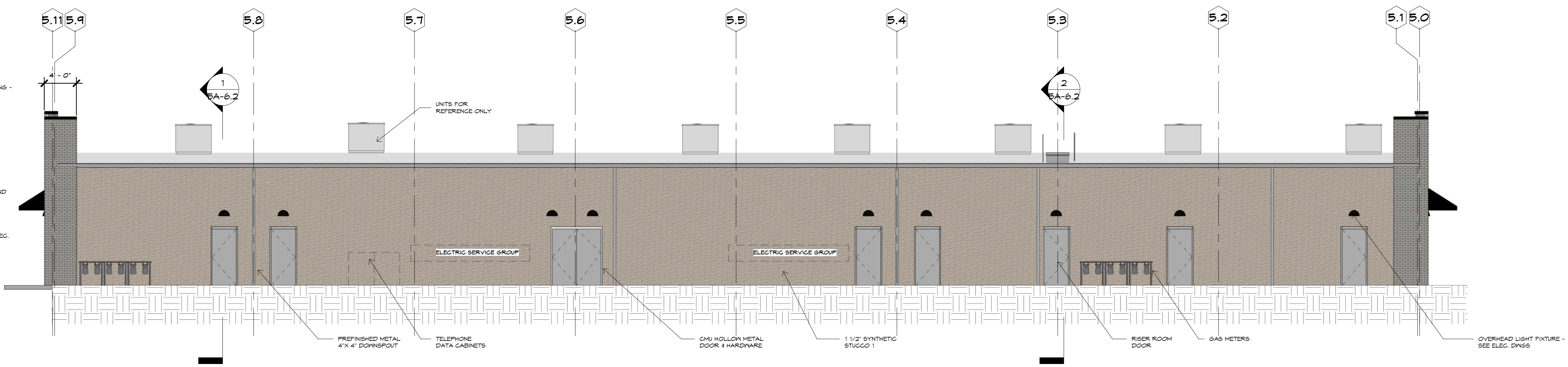
NOTE: ELEVATIONS ARE BASED ON DESIGN GRADES AND G.C. IS RESPONSIBLE FOR ADJUSTING EXTERIOR FINISHES TO MEET FINAL GRADES

Ⓣ DENOTES AREA OF 4x8 PLYWOOD BACKING FOR SIGNAGE ATTACHMENT

Ⓣ PROVIDE TEMPERED GLASS AS REQUIRED BY CODE



**4 RIGHT ELEVATION**  
 5A-1.1 SCALE 1/8" = 1'-0"

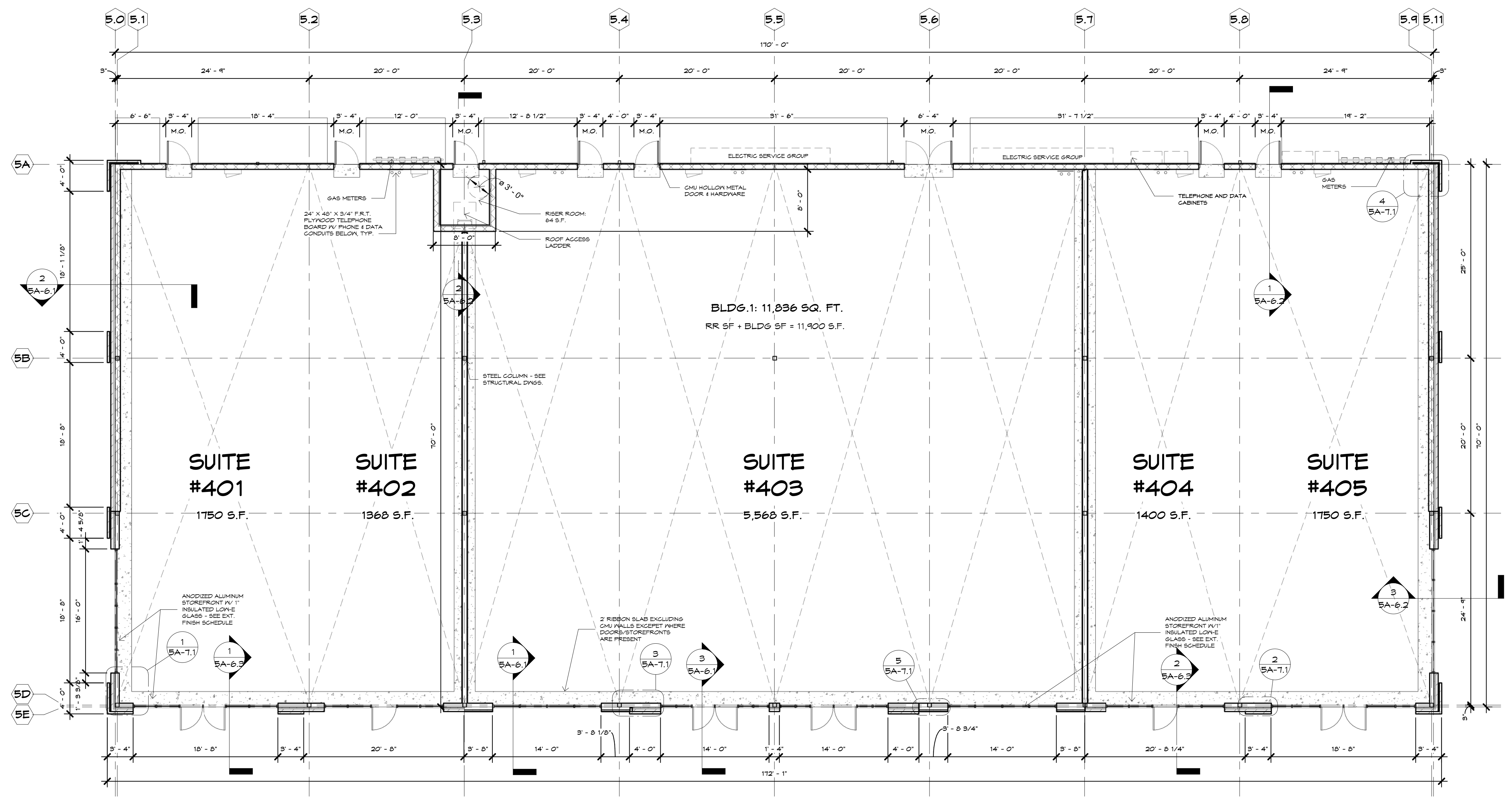


**3 REAR ELEVATION**  
 5A-1.1 SCALE 1/8" = 1'-0"

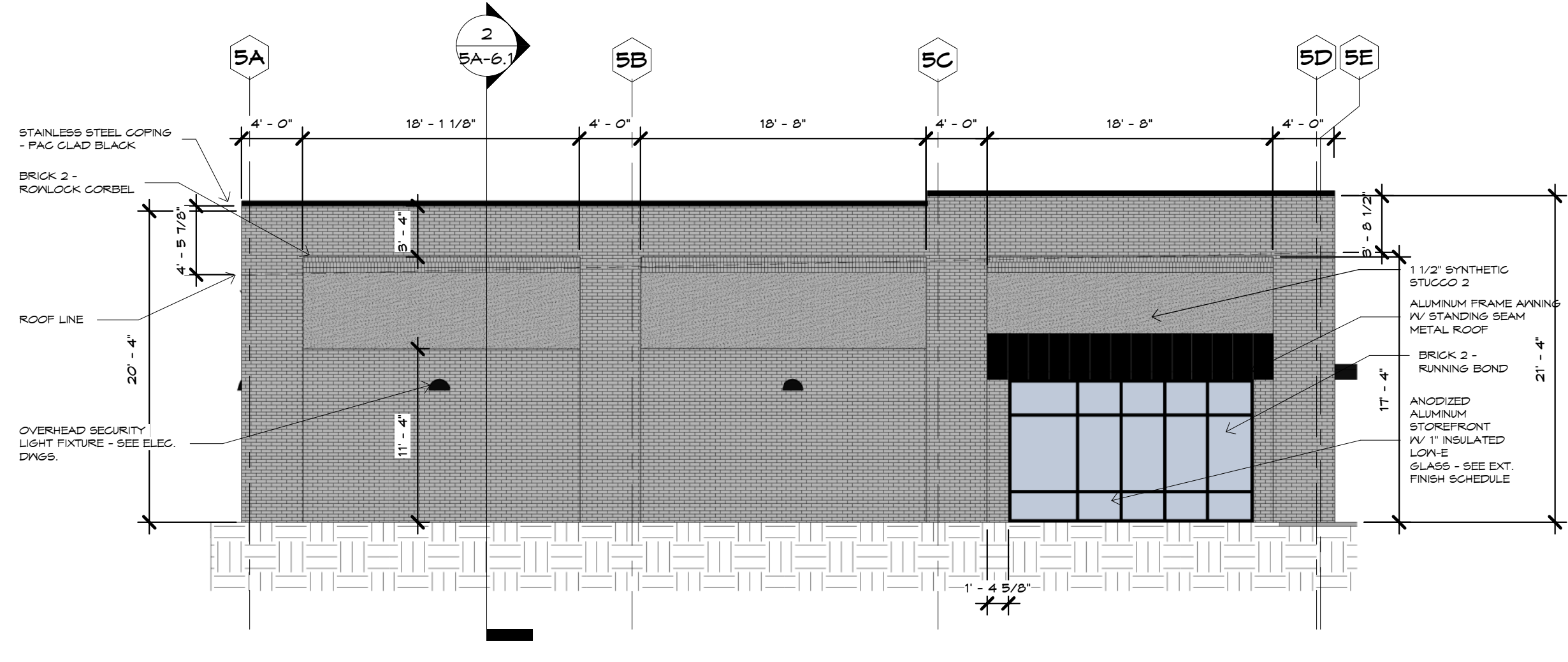
EXTERIOR FINISH SCHEDULE			
MATERIAL DESCRIPTION	MANUFACTURER	COLOR	REMARKS:
BR-1 - BRICK 1	CHEROKEE BRICK	"MELROSE"	MODULAR
BR-2 - BRICK 2	LEE BRICK	"459 WILLIAMSBURG"	PAINTED - COLOR TBD
BRICK MORTAR	CEMEX	"IVORY"	
SYNTHETIC STUCCO 1	DRYVIT	110 "VAN DYKE"	SAND FINE
SYNTHETIC STUCCO 2	DRYVIT	152 "MOUNTAIN FOG"	SAND FINE
ALUMINUM STOREFRONT FRAME	KAWNEER, YKK	BLACK ANODIZED FRAME	
PREFINISHED ALUMINUM SCUFFERS & DOWNSPOUTS	FAG-CLAD	"MATTE BLACK"	
MTL-2 - PREFINISHED METAL CANOPY & COPING	FAG-CLAD	"BONE WHITE"	
MTL-3 - PREFINISHED METAL CANOPY & COPING	FAG-CLAD	"MATTE BLACK"	STANDING SEAM JOINTS
MTL-4 - PREFINISHED METAL PANEL	FAG-CLAD	"MATTE BLACK"	FLUSH PANELS

**FINISH MATERIAL NOTES:**

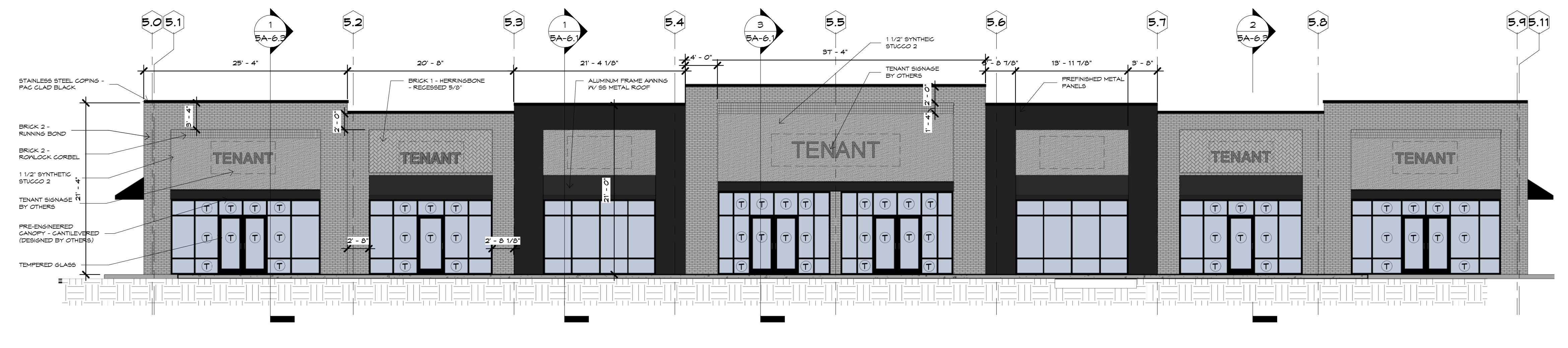
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**1 FLOOR PLAN**  
 5A-1.1 SCALE 1/8" = 1'-0"



**5 LEFT ELEVATION**  
 5A-1.1 SCALE 1/8" = 1'-0"



**2 FRONT ELEVATION**  
 5A-1.1 SCALE 1/8" = 1'-0"

--- DENOTES AREA OF 4'x8' PLYWOOD BACKING FOR SIGNAGE ATTACHMENT

⊕ PROVIDE TEMPERED GLASS AS REQUIRED BY CODE

FAÇADE PERCENTAGES:  
 57.6% BRICK  
 31% GLASS

NOTE: ELEVATIONS ARE BASED ON DESIGN GRADES AND G.C. IS RESPONSIBLE FOR ADJUSTING EXTERIOR FINISHES TO MEET FINAL GRADES





TREE PRESERVATION AREA			
Wallbrook	Area (SF)	Acres	
Lot 1A (Publix)	289,488.0	6.65	
Lot 1B	100,018.8	2.30	
Lot 1C	82,590.5	1.90	
Lot 2	74,702.8	1.71	
Lot 3	47,515.5	1.09	
Lot 4	78,725.4	1.81	
Lot 5 (Boat Tract)	220,767.8	5.07	
Lot 6 (Townhomes)	876,206.2	20.11	
Lot 7	119,306.6	2.74	
Lot 8	232,868.9	5.35	
Right-of-Way (Future)	290,799.5	6.68	
WALLBROOK GROSS ACREAGE		55.39	
TREE PRESERVATION AREA	368,616.2	8.46	15.28%
QUALIFYING REPLACEMENT DECIDUOUS			12
QUALIFYING REPLACEMENT EVERGREEN			8

Paris Tract	Area (SF)	Acres	
Lot 9	86,013.5	1.97	
Lot 10	136,382.3	3.13	
Lot 11	70,406.6	1.62	
Right-of-Way (Future)	13,978.4	0.32	
PARIS TRACT GROSS ACREAGE		7.04	
TREE PRESERVATION AREA	16,399.5	0.38	5.35%
QUALIFYING REPLACEMENT DECIDUOUS			2
QUALIFYING REPLACEMENT EVERGREEN			0

MBW Tract	Area (SF)	Acres	
Lot 12	223,658.5	5.13	
Lot 13	60,807.1	1.40	
Lot 14	17,893.2	0.41	
MBW GROSS ACREAGE		6.94	
TREE PRESERVATION AREA	0.0	0.00	0.00%
QUALIFYING REPLACEMENT DECIDUOUS			1
QUALIFYING REPLACEMENT EVERGREEN			0

TREE REPLACEMENT - WALLBROOK						
Date	ToR Project #	Project Description	Deciduous	Total Provided / Required	Evergreen	Total Provided / Required
18-AUG-23	SOP 23-05	Publix at Wallbrook	12	12 / 12	8	8 / 8

TREE REPLACEMENT - PARIS						
Date	ToR Project #	Project Description	Deciduous	Total Provided / Required	Evergreen	Total Provided / Required
				0 / 2	0	n/a

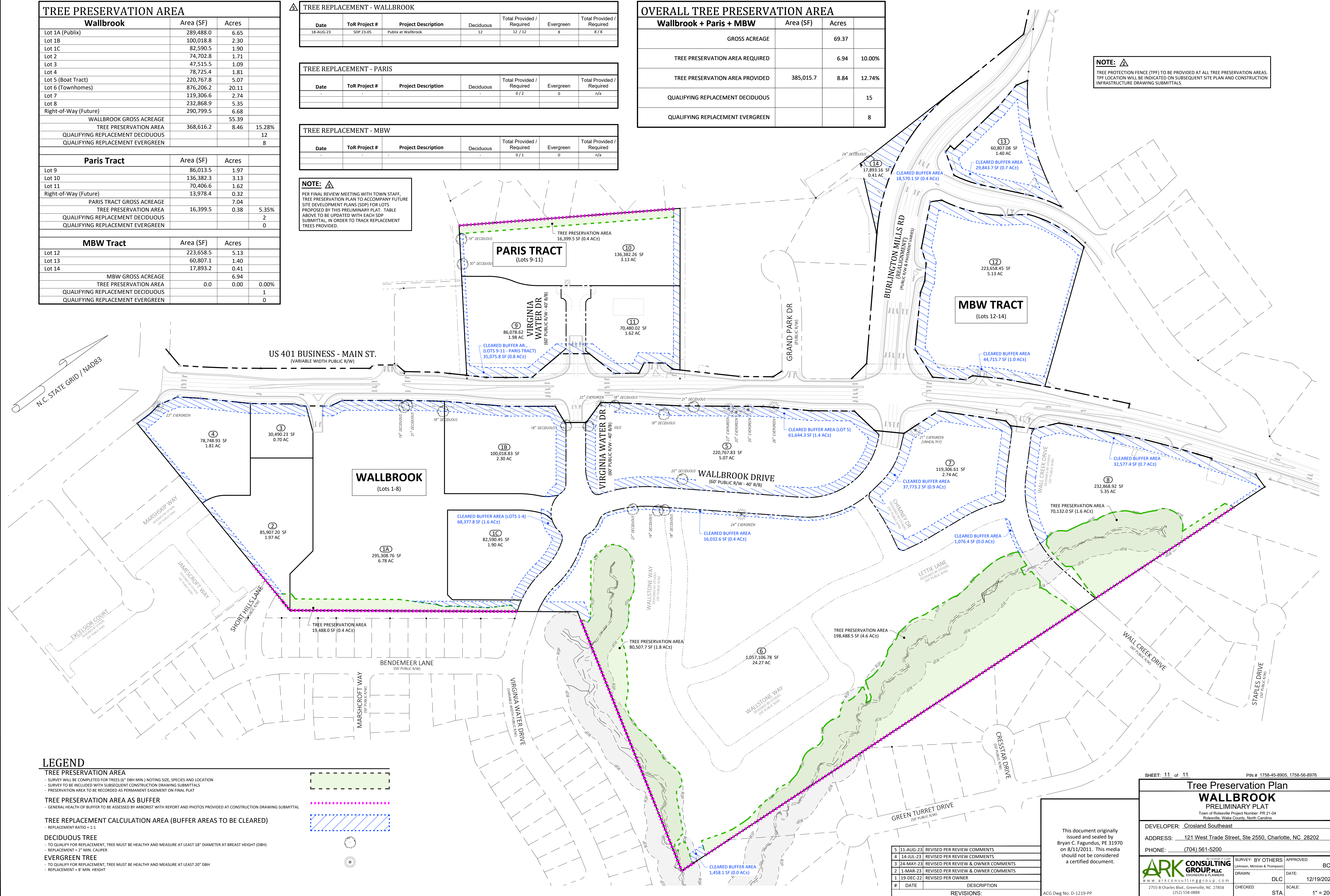
  

TREE REPLACEMENT - MBW						
Date	ToR Project #	Project Description	Deciduous	Total Provided / Required	Evergreen	Total Provided / Required
				0 / 1	0	n/a

**NOTE:** PER FINAL REVIEW MEETING WITH TOWN STAFF, TREE PRESERVATION PLAN TO ACCOMPANY FUTURE SITE DEVELOPMENT PLANS (SDP) FOR LOTS PROPOSED BY THIS PRELIMINARY PLAT. TABLE ABOVE TO BE UPDATED WITH EACH SDP SUBMITTAL, IN ORDER TO TRACK REPLACEMENT TREES PROVIDED.

OVERALL TREE PRESERVATION AREA			
Wallbrook + Paris + MBW	Area (SF)	Acres	
GROSS ACREAGE		69.37	
TREE PRESERVATION AREA REQUIRED		6.94	10.00%
TREE PRESERVATION AREA PROVIDED	385,015.7	8.84	12.74%
QUALIFYING REPLACEMENT DECIDUOUS			15
QUALIFYING REPLACEMENT EVERGREEN			8

**NOTE:** TREE PROTECTION FENCE (TPF) TO BE PROVIDED AT ALL TREE PRESERVATION AREAS. TPF LOCATION WILL BE INDICATED ON SUBSEQUENT SITE PLAN AND CONSTRUCTION INFRASTRUCTURE DRAWING SUBMITTALS.



**LEGEND**

- TREE PRESERVATION AREA**
  - SURVEY WILL BE COMPLETED FOR TREES (6" DBH MIN.) NOTING SIZE, SPECIES AND LOCATION
  - SURVEY TO BE INCLUDED WITH SUBSEQUENT CONSTRUCTION DRAWING SUBMITTALS
  - PRESERVATION AREA TO BE RECORDED AS PERMANENT EASEMENT ON FINAL PLAT
- TREE PRESERVATION AREA AS BUFFER**
  - GENERAL HEALTH OF BUFFER TO BE ASSESSED BY ARBORIST WITH REPORT AND PHOTOS PROVIDED AT CONSTRUCTION DRAWING SUBMITTAL
- TREE REPLACEMENT CALCULATION AREA (BUFFER AREAS TO BE CLEARED)**
  - REPLACEMENT RATIO = 1:1
- DECIDUOUS TREE**
  - TO QUALIFY FOR REPLACEMENT, TREE MUST BE HEALTHY AND MEASURE AT LEAST 18" DIAMETER AT BREAST HEIGHT (DBH)
  - REPLACEMENT = 2" MIN. CALIPER
- EVERGREEN TREE**
  - TO QUALIFY FOR REPLACEMENT, TREE MUST BE HEALTHY AND MEASURE AT LEAST 20" DBH
  - REPLACEMENT = 8" MIN. HEIGHT

#	DATE	DESCRIPTION
5	11-AUG-23	REVISED PER REVIEW COMMENTS
4	14-JUL-23	REVISED PER REVIEW COMMENTS
3	24-MAY-23	REVISED PER REVIEW & OWNER COMMENTS
2	1-MAR-23	REVISED PER REVIEW & OWNER COMMENTS
1	19-DEC-22	REVISED PER OWNER

This document originally issued and sealed by Bryan C. Fagundus, PE 31970 on 8/11/2011. This media should not be considered a certified document.

SHEET: 11 of 11 PIN # 1758-45-8905, 1758-56-8976

**Tree Preservation Plan**  
**WALLBROOK**  
PRELIMINARY PLAT

DEVELOPER: Crosland Southeast  
ADDRESS: 121 West Trade Street, Ste 2550, Charlotte, NC 28202  
PHONE: (704) 561-5200

APPROVED: BCF  
DATE: 12/19/2022  
SCALE: 1" = 200'

ARK CONSULTING GROUP, P.L.L.C.  
ENGINEERS & PLANNERS  
2755-B Charles Blvd., Greenville, NC 27858  
(252) 558-0888