

CONSTRUCTION DRAWINGS FOR WAKE STONE ATHLETIC COMPLEX

KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

AUGUST 28, 2019

TOK PROJECT NO.: ZCP-7-19

RFP NO.: 20-6200133

CONSTRUCTION DRAWINGS FOR:
KNIGHTDALE ATHLETIC COMPLEX
TOK PROJECT NO.: ZCP-7-19
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SITE DATA TABLE

| | | | |
|---|---|---|--------------|
| OWNER/APPLICANT: | TOWN OF KNIGHTDALE 950 STEEPLE SQUARE CT KNIGHTDALE, NC 27545 | | |
| PROPERTY INFORMATION: | LOT 1 | LOT 2 | LOT 3 |
| PIN: | 1755-11-4133 | 1755-01-6038 | 1745-91-6798 |
| REID: | 0455461 | 0460426 | 0460427 |
| ADDRESS: | TBD | TBD | TBD |
| SITE ACREAGE: | 10.08 AC | 40.00 AC | 24.79 AC |
| PHASE I ACREAGE (LOT 1 AND 2): | | | 50.08 AC |
| ZONING: | NMX | | |
| RIVER BASIN/STREAM CLASSIFICATION: | BEAVERDAM CREEK (NEUSE RIVER - CLASS C (NSW)) | | |
| PH I DEVELOPMENT INFORMATION: | EXISTING USE: | VACANT | |
| | PROPOSED USE: | SECTION 2.3(C)(5)(I) RECREATION FACILITIES (OUTDOOR) | |
| | EXISTING BUILDING AREA: | 0 SF | |
| | PROPOSED BUILDING AREA: | 5,220 SF | |
| | BUILDING SETBACK: | FRONT - 10' SIDE (BETWEEN BUILDINGS) - 10' REAR - 30' | |
| | EXISTING IMPERVIOUS AREA: | 0.00 AC (0%) | |
| | PROPOSED IMPERVIOUS AREA (PHASE I ONLY): | 5.98 AC | |
| | FUTURE IMPERVIOUS AREA (PHASE 1 ONLY): | 6.06 AC | |
| | TOTAL IMPERVIOUS (PHASE 1 ONLY): | 13.04 AC (26.04%) | |
| | PROPOSED DISTURBED AREA: | 34.7 AC | |
| PARKING CALCULATIONS: MAX. REQ'D PARKING: 1/3 PPL. AT CAPACITY x 270 (PER FIELD) x 5 FIELDS | 450 SPACES | | |
| MIN. REQ'D PARKING: | 1/2 OF MAXIMUM 225 SPACES | | |
| PROVIDED PARKING: | 464 SPACES | | |
| | REQUIRED ACCESSIBLE PARKING (401-500 PROVIDED): | 9 | |
| | PROVIDED ACCESSIBLE PARKING: | 12 | |
| INFRASTRUCTURE SUMMARY: | PUBLIC ROADWAY | 600 LF | |
| | FIRE LANE | 0 LF | |
| | PUBLIC WATER | 641 LF | |
| | PUBLIC SEWER | 164 LF | |
| | WATER SERVICE | 1 EA | |
| | SEWER SERVICE | 1 EA | |
| | FIRE LINE | 369 LF | |
| | PROJECTED SEWER FLOW: 250 GPD/FIXTURE x 15 FIXTURES: | 3,750 GPD | |

THIS PROJECT IS LOCATED WITHIN ZONE X (OUTSIDE OF THE 0.2% ANNUAL CHANCE AND FUTURE CONDITIONS 1% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON FEMA FIRM MAP NUMBERS 3720175500J AND 3720174500J, EACH WITH AN EFFECTIVE DATE OF MAY 2, 2006.

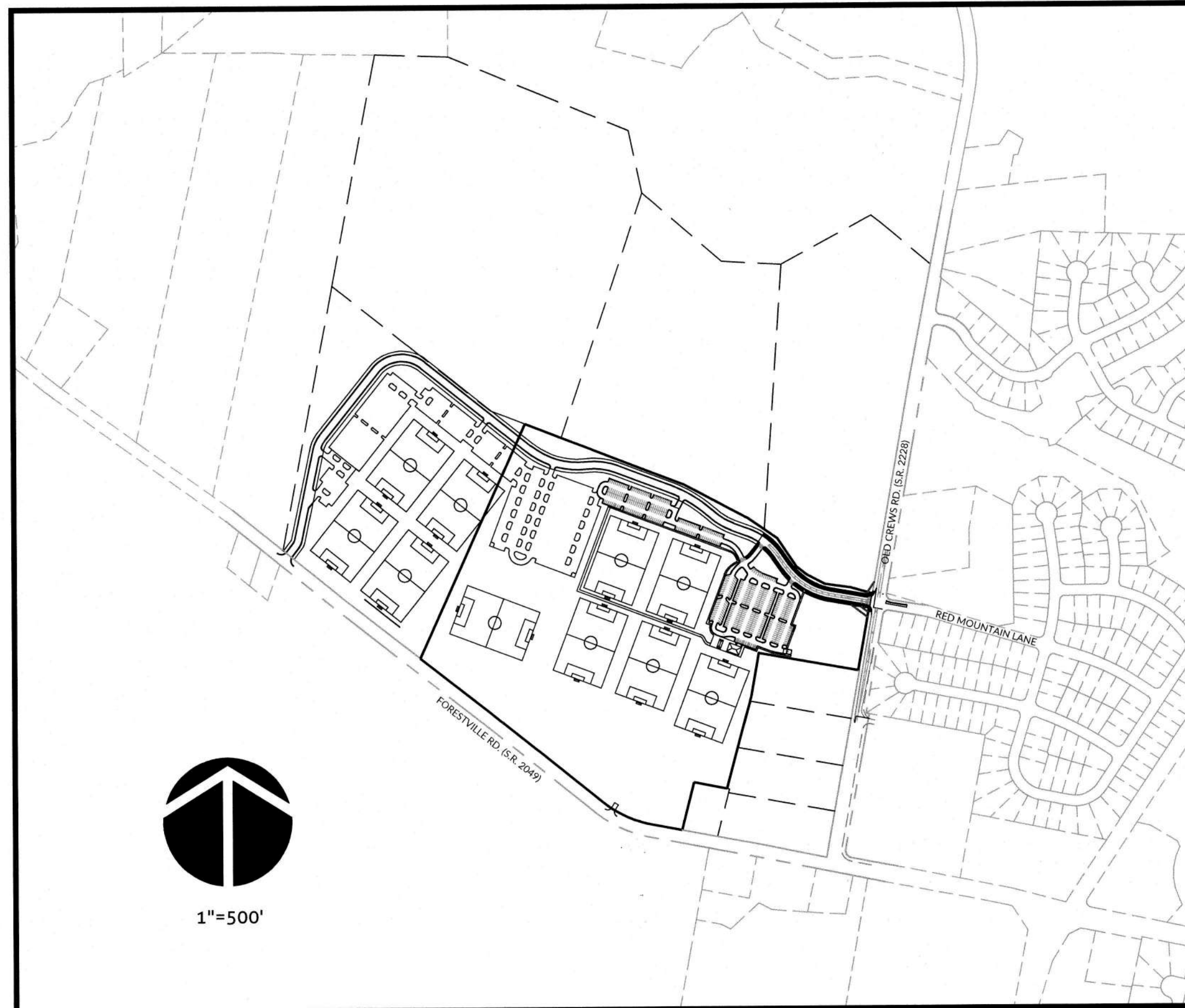
NOTE

A PLAT FOR ALL CORSES WILL BE SUBMITTED TO CORPUD FOR REVIEW PRIOR TO RECORDING AND PRIOR TO THE ISSUANCE OF BUILDING PERMITS FROM THE TOWN OF KNIGHTDALE.

OWNER/APPLICANT

TOWN OF KNIGHTDALE
950 STEEPLE SQUARE COURT
KNIGHTDALE, NC 27545

ATTN: BILL SUMMERS
TELEPHONE: (919) 217-2202
FAX: (919) 217-2249



VICINITY MAP

INDEX OF SHEETS

| Sheet Number | Sheet Title |
|--------------|------------------------------------|
| C0.0 | Cover |
| C1.0 | Existing Conditions |
| C2.0 | Site Plan |
| C2.1 | Detailed Site Plan |
| C2.2 | Detailed Site Plan |
| C3.0 | Entrance Road Plan and Profile |
| C3.1 | Old Crews Road Plan and Profile |
| C3.2 | Old Crews Road Improvements |
| C4.0 | Grading and Drainage Plan |
| C4.1 | Detailed Grading and Drainage Plan |
| C4.2 | Detailed Grading and Drainage Plan |
| C5.0 | Utility Plan |
| C6.0 | SCM 1 Plan and Details |
| C6.1 | SCM 2 Plan and Details |
| C6.2 | STORMWATER CONTROL DETAILS |
| C7.0 | Haul Road Plan |
| C7.1 | Stage 1 Erosion Control Plan |
| C7.2 | Stage 2 Erosion Control Plan |
| C7.3 | Stage 2 Erosion Control Plan |
| C8.0 | Bid Alternate Plan |
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| C9.2 | Site Details |
| C9.3 | Site and NCDOT Details |
| C9.4 | Storm Drainage Details |
| C9.5 | Utility Details - Water |
| C9.6 | Utility Details - Sewer |
| C9.7 | Erosion Control Details |
| C9.8 | Erosion Control Details |
| C9.9 | Erosion Control Details |
| C9.10 | Erosion Control Details |
| L1.0 | Overall Landscape Plan |
| L1.1 | Landscape Plan |
| L1.2 | Landscape Plan |
| L1.3 | Landscape Plan |
| L1.4 | Landscape Plan |
| L1.5 | Landscape Details |
| L2.0 | Grassing Plan |
| SL1.0 | Lighting Plan |
| SL1.1 | Lighting Details |
| IR-1 | Irrigation Plan |
| IR-2 | Irrigation Plan |
| IR-3 | Irrigation Plan |

ATTENTION CONTRACTORS

THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT. PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: *[Signature]* DATE: 9/9/19
ADMINISTRATOR

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # *W-3642*
AUTHORIZATION TO CONSTRUCT *By new 4m. Sample*
DATE *9/17/19*

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM

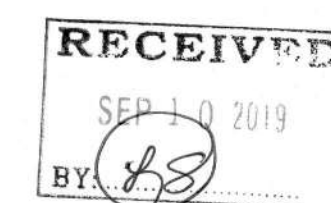
THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # *S-4567*
AUTHORIZATION TO CONSTRUCT *By new 4m. Sample*
DATE *9/17/19*

TOWN APPROVED STANDARDS SHALL CONTROL. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN THESE CONSTRUCTION DRAWINGS AND THE TOWN OF KNIGHTDALE'S APPROVED STANDARDS FOR THIS PROJECT, THE APPROVED STANDARDS SHALL CONTROL. TOWN OF KNIGHTDALE APPROVED STANDARDS SHALL MEAN ALL DEVELOPMENT DOCUMENTS NECESSARY FOR APPROVAL FOR THE PROPERTY INCLUDING, BUT NOT LIMITED TO, ANY SPECIAL USE PERMIT, SUBDIVISION PLAN, SITE PLAN, SUBDIVISION(S), PHASING SCHEDULE, DEVELOPMENT AGREEMENT, UTILITY ALLOCATION AGREEMENT, ANNEXATION AGREEMENT, THE TOWN OF KNIGHTDALE STANDARD SPECIFICATION AND DETAILS MANUAL, AND APPLICABLE PROVISIONS OF THE NORTH CAROLINA STATE BUILDING CODE.

PROFESSIONAL DESIGN ENGINEER CERTIFICATION: THESE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING DRAWINGS AND WITH THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE. I, TUCKER MCKENZIE, BE CERTIFY THAT THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE HAVE BEEN THOROUGHLY CHECKED AND FOUND TO BE APPLICABLE TO THIS PROJECT. ALL EXCEPTIONS TO THE APPLICABLE TOWN STANDARDS HAVE BEEN PREVIOUSLY APPROVED BY THE TOWN OF KNIGHTDALE AND SAID EXCEPTIONS ARE SHOWN ON SHEET(S) *1/4* OF THESE DRAWINGS.

BY: *[Signature]* DATE: 9/29/19
NORTH CAROLINA
PROFESSIONAL
SEAL
44527
ENGINEER
TUCKER MCKENZIE



PREPARED BY:



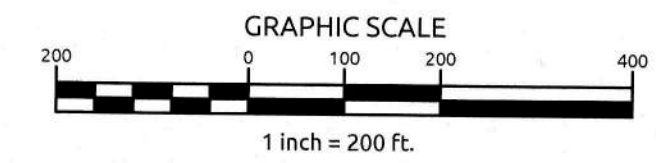
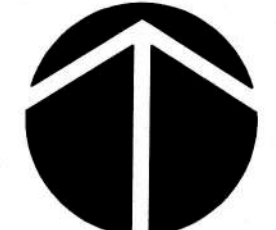
WithersRavenel
Engineers | Planners | Surveyors

115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com



- NOTES:
1. BOUNDARY SURVEY PERFORMED BY WITHERSRAVENEL AUGUST 14, 2018.
 2. TOPOGRAPHIC CONTOURS TAKEN FROM GIS.
 3. STREAM AND WETLANDS FIELD VERIFIED BY WITHERSRAVENEL.
 4. WATER AND SEWER TAKEN FROM GIS.
 5. NO MODIFICATIONS ARE PROPOSED TO SUBSTANTIAL / SIGNIFICANT VEGETATION, HISTORIC OR CULTURAL RESOURCES AS PART OF THIS PROJECT.

FLOOD INFORMATION
THIS PARCEL OF LAND LIES WITHIN A FLOOD
HAZARD AREA AS PER F.I.R.M. PANEL
NUMBER: 3720175500J AND 3720174500J
EFFECTIVE DATE: MAY 2, 2006



LEGEND (UNLESS OTHERWISE NOTED)

| | |
|----------------------------------|--|
| IPS - IRON PIPE SET | |
| EIP - EXISTING IRON PIPE | |
| CB - CATCH BASIN | |
| DI - DROP INLET | |
| PH - FIRE HYDRANT | |
| PP - POWER POLE | |
| LP - LIGHT POLE | |
| WV - WATER VALVE | |
| MH - MANHOLE | |
| SSMH - SANITARY SEWER MANHOLE | |
| EX - EXISTING | |
| RCP - REINFORCED CONCRETE PIPE | |
| DIP - DUCTILE IRON PIPE | |
| FDC - FIRE DEPARTMENT CONNECTION | |
| DB - DEED BOOK | |
| BM - BOOK MAP | |
| PG - PAGE | |

LINE TYPE LEGEND

| | |
|---------------------|-----------|
| ADJOINER | |
| BOUNDARY | |
| EASEMENT | |
| R/W | |
| WATER LINE | W |
| OVERHEAD POWER LINE | OHPL DHPL |
| SANITARY SEWER LINE | SS |

| LOT | OWNER | USE | PIN | DEED BOOK/PAGE | ZONE |
|-----|--------------------|--------|------------|----------------|------|
| 1 | TOWN OF KNIGHTDALE | VACANT | 1755114133 | 17055/717 | NMX |
| 2 | TOWN OF KNIGHTDALE | VACANT | 1755016038 | 17307/1582 | NMX |

LINE TABLE

| LINE | DIRECTION | DISTANCE |
|------|--------------|----------|
| L1 | S 84°12'24"E | 341.69 |
| L2 | S 67°24'57"E | 452.09 |
| L3 | S 67°24'57"E | 457.94 |
| L4 | S 12°02'02"E | 286.14 |
| L5 | S 46°03'19"E | 489.29 |
| L6 | S 86°44'06"E | 276.00 |
| L7 | N 61°42'56"E | 476.21 |
| L8 | S 52°30'14"E | 66.00 |
| L9 | S 49°43'01"E | 293.70 |
| L10 | S 10°50'31"W | 531.39 |
| L11 | S 09°58'07"W | 555.77 |
| L12 | S 10°04'44"W | 972.57 |
| L13 | N 73°57'04"W | 4.46 |
| L14 | N 73°57'04"W | 100.03 |
| L15 | N 61°56'42"W | 121.88 |
| L16 | N 61°56'24"W | 97.05 |
| L17 | N 51°57'18"W | 59.03 |
| L18 | N 33°57'52"W | 199.99 |
| L19 | N 55°30'53"W | 73.65 |
| L20 | N 55°30'53"W | 94.71 |
| L21 | N 62°01'47"W | 336.78 |
| L22 | N 68°48'10"W | 226.24 |
| L23 | N 68°48'10"W | 484.15 |
| L24 | N 68°48'10"W | 180.68 |
| L25 | N 68°48'10"W | 171.70 |
| L26 | N 51°28'36"W | 213.37 |
| L27 | N 51°28'36"W | 262.05 |
| L28 | S 20°01'03"W | 99.97 |
| L29 | N 68°58'12"W | 274.89 |
| L30 | N 10°01'18"E | 200.09 |
| L31 | S 79°56'17"E | 5.10 |
| L32 | N 10°03'00"E | 191.38 |
| L33 | S 10°11'21"W | 37.68 |
| L34 | S 10°11'21"W | 223.37 |
| L35 | S 10°11'21"W | 215.76 |
| L36 | S 10°11'21"W | 218.18 |
| L37 | N 78°33'53"E | 303.87 |
| L38 | S 14°28'19"W | 229.61 |
| L39 | S 14°28'19"W | 3.38 |
| L40 | N 78°18'03"W | 142.23 |
| L41 | N 50°58'37"W | 373.58 |
| L42 | N 51°28'14"W | 240.52 |
| L43 | N 51°54'22"W | 418.87 |
| L44 | N 51°54'22"W | 415.57 |
| L45 | N 50°59'58"W | 33.10 |
| L46 | N 50°59'58"W | 320.59 |
| L47 | N 10°03'43"E | 383.97 |
| L48 | S 10°46'46"W | 0.99 |
| L49 | N 79°18'03"W | 178.37 |
| L50 | N 14°28'10"E | 269.99 |
| L51 | N 14°28'10"E | 16.36 |
| L52 | N 78°51'59"W | 11.10 |
| L53 | N 14°54'52"E | 197.96 |
| L54 | N 14°54'52"E | 224.13 |
| L55 | N 14°54'52"E | 26.27 |
| L56 | S 79°48'39"E | 476.29 |
| L57 | S 79°48'39"E | 496.78 |
| L58 | S 79°48'39"E | 503.34 |
| L59 | N 78°51'59"W | 196.69 |

CURVE TABLE

| CURVE | RADIUS | LENGTH | CHORD | BEARINGS |
|-------|-----------|---------|---------|---------------|
| C1 | 3,030.00' | 38.92' | 38.92' | N 78°55'58" W |
| C2 | 520.00' | 297.06' | 294.45' | N 65°08'20" W |
| C3 | 3,030.00' | 26.11' | 26.11' | N 51°13'25" W |
| C4 | 3,030.00' | 23.04' | 23.04' | N 51°41'18" W |
| C5 | 2,870.00' | 47.00' | 47.00' | N 51°57'10" W |

City of Raleigh
Public Utilities Department
DATE: 9/7/19

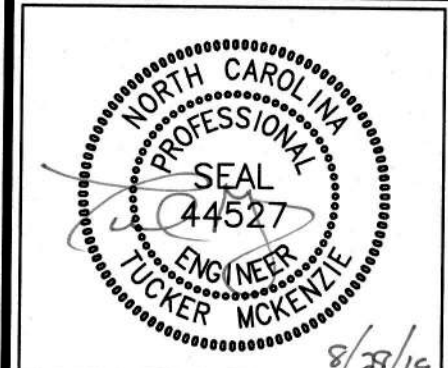


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BY: *[Signature]* DATE: 9-7-2019
DEVELOPMENT SERVICES ENGINEER

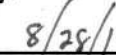
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 9/7/19
ADMINISTRATOR

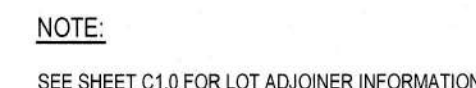


Revisions

| | | |
|---|------------|----------|
| 1 | ADDENDUM 1 | 08/20/19 |
|---|------------|----------|

[illegible]

C2.0



GENERAL NOTES:

1. THIS PROJECT IS PART OF A PHASED DEVELOPMENT PLAN AND IMPROVEMENTS TO FORESTVILLE ROAD AND OLD CREEKS ROAD WILL BE COMPLETED IN SUBSEQUENT PHASES OF DEVELOPMENT.
2. GENERAL BUILDING DIMENSIONS ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND SERVE AS "PLACEHOLDERS" ON THE PLAN. ACTUAL BUILDING PLANS AND LOCATIONS TO BE DETERMINED AT A LATER DATE.
3. ALL DIMENSIONS ARE TO BACK OF CURB.
4. ALL CURB OUTSIDE OF PUBLIC RIGHT OF WAY MUST BE 24".
5. WHERE SIDEWALKS OR WALKWAYS ABUT PARKING SPACES, THEY ARE TO BE A MINIMUM OF SIX (6) FEET WIDE (DIMENSIONED FROM BACK OF CURB TO BACK OF WALK) WITH RAMPS PROVIDED AT INTERVALS TO ALLOW ADEQUATE ACCESS TO THE PARKING LOT.
6. DOORS ARE INDICATED ON ALL BUILDINGS FOR WHICH ARCHITECTURAL DESIGN HAS OCCURRED.
7. REFER TO SHEET C8.0-C8.2 FOR SITE DETAILS.
8. ALL ACCESSIBLE ROUTES MUST COMPLY WITH THE LATEST VERSION OF THE NC ACCESSIBILITY CODE. (CHAPTER 11 OF 2009 NC BUILDING CODE)
9. ALL SIDEWALKS TO BE CONSTRUCTED OF CONCRETE.
10. WORK IN THIS PROJECT SHALL CONFORM TO THESE PLANS, THE LATEST EDITIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) ROAD AND BRIDGE SPECIFICATIONS, THE NCDOT ROAD AND BRIDGE STANDARDS, THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL HANDBOOK, THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL REGULATIONS, TOWN OF KINGTIDEALE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS, THE FINAL GEOTECHNICAL REPORT, AND GENERAL DESIGN STANDARDS. IN THE EVENT OF CONFLICT BETWEEN ANY OF THESE STANDARDS, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT SHALL GOVERN UNLESS OTHERWISE NOTED IN THESE PLANS.
11. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL JOBSITE SAFETY, INCLUDING BUT NOT LIMITED TO TRENCH SAFETY, DURING ALL PHASES OF CONSTRUCTION. ALL WORK SHALL COMPLY WITH ALL TOWN, COUNTY AND STATE REGULATIONS AND CODES AND O.S.H.A. STANDARDS.
12. THE LOCATION AND SIZE OF EXISTING UTILITIES AS SHOWN IS APPROXIMATE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR HORIZONTALLY AND VERTICALLY LOCATING AND PROTECTING ALL PUBLIC OR PRIVATE UTILITIES (SHOWN OR NOT SHOWN) WHICH LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. AT LEAST 48 HOURS PRIOR TO ANY DEMOLITION, GRADING, OR CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL CALL "811" FOR PROPER IDENTIFICATION OF EXISTING UTILITIES WITHIN THE SITE.
13. THE CONTRACTOR SHALL PROTECT ALL SIGNS, MANHOLES, TELEPHONE RISERS, WATER VALVES, ETC. DURING ALL CONSTRUCTION PHASES. THE CONTRACTOR SHALL REPAIR AT HIS OWN EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. ALL PROPOSED UTILITIES ON-SITE SHALL BE UNDERGROUND.
14. TRAFFIC CONTROL ON PUBLIC STREETS IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE IN CONFORMANCE WITH THESE PLANS, THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES," AND AS FURTHER DIRECTED BY THE TOWN AND NCDOT.
15. ALL MANUFACTURERS' PRODUCTS SPECIFIED IN THESE PLANS OR USED AS APPROVED ALTERNATES SHALL BE INSTALLED PER THE MANUFACTURERS' SPECIFICATIONS.
16. ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER. IN WRITING, WHO SHALL PROMPTLY ADDRESS SUCH INCONSISTENCIES OR AMBIGUITIES. WORK DONE BY THE CONTRACTOR AFTER THE DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES, OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
17. CONSTRUCTION STAKEOUT FOR THIS PROJECT MAY BE PERFORMED BY THE CONTRACTOR, USING A DIGITAL (CADD) FILE PROVIDED BY THE ENGINEER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES FOUND BETWEEN THE DIGITAL FILE AND THE CERTICAL STAKING DIMENSIONS SHOWN ON THIS PLAN (I.E. PAVEMENT WIDTHS, CURB RAIL, BUILDING SETBACKS, BUILDING FOOTPRINTS, ETC.). ANY MODIFICATIONS MADE BY OTHERS TO THE DIGITAL FILE PROVIDED BY THE ENGINEER SHALL RENDER IT VOID.
18. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL ARRANGE THE MEETING WITH THE TOWN OF KINGTIDEALE STAFF, ENGINEER, OWNER, AND WAKE STATE KINGTIDEALE QUARRY SUPERINTENDENT.
19. CONTRACTOR IS RESPONSIBLE FOR VERIFYING OR OBTAINING ALL REQUIRED PERMITS AND APPROVALS PRIOR TO COMMENCING CONSTRUCTION.
20. THE FRAMES AND COVERS OF ALL EXISTING AND PROPOSED DRAINAGE, SANITARY SEWER, WATER MAIN, GAS AND WIRE UTILITY STRUCTURES SHALL BE ADJUSTED TO MATCH PROPOSED FINISHED ELEVATIONS AND SLOPES.
21. ROADWAYS AND BUILDINGS MUST BE CAPABLE OF SUPPORTING FIRE APPARATUS DURING CONSTRUCTION.
22. CONTRACTOR SHALL PROTECT ALL MONUMENTS, IRON PINS AND PROPERTY CORNERS DURING CONSTRUCTION.
23. ANY REFERENCE TO A RETAINING WALL WITHIN THE PLAN SET IS FOR APPROVAL PERTAINING TO LOCATION, APPEARANCE, AND SIZE ONLY. ALL RETAINING WALLS MUST BE DESIGNED BY WALL DESIGNER.
24. HANDRAILS ARE REQUIRED AT ALL STAIRS WITH MORE THAN ONE RISE IN ACCORDANCE WITH NC BUILDING CODE.
25. LANDINGS ARE REQUIRED AT THE TOP OF ALL CURB RAMPS IN ACCORDANCE WITH NC BUILDING CODE, SLOPES IN ALL DIRECTIONS SHALL NOT BE STEEPER THAN 1:48.
26. LANDINGS ARE REQUIRED AT THE TOP AND BOTTOM OF ALL STAIRS IN ACCORDANCE WITH THE NC BUILDING CODE, LATEST VERSION.
27. PORTIONS OF THE PARKING LOTS WILL BE GRAVEL INSTEAD OF PAVED. THE PARKING LOT WILL BE CLASSIFIED AS TEMPORARY IN NATURE IN ACCORDANCE WITH SECTION 10.4.1, b. 1, AND MEET THE APPLICABLE REQUIREMENTS OF THAT SECTION. SEE PHASING PLAN SHEET C8.0.
28. APPLICABLE RIGHT OF WAY IMPROVEMENTS WILL BE CONSTRUCTED AS PART OF A LATER PHASE.
29. PARKING ATTENDANTS WILL BE USED FOR EVENTS TO MINIMIZE THE USE OF THE OUTER PARKING LOTS TWO AND THREE.
30. PAVEMENT MARKINGS SHALL BE THERMOPLASTIC EXCEPT FOR PARKING STALLS.

PAVING/CURBING NOTES:

1. WHERE PROPOSED CURB AND GUTTER TIES TO EXISTING CURB OR CURB AND GUTTER, A TRANSITION OF 10' SHALL BE MADE TO CONFORM TO THE EXISTING HEIGHTS AND SHAPES.
2. BEFORE ANY EARTHWORK IS DONE, THE CONTRACTOR SHALL STAKE OUT AND MARK THE LIMITS OF PAVEMENT AND OTHER ITEMS ESTABLISHED IN THE PLANS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORK.
3. ALL PAVEMENT SUB GRADGES SHALL BE SCARIFIED TO A DEPTH OF 8 INCHES AND COMPACTED TO A MINIMUM DENSITY OF 100 PERCENT OF THE MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION PLANS OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER. FILL SHALL BE PLACED AND COMPACTED IN MAXIMUM 8" LIFTS. IN AREAS WHERE ROCK IS ENCOUNTERED AT FINAL SUB GRADE ELEVATION, THE EXPOSED ROCK SHALL BE TOPPED WITH A LEVELING COURSE OF SANDY CLAY OR CLAYEY SAND (P.I. BETWEEN 4 AND 15) AS NEEDED TO PROVIDE A SMOOTH SURFACE FOR PAVING.
4. ALL CURB JOINTS SHALL EXTEND THROUGH THE CURB. MINIMUM LENGTH OF OFFSET JOINTS AT RADIUS POINTS IS 15 FEET. ALL JOINTS SHALL BE SEALED WITH JOINT SEALANT.
5. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL SOIL TESTING IS PERFORMED AND THE RESULTS FORWARDED TO THE ENGINEER AND OWNER.
6. CONTRACTOR SHALL FURNISH AND INSTALL ALL PAVEMENT MARKINGS FOR FIRE LINES, PARKING STALLS, HANDICAPPED PARKING SYMBOLS, AND MISCELLANEOUS STRIPING WITHIN PARKING LOT AND AROUND BUILDINGS AS SHOWN ON THE PLANS. ALL PAINT FOR PAVEMENT MARKINGS SHALL ADHERE TO NCDDOT STANDARDS.
7. ALL HANDICAP RAMPING, STRIPING AND PAVEMENT MARKINGS SHALL CONFORM TO ADA REQUIREMENTS AND THE "2009 NORTH CAROLINA STATE BUILDING CODE, CHAPTER 11".
8. TESTING OF MATERIAL REQUIRED FOR THE CONSTRUCTION OF THE PARKING IMPROVEMENTS SHALL BE PERFORMED BY AN APPROVED AGENCY FOR TESTING MATERIALS. THE NOMINATION OF THE TESTING LAB AND THE PAYMENT OF EACH TESTING SERVICES SHALL BE MADE BY THE OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SHOW BY STANDARD TESTING PROCEDURES THAT THE WORK CONSTRUCTED MEETS THE REQUIREMENTS OF THE NCDDOT AND TOWNS SPECIFICATIONS.
9. CROSSWALKS SHALL BE CONSTRUCTED OF PAVERS OR STAMPED CONCRETE OF A CONTRASTING COLOR.

GRAPHIC SCALE

100 0 50 100 200

1 inch = 100 ft.

Public Utilities Department
DATE 9/17/19
BY KS



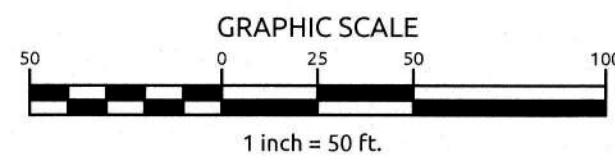
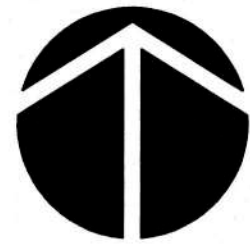
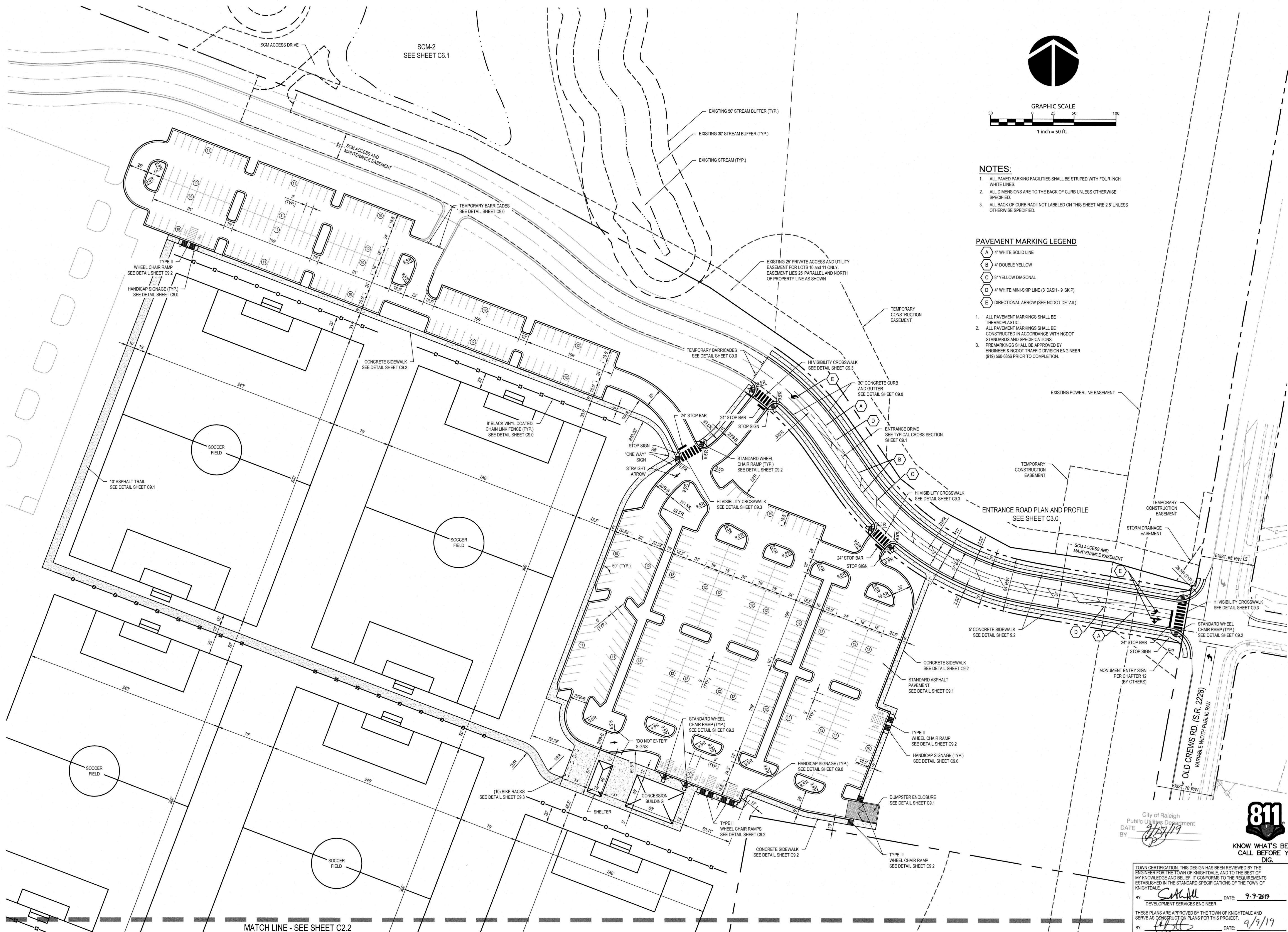
BY: S. H. Hill DATE: 9.9.2019

DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND
SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: GA DATE: 9/9/17

K:\318-4870\318075-Signature\Public\CD\Cost Drawings\C2.1 Detailed Site Plan.dwg, Wednesday, August 28, 2019 11:46:19 AM - FRESHOUR, CHMS



NOTES:

1. ALL PAVED PARKING FACILITIES SHALL BE STRIPED WITH FOUR INCH WHITE LINES.
2. ALL DIMENSIONS ARE TO THE BACK OF CURB UNLESS OTHERWISE SPECIFIED.
3. ALL BACK OF CURB RADII NOT LABELED ON THIS SHEET ARE 2.5' UNLESS OTHERWISE SPECIFIED.

PAVEMENT MARKING LEGEND

- A 4" WHITE SOLID LINE
- B 4" DOUBLE YELLOW
- C 8" YELLOW DIAGONAL
- D 4" WHITE MINI-SKIP LINE (3' DASH - 9' SKIP)
- E DIRECTIONAL ARROW (SEE NCDOT DETAIL)

1. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
2. ALL PAVEMENT MARKINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NCDOT STANDARDS AND SPECIFICATIONS.
3. PREPARATIONS SHALL BE APPROVED BY ENGINEER & NCDOT TRAFFIC DIVISION ENGINEER (919) 560-6856 PRIOR TO COMPLETION.

| | | | |
|---------|----------|----------|----|
| Job No. | 02180875 | Drawn By | WR |
| Date | 08/28/19 | Designer | WR |



| Revisions | | |
|-----------|------------|----------|
| 1 | ADDENDUM 1 | 08/20/19 |



KNOW WHAT'S BELOW.
CALL BEFORE YOU
DIG.

City of Raleigh
Public Utilities Department
DATE: 9/9/19
BY: [Signature]

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

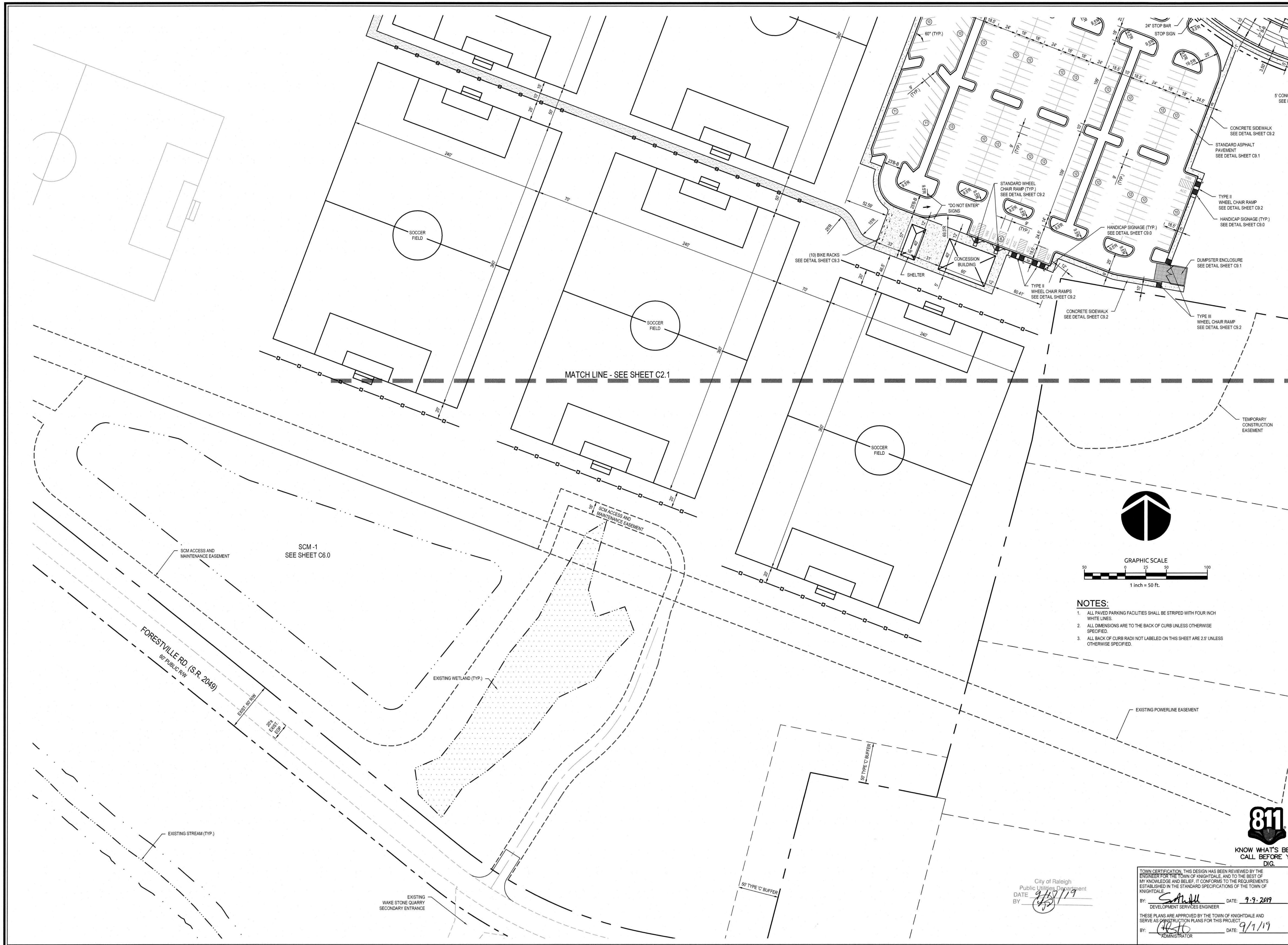
BY: [Signature] DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: [Signature] DATE: 9/9/19
ADMINISTRATOR

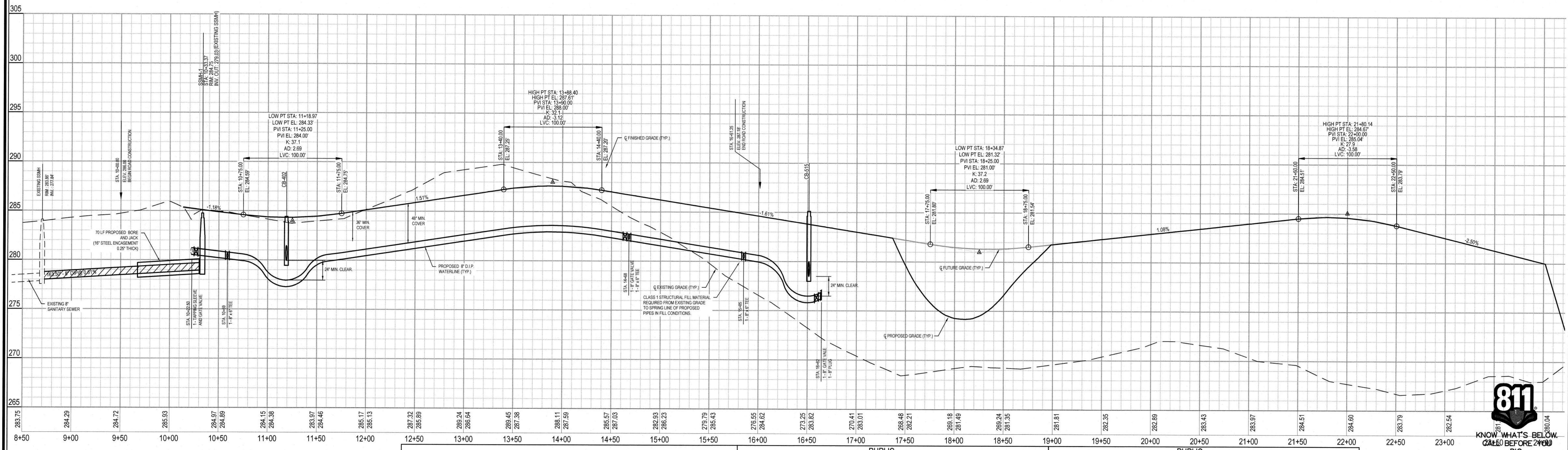
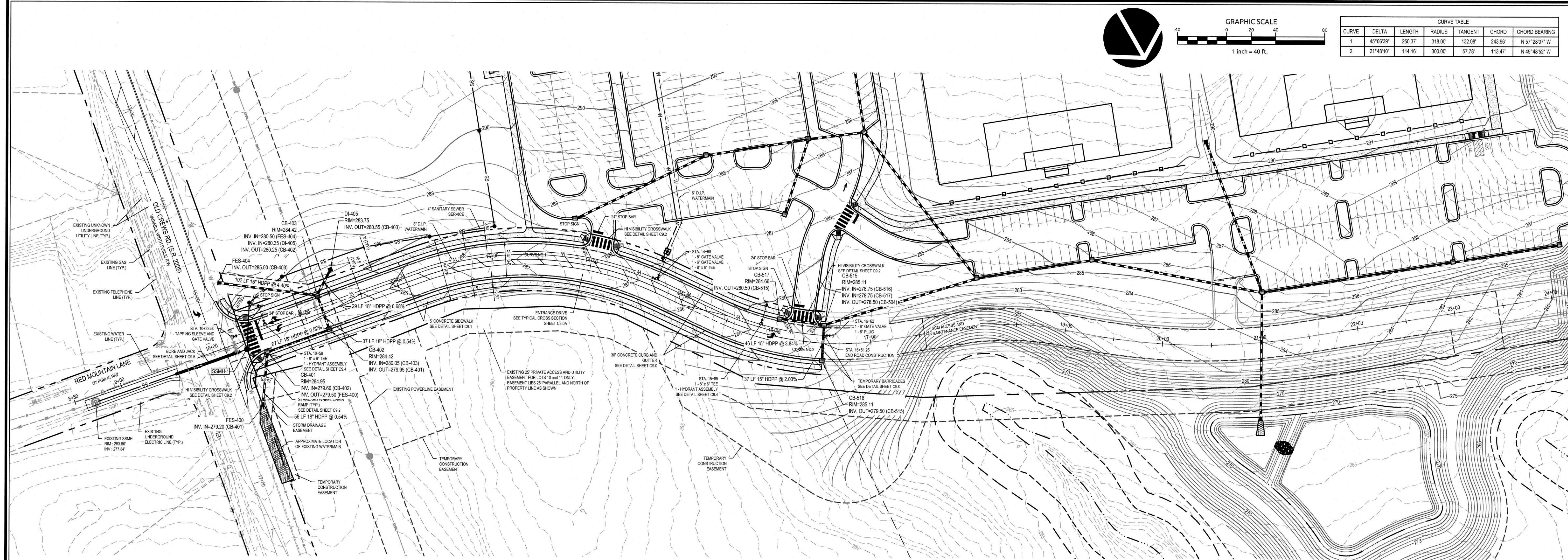
DETAILED SITE PLAN

Sheet No. _____

C2.2



K:\1310-0070\130070-A\130070-01\130070-01.dwg: Wakestone Athletic Complex Entrance Road Plan and Profile, August 26, 2019 11:46:42 AM - P:\RSH\CHUR, CHMS



ATTENTION CONTRACTORS

THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSIDE PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # W-3642

AUTHORIZATION TO CONSTRUCT For M. Sample

DATE 9/17/19

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # S-4567

AUTHORIZATION TO CONSTRUCT For M. Sample

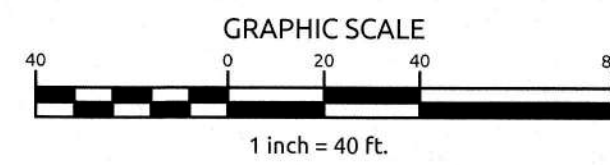
DATE 9/17/19

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIIGHTDALE.

BY: CAH DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: CAH DATE: 9/9/19
ADMINISTRATOR



| CURVE TABLE | | | | | |
|-------------|-----------|--------|--------|---------|--------|
| CURVE | DELTA | LENGTH | RADIUS | TANGENT | CHORD |
| 1 | 45°08'30" | 250.37 | 318.00 | 132.06 | 243.96 |
| 2 | 21°48'10" | 114.16 | 300.00 | 57.78 | 113.47 |

WithersRavenel
Engineers | Planners | Surveyors

**WAKESTONE ATHLETIC
COMPLEX**

KNIIGHTDALE, NORTH CAROLINA

**ENTRANCE ROAD PLAN
AND PROFILE**

Job No. 02180875 Drawn By WR
Date 08/28/19 Designer WR



Revisions
1 ADDENDUM 1 08/20/19

Sheet No.
C3.0

ATTENTION CONTRACTORS

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # 5-4567

AUTHORIZATION TO CONSTRUCT Phon M. Sample

DATE 9/17/19

THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.

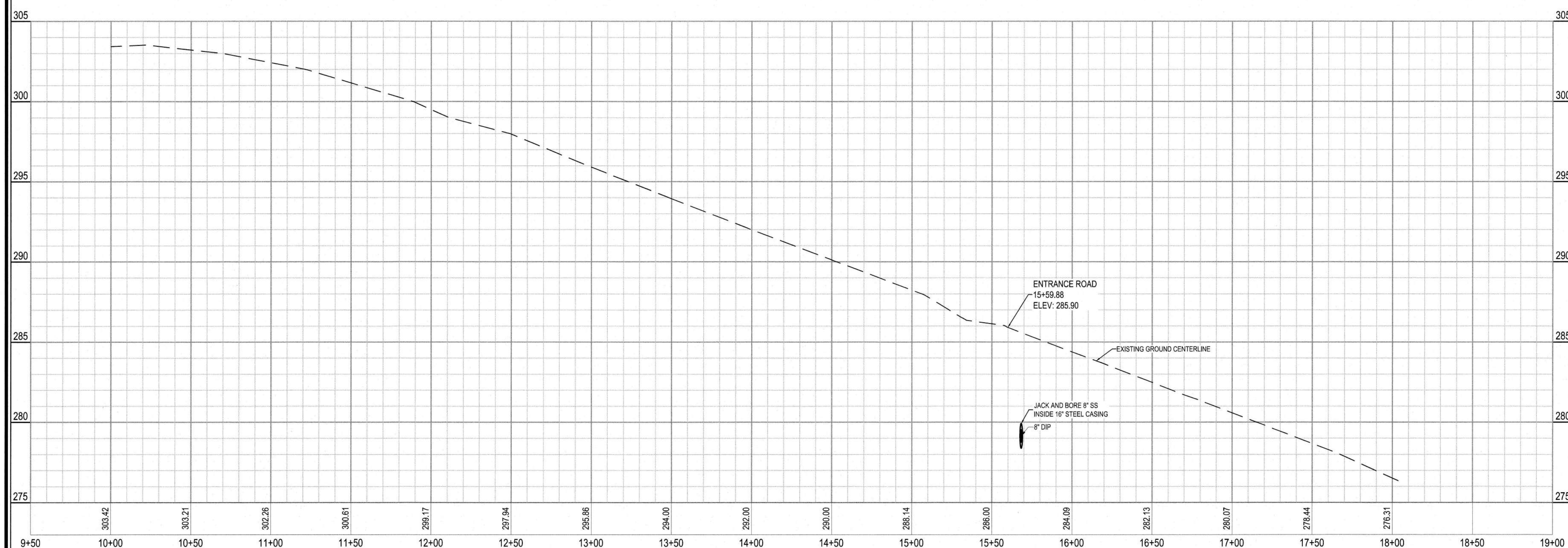
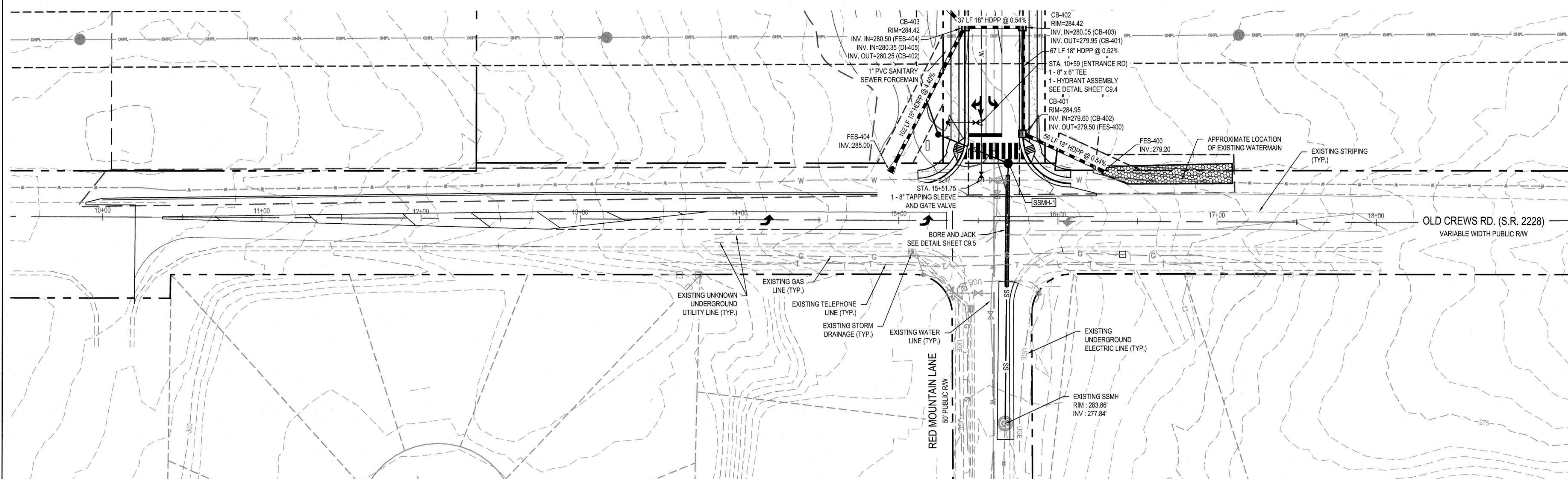
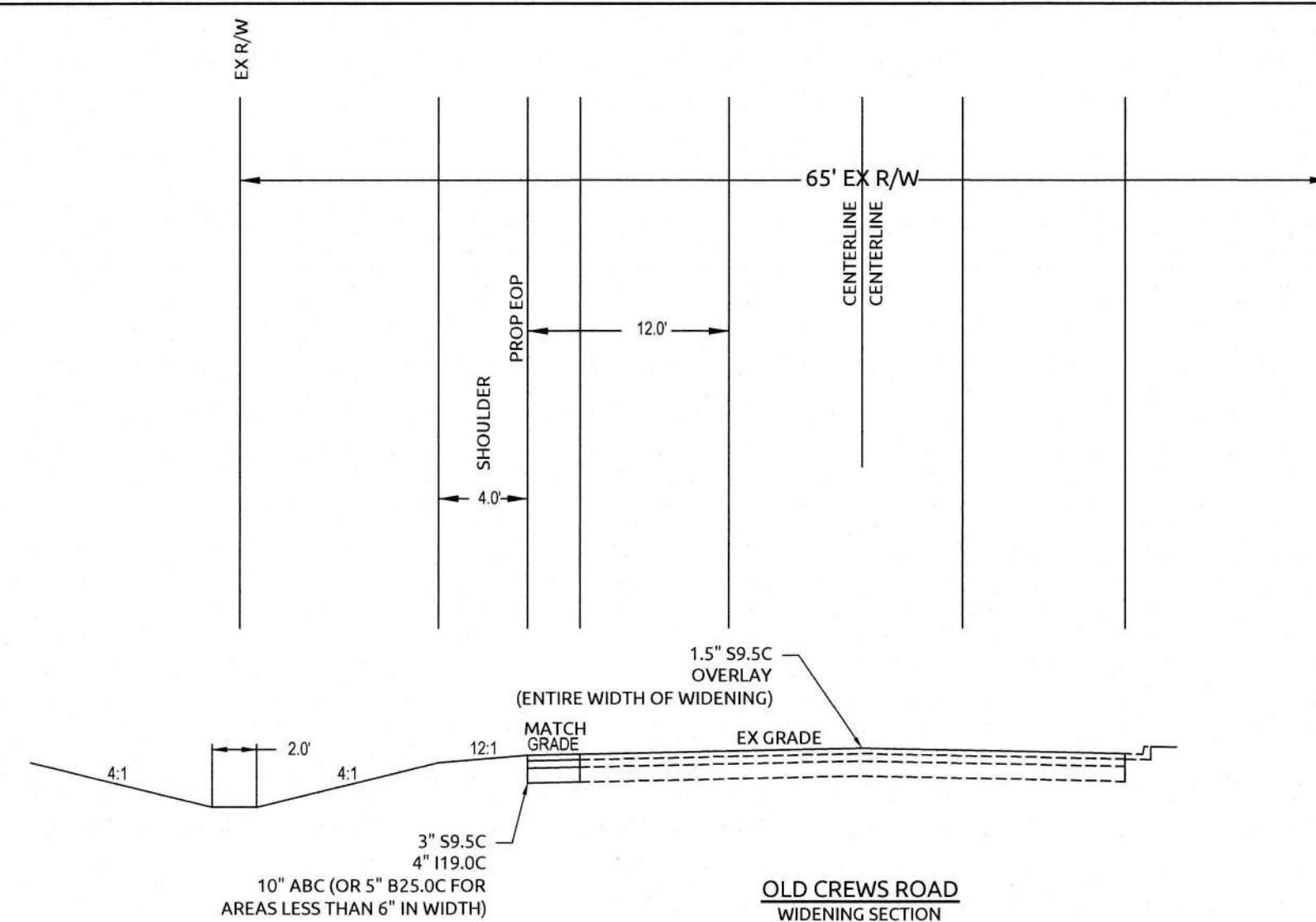
PUBLIC
WATER DISTRIBUTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # W-3642

AUTHORIZATION TO CONSTRUCT 21 Low M. Sample

DATE 9/17/19



GRAPHIC SCALE

40 0 20 40

1 inch = 40 ft.



KNOW WHAT'S BELOW
CALL BEFORE YOU
DIG.

TOWN CERTIFICATION. THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENT ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: S. A. M. DATE: 9.9.2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND
SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: [Signature] DATE: 9/9/19

WithersRavenel
Engineers | Planners | Surveyors

1115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

WAKE STONE ATHLETIC
COMPLEX

KNIGHTDALE, NORTH CAROLINA

OLD CREWS ROAD PLAN AND PROFILE

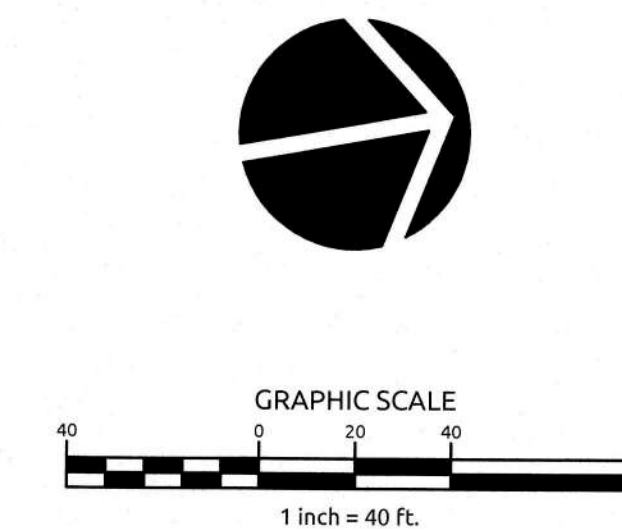
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| Job No. | 02180875 | Drawn By | W |
| Date | 08/28/19 | Designer | W |



| Revisions | | |
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| 1 | ADDENDUM 1 | 08/20/1 |

Sheet No. _____

C3.1

1115 MacKenzie Drive | Cary, NC 27511 | P: 919 460 3340 | Licence #: C-09322 | www.mccormick.com

KNIGHTDALE, NORTH CAROLINA

OLD CREWS ROAD IMPROVEMENTS

PAVEMENT SCHEDULE

OLD CREWS ROAD

AREAS OF WIDENING GREATER THAN 6 FEET IN WIDTH:

| | |
|----------------------|-----------|
| SURFACE COURSE: | 3" 59.5C |
| INTERMEDIATE COURSE: | 4" 119.0C |
| BASE COURSE: | 10" 180C |

AREAS OF WIDENING LESS THAN 6 FEET IN WIDTH:

| | |
|-----------------|-----------|
| SURFACE COURSE: | 3" 59.5C |
| FIRST COURSE: | 4" 119.0C |
| BASE COURSE: | 5" 825.0C |

CONCRETE PADS

SIDEWALK:

| | |
|--------------|-------------|
| CONCRETE: | 4" 3000 PSI |
| BASE COURSE: | NA |

NOTES

1. ALL FILL UNDER PROPOSED PAVEMENT AREAS SHALL BE PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. UNLESS OTHERWISE STATED, NO FILL SHALL BE COMPACTED TO LESS THAN 90% RELATIVE COMPACTION AS DETERMINED BY ASTM D-698 STANDARD PROCTOR METHOD.
2. UNLESS OTHERWISE STATED, THE TOP 12 INCHES OF SUBGRADE SHALL BE COMPACTED TO A MINIMUM 90% OF STANDARD PROCTOR.
3. PRIOR TO PLACEMENT OF AGGREGATE BASE, SUBGRADE SHALL BE PROFFLOOED AND YIELDING AREAS REPAIRED AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
4. AGGREGATE BASE COURSE SHALL BE PLACED AND COMPACTED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. UNLESS OTHERWISE STATED, NO ABC SHALL BE COMPACTED TO LESS THAN 100% RELATIVE COMPACTION AS DETERMINED BY ASTM D-1557 MODIFIED PROCTOR METHOD.
5. ASPHALT PAVEMENT SHALL BE PLACED AND COMPACTED AS DIRECTED BY THE GEOTECHNICAL ENGINEER, IN ACCORDANCE WITH THE MOST CURRENT AASHTO STANDARDS.
6. CONCRETE PAVEMENT SHALL BE SUPPLIED AND PLACED IN ACCORDANCE WITH THE MOST CURRENT ASTM AND AMERICAN CONCRETE INSTITUTE (ACI) STANDARDS.
7. PAVEMENT DESIGN TO BE PROVIDED PRIOR TO FINAL DESIGN.

PAVEMENT MARKING LEGEND

- | | |
|---|---|
| A | 4" WHITE SOLID LINE |
| B | 4" DOUBLE YELLOW |
| C | 8" YELLOW DIAGONAL |
| D | 4" WHITE MINI-SKIP LINE (3' DASH - 9' SKIP) |
| E | DIRECTIONAL ARROW (SEE NCDOT DETAIL) |

1. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
2. ALL PAVEMENT MARKINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH NCDOT STANDARDS AND SPECIFICATIONS.
3. PREMARKINGS SHALL BE APPROVED BY ENGINEER & NCDOT TRAFFIC DIVISION ENGINEER (919) 560-6856 PRIOR TO COMPLETION.

811®
KNOW WHAT'S BELOW
CALL BEFORE YOU
DIG

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTLAKE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTLAKE.

BY: *Samuel M. [Signature]* DATE: 9-9-
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTLAKE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

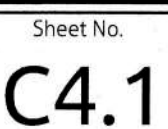
BY: *[Signature]* DATE: 9/9/
ADMINISTRATOR



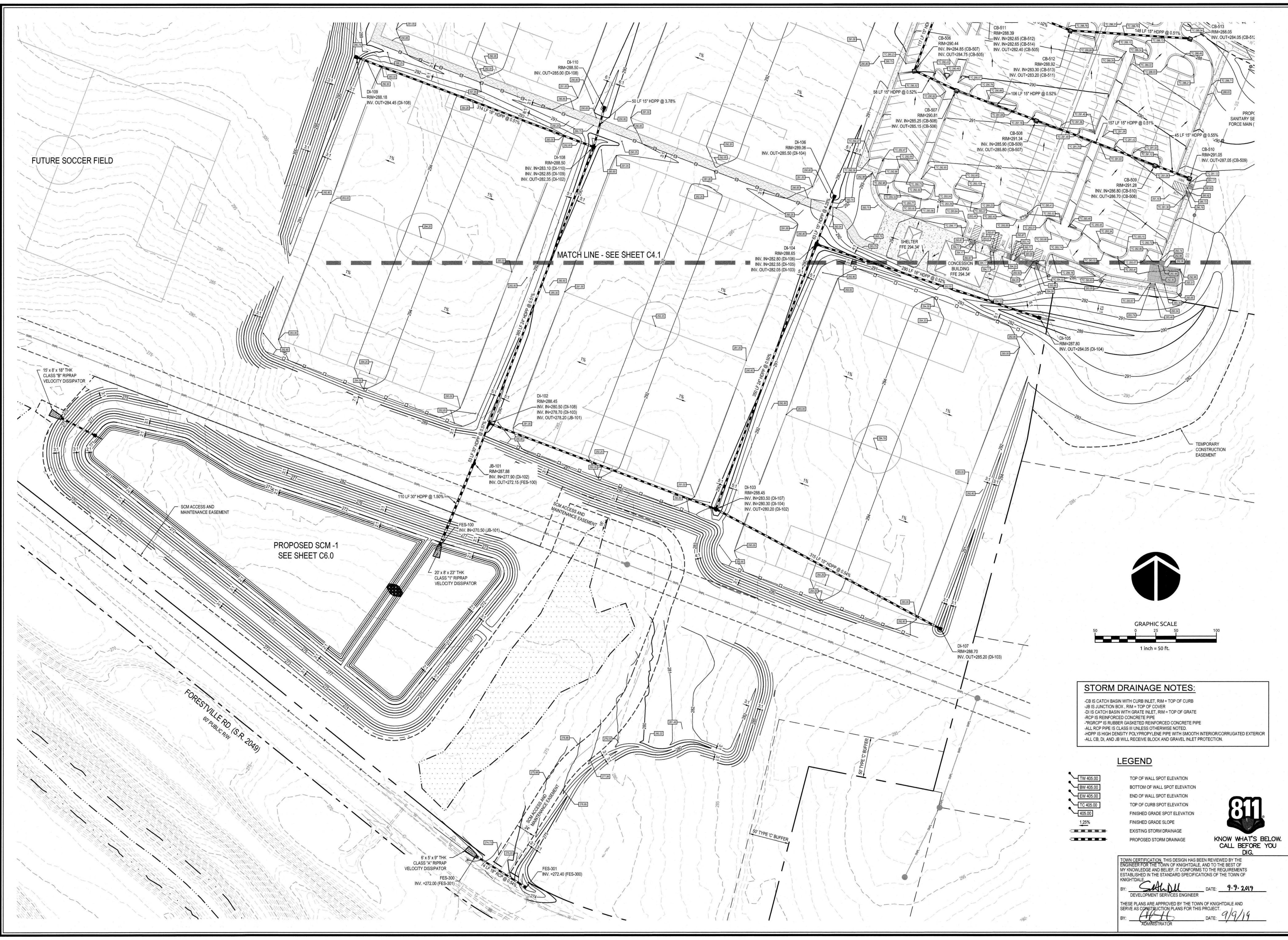
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| Revisions | | |
| 1 | ADDENDUM 1 | 08/20/1 |

Sheet No.

C3.2



K:\1818-0870\18075-Angelstone Athletic Park\CAD\Sheet Drawings\C4.1 Detailed Grading and Drainage Plan.dwg Wednesday, August 28, 2019 11:47:40 AM - FRESHOUR, CHRS



STORM DRAINAGE NOTES:

- CB IS CATCH BASIN WITH CURB INLET, RIM = TOP OF CURB
- JB IS JUNCTION BOX, RIM = TOP OF COVER
- DI IS CATCH BASIN WITH GRATE INLET, RIM = TOP OF GRATE
- ROP IS REINFORCED CONCRETE PIPE
- *RGROP IS RUBBER GASKETED REINFORCED CONCRETE PIPE
- ALL ROP PIPE IS CLASS II UNLESS OTHERWISE NOTED.
- HDPPE IS HIGH DENSITY POLYPROPYLENE PIPE WITH SMOOTH INTERIOR/CORRUGATED EXTERIOR
- ALL CB, DI, AND JB WILL RECEIVE BLOCK AND GRAVEL INLET PROTECTION.

LEGEND

- TW 405.00 TOP OF WALL SPOT ELEVATION
- BOX 405.00 BOTTOM OF WALL SPOT ELEVATION
- EW 405.00 END OF WALL SPOT ELEVATION
- TC 405.00 TOP OF CURB SPOT ELEVATION
- 405.00 FINISHED GRADE SPOT ELEVATION
- 1.25% FINISHED GRADE SLOPE
- EXISTING STORM DRAINAGE
- PROPOSED STORM DRAINAGE



TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *SALUDU* DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *CHRS* DATE: 9/9/19
ADMINISTRATOR

**WAKE STONE ATHLETIC
COMPLEX**

KNIGHTDALE, NORTH CAROLINA

**DETAILED GRADING AND
DRAINAGE PLAN**

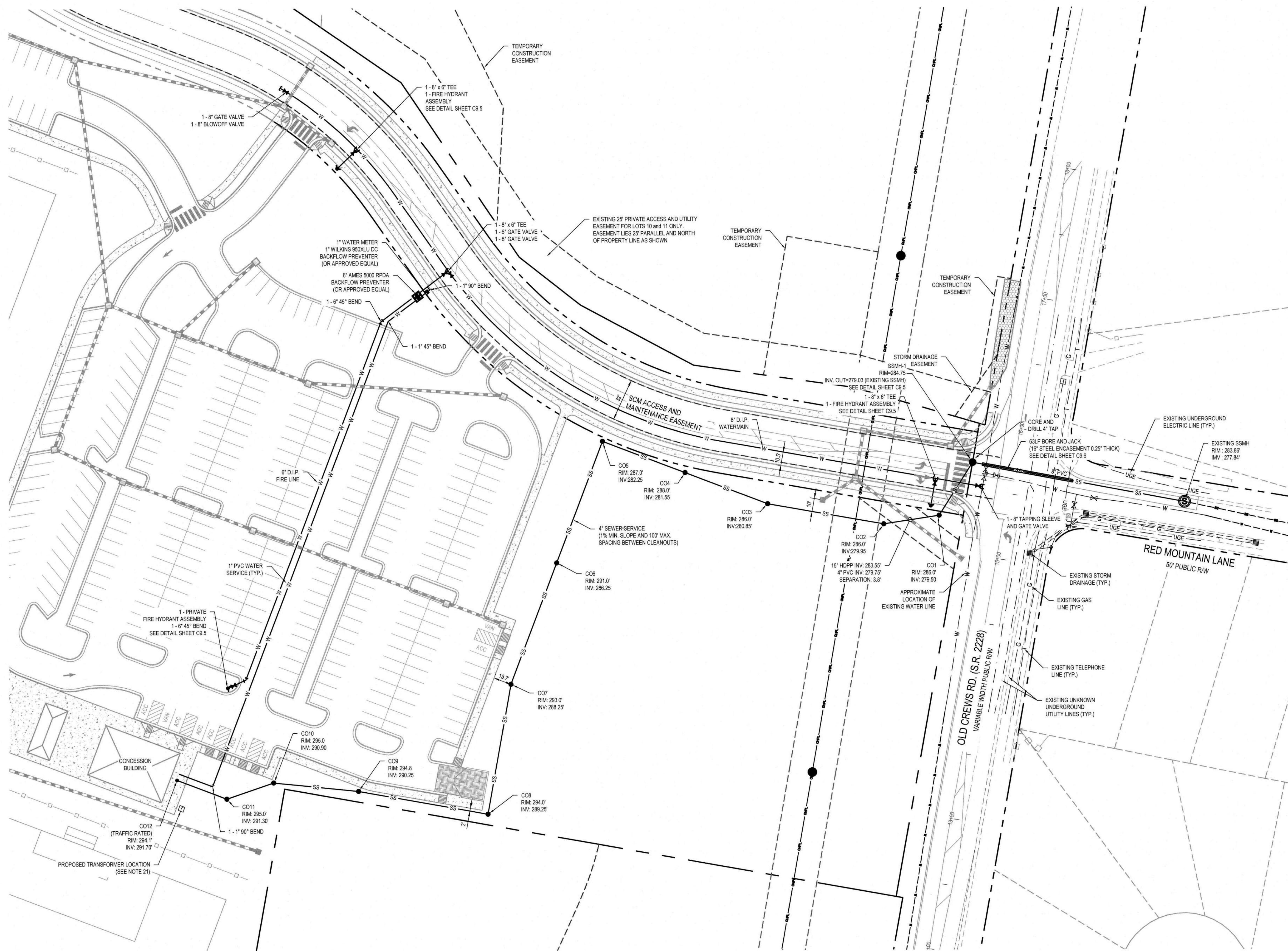
Job No. 02180875 Drawn By WJR
Date 08/28/19 Designer WJR



| Revisions | | |
|-----------|------------|----------|
| 1 | ADDENDUM 1 | 08/20/19 |

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K:\18-0870\180725-Regulate Athletic Park CAD\Civil\Drawings\CU\Utility Plans\Wednesday, August 18, 2015 11:57:56 AM - TRESHOUA.CHRS



UTILITY NOTES:

- ALL FILL MATERIAL IS TO BE IN PLACE AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
- MINIMUM TRENCH WIDTH AT THE TOP OF PIPE SHALL BE AT LEAST 18 INCHES GREATER THAN THE OUTSIDE DIAMETER OF THE PIPE.
- ALL UTILITIES SHOULD BE KEPT 10' APART (PARALLEL) OR WHEN CROSSING 18" VERTICAL CLEARANCE (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE).
- CONTRACTOR SHALL MAINTAIN A MINIMUM OF 4'-0" COVER ON ALL WATER MAINS.
- IN THE EVENT OF A VERTICAL CONFLICT BETWEEN WATERLINES, SANITARY LINES, STORM LINES AND GAS LINES (EXISTING AND PROPOSED), THE SANITARY LINE SHALL BE DUCTILE IRON PIPE WITH MECHANICAL JOINTS AT LEAST 10' ON BOTH SIDES OF CROSSING. THE WATERLINE SHALL HAVE MECHANICAL JOINTS WITH APPROPRIATE THRUST BLOCKING AS REQUIRED TO PROVIDE A MINIMUM OF 18" CLEARANCE. MEETING REQUIREMENTS OF ANSI A21.10 OR ANSI 21.11 (AWWA C-151) (CLASS 50). THE MINIMUM VERTICAL SEPARATION DISTANCE BETWEEN STORM SEWERS AND SANITARY SEWERS SHALL BE A MINIMUM OF 24".
- LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED AND APPROVED BEFORE BACKFILLING.
- ALL CONCRETE FOR ENCASUREMENTS SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH AT 3000 PSI.
- DRAWINGS DO NOT PURPORT TO SHOW ALL EXISTING UTILITIES.
- EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES.
- REFER TO ARCHITECTURAL DRAWINGS FOR TIE-IN LOCATION AND ELEVATION OF ALL UTILITIES.
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES CHARTED OR UNCHARTED WHICH MIGHT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
- ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS AND/OR TESTING REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL CONNECTION OF SERVICE.
- CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS.
- A MINIMUM HORIZONTAL SEPARATION OF 10' AND A MINIMUM VERTICAL SEPARATION OF 2' BETWEEN STORM DRAINAGE AND SEWER AND 1' BETWEEN STORM DRAINAGE AND WATER UTILITIES MUST BE PROVIDED.
- NO STRUCTURAL COMPONENT OF ANY RETAINING WALL CAN BE LOCATED WITHIN A RIGHT-OF-WAY OR EASEMENT.
- FIRE LINES SHALL BE MARKED THROUGHOUT THE SITE INCLUDING THE FRONT AND REAR OF BUILDINGS AND IN FRONT OF FIRE HYDRANTS AND FDC'S.
- EASEMENTS ACROSS SLOPED AREAS SHALL BE GRADED UNIFORMLY ACROSS THE SLOPE TO NO STEEPER THAN A 5 TO 1 RATIO.
- ALL VALVES SHALL BE RESTRAINED IN BOTH DIRECTIONS IN A MANNER CONSISTENT WITH OPERATION AS A DEAD END USING STAINLESS STEEL RODS AND BLOCKING ACCORDING TO STANDARD SPECIFICATIONS UNLESS OTHERWISE SHOWN ON THE PLANS.
- SANITARY SEWER CLEANOUTS OUTSIDE OF PAVED AREAS MAY BE FINISHED WITH A THREADED PLASTIC PLUG UPON APPROVAL BY THE UTILITY INSPECTOR HAVING JURISDICTION.
- PROPOSED TRANSFORMER LOCATION SHOWS DESIRED LOCATION. CONTRACTOR TO PROVIDE SECONDARY PULLS FROM THIS LOCATION TO THE HOUSE PANEL AT THE CONCESSIONS. HOUSE PANEL TO PROVIDE POWER FOR SITE VUA LIGHTING, MONUMENT LIGHTING, AND IRRIGATION PANELS/CONTROLLERS/PUMPS. CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING FOR THESE SITE FIXTURES.

COR APPENDIX D STANDARD UTILITY NOTES:

- ALL STANDARD MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARD, DETAILS, & SPECIFICATIONS (REFERENCE CORPUS HANDBOOK, CURRENT EDITION)
- UTILITY SEPARATION REQUIREMENTS:
 - A DISTANCE OF 100' SHALL BE MAINTAINED BETWEEN SANITARY SEWER & ANY PRIVATE OR PUBLIC WATER SUPPLY SOURCE SUCH AS AN IMPOUNDED RESERVOIR USED AS A SOURCE OF DRINKING WATER. IF ADEQUATE LATERAL SEPARATION CANNOT BE ACHIEVED, FERROUS SANITARY SEWER PIPE SHALL BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS. HOWEVER, THE MINIMUM SEPARATION SHALL NOT BE LESS THAN 25' FROM A PRIVATE WELL OR 50' FROM A PUBLIC WELL.
 - WHEN INSTALLING WATER & SEWER MAINS, THE HORIZONTAL SEPARATION BETWEEN UTILITIES SHALL BE 10'. IF THIS SEPARATION CANNOT BE MAINTAINED DUE TO EXISTING CONDITIONS, THE VARIATION ALLOWED IS THE WATER MAIN IN A SEPARATE TRENCH WITH THE ELEVATION OF THE WATER MAIN AT LEAST 18" ABOVE THE TOP OF THE SEWER & MUST BE APPROVED BY THE PUBLIC UTILITIES DIRECTOR. ALL DISTANCES ARE MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER.
 - WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER SEPARATION, OR ANYTIME A SANITARY SEWER PASSES OVER A WATERMAIN, DIP MATERIALS OR STEEL ENCASEMENT EXTENDED 10' ON EACH SIDE OF CROSSING MUST BE SPECIFIED & INSTALLED TO WATERLINE SPECIFICATIONS.
 - 5.0' MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN ALL SANITARY SEWER & STORM DRAIN FACILITIES, UNLESS DIP MATERIAL IS SPECIFIED FOR SANITARY SEWER.
 - MAINTAIN 18" MIN. VERTICAL SEPARATION AT ALL WATERMAIN & RCP STORM DRAIN CROSSINGS. MAINTAIN 24" MIN. VERTICAL SEPARATION AT ALL SANITARY SEWER & RCP STORM DRAIN CROSSINGS. WHERE ADEQUATE SEPARATIONS CANNOT BE ACHIEVED, SPECIFY DIP MATERIALS & A CONCRETE CRADLE HAVING 8" MIN. CLEARANCE (PER CORPUS DETAILS W-41 & S-40).
 - ALL OTHER UNDERGROUND UTILITIES SHALL CROSS WATER & SEWER FACILITIES WITH 18" MIN. VERTICAL SEPARATION REQUIRED.
- ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN &/OR PROFILE BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER & SEWER SERVICE TO EXISTING RESIDENCES & BUSINESSES THROUGHOUT CONSTRUCTION OF PROJECT. ANY NECESSARY SERVICE INTERRUPTIONS SHALL BE PRECEDED BY A 24 HOUR ADVANCE NOTICE TO THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT.
- 3.0' MINIMUM COVER IS REQUIRED ON ALL WATER MAINS & SEWER FORCE MAINS. 4.0' MINIMUM COVER IS REQUIRED ON ALL REUSE MAINS.
- IT IS THE DEVELOPER'S RESPONSIBILITY TO ABANDON OR REMOVE EXISTING WATER & SEWER SERVICES NOT BEING USED IN REDEVELOPMENT OF A SITE UNLESS OTHERWISE DIRECTED BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. THIS INCLUDES ABANDONING TAP AT MAIN & REMOVAL OF SERVICE FROM ROW OR EASEMENT PER CORPUS HANDBOOK PROCEDURE.
- INSTALL 3/4" COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2' X 2' WATERLINE ENCASEMENT IMMEDIATELY ADJACENT. NOTE: IT IS THE APPLICANT'S RESPONSIBILITY TO PROPERLY SIZE THE WATER SERVICE FOR EACH CONNECTION TO PROVIDE ADEQUATE FLOW & PRESSURE.
- INSTALL 4" PVC SEWER SERVICES @ 1.0% MINIMUM GRADE WITH CLEANOUTS LOCATED AT ROW OR EASEMENT LINE & SPACED EVERY 75 LINEAR FEET MAXIMUM.
- PRESSURE REDUCING VALVES ARE REQUIRED ON ALL WATER SERVICES EXCEEDING 80 PSI. BACKWATER VALVES ARE REQUIRED ON ALL SANITARY SEWER SERVICES HAVING BUILDING DRAINS LOWER THAN 1.0' ABOVE THE NEXT UPSTREAM MANHOLE.
- ALL ENVIRONMENTAL PERMITS APPLICABLE TO THE PROJECT MUST BE OBTAINED FROM NCDD, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
- NCDDOT / RAILROAD ENCROACHMENT AGREEMENTS ARE REQUIRED FOR ANY UTILITY WORK (INCLUDING MAIN EXTENSIONS & SERVICE TAPS) WITHIN STATE OR RAILROAD ROW PRIOR TO CONSTRUCTION.
- GREASE INTERCEPTOR / OIL WATER SEPARATOR SIZING CALCULATIONS & INSTALLATION SPECIFICATIONS SHALL BE APPROVED BY THE CORPUS FOS PROGRAM COORDINATOR PRIOR TO ISSUANCE OF A BUILDING PERMIT. CONTACT TIM BEASLEY AT (919) 996-2334 OR TIMOTHY.BEASLEY@RALEIGHNC.GOV FOR MORE INFORMATION.
- CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX 8 OF THE RULES GOVERNING PUBLIC WATER SYSTEMS IN NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA LIST. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT. CONTACT JOANIE HARTLEY AT (919) 996-5923 OR JOANIE.HARTLEY@RALEIGHNC.GOV FOR MORE INFORMATION.

PUBLIC SEWER COLLECTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC SEWER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # 5-4567
AUTHORIZATION TO CONSTRUCT [Signature]
DATE 9/17/19

PUBLIC WATER DISTRIBUTION/EXTENSION SYSTEM

THE CITY OF RALEIGH CONSENTS TO THE CONNECTION AND EXTENSION OF THE CITY'S PUBLIC WATER SYSTEM AS SHOWN ON THIS PLAN. THE MATERIAL AND CONSTRUCTION METHODS USED FOR THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY'S PUBLIC UTILITIES HANDBOOK.

CITY OF RALEIGH
PUBLIC UTILITIES DEPARTMENT PERMIT # W-3642
AUTHORIZATION TO CONSTRUCT [Signature]
DATE 9/17/19

ATTENTION CONTRACTORS

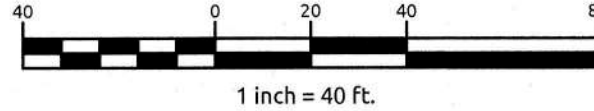
THE CONSTRUCTION CONTRACTOR RESPONSIBLE FOR THE EXTENSION OF WATER AND SEWER, AS APPROVED IN THESE PLANS, IS RESPONSIBLE FOR CONTACTING THE PUBLIC UTILITIES DEPARTMENT AT (919) 996-4540 AT LEAST 24 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.

FAILURE TO NOTIFY BOTH CITY DEPARTMENTS IN ADVANCE OF BEGINNING CONSTRUCTION WILL RESULT IN THE ISSUANCE OF MONETARY FINES AND REQUIRE REINSTALLATION OF ANY WATER OR SEWER FACILITIES NOT INSPECTED AS A RESULT OF THIS NOTIFICATION FAILURE.

FAILURE TO CALL FOR INSPECTION, INSTALL A DOWNSTREAM PLUG, HAVE PERMITTED PLANS ON THE JOB SITE, OR ANY OTHER VIOLATION OF CITY OF RALEIGH STANDARDS WILL RESULT IN A FINE AND POSSIBLE EXCLUSION FROM FUTURE WORK IN THE CITY OF RALEIGH.



GRAPHIC SCALE



KNOW WHAT'S BELOW.
CALL BEFORE YOU
DIG.

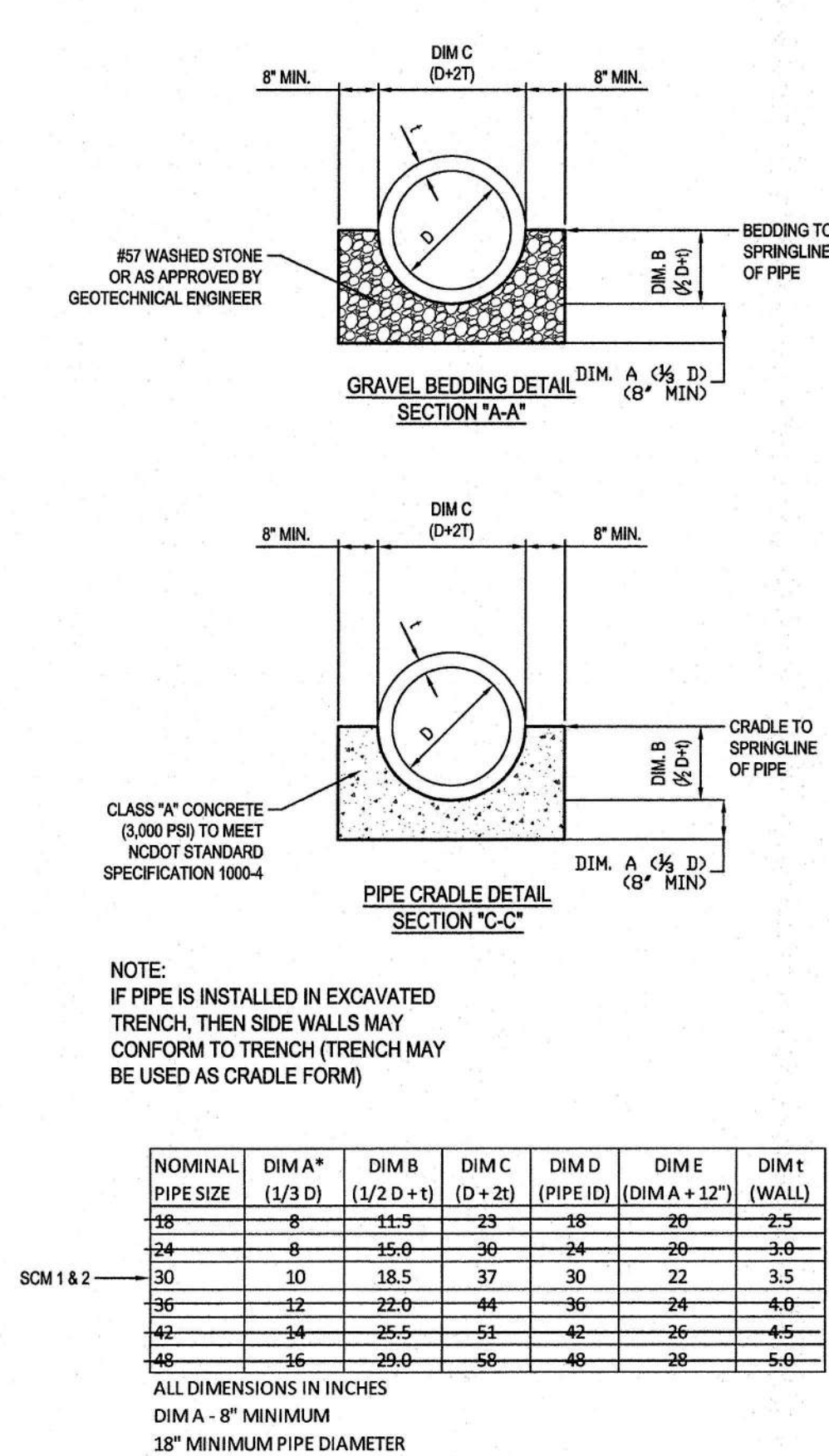
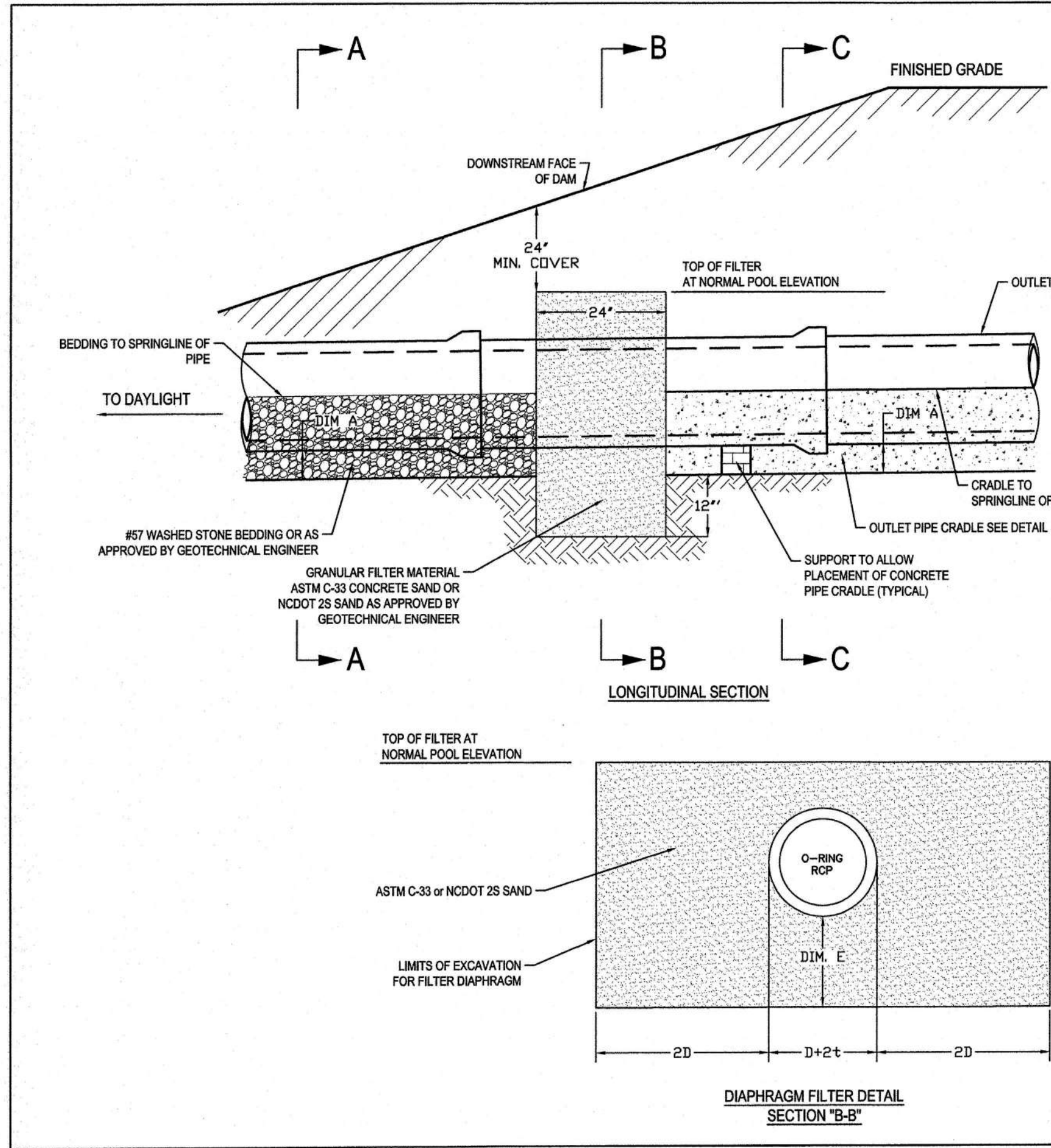
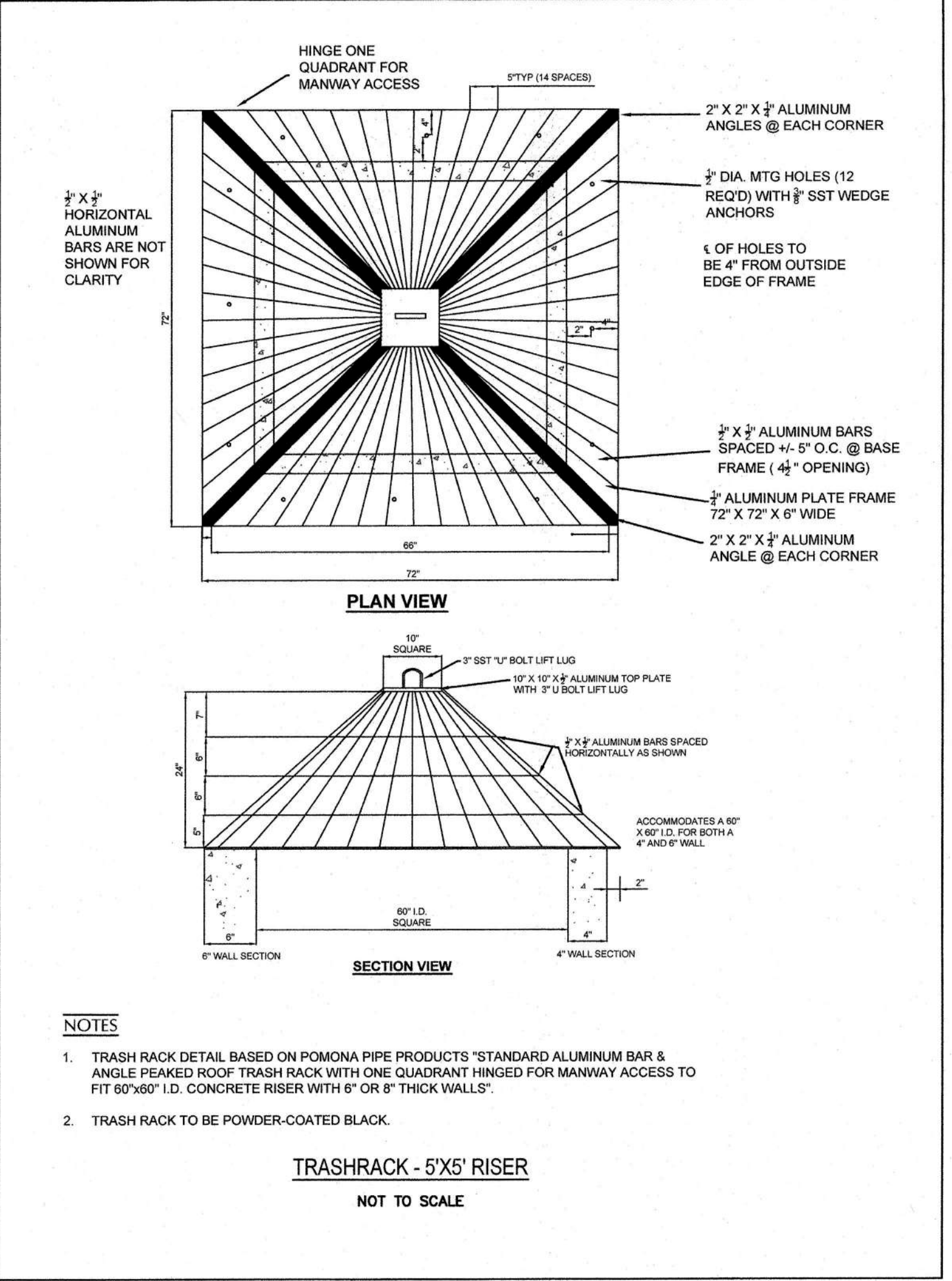
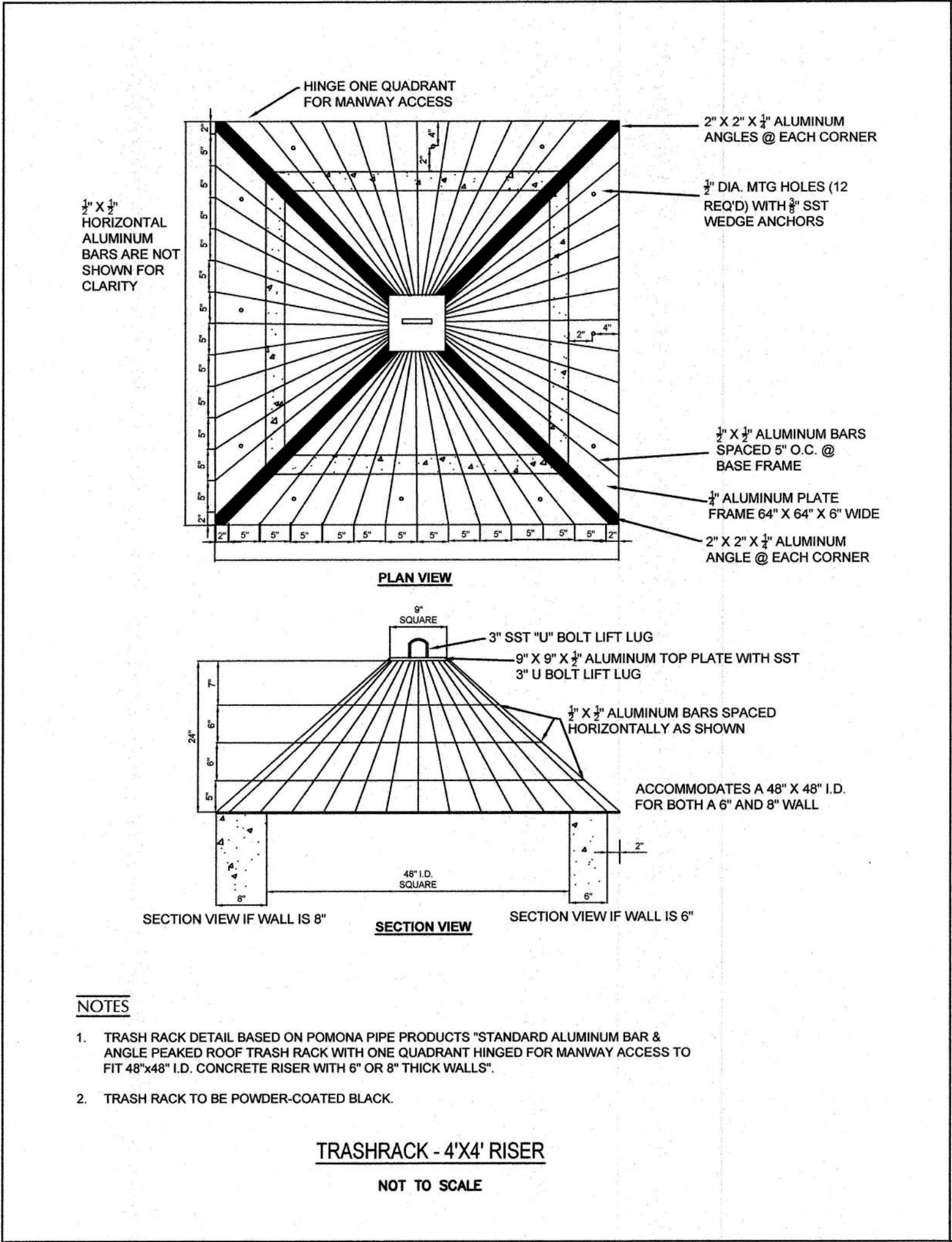
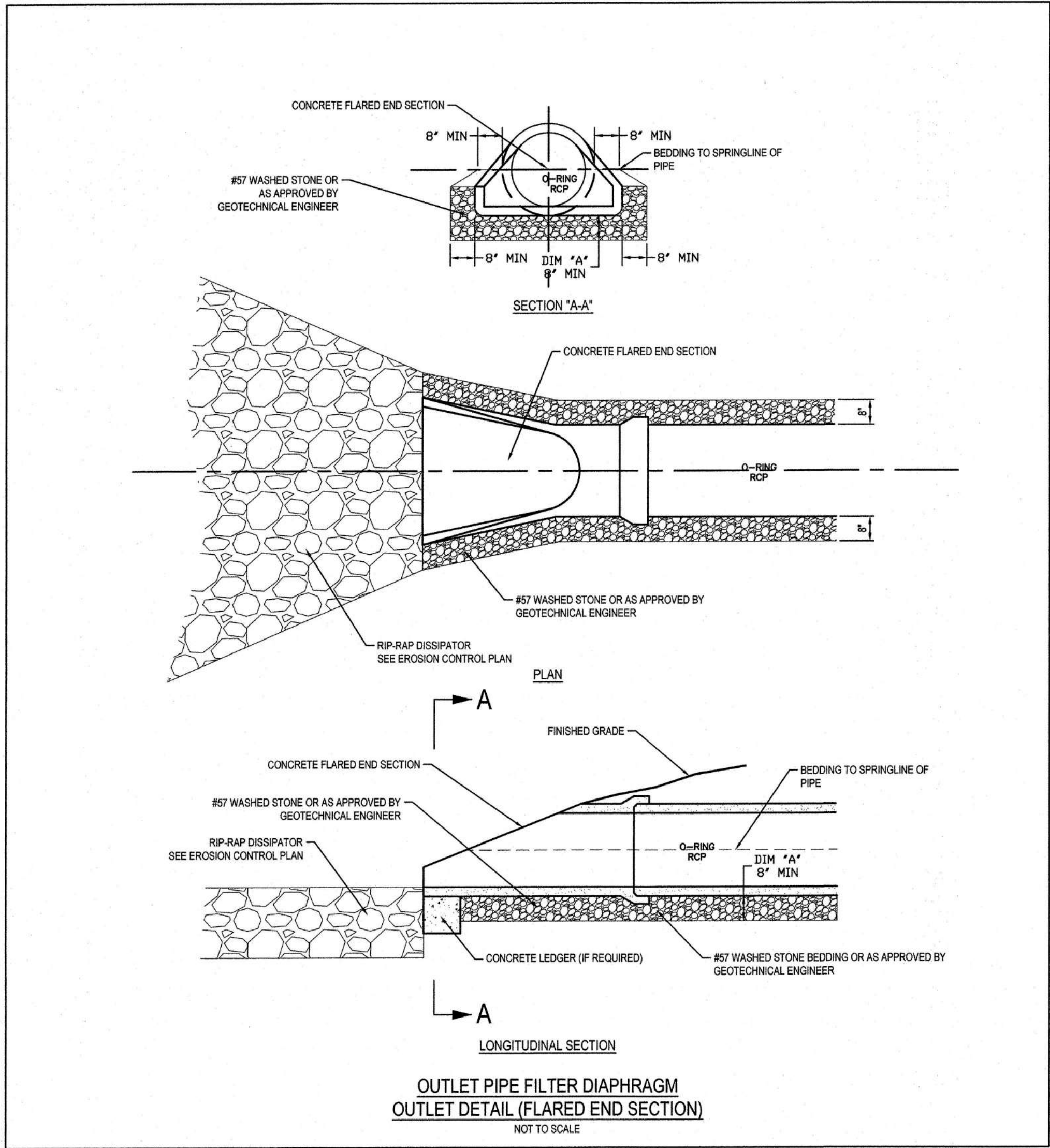
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: [Signature] DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: [Signature] DATE: 9/9/19
ADMINISTRATOR

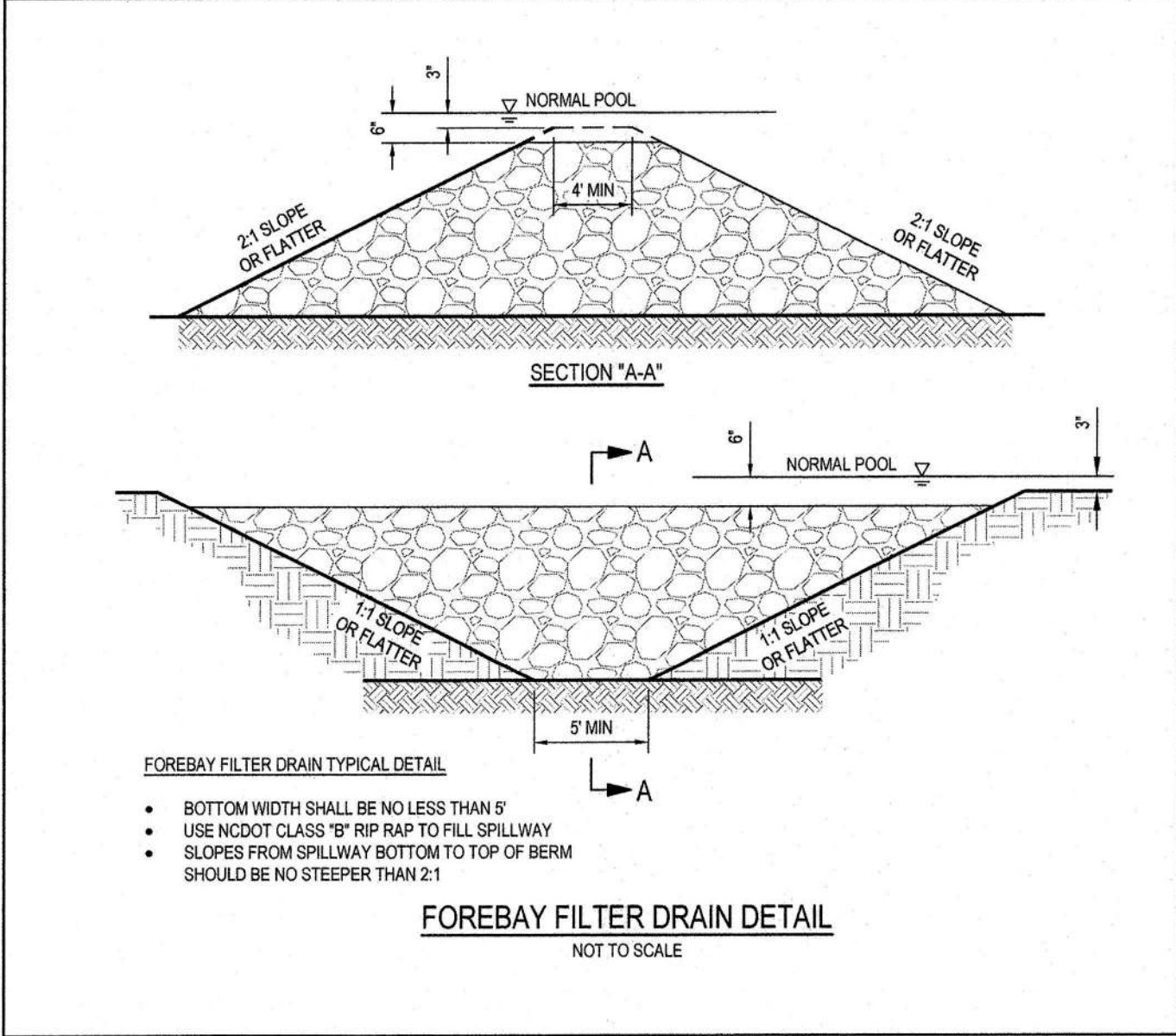
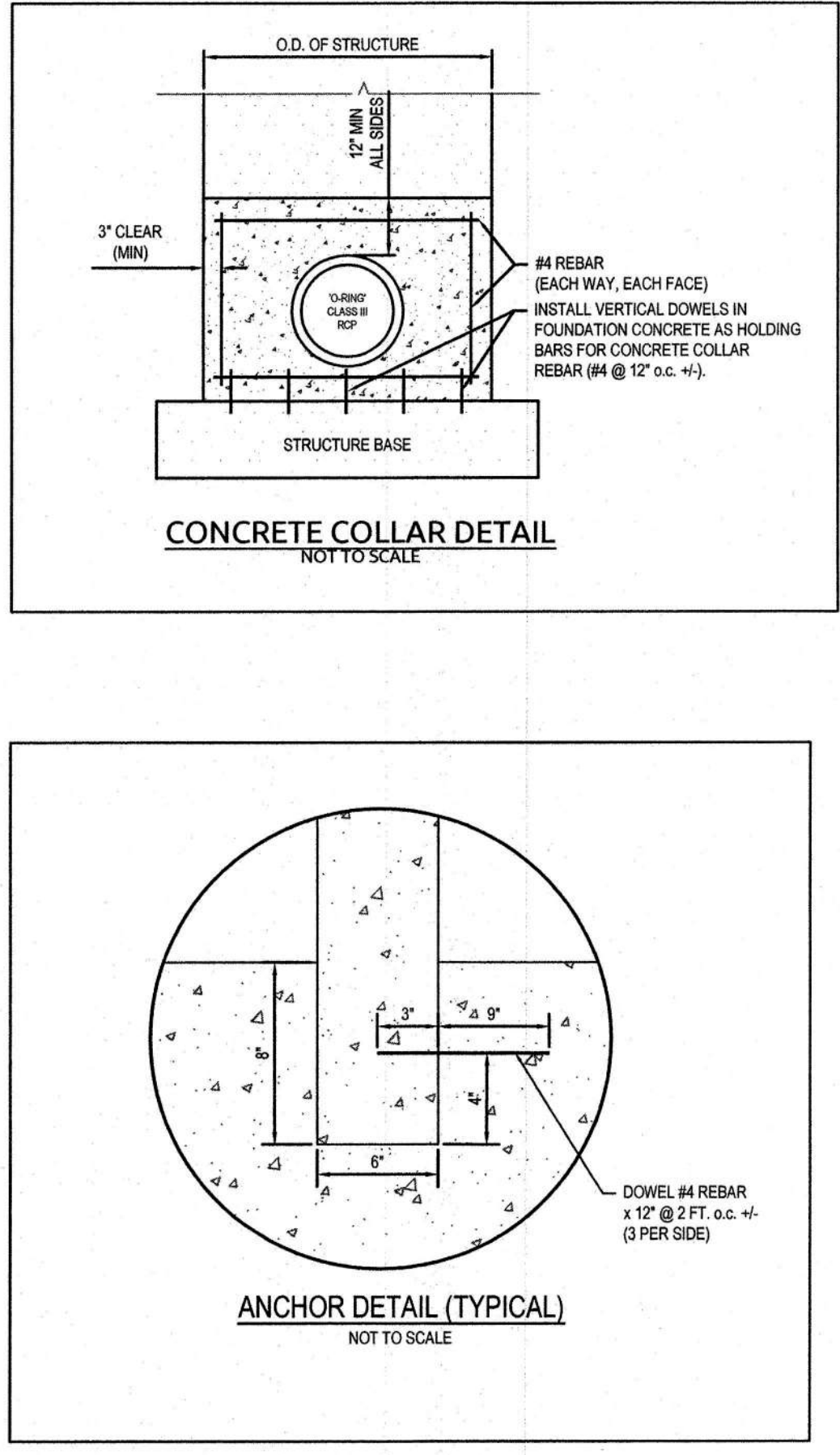




NOTE:
IF PIPE IS INSTALLED IN EXCAVATED TRENCH, THEN SIDE WALLS MAY CONFORM TO TRENCH (TRENCH MAY BE USED AS CRADLE FORM)

| NOMINAL PIPE SIZE | DIM A* (1/3 D) | DIM B (1/2 D + t) | DIM C (D + 2t) | DIM D (PIPE ID) | DIM E (DIMA + 12") | DIM t (WALL) |
|-------------------|----------------|-------------------|----------------|-----------------|--------------------|--------------|
| 18 | 8 | 11.5 | 23 | 18 | 20 | 2.5 |
| 24 | 8 | 15.0 | 30 | 24 | 20 | 3.0 |
| 30 | 10 | 18.5 | 37 | 30 | 22 | 3.5 |
| 36 | 12 | 22.0 | 44 | 36 | 24 | 4.0 |
| 42 | 14 | 25.5 | 51 | 42 | 26 | 4.5 |
| 48 | 16 | 29.0 | 58 | 48 | 28 | 5.0 |

ALL DIMENSIONS IN INCHES
DIMA - 8" MINIMUM
18" MINIMUM PIPE DIAMETER



TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 9/9/19
ADMINISTRATOR

WithersRavenel
Engineers | Planners | Surveyors

**KNIGHTDALE ATHLETIC PARK
PHASE I**

KNIGHTDALE, NORTH CAROLINA

**STORMWATER CONTROL
DETAILS**

Job No. 02180875 Drawn By WR
Date 08/07/19 Designer WR

811
KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 9/9/19
ADMINISTRATOR

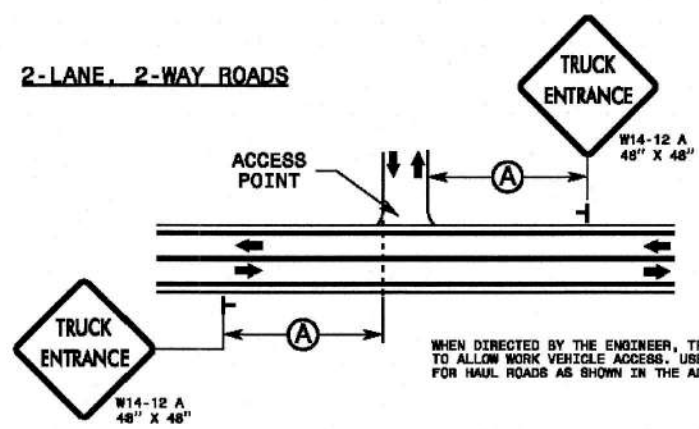
Revisions
1 ADDENDUM 1 08/20/19

Sheet No.
C6.2

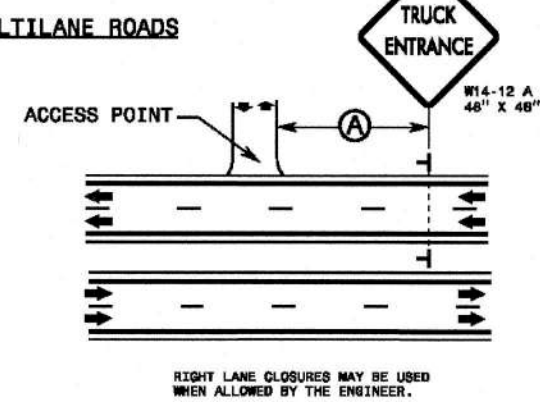


ROADSIDE ACCESS POINT

2-LANE, 2-WAY ROADS

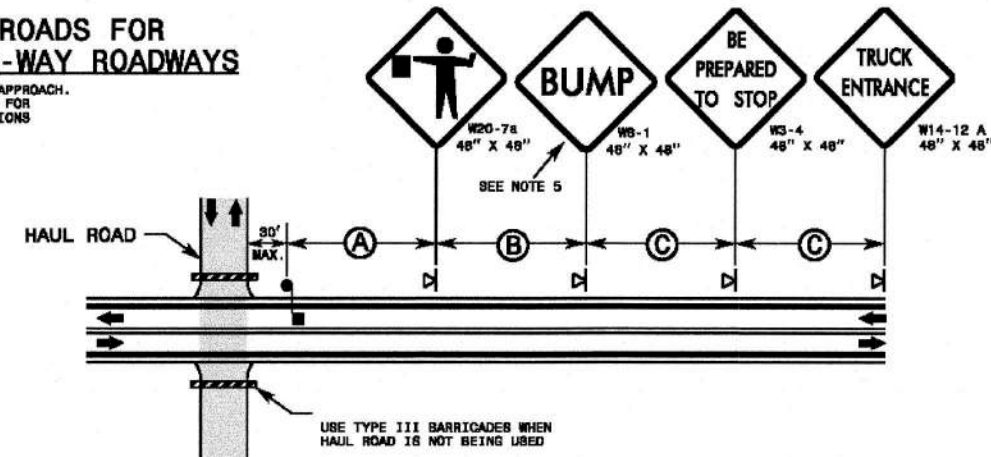


MULTILANE ROADS



HAUL ROADS FOR 2-LANE, 2-WAY ROADWAYS

SHOWN SHOWN FOR ONE APPROACH. SAME SIGNING APPLIED TO BOTH APPROACH DIRECTIONS



GENERAL NOTES

1. MOUNT SIGNS ON BOTH LEFT AND RIGHT SIDES ON DIVIDED ROADWAYS. SIGNS ARE REQUIRED ONLY ON THE RIGHT SIDE OF THE ROADWAY FOR UNDIVIDED ROADWAYS.
2. PROVIDE MINIMUM STOPPING SIGHT DISTANCE FOR EACH FLAGGER LOCATION.
3. REFER TO RSD, 1101.11, SHEETS 2 & 4, FOR STOPPING SIGHT DISTANCE AND SIGN SPACING.
4. UPON COMPLETION OF EACH HAULING OPERATION, REPAIR, SWEEP, AND RESTORE THE ROADWAY TO BE SAFELY TRAVELABLE AT NORMAL OPERATING SPEEDS.
5. "BUMP" SIGNS (W14-12 A) ARE REQUIRED ONLY IF A BUMP OVER THE ROADWAY EXISTS AS A RESULT OF IMPLEMENTING THE HAUL ROAD. USE FLAGGERS AT ALL TIMES TO STOP TRAFFIC WHEN BUMPS ARE LOCATED ACROSS THE ROADWAY. CONSTRUCT BUMPS TO PROVIDE A SMOOTH TRANSITION FOR TRAFFIC CROSSING THEM. REMOVE BUMPS PRIOR TO ALLOWING TRAFFIC TO RESUME NORMAL OPERATING SPEEDS.
6. WHEN NOT SPECIFIED IN THE PLANS OR BY THE ENGINEER, PAYMENT FOR CONVENIENCE WILL NOT BE MADE FOR FLAGGERS.

LEGEND

- STATIONARY SIGN
- PORTABLE SIGN
- FLAGGER
- DIRECTION OF TRAFFIC FLOW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
WORK ZONE VEHICLE ACCESS
HAUL ROAD ACCESS

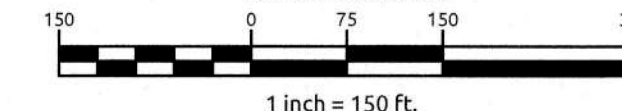
SHEET 1 OF 2
1101.05

GENERAL NOTES:

1. CONTRACTOR TO FOLLOW NCDOT STANDARD DETAIL 1101.05 AND OTHER APPLICABLE DETAILS FOR WORK ZONE SAFETY AND HAUL ROAD ACCESS.
2. CONTRACTOR TO ALLOW FOR 100' OF PAVEMENT REPAIR ALONG FORESTVILLE ROAD. PAVEMENT REPAIR TO BE COMPLETED AFTER HAULING IS COMPLETE.



GRAPHIC SCALE



TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 9-9-2019

DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 2/1/15

ADMINISTRATOR



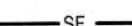
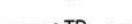
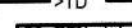



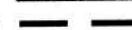



- ## SEEDBED PREPARATION

- ### CONSTRUCTION SEQUENCE

- ### NC GROUND COVER REQUIREMENT

SELF INSPECTION NOTE

| LEGEND | | EROSION CONTROL LEGEND | |
|----------------------|---|------------------------|---|
| EXISTING EASEMENT | --- | TREE PROTECTION FENCE | — TP — |
| WATER LINE | --- W --- | SILT FENCE | — SF — |
| OVERHEAD POWER | — OHE — | DIVERSION SWALE | —> TD — |
| 1' CONTOUR | --- | CONSTRUCTION ENTRANCE |  |
| 5' CONTOUR | --- | CONSTRUCTION LIMIT |  |
| SANITARY SEWER | ⊙ — SS — | SILT FENCE OUTLET |  |
| PROPOSED STORM DRAIN |  | SLOPE DRAIN |  |
| EXISTING STORM DRAIN |  | INLET PROTECTION |  |
| | | CHECK DAM |  |

Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable. (Section 11.B(2)(b))

KNIGHT DALE:
BY: S. A. Hill DATE: 9.9.2
DEVELOPMENT SERVICES ENGINEER

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: C. H. DU DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: 4470 DATE: 9/9/19
ADMINISTRATOR



KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.

| LEGEND | |
|----------------------|-----|
| EXISTING EASEMENT | --- |
| WATER LINE | --- |
| OVERHEAD POWER | --- |
| 1' CONTOUR | --- |
| 5' CONTOUR | --- |
| SANITARY SEWER | --- |
| PROPOSED STORM DRAIN | --- |
| EXISTING STORM DRAIN | --- |

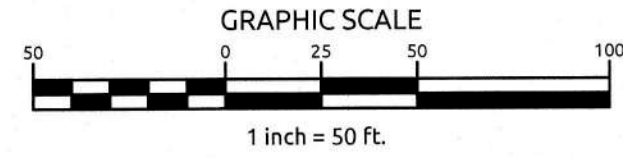
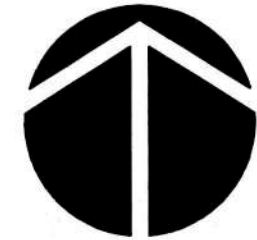
| EROSION CONTROL LEGEND | |
|------------------------|-----|
| TREE PROTECTION FENCE | --- |
| SILT FENCE | --- |
| DIVERSION SWALE | --- |
| CONSTRUCTION ENTRANCE | --- |
| CONSTRUCTION LIMIT | --- |
| SILT FENCE OUTLET | --- |
| SLOPE DRAIN | --- |
| INLET PROTECTION | --- |
| CHECK DAM | --- |
| DIVERSION BERM | --- |

| GROUND STABILIZATION | | |
|--|---------------|---|
| SITE AREA | STABILIZATION | STABILIZATION TIME |
| DESCRIPTION | TIME FRAME | FRAME EXCEPTIONS |
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES | 7 DAYS | NONE |
| HIGH QUALITY WATER (H2O) ZONES | 7 DAYS | NONE |
| SLOPES STEEPER THAN 3:1 | 7 DAYS | IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED |
| SLOPES FLATTER THAN 3:1 | 14 DAYS | 7 DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH |
| ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1 | 14 DAYS | NONE (EXCEPT FOR PERIMETERS AND H2O ZONES) |

Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable. (Section 11.8(2)(b))

BASIN REMOVAL SEQUENCE

- SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL ENGINEER/CONSULTANT TO DETERMINE IF BASIN #2 THRU #6 CAN BE REMOVED. INSTALL SILT FENCING, SILT BAG OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASINS.
 - REMOVE BASINS AND ASSOCIATED TEMPORARY DIVERSION DITCHES. FINE GRADE AREA IN PREPARATION FOR SEEDING.
 - PERFORM SEEDED PREPARATION, SEED, MULCH AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
 - WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL ENGINEER/CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVICE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.
- NOTE: A MEETING SHOULD ALSO BE SCHEDULED WITH THE ENVIRONMENTAL ENGINEER/CONSULTANT TO DETERMINE WHEN BASIN #1 MAY BE CONVERTED FOR STORMWATER USE.



EROSION CONTROL NOTES:

- THE SITE SHALL BE STABILIZED AND SEEDED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUSLY, RELOCATED WHEN AND AS NECESSARY, AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, RESEEDED, AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
- ALL AREAS SHALL BE GRADED FOR POSITIVE DRAINAGE, AND AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION. IN ADDITION TO THE MEASURES SHOWN IN THESE PLANS, THE CONTRACTOR SHALL USE INTERIM SILT FENCES, DIVERSION DITCHES, BERMS, OR OTHER METHODS AS REQUIRED TO DIRECT DRAINAGE AS SHOWN ON THESE PLANS AND TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM FLOWING ONTO ADJACENT PROPERTIES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL EROSION, CONSERVATION, AND SILTATION ORDINANCES. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES AND THE ESTABLISHMENT OF A STAND OF GRASS OR OTHER GROWTH TO PREVENT EROSION.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHOWN ON PLANS IS BASED ON BEST AVAILABLE INFORMATION BUT CAN BE CONSIDERED ONLY AS APPROXIMATE.
- PERMANENT GROUND COVER SHALL BE ESTABLISHED EITHER IN 15 WORKING DAYS OR 90 CALENDAR DAYS, WHICHEVER IS SHORTER.
- TOPSOIL SHALL BE WASTED ON AREA SHOWN.
- ALL STREETS ADJACENT TO THE PROJECT SHALL BE KEPT CLEAN AT ALL TIMES OR A WASH STATION WILL BE REQUIRED.
- NO FLOOD PLAINS EXIST ON THIS PLAN.
- THE CONTRACTOR SHALL REMOVE ANY SEDIMENT THAT IS DEPOSITED OUTSIDE THE LIMIT OF CONSTRUCTION.
- RAIN GAUGE WILL BE INSTALLED ON SITE & COPIES OF PLAN APPROVED BY NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCEQ), ANY 401/404 DOCUMENTATION IS A MINIMUM OF THE PAST 30 DAYS OF SELF-INSPECTION REPORTS WILL BE KEPT ON SITE UNTIL ON SITE UNTIL PROJECT IS CLOSED OUT BY NCEQ.
- ANY BARE SOILS BETWEEN OUTLET AND PERIMETER CONTROLS AND/OR BETWEEN DIVERSIONS AND PERIMETER CONTROLS NEED TO BE SEEDED AND MULCHED.

SEEDBED PREPARATION

- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL THREE INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
 - RIP THE ENTIRE AREA TO SIX INCHES DEEP.
 - REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS, LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
 - APPLY AGRICULTURAL LIME, FERTILIZER AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE MIXTURE BELOW).
 - CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDED IS PREPARED FOUR TO SIX INCHES DEEP.
 - SEED ON A FRESHLY PREPARED SEEDED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
 - MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
 - INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE MORE THAN 60% DAMAGED, RE-ESTABLISH FOLLOWING THE ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
 - CONSULT S&C ENVIRONMENTAL ENGINEERS ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.
- NOTE: ALL E&S MEASURES MUST BE MAINTAINED UNTIL ALL UPGRADE DRAINAGE AREAS HAVE BEEN STABILIZED WITH PERMANENT VEGETATION.

CONSTRUCTION SEQUENCE

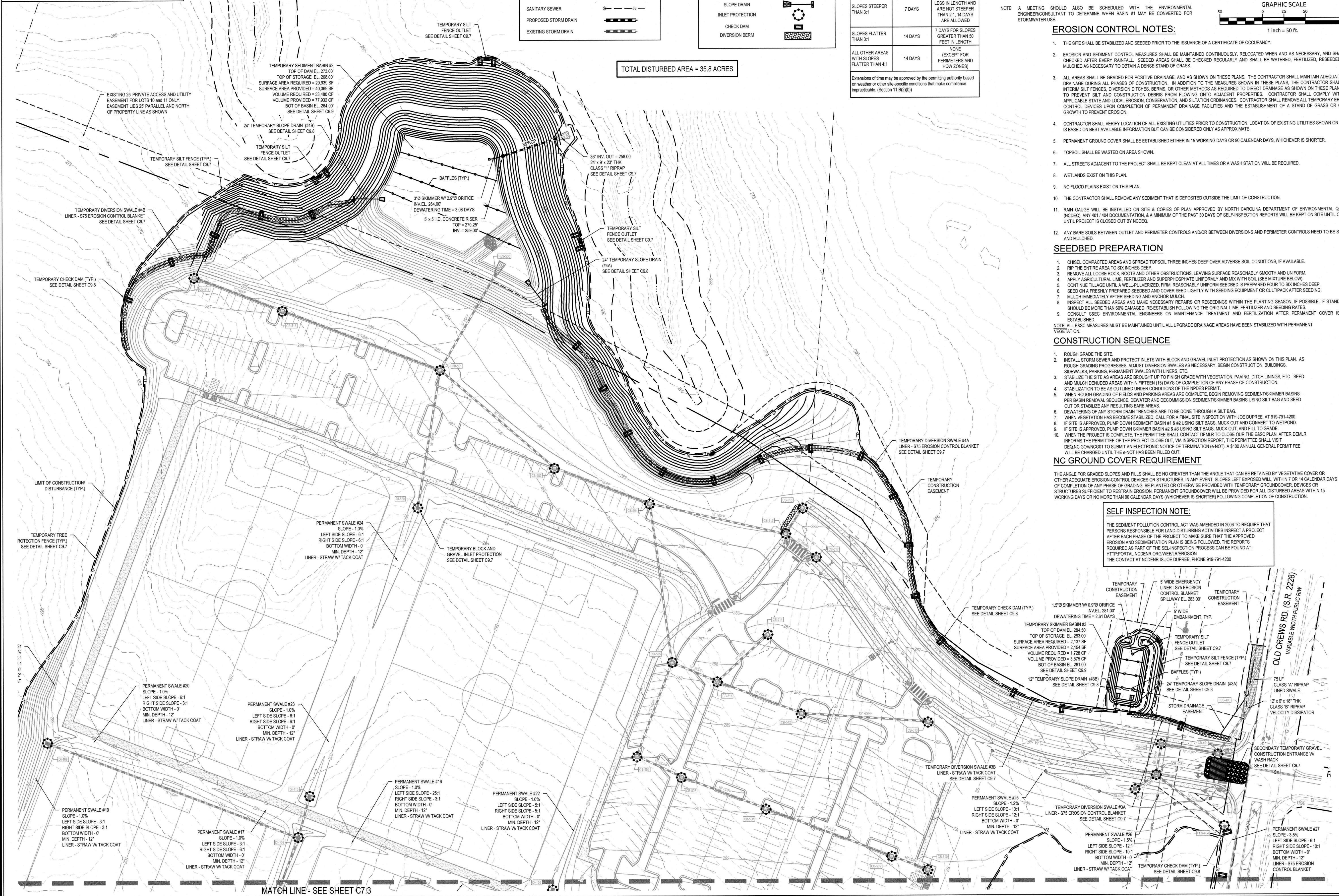
- ROUGH GRADE THE SITE.
- INSTALL STORM SEWER AND PROTECT INLETS WITH BLOCK AND GRAVEL. INLET PROTECTION AS SHOWN ON THIS PLAN. AS ROUGH GRADING PROGRESSES, ADJUST DIVERSION SWALES AS NECESSARY. BEGIN CONSTRUCTION, BUILDINGS, SIDEWALKS, PARKING, PERMANENT SWALES WITH LINERS, ETC.
- STABILIZE THE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENuded AREAS WITHIN FIFTEEN (15) DAYS OF COMPLETION OF ANY PHASE OF CONSTRUCTION.
- STABILIZATION TO BE AS OUTLINED UNDER CONDITIONS OF THE NPDES PERMIT.
- WHEN ROUGH GRADING OF FIELDS AND PARKING AREAS ARE COMPLETE, BEGIN REMOVING SEDIMENT/SKIMMER BASINS PER BASIN REMOVAL SEQUENCE. DEWATER AND DECOMMISSION SEDIMENT/SKIMMER BASINS USING SILT BAGS AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS.
- DEWATERING OF ANY STORM DRAIN TRENCHES ARE TO BE DONE THROUGH A SILT BAG.
- WHEN VEGETATION HAS BECOME STABILIZED, CALL FOR A FINAL SITE INSPECTION WITH JOE DUREE, AT 919-791-4200.
- IF SITE IS APPROVED, PUMP DOWN SEDIMENT BASIN #1 & #2 USING SILT BAGS, MUCK OUT AND CONVERT TO WET POND.
- IF SITE IS APPROVED, PUMP DOWN SKIMMER BASIN #2 & #3 USING SILT BAGS, MUCK OUT, AND FILL TO GRADE.
- WHEN THE PROJECT IS COMPLETE, THE PERMITTEE SHALL CONTACT DEMUL TO CLOSE OUR THE E&S PLAN. AFTER DEMUL INFORMS THE PERMITTEE OF THE PROJECT CLOSE OUT, VIA INSPECTION REPORT, THE PERMITTEE SHALL VISIT DEMUL DOWNSTREAM TO SUBMIT AN ELECTRONIC NOTICE OF TERMINATION (e-NOT). A \$100 ANNUAL GENERAL PERMIT FEE WILL BE CHARGED UNTIL THE e-NOT HAS BEEN FILLED OUT.

NC GROUND COVER REQUIREMENT

THE ANGLE FOR GRADED SLOPES AND FILLS SHALL BE NO GREATER THAN THE ANGLE THAT CAN BE RETAINED BY VEGETATIVE COVER OR OTHER ADEQUATE EROSION CONTROL DEVICES OR STRUCTURES. IN ANY EVENT, SLOPES LEFT EXPOSED WILL, WITHIN 7 OR 14 CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH TEMPORARY GROUND COVER, DEVICES OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION. PERMANENT GROUND COVER WILL BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION.

SELF INSPECTION NOTE:

THE SEDIMENT POLLUTION CONTROL ACT WAS AMENDED IN 2006 TO REQUIRE THAT PERSONS RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES INSPECT A PROJECT AFTER EACH PHASE OF THE PROJECT TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION PLAN IS BEING FOLLOWED. THE REPORTS REQUIRED AS PART OF THE SELF-INSPECTION PROCESS CAN BE FOUND AT: [HTTP://PORTAL.NCDENR.ORG/WEB/NCDENR/EROSION](http://portal.ncdenr.org/web/ncdenr/erosion)
THE CONTACT AT NCDENR IS JOE DUREE, PHONE 919-791-4200



MATCH LINE - SEE SHEET C7.3

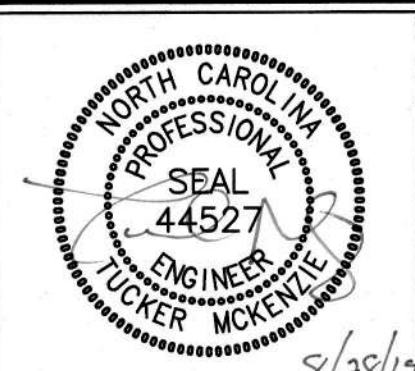
WithersRavenel
Engineers | Planners | Surveyors

**WAKE STONE ATHLETIC
COMPLEX**

KNIGHTDALE, NORTH CAROLINA

**STAGE 2 EROSION
CONTROL PLAN**

Job No. 02180875 Drawn By VWR
Date 08/28/19 Designer VWR



Revisions
1 ADDENDUM 1 08/20/19

Sheet No.

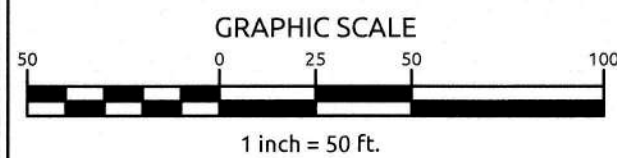
C7.2

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: SALU DATE: 7-7-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: 9/19/19 DATE: 9/19/19
ADMINISTRATOR



LEGEND

| | |
|----------------------|-----|
| EXISTING EASEMENT | --- |
| WATER LINE | --- |
| OVERHEAD POWER | --- |
| 1' CONTOUR | --- |
| 5' CONTOUR | --- |
| SANITARY SEWER | --- |
| PROPOSED STORM DRAIN | --- |
| EXISTING STORM DRAIN | --- |

EROSION CONTROL LEGEND

| | |
|-----------------------|-----|
| TREE PROTECTION FENCE | TP |
| SILT FENCE | SF |
| DIVERSION SWALE | >TD |
| CONSTRUCTION ENTRANCE | --- |
| CONSTRUCTION LIMIT | --- |
| SILT FENCE OUTLET | --- |
| SLOPE DRAIN | --- |
| INLET PROTECTION | --- |
| CHECK DAM | --- |

BASIN REMOVAL SEQUENCE

- SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL ENGINEER/CONSULTANT TO DETERMINE IF BASIN #2 THRU #9 CAN BE REMOVED. INSTALL SILT FENCING, SILT BAG OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASINS.
- REMOVE BASINS AND ASSOCIATED TEMPORARY DIVERSION DITCHES. FINE GRADE AREA IN PREPARATION FOR SEEDING.
- PERFORM SEEDBED PREPARATION, SEED, MULCH AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
- WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL ENGINEER/CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVISE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION.

NOTE: A MEETING SHOULD ALSO BE SCHEDULED WITH THE ENVIRONMENTAL ENGINEER/CONSULTANT TO DETERMINE WHEN BASIN #1 MAY BE CONVERTED FOR STORMWATER USE.

NC GROUND COVER REQUIREMENT

THE ANGLE FOR GRADED SLOPES AND FILLS SHALL BE NO GREATER THAN THE ANGLE THAT CAN BE RETAINED BY VEGETATIVE COVER OR OTHER ADEQUATE EROSION-CONTROL DEVICES OR STRUCTURES. IN ANY EVENT, SLOPES LEFT EXPOSED WILL, WITHIN 7 OR 14 CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH TEMPORARY GROUND COVER, DEVICES OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION. PERMANENT GROUND COVER WILL BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION.

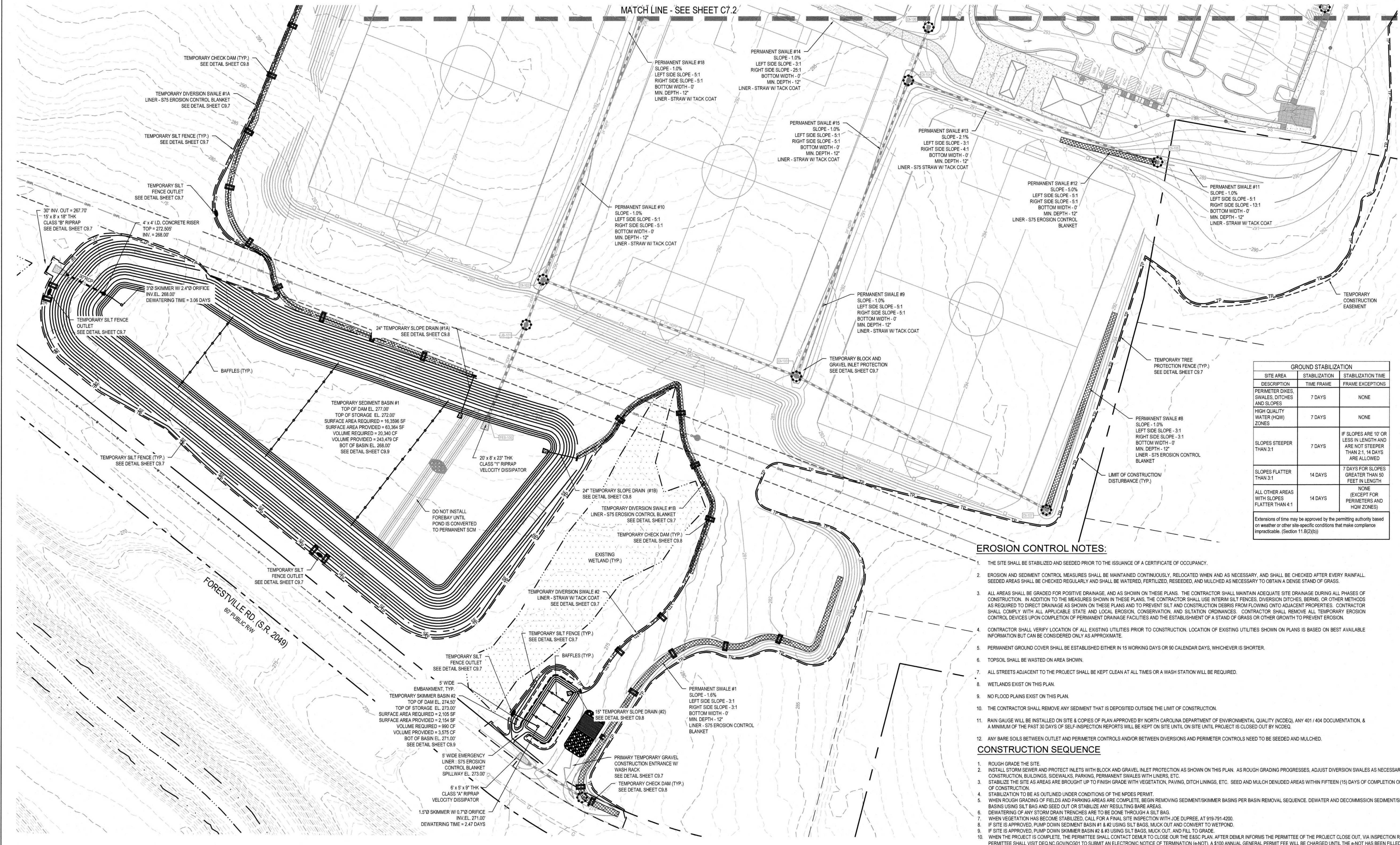
SELF INSPECTION NOTE:

THE SEDIMENT POLLUTION CONTROL ACT WAS AMENDED IN 2006 TO REQUIRE THAT PERSONS RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES INSPECT A PROJECT AFTER EACH PHASE OF THE PROJECT TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION PLAN IS BEING FOLLOWED. THE REPORTS REQUIRED AS PART OF THE SELF-INSPECTION PROCESS CAN BE FOUND AT: [HTTP://PORTAL.NCDENR.ORG/WEB/NCDENR](http://portal.ncdenr.org/web/ncdenr). THE CONTACT AT NCDENR IS JOE DUPREE, PHONE 919-791-4200.

SEEDBED PREPARATION

- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL THREE INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
 - RIP THE ENTIRE AREA TO SIX INCHES DEEP.
 - REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS, LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
 - APPLY AGRICULTURAL LIME, FERTILIZER AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE MATURE BELOW).
 - CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED FOUR TO SIX INCHES DEEP.
 - SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
 - MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
 - INSPECT ALL SEEDBED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE MORE THAN 80% DAMAGED, RE-ESTABLISH FOLLOWING THE ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
 - CONSULT SAGC ENVIRONMENTAL ENGINEERS ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.
- NOTE: ALL EROSION MEASURES MUST BE MAINTAINED UNTIL ALL UPGRADE DRAINAGE AREAS HAVE BEEN STABILIZED WITH PERMANENT VEGETATION.

TOTAL DISTURBED AREA = 35.8 ACRES



| GROUND STABILIZATION | | |
|--|---------------|---|
| SITE AREA | STABILIZATION | STABILIZATION TIME |
| DESCRIPTION | TIME FRAME | FRAME EXCEPTIONS |
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES | 7 DAYS | NONE |
| HIGH QUALITY WATER (HOW) ZONES | 7 DAYS | NONE |
| SLOPES STEEPER THAN 3:1 | 7 DAYS | IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED |
| SLOPES FLATTER THAN 3:1 | 14 DAYS | 7 DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH |
| ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1 | 14 DAYS | NONE (EXCEPT FOR PERIMETERS AND HOW ZONES) |

Extensions of time may be approved by the permitting authority based on weather or other site-specific conditions that make compliance impracticable. (Section 11.8(2)(b))

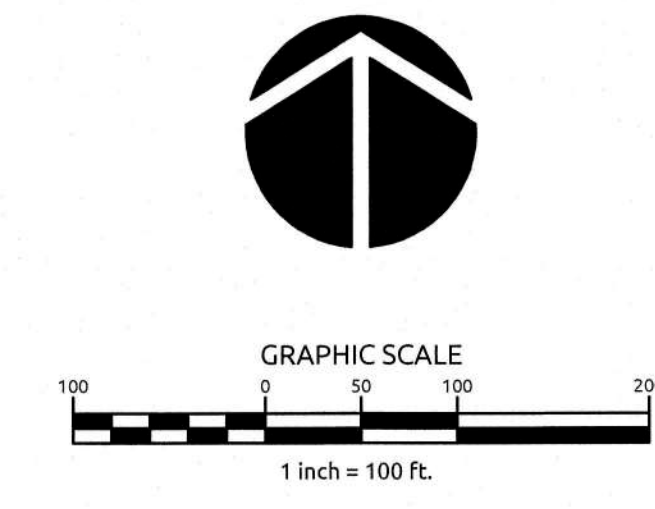
EROSION CONTROL NOTES:

- THE SITE SHALL BE STABILIZED AND SEEDING PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUOUSLY, RELOCATED WHEN AND AS NECESSARY, AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDING AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED, AND MULCHED AS NECESSARY TO OBTAIN A DENSE STAND OF GRASS.
- ALL AREAS SHALL BE GRADED TO POSITIVE DRAINAGE, AND AS SHOWN ON THESE PLANS, THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION. IN ADDITION TO THE MEASURES SHOWN IN THESE PLANS, THE CONTRACTOR SHALL USE INTERIM SILT FENCES, DIVERSION DITCHES, BERMS, OR OTHER METHODS AS REQUIRED TO DIRECT DRAINAGE AS SHOWN ON THESE PLANS AND TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM FLOWING ONTO ADJACENT PROPERTIES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL EROSION, CONSERVATION, AND SILTATION ORDINANCES. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES AND THE ESTABLISHMENT OF A STAND OF GRASS OR OTHER GROWTH TO PREVENT EROSION.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHOWN ON PLANS IS BASED ON BEST AVAILABLE INFORMATION BUT CAN BE CONSIDERED ONLY AS APPROXIMATE.
- PERMANENT GROUND COVER SHALL BE ESTABLISHED EITHER IN 15 WORKING DAYS OR 90 CALENDAR DAYS, WHICHEVER IS SHORTER.
- TOPSOIL SHALL BE WASTED ON AREA SHOWN.
- ALL STREETS ADJACENT TO THE PROJECT SHALL BE KEPT CLEAN AT ALL TIMES OR A WASH STATION WILL BE REQUIRED.
- WETLANDS EXIST ON THIS PLAN.
- NO FLOOD PLAINS EXIST ON THIS PLAN.
- THE CONTRACTOR SHALL REMOVE ANY SEDIMENT THAT IS DEPOSITED OUTSIDE THE LIMIT OF CONSTRUCTION.
- RAIN GAUGE WILL BE INSTALLED ON SITE & COPIES OF PLAN APPROVED BY NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ), ANY 401/404 DOCUMENTATION, & A MINIMUM OF THE PAST 30 DAYS OF SELF-INSPECTION REPORTS WILL BE KEPT ON SITE UNTIL PROJECT IS CLOSED OUT BY NCDEQ.
- ANY BARE SOILS BETWEEN OUTLET AND PERIMETER CONTROLS AND/OR BETWEEN DIVERSIONS AND PERIMETER CONTROLS NEED TO BE SEEDING AND MULCHED.

CONSTRUCTION SEQUENCE

- ROUGH GRADE THE SITE.
- INSTALL STORM SEWER AND PROTECT INLETS WITH BLOCK AND GRAVEL INLET PROTECTION AS SHOWN ON THIS PLAN. AS ROUGH GRADING PROGRESSES, ADJUST DIVERSION SWALES AS NECESSARY. BEGIN CONSTRUCTION, BUILDINGS, SIDEWALKS, PARKING, PERMANENT SWALES WITH LINERS, ETC.
- STABILIZE THE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS WITHIN FIFTEEN (15) DAYS OF COMPLETION OF ANY PHASE OF CONSTRUCTION.
- STABILIZATION TO BE AS OUTLINED UNDER CONDITIONS OF THE NPDES PERMIT.
- WHEN ROUGH GRADING OF FIELDS AND PARKING AREAS ARE COMPLETE, BEGIN REMOVING SEDIMENT/SKIMMER BASINS PER BASIN REMOVAL SEQUENCE. DEWATER AND DECOMMISSION SEDIMENT/SKIMMER BASINS USING SILT BAGS AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS.
- DEWATERING OF ANY STORM DRAIN TRENCHES ARE TO BE DONE THROUGH A SILT BAG.
- WHEN VEGETATION HAS BECOME STABILIZED, CALL FOR A FINAL SITE INSPECTION WITH JOE DUPREE, AT 919-791-4200.
- IF SITE IS APPROVED, PUMP DOWN SEDIMENT BASIN #1 & #2 USING SILT BAGS, MUCK OUT AND CONVERT TO WETPOND.
- IF SITE IS APPROVED, PUMP DOWN SKIMMER BASIN #2 & #3 USING SILT BAGS, MUCK OUT AND FILL TO GRADE.
- WHEN THE PROJECT IS COMPLETE, THE PERMITTEE SHALL CONTACT DEMAR TO CLOSE OUR THE EASC PLAN. AFTER DEMAR INFORMS THE PERMITTEE OF THE PROJECT CLOSE OUT, VIA INSPECTION REPORT, THE PERMITTEE SHALL VISIT DEQ.NC.GOV/NG01 TO SUBMIT AN ELECTRONIC NOTICE OF TERMINATION (e-NOT). A \$100 ANNUAL GENERAL PERMIT FEE WILL BE CHARGED UNTIL THE e-NOT HAS BEEN FILLED OUT.





- GENERAL NOTES:**
1. PORTIONS OF THE PARKING LOTS MAY BE GRAVEL INSTEAD OF PAVED, THE PARKING LOT WILL BE CLASSIFIED AS TEMPORARY IN NATURE IN ACCORDANCE WITH SECTION 10.4, B, 1, b. AND MEET THE APPLICABLE REQUIREMENTS OF THAT SECTION.
 2. APPLICABLE RIGHT OF WAY IMPROVEMENTS WILL BE CONSTRUCTED AS PART OF A LATER PHASE.
 3. PARKING ATTENDANTS WILL BE USED FOR EVENTS TO MINIMIZE THE USE OF THE OUTER PARKING LOTS TWO AND THREE.

NOTE:
SEE SHEET C1.0 FOR LOT ADJOINER INFORMATION.

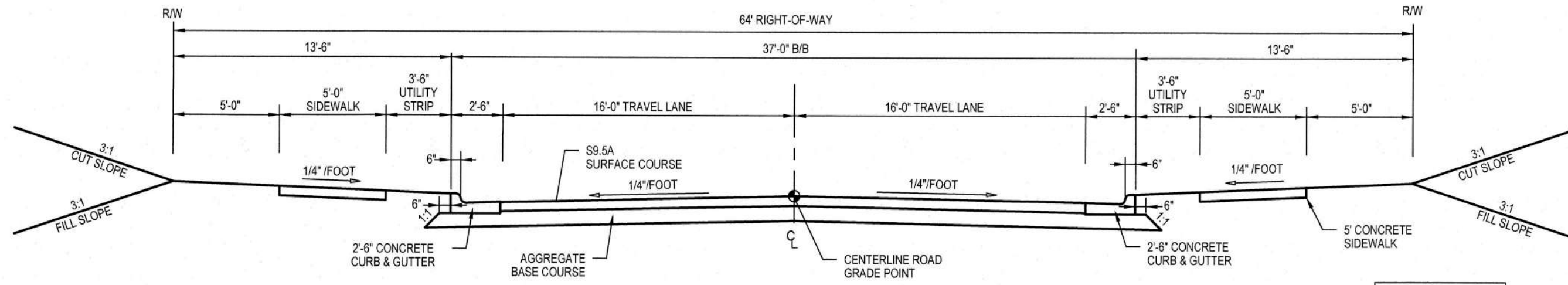


TOWN CERTIFICATION. THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: Scott H. Dell DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

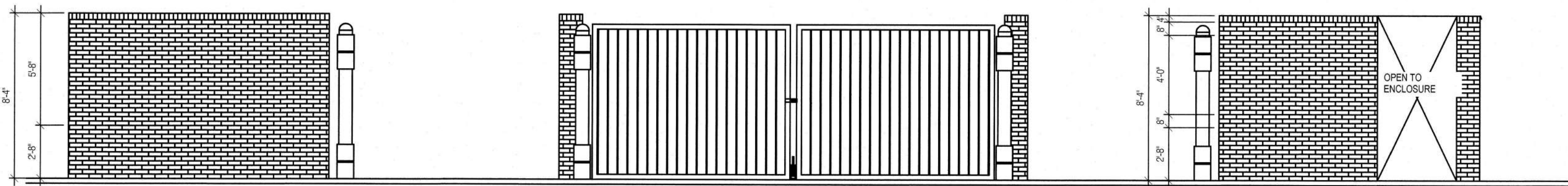
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: C. H. Dell DATE: 9/9/19
ADMINISTRATOR

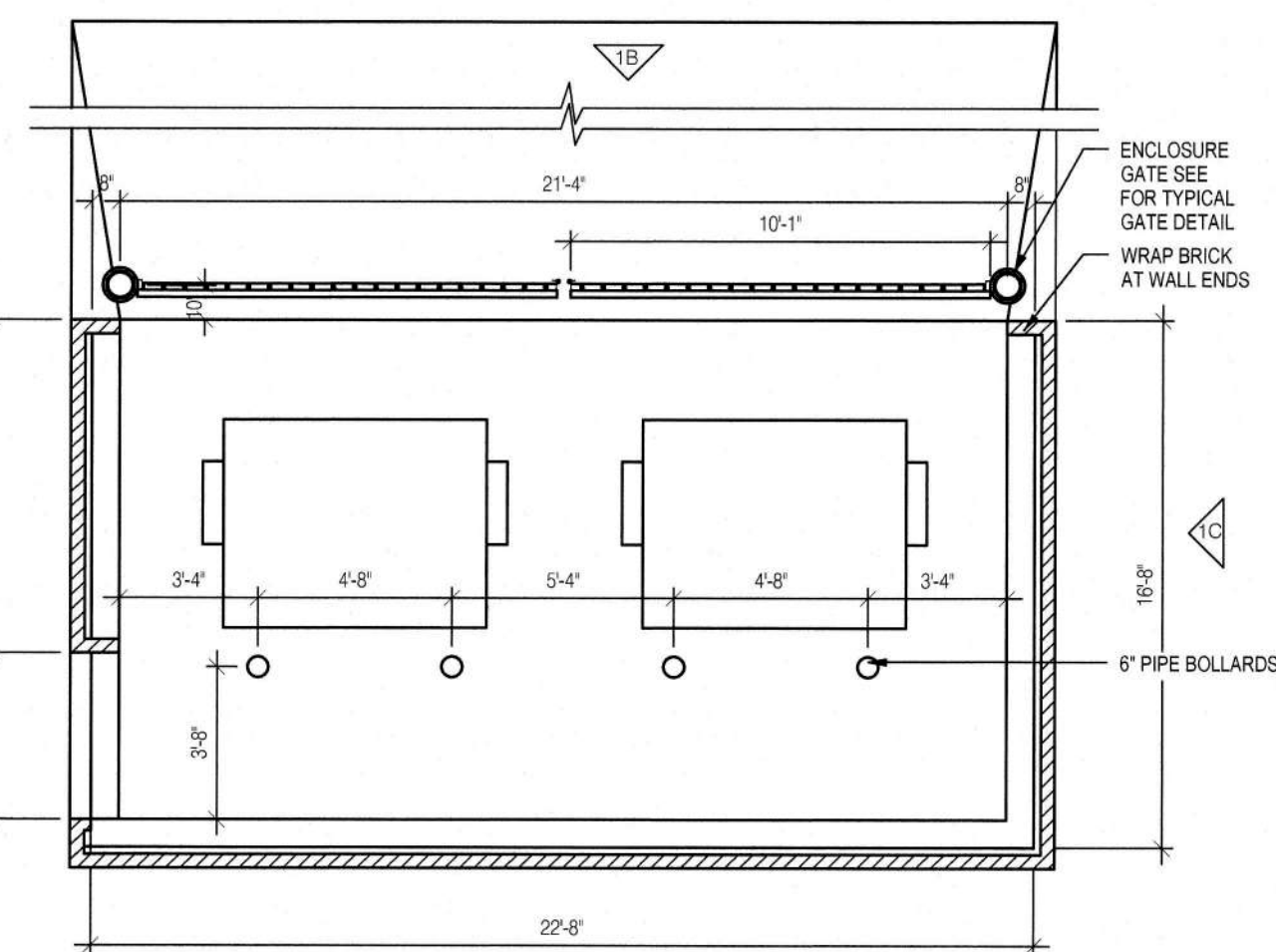
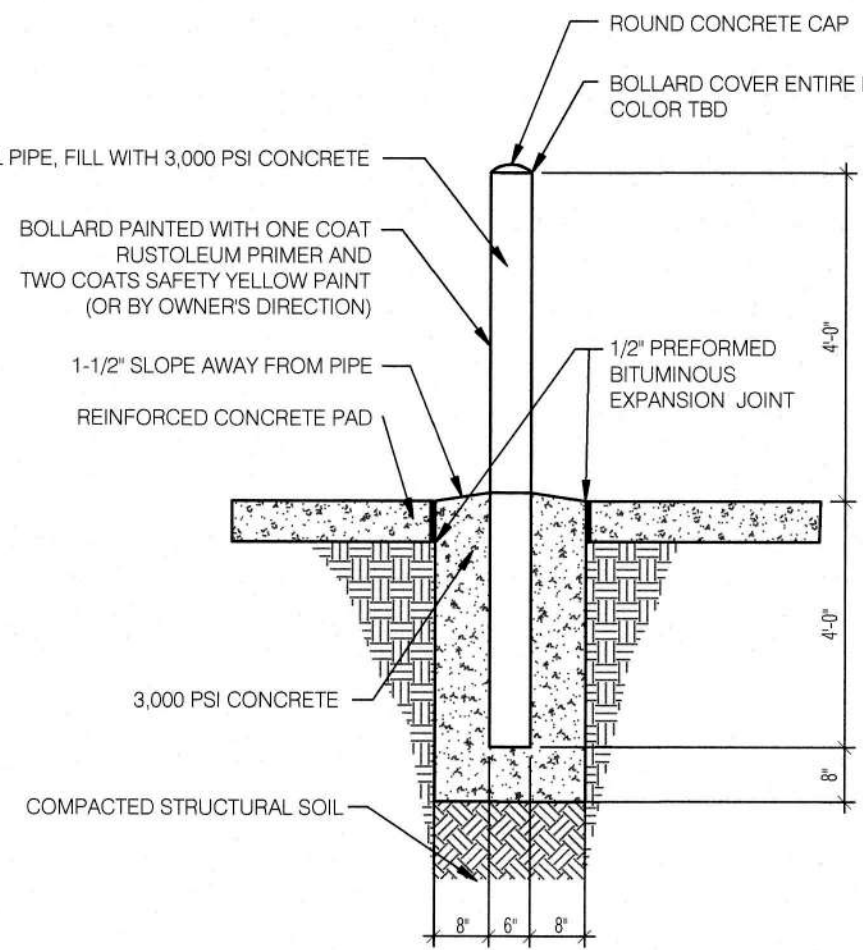
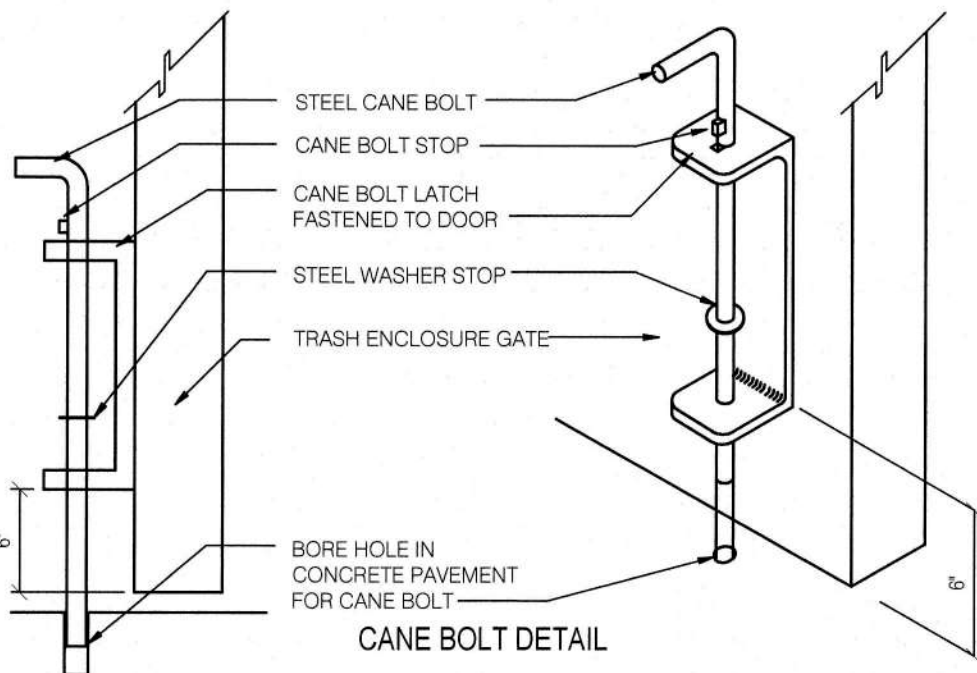


ENTRANCE DRIVE (64' R/W, 37' B/B)

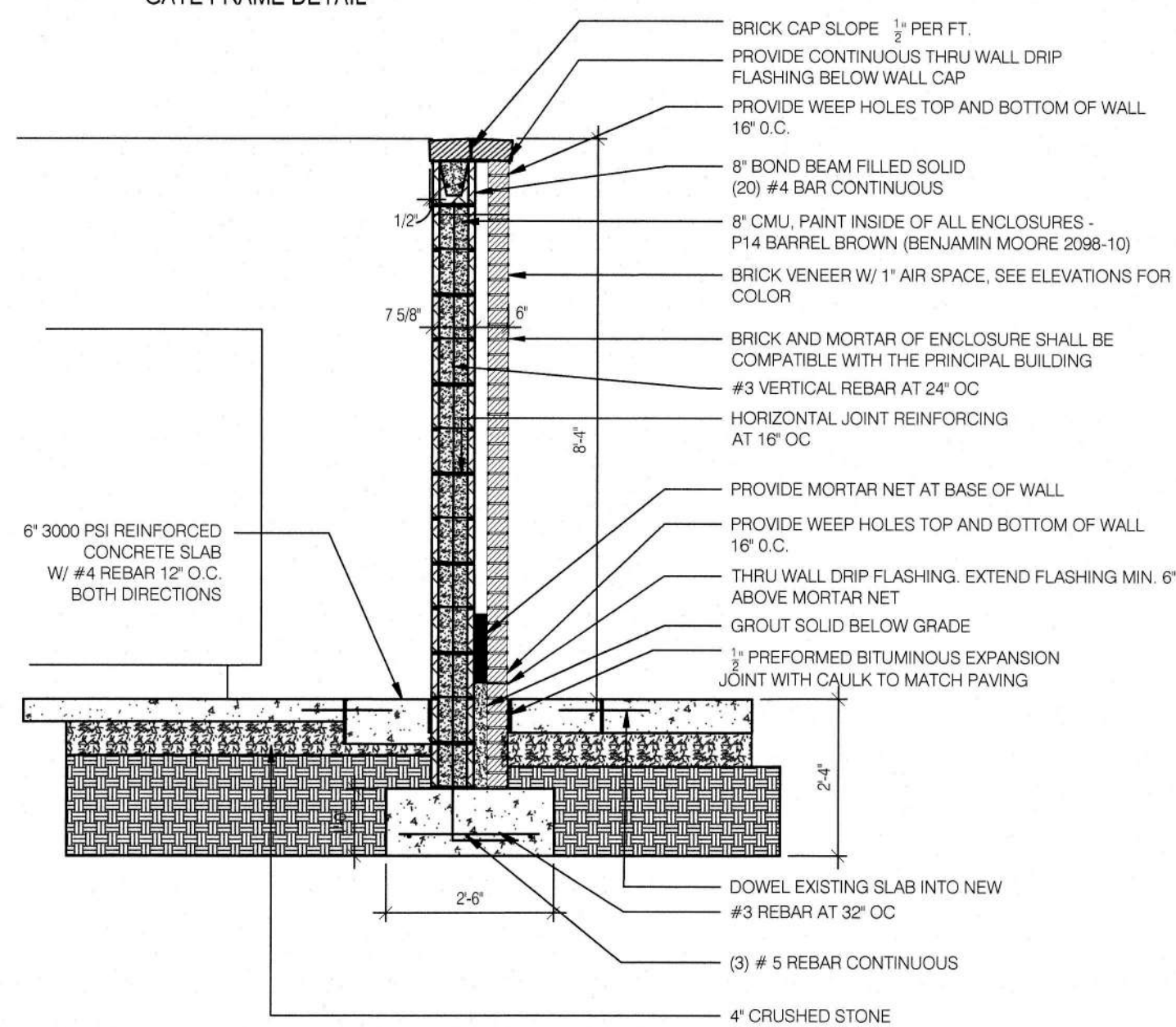
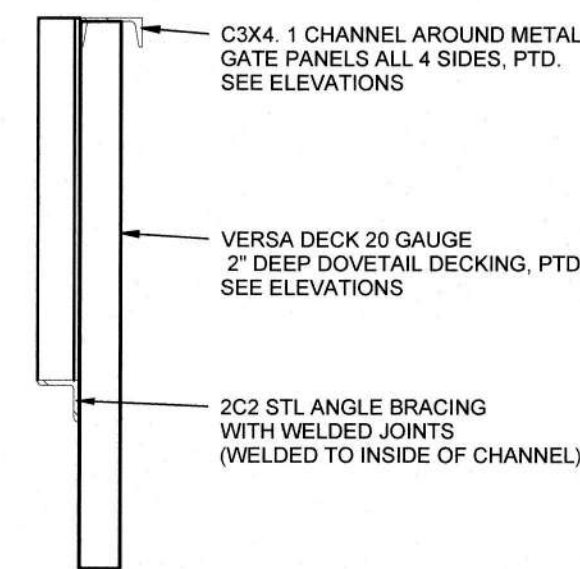
PAVEMENT SECTION
3" S9.5C
8" ABC



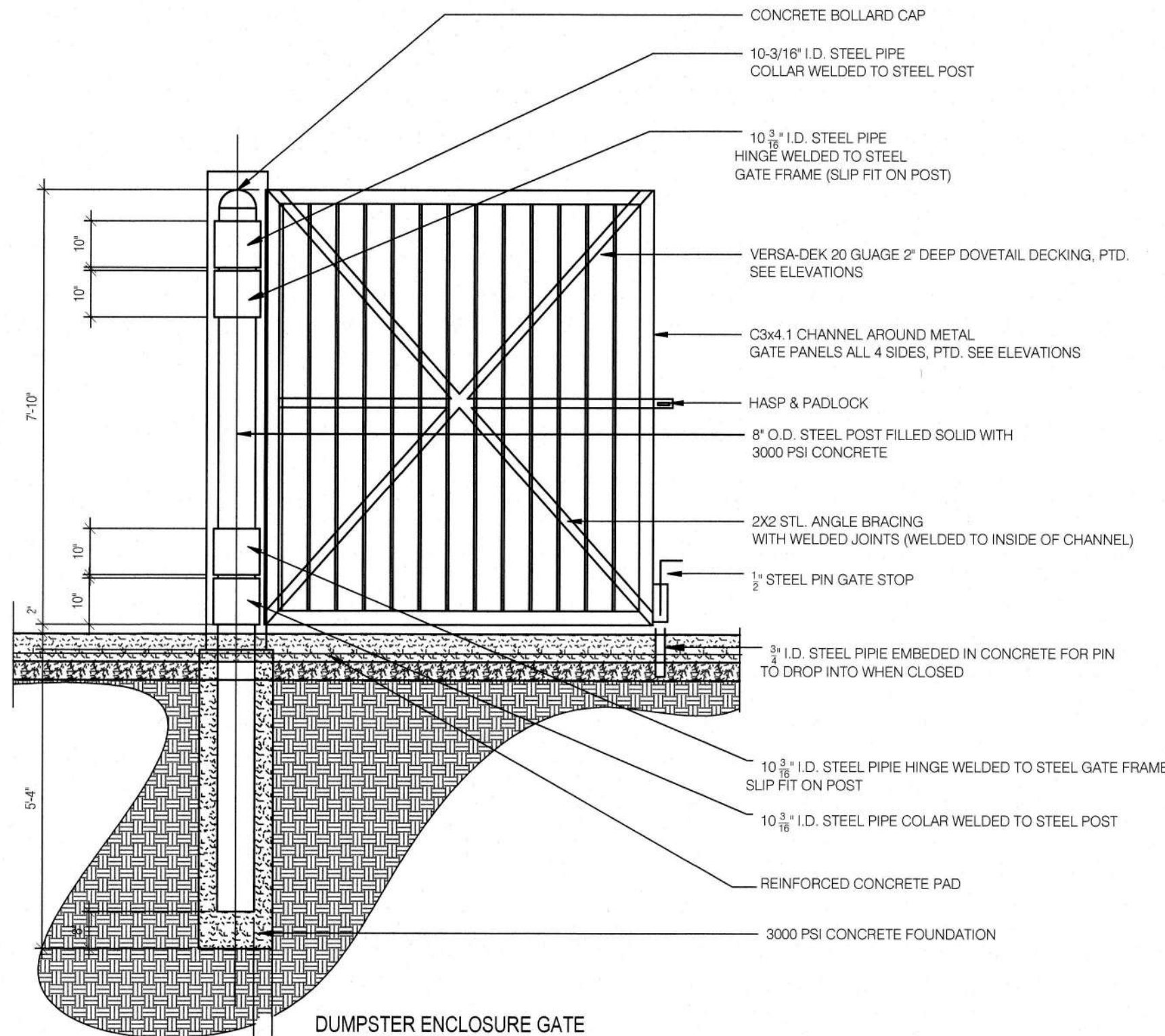
ENCLOSURE ELEVATIONS



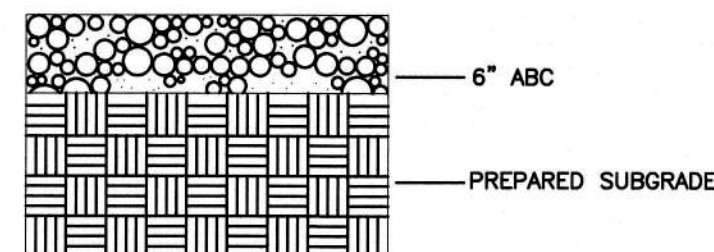
DUMPSTER PLAN



DUMPSTER ENCLOSURE SECTION

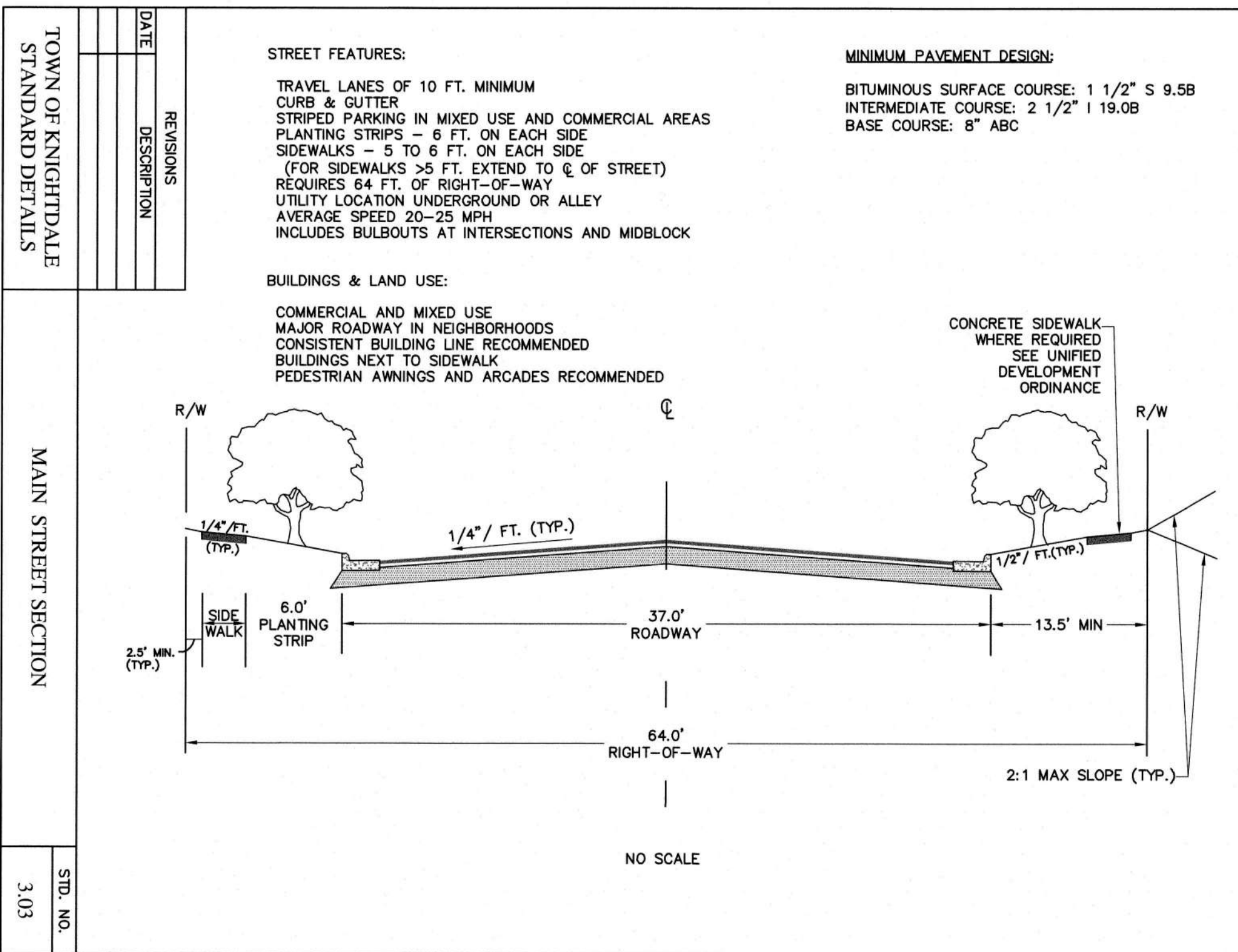


DUMPSTER ENCLOSURE GATE



1. ALL FILL UNDER PROPOSED PAVEMENT AREAS SHALL BE PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. UNLESS OTHERWISE STATED, NO FILL SHALL BE COMPACTED TO LESS THAN 95% RELATIVE COMPACTION AS DETERMINED BY ASTM D-698 STANDARD PROCTOR METHOD.
2. UNLESS OTHERWISE STATED, THE TOP 12 INCHES OF SUBGRADE SHALL BE COMPACTED TO A MINIMUM 95% OF STANDARD PROCTOR.
3. PRIOR TO PLACEMENT OF AGGREGATE BASE, SUBGRADE SHALL BE PROFFROLLED AND YIELDING AREAS REPAIRED AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
4. AGGREGATE BASE COURSE SHALL BE PLACED AND COMPACTED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. UNLESS OTHERWISE STATED, NO ABC SHALL BE COMPACTED TO LESS THAN 100% RELATIVE COMPACTION AS DETERMINED BY ASTM D-1557 MODIFIED PROCTOR METHOD.

TEMPORARY GRAVEL DRIVE

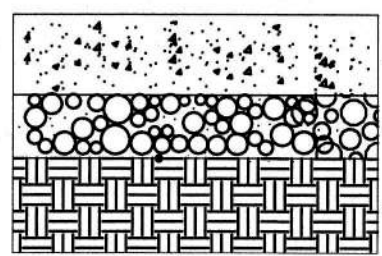


STREET FEATURES:
TRAVEL LANES OF 10 FT. MINIMUM
CURB & GUTTER
STRIPED PARKING IN MIXED USE AND COMMERCIAL AREAS
PLANTING STRIPS - 6 FT. ON EACH SIDE
SIDEWALKS - 5 TO 6 FT. ON EACH SIDE
(FOR SIDEWALKS > 5 FT. EXTEND TO C OF STREET)
REQUIRES 64 FT. OF RIGHT-OF-WAY
UTILITY LOCATION UNDERGROUND OR ALLEY
AVERAGE SPEED 20-25 MPH
INCLUDES BULBOUTS AT INTERSECTIONS AND MIDBLOCK

MINIMUM PAVEMENT DESIGN:
BITUMINOUS SURFACE COURSE: 1 1/2" S 9.5B
INTERMEDIATE COURSE: 2 1/2" I 19.0B
BASE COURSE: 8" ABC

BUILDINGS & LAND USE:
COMMERCIAL AND MIXED USE
MAJOR ROADWAY IN NEIGHBORHOODS
CONSISTENT BUILDING LINE RECOMMENDED
BUILDINGS NEXT TO SIDEWALK
PEDESTRIAN AWNINGS AND ARCADES RECOMMENDED

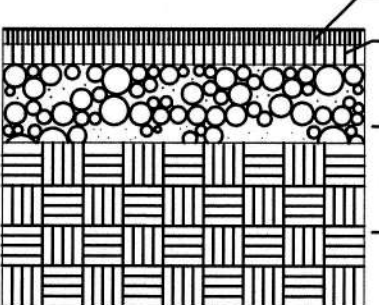
CONCRETE SIDEWALK
WHERE REQUIRED
SEE UNITED
DEVELOPMENT
ORDINANCE



| PAVEMENT TYPE | THICKNESS | ABC |
|---------------|--------------|-----|
| PAVEMENT | 4,000 PSI 6" | 8" |
| SIDEWALK | 3,000 PSI 4" | 6" |

1. ALL FILL UNDER PROPOSED PAVEMENT AREAS SHALL BE PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. UNLESS OTHERWISE STATED, NO FILL SHALL BE COMPACTED TO LESS THAN 95% RELATIVE COMPACTION AS DETERMINED BY ASTM D-698 STANDARD PROCTOR METHOD.
2. UNLESS OTHERWISE STATED, THE TOP 12 INCHES OF SUBGRADE SHALL BE COMPACTED TO A MINIMUM 95% OF STANDARD PROCTOR.
3. PRIOR TO PLACEMENT OF STONE, SUBGRADE SHALL BE PROFFROLLED AND YIELDING AREAS REPAIRED AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
4. AGGREGATE BASE COURSE SHALL BE PLACED AND COMPACTED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. UNLESS OTHERWISE STATED, NO ABC SHALL BE COMPACTED TO LESS THAN 100% RELATIVE COMPACTION AS DETERMINED BY ASTM D-1557 MODIFIED PROCTOR METHOD.
5. CONCRETE PAVEMENT SHALL BE SUPPLIED AND PLACED IN ACCORDANCE WITH THE MOST CURRENT ASTM AND AMERICAN CONCRETE INSTITUTE (ACI) STANDARDS.

PAVEMENT SHALL BE CONSTRUCTED OF 4000 PSI CONCRETE. REINFORCEMENT SHALL BE SPACED 12" BARS O.C. BOTH DIRECTIONS OR WELDED WIRE FABRIC SPACED 6" O. C. BOTH DIRECTIONS, AS INDICATED BELOW. SURFACE FINISHES AND JOINTS SHALL BE AS INDICATED ON PLANS AND DETAILS.



| PAVEMENT TYPE | S 9.5C | ABC |
|---------------|--------|-----|
| LIGHT DUTY | 3" | 6" |
| HEAVY DUTY | 3" | 8" |

LIGHT DUTY - PARKING STALLS
HEAVY DUTY - FIRE LANE/TRUCK ROUTE

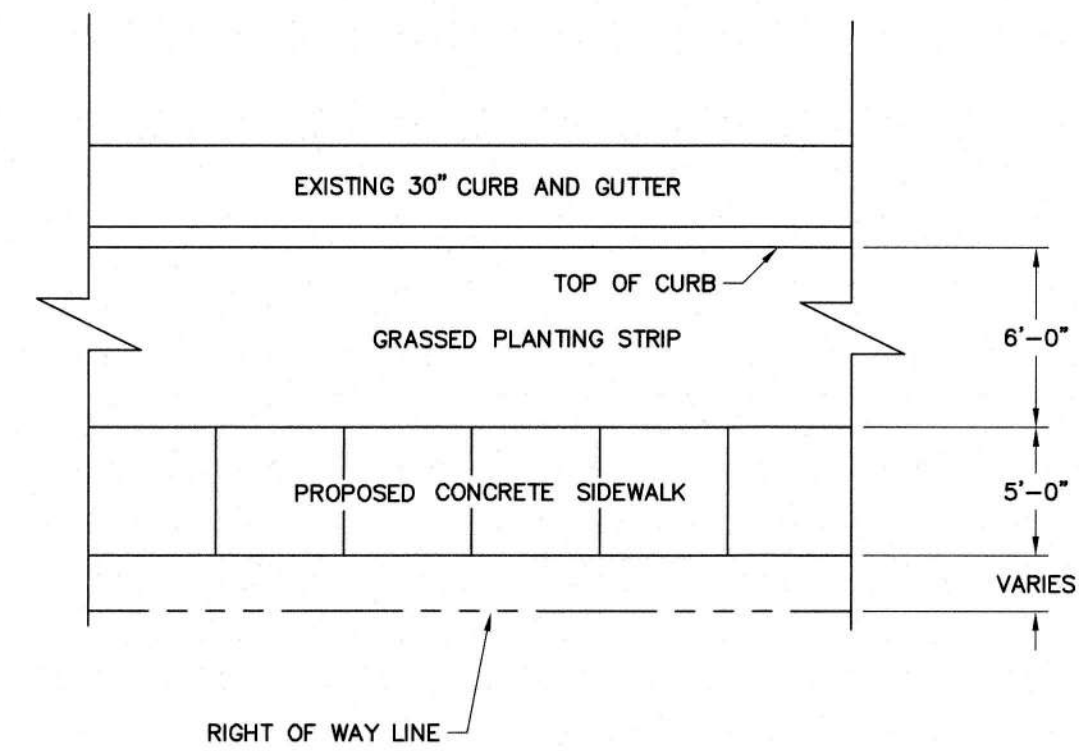
1. ALL FILL UNDER PROPOSED PAVEMENT AREAS SHALL BE PLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. UNLESS OTHERWISE STATED, NO FILL SHALL BE COMPACTED TO LESS THAN 95% RELATIVE COMPACTION AS DETERMINED BY ASTM D-698 STANDARD PROCTOR METHOD.
2. UNLESS OTHERWISE STATED, THE TOP 13 INCHES OF SUBGRADE SHALL BE COMPACTED TO A MINIMUM 95% OF STANDARD PROCTOR.
3. PRIOR TO PLACEMENT OF AGGREGATE BASE, SUBGRADE SHALL BE PROFFROLLED AND YIELDING AREAS REPAIRED AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
4. AGGREGATE BASE COURSE SHALL BE PLACED AND COMPACTED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. UNLESS OTHERWISE STATED, NO ABC SHALL BE COMPACTED TO LESS THAN 100% RELATIVE COMPACTION AS DETERMINED BY ASTM D-1557 MODIFIED PROCTOR METHOD.
5. ASPHALT PAVEMENT SHALL BE PLACED AND COMPACTED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. IN ACCORDANCE WITH THE MOST CURRENT AASHTO STANDARDS.
6. PAVEMENT DESIGN TO BE PROVIDED PRIOR TO FINAL DESIGN.

ASPHALT PAVEMENT

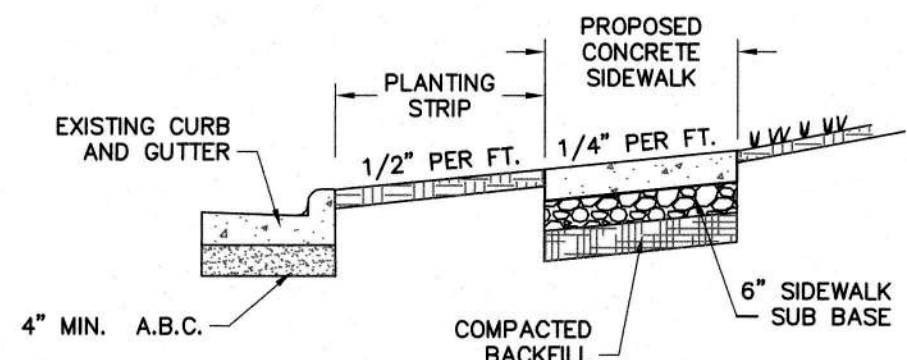


TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *CMU* DATE: 9-7-2019
DEVELOPMENT SERVICES ENGINEER
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: *CMU* DATE: 9/9/19
ADMINISTRATOR



PLAN VIEW



TYPICAL SECTION

NOTES:

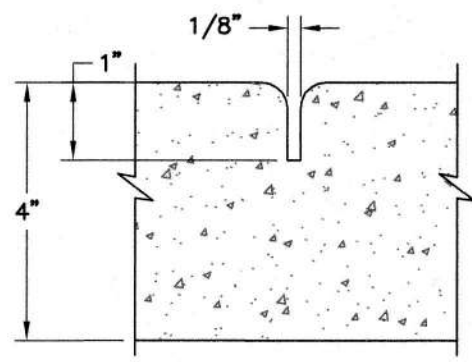
1. TRANSVERSE EXPANSION JOINTS TO BE A MAXIMUM OF 50 FEET APART.
2. CONTROL JOINTS TO BE AT 5 FEET O.C.
3. ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.
4. SIDEWALK SUB BASE TO BE A MIXTURE OF 70 PERCENT #57 STONE AND ASTM C33 SAND OR EQUAL.

| REVISIONS | DATE | DESCRIPTION |
|-----------|------|-------------|
| | | |
| | | |
| | | |

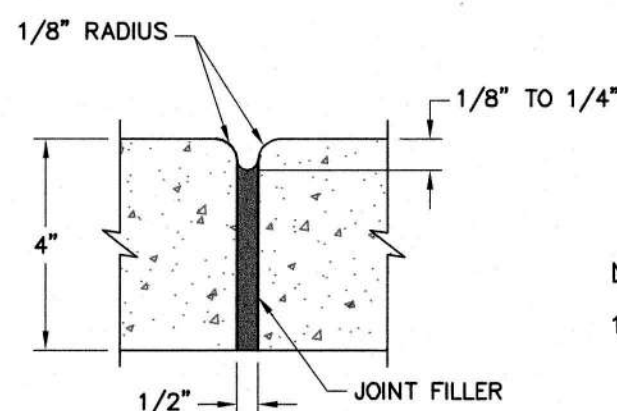
TOWN OF KNIGHTDALE
STANDARD DETAILS

CONCRETE SIDEWALKS

1 of 2
STD. NO.
4.04



GROOVE JOINT IN SIDEWALK



TRANSVERSE EXPANSION
JOINT IN SIDEWALK

NOTES:

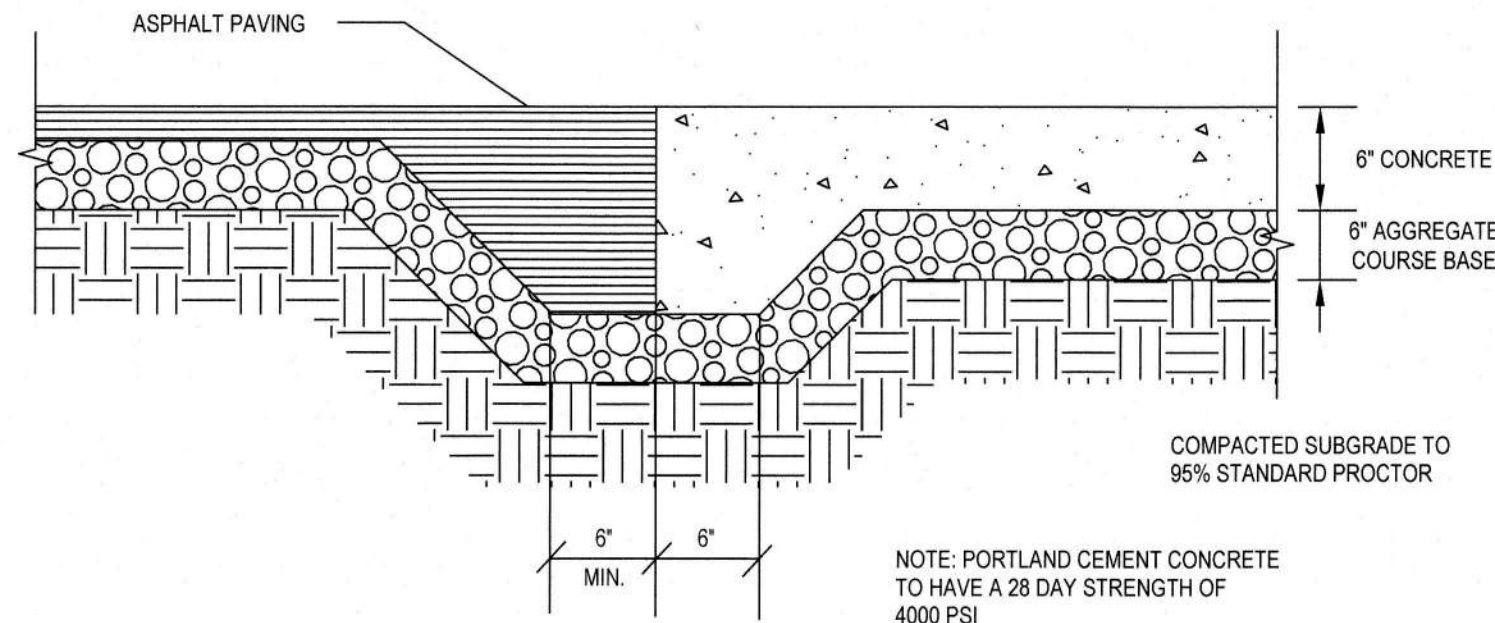
1. A GROOVE JOINT 1" DEEP WITH 1/8" RADI SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45' INTERVALS NOT TO EXCEED 50' AND MATCHING EXPANSION/CONSTRUCTION JOINT IN ADJACENT CURB. A SEALED 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
2. SIDEWALK AT DRIVEWAY ENTRANCES TO BE 6" THICK.
3. WIDTH OF SIDEWALK ON THOROUGHFARE STREETS SHALL BE A MINIMUM OF 5'. WIDTH OF SIDEWALKS IN THE CENTRAL BUSINESS DISTRICT WILL BE DETERMINED BY THE TOWN ENGINEER.
4. WIDTH OF SIDEWALKS ON NON-THOROUGHFARE STREETS SHALL BE A MINIMUM OF 5' UNLESS OTHERWISE SPECIFIED BY THE TOWN'S UNIFIED DEVELOPMENT ORDINANCE.
5. SIDEWALK TO BE POURED TO END OF RADIUS AT INTERSECTING STREETS.
6. CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 PSI IN 28 DAYS.

| REVISIONS | DATE | DESCRIPTION |
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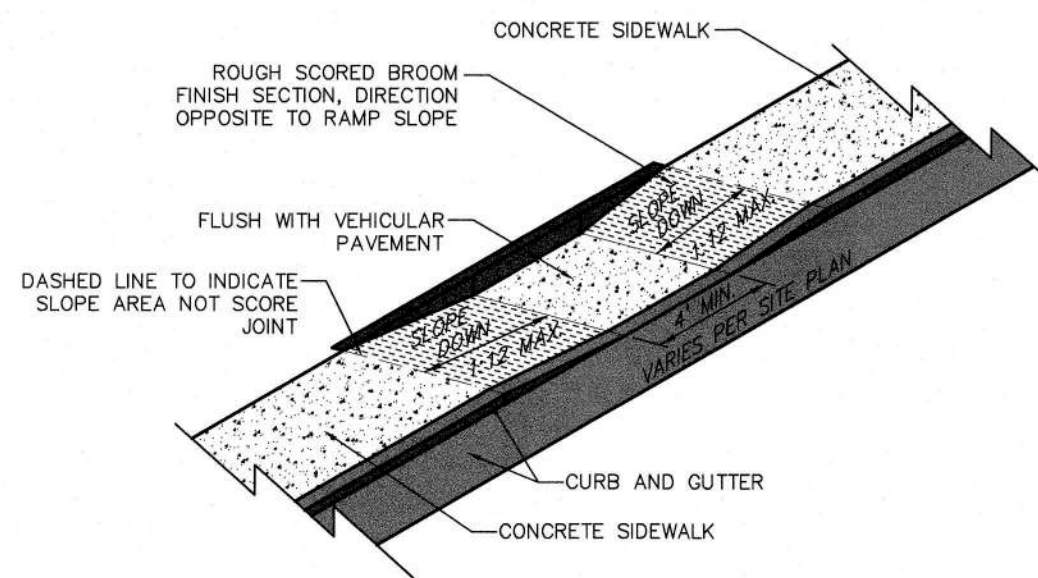
TOWN OF KNIGHTDALE
STANDARD DETAILS

CONCRETE SIDEWALKS

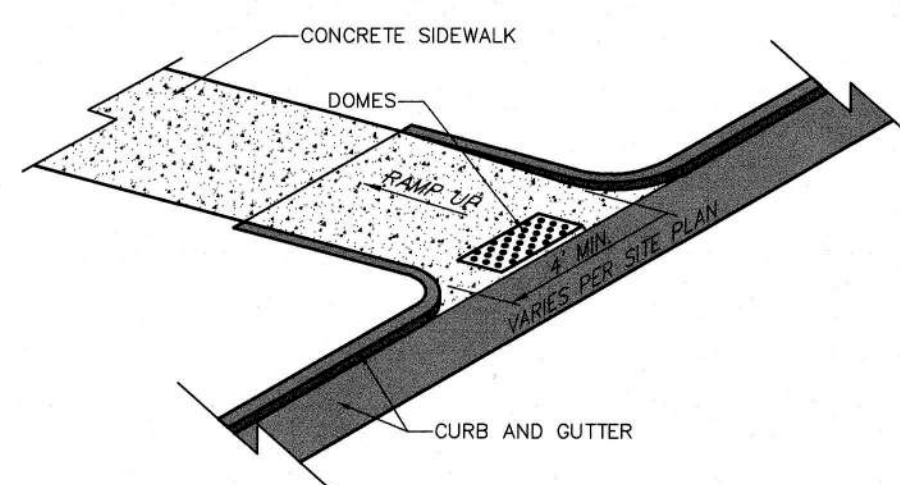
2 of 2
STD. NO.
4.04



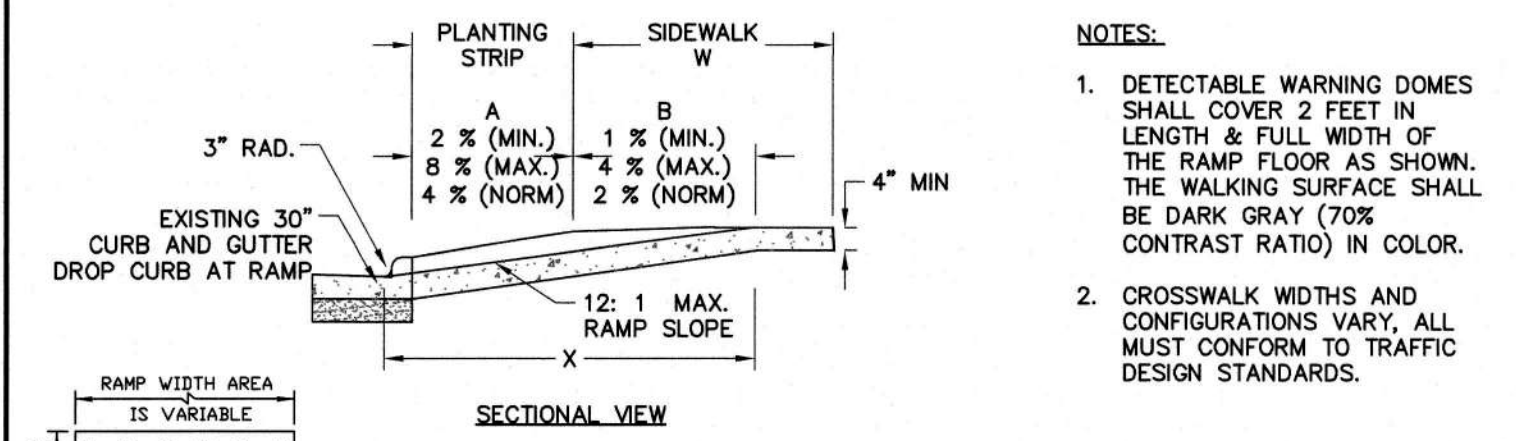
ASPHALT TO CONCRETE TRANSITION



WHEELCHAIR (H/C) RAMP TYPE II
NOT TO SCALE



WHEELCHAIR (H/C) RAMP TYPE III
NOT TO SCALE

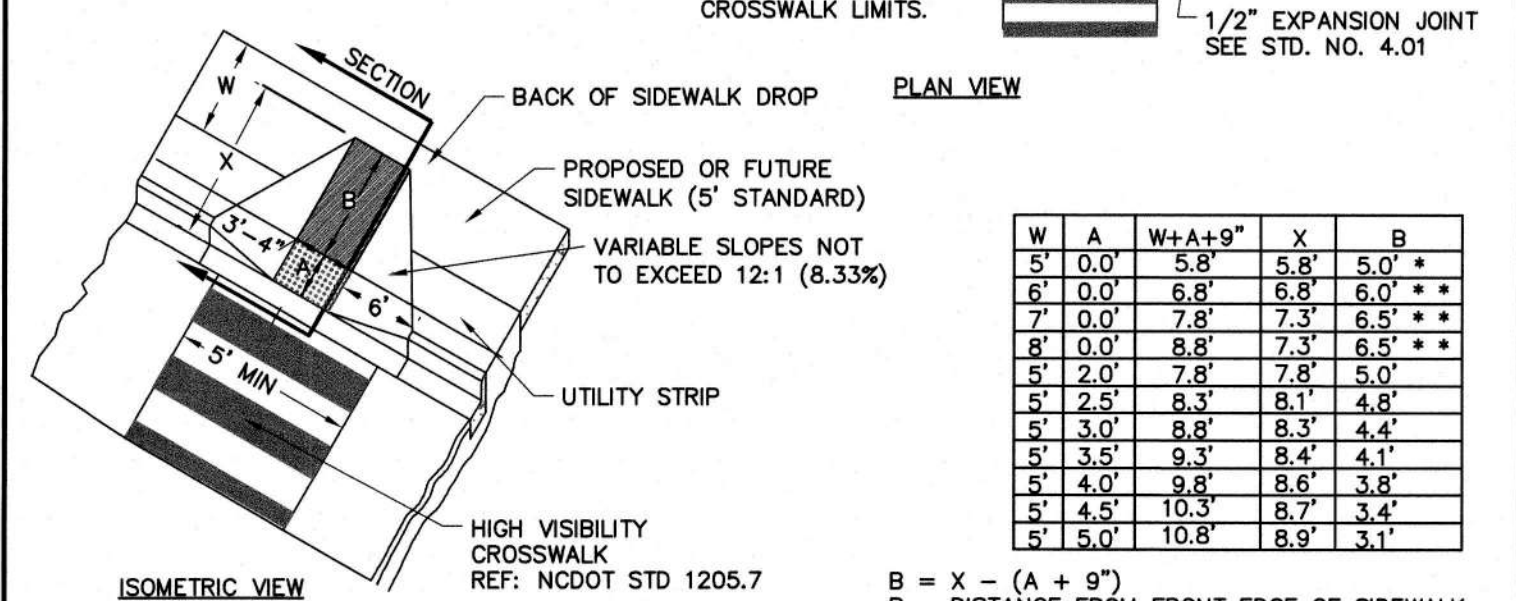
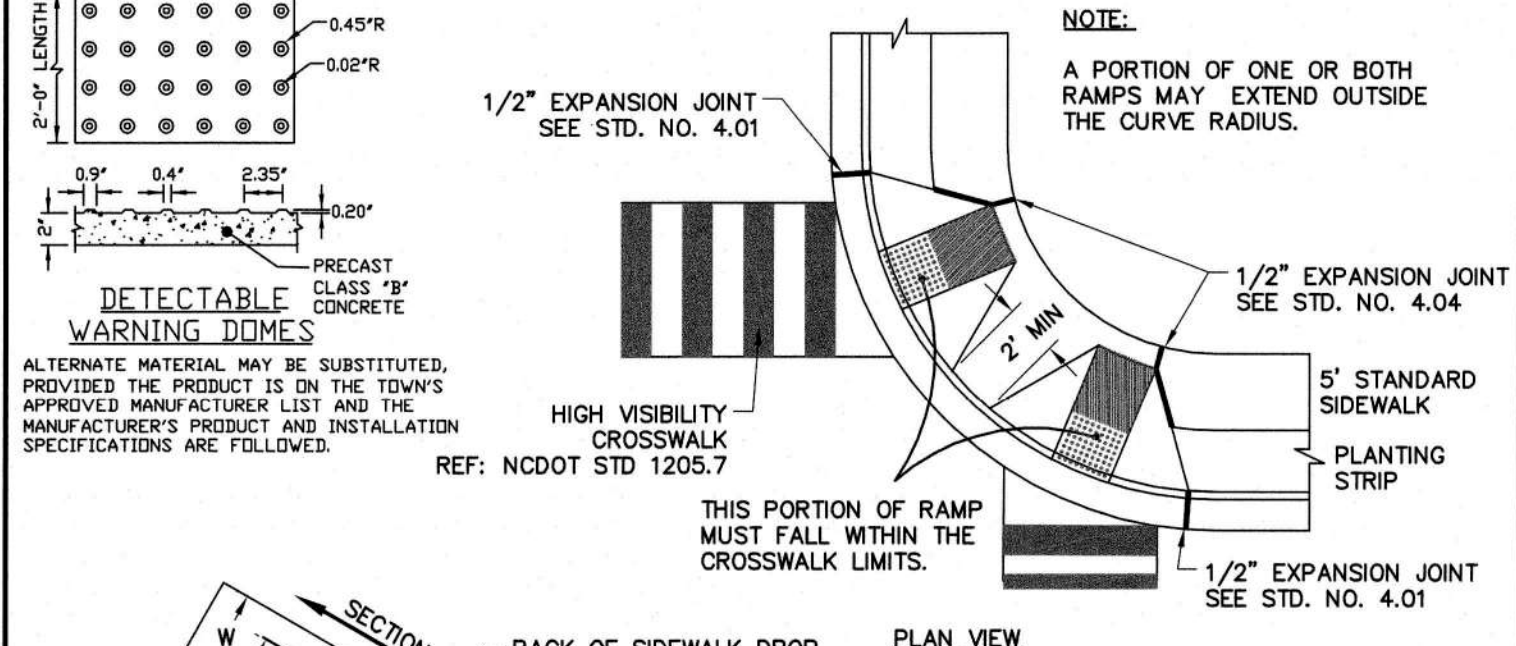


NOTES:

1. DETECTABLE WARNING DOMES SHALL COVER 2 FEET IN LENGTH & FULL WIDTH OF THE RAMP FLOOR AS SHOWN. THE WALKING SURFACE SHALL BE DARK GRAY (70% CONTRAST RATIO) IN COLOR.
2. CROSSWALK WIDTHS AND CONFIGURATIONS VARY, ALL MUST CONFORM TO TRAFFIC DESIGN STANDARDS.

NOTE:

A PORTION OF ONE OR BOTH RAMP MAY EXTEND OUTSIDE THE CURVE RADIUS.

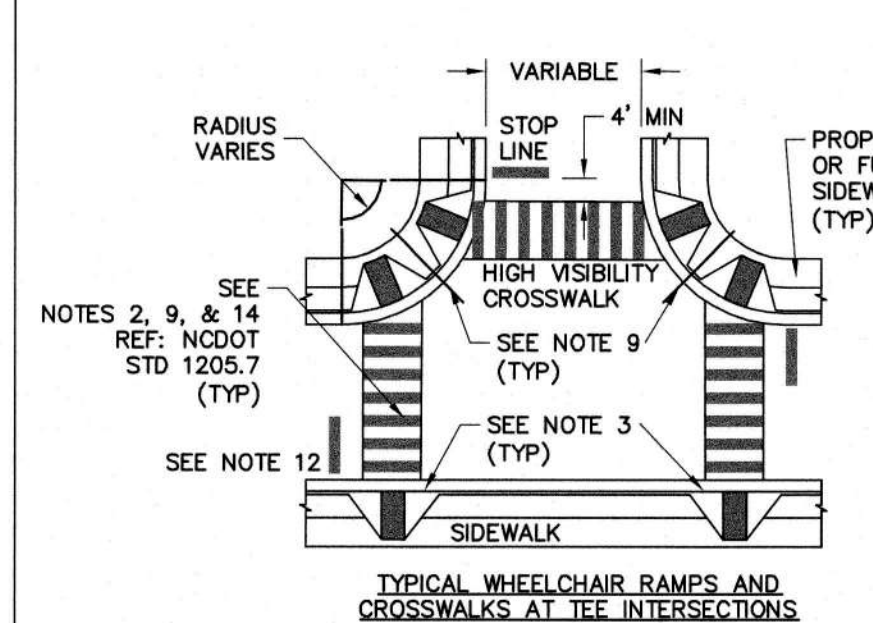


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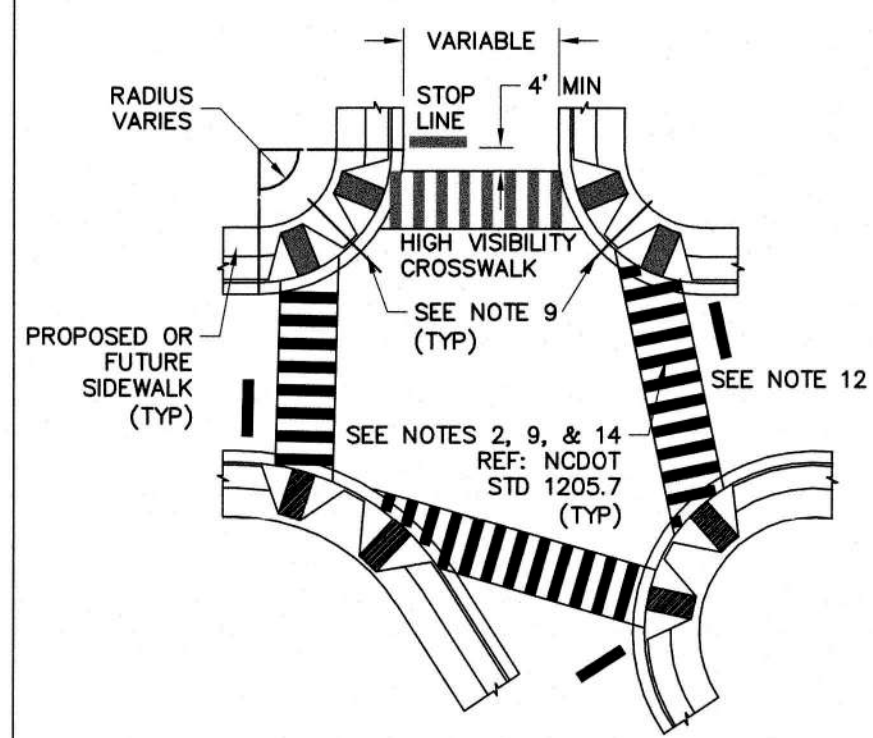
TOWN OF KNIGHTDALE
STANDARD DETAILS

WHEELCHAIR RAMP CURB CUT

1 of 2
STD. NO.
4.06



TYPICAL WHEELCHAIR RAMPS AND
CROSSWALKS AT TEE INTERSECTIONS



TYPICAL WHEELCHAIR RAMPS AND
CROSSWALKS AND STOP LINES

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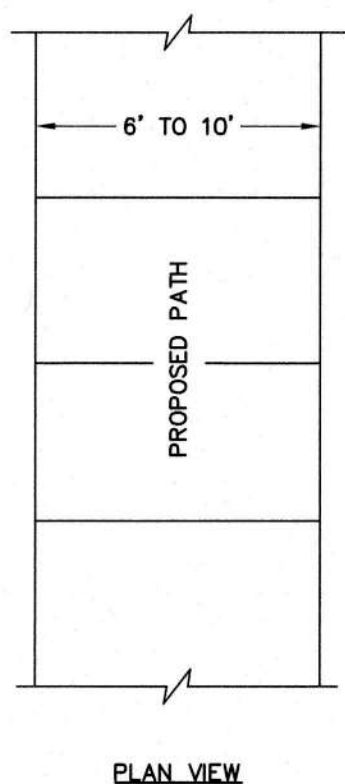
TOWN OF KNIGHTDALE
STANDARD DETAILS

WHEELCHAIR RAMP CURB CUT

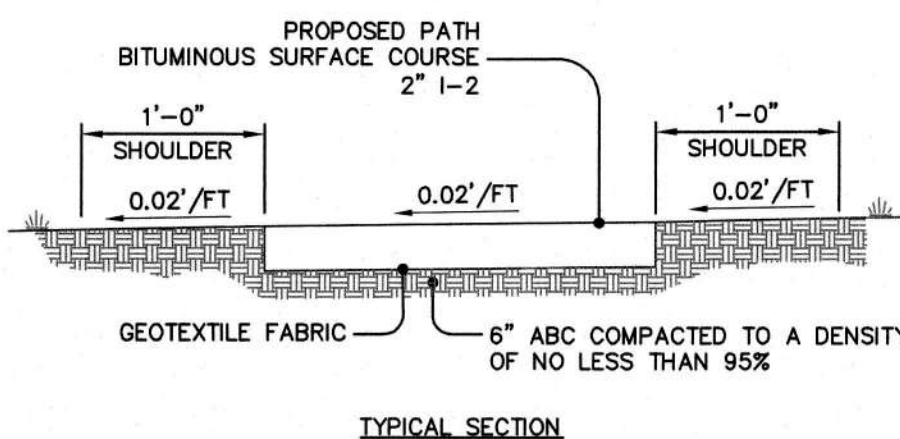
2 of 2
STD. NO.
4.06

NOTES:

3. NO GEN. ST. 136-44.14 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED SHALL INCLUDE WHEELCHAIR RAMPS AT ALL INTERSECTIONS AND OTHER POINTS OF PEDESTRIAN TRAFFIC.
- WHEELCHAIR RAMPS SHALL BE PROVIDED AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE TOWN. LOCATIONS MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE TOWN TO AVOID POWER POLES, FIRE HYDRANTS, STORM INLETS, ETC. NO LESS THAN TWO (2) FEET OF FULL HEIGHT CURB SHALL BE PLACED BETWEEN THE RAMPS.
- NO SLOPE ON THE WHEELCHAIR RAMP SHALL EXCEED 1" PER FOOT (12:1 OR 8.33%) IN RELATIONSHIP TO THE GRADE OF THE STREET.
- THE WHEELCHAIR RAMP SHALL BE A MINIMUM OF 40" (3'-4") WIDE.
- CONCRETE SHALL BE A MINIMUM OF 3000 P.S.I. AND FINISHED WITH A NON-SKID SURFACE.
- AN EXPANSION JOINT OF 1/2" SHALL BE PLACED AT THE JOINT BETWEEN THE WHEELCHAIR RAMP AND THE CURB OR SIDEWALK.
- THE INSIDE PEDESTRIAN CROSSWALK LINES SHALL BE SET NO CLOSER INTO THE INTERSECTION THAN WOULD BE ESTABLISHED BY BISECTING THE CURB RADIUS.
- THE CURB CUTS AND THE PEDESTRIAN CROSSWALK LINES SHALL BE COORDINATED SO THAT THE BEGINNING OF THE WHEELCHAIR RAMP WILL FALL COMPLETELY WITHIN THE CROSSWALK LINES.
- THE MINIMUM WIDTH OF THE PEDESTRIAN CROSSWALKS SHALL BE 5'-0".
- STOP LINES SHALL BE PLACED AS SHOWN TO INDICATE THE POINT AT WHICH VEHICLES MUST COME TO A STOP. THIS POINT SHALL BE A MINIMUM OF 4'-0" FROM THE PEDESTRIAN CROSSWALK.
- PARKING SHALL NOT BE ALLOWED WITHIN 20' OF PEDESTRIAN CROSSWALKS.
- ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD. ALL PAVEMENT MARKINGS SHALL CONFORM WITH NC DOT SPECIFICATIONS SECTIONS 920 AND 1087.
- ALL STOP BARS SHALL BE 4 FEET BEHIND EDGE OF CROSSWALK.



PLAN VIEW



TYPICAL SECTION

NOTES:

1. CROSS SLOPE DIRECTION VARIES. SEE LAYOUT PLANS FOR DIRECTION OF SLOPE.
2. CONTRACTOR IS RESPONSIBLE FOR REESTABLISHING ALL SLOPES DISTURBED BY CONSTRUCTION.

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TOWN OF KNIGHTDALE
STANDARD DETAILS

STANDARD MULTI-USE PATH
GREENWAY

STD. NO.
4.09

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|---------|----------|----------|----|
| Job No. | 02180875 | Drawn By | WR |
| Date | 08/28/19 | Designer | WR |



| Revisions | 1 | ADDENDUM 1 | 08/20/19 |
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TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *CHAD* DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *CHAD* DATE: 9/9/19
ADMINISTRATOR

K:\18\18-0070\18070-Knightdale Athletic Park\CAD\Construction Drawings\C99 Details.dwg, Wednesday, August 28, 2019 11:49:58 AM - FRESHCUTTE, CHRS

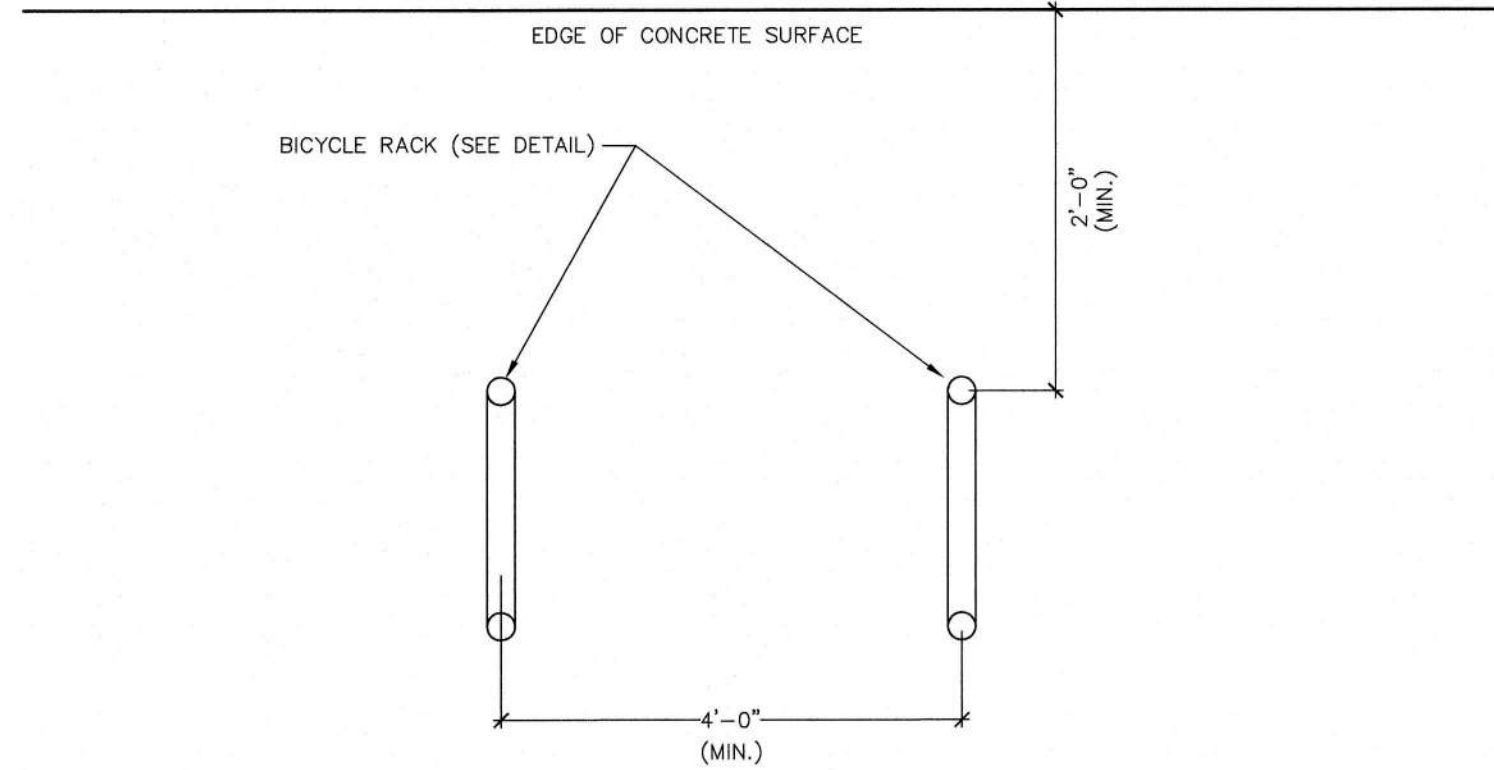
BP Barco Products
A Geneva Scientific Company
11 N. Barco Avenue
Batesville, IL 60510
Phone: (800) 338-2887
Fax: (800) 879-8957
Visit Our Website at: www.barcoproducts.com

Specifications
Club Bike Rack - In-ground BIKELOOP®

24-1/2" Center to center overall width with a total overall height of 38-1/2"
Made of 2-7/8" 12 gauge galvanized steel tubing
Coated with a thermal plastic coating to prevent rust and scratches
No assembly required
All hardware is non-corrosive

To maintain better fit is recommended to wash, rinse, and dry the units after prolonged use.
Check for loose bolts and nuts and tighten as needed.

Club Bike Rack - BIKELOOP® - Specifications



BICYCLE RACK TYPICAL LAYOUT
SCALE: 1/2" = 1'-0"

PLANNING & URBAN DESIGN DESIGN STANDARDS

RECOMMENDED LOS "A"

PARKING ANGLE 90° (TWO WAY OPERATION ONLY)
TOTAL 63'6"

PARKING ANGLE 60° (ONE WAY OPERATION ONLY)
TOTAL 55'6"

PARKING ANGLE 45° (ONE WAY OPERATION ONLY)
TOTAL 50'9"

MINIMUM LOS "C"

WAKE STONE ATHLETIC COMPLEX

TOTAL 61'6"

TOTAL 53'6"

TOTAL 48'9"

NOTE:
1. FOR ACCESSIBLE PARKING STANDARDS SEE TOWN UNIFIED DEVELOPMENT ORDINANCE.
2. PAVEMENT MARKINGS SHALL BE 4" WHITE PAINT TO TOWN STANDARDS.

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TOWN OF KNIGHTDALE STANDARD DETAILS

PARKING STANDARDS

STD. NO.
3.20

HI-VISIBILITY CROSSWALK

STANDARD CROSSWALK

LEGEND
• DIRECTION OF TRAFFIC FLOW
• CURB RAMP WITH DETECTABLE WARNING DOMES

1. THE MINIMUM WIDTH OF STANDARD CROSSWALKS IS 6 FEET. THE MINIMUM WIDTH OF HI-VISIBILITY CROSSWALKS IS 10 FEET.
2. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL IS 4' MIN.
3. BEYOND THE CURB FACE, A CLEAR SPACE OF 4' X 4' FEET MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE CROSSWALK.
4. PLACE STOP BARS A MINIMUM OF 4 FEET FROM NEAREST CROSSWALK LINE. STOP BARS AT SIGNALIZED INTERSECTIONS SHOULD BE COORDINATED WITH THE SIGNAL DESIGN SECTION OR AS DIRECTED BY THE ENGINEER.
5. CURB RAMP SHALL BE CONSTRUCTED IN ACCORDANCE TO THE LATEST ROADWAY STANDARD DRAWINGS.

CONCRETE SIDEWALK

NOTES:
CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.
PLACE A GROOVE JOINT 1" DEEP WITH 1/8" RADIUS IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A 3/4" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
SEE STD. DWG. 848.06 FOR WHEELCHAIR RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.

TRANSVERSE EXPANSION JOINT IN SIDEWALK

DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

CONCRETE SIDEWALK

ENGLISH STANDARD DRAWING FOR

CONCRETE SIDEWALK

NOTES:
1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMP AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMP OR MARKINGS AS SHOWN, CONTACT THE SIGNALING AND SIGNALING UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
6. TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMP A MINIMUM OF 4' WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMP SHALL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGH THE ISLAND.
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'x5' LANDING AT THE TOP OF A RAMP, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMP WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
18. CURB RAMP THROUGH MEDIAN ISLANDS, SINGLE RAMP AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

ENGLISH STANDARD DRAWING FOR

PROPOSED CURB AND GUTTER

NOTES:
1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FACE OF CURB ON THE SIDEWALK.
2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBLY WITH ADJACENT SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT RESOLVED CONTRAST THE OTHER RAMP.

ISOMETRIC VIEW

SECTION A-A

SECTION B-B

PLAN VIEW

DETECTABLE WARNING DOMES

ENGLISH STANDARD DRAWING FOR

PROPOSED CURB AND GUTTER

NOTES:
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ISOMETRIC VIEW

SECTION A-A

SECTION B-B

PLAN VIEW

DETECTABLE WARNING DOMES

ENGLISH STANDARD DRAWING FOR

PROPOSED CURB AND GUTTER

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ISOMETRIC VIEW

SECTION A-A

SECTION B-B

PLAN VIEW

DETECTABLE WARNING DOMES

ENGLISH STANDARD DRAWING FOR

PROPOSED CURB AND GUTTER

NOTES:
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2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBLY WITH ADJACENT SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT RESOLVED CONTRAST THE OTHER RAMP.

ISOMETRIC VIEW

SECTION A-A

SECTION B-B

PLAN VIEW

DETECTABLE WARNING DOMES



TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: **SEAN ALL** DATE: **9-9-2019**
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: **CHRS** DATE: **9/9/19**
ADMINISTRATOR

WithersRavenel
Engineers | Planners | Surveyors

WAKE STONE ATHLETIC COMPLEX

KNIGHTDALE, NORTH CAROLINA

SITE AND NCDOT DETAILS

Job No. 02180875 Drawn By WR
Date 08/28/19 Designer WR

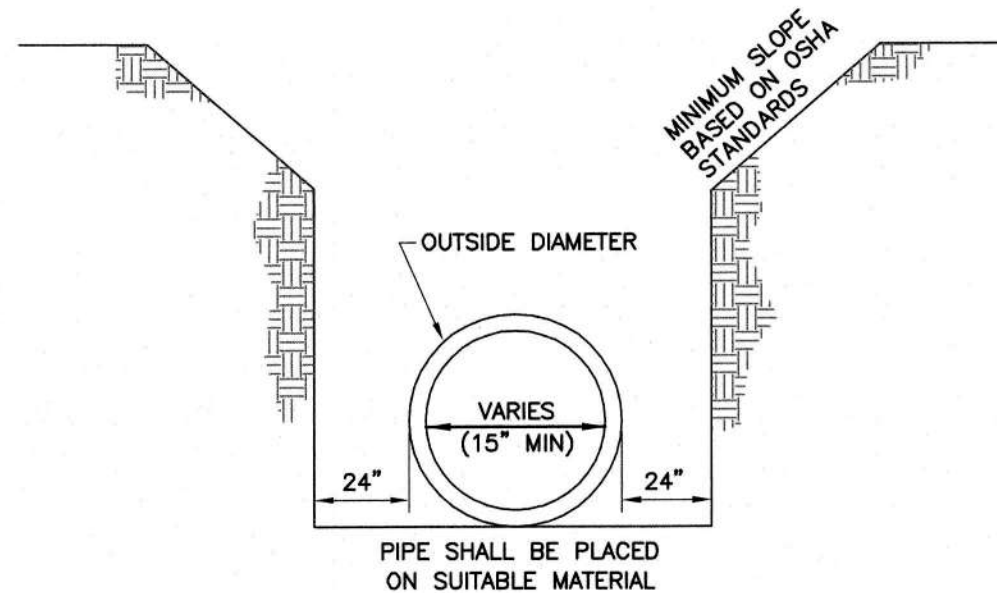
NORTH CAROLINA PROFESSIONAL SEAL 44527
JULY 2019
JULY 2019

Revisions
1 ADDENDUM 1 08/20/19

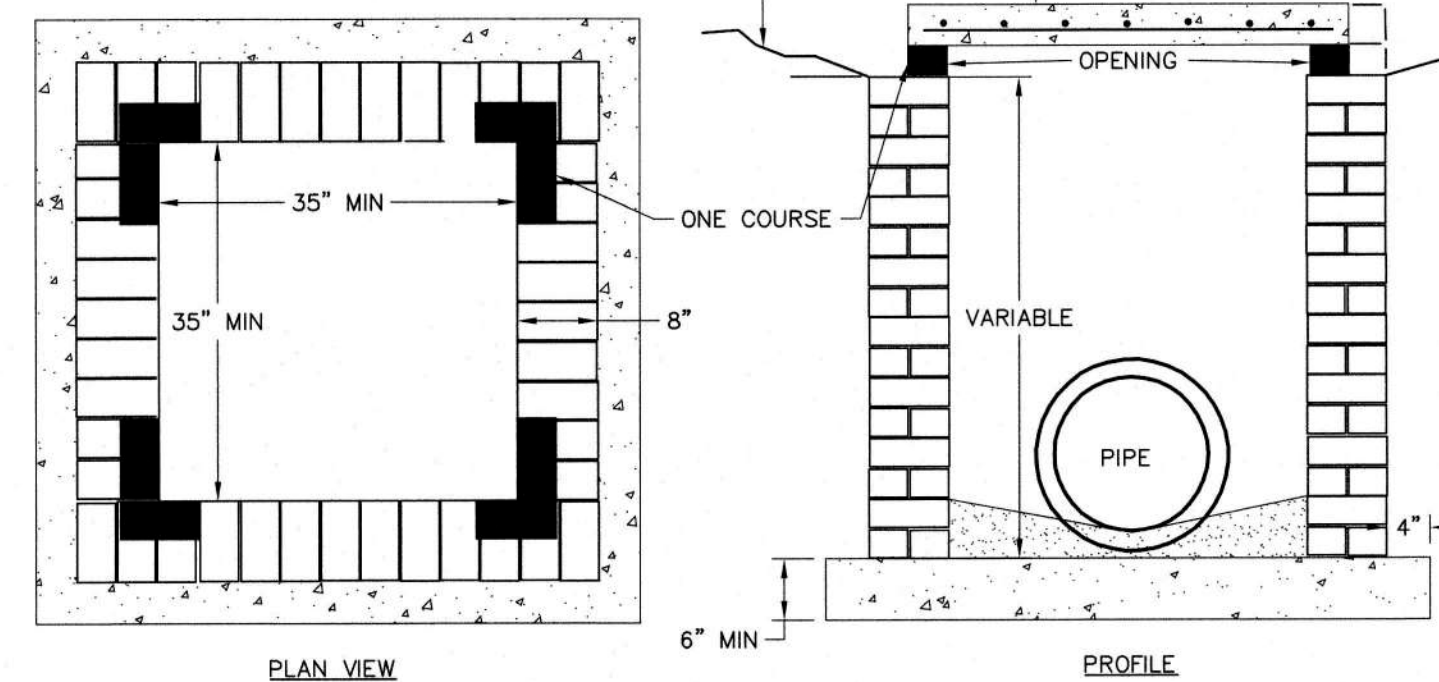
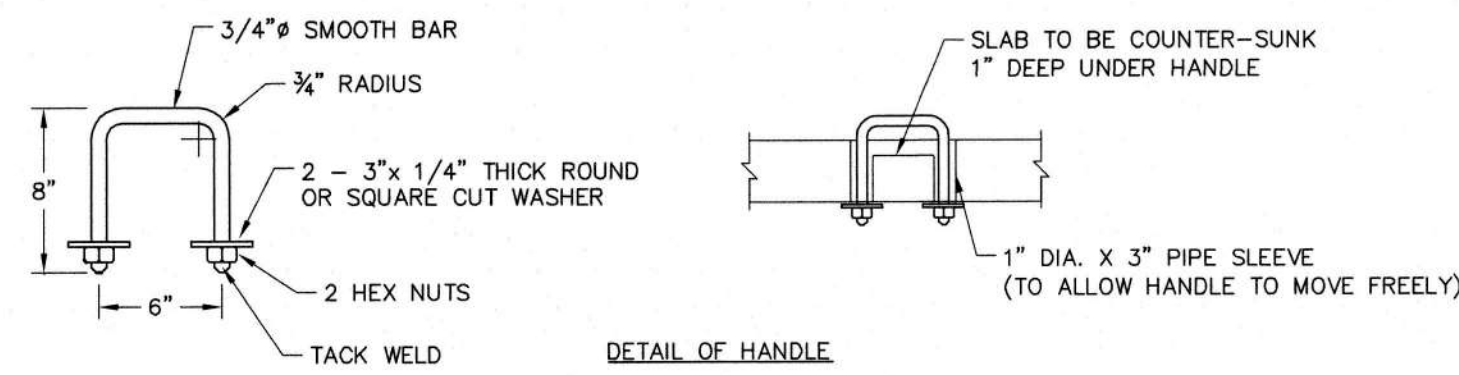
Sheet No.
C9.3

NOTES:

1. A MINIMUM OF 24" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR COMPACTION OF FILL MATERIAL. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER THE PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE PLACED IN LAYERS NOT TO EXCEED 6" UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO RISE IN UNBACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS ONLY. EACH AND EVERY LAYER OF BACKFILL SHALL BE PLACED LOOSE AND THOROUGHLY COMPACTED INTO PLACE.
2. ALL BACKFILL MATERIAL SHALL HAVE AN IN PLACE COMPACTED DENSITY OF AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DENSITY.
3. THE FINAL 24" OF BACKFILL MATERIAL SHALL BE COMPACTED TO 100% OF THE STANDARD PROCTOR MAXIMUM DENSITY.
4. ALL TRENCHING OPERATIONS SHALL MEET OSHA STANDARDS.
5. BACKFILL MATERIAL BENEATH ROADWAY SHALL BE SELECT BACKFILL MATERIAL.



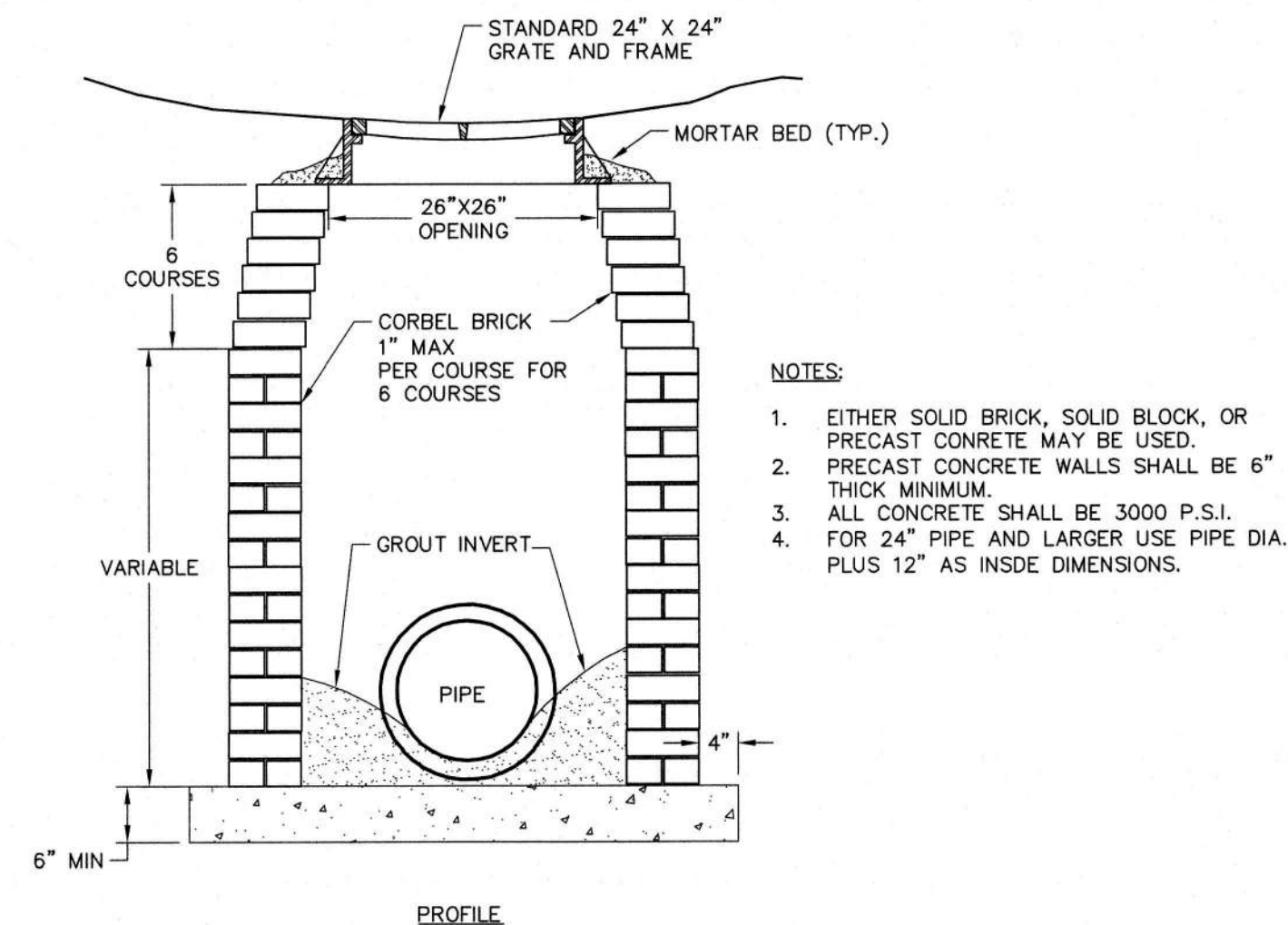
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TOWN OF KNIGHTDALE
STANDARD DETAILSTRENCH FOR
STORM DRAIN PIPESSTD. NO.
5.02

NOTES:

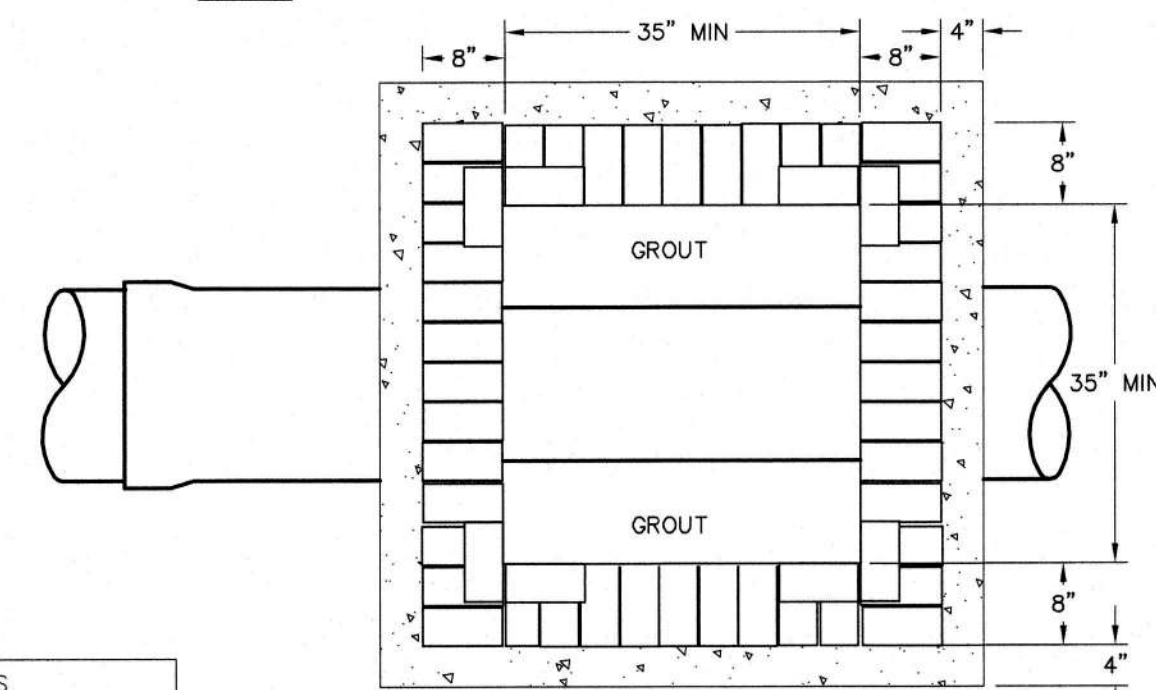
1. EITHER SOLID BRICK, SOLID BLOCK OR PRECAST CONCRETE MAY BE USED.
2. PRECAST CONCRETE WALLS SHALL BE 6" THICK MINIMUM.
3. ALL CONCRETE SHALL BE 3000 P.S.I.
4. FOR 24" PIPE AND LARGER USE PIPE DIA. PLUS 12" AS INSIDE DIMENSIONS.

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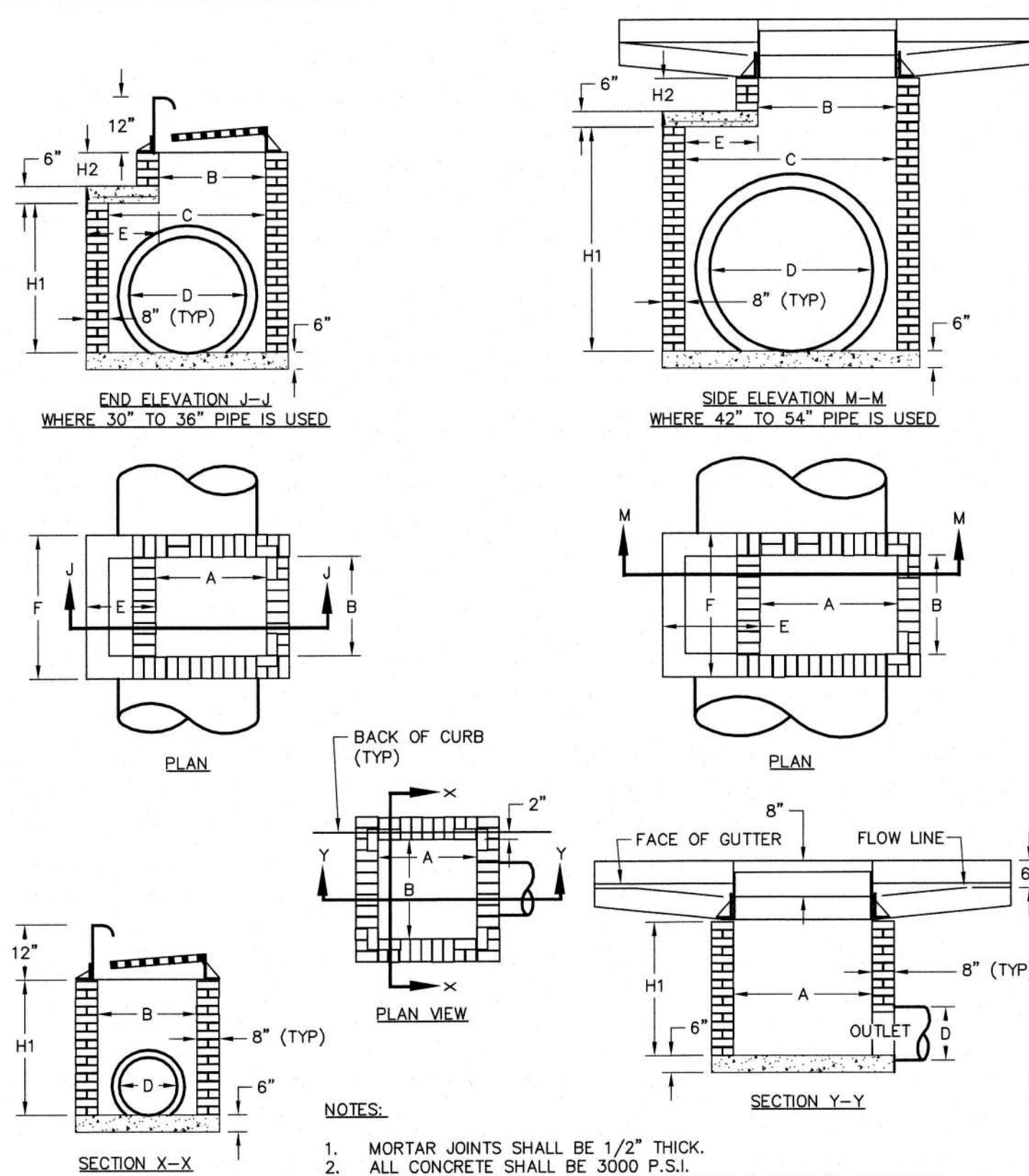
TOWN OF KNIGHTDALE
STANDARD DETAILSSTANDARD YARD INLET
WITH CONCRETE SLABSTD. NO.
5.03

NOTES:

1. EITHER SOLID BRICK, SOLID BLOCK, OR PRECAST CONCRETE MAY BE USED.
2. PRECAST CONCRETE WALLS SHALL BE 6" THICK MINIMUM.
3. ALL CONCRETE SHALL BE 3000 P.S.I.
4. FOR 24" PIPE AND LARGER USE PIPE DIA. PLUS 12" AS INSIDE DIMENSIONS.



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TOWN OF KNIGHTDALE
STANDARD DETAILSSTANDARD DROP INLET
WITH GRATE AND FRAMESTD. NO.
5.04

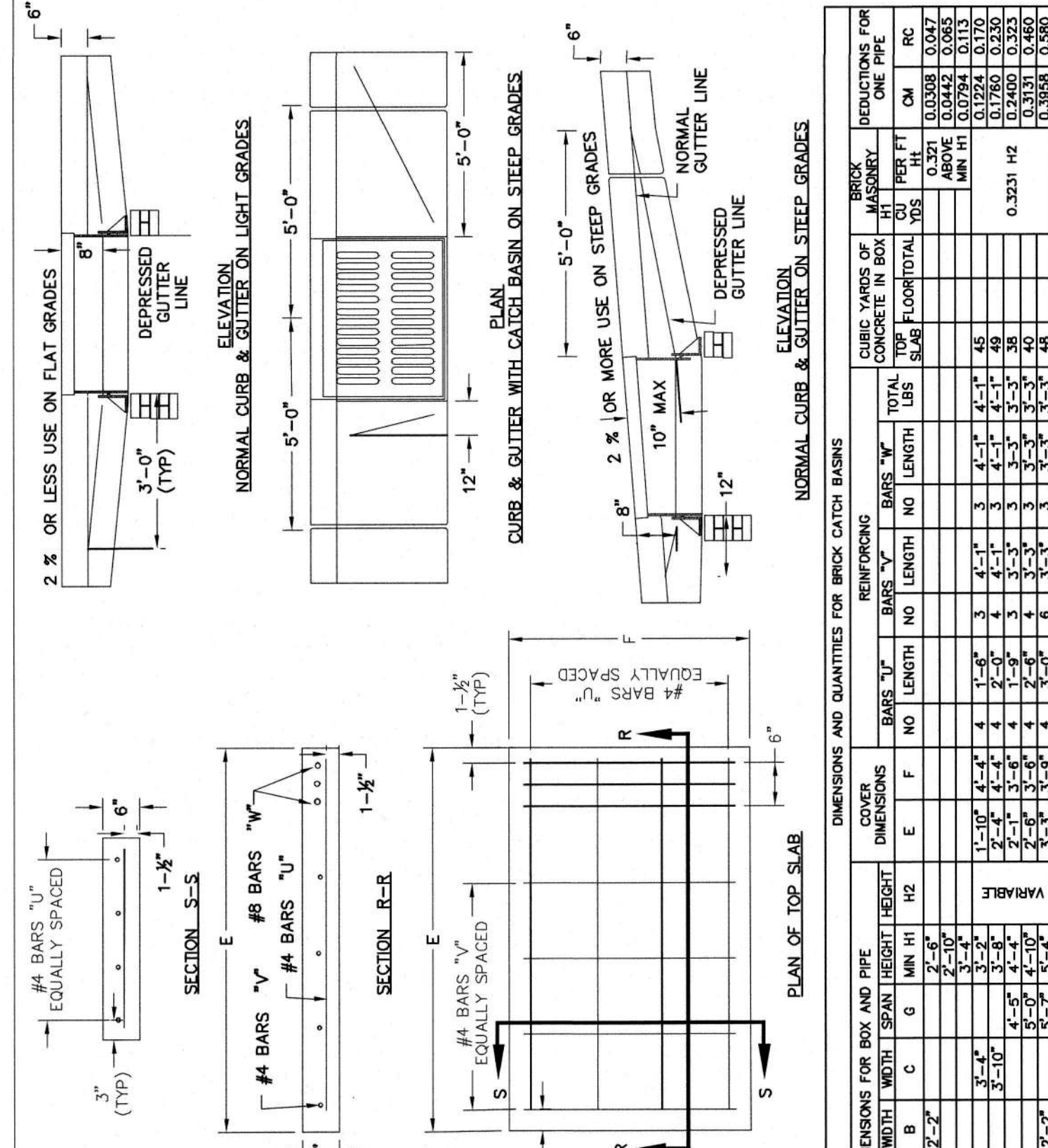
NOTES:

1. MORTAR JOINTS SHALL BE 1/2" THICK.
2. ALL CONCRETE SHALL BE 3000 P.S.I.
3. BASE SLABS SHALL BE FORMED PRIOR TO PLACING OF CONCRETE.
4. USE TYPE "A" GRATE AT SAG POINTS, OTHERWISE USE TYPE "B" OR "C" FOR THE APPROPRIATE FLOW DIRECTION.
5. MASONRY UNITS MAY BE JUMBO BRICK, CONCRETE BRICK OR SOLID CONCRETE BLOCK.
6. ALL WALLS GREATER THAN 6" IN DEPTH SHALL BE CONSTRUCTED 12" THICK

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TOWN OF KNIGHTDALE
STANDARD DETAILS

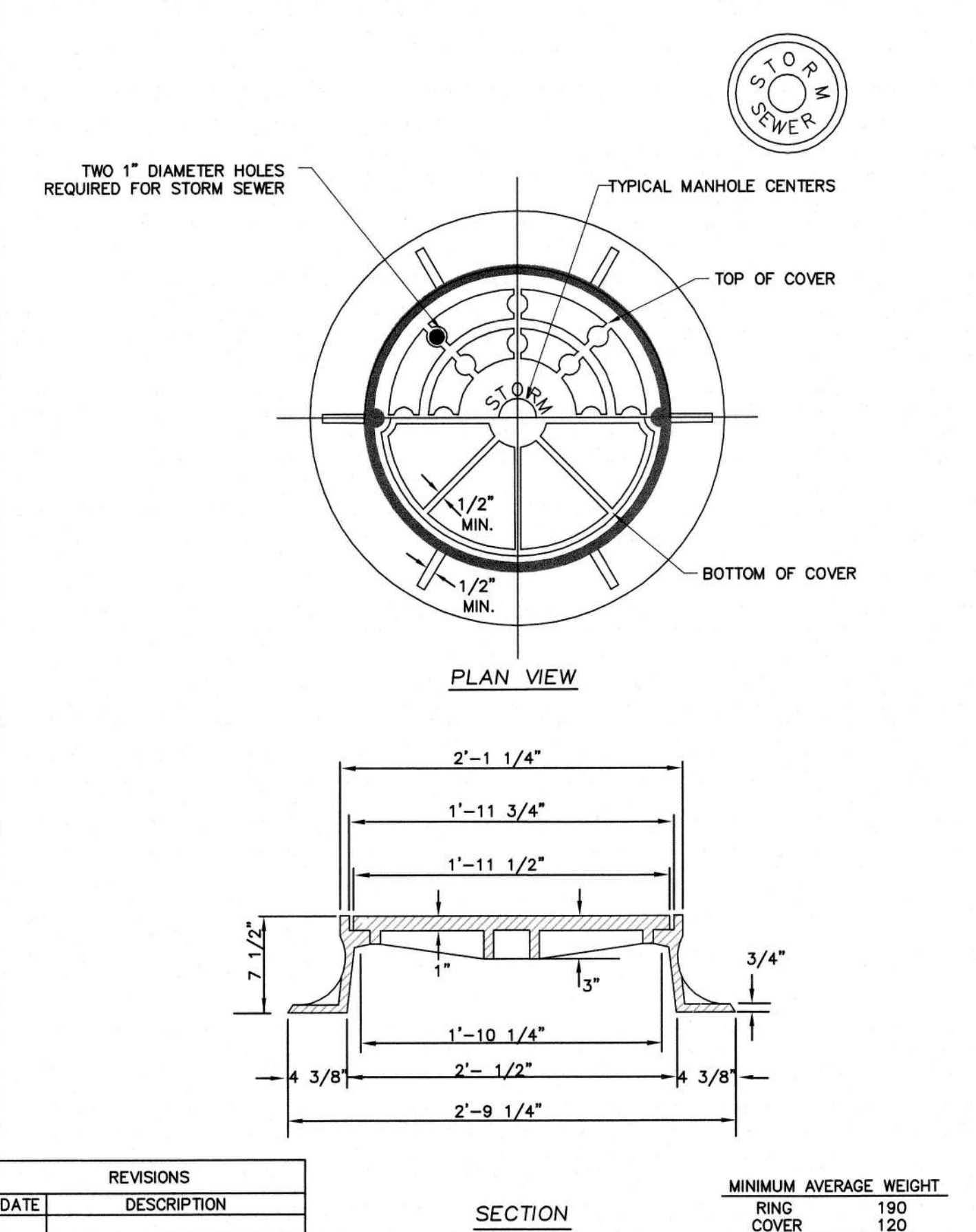
STANDARD CURB INLET

1 of 2
STD. NO.
5.05

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TOWN OF KNIGHTDALE
STANDARD DETAILS

STANDARD CURB INLET

2 of 2
STD. NO.
5.05

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TOWN OF KNIGHTDALE
STANDARD DETAILS

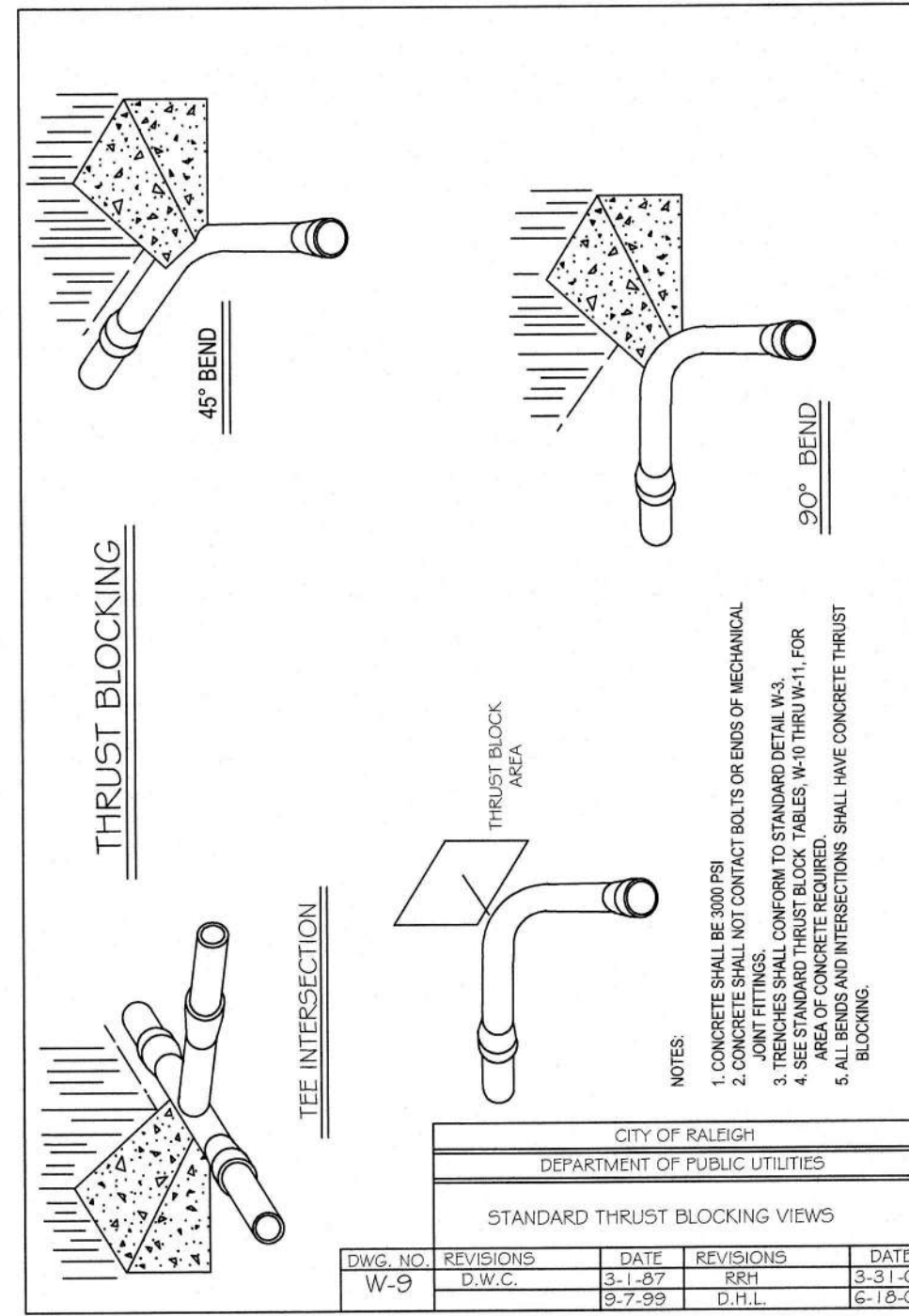
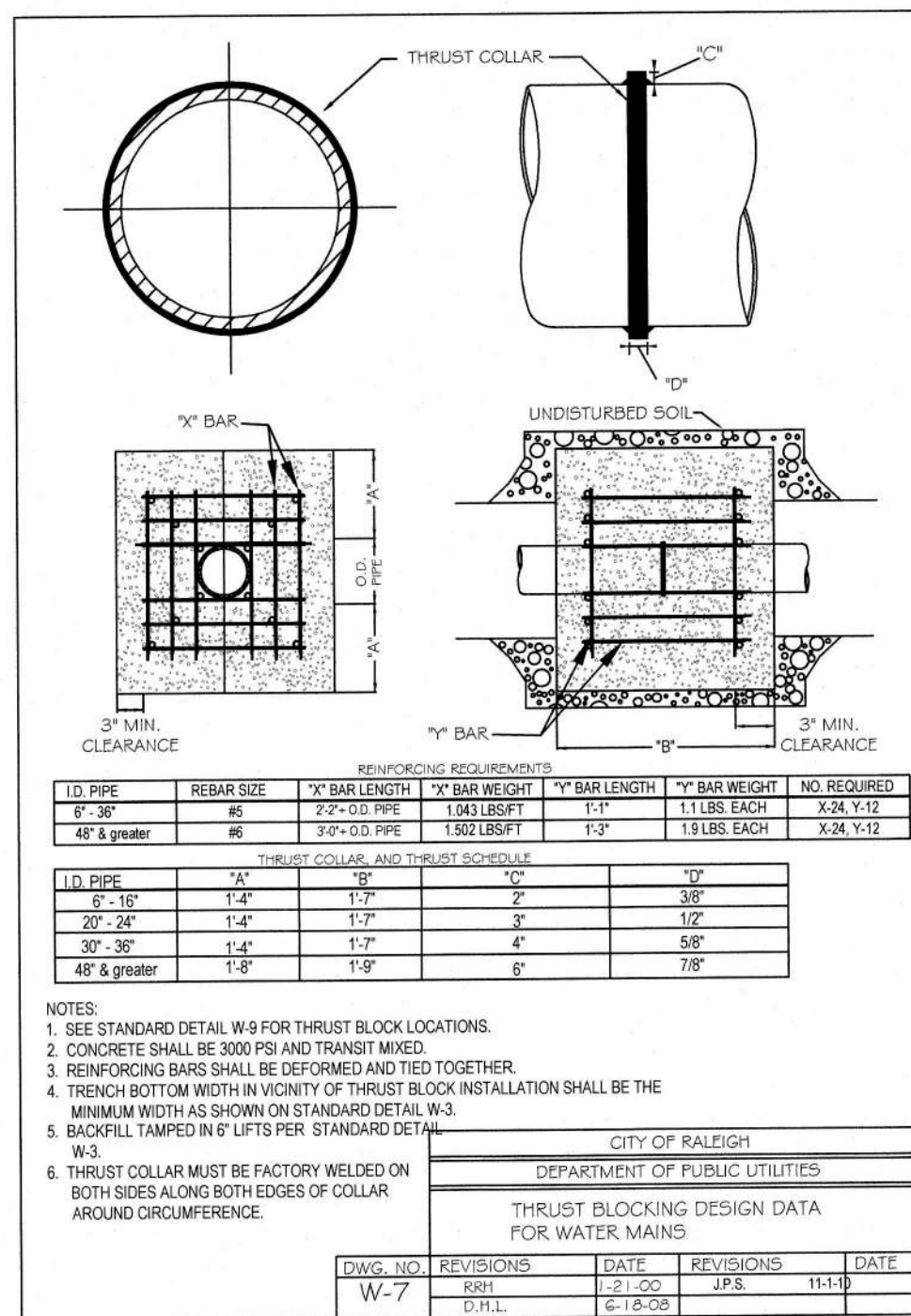
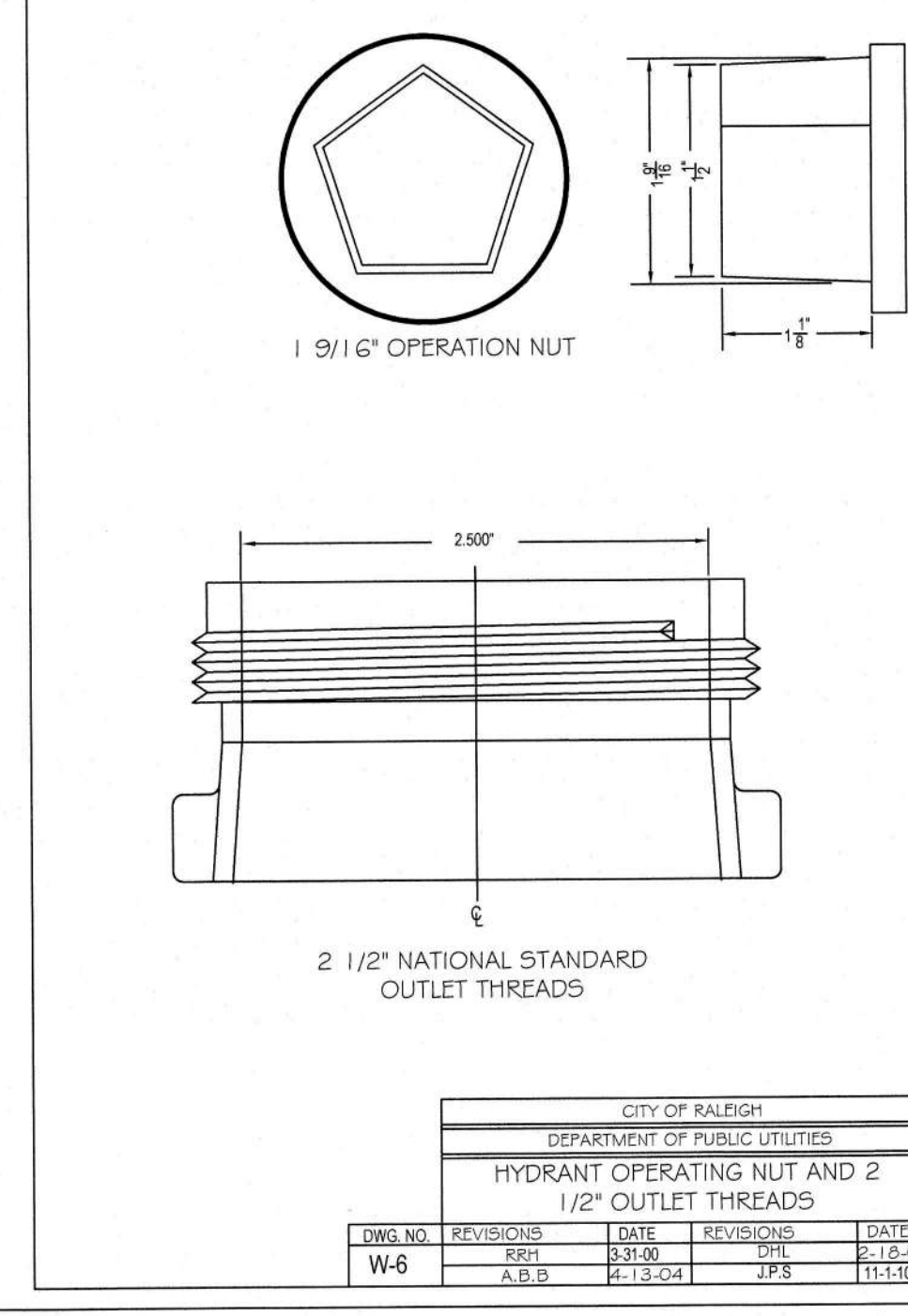
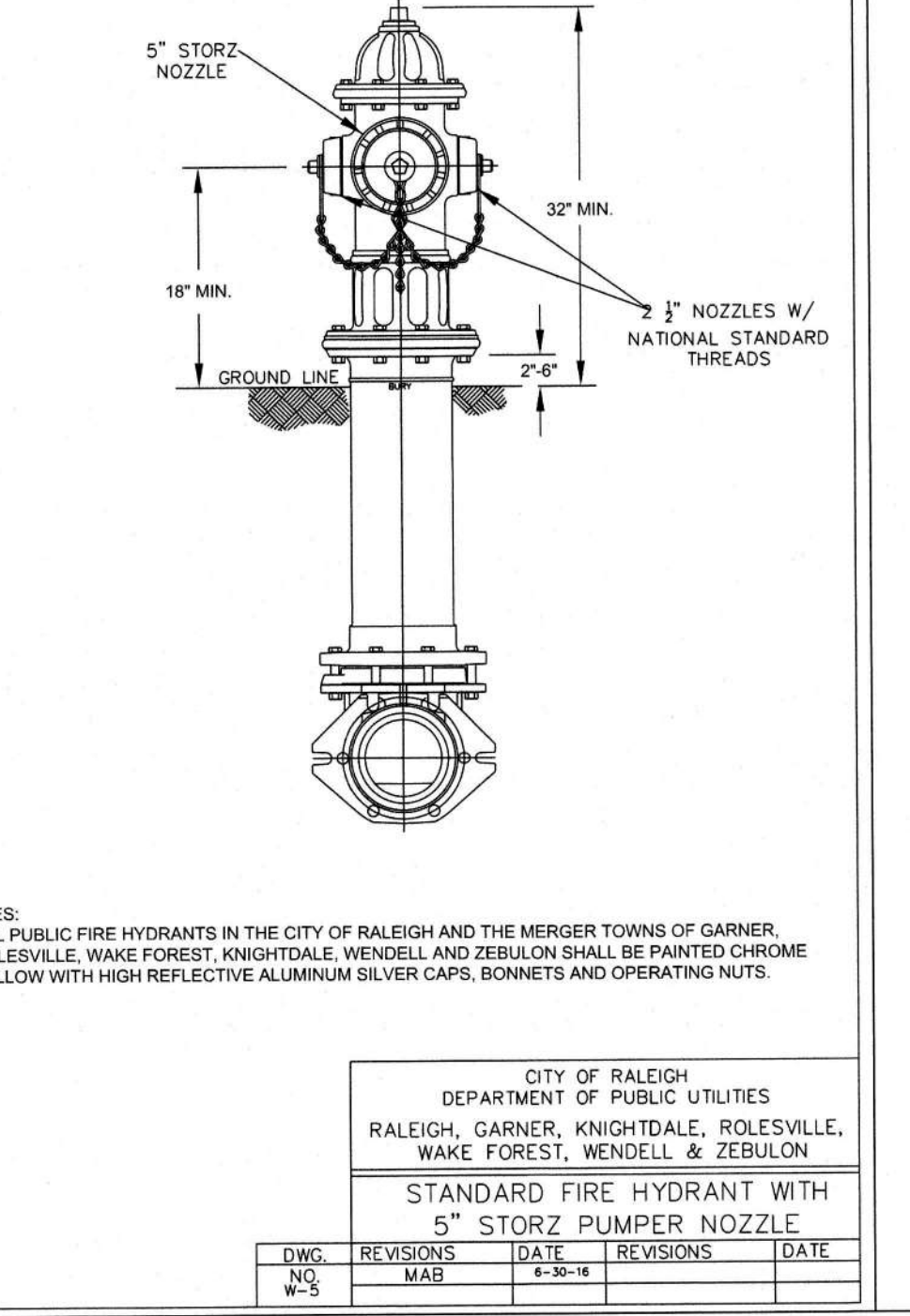
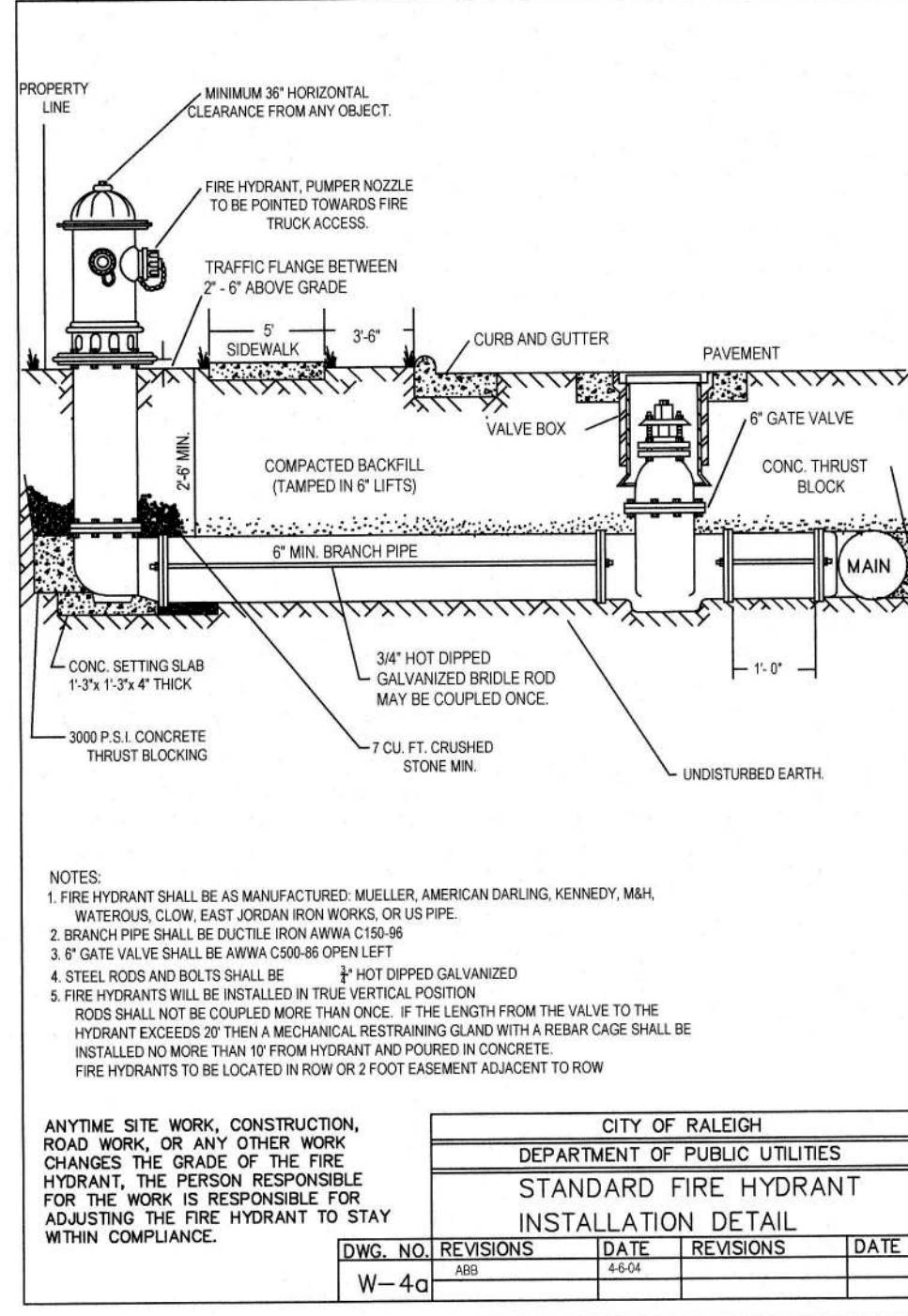
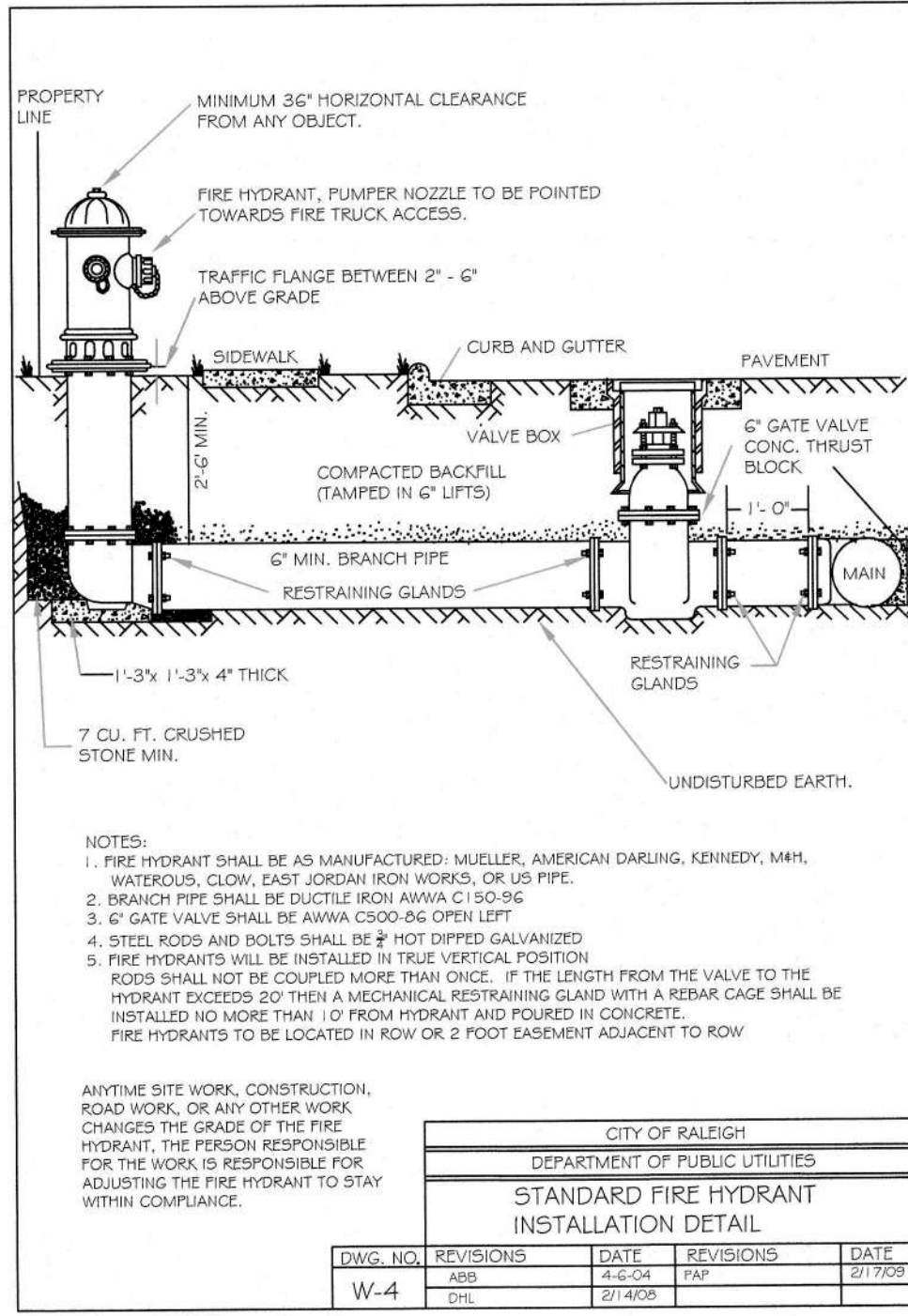
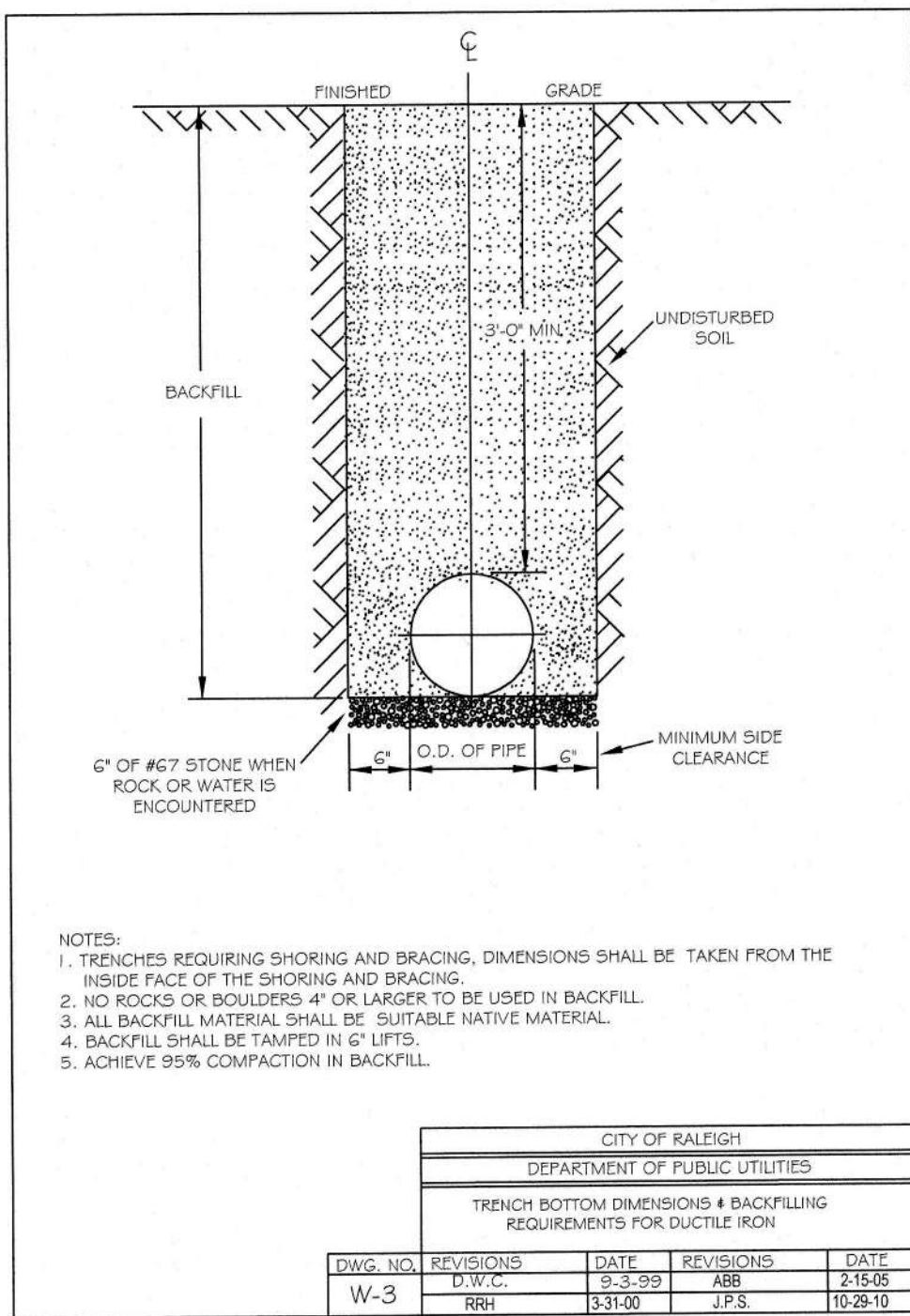
STANDARD MANHOLE RING & COVER

STD. NO.
5.10KNOW WHAT'S BELOW.
CALL BEFORE YOU
DIG.TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE
ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF
MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS
ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF
KNIGHTDALE.BY: *S. M. M. M.* DATE: 9-9-2019

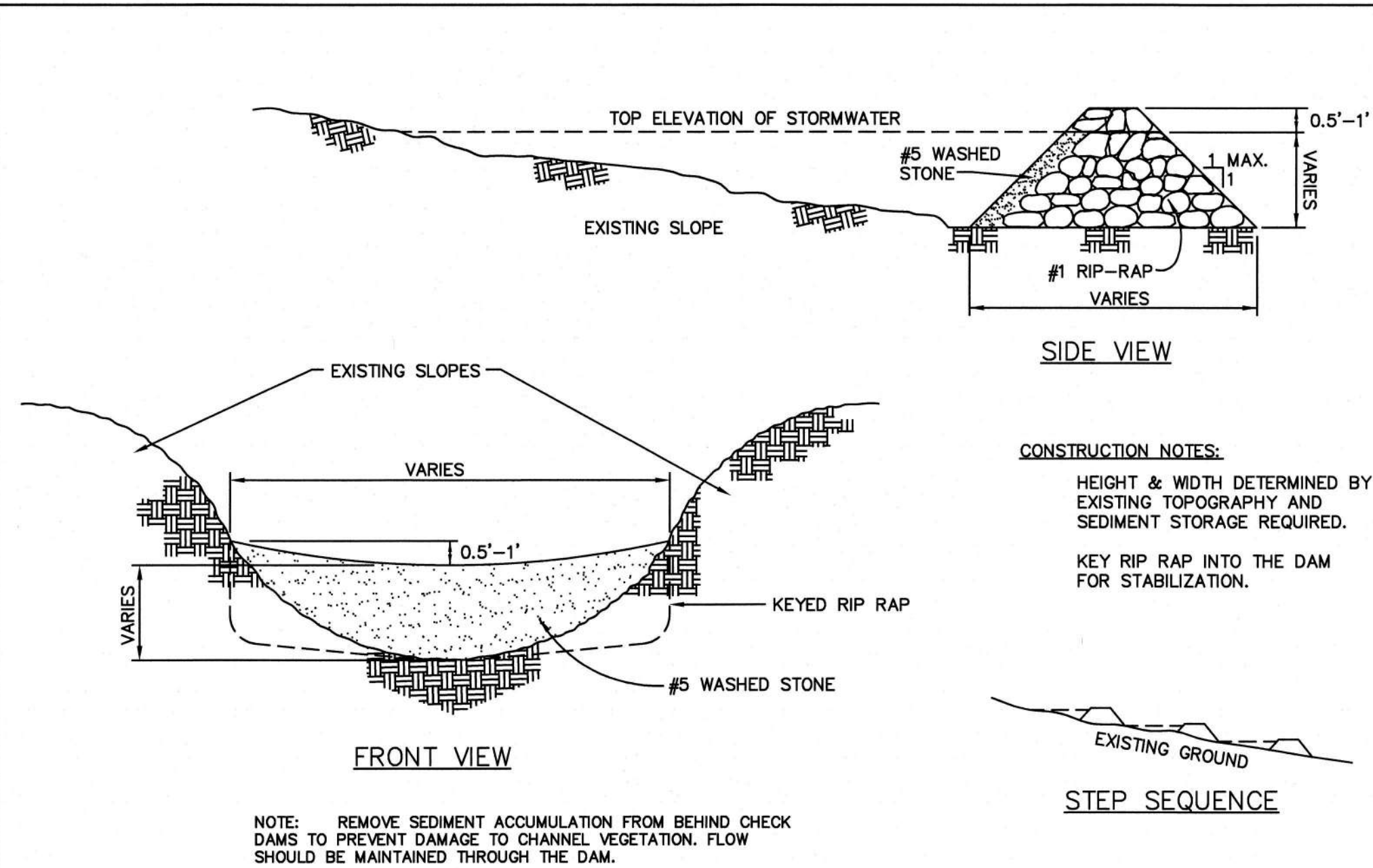
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND
SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.BY: *C. B. A.* DATE: 9/9/19

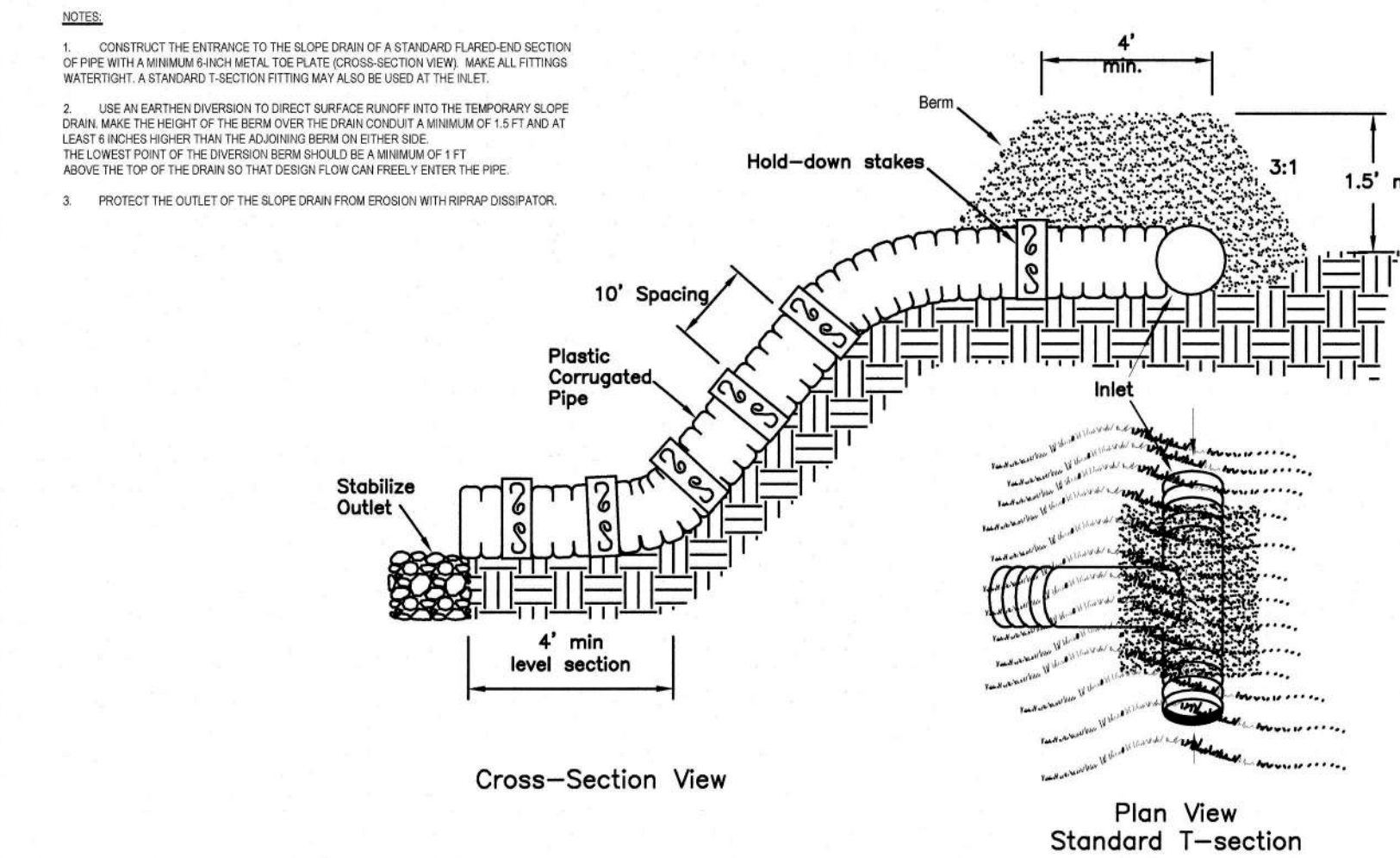
ADMINISTRATOR



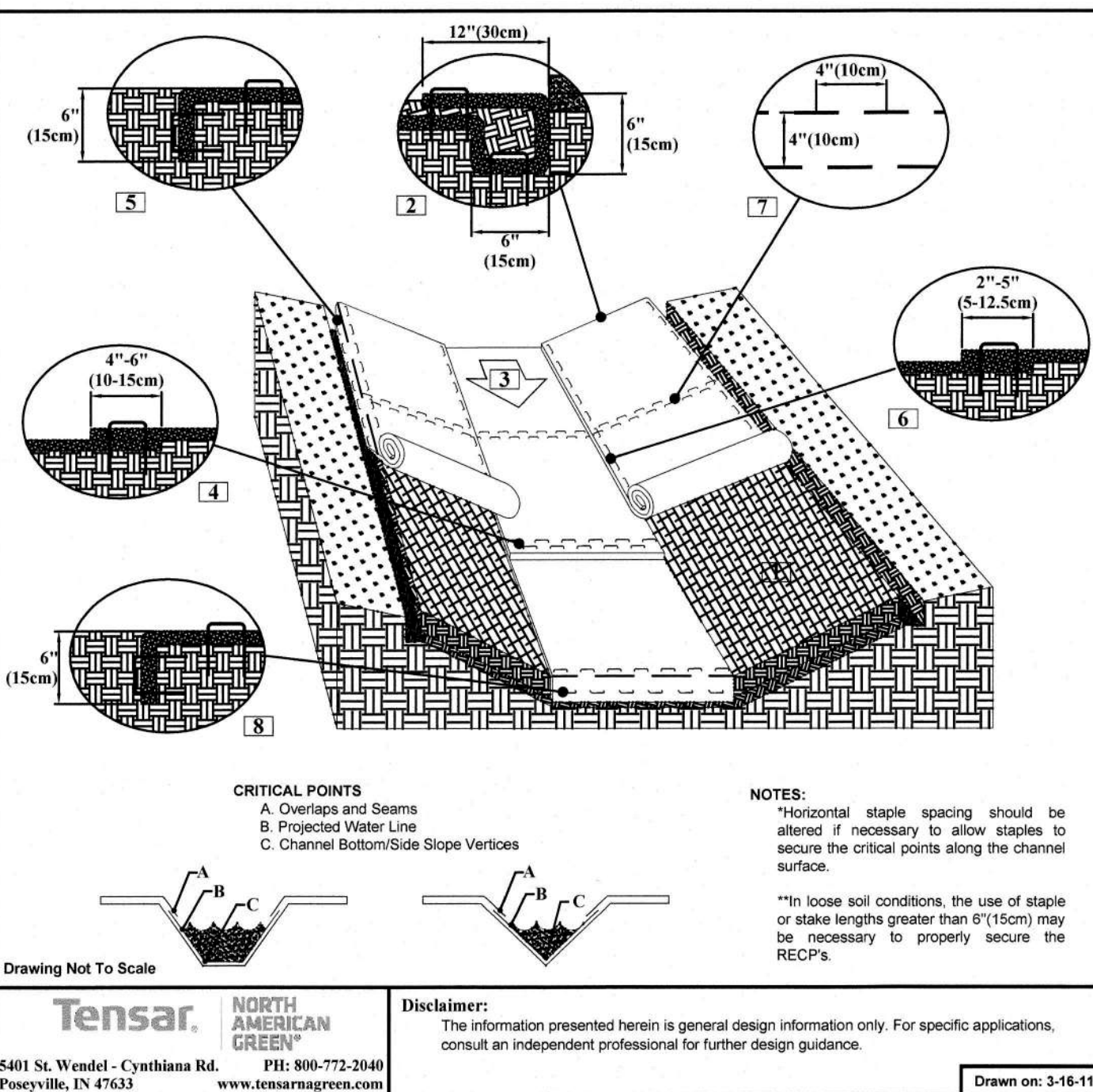
| REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I. | | | | | | | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| ALL AREAS GIVEN IN SQUARE FEET | | | | | | | | | | | |
| SIZE AND DEGREE OF BEND | STAYED THRU IN | STAYED THRU IN | STAYED THRU IN | STAYED THRU IN | STAYED THRU IN | STAYED THRU IN | STAYED THRU IN | STAYED THRU IN | STAYED THRU IN | STAYED THRU IN | STAYED THRU IN |
| 6" | 1.108 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 11 1/4" | 2.207 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| 22 1/2" | 4.328 | 2 | 3 | 3 | 1 | 1 | 1 | 2 | 5 | 1 | 1 |
| 45° | 7.966 | 2 | 4 | 5 | 1 | 1 | 2 | 8 | 1 | 1 | 1 |
| 90° | 15.932 | 3 | 5 | 6 | 2 | 2 | 3 | 10 | 1 | 1 | 1 |
| 135° | 23.898 | 4 | 6 | 7 | 3 | 3 | 4 | 13 | 2 | 1 | 1 |
| 180° | 31.864 | 5 | 7 | 8 | 4 | 4 | 5 | 16 | 3 | 1 | 1 |
| 225° | 39.830 | 6 | 8 | 9 | 5 | 5 | 6 | 19 | 4 | 1 | 1 |
| 270° | 47.796 | 7 | 9 | 10 | 6 | 6 | 7 | 22 | 5 | 1 | 1 |
| 315° | 55.762 | 8 | 10 | 11 | 7 | 7 | 8 | 25 | 6 | 1 | 1 |
| 360° | 63.728 | 9 | 11 | 12 | 8 | 8 | 9 | 28 | 7 | 1 | 1 |
| 405° | 71.694 | 10 | 12 | 13 | 9 | 9 | 10 | 31 | 8 | 1 | 1 |
| 450° | 79.660 | 11 | 13 | 14 | 10 | 10 | 11 | 34 | 9 | 1 | 1 |
| 495° | 87.626 | 12 | 14 | 15 | 11 | 11 | 12 | 37 | 10 | 1 | 1 |
| 540° | 95.592 | 13 | 15 | 16 | 12 | 12 | 13 | 40 | 11 | 1 | 1 |
| 585° | 103.558 | 14 | 16 | 17 | 13 | 13 | 14 | 43 | 12 | 1 | 1 |
| 630° | 111.524 | 15 | 17 | 18 | 14 | 14 | 15 | 46 | 13 | 1 | 1 |
| 675° | 119.490 | 16 | 18 | 19 | 15 | 15 | 16 | 49 | 14 | 1 | 1 |
| 720° | 127.456 | 17 | 19 | 20 | 16 | 16 | 17 | 52 | 15 | 1 | 1 |
| 765° | 135.422 | 18 | 20 | 21 | 17 | 17 | 18 | 55 | 16 | 1 | 1 |
| 810° | 143.388 | 19 | 21 | 22 | 18 | 18 | 19 | 58 | 17 | 1 | 1 |
| 855° | 151.354 | 20 | 22 | 23 | 19 | 19 | 20 | 61 | 18 | 1 | 1 |
| 900° | 159.320 | 21 | 23 | 24 | 20 | 20 | 21 | 64 | 19 | 1 | 1 |
| 945° | 167.286 | 22 | 24 | 25 | 21 | 21 | 22 | 67 | 20 | 1 | 1 |
| 990° | 175.252 | 23 | 25 | 26 | 22 | 22 | 23 | 70 | 21 | 1 | 1 |
| 1035° | 183.218 | 24 | 26 | 27 | 23 | 23 | 24 | 73 | 22 | 1 | 1 |
| 1080° | 191.184 | 25 | 27 | 28 | 24 | 24 | 25 | 76 | 23 | 1 | 1 |
| 1125° | 199.150 | 26 | 28 | 29 | 25 | 25 | 26 | 79 | 24 | 1 | 1 |
| 1170° | 207.116 | 27 | 29 | 30 | 26 | 26 | 27 | 82 | 25 | 1 | 1 |
| 1215° | 215.082 | 28 | 30 | 31 | 27 | 27 | 28 | 85 | 26 | 1 | 1 |
| 1260° | 223.048 | 29 | 31 | 32 | 28 | 28 | 29 | 88 | 27 | 1 | 1 |
| 1305° | 231.014 | 30 | 32 | 33 | 29 | 29 | 30 | 91 | 28 | 1 | 1 |
| 1350° | 238.980 | 31 | 33 | 34 | 30 | 30 | 31 | 94 | 29 | 1 | 1 |
| 1395° | 246.946 | 32 | 34 | 35 | 31 | 31 | 32 | 97 | 30 | 1 | 1 |
| 1440° | 254.912 | 33 | 35 | 36 | 32 | 32 | 33 | 100 | 31 | 1 | 1 |
| 1485° | 262.878 | 34 | 36 | 37 | 33 | 33 | 34 | 103 | 32 | 1 | 1 |
| 1530° | 270.844 | 35 | 37 | 38 | 34 | 34 | 35 | 106 | 33 | 1 | 1 |
| 1575° | 278.810 | 36 | 38 | 39 | 35 | 35 | 36 | 109 | 34 | 1 | 1 |
| 1620° | 286.776 | 37 | 39 | 40 | 36 | 36 | 37 | 112 | 35 | 1 | 1 |
| 1665° | 294.742 | 38 | 40 | 41 | 37 | 37 | 38 | 115 | 36 | 1 | 1 |
| 1710° | 302.708 | 39 | 41 | 42 | 38 | 38 | 39 | 118 | 37 | 1 | 1 |
| 1755° | 310.674 | 40 | 42 | 43 | 39 | 39 | 40 | 121 | 38 | 1 | 1 |
| 1800° | 318.640 | 41 | 43 | 44 | 40 | 40 | 41 | 124 | 39 | 1 | 1 |
| 1845° | 326.606 | 42 | 44 | 45 | 41 | 41 | 42 | 127 | 40 | 1 | 1 |
| 1890° | 334.572 | 43 | 45 | 46 | 42 | 42 | 43 | 130 | 41 | 1 | 1 |
| 1935° | 342.538 | 44 | 46 | 47 | 43 | 43 | 44 | 133 | 42 | 1 | 1 |
| 1980° | 350.504 | 45 | 47 | 48 | 44 | 44 | 45 | 136 | 43 | 1 | 1 |
| 2025° | 358.470 | 46 | 48 | 49 | 45 | 45 | 46 | 139 | 44 | 1 | 1 |
| 2070° | 366.436 | 47 | 49 | 50 | 46 | 46 | 47 | 142 | 45 | 1 | 1 |
| 2115° | 374.402 | 48 | 50 | 51 | 47 | 47 | 48 | 145 | 46 | 1 | 1 |
| 2160° | 382.368 | 49 | 51 | 52 | 48 | 48 | 49 | 148 | 47 | 1 | 1 |
| 2205° | 390.334 | 50 | 52 | 53 | 49 | 49 | 50 | 151 | 48 | 1 | 1 |
| 2250° | 398.300 | 51 | 53 | 54 | 50 | 50 | 51 | 154 | 49 | 1 | 1 |
| 2295° | 406.266 | 52 | 54 | 55 | 51 | 51 | 52 | 157 | 50 | 1 | 1 |
| 2340° | 414.232 | 53 | 55 | 56 | 52 | 52 | 53 | 160 | 51 | 1 | 1 |
| 2385° | 422.198 | 54 | 56 | 57 | 53 | 53 | 54 | 163 | 52 | 1 | 1 |
| 2430° | 430.164 | 55 | 57 | 58 | 54 | 54 | 55 | 166 | 53 | 1 | 1 |
| 2475° | 438.130 | 56 | 58 | 59 | 55 | 55 | 56 | 169 | 54 | 1 | 1 |
| 2520° | 446.096 | 57 | 59 | 60 | 56 | 56 | 57 | 172 | 55 | 1 | 1 |
| 2565° | 454.062 | 58 | 60 | 61 | 57 | 57 | 58 | 175 | 56 | 1 | 1 |
| 2610° | 462.028 | 59 | 61 | 62 | 58 | 58 | 59 | 178 | 57 | 1 | 1 |
| 2655° | 470.000 | 60 | 62 | 63 | 59 | 59 | 60 | 181 | 58 | 1 | 1 |
| 2700° | 477.966 | 61 | 63 | 64 | 60 | 60 | 61 | 184 | 59 | 1 | 1 |
| 2745° | 485.932 | 62 | 64 | 65 | 61 | 61 | 62 | 187 | 60 | 1 | 1 |
| 2790° | 493.898 | 63 | 65 | 66 | 62 | 62 | 63 | 190 | 61 | 1 | 1 |
| 2835° | 501.864 | 64 | 66 | 67 | 63 | 63 | 64 | 193 | 62 | 1 | 1 |
| 2880° | 509.830 | 65 | 67 | 68 | 64 | 64 | 65 | 196 | 63 | 1 | 1 |
| 2925° | 517.796 | 66 | 68 | 69 | 65 | 65 | 66 | 199 | 64 | 1 | 1 |
| 2970° | 525.762 | 67 | 69 | 70 | 66 | 66 | 67 | 202 | 65 | 1 | 1 |
| 3015° | 533.728 | 68 | 70 | 71 | 67 | 67 | 68 | 205 | 66 | 1 | 1 |
| 3060° | 541.694 | 69 | 71 | 72 | 68 | 68 | 69 | 208 | 67 | 1 | 1 |
| 3105° | 549.660 | 70 | 72 | 73 | 69 | 69 | 70 | 211 | 68 | 1 | 1 |
| 3150° | 557.626 | 71 | 73 | 74 | 70 | 70 | 71 | 214 | 69 | 1 | 1 |
| 3195° | 565.592 | 72 | 74 | 75 | 71 | 71 | 72 | 217 | 70 | 1 | 1 |
| 3240° | 573.558 | 73 | 75 | 76 | 72 | 72 | 73 | 220 | 71 | 1 | 1 |
| 3285° | 581.524 | 74 | 76 | 77 | 73 | 73 | 74 | 223 | 72 | 1 | 1 |
| 3330° | 589.490 | 75 | 77 | 78 | 74 | 74 | 75 | 226 | 73 | 1 | 1 |
| 3375° | 597.456 | 76 | 78 | 79 | 75 | 75 | 76 | 229 | 74 | 1 | 1 |
| 3420° | 605.422 | 77 | 79 | 80 | 76 | 76 | 77 | 232 | 75 | 1 | 1 |
| 3465° | 613.388 | 78 | 80 | 81 | 77 | 77 | 78 | 235 | 76 | 1 | 1 |
| 3510° | 621.354 | 79 | 81 | 82 | 78 | 78 | 79 | 238 | 77 | 1 | 1 |
| 3555° | 629.320 | 80 | 82 | 83 | 79 | 79 | 80 | 241 | 78 | 1 | 1 |
| 3600° | 637.286 | 81 | 83 | 84 | 80 | 80 | 81 | 244 | 79 | 1 | 1 |
| 3645° | 645.252 | 82 | 84 | 85 | 81 | 81 | 82 | 247 | 80 | 1 | 1 |
| 3690° | 653.218 | 83 | 85 | 86 | 82 | 82 | 83 | 250 | 81 | 1 | 1 |
| 3735° | 661.184 | 84 | 86 | 87 | 83 | 83 | 84 | 253 | 82 | 1 | 1 |
| 3780° | 669.150 | 85 | 87 | 88 | 84 | 84 | 85 | 256 | 83 | 1 | 1 |
| 3825° | 677.116 | 86 | 88 | 89 | 85 | 85 | 86 | 259 | 84 | 1 | 1 |
| 3870° | 685.082 | 87 | 89 | 90 | 86 | 86 | 87 | 262 | 85 | 1 | 1 |
| 3915° | 693.048 | 88 | 90 | 91 | 87 | 87 | 88 | 265 | 86 | 1 | 1 |
| 3960° | 701.014 | 89 | 91 | 92 | 88 | 88 | 89 | 268 | 87 | 1 | 1 |
| 4005° | 708.980 | 90 | 92 | 93 | 89 | 89 | 90 | 271 | 88 | 1 | 1 |
| 4050° | 716.946 | 91 | 93 | 94 | 90 | 90 | 91 | 274 | 89 | 1 | 1 |
| 4095° | 724.912 | 92 | 94 | 95 | 91 | 91 | 92 | 277 | 90 | 1 | 1 |
| 4140° | 732.878 | 93 | 95 | 96 | 92 | 92 | 93 | 280 | 91 | 1 | 1 |
| 4185° | 740.844 | 94 | 96 | 97 | 93 | 93 | 94 | 283 | 92 | 1 | 1 |
| 4230° | 748.810 | 95 | 97 | 98 | 94 | 94 | 95 | 286 | 93 | 1 | 1 |
| 4275° | 756.776 | 96 | 98 | 99 | 95 | 95 | 96 | 289 | 94 | 1 | 1 |
| 4320° | 764.742 | 97 | 99 | 100 | 96 | 96 | 97 | 292 | 95 | 1 | 1 |
| 4365° | 772.708 | 98 | 100 | 101 | 97 | 97 | 98 | 295 | 96 | 1 | 1 |
| 4410° | 780.674 | 99 | 101 | 102 | 98 | 98 | 99 | 298 | 97 | 1 | 1 |
| 4455° | 788.640 | 100 | 102 | 103 | 99 | 99 | 100 | 301 | 98 | 1 | 1 |
| 4500° | 796.606 | 101 | 103 | 104 | 100 | 100 | 101 | 304 | 99 | 1 | 1 |
| 4545° | 804.572 | 102 | 104 | 105 | 101 | 101 | 102 | 307 | 100 | 1 | 1 |
| 4590° | 812.538 | 103 | 105 | 106 | 102 | 102 | 103 | 310 | 101 | 1 | 1 |
| 4635° | 820.504 | 104 | 106 | 107 | 103 | 103 | 104 | 313 | 102 | 1 | 1 |
| 4680° | 828.470 | 105 | 107 | 108 | 104 | 104 | 105 | 316 | 103 | 1 | 1 |
| 4725° | 836.436 | 106 | 108 | 109 | 105 | 105 | 106 | 319 | 104 | 1 | 1 |
| 4770° | 844.402 | 107 | 109 | 110 | 106 | 106 | 107 | 322 | 105 | 1 | 1 |
| 4815° | 852.368 | 108 | 110 | 111 | 107 | 107 | 108 | 325 | 106 | 1 | 1 |
| 4860° | 860.334 | 109 | 111 | 112 | 108 | 108 | 109 | 328 | 107 | 1 | 1 |
| 4905° | 868.300 | 110 | 112 | 113 | 109 | 109 | 110 | 331 | 108 | 1 | 1 |
| 4950° | 876.266 | 111 | 113 | 114 | 110 | 110 | 111 | 334 | 109 | 1 | 1 |
| 4995° | 884.232 | 112 | 114 | 115 | 111 | 111 | 112 | 337 | 110 | 1 | 1 |
| 5040° | 892.198 | 113 | 115 | 116 | 112 | 112 | 113 | 340 | 111 | 1 | 1 |
| 5085° | 900.164 | 114 | 116 | 117 | 113 | 113 | 114 | 343 | 112 | 1 | 1 |
| 5130° | 908.130 | 115 | 117 | 118 | 114 | 114 | 115 | 346 | 113 | 1 | 1 |
| 5175° | 916.096 | 116 | 118 | 119 | 115 | 115 | 116 | 349 | 114 | 1 | 1 |
| 5220° | 924.062 | 117 | 119 | 120 | 116 | 116 | 117 | 352 | 115 | 1 | 1 |
| 5265° | 932.028 | 118 | 120 | 121 | 117 | 117 | 118 | 355 | 116 | 1 | 1 |
| 5310° | 940.000 | 119 | 121 | 122 | 118 | 118 | 119 | 358 | 117 | 1 | 1 |
| 5355° | 947.966 | 120 | 122 | 123 | 119 | 119 | 120 | 361 | 118 | 1 | 1 |
| 5400° | 955.932 | 121 | 123 | 124 | 120 | 120 | 121 | 364 | 119 | 1 | 1 |
| 5445° | 963.898 | 122 | 124 | 125 | 121 | 121 | 122 | 367 | 120 | 1 | 1 |
| 5490° | 971.864 | 123 | 125 | 126 | 122 | 122 | 123 | 370 | 121 | 1 | 1 |
| 5535° | 979.830 | 124 | 126 | 127 | 123 | 123 | 124 | 373 | 122 | 1 | 1 |
| 5580° | 987.796 | 125 | 127 | 128 | 124 | 124 | 125 | 376 | 123 | 1 | 1 |
| 5625° | 995.762 | 126 | 128 | 129 | 125 | 125 | 126 | 379 | 124 | 1</ | |



STANDARD CHECK DAM



STANDARD TEMPORARY SLOPE DRAIN

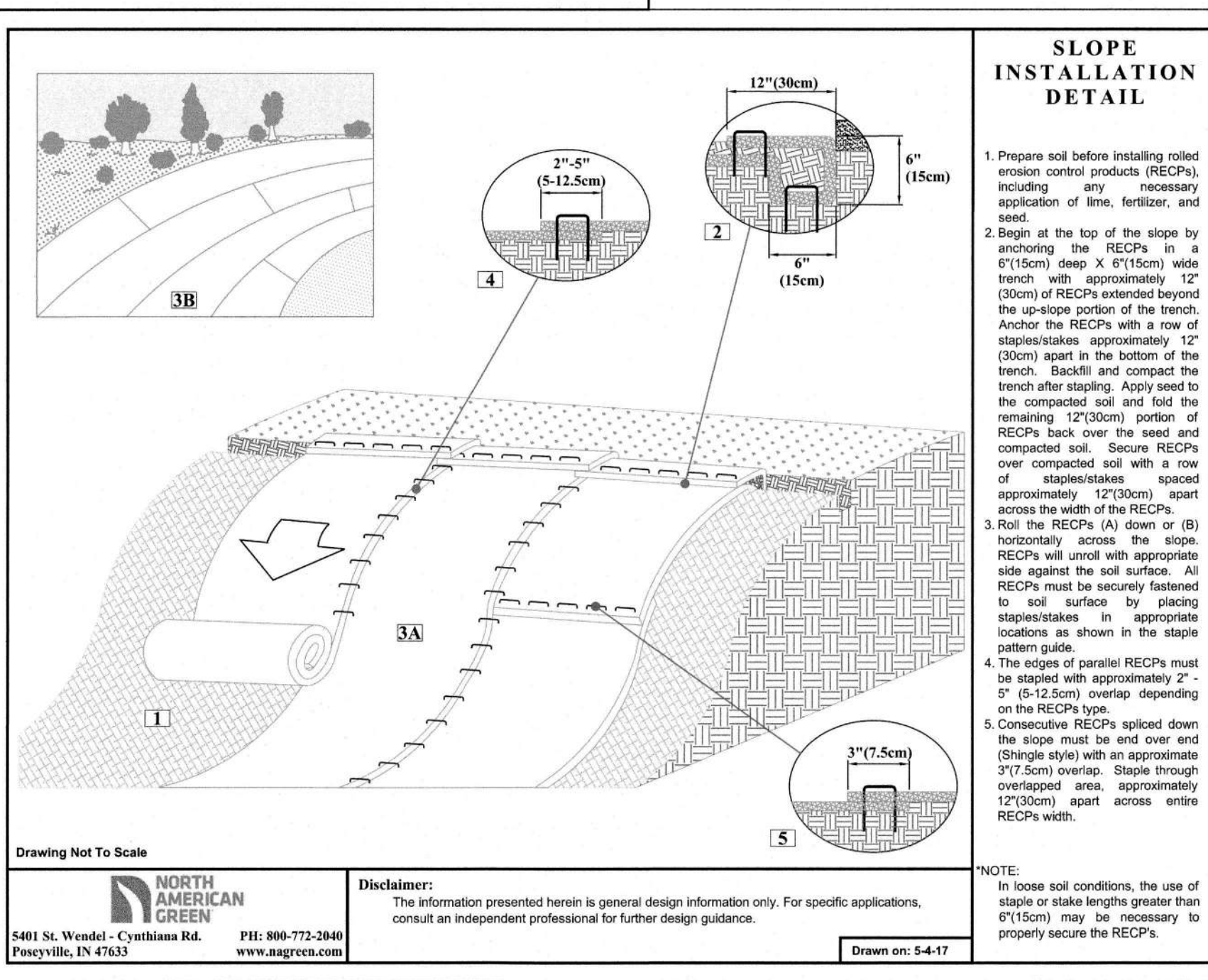


Drawing Not To Scale

Tensar
NORTH AMERICAN GREEN
5401 St. Wendel - Cynthia Rd.
Poseyville, IN 47633
PH: 800-772-2640
www.tensarusa.com

Disclaimer:
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 3-16-11



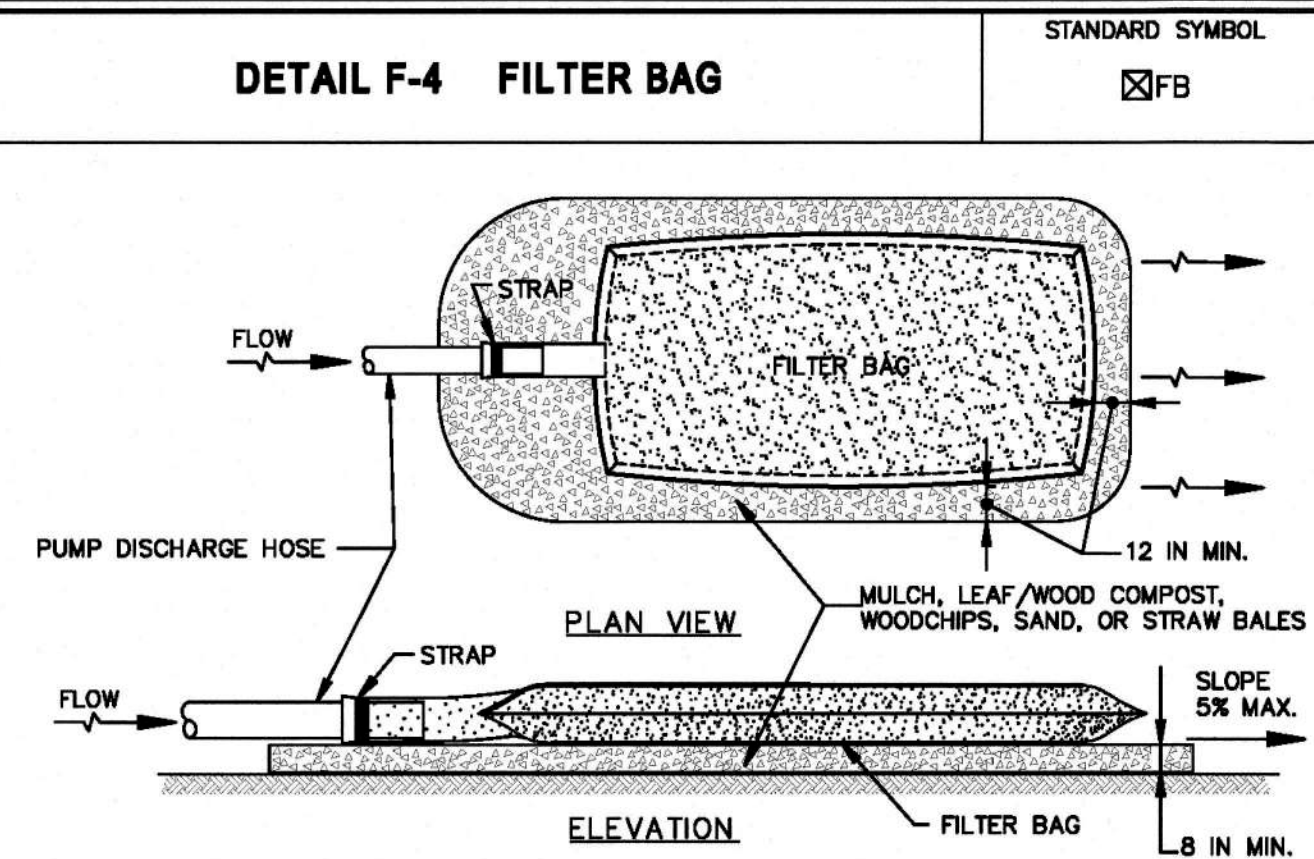
Drawing Not To Scale

NORTH AMERICAN GREEN
5401 St. Wendel - Cynthia Rd.
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Disclaimer:
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Drawn on: 5-4-17

DETAIL F-4 FILTER BAG

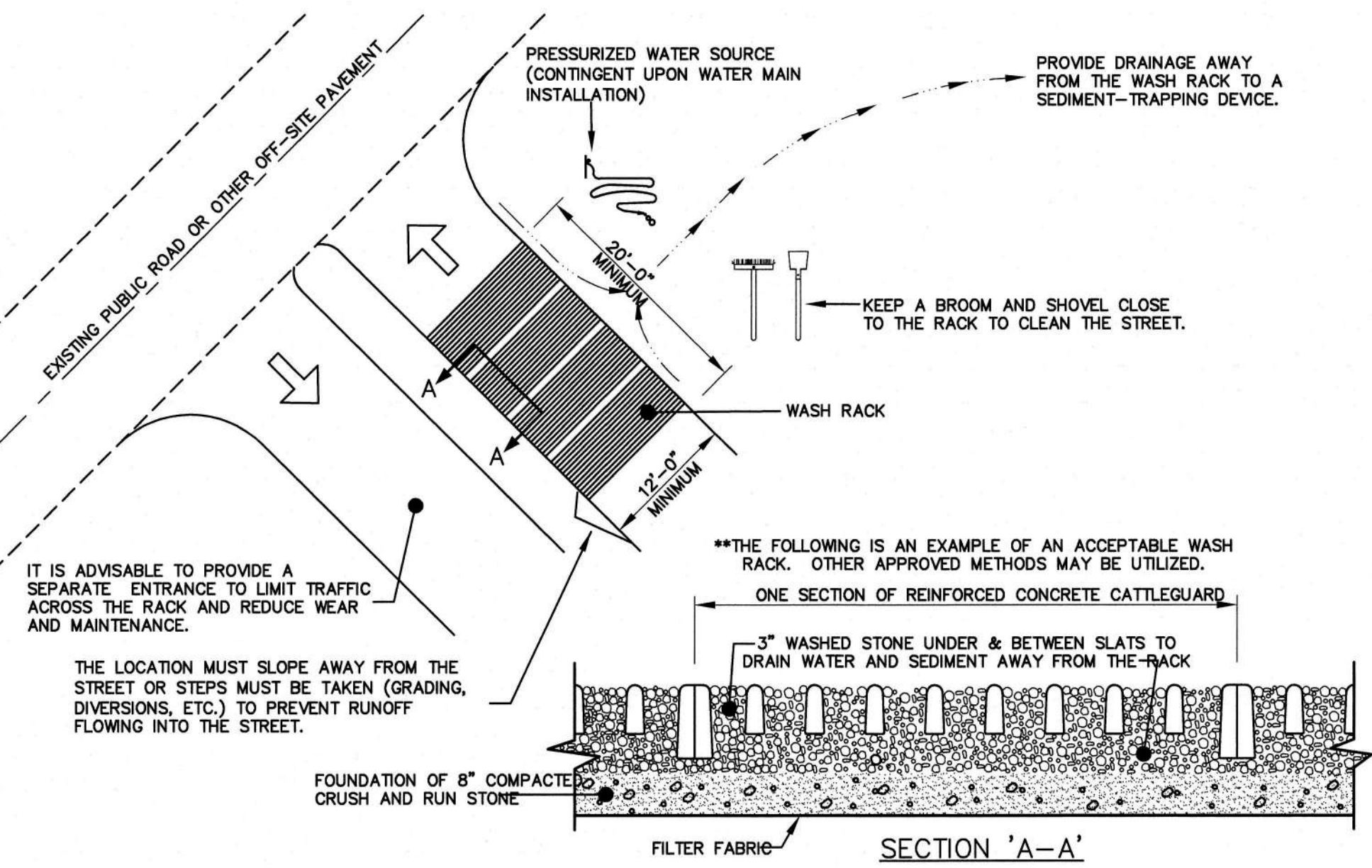


CONSTRUCTION SPECIFICATIONS

- TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
- PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
- CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
- REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
- USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

| | | |
|-----------------------------------|----------------------------|-------------|
| GRAB TENSILE | 250 LB | ASTM D-4632 |
| PUNCTURE | 150 LB | ASTM D-4633 |
| FLOW RATE | 70 GAL/MIN/FT ² | ASTM D-4491 |
| PERMITTIVITY (SEC ⁻¹) | 1.2 SEC-1 | ASTM D-4491 |
| UV RESISTANCE | 70% STRENGTH @ 500 HOURS | ASTM D-4355 |
| APPARENT OPENING SIZE (AOS) | 0.15-0.18 MM | ASTM D-4751 |
| SEAM STRENGTH | 90% | ASTM D-4632 |

- REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.



STANDARD CONSTRUCTION EXIT WASH RACK

IT IS ADVISABLE TO PROVIDE A SEPARATE ENTRANCE TO LIMIT TRAFFIC ACROSS THE RACK AND REDUCE WEAR AND MAINTENANCE.

THE LOCATION MUST SLOPE AWAY FROM THE STREET OR STEPS MUST BE TAKEN (GRADING, DIVERSIONS, ETC.) TO PREVENT RUNOFF FLOWING INTO THE STREET.

PROVIDE DRAINAGE AWAY FROM THE WASH RACK TO A SEDIMENT-TRAPPING DEVICE.

KEEP A BROOM AND SHOVEL CLOSE TO THE RACK TO CLEAN THE STREET.

**THE FOLLOWING IS AN EXAMPLE OF AN ACCEPTABLE WASH RACK. OTHER APPROVED METHODS MAY BE UTILIZED.

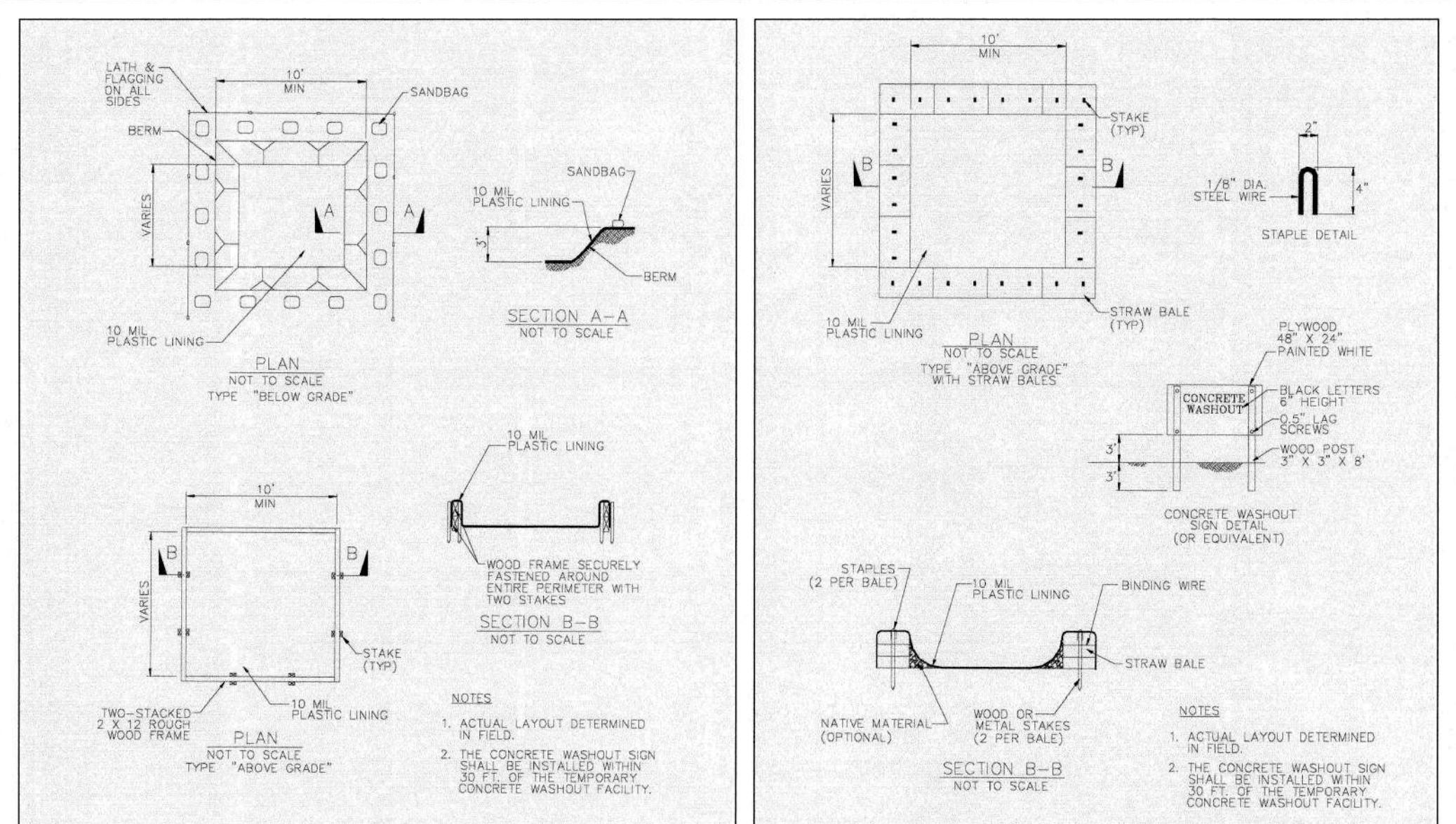
ONE SECTION OF REINFORCED CONCRETE CATTLEGUARD

3" WASHED STONE UNDER & BETWEEN SLATS TO DRAIN WATER AND SEDIMENT AWAY FROM THE RACK

FOUNDATION OF 8" COMPACTED CRUSH AND RUN STONE

FILTER FABRIC

SECTION 'A-A'



CONCRETE WASHOUT DETAIL

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *[Signature]* DATE: 9-9-2019

DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *[Signature]* DATE: 9/9/19

ADMINISTRATOR

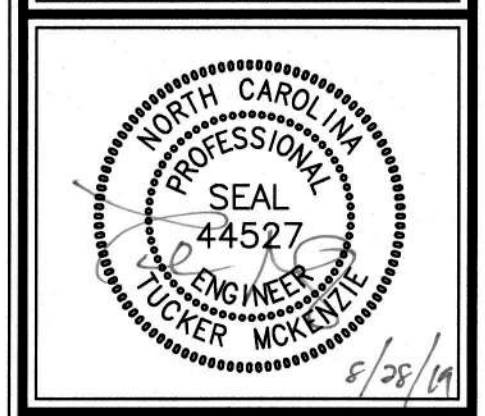
WithersRavenel
Engineers | Planners | Surveyors

WAKE STONE ATHLETIC COMPLEX

KNIGHTDALE, NORTH CAROLINA

EROSION CONTROL DETAILS

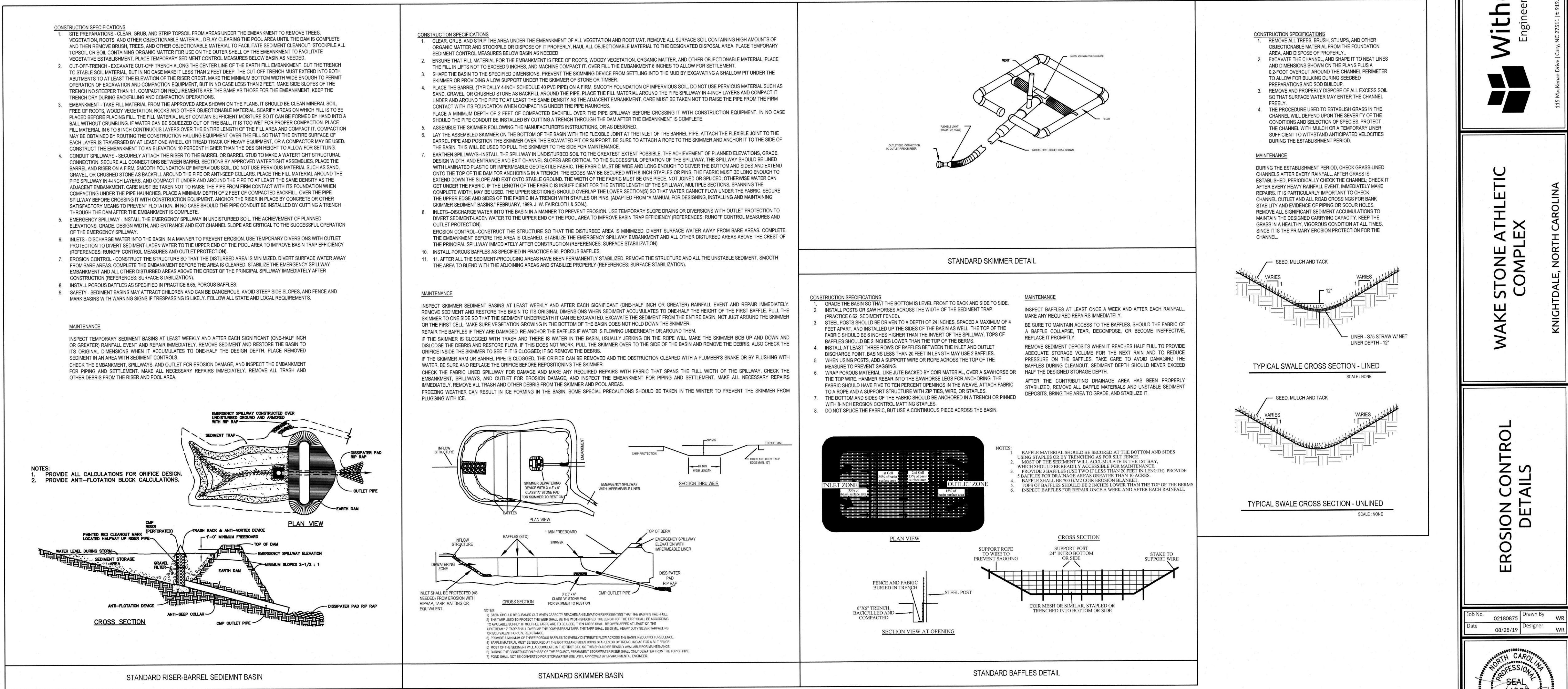
Job No. 02180875 Drawn By WR
Date 08/28/19 Designer WR



Revisions
1 ADDENDUM 1 08/20/19



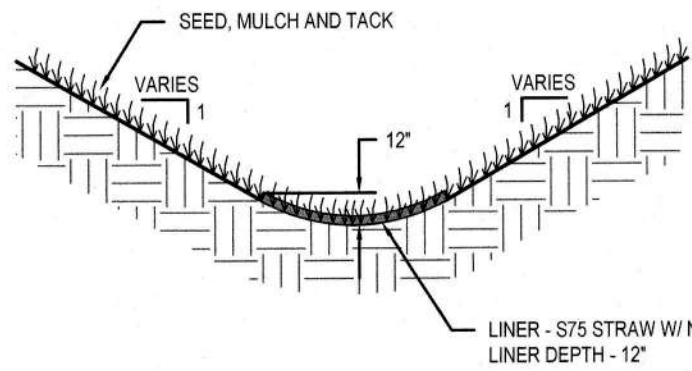
Sheet No.
C9.8



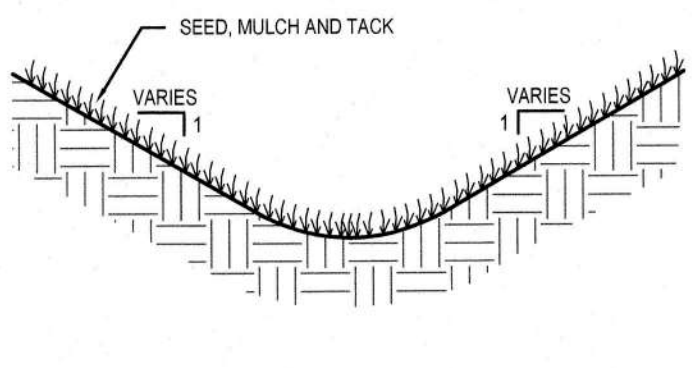
- CONSTRUCTION SPECIFICATIONS**
1. REMOVE ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA AND DISPOSE OF PROPERLY.
 2. EXCAVATE THE CHANNEL AND SHAPE IT TO NEAT LINES AND DIMENSIONS SHOWN ON THE PLANS PLUS A 0.2-FOOT OVERCUT AROUND THE CHANNEL PERIMETER TO ALLOW FOR BULKING DURING SEEDED PREPARATIONS AND SOO BUILDUP.
 3. REMOVE AND PROPERLY DISPOSE OF ALL EXCESS SOIL SO THAT SURFACE WATER MAY ENTER THE CHANNEL FREELY.
 4. THE PROCEDURE USED TO ESTABLISH GRASS IN THE CHANNEL WILL DEPEND UPON THE SEVERITY OF THE CONDITIONS AND SELECTION OF SPECIES. PROTECT THE CHANNEL WITH MULCH OR A TEMPORARY LINER SUFFICIENT TO WITHSTAND ANTICIPATED VELOCITIES DURING THE ESTABLISHMENT PERIOD.

MAINTENANCE

DURING THE ESTABLISHMENT PERIOD, CHECK GRASS-LINED CHANNELS AFTER EVERY RAINFALL. AFTER GRASS IS ESTABLISHED, PERIODICALLY CHECK THE CHANNEL. CHECK IT AFTER EVERY HEAVY RAINFALL EVENT. IMMEDIATELY MAKE REPAIRS. IT IS PARTICULARLY IMPORTANT TO CHECK CHANNEL OUTLET AND ALL ROAD CROSSINGS FOR BANK STABILITY AND EVIDENCE OF PIPING OR SCOUR HOLES. REMOVE ALL SIGNIFICANT SEDIMENT ACCUMULATIONS TO MAINTAIN THE DESIGNED CARRYING CAPACITY. KEEP THE GRASS IN A HEALTHY, VIGOROUS CONDITION AT ALL TIMES, SINCE IT IS THE PRIMARY EROSION PROTECTION FOR THE CHANNEL.



TYPICAL SWALE CROSS SECTION - LINED



TYPICAL SWALE CROSS SECTION - UNLINED



KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.

TOWN CERTIFICATION. THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: *SAH* DATE: **9-9-2019**

DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: *CDK* DATE: **9/9/19**

ADMINISTRATOR



Job No. 02180875 Drawn By WR
Date 08/28/19 Designer WR



Revisions
1 ADDENDUM 1 08/20/19

Sheet No.

C9.9

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT
Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

| Required Ground Stabilization Timeframes | | |
|--|---|---|
| Site Area Description | Stabilize within this many calendar days after ceasing land disturbance | Timeframe variations |
| (a) Perimeter dikes, swales, ditches, and perimeter slopes | 7 | None |
| (b) High Quality Water (HQW) Zones | 7 | None |
| (c) Slopes steeper than 3:1 | 7 | If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed. -7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed |
| (d) Slopes 3:1 to 4:1 | 14 | -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope |
| (e) Areas with slopes flatter than 4:1 | 14 | -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope |

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

| Temporary Stabilization | Permanent Stabilization |
|--|---|
| <ul style="list-style-type: none">Temporary grass seed covered with straw or other mulches and tackifiersHydroseeding Rolled erosion control products with or without temporary grass seedAppropriately applied straw or other mulchPlastic sheeting | <ul style="list-style-type: none">Permanent grass seed covered with straw or other mulches and tackifiersGeotextile fabrics such as permanent soil reinforcement mattingHydroseedingShrubs or other permanent plantings covered with mulchUniform and evenly distributed ground cover sufficient to restrain erosionStructural methods such as concrete, asphalt or retaining walls Rolled erosion control products with grass seed |

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

- Select flocculants that are appropriate for the soils being exposed during construction, selecting from the NC DWR List of *Approved PAMS/Flocculants*.
- Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
- Apply flocculants at the concentrations specified in the NC DWR List of *Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
- Provide ponding area for containment of treated Stormwater before discharging offsite.
- Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

- Maintain vehicles and equipment to prevent discharge of fluids.
- Provide drip pans under any stored equipment.
- Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
- Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
- Remove leaking vehicles and construction equipment from service until the problem has been corrected.
- Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

- Never bury or burn waste. Place litter and debris in approved waste containers.
- Provide a sufficient number and size of waste containers (e.g. dumpster, trash receptacle) on site to contain construction and domestic wastes.
- Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
- Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
- Anchor all lightweight items in waste containers during times of high winds.
- Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
- Dispose waste off-site at an approved disposal facility.
- On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

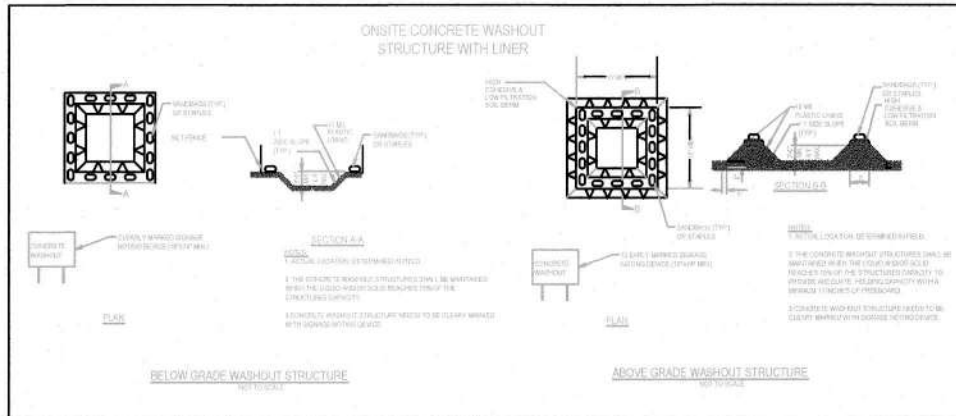
- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
- Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Contain liquid wastes in a controlled area.
- Containment must be labeled, sized and placed appropriately for the needs of site.
- Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

PORTABLE TOILETS

- Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
- Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
- Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

- Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
- Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
- Provide stable stone access point when feasible.
- Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.



CONCRETE WASHOUTS

- Do not discharge concrete or cement slurry from the site.
- Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
- Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
- Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
- Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
- Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
- Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
- Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
- Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
- At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

- Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
- Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
- Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
- Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

- Create designated hazardous waste collection areas on-site.
- Place hazardous waste containers under cover or in secondary containment.
- Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

NOTE: ALL GROUND COVER TO BE APPLIED PER CONDITIONS OF THE NPDES PERMIT OR IN CRITICAL AREAS, AT END OF DAY.

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

| Inspect | Frequency (during normal business hours) | Inspection records must include: |
|--|--|---|
| (1) Rain gauge maintained in good working order | Daily | Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero". The permittee may use another rain-monitoring device approved by the Division. |
| (2) E&SC Measures | At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours | 1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken. |
| (3) Stormwater discharge outfalls (SDOs) | At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours | 1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken. |
| (4) Perimeter of site | At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours | If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases. |
| (5) Streams or wetlands onsite or offsite (where accessible) | At least once per 7 calendar days and within 24 hours of a rain event > 1.0 inch in 24 hours | If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit of this permit. |
| (6) Ground stabilization measures | After each phase of grading | 1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible. |

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be documented in the manner described:

| Item to Document | Documentation Requirements |
|---|---|
| (a) Each E&SC Measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC Plan. | Initial and date each E&SC Measure on a copy of the approved E&SC Plan or complete, date and sign an inspection report that lists each E&SC Measure shown on the approved E&SC Plan. This documentation is required upon the initial installation of the E&SC Measures or if the E&SC Measures are modified after initial installation. |
| (b) A phase of grading has been completed. | Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate completion of the construction phase. |
| (c) Ground cover is located and installed in accordance with the approved E&SC Plan. | Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications. |
| (d) The maintenance and repair requirements for all E&SC Measures have been performed. | Complete, date and sign an inspection report. |
| (e) Corrective actions have been taken to E&SC Measures. | Initial and date a copy of the approved E&SC Plan or complete, date and sign an inspection report to indicate the completion of the corrective action. |

2. Additional Documentation

In addition to the E&SC Plan documents above, the following items shall be kept on the site and available for agency inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

- This general permit as well as the certificate of coverage, after it is received.
- Records of inspections made during the previous 30 days. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.
- All data used to complete the Notice of Intent and older inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING**

SECTION C: REPORTING

1. Occurrences that must be reported

Permittees shall report the following occurrences:

- Visible sediment deposition in a stream or wetland.
- Oil spills if:
 - They are 25 gallons or more,
 - They are less than 25 gallons but cannot be cleaned up within 24 hours,
 - They cause sheen on surface waters (regardless of volume), or
 - They are within 100 feet of surface waters (regardless of volume).
- Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.
- Anticipated bypasses and unanticipated bypasses.
- Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Division's Emergency Response personnel at (800) 662-7956, (800) 858-0368 or (919) 733-3300.

| Occurrence | Reporting Timeframes (After Discovery) and Other Requirements |
|--|--|
| (a) Visible sediment deposition in a stream or wetland | <ul style="list-style-type: none">Within 24 hours, an oral or electronic notification.Within 7 calendar days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis.If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions. |
| (b) Oil spills and release of hazardous substances per Item 1(b)-(f) above | <ul style="list-style-type: none">Within 24 hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release. |
| (c) Anticipated bypasses [40 CFR 122.41(m)(3)] | <ul style="list-style-type: none">A report at least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass. |
| (d) Unanticipated bypasses [40 CFR 122.41(m)(3)] | <ul style="list-style-type: none">Within 24 hours, an oral or electronic notification.Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass. |
| (e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(h)(7)] | <ul style="list-style-type: none">Within 24 hours, an oral or electronic notification.Within 7 calendar days, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. [40 CFR 122.41(h)(6)].Division staff may waive the requirement for a written report on a case-by-case basis. |



KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: Calvin DATE: 7-3-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: Chris DATE: 9/3/19
ADMINISTRATOR

WithersRavenel
Engineers | Planners | Surveyors

**WAKE STONE ATHLETIC
COMPLEX**

KNIGHTDALE, NORTH CAROLINA

**EROSION CONTROL
DETAILS**

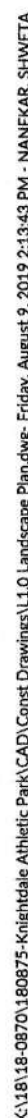
Job No. 02180875 Drawn By WR
Date 08/28/19 Designer WR



Revisions
1 ADDENDUM 1 08/20/19

Sheet No.

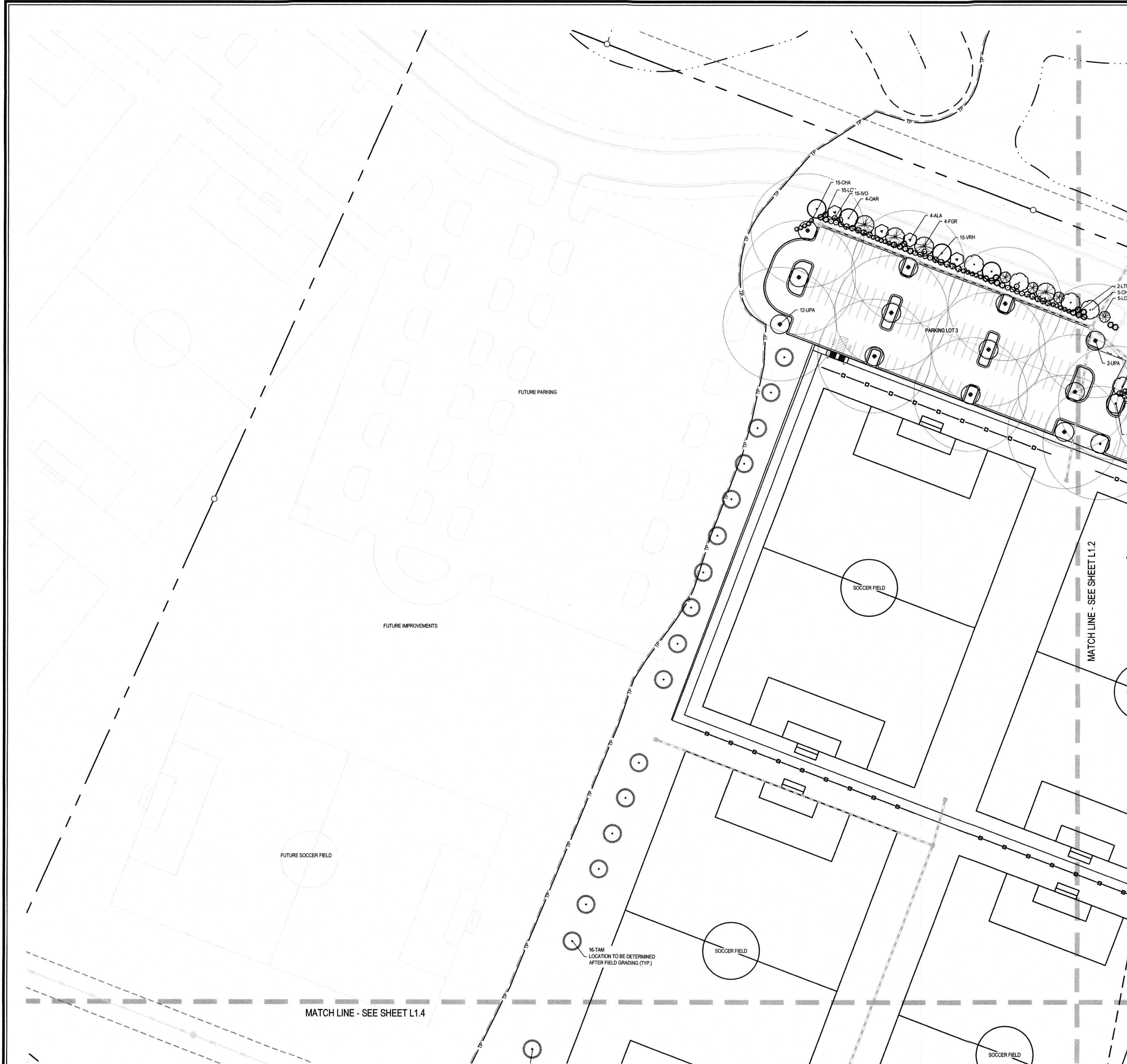
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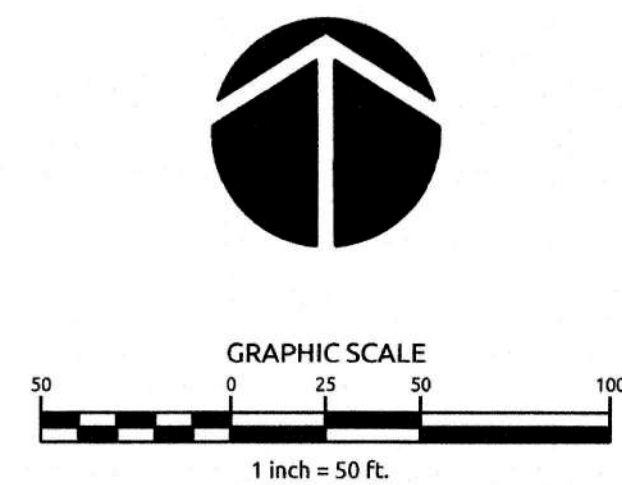
115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

KNIGHTDALE, NORTH CAROLINA

K:\18131-0870\180875-Knightdale Athletic Park\CAD\Civil\Drawings\11.0 Landscape\Planting\11.0 Landscape Planting.dwg, Friday, August 9, 2019 2:13:46 PM - MANDEAL SHWETA



| PLANT SCHEDULE | | | |
|------------------|-----|----------------------------------|------------------------------|
| SYMBOL | KEY | BOTANICAL NAME | COMMON NAME |
| CANOPY TREES | | | |
| | FGR | <i>Fagus grandifolia</i> | American Beech |
| | LTU | <i>Liriodendron tulipifera</i> | Tulip Poplar |
| | UPA | <i>Ulmus parvifolia</i> 'Alles' | Chinese Elm |
| | QRU | <i>Quercus rubra</i> | Red Oak |
| | QPH | <i>Quercus phellos</i> | Willow Oak 'QPMTF' (Wynstar) |
| | QSH | <i>Quercus shumardii</i> | Shumard Oak |
| | OVI | <i>Ostrya virginiana</i> | Eastern Hop Hornbeam |
| | TAM | <i>Tilia americana</i> | Lindertree |
| | OAR | <i>Oxydendrum arborescens</i> | Sourwood |
| UNDERSTORY TREES | | | |
| | CCA | <i>Cercis canadensis</i> | Redbud |
| | CAC | <i>Carpinus canadensis</i> | American Hornbeam |
| | ALA | <i>Amelanchier laevis</i> | Allegheny Serviceberry |
| SHRUBS | | | |
| | LCH | <i>Lonicera chinensis</i> | Fringe Flower |
| | CHA | <i>Cephalotaxus harringtonia</i> | Japanese Plum Yew |
| | VRH | <i>Viburnum rhytidophyllum</i> | Leatherleaf Viburnum |
| | OFR | <i>Osmanthus fragrans</i> | Fragrant Tea Olive |
| | IVO | <i>Ilex vomitoria</i> 'Bordeaux' | Yaupon Holly |



TOWN CERTIFICATION, THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

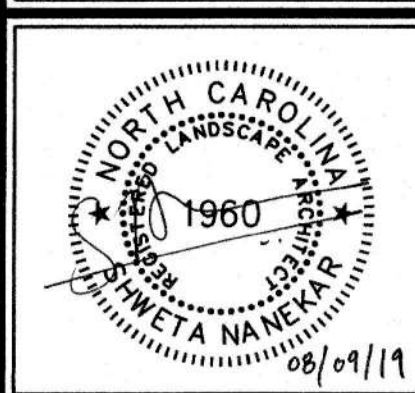
BY: S. H. H. H. DATE: 9-7-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: C. B. X. DATE: 9/9/19
ADMINISTRATOR

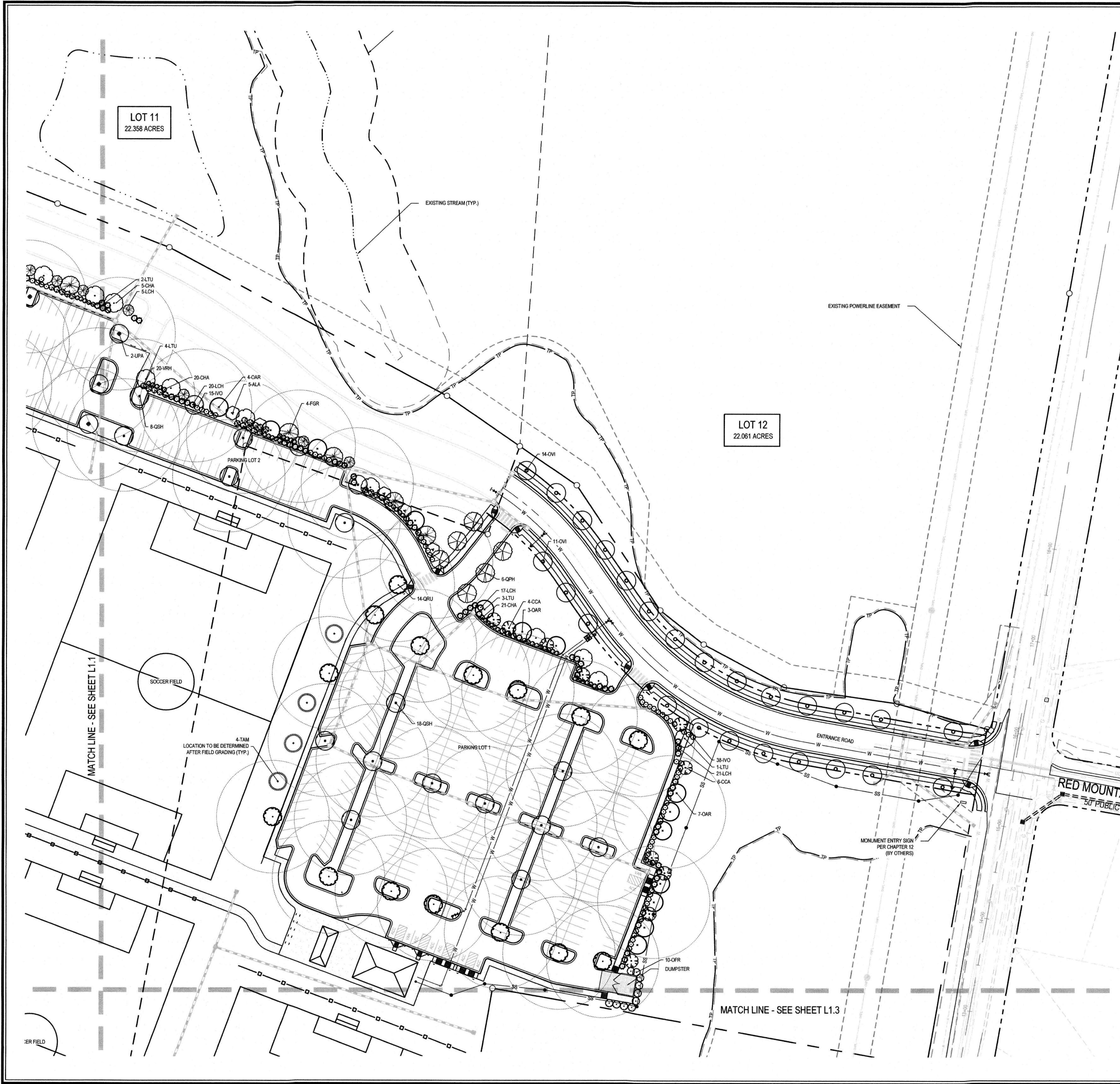


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| Date | 08/09/19 | Designer | WR |

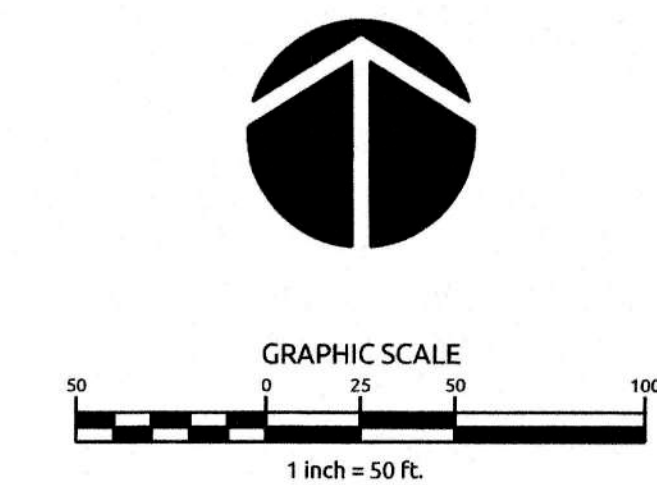


| Revisions | | |
|-----------|------------|----------|
| 1 | ADDENDUM 1 | 08/20/19 |
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K:\018-0870\180875-Knightdale Athletic Park\CAD\Grass Drawings\L1.1 Landscape Plan.dwg Friday, August 9, 2019 2:13:48 PM - NANNKAR, SHWETA



| PLANT SCHEDULE | | | |
|------------------|-----|---------------------------|------------------------------|
| SYMBOL | KEY | BOTANICAL NAME | COMMON NAME |
| CANOPY TREES | | | |
| | FGR | Fagus grandifolia | American Beech |
| | LTU | Liriodendron tulipifera | Tulip Poplar |
| | UPA | Ulmus parvifolia 'Atter' | Chinese Elm |
| | QRU | Quercus rubra | Red Oak |
| | QPH | Quercus phellos | Willow Oak 'QPMIT' (Wynstar) |
| | QSH | Quercus shumardii | Shumard Oak |
| | OVI | Ostrya virginiana | Eastern Hkp Hornbeam |
| | TAM | Tilia americana | Lindentree |
| | OAR | Oxydendrum arbutum | Sourwood |
| UNDERSTORY TREES | | | |
| | CCA | Cercis canadensis | Redbud |
| | CAC | Carpinus caroliniana | American Hornbeam |
| | NLA | Amelanchier laevis | Allegheny Serviceberry |
| SHRUBS | | | |
| | LCH | Loropetalum chinense | Fringe Flower |
| | CHA | Caphalotaxus harringtonia | Japanese Plum Yew |
| | VRH | Viburnum rhytidophyllum | Leatherleaf Viburnum |
| | OFR | Osmarthus fragrans | Fragrant Tea Olive |
| | IVO | Ilex vomitoria 'Bordeaux' | Yaupon Holly |



TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: S. H. H. DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: C. B. K. DATE: 9/9/19
ADMINISTRATOR



WithersRavenel
Engineers | Planners | Surveyors

WAKE STONE ATHLETIC COMPLEX
KNIGHTDALE, NORTH CAROLINA

LANDSCAPE PLAN

Job No: 02180875
Date: 08/09/19

Drawn By: WR
Designer: WR

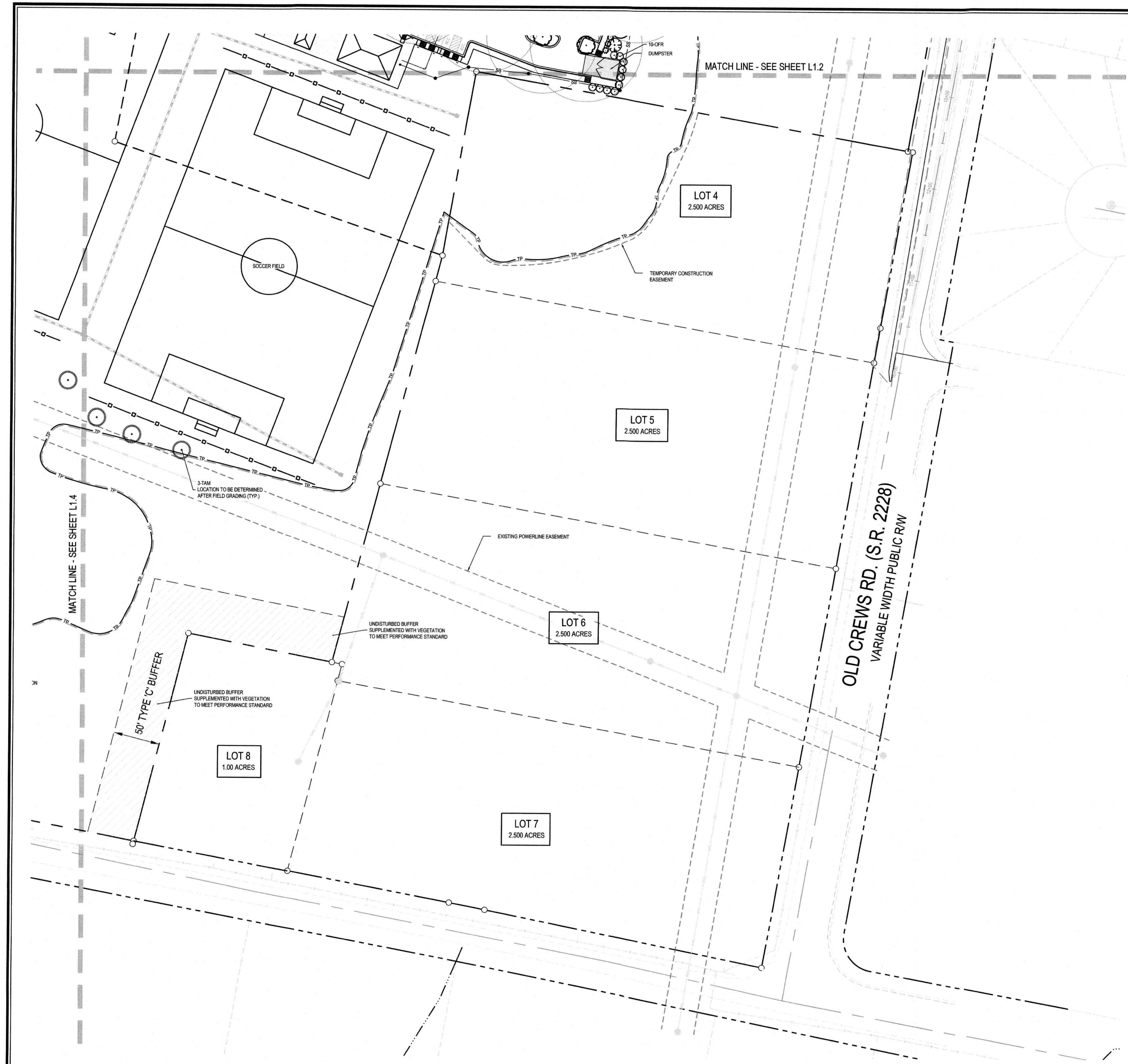
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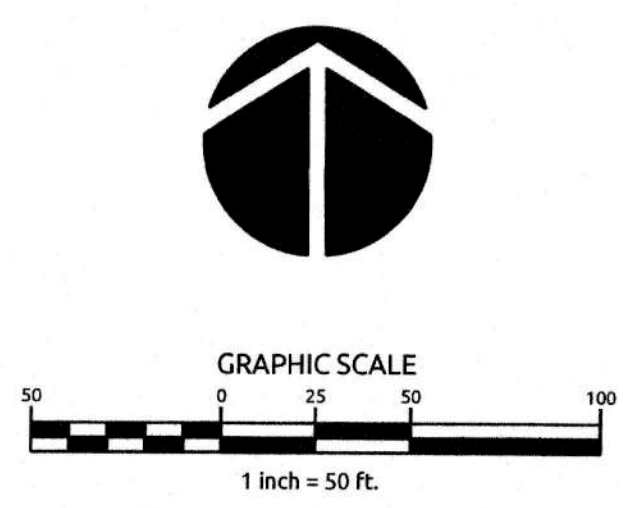
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L1.2

K:\1818-09701-80875-Singlestone-Medical-Park\CD\Cost-Drawing\LLD Landscape Plan.dwg Friday, August 9, 2019 2:13:30 PM - NAMEGAS, SHWETA



| PLANT SCHEDULE | | | |
|------------------|-----|---------------------------|------------------------------|
| SYMBOL | KEY | BOTANICAL NAME | COMMON NAME |
| CANOPY TREES | | | |
| | FGR | Fagus grandifolia | American Beech |
| | LTU | Liriodendron tulipifera | Tulip Poplar |
| | UPA | Ulmus parvifolia 'Alba' | Chinese Elm |
| | QRU | Quercus rubra | Red Oak |
| | QPH | Quercus phellos | Willow Oak 'OPMTF' (Wynstar) |
| | QSH | Quercus shumardi | Shumard Oak |
| | OVI | Ostrya virginiana | Eastern Hop Hornbeam |
| | TAM | Tilia americana | Lindentree |
| | DAR | Oxydendrum arboreum | Sourwood |
| UNDERSTORY TREES | | | |
| | CCA | Cercis canadensis | Redbud |
| | CAC | Carpinus caroliniana | American Hornbeam |
| | ALA | Amelanchier laevis | Allegheny Serviceberry |
| SHRUBS | | | |
| | LCH | Loropetalum chinense | Fringe Flower |
| | CHA | Cephalotaxus harringtonia | Japanese Plum Yew |
| | VRH | Viburnum rhytidophyllum | Leatherleaf Viburnum |
| | OFR | Osmorhiza fragnans | Fragrant Tea Olive |
| | IVO | Ilex vomitoria 'Bordeaux' | Yaupon Holly |



TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: SAH DATE: 9.9.2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: CHS DATE: 9/9/19
ADMINISTRATOR



WithersRavenel
Engineers | Planners | Surveyors

WAKE STONE ATHLETIC
COMPLEX

KNIGHTDALE, NORTH CAROLINA

LANDSCAPE PLAN

Job No. 02180675
Date 08/09/19

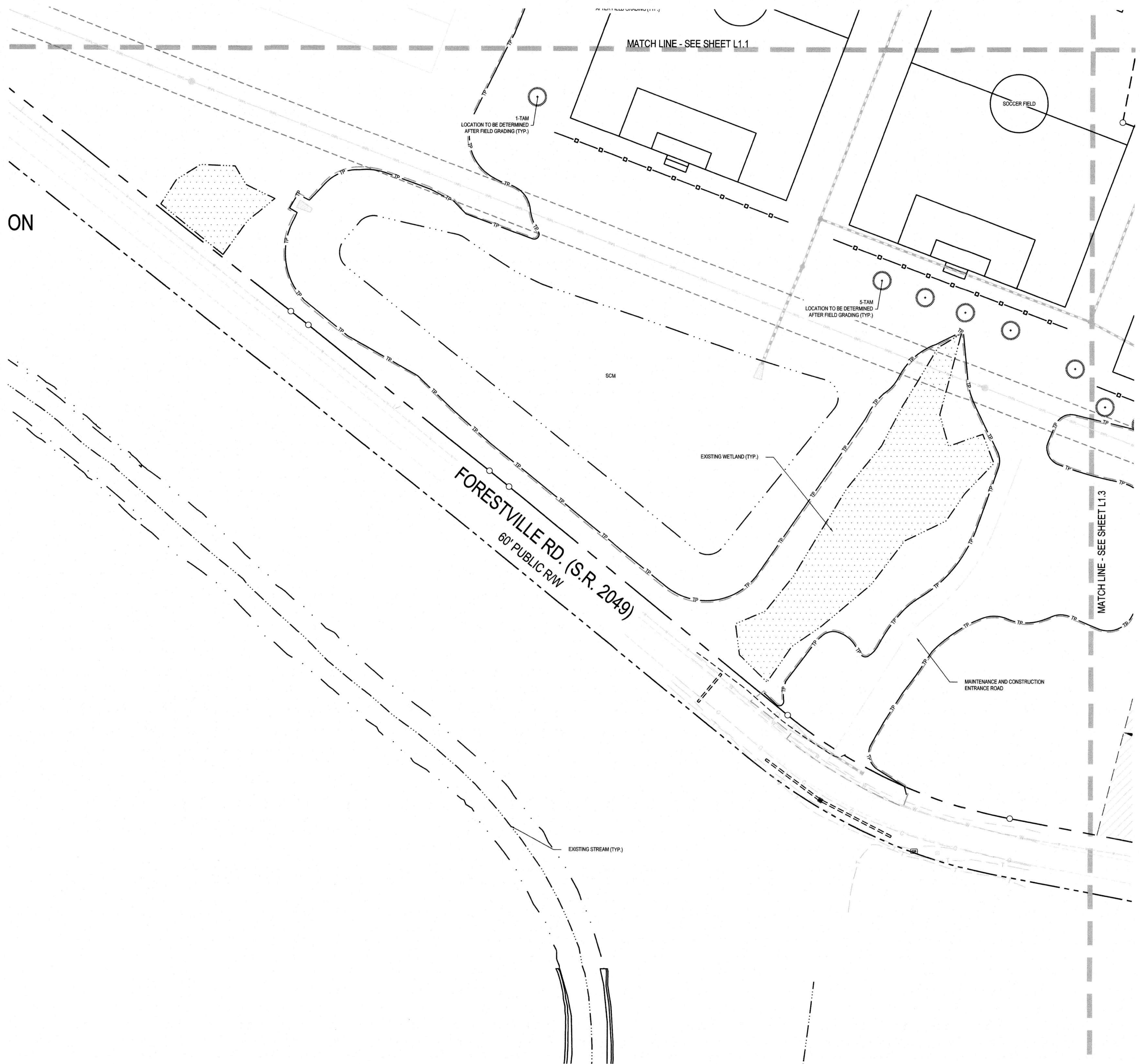
Drawn By WR
Designer WR

Revisions

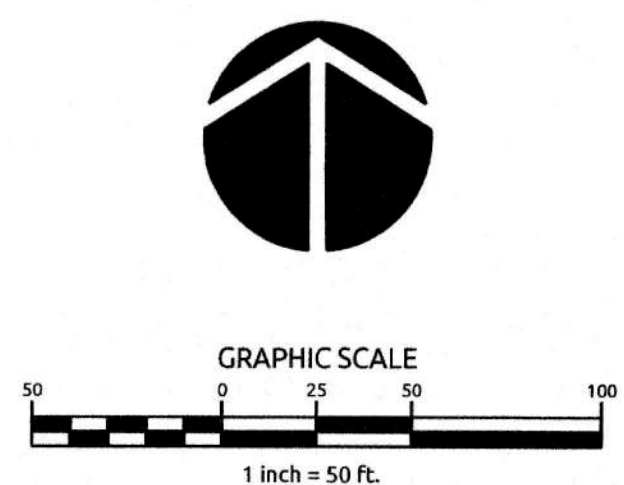
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Sheet No.
L1.3

K:\1818-0001\18075-Scout Drawings\110 Landscape Plan.dwg Friday, August 9, 2019 2:33:35 PM MANIKAL SIVETA



| PLANT SCHEDULE | | | |
|------------------|-----|-------------------------|-----------------------------|
| SYMBOL | KEY | BOTANICAL NAME | COMMON NAME |
| CANOPY TREES | | | |
| (Symbol) | FGR | Fagus grandifolia | American Beech |
| (Symbol) | LTU | Liriodendron tulipifera | Tulip Poplar |
| (Symbol) | UPA | Ulmus parvifolia/Allee | Chinese Elm |
| (Symbol) | QRU | Quercus rubra | Red Oak |
| (Symbol) | QPH | Quercus phellos | Willow Oak "QPMTF" (Wyneta) |
| (Symbol) | QSH | Quercus shumardi | Shumard Oak |
| (Symbol) | OVI | Ostrya virginiana | Eastern Hop Hornbeam |
| (Symbol) | TAM | Tilia americana | Lindertree |
| (Symbol) | OAR | Oxydendrum arborescens | Sourwood |
| UNDERSTORY TREES | | | |
| (Symbol) | CCA | Cercia canadensis | Redbud |
| (Symbol) | CAC | Carpinus caroliniana | American Hornbeam |
| (Symbol) | ALA | Amelanchier laevis | Allegheny Serviceberry |
| SHRUBS | | | |
| (Symbol) | LCH | Lonicera chinensis | Fringe Flower |
| (Symbol) | CHA | Cephaelis harringtonia | Japanese Plum Yew |
| (Symbol) | VRH | Viburnum rhytidophyllum | Leatherleaf Viburnum |
| (Symbol) | OFR | Osmarthus fragrans | Fragrant Tea Olive |
| (Symbol) | IVO | Ilex vomitoria/Bordeaux | Yaupon Holly |



TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: C. Siveta DATE: 7-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: C. Siveta DATE: 9/6/19
ADMINISTRATOR

WithersRavenel
Engineers | Planners | Surveyors

WAKE STONE ATHLETIC
COMPLEX

KNIGHTDALE, NORTH CAROLINA

LANDSCAPE PLAN

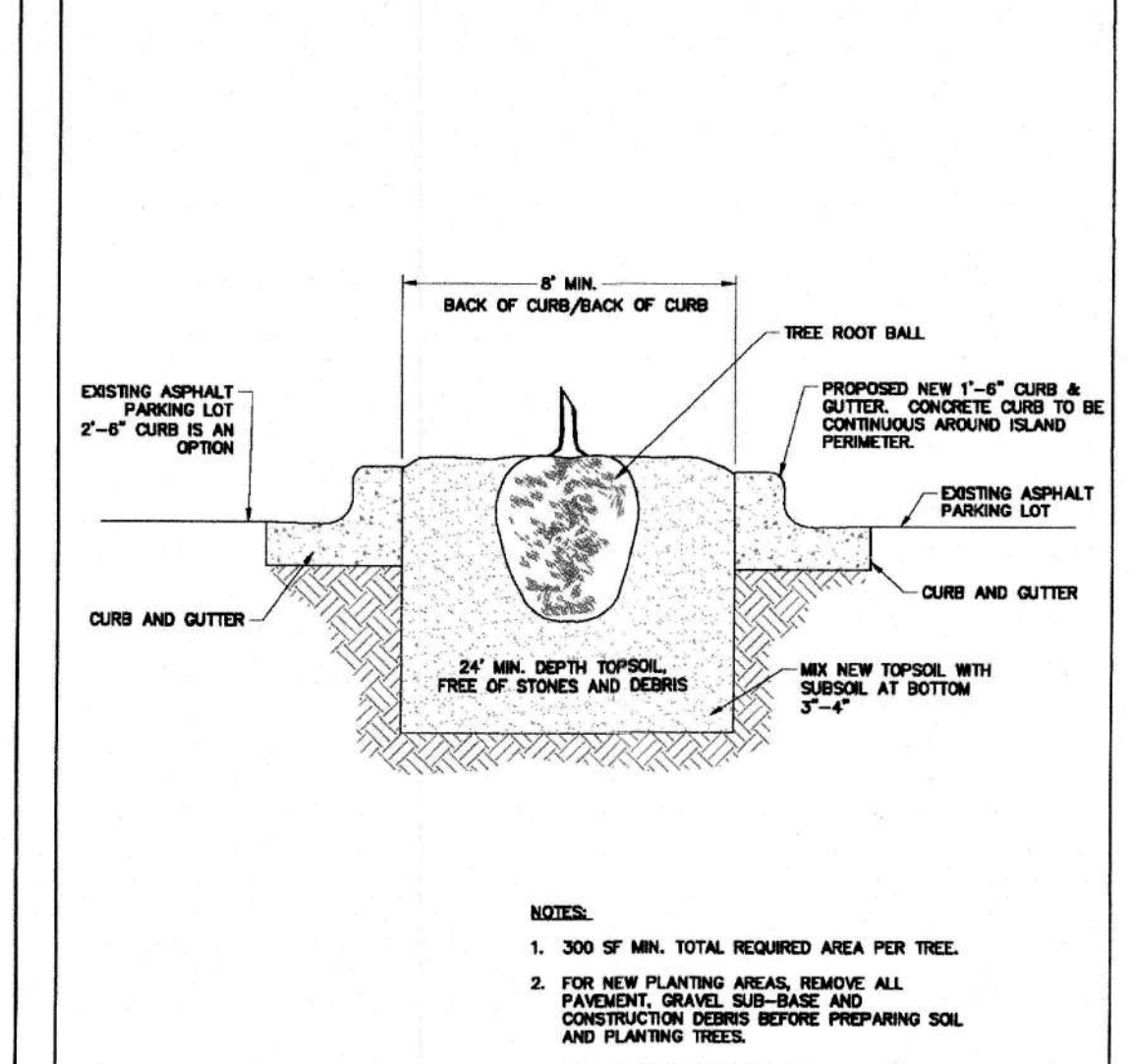
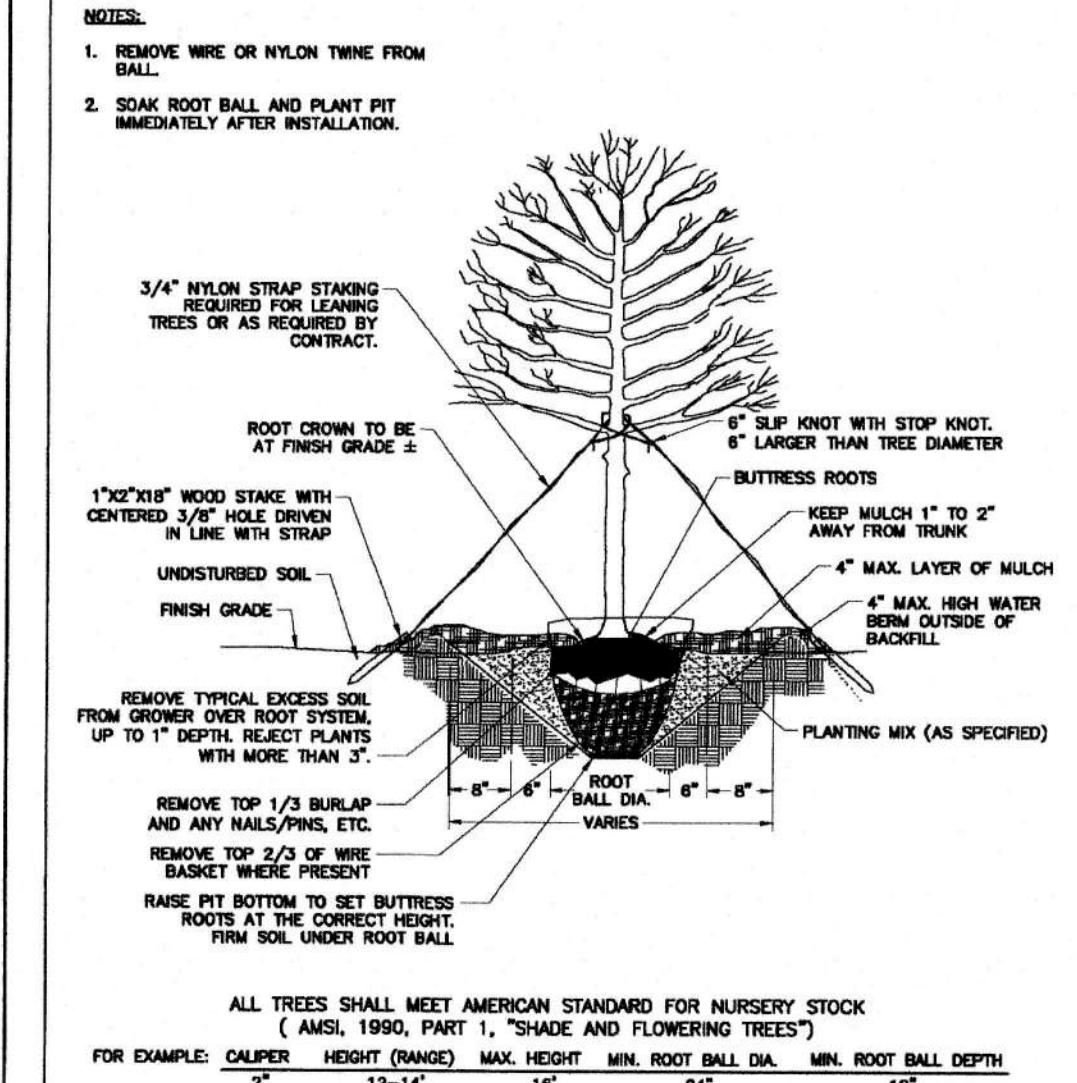
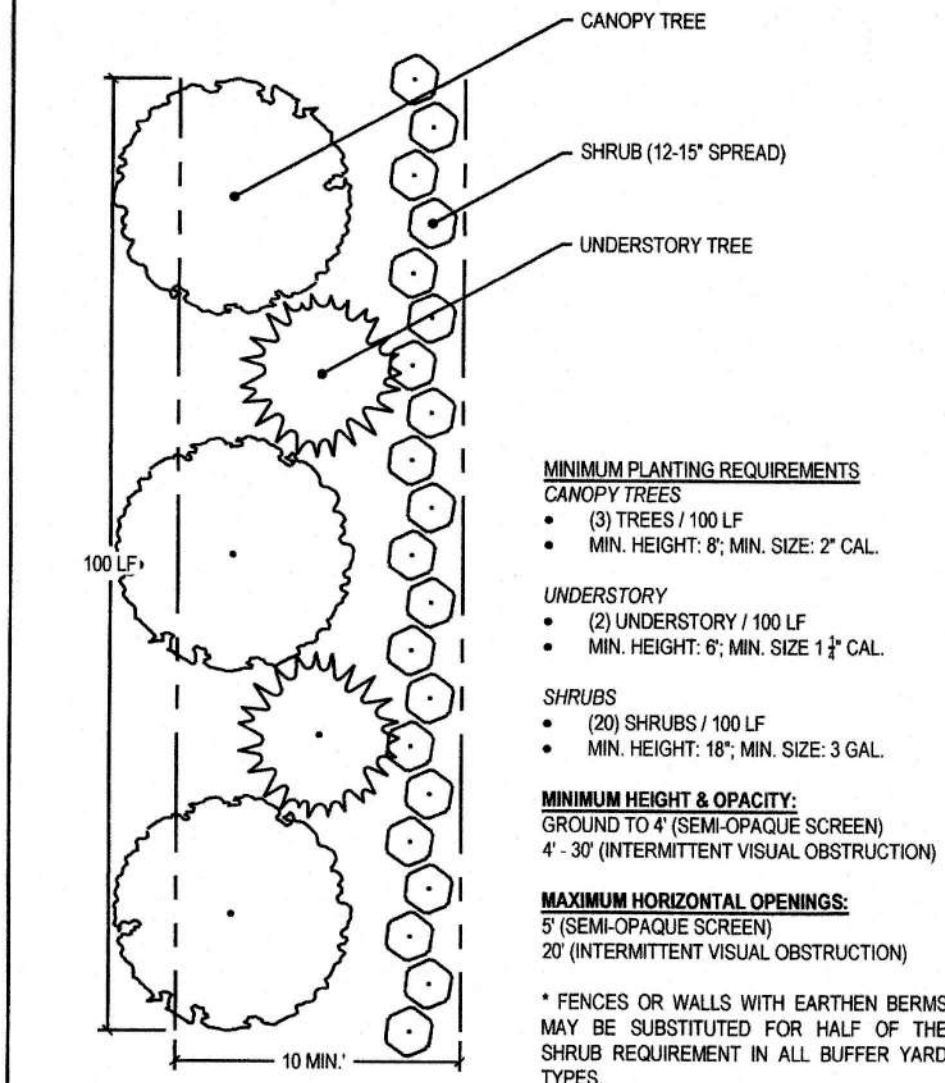
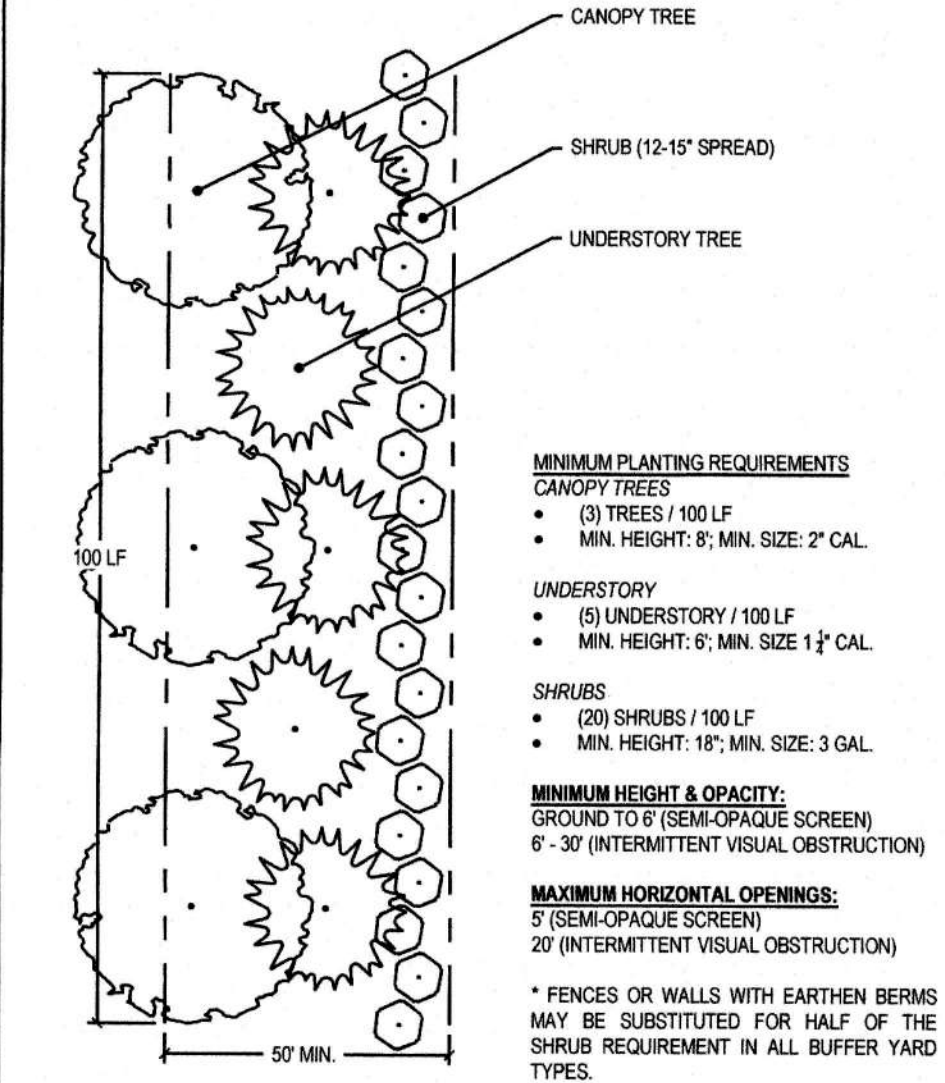
Job No. 02180875
Date 08/09/19

Drawn By WR
Designer WR

Revisions

| | | |
|---|------------|----------|
| 1 | ADDENDUM 1 | 08/20/19 |
|---|------------|----------|

Sheet No.
L1.4



| PLANT SCHEDULE | | KEY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | HEIGHT | NOTES |
|------------------|-----|---------------------------|------------------------------|----------------|-------------|----------|----------|---------|
| NOOPY TREES | | | | | | | | |
| 8 | FOR | FGR | Fagus grandifolia | American Beech | B&B | 2" MIN. | 8' MIN. | MATCHED |
| 12 | LTU | Liriodendron tulipifera | Tulip Poplar | B&B | 2" MIN. | 8' MIN. | 8' MIN. | MATCHED |
| 14 | UPA | Ulmus parvifolia/Allee | Chinese Elm | B&B | 2" MIN. | 8' MIN. | 8' MIN. | MATCHED |
| 16 | QRU | Quercus rubra | Red Oak | B&B | 2" MIN. | 8' MIN. | 8' MIN. | MATCHED |
| 18 | QSH | Quercus shumardii | Shumard Oak | B&B | 2" MIN. | 8' MIN. | 8' MIN. | MATCHED |
| 6 | QPH | Quercus phellos | Willow Oak "OPMTF" (Wynstar) | B&B | 2" MIN. | 8' MIN. | 8' MIN. | MATCHED |
| 25 | OVI | Ostrya virginiana | Eastern Hop Hornbeam | B&B | 2" MIN. | 8' MIN. | 8' MIN. | MATCHED |
| 25 | TAM | Tilia americana | Lindentree | B&B | 2" MIN. | 8' MIN. | 8' MIN. | MATCHED |
| 18 | OAR | Oxydendrum arborescens | Sourwood | B&B | 2" MIN. | 8' MIN. | 8' MIN. | MATCHED |
| UNDERSTORY TREES | | | | | | | | |
| 10 | CCA | Cercis canadensis | Redbud | B&B | 1 1/4" MIN. | 6' MIN. | 6' MIN. | MATCHED |
| 7 | CAC | Carpinus caroliniana | American Hornbeam | B&B | 1 1/4" MIN. | 6' MIN. | 6' MIN. | MATCHED |
| 9 | ALA | Amelanchier laevis | Allegheny Serviceberry | B&B | 1 1/4" MIN. | 6' MIN. | 6' MIN. | MATCHED |
| SHRUBS | | | | | | | | |
| 79 | LCH | Lonicera chinensis | Fringe Flower | CONT. | 3 GAL. MIN. | 18" MIN. | 18" MIN. | MATCHED |
| 61 | CHA | Cephaelis harringtonia | Japanese Plum Yew | CONT. | 3 GAL. MIN. | 18" MIN. | 18" MIN. | MATCHED |
| 35 | VRH | Viburnum rhytidophyllum | Leatherleaf Viburnum | CONT. | 3 GAL. MIN. | 18" MIN. | 18" MIN. | MATCHED |
| 10 | OFR | Osmanthus fragrans | Fragrant Tea Olive | CONT. | 3 GAL. MIN. | 18" MIN. | 18" MIN. | MATCHED |
| 68 | IVO | Ilex vomitoria 'Bordeaux' | Yaupon Holly | CONT. | 3 GAL. MIN. | 18" MIN. | 18" MIN. | MATCHED |

LANDSCAPE CALCULATIONS FOR BUFFERYARDS:

TYPE C BUFFERYARD

SEGMENT A - 280 LF

CANOPY TREES REQUIRED = 9

CANOPY TREES PROVIDED = 9

UNDERSTORY TREES REQUIRED = 14

UNDERSTORY TREES PROVIDED = 14

SHRUBS REQUIRED = 56

SHRUBS PROVIDED = 56

SEGMENT B - 157 LF

CANOPY TREES REQUIRED = 5

CANOPY TREES PROVIDED = 5

UNDERSTORY TREES REQUIRED = 8

UNDERSTORY TREES PROVIDED = 8

SHRUBS REQUIRED = 32

SHRUBS PROVIDED = 32

NOTE: TYPE C BUFFERYARD IS UNDISTURBED. SUPPLEMENT WITH VEGETATION TO COMPLY WITH PERFORMANCE STANDARD.

TYPE A BUFFERYARD

SEGMENT C - 226 LF

CANOPY TREES REQUIRED = 7

CANOPY TREES PROVIDED = 7

UNDERSTORY TREES REQUIRED = 5

UNDERSTORY TREES PROVIDED = 5

SHRUBS REQUIRED = 46

SHRUBS PROVIDED = 46

SEGMENT D - 72 LF

CANOPY TREES REQUIRED = 3

CANOPY TREES PROVIDED = 3

UNDERSTORY TREES REQUIRED = 2

UNDERSTORY TREES PROVIDED = 2

SHRUBS REQUIRED = 15

SHRUBS PROVIDED = 15

NOTE: SEWER EASEMENT CONFLICT.

SEGMENT E - 194 LF

CANOPY TREES REQUIRED = 6

CANOPY TREES PROVIDED = 6

UNDERSTORY TREES REQUIRED = 4

UNDERSTORY TREES PROVIDED = 4

SHRUBS REQUIRED = 39

SHRUBS PROVIDED = 39

SEGMENT F - 400 LF

CANOPY TREES REQUIRED = 12

CANOPY TREES PROVIDED = 12

UNDERSTORY TREES REQUIRED = 8

UNDERSTORY TREES PROVIDED = 8

SHRUBS REQUIRED = 80

SHRUBS PROVIDED = 80

SEGMENT G - 388 LF

CANOPY TREES REQUIRED = 12

CANOPY TREES PROVIDED = 12

UNDERSTORY TREES REQUIRED = 8

UNDERSTORY TREES PROVIDED = 8

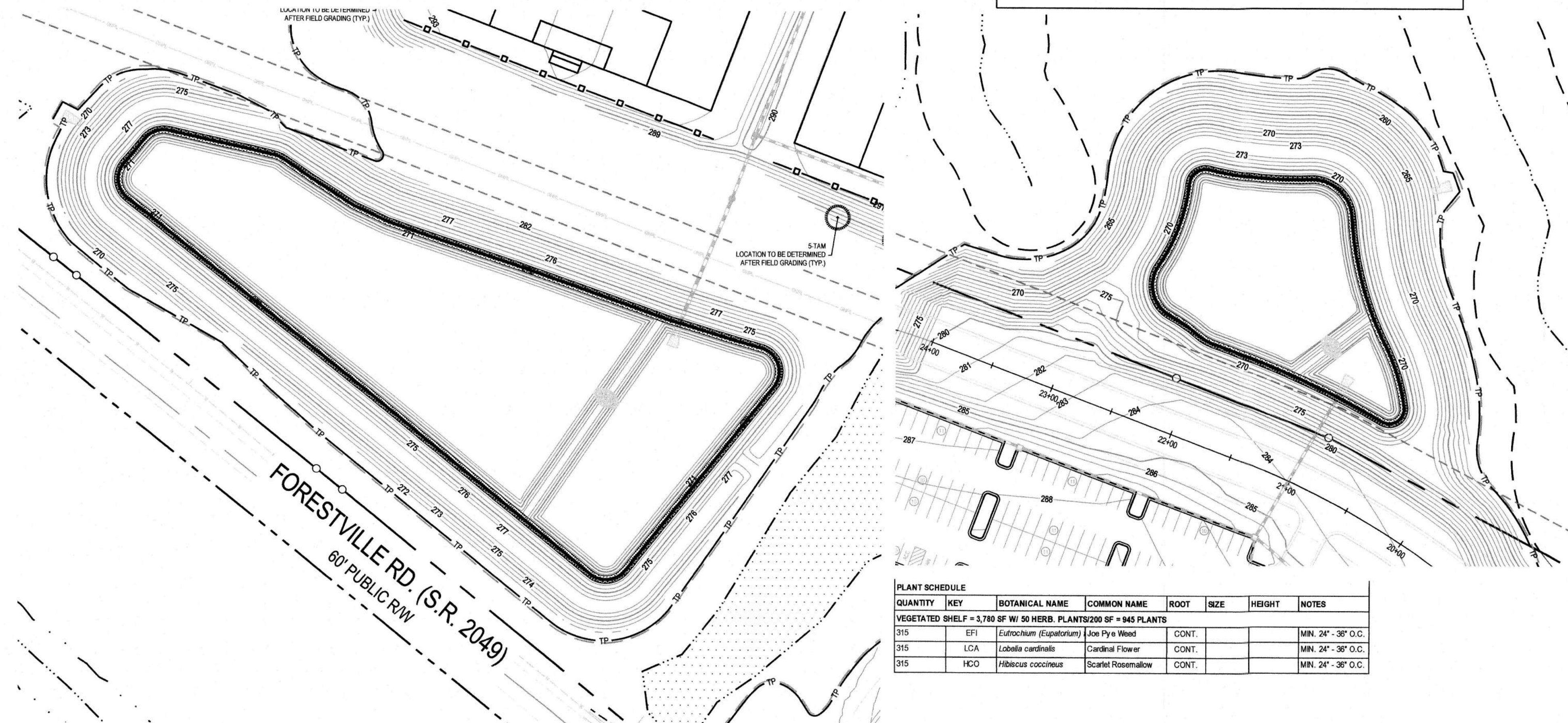
SHRUBS REQUIRED = 78

SHRUBS PROVIDED = 78

2018 NCDEQ REQUIREMENTS

1. ON THE DAM AND DAM EMBANKMENT SLOPES, TURF GRASS PROVIDES STABILITY AND ENHANCES ACCESS TO THE FACILITY FOR MAINTENANCE. DEQ RECOMMENDS PERENNIAL GRASSES SUCH AS HYBRID BERMUDA OR CENTIPEDE IN THE COASTAL PLAIN AND PIEDMONT, AND COOL SEASON TURF GRASS SUCH AS FESCUE AND BLUEGRASS IN THE MOUNTAINS. WEEPING LOVE GRASS IS NOT ALLOWED BECAUSE IT DOES NOT PROVIDE LONG TERM SLOPE STABILIZATION.
2. THE DAM STRUCTURE, INCLUDING FRONT AND BACK EMBANKMENT SLOPES, OF THE POND SHALL BE VEGETATED WITH NON-CLUMPING TURF GRASS, TREES AND SHRUBS SHALL NOT BE ALLOWED.
3. THE VEGETATED SHELVE SHALL BE PLANTED WITH A MINIMUM OF (3) DIVERSE SPECIES OF HERBACEOUS, NATIVE VEGETATION AT A MINIMUM DENSITY OF 50

| PLANT SCHEDULE | | QUANTITY | KEY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | HEIGHT | NOTES |
|---|-----|-------------------------|--------------------|----------------|-------------|------|------|---------------------|-------|
| VEGETATED SHELVE = 7,751 SF W/ 50 HERB. PLANTS/200 SF = 1938 PLANTS | | | | | | | | | |
| 546 | EFI | Eutrochium (Eupatorium) | Joe Pye Weed | CONT. | | | | MIN. 24" - 36" O.C. | |
| 546 | LCA | Lobelia cardinalis | Cardinal Flower | CONT. | | | | MIN. 24" - 36" O.C. | |
| 546 | HCO | Hibiscus coccineus | Scarlet Rosemallow | CONT. | | | | MIN. 24" - 36" O.C. | |



| PLANT SCHEDULE | | QUANTITY | KEY | BOTANICAL NAME | COMMON NAME | ROOT | SIZE | HEIGHT | NOTES |
|--|-----|-------------------------|--------------------|----------------|-------------|------|------|---------------------|-------|
| VEGETATED SHELVE = 3,780 SF W/ 50 HERB. PLANTS/200 SF = 945 PLANTS | | | | | | | | | |
| 315 | EFI | Eutrochium (Eupatorium) | Joe Pye Weed | CONT. | | | | MIN. 24" - 36" O.C. | |
| 315 | LCA | Lobelia cardinalis | Cardinal Flower | CONT. | | | | MIN. 24" - 36" O.C. | |
| 315 | HCO | Hibiscus coccineus | Scarlet Rosemallow | CONT. | | | | MIN. 24" - 36" O.C. | |



KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.

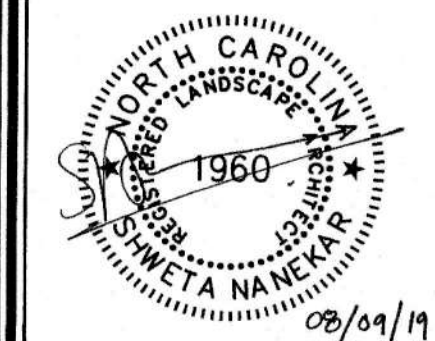
TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.

BY: S. M. M. DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

BY: C. B. B. DATE: 9/9/19
ADMINISTRATOR

Job No. 02180875 Drawn By WR
Date 08/09/19 Designer WR



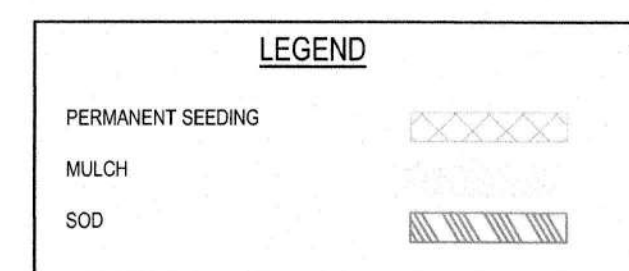
Revisions
1 ADDENDUM 1 08/20/19

KNIGHTDALE, NORTH CAROLINA

GRASSING PLAN

[illegible]

Sheet No.
L2.0



GRAPHIC SCALE

1 inch = 100 F



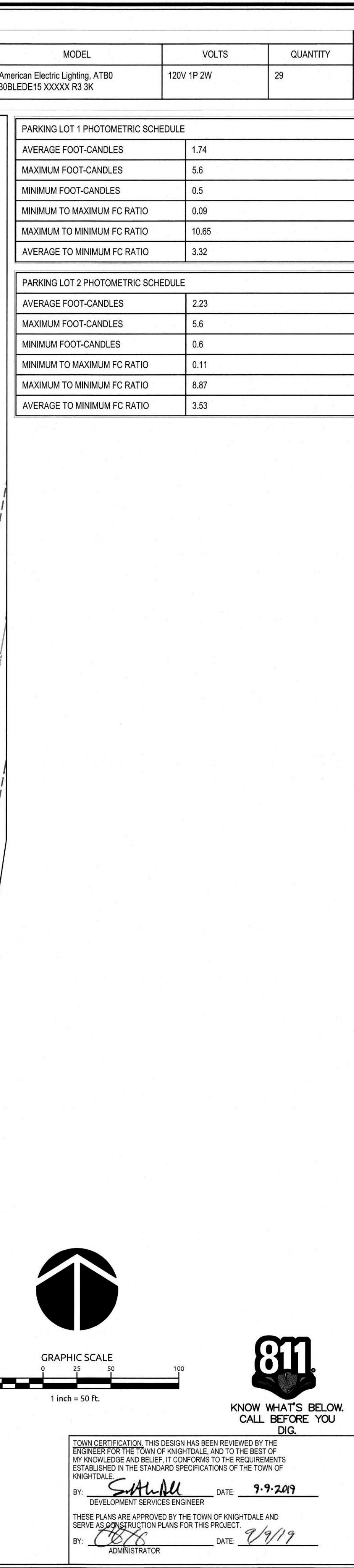
KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.

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BY: [Signature] DATE: 9-9-2019
DEVELOPMENT SERVICES ENGINEER

THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTSDALE AND
SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.

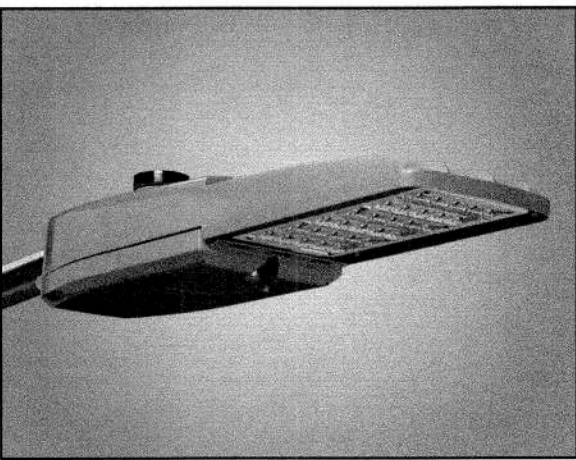
BY: [Signature] DATE: 9/9/19
ADMINISTRATOR





Autobahn Series ATB0 Roadway Lighting

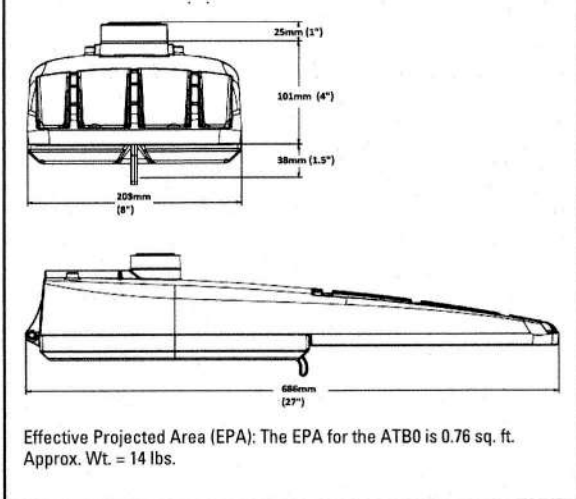
PRODUCT OVERVIEW



Applications:

Roadways
Off ramps
Residential streets
Parking lots

DIMENSIONS



STANDARDS

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/DPL to confirm which versions are qualified.
Color temperatures of ≤ 3000K must be specified for International Dark-Sky Association certification.
Rated for -40°C to 40°C ambient
CSA certified to U.S. and Canadian standards
Complies with ANSI: C136.2, C136.10, C136.14, C136.31, C136.15, C136.37

Note: Specifications subject to change without notice. Actual performance may differ as a result of end-user environment and application.
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Autobahn Series ATB0 Roadway Lighting

ORDERING INFORMATION

Example: ATB0 30LEDE10 MVOLT R2

| Series | Performance Packages | Voltage | Optics |
|---------------------------|---|---|--|
| ATB0 Autobahn LED Roadway | 10BLED70 10B Chips, 700mA Driver 10BLED10 10B Chips, 1050mA Driver 10BLED15 10B Chips, 1500mA Driver 20BLED53 20B Chips, 525mA Driver 20BLED70 20B Chips, 700mA Driver 20BLED10 20B Chips, 1050mA Driver 20BLED13 20B Chips, 1300mA Driver 20BLED15 20B Chips, 1500mA Driver 30BLED70 30B Chips, 700mA Driver 30BLED85 30B Chips, 850mA Driver 30BLED10 30B Chips, 1050mA Driver 30BLED13 30B Chips, 1300mA Driver 30BLED15 30B Chips, 1500mA Driver | MVOLT Multi-volt, 120-277V 347 347V 480 480V | R2 Roadway Type II R3 Roadway Type III R4 Roadway Type IV R5 Roadway Type V |

| Options | | | |
|--|--|--|--|
| Color: Temperature (CCT) (Blank) 4000K CCT, 70 CRI Min. 3K 3000K CCT, 70 CRI Min. 5K 5000K CCT, 70 CRI Min. | UMS-XX 8" Horizontal Arm for Square Pole, Painted to match Fixture UMR-GALV 8" Horizontal Arm for Round Pole, Galvanized UMS-GALV 8" Horizontal Arm for Square Pole, Galvanized | Accessories (field installed): ATB0 LTS20 Light Trespass Shield for ATB0 LEM 20 ATB0 LTS30 Light Trespass Shield for ATB0 LEM 30 | |
| Paint (Blank) Gray (Standard) BK Black BZ Bronze DBS Dark Bronze GI Graphite WH White | Controls (Blank) 3 Pin NEMA Photocontrol Receptacle (Standard) P7 7 Pin Photocontrol Receptacle (Dimmable Driver Included) NR No Photocontrol Receptacle A0 Field Adjustable Output DM 0V-10V Dimmable Driver (Controls by others) ML Multi-Level Dimming PCSS Solid State Lighting PCLL Solid State Long Life Photocontrol Shorting Cap | Notes 1 Not available in 347 or 480V. 2 Not available with DM, ML or NR. 3 Not available with DM or ML options. Not available with 10BLED packages. 4 Not available with A0, DM or P7 options. 5 Dimming Schedule and light level information required from the customer in order to configure product. Contact Infrastructure Technical Support to proceed. | |
| Surge Protection (Blank) Standard 10kV/5kA SPD 20 20kV/10kA SPD MP MOV Pack IL SPD with Indicator Light | Terminal Block (Blank) Terminal Block (Standard) T2 Wired to L1 & L2 Positions | Packaging (Blank) Single Unit (Standard) JP Job Pack (42/Pallet) | |
| Misc. BL External Bubble Level HS House-Side Shield NL Nema Label XL Not CSA Certified UMR-XX 8" Horizontal Arm for Round Pole, Painted to match Fixture | | | |

AEL American Electric Lighting
AEL Headquarters, 3825 Columbus Road, Granville, OH 43021
www.americanelectriclighting.com
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Warranty Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/resources/terms-and-conditions
Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25°C. Specifications subject to change without notice.
Please contact your sales representative for the latest product information.

Autobahn Series ATB0 Roadway Lighting

PERFORMANCE PACKAGE

| Performance Package | Drive Current (mA) | Input Watts | Optic | 3K (3000K CCT, 70 CRI Min.) | | | | | 4K/5K (4000K/5000K CCT, 70 CRI Min.) | | | | | LLD @ 25°C | | |
|---------------------|--------------------|-------------|--------|-----------------------------|-----|---|---|--------|--------------------------------------|-----|---|---|------|------------|-----------|------------|
| | | | | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G | 25k Hours | 75k Hours | 100k Hours |
| 10B | 700 | 25 | R2 | 2,670 | 107 | 1 | 0 | 1 | 2,994 | 120 | 1 | 0 | 1 | 0.98 | 0.97 | 0.96 |
| | 1050 | 37 | | 4,006 | 108 | 1 | 0 | 2 | 4,293 | 116 | 1 | 0 | 2 | 0.97 | 0.95 | 0.92 |
| | 1500 | 54 | | 5,354 | 93 | 1 | 0 | 2 | 5,688 | 105 | 1 | 0 | 2 | 0.93 | 0.90 | 0.88 |
| | 700 | 25 | R3 | 2,702 | 108 | 1 | 0 | 1 | 3,009 | 120 | 1 | 0 | 1 | 0.98 | 0.97 | 0.96 |
| | 1050 | 37 | | 4,069 | 110 | 1 | 0 | 1 | 4,313 | 117 | 1 | 0 | 1 | 0.97 | 0.95 | 0.92 |
| | 1500 | 54 | | 5,409 | 109 | 1 | 0 | 1 | 5,742 | 106 | 1 | 0 | 1 | 0.93 | 0.90 | 0.88 |
| | 700 | 25 | R4 | 2,686 | 107 | 1 | 0 | 1 | 2,962 | 120 | 1 | 0 | 1 | 0.98 | 0.97 | 0.96 |
| | 1050 | 37 | | 3,934 | 106 | 1 | 0 | 1 | 4,232 | 114 | 1 | 0 | 1 | 0.97 | 0.95 | 0.92 |
| | 1500 | 54 | | 5,383 | 100 | 1 | 0 | 2 | 5,653 | 105 | 1 | 0 | 2 | 0.93 | 0.90 | 0.88 |
| | 700 | 25 | R5 | 2,705 | 112 | 2 | 0 | 1 | 3,065 | 122 | 2 | 0 | 1 | 0.98 | 0.97 | 0.96 |
| | 1050 | 37 | | 4,126 | 111 | 3 | 0 | 1 | 4,422 | 120 | 3 | 0 | 1 | 0.97 | 0.95 | 0.92 |
| | 1500 | 54 | | 5,551 | 103 | 3 | 0 | 1 | 5,844 | 108 | 3 | 0 | 1 | 0.93 | 0.90 | 0.88 |
| 20B | 700 | 25 | R2 | 4,338 | 120 | 1 | 0 | 2 | 4,638 | 120 | 1 | 0 | 2 | 0.98 | 0.97 | 0.96 |
| | 1050 | 37 | | 6,652 | 118 | 1 | 0 | 2 | 6,956 | 124 | 1 | 0 | 2 | 0.98 | 0.96 | 0.95 |
| | 1500 | 54 | | 7,948 | 112 | 2 | 0 | 2 | 8,506 | 120 | 2 | 0 | 2 | 0.97 | 0.95 | 0.92 |
| | 700 | 25 | R3 | 4,342 | 120 | 1 | 0 | 2 | 4,638 | 118 | 2 | 0 | 2 | 0.93 | 0.90 | 0.88 |
| | 1050 | 37 | | 6,658 | 106 | 2 | 0 | 3 | 7,058 | 111 | 2 | 0 | 3 | 0.93 | 0.90 | 0.88 |
| | 1500 | 54 | | 8,026 | 124 | 1 | 0 | 2 | 8,676 | 130 | 1 | 0 | 2 | 0.98 | 0.97 | 0.96 |
| | 700 | 25 | R4 | 4,346 | 120 | 1 | 0 | 2 | 4,622 | 125 | 1 | 0 | 2 | 0.98 | 0.96 | 0.95 |
| | 1050 | 37 | | 6,658 | 112 | 2 | 0 | 2 | 6,949 | 121 | 2 | 0 | 2 | 0.98 | 0.96 | 0.95 |
| | 1500 | 54 | | 8,321 | 107 | 2 | 0 | 2 | 8,653 | 116 | 2 | 0 | 2 | 0.93 | 0.90 | 0.88 |
| | 700 | 25 | R5 | 4,348 | 120 | 2 | 0 | 2 | 4,616 | 113 | 2 | 0 | 2 | 0.93 | 0.90 | 0.88 |
| | 1050 | 37 | | 6,660 | 112 | 2 | 0 | 2 | 6,949 | 121 | 2 | 0 | 2 | 0.98 | 0.96 | 0.95 |
| | 1500 | 54 | | 8,326 | 122 | 3 | 0 | 1 | 8,697 | 131 | 3 | 0 | 1 | 0.98 | 0.96 | 0.95 |
| 30B | 700 | 25 | R2 | 6,658 | 124 | 1 | 0 | 2 | 6,956 | 120 | 1 | 0 | 2 | 0.98 | 0.97 | 0.96 |
| | 1050 | 37 | | 9,976 | 118 | 3 | 0 | 2 | 10,280 | 125 | 3 | 0 | 2 | 0.97 | 0.95 | 0.92 |
| | 1500 | 54 | | 11,901 | 114 | 3 | 0 | 2 | 12,589 | 127 | 4 | 0 | 2 | 0.97 | 0.95 | 0.92 |
| | 700 | 25 | R3 | 6,660 | 120 | 2 | 0 | 2 | 6,947 | 131 | 2 | 0 | 2 | 0.93 | 0.90 | 0.88 |
| | 1050 | 37 | | 9,979 | 119 | 2 | 0 | 3 | 10,474 | 126 | 2 | 0 | 3 | 0.97 | 0.95 | 0.92 |
| | 1500 | 54 | | 11,881 | 105 | 3 | 0 | 3 | 12,414 | 114 | 3 | 0 | 3 | 0.93 | 0.90 | 0.88 |
| | 700 | 25 | R4 | 13,675 | 109 | 3 | 0 | 3 | 14,861 | 119 | 3 | 0 | 3 | 0.93 | 0.90 | 0.88 |
| | 1050 | 37 | | 15,000 | 104 | 3 | 0 | 3 | 16,251 | 112 | 3 | 0 | 3 | 0.93 | 0.90 | 0.88 |
| | 1500 | 54 | | 18,330 | 122 | 2 | 0 | 2 | 19,888 | 127 | 2 | 0 | 2 | 0.97 | 0.95 | 0.92 |
| | 700 | 25 | R5 | 10,656 | 121 | 2 | 0 | 2 | 10,625 | 130 | 2 | 0 | 2 | 0.97 | 0.95 | 0.92 |
| | 1050 | 37 | | 11,988 | 114 | 2 | 0 | 2 | 12,748 | 123 | 2 | 0 | 2 | 0.97 | 0.95 | 0.92 |
| | 1500 | 54 | | 14,382 | 119 | 2 | 0 | 2 | 15,850 | 118 | 2 | 0 | 2 | 0.93 | 0.90 | 0.88 |
| 700 | 25 | R6 | 15,381 | 106 | 3 | 0 | 3 | 15,912 | 112 | 3 | 0 | 3 | 0.93 | 0.90 | 0.88 | |
| 1050 | 37 | | 18,335 | 119 | 2 | 0 | 2 | 19,871 | 128 | 2 | 0 | 2 | 0.98 | 0.97 | 0.96 | |
| 1500 | 54 | | 22,687 | 119 | 2 | 0 | 2 | 24,589 | 128 | 2 | 0 | 2 | 0.97 | 0.95 | 0.92 | |
| 700 | 25 | R7 | 11,989 | 105 | 3 | 0 | 3 | 12,792 | 122 | 3 | 0 | 3 | 0.97 | 0.95 | 0.92 | |
| 1050 | 37 | | 13,671 | 109 | 2 | 0 | 3 | 14,869 | 118 | 3 | 0 | 3 | 0.93 | 0.90 | 0.88 | |
| 1500 | 54 | | 16,462 | 103 | 3 | 0 | 3 | 16,463 | 114 | 3 | 0 | 3 | 0.93 | 0.90 | 0.88 | |
| 700 | 25 | R8 | 8,893 | 127 | 3 | 0 | 3 | 9,158 | 127 | 3 | 0 | 3 | 0.97 | 0.95 | 0.92 | |
| 1050 | 37 | | 10,469 | 126 | 4 | 0 | 2 | 11,209 | 126 | 4 | 0 | 2 | 0.97 | 0.95 | 0.92 | |
| 1500 | 54 | | 12,583 | 118 | 4 | 0 | 2 | 13,286 | 127 | 4 | 0 | 2 | 0.97 | 0.95 | 0.92 | |
| 700 | 25 | R9 | 14,438 | 115 | 4 | 0 | 2 | 15,254 | 121 | 4 | 0 | 2 | 0.97 | 0.95 | 0.92 | |
| 1050 | 37 | | 16,853 | 109 | 4 | 0 | 2 | 16,876 | 116 | 4 | 0 | 2 | 0.93 | 0.90 | 0.88 | |

Note: Individual fixture performance may vary.

| ATB0 LLD Multiplier | 15°C | 20°C | 25°C | 30°C | 35°C | 40°C |
|---------------------|------|------|------|------|------|------|
| | 1.02 | 1.01 | 1 | 0.98 | 0.97 | 0.95 |

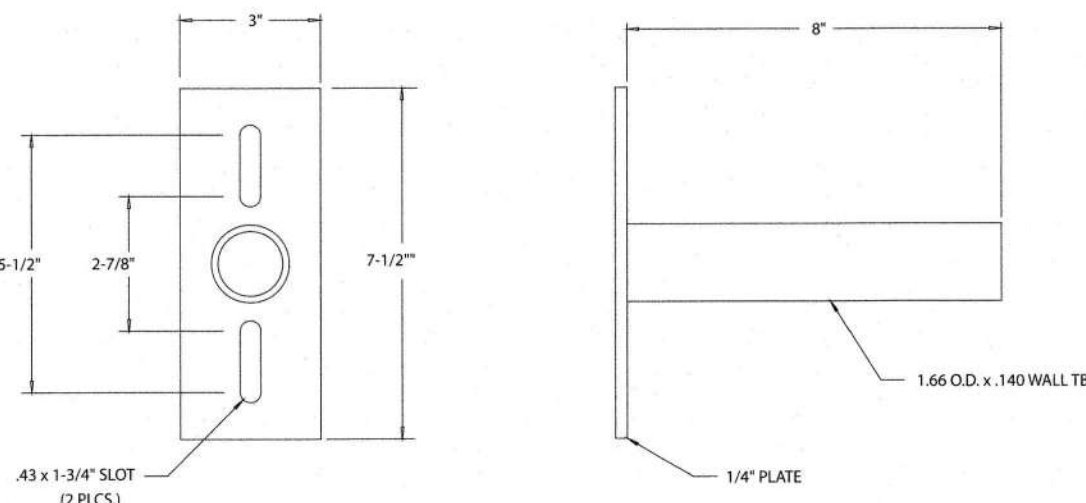
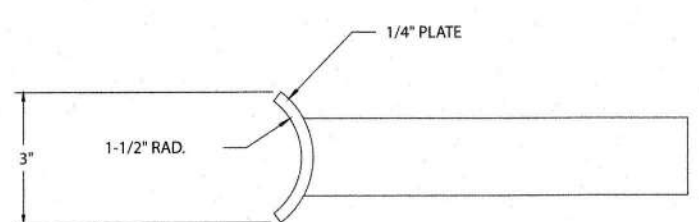
To calculate the LLD for a temperature other than 25°C, multiply the LLD @ 25°C (shown in the performance package table) by the LLD multiplier for the selected temperature.

AEL American Electric Lighting
AEL Headquarters, 3825 Columbus Road, Granville, OH 43021
www.americanelectriclighting.com
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Warranty Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/resources/terms-and-conditions
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Please contact your sales representative for the latest product information.

Autobahn Series ATB0 Roadway Lighting

UMR POLE ADAPTOR RECOMMENDED FOR USE WITH POLES OF 4" DIAMETER OR SMALLER

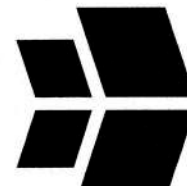


UMR POLE ADAPTOR

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WithersRavenel
Engineers | Planners | Surveyors



KNIGHTDALE, NORTH CAROLINA

WAKE STONE ATHLETIC
COMPLEX

LIGHTING DETAILS

Job No. 02180875 Drawn By WR
Date 08/28/19 Designer WR

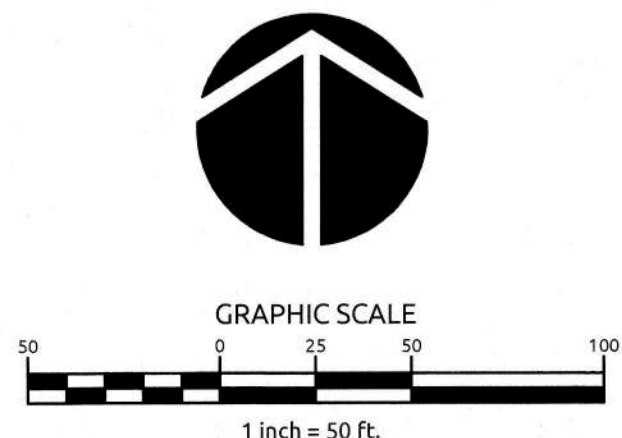


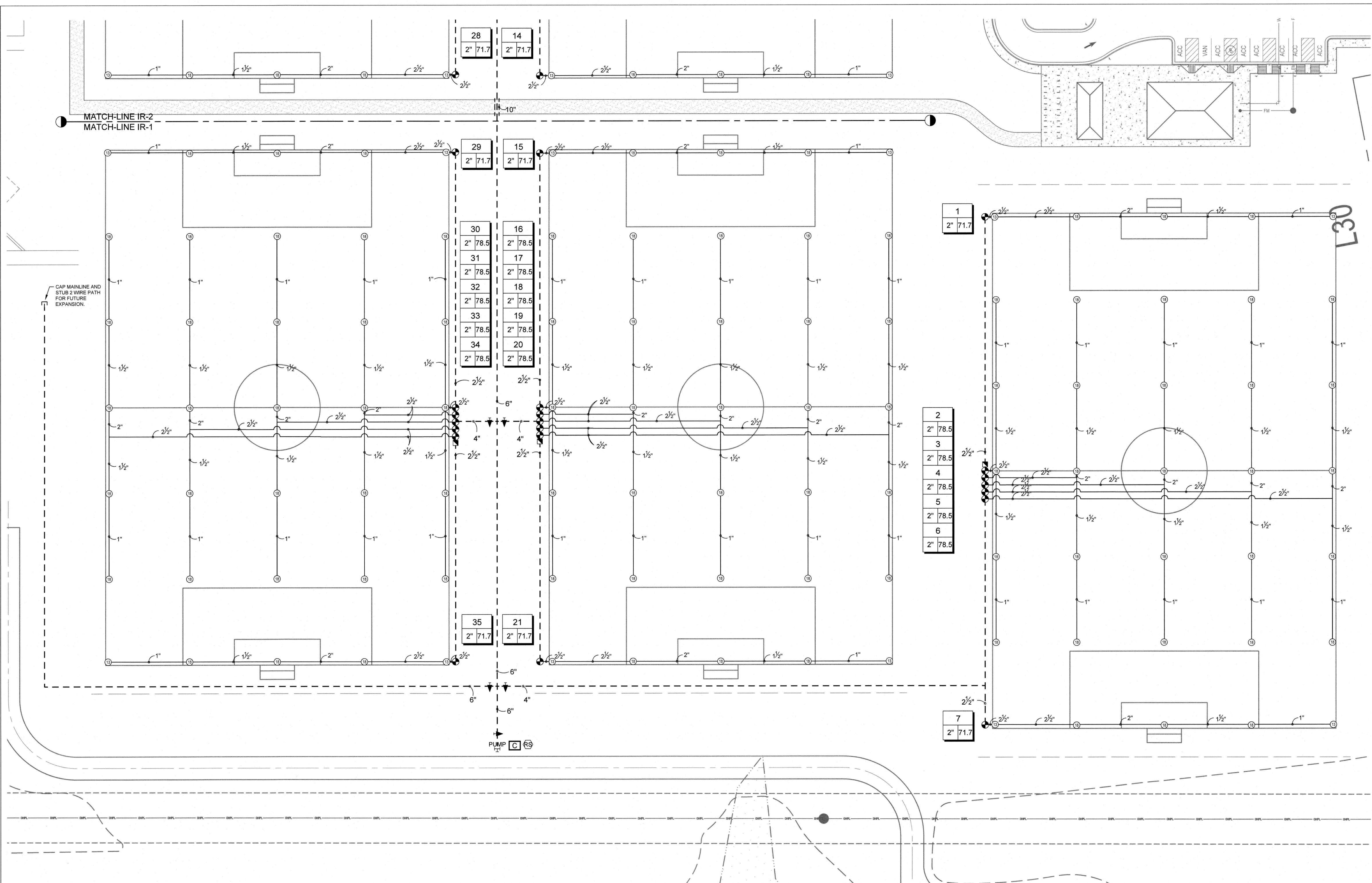
Revisions
1 ADDENDUM 1 08/20/19



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CALL BEFORE YOU DIG.

TOWN CERTIFICATION: THIS DESIGN HAS BEEN REVIEWED BY THE ENGINEER FOR THE TOWN OF KNIGHTDALE. AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT CONFORMS TO THE REQUIREMENTS ESTABLISHED IN THE STANDARD SPECIFICATIONS OF THE TOWN OF KNIGHTDALE.
BY: SALAM DATE: 9/9/2019
THESE PLANS ARE APPROVED BY THE TOWN OF KNIGHTDALE AND SERVE AS CONSTRUCTION PLANS FOR THIS PROJECT.
BY: DATE: 9/9/19
ADMINISTRATOR





MATCH-LINE IR-2
MATCH-LINE IR-1

CAP MAINLINE AND
STUB 2 WIRE PATH
FOR FUTURE
EXPANSION.

| |
|---------|
| 28 |
| 2" 71.7 |

| |
|---------|
| 29 |
| 2" 71.7 |

| |
|---------|
| 30 |
| 2" 78.5 |
| 31 |
| 2" 78.5 |
| 32 |
| 2" 78.5 |
| 33 |
| 2" 78.5 |
| 34 |
| 2" 78.5 |

| |
|---------|
| 35 |
| 2" 71.7 |

| |
|---------|
| 14 |
| 2" 71.7 |

| |
|---------|
| 15 |
| 2" 71.7 |

| |
|---------|
| 16 |
| 2" 78.5 |
| 17 |
| 2" 78.5 |
| 18 |
| 2" 78.5 |
| 19 |
| 2" 78.5 |
| 20 |
| 2" 78.5 |

| |
|---------|
| 21 |
| 2" 71.7 |

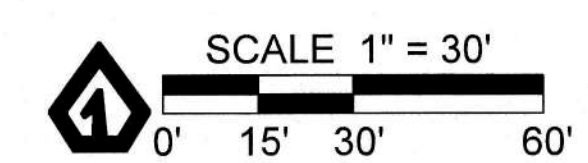
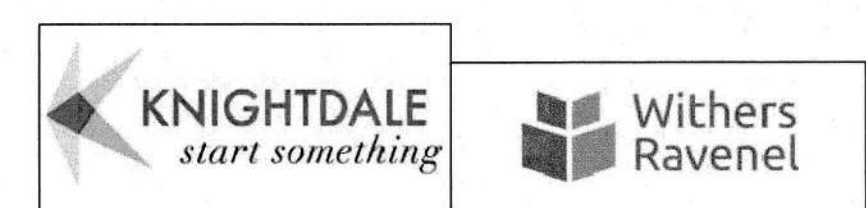
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| 1 |
| 2" 71.7 |

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| 2 |
| 2" 78.5 |
| 3 |
| 2" 78.5 |
| 4 |
| 2" 78.5 |
| 5 |
| 2" 78.5 |
| 6 |
| 2" 78.5 |

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| 7 |
| 2" 71.7 |

Seth A.
D.S.E.
9-9-2019
Date

OTO
Administrator
9/9/19
Date



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PROJECT NAME

KNIGHTDALE ATHLETIC PARK-PH1

KNIGHTDALE, NC

Project Title

IRRIGATION PLAN

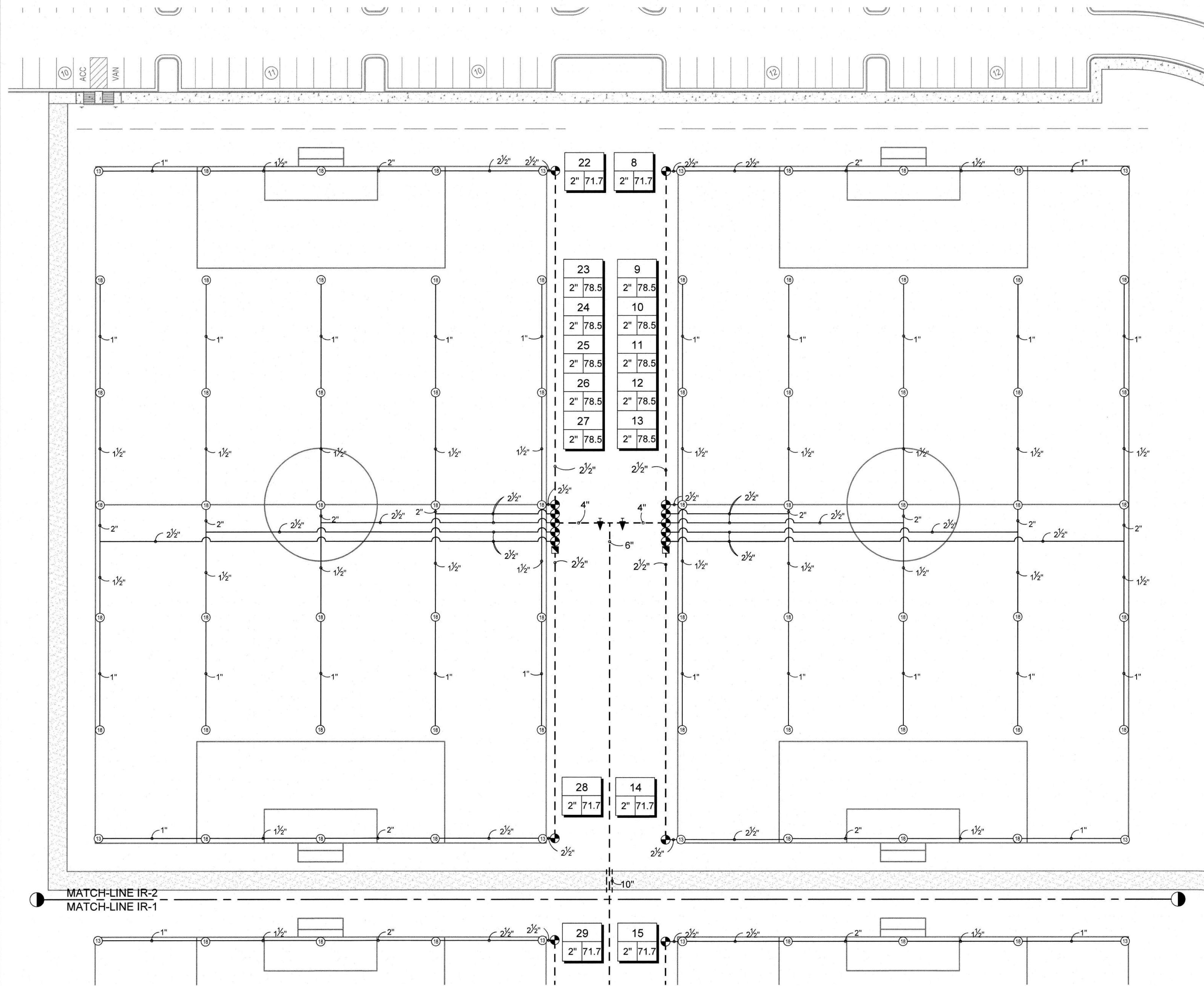
Project Number: 183363
Design Date: 04/04/2019
LS Plan Date:
Drawn By: CLC
Checked By:
Drawing Scale: 1" = 30'

| Revisions | Date |
|-----------|------|
| 1. | |
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Sheet Number:

IR-1

Sheet: 1 OF 3



IRRIGATION SCHEDULE

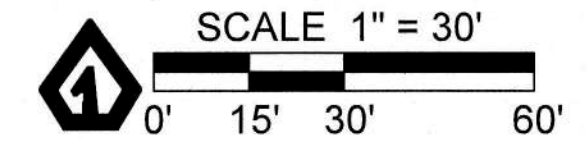
| SYMBOL | MANUFACTURER/MODEL |
|---------------|---|
| 13 | HUNTER I-25-04 |
| 18 | HUNTER I-25-04 |
| SYMBOL | MANUFACTURER/MODEL |
| 13 | HUNTER ICV-G SENTRY W/ BASELINE BL-5201 BICODER |
| 18 | HUNTER HQ-44RC |
| 13 | LEEMCO SELF RESTRAINED GATE VALVE (MAINLINE SIZE) |
| 18 | CONTROLLER- GREEN TECH SA6-BL-1-TW/BLCM-16/EMP-16 |
| 13 | HUNTER RAIN-CLIK |
| 18 | DUCTILE IRON RESTRAINED CAP FOR FOR EXPANSION |
| PUMP | PUMP STATION- GREEN TECH PIB-25-C-233/BL-BHM400-NO 230V/3PH |
| --- | IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21 |
| --- | IRRIGATION MAINLINE: PVC CLASS 200 SDR 21 2-1/2" |
| --- | IRRIGATION MAINLINE: PVC CLASS 200 SDR 21 4" (GJ) |
| --- | IRRIGATION MAINLINE: PVC CLASS 200 SDR 21 6" (GJ) |
| --- | PIPE SLEEVE: PVC SCHEDULE 40 |
| Valve Callout | |
| # | Valve Number |
| # | Valve Flow |
| # | Valve Size |

IRRIGATION NOTES

1. IRRIGATION SYSTEM DESIGN BASED ON 312 GPM AT 90 PSI.
2. IRRIGATION DESIGN IS FROM THE POINT OF CONNECTION(POC) ONLY. THE DESIGN IS BASED ON GALLONS PER MINUTE(GPM) AND POUNDS PER SQUARE INCH(PSI) FURNISHED BY OTHERS.
3. IRRIGATION CONTRACTOR IS TO VERIFY POINT OF CONNECTION IN THE FIELD. INSTALLER IS TO CONFIRM THE MINIMUM DISCHARGE REQUIREMENTS OF THE POINT OF CONNECTION AS INDICATED ON THE LEGEND PRIOR TO INSTALLATION.
4. THE PRESSURE REQUIREMENT AT THE POINT OF CONNECTION IS BASED ON NO MORE THAN 5- FEET OF ELEVATION CHANGE IN THE AREAS OF IRRIGATION.
5. ALL PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND ACCORDING TO LOCAL BUILDING, ELECTRICAL AND PLUMBING CODES.
6. IRRIGATION CONTRACTOR WILL ARRANGE INSPECTIONS REQUIRED BY LOCAL AGENCIES AND ORDINANCES DURING THE COURSE OF CONSTRUCTION AS REQUIRED. ALL WIRING TO BE PER LOCAL CODE. BACKFLOW PREVENTION PER LOCAL CODE.
7. LOCATION OF IRRIGATION COMPONENTS SHOWN ON DRAWINGS IS APPROXIMATE. ACTUAL PLACEMENT MAY VARY SLIGHTLY AS REQUIRED TO ACHIEVE FULL, EVEN COVERAGE.
8. ALL SPRINKLER HEADS SHALL BE INSTALLED PERPENDICULAR TO FINISH GRADES, EXCEPT AS OTHERWISE INDICATED.
9. INSTALL IRRIGATION MAINS WITH A MINIMUM 18" OF COVER BASED ON FINISH GRADES. INSTALL IRRIGATION LATERAL WITH A MINIMUM 12" OF COVER BASED ON FINISH GRADES.
10. PIPE LOCATIONS ARE DIAGRAMATIC. VALVES AND MAINLINE SHOWN IN PAVED AREAS ARE FOR GRAPHIC CLARITY ONLY.
11. THE IRRIGATION CONTRACTOR SHALL COMPLY WITH PIPE SIZES AS INDICATED.
12. ALL WIRE SPLICES OR CONNECTIONS SHALL BE MADE WITH APPROVED WATERPROOF WIRE CONNECTORS AND BE IN A VALVE OR SPLICE BOX.
13. ALL CONTROL WIRING DOWNSTREAM OF THE CONTROLLER IS TO BE 2-WIRE 14 AWG, UL APPROVED DIRECT BURY.
14. THE DESIGN IS BASED ON THE SITE INFORMATION AND/OR DRAWING SUPPLIED WITH THE DESIGN CRITERIA BEING SET (AREA TO BE IRRIGATED, EQUIPMENT MANUFACTURER AND MODEL TO BE USED, WATER SOURCE INFORMATION, ELECTRICAL POWER AVAILABILITY, ETC...). SITEONE LANDSCAPE SUPPLY BEARS NO RESPONSIBILITY OR LIABILITY FOR ANY ERRORS IN DESIGN OR INSTALLATION THAT ARISE DUE TO INACCURACIES IN THE ABOVE REFERENCED INFORMATION SUPPLIED TO SITEONE LANDSCAPE SUPPLY IN RELATION TO THIS PROJECT, UNLESS OTHERWISE NOTED.
15. THE INSTALLING CONTRACTOR MUST HOLD A CURRENT, VALID NC IRRIGATION CONTRACTOR'S LICENSE.

Signature
DSE
Signature
Admin/Project

9-7-2019
Date
3/4/19
Date



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PROJECT NAME
KNIGHTDALE ATHLETIC PARK-PH1
KNIGHTDALE, NC

Project Title
IRRIGATION PLAN

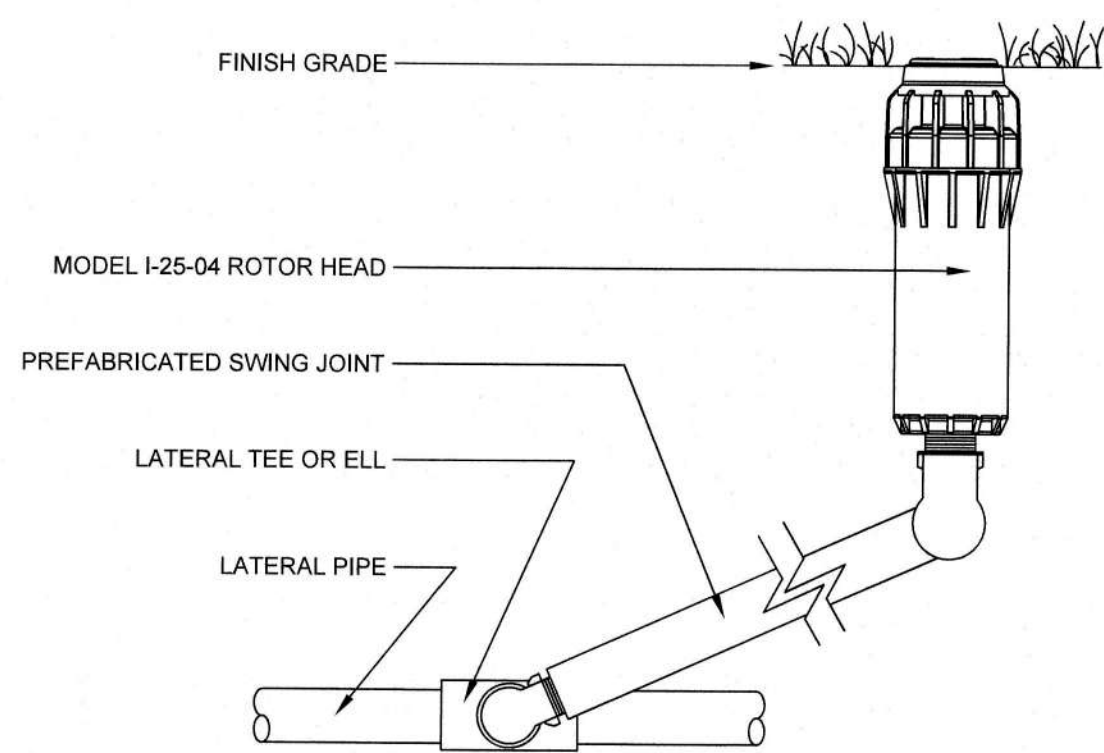
Project Number: 183363
Design Date: 04/04/2019
LS Plan Date:
Drawn By: CLC
Checked By:
Drawing Scale: 1" = 30'

| Revisions | Date |
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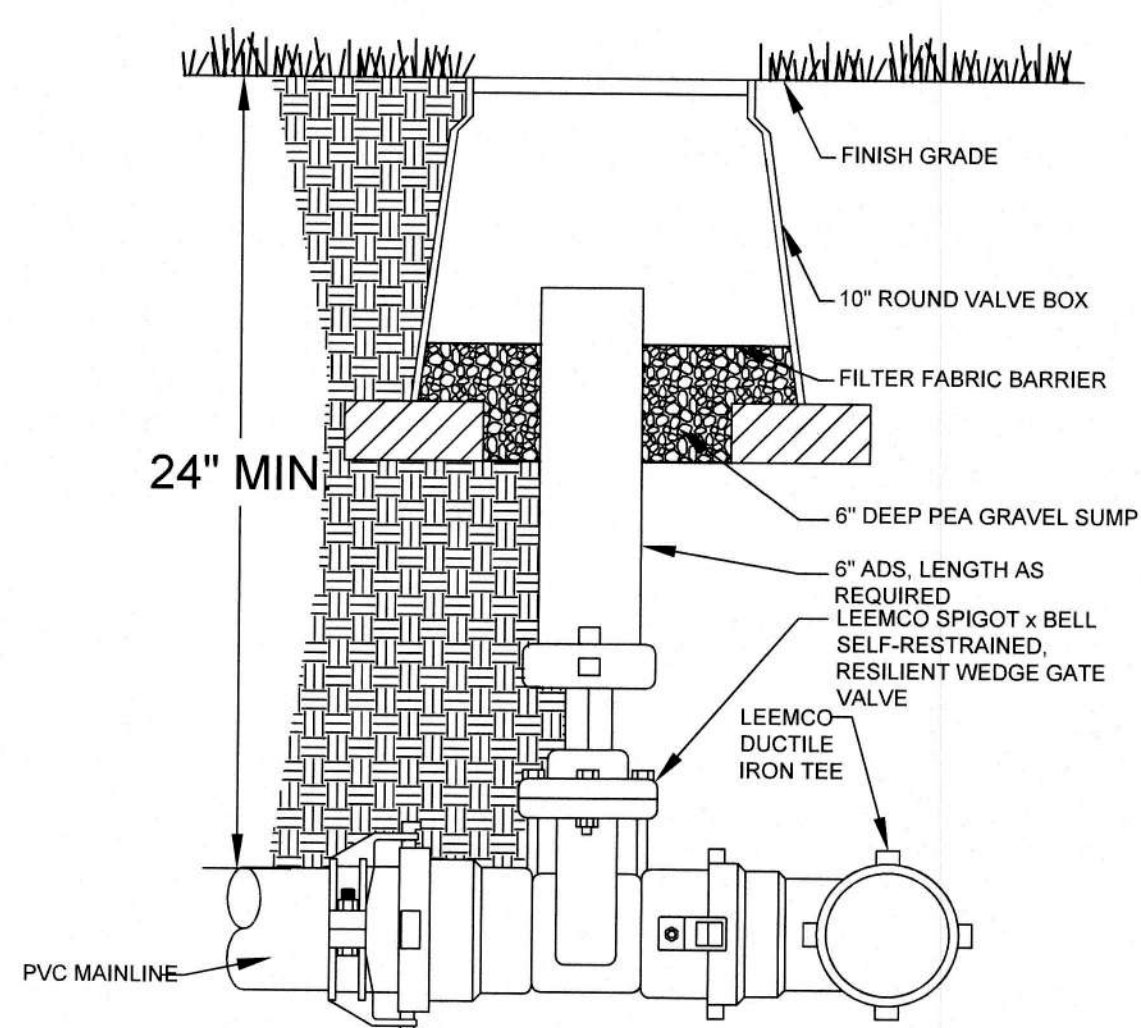
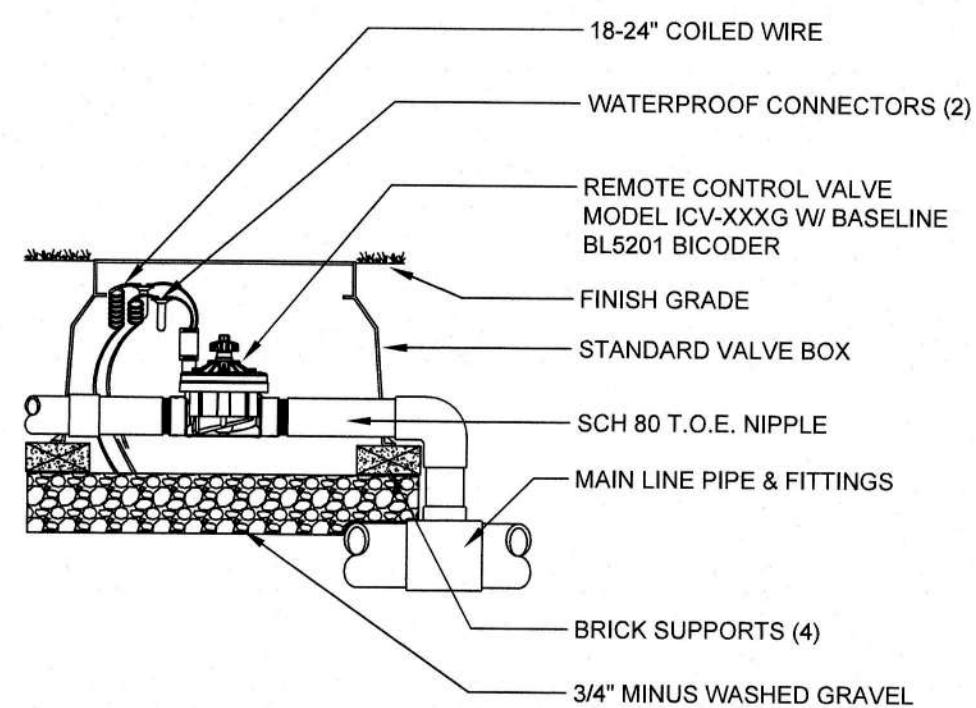
Sheet Number:

IR-2

Sheet: 2 OF 3



OPTIONS:
☐ R = FACTORY INSTALLED RECLAIMED RUBBER COVER
☐ SS = STAINLESS STEEL RISER
☐ HS = HIGH SPEED VERSION



DISTANCE CHART

REFER TO THE FOLLOWING TABLE THAT LISTS THE LENGTH (IN FEET) FOR EACH SIZE/TYPE FITTING WITHIN WHICH ALL JOINTS MUST BE RESTRAINED. ALL FITTINGS AND JOINT RESTRAINTS SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS & SPECIFICATIONS.

AS AN EXAMPLE, IF YOU ARE INSTALLING A 3" MAINLINE WITH A DIRECTIONAL CHANGE OF 90°, REFER TO CHART UNDER PIPE SIZE TO 3" AND UNDER BENDS 90° YOU WILL SEE THE DISTANCE OF 11'. IF THERE IS ANY JOINT (VALVE, BELL, ETC.) YOU MUST INSTALL A JOINT RESTRAINT WITHIN 11' OF THE 90° MAINLINE DIRECTIONAL CHANGE.

| PIPE SIZE | BENDS | | | | REDUCERS | | | DEAD END | |
|-----------|-------|-----|-----|-----|----------|--------|--------|----------|----------|
| | 11° | 22° | 45° | 90° | 1 STEP | 2 STEP | 3 STEP | BLIND | SERV. B. |
| 2" | 1' | 1' | 2' | 6' | - | - | - | 19' | 6' |
| 2.5" | 1' | 2' | 4' | 9' | 4' | - | - | 23' | 10' |
| 3" | 2' | 3' | 6' | 11' | 8' | 10' | - | 30' | 15' |
| 4" | 2' | 4' | 9' | 20' | 14' | 20' | 31' | 45' | 25' |
| 6" | 3' | 6' | 15' | 29' | 30' | 40' | 53' | 63' | 40' |
| 8" | 4' | 8' | 15' | 38' | 39' | 50' | 63' | 79' | 70' |
| 10" | 5' | 10' | 19' | 45' | 36' | 56' | 75' | 96' | 90' |
| 12" | 5' | 10' | 21' | 53' | 38' | 60' | 83' | 112' | 110' |

INSTALLATION CHART

REFER TO THE FOLLOWING TABLE WHICH LISTS THE NUMBER OF BOLTS, SIZE, AND TORQUE FOR EACH BOLT IN REFERENCE TO THE SIZE OF PIPE WHICH IS BEING RESTRAINED.

AS AN EXAMPLE, IF YOU HAVE A 3" PIPE, YOU WILL NEED 2 BOLTS THAT ARE 3/8" X 2.5" AND TIGHTEN THEM WITH A TORQUE WRENCH TO 20 FT-LBS.

| PIPE SIZE | NO. BOLTS | BOLT SIZE | TORQUE FT-LBS. |
|-----------|-----------|-------------|----------------|
| 2" | 2 | 3/8" x 2.5" | 20 |
| 2.5" | 2 | 3/8" x 2.5" | 20 |
| 3" | 2 | 3/8" x 2.5" | 20 |
| 4" | 2 | 1/2" x 3" | 50 |
| 6" | 2 | 1/2" x 3.5" | 50 |
| 8" | 4 | 1/2" x 4" | 50 |
| 10" | 4 | 5/8" x 5.5" | 100 |
| 12" | 4 | 5/8" x 5.5" | 100 |

CONTACT TONY GARNER @ (208) 631-7787, THE LEEMCO REPRESENTATIVE, FOR ALL QUESTIONS CONCERNING LEEMCO PRODUCTS. COORDINATE AN INSTALLATION CLINIC WITH TONY GARNER PRIOR TO INSTALLING THE MAINLINE.

JOINT RESTRAINT CHART DETAIL

1 I-25-04 ROTOR HEAD

NTS

S1-RO-HUN-07

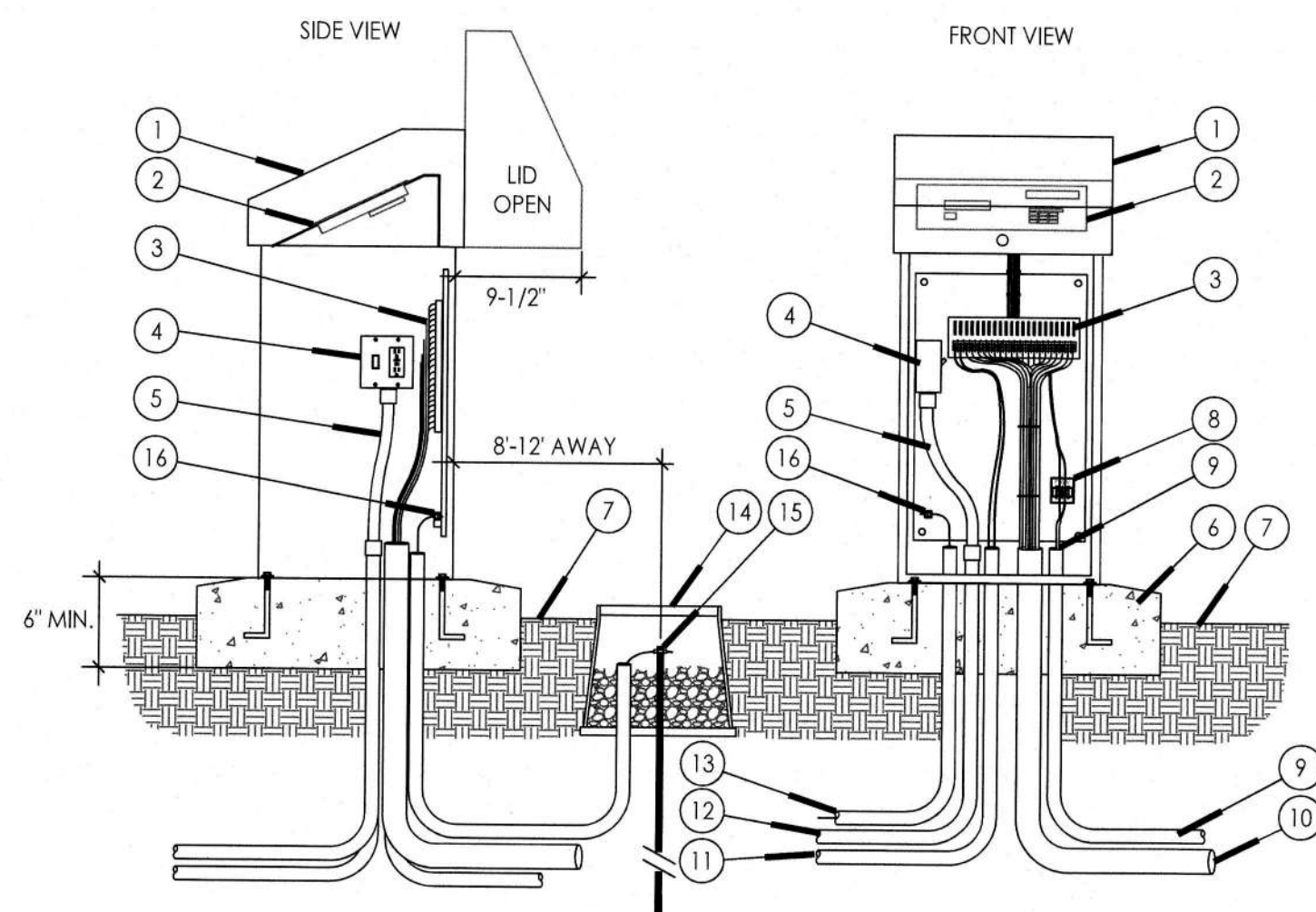
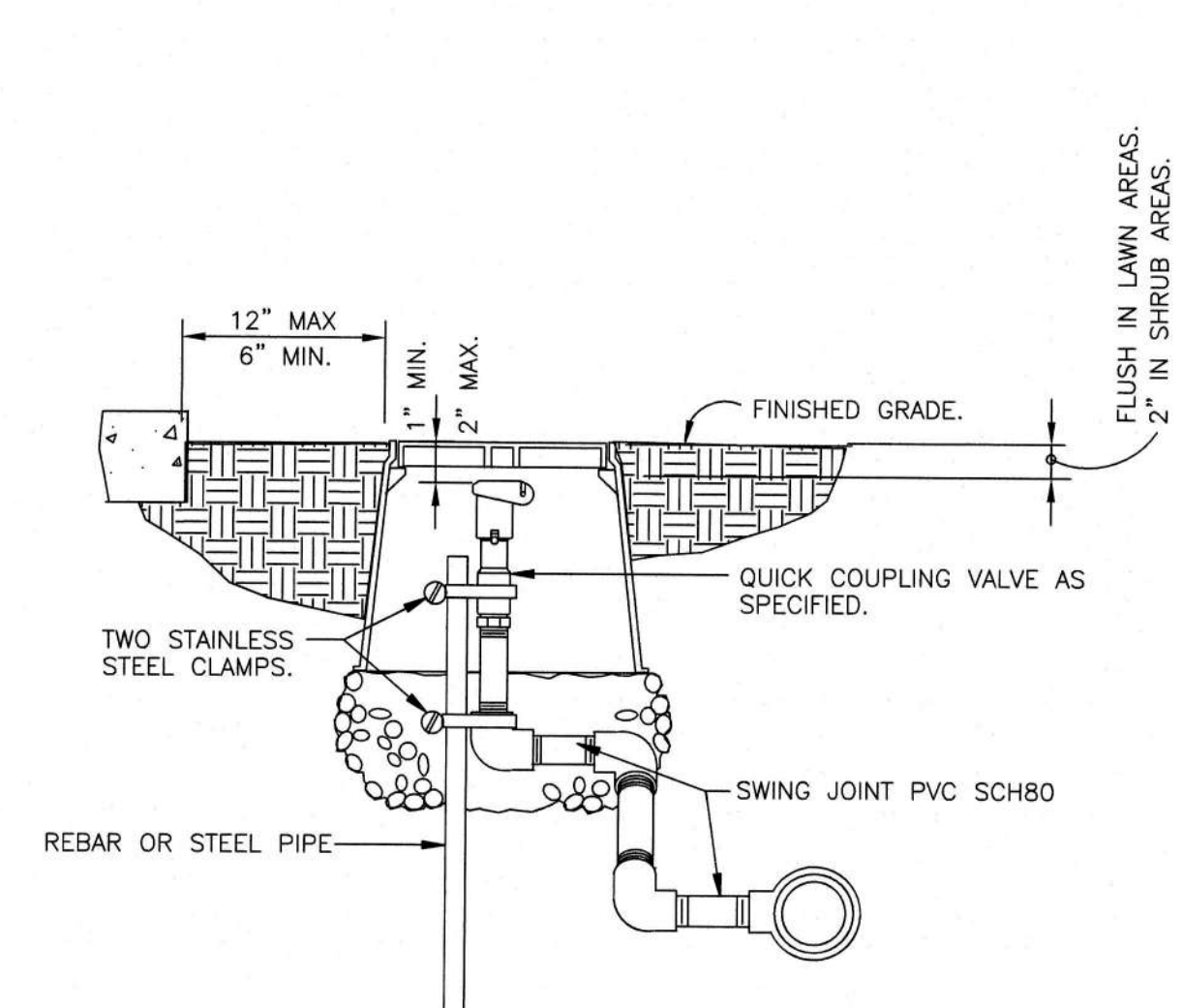
2 ICV GLOBE VALVE W/ SENTRY FILTER

NTS

S1-VA-HUN-03

3 LMV-SB MAINLINE GATE VALVE DETAIL

NTS



- STRONGBOX STAINLESS STEEL NEMA 3R RAINPROOF ENCLOSURE (UL LISTED).
- SATELLITE ASSEMBLY, ASSEMBLED IN ENCLOSURE BY SITEONE GREEN TECH.
- TERMINAL STRIP FOR VALVE WIRES.
- POWER SWITCH / GFCI RECEPTACLE.
- ELECTRICAL FLEX CONDUIT FOR POWER.
- 6" MIN THICK, CONCRETE PAD WITH ANCHOR BOLTS PER MANUFACTURER RECOMMENDATIONS.
- FINISHED GRADE.
- FLOW SENSOR TERMINAL BOARD.
- 1" CONDUIT AND SWEEP ELL WITH FLOW SENSOR CABLE.
- 3" CONDUIT AND SWEEP ELL FOR LEAD WIRES.
- 1" CONDUIT AND SWEEP ELL FOR MASTER VALVE WIRES.
- 1" CONDUIT AND SWEEP ELL FOR 110 VAC POWER LINE.
- 1" CONDUIT AND SWEEP ELL FOR GROUND WIRE.
- 10" ROUND VALVE BOX AROUND GROUND ROD, FILL WITH 3/4" CRUSHED ROCK.
- 5/8" X 8" GROUND ROD WITH #6 GROUND WIRE AND CLAMP, LOCATE 8'-12" FROM ENCLOSURE.
- #6 GROUND WIRE SECURED TO BACKBOARD GROUNDING TERMINAL.

NOTE: SEE IRRIGATION LEGEND CALL OUT FOR INCLUDED SATELLITE COMMUNICATION COMPONENTS. SUGGESTED CONDUIT SIZES MAY NEED TO BE LARGER.

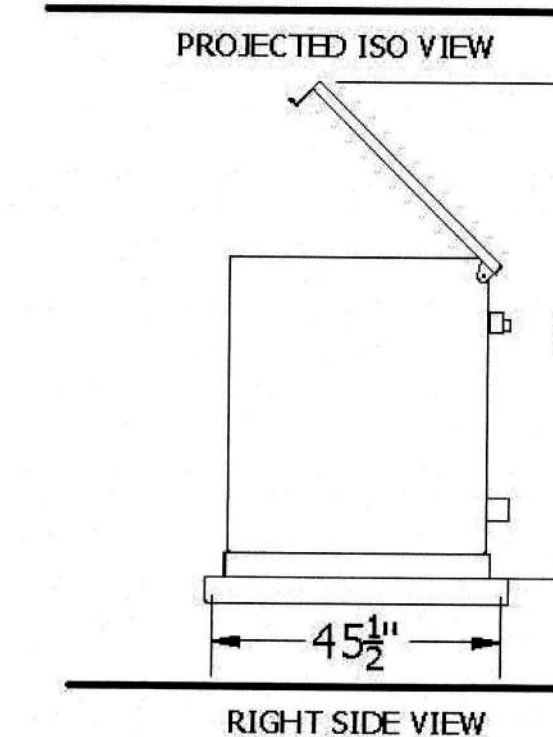
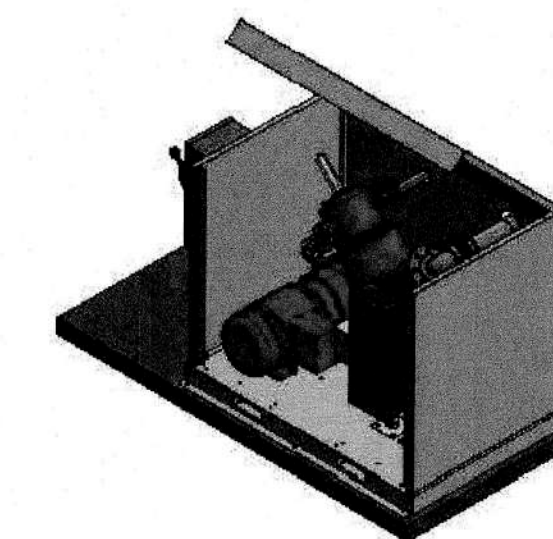
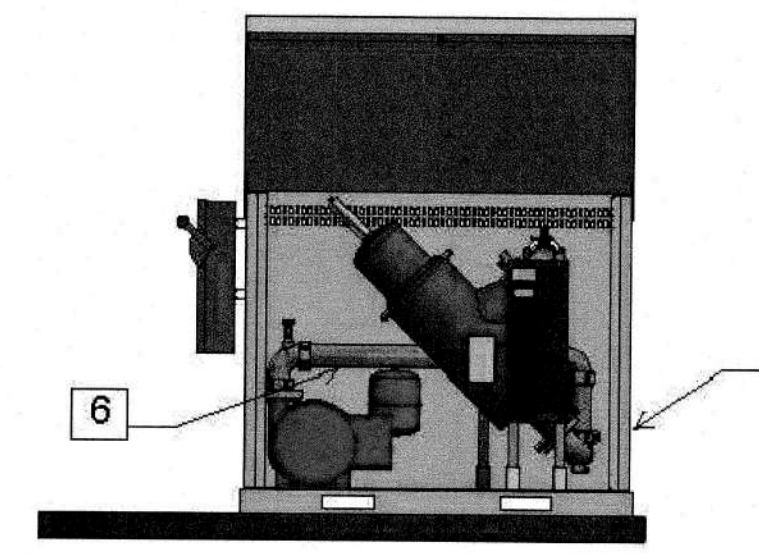
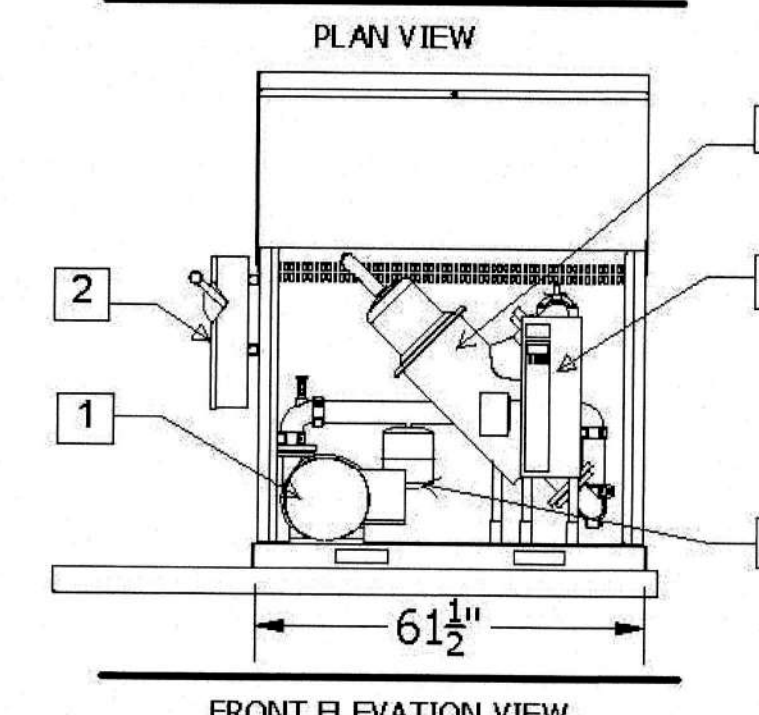
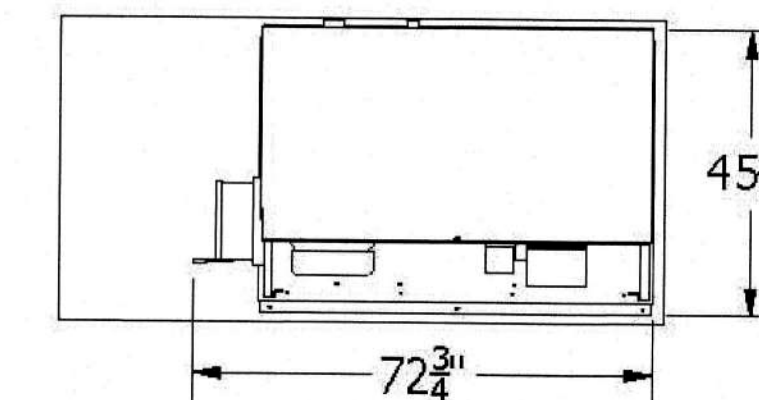
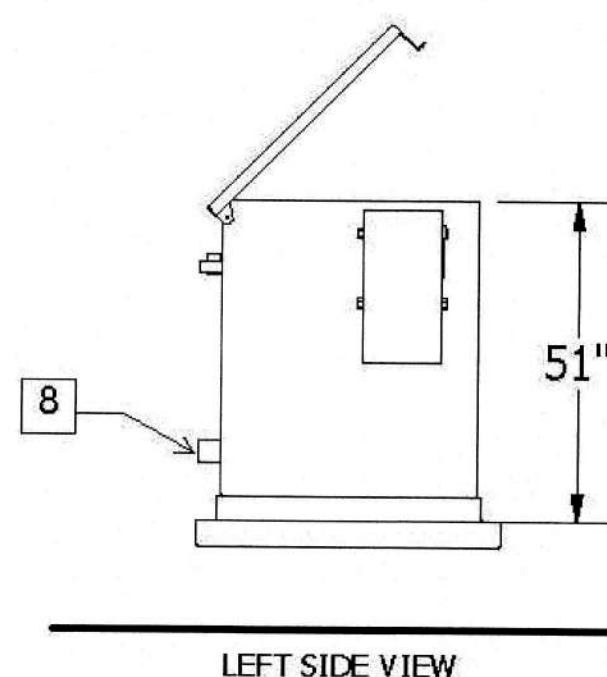
SA6 - STRONGBOX: SB-16SS (16"W x 38"H x 15.5"D)
 TOP ENTRY ENCLOSURE - CONCRETE PAD

6 SATELLITE ASSEMBLY (SA SERIES)



LEGEND

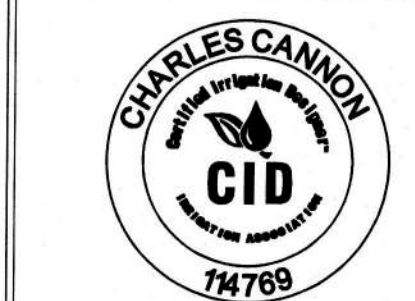
- Goulds Centrifugal Pump & TEFC Motor
- Load Center & Disconnect (230V/3PH)
- IPC Series VFD
- Shown with OPTIONAL Auto-flush Filtration
- Pneumatic Pressure Tank
- Galvanized Grooved Piping
- Powder Coated Alum. Marine Grade Encl.
- Intake Connection
- 4" Baseline Hydrometer (not shown)



Performance: 312 GPM @ 90 PSI (5' lift)

NOTES:
 THIS IS A CONCEPTUAL DESIGN THAT MAY BE SUBJECT TO MINOR CHANGES DUE TO EQUIPMENT DIMENSIONS. EQUIPMENT SETBACKS SHOULD BE IN COMPLIANCE BY NEG, LOCAL AND STATE ELECTRICAL CODES.

| | | | | | | | |
|-----------------------------|----------------------------------|----------------|-------|-------------------|----------|--------------|-----|
| PROJECT | KNIGHTDALE PARK- GENERIC DRAWING | MOTOR | 25 HP | POWER | 230V/3PH | DRAWN BY: | JAS |
| MODEL | PIB-25-CB-233/EL-BH-M400-NO | DISCHARGE SIZE | 4" | FILTRATION DEGREE | 130 | APPROVED BY: | BT |
| CUSTOMER APPROVAL SIGNATURE | DATE | SUCTION SIZE | 6" | MISC | | | |



PROJECT NAME
KNIGHTDALE ATHLETIC PARK-PH1
 KNIGHTDALE, NC

Project Title
IRRIGATION PLAN

Project Number: 183363
 Design Date: 04/04/2019
 LS Plan Date:
 Drawn By: CLC
 Checked By:
 Drawing Scale: 1" = 30'

| Revisions | Date |
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Sheet Number:

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Sheet: 3 OF 3

Satuli
 9-9-2019
 9/9/19