

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF KNIGHTDALE STANDARDS AND SPECIFICATIONS

SYMBOLS AND ABBREVIATIONS

Table listing symbols and abbreviations for various construction elements such as aggregate base course, aluminum, aluminumized steel, back to back, blow-off assembly, curb and gutter, cubic feet per second, curb inlet, center line, corrugated metal pipe, clean out, communication, concrete, double check valve, double detector check valve, drop inlet, ductile iron pipe, easement, electric, existing, flared end section, fire hydrant, force main, feet, feet per sec, galvanized, gate valve, high density polyethylene, length, linear feet, manhole, pavement, finished pad elevation, power pole, polyvinyl chloride, radius, right-of-way, reducer, reinforced concrete pipe, reduced pressure zone, sanitary sewer, station, temporary diversion ditch, telephone, temporary sediment basin, underground, wheelchair ramp, water line, water meter, yard inlet.

ATTENTION CONTRACTORS

The Construction Contractor responsible for the extension of water, sewer, and/or gas, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty four hours prior to beginning any of their 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 Jobsite, 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.

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

EROSION CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT

APPROVED EROSION CONTROL [] S- STORMWATER MGMT. [] S- FLOOD STUDY [] S- DATE: ENVIRONMENTAL CONSULTANT SIGNATURE

WATER ALLOCATION POLICY BONUS POINT CHART

Table with 2 columns: Base Points - Major Residential Subdivision (15), Bonus Point Items (Additional 35 Points required), and Points. Items include Residential Architectural Standards (15), Development within Old Town District (4), IPEMA Certified Playground Equipment (4), Stormwater - Wet Pond w/ Fountain (4), Provision of On-Street Public Parking (4), Outdoor Display of Public Art (4), Total Proposed Bonus Points (35), and Total Points (50 Points Required) (50).

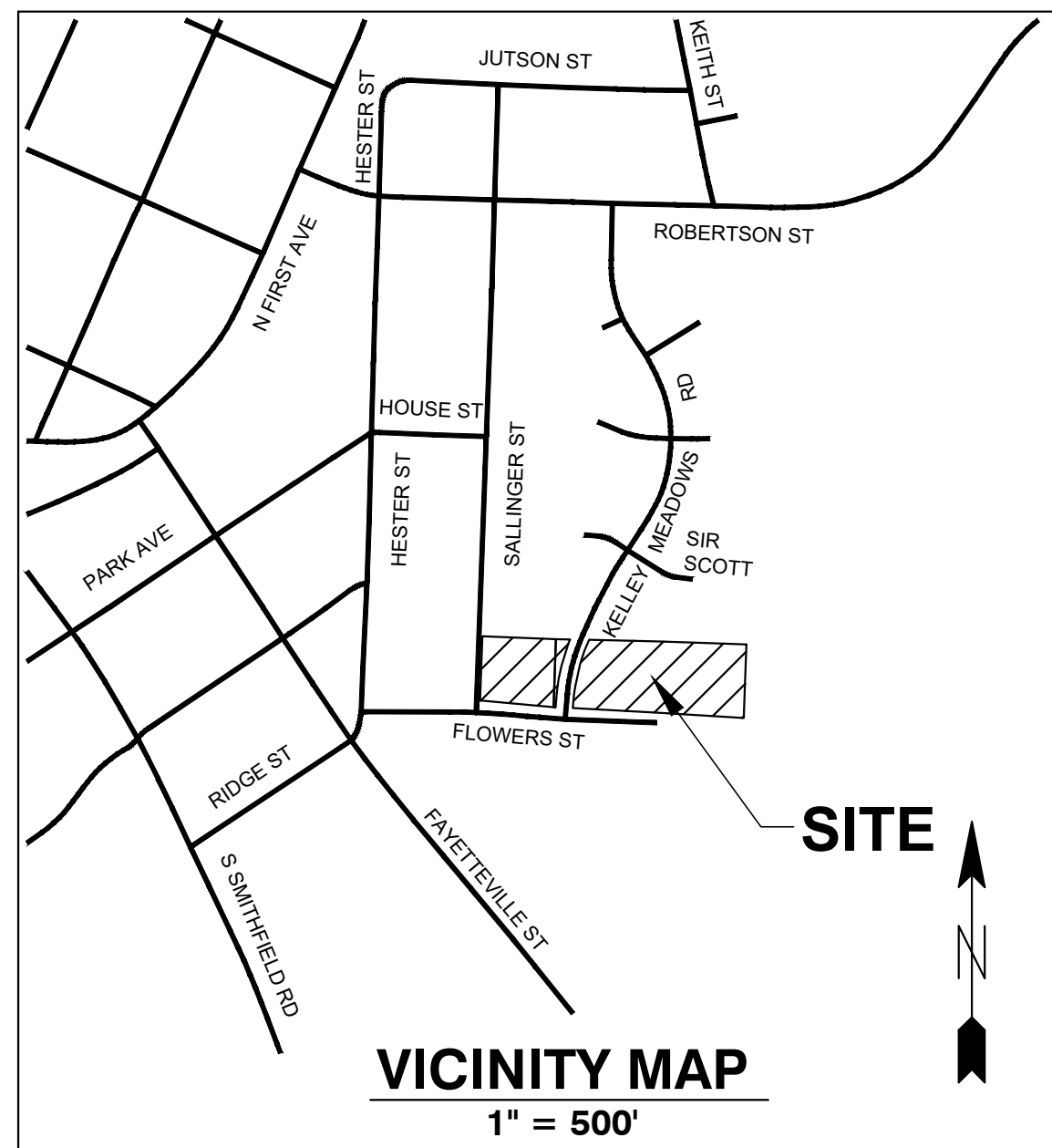
QUANTITY SUMMARY

Table with 2 columns: Item and Quantity. Items include Public Water (LF) 274, Water Service Connections 17, Public Sewer (LF) 505, Sanitary Sewer Service Connections 17, Public Storm Drainage (LF) 426, Public Street (LF) 246, Public Sidewalk (LF) 823, Public Curb and Gutter (LF) 597.

NOTE: UTILITY CONNECTION PERMITS FOR THIS PROJECT WILL BE ISSUED BY THE TOWN OF KNIGHTDALE ONLY AFTER A DRAFT OF THE PLAT SUBDIVISION AND RIGHT OF WAY DEDICATIONS HAVE BEEN REVIEWED FOR APPROVAL BY CORPUD THEN RECORDED.

FLOWERS PLACE SUBDIVISION 0 KELLEY MEADOWS ROAD TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA CONSTRUCTION DRAWINGS

TOWN OF KNIGHTDALE PUD CASE NO. ZMA-9-19



BEFORE YOU DIG! CONTACT ONE-CALL CENTER 1-800-632-4949

SHEET INDEX

- COVER
C0.1 EXISTING CONDITIONS & DEMOLITION PLAN
C1.0 SITE PLAN
C1.1 ACTIVE OPEN SPACE PLAN
C2.0 UTILITY PLAN
C3.0 GRADING AND DRAINAGE PLAN
C3.1 ENLARGED SCM PLAN AND DETAILS
C3.2 EROSION CONTROL PLAN - STAGE 1
C3.3 EROSION CONTROL PLAN - STAGE 2
C3.4 NGG01 PLAN
C4.1 PRIVATE ALLEY 1 & 2 PLAN AND PROFILE
C4.2 FLOWERS STREET ROAD WIDENING AND PUBLIC SEWER PLAN AND PROFILE
C5.1 DETAILS
C5.2 DETAILS
C5.3 DETAILS
C5.4 DETAILS
C5.5 DETAILS
L1.0 LANDSCAPE PLAN
L1.1 LANDSCAPE PLAN
SL-101 SITE LIGHTING

SITE DATA

Table containing project name (Flowers Place Subdivision), wet pond site, real ID number, address, zoning, use, single family residential site, real ID number, address, zoning, use, site area (gross), dedicated R/W area, net site area, number of lots, density, number of bedrooms, minimum lot width, and recreational open space calculations.

ZONING CONDITIONS

ZMA-9-19 HABITAT FOR HUMANITY PLANNED UNIT DEVELOPMENT SECTION 1: That the Unified Development Ordinance of the Town of Knightdale Code, which includes the Zoning District Map, be amended to rezone approximately 2.29 acres located within the Town of Knightdale's Corporate Limits located east of Kelley Meadows Road and north of Flowers Street, addressed 201 Flowers Street, and identified as Wake County PIN 1754-51-5410 from Urban Residential 12 (UR12) to Urban Residential-12 Planned Unit Development (UR12-PUD) as indicated.

SECTION 2: That the additional conditions contained within the application identified as ZMA-9-19 and PUD Document (Exhibit 1), and listed below apply as additional zoning conditions to the parcel of land identified as PIN 1754-51-5410:

- 1. All lots will be 30 feet in width, rear loaded on a private alley, and served by driveways that are a minimum length of 20 ft. rather than the UDO requirement of 35 ft.
2. The 20-foot Type B landscape buffer yard required between the proposed subdivision and existing Wil-Ros Meadows subdivision to the north will be reduced accordingly; the buffer will be reduced to a width of 5 ft. along Lot 1 and the alley; and to a width of 10 ft. along the proposed playground area. A 6 ft. wood privacy fence along with vegetation will be provided for the reduced buffer areas. The applicant will provide the full 20 ft. Type B buffer along the remainder of the shared northern property line.
3. The applicant will provide an uncovered Cluster Mailbox Unit (CBU) instead of a CBU covered by a shelter as required by UDO Ch. 4.7.E.
4. The applicant has provided actual home elevations that will be built in the subdivision (included in PUD document). In addition to the elevations, the applicant agrees to the Single-Family Dwelling Architectural Standards found in UDO Ch. 5.7 and the additional conditions listed below:

- a. All dwellings will be 2-story single family homes built on 30 ft. wide lots and will have a minimum of 1,150 heated square feet.
b. All driveways will be a paved surface accessed from a rear alley with space to accommodate two vehicles. Garages will not be provided for this development. A paved or hard surface walking path will be provided from the driveway to the rear of the home.
c. All single-family homes shall be raised from the finished grade a minimum of 18" and shall have crawlspace foundations that shall be covered on all sides with brick or stone. Areas under porches may be enclosed with lattice.
d. All homes shall have a combination of two or more of the following materials on the front facade above the foundation: stone, brick, lap siding, shake, or board and batten. All siding shall be fiber cement. Vinyl may be used for soffits, fascia, and corner boards.
e. All single-family homes will have a front porch with a minimum depth of six (6) feet. Front porch posts will be at least 6"x6" and extend at least 6'0" of the facade.
f. Main roof pitches (excluding porches) for 2-story homes shall be at least 7:12. Some dwellings may have hip roof design. Monopitch (shed) roofs are allowed only if they are attached to the wall of the main building and shall have a pitch of at least 3:12.
g. There shall be a 12" overhang on every gable roof end and hip roof end.
h. For every linear 30 feet (or fraction) of continuous side elevation, there shall be one window or door added to the side elevation. Any sliding break on the side of the home such as a fireplace, porch, wall offset can be used as an alternative to a window or door.

5. The submitted site plan (Exhibit 2) and home elevations will serve as the site-specific development plan. However, the applicant must submit Construction Drawings to the Town for approval that are in conformance with the approved conditions of the UR12PUD zoning district, master plan meetings, Unified Development Ordinance, and comments from the January 9, 2020 ORC meeting.

SECTION 3. That all laws and clauses of law in conflict herewith are hereby repealed to the extent of said conflict.

SECTION 4. That if this ordinance or application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions of this ordinance which can be given separate effect and to the end the provisions of this ordinance are declared to be severable.

SECTION 5. That this ordinance has been adopted following a duly advertised public hearing of the Town Council and following review and recommendation by the Land Use Review Board. SECTION 6. That this ordinance shall be enforced as provided in G.S. 160A-175 or as provided for in the Knightdale Town Code.

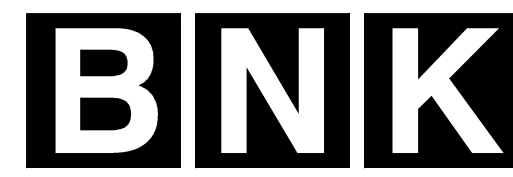
SECTION 7. That this ordinance shall become effective upon its adoption by Town Council. Adopted this 19th day of February, 2020

OWNER/ DEVELOPER:

HABITAT FOR HUMANITY OF WAKE COUNTY 2420 NORTH RALEIGH BLVD. RALEIGH, NC 27604

CONTACT: JIM MIDDLETON PHONE: 919-833-1999 EMAIL: Jim.Middleton@habitatwake.org

ENGINEER:



BASS, NIXON & KENNEDY, INC. CONSULTING ENGINEERS

6310 CHAPEL HILL ROAD, SUITE 250 RALEIGH, NORTH CAROLINA 27607

TELEPHONE: (919) 851-4422 FAX: (919) 851-8968

CERTIFICATION NUMBERS: NCBELS (C-0110) NCBOLA (C-0267)

CONTACT: MARTY D. BIZZELL, PE EMAIL: Marty.Bizzell@BNKinc.com



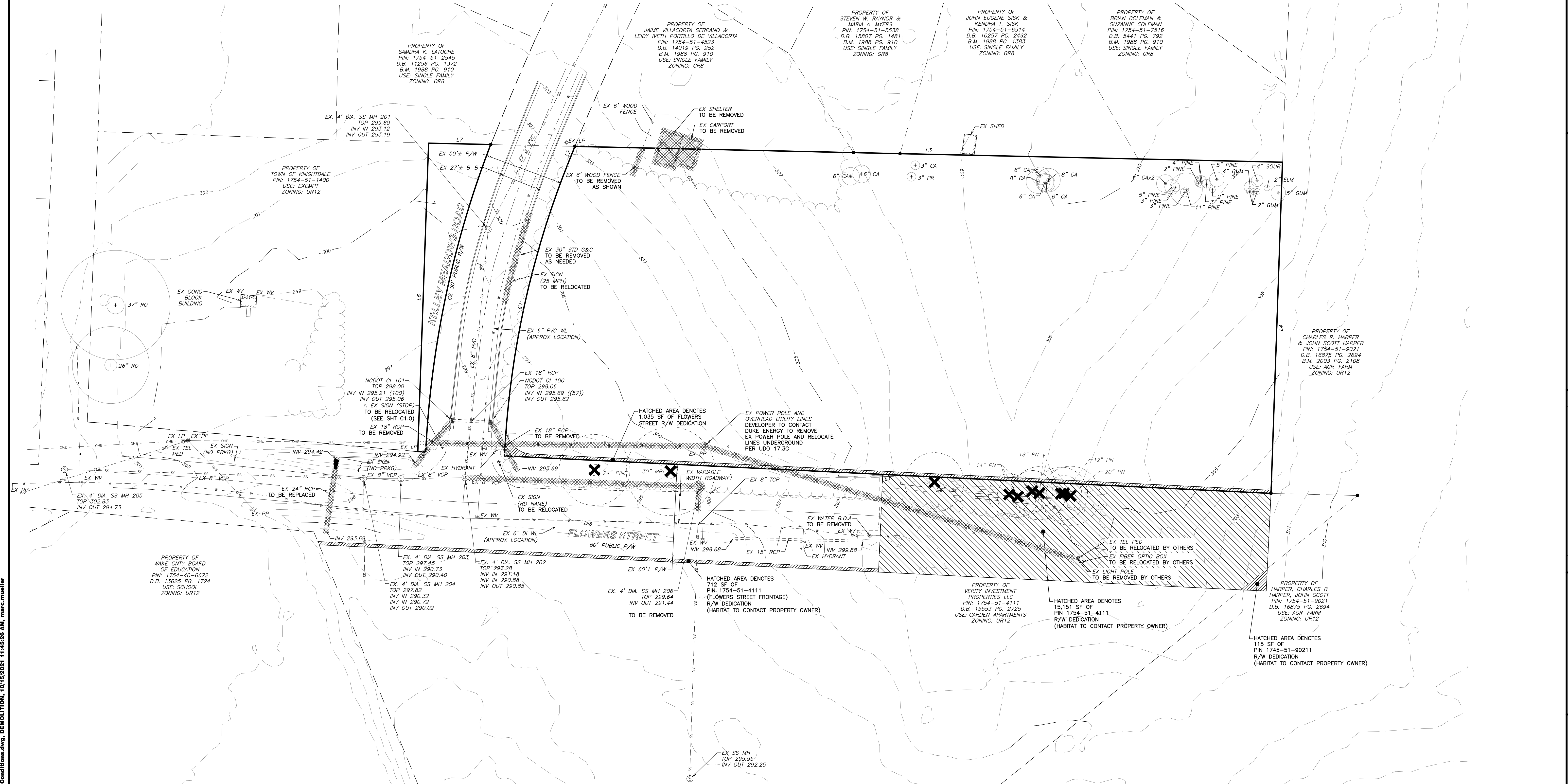
CONSTRUCTION NOTES

- 1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH APPLICABLE MUNICIPALITY STANDARDS, SPECIFICATIONS, AND DETAILS. WORK IN THIS PROJECT SHALL ALSO CONFORM TO THESE PLANS, THE LATEST EDITIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) ROAD AND BRIDGE SPECIFICATIONS, THE ROAD AND BRIDGE STANDARDS, THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL HANDBOOK, THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL REGULATIONS, 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.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR TRENCH SAFETY DURING ALL PHASES OF CONSTRUCTION.
3. 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 WHICH LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. AT LEAST 48 HOURS PRIOR TO ANY DEMOLITION, GRADING, OR CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE NORTH CAROLINA ONE-CALL UTILITIES LOCATION SERVICE (1-800-632-4949) FOR PROPER IDENTIFICATION OF EXISTING UTILITIES WITHIN THE SITE.
4. THE CONTRACTOR SHALL SALVAGE AND PROTECT ALL EXISTING POWER POLES, 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.
5. TRAFFIC CONTROL ON PUBLIC STREETS SHALL BE IN CONFORMANCE WITH THE TRAFFIC CONTROL PLAN, THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AND AS FURTHER DIRECTED BY CITY AND STATE INSPECTORS.
6. 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 HIS DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES, OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
7. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL ARRANGE THE MEETING WITH THE CITY ENGINEERING DIVISION.
8. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL REQUIRED PERMITS AND APPROVALS PRIOR TO COMMENCING CONSTRUCTION.
9. 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. THE CONTRACTOR SHALL USE SILT FENCES (OR OTHER METHODS APPROVED BY THE ENGINEER AND APPLICABLE MUNICIPALITY) AS REQUIRED TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM FLOWING ONTO ADJACENT PROPERTIES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE STATE, LOCAL, OR 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.
10. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND MOISTURE CONDITION ALL FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
11. MATERIALS USED TO CONSTRUCT EMBANKMENTS FOR ANY PURPOSE, BACKFILL AROUND DRAINAGE STRUCTURES, OR IN UTILITY TRENCHES FOR ANY OTHER DEPRESSION REQUIRING FILL OR BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST AS SET OUT IN ASTM STANDARD D698. STONE BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST AS SET OUT IN ASTM STANDARD D1557. THE CONTRACTOR SHALL PRIOR TO ANY OPERATIONS INVOLVING FILLING OR BACKFILLING, SUBMIT THE RESULTS OF THE PROCTOR TEST TOGETHER WITH A CERTIFICATION THAT THE SOIL TESTED IS REPRESENTATIVE OF THE MATERIALS TO BE USED ON THE PROJECT. TESTS SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND THE CERTIFICATIONS MADE BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY.

TOWN OF KNIGHTDALE PROJECT NO. PUD CASE NO. ZMA-9-19

FLOWERS PLACE SUBDIVISION CONSTRUCTION DRAWINGS

\\chiffre\civ\2016\18082 - Knightdale Habitat SD\Civil\04 Construction\00 - 18082_Cover.dwg COVER, 10/15/2021 11:37:04 AM, marc.muehler



- BNK EX TREE TYPE ABBREVIATIONS**
- APPLE --- AP
 - ASH --- AS
 - BEECH --- BE
 - BLACK WALNUT --- BW
 - BROADFORD PEAR --- BP
 - BURFORD HOLLY --- BH
 - CATALPA --- CP
 - CEDAR --- CR
 - COTTONWOOD --- CW
 - CRABAPPLE --- CA
 - CREPE MYRTLE --- CM
 - CYPRESS --- CY
 - DOGWOOD --- DW
 - ELM --- EL
 - GUM --- GM
 - HACKBERRY --- HB
 - HICKORY --- HK
 - HOLLY --- HY
 - IRONWOOD --- IW
 - LOCUST --- LC
 - MAGNOLIA --- MG
 - MAPLE --- MP
 - MIMOSA --- MM
 - PEAR --- PR
 - PECAN --- PC
 - PERSIMMON --- PS
 - REDTIP --- RT
 - PINE --- PN
 - POPLAR --- PP
 - REDBUD --- RB
 - RED OAK --- RO
 - SOURWOOD --- SW
 - SWEETBAY --- SB
 - SYCAMORE --- SY
 - WAX MYRTLE --- WM
 - WHITE OAK --- WO
 - WILD CHERRY --- WC
 - WILLOW --- WW
 - ZELKOVIA --- ZA

Existing Boundary Line Table

Line #	Length	Direction
L1	486.49'	N87°12'13.41"W
L2	11.35'	N22°02'02.96"E
L3	448.66'	S88°43'22.02"E
L4	209.97'	S1°59'26.99"W
L5	5.07'	N87°12'13.41"W
L6	195.62'	N2°00'03.59"E
L7	39.46'	S88°43'22.02"E

Existing Boundary Curve Table

Curve #	Length	Radius
C1	190.81'	575.00'
C2	200.04'	625.00'

NOTE:
SUPPLEMENTAL WATER MAIN INFORMATION FOR FLOWERS STREET PROVIDED BY WOOTEN (EMAILED 8-20-2021).

NOTE:
THERE ARE NO EXISTING 12 INCH DBH OR GREATER CANOPY TREES ON THE PROPERTY.

NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

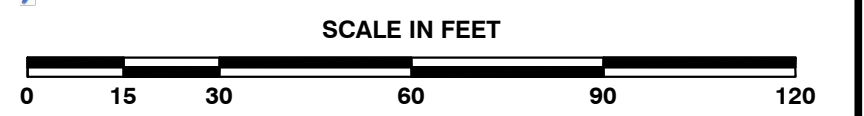
NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

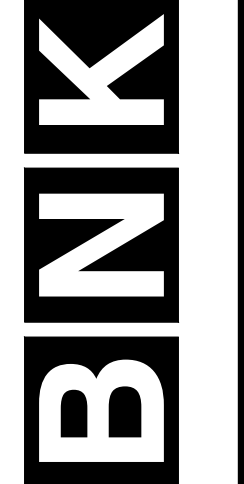
a. Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: _____ Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: 10/26/21
Administrator





BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHASEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 851-4422 FAX: (919) 851-8966
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
1		DEMOLITION PLAN	MDB
2	06-20-2020	TOK CD 2ND REVIEW COMMENTS	MDM
3	10-05-2020	TOK CD 3RD REVIEW COMMENTS	MDM
4	12-15-2020	TOK CD 4TH REVIEW COMMENTS	MDM
5	08-20-2021	TOK CD 5TH REVIEW COMMENTS	MDM

SCALE: 1" = 30'

CHK BY: MDB

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SHEET C0.1

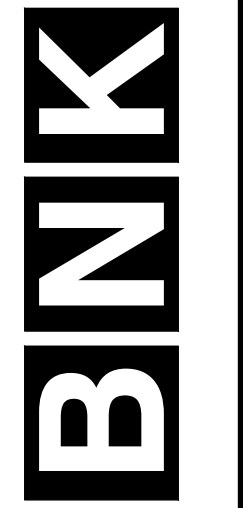
TOWN OF KNIGHTDALE PUD CASE NO. ZMA-9-19

\\chiffle.cad\1_2018\18082 - Knightdale Habitat SDC\1104 Construction\01 - 18082_Ex Conditions.dwg, DEMOLITION, 10/15/2021 11:45:26 AM, mmar-mweller

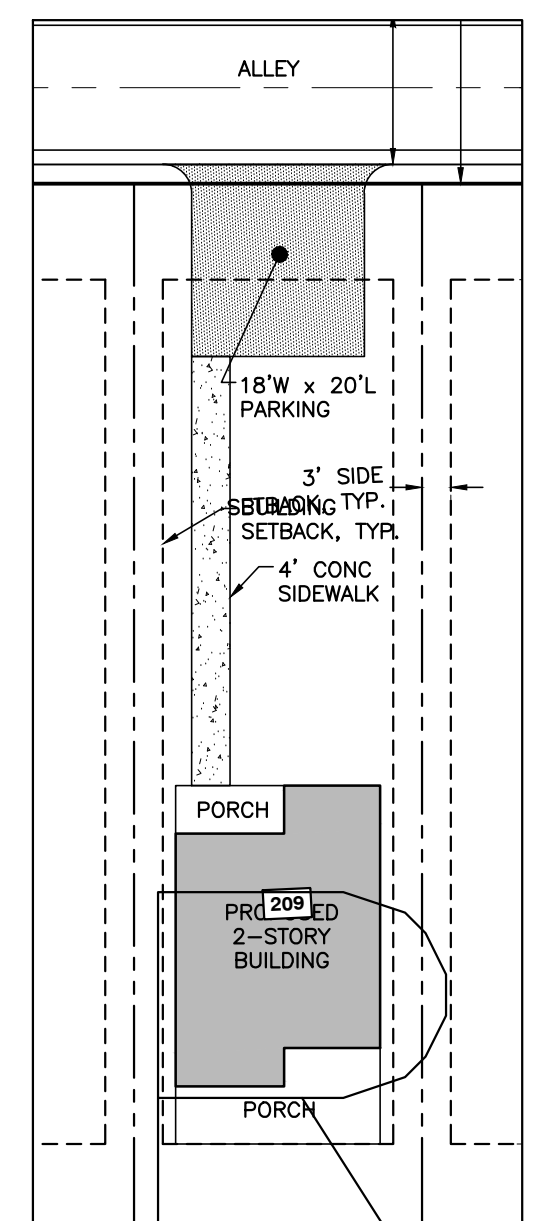
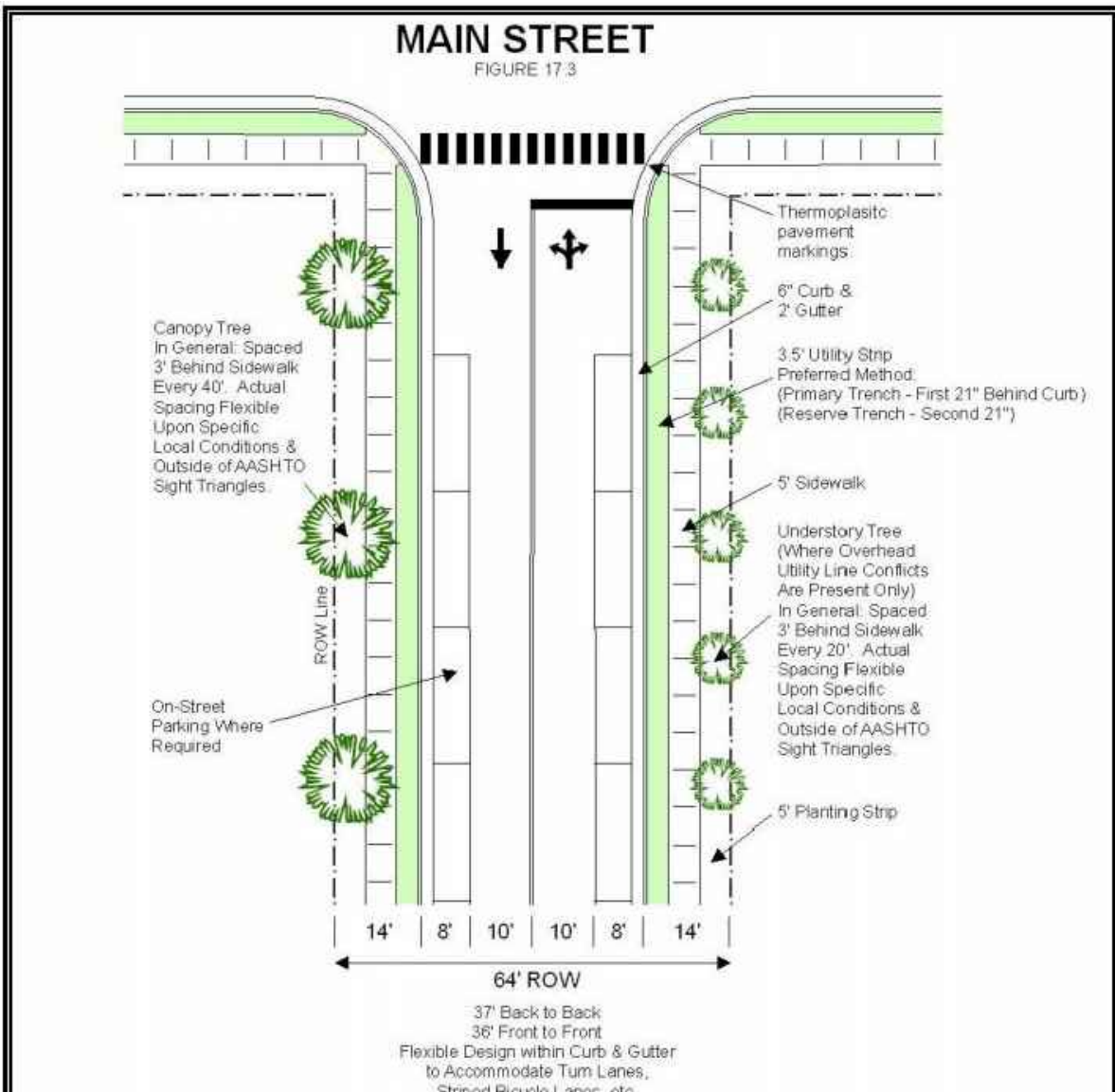
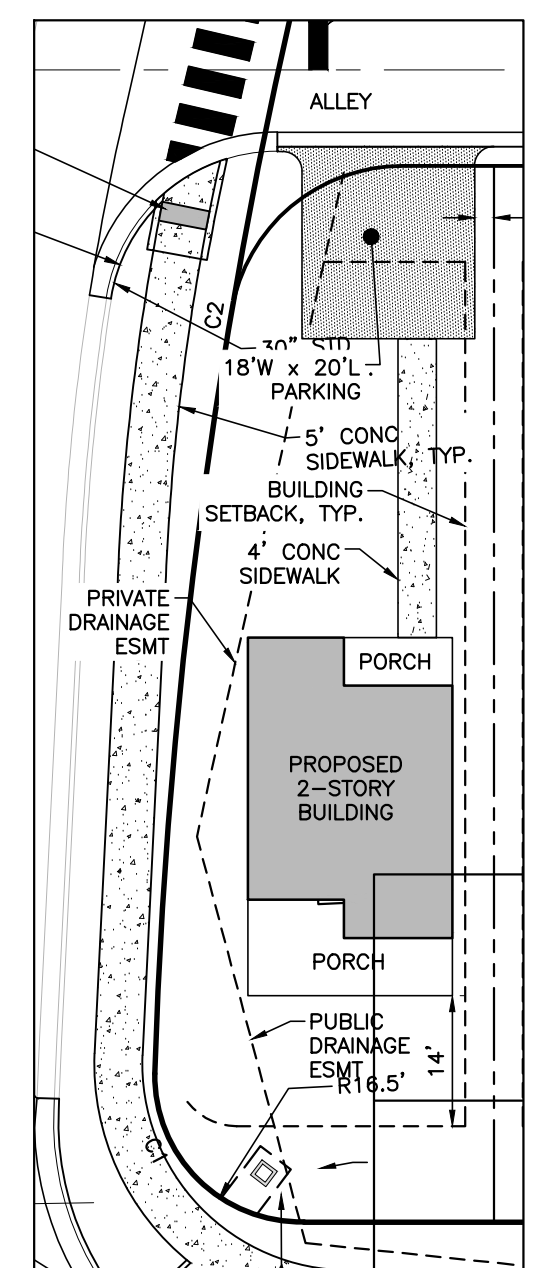
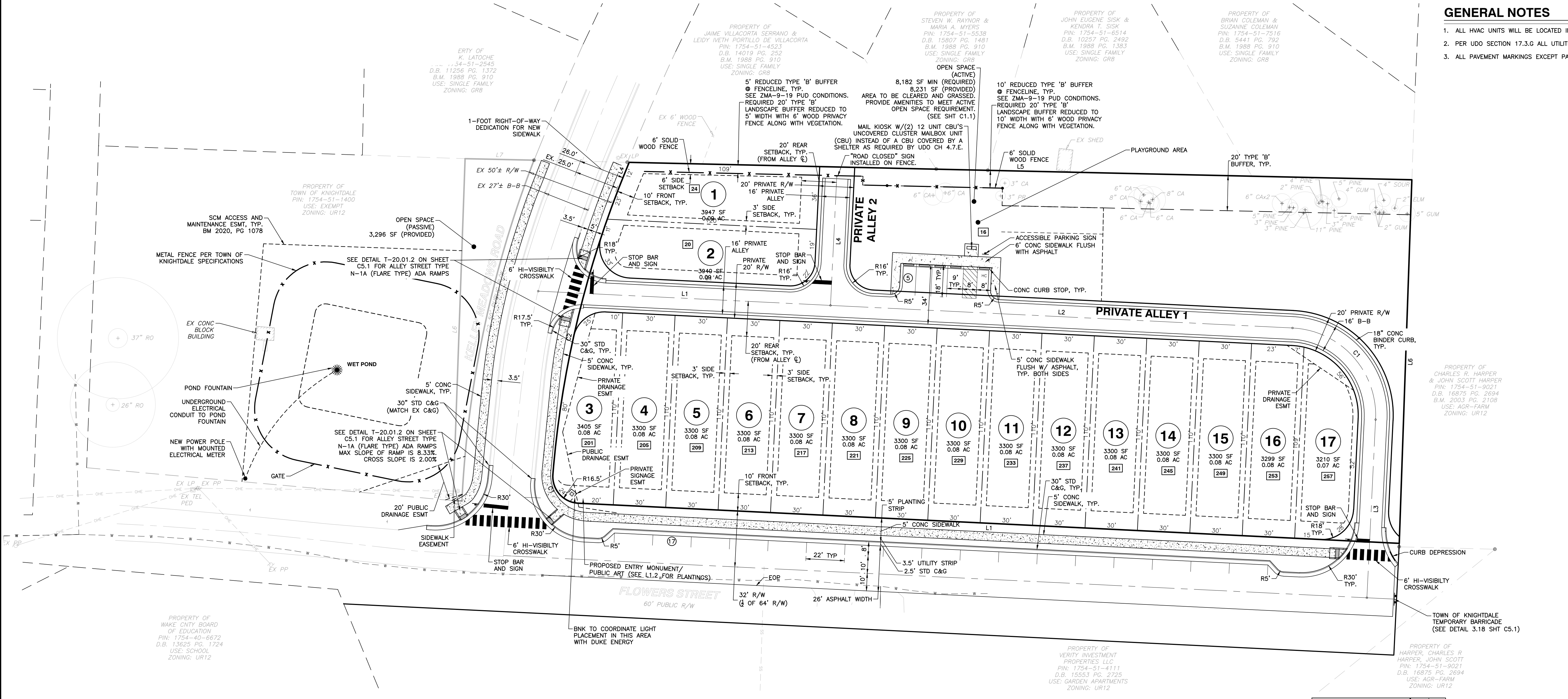
NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

GENERAL NOTES

1. ALL HVAC UNITS WILL BE LOCATED IN THE REAR YARDS.
2. PER UDD SECTION 17.3.G ALL UTILITIES SHALL BE PLACED UNDERGROUND.
3. ALL PAVEMENT MARKINGS EXCEPT PARKING SPACE LINES SHALL BE THERMOPLASTIC.



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
 6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919) 851-4422 FAX: (919) 851-8866
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)



Line #	Length	Direction
L1	469.70'	N87°12'13.41"W
L4	11.72'	N22°02'03.12"E
L5	447.59'	S88°43'22.02"E
L6	207.97'	S1°58'59.11"W

Curve #	Length	Radius
C1	24.45'	15.25'
C2	173.02'	579.28'

Line #	Length	Direction
L1	167.31'	S87°12'13.41"E
L2	264.46'	S87°12'13.41"E
L3	102.00'	S2°47'46.59"W
L4	74.02'	S2°47'46.59"W

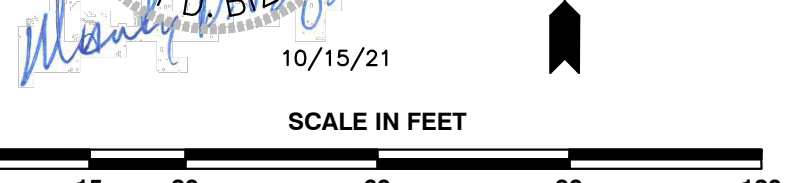
Curve #	Length	Radius
C1	78.54'	50.00'

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.

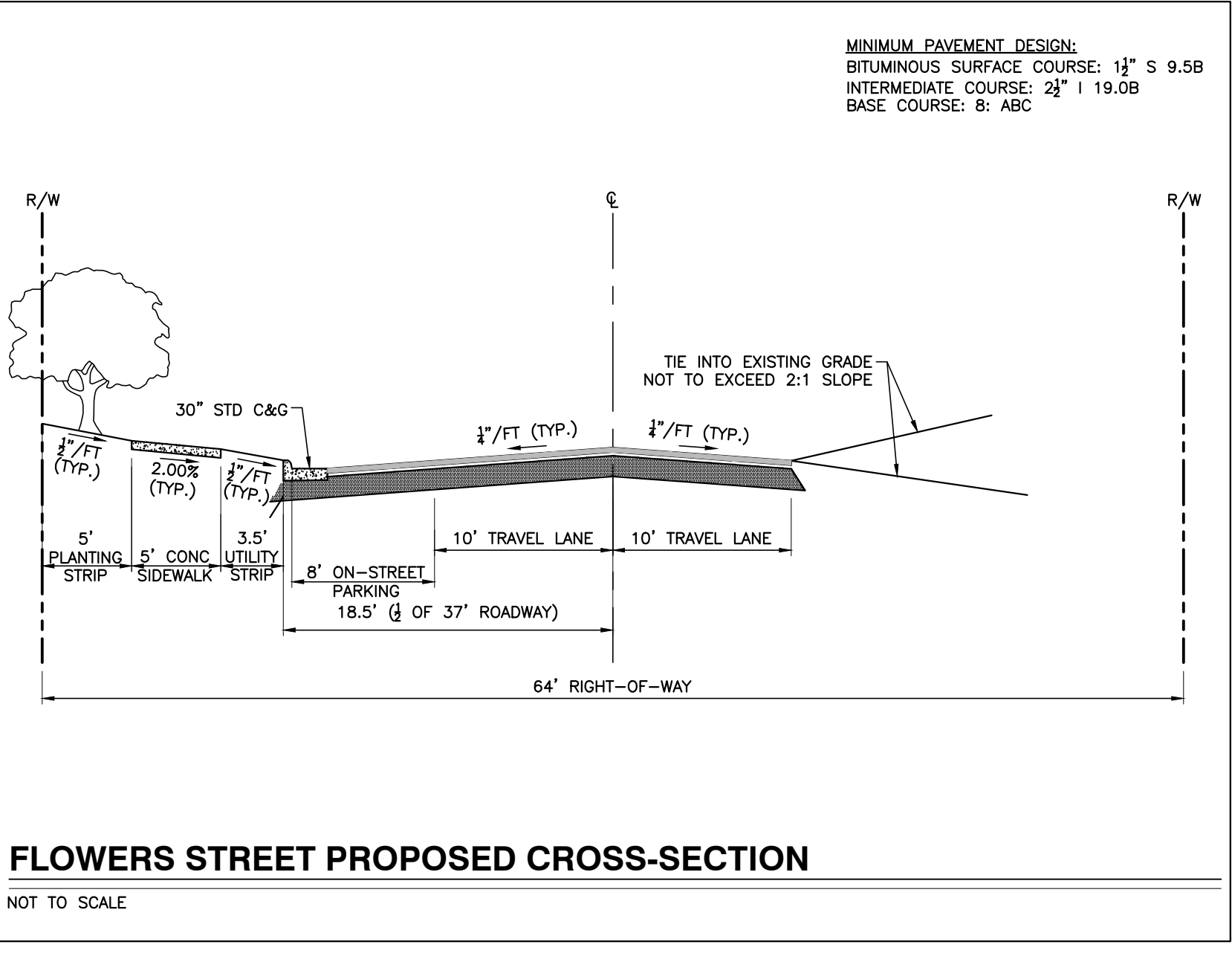
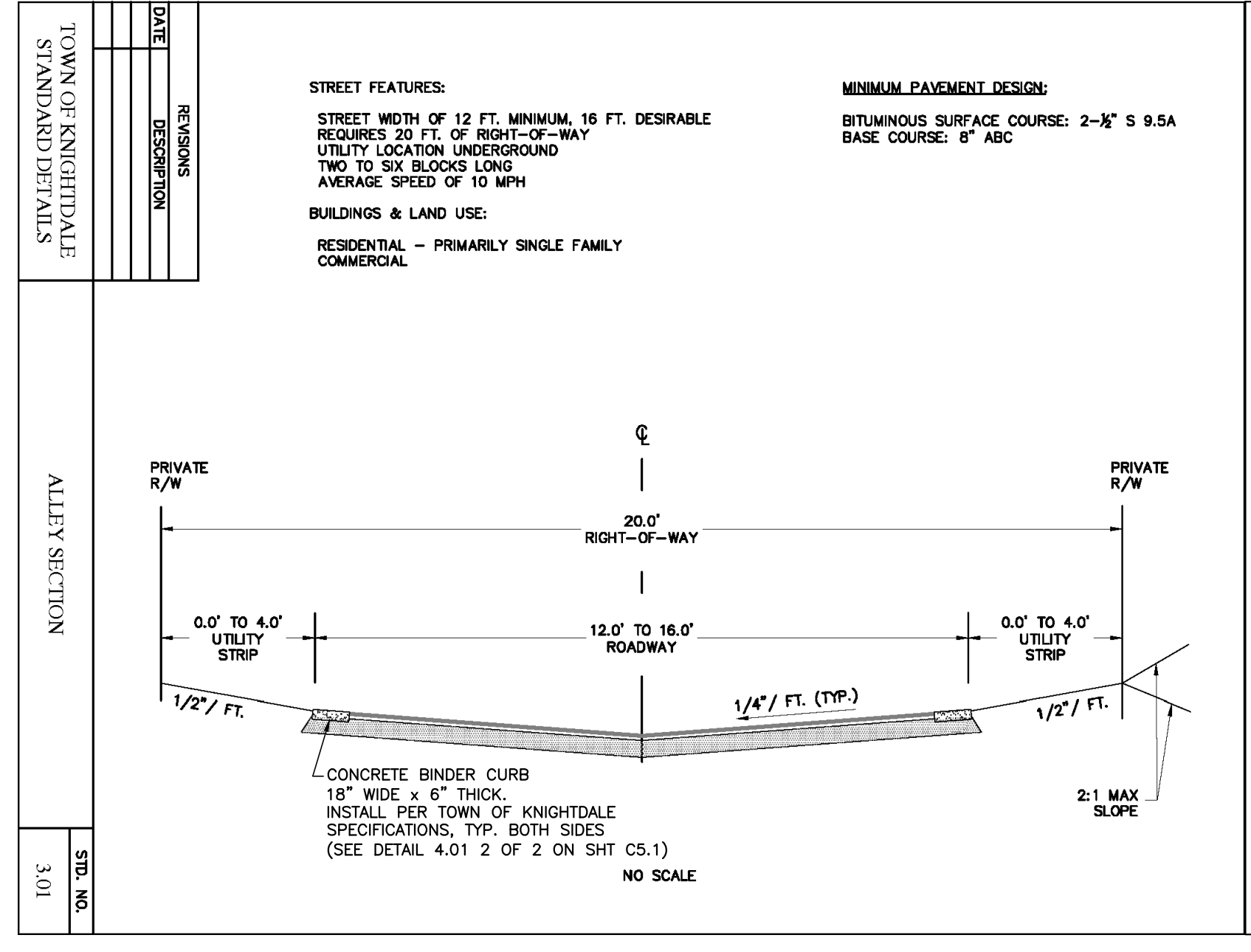
By: _____ Date: _____
 Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: 10/26/21
 Administrator



NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT



- Common Street Features (Section 2.2):**
- Curb & gutter with striped parking in mixed use and commercial areas
 - Street Tree Planting strips - 5 ft. minimum on each side (see introduction of Section 17.3.A for further notes about NCDOT maintained streets)
 - Sidewalks - 5 to 13.5 ft. on each side (Where sidewalk, utility and planting strips combined in commercial use areas, approved tree grates must be used and trees planted according to standard specification location.)
 - Bicycle Markings: (If no on-street parking is required and this section is identified for use with a designated bikeway, a minimum 4-foot striped outside bicycle lane excluding gutter shall be provided - see Appendix C)
- Buildings & Land Use:**
- Commercial and mixed use street or a major roadway in neighborhoods
 - Consistent building line recommended with buildings next to sidewalk
 - Pedestrian awnings and arcades recommended except in MI District

\\chiffre-cvtd_1\2018\18082 - Knightdale Habitat SD\CVL104 Construction\02 - 18082_Site.dwg, SITE, 10/15/2021 11:46:07 AM, mncm.mweller

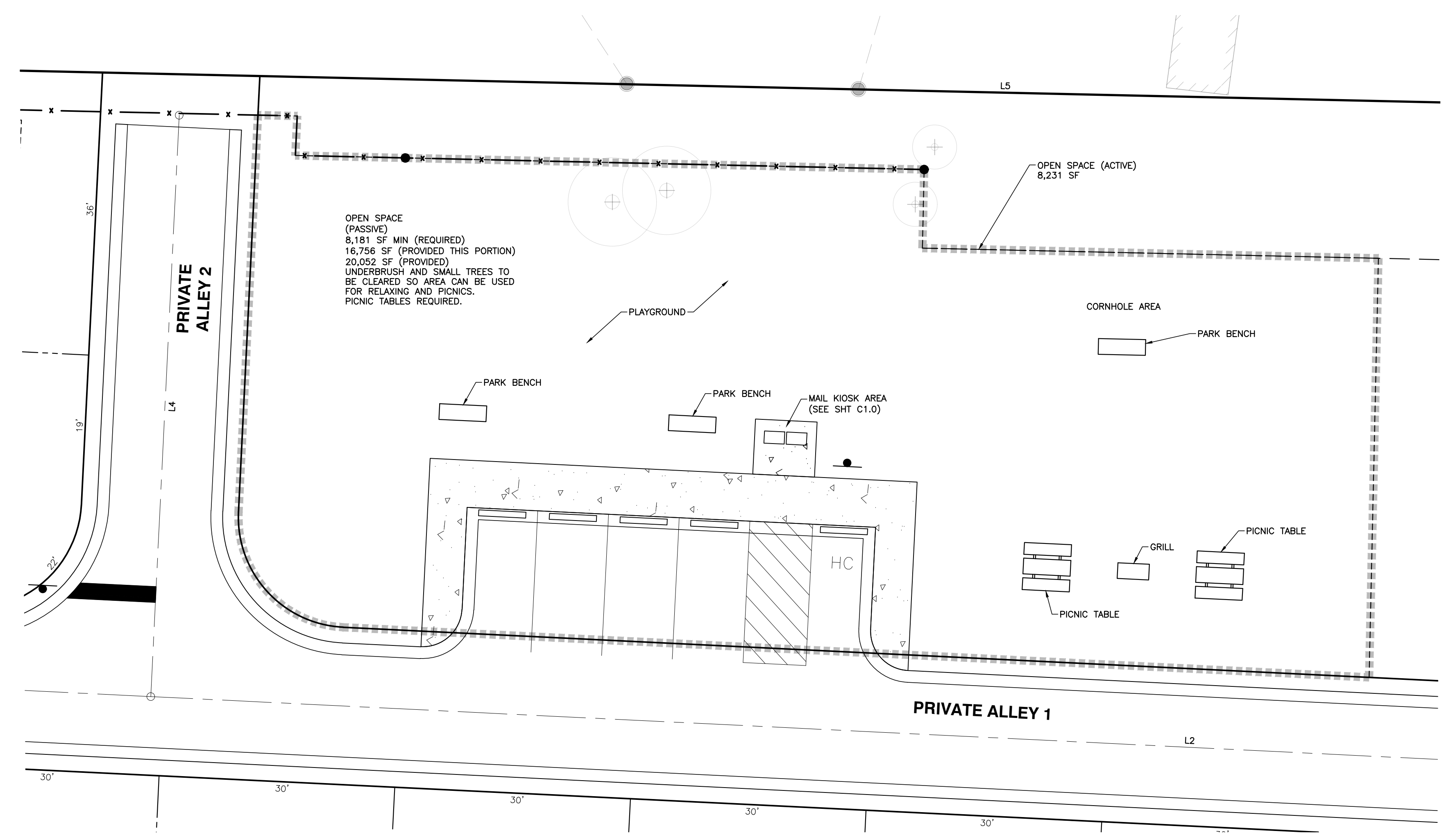
SITE PLAN

NO.	DATE	DESCRIPTION	BY
1	07-08-2020	TOK CD 1ST REVIEW COMMENTS	MD
2	06-20-2020	TOK CD 2ND REVIEW COMMENTS	MD
3	10-05-2020	TOK CD 3RD REVIEW COMMENTS	MD
4	12-15-2020	TOK CD 4TH REVIEW COMMENTS	MD
5	08-20-2021	TOK CD 5TH REVIEW COMMENTS	MD

SCALE: 1" = 30'

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
 TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SHEET C1.0



\\chiffre-civil_2018\18082 - Knightdale Habitat SD\civil\04 Construction\02 - 18082_Site.dwg, OPEN SPACE, 10/15/2021 11:46:29 AM, mtrc.mueller



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
 6310 CHABEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919)851-4422 FAX: (919)851-8866
 CERTIFICATION NUMBERS: NCBELLS (C-0110); NCBOLLA (C-0267)

NO.	DATE	DESCRIPTION	BY
5	08-26-2021	TOX CD 5TH REVIEW COMMENTS	MRM
4	12-15-2020	TOX CD 4TH REVIEW COMMENTS	MRM
3	10-05-2020	TOX CD 3RD REVIEW COMMENTS	MRM
2	06-26-2020	TOX CD 2ND REVIEW COMMENTS	MRM
1	07-08-2020	TOX CD 1ST REVIEW COMMENTS	MRM

JOB NO.	DATE	RAB	CHK BY
03-18082	04-07-20	RAB	MDB

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
 TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SHEET C1.1

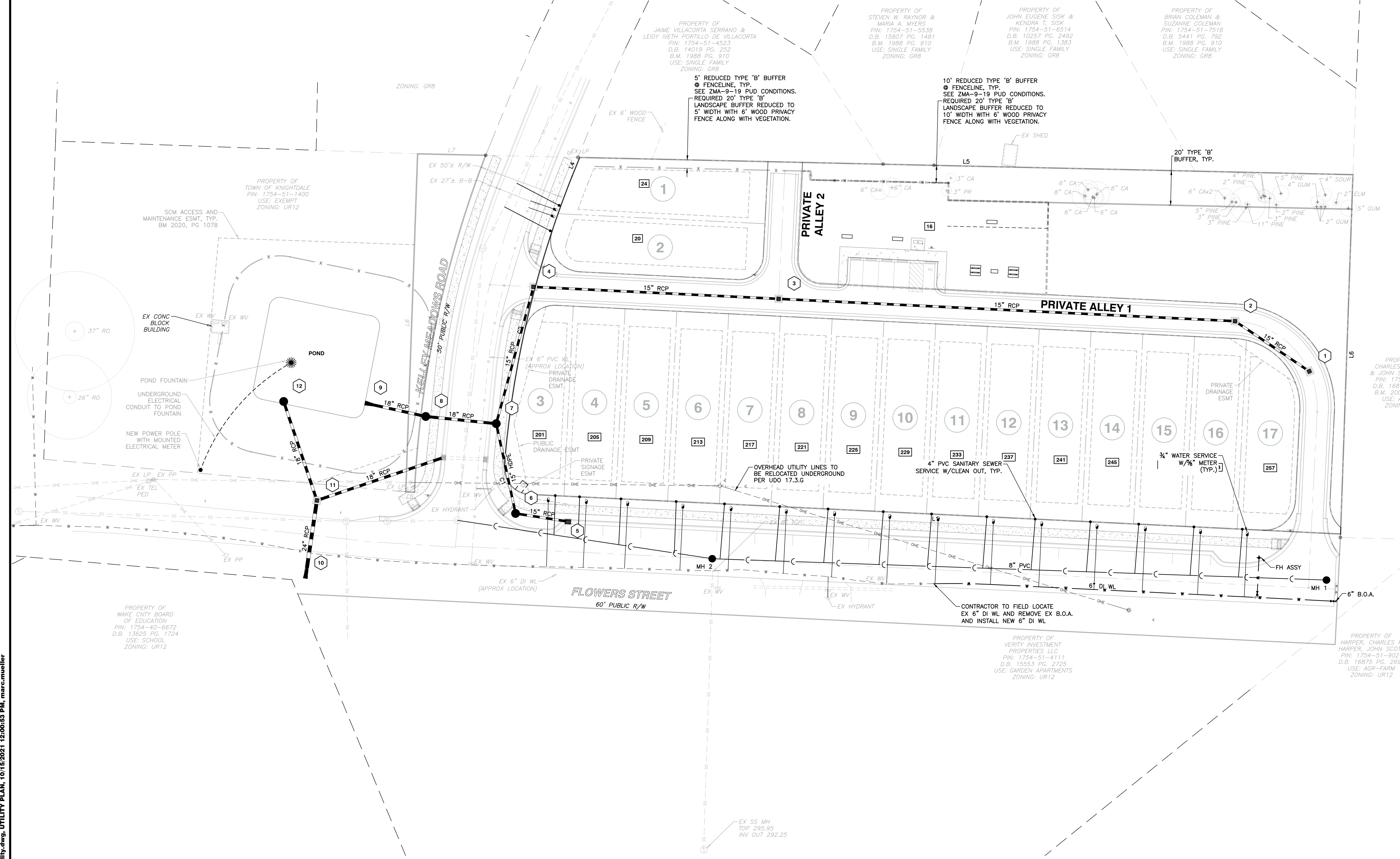
a. **Town Certification.** This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.
 By: _____ Date: _____
 Town Engineer
 These plans are approved by the Town of Knightdale and serve as construction plans for this project.
 By: _____ Date: **10/26/21**
 Administrator

NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

Professional Engineer Seal for **MARY D. BIZZELL**, No. 036908, State of North Carolina. Date: 10/15/21. Includes a north arrow and a graphic scale in feet (0 to 40).



ATTENTION CONTRACTORS
The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-1540 at least twenty-four hours prior to beginning any of their 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 Jobsite, 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.

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

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-4609X

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-3700

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 # - -

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
Raleigh Water Review Officer

CITY OF RALEIGH UTILITY NOTES

- ALL MATERIALS & CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH DESIGN STANDARDS, DETAILS & SPECIFICATIONS (REFERENCE: CORPUD 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 &/OR 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 ENCASMENT 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 SEWER 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 6" MIN. CLEARANCE (PER CORPUD DETAILS W-41 & S-49)
 - 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 FORCEMAINS. 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 CORPUD HANDBOOK PROCEDURE.
- INSTALL 3/4" COPPER WATER SERVICES WITH METERS LOCATED AT ROW OR WITHIN A 2'X2' WATERLINE EASEMENT 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 NCDOW, USACE &/OR FEMA FOR ANY RIPARIAN BUFFER, WETLAND &/OR FLOODPLAIN IMPACTS (RESPECTIVELY) PRIOR TO CONSTRUCTION.
- NCDOT/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 CORPUD FOG 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-B 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 APPROVAL 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

NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT



10/15/21

SCALE IN FEET



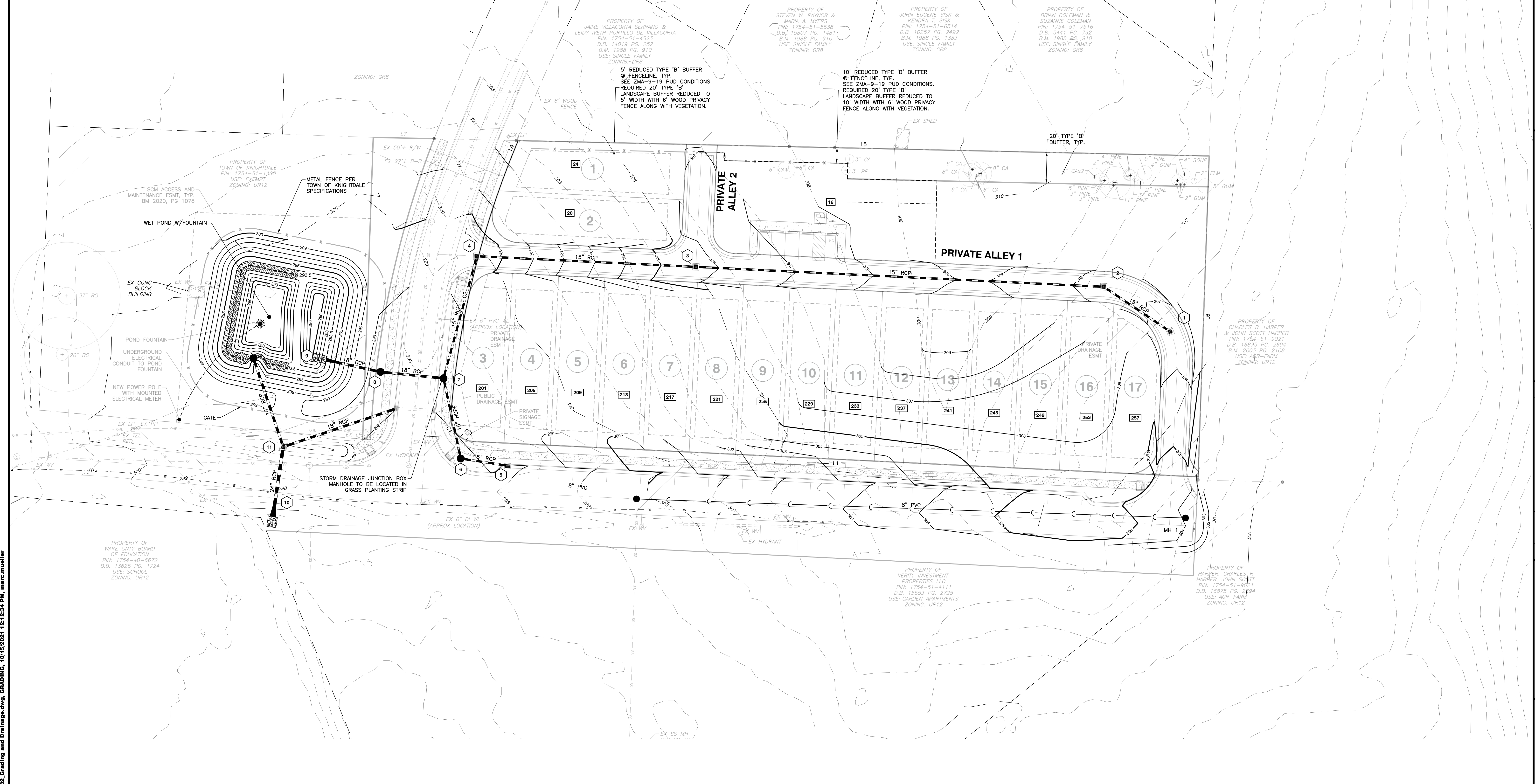
BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 961-1442 FAX: (919) 961-8966
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

DATE	DESCRIPTION	BY
03-18-2021	JOB NO.	CHK BY: MDB
04-07-20	RAB	
05-20-2021	TOK CD 3TH REVIEW COMMENTS	
06-20-2020	TOK CD 2ND REVIEW COMMENTS	
07-08-2020	TOK CD 1ST REVIEW COMMENTS	
08-20-2020	TOK CD 3RD REVIEW COMMENTS	
12-15-2020	TOK CD 4TH REVIEW COMMENTS	
08-20-2021	TOK CD 5TH REVIEW COMMENTS	

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

SHEET C2.0



Pipe Network								
Inlet Type	Inlet ID		Line Length (ft)	Line Size		InvertUp (ft)	InvertDn (ft)	Grnd/Top Elev Up (ft)
	UP	DN		(in)	(%)			
Drop Inlet	1	2	51.86	15	0.77	301.80	301.40	306.50
Drop Inlet	2	3	264.46	15	0.7	301.30	299.45	307.59
Drop Inlet	3	4	142.00**	15	3.2	299.35	294.80	305.69
Drop Inlet	4	7	82.00**	15	0.5	294.55	294.14	299.34
Junction Box	7	8	40.98**	18	0.59	294.04	293.80	298.30
Junction Box	8	9	36.02**	18	0.56	293.70	293.50	298.50
NCDOT Curb Inlet	5	6	30.66**	15	0.55	294.80	294.63	298.28
Drop Inlet	6	7	*53.14**	15	0.55	294.53	294.24	298.10
Exist Curb Inlet	EX	11	77.12**	18	1.63	295.06	293.80	298.00
Pond Riser	12	11	60.40**	18	0.5	293.40	293.10	297.00
Yard Inlet	11	10	45.54	24	0.55	293.00	292.75	296.50

* HDPE PIPE; OTHERWISE RCP ** = RUBBER GASKET JOINT PIPE REQUIRED (O-RING PIPE)

NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

a. **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: _____ Date: _____
Town Engineer

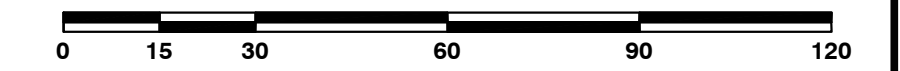
These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: **10/26/21**
Administrator



10/15/21

SCALE IN FEET



BANK

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 851-4422 FAX: (919) 851-8866
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
5	08-26-2021	TOK CD 3TH REVIEW COMMENTS	MRM
4	12-15-2020	TOK CD 1TH REVIEW COMMENTS	MRM
3	10-05-2020	TOK CD 3RD REVIEW COMMENTS	MRM
2	06-26-2020	TOK CD 2ND REVIEW COMMENTS	MRM
1	07-08-2020	TOK CD 1ST REVIEW COMMENTS	MRM

REVISIONS

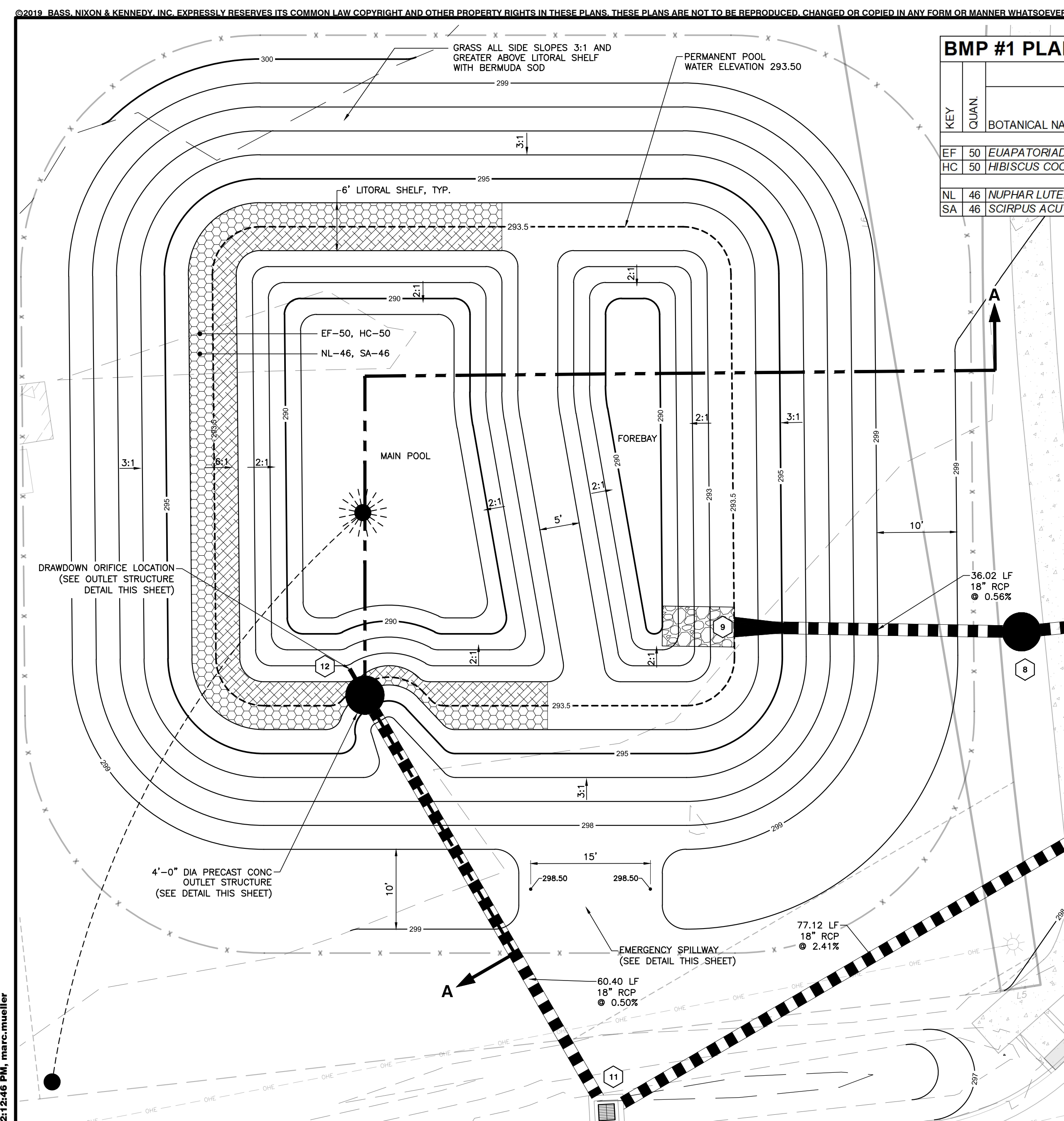
SCALE: 1" = 30'

CHK BY: MDB

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SHEET C3.0

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION



BMP #1 PLANTING SCHEDULE

KEY	QUAN	BOTANICAL NAME	COMMON NAME	CONTAINER	SPACING	NOTE
EF	50	ELIAPATORIADDELPHIS FISTULOSIS	JOE PINE WEEED	4" POT	24" O.C.	FULL BUSHY CONTAINER
HC	50	HIBISCUS COCCINEUS	SCARLETT ROSEMALLOW	4" POT	24" O.C.	FULL BUSHY CONTAINER
NL	46	NLIPHAR LUTEA	SPATTERDOCK LILY	4" POT	24" O.C.	FULL BUSHY CONTAINER
SA	46	SCIRPUS ACUTUS	HARDSTEM BULLRUSH	4" POT	24" O.C.	FULL BUSHY CONTAINER

BOUYANCY CALCULATIONS FOR RISER/BARREL

Flowers Place Subdivision

Riser Inside Diameter (ft)	4.0
Riser Wall Thickness (in)	6
Pond Bottom Elevation (ft)	290.00
Riser Crest Elevation (ft)	297.00
Density of Riser Mat (lb/cf)	150.00
Pipe Inside Diameter (in)	18
Pipe Wall Thickness (in)	2.5
Length of Pipe Exposed (ft)	2.00
Density H2O (lb/cf)	62.40
Volume H2O Displaced by Riser (cf)	137.44
Weight H2O Displaced by Riser (lb)	8576.55
Volume H2O Displaced by Pipe (cf)	5.77
Weight H2O Displaced by Pipe (lb)	360.08
Total Uplift Force (lb)	8936.63
Weight of Riser (lb)	7422.01
Weight of Pipe (lb)	335.43
Pipe/Riser Downward Force (lb)	7757.44

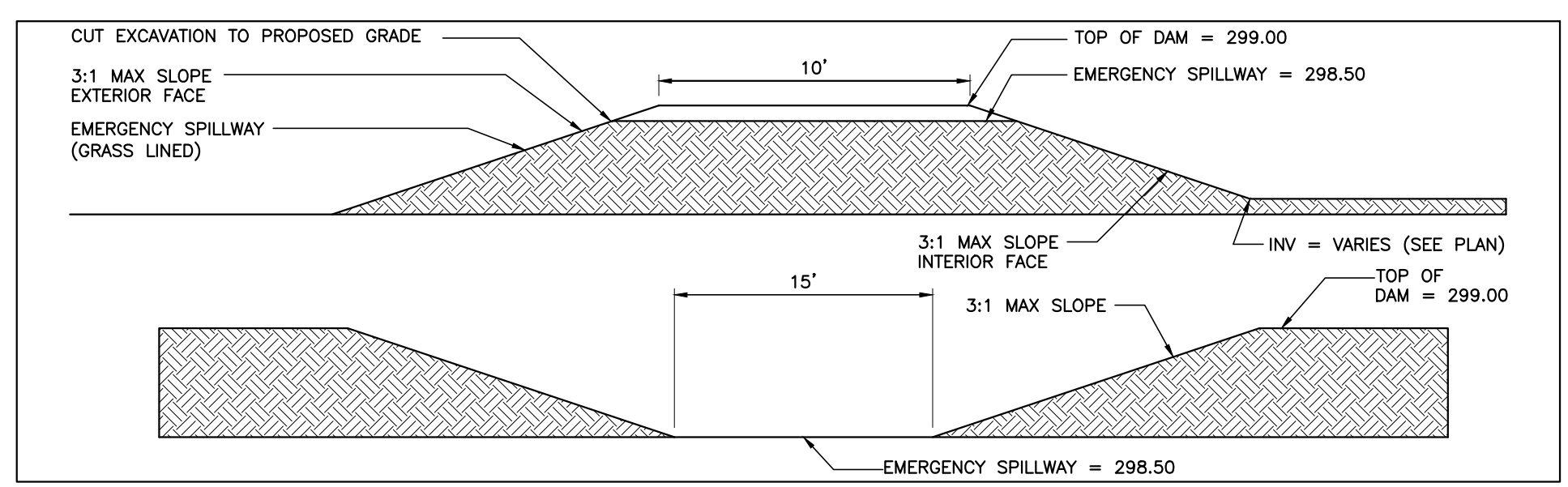
Minimum Factor of Safety	1.2
Required ballast thickness (in)	18.89
Provided Ballast Thickness (in)	24
Total Downward Force (lb)	11527.35
Provided Factor of Safety	1.29

WET DETENTION BASIN CONSTRUCTION SEQUENCE

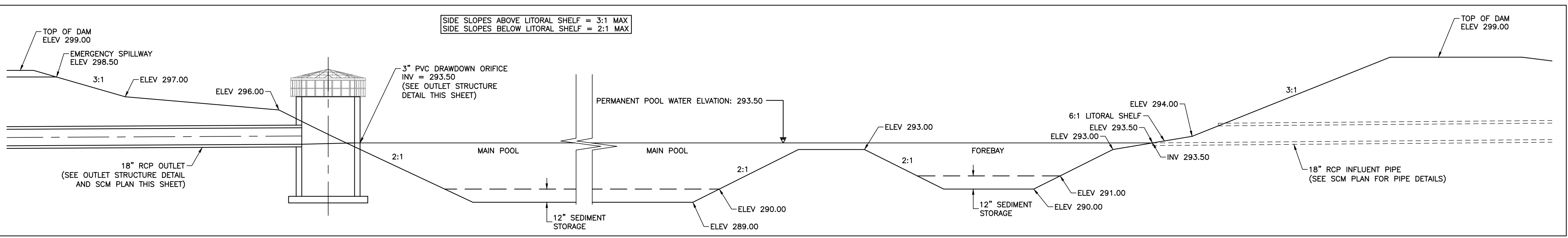
- UNDER NO CIRCUMSTANCES SHALL THE WET DETENTION BASIN BE FINALIZED AND PLANTED PRIOR TO COMPLETION OF CONSTRUCTION AND STABILIZATION OF ALL AREAS WHICH DRAIN TO IT.
- IF WET DETENTION BASIN IS TO BE USED AS A SEDIMENT BASIN DURING CONSTRUCTION, ROUGH GRADE PER PLANS, FILL PLACEMENT AND OUTLET STRUCTURE CONSTRUCTION SHALL BE IN COMPLIANCE WITH DETAILS AND WET DETENTION BASIN CONSTRUCTION NOTES HEREON. IF THE WET DETENTION BASIN HAS BEEN PREVIOUSLY ROUGH GRADED AND/OR USED AS A SEDIMENT BASIN, REMOVE AND DISPOSE OF SEDIMENT DEPOSITS WITHIN THE BASIN AREA.
- ROUGH GRADE WET DETENTION BASIN AS NECESSARY AFTER SEDIMENT REMOVAL AND TO FINALIZE BASIN GRADES. ALL FILL PLACEMENT SHALL BE IN COMPLIANCE WITH THE SPECIFICATION IN THE CONSTRUCTION NOTES ON THIS SHEET.
- AFTER ROUGH GRADING WET DETENTION BASIN, BEGIN FINE GRADING TO CONSTRUCT FOREBAY BERMS/WALLS AND MAIN POOL AREA. GRADING TOLERANCE FOR THE WET DETENTION BASIN SHALL BE +/- 0.20 FEET FROM GRADES SHOWN ON THIS PLAN.
- IN CONJUNCTION WITH GRADING AND FILL PLACEMENT, CONSTRUCT OUTLET STRUCTURES TO BRING IT INTO COMPLIANCE WITH THESE PLANS. IF OUTLET STRUCTURES WERE CONSTRUCTED WITH ROUGH GRADING WHEN USING THE WET DETENTION BASIN AS SEDIMENT BASIN, SKIP TO NEXT STEP.
- WHEN FINE GRADING AND OUTLET STRUCTURE IS COMPLETE, CALL SURVEYOR AND ENGINEER FOR ASBUILT SURVEY AND EVALUATION.
- IF SURVEYOR AND ENGINEER DETERMINE THAT GRADING IS NOT IN COMPLIANCE WITH THESE DRAWINGS, MAKE CORRECTIONS AS REQUIRED BY THE ENGINEER, AND REPEAT PREVIOUS STEP. OTHERWISE PROCEED TO NEXT STEP.
- UPON NOTIFICATION FROM THE ENGINEER THAT THE WET DETENTION BASIN IS IN COMPLIANCE WITH THESE DRAWINGS, PROVIDE LANDSCAPING IN COMPLIANCE WITH THE PLAN SHOWN ON THIS SHEET AND ANY ADDITIONAL SPECIFICATIONS FROM THE OWNER. IF TIMING IS SUCH THAT PLANTINGS WOULD OCCUR IN SUMMER MONTHS, COORDINATE WITH THE ENGINEER, OWNER, AND THE LOCAL MUNICIPALITY ABOUT DELAYING PLANTINGS UNTIL FALL OR EARLY WINTER FOR MAXIMUM SURVIVABILITY OF PLANTINGS.
- SEED ALL DISTURBED AREAS PER THE SEEDING SCHEDULE SHOWN IN THESE PLANS.
- CALL TOWN OF KNIGHTDALE STORMWATER INSPECTOR FOR APPROVAL OF STABILIZATION.
- CONTRACTOR SHALL WATER NEW PLANT MATERIAL PLANTED IN THE WET DETENTION BASIN DAILY UNTIL COMPLETION OF ALL OTHER SITE RELATED CONSTRUCTION. AFTER THE FULL SCOPE OF THE CONTRACTOR'S WORK IS COMPLETED, IT SHALL BE THE OWNER'S RESPONSIBILITY TO WATER PLANTS DAILY UNTIL PLANTS HAVE BECOME WELL ESTABLISHED AND WATERING IS NO LONGER NECESSARY.

WET DETENTION BASIN CONSTRUCTION NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH TOWN OF KNIGHTDALE AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL WARRANTY ALL PLANTED MATERIALS FOR A PERIOD OF 2 YEARS FROM DATE OF INSTALLATION. AT THE END OF THE FIRST YEAR AND AT THE END OF THE SECOND YEAR, THE CONTRACTOR SHALL REPLACE ALL PLANTS WHICH DO NOT SURVIVE. ANY HEALTHY PLANTS DAMAGED DURING PLANT REPLACEMENT SHALL ALSO BE REPLACED.
- LANDSCAPING PLANTINGS SHOWN HEREON SHALL BE INSTALLED DURING FALL SEASON OR EARLY WINTER IF POSSIBLE FOR MAXIMUM PLANT SURVIVABILITY.
- THE CONTRACTOR OR OWNER SHALL EMPLOY A GEOTECHNICAL ENGINEER TO TEST ALL EMBANKMENTS AND FILL PLACEMENT FOR PROPER COMPACTION. PROPER COMPACTION SHALL BE PER THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS OR THESE PLANS, WHICHEVER IS MORE STRINGENT. EMBANKMENTS FOR BASINS SHALL BE PLACED IN 6 INCH LOOSE LAYERS AND SHALL BE COMPACTED TO A DENSITY OF NO LESS THAN 95% OF THE STANDARD PROCTOR MAXIMUM DENSITY AT A MOISTURE CONTENT OF + OR - TWO PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D698. THE CONTRACTOR SHALL TAKE PHOTOGRAPHS OF THE OUTLET STRUCTURE AT ALL PHASES OF INSTALLATION AND SHALL RETAIN WITH GEOTECHNICAL TESTING DATA. THE CONTRACTOR SHALL ALSO RETAIN ALL SHIPPING RECORDS AND SPECIFICATIONS FOR THE OUTLET STRUCTURE MATERIALS AND STRUCTURES. ALL OF THE ABOVE DATA MAY BE REQUIRED AS PART OF THE MUNICIPALITY AS-BUILT PROCESS AND SHALL BE MADE AVAILABLE TO THE ENGINEER UPON REQUEST. THE CONTRACTOR AND OWNER SHALL HAVE DOCUMENTATION OF THESE TESTS AVAILABLE UPON REQUEST.
- TOLERANCES FOR FINAL GRADES SHALL BE WITHIN +/- 0.20 FEET. THE TOWN OF KNIGHTDALE WILL REQUIRE AN ASBUILT SURVEY OF THE CONSTRUCTED WET DETENTION BASIN THEREFORE STRICT ADHERENCE TO THE GRADING ON THIS PLAN AND THE TOLERANCES SPECIFIED HEREON SHALL BE REQUIRED PRIOR TO CERTIFICATION BY THE ENGINEER THAT THE WET DETENTION BASIN HAS BEEN BUILT IN COMPLIANCE WITH THESE DRAWINGS. UPON COMPLETION OF THE FINAL GRADING (PRIOR TO PLACEMENT OF ANY PLANT MATERIAL) THE CONTRACTOR SHALL CONTACT THE SURVEYOR TO SURVEY THE ASBUILT CONSTRUCTED WET DETENTION BASIN. THE CONTRACTOR SHALL NOTIFY THE ENGINEER THAT THE CONSTRUCTED WET DETENTION BASIN HAS BEEN COMPLETED AND THE ENGINEER SHALL EVALUATE THE ASBUILT SURVEY DATA FOR COMPLIANCE WITH THESE DRAWINGS. IF THE WET DETENTION BASIN IS FOUND TO BE OUT OF COMPLIANCE WITH THESE DRAWINGS, THE CONTRACTOR SHALL REGRADE THE WET DETENTION BASIN AS NECESSARY TO BRING THE WET DETENTION BASIN INTO COMPLIANCE WITH THESE DRAWINGS. THE COST OF ANY ADDITIONAL SURVEY OR ENGINEERING EVALUATION REQUIRED RESULTING FROM INCOMPLETE OR INCORRECT GRADING OF THE WET DETENTION BASIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

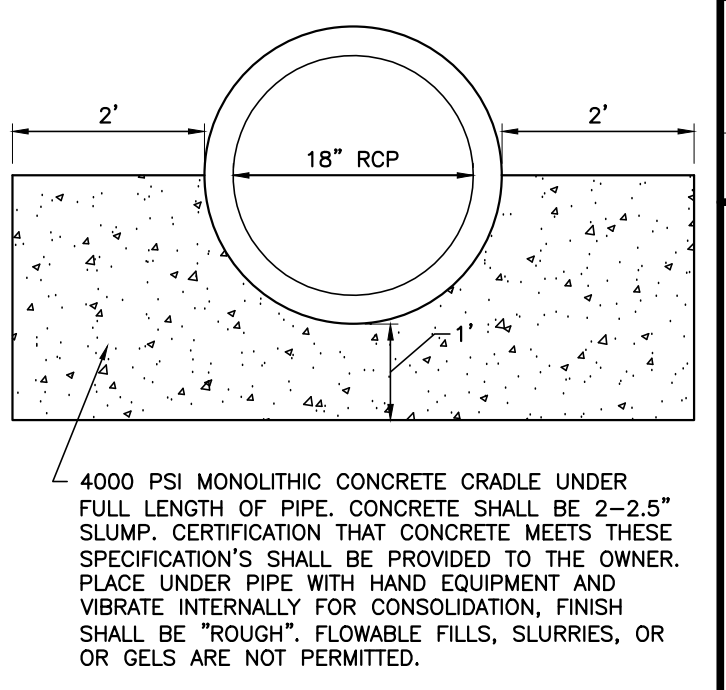
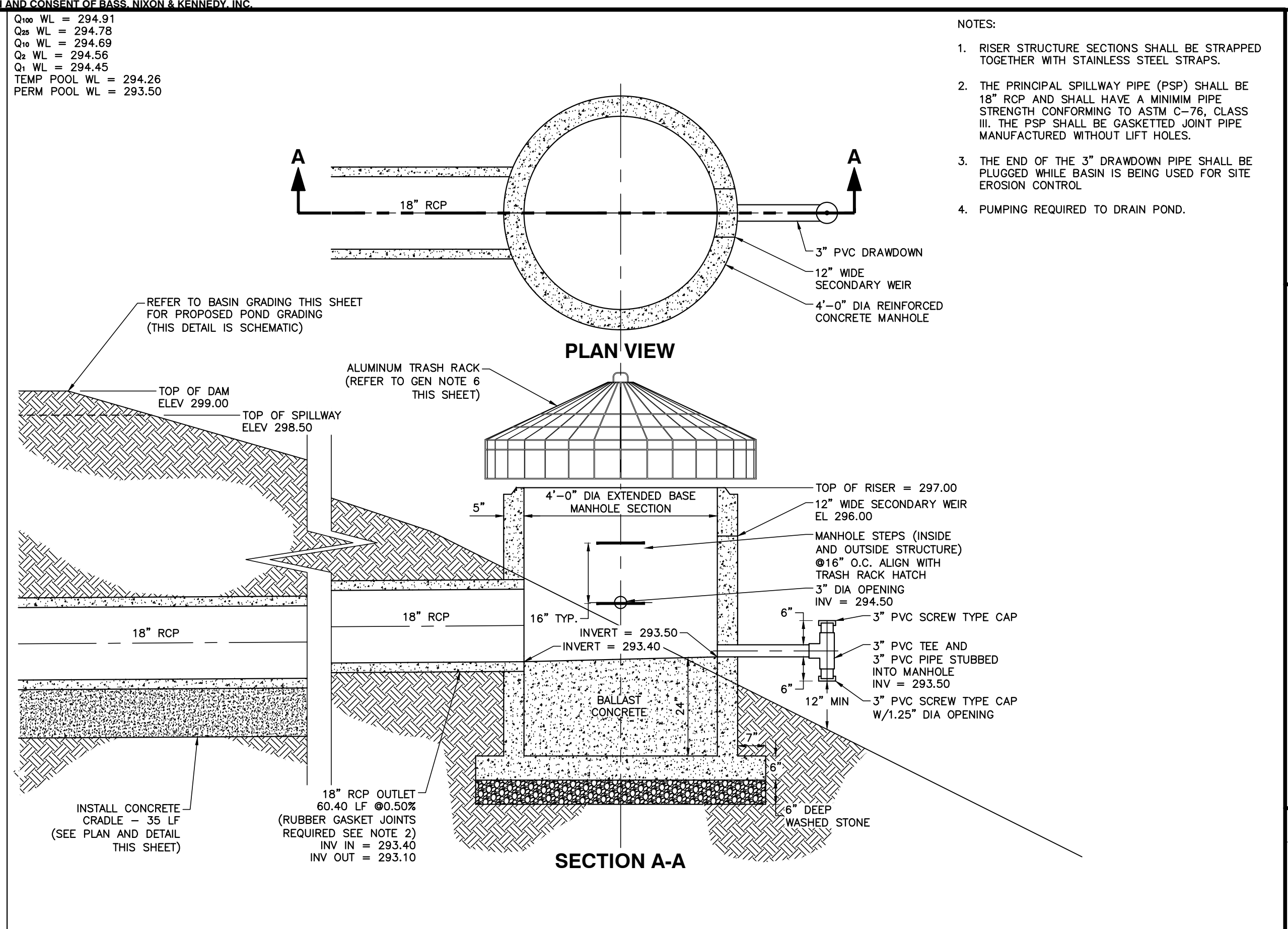


EMERGENCY SPILLWAY DETAIL



SCM CROSS SECTION A-A

SCALE: 1" = 5'



NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

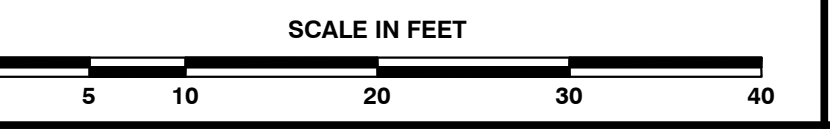
NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

a. 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: _____ Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: 10/26/21
Administrator



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 851-4422 FAX: (919) 851-8866
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLCA (C-0267)

DATE	DESCRIPTION	BY
03-18-2021	RAB	CHK BY: MDB
04-07-20	DRAWN BY	
05-15-2020	DATE	
10-05-2020	TOOK CD 3RD REVIEW COMMENTS	
06-20-2020	TOOK CD 2ND REVIEW COMMENTS	
07-08-2020	TOOK CD 1ST REVIEW COMMENTS	
	NO.	

ENLARGED SCM PLAN AND DETAILS

SCALE: 1" = 10'

FLOWERS PLACE SUBDIVISION

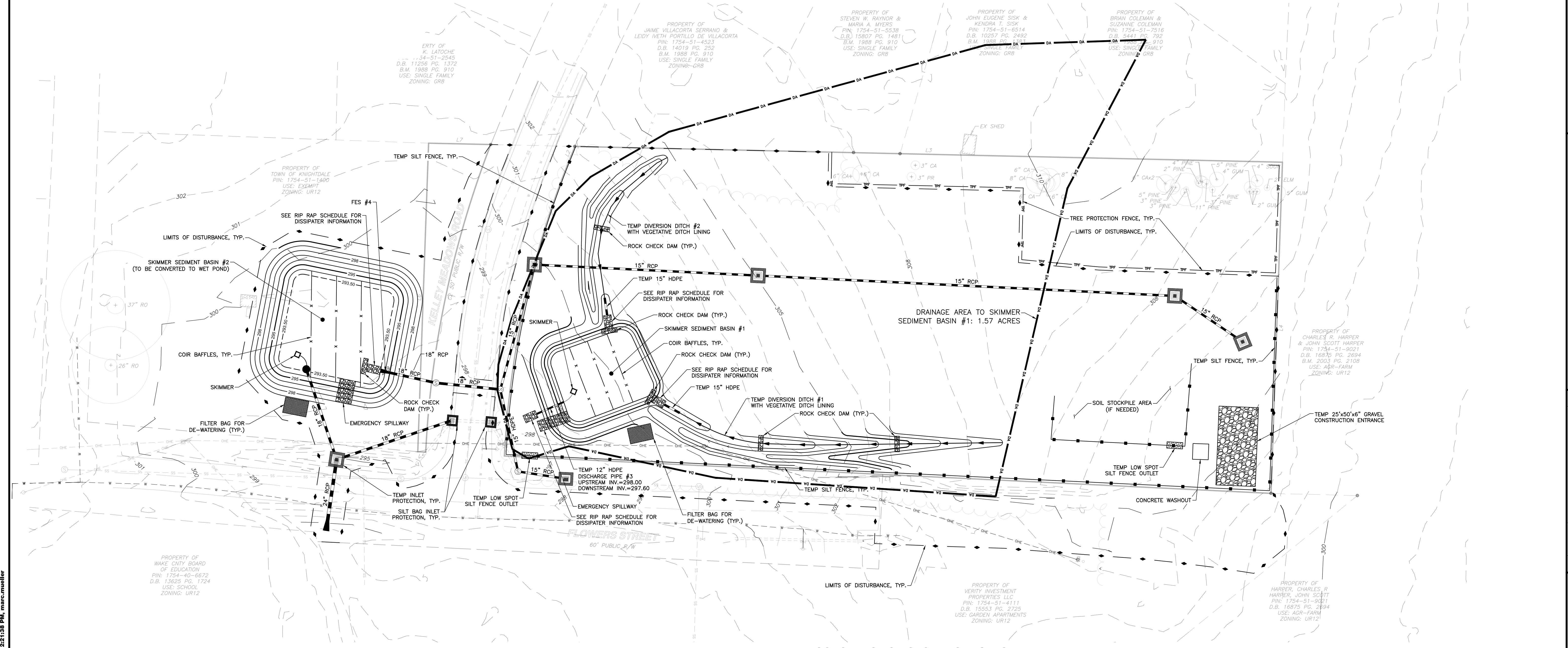
0 KELLEY MEADOWS ROAD

TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

SHEET C3.1

\\chiffre-cvtd_1201818082 - Knightdale Habitat SD CIVIL 04 Construction 04 - 18082_Grading and Drainage.dwg, SCM, 10/15/2021 12:12:46 PM, mnc-mweller



Skimmer Basin #1		Skimmer Basin #2	
Okay		Okay	
1.57 Drainage Area (Acres)	5.87 Peak Flow from 10-year Storm (cfs)	2.24 Drainage Area (Acres)	8.09 Peak Flow from 10-year Storm (cfs)
2826 Required Volume (ft ³)	2486 Required Surface Area (ft ²)	4032 Required Volume (ft ³)	3519 Required Surface Area (ft ²)
35.1 Suggested Width (ft)	70.2 Suggested Length (ft)	41.9 Suggested Width (ft)	83.9 Suggested Length (ft)
45 Trial Top Width at Spillway Invert (ft)	55 Trial Top Length at Spillway Invert (ft)	58 Trial Top Width at Spillway Invert (ft)	62 Trial Top Length at Spillway Invert (ft)
2 Trial Side Slope Ratio Z:1	2 Trial Depth (ft) (2 to 3.5 feet above grade)	2 Trial Side Slope Ratio Z:1	2 Trial Depth (ft) (2 to 3.5 feet above grade)
37 Bottom Width (ft)	47 Bottom Length (ft)	50 Bottom Width (ft)	54 Bottom Length (ft)
1739 Bottom Area (ft ²)	4193 Actual Volume (ft ³)	2700 Bottom Area (ft ²)	6275 Actual Volume (ft ³)
2475 Actual Surface Area (ft ²)	10 Trial Weir Length (ft)	2700 Bottom Area (ft ²)	6275 Actual Volume (ft ³)
0.5 Suggested Trial Depth of Flow (ft)	10.6 Spillway Capacity (cfs)	0.5 Suggested Trial Depth of Flow (ft)	10.6 Spillway Capacity (cfs)
3 Skimmer Size (inches)	0.25 Head on Skimmer (feet)	2.5 Skimmer Size (inches)	0.208 Head on Skimmer (feet)
0.75 Orifice Size (1/4 inch increments)	4.35 Dewatering Time (days)	1 Orifice Size (1/4 inch increments)	3.83 Dewatering Time (days)

CHANNEL ANALYSIS											
* -> Temp. Diversion #1											
Name	Temp. Diversion #1	Discharge	Channel Slope	Channel Bottom Width	Left Side Slope	Right Side Slope	Low Flow Liner	Reference Class	Vegetation Type	Vegetation Density	Soil Type
Unreinforced Vegetation	Straight	1.99 cfs	1.82 ft/s	0.36 ft	0.059	4 ft/ft/2	0.75 ft/ft/2	0.36	FAIR	50-64%	CLAY (GC)
Reinforced Vegetation	Straight	1.99 cfs	1.82 ft/s	0.36 ft	0.059	3.61 ft/ft/2	0.56 ft/ft/2	0.48	STABLE		

CHANNEL ANALYSIS											
* -> Temp. Diversion #2											
Name	Temp. Diversion #2	Discharge	Channel Slope	Channel Bottom Width	Left Side Slope	Right Side Slope	Low Flow Liner	Reference Class	Vegetation Type	Vegetation Density	Soil Type
Unreinforced Vegetation	Straight	1.82 cfs	1.63 ft/s	0.36 ft	0.064	4 ft/ft/2	0.62 ft/ft/2	0.46	STABLE		
Reinforced Vegetation	Straight	1.82 cfs	1.63 ft/s	0.36 ft	0.064	4 ft/ft/2	0.47 ft/ft/2	0.6	STABLE		

- REQUIRED WAKE COUNTY BASIN REMOVAL AND/OR CONVERSION SEQUENCE
- SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED OR CONVERTED TO A PERMANENT STORMWATER POND. INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
 - UTILIZE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SEDIMENT BASIN SURFACE FOR DRAW DOWN OF WATER IN BASIN FOR MAINTENANCE OR CLOSE OUT UNLESS INFEASIBLE. SEE REQUIREMENTS OF NCG01 PERMIT PART I, SECTION G, ITEM (4) ENTITLED "DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT" AND REFER TO WAKE COUNTY "FILTER BAG FOR DEWATERING ACTIVITIES" CONSTRUCTION DETAIL.
 - REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF CURVE PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.
 - PERFORM SEEDBED PREPARATION, SEED, MULCH AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
 - INSTALL VELOCITY DISSIPATORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
 - WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL 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 CONSULTANT TO DETERMINE WHEN A BASIN MAY BE CONVERTED FOR STORMWATER USE. SOME MUNICIPALITIES MAY ALSO REQUIRE THIS.

CONSTRUCTION SEQUENCE - STAGE 1

- ONCE THE EROSION AND SEDIMENT CONTROL PLAN APPROVAL AND NCG01 CERTIFICATE OF COVERAGE ARE OBTAINED, SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT. OBTAIN A LAND-DISTURBING PERMIT.
- INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SKIMMER SEDIMENT BASIN #1 AND OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
- CALL ENVIRONMENTAL CONSULTANT FOR AN ONSITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT TO OBTAIN A CERTIFICATE OF COMPLIANCE.
- BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
- STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDEED AREAS PER GROUND STABILIZATION TIME FRAMES.
- BEGIN INSTALLING STORM SEWER BEGINNING DOWNSTREAM AT FES #10. DEMO EXISTING 24" RCP IN FLOWERS STREET AND REPLACE WITH NEW 24" RCP AT THE NEW INVERT ELEVATIONS. INSTALL NEW YI #11. PROTECT INLETS WITH BLOCK AND GRAVEL INLET CONTROLS.
- GO TO WATER JET DEBRIS OUT OF EXISTING CI #13 AND EXISTING CI #14. DEMO AND REMOVE EXISTING INCOMING 18" RCP STORM PIPE TO EXISTING CI #14 AND SEAL OPENING IN STORM BOX. DEMO AND REMOVE EXISTING 18" RCP OUTLET PIPE FROM EXISTING CI #13. INSTALL NEW 18" RCP FROM EXISTING CI #13 AND CONNECT TO NEW YI #11.
- CONSTRUCT SKIMMER SEDIMENT BASIN #2 AND PERMANENT RISER STRUCTURE RS #12. PROCEED WITH THE INSTALLATION OF JB #6 WITH 18" RCP TO FES #9 INTO SKIMMER SEDIMENT BASIN #2. THEN INSTALL JB #7 AND 18" RCP CONNECTION TO JB #6. INSTALL YI #6 AND 15" RCP CONNECTION TO JB #7. INSTALL CI #5 AND 15" RCP CONNECTION TO YI #6. INSTALL CI #4 AND 15" RCP CONNECTION TO JB #7. INSTALL REMAINING STORM STRUCTURES AND RCP ALONG THE PROPOSED ALLEY STREET.
- STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, ALLEY PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDEED AREAS PER GROUND STABILIZATION TIME FRAMES.
- CALL ENVIRONMENTAL CONSULTANT FOR AN ONSITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT PRIOR TO THE REMOVAL OF SKIMMER SEDIMENT BASIN #1.
- CONTINUE TO SOIL EROSION PLAN STAGE 2 ONCE SKIMMER BASIN #1 HAS BEEN REMOVED.

TOTAL DISTURBED AREA = 2.8 AC
 ENVIRONMENTAL CONSULTANT: ALAN ALCOCK (919-868-2560)

RIP RAP SCHEDULE

Structure	d ₅₀ (ft)	Velocity (ft/s)	Length (ft)	Width (ft)	Depth (ft)	Type	d ₅₀
FES 9	1.50	5.4	9	5	22	Class 'B'	6" - 13"
FES 10	2.00	5.9	12	6	22	Class 'B'	6" - 13"
DITCH #1	1.25	9.1	5	4	9	Class 'A'	3" - 6"
DITCH #2	1.25	9.1	5	4	9	Class 'A'	3" - 6"
PIPE 3"	1.00	6.4	4	3	9	Class 'A'	3" - 6"

* For NYDOT Dissipator Schedule Fig. 1
 10-YEAR STORM
 **TEMPORARY DIVERSION DITCH OUTLET
 ***TEMPORARY SKIMMER BASIN #1 OUTLET

Existing Boundary Line Table		
Line #	Length	Direction
L1	486.49'	N87°12'13.41"W
L2	11.35'	N22°02'02.96"E
L3	448.66'	S88°43'22.02"E
L4	209.97'	S1°59'29.99"W
L5	5.07'	N87°12'13.41"W
L6	195.62'	N2°00'03.59"E
L7	39.46'	S88°43'22.02"E

Existing Boundary Curve Table		
Curve #	Length	Radius
C1	190.81'	575.00'
C2	200.04'	625.00'

SEDIMENT BASIN SUMMARY CHART

Sediment Basin Number	1	2
Drainage Area (acres)	1.57	2.24
Q10(cfs)	(0.5)(7.22)(1.57)=5.67	(0.5)(7.22)(2.24)=8.09
Weir Size (ft)	10 x 1.5	10 x 1.5
Surface Area Required (SF)	(435)(5.67)=2,467	(435)(8.09)=3,519
Volume Required (CF)	(1800)(1.57)=2,826	(1800)(2.24)=4,032
Dimensions (ft)	see plans	see plans
Surface Area Provided (SF)	2,520	4,620
Volume Provided (CF)	5,040	6,600
Skimmer Size	3"	2.5"
Orifice Radius	0.4"	.5"
Orifice Diameter	0.75"	1"
Drawdown Time (Days)	4.35	3.83
Number of Baffles	3	3

NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

LEGEND

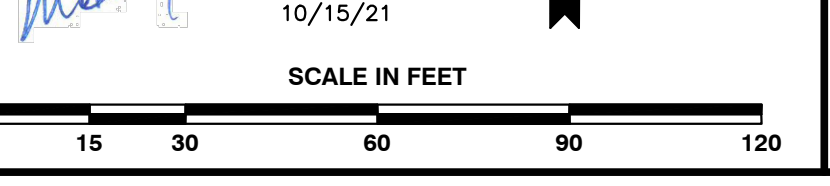
- TEMP LOW SPOT SILT FENCE OUTLET
- TEMP CHECK DAM
- TEMP INLET PROTECTION
- TEMP CONSTRUCTION ENTRANCE
- TEMP DIVERSION DITCH (LINED-SEE DETAIL)
- TEMP SILT FENCE
- TEMP TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE

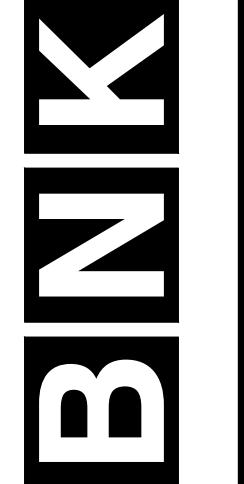
a. Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: _____ Date: _____
 Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: 10/26/21
 Administrator





BASS, NIXON & KENNEDY, INC.
 CONSULTING ENGINEERS
 6310 CHABEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919) 861-4422 FAX: (919) 861-8866
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
1	07-08-2020	TOK CD 1ST REVIEW COMMENTS	MB
2	06-26-2020	TOK CD 2ND REVIEW COMMENTS	MB
3	10-05-2020	TOK CD 3RD REVIEW COMMENTS	MB
4	12-15-2020	TOK CD 4TH REVIEW COMMENTS	MB
5	08-26-2021	TOK CD 5TH REVIEW COMMENTS	MB

EROSION CONTROL STAGE 1

SCALE: 1" = 30'

CHK BY: MDB

FLOWERS PLACE SUBDIVISION

0 KELLEY MEADOWS ROAD

TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

SHEET C3.2

TOWN OF KNIGHTDALE PUD CASE NO. ZMA-9-19



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
 6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919) 851-4422 FAX: (919) 851-8966
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
5	08-20-2021	TOX CD STD REVIEW COMMENTS	MRM
4	12-15-2020	TOX CD #17/17/2020 CO. 1543E REVIEW COMMENTS	MRM
3	10-05-2020	TOX CD 2ND REVIEW COMMENTS	MRM
2	08-20-2020	TOX CD 2ND REVIEW COMMENTS	MRM
1	07-08-2020	TOX CD 1ST REVIEW COMMENTS	MRM

EROSION CONTROL STAGE 2

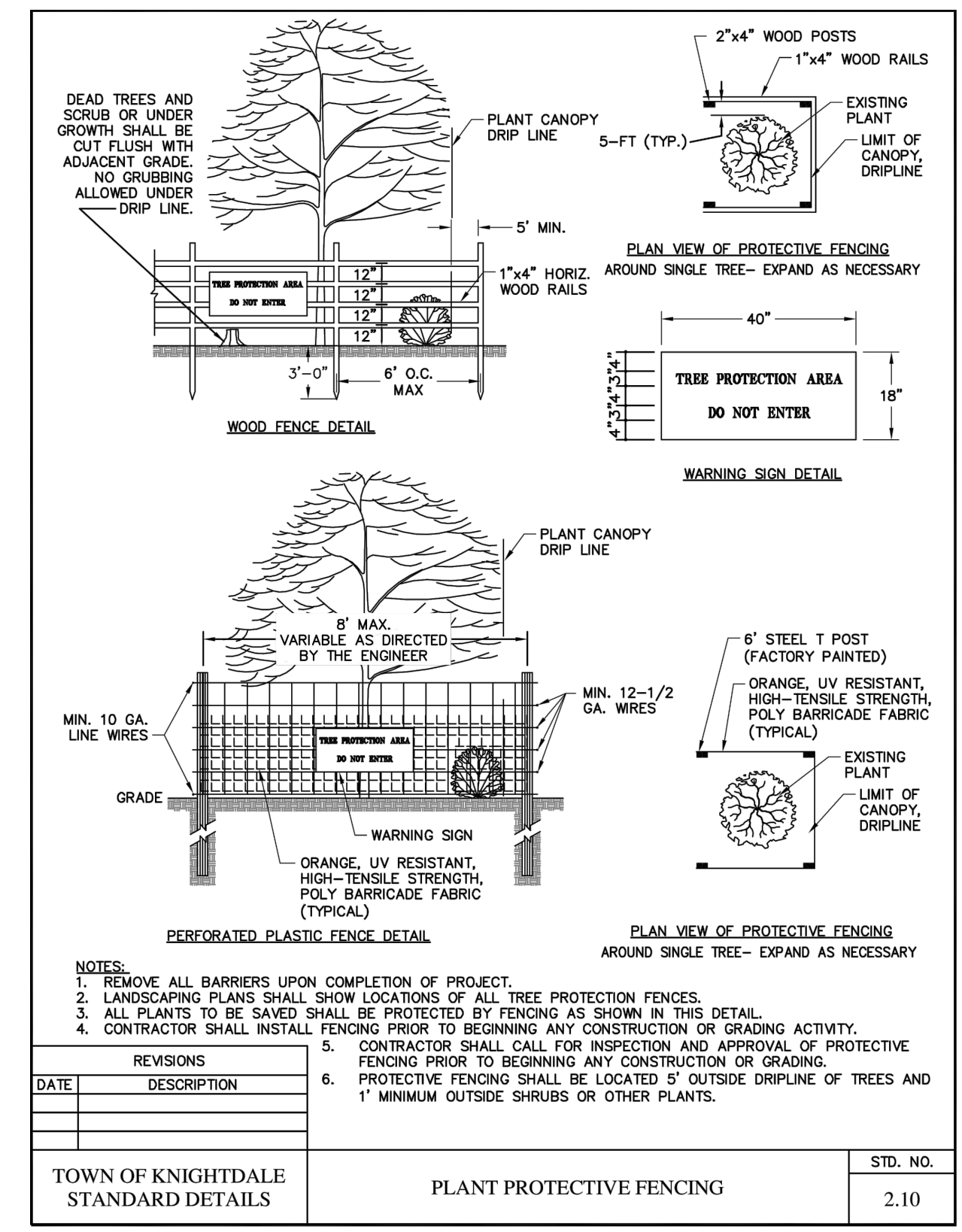
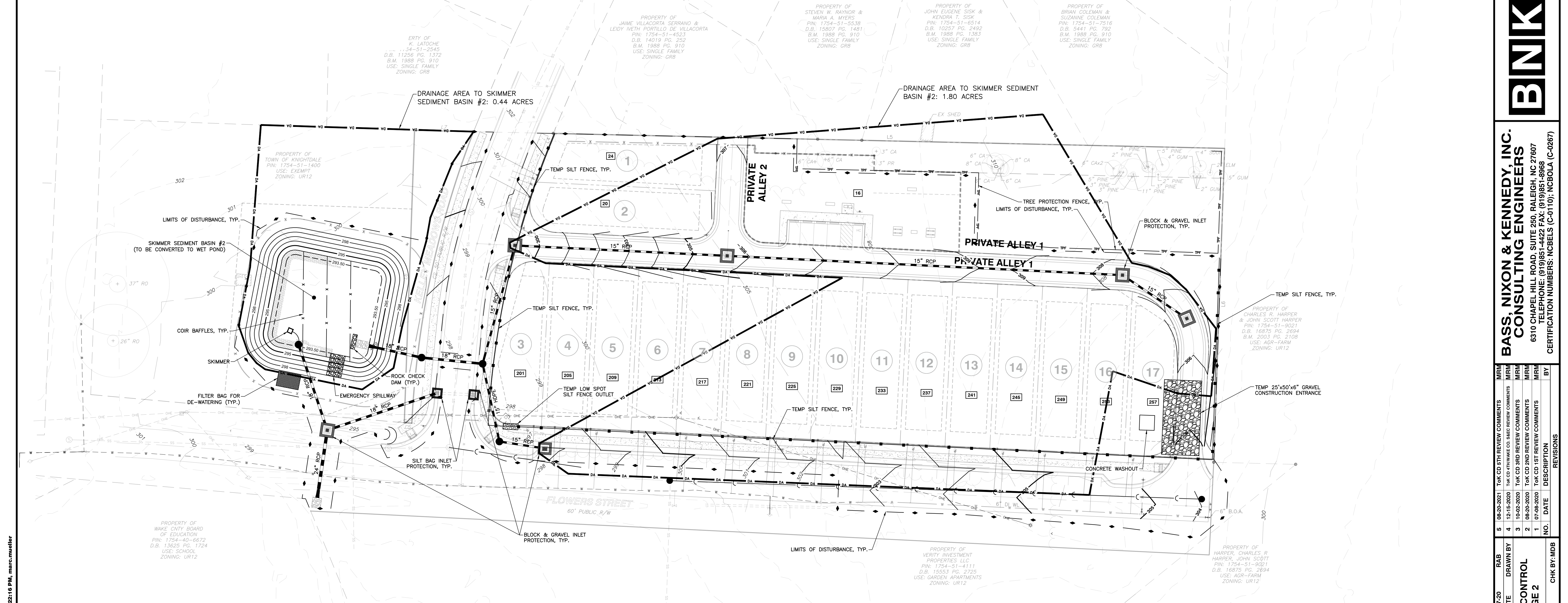
RAB: 04-07-20
 DATE: 08-18-22
 JOB NO.: 18092

CHK BY: MDB

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
 TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SHEET C3.3

\\chiffelle.civil_1\2018\18092 - Knightdale Habitat SD\CHIL04 Construction\07 - 18092_Erosion Control\Fig 2.dwg, stage 2, 10/15/2021 12:22:18 PM, mtrc.museller



SEEDING SCHEDULE

SEEDING PERIOD	SEEDING TYPE	APPLICATION RATE (LBS/ACRE)
MAXIMUM SLOPE 3:1		
AUGUST 15 - NOVEMBER 01	TALL FESCUE	300
NOVEMBER 01 - MARCH 01	TALL FESCUE AND ABRUZZI RYE	300
MARCH 01 - APRIL 15	TALL FESCUE	300
APRIL 15 - JUNE 30	HULLED COMMON BERMOUDAGRASS	25
JULY 01 - AUGUST 15	*BROWNTOP MILLET OR *SORGHUM-SUDAN HYBRIDS	35
SLOPES 2:1 TO 3:1		
MARCH 01 - JUNE 01	SERICA LESPEDEZA (SCARIFIED) AND	50
MARCH 01 - APRIL 15	TALL FESCUE OR	120
MARCH 01 - JUNE 30	WEEPING LOVEGRASS OR HULLED COMMON BERMOUDAGRASS	10
JUNE 01 - SEPTEMBER 01	*TALL FESCUE AND *BROWNTOP MILLET OR *SORGHUM-SUDAN HYBRIDS	25
SEPTEMBER 01 - MARCH 01	SERICA LESPEDEZA (UNHULLED, UNSCARIFIED) AND TALL FESCUE OR	120
NOVEMBER 01 - MARCH 01	ABRUZZI RYE	25

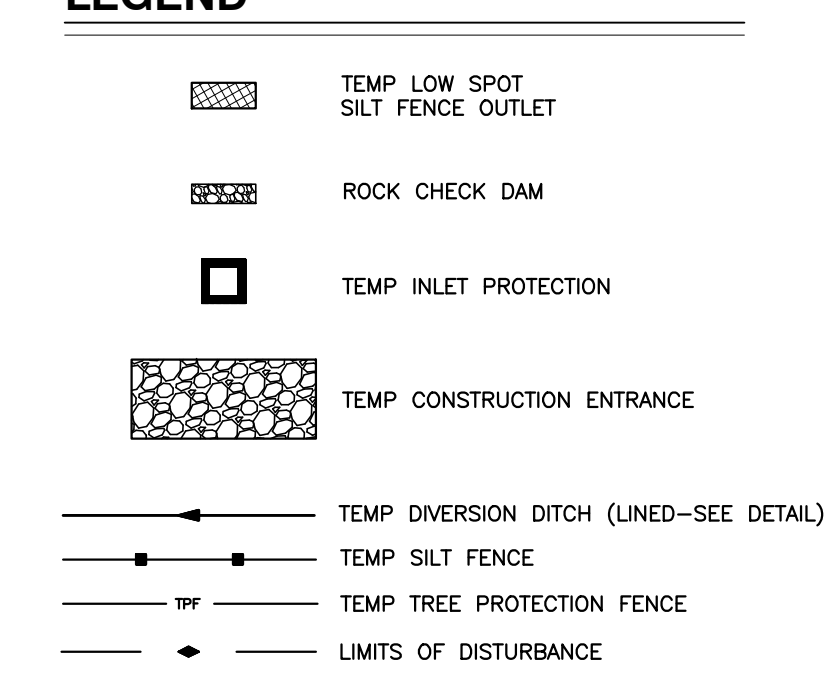
REVISIONS

DATE	DESCRIPTION

TOWN OF KNIGHTDALE STANDARD DETAILS SEEDING SCHEDULE STD. NO. 2.01

- REQUIRED WAKE COUNTY BASIN REMOVAL AND/OR CONVERSION SEQUENCE**
- SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED OR CONVERTED TO A PERMANENT STORMWATER POND. INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
 - UTILIZE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SEDIMENT BASIN SURFACE FOR DRAW DOWN OF WATER IN BASIN FOR MAINTENANCE OR CLOSE OUT UNLESS INFEASIBLE. SEE REQUIREMENTS OF NCDOT PERMITS PART II, SECTION G, ITEM (4) ENTITLED "DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT" AND REFER TO WAKE COUNTY "FILTER BAG FOR DEMATERING ACTIVITIES" CONSTRUCTION DETAIL.
 - REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF CULVERT PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.
 - PERFORM SEEDBED PREPARATION, SEED, MULCH AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
 - INSTALL VELOCITY DISSIPATORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
 - WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL 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 CONSULTANT TO DETERMINE WHEN A BASIN MAY BE CONVERTED FOR STORMWATER USE. SOME MUNICIPALITIES MAY ALSO REQUIRE THIS.

- CONSTRUCTION SEQUENCE - STAGE 2**
- BEGIN CONSTRUCTION OF THE INDIVIDUAL HOMES.
 - STABILIZE SITE AS NEW DISTURBED AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUEDED AREAS PER GROUND STABILIZATION TIME FRAMES.
 - WHEN CONSTRUCTION OF ALLEY STREET IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL ENVIRONMENTAL CONSULTANT FOR AN INSPECTION.
 - IF THE SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC., AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS, SHOULD NOW BE INSTALLED.
 - WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT. OBTAIN A CERTIFICATE OF COMPLETION.
- NOTE: WAKE COUNTY MUST GRANT PERMISSION TO CONVERT THE SEDIMENT BASIN OVER TO THE STORMWATER USE PRIOR TO COMPLETING ANY RELATED WORK.
- TOTAL DISTURBED AREA = 2.8 AC
 ENVIRONMENTAL CONSULTANT: ALAN ALCOCK (919-868-2560)



NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

TOWN OF KNIGHTDALE PROFESSIONAL SEAL
 10/15/21
 SCALE IN FEET



BASS, NIXON & KENNEDY, INC. CONSULTING ENGINEERS 6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607 TELEPHONE: (919) 851-4422 FAX: (919) 851-8966 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCGO1 CONSTRUCTION GENERAL PERMIT

Table with 3 columns: SITE AREA DESCRIPTION, STABILIZATION, and TIMEFRAME EXCEPTIONS. Rows include Perimeter dikes, High Quality Water (HQW) Zones, Slopes steeper than 3:1, Slopes 3:1 or flatter, and All other areas with slopes flatter than 4:1.

*For Falls Lake watershed, in disturbed areas where grading activities are incomplete, provide temporary groundcover no later than seven (7) days for slopes steeper than 3:1; ten (10) days for slopes equal to or flatter than 3:1; fourteen (14) days for areas with no slope.

Table with 2 columns: Temporary Stabilization and Permanent Stabilization. Lists various methods like grass seed, hydroseeding, mulch, and geotextiles.

- 1. Select flocculants that are appropriate for the soils being exposed during construction...
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures...
3. Apply flocculants at the concentrations specified in the NC DWR List of Approved PAMS/Flocculants...
4. Provide ponding area for containment of treated Stormwater before discharging offsite...
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.



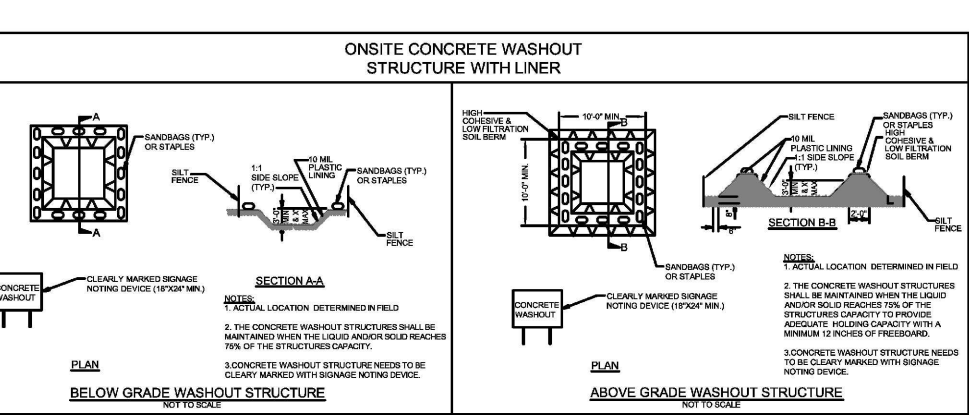
- EQUIPMENT AND VEHICLE MAINTENANCE
1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. 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
1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number of waste containers on site to manage the quantity of waste produced.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. 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.
5. Cover waste containers at the end of each workday and before storm events. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow.
8. Dispose waste off-site at an approved disposal facility.

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

- PORTABLE TOILETS
1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. 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
1. 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.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. 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
1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. 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.
4. Install temporary concrete washouts per local requirements, where applicable.
5. Empty waste containers as needed to prevent overflow.
6. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout.
8. Install at least one sign directing concrete trucks to the washout within the project limits.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility.

- HERBICIDES, PESTICIDES AND RODENTICIDES
1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. 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.
3. Do not stockpile these materials onsite.

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

NCGO1 GROUND STABILIZATION AND MATERIALS HANDLING EFFECTIVE: 03/01/19

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING SECTION A: SELF-INSPECTION. Table with 3 columns: Inspect, Frequency, and Inspection records must include. Rows include Rain gauge, E&S Measures, Stormwater discharge, Perimeter of site, Streams or wetlands, and Ground stabilization measures.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.
PART II, SECTION G, ITEM (4) DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT. Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible.

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING SECTION B: RECORDKEEPING. 1. E&S Plan Documentation. The approved E&S plan as well as any approved deviation shall be kept on the site. 2. Additional Documentation to be Kept on Site. In addition to the E&S plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours.

3. Documentation to be Retained for Three Years. All data used to complete the e-NOI and all 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: (a) Visible sediment deposition in a stream or wetland. (b) Oil spills. (c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act. (d) Anticipated bypasses and unanticipated bypasses. (e) 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.

NCGO1 SELF-INSPECTION, RECORDKEEPING AND REPORTING EFFECTIVE: 04/01/19

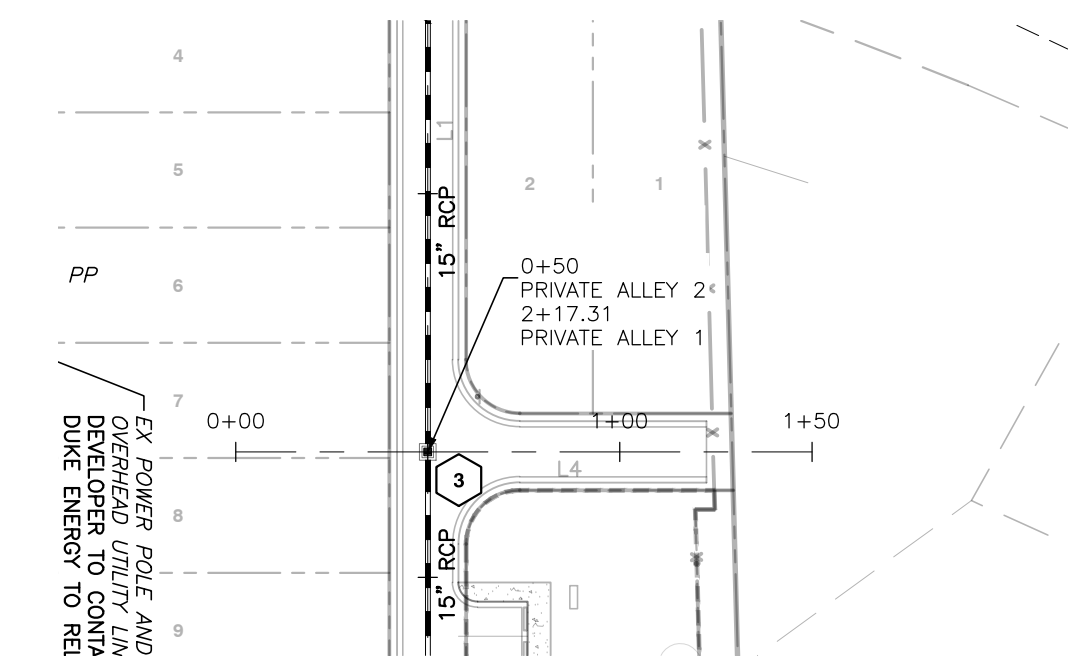
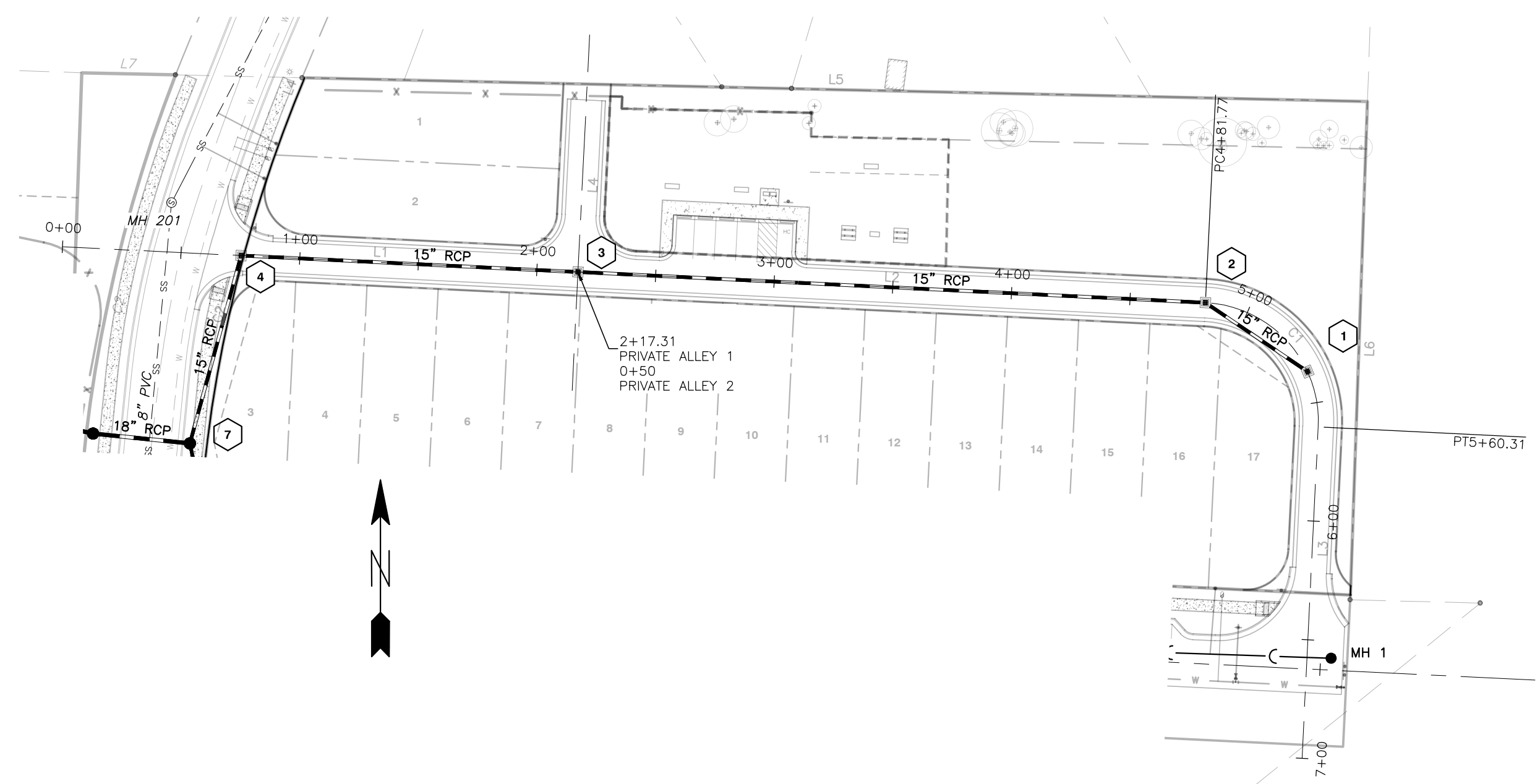
Table with 5 columns: DATE, DESCRIPTION, REVISIONS, etc. Rows 1-5 detailing review comments and dates.

FLOWERS PLACE SUBDIVISION 0 KELLEY MEADOWS ROAD TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

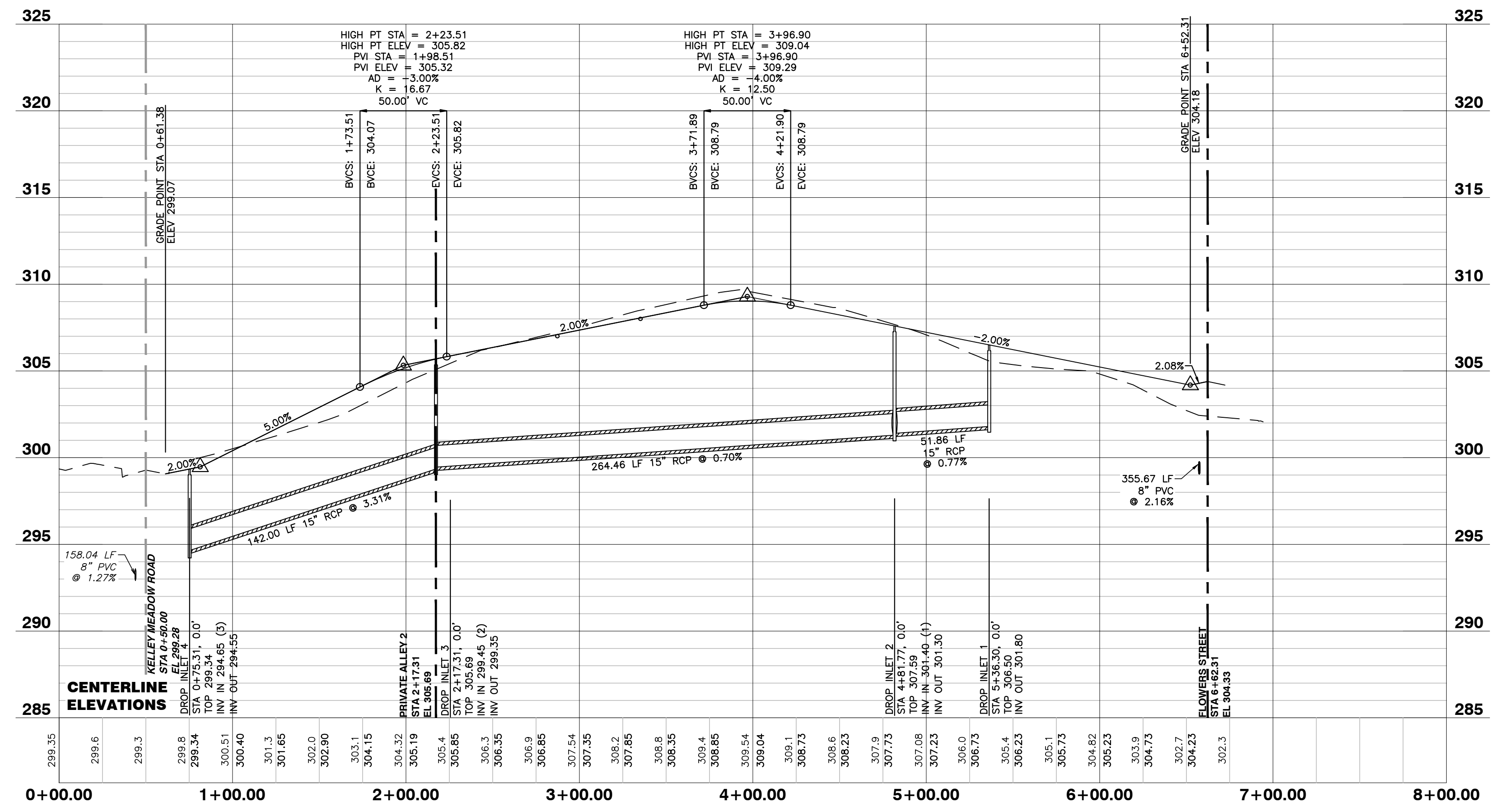
SHEET C3.4

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: 10/26/21

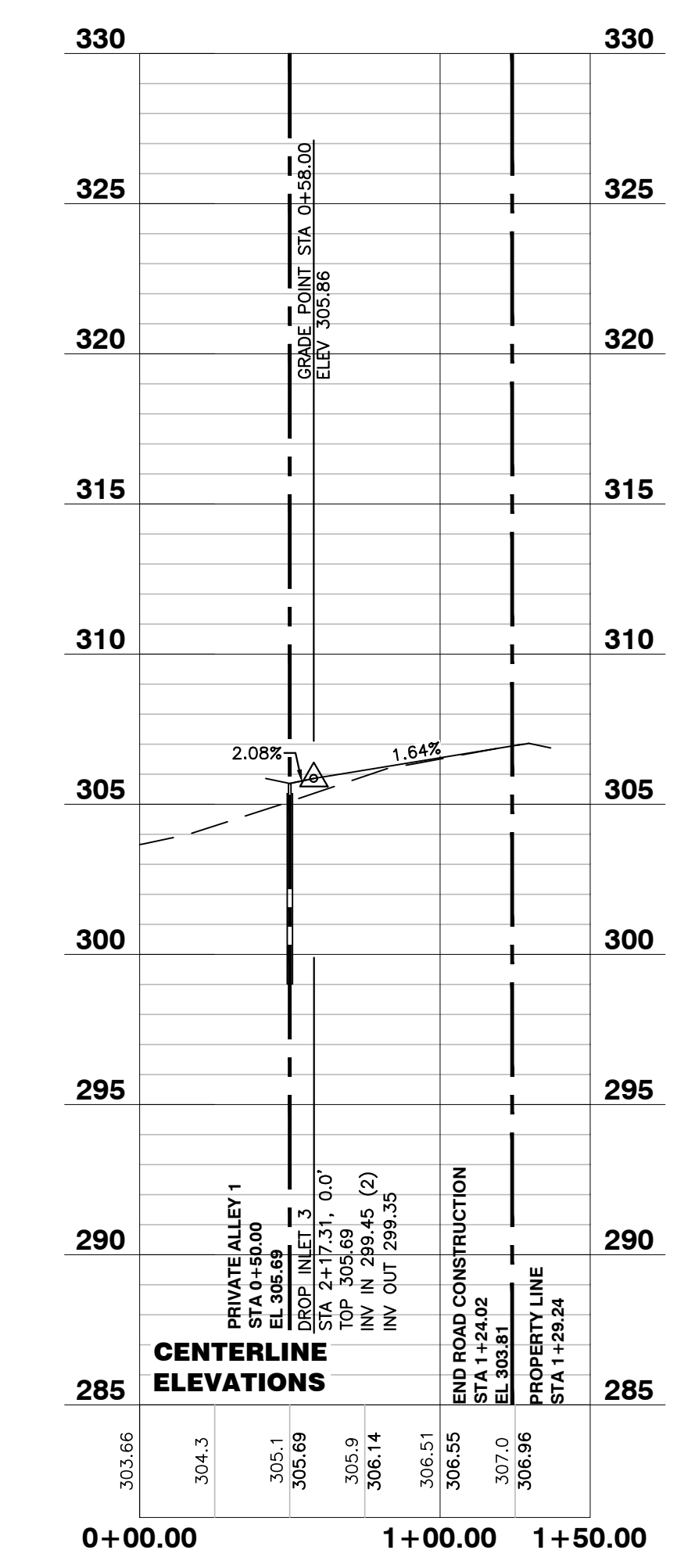




PRIVATE ALLEY 1



PRIVATE ALLEY 2



NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

a. **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: _____ Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: 10/26/21
Administrator



10/15/21

NO.	DATE	DESCRIPTION	BY
5	08-20-2021	TOK CD 3RD REVIEW COMMENTS	MRM
4	12-15-2020	TOK CD 1ST REVIEW COMMENTS	MRM
3	10-05-2020	TOK CD 2ND REVIEW COMMENTS	MRM
2	06-20-2020	TOK CD 3RD REVIEW COMMENTS	MRM
1	07-08-2020	TOK CD 1ST REVIEW COMMENTS	MRM

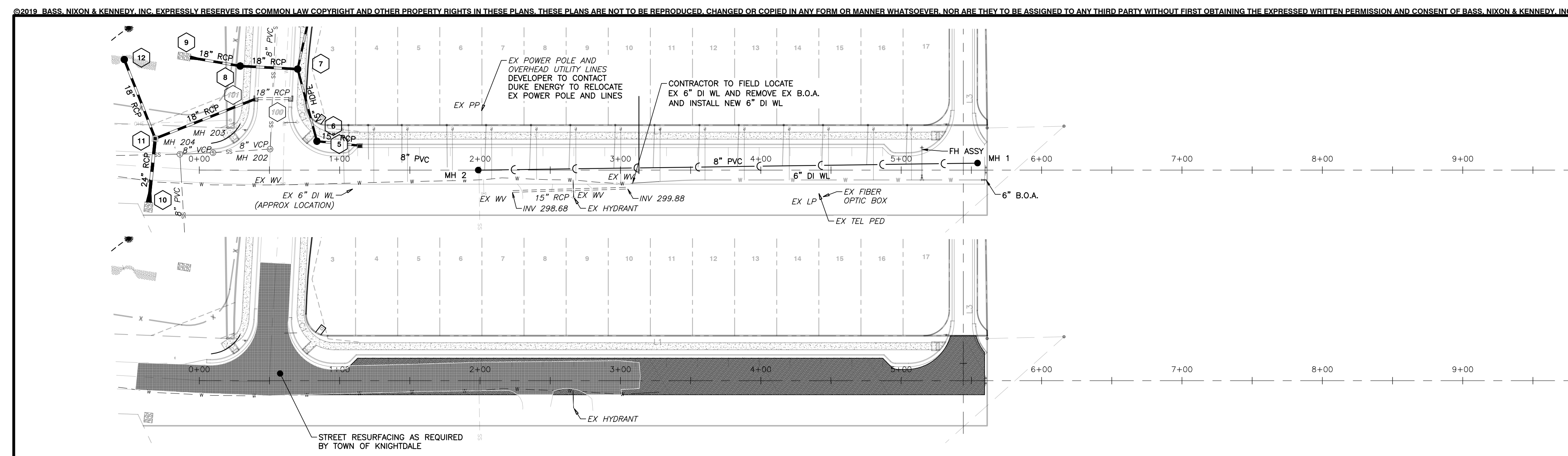
RAB
DATE
DRAWN BY
PRIVATE ALLEY 1 & 2
PLAN AND PROFILE
SCALE: 1" = 50' H/ 1" = 5' V CHK BY: MDB

**FLOWERS PLACE
SUBDIVISION
0 KELLEY MEADOWS ROAD**
TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

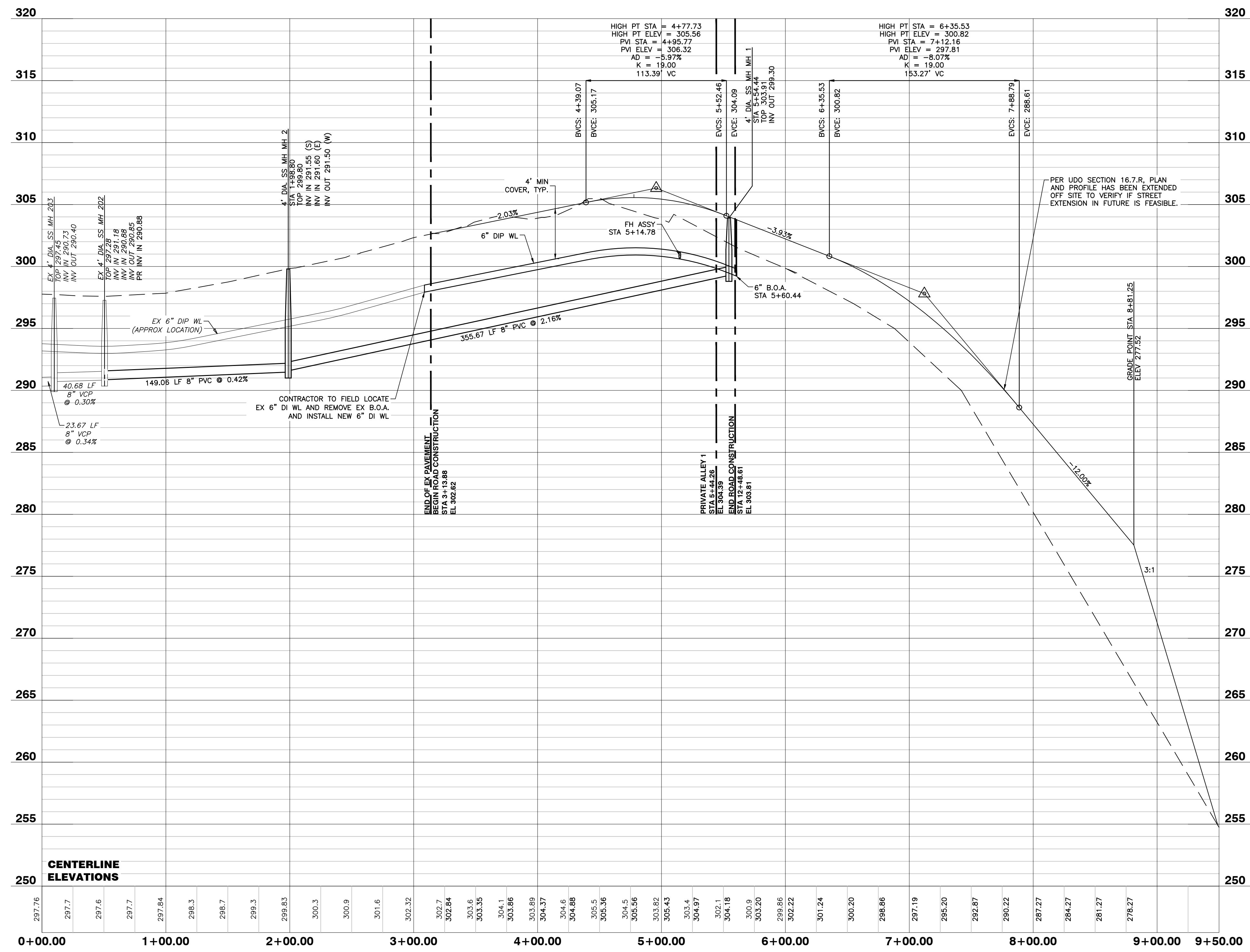
SHEET
C4.1

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHABEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 851-4422 FAX: (919) 851-8866
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)





FLOWERS STREET



NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

ATTENTION CONTRACTORS
 The Construction Contractor responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for contacting the Public Utilities Department at (919) 996-4540 at least twenty four hours prior to beginning any of their 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 Jobsite, 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.

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)
 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-4609X
 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-3700
 The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 # - - - - -

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
 Raleigh Water Review Officer

a. **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: _____ Date: _____
 Town Engineer
 These plans are approved by the Town of Knightdale and serve as construction plans for this project.
 By: _____ Date: 10/26/21
 Administrator



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
 6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919) 991-4422 FAX: (919) 991-8966
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

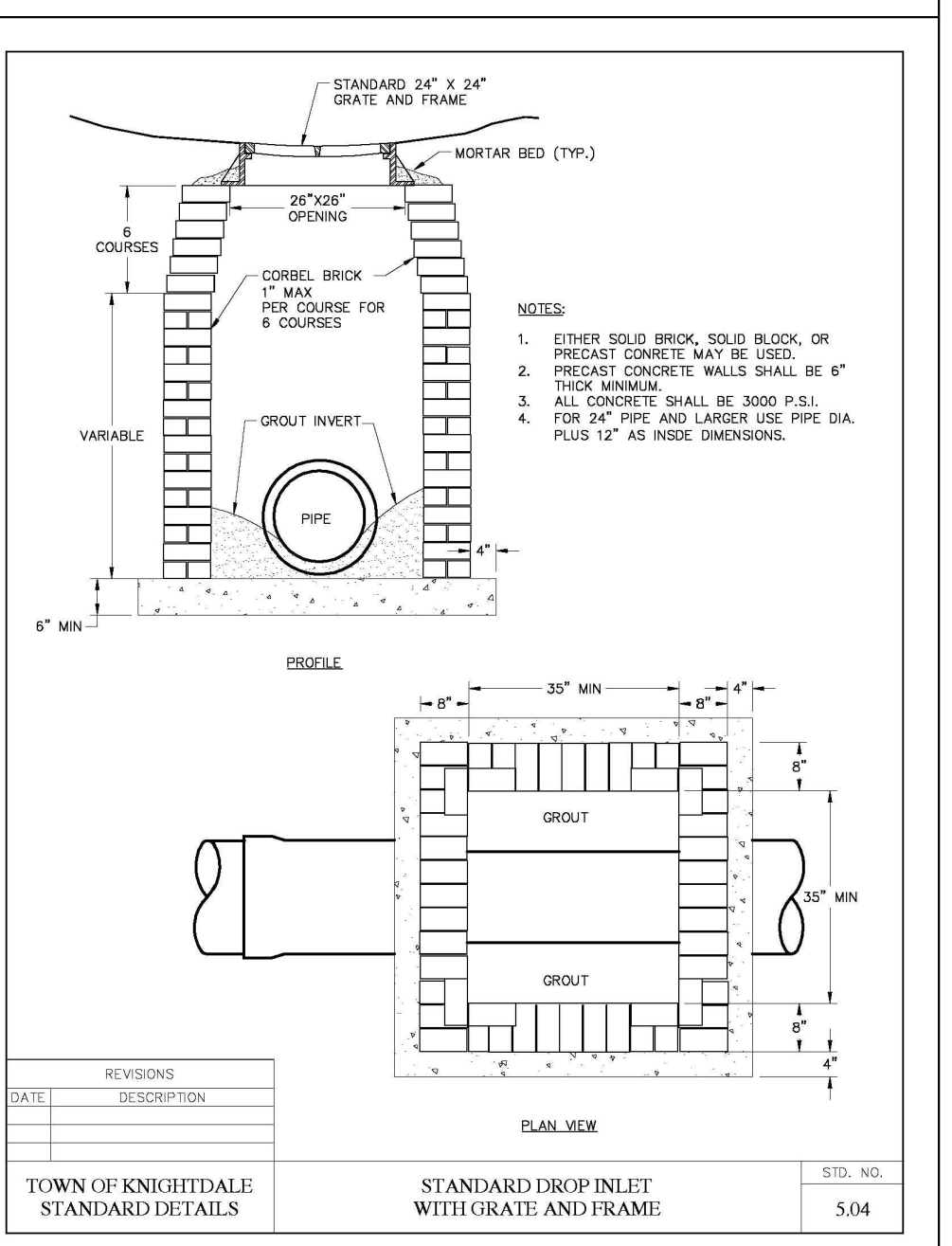
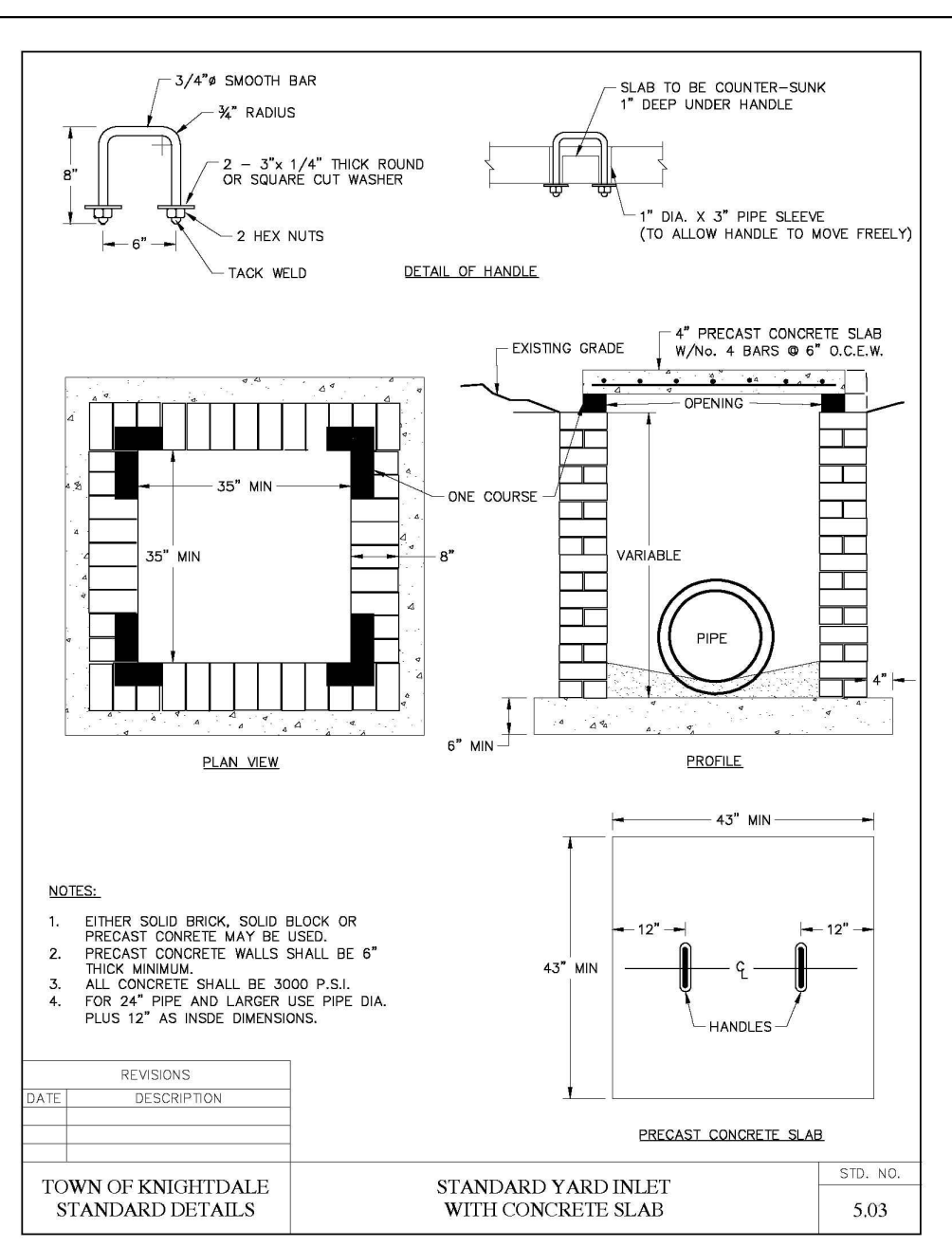
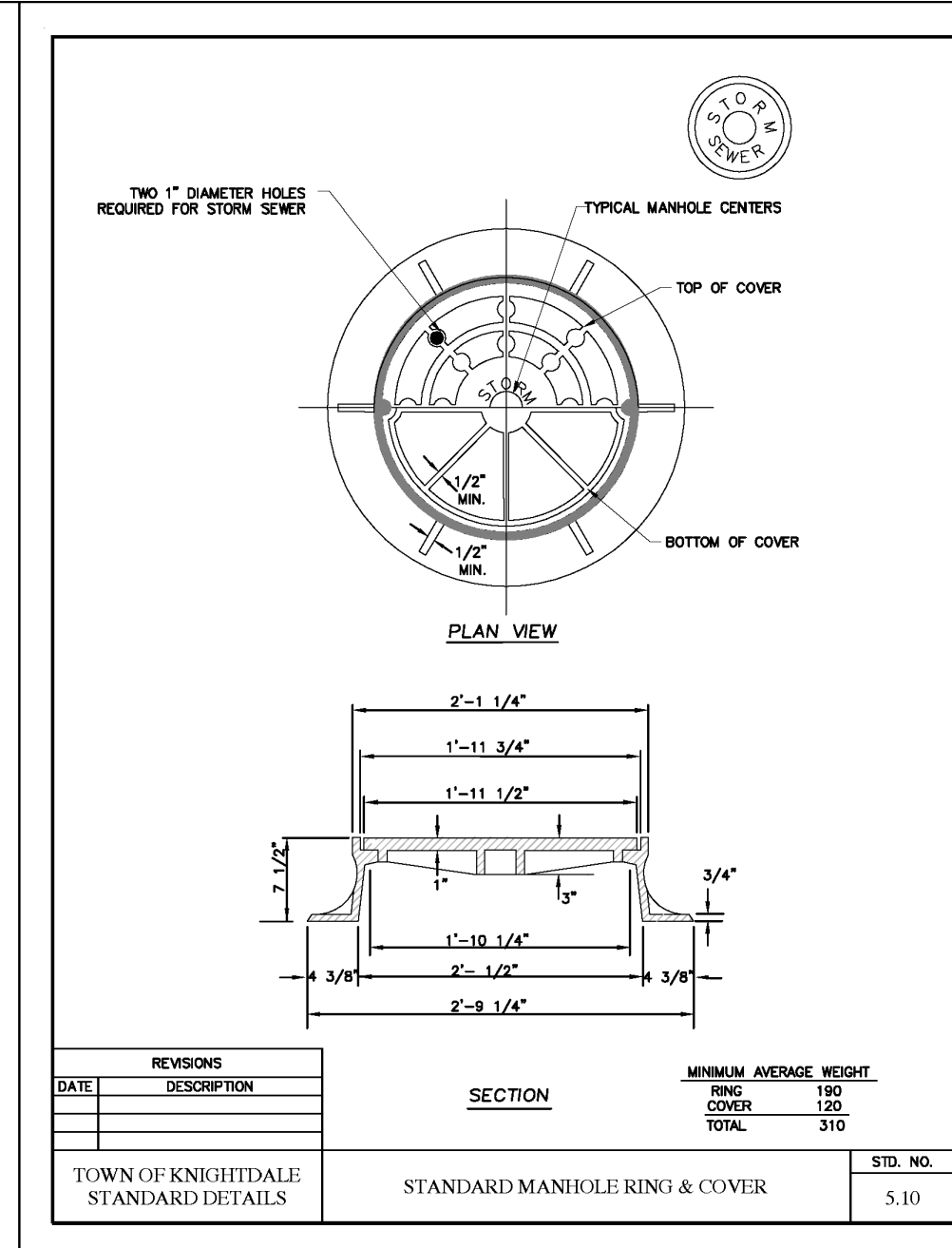
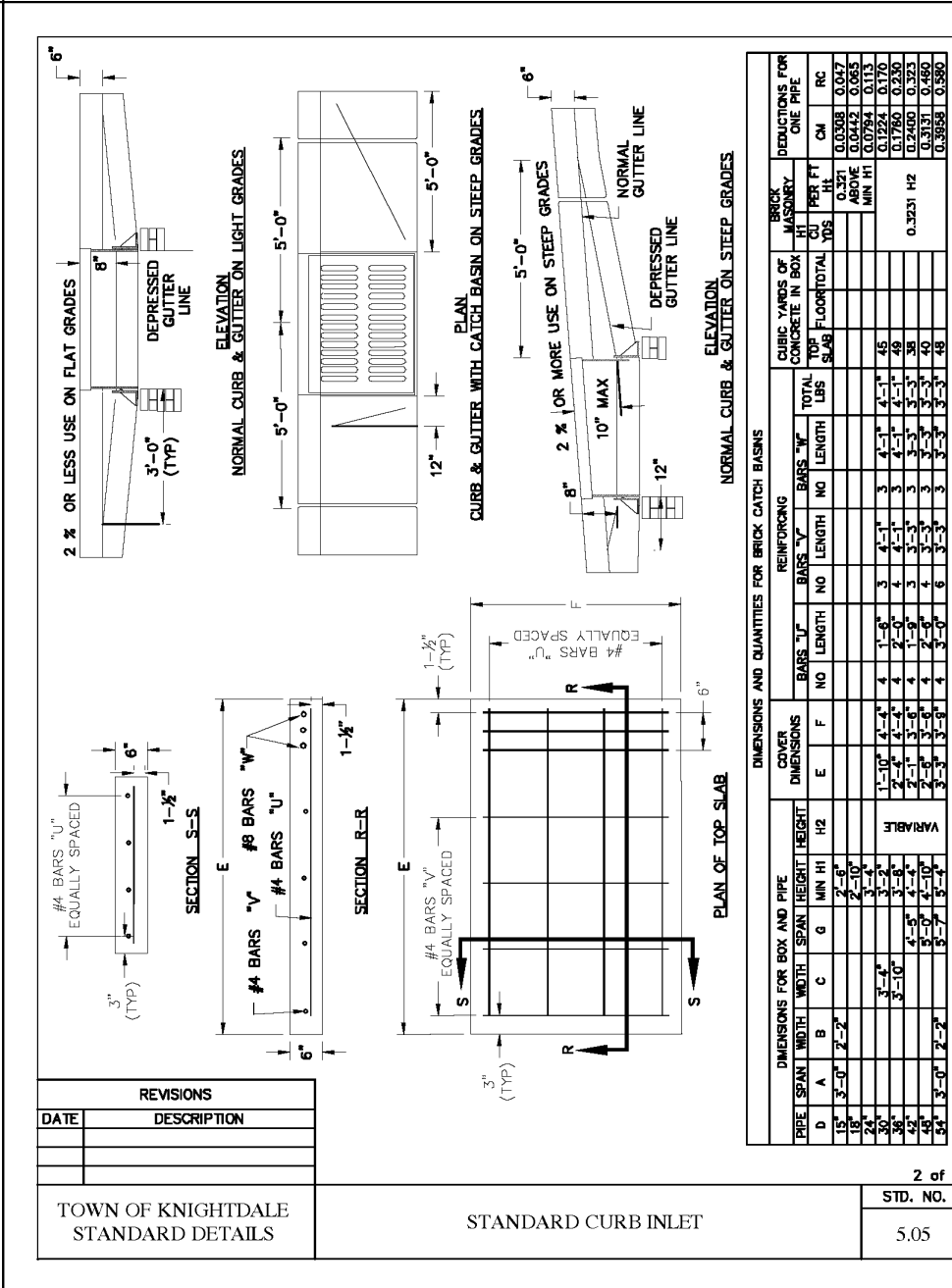
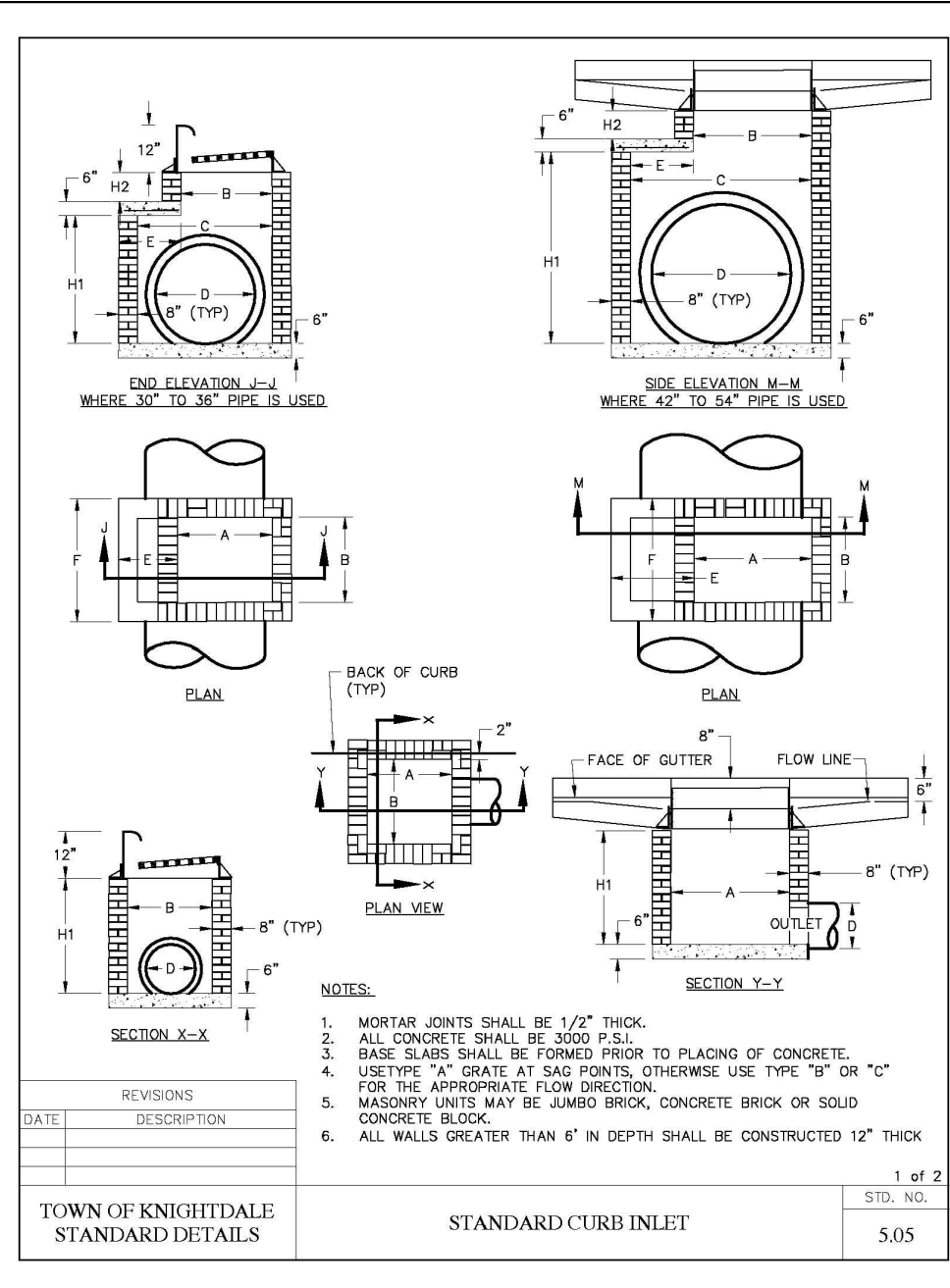
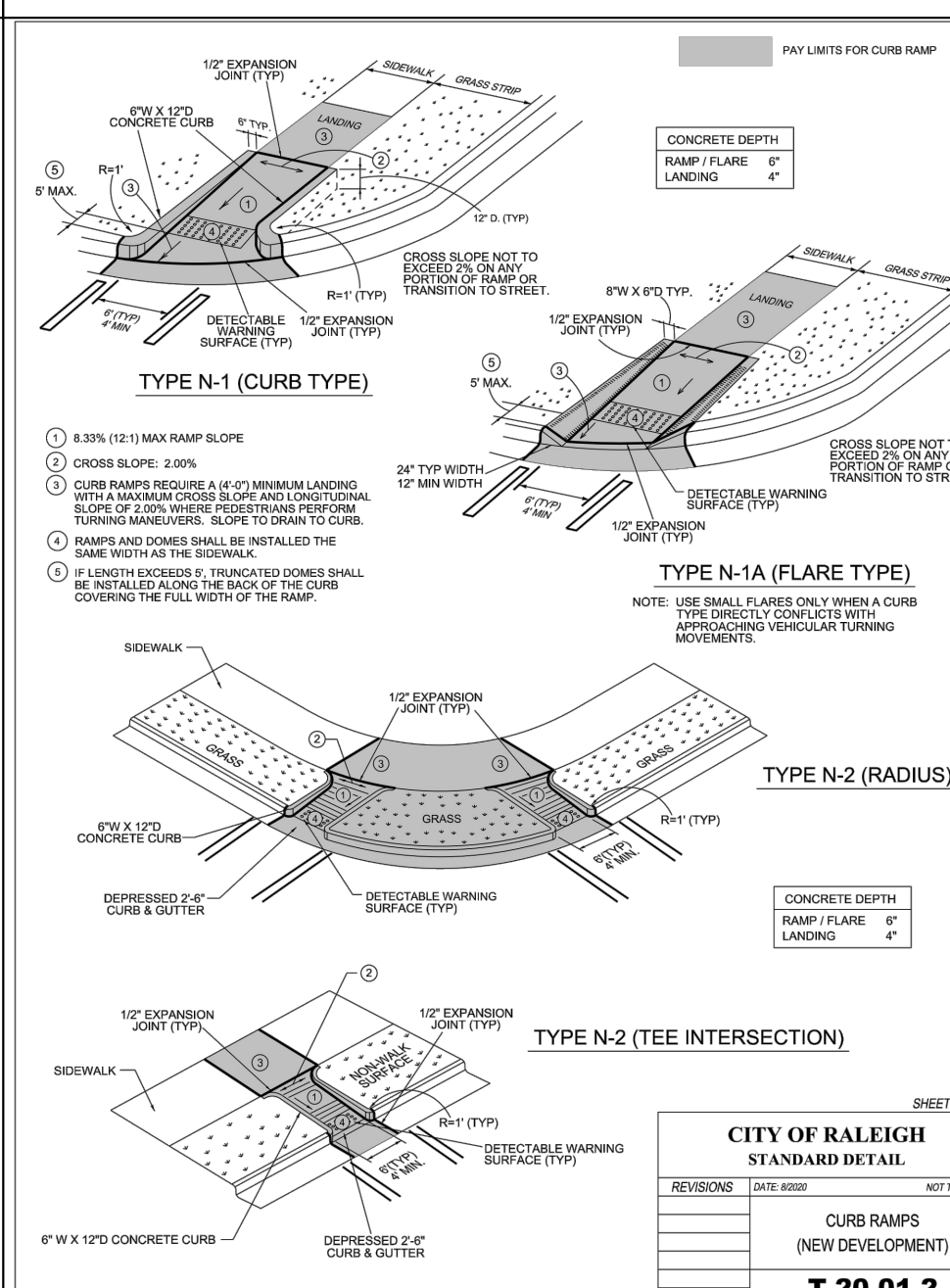
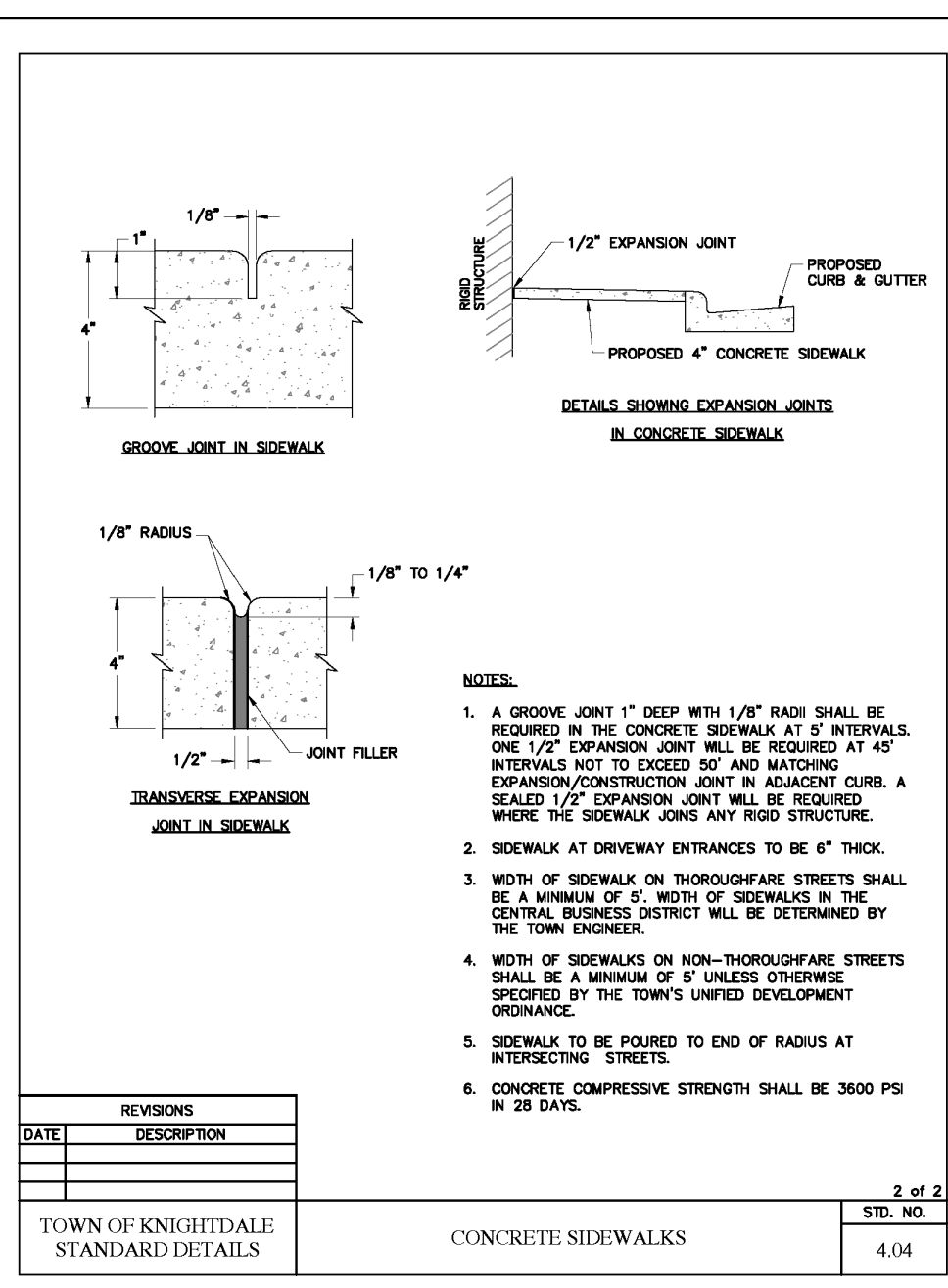
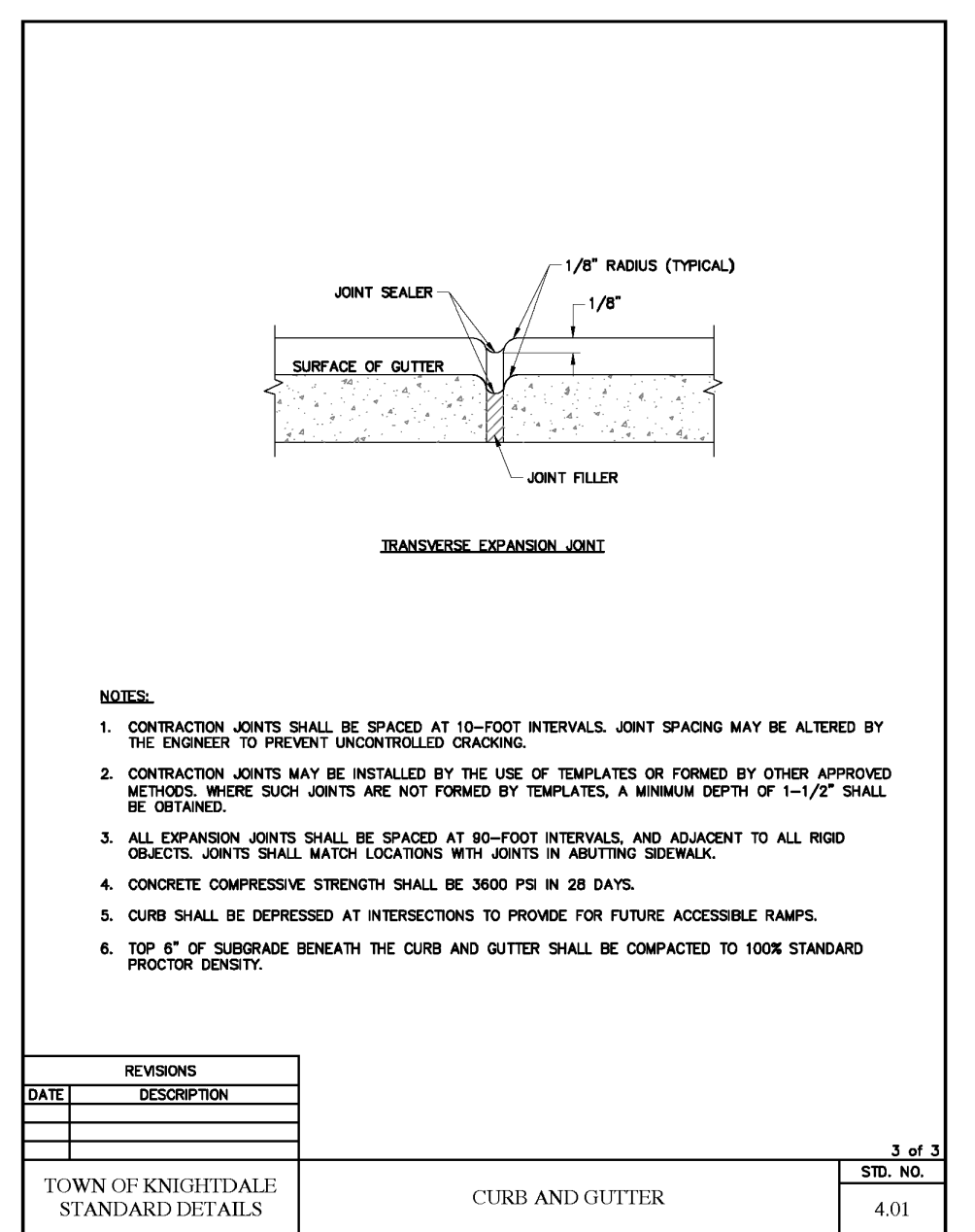
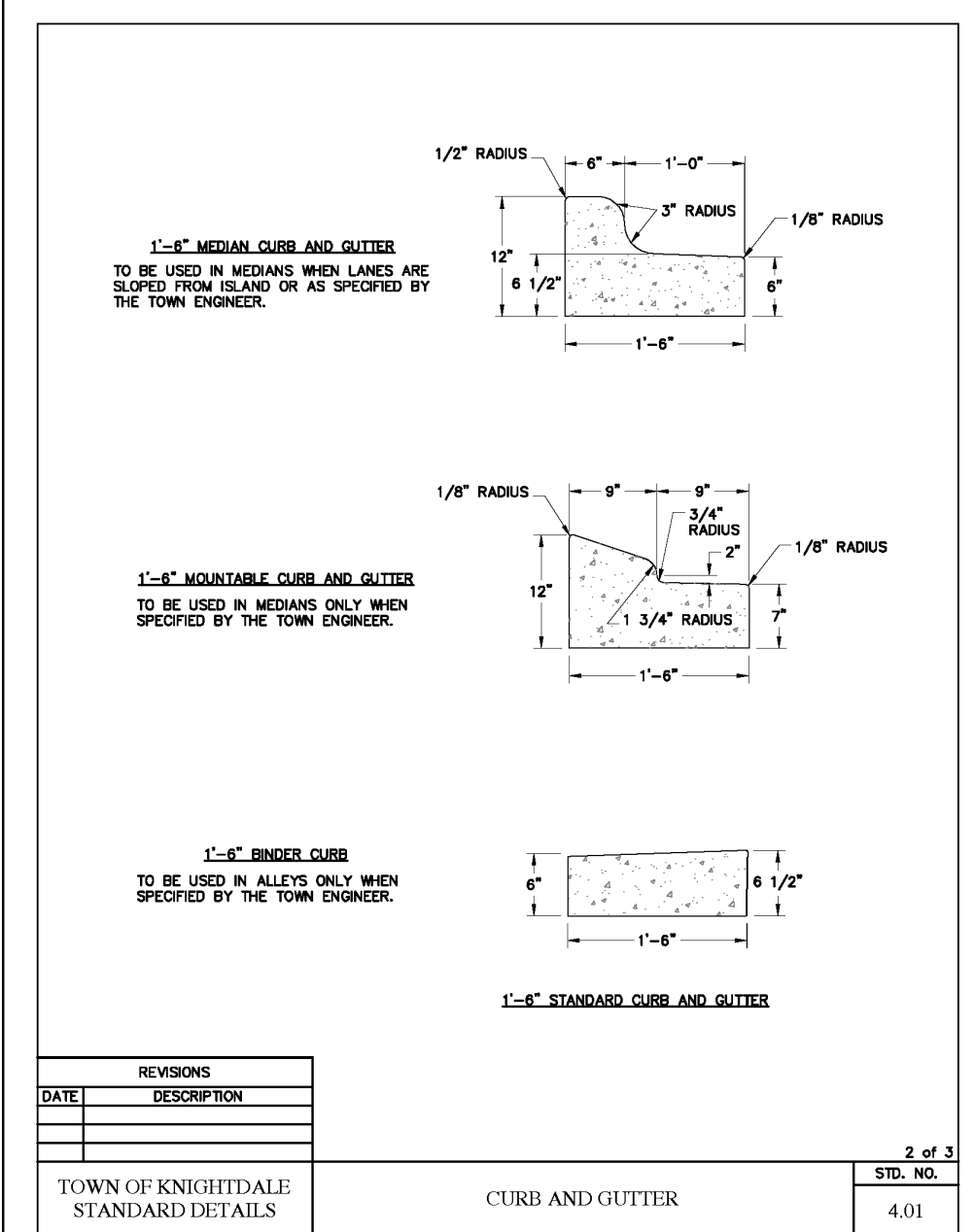
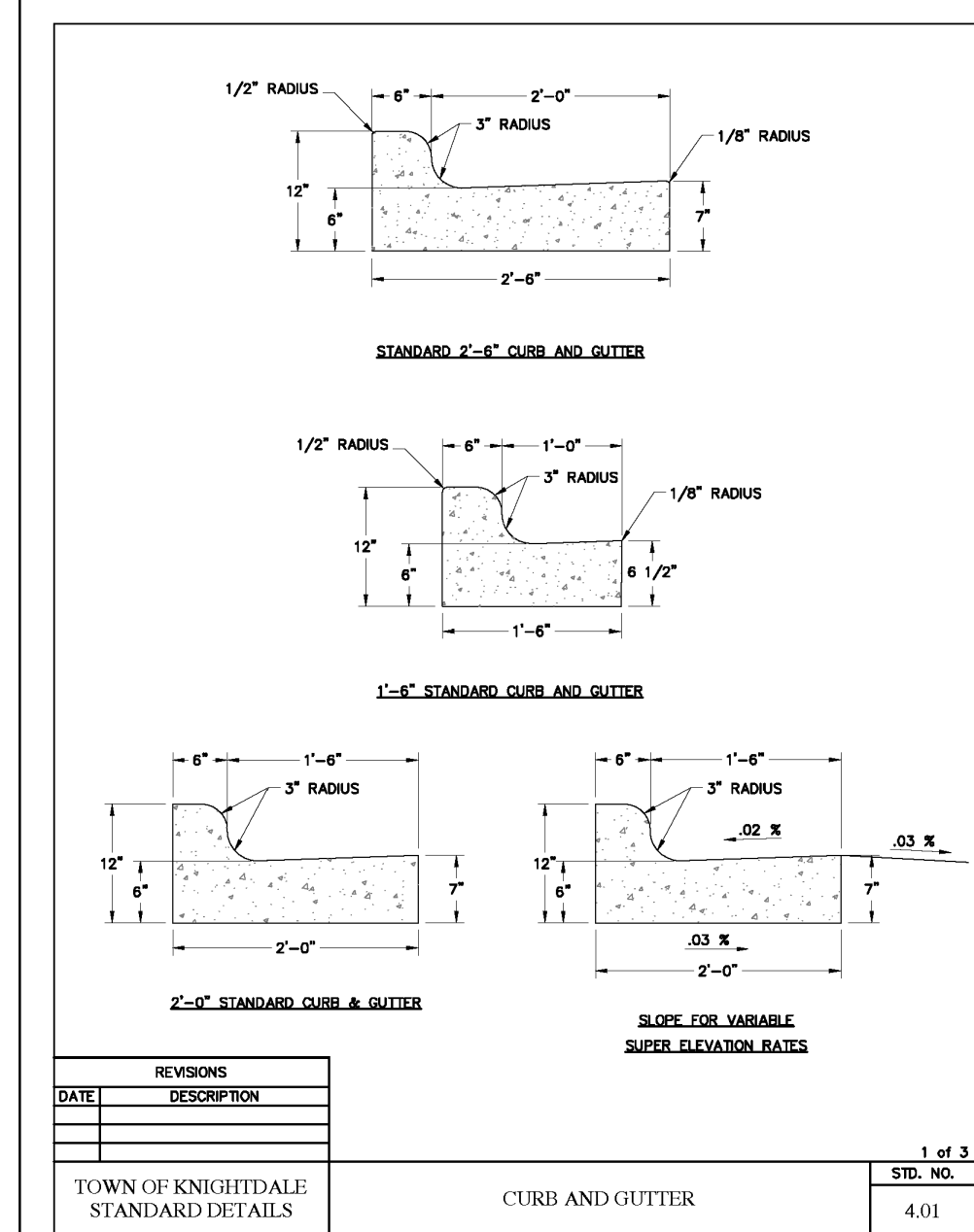
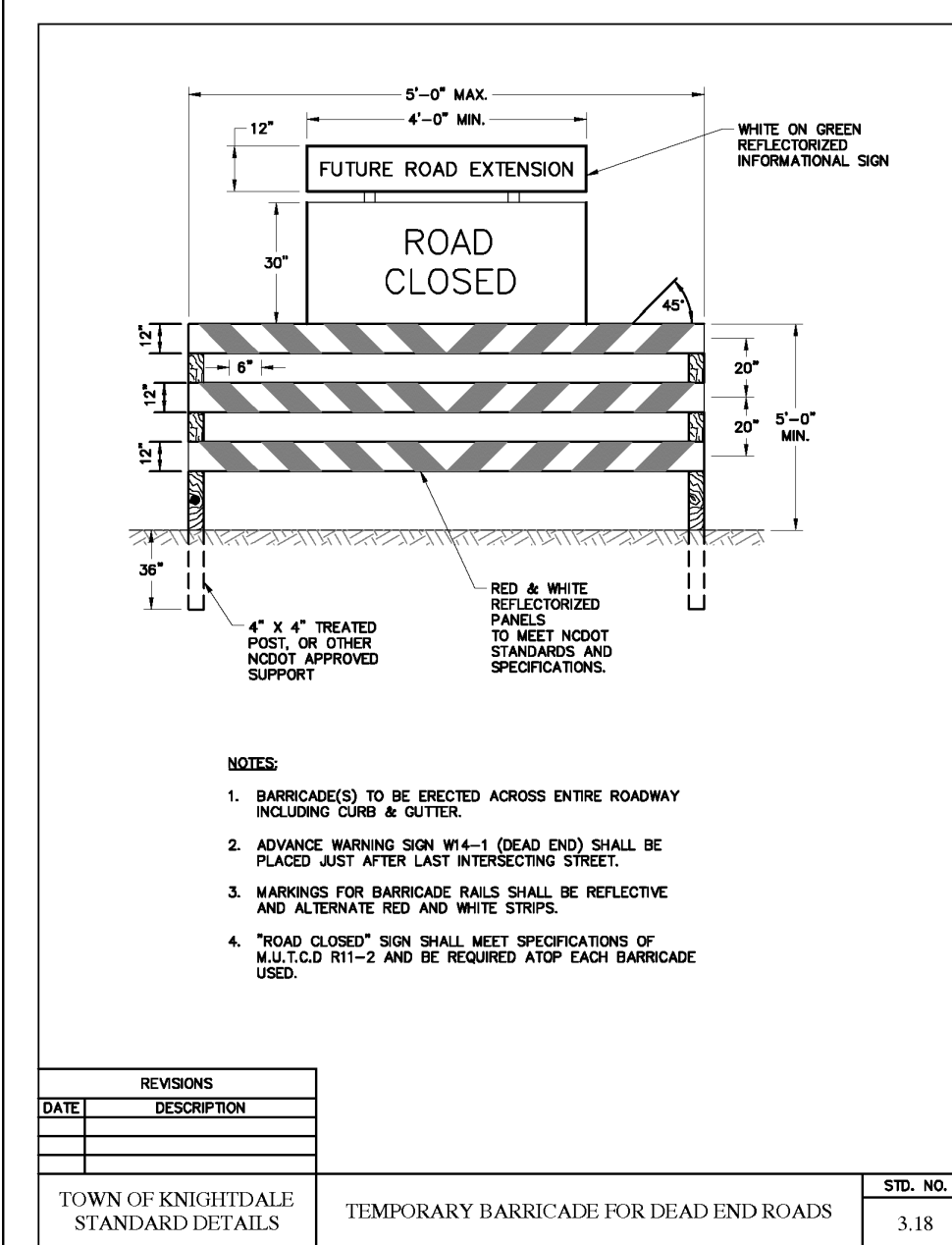
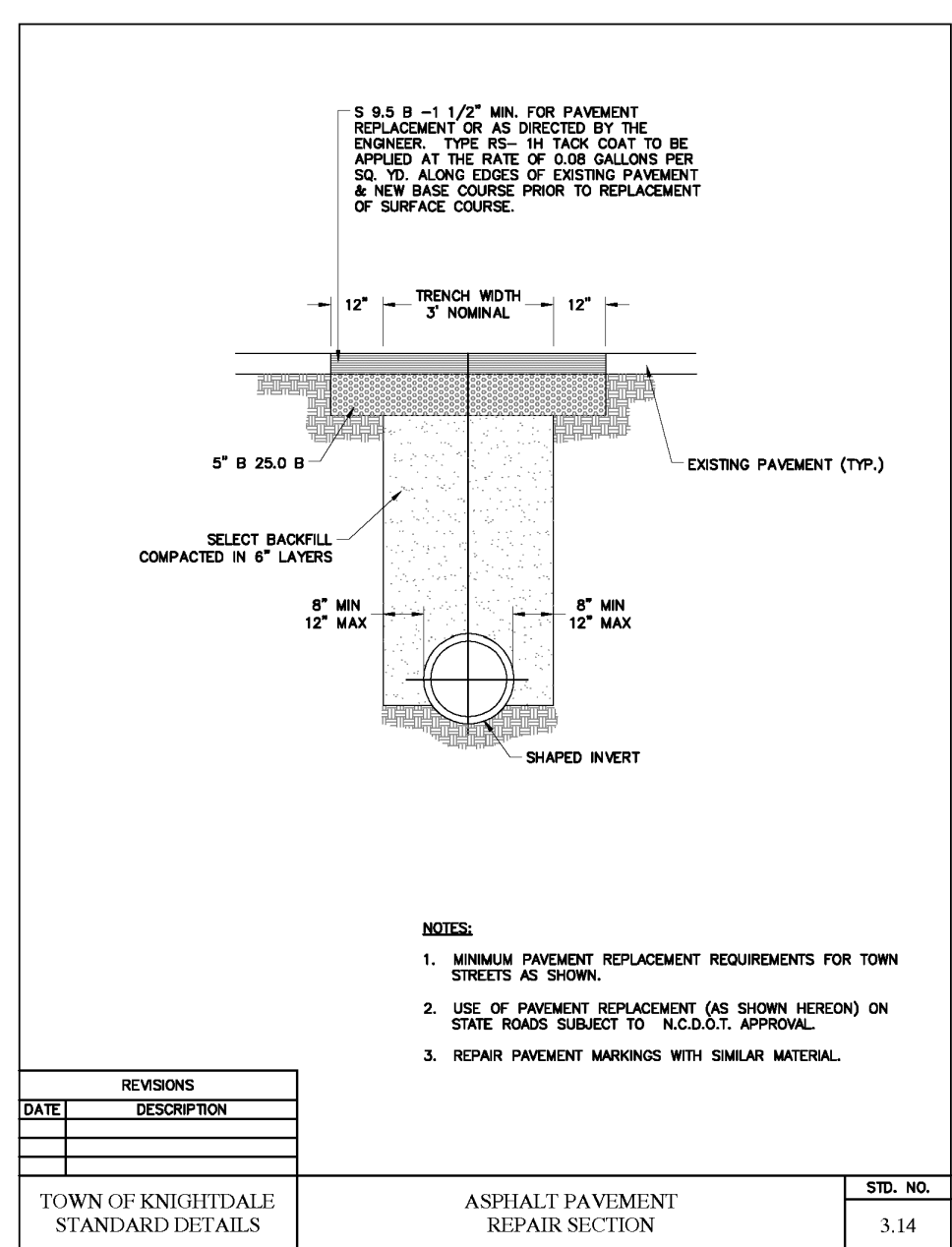
NO.	DATE	DESCRIPTION	BY
5	08-20-2021	TOK CD 3TH REVIEW COMMENTS	MMR
4	12-15-2020	TOK CD 1TH REVIEW COMMENTS	MMR
3	10-02-2020	TOK CD 2ND REVIEW COMMENTS	MMR
2	06-20-2020	TOK CD 2ND REVIEW COMMENTS	MMR
1	07-08-2020	TOK CD 1ST REVIEW COMMENTS	MMR

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
 TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SHEET C4.2

\\chiffre\civild_2018\18082 - Knightdale Habitat SD\CTHIL04 Construction\05 - 18082_DATA.dwg, C4.2, 10/15/2021 12:20:44 PM, marc.mueller

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION



\\chiffre\civl_1\2018\18082 - Knightdale Habitat SD\CIVIL\04 Construction\08 - 18082_Details.dwg, CS_1, 10/15/2021 12:53:36 PM, mmc-mweller

BANK

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
 6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919)851-4422 FAX: (919)851-8966
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLCA (C-0267)

NO.	DATE	DESCRIPTION	BY
1	08-20-2021	TOK CD 1ST REVIEW COMMENTS	MDR
2	10-05-2020	TOK CD 2ND REVIEW COMMENTS	MDR
3	06-20-2020	TOK CD 3RD REVIEW COMMENTS	MDR
4	12-15-2020	TOK CD 4TH REVIEW COMMENTS	MDR
5	08-20-2021	TOK CD 5TH REVIEW COMMENTS	MDR

DETAILS

SCALE: N.T.S.

CHK BY: MDR

NORTH CAROLINA
 PROFESSIONAL SEAL
 036908
 MARY D. BIZZELL
 10/15/21

a. 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: _____ Date: _____
 Town Engineer

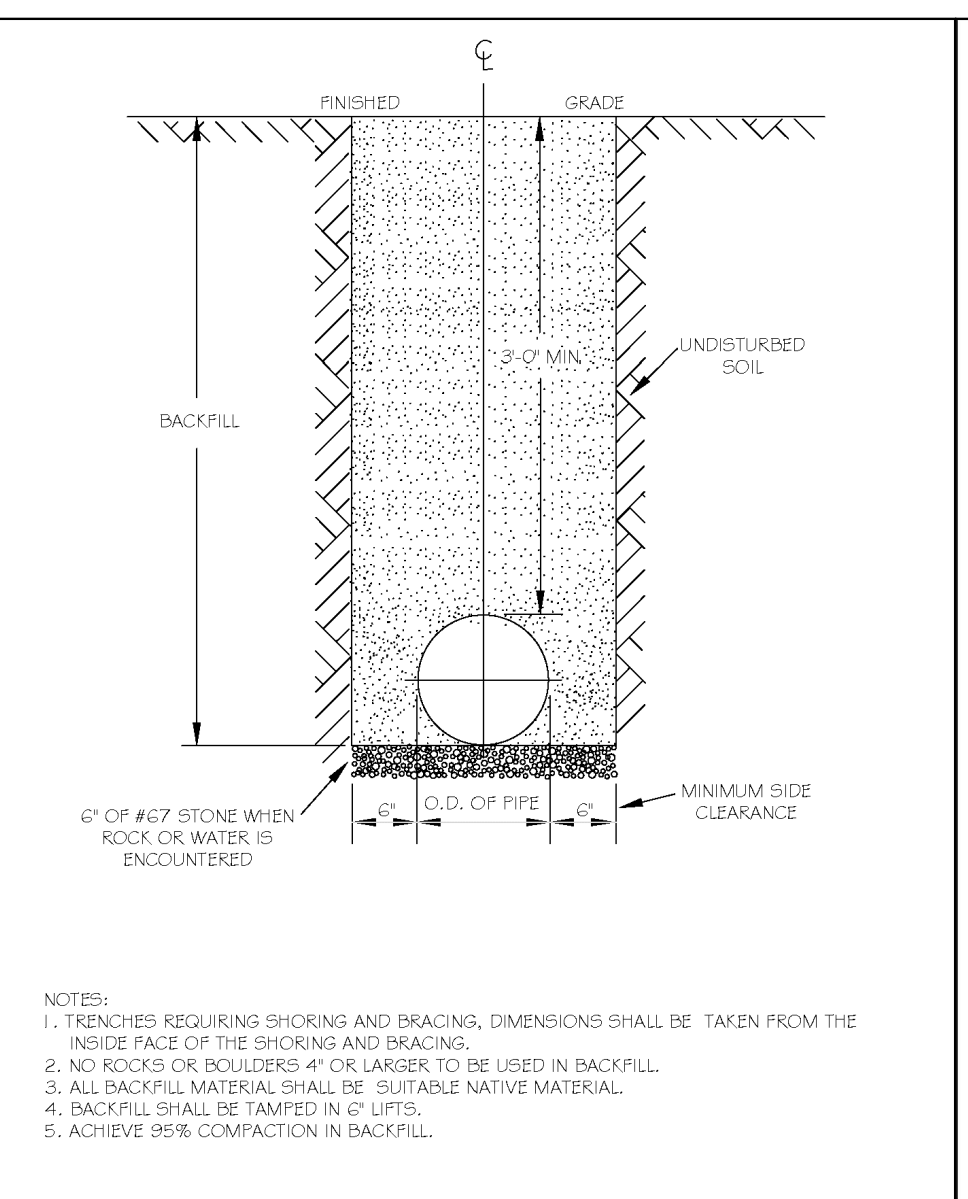
These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: 10/26/21
 Administrator

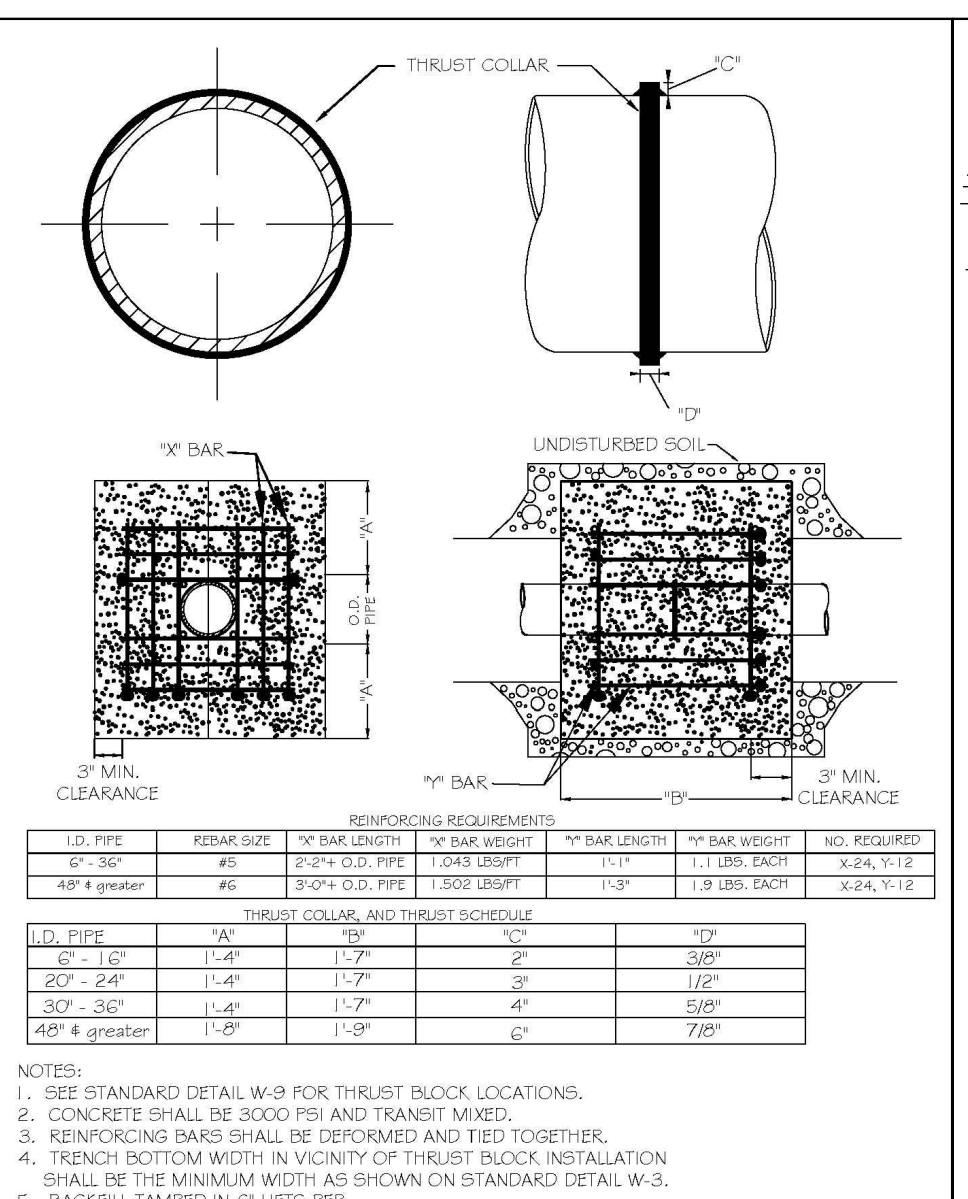
FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
 TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SHEET C5.1

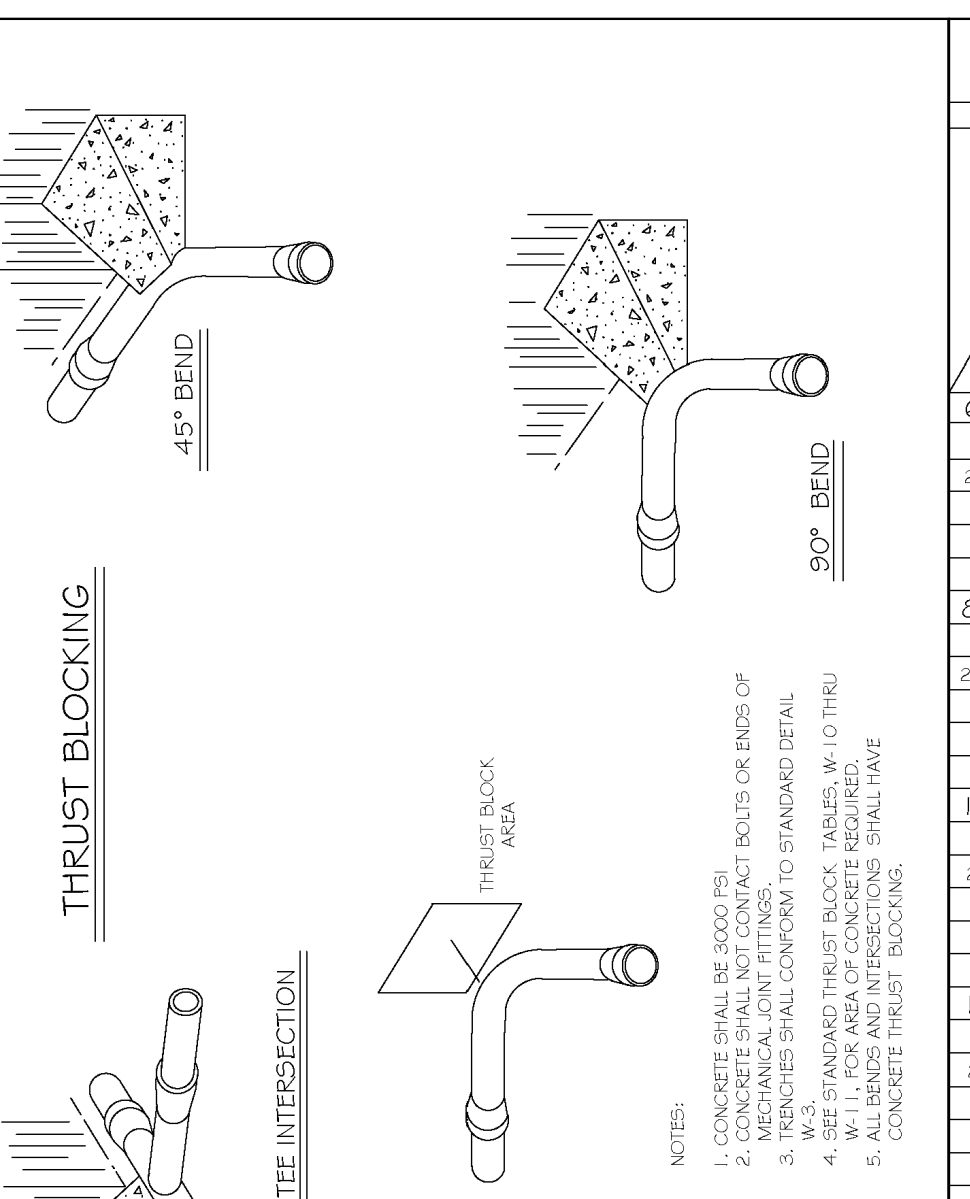
NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION



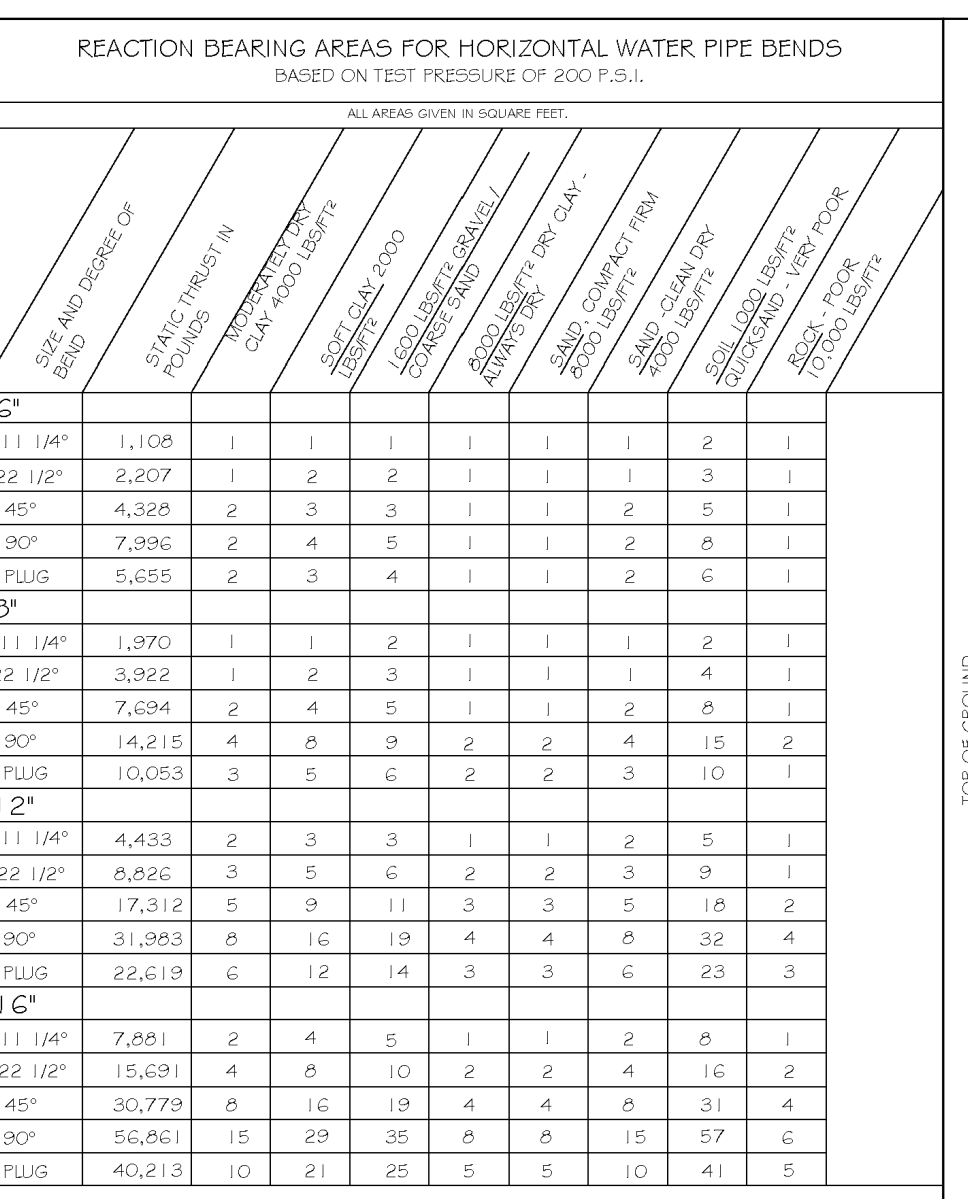
Notes for trench construction: 1. TRENCHES REQUIRING SHORING AND BRACING... 2. NO ROCKS OR BOLLERS 4" OR LARGER TO BE USED IN BACKFILL... 3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL... 4. BACKFILL SHALL BE TAMPED IN 4" LIFTS... 5. ACHIEVE 95% COMPACTION IN BACKFILL.



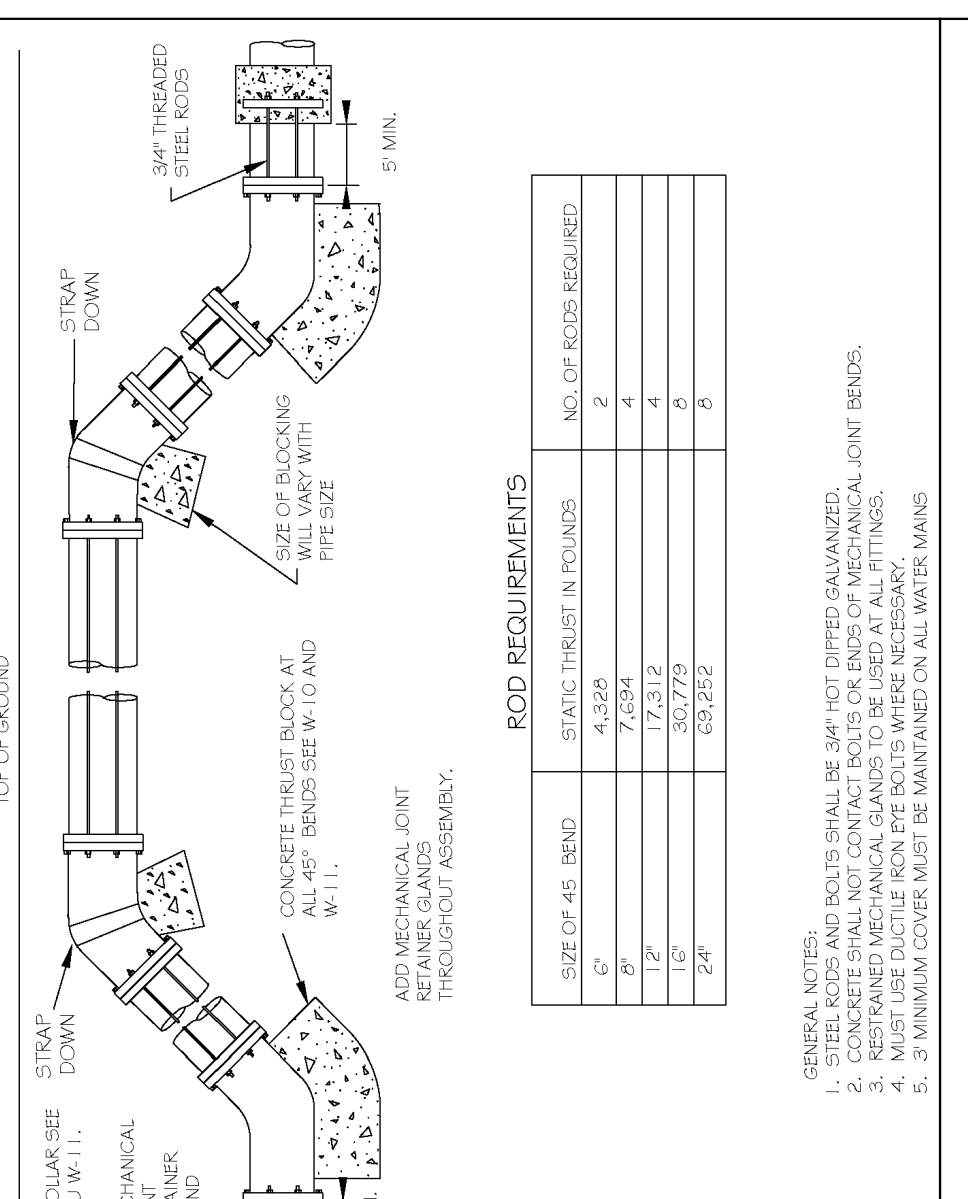
Notes for thrust blocking: 1. SEE STANDARD DETAIL W-9 FOR THRUST BLOCK LOCATIONS... 2. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED... 3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER... 4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3... 5. BACKFILL TAMPED IN 4" LIFTS PER STANDARD DETAIL W-3... 6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.



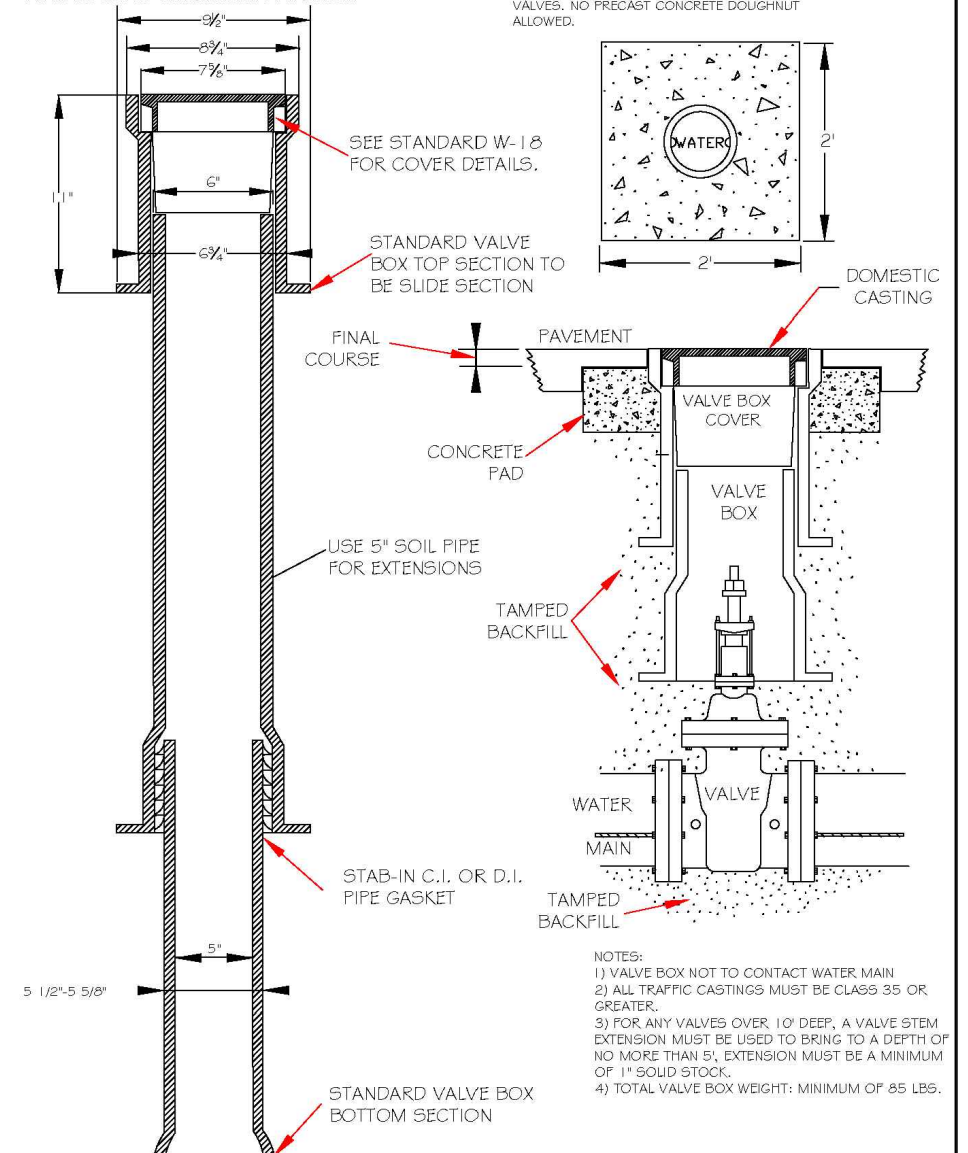
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I. Table with columns for size and degree of bend, static thrust in pounds, and reaction thrust in pounds.



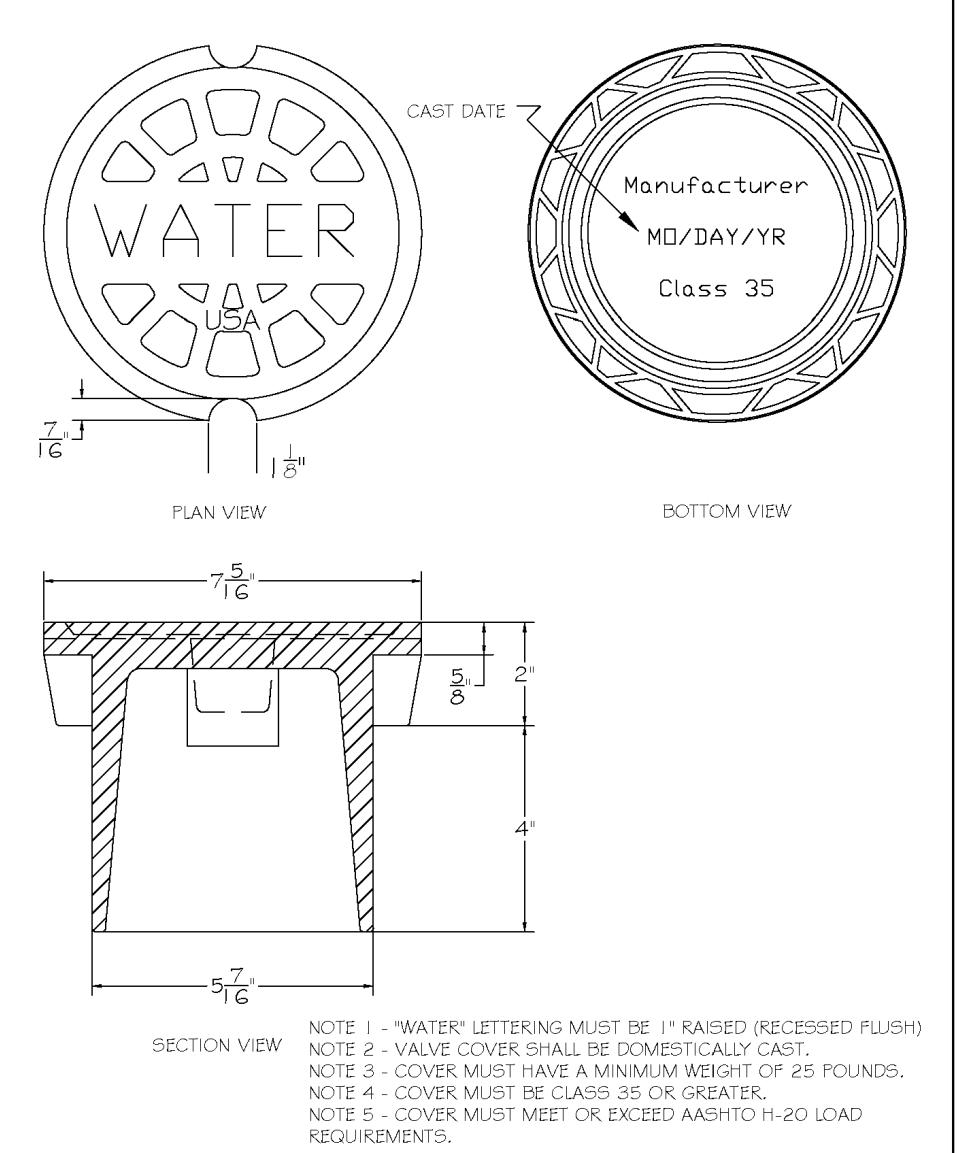
ROD REQUIREMENTS table with columns for size of 45 degree bend, static thrust in pounds, and number of rods required.



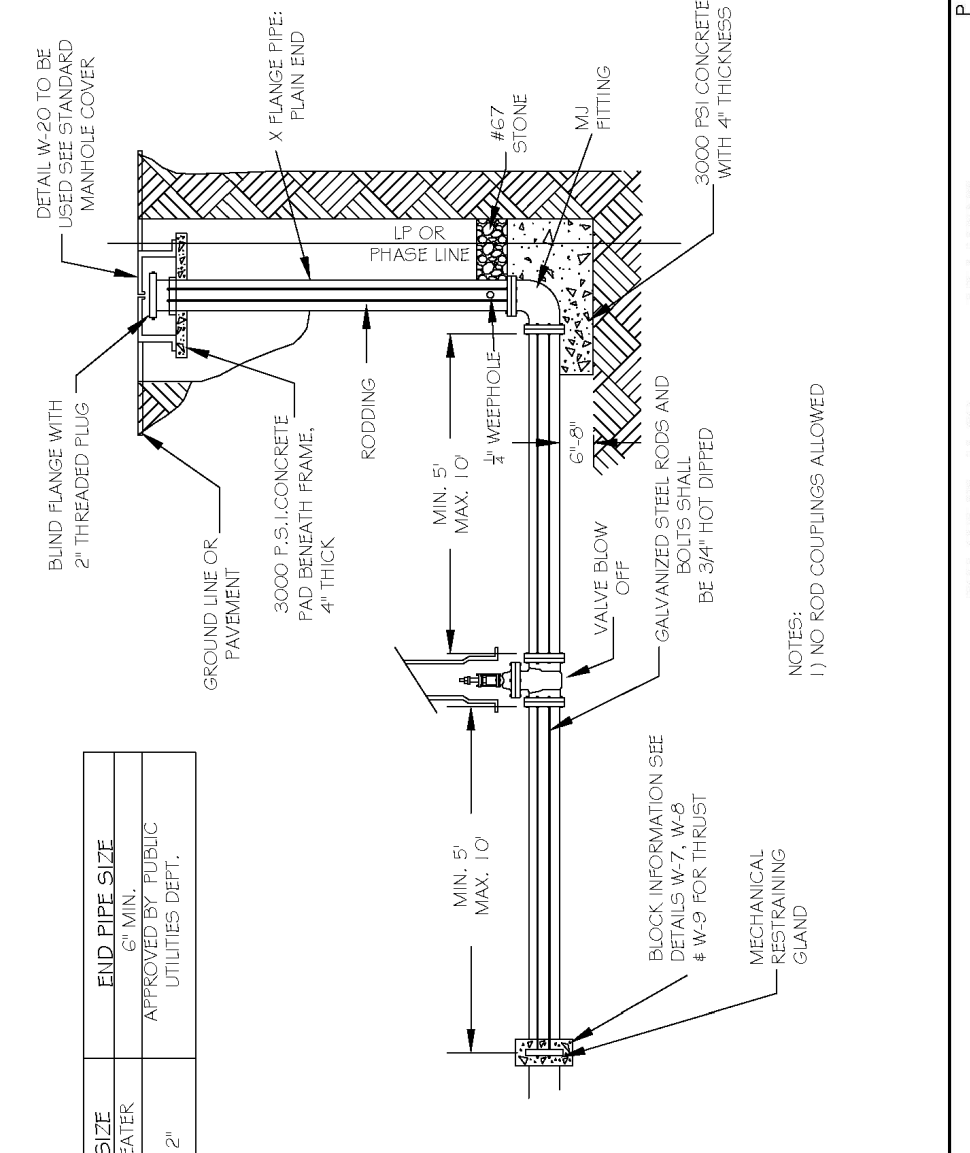
Notes for tapping sleeve: 1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS... 2. SEE STANDARD REACTION BLOCK TABLES, W-10 AND W-11 FOR AREA OF CONCRETE REQUIRED.



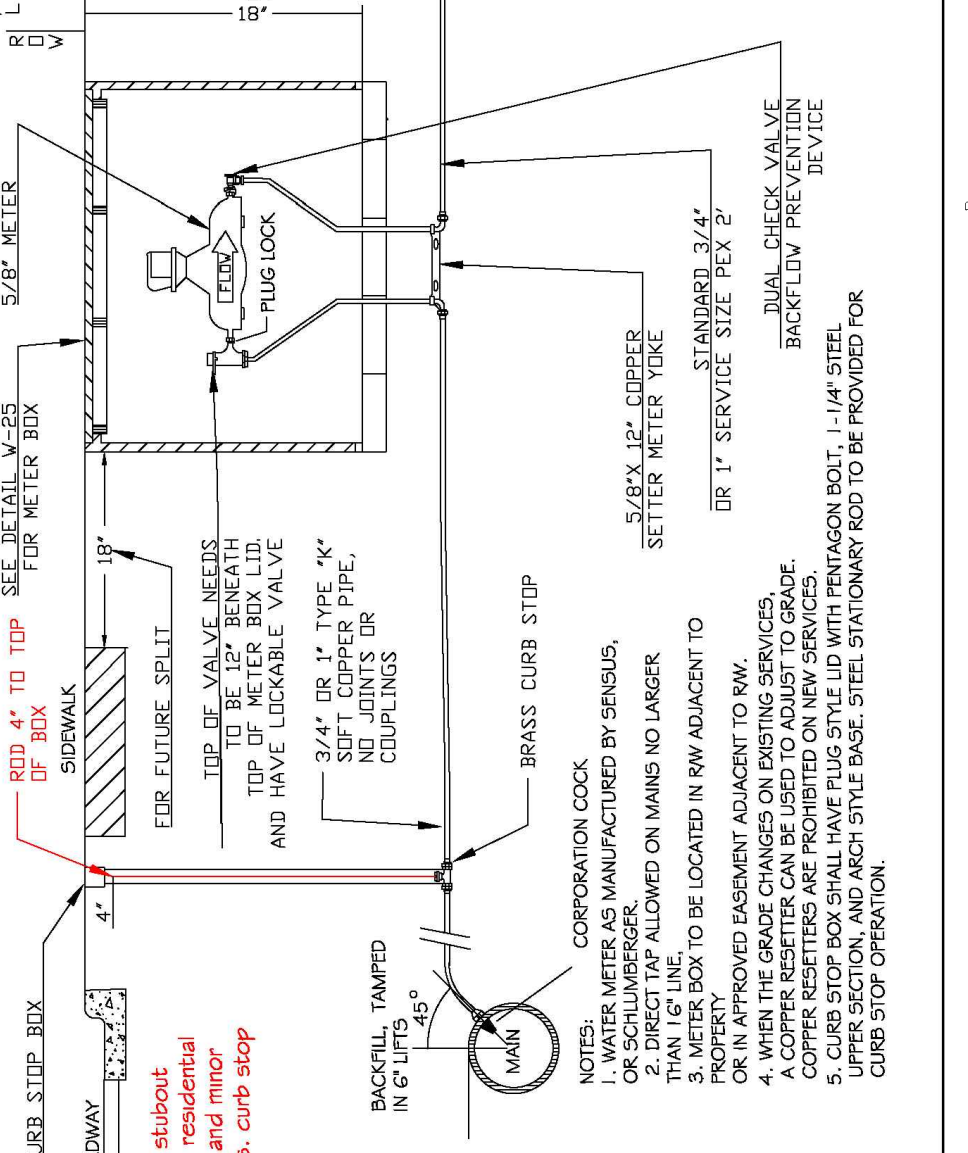
Notes for valve box installation: 1. VALVE BOX MUST NOT CONTACT WATER MAIN... 2. ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER... 3. ANY VALVES OVER 10" DIA. A VALVE BODY EXTENSION MUST BE USED TO BRING TO A MINIMUM OF 18" FROM STREET... 4. TOTAL VALVE BOX WEIGHT MINIMUM OF 85 LBS.



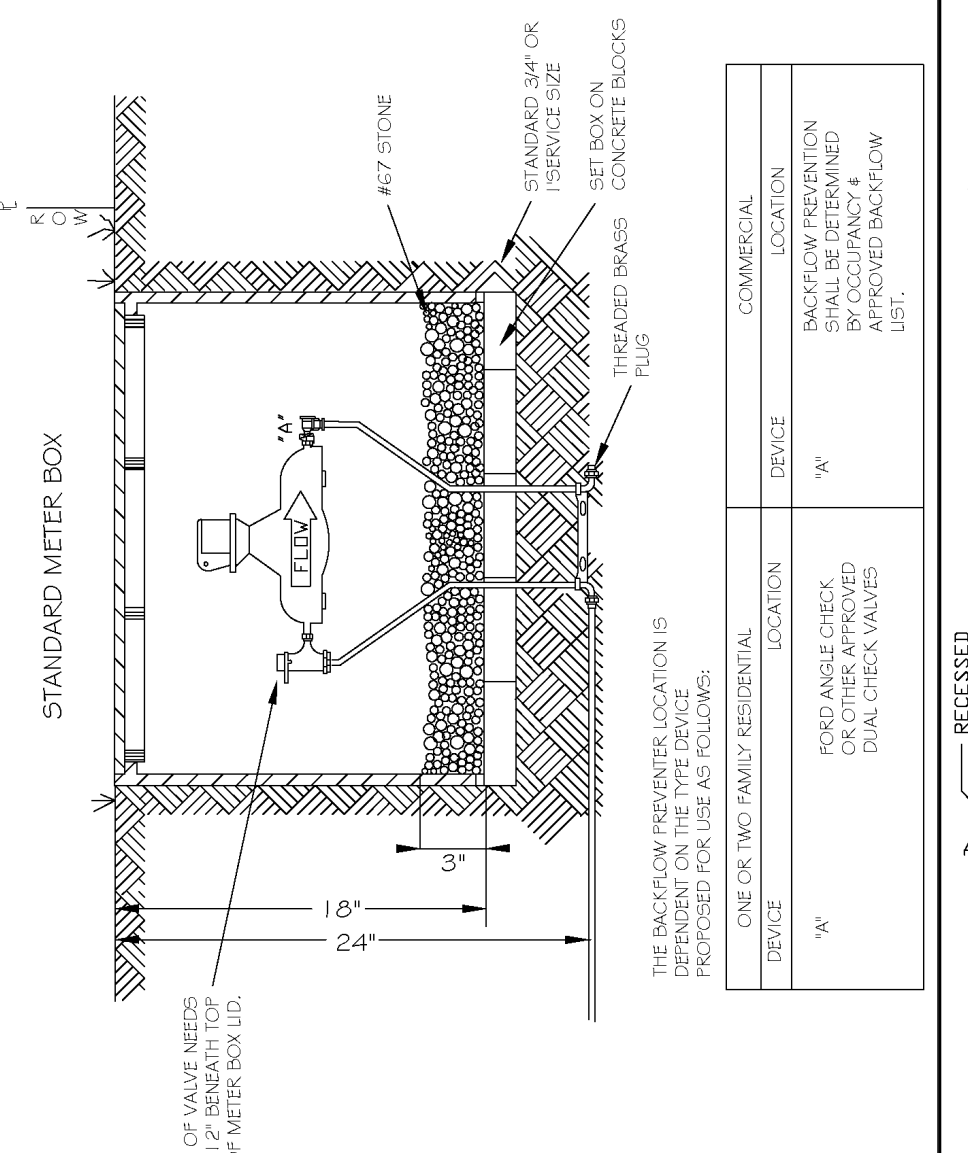
Notes for valve box drop lid: 1. "WATER" LETTERING MUST BE 1" RAISED (RECESSED FLUSH)... 2. VALVE COVER SHALL BE DOMESTICALLY CAST... 3. COVER MUST HAVE A MINIMUM WEIGHT OF 25 POUNDS... 4. COVER MUST MEET OR EXCEED ANSII F120 LOAD REQUIREMENTS.



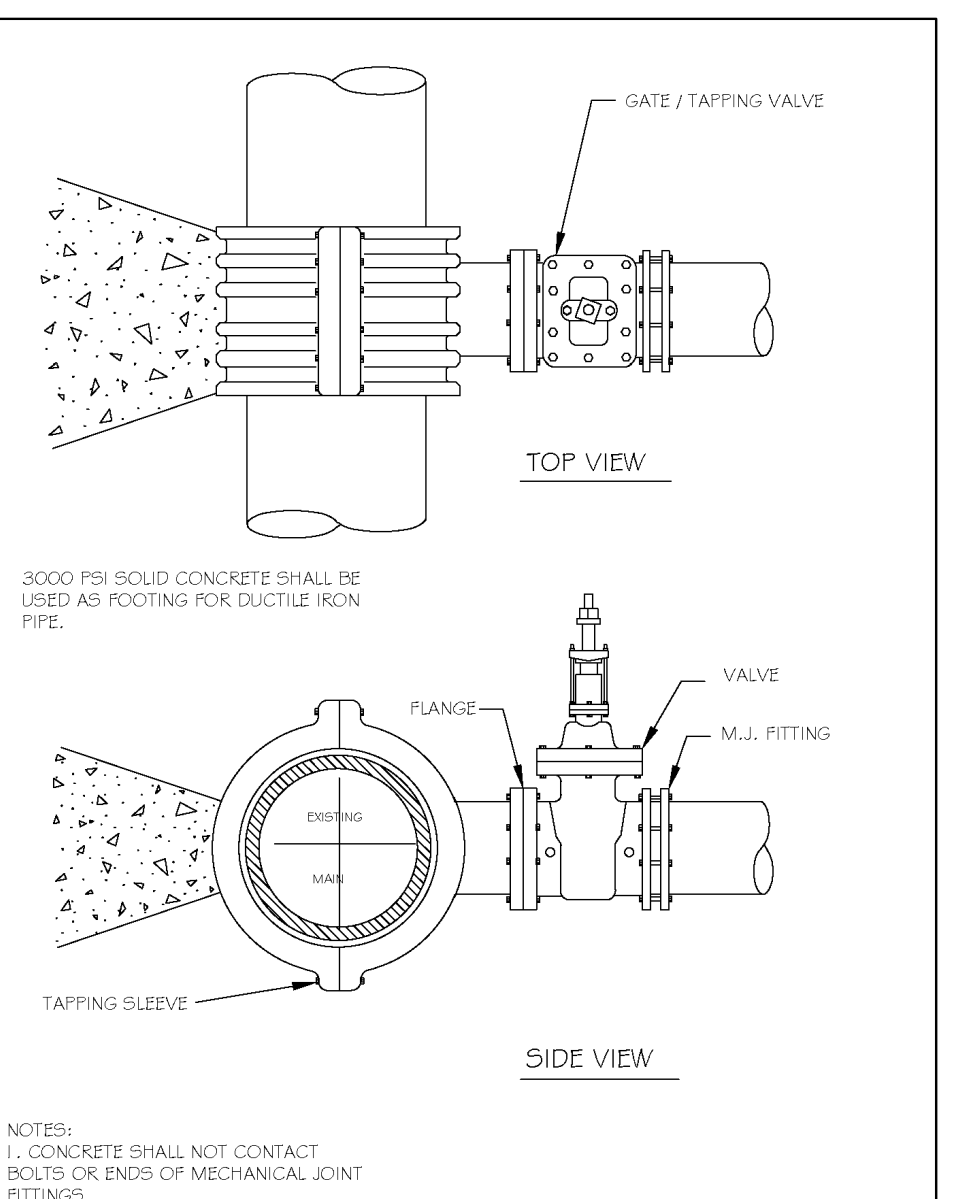
Notes for temporary water main blow-off: 1. CURB STOP BOX SHALL BE 18" DIA. WITH 1/4" DIA. STATIONARY ROD TO BE PROVIDED FOR CURB STOP OPERATION... 2. VALVE COVER SHALL BE 18" DIA. WITH 1/4" DIA. STATIONARY ROD TO BE PROVIDED FOR CURB STOP OPERATION.



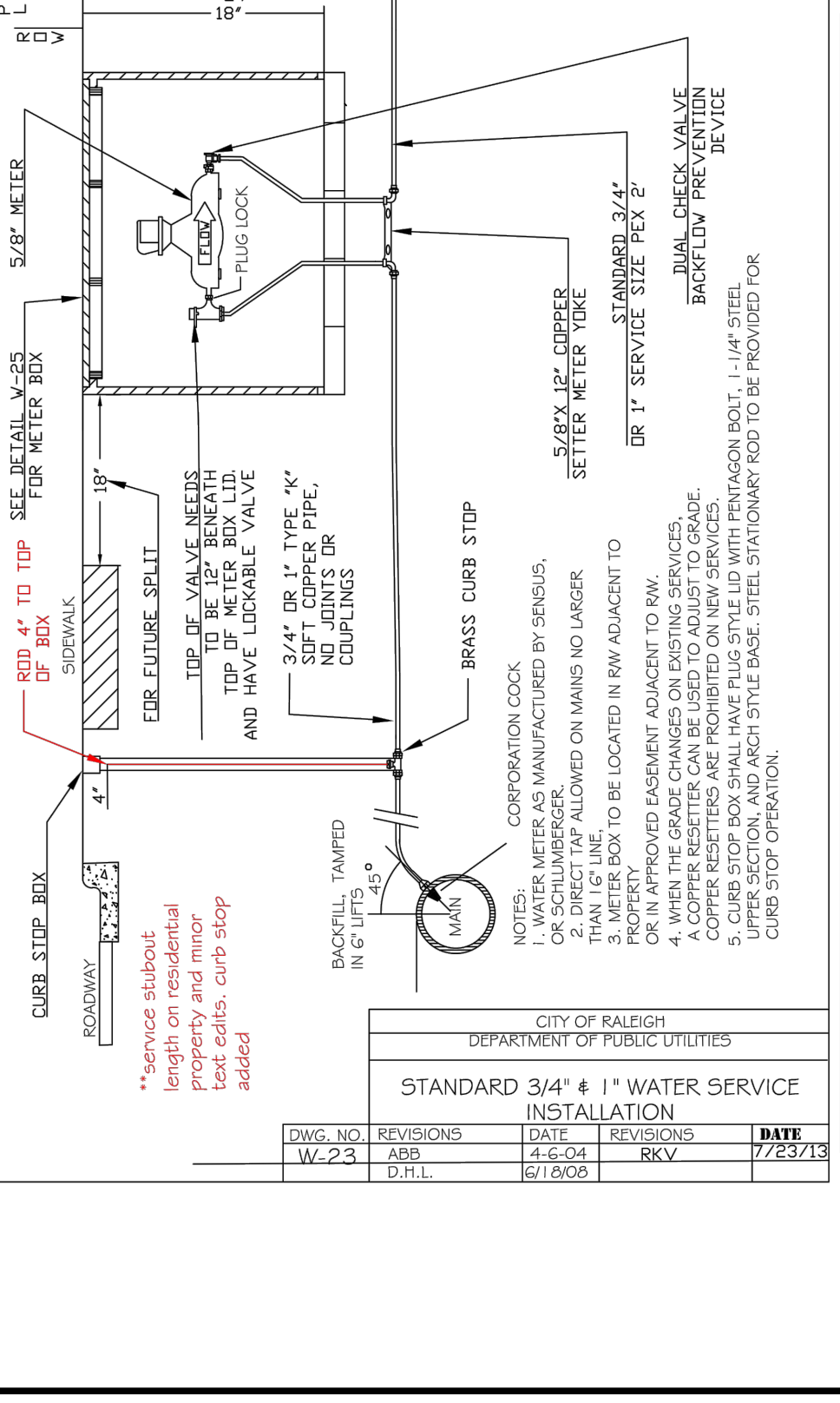
Notes for water service installation: 1. WATER METER SHALL BE MANUFACTURED BY SINGULUS... 2. DIRECT TAP ALLOWED ON MAINS NO LARGER THAN 12" DIA... 3. METER BOX TO BE LOCATED IN RW ADJACENT TO CURB STOP AND APPROXIMATELY ADJACENT TO RW... 4. WHEN THE GRADE CHANGES ON EXISTING SERVICES, COPPER SERVICE SETS ARE PROHIBITED ON NEW SERVICES... 5. CURB STOP BOX SHALL HAVE PLUS STYLE LID WITH PENTAGON BOLT, 1/4" DIA. STATIONARY ROD TO BE PROVIDED FOR CURB STOP OPERATION.



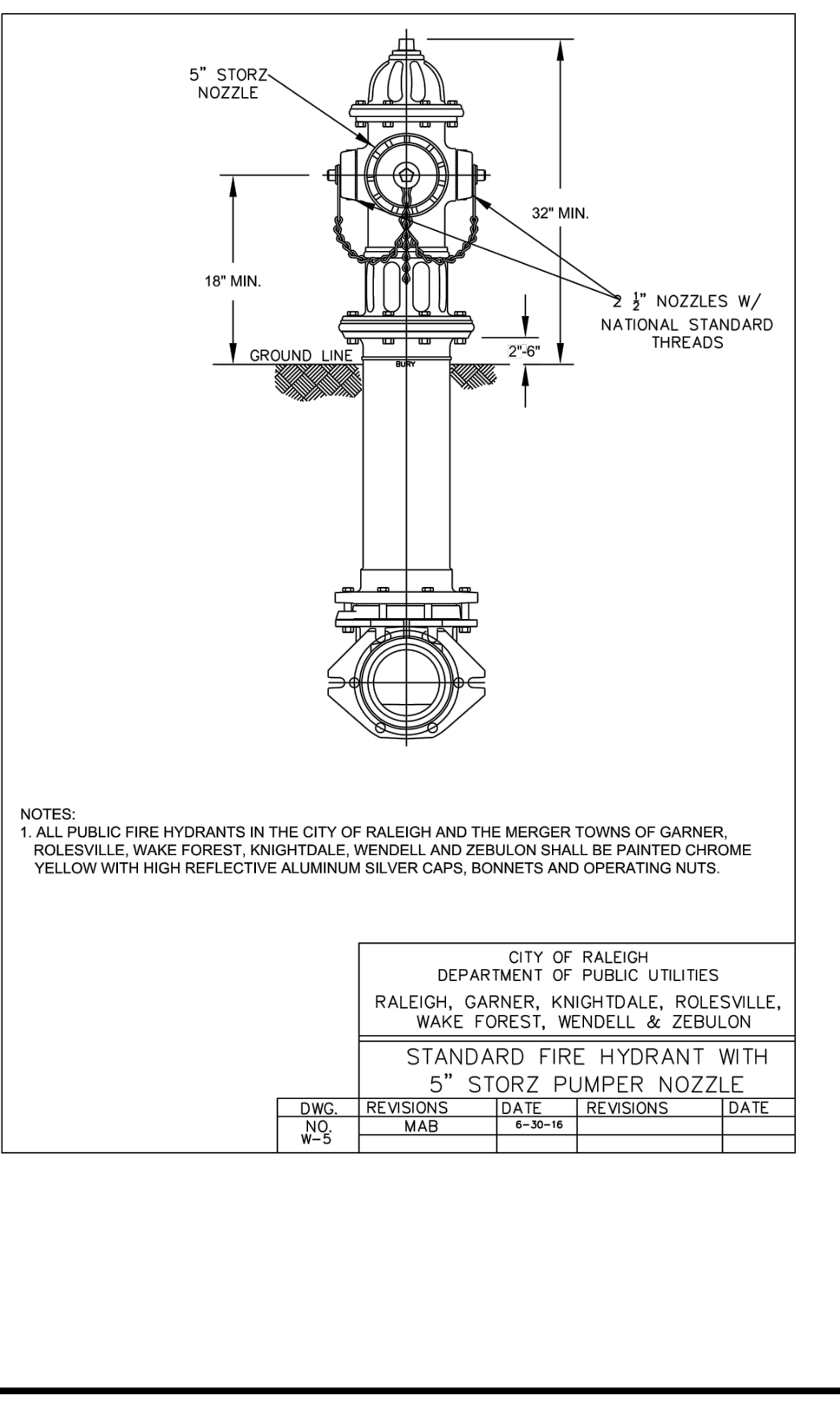
Notes for standard meter box: 1. CURB STOP BOX SHALL BE 18" DIA. WITH 1/4" DIA. STATIONARY ROD TO BE PROVIDED FOR CURB STOP OPERATION... 2. VALVE COVER SHALL BE 18" DIA. WITH 1/4" DIA. STATIONARY ROD TO BE PROVIDED FOR CURB STOP OPERATION.



Notes for water meter box detail: 1. COVER WEIGHT: 13 LBS +/- 5%... 2. LIDS TO BE COATED WITH BITUMINOUS COAL TAR COATING... 3. BONES AND LIDS MUST BE MANUFACTURED FROM SAME DOMESTIC FOUNDRY.



Notes for fire hydrant: 1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.



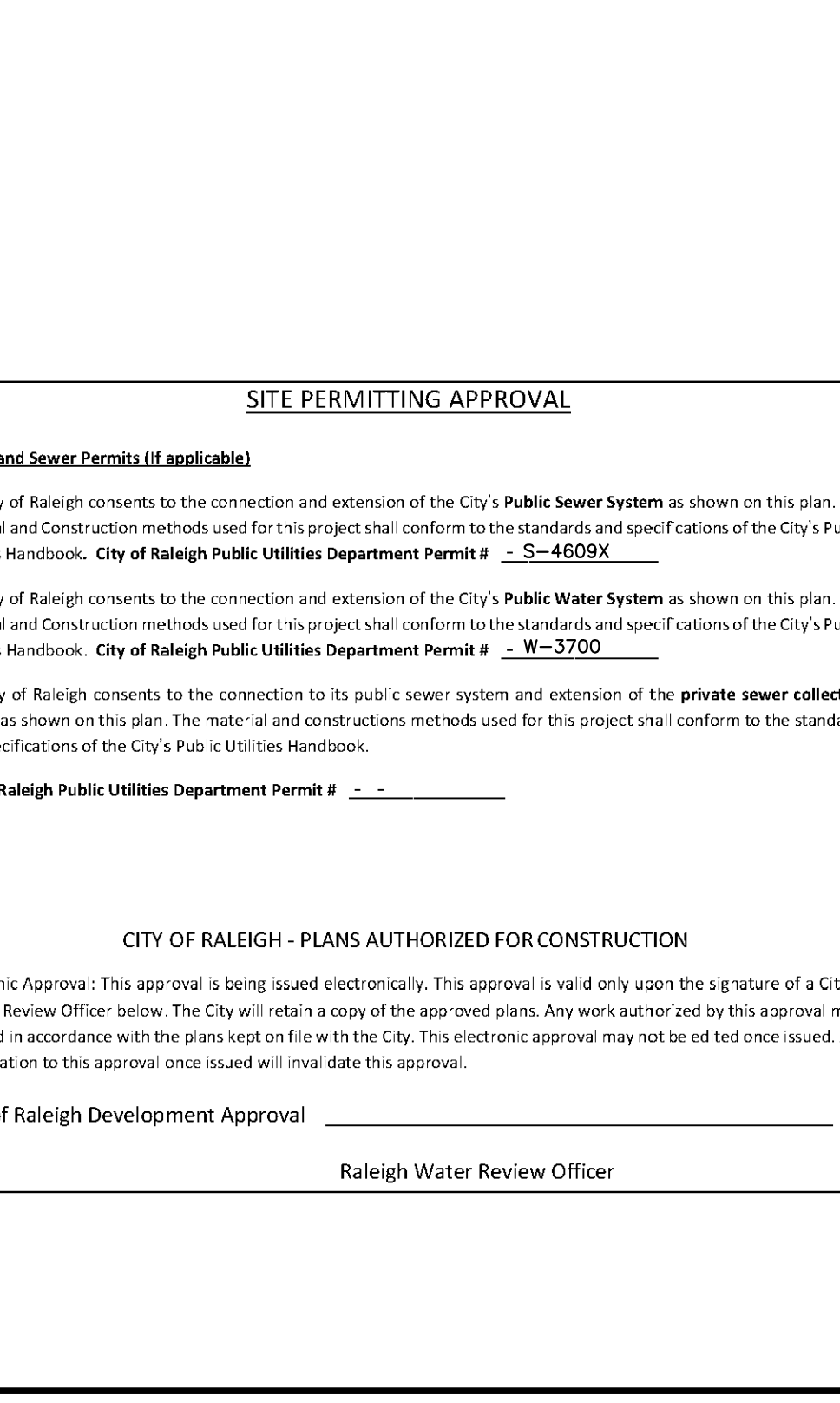
Notes for fire hydrant: 1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.



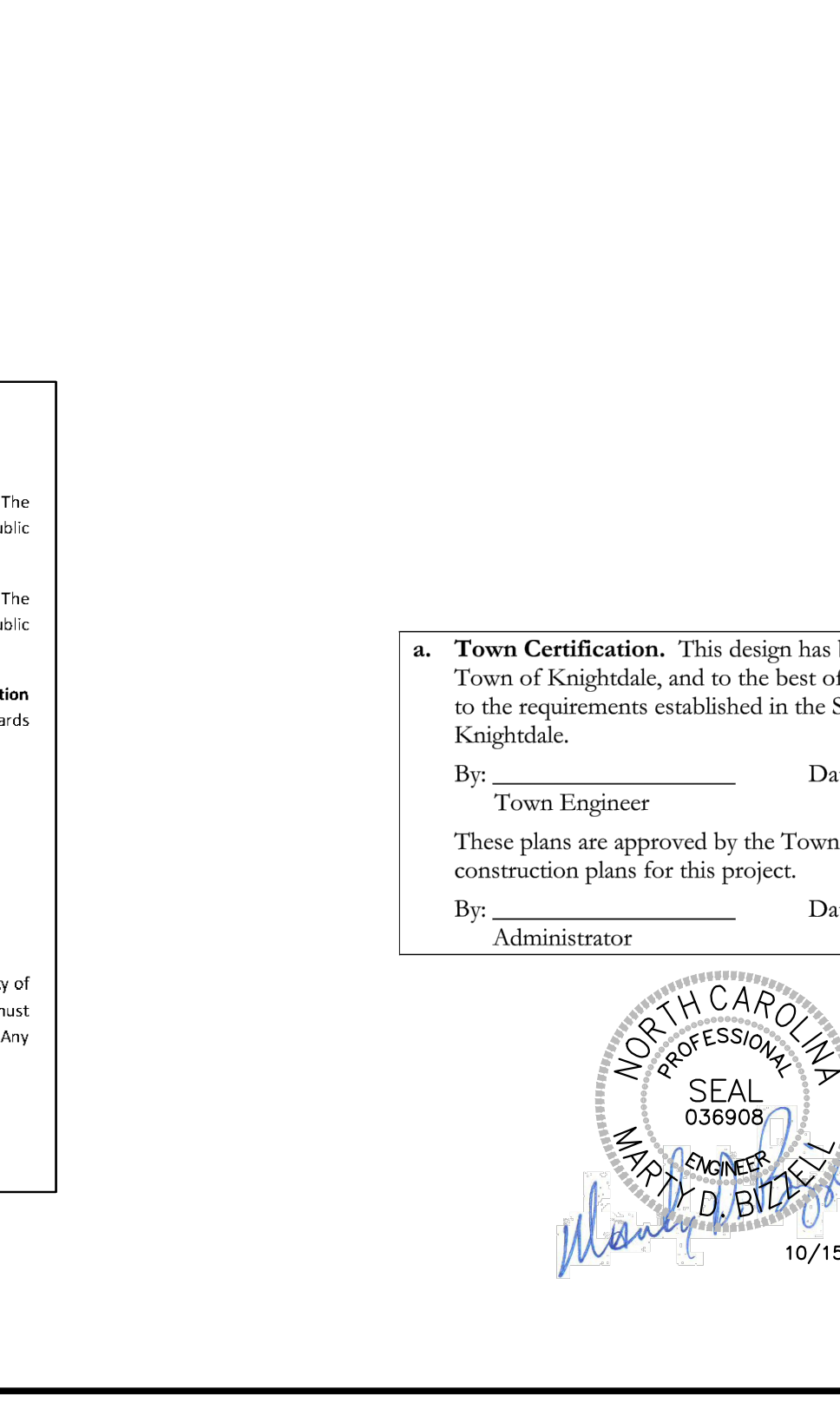
Notes for fire hydrant: 1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.



Notes for fire hydrant: 1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.



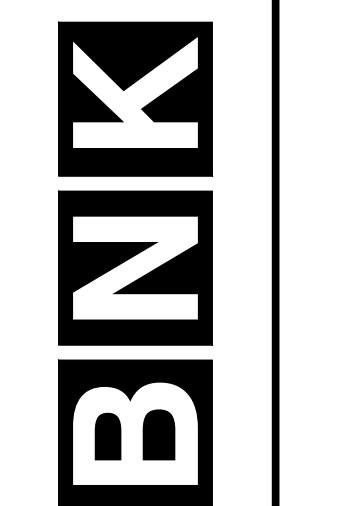
Notes for fire hydrant: 1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.



Notes for fire hydrant: 1. ALL PUBLIC FIRE HYDRANTS IN THE CITY OF RALEIGH AND THE MERGER TOWNS OF GARNER, ROLESVILLE, WAKE FOREST, KNIGHTDALE, WENDELL AND ZEBULON SHALL BE PAINTED CHROME YELLOW WITH HIGH REFLECTIVE ALUMINUM SILVER CAPS, BONNETS AND OPERATING NUTS.

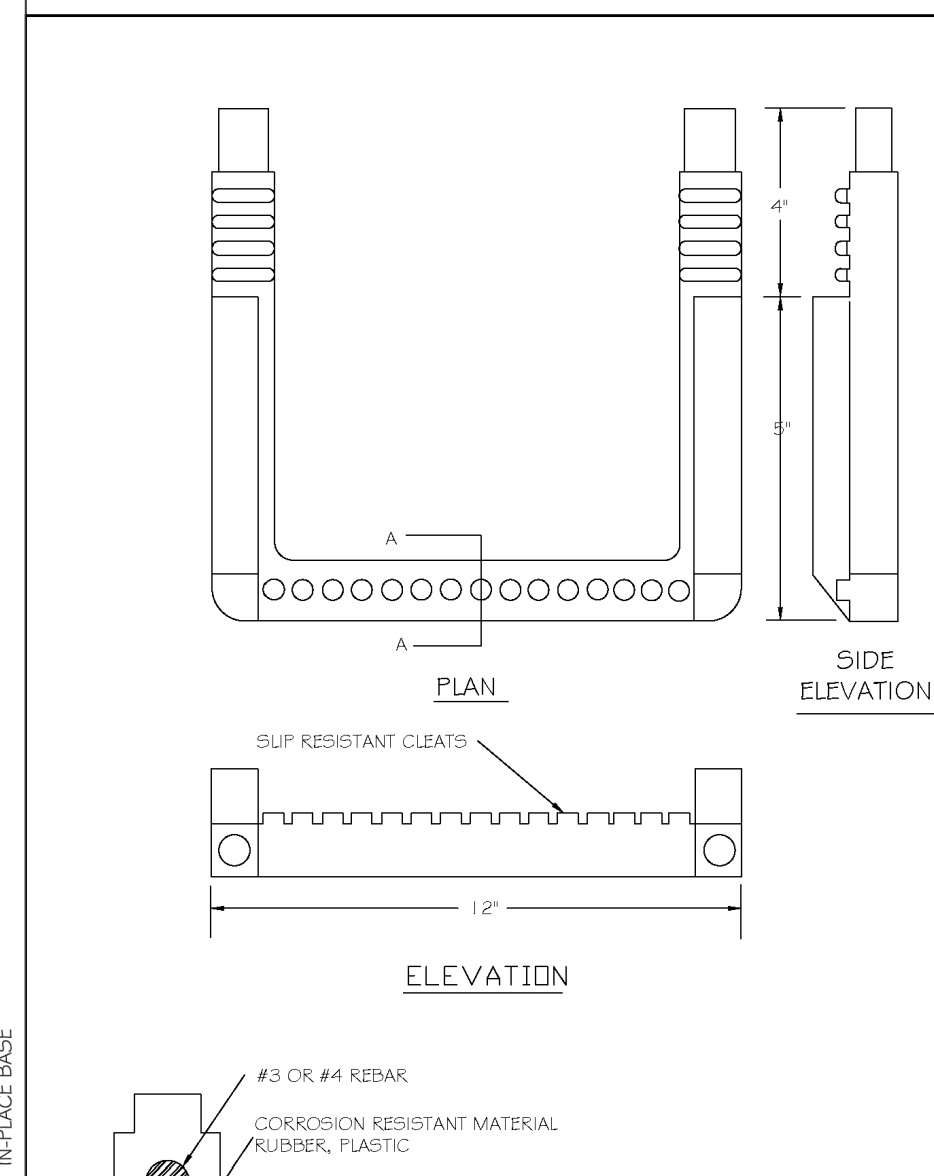
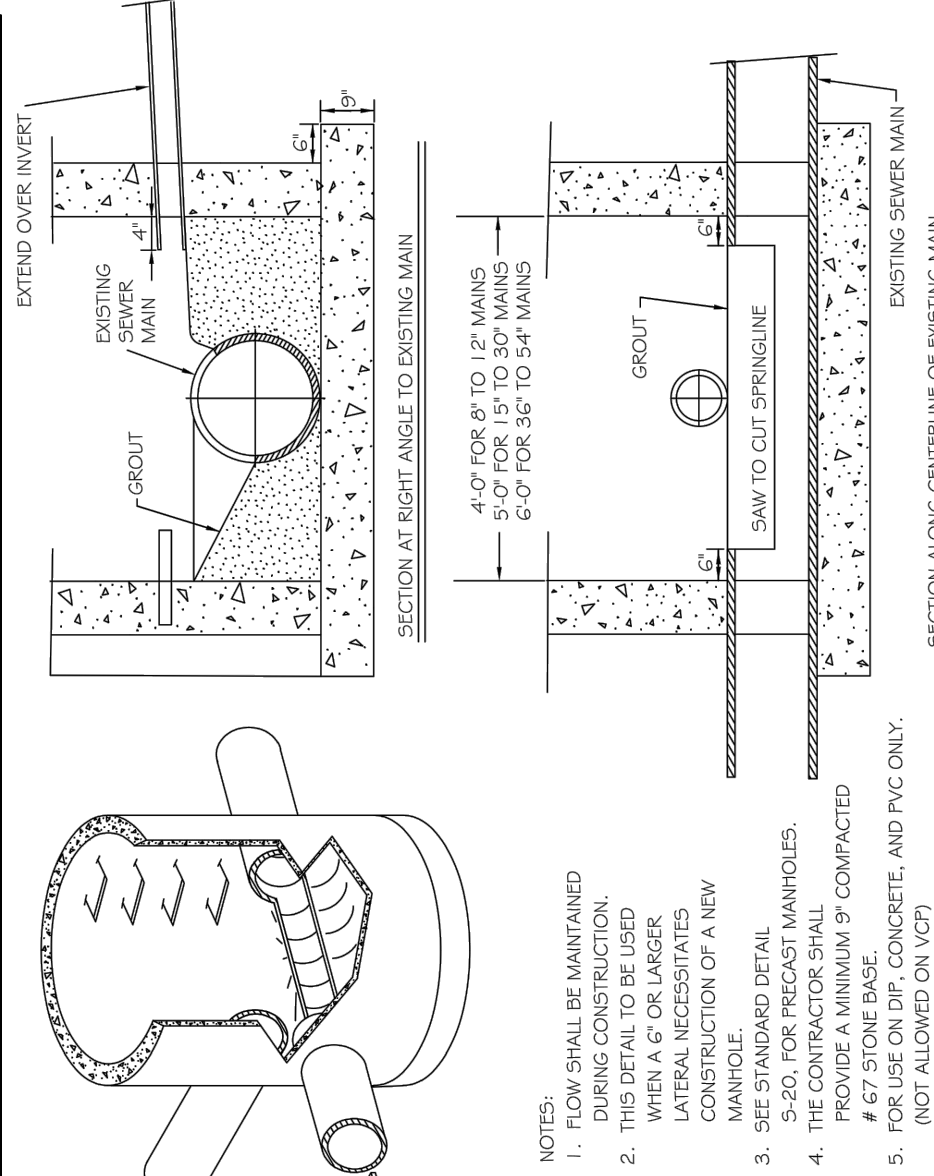
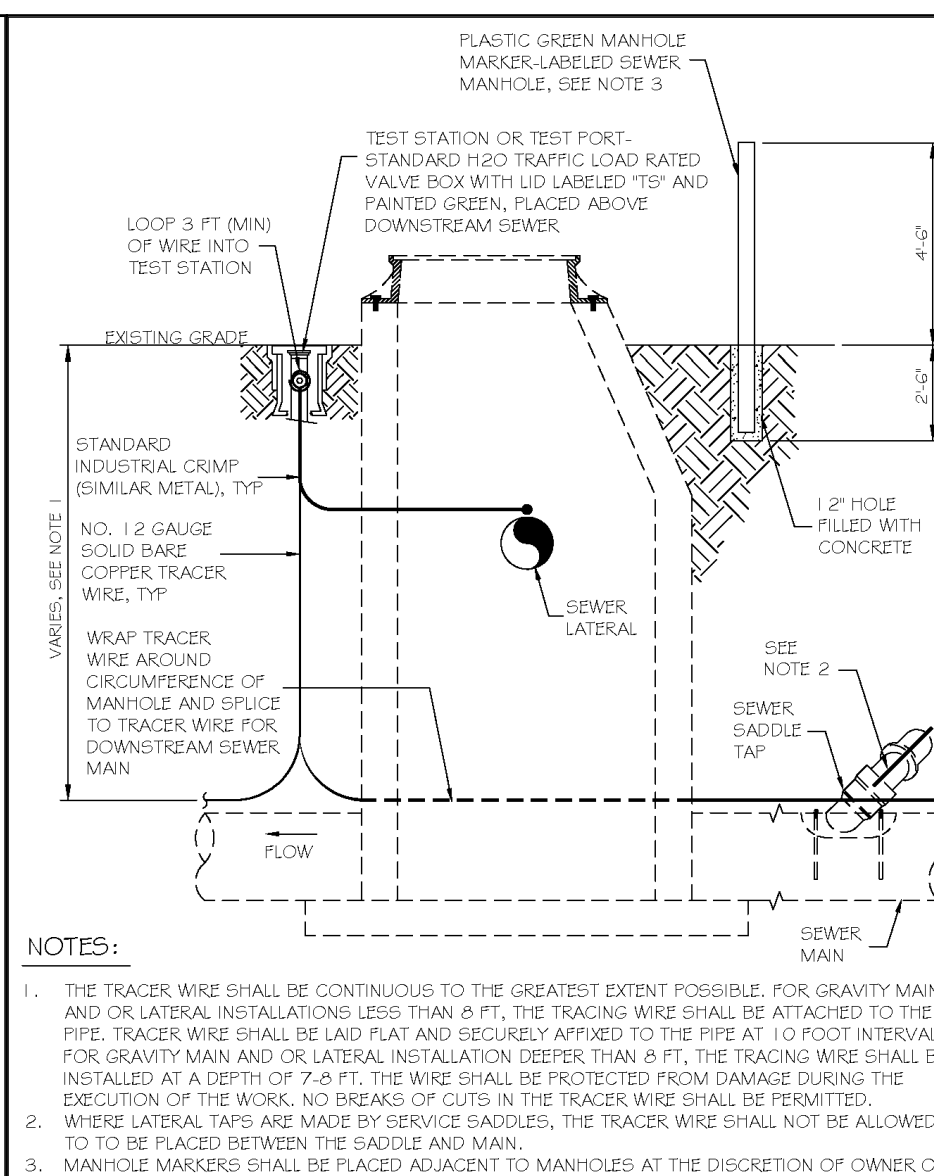
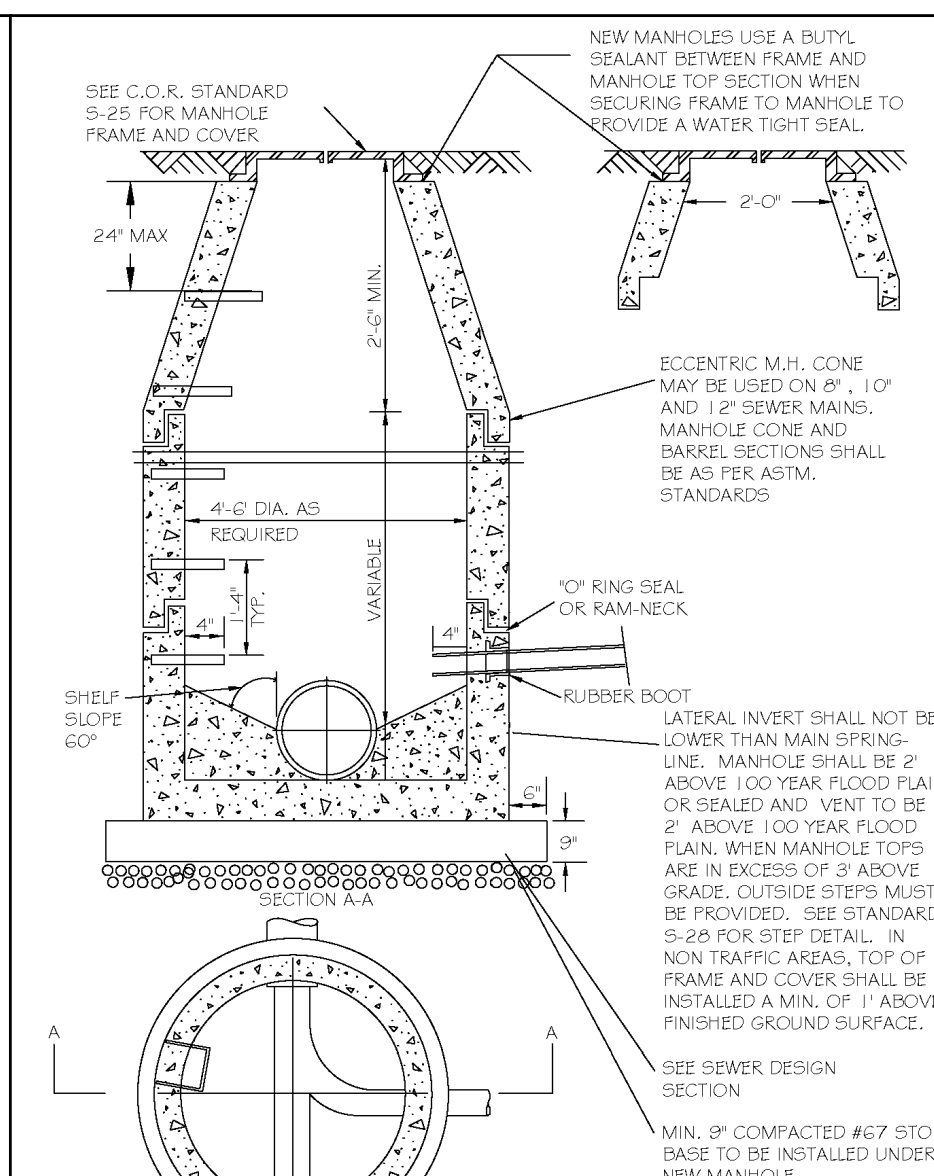
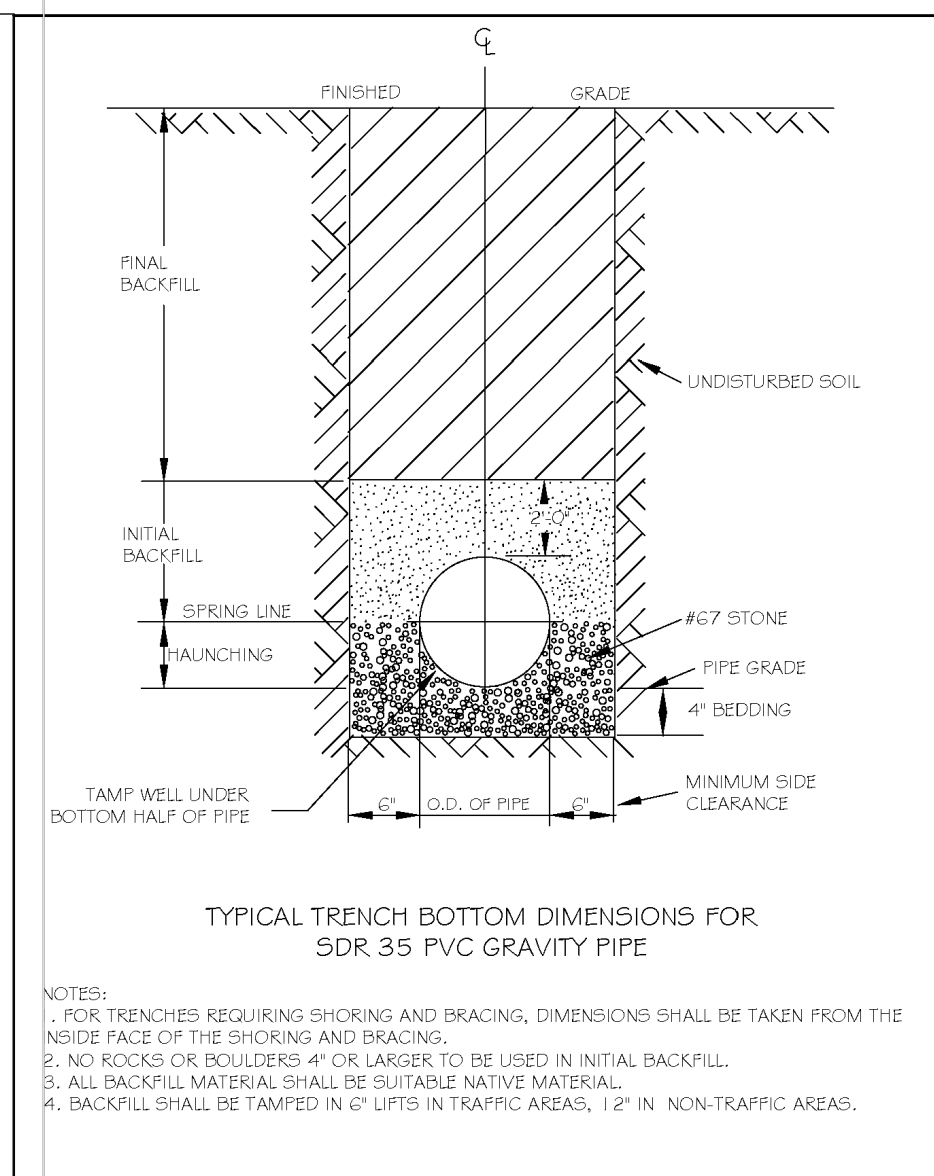
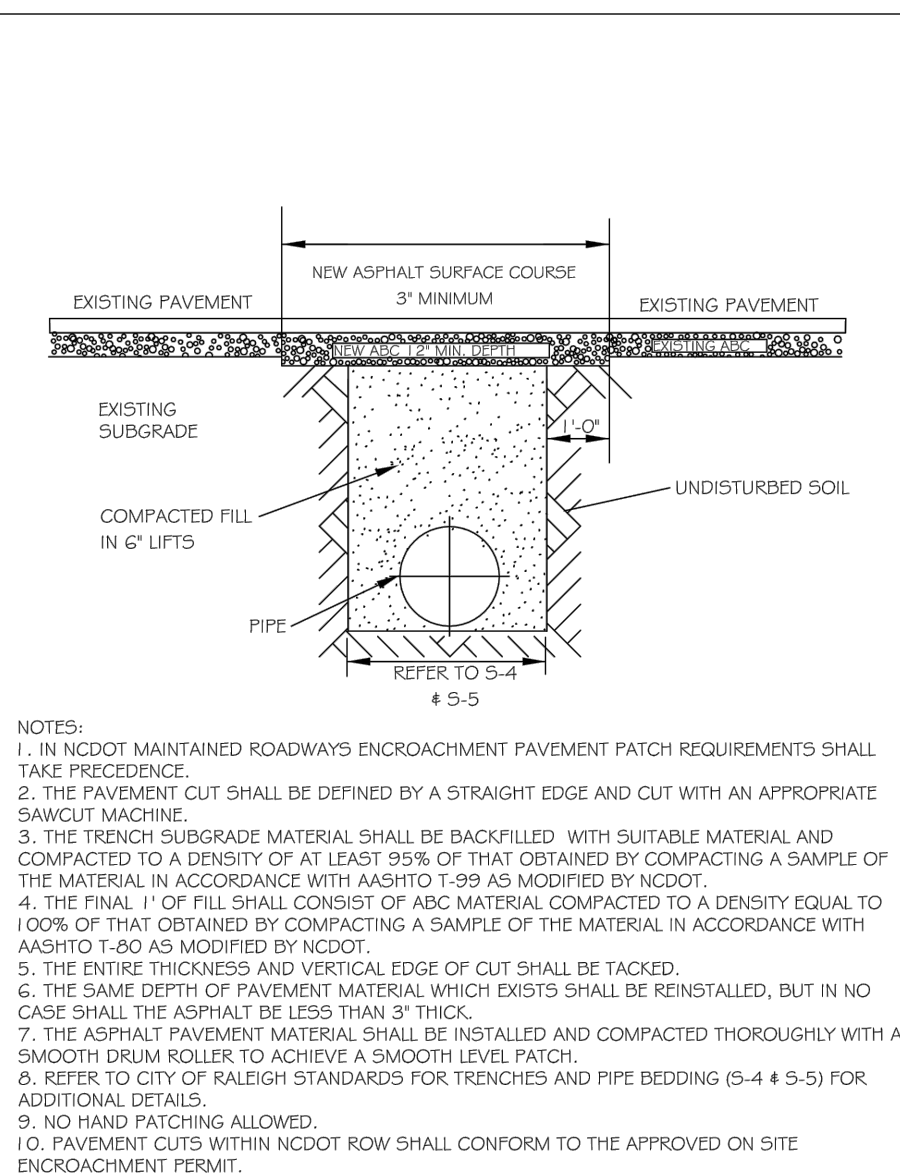
Revision table with columns for revision number, date, description, and reviewer. Includes details for valve box, water meter, and fire hydrant.

Site Permitting Approval section. Includes approval text from the City of Raleigh, Town of Knightdale, and Town of Zebulon. Includes a signature block for the Town Engineer and Administrator, dated 10/26/21. Includes a professional seal for Mary D. Bizell, Engineer, North Carolina, No. 036908.



BASS, NIXON & KENNEDY, INC. CONSULTING ENGINEERS 6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607 TELEPHONE: (919) 851-4422 FAX: (919) 851-8966 CERTIFICATION NUMBER: NCBELS (C-0110); NCBOLA (C-0267)

Table with columns for revision number, date, description, and reviewer. Includes details for valve box, water meter, and fire hydrant.



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD ASPHALT PAVEMENT PATCH DETAIL					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-3		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	

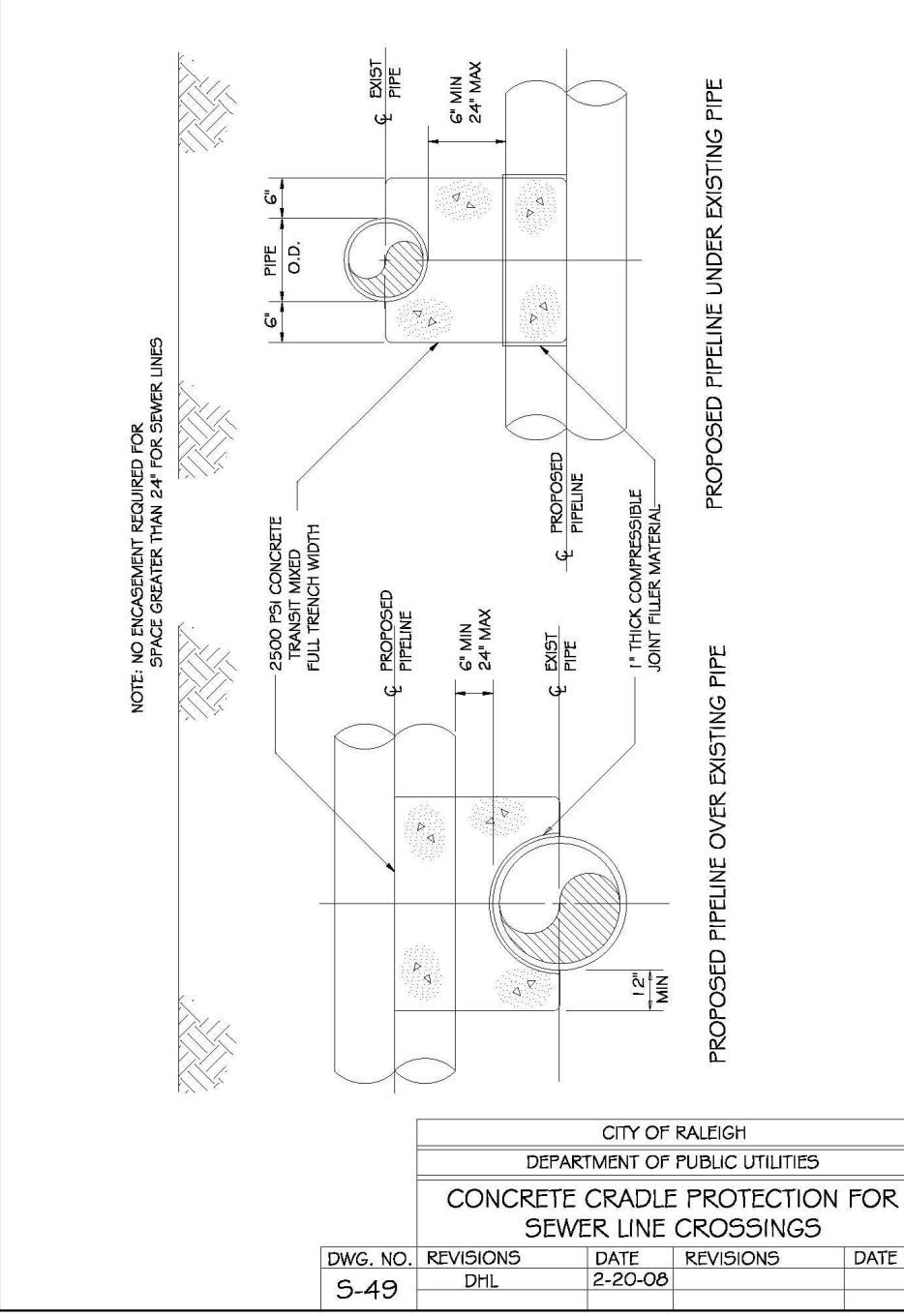
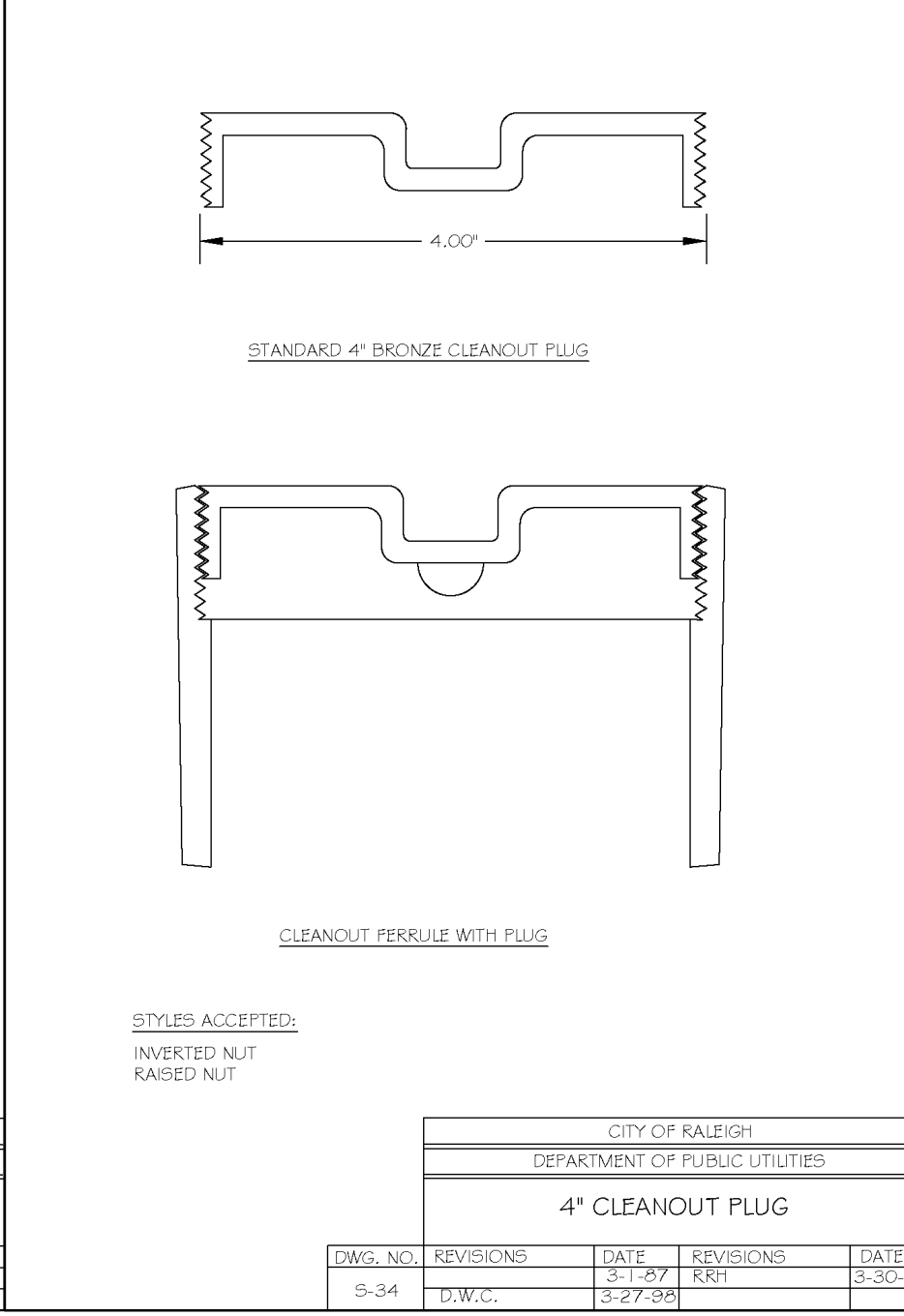
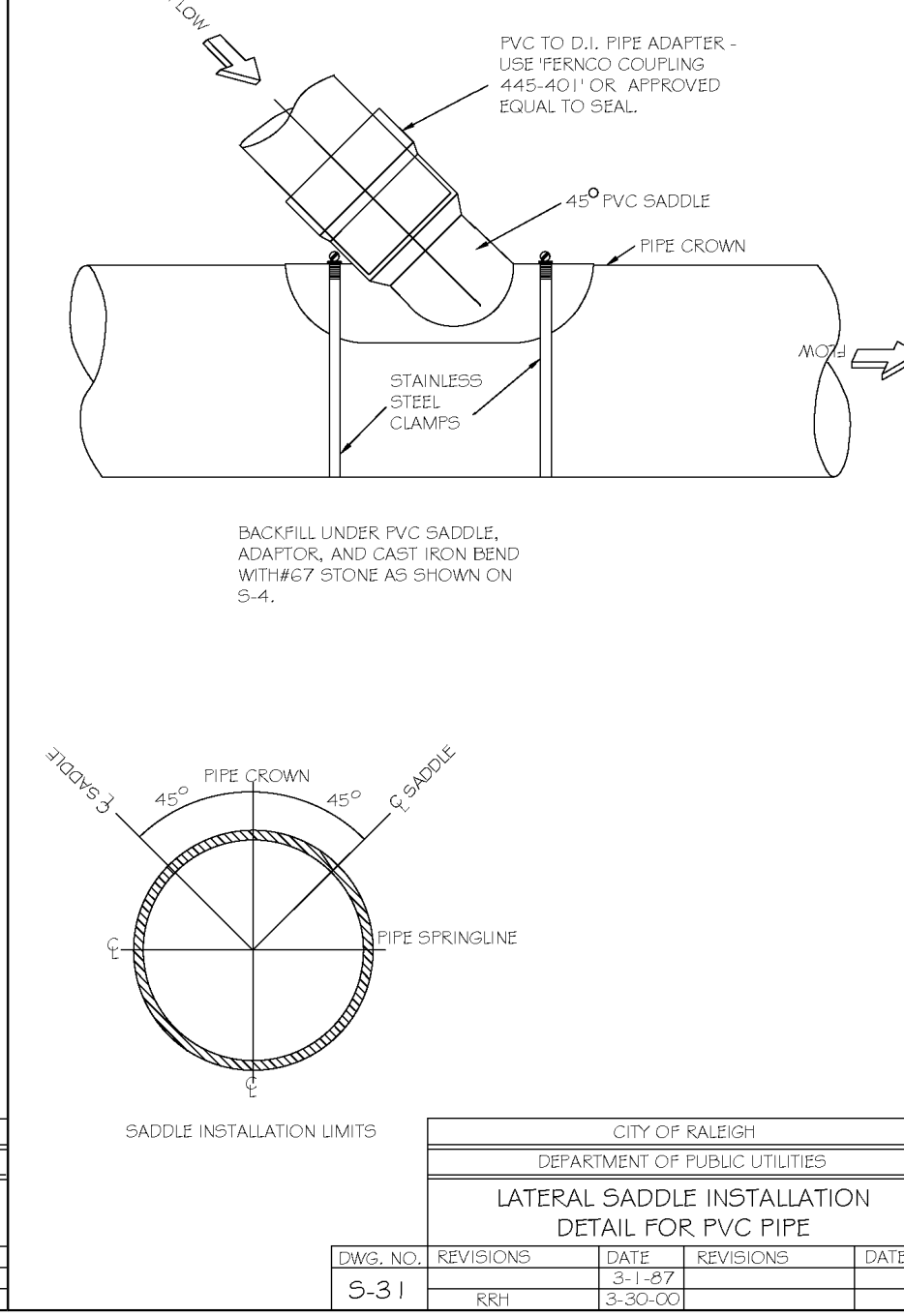
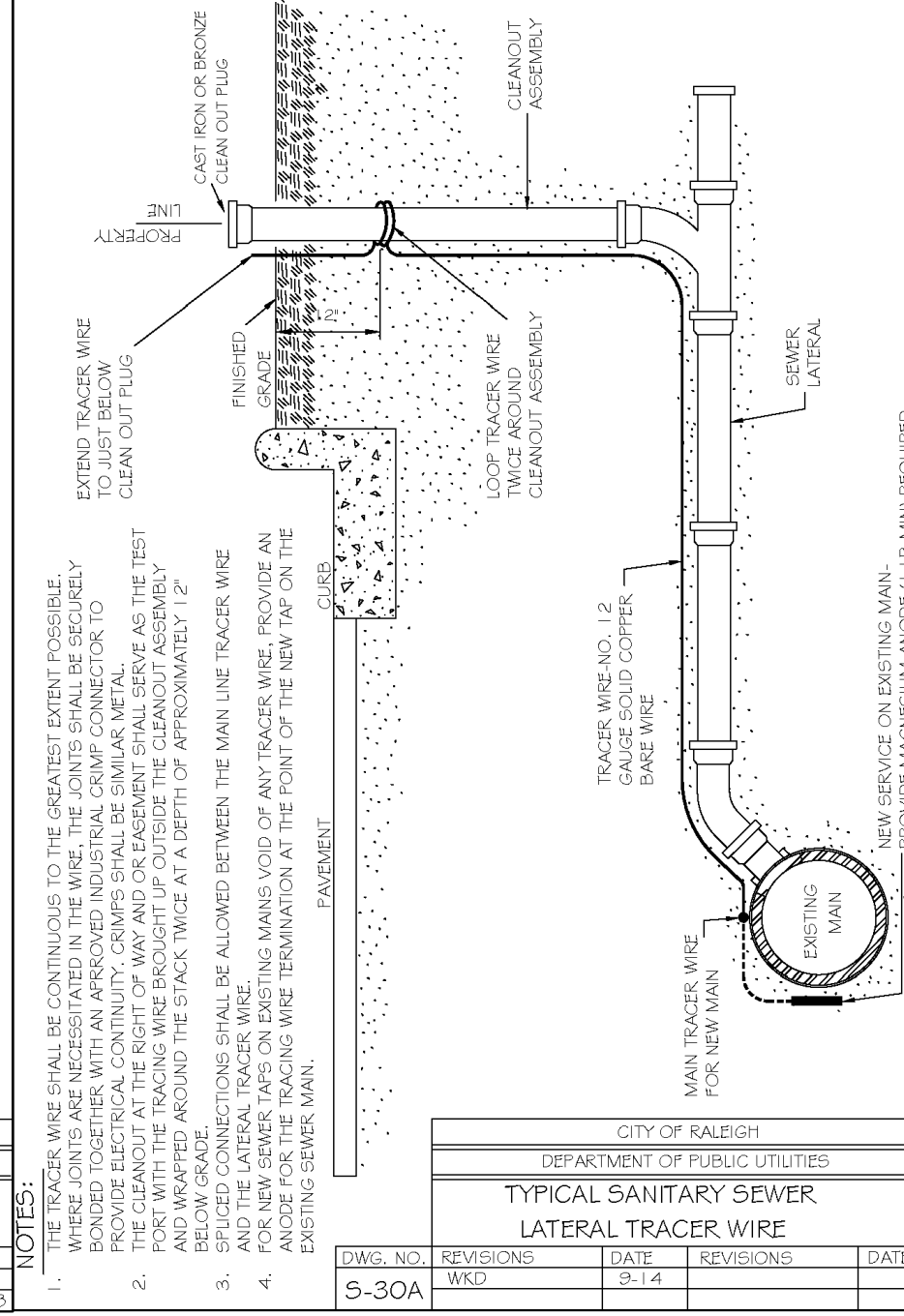
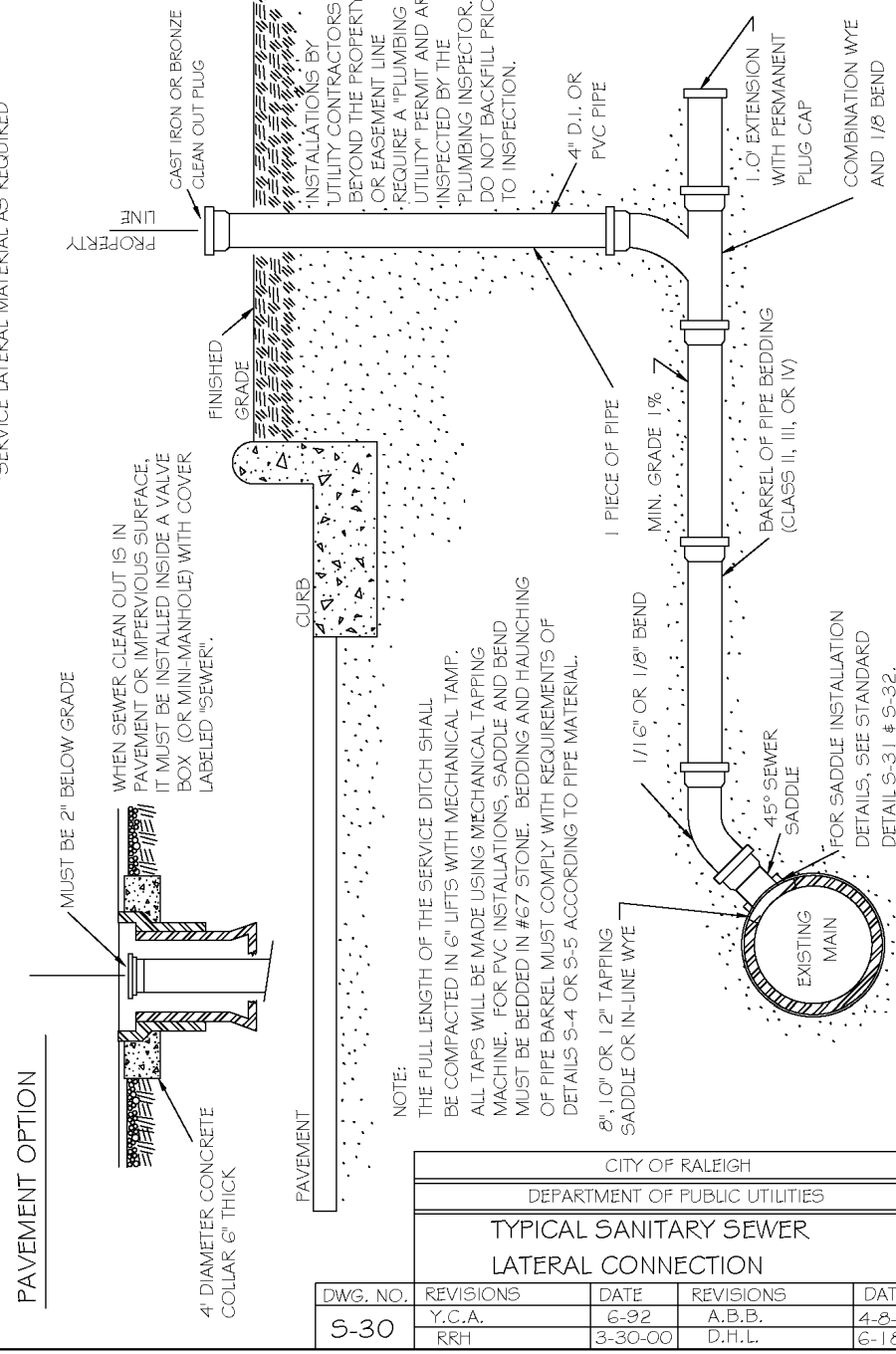
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES TRENCH BOTTOM DIMENSIONS AND BACKFILLS REQUIREMENTS FOR PVC GRAVITY SEWER MAIN					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-5		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD PRECAST SANITARY SEWER MANHOLE					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-20		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD MANHOLE INSTALLATION OVER EXISTING SEWER MAIN					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-22A		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD MANHOLE INSTALLATION OVER EXISTING SEWER MAIN					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-22		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD SUP RESISTANT MANHOLE STEP DETAIL					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-2D		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES TYPICAL SANITARY SEWER LATERAL CONNECTION					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-30		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES TYPICAL SANITARY SEWER LATERAL TRACER WIRE					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-30A		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES LATERAL SADDLE INSTALLATION DETAIL FOR PVC PIPE					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-31		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES 4\"/>					
5-34		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES CONCRETE CRADLE PROTECTION FOR SEWER LINE CROSSINGS					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
5-49		11-29-09	A.B.B.	4-13-04	
		3-30-00	T.P.S.	10-6-10	



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 851-4422 FAX: (919) 851-8866
CERTIFICATION NUMBERS: NCBELS (C-0110); NCSOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
1	07-08-2020	Tak CD 1ST REVIEW COMMENTS	MRM
2	06-20-2020	Tak CD 2ND REVIEW COMMENTS	MRM
3	10-05-2020	Tak CD 3RD REVIEW COMMENTS	MRM
4	12-15-2020	Tak CD 4TH REVIEW COMMENTS	MRM
5	08-26-2021	Tak CD 5TH REVIEW COMMENTS	MRM

SCALE: N.T.S. CHK BY: MDB

**FLOWERS PLACE
SUBDIVISION**
0 KELLEY MEADOWS ROAD
TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

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-4609X**

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-3700**

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection 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 # - - -

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
Raleigh Water Review Officer

a. **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.

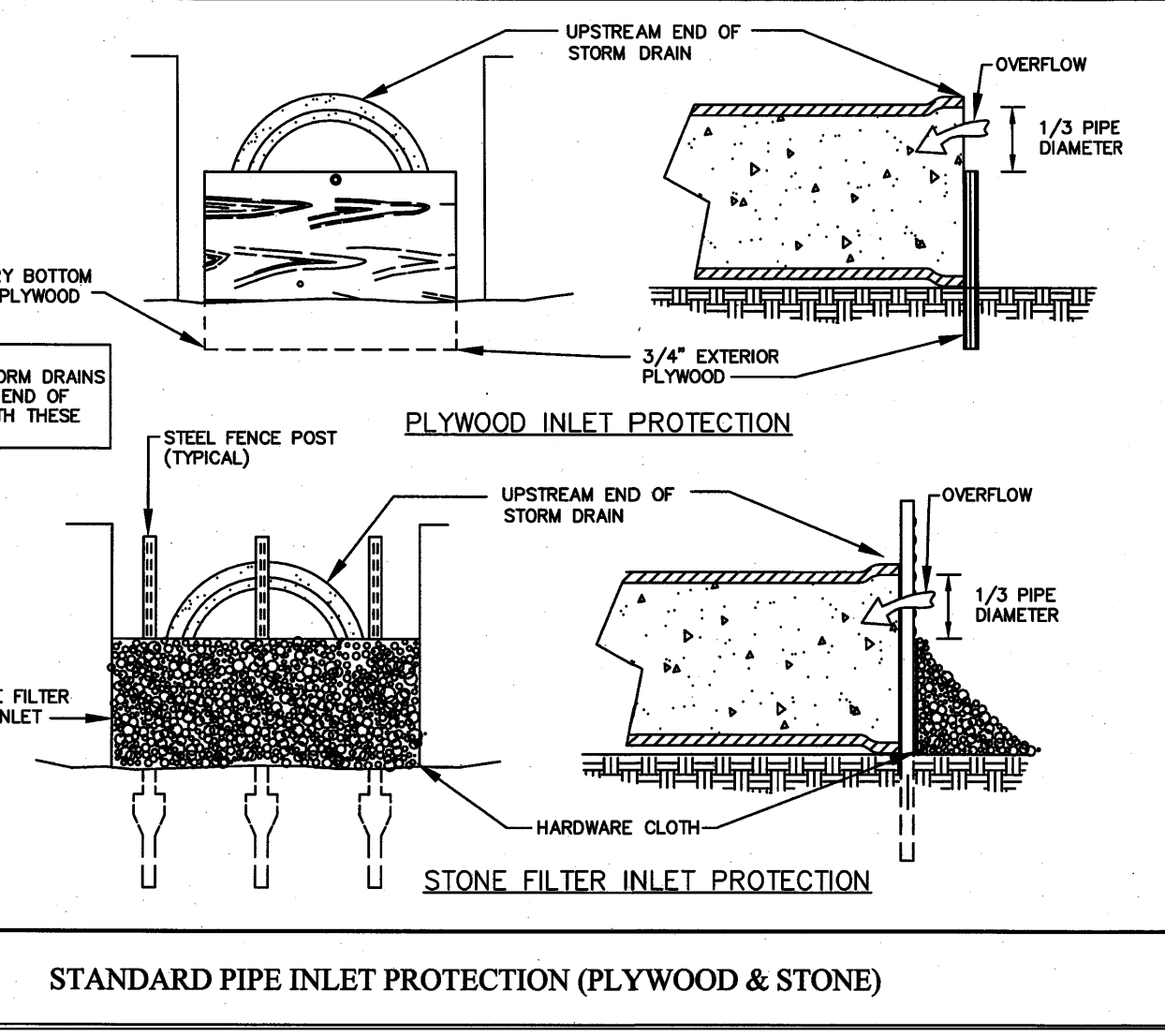
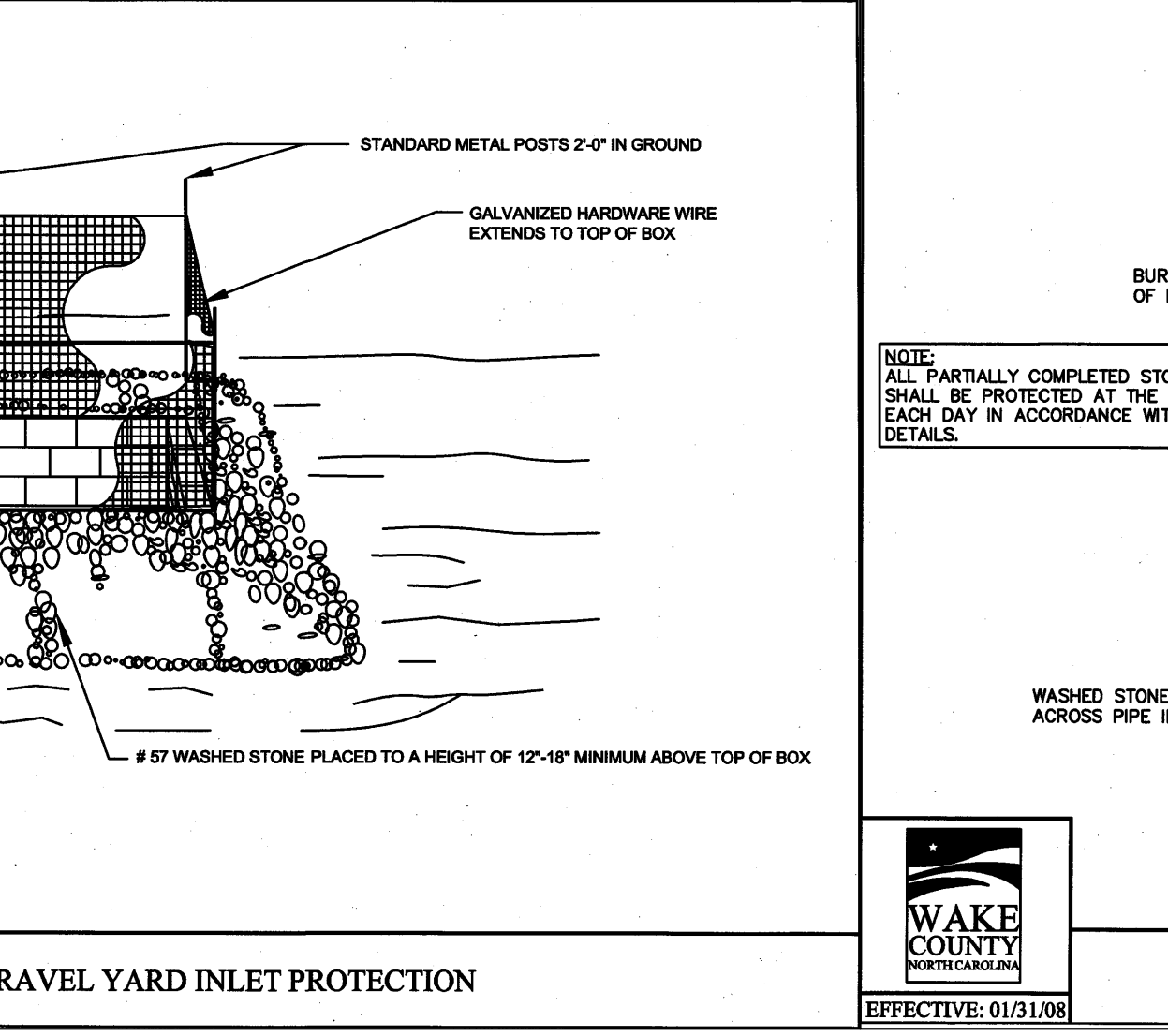
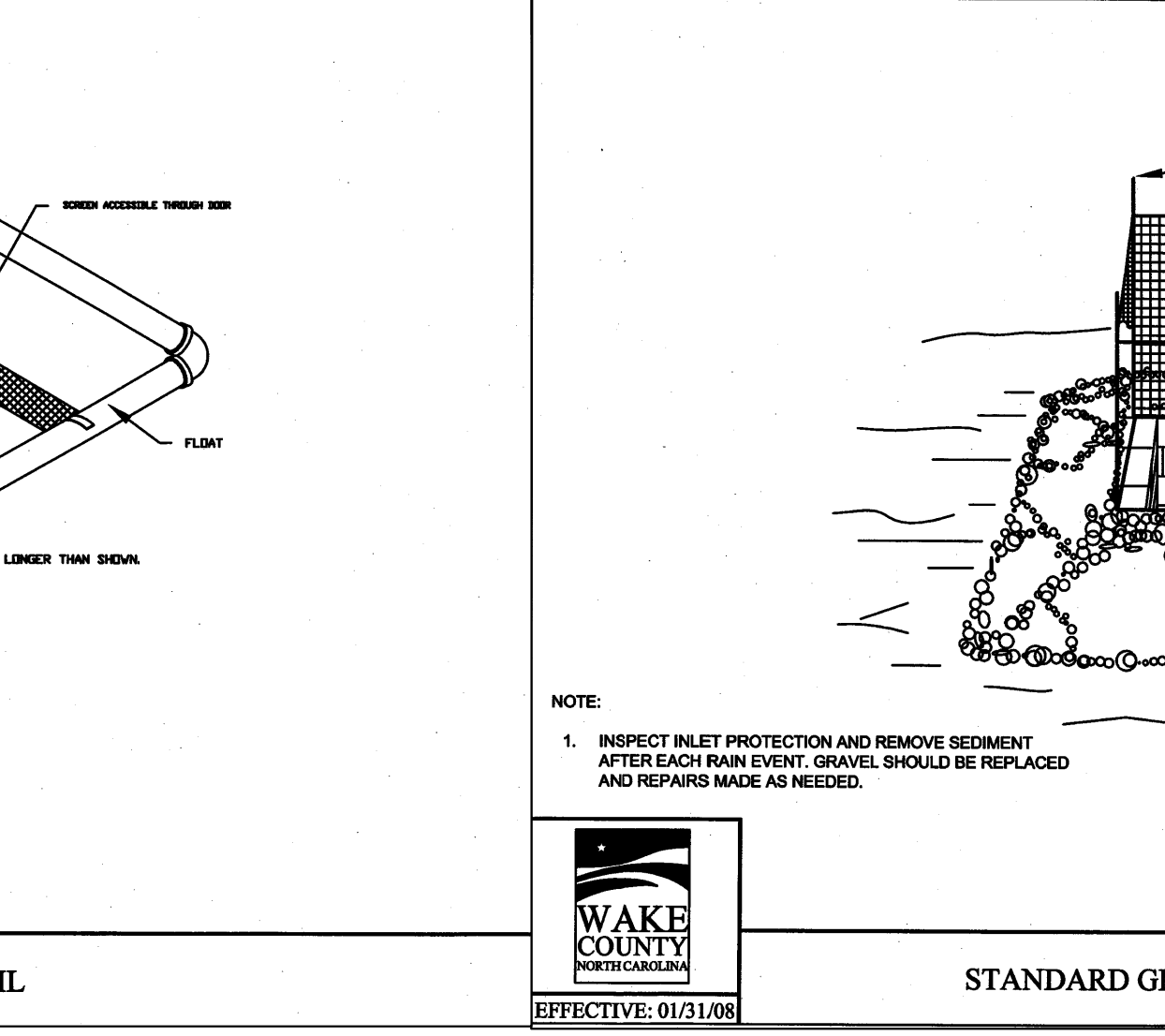
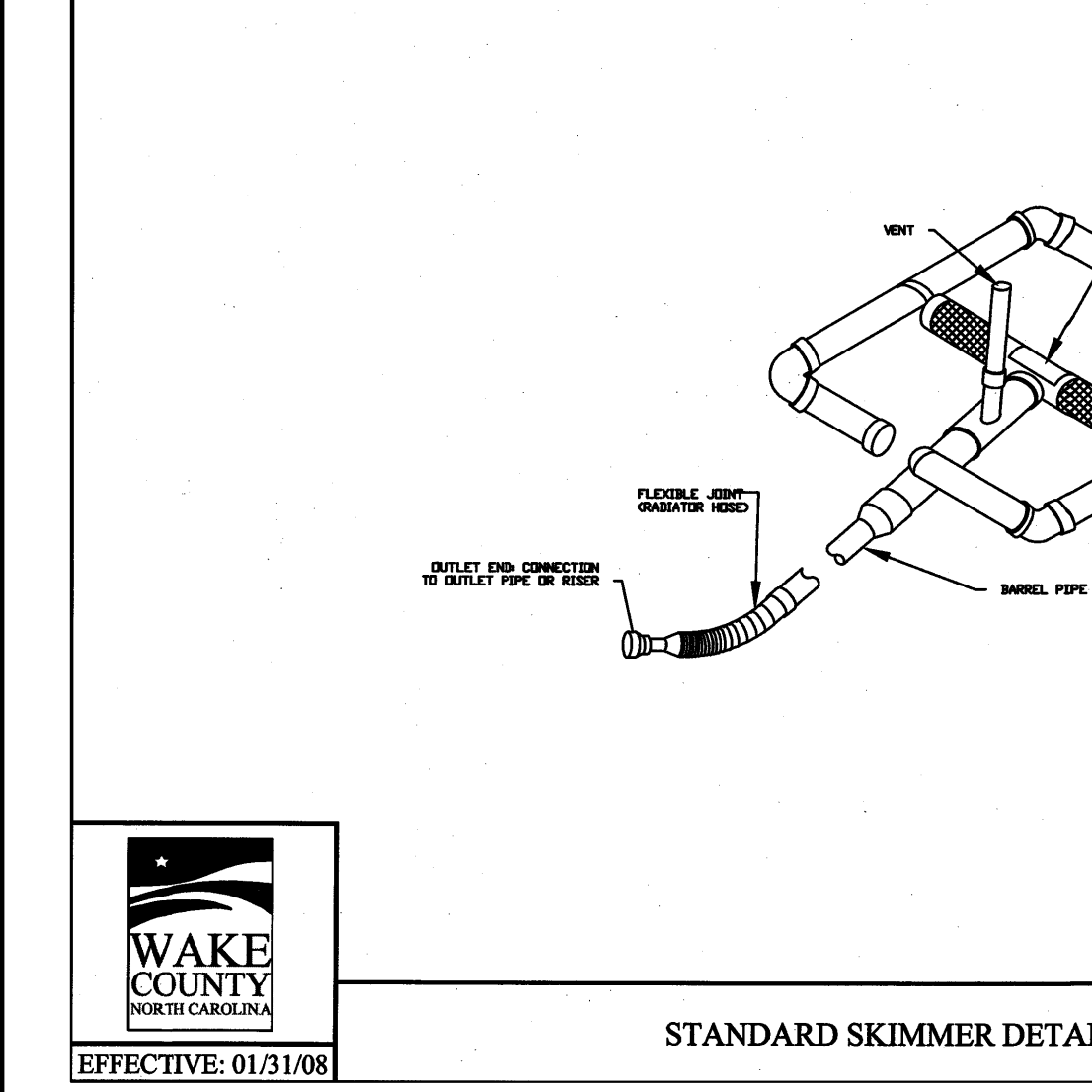
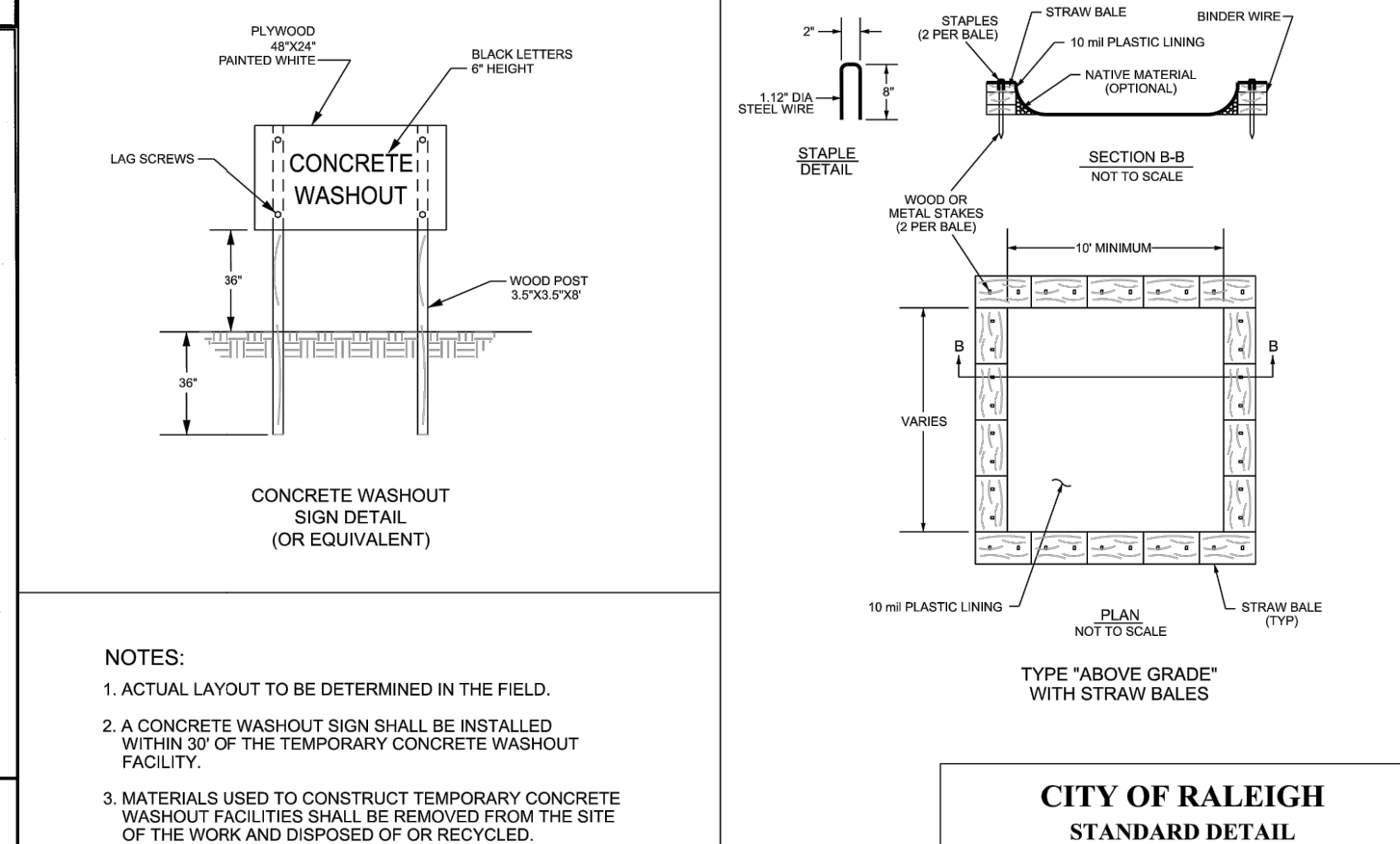
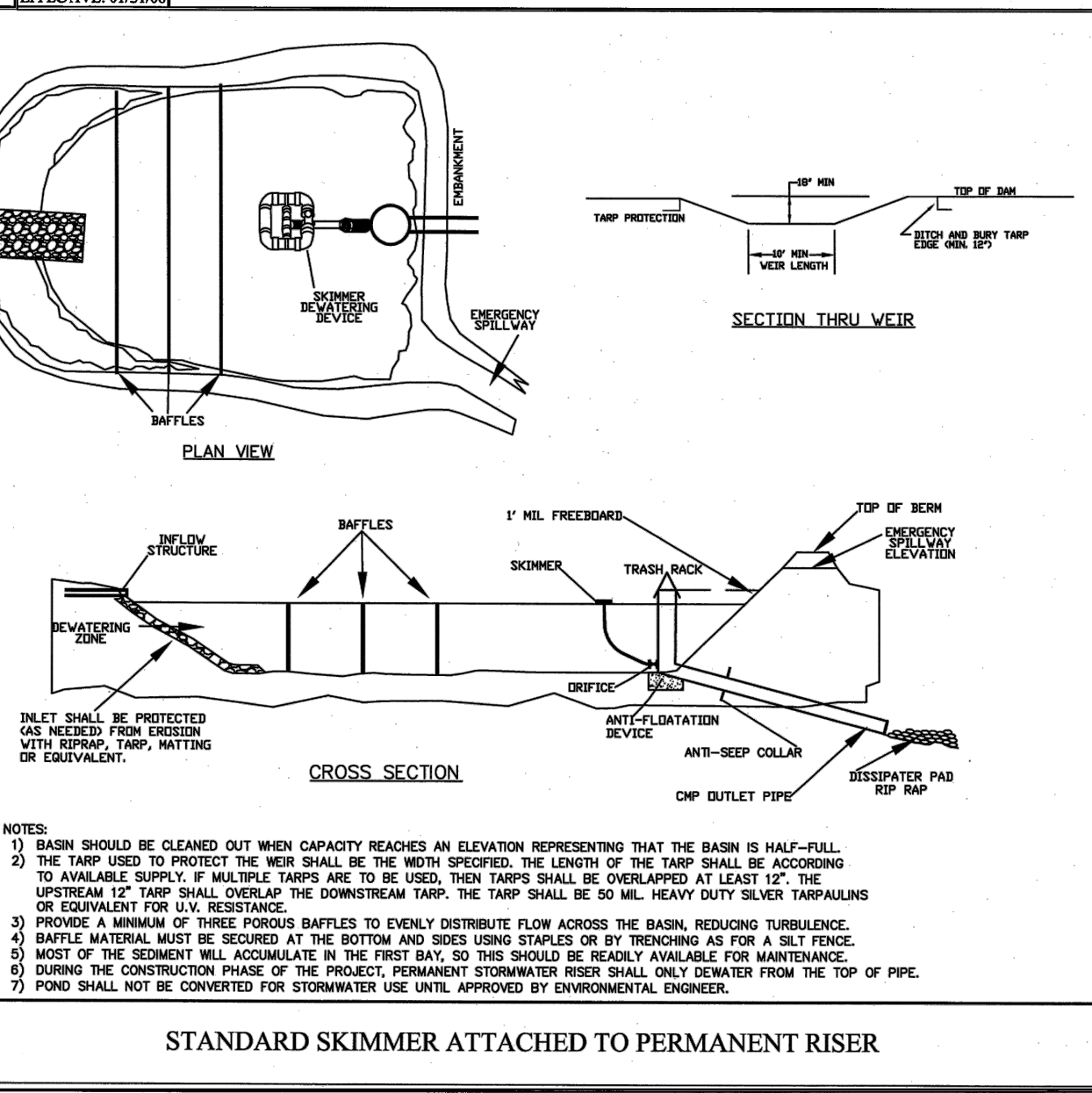
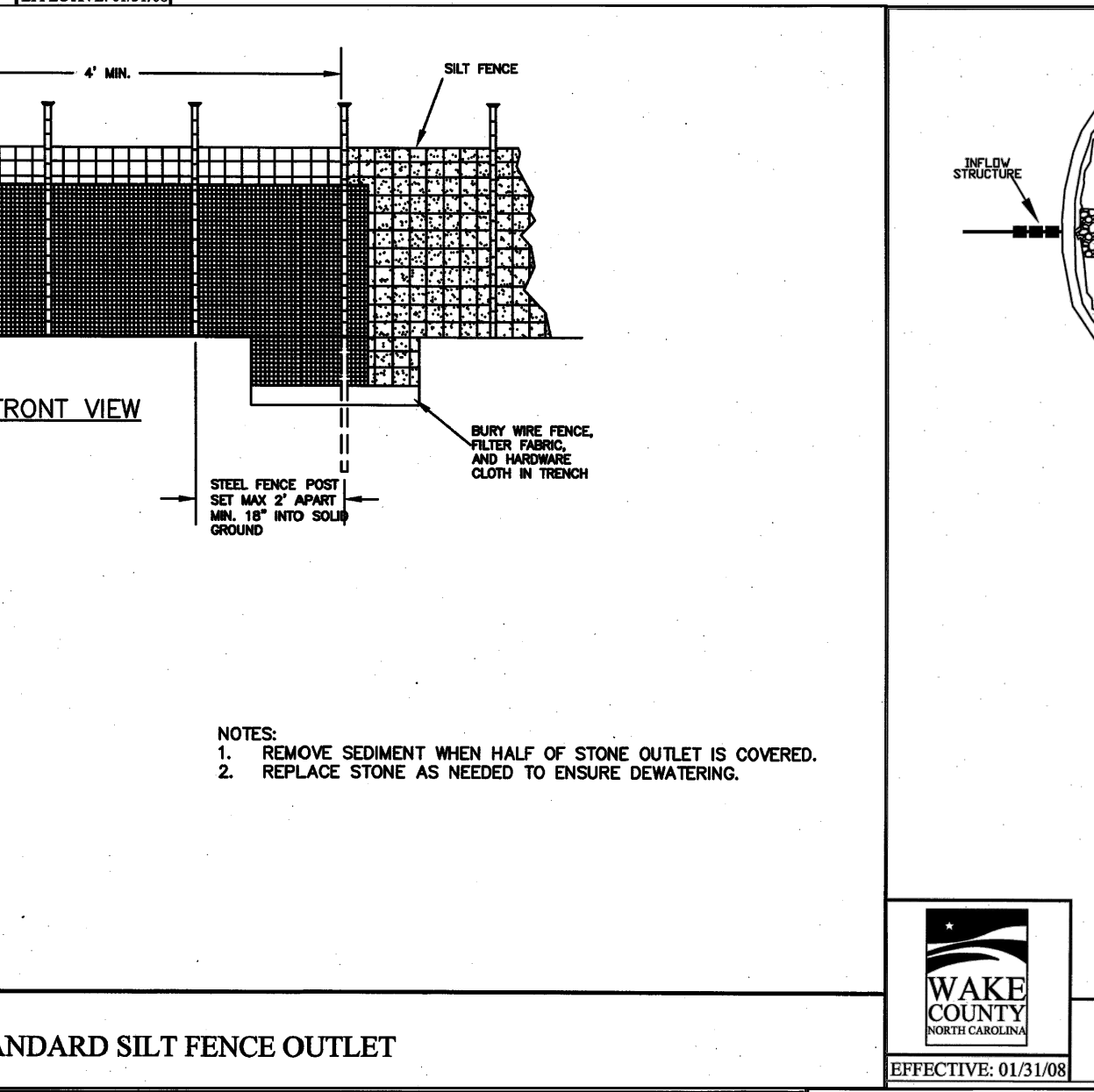
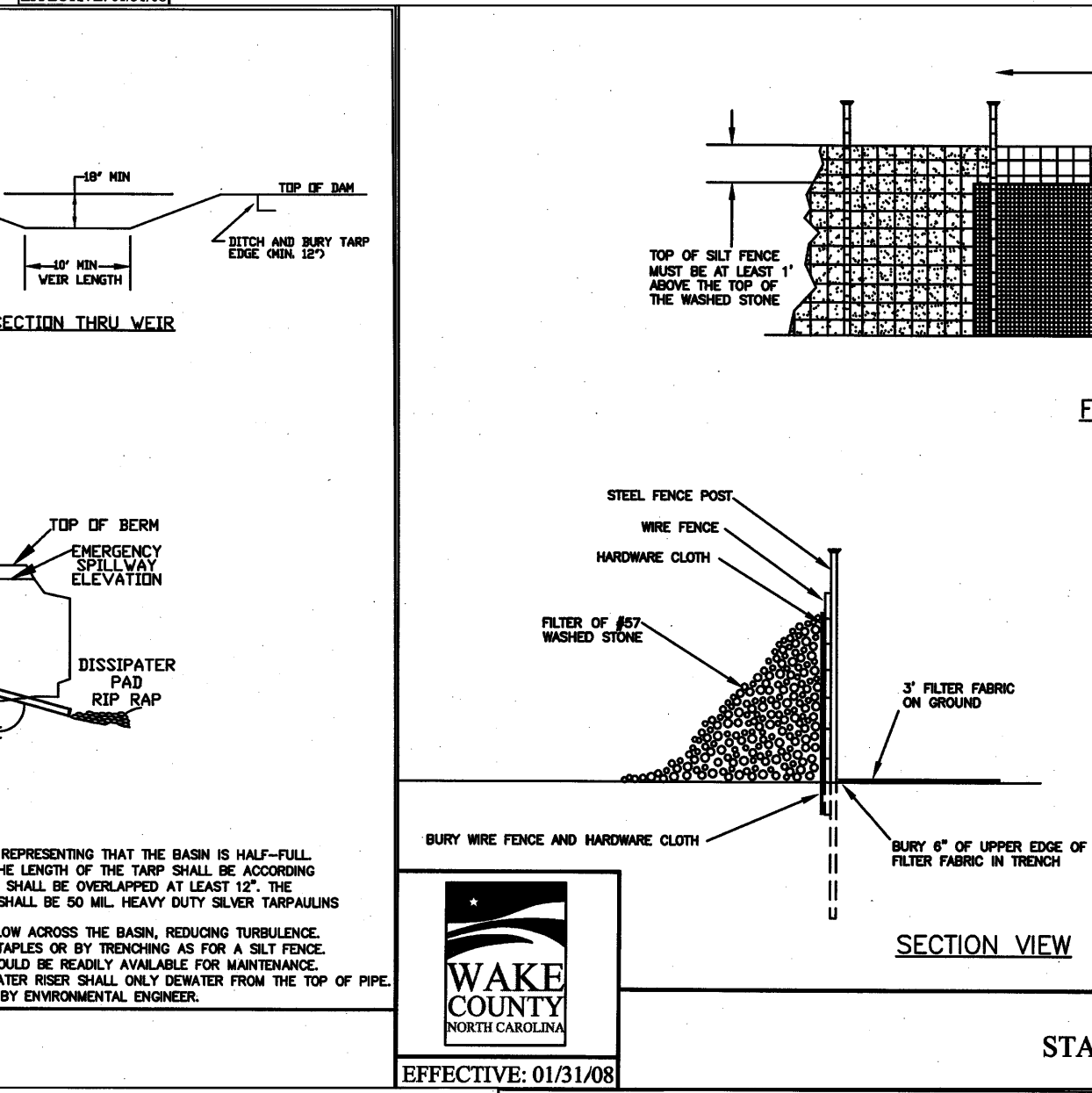
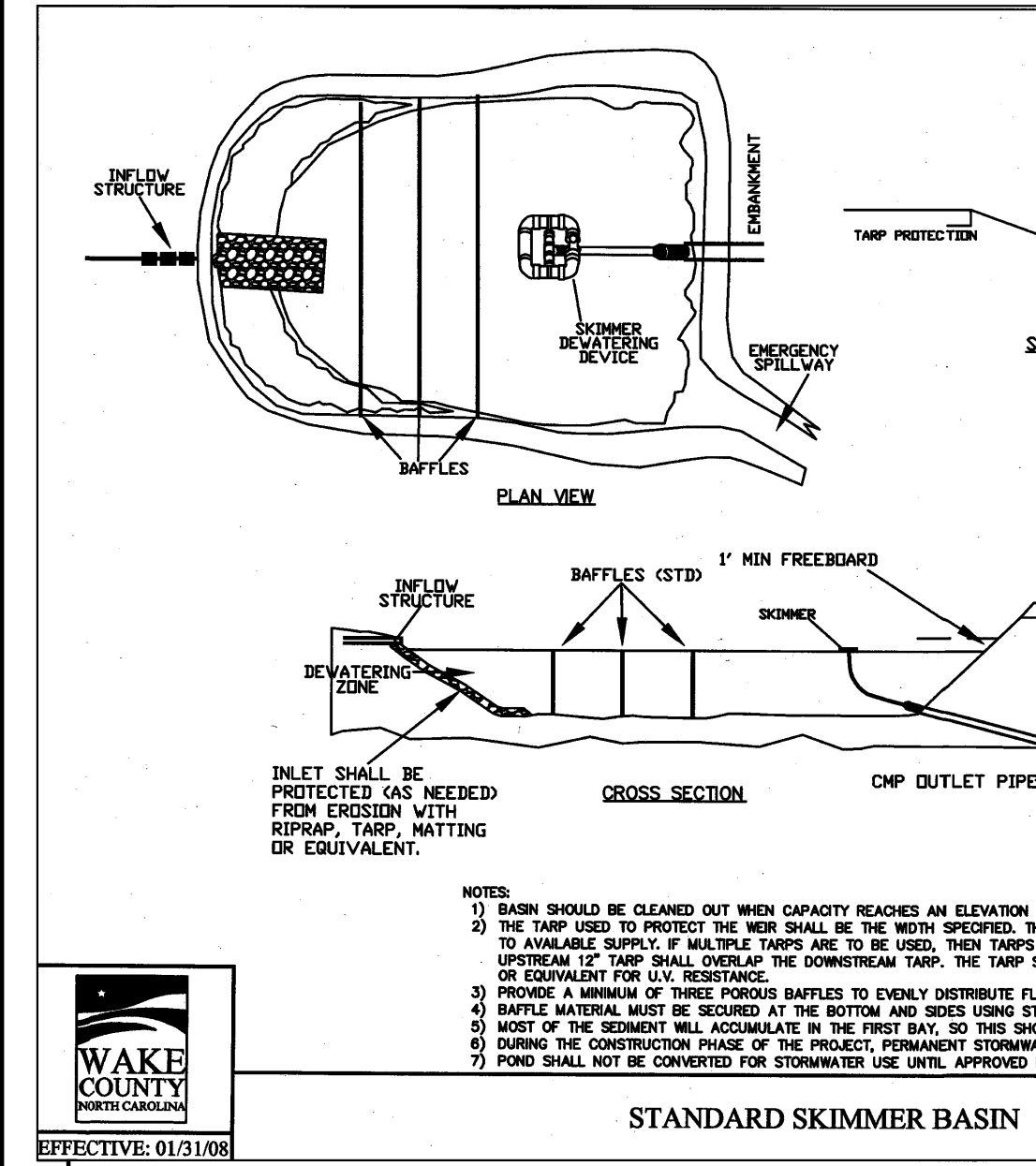
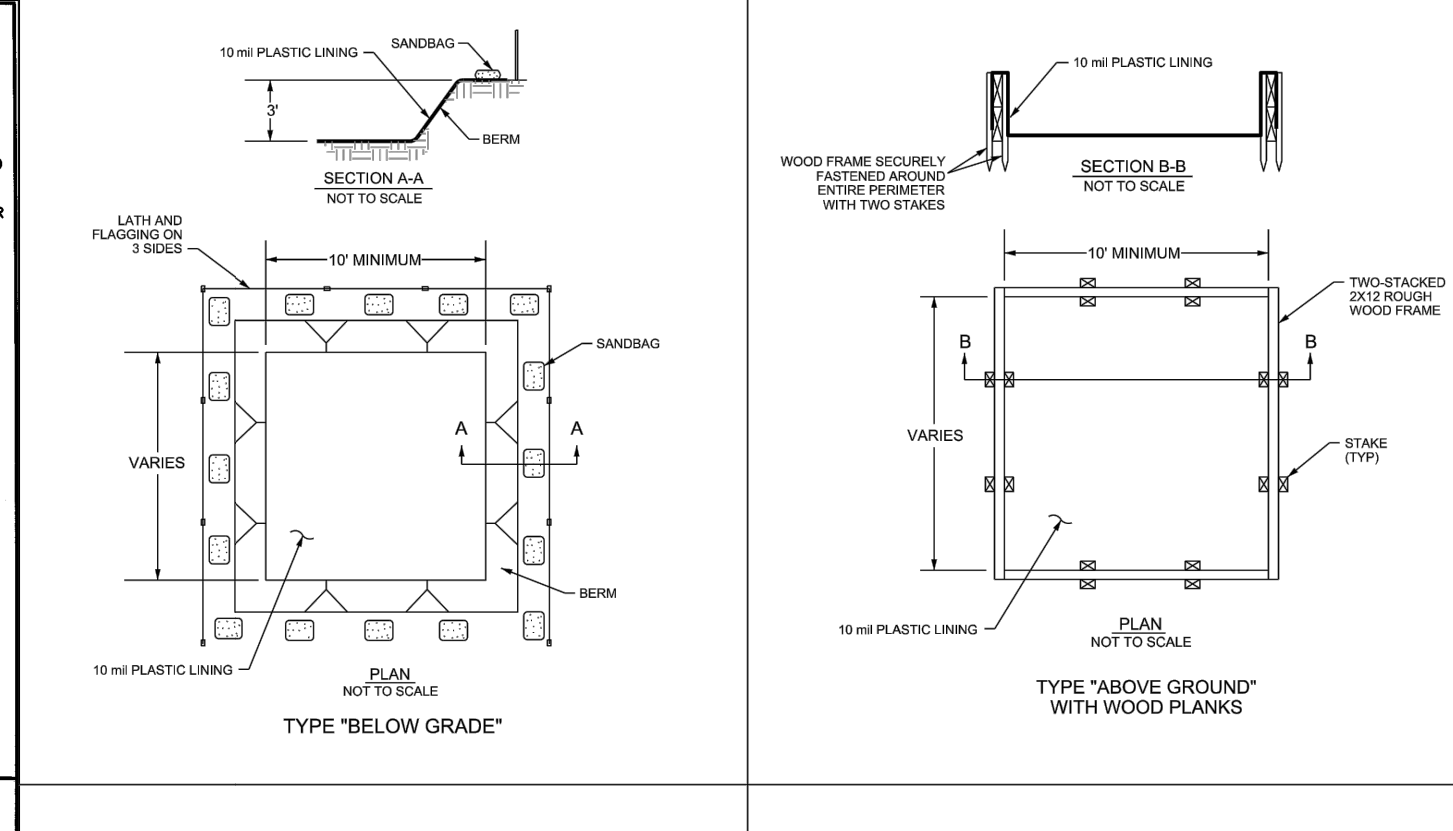
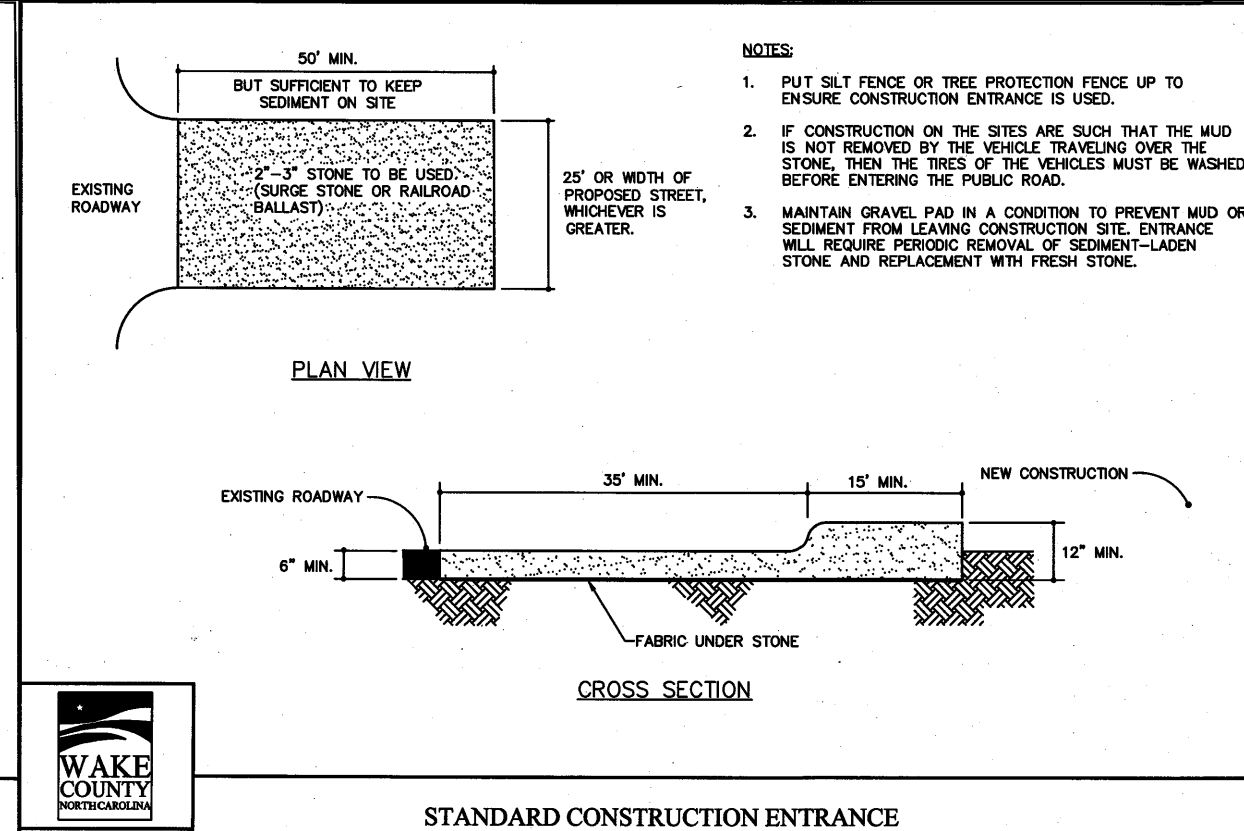
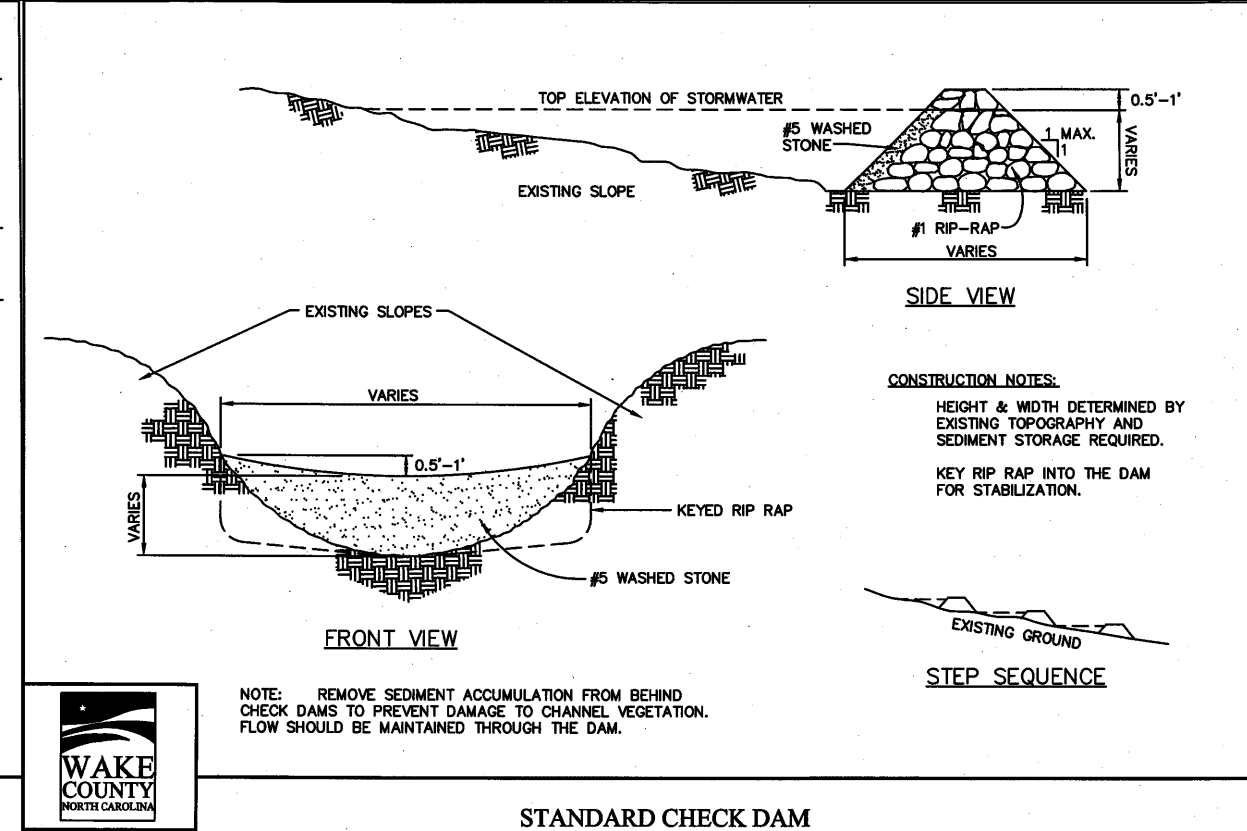
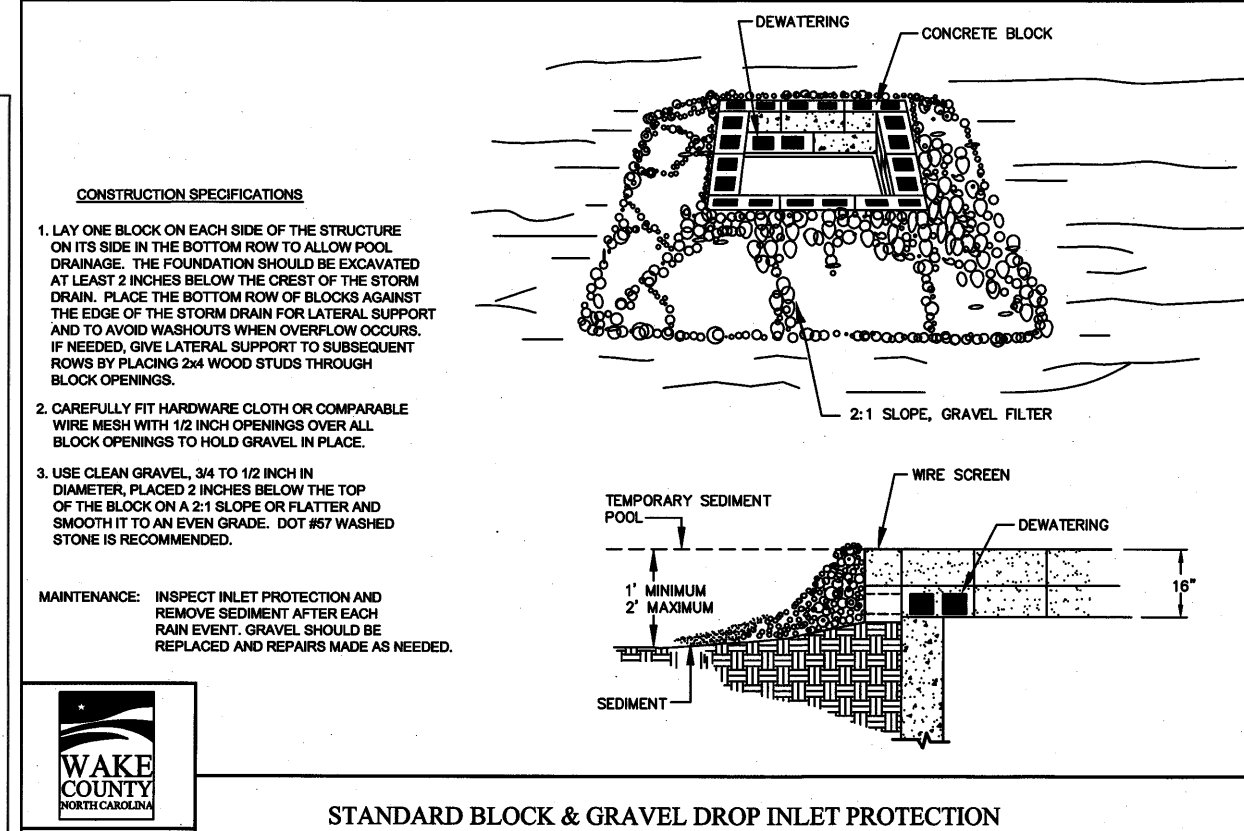
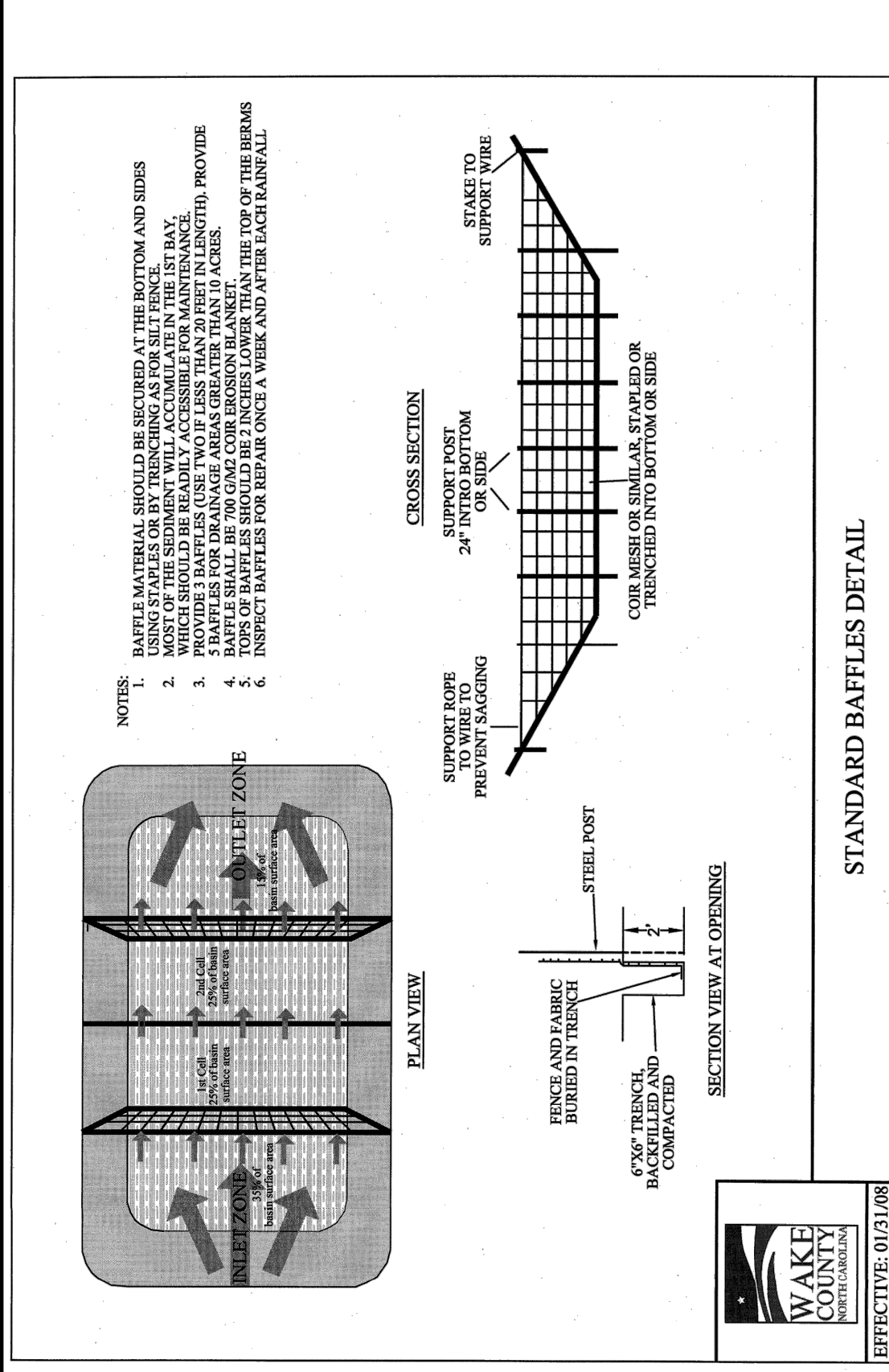
By: _____ Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: **10/26/21**
Administrator



10/15/21



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 871-4422 FAX: (919) 871-8868
CERTIFICATION NUMBERS: NCBELS (C-0110); NCSOLA (C-0267)

REVISIONS	DATE	DESCRIPTION	BY
5	08-26-2021	TOK CD 3TH REVIEW COMMENTS	MFR
4	12-15-2020	TOK CD 3TH REVIEW COMMENTS	MFR
3	10-05-2020	TOK CD 3RD REVIEW COMMENTS	MFR
2	06-26-2020	TOK CD 2ND REVIEW COMMENTS	MFR
1	07-08-2020	TOK CD 1ST REVIEW COMMENTS	MFR

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

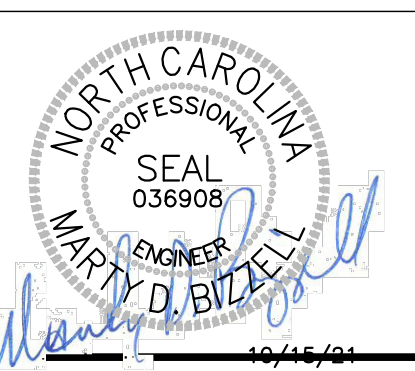
NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

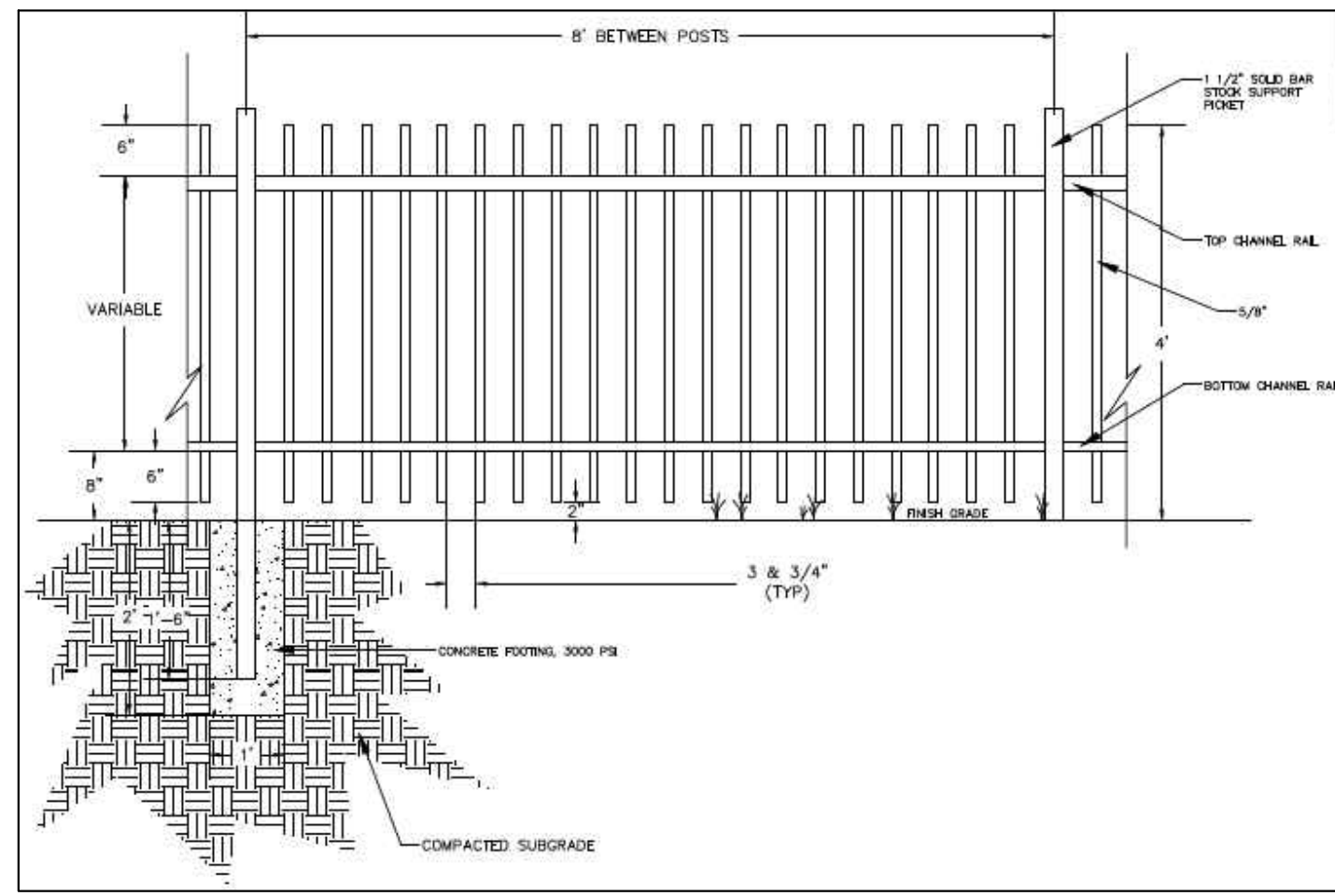
a. Town Certification. This design has been reviewed by the Engineer for the Town of Knightdale, and to the best of my knowledge and belief, it conforms to the requirements established in the Standard Specifications of the Town of Knightdale.

By: _____ Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

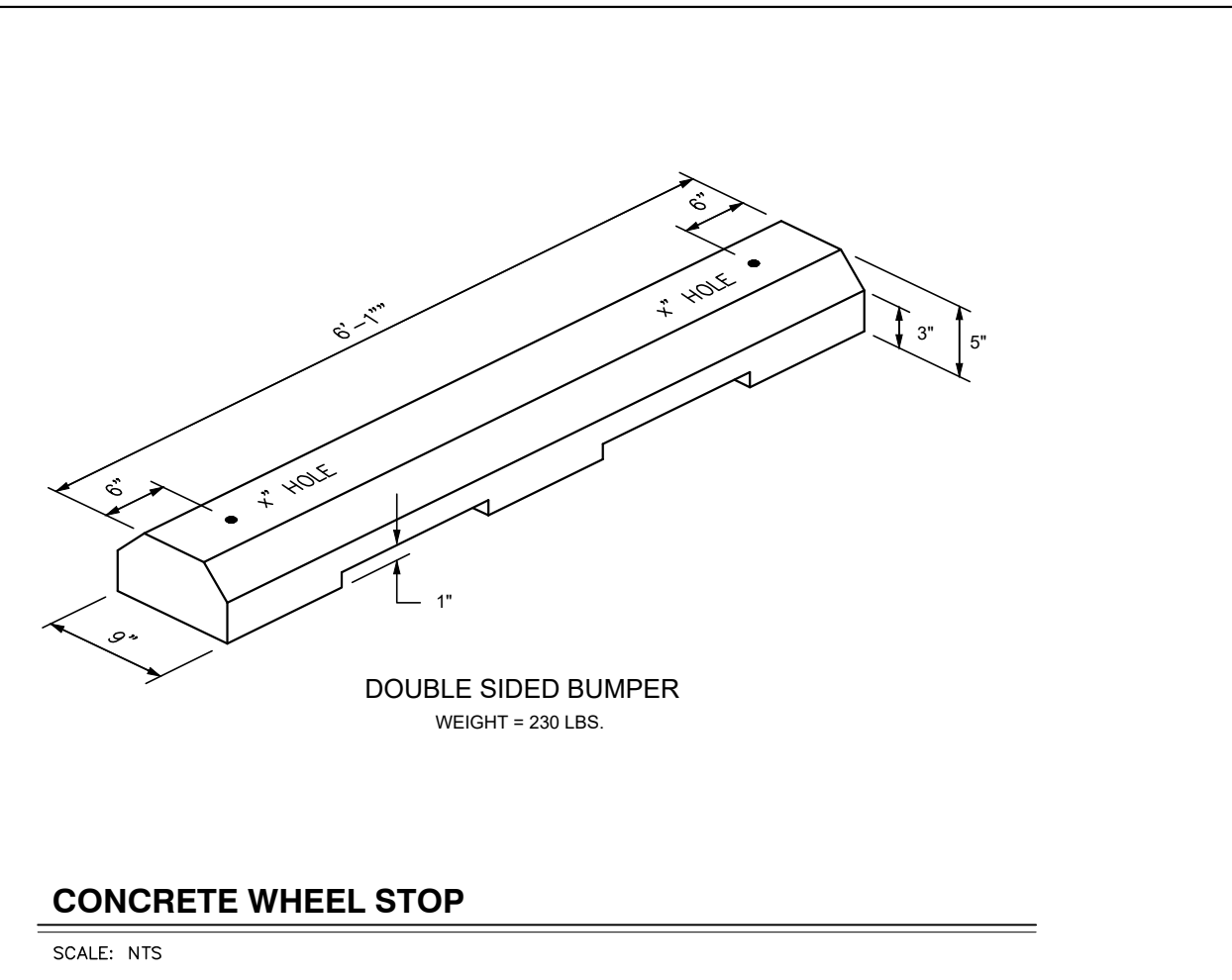
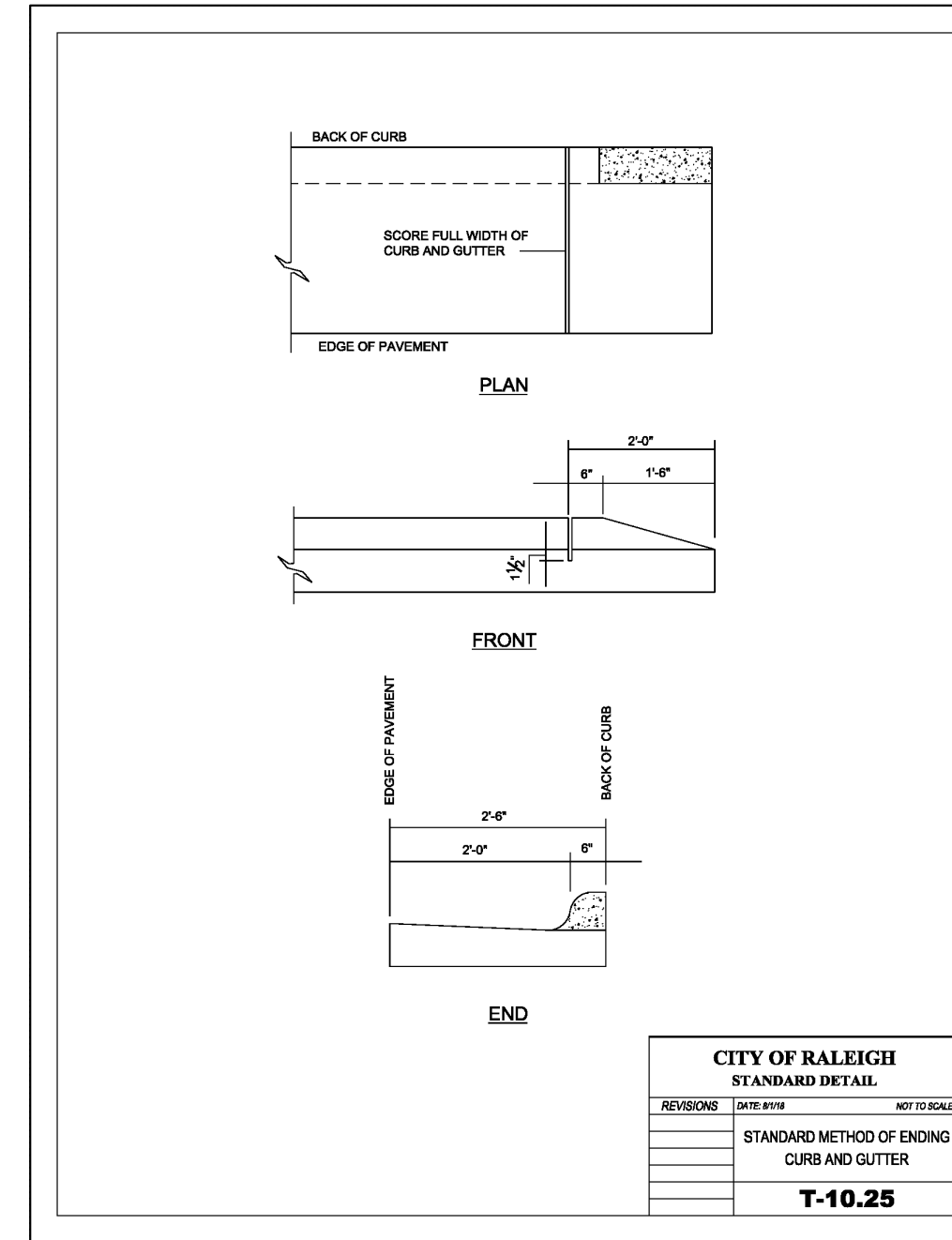
By: _____ Date: 10/26/21
Administrator





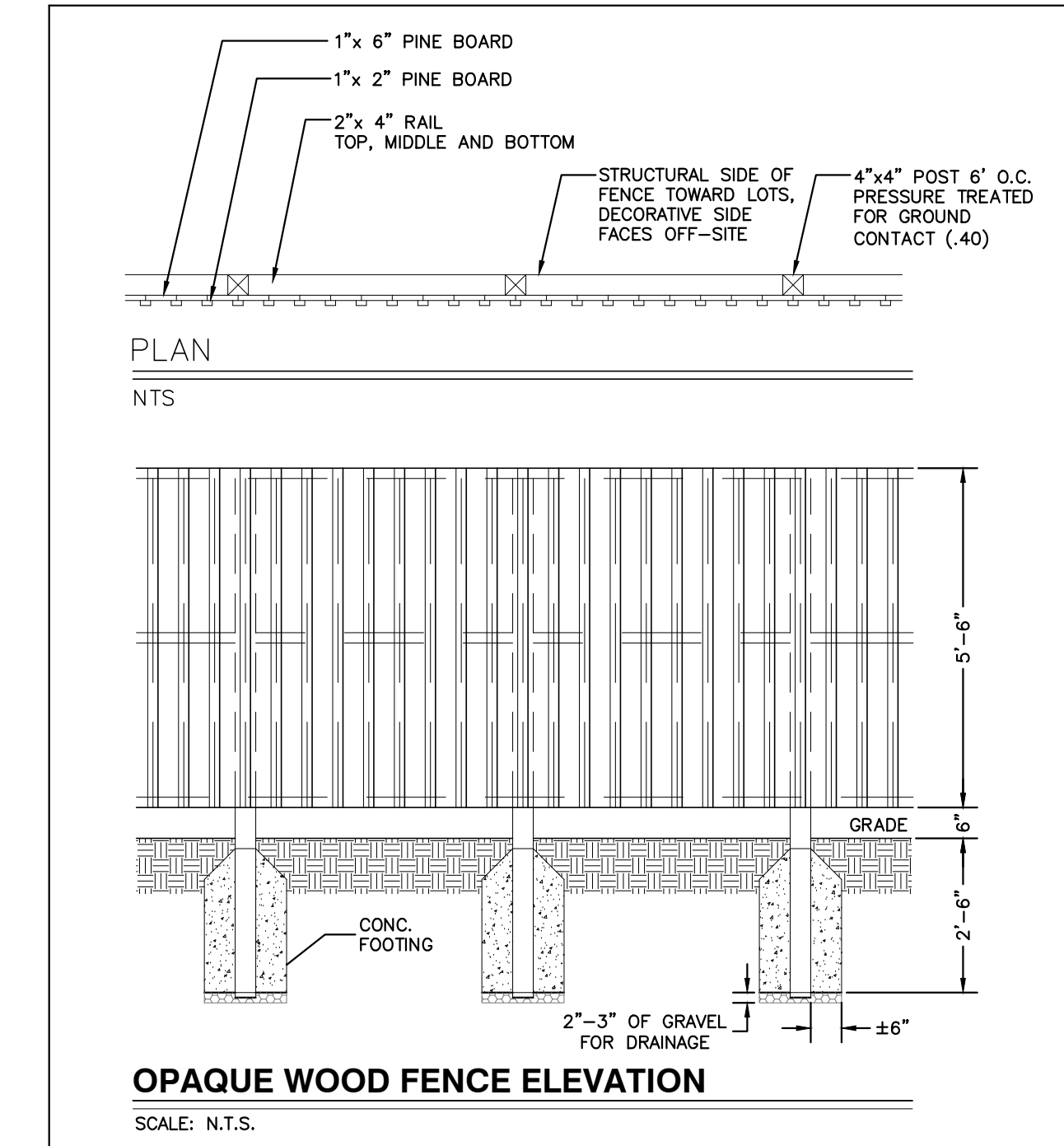
4' ALUMINUM FENCE (BLACK)

SCALE: N.T.S.



CONCRETE WHEEL STOP


SCALE: N.T.S.



OPAQUE WOOD FENCE ELEVATION

SCALE: N.T.S.

9/22/2020 384 Sq. Premium Park Grill - The Park Catalog



The Park Catalog
220 Congress Park Drive, Suite 215
Delray Beach FL 33445
5616207878
sales@theparkcatalog.com



384 Sq. Premium Park Grill
[Be the first to review this product](https://www.theparkcatalog.com/review/product/list/id/2094785/category/50/#:form)
(<https://www.theparkcatalog.com/review/product/list/id/2094785/category/50/#:form>)

\$237.00

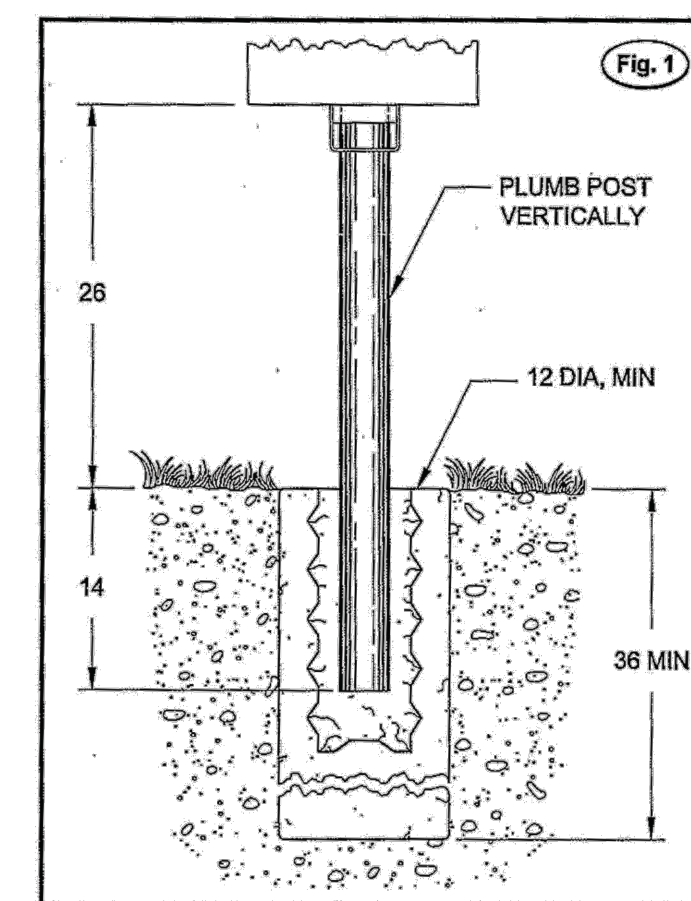
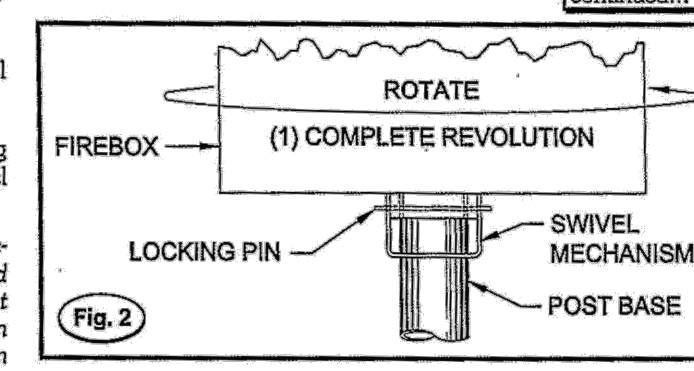
3350 NW Boca Raton Blvd.
Suite B2
Boca Raton, FL 33431
800-699-3503
www.theparkcatalog.com



Destination: _____
Model #: _____
Order #: _____

GRILL POST BASE INSTALLATION, GRILL LOCKING, and MAINTENANCE INSTRUCTIONS

- Use a post hole digger to make a hole a minimum of 12" dia. x 36" deep. Fill the hole with concrete (see Fig. 1).
NOTE: Local soil conditions may require a larger footing. Check local codes. This footing size applies to Models A-20, B-24, C-26, H-16, J-20, K-20, N-20, NG-20, NS-20, N-24, NG-24, N2-2032, Q-20, QG-20, Q-24, and QG-24. Concrete footing recommendations for Models D2-48, L-1500, P-1000, and Q3-2460 are on page 2.
- Take the end of the Post Base that has 2 holes in it and place the opposite end into the concrete. Install the Post 26" above ground level and plumb vertically (see Fig. 1). Allow the concrete to cure before installing the Grill on the Post.
- Install the Grill on the Post Base. Line up the holes in the Grill Swivel Mechanism with the holes in the Post Base (see Fig. 2).
- Insert the provided Locking Pin through the aligned holes leaving an equal length of pin protruding from each side of the Swivel Mechanism (see Fig. 2).
NOTE: Figs. 1 & 2 show a grill design without a reinforcement ring on the bottom of the grill box. Models A-20 and B-24 do have a reinforcement ring and it works best to insert the Locking Pin from the back side of the Grill. Pass the Pin under the ring and angle up slightly to the swivel hole. On Models C2-36 and N2-2032 the Pin is inserted through the middle hole of (3) holes on one side of the reinforcement ring and then into the swivel hole. On Model Q3-2460 the Pin is inserted through an access hole on the back side of the reinforcement ring and then through the Swivel hole. Models D2-48, L-1500, and P-1000 have reinforcement rings but there is ample space between it and the swivel mechanism to insert the Pin directly into the swivel hole.

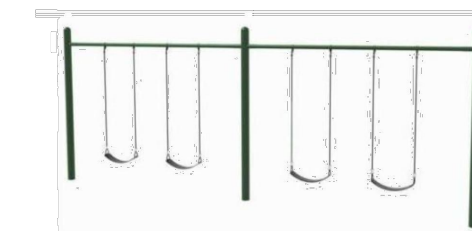


DO NOT DISCARD!

GRILL LOCKING PIN & ASSEMBLY, INSTALLATION and MAINTENANCE INSTRUCTIONS ENCLOSED

Playground Equipment List for Flowers Place, Knightdale

Swing Set



Vendor: Sports Play- 4 seats, single posts
Durable 4.5" single posts (7 gauge pipe)
Top Rail is 2 3/8 in diameter (11 gauge pipe)
8" tall swing beam
Weight limit of 200 lbs. per swing

Bouncy Spring Animals/Truck



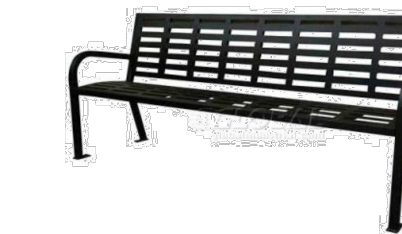
Vendor: PlaygroundEquipment.com
Space Required 13' 2" x 19' 11" (4,01m x 6,06m)

Free Standing Glide Slide (48-in deck)



Vendor: PlayWorld
Space Required 15' 2" x 24' 6" (4,61m x 7,48m)

Bench-48 inch steel



Vendor: Lasting Impressions

Picnic Table- 57 x 96" long



Vendor: Home Depot

All Weather PVC Cornhole Boards- set of 2 with bags



Vendor: All American Tailgate- Size: 48 x 24"

Playground Surface- Engineered wood chips for ADA accessibility @ \$4.00 per SF= 1800 SF



Vendor: Adventure Turf



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHABEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 851-4422 FAX: (919) 851-8866
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

MRM	DATE	DESCRIPTION	BY
5	08-26-2021	TOK CD 5TH REVIEW COMMENTS	MBD
4	12-15-2020	TOK CD 4TH REVIEW COMMENTS	MBD
3	10-02-2020	TOK CD 3RD REVIEW COMMENTS	MBD
2	06-26-2020	TOK CD 2ND REVIEW COMMENTS	MBD
1	07-08-2020	TOK CD 1ST REVIEW COMMENTS	MBD

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

SHEET C5.5

a. **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: _____ Date: _____
Town Engineer
These plans are approved by the Town of Knightdale and serve as construction plans for this project.
By: _____ Date: **10/26/21**
Administrator



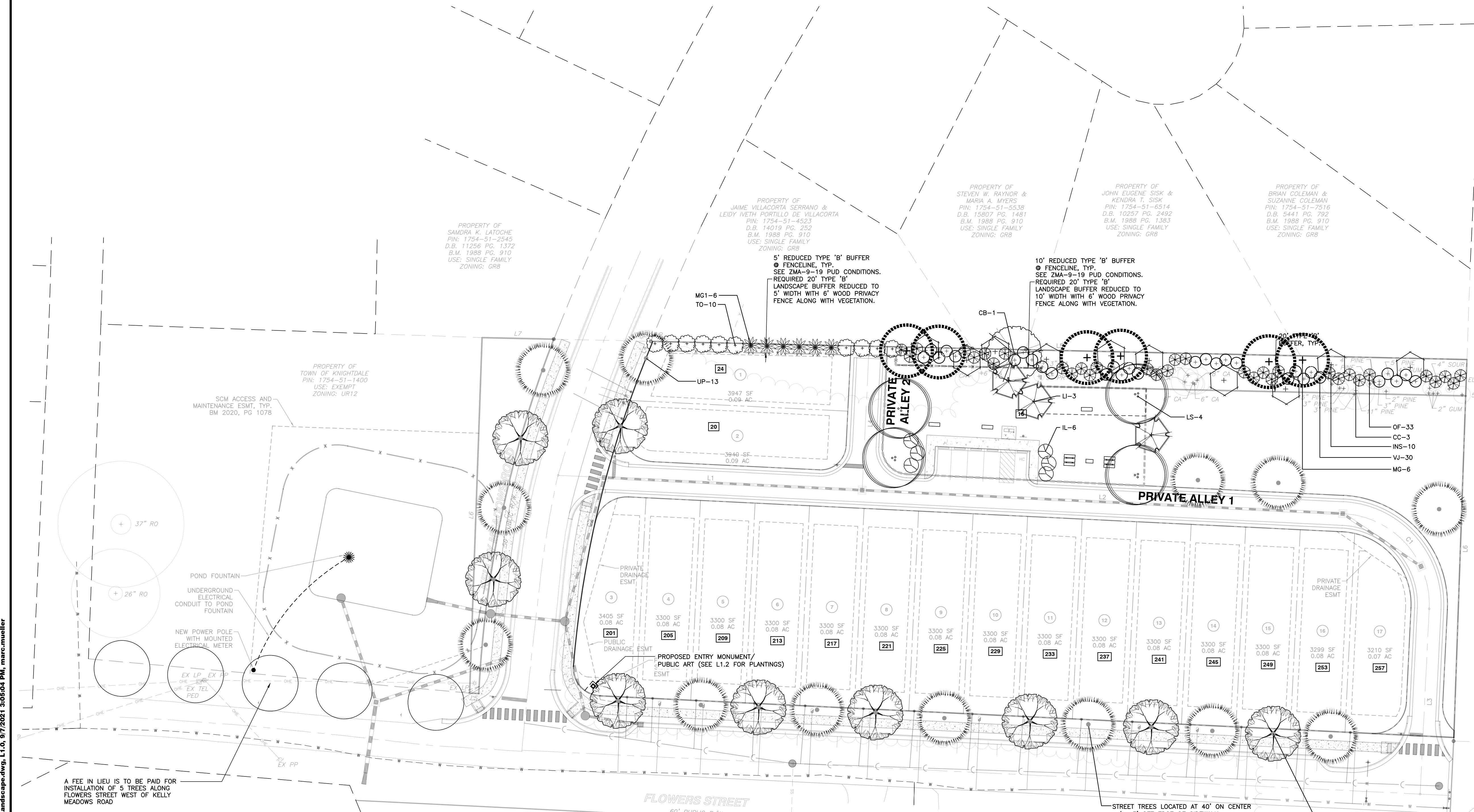
10/15/21

Proposed Boundary Line Table			Proposed Boundary Curve Table			Road CL Line Table			Road CL Curve Table		
Line #	Length	Direction	Curve #	Length	Radius	Line #	Length	Direction	Curve #	Length	Radius
L1	469.70'	N87°12'13.41"W	C1	24.45'	15.25'	L1	167.31'	S87°12'13.41"E	C1	78.54'	50.00'
L4	11.72'	N22°02'03.12"E	C2	173.02'	579.28'	L2	264.46'	S87°12'13.41"E			
L5	447.59'	S88°43'22.02"E				L3	102.00'	S2°47'46.59"W			
L6	207.97'	S1°58'59.11"W				L4	74.02'	S2°47'46.59"W			

LANDSCAPE NOTES

- A/C UNITS, TRANSFORMERS AND OTHER MECHANICAL OR UTILITY EQUIPMENT, NOT SHOWN ON THE PLAN, SHALL BE SCREENED FROM VIEW EITHER BY ADJUSTING PLANTINGS SHOWN IN CLOSE PROXIMITY TO EQUIPMENT OR BY THE ADDITION OF WAX MYRTLES @ 24" HT, 5' OC (SEE GENERAL NOTES FOR EQUIPMENT ACCESSIBILITY AND PLANTING PROXIMITY, ETC.). DUMPSTER IS SCREENED FROM OFF-SITE VIEWS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO PLANTING.
- MULCH SHALL BE 3" DEEP PINE STRAW UNLESS OTHERWISE NOTED.
- VERIFICATION OF TOTAL QUANTITIES AS SHOWN IN THE PLANT LIST AND ON THE PLAN SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR. ANY DISCREPANCIES BETWEEN PLANT LIST AND PLANTING PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
- ALL TREES, SHRUBS, GROUNDCOVER, ETC. SHALL CONFORM TO ACCEPTED STANDARDS ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERMEN.
- ALL ROOTBALLS REMOVED FROM CONTAINERS SHALL BE SCARIFIED PRIOR TO PLANTING.
- B&B AS LISTED UNDER "ROOT" IN THE PLANT LIST INDICATES BALLED & BURLAPPED.
- ALL PLANTS/PLANTINGS SHALL BE MULCHED IMMEDIATELY AFTER PLANTING AND WATERED.
- ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS THEY BORE TO PREVIOUS EXISTING GRADE (UNLESS OTHERWISE NOTED).
- ALL TREES AND SHRUBS SHALL REQUIRE MULCH RINGS AT THEIR BASE IF LEFT WITHIN LAWN AREAS.
- MULCH EDGES AND PROPOSED PLANTINGS SHALL NOT DISTURB ANY EXISTING GROUPS OF TREES TO REMAIN. EDGES ARE SHOWN FOR APPROXIMATION ONLY, BUT ARE TO INDICATE SMOOTH, CLEAN CURVES.
- CULVERTS, RIP-RAP STRUCTURES, AND OTHER STORMWATER DEVICES SHALL BE SCREENED WITH EVERGREEN SHRUBS. IF STRUCTURES ARE NOT SHOWN ON THE PLAN, INSTALL WAX MYRTLES @ 24" HT. - 5' OC.
- A 2' BUMPER OVERHANG, FROM THE BACK OF CURB, SHALL BE ALLOTTED FOR MATURE SHRUBS.
- TREE PROTECTION FENCING SHALL BE MAINTAINED UNTIL ALL SITE WORK IS COMPLETED. THE FENCING SHALL BE REMOVED PRIOR TO THE FINAL SITE INSPECTION FOR THE CERTIFICATE OF OCCUPANCY (C.O.). THE SITE SHALL BE STABILIZED AND SEEDED PRIOR TO THE ISSUANCE OF A (C.O.).
- ALL TREES SHALL BE LOCATED A MINIMUM OF 3' FROM SIDEWALKS.

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
 6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919) 851-4422 FAX: (919) 851-8966
 CERTIFICATION NUMBER: NCBELS (C-0110); NCBOLCA (C-0267)



BNK EX TREE TYPE ABBREVIATIONS

APPLE	AP
ASH	AS
BEECH	BE
BLACK WALNUT	BW
BRADFORD PEAR	BP
BURFORD HOLLY	BH
CATALPA	CP
CEDAR	CR
COTTONWOOD	CW
CRABAPPLE	CA
CREPE MYRTLE	CM
CYPRESS	CY
DOGWOOD	DW
ELM	EL
GUM	GM
HACKBERRY	HB
HICKORY	HK
HOLLY	HY
IRONWOOD	IW
LOCUST	LC
MAGNOLIA	MG
MAPLE	MP
MIMOSA	MM
PEAR	PR
PECAN	PC
PERSIMMON	PS
REDTIP	RT
PINE	PN
POPLAR	PP
REDBUD	RB
RED OAK	RO
SOURWOOD	SW
SWEETBAY	SB
SYCAMORE	SY
WAX MYRTLE	WM
WHITE OAK	WO
WILD CHERRY	WC
WILLOW	WW
ZELKOVA	ZA

PLANT LIST

KEY	SCIENTIFIC NAME	COMMON NAME	QUAN.	CAL	HT	ROOT	REMARKS
SHADE TREES							
AS	Acer saccharum 'Legacy'	Legacy Sugar Maple	9	2"	8'	B&B	Street Tree
CB	Carpinus betulus	European Hornbeam	1	2"	8'	B&B	Buffer
LS	Liquidambar styraciflua 'Rotundiloba'	Fruitless Sweetgum	4	2"	8'	B&B	Accent
MG	Magnolia grandiflora	Southern Magnolia	6	2"	8'	B&B	Buffer
UP	Ulmus parvifolia	Chinese Elm	13	2"	8'	B&B	Street Tree
UNDERSTORY TREES							
CC	Cercis canadensis	Eastern Redbud	3	1.25"	6'	B&B	Buffer
IN	Ilex 'Nellie R. Stevens'	Nellie Stevens Holly	9		6'	B&B	Buffer
LI	Lagerstroemia indica 'Natchez'	Natchez Crape Myrtle	3	1.25"	6'	B&B	Accent
MG1	Magnolia grandiflora 'Little Gem'	Little Gem Magnolia	6	1.25"	6'	B&B	Buffer
TO	Thuja occidentalis 'Green Giant'	Green Giant Arborvitae	10	1.25"	6'	B&B	Buffer
Shrubs							
BT	Berberis thunbergii 'Crimson Pygmy'	Crimson Pygmy Barberry	10		12"	cont.	Accent
CD	Chamaecyparis obtusa 'Gracilis'	Dwarf Hinoki Falsecypress	3		30"	cont.	Accent
IL	Ilex latifolia	Lusterleaf Holly	6		48"	cont.	Screen
OF	Osmanthus fortunei	Fortunes Osmanthus	33		18"	cont.	Buffer
PJ	Pieris japonica 'Compacta'	Japanese Andromeda	4		15"	cont.	Accent
VJ	Viburnum japonicum	Japanese Viburnum	30		18"	cont.	Buffer
Groundcover							
OP	Ophiopogon planiscapus nigrescens	Black Mondo Grass	50			cont.	1' on center

NOTE: ALL PLANT SIZES REPRESENT MINIMUM SIZE AT INSTALLATION

NO WETLANDS EXIST ON-SITE

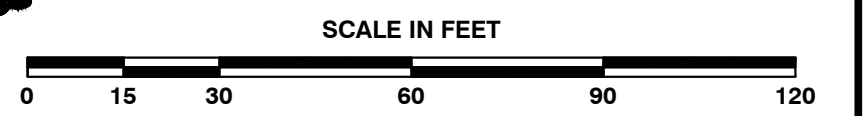
NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT

a. Lighting Plan Certification: I hereby certify I am the applicant and that a Lighting Plan shall be submitted by the utility provider to the Knightdale Planning Department for approval prior to the installation of all required lighting. The lighting plan shall designate the proposed location of all light poles and shall be in compliance with sections 8.10 and 16.8B as well as Chapter 11 of the Town of Knightdale UDO. If a proposed light pole location should present a conflict with existing or proposed vegetation according to the approved construction drawings, the Landscaping Plan shall be revised to comply with the Town of Knightdale UDO requirements. All revisions are subject to Town of Knightdale approval.

Date: _____ Applicant: _____
 I (officer authorized to take acknowledgments) do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of this certificate. Witness my hand and (where an official seal is required by law) official seal this ____ day of _____, A.D., ____ (year).
 Official Seal: _____ Notary: _____
 Commission Expires: _____

a. 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: _____ Date: _____
 Town Engineer
 These plans are approved by the Town of Knightdale and serve as construction plans for this project.
 By: _____ Date: **10/26/21**
 Administrator



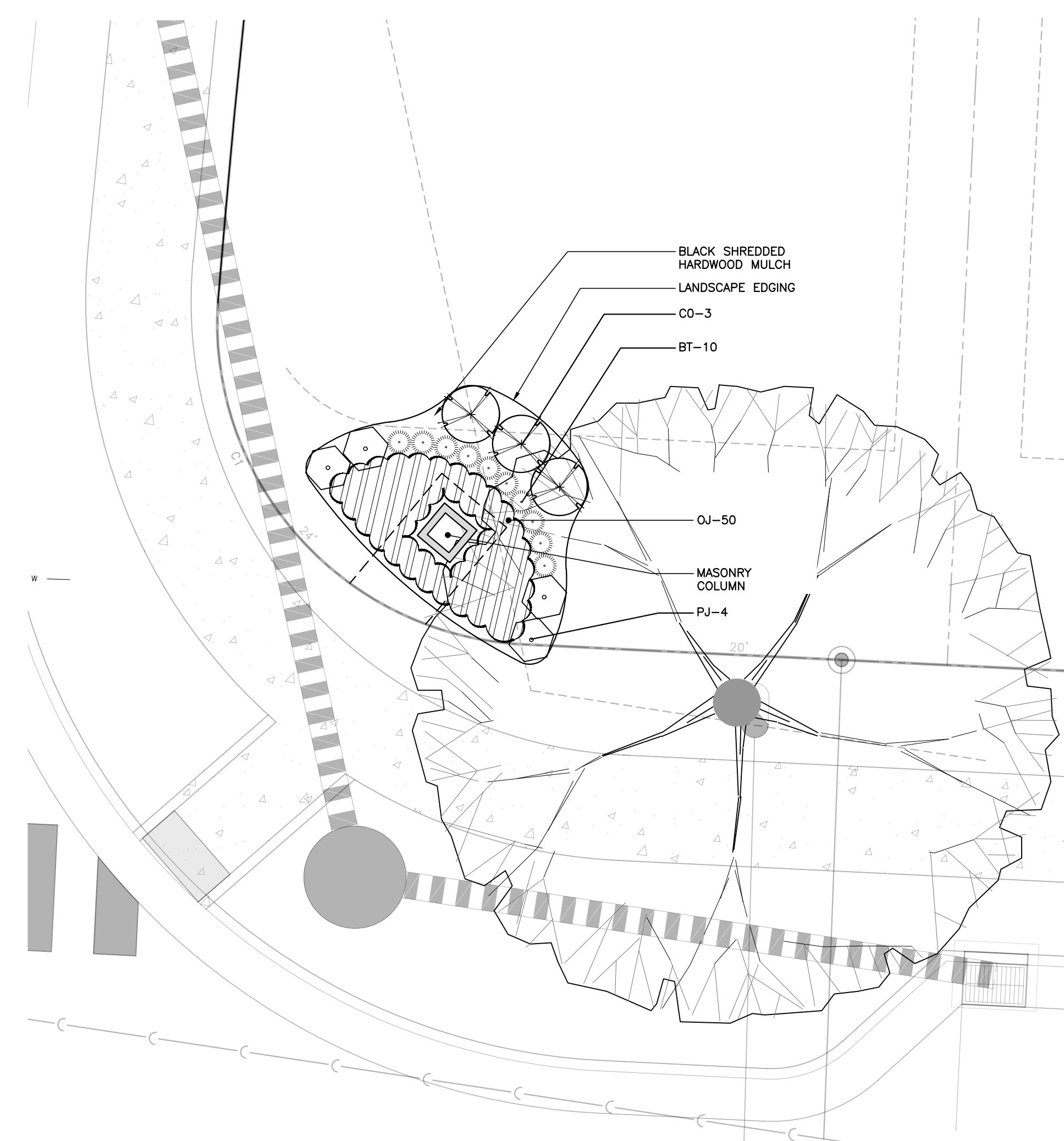
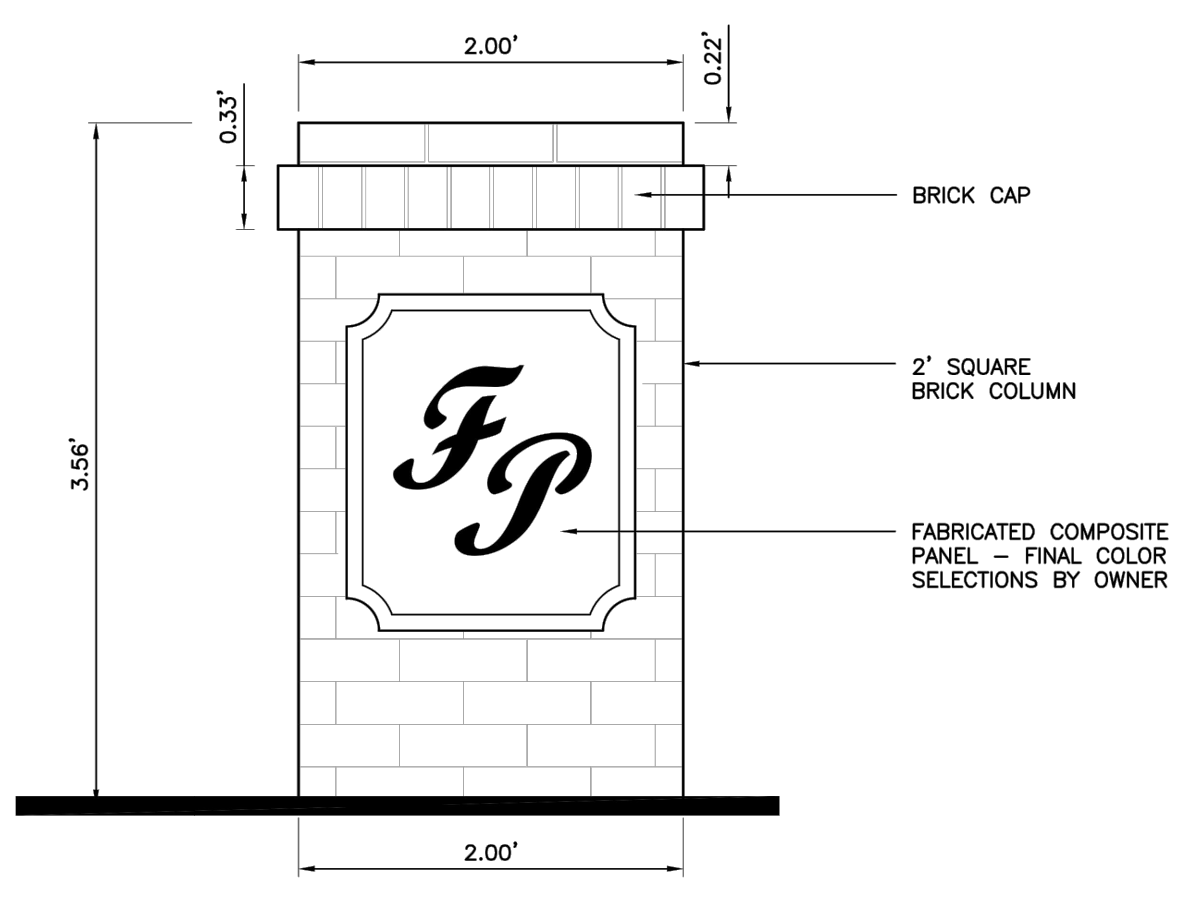
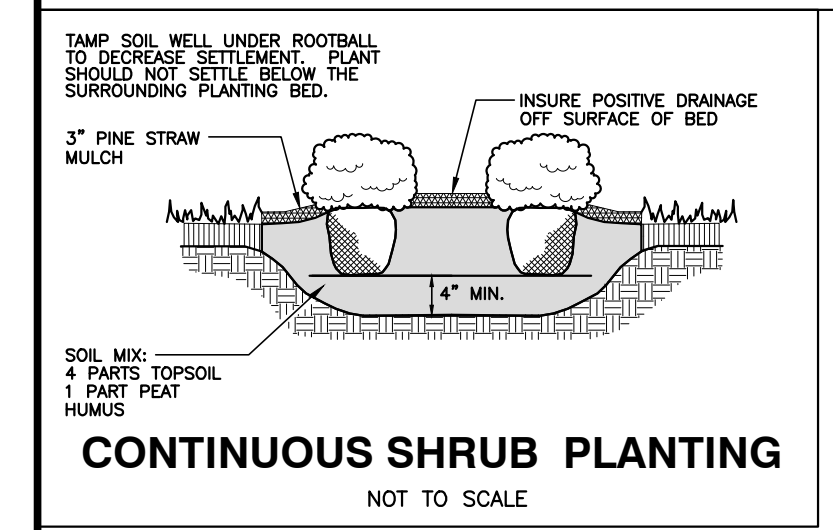
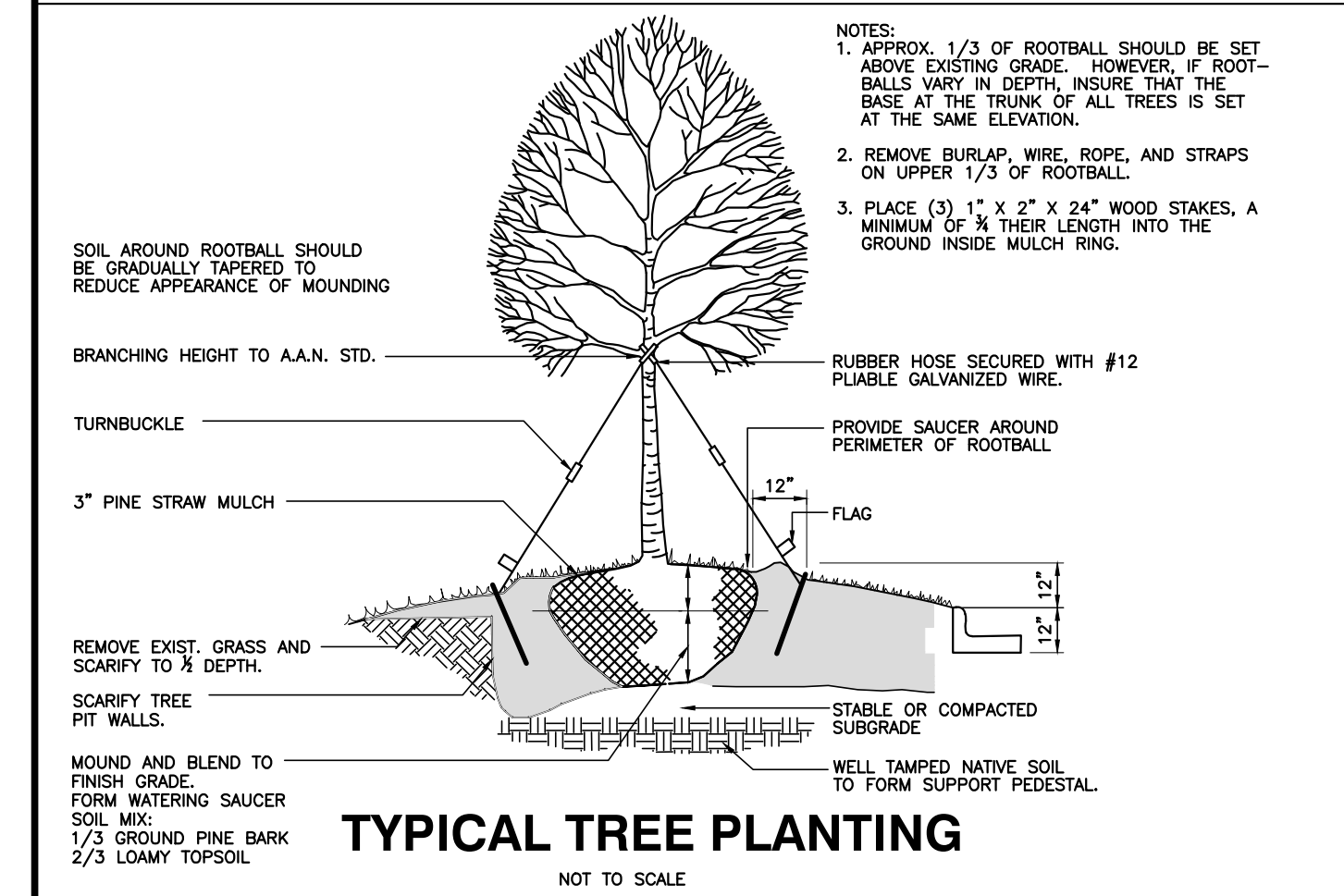
LANDSCAPE PLAN
 DATE: 04-07-20
 DRAWN BY: RAB
 CHECK BY: MDB
 SCALE: 1" = 30'

NO.	DATE	DESCRIPTION	BY
1	07-08-20	TOK CD 1ST REVIEW COMMENTS	GW
2	06-20-20	TOK CD 2ND REVIEW COMMENTS	GW
3	10-02-20	TOK CD 3RD REVIEW COMMENTS	GW
4	12-10-20	TOK CD 4TH REVIEW COMMENTS	MB

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
 TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

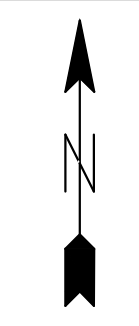
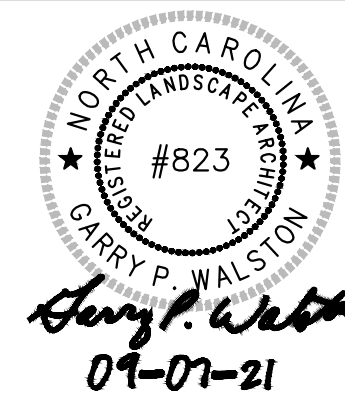
SHEET L1.0



NO WETLANDS EXIST ON-SITE

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF KNIGHTDALE AND NCDOT



a. Lighting Plan Certification: I hereby certify I am the applicant and that a Lighting Plan shall be submitted by the utility provider to the Knightdale Planning Department for approval prior to the installation of all required lighting. The lighting plan shall designate the proposed location of all light poles and shall be in compliance with sections 8.10 and 16.8B as well as Chapter 11 of the Town of Knightdale UDO. If a proposed light pole location should present a conflict with existing or proposed vegetation according to the approved construction drawings, the Landscaping Plan shall be revised to comply with the Town of Knightdale UDO requirements. All revisions are subject to Town of Knightdale approval.

Date: _____ Applicant: _____

I (officer authorized to take acknowledgments) do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of this certificate. Witness my hand and (where an official seal is required by law) official seal this ____ day of _____, A.D., ____ (year).

Official Seal: _____ Notary: _____

Commission Expires: _____

a. 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: _____ Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: 10/26/21
Administrator

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHABEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 851-4422 FAX: (919) 851-8868
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

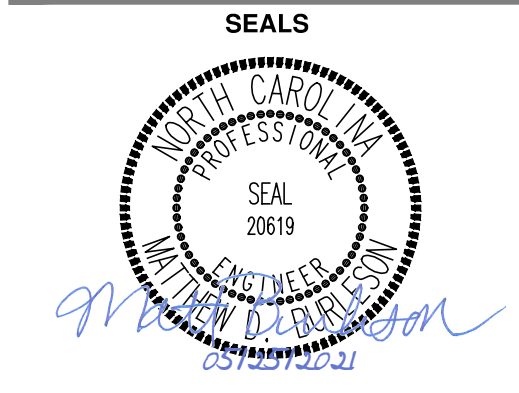
NO.	DATE	DESCRIPTION	BY
4	12-10-20	TOK CD 3RD REVIEW COMMENTS	MIR
3	10-02-20	TOK CD 3RD REVIEW COMMENTS	GW
2	06-20-20	TOK CD 2ND REVIEW COMMENTS	GW
1	07-08-20	TOK CD 1ST REVIEW COMMENTS	GW
		REVISIONS	

LANDSCAPE DETAILS

CHK BY: MDB

FLOWERS PLACE SUBDIVISION
0 KELLEY MEADOWS ROAD
TOWN OF KNIGHTDALE, WAKE COUNTY, NORTH CAROLINA

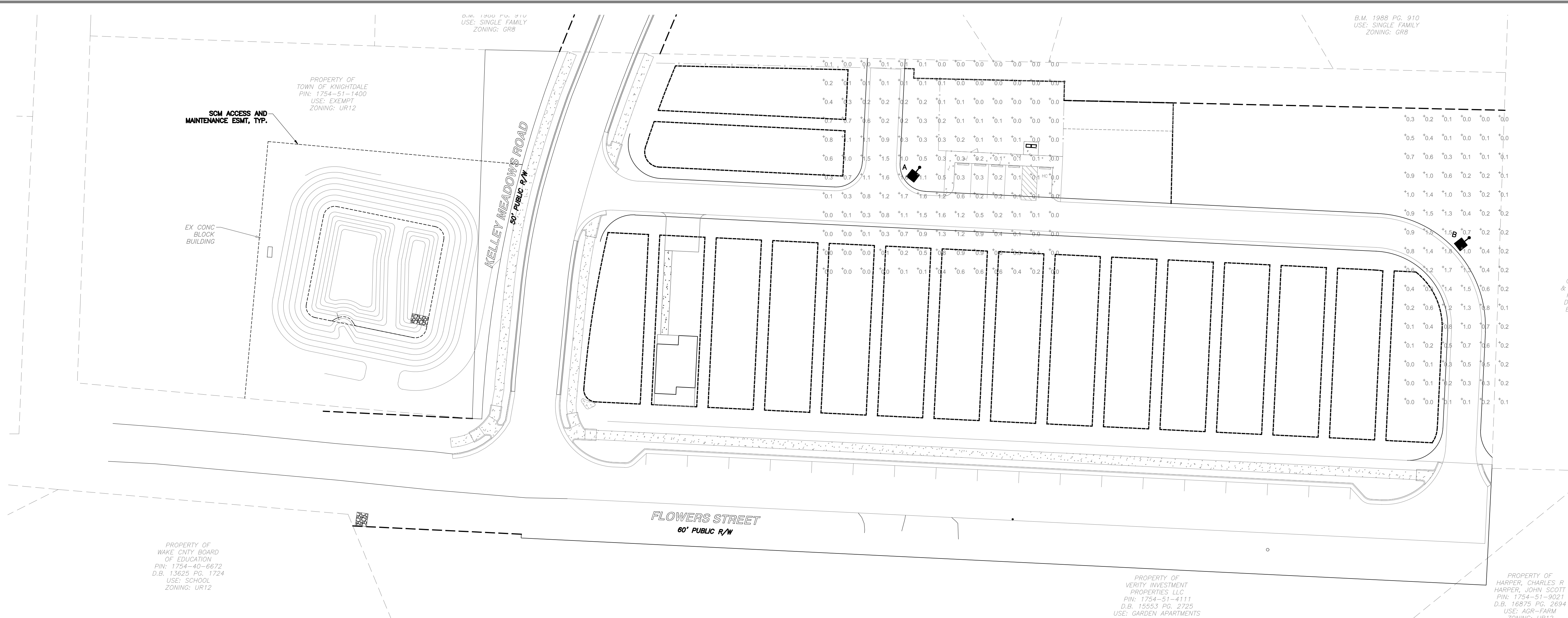
SHEET **L1.1**



MEADVIEW SUBDIVISION 0 KELLEY MEADOWS ROAD KNIGHTDALE, NC 27545

REVISIONS		
NUMBER	DESCRIPTION	DATE

SHEET
 DRAWN BY: CMC
 CHECKED BY: MDB
 DATE ISSUED: 05/25/2021
 SHEET NAME:
SITE LIGHTING



1 SITE LIGHTING PLAN SCALE: 1" = 30' - 0"

EXTERIOR LIGHTING IS SHOWN FOR LIGHTING AN ALLEY.

a. Lighting Plan Certification: I hereby certify I am the applicant and that a Lighting Plan shall be submitted by the utility provider to the Knightdale Planning Department for approval prior to the installation of all required lighting. The lighting plan shall designate the proposed location of all light poles and shall be in compliance with sections 8.10 and 16.8B as well as Chapter 11 of the Town of Knightdale UDO. If a proposed light pole location should present a conflict with existing or proposed vegetation according to the approved construction drawings, the Landscaping Plan shall be revised to comply with the Town of Knightdale UDO requirements. All revisions are subject to Town of Knightdale approval.

Date: _____ Applicant: _____
 I (officer authorized to take acknowledgments) do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of this certificate. Witness my hand and (where an official seal is required by law) official seal this ____ day of _____, A.D., ____ (year).

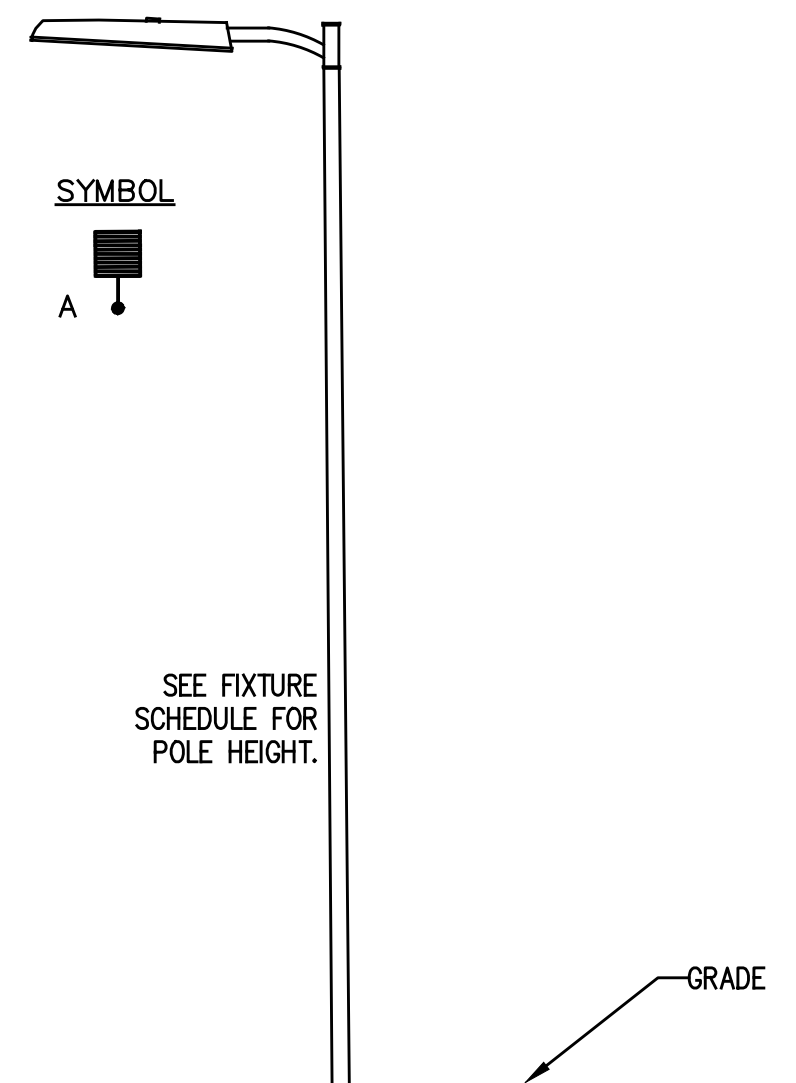
Official Seal: _____ Notary: _____
 Commission Expires: _____

a. 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: _____ Date: _____
 Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project. **10/26/21**

By: _____ Date: _____
 Administrator



2 TYPICAL FIXTURE DETAILS SCALE: NONE

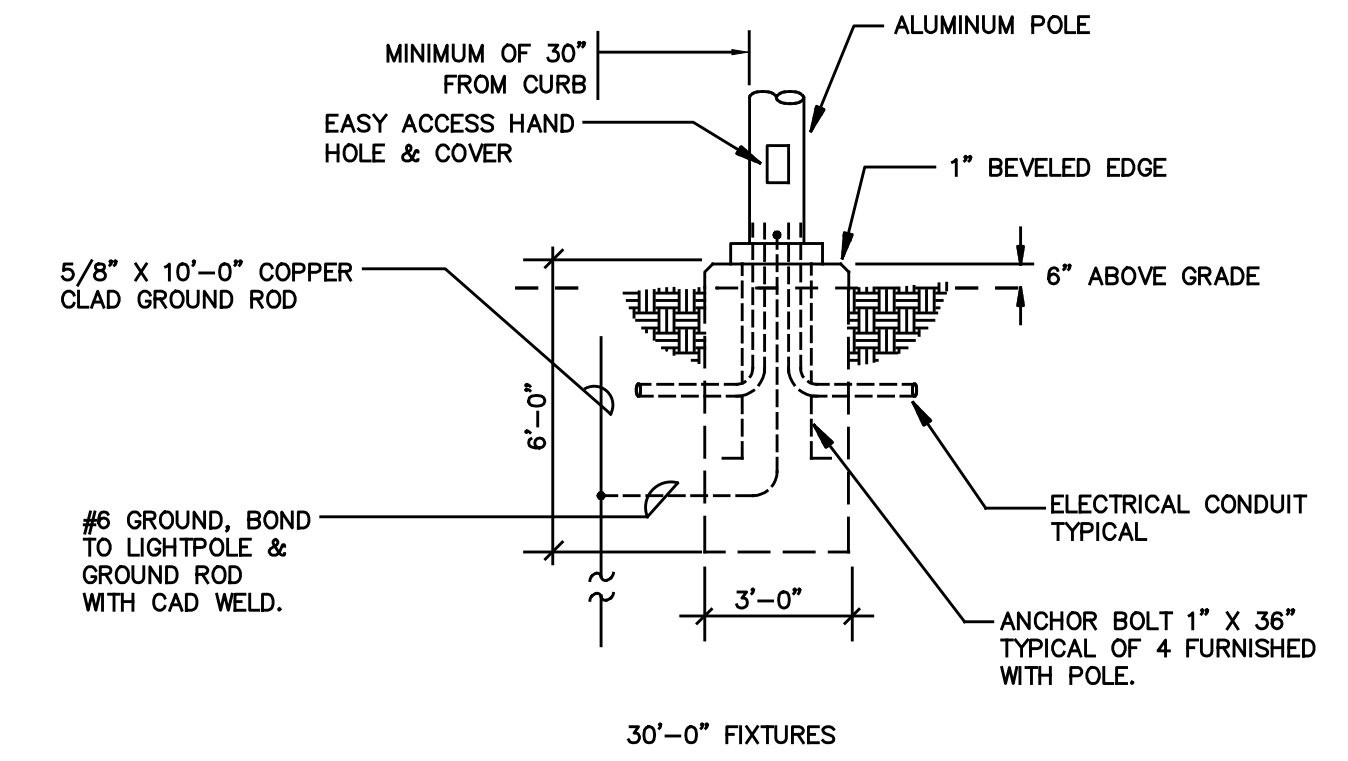
NOTE: SEE SITE LIGHTING FIXTURE SCHEDULE FOR POLE AND MOUNTING HEIGHTS.

LUMINAIRE SCHEDULE					
TYPE	DESCRIPTION	CONFIGURATION/LAMP	LUMENS PER HEAD	MOUNTING/BALLAST	LLF
A	LED PARKING LOT LIGHTING - TYPE 1 DISTRIBUTION LITHONIA DSX1 LED P1 40K T1S MVOLT OR EQUAL	SINGLE/LED	6,956	MOUNT AT 30'	0.95
B	LED PARKING LOT LIGHTING - TYPE 1 DISTRIBUTION LITHONIA DSX1 LED P1 40K T1S MVOLT HS OR EQUAL	SINGLE/LED	6,956	MOUNT AT 30'	0.95

NOTE: VERIFY EXACT FIXTURE AND POLE WITH OWNER.

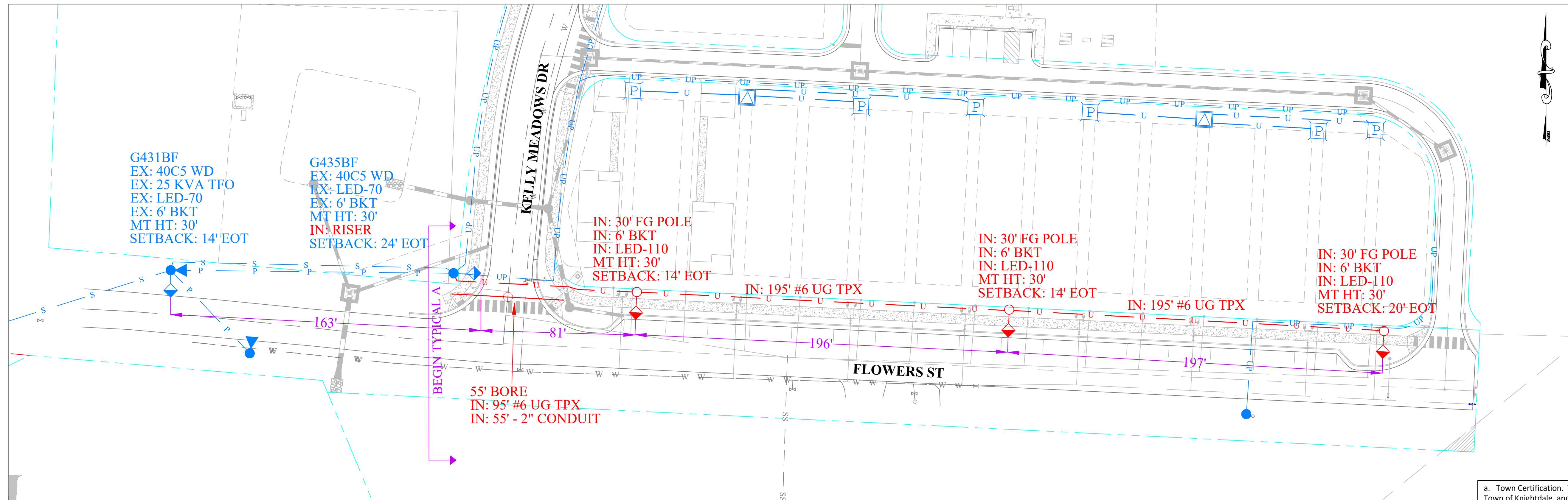
- NOTES:**
- PRIOR TO RELEASE OF THE CERTIFICATE OF OCCUPANCY, THE OWNER/BUILDER MUST SUPPLY THE TOWN WITH A FINAL LETTER OF CERTIFICATION FROM THE LIGHTING ENGINEER, LIGHTING MANUFACTURER, OR AUTHORIZED LIGHTING CONTRACTOR VERIFYING THAT ALL SITE LIGHTING IS INSTALLED ACCORDING TO TOWN STANDARDS, THE APPROVED PLANS AND ANY APPLICABLE CONDITIONS.
 - BUILDING LIGHTING SHALL BE PROVIDED TO ILLUMINATE ENTRANCES AND EXITS TO MEET IES STANDARDS AS PART OF THE BUILDING ELECTRICAL DESIGN AND IS NOT INCLUDED IN THE SCOPE OF THIS SITE LIGHTING LAYOUT.
 - ALL SITE LIGHTING SHALL BE SHIELDED FROM ADJACENT PUBLIC STREETS USING HOUSE SIDE SHIELDS IF GREATER THAN 2.0 FC AT PROPERTY LINE.
 - THE INTENT OF THIS DRAWING IS TO SHOW FOOTCANDLE LEVELS BASED ON FIXTURES SHOWN. ACTUAL LEVELS MAY VARY BASED ON ACTUAL FIXTURE INSTALLED.
 - THIS DRAWING IS INTENDED FOR PRELIMINARY SITE PLAN APPROVAL OF DESIGNED LIGHTING LEVELS AND IS NOT INTENDED TO BE USED FOR CONSTRUCTION.

ELECTRICAL CONNECTION NOTE:
 THIS IS A SITE LIGHTING CALCULATION PLAN ONLY AND DOES NOT PROVIDE ELECTRICAL CONNECTIONS FOR FIXTURES SHOWN. SITE DEVELOPERS (OWNERS, BUILDERS AND GENERAL CONTRACTORS) ARE RESPONSIBLE FOR COORDINATING WITH BUILDING ELECTRICAL CONTRACTOR OR POWER COMPANY FOR POWER CONNECTIONS FOR ALL FIXTURES.



3 LIGHT POLE BASE DETAIL SCALE: NONE

30'-0" FIXTURES



a. 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: _____ Date: _____
Town Engineer

These plans are approved by the Town of Knightdale and serve as construction plans for this project.

By: _____ Date: 10/26/21
Administrator

FOR CONSTRUCTION DETAILS, REFER IN PARTICULAR TO THE FOLLOWING PE SPECIFICATION DRAWINGS

DRAWING NUMBER	DRAWING TITLE
22.01-104	TRENCH DETAILS
03.02-100	SECONDARIES & SERVICES
30.02-120	LIGHTING BRACKETS FOR STEEL & FIBERGLASS POLES
30.09-101	GRAY FIBERGLASS POLE LIGHTING INSTALLATIONS
30.08-124	MOUNTING HEIGHT FOR LUMINAIRES

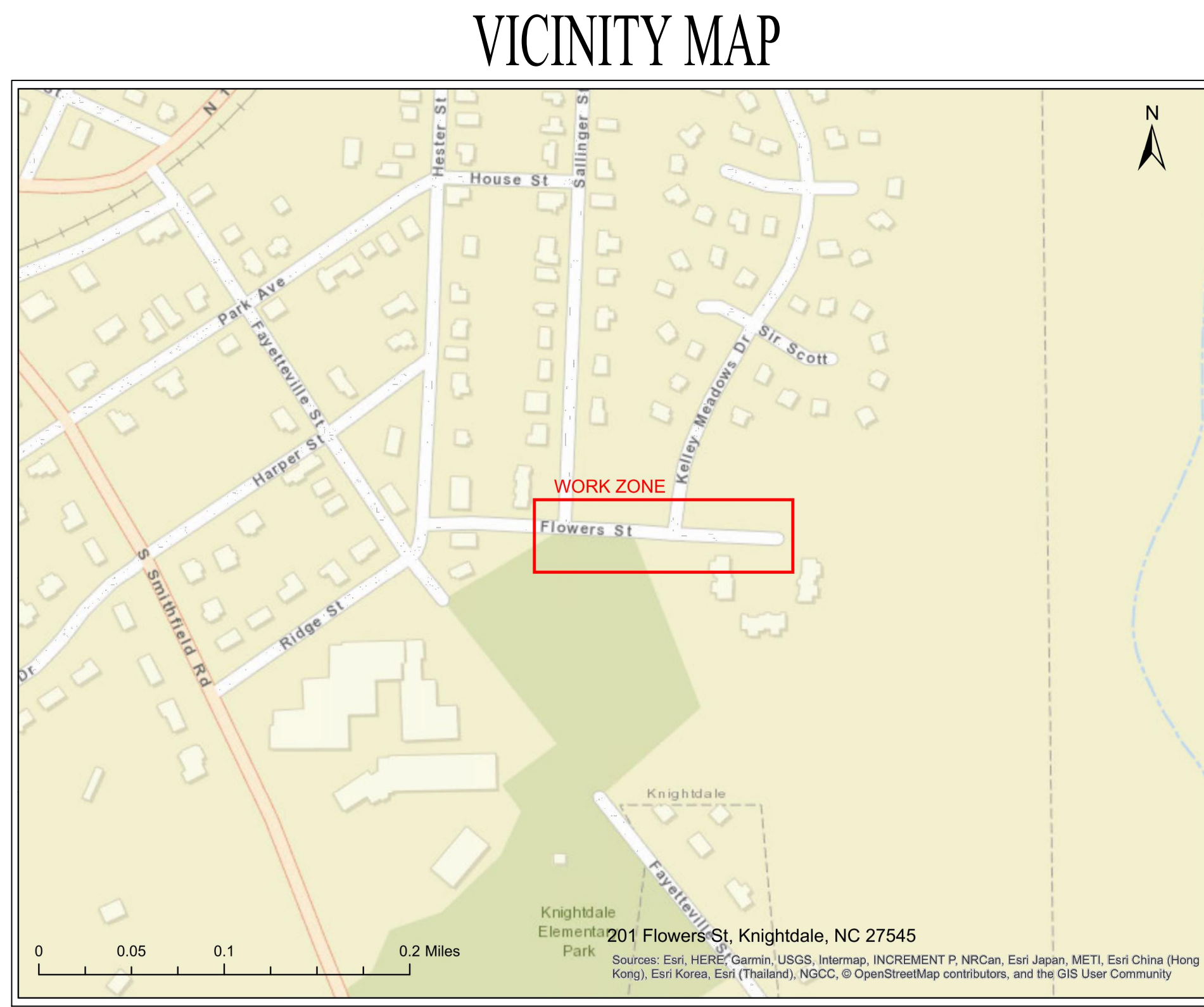
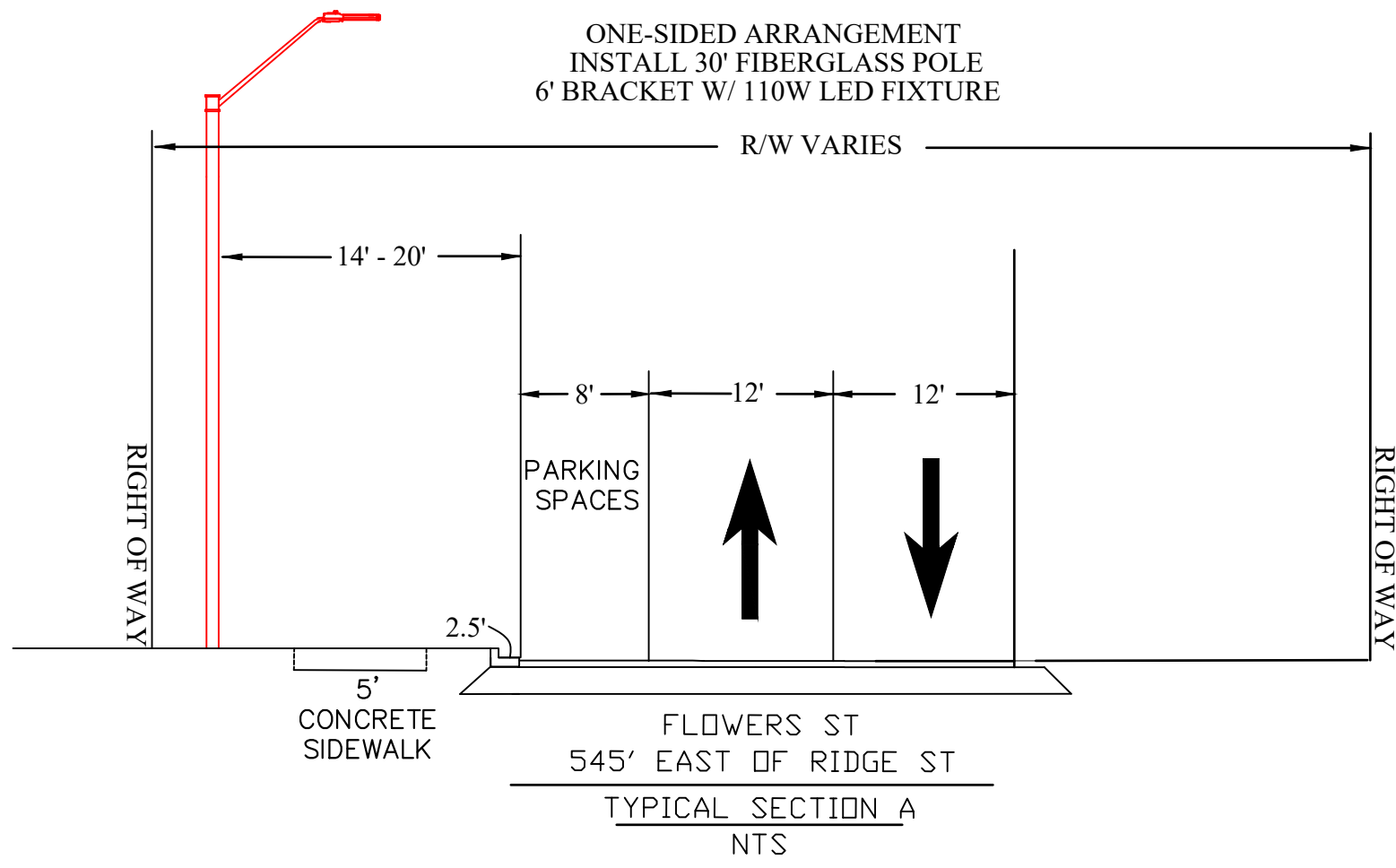
PROPOSED	EXISTING	REMOVE	ABANDON	LEGEND
				LED LUMINAIRE
				DECORATIVE LUMINAIRE
				FIBERGLASS/STEEL LIGHTING POLE
				WOOD POLE
				FOREIGN POLE
				TRANSFORMER (POLE MOUNTED)
				STREET LIGHT CIRCUIT UNDERGROUND
				STREET LIGHT CIRCUIT OVERHEAD
				OH PRIMARY CIRCUIT
				ROW/PROPERTY LINES
				SECONDARY PEDESTAL
				TRANSFORMER (PAD MOUNTED)
				BORE

FLOWERS STREET

TES REQUIREMENTS	LOCAL/INTERMEDIATE	ACTUAL
AVE. MAINT. FC:	0.7 MIN. 0.81	
AVE. / MIN. RATIO:	6:1 MAX. 5.69:1	
VEILING LUMS RATIO:	0.4:1 MAX. 0.27:1	

LIGHTING LEVELS CALCULATED USING ALADAN/LITEPRO
 AVG DAILY TRAFFIC: N/A
 DESIGN SPEED LIMIT: N/A
 ACTUAL SPEED LIMIT: N/A
 AVG SPAN DISTANCE: 159 FEET

- NOTES**
- LIGHTING LEVELS ARE BASED ON ONE-SIDED LIGHTING FOR THE ROADWAY.
 - ALL LUMINAIRES WILL BE 110 LED ROADWAY TYPE III, 4000K, RECTANGLE PATTERN WITH PHOTOCELLS AND BALLAST, RATED: 12,415 LUMENS 240V.
 - ALL LIGHTING WITH UNDERGROUND SERVICE WILL BE INSTALLED ON FIBERGLASS POLES LOCATED INSIDE OF ROAD R/W.
 - MOUNTING HEIGHT FOR LIGHTING FIXTURES: 30' WITH 6' BRACKET ON NEW FBGL POLES.
 - MINIMUM SETBACK OF NEW LIGHTING POLES IS 10' BACK OF TRAVEL LANE WHERE CURB AND GUTTER EXISTS. DESIGN SETBACK IS 14'-20' BACK OF THE CURB AND GUTTER OR APPROX 1 FOOT BEHIND SIDEWALK.
 - ALL POWER SOURCES WILL BE FROM DUKE ENERGY-PROGRESS FACILITIES.
 - ALL CONSTRUCTION WILL COMPLY WITH NESC REQUIREMENTS AND DUKE ENERGY-PROGRESS SPECIFICATIONS. REFER TO THE DUKE ENERGY-PROGRESS DRAWINGS LISTED.



Safety Reminders / Adverse Conditions

WZS: REMEMBER "YOUR CIRCLE OF SAFETY"
WZS: SET PROPER WORK ZONE NEEDED
WZS: SET PROPER SIGNS, CONES, AND BARRICADES
WZS: REMEMBER WALK AROUNDS AND PRETRIP
WZS:

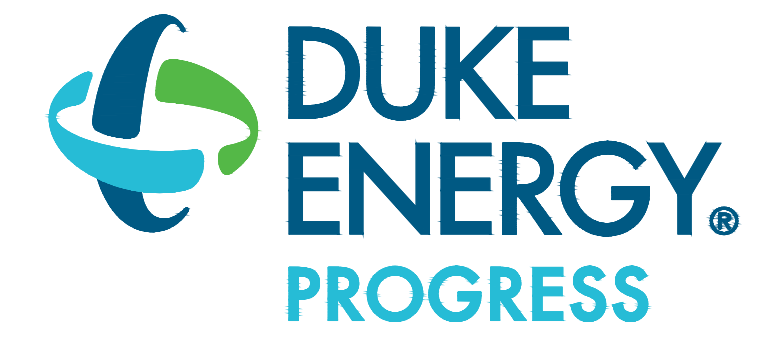
REMEMBER: Work zone area conditions may have changed for this job! Everyone is responsible for verifying the above safety information is correct prior to any work being performed each day.

NO.	DATE	REVISION	BY

NO.	DATE	REVISION	BY

LIGHTING DESIGN TOLERANCE

The calculated footcandle light levels in this lighting design are predicted values and are based on specific information that has been supplied to Duke Energy. Any inaccuracies in the supplied information, differences in luminaire installation, lighted area geometry including elevation differences, reflective properties of surrounding surfaces, obstructions (foliage or otherwise) in the lighted area, or lighting from sources other than listed in this design may produce different results from the predicted values. Normal tolerances of voltage, lamp output, and ballast and luminaire manufacture will also affect results.



PROPRIETARY & CONFIDENTIAL

This document together with the concepts and designs herein, presented as an instrument of service, is the sole property of Duke Energy, and is intended only for the specific purpose and prospective client as stated in the title block of this drawing. Any use, copying, reproduction or disclosure of the drawing, design or any information contained herein by the prospective customer or other entities, including without limitation, architects, engineers, or equipment manufacturers is hereby expressly prohibited and shall not be permitted absent prior written consent from, and payment of compensation to Duke Energy. Duke Energy disclaims any liability or responsibility for any unauthorized use of or reliance on this document.

STREET LIGHTING ARRANGEMENT FOR FLOWERS ST HABITAT FOR HUMANITY

KNIGHTDALE, NC

Designed by **DUKE ENERGY PROGRESS LIGHTING SOLUTIONS**

Reviewed by **NATHAN MARCINKO** Scale 1" = 30'

Date 9/28/20 Size Drawing size "D"

Description WR#37283320

Drawing No. 37283320 Sht. 1 OF 1