

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

## SYMBOLS AND ABBREVIATIONS

ABC	AGGREGATE BASE COURSE	—	EXISTING CURB INLET
ALUM	ALUMINUM	□	EXISTING GRATE INLET/YARD INLET
AST2	ALUMINIZED STEEL - TYPE 2	—	EXISTING FLARED END SECTION
B-B	BACK TO BACK	⊕	EXISTING FIRE HYDRANT
BOA	BLOW-OFF ASSEMBLY	—	EXISTING BLOW-OFF ASSEMBLY
C&G	CURB AND GUTTER	—	EXISTING GATE VALVE
CFS	CUBIC FEET PER SECOND	—	EXISTING REDUCER
CI	CURB INLET	□	EXISTING WATER METER
CL	CENTER LINE	—	EXISTING SAN SEWER MANHOLE
CMP	CORRUGATED METAL PIPE	—	EXISTING CLEAN OUT
CO	CLEAN OUT	⊕	EXISTING POWER POLE
COM	COMMUNICATION	—	EXISTING TELEPHONE PEDESTAL
CONC	CONCRETE	—	EXISTING AREA LIGHT
DCV	DOUBLE CHECK VALVE	—	EXISTING SIGN
DDCV	DOUBLE DETECTOR CHECK VALVE	—	NEW CURB INLET
DI	DROP INLET	—	NEW GRATE INLET/YARD INLET
DIP	DUCTILE IRON PIPE	—	NEW FLARED END SECTION
EASE	EASEMENT	—	NEW FIRE HYDRANT
ELEC	ELECTRIC	—	NEW BLOW-OFF ASSEMBLY
EX	EXISTING	—	NEW GATE VALVE
FES	FLARED END SECTION	—	NEW REDUCER
FH	FIRE HYDRANT	⊕	NEW WATER METER
FM	FORCE MAIN	—	NEW TEE
FT	FEET	—	NEW FLUG
FT/SEC	FEET PER SEC	—	NEW MANHOLE
GALV	GALVANIZED	—	NEW CLEAN OUT
GV	GATE VALVE	—	NEW SIGN
HDPE	HIGH DENSITY POLYETHYLENE	—	IRON PIPE
L	LENGTH	—	BENCHMARK
LF	LINEAR FEET	—	—
MH	MANHOLE	⊕	—
PAVE	PAVEMENT	—	TEMP SILT FENCE
PE	FINISHED PAD ELEVATION	—	TEMP TREE PROTECTION FENCE
PP	POWER POLE	—	TEMP COMBINATION SILT/TREE PROTECTION FENCE
PVC	POLYVINYL CHLORIDE	—	TEMP DIVERSION DITCH
R	RADIUS	—	DISTURBED LIMITS
R/W	RIGHT-OF-WAY	—	STREAM
RED	REDUCER	—	—
RCP	REINFORCED CONCRETE PIPE	—	EXISTING GAS LINE
RPZ	REDUCED PRESSURE ZONE	—	EXISTING COMMUNICATIONS LINE
SS	SANITARY SEWER	—	EXISTING UNDERGROUND TELEPHONE
STA	STATION	—	EXISTING UNDERGROUND ELECTRIC
TDD	TEMPORARY DIVERSION DITCH	—	EXISTING OVERHEAD ELECTRIC
TELE	TELEPHONE	—	EXISTING WATER LINE
TSB	TEMPORARY SEDIMENT BASIN	—	EXISTING SANITARY SEWER FORCE MAIN
UG	UNDERGROUND	—	EXISTING SANITARY SEWER
WCR	WHEELCHAIR RAMP	—	EXISTING STORM DRAINAGE
W/L	WATER LINE	—	NEW STORM DRAINAGE
WM	WATER METER	—	NEW WATER LINE
YI	YARD INLET	—	NEW SANITARY SEWER
		—	NEW SANITARY SEWER FORCE MAIN
		—	NEW GAS MAIN
		—	HANDICAPPED ACCESSIBLE ROUTE

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

# COBBLESTONE VILLAGE

## MIXED USE DEVELOPMENT

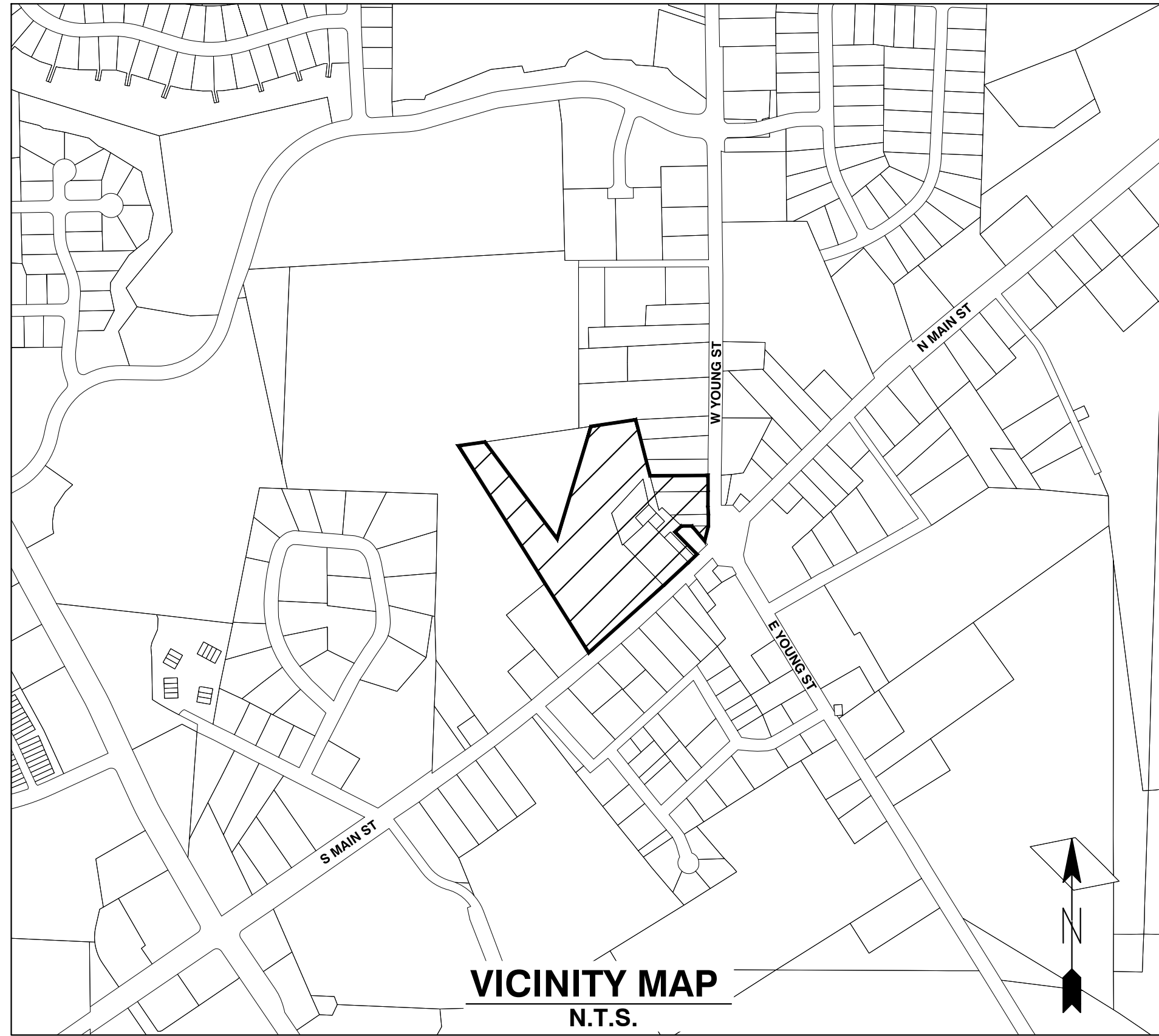
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

# CONSTRUCTION DRAWINGS

## TOWN OF ROLESVILLE PROJECT NO. CUP-SB-21-01

### SITE PLAN APPLICATION NO. CUP-SB-21-01

### CASE NO. SP21-01



**Public**  
**Water Distribution / Extension System**  
 The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.  
 City of Raleigh  
 Public Utilities Department Permit # W-3879  
 Authorization to Construct See digital signature

**Private**  
**Sewer Collection / Extension System**  
 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 # S-4962 (P)  
 Authorization to Construct See digital signature

#### 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 # W-3879

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 # S-2852 (P)

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 relied upon. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval  
 Raleigh Water Review Officer

**OWNER:**  
 TOWN OF ROLESVILLE  
 P.O. BOX 250  
 ROLESVILLE, NC 27571-0250

**DEVELOPER:**  
 KDM DEVELOPMENT CORPORATION  
 1080 PITTSFORD VICTOR RD, STE 202  
 PITTSFORD NY 14534-3805

**CONTACT: KENYON BURHNAM**  
**PHONE: 585-465-0099**  
**EMAIL: KBURNHA2@U.ROCHESTER.EDU**

## SHEET INDEX

<b>COVER</b>	
<b>C0.1</b>	<b>EXISTING CONDITIONS &amp; DEMOLITION PLAN</b>
<b>C1.1</b>	<b>SITE PLAN</b>
<b>C1.2</b>	<b>OPEN SPACE PLAN</b>
<b>C2.1</b>	<b>UTILITY PLAN</b>
<b>C3.1</b>	<b>GRADING AND DRAINAGE PLAN</b>
<b>C3.2</b>	<b>BMP DETAILS</b>
<b>C3.3</b>	<b>EROSION CONTROL PLAN - STAGE 1</b>
<b>C3.4</b>	<b>EROSION CONTROL PLAN - STAGE 2</b>
<b>C3.5</b>	<b>EROSION CONTROL DETAILS</b>
<b>C3.6</b>	<b>EROSION CONTROL DETAILS</b>
<b>C3.7</b>	<b>NCG01 PLAN</b>
<b>C3.8</b>	<b>STORM DRAINAGE PIPE &amp; STRUCTURE TABLE</b>
<b>C4.1</b>	<b>PUBLIC WATERLINE PROFILE</b>
<b>C4.2</b>	<b>SANITARY SEWER PROFILE</b>
<b>C4.3</b>	<b>S. MAIN ST. - U.S. 401 WIDENING CROSS SECTIONS</b>
<b>L1.1</b>	<b>LANDSCAPE PLAN</b>
<b>L1.2</b>	<b>LANDSCAPE DETAILS</b>
<b>SL-101</b>	<b>LIGHTING PLAN</b>
<b>C5.1</b>	<b>DETAILS</b>
<b>C5.2</b>	<b>DETAILS</b>
<b>C5.3</b>	<b>DETAILS</b>
<b>C5.4</b>	<b>DETAILS</b>
<b>C5.5</b>	<b>DETAILS</b>
<b>C5.6</b>	<b>DETAILS</b>

## CONSTRUCTION NOTES

- 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 THE MOST STRINGENT SHALL GOVERN.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR TRENCH SAFETY DURING ALL PHASES OF CONSTRUCTION.
- 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 (ULOCOS) AT 1-800-632-4949 FOR PROPER IDENTIFICATION OF EXISTING UTILITIES WITHIN THE SITE.
- 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.
- 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.
- 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.
- A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL ARRANGE THE MEETING WITH THE CITY ENGINEERING DIVISION.
- CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL REQUIRED PERMITS AND APPROVALS PRIOR TO COMMENCING CONSTRUCTION.
- 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 FEDERAL, STATE, 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.
- 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.
- 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 D998. 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.
- PROPOSED CONTOURS AND GUTTER GRADIENTS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND ROADWAY PROFILES/SUPERELEVATIONS ARE TO BE USED IN CASE OF DISCREPANCY.
- THE CONTRACTOR SHALL REVIEW, VERIFY AND COORDINATE ALL DIMENSIONS SHOWN ON PLANS, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES CROSSING THE STORM SEWER PRIOR TO STARTING PROJECT.
- ALL CURB JOINTS SHALL EXTEND THROUGH THE CURB. MINIMUM LENGTH OF OFFSET JOINTS AT RADIUS POINTS IS 1.5 FEET. ALL JOINTS SHALL BE SEALED WITH JOINT SEALANT.
- ALL HANDICAP RAMPING, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO ADA REQUIREMENTS AND THE NORTH CAROLINA STATE BUILDING CODE, VOL. 1-C ACCESSIBILITY CODE.
- OWNER SHALL PROVIDE FENCING AND OTHER SAFETY MEASURES NECESSARY IN AND AROUND ANY PROPOSED STORMWATER MANAGEMENT MEASURES (PONDS, WETLANDS, ETC.) OBTAINING PROPER PERMITS SHALL BE THE RESPONSIBILITY OF THE OWNER.
- RETAINING WALLS EXCEEDING 30 INCHES IN HEIGHT SHALL INCLUDE FALL PROTECTION IN THE FORM OF A HANDRAIL OR FENCING ON THE HIGH SIDE OF THE RETAINING WALL.
- PROPER COMPACTION OF ALL FILL SOILS PLACED ON SITE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COMPACTION SHALL BE ADEQUATE TO SUPPORT THE PROPOSED USE OF AREAS IN WHICH FILL SOILS ARE PLACED. THE CONTRACTOR SHALL HIRE A GEOTECHNICAL ENGINEER TO TEST AND VERIFY THAT COMPACTION IS ADEQUATE FOR THE PROPOSED USE OF THE AREA OF FILL PLACEMENT.
- ALL ASPECTS OF THIS PROJECT SHALL BE IN FULL COMPLIANCE WITH CURRENT ADA STANDARDS. IF THE CONTRACTOR NOTES ANY ASPECTS OF THE PROJECT WHICH ARE NOT IN COMPLIANCE, THE ENGINEER SHALL BE NOTIFIED PRIOR TO ANY FURTHER WORK BEING PERFORMED. ANY WORK PERFORMED AFTER THE CONTRACTOR NOTES SUCH A NON COMPLIANCE IS SUBJECT TO REMOVAL AND REPAIR AT THE CONTRACTOR'S EXPENSE.
- 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 PONDS 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 4% OR TWO PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D998. THE CONTRACTOR SHALL TAKE PHOTOGRAPHS OF THE OUTLET STRUCTURE AT ALL 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.
- RETAINING WALLS SHOWN HEREIN SHALL BE DESIGNED BY A QUALIFIED PROFESSIONAL ENGINEER WITH EXPERIENCE DESIGNING RETAINING WALLS. AT LEAST 14 DAYS PRIOR TO BEGINNING CONSTRUCTION OF RETAINING WALLS, THE CONTRACTOR SHALL CONTACT THE OWNER'S GEOTECHNICAL ENGINEER TO SCHEDULE AND COORDINATE ALL APPROPRIATE INSPECTIONS, TESTING, AND VERIFICATION NECESSARY DURING RETAINING WALL CONSTRUCTION. THE GEOTECHNICAL ENGINEER SHALL PROVIDE CONTINUOUS INSPECTION, TESTING AND VERIFICATION FOR THE DURATION OF RETAINING WALL CONSTRUCTION. PROPER SCHEDULING, EXECUTION, AND RECORD KEEPING FOR ALL REQUIRED INSPECTIONS, TESTING, AND VERIFICATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SUCH RECORDS SHALL BE RETAINED AND SHALL BE PROVIDED TO THE OWNER AND BASS, NIXON & KENNEDY, INC. ALL MONITORING, TESTING, AND VERIFICATION SHALL CONFORM TO THE MOST RECENT VERSION OF THE NC BUILDING CODE CHAPTER 15, SECTION 1806 OR THE WALL DESIGN ENGINEER'S SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.



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

## QUANTITY SUMMARY

PHASE NUMBER(S)	1
NUMBER OF LOT(S)	1
LOT NUMBER(S) BY PHASE	N/A
NUMBER OF UNITS	180
LIVABLE BUILDINGS	6
OPEN SPACE (AC)	1.92
NUMBER OF OPEN SPACE LOTS	N/A
PUBLIC WATER (LF)	875
PRIVATE SEWER (LF)	550
PUBLIC STREET (LF)	0
PUBLIC SIDEWALK (LF)	255

## 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, CPESC**  
**EMAIL: Marty.Bizzell@BNKinc.com**



06/02/22



**SP 21-01 Cobblestone Village**  
**APPROVED**

Date: October 6, 2022

*Meredith Gruber*

Town of Rolesville Planning  
 Department

## EROSION CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT

**APPROVED**

EROSION CONTROL  S- SEC-055248-2021

STORMWATER MGMT.  S- SWF-055250-2021

FLOOD STUDY  S-

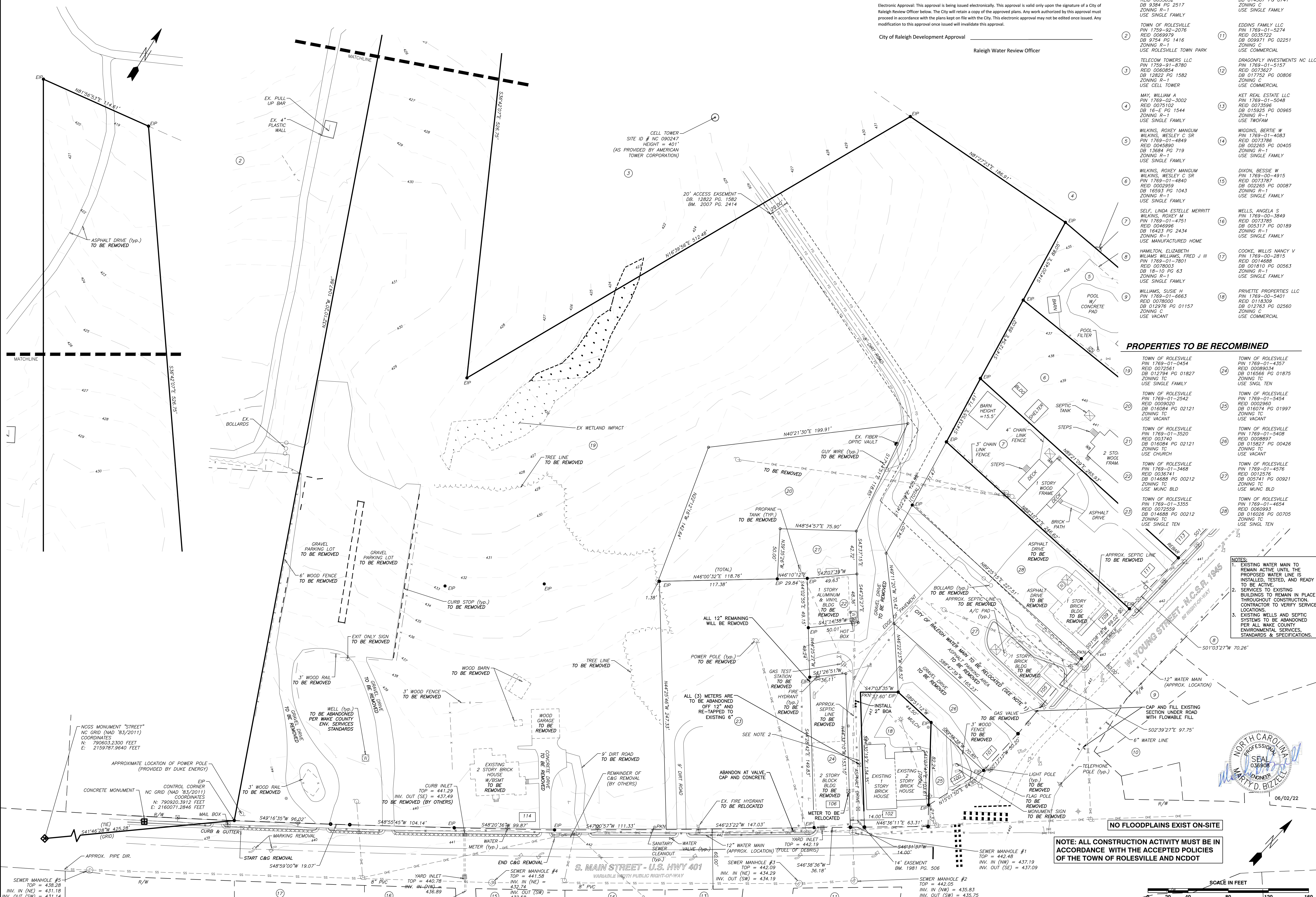
DATE 10/6/2022

*Marty D. Bizzell*  
 ENVIRONMENTAL CONSULTANT SIGNATURE

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer \_\_\_\_\_



PROPERTIES TO BE RECOMBINED

- TOWN OF ROLESVILLE PIN 1769-01-0454 REID 0008920 DB 012794 PG 01827 ZONING TC USE SINGLE FAMILY
- TOWN OF ROLESVILLE PIN 1769-01-2542 REID 0009020 DB 016084 PG 02121 ZONING TC USE VACANT
- TOWN OF ROLESVILLE PIN 1769-01-3520 REID 003740 DB 016084 PG 02121 ZONING TC USE CHURCH
- TOWN OF ROLESVILLE PIN 1769-01-3468 REID 0036741 DB 014688 PG 00212 ZONING TC USE MUNC BLD
- TOWN OF ROLESVILLE PIN 1769-01-3465 REID 0025593 DB 014688 PG 00212 ZONING TC USE SINGLE TEN
- TOWN OF ROLESVILLE PIN 1769-01-4357 REID 0008954 DB 016566 PG 01875 ZONING TC USE SINGL TEN
- TOWN OF ROLESVILLE PIN 1769-01-2542 REID 0009020 DB 016074 PG 01997 ZONING TC USE VACANT
- TOWN OF ROLESVILLE PIN 1769-01-5408 REID 0008897 DB 016527 PG 00426 ZONING TC USE VACANT
- TOWN OF ROLESVILLE PIN 1769-01-4576 REID 0012576 DB 005741 PG 00921 ZONING TC USE MUNC BLD
- TOWN OF ROLESVILLE PIN 1769-01-4654 REID 0006993 DB 016026 PG 00705 ZONING TC USE SINGL TEN

- NOTES:
- EXISTING WATER MAIN TO REMAIN ACTIVE UNTIL THE PROPOSED WATER LINE IS INSTALLED, TESTED, AND READY TO BE ACTIVE.
  - SERVICES TO EXISTING BUILDINGS TO REMAIN IN PLACE THROUGHOUT CONSTRUCTION. CONTRACTOR TO VERIFY SERVICE LOCATIONS.
  - EXISTING WELLS AND SEPTIC SYSTEMS TO BE ABANDONED PER ALL WAKE COUNTY ENVIRONMENTAL SERVICES, STANDARDS & SPECIFICATIONS.



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



**BASS, NIXON & KENNEDY, INC.**  
CONSULTING ENGINEERS  
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607  
TELEPHONE: (919)881-4422 FAX: (919)881-6868  
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY

PROGRESS DRAWN BY: MRM  
DATE: 03-19-17  
JOB NO.: 19157

EXISTING CONDITIONS & DEMOLITION PLAN

SCALE: 1" = 40'

CHK BY: MDB

**COBBLESTONE VILLAGE MIXED USE DEVELOPMENT**  
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET **C0.1**

TOWN OF ROLESVILLE PROJECT NO. \_\_\_\_\_

19157 - Rolesville Town Center CIVIL 04 Construction 01 - 19157\_en\_cons.dwg, Ex. Cont. 6/2/2022 4:30:22 PM, marc.mueller

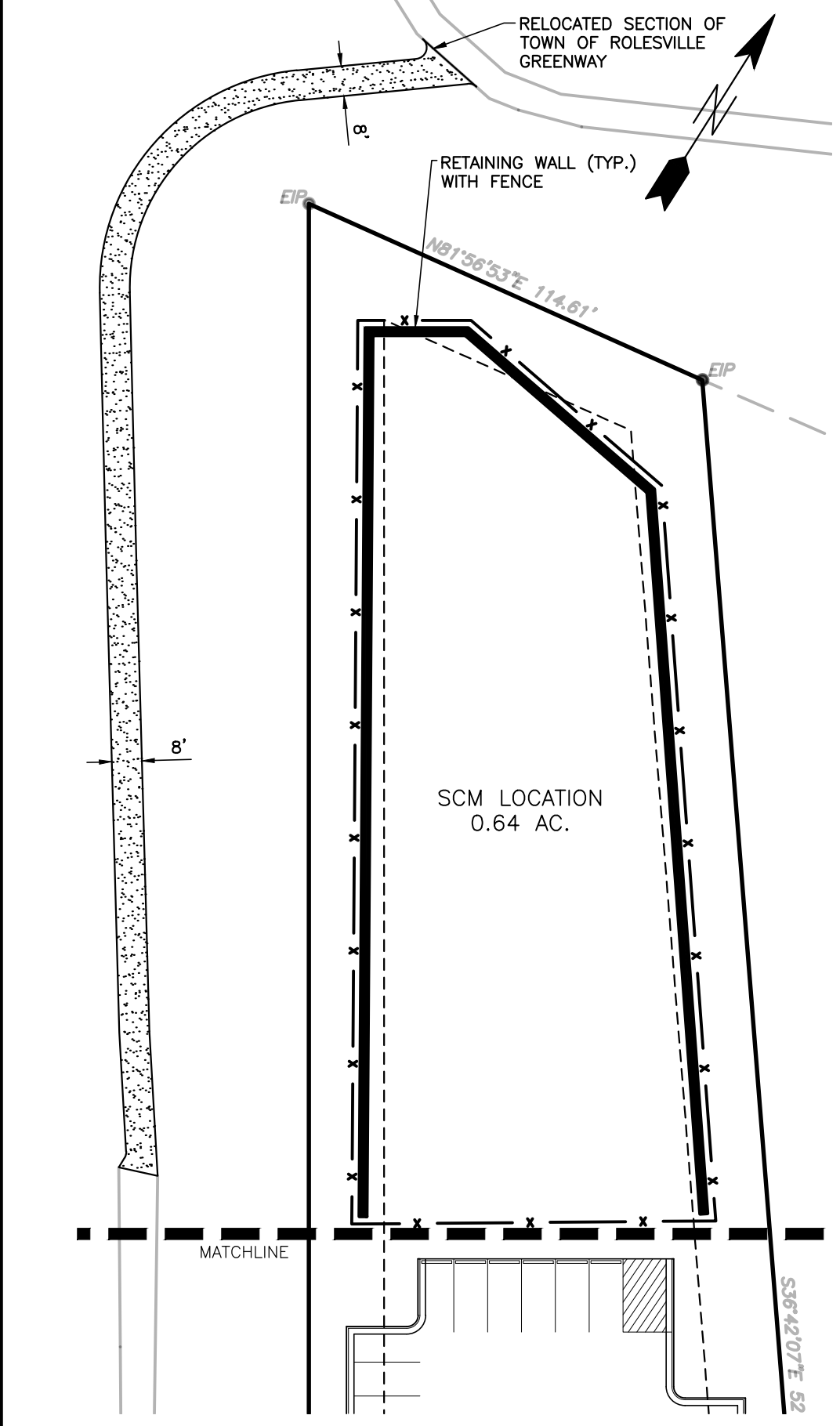


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**CONSULTING ENGINEERS**  
 6310 CHARLETT HILL ROAD, SUITE 250, RALEIGH, NC 27607  
 TELEPHONE: (919)881-1122 FAX: (919)881-8686  
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY

**COBBLESTONE VILLAGE**  
**MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA  
 NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

- CONDITIONS OF APPROVAL:**
1. TECHNICAL REVIEW COMMITTEE APPROVAL AND ISSUANCE OF REQUIRED PERMITS FROM ALL AGENCIES MUST BE ACHIEVED AND SUBMITTED FOR REVIEW AND RECORD RETENTION PRIOR TO FINAL SIGNATURE AND APPROVAL OF THE SITE PLAN.
  2. CROSS-CONNECTION ACCESS TO ONE OF THE THREE ADJACENT PROPERTIES TO THE EAST ALONG W. YOUNG STREET (111, 113, AND 115 W. YOUNG STREET) FOR FUTURE DEVELOPMENT WILL BE PROVIDED.
  3. BEST EFFORTS WILL BE MADE FOR GREENWAY ACCESS ACROSS THE TELECOM TOWERS, LLC SITE FOR PEDESTRIAN TRAFFIC FROM OVERFLOW PARKING SITE LOCATED AT THE TERMINUS OF SCARBORO STREET IN MAIN STREET PARK.
  4. BASED UPON TESTIMONY REGARDING SHARED PARKING IN A MIXED-USE DEVELOPMENT, A 15% PARKING REDUCTION IS GRANTED RESULTING IN 467 REQUIRED SPACES.
  5. A MAXIMUM HEIGHT OF 60 FEET IS APPROVED PER THE BUILDING HEIGHT DESIGN ALTERNATIVE FOR THE SITE AS SHOWN ON THE SITE PLAN, PROVIDED ALL OTHER APPLICABLE STANDARDS ACCORDING TO THE LDO ARE MET.
  6. FINAL STREET DESIGN SHALL INCORPORATE A ROUNDABOUT OR OTHER CUT-THROUGH FOR DROP-OFFS CONSISTENT WITH THE DESIGN REQUIREMENTS OF THE TOWN COMMUNITY BUILDING AS PROVIDED BY THE TOWN'S ARCHITECTURAL CONSULTANT.
  7. SLIP APPROVED BY BOARD OF COMMISSIONERS ON OCTOBER 5, 2021.



**OVERALL SITE DATA**

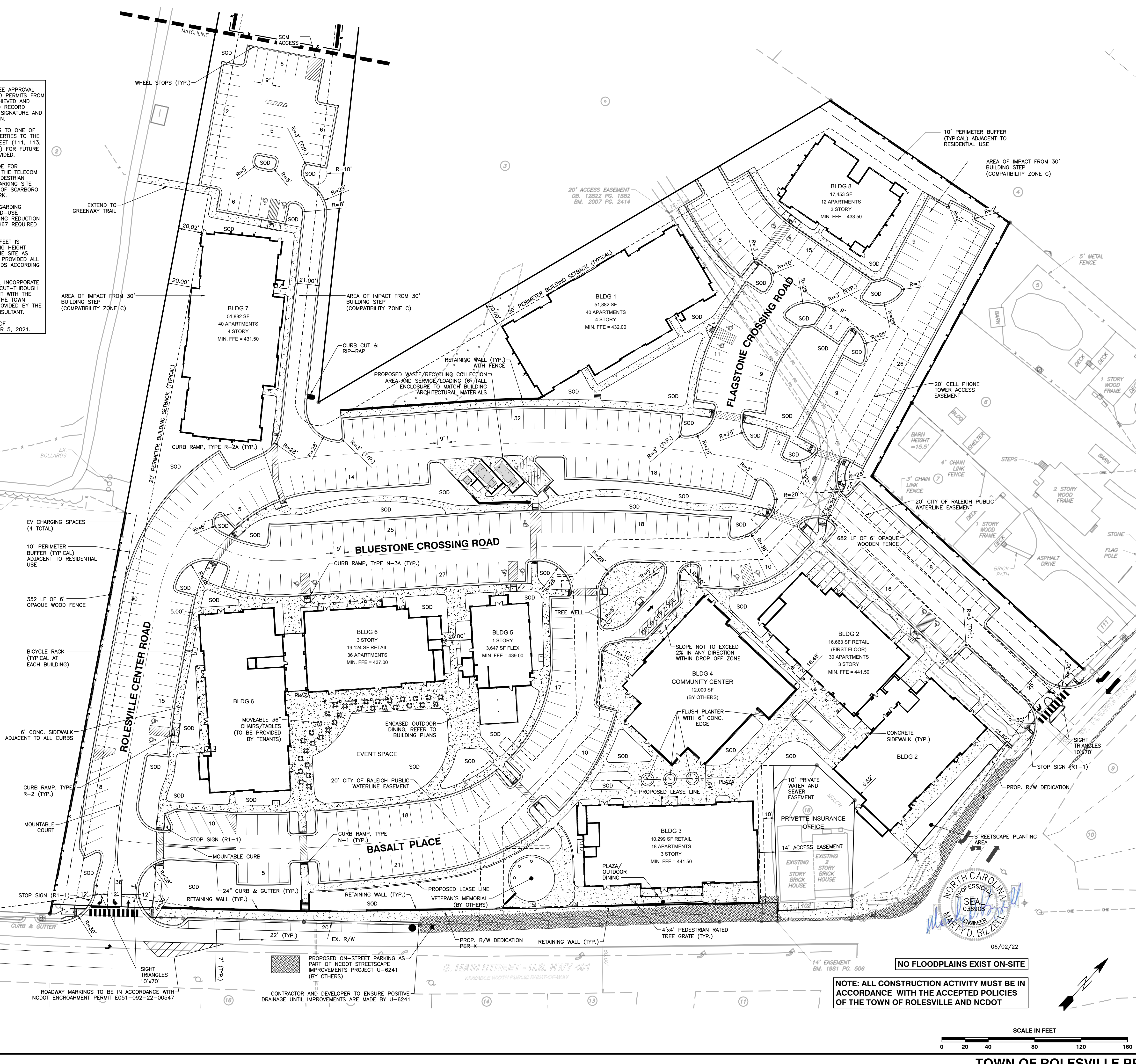
SITE AREA	10.96 AC (477,418 SF±)
P.I.N.	1769-01-0454, 1769-01-4357, 1769-01-3355 1769-01-3468, 1769-01-2542, 1769-01-3520 1769-01-4654, 1769-01-5454, 1769-01-5408, 1769-01-4576
ZONING DISTRICT:	TOWN CENTER (TC) RESIDENTIAL, MIXED USE
OPEN SPACE AREA:	1.92 AC PROVIDED (1.10 AC REQUIRED, 10%)
IMPERVIOUS AREA:	7.48 AC
IMPERVIOUS AREA (%):	68%
APARTMENT MIX	112 UNITS
1 BEDROOM	64 UNITS
2 BEDROOM	176 UNITS
TOTAL APARTMENTS	
RESIDENTIAL DENSITY:	16.06 UNITS/ACRE
RETAIL/COMMERCIAL:	49,830 SQUARE FEET
MUNICIPAL FLEX SPACE:	15,900 SQUARE FEET
TOTAL:	65,730 SQUARE FEET
EVENT SPACE:	0.44 ACRES/ 18,976 SQUARE FEET
PARKING REQUIREMENTS PER TC DISTRICT DEVELOPMENT STANDARDS	
MIXED USE RESIDENTIAL: 2.0 SPACES PER UNIT	176 x 2 = 352 SPACES REQUIRED
MIXED USE NON-RESIDENTIAL: 3 SPACES PER 1000 GSF	65,730/1000 x 3 = 197 SPACES REQUIRED
TOTAL PARKING REQUIRED/PROVIDED:	549 SPACES REQUIRED/ 468 PROVIDED
5% OF ON STREET PARKING MAY BE COUNTED AS REQUIRED PARKING (28 ALLOWED/ 24 PROVIDED)	
15% PARKING REDUCTION ALLOWED FOR SHARED PARKING: 549 x .85 = 467 REQUIRED	
BUILDING 1:	51,882 SF APARTMENTS
BUILDING 2:	16,641 SF RETAIL
BUILDING 3:	11,405 SF RETAIL
BUILDING 4:	15,900 SF MUNICIPAL
BUILDING 5:	3,816 FLEX
BUILDING 6:	18,148 SF RETAIL
BUILDING 7:	51,882 SF APARTMENTS
BUILDING 8:	17,453 SF APARTMENTS

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

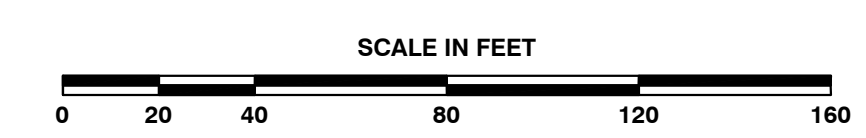
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City of Raleigh Development Approval

Raleigh Water Review Officer

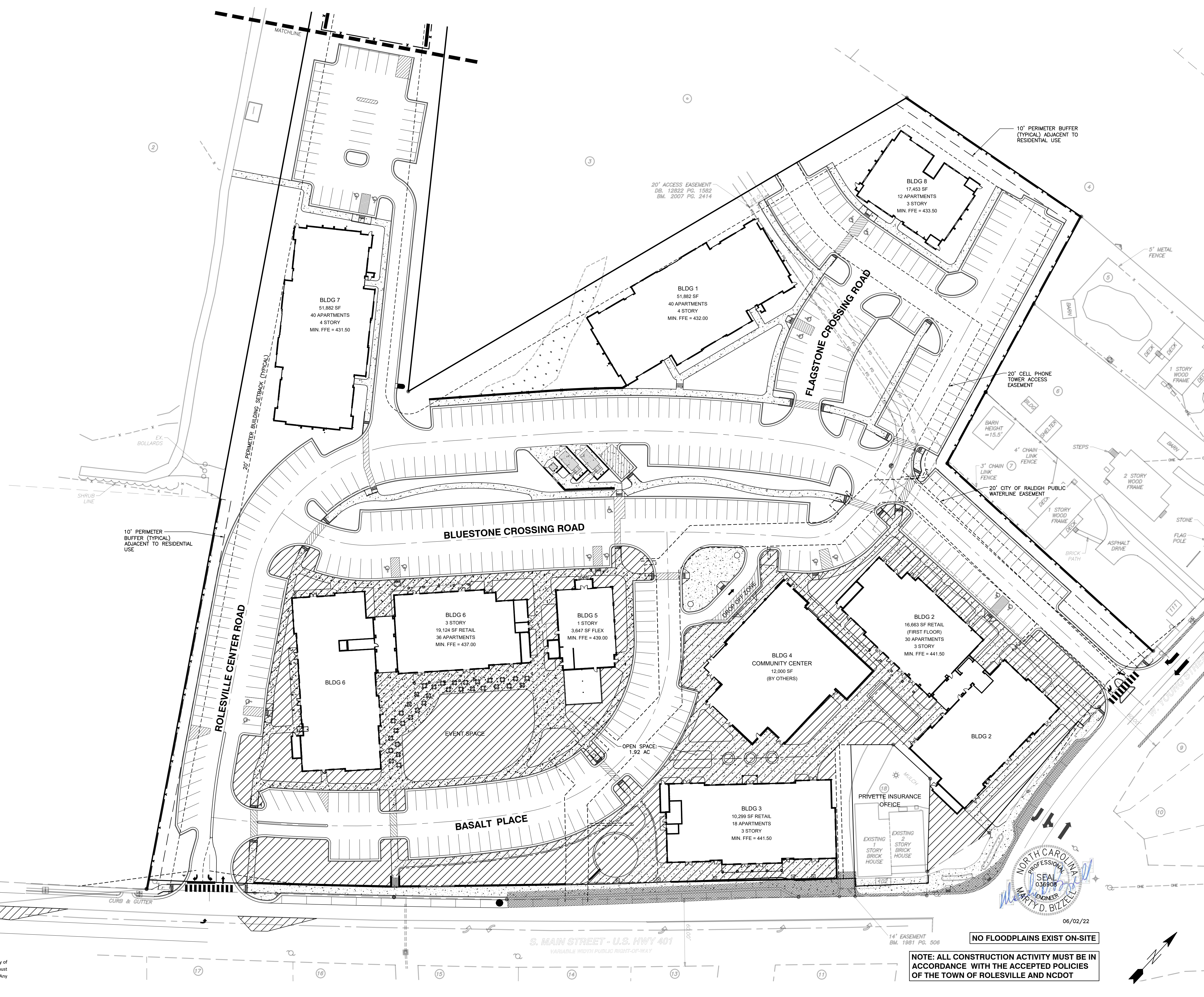
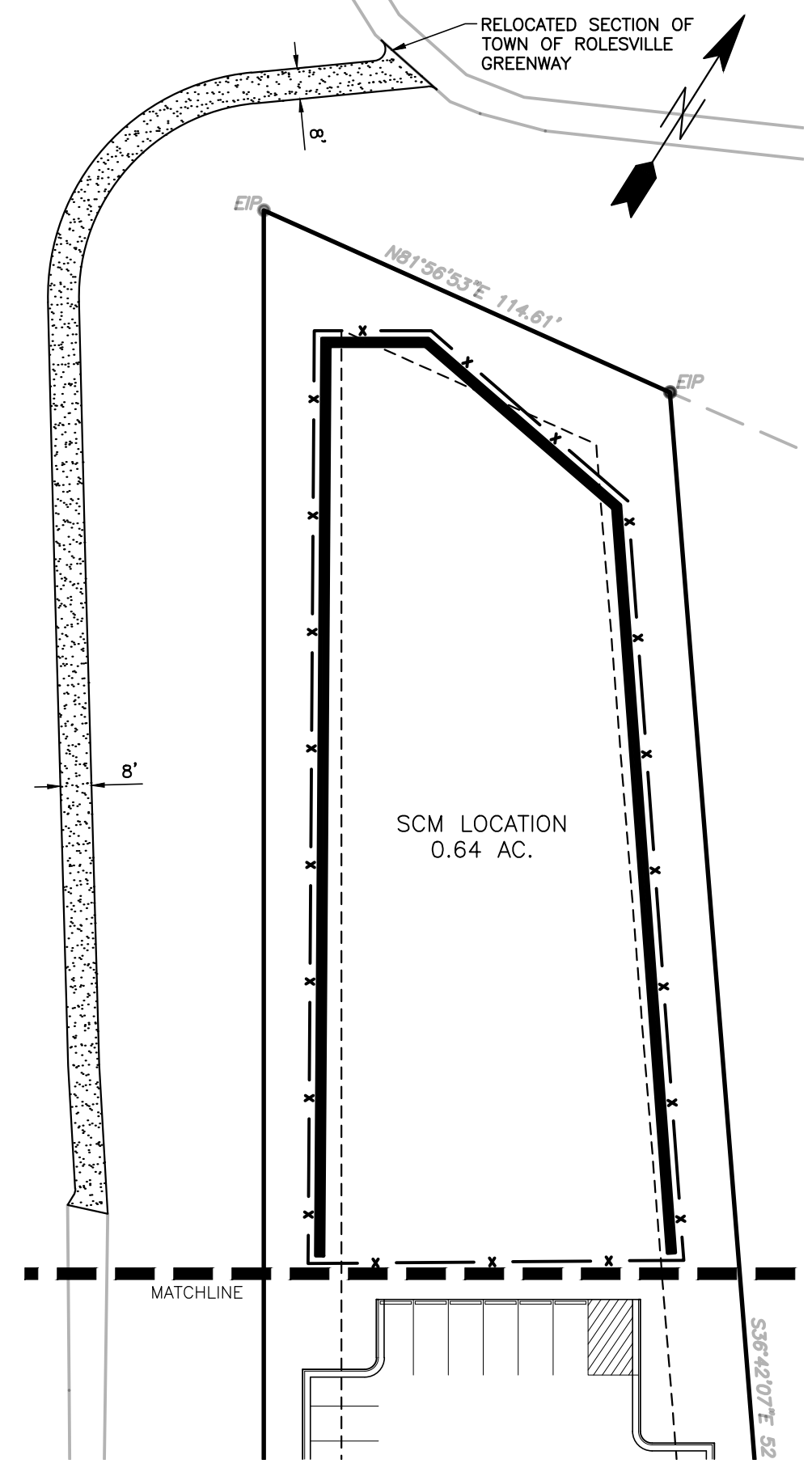


**NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT**



SHEET C1.1

TOWN OF ROLESVILLE PROJECT NO.



R:\2021\19157 - Rolesville Town Center CIVIL\04 Construction\02 - 19157\_Site.dwg, Open Space Plan, 6/2/2022 4:33:33 PM, mtrcmweller

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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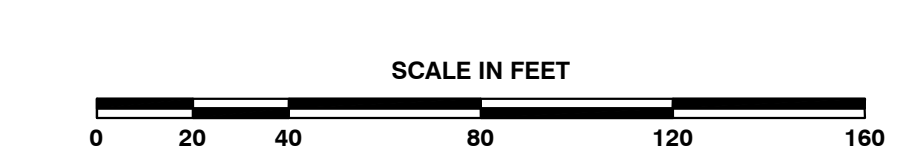
City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer \_\_\_\_\_

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06/02/22



**BASS, NIXON & KENNEDY, INC.**  
CONSULTING ENGINEERS  
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607  
TELEPHONE: (919)881-1122 FAX: (919)881-8686  
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY

PROGRESS MRN  
DATE DRAWN BY  
JOB NO. OPEN SPACE PLAN  
SCALE: 1" = 40'  
CHK BY: MDB

**COBBLESTONE VILLAGE**  
MIXED USE DEVELOPMENT  
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET  
**C1.2**

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer \_\_\_\_\_

**Public**  
 Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh  
 Public Utilities Department Permit # W-3879  
 Authorization to Construct See digital signature

**Private**  
 Sewer Collection / Extension System

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 # S-4962 (P)  
 Authorization to Construct See digital signature

**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.

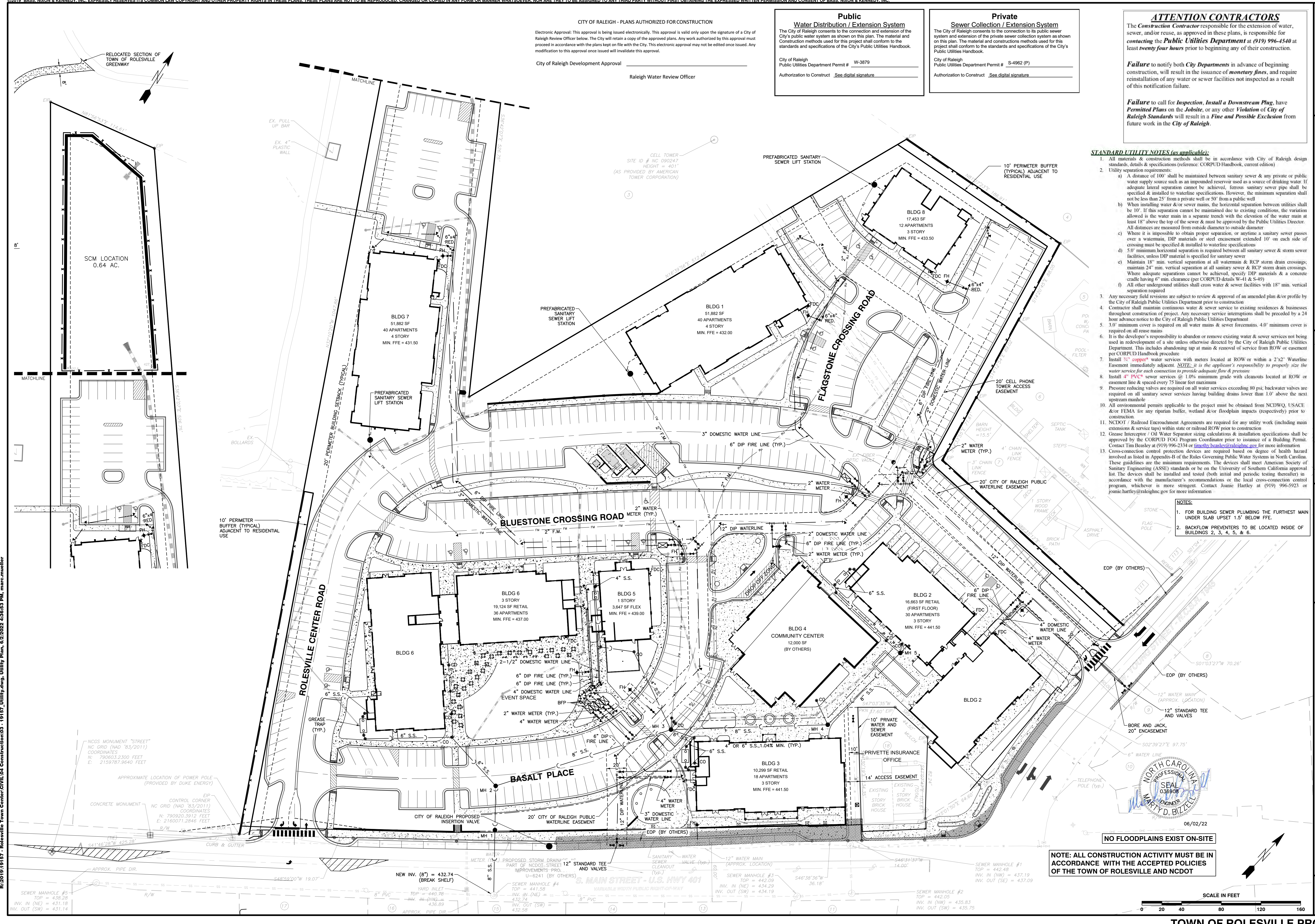
Failure to call for Inspection, Install a Downstream Plug, have Permitted Plans on the Jobsite, or any other Violation of City of Raleigh Standards will result in a Fine and Possible Exclusion from future work in the City of Raleigh.

**STANDARD UTILITY NOTES (as applicable):**

- 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 watertight 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 encasement extended 10' on each side of crossing must be specified & installed to watertight 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 force mains. 4.0' minimum cover is required on all reuse mains
- It is the developer's responsibility to abandon or remove existing water & sewer services not being used in redevelopment of a site unless otherwise directed by the City of Raleigh Public Utilities Department. This includes abandoning tap at main & removal of service from ROW or easement per CORPUD Handbook procedure
- Install 3/4" copper\* water services with meters located at ROW or within a 2'x2' Watertight 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 NCDWQ, 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 IOK Program Coordinator prior to issuance of a Building Permit. Contact Tim Hensley at (919) 996-2334 or [timothy.hensley@raleighnc.gov](mailto:timothy.hensley@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](mailto:joanie.hartley@raleighnc.gov) for more information

**NOTES:**

- FOR BUILDING SEWER PLUMBING THE FURTHEST MAIN UNDER SLAB UPSET 1.5" BELOW FFE.
- BACKFLOW PREVENTERS TO BE LOCATED INSIDE OF BUILDINGS 2, 3, 4, 5, & 6.



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**BASS, NIXON & KENNEDY, INC.**  
 CONSULTING ENGINEERS  
 6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607  
 TELEPHONE: (919) 981-4422 FAX: (919) 981-6986  
 CERTIFICATION NUMBERS: NCBELS (C-010); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY

UTILITY PLAN  
 SCALE: 1" = 40'  
 CHK BY: MBB

**COBBLESTONE VILLAGE MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

**SHEET C2.1**

TOWN OF ROLESVILLE PROJECT NO. \_\_\_\_\_

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

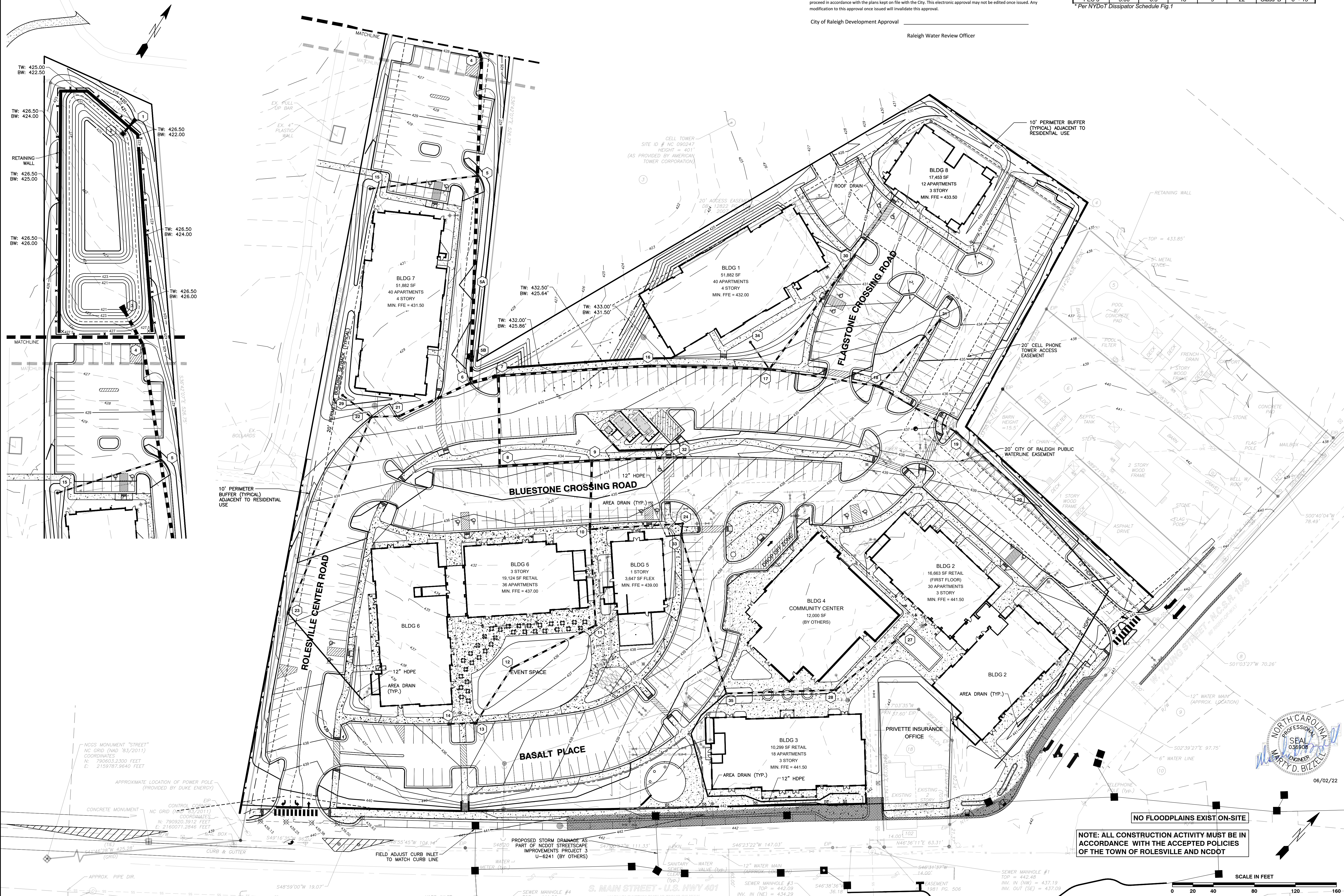
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City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer

Structure	d <sub>50</sub> (ft)	Velocity (fps)	Length (ft)	Width (ft)	Depth (in)	Type	d <sub>50</sub>
FES 1	2.00	7.4	12	6	22	Class 'B'	6" - 13"
FES 3	3.00	6.5	18	9	22	Class 'B'	6" - 13"

\* Per NYDOT Dissipator Schedule Fig.1



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NO.	DATE	DESCRIPTION	BY

03-19157  
 JOB NO.

MRN  
 DRAWN BY

DATE

GRADING PLAN

SCALE: 1" = 40'

CHK BY: MDB

PROGRESS

DATE

DESCRIPTION

NO.

DATE

DESCRIPTION

BY

REVISIONS

NO. DATE DESCRIPTION BY

NO. DATE DESCRIPTION BY

NO. DATE DESCRIPTION BY

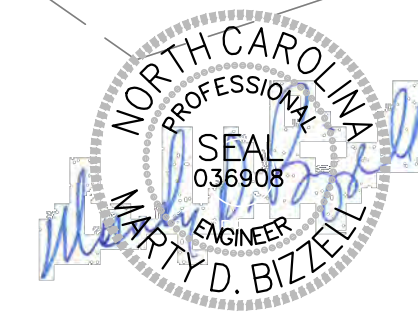
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**COBBLESTONE VILLAGE**  
**MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

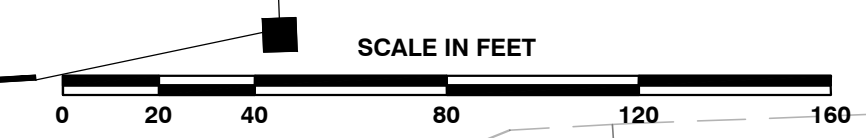
SHEET  
**C3.1**

TOWN OF ROLESVILLE PROJECT NO.

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION



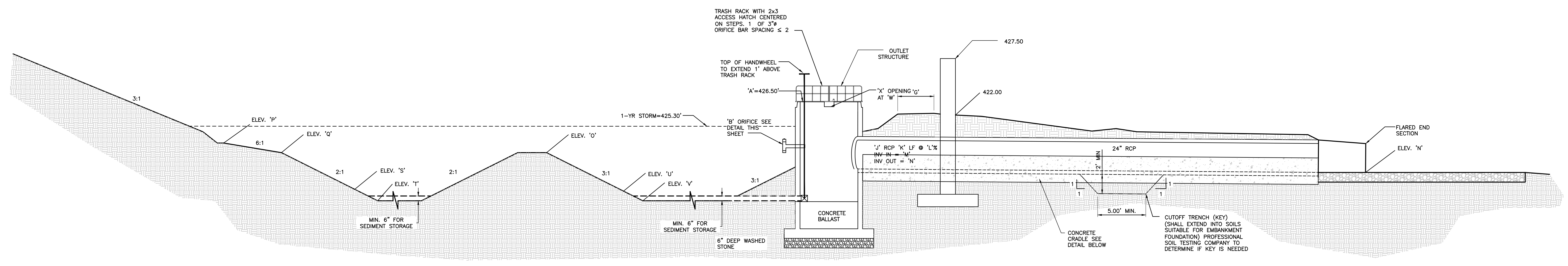
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SCALE IN FEET



**BASS, NIXON & KENNEDY, INC.**  
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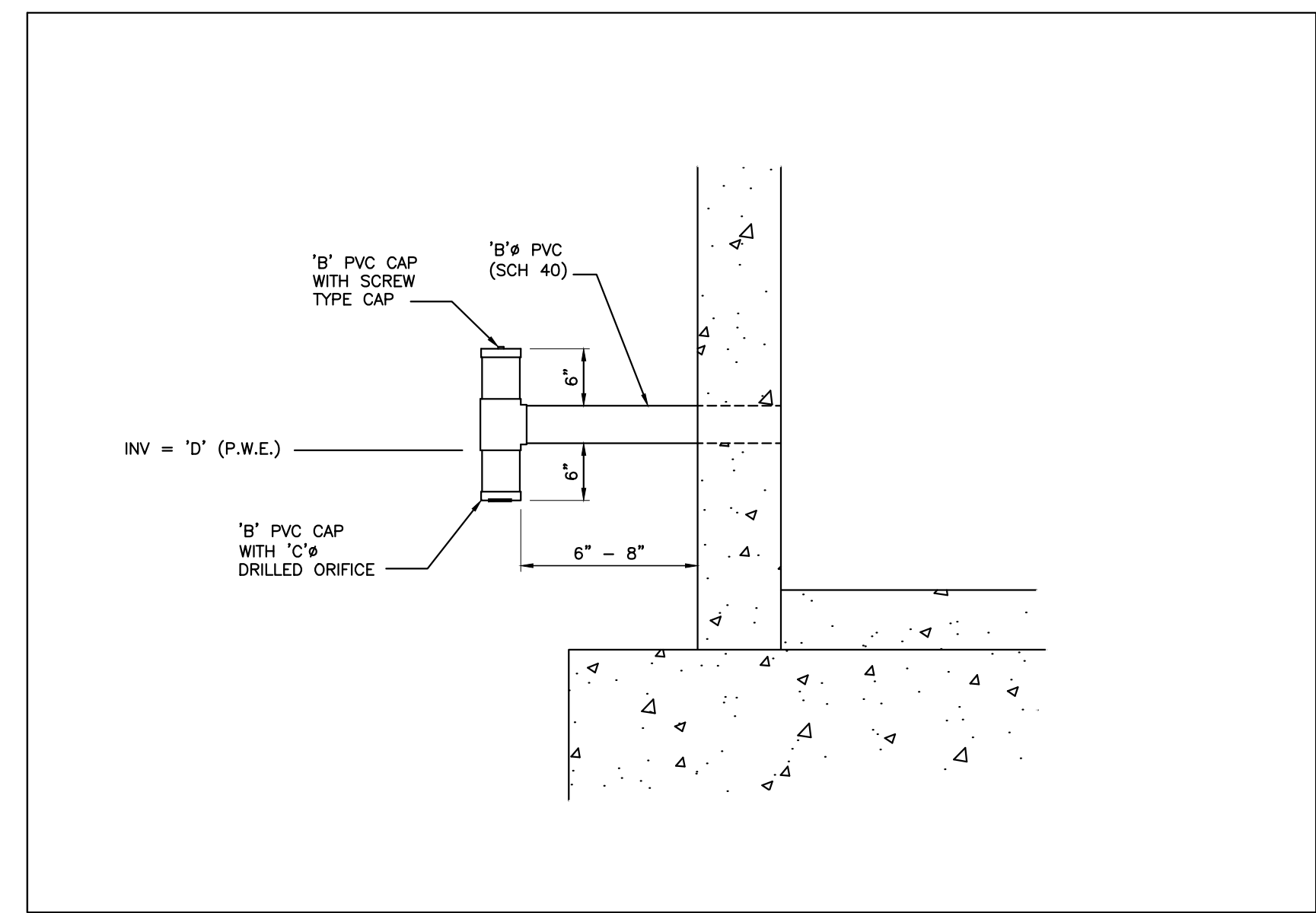


**CROSS-SECTION OF WET POND A-A**

NTS

**BOUANCY CALCULATIONS FOR RISER/BARREL**  
**COBBLESTONE VILLAGE**  
**WET POND - SCM**

Square Riser Inside Length (ft):	4.0
Riser Wall Thickness (in):	6
Pond Bottom Elevation (ft):	420.00
Riser Crest Elevation (ft):	426.50
Density of Riser Mat (lb/cf):	150.00
Pipe Inside Diameter (in):	24
Pipe Wall Thickness (in):	3
Length of Pipe Exposed (ft):	1.00
Density H2O (lb/cf):	62.40
Volume H2O Displaced by Riser (cf):	131.63
Weight H2O Displaced by Riser (lb):	8213.40
Volume H2O Displaced by Pipe (cf):	4.91
Weight H2O Displaced by Pipe (lb):	306.31
Total Uplift Force (lb):	8519.71
Weight of Riser (lb):	4,144
Weight of Pipe (lb):	285.07
Pipe/Riser Downward Force (lb):	4408.82
<b>Ballast Concrete:</b>	
Minimum Factor of Safety:	1.2
Required ballast thickness (in):	37.02
Provided Ballast Thickness (in):	40
Total Downward Force (lb):	10,692
Provided Factor of Safety:	1.25



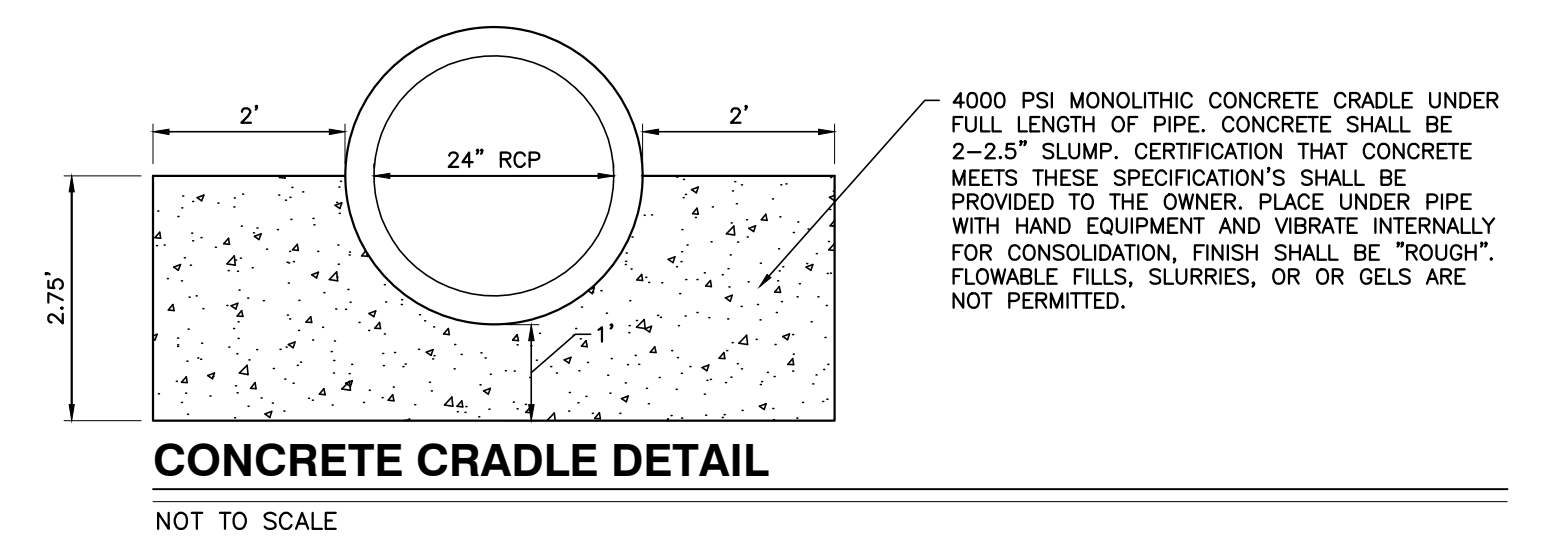
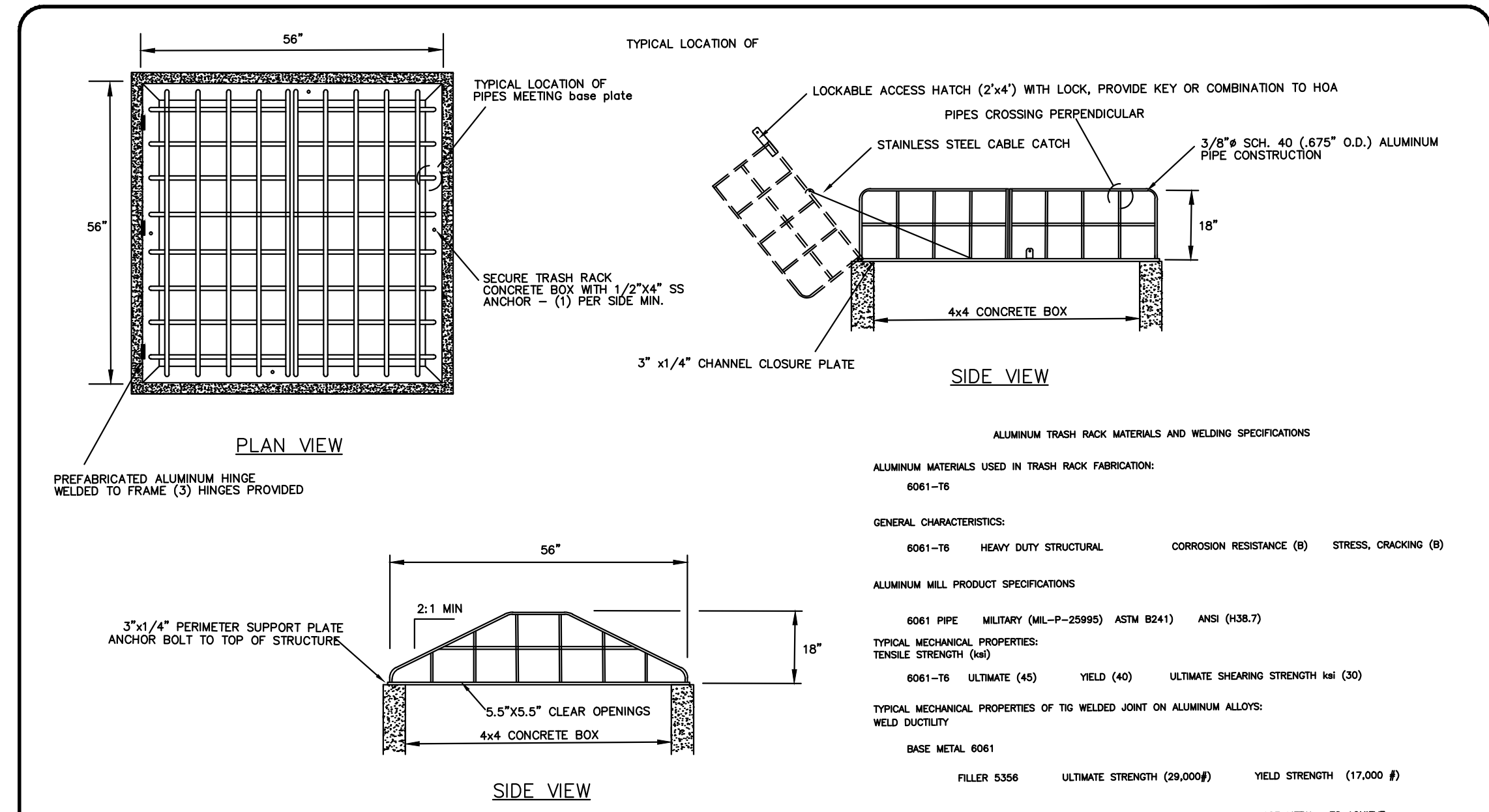
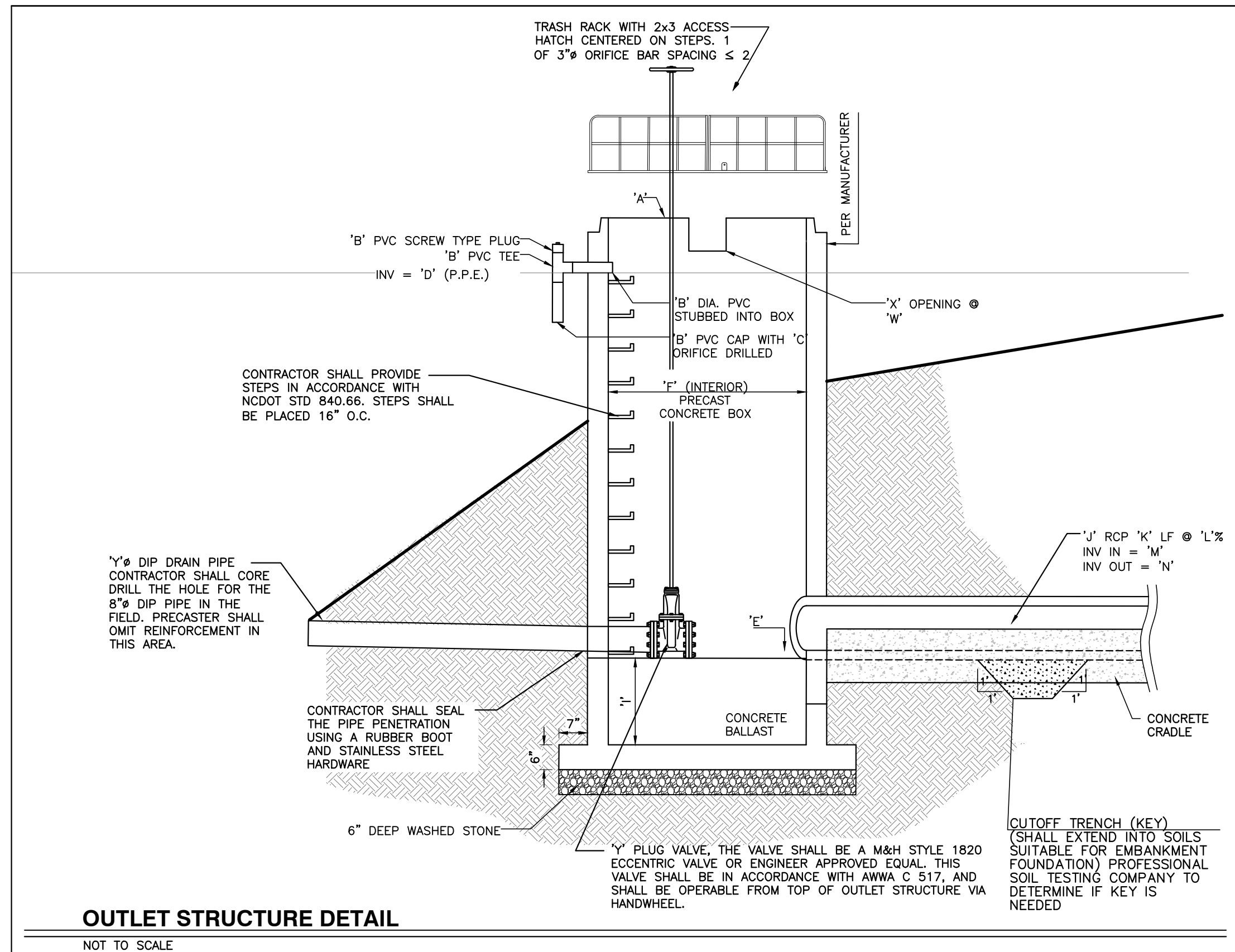
**INVERTED INTAKE DETAIL (RISER)**

NTS

**POND LEGEND - SCM**

Description	Design	As-Built
A Top of Riser	426.50 ft	
B Diameter of PVC Drawdown Pipe	4 in	
C Drawdown Orifice Opening	2.5 in	
D Drawdown Pipe Elevation / Permanent Pool	424.50 ft	
E Inside Bottom Riser Elevation	420.00 ft	
F Outlet Structure Size	4ft x 4ft	
G Top of Berm Width	10 ft	
H Top of Dam	428.00 ft	
I Ballast Thickness	40 in	
J Size of Outlet Pipe	24 in	
K Length of Outlet Pipe	18 ft	
L Slope of Outlet Pipe	2.78 %	
M Invert in Outlet Pipe	420.00 ft	
N Invert Out Outlet Pipe	419.80 ft	
O Top Elevation Forebay Berm	424.00 ft	
P Elevation Top of Litoral Shelf	425.00 ft	
Q Elevation Bottom of Litoral Shelf	424.00 ft	
R Slope of Litoral Shelf	6:1	
S Sediment Cleanout Elevation Forbay	422.00 ft	
T Bottom Elevation Forebay	421.00 ft	
U Sediment Cleanout Elevation Permanent Pool	421.00 ft	
V Bottom Elevation Permanent Pool	420.00 ft	
W Elevation Secondary Weir	426.20 ft	
X Width Secondary Weir	12 in	

**Special Instructions**  
 Place Drawdown pipe opposite of outlet pipe and ensure a minimum of 12" clearance between drawdown pipe opening and ground elevation to allow for proper drainage. Place secondary weir above drawdown pipe on same side of outlet structure.



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Raleigh Water Review Officer \_\_\_\_\_

06/02/22

PROFESSIONAL SEAL  
 MARY D. BIZELLE  
 ENGINEER

**NO FLOODPLAINS EXIST ON-SITE**

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R:\2019\19157 - Rolesville Town Center\CIVIL\04 Construction\11 - 19157\_BMP Details.dwg, BMP Details, 6/2/2022 4:36:52 PM, mrcmcmiller

NO.	DATE	DESCRIPTION	BY

**COBBLESTONE VILLAGE**  
**MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

03-19157-19157\_BMP Details.dwg  
 DATE DRAWN BY  
 DATE DRAWN BY  
 DATE DRAWN BY  
 DATE DRAWN BY

**BMP DETAILS**

SCALE: N.T.S.

CHK BY: MDB

NO. DATE DESCRIPTION BY

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

**CONSTRUCTION SEQUENCE - STAGE 1**

- ONCE THE EROSION AND SEDIMENT CONTROL PLAN APPROVAL AND NCGO1 CERTIFICATE OF COVERAGE ARE OBTAINED, SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT. OBTAIN A LAND-DISTURBANCE PERMIT.
- INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SKIMMER SEDIMENT BASINS 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.
- 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.

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 = 11.0 AC

**DENUDED AREA = 10.96 AC**

**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 NCGO1 PERMIT PART I, SECTION C, 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 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 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.

**SEDIMENT BASIN SUMMARY CHART**

Structure Number	1	2	3
Drainage Area (Acres)	3.42	4.61	0.6
Q1 (cfs)	(0.5)(7.22)(3.42)=12.35	(0.5)(7.22)(4.61)=16.64	(0.5)(7.22)(0.6)=2.17
Weir Size (ft)	10 x 1.5	10 x 1.5	10 x 1.5
Surface Area Required (SF)	(435)(12.35)=5,372	(435)(16.64)=7,238	(435)(2.17)=944
Volume Required (CF)	(1800)(3.42)=6,156	(1800)(4.61)=8,298	(1800)(0.6)=1,080
Dimensions (ft)	see plans	see plans	see plans
Surface Area Provided (SF)	5,400	10,640	1,584
Volume Provided (CF)	13,572	27,636	2,563
Skimmer Size	4"	4"	3"
Orifice Radius	0.5"	0.63"	0.25
Orifice Diameter	1.0"	1.25"	0.5
Drawdown Time (days)	4.62	3.98	3.74
Number of Baffles	3	3	3

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City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer \_\_\_\_\_

**DITCH/CHANNEL CALCULATIONS**

DIVERSION DITCH ID	LENGTH (LF)	DA (Ac)	Q10 (CFS)	SLOPE (%)	V10 (FPS)	LINER*	PERMISSIBLE SHEAR STRESS (PSF)	CALCULATED SHEAR STRESS (PSF)
DV-1	296	1.02	2.34	2.00	2.01	SC150	2.00	0.78
DV-2	495	1.00	2.30	2.60	2.29	SC150	2.00	0.94
DV-3	442	0.52	1.19	1.80	0.92	SC150	1.80	0.29
DV-4	167	0.08	0.13	2.90	0.96	SC150	1.80	0.38

\*NAG = NORTH AMERICAN GREEN OR EQUIVALENT

**Skimmer Basin #1**

4.34 Drainage Area (Acres)  
12.35 Peak Flow from 10-year Storm (cfs)

6198 Required Volume (ft³)  
6372 Required Surface Area (ft²)  
51.8 Suggested Width (ft)  
1033 Suggested Length (ft)

54 Trial Top Width at Spillway Invert (ft)  
100 Trial Top Length at Spillway Invert (ft)  
2 Trial Side Slope Ratio Z:1  
3 Trial Depth (ft) (2 to 3.5 feet above grade)  
48 Bottom Width (ft)  
48 Bottom Length (ft)  
3908 Bottom Area (ft²)  
1572 Actual Volume (ft³)  
5402 Actual Surface Area (ft²)

10 Trial Weir Length (ft)  
0.75 Suggested Trial Depth of Flow (ft)  
30.0 Spillway Capacity (cfs)

Skimmer Size (Inches)  
4.033 Head on Skimmer (feet)  
1.25 Orifice Size (1/4 inch increments)  
4.62 Dewatering Time (days)  
Required 3 to 5 days for Wake County

**Skimmer Basin #2**

4.61 Drainage Area (Acres)  
16.64 Peak Flow from 10-year Storm (cfs)

8298 Required Volume (ft³)  
7238 Required Surface Area (ft²)  
60.2 Suggested Width (ft)  
120.3 Suggested Length (ft)

56 Trial Top Width at Spillway Invert (ft)  
190 Trial Top Length at Spillway Invert (ft)  
2 Trial Side Slope Ratio Z:1  
3 Trial Depth (ft) (2 to 3.5 feet above grade)  
44 Bottom Width (ft)  
48 Bottom Length (ft)  
3908 Bottom Area (ft²)  
27636 Actual Volume (ft³)  
10840 Actual Surface Area (ft²)

20 Trial Weir Length (ft)  
0.75 Suggested Trial Depth of Flow (ft)  
39.0 Spillway Capacity (cfs)

Skimmer Size (Inches)  
4 Skimmer Size (Inches)  
0.333 Head on Skimmer (feet)  
1.25 Orifice Size (1/4 inch increments)  
3.98 Dewatering Time (days)  
Required 3 to 5 days for Wake County

**Skimmer Basin #3**

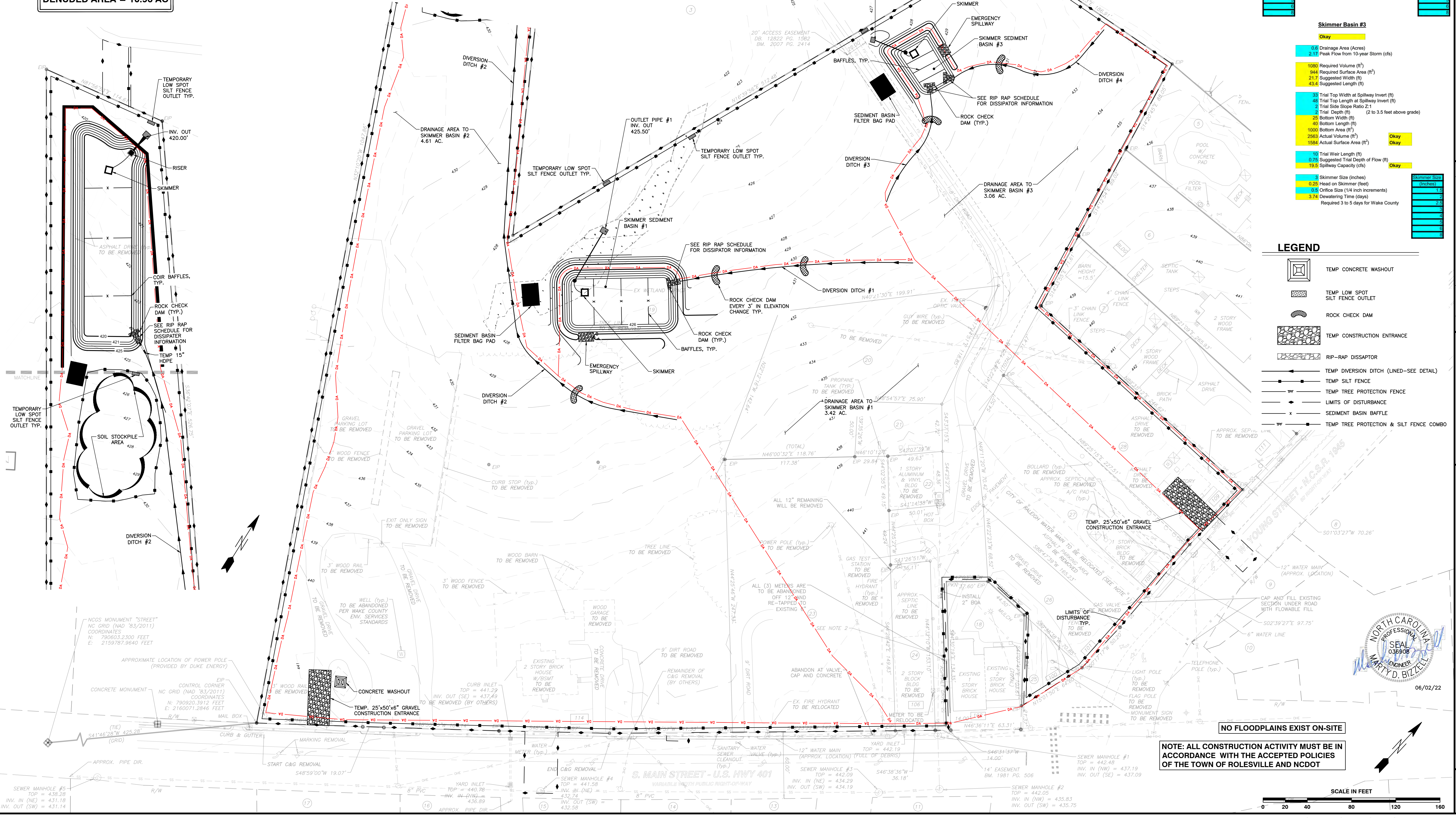
0.6 Drainage Area (Acres)  
2.17 Peak Flow from 10-year Storm (cfs)

1080 Required Volume (ft³)  
944 Required Surface Area (ft²)  
21.7 Suggested Width (ft)  
43.4 Suggested Length (ft)

33 Trial Top Width at Spillway Invert (ft)  
48 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)  
28 Bottom Width (ft)  
40 Bottom Length (ft)  
1000 Bottom Area (ft²)  
2563 Actual Volume (ft³)  
1584 Actual Surface Area (ft²)

10 Trial Weir Length (ft)  
0.75 Suggested Trial Depth of Flow (ft)  
19.0 Spillway Capacity (cfs)

Skimmer Size (Inches)  
0.333 Head on Skimmer (feet)  
1.25 Orifice Size (1/4 inch increments)  
3.74 Dewatering Time (days)  
Required 3 to 5 days for Wake County



**LEGEND**

- TEMP CONCRETE WASHOUT
- TEMP LOW SPOT SILT FENCE OUTLET
- ROCK CHECK DAM
- TEMP CONSTRUCTION ENTRANCE
- RIP-RAP DISSIPATOR
- TEMP DIVERSION DITCH (LINED-SEE DETAIL)
- TEMP SILT FENCE
- TEMP TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE
- SEDIMENT BASIN BAFFLE
- TEMP TREE PROTECTION & SILT FENCE COMBO

**PROGRESS**

DATE: \_\_\_\_\_  
JOB NO.: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
CHECKED BY: MDB

**EROSION CONTROL PLAN - STAGE 1**

SCALE: 1" = 40'

NO. DATE DESCRIPTION REVISIONS

06/02/22

SCALE IN FEET

0 20 40 80 120 160

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

NO FLOODPLAINS EXIST ON-SITE

**BASS, NIXON & KENNEDY, INC.**  
CONSULTING ENGINEERS  
6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607  
TELEPHONE: (919) 881-4422 FAX: (919) 881-6886  
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

**COBLESTONE VILLAGE**  
MIXED USE DEVELOPMENT  
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

**PROFESSIONAL SEAL**  
W. MARY D. BIZELLE  
NORTH CAROLINA  
036590  
LICENSED PROFESSIONAL ENGINEER  
06/02/22

**TOWN OF ROLESVILLE PROJECT NO. C3.3**

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

R:\2019\19157 - Rolesville Town Center\04 Construction\06 - 19157\_Erosion Control\Stage 1.dwg, Erosion Control Phase 1, 6/2/2022 4:39:11 PM, mrcmawalter



### CONSTRUCTION SEQUENCE - STAGE 2

- BEGIN CONSTRUCTION OF ALL BUILDINGS.
  - STABILIZE SITE AS NEW DISTURBED AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDATED AREAS PER GROUND STABILIZATION TIME FRAMES.
  - WHEN CONSTRUCTION OF PARKING LOTS ARE 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 = 10.96 AC
- ENVIRONMENTAL CONSULTANT: JEEVAN NEUPANE (919-819-8907)

### 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 II, SECTION C, ITEM (4) ENTITLED "DRAW DOWN OF SEDIMENT BASIN 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 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 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.

#### Skimmer Basin #2

6.99 Drainage Area (Acres)	25.23 Peak Flow from 10-year Storm (cfs)	12580 Required Volume (ft³)	10975 Required Surface Area (ft²)	74.1 Suggested Width (ft)	148.2 Suggested Length (ft)
58 Trial Top Width at Spillway Invert (ft)	190 Trial Top Length at Spillway Invert (ft)	2 Trial Side Slope Ratio 2:1	3 Trial Depth (ft)	46 Bottom Width (ft)	176 Bottom Length (ft)
176 Bottom Area (ft²)	8188 Bottom Area (ft²)	28740 Actual Volume (ft³)	11020 Actual Surface Area (ft²)	20 Trial Weir Length (ft)	0.75 Head on Skimmer (feet)
39.9 Spillway Capacity (cfs)	4 Skimmer Size (Inches)	0.333 Head on Skimmer (feet)	156 Orifice Size (1/4 inch increments)	4.20 Dewatering Time (days)	Required 3 to 5 days for Wake County

#### SEDIMENT BASIN SUMMARY CHART

Sediment Basin Number	1	2
Drainage Area (Acres)	1.74	6.99
Q10 (cfs)	(0.5)(7.22)(1.74)=6.28	(0.5)(7.22)(6.99)=25.23
Weir Size (ft)	10 x 1.5	10 x 1.5
Surface Area Required (SF)	(435)(6.28)=2,732	(435)(25.23)=10,975
Volume Required (CF)	(1800)(1.74)=3,132	(1800)(6.99)=12,580
Dimensions (ft)	see plans	see plans
Volume Provided (SF)	2,800	11,000
Volume Provided (CF)	5,646	27,900
Skimmer Size	4"	4"
Orifice Radius	0.4"	0.75"
Orifice Diameter	0.75"	1.5"
Drawdown Time (Days)	4.18	4.2
Number of Baffles	3	3

#### DITCH/CHANNEL CALCULATIONS

DIVERSION DITCH ID	LENGTH (LF)	DA (Ac)	Q10 (CFS)	SLOPE (%)	V10 (FPS)	LINER *	PERMISSIBLE SHEAR STRESS (PSF)	CALCULATED SHEAR STRESS (PSF)
DV-1	296	1.02	2.34	2.00	2.01	SC150	2.00	0.78
DV-2	495	1.00	2.30	2.60	2.29	SC150	2.00	0.94
DV-3	442	0.52	1.19	1.80	0.92	SC150	1.80	0.29
DV-4	167	0.06	0.13	2.90	0.96	SC150	1.80	0.38

\* NAG = NORTH AMERICAN GREEN OR EQUIVALENT

### LEGEND

- TEMP CONSTRUCTION ENTRANCE
- TEMP LOW SPOT SILT FENCE OUTLET
- TEMP INLET PROTECTION
- RIP-RAP DISSIPATOR
- TEMP SILT FENCE
- TEMP TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE
- SEDIMENT BASIN BAFFLE
- TEMP TREE PROTECTION & SILT FENCE COMBO

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



**BASS, NIXON & KENNEDY, INC.**  
**CONSULTING ENGINEERS**  
 6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607  
 TELEPHONE: (919)881-1122 FAX: (919)881-8686  
 CERTIFICATION NUMBERS: NCBEL (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY

COBBLESTONE VILLAGE MIXED USE DEVELOPMENT  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

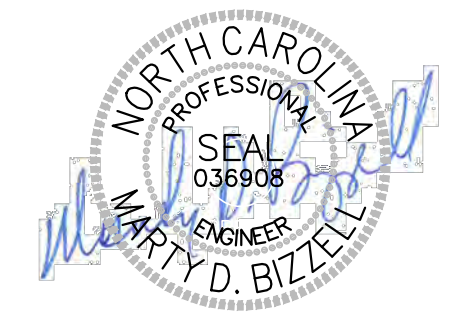
NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

PROGRESS DRAWN BY: MRM  
 DATE: 03-19-17  
 JOB NO.: 19187

EROSION CONTROL PLAN - STAGE 2

SCALE: 1" = 40'

CHK BY: MDB



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

SCALE IN FEET

SEWER MANHOLE #5  
 TOP = 438.28  
 INV. IN (NE) = 431.18  
 INV. OUT (SW) = 431.14

SEWER MANHOLE #4  
 TOP = 441.58  
 INV. IN (NE) = 432.74  
 INV. OUT (SW) = 432.58

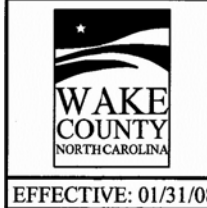
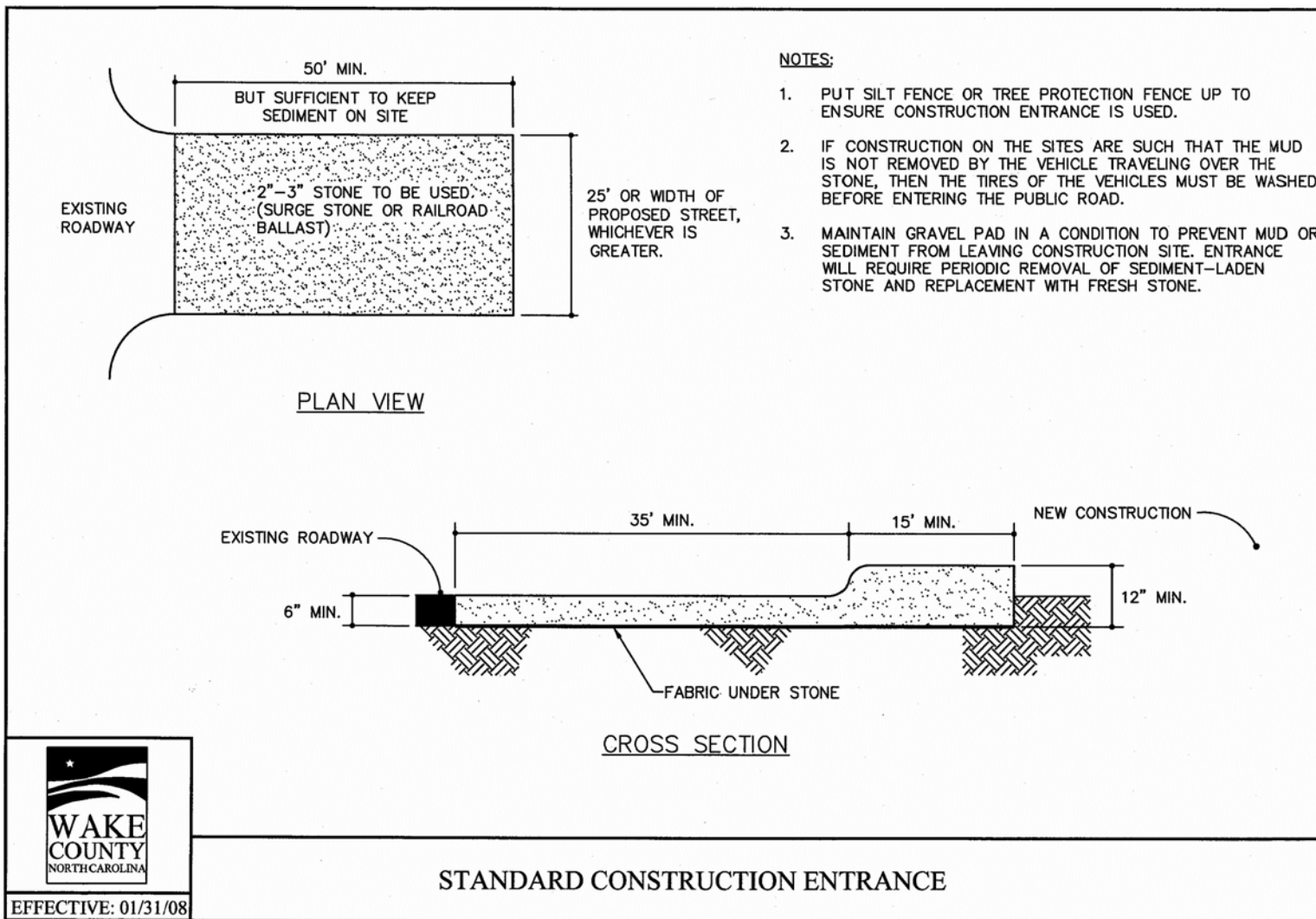
SEWER MANHOLE #3  
 TOP = 442.09  
 INV. IN (NE) = 434.29  
 INV. OUT (SW) = 431.19

SEWER MANHOLE #2  
 TOP = 442.05  
 INV. IN (NW) = 435.83  
 INV. OUT (SW) = 435.75

SEWER MANHOLE #1  
 TOP = 442.48  
 INV. IN (NW) = 437.19  
 INV. OUT (SE) = 437.09

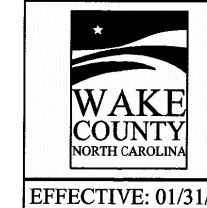
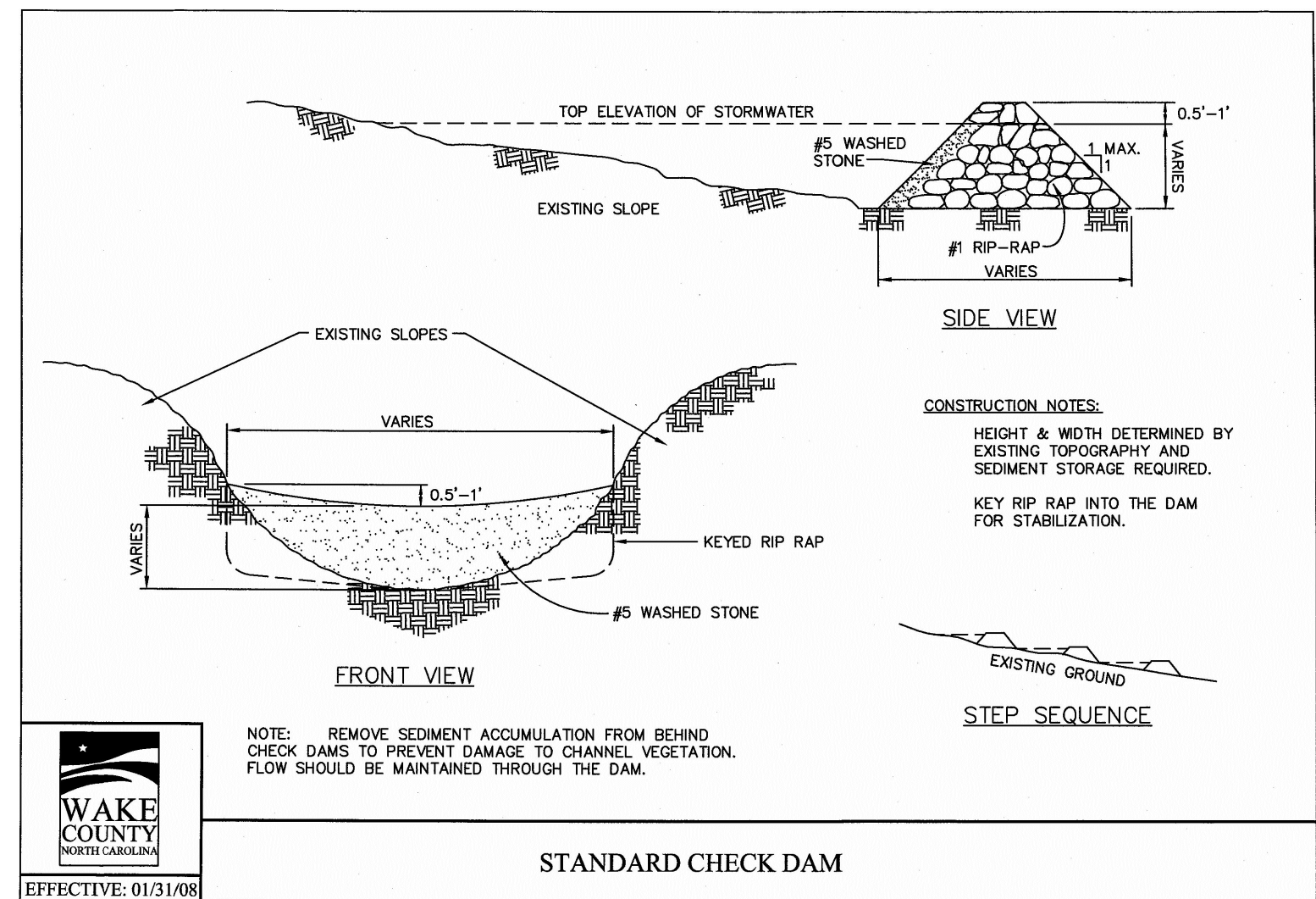
R:\2019\19187 - Rolesville Town Center\CIVIL\04\_Construction\06 - 19187\_Erosion Control Phase 2.dwg, Erosion Control Phase 2, 6/2/2022 4:39:51 PM, mrm, mmm

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION



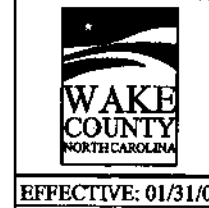
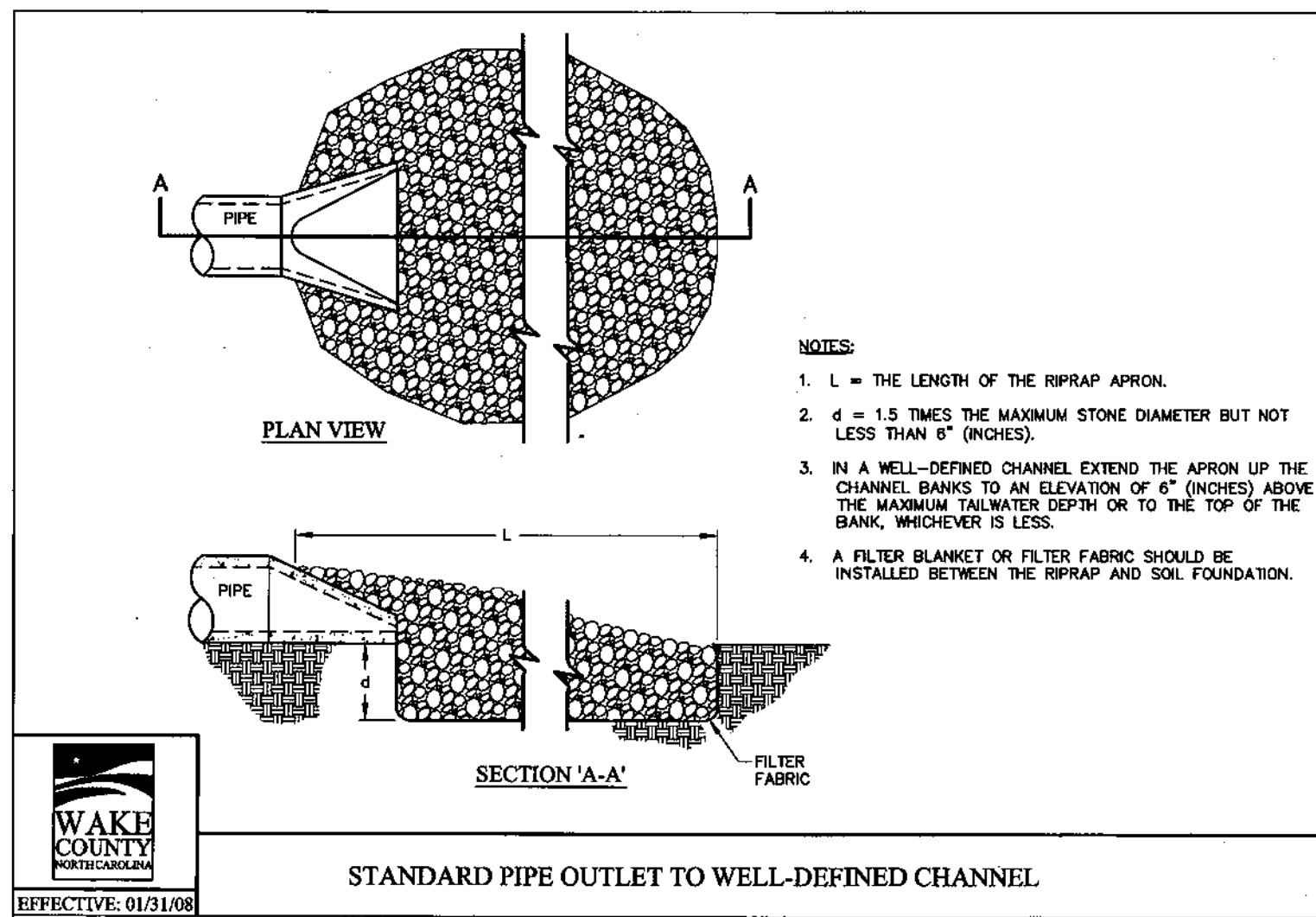
STANDARD CONSTRUCTION ENTRANCE

EFFECTIVE: 01/31/08



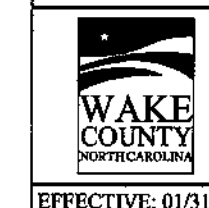
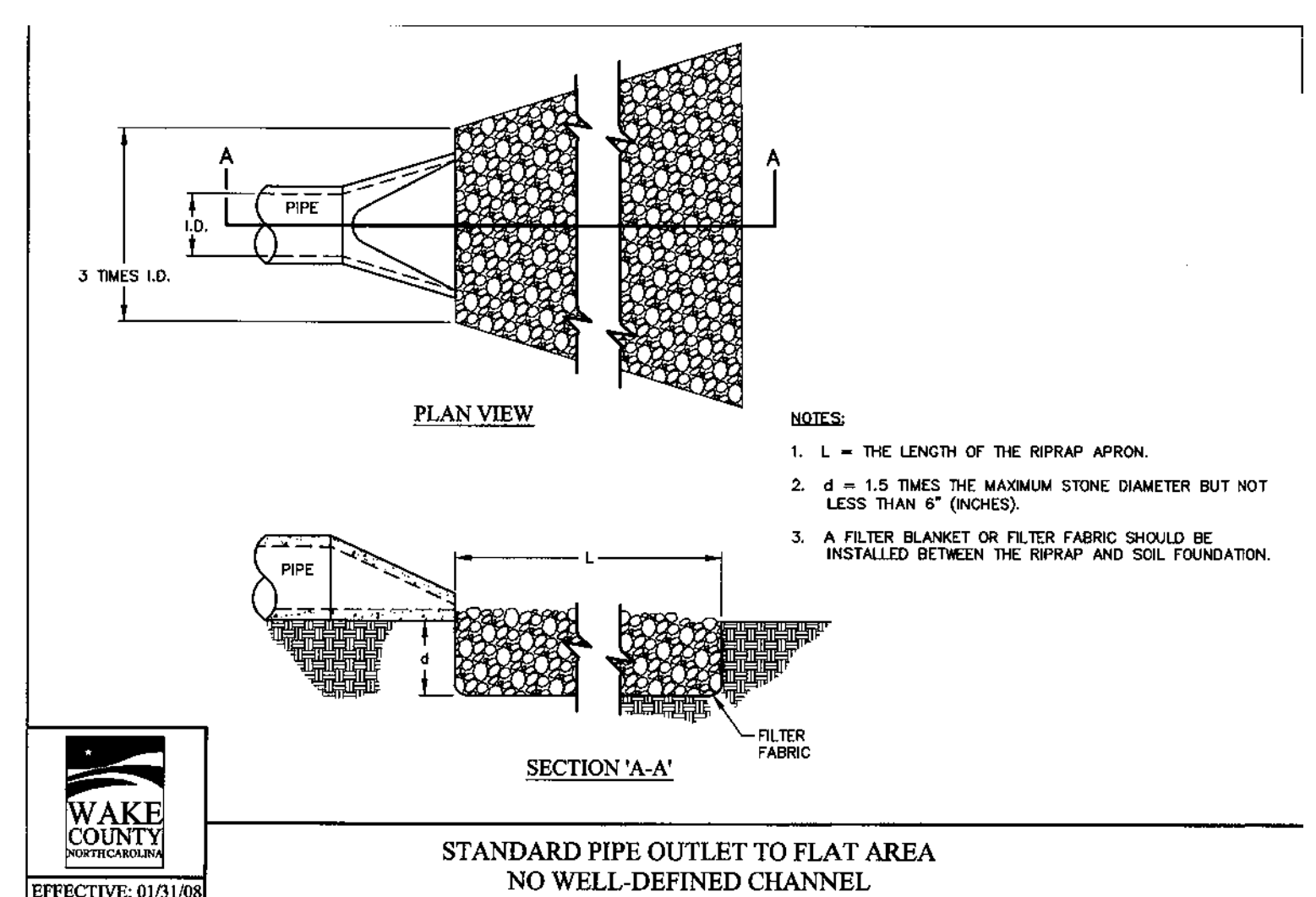
STANDARD CHECK DAM

EFFECTIVE: 01/31/08



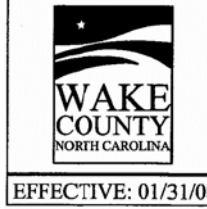
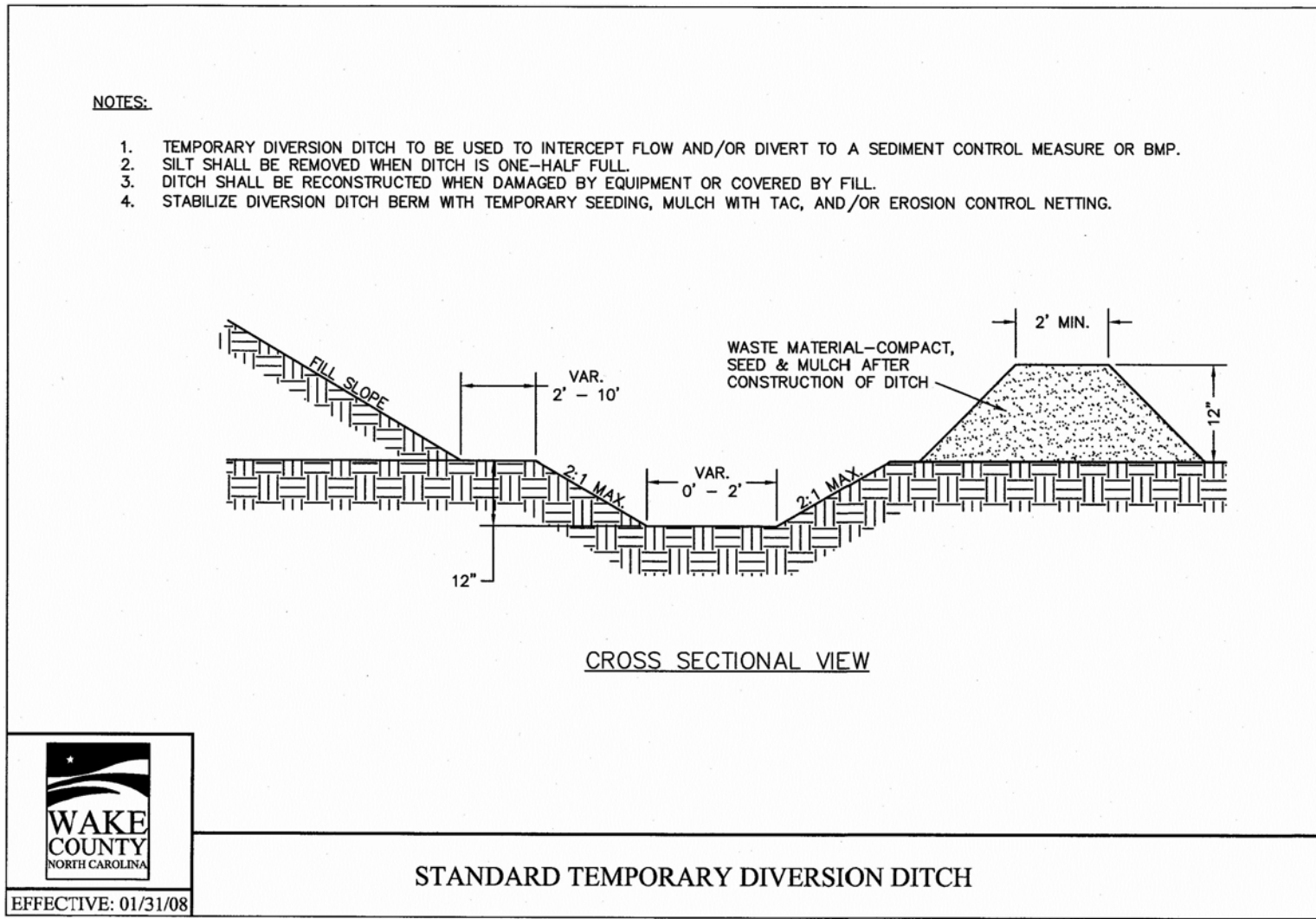
STANDARD PIPE OUTLET TO WELL-DEFINED CHANNEL

EFFECTIVE: 01/31/08



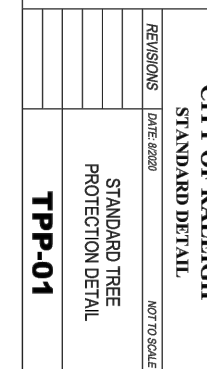
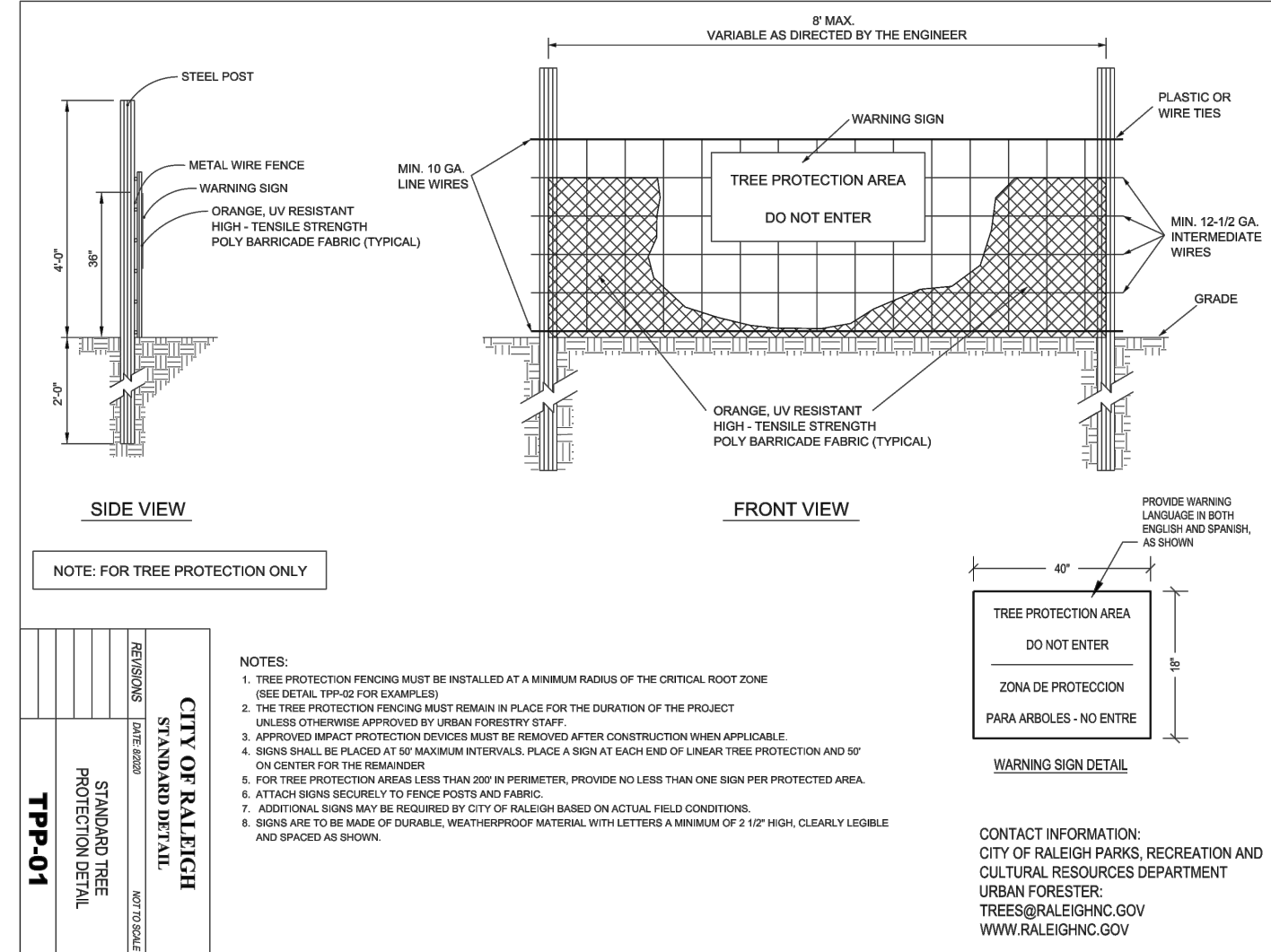
STANDARD PIPE OUTLET TO FLAT AREA NO WELL-DEFINED CHANNEL

EFFECTIVE: 01/31/08

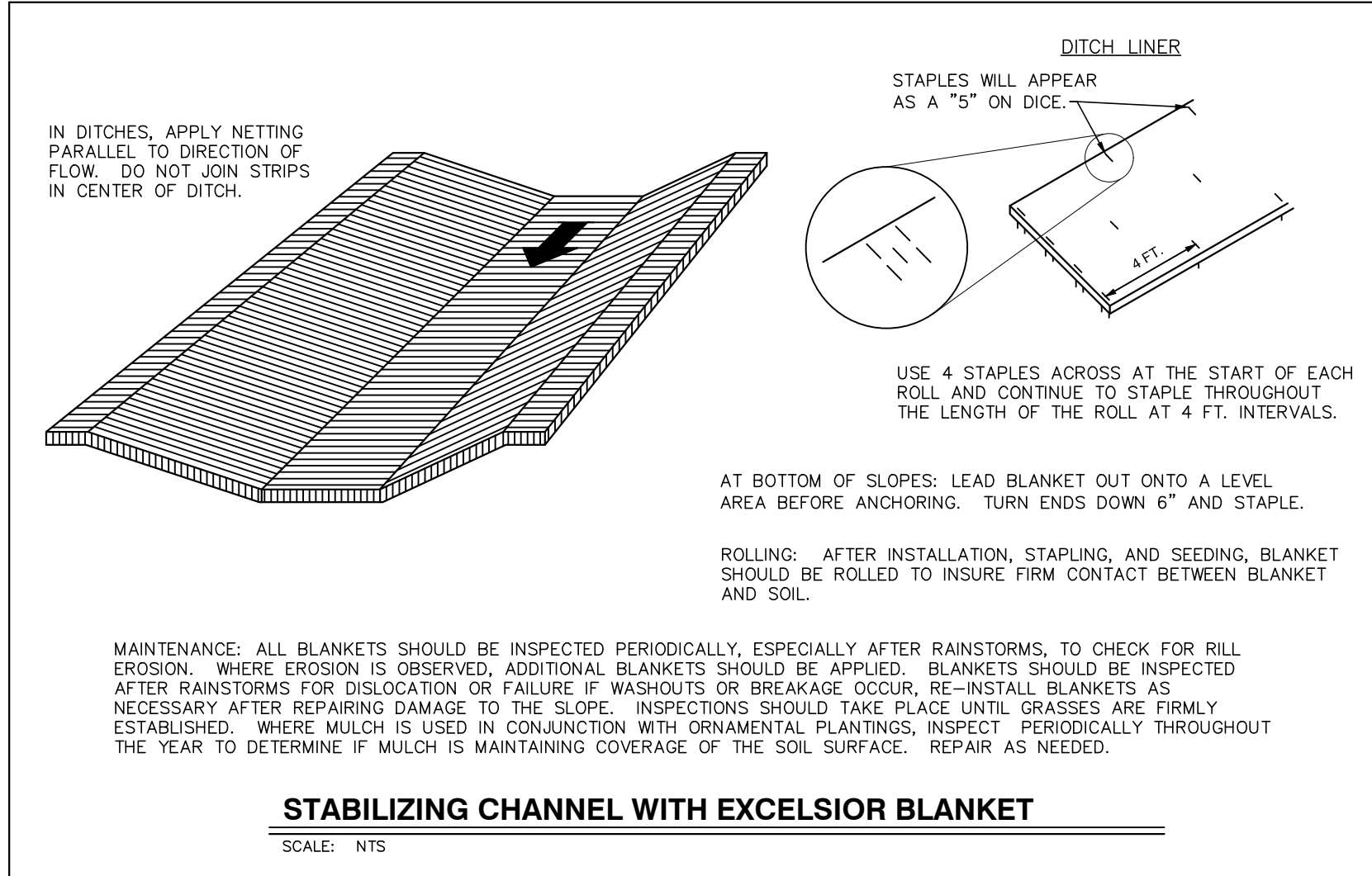


STANDARD TEMPORARY DIVERSION DITCH

EFFECTIVE: 01/31/08

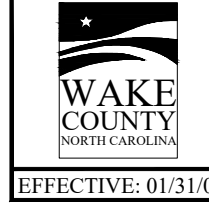
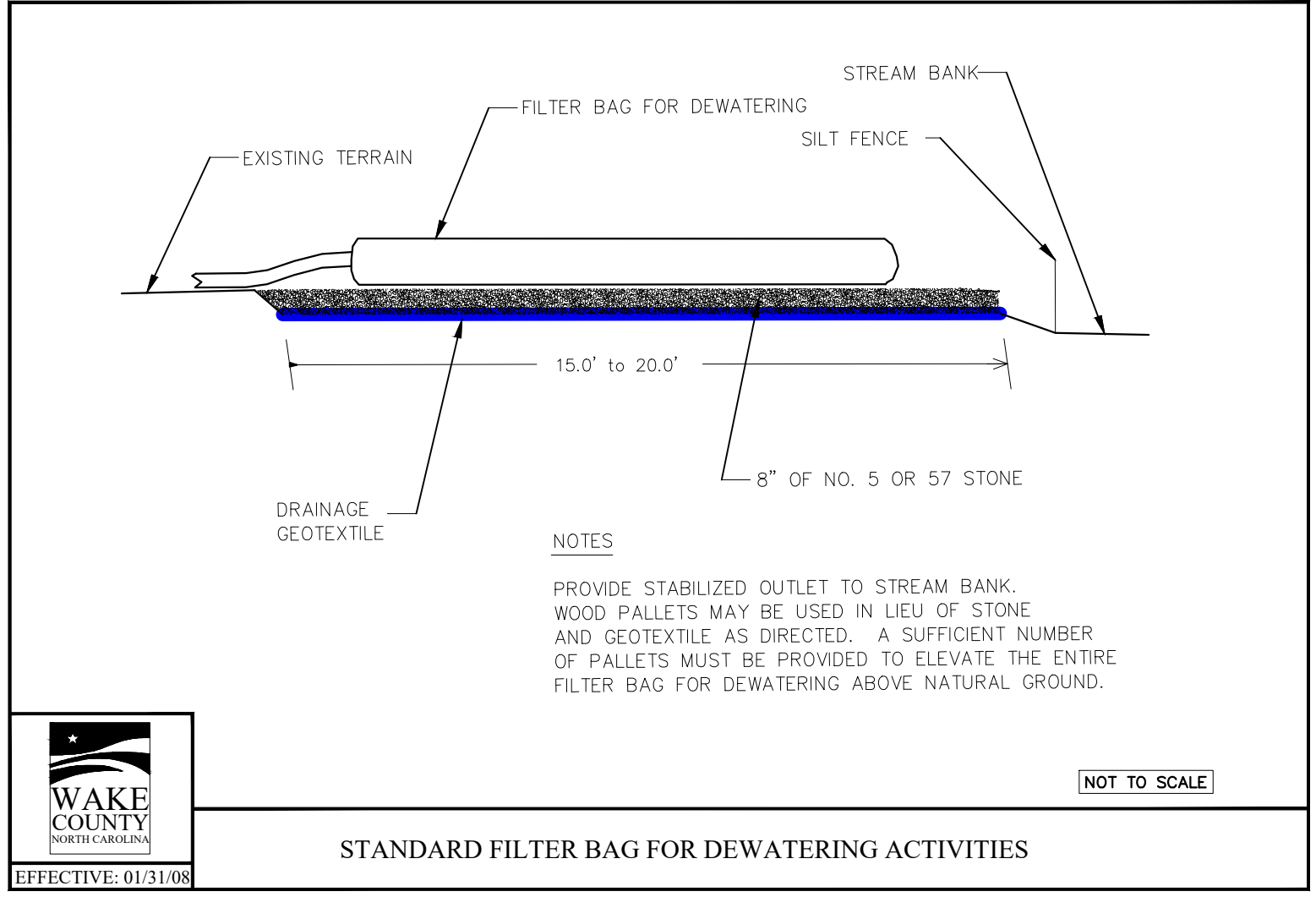


STANDARD TREE PROTECTION DETAIL TTP-01



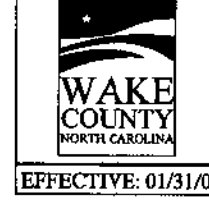
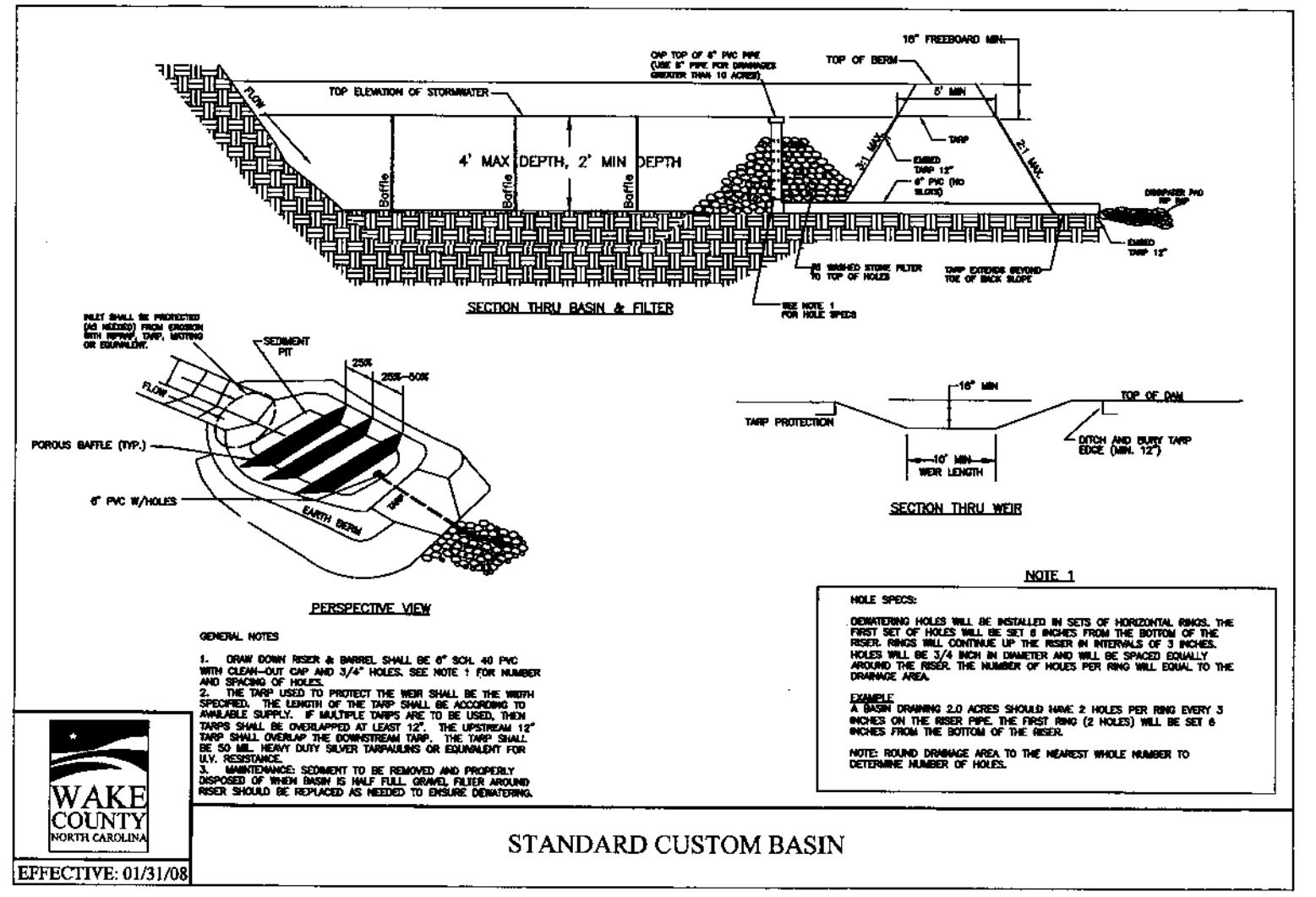
STABILIZING CHANNEL WITH EXCELSIOR BLANKET

SCALE: NTS



STANDARD FILTER BAG FOR DEWATERING ACTIVITIES

EFFECTIVE: 01/31/08



STANDARD CUSTOM BASIN

EFFECTIVE: 01/31/08

**BANK**

**BASS, NIXON & KENNEDY, INC.**  
CONSULTING ENGINEERS  
6310 CHARLETT HILL ROAD, SUITE 250, RALEIGH, NC 27607  
TELEPHONE: (919) 881-1122 FAX: (919) 881-6888  
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY

PROGRESS DRAWN BY: MRM  
DATE: 03-19-17  
JOB NO.: 19157

**EROSION CONTROL DETAILS**

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

**COBBLESTONE VILLAGE MIXED USE DEVELOPMENT**  
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

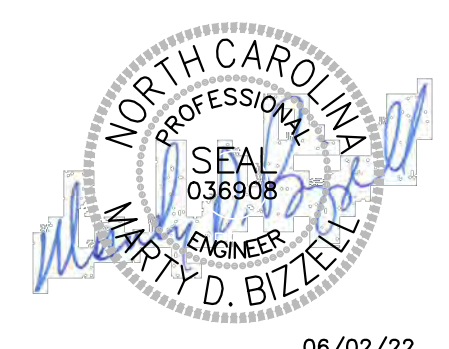
**SHEET C3.5**

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

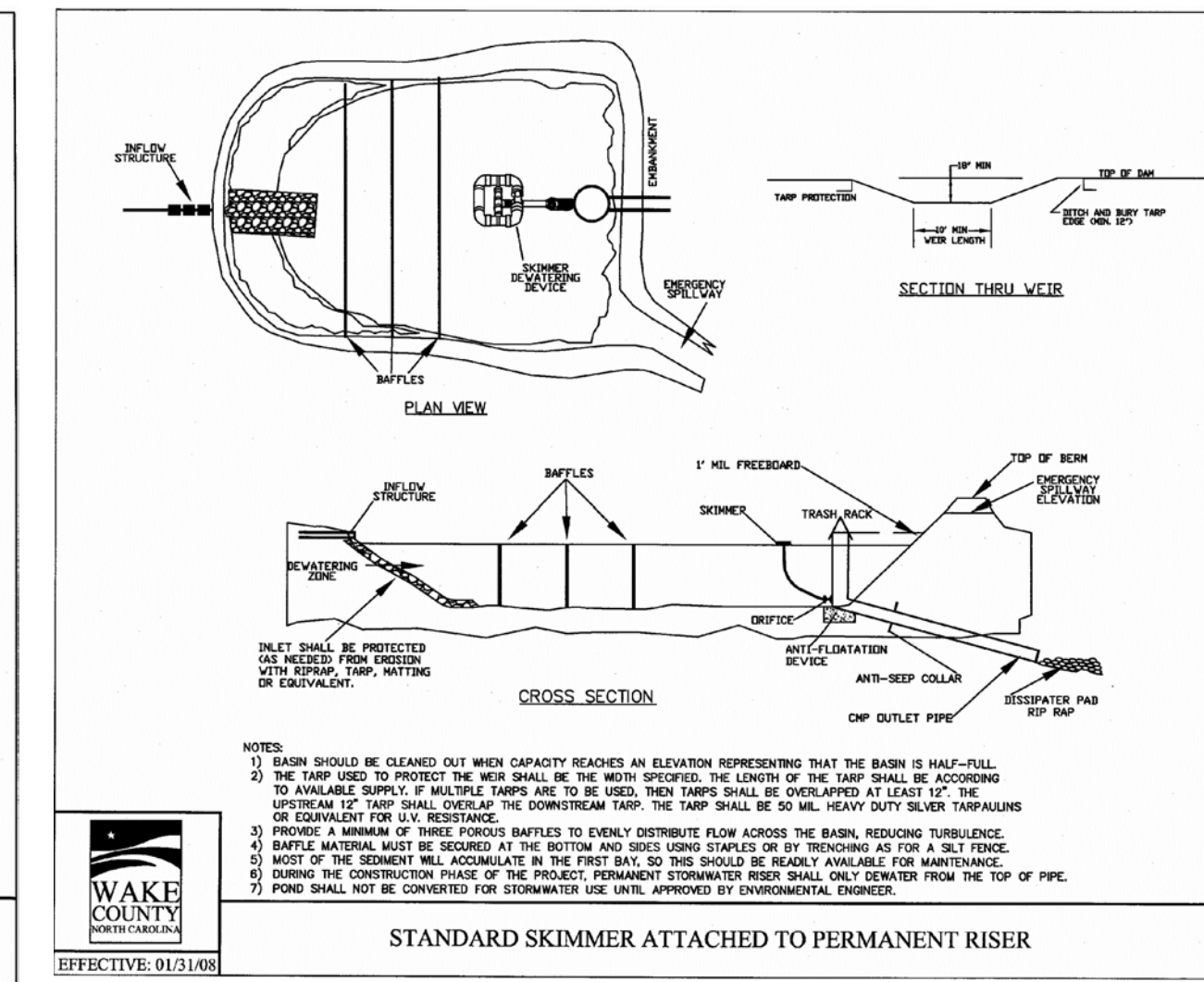
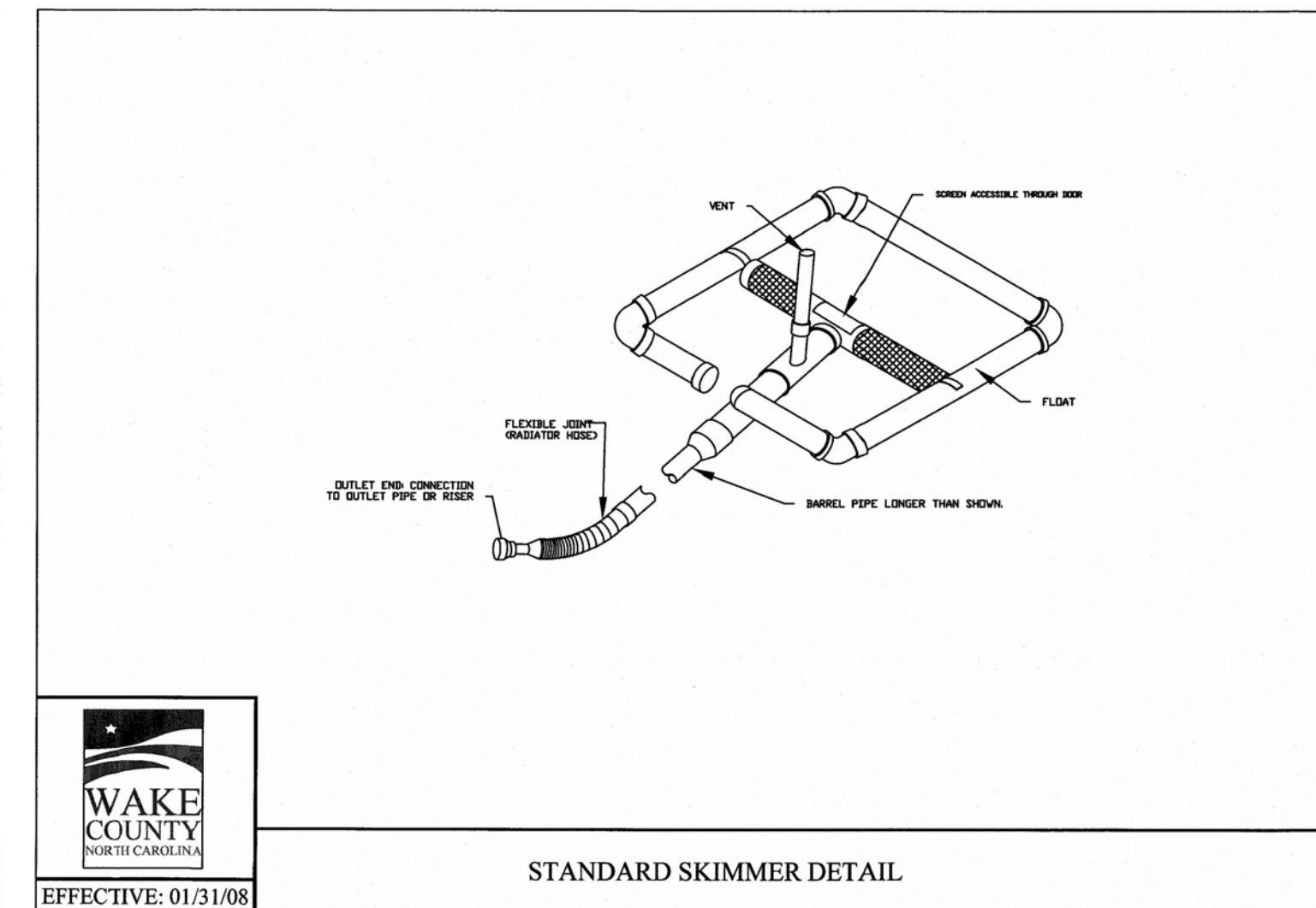
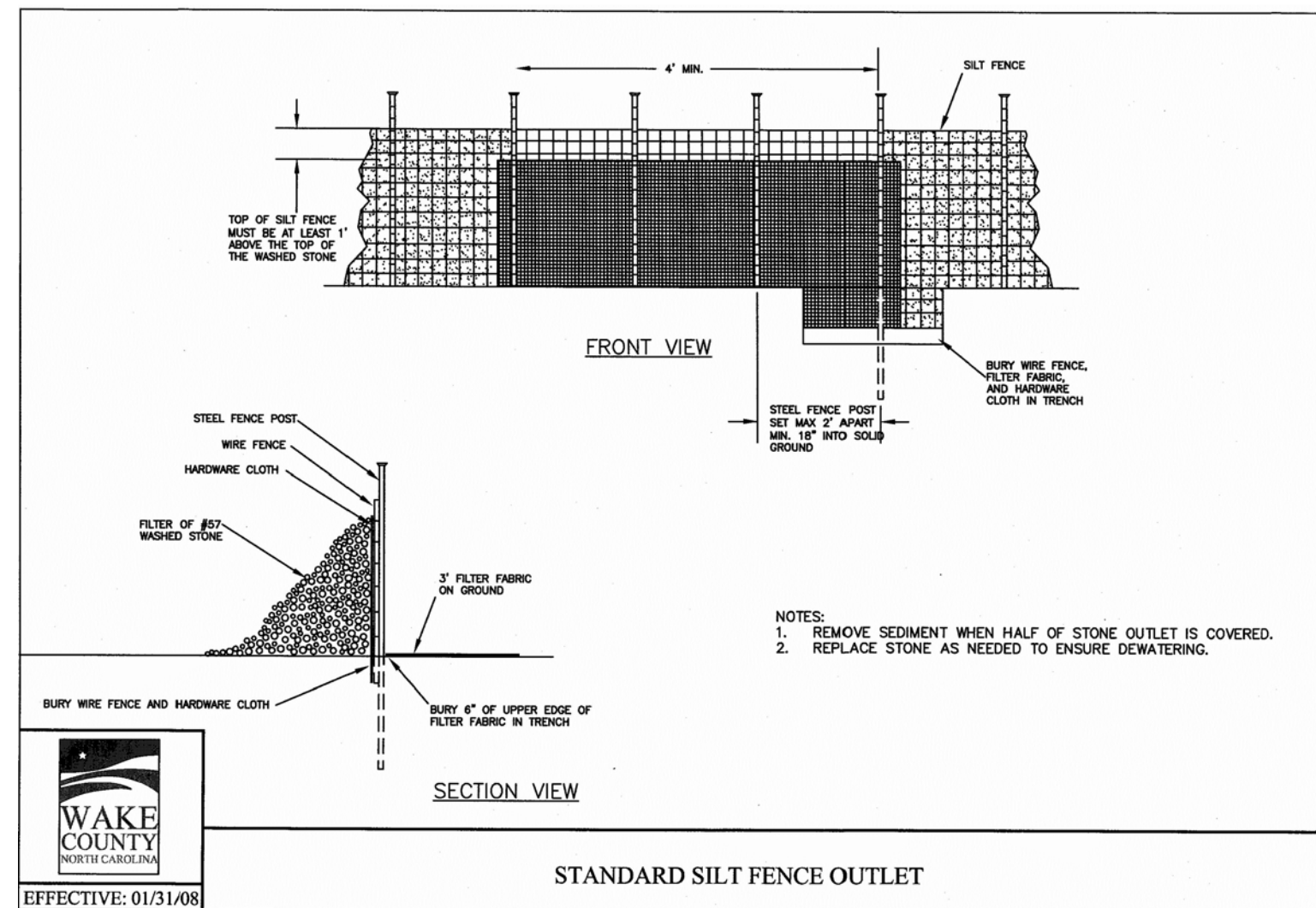
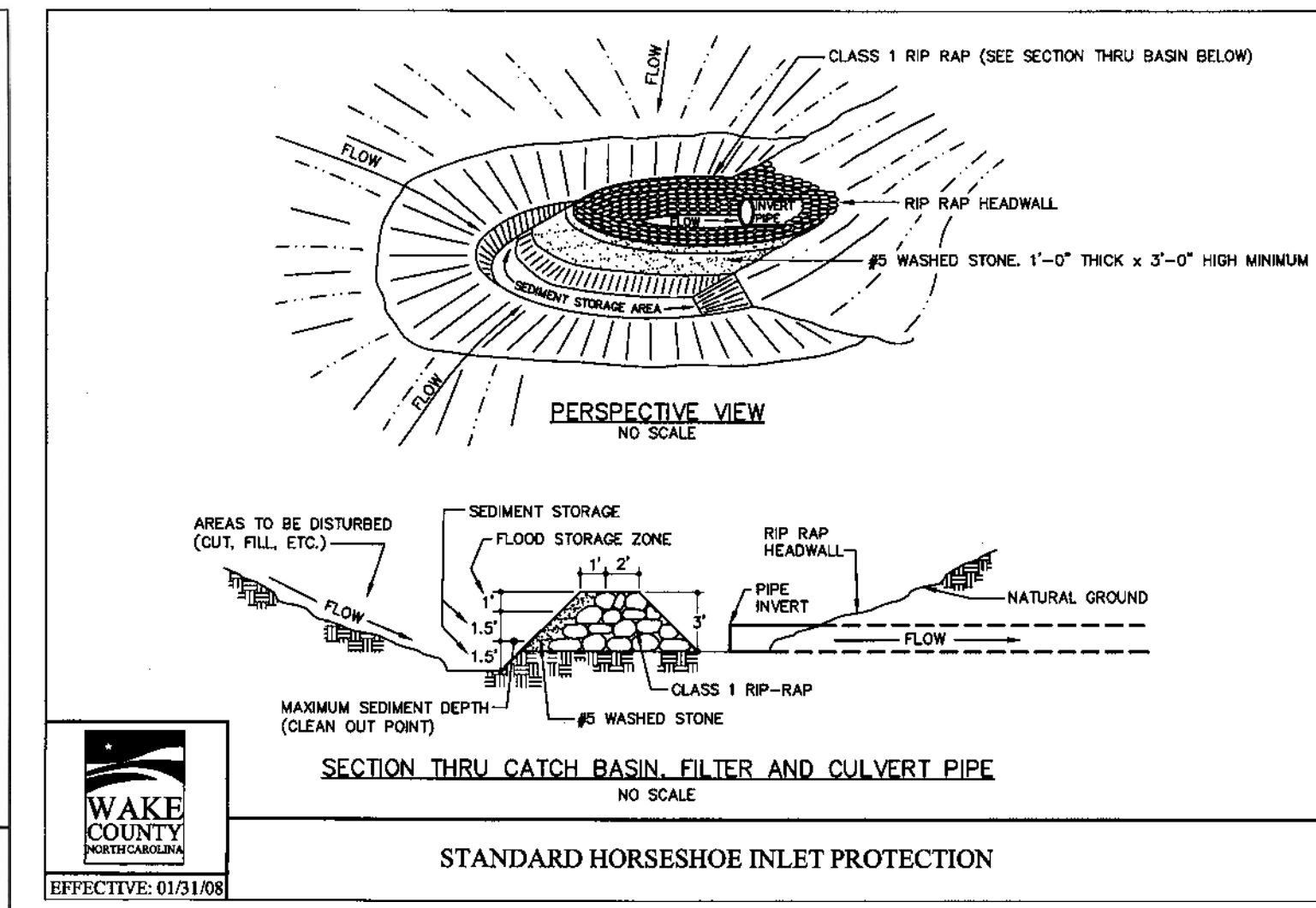
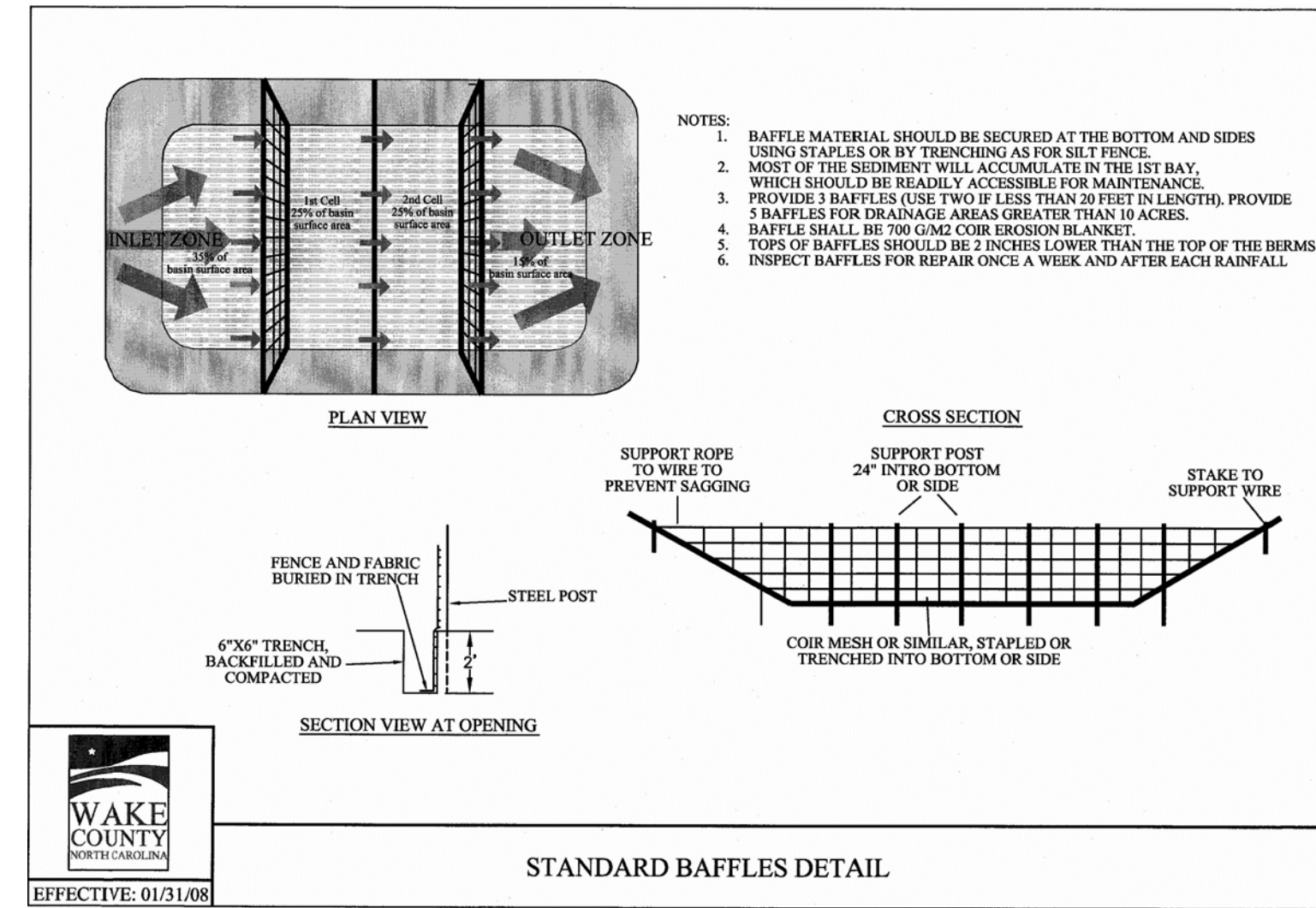
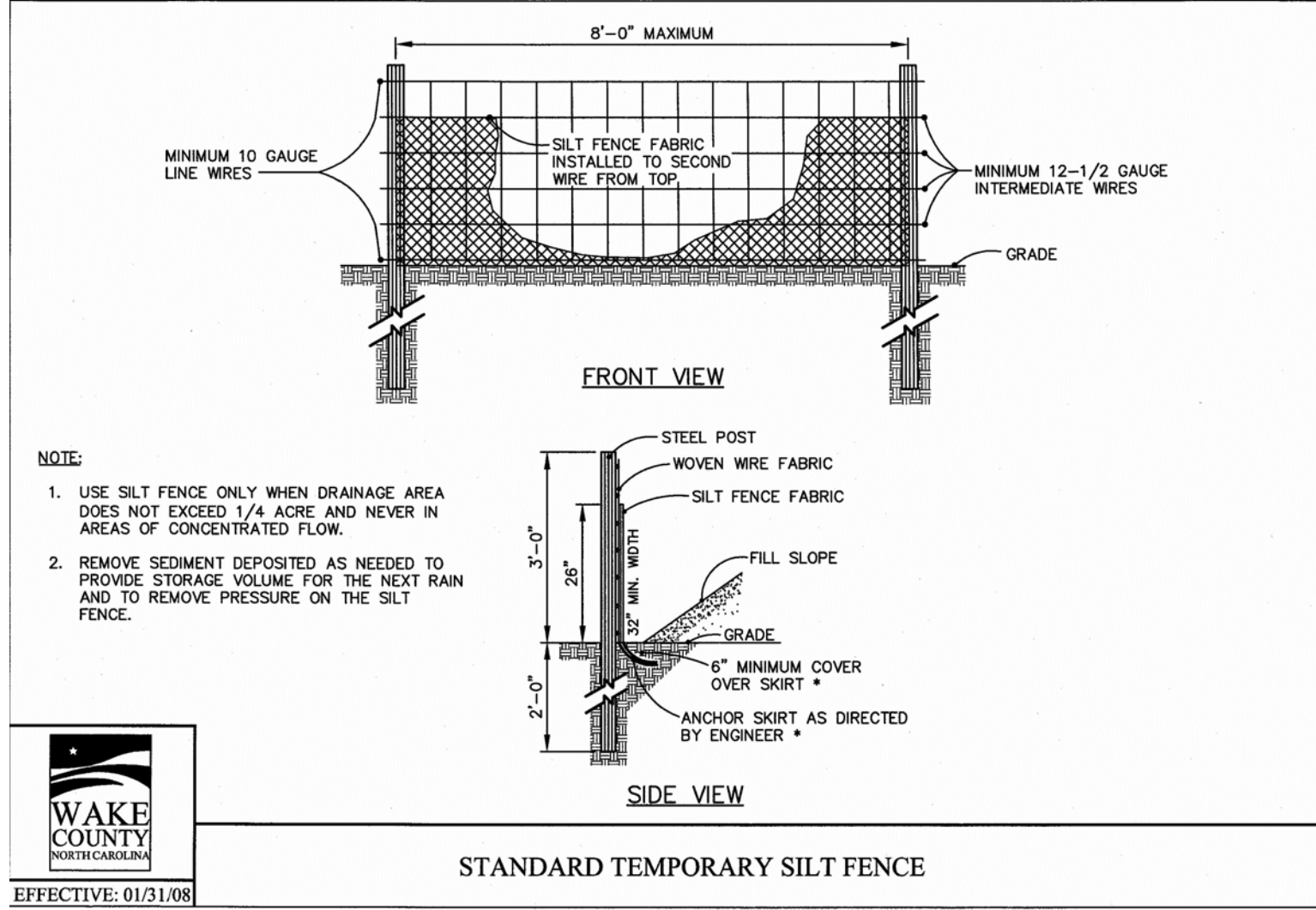
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City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer \_\_\_\_\_

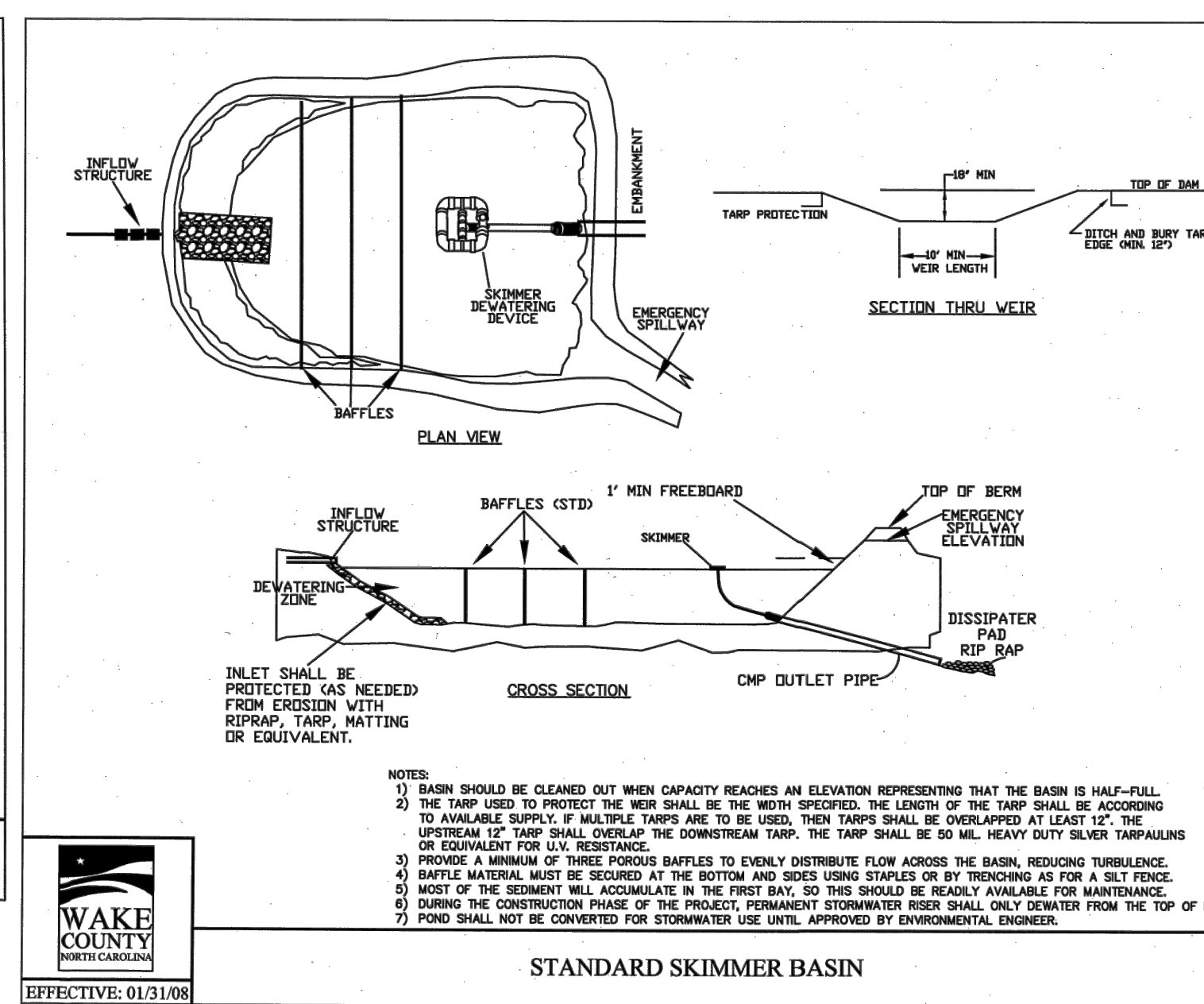
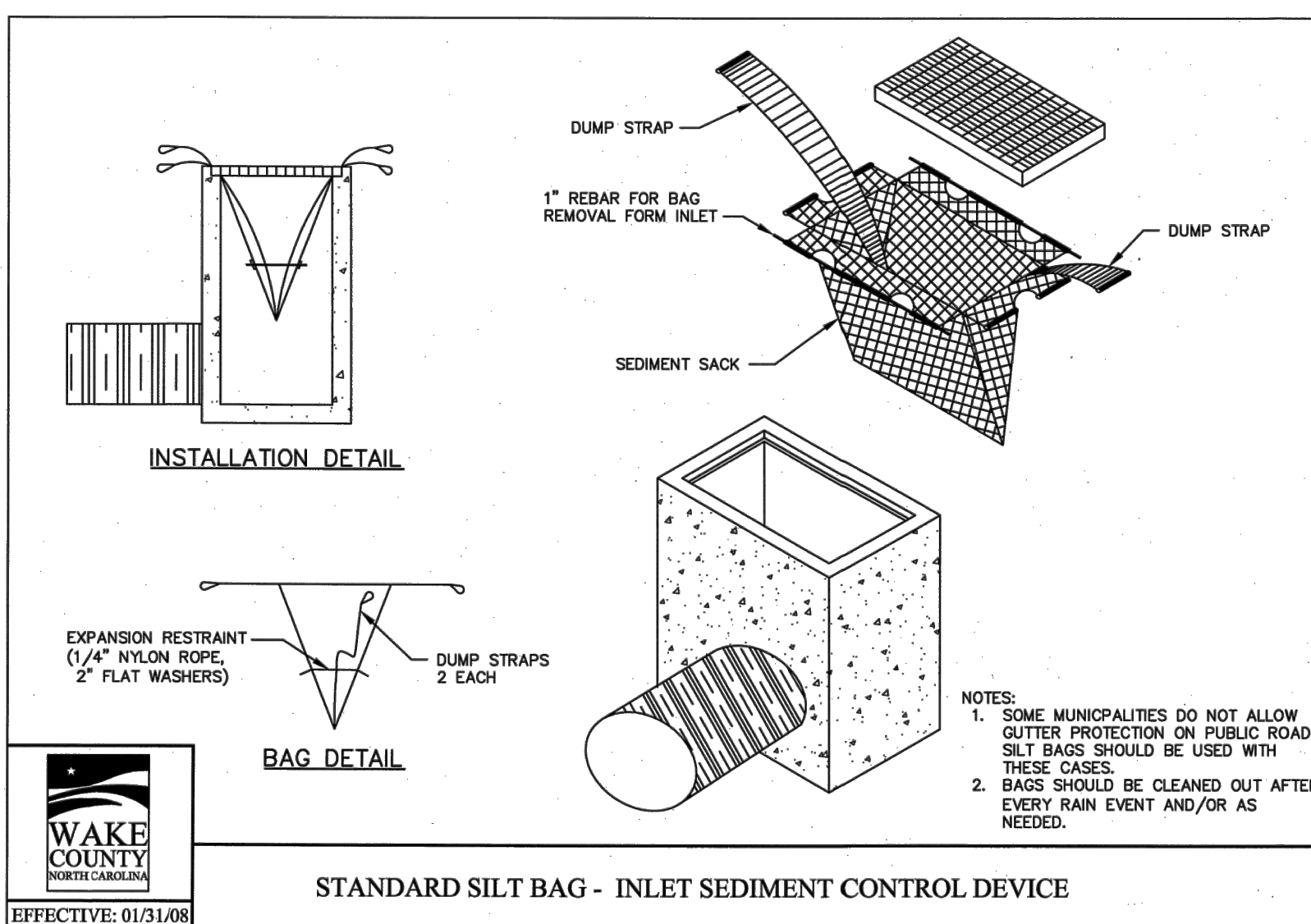


06/02/22



**SEEDING INFORMATION:**

SEEDBED PREPARATION		
1.	CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.	
2.	RIP THE ENTIRE AREA TO 6 INCHES DEPTH.	
3.	REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.	
4.	APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPER PHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW*).	
5.	CONTINUE TILLAGE UNTIL A WELL PULVERIZED FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.	
6.	SEED ON A FRESHLY PREPARED SEEDBED AND COVER LIGHTLY WITH SEEDING EQUIPMENT OR CULTPACK AFTER SEEDING.	
7.	MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.	
8.	INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 50% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.	
9.	CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.	
* APPLY AGRICULTURAL LIMESTONE - 2 TONS/ACRE FERTILIZER - 10-10-10 ANALYSIS AT 800-1,000 LBS./ACRE SUPER PHOSPHATE - 500 LBS. OF 20% ANALYSIS SUPER PHOSPHATE MULCH - 2 TONS (APPROX. 80 BALES) SMALL GRAIN STRAW/ACRE ANCHOR - TACK WITH LIQUID ASPHALT AT 400 GAL./ACRE OR EMULSIFIED ASPHALT AT 300 GALLONS/ACRE		
SEEDING SCHEDULE		
PERMANENT SEEDING - SHOULDERS, SIDE DITCHES, SLOPES (MAX. 3:1)		
DATE	TYPE	PLANTING RATE
AUG. 15 - NOV. 1	TALL FESCUE	200 LBS./ACRE
NOV. 1 - MAR. 1	TALL FESCUE AND ABRUZZI RYE (NURSE CROP)	200 LBS./ACRE 25 LBS./ACRE
MAR. 1 - APR. 15	TALL FESCUE	200 LBS./ACRE
APR. 15 - JUN. 30	HULLED COMMON BERMUDAGRASS	15 LBS./ACRE
PERMANENT SEEDING - SLOPES (3:1 TO 2:1)		
AUG. 15 - NOV. 1	TALL FESCUE AND SERICEA LESPEDEZA (UNHULLED, UNSCARIFIED)	200 LBS./ACRE 60 TO 70 LBS./ACRE
NOV. 1 - MAR. 1	TALL FESCUE AND SERICEA LESPEDEZA (UNHULLED, UNSCARIFIED) AND ABRUZZI RYE	200 LBS./ACRE 60 TO 70 LBS./ACRE 25 LBS./ACRE
MAR. 1 - JUN. 1	TALL FESCUE AND SERICEA LESPEDEZA (SCARIFIED)	200 LBS./ACRE 40 TO 50 LBS./ACRE
MAR. 15 - JUN. 30	WEEDING LOVEGRASS AND SERICEA LESPEDEZA (SCARIFIED)	10 LBS./ACRE 40 TO 50 LBS./ACRE
MAR. 15 - JUN. 30	HULLED COMMON BERMUDAGRASS AND SERICEA LESPEDEZA (SCARIFIED)	15 LBS./ACRE 40 TO 50 LBS./ACRE
TEMPORARY SEEDING		
JUNE 1 - SEPT. 1	TALL FESCUE AND BROWNTOP MILLET (NURSE CROP) OR SORGHUM-SUDAN HYBRIDS (NURSE CROP)	200 LBS./ACRE 35 LBS./ACRE 30 LBS./ACRE
CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENIED AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.		
*NURSE CROP/TEMPORARY-RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING, OTHERWISE FESCUE MAY BE SHADED OUT.		



CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer



06/02/22



**BASS, NIXON & KENNEDY, INC.**  
 CONSULTING ENGINEERS  
 6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607  
 TELEPHONE: (919)881-4422 FAX: (919)881-6868  
 CERTIFICATION NUMBERS: NCBELS (C-010); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY

COBBLESTONE VILLAGE MIXED USE DEVELOPMENT  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA  
 SCALE: N.T.S.  
 CHK BY: MDB  
 EROSION CONTROL DETAILS

SHEET C3.6

TOWN OF ROLESVILLE PROJECT NO.

NO.	DATE	DESCRIPTION	BY

03-19187	PROGRESS	MRM	DATE	DRAWN BY

NCG01 PLAN  
SCALE: N.T.S.  
CHK BY: MDB

COBLESTONE VILLAGE MIXED USE DEVELOPMENT  
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C3.7

TOWN OF ROLESVILLE PROJECT NO.

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

**GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT**

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

**Temporary and Permanent Groundcover\***

SITE AREA DESCRIPTION	STABILIZATION	TEMPERATURE EXCEPTIONS
Filler/dike, sodas, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 3:1 or less in length and are not steeper than 2.5:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 2:1 in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeter and HQW Zones.

\*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.

**GROUND STABILIZATION SPECIFICATION**

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

Temporary Stabilization	Permanent Stabilization
<ul style="list-style-type: none"> <li>Permanent grass seed covered with straw or other mulches and tackifiers.</li> <li>Hydroseeding.</li> <li>Roll-on erosion control products with or without temporary grass seed.</li> <li>Appropriately applied straw or other mulch.</li> <li>Plastic sheeting.</li> </ul>	<ul style="list-style-type: none"> <li>Permanent grass seed covered with straw or other mulches and tackifiers.</li> <li>Geotextile fabrics such as permanent soil reinforcement matting.</li> <li>Hydroseeding.</li> <li>Straw or other permanent plantings covered with mulch.</li> <li>Uniform and evenly distributed ground cover sufficient to restrain erosion.</li> <li>Structural methods such as concrete, asphalt or retaining walls.</li> </ul>

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



**NCG01 GROUND STABILIZATION AND MATERIALS HANDLING**

EFFECTIVE: 03/01/19

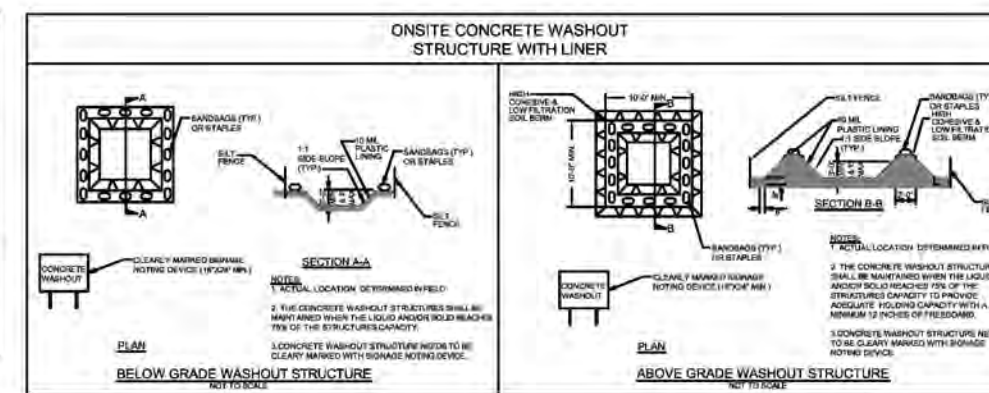
- EQUIPMENT AND VEHICLE MAINTENANCE**
- Maintain vehicles and equipment to prevent discharge of fluids.
  - Provide drip pans under any stored equipment.
  - Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
  - Collect all spent fluids, store in separate containers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

- LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE**
- Never bury or burn waste. Place litter and debris in approved waste containers.
  - Provide a sufficient number of waste containers on site to manage the quantity of waste produced.
  - Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
  - Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
  - Cover waste containers at the end of each workday and before storm events. Repair or replace damaged waste containers.
  - Anchor all lightweight items in waste containers during times of high winds.
  - Empty waste containers as needed to prevent overflow.
  - Dispose waste off-site at an approved disposal facility.

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

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

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



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

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

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

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

**SECTION A: SELF-INSPECTION**

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

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

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

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

**SECTION B: RECORDKEEPING**

**1. E&SC Plan Documentation**

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed (including normal business hours)	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

**2. Additional Documentation to be Kept on Site**

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

- This General Permit as well as the Certificate of Coverage, after it is received.
- Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

**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:

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

**2. Reporting Timeframes and Other Requirements**

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

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

**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. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

- The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
- The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item 2(c) and (d) of this permit,
- Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
- Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in item (c) above,
- Velocity dissipation devices such as neck traps, and riprap are provided at all discharge points of all dewatering devices, and
- Sediment removed from the dewatering treatment devices described in item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

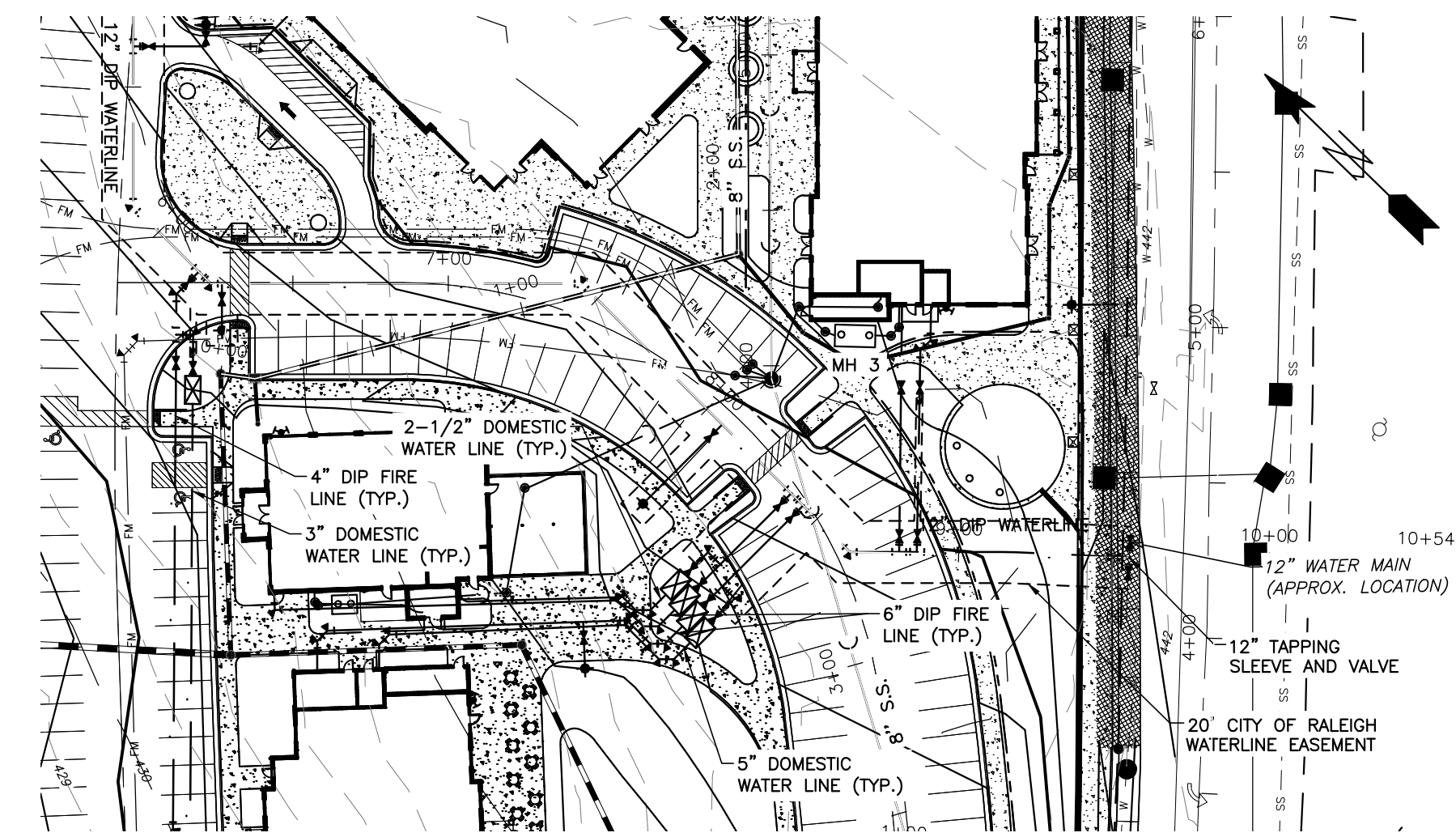
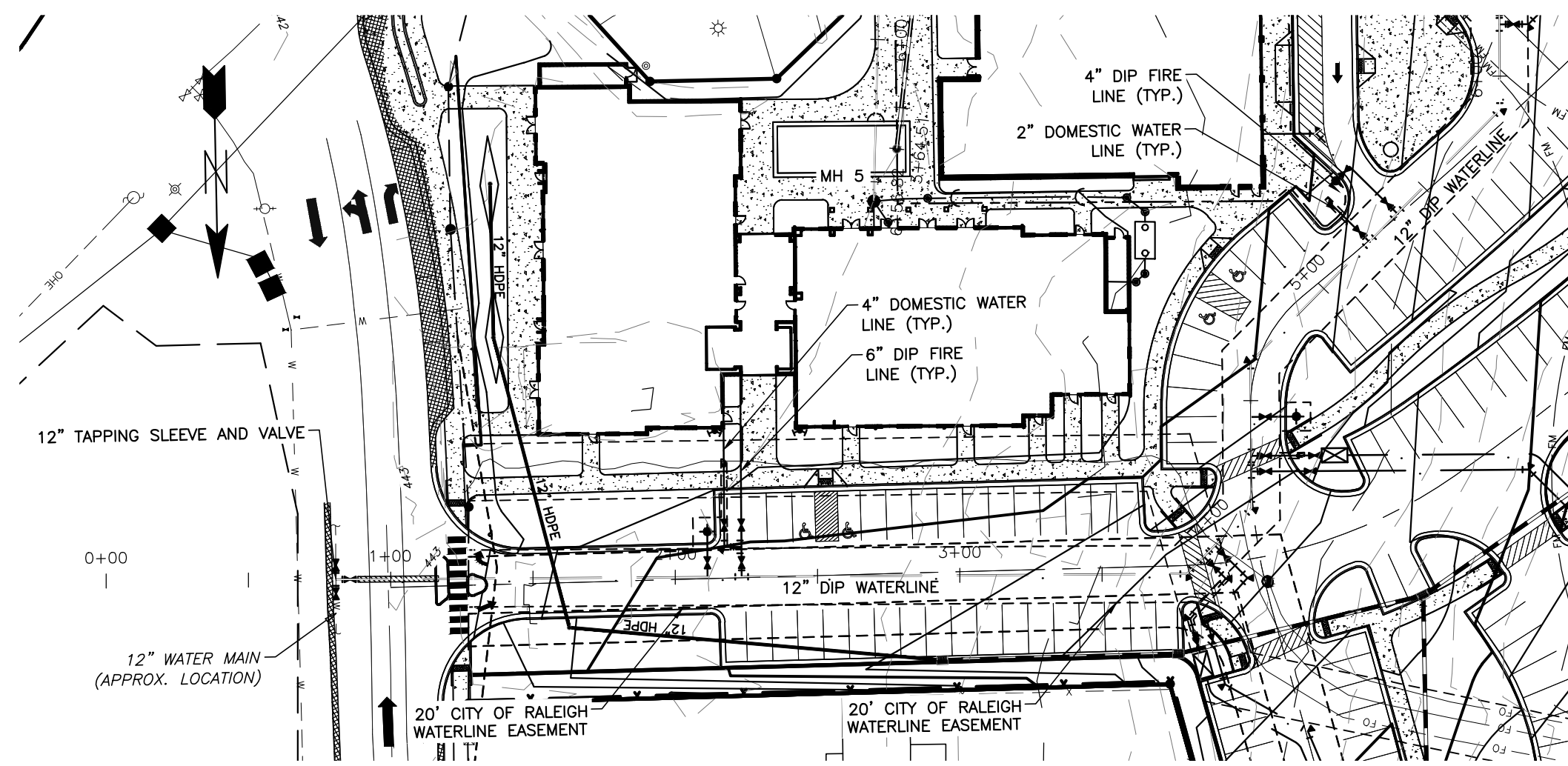
**NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING**

EFFECTIVE: 04/01/19



06/02/22





**Public**  
**Water Distribution / Extension System**  
 The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.  
 City of Raleigh  
 Public Utilities Department Permit # W-3879  
 Authorization to Construct See digital signature

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 \_\_\_\_\_



**BASS, NIXON & KENNEDY, INC.**  
**CONSULTING ENGINEERS**  
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 TELEPHONE: (919)881-1422 FAX: (919)881-6868  
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

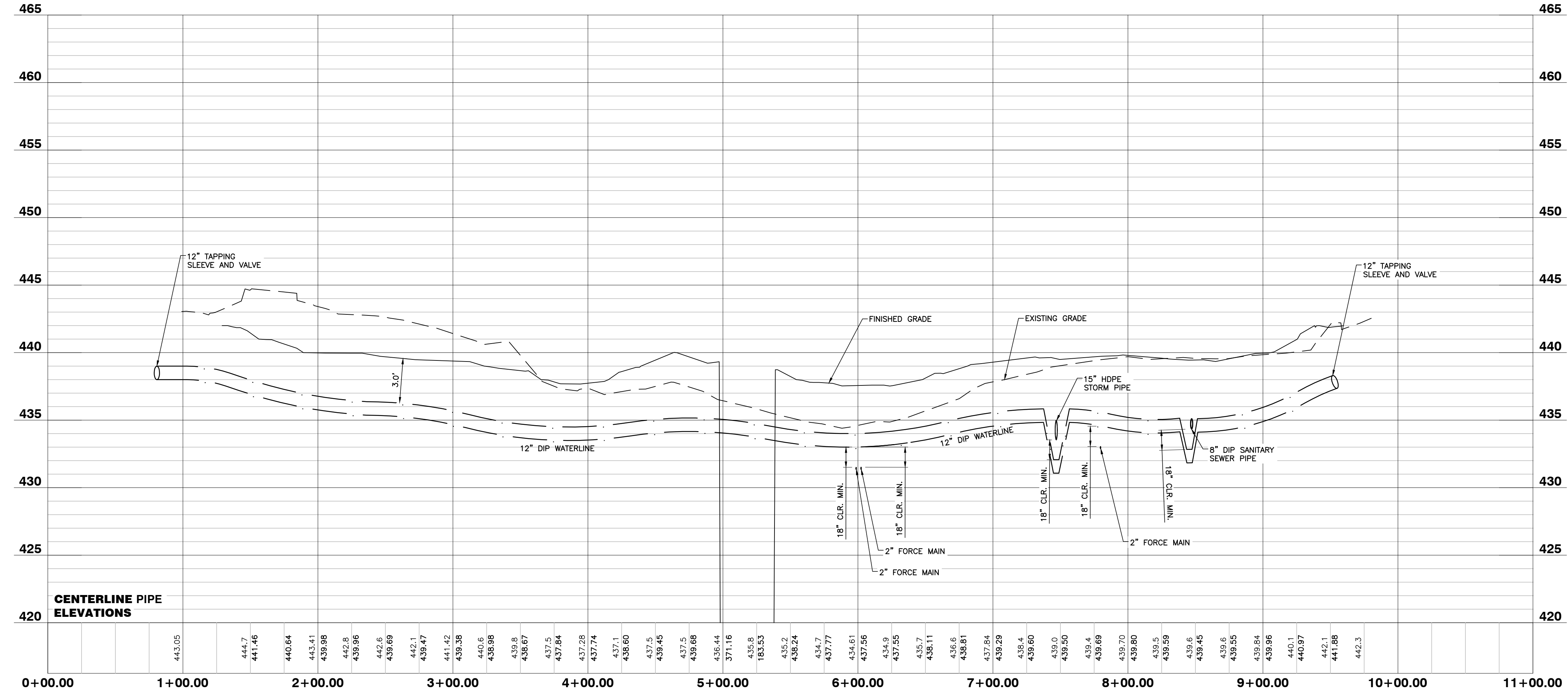
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03-19157	PROGRESS	MRM
JOB NO.	DATE	DRAWN BY
<b>PUBLIC WATERLINE PROFILE</b>		
SCALE: 1" = 50' H; 1" = 5' V CHK BY: MDB		

**COBBLESTONE VILLAGE**  
**MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

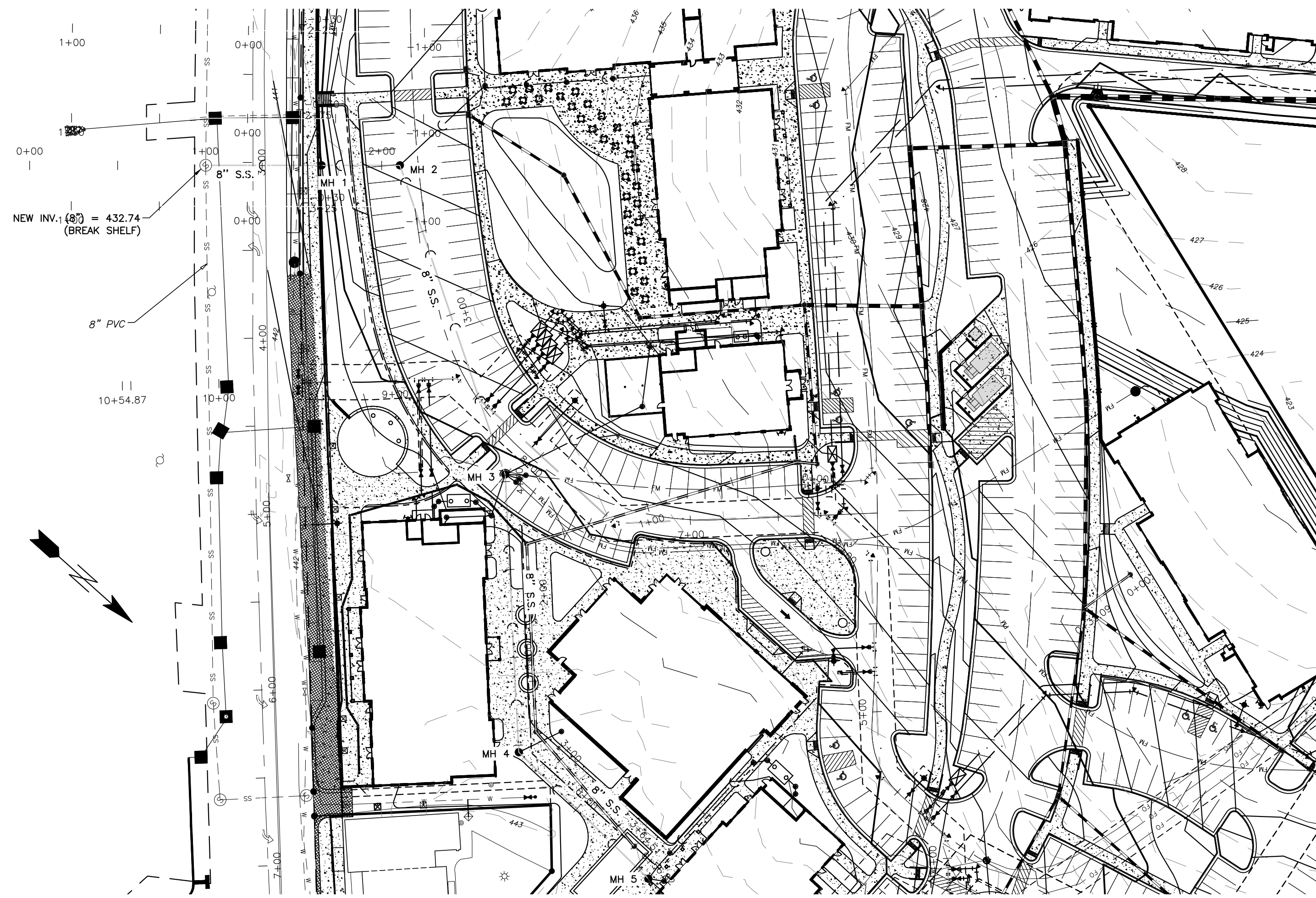
SHEET  
**C4.1**

**PUBLIC WATERLINE PROFILE**



06/02/22

**NO FLOODPLAINS EXIST ON-SITE**  
 NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT



**Private Sewer Collection / Extension System**  
 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 # S-4962 (P)  
 Authorization to Construct See digital signature

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

NO.	DATE	DESCRIPTION	BY

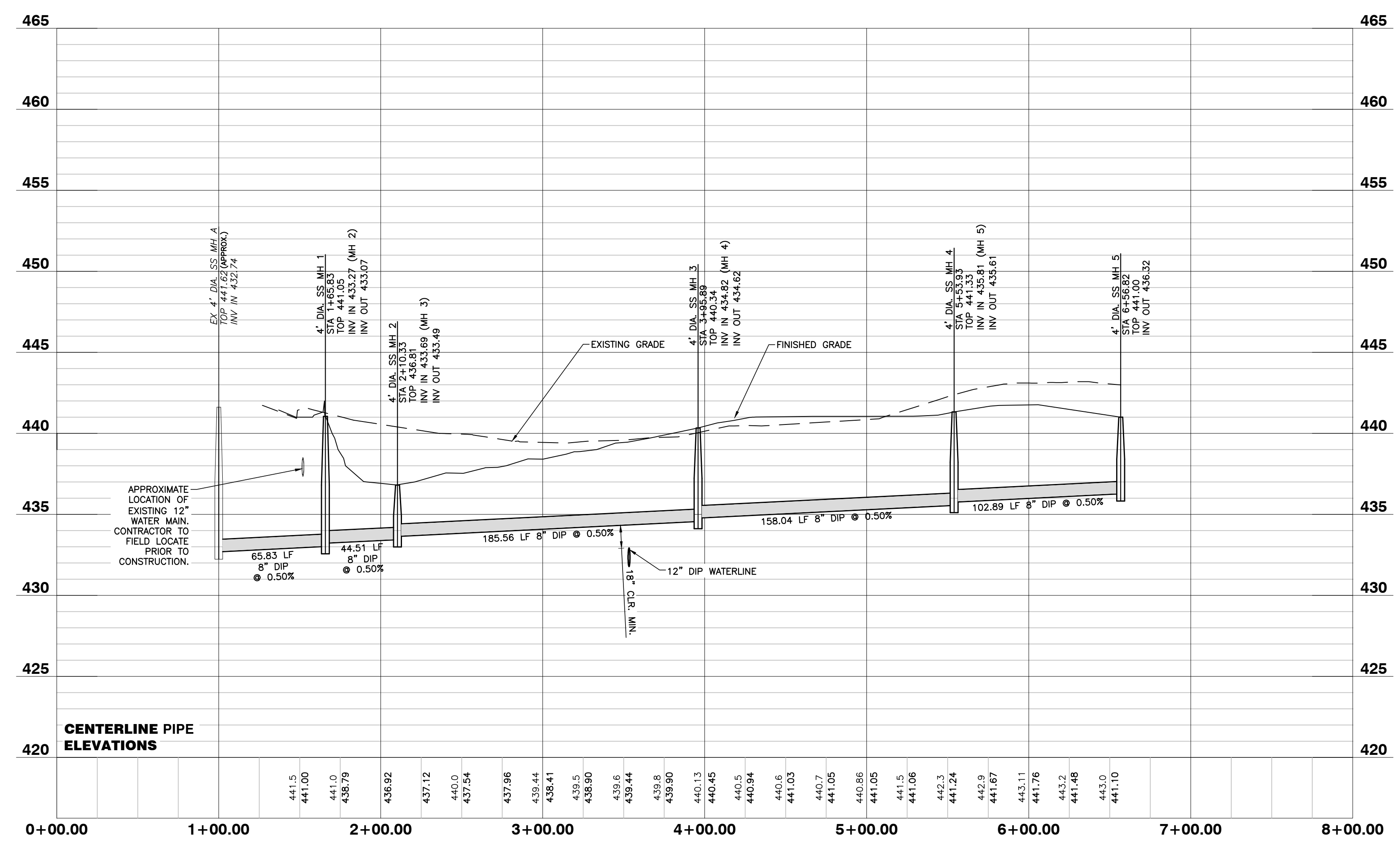
03-19157 PROGRESS MRN  
 JOB NO. DATE DRAWN BY  
**SANITARY SEWER PROFILE**  
 SCALE: 1" = 50' H; 1" = 5' V CHK BY: MDB

**COBBLESTONE VILLAGE**  
**MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET  
**C4.2**

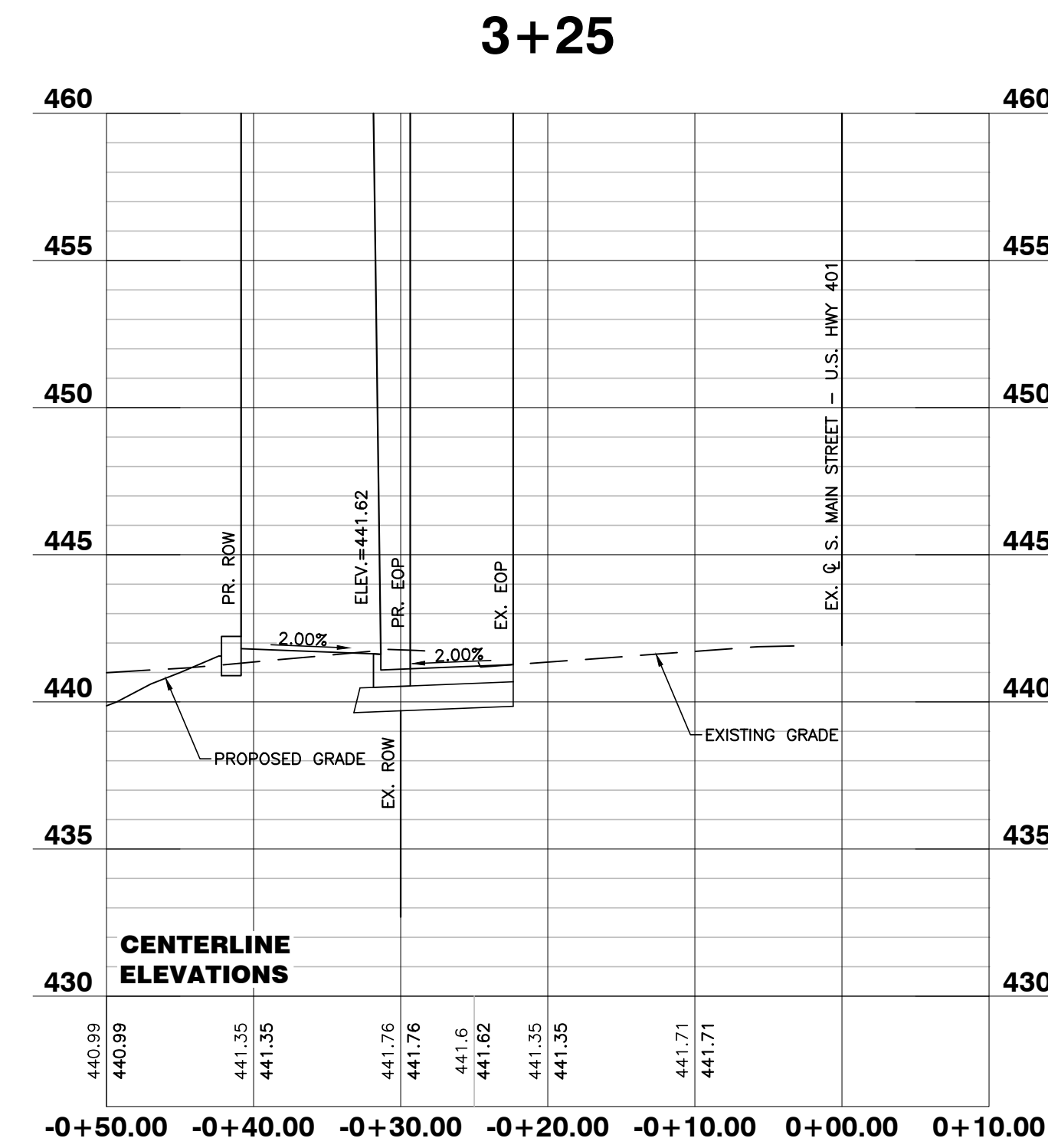
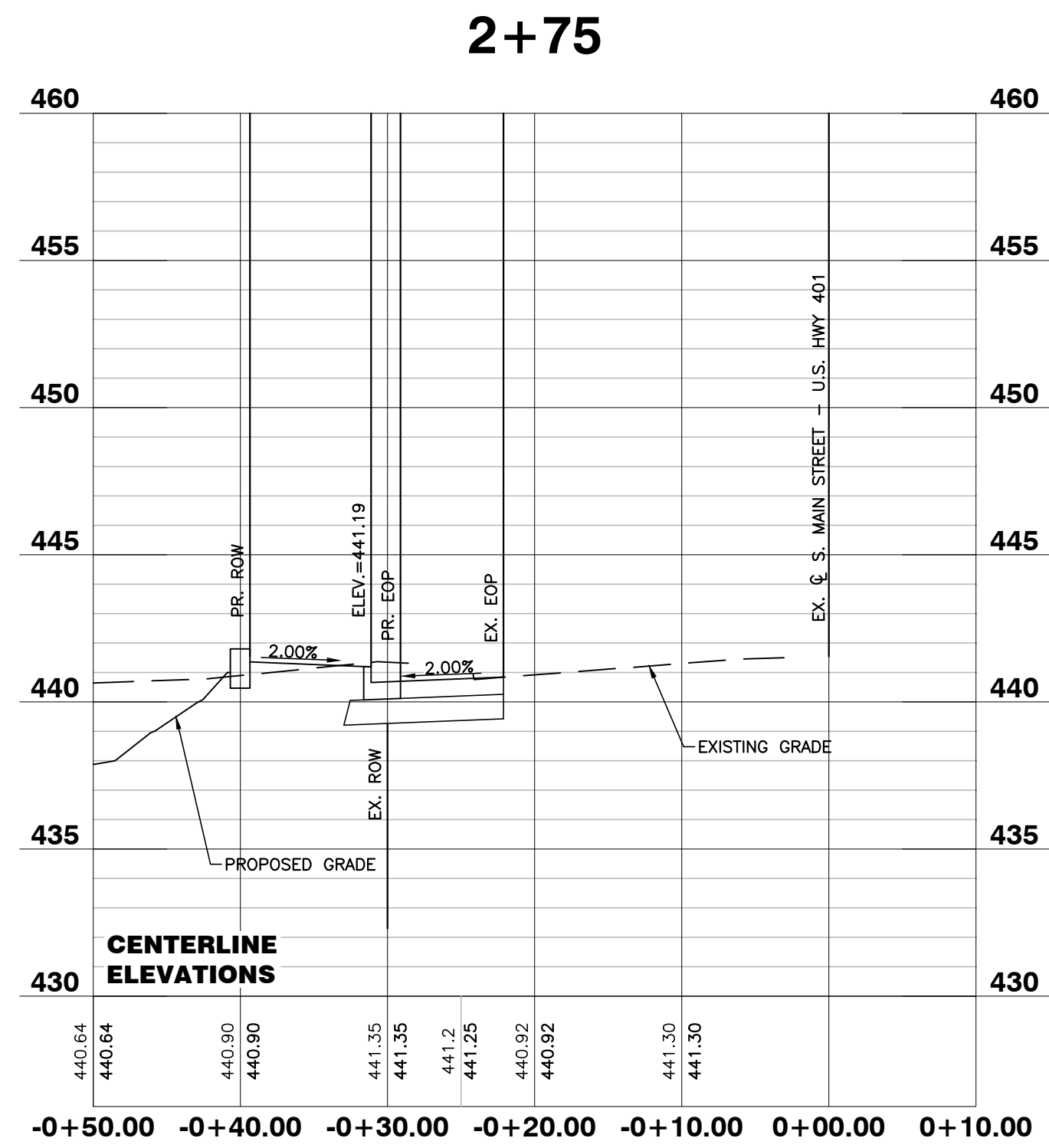
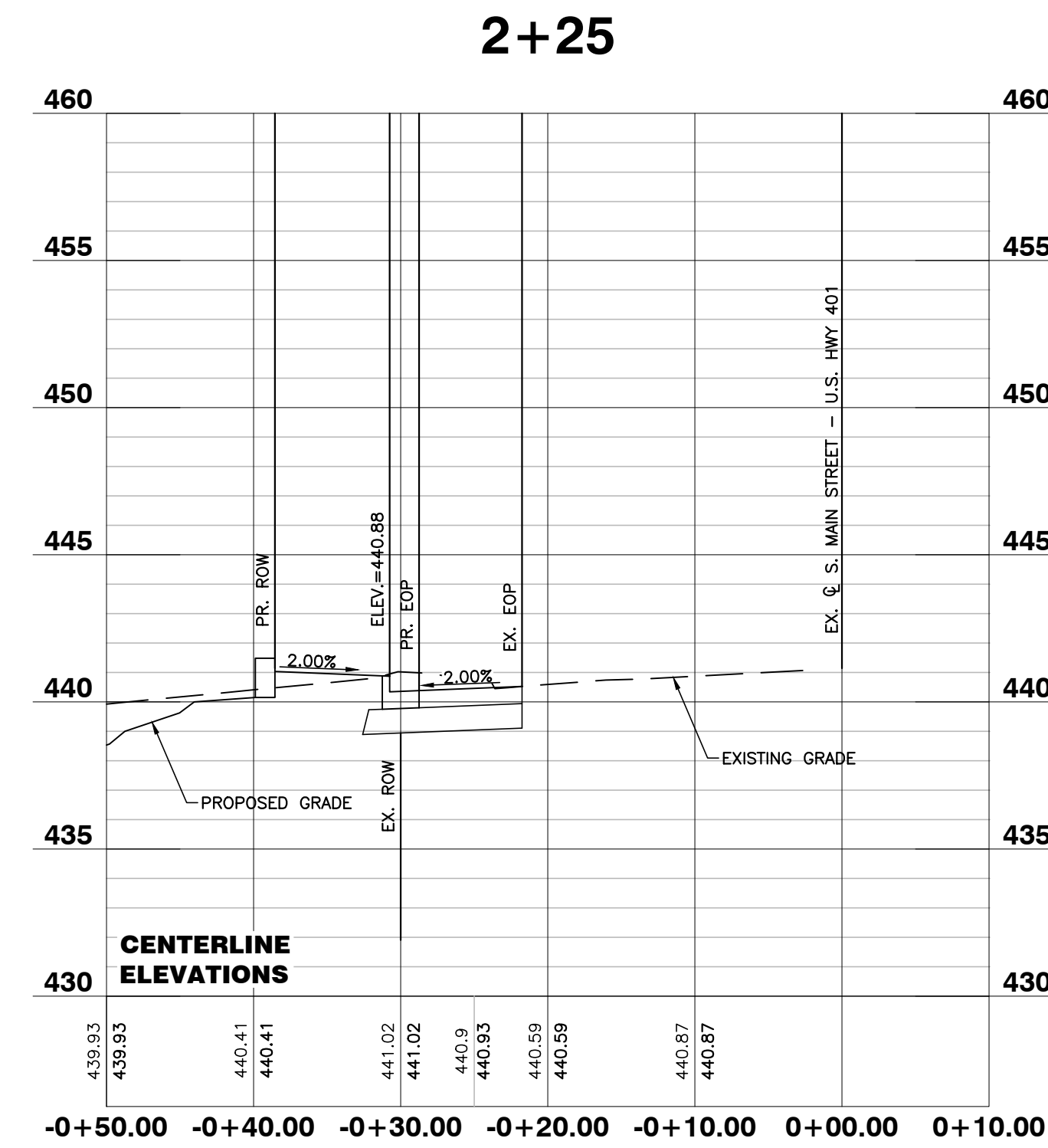
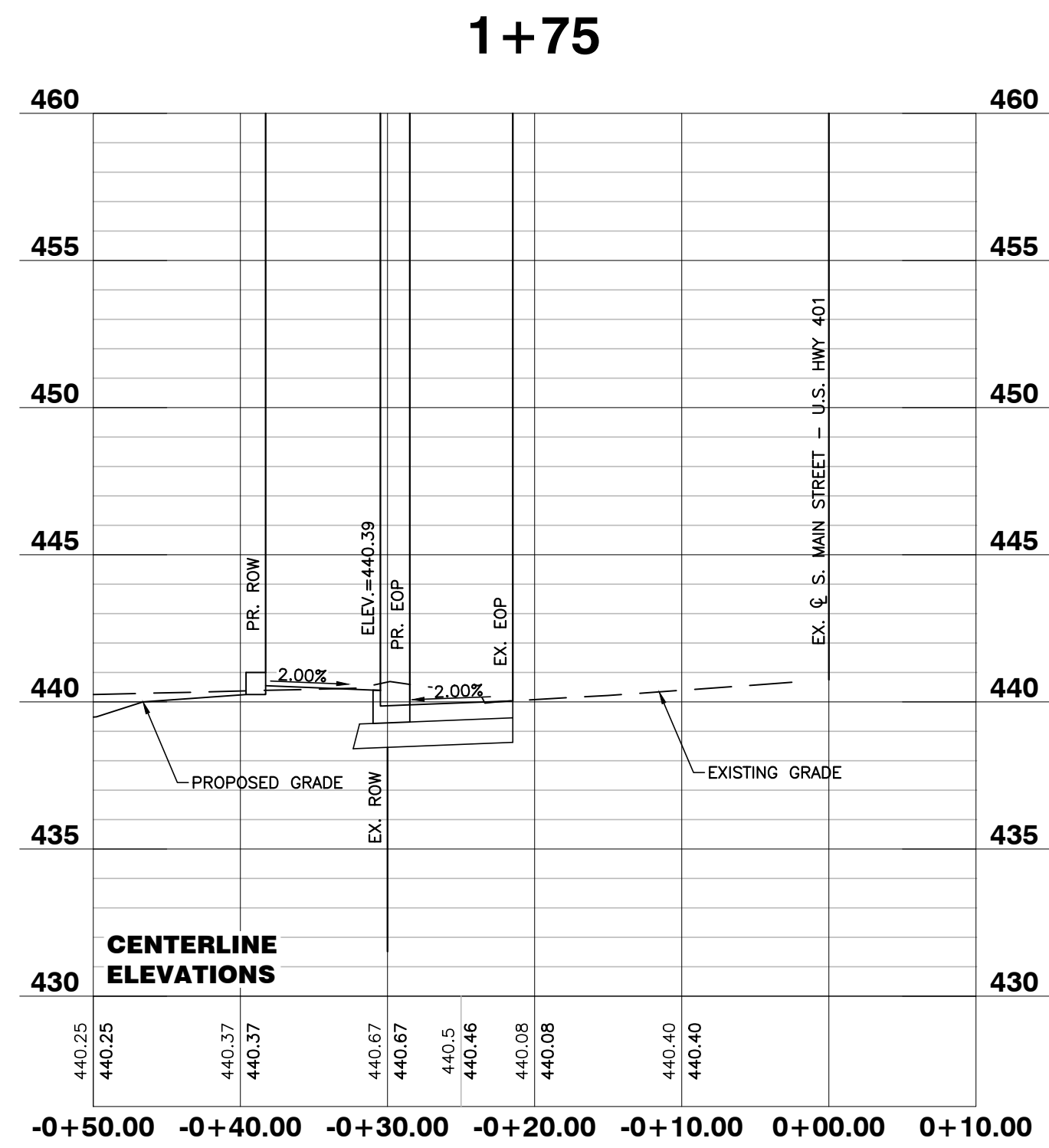
NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

**SANITARY SEWER PROFILE**



NO FLOODPLAINS EXIST ON-SITE

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



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City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer



06/02/22

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NO.	DATE	DESCRIPTION	BY

03-19187 PROGRESS MRN  
 DATE DRAWN BY  
**S. MAIN ST. - U.S. 401**  
**WIDENING CROSS**  
**SECTIONS**  
 SCALE: 1" = 50' H; 1" = 5' V CHK BY: MDB

**COBBLESTONE VILLAGE**  
**MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET  
**C4.3**





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PROGRESS	DATE	PER TOR COMMENTS	BY
3	05-12-22	PER TOR COMMENTS	GW
2	04-20-22	PER TOR COMMENTS	GW
1	5-28-21	PER TOR COMMENTS	GW
NO.	DATE	DESCRIPTION	BY

03-19157 PROGRESS DATE DRAWN BY

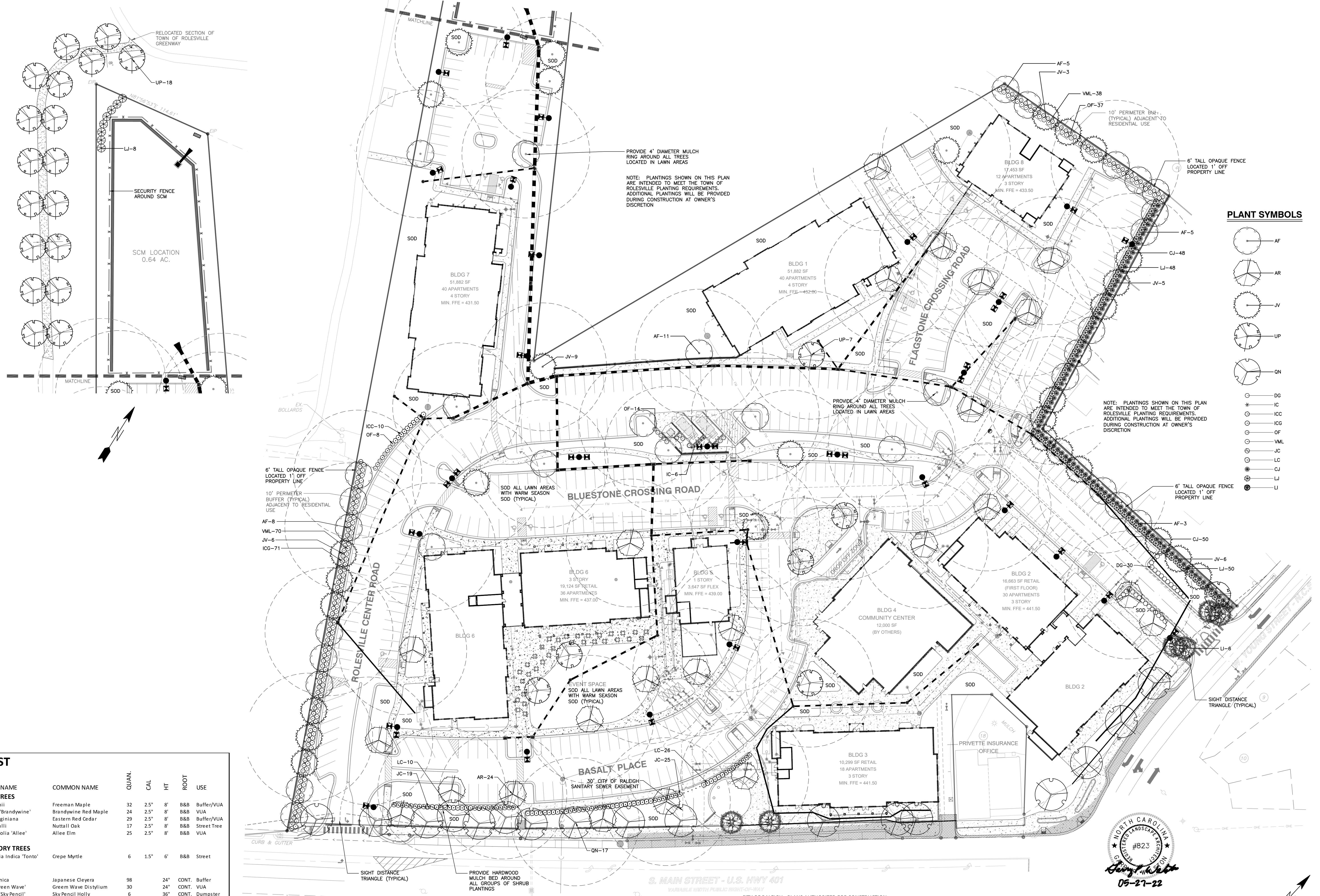
LANDSCAPE PLAN

SCALE: 1" = 40'

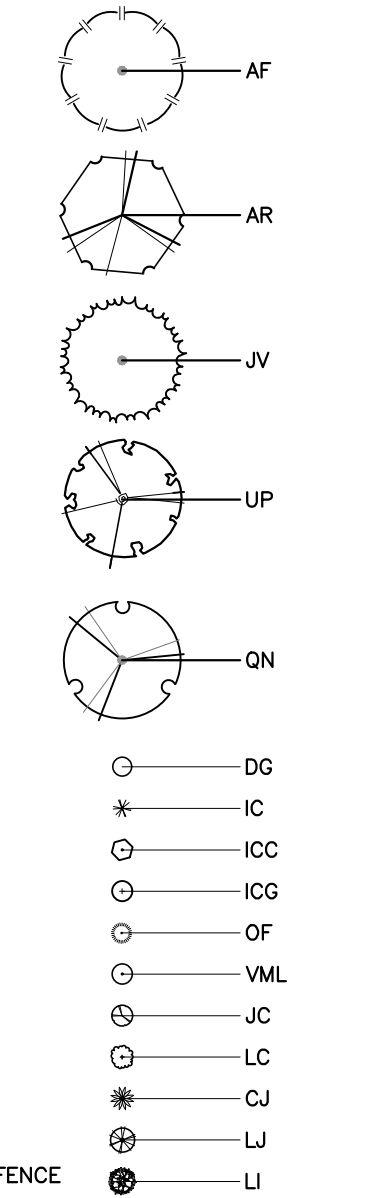
**COBBLESTONE VILLAGE**  
**MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET L1.1

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION



**PLANT SYMBOLS**



**PLANT LIST**

KEY	SCIENTIFIC NAME	COMMON NAME	QUAN.	CAL.	HT.	ROOT	USE
<b>CANOPY TREES</b>							
AF	Acer freemanii	Freeman Maple	32	2.5"	8'	B&B	Buffer/VUA
AR	Acer rubrum 'Brandywine'	Brandywine Red Maple	24	2.5"	8'	B&B	VUA
JV	Juniperus virginiana	Eastern Red Cedar	29	2.5"	8'	B&B	Buffer/VUA
QN	Quercus nuttallii	Nuttall Oak	17	2.5"	8'	B&B	Street Tree
UP	Ulmus parvifolia 'Allee'	Allee Elm	25	2.5"	8'	B&B	VUA
<b>UNDERSTORY TREES</b>							
LI	Lagerstroemia indica 'Tonto'	Crepe Myrtle	6	1.5"	6'	B&B	Street
<b>SHRUBS</b>							
CJ	Cleyera japonica	Japanese Cleyera	98		24"	CONT.	Buffer
DG	Distylium 'Green Wave'	Green Wave Distylium	30		24"	CONT.	VUA
IC	Ilex crenata 'Sky Pencil'	Sky Pencil Holly	6		36"	CONT.	Dumpster
ICC	Ilex crenata 'Chesapeake'	Chesapeake Holly	10		24"	CONT.	VUA Screen
ICG	Ilex crenata 'Green Lustre'	Green Lustre Japanese Holl	71		24"	CONT.	Buffer
JC	Juniperus chinensis 'Savbrook Gold'	Savbrook Gold Juniper	44		24"	CONT.	VUA Screen
LC	Loropetalum chinense 'Da ruma'	Daruma Loropetalum	36		24"	CONT.	VUA Screen
LI	Ligustrum japonicum	Wax Ligustrum	106		24"	CONT.	Buffer
OF	Osmanthus fragrans	Fragrant Tea Olive	59		24"	CONT.	Buffer/Screen
VML	Viburnum x 'Moonlit Lace'	Moonlit Lace Viburnum	108		24"	CONT.	Buffer

R:\2019\19157 - Rolesville Town Center\CIVIL\04\_Construction\08 - 19157\_Landscape.dwg, Landscape Plan, 5/27/2023 3:19:14 PM, marc.mueller

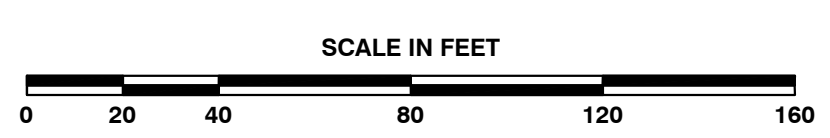


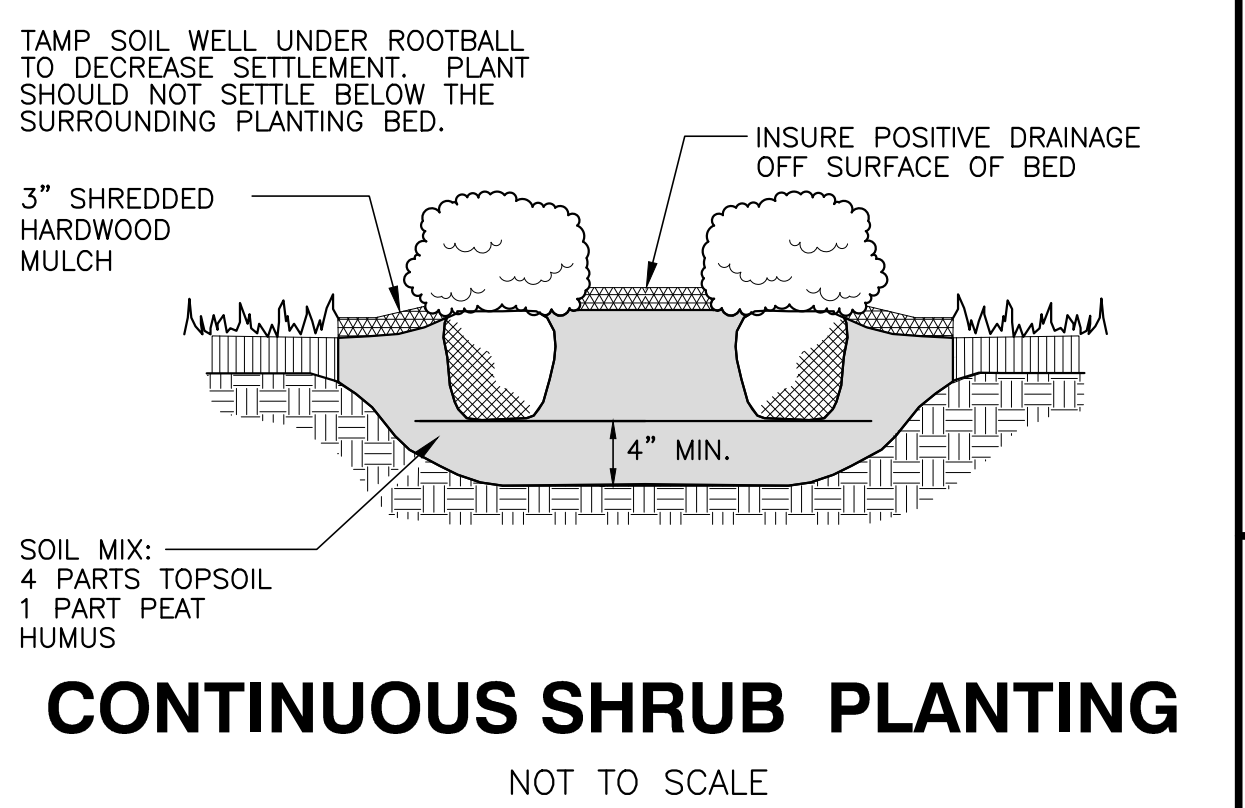
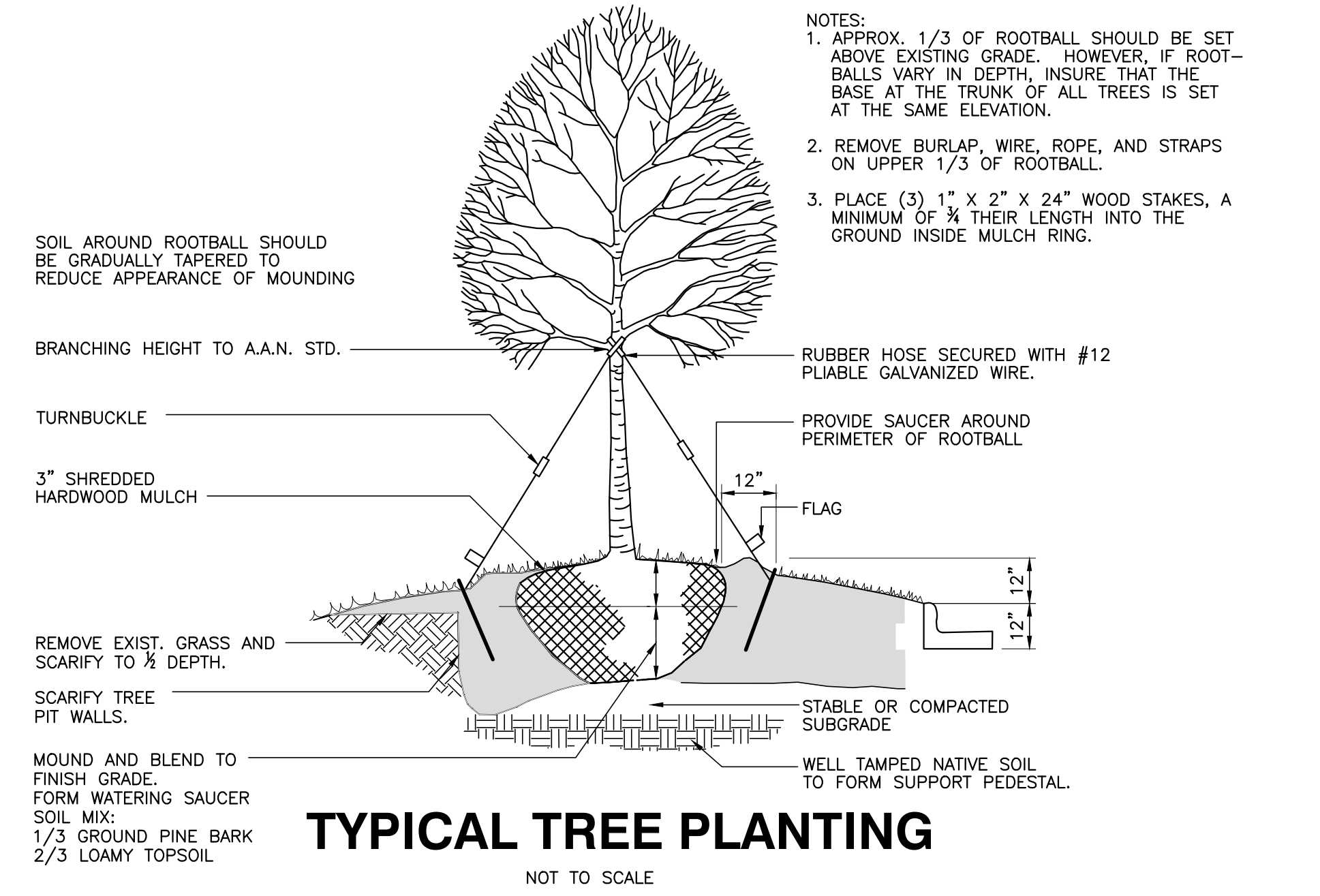
CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION  
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City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer

NO FLOODPLAINS EXIST ON-SITE

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





**BASS, NIXON & KENNEDY, INC.**  
CONSULTING ENGINEERS  
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607  
TELEPHONE: (919) 881-1122 FAX: (919) 881-6888  
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

**GENERAL 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 SHREDDED HARDWOOD MULCH 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 NURSERYMEN.
- 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.).
- UNLESS OTHERWISE NOTED ON THE PLAN, ALL DISTURBED AREAS ARE TO BE SEEDED WITH WARM SEASON GRASS, INCLUDING PARKING LOT PERIMETERS AND PARKING LOT ISLANDS.
- PERIMETER BUFFER AREAS ARE TO BE MULCHED TO A DEPTH OF THREE INCHES.

**LANDSCAPE CALCULATIONS**

PERIMETER BUFFERS (10' TYPICAL):  
 WEST (1) - 352 LF = 4 TREES / 100 LF = 14 TREES REQUIRED/PROVIDED  
 = 40 SHRUBS / 100 LF = 141 SHRUBS REQUIRED/PROVIDED  
 = 352 LF MIN. 6' TALL FENCE REQUIRED

NORTH (2) - 187 LF = 4 TREES / 100 LF = 8 TREES REQUIRED/PROVIDED  
 = 40 SHRUBS / 100 LF = 75 SHRUBS REQUIRED/PROVIDED  
 = 187 LF MIN. 6' TALL FENCE REQUIRED

NORTHEAST (3) - 240 LF = 4 TREES / 100 LF = 10 TREES REQUIRED/PROVIDED  
 = 40 SHRUBS / 100 LF = 96 SHRUBS REQUIRED/PROVIDED  
 = 240 LF MIN. 6' TALL FENCE REQUIRED

EAST (4) - 247 LF = 4 TREES / 100 LF = 10 TREES REQUIRED/PROVIDED  
 = 40 SHRUBS / 100 LF = 100 SHRUBS REQUIRED/PROVIDED  
 = 247 LF MIN. 6' TALL FENCE REQUIRED

STREET YARDS:  
 MAIN ST - 595 LF = 1 TREE / 50 LF = 12 TREES REQUIRED/PROVIDED  
 WEST YOUNG ST - 242 LF = 1 TREE / 50 LF = 5 TREES REQUIRED/PROVIDED

VEHICULAR USE AREA COVERAGE: 1 TREE WITHIN 60' OF EACH PARKING SPACE

PLANTING NOTES:  
 LOCATE PLANTS AND PLANTING BEDS BY USING SCALED DIMENSIONS FROM STREET, PROPERTY LINES, BACK OF CURB, BUILDINGS, WALLS, ETC. ALL PLANTS SHALL MEET OR EXCEED THE MINIMUM STANDARDS SET BY THE U.S.D.A. FOR NURSERY STOCK SPONSORED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC., WASHINGTON, D.C. NO SUBSTITUTIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL FROM THE OWNER AND/OR THE LANDSCAPE ARCHITECT. SYMBOLS: B&B = BALLED & BURLAPPED; B.R. = BARE ROOT; CONT. = CONTAINER, O.C. = ON-CENTER

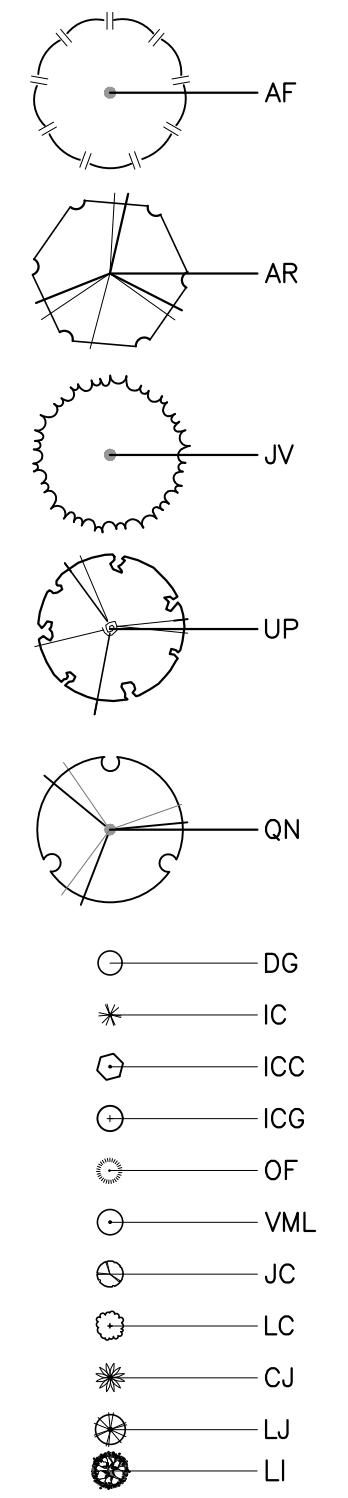
STREET TREE PLANTINGS TO BE COORDINATED IN CONCURRENCE WITH NCDOT STREETSCAPE IMPROVEMENT PROJECT ALONG S. MAIN AND YOUNG STREET(S).

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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 Raleigh Water Review Officer

**PLANT SYMBOLS**



NO FLOODPLAINS EXIST ON-SITE

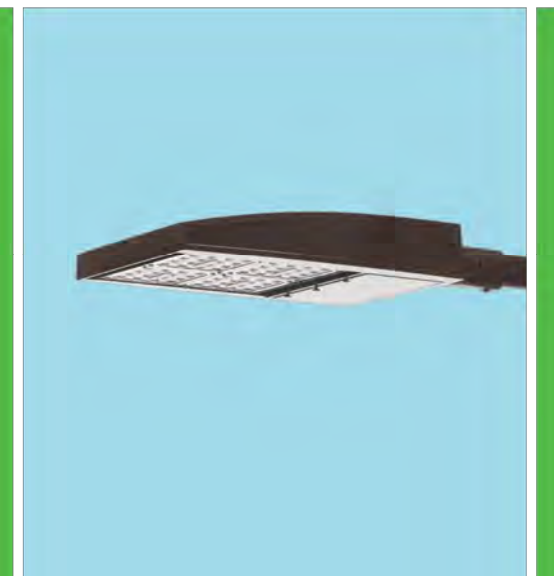
NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT



**COBBLESTONE VILLAGE**  
MIXED USE DEVELOPMENT  
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET L1.2

Outdoor Lighting  
**Shoebox LED**



The energy-efficient Shoebox LED combines a decorative, contemporary style with versatility and ample lighting effect that is perfect for streets, parking lots, commercial buildings and residential communities. The Shoebox LED provides excellent color rendition along with a controlled light pattern that reduces glare and keeps the light directed only where you want it. Available in black, dark bronze, gray or white with one to four fixtures per pole.

- LED** (Light Emitting Diode)  
150, 220, 420, 530 watts
- Mounting heights** 25', 30', 35'
- Colors**  
Black  
Bronze  
Gray  
White
- Poles**  
Fiberglass (1 or 2 fixtures per pole)  
Decorative tapered metal  
Decorative square metal
- Note: 35' pole available in black or bronze only.

For additional information, visit us at [duke-energy.com/OutdoorLighting](http://duke-energy.com/OutdoorLighting) or call us toll free at 866.769.6417.



Outdoor Lighting  
**Shoebox LED**

Light source: LED (white)  
Replacement for\* LED Wattage 150 – 250-watt HPS and metal halide; LED Wattage 205 – up to 400-watt metal halide; LED Wattage 530 – 1,000-watt metal halide

Warm-up and restrike time: Instant on (no warm-up or restrike time)

Wattage	BUG Rating	Light Pattern	Lumens	Color Temp
LED 150	B5-U0-G3	IESNA Type V (circular)	19580	4,000K
<b>LED 150</b>	<b>B3-U0-G4</b>	<b>IESNA Type IV (forward throw)</b>	<b>18459</b>	
LED 150	B2-U0-G3	IESNA Type III (oval)	19006	
LED 220	B5-U0-G3	IESNA Type V (circular)	25870	
LED 220	B3-U0-G4	IESNA Type IV (forward throw)	24390	
LED 220	B2-U0-G4	IESNA Type III (oval)	25114	
LED 420	B5-U0-G5	IESNA Type V (circular)	48514	
LED 420	B3-U0-G5	IESNA Type IV (forward throw)	43765	
LED 530	B5-U0-G5	IESNA Type V (circular)	60296	
LED 530	B3-U0-G5	IESNA Type IV (forward throw)	54395	

\* These are approximate replacement suggestions; actual conditions could be different.

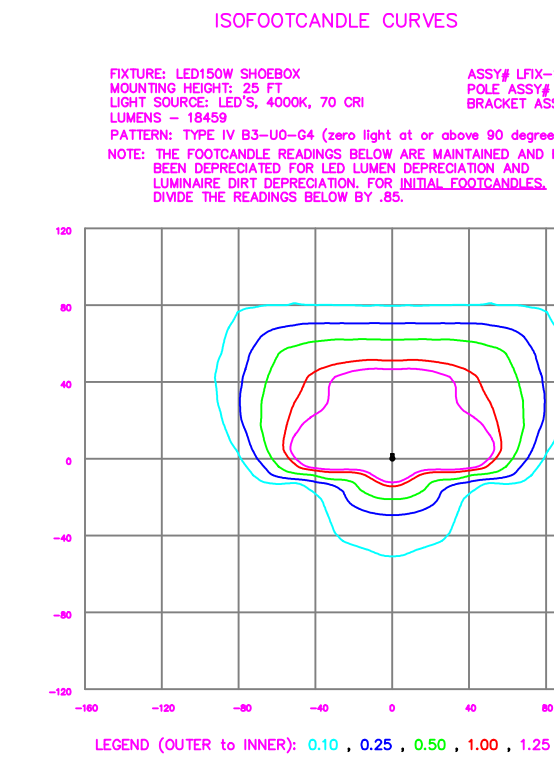
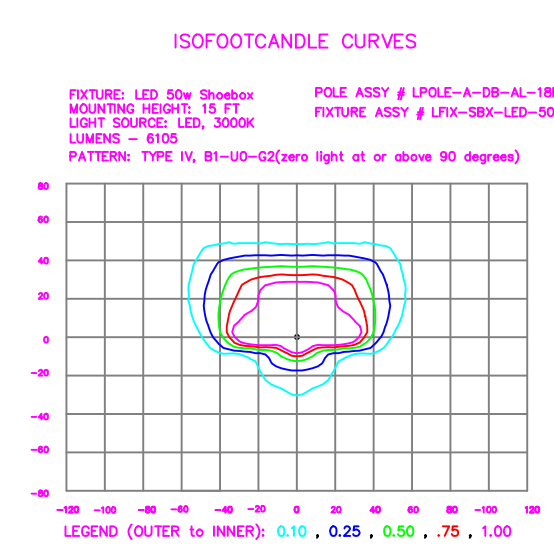
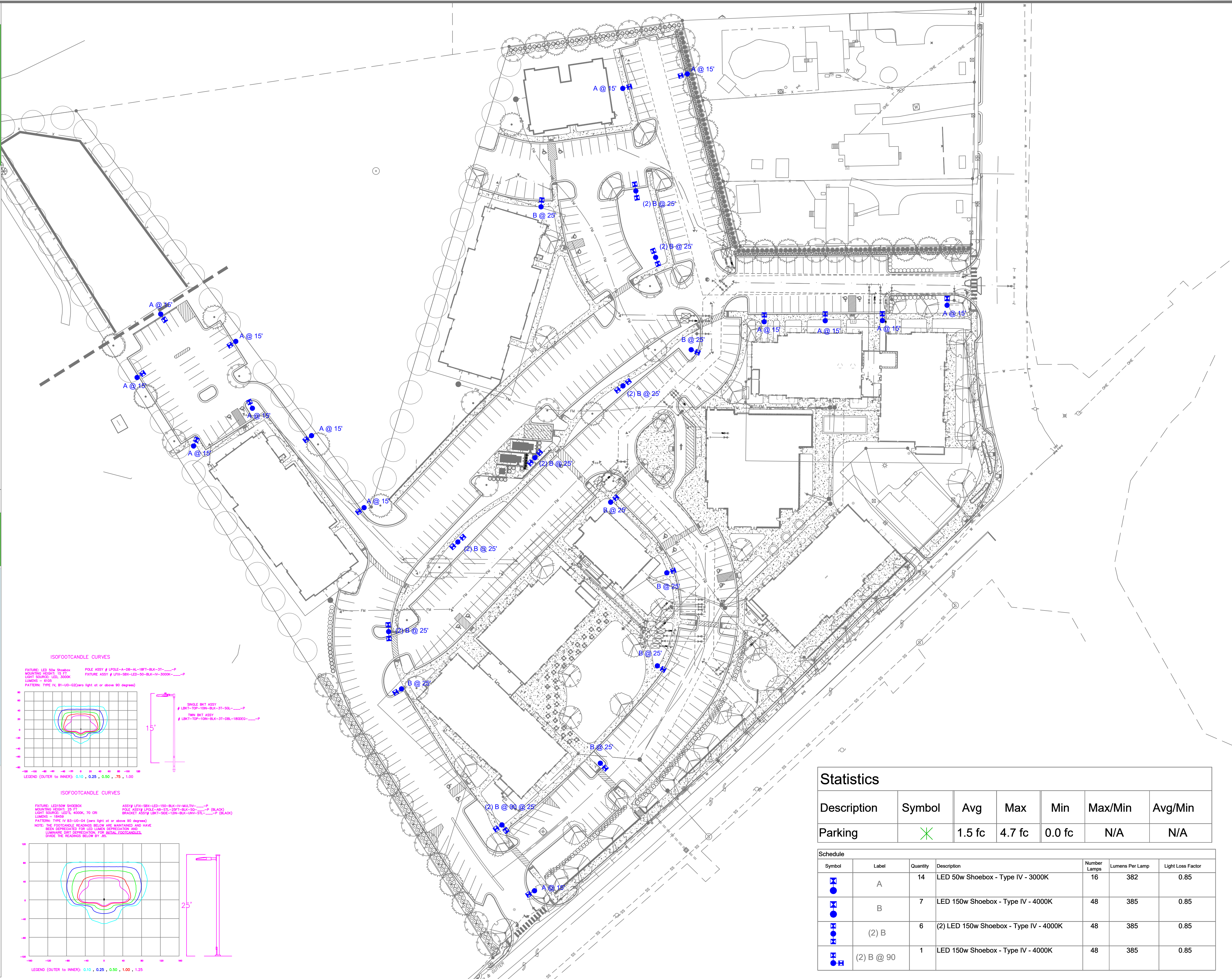


**Poles available:**

Name	Mounting height	Color
Round tapered decorative metal*	35'	Black Bronze
Decorative square metal*	25' and 30'	Black Bronze Gray White
<b>Fiberglass</b>	30'	<b>Black (1 or 2 fixtures per pole)</b> <b>Gray (1 or 2 fixtures per pole)</b>

Features	Benefits
Little or no installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance included	Eliminates high and unexpected repair bills
Electricity included	Less expensive than metered service
Warranty included	Worry-free
One low monthly cost on your electric bill	Convenience and savings for you
Turnkey operation	Provides hassle-free installation and service
Backed by over 40 years of experience	A name you can trust today ... and tomorrow

\*2" raised foundation available when required on metal poles only.



**Statistics**

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Parking	X	1.5 fc	4.7 fc	0.0 fc	N/A	N/A

**Schedule**

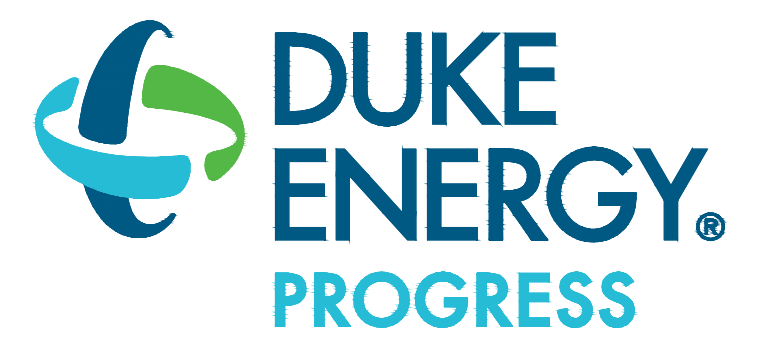
Symbol	Label	Quantity	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor
A	A	14	LED 50w Shoebox - Type IV - 3000K	16	382	0.85
B	B	7	LED 150w Shoebox - Type IV - 4000K	48	385	0.85
(2) B	(2) B	6	(2) LED 150w Shoebox - Type IV - 4000K	48	385	0.85
(2) B @ 90	(2) B @ 90	1	LED 150w Shoebox - Type IV - 4000K	48	385	0.85

Customer approval \_\_\_\_\_  
Date \_\_\_\_\_

DISTANCE CALIBRATION (INCHES)  
0 0.5 1.0 2.0 3.0 4.0

**LIGHTING DESIGN TOLERANCE**

The calculated footcandle light levels on 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 (follage 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**

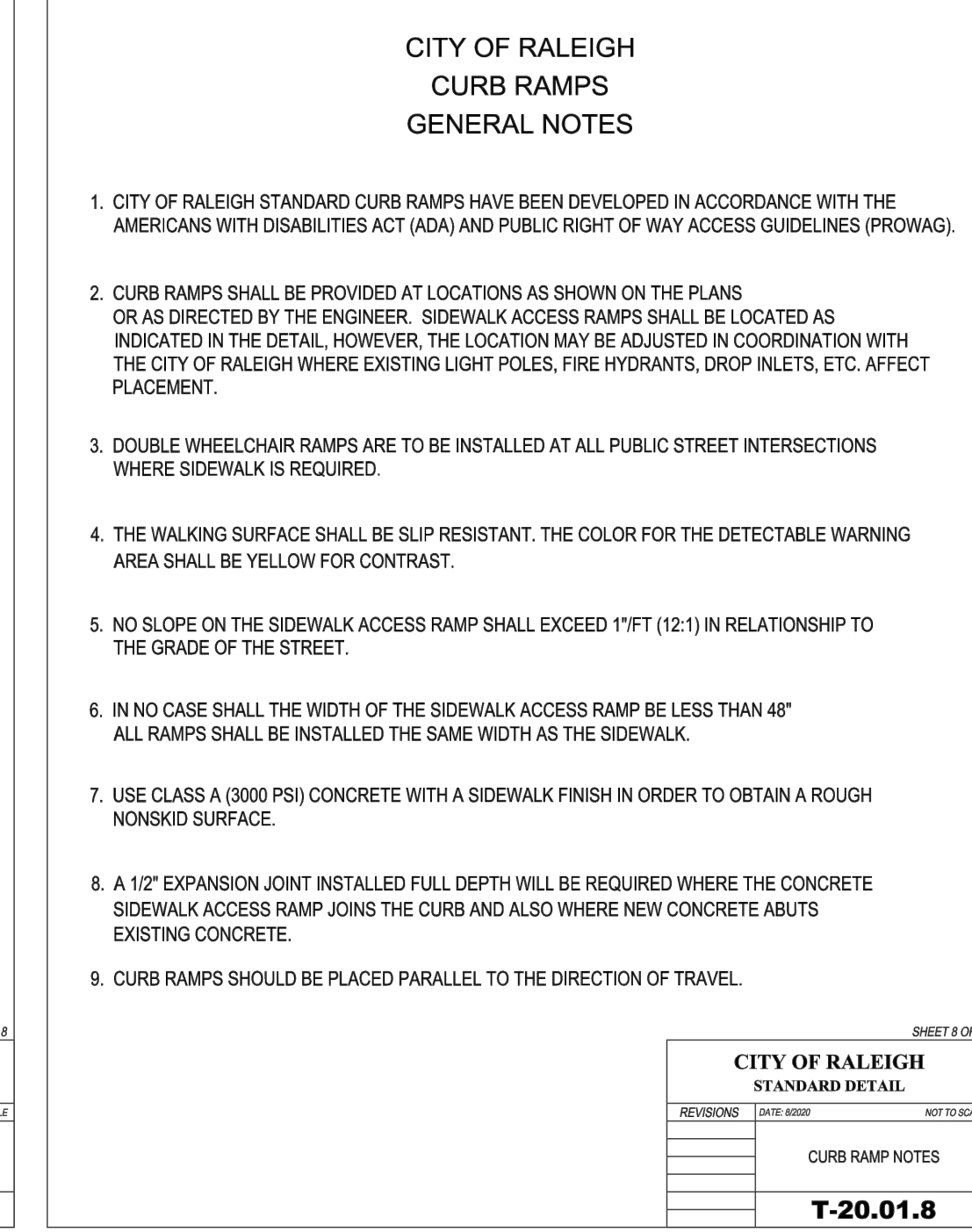
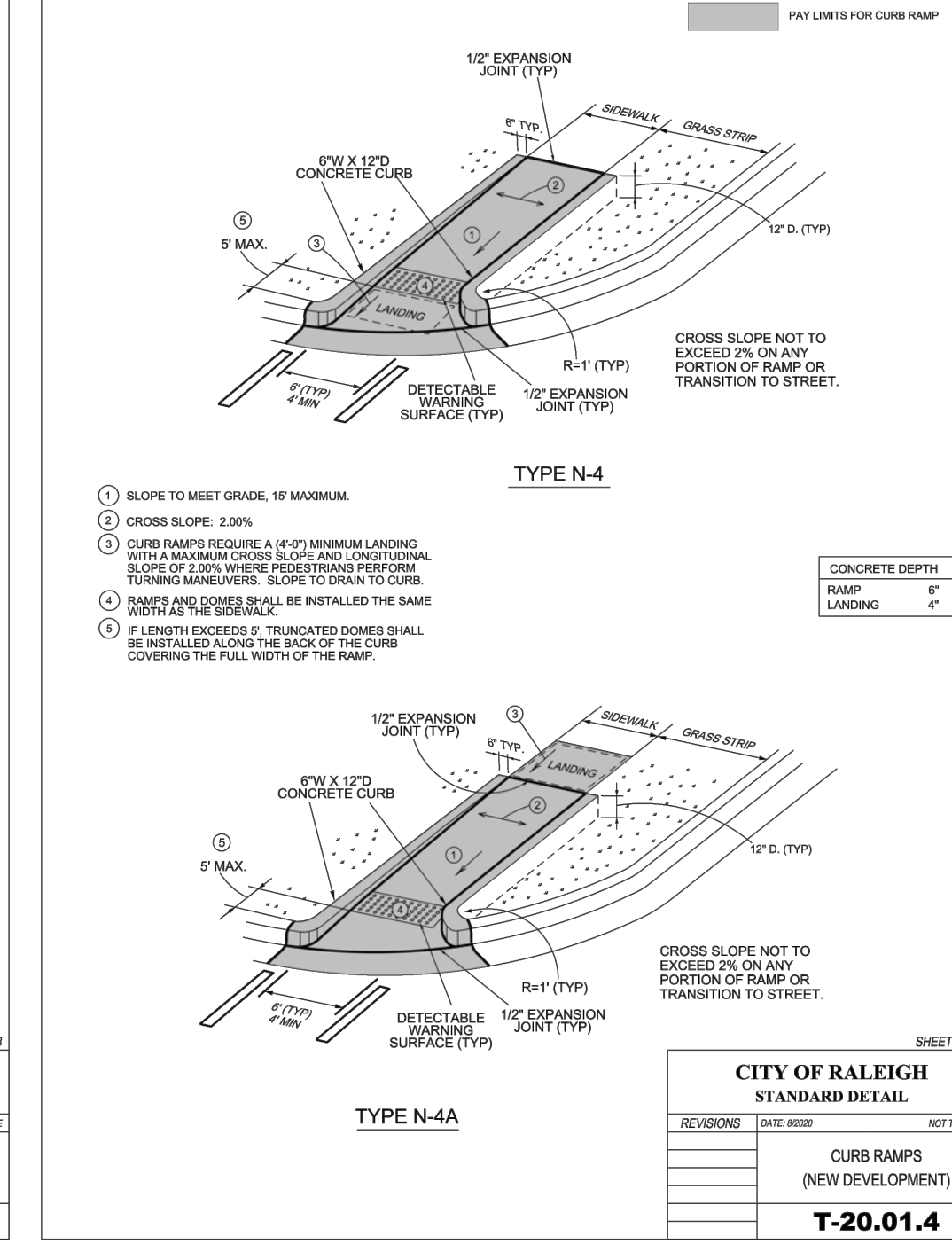
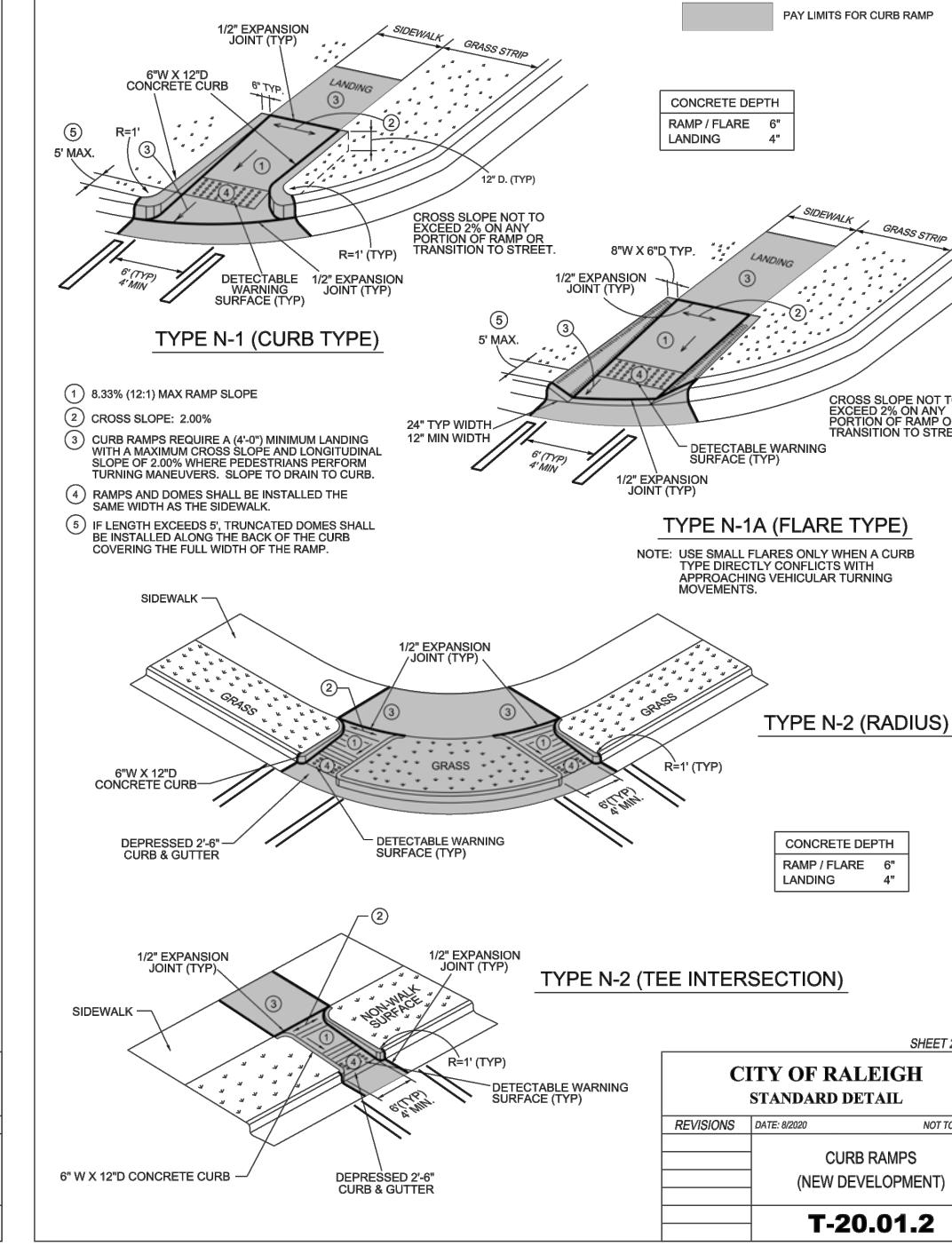
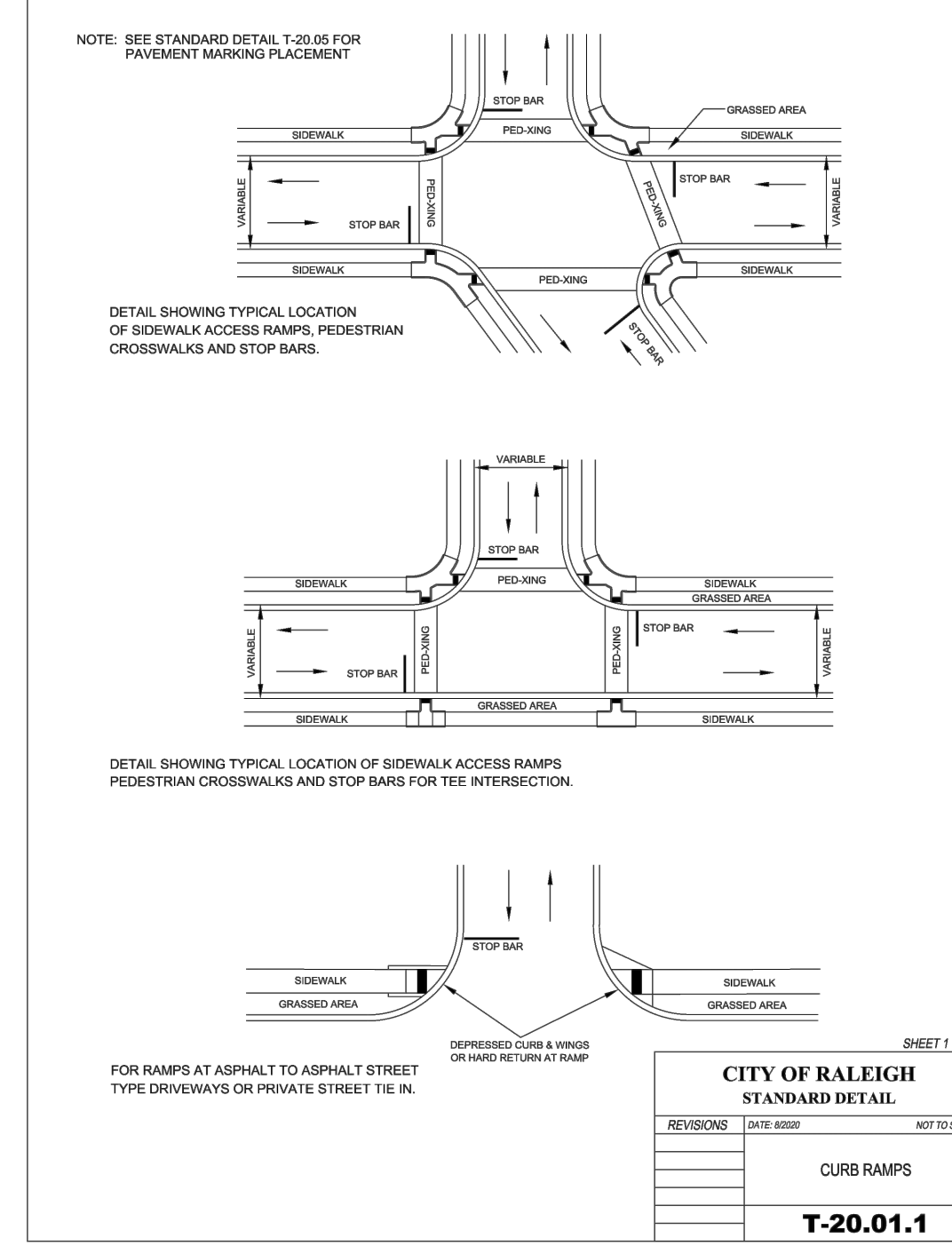
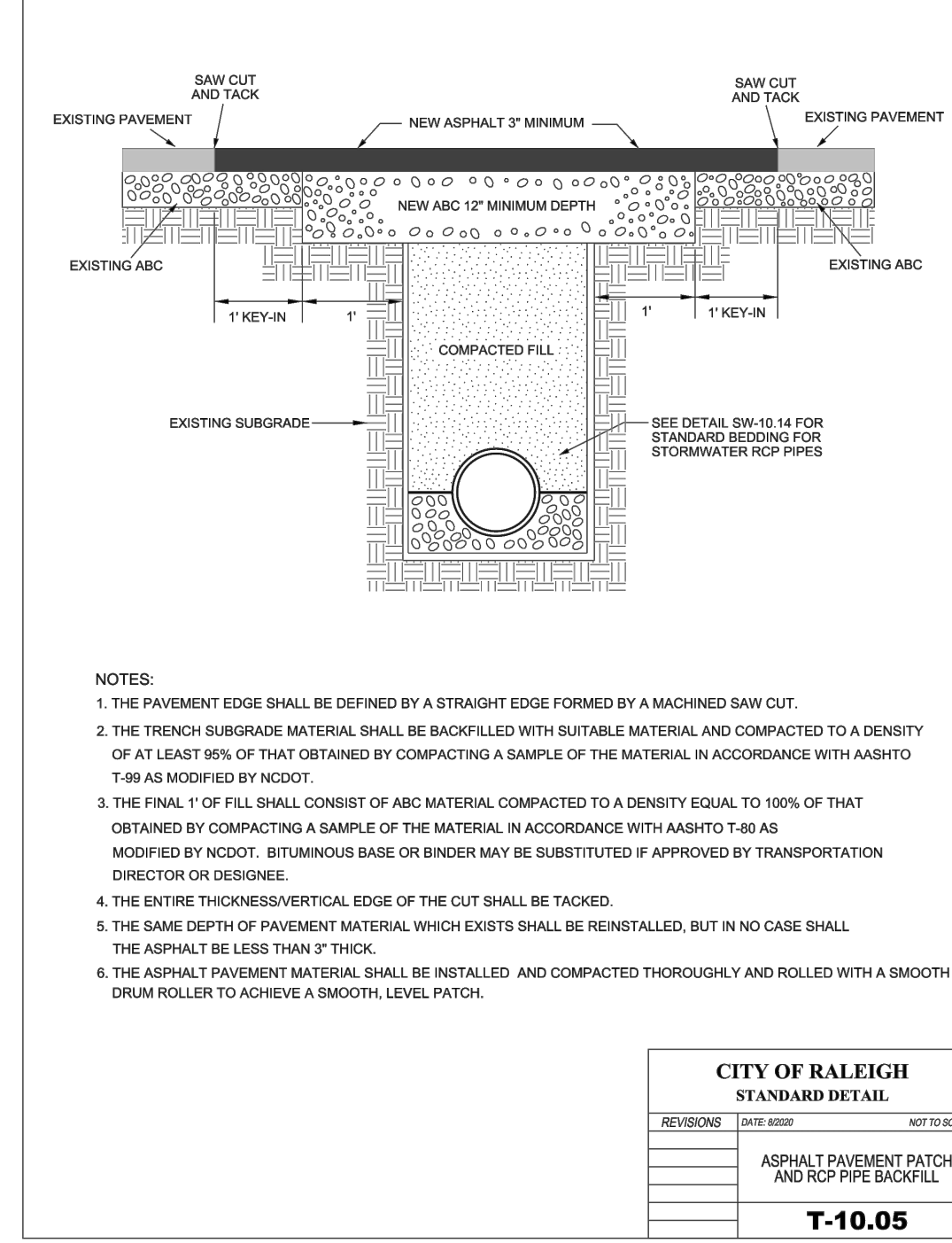
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**COBBLESTONE VILLAGE**  
Rosesville, NC  
SITE LIGHTING PLAN

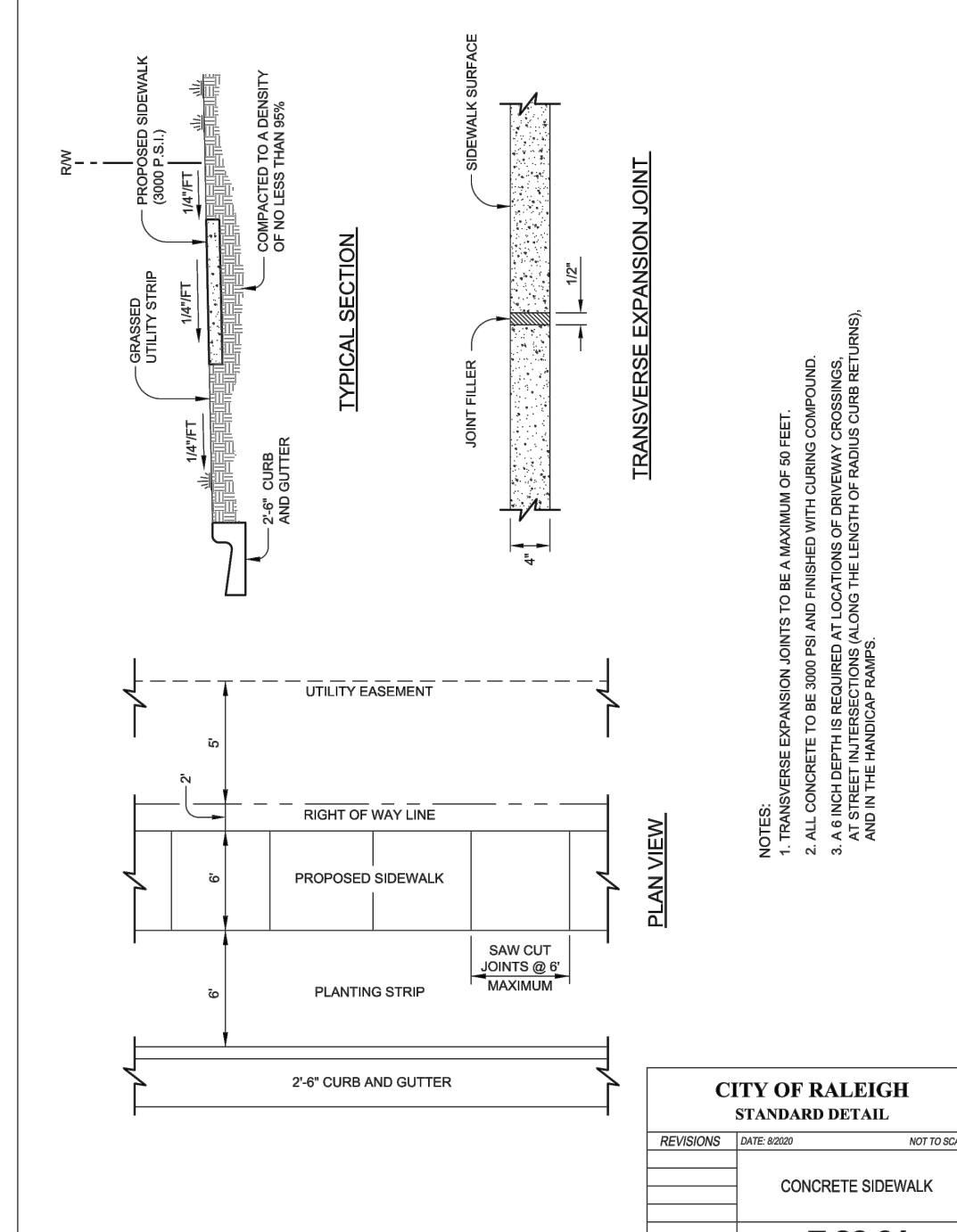
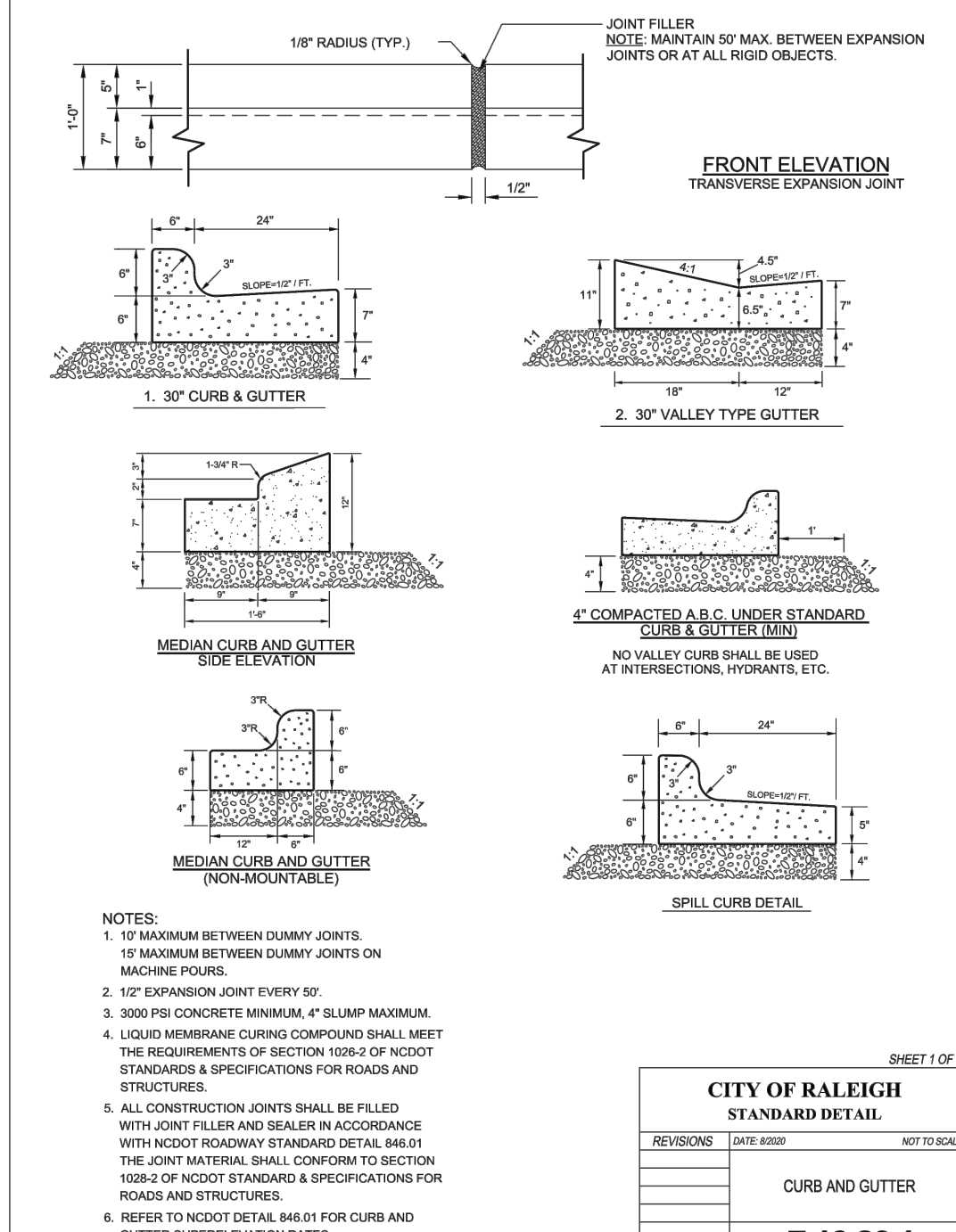
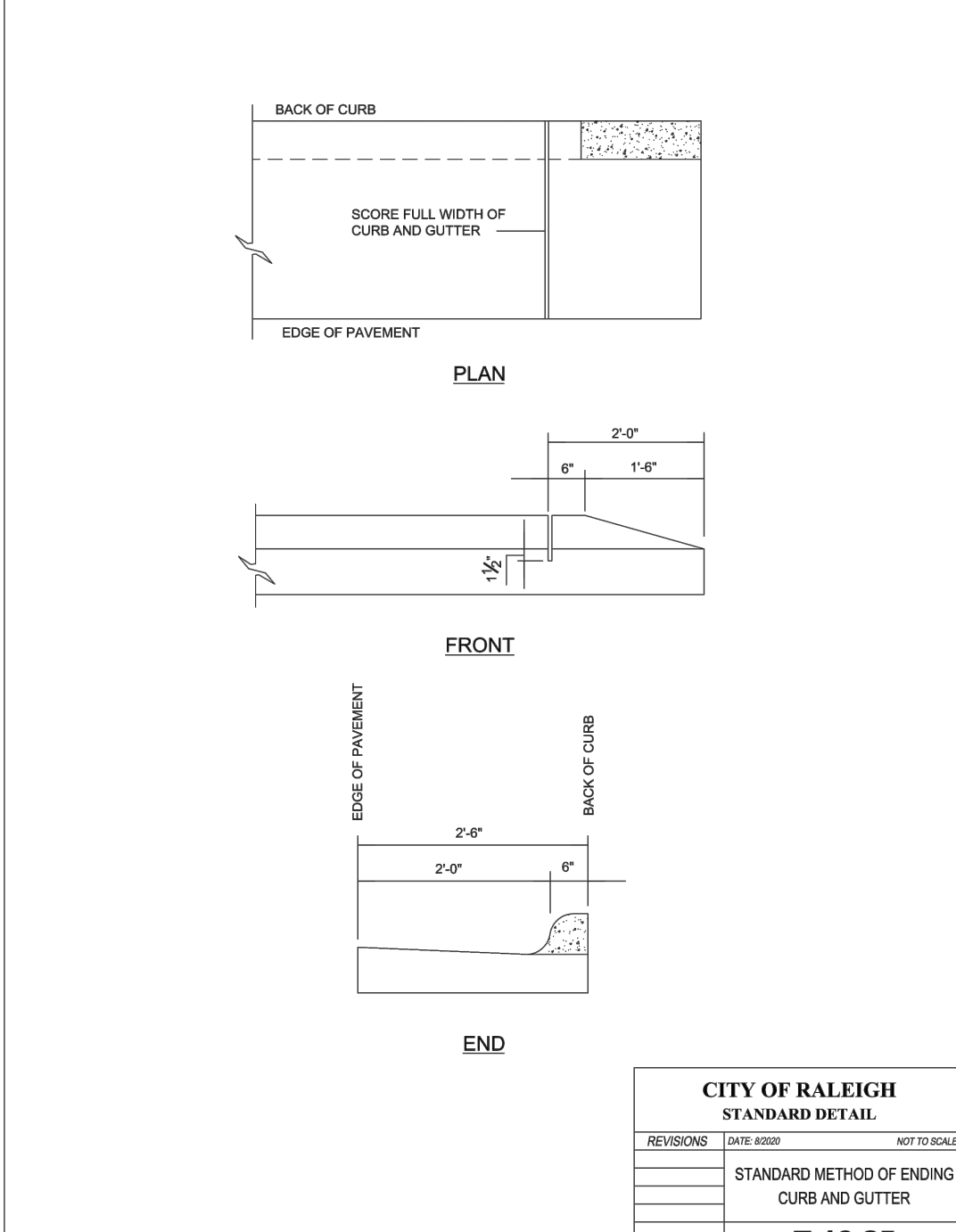
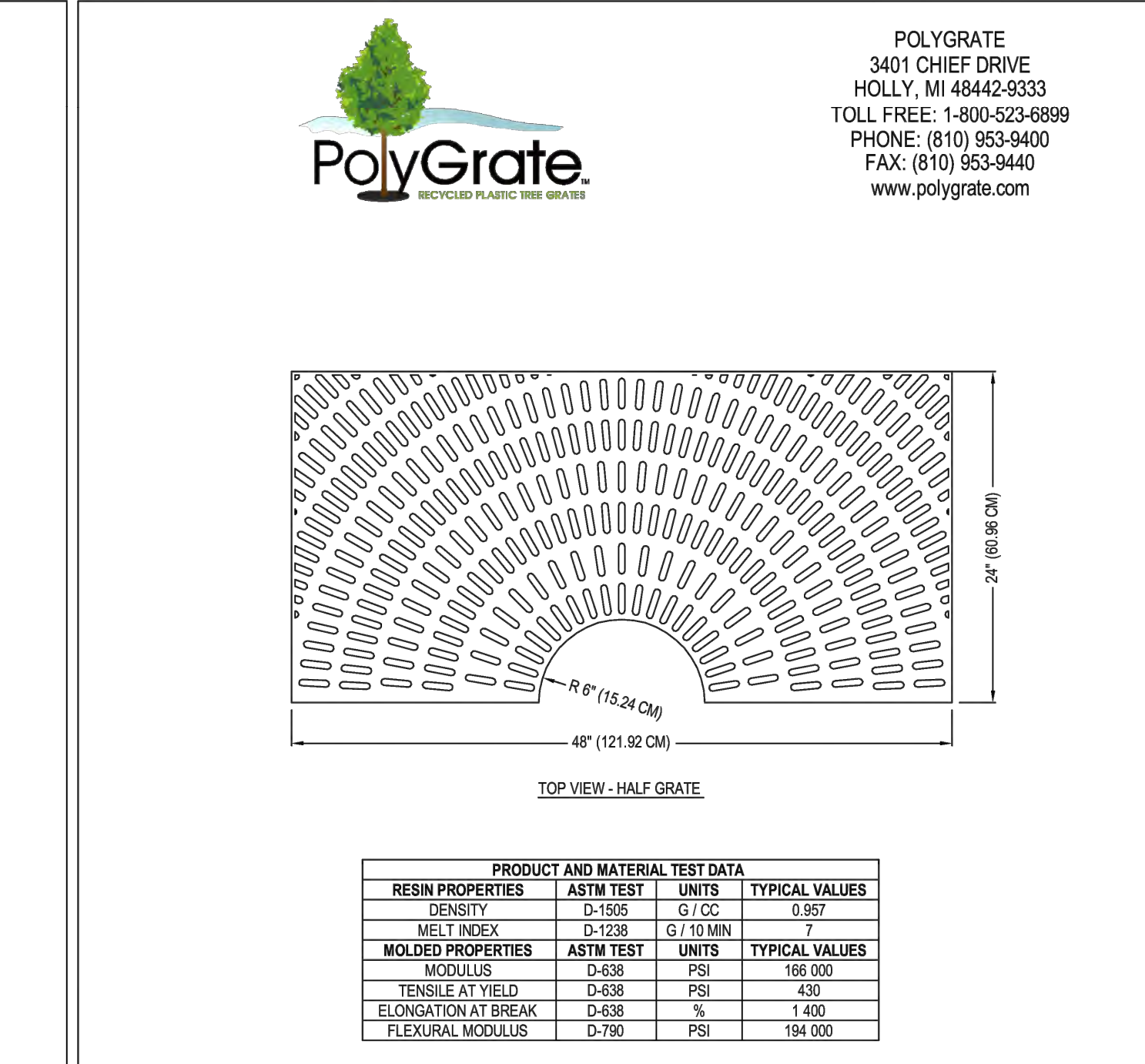
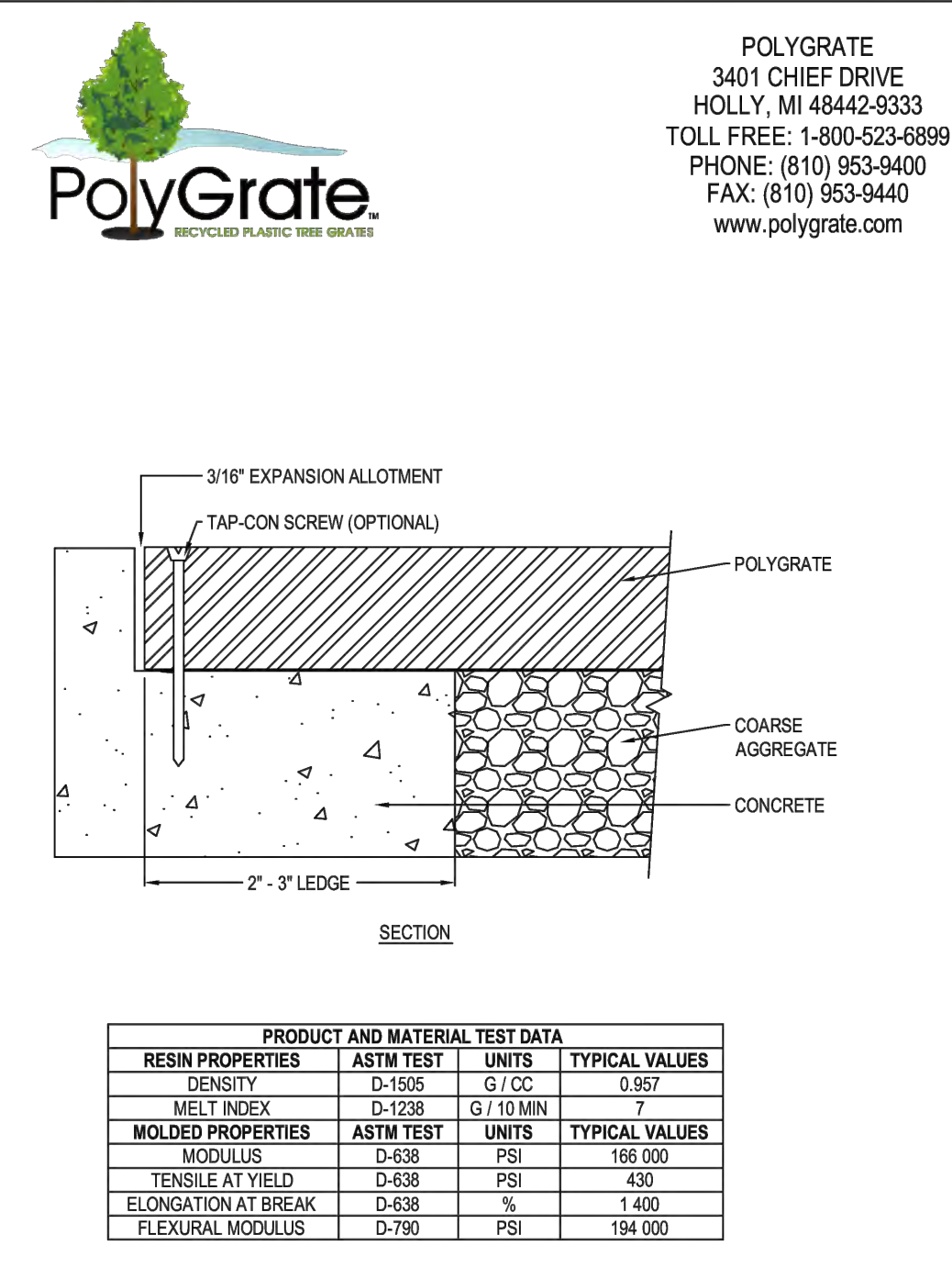
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Reviewed by T. Ferguson Scale 1" = 50'  
Date 02/14/2022 Size "Arch D"  
Description LED Shoebox  
Drawing No. 22-0047A Sht. 1 OF 1

REV#	DATE	REVISION	BY
Rev A	02/14/22	LED Shoebox	NJ

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**BASS, NIXON & KENNEDY, INC.**  
 CONSULTING ENGINEERS  
 6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607  
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**PolyGrate**  
 3401 CHIEF DRIVE  
 HOLLY, MI 48442-9333  
 TOLL FREE: 1-800-523-6899  
 PHONE: (810) 953-9400  
 FAX: (810) 953-9440  
 www.polygrate.com

**PRODUCT AND MATERIAL TEST DATA**

RESIN PROPERTIES	ASTM TEST	UNITS	TYPICAL VALUES
DENSITY	D-1505	G / CC	0.957
MELT INDEX	D-1238	G / 10 MIN	7
MOLDED PROPERTIES	ASTM TEST	UNITS	TYPICAL VALUES
MODULUS	D-638	PSI	196,000
TENSILE AT YIELD	D-638	PSI	430
ELONGATION AT BREAK	D-638	%	1,400
FLEXURAL MODULUS	D-790	PSI	194,000

**POLYGRATE™**  
 POLYGRATE™ INSTALLATION WITH CONCRETE SURROUND

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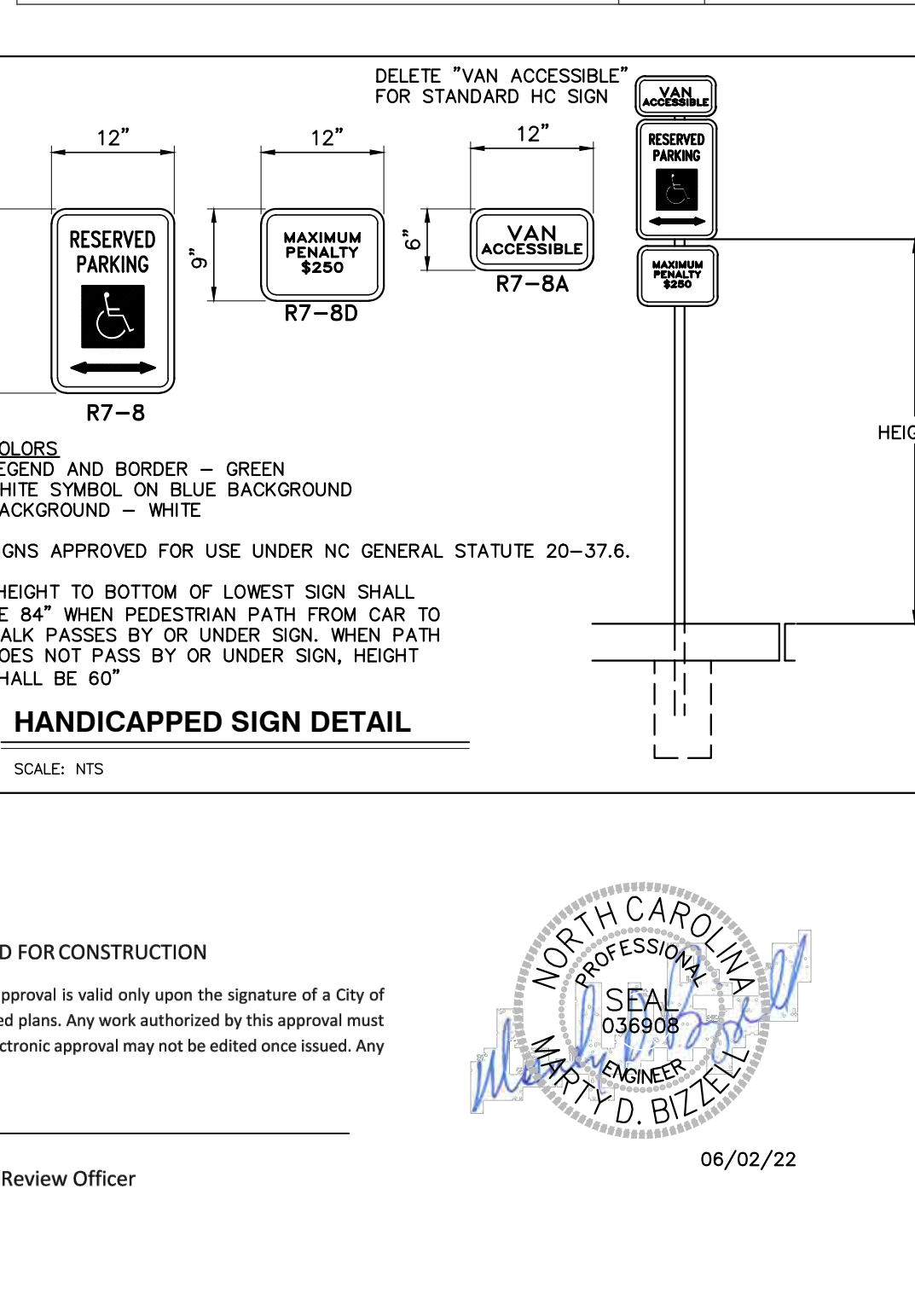
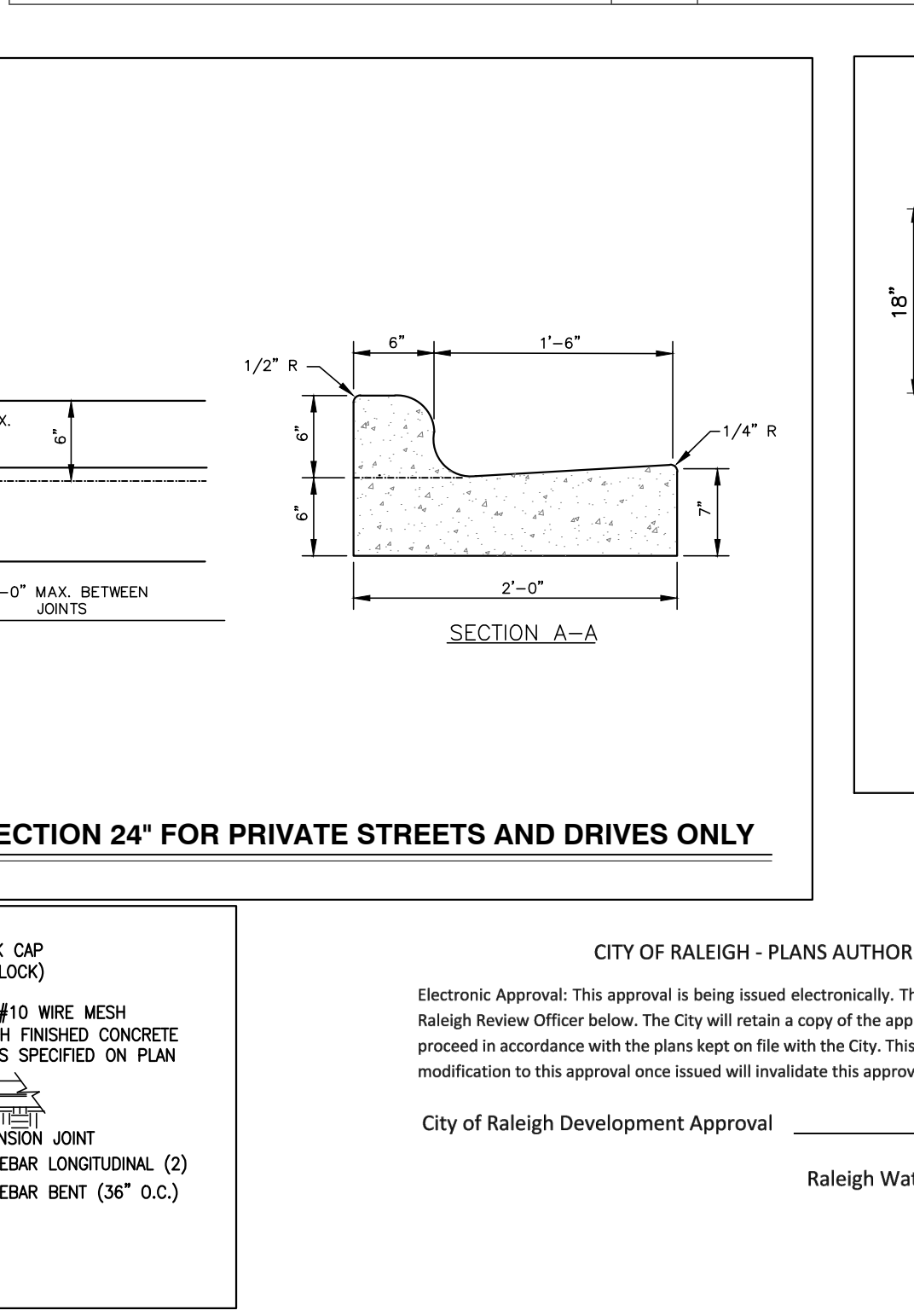
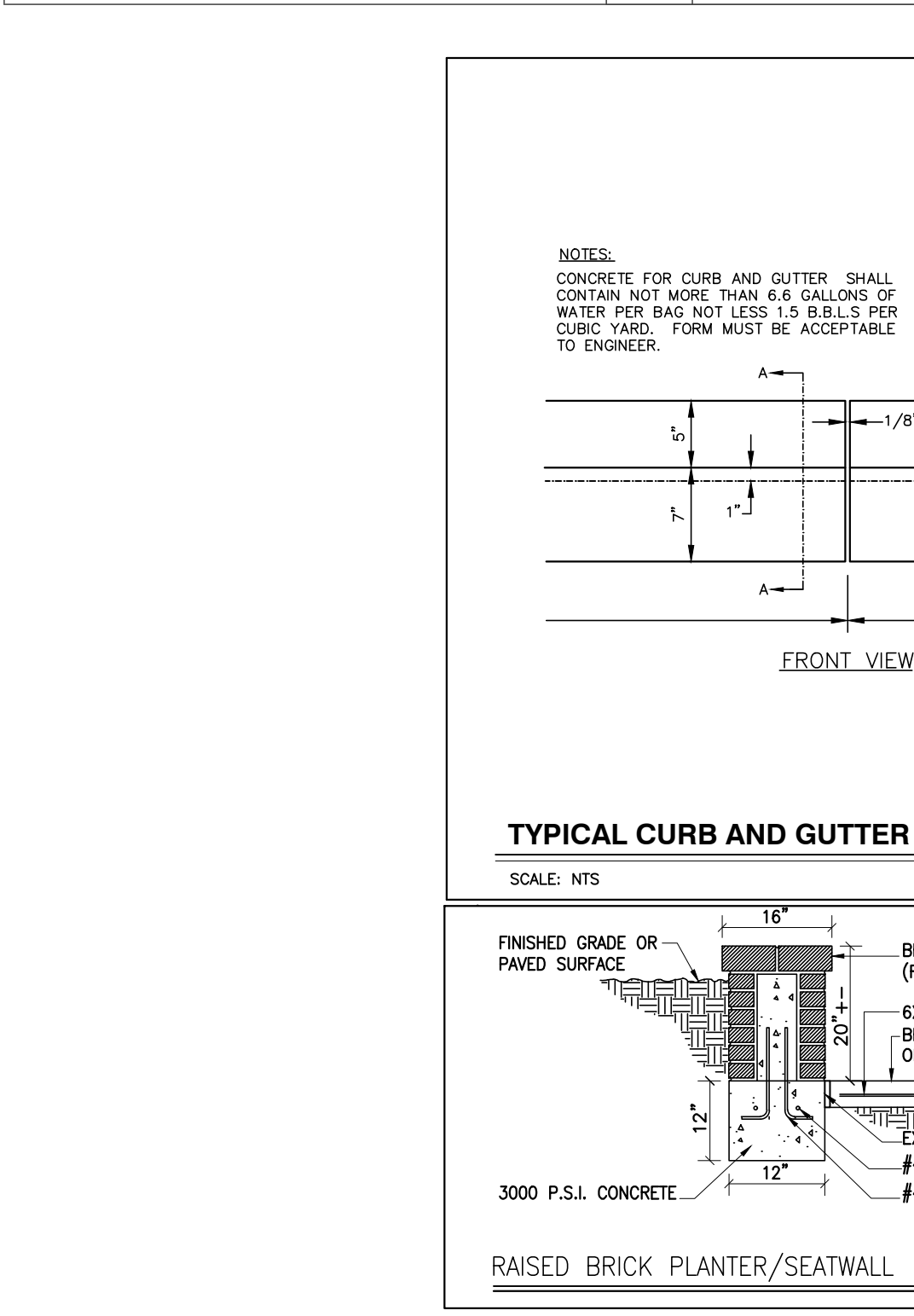
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**POLYGRATE™ SQUARE TREE GRATES**  
 4' X 4' SQUARE POLYGRATE™ TREE GRATE (TSB44)

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PROGRESS	MRN	DATE	DRAWN BY	DATE	DESCRIPTION	NO.	DATE	BY

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

**COBBLESTONE VILLAGE**  
 MIXED USE DEVELOPMENT  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

**SHEET C5.1**

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

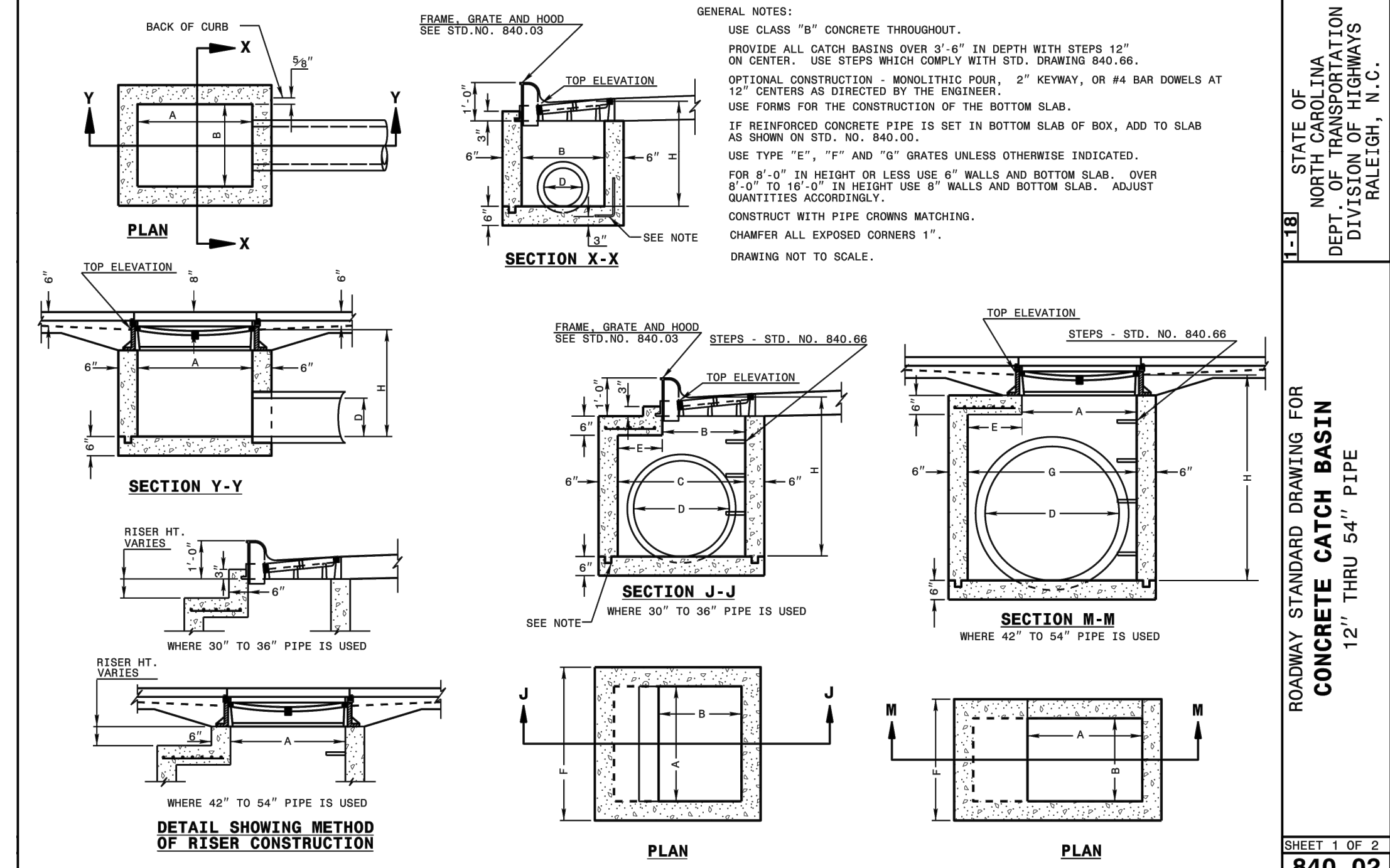


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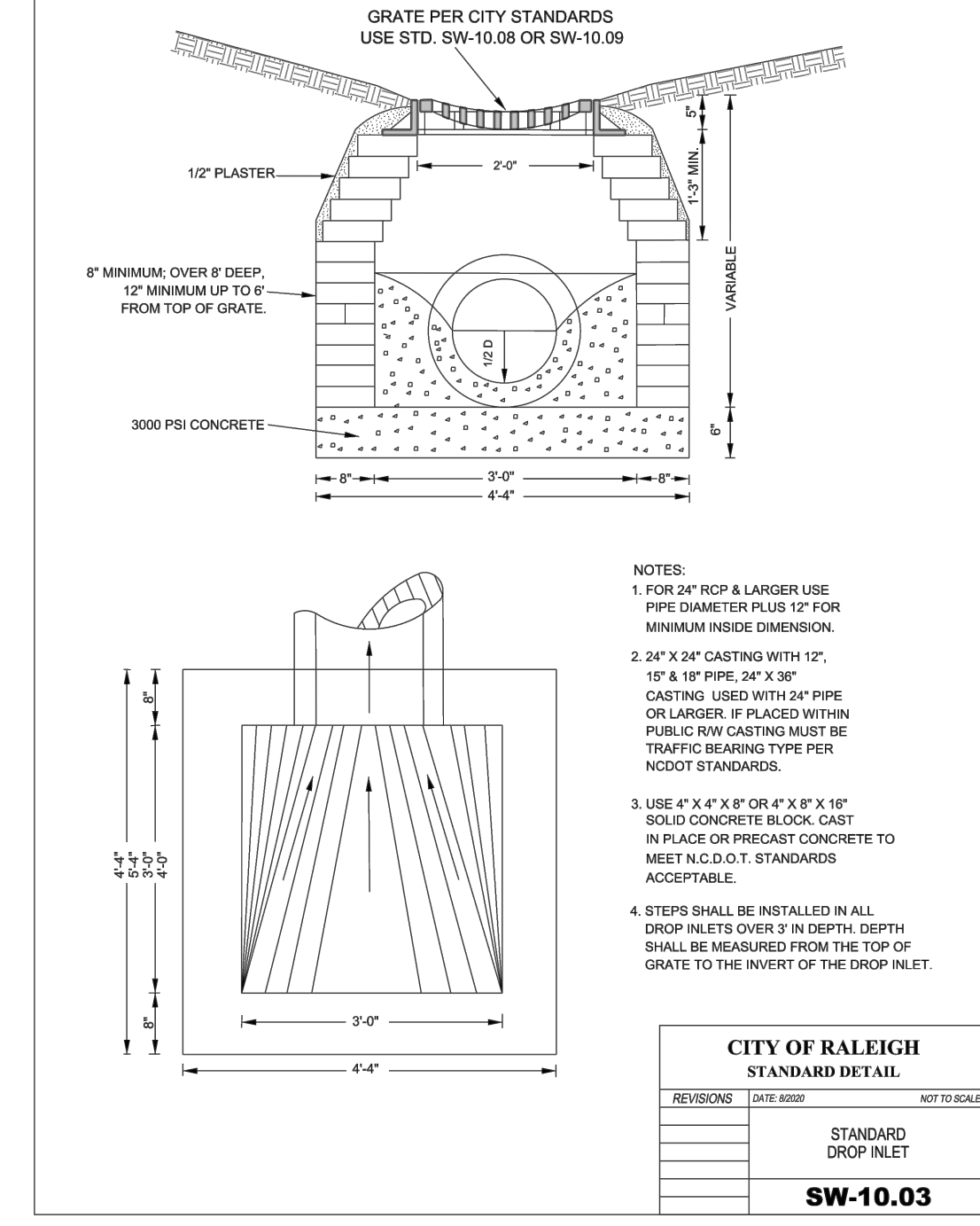
06/02/22



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

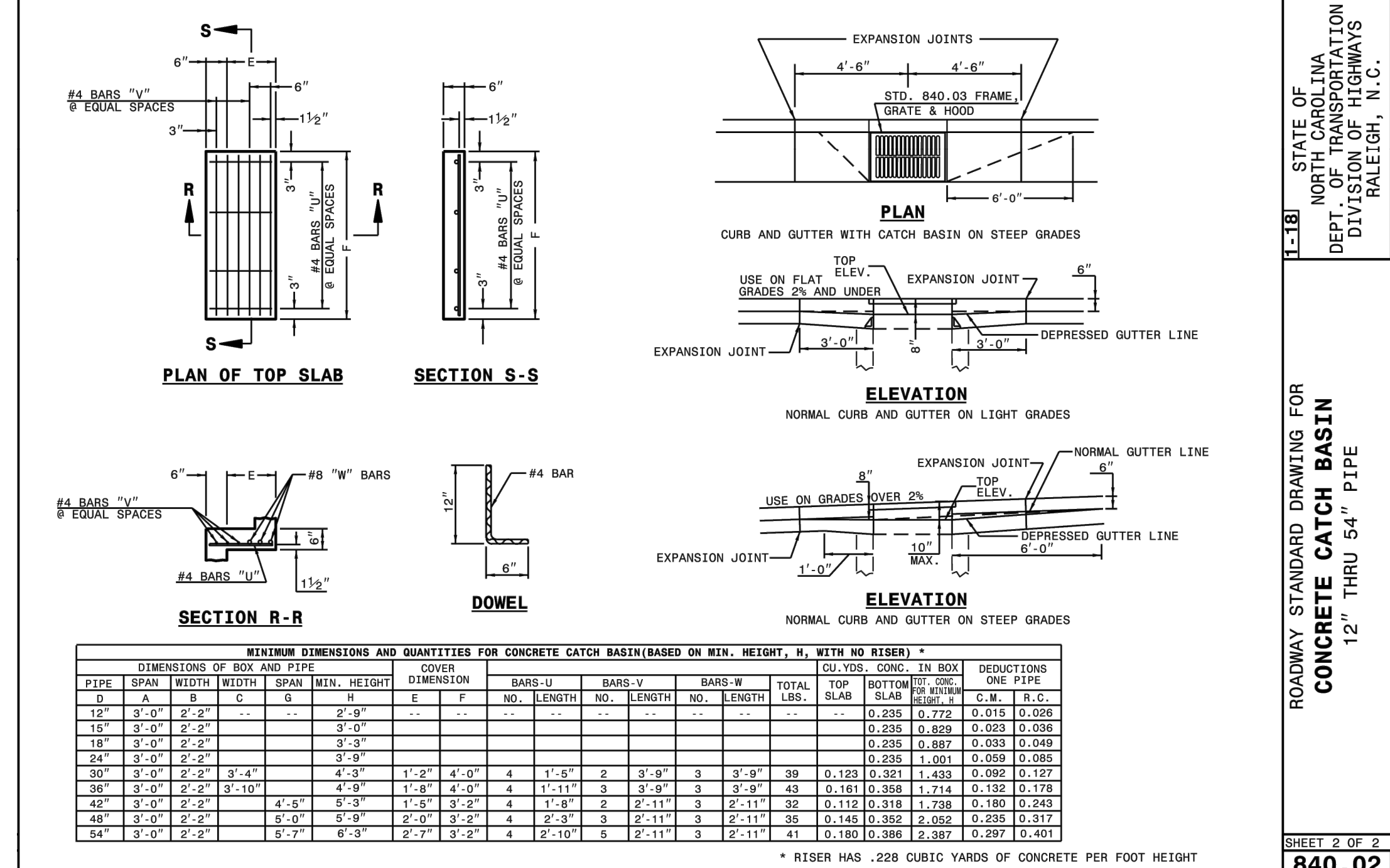
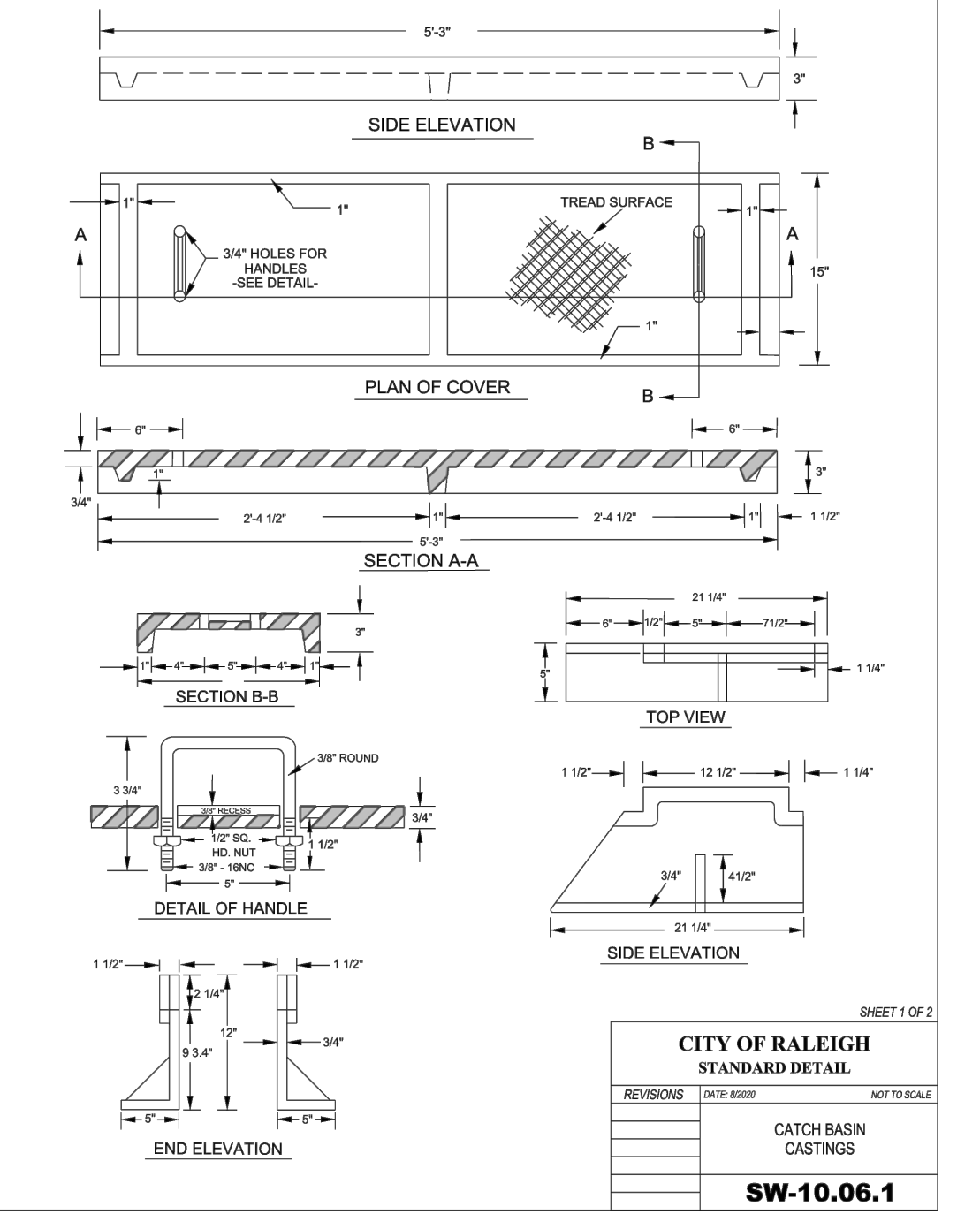
ROADWAY STANDARD DRAWING FOR  
**CONCRETE CATCH BASIN**  
 12" THRU 54" PIPE

SHEET 1 OF 2  
**840.02**



CITY OF RALEIGH  
 STANDARD DETAIL  
 STANDARD DROP INLET  
**SW-10.03**

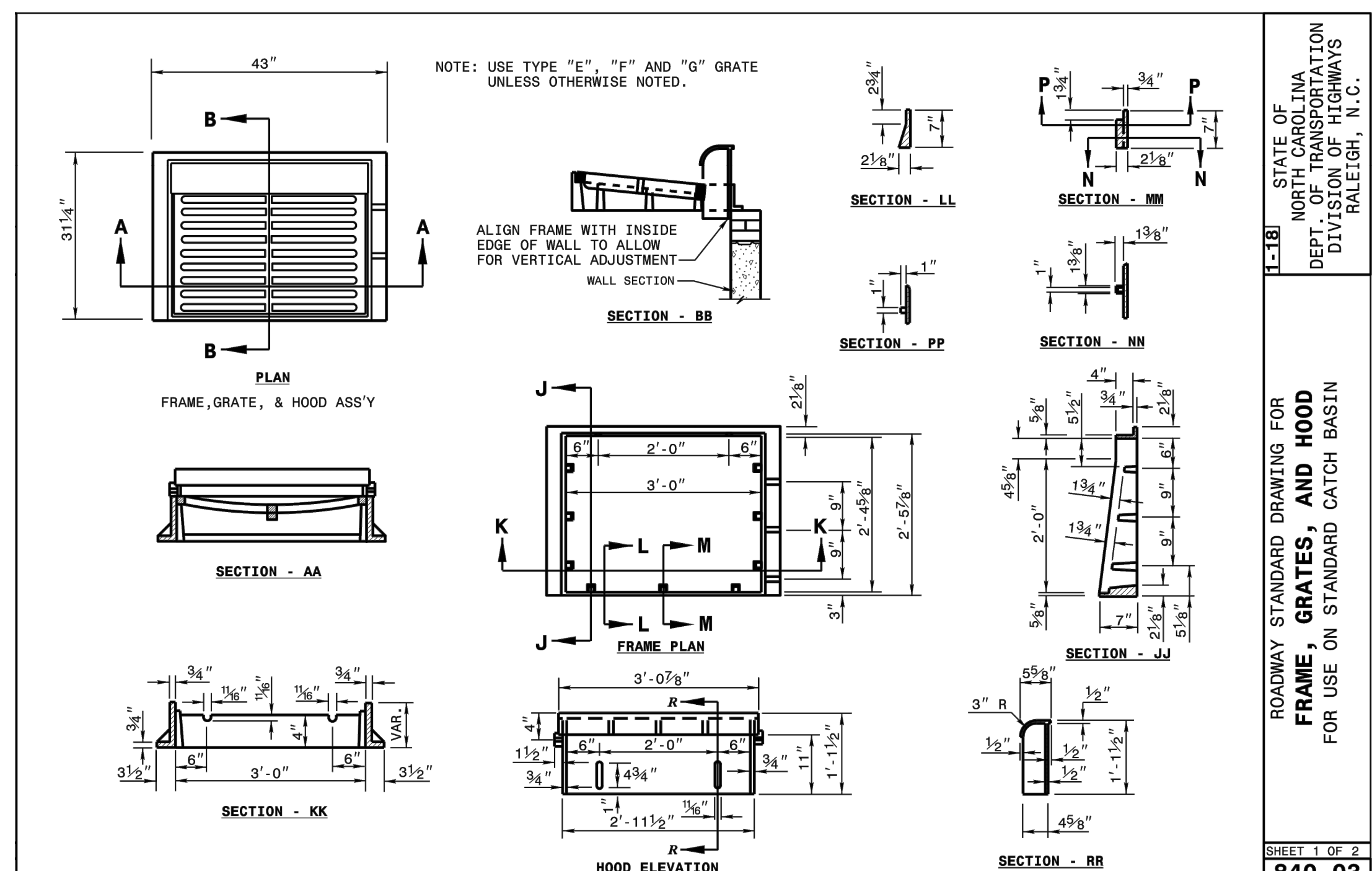
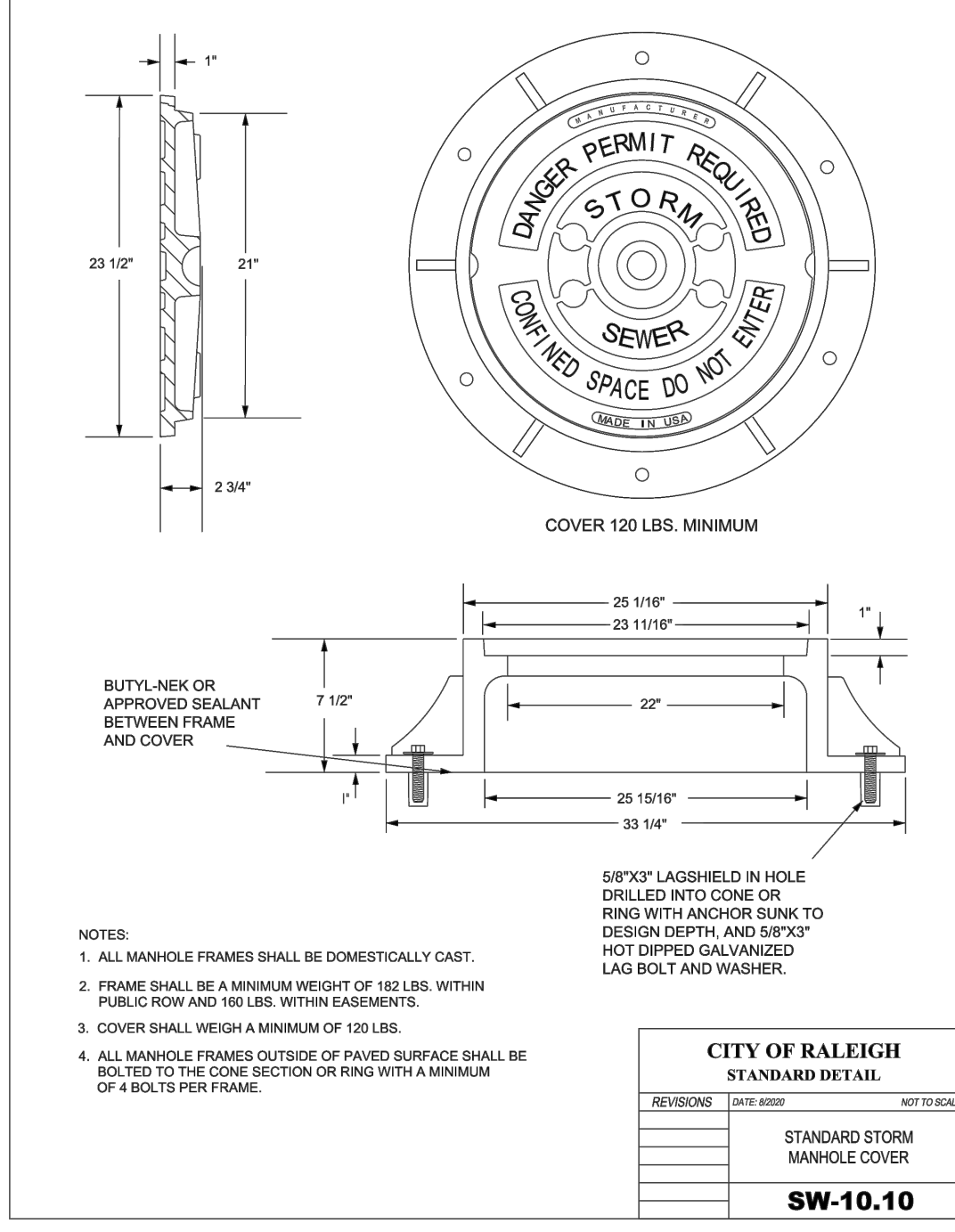
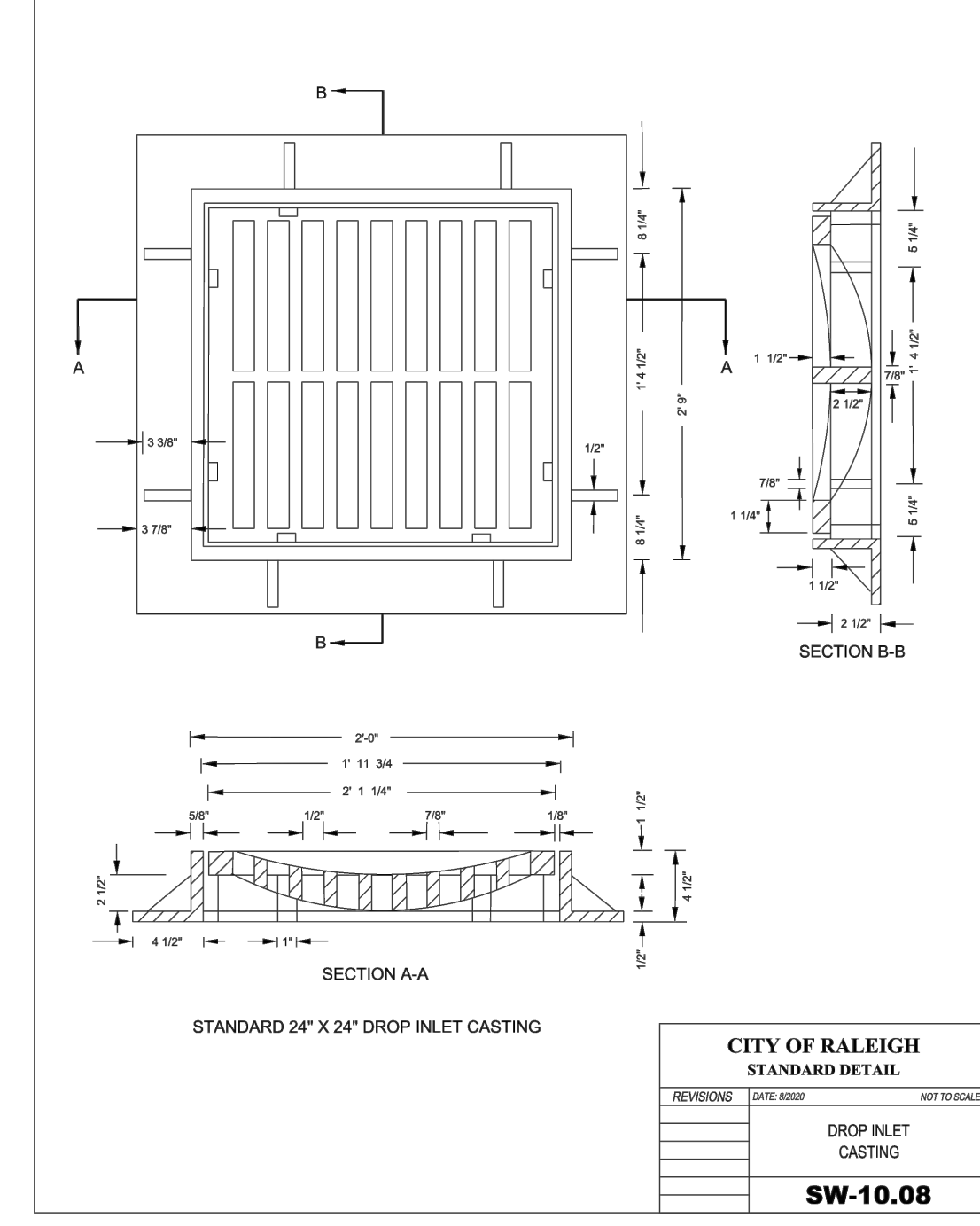
CITY OF RALEIGH  
 STANDARD DETAIL  
 STANDARD CLASS "A" MANHOLE  
**SW-10.05**



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

ROADWAY STANDARD DRAWING FOR  
**CONCRETE CATCH BASIN**  
 12" THRU 54" PIPE

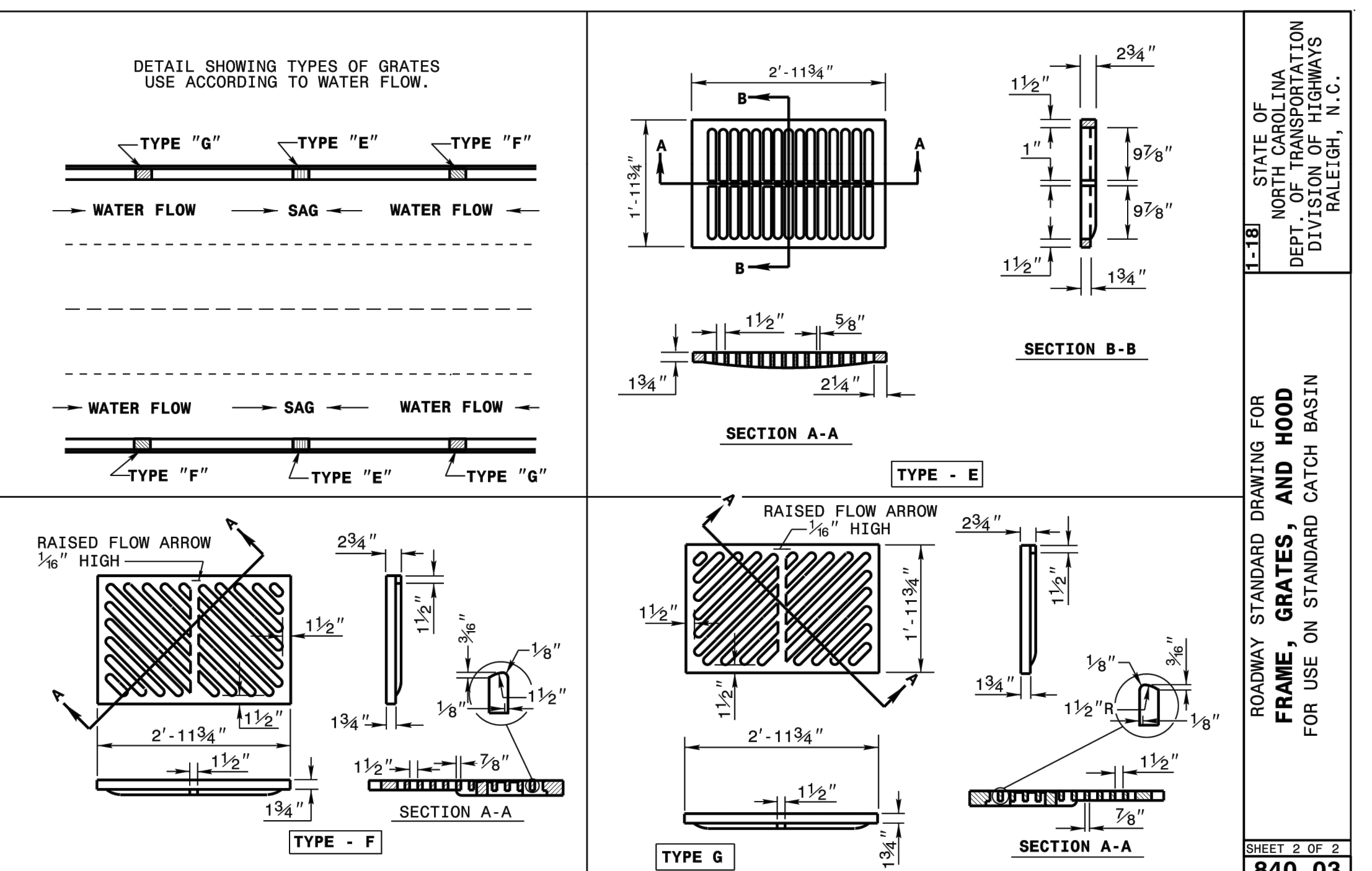
SHEET 2 OF 2  
**840.02**



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

ROADWAY STANDARD DRAWING FOR  
**FRAME, GRATES, AND HOOD**  
 FOR USE ON STANDARD CATCH BASIN

SHEET 1 OF 2  
**840.03**



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 Raleigh Water Review Officer

06/02/22

**BASS, NIXON & KENNEDY, INC.**  
 CONSULTING ENGINEERS  
 6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607  
 TELEPHONE: (919) 881-1122 FAX: (919) 881-8686  
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

**COBBLESTONE VILLAGE MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

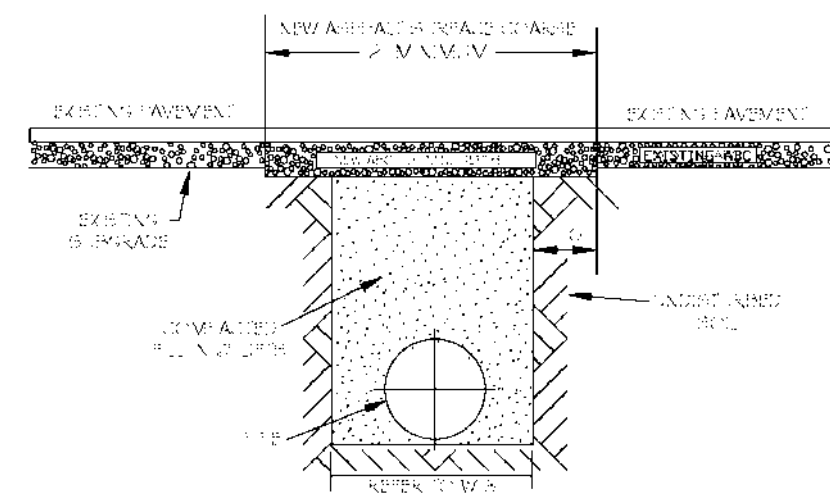
PROGRESS MRM DATE DRAWN BY  
 03-19157 JOB NO. \_\_\_\_\_

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

NO.	DATE	DESCRIPTION	BY

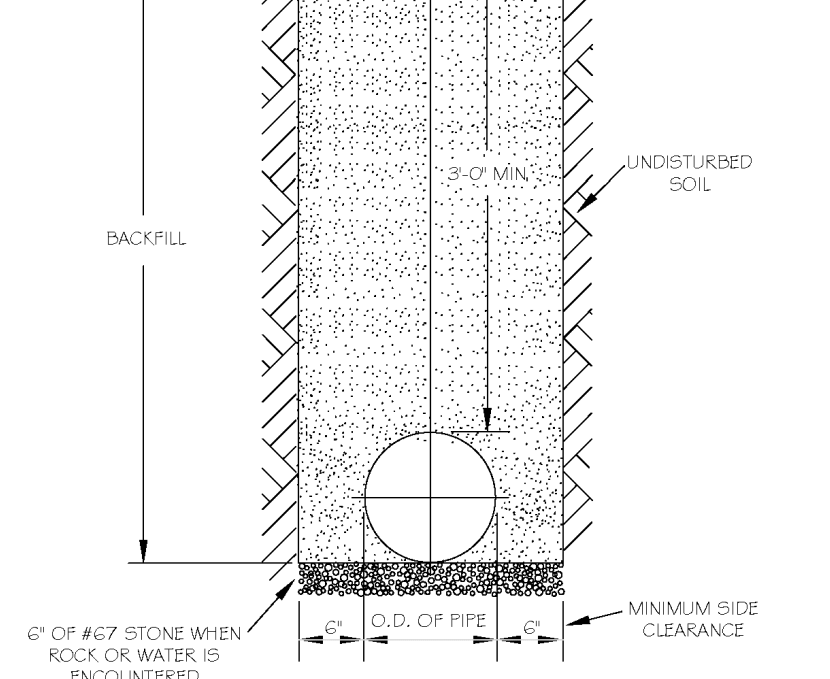
SHEET C5.2





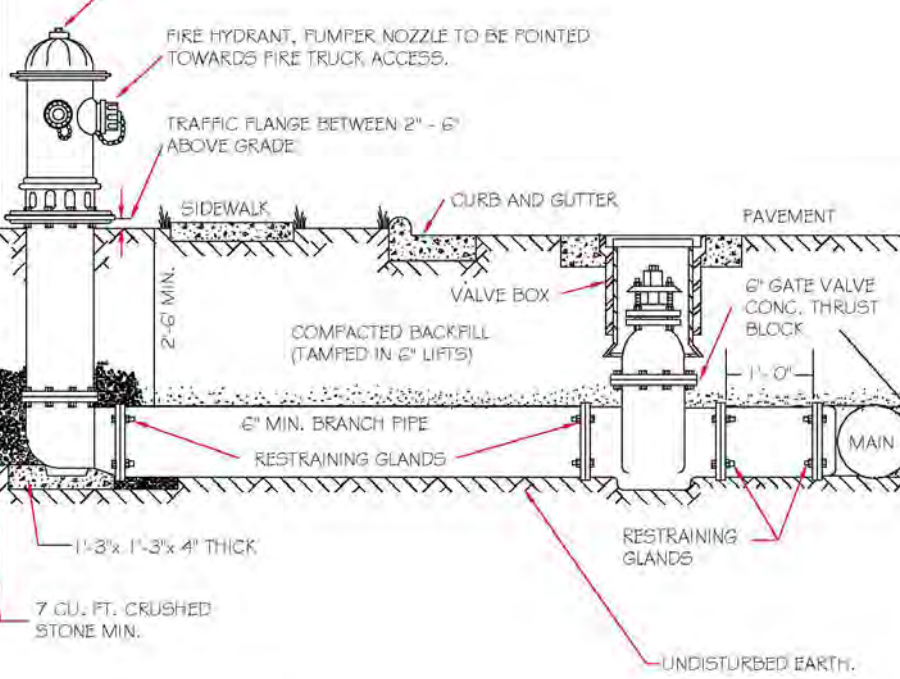
NOTES:  
 1. THE PAVEMENT OF THIS PATCH SHALL BE IDENTICAL TO THE EXISTING PAVEMENT.  
 2. THE PATCH SHALL BE MADE OF ASPHALT PAVEMENT WITH A MINIMUM 1/2" THICKNESS.  
 3. THE PATCH SHALL BE MADE OF ASPHALT PAVEMENT WITH A MINIMUM 1/2" THICKNESS.  
 4. THE PATCH SHALL BE MADE OF ASPHALT PAVEMENT WITH A MINIMUM 1/2" THICKNESS.  
 5. THE PATCH SHALL BE MADE OF ASPHALT PAVEMENT WITH A MINIMUM 1/2" THICKNESS.

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-2	ADD	3-1-22	ABB	2-15-22
	REV	3-1-22	J.P.S.	10-22-19



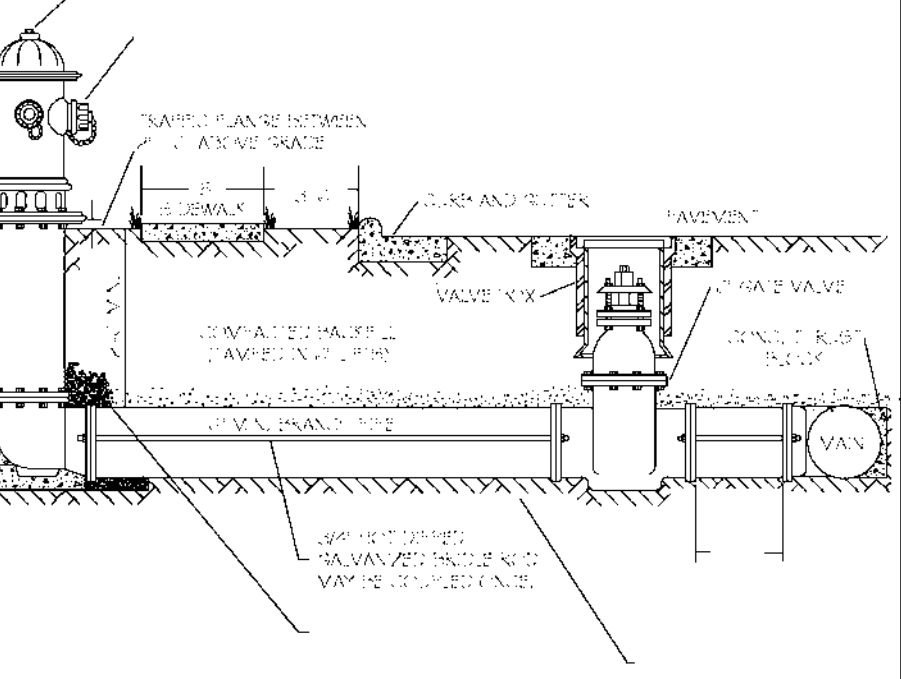
NOTES:  
 1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.  
 2. NO ROCKS OR Boulders 4" OR LARGER TO BE USED IN BACKFILL.  
 3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.  
 4. BACKFILL SHALL BE TAMPED IN LIFTS.  
 5. ACHIEVE 95% COMPACTION IN BACKFILL.

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-3	D.W.C.	8-3-99	ABB	2-15-02
	REV	8-3-00	J.P.S.	10-22-19



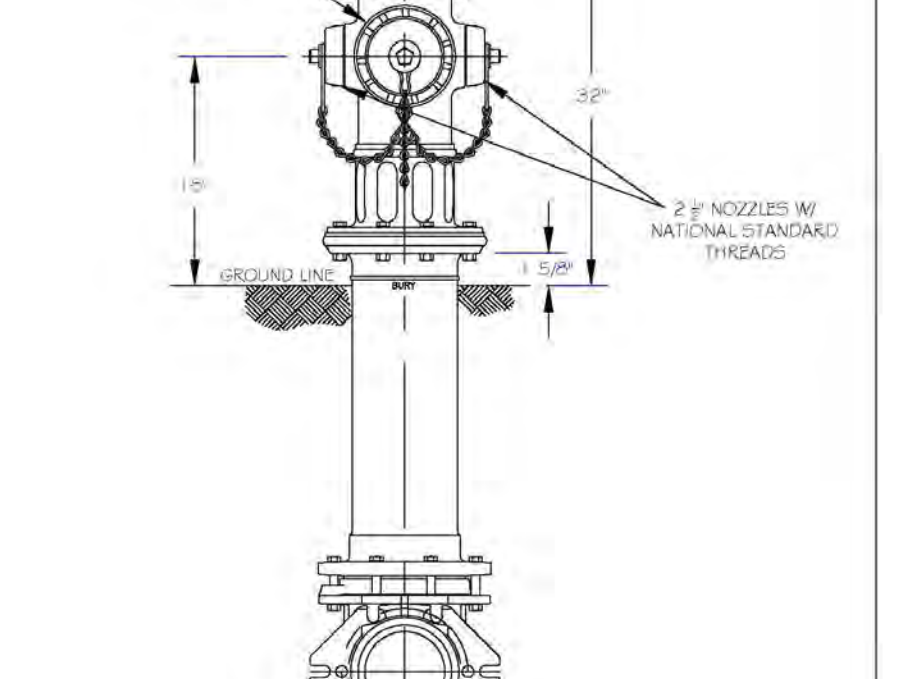
NOTES:  
 1. FIRE HYDRANT SHALL BE AN UNMANUFACTURED MANUFACTURED (AMERICAN FRISING, KENNEDY, M&L, WATERS, GLOW, EAST JORDAN IRON WORKS, OR US PIPE).  
 2. BRANCH PIPE SHALL BE DUCTILE IRON (AWWA C151).  
 3. 4" GATE VALVE SHALL BE ANNA OSGOOD OR OPEN LIFE.  
 4. STEEL RODS AND BOLTS SHALL BE #3 HOT DIPPED GALVANIZED.  
 5. FIRE HYDRANTS SHALL BE INSTALLED ABOVE GROUND.  
 6. FIRE HYDRANTS SHALL NOT BE INSTALLED MORE THAN 10' FROM THE VALVE TO THE HYDRANT EXCEPT FOR THOSE INSTALLED WITH A REVERSE GATE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.  
 7. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW.

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-4	ADD	4-6-04	J.P.S.	8-7-00
	REV	8-7-00	J.P.S.	10-22-19



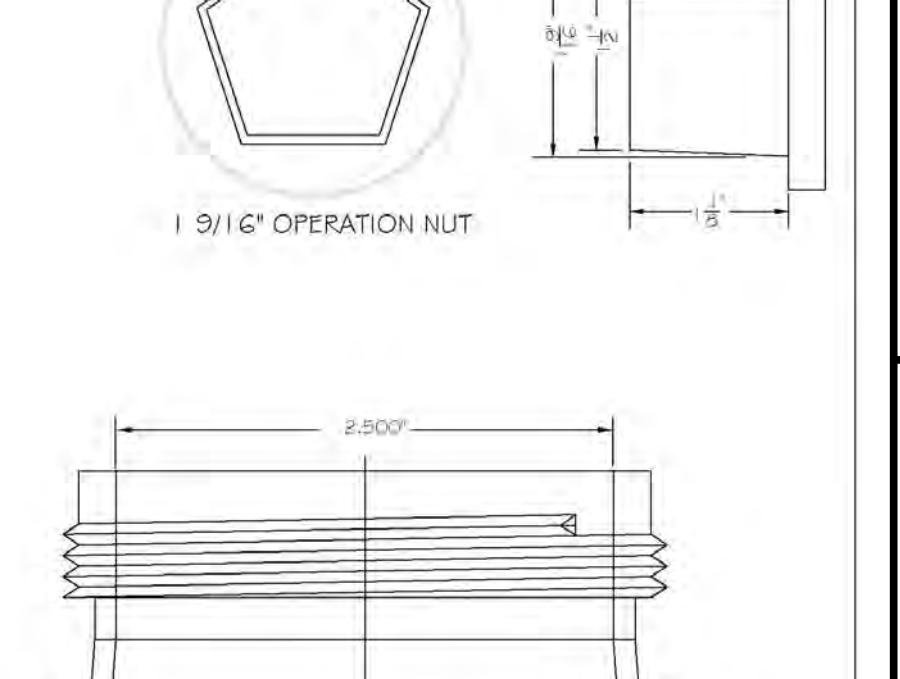
NOTES:  
 1. FIRE HYDRANT SHALL BE AN UNMANUFACTURED MANUFACTURED (AMERICAN FRISING, KENNEDY, M&L, WATERS, GLOW, EAST JORDAN IRON WORKS, OR US PIPE).  
 2. BRANCH PIPE SHALL BE DUCTILE IRON (AWWA C151).  
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 7. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW.

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-4	ADD	4-6-04	J.P.S.	8-7-00
	REV	8-7-00	J.P.S.	10-22-19



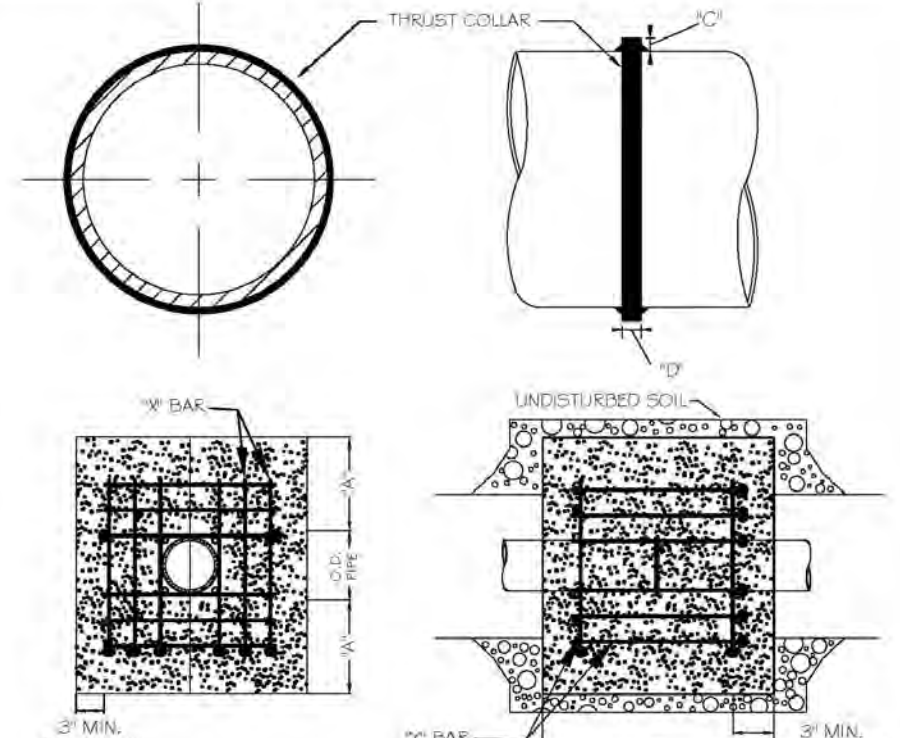
NOTES:  
 1. RALEIGH PUBLIC HYDRANTS SHALL BE PAINTED SOLID RED.  
 2. KNOXVILLE PUBLIC HYDRANTS SHALL BE PAINTED RED W/WHITE OPERATING NUTS.  
 3. ZEPHYRUS PUBLIC HYDRANTS SHALL BE PAINTED RED W/WHITE OPERATING NUTS.  
 4. WAKE FOREST AND GANNETT AND WENDELL PUBLIC AND PRIVATE HYDRANTS TO BE PAINTED SAFETY YELLOW W/WHITE CAPS AND OPERATING NUTS.  
 5. OPERATING NUTS ON HYDRANTS CONNECTED TO PUBLIC MAINS LARGER THAN 12" SHALL BE PAINTED BLACK.

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-5	ADD	3-1-22	ABB	2-15-22
	REV	3-1-22	D.H.L.	8-18-20



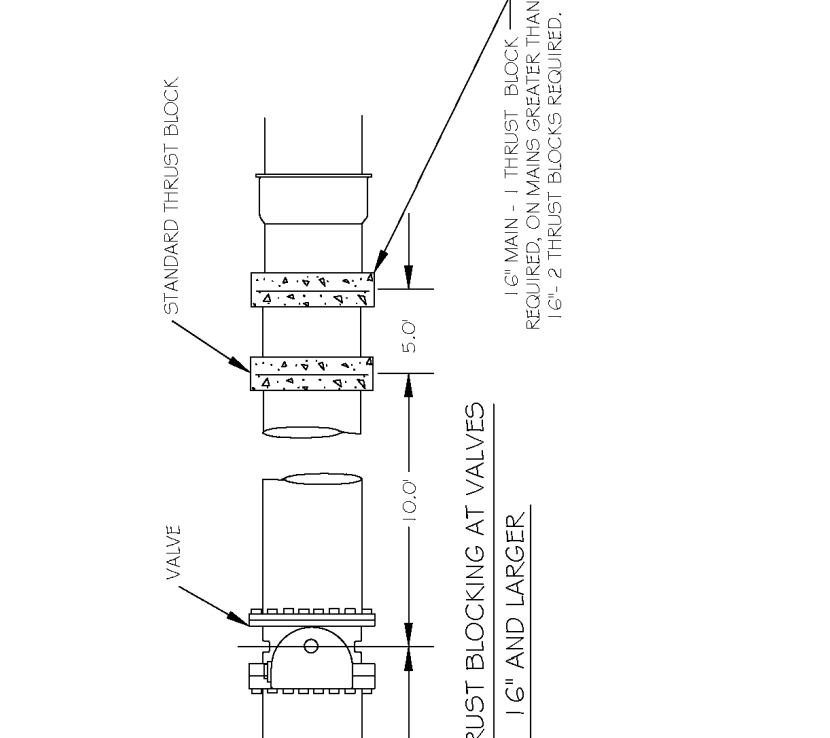
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 2. KNOXVILLE PUBLIC HYDRANTS SHALL BE PAINTED RED W/WHITE OPERATING NUTS.  
 3. ZEPHYRUS PUBLIC HYDRANTS SHALL BE PAINTED RED W/WHITE OPERATING NUTS.  
 4. WAKE FOREST AND GANNETT AND WENDELL PUBLIC AND PRIVATE HYDRANTS TO BE PAINTED SAFETY YELLOW W/WHITE CAPS AND OPERATING NUTS.  
 5. OPERATING NUTS ON HYDRANTS CONNECTED TO PUBLIC MAINS LARGER THAN 12" SHALL BE PAINTED BLACK.

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-6	ADD	3-1-22	ABB	2-15-22
	REV	3-1-22	D.H.L.	8-18-20



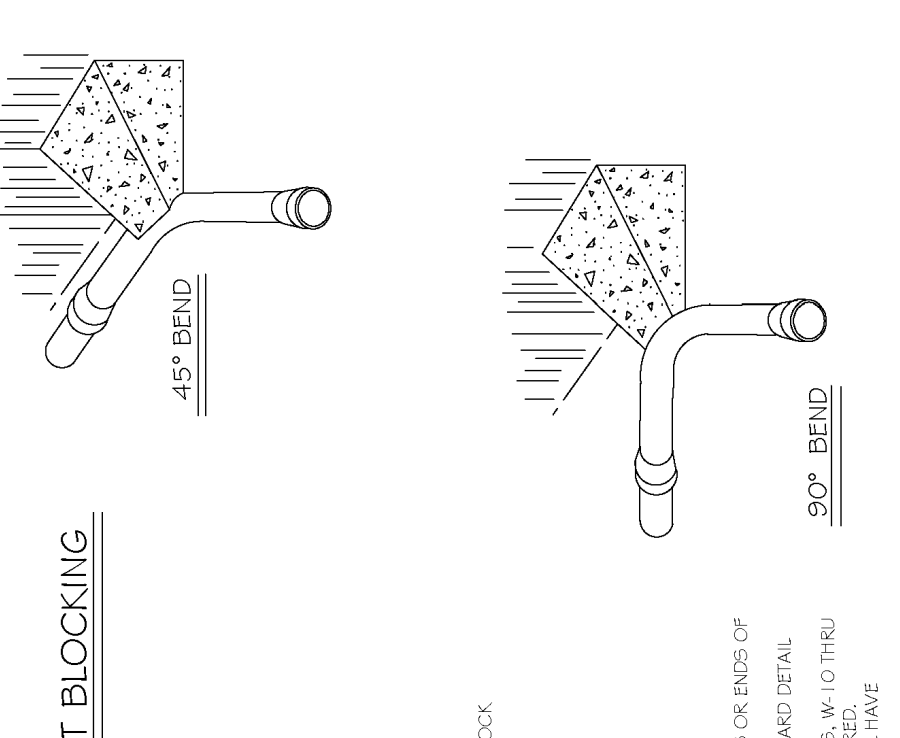
PIPE SIZE	PIPE LENGTH	PIPE WEIGHT	PIPE WEIGHT	PIPE WEIGHT
16"	10'	110	110	110
20"	10'	130	130	130

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-7	ADD	3-1-22	J.P.S.	11-1-17
	REV	4-1-22	J.P.S.	11-1-17



DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-8	ADD	8-7-99	ABB	2-15-02
	REV	8-7-99	ABB	2-15-02

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-8	ADD	8-7-99	ABB	2-15-02
	REV	8-7-99	ABB	2-15-02



DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-9	ADD	8-7-99	D.H.L.	8-18-20
	REV	8-7-99	D.H.L.	8-18-20

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-9	ADD	8-7-99	D.H.L.	8-18-20
	REV	8-7-99	D.H.L.	8-18-20

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS	REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
6"	24"
8"	30"
12"	36"
16"	40"

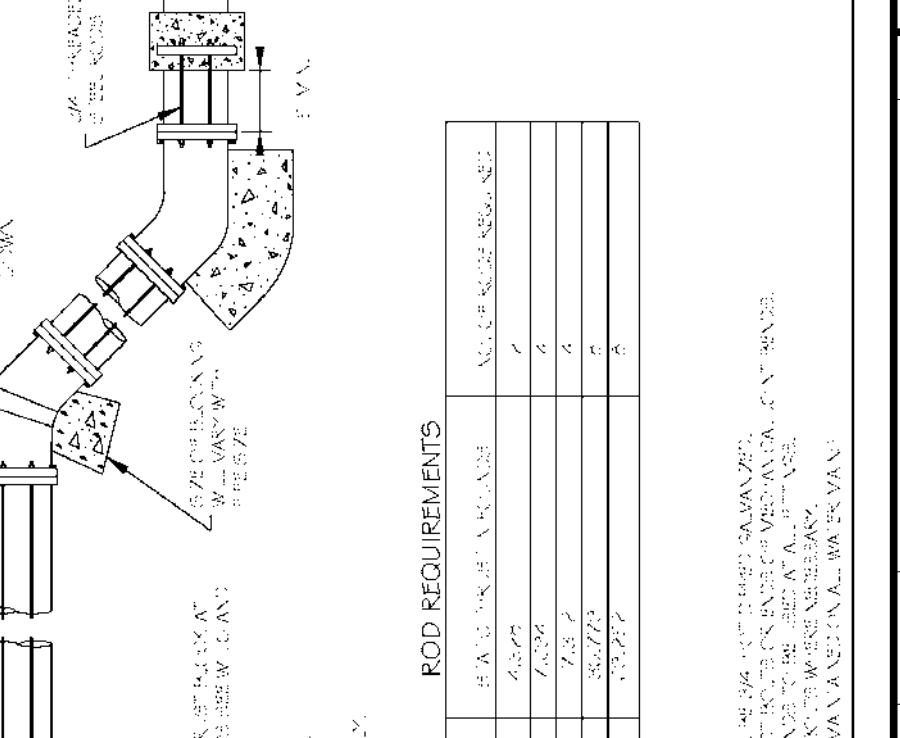
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W-10	ADD	8-22-22	J.P.S.	8-22-22

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-10	ADD	8-22-22	J.P.S.	8-22-22

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS	REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
24"	30"
30"	36"
36"	40"
40"	40"

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-11	ADD	8-22-22	J.P.S.	8-22-22

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-11	ADD	8-22-22	J.P.S.	8-22-22



DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-12	ADD	8-22-22	J.P.S.	8-22-22

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-12	ADD	8-22-22	J.P.S.	8-22-22



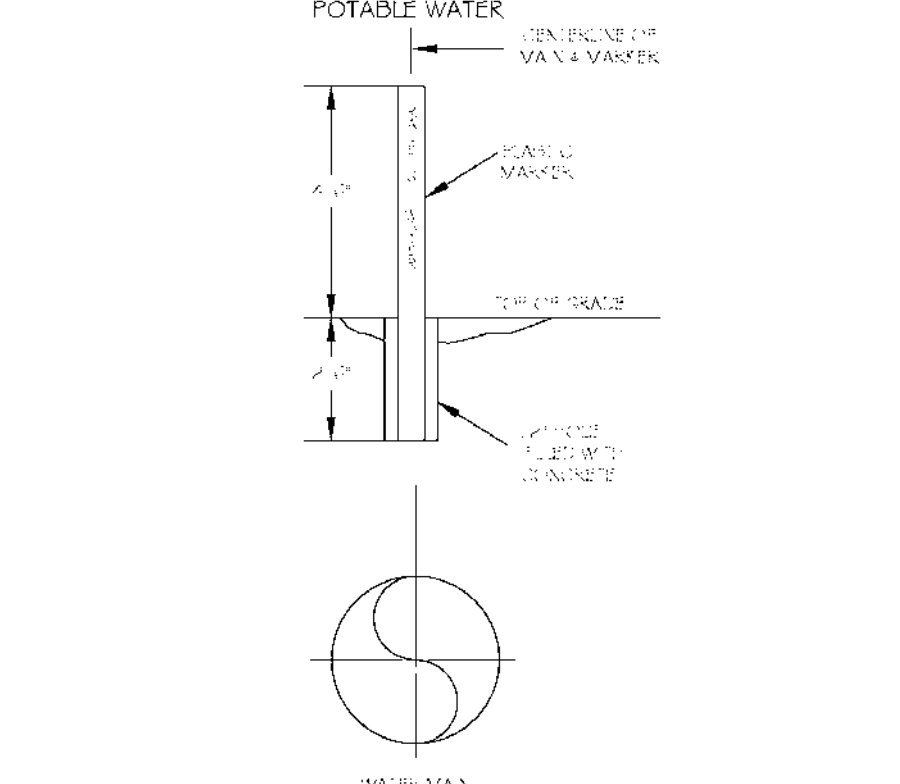
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W-13	ADD	8-22-22	J.P.S.	8-22-22

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-13	ADD	8-22-22	J.P.S.	8-22-22



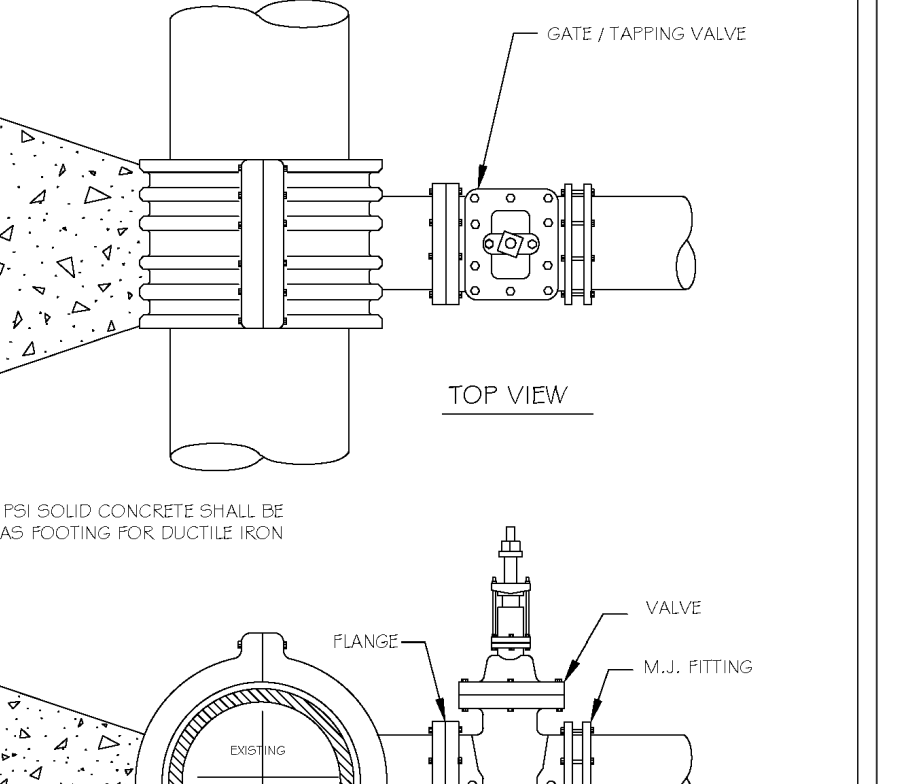
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W-14	ADD	8-22-22	J.P.S.	8-22-22

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-14	ADD	8-22-22	J.P.S.	8-22-22



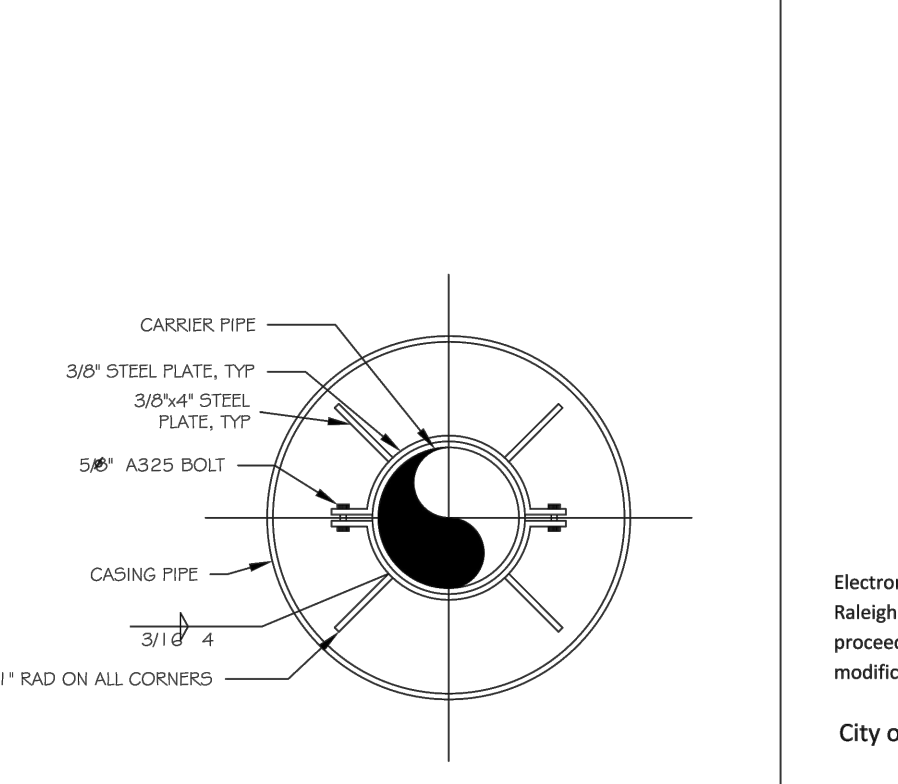
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W-14	ADD	8-22-22	J.P.S.	8-22-22

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-14	ADD	8-22-22	J.P.S.	8-22-22



DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-14	ADD	8-22-22	J.P.S.	8-22-22

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-14	ADD	8-22-22	J.P.S.	8-22-22



DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-40	ADD	8-16-04	J.P.S.	8-16-04

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-40	ADD	8-16-04	J.P.S.	8-16-04

**BASS, NIXON & KENNEDY, INC.**  
**CONSULTING ENGINEERS**  
 6810 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607  
 TELEPHONE: (919) 881-4242 FAX: (919) 881-6868  
 CERTIFICATION NUMBERS: NCBELS (C-0119); NCBOLA (C-0267)

PROGRESS	MRI	DATE	DRAWN BY	NO.	DATE	DESCRIPTION	BY

**COBBLESTONE VILLAGE**  
**MIXED USE DEVELOPMENT**  
 TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

**DETAILS**

SCALE: N.T.S.

CHK BY: MDB

08-19187  
 JOB NO.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

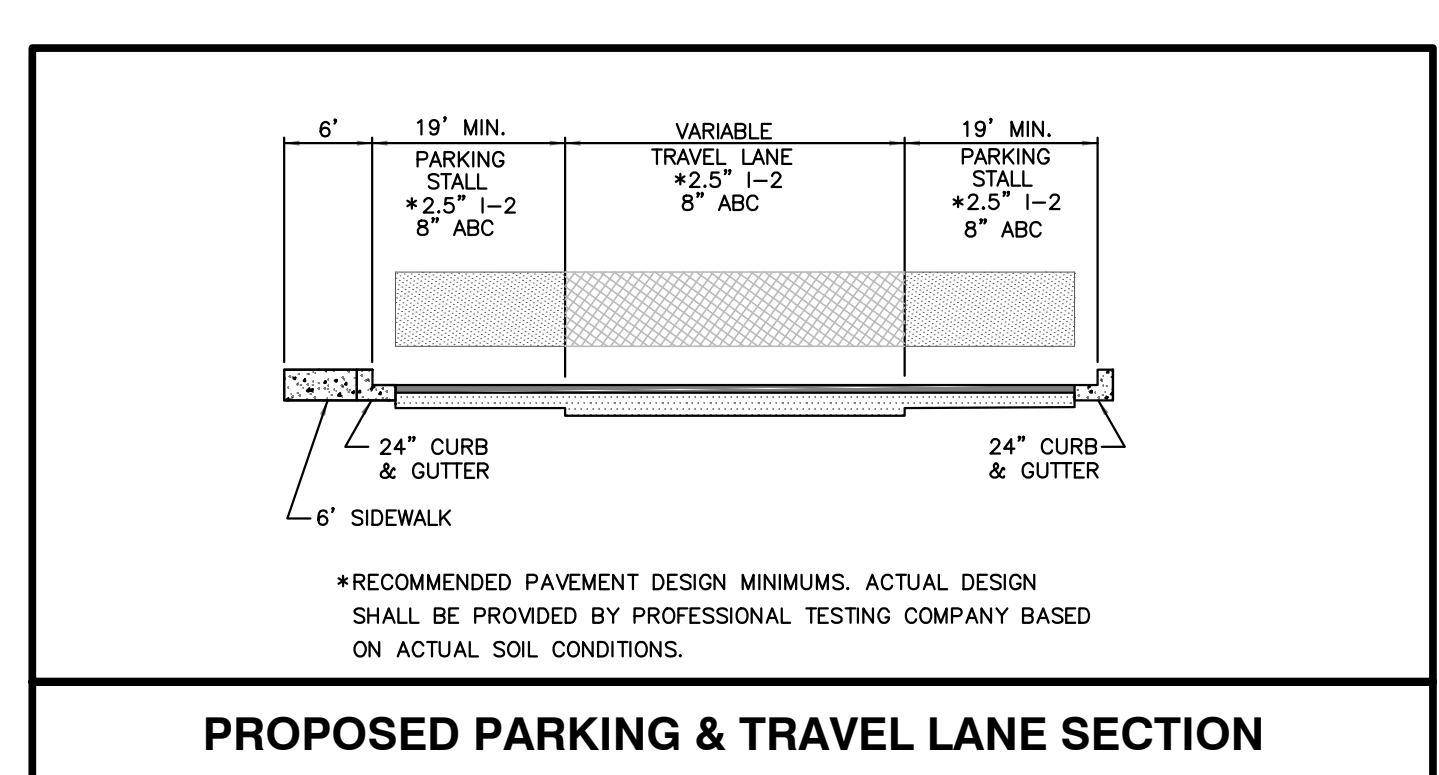
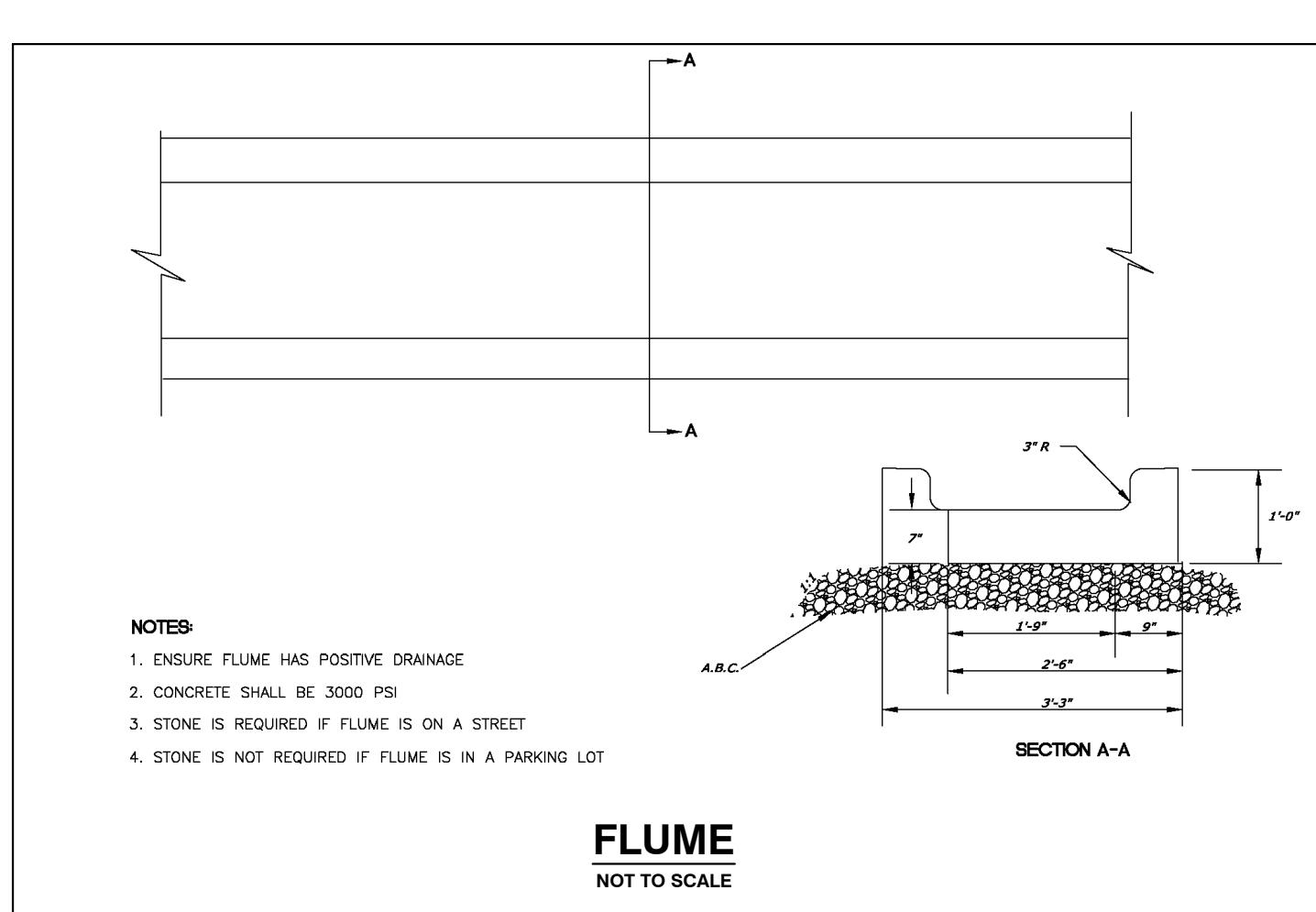
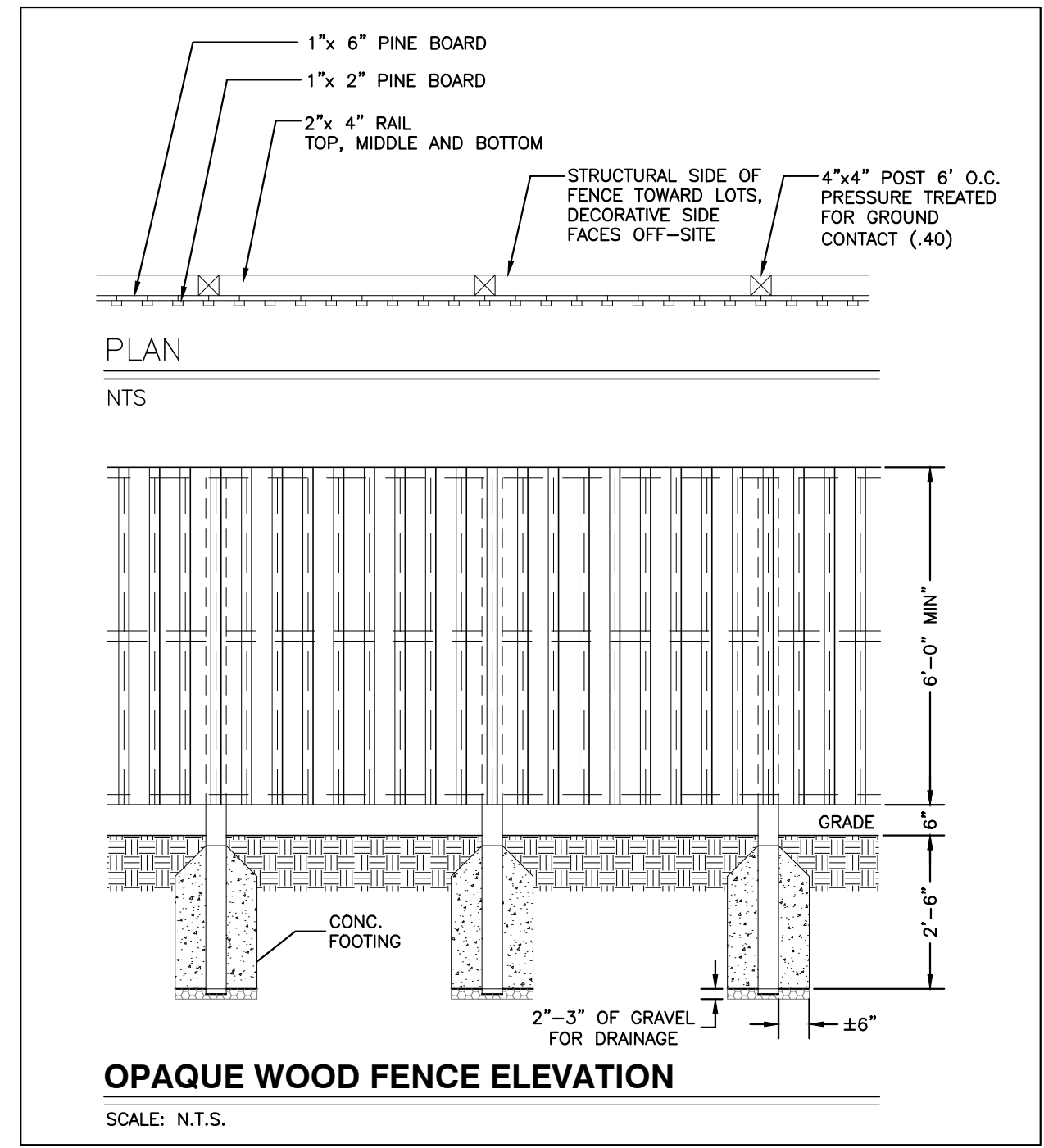
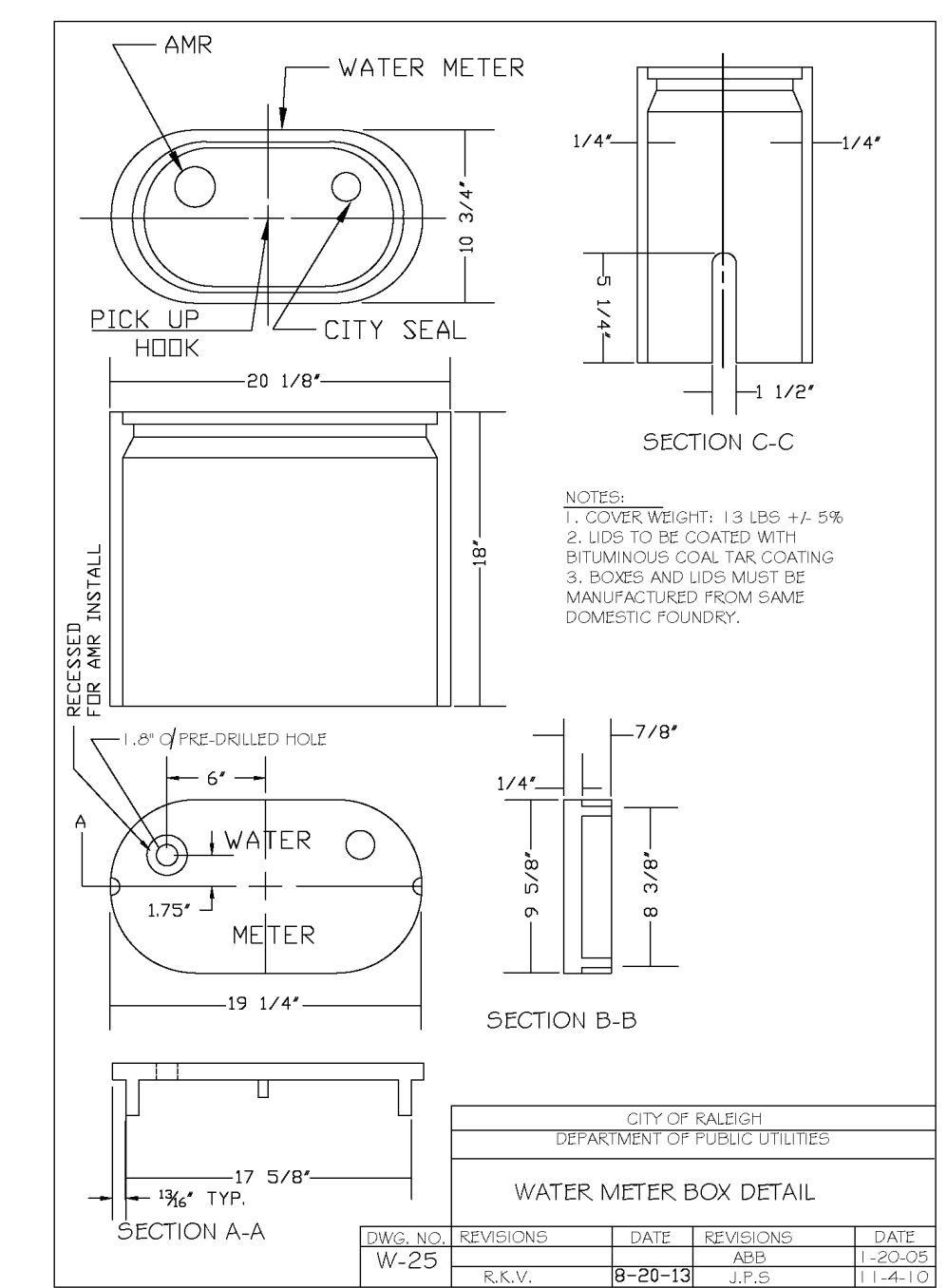
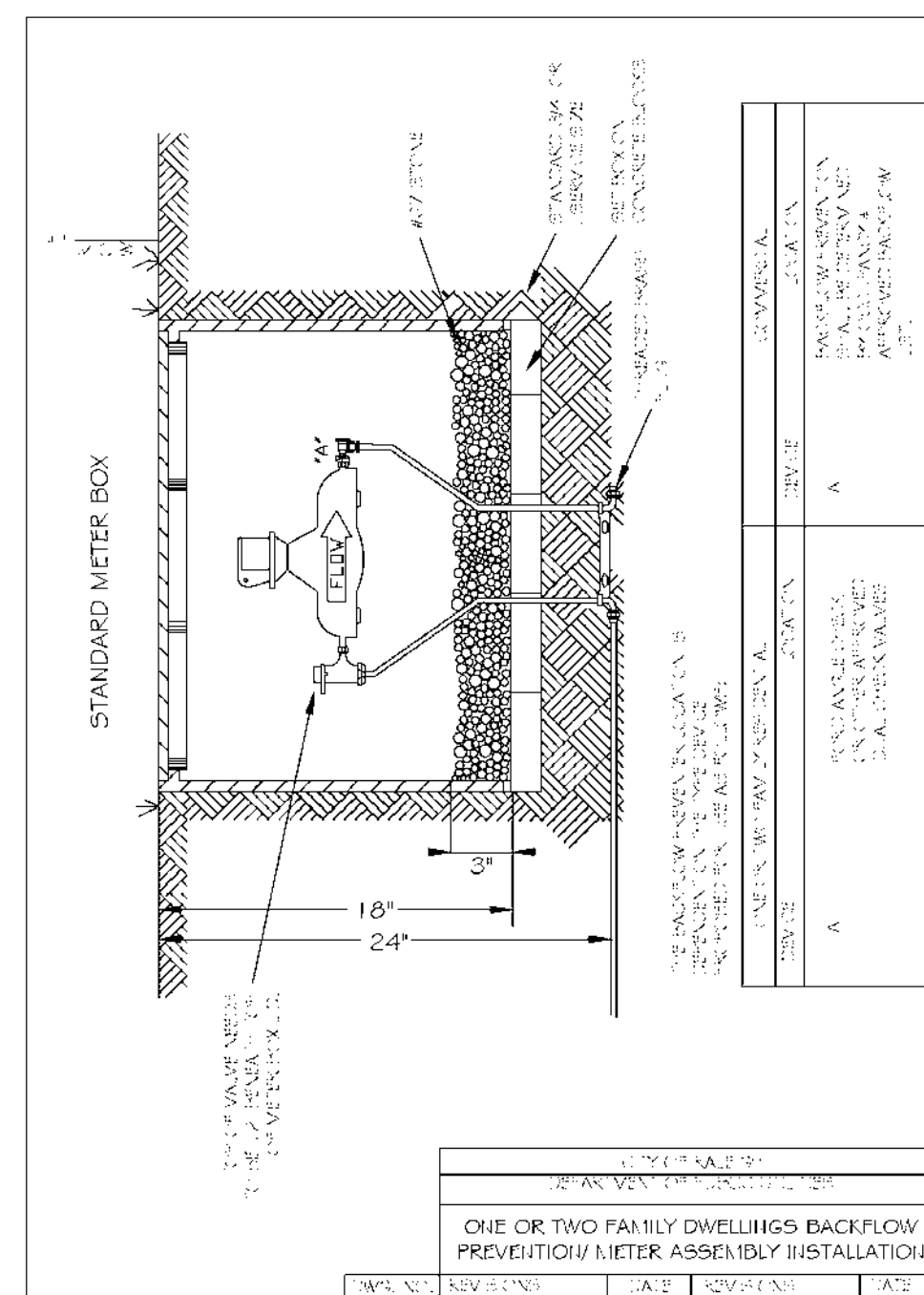
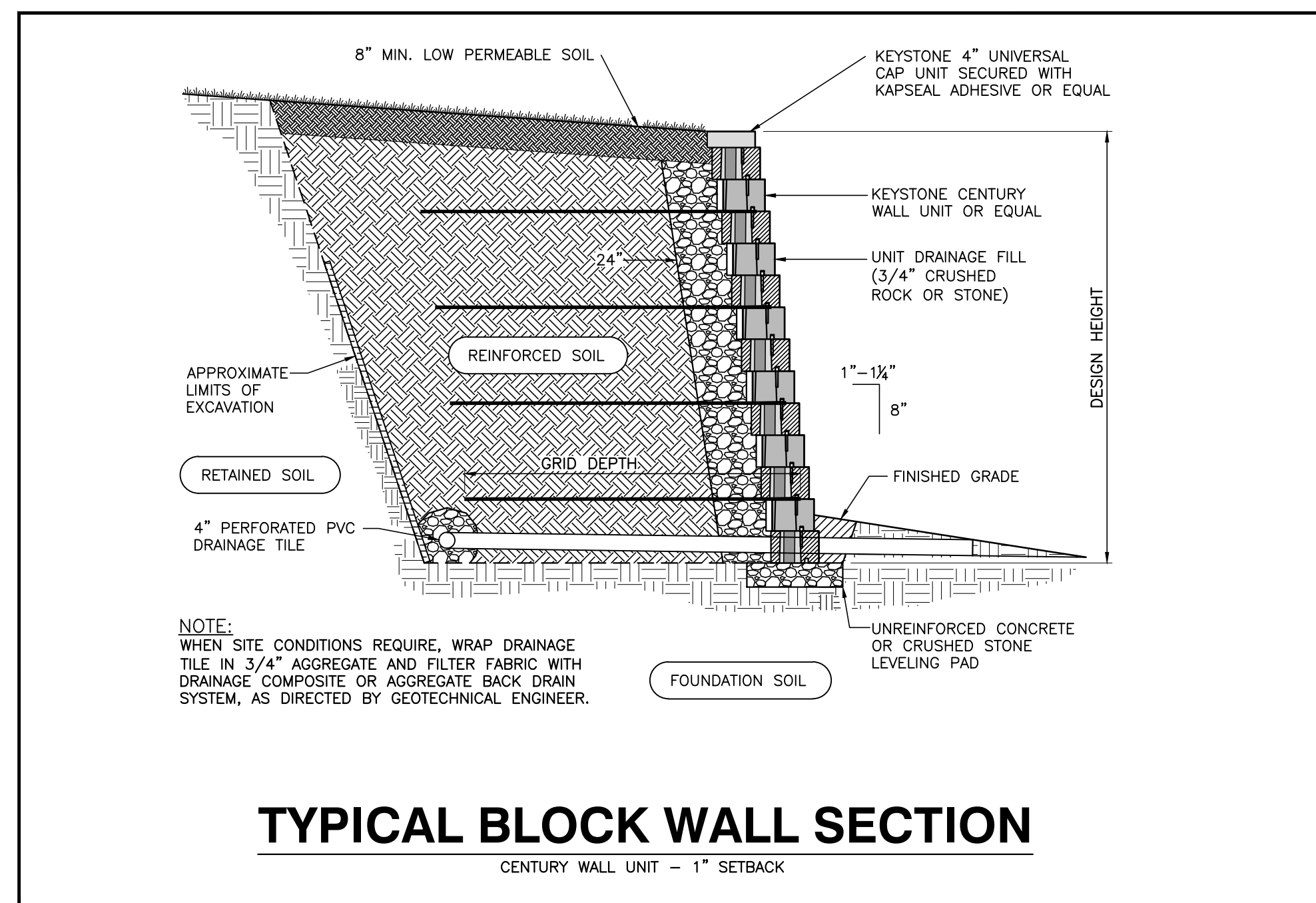
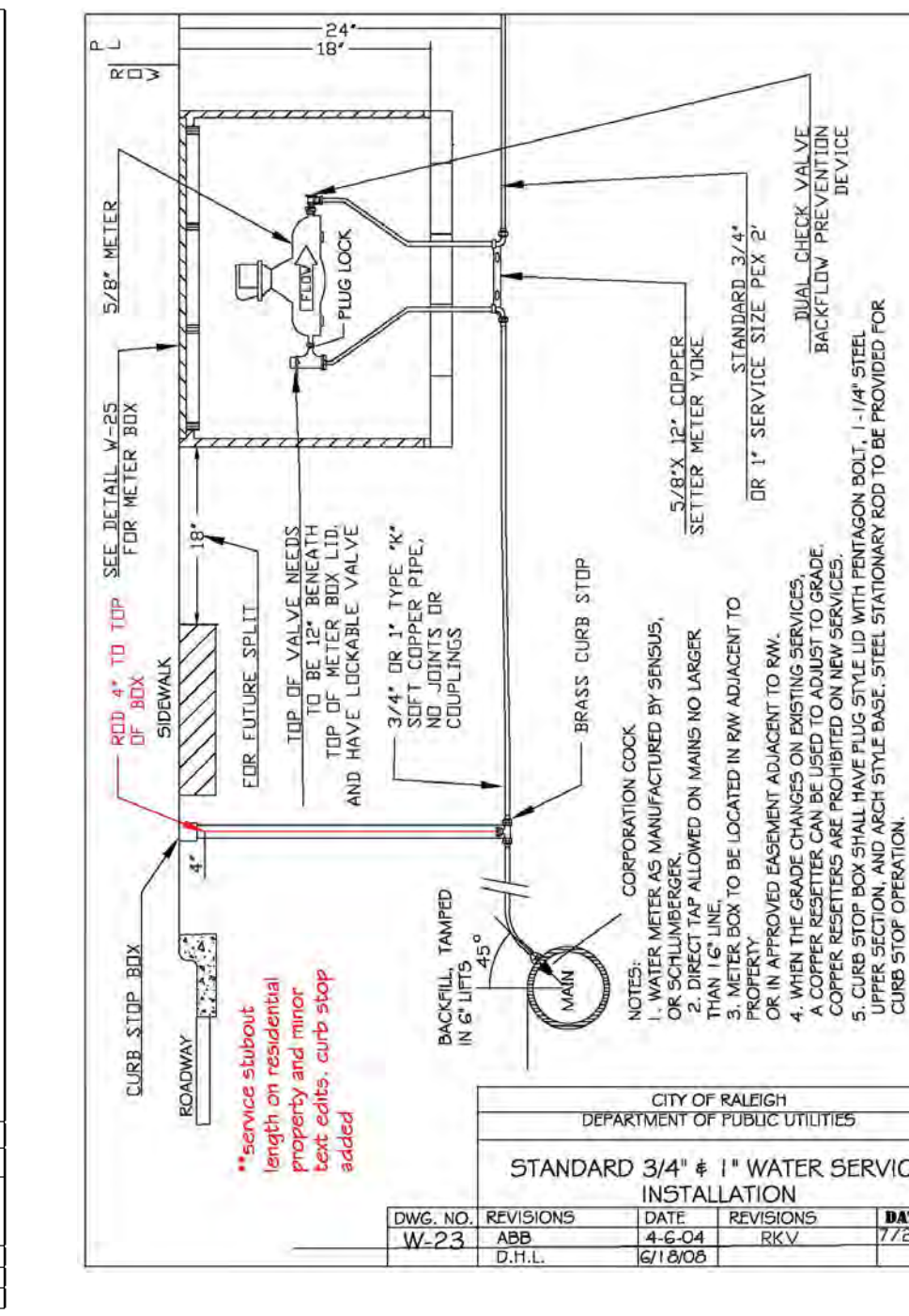
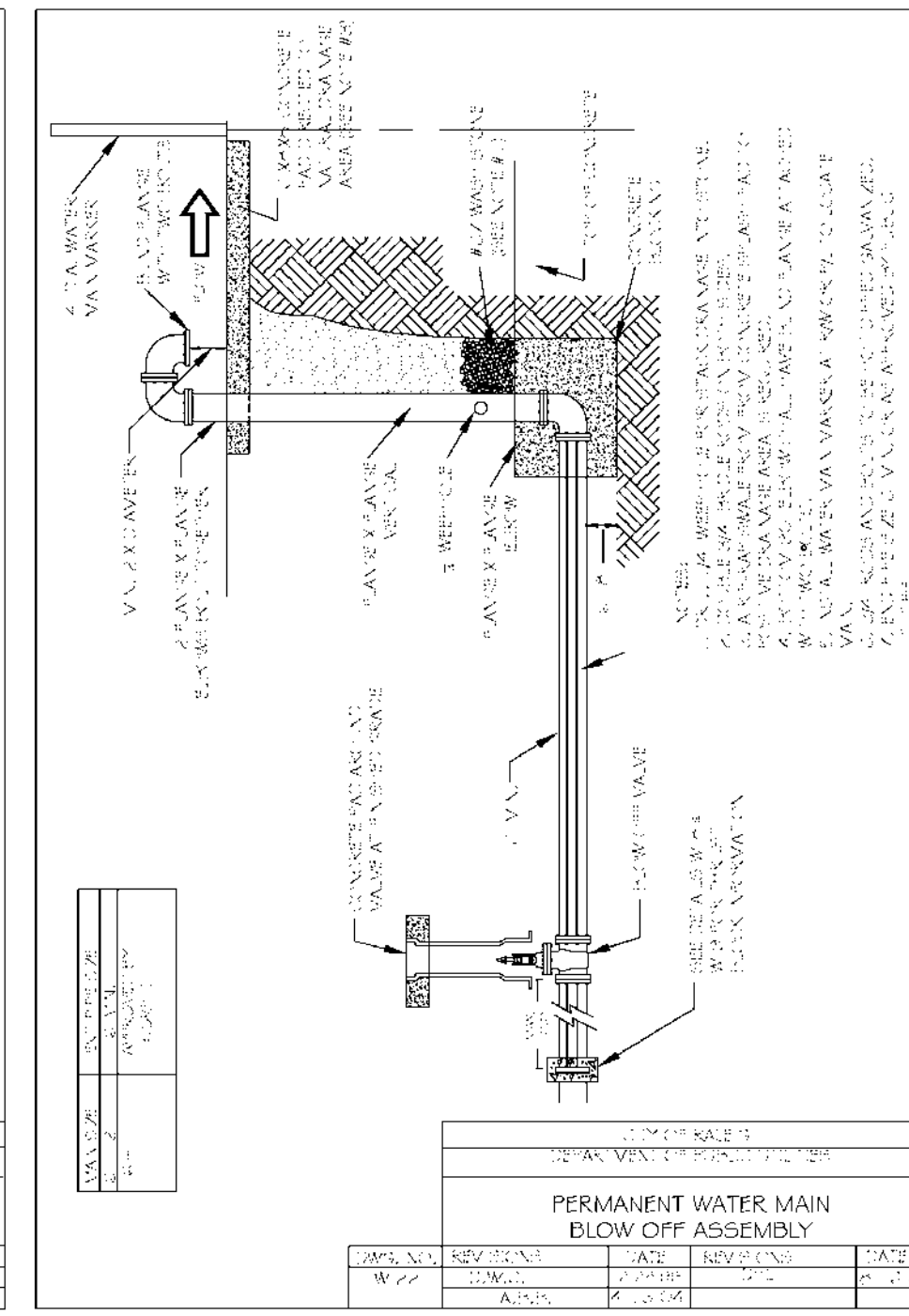
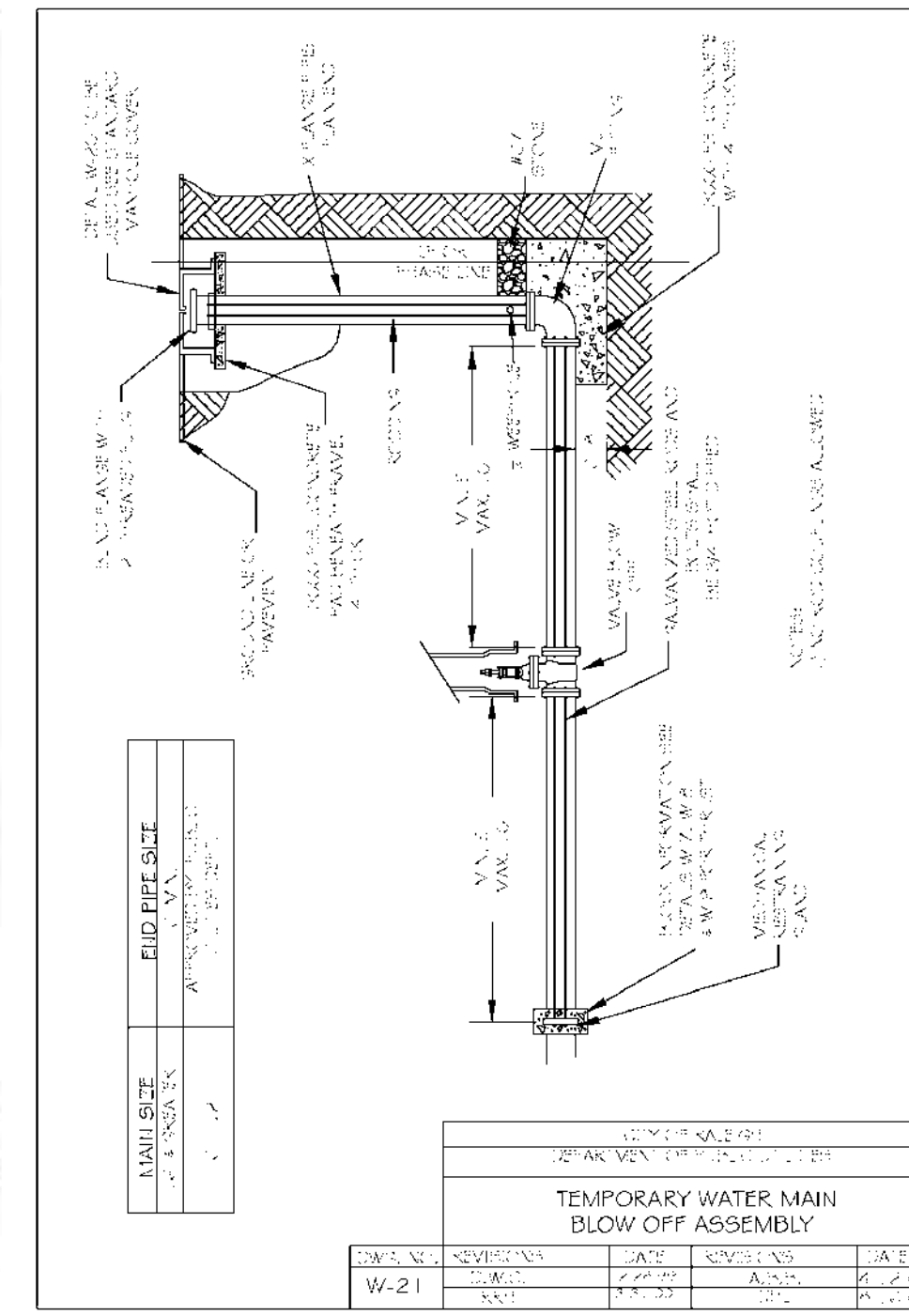
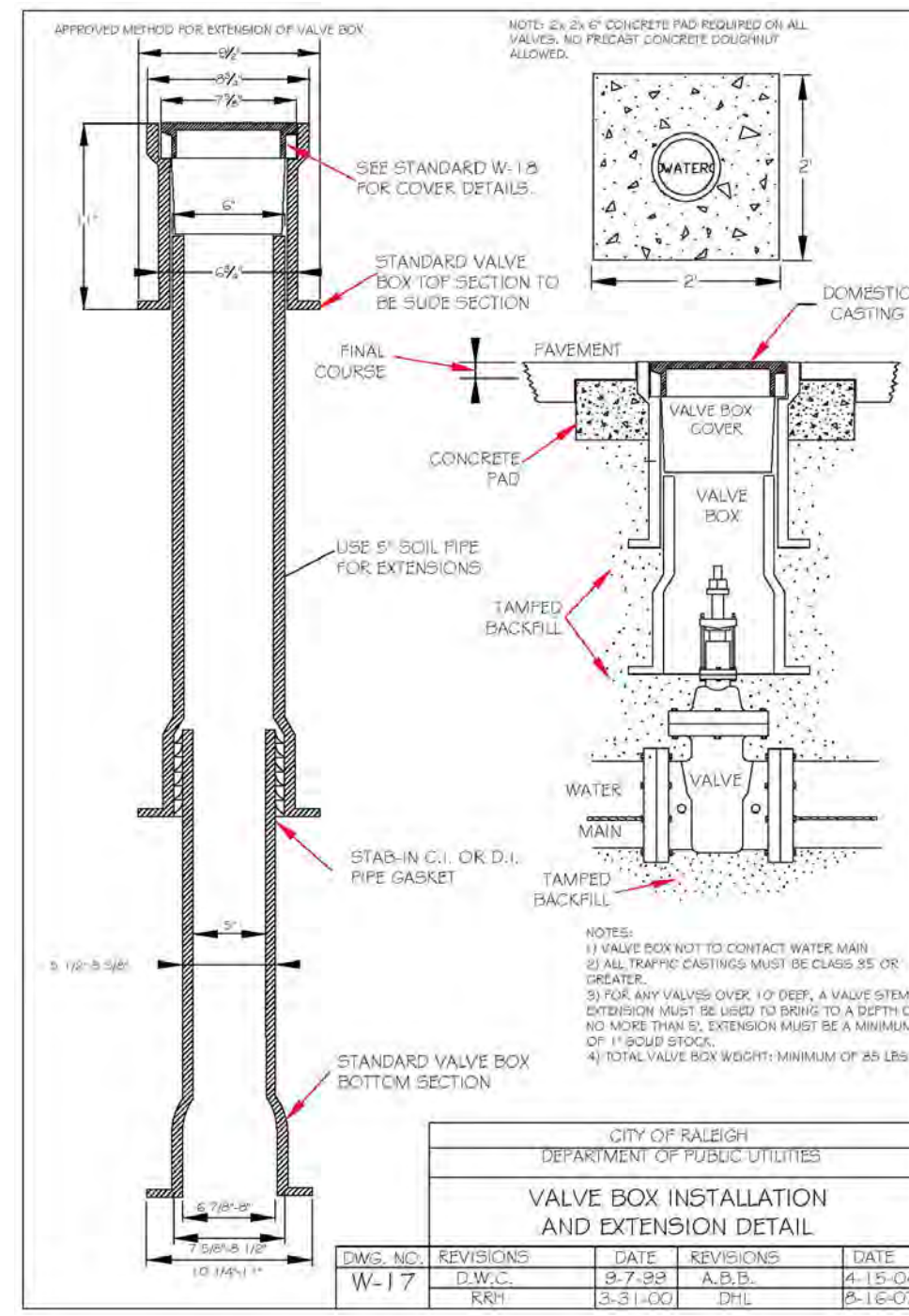
Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with 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 \_\_\_\_\_

06/02/22

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARTY D. BIZELLE



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 \_\_\_\_\_



06/02/22



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

NO.	DATE	DESCRIPTION	BY

**COBBLESTONE VILLAGE**  
MIXED USE DEVELOPMENT  
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

PROGRESS DRAWN BY  
DATE  
JOB NO.

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

SHEET C5.5



ROADWAY STANDARD DRAWING FOR  
METHOD OF PIPE INSTALLATION  
FLEXIBLE PIPE

GENERAL NOTES:  
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE FOUNDATION AT THAT POINT.  
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE OVERTIL UNTIL THE PIPE OVERTIL HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.  
SPEWING OF PIPE  
SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1  
APPROVED SUITABLE LOCAL MATERIAL.  
UNDESIRABLE SOFT MATERIAL.  
LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE SIZES: LEAN SECTION SELECT HEAVY PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTOR.

SHEET 1 OF 3  
300.01

ROADWAY STANDARD DRAWING FOR  
CONCRETE CURB, GUTTER AND CURB & GUTTER

GENERAL NOTES:  
PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.  
JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.  
CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS.  
CONSTRUCT NON-TEMPLATE FORMED JOINTS A MIN. OF 1 1/2\"/>

SHEET 1 OF 3  
846.01

ROADWAY STANDARD DRAWING FOR  
CONCRETE SIDEWALK

NOTES:  
CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4\"/>

TRANSVERSE EXPANSION JOINT IN SIDEWALK  
1/2\"/>

DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK  
BUILDING, WALL, ETC.  
1/2\"/>

SHEET 1 OF 3  
848.01

ROADWAY STANDARD DRAWING FOR  
CURB RAMPS

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

SHEET 3 OF 3  
848.05

ROADWAY STANDARD DRAWING FOR  
METHOD OF PIPE INSTALLATION  
RIGID PIPE

GENERAL NOTES:  
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE FOUNDATION AT THAT POINT.  
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE OVERTIL UNTIL THE PIPE OVERTIL HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.  
SPEWING OF PIPE  
SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1  
APPROVED SUITABLE LOCAL MATERIAL, ABOVE SPEWING.  
UNDESIRABLE SOFT MATERIAL.  
LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE SIZES: LEAN SECTION SELECT HEAVY PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTOR.

SHEET 2 OF 3  
300.01

ROADWAY STANDARD DRAWING FOR  
CONCRETE CURB, GUTTER AND CURB & GUTTER

SECTION VIEWS OF EXPRESSWAY GUTTER IN SUPER ELEVATION  
SECTION VIEWS OF 2'-6\"/>

SHEET 2 OF 3  
846.01

ROADWAY STANDARD DRAWING FOR  
CURB RAMP

ISOMETRIC VIEW  
SECTION B-B  
SECTION A-A  
PLAN VIEW  
DETECTABLE WARNING DOMES

SHEET 1 OF 3  
848.05

ROADWAY STANDARD DRAWING FOR  
CURB RAMPS

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

SHEET 3 OF 3  
848.05

ROADWAY STANDARD DRAWING FOR  
METHOD OF PIPE INSTALLATION  
RIGID PIPE

Round Corrugated Steel Pipe  
2 1/2 x 1/8 CORRUGATION

Diameter (Inches)	Minimum cover (Inches)	Maximum Height of Cover (feet)
12	12	25
15	12	162
18	12	133
21	12	115
24	12	100
30	12	79
36	12	65
42	12	53
48	12	48
60	12	42
66	12	38
72	12	35
78	12	32
84	12	30

Round Corrugated Aluminum Pipe  
2 1/2 x 1/8 CORRUGATION

Diameter (Inches)	Minimum cover (Inches)	Maximum Height of Cover (feet)
12	12	275
15	12	183
18	12	144
21	12	123
24	12	108
27	12	97
30	12	88
36	12	71
42	12	60
48	12	51
54	12	46
60	12	42
66	12	39
72	12	37
78	12	35
84	12	34

SHEET 2 OF 3  
300.01

ROADWAY STANDARD DRAWING FOR  
CONCRETE CURB, GUTTER AND CURB & GUTTER

DRIVEWAY WITH EXPRESSWAY GUTTER  
TRANSITION  
DRIVEWAY WITH 2'-6\"/>

SECTION A-A EXPRESSWAY GUTTER  
SECTION B-B TRANSITION GUTTER  
SECTION C-C 2'-6\"/>

PLAN VIEW OF TRANSITION EXPRESSWAY GUTTER TO 2'-6\"/>

SHEET 3 OF 3  
846.01

ROADWAY STANDARD DRAWING FOR  
CURB RAMP

DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR THE INTERSECTION

SHEET 2 OF 3  
848.05

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

06/02/22

PROGRESS DATE DRAWN BY CHECK BY: MDB

NO. DATE DESCRIPTION REVISIONS

MRM

83-19157

PROGRESS DATE DRAWN BY CHECK BY: MDB

NO. DATE DESCRIPTION REVISIONS

848.05

PROPOSED CURB AND GUTTER

PROPOSED CURB RAMP W/ LANDING

PROPOSED OR FUTURE SIDEWALK

ALLOWABLE LOCATIONS  
DUAL RAMP RADII..... ANY

CR

PROFESSIONAL SEAL  
036908  
ENGINEER  
MARTY D. BIZELLE

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

ROADWAY STANDARD DRAWING FOR  
METHOD OF PIPE INSTALLATION  
FLEXIBLE PIPE

ROADWAY STANDARD DRAWING FOR  
METHOD OF PIPE INSTALLATION  
RIGID PIPE

ROADWAY STANDARD DRAWING FOR  
CONCRETE CURB, GUTTER AND CURB & GUTTER

ROADWAY STANDARD DRAWING FOR  
CONCRETE CURB, GUTTER AND CURB & GUTTER

ROADWAY STANDARD DRAWING FOR  
CONCRETE SIDEWALK

ROADWAY STANDARD DRAWING FOR  
CURB RAMPS

ROADWAY STANDARD DRAWING FOR  
METHOD OF PIPE INSTALLATION  
RIGID PIPE

ROADWAY STANDARD DRAWING FOR  
CONCRETE CURB, GUTTER AND CURB & GUTTER

ROADWAY STANDARD DRAWING FOR  
CURB RAMP

ROADWAY STANDARD DRAWING FOR  
CONCRETE CURB, GUTTER AND CURB & GUTTER

ROADWAY STANDARD DRAWING FOR  
CURB RAMPS

**BASS, NIXON & KENNEDY, INC.**  
CONSULTING ENGINEERS  
6810 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607  
TELEPHONE: (919) 881-1122 FAX: (919) 881-8686  
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

**COBLESTONE VILLAGE**  
MIXED USE DEVELOPMENT  
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

SHEET C5.6

TOWN OF ROLESVILLE PROJECT NO.