

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	—	—
PE	FINISHED PAD ELEVATION	—	—
PP	POWER POLE	—	—
PVC	POLYVINYL CHLORIDE	—	—
R	RADIUS	—	—
R/W	RIGHT-OF-WAY	—	—
RED	REDUCER	—	—
RCP	REINFORCED CONCRETE PIPE	—	—
RPZ	REDUCED PRESSURE ZONE	—	—
SS	SANITARY SEWER	—	—
STA	STATION	—	—
TDD	TEMPORARY DIVERSION DITCH	—	—
TELE	TELEPHONE	—	—
TSB	TEMPORARY SEDIMENT BASIN	—	—
UG	UNDERGROUND	—	—
WCR	WHEELCHAIR RAMP	—	—
W/L	WATER LINE	—	—
WM	WATER METER	—	—
YI	YARD INLET	—	—

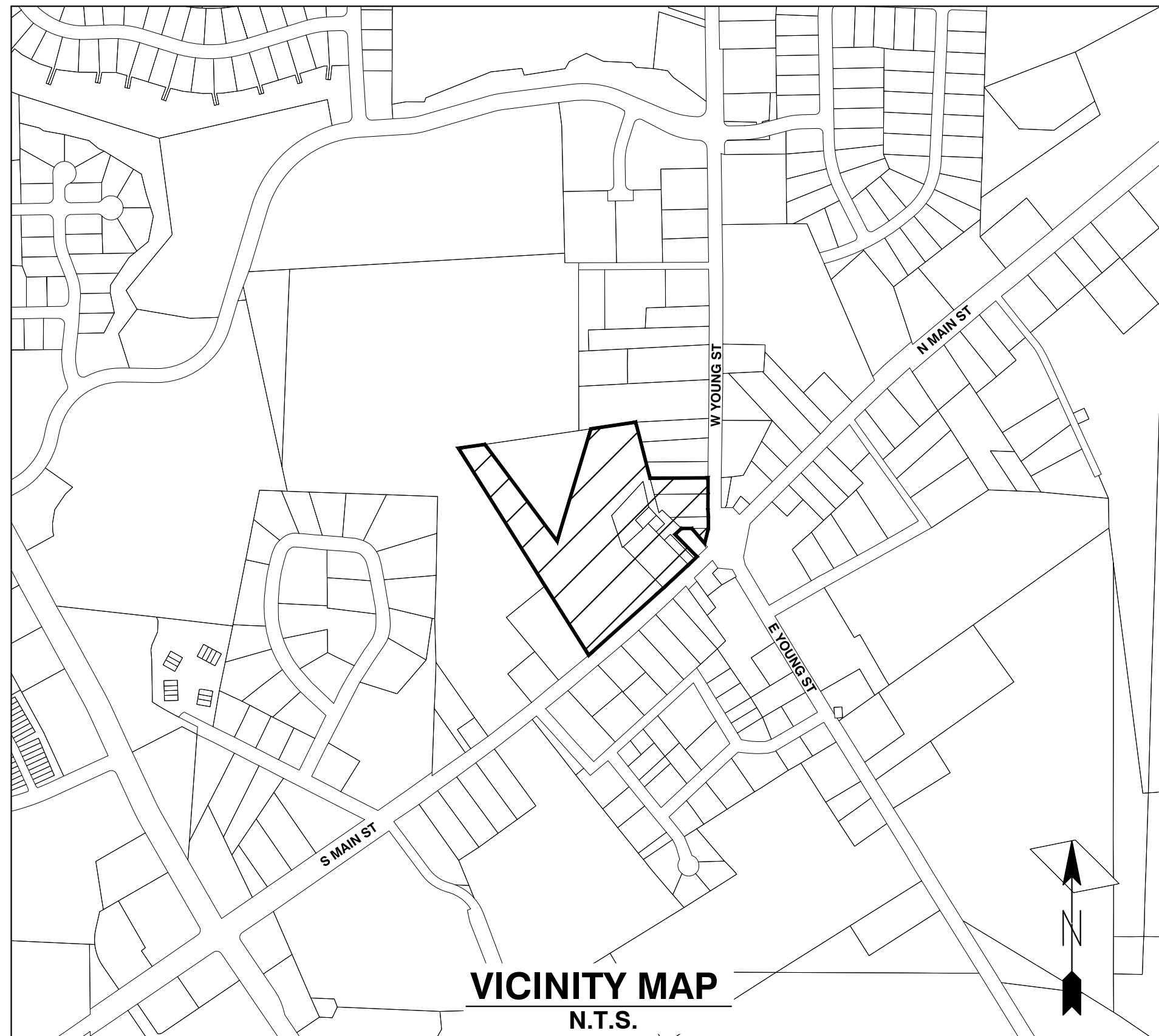
NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

COBBLESTONE VILLAGE MIXED USE DEVELOPMENT

TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

CONSTRUCTION DRAWINGS

TOWN OF ROLESVILLE PROJECT NO. SITE PLAN APPLICATION NO. CUP-SB-21-01



VICINITY MAP N.T.S.

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
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 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-2892 (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

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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

COVER

C0.1 EXISTING CONDITIONS & DEMOLITION PLAN

C1.1 SITE PLAN

C2.1 UTILITY PLAN

C3.1 GRADING AND DRAINAGE PLAN

C3.2 BMP DETAILS

C3.3 EROSION CONTROL PLAN - STAGE 1

C3.4 EROSION CONTROL PLAN - STAGE 2

C3.5 EROSION CONTROL DETAILS

C3.6 EROSION CONTROL DETAILS

C3.7 NCG01 PLAN

C3.8 STORM DRAINAGE PIPE & STRUCTURE TABLE

C4.1 PUBLIC WATERLINE PROFILE

C4.2 SANITARY SEWER PROFILE

L1.1 LANDSCAPE PLAN

SL-101 LIGHTING PLAN

C5.1 DETAILS

C5.2 DETAILS

C5.3 DETAILS

C5.4 DETAILS

C5.5 DETAILS

A2.21 EXTERIOR ELEVATIONS - BLDG 2

A2.22 EXTERIOR ELEVATIONS - BLDG 2

A2.31 EXTERIOR ELEVATIONS - BLDG 3

A2.32 EXTERIOR ELEVATIONS - BLDG 3

A2.51 EXTERIOR ELEVATIONS - BLDG 5

A2.61 EXTERIOR ELEVATIONS - BLDG 6

A2.62 EXTERIOR ELEVATIONS - BLDG 6

A2.71 EXTERIOR ELEVATIONS - BLDGS 1 & 7

A2.72 EXTERIOR ELEVATIONS - BLDGS 1 & 7

A2.81 EXTERIOR ELEVATIONS - BLDG 8

The following comment is copied over from previous review:

FOR FINAL PLAT "CONSTRUCTION DRAWINGS" WE WILL NEED STORM CALCS (02/10/&25 YR) AND MAP(S) PACKAGE INCLUDED. (1st review comments have not seen package since)

We need to have storm package (10yr/25yr) calcs DA maps for plan approval, for ALL future reviews.

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 (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 18, SECTION 1806 OR THE WALL DESIGN ENGINEER'S SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.



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

#1a Proposed xx Sanitary sewer in MAIN ST is public?

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)	2.32
NUMBER OF OPEN SPACE LOTS	N/A
PUBLIC WATER (LF)	875
PRIVATE SEWER (LF)	550
PUBLIC STREET (LF)	0
PUBLIC SIDEWALK (LF)	0

#1 - repeat comment from previous review: Along Main Street/401 and W Young Street ROW?

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



3/10/22

EROSION CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT

APPROVED

EROSION CONTROL S-

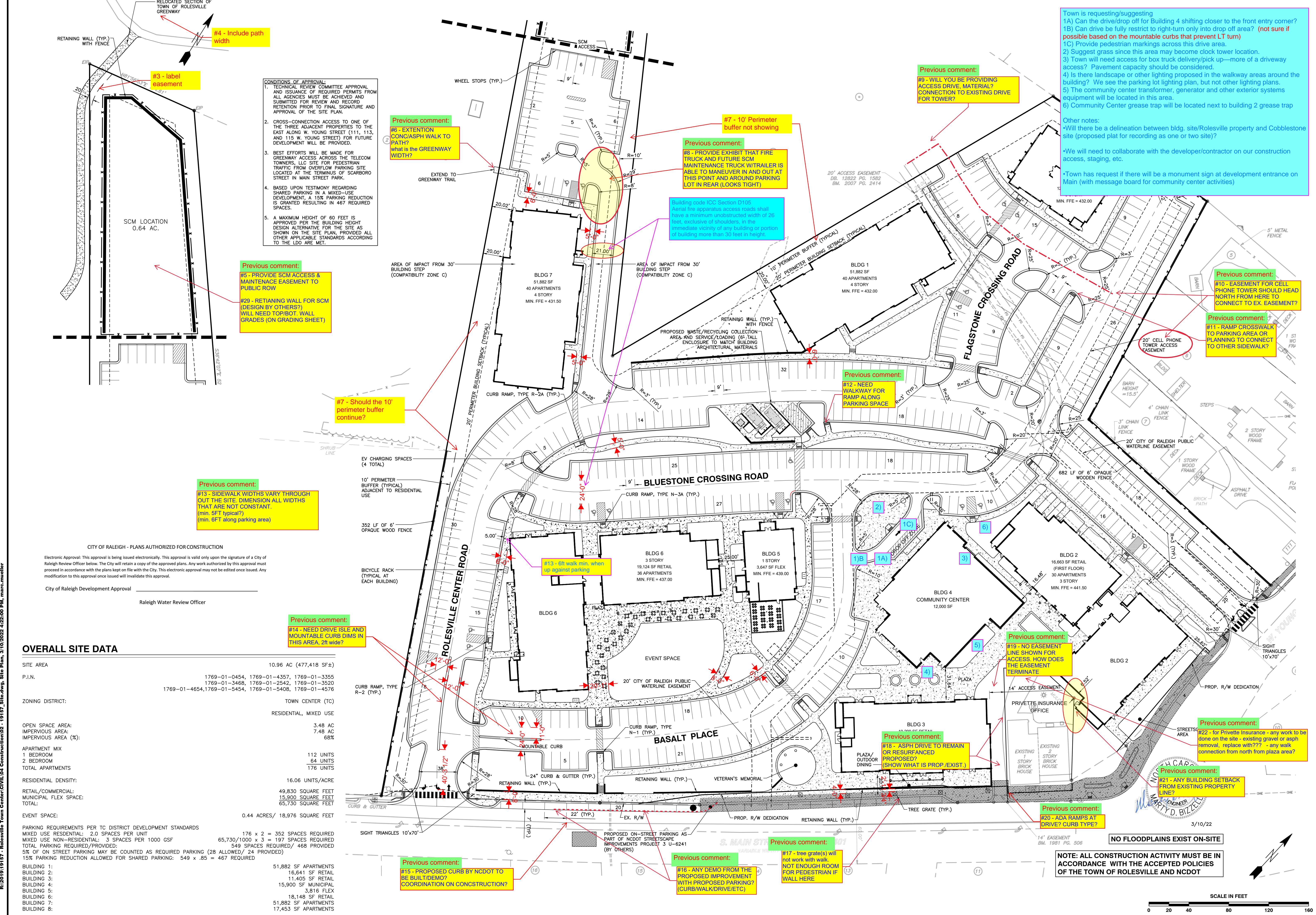
STORMWATER MGMT. S-

FLOOD STUDY S-

DATE



ENVIRONMENTAL CONSULTANT SIGNATURE



CONDITIONS OF APPROVAL:

- 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.
- 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.
- 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.
- BASED UPON TESTIMONY REGARDING SHARED PARKING IN A MIXED-USE DEVELOPMENT, A 15% PARKING REDUCTION IS GRANTED RESULTING IN 467 REQUIRED SPACES.
- 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.

Town is requesting/suggesting

- 1A) Can the drive/drop off for Building 4 shifting closer to the front entry corner?
- 1B) Can drive be fully restrict to right-turn only into drop off area? (not sure if possible based on the mountable curbs that prevent LT turn)
- 1C) Provide pedestrian markings across this drive area.
- 2) Suggest grass since this area may become clock tower location.
- 3) Town will need access for box truck delivery/pick up—more of a driveway access? Pavement capacity should be considered.
- 4) Is there landscape or other lighting proposed in the walkway areas around the building? We see the parking lot lighting plan, but not other lighting plans.
- 5) The community center transformer, generator and other exterior systems equipment will be located in this area.
- 6) Community Center grease trap will be located next to building 2 grease trap

Other notes:

- Will there be a delineation between bldg. site/Rolesville property and Cobblestone site (proposed plat for recording as one or two site)?
- We will need to collaborate with the developer/contractor on our construction access, staging, etc.
- Town has request if there will be a monument sign at development entrance on Main (with message board for community center activities)

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval _____

Raleigh Water Review Officer _____

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:	3.48 AC
IMPERVIOUS AREA:	7.48 AC
IMPERVIOUS AREA (%):	68%
APARTMENT MIX	
1 BEDROOM	112 UNITS
2 BEDROOM	64 UNITS
TOTAL APARTMENTS	176 UNITS
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

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)881-4422 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 DRAWN BY: MRM DATE: 03-19-17
JOB NO.: 19157_Site.dwg
SHEET C1.1

NO. DATE DESCRIPTION REVISIONS

SCALE: 1" = 40'

CHK BY: MDB

TOWN OF ROLESVILLE PROJECT NO.

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

NO FLOODPLAINS EXIST ON-SITE

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

SCALE IN FEET

3/10/22

Town is requesting/suggesting (utility questions)
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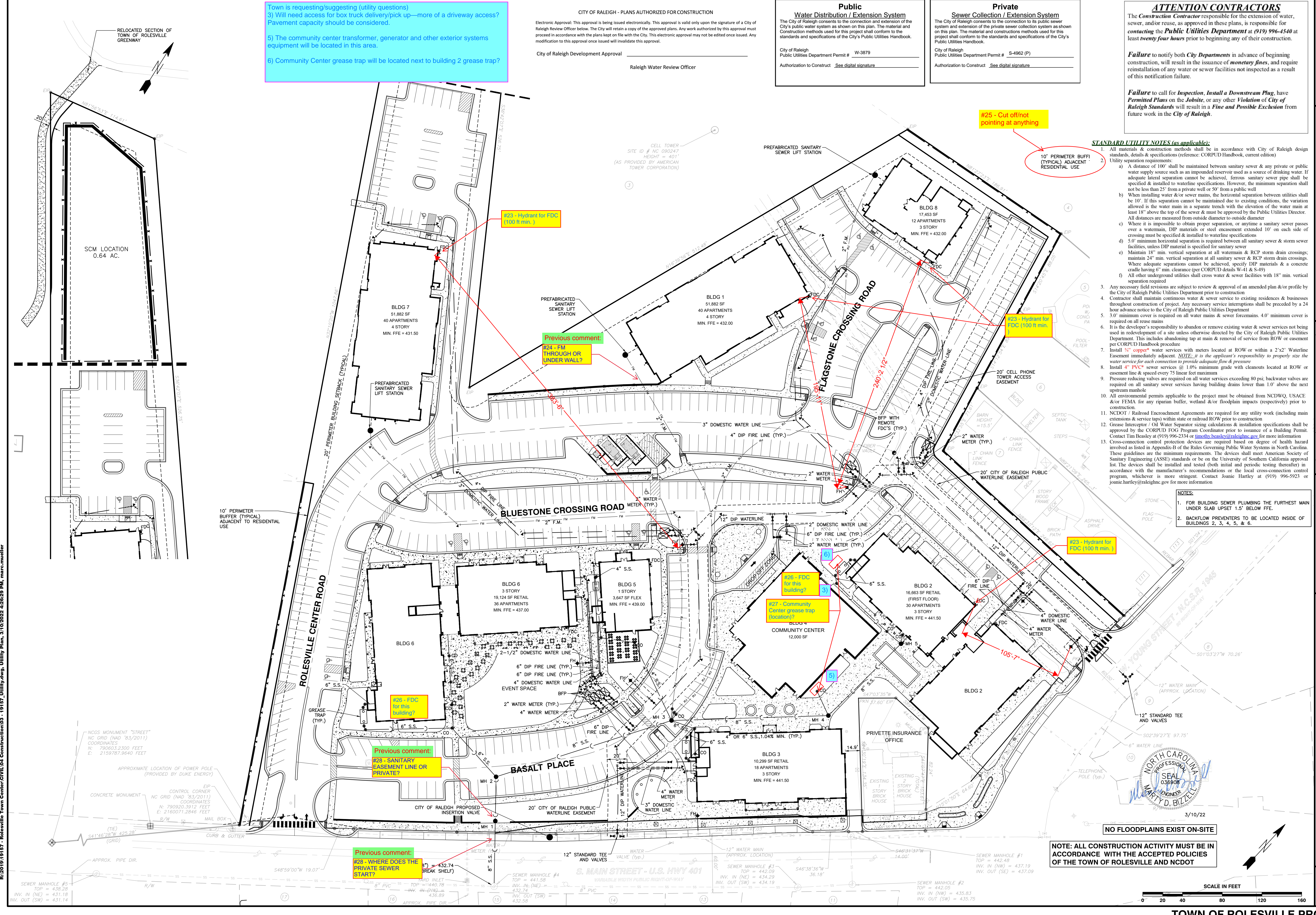
Public
Water Distribution / Extension System
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 City of Raleigh
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 Authorization to Construct See digital signature

Private
Sewer Collection / Extension System
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 City of Raleigh
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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 & 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 FOG Program Coordinator prior to issuance of a Building Permit. Contact Tim Besley at (919) 996-2334 or timothy.besley@raleighnc.gov for more information
 - Cross-connection control protection devices are required based on degree of health hazard involved as listed in Appendix-B of the Rules Governing Public Water Systems in North Carolina. These guidelines are the minimum requirements. The devices shall meet American Society of Sanitary Engineering (ASSE) standards or be on the University of Southern California approval list. The devices shall be installed and tested (both initial and periodic testing thereafter) in accordance with the manufacturer's recommendations or the local cross-connection control program, whichever is more stringent. Contact Joanie Hartley at (919) 996-5923 or joanie.hartley@raleighnc.gov for more information

- 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.



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 950, RALEIGH, NC 27607
 TELEPHONE: (919) 981-1122 FAX: (919) 981-8686
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

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

UTILITY PLAN

SHEET C2.1

NO FLOODPLAINS EXIST ON-SITE

SCALE: 1" = 40'

NO RELEASED FOR CONSTRUCTION OR BID SOLICITATION

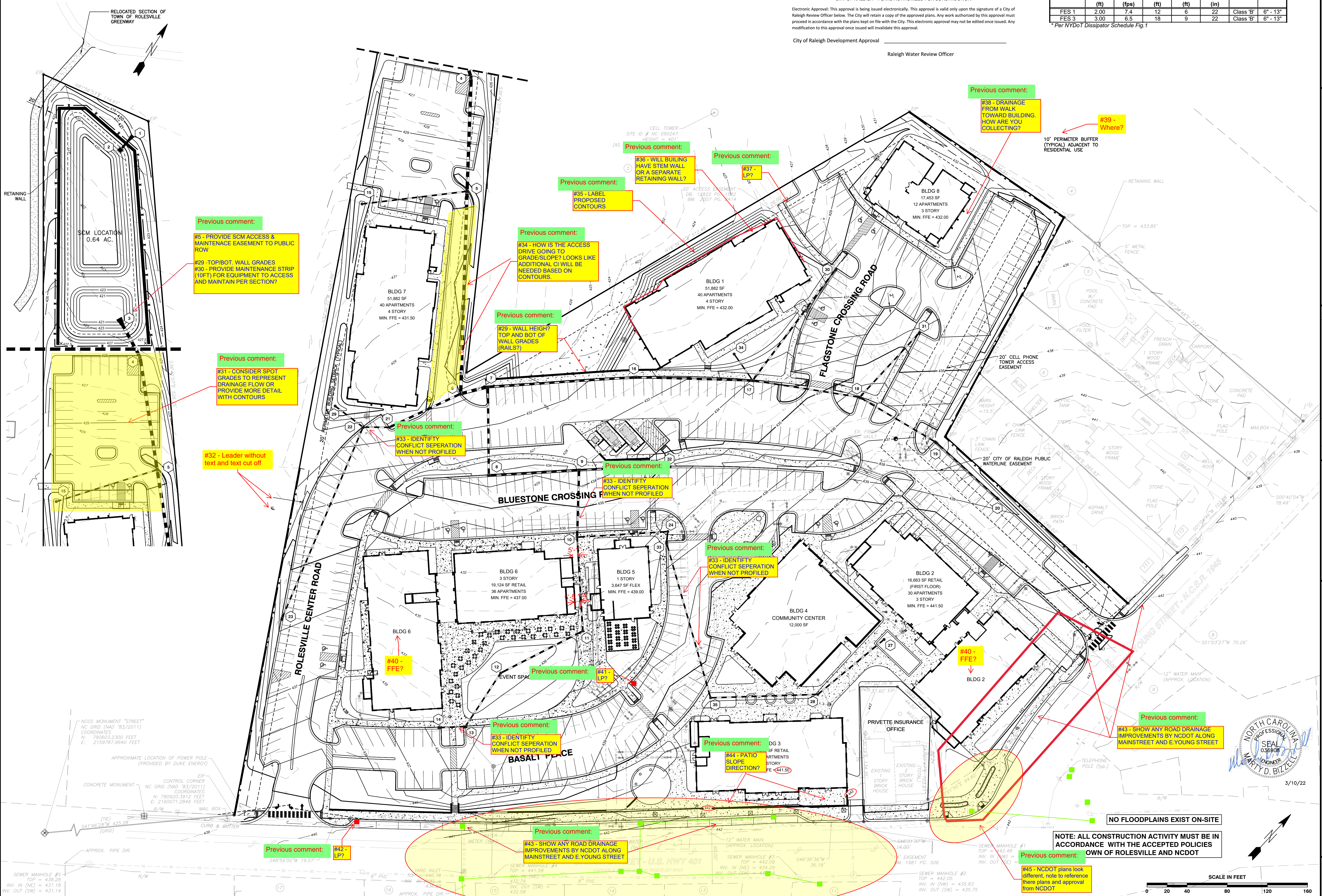
CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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 _____

Structure	d ₁ (ft)	Velocity (fps)	Length (ft)	Width (ft)	Depth (in)	Type	d ₅₀
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"

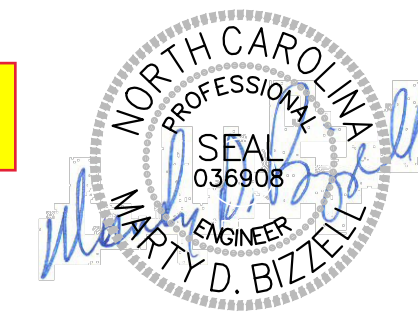
* Per NYDOT Dissipator Schedule Fig.1



BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
 6310 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919)851-1122 FAX: (919)851-8686
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY

PROGRESS MRM DATE DRAWN BY
 03-19-17 GRADING PLAN
 SCALE: 1" = 40'
 CHK BY: MDB

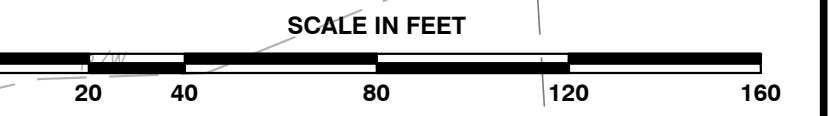


3/10/22

NO FLOODPLAINS EXIST ON-SITE

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

#45 - NCDOT plans look different, note to reference there plans and approval from NCDOT



R:\2019\19157 - Roleville Town Center CIVIL\04 - Construction\04 - 19157_Grading\dwg, Grading Plan, 3/10/2022 4:29:31 PM, marc.mueller

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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

SHEET C3.1

TOWN OF ROLESVILLE PROJECT NO.

CONSTRUCTION SEQUENCE - STAGE 1

- ONCE THE EROSION AND SEDIMENT CONTROL PLAN APPROVAL AND NCG01 CERTIFICATE OF COVERAGE ARE OBTAINED, SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT, OBTAIN A LAND-DISTURBING PERMIT.
- INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SKIMMER SEDIMENT 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

REQUIRED WAKE COUNTY BASIN REMOVAL AND/OR CONVERSION SEQUENCE

- SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED OR CONVERTED TO A PERMANENT STORMWATER POND, INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
- UTILIZE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SEDIMENT BASIN SURFACE FOR DRAW DOWN OF WATER IN BASIN FOR MAINTENANCE OR CLOSE OUT UNLESS INFEASIBLE. SEE REQUIREMENTS OF NCG01 PERMIT PART I, SECTION 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 ADVISE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION. NOTE: A MEETING SHOULD ALSO BE SCHEDULED WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE WHEN A BASIN MAY BE CONVERTED FOR STORMWATER USE. SOME MUNICIPALITIES MAY ALSO REQUIRE THIS.

SEDIMENT BASIN SUMMARY CHART

Sediment Basin Number	1	2	3
Drainage Area (Acres)	3.42	4.61	0.6
Orifice (ft)	(0.5)(7.22)(3.42)=12.35	(0.5)(7.22)(4.61)=16.64	(0.5)(7.22)(0.60)=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)(0.60)=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"	0.5"	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

DITCH/CHANNEL CALCULATIONS

DIVERSION DITCH ID	LENGTH (LF)	DA (Ac)	G10 (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	0.76
DV-2	495	1.00	2.30	2.60	2.29	SC150	2.00	0.84
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

Skimmer Size (Inches)	Skimmer Size (Inches)
4	4
3	3
2	2
1.5	1.5
1	1
0.75	0.75
0.5	0.5
0.25	0.25
0	0

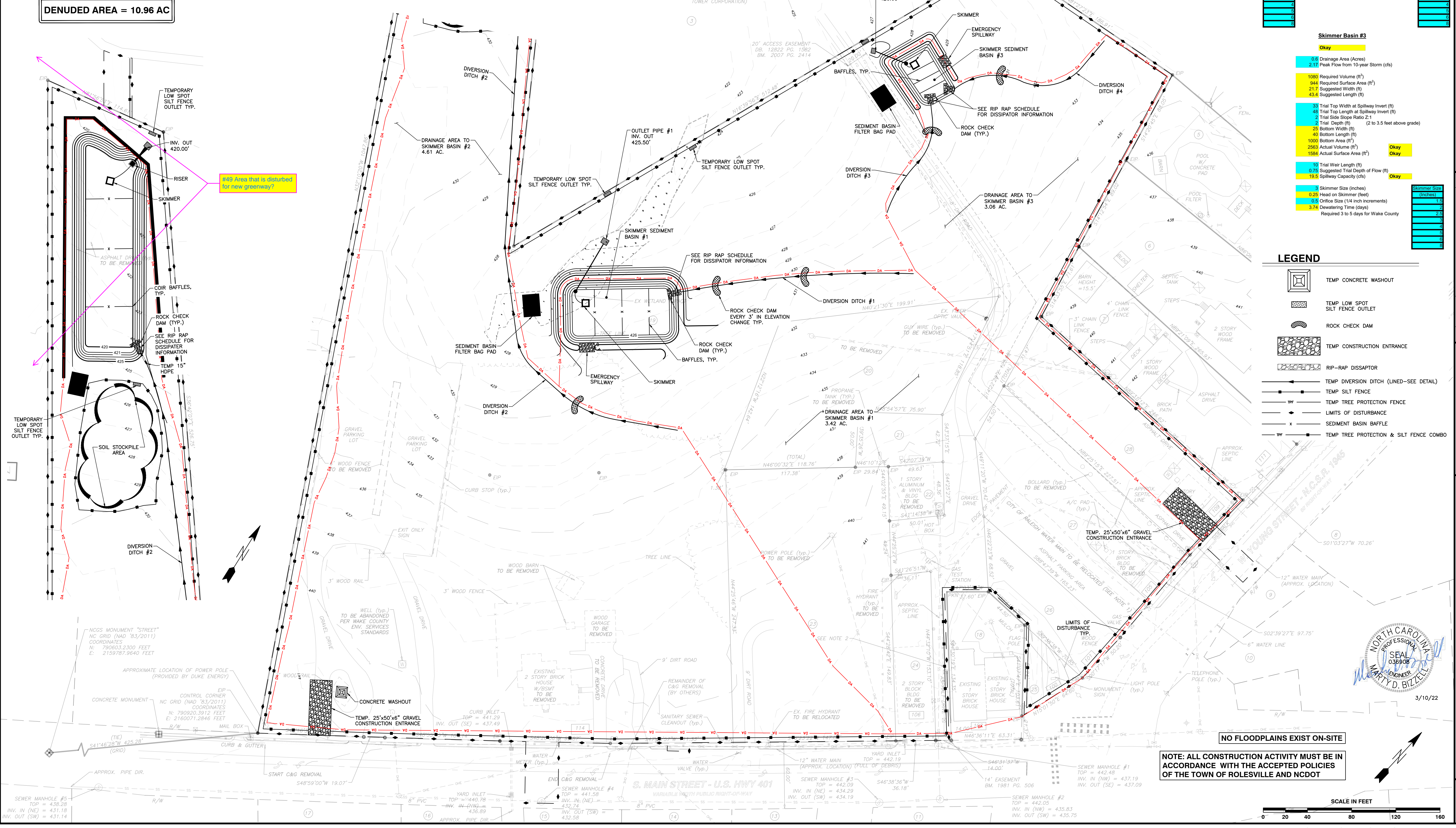
Skimmer Basin #2

Skimmer Size (Inches)	Skimmer Size (Inches)
4	4
3	3
2	2
1.5	1.5
1	1
0.75	0.75
0.5	0.5
0.25	0.25
0	0

Skimmer Basin #3

Skimmer Size (Inches)	Skimmer Size (Inches)
4	4
3	3
2	2
1.5	1.5
1	1
0.75	0.75
0.5	0.5
0.25	0.25
0	0

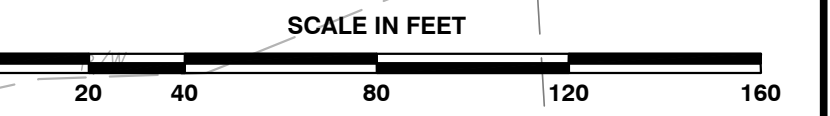
DENUDED AREA = 10.96 AC



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 _____

- 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

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 CHARLETTOWN ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)881-4422 FAX: (919)881-6866
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
JOB NO. EROSION CONTROL PLAN - STAGE 1
SCALE: 1" = 40'
CHK BY: MDB

NO. DATE DESCRIPTION REVISIONS

SEAL
NORTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
W. MARY D. BIZELLE
036908
3/10/22

SHEET C3.3
TOWN OF ROLESVILLE PROJECT NO.

R:\2019\19187 - Rolesville Town Center CIVIL\04 Construction\06 - 19187_Erosion Control Phase 1.dwg, Erosion Control Phase 1, 3/10/2022, 4:50:48 PM, marc.mueller

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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 DENuded 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)

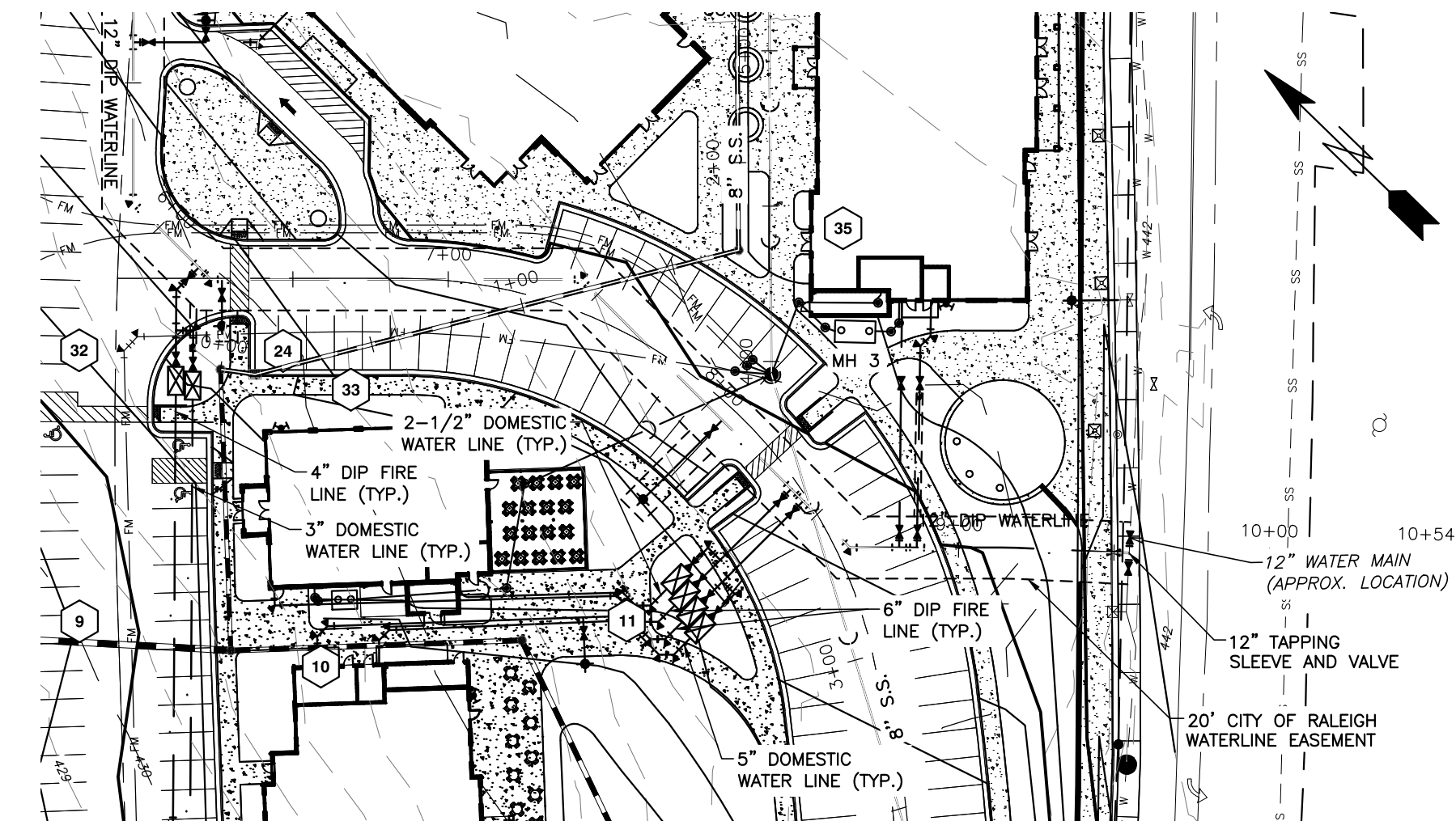
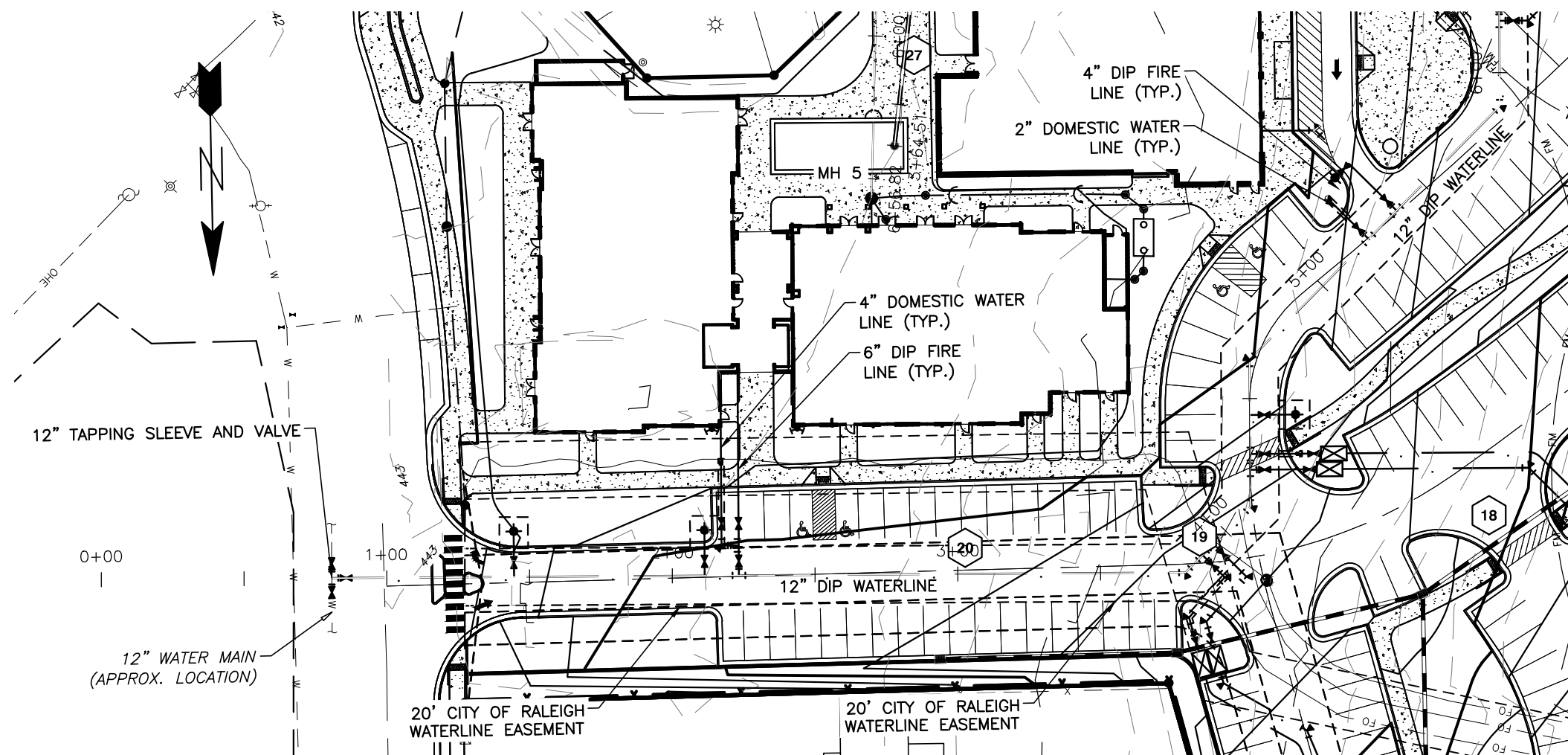
REQUIRED WAKE COUNTY BASIN REMOVAL AND/OR CONVERSION SEQUENCE

- 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.
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- PERFORM SEEDBED PREPARATION, SEED, MULCH AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
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Skimmer Basin #2

Item	Value	Status
6.99 Drainage Area (Acres)	6.99	Okay
25.23 Peak Flow from 10-year Storm (cfs)	25.23	Okay
12582 Required Volume (ft³)	12582	Okay
10975 Required Surface Area (ft²)	10975	Okay
74.1 Suggested Width (ft)	74.1	Okay
148.2 Suggested Length (ft)	148.2	Okay
58 Trial Top Width at Spillway Invert (ft)	58	Okay
190 Trial Top Length at Spillway Invert (ft)	190	Okay
2 Trial Side Slope Ratio 2:1	2:1	Okay
3 Trial Depth (ft) (2 to 3.5 feet above grade)	3	Okay
46 Bottom Width (ft)	46	Okay
178 Bottom Length (ft)	178	Okay
8188 Bottom Area (ft²)	8188	Okay
28740 Actual Volume (ft³)	28740	Okay
11020 Actual Surface Area (ft²)	11020	Okay
20 Trial Weir Length (ft)	20	Okay
0.75 Suggested Trial Depth of Flow (ft)	0.75	Okay
39.9 Spillway Capacity (cfs)	39.9	Okay
4 Skimmer Size (inches)	4	Okay
0.333 Head on Skimmer (feet)	0.333	Okay
156 Orifice Size (1/4 inch increments)	156	Okay
4.20 Dewatering Time (days)	4.20	Okay

Skimmer Size (inches)	Days
4	4.20
6	2.80
8	2.10
10	1.68
12	1.40
14	1.20
16	1.05
18	0.93
20	0.84
24	0.70
30	0.56
36	0.47
42	0.40
48	0.35
54	0.31
60	0.28
72	0.23
84	0.20
96	0.18
108	0.16
120	0.15
144	0.13
168	0.11
192	0.10
216	0.09
240	0.08
270	0.07
300	0.06
360	0.05
420	0.04
480	0.04
540	0.03
600	0.03
720	0.02
840	0.02
960	0.02
1080	0.02
1200	0.02
1440	0.01
1680	0.01
1920	0.01
2160	0.01
2400	0.01
2700	0.01
3000	0.01
3600	0.01
4200	0.01
4800	0.01
5400	0.01
6000	0.01
7200	0.01
8400	0.01
9600	0.01
10800	0.01
12000	0.01
14400	0.01
16800	0.01
19200	0.01
21600	0.01
24000	0.01
27000	0.01
30000	0.01
36000	0.01
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27000000000000000	0.01
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42000000000000000	0.01
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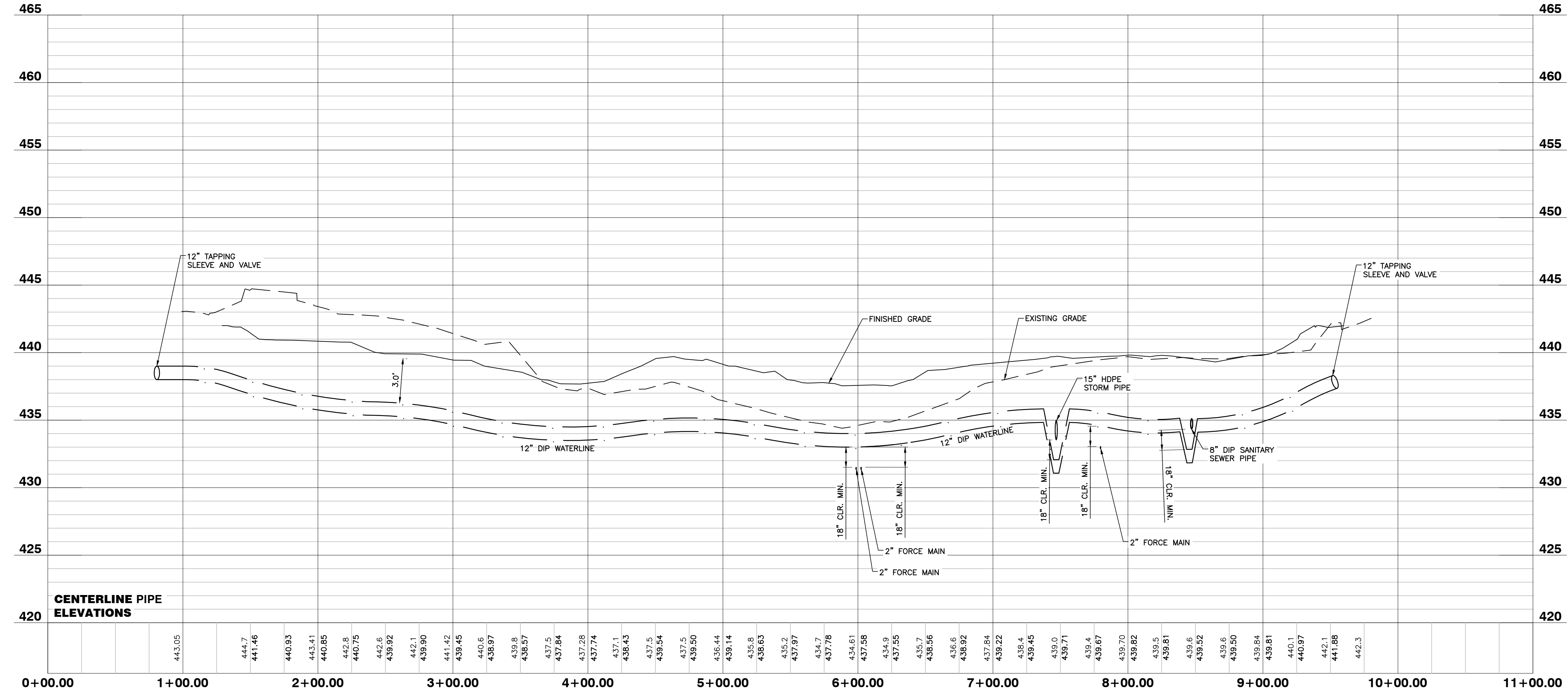


#52 - Hard to follow the stationing. Waterline and Sanitary Sewer stations are both on. Maybe only show necessary stations.

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 _____

PUBLIC WATERLINE PROFILE



3/10/22

NO FLOODPLAINS EXIST ON-SITE

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



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	MRM	DATE	DRAWN BY
03-19157			

PUBLIC WATERLINE PROFILE

SCALE: 1" = 50' H; 1" = 5' V CHK BY: MDB

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

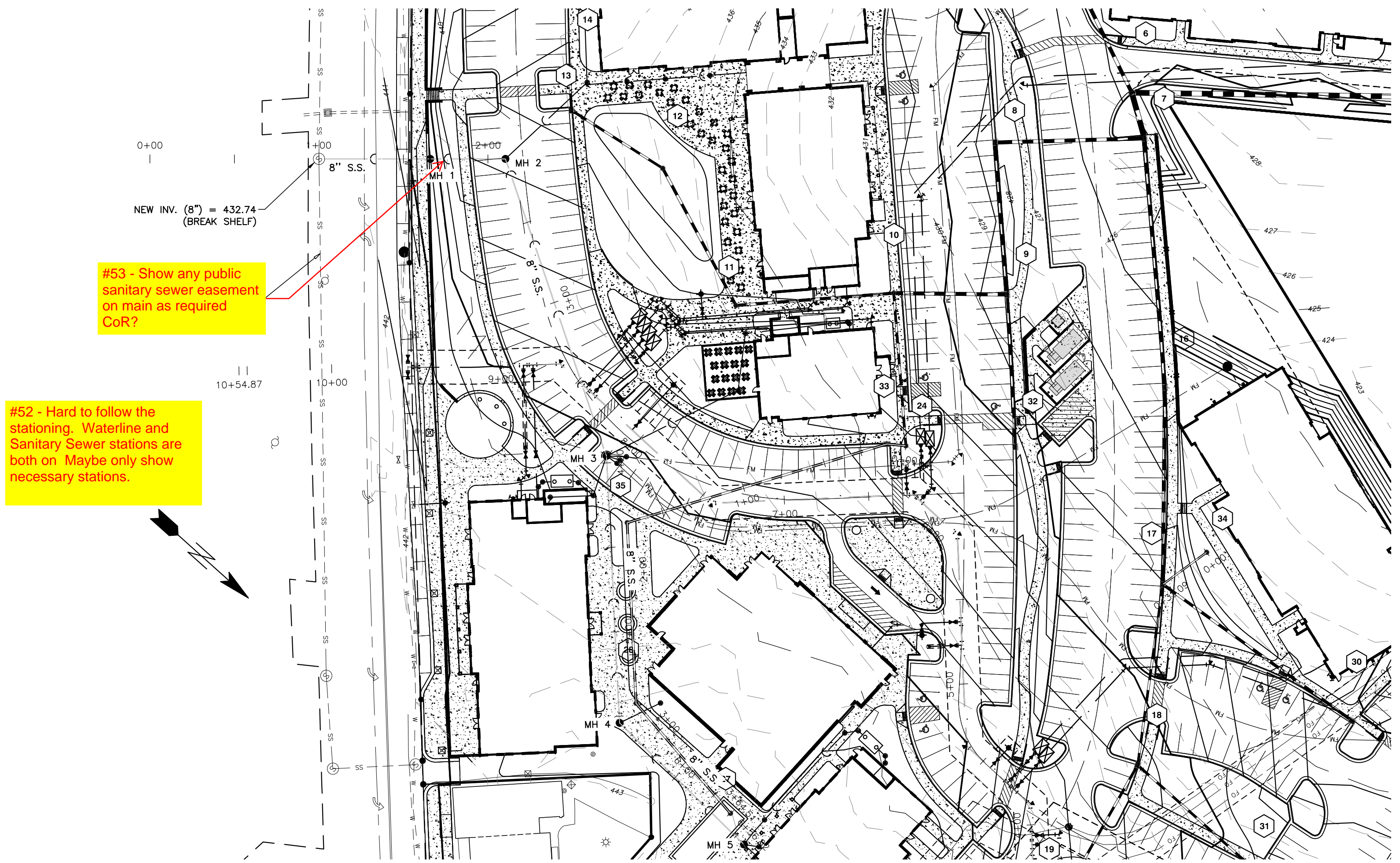
SHEET **C4.1**

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

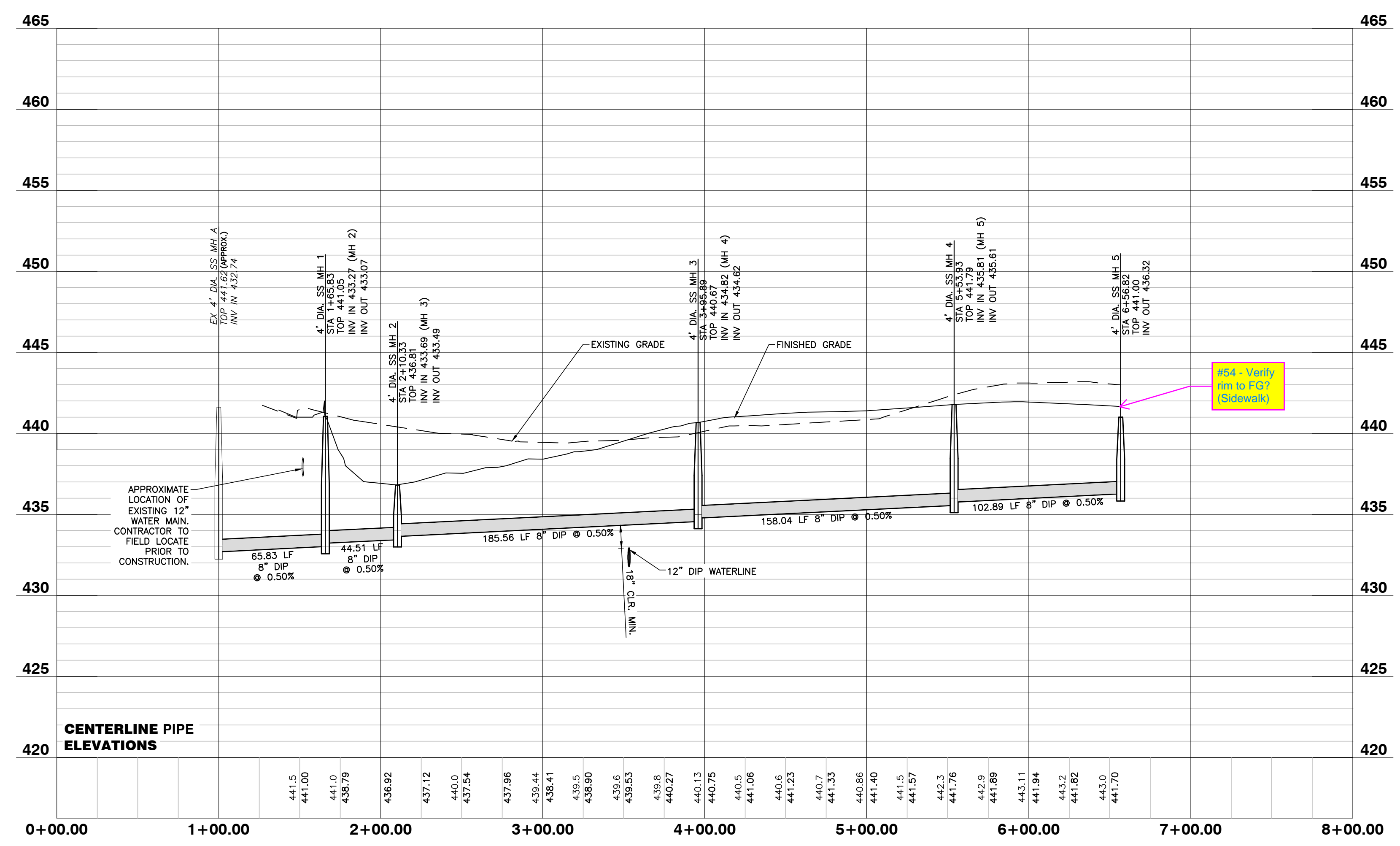


BASS, NIXON & KENNEDY, INC.
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 TELEPHONE: (919)881-1122 FAX: (919)881-8686
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 City of Raleigh Development Approval _____
 Raleigh Water Review Officer _____



SANITARY SEWER PROFILE



#54 - Verify rim to FG? (Schwak)



3/10/22

NO FLOODPLAINS EXIST ON-SITE

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

NO.	DATE	DESCRIPTION	BY

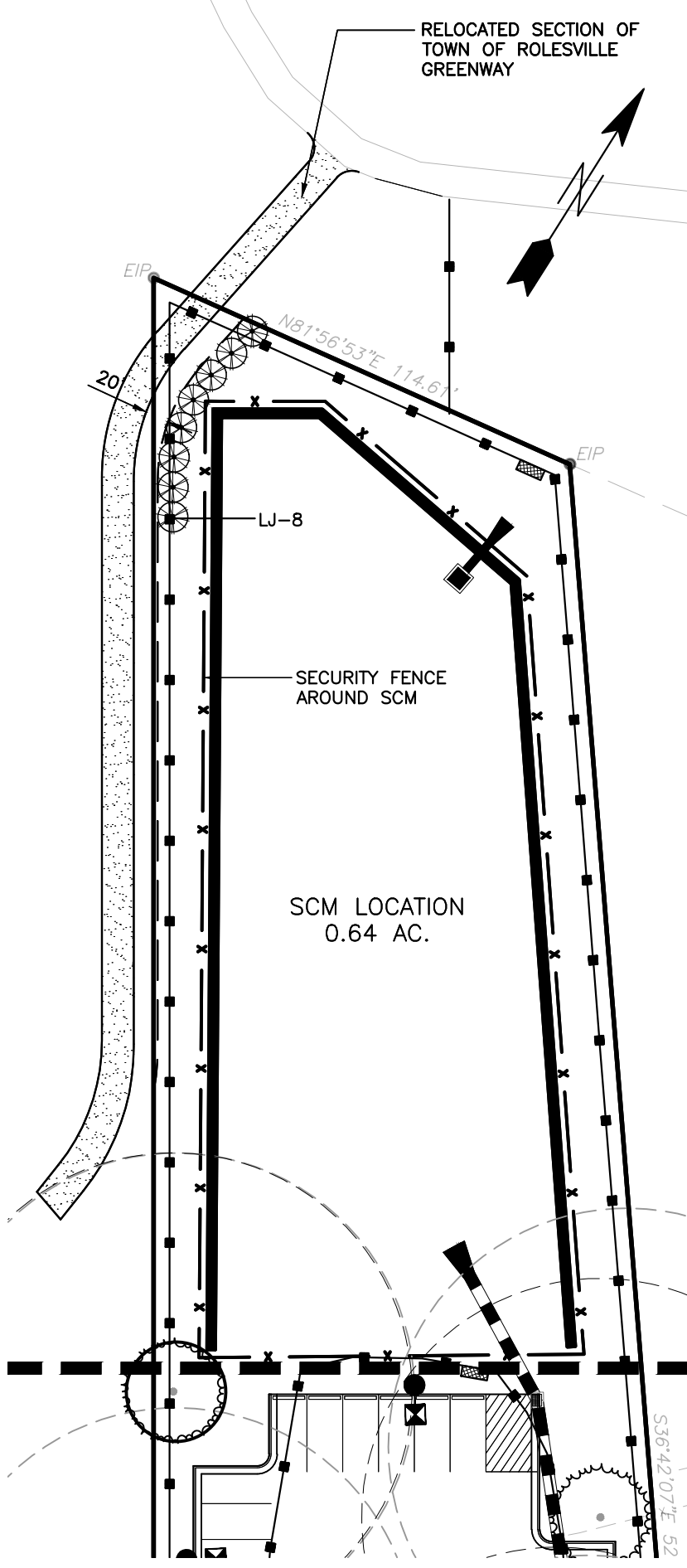
03-19157 PROGRESS MRN
 JOB NO. DATE DRAWN BY
SANITARY SEWER PROFILE
 SCALE: 1" = 50' H; 1" = 5' V CHK BY: MDB

SHEET
C4.2

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

GENERAL NOTES

1. 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.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO PLANTING.
3. MULCH SHALL BE 3" DEEP MULCH UNLESS OTHERWISE NOTED.
4. 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.
5. ALL TREES, SHRUBS, GROUNDCOVER, ETC. SHALL CONFORM TO ACCEPTED STANDARDS ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERMEN.
6. ALL ROOTBALLS REMOVED FROM CONTAINERS SHALL BE SCARIFIED PRIOR TO PLANTING.
7. B&B AS LISTED UNDER "ROOT" IN THE PLANT LIST INDICATES BALLED & BURLAPPED.
8. ALL PLANTS/PLANTINGS SHALL BE MULCHED IMMEDIATELY AFTER PLANTING AND WATERED.
9. ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS THEY BORE TO PREVIOUS EXISTING GRADE (UNLESS OTHERWISE NOTED).
10. ALL TREES AND SHRUBS SHALL REQUIRE MULCH RINGS AT THEIR BASE IF LEFT WITHIN LAWN AREAS.
11. 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.
12. 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.
13. A 2' BUMPER OVERHANG, FROM THE BACK OF CURB, SHALL BE ALLOTTED FOR MATURE SHRUBS.
14. 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.).
15. UNLESS OTHERWISE NOTED ON THE PLAN, ALL DISTURBED AREAS ARE TO BE SEED WITH WARM SEASON GRASS, INCLUDING PARKING LOT PERIMETERS AND PARKING LOT ISLANDS.
16. 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

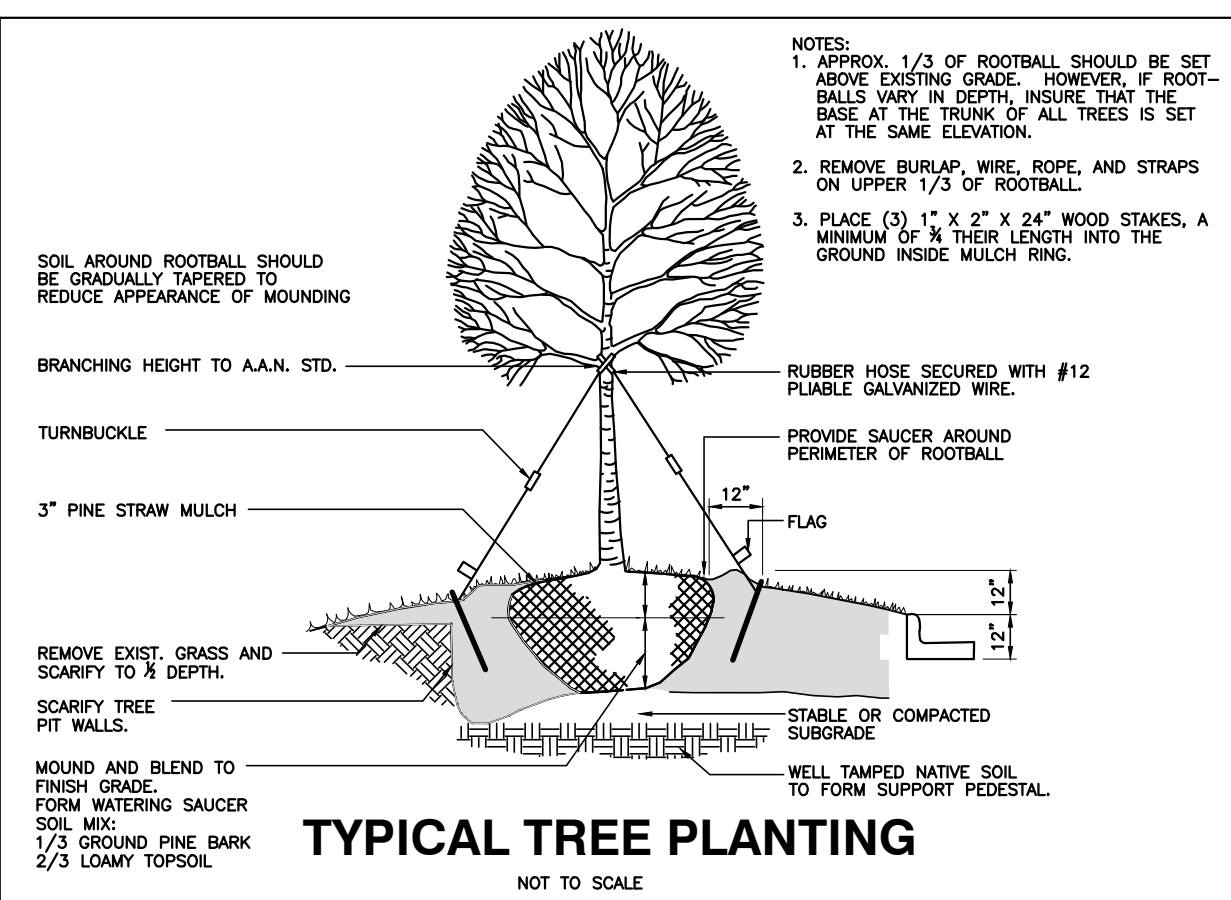
**NORTH (2) - 187 LF = 4 TREES / 100 LF = 8 TREES REQUIRED/PROVIDED
 = 40 SHRUBS / 100 LF = 75 SHRUBS REQUIRED/PROVIDED
 = 187 LF MIN. 6' TALL FENCE REQUIRED**

**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

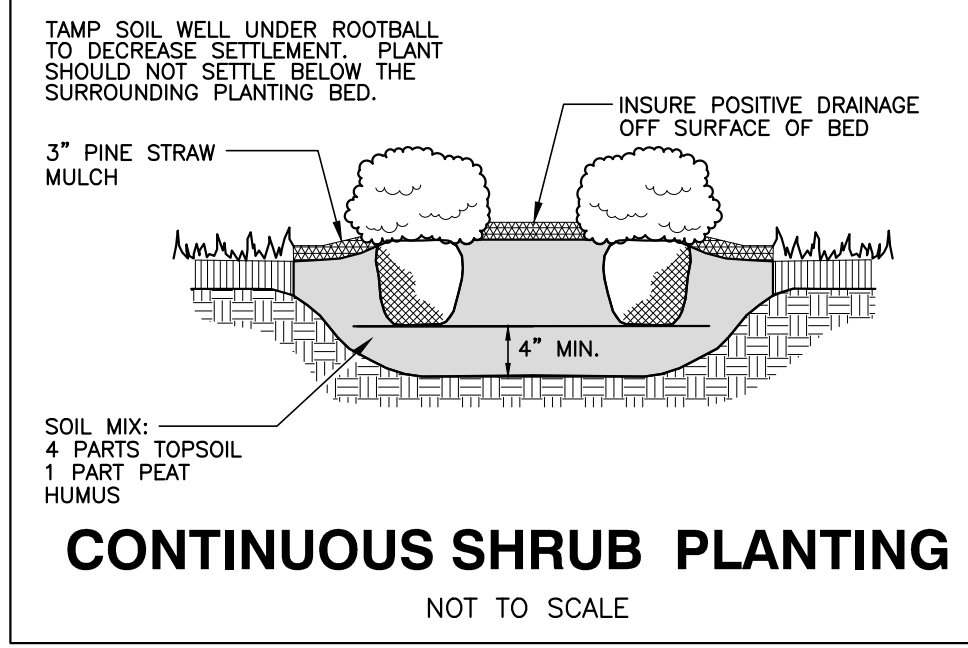


PLANTING NOTES:
 LOCATE PLANTS AND PLANTING BEDS BY USING SCALED DIMENSIONS FROM STREET, PROPERTY LINES, BACK OF CURB, BUILDINGS, WALLS, ETC. ALL PLANTS SHALL MEET OR EXCEED THE MINIMUM STANDARDS SET BY THE U.S.D.A. FOR NURSERY STOCK. SPONSORED BY THE AMERICAN ASSOCIATION OF NURSERMEN, WASHINGTON, D.C. 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. = CENTER

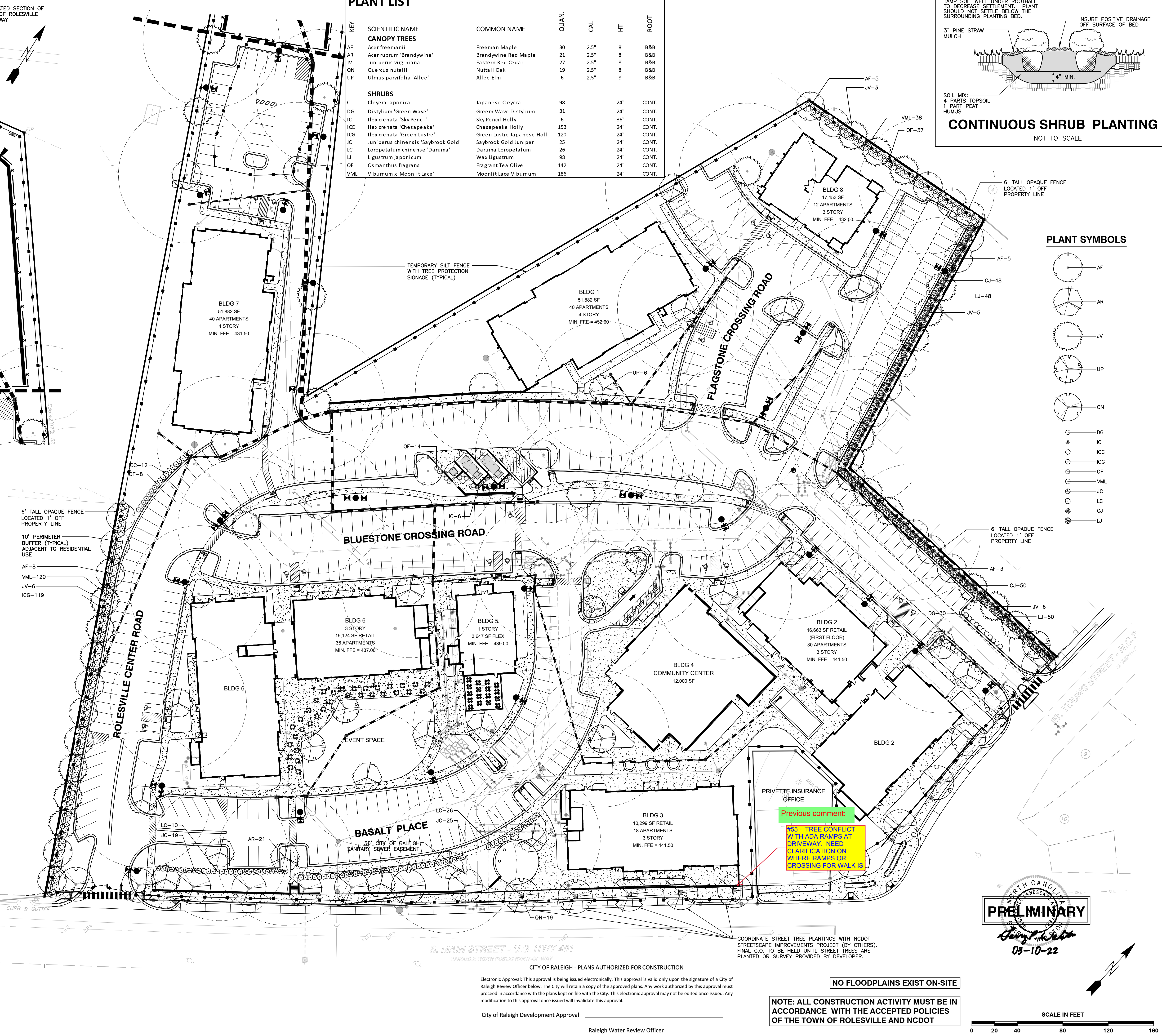
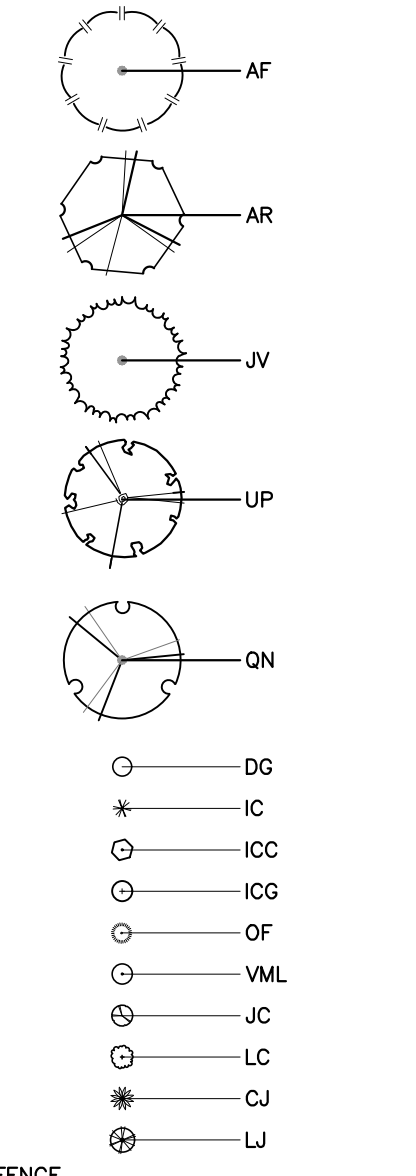
STREET TREE PLANTINGS TO BE COORDINATED IN CONCURRENCE WITH NCDOT STREETScape IMPROVEMENT PROJECT ALONG S. MAIN AND YOUNG STREET(S).

PLANT LIST

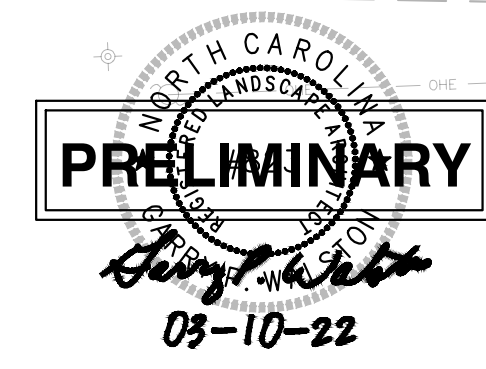
KEY	SCIENTIFIC NAME	COMMON NAME	QUAN.	CAL	HT	ROOT
CANOPY TREES						
AF	Acer freemanii	Freeman Maple	30	2.5"	8'	B&B
AR	Acer rubrum 'Brandywine'	Brandywine Red Maple	21	2.5"	8'	B&B
JV	Juniperus virginiana	Eastern Red Cedar	27	2.5"	8'	B&B
QN	Quercus nuttallii	Nuttall Oak	19	2.5"	8'	B&B
UP	Ulmus parvifolia 'Allee'	Allee Elm	6	2.5"	8'	B&B
SHRUBS						
CJ	Cleyera japonica	Japanese Cleyera	98		24"	CONT.
DG	Distylium 'Green Wave'	Green Wave Distylium	31		24"	CONT.
IC	Ilex crenata 'Sky Pencil'	Sky Pencil Holly	6		36"	CONT.
ICC	Ilex crenata 'Chesapeake'	Chesapeake Holly	153		24"	CONT.
ICG	Ilex crenata 'Green Lustre'	Green Lustre Japanese Holly	120		24"	CONT.
JC	Juniperus chinensis 'Savbrook Gold'	Savbrook Gold Juniper	25		24"	CONT.
LC	Loropetalum chinense 'Daruma'	Daruma Loropetalum	26		24"	CONT.
LJ	Ligustrum japonicum	Wax Ligustrum	98		24"	CONT.
OF	Osmanthus fragrans	Fragrant Tea Olive	142		24"	CONT.
VML	Viburnum x 'Moonlit Lace'	Moonlit Lace Viburnum	186		24"	CONT.



PLANT SYMBOLS



Previous comment:
 #55 - TREE CONFLICT WITH ADA RAMPS AT DRIVEWAY. NEED CLARIFICATION ON WHERE RAMPS OR CROSSING FOR WALK IS.

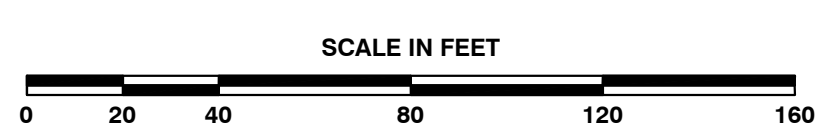


COORDINATE STREET TREE PLANTINGS WITH NCDOT STREETScape IMPROVEMENTS PROJECT (BY OTHERS). FINAL C.O. TO BE HELD UNTIL STREET TREES ARE PLANTED OR SURVEY PROVIDED BY DEVELOPER.

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NO FLOODPLAINS EXIST ON-SITE

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CONSULTING ENGINEERS
 6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919)881-1122 FAX: (919)881-8686
 CERTIFICATION NUMBERS: NCBELS (C-011); NCBOLA (C-0267)

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

LANDSCAPE PLAN

03-19157 JOB NO. 03-19157 LAK 03-10-22 DATE
 PROGRESS DRAWN BY CHECKED BY: GPW

NO. DATE DESCRIPTION BY

REVISIONS

SHEET **L1.1**

TOWN OF ROLESVILLE PROJECT NO. _____

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

Outdoor Lighting
Shoobox LED



The energy-efficient Shoobox 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 Shoobox 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 or call us toll free at 866.769.6417.

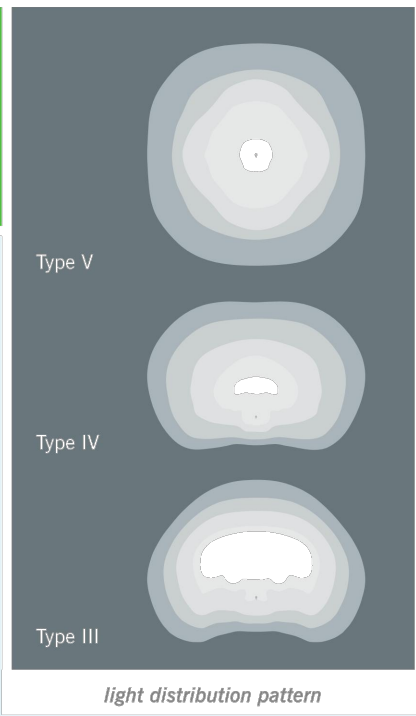


Outdoor Lighting
Shoobox LED

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
LED 150	B3-U0-G4	IESNA Type IV (forward throw)	18459	
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	

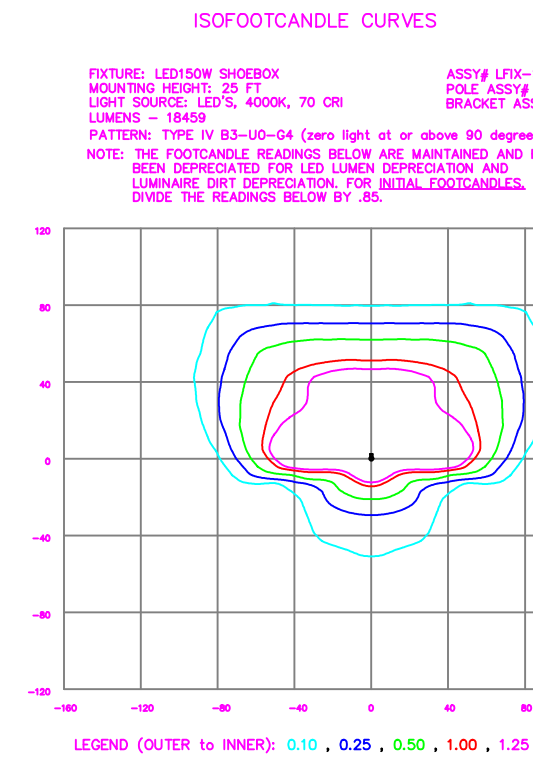
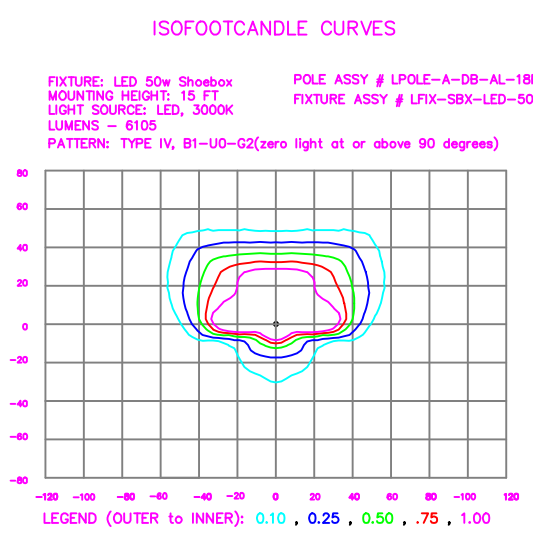
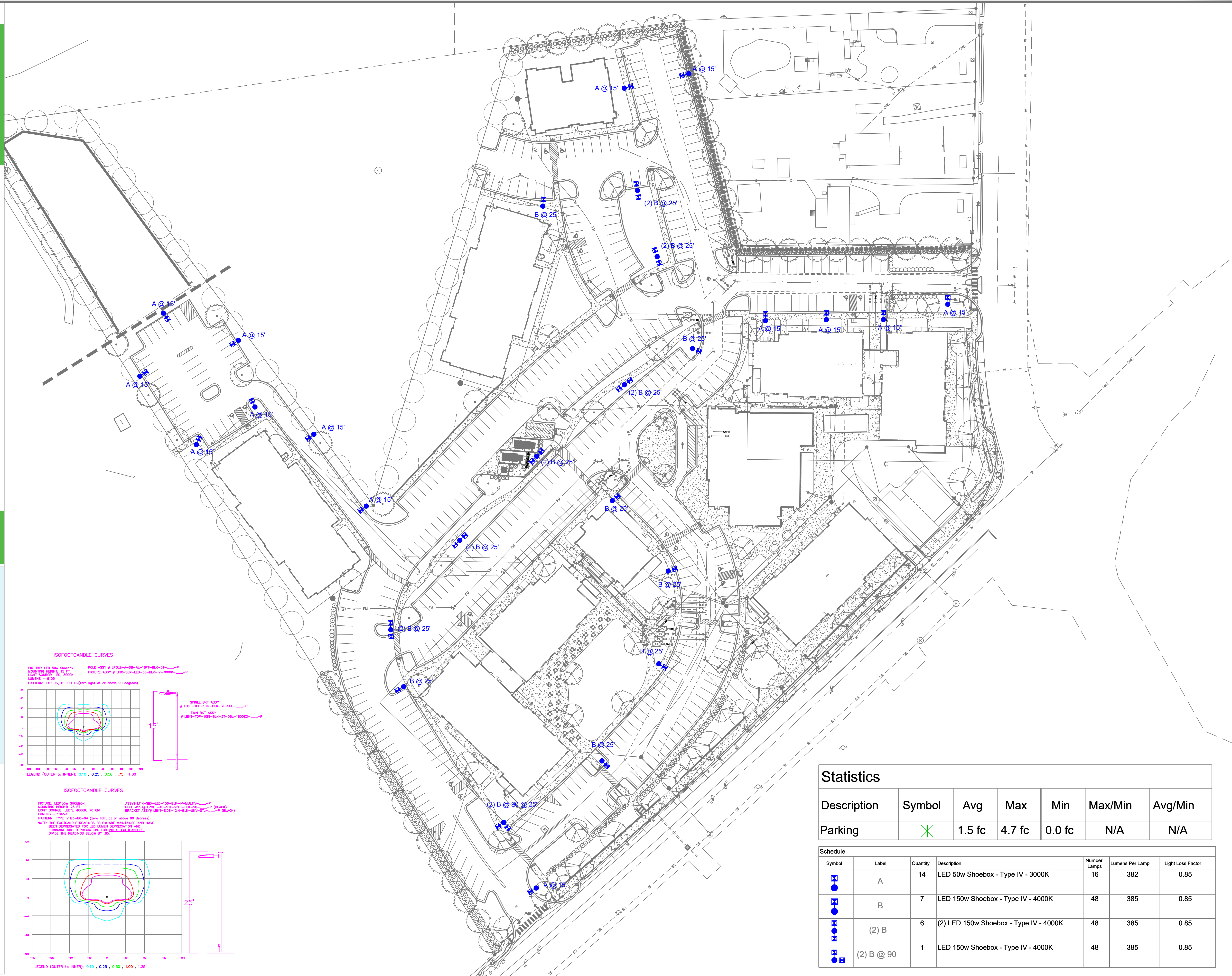


Poles available:

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

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

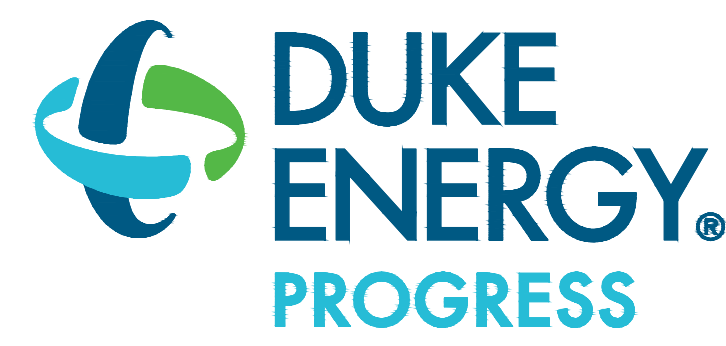
Schedule

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

Customer approval _____
Date _____

DISTANCE CALIBRATION (INCHES)
0 0.5 1.0 2.0 3.0 4.0

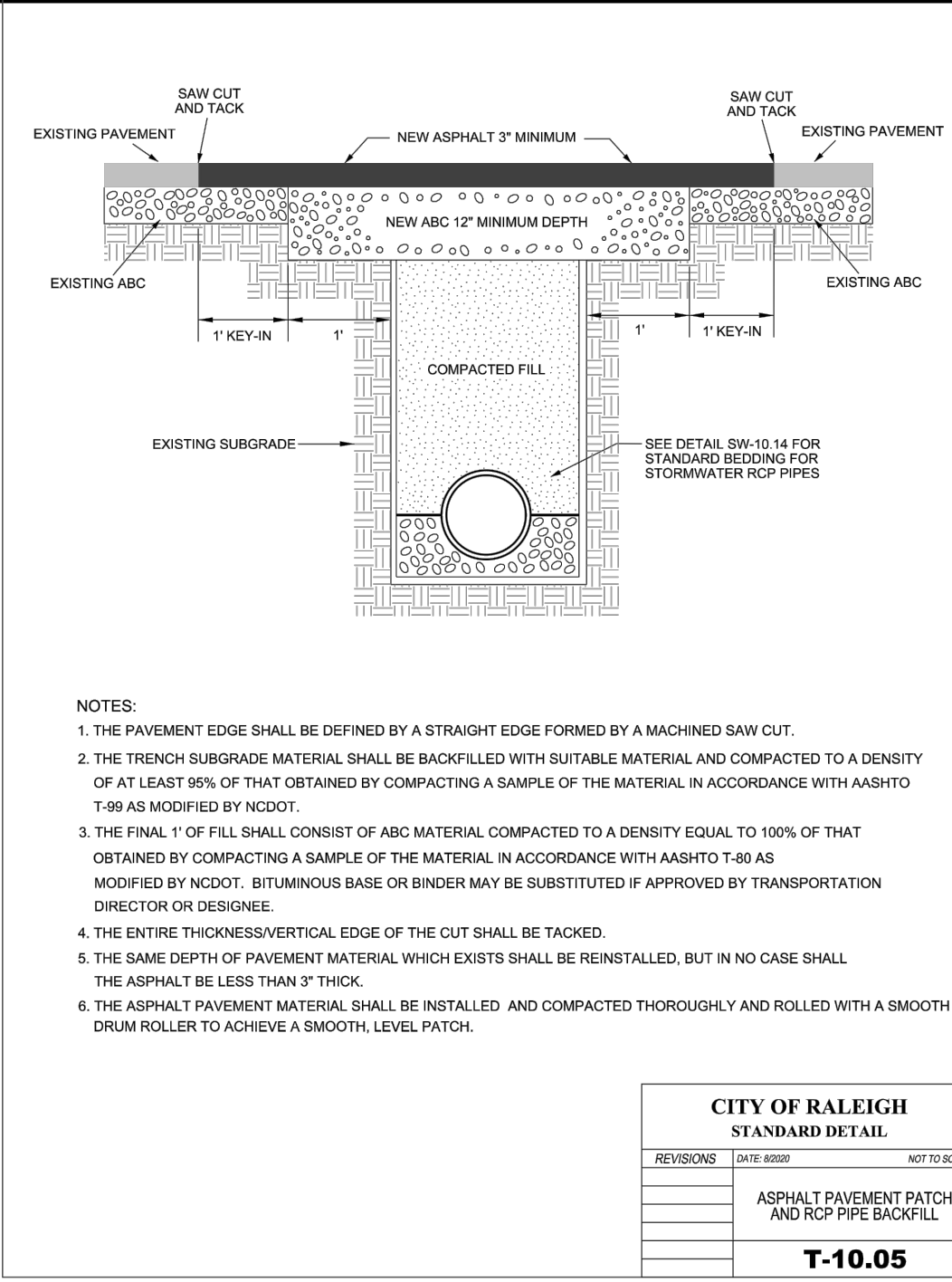
LIGHTING DESIGN TOLERANCE
The calculated footcandle light levels on this lighting design are predicted values and are based on specific information that has been supplied to Duke Energy. Any inaccuracies in the supplied information, differences in luminaire installation, lighted area geometry including 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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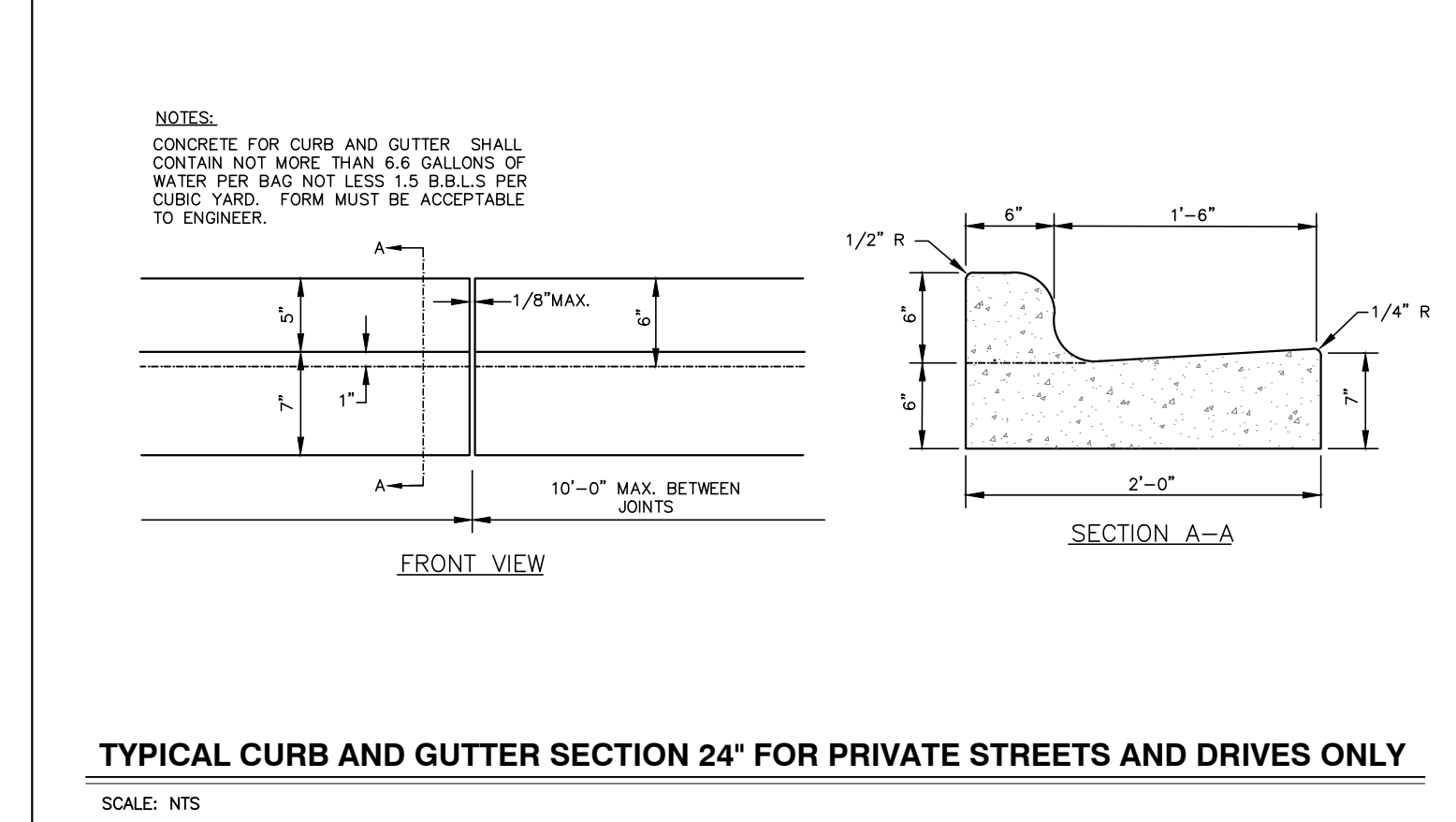
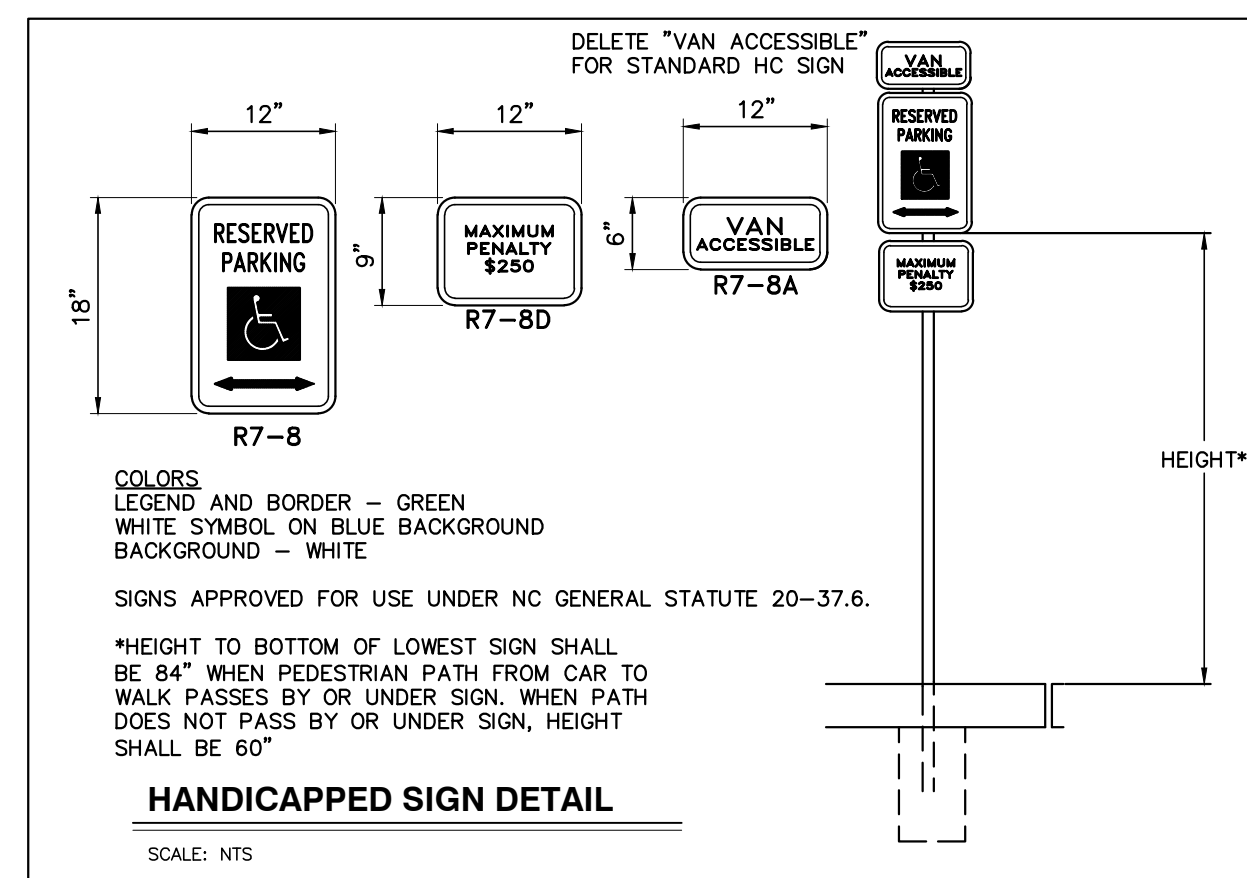
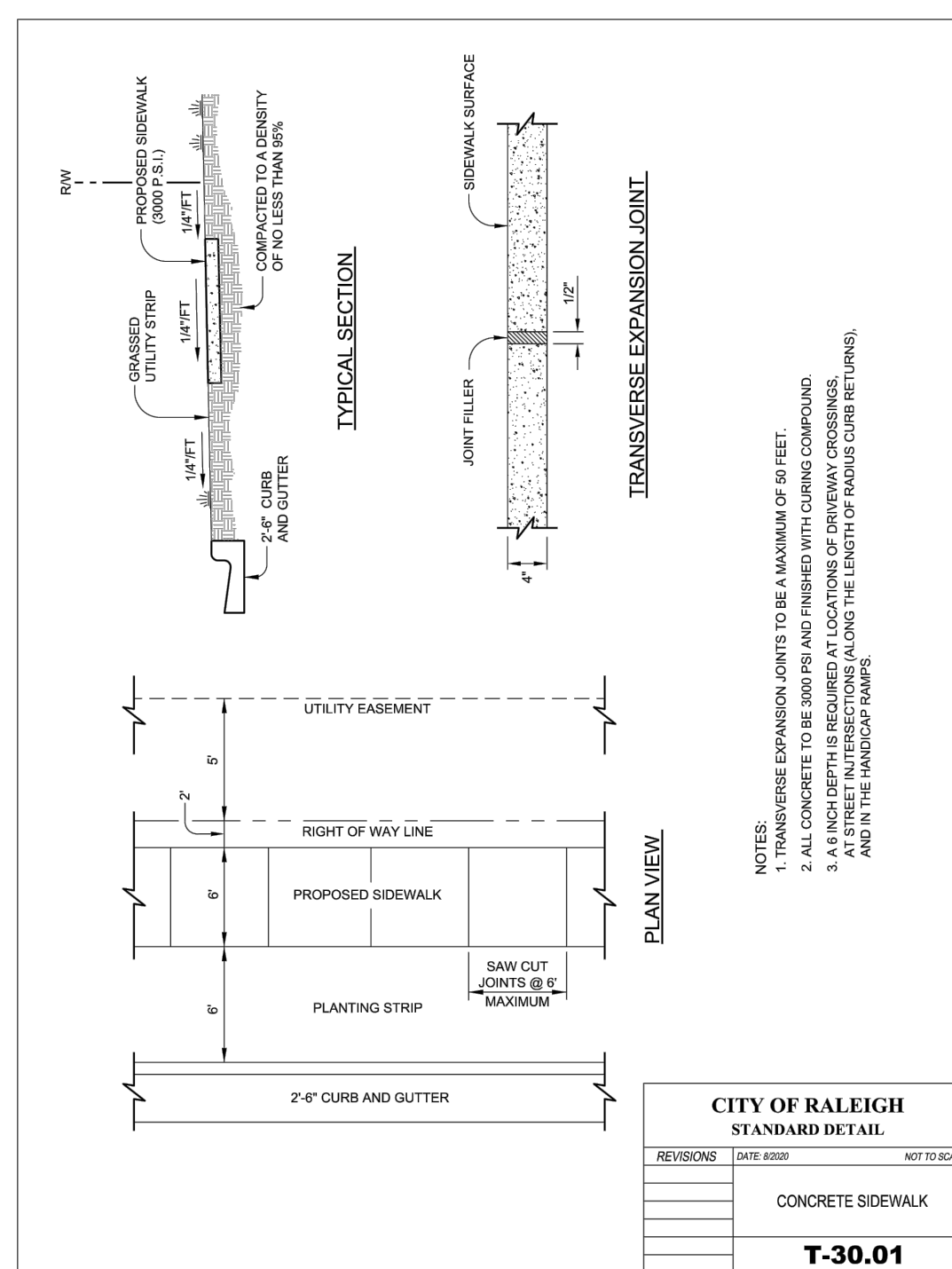
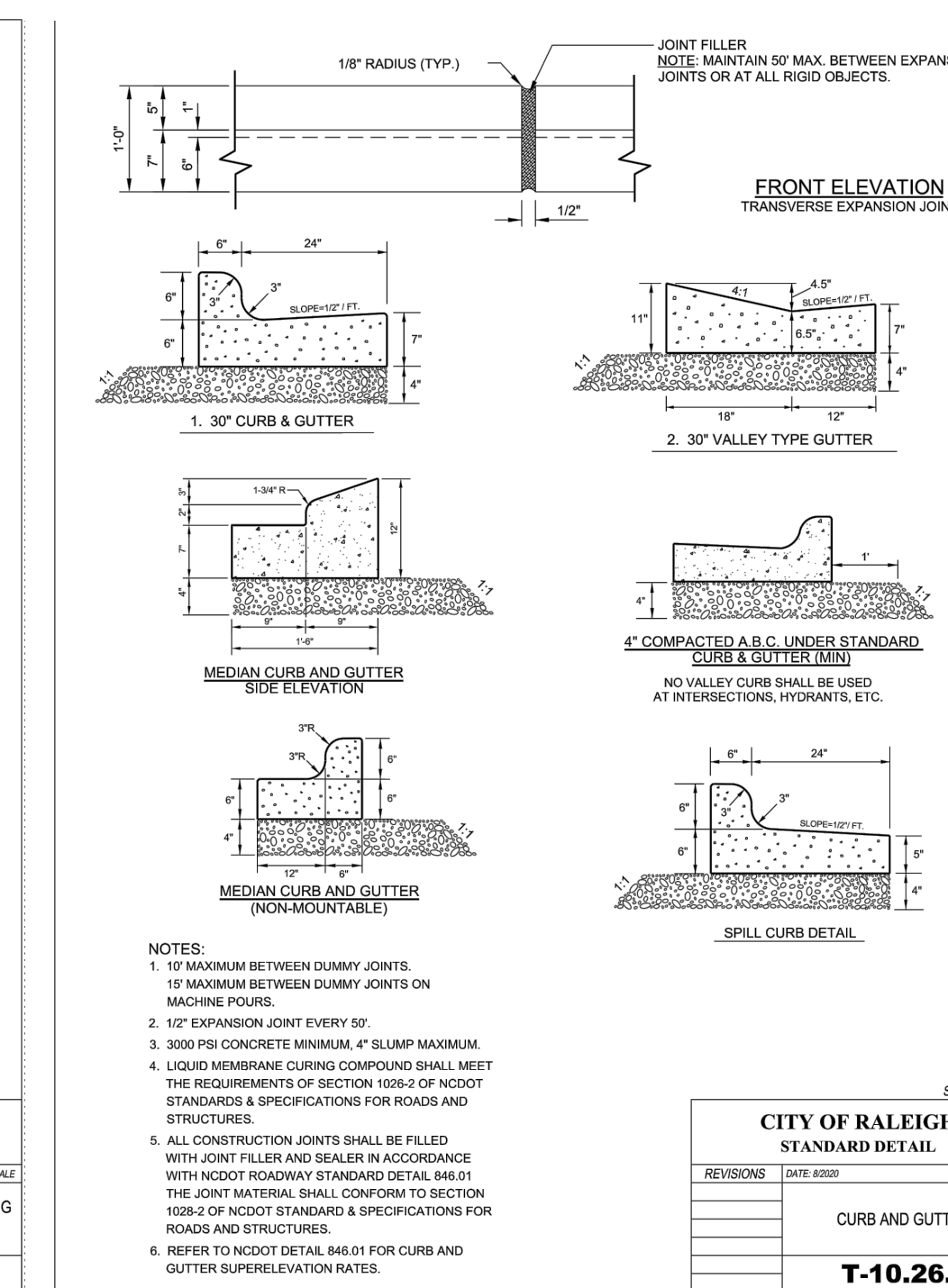
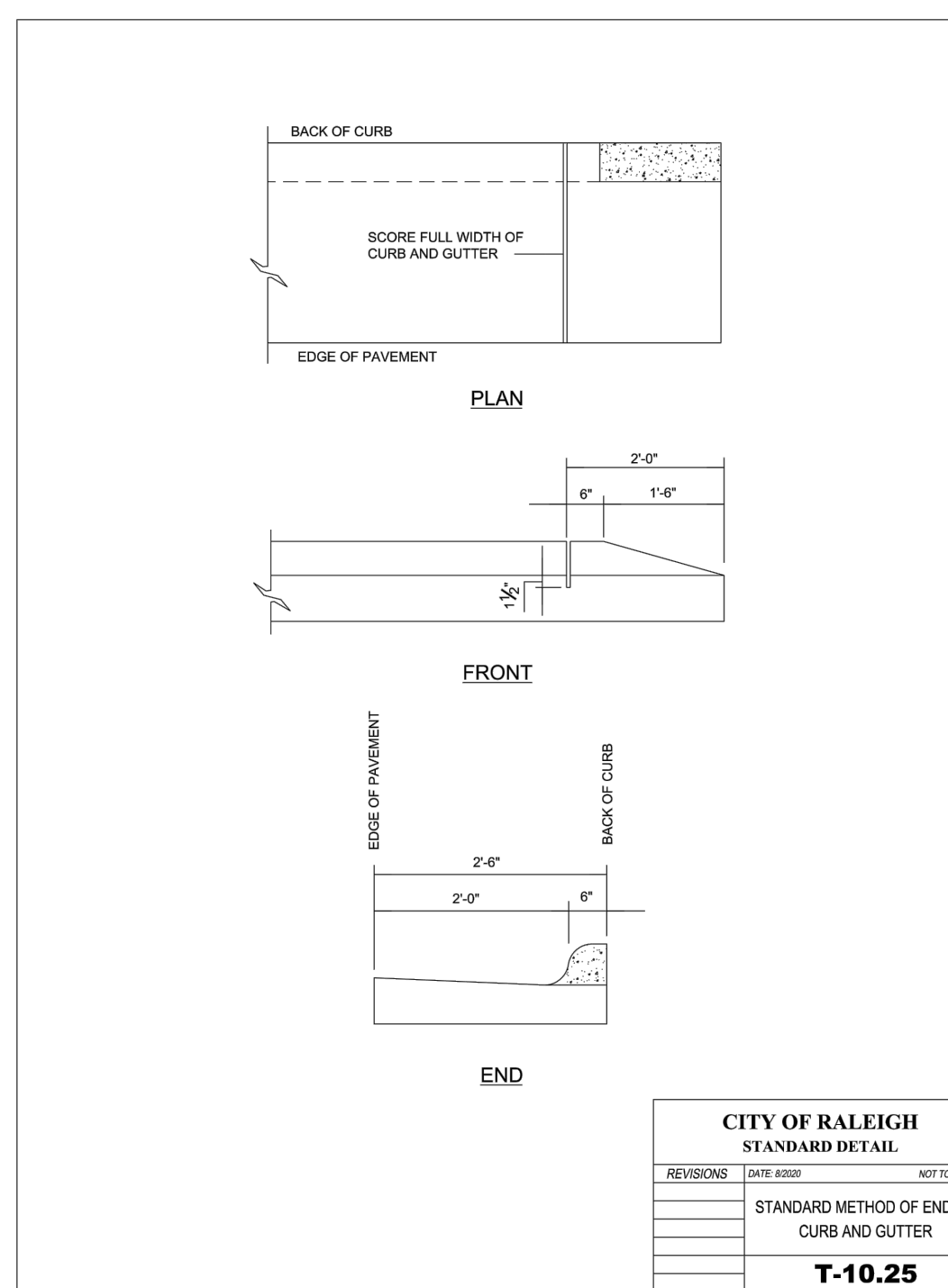
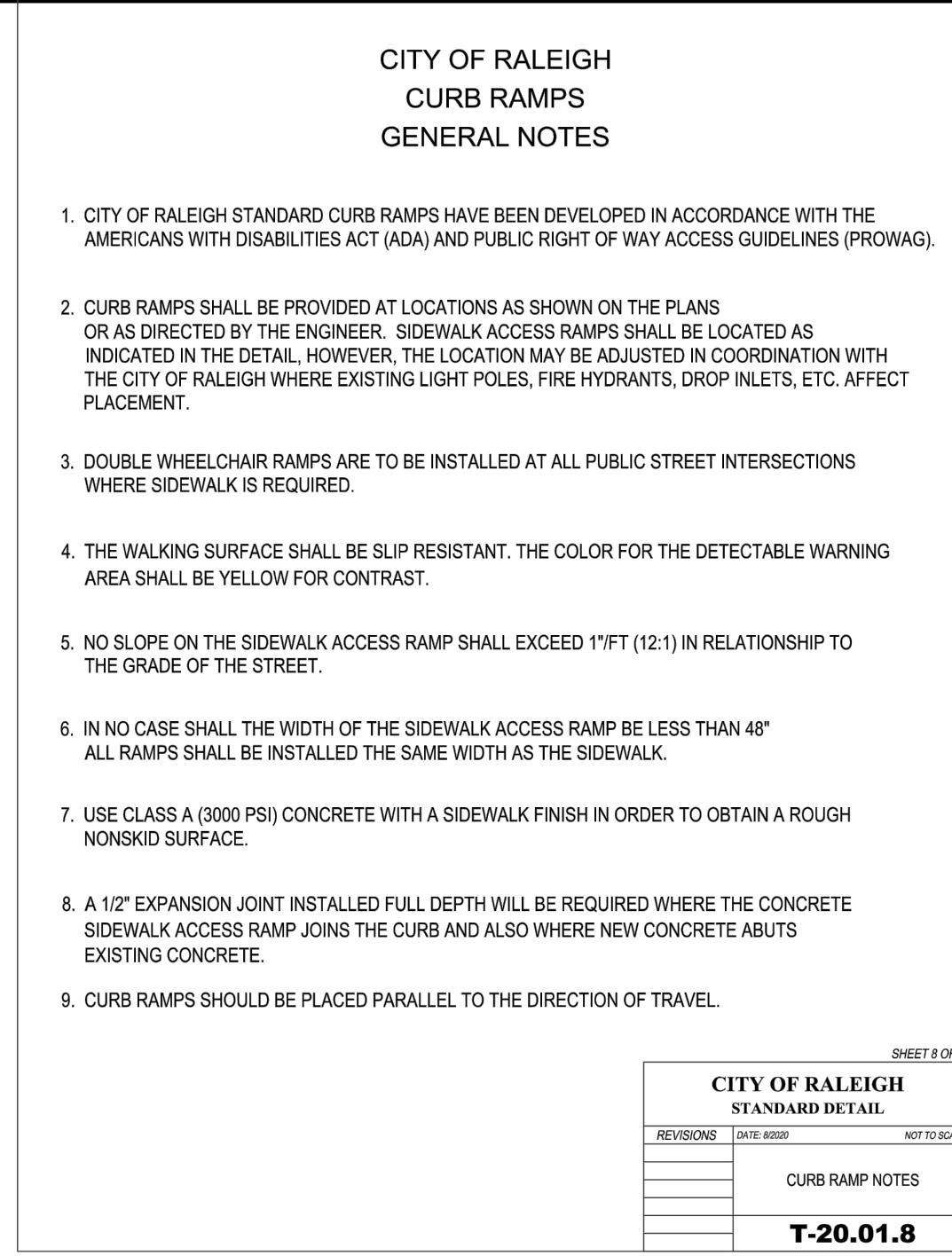
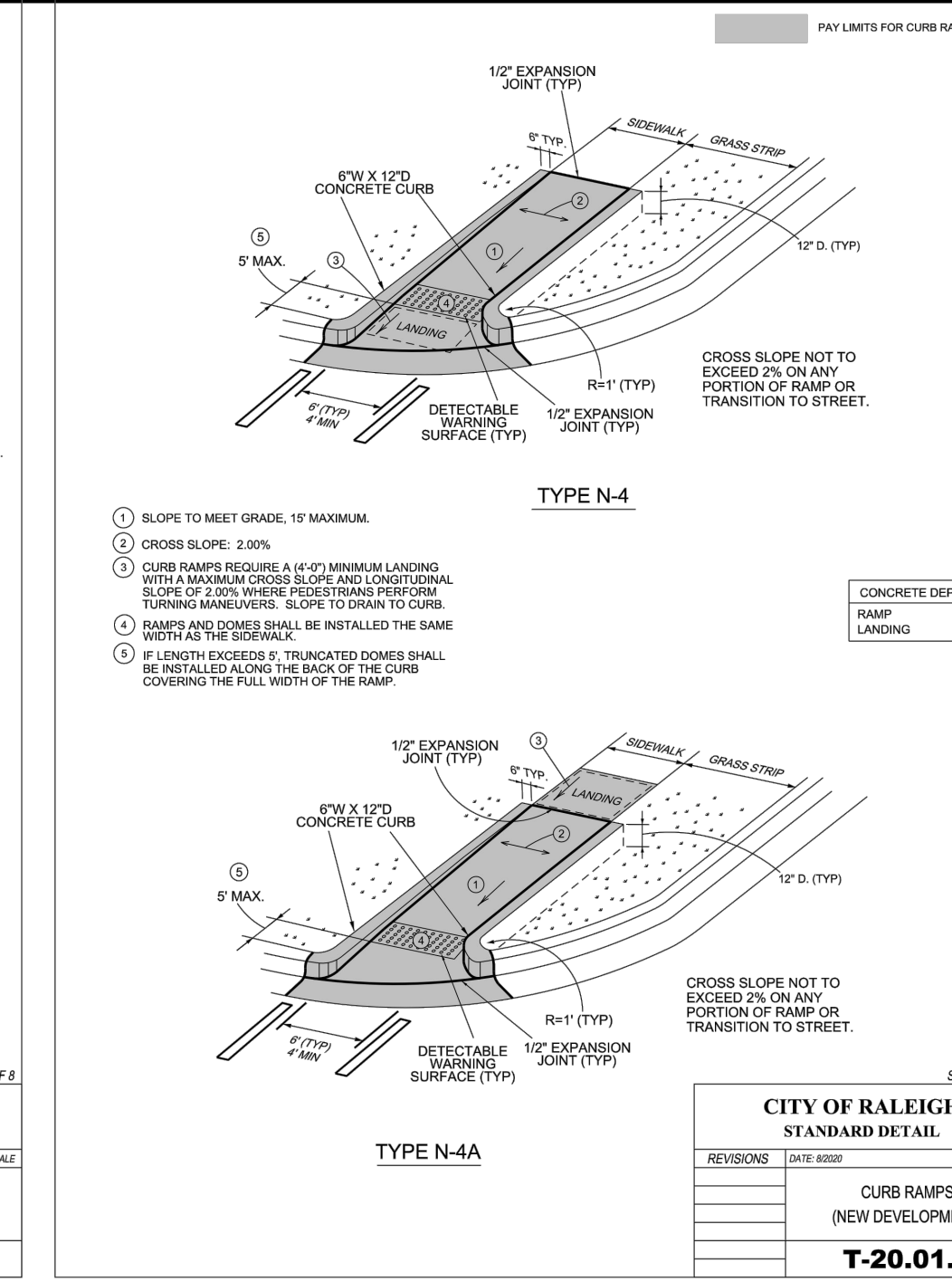
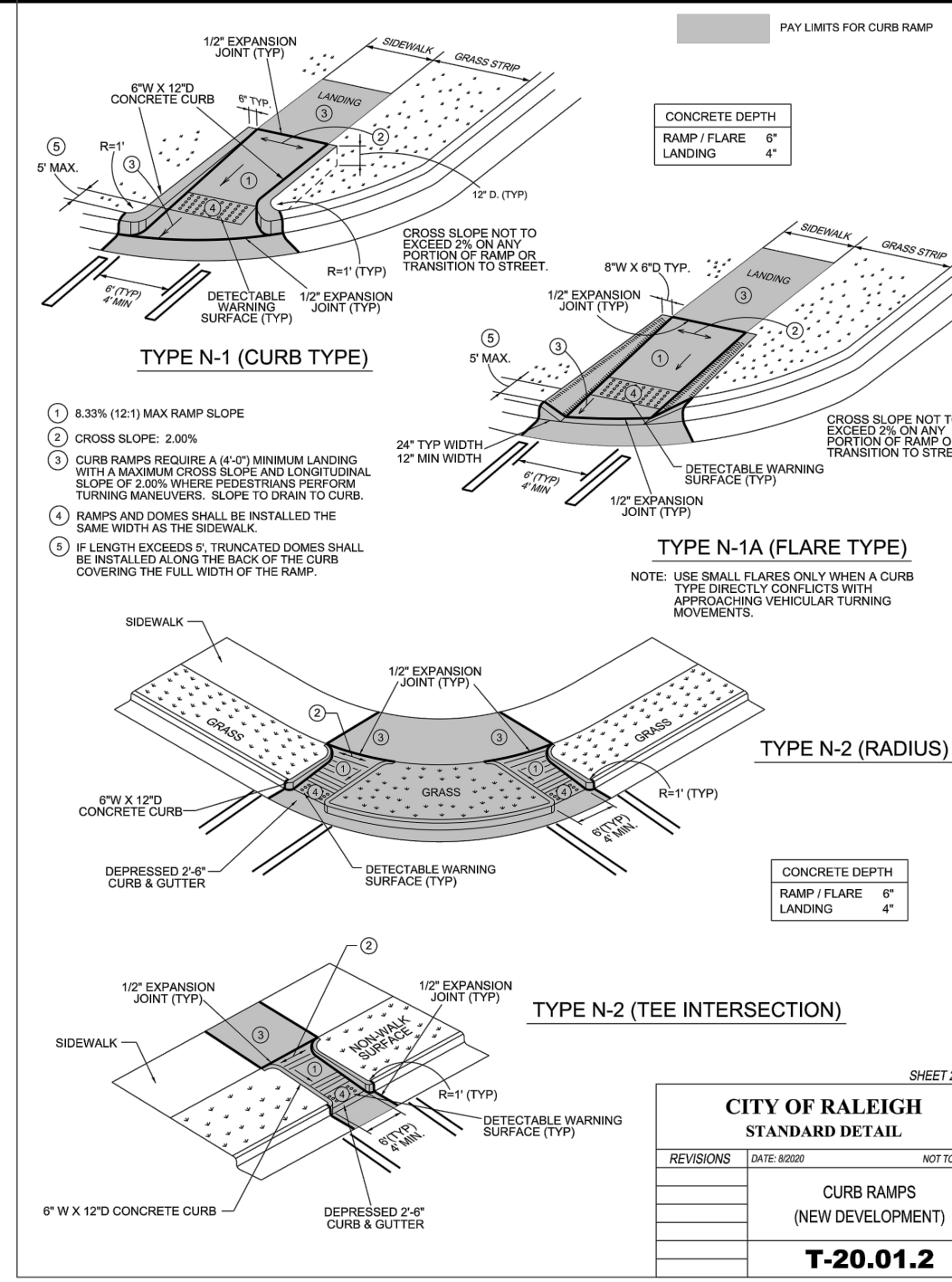
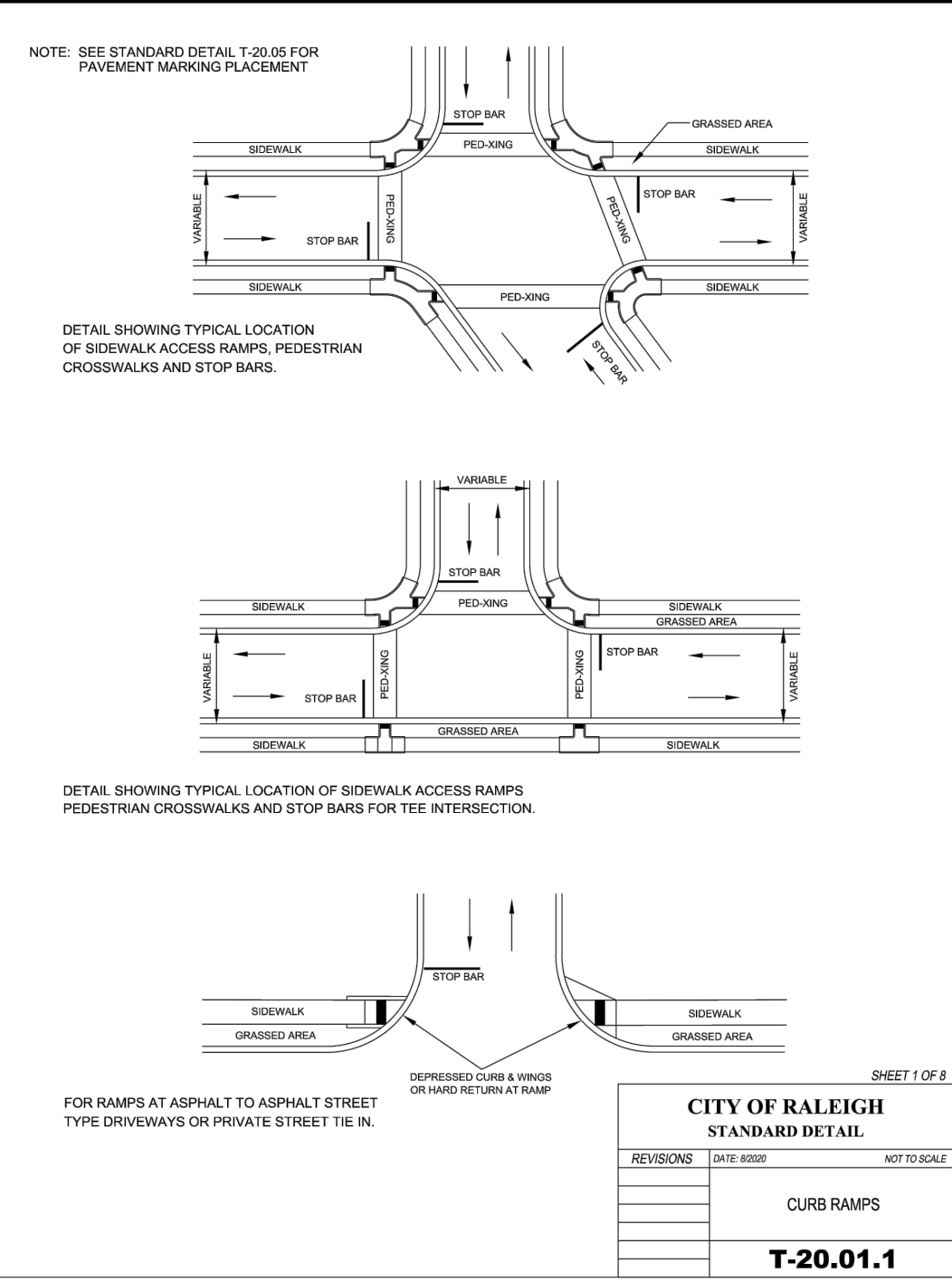
COBBLESTONE VILLAGE
Rosesville, NC
SITE LIGHTING PLAN
Designed by DEP LIGHTING SOLUTIONS
Reviewed by T. Ferguson Scale 1" = 50'
Date 02/14/2022 Size "Arch D"
Description LED Shoobox
Drawing No. 22-0047A Sht. 1 OF 1

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



Previous comment:

#56- WILL NEED NCDOT DETAILS ALONG THE ROW - STORM DRAINAGE (MUST MEET ALL NCDOT STANDARDS AND DETAILS) - SITE WORK (SIDEWALK/ADA RAMPS/CURBS/ETC. ALL THAT ARE TO BE USED)



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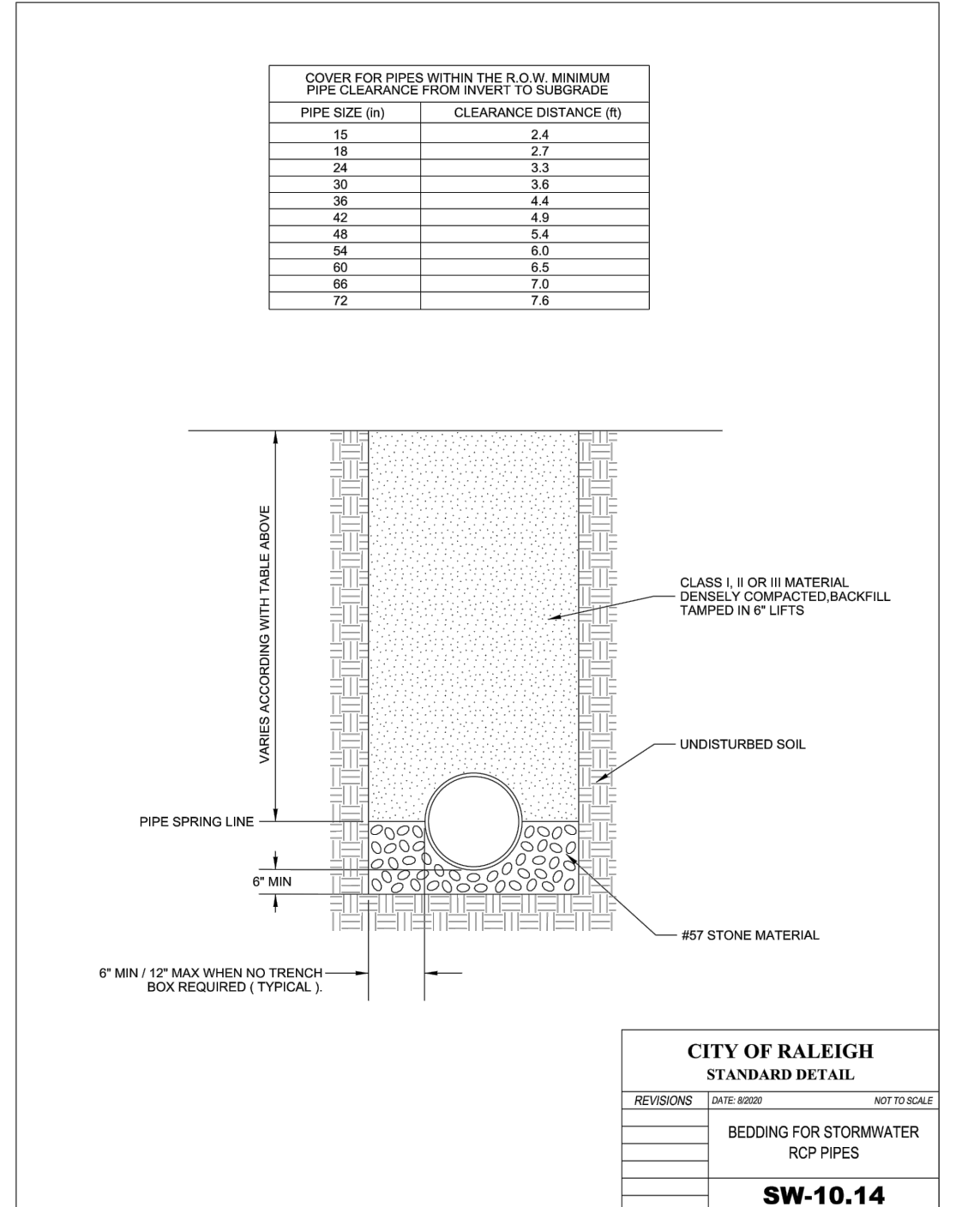
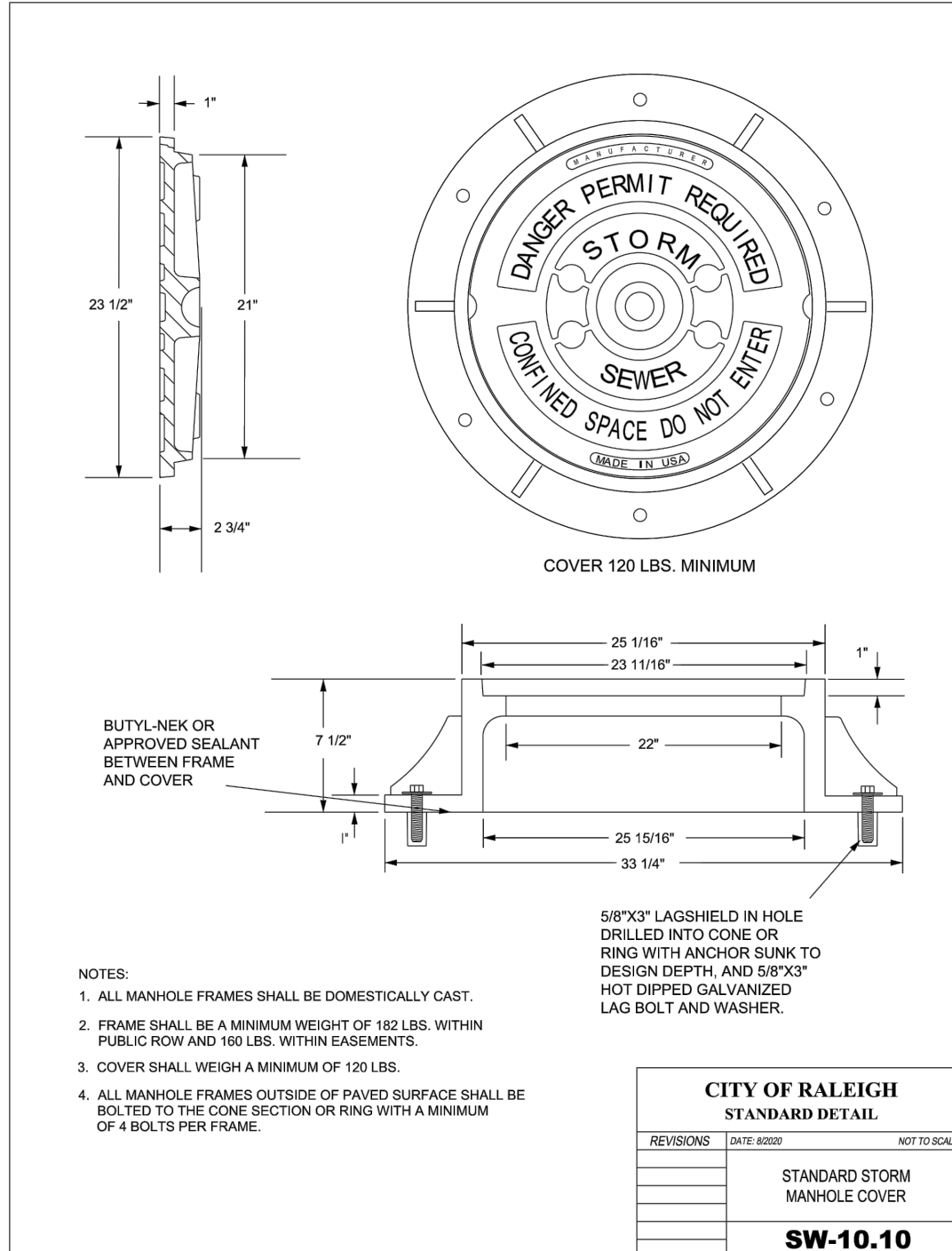
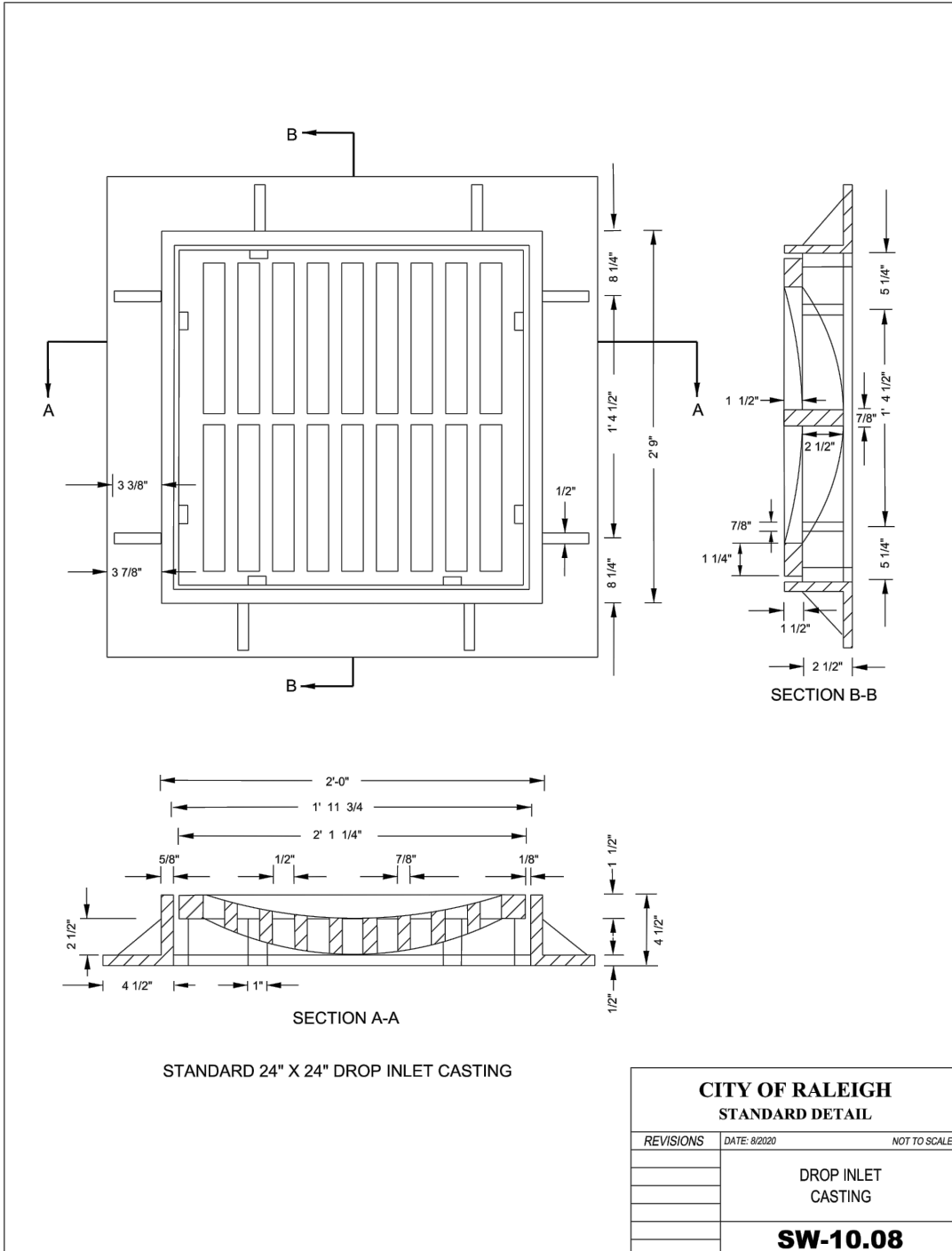
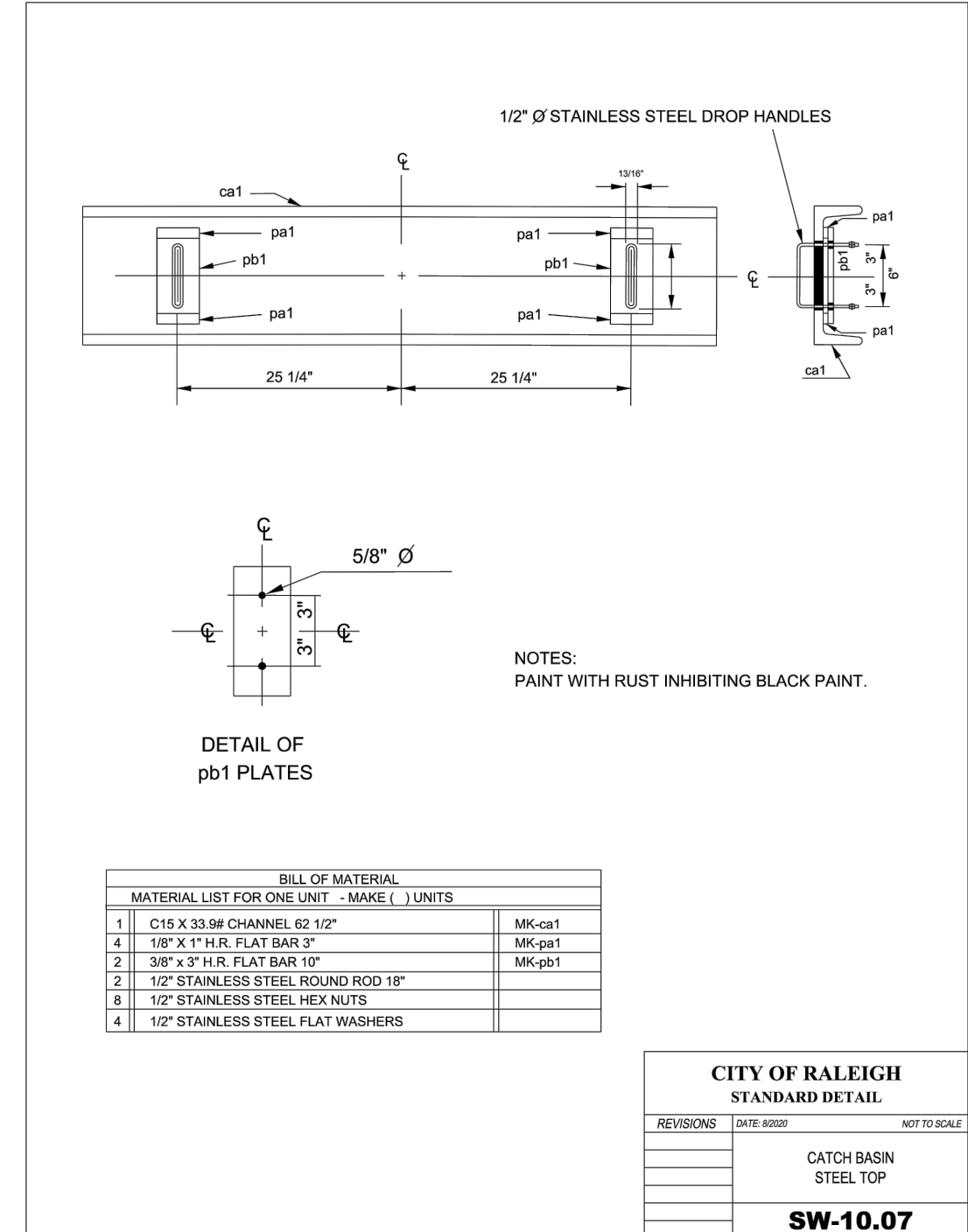
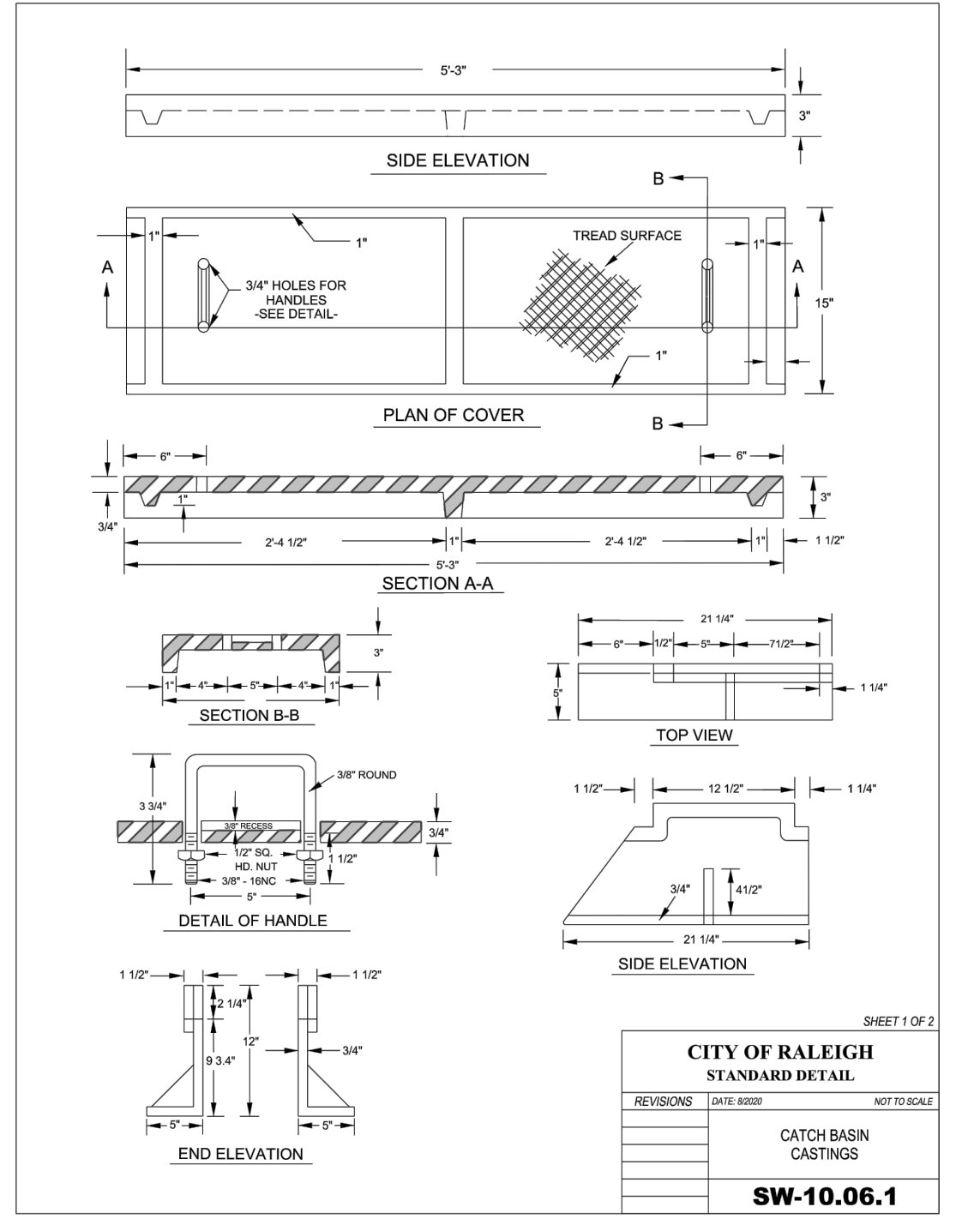
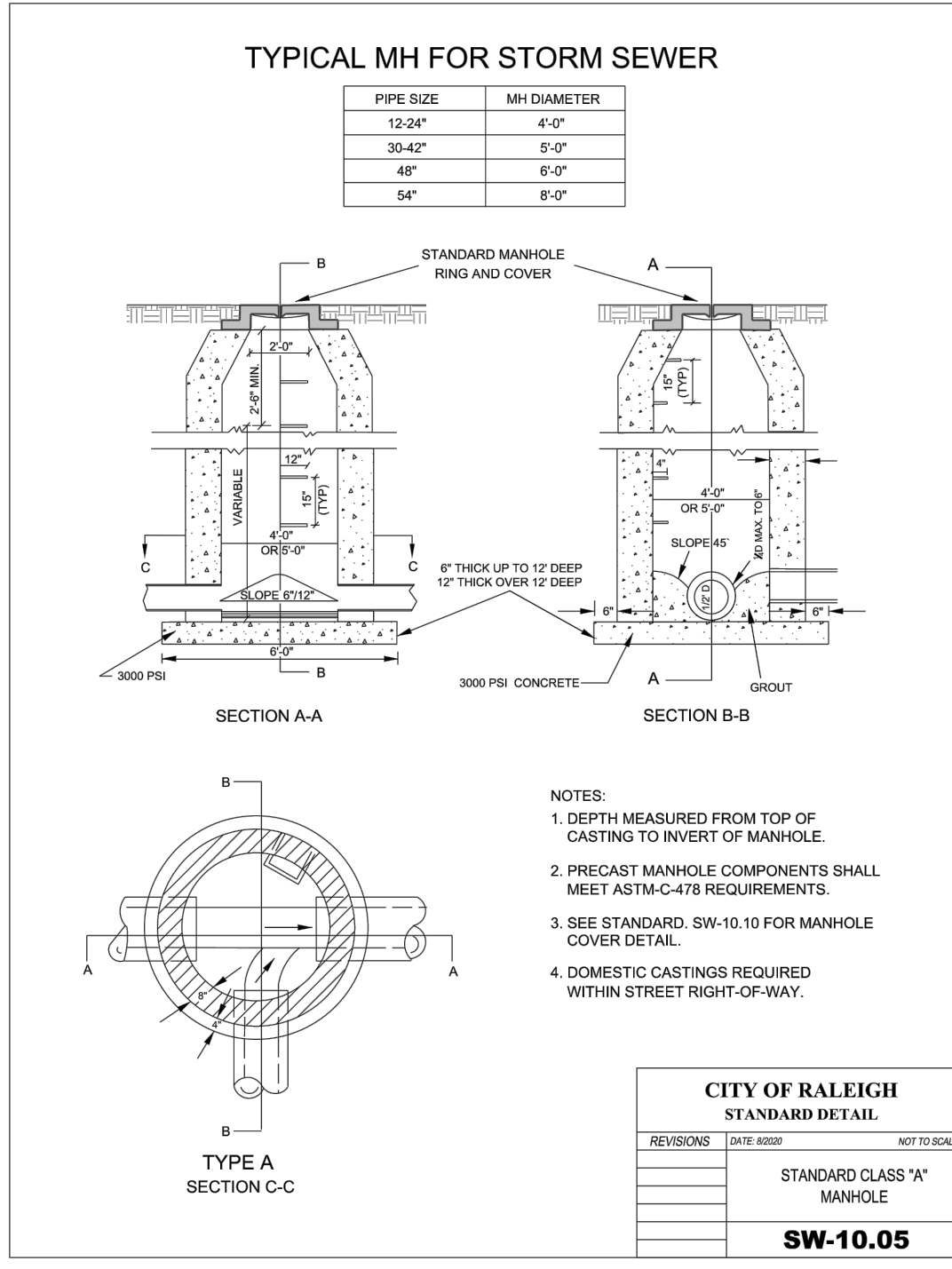
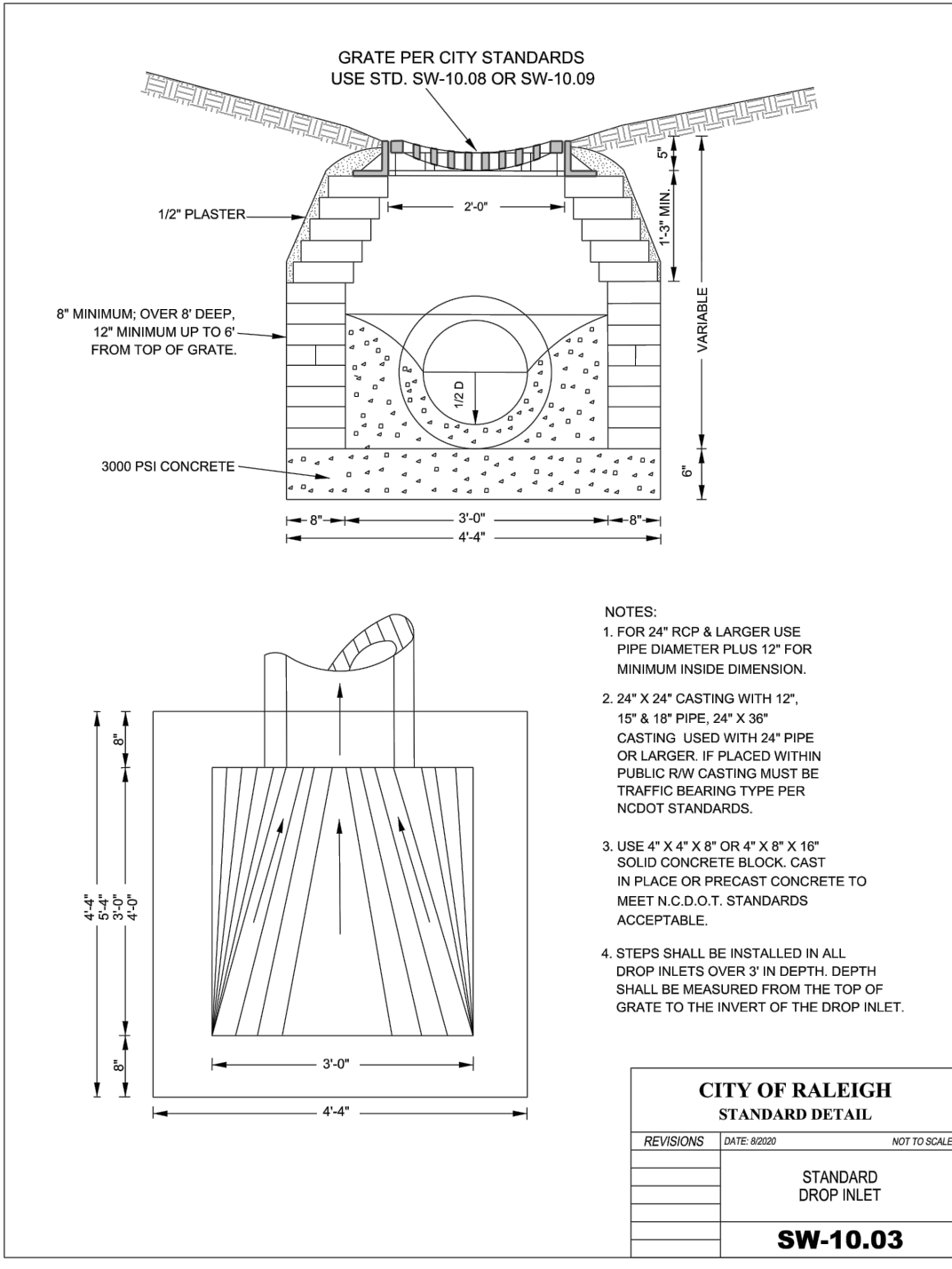
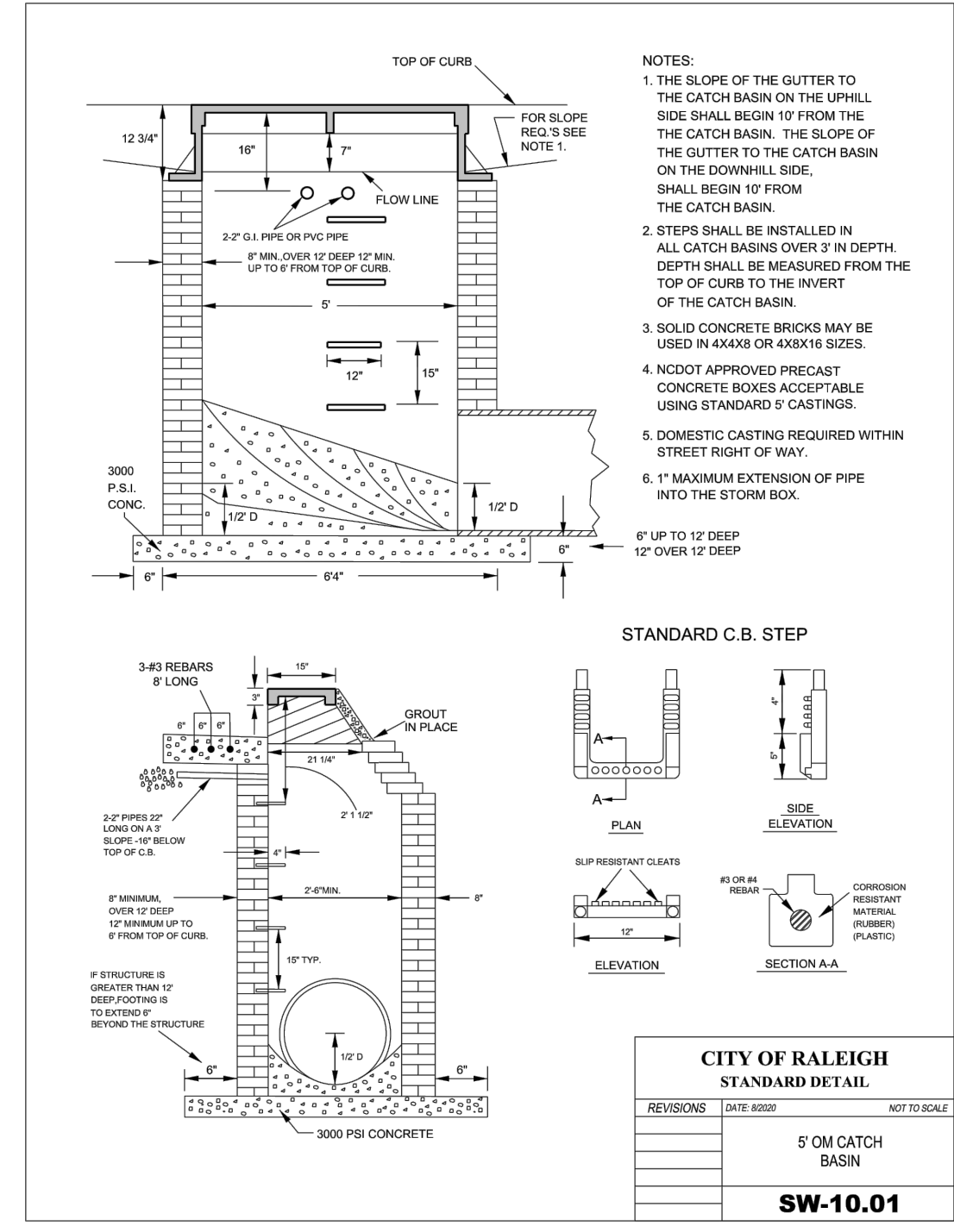
NO.	DATE	DESCRIPTION	BY

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

SHEET C5.1



3/10/22



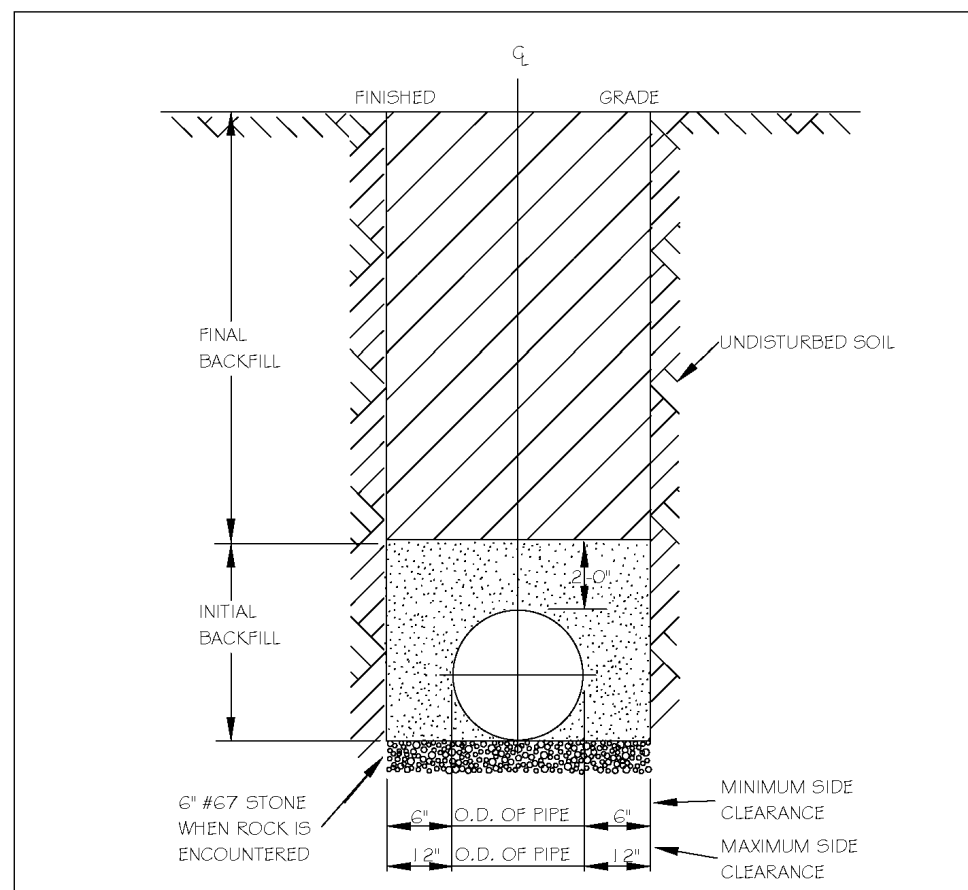
Previous comment:
 #56 - NEED NCDOT DETAILS
 - STORM DRAINAGE (MUST MEET ALL NCDOT STANDARDS AND DETAILS)
 - SITE WORK (SIDEWALK/ADA RAMPS/CURBS/ETC. ALL THAT ARE TO BE USED)
 - PROVIDE HDPE PIPE BACKFILE DETAIL (AREAS OUTSIDE THE INFLUENCE OF PAVEMENT)

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



3/10/22

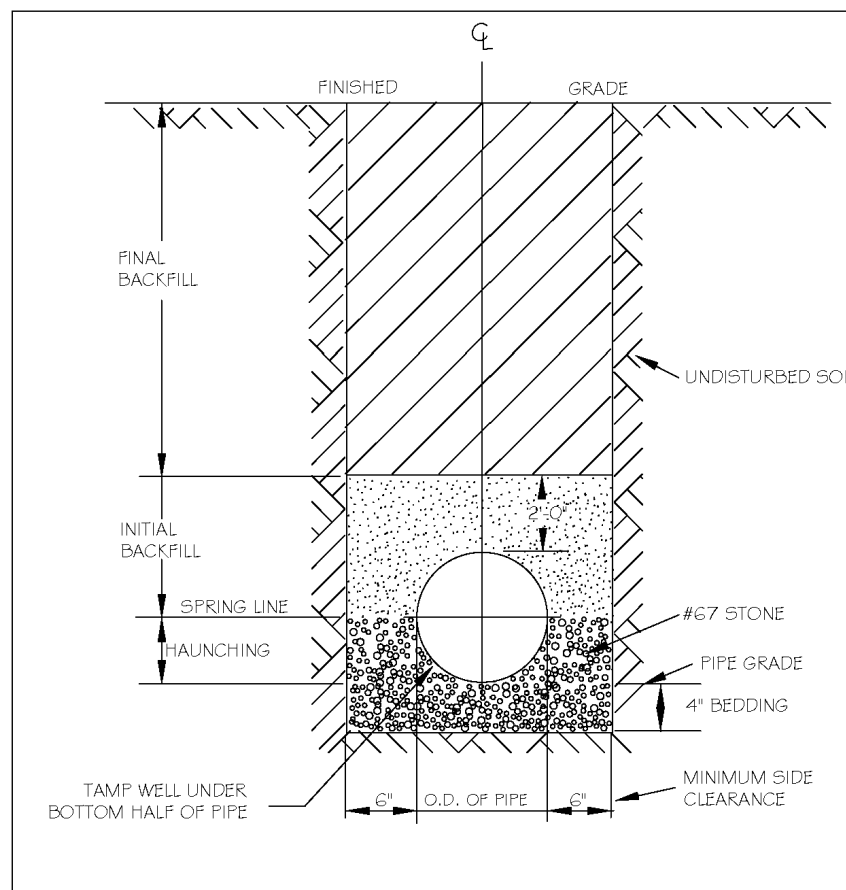
NO.	DATE	DESCRIPTION	BY



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 INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
5. ACHIEVE 90% COMPACTION IN NON-TRAFFIC AREAS, AND 95% COMPACTION IN TRAFFIC AREAS.
6. IF IN BASEMENT AT TOPSOIL, AND 1" CLEAN GRIEST FILL MAY BE REQUIRED.
7. NO BouldERS 6" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON

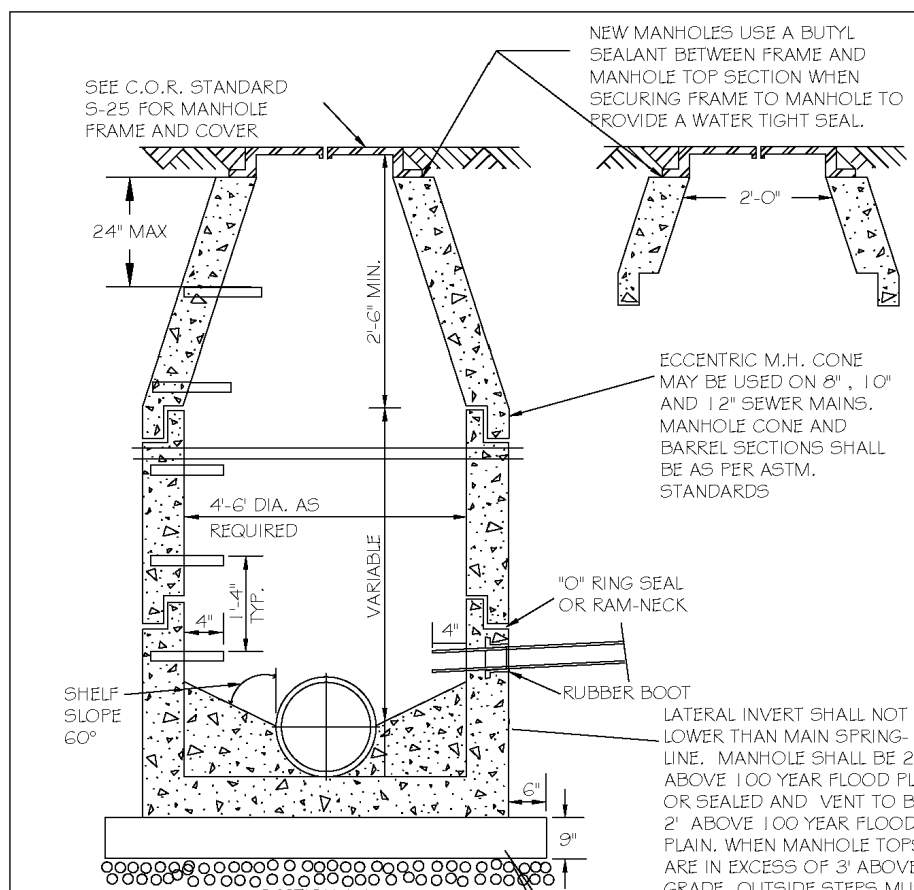
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-4	KRT	3-23-00		



NOTES:
1. FOR 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 INITIAL BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN

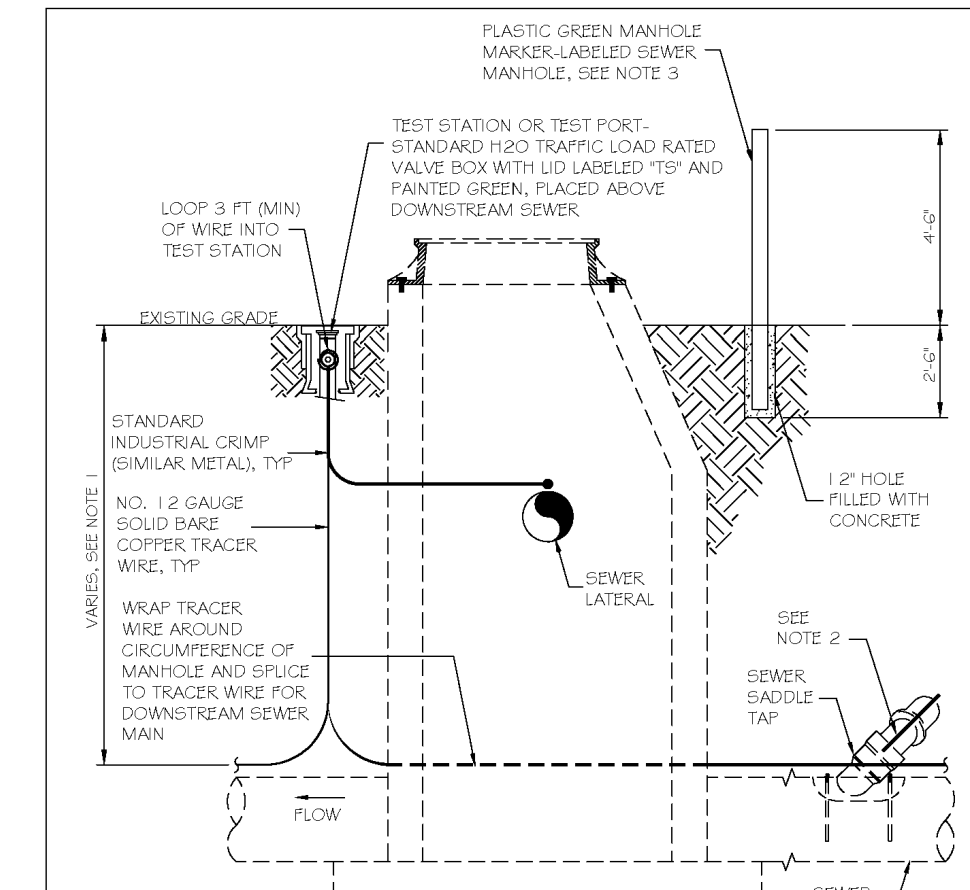
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-5	KRT	7-2-02		



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT, THE TRACER WIRE SHALL BE ATTACHED TO THE PIPE TRACER WIRE SHALL BE ADDED AND SECURELY ATTACHED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACER WIRE SHALL BE INSTALLED AT A DEPTH OF 7.5 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE COURSE OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SAIDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SAIDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD PRECAST SANITARY SEWER MANHOLE

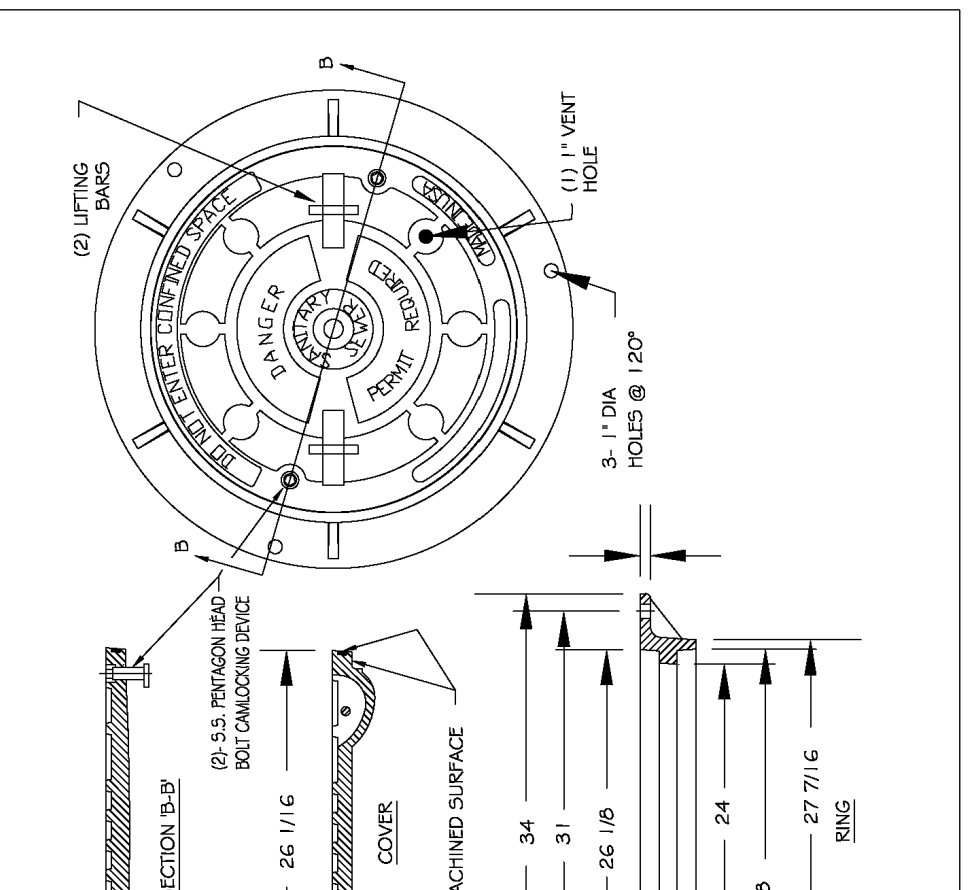
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20	T.C.A.	12-31-02	AKB	2-21-05
	KRT	3-30-00	DTL	6-14-08



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT, THE TRACER WIRE SHALL BE ATTACHED TO THE PIPE TRACER WIRE SHALL BE ADDED AND SECURELY ATTACHED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACER WIRE SHALL BE INSTALLED AT A DEPTH OF 7.5 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE COURSE OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SAIDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SAIDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER

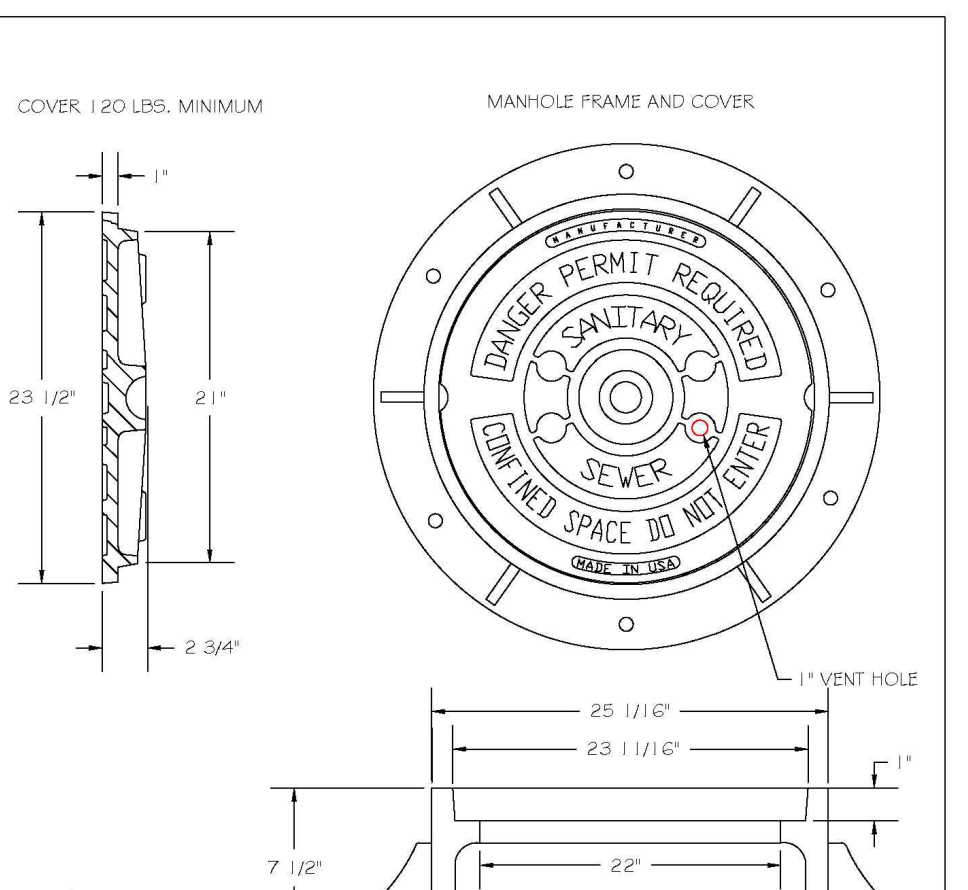
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20A	WJE	09-11		



NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 120 LBS. WITHIN PUBLIC ROW AND 140 LBS. WITHIN EASEMENTS.
3. COVER SHALL BE A MIN. OF 120 LBS. HOT DIPPED GALVANIZED LAGO BOOT AND WASHER.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE SET TO THE CORNER SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES FLAT TOP MANHOLE COVER

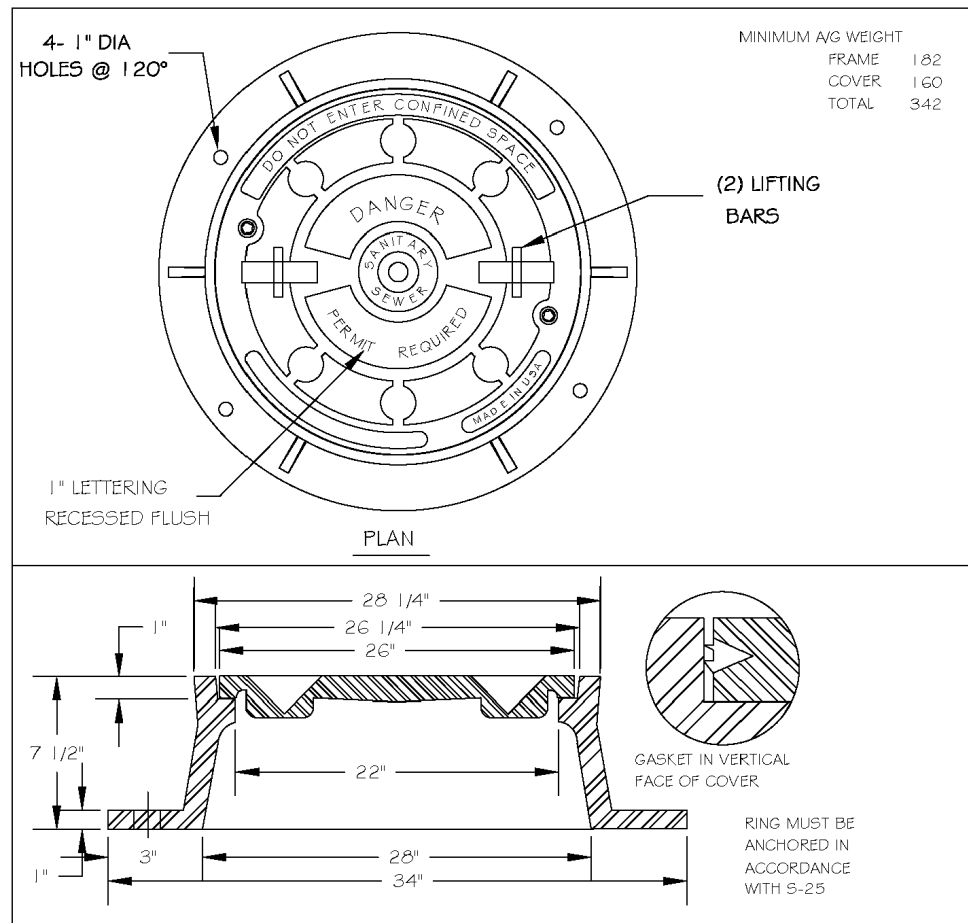
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-25.01	KRT	3-1-07	A.B.B.	2-9-05
	KRT	3-30-00	D.H.L.	6-18-08



NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 120 LBS. WITHIN PUBLIC ROW AND 140 LBS. WITHIN EASEMENTS.
3. COVER SHALL BE A MIN. OF 120 LBS. HOT DIPPED GALVANIZED LAGO BOOT AND WASHER.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE SET TO THE CORNER SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD MANHOLE COVER

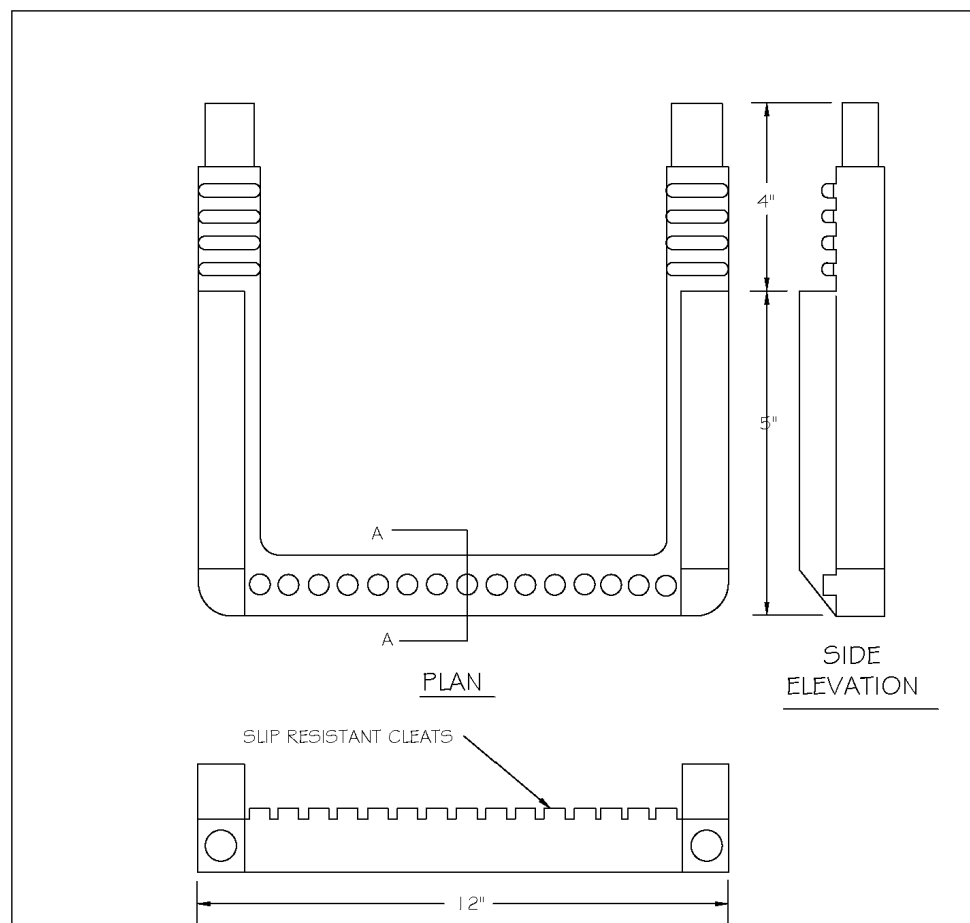
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-25	KRT	3-1-07	A.B.B.	2-9-05
	KRT	3-30-00	D.H.L.	6-18-08



NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 120 LBS. WITHIN PUBLIC ROW AND 140 LBS. WITHIN EASEMENTS.
3. COVER SHALL BE A MIN. OF 120 LBS. HOT DIPPED GALVANIZED LAGO BOOT AND WASHER.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE SET TO THE CORNER SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES MANHOLE FRAME AND WATERTIGHT COVER

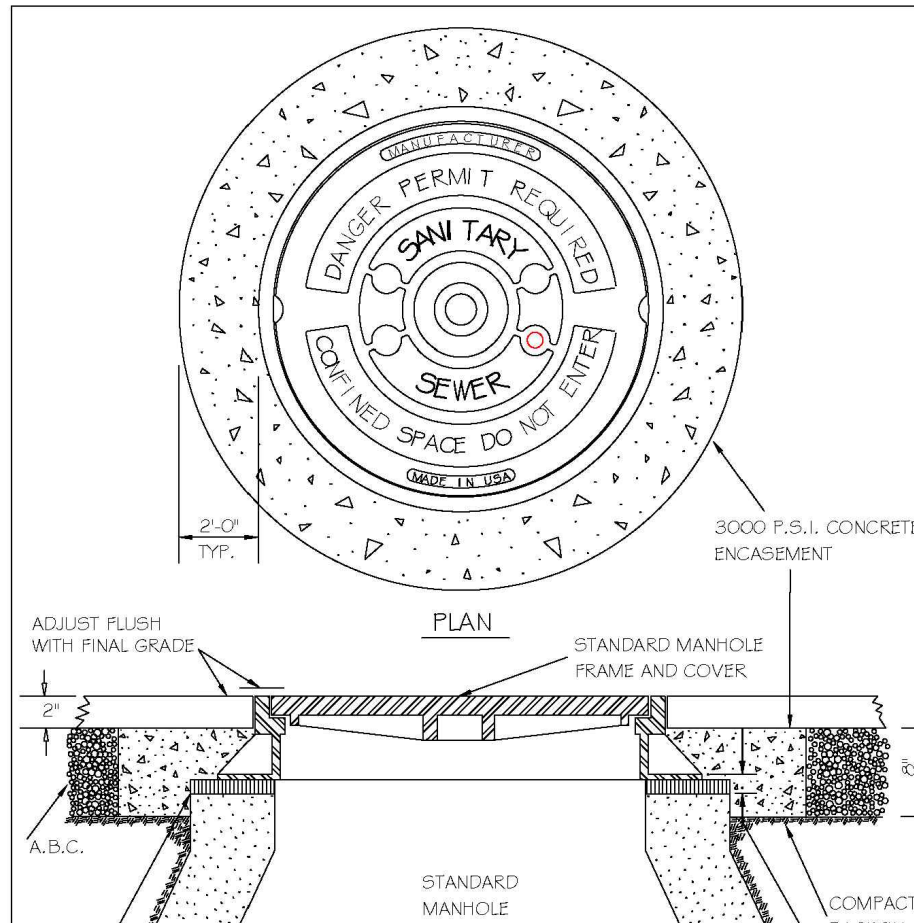
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-26	KRT	3-1-07	AKB	2-23-05
	KRT	3-30-00	DTL	6-18-08



NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 120 LBS. WITHIN PUBLIC ROW AND 140 LBS. WITHIN EASEMENTS.
3. COVER SHALL BE A MIN. OF 120 LBS. HOT DIPPED GALVANIZED LAGO BOOT AND WASHER.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE SET TO THE CORNER SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD SLIP RESISTANT MANHOLE STEP DETAIL

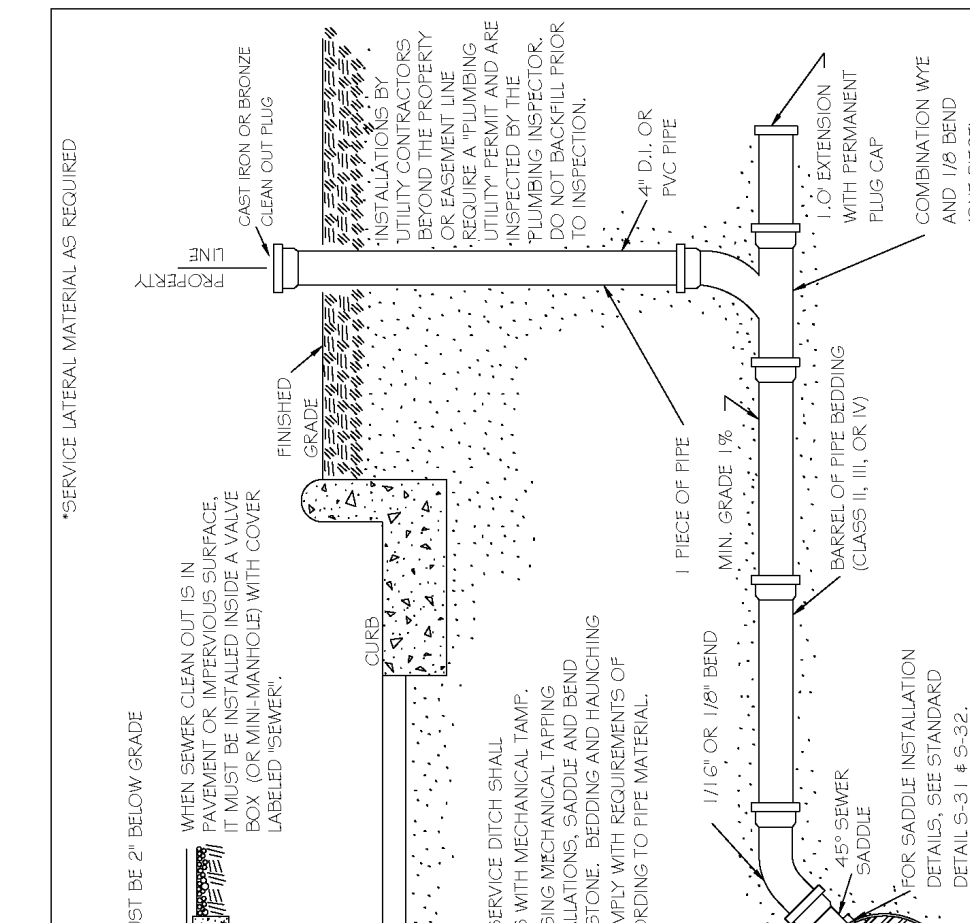
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-28	KRT	3-30-00		



NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 120 LBS. WITHIN PUBLIC ROW AND 140 LBS. WITHIN EASEMENTS.
3. COVER SHALL BE A MIN. OF 120 LBS. HOT DIPPED GALVANIZED LAGO BOOT AND WASHER.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE SET TO THE CORNER SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD MANHOLE FRAME AND COVER DETAIL WITHIN PAVED SURFACES

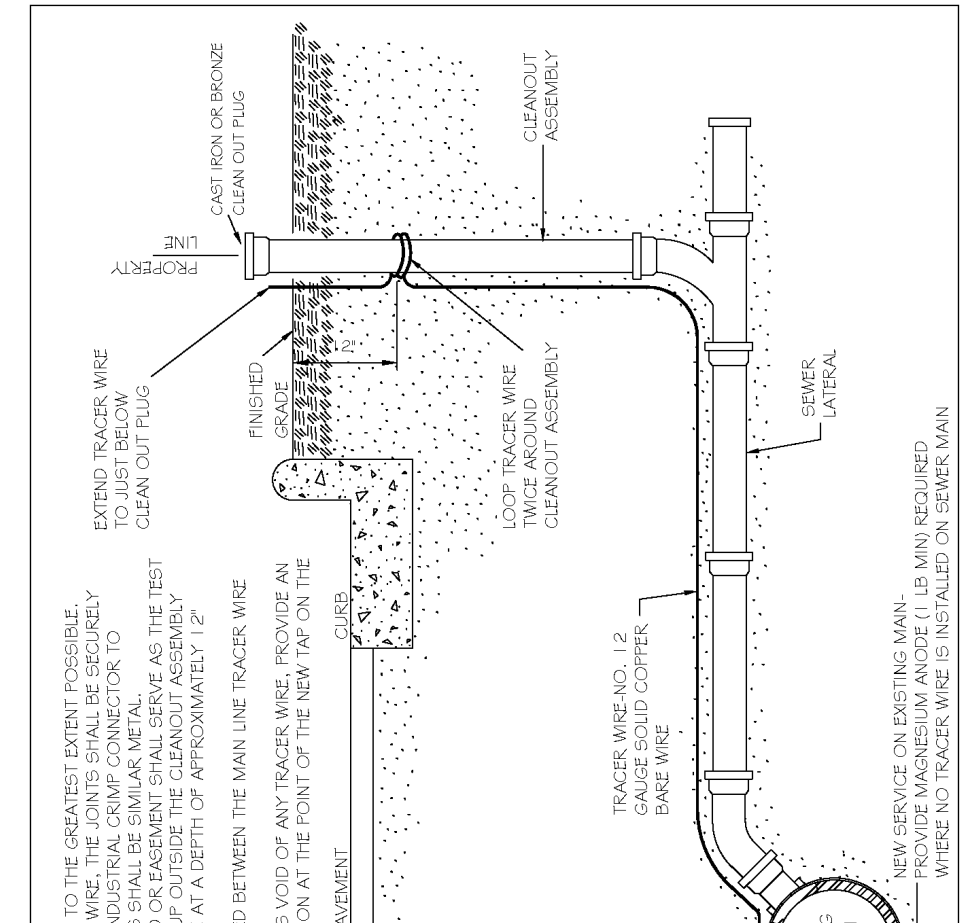
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-29	T.C.A.	2-21-05	AKB	3-30-00
	KRT	3-30-00	DTL	11-28-07



NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 120 LBS. WITHIN PUBLIC ROW AND 140 LBS. WITHIN EASEMENTS.
3. COVER SHALL BE A MIN. OF 120 LBS. HOT DIPPED GALVANIZED LAGO BOOT AND WASHER.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE SET TO THE CORNER SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES TYPICAL SANITARY SEWER LATERAL CONNECTION

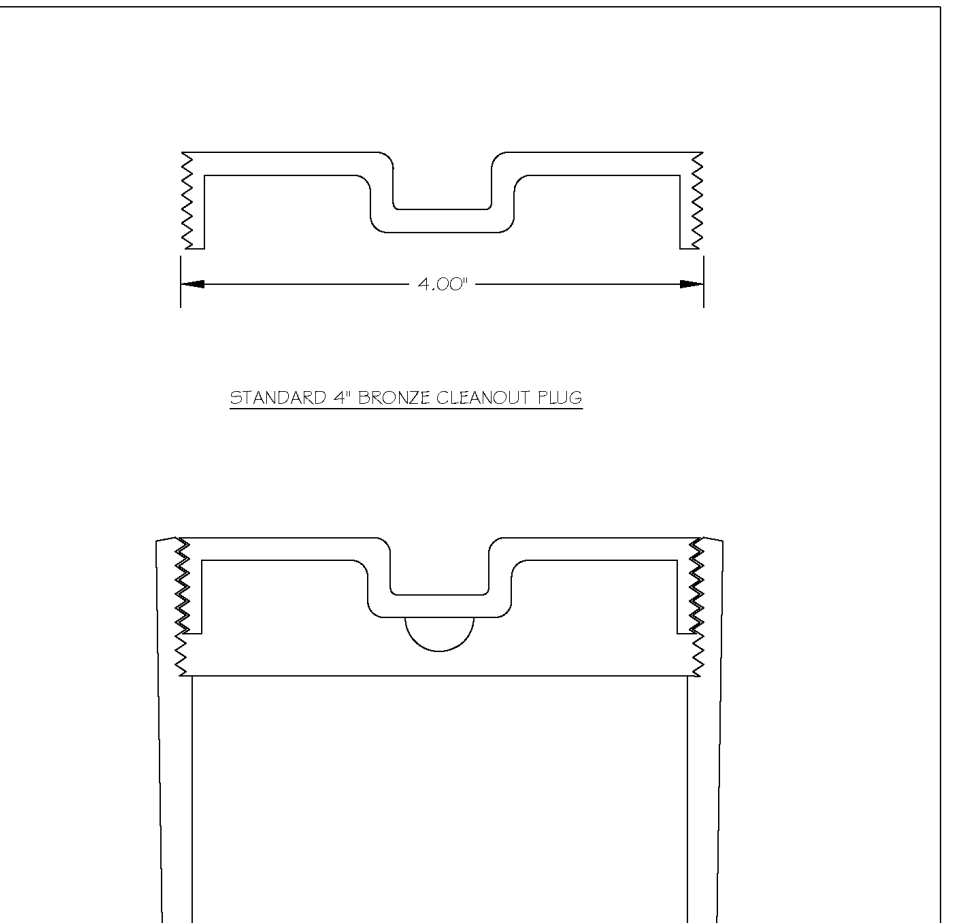
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30	T.C.A.	2-21-05	A.B.B.	4-24-04
	KRT	3-30-00	D.H.L.	11-18-05



NOTES:
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT, THE TRACER WIRE SHALL BE ATTACHED TO THE PIPE TRACER WIRE SHALL BE ADDED AND SECURELY ATTACHED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FT, THE TRACER WIRE SHALL BE INSTALLED AT A DEPTH OF 7.5 FT. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE COURSE OF THE WORK. NO BREAKS OF CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
2. WHERE LATERAL TAPS ARE MADE BY SERVICE SAIDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SAIDLE AND MAIN.
3. MANHOLE MARKERS SHALL BE PLACED ADJACENT TO MANHOLES AT THE DISCRETION OF OWNER OR OWNER'S REPRESENTATIVE.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES TYPICAL SANITARY SEWER LATERAL CONNECTION

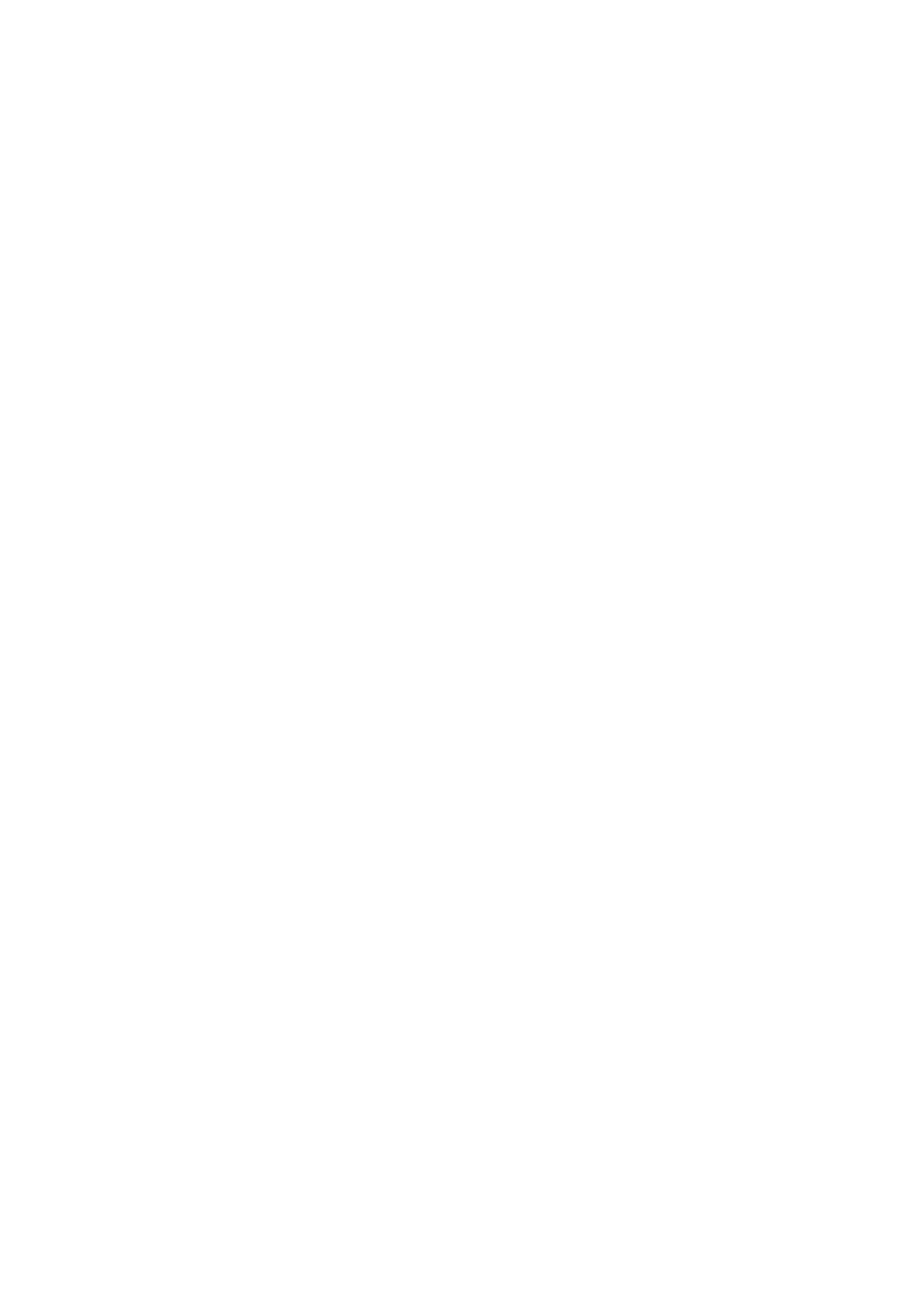
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-30A	T.C.A.	2-21-05	A.B.B.	4-24-04
	KRT	3-30-00	D.H.L.	11-18-05



NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 120 LBS. WITHIN PUBLIC ROW AND 140 LBS. WITHIN EASEMENTS.
3. COVER SHALL BE A MIN. OF 120 LBS. HOT DIPPED GALVANIZED LAGO BOOT AND WASHER.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE SET TO THE CORNER SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

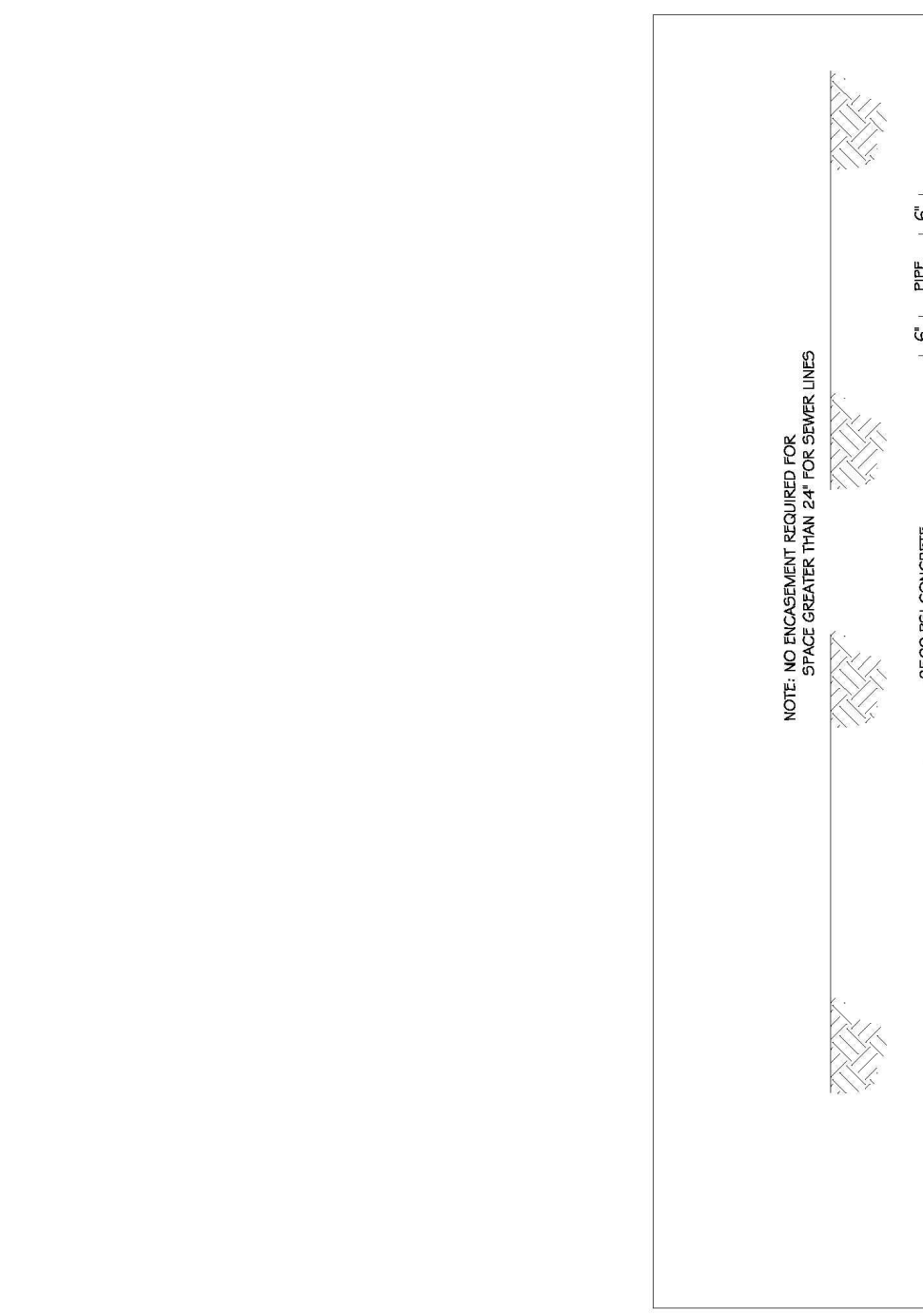
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES 4" CLEANOUT PLUG

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-34	T.W.C.	3-27-05		



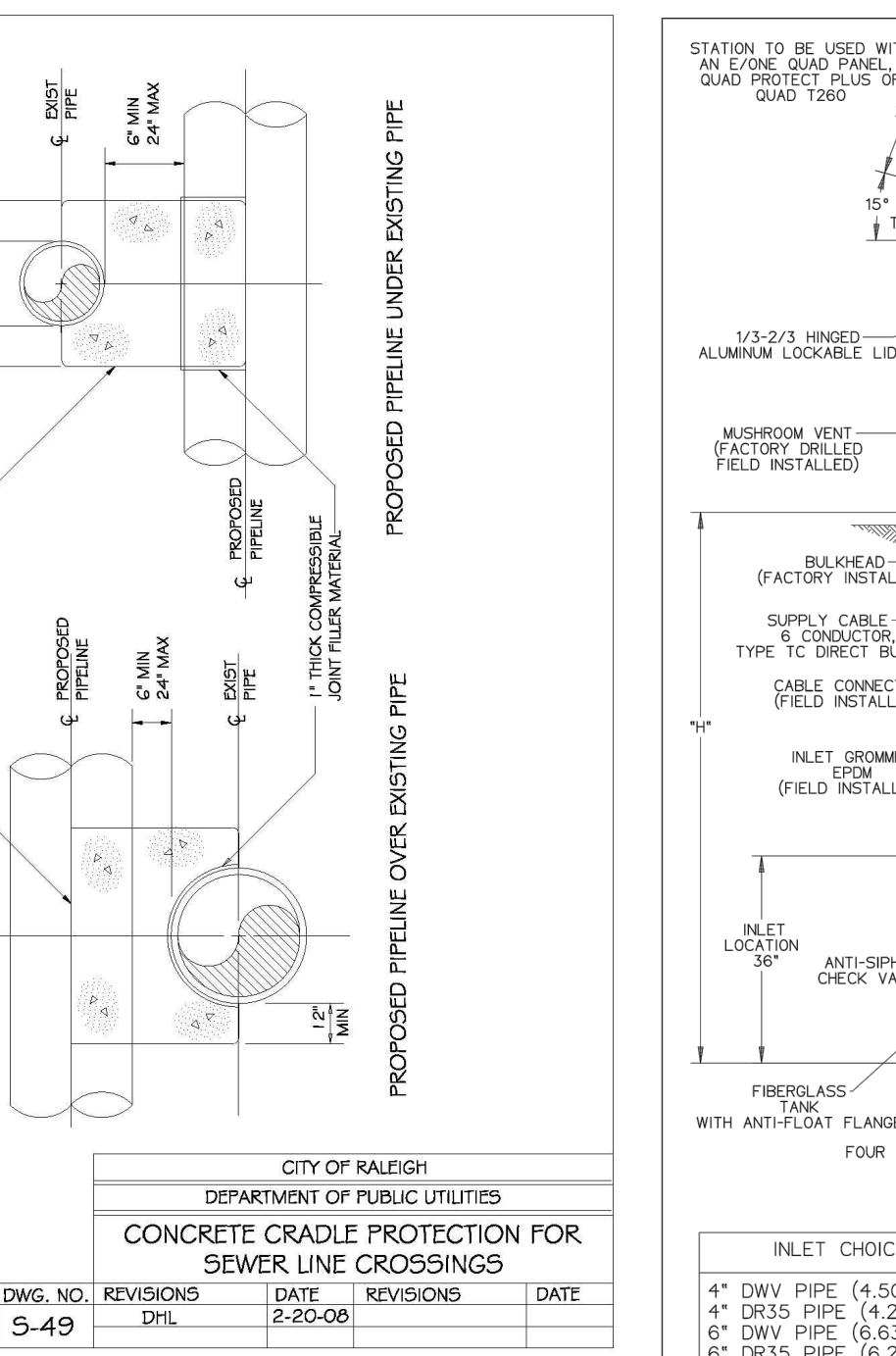
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES CONCRETE CRADLE PROTECTION FOR SEWER LINE CROSSINGS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-49	PH	2-20-00		



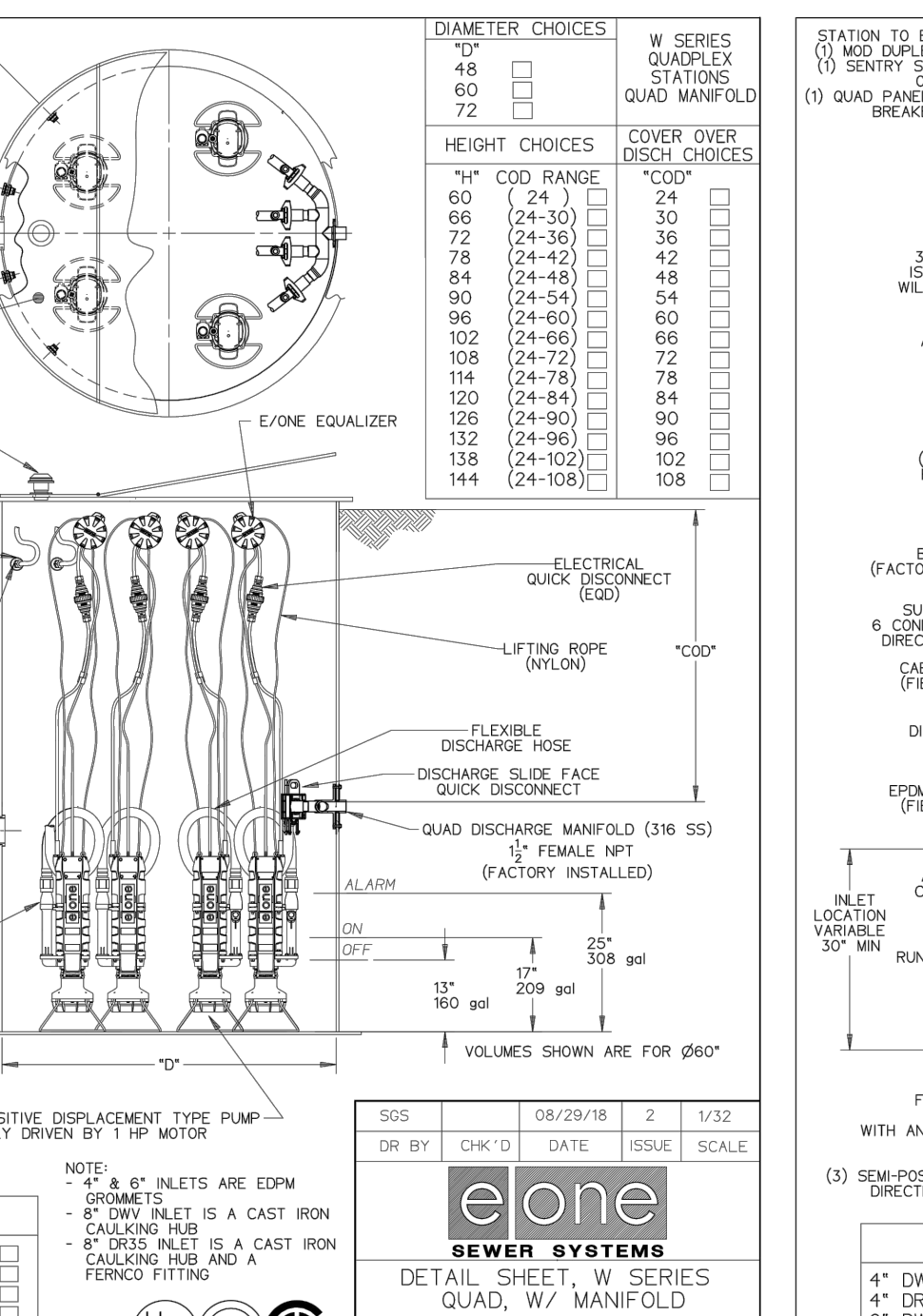
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES CONCRETE CRADLE PROTECTION FOR SEWER LINE CROSSINGS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-49	PH	2-20-00		



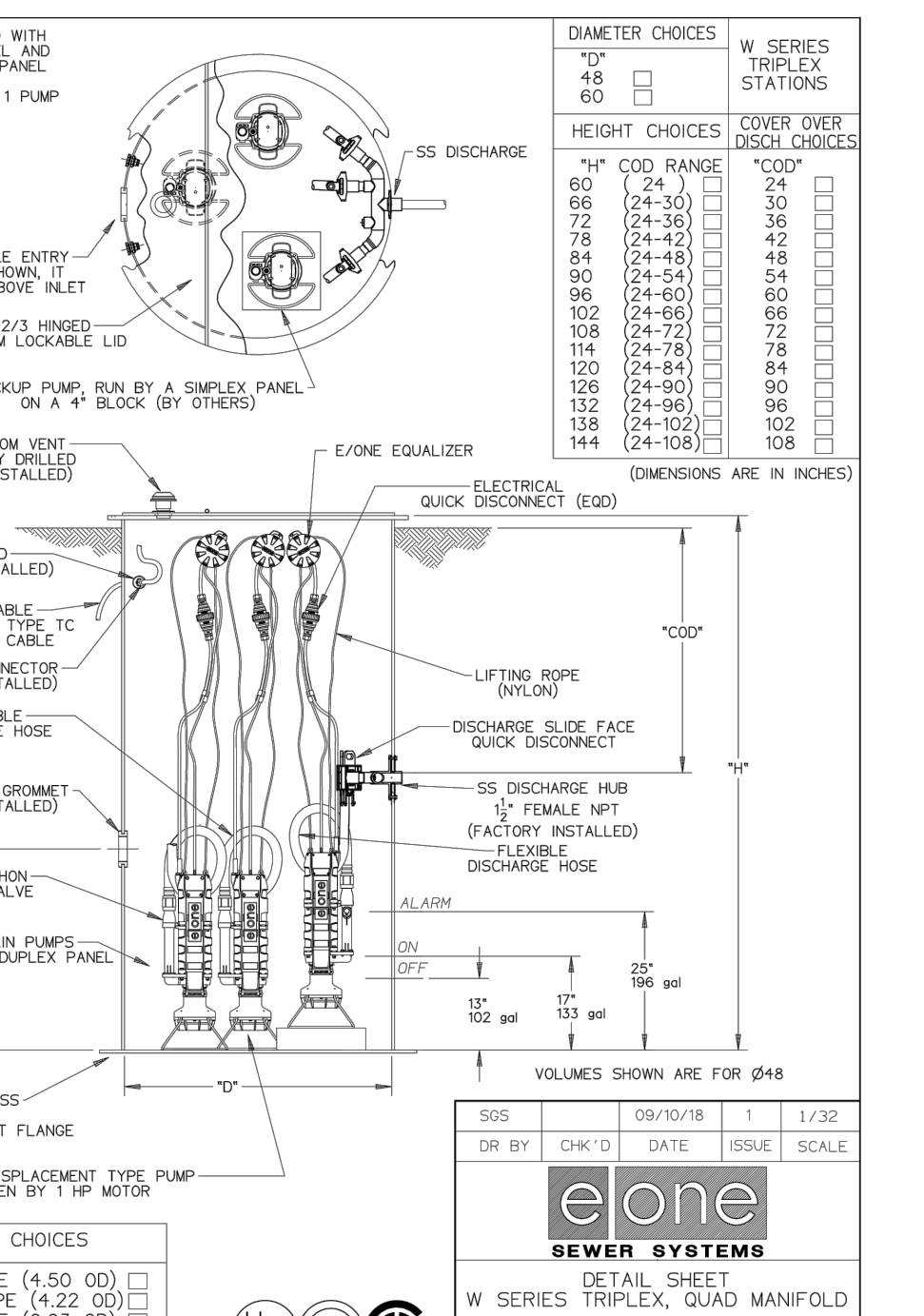
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STATION TO BE USED WITH AN EXISTING QUAD PANEL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-50	PH	2-20-00		



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STATION TO BE USED WITH A NEW QUAD PANEL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-50	PH	2-20-00		



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STATION TO BE USED WITH A NEW QUAD PANEL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-50	PH	2-20-00		



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STATION TO BE USED WITH A NEW QUAD PANEL

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-50	PH	2-20-00		

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6810 CHASE HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919) 881-7222 FAX: (919) 881-8888
CERTIFICATION NUMBERS: NCBELS (C-0119); NCBOLA (C-0267)

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

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

DETAILS
SCALE: N.T.S.
CHK BY: M.B.

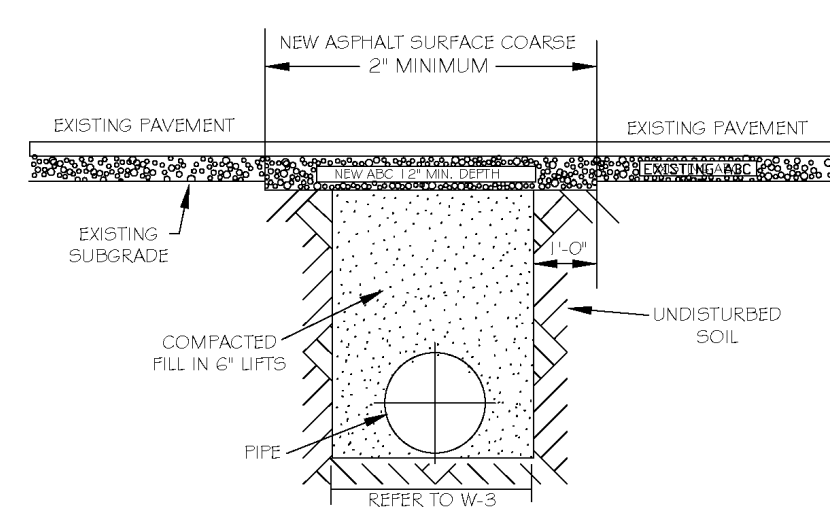
NO. DATE DESCRIPTION REVISIONS

NO.	DATE	DESCRIPTION	REVISIONS

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
W. D. BIZELL
036908

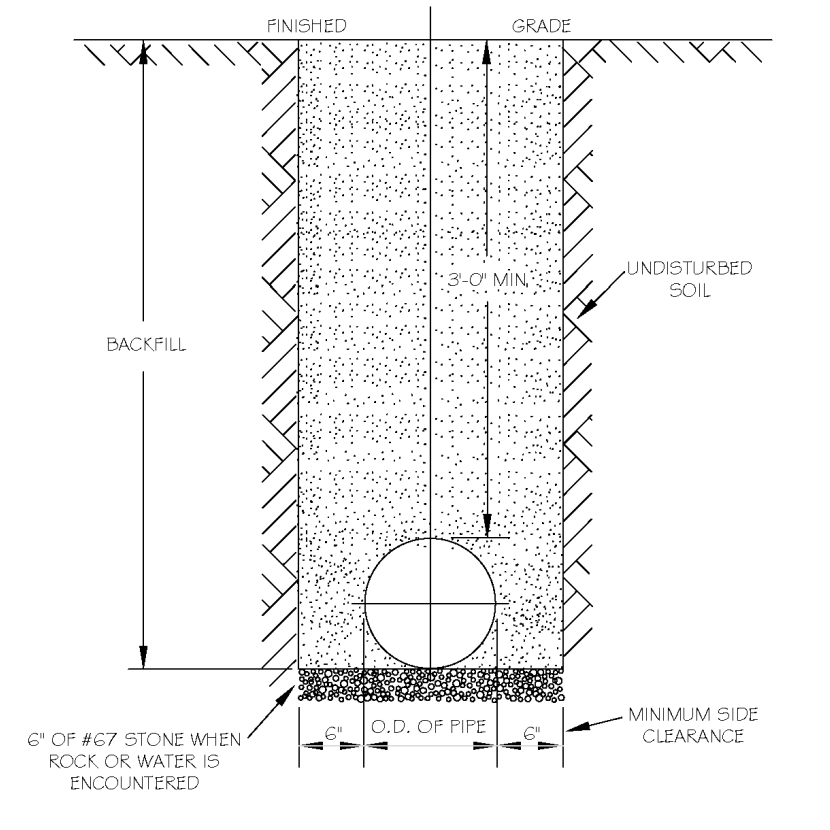
3/10/22

TOWN OF ROLESVILLE PROJECT NO.



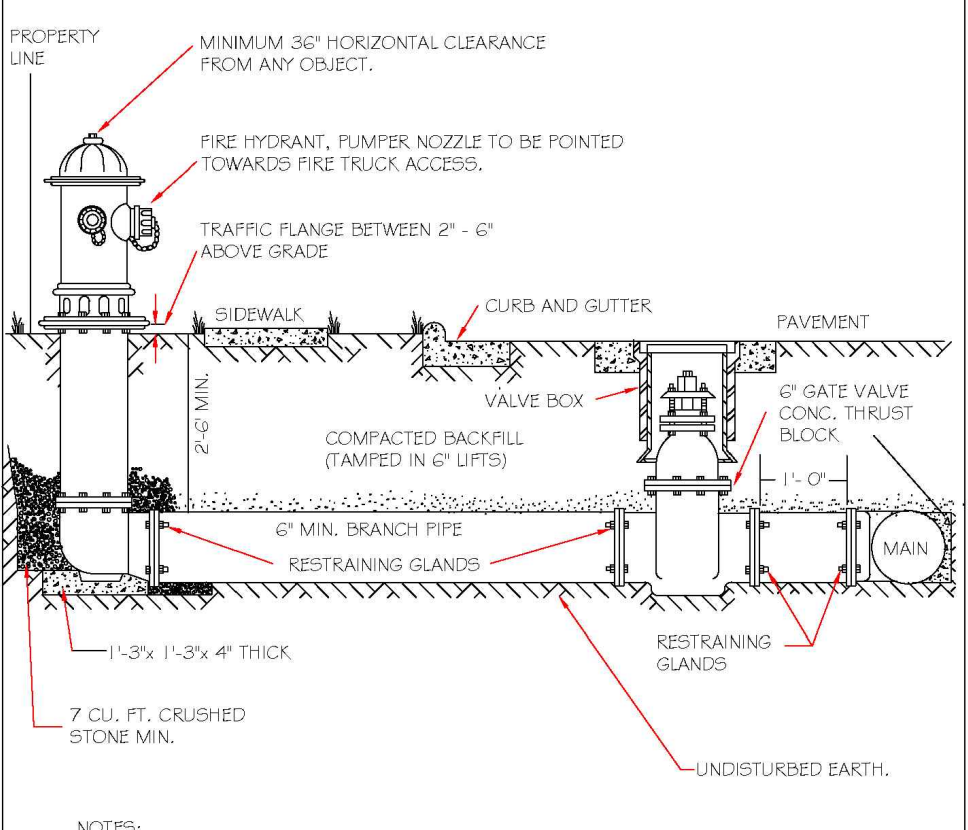
NOTES:
 1. THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROPRIATE SAW CUT MACHINE.
 2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NC DOT.
 3. THE FINAL 1" OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NC DOT.
 4. THE ENTIRE THICKNESS VERTICAL EDGE OF CUT SHALL BE TACKED.
 5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 2" THICK.
 6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH LEVEL PATCH.
 7. REFER TO CITY OF RALEIGH STANDARDS FOR TRENCHES AND PIPE BEDDING, W-3, FOR ADDITIONAL DETAILS.
 8. NO HAND PATCHING ALLOWED.
 9. PAVEMENT CUTS WITH NC DOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.

CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
STANDARD ASPHALT PAVEMENT PATCH DETAIL			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-2	RRH	3-31-00	A.S.B.
	D.W.C.	11-1-03	J.P.S.



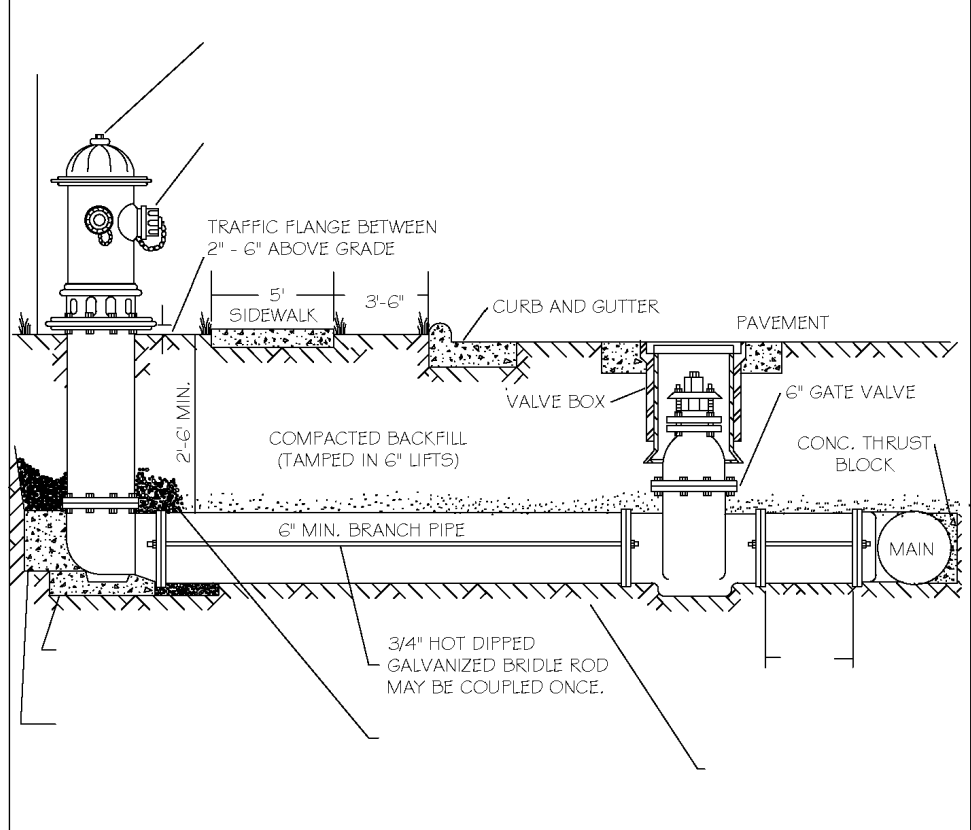
NOTES:
 1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
 2. NO ROCKS OR BouldERS 4" OR LARGER TO BE USED IN BACKFILL.
 3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
 4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
 5. ACHIEVE 95% COMPACTION IN BACKFILL.

CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-3	RRH	3-31-00	ABB
	D.W.C.	3-31-00	J.P.S.



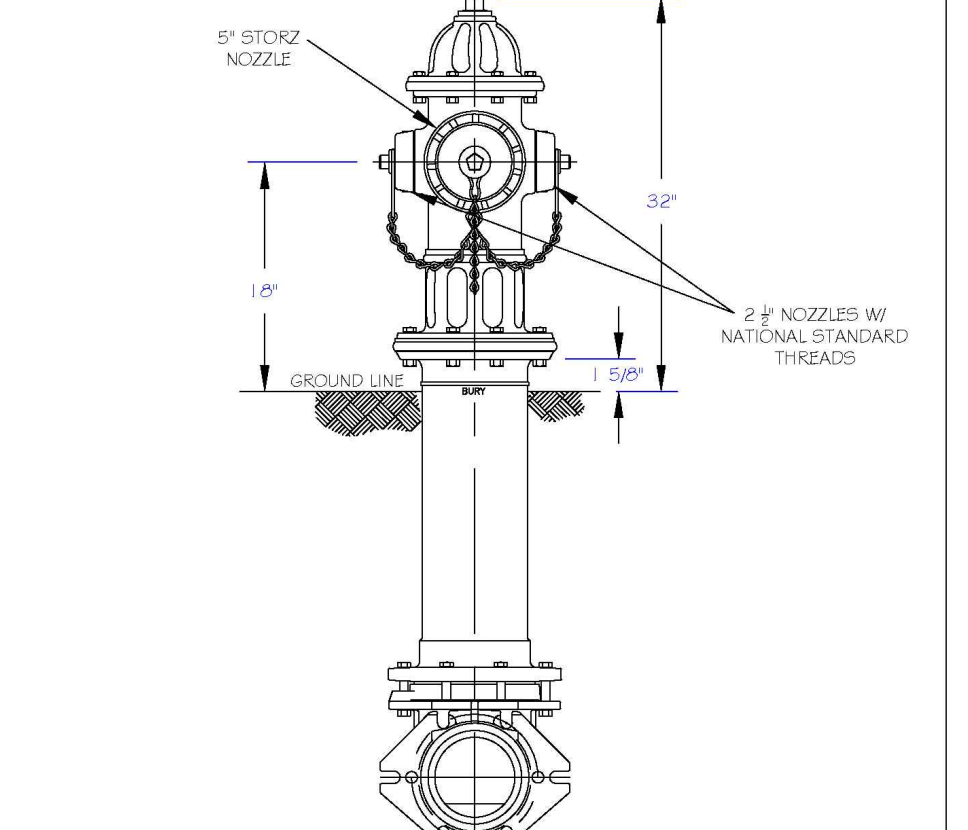
NOTES:
 1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY, MHI, WATERLOUS, GLOW, EAST JORDAN IRON WORKS, OR US PIPE.
 2. BRANCH PIPE SHALL BE DUCTILE IRON ANMA C150-80.
 3. 4" GATE VALVE SHALL BE ANMA C200-80 OPEN LEFT.
 4. STEEL RODS AND BOLTS SHALL BE #4 HOT DIPPED GALVANIZED.
 5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.
 6. STEEL RODS AND BOLTS SHALL BE #4 HOT DIPPED GALVANIZED.
 7. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.
 8. ROADS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CASE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
 9. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW.
 10. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW.

CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
STANDARD FIRE HYDRANT INSTALLATION DETAIL			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-4	ABB	4-6-04	RRH
	D.W.C.	2-7-08	J.P.S.



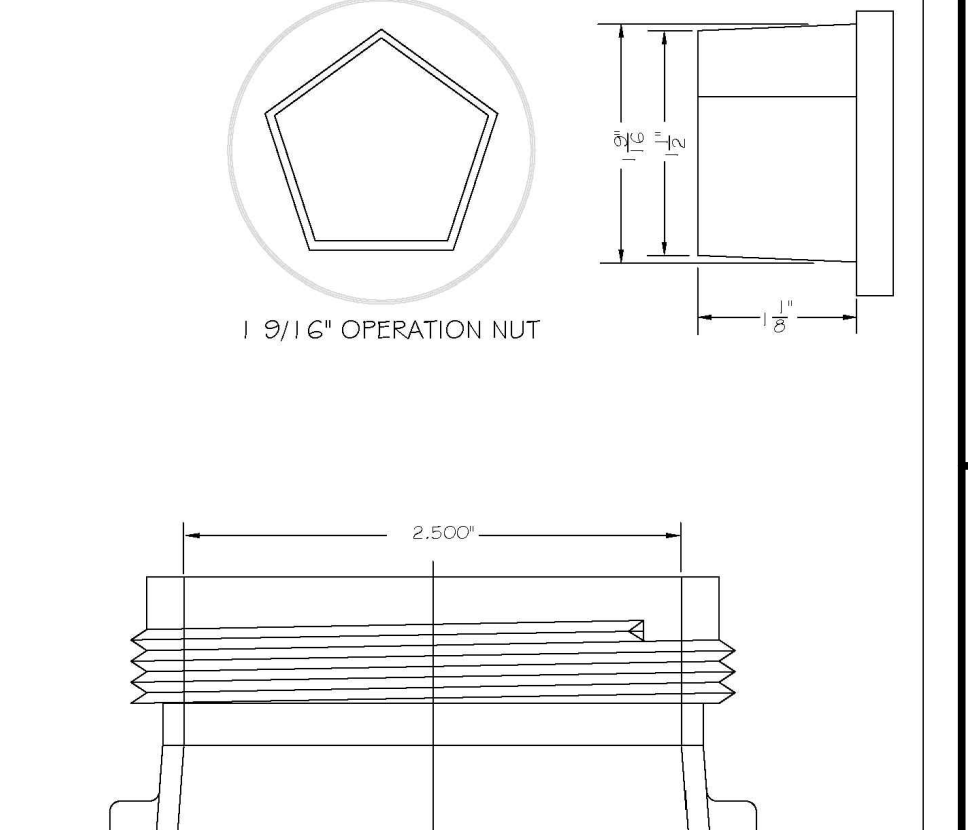
NOTES:
 1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY, MHI, WATERLOUS, GLOW, EAST JORDAN IRON WORKS, OR US PIPE.
 2. BRANCH PIPE SHALL BE DUCTILE IRON ANMA C150-80.
 3. 4" GATE VALVE SHALL BE ANMA C200-80 OPEN LEFT.
 4. STEEL RODS AND BOLTS SHALL BE #4 HOT DIPPED GALVANIZED.
 5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.
 6. STEEL RODS AND BOLTS SHALL BE #4 HOT DIPPED GALVANIZED.
 7. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.
 8. ROADS SHALL NOT BE COUPLED MORE THAN ONCE. IF THE LENGTH FROM THE VALVE TO THE HYDRANT EXCEEDS 20' THEN A MECHANICAL RESTRAINING GLAND WITH A REBAR CASE SHALL BE INSTALLED NO MORE THAN 10' FROM HYDRANT AND POURED IN CONCRETE.
 9. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW.
 10. FIRE HYDRANTS TO BE LOCATED IN ROW OR 2 FOOT EASEMENT ADJACENT TO ROW.

CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
STANDARD FIRE HYDRANT INSTALLATION DETAIL			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-4	ABB	4-6-04	RRH
	D.W.C.	2-7-08	J.P.S.



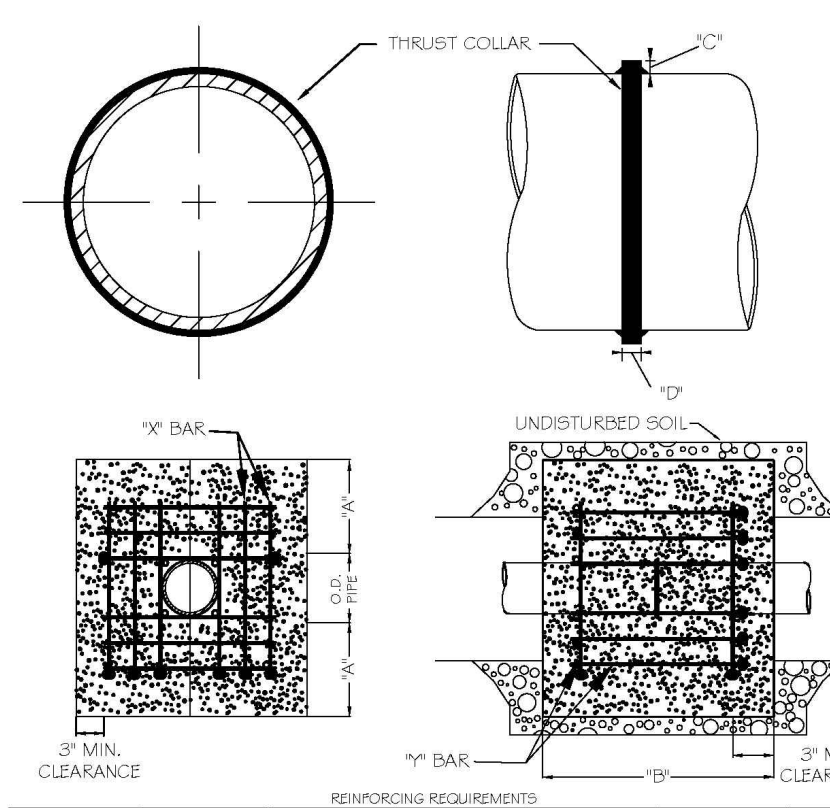
NOTES:
 1. RALEIGH PUBLIC HYDRANTS SHALL BE PAINTED SOLID RED.
 2. KNIGHTDALE, 4 RALEIGH PUBLIC HYDRANTS SHALL BE PAINTED RED W/SILVER OPERATING NUTS.
 3. ZIEGLER PUBLIC HYDRANTS SHALL BE PAINTED RED W/SILVER BONNETS AND OPERATING NUTS.
 4. WAKE FOREST AND GARNER, AND WENDELL PUBLIC AND PRIVATE HYDRANTS TO BE PAINTED SAFETY YELLOW W/SILVER CAPS AND OPERATING NUTS.
 5. OPERATING NUTS ON HYDRANTS CONNECTED TO POTABLE MAINS LARGER THAN 1/2" SHALL BE PAINTED BLACK.

CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
STANDARD FIRE HYDRANT WITH 5\"/>			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-5	RRH	3-1-07	ABB
	D.W.C.	3-31-00	D.H.L.



NOTES:
 1. RALEIGH PUBLIC HYDRANTS SHALL BE PAINTED SOLID RED.
 2. KNIGHTDALE, 4 RALEIGH PUBLIC HYDRANTS SHALL BE PAINTED RED W/SILVER OPERATING NUTS.
 3. ZIEGLER PUBLIC HYDRANTS SHALL BE PAINTED RED W/SILVER BONNETS AND OPERATING NUTS.
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 5. OPERATING NUTS ON HYDRANTS CONNECTED TO POTABLE MAINS LARGER THAN 1/2" SHALL BE PAINTED BLACK.

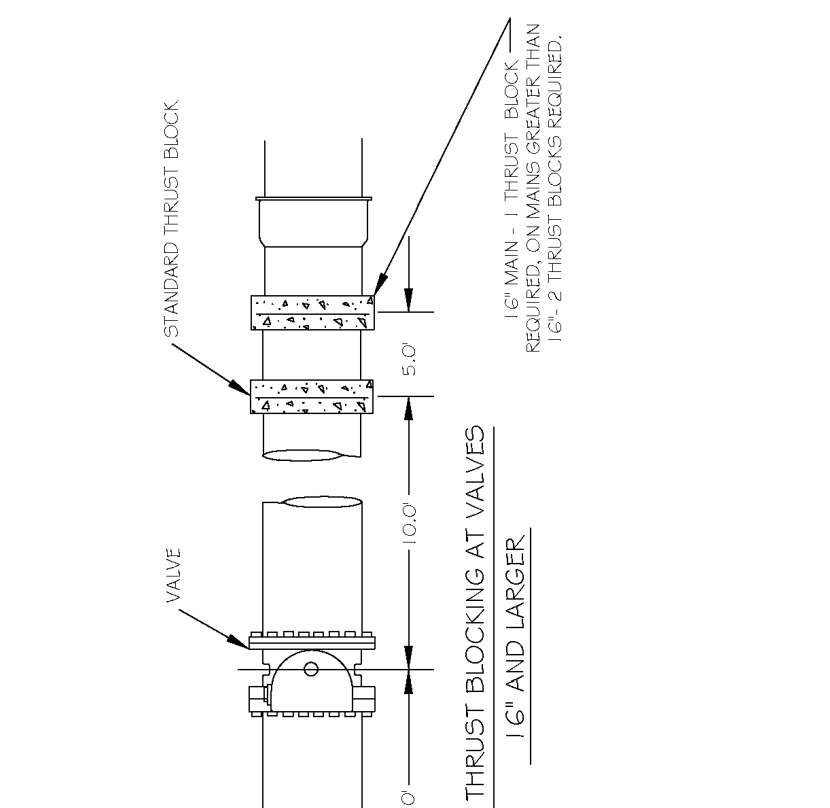
CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
HYDRANT OPERATING NUT AND 2 1/2\"/>			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-6	RRH	3-31-00	D.H.L.
	A.S.B.	6-13-04	J.P.S.



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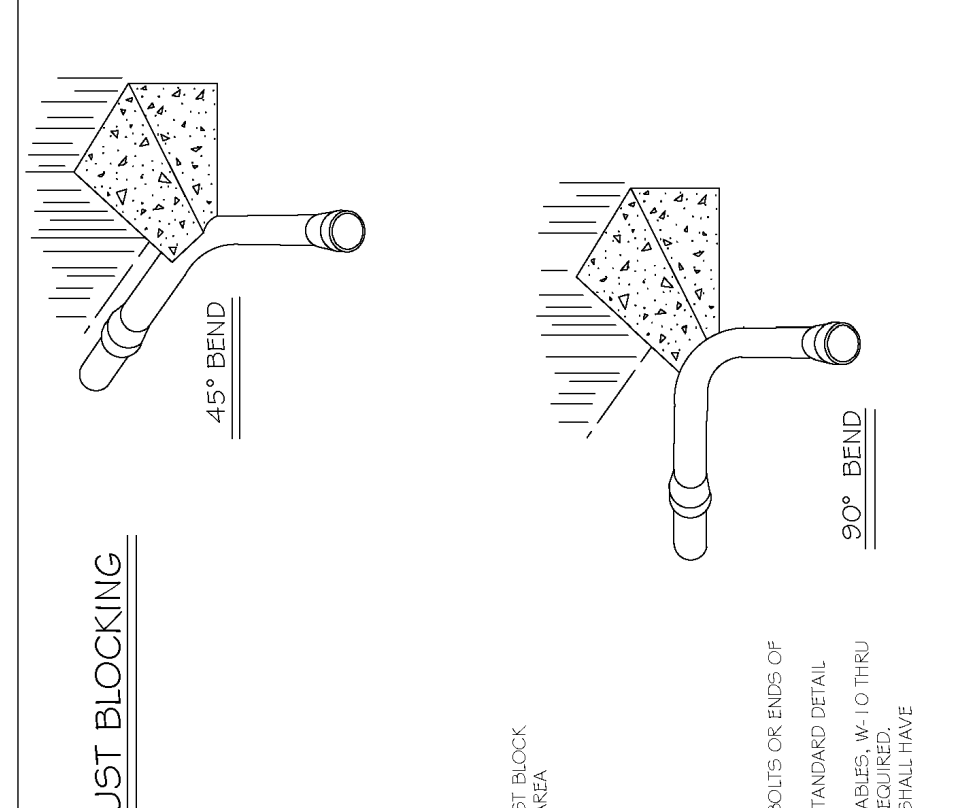
NOTES:
 1. SEE STANDARD DETAIL W-9 FOR THRUST BLOCK LOCATIONS.
 2. CONCRETE SHALL BE 3000 PSI AND FINISH MAND.
 3. REINFORCING BARS SHALL BE DROPPED AND TIED TOGETHER.
 4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3.
 5. BACKFILL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

CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
THRUST BLOCKING DESIGN DATA FOR WATER MAINS			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-7	RRH	3-1-00	J.P.S.
	D.W.C.	12-12-03	



CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
STANDARD THRUST BLOCK INSTALLATION FOR 16\"/>			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-8	Y.C.A.	4-2-92	RRH
	D.W.C.	3-31-00	

NOTES:
 1. CONCRETE SHALL BE 3000 PSI.
 2. CONCRETE SHALL NOT CONTACT RODS OR ENDS OF MECHANICAL JOINT FITTINGS.
 3. W.S. SHALL BE MAINTAINED THROUGHOUT.
 4. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.



CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
STANDARD THRUST BLOCKING VIEWS			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-9	D.W.C.	3-7-99	D.H.L.
	D.W.C.	12-12-03	

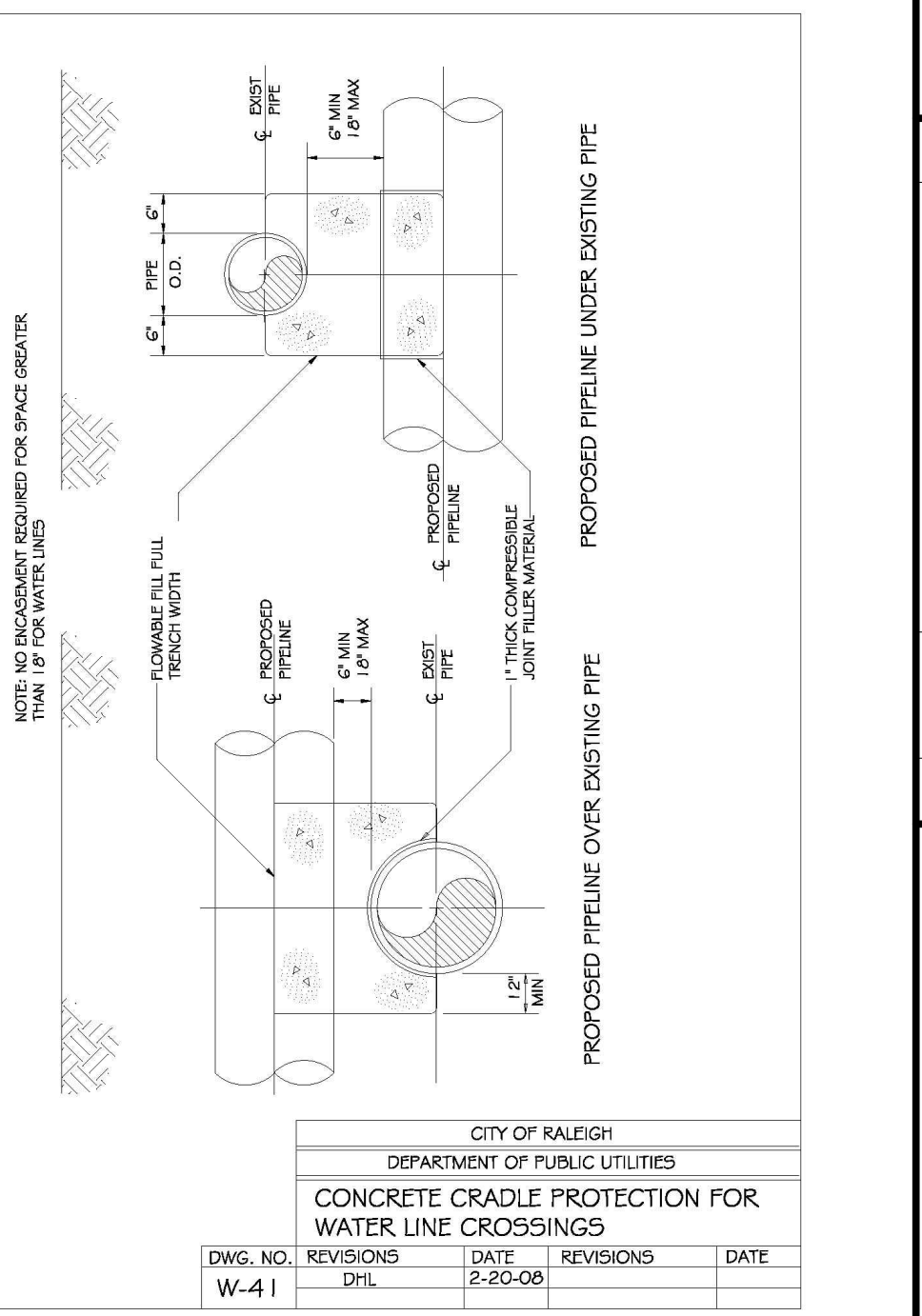
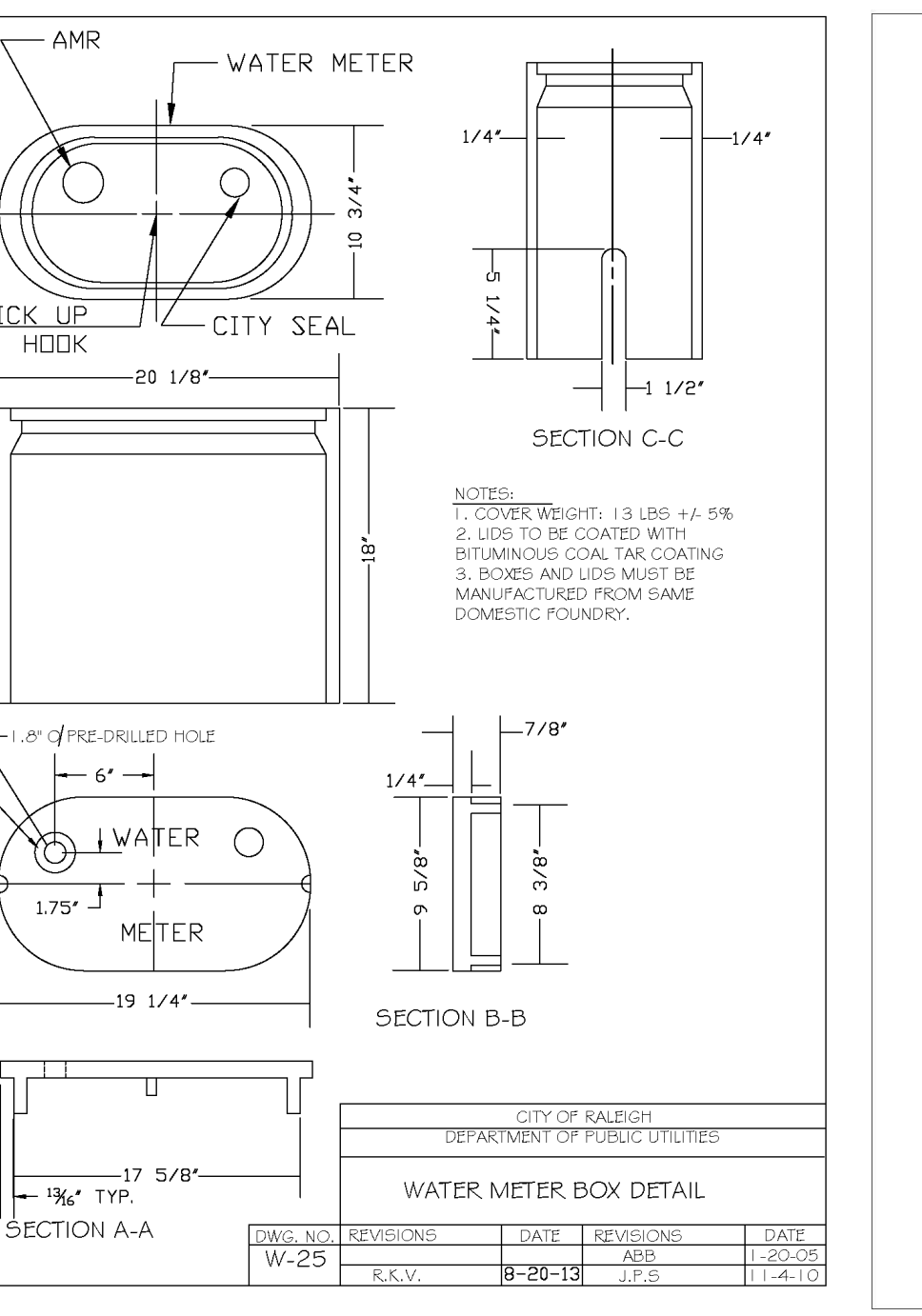
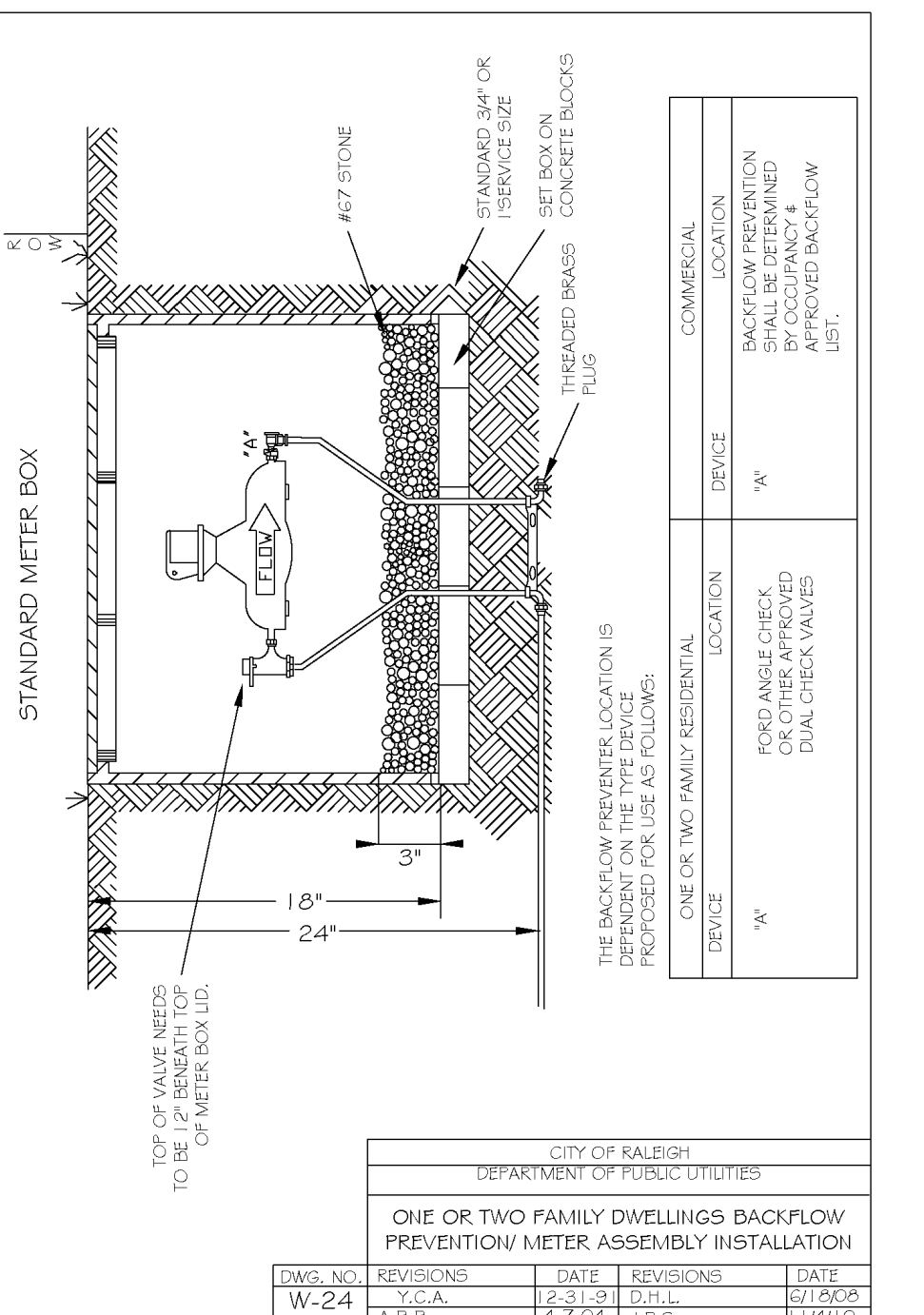
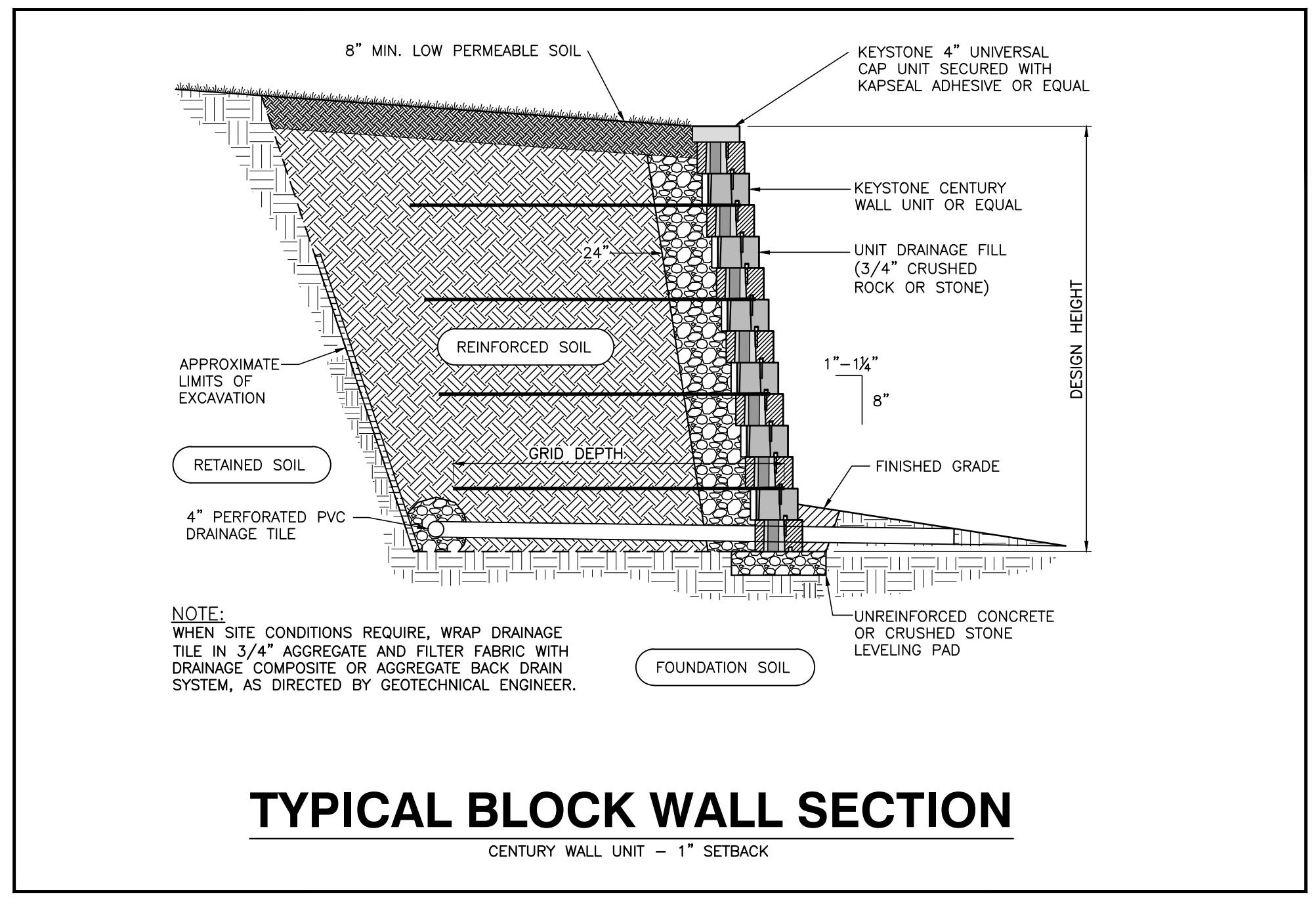
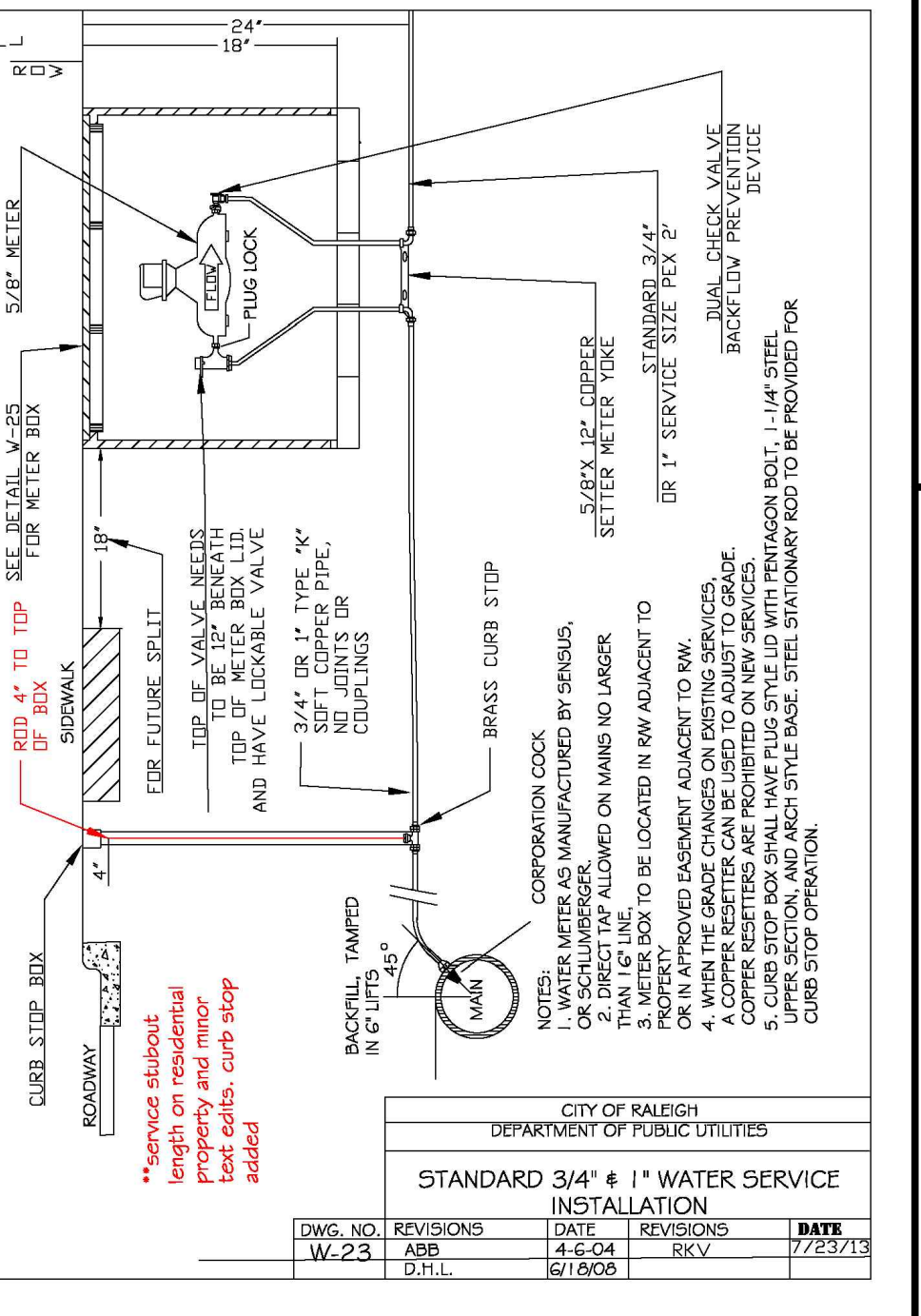
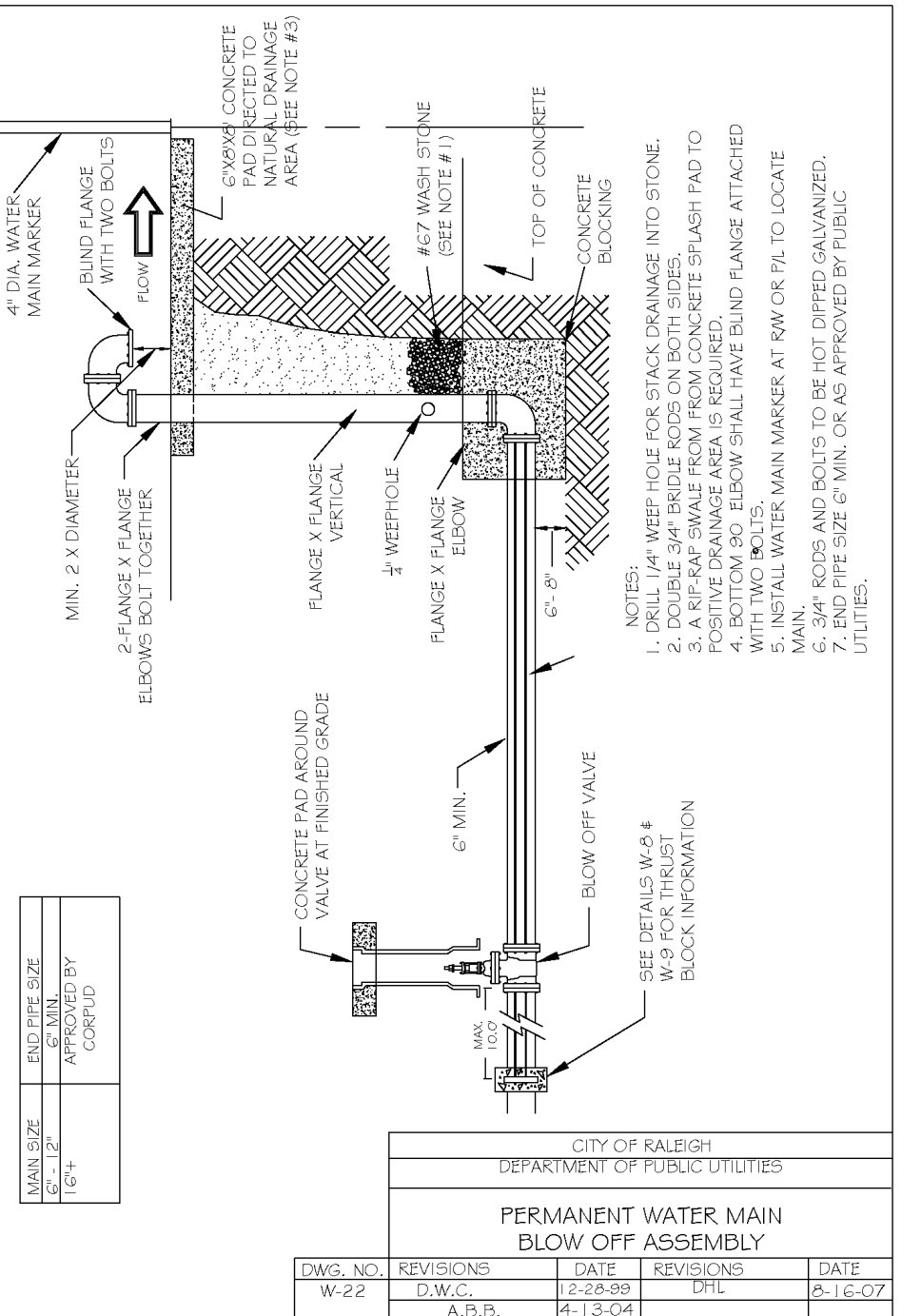
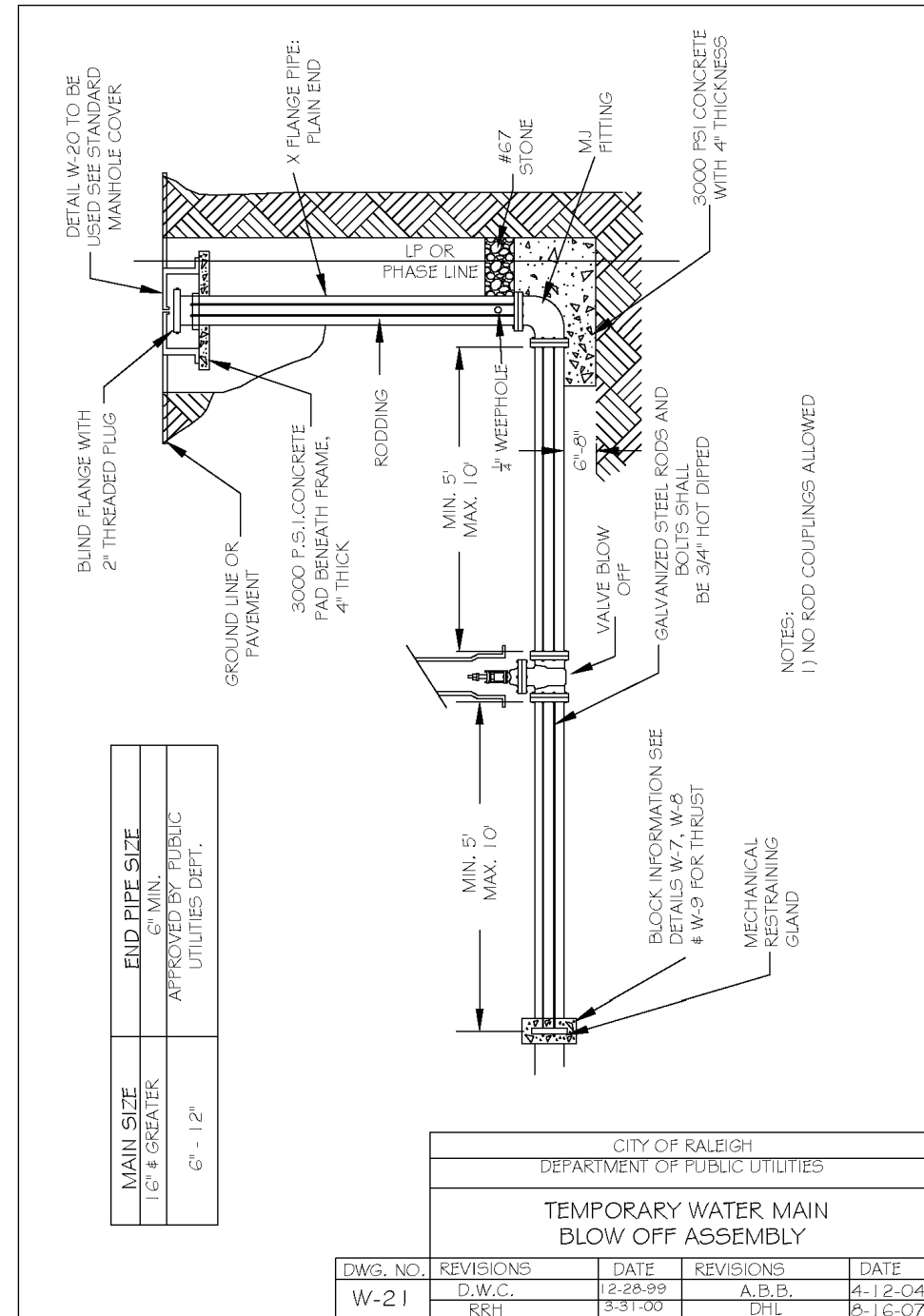
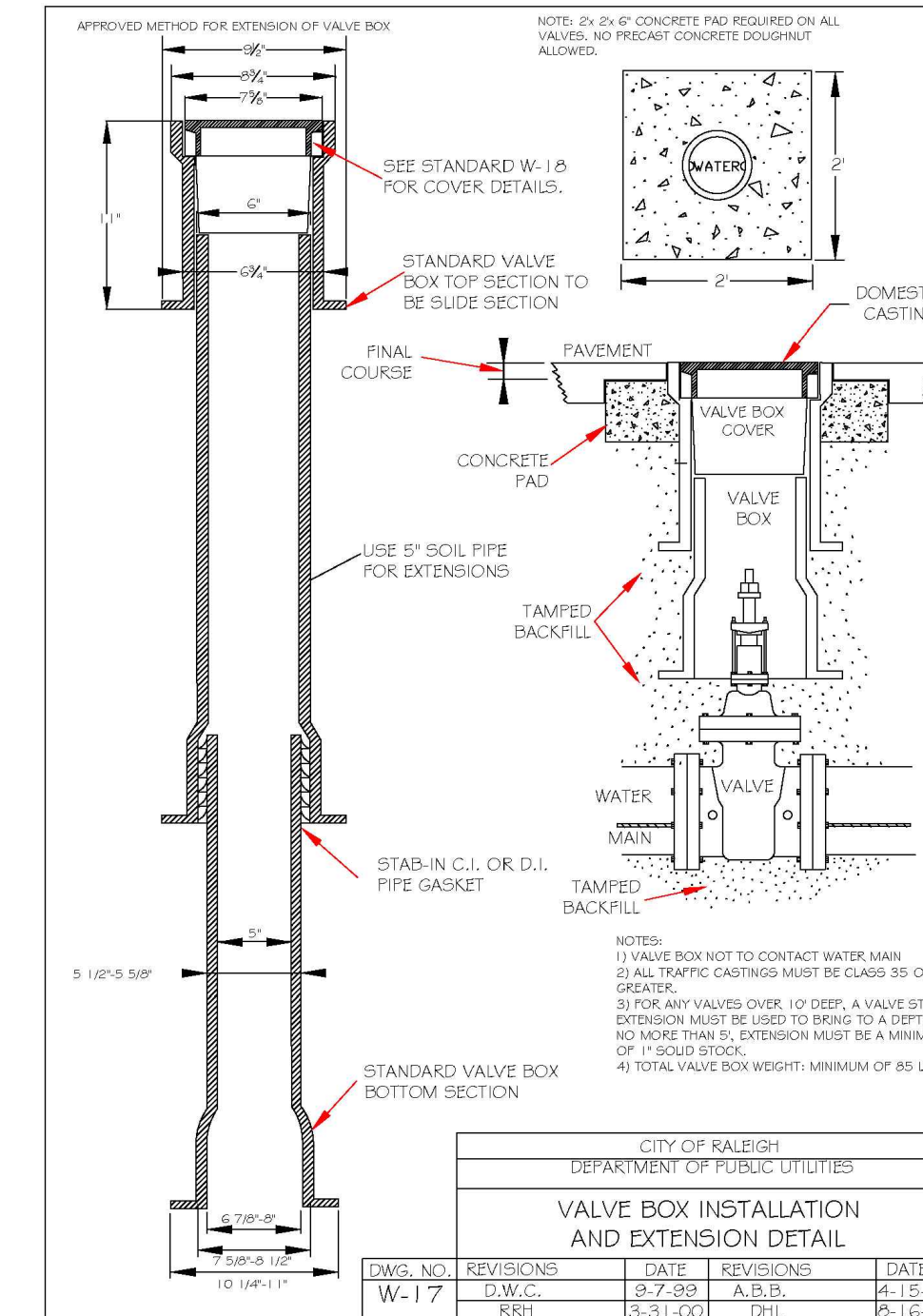
NOTES:
 1. CONCRETE SHALL BE 3000 PSI.
 2. CONCRETE SHALL NOT CONTACT RODS OR ENDS OF MECHANICAL JOINT FITTINGS.
 3. W.S. SHALL BE MAINTAINED THROUGHOUT.
 4. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS		REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS	
BASED ON TEST PRESSURE OF 200 P.S.I.		BASED ON TEST PRESSURE OF 200 P.S.I.	
ALL AREAS GIVEN IN SQUARE FEET			
PIPE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	MINIMUM AREA IN SQUARE FEET	MINIMUM AREA IN SQUARE FEET
6"	1,108	1	1
8"	1,970	1	1
10"	2,832	1	1
12"	3,694	1	1
14"	4,556	1	1
16"	5,418	1	1
18"	6,280	1	1
20"	7,142	1	1
22"	8,004	1	1
24"	8,866	1	1
26"	9,728	1	1
28"	10,590	1	1
30"	11,452	1	1
32"	12,314	1	1
34"	13,176	1	1
36"	14,038	1	1
38"	14,900	1	1
40"	15,762	1	1
42"	16,624	1	1
44"	17,486	1	1
46"	18,348	1	1
48"	19,210	1	1
50"	20,072	1	1
52"	20,934	1	1
54"	21,796	1	1
56"	22,658	1	1
58"	23,520	1	1
60"	24,382	1	1
62"	25,244	1	1
64"	26,106	1	1
66"	26,968	1	1
68"	27,830	1	1
70"	28,692	1	1
72"	29,554	1	1
74"	30,416	1	1
76"	31,278	1	1
78"	32,140	1	1
80"	33,002	1	1
82"	33,864	1	1
84"	34,726	1	1
86"	35,588	1	1
88"	36,450	1	1
90"	37,312	1	1
92"	38,174	1	1
94"	39,036	1	1
96"	39,898	1	1
98"	40,760	1	1
100"	41,622	1	1

CITY OF RALEIGH		CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES		DEPARTMENT OF PUBLIC UTILITIES	
THRUST BLOCKING DESIGN QUANTITY TABLE			
DWG. NO.	REVISIONS	DATE	REVISIONS
W-10	D.W.C.	3-7-99	D.H.L.
	D.W.C.	12-12-03	

NOTES:
 1. USE 60% NO. 4 REINFORCING FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

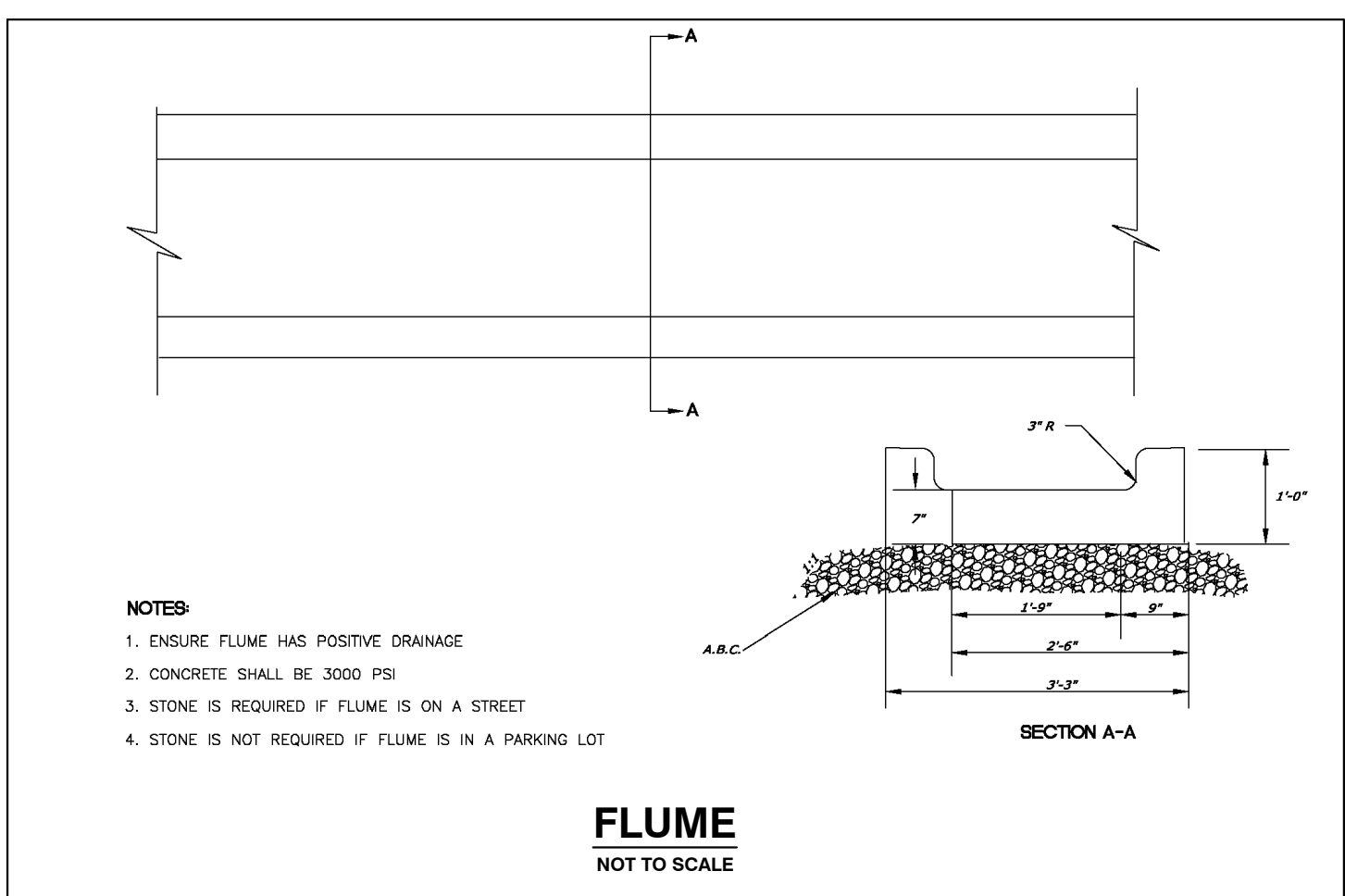
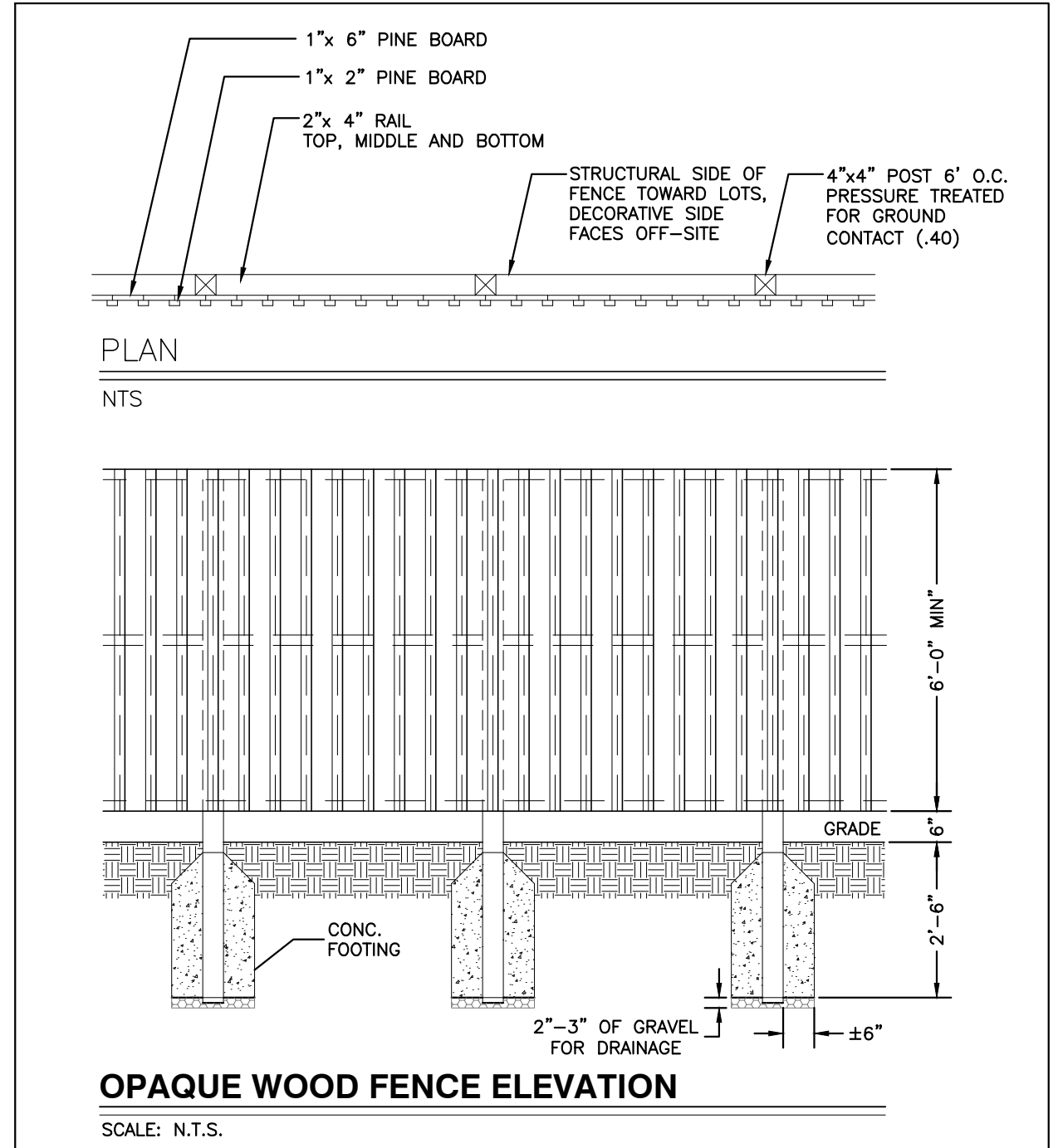
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS		REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS	
BASED ON TEST PRESSURE OF 200 P.S.I.		BASED ON TEST PRESSURE OF 200 P.S.I.	
ALL AREAS GIVEN IN SQUARE FEET			
PIPE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	MINIMUM AREA IN SQUARE FEET	MINIMUM AREA IN SQUARE FEET
24"	17,734	5	9
26"	19,418	5	9
28"	21,102	5	9
30"	22,786	5	9
32"	24,470	5	9
34"	26,154	5	9
36"	27,838	5	9
38"	29,522	5	9
40"	31,206	5	9
42"	32,890	5	9
44"	34,574	5	9
46"	36,258	5	9
48"	37,942	5	9
50"	39,626	5	9
52"	41,310	5	9
54"	42,994	5	9
56"	44,678	5	9
58"	46,		



R:\2019\19157 - Rolesville Town Center\CIVIL\04 Construction\07 - 19157_Details.dwg, C5.5, 3/10/2022 4:46:47 PM, mnc-muelter

Previous comment:

#57
 1) WILL THE BLOCK WALL SECTION BE USED IN THE SCM WALL?
 2) OR JUST THE TYPICAL WALLS PROPOSED THROUGHOUT THE SITE?
 3) ANY DESIGN FOR WALL ALONG MAINSTREET?



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 _____



3/10/22

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
 6310 CHASEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
 TELEPHONE: (919)881-1232 FAX: (919)881-8686
 CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

PROGRESS	DATE	BY	DESCRIPTION	NO.	DATE	BY

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

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

SHEET C5.5