



Memo

To: Mayor and Town Board of Commissioners
From: Meredith Gruber, Planning Director and Michael Elabarger, Senior Planner
Date: June 29, 2022
Re: Agenda Item C.4 – Town Board of Commissioners Meeting July 6, 2022
PR 22-02 Granite Crest Phase IV (4) Preliminary Subdivision Plat

Application / Background

PR 22-02, Granite Crest Phase IV (4) is a preliminary subdivision plat proposing to subdivide 11.594 acres into 25 single family detached lots, 2 open space lots, a mail kiosk lot, and 1,554 linear feet (LF) of new public streets. Phase IV (4) proposes 2 sub-phases – (b) for 16 residential lots numbers 176-191, and (c) for 9 residential lots numbers 192-200. The subject property is zoned Residential 2 Special Use District (R2-SUD) under the Unified Development Ordinance (UDO); under the Land Development Ordinance the Zoning District is termed RM-CZ. Approval of a preliminary subdivision plat requires an evidentiary (quasi-judicial) hearing at a Town Board of Commissioners' meeting.

Phase IV (4) follows Phase III(C), which was approved by the Town Board in May 2021 via an Amendment under Application PR 21-03 and is currently under development subject to Construction Drawing application CD 21-01. Phase III(C) includes the commitment that Lot 132 shall not be developed until such time that access to a public right-of-way is provided to PIN 1759744853 (N/F Meyers, James & Meyers, Terri G) and the existing 50' COR (City of Raleigh) Pump Station access easement (BM2008/Pg1173) can be abandoned.

The Applicant is simultaneously processing Construction Drawing CD 22-01, for the development of Lots 176-191 and 212 (mail kiosk lot), and it is still undergoing Technical Review Committee (TRC) Staff review.

Background

Summary Information

Applicant	Real Estate Marketing & Consulting, Inc
Property Address	0 Pluton Place
PINs	1759753474, 1759753092, 1759751000, 1759741891, 1759757603
Zoning	Residential 2 Special Use District (R2-SUD) under the Unified Development Ordinance (UDO)
Acreage	11.594 acres
Total Lots (SFD)	25
Proposed Density	2.16 units per acre gross

Development History and Applications

The Granite Crest subdivision has an extensive history that dates to at least 2003 – see the Town’s project webpage for complete details - <https://www.rolesvillenc.gov/projects/granite-crest-fka-willow-crest> . Entitlements for Phase 1, 2, and 3 occurred in the mid-2000’s right up until the housing market collapse circa 2008-2010. Small portions of Phase 3A were recorded between 2008 and 2012 via multiple plats. In 2015, Map Amendments and Special Use Permits were achieved for a Phase IV (4), but Preliminary Subdivision platting was not completed. The Developer reinitiated Preliminary Subdivision and Construction Drawings for the remainder of the originally planned project in 2021 and Phase IV (4) would be the last portion of it.

Comprehensive Plan

Future Land Use

The Future Land Use Map identifies the subject parcels as being appropriate for Medium Density Residential forms of development/use. Rolesville’s Comprehensive Plan defines Medium Density Residential as single-family residential uses with portions of duplex, townhouse, or multifamily residential. These are lots or tracts at a density range of three to five dwelling units per gross acre including preserved open space areas along with limited non-residential uses under planned unit development or form base code provisions.

At the time of Map Amendment and Special Use Permit approvals, it was determined that the residential subdivision project was consistent with this future land use designation.

Community Transportation Plan

Phase IV (4) is an interior component of the larger Granite Crest (fka Willow Crest) overall subdivision. The subdivision takes primary access via (existing) Big Willow Way at W. Young Street, which is a primary east/west corridor through the Town. An additional point of main access is via (existing) Granite Peak Drive which connects to Granite Falls Blvd., which spans between W. Young Street and Rogers Road, another major east/west corridor through the Town.

Traffic Impact Analysis

Phase IV (4) did not submit any Traffic Impact Analysis (TIA) information. The Preliminary Plat references off-site Road improvements required for this overall subdivision, and they are observed to be installed on W. Young Street. Phase IV (4) does not trigger or require any additional road improvements unto itself. The Applicant will address traffic impacts as part of the Evidentiary hearing process.

Greenways

The approved Special Use Permit case, SUP 15-01, includes condition #10 which states “*prior to the release of the 23rd certificate of occupancy [for a single-family detached residence], the Developer shall construct a 10’ wide paved greenway trail as shown on the attached Exhibit A or pay a fee-in-lieu to the Town of Rolesville in an amount no less than 100% of the estimate cost of constructing the same.*”. At the time of this agreement, the six (6) residential lots that would eventually be recorded under BM2016/Pg681-682, referred to as ‘Heritage Pluton Place’ and being Lots 201-206, were planned as part of the Granite Crest subdivision. Thus, with their development, six lots toward the initiation of this Condition have received certificates of occupancy. As laid out by the Developer, Phase IV(4)(b) would add 16 lots to this count, for a running total of 22 lots. Thus, this Condition will not be initiated until the Developer pursues

development of Phase IV(4)(c) or residential Lots 192-200, and the first of those lots achieves a Certificate of Occupancy (after full construction of a residence occurs).

Technical Review Committee

The Town of Rolesville's Technical Review Committee (TRC) has reviewed four (4) submittals of the preliminary subdivision plat, and there are no outstanding staff comments remaining.

Findings of Fact

The following findings, based on evidence and testimony received at an evidentiary hearing in accordance with procedures specified in the Unified Development Ordinance (UDO), must be made by the Town Board in order to approve a preliminary subdivision plat:

- A. That the proposed development and/or use will not materially endanger the public health or safety;
- B. That the proposed development and/or use will not substantially injure the value of adjoining property;
- C. That the proposed development and/or use will be in harmony with the scale, bulk, coverage, density, and character of the neighborhood in which it is located;
- D. That the proposed development and/or use will generally conform with the Comprehensive plan and other official plans adopted by the Town;
- E. That the proposed development and/or use is appropriately located with respect to transportation facilities, water and sewer supply, fire and police protection, and similar facilities;
- F. That the proposed development and/or use will not cause undue traffic congestion or create a traffic hazard;
- G. That the proposed development and use comply with all applicable requirements of this ordinance.

Potential Actions

- Approve the Preliminary Subdivision Plat and determine that the plat will meet the requirements of the Town's Unified Development Ordinance.
- Approve the Preliminary Subdivision Plat with modifications in consideration of information presented at the evidentiary hearing.
- Deny the Preliminary Subdivision Plat based on information presented at the evidentiary hearing with the stated reason for denial.

Suggested Town Board Motion

Motion to approve the preliminary subdivision plat for PR 22-02, Granite Crest Phase IV (4), based on the evidence and testimony received at the hearing to determine the Findings of Fact.

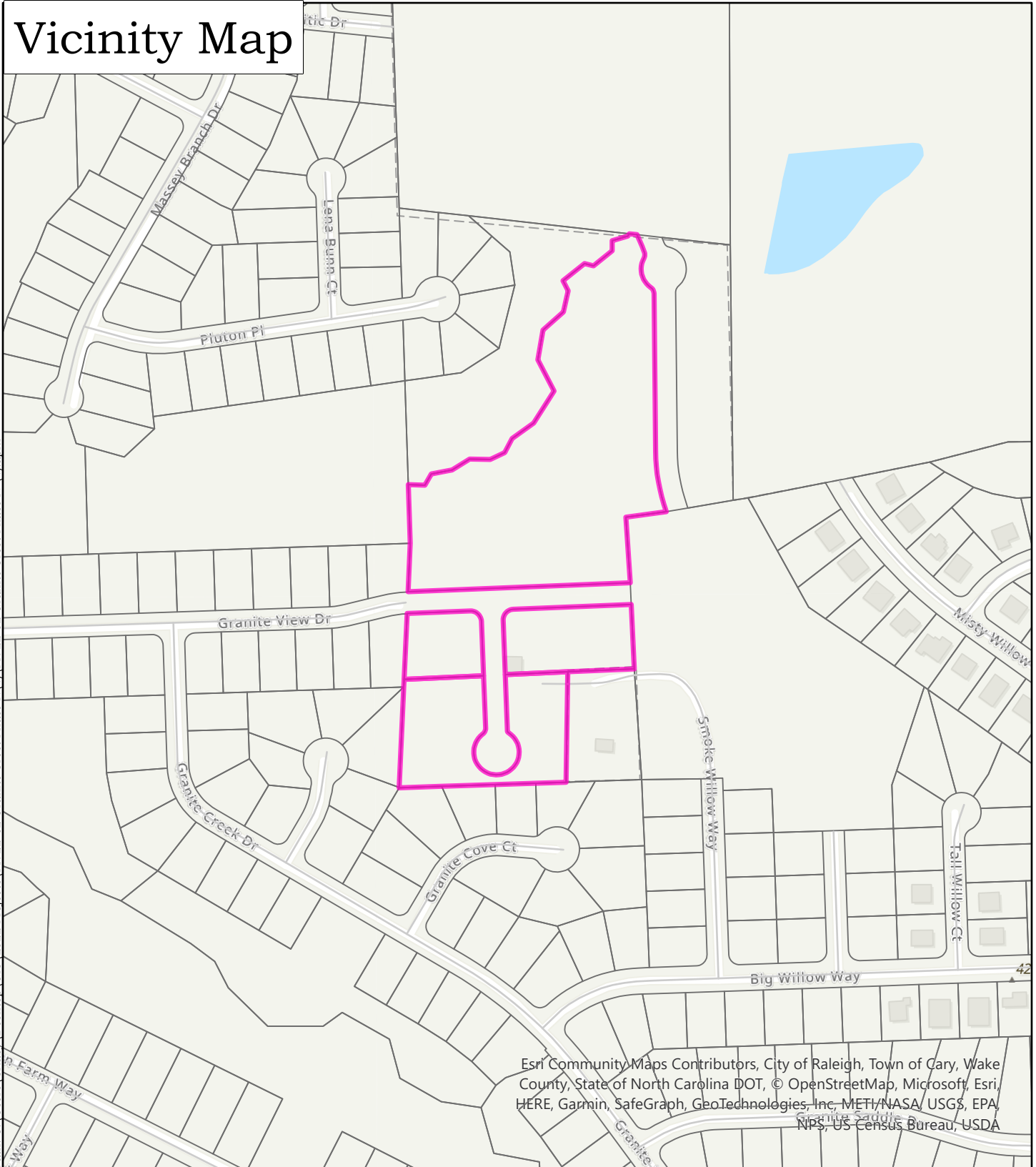
Attachments

1. Vicinity Map
2. Future Land Use Map
3. Zoning Map
4. Application
5. Preliminary Subdivision Plat revision date of 06-28-2022

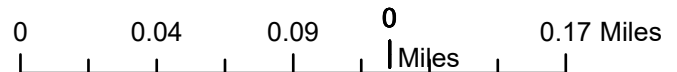
Vicinity Map

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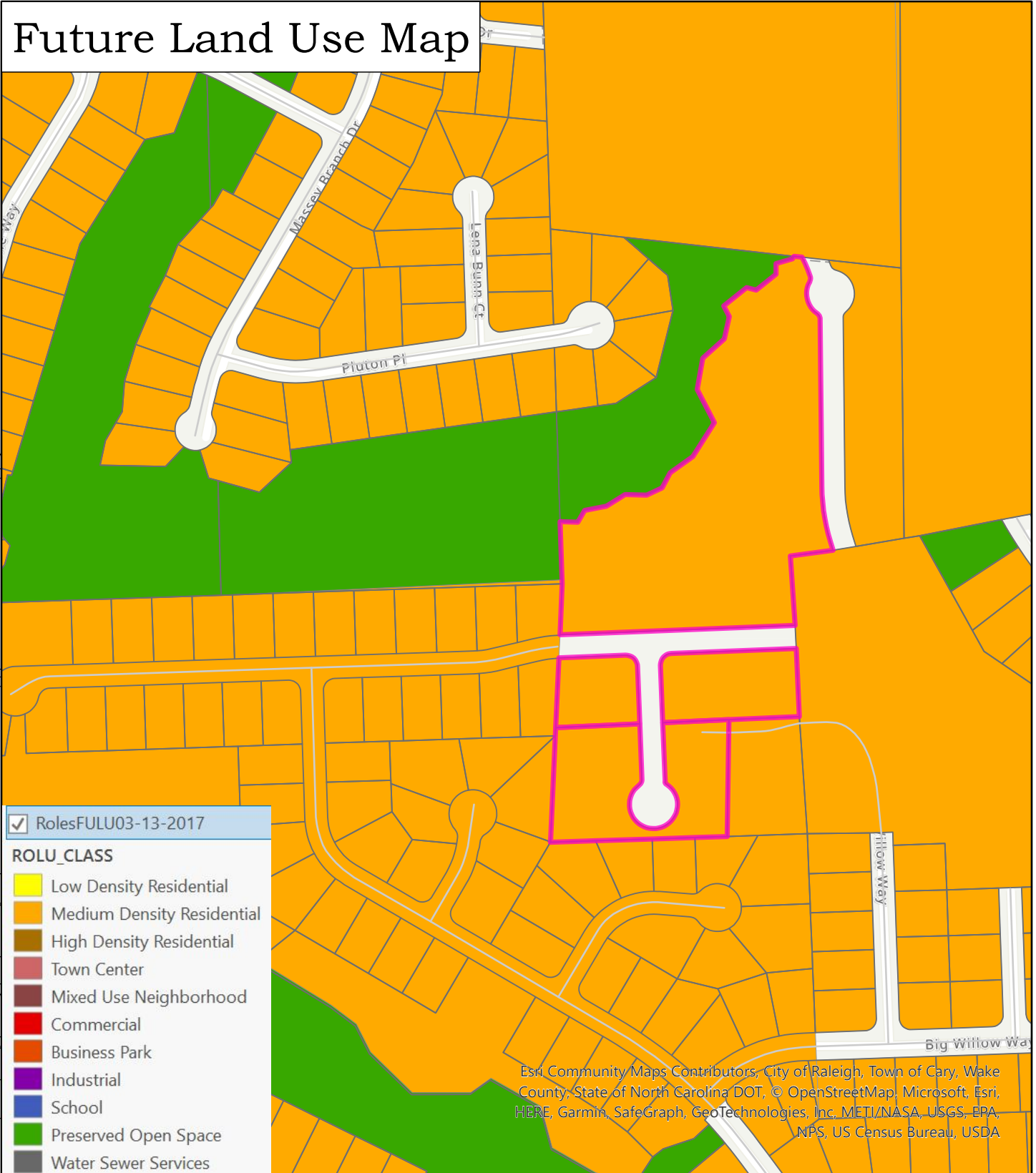
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Future Land Use Map

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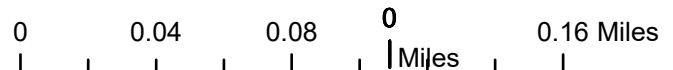


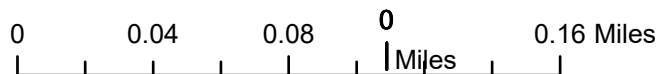
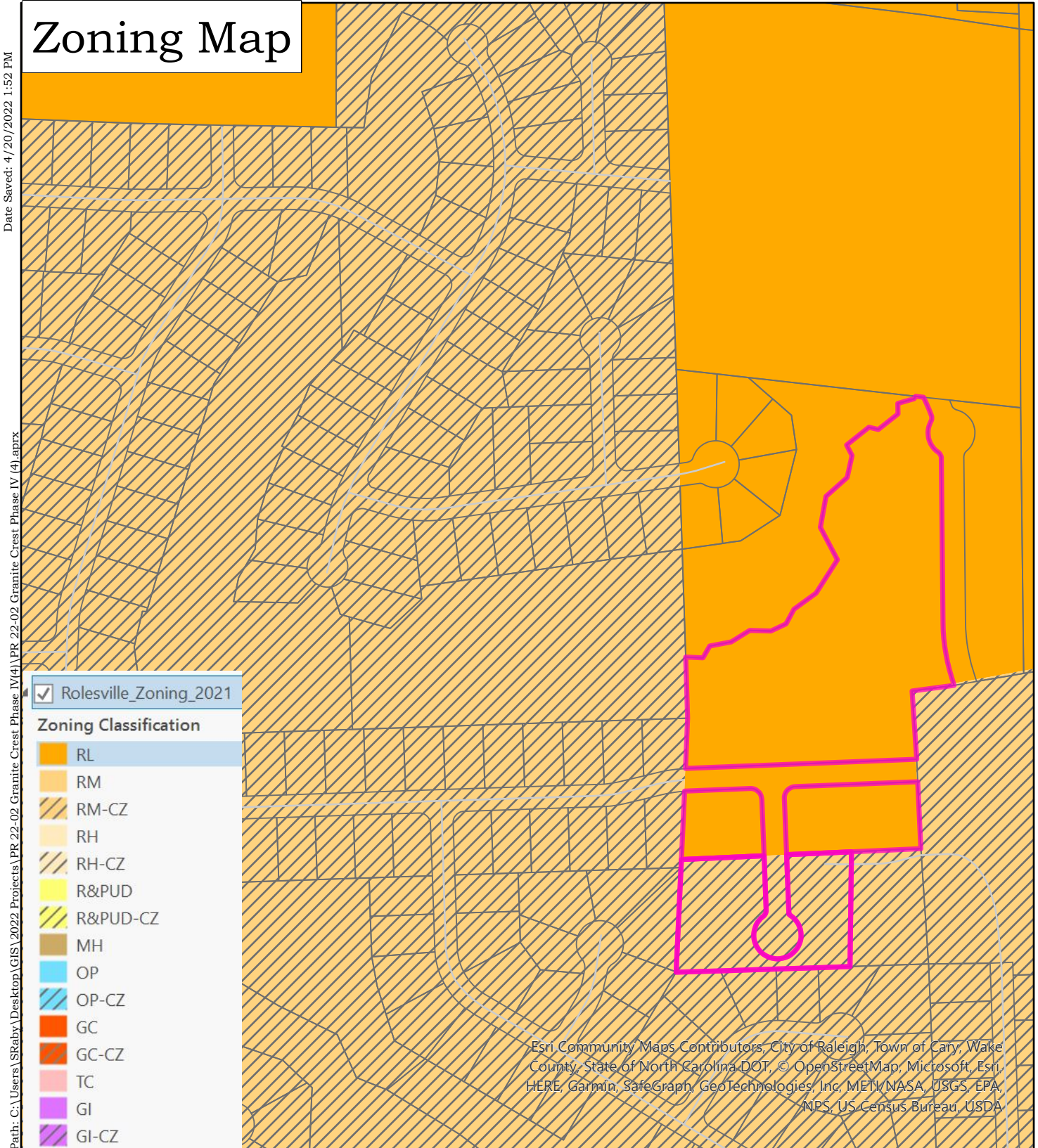
RolesFULU03-13-2017

ROLU_CLASS

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Town Center
- Mixed Use Neighborhood
- Commercial
- Business Park
- Industrial
- School
- Preserved Open Space
- Water Sewer Services

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Development Plan Review Application

Project/Development Name Granite Crest

Application Type Sketch Plan Preliminary Plat
 Construction Drawings Final Plat

Contact Information

Property Owner REAL ESTATE MARKETING & CONSULTING, INC

Address 6200 Falls of Neuse Road; Suite 102 City/State/Zip Raleigh, NC 27609

Phone (919) 865-9918 Email halperry@remc.us

Developer REAL ESTATE MARKETING & CONSULTING, INC

Contact Name Hal Perry

Address 6200 Falls of Neuse Roads; Suite 102 City/State/Zip Raleigh, NC 27609

Phone (919) 865-9918 Email halperry@remc.us

Design Engineering Company JAECO

Contact Name Travis Tyboroski

Address 333 Wade Avenue City/State/Zip Raleigh, NC 27605

Phone (919) 828-4428 Email info@jaeco.com

Property Information

Wake County PIN(s) 1759753474, 1759753092, 1759741891, 1759751000 Address 0 Pluton Place (amendment parcels only)
(amendment parcels only)

Total Property Acreage 106.557 Total Phases 4

Total Lots 206 Average Lot Size 0.29 ac (amendment parcels only)

Smallest Lot Size 0.22 ac (amendment parcels only) Largest Lot Size 0.43 ac (amendment parcels only)

I, as owner, developer, engineer, and/or agent, understand that I am responsible for all review fees due at the time of plan submittal. I understand that the Planning Department will not review my plans until I remit payment. I have read the Development Review Procedures, and I understand the review processes and requirements.

Signature  Date 02/22/2022

Town of Rolesville Planning

PO Box 250 / Rolesville, North Carolina 27571 / RolesvilleNC.gov / 919.554.6517

GRANITE CREST SUBDIVISION PHASE IV (PR-22-02) (LOTS 176-200, 209, 210, & 212)

PRELIMINARY PLAT 0 PLUTON PLACE ROLESVILLE, NC

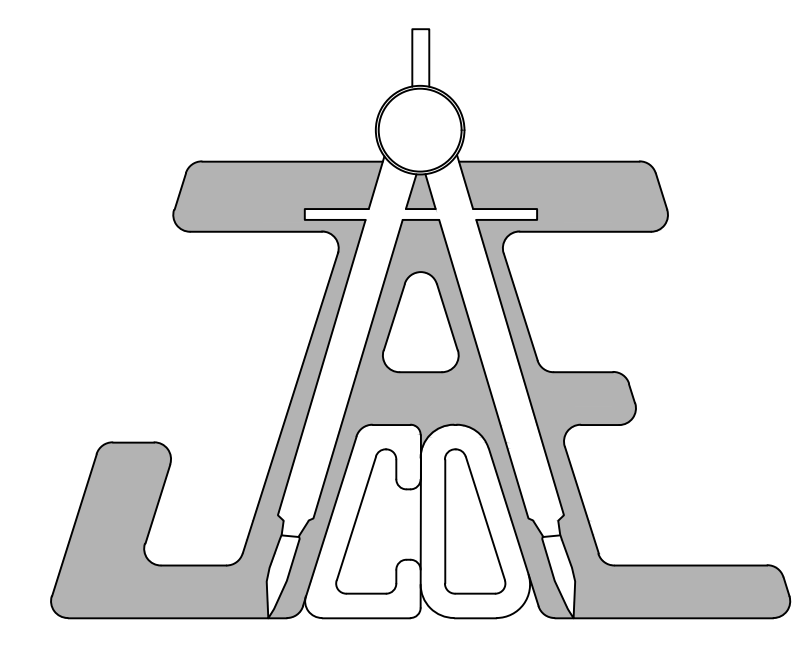
FEBRUARY 21, 2022
APRIL 14, 2022
MAY 26, 2022
JUNE 13, 2022
JUNE 15, 2022

LAST REVISED: JUNE 28, 2022

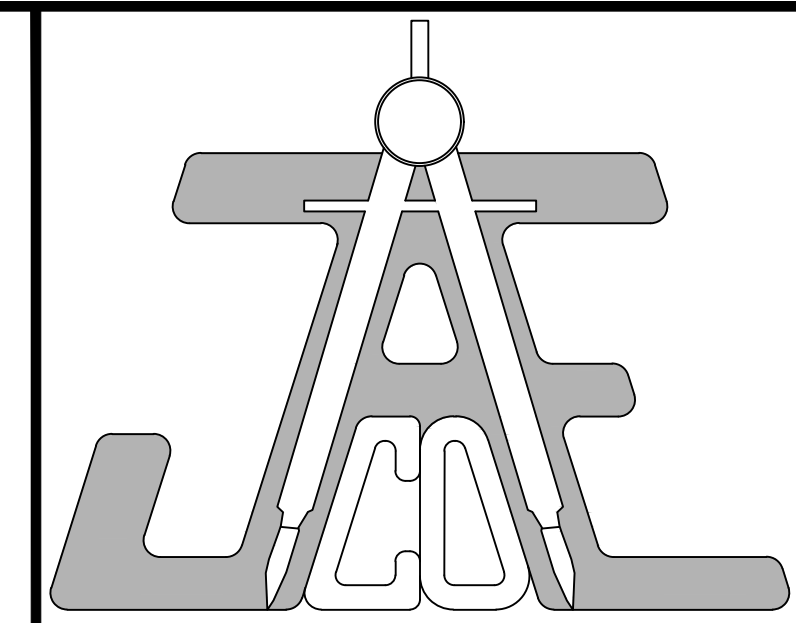
SHEET INDEX	
--	COVER
C-0	PRELIMINARY SUBDIVISION - OVERALL
C-1	EXISTING CONDITIONS & DEMOLITION PLAN
C-2	SUBDIVISION PLAN
C-3	SITE, SIGNAGE, & PAVEMENT MARKING PLAN
C-4	SITE DETAILS
C-5	EROSION & SEDIMENT CONTROL PLAN - PHASE I
C-6	EROSION & SEDIMENT CONTROL PLAN - PHASE II
C-7	EROSION & SEDIMENT CONTROL DETAILS
C-8	EROSION & SEDIMENT CONTROL DETAILS
C-13	STORMDRAIN & GRADING PLAN
C-17	STORMDRAIN DETAILS
C-18	UTILITY PLAN
C-20	UTILITY DETAILS
C-21	UTILITY DETAILS

OWNER/DEVELOPER:
REAL ESTATE MARKETING & CONSULTING, INC
6200 FALLS OF NEUSE ROAD
SUITE 102
RALEIGH, NC 27609
Phone: (919) 865-9918
E-mail: halpery@remc.us

CIVIL ENGINEER:
JAECO
Consulting Engineers
NC License F-0289
333 Wade Ave., Raleigh, N.C. 27605
Phone: (919) 828-4428
Fax: (919) 828-4711
E-mail: info@jaeco.com



ABBREVIATIONS	
APPLICABLE TO ENTIRE PLAN SET	
AC	ACRE
APPROX	APPROXIMATE
B-B	BACK-TO-BACK
BM	BOOK OF MAPS
B/O	BLOW-OFF ASSEMBLY
CB	CATCH BASIN
CIP	CAST IRON PIPE
CL	CENTERLINE
CO	CLEANOUT
CONC	CONCRETE
COR	CITY OF RALEIGH
CP	COMPUTED POINT
DB	DEED BOOK
DI	DROP INLET
DIP	DUCTILE IRON PIPE
DTL	DETAIL
ECM	EX CONC MONUMENT
EIP	EX IRON PIPE
EIR	EX IRON ROD
ELEC	ELECTRIC
ELEV	ELEVATION
EMAG	EX MAG NAIL
EOP	EDGE OF PAVEMENT
ESMT	EASEMENT
EX	EXISTING
FDC	FIRE DEPARTMENT CONNECTION
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
FH	FIRE HYDRANT
FM	FORCE MAIN
FP	FLOODPLAIN
GIS	GEOGRAPHIC INFORMATION SYSTEM
GM	GAS METER
GP	GALVANIZED PIPE
GW	GUY ANCHOR
HB	HOT BOX
HDPE	HIGH DENSITY POLYETHYLENE
IPS	IRON PIPE SET
LF	LINEAR FEET
LP	LIGHT POLE
LOC	LOCATION
MAGS	MAG NAIL SET
MH	MANHOLE
MW	MONITORING WELL
N/F	NOW OR FORMERLY
NCDDOT	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PG	PAGE
PP	POWER POLE
PROP	PROPOSED
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONC PIPE
ROW	RIGHT-OF-WAY
R/W	RIGHT-OF-WAY
RSDM	RALEIGH STREET DESIGN MANUAL
SF	SQUARE FEET
SS	SANITARY SEWER
STD	STANDARD
SWM	STORMWATER MANAGEMENT
TBD	TO BE DETERMINED
TBR	TO BE REMOVED
TBRL	TO BE RELOCATED
TCE	TEMPORARY CONSTRUCTION ESMT
TF	ELECTRIC TRANSFORMER
TP	TELEPHONE PEDESTAL
TYP	TYPICAL
UDO	UNIFIED DEVELOPMENT ORDINANCE
UNK	UNKNOWN
VCP	VITRIFIED CLAY PIPE
WV	WATER VALVE
WLE	WATER LINE ESMT
WM	WATER METER
YI	YARD INLET



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Granite Crest - Phase IV
0 Pluton Place
Rolesville, NC

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6200 Falls of Neuse Rd.
Suite 102
Raleigh, NC 27609

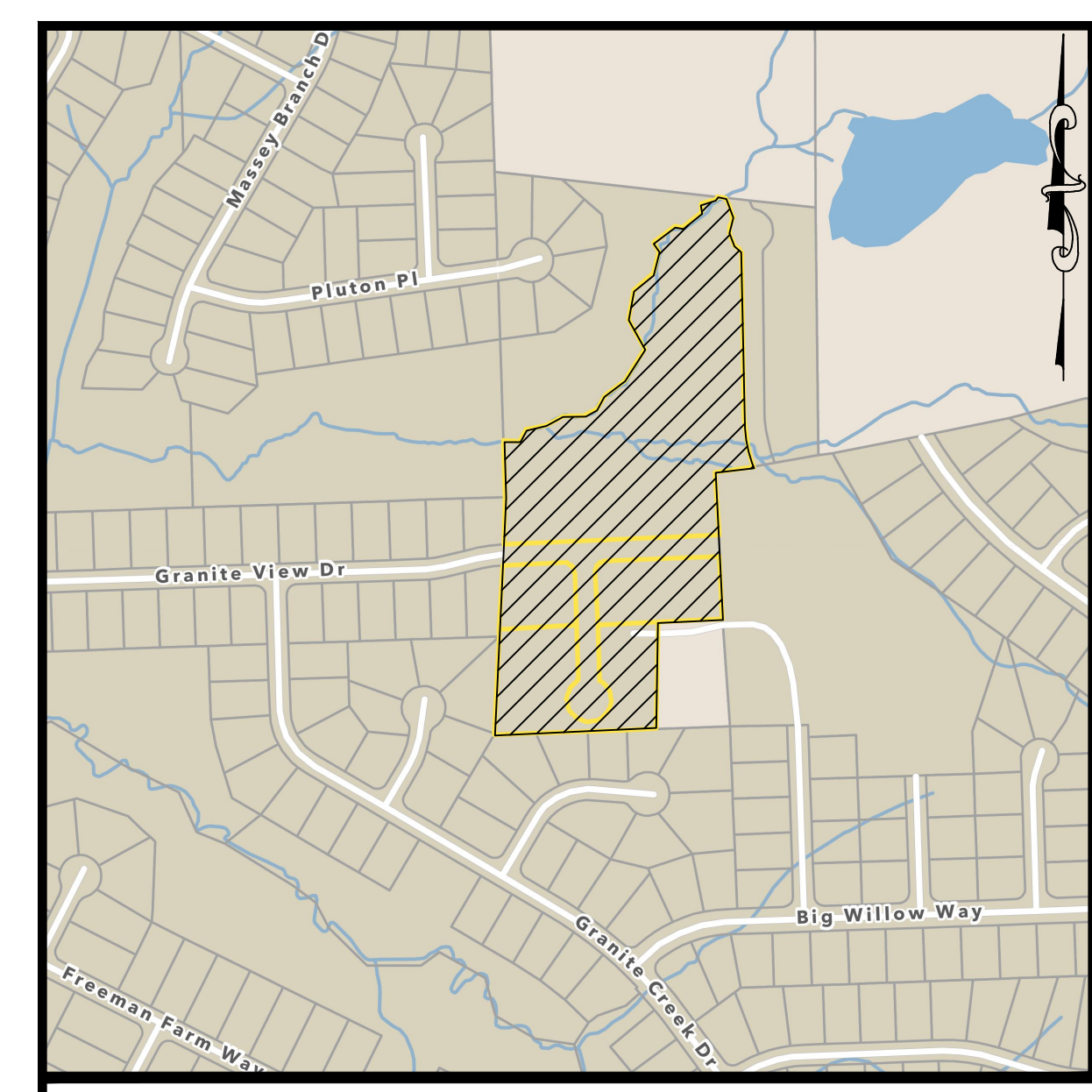
Call 811 before you dig.

LEGEND

COVER

Revisions		
Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	FOR BOARD HEARING	06/28/22

JAECO #: 364-04
DRAWING SCALE: AS SHOWN
DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 02/21/2022



VICINITY MAP
NOT TO SCALE

SITE DATA TABLE		
ADDRESS	0 PLUTON PLACE	
WAKE COUNTY PINS	1759753474, 1759757603, 1759751000, 1759753092, 1759741891	
ZONING	R2-SUD	
LOT 209 (BM2016 PG679 & BM2016 PG681)	270,811 SF	
LOT 210 (BM2016 PG679)	79,544 SF	
LOT 211 (BM2016 PG679)	26,337 SF	
LOT 212 (BM2016 PG679)	45,206 SF	
LOT 213 (BM2016 PG679)	80,167 SF	
PHASE III (BM2003 PG1836)	2,966 SF	
TOTAL TRACT AREA	505,031 SF	
AREA IN LOTS	307,910 SF	25 LOTS
LOT 209 REMAINDER	166,929 SF	
LOT 210 REMAINDER	22,560 SF	
LOT 212 REMAINDER	7,632 SF	
TOTAL PHASE IV AREA (LOTS 176-200, 209, 210, & 212)	11,594 AC (505,031 SF)	25 LOTS
PREVIOUSLY APPROVED AREA (PHASES I-III)	88,513 AC	174 LOTS
TOTAL PROJECT AREA ("GRANITE CREST" aka "WILLOW CREST")	100.107 AC	199 LOTS
OPEN SPACE		
PHASE IV	4.35 AC	
PREVIOUSLY APPROVED	23.28 AC	
TOTAL	27.63 AC	
BASE DIMENSIONAL STANDARDS		
	REQUIRED	PROVIDED (PHASE IV ONLY)
MINIMUM LOT AREA	11,250 SF*	11,262 SF
MINIMUM LOT WIDTH	85'	85'
MINIMUM LOT WIDTH AT CUL-DE-SAC (AT FRONT YARD SETBACK)	35'	66.1'
FRONT YARD SETBACK	30'	30'
SIDE YARD SETBACK	12'	12'
CORNER YARD SETBACK	22'	22'
REAR YARD SETBACK	25'	25'
MAXIMUM BUILDING HEIGHT	35'	35' MAX
PROPOSED DENSITY	25 UNITS / 11,594 AC = 2.16 U/A	
PARKING CALCULATIONS (PHASE IV ONLY)		
SPACES		
MAIL KIOSK	3 SPACES (INCLUDING 1 ADA VAN)	3
TOTAL		3
IMPERVIOUS SUMMARY (PHASE IV ONLY)		
EXISTING	0.20 AC	
RIGHT-OF-WAY	1.40 AC ±	
25 LOTS (3,000 SF MIA PER LOT)	1.72 AC [ALLOCATED]	
LOT 212	0.10 AC ±	
GREENWAY & CONNECTION	0.20 AC ±	
TOTAL	3.42 AC ±	
UTILITIES (PHASE IV ONLY)		
STUBS	33	
WATER	PUBLIC LENGTH (SIZE)	1,600 LF± (8")
	PRIVATE LENGTH (SIZE)	50 LF± (6")
SEWER	PUBLIC LENGTH (SIZE)	1,800 LF± (8")
	PRIVATE LENGTH (SIZE)	0 LF
STREETS (PHASE IV ONLY)		
SMOKE WILLOW WAY	655 LF	
GRANITE VIEW DRIVE	545 LF	
CRESTOVER COURT	354 LF	
TOTAL	1,544 LF	

*PER SPECIAL USE PERMIT DATED SEPTEMBER 07, 2004

- All homes built on the six (6) lots accessible off of Pluton Place shall be a minimum of 2,500 heated square feet. All homes built on the other twenty-five (25) lots, accessible from Granite Crest Subdivision, shall be a minimum of 2,250 heated square feet.
- All homes shall have, at minimum, a two car garage.
- All front loaded, two car garages shall have two separate garage doors. Three car, front loaded garages may have one double door and one single door if so desired. Side loaded garages may be fitted with any combination of doors.
- No home shall be clad with aluminum or vinyl siding.
- All homes shall either be "crawl space" or "stem-wall" type foundations. Those houses with "stem-wall" type foundations shall have a brick veneer around the full perimeter and be made accessible in compliance with the American with Disabilities Act (ADA).
- All houses shall have sheathing that is nominally 1/2 inch or greater OSB, Densglass, or other similar materials. No "thermosly" or narrow wall panel structural sheathing will be permitted. All garages shall be completely dry walled for fire and energy rating purposes.
- The architectural requirements of the neighborhood for both homes and accessory structures shall include an anti-monotony policy whereby duplicate plans/colors shall not be allowed on adjacent lots.
- All homes accessible from Pluton Place shall, at a minimum, be similar in architectural features, size, and materials as those in the adjoining section of Heritage Subdivision. General architectural requirements of the entire neighborhood will be governed by recorded conditions, covenants, and restrictions. The developer shall submit a copy of the conditions, covenants, and restrictions to the Town of Rolesville to allow the Town Attorney to review them before recordation.
- All required open space and drainage easements shall be owned and maintained by the homeowners association in perpetuity.
- Prior to the recordation of any lots in the development, the developer shall dedicate all required greenway easements to the Town. Prior to the release of the twenty-third (23rd) certificate of occupancy, the developer shall construct a 10 feet wide paved greenway trail as shown on the attached Exhibit A or pay a fee-in-lieu to the Town of Rolesville in an amount no less than 100% of the estimated cost of constructing same.
- Prior to the recordation of any lots in the development, all required public rights of way, including but not limited to, that portion of Smoke Willow Way that would extend to the northern property line beyond the proposed cul-de-sac, shall be dedicated to the Town. The cul-de-sac shall be abandoned at such time as the road is extended to the north.
- Prior to the issuance of the first Certificate of Occupancy in each section (either those 6 lots accessible from Pluton Place or the 25 lots accessible from Granite Crest Subdivision), the developer shall construct either a centralized mail kiosk and associated parking area or individual mailboxes to the satisfaction of the Town, Wake County Inspections, and the United States Postal Service.
- If unmarked human burials or human skeletal remains are encountered as a result of construction or agricultural activities, disturbance of the remains shall cease immediately and shall not resume without authorization from either the county medical examiner or the State Archaeologist.
- All other required landscaping shall be maintained in perpetuity. Should any plantings become diseased, damaged, or die then the property owner shall be required to be replaced with others in the same quantities, of similar sizes, and of similar species so as to blend with the existing landscaping.
- The developer shall notify all adjacent property owners no less than seven days prior to any blasting activities on the site.
- At no time shall development activities exceed the noise standards set forth in Rolesville Town Code of Ordinances Chapter 130.
- The final layer of asphalt, on the streets fronting recorded lots, shall be put down according to Town standards before 1 year after the issuance of the first building permit or the release of the twenty-third (23rd) certificate of occupancy, whichever comes first.
- For so long as the 50' pump station access easement recorded in BM2008 PG 1173 remains in effect, no building permit shall be issued for Lots 179, 184 and 186. Provided all other applicable requirements have been met, building permits for Lots 179, 184 and 196 may be issued only after the 50' pump station access easement recorded in BM2008, PG 1173 is relocated to outside of all proposed buildable lots and approved by the City of Raleigh and Town of Rolesville and such relocated easement plat is recorded.
- In the event that the fifty-foot wide area shown on the approved plans for the Granite Crest Lots mail kiosk (and associated parking) and access drive to the Meyer's property is dedicated to the Town of Rolesville as a future public street, developer or its successor in interest shall obtain from the Town of Rolesville an encroachment agreement for such non-public street improvements to be so located in a public right-of-way; however, the Town of Rolesville shall have no obligation to maintain or accept for maintenance such dedicated right-of-way until such time as the improvement of such dedicated right-of-way meets or exceeds the then Town standards and requirements for a public street.

SUP 15-01 CONDITIONS OF APPROVAL
(DB1629 PG2794)



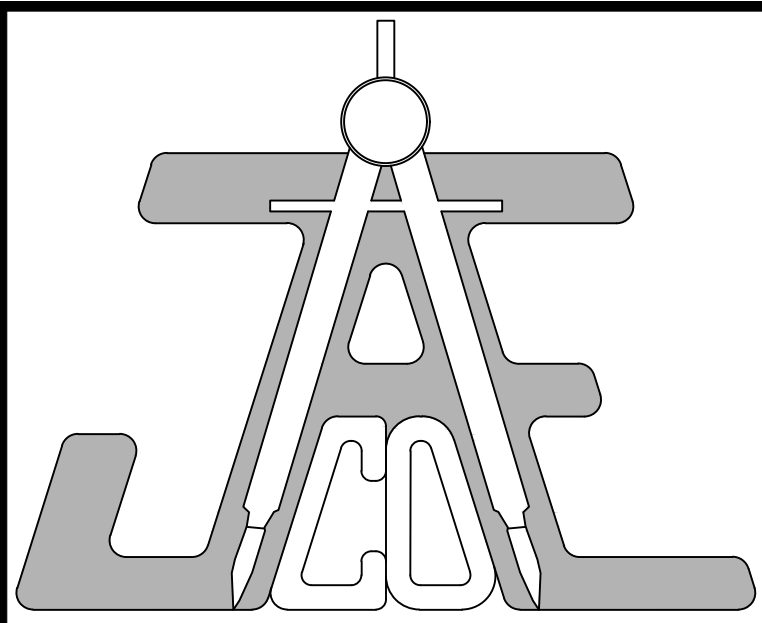
ADJACENT OWNER TABLE

PIN	OWNER	DB	PG	ZONE	
1	1759669030	N/F WHITMIRE, DAVID WAYNE WHITMIRE, MARY KATHERINE	16422	522	R2-SUD
2	1759659932	N/F WINSLETT, LEE WINSLETT, JULIA	16928	1313	R2-SUD
3	1759659833	N/F REEVES, MARTIN D REEVES, REBECCA E	17047	325	R2-SUD
4	1759659678	N/F THOMAS, BRIAN J THOMAS, KATHERINE P	16129	182	R2-SUD
5	1759659178	N/F SABA, ANDREA COLIANNI, SARA	18569	1044	R2-SUD
6	1759649979	N/F HARRIS, CASEY E HARRIS, SARAH BETH	17626	837	R2-SUD
7	1759648886	N/F EPPERSON, CHRISTOPHER A EPPERSON, CORNELIA L	17261	996	R2-SUD
8	1759649758	N/F JUNK, PHILIP JUNK, KATHERINE	17185	154	R2-SUD
9	1759649625	N/F SIMONTON, JEFFREY A SIMONTON, ROBIN A	17389	1770	R2-SUD
10	1759740671	N/F ROBINSON, NICHOLAS ROBINSON, MARIANNE	17426	2390	R2-SUD
11	1759741673	N/F SNYDER, ALLIE MARIE SNYDER, BENJAMIN D	17508	2370	R2-SUD
12	1759742673	N/F LIPPERT, REBECCA	17653	902	R2-SUD
13	1759743674	N/F HHOMES RALEIGH-DURHAM LLC	18544	1079	R2-SUD
14	1759744691	N/F PETREE, CHRISTOPHER RYAN PETREE, MEGHANN	17190	1529	R2-SUD
15	1759744497	N/F KLOSS, JONATHAN A KLOSS, SARAH R	17295	136	R2-SUD
16	1759745333	N/F WILSON, GREGORY WILSON, ELIZABETH	17126	1215	R2-SUD
17	1759745133	N/F HOOKS, DONTIQUE HOOKS, ERIKA	18215	1450	R2-SUD
18	1759746041	N/F ELKO, ROBERT JOHN ELKO, JENDI RAE	17224	2294	R2-SUD
19	1759747041	N/F FIEDLER, MICHAEL FIEDLER, ROBIN	17141	2182	R2-SUD
20	1759748031	N/F DUNCAN, CHRISTOPHER GENTRY DUNCAN, TANYA MARIE	17197	2049	R2-SUD
21	1759749012	N/F BRAY, CATHERINE WILSON BRAY, TRENT EDWARD	17173	536	R2-SUD
22	1759840002	N/F LONG, GENE E. LONG, ALINE M.	17078	909	R2-SUD

ADJACENT OWNER TABLE

PIN	OWNER	DB	PG	ZONE	
23	1759840082	N/F MATHER, JEFFREY MATHER, KATHRYN	17115	752	R2-SUD
24	1759841082	N/F PAPP, JON-MICHAEL PAPP, SHANA L	17107	785	R2-SUD
25	1759842071	N/F LINBOOM, DANIELLE N	16610	2041	R2-SUD
26	1759833959	N/F SCHMAHL, JOHN P SCHMAHL, AMY L	16639	65	R2-SUD
27	1759834928	N/F RUSSELL, SEAN C RUSSELL, AMY	15695	1725	R2-SUD
28	1759834988	N/F PAUL, RYAN J PAUL, CRESCENTA	16579	1363	R2-SUD
29	1759845070	N/F MALLETTE, ALONZO M IV LUEITAIN-MALLETTE, SACHEEN T	15824	165	R2-SUD
30	1759846052	N/F DURDEN, RICHARD	15675	413	R2-SUD
31	1759847033	N/F LUCAS, JOSEPH LUCAS, MAGGIE LOIS	15899	2320	R2-SUD
32	1759848025	N/F STAFFORD, KAREN D	16463	604	R2-SUD
33	1759849025	N/F CLARKE, JULIAN PATRICE	17261	2061	R2-SUD
34	1759940005	N/F GRAHAM, NICKEY CHARLES GRAHAM, LAURA MILLER	17271	2451	R2-SUD
35	1759940096	N/F MISTRETTA, TARA	17197	2361	R2-SUD
36	1759941086	N/F TODD, KEVIN M TODD, DORINDA	17206	254	R2-SUD
37	1759956689	N/F ACORD, GARY D ACORD, KIM C	16239	2442	R-1
38	1759750942	N/F ARSENAULT, DANIEL A ARSENAULT, MICHELLE L	16604	451	R2-SUD
39	1759751943	N/F MAXWELL, SHANE M MAXWELL, KENDRA L	16825	1118	R2-SUD
40	1759752807	N/F SOROKA, THOMAS JR TRUSTEE SOROKA, CYNTHIA K TRUSTEE	16735	1055	R2-SUD
41	1759752707	N/F THOMAS, ANDREW L THOMAS, LESLIE A	18754	403	R2-SUD
42	1759751659	N/F DODDINS, BRYAN EDWARD DODDINS, HEATHER OCTAVIA	18130	535	R2-SUD
43	1759750659	N/F BRENZY, KEVIN J BRENZY, LAUREN E	17125	870	R2-SUD
44	1759752637	N/F HERITAGE THREE HOMEOWNER'S ASSOCIATION INC	17493	2011	R2-SUD

- ### NOTES
- TURN LANES TO BE CONSTRUCTED ALONG WEST YOUNG STREET NCSR 1945 PER NCDOT STANDARDS.
 - ALL PUBLIC STREETS PER NCDOT STANDARDS.
 - FEE-IN-LIEU OF LAND TO BE PAID FOR PARK.
 - PONDS AND WETLANDS TO BE MAINTAINED FOR STORM WATER MANAGEMENT.
 - MONTHLY MAINTENANCE OF PONDS AND WETLANDS BY THE HOMEOWNERS ASSOCIATION.
 - SIDEWALK TO BE CONSTRUCTED ALONG WEST YOUNG STREET FROM SUBDIVISION TO COTTON PAWS STREET, APPROXIMATELY 800 FEET.
 - STREET AND TRAFFIC SIGNS TO BE PAID FOR BY THE OWNER.
 - STREET LIGHTING UPGRADE OF FIXTURES TO BE PAID FOR BY THE OWNER.
 - RIPARIAN BUFFERS AND WETLANDS TO BE APPROVED BY DIVISION OF WATER QUALITY AND CORPS OF ENGINEERS.
 - CONTRACTOR TO FIELD VERIFY LOCATION & ELEVATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF CONFLICTS.
 - CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH, TOWN OF ROLESVILLE, AND/OR NCDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
 - PER SUP15-01 PROVISION #10 "PRIOR TO THE RELEASE OF THE 23 CERTIFICATE OF OCCUPANCY, THE DEVELOPER SHALL CONSTRUCT A 5 FEET WIDE PAVED GREENWAY TRAIL AS SHOWN ON THE APPROVED PLAN OR PAY A FEE-IN-LIEU TO THE TOWN OF ROLESVILLE IN AN AMOUNT NO LESS THAN 100% OF THE ESTIMATED COST OF CONSTRUCTING THE SAME."



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LEGEND

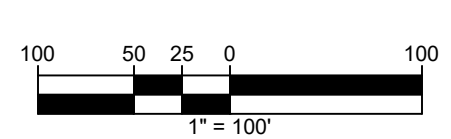
	ZONING BOUNDARY
	PHASE BOUNDARY
	PHASE IVb (BM2016 PG679)
	PHASE IVc (BM2016 PG682)

***NOTE**
 LOT 132 SHALL NOT BE DEVELOPED UNTIL SUCH TIME THAT ACCESS TO A PUBLIC RIGHT-OF-WAY IS PROVIDED TO PIN 1759744853 (N/F MEYERS, JAMES & MEYERS, TERRI G) AND THE EXISTING 50' COR PUMP STATION ACCESS EASEMENT (BM2008 PG1173) CAN BE ABANDONED.

PRELIMINARY SUBDIVISION - OVERALL

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	FOR BOARD HEARING	06/28/22

JAECO #: 364-04
 DRAWING SCALE: 1" = 100'
 DRAWN BY: TT
 CHECKED BY: TT
 DATE ISSUED: 02/21/2022



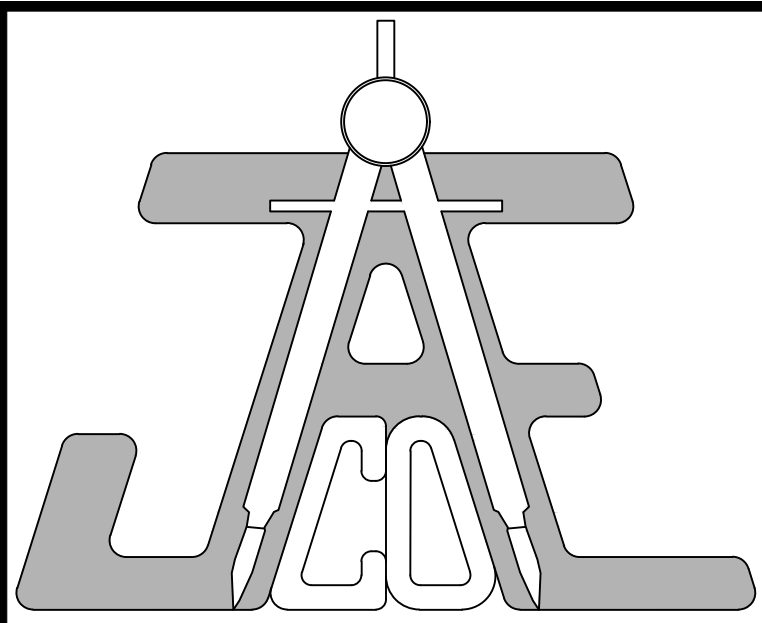
C-0

GENERAL NOTES:

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- CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH, TOWN OF ROLESVILLE, AND/OR NCDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
- 50' NEUSE RIVER BUFFER SHOWN HEREIN IS BASED ON THE "BUFFER DETERMINATION LETTER" (NBRRO #21-286) ISSUED SEPTEMBER 9, 2021 AND FLAGGING OF THE SAME BY S&EC.
- DEMOLITION INCLUDES CLEARING AND GRUBBING OF ALL VEGETATION WITHIN LIMIT OF DISTURBANCE. NO EXISTING VEGETATION IS REQUIRED TO BE PRESERVED.
- GIS TOPOGRAPHIC INFORMATION SHOWN HEREON OBTAINED FROM WAKE COUNTY OPEN DATA (ftp://wakeftp.co.wake.nc.us/GIS/Webdownloads/TOPOGRAPHIC/WAKE_2013) TILE 1759 ON JANUARY 22, 2022.

CURVE TABLE					
CURVE	LENGTH	RADIUS	DELTA	CHORD	CHORD BEARING
C1	39.27'	25.00'	090°00'00"	35.36'	S42° 41' 38"W
C2	13.61'	16.50'	047°14'51"	13.22'	S25° 55' 33"E
C3	258.70'	52.00'	285°02'58"	63.28'	S87° 01' 30"E
C4	16.65'	16.50'	057°48'07"	15.95'	N26° 35' 56"E
C5	39.27'	25.00'	090°00'00"	35.36'	N47° 18' 22"W
C6	123.79'	425.00'	016°41'19"	123.35'	S08° 54' 36"E
C7	15.78'	16.50'	054°47'07"	15.18'	N27° 57' 30"W
C8	76.36'	52.00'	084°08'27"	69.68'	S13° 16' 50"E
C9	14.02'	16.50'	048°40'59"	13.60'	N04° 26' 54"E
C10	44.11'	375.00'	006°44'22"	44.08'	N23° 15' 47"W

LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	38.36'	N87° 42' 41"W
L2	29.97'	S29° 53' 30"W
L3	48.55'	S79° 01' 22"W
L4	47.87'	S58° 07' 59"W
L5	47.01'	N88° 30' 29"W
L6	37.08'	S64° 43' 06"W
L7	36.74'	S28° 07' 01"W
L8	60.74'	S54° 12' 53"W
L9	87.60'	S32° 37' 58"W
L10	81.40'	S27° 31' 56"E
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L13	49.73'	S12° 28' 02"W
L14	26.07'	S27° 11' 30"E
L15	63.52'	S51° 18' 29"W
L16	21.31'	N75° 48' 43"W
L17	55.39'	S51° 27' 49"W
L18	23.15'	S00° 08' 58"E
L19	37.47'	S73° 39' 37"W
L20	17.60'	N83° 37' 04"W
L21	6.25'	S31° 14' 27"W
L22	18.50'	S17° 15' 16"E



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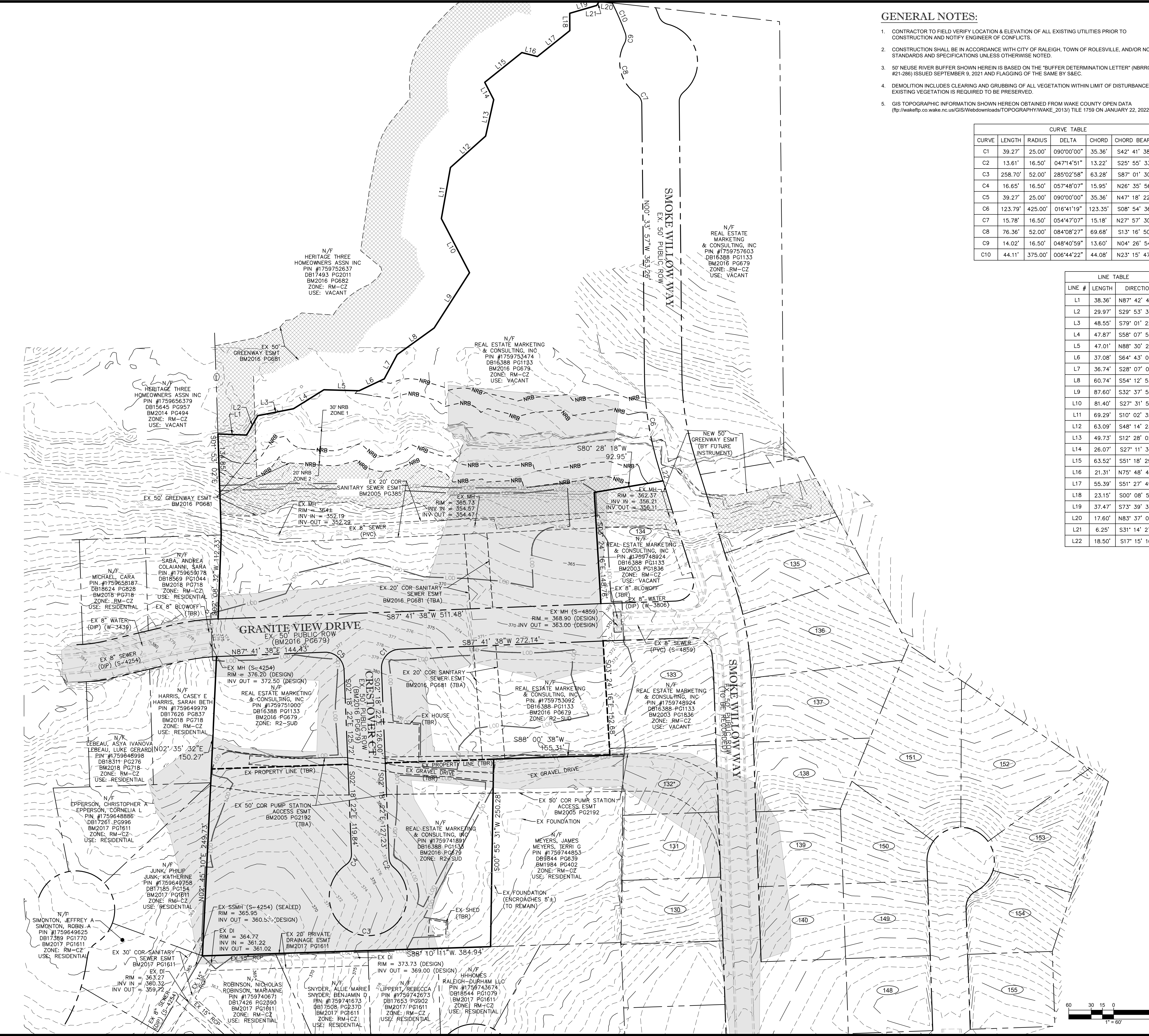
LEGEND	
---	LIMIT OF DISTURBANCE
---	PROPERTY LINE
---	PROPERTY LINE (TBR)
---	RIGHT-OF-WAY LINE
---	ADJACENT PROPERTY LINE
---	EX ESMT
---	EX ESMT TBA
---	STREAM TOP OF BANK (PER NBRRO #21-286)
---	37% NRB
---	38% NRB
---	NEUSE RIVER BUFFER
---	EX MINOR CONTOUR
---	EX MAJOR CONTOUR
---	EX WATER
---	EX SANITARY SEWER
---	EX STORM DRAIN
---	LIMITS OF FIELD TOPO (SUPPLEMENTED BY GIS)
---	EX 50' GREENWAY ESMT (BM2016 PG681)

EXISTING CONDITIONS & DEMOLITION PLAN

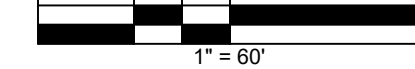
Revisions		
Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

JACO # 364-04
DRAWING SCALE: 1" = 60'
DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 01/30/2022

C-1



TAMAR (2017) NC GRID



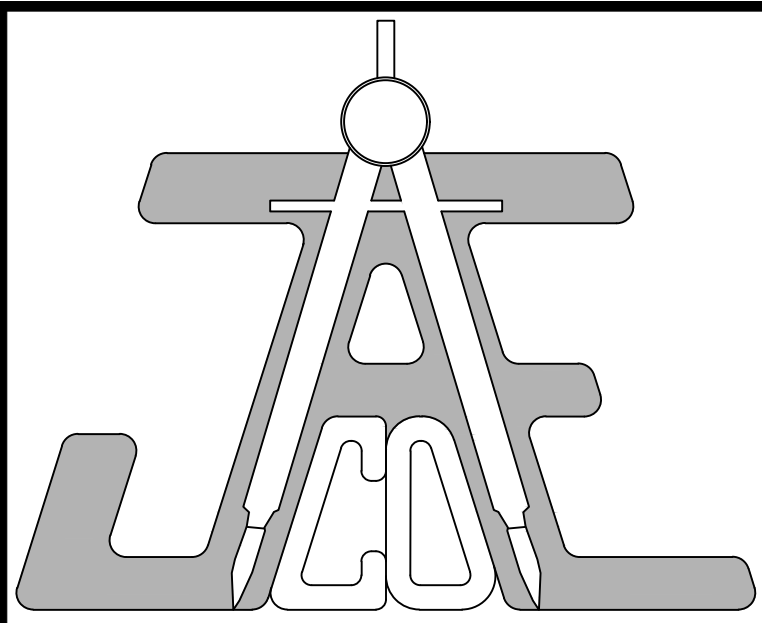
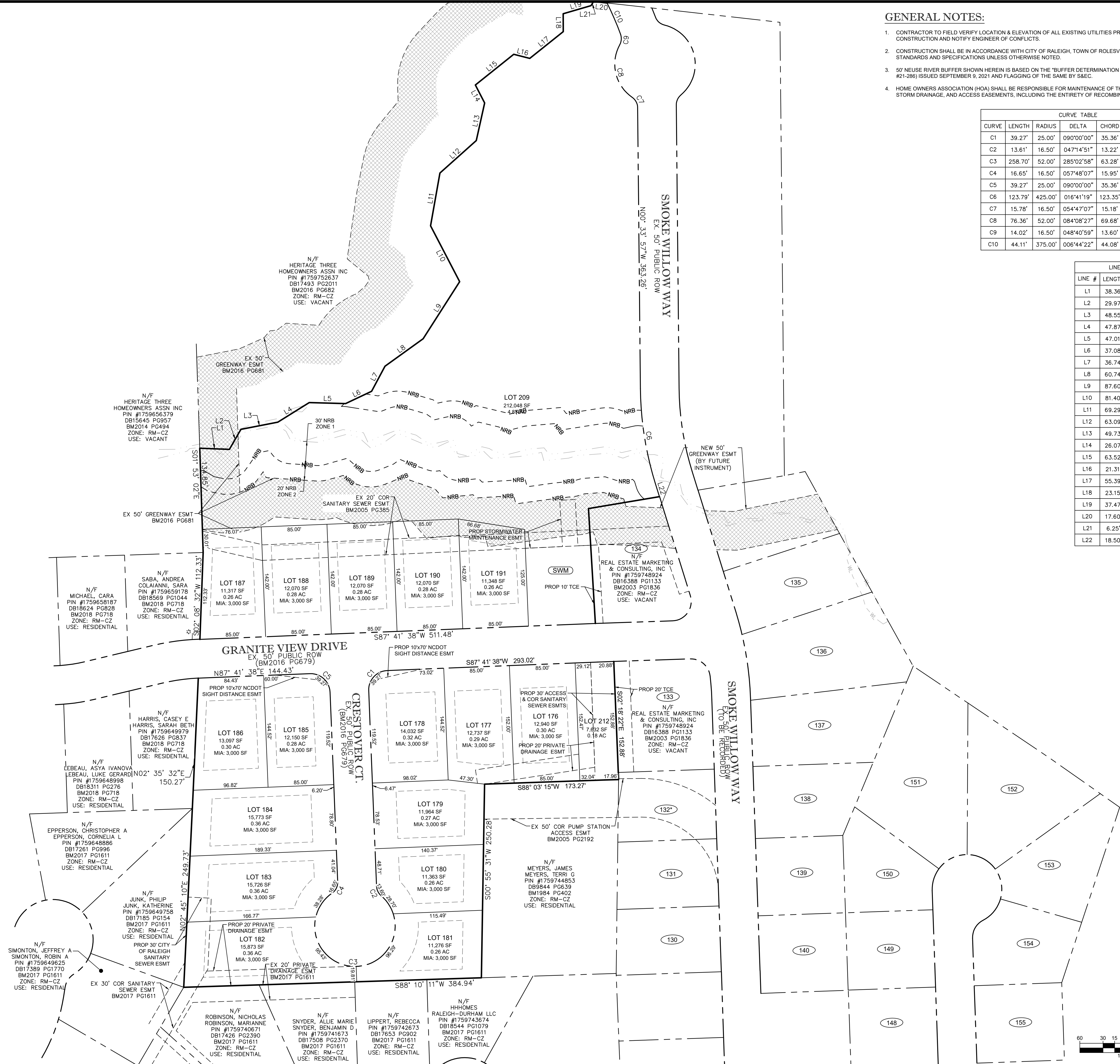
TAMARAC (2017) NC GRID

GENERAL NOTES:

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Rolesville, NC

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6200 Falls of Neuse Rd.
Suite 102
Raleigh, NC 27609

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LEGEND

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

SUBDIVISION PLAN

JAECO #: 364-04
DRAWING SCALE: 1" = 60'
DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 01/30/2022



N/F
HERITAGE THREE
HOMESOWNERS ASSN INC
PIN #1759636379
DB15645 PG957
BM2014 PG494
ZONE: RM-CZ
USE: VACANT

N/F
SABA, ANDREA
COLAJANNI, SARA
PIN #1759659178
DB18569 PG1044
BM2018 PG718
ZONE: RM-CZ
USE: RESIDENTIAL

N/F
MICHAEL, CARA
PIN #1759658187
DB18624 PG828
BM2018 PG718
ZONE: RM-CZ
USE: RESIDENTIAL

N/F
HARRIS, CASEY E
HARRIS, SARAH BETH
PIN #1759649979
DB17626 PG837
BM2018 PG713
ZONE: RM-CZ
USE: RESIDENTIAL

N/F
LEBEAU, ASYA IVANOVA
LEBEAU, LUKE GERARD
PIN #1759648988
DB18311 PG276
BM2018 PG718
ZONE: RM-CZ
USE: RESIDENTIAL

N/F
EPPERSON, CHRISTOPHER A
EPPERSON, CORNELIA L
PIN #1759648886
DB17261 PG996
BM2017 PG1611
ZONE: RM-CZ
USE: RESIDENTIAL

N/F
JUNK, PHILIP
JUNK, KATHERINE
PIN #1759649758
DB17185 PG154
BM2017 PG1611
ZONE: RM-CZ
USE: RESIDENTIAL

N/F
SIMONTON, JEFFREY A
SIMONTON, ROBIN A
PIN #1759649625
DB17389 PG1770
BM2017 PG1611
ZONE: RM-CZ
USE: RESIDENTIAL

N/F
ROBINSON, NICHOLAS
ROBINSON, MARIANNE
PIN #1759740671
DB17426 PG2390
BM2017 PG1611
ZONE: RM-CZ
USE: RESIDENTIAL

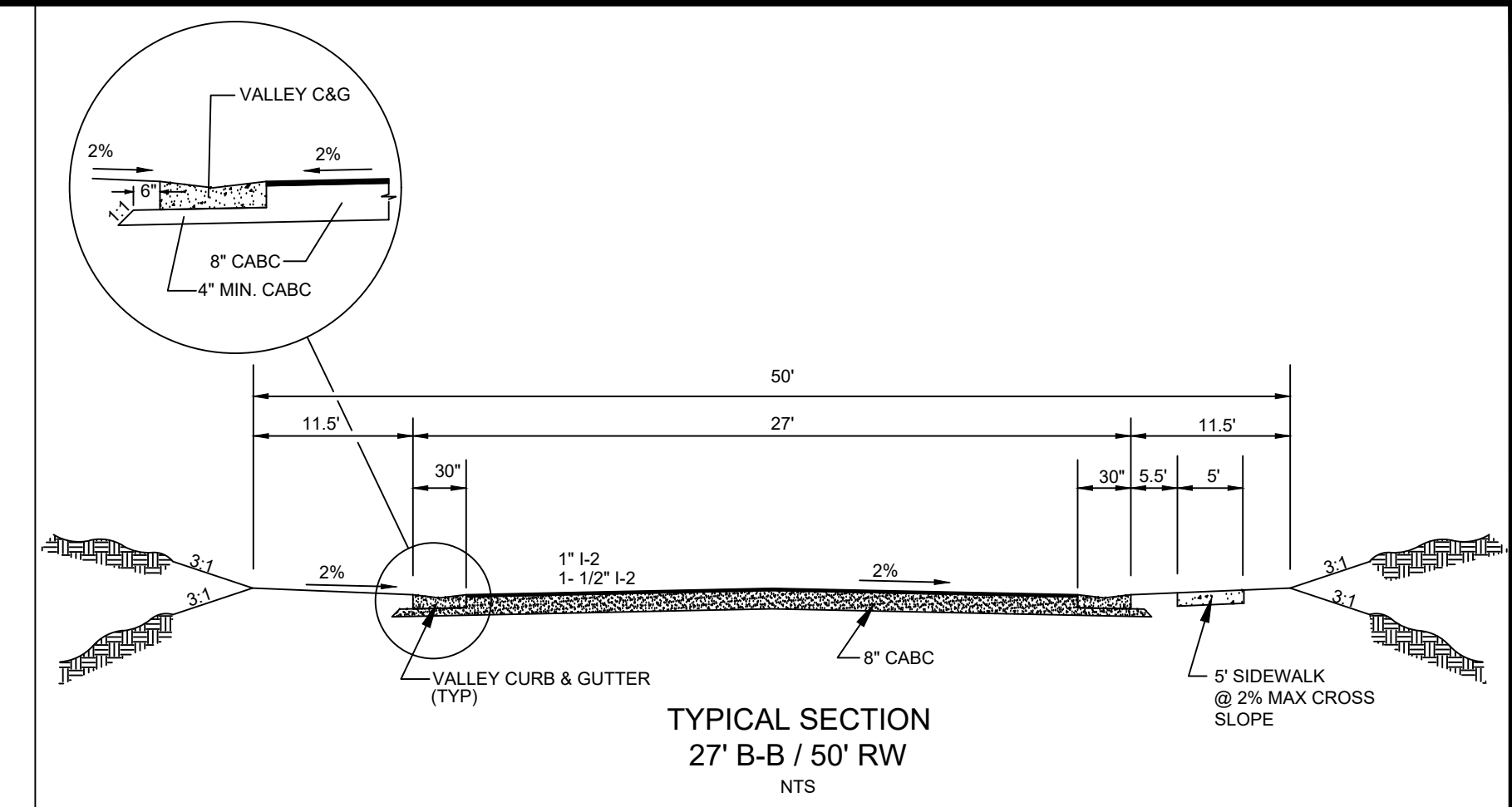
N/F
SNYDER, ALLIE MARIE
SNYDER, BENJAMIN D
PIN #1759741673
DB17508 PG2370
BM2017 PG1611
ZONE: RM-CZ
USE: RESIDENTIAL

N/F
LIPPERT, REBECCA
PIN #1759742673
DB17653 PG902
BM2017 PG1611
ZONE: RM-CZ
USE: RESIDENTIAL

N/F
HUGHES
RALEIGH-DURHAM LLC
PIN #1759743674
DB18544 PG1079
BM2017 PG1611
ZONE: RM-CZ
USE: RESIDENTIAL

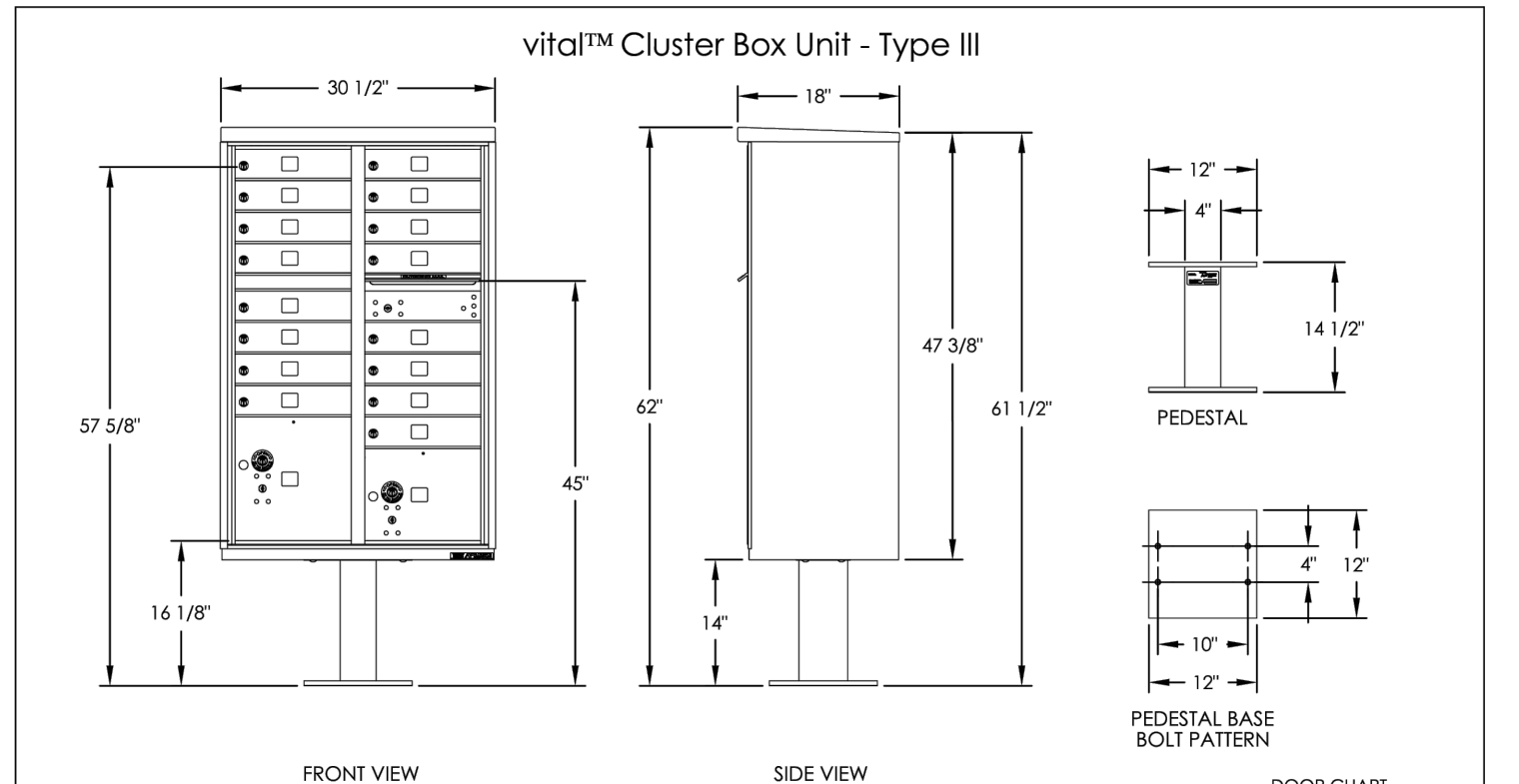
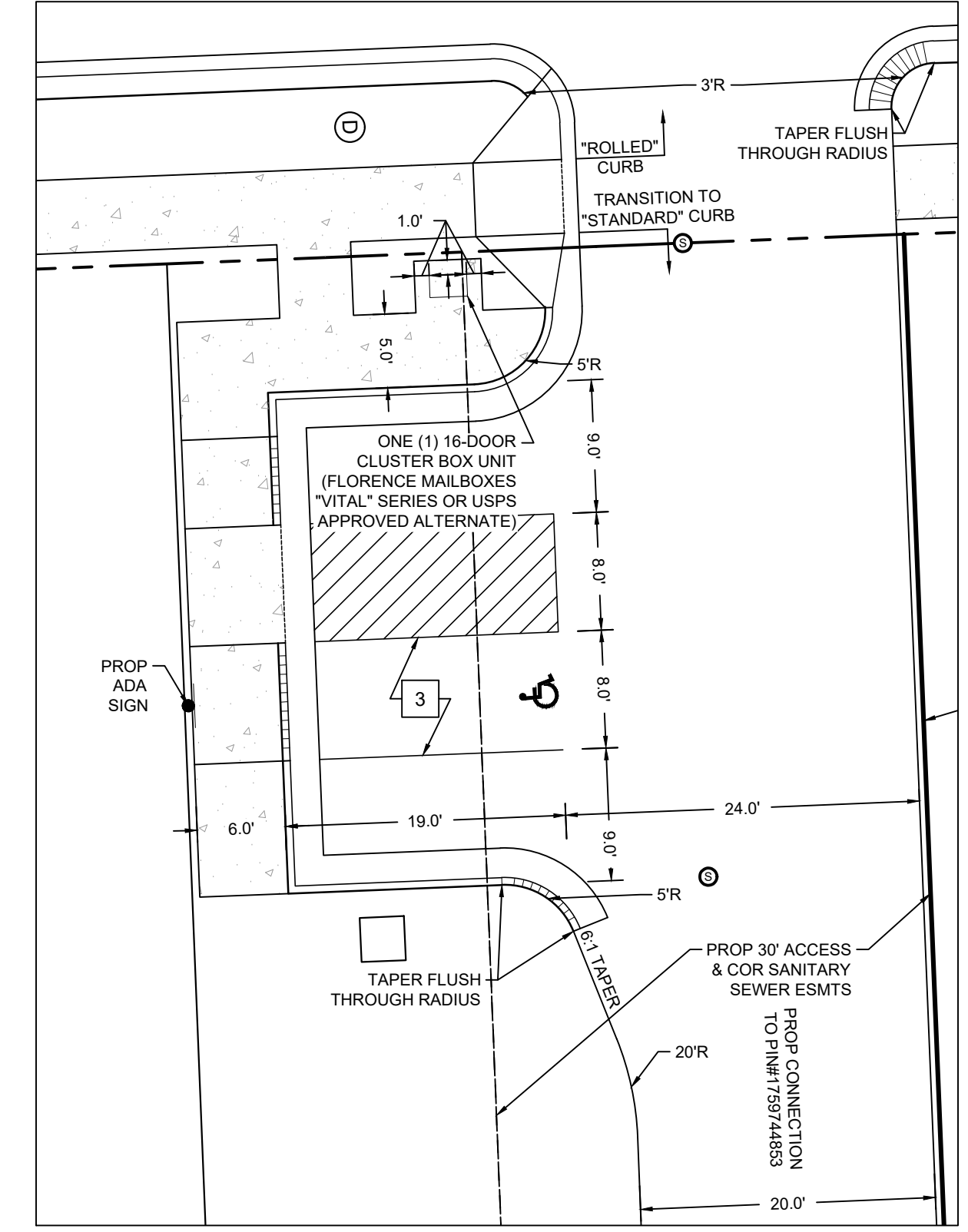
N/F
MEYERS, JAMES
MEYERS, TERRI G
PIN #1759744853
DB9844 PG639
BM1984 PG402
ZONE: RM-CZ
USE: RESIDENTIAL

EX FOUNDATION
(ENCROACHES 5'±)
(TO REMAIN)



GENERAL NOTES:

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- HOME OWNERS ASSOCIATION (HOA) SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE STORM WATER, STORM DRAINAGE, AND ACCESS EASEMENTS, INCLUDING THE ENTIRETY OF RECOMBINED LOT 212.



- NOTES:
- This unit is approved for USPS and private applications.
 - Decorative mailbox accessories sold separately and are USPS Approved products.
 - Pedestal should be installed with included Rubber Pad; mounting hardware not included, refer to installation manual for recommendations.
 - Florence™ series CBU is Officially Licensed by USPS; License # CDSEQ-08-B-0012

FLORENCE
manufacturing company
5935 Corporate Drive • Manassas, VA 20108
www.florencemailboxes.com • (800) 275-1747
A GREINER INDUSTRIES COMPANY

DOOR TYPE	38013 SLIP	REV	A
10\"/>			

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PRELIMINARY

DO NOT USE FOR CONSTRUCTION

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PAVEMENT MARKING KEY NOTES:
ALL REFERENCES PER CURRENT NCDOT

1	24" STOP BAR (1205.04)	3	4" SOLID WHITE
2	24" SOLID WHITE		

SIGNAGE KEY NOTES:
ALL REFERENCES PER CURRENT FHWA MUTCD

1	PROP "STOP" SIGN (R67-30)
2	PROP PEDESTRIAN SIGN (W11-2) W/ ARROW PLAQUE (W16-7P)
3	PROP PEDESTRIAN SIGN (W11-2) W/ "AHEAD" PLAQUE (W16-9P)

LEGEND

--- WET POND - EMBANKMENT

SITE, SIGNAGE, & PAVEMENT MARKING PLAN

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

JAECO # 364-04
DRAWING SCALE: AS SHOWN
DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 01/30/2022

C-3

STOCKPILE NOTES

SOIL STOCKPILES SHALL BE LOCATED ON THE APPROVED PLAN AND SHALL ADHERE TO THE FOLLOWING REQUIREMENTS:

DESIGN CRITERIA:

- A. A 25-FOOT TEMPORARY MAINTENANCE AND ACCESS EASEMENT SHALL BE SHOWN AROUND ALL PROPOSED STOCKPILES (EROSION CONTROL MEASURES SURROUNDING THE STOCKPILE SHALL BE SHOWN AT THE OUTER LIMIT OF THIS EASEMENT)
- B. STOCKPILE FOOTPRINTS SHALL BE SETBACK A MINIMUM OF 25' FROM ADJACENT PROPERTY LINES.
- C. A NOTE SHALL BE PROVIDED ON THE APPROVED PLAN THAT STOCKPILE HEIGHT SHALL NOT EXCEED 35 FEET.
- D. STOCKPILE SLOPES SHALL BE 2:1 OR FLATTER.
- E. APPROVED BMPs SHALL BE SHOWN ON A PLAN TO CONTROL ANY POTENTIAL SEDIMENT LOSS FROM A STOCKPILE.
- F. STOCKPILING MATERIALS ADJACENT TO A DITCH, DRAINAGEWAY, WATERCOURSE, WETLAND, STREAM BUFFER, OR OTHER BODY OF WATER SHALL BE AVOIDED UNLESS AN ALTERNATIVE LOCATION IS DEMONSTRATED TO BE UNAVAILABLE.
- G. ANY CONCENTRATED FLOW LIKELY TO AFFECT THE STOCKPILE SHALL BE DIVERTED TO AN APPROVED BMP.
- H. OFF-SITE SPOIL OR BORROW AREAS MUST BE IN COMPLIANCE WITH WAKE COUNTY UDO AND STATE REGULATIONS. ALL SPOIL AREAS OVER AN ACRE ARE REQUIRED TO HAVE AN APPROVED SEDIMENT CONTROL PLAN. DEVELOPER/CONTRACTOR SHALL NOTIFY WAKE COUNTY OF ANY OFF-SITE DISPOSAL OF SOIL. PRIOR TO DISPOSAL, FILL OF FEMA FLOODWAY AREAS ARE PROHIBITED EXCEPT AS OTHERWISE PROVIDED BY SUBSECTION 14-19-2 OF THE WAKE COUNTY UNIFIED DEVELOPMENT ORDINANCE (CERTIFICATIONS AND PERMITS REQUIRED).

MAINTENANCE REQUIREMENTS:

- I. SEEDING OR COVERING STOCKPILES WITH TARPS OR MULCH IS REQUIRED AND WILL REDUCE EROSION PROBLEMS. TARPS SHOULD BE KEYPED IN AT THE TOP OF THE SLOPE TO KEEP WATER FROM RUNNING UNDERNEATH THE PLASTIC.
- J. IF A STOCKPILE IS TO REMAIN FOR FUTURE USE AFTER THE PROJECT IS COMPLETE (BUILDERS, ETC.), THE FINANCIAL RESPONSIBLE PARTY MUST NOTIFY WAKE COUNTY OF A NEW RESPONSIBLE PARTY FOR THAT STOCKPILE.
- K. THE APPROVED PLAN SHALL PROVIDE FOR THE USE OF STAGED SEEDING AND MULCHING ON A CONTINUAL BASIS WHILE THE STOCKPILE IS IN USE.
- L. ESTABLISH AND MAINTAIN A VEGETATIVE BUFFER AT THE TOE OF THE SLOPE (WHERE PRACTICAL).

GENERAL NOTES:

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- 3. 50' NEUSE RIVER BUFFER SHOWN HEREIN IS BASED ON THE "BUFFER DETERMINATION LETTER" (NBRRO #21-286) ISSUED SEPTEMBER 9, 2021 AND FLAGGING OF THE SAME BY S&C.

LOT DEVELOPMENT NOTE

THE INTENT OF THIS EROSION CONTROL PLAN IS TO PROVIDE ADEQUATE EROSION PROTECTION WHILE PRODUCING READY-TO-BUILD LOTS AND INSTALLING COMMON INFRASTRUCTURE SUCH AS ROADS AND UTILITIES. PRIOR TO CONSTRUCTION OF ACTUAL HOUSES, A SEPARATE LOT BY LOT PLANSET SHOULD BE PREPARED AND APPROVED BY OTHERS. THIS PLANSET IS NOT INTENDED TO PROVIDE LOT-BY-LOT EROSION CONTROL.

DOWNSTREAM BASIN STABILIZATION NOTE

IMMEDIATELY AFTER CONSTRUCTION OF SEDIMENT BASIN AND THROUGHOUT DURATION OF PROJECT, ENSURE AREA DOWNSTREAM OF BASIN IS STABILIZED.

PHASE I CONSTRUCTION SEQUENCE:

- 1. SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE WATERSHED MANAGER, KARYN PAGEAU - (919) 796-8769. OBTAIN A LAND-DISTURBING PERMIT.
- 2. DUE TO SEQUENCED NATURE OF DEVELOPMENT, INLET PROTECTION MAY STILL BE IN PLACE WITHIN THE NEW RIGHT-OF-WAY. ANY EXISTING INLET PROTECTION MAY BE USED IN LIEU OF THOSE SHOWN ON THIS PLAN IN THE EVENT THE DEVICE IS OPERATING AS INTENDED, INSPECTED, AND APPROVED FOR USE BY THE INSPECTOR.
- 3. INSTALL TREE PROTECTION FENCE, CONSTRUCTION ENTRANCE, SILT FENCE, SUPER SILT FENCE, DIVERSION DITCHES, CLEAN WATER DIVERSION DITCH, SILT FENCE OUTLETS, INLET PROTECTION, TEMPORARY SLOPE DRAINS, CONCRETE WASHOUT STRUCTURE, AND OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED IMMEDIATELY AFTER CONSTRUCTION.
- 4. INSTALL SEDIMENT BASIN INCLUDING PERMANENT RISER AND OUTLET PIPE. SEED IMMEDIATELY. INSTALL SKIMMER AND TIE TO PERMANENT RISER. INSTALL RIPRAP #1 BELOW THE SKIMMER AND ATTACH TETHER TO THE SKIMMER ITSELF.
- 5. CALL KARYN PAGEAU AT (919) 796-8769 FOR AN ONSITE INSPECTION BY THE WATERSHED MANAGER TO OBTAIN A CERTIFICATE OF COMPLIANCE.
- 6. BEGIN CLEARING AND GRUBBING WITHIN THE LIMITS OF DISTURBANCE. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE TO BASIN AND ALL DITCHES. COMPLETE PRELIMINARY ROUGH GRADING TO ALLOW FOR POSITIVE DRAINAGE TO EROSION CONTROL DEVICES.
- 7. MAINTAIN SEDIMENT AND EROSION CONTROL DEVICES AFTER EVERY RAIN EVENT AND ONCE PER WEEK. REMOVE ANY SILT BUILDUP ON ANY SILT FENCING AS NEEDED TO PREVENT BREACH. SEED OR MULCH OR STABILIZE WITH STONE PAVEMENT) ANY DENUDED AREAS WITHIN 14 CALENDAR DAYS OF TEMPORARY OR PERMANENTLY SUSPENDING LAND DISTURBING ACTIVITY.
- 8. AS SITE IS BROUGHT TO ROUGH GRADE, TRANSITION TO EROSION CONTROL PHASE II.

MATTING SCHEDULE

	SHEAR STRESSES (LB/FT ²)	NORMAL DEPTH*		
		PERMISSIBLE**	CALCULATED**	
CWD	ROLLMAX C350* (TEMPORARY)	12.0	1.84	0.59
DD#1	ROLLMAX C350* (PERMANENT)	12.0	0.64	1.02
DD#2	ROLLMAX DS75 (TEMPORARY)	1.6	0.65	1.04

*OR APPROVED ALTERNATE

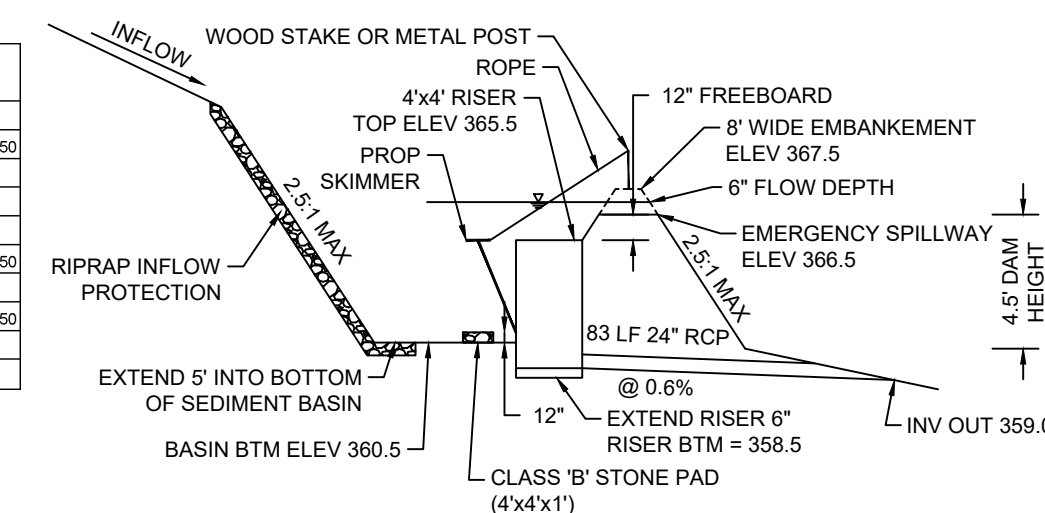
**PER NORTH AMERICAN GREEN ECMD5 7.0

RIPRAP SCHEDULE

#1	W _{min} [FT]	W _{max} [FT]	L _z [FT]	d ₅₀ [IN]	d _{max} [IN]	THICKNESS [IN]
#1	6.0	12.0	8.0	3	4.5	12

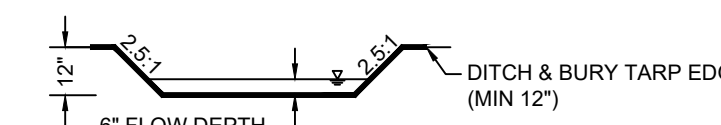
SKIMMER BASIN

SURFACE AREA REQUIRED	3,709 SF
SURFACE AREA PROVIDED	3,738 SF 365.50
VOLUME REQUIRED	5,400 CF
VOLUME PROVIDED	12,570 CF
STORAGE DEPTH	5.0 FT
TOP OF BERM	4,007 SF 387.50
BODY SPILLWAY LENGTH	40 FT
BOTTOM OF BASIN	1,290 SF 300.50
SKIMMER SIZE	2.5 IN
SKIMMER ORIFICE DIAMETER	1.25 IN



SEDIMENT BASIN SPILLWAY SECTION

NOT TO SCALE



SPILLWAY SECTION

NOT TO SCALE

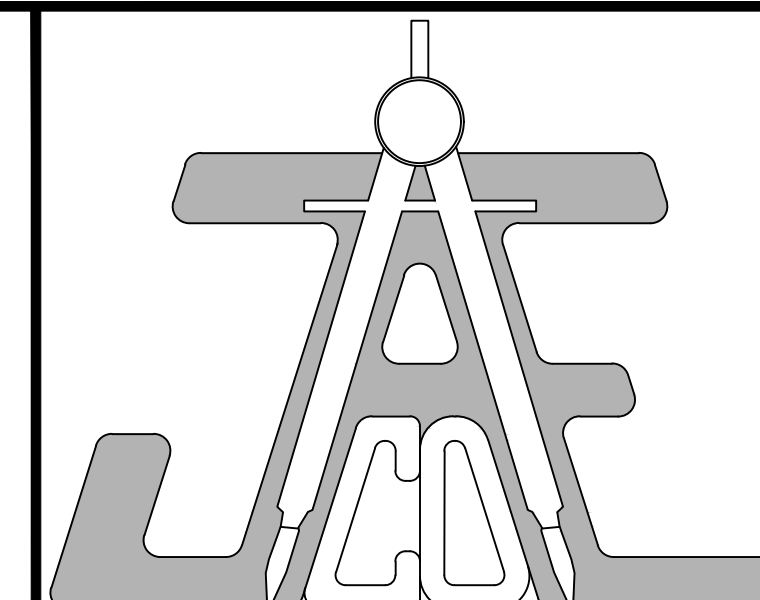
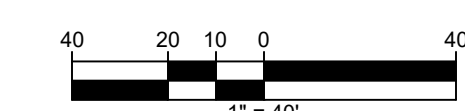
TARP NOTES

- 1. THE TARP SHALL BE 50 MIL. HEAVY DUTY SILVER TARPULINS OR APPROVED EQUIVALENT FOR U.V. RESISTANCE.
- 2. BURY AND SEAL THE BOTTOM AND SIDES OF THE TARP ON THE INSIDE OF THE EMBANKMENT SUCH THAT WATER FLOWS OVER THE TARP.
- 3. THE WIDTH OF THE TARP SHALL MUST COVER THE BOTTOM AND SIDES AND LAP ONTO THE TOP OF THE DAM IN ONE CONTINUOUS PIECE WITHOUT SPLICES.
- 4. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. THE LENGTH MUST EXTEND TO UNDISTURBED GROUND BELOW THE DAM.
- 5. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 18" THE UPSTREAM TARP SHALL OVERLAP THE DOWNSTREAM TARP. ANCHOR THE DOWNSTREAM TARP FIRST THEN OVERLAY THE UPSTREAM TARP TO ENSURE THERE ARE NO HOLES IN THE EXPOSED TARP.

TOTAL DENUEDE AREA = 4.00 AC.

PERPETUITY STATEMENT

MAXIMUM IMPERVIOUS AREA SQUARE FOOTAGE ON EACH INDIVIDUAL LOT WILL BE STRINGENTLY ENFORCED WITH NO EXCEPTIONS INTO PERPETUITY. PLANS APPROVED WITH A MAXIMUM IMPERVIOUS SURFACE AS SHOWN.



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Raleigh, NC 27609

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LEGEND

- LOD --- LIMIT OF DISTURBANCE
- 379 --- EX MINOR CONTOUR
- 380 --- EX MAJOR CONTOUR
- 381 --- PROP MINOR CONTOUR
- 382 --- PROP MAJOR CONTOUR
- W --- EX WATER
- SS --- EX SANITARY SEWER
- ES --- EX STORM DRAIN
- SD --- PROP STORM DRAIN
- --- DRAINAGE DIVIDE
- SF --- SILT FENCE
- SSF --- SUPER SILT FENCE
- --- DIVERSION DITCH
- --- TEMPORARY SLOPE DRAIN
- --- STAGING & STOCKPILE AREA
- --- CONSTRUCTION ENTRANCE
- --- SILT FENCE OUTLET
- --- CONCRETE WASHOUT
- --- PERMITS BOX
- CIP --- CURB INLET PROTECTION
- YIP --- YARD INLET PROTECTION

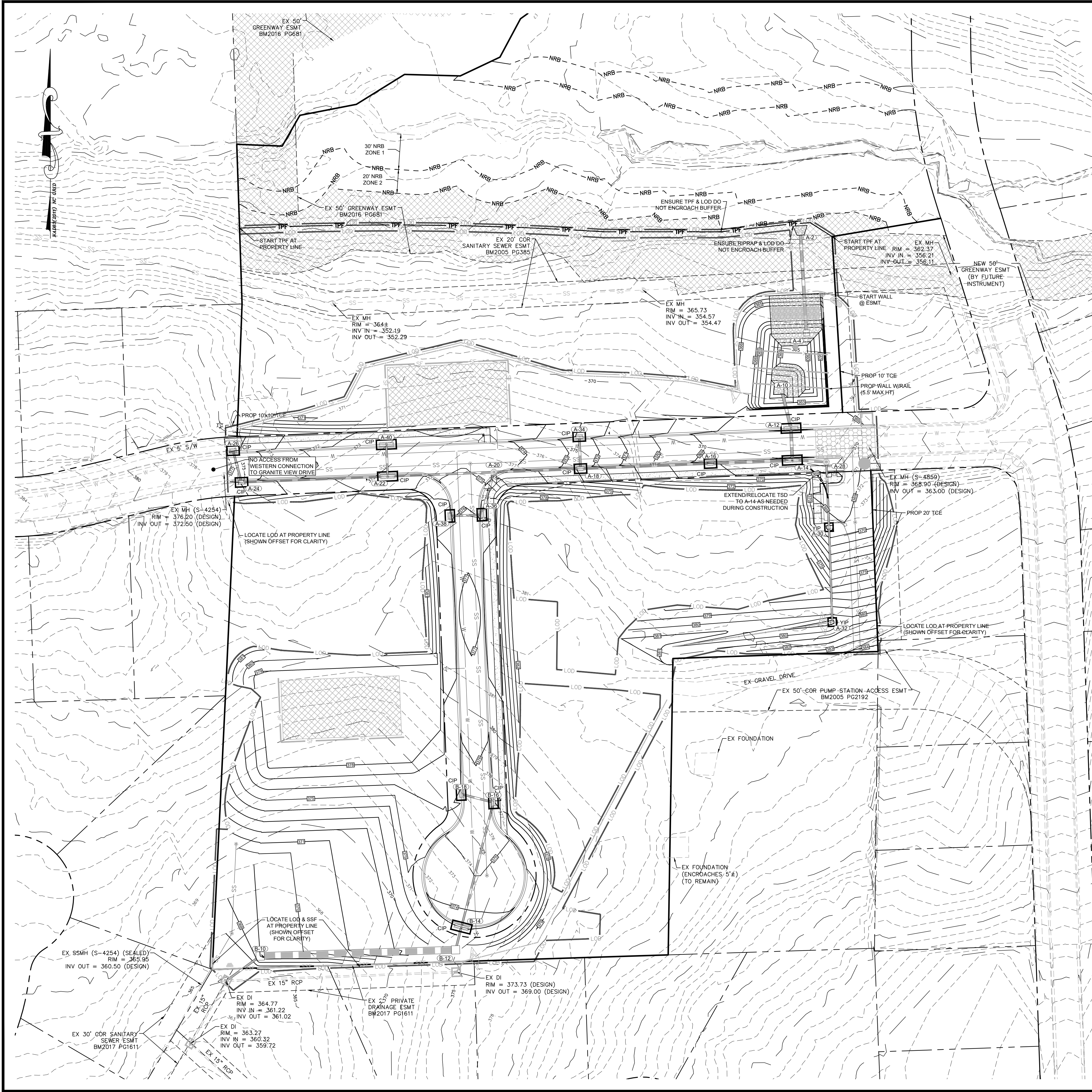
EROSION & SEDIMENT CONTROL PLAN - PHASE I

Revisions

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

JAECO #: 364-04
DRAWING SCALE: 1" = 40'
DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 01/30/2022

C-5



GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY LOCATION & ELEVATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF CONFLICTS.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH, TOWN OF ROLESVILLE, AND/OR NCDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
3. 50' NEUSE RIVER BUFFER SHOWN HEREIN IS BASED ON THE "BUFFER DETERMINATION LETTER" (NBRRO #21-286) ISSUED SEPTEMBER 9, 2021 AND FLAGGING OF THE SAME BY S&EC.

LOT DEVELOPMENT NOTE

THE INTENT OF THIS EROSION CONTROL PLAN IS TO PROVIDE ADEQUATE EROSION PROTECTION WHILE PRODUCING PAD READY LOTS AND INSTALLING COMMON INFRASTRUCTURE SUCH AS ROADS AND UTILITIES. PRIOR TO CONSTRUCTION OF ACTUAL HOUSES, A SEPARATE LOT BY LOT PLANSET SHOULD BE PREPARED AND APPROVED BY OTHERS. THIS PLANSET IS NOT INTENDED TO PROVIDE LOT-BY-LOT EROSION CONTROL.

DOWNSTREAM BASIN STABILIZATION NOTE

IMMEDIATELY AFTER CONSTRUCTION OF SEDIMENT BASIN AND THROUGHOUT DURATION OF PROJECT, ENSURE AREA DOWNSTREAM OF BASIN IS STABILIZED.

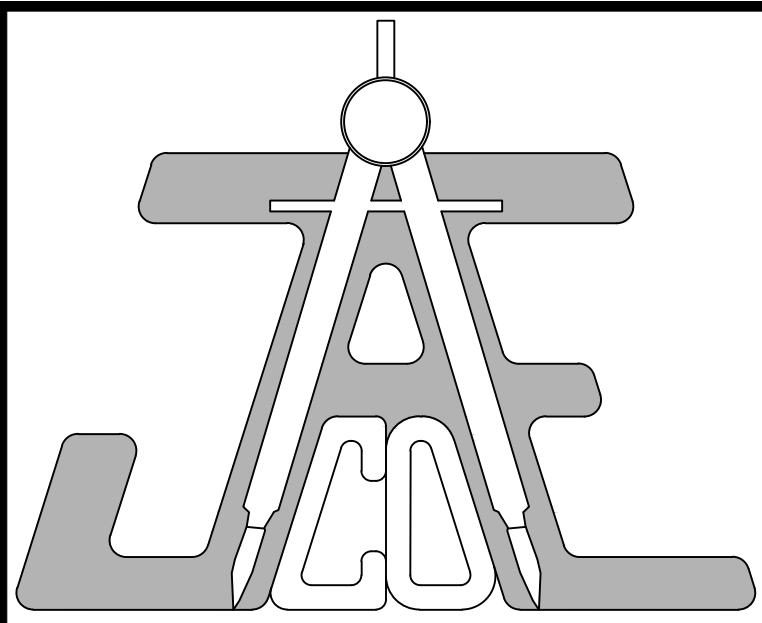
PHASE II CONSTRUCTION SEQUENCE:

1. PRIOR TO COMMENCING PHASE II INSTALLATIONS AND CONSTRUCTION CONTRACTOR TO CONFIRM THE FOLLOWING:
 - 1.1. AREA DOWNSTREAM OF BASIN IS STABILIZED
 - 1.2. RIP RAP PAD AND SILT BAG DEWATERING DEVICES ARE PRESENT AND OPERATIONAL ADJACENT TO SEDIMENT BASIN
 - 1.3. CONFIRM CHECK DAMS ARE PROVIDED AT THE OUTLET OF ALL DIVERSION DITCHES, THAT THE CHECK DAMS ARE LOCATED AS CLOSE AS POSSIBLE TO THE OUTLET AND ARE IN GOOD WORKING ORDER.
2. CONTINUE ROUGH GRADING. MAINTAIN AND ADJUST GRADES TO ENSURE POSITIVE DRAINAGE TO SKIMMER BASIN.
3. CONSTRUCT RETAINING WALL ON SITE AS NEEDED TO BRING SITE TO GRADE, PHASING SEDIMENT BASIN CONVERSION PER INSPECTOR DIRECTION.
4. INSTALL REMAINING STORMDRAIN, WORKING FROM DOWNSTREAM TO UPSTREAM INSTALLING INLET PROTECTION IMMEDIATELY AFTER EACH INLET IS INSTALLED AS SHOWN ON THE PLAN. DIVERT RUN-OFF TO INLETS AS ROUGH GRADES ARE COMPLETED.
5. INSTALL WATER AND SEWER LINES FROM DOWNSTREAM TO UPSTREAM AS NECESSARY DURING ROUGH GRADING TO AVOID CONFLICTS WITH STORM DRAIN SYSTEM.
6. HAUL AWAY ANY EXTRA TOPSOIL AND MATERIAL AS NEEDED TO BALANCE SITE. IF ANY TOPSOIL IS TO REMAIN STOCKPILED PROTECT WITH SILT FENCING AROUND PERIMETER AND REFER TO STOCKPILE NOTES.
7. SUBMIT DOCUMENTATION REQUIRED UNDER THE SITE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY TO STORMWATER CONTROL INSPECTIONS THROUGHOUT THE PROJECT.
8. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
9. MAINTAIN SEDIMENT AND EROSION CONTROL DEVICES AFTER EVERY RAIN EVENT GREATER THAN ONE (1) INCH AND ONCE PER WEEK. REMOVE ANY SILT BUILDUP ON ANY SILT FENCING AS NEEDED TO PREVENT BREACH. SEED ANY AREAS OF THE SITE WITHIN 14 DAYS OF COMPLETION OF ANY PHASE OF GRADING IN THAT AREA.
10. WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL ENVIRONMENTAL CONSULTANT FOR AN INSPECTION.
11. SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE IF THE SKIMMER BASIN CAN BE CONVERTED TO A PERMANENT BIORETENTION POND. INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
12. 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 NCGS11 PERMIT PART II, SECTION G, ITEM (4) ENTITLED "DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT" AND REFER TO WAKE COUNTY "FILTER BAG FOR DEWATERING ACTIVITIES" CONSTRUCTION DETAIL.
13. REMOVE SKIMMER BASIN AND SKIMMER. FINE GRADE AREA IN PREPARATION FOR BIORETENTION CONSTRUCTION AND SEEDING.
14. PERFORM SEEDBED PREPARATION, SEED, MULCH AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
15. COMPLETE WALL INSTALLATION AS REQUIRED, IF NOT COMPLETED DURING CONVERSION FROM SEDIMENT BASIN TO PERMANENT POND.
16. 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.
17. IF 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.
18. **DO NOT REMOVE DO#1.** INSPECT AND REPLACE ANY DAMAGED MATTING AND REGRADE AS NECESSARY TO CORRECT FOR DAMAGE THAT MAY HAVE OCCURRED DURING THE CONSTRUCTION PROCESS.
19. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT. OBTAIN A CERTIFICATE OF COMPLETION.

TOTAL DENUDED AREA = 4.00 AC.

PERPETUITY STATEMENT

MAXIMUM IMPERVIOUS AREA SQUARE FOOTAGE ON EACH INDIVIDUAL LOT WILL BE STRINGENTLY ENFORCED WITH NO EXCEPTIONS INTO PERPETUITY. PLANS APPROVED WITH A MAXIMUM IMPERVIOUS SURFACE AS SHOWN.



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LEGEND

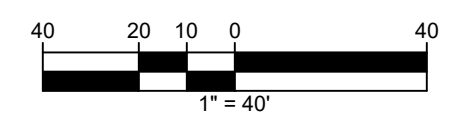
	LIMIT OF DISTURBANCE
	EX MINOR CONTOUR
	EX MAJOR CONTOUR
	PROP MINOR CONTOUR
	PROP MAJOR CONTOUR
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	EX SANITARY SEWER
	EX STORM DRAIN
	PROP STORM DRAIN
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	CURB INLET PROTECTION
	YARD INLET PROTECTION

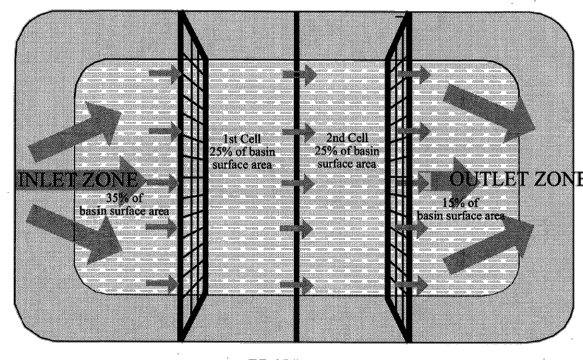
EROSION & SEDIMENT CONTROL PLAN - PHASE II

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

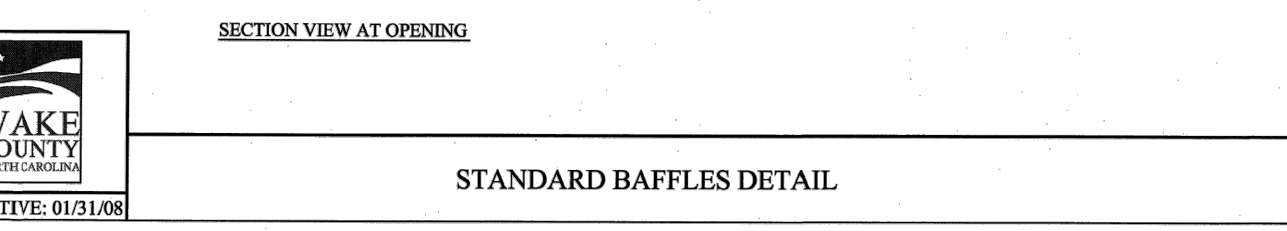
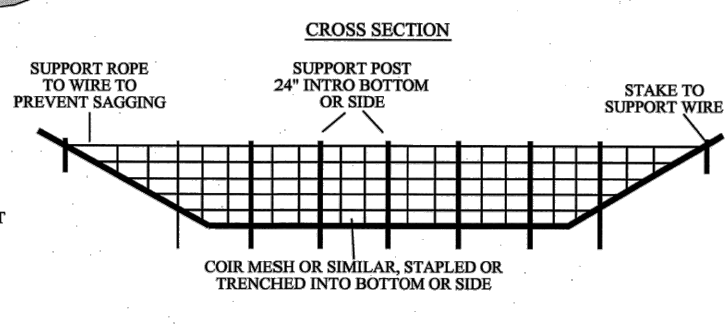
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DRAWING SCALE: 1" = 40'
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CHECKED BY: TT
DATE ISSUED: 01/30/2022

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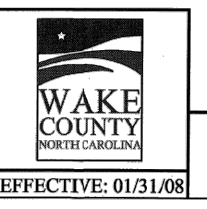




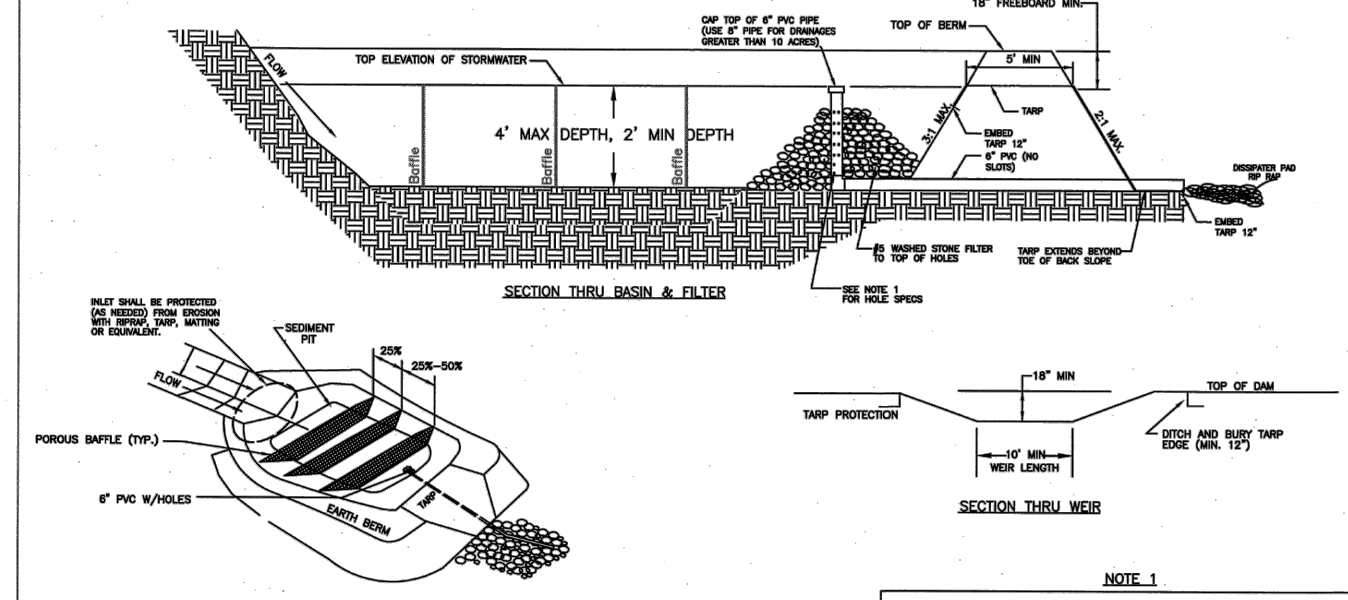
- NOTES:
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRUNCATING AS FOR SILT FENCE.
 2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
 3. PROVIDE 3 BAFFLES (ONE TWO FEET LESS THAN 20 FEET IN LENGTH), PROVIDE 2 BAFFLES FOR DRAINAGE AREAS GREATER THAN 2 ACRES.
 4. BAFFLE SHALL BE 700 LBS COIR BROKEN BLANKET.
 5. TOP OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERM.
 6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL.



STANDARD BAFFLES DETAIL

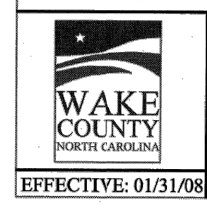


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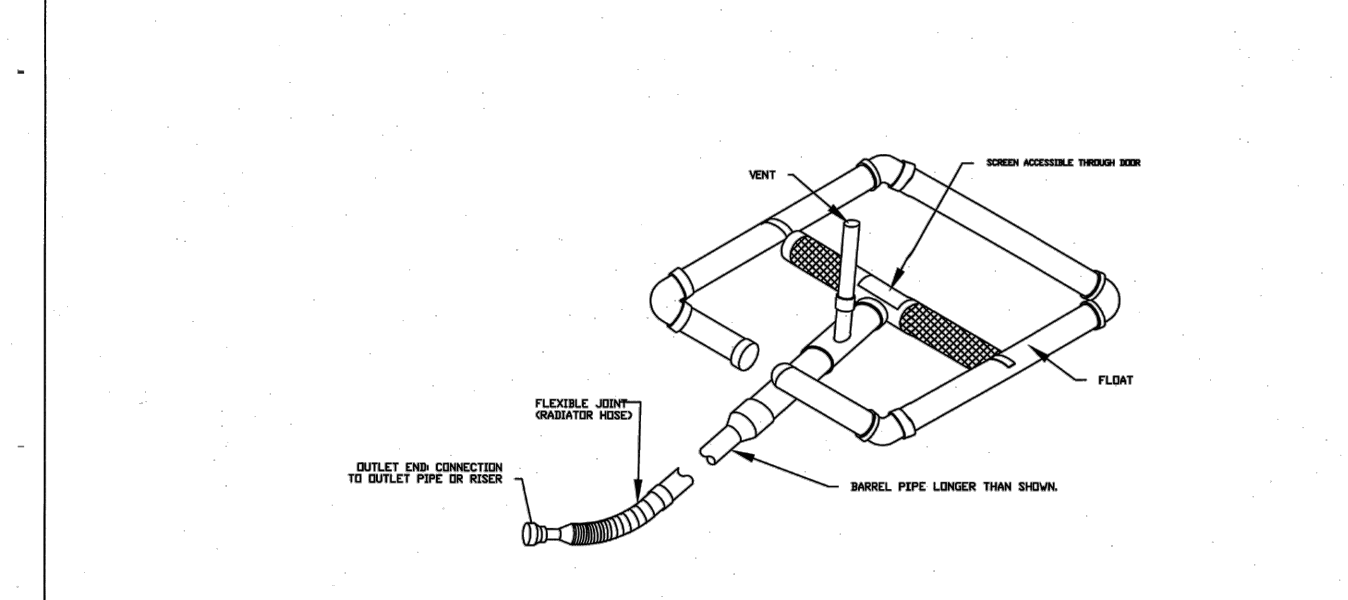


- NOTE 1:
- HOLE SPIES:
- CONSTRUCTION NOTES:
1. DRAIN CORNER FROM A BERM SHALL BE SET 2" FROM THE CORNER OF THE BERM AND 1/2" FROM THE BERM.
 2. THE DRAIN CORNER SHALL BE SET 2" FROM THE CORNER OF THE BERM AND 1/2" FROM THE BERM.
 3. THE DRAIN CORNER SHALL BE SET 2" FROM THE CORNER OF THE BERM AND 1/2" FROM THE BERM.
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 8. THE DRAIN CORNER SHALL BE SET 2" FROM THE CORNER OF THE BERM AND 1/2" FROM THE BERM.
 9. THE DRAIN CORNER SHALL BE SET 2" FROM THE CORNER OF THE BERM AND 1/2" FROM THE BERM.
 10. THE DRAIN CORNER SHALL BE SET 2" FROM THE CORNER OF THE BERM AND 1/2" FROM THE BERM.

STANDARD CUSTOM BASIN

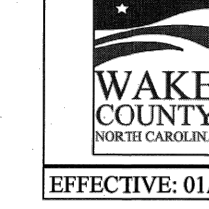


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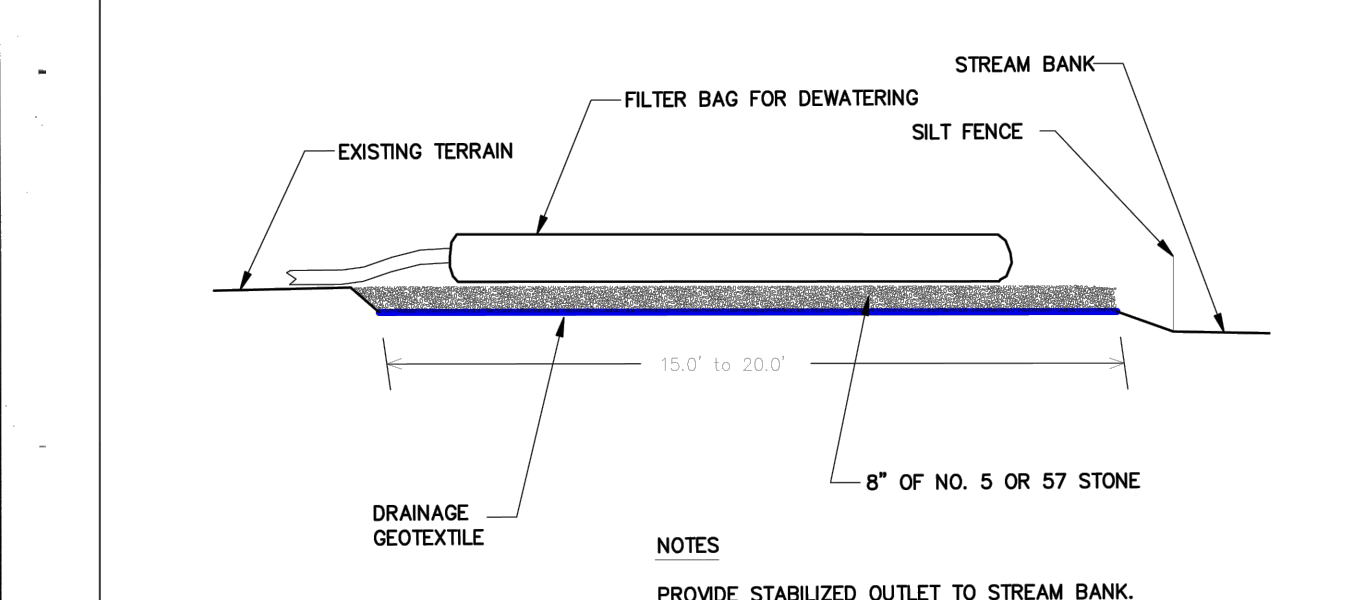


- NOTE:
- CONSTRUCTION NOTES:
1. THE SKIMMER SHALL BE SET 2" FROM THE CORNER OF THE BERM AND 1/2" FROM THE BERM.
 2. THE SKIMMER SHALL BE SET 2" FROM THE CORNER OF THE BERM AND 1/2" FROM THE BERM.
 3. THE SKIMMER SHALL BE SET 2" FROM THE CORNER OF THE BERM AND 1/2" FROM THE BERM.
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STANDARD SKIMMER DETAIL

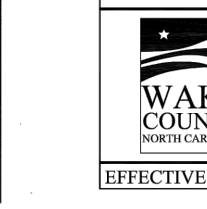


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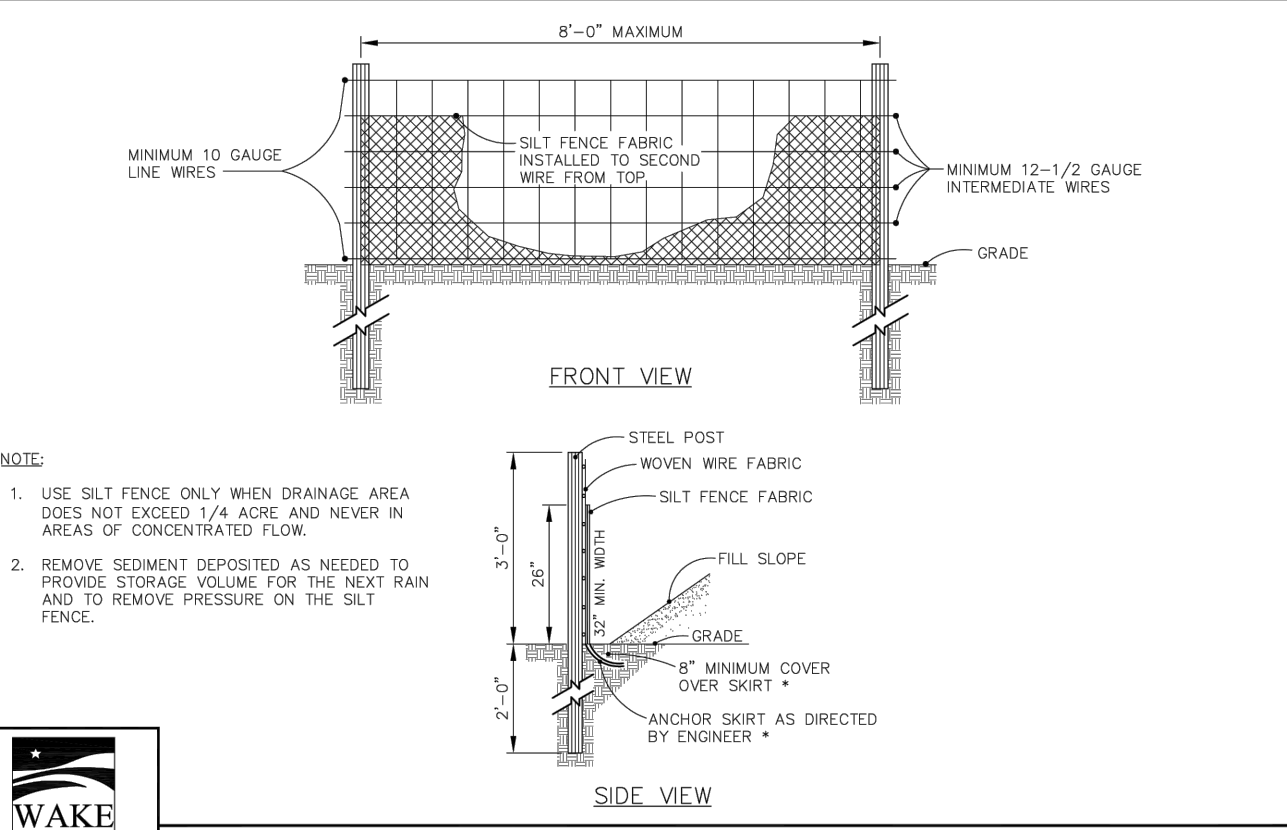


- NOTES:
- PROVIDE STABILIZED OUTLET TO STREAM BANK. WOOD PALLETS MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLETS MUST BE PROVIDED TO ELEVATE THE ENTIRE FILTER BAG FOR DEWATERING ABOVE NATURAL GROUND.

STANDARD FILTER BAG FOR DEWATERING ACTIVITIES

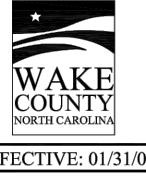


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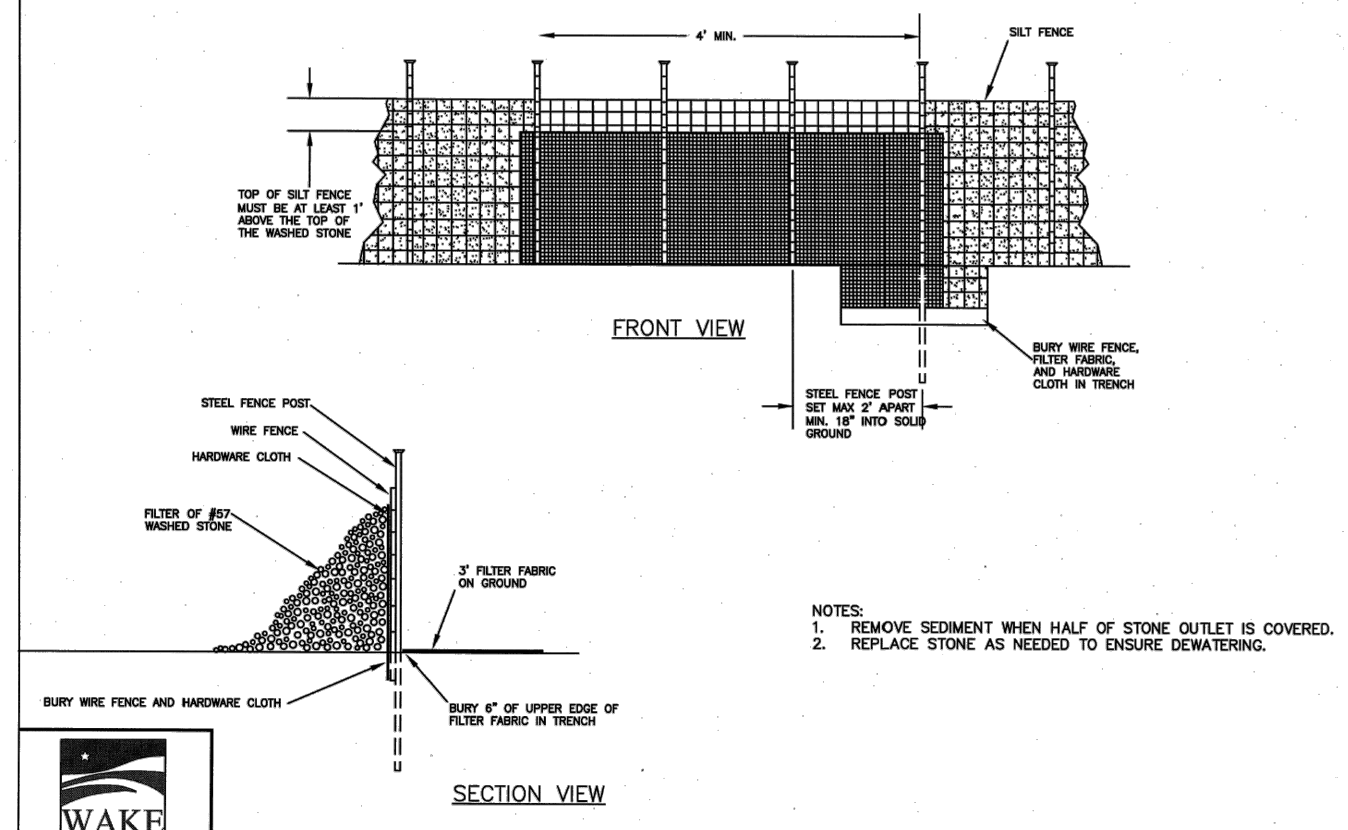


- NOTE:
1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
 2. REMOVE SEDIMENT DEPOSITED AS NEEDED TO PROVIDE STORAGE VOLUME FOR THE NEXT RAIN AND TO REMOVE PRESSURE ON THE SILT FENCE.

STANDARD TEMPORARY SILT FENCE

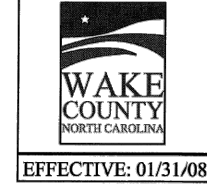


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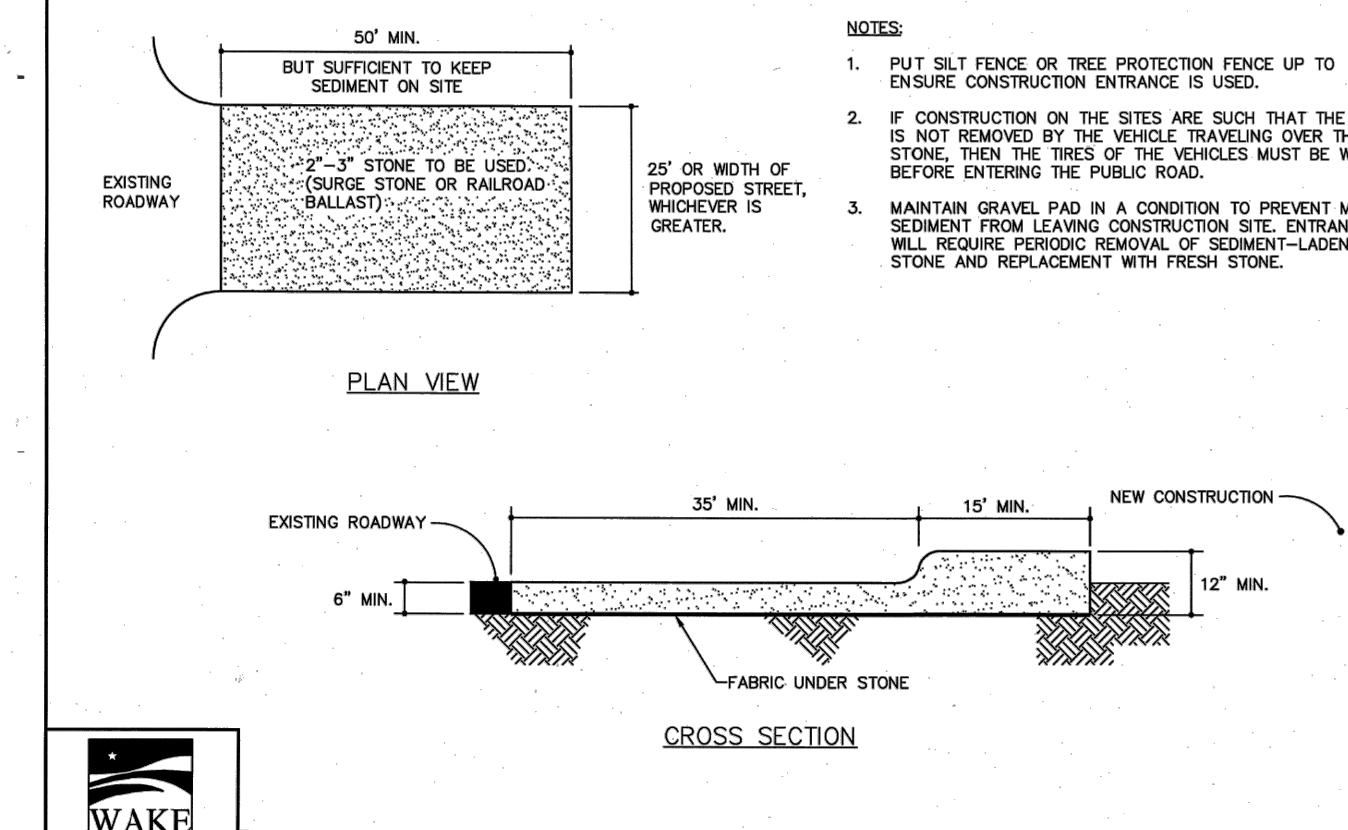


- NOTE:
1. REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED.
 2. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

STANDARD SILT FENCE OUTLET

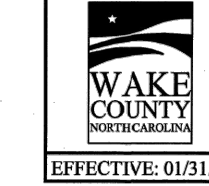


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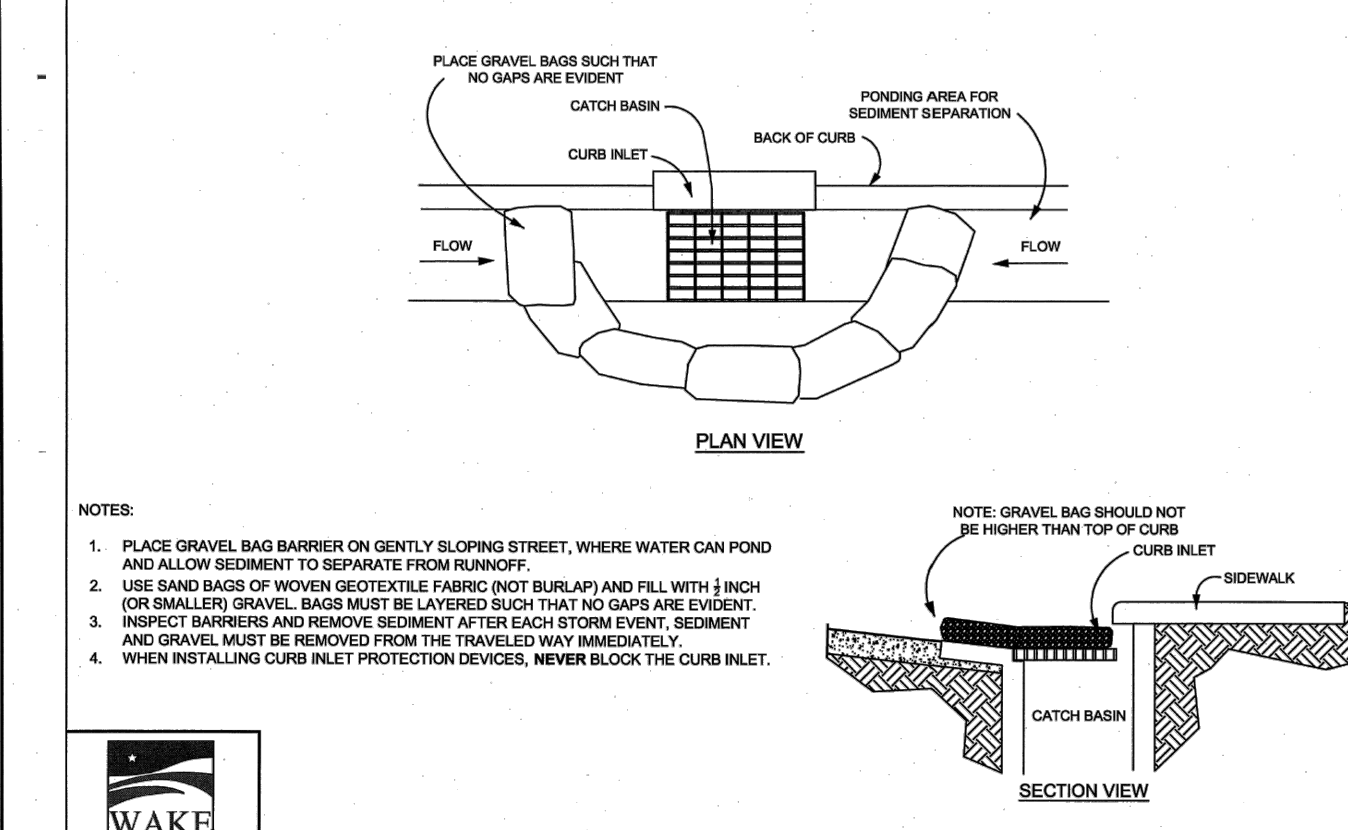


- NOTES:
1. PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.
 2. IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLES MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD.
 3. MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING CONSTRUCTION SITE. ENTRANCE WILL REQUIRE PERIODIC REMOVAL OF SEDIMENT-LADEN STONE AND REPLACEMENT WITH FRESH STONE.

STANDARD CONSTRUCTION ENTRANCE

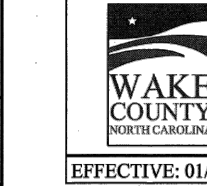


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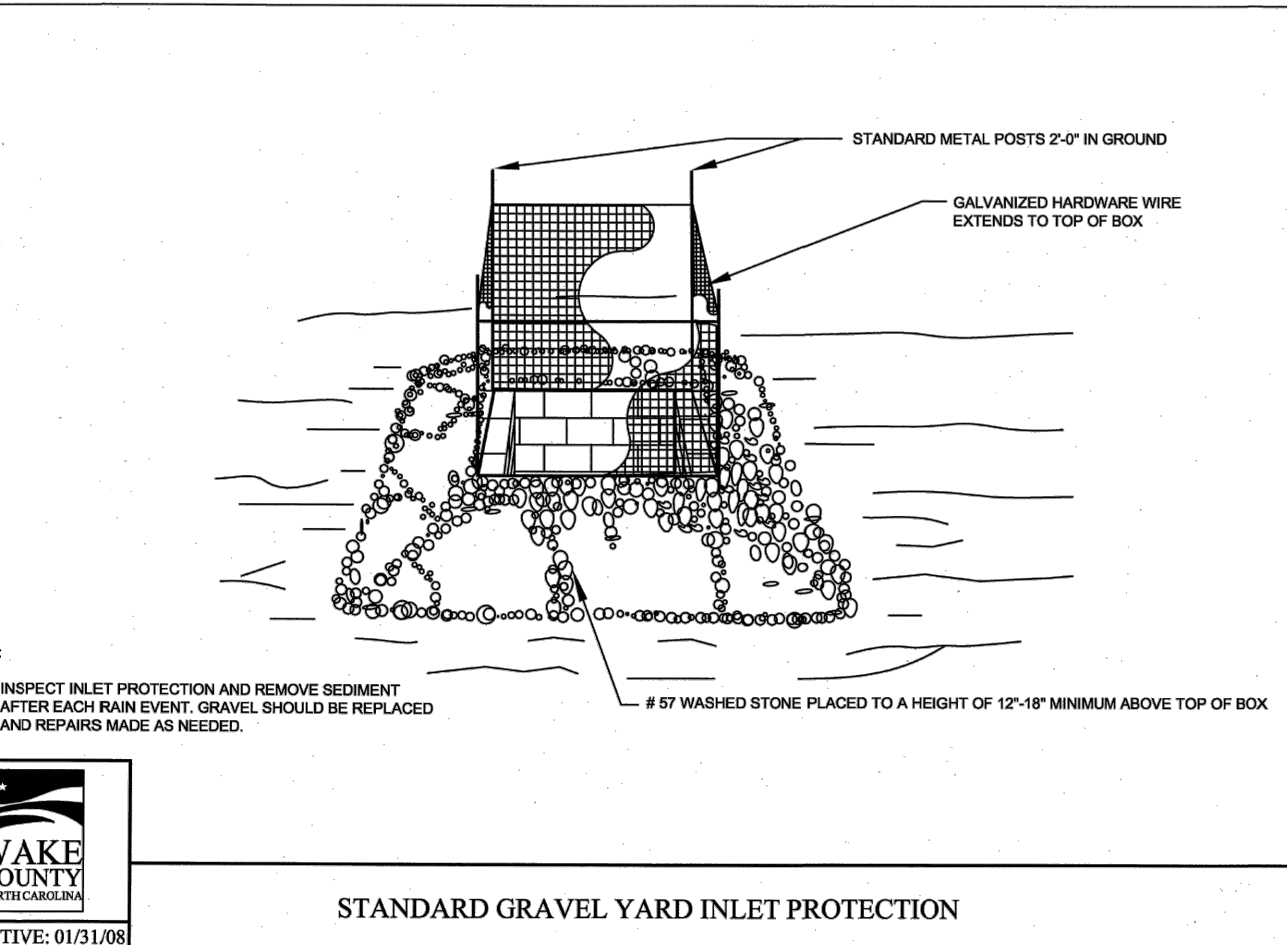


- NOTES:
1. PLACE GRAVEL BAG BARRIER ON GENTLY SLOPING STREET, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
 2. USE SAND BAGS OF MONOM GEOTEXTILE FABRIC (NOT BURAP) AND FILL WITH 1/2 INCH (OR SMALLER) GRAVEL. BAGS MUST BE LAYERED SUCH THAT NO GAPS ARE EVIDENT.
 3. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.
 4. WHEN INSTALLING CURB INLET PROTECTION DEVICES, NEVER BLOCK THE CURB INLET.

STANDARD GRAVEL BAG CURB INLET PROTECTION

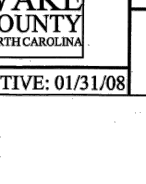


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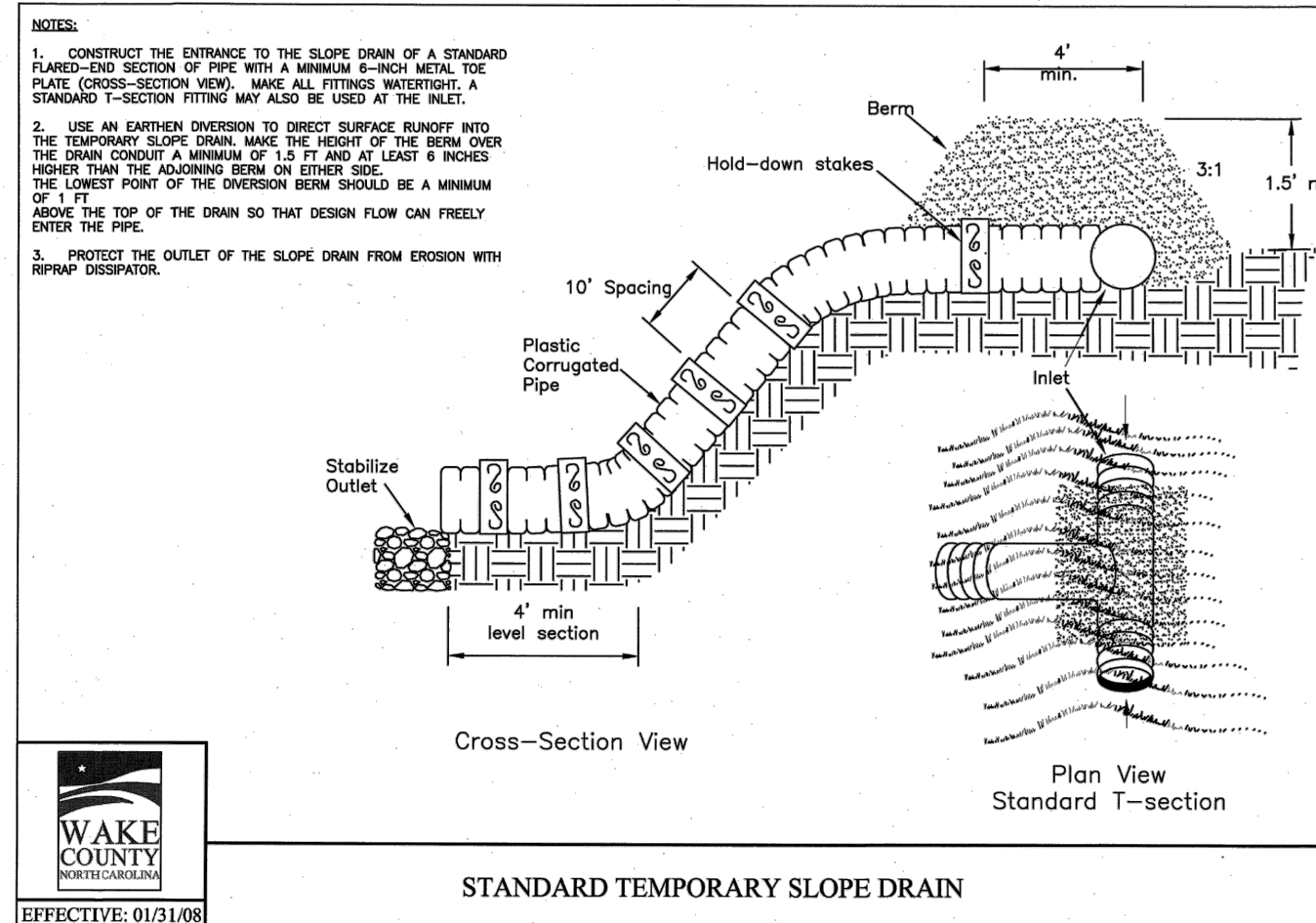


- NOTE:
1. INSPECT INLET PROTECTION AND REMOVE SEDIMENT AFTER EACH RAIN EVENT. GRAVEL SHOULD BE REPLACED AND REPAIRS MADE AS NEEDED.

STANDARD GRAVEL YARD INLET PROTECTION

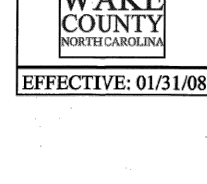


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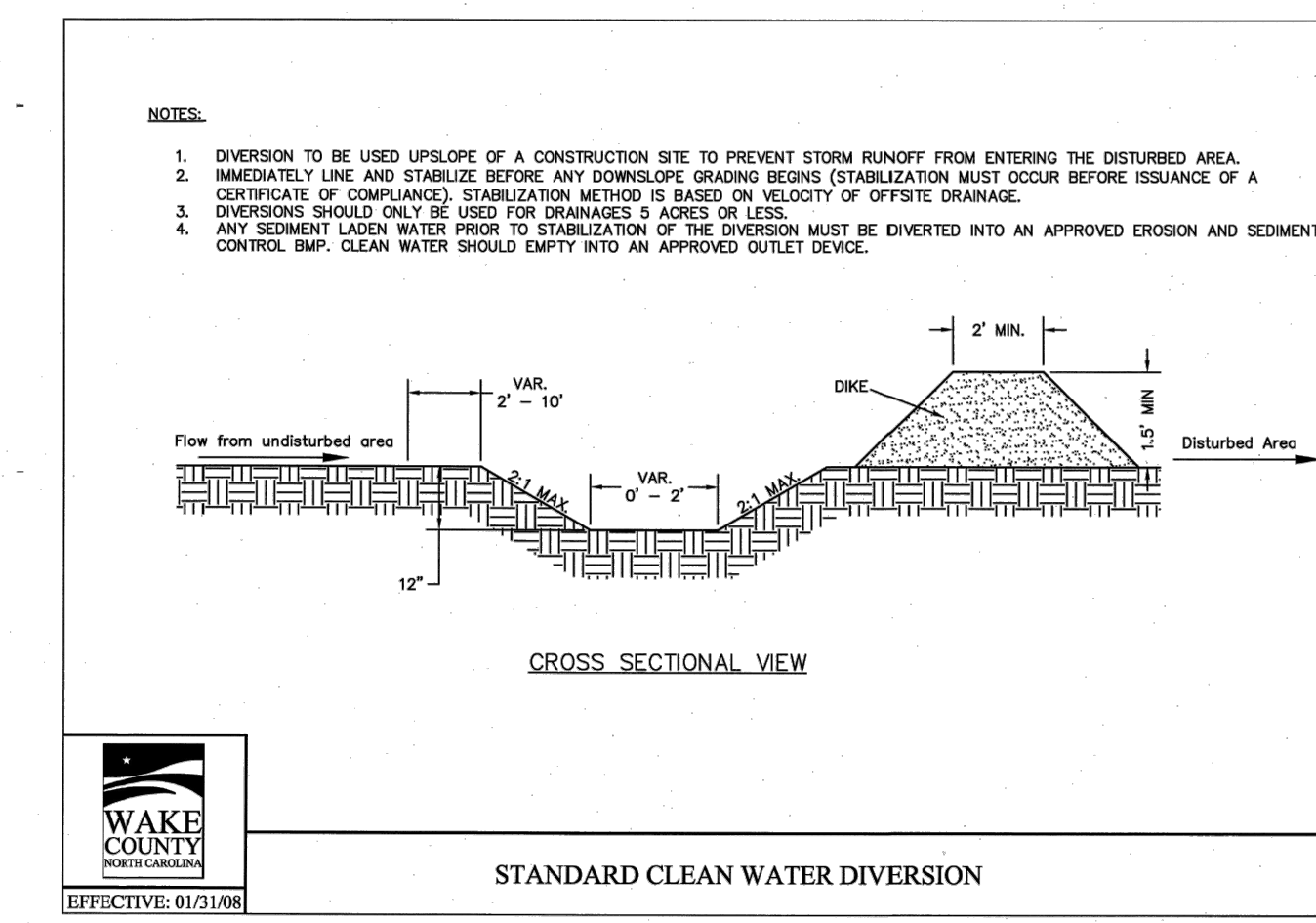


- NOTES:
1. CONNECT THE ENTRANCE TO THE SLOPE DRAIN OF A STANDARD FLARED-END SECTION OF PIPE WITH A MINIMUM 6-INCH METAL TEE PLATE CROSS-SECTION BERM. MAKE ALL FITTINGS INTERLOCK. A STANDARD T-SECTION FITTING MAY ALSO BE USED AT THE INLET.
 2. USE AN EXPANDED BERM TO DIRECT SURFACE RUNOFF INTO THE SLOPE DRAIN. MAKE THE HEIGHT OF THE BERM OVER THE DRAIN CORNER A MINIMUM OF 1.5 FEET AS LONG AS 6 INCHES HIGHER THAN THE ADJACENT BERM ON EITHER SIDE.
 3. PROTECT THE OUTLET OF THE SLOPE DRAIN FROM EROSION WITH RIP-RAP OR SPREADER.

STANDARD TEMPORARY SLOPE DRAIN

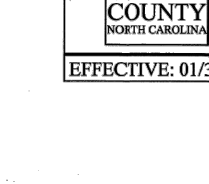


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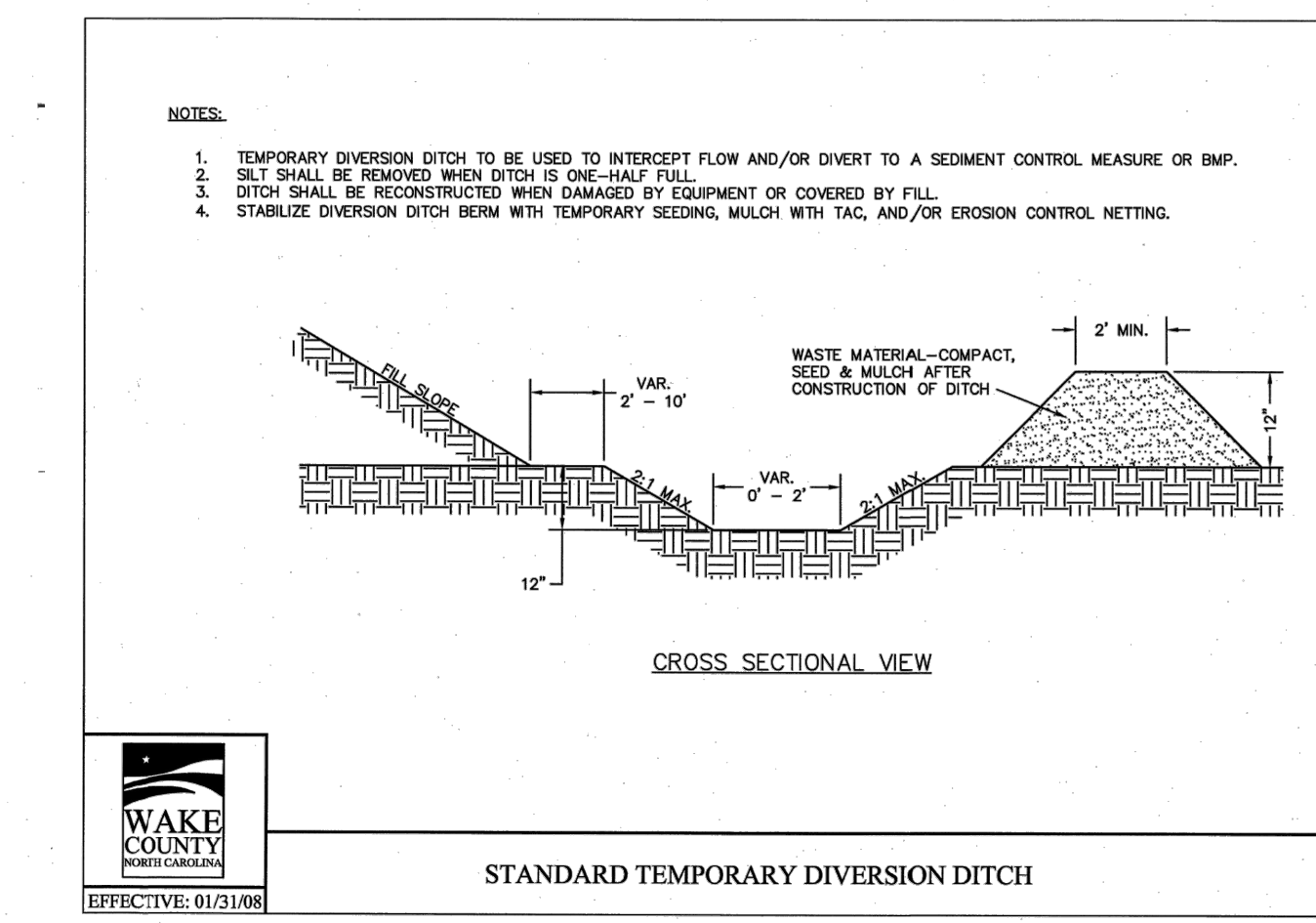


- NOTES:
1. DIVERSION TO BE USED UPSLOPE OF A CONSTRUCTION SITE TO PREVENT STORM RUNOFF FROM ENTERING THE DISTURBED AREA.
 2. IMMEDIATELY LINE AND STABILIZE BEFORE ANY DOWNSLOPE GRADING BEGINS (STABILIZATION MUST OCCUR BEFORE ISSUANCE OF A CERTIFICATE OF COMPLIANCE). STABILIZATION METHOD IS BASED ON VELOCITY OF OFFSITE DRAINAGE.
 3. DIVERSIONS SHOULD ONLY BE USED FOR DRAINAGES 5 ACRES OR LESS.
 4. ANY SEDIMENT LADEN WATER PRIOR TO STABILIZATION OF THE DIVERSION MUST BE DIVERTED INTO AN APPROVED EROSION AND SEDIMENT CONTROL BMP. CLEAN WATER SHOULD EMPTY INTO AN APPROVED OUTLET DEVICE.

STANDARD CLEAN WATER DIVERSION

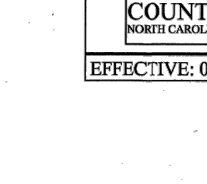


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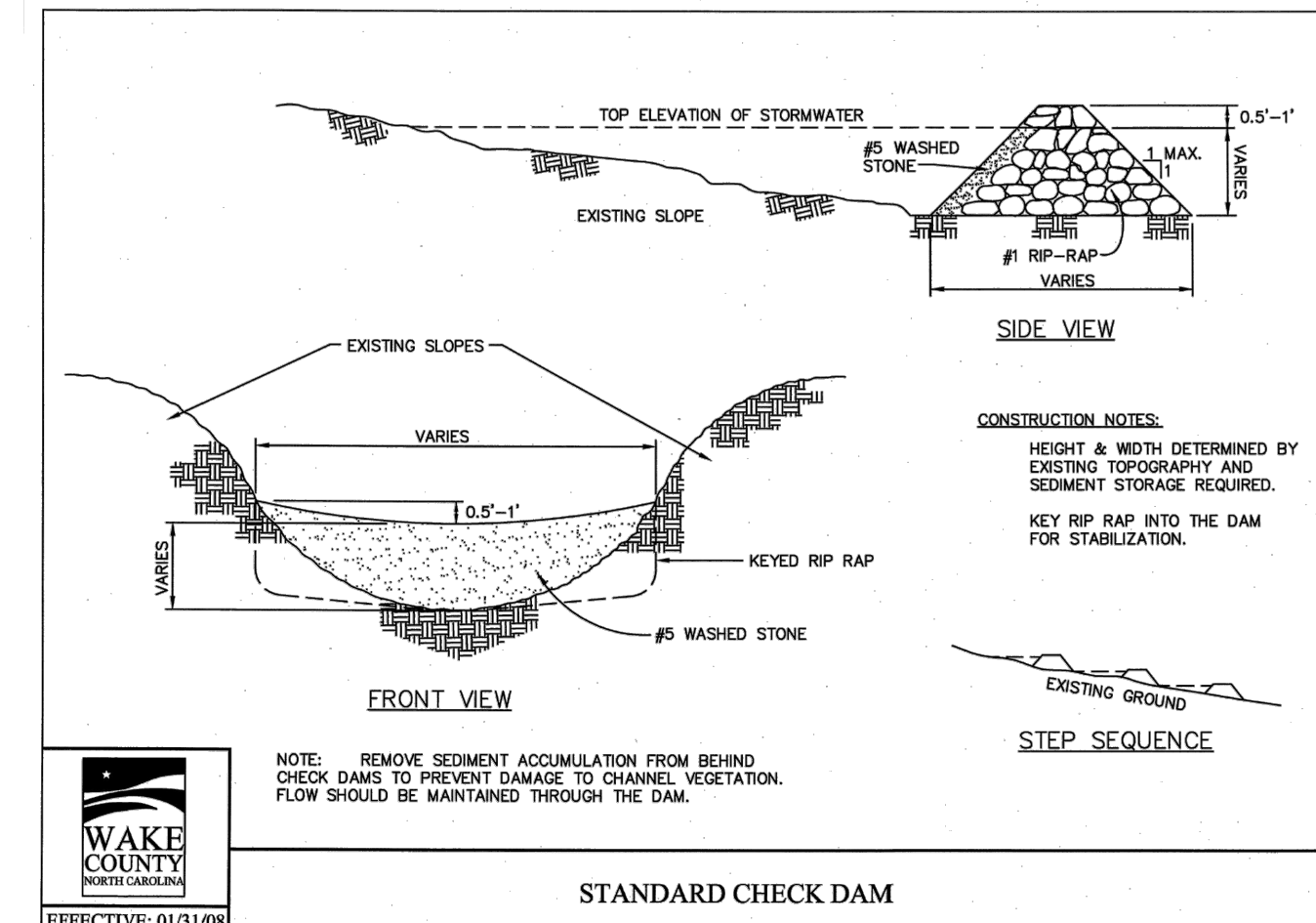


- NOTES:
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
 2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
 3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
 4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.

STANDARD TEMPORARY DIVERSION DITCH

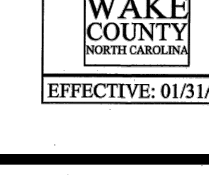


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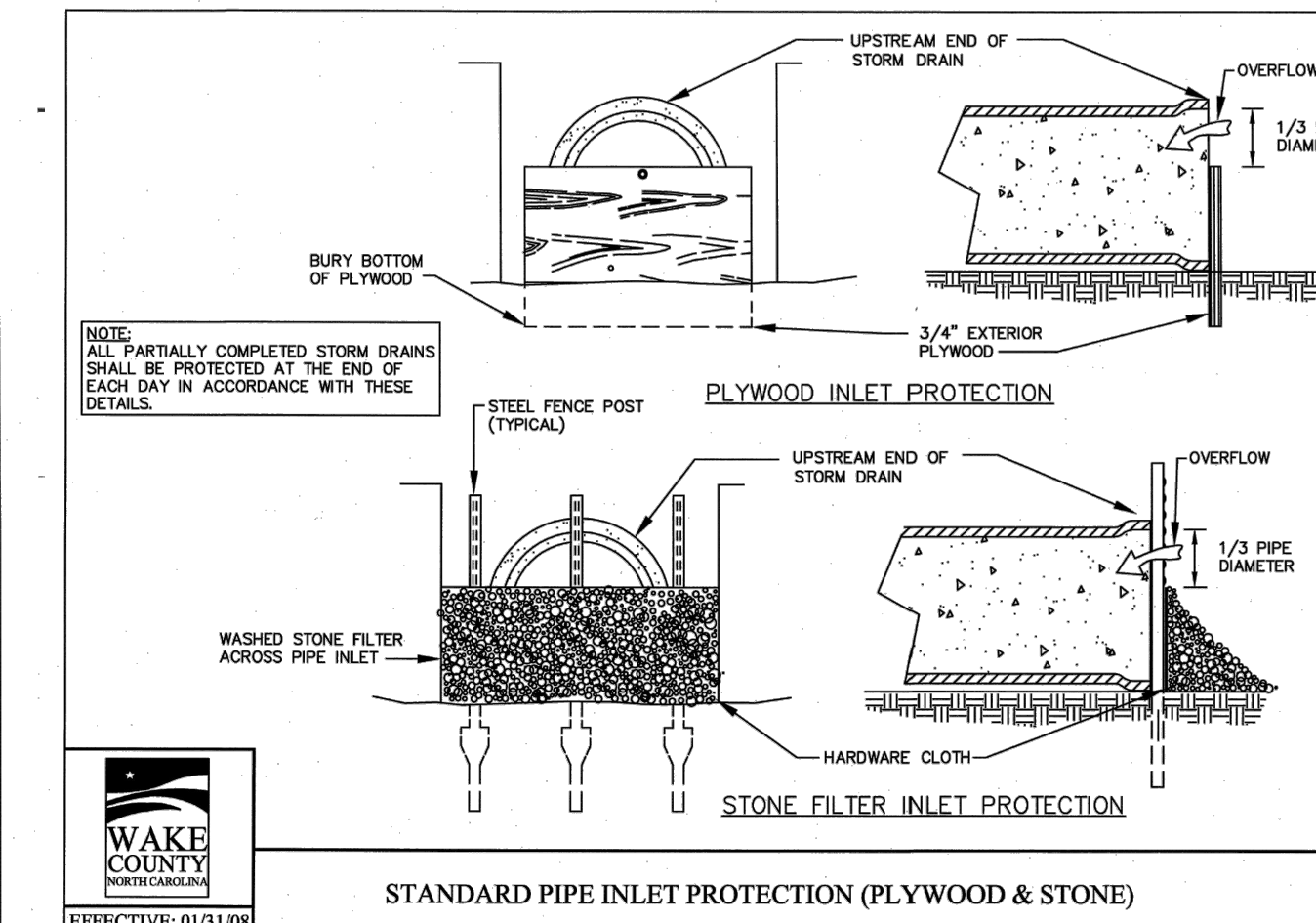


- NOTE: REMOVE SEDIMENT ACCUMULATION FROM BEHIND CHECK DAMS TO PREVENT DAMAGE TO CHANNEL VEGETATION. FLOW SHOULD BE MAINTAINED THROUGH THE DAM.

STANDARD CHECK DAM

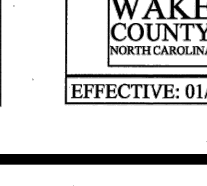


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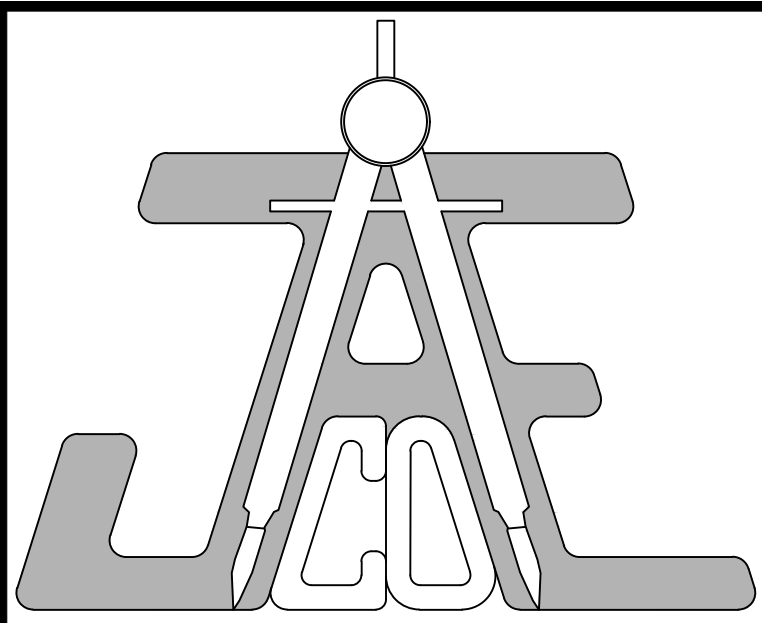


- NOTE: ALL PARTIALLY COMPLETED STORM DRAINS SHALL BE PROTECTED AT THE END OF EACH DAY IN ACCORDANCE WITH THESE DETAILS.

STANDARD PIPE INLET PROTECTION (PLYWOOD & STONE)



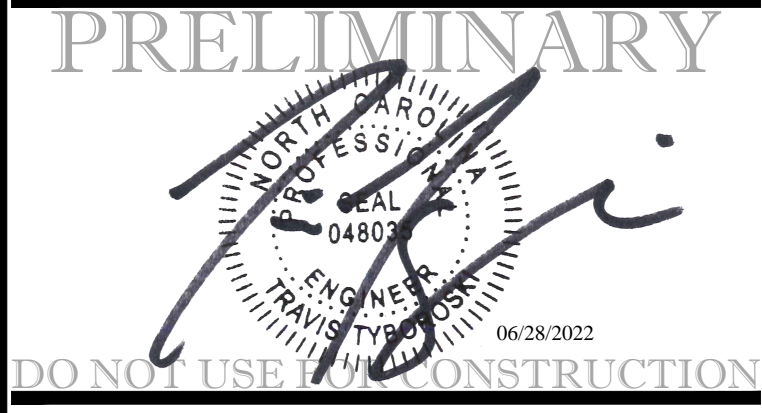
EFFECTIVE: 01/31/08



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PRELIMINARY

Granite Crest - Phase IV
0 Pluton Place
Rolesville, NC

Real Estate Marketing & Consulting, Inc.
6200 Falls of Neuse Rd.
Suite 102
Raleigh, NC 27609

Call 811 before you dig.

LEGEND

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

JAECO #: 364-04
DRAWING SCALE: AS SHOWN
DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 01/30/2022

C-7

ROLLMAX™ ROLLED EROSION CONTROL

Specification Sheet - EroNet™ D575™ Erosion Control Blanket

DESCRIPTION
The ultra short-term single net erosion control blanket shall be a machine produced mat of 100% agricultural straw with a functional longevity of up to 45 days. (NOTE: Functional longevity may vary depending upon climatic conditions, soil, geographical location, and elevation). The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top side with a polypropylene netting having an approximate 0.50 x 0.50 (1/2" x 1/2") mesh with photodegradable accelerators to provide breakdown of the netting within approximately 45 days, depending upon geographical location and elevation. The blankets shall be sewn together on 150 inch (1.81 m) centers with a degradable thread. The blanket shall be manufactured with a colored thread stitched along both outer edges (approximately 2-3 inches (5-7.5 cm) from the edge) as an overlap guide for adjacent mats. The D575 shall meet Type 1 specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administrator's (FHWA) FP-03 Section 713.97.

Index Property	Test Method	Typical
Thickness	ASTM D6622	0.45 in. (9.14 mm)
Resiliency	ECTC Guidelines	70.8%
Water Absorbency	ASTM D1917	37%
Max./Unit Area	ASTM G475	8.17 oz/yd (241 g/m ²)
Smell	ECTC Guidelines	9%
Smolder Resistance	ECTC Guidelines	Yes
Softness	ASTM D1988	6.0 in. (15.2 cm)
Light Penetration	ASTM D6567	106.6 in. (2708 mm)
Tensile Strength - MD	ASTM D6818	42.8 lb/ft (6.24 kN/m)
Tensile Strength - TD	ASTM D6818	42.8 lb/ft (6.24 kN/m)
Elongation - TD	ASTM D6818	29.2%
Biomass Improvement	ASTM D7132	290%

Design Permissible Shear Stress	
Unvegetated Shear Stress	15.0 psf (0.74 kg/m ²)
Unvegetated Velocity	5.0 ft/s (1.52 m/s)

Slope Design Data: C Factors	Slope Gradients (S)
Slope Length (L)	0.11
< 25 ft (7.62 m)	0.025
25-50 ft	0.11
> 50 ft (15.2 m)	0.19

Material Content	
Matrix	100% Straw Fiber
Netting	Top side only, lightweight photodegradable with photo accelerators

Standard Roll Sizes	
Width	6.67 (2.03 m)
Length	108 ft (32.92 m)
Weight 10%	50 lbs (22.68 kg)
Area	80 sq yd (66.5 m ²)

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Aurora, CA 95009
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tensorcorp.com

ROLLMAX™ ROLLED EROSION CONTROL

Specification Sheet - VMax™ E350™ Turf Reinforcement Mat

DESCRIPTION
The composite turf reinforcement mat (CTRM) shall be a machine produced mat of 100% coconut fiber matrix incorporated into permanent three dimensional turf reinforcement matting. The matrix shall be evenly distributed across the entire width of the matting and cross stitched between super heavy duty UV-stabilized nettings with 0.50 x 0.50 (1/2" x 1/2") openings. An ultra heavy duty UV-stabilized, dramatically convoluted (or matted) intermediate matting with 0.50 x 0.50 (1/2" x 1/2") openings, and covered by a super heavy duty UV-stabilized netting with 0.50 x 0.50 (1/2" x 1/2") openings. The middle convoluted matting shall form prominent closely spaced ridges across the entire width of the mat. The three nettings shall be stitched together on 150 in. (3.81 m) centers with UV-stabilized polypropylene thread to form permanent three dimensional turf reinforcement matting. All mats shall be manufactured with colored thread stitched along both outer edges as an overlap guide for adjacent mats. The E350 shall meet Type 1A, B, and C specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administrator's (FHWA) FP-03 Section 713.97.

Index Property	Test Method	Typical
Thickness	ASTM D6625	0.70 in. (17.8 mm)
Resiliency	ASTM D6624	90%
Density	ASTM D792	0.97 g/cm ³
Max./Unit Area	ASTM D6666	18.46 oz/yd (524 g/m ²)
UV Stability	ASTM D4855/1003 HR	80%
Porosity	ECTC Guidelines	9%
Softness	ASTM D1988	0.3 in. (7.62 mm)
Light Penetration	ASTM D6567	7.2%
Tensile Strength - MD	ASTM D6818	58.8 lb/ft (8.56 kN/m)
Elongation - MD	ASTM D6818	45.3%
Tensile Strength - TD	ASTM D6818	68.6 lb/ft (10.03 kN/m)
Elongation - TD	ASTM D6818	75.3%
Biomass Improvement	ASTM D7132	360%

Design Permissible Shear Stress	Permeability	Long Duration	
Phase 1 Unvegetated	3.2 psf (153 Pa)	3.0 psf (144 Pa)	
Phase 2 Partially Veg.	10.0 psf (480 Pa)	10.0 psf (480 Pa)	
Phase 3 Fully Veg.	12.0 psf (576 Pa)	10.0 psf (480 Pa)	
Unvegetated Velocity	10.5 fps (3.2 m/s)	Vegetated Velocity	20 fps (6.0 m/s)

Material Content	
Matrix	100% Coconut Fiber
Netting	Top and Bottom UV Stabilized Polypropylene
Thread	Polypropylene, UV Stable

Standard Roll Sizes	
Width	6.5 ft (2.0 m)
Length	55 ft (16.8 m)
Weight ± 10%	37 lbs (16.8 kg)
Thread	40 (13.4 mm)

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925.710.0100
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Installation Made Easy

When under the pressure of severe conditions, even the best erosion control products can't function to their full potential without proper installation and anchoring. Tensor supplies a wide variety of fastener options for nearly every application and soil type.

For severe applications needing the ultimate, long lasting hold, try our 1/2 in. and 3/4 in. ribbed staples, our 1/2 in. plastic ShowMax™ stakes, or complete line of percussion earth anchors. The Tensor earth anchors reach deep into the soil strata to offer enhanced anchoring in the worst conditions. Our variety of earth anchors are designed for durability and holding power under extreme hydraulic stresses and adverse soil conditions.

STAPLE PATTERNS
Proper staple patterns must be used to achieve optimal results in RECP installation. Tensor recommends the following general stapling patterns as guidance for use with our RECPs as seen in (Figure 1). Site specific staple pattern recommendations based on soil type and severity of application may be acquired through our Erosion Control Materials Design Software (ECADMS™). www.tensor.com

Our biodegradable BioStakes™ are available in 4 in. and 6 in. lengths and provide an environmentally friendly alternative to metal staples. For an even more durable, deeper reaching yet still natural anchoring option, our Wood EcoStakes™ are available in 6 in., 12 in., 18 in., and 24 in. lengths.

STAPLE PATTERN GUIDE

Figure 1 shows various staple patterns (A-E) for different applications and soil types. A: Standard pattern for general use. B: Pattern for high flow channels. C: Pattern for streambanks. D: Pattern for shoulders and side ditches. E: Pattern for slopes.

Slope Installation

The following slope guide outlines our general recommendations for installing Tensor's RollMax™ temporary and/or permanent RECPs on sloping applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the slope severity.

SLOPE INSTALLATION STEPS

- Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed. See page 7 for special requirements when soil filling a woven TBM.
- Begin at the top of the slope by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the slope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
- Roll the RECPs (A) down or (B) horizontally across the slope. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
- The edges of parallel RECPs must be stapled with approximately 2 in. (5 cm) overlap depending on the RECP type.
- Consecutive RECPs split down the slope must be end-over-end (single style) with an approximate 12 in. (30 cm) overlap. Staple through overlapped area, approximately 12 in. (30 cm) apart across entire RECPs width.

SOIL FILLING
Consult the following installation instructions when soil filling a woven TBM.

- Installed TBM shall be seeded and soil-filled.
- After seeding, spread a layer of soil into the mat. Using the flat side of a rake, broom or other tool, completely fill the voids. Smooth soil fill in order to just expose the top of the TBM matrix. Do not place excessive soil above the mat.
- In the case of equipment use, no tracked equipment or sharp turns shall be allowed on the mat. Avoid any traffic over the mat if loose or wet soil conditions exist.
- Additional seed, hydraulic mulching or the use of a temporary erosion control blanket can be applied over the soil-filled mat for additional protection.
- Consult with a manufacturer's technical representative for installation assistance if unique conditions apply.

JAECO Consulting Engineers and Land Surveyors

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Fax: (919) 828-4711
E-mail: info@jaeco.com

www.jaeco.com

PRELIMINARY

Professional Engineer Seal: JAECO, License No. 4880, State of North Carolina, Mechanical, dated 06/26/2022.

DO NOT USE FOR CONSTRUCTION

TREE PROTECTION FENCE

N.T.S.

CRITICAL POINTS
A. Warning and Signs
B. Project Water Line
C. Channel Bottom/Tree Veneers

CHANNEL INSTALLATION STEPS

- Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed. See page 7 for special requirements when soil filling a woven TBM.
- Begin at the top of the channel by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the slope portion of the trench. Use ShowMax™ mat at the channel/culvert outlet as supplemental cover protection as needed. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
- Roll across RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
- Full-length edge of RECPs in critical areas should be anchored with a row of staples and anchors approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling (Figure 4).
- The edges of all horizontal and vertical seams must be stapled with approximately 2 in. (5 cm) (5-12 cm) overlap in streambank applications, seam overlaps should be shingled in the predominant flow direction.
- The edges of the RECPs at or below normal water level must be anchored by placing the RECPs in a 12 in. (30 cm) deep x 6 in. (15 cm) wide anchor trench. Anchor the RECPs with a row of staples and anchors approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.

NOTE: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.

Channel Installation

The following channel guide outlines our general recommendations for installing Tensor's RollMax™ temporary and/or permanent RECPs in concentrated flow applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the channel severity.

SHORELINE/STREAMBANK INSTALLATION STEPS

- For severe installation, lower water level from Level A to Level B before installation.
- Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed. See page 7 for special requirements when soil filling a woven TBM.
- Begin at the top of the shoreline by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the slope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.
- Roll RECPs either (A) down the shoreline for long banks (top to bottom) or (B) horizontally across the shoreline.

Shoreline Installation

The following guide outlines our general recommendations for installing Tensor's RollMax™ temporary and/or permanent RECPs along shoreline and stream bank applications. Consult the staple pattern guide (Figure 1) for fastener spacing recommendations based on the bank severity.

INSTALLING RECP WITH EARTH ANCHORS
Consult the following guide details when using earth anchors in conjunction with our RollMax™ RECPs.

For the leading edge of a slope or channel, secure the RECP in a 6 in. (15 cm) x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECP extended beyond the upper portion of the trench. Anchor the RECP with a row of staples and anchors approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) across the width of the RECP (Figures 2 and 3).

Full-length edge of RECPs in critical areas should be anchored with a row of staples and anchors approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling (Figure 4).

The edges of all horizontal and vertical seams must be stapled with approximately 2 in. (5 cm) (5-12 cm) overlap in streambank applications, seam overlaps should be shingled in the predominant flow direction.

The edges of the RECPs at or below normal water level must be anchored by placing the RECPs in a 12 in. (30 cm) deep x 6 in. (15 cm) wide anchor trench. Anchor the RECPs with a row of staples and anchors approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.

NOTE: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.

Special Installation Instructions

INSTALLING RECP WITH EARTH ANCHORS
Consult the following guide details when using earth anchors in conjunction with our RollMax™ RECPs.

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Full-length edge of RECPs in critical areas should be anchored with a row of staples and anchors approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling (Figure 4).

The edges of all horizontal and vertical seams must be stapled with approximately 2 in. (5 cm) (5-12 cm) overlap in streambank applications, seam overlaps should be shingled in the predominant flow direction.

The edges of the RECPs at or below normal water level must be anchored by placing the RECPs in a 12 in. (30 cm) deep x 6 in. (15 cm) wide anchor trench. Anchor the RECPs with a row of staples and anchors approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12 in. (30 cm) apart across the width of the RECPs.

NOTE: In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.

SUPER SILT FENCE

N.T.S.

NOTES

- MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT FENCE SHALL BE REPLACED EVERY 6 MONTHS AND POSTS SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY. SILT FENCE SHALL BE INSPECTED WEEKLY AND ALL MAINTENANCE ISSUES SHALL BE CORRECTED AT THAT TIME.
- SILT FENCE SHOULD BE A MINIMUM OF 6 FEET FROM THE TOE OF SLOPE.

ROLLMAX SPECIFICATIONS AND INSTALLATION INSTRUCTIONS

DATE	TYPE	PANTING RATE
MAR 1 - JUN 1	SERICEA LESPEDEZA (SCARIFIED) AND USE THE FOLLOWING COMBINATIONS:	50 LBS/ACRE (SERICEA LESPEDEZA)
MAR 1 - APR 15	ADD TALL FESCUE	10 LBS/ACRE
MAR 1 - JUN 30	OR ADD WEEPINE LOVE GRASS	10 LBS/ACRE
MAR 1 - JUN 30	OR ADD HULLED COMMON BERMUDAGRASS	25 LBS/ACRE
JUN 1 - SEPT 1	TALL FESCUE AND BROWNTOP MULLET OR SORGHUM-SUDAN HYBRIDS ***	120 LBS/ACRE (TALL FESCUE); 35 LBS/ACRE (BROWNTOP MULLET); 30 LBS/ACRE (SORGHUM-SUDAN HYBRIDS)
SEPT 1 - MAR 1	SERICEA LESPEDEZA (UNHULLED-UNSCARIFIED) AND TALL FESCUE	70 LBS/ACRE (SERICEA LESPEDEZA); 120 LBS/ACRE (TALL FESCUE)
NOV 1 - MAR 1	AND ABRUZZI RYE	25 LBS/ACRE

CONSULT S&E/C ENVIRONMENTAL ENGINEERS FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENuded AREAS. THE ABOVE VEGETATION RATES ARE THOSE THAT DO WELL UNDER LOCATION CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE. ***TEMPORARY: RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW MORE THAN 12" IN HEIGHT BEFORE MOWINGS; OTHERWISE, FESCUE MAY BE SHADED OUT.

DATE	TYPE	PANTING RATE
AUG 15 - NOV 1	TALL FESCUE	300 LBS/ACRE
NOV 1 - MAR 1	TALL FESCUE & ABRUZZI RYE	300 LBS/ACRE
MAR 1 - APR 15	TALL FESCUE	300 LBS/ACRE
APR 15 - JUN 30	HULLED COMMON BERMUDAGRASS	25 LBS/ACRE
JUL 1 - AUG 15	TALL FESCUE AND BROWNTOP MILLET OR SORGHUM-SUDAN HYBRIDS***	125 LBS/ACRE (TALL FESCUE); 35 LBS/ACRE (BROWNTOP MILLET); 30 LBS/ACRE (SORGHUM-SUDAN HYBRIDS)

SITE AREA DESCRIPTION	STABILIZATION	TIMEFRAME EXCEPTIONS
PERMETER DIKES, SWALES, DITCHES, SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	70 DAYS	IF SLOPES ARE LESS THAN 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERMETERS AND HOW ZONES

SEEDBED PREPARATION:

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

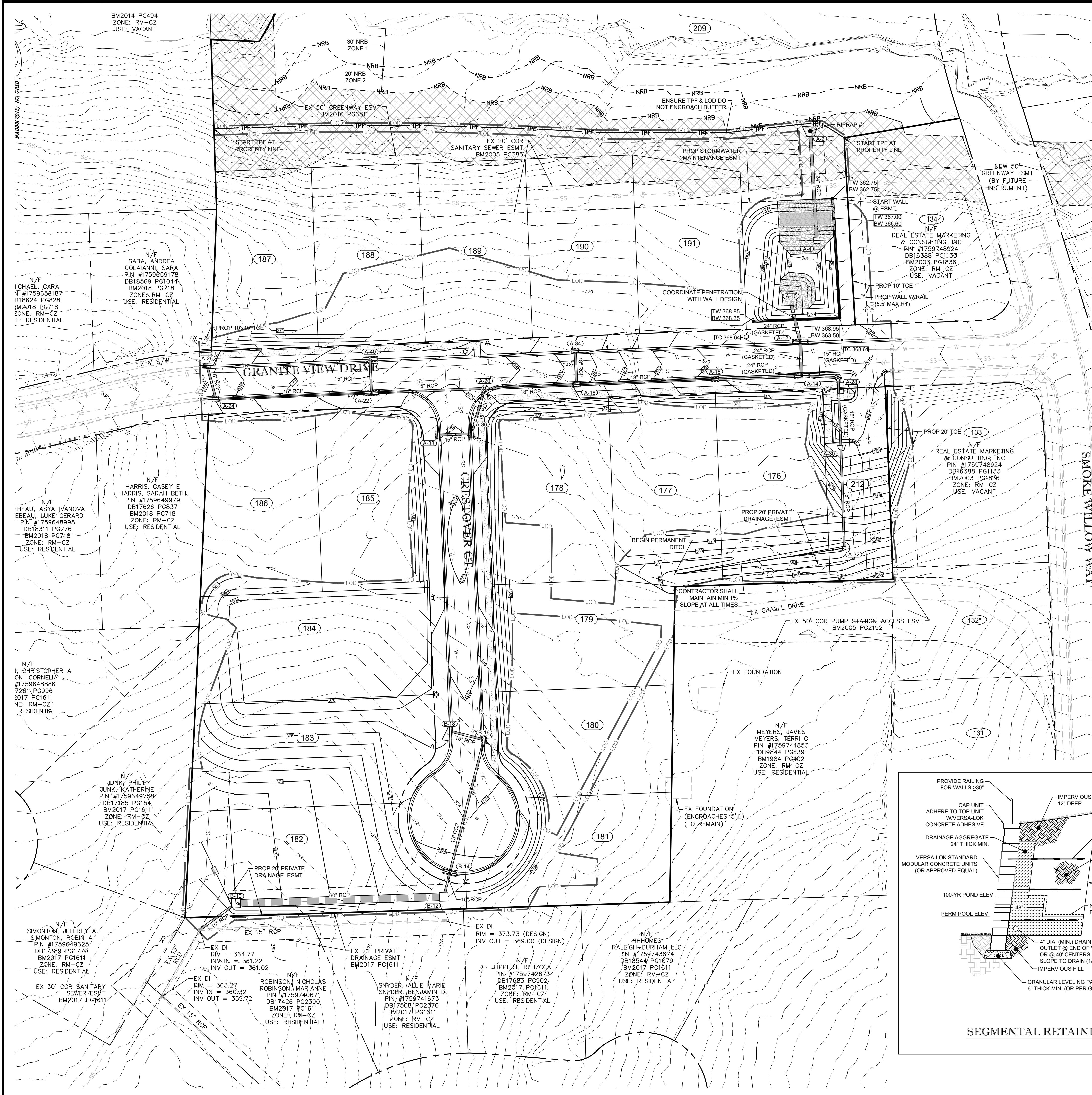
SEEDING MIXTURE	
AGRICULTURAL LIMESTONE	2 TONS/ACRE (3 TONS/ACRE IN CLAY SOILS)
FERTILIZER	1,000 LBS/ACRE - 10-10-10
SUPERPHOSPHATE	500 LBS/ACRE - 20% ANALYSIS
MULCH	2 TONS/ACRE - SMALL GRAIN STRAW
ANCHOR	ASPHALT EMULSION AT 300 GAL/ACRE

EROSION & SEDIMENT CONTROL DETAILS

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	08/27/22

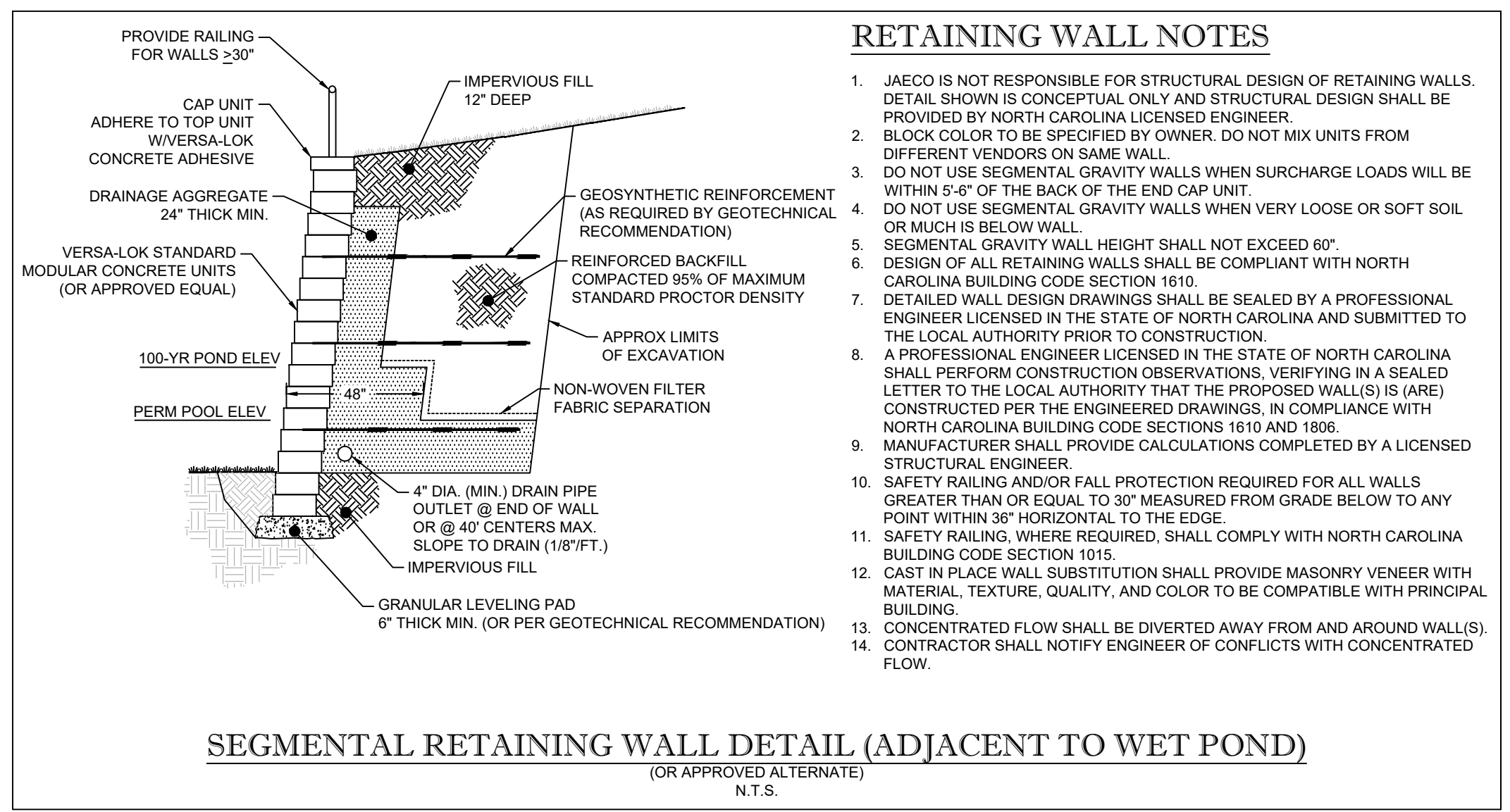
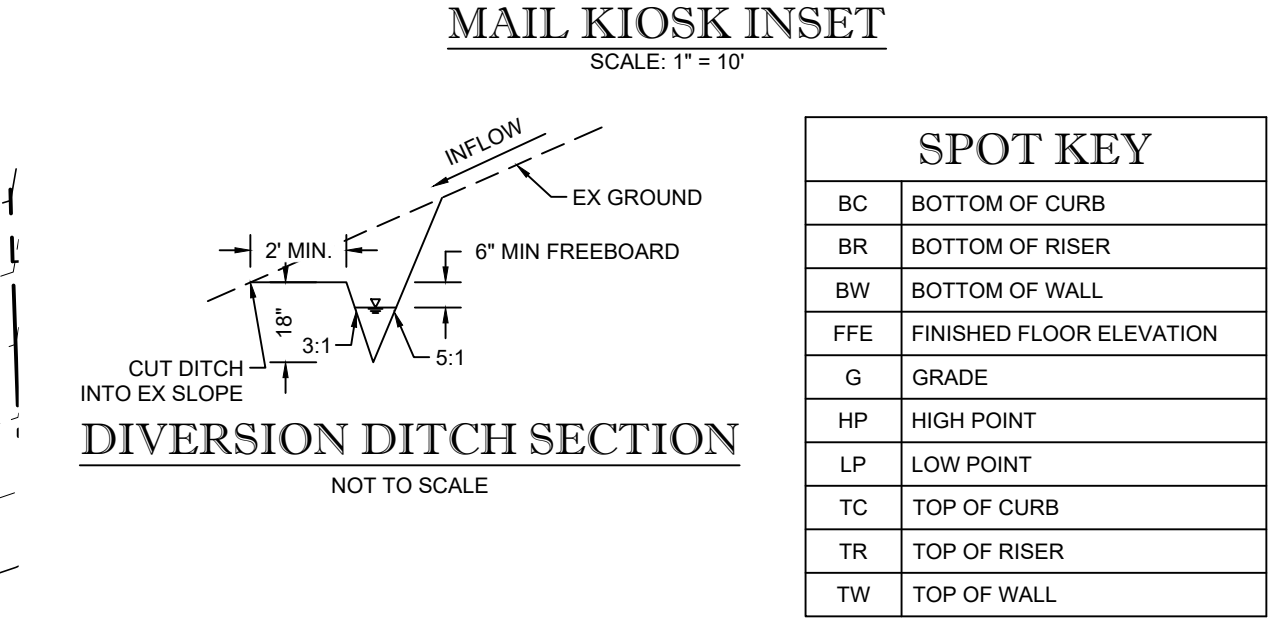
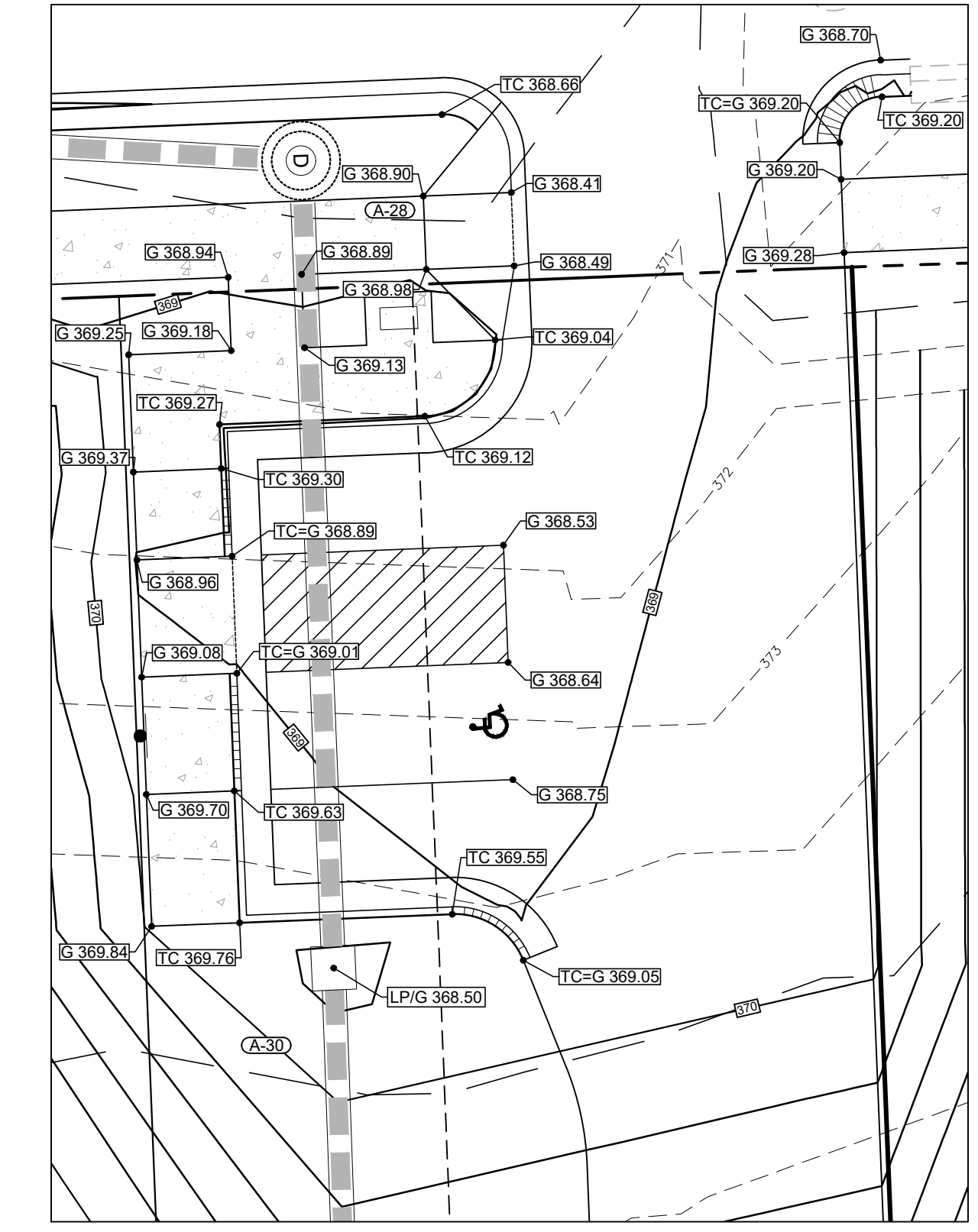
JAECO #: 364-04
DRAWING SCALE: AS SHOWN
DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 01/30/2022

C-8



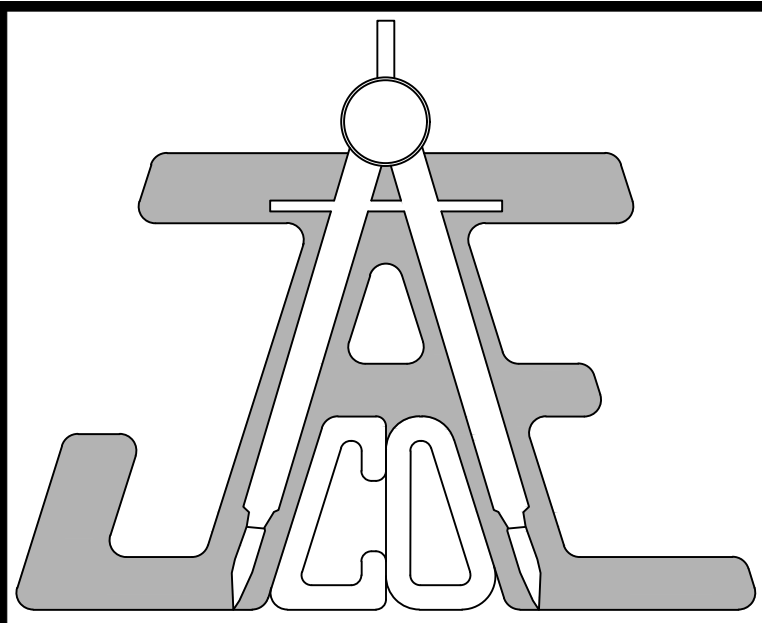
GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY LOCATION & ELEVATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF CONFLICTS.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH, TOWN OF ROLESVILLE, AND/OR NCDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
3. 50' NEUSE RIVER BUFFER SHOWN HEREIN IS BASED ON THE "BUFFER DETERMINATION LETTER" (NBRRO #21-286) ISSUED SEPTEMBER 9, 2021 AND FLAGGING OF THE SAME BY S&EC.

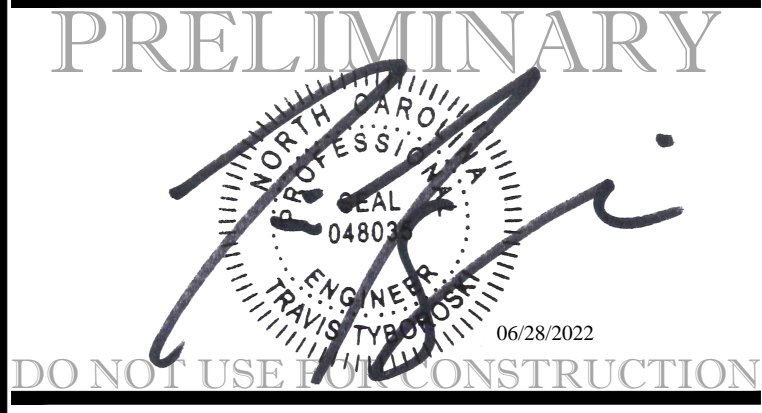


RETAINING WALL NOTES

1. JAECO IS NOT RESPONSIBLE FOR STRUCTURAL DESIGN OF RETAINING WALLS. DETAIL SHOWN IS CONCEPTUAL. ONLY A STRUCTURAL DESIGN SHALL BE PROVIDED BY NORTH CAROLINA LICENSED ENGINEER.
2. BLOCK COLOR TO BE SPECIFIED BY OWNER. DO NOT MIX UNITS FROM DIFFERENT VENDORS ON SAME WALL.
3. DO NOT USE SEGMENTAL GRAVITY WALLS WHEN SURCHARGE LOADS WILL BE WITHIN 5'-0" OF THE BACK OF THE END CAP UNIT.
4. DO NOT USE SEGMENTAL GRAVITY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCH IS BELOW WALL.
5. SEGMENTAL GRAVITY WALL HEIGHT SHALL NOT EXCEED 60'.
6. DESIGN OF ALL RETAINING WALLS SHALL BE COMPLIANT WITH NORTH CAROLINA BUILDING CODE SECTION 1610.
7. DETAILED WALL DESIGN DRAWINGS SHALL BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA AND SUBMITTED TO THE LOCAL AUTHORITY PRIOR TO CONSTRUCTION.
8. A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NORTH CAROLINA SHALL PERFORM CONSTRUCTION OBSERVATIONS, VERIFYING IN A SEALED LETTER TO THE LOCAL AUTHORITY THAT THE PROPOSED WALL(S) IS (ARE) CONSTRUCTED PER THE ENGINEERED DRAWINGS, IN COMPLIANCE WITH NORTH CAROLINA BUILDING CODE SECTIONS 1610 AND 1806.
9. MANUFACTURER SHALL PROVIDE CALCULATIONS COMPLETED BY A LICENSED STRUCTURAL ENGINEER.
10. SAFETY RAILING AND/OR FALL PROTECTION REQUIRED FOR ALL WALLS GREATER THAN OR EQUAL TO 30" MEASURED FROM GRADE BELOW TO ANY POINT WITHIN 36" HORIZONTAL TO THE EDGE.
11. SAFETY RAILING, WHERE REQUIRED, SHALL COMPLY WITH NORTH CAROLINA BUILDING CODE SECTION 1015.
12. GAST IN PLACE WALL SUBSTITUTION SHALL PROVIDE MASONRY VENEER WITH MATERIAL, TEXTURE, QUALITY, AND COLOR TO BE COMPATIBLE WITH PRINCIPAL BUILDING.
13. CONCEALED FLOW SHALL BE DIVERTED AWAY FROM AND AROUND WALL(S).
14. CONTRACTOR SHALL NOTIFY ENGINEER OF CONFLICTS WITH CONCENTRATED FLOW.



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 www.jaeco.com



Granite Crest - Phase IV
 0 Pluton Place
 Rolesville, NC

Real Estate Marketing & Consulting, Inc.
 6200 Falls of Neuse Rd.
 Suite 102
 Raleigh, NC 27609

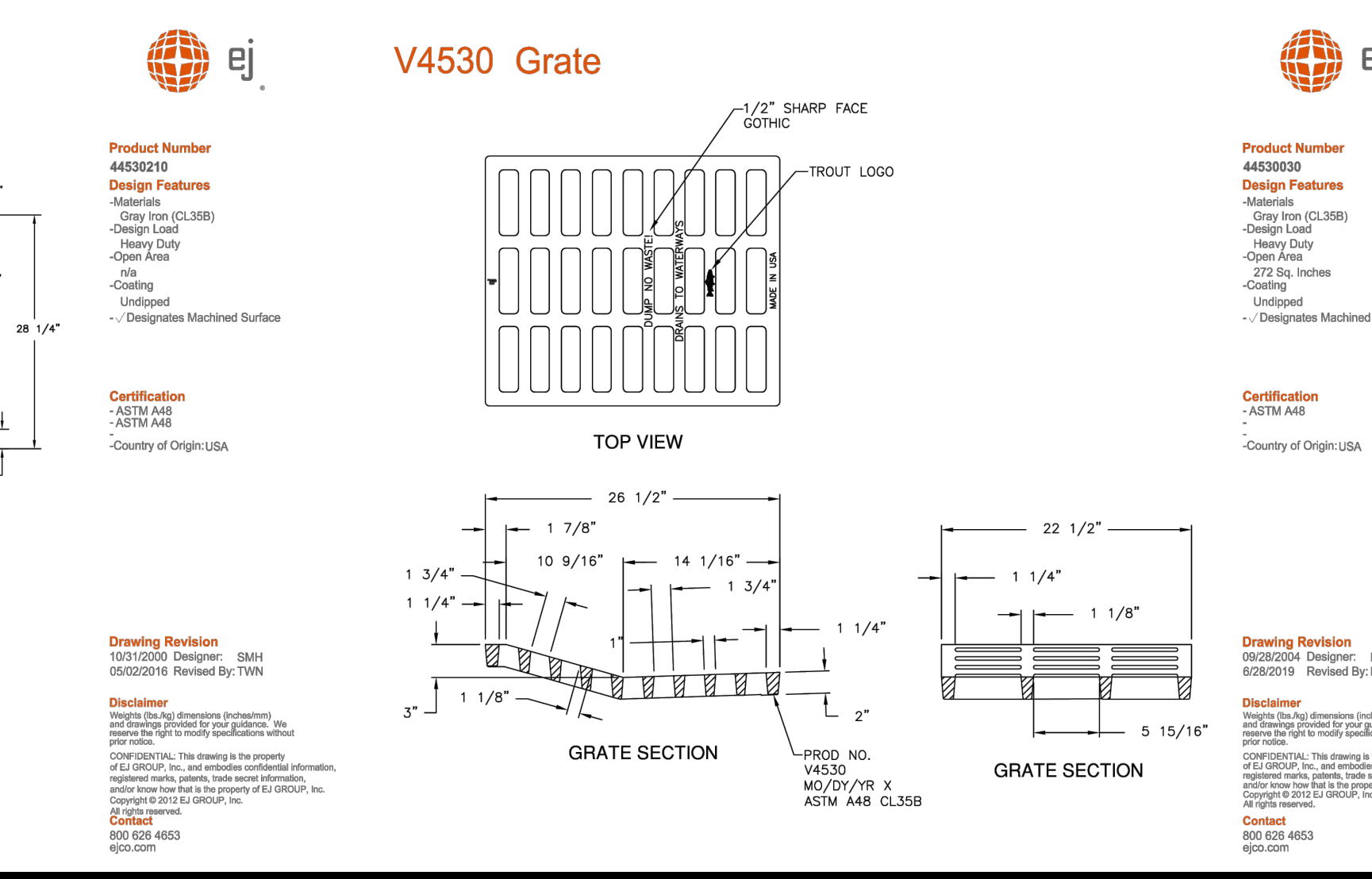
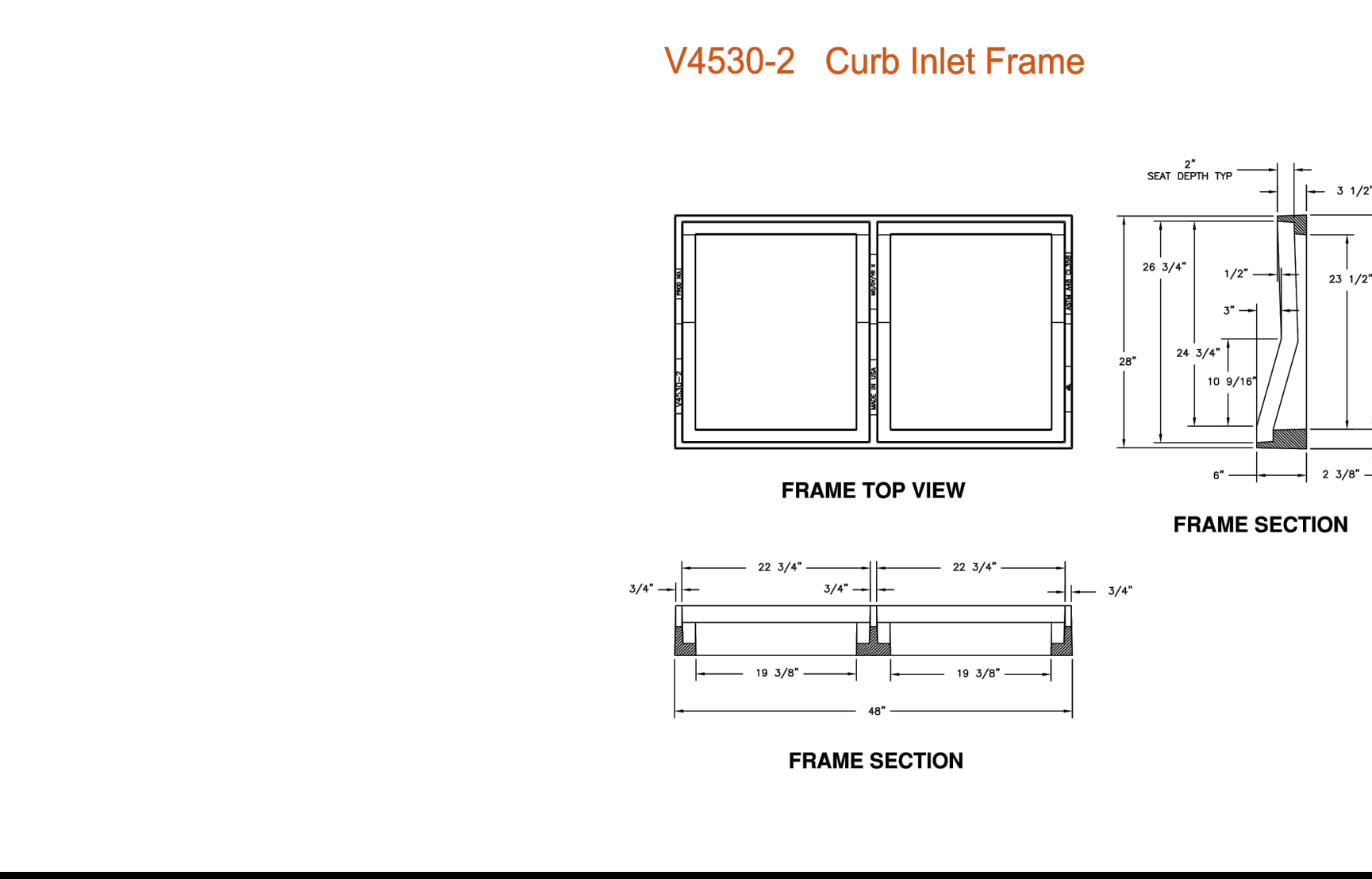
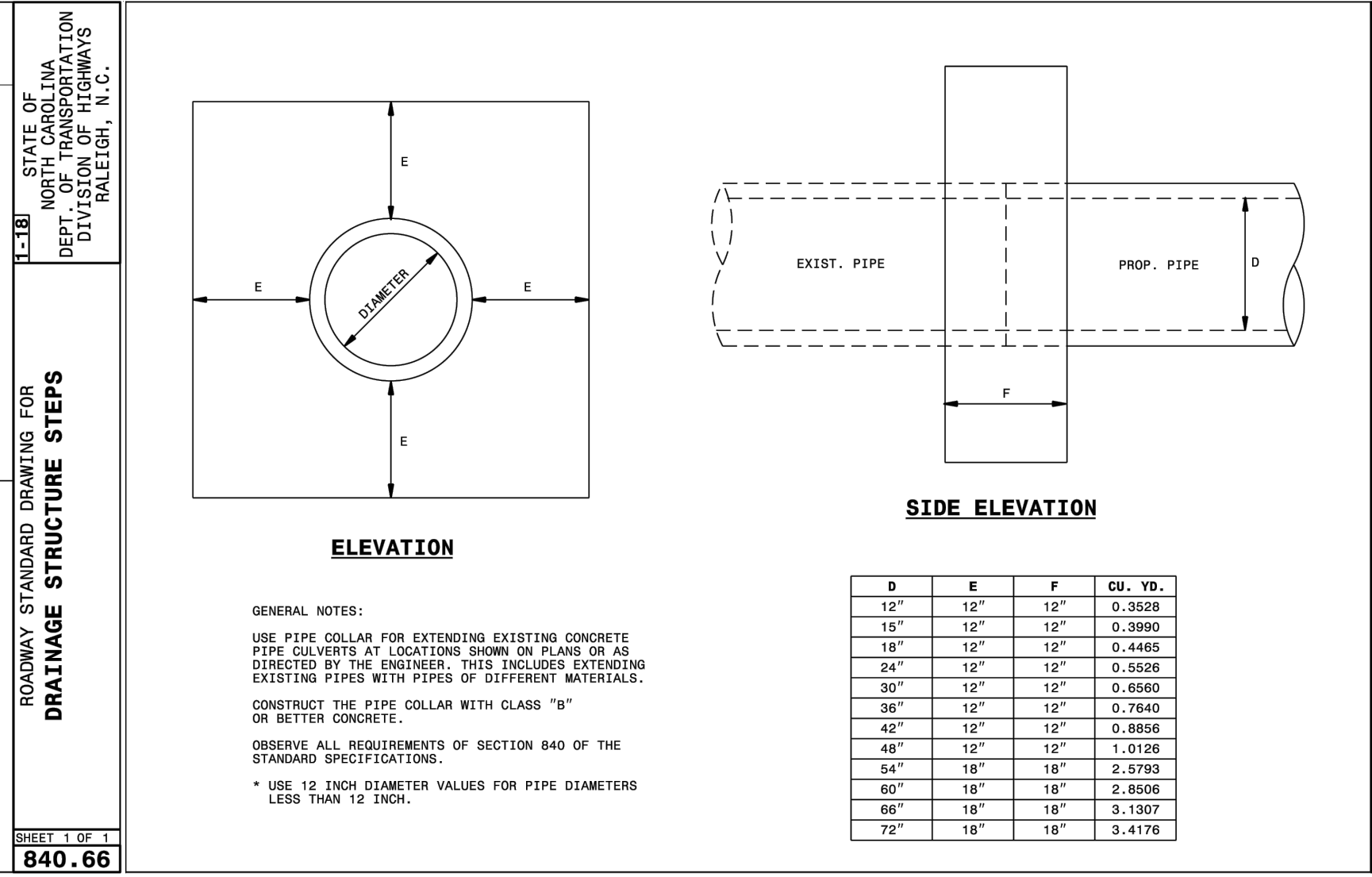
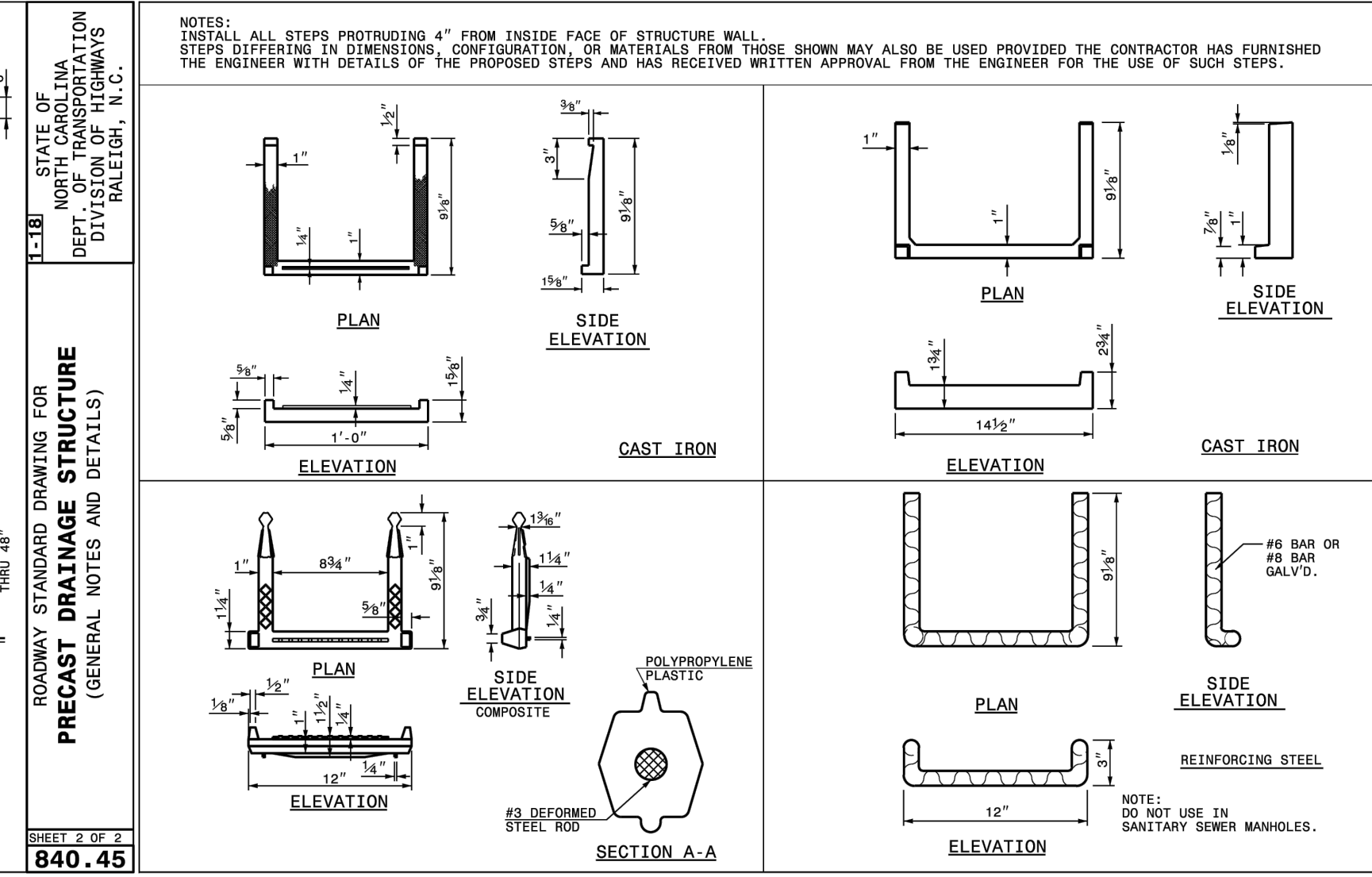
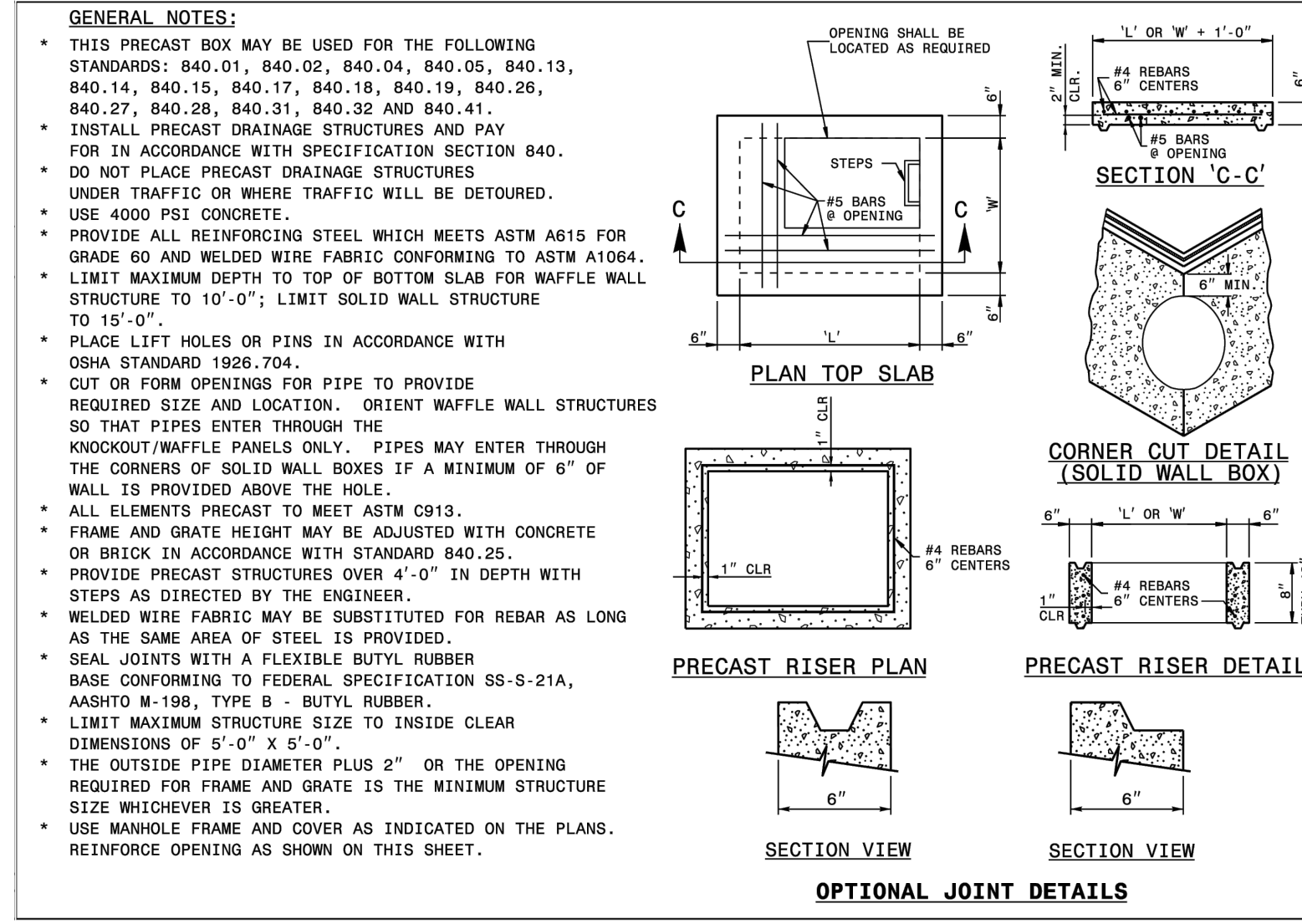
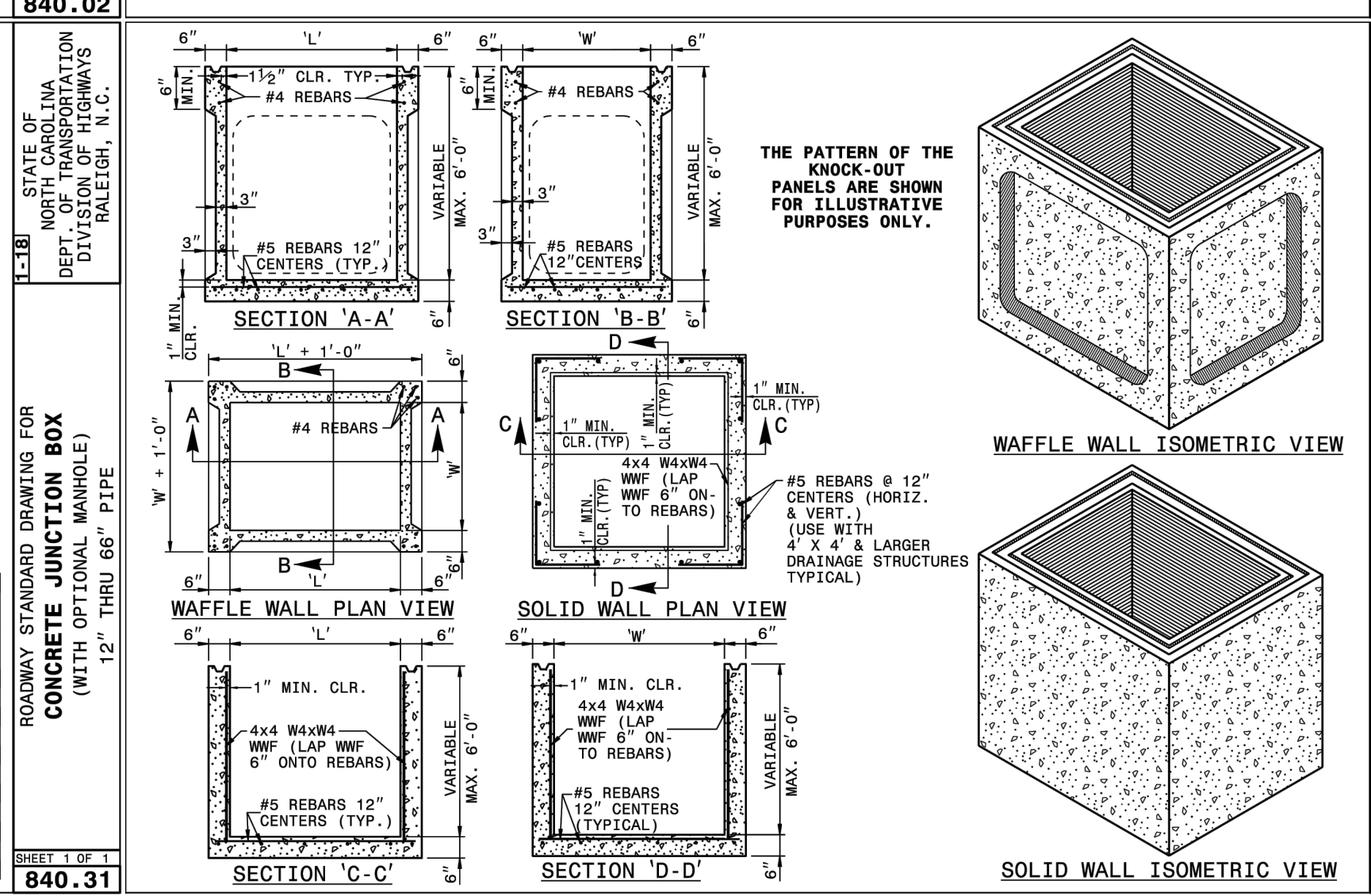
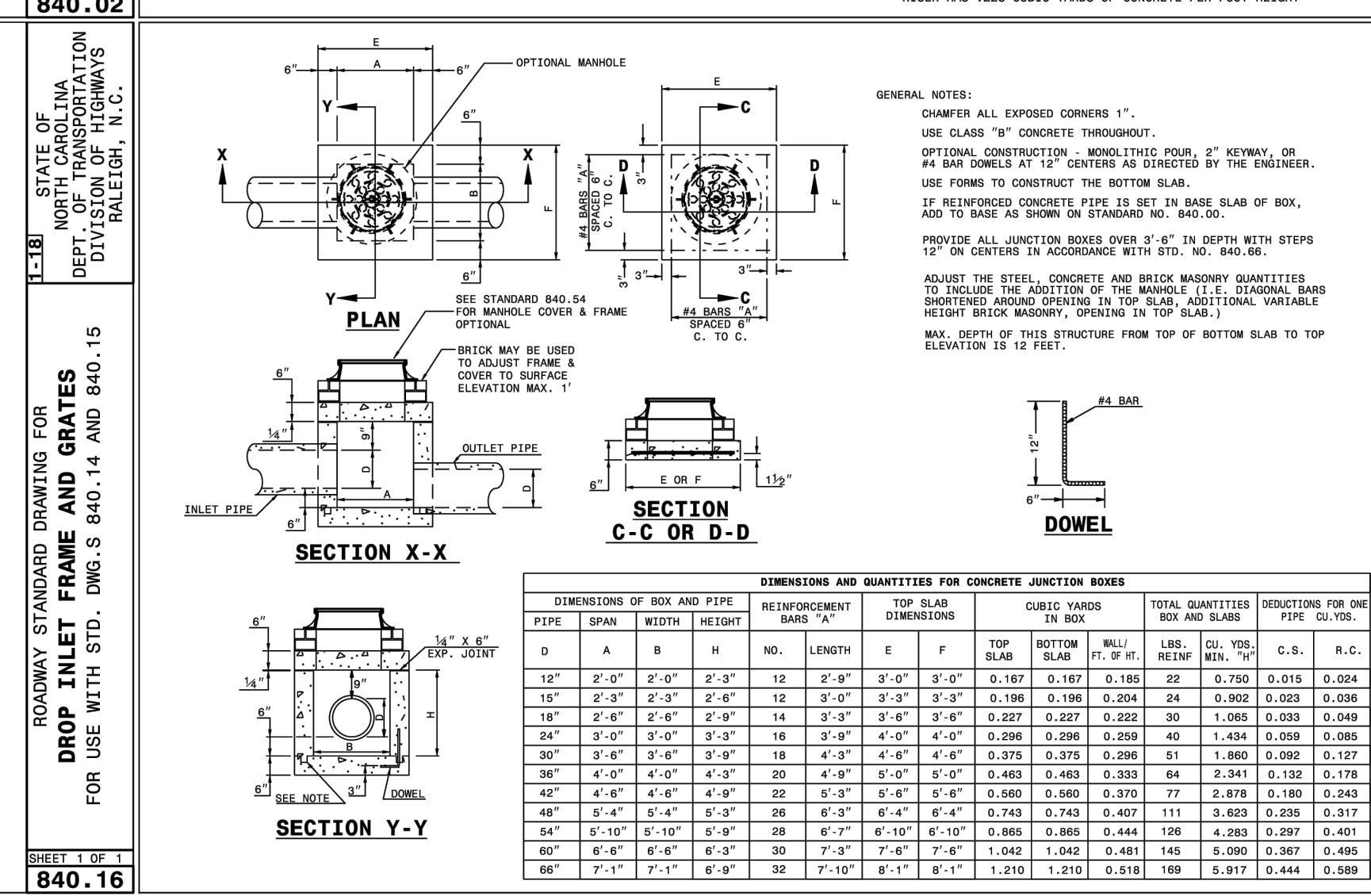
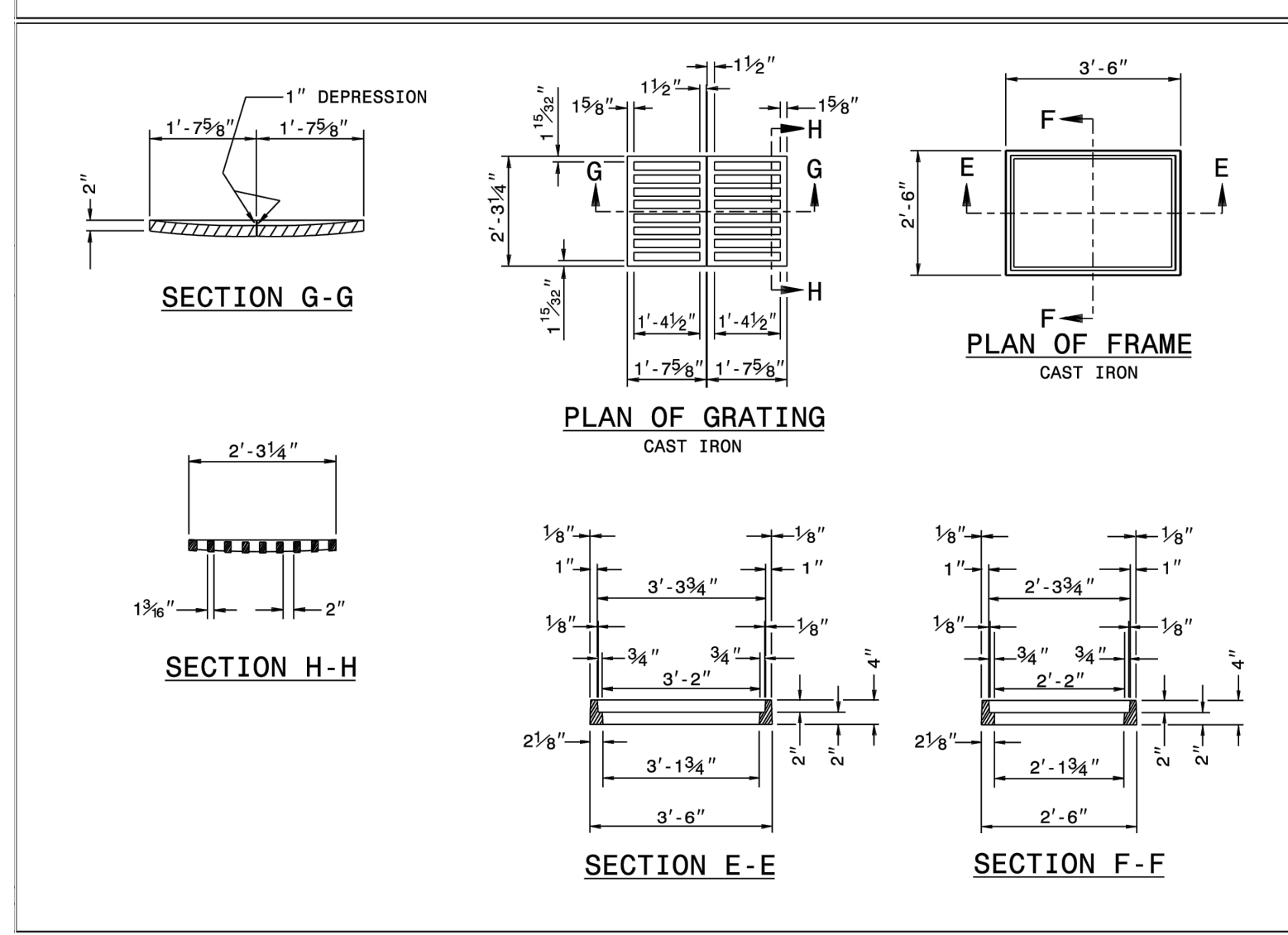
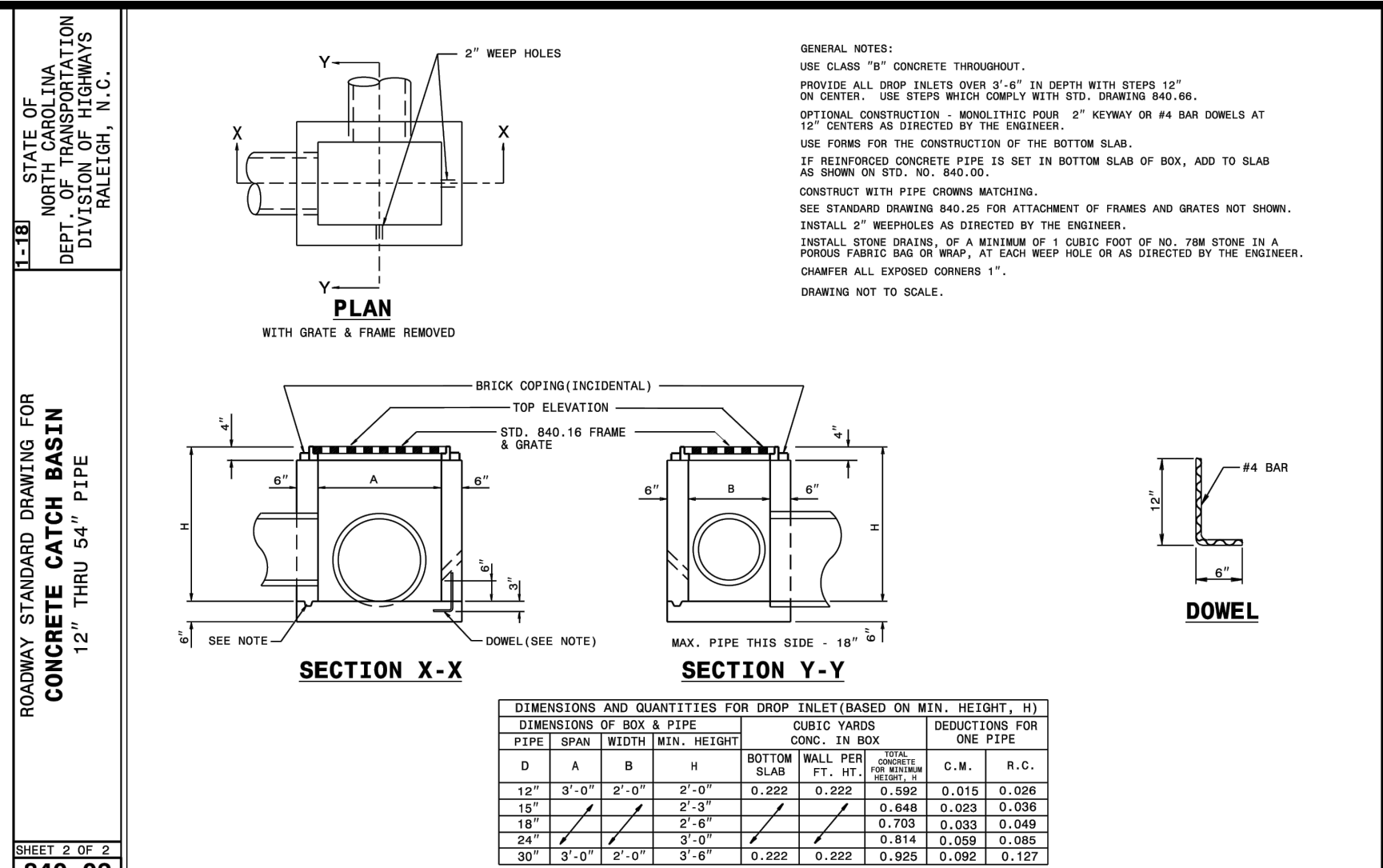
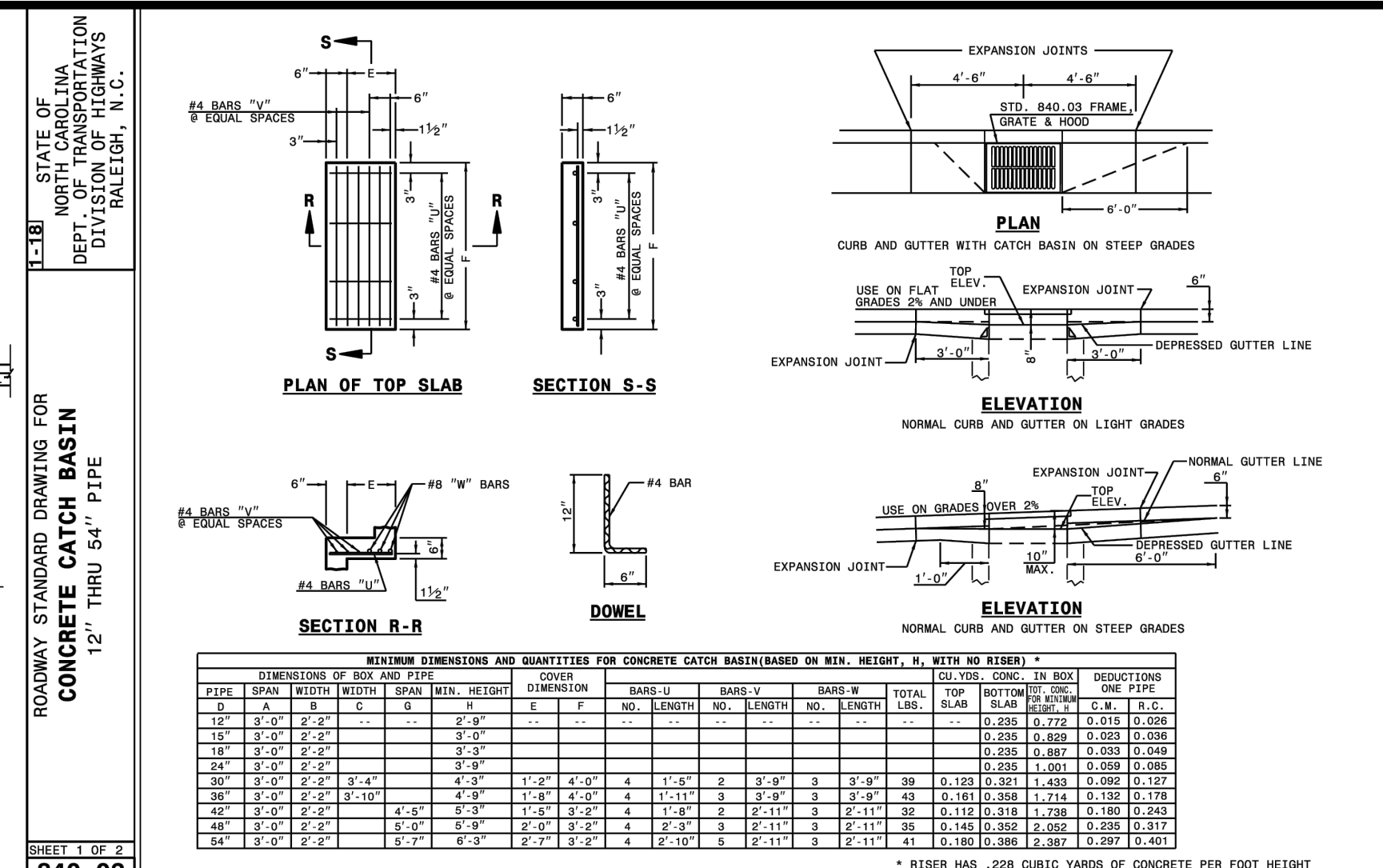
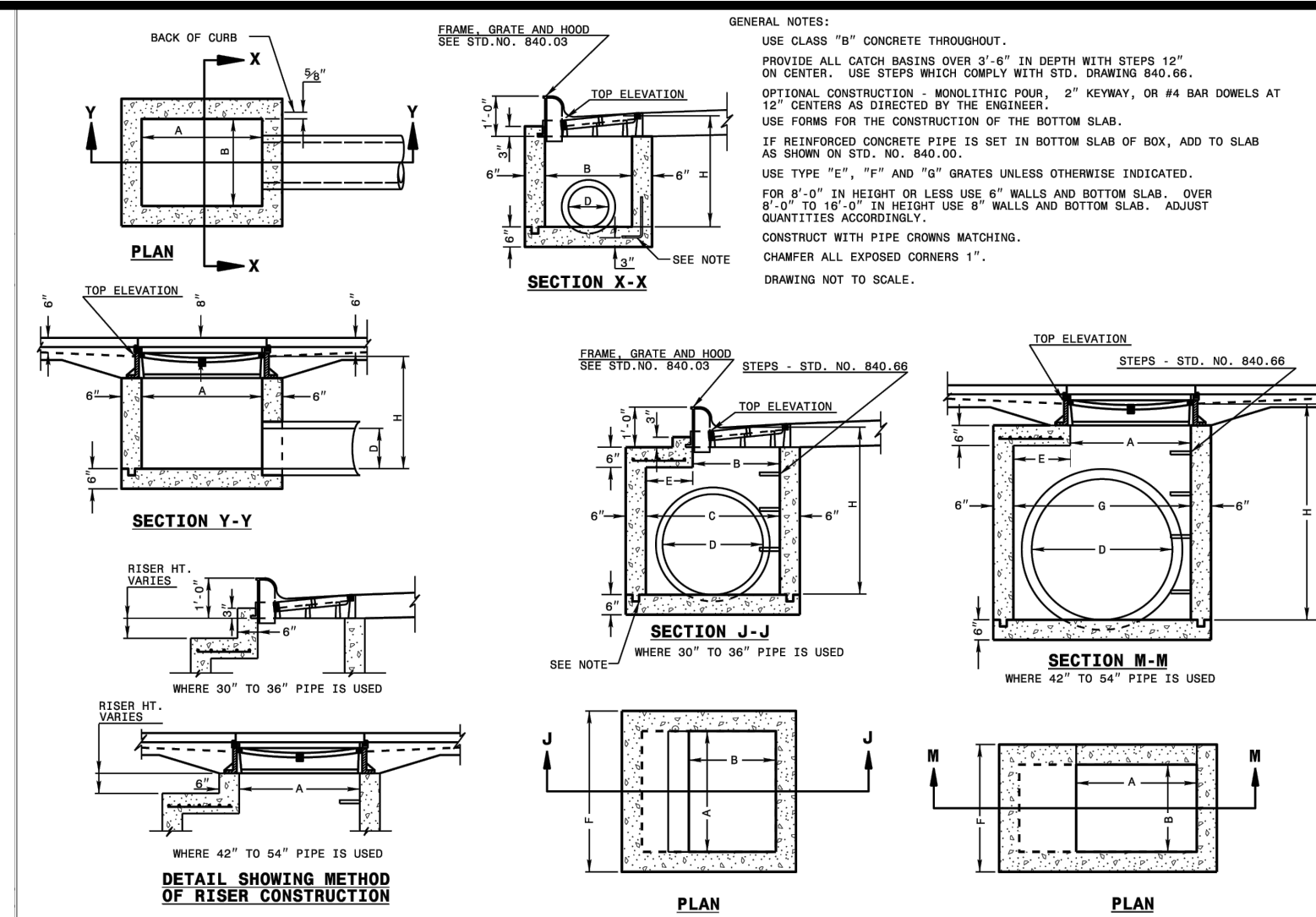
Call 811 before you dig.

LEGEND

STORMDRAIN & GRADING PLAN

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

JAECO #: 364-04
 DRAWING SCALE: AS SHOWN
 DRAWN BY: TT
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PRELIMINARY

DO NOT USE FOR CONSTRUCTION

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6200 Falls of Neuse Rd.
Suite 102
Raleigh, NC 27609

Call before you dig.

LEGEND

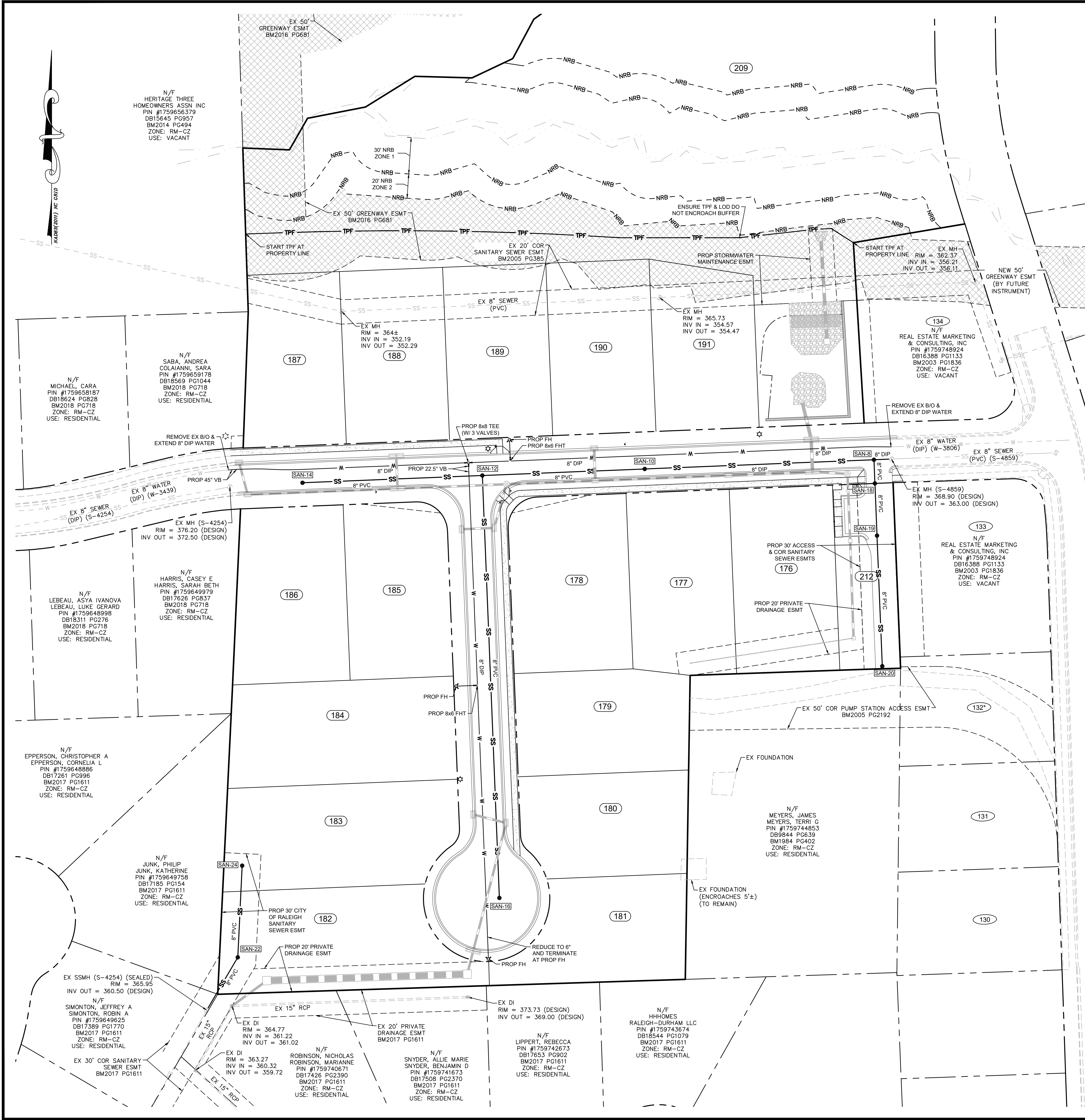
EXIST. PIPE
PROP. PIPE

STORMDRAIN DETAILS

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

JAECO # 364-04
DRAWING SCALE: AS SHOWN
DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 01/30/2022

C-17



GENERAL NOTES:

- CONTRACTOR TO FIELD VERIFY LOCATION & ELEVATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF CONFLICTS.
- CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF RALEIGH, TOWN OF ROLESVILLE, AND/OR NCDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
- 50' NEUSE RIVER BUFFER SHOWN HEREIN IS BASED ON THE "BUFFER DETERMINATION LETTER" (NBRRO #21-286) ISSUED SEPTEMBER 9, 2021 AND FLAGGING OF THE SAME BY S&EC.
- 8" GRAVITY SEWER MAIN SHALL BE MANUFACTURED IN ACCORDANCE WITH ALL THE REQUIREMENTS OF ASTM D-3034-98 SDR 35 TYPE PSM POLYVINYL CHLORIDE SEWER PIPE AND FITTING, UNLESS OTHERWISE NOTED.
- ALL WATER MAINS SHALL BE PRESSURE CLASS OR THICKNESS CLASS DUCTILE IRON PIPE DESIGNED IN ACCORDANCE WITH AWWA STANDARD C-150. THE MINIMUM THICKNESS SHALL BE PRESSURE CLASS 350 FOR 6" AND 8" MAINS.
- ALL PROPOSED SEWER SERVICES TO BE 4" PVC, UNLESS OTHERWISE NOTED, AND BE INSTALLED IN ACCORDANCE WITH CITY OF RALEIGH STANDARD DETAILS S-30, S-31, AND S-32.
- ALL PROPOSED WATER SERVICE TO BE 3/4" COPPER WITH 5/8" METER, UNLESS OTHERWISE NOTED, AND BE INSTALLED AS SHOWN ON PLAN IN ACCORDANCE WITH CITY OF RALEIGH DETAIL W-23.

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 18" 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.
- Developer shall provide 15 days advance notice to owner for any work required within an existing City of Raleigh Utility Easement traversing private property.
- 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 service with 5/8" meter located within private ROW. 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 service @ 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; backflow 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 Stephen Calverley at (919) 996-2334 or Stephen.calverley@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.

SANITARY STRUCTURE TABLE

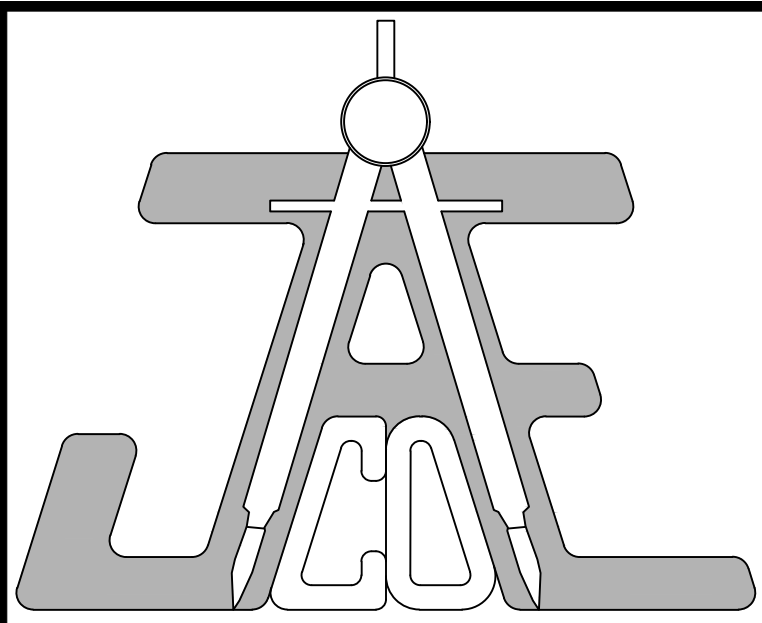
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SAN-8	48" MH	COR S-20	368.54	364.20 (SAN-10) 364.20 (SAN-18)	363.75 (EX MH-11)	14.51LF 8" DIP @ 1.72%
SAN-10	48" MH	COR S-20	370.86	365.53 (SAN-12)	365.33 (SAN-8)	188.80LF 8" DIP @ 0.60%
SAN-12	48" MH	COR S-20	374.85	366.53 (SAN-14) 366.53 (SAN-16)	366.33 (SAN-10)	133.72LF 8" PVC @ 0.60%
SAN-14	48" MH	COR S-20	375.29		367.42 (SAN-12)	148.13LF 8" PVC @ 0.60%
SAN-16	48" MH	COR S-20	374.93		368.65 (SAN-12)	348.03LF 8" PVC @ 0.61%
SAN-18	48" MH	COR S-20	368.78	364.60 (SAN-19)	364.60 (SAN-8)	19.50LF 8" PVC @ 2.05%
SAN-19	48" MH	COR S-20	369.31	366.14 (SAN-20)	365.94 (SAN-18)	43.00LF 8" PVC @ 2.65%
SAN-20	48" MH	COR S-20	384.12		376.60 (SAN-19)	107.61LF 8" PVC @ 9.72%
SAN-22	48" MH	COR S-20	367.48	363.25 (SAN-24)	363.05 (EX MH (SEALED))	50.46LF 8" PVC @ 1.49%
SAN-24	48" MH	COR S-20	370.30		366.00 (SAN-22)	75.56LF 8" PVC @ 3.64%

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.

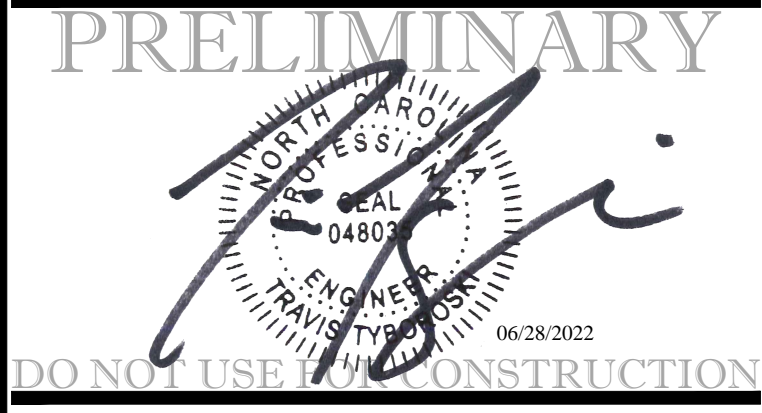
Failure to call for **Inspection, Install a Downstream Plug, have Permits** filed on the **Jobsite**, or any other **Violation of City of Raleigh Standards** will result in a **Fine and Possible Exclusion** from future work in the **City of Raleigh**.



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Call 811 before you dig.

LEGEND

--- WET POND - EMBANKMENT
-W- EX WATER LINE
-SS- EX SANITARY SEWER
-W- PROP WATER LINE
-SS- PROP SANITARY SEWER

PLANS NOT APPROVED FOR CONSTRUCTION UNLESS SIGNED BY CITY OF RALEIGH

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.
City of Raleigh Public Utilities Department Permit # S-5018

The City of Raleigh consents to the connection to the private 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 # W-3912

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 _____

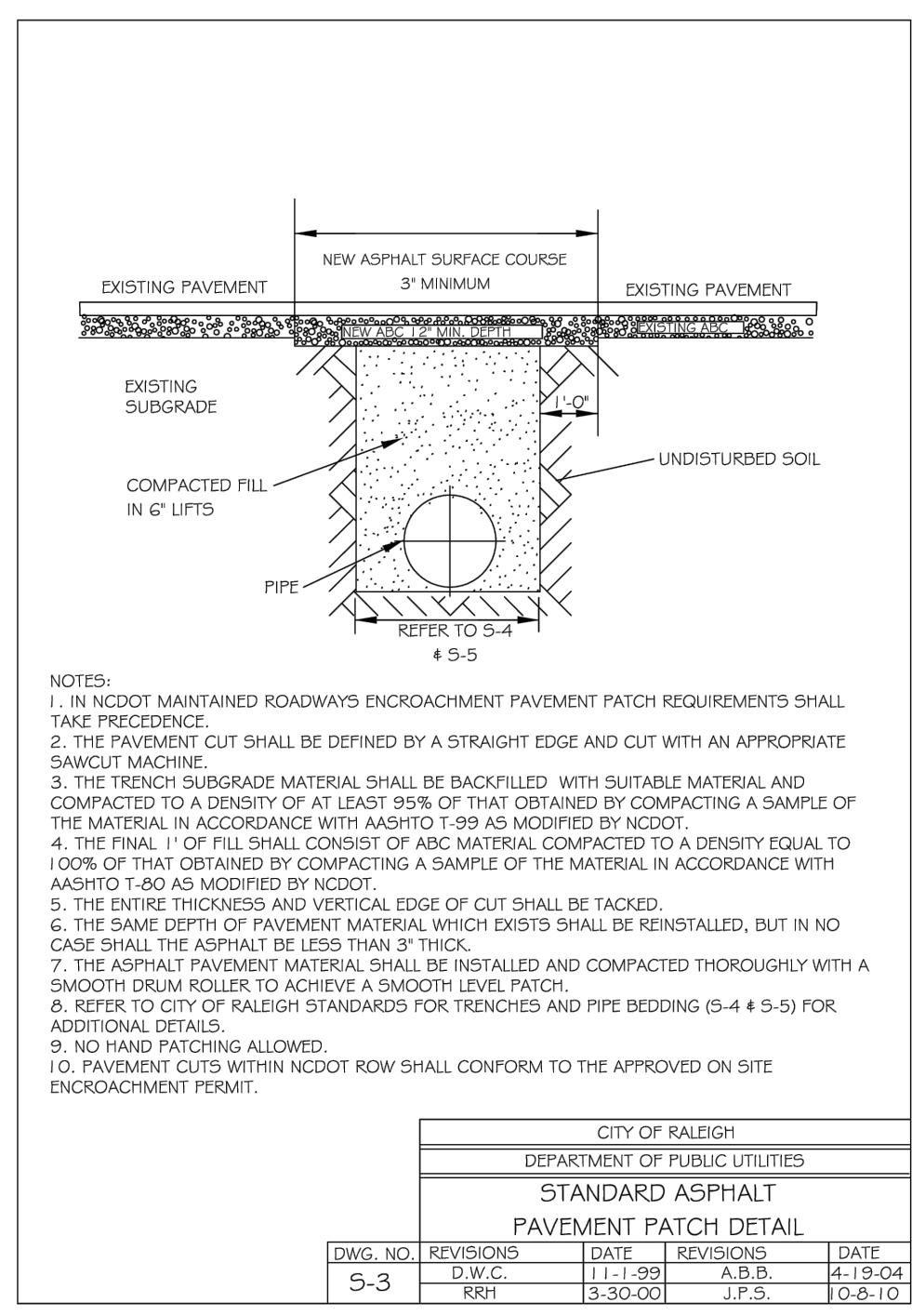
UTILITY PLAN

Revisions

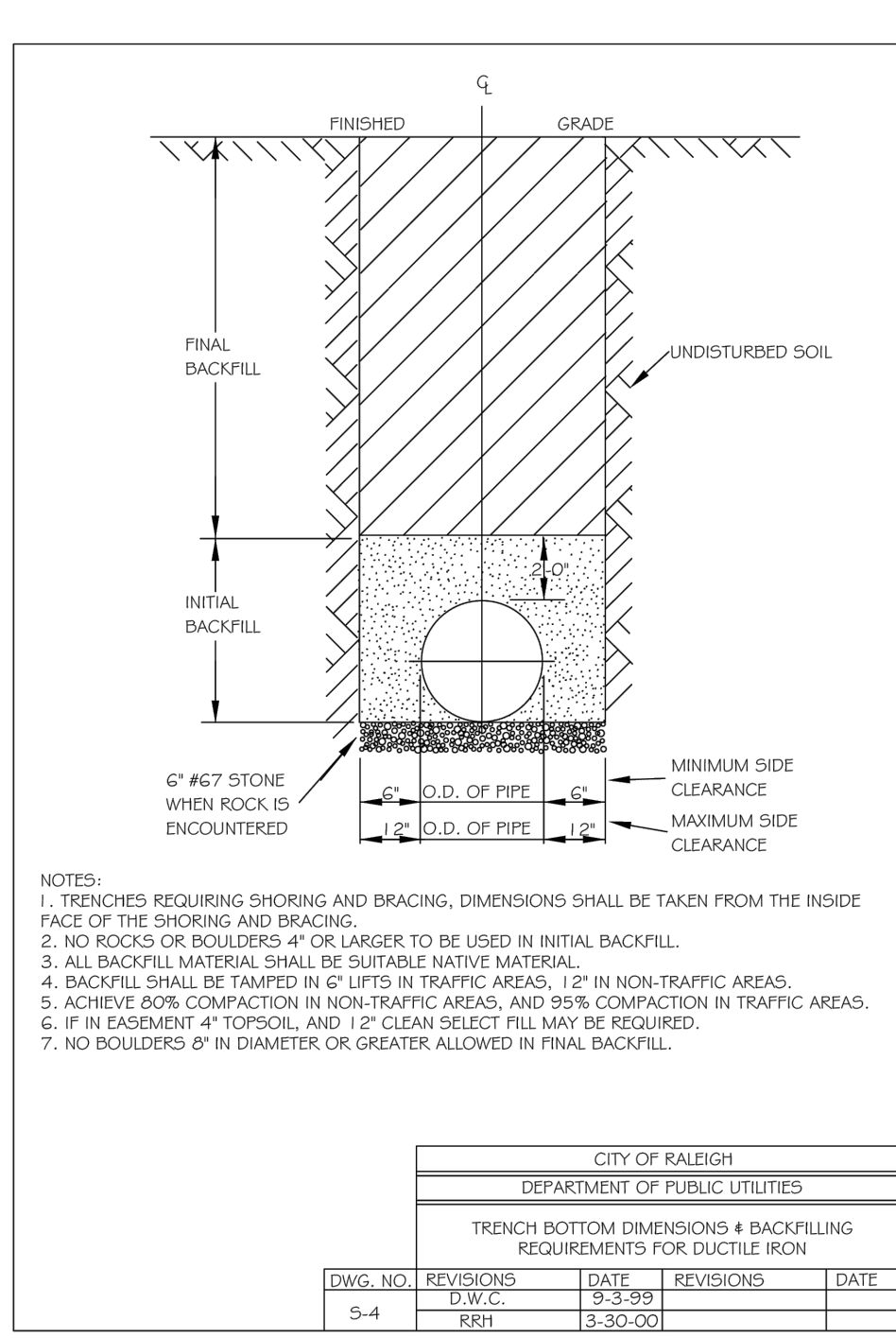
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2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

JAECO #: 364-04
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DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 01/30/2022

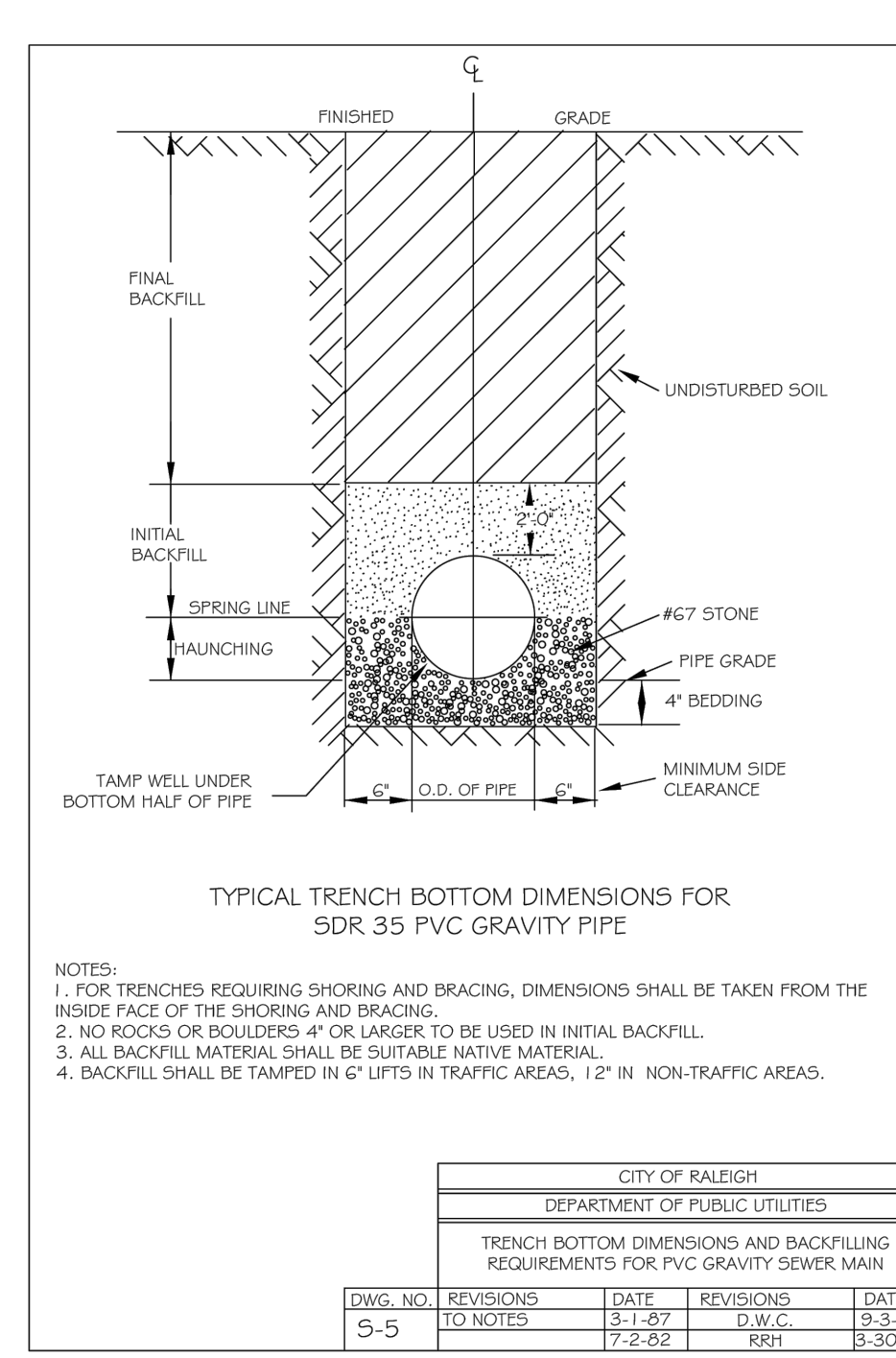
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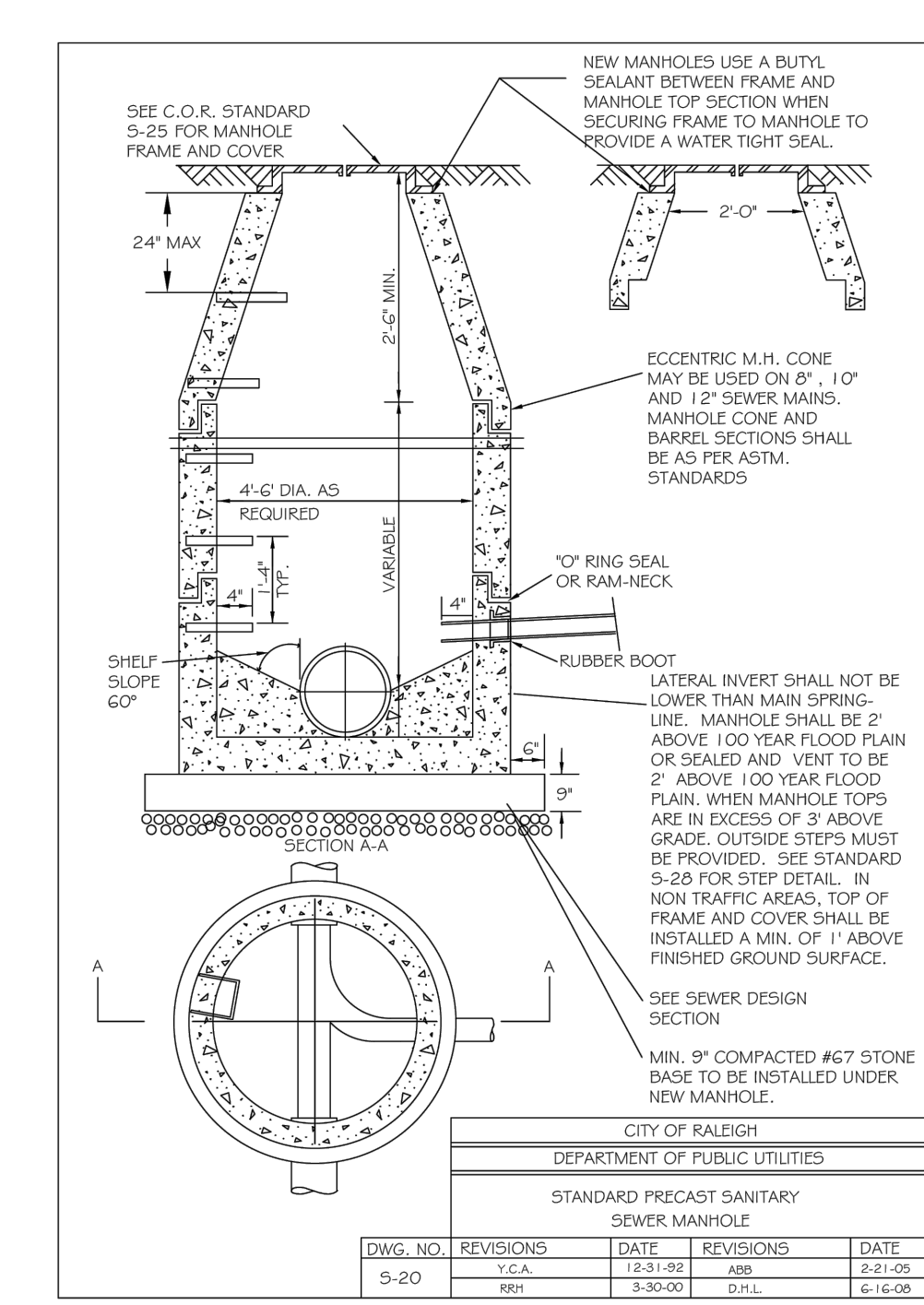
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	RRH	3-30-00	J.P.S.	10-6-10



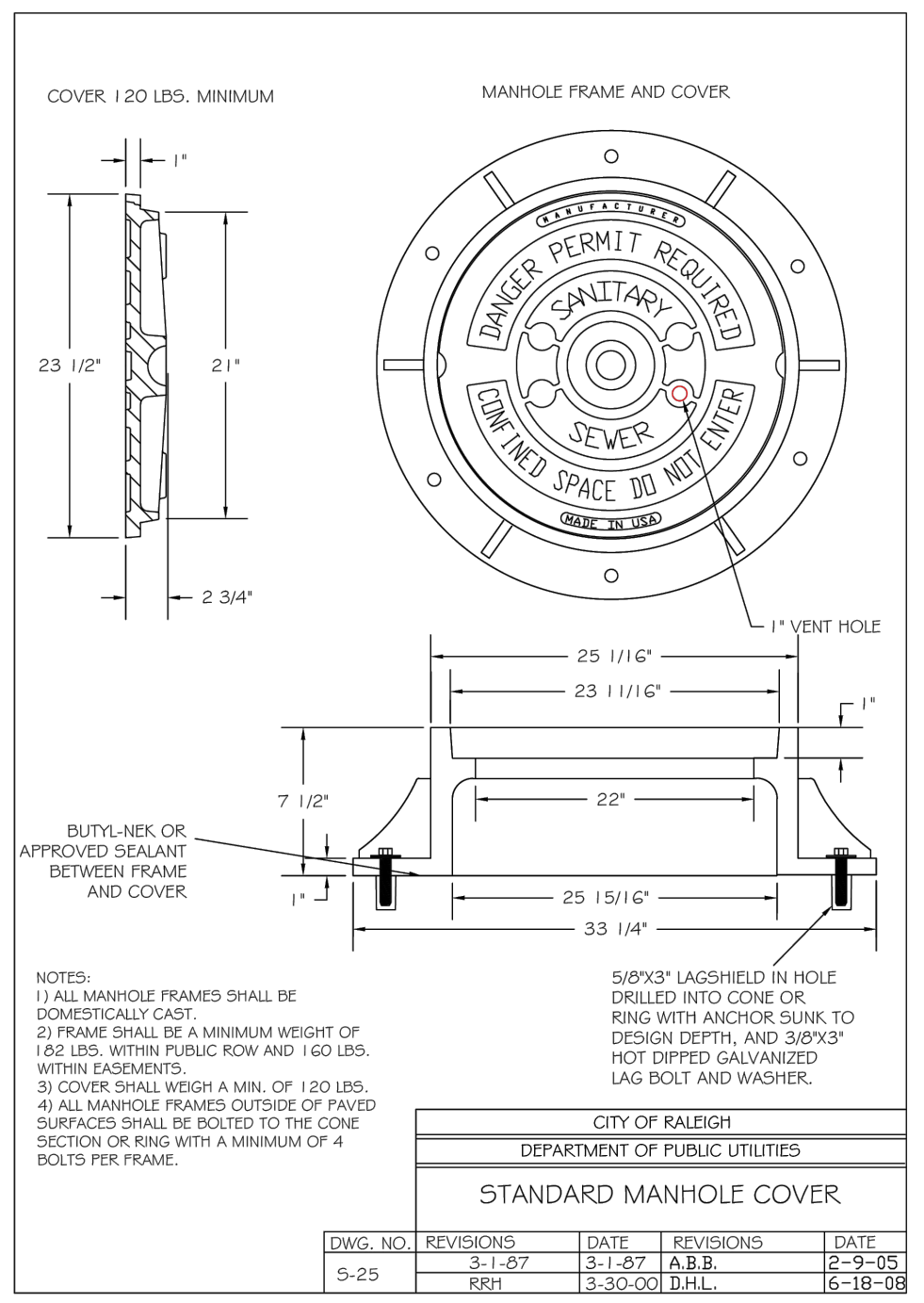
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	RRH	3-30-00		



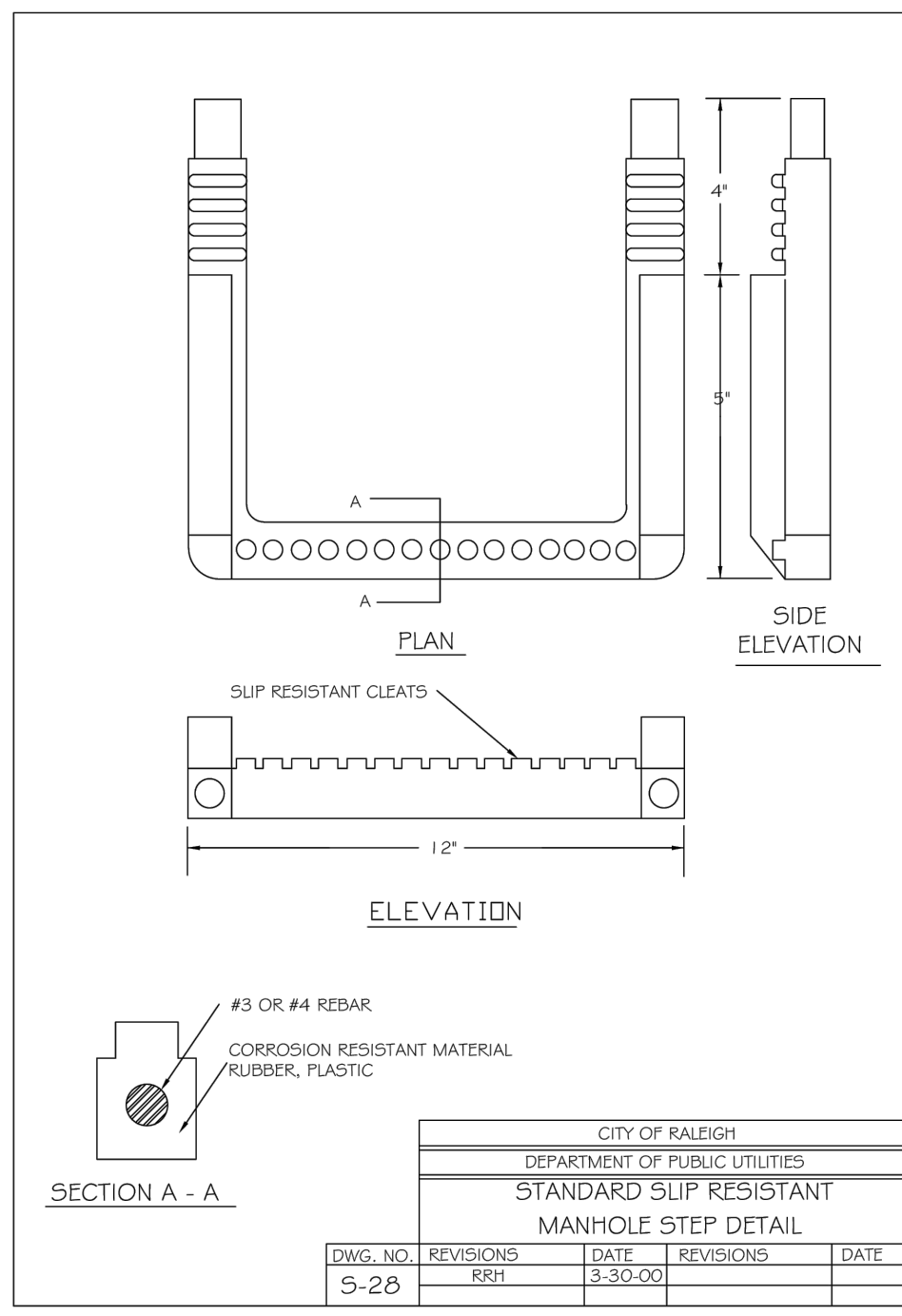
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			RRH	3-30-00



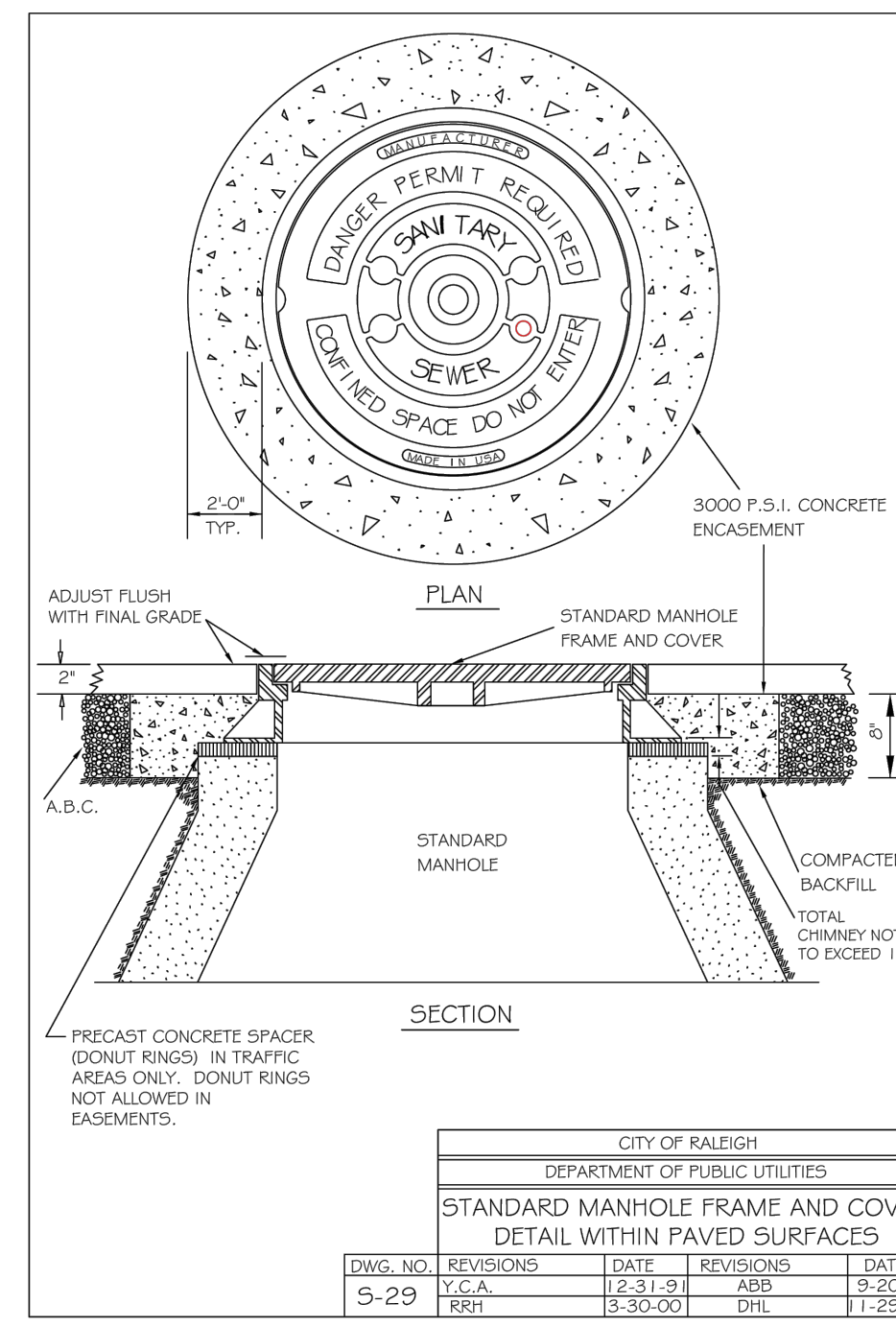
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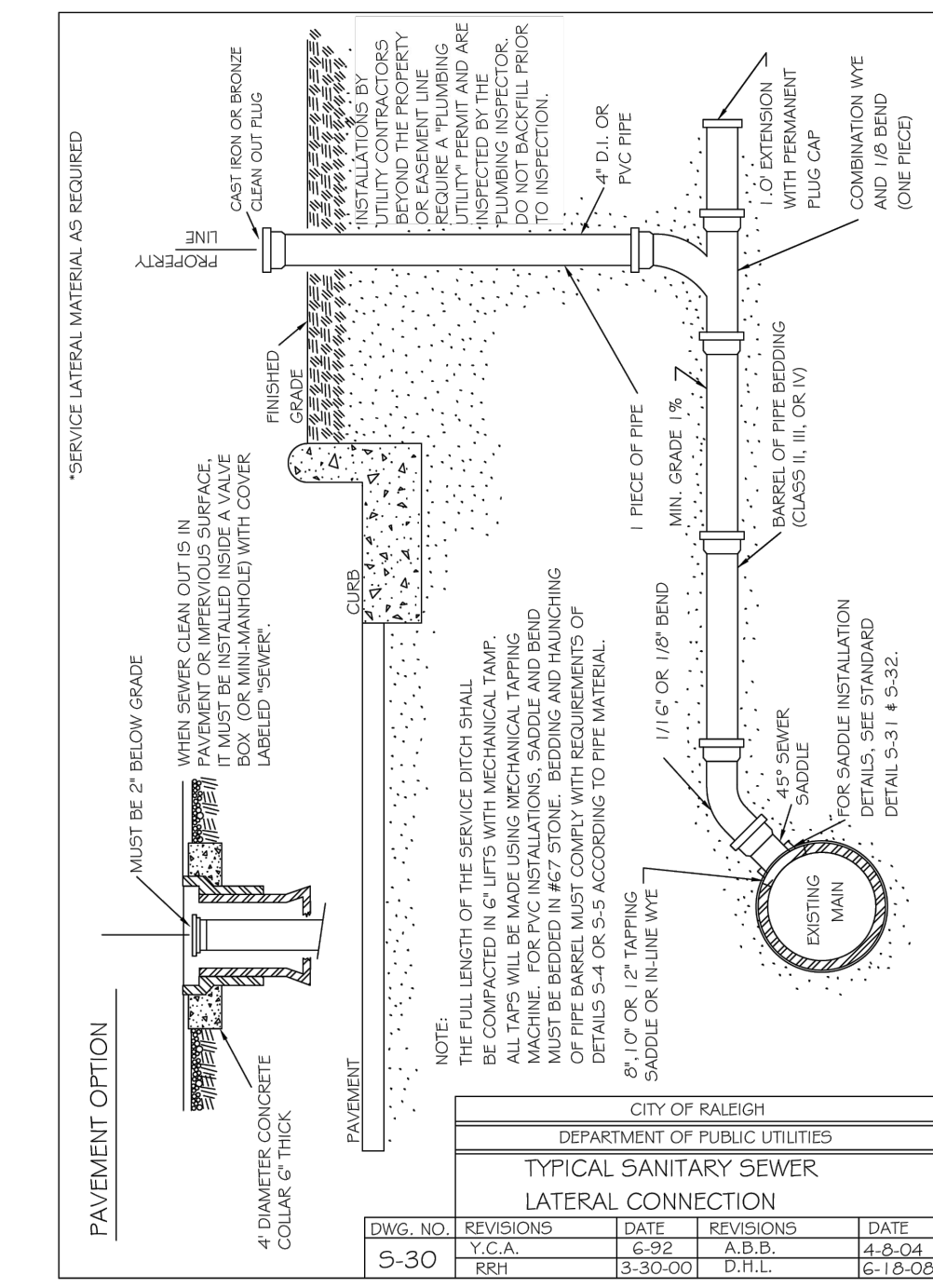
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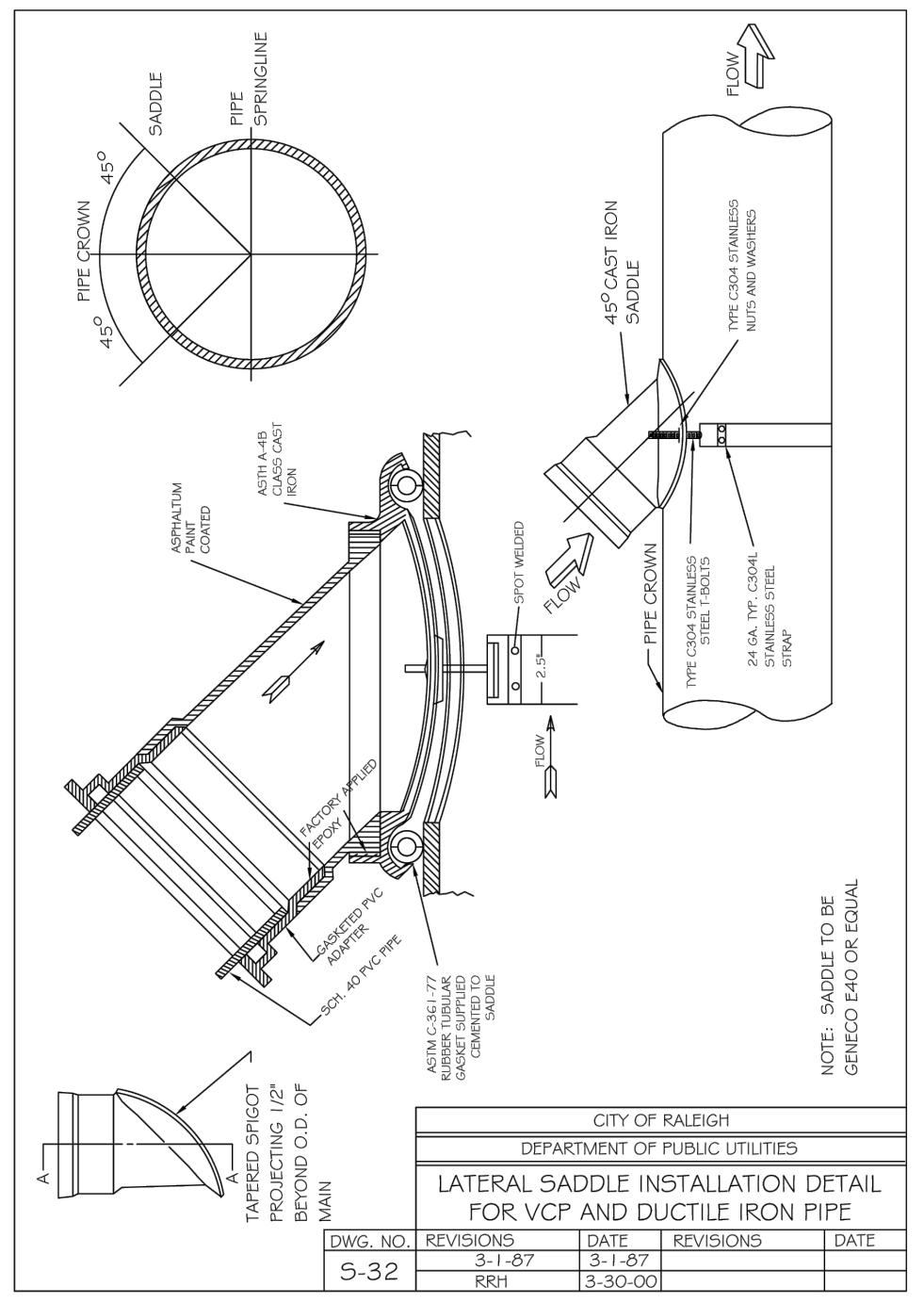
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
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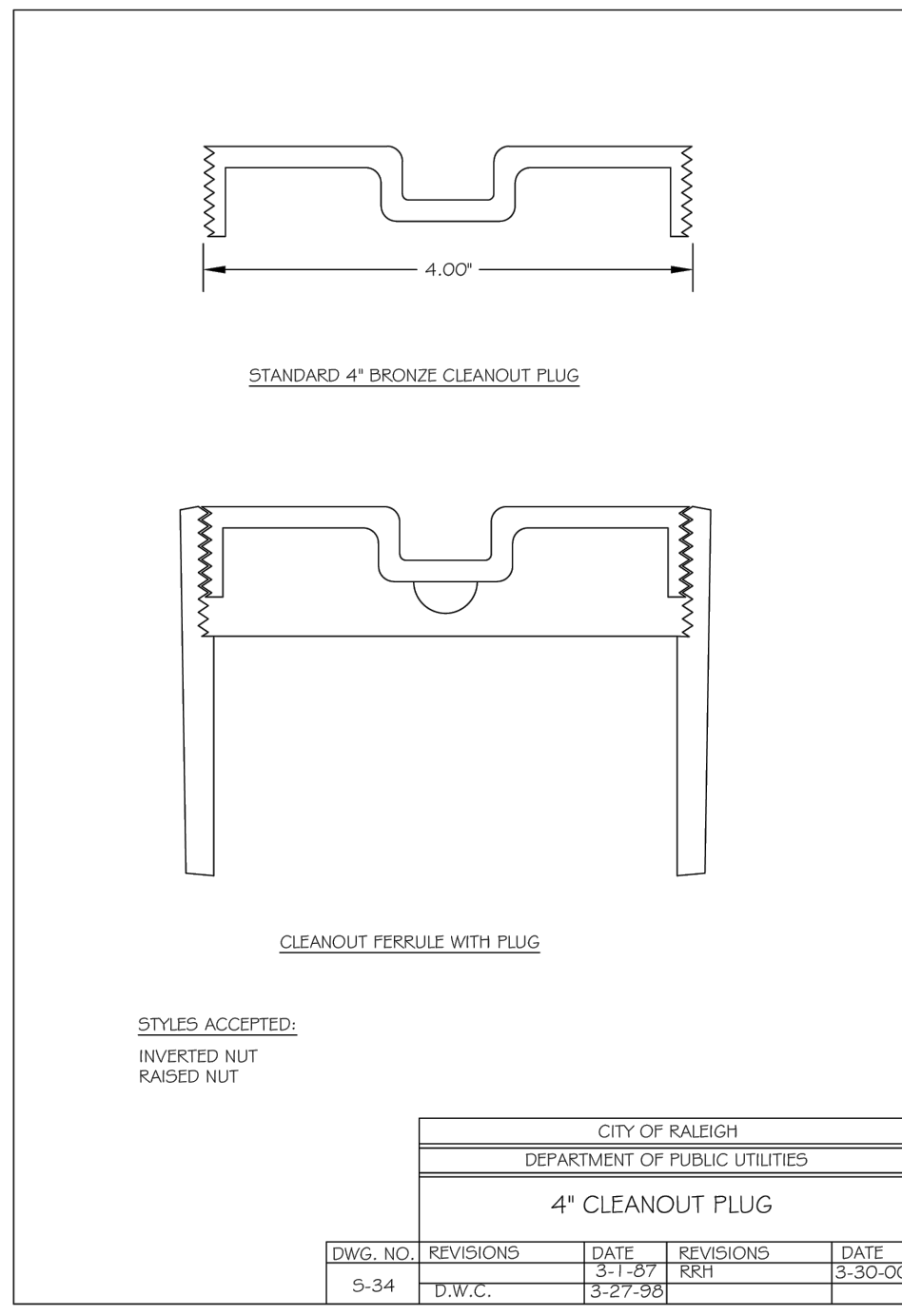
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
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	RRH	3-30-00	D.H.L.	7-29-07



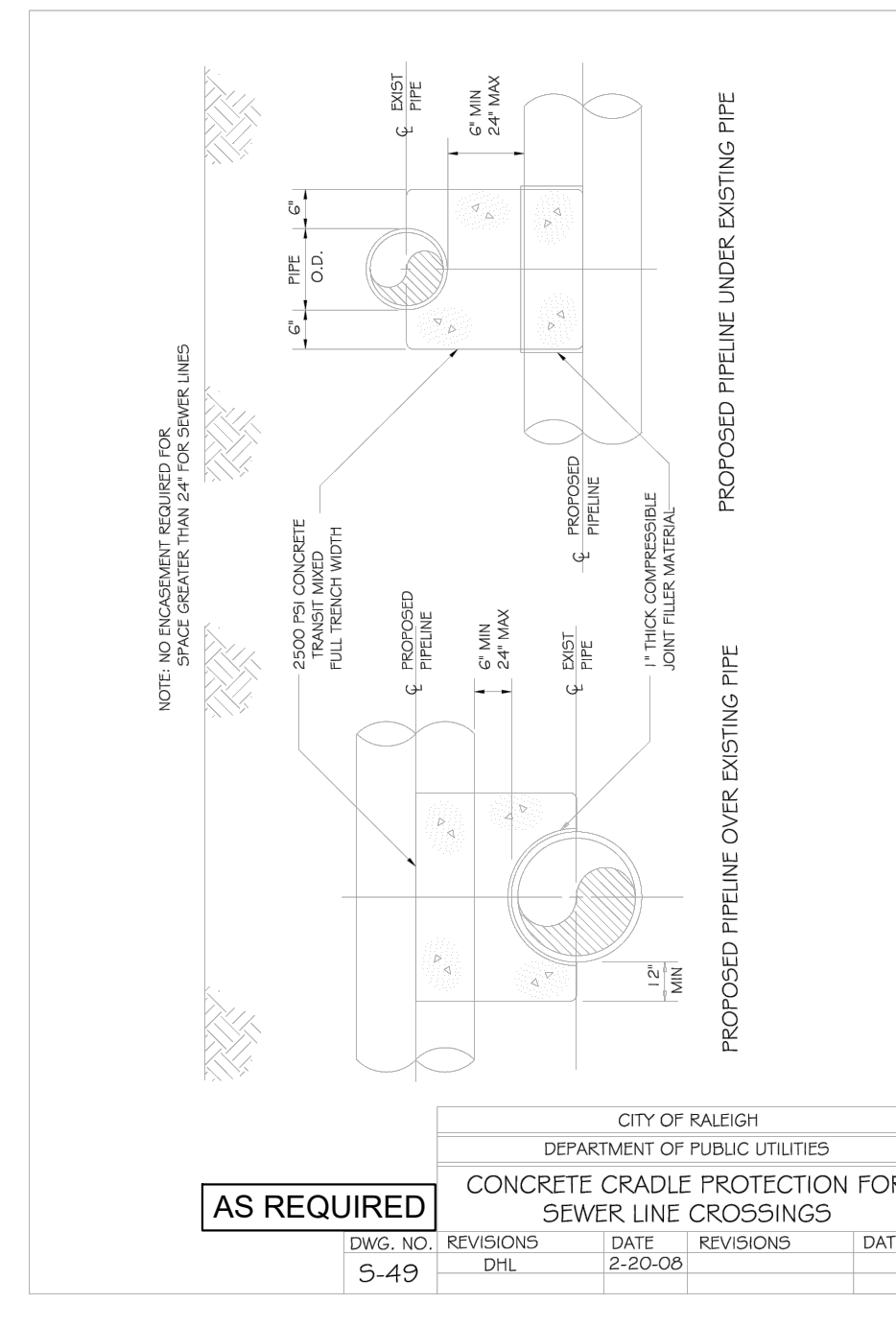
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5-30	T.C.A.	6-30-92	A.B.S.	4-24-04
	RRH	3-30-00	D.H.L.	6-16-08



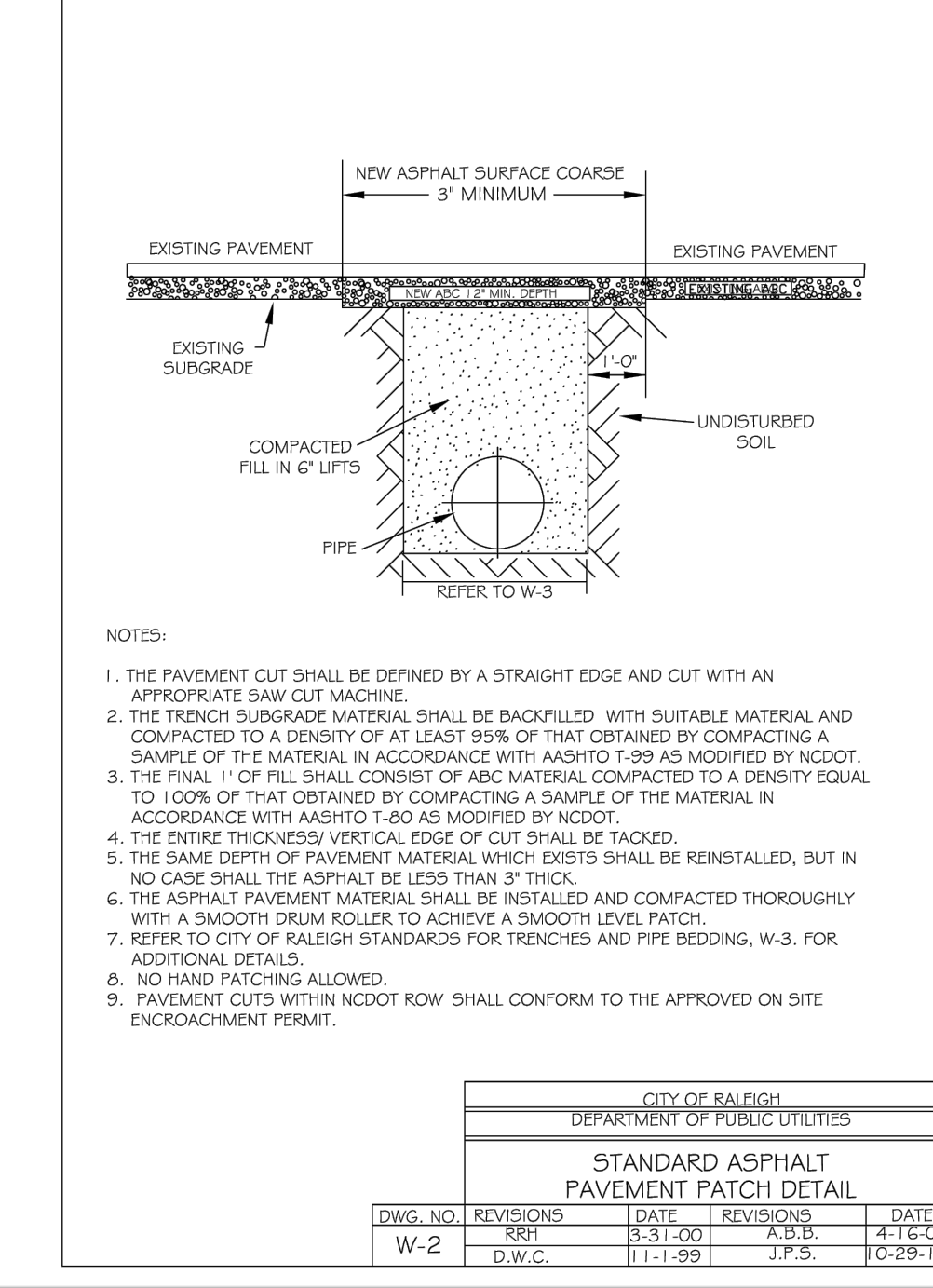
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5-32	RRH	3-1-87	RRH	3-30-00



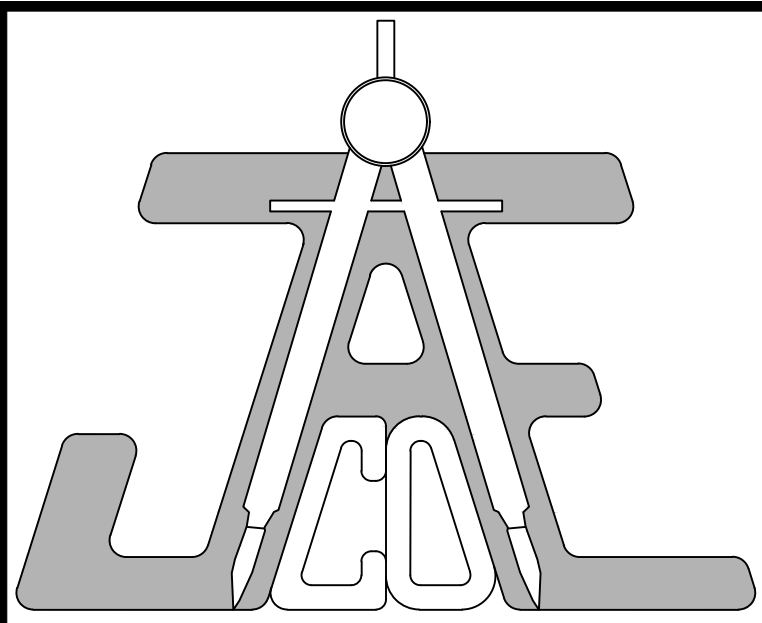
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
5-34	D.W.C.	3-1-87	RRH	3-30-00



DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
5-49	D.H.L.	2-20-08		

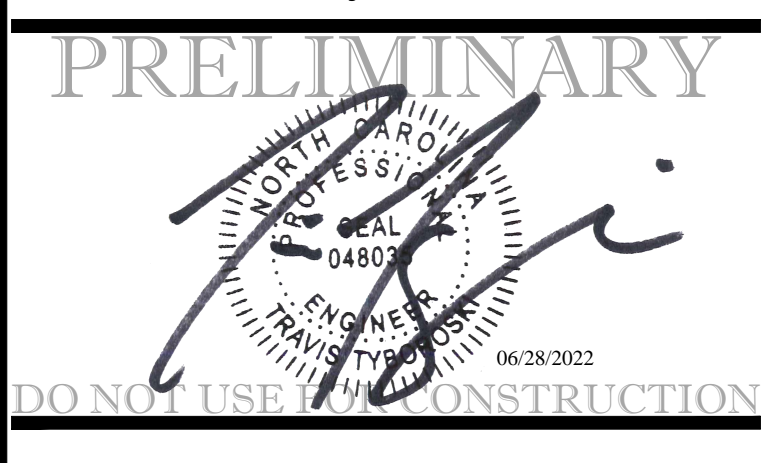


DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-2	RRH	3-31-00	A.B.S.	4-16-04
	D.W.C.	11-11-99	J.P.S.	10-29-10



JAECO
Consulting Engineers and Land Surveyors

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Phone: (919) 828-4428
Fax: (919) 828-4711
E-mail: info@jaeco.com



Granite Crest - Phase IV
0 Pluton Place
Rolesville, NC

Real Estate Marketing & Consulting, Inc.
6200 Falls of Neuse Rd.
Suite 102
Raleigh, NC 27609

Call before you dig.

LEGEND

PLANS NOT APPROVED FOR CONSTRUCTION UNLESS SIGNED BY CITY OF RALEIGH
CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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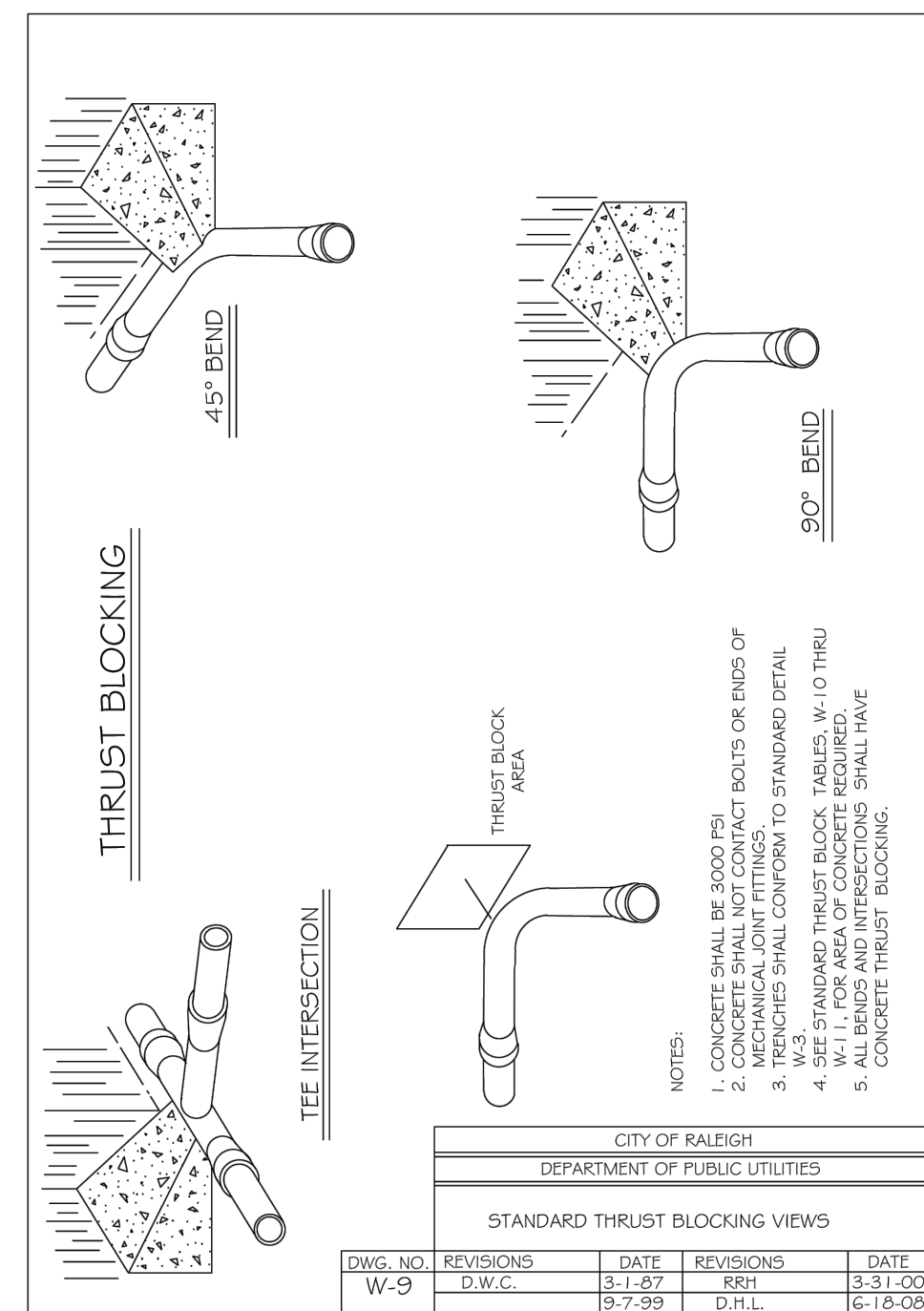
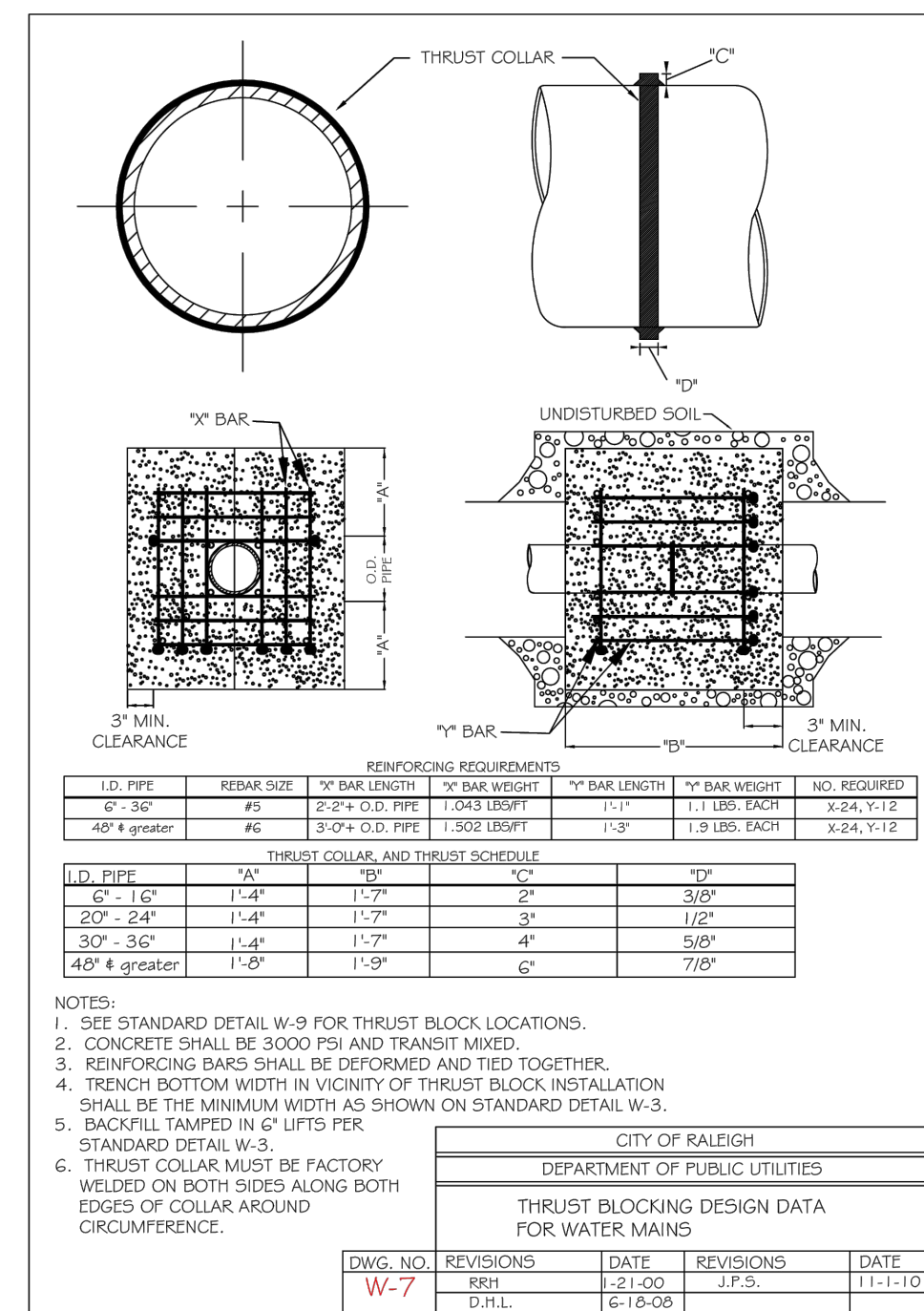
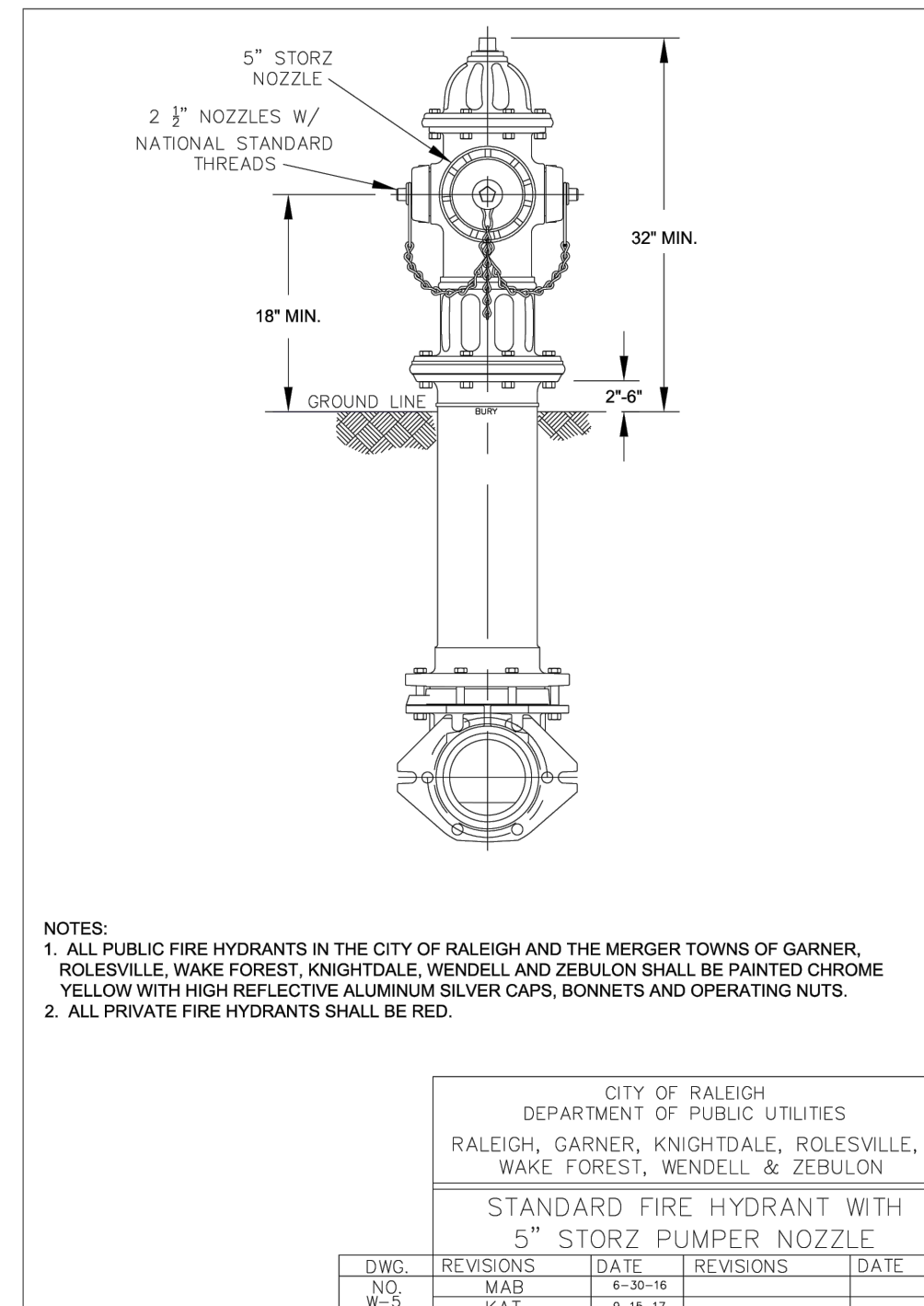
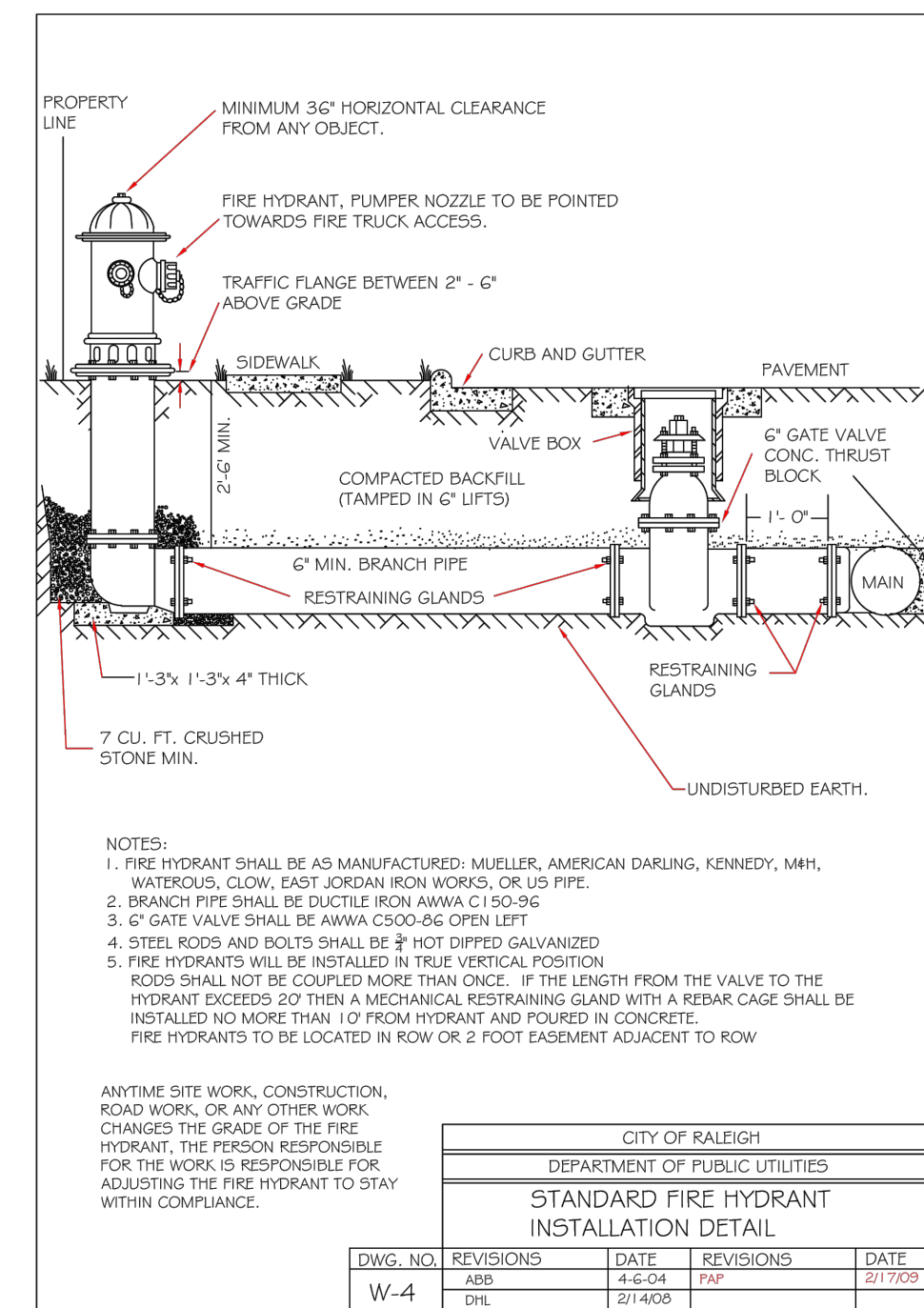
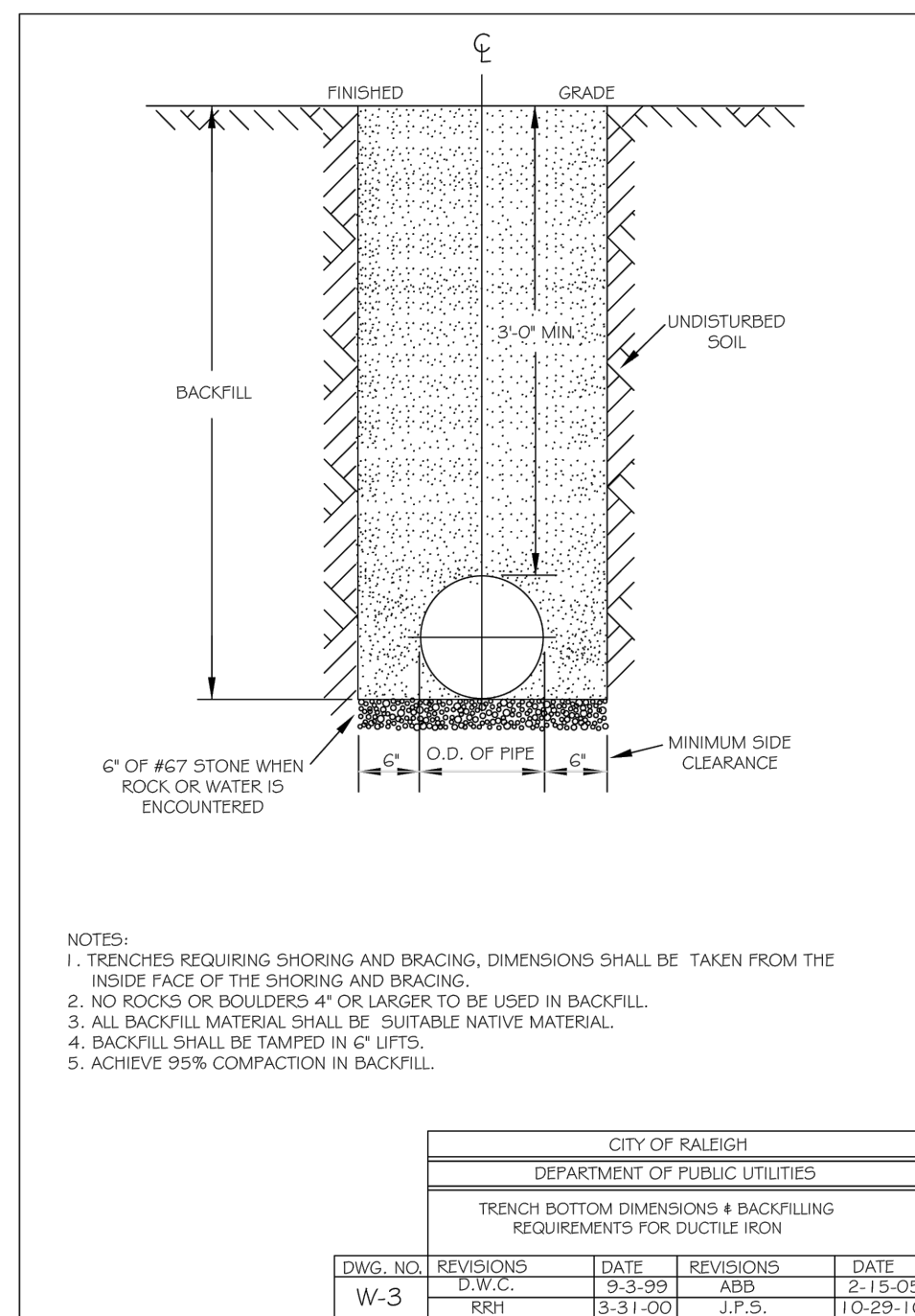
City of Raleigh Development Approval City of Raleigh Review Officer

UTILITY DETAILS

Number	Description	Date
1	PER TRC COMMENTS	04/14/22
2	PER TRC COMMENTS	05/26/22
3	PER TRC COMMENTS	06/13/22
4	PER TRC COMMENTS	06/15/22
5	PER TRC COMMENTS	06/27/22

JAECO # 364-04
DRAWING SCALE: AS SHOWN
DRAWN BY: TT
CHECKED BY: TT
DATE ISSUED: 01/30/2022

C-20



REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I.

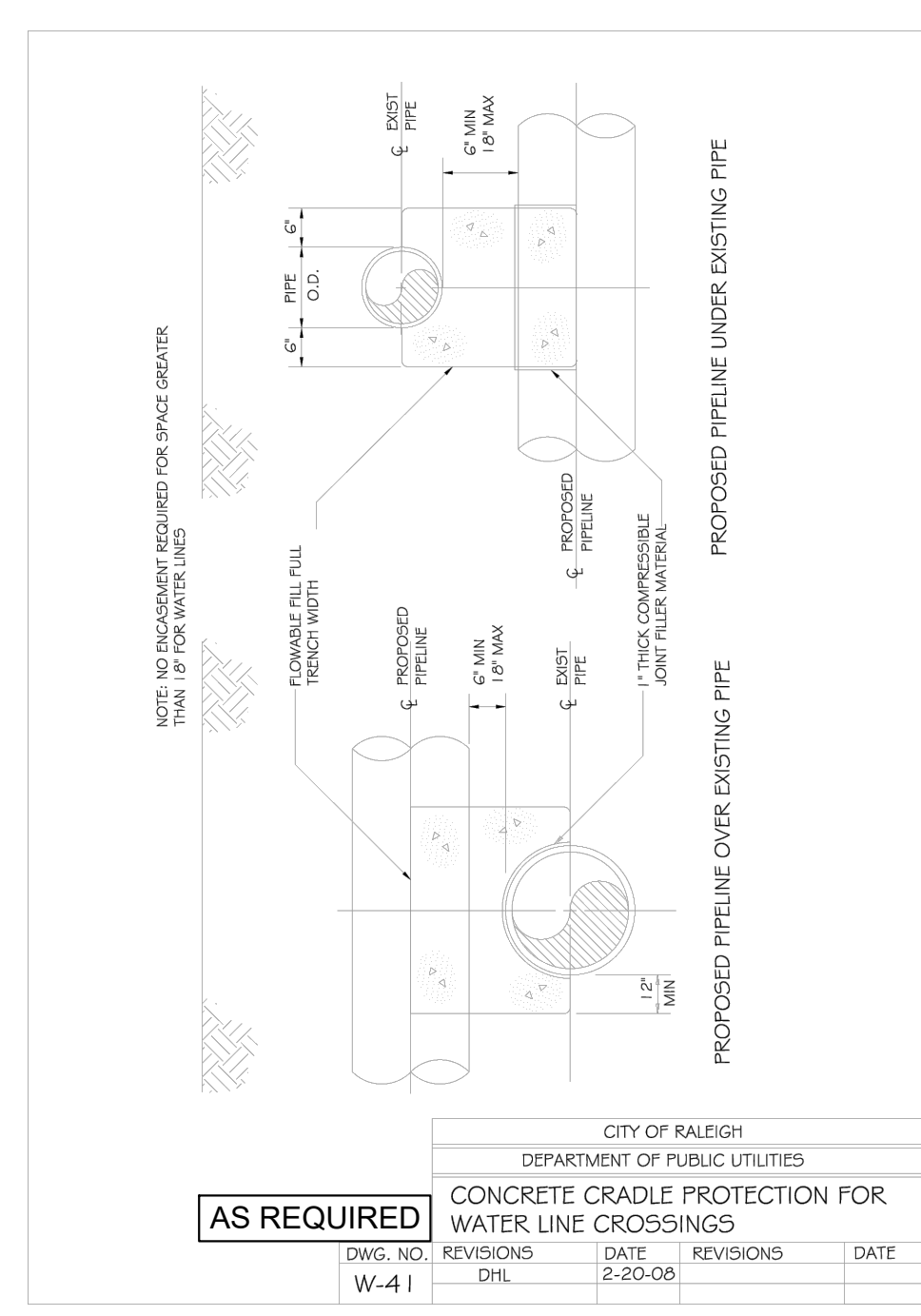
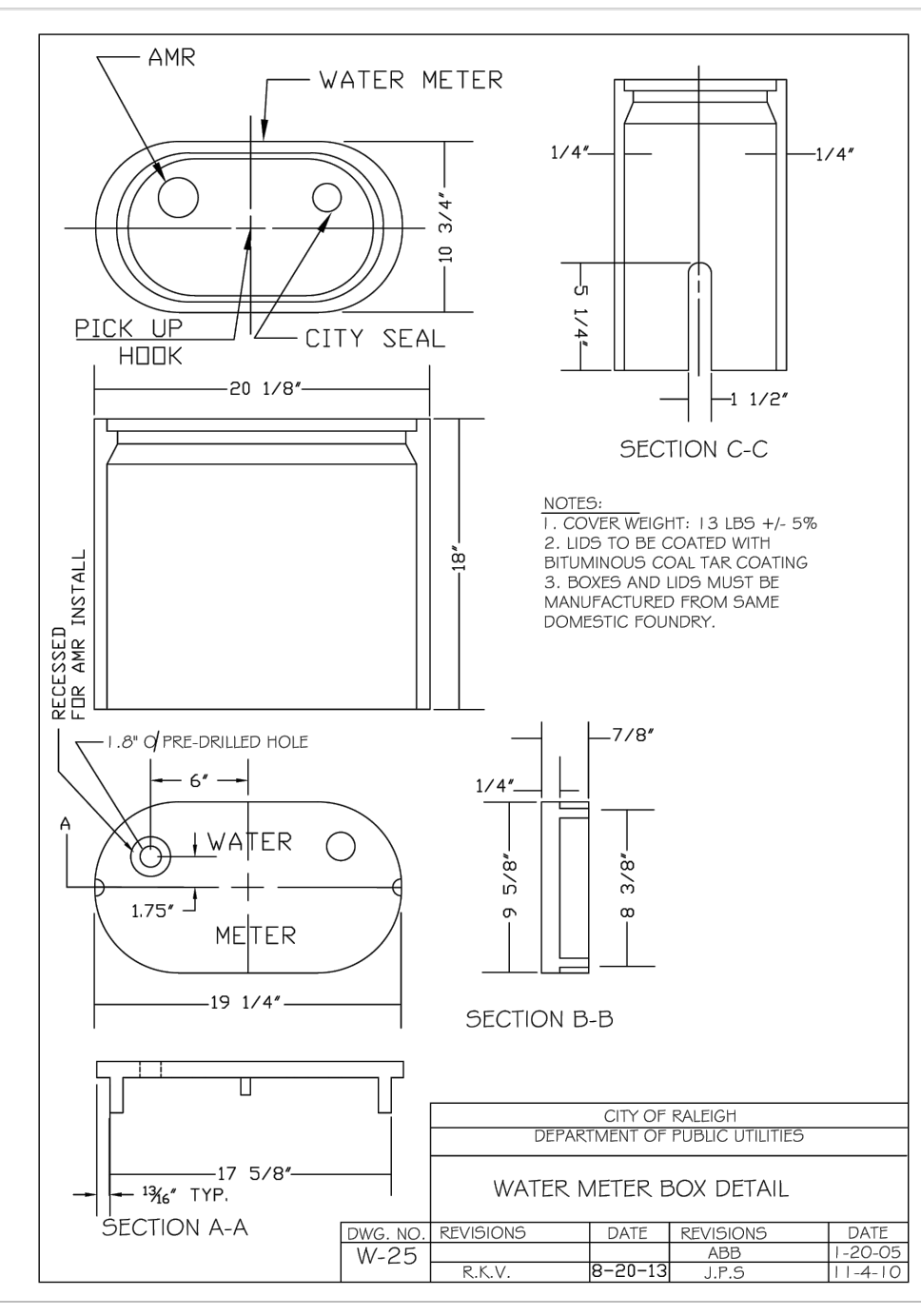
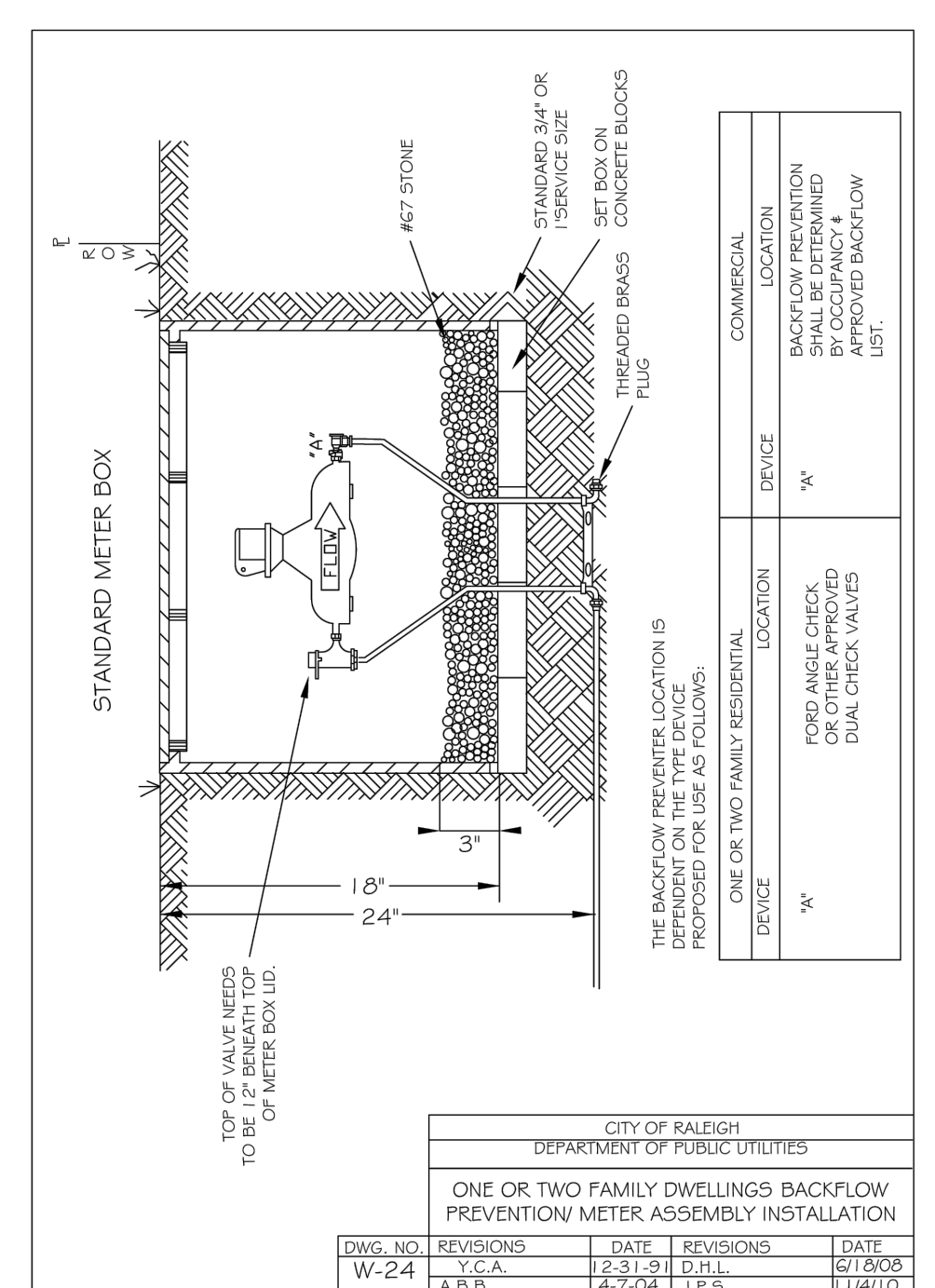
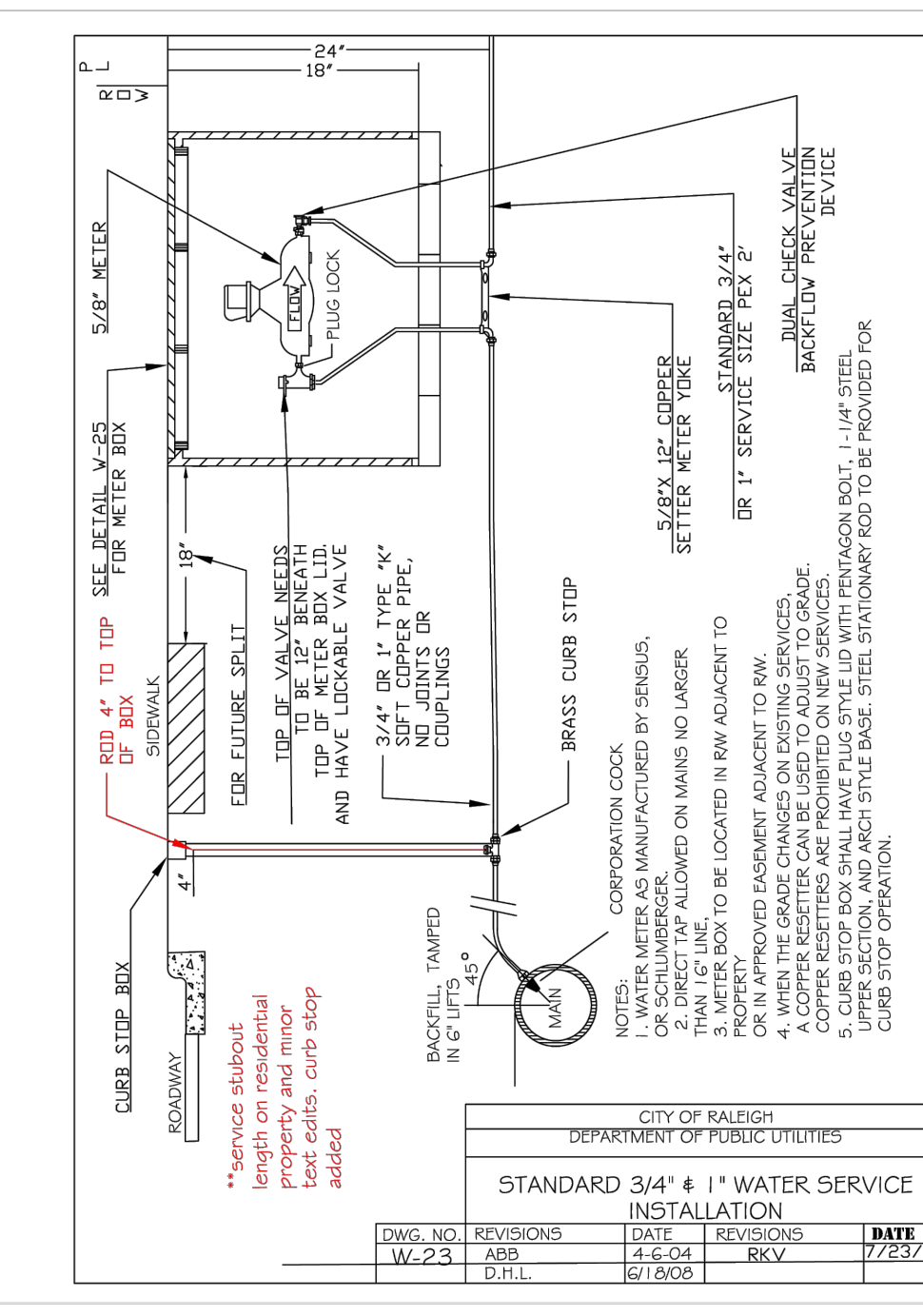
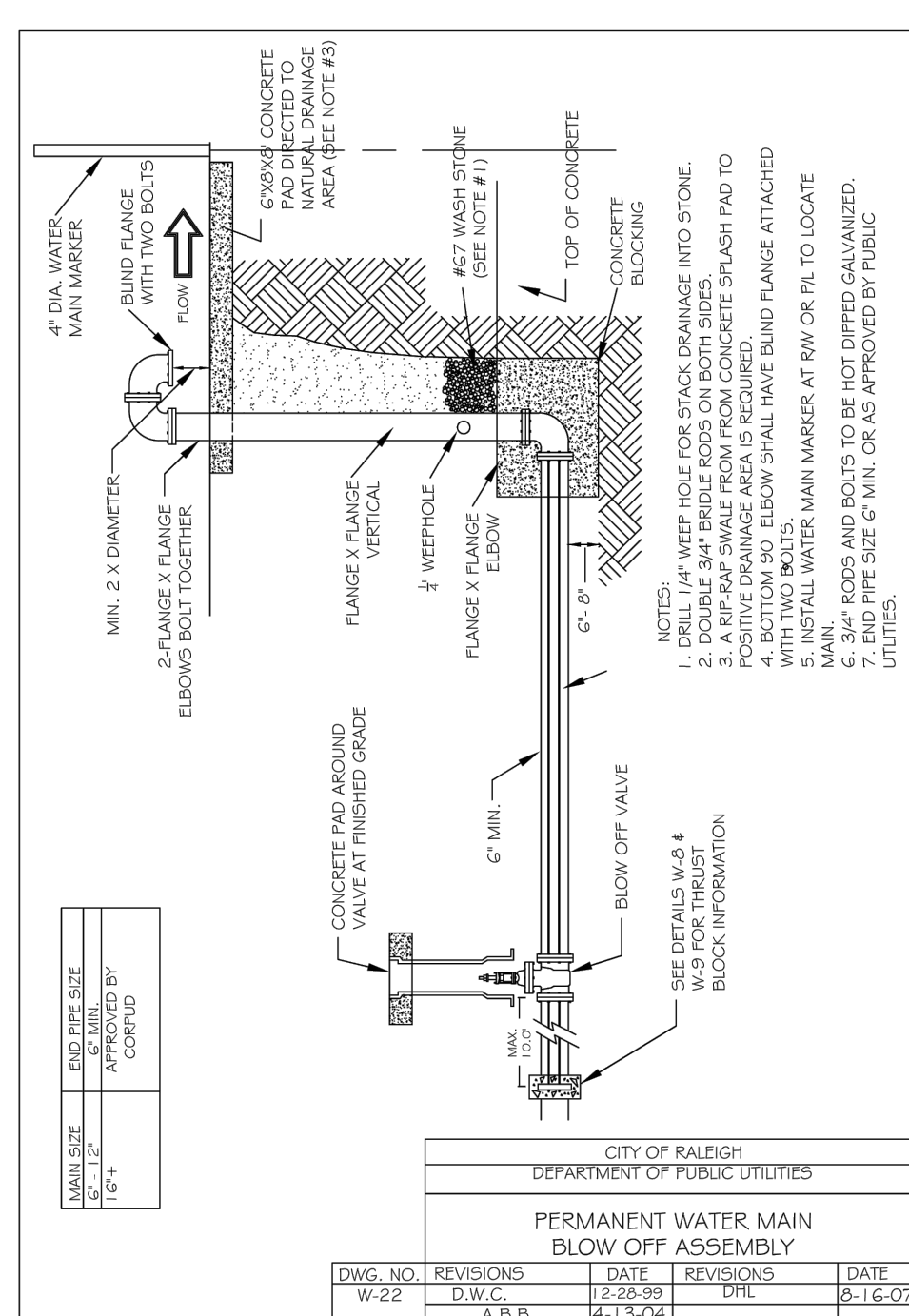
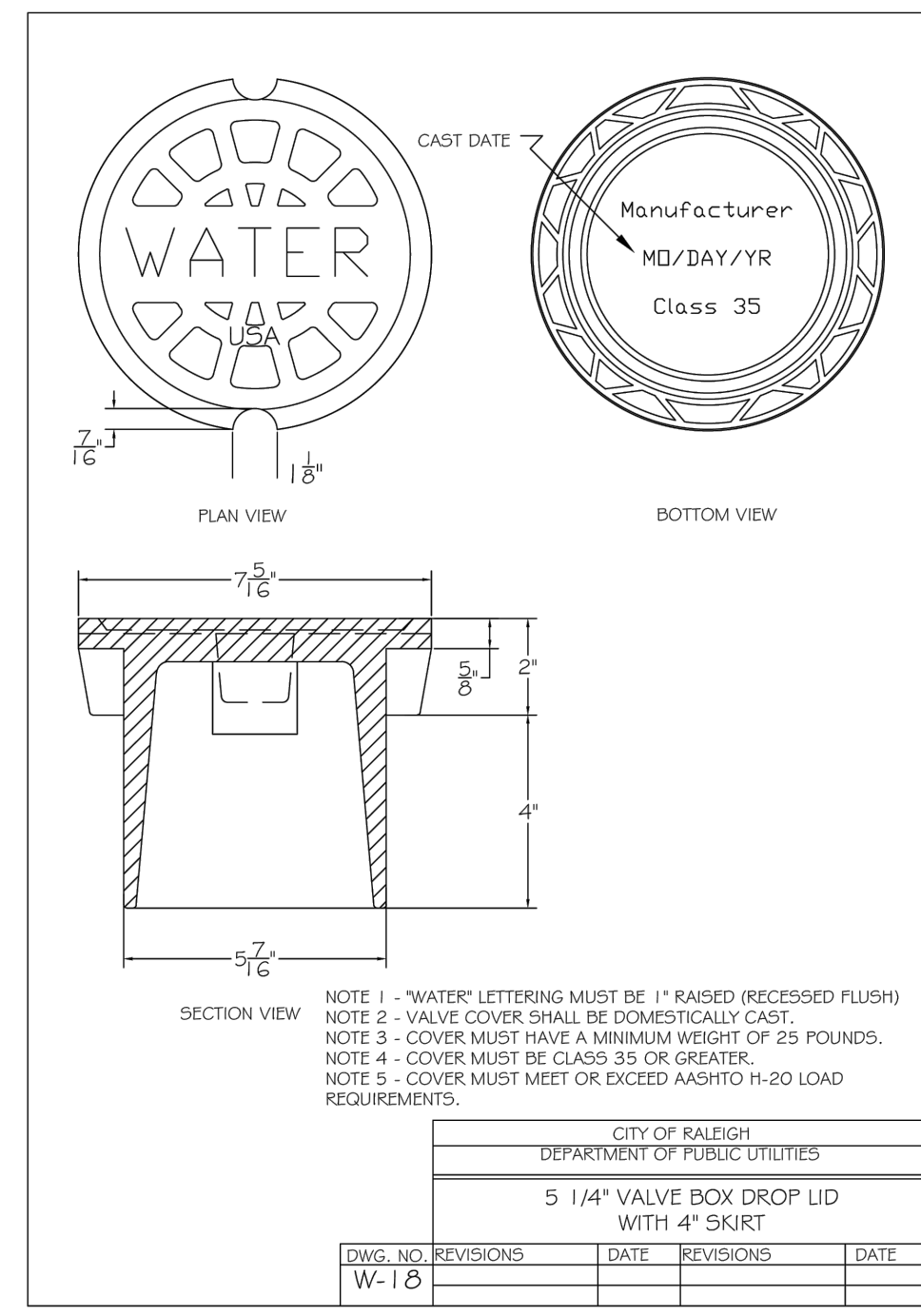
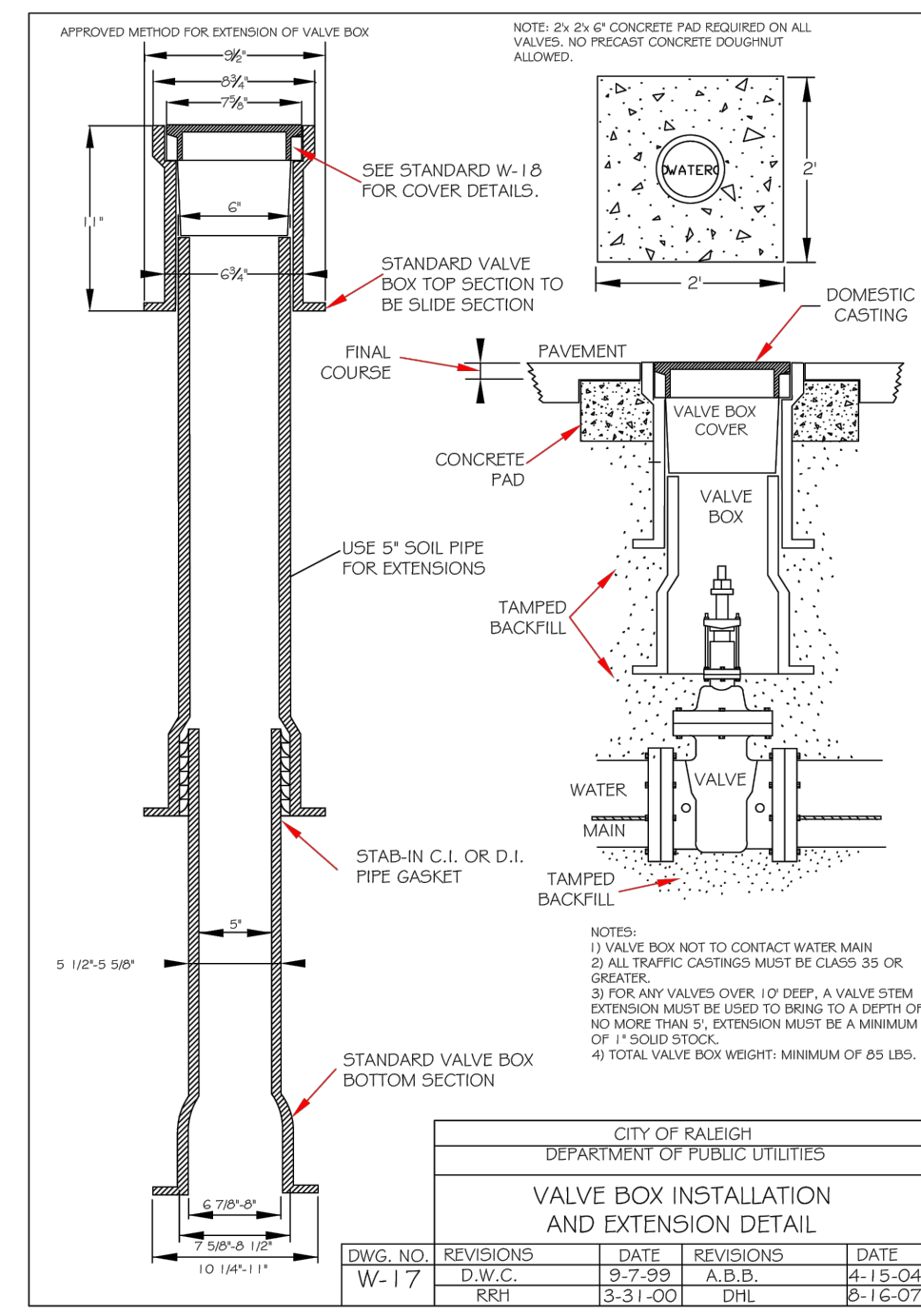
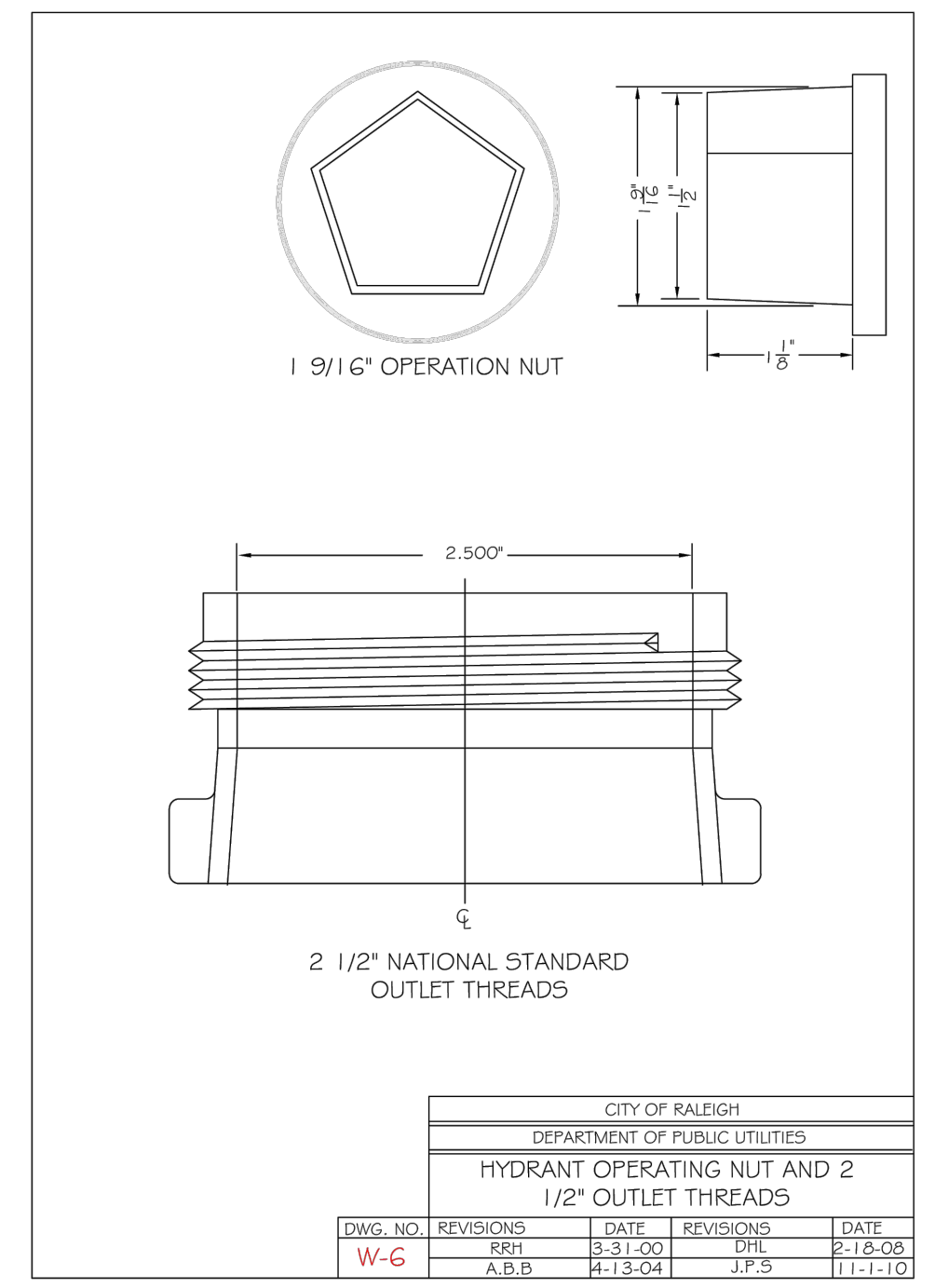
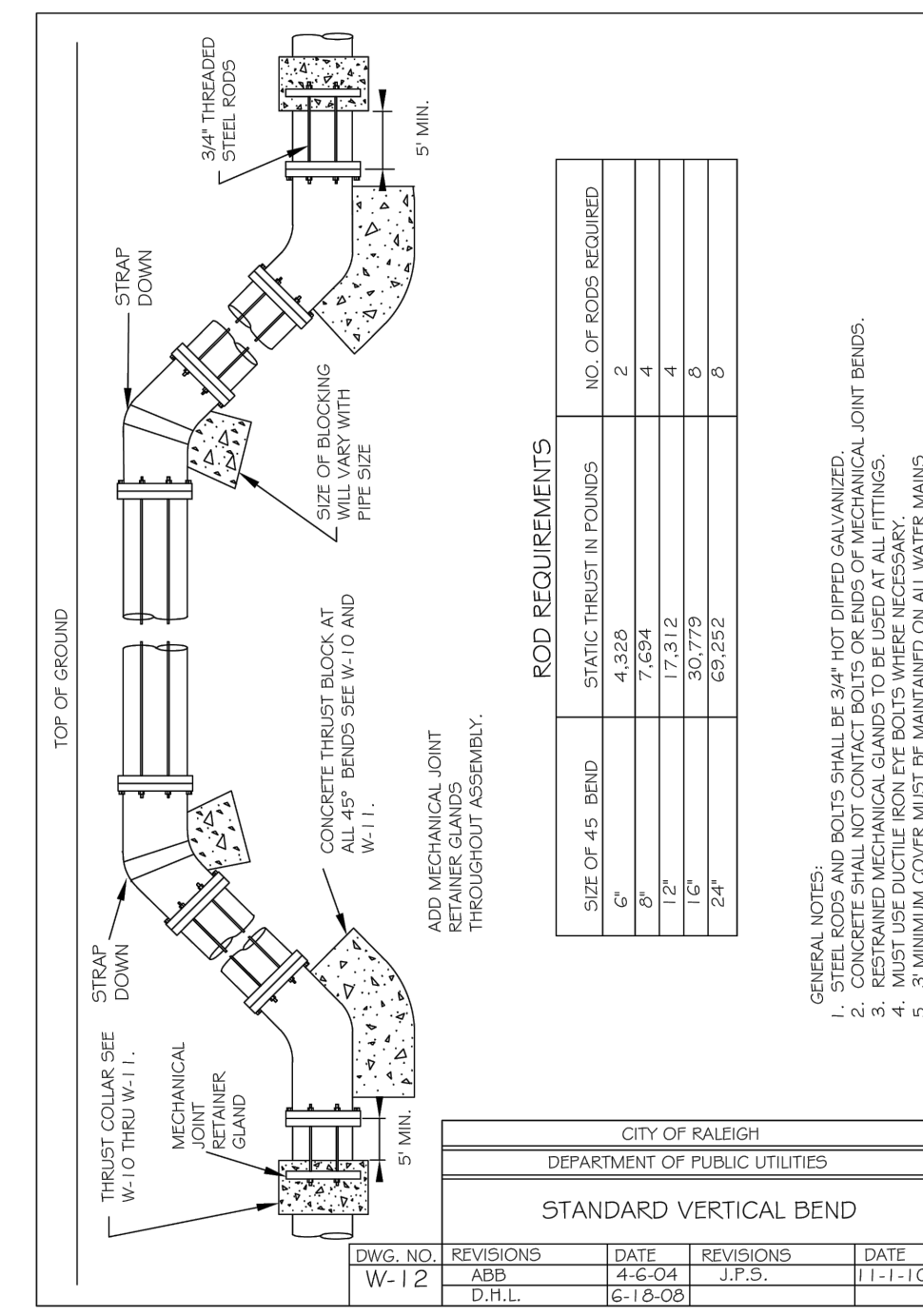
ALL AREAS GIVEN IN SQUARE FEET.

PIPE AND TYPES OF BEND	FLANGE IN TRENCH	FLANGE IN TRENCH	FLANGE IN TRENCH	FLANGE IN TRENCH	FLANGE IN TRENCH	FLANGE IN TRENCH	FLANGE IN TRENCH	FLANGE IN TRENCH	FLANGE IN TRENCH
6"									
1 1/4"	1,108	1	1	1	1	1	1	2	1
2 1/2"	2,207	1	2	2	1	1	1	3	1
45°	4,328	2	3	3	1	1	2	5	1
90°	7,996	2	4	5	1	1	2	8	1
PLUG	5,655	2	3	4	1	1	2	6	1
8"									
1 1/4"	1,970	1	1	2	1	1	1	2	1
2 1/2"	3,922	1	2	3	1	1	1	4	1
45°	7,694	2	4	5	1	1	2	8	1
90°	14,215	4	8	9	2	2	4	15	2
PLUG	10,293	3	5	6	2	2	3	10	1
12"									
1 1/4"	4,433	2	3	3	1	1	2	5	1
2 1/2"	8,856	3	5	5	2	2	3	9	1
45°	17,212	5	9	9	3	3	5	18	2
90°	31,985	8	16	19	4	4	6	32	4
PLUG	22,619	6	12	14	3	3	6	23	3
16"									
1 1/4"	7,861	2	4	5	1	1	2	6	1
2 1/2"	15,691	4	8	10	2	2	4	16	2
45°	30,779	8	16	19	4	4	6	31	4
90°	56,261	15	29	35	8	8	15	57	6
PLUG	40,213	10	21	25	5	5	10	41	5

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6" - 80 BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

CITY OF RALEIGH			
DEPARTMENT OF PUBLIC UTILITIES			
THRUST BLOCKING DESIGN QUANTITY TABLE			
DWG. NO.	REVISIONS	DATE	DATE
W-10	D.W.C.	6-23-99	



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PRELIMINARY

06/26/2022

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