PARK APARTMENTS

1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27709

PHASE 1A & 1B
FORM DISTRICT PERMIT

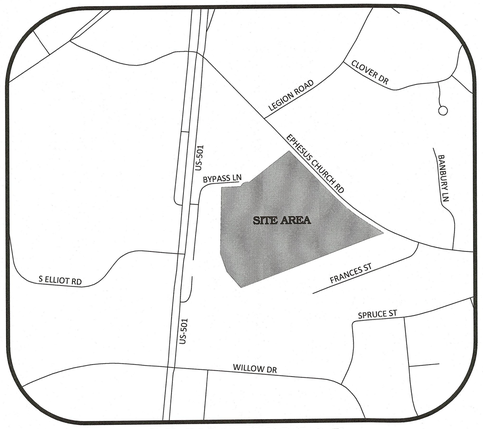
PROJECT NUMBER: WDF-17000

DATE: FEBRUARY 28, 2019
REVISED: AUGUST 30, 2019

Zoning Approved Plan Set
September 4, 2019
89 pages

SITE DATA

PIN	9799346446	
SITE AREA	595,027 SF / 13.66 AC	
NET LAND AREA (PHASE 1A)	139,273 SF	
NET LAND AREA (PHASE 1B)	195,074 SF	
GROSS LAND AREA (PHASE 1A)	153,200 SF	
GROSS LAND AREA (PHASE 1B)	214,581 SF	
ZONING	WR-3, WR-7	
WATERSHED PROTECTION	JORDAN LAKE	
RIVER BASIN	CAPE FEAR	
EXISTING USE	MULTI-FAMILY RESIDENTIAL	
PROPOSED USE	MULTI-FAMILY RESIDENTIAL (PHASE 1A: 308 UNITS 575,091 SF, PHASE 1B: 106 UNITS, 143,935 SF)	
IMPERVIOUS	EXISTING	6.51 AC (47.6%)
	PROPOSED	8.88 AC (65.0%)
VEHICULAR PARKING (PHASE 1A)	MINIMUM REQUIRED	1 BR: 194 UNITS*1/UNIT = 194 SPACES 2 BR: 108 UNITS*1.25/UNIT = 135 SPACES 3 BR: 6 UNITS*1.5/UNIT = 9 SPACES TOTAL = 308 SPACES
	MAXIMUM REQUIRED	1 BR: 194 UNITS*1.25/UNIT = 243 SPACES 2 BR: 108 UNITS*1.75/UNIT = 189 SPACES 3 BR: 6 UNITS*2.25/UNIT = 14 SPACES TOTAL = 446 SPACES
	PROPOSED	507 (500 DECK, 7 ON-STREET)
VEHICULAR PARKING (PHASE 1B)	MINIMUM REQUIRED	1 BR: 35 UNITS*1/UNIT = 35 SPACES 2 BR: 71 UNITS*1.25/UNIT = 89 SPACES TOTAL = 124 SPACES
	MAXIMUM REQUIRED	1 BR: 35 UNITS*1.25/UNIT = 44 SPACES 2 BR: 71 UNITS*1.75/UNIT = 125 SPACES TOTAL = 169 SPACES
	PROPOSED	147 SPACES (10 GARAGE, 27 COMPACT)
ACCESSIBLE PARKING (PHASE 1A)	REQUIRED	6 SPACES (2 VAN)
	PROPOSED	11 SPACES (2 VAN)
ACCESSIBLE PARKING (PHASE 1B)	REQUIRED	6 SPACES (2 VAN)
	PROPOSED	8 SPACES (4 VAN, 2 GARAGE)
BIKE PARKING (PHASE 1A)	REQUIRED	308 UNITS * 1 SPACE/2 UNITS (20% SHORT TERM/80% LONG TERM) = 154 SPACES (31 SHORT TERM, 123 LONG TERM)
	PROPOSED	156 INTERNAL SPACES (31 SHORT TERM, 125 LONG TERM)
BIKE PARKING (PHASE 1B)	REQUIRED	106 UNITS * 1 SPACE/2 UNITS (20% SHORT TERM/80% LONG TERM) = 53 SPACES (11 SHORT TERM, 42 LONG TERM)
	PROPOSED	52 SPACES
MAXIMUM BUILDING HEIGHT	REQUIRED	WR-7 - 7-STORIES, NOT TO EXCEED 90'
		WR-3 - 3-STORIES, NOT TO EXCEED 45'
	PROPOSED	WR-7 - 5-STORIES, 75.92'
		WR-3 - 3-STORIES, 35.78
OUTDOOR AMENITY AREA (TOTAL SITE)	REQUIRED	0.06*334,347 SF = 20,061 SF
	PROPOSED	24,356 SF
RECREATION SPACE (PHASE 1A)	REQUIRED	0.12*153,200 SF/2 = 9,192 SF
	PROPOSED	15,293 SF
RECREATION SPACE (PHASE 1B)	REQUIRED	0.08*214,581 SF/2 = 8,583 SF
	PROPOSED	7,095 SF
SETBACKS	STREET YARD	0'-10' BUILD TO
	SIDE YARD	0'-10' BUILD TO
	REAR YARD	10'
DISTURBED AREA	14.20 AC	



VICINITY MAP
1" = 500'

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	PLAN AND PROFILE - ROUNDABOUT UNWRAP SE STA. 10+00.00 THRU STA. 10+67.01
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A3A.16	ENLARGED VIGNETTE RENDERINGS
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A4B.01	SITE SECTION
A4B.02	TRANSVERSE SITE SECTION

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

MCADAMS
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333 WEST TRADE STREET, SUITE 300
CHARLOTTE, NC 28202
CONTACT: GRAY STOUT
PHONE: 704. 444. 7862

NORTH CAROLINA PROFESSIONAL SEAL 044863 ENGINEER NATHAN BALES 9/2/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PER CHAPEL HILL AND OWASA COMMENTS

PHASE 1A & 1B FORM DISTRICT PERMIT FOR:

PARK APARTMENTS
CHAPEL HILL,
NORTH CAROLINA, 27709
PROJECT NUMBER: WDF-17000

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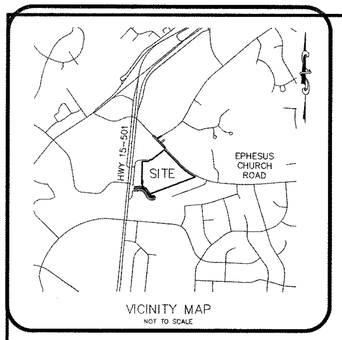


VICINITY MAP
NOT TO SCALE

GENERAL NOTES

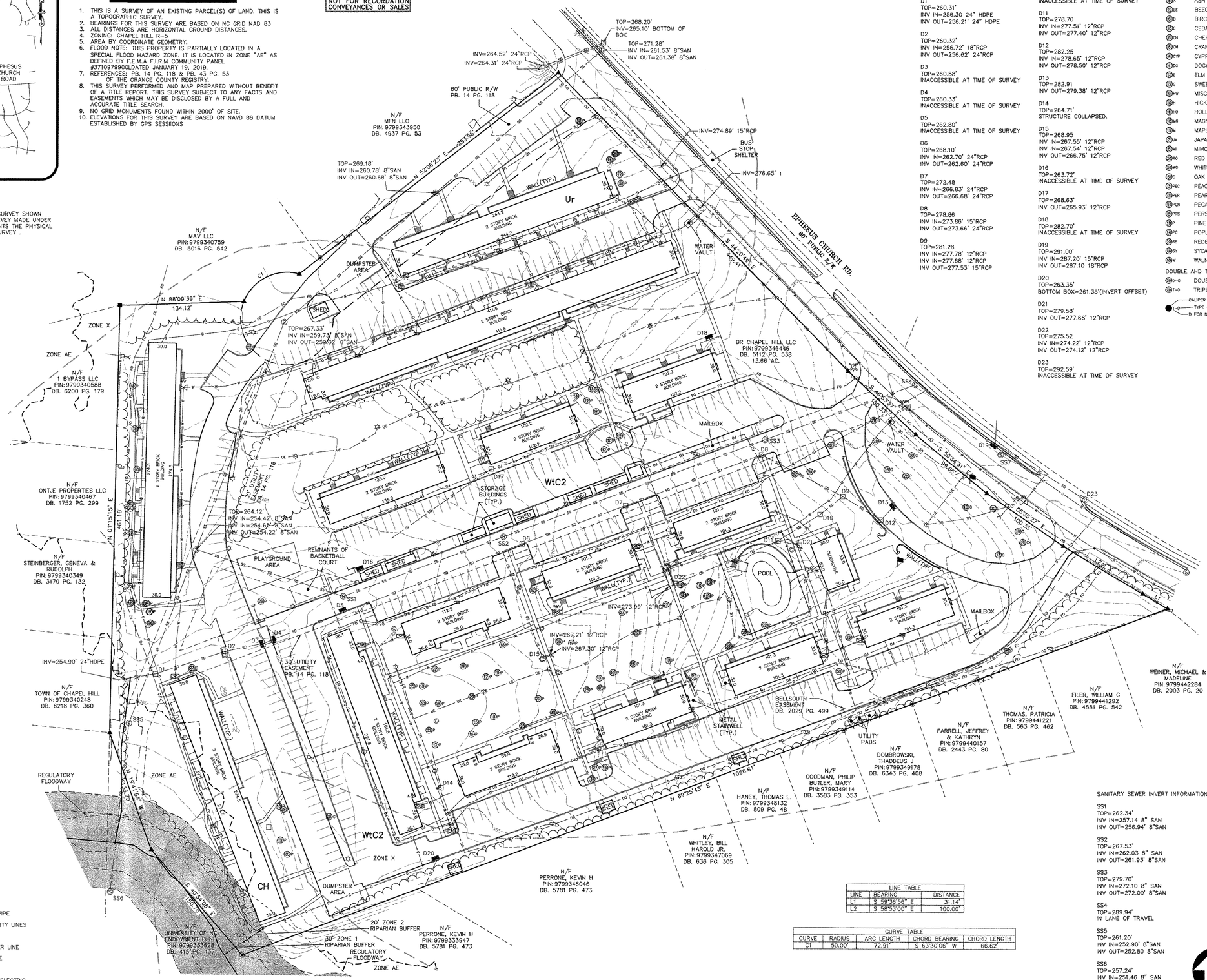
1. THIS IS A SURVEY OF AN EXISTING PARCEL(S) OF LAND. THIS IS A TOPOGRAPHIC SURVEY.
2. BEARINGS FOR THIS SURVEY ARE BASED ON NC GRID NAD 83
3. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES.
4. ZONING: CHAPEL HILL R-5
5. AREA BY COORDINATE GEOMETRY.
6. FLOOD NOTE: THIS PROPERTY IS PARTIALLY LOCATED IN A SPECIAL FLOOD HAZARD ZONE. IT IS LOCATED IN ZONE "AE" AS DEFINED BY F.E.M.A F.I.R.M COMMUNITY PANEL #3710979900LDATED JANUARY 19, 2019.
7. REFERENCES: PB. 14 PG. 118 & PB. 43 PG. 53 OF THE ORANGE COUNTY REGISTRY.
8. THIS SURVEY PERFORMED AND MAP PREPARED WITHOUT BENEFIT OF A TITLE REPORT. THIS SURVEY SUBJECT TO ANY FACTS AND EASEMENTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.
9. NO GRID MONUMENTS FOUND WITHIN 2000' OF SITE.
10. ELEVATIONS FOR THIS SURVEY ARE BASED ON NAVD 88 DATUM ESTABLISHED BY GPS SESSIONS

PRELIMINARY PLAT
NOT FOR RECORDATION
CONVEYANCES OR SALES

I HEREBY CERTIFY THAT THE TOPOGRAPHIC SURVEY SHOWN HEREON IS BASED ON AN ACTUAL FIELD SURVEY MADE UNDER MY SUPERVISION AND ACCURATELY REPRESENTS THE PHYSICAL FEATURES THEREON AT THE TIME OF THIS SURVEY .

RONALD T. FREDERICK, P.L.S. L-4720

DATE



STORM DRAIN INVERT INFORMATION

D1
TOP=260.31'
INV IN=256.30 24" HDPE
INV OUT=256.21' 24" HDPE

D2
TOP=260.32'
INV IN=256.72' 18"RCP
INV OUT=256.62' 24"RCP

D3
TOP=260.58'
INACCESSIBLE AT TIME OF SURVEY

D4
TOP=260.33'
INACCESSIBLE AT TIME OF SURVEY

D5
TOP=262.80'
INACCESSIBLE AT TIME OF SURVEY

D6
TOP=268.10'
INV IN=262.70' 24"RCP
INV OUT=262.60' 24"RCP

D7
TOP=272.48
INV IN=266.83' 24"RCP
INV OUT=266.68' 24"RCP

D8
TOP=278.86
INV IN=273.86' 15"RCP
INV OUT=273.66' 24"RCP

D9
TOP=281.28
INV IN=277.78' 12"RCP
INV IN=277.68' 12"RCP
INV OUT=277.53' 15"RCP

D10
TOP=279.79'
INACCESSIBLE AT TIME OF SURVEY

D11
TOP=278.70
INV IN=277.51' 12"RCP
INV OUT=277.40' 12"RCP

D12
TOP=282.25
INV IN=278.65' 12"RCP
INV OUT=278.50' 12"RCP

D13
TOP=282.91
INV OUT=279.38' 12"RCP

D14
TOP=264.71'
STRUCTURE COLLAPSED.

D15
TOP=268.95
INV IN=267.55' 12"RCP
INV IN=267.54' 12"RCP
INV OUT=266.75' 12"RCP

D16
TOP=263.72'
INACCESSIBLE AT TIME OF SURVEY

D17
TOP=268.63'
INV OUT=265.93' 12"RCP

D18
TOP=282.70'
INACCESSIBLE AT TIME OF SURVEY

D19
TOP=291.00'
INV IN=287.20' 15"RCP
INV OUT=287.10 18"RCP

D20
TOP=263.35'
BOTTOM BOX=261.35'(INVERT OFFSET)

D21
TOP=279.58'
INV OUT=277.68' 12"RCP

D22
TOP=275.52
INV IN=274.22' 12"RCP
INV OUT=274.12' 12"RCP

D23
TOP=292.59'
INACCESSIBLE AT TIME OF SURVEY

TREE LEGEND

8 A	ASH
10 BE	BEECH
8 BI	BIRCH
18 CE	CEDAR
8 CH	CHERRY
8 CM	CRAPE MYRTLE
8 CYP	CYPRESS
8 DG	DOGWOOD
18 E	ELM
12 G	SWEET GUM
18 HW	MISC. HARDWOOD
18 H	HICKORY
18 HO	HOLLY
18 MG	MAGNOLIA
18 M	MAPLE
8 JM	JAPANESE MAPLE
8 M	MIMOSA
28 RO	RED OAK
28 WO	WHITE OAK
30 O	OAK
18 PEC	PEACH
18 PER	PEAR
18 PCN	PECAN
18 PRS	PERSIMMON
18 P	PINE
18 PO	POPLAR
18 RB	REDBUD
18 SY	SYCAMORE
18 W	WALNUT

DOUBLE AND TRIPLE TRUNKS

28 D-O	DOUBLE OAK
28 T-O	TRIPLE OAK

CALIPER INCH SIZE OF TREE
TYPE OF TREE
D FOR DOUBLE, T FOR TRIPLE

LEGEND

- EXISTING IRON PIPE
- IRON PIPE SET
- CALCULATED POINT
- BORE HOLE
- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEANOUT
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- TELEPHONE PEDESTAL
- TELEPHONE MANHOLE
- ELECTRIC BOX
- LIGHT POLE
- POWER POLE
- CURB INLET
- STORM DRAINAGE MANHOLE
- YARD INLET

SD	STORM DRAIN PIPE
OU	OVERHEAD UTILITY LINES
W	WATER LINE
SS	SANITARY SEWER LINE
T	TELEPHONE LINE
G	GAS LINE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE
X	FENCE LINE

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 59°36'56" E	31.14'
L2	S 58°53'00" E	100.00'

CURVE TABLE				
CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH
C1	50.00'	72.91'	S 63°30'06" W	66.62'

SOILS LEGEND			
MAP UNIT SYMBOL	MAP UNIT NAME	UNIFIED SOIL CLASSIFICATION	HYDROLOGIC SOIL GROUP
CH	CHEWALACA LOAM	CL	B/D
UR	URBAN LAND		
WtC2	WHITE STORE CLAY LOAM	CL	D
WwC	WHITE STORE-URBAN LAND COMPLEX	ML	D

SANITARY SEWER INVERT INFORMATION

SS1
TOP=262.34'
INV IN=257.14 8" SAN
INV OUT=256.94' 8"SAN

SS2
TOP=267.53'
INV IN=262.03 8" SAN
INV OUT=261.93' 8"SAN

SS3
TOP=279.70'
INV IN=272.10 8" SAN
INV OUT=272.00' 8"SAN

SS4
TOP=289.94'
IN LANE OF TRAVEL

SS5
TOP=261.20'
INV IN=252.90' 8"SAN
INV OUT=252.80 8"SAN

SS6
TOP=257.24'
INV IN=251.46 8" SAN
INV OUT=251.34' 8"SAN

SS7
TOP=291.15'
IN LANE OF TRAVEL

GRAPHIC SCALE
0 25 50 100
1 inch = 50 ft.

PERMIT SET

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PARK APARTMENTS
FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-XC1
CHECKED BY	RTF
DRAWN BY	JBT
SCALE	1"=50'
DATE	02. 28. 2019

SHEET

EXISTING CONDITIONS

C-1

X:\Projects\WDF\WDF-17000\Land\Form District Permit\Current Drawings\WDF17000-XC1.dwg, 8/30/2019 12:55:55 PM, Bates, Nathan

GENERAL NOTES

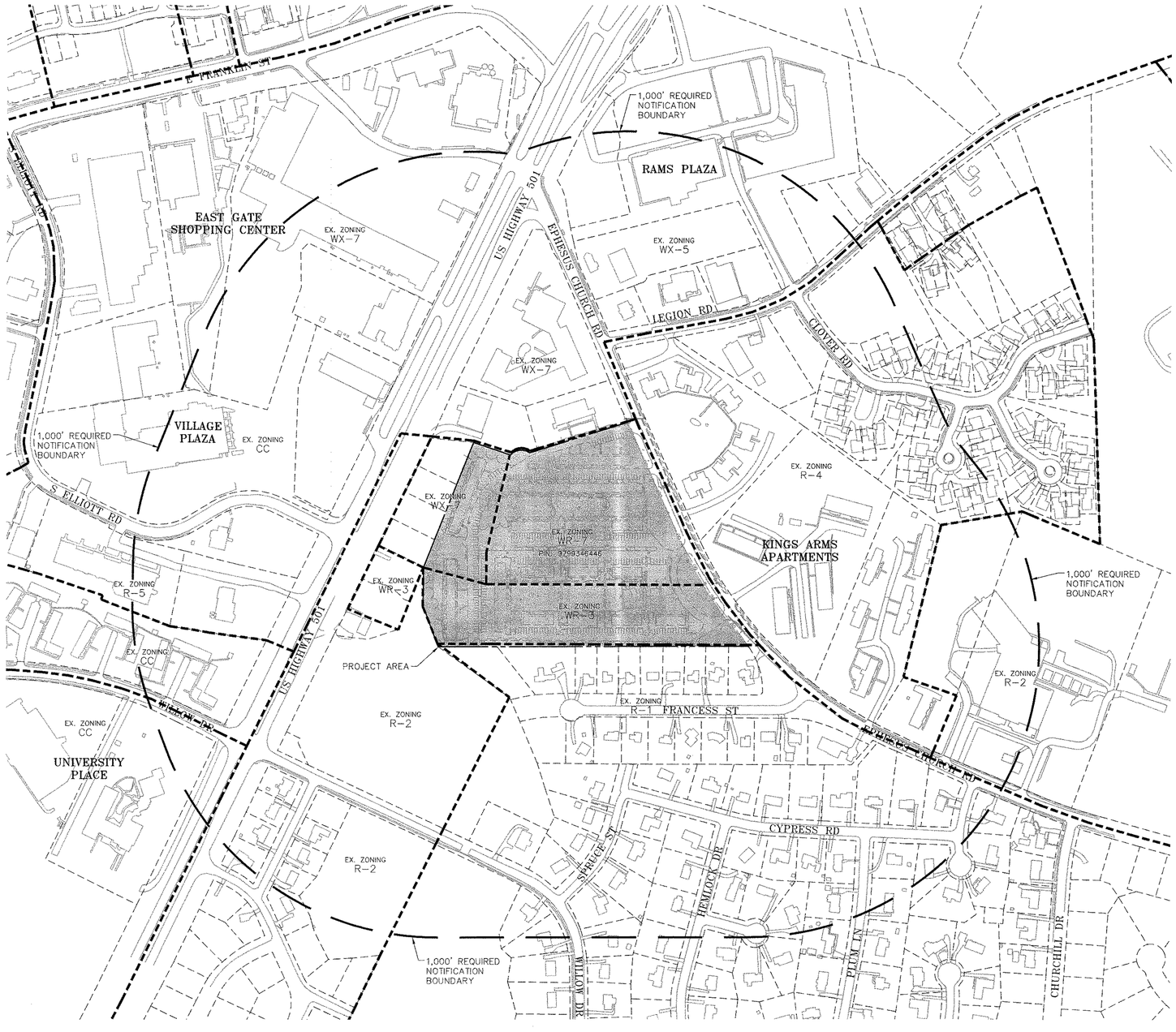
1. PIN'S AND PROPERTY INFORMATION FROM ORANGE COUNTY GIS.
2. BOUNDARY FROM SURVEY BY TIMMONS GROUP COMPLETED 05/19/2015.

LEGEND

1,000' REQUIRED NOTIFICATION BOUNDARY

PROJECT AREA

ZONING DISTRICT LINE



GRAPHIC SCALE

0 100 200 400

1 inch = 200 ft.

PERMIT SET

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 9/2/19

REVISIONS

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3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-AM1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=200'
DATE	02. 28. 2019

SHEET

AREA MAP

C-2

X:\Projects\WDF\WDF-17000\Land\Form District Permit\Current Drawings\WDF17000-AM1.dwg, 9/3/2019 12:55:39 PM, Bales, Nathan

GENERAL NOTES:

1. CONTRACTOR TO NOTIFY SURROUNDING PROPERTIES 7 DAYS PRIOR TO STARTING CONSTRUCTION.
2. CONTRACTOR TO PROVIDE NOTICE TO THE TOWN OF CHAPEL HILL REGARDING SPECIFIC DATES FOR ANY NECESSARY ROAD CLOSURES AND LANE REDUCTIONS.
3. GENERAL CONTRACTOR TO COORDINATE WITH SPECIFIC PROPERTIES AFFECTED BY THE PROPOSED ROAD CLOSURES IF REQUIRED TO ENSURE CONTINUOUS ACCESS TO THE AFFECTED PROPERTIES.
4. SETBACKS ARE PROPOSED UNDER THE PLANNED DEVELOPMENT HOUSING PROVISION OF THE LUMO AND ARE NOTED ON THIS SHEET.
5. ALL PARKING SHOWN SPACE MARKINGS SHALL BE PER THE TOWN OF CHAPEL HILL CODE FOR PARKING LOTS.
6. MINIMUM CORNER CLEARANCES FROM THE CURBLINE OF INTERSECTING STREETS SHALL BE AT LEAST 20' FROM THE POINT OF TANGENCY. NO DRIVEWAYS OR PARKING SPACES SHALL ENCROACH ON THIS MINIMUM CORNER CLEARANCE.
7. WITHIN THE SIGHT DISTANCE TRIANGLES SHOWN, NO OBSTRUCTION BETWEEN 2' AND 8' IN HEIGHT ABOVE THE CURB LINE ELEVATION SHALL BE LOCATED IN WHOLE OR IN PART. OBSTRUCTIONS INCLUDE BUT ARE NOT LIMITED TO ANY BERM, FOLIAGE, FENCE, WALL, SIGN, OR PARKED VEHICLE.
8. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST TOWN OF CHAPEL HILL, NCDOT AND OWASA STANDARDS AND SPECIFICATIONS.
9. ALL DIMENSIONS SHOWN ON SITE PLAN ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
10. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS FOR EXCAVATIONS; FINAL RULE 29CFR PART 1926, SUBPART "P" APPLIES TO ALL EXCAVATIONS EXCEEDING FIVE (5) FEET IN DEPTH. EXCAVATION EXCEEDING TWENTY (20) FEET IN DEPTH REQUIRES THE DESIGN OF A TRENCH SAFETY SYSTEM BY A REGISTERED PROFESSIONAL ENGINEER, PROVIDED BY CONTRACTOR RESPONSIBLE FOR EXCAVATION.
11. EQUIPMENT AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED PROVIDED APPROVAL HAS BEEN OBTAINED FROM THE OWNER IN WRITING PRIOR TO ORDERING OR INSTALLATION. THE CONTRACTOR SHALL WAIVE ANY CLAIM FOR ADDITIONAL COST RELATED TO THE SUBSTITUTION OF ALTERNATE EQUIPMENT.
12. CONTRACTOR SHALL MAINTAIN AN "AS-BUILT" SET OF DRAWINGS TO RECORD THE EXACT LOCATION OF ALL PIPING PRIOR TO CONCEALMENT. DRAWINGS SHALL BE GIVEN TO THE OWNER UPON COMPLETION OF THE PROJECT WITH A COPY OF THE TRANSMITTAL LETTER TO THE ENGINEER.
13. CONTRACTOR IS RESPONSIBLE FOR COORDINATING CONSTRUCTION ACTIVITIES WITH THE APPROPRIATE UTILITY COMPANIES FOR ANY REQUIRED RELOCATION (I.E. POWER POLES, TELEPHONE PEDESTALS, WATER METERS, ETC.).
14. PRIOR TO STARTING CONSTRUCTION, THE GENERAL CONTRACTOR SHALL SCHEDULE AND HOLD A PRE-CONSTRUCTION CONFERENCE WITH THE TOWN OF CHAPEL HILL ENGINEERING DEPARTMENT, ORANGE COUNTY SOIL AND EROSION DEPARTMENT, ENGINEER, AND OWNER/REPRESENTATIVE.
15. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
16. ALL STREET NAME SIGNS SHALL CONFORM TO THE LATEST EDITION OF THE MUTCD INCLUDING MIXED CASE LETTERING, PROPER LETTER HEIGHTS, AND RETROREFLECTIVITY.
17. ALL ASPHALT EDGES SHALL BE SAW CUT TO PROVIDE A GOOD LONGITUDINAL JOINT. MILL 1.5 FEET AT 1.5 INCHES DEEP MINIMUM TO PROVIDE A LONGITUDINAL LAP JOINT FOR FINAL SURFACE LAYER. NO MILLING SHALL BE LEFT FOR A PERIOD OF TIME GREATER THAN 48 HOURS BEFORE A STREET IS TO BE REPAVED/RESURFACED.
18. SEPARATE BUILDING PERMITS ARE REQUIRED FOR RETAINING WALLS, DUMPSTER ENCLOSURES, MONUMENTS, SIGNS, OR OTHER ACCESSORY STRUCTURES OR ELEMENTS.
19. EXISTING UTILITIES AND STRUCTURES SHOWN, BOTH UNDERGROUND AND ABOVE GROUND, ARE BASED ON A FIELD SURVEY AND THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS PRIOR TO BEGINNING RELATED CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE IMMEDIATELY.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND/OR RELOCATION OF ALL EXISTING UTILITIES IN COORDINATION WITH THE APPROPRIATE UTILITY, AGENCY, OR COMPANY.
21. EXISTING CONTOURS ARE BASED ON SURVEY COMPLETED BY TIMMONS. EXISTING UTILITIES SHOWN ARE BASED ON SURVEY AND THE BEST AVAILABLE RECORDS. THE CONTRACTOR, HOWEVER, SHALL VERIFY CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE PLANS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY. FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
22. EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED/RESTORED TO THEIR ORIGINAL CONDITION OR TO THE SATISFACTION OF THE OWNER BY THE CONTRACTOR RESPONSIBLE FOR THE DAMAGE.
23. A SINGLE ELECTRICAL SERVICE SHALL BE PROVIDED TO SERVE EACH STRUCTURE WITH THE EXCEPTION OF THE FIRE PUMP.
24. MECHANICAL EQUIPMENT MUST BE PLACED AT OR ABOVE THE BASE FLOOD ELEVATION PLUS 2 FEET.
25. A ZONE FOR FIRE DEPARTMENT LADDERS AND FIREFIGHTING OPERATIONS MUST BE PROVIDED, REQUIRING ALL LINES TO BE BURIED SURROUNDING STRUCTURES.
26. BACK WASH WATER FROM THE POOL SHALL DISCHARGE INTO SANITARY SEWER AND NOT STORM SEWER.
27. CONTRACTOR TO CONTACT THE CHAPEL HILL STORMWATER MANAGEMENT DIVISION AT 919-969-7246 TO SCHEDULE SITE INSPECTION AT LEAST TEN (10) DAYS IN ADVANCE OF REQUESTING THE CERTIFICATE OF OCCUPANCY.
28. IMPROVEMENTS, STRUCTURES, FIXTURES, SIGNS, TABLES, CHAIRS, PLANTERS, OR ANY OTHER OBJECT SHALL NOT BE PLACED IN SIDEWALK AREAS FOR ANY PERIOD OF TIME.
29. FLOOR DRAINS FROM THE ROOFED PARKING AREA AND HVAC CONDENSATE SHALL NOT BE CONNECTED TO THE STORM SEWER SYSTEM.
30. ANY ROOF DRAINS OR OTHER PLUMBING INTENDED TO DISCHARGE TO THE STORM SEWER SYSTEM NOT SHOWN ON THE APPROVED PLANS ARE NOT APPROVED. ANY DISCHARGE DIRECTED TO THE STORM SEWER SYSTEM THAT IS NOT APPROVED WILL NEED TO APPROVAL FROM THE TOWN OF CHAPEL HILL STORMWATER MANAGEMENT DIVISION.
31. THE NORTH CAROLINA DEPARTMENT OF INSURANCE SHALL REVIEW AND APPOVE ANY PROJECTS LISTED IN TABLE 104.1 OF THE NORTH CAROLINA ADMINISTRATION AND POLICIES CODE BEFORE THE TOWN OF CHAPEL HILL WILL BEGIN ITS BUIDILNG PERMIT REVIEW.
32. A SINGLE ELECTRICAL SERVICE SHALL BE PROVIDED TO SERVE THE STRUCTURE WITH THE EXCEPTION OF THE FIRE PUMP, IN ACCORDANCE WITH ARTICLE 230.2(A) OF THE 2017 NORTH CAROLINA ELECTRICAL CODE.
33. CURB AND GUTTER AND ATLEAST THE FIRST LIFT OF ASPHALT FOR THE ROADS MUST BE PLACED PRIOR TO THE START OF CONSTRUCTION.
34. PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, THE APPLICANT SHALL PROVIDE THE MINIMUM REQUIRED HANDICAPPED PARKING SPACES AND DESIGN ALL HANDICAPPED PARKING SPACES, RAMPS, CROSSWALKS, AND ASSOCIATED INFRASTRUCTURE ACCORDING TO THE AMERICANS WITH DISABILITIES ACT STANDARDS, NORTH CAROLINA BUILDING CODE, AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) CODE, AND TOWN STANDARD.
    A. THE NUMBER OF PARKING SPACES SHALL COMPLY WITH NCBC 2018 SECTION 1106.1, 1 PER 6 COMPLIANT SPACES OR PORTION THEREOF MUST BE VAN ACCESSIBLE. NO SLOPE SHALL EXCEED 2% IN ANY DIRECTION. SIGNAGE SHALL BE PLACES IN ACCORDANCE WITH NCBC 2018 REQUIREMENTS, MUTCD AND ACC A 117.1.
    B. CURB CUTS AND ACCESSIBLE ROUTES PER ICC A117.1 2009 EDITION. CROSS SLOPE LIMITED TO 2%. CALL TOWN OF CHAPEL HILL BUILDING INSPECTIONS OFFICE FOR INSPECTION PRIOR TO PLACEMENT OF CONCRETE.
    C. SLOPES GREATER THAN 5% REQUIRES CONSTRUCTION AS A RAMP.

GRADING & STORM DRAINAGE NOTES:

1. CONTRACTOR SHALL NOTIFY NC 811 (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR TO CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF NC 811. REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
2. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION CONFERENCE WITH THE ORANGE COUNTY SOIL AND EROSION CONTROL OFFICER, TOWN OF CHAPEL HILL STORM WATER MANAGEMENT DIVISION, AND OWNER'S REP/ENGINEER.
3. CONTRACTOR TO CONTACT MICHAEL WRIGHT WITH THE TOWN OF CHAPEL HILL AT 919-969-5084 TO POST EROSION CONTROL BOND PRIOR TO ANY LAND DISTURBANCE.
4. GRADING AND CONTOURS ARE BASED ON NORTH AMERICAN VERTICAL DATUM 88 (NAVD88).
5. SOIL UNDER BUILDINGS AND PAVED AREAS SHALL BE APPROVED, PLACED AND COMPACTED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER AND SHOULD MEET OR EXCEED TOWN OF CHAPEL HILL STANDARDS.
6. GRADING IN AREAS DESIGNATED AS "ACCESSIBLE" SHALL COMPLY WITH ALL FEDERAL AND LOCAL ACCESSIBILITY RULES AND GUIDELINES. EVEN THOUGH PLANS MAY NOT SHOW ALL SPOT ELEVATIONS IN THESE REGIONS, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE THAT THE AREAS ARE GRADED TO AMERICAN DISABILITY ACT (ADA) COMPLIANT SPECIFICATIONS.
7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY AREAS WHERE SPILL CURB IS NECESSARY TO CONVEY RUNOFF TO THE NEAREST CATCH BASIN OR DROP INLET. THE OWNER AND/OR ENGINEER SHALL NOT BE HELD RESPONSIBLE FOR CURBING INSTALLED PRIOR TO PAVING THAT DOES NOT DRAIN PROPERLY.
8. ALL PROPOSED INLETS, CATCH BASINS, AND DROP INLETS SHALL BE PROTECTED BY EROSION CONTROL MEASURES AS SHOWN AND SPECIFIED ON THE EROSION CONTROL PLAN
9. THE CURB INLETS AND YARD INLETS SHALL BE CONSTRUCTED IN THE LOCATIONS SHOWN UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR REPORTING ANY DISCREPANCIES IN THE CATCH BASIN ELEVATIONS OR THE PROPOSED PIPE SLOPES TO THE ENGINEER. THE CONTRACTOR IS ALSO RESPONSIBLE TO REPORT ANY CONFLICTS BETWEEN ANY UTILITY, STORM DRAIN LINE, WATER LINE, SEWER LINE OR ANY OTHER PROPOSED OR EXISTING STRUCTURE TO THE ENGINEER.
10. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS. THE CONTRACTOR SHALL FIELD VERIFY GRADES SURROUNDING ALL BUILDINGS PRIOR TO GRADING ACTIVITIES AND REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
11. PIPE SPECIFIED AS RCP MAY BE SUBSTITUTED IF APPROVED BY THE TOWN OF CHAPEL HILL WITH APPROVED MATERIALS PER THE TOWN OF CHAPEL HILL STANDARDS AND SPECIFICATIONS OUTSIDE OF PUBLIC RIGHT OF WAY AND EASEMENTS. ALL BEDDING FOR ALTERNATE MATERIALS SHALL CONFORM TO NCDOT, AASHTO AND ASTM SPECIFICATIONS.
12. THE MINIMUM PIPE SIZE WITHIN A PUBLIC RIGHT-OF-WAY IS 15".
13. FOR ALL PIPE OUTLETS 60" AND GREATER (SINGLE) AND 36" (MULTIPLE) HEADWALLS/ENDWALLS SHALL BE USED AND A 4' HIGH BLACK POLY COATED CHAIN LINK FENCE PLACED OVER THE WALL.
14. FOR NPDES PERMIT COMPLIANCE: ALL SLOPES 3:1 AND STEEPER MUST BE STABILIZED WITHIN 7 DAYS, ALL OTHER AREAS MUST BE STABILIZED WITHIN 14 DAYS.
15. ALL STORM PIPE SPECIFIED AS REINFORCED CONCRETE (RCP) SHALL BE MINIMUM CLASS III PIPE.
16. ALL STORM PIPE SHALL BE LAID AT LEAST 10' HORIZONTALLY OR 18" VERTICALLY FROM ANY WATER MAIN AND 24" VERTICALLY FROM ANY SEWER MAIN. REFER TO NCAC 02T RULES FOR EXEMPTIONS.
17. GEOTEXTILE FABRIC OR APPROVED EQUIVALENT ARE REQUIRED AT ALL DISSIPATOR PADS.

FIRE DEPARTMENT NOTES:

1. SITE SHALL COMPLY WITH THE LATEST NATIONAL BUILDING AND FIRE CODES.
2. FUNCTIONAL FIRE PROTECTION SHALL BE PROVIDED PRIOR TO THE ARRIVAL OF COMBUSTIBLE MATERIALS ON THE SITE.
3. FIRE ACCESS ROUTE SHALL HAVE A MINIMUM RADIUS OF 28' (FACE OF CURB) TO ALLOW FIRE APPARATUS ACCESS THROUGH SITE (IFC 503.2.4).
4. ANY GATES ACROSS FIRE APPARATUS ACCESS ROADS SHALL BE A MINIMUM WIDTH OF 20', BE OF SWINGING OR SLIDING TYPE AND HAVE AN EMERGENCY MEANS OF OPERATION. ALL GATES IN FIRE TRUCK APPARATUS ACCESS ROUTES SHALL BE OPERABLE BY EITHER FORCIBLE ENTRY OR KEYED AND MUST BE CAPABLE OF BEING OPERATED MY ONE PERSON. ALL GATES IN FIRE TRUCK APPARATUS ACCESS ROUTES SHALL BE INSTALLED AND MAINTAINED ACCORDING TO UL375 AND ASTM F2200.
5. ALL PORTIONS OF THE FIRST FLOOR OF THE BUILDING MUST BE WITHIN 150' OF THE FIRE ACCESS ROUTE (IFC 503.1.1)
6. BUILDING ADDRESSES SHALL BE PLACED ON BOTH SIDES OF THE BUILDING ON A CLEARLY VISIBLE PLACARD FOR LOCATION PURPOSES.
7. ALL FIRE TRUCK ACCESSIBLE ROUTES SHALL BE RATED FOR 80,000 LB AND HAVE A MINIMUM CLEAR WIDTH OF 26' (IFC 503.2.1).
8. FIRE RISER ROOM SHALL BE EQUIPPED WITH AN EXTERNAL LOCK BOX.
9. RISER ROOM SHALL HAVE ADEQUATE DRAINAGE FOR EMERGENCY RPZ DISCHARGE.
10. PRIVATE FIRE SERVICE MAINS AND APPURTENCES SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 24, NC FPC 507.2.1.
11. ALL CONSTRUCTION AND DEMOLITION CONDUCTED SHALL BE IN COMPLIANCE WITH THE CURRENT EDITION OF CHAPTER 14 OF THE NC FPC.
12. OPEN BURNING OF TREES, LIMBS, STUMPS, AND CONSTRUCTION DEBRIS ASSOCIATED WITH THIS DEVELOPMENT IS PROHIBITED.
13. DURING CONSTRUCTION, VEHICLE ACCESS FOR FIRE FIGHTING SHALL BE PROVIDED. TEMPORARY STREET SIGNS SHALL BE INSTALLED AT EACH STREET INTERSECTION WHEN CONSTRUCTION ALLOWS PASSAGE OF VEHICLES. SIGNS SHALL BE OF AN APPROVED SIZE, WEATHER RESISTANCE AND MAINTAINED UNTIL REPLACED BY PERMANENT SIGNS.
14. THE OWNER/DEVELOPER SHALL DESIGNATE ONE PERSON TO BE THE FIRE PREVENTION PROGRAM SUPERINTENDENT WHO SHALL BE RESPONSIBLE FOR ENFORCING CHAPTER 14 OF THE NCFPC AND THE ON-SITE FIRE PREVENTION PROGRAM AND ENSURE THAT IT IS CARRIED OUT THROUGH COMPLETION OF THE PROJECT.

RETAINING WALL NOTES

1. THE RETAINING WALL ALIGNMENT SHOWN ON THESE PLANS DEPICTS THE LOCATION OF THE FRONT FACE OF THE RETAINING WALL AT THE TOP OF THE WALL. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING RETAINING WALLS ARE NOT LOCATED IN ANY STREAM BUFFERS, AND THEIR CONSTRUCTION DOES NOT ENCROACH INTO ANY ADJACENT PROPERTIES DUE TO ANY BATTER INCORPORATED IN THE DESIGN OF THE WALLS.
2. RETAINING WALLS ARE TO BE DESIGN-BUILD PROJECTS BY THE CONTRACTOR. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN FINAL CONSTRUCTION DRAWINGS FROM A REGISTERED ENGINEER AND GAIN ALL REQUIRED PERMITS NECESSARY FOR THE CONSTRUCTION OF THE RETAINING WALLS.
3. RETAINING WALLS SHALL BE ASSUMED TO BE BACKFILLED WITH OFF-SITE BORROW MATERIAL OR PROCESSED FILL, UNLESS THE CONTRACTOR CAN PROVIDE TO THE OWNER WITH CONFIRMATION FROM THE GEOTECHNICAL ENGINEER AND THE RETAINING WALL DESIGNER, THAT READILY AVAILABLE ON-SITE SOILS CAN BE USED.
4. THE TOP AND BOTTOM OF WALL ELEVATIONS SHOWN ON THESE PLANS IDENTIFY FINISHED GRADE ELEVATIONS ONLY. THE EXTENT THAT THE RETAINING WALL WILL BE EXTENDED BELOW GRADE TO THE FOOTING OR ABOVE GRADE TO THE TOP OF THE CAP BLOCK COURSE SHALL BE IDENTIFIED ON THE RETAINING WALL CONSTRUCTION DRAWINGS.
5. ALL RETAINING WALLS OVER 30" HIGH SHALL HAVE A SAFETY FENCE (DESIGN BY OTHERS).
6. ANY PART OF ANY RETAINING WALL THAT EXTENDS INTO THE RIGHT-OF-WAY WILL REQUIRE AN ENCROACHMENT AGREEMENT. ENCROACHMENT AGREEMENTS FOR RETAINING WALLS SHALL BE APPROVED PRIOR TO CONSTRUCTION DRAWING APPROVAL.
7. ANY TIEBACK SYSTEMS FOR THE RETAINING WALLS SHALL NOT BE ALLOWED WITHIN PUBLIC RIGHT-OF-WAY.
8. STORMWATER RUN-OFF SHALL BE DIRECTED AWAY FROM RETAINING WALLS. ANY RUN-OFF FLOWING TO AND OVER A RETAINING WALL SHALL BE KEPT TO AN ABSOLUTE MINIMUM AND BROUGHT TO THE ATTENTION OF THE WALL DESIGNER PRIOR TO THEIR DESIGN.

ORANGE WATER AND SEWER AUTHORITY UTILITY NOTES:

1. STANDARDS AND SPECIFICATIONS - ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH OWASA STANDARDS AND SPECIFICATIONS LATEST REVISED EDITION.
2. PRECONSTRUCTION CONFERENCE - A PRECONSTRUCTION CONFERENCE WITH THE OWASA CONSTRUCTION INSPECTOR IS REQUIRED BEFORE BEGINNING ANY UTILITY CONSTRUCTION.
3. PROJECT ACCEPTANCE - IN ADDITION TO A FINAL INSPECTION APPROVED BY THE OWASA CONSTRUCTION INSPECTOR, THE FOLLOWING DOCUMENTS MUST BE RECEIVED AND APPROVED BY OWASA BEFORE ACCEPTANCE OF THE PROJECT AND THE SETTING OF METERS:
    - ENGINEER'S CERTIFICATION OF PUBLIC SEWER - ORIGINAL DOCUMENT
    - ENGINEER'S CERTIFICATION OF PUBLIC WATER - ORIGINAL DOCUMENT
    - ASSET LETTER - ORIGINAL DOCUMENT
    - LETTER OF DEDICATION - ORIGINAL DOCUMENT
    - AS BUILT DRAWINGS (INCLUDING 1"=100' SCALE SITE PLAN) AS BUILTS OF SEWER CONSTRUCTION SUBJECT TO REVIEW AND APPROVAL BY NCDENR DIVISION OF WATER QUALITY.
    - MANHOLE DATA SHEETS
    - RECORDED PLAT
    - ORIGINAL RECORDED WATER AND SEWER DEEDS OF EASEMENT - PREPARED USING OWASA'S STANDARD FORM.
4. SEWER STATEMENT - SEWER LINES UNDER CONSTRUCTION SHALL BE PLUGGED WITH A MECHANICAL PLUG AT THE FIRST MANHOLE UPSTREAM FROM THE POINT OF CONNECTION. PLUG SHALL BE PLACED IN THE OUTLET CONNECTION AND SECURED WITH STEEL CABLE. PLUG SHALL REMAIN IN PLACE UNTIL ACCEPTANCE OF LINES BY OWASA. WATER, STONE, DIRT, OR ANY OTHER DEBRIS SHALL NOT BE ALLOWED TO ENTER THE OWASA SANITARY SEWER SYSTEM DURING FLUSHING OPERATIONS OR AT ANY OTHER TIME. CONSTRUCTION TAKING PLACE IN THE VICINITY OF ANY EXISTING OWASA SEWER LINES OR MANHOLES SHALL NOT CAUSE ANY INFLOW OF SURFACE WATER OR DEBRIS TO ENTER THE REMAIN ACCESSIBLE AT ALL TIMES. THE OWNER AND/OR CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES INCURRED TO THE OWASA SANITARY SEWER SYSTEM AND FINES IMPOSED BY THE STATE OF NORTH CAROLINA DIVISION OF WATER QUALITY DUE TO SEWER SPILLS OR OVERFLOWS.
5. SEWER SERVICES - SEWER SERVICES LOCATED WITHIN PUBLIC RIGHT-OF-WAY OR OWASA SEWER EASEMENTS MUST BE CONSTRUCTED OF DUCTILE IRON PIPE FROM THE TAP UP TO AND INCLUDING THE FIRST CLEAN-OUT. EXCEPT FOR DEAD END MANHOLES, ALL 4" INCH SEWER SERVICES MUST BE TAPPED INTO THE SEWER MAIN. ALL 6" SERVICES MUST BE CONNECTED TO A MANHOLE. CLEANOUTS SHALL BE SPACED NO MORE THAN 75 FEET APART. CLEANOUTS LOCATED IN PAVEMENT AREAS SHALL BE HEAVY DUTY TRAFFIC RATED CONSTRUCTION.
6. BLOCKING AND RODDING - RETAINER GLANDS TO BE USED ON ALL MECHANICAL JOINTS IN ADDITION TO RODDING AND BLOCKING.
7. EXISTING VALVES - CONTRACTOR RESPONSIBLE FOR VERIFYING THAT EXISTING VALVE AT THE POINT OF CONNECTION TO THE OWASA SYSTEM IS ADEQUATE FOR PERFORMING AND PASSING HYDROSTATIC PRESSURE AND LEAKAGE TEST. CONTRACTOR, AT HIS EXPENSE, MAY OPTIONALLY REPLACE VALVE OR INSTALL A NEW VALVE FOR THE PURPOSE OF PERFORMING A PRESSURE TEAT FOR NEW MAIN INSTALLATION. IF CONTRACTOR ELECTS TO PRESSURE TEST AGAINST EXISTING VALVE, CONTRACTOR ACCEPTS RESPONSIBILITY FOR ENSURING PASSING PRESSURE TEST IN ACCORDANCE WITH OWASA REQUIREMENTS. IN ANY CASE, NO CLAIM WHATSOEVER SHALL BE MADE AGAINST OWASA FOR FAILURE OF PRESSURE TEST. EXISTING WATER VALVES SHALL BE OPERATED BY OWASA PERSONNEL ONLY. VALVES THAT SEPARATE PURITY APPROVED WATER AND UNAPPROVED WATER ARE TO REMAIN CLOSED AT ALL TIMES. VALVES MAY BE TEMPORARILY OPENED FOR LOADING AND FLUSHING BY THE OWASA INSPECTOR ONLY.
8. DECHLORINATION REQUIREMENTS - THE CONTRACTOR SHALL BE RESPONSIBLE FOR NEUTRALIZATION OF CHLORINATED WATER AT THE POINT OF DISCHARGE FROM THE MAIN BEING TESTED. THIS SHALL OCCUR FOLLOWING CHLORINATED TO DISINFECT A MAIN OR ANY OTHER TIME WHEN ELEVATED LEVELS OF CHLORINE COULD POTENTIALLY BE DISCHARGED INTO THE ENVIRONMENT BY THE CONTRACTOR. AT THE TIME THE DISINFECTION AND PURITY TESTING PROCEDURES ARE DISCUSSED WITH THE OWASA CONSTRUCTION INSPECTOR, THE PROCEDURE FOR DECHLORINATION WILL BE COVERED. ABSOLUTELY NO FLUSHING, DISINFECTION, OR PURITY SAMPLING IS TO TAKE PLACE WITHOUT PRIOR APPROVAL OF A SAMPLING PLAN BY THE OWASA INSPECTOR.
9. DEWATERING OF THE POOL SHALL NOT DISCHARGE INTO STORM SYSTEM UNLESS DE-CHLORINATED PRIOR TO DEWATERING.
10. PLEASE BE ADVISED THAT OWASA APPROVAL OF THIS PROJECT IS FOR COMPLIANCE WITH OWASA POLICIES, STANDARDS, AND SPECIFICATIONS ONLY. ALL OTHER MATTERS PERTAINING TO THIS PROJECT ARE THE RESPONSIBILITY OF THE DESIGN ENGINEER. OWASA APPROVAL DOES NOT PRECLUDE THE DEVELOPER, PROJECT ENGINEER, CONTRACTOR, OR OTHER AGENTS OR PARTIES ACTING ON THEIR BEHALF FROM FULL COMPLIANCE WITH OWASA CURRENT STANDARDS, SPECIFICATIONS, AND PROCEDURES OR FROM COMPLYING WITH ANY AND ALL STATUES, RULES, REGULATIONS, AND ORDINANCES WHICH MAY BE IMPOSED BY OTHER GOVERNMENT AGENCIES (LOCAL, STATE, AND FEDERAL) WHICH MAY HAVE JURISDICTION. VIOLATIONS WILL RESULT IN THE OWASA PROJECT APPROVAL BEING RESCINDED.
11. CONTACT NC 811 (811 OR 1-800-632-4949) AND OWASA (919-968-4421) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO ANY EXCAVATION OR CONSTRUCTION TO HAVE EXISTING UTILITIES LOCATED.
12. DISCHARGE FROM THIS PROJECT MUST BE IN COMPLIANCE WITH THE OWASA SEWER USE ORDINANCE. A GREASE INTERCEPTOR SHALL BE PROVIDED WHEN IN THE OPINION OF OWASA IT IS NECESSARY FOR THE PROPER HANDLING OF WASTEWATER CONTAINING EXCESSIVE AMOUNTS OF GREASE. ALL INTERCEPTION UNITS MUST BE OF THE TYPE AND CAPACITY WHICH IS CERTIFIED BY THE PROJECT ENGINEER AS MEETING THE REQUIREMENTS OF OWASA.
13. BACKFLOW PREVENTION WILL BE REQUIRED IN ACCORDANCE WITH OWASA CROSS-CONNECTION CONTROL ORDINANCE AND MANUAL.
14. DOMESTIC SERVICE TO INCLUDE REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY.
15. FIRE SERVICE TO INCLUDE RPDA BACKFLOW DEVICE.
16. FIRE PROTECTION SYSTEMS - PRESSURE TESTING, CHLORINATION, AND PURITY TESTING SHALL BE COMPLETED BEFORE THE INSTALLATION OF THE RPDA UNIT.
17. REMOTE READ-OUT DEVICES - RPDA AND RPZ DEVICES LOCATED INSIDE BUILDINGS MUST BE EQUIPPED WITH AN AMR METER TO BE PURCHASED FROM OWASA AND INSTALLED BY THE CONTRACTOR. CONTACT THE OWASA CONSTRUCTION INSPECTOR FOR DETAILS OF THIS INSTALLATION.
18. FOR FIRE SERVICE BACKFLOW DEVICES, USE A DOUBLE CHECK DETECTOR, REDUCED PRESSURE ZONE ASSEMBLY MEETING THE STANDARDS OF THE OWASA CROSS CONNECTION CONTROL ORDINANCE AND MANUAL. INSTALL THE DEVICE IN AN INTERNAL RISER ROOM WITH EXTERNAL ACCESS. CLEARANCES SHALL COMPLY WITH THE OWASA CROSS CONNECTION CONTROL ORDINANCES AND MANUAL. ACCESS TO RISER ROOM FROM OUTSIDE SHALL INCLUDE PROVISIONS FOR THE FIRE DEPARTMENT SUCH AS A KNOX BOX.
19. ALL BUILDINGS WITH FIRE SUPPRESSION LINES MUST HAVE BACKFLOW DEVICES LOCATED INSIDE THE BUILDING IN AN ABOVE GROUND LOCATION ADJACENT TO THE OUTSIDE WALL WHERE THE WATERLINE ENTERS THE BUILDING.
20. FOR IRRIGATION SERVICE BACKFLOW DEVICE, USE A REDUCED PRESSURE ZONE ASSEMBLY MEETING THE STANDARDS OF THE OWASA CROSS CONNECTION CONTROL ORDINANCE AND MANUAL. INSTALL THE IRRIGATION DEVICE INSIDE AN ABOVE GROUND HOT BOX.
21. UNDERGROUND VAULTS FOR METERS SHALL BE DRAINED BY PVC SCHEDULE 40 DRAINS TO DAYLIGHT INTO SLOPES. CONNECTION TO STORM STRUCTURES IS ONLY ALLOWED WITH THE CONSENT OF OWASA. DRAIN SIZES SHALL BE 2" DIAMETER FOR METERS OR DEVICES LESS THAN 2" AND SHALL BE 4" DIAMETER FOR DEVICES OVER 2".
22. CONNECTION OF SANITARY SEWER SERVICE TO AN EXISTING MANHOLE SHALL COMPLY WITH OWASA STANDARDS, INCLUDING: CORE DRILL FOR OPENING INTO MANHOLE AND INSTALL WITH FLEXIBLE BOOT. IF PAVEMENT CUT IS REQUIRED, CONTRACTOR SHALL PATCH PAVEMENT IN ACCORDANCE WITH TOWN OF CHAPEL HILL STANDARDS AND PROPER GEOTECHNICAL INFORMATION FOR SOIL LOADING.
23. IF HYDRAULIC ELEVATORS ARE USED THE SUMP MUST BE PLUMBED TO SANITARY SEWER LINES.
24. FIRE HYDRANTS MUST BE FULLY FUNCTIONAL AND PHYSICALLY APPROVED BY OWASA BEFORE COMBUSTIBLE MATERIALS CAN BE BROUGHT ON TO THE SITE.

PAVEMENT MARKING/SIGNAGE NOTES:

1. ALL SIGNAGE SHALL BE COORDINATED WITH THE TOWN OF CHAPEL HILL.
2. ALL SIGNAGE SHALL MEET MUTCD STANDARDS AND SPECIFICATIONS.
3. ALL SIGNAGE SHALL MEET NCDOT PEDESTRIAN SAFETY SPECIFICATIONS.
4. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) AND/OR TOWN OF CHAPEL HILL STANDARDS AND SPECIFICATIONS.
5. ALL SIGNS SHALL BE PRISMATIC AND ADHERE TO THE MINIMAL RETROREFLECTIVITY STANDARDS FOUND IN THE LATEST VERSION OF THE MUTCD.
6. ALL PAVEMENT MARKINGS ON PUBLIC STREETS SHALL BE THERMOPLASTIC AND ARE TO BE PLACED PER NCDOT STANDARDS (REFERENCE 2012 NCDOT DETAILS (1205.01~1205.12)
7. SIGN DESIGNS FOR STREET NAME SIGNS SHALL BE APPROVED BY TRANSPORTATION/ENGINEERING DEPARTMENT STAFF TO ENSURE COMPLIANCE WITH MUTCD SPECIFICATIONS. DESIGNS MUST BE APPROVED BY TOWN STAFF PRIOR TO ACCEPTANCE OF STREETS OR ISSUANCE OF 1ST CO.
8. ALL STREET NAME SIGNS SHALL CONFORM TO THE LATEST EDITION OF THE MUTCD INCLUDING MIXED CASE LETTERING, PROPOPER LETTER HEIGHTS, AND RETROREFLECTIVITY.

LANDSCAPE PROTECTION NOTES:

1. PLAN SHOWS RARE AND SPECIMEN TREES IN ACCORDANCE WITH THE ORDINANCE THAT WAS IN EFFECT AT THE TIME OF APPROVAL.
2. LANDSCAPING ON EAST SIDE OF SITE ALONG THE ALTERNATIVE BUFFER SHALL BE COORDINATED TO PRESERVE EXISTING TREES AS MUCH AS POSSIBLE. PROPOSED PLANTINGS IN BUFFER MAY ENCROACH BEYOND "TREE PROTECTION" FENCE. CONFLICTS BETWEEN PROPOSED PLANTINGS AND EXISTING TREES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR REMEDIATION.
3. ALL IRRIGATION SYSTEMS SHALL BE EQUIPPED WITH AUTOMATIC CONTROLLERS THAT ACTIVATE THE SYSTEM ACCORDING TO A DESIRED FREQUENCY AND DURATION, AND SHALL ALSO BE EQUIPPED WITH RAIN OR SOIL MOISTURE SENSORS THAT WILL PREVENT IRRIGATION DURING PERIODS OF RAINFALL OR WHEN THERE IS SUFFICIENT MOISTURE IN THE GROUND FOR PLANT HEALTH AND SURVIVAL IN ACCORDANCE WITH THE LOCAL GOVERNMENT WATER CONSERVATION ORDINANCES.

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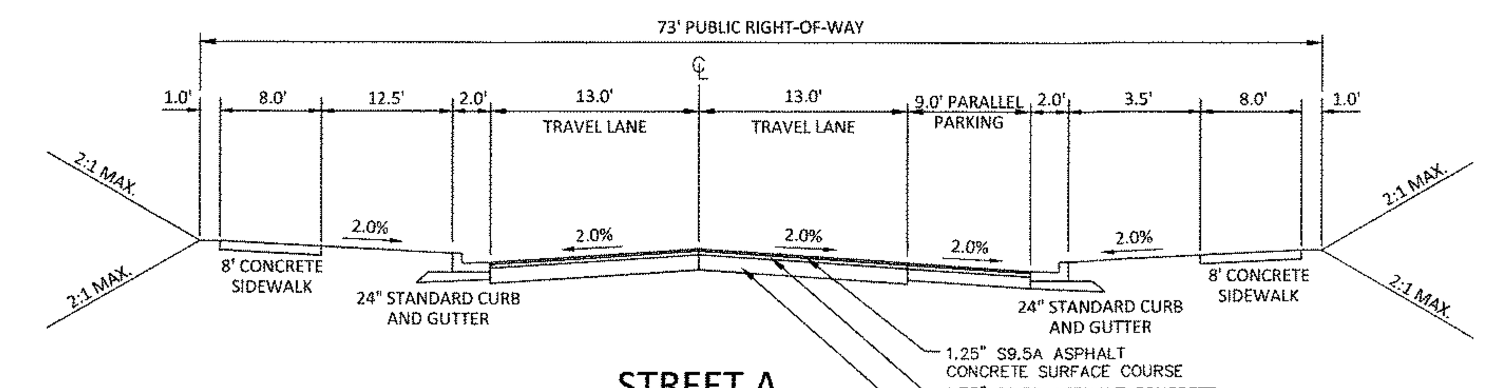
ORANGE COUNTY SOLID WASTE STANDARD PLAN NOTES (CONSTRUCTION WASTE):

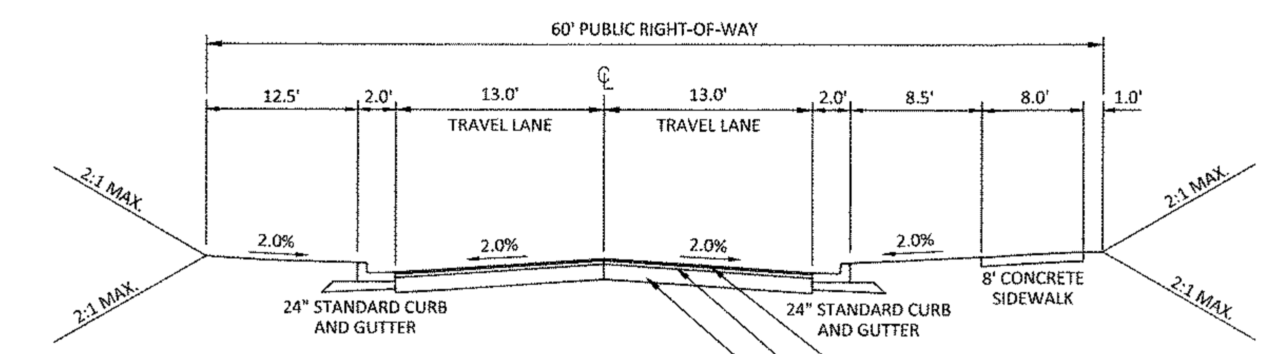
1. ALL EXISTING STRUCTURES 500 SQUARE FEET AND LARGER SHALL BE ASSESSED PRIOR TO THE ISSUANCE OF A DEMOLITION PERMIT TO ENSURE COMPLIANCE WITH THE COUNTY'S REGULATED RECYCLABLE MATERIALS ORDINANCE (RRMO) AND TO ASSESS THE POTENTIAL FOR DECONSTRUCTION AND/OR THE REUSE OF SALVAGEABLE MATERIALS. CONTACT THE ORANGE COUNTY SW ENFORCEMENT OFFICER AT 919-968-2788 TO ARRANGE FOR THE ASSESSMENT.
2. PURSUANT TO THE COUNTY'S RRMO, CLEAN WOOD WASTE, SCRAP METAL, AND CORRUGATED CARDBOARD PRESENT IN CONSTRUCTION OR DEMOLITION WASTE MUST BE RECYCLED.
3. PURSUANT TO THE COUNTY'S RRMO, ALL HAULERS OF MIXED CONSTRUCTION AND DEMOLITION WASTE WHICH INCLUDES ANY REGULATED RECYCLABLE MATERIALS SHALL BE LICENSED BY ORANGE COUNTY.
4. PRIOR TO ANY DEMOLITION OR CONSTRUCTION ACTIVITY ON THE SITE, THE APPLICANT SHALL HOLD A PRE-DEMOLITION/PRE-CONSTRUCTION CONFERENCE WITH SOLID WASTE STAFF. THIS MAY BE THE SAME PRE-CONSTRUCTION MEETING HELD WITH OTHER DEVELOPMENT/ENFORCEMENT OFFICIALS.
5. THE PRESENCE OF ANY ASBESTOS CONTAINING MATERIALS ('ACM') AND/OR OTHER HAZARDOUS MATERIALS SHALL BE HANDLED IN ACCORDANCE WITH ANY AND ALL LOCAL, STATE, AND FEDERAL REGULATIONS AND GUIDELINES.

CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.



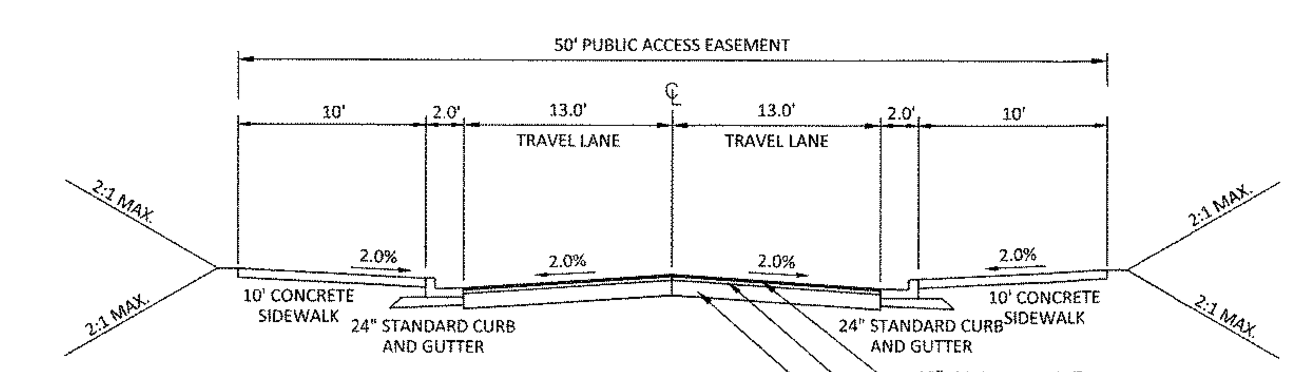
STREET A
PARALLEL PARKING 1-SIDE
(73' PUBLIC R/W)

NOTE:
1. SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.
2. THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



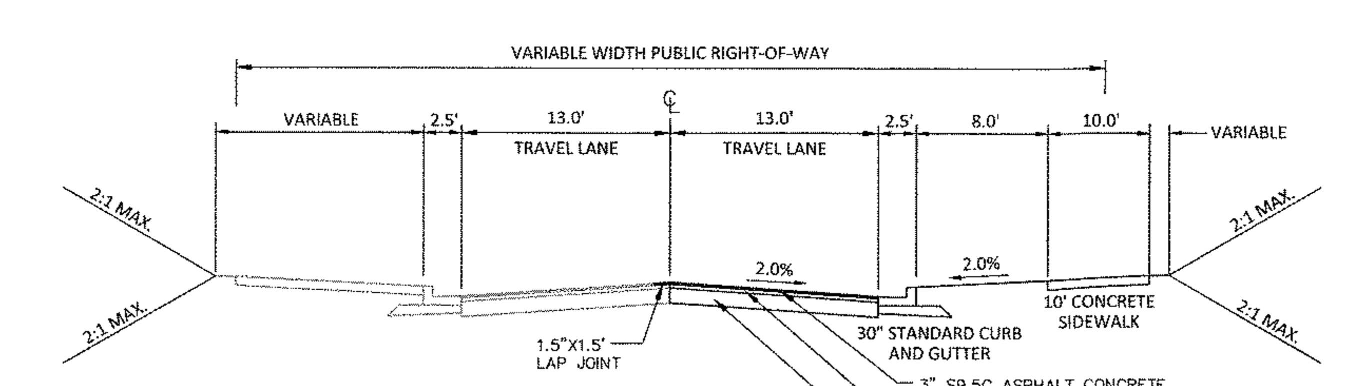
STREET B
NO PARKING
(60' PUBLIC R/W)

NOTE:
1. SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.
2. THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



STREET C
NO PARKING
(50' PUBLIC ACCESS EASEMENT)

NOTE:
1. SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.
2. THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



EPHESUS CHURCH RD.
NO PARKING
(VARIABLE WIDTH PUBLIC R/W)

NOTE:
1. SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.
2. THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

PERMIT SET

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1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER J. NATHAN BALES 9/3/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

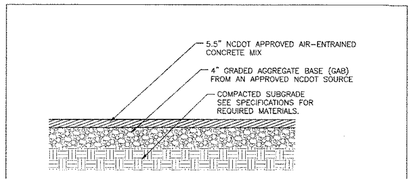
PROJECT NO.	WDF-17000
FILENAME	WDF17000-N1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

SHEET

PROJECT NOTES AND TYPICAL SECTIONS

C-3

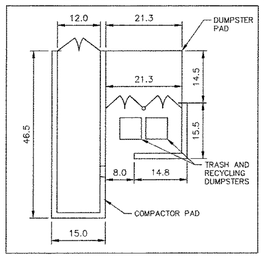
X:\Projects\WDF\WDF-17000\Land\Form District Permit\Current Drawings\WDF17000-N1.dwg, 9/3/2019 12:55:44 PM, Bales, Nathan



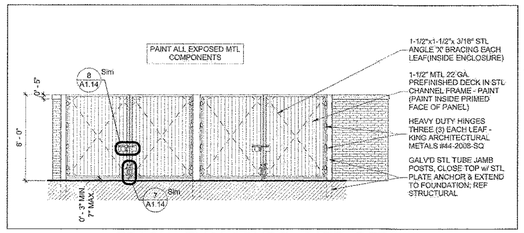
DUMPSTER PAD CONCRETE DETAIL

N.T.S.

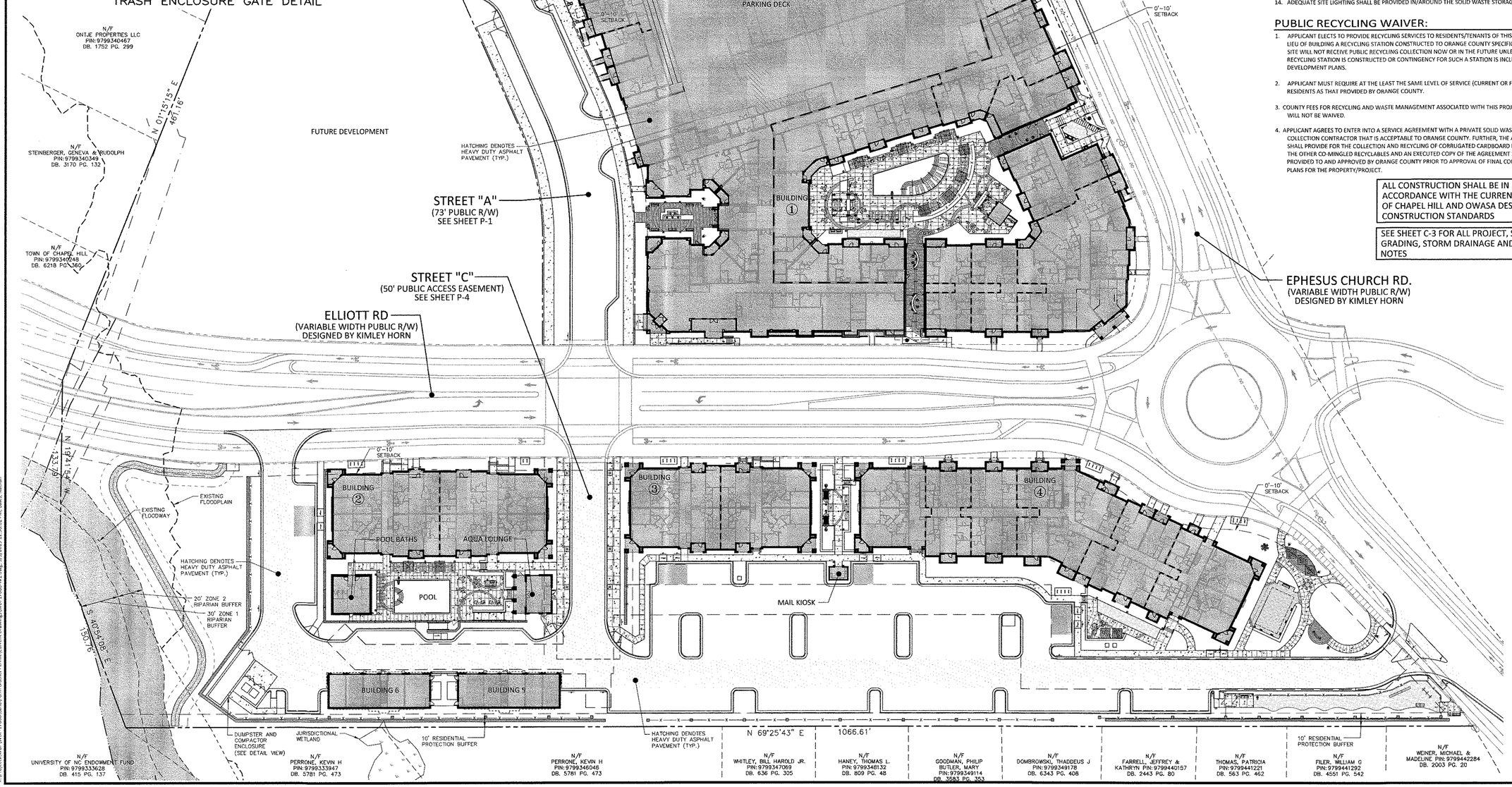
NOTE:
THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



DUMPSTER DETAIL
1"=20'



TRASH ENCLOSURE GATE DETAIL



SOLID WASTE AND RECYCLING NOTES:

1. ALL EXISTING STRUCTURES 500 SQUARE FEET AND LARGER IN SIZE SHALL BE ASSESSED PRIOR TO DEMOLITION TO ENSURE COMPLIANCE WITH THE COUNTY'S REGULATED RECYCLABLE MATERIALS ORDINANCE (RRMO) AND TO ASSESS THE POTENTIAL FOR DE-CONSTRUCTION AND/OR THE RE-USE OF SALVAGEABLE MATERIALS.
2. BY ORANGE COUNTY ORDINANCE, CLEAN WOOD WASTE, SCRAP METAL, AND CORRUGATED CARDBOARD PRESENT IN CONSTRUCTION OR DEMOLITION WASTE MUST BE RECYCLED.
3. BY ORANGE COUNTY ORDINANCE, ALL HAULERS OF MIXED CONSTRUCTION AND DEMOLITION WASTE THAT INCLUDES ANY REGULATED RECYCLABLE MATERIALS SHALL BE LICENSED BY ORANGE COUNTY.
4. PRIOR TO ANY DEMOLITION OR CONSTRUCTION ACTIVITY ON THE SITE THE APPLICANT SHALL HOLD A PRE-DEMOLITION/PRE-CONSTRUCTION CONFERENCE WITH THE SOLID WASTE STAFF (919-968-2788). THIS MAY BE THE SAME PRE-CONSTRUCTION MEETING HELD WITH OTHER DEVELOPMENT/ENFORCEMENT OFFICIALS.
5. THE PRESENCE OF ANY ASBESTOS CONTAINING MATERIALS ('ACM') AND/OR OTHER HAZARDOUS MATERIALS IN CONSTRUCTION AND DEMOLITION WASTE SHALL BE HANDLED IN ACCORDANCE WITH ANY AND ALL LOCAL, STATE, AND FEDERAL REGULATIONS AND GUIDELINES.
6. IF ANY VEHICLES ARE PARKED IN THE REFUSE OR RECYCLABLES COLLECTION VEHICLE ACCESS AREA, THE CONTAINERS WILL NOT RECEIVE SERVICE UNTIL THE NEXT SCHEDULED COLLECTION DAY.
7. TRASH WILL BE PLACED IN SEPARATE DUMPSTERS AND COLLECTED BY A PRIVATE WASTE COLLECTION CONTRACTOR.
8. ALL CONSTRUCTION WASTE MATERIALS CONTAINING REGULATED RECYCLABLE MATERIALS (SEE NOTE 2 ABOVE) SHALL BE RECYCLED PURSUANT TO THE ORANGE COUNTY REGULATED RECYCLABLE MATERIALS ORDINANCE (RRMO). CONTRACTORS SHALL RETAIN PICKUP SLIPS TO RECORD/VALIDATE RECYCLING AS MAY BE REQUIRED FOR ENVIRONMENTAL CREDITS.
9. THE OWNER, OR THEIR DESIGNEE, SHALL BE RESPONSIBLE FOR MAINTAINING A FIRE WATCH DURING CONSTRUCTION AND DEMOLITION WHERE MATERIALS SUBJECT TO SPONTANEOUS COMBUSTION OR OTHER HAZARDOUS CONSTRUCTION OR DEMOLITION IS OCCURRING.
10. ALL CONSTRUCTION AND DEMOLITION SHALL BE CONDUCTED IN COMPLIANCE WITH THE CURRENT EDITION OF CHAPTER 14 OF THE NC FPC.
11. ANY GATE DESIGN SHALL INCLUDE GATE RETAINERS.
12. THERE WILL BE ROOM IN THE DUMPSTER ENCLOSURES OR ADJACENT TO COMPACTOR AREAS DESIGNATED FOR RECYCLING BINS AS APPROVED BY THE ORANGE COUNTY SOLID WASTE DEPARTMENT.
13. ITEMS TO BE RECYCLED WILL INCLUDE ALL MATERIALS ACCEPTED BY ORANGE COUNTY SOLID WASTE (INCLUDED BUT NOT LIMITED TO:)
    - 13.1.1. GLASS (CLEAR, BROWN AND GREEN)
    - 13.1.2. PLASTIC
    - 13.1.3. NEWSPAPERS, MAGAZINES AND OTHER PAPER
    - 13.1.4. METAL CANS
    - 13.1.5. CARDBOARD
14. ADEQUATE SITE LIGHTING SHALL BE PROVIDED IN/AROUND THE SOLID WASTE STORAGE AREAS.

PUBLIC RECYCLING WAIVER:

1. APPLICANT ELECTS TO PROVIDE RECYCLING SERVICES TO RESIDENTS/TENANTS OF THIS PROPERTY IN LIEU OF BUILDING A RECYCLING STATION CONSTRUCTED TO ORANGE COUNTY SPECIFICATIONS. THE SITE WILL NOT RECEIVE PUBLIC RECYCLING COLLECTION NOW OR IN THE FUTURE UNLESS SUCH A RECYCLING STATION IS CONSTRUCTED OR CONTINGENCY FOR SUCH A STATION IS INCLUDED ON THE DEVELOPMENT PLANS.
2. APPLICANT MUST REQUIRE AT THE LEAST THE SAME LEVEL OF SERVICE (CURRENT OR FUTURE) TO ITS RESIDENTS AS THAT PROVIDED BY ORANGE COUNTY.
3. COUNTY FEES FOR RECYCLING AND WASTE MANAGEMENT ASSOCIATED WITH THIS PROJECT/PROPERTY WILL NOT BE WAIVED.
4. APPLICANT AGREES TO ENTER INTO A SERVICE AGREEMENT WITH A PRIVATE SOLID WASTE/RECYCLING COLLECTION CONTRACTOR THAT IS ACCEPTABLE TO ORANGE COUNTY. FURTHER, THE AGREEMENT SHALL PROVIDE FOR THE COLLECTION AND RECYCLING OF CORRUGATED CARDBOARD IN ADDITION TO THE OTHER CO-MINGLED RECYCLABLES AND AN EXECUTED COPY OF THE AGREEMENT SHALL BE PROVIDED TO AND APPROVED BY ORANGE COUNTY PRIOR TO APPROVAL OF FINAL CONSTRUCTION PLANS FOR THE PROPERTY/PROJECT.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL AND OWASA DESIGN AND CONSTRUCTION STANDARDS

SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES
8/30/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-W1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

SOLID WASTE PLAN

C-4

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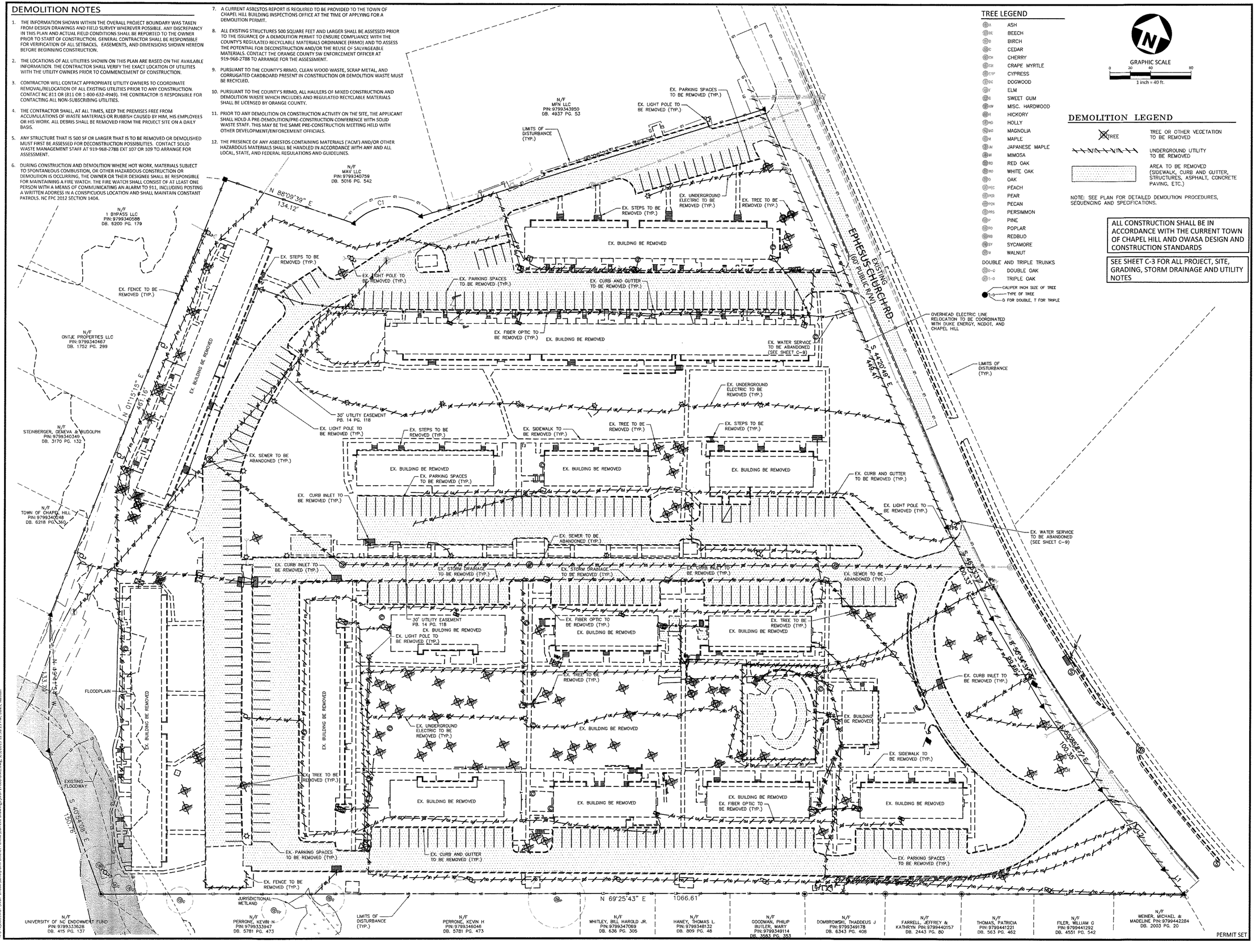
DEMOLITION NOTES

1. THE INFORMATION SHOWN WITHIN THE OVERALL PROJECT BOUNDARY WAS TAKEN FROM DESIGN DRAWINGS AND FIELD SURVEY WHEREVER POSSIBLE. ANY DISCREPANCY IN THIS PLAN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE OWNER PRIOR TO START OF CONSTRUCTION. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS, AND DIMENSIONS SHOWN HEREON BEFORE BEGINNING CONSTRUCTION.
2. THE LOCATIONS OF ALL UTILITIES SHOWN ON THIS PLAN ARE BASED ON THE AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UTILITIES WITH THE UTILITY OWNERS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. CONTRACTOR WILL CONTACT APPROPRIATE UTILITY OWNERS TO COORDINATE REMOVAL/RELOCATION OF ALL EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. CONTACT NC 811 OR (811 OR 1-800-632-4949). THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL NON-SUBSCRIBING UTILITIES.
4. THE CONTRACTOR SHALL, AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIALS OR RUBBISH CAUSED BY HIM, HIS EMPLOYEES OR HIS WORK. ALL DEBRIS SHALL BE REMOVED FROM THE PROJECT SITE ON A DAILY BASIS.
5. ANY STRUCTURE THAT IS 500 SF OR LARGER THAT IS TO BE REMOVED OR DEMOLISHED MUST FIRST BE ASSESSED FOR DECONSTRUCTION POSSIBILITIES. CONTACT SOLID WASTE MANAGEMENT STAFF AT 919-968-2788 EXT 107 OR 109 TO ARRANGE FOR ASSESSMENT.
6. DURING CONSTRUCTION AND DEMOLITION WHERE HOT WORK, MATERIALS SUBJECT TO SPONTANEOUS COMBUSTION, OR OTHER HAZARDOUS CONSTRUCTION OR DEMOLITION IS OCCURRING, THE OWNER OR THEIR DESIGNEE SHALL BE RESPONSIBLE FOR MAINTAINING A FIRE WATCH. THE FIRE WATCH SHALL CONSIST OF AT LEAST ONE PERSON WITH A MEANS OF COMMUNICATING AN ALARM TO 911, INCLUDING POSTING A WRITTEN ADDRESS IN A CONSPICUOUS LOCATION AND SHALL MAINTAIN CONSTANT PATROLS. NC FPC 2012 SECTION 1404.
7. A CURRENT ASBESTOS REPORT IS REQUIRED TO BE PROVIDED TO THE TOWN OF CHAPEL HILL BUILDING INSPECTIONS OFFICE AT THE TIME OF APPLYING FOR A DEMOLITION PERMIT.
8. ALL EXISTING STRUCTURES 500 SQUARE FEET AND LARGER SHALL BE ASSESSED PRIOR TO THE ISSUANCE OF A DEMOLITION PERMIT TO ENSURE COMPLIANCE WITH THE COUNTY'S REGULATED RECYCLABLE MATERIALS ORDINANCE (RRMO) AND TO ASSESS THE POTENTIAL FOR DECONSTRUCTION AND/OR THE REUSE OF SALVAGEABLE MATERIALS. CONTACT THE ORANGE COUNTY SW ENFORCEMENT OFFICER AT 919-968-2788 TO ARRANGE FOR THE ASSESSMENT.
9. PURSUANT TO THE COUNTY'S RRMO, CLEAN WOOD WASTE, SCRAP METAL, AND CORRUGATED CARDBOARD PRESENT IN CONSTRUCTION OR DEMOLITION WASTE MUST BE RECYCLED.
10. PURSUANT TO THE COUNTY'S RRMO, ALL HAULERS OF MIXED CONSTRUCTION AND DEMOLITION WASTE WHICH INCLUDES AND REGULATED RECYCLABLE MATERIALS SHALL BE LICENSED BY ORANGE COUNTY.
11. PRIOR TO ANY DEMOLITION OR CONSTRUCTION ACTIVITY ON THE SITE, THE APPLICANT SHALL HOLD A PRE-DEMOLITION/PRE-CONSTRUCTION CONFERENCE WITH SOLID WASTE STAFF. THIS MAY BE THE SAME PRE-CONSTRUCTION MEETING HELD WITH OTHER DEVELOPMENT/ENFORCEMENT OFFICIALS.
12. THE PRESENCE OF ANY ASBESTOS-CONTAINING MATERIALS ('ACM') AND/OR OTHER HAZARDOUS MATERIALS SHALL BE HANDLED IN ACCORDANCE WITH ANY AND ALL LOCAL, STATE, AND FEDERAL REGULATIONS AND GUIDELINES.



TREE LEGEND

- A — ASH
- BE — BEECH
- B — BIRCH
- C — CEDAR
- CH — CHERRY
- CM — CRAPE MYRTLE
- CY — CYPRESS
- DC — DOGWOOD
- E — ELM
- G — SWEET GUM
- HW — MISC. HARDWOOD
- H — HICKORY
- HO — HOLLY
- MG — MAGNOLIA
- M — MAPLE
- JM — JAPANESE MAPLE
- MI — MIMOSA
- RO — RED OAK
- WO — WHITE OAK
- O — OAK
- PC — PEACH
- PR — PEAR
- PN — PECAN
- PS — PERSIMMON
- P — PINE
- PO — POPLAR
- RB — REDBUD
- SY — SYCAMORE
- W — WALNUT

DOUBLE AND TRIPLE TRUNKS

- D-O — DOUBLE OAK
- T-O — TRIPLE OAK

CALIPER INCH SIZE OF TREE
T-O — TYPE OF TREE
D FOR DOUBLE, T FOR TRIPLE

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

DEMOLITION LEGEND

- TREE — TREE OR OTHER VEGETATION TO BE REMOVED
- UNDERGROUND UTILITY TO BE REMOVED
- AREA TO BE REMOVED (SIDEWALK, CURB AND GUTTER, STRUCTURES, ASPHALT, CONCRETE PAVING, ETC.)

NOTE: SEE PLAN FOR DETAILED DEMOLITION PROCEDURES, SEQUENCING AND SPECIFICATIONS.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL AND OWASA DESIGN AND CONSTRUCTION STANDARDS

SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 9/3/19

REVISIONS

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3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-DM1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

DEMOLITION PLAN

C-5

PERMIT SET

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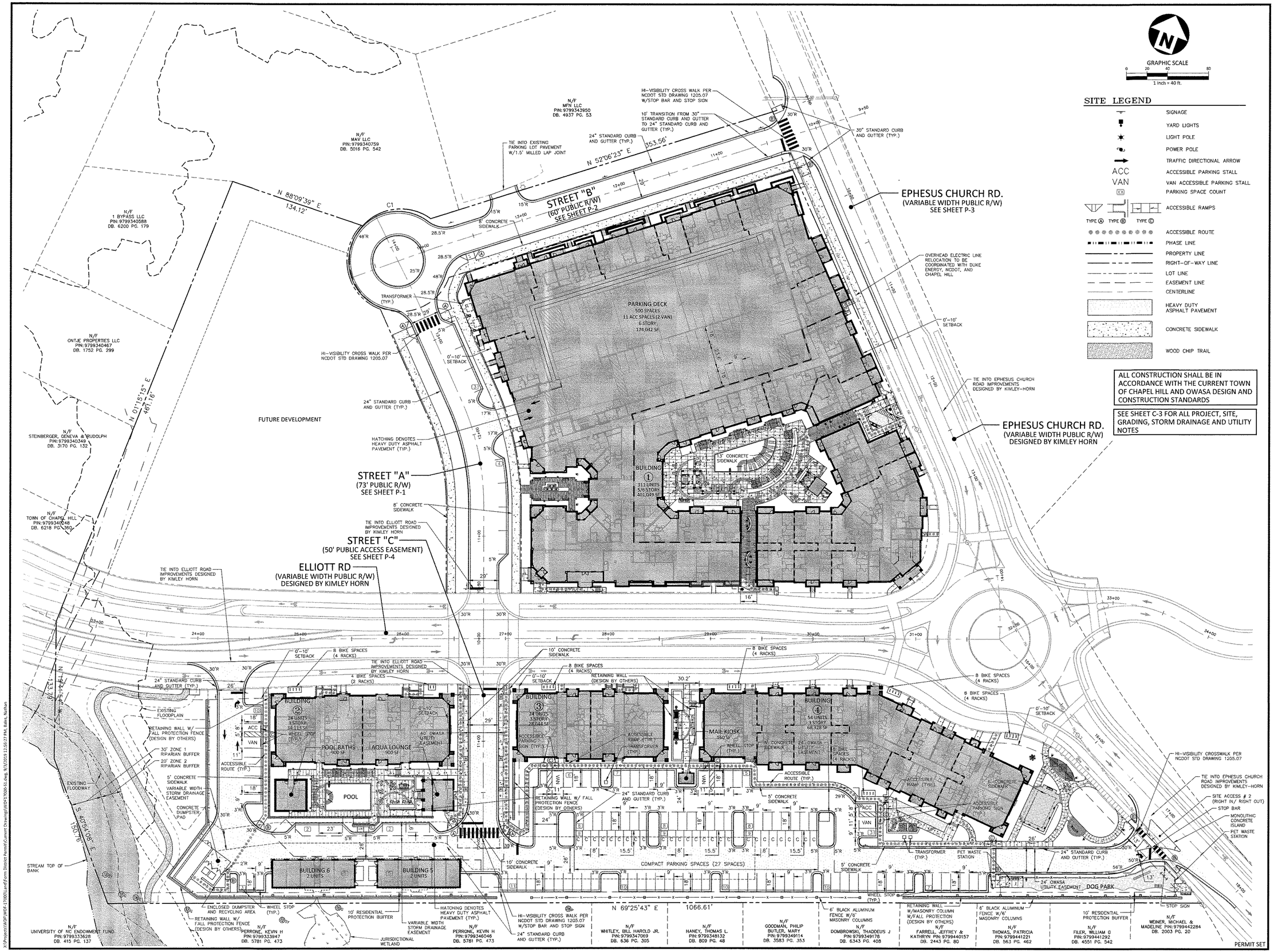

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PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-S1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

SITE PLAN

C-6

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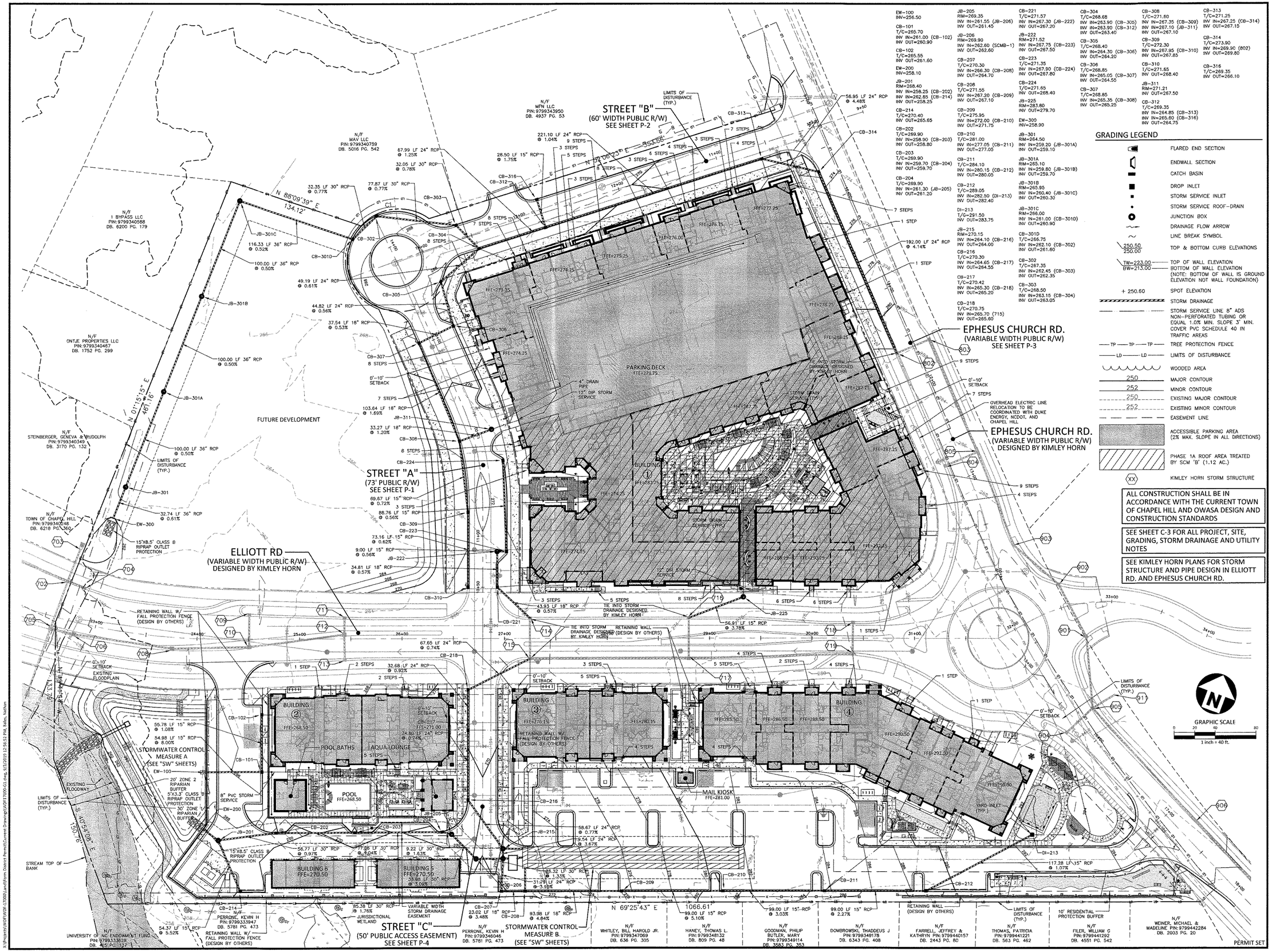

GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-DRAIN
- JUNCTION BOX
- DRAINAGE FLOW ARROW
- LINE BREAK SYMBOL
- 250.50 / 250.00 — TOP & BOTTOM CURB ELEVATIONS
- TW=223.00 / BW=213.00 — TOP OF WALL ELEVATION / BOTTOM OF WALL ELEVATION (NOTE: BOTTOM OF WALL IS GROUND ELEVATION NOT WALL FOUNDATION)
- + 250.60 — SPOT ELEVATION
- STORM DRAINAGE
- STORM SERVICE LINE 8" ADS NON-PERFORATED TUBING OR EQUAL 1.0% MIN. SLOPE 3' MIN. COVER PVC SCHEDULE 40 IN TRAFFIC AREAS
- TP — TREE PROTECTION FENCE
- LD — LIMITS OF DISTURBANCE
- WOODED AREA
- 250 — MAJOR CONTOUR
- 252 — MINOR CONTOUR
- 250 — EXISTING MAJOR CONTOUR
- 252 — EXISTING MINOR CONTOUR
- EASEMENT LINE
- ACCESSIBLE PARKING AREA (2% MAX. SLOPE IN ALL DIRECTIONS)
- PHASE 1A ROOF AREA TREATED BY SCM 'B' (1.12 AC.)
- XX — KIMLEY HORN STORM STRUCTURE

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL AND OWASA DESIGN AND CONSTRUCTION STANDARDS

SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

SEE KIMLEY HORN PLANS FOR STORM STRUCTURE AND PIPE DESIGN IN ELLIOTT RD. AND EPHESUS CHURCH RD.

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NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 10/1/19

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PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-G1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

GRADING AND STORM DRAINAGE PLAN

C-7

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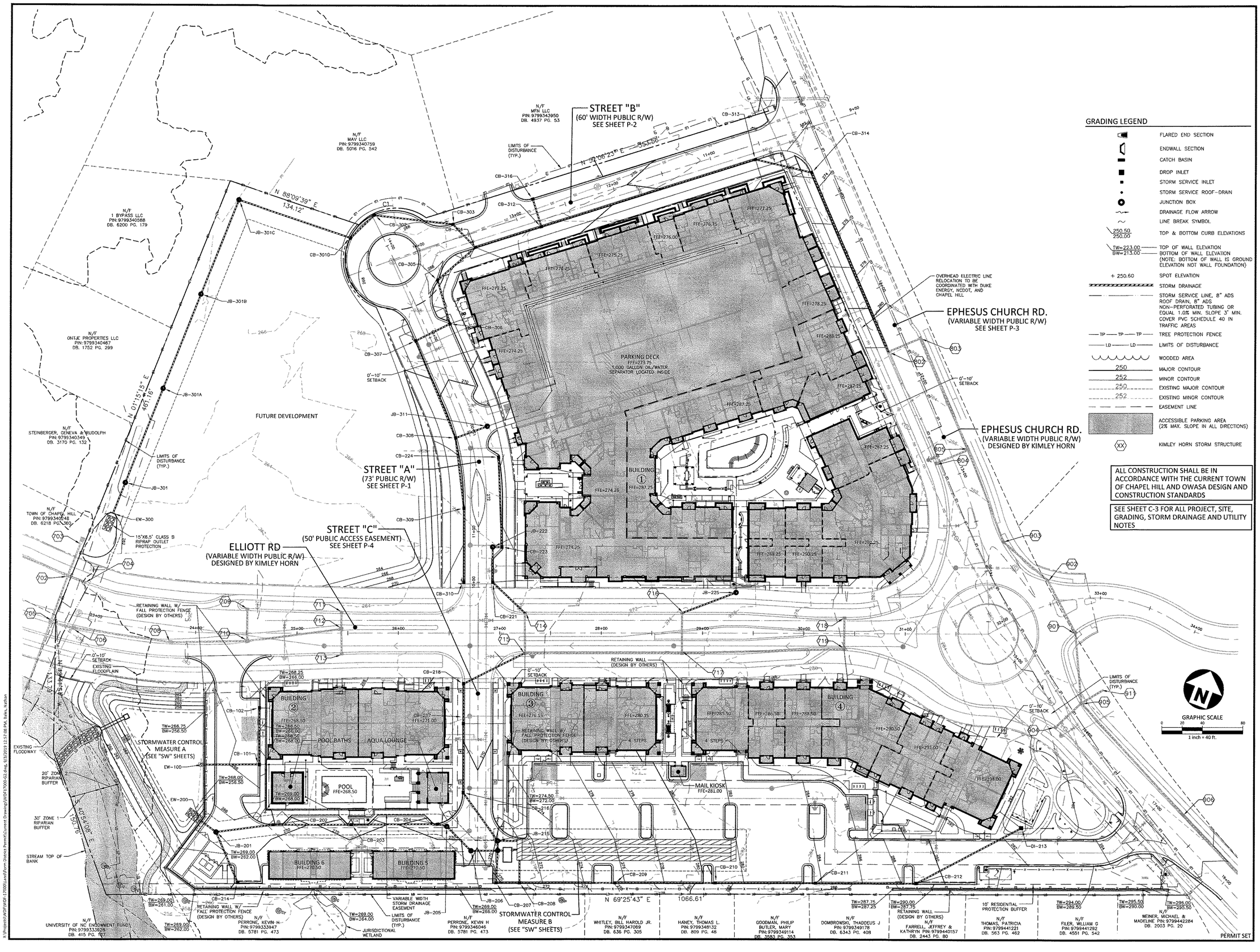

GRADING LEGEND

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- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-DRAIN
- JUNCTION BOX
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- 250.50 / 250.00 — TOP & BOTTOM CURB ELEVATIONS
- TW=223.00 / BW=213.00 — TOP OF WALL ELEVATION / BOTTOM OF WALL ELEVATION (NOTE: BOTTOM OF WALL IS GROUND ELEVATION NOT WALL FOUNDATION)
- + 250.60 — SPOT ELEVATION
- STORM DRAINAGE
- STORM SERVICE LINE, 8" ADS ROOF DRAIN, 8" ADS NON-PERFORATED TUBING OR EQUAL 1.0% MIN. SLOPE 3' MIN. COVER PVC SCHEDULE 40 IN TRAFFIC AREAS
- TP — TREE PROTECTION FENCE
- LD — LIMITS OF DISTURBANCE
- WOODED AREA
- 250 — MAJOR CONTOUR
- 252 — MINOR CONTOUR
- 250 — EXISTING MAJOR CONTOUR
- 252 — EXISTING MINOR CONTOUR
- EASEMENT LINE
- ACCESSIBLE PARKING AREA (2% MAX. SLOPE IN ALL DIRECTIONS)
- XX — KIMLEY HORN STORM STRUCTURE

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL AND OWASA DESIGN AND CONSTRUCTION STANDARDS

SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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PARK APARTMENTS

FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER ZACHARY NATHAN BAILES

3/8/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-G1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

DETAILED GRADING AND STORM DRAINAGE PLAN

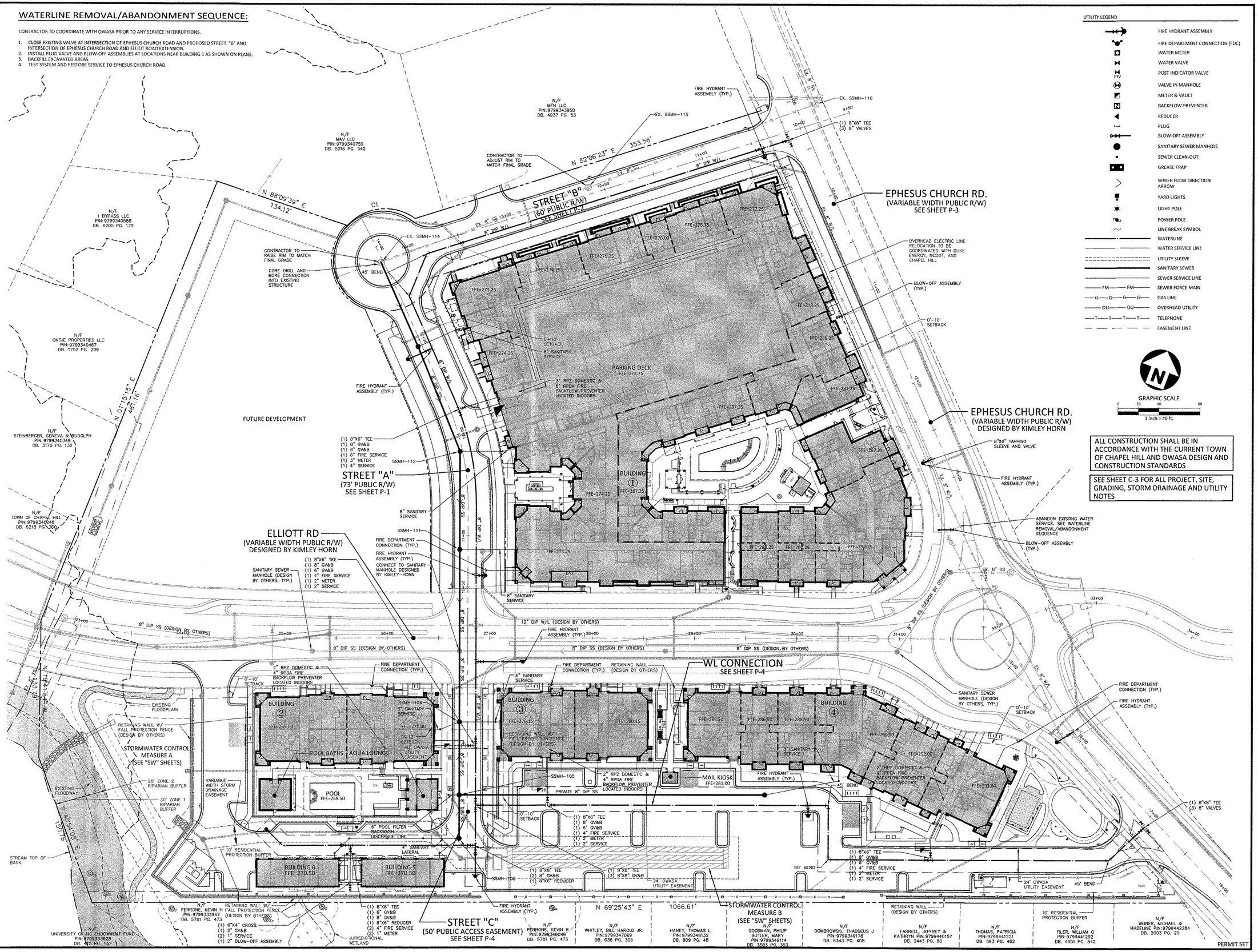
C-8

X:\Projects\WDF\WDF-17000\Land\Form District Permit\Current Drawings\WDF17000-G2.dwg, 3/8/2019 12:57:08 PM, Bailes, Nathan

WATERLINE REMOVAL/ABANDONMENT SEQUENCE:

CONTRACTOR TO COORDINATE WITH OWASA PRIOR TO ANY SERVICE INTERRUPTIONS.

1. CLOSE EXISTING VALVE AT INTERSECTION OF EPHESUS CHURCH ROAD AND PROPOSED STREET "B" AND INTERSECTION OF EPHESUS CHURCH ROAD AND ELLIOT ROAD EXTENSION.
2. INSTALL PLUG VALVE AND BLOW-OFF ASSEMBLIES AT LOCATIONS NEAR BUILDING 1 AS SHOWN ON PLANS.
3. BACKFILL EXCAVATED AREAS.
4. TEST SYSTEM AND RESTORE SERVICE TO EPHESUS CHURCH ROAD.



UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER METER
- WATER VALVE
- POST INDICATOR VALVE
- VALVE IN MANHOLE
- METER & VAULT
- BACKFLOW PREVENTER
- REDUCER
- PLUG
- BLOW-OFF ASSEMBLY
- SANITARY SEWER MANHOLE
- SEWER CLEAN-OUT
- GREASE TRAP
- SEWER FLOW DIRECTION ARROW
- YARD LIGHTS
- LIGHT POLE
- POWER POLE
- LINE BREAK SYMBOL
- WATERLINE
- WATER SERVICE LINE
- UTILITY SLEEVE
- SANITARY SEWER
- SEWER SERVICE LINE
- FM — SEWER FORCE MAIN
- G — GAS LINE
- OU — OVERHEAD UTILITY
- T — TELEPHONE
- EASEMENT LINE

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

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NORTH CAROLINA PROFESSIONAL SEAL 042868 ENGINEER NATHAN BALES
9/3/19

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4	08. 30. 2019	PERMIT SET

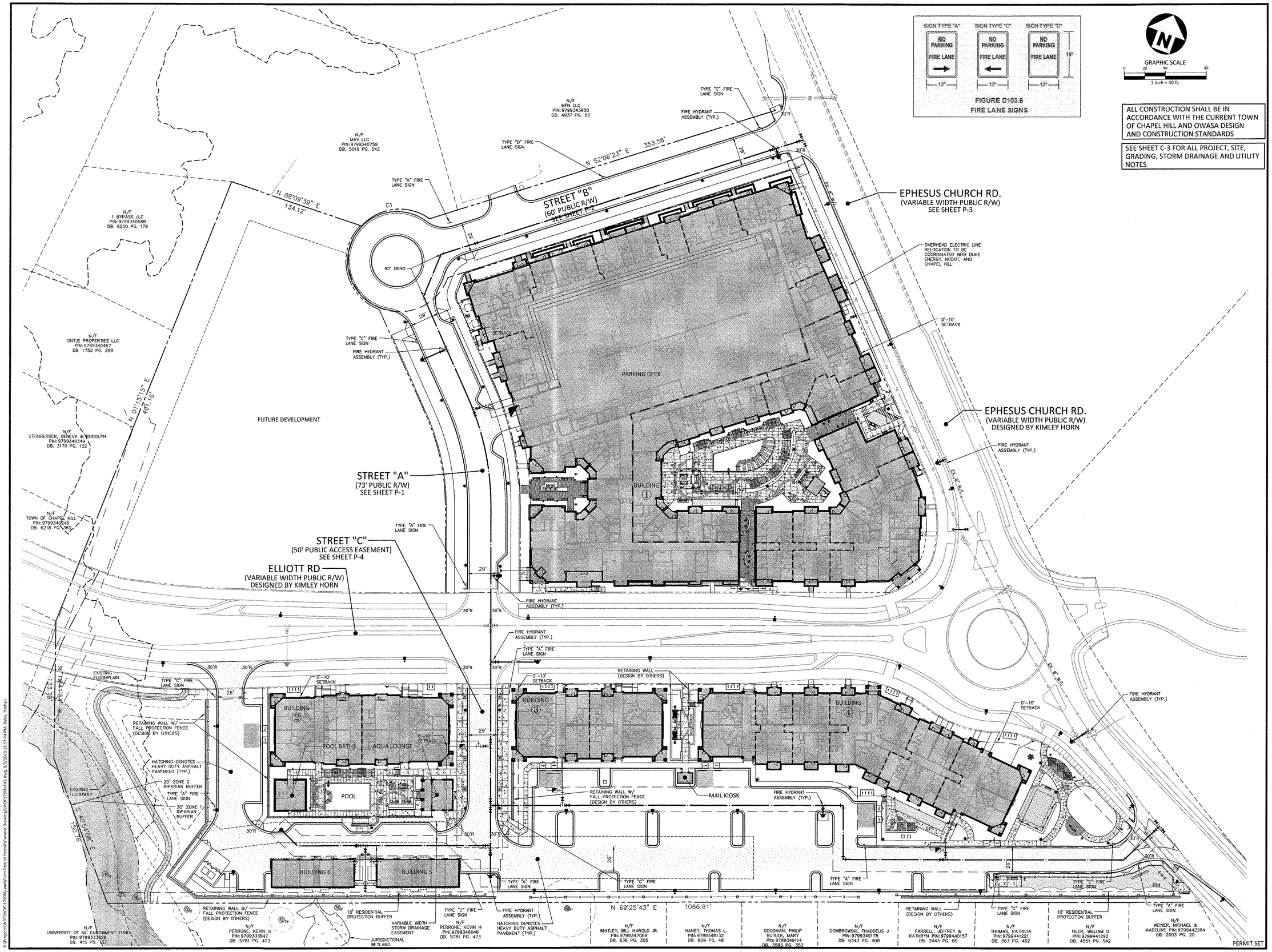
PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-U1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

UTILITY PLAN

C-9



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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL 024362 ENGINEER NATHAN BALES 9/2/19

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PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-FA1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

FIRE PROTECTION PLAN

C-10

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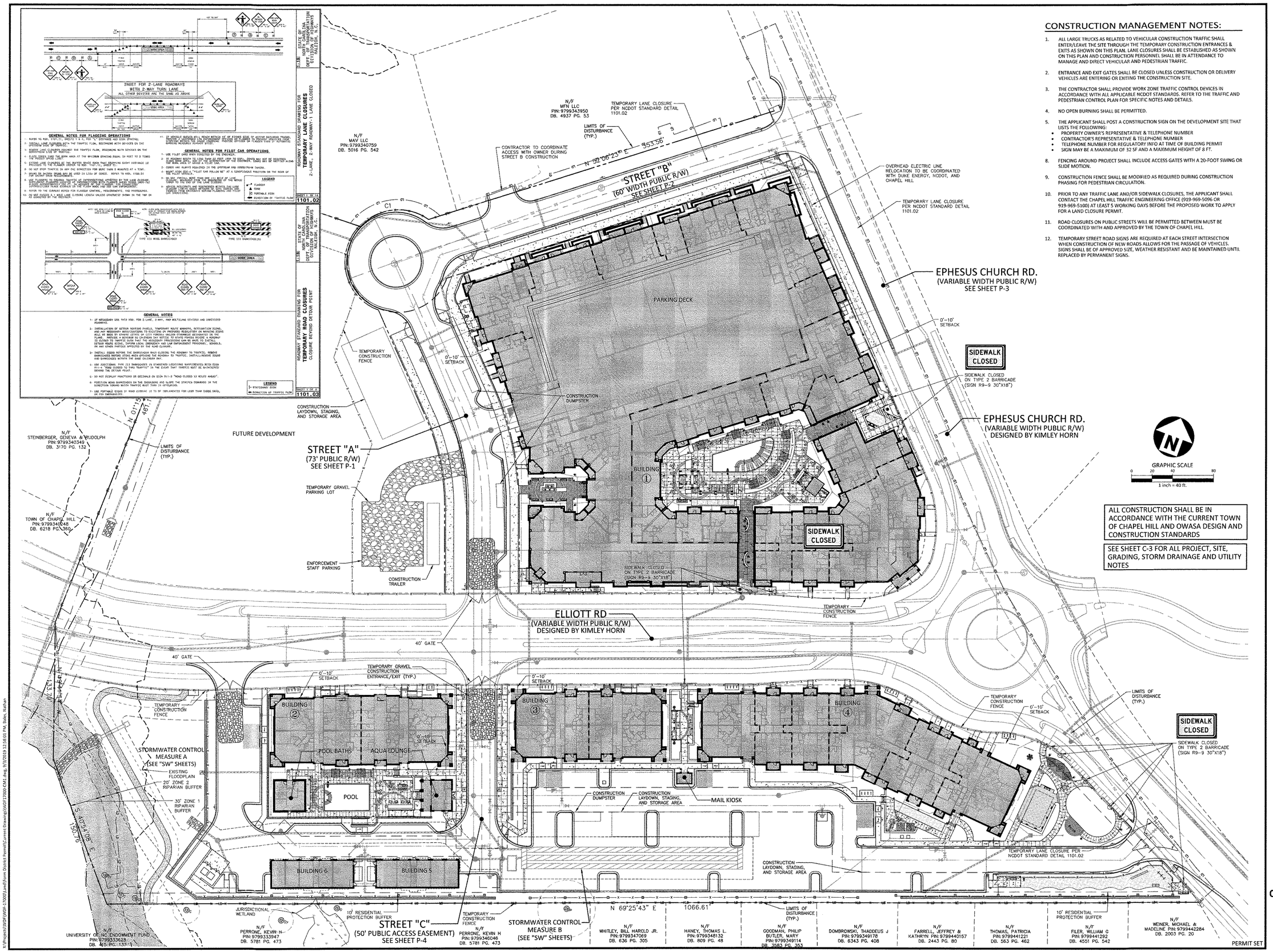

CONSTRUCTION MANAGEMENT NOTES:

1. ALL LARGE TRUCKS AS RELATED TO VEHICULAR CONSTRUCTION TRAFFIC SHALL ENTER/LEAVE THE SITE THROUGH THE TEMPORARY CONSTRUCTION ENTRANCES & EXITS AS SHOWN ON THIS PLAN. LANE CLOSURES SHALL BE ESTABLISHED AS SHOWN ON THIS PLAN AND CONSTRUCTION PERSONNEL SHALL BE IN ATTENDANCE TO MANAGE AND DIRECT VEHICULAR AND PEDESTRIAN TRAFFIC.
2. ENTRANCE AND EXIT GATES SHALL BE CLOSED UNLESS CONSTRUCTION OR DELIVERY VEHICLES ARE ENTERING OR EXITING THE CONSTRUCTION SITE.
3. THE CONTRACTOR SHALL PROVIDE WORK ZONE TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH ALL APPLICABLE NCDOT STANDARDS. REFER TO THE TRAFFIC AND PEDESTRIAN CONTROL PLAN FOR SPECIFIC NOTES AND DETAILS.
4. NO OPEN BURNING SHALL BE PERMITTED.
5. THE APPLICANT SHALL POST A CONSTRUCTION SIGN ON THE DEVELOPMENT SITE THAT LISTS THE FOLLOWING:
   - PROPERTY OWNER'S REPRESENTATIVE & TELEPHONE NUMBER
   - CONTRACTOR'S REPRESENTATIVE & TELEPHONE NUMBER
   - TELEPHONE NUMBER FOR REGULATORY INFO AT TIME OF BUILDING PERMIT
   - SIGN MAY BE A MAXIMUM OF 32 SF AND A MAXIMUM HEIGHT OF 8 FT.
8. FENCING AROUND PROJECT SHALL INCLUDE ACCESS GATES WITH A 20-FOOT SWING OR SLIDE MOTION.
9. CONSTRUCTION FENCE SHALL BE MODIFIED AS REQUIRED DURING CONSTRUCTION PHASING FOR PEDESTRIAN CIRCULATION.
10. PRIOR TO ANY TRAFFIC LANE AND/OR SIDEWALK CLOSURES, THE APPLICANT SHALL CONTACT THE CHAPEL HILL TRAFFIC ENGINEERING OFFICE (919-969-5096 OR 919-969-5100) AT LEAST 5 WORKING DAYS BEFORE THE PROPOSED WORK TO APPLY FOR A LAND CLOSURE PERMIT.
11. ROAD CLOSURES ON PUBLIC STREETS WILL BE PERMITTED BETWEEN MUST BE COORDINATED WITH AND APPROVED BY THE TOWN OF CHAPEL HILL.
12. TEMPORARY STREET ROAD SIGNS ARE REQUIRED AT EACH STREET INTERSECTION WHEN CONSTRUCTION OF NEW ROADS ALLOWS FOR THE PASSAGE OF VEHICLES. SIGNS SHALL BE OF APPROVED SIZE, WEATHER RESISTANT AND BE MAINTAINED UNTIL REPLACED BY PERMANENT SIGNS.

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL 042 ENGINEER NATHAN BALES 9/2/19

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PLAN INFORMATION

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FILENAME	WDF17000-CM1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

CONSTRUCTION MANAGEMENT & TRAFFIC CONTROL PLAN

C-11

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Figure 6H-28. Sidewalk Detour or Diversion (TA-28)

Typical Application 28

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

FIGURE 6H–28
SIDEWALK DETOUR OR DIVERSION (TA–28)

FIGURE 6F–7
CHANNELIZING DEVICES – SIDEWALK BARRICADE

*WARNING LIGHTS (OPTIONAL)
**RAIL STRIPE WIDTHS SHALL BE 6 INCHES, EXCEPT THAT 4–INCH WIDE STRIPS MAY BE USED IF RAIL LENGTHS ARE LESS THAN 36 INCHES. THE SIDES OF BARRICADES FACING TRAFFIC SHALL HAVE RETROREFLECTIVE RAIL FACES.

SIGNAGE NOTES

1. ALL SIGNAGE SHALL BE COORDINATED WITH TOWN OF CHAPEL HILL.
2. ALL SIGNAGE SHALL MEET MUTCD STANDARDS AND SPECIFICATIONS.
3. ALL SIGNAGE SHALL MEET NCDOT PEDESTRIAN SAFETY SPECIFICATIONS.
4. ALL PEDESTRIAN SIGNAGE SHALL BE MOUNTED ON TYPE 2 BARRICADES COMPLIANT WITH 2009 MUTCD SECTION 6F.63.

PEDESTRIAN PROTECTION PLAN

GENERAL NOTES

1. ROUTE SHALL BE ACCESSIBLE AT ALL TIMES PER ADA.
2. KEEP PEDESTRIAN ROUTE CLEAR OF CONSTRUCTION ACTIVITIES.
3. UNIQUE PEDESTRIANS NEEDS SHALL BE COORDINATED WITH THE SITE CONTRACTOR.

LEGEND

●●●●●●●●●●● ROUTE

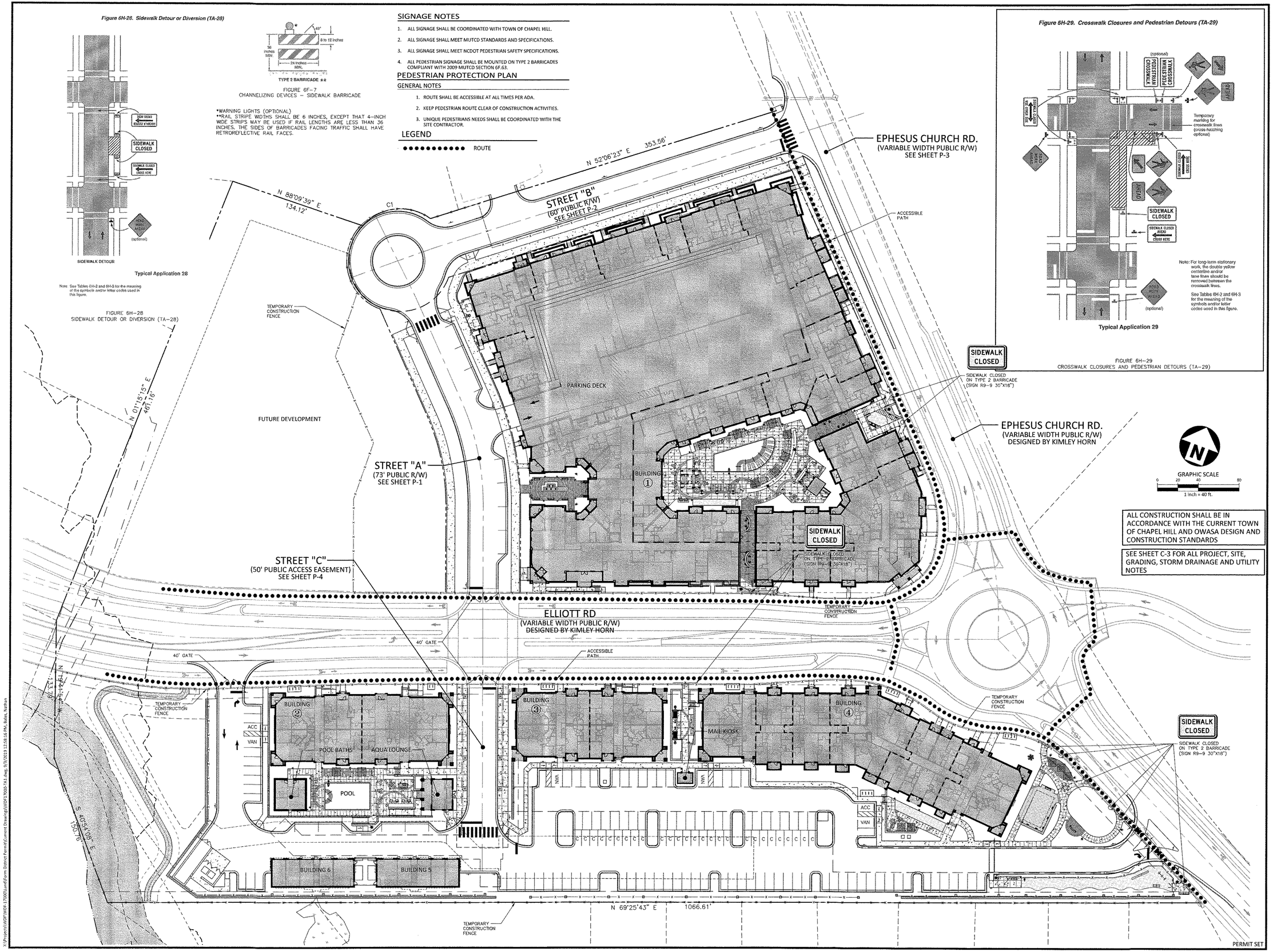
Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)

Typical Application 29

Note: For long-term stationary work, the double yellow centerline and/or lane lines should be removed between the crosswalk lines.

See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

FIGURE 6H–29
CROSSWALK CLOSURES AND PEDESTRIAN DETOURS (TA–29)



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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 9/3/19

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3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-TA1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

PEDESTRIAN CONTROL PLAN

C-12

PERMIT SET

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McADAMS

AASHTO INTERSECTION SIGHT DISTANCE SUMMARY

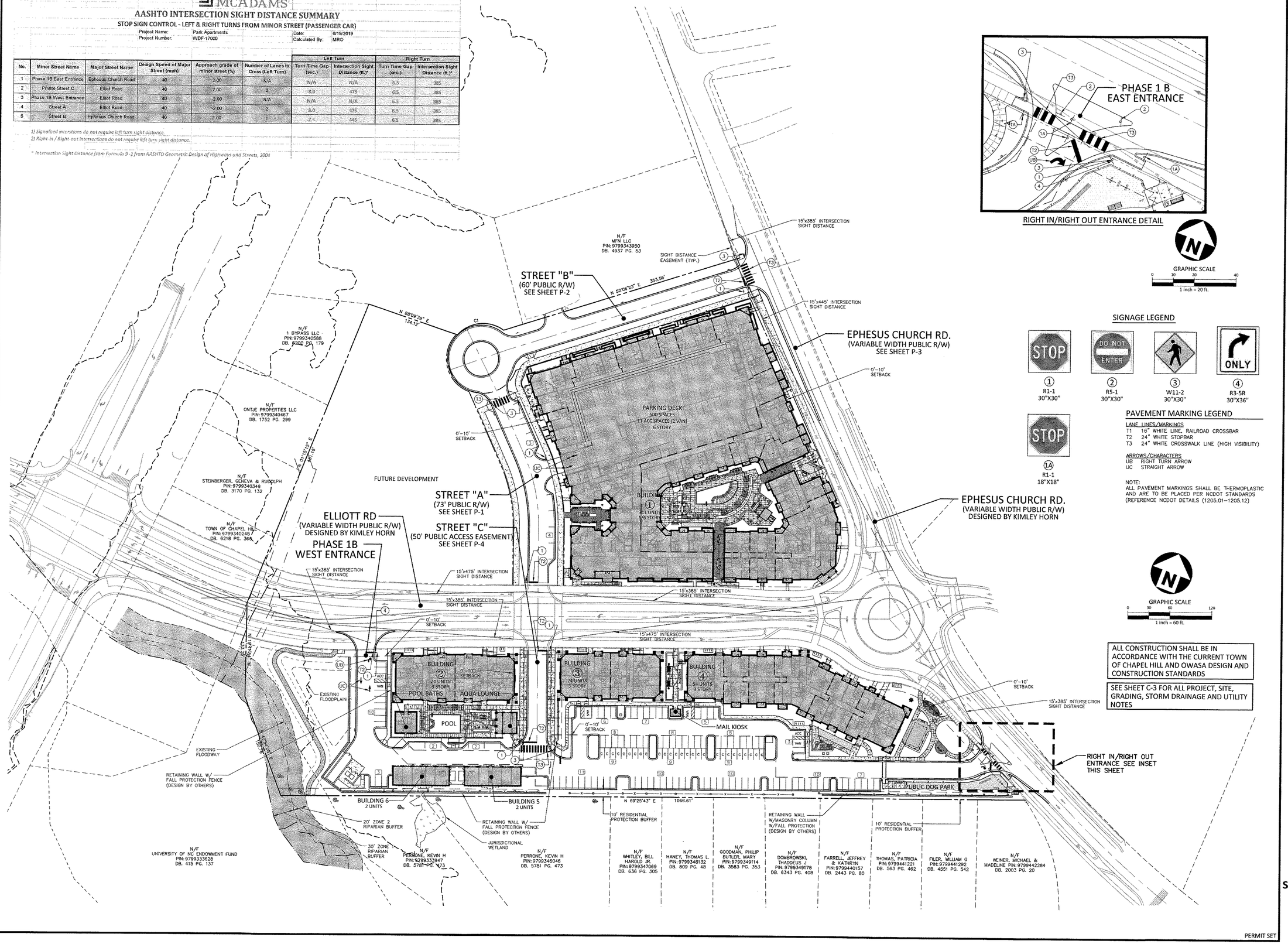
STOP SIGN CONTROL - LEFT & RIGHT TURNS FROM MINOR STREET (PASSENGER CAR)

Project Name: Park Apartments
Project Number: WDF-17000
Date: 6/19/2019
Calculated By: MRO

No.	Minor Street Name	Major Street Name	Design Speed of Major Street (mph)	Approach grade of minor street (%)	Number of Lanes to Cross (Left Turn)	Left Turn		Right Turn	
						Turn Time Gap (sec.)	Intersection Sight Distance (ft.)*	Turn Time Gap (sec.)	Intersection Sight Distance (ft.)*
1	Phase 1B East Entrance	Ephesus Church Road	40	2.00	N/A	N/A	N/A	6.5	385
2	Private Street C	Elliot Road	40	2.00	2	8.0	475	6.5	385
3	Phase 1B West Entrance	Elliot Road	40	2.00	N/A	N/A	N/A	6.5	385
4	Street A	Elliot Road	40	2.00	2	8.0	475	6.5	385
5	Street B	Ephesus Church Road	40	2.00	1	7.5	445	6.5	385

1) Signalized intersections do not require left turn sight distance.
2) Right-in / Right-out intersections do not require left turn sight distance.

** Intersection Sight Distance from Formula 9 -1 from AASHTO Geometric Design of Highways and Streets, 2004*



RIGHT IN/RIGHT OUT ENTRANCE DETAIL

GRAPHIC SCALE
0 10 20 40
1 inch = 20 ft.

GRAPHIC SCALE
0 30 60 120
1 inch = 60 ft.

SIGNAGE LEGEND

STOP	DO NOT ENTER		ONLY
1 R1-1 30"X30"	2 R5-1 30"X30"	3 W11-2 30"X30"	4 R3-5R 30"X36"

STOP
1A R1-1 18"X18"

PAVEMENT MARKING LEGEND

LANE LINES/MARKINGS
T1 16" WHITE LINE, RAILROAD CROSSBAR
T2 24" WHITE STOPBAR
T3 24" WHITE CROSSWALK LINE (HIGH VISIBILITY)

ARROWS/CHARACTERS
UB RIGHT TURN ARROW
UC STRAIGHT ARROW

NOTE:
ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC AND ARE TO BE PLACED PER NCDOT STANDARDS (REFERENCE NCDOT DETAILS (1205.01–1205.12)

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NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES
9/3/19

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PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-S2
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=60'
DATE	02. 28. 2019

SHEET

STOPPING SIGHT DISTANCE AND SIGNAGE PLAN

C-13

PERMIT SET

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CONSTRUCTION SEQUENCE – STAGE 1

1. OBTAIN A LAND-DISTURBING PERMIT AND SCHEDULE A PRECONSTRUCTION CONFERENCE WITH ORANGE COUNTY EROSION CONTROL OFFICER, WESLEY POOLE (919)245.2587. PRECONSTRUCTION MEETING SHALL INCLUDE A REPRESENTATIVE FROM OWASA, TOWN OF CHAPEL HILL, TOWN'S URBAN FORESTER, AND OWNER.

   NOTE: INSTALL A RURAL TYPE MAILBOX ON THE SITE TO HOLD A COPY OF THE APPROVED EROSION CONTROL PLAN AND TO PROVIDE A PLACE FOR INSPECTORS TO LEAVE INSPECTION REPORT, COMPLIANCE NOTICES, ETC.

2. INSTALL GRAVEL CONSTRUCTION ENTRANCE(S) AND TEMPORARY SILT FENCING WITH OUTLETS AS SHOWN ON THE APPROVED PLANS.
3. CONTRACTOR SHALL DEMOLISH AND CLEAR ONLY THOSE AREAS NECESSARY TO ACCESS AND INSTALL SEDIMENT BASINS AND TO INSTALL INITIAL PERIMETER DEVICES. INSTALL DIVERSION DITCHES/BERMS AND INLET PROTECTION ON EXISTING INLETS AS SHOWN.
4. CONTRACTOR TO DIVERT RUNOFF TO SB-A.
5. INSTALL INLET PROTECTION PER ORANGE COUNTY SEC STANDARDS AND SPECIFICATIONS ON ALL INLETS.
6. CALL 919.245.2587 FOR ON-SITE INSPECTION BY ORANGE COUNTY EROSION CONTROL.
10. BEGIN CLEARING, DEMOLITION OF EXISTING ASPHALT AND GRAVEL AREAS, AND GENERAL GRADING OF STAGE I AREA. MAINTAIN DEVICES AS NEEDED.
11. NO MUD SHALL BE TRACKED ONTO EXISTING PAVEMENT OR A NOTICE OF VIOLATION FROM THE EROSION CONTROL DEPARTMENT MAY ENSUE. ADDITIONAL MEASURES MAY BE NECESSARY TO ASSURE THAT NO SEDIMENT LEAVES THE SITE.
12. PROVIDE ALL DISTURBED AREAS WITH GROUND COVER WITHIN 14 CALENDAR DAYS AFTER COMPLETION OF ANY PHASE OF CLEARING, GRUBBING OR GRADING. THE SEEDING, SEEDBED PREPARATION, MULCH AND/OR ROLLED EROSION CONTROL PRODUCT INSTALLATION MUST BE IN ACCORDANCE WITH THE SEEDING SCHEDULE PROVIDED IN THIS S&E PLAN. NOTE: SLOPES IN EXCESS OF 3H:1V SHALL BE STABILIZED WITHIN 7 DAYS AND FOR MODERATE SLOPES (SLOPES LESS THAN 3H:1V) SHALL BE STABILIZED WITHIN 14 DAYS.
13. WITH APPROVAL FROM ORANGE COUNTY EROSION CONTROL INSPECTOR, CONTINUE TO STAGE 2.

CONSTRUCTION SEQUENCE – STAGE 2

1. CONTINUE MASS GRADING FROM STAGE 1.
2. UTILIZE THE SUITABLE BACKFILL MATERIAL FROM EXCAVATION. RELOCATE AND ADJUST TEMPORARY DIVERSION DITCHES AS NECESSARY. DIVERSION DITCHES SHALL REMAIN IN PLACE AND OPERATIONAL UNTIL SITE IS STABILIZED.
3. CONSTRUCT STORM DRAIN SYSTEM AS SHOWN. TEMPORARILY BLOCK PIPES LEADING DIRECTLY TO AND FROM SCM "B" TO PREVENT SEDIMENT FROM ENTERING FACILITY.
4. INSTALL INLET PROTECTION ON ALL INLET STRUCTURES DURING CONSTRUCTION.
5. PROVIDE ALL DISTURBED AREAS WITH GROUND COVER WITHIN 14 CALENDAR DAYS AFTER COMPLETION OF ANY PHASE OF CLEARING, GRUBBING OR GRADING. THE SEEDING, SEEDBED PREPARATION, MULCH AND/OR ROLLED EROSION CONTROL PRODUCT INSTALLATION MUST BE IN ACCORDANCE WITH THE SEEDING SCHEDULE PROVIDED IN THIS S&E PLAN. NOTE: SLOPES IN EXCESS OF 3H:1V SHALL BE STABILIZED WITHIN 7 DAYS AND FOR MODERATE SLOPES (SLOPES LESS THAN 3H:1V) SHALL BE STABILIZED WITHIN 14 DAYS.
6. AT THE CONCLUSION OF BUILDING OR IF LAND-DISTURBING ACTIVITY IS STOPPED FOR MORE THAN 14 CONSECUTIVE CALENDAR DAYS, PERMANENT VEGETATIVE COVER SHALL BE INSTALLED IN ACCORDANCE WITH THIS S&E PLAN.
7. WHEN SITE IS AT FINAL GRADE AND NO FURTHER GRADING IS NECESSARY, CONTRACTOR SHALL STABILIZE PORTIONS OF THE SITE WITH SEED/MULCH UNTIL FINAL LANDSCAPING IS INSTALLED.

CONSTRUCTION SEQUENCE – STAGE 3

1. CONTINUE MASS GRADING FROM STAGE 2.
2. UTILIZE THE SUITABLE BACKFILL MATERIAL FROM EXCAVATION. RELOCATE AND ADJUST TEMPORARY DIVERSION DITCHES AS NECESSARY. DIVERSION DITCHES SHALL REMAIN IN PLACE AND OPERATIONAL UNTIL SITE IS STABILIZED.
3. PROVIDE ALL DISTURBED AREAS WITH GROUND COVER WITHIN 14 CALENDAR DAYS AFTER COMPLETION OF ANY PHASE OF CLEARING, GRUBBING OR GRADING. THE SEEDING, SEEDBED PREPARATION, MULCH AND/OR ROLLED EROSION CONTROL PRODUCT INSTALLATION MUST BE IN ACCORDANCE WITH THE SEEDING SCHEDULE PROVIDED IN THIS S&E PLAN. NOTE: SLOPES IN EXCESS OF 3H:1V SHALL BE STABILIZED WITHIN 7 DAYS AND FOR MODERATE SLOPES (SLOPES LESS THAN 3H:1V) SHALL BE STABILIZED WITHIN 14 DAYS.
4. AT THE CONCLUSION OF BUILDING OR IF LAND-DISTURBING ACTIVITY IS STOPPED FOR MORE THAN 14 CONSECUTIVE CALENDAR DAYS, PERMANENT VEGETATIVE COVER SHALL BE INSTALLED IN ACCORDANCE WITH THIS S&E PLAN.
5. WHEN SITE IS AT FINAL GRADE AND NO FURTHER GRADING IS NECESSARY, CONTRACTOR SHALL STABILIZE PORTIONS OF THE SITE WITH SEED/MULCH UNTIL FINAL LANDSCAPING IS INSTALLED.
6. WITH APPROVAL FROM OCEC CONVERT SEDIMENT BASING "A" TO PERMANENT BMP DEVICE.
7. UNBLOCK PIPES LEADING TO AND FROM SCM "B".
8. WHEN CONSTRUCTION IS COMPLETE, CALL OCEC TO OBTAIN FINAL INSPECTION AND CERTIFICATE OF COMPLETION TO CLOSE OUT EROSION CONTROL PERMIT.

EROSION CONTROL NOTES:

1. EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED AND INSPECTED PRIOR TO ANY GRADING ON SITE. THE CONTRACTOR SHALL CALL FOR A INSPECTION BY ORANGE COUNTY SEDIMENTATION AND EROSION CONTROL (SEC) ONCE INITIAL MEASURES ARE IN PLACE.
2. REQUIRED TREE PROTECTION FENCING SHALL BE INSTALLED AND A PRE-CONSTRUCTION CONFERENCE SCHEDULED WITH THE TOWN'S URBAN FORESTER PRIOR TO BEGINNING LAND DISTURBANCE.
3. SEDIMENT/EROSION CONTROL DEVICES MUST BE CHECKED AFTER EACH STORM EVENT. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF THE CAPACITY OF THE DEVICE.
4. IN ADDITION TO THE REQUIREMENT DURING CONSTRUCTION FOR THE INSPECTION OF EROSION CONTROL DEVICES AFTER EVERY RAINFALL, THE CONTRACTOR SHALL INSPECT THE EROSION AND SEDIMENT CONTROL DEVICES AND OFFSITE ROADWAYS DAILY, MAKE ANY NECESSARY REPAIRS OR ADJUSTMENTS TO THE DEVICES, REMOVE DEPOSITION OF WET OR DRY SILT ON ADJACENT ROADWAYS AND MAINTAIN INSPECTION LOGS DOCUMENTING THE DAILY INSPECTIONS AND ANY NECESSARY REPAIRS.
5. A COPY OF THE APPROVED EROSION CONTROL PLAN MUST BE ON FILE AT THE JOB SITE AT ALL TIMES.
6. CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ALL EROSION CONTROL DEVICES ARE THE RESPONSIBILITY OF THE GRADING CONTRACTOR UNLESS OTHERWISE NOTED.
7. ANY GRADING BEYOND THE DENUDED LIMITS SHOWN ON THE PLAN IS A VIOLATION OF THE COUNTY EROSION CONTROL ORDINANCE AND IS SUBJECT TO A FINE.
8. NO DEBRIS SHALL BE TRACKED ONTO ANY EXISTING PAVED AREAS OR PUBLIC RIGHT OF WAY. IF THE SITUATION OCCURS WHERE MUD, ROCK AND DEBRIS IS TRACKED ONTO PAVEMENT, THE CONTRACTOR SHALL CLEAN THE PAVEMENT AND INSTALL ADDITIONAL MEASURES TO PREVENT THE FUTURE OCCURRENCE.
9. DURING THE CONSTRUCTION PHASE, ADDITIONAL EROSION AND SEDIMENT CONTROLS MAY BE REQUIRED IF THE PROPOSED MEASURES DO NOT CONTAIN THE SEDIMENT ON SITE. THE EROSION CONTROL INSPECTOR MAY REQUIRE ADDITIONAL FIELD MEASURES AS NECESSARY TO PROVIDE ADEQUATE PROTECTION FROM RECEIVING WATER COURSES.
10. PROTECTION OF EXISTING VEGETATION: AT THE START OF GRADING INVOLVING THE STRIPPING OF TOPSOIL OR LOWERING OF EXISTING GRADE AROUND A TREE, A CLEAN, SHARP, VERTICAL CUT SHALL BE MADE AT THE EDGE OF THE TREE SAVE AREA AT THE SAME TIME AS OTHER EROSION CONTROL MEASURES ARE INSTALLED. THE TREE PROTECTION FENCING SHALL BE INSTALLED ON THE SIDE OF THE CUT FARTHEST AWAY FROM THE TREE TRUNK AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREES IS COMPLETE. NO STORAGE OF MATERIALS, FILL, OR EQUIPMENT AND NO TRESPASSING SHALL BE ALLOWED WITHIN THE BOUNDARY OF THE PROTECTED AREA AND SHALL BE POSTED ON THE PROTECTION FENCE. A PROTECTION FENCE CONSTRUCTED OF MATERIAL RESISTANT TO DEGRADATION BY SUN, WIND, AND MOISTURE FOR THE DURATION OF THE CONSTRUCTION, SHALL BE INSTALLED AT THE SAME TIME AS THE EROSION CONTROL MEASURES AND SHALL BE IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREES IS COMPLETE.
11. A CONSTRUCTION SEQUENCE HAS BEEN PROVIDED. INSTALLATION OF ALL PROPOSED SEDIMENTATION & EROSION CONTROL MEASURES IN THE SEQUENCE(S) PROVIDED AND MAINTENANCE OF THOSE DEVICES IS REQUIRED. THE CONTRACTOR MAY BE ALLOWED, WITH PRIOR APPROVAL FROM THE OWNER, TO COORDINATE CHANGES TO THE PLAN WITH THE ON-SITE SEDIMENTATION & EROSION CONTROL INSPECTOR AND THE ENGINEER.
12. PROVIDE INLET PROTECTION AROUND ALL SITE STORM INLETS. PROTECT OPEN PIPES UNDER CONSTRUCTION WITH EITHER PLYWOOD OR WITH MESH AND GRAVEL WEIRS. RUNOFF SHALL NOT BE ALLOWED IN ANY OPEN TRENCH.
13. CONTRACTOR TO VERIFY SILT FENCE OUTLET PLACEMENT AT LOW POINTS AS THEY EXIST OR DEVELOP. ADDITIONAL SILT FENCE OUTLETS MAY BE REQUIRED TO PREVENT EROSION DURING AND AFTER CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES. IF ADDITIONAL SILT FENCE OUTLETS ARE NECESSARY, CONTRACTOR TO ADD ADDITIONAL SILT FENCE OUTLETS PER ENGINEER, NCDEQ EROSION CONTROL INSPECTOR, OR OWNER DIRECTION. IF PONDING OF WATER OR SEDIMENT OCCURS ALONG SILT FENCE, CONTRACTOR SHALL INSTALL AN ADDITIONAL SILT FENCE OUTLET.
14. TEMPORARY DIVERSIONS SHALL BE MAINTAINED DAILY BY CONTRACTOR SO THAT THEY ARE FUNCTIONAL AT THE END OF EACH WORKDAY AND WHEN STOPPING WORK FOR RAIN.

TEMPORARY SKIMMER BASIN SPECIFICATIONS

1. CLEAR, GRUB, AND STRIP THE AREA UNDER THE EMBANKMENT OF ALL VEGETATION AND ROOT MAT. REMOVE ALL SURFACE SOIL CONTAINING HIGH AMOUNTS OF ORGANIC MATTER AND STOCKPILE OR DISPOSE OF IT PROPERLY. HAUL ALL OBJECTIONABLE MATERIAL TO THE DESIGNATED DISPOSAL AREA. PLACE TEMPORARY SEDIMENT CONTROL MEASURES BELOW BASIN AS NEEDED.
2. ENSURE THAT FILL MATERIAL FOR THE EMBANKMENT IS FREE OF ROOTS, WOODY VEGETATION, ORGANIC MATTER, AND OTHER OBJECTIONABLE MATERIAL. PLACE THE FILL IN LIFTS NOT THE EXCEED 9 INCHES, AND MACHINE COMPACT IT. OVER FILL THE EMBANKMENT 6 INCHES TO ALLOW FOR SETTLEMENT.
3. SHAPE THE BASIN TO THE SPECIFIED DIMENSIONS. PREVENT THE SKIMMING DEVICE FROM SETTLING INTO THE MUD BY EXCAVATING A SHALLOW PIT UNDER THE SKIMMER OR PROVIDING A LOW SUPPORT UNDER THE SKIMMER OF STONE OR TIMBER.
4. PLACE THE BARREL (TYPICALLY 4-INCH SCHEDULE 40 PVC PIPE) ON A FIRM, SMOOTH FOUNDATION OF IMPERVIOUS SOIL. DO NOT USE PERVIOUS MATERIAL SUCH AS SAND, GRAVEL, OR CRUSHED STONE AS BACKFILL AROUND THE PIPE. PLACE THE FILL MATERIAL AROUND THE PIPE SPILLWAY IN 4-INCH LAYERS AND COMPACT IT UNDER AND AROUND THE PIPE TO AT LEAST THE SAME DENSITY AS THE ADJACENT EMBANKMENT. CARE MUST BE TAKEN NOT THE RAISE THE PIPE FROM THE FIRM CONTACT WITH ITS FOUNDATION WHEN COMPACTING UNDER THE PIPE HAUNCHES.
5. PLACE A MINIMUM DEPTH OF 2 FEET OF COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT. IN NO CASE SHOULD THE PIPE CONDUIT BE INSTALLED BY CUTTING A TRENCH THROUGH THE DAM AFTER THE EMBANKMENT IS COMPLETE.
6. ASSEMBLE THE SKIMMER FOLLOWING THE MANUFACTURER'S INSTRUCTIONS, OR AS DESIGNED.
7. LAY THE ASSEMBLED SKIMMER ON THE BOTTOM OF THE BASIN WITH THE FLEXIBLE JOINT AT THE INLET OF THE BARREL PIPE. ATTACH THE FLEXIBLE JOINT TO THE BARREL PIPE AND POSITION THE SKIMMER OVER THE EXCAVATED PIT OR SUPPORT. BE SURE TO ATTACH A ROPE TO THE SKIMMER AND ANCHOR IT TO THE SIDE OF THE BASIN. THIS WILL BE USED TO PULL THE SKIMMER TO THE SIDE FOR MAINTENANCE.
8. EARTHEN SPILLWAYS – INSTALL THE SPILLWAY IN UNDISTURBED SOIL TO THE GREATEST EXTENT POSSIBLE. THE ACHIEVEMENT OF PLANNED ELEVATIONS, GRADE, DESIGN WIDTH, AND ENTRANCE AND EXIT CHANNEL SLOPES ARE CRITICAL TO THE SUCCESSFUL OPERATION OF THE SPILLWAY. THE SPILLWAY SHOULD BE LINED WITH LAMINATED PLASTIC OR IMPERMEABLE GEOTEXTILE FABRIC. THE FABRIC MUST BE WIDE AND LONG ENOUGH TO COVER THE BOTTOM AND SIDES AND EXTEND ONTO THE TOP OF THE DAM FOR ANCHORING IN A TRENCH. THE EDGES MAY BE SECURED WITH 8-INCH STAPLES OR PINS. THE FABRIC MUST BE LONG ENOUGH TO EXTEND DOWN THE SLOPE AND EXIT ONTO STABLE GROUND. THE WIDTH OF THE FABRIC MUST BE ONE PIECE, NOT JOINED OR SPLICED; OTHERWISE WATER CAN GET UNDER THE FABRIC. IF THE LENGTH OF THE FABRIC IS INSUFFICIENT FOR THE ENTIRE LENGTH OF THE SPILLWAY, MULTIPLE SECTIONS, SPANNING THE COMPLETE WIDTH, MAY BE USED. THE UPPER SECTION (S) SHOULD OVERLAP THE LOWER SECTION(S) SO THAT WATER CANNOT FLOW UNDER THE FABRIC. SECURE THE UPPER EDGE AND SIDES OF THE FABRIC IN A TRENCH WITH STAPLES OR PINS. (ADAPTED FROM "A MANUAL FOR DESIGNING, INSTALLING, AND MAINTAINING SKIMMER SEDIMENT BASINS." FEBRUARY, 1999. J. W. FAIRCLOTH & SON.).
9. INLETS – DISCHARGE WATER INTO THE BASIN IN A MANNER TO PREVENT EROSION. USE TEMPORARY SLOPE DRAINS OR DIVERSIONS WITH OUTLET PROTECTION TO DIVERT SEDIMENT-LADEN WATER TO THE UPPER END OF THE POOL AREA TO IMPROVE BASIN TRAP EFFICIENCY (REFERENCES: RUNOFF CONTROL MEASURES AND OUTLET PROTECTION).
10. EROSION CONTROL – CONSTRUCT THE STRUCTURE SO THAT THE DISTURBED AREA IS MINIMIZED. DIVERT SURFACE WATER AWAY FROM BARE AREAS. COMPLETE THE EMBANKMENT BEFORE THE AREA IS CLEARED. STABILIZE THE EMERGENCY SPILLWAY EMBANKMENT AND ALL OTHER DISTURBED AREAS ABOVE THE CREST OF THE PRINICIPAL SPILLWAY IMMEDIATELY AFTER CONSTRUCTION (REFERENCES: SURFACE STABILIZATION).
11. INSTALL POROUS BAFFLES AS SPECIFIED IN PRACTICE 6.65, POROUS BAFFLES.
12. AFTER ALL THE SEDIMENT-PRODUCING AREAS HAVE BEEN PERMANENTLY STABILIZED, REMOVE THE STRUCTURE AND ALL THE UNSTABLE SEDIMENT. SMOOTH THE AREA TO BLEND WITH THE ADJOINING AREAS AND STABILIZE PROPERLY (REFERENCES: SURFACE STABILIZATION)

TEMPORARY SEEDING SCHEDULE

SEEDING DATE	SEEDING MIXTURE	APPLICATION RATE
JAN 1 – MAY 1	RYE (GRAIN)	120 LBS/AC
	KOBE LESPEDEZA	50 LBS/AC
MAY 1 – AUG 15	GERMAN MILLET	40 LBS/AC
AUG 15 – DEC 30	RYE (GRAIN)	120 LBS/AC

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 750 LB/AC 10-10-10 FERTILIZER (FROM AUG 15 – DEC 30, INCREASE 10-10-10 FERTILIZER TO 1000 LB/AC).

MULCH
APPLY 4000 LB/AC STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
JAN 1 – AUG 15: REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE, AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

AUG 15 – DEC 30: REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOP DRESS WITH 50 LB/AC OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/AC KOBE LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

NOTE: USE THE TEMPORARY SEEDING SCHEDULE ONLY WHEN DATE IS NOT CORRECT TO USE THE PERMANENT SEEDING SCHEDULE.

PERMANENT SEEDING SCHEDULE

SEEDING DATE	SEEDING MIXTURE	APPLICATION RATE
AUG 25 – OCT (BEST)	TALL FESCUE	200 LBS/AC
	RYE (GRAIN)	50 LBS/AC
	GERMAN MILLET	50 LBS/AC
FEB – APR 15 (POSSIBLE)	TALL FESCUE	200 LBS/AC
	RYE (GRAIN)	50 LBS/AC
	GERMAN MILLET	50 LBS/AC

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 1000 LB/AC 10-10-10 FERTILIZER.

MULCH
APPLY 4000 LB/AC STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
INSPECT AND REPAIR MULCH FREQUENTLY. REFERTILIZE IN LATE WINTER OF THE FOLLOWING YEAR; USE SOIL TESTS OR APPLY 150 LB/AC 10-10-10 FERTLIZER. MOW REGULARLY TO A HEIGHT OF 2-4 INCHES.

SEEDBED PREPARATION

AREAS TO BE SEEDED TO BE SCARIFIED 4" DEEP. A FIRM, WELL PULVERIZED, UNIFORM SEEDBED SHOULD BE PROVIDED. FERTILIZER SHALL BE PLACED DURING SCARIFICATION AS FOLLOWS:
LIME: 45 LBS / 1,000 SF
PHOSPHOROUS: 20 LBS / 1,000 SF
FERTILIZER: 17 LBS / 1,000 SF

CONTRACTOR'S MAINTENANCE PLAN:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO MAINTAIN ALL MEASURES AS DESIGNED.
2. SEDIMENT BASINS SHALL BE INSPECTED REGULARLY DURING LAND DISTURBING ACTIVITIES AND AFTER EACH RUNOFF-PRODUCING RAINFALL. SEDIMENT SHALL BE REMOVED AND THE BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO ONE-HALF THE DESIGN DEPTH OF EACH BASIN. PORTIONS OF THE BASIN'S GRAVEL FACING THAT ARE CONTAMINATED BY SEDIMENT SHALL BE REPLACED WITH FRESH GRAVEL DURING EACH SEDIMENT REMOVAL EPISODE.
3. SEDIMENT FENCES SHALL BE INSPECTED AT LEAST ONCE A WEEK AND AFTER EACH RUNOFF PRODUCING RAINFALL. REPAIRS SHALL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS SHALL BE REMOVED AS NEEDED TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAINFALL EVENT, AND TO REDUCE PRESSURE ON THE FENCE. FENCING MATERIALS AND SEDIMENT DEPOSITS SHALL BE REMOVED, AND THE AREA BROUGHT TO GRADE FOLLOWING STABILIZATION OF UPGRADIENT DISTURBED AREAS.
4. DIVERSION DITCHES MUST REMAIN IN PLACE UNTIL PROJECT IS STABILIZED.
5. EROSION CONTROL DURING SITE CONSTRUCTION WILL BE ACCOMPLISHED BY USE OF SILT FENCING AND SILT FENCE OUTLETS. DEVICES MUST BE EMPTIED WHEN SEDIMENT ACCUMULATION HAS REACHED 6" DEPTH.

TEMPORARY SKIMMER BASIN/TRAP DESIGN TABLE		
SEDIMENT TRAP ID	SB-A	
Drainage Area (AC.)	4.86	
Disturbed Area (AC.)	4.85	
Flow Q10 (CFS)	21.10	
Bottom Elevation (FT)	256.50	
Sediment Depth (FT)	3.5	
Freeboard (from Sediment Depth)	2.0	
Depth to Crest of Riser (FT)	3.8	
Depth to Crest of Emergency Spillway (FT)	N/A	
Side Slopes	2.0H:1V	
Spillway Length (FT)	20 (6"X6" RISER)	
Height of Berm (FT)	5.5 @ 262.00	
Top of Trap Length (FT)	142	
Top of Trap Width (FT)	82	
Storage Volume Required (FT³)	8,748	
Storage Volume Prov'd. (FT³)	27,472	
Sediment Surface Area Req'd (FT²)	9,160	
Sediment Surface Area Prov'd (FT²)	9,653	
Number of Skimmers	1	
Skimmer Size (IN)	2.00	
Skimmer Orifice Size (IN)	2.00	
Anti-Flotation Block	SEE SW SHEETS	
Riser Diameter (IN)	SEE SW SHEETS	
Barrel Diameter (IN)	SEE SW SHEETS	
Notes:		
1. Side slopes pertain only for the vertical height from the base to the top of berm, 2H:1V above that.		
2. See details on silt fence baffle spacing.		

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

BUILDING WASTES HANDLING
• NO PAINT OR LIQUID WASTES IN STREAM OR STORM DRAINS
• DEDICATED AREAS FOR DEMOLITION, CONSTRUCTION AND OTHER WASTES MUST BE LOCATED 50' FROM STORM DRAINS AND STREAMS UNLESS NO REASONABLE ALTERNATIVES AVAILABLE.
• EARTHEN-MATERIAL STOCKPILES MUST BE LOCATED 50' FROM STORM DRAINS AND STREAMS UNLESS NO REASONABLE ALTERNATIVES AVAILABLE.
• CONCRETE MATERIALS MUST BE CONTROLLED TO AVOID CONTACT WITH SURFACE WATER, WETLANDS, OR BUFFERS.

PERMIT SET

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BAILES 9/9/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	09. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-EC1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	N/A
DATE	02. 28. 2019

SHEET

EROSION CONTROL NOTES

EC-1

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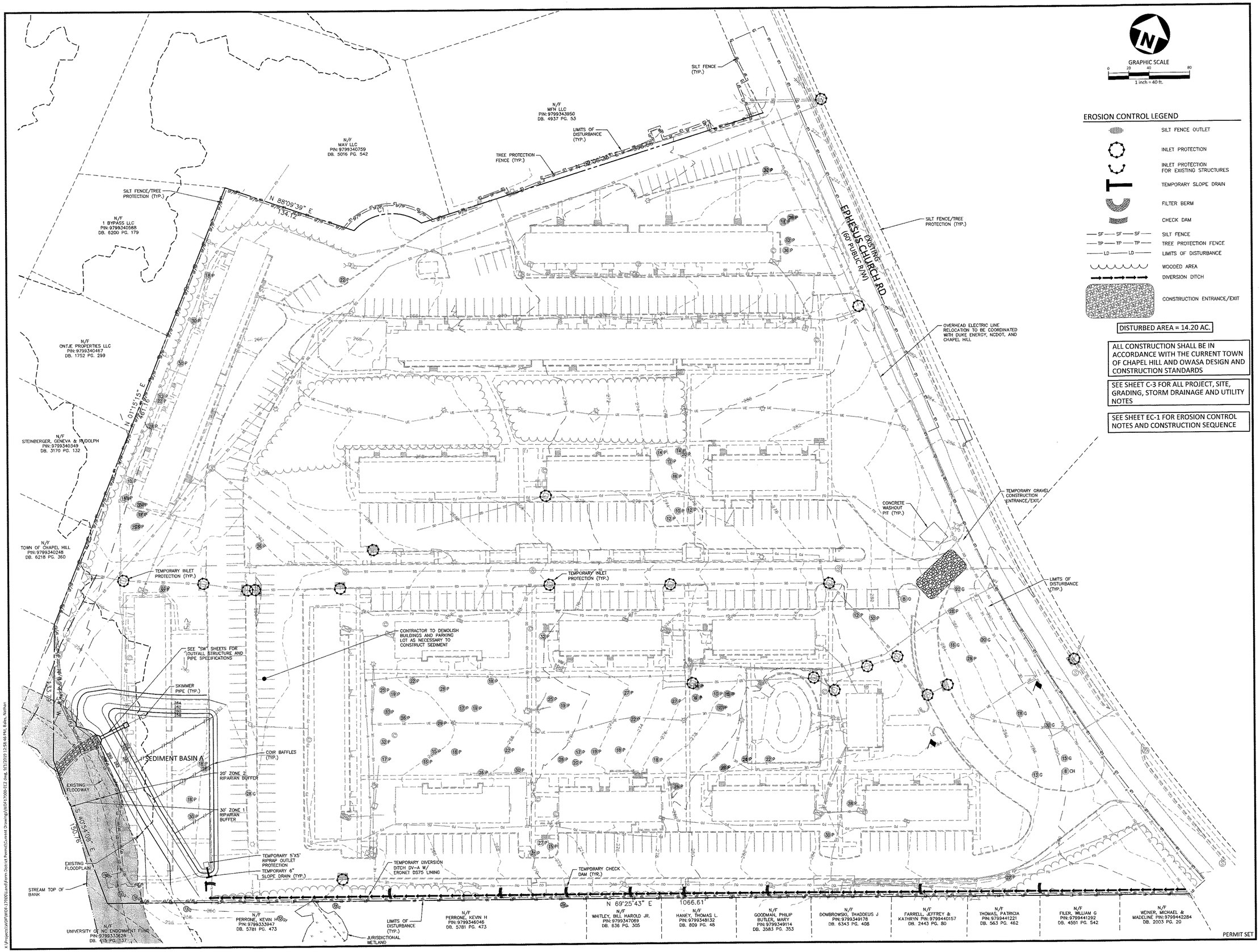

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4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-EC2
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

EROSION CONTROL PLAN - STAGE 1

EC-2

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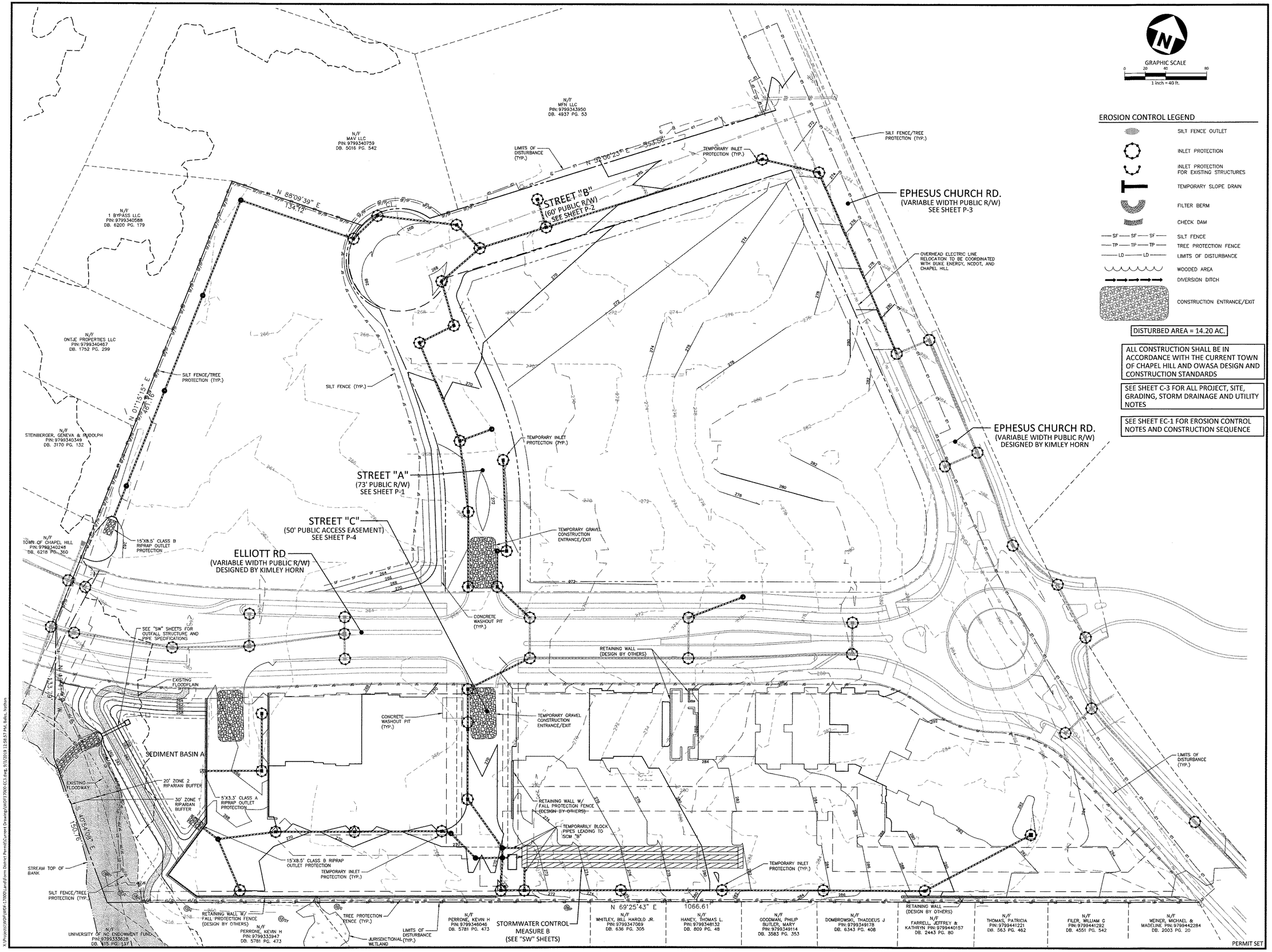

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

EROSION CONTROL LEGEND

- SILT FENCE OUTLET
- INLET PROTECTION
- INLET PROTECTION FOR EXISTING STRUCTURES
- TEMPORARY SLOPE DRAIN
- FILTER BERM
- CHECK DAM
- SILT FENCE (SF)
- TREE PROTECTION FENCE (TP)
- LIMITS OF DISTURBANCE (LD)
- WOODED AREA
- DIVERSION DITCH
- CONSTRUCTION ENTRANCE/EXIT

DISTURBED AREA = 14.20 AC.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL AND OWASA DESIGN AND CONSTRUCTION STANDARDS

SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

SEE SHEET EC-1 FOR EROSION CONTROL NOTES AND CONSTRUCTION SEQUENCE

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NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 7/3/19

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3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-EC3
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

EROSION CONTROL PLAN - STAGE 2

EC-3

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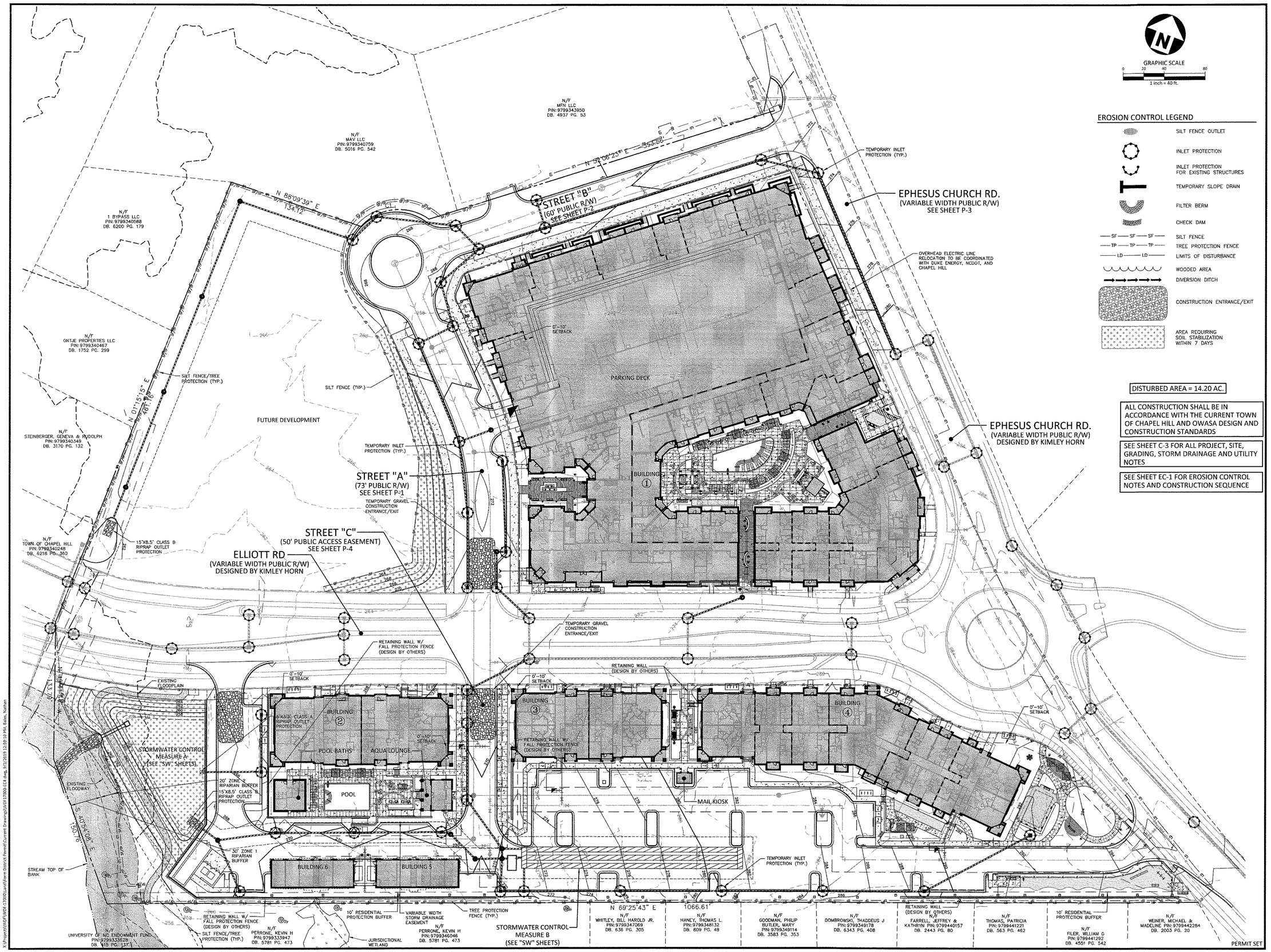

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

EROSION CONTROL LEGEND

- SILT FENCE OUTLET
- INLET PROTECTION
- INLET PROTECTION FOR EXISTING STRUCTURES
- TEMPORARY SLOPE DRAIN
- FILTER BERM
- CHECK DAM
- SF — SF — SF — SILT FENCE
- TP — TP — TP — TREE PROTECTION FENCE
- LD — LD — LIMITS OF DISTURBANCE
- WOODED AREA
- DIVERSION DITCH
- CONSTRUCTION ENTRANCE/EXIT
- AREA REQUIRING SOIL STABILIZATION WITHIN 7 DAYS

DISTURBED AREA = 14.20 AC.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL AND OWASA DESIGN AND CONSTRUCTION STANDARDS

SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

SEE SHEET EC-1 FOR EROSION CONTROL NOTES AND CONSTRUCTION SEQUENCE

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NORTH CAROLINA PROFESSIONAL SEAL 036182 ENGINEER NATHAN BALES 8/3/19

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4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-EC4
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

EROSION CONTROL PLAN - STAGE 3

EC-4

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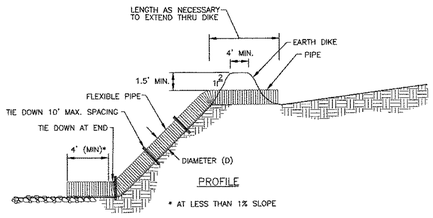


CONSTRUCTION SPECIFICATIONS:

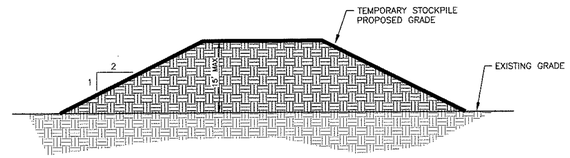
1. THE TOP OF THE EARTH DIKE OVER THE INLET PIPE AND THOSE DIKES CARRYING WATER TO THE PIPE SHALL BE AT LEAST 1.5 FEET HIGHER AT ALL POINTS THAN THE TOP OF THE INLET PIPE.
2. THE PIPE SHALL BE FLEXIBLE WITH WATER TIGHT CONNECTING BANDS. FLEXIBLE PIPE SHOULD BE STAKED ON EITHER SIDE.
3. A RIP RAP APRON SHALL BE PROVIDED AT THE OUTLET, IF EMPTYING INTO A DISTURBED AREA.
4. THE SOIL AROUND AND UNDER THE INLET PIPE AND ENTRANCE SECTION SHALL BE HAND TAMPED IN 4" LIFTS TO THE TOP OF THE EARTH DIKE.
5. FOLLOW-UP INSPECTION AND ANY NEEDED MAINTENANCE SHALL BE PERFORMED AFTER EACH STORM BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT.

TEMPORARY SLOPE DRAIN

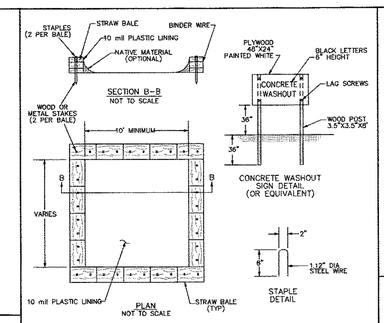
N.T.S.

NOTES:

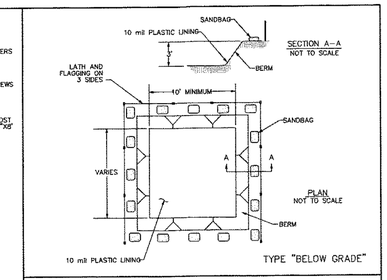
1. STOCKPILE HEIGHT TO NOT EXCEED 15'



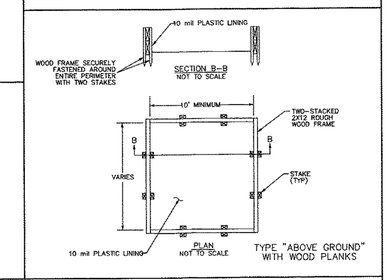
TYPICAL STOCKPILE DETAIL (NTS)



TYPE "ABOVE GRADE" WITH STRAW BALES



TYPE "BELOW GRADE"

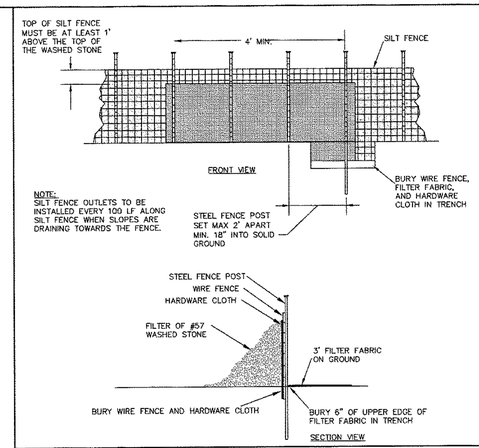


TYPE "ABOVE GROUND" WITH WOOD PLANKS

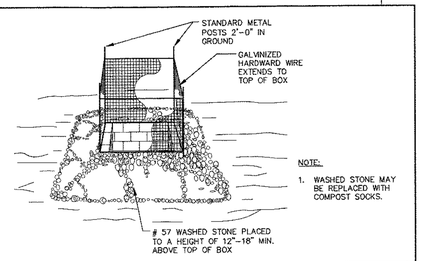
NOTES

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

CONCRETE WASHOUT



STANDARD SILT FENCE OUTLET



NOTE:

1. WASHED STONE MAY BE REPLACED WITH COMPOST SOCKS.

STANDARD POST & GRAVEL INLET PROTECTION

BLOCK AND GRAVEL INLET PROTECTION MAINTENANCE

INSPECT THE BARRIER AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL AND MAKE REPAIRS AS NEEDED.

REMOVE SEDIMENT AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR SUBSEQUENT RAINS.

WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN ADEQUATELY STABILIZED, REMOVE ALL MATERIALS AND ANY UNSTABLE SOIL, AND EITHER SALVAGE OR DISPOSE OF IT PROPERLY.

BRING THE DISTURBED AREA TO PROPER GRADE, THEN SMOOTH AND COMPACT IT.

APPROPRIATELY STABILIZE ALL BARE AREAS AROUND THE INLET.

SILT FENCE OUTLET MAINTENANCE

REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED.

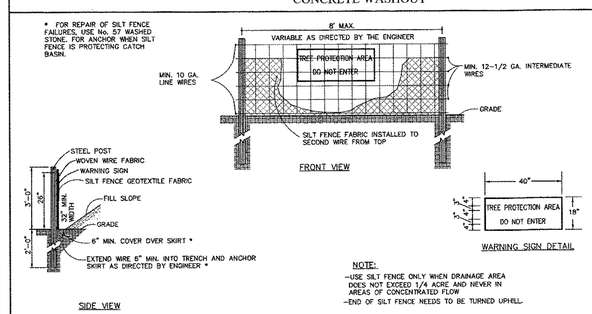
REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY

SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.



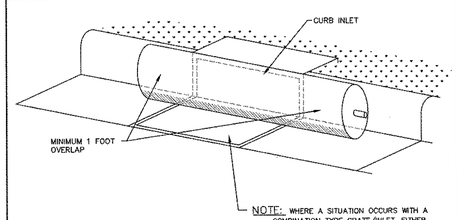
NOTE:

-USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW
-END OF SILT FENCE NEEDS TO BE TURNED UPHILL.

NOTES:

WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS.
PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.
ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF RALEIGH INSPECTIONS DEPARTMENT BASED ON ACTUAL FIELD CONDITIONS.
PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.

STANDARD TEMPORARY SILT / TREE PROTECTION FENCE



NOTE: WHERE A SITUATION OCCURS WITH A COMBINATION TYPE GRATE/INLET, EITHER COVER GRATE INLET OR BEND SEDIMENT FILTER AROUND GRATE TO ASSURE ALL SEDIMENT LADEN RUNOFF IS CAPTURED.

NOTES:

1. THE SEDIMENT FILTER SHALL BE SYNTHETIC FILTER MANUFACTURED FROM RECYCLED SYNTHETIC FIBERS.
2. THE SEDIMENT FILTER WILL BE MANUFACTURED TO BY 9" IN DIAMETER AND ARE AVAILABLE IN 4', 6', 8', 10', 12', 14' AND 16' LENGTHS AND A MINIMUM OF 24" LONGER THAN THE CURB INLET OPENING. THIS WILL ALLOW FOR SUFFICIENT LENGTH TO COVER THE INLET WITH TWELVE (12) INCHES BEYOND THE INLET ON BOTH ENDS.

CONSTRUCTION SEQUENCE

EXISTING INLET PROTECTION

SILT FENCE MAINTENANCE

INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY

SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALLISH 9/24/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-EC5
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

SHEET

EROSION CONTROL DETAILS

EC-5

PERMIT SET

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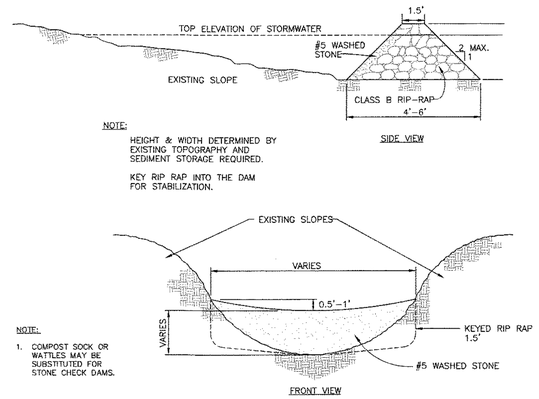


NOTE:

HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.

KEY RIP RAP INTO THE DAM FOR STABILIZATION.

NOTE:

1. COMPOST SOCK OR WATTLES MAY BE SUBSTITUTED FOR STONE CHECK DAMS.

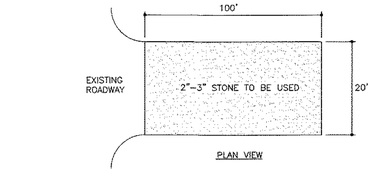
STANDARD CHECK DAM

CHECK DAM MAINTENANCE

INSPECT CHECK DAMS AND CHANNELS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. CLEAN OUT SEDIMENT, STRAW, LIMBS, OR OTHER DEBRIS THAT COULD CLOG THE CHANNEL WHEN NEEDED.

ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, ADDITIONAL MEASURE CAN BE TAKEN SUCH AS, INSTALLING A PROTECTIVE RIPRAP LINER IN THAT PORTION OF THE CHANNEL.

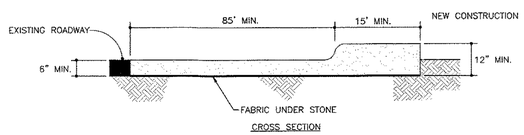
REMOVE SEDIMENT ACCUMULATED BEHIND THE DAMS AS NEEDED TO PREVENT DAMAGE TO CHANNEL VEGETATION, ALLOW THE CHANNEL TO DRAIN THROUGH THE STONE CHECK DAM, AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM. ADD STONES TO DAMS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.



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.



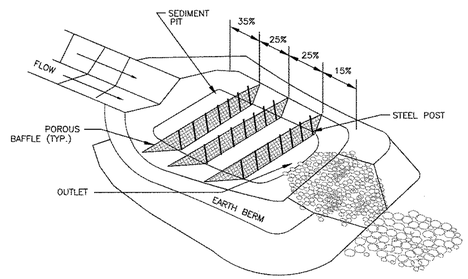
STANDARD CONSTRUCTION ENTRANCE

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE MAINTENANCE

MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2-INCH STONE.

AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY.

IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO ANY ROADWAYS.



PERSPECTIVE VIEW

NTS

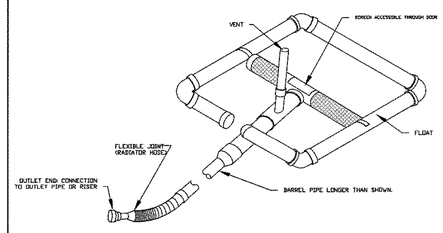
CONSTRUCTION SPECIFICATION

1. GRADE THE BASIN SO THAT THE BOTTOM IS LEVEL FRONT TO BACK AND SIDE TO SIDE.
2. INSTALL POSTS OR SAW HORSES ACROSS THE WIDTH OF THE SEDIMENT TRAP.
3. STEEL POSTS SHOULD BE DRIVEN TO A DEPTH OF 24 INCHES, SPACED AT A MAXIMUM OF 4 FEET APART, AND INSTALLED UP THE SIDES OF THE BASIN AS WELL. THE TOP OF THE FABRIC SHOULD BE 6 INCHES HIGHER THAN THE INVERT OF THE SPILLWAY. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERM.
4. INSTALL AT LEAST THREE ROWS OF BAFFLES BETWEEN THE INLET AND OUTLET DISCHARGE POINT.
5. WHEN USING POSTS, ADD A SUPPORT WIRE OR ROPE ACROSS THE TOP OF THE MEASURE TO PREVENT SAGGING.
6. WRAP POROUS MATERIAL, LIKE JUTE BACKED BY COIR MATERIAL, OVER A SAWHORSE OR THE TOP WIRE. HAMMER REBAR INTO THE SAWHORSE LEGS FOR ANCHORING. THE FABRIC SHOULD HAVE FIVE TO TEN PERCENT OPENINGS IN THE WEAVE. ATTACH FABRIC TO A ROPE AND A SUPPORT STRUCTURE WITH SIP TIES, WIRE, OR STAPLES.
7. THE BOTTOM AND SIDES OF THE FABRIC SHOULD BE ANCHORED IN A TRENCH OR PINNED WITH 8 INCH EROSION CONTROL MATTING STAPLES.
8. DO NOT SPLICE THE FABRIC, BUT USE A CONTINUOUS PIECE ACROSS THE BASIN.

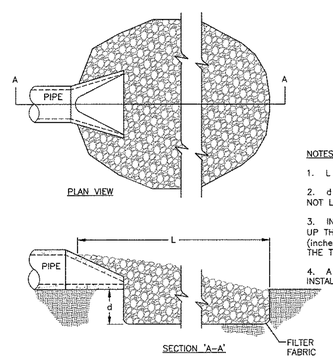
POROUS BAFFLE INSTALLATION DETAIL

MAINTENANCE PLAN:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO MAINTAIN ALL MEASURES AS DESIGNED.
2. SEDIMENT BASINS SHALL BE INSPECTED REGULARLY DURING LAND DISTURBING ACTIVITIES AND AFTER EACH RUNOFF-PRODUCING RAINFALL. SEDIMENT SHALL BE REMOVED AND THE BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO ONE-HALF THE DESIGN DEPTH OF EACH BASIN. PORTIONS OF THE BASIN'S GRAVEL FACING THAT ARE CONTAMINATED BY SEDIMENT SHALL BE REPLACED WITH FRESH GRAVEL DURING EACH SEDIMENT REMOVAL EPISODE.
3. SEDIMENT FENCES SHALL BE INSPECTED AT LEAST ONCE A WEEK AND AFTER EACH RUNOFF PRODUCING RAINFALL. REPAIRS SHALL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS SHALL BE REMOVED AS NEEDED TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAINFALL EVENT, AND TO REDUCE PRESSURE ON THE FENCE. FENCING MATERIALS AND SEDIMENT DEPOSITS SHALL BE REMOVED, AND THE AREA BROUGHT TO GRADE FOLLOWING STABILIZATION OF UPGRADIENT DISTURBED AREAS.
4. DIVERSION DITCHES MUST REMAIN IN PLACE UNTIL PROJECT IS STABILIZED.
5. EROSION CONTROL DURING SITE CONSTRUCTION WILL BE ACCOMPLISHED BY USE OF SILT FENCING AND SILT FENCE OUTLETS. DEVICES MUST BE EMPTIED WHEN SEDIMENT ACCUMULATION HAS REACHED 6" DEPTH.
6. RIPRAP CHANNELS SHOULD BE INSPECTED AT REGULAR INTERVALS AS WELL AS AFTER MAJOR RAIN EVENTS. REPAIRS SHOULD BE MADE IMMEDIATELY. MAINTAIN ALL VEGETATION ADJACENT TO THE CHANNEL IN A HEALTHY, VIGOROUS CONDITION TO PROTECT THE AREA FROM EROSION AND SCOUR DURING OUT-OF-BANK FLOW.



SKIMMER DETAIL



NOTES:

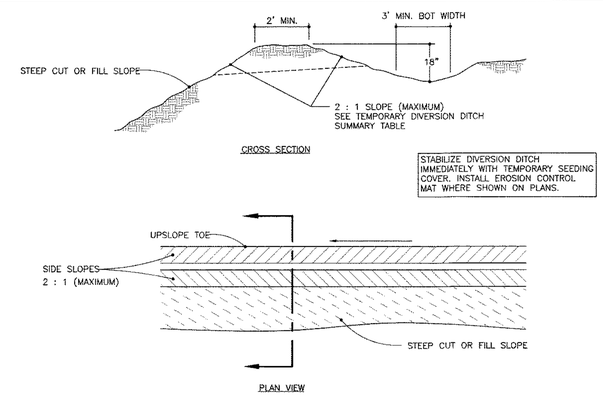
1. L = THE LENGTH OF THE RIPRAP APRON.

2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (inches).

3. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" (inches) ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.

4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

PIPE OUTLET TO WELL-DEFINED CHANNEL



TEMPORARY DIVERSION DITCH

TEMPORARY DIVERSION MAINTENANCE

INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL.

IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE.

CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED.

WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL 036661 ENGINEER NATHAN BALES 9/3/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-EC5
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

SHEET

EROSION CONTROL DETAILS

EC-6

PERMIT SET

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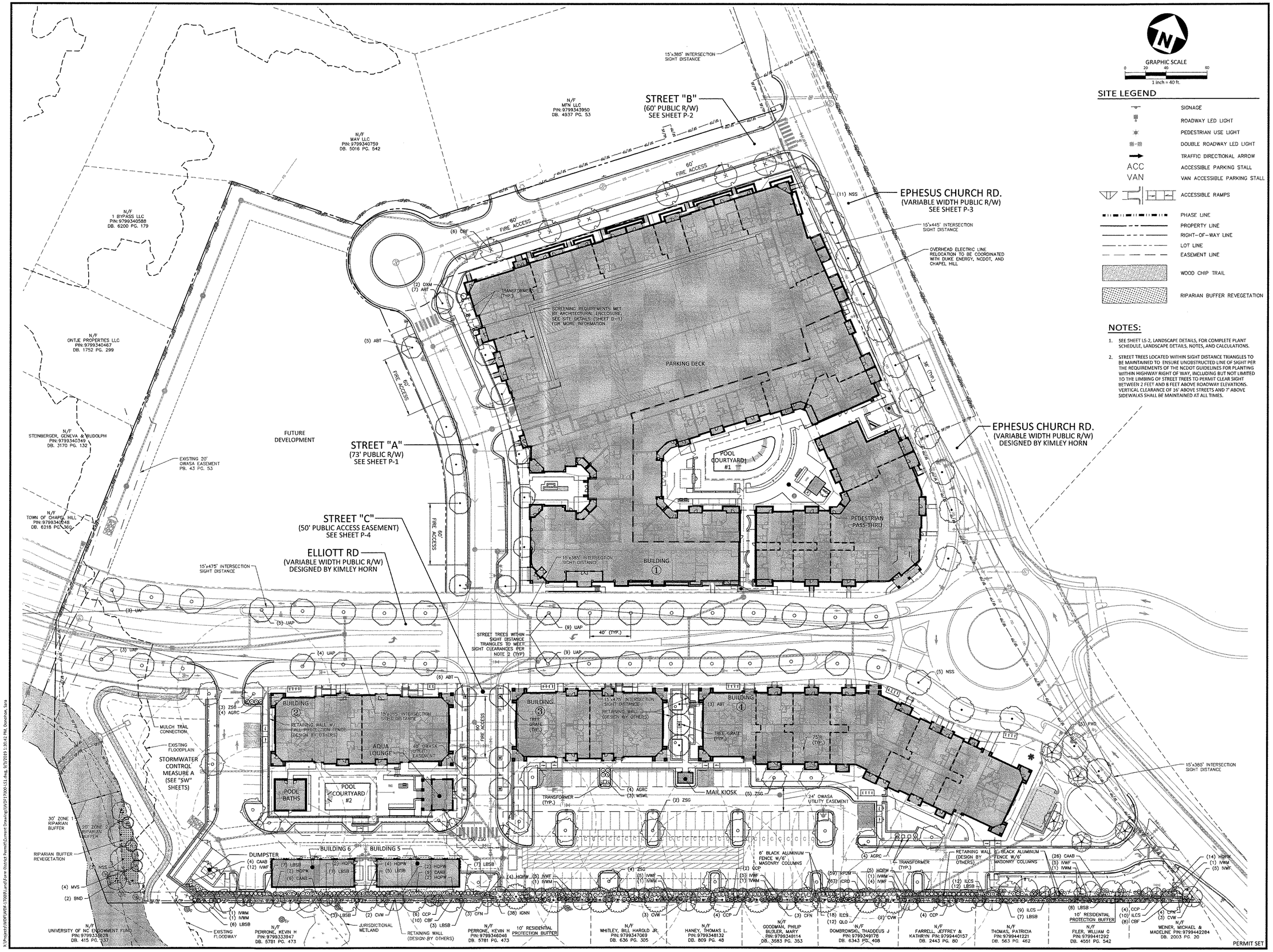

GRAPHIC SCALE

0 20 40 80

1 inch = 40 ft.

SITE LEGEND

- SIGNAGE
- ROADWAY LED LIGHT
- PEDESTRIAN USE LIGHT
- DOUBLE ROADWAY LED LIGHT
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- ACCESSIBLE RAMPS
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- EASEMENT LINE
- WOOD CHIP TRAIL
- RIPARIAN BUFFER REVEGETATION

NOTES:

1. SEE SHEET LS-2, LANDSCAPE DETAILS, FOR COMPLETE PLANT SCHEDULE, LANDSCAPE DETAILS, NOTES, AND CALCULATIONS.
2. STREET TREES LOCATED WITHIN SIGHT DISTANCE TRIANGLES TO BE MAINTAINED TO ENSURE UNOBSTRUCTED LINE OF SIGHT PER THE REQUIREMENTS OF THE NCDOT GUIDELINES FOR PLANTING WITHIN HIGHWAY RIGHT OF WAY, INCLUDING BUT NOT LIMITED TO THE LIMBING OF STREET TREES TO PERMIT CLEAR SIGHT BETWEEN 2 FEET AND 8 FEET ABOVE ROADWAY ELEVATIONS. VERTICAL CLEARANCE OF 16' ABOVE STREETS AND 7' ABOVE SIDEWALKS SHALL BE MAINTAINED AT ALL TIMES.

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA LICENSED LANDSCAPE ARCHITECT 1031 JOSHUA A. DECKER 08/30/19

REVISIONS

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1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-LS1
CHECKED BY	SRD
DRAWN BY	AMR
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

LANDSCAPE PLAN

LS-1

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PLANT SCHEDULE

TREES	CODE	QTY	COMMON NAME	BOTANICAL NAME	CAL	HEIGHT	CONT	REMARKS
	ABT	21	Trident Maple	Acer buergerianum	2.5"	–		
	BND	2	Duraheat River Birch	Betula nigra 'Duraheat'	–	12' min		Multi-Stem
	CBF	24	Pyramidal European Hornbeam	Carpinus betulus 'Fastigiata'	2.5"	–		
	CCP	20	Forest Pansy Redbud	Cercis canadensis 'Forest Pansy' TM	–	6' min		
	CVW	10	White Fringetree	Chionanthus virginicus	2.5"	–		
	CFN	10	Cloud Nine Eastern Dogwood	Cornus florida 'Cloud Nine'	–	6' min		
	OXM	2	Oakland Red Holly	Ilex x 'Magland'	–	6' min		
	MVS	4	Sweet Bay	Magnolia virginiana	–	6'		
	NSS	19	Sour Gum	Nyssa sylvatica	2.5"	–		
	PXO	5	Okame Cherry	Prunus x okame	–	8' min		
	QLO	12	Overcup Oak	Quercus lyrata	2.5"	–		
	UAP	33	American Elm	Ulmus americana 'Princeton'	3.5"	–		See Note #2 on Sheet LS-1
	ZSG	21	Sawleaf Zelkova	Zelkova serrata 'Green Vase'	2.5"	–		

SHRUBS	CODE	QTY	COMMON NAME	BOTANICAL NAME	HEIGHT	SPACING	CONT	REMARKS
	AGRC	12	Rose Creek Abelia	Abelia x grandiflora 'Rose Creek'	18" min			
	CAAB	48	American Beautyberry	Callicarpa americana	20–24"			
	HQPW	35	Pee Wee Oakleaf Hydrangea	Hydrangea quercifolia 'Pee Wee'	24"			
	ICRD	67	Dwarf Chinese Holly	Ilex cornuta 'Rotunda'	18" min			
	ILCS	49	Steeds Japanese Holly	Ilex crenata 'Steeds'	24–30"			
	IGNN	38	Nigra Inkberry	Ilex glabra 'Nigra'	24–30"			
	IVWM	8	Winter Red Holly	Ilex verticillata 'Southern Gentleman'	18" min			Male cultivar to ensure berry production on the female
	IVWF	41	Winter Red Holly	Ilex verticillata 'Winter Red'	30–36"			
	LBSB	65	Spicebush	Lindera benzoin	20–24"			
	MSML	3	Eulalia Grass	Miscanthus sinensis 'Morning Light'	–		7 gal	
	RPJM	59	PJM Rhododendron	Rhododendron x 'PJM'	18" min			Other cultivars in PJM group acceptable, all plants to match cultivar

LANDSCAPE CALCULATIONS:

BUFFER CALCULATIONS

10' SOUTHERN RESIDENTIAL PROTECTION BUFFER
REQUIREMENT:
(4 LARGE TREES, 3 SMALL TREES, 40 SHRUBS / 100 LF)

TOTAL LINEAR FOOTAGE:	1000'
LARGE TREES REQUIRED:	40
LARGE TREES PROVIDED:	46
SMALL TREES REQUIRED:	30
SMALL TREES PROVIDED:	30
SHRUBS REQUIRED:	400
SHRUBS PROVIDED:	403

CANOPY REPLACEMENT CALCULATIONS
REQUIREMENT:
(ONE LARGE TREE PER 500 SF OF TREE CANOPY COVERAGE DEFICIT)

TREE CANOPY COVERAGE DEFICIT:	101,930 SF (2.34 AC)
LARGE TREES REQUIRED:	204 TREES
LARGE TREES PROVIDED:	137 TREES

RIPARIAN BUFFER REVEGETATION
REQUIREMENT:
(302 NATIVE HARDWOOD TREES / 1 ACRE, MIN. 2 NATIVE HARDWOOD SPEICES)

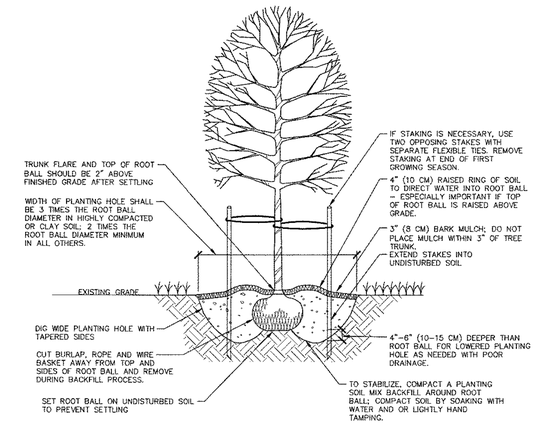
TOTAL ACREAGE:	0.02 ACRES
TREES REQUIRED:	7
TREES PROVIDED:	9
HARDWOOD SPECIES REQUIRED:	2
HARDWOOD SPECIES PROVIDED:	3

LANDSCAPE CALCULATION NOTES:

1. SEE SHEET TC-1,LANDSCAPE PROTECTION & TREE COVERAGE PLAN, FOR SITE TREE CANOPY COVERAGE CALCULATIONS.
2. TREE CANOPY CALCULATIONS ARE SUBJECT TO CHANGE, FINAL TREE REPLACEMENT REQUIREMENT TO BE DETERMINED WITH FINAL SIGNED PLANS.
3. TREE REPLACEMENT TO BE PROVIDED VIA TREE PLANTING, RESERVE AREA, PAYMENT-IN-LIEU, OR A COMBINATION OF THOSE OPTIONS.

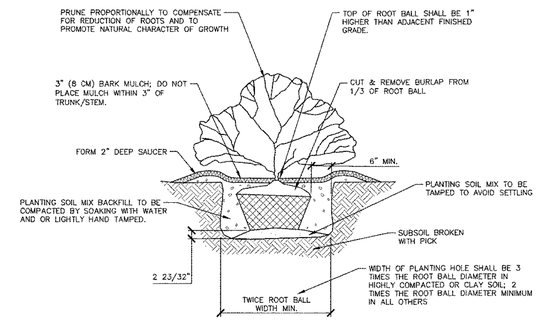
LANDSCAPE NOTES

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF CHAPEL HILL, THE BLUE HILL FORM DISTRICT AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR IS RESPONSIBLE FOR THE SITE INSPECTION BEFORE LANDSCAPE CONSTRUCTION AND INSTALLATION IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS.
3. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE BEGINNING DEMOLITION OR INSTALLATION.
4. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN THE NOTES, SPECIFICATIONS, DRAWINGS OR SITE CONDITIONS FOR RESOLUTION PRIOR TO INSTALLATION.
5. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. THIS PLAN IS FOR PLANTING PURPOSES ONLY. FOR INFORMATION REGARDING BUILDINGS, GRADING, WALLS, ETC., REFER TO ARCHITECTURE, SITE AND GRADING PLANS.
7. VERIFICATION OF TOTAL PLANT QUANTITIES AS SHOWN IN THE PLANT SCHEDULE SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
8. CONTRACTOR TO ENSURE PROPER STABILIZATION AND SEEDING OF THE SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.
9. LANDSCAPE MATERIAL SHALL BE WELL FORMED, VIGOROUS, GROWING SPECIMENS WITH GROWTH TYPICAL OF VARIETIES SPECIFIED AND SHALL BE FREE FROM DAMAGE, INSECTS AND DISEASES. MATERIAL SHALL EQUAL OR SURPASS #1 QUALITY AS DEFINED IN THE CURRENT ISSUE OF "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
10. ALL PLANT MATERIAL IS TO BE CAREFULLY HANDLED BY THE ROOT BALL, NOT THE TRUNK, BRANCHES AND/OR FOLIAGE OF THE PLANT. MISHANDLED PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT.
11. ALL PLANT MATERIAL IS TO BE WELL ROOTED, NOT ROOT BOUND, SUCH THAT THE ROOT BALL REMAINS INTACT THROUGHOUT THE PLANTING PROCESS. DEFICIENT PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT OR OWNER.
12. ALL PLANTS TO BE A MINIMUM OF WHAT IS SPECIFIED IN THE PLANT SCHEDULE. ANY CHANGES OR SUBSTITUTIONS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT AND GOVERNING JURISDICTION PRIOR TO ANY HOLE BEING DUG.
13. CONTRACTOR TO COORDINATE WITH OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT TO ESTABLISH THE EXTENTS OF MULCH/SEED/SOD IF NOT SPECIFICALLY SHOWN ON PLANS.
14. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ALL PLANTING AREAS.
15. PROPOSED TREES TO BE PLANTED A MINIMUM 10 FEET FROM ANY LIGHT POLE AS MEASURED FROM TRUNK OF THE TREE TO THE POLE.
16. PROPOSED TREES TO BE PLANTED A MINIMUM 5 FEET FROM ANY FIRE HYDRANT AS MEASURED FROM TRUNK OF THE TREE TO THE HYDRANT.
17. CONTRACTOR SHALL COMPLETE SOIL TEST IN ALL PLANTING AREAS TO DETERMINE SOIL AMENDMENT REQUIREMENTS UNLESS WAIVED BY OWNER'S REPRESENTATIVE. CONTRACTOR SHALL ADJUST PH AND FERTILITY BASED UPON THE SOIL TEST RESULTS.
18. TOPSOIL SHALL BE FREE OF MATERIAL LARGER THAN 1.0 INCH IN DIAMETER OR LENGTH AND SHALL NOT CONTAIN SLAG, CINDERS, STONES, LUMPS OF SOIL, STICKS, ROOTS, TRASH, OR OTHER EXTRANEOUS MATERIAL.
19. LOOSEN SUBGRADE / SURFACE SOIL TO A MINIMUM DEPTH OF 6 INCHES. APPLY SOIL AMENDMENTS AND FERTILIZERS AS REQUIRED BY THE SOIL TEST RESULTS TO ACHIEVE A HEALTHY GROWING MEDIA AND MIX THOROUGHLY INTO TOP 4 INCHES OF SOIL. SPREAD PLANTING SOIL MIX TO A DEPTH OF 6 INCHES BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.
20. IF IMPORTED TOPSOIL IS REQUIRED, THE SUBGRADE SHALL BE SCARIFIED OR TILLED TO A DEPTH OF AT LEAST 6 INCHES PRIOR TO INSTALLATION OF IMPORTED TOPSOIL. FOLLOWING INSTALLATION OF IMPORTED TOPSOIL, THE TOPSOIL SHALL BE TILLED TO INTEGRATE THE SOIL PROFILES.
21. PLANT MATERIALS ARE TO BE GUARANTEED FOR A PERIOD OF 12 MONTHS. PLANT MATERIALS WHICH REMAIN UNHEALTHY WILL BE REPLACED BY THE LANDSCAPE CONTRACTOR BEFORE THE EXPIRATION OF THE GUARANTEE PERIOD OR IMMEDIATELY IF SO DIRECTED BY THE OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
22. ALL TREE PLANTINGS SHALL BE MULCHED TO A DEPTH OF 3 INCHES, AND WITH A MINIMUM 3 FOOT RADIUS FROM BASE OF TREE OR TO DRIPLINE. MULCH SHALL BE FREE OF TRASH AND MAINTAINED WEED FREE. MULCH SHALL NOT COVER THE ROOT FLARE. CONFIRM MULCH SPECIFICATIONS WITH OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
23. DO NOT PRUNE TREES AND SHRUBS BEFORE DELIVERY. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY THEIR NATURAL SHAPE. PROVIDE PROTECTIVE COVERING OF EXTERIOR PLANTS DURING DELIVERY. DO NOT DROP EXTERIOR PLANTS DURING DELIVERY AND HANDLING.
24. DELIVER EXTERIOR PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND INSTALL IMMEDIATELY. IMMEDIATELY AFTER UNLOADING, STAND THE TREES UP TO REDUCE THE RISK OF SUN SCALD. PROPERLY STAGED TREES ARE STANDING, UNTIED AND SPACED. UNLESS IMMEDIATELY INSTALLED, SET EXTERIOR PLANTS AND TREES IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.
25. SEE LANDSCAPE DETAILS FOR TREE STAKING REQUIREMENTS.
26. EXCAVATE EDGES OF ALL PLANTING BEDS TO 2 INCH DEPTH TO FORM A NEAT AND CRISP DEFINITION.
27. CONTRACTOR SHALL REMOVE DEBRIS AND FINE GRADE ALL PLANTING AREAS PRIOR TO INSTALLATION.
28. REMOVE GUY WIRES AND STAKES AT END OF WARRANTY PERIOD OR ESTABLISHMENT.
29. FINISH GRADING: GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. GRADE TO WITHIN PLUS OR MINUS 1/2 INCH OF FINISH ELEVATION. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES. LIMIT FINISHED GRADING TO AREAS THAT CAN BE PLANTED IN THE IMMEDIATE FUTURE.



NOTES:
1. SELECT TREES THAT HAVE: STRONG CENTRAL LEADER; CROWN WITH FULL FOLIAGE; ARE GROWN IN HEAVY CLAY SOIL WITH DRIP IRRIGATION.
2. BEFORE INSTALLING PLANTING SOIL MIX BACKFILL AROUND ROOT BALL, BE SURE TO SOAK HOLE TO CONFIRM WATER FILTERS THROUGH UNDISTURBED SOIL. DESIGN ALTERNATIVE DRAINAGE SYSTEM IF REQUIRED.
3. A SOIL EXPERT CAN BE CONSULTED TO HELP MODIFY AND FERTILIZE TOPSOIL TO CREATE AN ACCEPTABLE PLANTING SOIL MIX FOR THE SITE CONDITIONS AND SPECIFIC TREE SPECIES.
4. IF USING CONTAINER GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
5. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND DURING DRY PERIODS.

01 TREE INSTALLATION DETAIL
SCALE: 1/2" = 1'=0"



02 SHRUB INSTALLATION DETAIL
SCALE: 1/2" = 1'=0"

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PARK APARTMENTS
FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-LS1
CHECKED BY	SRD
DRAWN BY	AMR
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

LANDSCAPE DETAILS

LS-2

PERMIT SET

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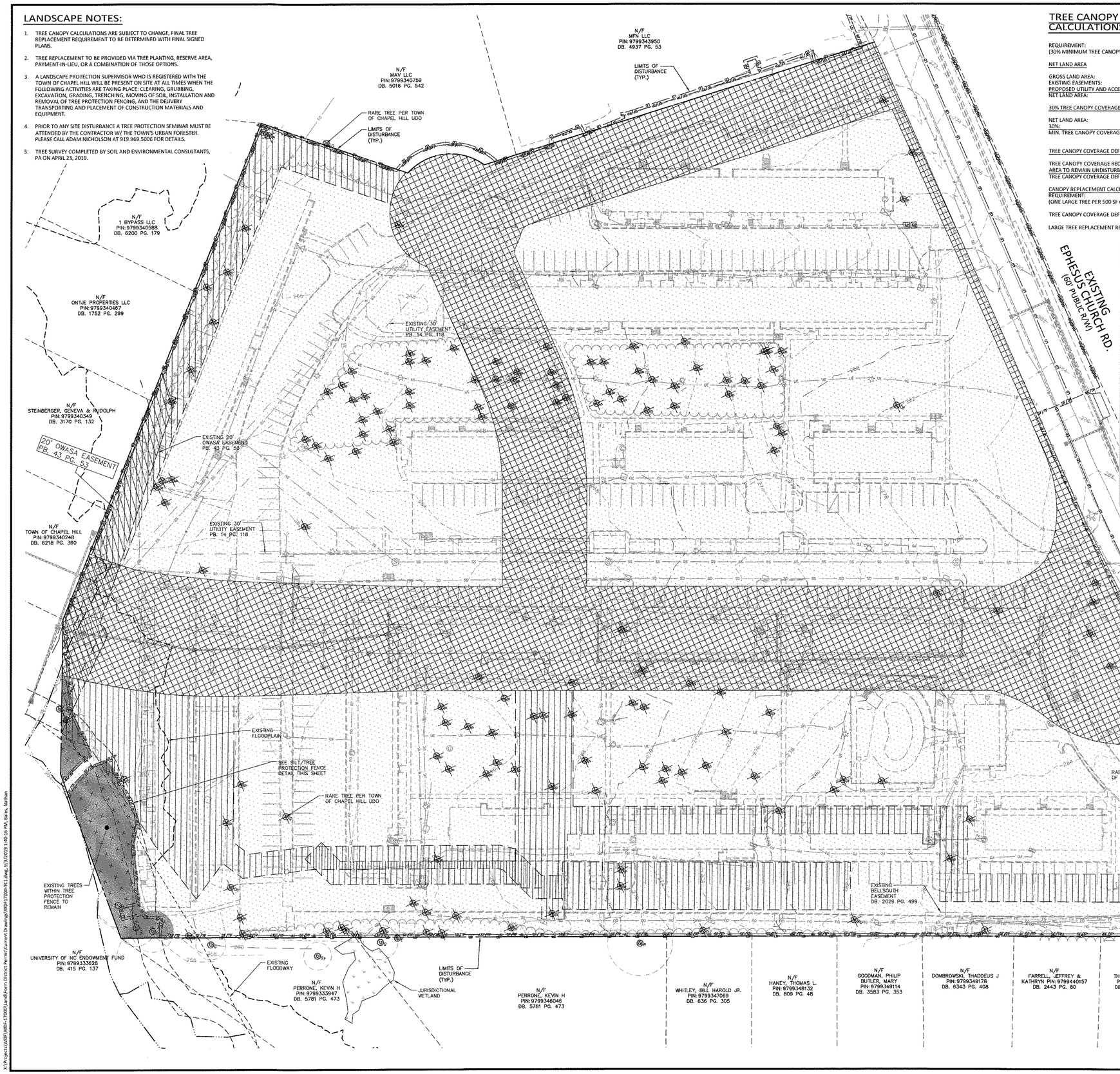
LANDSCAPE NOTES:

1. TREE CANOPY CALCULATIONS ARE SUBJECT TO CHANGE, FINAL TREE REPLACEMENT REQUIREMENT TO BE DETERMINED WITH FINAL SIGNED PLANS.
2. TREE REPLACEMENT TO BE PROVIDED VIA TREE PLANTING, RESERVE AREA, PAYMENT-IN-LIEU, OR A COMBINATION OF THOSE OPTIONS.
3. A LANDSCAPE PROTECTION SUPERVISOR WHO IS REGISTERED WITH THE TOWN OF CHAPEL HILL WILL BE PRESENT ON SITE AT ALL TIMES WHEN THE FOLLOWING ACTIVITIES ARE TAKING PLACE: CLEARING, GRUBBING, EXCAVATION, GRADING, TRENCHING, MOVING OF SOIL, INSTALLATION AND REMOVAL OF TREE PROTECTION FENCING, AND THE DELIVERY TRANSPORTING AND PLACEMENT OF CONSTRUCTION MATERIALS AND EQUIPMENT.
4. PRIOR TO ANY SITE DISTURBANCE A TREE PROTECTION SEMINAR MUST BE ATTENDED BY THE CONTRACTOR W/ THE TOWN'S URBAN FORESTER. PLEASE CALL ADAM NICHOLSON AT 919.969.5006 FOR DETAILS.
5. TREE SURVEY COMPLETED BY SOIL AND ENVIRONMENTAL CONSULTANTS, PA ON APRIL 23, 2019.



TREE CANOPY COVERAGE CALCULATIONS:

REQUIREMENT:
(30% MINIMUM TREE CANOPY COVERAGE OF NET LAND AREA)

NET LAND AREA

GROSS LAND AREA:	13.66 AC
EXISTING EASEMENTS:	- 0.10 AC
PROPOSED UTILITY AND ACCESS EASEMENTS:	- 5.21 AC
NET LAND AREA:	8.35 AC

30% TREE CANOPY COVERAGE

NET LAND AREA:	8.35 AC
30%:	x0.30
MIN. TREE CANOPY COVERAGE REQUIREMENT:	2.51 AC

TREE CANOPY COVERAGE DEFICIT

TREE CANOPY COVERAGE REQUIREMENT:	2.51 AC (30.06 %)
AREA TO REMAIN UNDISTURBED:	- 0.17 AC (2.04%)
TREE CANOPY COVERAGE DEFICIT:	2.34 AC (28.02%)

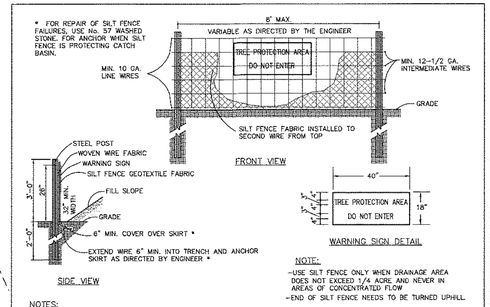
CANOPY REPLACEMENT CALCULATIONS
REQUIREMENT:
(ONE LARGE TREE PER 500 SF OF TREE CANOPY COVERAGE DEFICIT)

TREE CANOPY COVERAGE DEFICIT:	101,930 SF (2.34 AC)
	101,930/500
LARGE TREE REPLACEMENT REQUIRED:	204 TREES

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

TREE CANOPY COVERAGE LEGEND

TREE	EXISTING TREE
P	EXISTING PINE
G	EXISTING GUM
O	EXISTING OAK
E	EXISTING ELM
CH	EXISTING CHERRY
TP	EXISTING TREE TO BE REMOVED
SF/TP	SILT/TREE PROTECTION FENCE
LD	LIMITS OF DISTURBANCE



NOTE:
-USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW
-END OF SILT FENCE NEEDS TO BE TURNED UPHILL.

NOTES:
1. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
2. LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
3. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS.
4. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
5. FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
6. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
7. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.
8. ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF RALEIGH INSPECTIONS DEPARTMENT BASED ON ACTUAL FIELD CONDITIONS.
9. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.

STANDARD TEMPORARY SILT / TREE PROTECTION FENCE

EXISTING CLEARED AREAS (EASEMENTS)	ACREAGE
EXISTING SANITARY SEWER EASMENT	0.10 AC
AREAS TO BE CLEARED AND GRADED	
AREA TO BE REMOVED (ONSITE).	13.54 AC
LIMIT OF DISTURBANCE (INCLUDING OFFSITE)	14.12 AC
PROPOSED UTILITY EASEMENTS	1.79 AC
PROPOSED RIGHT-OF-WAY	3.49 AC
COMBINED UTILITY AND ACCESS EASEMENTS	5.21 AC
AREA TO REMAIN	
PRESERVED AREA	0.17 AC

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL AND OWASA DESIGN AND CONSTRUCTION STANDARDS

SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

PERMIT SET

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FORM DISTRICT PERMIT
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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA LICENSED LANDSCAPE ARCHITECT 4291 JOSHUA DECKER
08.30.19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

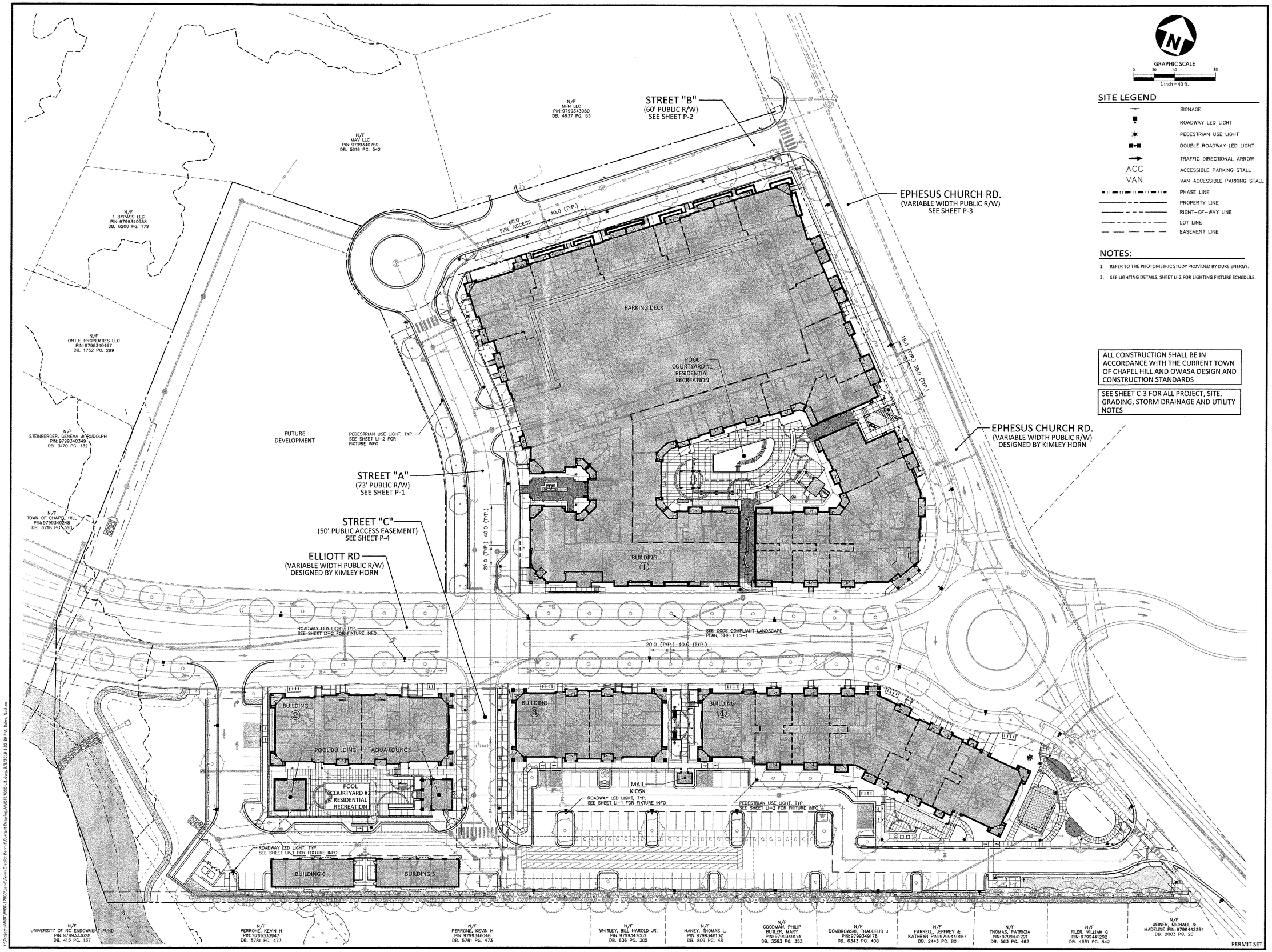
PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-TC1
CHECKED BY	SRD
DRAWN BY	AMR
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

LANDSCAPE PROTECTION & TREE COVERAGE PLAN

TC-1



GRAPHIC SCALE

0 20 40 80

1 inch = 40 ft.

SITE LEGEND

	SIGNAGE
	ROADWAY LED LIGHT
	PEDESTRIAN USE LIGHT
	DOUBLE ROADWAY LED LIGHT
	TRAFFIC DIRECTIONAL ARROW
ACC	ACCESSIBLE PARKING STALL
VAN	VAN ACCESSIBLE PARKING STALL
	PHASE LINE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	LOT LINE
	EASEMENT LINE

NOTES:

1. REFER TO THE PHOTOMETRIC STUDY PROVIDED BY DUKE ENERGY.
2. SEE LIGHTING DETAILS, SHEET LI-2 FOR LIGHTING FIXTURE SCHEDULE.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL AND OWASA DESIGN AND CONSTRUCTION STANDARDS

SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

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NORTH CAROLINA LICENSED LANDSCAPE ARCHITECT
JOSHUA A. DECKER
08/30/19

REVISIONS

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4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-LI
CHECKED BY	SRD
DRAWN BY	AMR
SCALE	1"=40'
DATE	02. 28. 2019

SHEET

LIGHTING PLAN

LI-1

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LIGHTING FIXTURE SCHEDULE

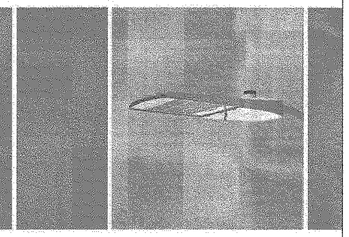
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	FINISH	WATTS	COLOR TEMP	MOUNTING
	DUKE ENERGY / SINGLE ROADWAY LED / VEHICULAR USE LIGHT	26	BLACK	SEE CUT SHEET	SEE CUT SHEET	POLE MOUNT
	DUKE ENERGY / SINGLE SANIBEL LED / PEDESTRIAN USE LIGHT	25	BLACK	SEE CUT SHEET	SEE CUT SHEET	POLE MOUNT

DUKE ENERGY. PROGRESS

Outdoor Lighting

Roadway LED

VEHICULAR USE AREAS



The Roadway LED is a green solution and great fit for streets, roads, long, narrow areas and parking lots. This energy-efficient luminaire delivers the light where it is needed while increasing visibility and reducing spill light to adjoining properties. Choose low to medium light output on wood or fiberglass poles for mount on an existing pole. Available with one to four fixtures per pole, depending on the fixture/pole combination selected.

LED *(Light Emitting Diode)*	50 | 75 | 105 | 150 | 215 | 280 watts
Mounting heights	25', 30', 35'
Color	Gray, Black
Poles	Fiberglass Metal *(special conditions)* Wood

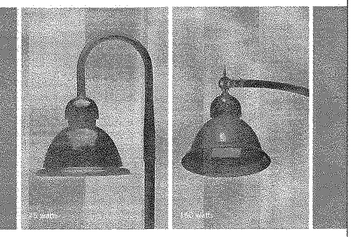
For additional information, visit us at duke-energy.com/OutdoorLighting or call us toll free at 866.769.6417.

DUKE ENERGY. PROGRESS

Outdoor Lighting

Sanibel LED

PEDESTRIAN USE AREAS



The beauty of the stylish Sanibel LED is its remarkable versatility. Its sleek simplicity, with a gently curved bracket that helps cast light downward, is at home virtually anywhere – from more formal traditional neighborhoods to beachfront communities and other casual locales.

LED *(Light Emitting Diode)*	75 watts, 150 watts
Mounting heights	12', 16', 29'
Color	Black
Pole	Smooth round concrete

For additional information, visit us at duke-energy.com/OutdoorLighting or call us toll free at 866.769.6417.

DUKE ENERGY. PROGRESS

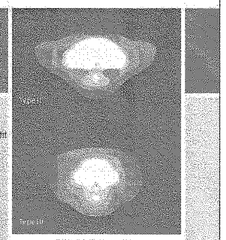
Outdoor Lighting

Roadway LED

Light source: LED *(white)*
Lumens: 4,807 – 25,050 *(fixture dependent)*

Wattage	Light Pattern	IESNA Backlight-Uplight – Glare (BUG) Rating
LED 50	IESNA Type III *(medium oval)*	B1-U0-G1
LED 75	IESNA Type II *(long oval)*	B1-U0-G2
LED 105	IESNA Type II *(long oval)*	B2-U0-G1
LED 150	IESNA Type III *(medium oval)*	B2-U0-G2
LED 215	IESNA Type III *(medium oval)*	B3-U0-G2
LED 280	IESNA Type III *(medium oval)*	B3-U0-G4

Color temperature: 4,000K
Warm-up and restrike time: Instant *(on the warm-up or restrike time)*



light distribution pattern

Poles available:

Name	Mounting height	Color
Fiberglass	25', 30', 35'	Gray
Fiberglass	25', 30', 35'	Black *(additional cost)*
Wood	25', 30', 35'	Standard
Metal *(special conditions)*	25', 30', 35'	Gray

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

**2' raised foundation available when required.*

©2015 Duke Energy Corporation 132697 7/15

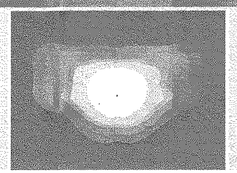
DUKE ENERGY. PROGRESS

Outdoor Lighting

Sanibel LED

Light source: LED *(white)*

Wattage	BUG Rating	Light Pattern	Lumens	Color Temp
75W	B1-U0-G1	IESNA Type III *(oval)*	6,320	4,000K
150W	B2-U0-G2		16,160	



light distribution pattern

Pole available:

Name	Mounting height	Color
Smooth round concrete	12', 16', 29'	Black

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

©2017 Duke Energy Corporation 170288 5/17

MCADAMS

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CLIENT

WOODFIELD INVESTMENTS
11425 HORSEMAN'S TRAIL
RALEIGH, NC 27613
PHONE: 919. 535. 8947

PARK APARTMENTS
FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA LANDSCAPE ARCHITECT LICENSE NO. 2009 JOSHUA DECKER 08.30.19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-LI1
CHECKED BY	SRD
DRAWN BY	AMR
SCALE	-
DATE	02. 28. 2019

SHEET

LIGHTING DETAILS

LI-2

PERMIT SET

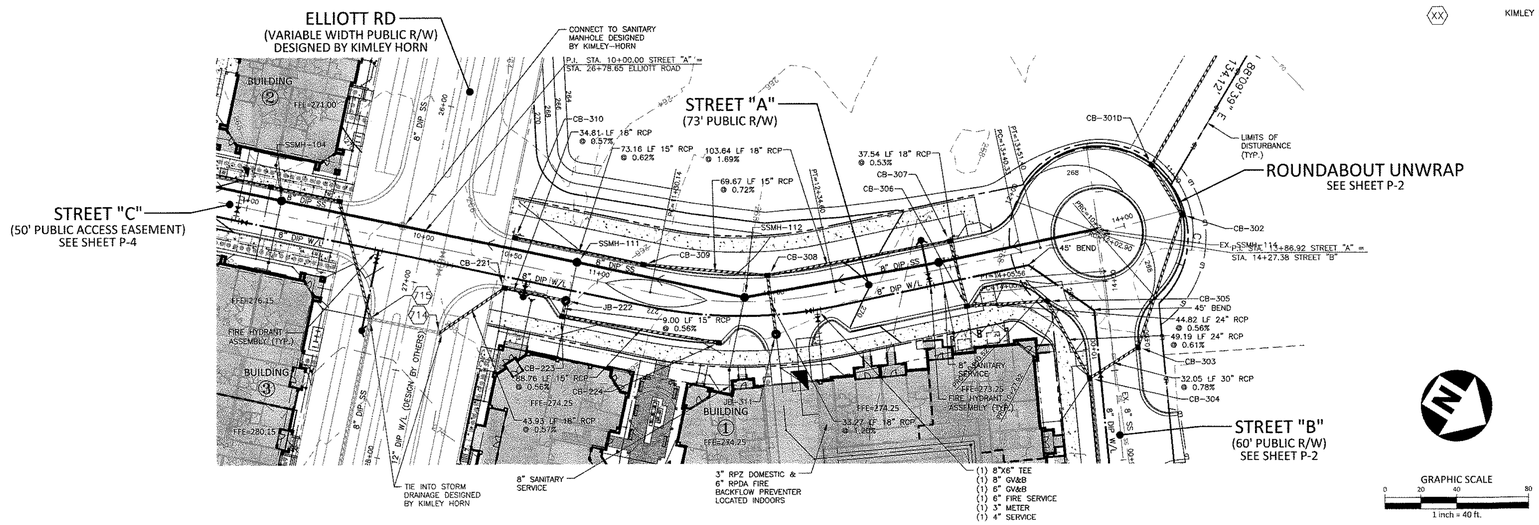
X:\Projects\WDF\WDF-17000\Land\Form District Permit\Current Drawings\WDF17000-LI1.dwg, 9/3/2019 1:02:40 PM, Bales, Nathan

LEGEND

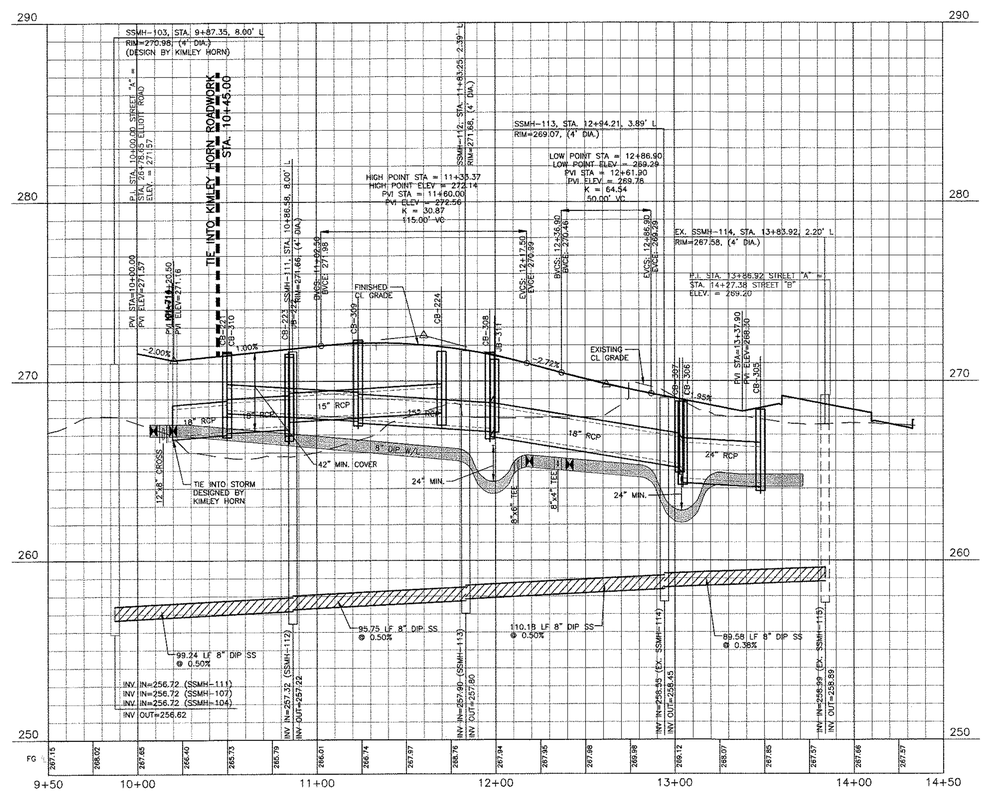
(XX) KIMLEY HORN STORM STRUCTURE

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF CHAPEL HILL AND OWASA DESIGN AND CONSTRUCTION STANDARDS

SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES



STREET "A"



PERMIT SET

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DEVELOPER

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REVISIONS

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4	08. 30. 2019	PERMIT SET

NORTH CAROLINA PROFESSIONAL SEAL 042462 ENGINEER NATHAN BALES 9/3/19

PARK APARTMENTS

FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-P1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'/1"=4'
DATE	02. 28. 2019

PLAN AND PROFILE

STREET "A", STA. 10+00 THRU STA. 14+50

P-1

LEGEND

(XX) KIMLEY HORN STORM STRUCTURE

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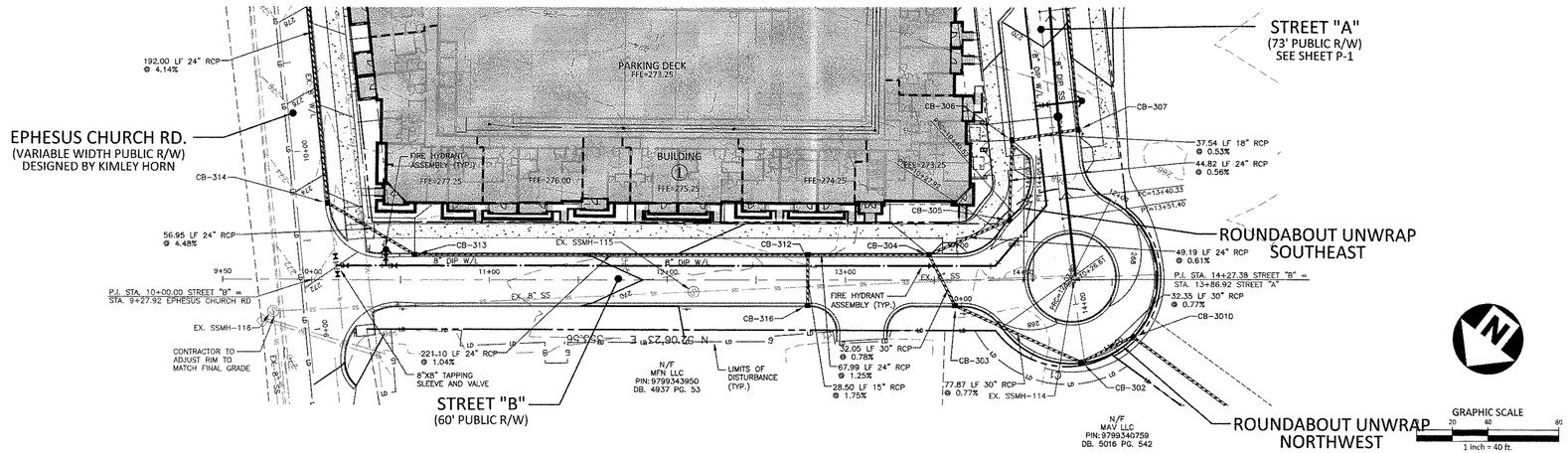

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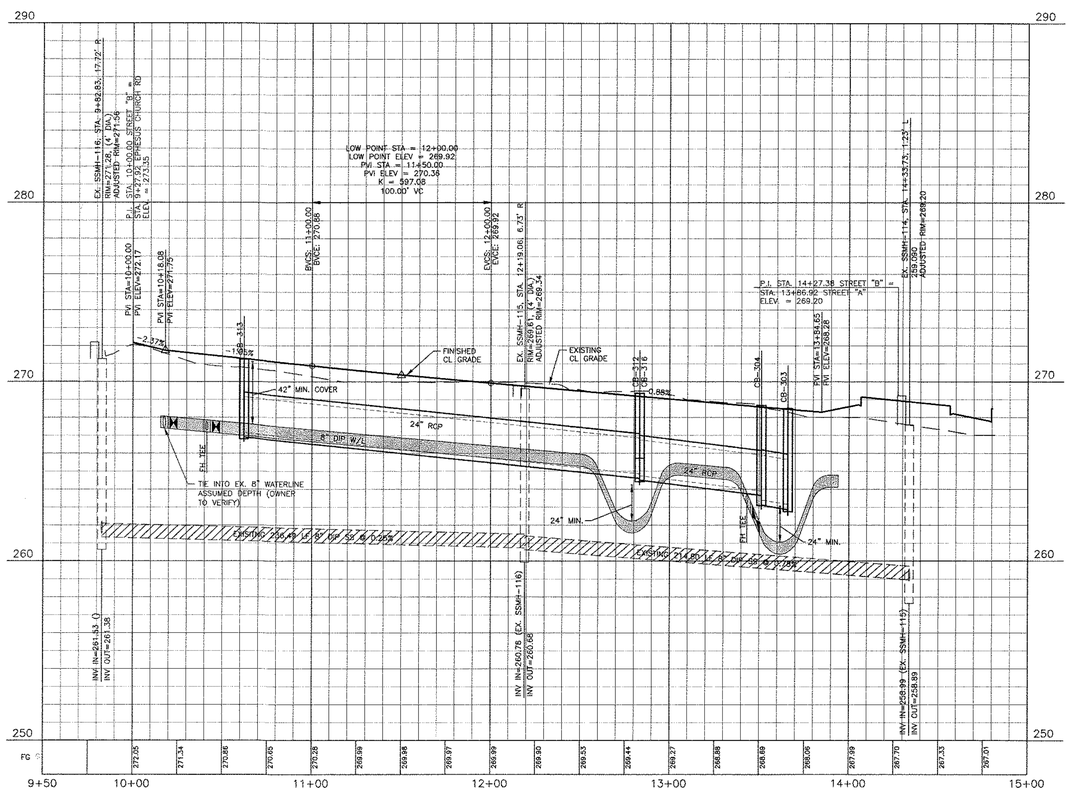
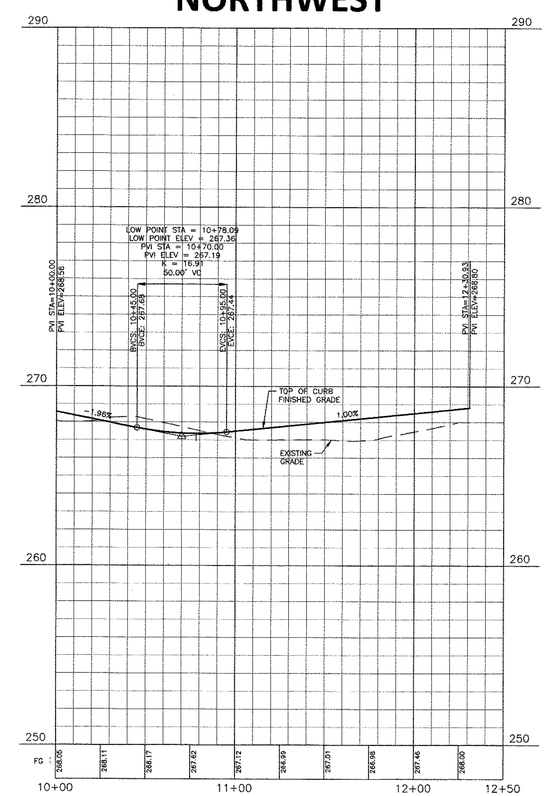
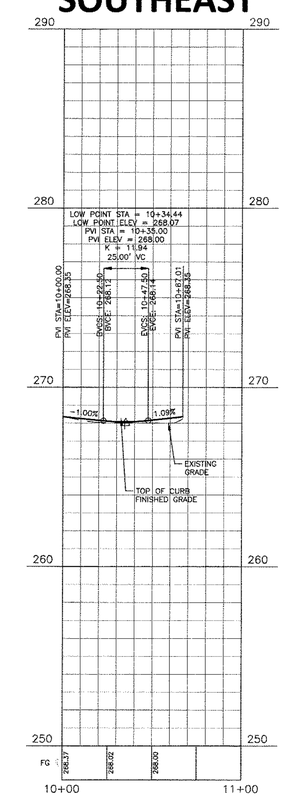


ROUNDABOUT UNWRAP

NORTHWEST



SOUTHEAST



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REVISIONS

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4	08. 30. 2019	PERMIT SET

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 9/3/19

PARK APARTMENTS

FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-P1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'/1"=4'
DATE	02. 28. 2019

PLAN AND PROFILE

STREET "B", STA. 10+00 THRU STA. 15+00
ROUNDABOUT UNWRAP NW, STA. 10+00 THRU STA. 12+50
ROUNDABOUT UNWRAP SE, STA. 10+00 THRU STA. 11+00

P-2

LEGEND

(XX) KIMLEY HORN STORM STRUCTURE

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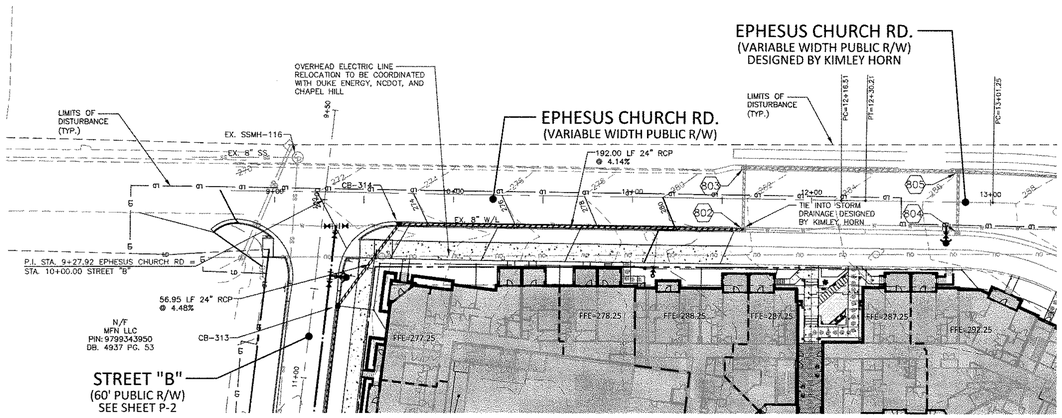
SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

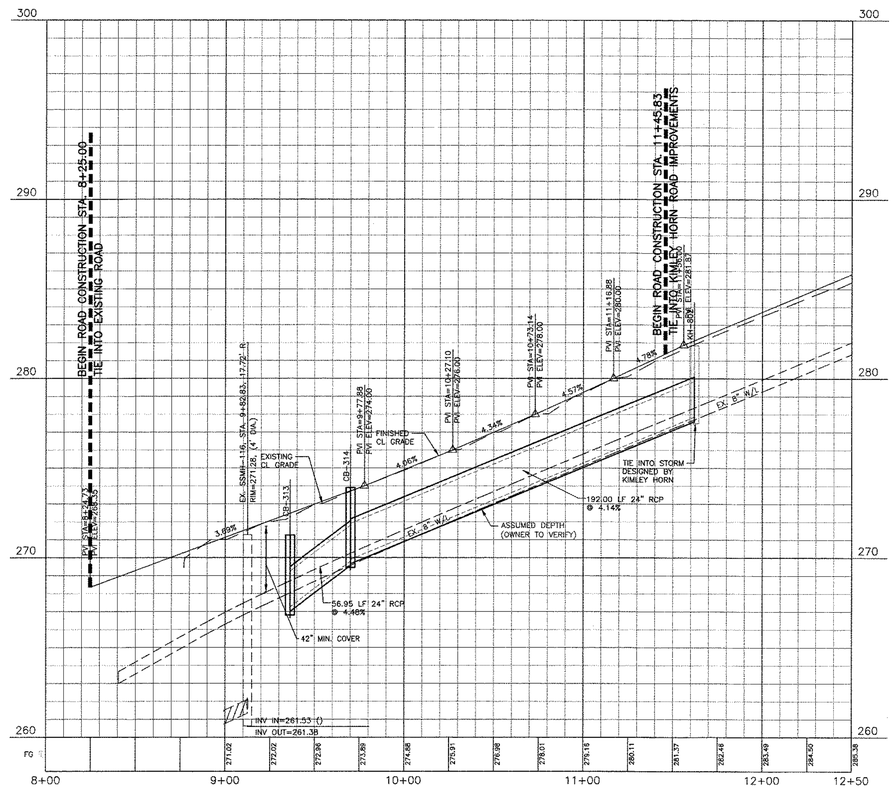


GRAPHIC SCALE

0 20 40 80

1 inch = 40 ft.

EPHESUS CHURCH RD



PERMIT SET

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11425 HORSEMAN'S TRAIL
RALEIGH, NC 27613
PHONE: 919. 535. 8947

REVISIONS

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4	08. 30. 2019	PERMIT SET

NORTH CAROLINA PROFESSIONAL SEAL 045862 ENGINEER NATHAN BALES 9/3/19

PARK APARTMENTS

FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-P1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'/1"=4'
DATE	02. 28. 2019

PLAN AND PROFILE

EPHESUS CHURCH RD, STA. 8+23 THRU STA. 12+50

P-3

LEGEND

(XX) KIMLEY HORN STORM STRUCTURE

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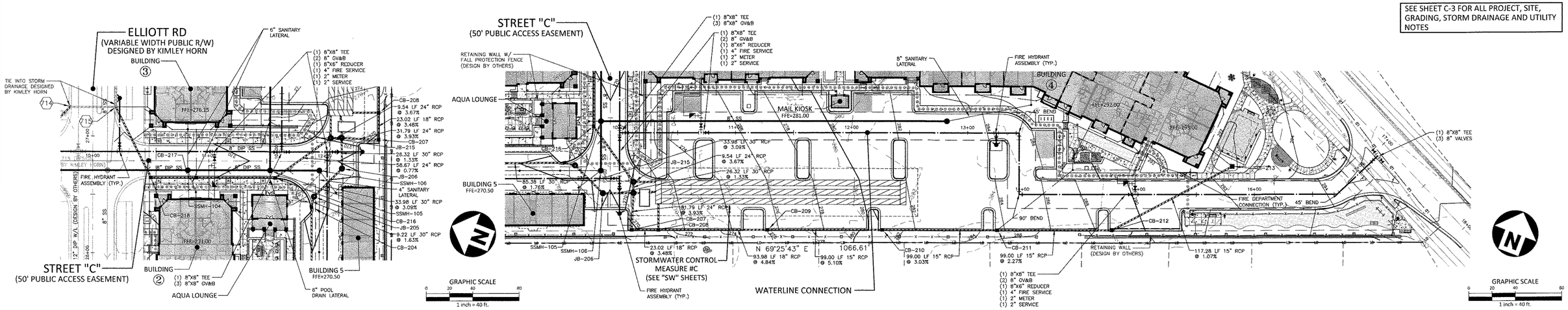
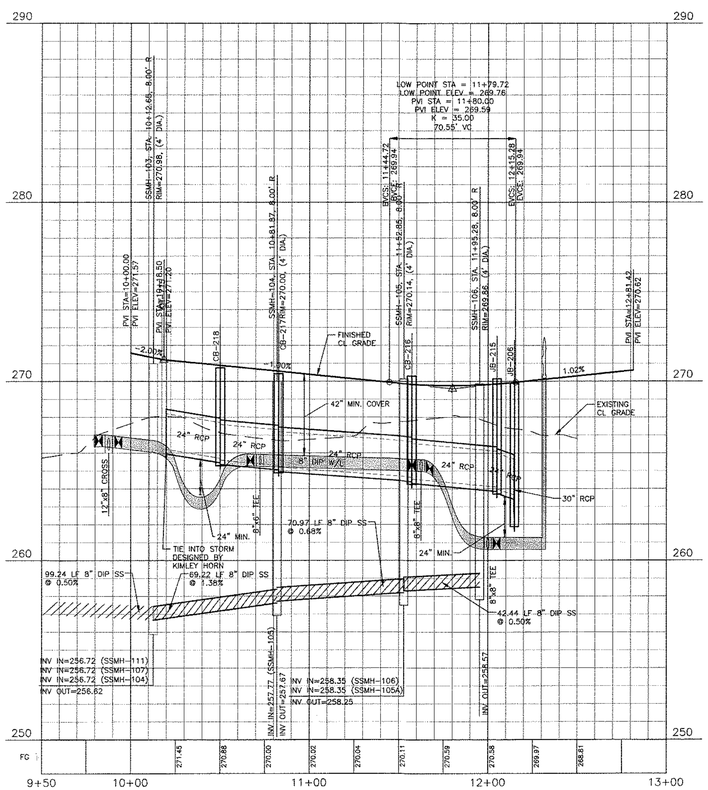
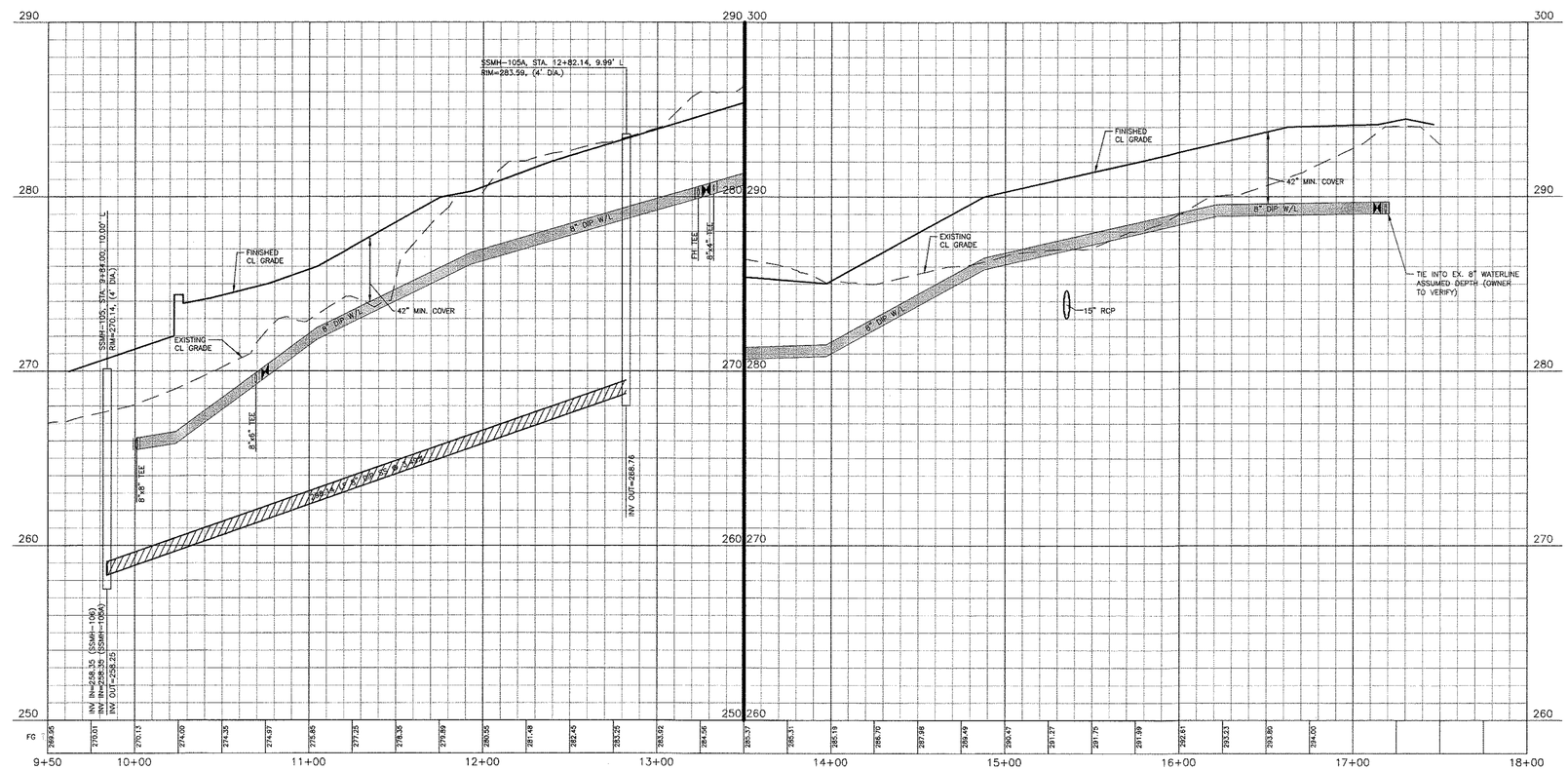
SEE SHEET C-3 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES



PRIVATE STREET "C"



WATERLINE CONNECTION



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REVISIONS

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4	08. 30. 2019	PERMIT SET

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 9/3/19

PARK APARTMENTS

FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

PLAN INFORMATION

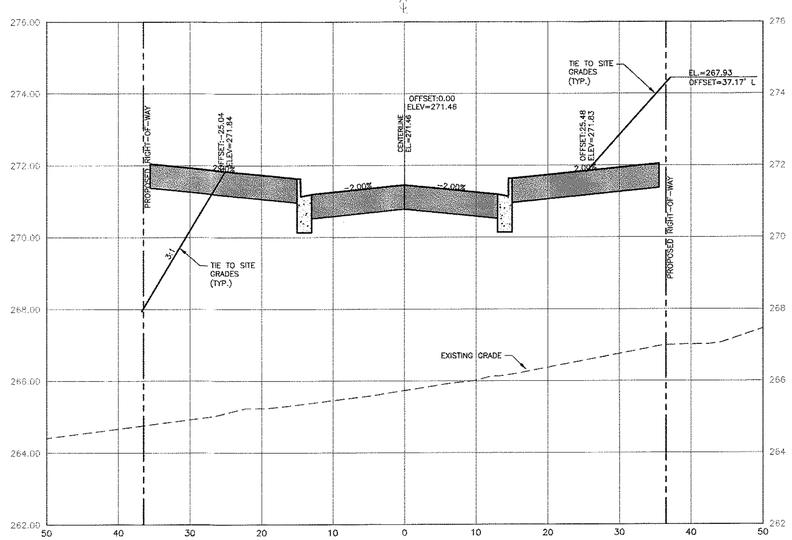
PROJECT NO.	WDF-17000
FILENAME	WDF17000-P1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=40'/1"=4'
DATE	02. 28. 2019

PLAN AND PROFILE

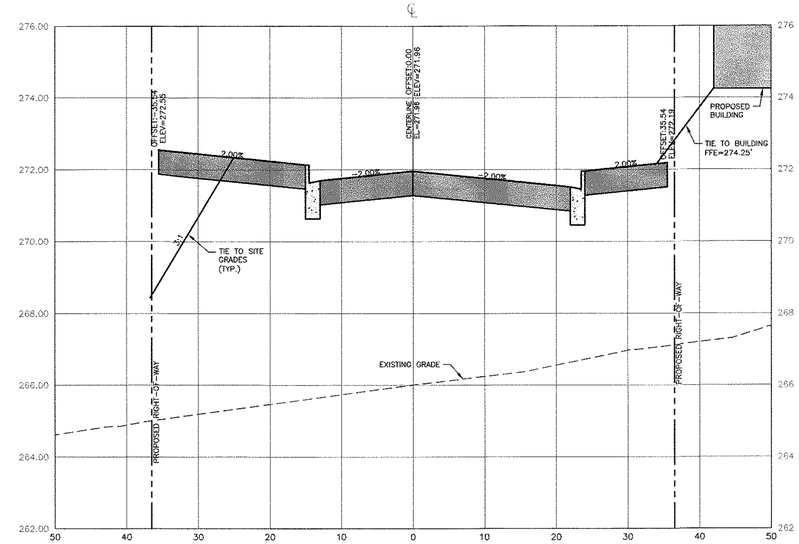
STREET "C", STA. 9+50 THRU STA. 13+00
WL CONNECTION, STA. 9+50 THRU STA. 18+00

P-4

10+50



11+00



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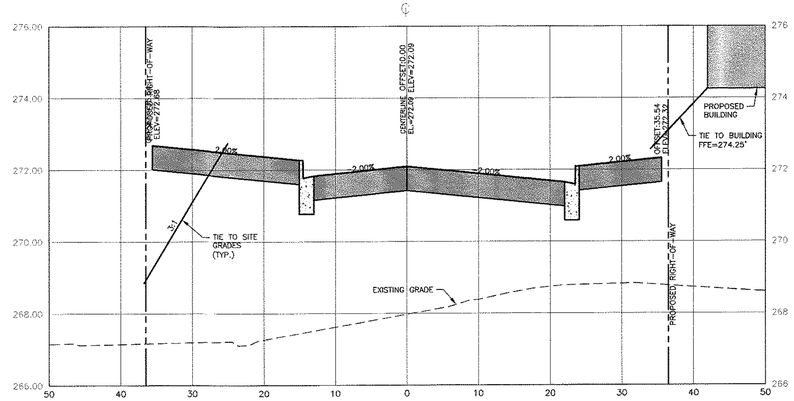
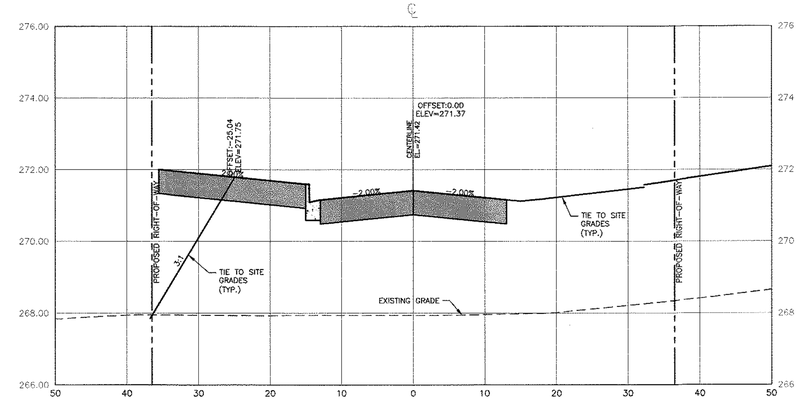


12+00



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PHONE: 919. 535. 8947

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

NORTH CAROLINA PROFESSIONAL SEAL 044462 ENGINEER NATHAN BALES 9/3/19

PARK APARTMENTS
FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

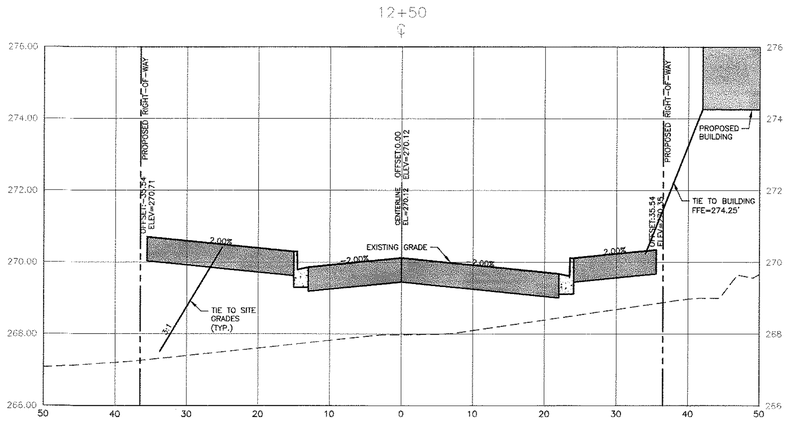
PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-XS1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=10'/1"=2'
DATE	02. 28. 2019

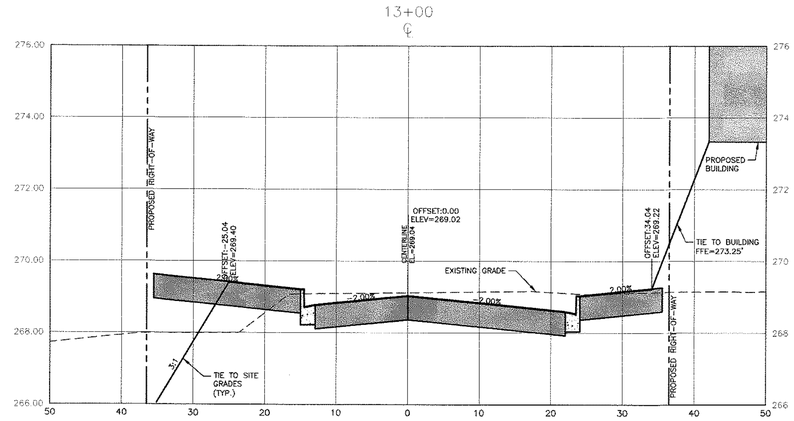
CROSS SECTIONS
STREET "A", STA. 10+50 THRU STA. 12+00

XS-1

12+50



13+00



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REVISIONS

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NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES
7/2/19

PARK APARTMENTS

FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

PLAN INFORMATION

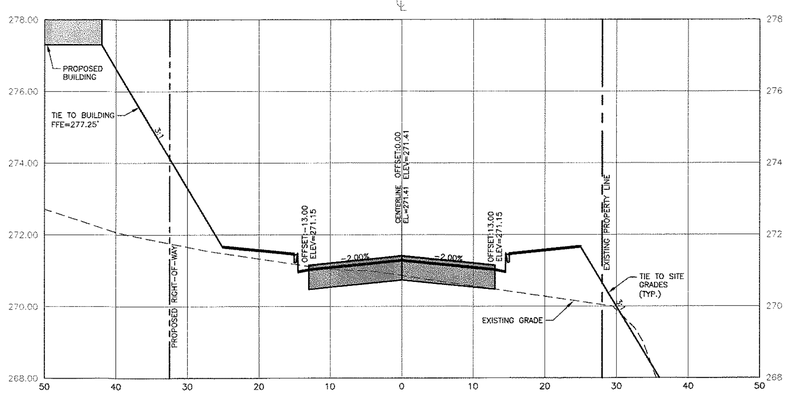
PROJECT NO.	WDF-17000
FILENAME	WDF17000-XS1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=10'/1"=2'
DATE	02. 28. 2019

CROSS SECTIONS

STREET "A", STA. 12+50 THRU STA. 13+50

XS-2

10+50
℄



11+00
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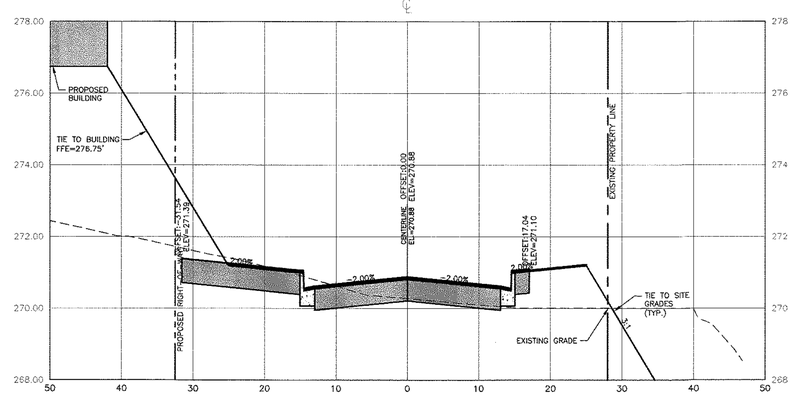

11+50
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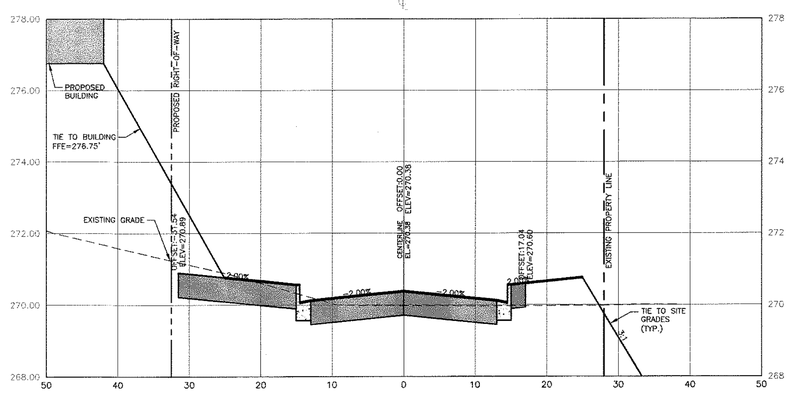

12+00
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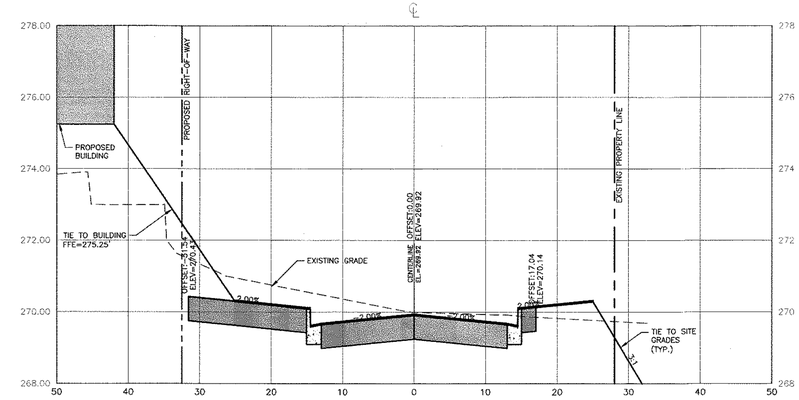

PERMIT SET

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DEVELOPER

WOODFIELD INVESTMENTS
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PHONE: 919. 535. 8947

REVISIONS

NO.	DATE	
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3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
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NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES
9/12/19

PARK APARTMENTS

FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

PLAN INFORMATION

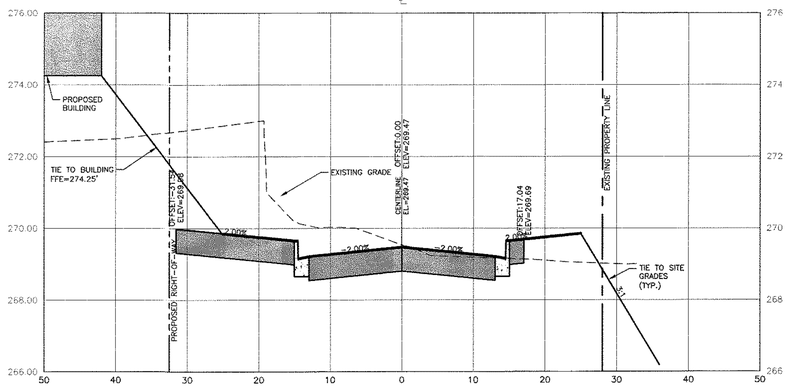
PROJECT NO.	WDF-17000
FILENAME	WDF17000-XS1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=10'/1"=2'
DATE	02. 28. 2019

CROSS SECTIONS

STREET "B", STA. 10+50 THRU STA. 12+00

XS-3

12+50
℄



13+00
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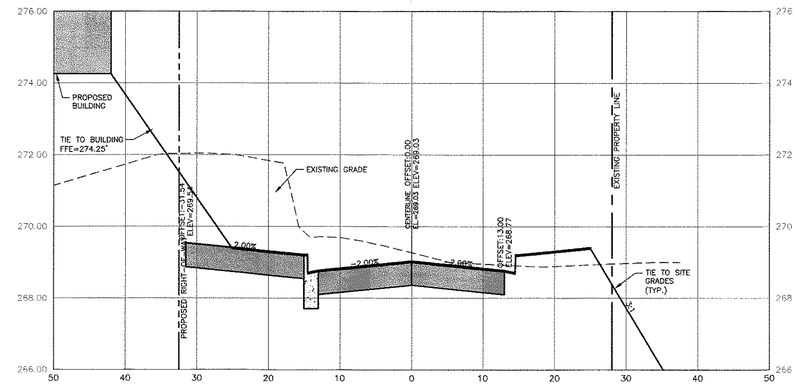

13+50
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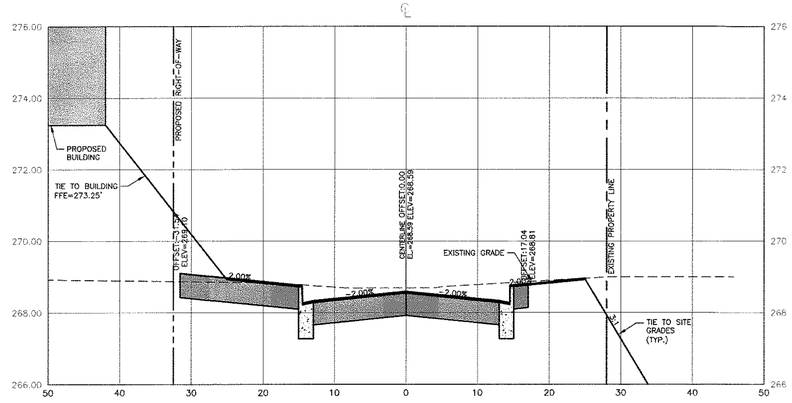

PERMIT SET

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4	08. 30. 2019	PERMIT SET

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 9/2/19

PARK APARTMENTS

FORM DISTRICT PERMIT

1250 EPHESUS CHURCH ROAD

CHAPEL HILL, NORTH CAROLINA, 27517

PLAN INFORMATION

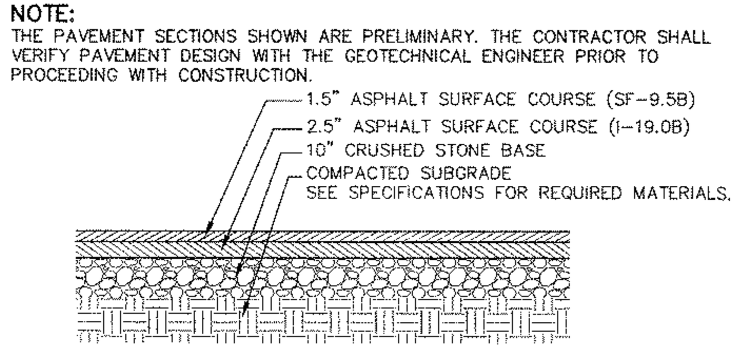
PROJECT NO.	WDF-17000
FILENAME	WDF17000-XS1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	1"=10'/1"=2'
DATE	02. 28. 2019

CROSS SECTIONS

STREET "A", STA. 12+50 THRU STA. 13+50

XS-4

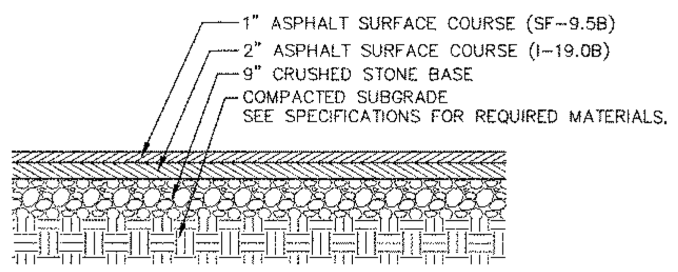
NOTE:
THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.

ON-SITE ASPHALT HEAVY DUTY TRAFFIC PAVEMENT DETAIL
N.T.S.

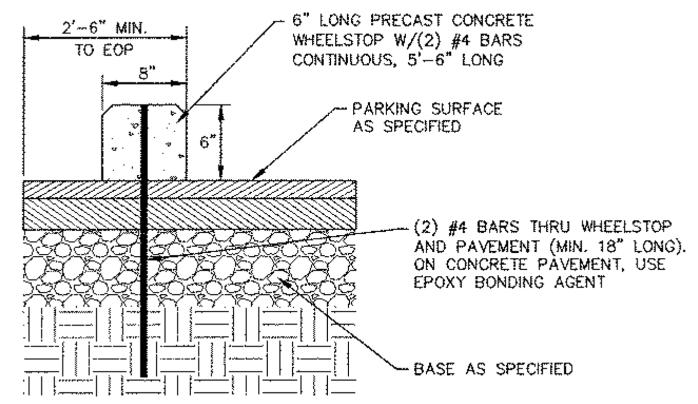
NOTE:
THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



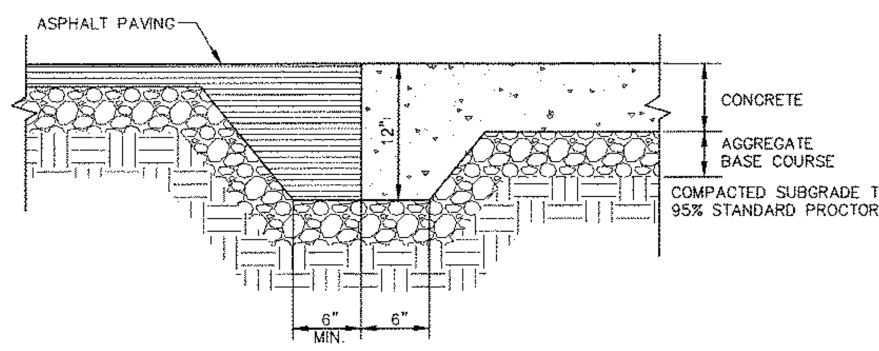
SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.

ON-SITE ASPHALT PARKING PAVEMENT DETAIL
N.T.S.

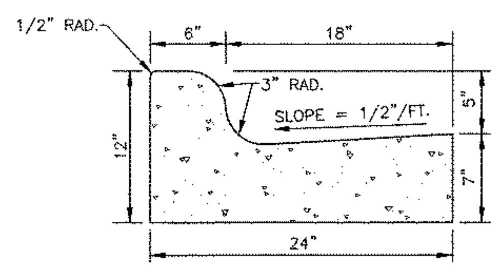
NOTE: CURB STOP SHALL BE SLOTTED, FOR DRAINAGE



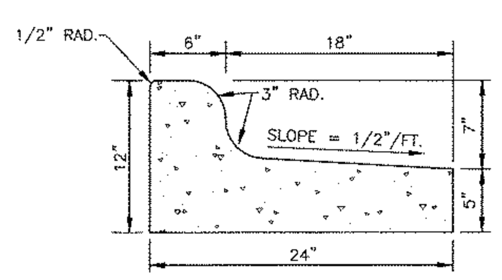
WHEEL STOP
N.T.S.



ASPHALT TO CONCRETE PAVEMENT TRANSITION
N.T.S.



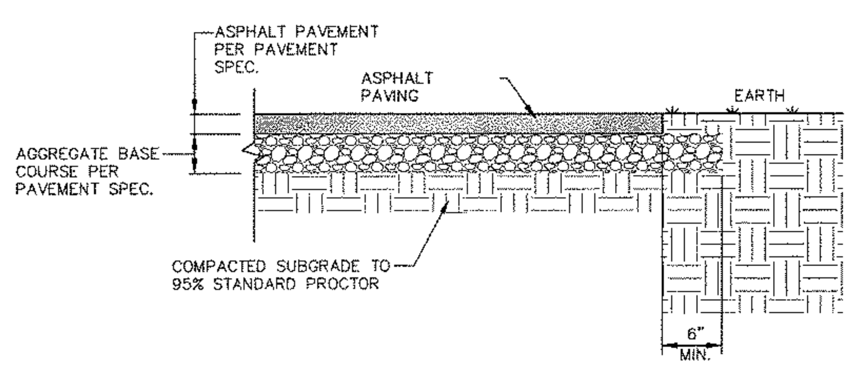
STANDARD 24" CURB AND GUTTER



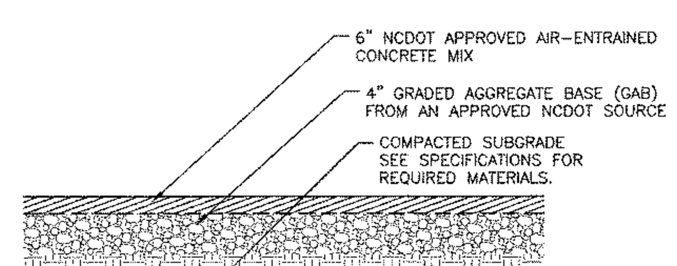
24" SPILL CURB AND GUTTER

NOTES:
1. 10' MAXIMUM BETWEEN DUMMY JOINTS. 15' MAXIMUM BETWEEN DUMMY JOINTS ON MACHINE POURS.
2. 1/2" EXPANSION JOINT EVERY 50'.
3. 3000 PSI CONCRETE MINIMUM, 4" SLUMP MAXIMUM.
4. LIQUID MEMBRANE CURING COMPOUND SHALL MEET THE REQUIREMENTS OF SECTION 1026-2 OF NCDOT STANDARDS AND SPECIFICATIONS FOR ROADS AND STRUCTURES.
5. ALL CONSTRUCTION JOINTS SHALL BE FILLED WITH FILLER AND SEALER IN ACCORDANCE WITH NCDOT ROADWAY STANDARD DETAIL 846.01. THE JOINT MATERIAL SHALL CONFORM TO SECTION 1028-2 OF THE NCDOT STANDARDS AND SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. REFER TO NCDOT DETAIL 846.01 FOR CURB AND GUTTER SUPERELEVATION RATES.

24" CURB AND GUTTER
N.T.S.

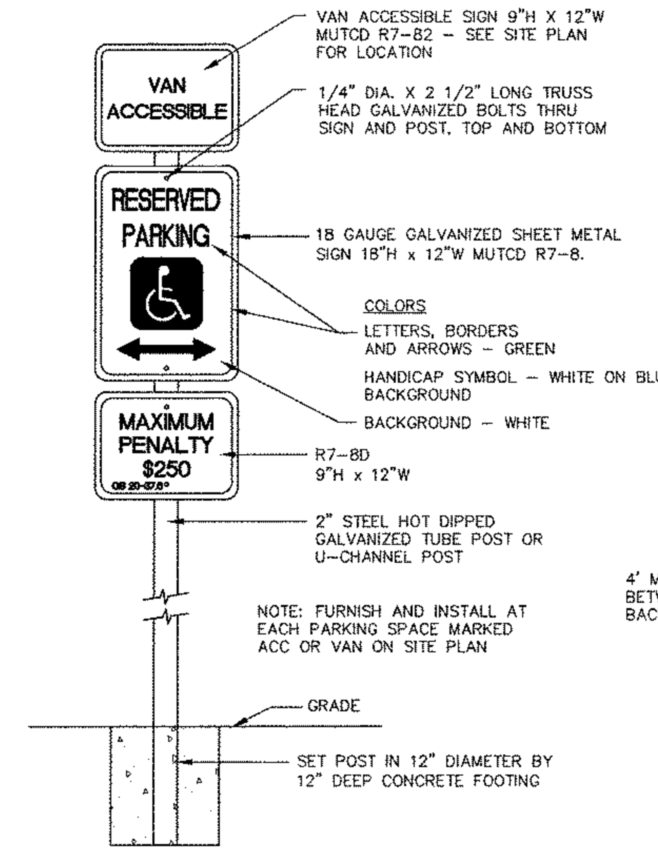


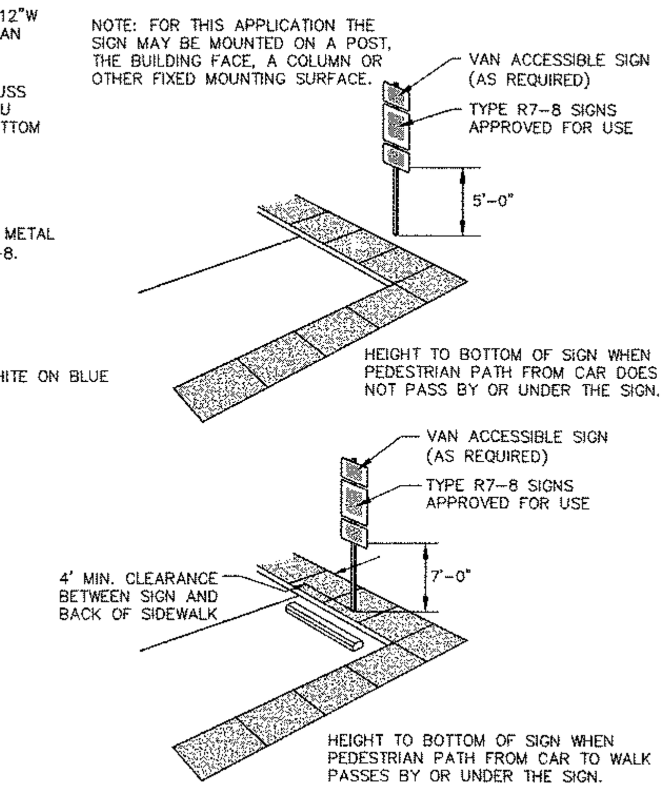
ASPHALT EDGE DETAIL
N.T.S.



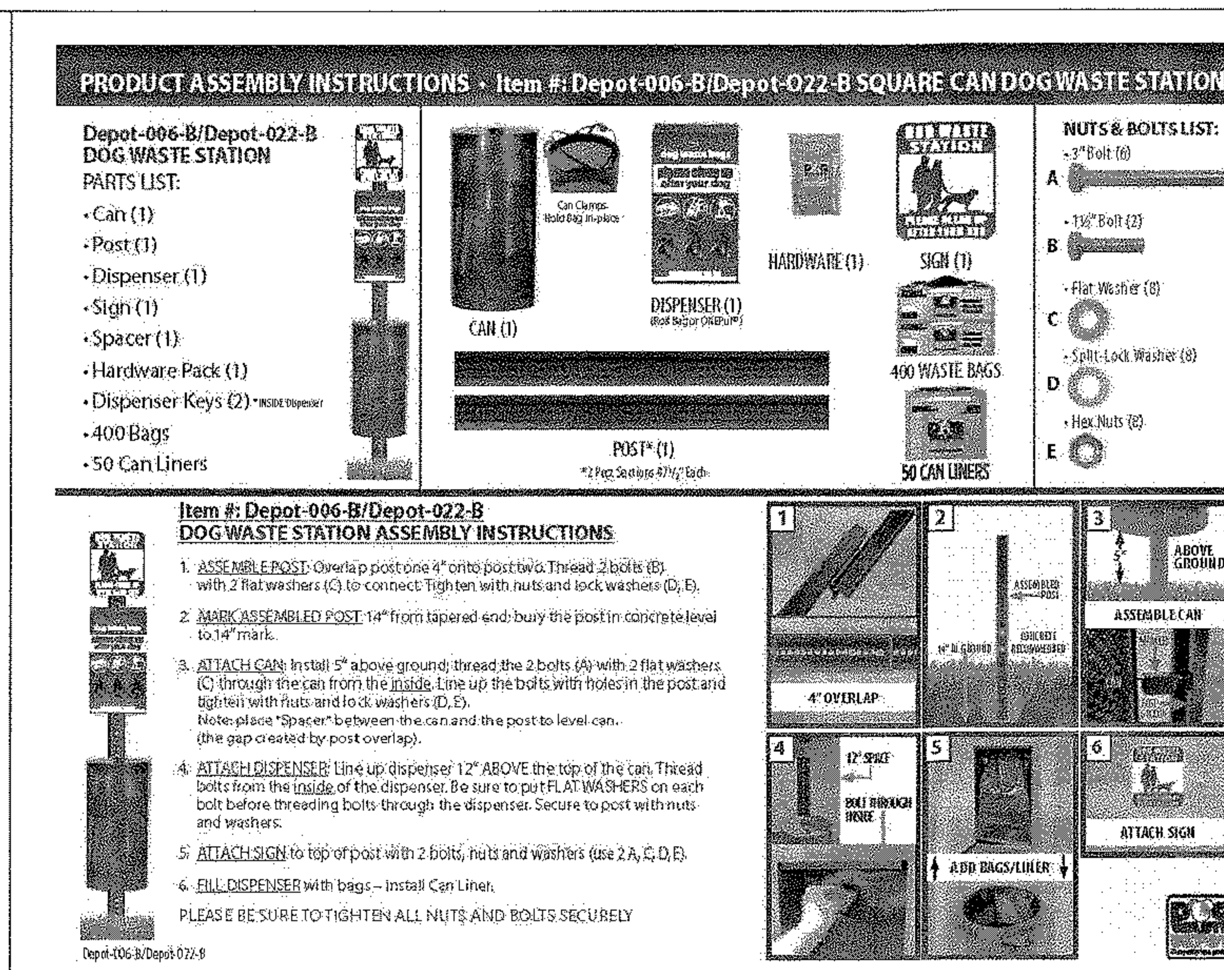
HEAVY DUTY CONCRETE PAVEMENT DETAIL
N.T.S.

NOTE:
THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



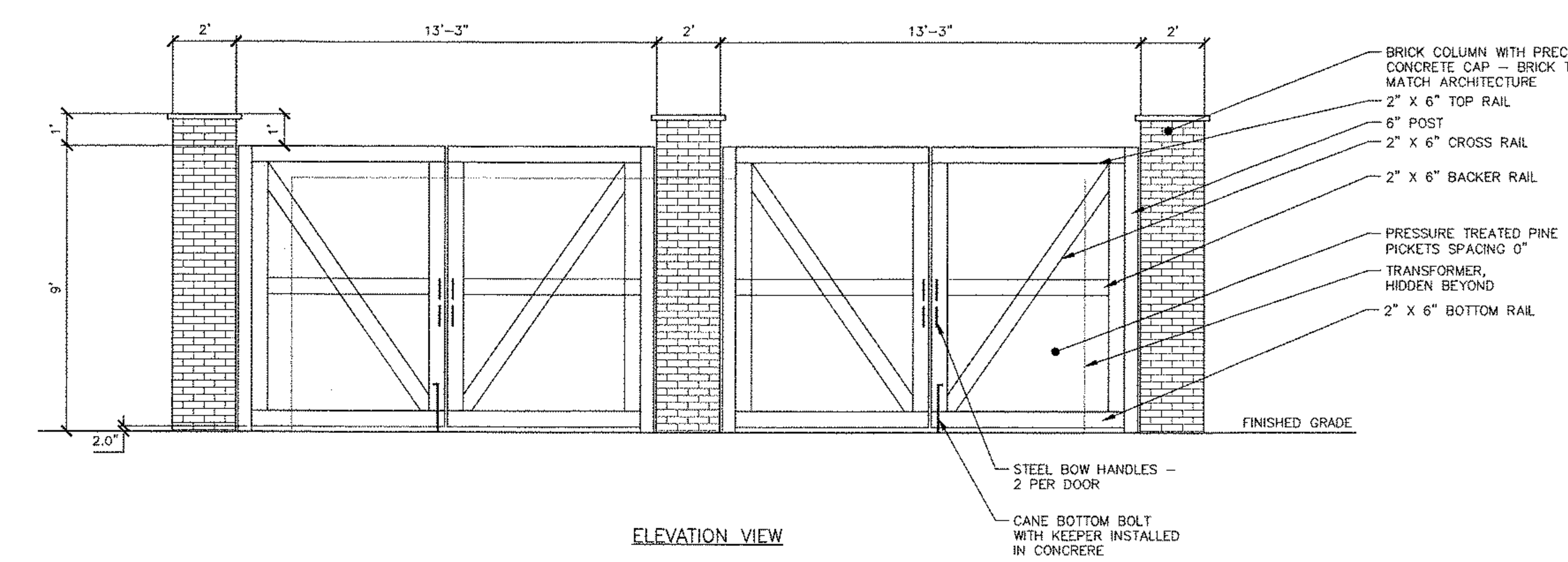


ACCESSIBLE PARKING SPACE SIGN
N.T.S.

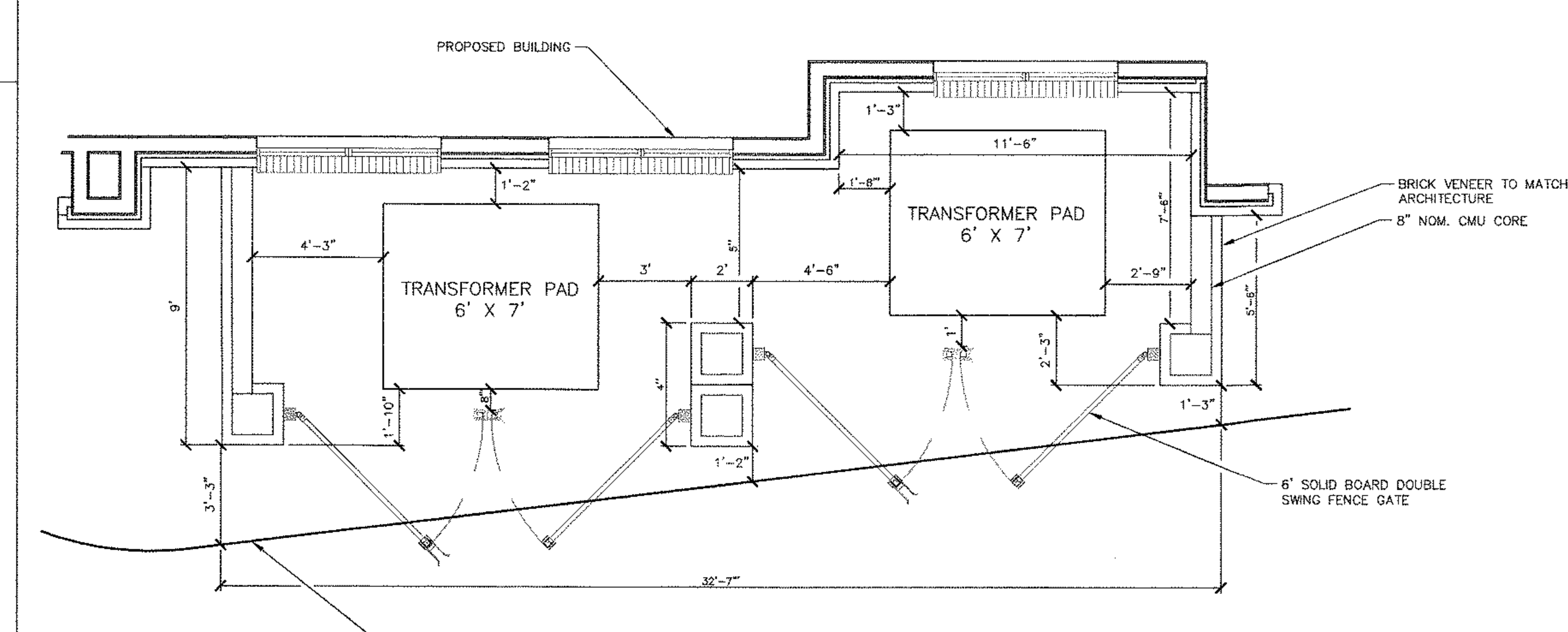


NOTES:
1. IMAGES FOR REFERENCE ONLY AND TO CONVEY DESIGN INTENT. FINAL PRODUCT SELECTION BY OWNER.

PET WASTE STATION
N.T.S.



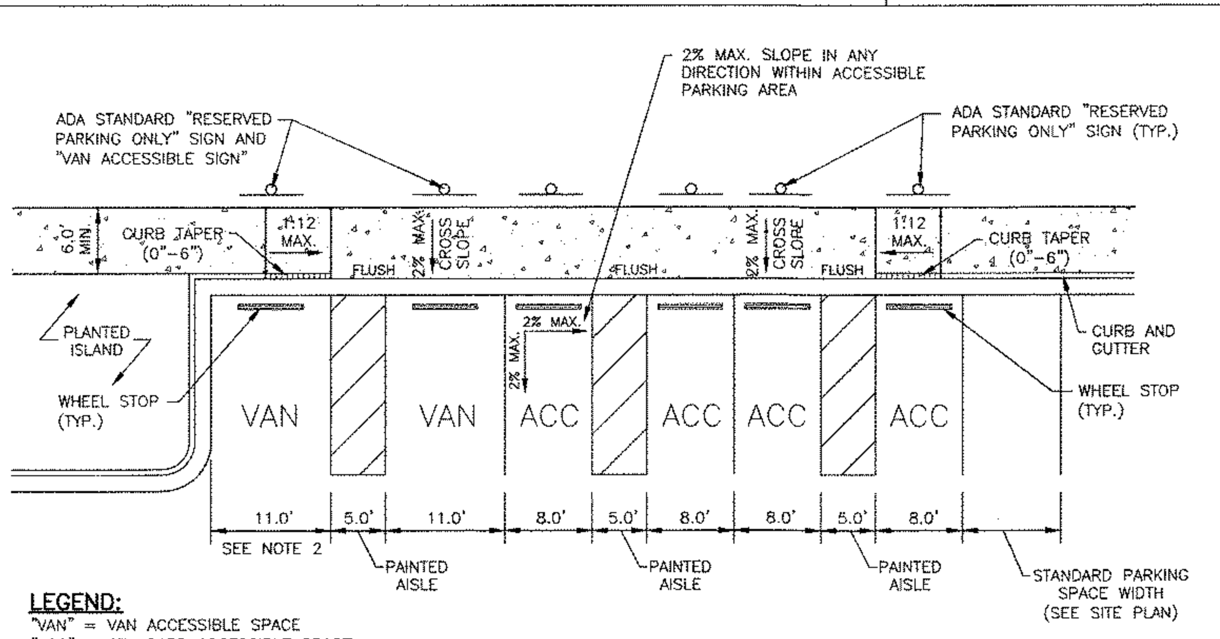
ELEVATION VIEW



PLAN VIEW

NOTES:
1. ALL WOOD SHALL BE PRESSURE TREATED PINE. STAIN COLOR TO BE CHOSEN BY OWNER AND SHALL BE COMPLIMENTARY TO BRICK VENEER.
2. DIMENSIONS MAY VARY AS DESIGN DEVELOPS.

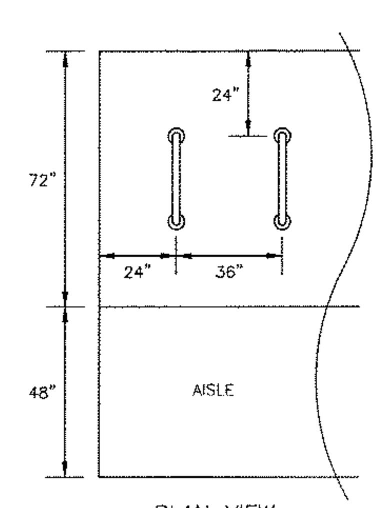
TRANSFORMER ENCLOSURE
1/4"=1'-0"



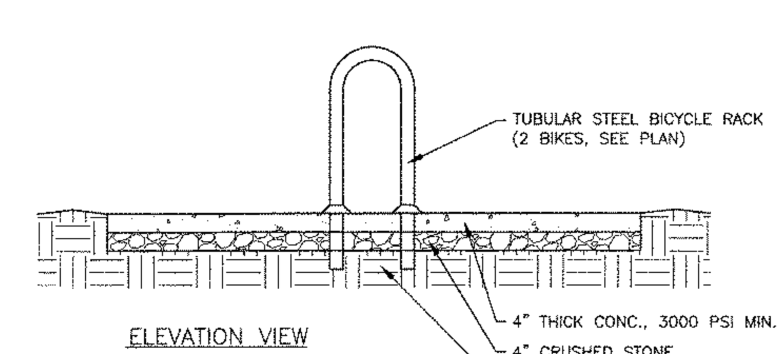
LEGEND:
"VAN" = VAN ACCESSIBLE SPACE
"ACC" = STANDARD ACCESSIBLE SPACE

NOTES:
1. CURB AND GUTTER, WALK AND RAMP TO BE PLACED SEPARATELY.
2. ACCESSIBLE PARKING SPACE WIDTH TO BE MEASURED FROM THE EDGE OF PAVEMENT WHERE CURB AND GUTTER IS ADJACENT TO THE ACCESSIBLE SPACE.
3. ALL ACCESSIBLE SPACES SHALL BE IDENTIFIED BY ABOVE-GROUND SIGNS ONLY.
4. STRIPING IS WHITE ON DARK PAVEMENT AND BLACK ON LIGHT PAVEMENT.
5. VAN ACCESSIBLE SPACES TO BE 11.0' MINIMUM WIDTH.

TYPICAL ACCESSIBLE PARKING SPACE LAYOUT, RAMP AND SIGN LOCATIONS
N.T.S.



PLAN VIEW



ELEVATION VIEW

BICYCLE RACK
N.T.S.

PERMIT SET

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FORM DISTRICT PERMIT
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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL 042862 ENGINEER Z. NATHAN BALES 9/3/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-D1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

SHEET

SITE DETAILS

D-1

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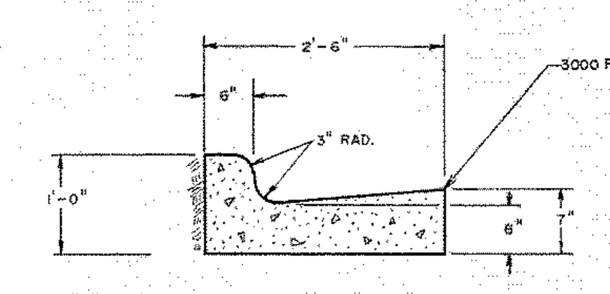
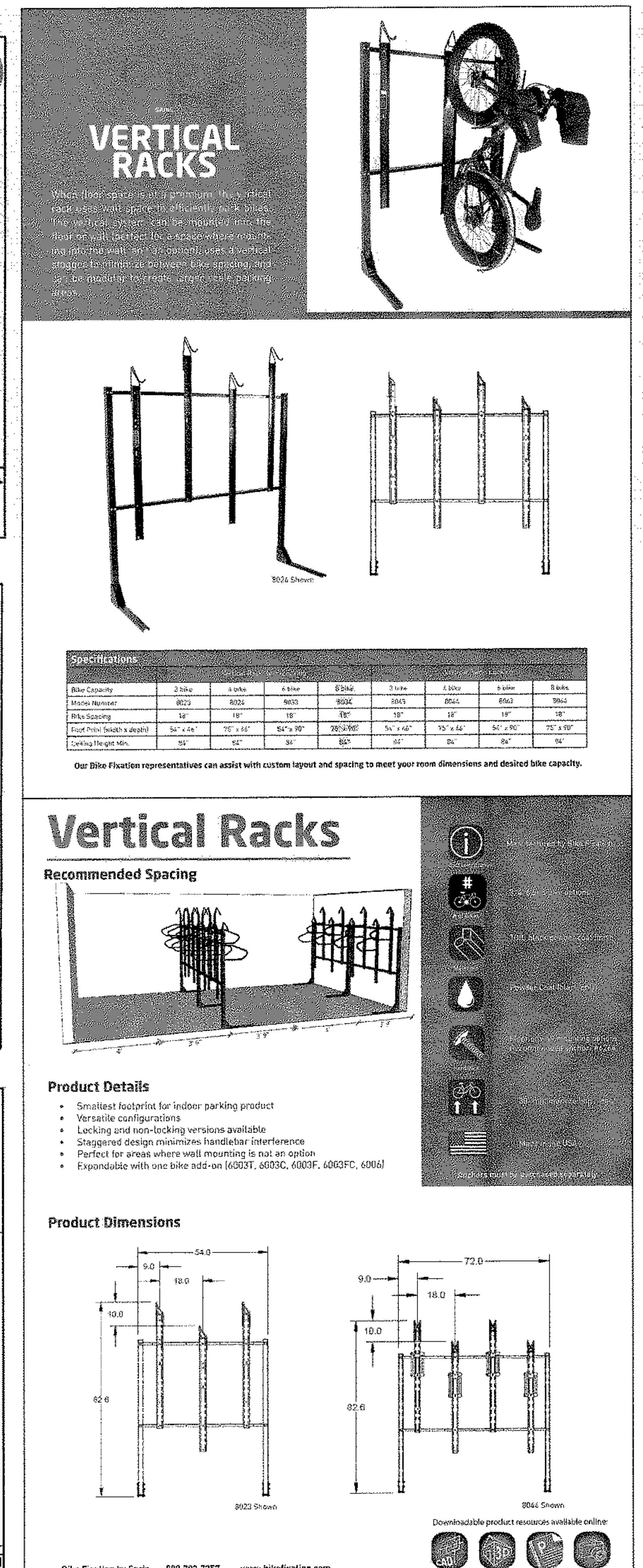
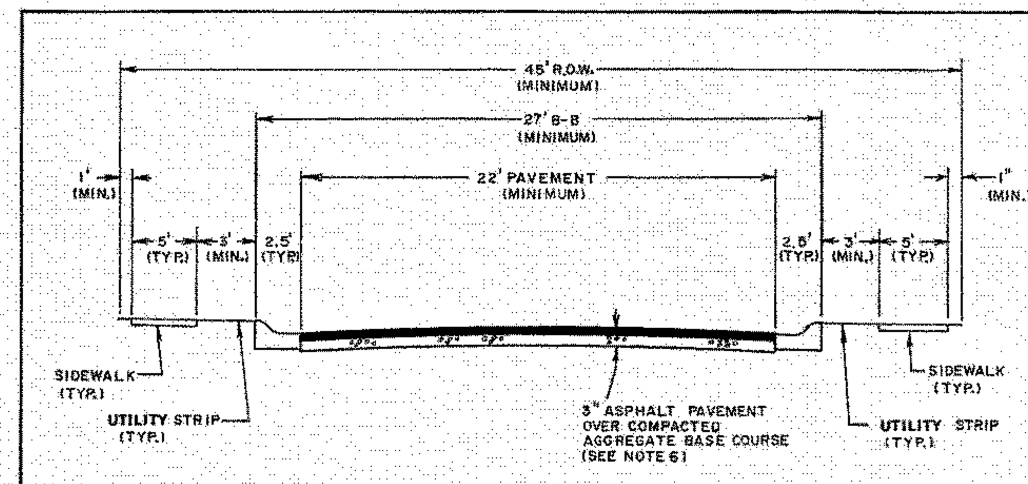


ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS			DET.NO.
CURB & GUTTER SECTION	NO	DATE	BY	ST-2





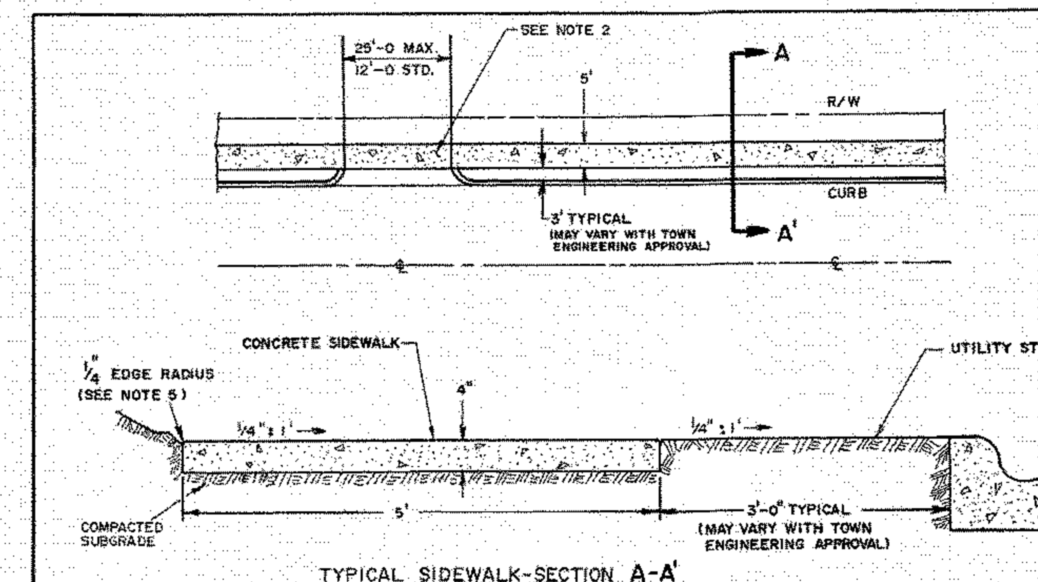
NOTES:

1. UTILITY STRIP WIDTH MAY VARY DEPENDING ON APPROVED LANDSCAPING DESIGN.
2. ALTERNATIVE PAVEMENT DESIGNS MAY REQUIRED BASED UPON SITE-SPECIFIC SOIL AND DRAINAGE CONDITIONS.
3. ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED FOR UTILITY INSTALLATION.
4. ADDITIONAL TRAVEL LANE WIDTH MAY BE REQUIRED ON STREETS EXPECTED TO CONVEY HIGH TRAFFIC VOLUMES AND/OR TRUCK TRAFFIC.
5. ADD 9'(MINIMUM) OF ADDITIONAL PAVEMENT WIDTH IF TURN LANE IS REQUIRED.
6. AGGREGATE BASE COURSE THICKNESS SHALL BE 8" IN TYPE I AREA ; 10" IN TYPE II AREA.

NO SCALE

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE:	REVISIONS			DET.NO.
LOCAL STREET (WITH ON-STREET PARKING)	NO.	DATE	BY	ST-1D
	1	03/02	JWH	SH.5 of 8



NOTES:

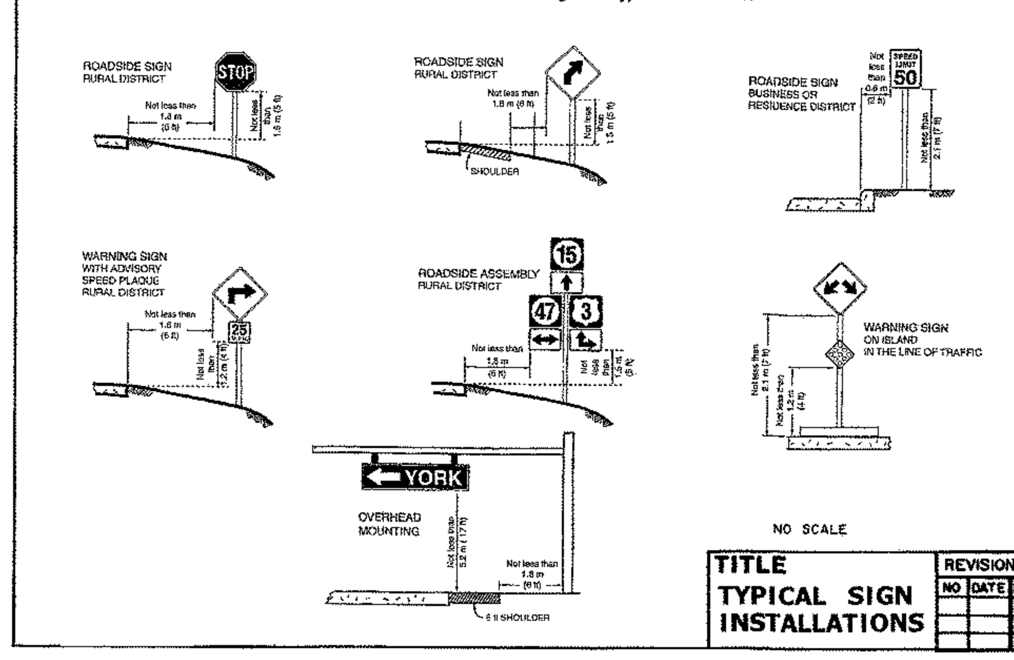
1. ALL CONCRETE 3000 PSI.
2. SEE STANDARD DETAIL "D-1" FOR THROUGH DRIVEWAY SPECIFICATIONS.
3. EXPANSION JOINTS 50' APART MAXIMUM.
4. CONTROL JOINT EVERY 5 FEET.
5. ALL SIDEWALKS SHALL BE CONSTRUCTED WITH TOOLED 1/4" EDGE RADIUS.
6. IF UTILITY STRIP IS COMPLETELY ELIMINATED, SIDEWALK SHALL BE PLACED DIRECTLY AT BACK-OF-CURB, WITH 1/4" EDGE RADIUS.

NO SCALE

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS			DET.NO.
TYPICAL SIDEWALK	NO	DATE	BY	ST-4
				SH.1 of 3

Heights and Lateral Locations of Signs for Typical Installations

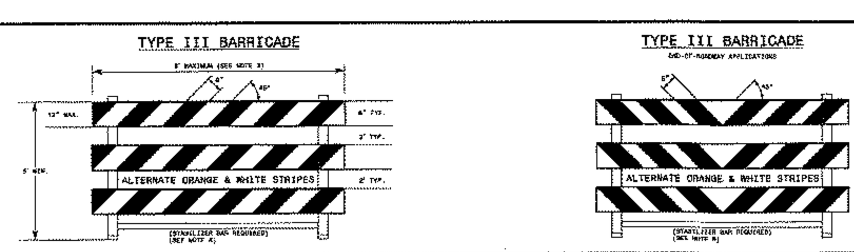


NO SCALE

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS			DET.NO.
TYPICAL SIGN INSTALLATIONS	NO	DATE	BY	ST-12

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

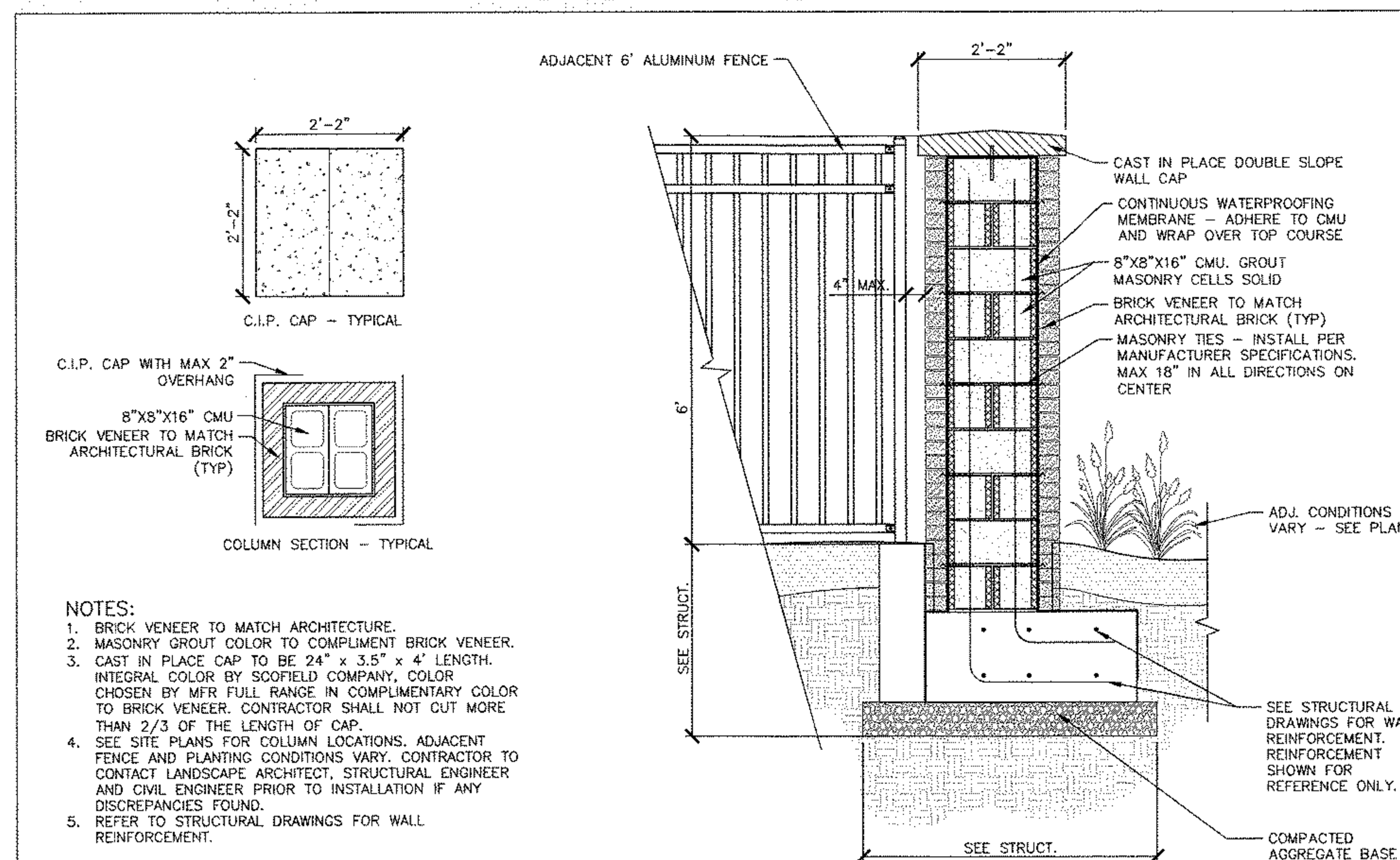


GENERAL NOTES

1. HORIZONTAL RAILS FOR MAY BE CONSTRUCTED OF APPROVED COMPOSITE, HOLLOW/CORRUGATED EXTRUDED RIGID POLYOLEFIN, HIGH DENSITY POLYETHYLENE, OR OTHER NCDOT APPROVED MATERIAL.
2. BARRICADE SHALL BE LIMITED TO A MAXIMUM LENGTH OF 8 FT UNLESS NCHRP 350 CRASH TESTED FOR CATEGORY II DEVICES AND NCDOT APPROVED.
3. ONLY NCDOT APPROVED COMPOSITE AND ROLL-UP SIGNS MAY BE MOUNTED ON THE BARRICADE RAILS. MOUNT SIGNS TO BARRICADE RAILS TO ENSURE SIGN WILL NOT BECOME DETACHED UNDER NORMAL WIND AND TRAFFIC CONDITIONS.
4. SIGNS SHALL BE MOUNTED A MINIMUM OF 1 FOOT FROM THE GROUND TO THE BOTTOM OF THE SIGN UNLESS SIGNS R11-3 OR R11-4 ARE REQUIRED BY THE PLANS OR DIRECTED BY THE ENGINEER.
5. USE TYPE VII OR HIGHER PRISMATIC RETROREFLECTIVE SHEETING ON BOTH SIDES OF THE BARRICADE RAILS.
6. BARRICADE MUST BE NCHRP 350 FOR CATEGORY II DEVICES AND NCDOT APPROVED WITH STABILIZER BAR OR ADEQUATE LATERAL BRACING.
7. ASSEMBLY OF THE GENERIC BARRICADES MUST BE SELF CERTIFIED BY THE ASSEMBLER.
8. BARRICADES USED TO CLOSE A ROADWAY SHALL EXTEND ACROSS THE ENTIRE ROADWAY. WHERE LOCAL TRAFFIC MUST BE MAINTAINED, THEY MAY BE PLACED IN A STAGGERED PATTERN.
9. STRIPES ON WORK ZONE BARRICADE RAILS SHALL BE ALTERNATE ORANGE AND WHITE RETROREFLECTIVE STRIPES, SLOPED DOWNWARD TOWARDS THE SIDE WHICH TRAFFIC IS TO PASS OR TURN IN DETOURING. WHERE NO TURNS ARE INTENDED, THE STRIPES SHOULD SLOPE DOWNWARD TOWARD THE CENTER OF THE BARRICADE OR BARRICADES.
10. USE RED AND WHITE STRIPES FOR PERMANENT BARRICADES.
11. SEE THE DEPARTMENT'S APPROVED PRODUCTS LIST AT https://apps.dot.state.nc.us/vendor/approvedproducts.
12. PLACE MANUFACTURER'S NAME AND FEDERAL HIGHWAY ADMINISTRATION'S NCHRP 350 APPROVAL LETTER NUMBER ON BARRICADE FRAME.
13. PLACE SANDBAGS OR OTHER APPROVED BALLASTING METHODS ON THE FEET OF THE FRAME. DO NOT PLACE SANDBAGS ON TOP OF A STRIPED RAIL OR STABILIZER BAR. DO NOT BALLAST BARRICADES BY HEAVY OBJECTS SUCH AS ROCKS, CHUNKS OF CONCRETE OR OTHER ITEMS THAT WOULD CAUSE DAMAGE IF THE BARRICADE IS STRUCK BY A VEHICLE.

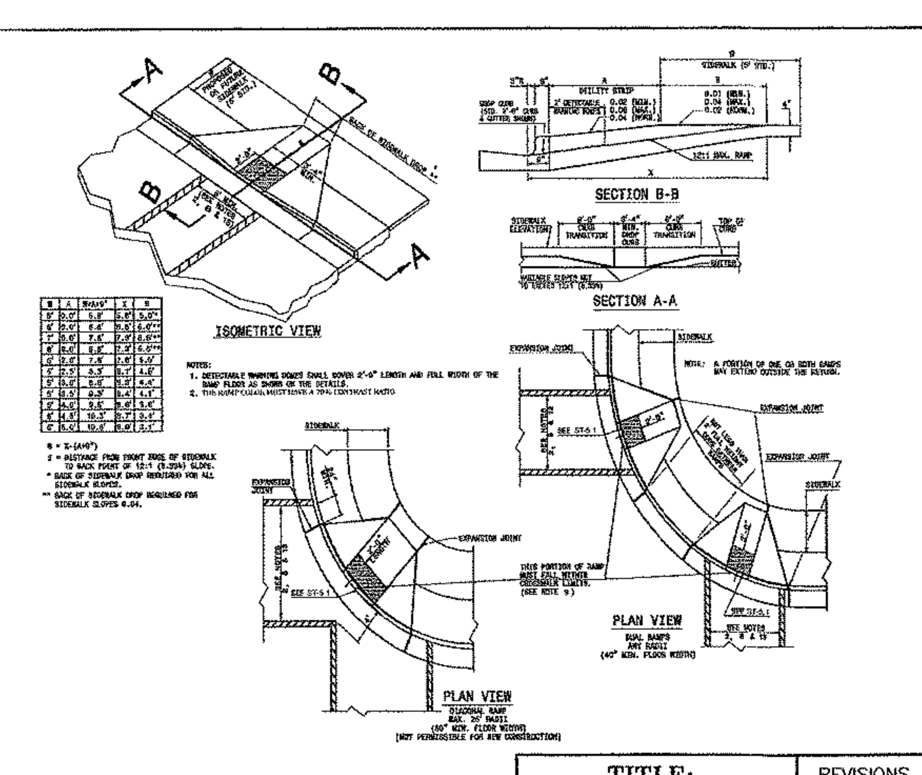
ENGLISH STANDARD DRAWING FOR BARRICADES TYPE-III

SHEET 1 OF 1 1145.01



NOTES:
1. BRICK VENEER TO MATCH ARCHITECTURE.
2. MASONRY GROUT COLOR TO COMPLIMENT BRICK VENEER.
3. CAST IN PLACE CAP TO BE 24" x 3.5" x 4' LENGTH. INTEGRAL COLOR BY SCOFIELD COMPANY, COLOR CHOSEN BY MFR FULL RANGE IN COMPLIMENTARY COLOR TO BRICK VENEER. CONTRACTOR SHALL NOT CUT MORE THAN 2/3 OF THE LENGTH OF CAP.
4. SEE SITE PLANS FOR COLUMN LOCATIONS. ADJACENT FENCE AND PLANTING CONDITIONS VARY. CONTRACTOR TO CONTACT LANDSCAPE ARCHITECT, STRUCTURAL ENGINEER AND CIVIL ENGINEER PRIOR TO INSTALLATION IF ANY DISCREPANCIES FOUND.
5. REFER TO STRUCTURAL DRAWINGS FOR WALL REINFORCEMENT.

01 ACCENT COLUMN AND FENCE — SECTION SCALE: 1/2"=1'-0"



NOTE: DRAWING NOT TO SCALE
SOURCE: NCDOT STANDARD DRAWINGS

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE:	REVISIONS		DET.NO.
ACCESSIBLE RAMP	09/03 02/08	JH ER	ST - 5.3

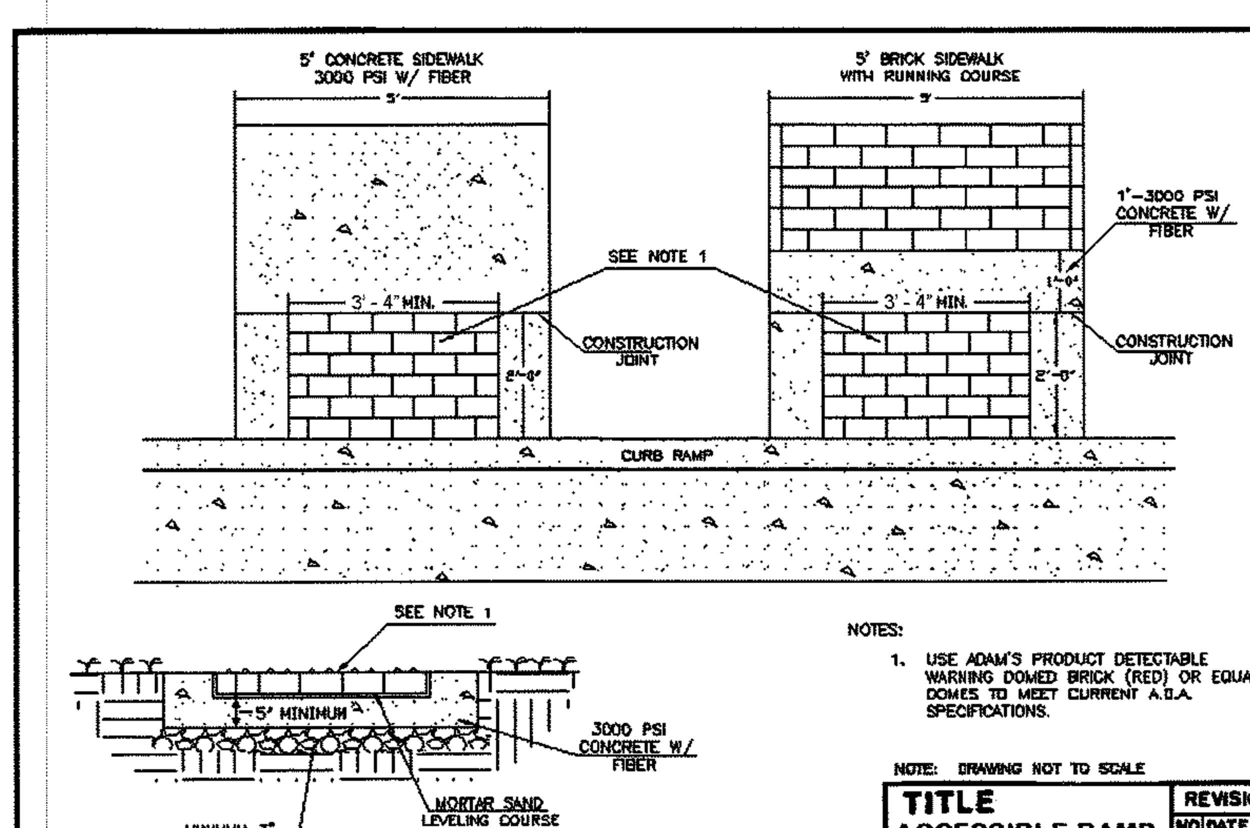
NOTES:

1. CONSTRUCT THE WALKING SURFACE WITH SLIP RESISTANCE AND A 70% CONTRASTING COLOR TO THE SIDEWALK.
2. CROSSWALK WIDTHS AND CONFIGURATION MAY VARY BUT MUST CONFORM TO TRAFFIC DESIGN STANDARDS.
3. PROVIDE WHEELCHAIR RAMPS AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATE WHEELCHAIR RAMPS AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT. WHERE TWO RAMPS ARE INSTALLED, PLACE NOT LESS THAN TWO FEET OF FULL HEIGHT CURB BETWEEN THE RAMPS. PLACE DUAL RAMPS AS PERPENDICULAR TO THE TRAVEL LANE BEING CROSSED AS POSSIBLE .
4. DO NOT EXCEED 0.08 (12:1) SLOPE ON THE WHEELCHAIR RAMP IN RELATIONSHIP TO THE GRADE OF THE STREET.
5. CONSTRUCT WHEELCHAIR RAMPS 40" (3'-4") OR GREATER FOR DUAL RAMPS AND 60" (5'-0") OR GREATER FOR DIAGONAL RAMPS.
6. USE CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.
7. PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB AS SHOWN ON DETAIL ST-5A.
8. PLACE THE INSIDE PEDESTRIAN CROSSWALK LINES NO CLOSER IN THE INTERSECTION BY BISECTING THE INTERSECTION RADII, WITH ALLOWANCE OF A 4' CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 13)
9. COORDINATE THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SO THE FLOOR OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES. PLACE DIAGONAL RAMPS WITH FLARED SIDES SO 24" OF FULL HEIGHT CURB FALLS WITHIN THE CROSSWALK MARKINGS ON EACH SIDE OF THE FLARES.
10. CONSTRUCT THE PEDESTRIAN CROSSWALK A MINIMUM OF 6 FEET. A CROSSWALK WIDTH OF 8 FEET OR GREATER IS DESIRABLE.
11. USE STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE TO BE PARALLEL TO THE INTERSECTION ROADWAY.
12. TERMINATE PARKING A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.
13. PLACE ALL PAVEMENT MARKINGS IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.

SOURCE: NCDOT STANDARD DRAWINGS

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE:	REVISIONS		DET.NO.
ACCESSIBLE RAMP	09/03	JH	ST - 5.4



NOTES:

1. USE ADAM'S PRODUCT DETECTABLE WARNING DOMED BRICK (RED) OR EQUAL. DOMES TO MEET CURRENT A.D.A. SPECIFICATIONS.

NOTE: DRAWING NOT TO SCALE

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS			DET.NO.
ACCESSIBLE RAMP WITH DETECTABLE WARNING DOMES	NO	DATE	BY	ST-5.1
		4/11/06	MCR	
		5/8/07	LRT	

PERMIT SET

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1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL 044862 ENGINEER J. NATHAN BALES 9/3/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

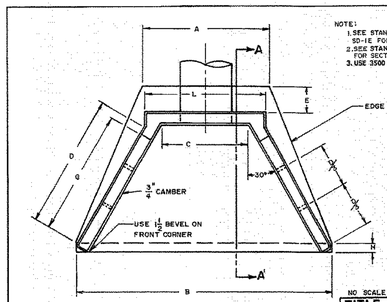
PROJECT NO.	WDF-17000
FILENAME	WDF17000-D1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

SHEET

SITE DETAILS

D-2

X:\Projects\WDF\WDF-17000\Land\Form District Permit\Current Drawings\WDF17000-D1.dwg, 9/3/2019 1:04:35 PM, Bales, Nathan



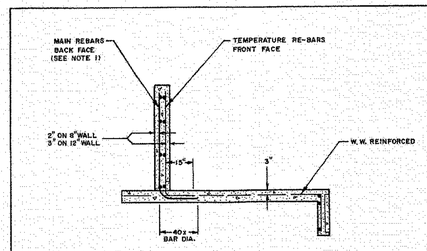
PLAN VIEW

NOTE:
1. SEE STANDARD DETAIL SD-1D AND SD-1E FOR DIMENSIONS.
2. SEE STANDARD DETAIL SD-1A FOR SECTION A-A'.
3. USE 3500 P.S.I. CONCRETE.

NO SCALE

TITLE	REVISIONS			DET.NO.
	NO	DATE	BY	
REINFORCED CONCRETE HEADWALL				SD-1 SH 1 of 6

ENGINEERING DEPARTMENT STANDARD DETAILS



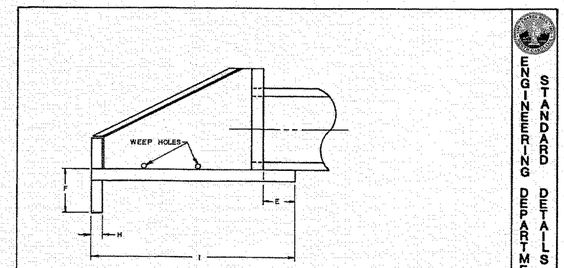
CROSS SECTION A-A'

NOTES:
1. 1 USE NO.4 REBAR @ 12" O.C. BOTH FACES HORIZONTAL & VERTICAL.
2. 2 SEE STANDARD DETAIL SD-1D AND SD-1E FOR DIMENSIONS.

NO SCALE

TITLE	REVISIONS			DET.NO.
	NO	DATE	BY	
REINFORCED CONCRETE HEADWALL				SD-1A SH.2 of 6

ENGINEERING DEPARTMENT STANDARD DETAILS



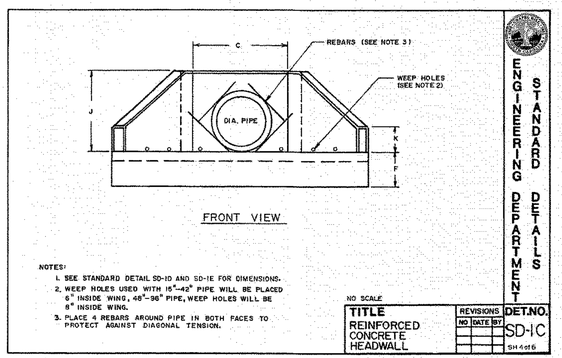
SIDE VIEW

NOTE:
1. SEE STANDARD DETAIL SD-1D AND SD-1E FOR DIMENSIONS.

NO SCALE

TITLE	REVISIONS			DET.NO.
	NO	DATE	BY	
REINFORCED CONCRETE HEADWALL				SD-1B SH 3 of 6

ENGINEERING DEPARTMENT STANDARD DETAILS



FRONT VIEW

NOTES:
1. SEE STANDARD DETAIL SD-1D AND SD-1E FOR DIMENSIONS.
2. WEEP HOLES USED WITH 15"-42" PIPE WILL BE PLACED 6" INSIDE WING, 48"-96" PIPE, WEEP HOLES WILL BE 8" INSIDE WING.
3. PLACE 4 REBARS AROUND PIPE IN BOTH FACES TO PROTECT AGAINST DIAGONAL TENSION.

NO SCALE

TITLE	REVISIONS			DET.NO.
	NO	DATE	BY	
REINFORCED CONCRETE HEADWALL				SD-1C SH 4 of 6

ENGINEERING DEPARTMENT STANDARD DETAILS

DIMENSIONS FOR REINFORCED CONCRETE SINGLE PIPE HEADWALL WITH WING WALLS

PIPE SIZE	SHELL THICKNESS	WALL THICKNESS	SLAB THICKNESS	A*	B*	C*	D	E	F	G	H	I	J	K	L*
15"	2 1/4"	6"	6"	4'-10"	9'-4"	3'-7"	4'-2"	1'-0"	1'-6"	3'-8"	6"	9'-9"	2'-7"	1'-0"	2'-2"
18"	2 1/2"	6"	6"	5'-5"	10'-5"	3'-11"	4'-11"	1'-0"	1'-6"	4'-5"	6"	8'-3"	2'-11"	1'-0"	2'-8"
24"	3"	8"	6"	6'-4"	12'-4"	4'-8"	5'-3"	1'-0"	1'-6"	5'-9"	6"	7'-5"	3'-6"	1'-0"	3'-1"
30"	3 1/2"	8"	6"	7'-5"	14'-3"	5'-1"	7'-7"	1'-0"	1'-6"	7'-1"	6"	6'-7"	4'-0"	1'-0"	3'-8"
36"	4"	8"	6"	7'-5"	15'-1"	5'-8"	7'-10"	1'-6"	2'-0"	7'-4"	6"	9'-4"	4'-8"	1'-6"	7'-3"
42"	4 1/2"	8"	6"	8'-4"	17'-0"	6'-3"	9'-2"	1'-6"	2'-0"	8'-8"	6"	10'-6"	5'-3"	1'-6"	7'-9"
48"	5"	8"	6"	9'-4"	18'-11"	6'-10"	10'-6"	1'-6"	2'-0"	10'-0"	6"	11'-7"	5'-10"	1'-6"	8'-5"
54"	5 1/2"	8"	6"	10'-4"	19'-9"	7'-5"	10'-9"	1'-6"	2'-0"	10'-3"	8"	11'-10"	6'-5"	2'-0"	9'-0"
60"	6"	12"	6"	10'-10"	22'-5"	8'-0"	12'-1"	2'-0"	2'-6"	11'-7"	8"	14'-0"	7'-0"	2'-0"	10'-4"
66"	6 1/2"	12"	6"	11'-9"	24'-4"	8'-7"	13'-5"	2'-0"	2'-6"	12'-11"	8"	15'-2"	7'-7"	2'-0"	10'-11"
72"	7"	12"	6"	12'-8"	26'-1"	9'-2"	13'-7"	2'-0"	2'-6"	13'-1"	8"	15'-3"	8'-2"	2'-6"	11'-6"
78"	7 1/2"	12"	6"	13'-4"	27'-0"	9'-9"	14'-11"	2'-0"	2'-6"	14'-5"	8"	16'-5"	8'-9"	2'-6"	12'-1"
84"	8"	12"	8"	13'-11"	27'-9"	10'-4"	15'-1"	2'-0"	2'-6"	14'-7"	8"	16'-7"	9'-4"	3'-0"	12'-8"
90"	8 1/2"	12"	8"	14'-10"	29'-9"	10'-11"	16'-0"	2'-0"	2'-6"	16'-0"	8"	17'-10"	9'-11"	3'-6"	13'-3"
96"	9"	12"	10"	15'-10"	30'-6"	11'-6"	16'-8"	2'-0"	2'-6"	16'-2"	12"	17'-11"	10'-6"	3'-6"	13'-10"
102"	9 1/2"	14"	10"	16'-11"	32'-10"	12'-1"	18'-0"	2'-0"	2'-6"	17'-6"	12"	19'-4"	11'-1"	3'-6"	14'-10"
108"	10"	14"	10"	17'-6"	33'-8"	12'-8"	18'-3"	2'-0"	2'-6"	17'-8"	12"	19'-7"	11'-8"	4'-0"	15'-3"
114"	10 1/2"	16"	10"	18'-5"	35'-0"	13'-3"	19'-7"	2'-0"	2'-6"	19'-1"	12"	21'-0"	12'-3"	4'-0"	16'-3"
120"	11"	16"	10"	19'-5"	37'-10"	13'-10"	20'-11"	2'-0"	2'-6"	20'-0"	12"	22'-2"	12'-10"	4'-0"	16'-11"

CONCRETE DOUBLE PIPE HEADWALL

A	B	C	L
8'-6"	12'-0"	7'-3"	8'-9"
9'-4"	14'-4"	7'-10"	9'-5"
10'-10"	16'-10"	9'-0"	10'-7"
12'-4"	18'-4"	9'-2"	11'-9"
13'-7"	20'-9"	11'-8"	12'-11"
14'-7"	23'-3"	12'-6"	14'-1"
16'-2"	23'-9"	13'-9"	15'-3"
17'-6"	27'-2"	14'-10"	16'-5"
18'-10"	30'-3"	16'-0"	18'-6"
20'-4"	32'-11"	17'-2"	19'-6"
21'-7"	34'-3"	18'-4"	20'-8"
23'-1"	36'-9"	19'-6"	21'-10"
24'-3"	38'-7"	20'-8"	23'-0"
25'-9"	40'-8"	21'-10"	24'-2"
27'-4"	42'-0"	23'-0"	25'-4"
29'-0"	44'-11"	24'-2"	26'-11"
30'-0"	46'-4"	25'-4"	28'-1"
31'-6"	48'-1"	26'-6"	29'-4"
33'-3"	51'-8"	27'-8"	30'-9"

NOTE:
1. REFER TO DETAIL SD-1E FOR SINGLE AND DOUBLE PIPE HEADWALL REINFORCING SCHEDULE.
2. *SEE DOUBLE PIPE HEADWALL DIMENSIONS FOR A, B, C, & L, ALL OTHER DIMENSIONS REMAIN THE SAME FOR EITHER DOUBLE OR SINGLE PIPE.
3. ALLOW 2' BETWEEN PIPES FOR DOUBLE PIPE HEADWALL.

TITLE	REVISIONS			DET.NO.
	NO	DATE	BY	
REINFORCED CONCRETE HEADWALL				SD-1D SH.5 of 6

ENGINEERING DEPARTMENT STANDARD DETAILS

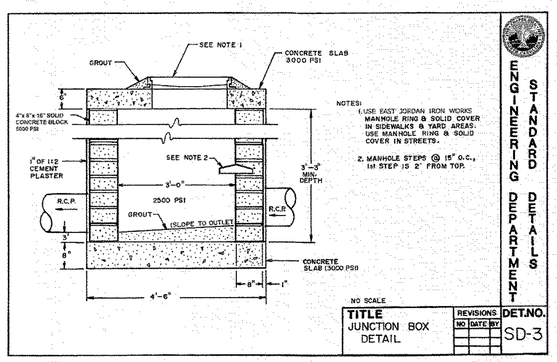
REINFORCING SCHEDULE

PIPE SIZE	BACK FACE WALL REINFORCEMENT HORIZONTAL	BACK FACE WALL REINFORCEMENT VERTICAL	SLAB REINFORCEMENT	FRONT FACE TEMP. REINFORCEMENT IN FRONT FACE OF WALLS (COMPRESSION STEEL)	CUBIC YARDS OF CONCRETE PER SINGLE PIPE	CUBIC YARDS OF CONCRETE PER DOUBLE PIPE
15"	No. 3 @ 12" O.C.	No.3 @ 12" O.C.	6"x6" 10/10 WIRE MESH REINF.	No.4 @ 18" HOR. AND VERT.	1.61	2.24
18"	"	"	"	"	1.96	2.70
24"	"	"	"	"	2.67	3.66
30"	"	"	"	"	3.49	4.72
36"	"	"	"	"	4.21	5.75
42"	"	"	"	"	4.90	7.05
48"	"	"	"	"	6.35	8.52
54"	"	No.4 @ 12" O.C.	"	"	7.23	9.74
60"	"	"	"	"	11.25	14.74
66"	No.4 @ 12" O.C.	"	6"x6" 8/8 WIRE MESH REINF.	"	14.67	19.44
72"	"	"	"	No.4 @ 12" HOR. AND VERT.	15.75	20.96
78"	"	"	"	"	18.04	23.89
84"	"	No.5 @ 12" O.C.	"	"	19.32	25.99
90"	"	"	"	"	21.92	28.95
96"	No.5 @ 12" O.C.	No.6 @ 12" O.C.	"	"	26.38	35.30
102"	"	No.6 @ 10" O.C.	"	"	32.26	42.53
108"	"	"	"	"	34.21	45.15
114"	"	No.8 @ 12" O.C.	"	"	40.78	53.26
120"	"	"	"	"	44.97	58.59

NOTE:
1. REFER TO STANDARD DETAIL SD-1D FOR SINGLE AND DOUBLE PIPE DIMENSIONS.

TITLE	REVISIONS			DET.NO.
	NO	DATE	BY	
REINFORCED CONCRETE HEADWALL				SD-1E SH.6 of 6

ENGINEERING DEPARTMENT STANDARD DETAILS



NOTES:
1. USE EAST JORDAN IRON WORKS MANHOLE RING & SOLID COVER IN SIDEWALKS & YARD AREAS. USE MANHOLE RING & SOLID COVER IN STREETS.
2. MANHOLE STEPS @ 15" O.C., 1st STEP IS 2' FROM TOP.

NO SCALE

TITLE	REVISIONS			DET.NO.
	NO	DATE	BY	
JUNCTION BOX DETAIL				SD-3

ENGINEERING DEPARTMENT STANDARD DETAILS

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL 042 ENGINEER JONATHAN BALES
8/7/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-D1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

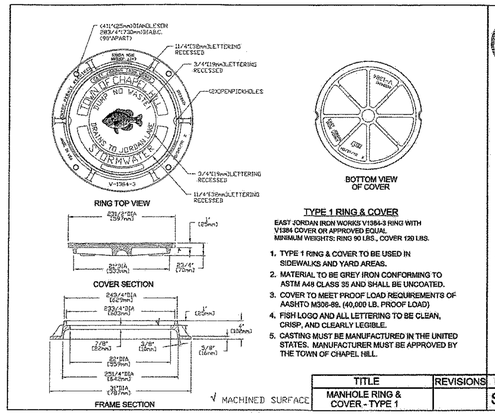
SHEET

STORM DRAINAGE DETAILS

D-3

PERMIT SET

X:\Projects\WDF\WDF-17000\Land\Form District Permit\Current Drawings\WDF17000-D1.dwg, 8/7/2019 1:04:40 PM, Bales, Nathan



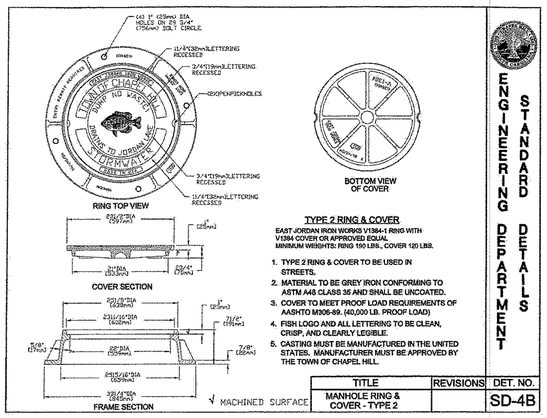
TYPE 1 RING & COVER

EAST JORDAN IRON WORKS V1384-3 RING WITH V1384 COVER OR APPROVED EQUAL.
MINIMUM WEIGHTS: RING 90 LBS., COVER 120 LBS.

1. TYPE 1 RING & COVER TO BE USED IN SIDEWALKS AND YARD AREAS.
2. MATERIAL TO BE GREY IRON CONFORMING TO ASTM A48 CLASS 35 AND SHALL BE UNCOATED.
3. COVER TO MEET PROOF LOAD REQUIREMENTS OF AASHTO M306-89. (40,000 LB. PROOF LOAD)
4. FISH LOGO AND ALL LETTERING TO BE CLEAN, CRISP, AND CLEARLY LEGIBLE.
5. CASTING MUST BE MANUFACTURED IN THE UNITED STATES. MANUFACTURER MUST BE APPROVED BY THE TOWN OF CHAPEL HILL.

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS	DET. NO.
MANHOLE RING & COVER - TYPE 1		SD-4A



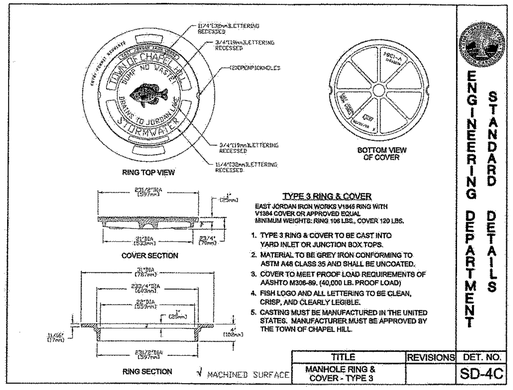
TYPE 2 RING & COVER

EAST JORDAN IRON WORKS V1384-1 RING WITH V1384 COVER OR APPROVED EQUAL.
MINIMUM WEIGHTS: RING 150 LBS., COVER 120 LBS.

1. TYPE 2 RING & COVER TO BE USED IN STREETS.
2. MATERIAL TO BE GREY IRON CONFORMING TO ASTM A48 CLASS 35 AND SHALL BE UNCOATED.
3. COVER TO MEET PROOF LOAD REQUIREMENTS OF AASHTO M306-89. (40,000 LB. PROOF LOAD)
4. FISH LOGO AND ALL LETTERING TO BE CLEAN, CRISP, AND CLEARLY LEGIBLE.
5. CASTING MUST BE MANUFACTURED IN THE UNITED STATES. MANUFACTURER MUST BE APPROVED BY THE TOWN OF CHAPEL HILL.

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS	DET. NO.
MANHOLE RING & COVER - TYPE 2		SD-4B



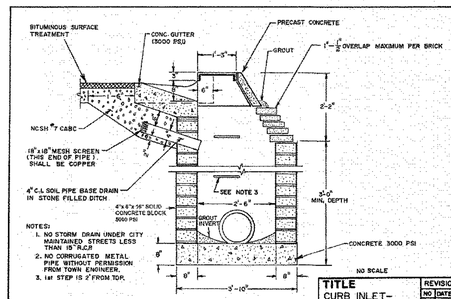
TYPE 3 RING & COVER

EAST JORDAN IRON WORKS V1384 RING WITH V1384 COVER OR APPROVED EQUAL.
MINIMUM WEIGHTS: RING 108 LBS., COVER 120 LBS.

1. TYPE 3 RING & COVER TO BE CAST INTO YARD INLET OR JUNCTION BOX TOPS.
2. MATERIAL TO BE GREY IRON CONFORMING TO ASTM A48 CLASS 35 AND SHALL BE UNCOATED.
3. COVER TO MEET PROOF LOAD REQUIREMENTS OF AASHTO M306-89. (40,000 LB. PROOF LOAD)
4. FISH LOGO AND ALL LETTERING TO BE CLEAN, CRISP, AND CLEARLY LEGIBLE.
5. CASTING MUST BE MANUFACTURED IN THE UNITED STATES. MANUFACTURER MUST BE APPROVED BY THE TOWN OF CHAPEL HILL.

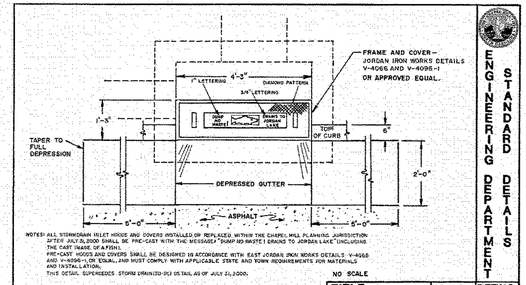
ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS	DET. NO.
MANHOLE RING & COVER - TYPE 3		SD-4C



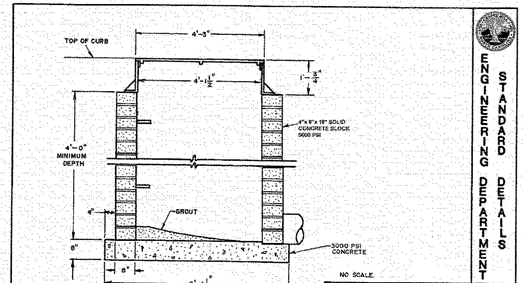
ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS	DET.NO.
CURB INLET- SIDE VIEW	NO DATE BY	SD-5



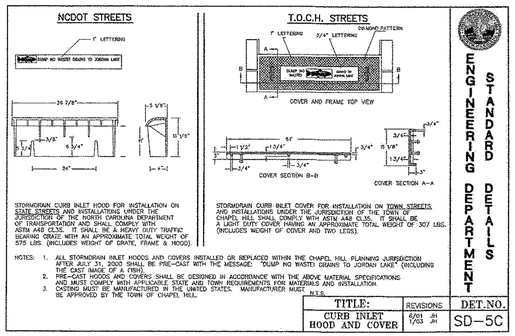
ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS	DET.NO.
CURB INLET- TOP VIEW	NO DATE BY	SD-5A



ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE	REVISIONS	DET.NO.
CURB INLET- FRONT VIEW	NO DATE BY	SD-5B



STORMDRAIN CURB INLET HOOD FOR INSTALLATION ON STATE STREETS AND INSTALLATIONS UNDER THE JURISDICTION OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION AND SHALL COMPLY WITH ASTM A48 CL35. IT SHALL BE A HEAVY DUTY TRAFFIC BEARING GRATE WITH AN APPROXIMATE TOTAL WEIGHT OF 575 LBS. (INCLUDES WEIGHT OF GRATE, FRAME & HOOD).

STORMDRAIN CURB INLET COVER FOR INSTALLATION ON TOWN STREETS AND INSTALLATIONS UNDER THE JURISDICTION OF THE TOWN OF CHAPEL HILL SHALL COMPLY WITH ASTM A48 CL35. IT SHALL BE A LIGHT DUTY COVER HAVING AN APPROXIMATE TOTAL WEIGHT OF 307 LBS. (INCLUDES WEIGHT OF COVER AND TWO LEGS).

NOTES:
1. ALL STORMDRAIN INLET HOODS AND COVERS INSTALLED OR REPLACED WITHIN THE CHAPEL HILL PLANNING JURISDICTION AFTER JULY 31, 2000 SHALL BE PRE-CAST WITH THE MESSAGE "DUMP NO WASTE! DRAINS TO JORDAN LAKE" (INCLUDING THE CAST IMAGE OF A FISH).
2. PRE-CAST HOODS AND COVERS SHALL BE DESIGNED IN ACCORDANCE WITH THE ABOVE MATERIAL SPECIFICATIONS AND MUST COMPLY WITH APPLICABLE STATE AND TOWN REQUIREMENTS FOR MATERIALS AND INSTALLATION.
3. CASTING MUST BE MANUFACTURED IN THE UNITED STATES. MANUFACTURER MUST BE APPROVED BY THE TOWN OF CHAPEL HILL.

ENGINEERING DEPARTMENT STANDARD DETAILS

TITLE:	REVISIONS	DET.NO.
CURB INLET HOOD AND COVER	6/01 JH 1/05 JH	SD-5C

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 9/9/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-D1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

SHEET

STORM DRAINAGE DETAILS

D-4

PERMIT SET

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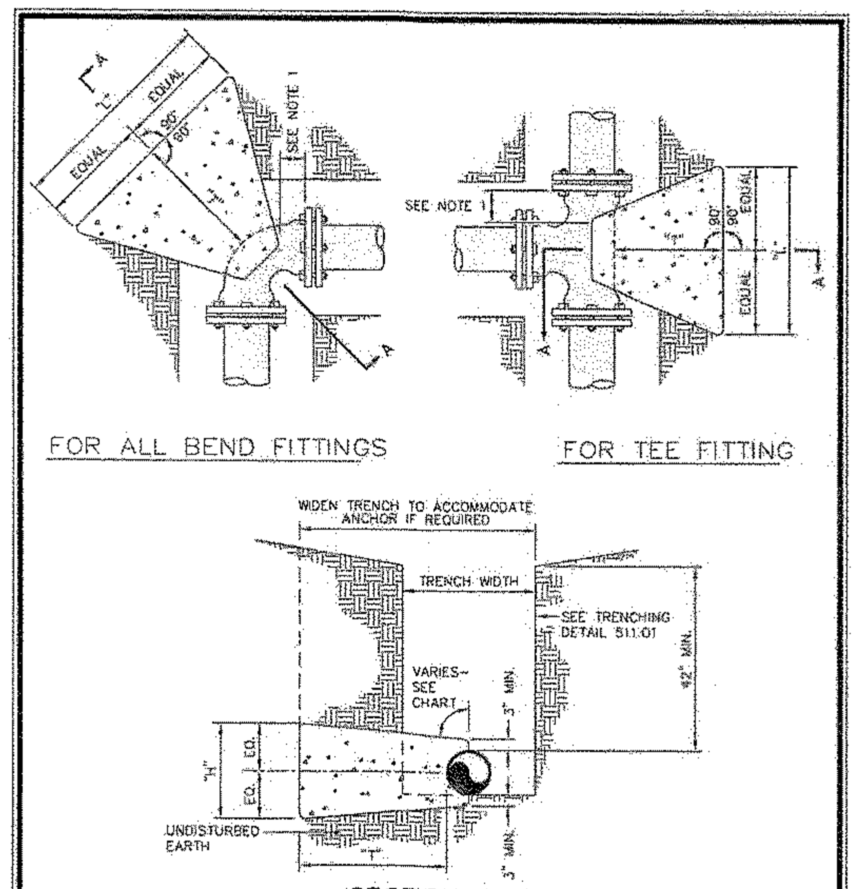

NOTES:
1. Concrete blocking is to be formed to ensure accessibility to fittings and poured against undisturbed earth.
2. Fittings are to be completely wrapped with plastic, prior to pouring concrete.
3. Concrete to be minimum 3,000 psi. @ 28 days.

OWASA – Quality Service Since 1977 | 400 Jones Ferry Road, PO Box 366, Carrboro, NC 27510-0366 | ORANGE WATER AND SEWER AUTHORITY | Voice (919) 968-4421 FAX (919) 968-4464 www.owasa.org | USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

BLOCKING DETAIL for HORIZONTAL BENDS AND TEE — SCALE: Not To Scale; DETAIL #: 512.02; REVISION DATE: August 15, 2003; SHEET #: 1 of 4

TEST PRESSURE = 150 P.S.I.

PIPE SIZE	TYPE FITTING	"L" (Ft.)	"H" (Ft.)	"T" (Ft.)	VOLUME CONCRETE CU. YD.
<4 INCHES	11 1/4°	---	---	---	---
	22 1/2°	1.00	1.00	1.50	0.06
	45°	1.00	1.00	1.50	0.06
	90°	1.00	1.00	2.50	0.09
	TEE / PLUG	1.00	1.00	2.00	0.07
4 INCHES	11 1/4°	1.00	1.00	2.50	0.09
	22 1/2°	1.00	1.00	2.50	0.09
	45°	1.00	1.00	2.50	0.09
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.00	0.12
6 INCHES	11 1/4°	1.50	1.50	2.50	0.15
	22 1/2°	1.50	1.50	2.50	0.15
	45°	1.50	1.50	2.50	0.15
	90°	2.00	2.00	3.00	0.28
	TEE / PLUG	2.00	2.00	2.50	0.23
8 INCHES	11 1/4°	2.00	2.00	2.50	0.23
	22 1/2°	2.00	2.00	2.50	0.23
	45°	2.00	2.00	2.75	0.25
	90°	3.00	2.00	3.00	0.39
	TEE / PLUG	3.00	2.00	2.50	0.32
12 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	2.00	2.00	3.00	0.28
	45°	3.00	2.50	3.00	0.47
	90°	4.50	3.00	3.50	0.94
	TEE / PLUG	4.50	3.00	3.00	0.81
16 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	3.00	2.00	3.00	0.39
	45°	4.00	3.00	3.50	0.84
	90°	6.50	3.50	3.50	1.54
	TEE / PLUG	6.50	3.50	3.00	1.32

CHART NOTES:
1. If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
2. Blocking sizes shown in these tables assume the following:
   a. Blocking is constructed in residual soils as shown in detail
   b. Soil bearing pressure = 2000 psf
   c. Velocity of flow = 15 fps
3. This detail not applicable to reducing bends.
4. Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

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BLOCKING DETAIL for HORIZONTAL BENDS AND TEE — SCALE: Not To Scale; DETAIL #: 512.02; REVISION DATE: August 15, 2003; SHEET #: 2 of 4

TEST PRESSURE = 200 P.S.I.

PIPE SIZE	TYPE FITTING	"L" (Ft.)	"H" (Ft.)	"T" (Ft.)	VOLUME CONCRETE CU. YD.
<4 INCHES	11 1/4°	1.00	1.00	1.00	0.04
	22 1/2°	1.00	1.00	1.50	0.06
	45°	1.00	1.00	1.50	0.06
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.00	0.12
4 INCHES	11 1/4°	1.00	1.00	2.50	0.09
	22 1/2°	1.00	1.00	2.50	0.09
	45°	1.50	1.50	2.50	0.15
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.00	0.12
6 INCHES	11 1/4°	1.50	1.50	2.50	0.15
	22 1/2°	1.50	1.50	2.50	0.15
	45°	1.50	1.50	2.50	0.15
	90°	2.50	2.00	3.00	0.33
	TEE / PLUG	2.50	2.00	2.50	0.28
8 INCHES	11 1/4°	2.00	2.00	2.50	0.23
	22 1/2°	2.00	2.00	2.50	0.23
	45°	2.00	2.00	2.50	0.23
	90°	4.00	2.00	3.00	0.50
	TEE / PLUG	4.00	2.00	2.50	0.42
12 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	3.00	2.00	3.00	0.39
	45°	4.00	2.50	3.00	0.61
	90°	5.50	3.00	3.50	1.13
	TEE / PLUG	5.50	3.00	3.00	0.97
16 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	4.00	2.00	3.00	0.50
	45°	5.50	3.00	3.50	1.13
	90°	7.50	4.00	3.50	2.01
	TEE / PLUG	7.50	4.00	3.00	1.72

CHART NOTES:
1. If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
2. Blocking sizes shown in these tables assume the following:
   a. Blocking is constructed in residual soils as shown in detail
   b. Soil bearing pressure = 2000 psf
   c. Velocity of flow = 15 fps
3. This detail not applicable to reducing bends.
4. Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

BLOCKING DETAIL for HORIZONTAL BENDS AND TEE — SCALE: Not To Scale; DETAIL #: 512.02; REVISION DATE: August 15, 2003; SHEET #: 3 of 4

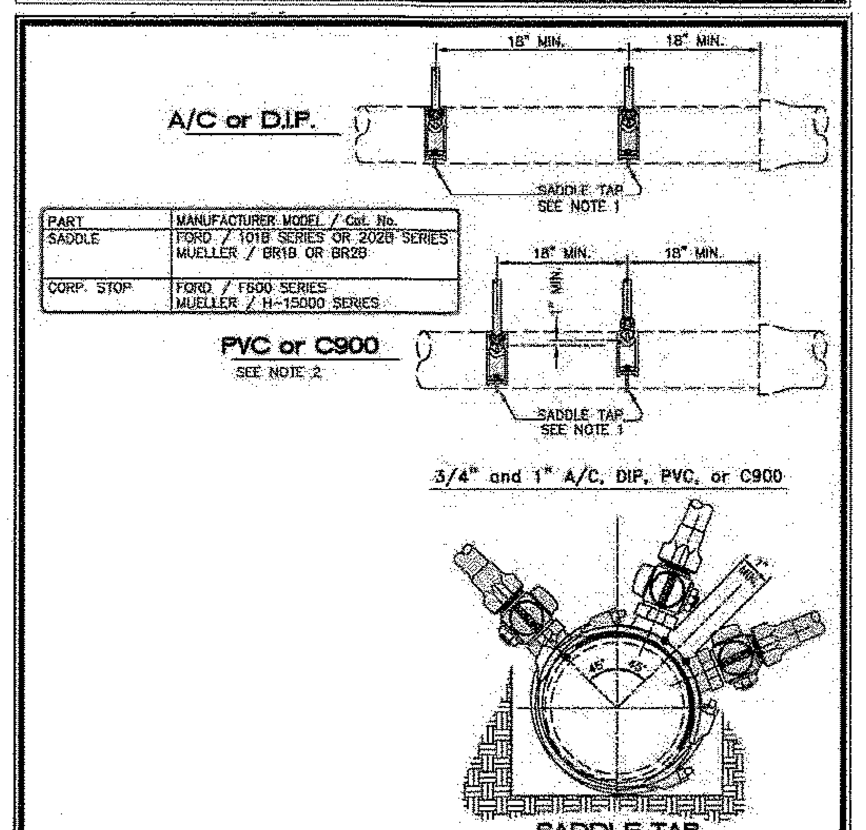
TEST PRESSURE = 250 P.S.I.

PIPE SIZE	TYPE FITTING	"L" (Ft.)	"H" (Ft.)	"T" (Ft.)	VOLUME CONCRETE CU. YD.
<4 INCHES	11 1/4°	1.00	1.00	1.00	0.04
	22 1/2°	1.00	1.00	1.50	0.06
	45°	1.00	1.00	1.50	0.06
	90°	1.50	1.50	2.50	0.15
	TEE / PLUG	1.50	1.50	2.00	0.12
4 INCHES	11 1/4°	1.00	1.00	2.50	0.09
	22 1/2°	1.00	1.00	2.50	0.09
	45°	1.50	1.50	2.50	0.15
	90°	2.00	2.00	2.50	0.23
	TEE / PLUG	2.00	2.00	2.00	0.19
6 INCHES	11 1/4°	1.50	1.50	2.50	0.15
	22 1/2°	1.50	1.50	2.50	0.15
	45°	2.00	1.50	2.50	0.19
	90°	3.00	2.00	3.00	0.39
	TEE / PLUG	3.00	2.00	2.50	0.32
8 INCHES	11 1/4°	2.00	2.00	2.50	0.23
	22 1/2°	2.00	2.00	2.50	0.23
	45°	2.50	2.00	2.50	0.28
	90°	4.00	2.50	3.00	0.61
	TEE / PLUG	4.00	2.50	2.50	0.51
12 INCHES	11 1/4°	2.00	2.00	3.00	0.28
	22 1/2°	3.50	2.00	3.00	0.44
	45°	4.50	2.75	3.00	0.74
	90°	6.00	3.50	3.50	1.43
	TEE / PLUG	6.00	3.50	3.00	1.22
16 INCHES	11 1/4°	2.50	2.00	3.00	0.33
	22 1/2°	4.00	2.50	3.00	0.61
	45°	6.00	3.50	3.50	1.43
	90°	8.00	4.50	4.00	2.74
	TEE / PLUG	8.00	4.50	3.50	2.40

CHART NOTES:
1. If blocking excavation is in lightly compacted fill areas, or in areas where boulders or stumps have been removed, blocking size must be re-sized for the specific location/circumstance by a NC licensed Professional Engineer.
2. Blocking sizes shown in these tables assume the following:
   a. Blocking is constructed in residual soils as shown in detail
   b. Soil bearing pressure = 2000 psf
   c. Velocity of flow = 15 fps
3. This detail not applicable to reducing bends.
4. Neither the weight of the concrete blocking nor friction between concrete blocking and soil was added into blocking sizes computation. Therefore, blocking size is conservative.

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

BLOCKING DETAIL for HORIZONTAL BENDS AND TEE — SCALE: Not To Scale; DETAIL #: 512.02; REVISION DATE: August 15, 2003; SHEET #: 4 of 4

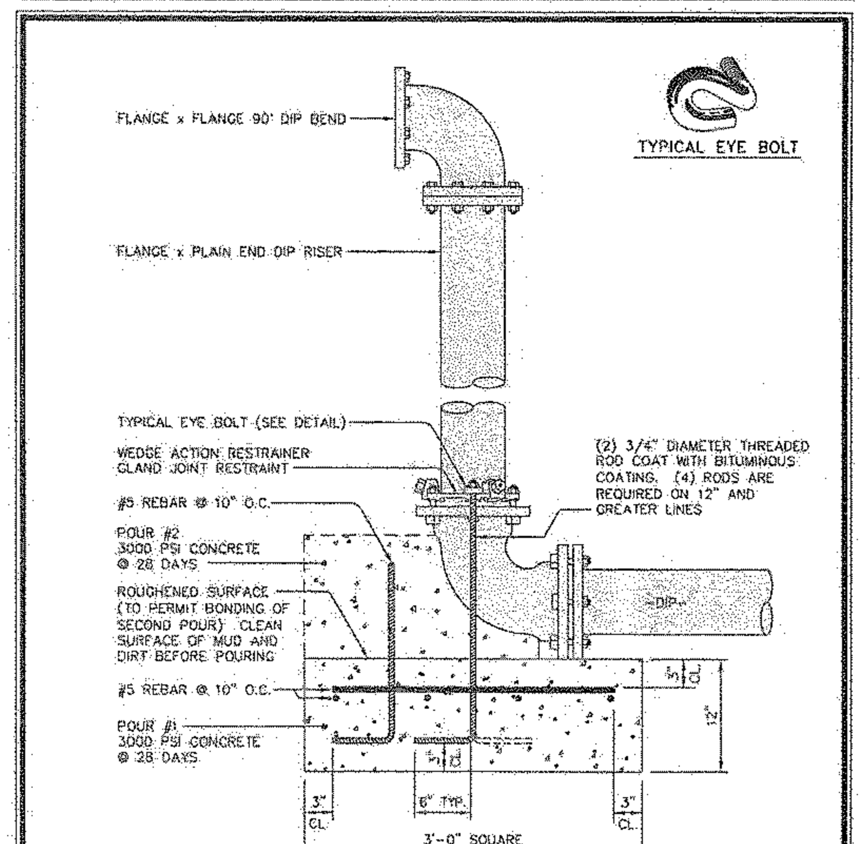


PART	MANUFACTURER MODEL / Cat. No.
SADDLE	FORD / 101B SERIES OR 202B SERIES MUELLER / BR1B OR BR2B
CORP. STOP	FORD / F600 SERIES MUELLER / H-15000 SERIES

NOTES:
1. All bronze saddle (Single or double strap for 3/4" and 1")
2. If 2 taps are made on each side of the main there shall be a minimum of 18" horizontal separation. Multiple taps on the same side shall have a minimum 18" horizontal separation and staggered a minimum of 1" vertically to prevent damage to the main.

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

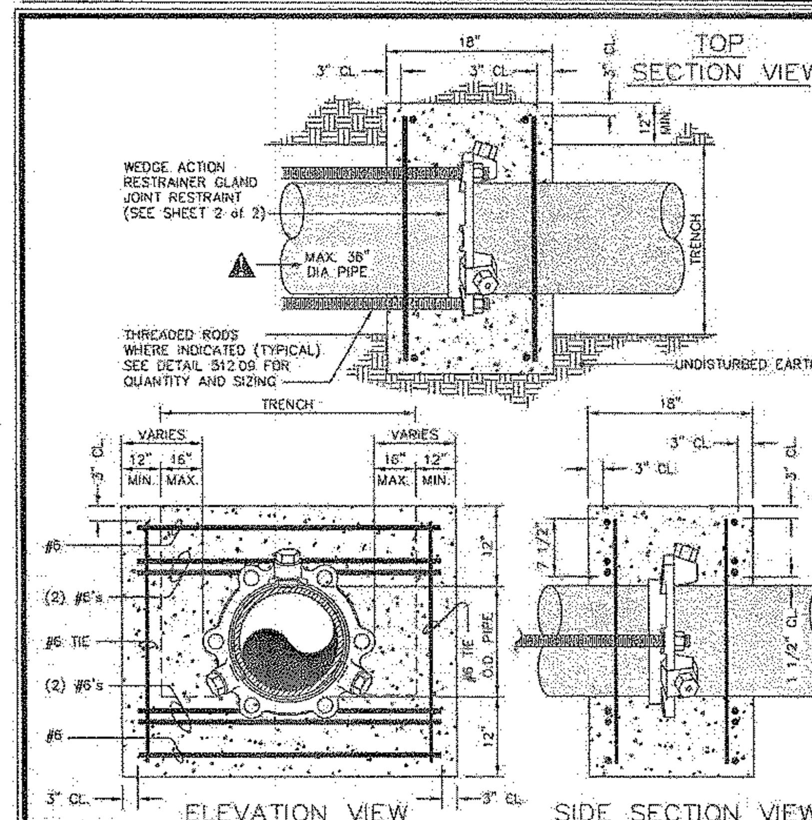
STANDARD 3/4" and 1" WATER TAPPING DETAIL — SCALE: Not To Scale; DETAIL #: 512.06; REVISION DATE: October, 2011; SHEET #: 1 of 1



NOTES:
1. Excavate under elbow for footing, place steel & rods in footing & pour (pour #1)
2. Once concrete has set in footing pour horizontal blocking (pour #2)
3. Footing adequate for water mains up to 8". North Carolina licensed Professional Engineer to design footings for lines greater than 8" diameter.

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

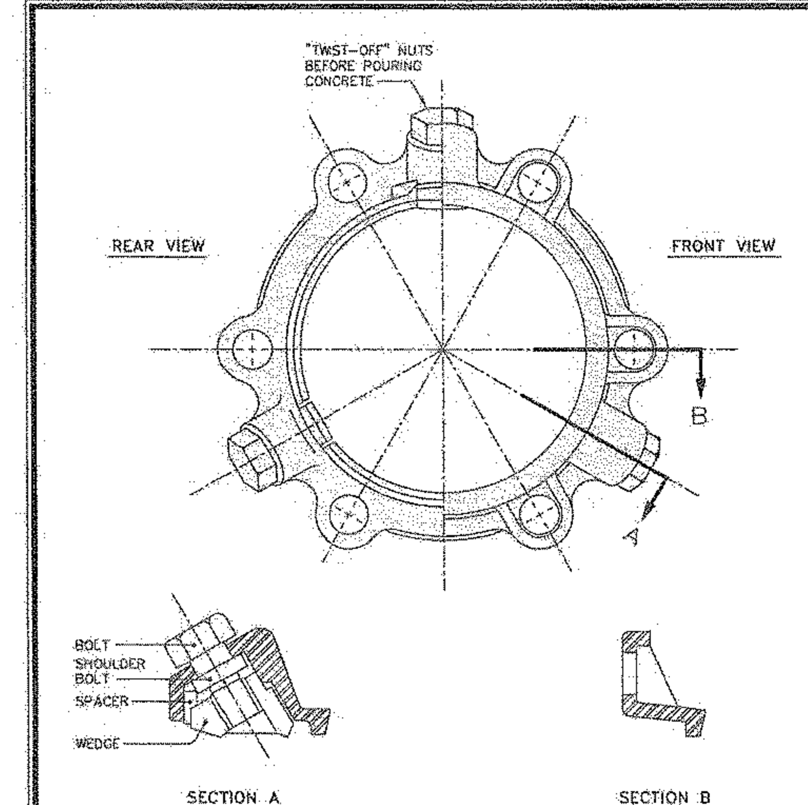
THRUST FOOTING DETAIL — SCALE: Not To Scale; DETAIL #: 512.07; REVISION DATE: August 15, 2003; SHEET #: 1 of 1



NOTES:
1. Concrete shall 3000 P.S.I.
2. Reinforcing bars shall be deformed bars, and tied together.
3. Trench bottom width in vicinity of thrust block(s) installation shall be the minimum width for placement of pipe (Max trench width = pipe O.D.+2 Ft.)
4. Backfill and compact in 6" layers.
5. Place thrust collar on one full joint of pipe.
6. Last joint of pipe with thrust collar to be mechanical joint pipe.
7. Place wedge action restrainer gland joint restraint 4 feet from plug end of pipe.

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

THRUST COLLAR & BLOCKING with WEDGE ACTION RESTRAINER GLAND — SCALE: Not To Scale; DETAIL #: 512.08; REVISION DATE: August 15, 2003; SHEET #: 1 of 2



A MEG-A-LUG SERIES 1100 or FORD WEDGE ACTION RESTRAINER GLAND UFR SERIES 1400 MECHANICAL JOINT RESTRAINT SHALL BE PLACED ON DIP. CONCRETE & REINFORCEMENT STEEL SHALL ALSO BE AS SHOWN ON SHEET 1 of 2.

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

THRUST COLLAR & BLOCKING with WEDGE ACTION RESTRAINER GLAND — SCALE: Not To Scale; DETAIL #: 512.08; REVISION DATE: August 15, 2003; SHEET #: 2 of 2

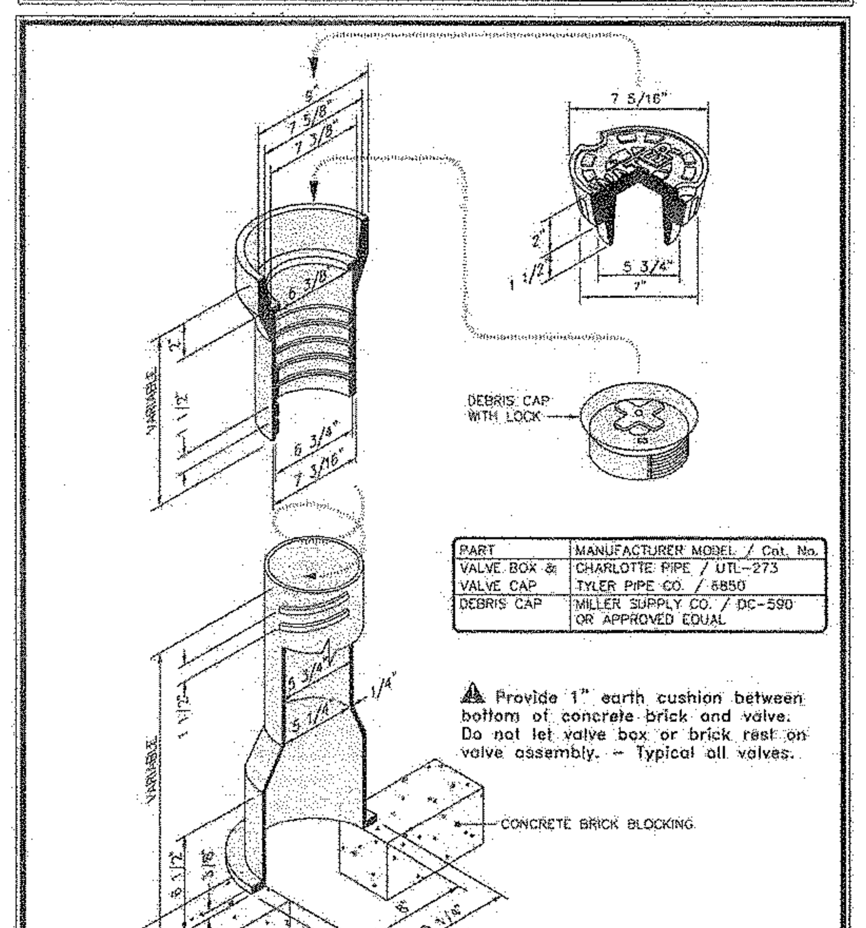
TIE ROD ANCHORS DATUM

PIPE SIZE (INCHES)	ROD DIAMETER	NUMBER OF A307 RODS REQUIRED
TEST PRESSURE = 150 PSI		
6	3/4"	2
8	3/4"	2
10	3/4"	2
12	3/4"	4
16	3/4"	6
20	3/4"	8
24	3/4"	8
30	1"	10
TEST PRESSURE = 200 PSI		
6	3/4"	2
8	3/4"	2
10	3/4"	4
12	3/4"	6
16	3/4"	8
20	3/4"	12
24	3/4"	10
30	1"	14
TEST PRESSURE = 250 PSI		
6	3/4"	4
8	3/4"	4
10	3/4"	4
12	3/4"	6
16	3/4"	12
20	3/4"	14
24	3/4"	16
30	1"	20

ASTM A307 CADIUM COATED TIE RODS

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

TIE ROD ANCHORS DATUM CHART — SCALE: Not To Scale; DETAIL #: 512.09; REVISION DATE: August 15, 2003; SHEET #: 1 of 1



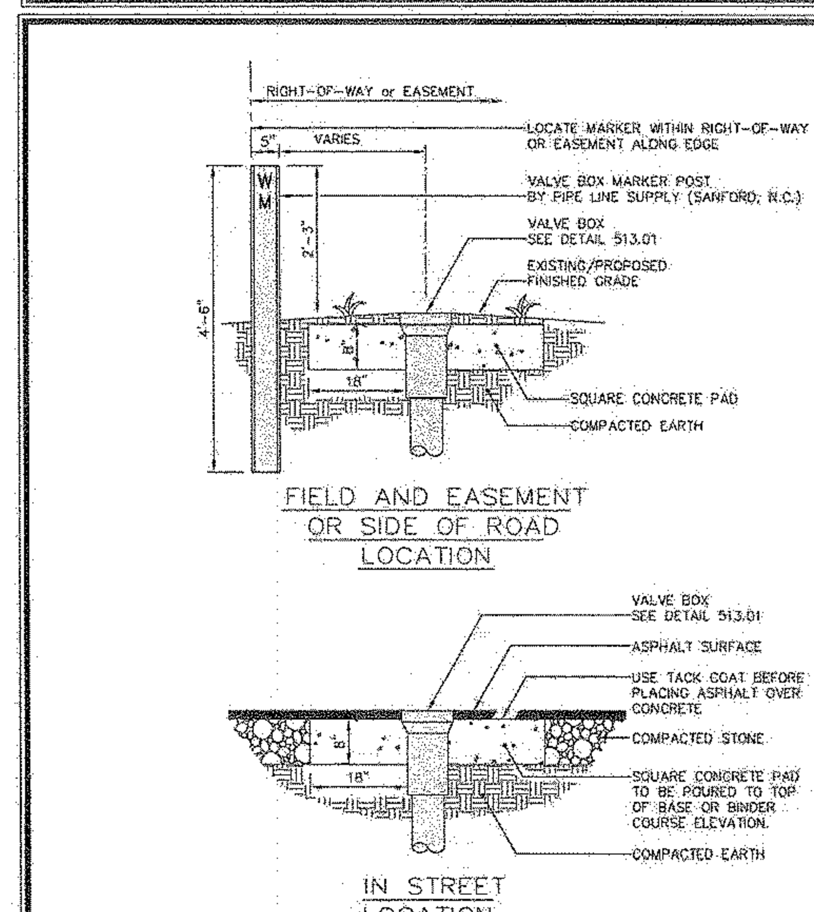
PART	MANUFACTURER MODEL / Cat. No.
VALVE BOX & VALVE CAP	CHARLOTTE PIPE / UTL-273 TYLER PIPE CO. / 6850
DEBRIS CAP	MILLER SUPPLY CO. / DC-590 OR APPROVED EQUAL

Provide 1" earth cushion between bottom of concrete brick and valve. Do not let valve box or brick rest on valve assembly. – Typical all valves.

NOTES:
1. Use heavy duty traffic lid marked "WATER".

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

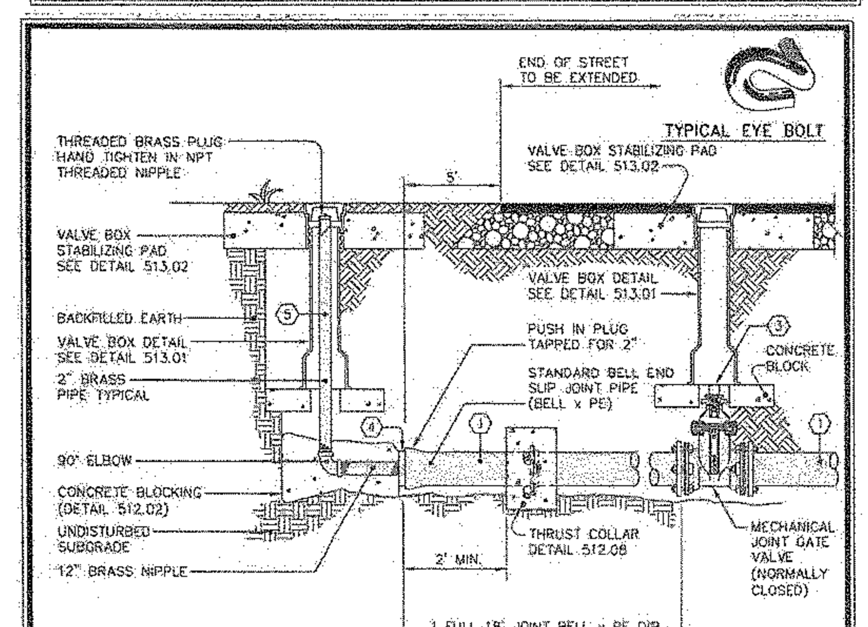
STANDARD SCREW VALVE BOX DETAIL — SCALE: Not To Scale; DETAIL #: 513.01; REVISION DATE: August 15, 2003; SHEET #: 1 of 1



NOTES:
1. Concrete to be minimum 3,000 PSI @ 28 days.

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

VALVE BOX STABILIZING PAD DETAILS — SCALE: Not To Scale; DETAIL #: 513.02; REVISION DATE: August 15, 2003; SHEET #: 1 of 1



① MAIN	② REDUCER	③ GATE VALVE	④ PLUG	⑤ BLOW-OFF ASSEMBLY
4"	N/A	4"	4" TAPPED FOR 2"	2" BRASS
6"	N/A	6"	6" TAPPED FOR 2"	2" BRASS
8"	N/A	8"	8" TAPPED FOR 2"	2" BRASS
10"	N/A	10"	REFER TO OWASA DETAIL 514.06	REFER TO OWASA DETAIL 514.06
12"	N/A	12"	REFER TO OWASA DETAIL 514.06	REFER TO OWASA DETAIL 514.06
16"	N/A	16"	REFER TO OWASA DETAIL 514.06	REFER TO OWASA DETAIL 514.06
18"	N/A	18"	REFER TO OWASA DETAIL 514.06	REFER TO OWASA DETAIL 514.06
20"	N/A	20"	REFER TO OWASA DETAIL 514.06	REFER TO OWASA DETAIL 514.06
24"	N/A	24"	REFER TO OWASA DETAIL 514.06	REFER TO OWASA DETAIL 514.06

NOTES:
1. No discharge from blow-off should go directly into a creek. OWASA must declorinate discharge before it enters a body of water.
2. Provide erosion and sedementation control for discharge.
3. If pipe is PE, use MJ cap and rod to thrust collar (detail 512.08).

OWASA – ORANGE WATER AND SEWER AUTHORITY – USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY

TEMPORARY 2" BLOW-OFF ASSEMBLY FOR MAINS UP TO 24" — SCALE: Not To Scale; DETAIL #: 514.05; REVISION DATE: August 15, 2003; SHEET #: 1 of 1

PERMIT SET

MCADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293
www.mcadamsco.com

CLIENT
WOODFIELD INVESTMENTS
11425 HORSEMAN'S TRAIL
RALEIGH, NC 27613
PHONE: 919. 535. 8947

PARK APARTMENTS
FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL 036862 ENGINEER A. NATHAN BALES 9/3/19

REVISIONS

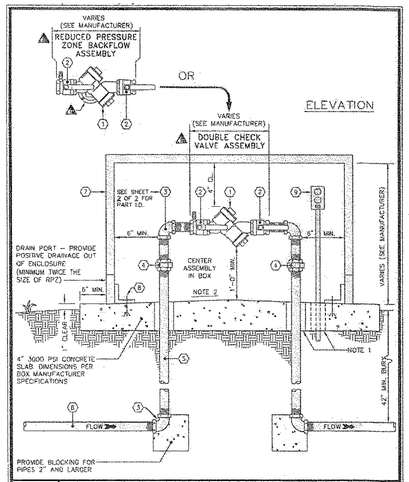
NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

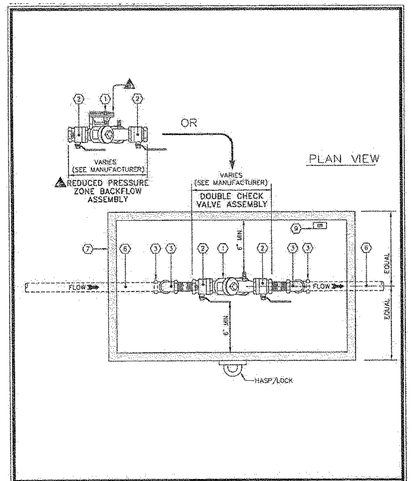
PLAN INFORMATION

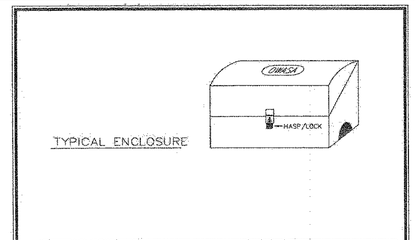
PROJECT NO.	WDF-17000
FILENAME	WDF17000-D1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

SHEET
OWASA DETAILS
D-5

X:\Projects\WDF\WDF-17000\Land\Form District Permit\Current Drawings\WDF17000-D1.dwg, 9/3/2019 1:04:50 PM, Bales, Nathan







#	PART	MANUFACTURER MODEL / Cat. No.
1	BACKFLOW PREVENTION ASSEMBLY, AS APPLICABLE	SEE SPECS. 02510 – PRODUCTS
2	1/4 TURN FULL PORT BRONZE BALL SHUT-OFF VALVE	----
3	90° BRASS ELBOW	----
4	THREADED UNION	----
5	3/4" THRU 2 1/2" STAINLESS STEEL OR BRASS THREADED PIPE	----
6	3/4" THRU 2 1/2" STAINLESS STEEL OR BRASS THREADED PIPE	----
7	INSULATED ENCLOSURE WITH LOCKING ACCESS AND HEATER (120 V, 1 PHASE, 60 HZ). VERIFY FITTINGS WILL FIT INSIDE BOX BEFORE ORDERING	HOFFBOX / HB.F5 – HB.5E (OR APPROVED EQUIVALENT)
8	STAINLESS STEEL ANCHOR BOLTS PER BOX MANUFACTURER RECOMMENDED SIZE AND SPACING	----
9	PROVIDE 120V RECEPTACLE ON GFCI NEAR PIPE RISER, SET MINIMUM 18" ABOVE FLOOR	UL STD. 943–NEMA 3R

NOTES:
1. Provide minimum 1" annular clearance around all risers and electrical conduit.
2. Slope floor to drain to ports at both ends. Ensure positive surface grade away from enclosure.

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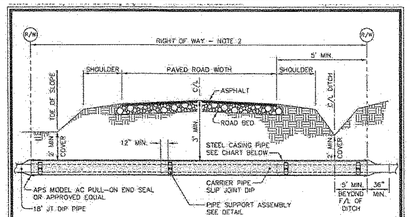
Quality Service Since 1977
ORANGE WATER AND SEWER AUTHORITY
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
3/4" to 2" DCV, RPZ ASSEMBLY (ABOVE GROUND)
SCALE: Not To Scale | DETAIL #: s.515.06
REVISION DATE: August 15, 2003 | SHEET #: 1 of 3



CARRIER PIPE		CASING PIPE			
		RAILROAD		HIGHWAY	
NOMINAL DIAMETER	OUTSIDE DIAMETER	OUTSIDE DIAMETER	WALL THICKNESS	OUTSIDE DIAMETER	WALL THICKNESS
8" & UNDER	9.00"	12 3/4"	0.188"	12 3/4"	0.250"
8"	9.05"	16"	0.250"	16"	0.250"
10"	11.10"	20"	0.281"	20"	0.250"
12"	13.20"	24"	0.344"	24"	0.250"
14"	15.30"	28"	0.406"	28"	0.312"
16"	17.40"	30"	0.406"	30"	0.312"
20"	21.60"	42"	0.562"	42"	0.312"
24"	25.80"	42"	0.562"	42"	0.312"

*DIMENSIONS ARE WITHOUT COATINGS

NOTES:
1. Installation by dry bore & jacking.
2. Bore to run from Right-of-Way to Right-of-Way unless approved otherwise by OWASA.
3. Grease encasement pipe as required for ease of installation.
4. Steel pipe to be 35,000 psi min. yield strength, grade B.
5. All exposed metal to be coated with epoxy or asphaltic material.
6. Skids to be installed, manufactured by ITT Grinnell, Charlotte, N.C. / Spider Manufacturing, Durham, N.C. / APS casing spacers by Advanced Products Systems Inc, Lafayette, LA. / or approved equal.

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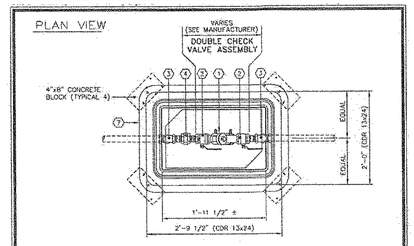
ORANGE WATER AND SEWER AUTHORITY
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
TYPICAL DETAIL for BORE UNDER PAVED ROADS / HIGHWAYS
SCALE: Not To Scale | DETAIL #: s.517.04
REVISION DATE: August 15, 2003 | SHEET #: 1 of 3



#	PART	MANUFACTURER MODEL / Cat. No.
1	3/4" or 1" DOUBLE CHECK VALVE ASSEMBLY	SEE SPECS. 02510 – PRODUCTS
2	1/4 TURN FULL PORT BRONZE BALL SHUT-OFF VALVE	----
3	90° ELBOW	----
4	THREADED UNION	----
5	3/4" or 1" STAINLESS STEEL OR BRASS THREADED PIPE	----
6	3/4" or 1" STAINLESS STEEL OR BRASS THREADED PIPE	----
7	METER BOX	BROOKS / MEDIUM BOX CDR / 13"x24" MID-STATES PLASTICS WC. / MSBC1324-12 (OR APPROVED EQUIVALENT)

NOTES:
1. Ensure positive surface grade away from vault.

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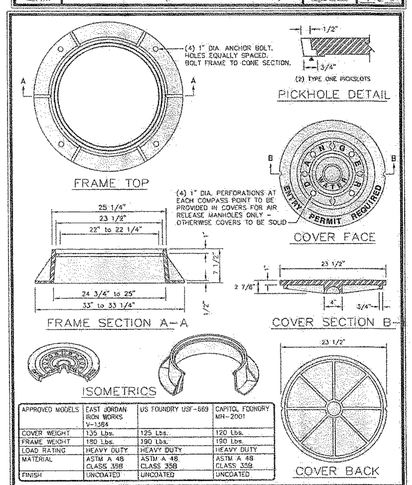
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
3/4" or 1" DCV ASSEMBLY (ALTERNATE UNDER GROUND BOX)
SCALE: Not To Scale | DETAIL #: s.515.07
REVISION DATE: August 15, 2003 | SHEET #: 2 of 3



APPROVED MODELS	EAST JORDAN IRON WORKS V-1384	US FOUNDRY USF-669	CAPITOL FOUNDRY MH-2001
COVER WEIGHT	135 Lbs.	125 Lbs.	120 Lbs.
FRAME WEIGHT	180 Lbs.	190 Lbs.	150 Lbs.
LOAD RATING	HEAVY DUTY	HEAVY DUTY	HEAVY DUTY
MATERIAL	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B
FINISH	UNCOATED	UNCOATED	UNCOATED

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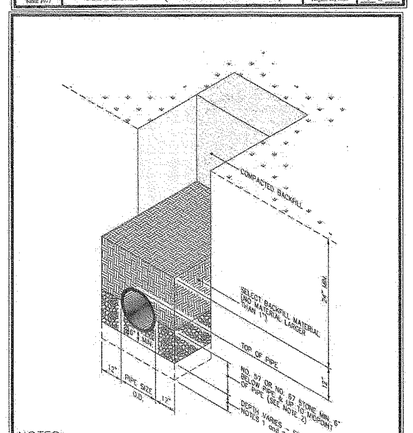
ORANGE WATER AND SEWER AUTHORITY
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
STANDARD WATER MANHOLE FRAME and COVER
SCALE: Not To Scale | DETAIL #: s.516.01
REVISION DATE: April 15, 2007 | SHEET #: 1 of 1



NOTES:
1. Foundation stone shall be required when soil conditions are unsuitable.
2. An additional 1 inch depth of cushioning material will be required for each additional 2 feet of trench depth in excess of 16 feet up to a maximum of 12 inches of cushioning material.

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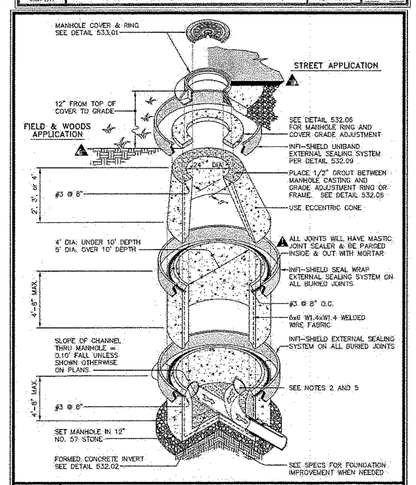
ORANGE WATER AND SEWER AUTHORITY
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
SANITARY SEWER BEDDING DETAIL
SCALE: Not To Scale | DETAIL #: s.532.00
REVISION DATE: August 15, 2003 | SHEET #: 1 of 1



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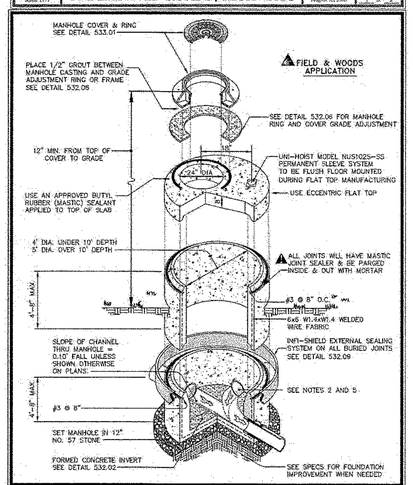
ORANGE WATER AND SEWER AUTHORITY
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
STANDARD ECCENTRIC CONE MANHOLE DETAIL
SCALE: Not To Scale | DETAIL #: s.532.01
REVISION DATE: April 15, 2007 | SHEET #: 1 of 3



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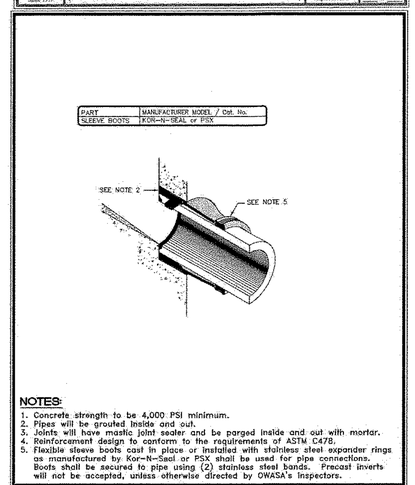
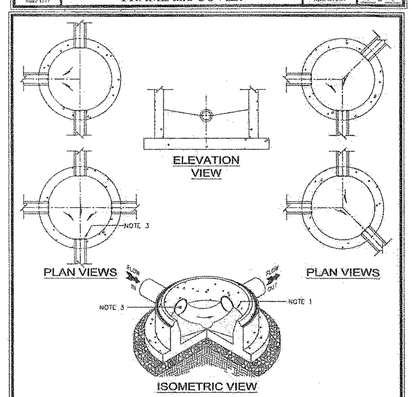
Quality Service Since 1977
ORANGE WATER AND SEWER AUTHORITY
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
STANDARD ECCENTRIC FLAT TOP MANHOLE DETAIL
SCALE: Not To Scale | DETAIL #: s.532.03
REVISION DATE: MAY 21, 2013 | SHEET #: 2 of 3



NOTES:
1. Concrete strength to be 4,000 PSI minimum.
2. Pipes will be grouted inside and out.
3. Joints will have mastic joint sealer and be parged inside and out with mortar.
4. Reinforcement design to conform to the requirements of ASTM C478.
5. Flexible sleeve boots cast in place or installed with stainless steel expander rings as manufactured by Kor-N-Seal or PSX shall be used for pipe connections. Boots shall be secured to pipe using (2) stainless steel bands. Precast inverts will not be accepted, unless otherwise directed by OWASA's inspectors.

OWASA — 400 Jones Ferry Road, Carrboro, NC 27510-2166 — Voice (919) 968-4421, FAX (919) 968-4464, www.owasa.org
Quality Service Since 1977
ORANGE WATER AND SEWER AUTHORITY
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
STANDARD ECCENTRIC MANHOLE DETAIL
SCALE: Not To Scale | DETAIL #: s.532.01
REVISION DATE: April 15, 2007 | SHEET #: 1 of 3



NOTES:
1. Concrete benches must be sloped away from the manhole wall beginning in line with the top of the pipe and sloped down to the spring-line of the pipe invert.
2. Service line entries to have cast in place troughs.
3. Radius of invert must have enough room to be able to insert air plugs and TV equipment.

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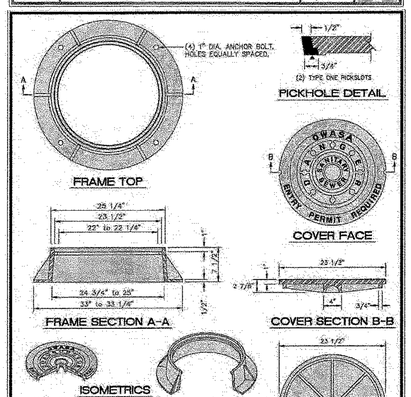
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
STANDARD SEWER INVERT PLANS FOR MANHOLE
SCALE: Not To Scale | DETAIL #: s.532.02
REVISION DATE: March 15, 2005 | SHEET #: 1 of 1



APPROVED MODELS	EAST JORDAN IRON WORKS V-1384	US FOUNDRY USF-669	CAPITOL FOUNDRY MH-2001
COVER WEIGHT	135 Lbs.	125 Lbs.	120 Lbs.
FRAME WEIGHT	180 Lbs.	190 Lbs.	150 Lbs.
LOAD RATING	HEAVY DUTY	HEAVY DUTY	HEAVY DUTY
MATERIAL	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B	ASTM A 48 CLASS 35B
FINISH	UNCOATED	UNCOATED	UNCOATED

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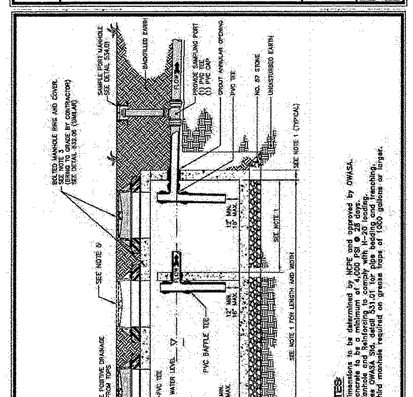
Quality Service Since 1977
ORANGE WATER AND SEWER AUTHORITY
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
SANITARY SEWER MANHOLE FRAME and COVER
SCALE: Not To Scale | DETAIL #: s.533.01
REVISION DATE: February 21, 2013 | SHEET #: 1 of 1



NOTES:
1. Dimensions to be determined by NCDE and approved by OWASA. Grease interceptor to be installed at ground level. Manhole and Reinforcing to comply with H-20 loading.
2. Connection to sanitary sewer to be made by OWASA personnel.
3. Third manhole required on grease interceptor of 10,000 gallons or larger.

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ORANGE WATER AND SEWER AUTHORITY
USE WITH THE OWASA STANDARD SPECIFICATIONS ONLY
GREASE INTERCEPTOR DETAIL
SCALE: Not To Scale | DETAIL #: s.537.01
REVISION DATE: September 9, 2008 | SHEET #: 1 of 1

PERMIT SET

MCADAMS
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WOODFIELD INVESTMENTS
11425 HORSEMAN'S TRAIL
RALEIGH, NC 27613
PHONE: 919. 535. 8947

PARK APARTMENTS
FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 9/7/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-D1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

SHEET

OWASA DETAILS

D-6

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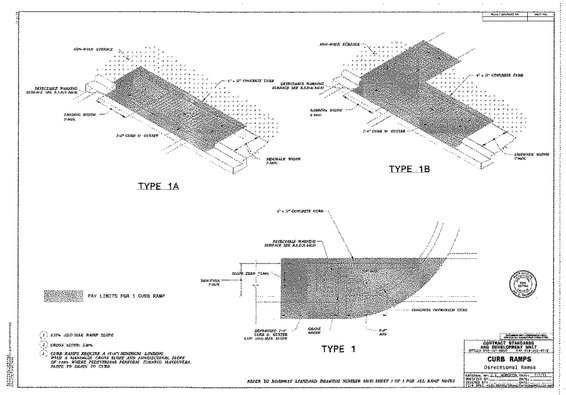

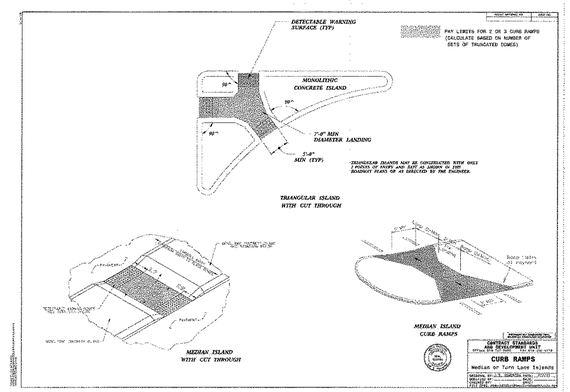

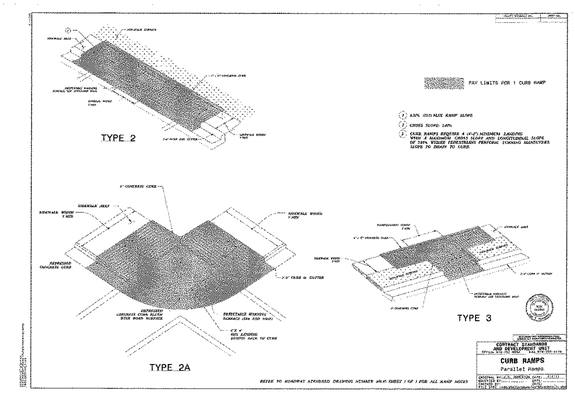

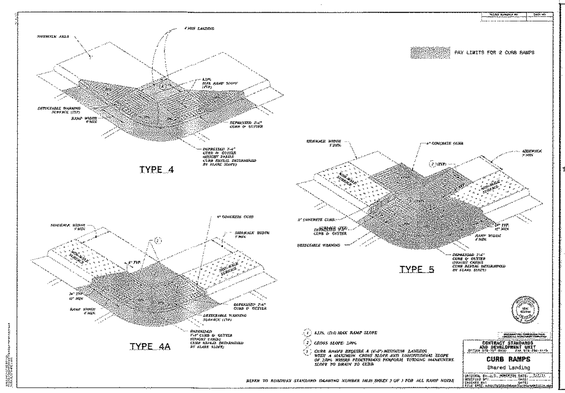

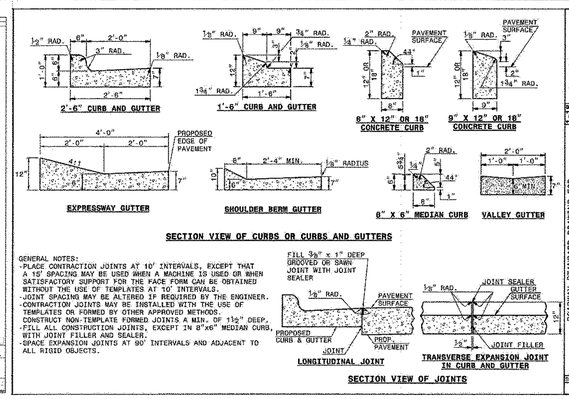

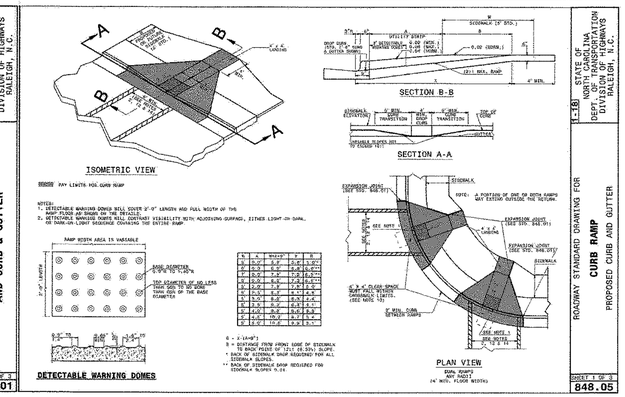

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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER NATHAN BALES 9/2/19

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-D1
CHECKED BY	ZNB
DRAWN BY	HMA
SCALE	NTS
DATE	02. 28. 2019

SHEET

NCDOT DETAILS

D-7

PERMIT SET

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STORMWATER CONTROL MEASURE 'A' CONSTRUCTION SPECIFICATIONS

GENERAL NOTES

1. PRIOR TO CONSTRUCTION, ANY DISCREPANCIES IN THE PLANS AND NOTES SHALL BE BROUGHT TO THE DESIGN ENGINEER'S ATTENTION IMMEDIATELY.

2. THE FINAL CERTIFICATION FOR THIS FACILITY WILL INCLUDE A CERTIFICATION BY THE ON-SITE GEOTECHNICAL ENGINEER THAT THE PROJECT WAS CONSTRUCTED PER THE APPROVED PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE ON-SITE GEOTECHNICAL ENGINEER FOR OBSERVATION AND TESTING SUCH THAT THE ON-SITE GEOTECHNICAL ENGINEER CAN CERTIFY THE CONSTRUCTION OF THE DAM EMBANKMENT AND SPILLWAY. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY.

3. ALL CONSTRUCTION ACTIVITY RELATED TO THE PROPOSED STORMWATER CONTROL MEASURE SHALL BE PER THE DETAILS AND SPECIFICATIONS SHOWN IN THESE DRAWINGS. SOILS, COMPACTION, AND OTHER MISCELLANEOUS DETAILS AND SPECIFICATIONS MAY BE MODIFIED PER THE RECOMMENDATIONS OF THE ON-SITE GEOTECHNICAL ENGINEER. HOWEVER, PRIOR TO IMPLEMENTATION, THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DEVIATION FROM THESE DESIGN DRAWINGS, INCLUDING SHOP DRAWINGS FOR ANY PROPOSED MODIFICATION.

4. DURING THE INITIAL STAGES OF CONSTRUCTION, THE STORMWATER CONTROL MEASURE MAY BE USED AS A SEDIMENT BASIN FOR EROSION CONTROL PURPOSES. IF SO, THE CONTRACTOR SHALL FOLLOW THE GENERAL CONSTRUCTION SEQUENCE BELOW:

   A. THE CONTRACTOR SHALL CONSTRUCT THE ENTIRE FACILITY (PERMANENT OUTLET STRUCTURE, DAM, ETC.) WITH THE EXCEPTION OF THE INTERIOR FINE GRADING FOR THE FACILITY. THE INTERIOR FINE GRADING WILL BE CONSTRUCTED ONCE THE EROSION CONTROL PHASE IS COMPLETE.
   B. THE TEMPORARY DRAW DOWN RISER (OR SKIMMER) SHALL BE CONNECTED TO THE PERMANENT 6"Ø DIP DRAIN PIPE.
   C. ONCE THE UPSTREAM DRAINAGE AREA IS STABILIZED AND THE EROSION CONTROL INSPECTOR APPROVES THE REMOVAL OF THE SEDIMENT BASIN, THE CONTRACTOR SHALL REMOVE THE TEMPORARY DRAW DOWN RISER (OR SKIMMER) AND CLEAN OUT THE BASIN. ALL SEDIMENT, TRASH, ETC. SHALL BE DISPOSED OF PROPERLY (I.E. - PLACED IN A LANDFILL) AND NOT STOCKPILED IN AN AREA WHERE WATER QUALITY COULD BE ADVERSELY AFFECTED.
   D. ONCE THE BASIN IS CLEANED OUT, AND ALL EROSION CONTROL DEVICES REMOVED, THE CONTRACTOR SHALL CONSTRUCT THE INTERIOR GRADING SHOWN ON THIS SHEET.
   E. ONCE THE GRADING IS COMPLETE, THE CONTRACTOR SHALL REQUEST AN ON-SITE INSPECTION AND AN AS-BUILT SURVEY PRIOR TO INSTALLATION OF THE STORMWATER CONTROL MEASURE PLANTS. IF THE CONTRACTOR PLANTS THE PROPOSED VEGETATION PRIOR TO AN AS-BUILT SURVEY (AND SUBSEQUENT APPROVAL), ANY CHANGES TO THE GRADING / RE-PLANTING OF PLANTS WILL BE AT THE CONTRACTOR'S EXPENSE.
   F. ONCE THE ENGINEER HAS APPROVED THE AS-BUILT GRADING, THE CONTRACTOR SHALL PLANT THE PROPOSED STORMWATER CONTROL MEASURE PLANTS SHOWN ON THE LANDSCAPE PLAN FOR THE FACILITY. AFTER COMPLETION OF THE PLANTING, THE LANDSCAPE CONTRACTOR SHALL PROVIDE A LETTER TO THE ENGINEER CERTIFYING THAT THE PLANTS HAVE BEEN INSTALLED PER THE APPROVED STORMWATER CONTROL MEASURE PLANTING PLAN.

6. ALL OSHA REQUIREMENTS FOR EXCAVATIONS (SHORING, DEPTH, ETC.) ARE THE RESPONSIBILITY OF THE CONTRACTOR. IF REQUIRED, THE CONTRACTOR SHALL PROVIDE AN EXCAVATION PLAN TO BE SEALED BY A NC P.E. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE IF AN EXCAVATION PLAN IS REQUIRED. THE JOHN R. MCADAMS COMPANY ASSUMES NO RESPONSIBILITY FOR ANY EXCAVATION DESIGN RELATED TO SAFETY OR OSHA REQUIREMENTS.

7. THE BEDDING MATERIAL FOR THE STORMWATER CONTROL MEASURE SHALL BE SPECIFIED BY THE ON-SITE GEOTECHNICAL ENGINEER. TYPICALLY A WELL-GRADED GRANULAR MATERIAL WILL BE USED FOR THE BEDDING. PLEASE NOTE THAT IF CONSTRUCTION EQUIPMENT WILL BE OPERATING FOR AN EXTENDED PERIOD OF TIME ON THE BEDDING, THEN THE APPROPRIATE MEASURES (E.G. ENGINEERED FABRIC, STIFF GEOGRID, ETC.) SHALL BE TAKEN TO ENSURE THE INTEGRITY OF THE BEDDING IS NOT COMPROMISED.

8. IT IS ANTICIPATED THAT DEWATERING WILL BE NECESSARY IN THE EXCAVATION AREAS (E.G. - EMBANKMENT SUB GRADE, INTERIOR PORTIONS OF THE STORMWATER CONTROL MEASURE, KEY TRENCH, ETC.). THEREFORE, THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ANY PUMPING EQUIPMENT, ETC. NEEDED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE STORMWATER CONTROL MEASURE SITE. DURING PLACEMENT OF FILL WITHIN THESE AREAS, THE CONTRACTOR SHALL KEEP THE WATER LEVEL BELOW THE BOTTOM OF THE EXCAVATION / CONSTRUCTION AREAS. THE MANNER IN WHICH THE WATER IS REMOVED SHALL BE SUCH THAT THE EXCAVATION BOTTOM AND SIDE SLOPES ARE STABLE, WITH NO SEDIMENT DISCHARGED FROM THE SITE (I.E. PUMPED WATER MAY NEED TO BE DIRECTED TO AN APPROVED EROSION CONTROL DEVICE SUCH AS A DIRT BAG (ACF ENVIRONMENTAL), OR ENGINEER APPROVED EQUIVALENT, PRIOR TO DISCHARGE).

9. THE RETAINING WALL ALIGNMENT SHOWN ON THESE PLANS DEPICTS THE LOCATION OF THE FRONT FACE OF THE RETAINING WALL AT THE BOTTOM.

10. THE RETAINING WALL IS TO BE A DESIGN-BUILD PROJECT(S) BY THE CONTRACTOR. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN FINAL CONSTRUCTION DRAWINGS FROM A REGISTERED PROFESSIONAL ENGINEER AND GAIN ALL REQUIRED PERMITS NECESSARY FOR THE CONSTRUCTION OF THE RETAINING WALL.

11. THE RETAINING WALL SHALL BE ASSUMED TO BE BACKFILLED WITH OFF-SITE BORROW MATERIAL OR PROCESSED FILL UNLESS CONTRACTOR CAN PROVIDE OWNER WITH CONFIRMATION FROM THE GEOTECHNICAL ENGINEER AND THE RETAINING WALL DESIGNER THAT READILY AVAILABLE ON-SITE SOILS CAN BE USED.

12. THE TOP AND BOTTOM OF WALL ELEVATIONS SHOWN ON THESE PLANS IDENTIFY FINISHED GRADE ELEVATIONS ONLY. THE EXTENT THAT THE RETAINING WALL WILL BE EXTENDED BELOW GRADE TO THE FOOTING SHALL BE IDENTIFIED ON THE RETAINING WALL CONSTRUCTION DRAWINGS.

13. THE ON-SITE GEOTECHNICAL ENGINEER SHOULD BE GIVEN AN OPPORTUNITY TO REVIEW ALL RETAINING WALL PLANS AND DESIGNS RELEVANT TO GEOTECHNICAL CONSIDERATIONS PRIOR TO FINAL DESIGN OF THE WALLS.

14. THE GRADES SHOWN ON THIS PLAN ARE FINISHED GRADES. IF THE EXISTING SOIL LAYER AFTER CONSTRUCTION / COMPACTION IS NOT DETERMINED SUITABLE BY A LANDSCAPE PROFESSIONAL FOR THE DRY POND PLANTINGS, THEN THE CONTRACTOR SHALL AMEND THE PLANTING AREA OF THE DRY POND AS DIRECTED BY A LANDSCAPE PROFESSIONAL.

15. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE TOP 2"-3" OF THE BERM SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3"-4" ON THE DAM EMBANKMENT. PLEASE NOTE THE TOPSOIL SHALL BE AMENDED, AS DIRECTED BY A LANDSCAPE PROFESSIONAL, PRIOR TO INSTALLATION ON THE EMBANKMENT.

16. THE CONTRACTOR SHALL REFER TO THE LANDSCAPE PLAN FOR THE PERMANENT PLANTING PLAN/SCHEDULE FOR THIS FACILITY. CONTRACTOR SHALL COORDINATE WITH A LANDSCAPE PROFESSIONAL REGARDING SCHEDULING FOR PLANT INSTALLATION. PLEASE NOTE THAT NO TREES/SHRUBS OF ANY TYPE MAY BE PLANTED ON THE PROPOSED DAM EMBANKMENT (FILL AREAS).

OUTLET STRUCTURE MATERIAL SPECIFICATIONS

1. THE 30"Ø RCP OUTLET BARREL SHALL BE CLASS III RCP, MODIFIED BELL AND SPIGOT, MEETING THE REQUIREMENTS OF ASTM C76-LATEST. THE PIPES SHALL HAVE CONFINED O-RING RUBBER GASKET JOINTS MEETING ASTM C-443-LATEST. THE PIPE JOINTS SHALL BE TYPE R-4.

2. THE STRUCTURAL DESIGN FOR THE 5' X 5' (INTERNAL DIMENSIONS) RISER BOX WITH EXTENDED BASE SHALL BE BY OTHERS. PRIOR TO ORDERING THE STRUCTURES, THE CONTRACTOR SHALL PROVIDE, TO THE DESIGN ENGINEER FOR REVIEW, SHOP DRAWINGS AND SUPPORTING STRUCTURAL CALCULATIONS SEALED BY A P.E. REGISTERED IN NORTH CAROLINA DEMONSTRATING THE PERTINENT VERTICAL LOADS ARE SUPPORTED BY THE CONCRETE RISER STRUCTURE.

3. THE RISER BOX OUTLET STRUCTURE SHALL BE PROVIDED WITH STEPS 16" ON CENTER. STEPS SHALL BE PROVIDED ON THE INNER WALL OF THE RISER BOX. STEPS SHALL BE IN ACCORDANCE WITH NCDOT STD. 840.66. PLEASE REFER TO SHEET SW-A2 FOR LOCATION OF THE RISER STEPS. NOTE THE STEPS SHALL LINE UP WITH THE ACCESS HATCH OF THE TRASH RACK.

4. THE CONCRETE ANTI-FLOTATION BLOCK SHALL BE CAST-IN-PLACE. STEEL REINFORCEMENT AND CONNECTION TO THE RISER SHALL BE PROVIDED IN ACCORDANCE WITH THE DETAIL ON SHEET SW-A2. THE CONTRACTOR SHALL ENSURE THE WEIGHT OF THE ENTIRE RISER STRUCTURE IS GREATER THAN OR EQUAL TO 24,675 LBS. IN LIEU OF CAST-IN-PLACE, THE CONTRACTOR MAY OPT FOR A PRECAST ANTI-FLOTATION BLOCK. SHOP DRAWINGS FOR THE PRECAST BLOCK SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. THE PRECAST ANTI-FLOTATION BLOCK SHALL HAVE A SHIPPING WEIGHT OF 17,253 LBS.

5. THE RISER BOX JOINTS SHALL BE SEALED USING BUTYL RUBBER SEALANT CONFORMING TO ASTM-C990-LATEST. IF NECESSARY, THE CONTRACTOR SHALL INCORPORATE A WATERSTOP INTO THE RISER BOX JOINT TO ENSURE A WATERTIGHT CONNECTION. THE CONTRACTOR SHALL PARGE JOINTS ON BOTH THE INSIDE AND OUTSIDE WITH NON-SHRINK GROUT AND INSTALL GALVANIZED STEEL STRAPS PER DETAIL ON SHEET SW-A2.

6. PRIOR TO ORDERING, THE CONTRACTOR SHALL SUBMIT TRASH RACK SHOP DRAWINGS TO THE ENGINEER FOR REVIEW. CONTRACTOR SHALL ENSURE THAT AN ACCESS HATCH IS PROVIDED WITHIN THE TRASH RACK (SEE DETAIL FOR LOCATION) THAT WILL ALLOW FOR FUTURE MAINTENANCE ACCESS. CONTRACTOR SHALL ALSO PROVIDE A CHAIN AND LOCK FOR SECURING THE ACCESS HATCH. NOTE THE ACCESS HATCH SHALL LINE UP WITH THE ACCESS STEPS AFTER INSTALLATION.

7. ALL POURED CONCRETE SHALL MEET THE FOLLOWING SPECIFICATIONS UNLESS OTHERWISE NOTED:
   -MINIMUM 3000 PSI (28 DAY)
   -SLUMP = 3" - 5"
   -ENTRAINED AIR = 5% - 7%

   PLEASE NOTE NO CONCRETE SHALL BE POURED WHEN THE AMBIENT AIR TEMPERATURES ARE EXPECTED TO BE ABOVE 85°F OR BELOW 40°F. CAST-IN-PLACE CONCRETE SHALL BE "WET CURED" AFTER FINISHING FOR A MINIMUM OF 48 HOURS.

   ON-SITE GEOTECHNICAL ENGINEER TO ENSURE AND CERTIFY ALL POURED CONCRETE MEETS THE ABOVE SPECIFICATIONS.

8. GEOTEXTILE FABRIC FOR THE 30"Ø RCP OUTLET BARREL JOINTS SHALL BE MIRAFI 180N OR ENGINEER APPROVED EQUAL (NON-WOVEN FABRIC)

9. STORMWATER CONTROL MEASURE EMERGENCY DRAW DOWN IS VIA AN 6"Ø PLUG VALVE. THE VALVE SHALL BE A M&H STYLE 1820 ECCENTRIC VALVE OR APPROVED EQUAL. THIS VALVE IS IN ACCORDANCE WITH AWWA C-517, AND SHALL BE OPERABLE FROM TOP OF OUTLET STRUCTURE VIA A HAND WHEEL (SEE DETAIL SHEET SW-A2). THE CONTRACTOR SHALL PROVIDE A REMOVABLE VALVE WRENCH WITH A HAND WHEEL ON TOP FOR OPERATION OF THE 6"Ø PLUG VALVE.

SCM A STAGE-STORAGE		
CONTOUR	CONTOUR AREA	ACCUMULATED CONTOUR VOLUME
[FT]	[SF]	[CF]
256.50	5,584	-
258.00	6,455	9,029
260.00	7,573	23,057
262.00	8,835	39,465

CONSTRUCTION SEQUENCE

1. PRIOR TO CONSTRUCTION, THE OWNER SHALL OBTAIN A LAND DISTURBING (GRADING) PERMIT AND AN "APPROVAL TO CONSTRUCT" FROM THE TOWN OF CHAPEL HILL AND ALL OTHER NECESSARY PERMITS FROM APPLICABLE AGENCIES (E.G. 404 / 401 PERMITS)

2. INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES PER THE APPROVED SEDIMENT AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL MAINTAIN ALL APPROVED SEDIMENT AND EROSION CONTROL MEASURES THROUGHOUT THE ENTIRE PROJECT, AS REQUIRED. THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE EROSION CONTROL INSPECTOR, AS REQUIRED BY GOVERNING AGENCIES, PRIOR TO ANY CLEARING.

3. CLEAR AND GRUB AREA WITHIN THE LIMITS OF THE PROPOSED DAM CONSTRUCTION. ALL TREES AND THEIR ENTIRE ROOT SYSTEMS MUST BE REMOVED FROM THE DAM FOOTPRINT AREA AND BACKFILLED WITH SUITABLE SOIL MATERIAL. THE BACKFILLED AREAS SHALL BE COMPACTED TO THE SAME STANDARDS AS THE DAM EMBANKMENT. THE REMAINING AREA OF THE EMBANKMENT SHALL BE STRIPPED TO A SUITABLE DEPTH AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER. ANY RESIDUAL SOILS TO BE LEFT IN PLACE MUST BE WELL SCARIFIED TO PROMOTE BONDING OF THE NEW EMBANKMENT FILL. NO EMBANKMENT MATERIAL SHALL BE PLACED FOR THE DAM OR KEY TRENCH UNTIL APPROVAL OF THE DAM SUBGRADE IS OBTAINED FROM THE ON-SITE GEOTECHNICAL ENGINEER.

4. EXCAVATE FOR THE NEW KEY TRENCH ALONG THE CENTERLINE OF THE PROPOSED DAM EMBANKMENT. THE TRENCH SHALL EXTEND A MINIMUM OF 5 FT BELOW EXISTING GRADE OR 2 FT BELOW THE 30"Ø RCP OUTLET BARREL AND SHALL HAVE A MINIMUM BOTTOM WIDTH OF 5 FEET. THE KEY TRENCH SIDESLOPES SHALL BE A MINIMUM OF 1:1 (H:V). WHEN EXCAVATING THE KEY TRENCH, IF ANY DEBRIS IS ENCOUNTERED TO AN EXTENT THAT SUCH DEBRIS MAY EXIST IN OTHER INSITU PORTIONS OF THE DAM EMBANKMENT, IT SHOULD ALSO BE REMOVED. THE KEY TRENCH SHALL BE COMPACTED TO THE SAME SPECIFICATION LISTED IN ITEM 4 OF THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS." DEPENDING UPON ON-SITE SOIL CONDITIONS ENCOUNTERED DURING EXCAVATION, THE ON-SITE GEOTECHNICAL ENGINEER MAY VARY THE DEPTH AND DIMENSIONS OF THE KEY TRENCH AS DEEMED NECESSARY. THE ON-SITE GEOTECHNICAL ENGINEER SHALL RETAIN DOCUMENTATION OF ANY VARIATION FOR FUTURE AS-BUILT SUBMITTALS TO THE TOWN OF CHAPEL HILL.

5. BEGIN PLACEMENT OF BACKFILL WITHIN THE KEY TRENCH. THE KEY TRENCH SHALL BE COMPACTED TO THE SPECIFICATIONS LISTED ITEM 4 OF THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS." THE KEY TRENCH SHALL BE TESTED PER THE SPECIFICATIONS LISTED IN THAT SECTION.

6. PRIOR TO INSTALLATION, SUBGRADE CONDITIONS ALONG THE SPILLWAY PIPES SHOULD BE EVALUATED BY THE ON-SITE GEOTECHNICAL ENGINEER TO ASSESS WHETHER SUITABLE BEARING CONDITIONS EXIST AT THE SUBGRADE LEVEL. SHOULD SOFT OR OTHERWISE UNSUITABLE CONDITIONS BE ENCOUNTERED ALONG THE PIPE ALIGNMENTS, THESE MATERIALS SHOULD BE UNDERCUT AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE UNDERCUT MATERIALS SHALL BE REPLACED WITH ADEQUATELY COMPACTED STRUCTURAL FILL, LEAN CONCRETE OR FLOWABLE FILL AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.

7. IN ORDER TO HELP PROTECT THE SOIL SUBGRADE FROM DETERIORATION (DUE TO EXPOSURE, RAINFALL, SEEPAGE, AND RUNOFF) BEFORE THE CRADLE CAN BE POURED, IT IS STRONGLY RECOMMENDED THAT A 3" TO 4" THICK CONCRETE MUD MAT BE POURED OVER THE SUBGRADE ONCE IT IS APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER. THE MUD MAT WILL ALSO PROVIDE BEARING FOR THE BLOCKS THAT TEMPORARILY SUPPORT THE SPILLWAY PIPE UNTIL THE CRADLE CAN BE POURED. THE METHOD OF BLOCK SUPPORT FOR THE PIPE PROPOSED BY THE CONTRACTOR SHOULD BE SUBMITTED TO THE JOHN R. McADAMS COMPANY FOR REVIEW.

8. BEGIN CONSTRUCTION OF THE NEW EMBANKMENT. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8" THICK LIFTS PRIOR TO COMPACTION, UNLESS DIRECTED OTHERWISE BY THE ON-SITE GEOTECHNICAL ENGINEER. FILL LIFTS SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF FILL. IF IT IS NECESSARY, THE EMBANKMENT FILL MATERIAL WILL BE OVERBUILT IN HORIZONTAL LIFTS AND CUT BACK TO FINAL GRADE IN ORDER TO ACHIEVE PROPER COMPACTION.

9. AS CONSTRUCTION OF THE EMBANKMENT MOVES FORWARD, IT WILL BE NECESSARY TO INSTALL THE CONCRETE CRADLE. SEE NOTE ON CRADLE DETAIL (SHEET SW-A3). THIS MAY BE CONSTRUCTED USING ONE OF THE FOLLOWING METHODS:

   A. IF THE PROPOSED STRUCTURAL FILL MATERIAL IS UTILIZED AS THE FORMWORK FOR THE CONCRETE CRADLE, THEN THE STRUCTURAL FILL SHOULD BE INSTALLED AND COMPACTED UP TO THE TOP OF CONCRETE CRADLE ELEVATION. ONCE THE STRUCTURAL FILL REACHES THE NEXT DOWNSTREAM JUNCTION BOX OR HEADWALL AND IS COMPACTED TO THE ELEVATION OF THE TOP OF THE CONCRETE CRADLE, EXCAVATE THE CONCRETE CRADLE TRENCH PER THE PROVIDED DETAILS AND CONSTRUCT THE CONCRETE CRADLE AS PER THE PROVIDED CONCRETE CRADLE DETAIL.

   B. IF THE PROPOSED STRUCTURAL FILL IS NOT UTILIZED AS THE FORMWORK FOR THE CONCRETE CRADLE, THEN PRIOR TO CONSTRUCTING THE STRUCTURAL FILL EMBANKMENT, THE FORMWORK FOR THE CONCRETE CRADLE SHOULD BE INSTALLED ON EXISTING GROUND AND/OR THE MUD MAT. THE CONCRETE CRADLE SHALL BE CONSTRUCTED PER THE PROVIDED DETAILS

10. AS AN ALTERNATE TO A CONCRETE CRADLE UNDER THE BARREL PIPE (SEE SHEET SW-A3), THE CONTRACTOR MAY CHOOSE TO ELIMINATE THE CONCRETE CRADLE AND USE COMPACTED BACKFILL IF THE ON-SITE GEOTECHNICAL ENGINEER WILL PROVIDE A NC PE SEALED LETTER CERTIFYING THAT THE COMPACTION UNDER, AROUND, AND ABOVE THE BARREL MEETS THE SPECIFICATIONS OF THE EMBANKMENT COMPACTION REQUIREMENTS AND MOISTURE CONTENT. THIS CERTIFICATION LETTER MUST BE SUBMITTED TO THE DESIGN ENGINEER PRIOR TO BACKFILL. THIS SEPARATE CERTIFICATION MUST BE SPECIFIC TO THE BARREL PIPE FOR THE FACILITY, AND MUST CLEARLY STATE THAT ALL SOIL MATERIAL UNDER, AROUND, AND ABOVE THE BARREL PIPE MEETS THE BERM AND SOIL COMPACTION SPECIFICATIONS ON THIS SHEET. THIS CERTIFICATION IS TO INCLUDE REFERENCE TO BOTH MATERIAL AND COMPACTION, AND MUST STATE THAT ALL MATERIALS UNDER, AROUND, AND ABOVE THE BARREL HAVE BEEN COMPACTED PER THE BERM MATERIAL SPECIFICATIONS (AT LEAST 95% OF MAXIMUM DRY DENSITY USING ASTM D698 STANDARD PROCTOR) WITH NO VOID SPACES PRESENT. THE CONTRACTORS INTENT TO UTILIZE THIS ALTERNATIVE MUST BE STATED PRIOR TO CONSTRUCTION TAKING PLACE. THIS CONTRACTORS CERTIFICATION MUST BE PRESENTED TO THE DESIGN ENGINEER BEFORE AN AS-BUILT CERTIFICATION CAN BE ISSUED FOR THIS FACILITY.

11. INSTALL RISER / BARREL ASSEMBLY, ALONG WITH THE EMERGENCY DRAIN SYSTEM. INSTALL 30" RCP OUTLET BARREL SPILLWAY FILTER FROM THE DETAILS SHOWN ON SHEET SW-A3.

12. CONSTRUCT EMBANKMENT PER SPECIFICATIONS LISTED IN THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS" AND REQUIREMENTS OF THE ON-SITE GEOTECHNICAL ENGINEER. ALL CHARACTERISTICS OF THE EMBANKMENT FILL MATERIAL SHALL MEET THE STANDARDS SET FORTH IN "BERM AND SOIL COMPACTION SPECIFICATIONS", INCLUDING COMPACTION AND MOISTURE REQUIREMENTS. IF NECESSARY TO ACHIEVE PROPER COMPACTION, THE EMBANKMENT FILL MATERIAL WILL BE OVERBUILT IN HORIZONTAL LIFTS AND CUT BACK TO PROPER FINAL GRADE. ANY HAND COMPACTION ACTIVITIES AROUND SPILLWAY OR DRAIN STRUCTURES SHALL BE CONDUCTED IN 4-INCH LOOSE LIFTS AND BE TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT. ALL COMPACTION AND MOISTURE TESTING SHALL BE CARRIED OUT AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER AND AS LISTED IN THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS".

13. UPON COMPLETION OF DAM EMBANKMENT, PROMPTLY STABILIZE AND SEED DAM EMBANKMENT PER SEEDING SCHEDULE. PERMANENT GROUND COVER SHALL BE ESTABLISHED PER THE PERMANENT SEEDING SCHEDULE FOUND ON SHEET SW-A4.

14. SCHEDULE A FINAL AS-BUILT INSPECTION AND AS-BUILT SURVEY WITH THE ENGINEER AND SURVEYOR. AN AS-BUILT INSPECTION AND SURVEY SHALL BE SCHEDULED BEFORE IMPOUNDING WATER IN THE FACILITY AND A MINIMUM OF 60 DAYS PRIOR TO THE ANTICIPATED DATE OF CERTIFICATION APPROVAL. ANY COMMENTS OR DEFICIENCIES IN THE SCM CONSTRUCTION MUST BE CORRECTED TO THE SATISFACTION OF THE ENGINEER AND OWNER BEFORE CERTIFICATION SHALL BE GRANTED.

BERM AND SOIL COMPACTION SPECIFICATIONS

1. PRIOR TO CONSTRUCTION, THE ON-SITE GEOTECHNICAL ENGINEER SHALL IDENTIFY BORROW / FILL AREAS AND VERIFY THEIR SUITABILITY FOR USE WITHIN THE DAM EMBANKMENT. ALSO, THE ON-SITE GEOTECHNICAL ENGINEER SHALL PERFORM STANDARD PROCTORS ON THE PROPOSED BORROW MATERIAL TO ENSURE THAT OPTIMUM MOISTURE CONTENT AND COMPACTION CAN BE ACHIEVED / CONTROLLED DURING CONSTRUCTION.

2. ALL FILL MATERIALS TO BE USED FOR THE DAM EMBANKMENT SHALL BE TAKEN FROM BORROW AREAS APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER. THE FILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, WOOD, STONES GREATER THAN 6", AND FROZEN OR OTHER OBJECTIONABLE MATERIAL. THE FOLLOWING SOIL TYPES ARE SUITABLE FOR USE AS FILL WITHIN THE DAM EMBANKMENT AND KEY TRENCH: ML AND CL. ALL FILL MATERIALS SHALL BE APPROVED BY THE ONSITE GEOTECHNICAL ENGINEER FOR THE INTENDED USE.

3. FILL PLACEMENT FOR THE EMBANKMENT SHALL NOT EXCEED A MAXIMUM 8" LIFT (UNCOMPACTED). EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF EMBANKMENT. BEFORE PLACEMENT OF FILL FOR THE BERM SECTION, ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND THE SURFACE PROPERLY PREPARED FOR FILL PLACEMENT. FILL MATERIAL ADJACENT TO ALL SPILLWAY AND DRAINAGE STRUCTURES SHALL BE PLACED IN 4-INCH (UNCOMPACTED) LIFTS AND HAND-COMPACTED TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT.

4. ALL FILL SOILS USED IN THE EMBANKMENT CONSTRUCTION SHALL BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). THE FILL SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT WITHIN -1 TO +3 PERCENT OF ITS OPTIMUM MOISTURE CONTENT. COMPACTION TESTS SHALL BE PERFORMED BY THE ON-SITE GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO VERIFY THAT THE PROPER COMPACTION LEVEL HAS BEEN REACHED. THE FILL SHOULD BE COMPACTED USING A SHEEPSFOOT TYPE COMPACTOR. IN ORDER TO PREVENT DAMAGE TO THE PIPE, NO COMPACTION EQUIPMENT SHALL CROSS ANY PIPE UNTIL MINIMUM COVER IS ESTABLISHED ALONG THE PIPE.

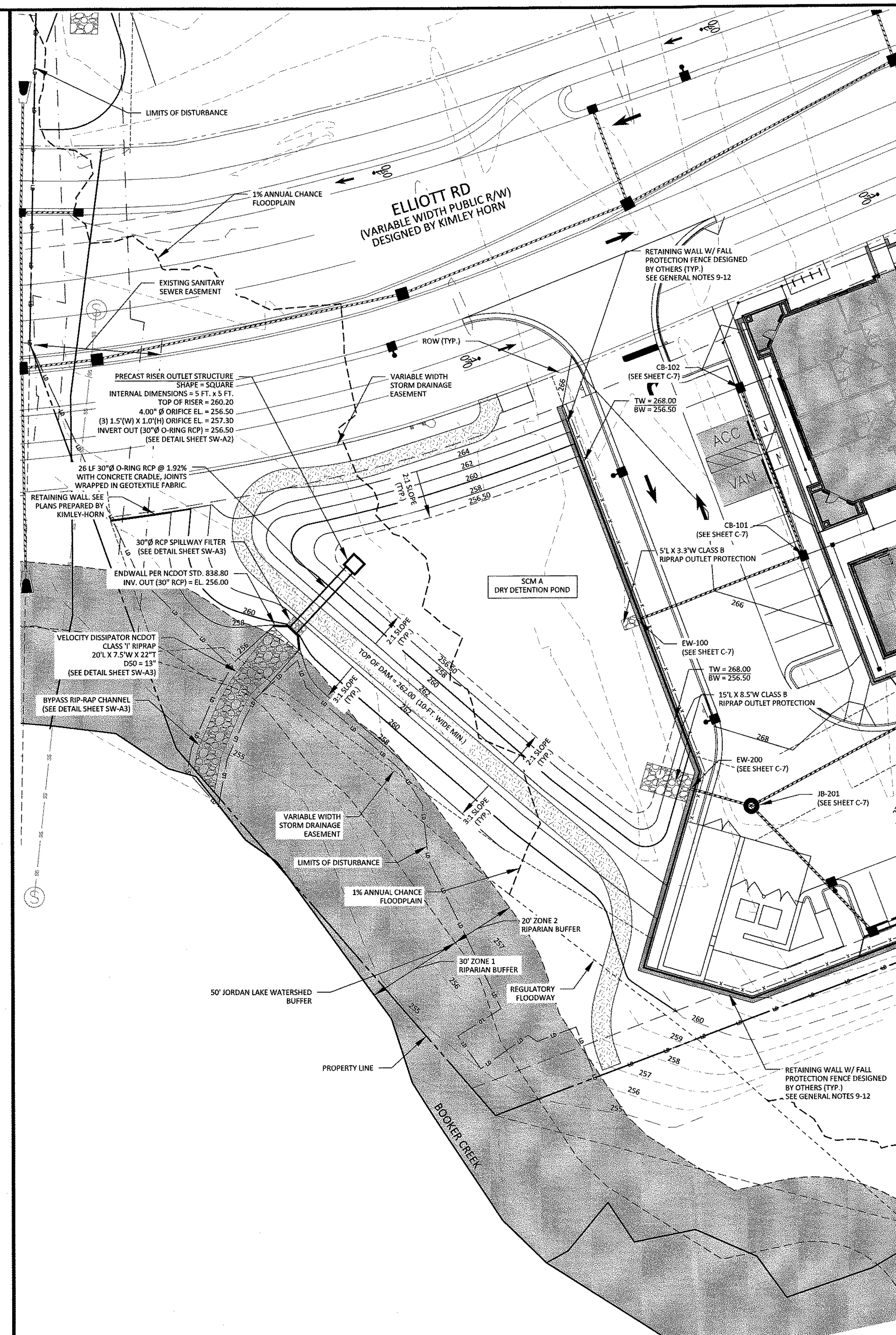
5. THE DESIGN ENGINEER SHALL BE PROVIDED WITH REPORTS AND CERTIFICATION, BY THE ON-SITE GEOTECHNICAL ENGINEER, THAT THE GEOTECHNICAL ASPECTS OF THE FACILITY HAVE BEEN CONSTRUCTED PER PLAN. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY. THESE REPORTS AND CERTIFICATION WILL BE NEEDED DURING THE AS-BUILT CERTIFICATION PROCESS FOR THIS STORMWATER CONTROL MEASURE. THEREFORE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE TESTING AND OBSERVATION WITH THE ON-SITE GEOTECHNICAL ENGINEER.

6. TESTING OF THE NEW FILL MATERIALS SHALL BE PERFORMED TO VERIFY THAT THE RECOMMENDED LEVEL OF COMPACTION IS ACHIEVED DURING CONSTRUCTION. THEREFORE, ONE DENSITY TEST SHALL BE PERFORMED FOR EVERY 2,500 SQUARE FEET OF AREA FOR EVERY LIFT OF FILL OR AS RECOMMENDED BY THE ON-SITE GEOTECHNICAL ENGINEER.

7. TESTING WILL BE REQUIRED ALONG THE 30"Ø RCP OUTLET BARREL AT A FREQUENCY OF ONE TEST PER 25 LF OF PIPE PER VERTICAL FOOT OF FILL OR AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.

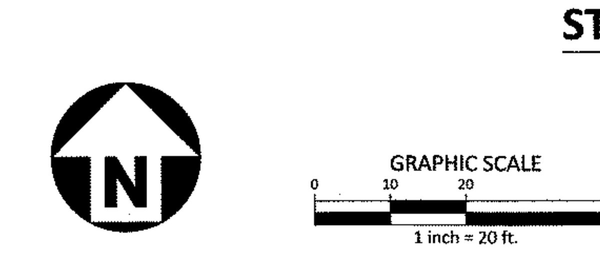
STATEMENT OF RESPONSIBILITY

1. ALL REQUIRED MAINTENANCE AND INSPECTIONS OF THE STORMWATER CONTROL MEASURE SHALL BE THE RESPONSIBILITY OF THE OWNER, PER THE EXECUTED OPERATION AND MAINTENANCE AGREEMENT FOR THIS FACILITY.



STORMWATER CONTROL MEASURE 'A' PLAN VIEW

1" = 20'



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CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL 47257 ENGINEER KATHERINE E. GARCIA 9/3/2019

REVISIONS

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4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-SWA
CHECKED BY	KEG
DRAWN BY	SCB
SCALE	1" = 20'
DATE	02. 28. 2019

SHEET

STORMWATER CONTROL MEASURE 'A' PLAN VIEW

SW-A1

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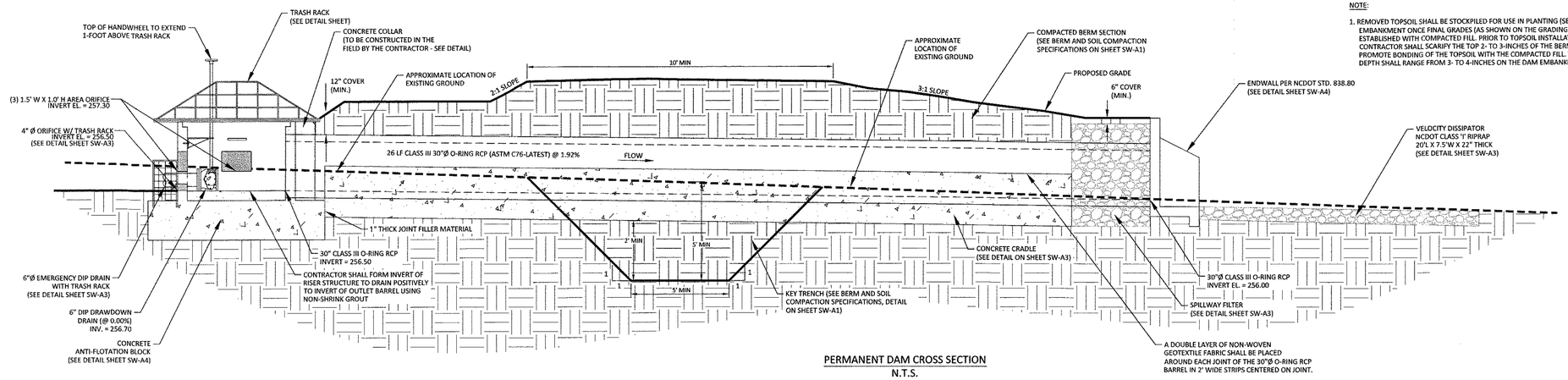
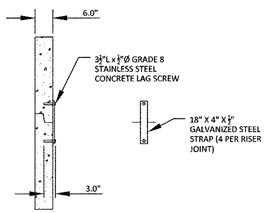


NOTE:

1. REMOVED TOPSOIL SHALL BE STOCKPILED FOR USE IN PLANTING (SEEDING) THE DAM EMBANKMENT ONCE FINAL GRADES (AS SHOWN ON THE GRADING PLAN) HAVE BEEN ESTABLISHED WITH COMPACTED FILL. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE TOP 2- TO 3-INCHES OF THE BERM SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3- TO 4-INCHES ON THE DAM EMBANKMENT.

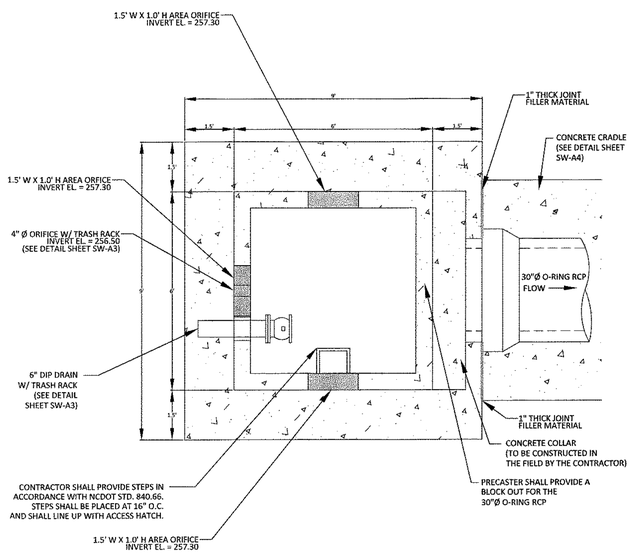
PERMANENT DAM CROSS SECTION
N.T.S.



RISER JOINT CONNECTION DETAIL
N.T.S.

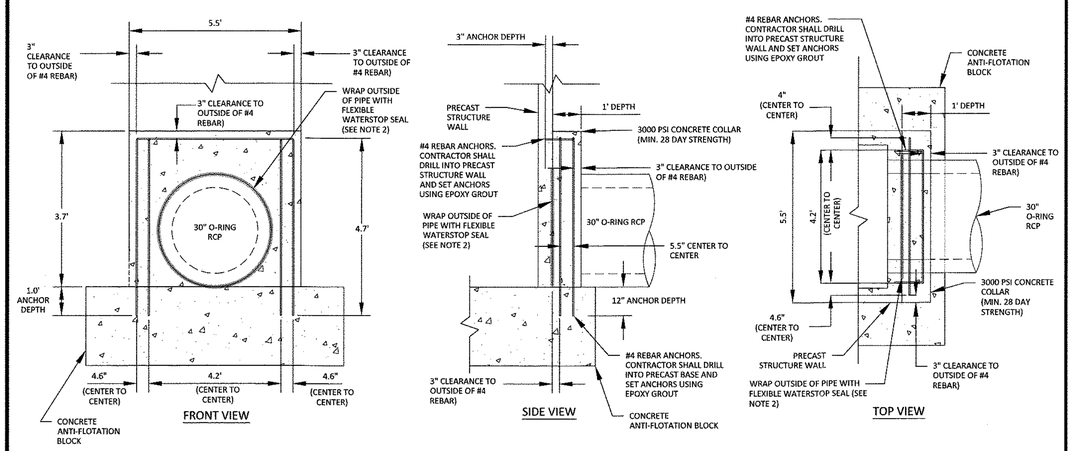
NOTES:

1. CONCRETE ANTI-FLOTATION BLOCK TO BE PROVIDED WITH MINIMUM TEMPERATURE AND SHRINKAGE STEEL REINFORCEMENT.
2. TRASH RACKS NOT SHOWN FOR CLARITY.
3. THE NUMBER OF GUIDES FOR THE VALVE STEM SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. THE VALVE STEM MUST BE OPERABLE FROM THE TOP OF THE RISER VIA THE HANDWHEEL WITH AN INSIGNIFICANT AMOUNT OF PLAY IN THE VALVE STEM.
4. CONTRACTOR SHALL PROVIDE A JOINT IN THE OUTLET BARREL NO MORE THAN 5-FT FROM THE RISER.

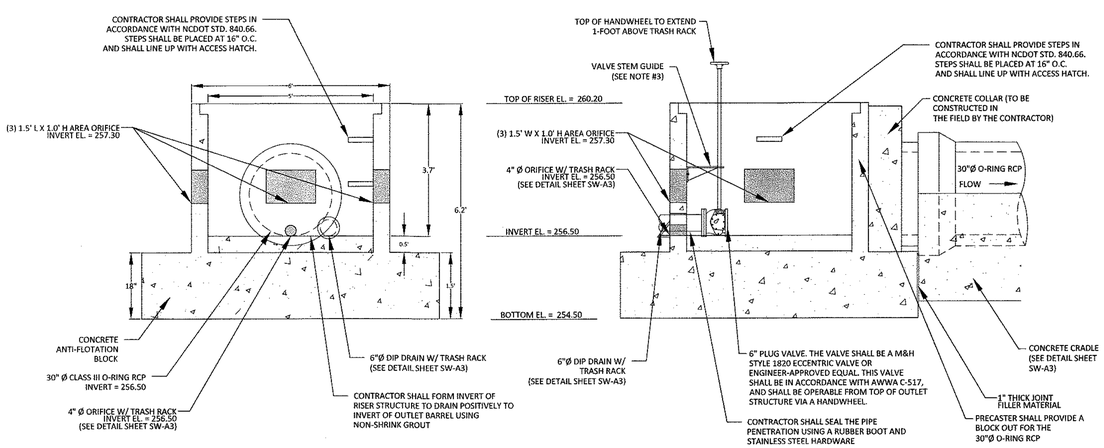


NOTES:

1. ALL REBAR TO BE #4 REBAR.
2. WRAP OUTSIDE OF PIPE WITH VOLCLAY WATERSTOP-RX® 101 (OR PRE-APPROVED EQUIVALENT) AT THE FACE OF THE PRECAST STRUCTURE WALL. PROVIDE 6" OVER LAP ON THE BOTTOM OF THE PIPE.



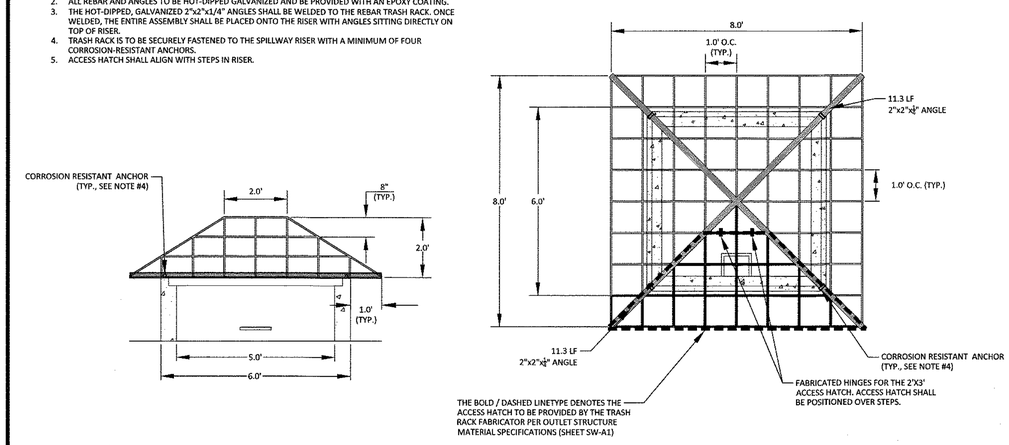
30"Ø CONCRETE COLLAR DETAIL
N.T.S.



PERMANENT OUTLET STRUCTURE DETAILS
N.T.S.

NOTES:

1. ALL REBAR TO BE #4 REBAR.
2. ALL REBAR AND ANGLES TO BE HOT-DIPPED GALVANIZED AND BE PROVIDED WITH AN EPOXY COATING.
3. THE HOT-DIPPED, GALVANIZED 2"x2"x1/4" ANGLES SHALL BE WELDED TO THE REBAR TRASH RACK. ONCE WELDED, THE ENTIRE ASSEMBLY SHALL BE PLACED ONTO THE RISER WITH ANGLES SITTING DIRECTLY ON TOP OF RISER.
4. TRASH RACK IS TO BE SECURELY FASTENED TO THE SPILLWAY RISER WITH A MINIMUM OF FOUR CORROSION-RESISTANT ANCHORS.
5. ACCESS HATCH SHALL ALIGN WITH STEPS IN RISER.



5'X5' RISER TRASH RACK DETAIL
N.T.S.

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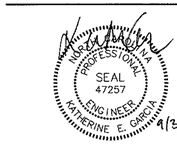

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4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-SWA
CHECKED BY	KEG
DRAWN BY	SCB
SCALE	N.T.S.
DATE	02. 28. 2019

SHEET

STORMWATER CONTROL MEASURE 'A' DETAILS

SW-A2

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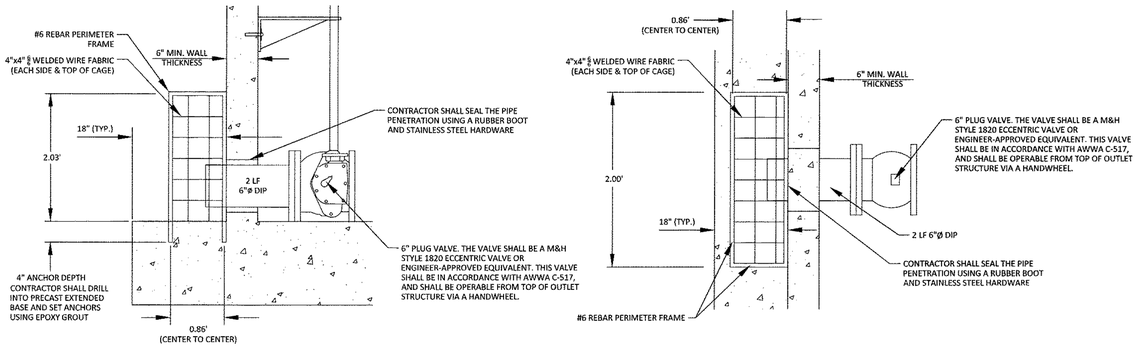
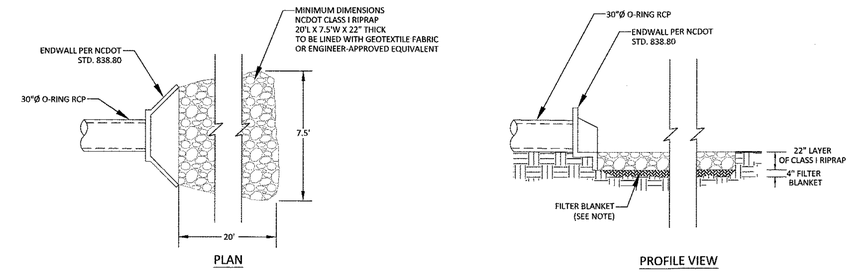


6"Ø EMERGENCY DIP DRAIN TRASH RACK DETAILS

N.T.S.

NOTES:

1. A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 4" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER-APPROVED EQUIVALENT.
2. RIPRAP TO EXTEND TO TOP OF CHANNEL WITH 2:1 SIDE SLOPES THROUGHOUT THE EXTENT OF CHANNEL.

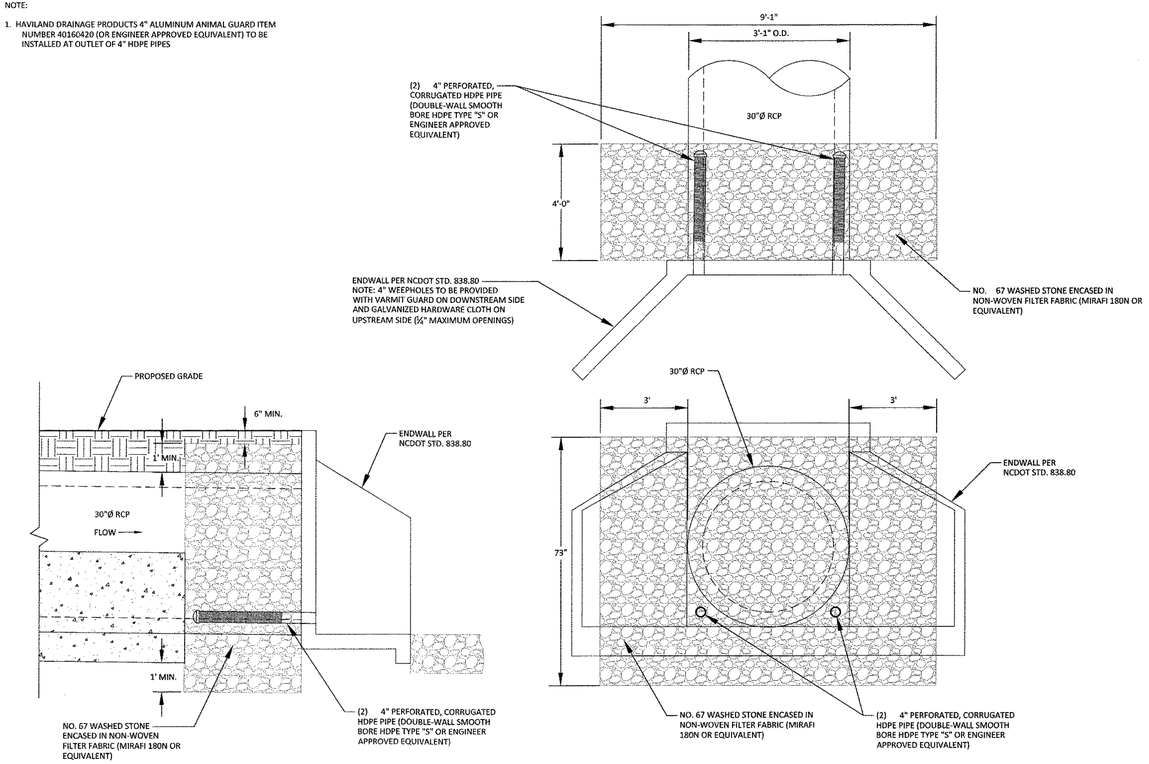


OUTLET BARREL VELOCITY DISSIPATER

N.T.S.

NOTE:

1. HAVILAND DRAINAGE PRODUCTS 4" ALUMINUM ANIMAL GUARD ITEM NUMBER 40160420 (OR ENGINEER APPROVED EQUIVALENT) TO BE INSTALLED AT OUTLET OF 4" HDPE PIPES



SPILLWAY FILTER DETAIL

N.T.S.

NOTE:

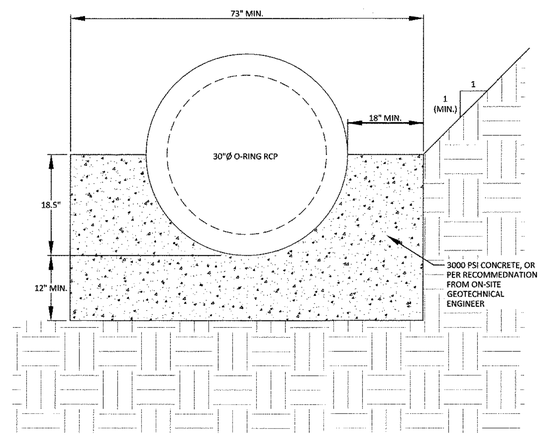
AS AN ALTERNATE TO A CONCRETE CRADLE UNDER THE BARREL PIPE (THIS DETAIL), THE CONTRACTOR MAY CHOOSE TO ELIMINATE THE CONCRETE CRADLE AND USE COMPACTED BACKFILL IF THE ON-SITE GEOTECHNICAL ENGINEER WILL PROVIDE A NC PE SEALED LETTER CERTIFYING THAT THE COMPACTION UNDER, AROUND, AND ABOVE THE BARREL MEETS THE SPECIFICATIONS OF THE EMBANKMENT COMPACTION REQUIREMENTS AND MOISTURE CONTENT. THIS CERTIFICATION LETTER MUST BE SUBMITTED TO THE DESIGN ENGINEER BEFORE AS-BUILT CERTIFICATION OF THE FACILITY. THIS SEPARATE CERTIFICATION MUST BE SPECIFIC TO THE BARREL PIPE FOR THE FACILITY, AND MUST CLEARLY STATE THAT ALL SOIL MATERIAL UNDER, AROUND, AND ABOVE THE BARREL PIPE MEETS THE BERM MATERIAL SPECIFICATIONS STATED ON SHEET SW-A1. THIS CERTIFICATION IS TO INCLUDE REFERENCE TO BOTH MATERIAL AND COMPACTION, AND MUST STATE THAT ALL MATERIALS UNDER, AROUND, AND ABOVE THE BARREL HAVE BEEN COMPACTED PER THE BERM MATERIAL SPECIFICATIONS (AT LEAST 95% OF MAXIMUM DRY DENSITY USING ASTM D698 STANDARD PROCTOR) WITH NO VOID SPACES PRESENT. THE CONTRACTORS INTENT TO UTILIZE THIS ALTERNATIVE MUST BE STATED PRIOR TO CONSTRUCTION TAKING PLACE. THIS CONTRACTORS CERTIFICATION MUST BE PRESENTED TO THE DESIGN ENGINEER BEFORE AN AS-BUILT CERTIFICATION CAN BE ISSUED FOR THIS FACILITY.

BARREL PIPE CONCRETE CRADLE CONSTRUCTION SEQUENCE

1. IF OPTION A IS CHOSEN FROM NOTE 9 OF THE CONSTRUCTION SEQUENCE (SHEET SW-A1), THEN BRING GRADE OF DAM EMBANKMENT TO SPRINGLINE OF PIPE ELEVATION. IF OPTION B IS CHOSEN FROM NOTE 9 OF THE CONSTRUCTION SEQUENCE, THEN CONSTRUCT FORMWORK FOR CONCRETE CRADLE ON EXISTING GRADE.
2. IF OPTION A IS CHOSEN FROM NOTE 9 OF THE CONSTRUCTION SEQUENCE, THEN EXCAVATE TRENCH FOR CRADLE AND BARREL PER DIMENSIONS ON DRAWINGS. IF OPTION B IS CHOSEN FROM NOTE 9 OF THE OUTLET STRUCTURE MATERIAL SPECIFICATIONS, PROCEED TO STEP 3 BELOW.
3. PLACE BARREL PIPE ON CONCRETE BLOCKS TO GRADE. AT THIS STEP, CONTRACTOR SHALL WRAP A DOUBLE LAYER OF NON-WOVEN GEOTEXTILE FABRIC AROUND EACH JOINT OF THE 30"Ø O-RING RCP BARREL IN 2' WIDE STRIPS CENTERED ON JOINT.
4. PLACE CONCRETE FOR CRADLE FOR EACH SECTION FROM ONE SIDE OF THE TRENCH. ALLOW CONCRETE TO FILL ENTIRE AREA UNDER PIPE AND PIPE HAUNCHES AS TO LEAVE NO VOIDS UNDER THE PIPE BEFORE PLACING CONCRETE ON THE OPPOSITE SIDE OF THE TRENCH. PLACE ENTIRE CRADLE AS ONE LIFT (VERTICALLY) PER DRAWINGS.
5. CONCRETE CRADLE MAY BE ELIMINATED PER RECOMMENDATION FROM THE ON-SITE GEOTECHNICAL ENGINEER. ANY DEVIATION FROM THIS DETAIL SHALL BE SUBMITTED TO AND REVIEWED BY THE DESIGN ENGINEER PRIOR TO IMPLEMENTATION. IF THE CRADLE IS ELIMINATED, THEN A LETTER FROM AN NC PE CERTIFYING THAT ALL SOIL MATERIAL UNDER, AROUND, AND ABOVE THE BARREL PIPE MEETS THE BERM MATERIAL SPECIFICATIONS STATED ON SHEET SW-A1 IS REQUIRED.
6. ALLOW CRADLE TO CURE FOR A MINIMUM OF 7 DAYS BEFORE ANY VIBRATING COMPACTION EQUIPMENT IS USED IN THE VICINITY OF THE BARREL PIPE.
7. TRENCH TO BE BACKFILLED IN 5" LIFTS WHEN COMPACTION IS BY HAND. BACKFILL IS IN 8" LIFTS WHEN CONDUCTED BY MACHINE. MINIMUM OF 2 FEET COVER MUST BE PRESENT ON 30"Ø RCP BEFORE DRIVING OVER WITH HEAVY EQUIPMENT.

NOTE:

1. CONTRACTOR SHALL PROVIDE A JOINT IN THE OUTLET BARREL NO MORE THAN 5-FT FROM THE RISER.

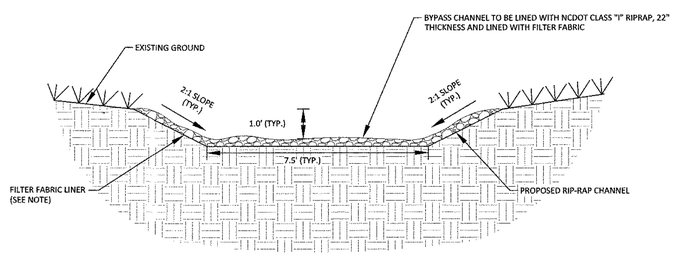


30" CONCRETE CRADLE DETAIL

N.T.S.

NOTES:

1. CHANNEL DIMENSION (1.0' DEEP, 7.5' BOTTOM WIDTH) ARE TO TOP OF RIP-RAP IN CHANNEL. ACTUAL CHANNEL EXCAVATION MUST CONSIDER THICKNESS OF THE RIPRAP AND FILTER FABRIC LINER.
2. A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 4" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER-APPROVED EQUIVALENT.
3. RIPRAP TO EXTEND TO TOP OF CHANNEL WITH 2:1 SIDE SLOPES THROUGHOUT THE EXTENT OF CHANNEL.

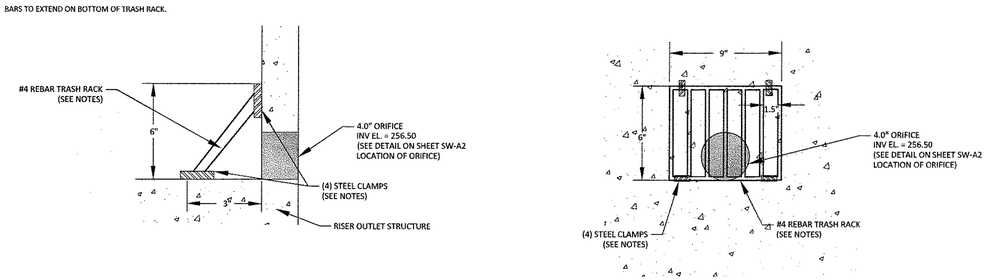


BYPASS RIP-RAP CHANNEL DETAIL

N.T.S.

NOTES:

1. ATTACH TRASH RACK WITH (4) HOT DIPPED GALVANIZED STEEL CLAMPS. EACH CLAMP ATTACHED TO WEIR BOX BY (2) 4"x1/4" CONCRETE ANCHOR BOLTS. EACH CLAMP SHALL BE COATED WITH AN EPOXY COATING.
2. ALL REBAR TO BE GALVANIZED #4 REBAR WITH AN EPOXY COATING.
3. BARS TO EXTEND ON BOTTOM OF TRASH RACK.



4" ORIFICE TRASH RACK DETAIL

N.T.S.

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DRAWN BY	SCB
SCALE	N.T.S.
DATE	02. 28. 2019

SHEET

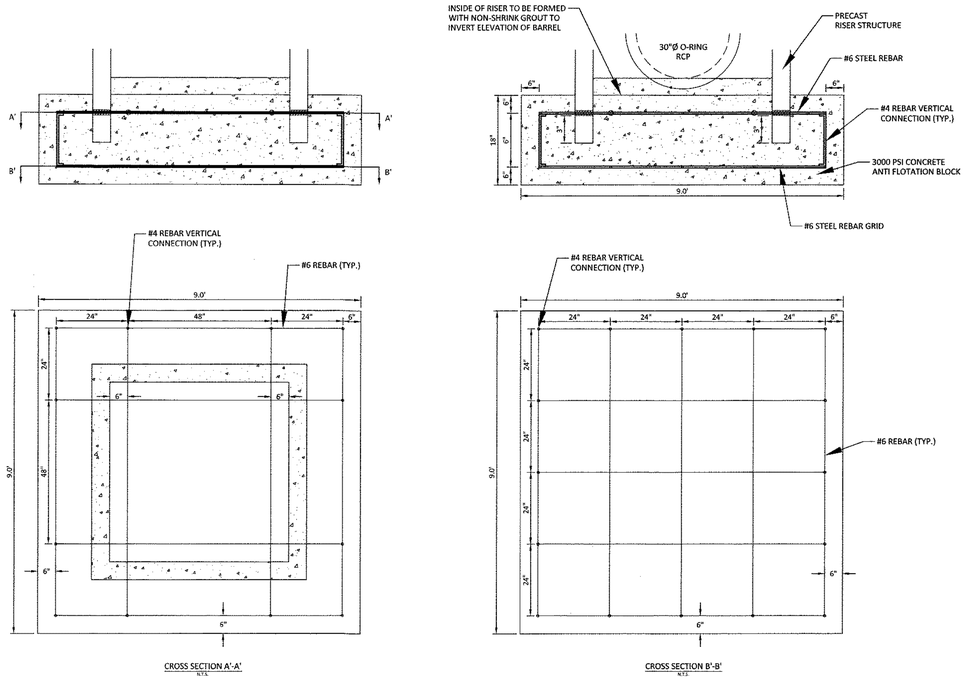
STORMWATER CONTROL MEASURE 'A' DETAILS

SW-A3

X:\Projects\WDF\WDF-17000\Storm\Form District Permit\Current Drawings\WDF17000-SWA.dwg, 9/3/2019 1:52:49 PM, Garcia, Kelli

NOTES:

1. ALL REINFORCING STEEL IN RISER ANTI-FLOTATION BLOCK TO BE GRADE 60 #6 BARS FOR HORIZONTAL CROSSING AND GRADE 60 #4 BARS FOR VERTICAL CONNECTIONS.
2. INSIDE OF RISER BOTTOM TO BE FORMED WITH NON-SHRINK GROUT TO INVERT ELEVATION OF BARREL.
3. ALL PIPE PENETRATIONS THROUGH THE CONCRETE RISER STRUCTURE SHALL BE MADE WATERTIGHT.



RISER/ANTI-FLOTATION BLOCK CONNECTION
N.T.S.

SEEDBED PREPARATION

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3-4 INCHES DEEP OVER ADVERSE SOIL CONDITIONS. TOPSOIL SHOULD BE INCORPORATED INTO THE FINAL GRADING OF THE BASIN SIDE SLOPES AND AQUATIC SHELF. CONTRACTOR SHOULD SCARIFY THE TOP 3-4 INCHES OF THE COMPACTED FILL TO PROMOTE BONDING WITH TOPSOIL.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. PER ONE TIME ONLY, APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL.
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. AFTER PERMANENT COVER IS ESTABLISHED.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT.

TEMPORARY SEEDING SCHEDULE

SEEDING DATE	SEEDING MIXTURE	APPLICATION RATE
JAN 1 - MAY 1	RYE (GRAIN)	120 LBS/AC
	KOBE LESPEDEZA	50 LBS/AC
MAY 1 - AUG 15	GERMAN MILLET	40 LBS/AC
AUG 15 - DEC 30	RYE (GRAIN)	120 LBS/AC

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 750 LB/AC 10-10-10 FERTILIZER (FROM AUG 15 - DEC 30, INCREASE 10-10-10 FERTILIZER TO 1000 LB/AC).

MULCH
APPLY 4000 LB/AC STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
JAN 1 - AUG 15: REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE, AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

AUG 15 - DEC 30: REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOP DRESS WITH 50 LB/AC OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/AC KOBE LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

NOTE: USE THE TEMPORARY SEEDING SCHEDULE ONLY WHEN DATE IS NOT CORRECT TO USE THE PERMANENT SEEDING SCHEDULE.

PERMANENT SEEDING SCHEDULE (DAM EMBANKMENTS)

SEEDING DATE	SEEDING MIXTURE OPTIONS (CHOOSE ONE)	APPLICATION RATE
MAY 1 - AUG 31	CENTIPEDE RAW	30 LBS/AC
APRIL 1 - SEPT 1	SUMMER MIX (80% HULLED BERMUDA/20% MILLET)	200 LBS/AC
OCT 1 - MARCH 1	FALL MIX (80% TALL FESCUE/20% ANNUAL RYEGRASS)	200 LBS/AC

SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 LB/AC GROUND AGRICULTURE LIMESTONE AND 1000 LB/AC 10-10-10 FERTILIZER.

MULCH
APPLY 4000 LB/AC STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE
INSPECT AND REPAIR MULCH FREQUENTLY. REFERTILIZE IN LATE WINTER OF THE FOLLOWING YEAR; USE SOIL TESTS OR APPLY 150 LB/AC 10-10-10 FERTILIZER. MOW REGULARLY TO A HEIGHT OF 2-4 INCHES.

NOTE: PERMANENT SEEDING SCHEDULE IS FOR SLOPES AND BOTTOM OF THE BASIN AND TOP OF BERM.

SEEDING SPECIFICATIONS

McADAMS
The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

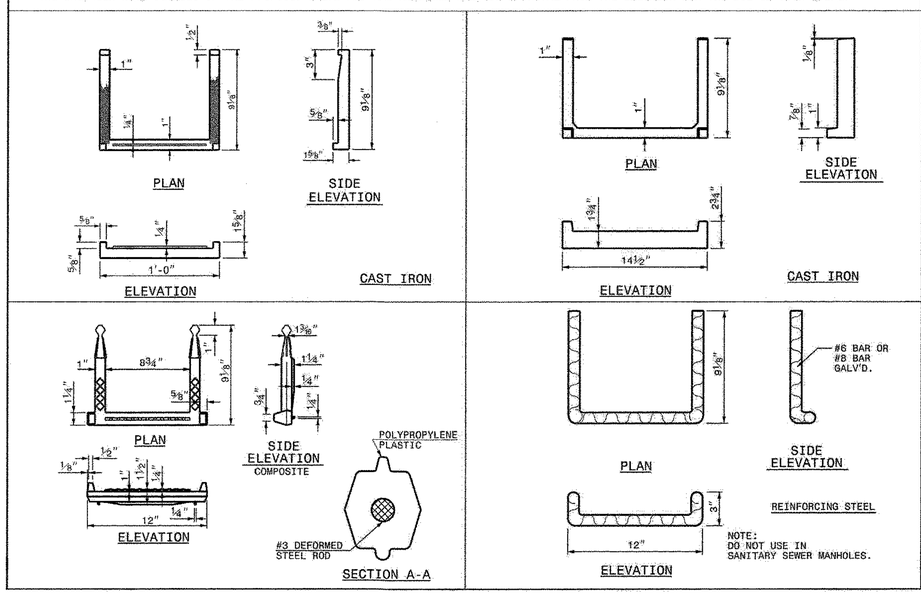
phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293

www.mcadamsco.com

CLIENT
WOODFIELD INVESTMENTS
11425 HORSEMAN'S TRAIL
RALEIGH, NC 27613
PHONE: 919. 535. 8947

PARK APARTMENTS
FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

NOTES:
INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL.
STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.

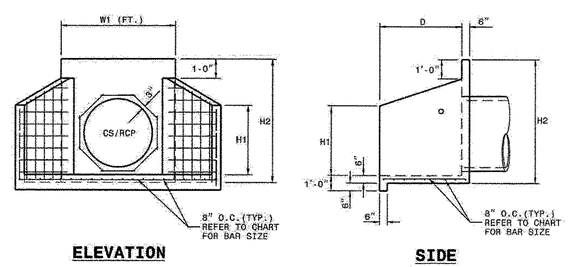


STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
1-18

ROADWAY STANDARD DRAWING FOR
DRAINAGE STRUCTURE STEPS

SHEET 1 OF 1
840.66

MAINTENANCE ACCESS STEPS
N.T.S.



NOTES:

* THIS PRECAST ENDWALL MAY BE USED FOR THE FOLLOWING STANDARDS: 838.01, 838.11, 838.21, 838.27, 838.33, 838.39, 838.51, 838.57, 838.63 AND 838.69.
* INSTALL PRECAST ENDWALLS WITH WINGS AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 838.
* USE 4000 PSI CONCRETE.
* PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A185 WITH 2" MIN. CLEARANCE.
* PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
* PIPE TO BE GROUTED INTO HEADWALL AT JOB SITE BY CONTRACTOR
* ALL ELEMENTS PRECAST TO MEET ASTM C913.
* WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
* CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

NOTE: THE MINIMUM BAR SIZE SHALL BE #5 BARS AT 8" CTS. THE CONTRACTOR WILL HAVE THE OPTION TO INCREASE THIS BAR SIZE AS NEEDED.

ENDWALL DIMENSIONS

FT.	MINIMUM	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.
PIPE DIA.	BAR SIZE	H1(FT.)	H2(FT.)	D (FT.)	W1	W2
1.0	#5 @ 8"	1.25/2.00	2.00/3.75	1.25/1.75	3.00/3.75	5.50/6.00
1.25	#5 @ 8"	1.25/2.00	3.00/3.75	1.25/2.00	3.50/3.75	6.50/6.75
1.50	#5 @ 8"	1.25/2.00	3.00/4.25	1.50/2.50	3.50/3.75	6.50/6.75
2.0	#5 @ 8"	1.50/2.50	4.00/4.75	1.75/2.50	4.00/4.25	7.50/8.25
2.5	#5 @ 8"	2.50/3.50	4.00/6.00	2.00/3.00	4.50/5.50	10.00/11.50
3.0	#5 @ 8"	3.00/3.50	5.00/6.00	2.75/3.50	5.25/5.75	11.50/11.75
3.5	#5 @ 8"	3.25/4.50	6.00/6.75	3.25/3.50	6.00/6.75	12.00/13.25
4.0	#5 @ 8"	3.50/4.50	6.50/7.00	3.25/3.50	6.50/6.75	13.00/13.25
4.5	#5 @ 8"	4.00/5.00	6.50/8.50	3.25/4.00	7.00/9.25	13.50/15.75
5.0	#5 @ 8"	4.50/5.00	7.00/8.50	3.25/4.00	7.25/9.25	13.75/15.75
5.5	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.25/9.25	14.00/15.75
6.0	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.75/9.25	14.75/16.75

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
1-18

ROADWAY STANDARD DRAWING FOR
PRECAST CONCRETE ENDWALL
FOR SINGLE 12" THRU 72" PIPE - 90° SKEW

SHEET 1 OF 1
838.80

OUTLET ENDWALL DETAILS
N.T.S.

NORTH CAROLINA PROFESSIONAL SEAL 47257 ENGINEER KATHERINE E. GARCIA
9/3/2019

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

PROJECT NO.	WDF-17000
FILENAME	WDF17000-SWA
CHECKED BY	KEG
DRAWN BY	SCB
SCALE	N.T.S.
DATE	02. 28. 2019

SHEET

STORMWATER CONTROL MEASURE 'A' DETAILS

SW-A4

PERMIT SET

X:\Projects\WDF\WDF-17000\Sworn\Form District Permit\Current Drawings\WDF17000-SWA.dwg, 9/3/2019 1:52:49 PM, Garcia, Kelli

STORMWATER CONTROL MEASURE 'B' CONSTRUCTION SPECIFICATIONS

GENERAL NOTES

1. PRIOR TO CONSTRUCTION, ANY DISCREPANCIES IN THE PLANS AND NOTES SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION.
2. PRIOR TO ANY CONSTRUCTION OR PLACEMENT OF ANY BACKFILL, THE ONSITE GEOTECHNICAL ENGINEER SHALL INSPECT THE EXCAVATION AREA FOR THE UNDERGROUND SCM WITHIN THIS AREA TO ASSESS WHETHER SUITABLE SOILS EXIST AT THE SUBGRADE LEVEL. IF THE CONTRACTOR CONSTRUCTS AND COVERS UP THE UNDERGROUND SCM PRIOR TO INSPECTION, THEN THIS AREA SHALL BE UNCOVERED AND TESTED (TO THE ENGINEER'S AND OWNER'S APPROVAL) AT THE CONTRACTOR'S EXPENSE.
3. THE FACILITY SHALL NOT BE USED AS A TEMPORARY EROSION CONTROL DEVICE (I.E. SEDIMENT TRAP OR SEDIMENT BASIN) DURING CONSTRUCTION.
4. PRIOR TO PLACING STORMFILTER CARTRIDGES WITHIN THE UNDERGROUND SYSTEM , THE CONTRACTOR SHALL REQUEST AN ONSITE MEETING WITH THE DESIGN ENGINEER AND THE EROSION CONTROL INSPECTOR TO ENSURE THE UPSTREAM DRAINAGE AREA IS COMPLETELY STABILIZED (I.E. GOOD VEGETATIVE COVER). IF THE CONTRACTOR DECIDES TO PLACE THE STORMFILTER CARTRIDGES PRIOR TO APPROVAL FROM THE DESIGN ENGINEER AND THE EROSION CONTROL INSPECTOR, THEN THE CONTRACTOR SHALL EXCAVATE/REPLACE, AS NECESSARY, THE COMPONENTS NEEDED FOR THE SYSTEM TO FUNCTION PROPERLY AT HIS / HER EXPENSE SHOULD THE STORMFILTER CARTRIDGES NOT FUNCTION PROPERLY (I.E. WILL NOT DRAIN DUE TO SEDIMENT DEPOSITION) DUE TO AN UNSTABILIZED UPSTREAM DRAINAGE AREA.
5. ONCE CONSTRUCTED, THE STORMFILTER CARTRIDGES SHALL NOT RECEIVE STORMWATER RUNOFF UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA TO THE UNDERGROUND SYSTEM HAS BEEN COMPLETELY STABILIZED AND SITE CONSTRUCTION IS COMPLETE.
6. ALL COMPONENTS OF THE UNDERGROUND SCM SYSTEM (CMP SECTIONS, JOINT / RISER CONNECTIONS, ENDCAPS, ACCESS MANHOLES, ETC.) SHALL BE DESIGNED BY OTHERS. ANY VARIATIONS OR CHANGES MADE FROM THESE SPECIFICATIONS AND DRAWINGS DURING THE ORDERING AND/ OR INSTALLATION OF ALL COMPONENTS MUST BE APPROVED BY THE DESIGN ENGINEER. THE STRUCTURAL DESIGN OF THE UNDERGROUND SCM, ALONG WITH ITS ASSUMPTIONS, IS ALSO BY OTHERS. THE JOHN R. McADAMS COMPANY, INC. AND ITS EMPLOYEES ASSUME NO LIABILITY WITH RESPECT TO ANY ASPECT OF THE STRUCTURAL DESIGN FOR THE UNDERGROUND SCM SYSTEM.
7. ALL PIPE / RISER CONNECTIONS AND JOINTS ASSOCIATED WITH THE UNDERGROUND SCM SYSTEM SHALL BE WATER TIGHT. THE MECHANISM FOR ACHIEVING THIS SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR REVIEW.
8. THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ANY PUMPING EQUIPMENT, ETC. NEEDED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE UNDERGROUND SCM SYSTEM SITE. IT IS ANTICIPATED THAT PUMPING WILL BE NECESSARY IN THE EXCAVATION AREAS. DURING PLACEMENT OF FILL WITHIN THIS AREA (OR OTHER AREAS AS NECESSARY), THE CONTRACTOR SHALL KEEP THE WATER LEVEL BELOW THE BOTTOM OF THE EXCAVATION. THE MANNER IN WHICH THE WATER IS REMOVED SHALL BE SUCH THAT THE EXCAVATION BOTTOM AND SIDE SLOPES ARE STABLE.
9. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADHERE TO ALL CURRENT OSHA REGULATIONS FOR CONFINED SPACE ENTRY AND PROVIDE SUCH DURING ENGINEER WALK-THROUGH/INSPECTION.
10. ALL PIPE PENETRATIONS THROUGH A CONCRETE OR CMP STRUCTURE (I.E. STORMFILTER CARTRIDGE / DETENTION SYSTEM, STORM DRAINAGE MANHOLES, ETC.) SHALL BE MADE WATERTIGHT USING NON-SHRINK CEMENTIOUS GROUT.
11. EXISTING UTILITIES AND STRUCTURES SHOWN, BOTH UNDERGROUND AND ABOVE GROUND, ARE BASED ON A FIELD SURVEY AND THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS PRIOR TO BEGINNING RELATED CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.

STORMWATER MANAGEMENT SYSTEM MATERIAL SPECIFICATIONS

1. THE UNDERGROUND STORMWATER MANAGEMENT SYSTEM IS TO BE DESIGNED BY OTHERS. ANY CHANGES TO THE PLANS SHALL BE PROVIDED TO THE DESIGN ENGINEER FOR REVIEW. PRIOR TO INSTALLATION, SHOP DRAWINGS OF THE STORMWATER MANAGEMENT SYSTEM SHALL BE PROVIDED TO THE DESIGN ENGINEER AND TO THE TOWN OF CHAPEL HILL FOR REVIEW.
2. FILTER CARTRIDGES SHALL BE CONTECH STORMFILTERS WITH PHOSPHOSORB MEDIA. STORAGE PIPE SHALL BE CONTECH ALUMINIZED TYPE II (ALT2) CORRUGATED METAL PIPE. INSTALLATION OF THE STORMWATER DEVICE SHALL BE PER THE MANUFACTURER'S INSTALLATION GUIDELINES AND SPECIFICATIONS.
3. ACCESS RISERS SHALL BE INSTALLED PER STRUCTURAL SPECIFICATIONS. ACCESS STEPS / LADDERS SHALL BE ATTACHED TO THE RISERS TO ALLOW FOR ACCESS INTO THE STORMWATER MANAGEMENT SYSTEM.
4. THE 30"Ø RCP OUTLET BARREL OF THE DETENTION SYSTEM SHALL BE CLASS III RCP, MODIFIED BELL AND SPIGOT, MEETING THE REQUIREMENTS OF ASTM C76-LATEST. THE PIPE JOINTS SHALL BE TYPE R-4.
5. GEOTEXTILE FABRIC FOR THE 30"Ø OUTLET BARREL JOINTS SHALL BE MIRAFI 180N OR ENGINEER APPROVED EQUAL (NON-WOVEN FABRIC). THE ONSITE GEOTECHNICAL ENGINEER SHALL APPROVE FABRIC FOR USE.
6. ALL POURED CONCRETE SHALL BE MINIMUM 3000 PSI (28 DAY) UNLESS OTHERWISE NOTED.
7. THE CONTRACTOR SHALL INSTALL THE DETENTION UNIT PER MANUFACTURERS' SPECIFICATIONS. CONTRACTOR TO PROVIDE A LETTER FROM MATERIAL SUPPLIER(S) STATING MATERIALS MEET THE SPECIFIED STANDARDS PRIOR TO INSTALLATION.
8. THE CMP SYSTEM SHALL BE DESIGNED FOR A MINIMUM HS-20/HS-25 FINAL LIVE LOADING CONDITIONS. THE CMP SYSTEM SHALL MEET HS-20/HS-25 LOADING REQUIREMENTS WITH A MINIMUM OF 12-INCHES OF COVER TO BOTTOM OF FLEXIBLE PAVEMENT FOR PIPE SPANS LESS THAN OR EQUAL TO 96-INCHES AND 18-INCHES OF COVER TO BOTTOM OF FLEXIBLE PAVEMENT FOR PIPE SPANS GREATER THAN 96-INCHES.
9. COVER AND REVIEW OF SITE CONDITIONS TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE SYSTEM TO BE THE RESPONSIBILITY OF THE MANUFACTURER.

FOUNDATION NOTES

1. ONCE THE EXCAVATION IS COMPLETE AND PRIOR TO INSTALLATION OF THE UNDERGROUND STORMWATER MANAGEMENT SYSTEM, THE ONSITE GEOTECHNICAL ENGINEER SHALL VERIFY THE BEARING CAPACITY OF THE UNDERLYING SOILS TO SERVE AS A FOUNDATION FOR THE UNDERGROUND STORMWATER MANAGEMENT SYSTEM. IF THE ONSITE GEOTECHNICAL ENGINEER DEEMS THE FOUNDATION SOILS AS UNSUITABLE, THEN THE UNSUITABLE MATERIAL SHOULD BE REMOVED DOWN TO A SUITABLE DEPTH AND THEN BUILT BACK UP TO THE CORRECT ELEVATION WITH A COMPACTED BACKFILL MATERIAL THAT IS APPROVED BY THE ONSITE GEOTECHNICAL ENGINEER. THE APPROVED BACKFILL MATERIAL SHOULD HAVE A GRADATION THAT WILL NOT ALLOW THE MIGRATION OF FINES, WHICH COULD CAUSE SETTLEMENT OF THE UNDERGROUND STORMWATER MANAGEMENT SYSTEM. IF NECESSARY, A GEOTEXTILE FABRIC CAN BE USED TO SEPARATE THE UNDERLYING SOILS AND THE BACKFILL MATERIAL. THIS GEOTEXTILE FABRIC (IF USED) IS TO BE SPECIFIED BY THE ON-SITE GEOTECHNICAL ENGINEER.
2. PLEASE NOTE THAT IF THE CONTRACTOR CONSTRUCTS AND COVERS UP THE EXCAVATION FOR THE UNDERGROUND STORMWATER MANAGEMENT SYSTEM PRIOR TO INSPECTION, THEN THIS AREA SHALL BE UNCOVERED AND TESTED (TO THE ENGINEER'S AND OWNER'S APPROVAL) AT THE CONTRACTOR'S EXPENSE.
3. THE FOUNDATION SUBGRADE SHALL BE GRADED TO A UNIFORM OR SLIGHTLY SLOPING GRADE PRIOR TO PLACEMENT OF THE BEDDING MATERIAL. IF THE FOUNDATION SUBGRADE WILL BE EXPOSED FOR AN EXTENDED PERIOD OF TIME DURING CONSTRUCTION, THEN IT SHOULD BE GRADED TO A SLIGHT SLOPE SUCH THAT SATURATION OF THE SUBGRADE DOES NOT OCCUR.
4. THE BEDDING MATERIAL FOR THE UNDERGROUND STORMWATER MANAGEMENT SYSTEM SHALL BE SPECIFIED BY THE ON-SITE GEOTECHNICAL ENGINEER. TYPICALLY, A WELL-GRADED GRANULAR MATERIAL WILL BE USED FOR THE BEDDING. PLEASE NOTE THAT IF CONSTRUCTION EQUIPMENT WILL BE OPERATING FOR AN EXTENDED PERIOD OF TIME ON THE BEDDING, THEN THE APPROPRIATE MEASURES (E.G. ENGINEERED FABRIC, STIFF GEOGRID, ETC.) SHALL BE TAKEN TO ENSURE THE INTEGRITY OF THE BEDDING IS NOT COMPROMISED.
5. THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ANY PUMPING EQUIPMENT, ETC. NEEDED FOR REMOVAL OF WATER FROM THE EXCAVATION. IT IS BEST TO BEGIN THE CONSTRUCTION OF THE DETENTION SYSTEMS AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR WATER TO ESCAPE.
6. THE ONSITE GEOTECHNICAL ENGINEER SHALL DETERMINE IF FOUNDATION DRAINS ARE REQUIRED FOR THE UNDERGROUND SCM SYSTEM. THE DESIGN ENGINEER SHALL BE NOTIFIED FOLLOWING THIS DETERMINATION. IF REQUIRED, THE FOUNDATION DRAINS ARE TO BE DESIGNED ENTIRELY BY THE ONSITE GEOTECHNICAL ENGINEER. THE FOUNDATION DRAIN SYSTEMS SHALL TIE TO THE NEAREST STORM SEWER INLET / JUNCTION BOX WITH INVERT LOWER THAN THE INVERT OF THE FOUNDATION DRAIN. FOUNDATION DRAIN SYSTEM SHALL NOT TIE INTO THE UNDERGROUND SCM AT ANY POINT.

BEDDING NOTES

1. THE EXCAVATION SUB GRADE MUST BE TRANSIT LEVEL.
2. THE EXCAVATION PIT SHALL BE LINED (ON THE BOTTOM AND ALL FOUR SIDES) WITH A NON-WOVEN GEO-TEXTILE (GEOTEX 401 OR APPROVED EQUIVALENT). THE ONSITE GEOTECHNICAL ENGINEER SHALL APPROVE FABRIC FOR USE.
3. THE SUBGRADE FOR THE DETENTION SYSTEM CAN BE A CONCRETE SLAB, OR CLEAN GRANULAR MATERIAL WITH A MAXIMUM AGGREGATE SIZE OF 3/4". THE BEDDING SHALL BE FREE FROM ROCK FORMATIONS, PROTRUDING STONES, FROZEN LUMPS, ROOTS, AND OTHER FOREIGN MATERIAL.
4. PREPARE THE SUBGRADE PER THE ONSITE GEOTECHNICAL ENGINEER'S DIRECTION (APPROXIMATELY 5-6" BELOW GRADE ON WHICH SLAB WILL SET). THE BEDDING MATERIAL SHOULD BE GRADED SUCH THAT A SMOOTH UNIFORM GRADE IS ESTABLISHED TO ALLOW FOR OPTIMUM PLACEMENT OF THE SAND FILTER.
5. THE SUBGRADE MUST SUPPORT THE DETENTION SYSTEM WITHOUT DIFFERENTIAL SETTLEMENT BETWEEN PIECES.
6. IF CONSTRUCTION EQUIPMENT WILL BE OPERATING FOR AN EXTENDED PERIOD OF TIME ON THE BEDDING, THEN THE APPROPRIATE MEASURES (E.G. STIFF GEOGRID, ETC.) SHALL BE TAKEN TO ENSURE THE INTEGRITY OF THE BEDDING IS NOT COMPROMISED.

BACKFILL MATERIAL NOTES

1. THE ON-SITE GEOTECHNICAL ENGINEER SHALL SPECIFY THE BACKFILL MATERIAL FOR THE STORMWATER MANAGEMENT SYSTEM.
2. THE BACKFILL MATERIAL SHOULD BE FREE OF ROCKS, FROZEN LUMPS, AND OTHER FOREIGN MATTER THAT COULD CAUSE HARD SPOTS WITHIN THE BACKFILL MATERIAL, OR THAT COULD DECOMPOSE AND CREATE VOIDS.
3. HIGHLY PLASTIC SILTS, HIGHLY PLASTIC CLAYS, ORGANIC SILTS, ORGANIC CLAYS, AND PEATS SHOULD NOT BE USED AS A BACKFILL MATERIAL.
4. THE BACKFILL MATERIAL SHOULD BE PLACED IN 6" LOOSE LIFTS AND COMPACTED TO 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM-D698). THE FILL SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT WITHIN +/- TWO PERCENT OF ITS OPTIMUM MOISTURE CONTENT.
5. ANY MATERIAL STOCKPILING ON TOP OF THE STORMWATER MANAGEMENT SYSTEM SHALL BE APPROVED BY THE STRUCTURAL DESIGN ENGINEER OR DETENTION SYSTEM MANUFACTURER.

STORMFILTER VAULT CONSTRUCTION NOTES

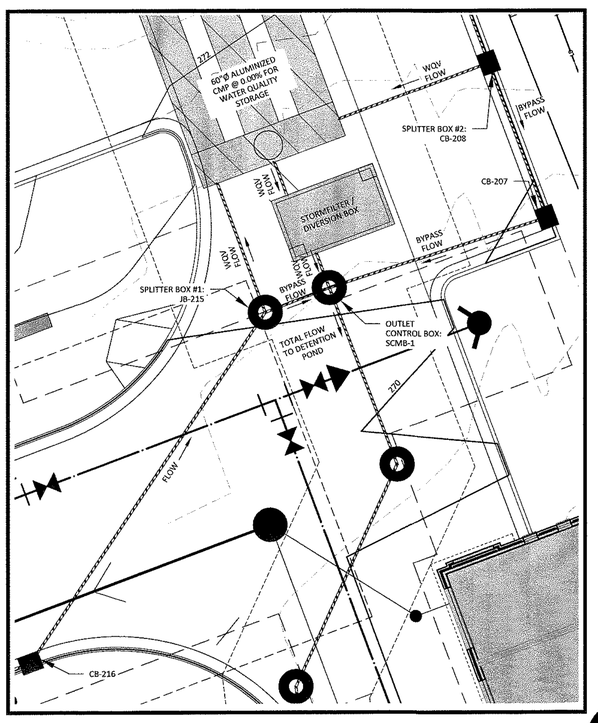
1. STORMFILTER VAULT CONFIGURATION IS PROVIDED ON SHEETS SW-B2 AND SW-B4.
2. ABSOLUTELY NO RUNOFF SHALL ENTER THE STORMFILTER VAULTS UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN STABILIZED.
3. MANHOLE ACCESS SHALL BE PROVIDED FOR THE STORMFILTER VAULTS. MANHOLES SHALL BE IN COMPLIANCE WITH TOWN OF CHAPEL HILL STANDARD DETAILS BUT SHALL BE A MINIMUM OF 24 INCHES IN DIAMETER TO COMPLY WITH OSHA CONFINED SPACE REQUIREMENTS (OR MINIMUM OSHA REQUIREMENTS APPLICABLE AT TIME OF CONSTRUCTION). CONTRACTOR SHALL PROVIDE ACCESS LADDERS FOR ACCESS BELOW ALL MANHOLES. MANHOLE COVERS SHALL ALLOW FOR PROPER VENTILATION.

SYSTEM TESTING NOTES

1. PRIOR TO PLACEMENT OF THE BACKFILL MATERIAL AND STORM FILTER CARTRIDGES, CONTRACTOR SHALL TEST FOR WATER TIGHTNESS. ENTRANCES AND EXITS SHALL BE PLUGGED AND THE SYSTEM COMPLETELY FILLED WITH WATER TO DEMONSTRATE WATER TIGHTNESS. WATER TIGHTNESS MEANS NO LEAKAGE FOR A PERIOD OF 8 HOURS. CONTRACTOR SHALL CALL AND SCHEDULE THE FIELD TESTING OF THE SYSTEM (BOTH WATER-TIGHTNESS AND FLOW DISTRIBUTION) WITH THE ENGINEER AT LEAST 2 WORKING DAYS PRIOR TO THE TEST. THE CONTRACTOR SHALL PROVIDE WRITTEN REPORTS TO THE ENGINEER VERIFYING THE WATER TIGHTNESS OF THE STORMWATER VAULT AND ADEQUATE FLOW DISTRIBUTION PRIOR TO PLACEMENT OF THE FILTER MEDIA.

STATEMENT OF RESPONSIBILITY

1. ALL REQUIRED MAINTENANCE AND INSPECTIONS OF THIS FACILITY SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER, PER THE EXECUTED OPERATION AND MAINTENANCE AGREEMENT FOR THIS FACILITY.



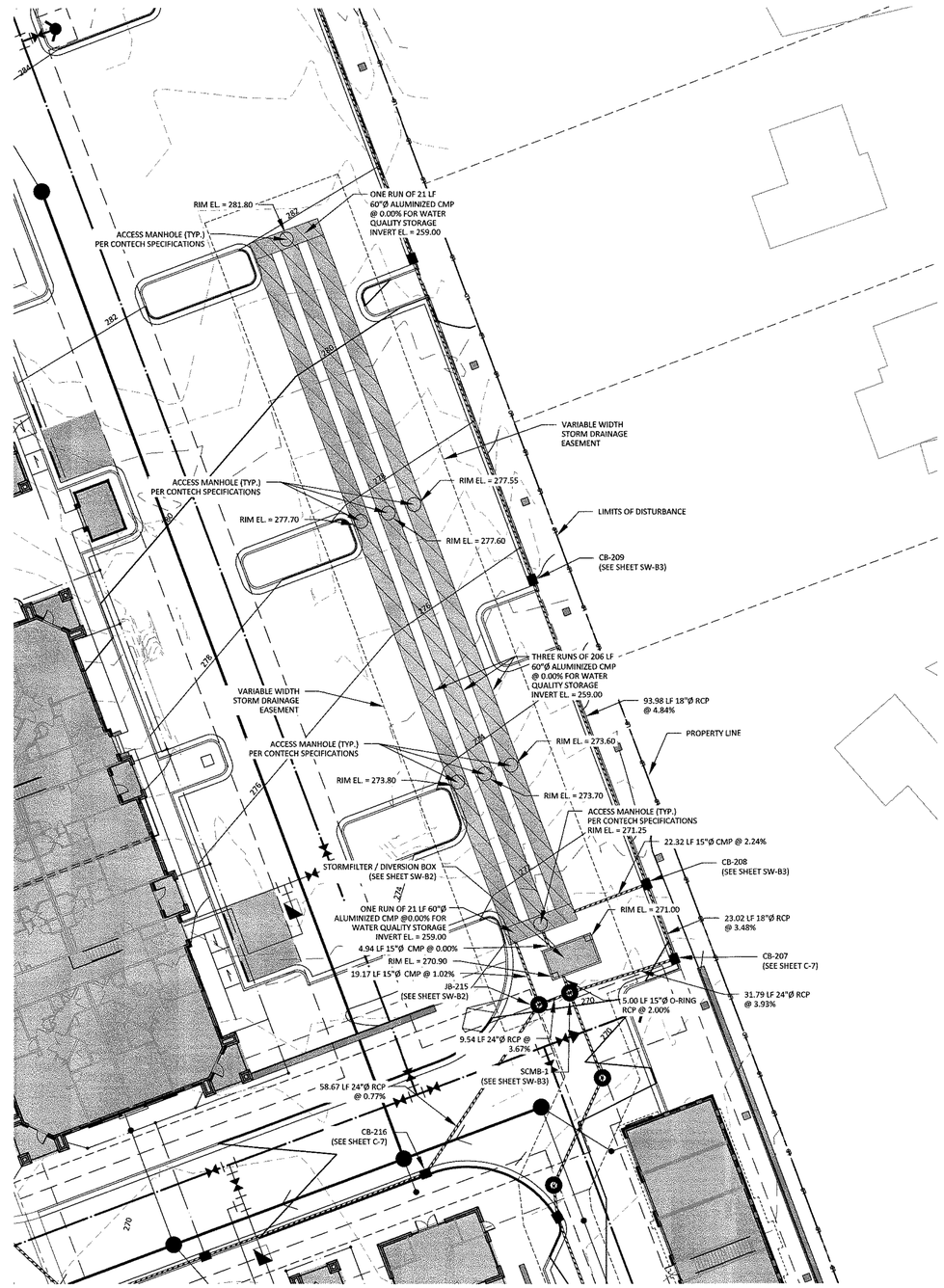
INSET PLAN VIEW

1" = 10'

GRAPHIC SCALE

0 5 10 20

1 inch = 10 ft.



GRAPHIC SCALE

0 10 20 40

1 inch = 20 ft.

STORMWATER CONTROL MEASURE 'B' PLAN VIEW

1" = 20'

PERMIT SET

McADAMS

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license number: C-0293

www.mcadamsco.com

CLIENT

WOODFIELD INVESTMENTS
11425 HORSEMAN'S TRAIL
RALEIGH, NC 27613
PHONE: 919. 535. 8947

PARK APARTMENTS
FORM DISTRICT PERMIT
1250 EPHESUS CHURCH ROAD
CHAPEL HILL, NORTH CAROLINA, 27517

NORTH CAROLINA PROFESSIONAL SEAL 47257 ENGINEER KATHERINE E. GARCIA

9/3/2019

REVISIONS

NO.	DATE	
1	05. 03. 2019	PER CHAPEL HILL AND OWASA COMMENTS
2	06. 20. 2019	PER CHAPEL HILL AND OWASA COMMENTS
3	08. 07. 2019	PER CHAPEL HILL AND OWASA COMMENTS
4	08. 30. 2019	PERMIT SET

PLAN INFORMATION

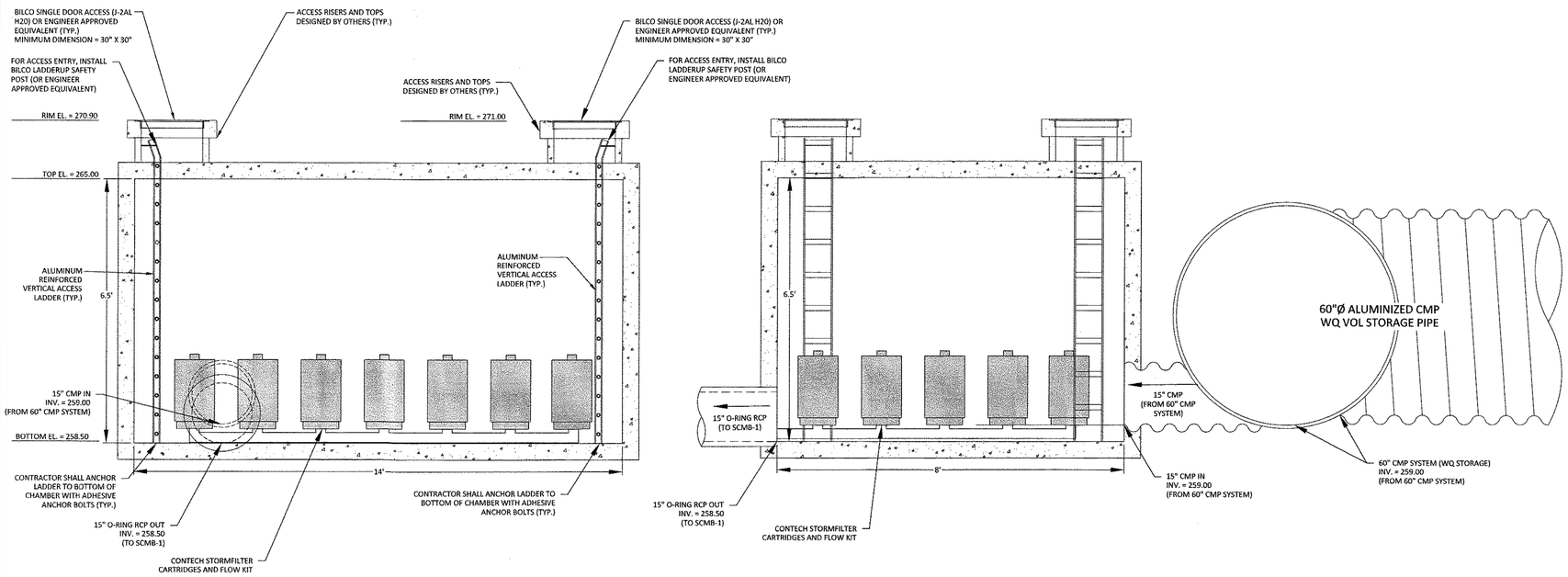
PROJECT NO.	WDF-17000
FILENAME	WDF17000-SWB
CHECKED BY	KEG
DRAWN BY	SCB
SCALE	1" = 20'
DATE	02. 28. 2019

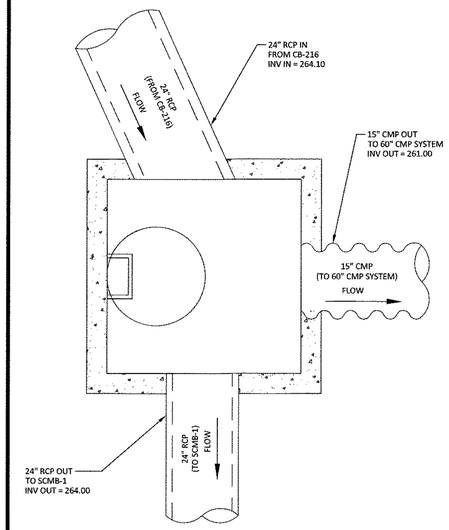
SHEET

STORMWATER CONTROL MEASURE 'B' PLAN VIEW

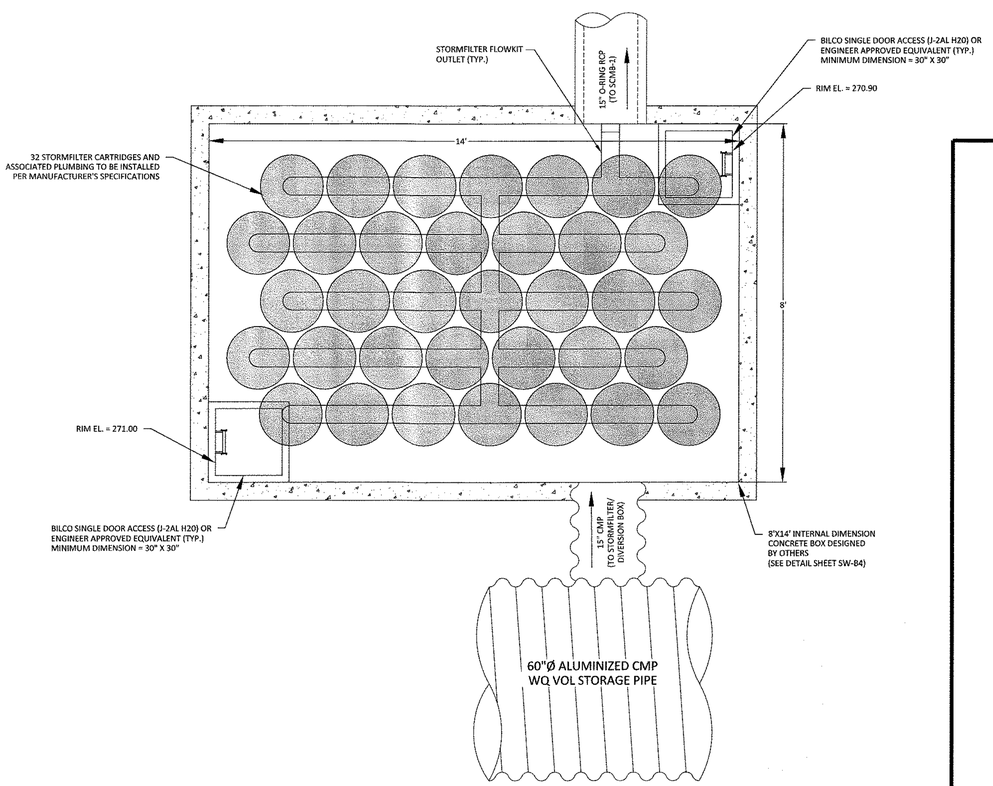
SW-B1

X:\Projects\WDF\WDF-17000\Storm\Form District Permit\Current Drawings\WDF17000-SWB.dwg, 8/8/2019 12:01:45 PM, Garcia, Kelli



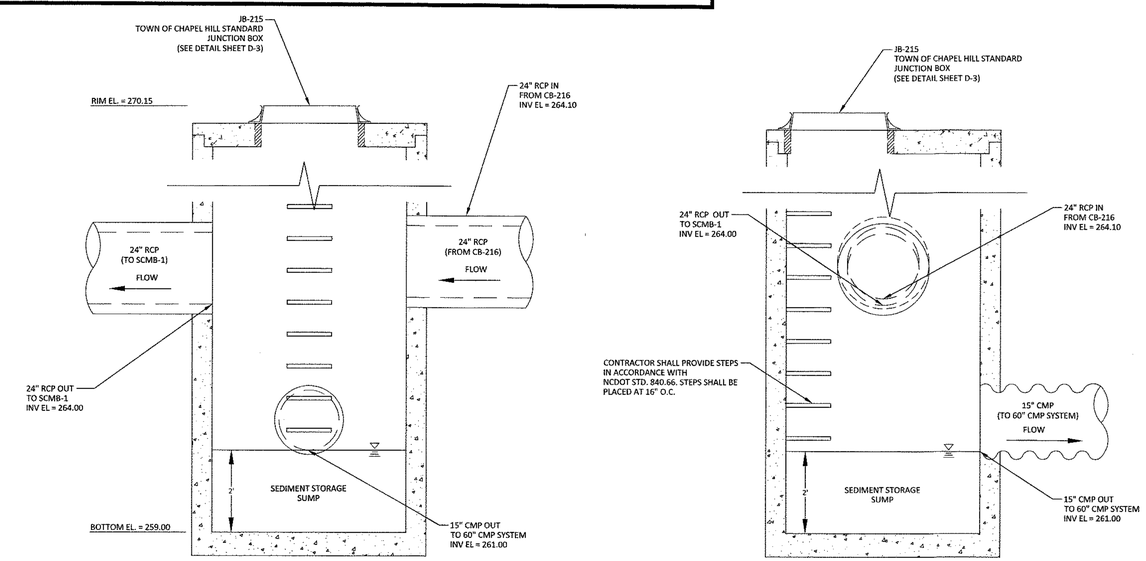


PLAN VIEW



STORMFILTER BOX DETAILS

N.T.S.



SIDE VIEW

SECTION VIEW

SPLITTER BOX #1 (JB-215)

N.T.S.

PERMIT SET

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PLAN INFORMATION

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DRAWN BY	SCB
SCALE	AS NOTED
DATE	02. 28. 2019

SHEET

STORMWATER CONTROL MEASURE 'B' DETAILS

SW-B2

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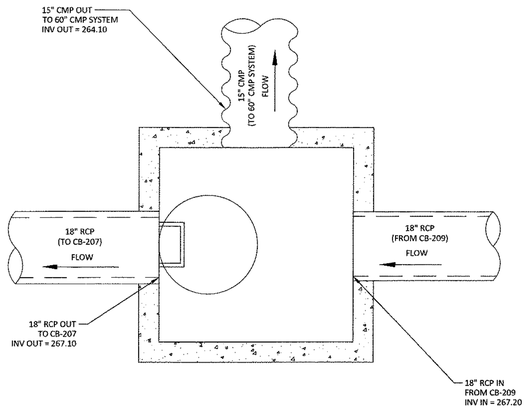
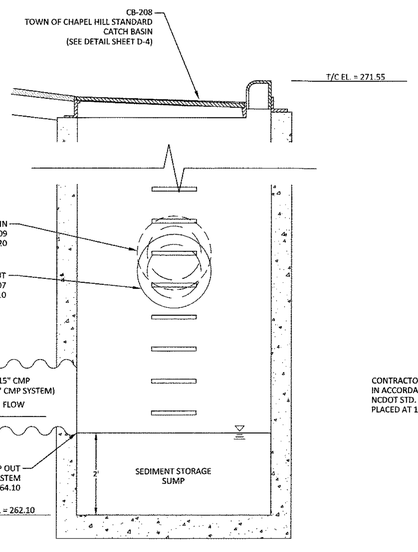
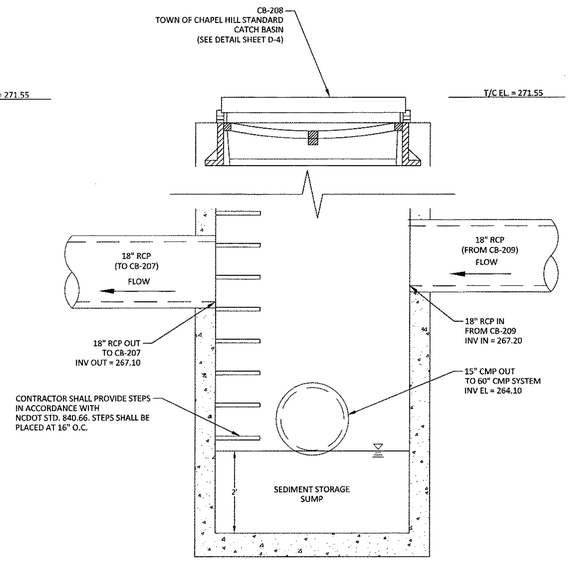


PLAN VIEW

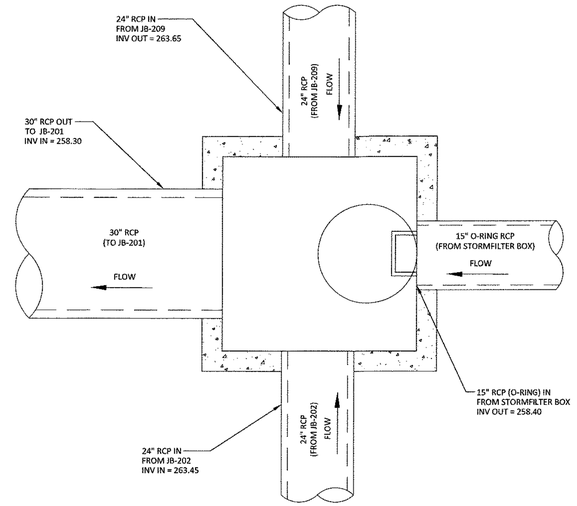


SIDE VIEW

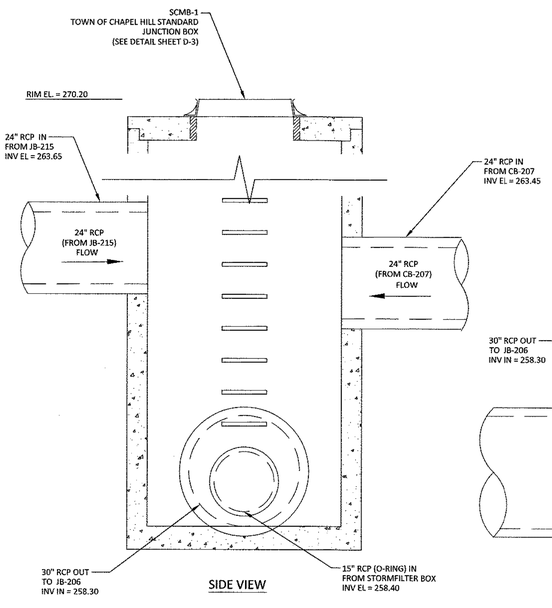


SECTION VIEW

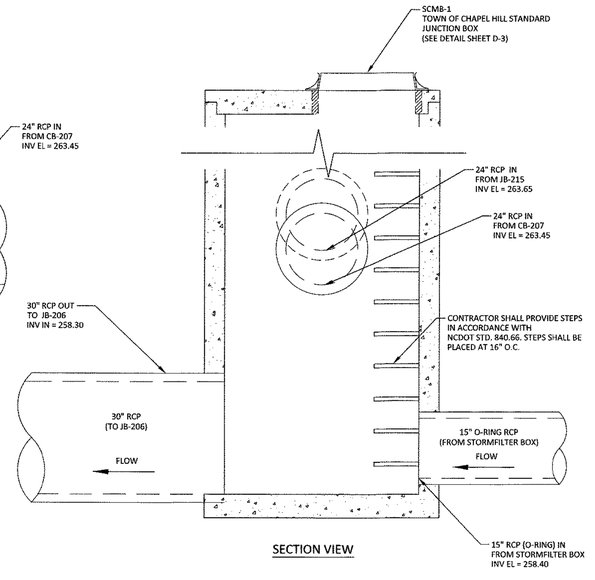
SPLITTER BOX #2 (CB-208)
N.T.S.



PLAN VIEW



SIDE VIEW



SECTION VIEW

OUTLET CONTROL BOX SCMB-1
N.T.S.

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SHEET

STORMWATER CONTROL
MEASURE 'B' DETAILS

SW-B3

PERMIT SET

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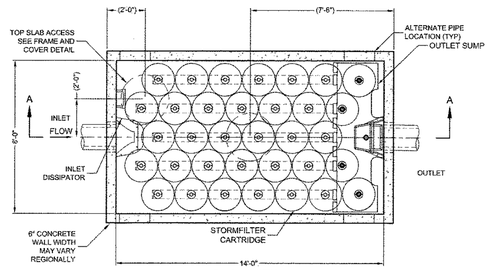
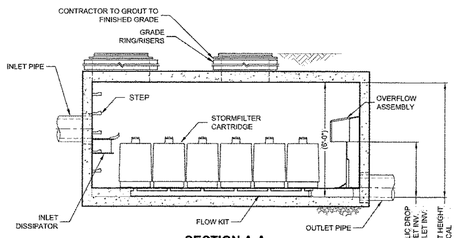
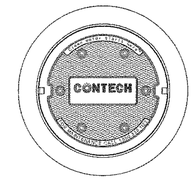


PLAN VIEW
VAULT STYLE: OUTLET SUMP (NIB)



SECTION A-A



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD VAULT STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (34). VAULT STYLE OPTIONS INCLUDE INLET BAY (27), INLET BAY/OUTLET BAY (22), OUTLET BAY (29), INLET BAY/FULL HEIGHT BAFFLE (28), FULL HEIGHT BAFFLE WALL (25).
STORMFILTER 8X14 PEAK HYDRAULIC CAPACITY IS 1.8 CFS. IF THE SITE CONDITIONS EXCEED 1.8 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			*
WATER QUALITY FLOW RATE (cfs)			*
PEAK FLOW RATE (cfs)			*
RETURN PERIOD OF PEAK FLOW (yrs)			*
CARTRIDGE HEIGHT (27", 18", LOW DROP(LD))			*
NUMBER OF CARTRIDGES REQUIRED			*
CARTRIDGE FLOW RATE			*
MEDIA TYPE (PERLITE, ZPG, PSORB)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*
UPSTREAM RIM ELEVATION			*
DOWNSTREAM RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*
NOTES/SPECIAL REQUIREMENTS:			

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONFORMING TO ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER VAULT (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL VAULT SECTIONS AND ASSEMBLE VAULT.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

Your Stormwater Treatment Solution
StormFilter®
The StormFilter is a registered trademark of Contech Engineered Solutions LLC. Contech reserves the right to change specifications without prior notice. Contact Contech for current information.

CONTECH® ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SF0814
STORMFILTER
STANDARD DETAIL

McADAMS
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NORTH CAROLINA PROFESSIONAL SEAL 47257 ENGINEER KATHERINE E. GARCIA
9/3/2019

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PLAN INFORMATION

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FILENAME	WDF17000-SWB
CHECKED BY	KEG
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SCALE	AS NOTED
DATE	02. 28. 2019

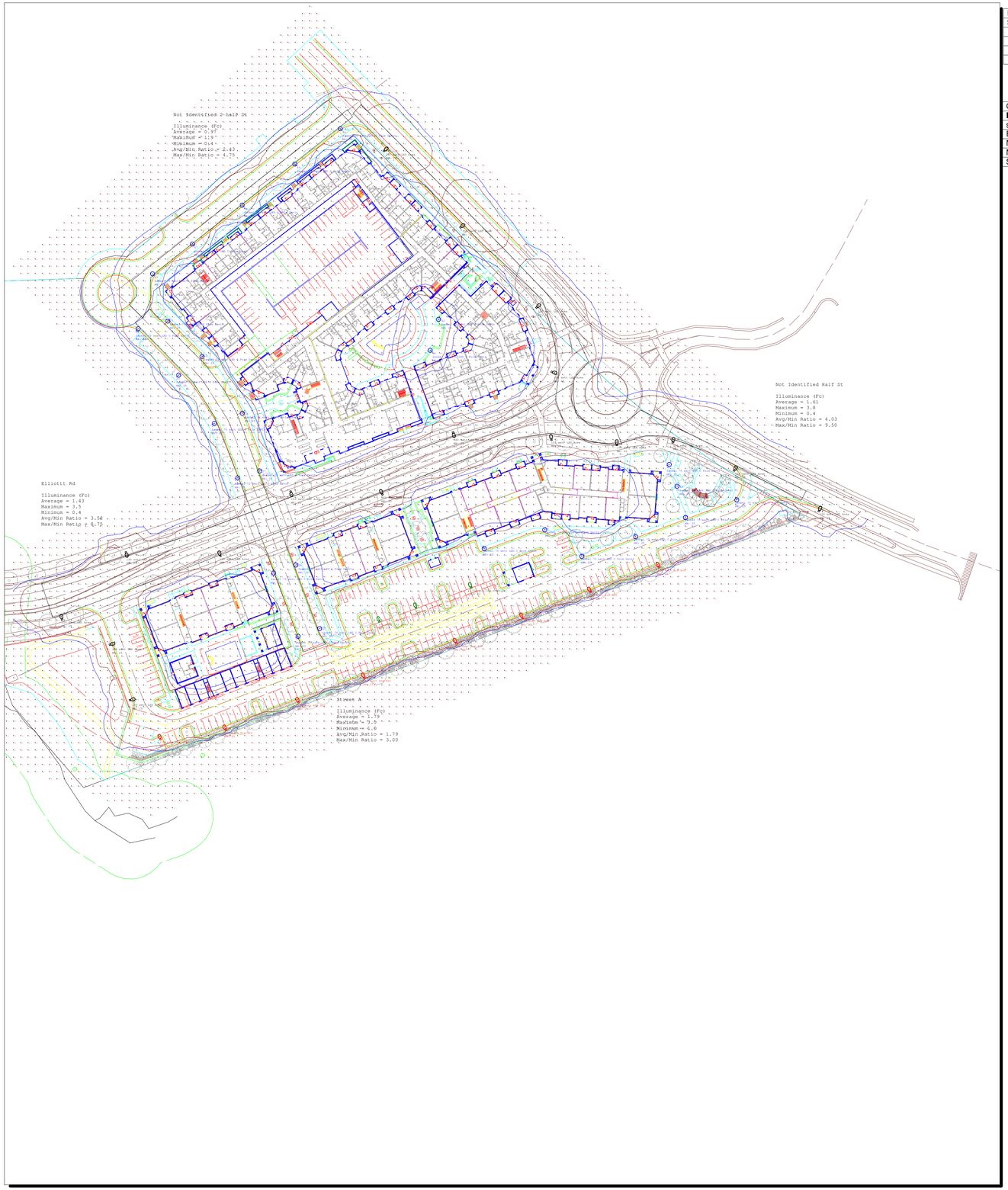
SHEET

STORMWATER CONTROL MEASURE 'B' DETAILS

SW-B4

PERMIT SET

X:\Projects\WDF\WDF-17000\Storm\Form District Permit\Current Drawings\WDF17000-SWB.dwg, 9/3/2019 12:01:48 PM, Garcia, Kelli



Luminaire Schedule

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description
	17	150 watt LED Area	SINGLE	N.A.	0.850	ATB2 40B LED E10 XXXXX R3
	27	Sanbel 70 watt LED C Pole Davit	SINGLE	N.A.	0.850	GBLF 070 4K XXXX L3
	3	150 watt LED Area AB	SINGLE	N.A.	0.850	ATB2 40B LED E10 XXXXX R3
	8	150 watt Are HSS	SINGLE	N.A.	0.850	ATB2 40BLEDE10 XXXXX R3 HS

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
site	Illuminance	Fc	0.53	3.8	0.0	N.A.	N.A.
Elliottt Rd	Illuminance	Fc	1.43	3.5	0.4	3.58	8.75
Not Identified 2 half St	Illuminance	Fc	0.97	1.9	0.4	2.43	4.75
Not Identified Half St	Illuminance	Fc	1.61	3.8	0.4	4.03	9.50
Street A	Illuminance	Fc	1.79	3.0	1.0	1.79	3.00

DUKE ENERGY.

#	Date	Comments

Revisions

Drawn By: Tom Grantham, LC, CEM
Checked By:
Date:5/2/2019
Scale: 1"= 80'

Park Apartments

Chapel Hill