HOLLY BROOK
WATER AND SEWER EXTENSION
FOR
TOWN of CARY
NORTH CAROLINA

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Cary, N.C. 27513
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Town of Cary Project No's. SW1288 & WT1244

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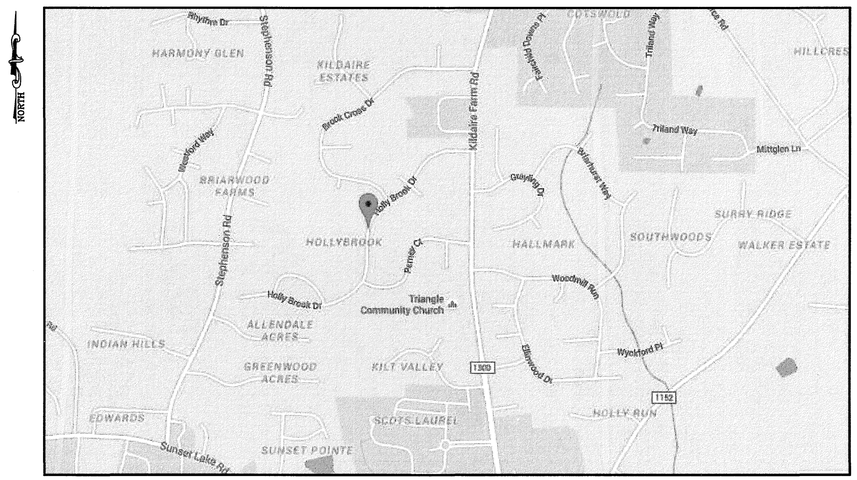

VICINITY MAP

SHEET INDEX

GENERAL:
G1 – COVER SHEET
G2 – SHEET INDEX MAP AND LEGEND
G3 – GENERAL NOTES, EROSION CONTROL NOTES AND MANHOLE SCHEDULE
G4 – SANITARY SEWER CLEANOUT SCHEDULE

CIVIL:
C1 – KILDAIRE FARM ROAD – 12" WATER MAIN STA. 0+95 TO STA. 12+00
C2 – KILDAIRE FARM ROAD/HOLLY BROOK DR – 12"/8" WATER MAIN STA. 12+00 TO STA. 14+00
8" WATER MAIN AND 8" SANITARY SEWER STA. 14+00/2+01.40 TO STA. 8+00
C3 – HOLLY BROOK DR – 8" WATER MAIN AND 8" SANITARY SEWER STA. 8+00 TO STA. 19+00
C4 – HOLLY BROOK DR – 8" WATER MAIN AND 8" SANITARY SEWER STA. 19+00 TO STA. 29+50
C5 – HOLLY BROOK DR – 8" WATER MAIN AND 8" SANITARY SEWER STA. 29+50 TO STA. 39+50
C6 – INKBERRY CT AND CROSSVINE CT – 6" WATER MAIN AND 8" SANITARY SEWER
INKBERRY STA. 1+00 TO STA. 5+38
CROSSVINE STA. 1+00 TO STA. 4+75
C7 – BROOK CROSS DRIVE – 8" WATER MAIN AND 8" SANITARY SEWER STA. 1+00 TO STA. 10+33
HDD STA. 5+12.14± TO STA. 8+71.69±
C8 – PERNEY COURT & CROSS COUNTRY – 8" WATER MAIN AND 8" SANITARY SEWER
PERNEY STA. 1+00 TO 4+50
MH #1 TO EXIST. MH STA. 1+00 TO STA. 1+83.62
C9 – CROSS COUNTRY ALIGNMENT 8" WATER & SEWER
MH #19 TO EX. P.S. STA. 1+00 TO STA. 2+63.77
MH #28 TO MH #18 STA. 1+00 TO STA. 3+01.34
8" WATER MAIN – STA. 1+00 TO STA. 3+15
C10 – CORALBERRY CIRCLE – 8" WATER MAIN AND 8" SANITARY SEWER
STA. 1+00 TO STA. 9+98.80
C11 – LAYDOWN YARD

DETAILS:
D1 – DETAILS
D2 – DETAILS
D3 – DETAILS
D4 – DETAILS
D5 – DETAILS
D6 – DETAILS
D7 – DETAILS
D8 – DETAILS
D9 – DETAILS
D10 – DETAILS
D11 – DETAILS
D12 – DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BEN R. LATINO, JR. 3/24/17

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ISSUED FOR BID
MARCH 24, 2017

HOLLY BROOK SUBDIVISION WATER AND SEWER EXTENSION

MCKIM & CREED PROJECT #03117-0011

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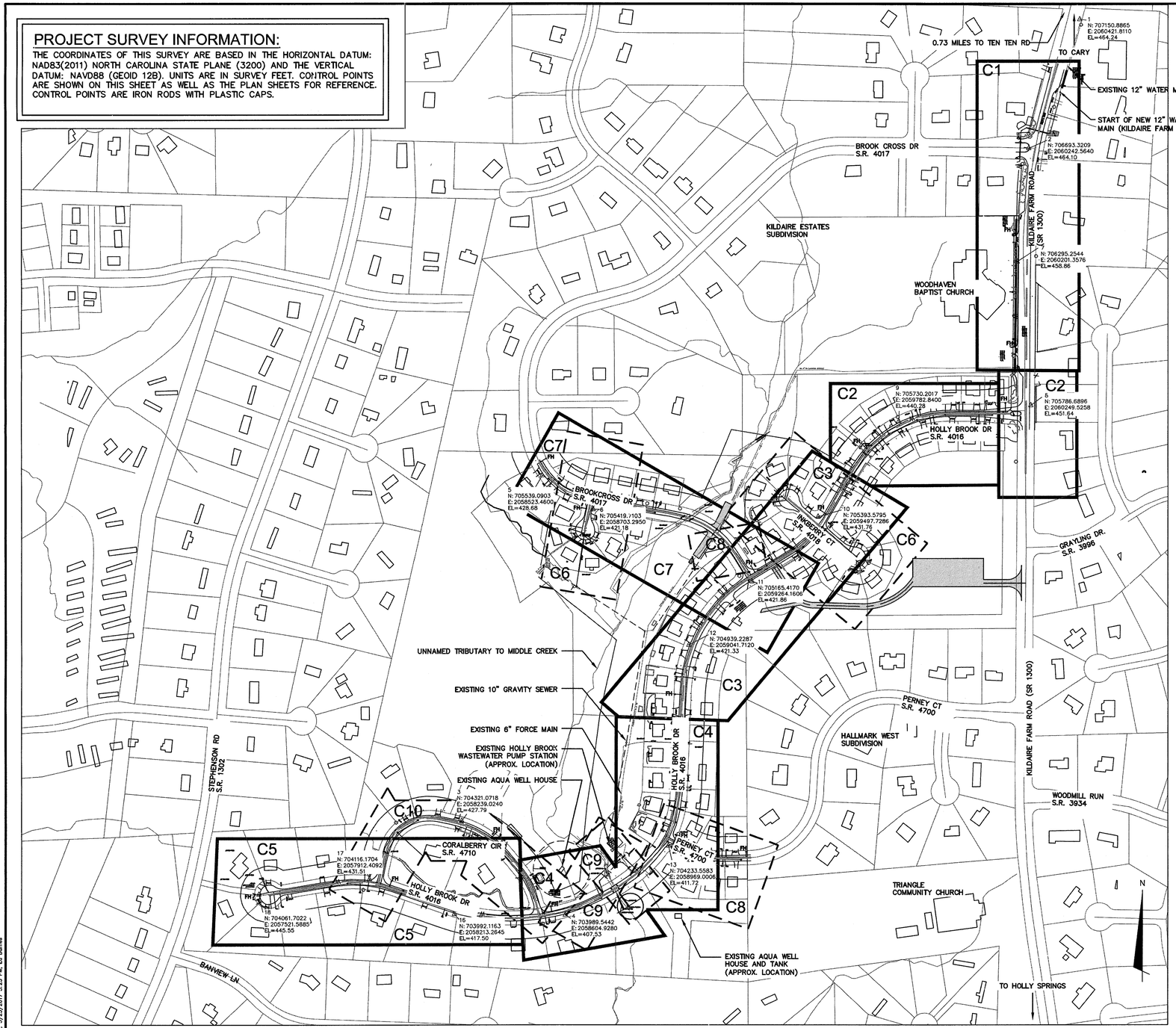
PROJECT SURVEY INFORMATION:

THE COORDINATES OF THIS SURVEY ARE BASED IN THE HORIZONTAL DATUM: NAD83(2011) NORTH CAROLINA STATE PLANE (3200) AND THE VERTICAL DATUM: NAVD88 (GEOID 12B). UNITS ARE IN SURVEY FEET. CONTROL POINTS ARE SHOWN ON THIS SHEET AS WELL AS THE PLAN SHEETS FOR REFERENCE. CONTROL POINTS ARE IRON RODS WITH PLASTIC CAPS.



CIVIL LEGEND:

	SANITARY SEWER MANHOLE
	STORM DRAIN MANHOLE
	TELEPHONE MANHOLE
	WATER MANHOLE
	ELECTRICAL MANHOLE
	PROPOSED SANITARY SEWER MANHOLE OR ARV MANHOLE
	WELL
	MONITORING WELL
	VALVE
WV	EXIST. WATER VALVE
GTS	GAS VALVE
	PROPOSED FIRE HYDRANT
	EXIST. FIRE HYDRANT
	BLOW-OFF ASSEMBLY
	REDUCER
WM	EXIST. WATER METER
WM	PROPOSED WATER METER
	SIGN
MB	MAIL BOX
	TEMPORARY BENCH MARK
PP	POWER POLE
LP	LIGHT POLE
	UTILITY POLE
GM	GAS METER
B-#	BORING LOCATION
	EXIST. TELEPHONE PEDESTAL
	EXIST. CABLE PEDESTAL
	EXIST. ELECTRICAL PEDESTAL
	HAND HOLE
	CHECK DAM
	ARC INLET FILTER (GRAVEL & RIP-RAP FILTER BERM BASIN)
	CURB INLET PROTECTION
	WATTLE
	STONE RELIEF OUTLET
	END OF INFO./END OF RECORD INFO. FOR U/G UTILITY
	TRANSFORMER
	BOUNDRY/MONUMENT
IRF	IRON ROD FOUND
IPF	IRON POLE FOUND
PKF	PK NAIL
RRSPIKE	RAIL ROAD SPIKE
IRS	IRON ROD SET
	IRON PIN
	SEPTIC TANK
	SURVEY CONTROL POINT
CO	CLEANOUT
XX	PARCEL ID NUMBER (SEE G4)

	EXIST. SANITARY SEWER
	TEMPORARY CONSTRUCTION EASEMENT
	℄ EXIST. CREEK OR DITCH
	PARCEL BOUNDARY
	PROPOSED EASEMENT
	EXISTING EASEMENT
	FENCE
FM	FORCE MAIN
W	WATER MAIN
G	GAS LINE
T	TELEPHONE
TFO	TELEPHONE FIBER OPTIC
TV	CABLE TV
TVFO	CABLE TV FIBER OPTIC
U	UNKNOWN
E	ELECTRICAL
W(R)	PER WATER RECORD
FM(R)	PER RECORD FORCEMAIN
T(R)	PER RECORD TELEPHONE
TV(R)	PER RECORD CABLE TV
TFO(R)	PER RECORD TELEPHONE FIBER OPTIC
OE	EXIST. OVERHEAD ELEC.
	EXIST. SANITARY SEWER
TPF	TREE PROTECTION FENCE
SF	SILT FENCE
SSF	TEMPORARY SILT FENCE IN HIGH HAZARD AREAS
SF/TPF	COMBINATION SILT FENCE/ TREE PROTECTION FENCE
CS	COMPOSIT SOCK
LOD	LIMITS OF DISTURBANCE
R/W	RIGHT-OF-WAY
	EXISTING TREE LINE/LANDSCAPE AREA
CL	CLEARING LIMITS
ZONE 1	NEUSE RIPARIAN BUFFER ZONE 1 BOUNDARY
ZONE 2	NEUSE RIPARIAN BUFFER ZONE 2 BOUNDARY
	WETLANDS
	RIP-RAP
	TEMPORARY STRAW w/ NET LINER
	SEDIMENT TRENCH
	TEMPORARY DIVERSION DITCH
	RIP RAP SPILLWAY

811 Know what's below. Call before you dig.

G2 LEGEND:

	EXISTING WATER MAIN
W	PROPOSED WATER LINE
	EXISTING GRAVITY SEWER
	PROPOSED GRAVITY SEWER
FH	PROPOSED FIRE HYDRANT

C"x" = SEE PLAN SHEET

SITE PLAN/ SHEET INDEX
1"=200'

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BERT R. LATINO, JR. 3/24/17

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HOLLY BROOK WATER AND SEWER EXTENSION

SHEET INDEX MAP AND LEGEND

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM/WOH
CHECKED	CLW
PROJ. MGR.	CLW

SCALE: HORIZONTAL: 1"=200' VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER: G2

STATUS: ISSUED FOR BID

REVISION: E

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GENERAL NOTES:

A. LOCATIONS AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES BEFORE CONSTRUCTION TO DETERMINE IF CONFLICTS EXIST. THE CONTRACTOR SHALL REPORT CONFLICTS TO THE ENGINEER.

B. CONTRACTOR SHALL PROVIDE SILT FENCE AROUND ALL BORROW/STOCKPILE/WASTE AREAS AND ALL LAYOUT/STAGING AREAS.

C. AT ALL STREAM CROSSINGS, CONTRACTOR SHALL ADHERE TO THE FOLLOWING SEQUENCE:

i. SET UP PUMP WITH SUCTION AND DISCHARGE HOSE.
ii. INSTALL UP-STREAM SANDBAG DAM.
iii. INSTALL DOWN-STREAM SANDBAG DAM.
iv. THE PUMP MOST RUN CONTINUOUSLY WHILE WORKING IN THE STREAM
v. STREAM BANKS MUST BE STABILIZED AT THE END OF EACH DAY.

D. SPOILS MAY TEMPORARILY BE PLACED IN THE ROADWAY IF SAND, FINES, OR SCREENINGS ARE PLACED FIRST, THE PILE IS CONFINED TO ONE LANE, AND APPROPRIATE TRAFFIC CONTROL MEASURES ARE IN PLACE. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE AND SCARS TO THE ROADWAY. CONTRACTOR SHALL ADHERE TO ALL FURTHER RESTRICTIONS PER THE APPROVED NCDOT ENCROACHMENT WHEN WORKING WITHIN NCDOT RIGHT-OF-WAY.

E. TEMPORARY SEEDING/STABILIZATION SHALL OCCUR EVERY 3 DAYS OR 400 FEET OF INSTALLATION, WHICHEVER OCCURS FIRST.

F. EXISTING PERMANENT UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE. SHOULD ADJUSTMENTS OF PROPOSED IMPROVEMENTS BE NECESSARY TO AVOID EXISTING UTILITIES, THE CONTRACTOR SHALL COORDINATE SUCH ADJUSTMENTS WITH THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

G. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE TOWN OF CARY'S "STANDARD SPECIFICATIONS AND DETAILS" AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", UNLESS OTHERWISE STATED BY THE CONTRACT DOCUMENTS.

H. THE CONTRACTOR SHALL BE COMPLETELY AND SOLELY RESPONSIBLE FOR ANY ENCROACHMENT ONTO PRIVATE PROPERTY. THE TOWN OF CARY SHALL NOT BE RESPONSIBLE FOR AGREEMENTS BETWEEN THE CONTRACTOR AND PRIVATE PROPERTY OWNERS.

I. SHOULD THE CONTRACTOR DAMAGE ANY EXISTING TOWN OF CARY UTILITIES, INCLUDING WATER, SEWER AND STORM DRAINAGE INFRASTRUCTURE, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEERING INSPECTOR AND THE TOWN OF CARY PUBLIC WORKS DEPARTMENT.

J. SHOULD THE CONTRACTOR DAMAGE ANY EXISTING UTILITIES OWNED BY OUTSIDE UTILITY PROVIDERS, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE UTILITY OWNER AND SCHEDULE REPAIRS. THE TOWN OF CARY SHALL NOT BE RESPONSIBLE FOR UTILITY DAMAGE CAUSED BY THE CONTRACTOR.

K. THE CONTRACTOR SHALL NOT BE ALLOWED TO BLOCK STREETS WITH UNATTENDED VEHICLES OR STOCKPILED MATERIALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOVING UNDERUTILIZED OR UNUSED EQUIPMENT AWAY FROM THE SITE. UNATTENDED VEHICLES SHALL NOT BE PARKED IN THE CONSTRUCTION ZONE OR WITHIN RESIDENTIAL STREET RIGHT-OF-WAY.

L. THE CONTRACTOR SHALL CAREFULLY SUPPORT AND PROTECT ANY UTILITIES, STRUCTURES, POWER POLES, PIPE LINES AND CONDUITS WHICH MAY BE ENCOUNTERED DURING COMPLETION OF THE WORK AT NO ADDITIONAL COST TO THE OWNER OTHER THAN WHERE SPECIFICALLY NOTED IN THE CONTRACT DOCUMENTS. AN ALLOWANCE HAS BEEN INCLUDED IN THE BID TO PAY FOR SUPPORT OF SPECIFIC POWER POLES REQUIRING THE UTILITY OWNER'S ASSISTANCE. ANY DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR OR UTILITY OWNER (WHERE REQUIRED) TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

M. CONTRACTOR SHALL REMOVE/RESET/REPLACE ALL DISTURBED MAILBOXES, SIGNS, PROPERTY IRONS, ETC. IN LIKE KIND OR BETTER CONDITION. COST INCURRED FOR THESE INCIDENTAL ITEMS SHALL BE INCLUDED IN UNIT PRICE BID ITEMS. PROPERTY IRONS MUST BE REPLACED BY A N.C. PLS.

N. ACCESS TO EACH RESIDENCE AND BUSINESS SHALL BE MAINTAINED AT ALL TIMES.

O. ALL DISTURBED DITCH LINES SHALL BE RESHAPED, RE-SEED, MULCHED AND TACK COAT APPLIED, TO PRE-CONSTRUCTION LINE, GRADE, AND SHAPE UNLESS SHOWN OTHERWISE.

P. NO NEW SEWER SHALL BE LOCATED WITHIN A 25 FOOT RADIUS OF AN EXISTING PRIVATE POTABLE WATER WELL OR 50' OF A PUBLIC/COMMMUNITY POTABLE WATER WELL. IF THE SEWER DESIGN CONFLICTS WITH THIS RULE, CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY. CONTRACTOR SHALL NOT PROCEED WITH SEWER INSTALLATION IN AREA OF CONFLICT UNTIL DIRECTED TO DO SO BY ENGINEER IN WRITING.

Q. ALL LAND DISTURBANCES SHALL BE MAINTAINED WITHIN THE PERMANENT AND TEMPORARY EASEMENTS AS INDICATED ON THE PLANS. IF CONTRACTOR REQUIRES ADDITIONAL AREA FOR CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL NOTIFY ENGINEER AS SOON AS POSSIBLE AND NOT OCCUPY ADDITIONAL AREA UNTIL THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS REVISED AND APPROVED BY NCDEQ. CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS AND TIME DELAYS ASSOCIATED w/ PERMIT MODIFICATION.

R. REINFORCED SILT FENCE OUTLETS AND TIMBER MATS SHALL BE USED AT ALL STREAM AND DITCH CROSSINGS. PROVIDE REINFORCED OUTLETS ALONG PERIMETER SILT FENCE IN LOW LYING AREAS AND AT SHARP ANGLE CHANGES LESS THAN 90 DEGREES. ALL TIMBER MATS MUST REMAIN IN PLACE UNTIL CROSSING IS STABILIZED AS SHOWN ON THE PLANS.

S. ALL INGRESS AND EGRESS TO PROJECT AREA OUTSIDE OF PAVED SURFACES MUST BE PERFORMED THROUGH TEMPORARY CONSTRUCTION ENTRANCES.

T. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING STORM DRAINAGE DURING CONSTRUCTION SUCH THAT PRE-EXISTING DRAINAGE CAPACITY IS CONTINUOUSLY PROVIDED. TEMPORARY STORM BASINS, PIPES, AND PUMPS SHOULD BE USED IF NECESSARY. PERMANENT STORM DRAINAGE STRUCTURES AND PIPES SHALL BE REPLACED AS SOON AS POSSIBLE.

U. ALL STORM DRAINAGE TO BE REPLACED AT THE EXISTING ELEVATION AND LOCATIONS UNLESS NOTED OTHERWISE.

V. SEWER SERVICES TO REMAIN ACTIVE AT ALL TIMES EXCEPT DURING CONNECTION OF SERVICE TO NEW SEWER MAIN. COORDINATE ANY SERVICE INTERRUPTION WITH THE TOWN OF CARY AND OWNER/OCCUPANT.

W. CONTRACTOR SHALL TAKE STEPS NECESSARY TO PROTECT EXISTING UTILITIES FROM DAMAGE DURING BLASTING. MUCH OF THE CONSTRUCTION WILL OCCUR PARALLEL TO EXISTING UTILITIES AND STRUCTURES. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL DAMAGED UTILITIES, SPILLS, CONTAMINATIONS, CLEANUP, VIOLATIONS, FINES, ETC. CAUSED BY CONSTRUCTION OF THIS PROJECT (INCLUDING BLASTING). SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

X. ALL VEGETATION REMOVED WITHIN UTILITY EASEMENTS AS REQUIRED FOR WATER AND SEWER MAIN INSTALLATION SHALL NOT BE RE-ESTABLISHED, OTHER THAN SEEDING AS REQUIRED BY THE SPECIFICATIONS. STRUCTURES, SUCH AS FENCES AND MAILBOXES SHALL BE REMOVED AN REINSTALLED AS REQUIRED FOR UTILITY INSTALLATION.

Y. CONTRACTOR SHALL FIELD VERIFY INVERT OF EXISTING MANHOLES PRIOR TO ANY CONSTRUCTION.

Z. CONTRACTOR SHALL PROVIDE AN APPROVED CONNECTION TO EXISTING MANHOLE. CONNECTION SHALL BE CORED THROUGH THE BENCH WITH A CONCRETE CORING MACHINE. RESHAPE INVERTS AS NECESSARY.

AA. PROVIDE SANITARY SEWER PROTECTION. SEE STANDARD DETAIL 07000.17.

BB. TOWN OF CARY MAINTENANCE ENDS AT THE EDGE OF PERMANENT UTILITY AND PIPELINE EASEMENT.

CC. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ANY LANDSCAPING WALLS, OR STONE RETAINING WALLS AS REQUIRED TO INSTALL WATER AND SEWER SERVICES.

DD. CONTRACTOR SHALL MAINTAIN 12" SEPARATION BETWEEN WATER METERS AND SS CLEANOUTS.

EE. ALL WATER AND SEWER MAINS SHALL HAVE A HORIZONTAL SEPARATION OF 10' OR VERTICAL SEPARATION OF 18" WITH WATER LINE HIGHER THAN SEWER IN ACCORDANCE WITH 2T RULES OF THE NCAC. CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER IF ADJUSTMENTS NEED TO BE MADE IN THE FIELD TO MEET REQUIREMENTS.

FF. FOR PAVING REQUIREMENTS REFERENCE SPEC. SECTION 21000.

GG. FOR EACH METER BOX AND CLEANOUT LOCATION, PROPER EROSION CONTROL MEASURES SHALL BE INSTALLED WHERE REQUIRED. REFER TO DETAILS 2-7 ON SHEET D11 FOR ADDITIONAL INFORMATION.

HH. CONTRACTOR SHALL ADJUST MANHOLE RIM ELEVATIONS TO FINAL PAVEMENT GRADE AS REQUIRED.

II. ACCESS ALONG THE EXISTING TOWN OF CARY SANITARY SEWER EASEMENT FOR INSTALLATION OF SEWER SERVICE LATERALS AND CLEAN-OUTS SHALL BE ACCOMPLISHED THROUGH USE OF TEMPORARY CONSTRUCTION ENTRANCE OFF BROOK CROSS DRIVE. CONTRACTOR SHALL UTILIZE WOOD MATS ALONG PORTIONS OF EASEMENT IN WETLANDS OR OTHERWISE WET AREAS TO MINIMIZE IMPACTS. WHERE CLEARING IS REQUIRED IN DELINEATED WETLANDS THE CONTRACTOR SHALL CUT TREES AT GROUND LEVEL AND LEAVE STUMPS IN PLACE. GRUBBING IN WETLANDS OUTSIDE OF TRENCH EXCAVATION IS PROHIBITED.

JJ. FOR WATER AND SEWER SERVICES IN HOLLY BROOK, UNLESS SPECIFIED DIFFERENTLY, EACH PROPERTY WILL HAVE A 1" WATER SERVICE TO NEW METER BOX AND EVERY PROPERTY WILL HAVE A 4" SANITARY SEWER SERVICE TO CLEAN-OUT LOCATIONS SHOWN ON THE PLANS. REFER TO SHEET G4, SANITARY SEWER CLEANOUT SCHEDULE FOR MATERIAL AND DESIGN INVERTS. REFER TO TECHNICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

KK. FOR PIPE EMBEDMENT INFORMATION AND DETAILS FOR DUCTILE IRON PIPE FOR GRAVITY SEWERS, REFERENCE STANDARD SPECIFICATIONS SECTION 07000 (WASTEWATER COLLECTION SYSTEMS).

LL. REPAIR OF AQUA OWNED WATER AND SEWER MAINS SHALL BE PERFORMED BY CONTRACTOR VIA AGREEMENT BETWEEN AQUA AND THE TOWN OF CARY. SEE STANDARD SPECIF"ICATIONS SECTION 21000 FOR ADDITIONAL INFORMATION.

MM. CONTRACTOR SHALL NOTE THAT NEW WATER SERVICES ARE NOT SHOWN ON THE PROFILES FOR CLARITY AND CONTRACTOR SHALL MAKE ALL NEW WATER SERVICE CONNECTIONS AS REQUIRED.

NN. CONTRACTOR SHALL FIELD VERIFY ALL S.U.E. DATA PRIOR TO CONSTRUCTION.

PROJECT ADMINISTRATION

A. THE CONTRACTOR SHALL PROVIDE AT LEAST ONE FULL-TIME, ON-SITE SUPERINTENDENT FOR THIS PROJECT. THE PROJECT SUPERINTENDENT SHALL BE APPROVED BY THE TOWN BASED ON REFERENCES AND PRIOR PROJECTS WITH THE TOWN. THE PROJECT SUPERINTENDENT SHALL BE ON-SITE FOR ALL CONSTRUCTION-RELATED ACTIVITIES FROM CLEARING TO SITE RESTORATION. THE PROJECT SUPERINTENDENT SHALL NOT BE REPLACED EXCEPT BY WRITTEN APPROVAL FROM THE OWNER.

SANITARY SEWER LINE CONSTRUCTION NOTES:

1. FOLLOWING CONSTRUCTION, ALL TEMPORARY STREAM CROSSINGS SHALL BE REMOVED AND THE STREAM BANKS SHALL BE STABILIZED WITH TEMPORARY LINER OR ROCK RIP RAP MEAN STONE SIZE AND THE MINIMUM THICKNESS AS INDICATED IN THE DRAWINGS FOR EACH CROSSING. ALL RIP RAP SHALL BE INSTALLED OVER THE GEOTEXTILE FILTER FABRIC. (REF. DETAIL MS-02 ON SHEET D9 AND TECHNICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

EROSION CONTROL NOTES

1. BEFORE ANY WORK BEGINS, GIVE NOTICE TO NCDENR – LAND QUALITY SECTION, AT RALEIGH REGIONAL OFFICE, OF THE START DATE BY PHONE AT 919-791-4200 AND IN WRITING AT THE FOLLOWING ADDRESS:

   NCDENR – LQS-RALEIGH REGIONAL OFFICE
   1628 MAIL SERVICE CENTER
   RALEIGH, NC 27699-1628
   ATTN: JOE DUPREE

2. SEE CIVIL LEGEND ON SHEET G2 FOR ALL EROSION CONTROL MEASURE SYMBOLS AND LINETYPES.

3. EROSION CONTROL MEASURES SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS AND/OR AS REQUIRED FOR UTILITY INSTALLATION.

TEMPORARY AND PERMANENT SEEDING SCHEDULE AND MULCH RATES

PART 1 – TEMPORARY AND PERMANENT NON LAWN SEEDING MEASURES

A. GENERAL:

i. AFTER CONSTRUCTION IS COMPLETE IN ANY AREA OR PHASE OF THE PROJECT, THE DISTURBED AREAS SHALL RECEIVE A PERMANENT GROUND COVER. SEEDING AND MULCHING SHALL BE PERFORMED IMMEDIATELY BEHIND CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE PERMANENT SEEDING IN ALL DISTURBED AREAS AS INDICATED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ADAPT PERMANENT SEEDING OPERATIONS TO PROTECT AND TO ACCOMMODATE ANY TEMPORARY SEEDING AND SOIL AND EROSION CONTROL MEASURES THAT MAY ALREADY BE IN PLACE DURING THE WORK PERIOD.

ii. WHEN SEEDING MUST TAKE PLACE OUT OF SEASON FOR PERMANENT GRASS THE APPROPRIATE TEMPORARY SEEDING SHALL BE DONE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERMANENT SEEDING AS SPECIFIED IN SEASON AT NO ADDITIONAL COST TO OWNER.

iii. CONTRACTOR SHALL BE RESPONSIBLE FOR TURF MAINTENANCE THROUGH SUBSTANTIAL COMPLETION. SLOPES MUST BE AT 90% COVERAGE AT SUBSTANTIAL COMPLETION REVIEW TO BE ACCEPTED. IF NOT AT 90% COVERAGE, SUBSTANTIAL COMPLETION WILL BE DELAYED UNTIL THE FOLLOWING GROWING SEASON.

B. SITE PREPARATION AND INSTALLATION:

i. GROUND COVER: ALL DISTURBED AREAS SHALL BE DRESSED TO A DEPTH OF FIVE (5) INCHES. THE TOP TWO (2) INCHES SHALL BE PULVERIZED TO PROVIDE UNIFORM SEEDBED. RAKE OR HARROW THE SITE TO ESTABLISH A SMOOTH AND LEVEL FINAL GRADE. SOIL PARTICLES SHOULD BE NO LARGER THAN MARBLE SIZE, AND PEA GRAVEL SIZE IS EVEN BETTER. AGRICULTURAL LIME SHALL BE APPLIED AT THE RATE OF 95 LBS./1000 SQ. FT. IMMEDIATELY BEFORE PLOWING. GRASS SEED SHALL BE APPLIED AT THE RATES OUTLINED IN TABLES 1 AND 2.

ii. 5-10-10 FERTILIZER SHALL BE APPLIED TO ALL DISTURBED AREAS AT A RATE OF 21 LBS./1000 SQ. FT. MULCHING SHALL CONSIST OF SMALL GRAIN STRAW APPLIED AT A RATE OF 2 TONS/ACRE. MULCHED AREAS SHALL BE TACKED WITH ASPHALT OR OTHER APPROVED METHOD SUFFICIENT TO HOLD THE STRAW IN PLACE, AT A RATE OF 400 GALLONS/ACRE.

iii. WHEN SEEDING MUST TAKE PLACE OUT OF SEASON FOR PERMANENT GRASS THE APPROPRIATE TEMPORARY SEEDING SHALL BE DONE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERMANENT SEEDING AS SPECIFIED IN SEASON AT NO ADDITIONAL COST TO OWNER.

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)

* "EXTENSIONS OF TIME MAY BE APPROVED BY THE PERMITTING AUTHOIRTY BASED ON WEATHER OR OTHER SITE-SPECIFIC CONDITIONS THAT MAKE COMPLIANCE IMPRACTICABLE." (SECTION II.B(2)(B) NPDES GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES)

C. CLEANUP AND INSPECTION:

i. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REMOVE FROM THE SITE ALL EQUIPMENT AND OTHER ARTICLES USED. ALL EXCESS SOIL, STONE, AND DEBRIS SHALL BE REMOVED AND LEGALLY DISPOSED OF AT NO ADDITIONAL COST TO THE OWNER. ALL WORK AREAS SHALL BE LEFT IN A CLEAN AND NEAT CONDITION. ALL DAMAGE TO EXISTING CONSTRUCTION CAUSED BY LANDSCAPING OPERATIONS SHALL BE REPAIRED TO THE SATISFACTION OF THE TOWN AT THE CONTRACTOR'S EXPENSE.

ii. SEEDED AREAS SHALL BE PROTECTED AND REPLANTED AS NECESSARY TO ESTABLISH A UNIFORM STAND OF SPECIFIED GRASS. SCATTERED BARE SPOTS, NONE OF WHICH SHALL BE LARGER THAT ONE (1) SQUARE FOOT, WILL BE ALLOWED UP TO A MAXIMUM OF 3% OF THE SEEDED AREA FOR EACH PROPERTY. WHEN SEEDED AREAS ARE READY FOR INSPECTION, THE MAINTAINED TURF AREAS SHALL BE NEATLY MOWED TO THE UNIFORM HEIGHT OF APPROXIMATELY TWO AND ONE-HALF (2.5) INCHES. THE SEEDED AREAS SHALL BE CONSIDERED ESTABLISHED ONLY WHEN THE SPECIFIED GRASS IS VIGOROUS AND GROWING WELL IN ADDITION TO MEETING THE OTHER REQUIREMENTS SPECIFIED.

iii. AN INSPECTION OF THE COMPLETED SEEDING SHALL BE MADE AT THE CONCLUSION OF THE LANDSCAPE WORK UPON WRITTEN NOTICE REQUESTING SUCH INSPECTION SUBMITTED BY THE CONTRACTOR TO THE ENGINEER, AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED DATE OF INSPECTION.

iv. A FINAL INSPECTION SHALL BE PERFORMED WHEN A SATISFACTORY STAND OF SEEDED TURF GRASS HAS BEEN PRODUCED, UPON WRITTEN NOTICE REQUESTING SUCH INSPECTION SUBMITTED BY THE CONTRACTOR TO THE ENGINEER, AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED DATE OF INSPECTION. IF A SATISFACTORY STAND OF TURF HAS NOT BEEN PRODUCED AT THE TIME OF FINAL INSPECTION, NECESSARY REPAIRS SHALL BE PERFORMED IN CONFORMANCE WITH THE REQUIREMENTS OF THIS SECTION. UPON COMPLETION OF THESE REPAIRS, THE SEEDED GRASS SHALL BE REINSPECTED UPON WRITTEN NOTICE AS ABOVE.

TABLE 1 : SHOULDERS, SIDE DITCHES, SLOPES (FOR SLOPES BETWEEN 2:1 AND 3:1)		
DATE	TYPE	PLANTING RATE
MAR 1 – JUN 1	SERICEA LESPEDEZA (SCARIFIED) AND	50 LBS/ACRE
MAR 1 – APR 15	ADD TALL FESCUE OR	120 LBS/ACRE
MAR 1 – JUN 30	ADD HULLED COMMON BERMUDA GRASS	25 LBS/ACRE
JUN 1 – SEPT 1	*** TALL FESCUE AND *** BROWNTOP MILLET OR *** SORGHUM-SUDAN HYBRIDS	120 LBS/ACRE 35 LBS/ACRE 30 LBS/ACRE
SEPT 1 – MAR 1	SERICEA LESPEDEZA (UNHULLED/UNSCARIFIED) AND TALL FESCUE	70 LBS/ACRE 120 LBS/ACRE
NOV 1 – MAR 1	ADD ABRUZZI RYE	25 LBS/ACRE

TABLE 2 : SHOULDERS, SIDE DITCHES, SLOPES (FOR SLOPES 3:1 AND FLATTER)		
DATE	TYPE	PLANTING RATE
AUG 15 – NOV 1	TALL FESCUE	300 LBS/ACRE
NOV 1 – MAR 1	TALL FESCUE AND ABRUZZI RYE	300 LBS/ACRE
MAR 1 – APR 15	TALL FESCUE	300 LBS/ACRE
APR 15 – JUN 30	HULLED COMMON BERMUDA GRASS	25 LBS/ACRE
JUL 15 – AUG 15	*** TALL FESCUE AND *** BROWNTOP MILLET OR *** SORGHUM-SUDAN HYBRIDS	35 LBS/ACRE

TABLE 1 & 2 NOTES:

CONSULT STORMWATER MANAGEMENT ENGINEER OR NATURAL RESOURCES CONSERVATION SERVICE (NRCS) FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE ABOVE VEGETATION RATES ARE THOSE, WHICH DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS MAY BE POSSIBLE BUT MUST BE APPROVED BY THE ENGINEER.

***TEMPORARY – RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12 INCHES IN HEIGHT BEFORE MOWING TO KEEP FESCUE FROM BEING SHADED OUT.

REVIEW REQUIREMENTS IN DEQ LAND QUALITY EROSION CONTROL PLAN APPROVAL TO DETERMINE IF THE APPROVAL HAS ANY RESTRICTIONS.

PART 2 – PERMANENT LAWN SEEDING MEASURES

A. GENERAL:

i. THE FOLLOWING INFORMATION SHALL BE APPLICABLE FOR ALL PERMANENT LAWN SEEDING. PERMANENT LAWN SEEDING SHALL TAKE PLACE WITHIN ALL DEVELOPED AREAS OF DISTURBANCE INCLUDING RESIDENTIAL AND COMMERCIAL AREAS AND SHALL BE REPLACED IN KIND OF EXISTING MATERIAL BY THE CONTRACTOR. AN APPROVED TURF TYPE TALL FESCUE BLEND SHALL BE USED PER THE CONTRACT DOCUMENTS. KENTUCKY 31 IS NOT AN ACCEPTABLE BLEND.

ii. WHEN SEEDING MUST TAKE PLACE OUT OF SEASON FOR PERMANENT GRASS THE APPROPRIATE TEMPORARY SEEDING SHALL BE DONE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERMANENT SEEDING AS SPECIFIED IN SEASON AT NO ADDITIONAL COST TO OWNER.

iii. CONTRACTOR SHALL BE RESPONSIBLE FOR LAWN MAINTENANCE THROUGH SUBSTANTIAL COMPLETION. LAWNS MUST BE AT 90% COVERAGE AT SUBSTANTIAL COMPLETION REVIEW TO BE ACCEPTED. IF NOT AT 90% COVERAGE, SUBSTANTIAL COMPLETION WILL BE DELAYED UNTIL THE FOLLOWING GROWING SEASON.

B. SITE PREPARATION:

i. REMOVE OR KILL ANY UNDESIRABLE EXISTING TURF OR VEGETATION. HERBICIDE SPRAYING OR OTHER CHEMICAL TREATMENT SHALL BE APPROVED BY THE ENGINEER PRIOR TO BEING USED BY THE CONTRACTOR. IF PREEXISTING TURF OR OTHER VEGETATION IS MIXED WITH THE SOIL TO BE REUSED, THE CONTRACTOR SHALL USE BEST JUDGEMENT IN REMOVING IT OR INCORPORATING IT INTO THE SOIL DURING PREPARATION.

ii. IF TOPSOIL WAS NOT USED TO REESTABLISH THE UPPER SOIL LAYER AND THE UPPER SOIL IS HEAVY WITH HIGH CLAY CONTENT, SPREAD 1.5-2 INCHES OF AGED GROUND PINE BARK OR BAGGED ORGANIC HUMUS OVER THE AREA TO BE REPAIRED.

iii. FOR ALL GRASSES EXCEPT CENTIPEDE GRASS, APPLY PER 1,000 SQUARE FEET: A MINIMUM OF 95 POUNDS OF AGRICULTURAL LIME AND ONE OF THE FOLLOWING FERTILIZERS: 40 POUNDS OF 5-10-10; 20 POUNDS OF 10-20-20; OR 20 POUNDS OF 8-8-8 OR 10-10-10 IN COMBINATION WITH 4 POUNDS OF 0-46-0. CENTIPEDE GRASS PREFERS ACIDIC SOILS AND LOW LEVELS OF PHOSPHORUS AND MAY NOT REQUIRE THE ADDITION OF LIME AND PHOSPHORUS. ALSO, ONCE CONSTRUCTION BEGINS, SOIL TESTING WILL BE CONDUCTED, AND DEPENDING ON THE RESULTS, ADDITIONAL LIME SHALL BE ADDED BY THE CONTRACTOR.

iv. INCORPORATE LIME AND FERTILIZER (AND PINE BARK IF ADDED) INTO THE TOP 6 INCHES OF THE SOIL USING A ROTOTILLER OR BY HAND. ROTOTILL OR HAND CULTIVATE TO WELL INCORPORATE THE AMENDMENTS AND GET A UNIFORM LOOSELY TEXTURED SOIL OF MINIMUM 6-INCH DEPTH.

v. RAKE OR HARROW THE SITE TO ESTABLISH A SMOOTH AND LEVEL FINAL GRADE. SOIL PARTICLES SHOULD BE NO LARGER THAN MARBLE SIZE, AND PEA GRAVEL SIZE IS EVEN BETTER. HAND RAKING TO LEVEL THE SOIL AND WORK OUT HILLS AND HOLLOWS. FOR AREAS LARGER THAN 100 SQ. FT. ALLOW RAIN OR IRRIGATE TO SETTLE THE SOIL. IN SOME SITUATIONS, THE ENGINEER MAY REQUIRE ROLLING OR CULTIPACKING TO FIRM THE SOIL BEFORE SEEDING. HAND RAKE AGAIN TO BREAK UP THE CRUSTY SURFACE BEFORE SEEDING OR PLANTING.

C. INSTALLATION:

ii. GENERAL:

a. SEED OR PLANT THE REQUIRED GRASS ACCORDING TO TABLE 3.

b. THE CHOICE OF TURFGRASS TYPE, VARIETY AND PROPAGATION FORM SHALL BE SPECIFIED IN THE CONTRACT DOCUMENTS, AS SPECIFIED IN THE ITEMIZED PROPOSAL, OR AS DESIGNATED BY THE ENGINEER.

c. SEED SHALL BE TAGGED CERTIFIED SEED. GERMINATION SHALL BE A MINIMUM OF 95%. SEED SHALL BE 98% PURE WITH LESS THAN 2% OTHER-CROP SEED OR DEBRIS. SEED SHALL BE FREE OF NOXIOUS WEED SEED.

d. SOD, SPRIGS, PLUGS OR OTHER VEGETATIVE PLANT PROPAGATION MATERIALS SHALL BE CERTIFIED FREE OF NOXIOUS WEEDS. MATERIALS SHALL BE IN GOOD HEALTH AND VIGOR, FREE OF DISEASE OR PESTS, OR DAMAGE FROM DRYNESS, ADVERSE TEMPERATURE, HERBICIDES, FERTILIZER OR OTHER CHEMICALS. SPRIGS THAT ARE OLDER THAN 48 HOURS ARE NOT ACCEPTABLE REGARDLESS OF CONDITION.

e. THE CONTRACTOR SHALL MAINTAIN A LOG OF DATES THAT SOD, SPRIGS, PLUGS, OR OTHER SEEDING INSTALLATION WAS COMPLETED FOR EACH INDIVIDUAL PROPERTY AND SHALL NOTIFY THE ENGINEER OR INSPECTOR OF EACH DAY'S PROGRESS.

ii. SEEDING:

a. SOW THE SEED ON FRESHLY PREPARED SOIL. ENSURE UNIFORM COVERAGE BY USING A CENTRIFUGAL (ROTARY) OR DROP-TYPE SPREADER. AREAS LARGER THAN 100 SQ. FT. SHALL BE SEEDED WITH A MINIMUM OF TWO PASSES AT THE APPROPRIATE PARTIAL RATE FOR EACH PASS. FOR AREAS AVERAGING GREATER 15 FT. WIDTH, APPLY HALF THE SEED IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE FIRST DIRECTION.

b. APPLY A STARTER-TYPE FERTILIZER TO THE SOIL SURFACE FOR EXAMPLE, 10 POUNDS OF 5-10-10 OR 5 POUNDS OF 10-20-20 PER 1,000 SQUARE FEET AT THE TIME OF SEEDING.

c. LIGHTLY COVER THE SEED BY HAND RAKING OR DRAGGING WITH A MAT OR CHAIN-LINK FENCE. ROLL OR TAMP THE SOIL LIGHTLY TO FIRM THE SURFACE AND PROVIDE GOOD SEED-TO-SOIL CONTACT.

d. MULCHING SHALL CONSIST OF SMALL GRAIN STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCHED AREAS SHALL BE TACKED WITH ASPHALT OR OTHER APPROVED METHOD SUFFICIENT TO HOLD THE STRAW IN PLACE, AT A RATE OF 400 GALLONS PER ACRE.

D. CLEANUP AND INSPECTION:

i. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REMOVE FROM THE SITE ALL EQUIPMENT AND OTHER ARTICLES USED. ALL EXCESS SOIL, STONE, AND DEBRIS SHALL BE REMOVED AND LEGALLY DISPOSED OF AT NO ADDITIONAL COST TO THE OWNER. ALL WORK AREAS SHALL BE LEFT IN A CLEAN AND NEAT CONDITION. ALL DAMAGE TO EXISTING CONSTRUCTION CAUSED BY LANDSCAPING OPERATIONS SHALL BE REPAIRED TO THE SATISFACTION OF THE TOWN AT THE CONTRACTOR'S EXPENSE.

ii. SEEDED AREAS SHALL BE PROTECTED AND REPLANTED AS NECESSARY TO ESTABLISH A UNIFORM STAND OF SPECIFIED GRASS. SCATTERED BARE SPOTS, NONE OF WHICH SHALL BE LARGER THAT ONE (1) SQUARE FOOT, WILL BE ALLOWED UP TO A MAXIMUM OF 3% OF THE SEEDED AREA FOR EACH PROPERTY. WHEN SEEDED AREAS ARE READY FOR INSPECTION, THE MAINTAINED TURF AREAS SHALL BE NEATLY MOWED TO THE UNIFORM HEIGHT OF APPROXIMATELY TWO AND ONE-HALF (2.5) INCHES. THE LAWNS SHALL BE CONSIDERED ESTABLISHED ONLY WHEN THE SPECIFIED GRASS IS VIGOROUS AND GROWING WELL IN ADDITION TO MEETING THE OTHER REQUIREMENTS SPECIFIED.

iii. AN INSPECTION OF THE COMPLETED SEEDING SHALL BE MADE AT THE CONCLUSION OF THE LANDSCAPE WORK UPON WRITTEN NOTICE REQUESTING SUCH INSPECTION SUBMITTED BY THE CONTRACTOR TO THE ENGINEER, AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED DATE OF INSPECTION.

iv. FINAL INSPECTION SHALL BE PERFORMED WHEN A SATISFACTORY STAND OF SEEDED TURF GRASS HAS BEEN PRODUCED, UPON WRITTEN NOTICE REQUESTING SUCH INSPECTION SUBMITTED BY THE CONTRACTOR TO THE ENGINEER, AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED DATE OF INSPECTION. IF A SATISFACTORY STAND OF TURF HAS NOT BEEN PRODUCED AT THE TIME OF FINAL INSPECTION, NECESSARY REPAIRS SHALL BE PERFORMED IN CONFORMANCE WITH THE REQUIREMENTS OF THIS SECTION. UPON COMPLETION OF THESE REPAIRS, THE SEEDED GRASS SHALL BE RE-INSPECTED UPON WRITTEN NOTICE AS ABOVE.

TABLE 3 : LAWN SEEDING (COOL AND WARM SEASON GRASSES)				
		TYPICAL PLANTING RATE/1,000 SQ. FT.		
LAWN GRASS	PLANTING DATES[1]	SEEDS[2]	SPACE[3] PLANTING	SPRIGGING[4]
TALL FESCUE	MAR 1 TO OCT 15 (AUG 15 TO OCT 1 OPTIMUM)	6	–	–
TALL FESCUE/ANNUAL (WINTER) RYE	OCT 15 TO MAR 1	6 FESCUE 1 RYE	–	–
BURMUDA GRASS (SEED)	APR 1 TO AUG 15	1 TO 2	–	–
BURMUDA GRASS (VEGETATIVE)	APR 15 TO AUG 30	–	5[4]	5
CENTIPEDE GRASS	MARCH TO JULY	0.25 TO 0.50	5[4]	–
ZOYSIA GRASS	APRIL TO JULY	–	5[4]	5
ST. AUGUSTINE GRASS	APRIL TO JULY	–	5[4]	–

TABLE 3 NOTES:

1 – SOD CONSISTING OF COOL-SEASON GRASSES CAN BE INSTALLED ANYTIME THE GROUND IS NOT FROZEN. SOD CONSISTING OF WARM-SEASON GRASSES CAN BE INSTALLED AS LONG AS SOIL TEMPERATURE EXCEEDS 55° F. (TYPICALLY APRIL 15 TO OCT. 1).
2 – POUNDS OF SEED PER 1,000 SQ. FT.
3 – SQUARE YARDS OF TURF CUT INTO 2-INCH CENTERS TO PLANT 1,000 SQ. FT.
4 – BUSHELS OF SPRIGS PER 1,000 SQ. FT. (1 SQ. YD. OF TURF PULLED APART IS EQUIVALENT TO 1 BUSHEL OF SPRIGS).

NOTIFICATION OF LAND RESOURCES SEDIMENT AND EROSION CONTROL SELF-INSPECTION PROGRAM:

THE SEDIMENT POLLUTION CONTROL ACT WAS AMENDED IN 2006 TO REQUIRE THAT PERSONS RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES INSPECT A PROJECT AFTER EACH PHASE OF THE PROJECT TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED. RULES DETAILING THE DOCUMENTATION OF THESE INSPECTIONS TOOK EFFECT OCTOBER 1, 2010. THE SELF-INSPECTION PROGRAM IS SEPARATE FROM THE WEEKLY SELF-MONITORING PROGRAM OF THE **NPDES** STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES. THE FOCUS OF THE SELF-INSPECTION REPORT IS THE INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL MEASURES ACCORDING TO THE APPROVED PLAN. THE INSPECTIONS MUST BE CONDUCTED AFTER EACH PHASE OF THE PROJECT, AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED IN ACCORDANCE WITH NCGS 113A-54.1 AND 15A NCAC 4B.0131. THE SELF-INSPECTION REPORT FORM IS AVAILABLE AS AN EXCEL SPREADSHEET FROM http://www.dlr.enr.state.nc.us/pages/sedimentation_new.html. IF YOU HAVE QUESTIONS OR CANNOT ACCESS THE FORM, PLEASE CONTACT THIS OFFICE AT (919) 791-4200.

MANHOLE TABLE				
MH #	NORTHING	EASTING	HEIGHT	SIZE
MH #1	705286.36	2059179.39	9.3	4'ø
MH #2	705168.76	2059252.46	10.7	4'ø
MH #3	705287.28	2059444.69	9.2	4'ø
MH #4 (EXTENDED BASE)	705357.61	2059512.86	11.6	4'ø
MH #5 (EXTENDED BASE)	705507.34	2059597.63	11.6	4'ø
MH #6	705623.67	2059674.93	10.0	4'ø
MH #7	705685.90	2059748.05	9.9	4'ø
MH #8	705734.10	2059846.89	9.4	4'ø
MH #9	705752.26	2059947.02	9.2	4'ø
MH #10	705752.26	2060112.19	7.3	4'ø
MH #11	705252.56	2059632.21	10.1	4'ø
MH #12 (EXTENDED BASE)	705146.95	2058643.46	10.2	4'ø
MH #13 (EXTENDED BASE)	705353.31	2058675.65	13.2	4'ø
MH #14 (EXTENDED BASE)	705451.00	2058705.31	14.7	4'ø
MH #15	705527.23	2058545.31	10.8	4'ø
MH #16	705472.96	2058613.71	12.3	4'ø
MH #17	705408.34	2058921.15	8.8	4'ø
MH #18 (EXTENDED BASE)	704202.29	2058800.15	11.8	4'ø
MH #19 (EXTENDED BASE)	704139.61	2058866.55	6.8	4'ø
MH #20	704247.75	2058965.39	9.4	4'ø
MH #21	704315.51	2058993.88	10.4	4'ø
MH #22	704439.43	2059014.02	10.8	4'ø
MH #23	704606.23	2059021.60	10.3	4'ø
MH #24	704848.97	2059032.58	7.0	4'ø
MH #25	704184.68	2059225.55	14.9	4'ø
MH #26 (EXTENDED BASE)	704187.59	2059109.59	11.9	4'ø
MH #27 (EXTENDED BASE)	704109.07	2058702.97	7.7	4'ø
MH #28 (EXTENDED BASE)	704048.92	2058731.76	9.8	4'ø
MH #29 (EXTENDED BASE)	704011.70	2058656.22	9.3	4'ø
MH #30 (EXTENDED BASE)	703980.82	2058518.68	10.4	4'ø
MH #31	703974.67	2058342.96	10.6	4'ø
MH #32	704002.25	2058209.65	9.6	4'ø
MH #33 (EXTENDED BASE)	704091.29	2057950.29	12.7	4'ø
MH #34	704100.52	2057835.33	8.0	4'ø
MH #35 (EXTENDED BASE)	704059.78	2057560.48	11.6	4'ø
MH #36	704323.35	2058083.76	7.7	4'ø
MH #37	704279.72	2058011.70	9.1	4'ø
MH #38 (EXTENDED BASE)	704211.64	2057975.12	11.0	4'ø
MH #39	704227.78	2058365.49	7.1	4'ø
MH #40	704119.98	2058460.21	8.2	4'ø
MH #41	704048.89	2058492.61	5.3	4'ø

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BEN R. LATINO, JR. 3/24/17

MCKIM&CREED
1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606
Phone: (919)233-8091, Fax: (919)233-8031
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HOLLY BROOK WATER AND SEWER EXTENSION

GENERAL NOTES, EROSION CONTROL NOTES AND MANHOLE SCHEDULE

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM/WOH
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER
DRAWING NUMBER G3

STATUS: ISSUED FOR BID
REVISION E

S:\03117\0011\80-Drawings\GENERAL\G3-3117-001.dwg, 3/23/2017 3:26 PM, Ed Barnes

SANITARY SEWER CLEANOUT SCHEDULE

Service No.	Property Owner(s)	Service Address	Service Connection Tie-in Elevation (at main or manhole)	Ground Elevation at Cleanout	Cleanout Invert Elevation	Cleanout Depth (below grade)	Top of Cleanout Elevation	Service Material
1	HUSKISSON[1], ROBBIE V & TRICIA T	4604 HOLLY BROOK DR	443.21	450.67	444.10	6.57	451.17	PVC
2	GRAZIOSO, THOMAS E & GRETCHEN K	4608 HOLLY BROOK DR	440.00	448.99	440.87	8.12	449.49	PVC
3	ROWLEY, WILLIAM H & SHIRLEY P	4612 HOLLY BROOK DR	437.88	447.55	438.23	9.32	448.05	PVC
4	WARREN, DOUGLAS G & LILING L	4616 HOLLY BROOK DR	434.44	445.49	435.34	10.15	445.99	PVC
5	SCHAD, MICHAEL GENE	4620 HOLLY BROOK DR	431.17	441.30	432.07	9.23	441.80	PVC
6	DELONG, JUSTIN & JESSICA	4624 HOLLY BROOK DR	428.90	438.42	429.24	9.18	438.92	PVC
7	JOHNSON, MATTHEW H & FRANCES A	4628 HOLLY BROOK DR	424.81	433.19	425.20	7.99	433.69	PVC
8	PETER J GADZIALA JR & MARCIE LACOMBE	4636 HOLLY BROOK DR	423.65	432.47	424.54	7.93	432.97	PVC
9	COOKE, CHARLOTTE REID	4640 HOLLY BROOK DR	421.98	433.26	422.84	10.42	433.76	PVC
10	DIEFFENDERFER, JAMES N & MARY R	4000 INKBERRY CT	421.83	433.14	422.69	10.45	433.64	PVC
11*	ROGERS, ANNA LYON	4004 INKBERRY CT	405.69	417.90	413.90	4.00	418.40	DIP
12*	SICARD, ADAM J	4008 INKBERRY CT	409.69	416.58	412.58	4.00	417.08	DIP
13*	MELTON, JOSEPH M & AMY J	4009 INKBERRY CT	404.13	415.09	411.09	4.00	415.59	DIP
14*	ALBRIGHT, ROBERT W & KAREN E	4005 INKBERRY CT	404.21	415.18	411.18	4.00	415.68	DIP
15	AKINS, MICHAEL B & JENNIFER A	4700 HOLLY BROOK DR	420.66	428.36	421.02	7.34	428.86	PVC
16	HEASLEY, RANDY S & BETH ANN	4704 HOLLY BROOK DR	416.89	425.20	417.74	7.46	425.70	PVC
17	MORGAN, MARK C & HALL, CHRISTY R	4708 HOLLY BROOK DR	411.11	420.99	411.99	9.00	421.49	PVC
18	LEAMING, WILLIAM VAN DE VENTER & SHARON O'DELL	4016 BROOK CROSS DR	410.32	416.94	410.65	6.29	417.44	PVC
19	D'ANGELO, ALICIA	4020 BROOK CROSS DR	408.68	418.34	409.53	8.81	418.84	PVC
20	ROADCUP, RICKY R & KATHRYN A	4024 BROOK CROSS DR	408.46	419.01	409.31	9.70	419.51	PVC
21	BRADLEY, ZITA H JR	4028 BROOK CROSS DR	408.41	424.29	409.24	15.05	424.79	PVC
22	HUDSON, VICKIE LYNN	4032 BROOK CROSS DR	409.56	424.87	410.38	14.49	425.37	PVC
24	DUNN, DAVID L & PARRIS, CHERYL	4037 BROOK CROSS DR	417.39	427.13	417.61	9.52	427.63	PVC
25	BALDWIN, JOHN C & DONNA L	4033 BROOK CROSS DR	415.49	426.37	416.27	10.10	426.87	PVC
26	HUTTO, JODY J & PAIGE S	4029 BROOK CROSS DR	406.50	419.76	406.96	12.80	420.26	PVC
27*	TROIANO, RAYMOND J & CATHERINE	4804 CROSSVINE CT	402.98	414.69	410.69	4.00	415.19	DIP
28*	QUICK, REINHOLD & SUZANNE S	4808 CROSSVINE CT	403.98	412.60	408.60	4.00	413.10	DIP
29	CROMPTON, JOHN R JR & PHYLLIS K	4809 CROSSVINE CT	402.44	412.36	408.36	4.00	412.86	DIP
30	LEWIS, YOLANDA C & BURTON, SUSAN L	4805 CROSSVINE CT	406.50	417.42	406.98	10.44	417.92	PVC
31	ERBEZNIK, FRANK J & VERONICA L	4801 CROSSVINE CT	408.28	417.28	409.07	8.21	417.78	DIP
32	DEXTER, BRIAN K & MARIE C	4021 BROOK CROSS DR	408.65	416.30	409.43	6.87	416.80	PVC
33*	FULCHER, ROBERT G	4800 HOLLY BROOK DR	402.96	414.40	410.40	4.00	414.90	DIP
34*	WRIGHT, DONALD M & JULIE G	4804 HOLLY BROOK DR	400.62	411.30	407.30	4.00	411.80	DIP
35*	KIMES, CAROL & BAFARO, THOMAS	4808 HOLLY BROOK DR	400.38	411.08	407.08	4.00	411.58	DIP
36*	BAGGIO, YVONNE	4812 HOLLY BROOK DR	399.29	411.36	407.36	4.00	411.86	DIP
37*	AYERS, STEPHEN E & JESSICA K	4816 HOLLY BROOK DR	397.57	412.90	408.90	4.00	413.40	DIP
38*	YAKABOSKI, GREGORY F & KAREN A	4820 HOLLY BROOK DR	396.67	411.81	407.81	4.00	412.31	DIP
39*	GEROLEMON, DAVID A & MICHELLE L	4824 HOLLY BROOK DR	396.37	411.81	407.81	4.00	412.31	DIP
40*	YAN, DE YAN ZHANG & BAO QIN	4828 HOLLY BROOK DR	395.60	410.34	406.34	4.00	410.84	DIP
41*	HOWARD, KRISTEN CARROL	4832 HOLLY BROOK DR	395.22	409.10	405.10	4.00	409.60	DIP
42*	COULSON, CHRISTOPHER P, LINDSAY C	4836 HOLLY BROOK DR	394.62	407.27	403.27	4.00	407.77	DIP
43*	BORRELLI, WANDA	4840 HOLLY BROOK DR	394.10	406.60	402.60	4.00	407.10	DIP
44*	FABBRI, LINDA K	4844 HOLLY BROOK DR	393.47	403.62	399.62	4.00	404.12	DIP
45	LEMMON, THOMAS PAUL & JODIE R	4708 CORALBERRY CIR	412.70	420.80	413.59	7.21	421.30	DIP
46	MORRIS, ADAM & VANDRONGELEN, KATELIJNE	4712 CORALBERRY CIR	416.23	422.63	416.60	6.03	423.13	DIP
47	WILLIAMS, DAVID M & ANGELA S	4720 CORALBERRY CIR	422.52	429.03	422.80	6.23	429.53	PVC
48	FALLER, CHRISTOPHER J & WILLIAMS, RACHEL E	4724 CORALBERRY CIR	420.14	427.49	420.97	6.52	427.99	PVC
49	RAKOSKI, ROBERT	5028 HOLLY BROOK DR	428.55	436.65	429.37	7.28	437.15	PVC
50	BARNES, DAVID A & PARKER, LAURA S	5032 HOLLY BROOK DR	432.76	442.48	433.62	8.86	442.98	PVC
51	SHEEDY, JAMES M & GAIL A	5036 HOLLY BROOK DR	434.49	444.54	435.04	9.50	445.04	PVC
52	HOLLY BROOK HOMEOWNERS ASSOCIATION, INC	4637 HOLLY BROOK DR						
53	PRICE, BURT L & PAMELA A	5037 HOLLY BROOK DR	434.49	445.04	434.99	10.05	445.54	PVC
54	AIKEN, MARK A & ELLEN W	5033 HOLLY BROOK DR	434.49	444.83	434.94	9.89	445.33	PVC
55	BAKER, JEFFREY R & STACI A	5029 HOLLY BROOK DR	432.56	442.64	433.28	9.36	443.14	PVC
56	LEMIRE, MARC & KARA	5025 HOLLY BROOK DR	428.59	436.68	429.28	7.40	437.18	PVC
57	CROLLMAN, MICHAEL A & ANNA L	5021 HOLLY BROOK DR	413.84	423.17	414.54	8.63	423.67	PVC
58	BOYLE, LEONARD	5013 HOLLY BROOK DR	409.46	417.95	410.17	7.78	418.45	PVC
59	MERRIAM, MELISSA & MICHAEL	4721 CORALBERRY CIR	420.09	425.67	420.29	5.39	426.17	PVC
60	SHANKIN, STEVEN J & ANNMARIE W	4709 CORALBERRY CIR	406.39	414.16	406.67	7.49	414.66	PVC
61	CARTER, CHARLES A & CATHERINE B	5001 HOLLY BROOK DR	400.80	409.77	401.55	8.22	410.27	PVC
62	JOHNSON, EDWARD W III & VICTORIA S	4921 HOLLY BROOK DR	398.72	407.87	399.46	8.41	408.37	PVC
63	COLLE, JACQUELINE M	3909 PERNEY CT	401.37	407.13	402.21	4.92	407.63	DIP
64	BRITT, VICTOR W & PATRICIA C	3905 PERNEY CT	403.44	413.21	404.16	9.05	413.71	PVC
65	FORD, JANET PATRICIA	3901 PERNEY CT	404.52	414.33	404.68	9.65	414.83	PVC
66	WILLOWS, TERENCE & ELEANOR, GONZALEZ, LOUISE H	3900 PERNEY CT	409.74	422.66	409.92	12.74	423.16	PVC
67	SQUERI, WALTER L JR & ANNA	3904 PERNEY CT	409.74	424.74	410.01	14.73	425.24	PVC
68	MANAWI, MAJDI A. & SHANABLEH, SUHA	3908 PERNEY CT	403.21	413.38	403.99	9.39	413.88	PVC
69	WALKER, PATRICK T	3912 PERNEY CT	403.18	413.22	403.97	9.25	413.72	PVC
70	WOLSKI, MARK J & LAURA A	4837 HOLLY BROOK DR	404.30	416.64	405.06	11.58	417.14	PVC
71	HOLDAWAY, KEVAN & KALEEN	4833 HOLLY BROOK DR	405.34	414.96	406.08	8.88	415.46	PVC
72	HOLLY BROOK HOMEOWNERS ASSOCIATION, INC	4009 INKBERRY CT						
73	LOVGREN, BRIAN W	4825 HOLLY BROOK DR	413.07	420.95	413.80	7.15	421.45	PVC
74	LANZER, JOHN K & SUZANNE K	4817 HOLLY BROOK DR	412.60	421.30	412.85	8.45	421.80	DIP
75	HOLLY BROOK HOMEOWNERS ASSOC INC**	4813 HOLLY BROOK DR	412.60	419.04	412.90	6.14	419.54	DIP
76	CHAPLIN, ERIC & GWEN	4705 HOLLY BROOK DR	418.69	427.34	419.45	7.89	427.84	PVC
77	MESSER, DEREK S & AMY A	3913 INKBERRY CT	420.66	431.10	420.88	10.22	431.60	DIP
78	RATTRAY, WILLIAM J & NANCY M	3909 INKBERRY CT	424.55	430.45	425.10	5.35	430.95	PVC
79	JENKINS, FLOYD THOMAS JR & CHERYL M	3905 INKBERRY CT	424.55	430.34	425.05	5.29	430.84	PVC
80	KURTZ, JAMES M & ANN B	3901 INKBERRY CT	424.55	430.39	425.05	5.34	430.89	PVC
81	ROGERS, JAMES C & HELEN	3900 INKBERRY CT	424.55	431.91	425.02	6.89	432.41	PVC
82	PFERDEORT, VALERIE A	3904 INKBERRY CT	424.55	433.24	425.03	8.21	433.74	PVC
83	CARTLEDGE, TONY WALTER	3912 INKBERRY CT	421.43	434.82	422.17	12.65	435.32	PVC
84	BOYLES-LEWIS, THOMAS & MYRANDA	4641 HOLLY BROOK DR	422.01	434.66	422.75	11.91	435.16	PVC
85	DAVIS, KEITH I & MARGARET L	4637 HOLLY BROOK DR	423.61	433.52	424.31	9.21	434.02	PVC
86	KNETSCH, MARK A & HEATHER I	4629 HOLLY BROOK DR	424.04	432.76	424.76	8.00	433.26	PVC
87	SULIER, RYAN MICHAEL & CHANTEL T	4625 HOLLY BROOK DR	427.45	437.15	428.17	8.98	437.65	PVC
88	BENZICK, MARK E & ELIZABETH C	4617 HOLLY BROOK DR	431.53	440.77	432.23	8.54	441.27	PVC
89	SHERWIN, JON CHRISTOPHER	4613 HOLLY BROOK DR	435.79	445.58	436.49	9.09	446.08	PVC
90	HAYES, LEONARD C. & MARIE C.	4609 HOLLY BROOK DR	439.67	448.58	440.40	8.18	449.08	PVC
91	BAKER, SUSAN C & MILLER, GARY	4605 HOLLY BROOK DR	445.24	450.52	445.50	5.02	451.02	PVC
92	GILBERT, ROBERT ANDREW & SUSAN R	5024 HOLLY BROK DR	418.23	431.95	419.23	12.72	432.45	PVC

*Property contains two (2) separate cleanouts. Information in this cleanout schedule refers to the cleanout located on the property line.

** SEWER SERVICE AND CLEANOUT SHALL BE 6"

TEST HOLE INFORMATION

TH#1
HUB SET=459.96'
26"OD BLACK CORRUGATED PLASTIC PIPE
TOP DEPTH=0.40'
TOP ELEV.=459.56'

TH#2
HUB SET=460.11'
0.5"OD BLACK TELEPHONE FIBER OPTIC CABLE
TOP DEPTH=1.74'
TOP ELEV.=458.37'

TH#2A
HUB SET=460.12'
1.5"OD BLACK TELEPHONE CABLE
TOP DEPTH=3.81'
TOP ELEV.=456.31'

TH#2B
HUB SET=460.13'
1.5"OD BLACK TELEPHONE CABLE
TOP DEPTH=3.76'
TOP ELEV.=456.37'

TH#2C
HUB SET=460.09'
0.5"OD BLACK TELEPHONE FIBER OPTIC CABLE
TOP DEPTH=3.86'
TOP ELEV.=456.23'

TH#2D
HUB SET=460.12'
1.5"OD BLACK TELEPHONE CABLE
TOP DEPTH=3.81'
TOP ELEV=456.31'

TH#2E
HUB SET=460.13'
2"OD BLACK HDPE INNERDUCT WITH TELEPHONE FIBER OPTIC CABLE
TOP DEPTH=2.17'
TOP ELEV.=457.96'

TH#2F
HUB SET=460.14'
1"OD BLACK TELEPHONE CABLE
TOP DEPTH=2.84'
TOP ELEV.=457.30'

TH#2G
HUB SET=460.24'
0.5"OD BLACK TELEPHONE FIBER OPTIC CABLE
TOP DEPTH=2.33'
TOP ELEV.=457.91'

TH#3
HUB SET=463.52'
2.5"OD BLACK PE GAS PIPE
TOP DEPTH=3.55'
TOP ELEV.=459.97'

TH#4
HUB SET=463.49'
1.5"OD ORANGE HDPE INNERDUCT WITH CABLE TV FIBER OPTIC CABLE
TOP DEPTH=2.53'
TOP ELEV.=460.96'

TH#5
HUB SET=463.73'
13"OD COATED STEEL HIGH PRESSURE GAS PIPE
TOP DEPTH=2.76'
TOP ELEV.=460.97'

TH#5A
HUB SET=463.73'
2"OD BLACK TELEPHONE CABLE
TOP DEPTH=2.67'
TOP ELEV.=461.06'

TH#5B
HUB SET=463.62'
0.5"OD BLACK CABLE (TELEPHONE OR CABLE TV)
TOP DEPTH=2.84'
TOP ELEV.=460.78'

TH#6
HUB SET=463.45'
6.5"OD WHITE PVC WATER PIPE
TOP DEPTH=3.25'
TOP ELEV.=460.20'

TH#7
HUB SET=451.96'
6.5"OD WHITE PVC WATER PIPE
TOP DEPTH=3.95'
TOP ELEV.=448.01'

TH#8
HUB SET=461.22'
1.5"OD BLACK TELEPHONE CABLE
TOP DEPTH=2.51'
TOP ELEV.=458.71'

TH#8A
HUB SET=460.77'
0.5"OD BLACK TELEPHONE FIBER OPTIC CABLE
TOP DEPTH=3.84'
TOP ELEV.=456.93'

TH#9
HUB SET=461.69'
6.75"OD DUCTILE IRON FORCED SANITARY SEWER
TOP DEPTH=3.17'
TOP ELEV.=458.52'

TH#10
HUB SET=453.58'
7"OD DI FORCE MAIN PIPE
TOP DEPTH=6.20'
TOP ELEV.=447.38'

TH#11
PK SET=431.64'
7"OD PVC WATER PIPE
TOP DEPTH=3.79'
TOP ELEV.=427.85'

TH#12
PK SET=432.48'
4"OD PVC FORCE MAIN PIPE
TOP DEPTH=3.23'
TOP ELEV.=429.25'

TH#13
PK SET=432.71'
4.5"OD PLASTIC GAS PIPE
TOP DEPTH=4.15'
TOP ELEV.=428.56'

TH#14
PK SET=431.78'
4.5"OD PVC WATER PIPE
TOP DEPTH=4.40'
TOP ELEV.=427.38'

TH#15
PK SET=431.65'
4.5"OD PVC FORCE MAIN PIPE
TOP DEPTH=4.51'
TOP ELEV.=427.14'

TH#16
PK SET=431.23'
2.5"OD PLASTIC GAS PIPE
TOP DEPTH=2.15'
TOP ELEV.=429.08'

TH#17
PK SET=422.20'
7"OD PVC WATER PIPE
TOP DEPTH=3.90'
TOP ELEV.=418.30'

TH#18
PK SET=422.03'
6.5"OD PVC FORCE MAIN PIPE
TOP DEPTH=3.09'
TOP ELEV.=418.94'

TH#19
PK SET=421.76'
4.5"OD PLASTIC GAS PIPE
TOP DEPTH=2.03'
TOP ELEV.=419.73'

TH#20
PK SET=412.85'
4.5"OD PLASTIC GAS PIPE
TOP DEPTH=2.63'
TOP ELEV.=410.22'

TH#21
PK SET=411.04'
4"OD PVC WATER PIPE
TOP DEPTH=4.42'
TOP ELEV.=406.62'

TH#22
PK SET=410.65'
1"OD PLASTIC GAS PIPE
TOP DEPTH=2.15'
TOP ELEV.=408.50'

TH#23
HUB SET=406.27'
7"OD PVC WATER PIPE
TOP DEPTH=3.26'
TOP ELEV.=403.01'

TH#24
HUB SET=405.39'
7"OD PVC WATER PIPE
TOP DEPTH=2.50'
TOP ELEV.=402.89'

TH#25
PK SET=408.75'
2"OD PLASTIC GAS PIPE
TOP DEPTH=2.59'
TOP ELEV.=406.16'

TH#26
PK SET=408.51'
7"OD PVC WATER PIPE
TOP DEPTH=3.69'
TOP ELEV.=404.82'

TH#27
PK SET=430.05'
7"OD PVC WATER PIPE
TOP DEPTH=3.45'
TOP ELEV.=426.60'

TH#28
PK SET=431.32'
2"OD PLASTIC GAS PIPE
TOP DEPTH=3.69'
TOP ELEV.=427.63'

TH#29
HUB SET=416.98'
2.5"OD PLASTIC GAS PIPE
TOP DEPTH=2.92'
TOP ELEV.=414.06'
0.5"OD CABLE TV CABLE
TOP DEPTH=2.02'
TOP ELEV.=414.96'

TH#30
HUB SET=417.31'
0.5"OD BLACK TELEPHONE CABLE
TOP DEPTH=3.00'
TOP ELEV.=414.31'

TH#31
PK SET=422.05'
3.5"OD PVC FORCE MAIN PIPE
TOP DEPTH=2.97'
TOP ELEV.=419.08'

TH#32
PK SET=422.05'
4.5"OD PLASTIC GAS PIPE
TOP DEPTH=1.75'
TOP ELEV.=420.30'

TH#34
HUB SET=419.29'
6.5"OD PVC FORCE MAIN PIPE
TOP DEPTH=3.00'
TOP ELEV.=416.29'

TH#35
HUB SET=419.33'
4.5"OD PLASTIC GAS PIPE
TOP DEPTH=2.75'
TOP ELEV.=416.58'

TH#36A
HUB SET=418.26'
(3) 1"OD ELECTRIC CABLES
TOP DEPTH=2.35'
TOP ELEV.=415.91'

TH#36B
HUB SET=418.34'
6"OD PVC WATER PIPE
TOP DEPTH=2.60'
TOP ELEV.=415.74'

TH#37
HUB SET=412.07'
6"OD PVC FORCE MAIN PIPE
TOP DEPTH=4.67'
TOP ELEV.=407.40'

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BEN R. LATINO, JR. 3/24/17

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HOLLY BROOK
WATER AND SEWER EXTENSION

SANITARY SEWER CLEANOUT SCHEDULE

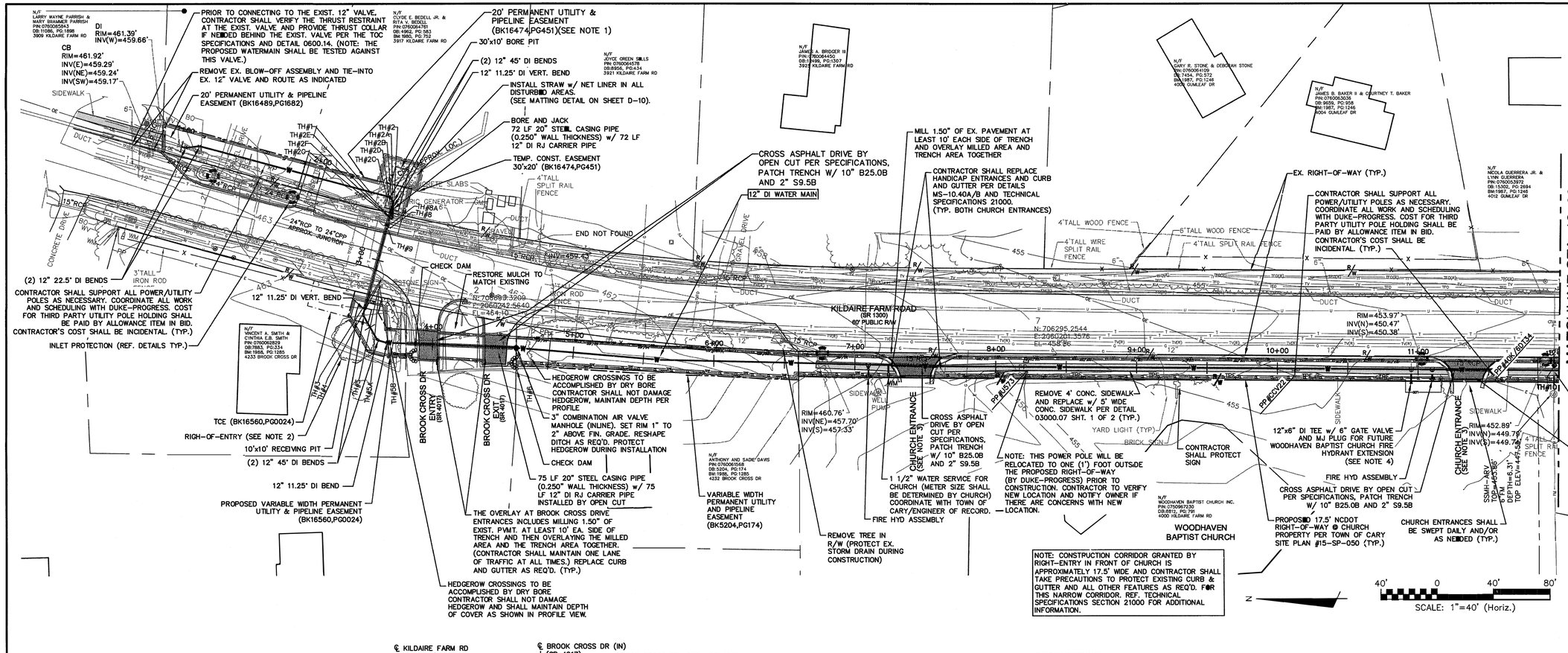
DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM/WOH
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER
DRAWING NUMBER G4

STATUS: ISSUED FOR BID
REVISION E

S:\03117\0011\90-Drawings\GENERAL\G4-3117-001.dwg, 3/23/2017 3:55 PM, Ed Barnes



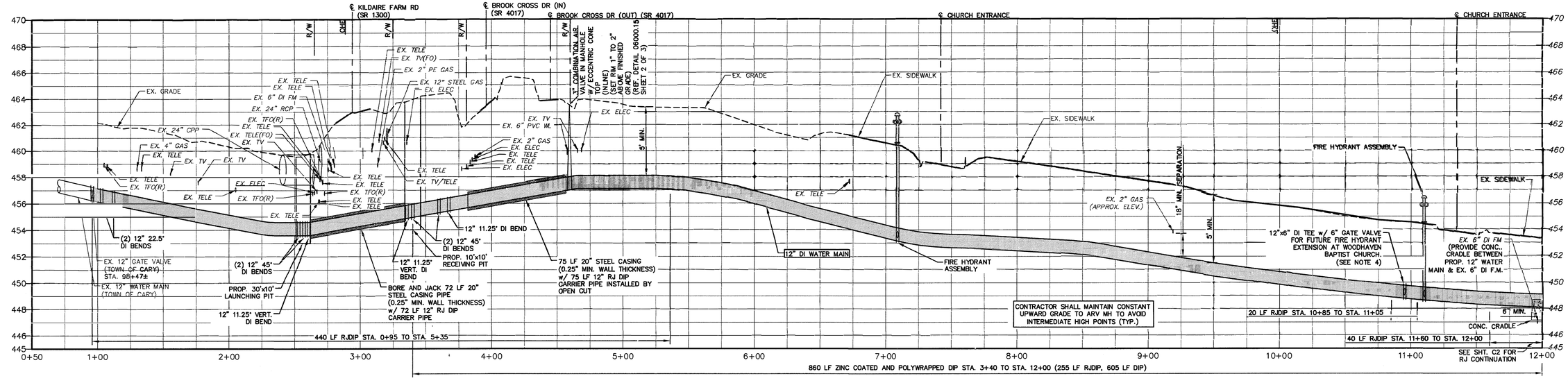
NOTES:

1. 3917 KILDAIRE FARM ROAD – BEDELL PROPERTY – CONTRACTOR SHALL COORDINATE CONSTRUCTION AT THIS PROPERTY WITH RESIDENT AND TRENCHING AT DRIVEWAY SHALL BE OPENED AND CLOSED IN THE SAME DAY.

2. 4233 BROOK CROSS DRIVE – SMITH PROPERTY – THE TEMPORARY CONSTRUCTION EASEMENT SHALL BE ACCESSED FROM NORTH END ONLY. DO NOT DAMAGE BUSHES/HEDGEROW ALONG KILDAIRE FARM ROAD. REMOVE TWO BRADFORD PEAR TREES, REMOVE FENCE. REPLACE FENCE ETC. AFTER INSTALLATION. RESEED PROPERTY WITH BERMUDA GRASS AS WELL AS ANY DISTURBANCE ALONG BROOK CROSS DRIVE SIDE OF BUSHES. TOWN OF CARY TO PROVIDE CONTRACTOR WITH RIGHT-OF-ENTRY AGREEMENT FOR ADDITIONAL INFORMATION.

3. CONTRACTOR SHALL PAVE CHURCH ENTRANCES WITHIN FIVE DAYS OF CONSTRUCTION. ONLY ONE CHURCH ENTRANCE MAY BE CLOSED AT A TIME AND ACCESS SHALL BE MAINTAINED. CHURCH HAS A DAYCARE AND CONTRACTOR SHALL COORDINATE WITH CHURCH CONCERNING DROP-OFF AND PICK-UP AT DAYCARE TO MINIMIZE IMPACTS.

4. CONTRACTOR SHALL COORDINATE WITH ENGINEER AND THE CHURCH TO VERIFY FINAL LOCATION OF THE TEE PRIOR TO INSTALLATION.



REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL — NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BEN R. LATINO, JR. 5/2/17

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HOLLY BROOK WATER AND SEWER EXTENSION KILDAIRE FARM ROAD

12" WATER MAIN STA. 0+95 TO STA. 12+00

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE: HORIZONTAL: 1"=40' VERTICAL: 1"=4'

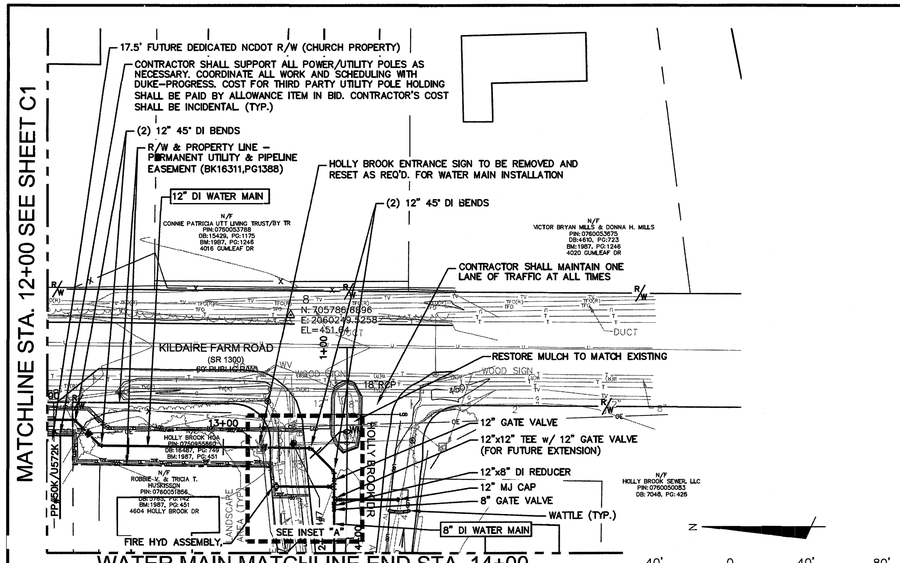
M&C FILE NUMBER

DRAWING NUMBER: C1

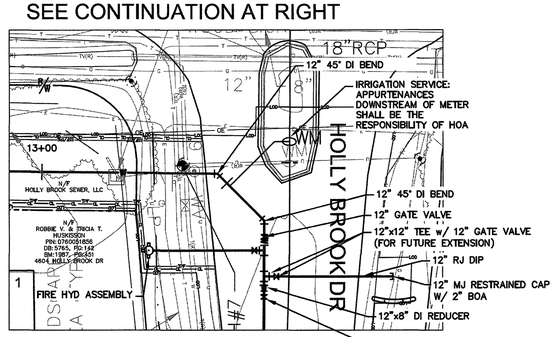
STATUS: ISSUED FOR BID

REVISION: E

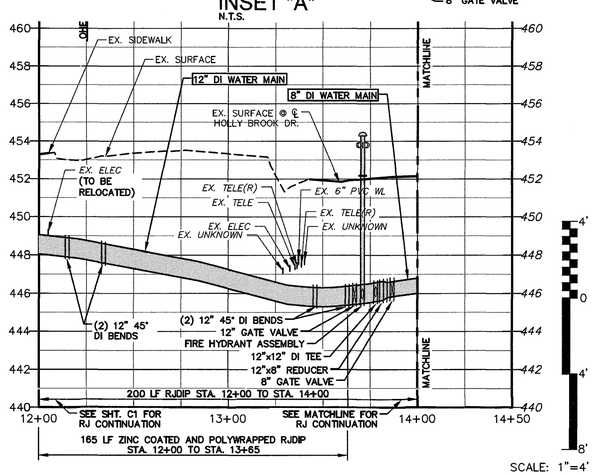
S:\03117\0011\06-Drawings\CWA\C1-C10 AND M-C-M-5.dwg, 3/23/2017 4:30 PM, Ed Barnes

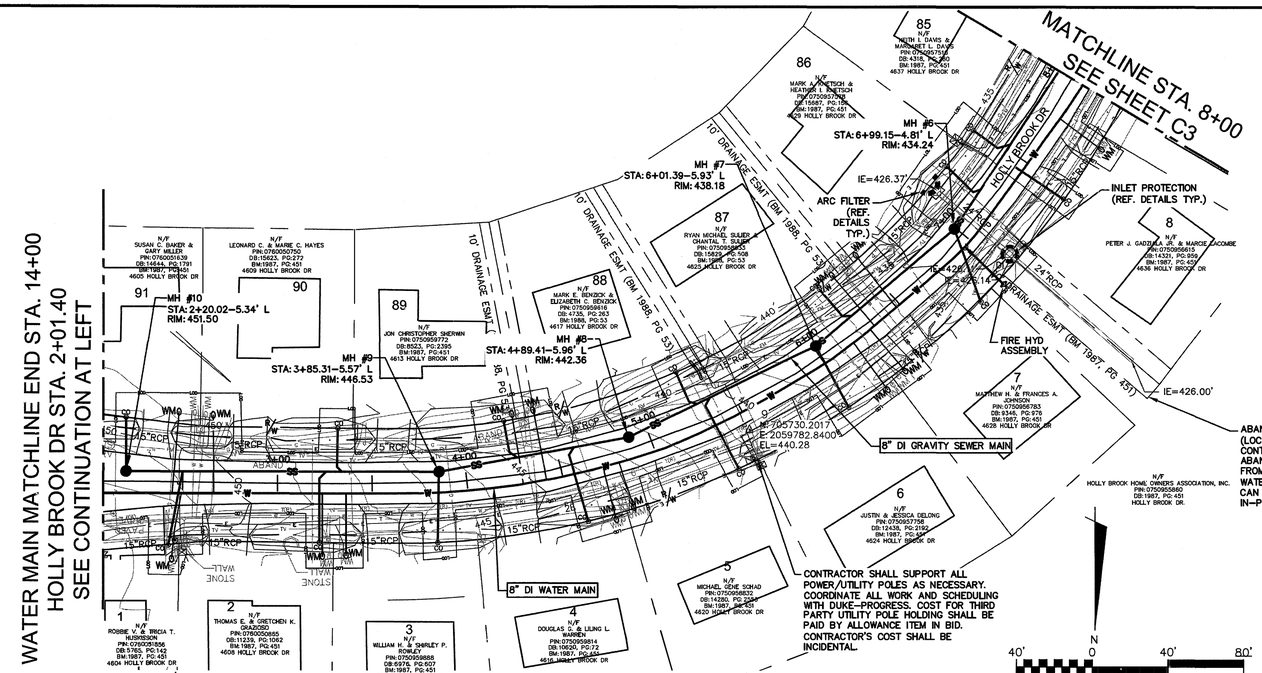


WATER MAIN MATCHLINE END STA. 14+00
HOLLY BROOK DR STA. 2+01.40
SEE CONTINUATION AT RIGHT



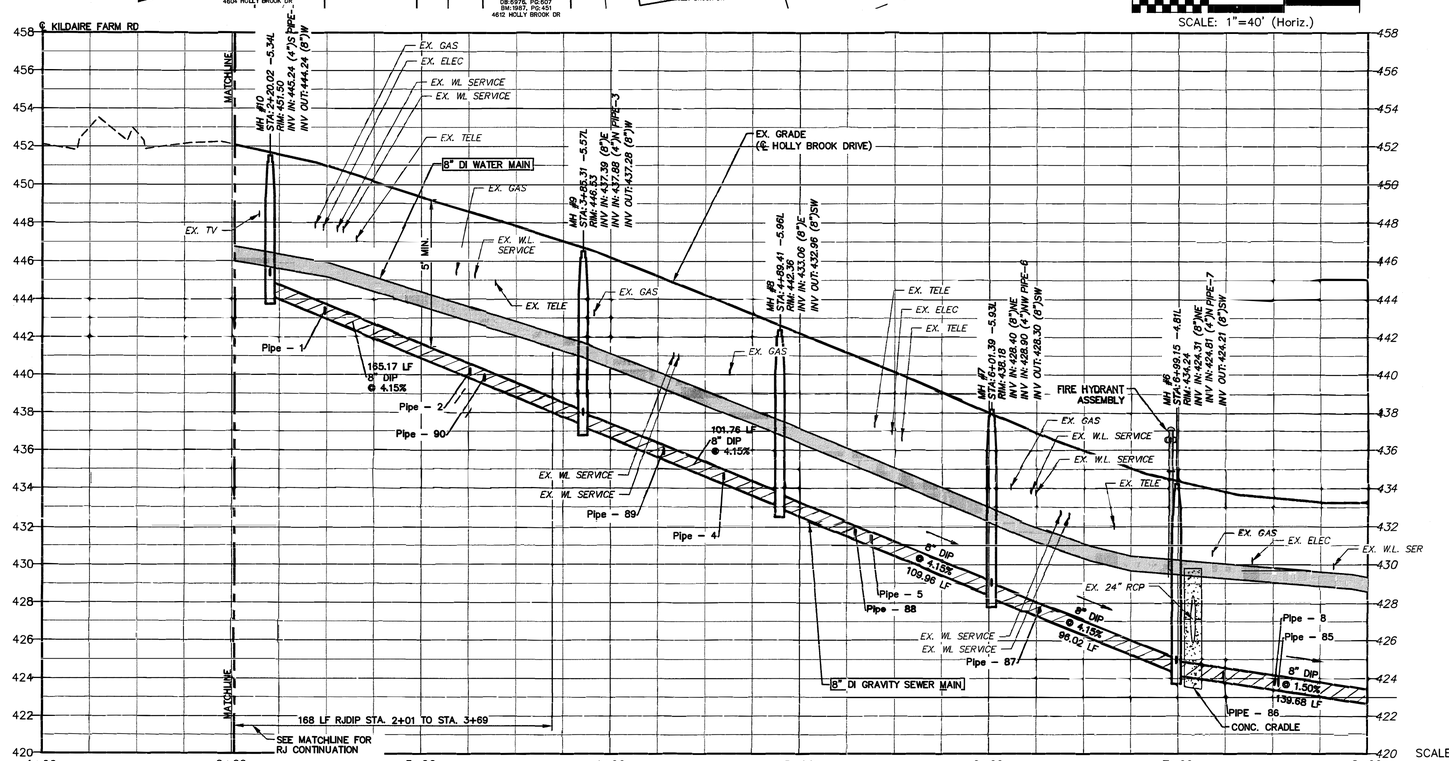
INSET "A"
N.T.S.





NOTES:

1. STATION NUMBERS WITHIN HOLLY BROOK SUB-DIVISION ARE BASED UPON ROAD CENTERLINES. PROFILE ELEVATIONS SHOWN ARE RELATIVE TO THE ROAD CENTERLINE AND MAY NOT REPRESENT INSTALLATION DEPTHS.



REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 034499 ENGINEER BERT R. LATINO, JR.
3/24/17

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HOLLY BROOK WATER AND SEWER EXTENSION KILDAIRE FARM RD/HOLLY BROOK DR

12"/8" WATER MAIN STA. 12+00 TO STA. 14+00
8" WATER MAIN AND 8" SANITARY SEWER STA. 14+00/2+01.40 TO STA. 8+00

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE: HORIZONTAL: 1"=40' VERTICAL: 1"=4'

M&C FILE NUMBER

DRAWING NUMBER: C2

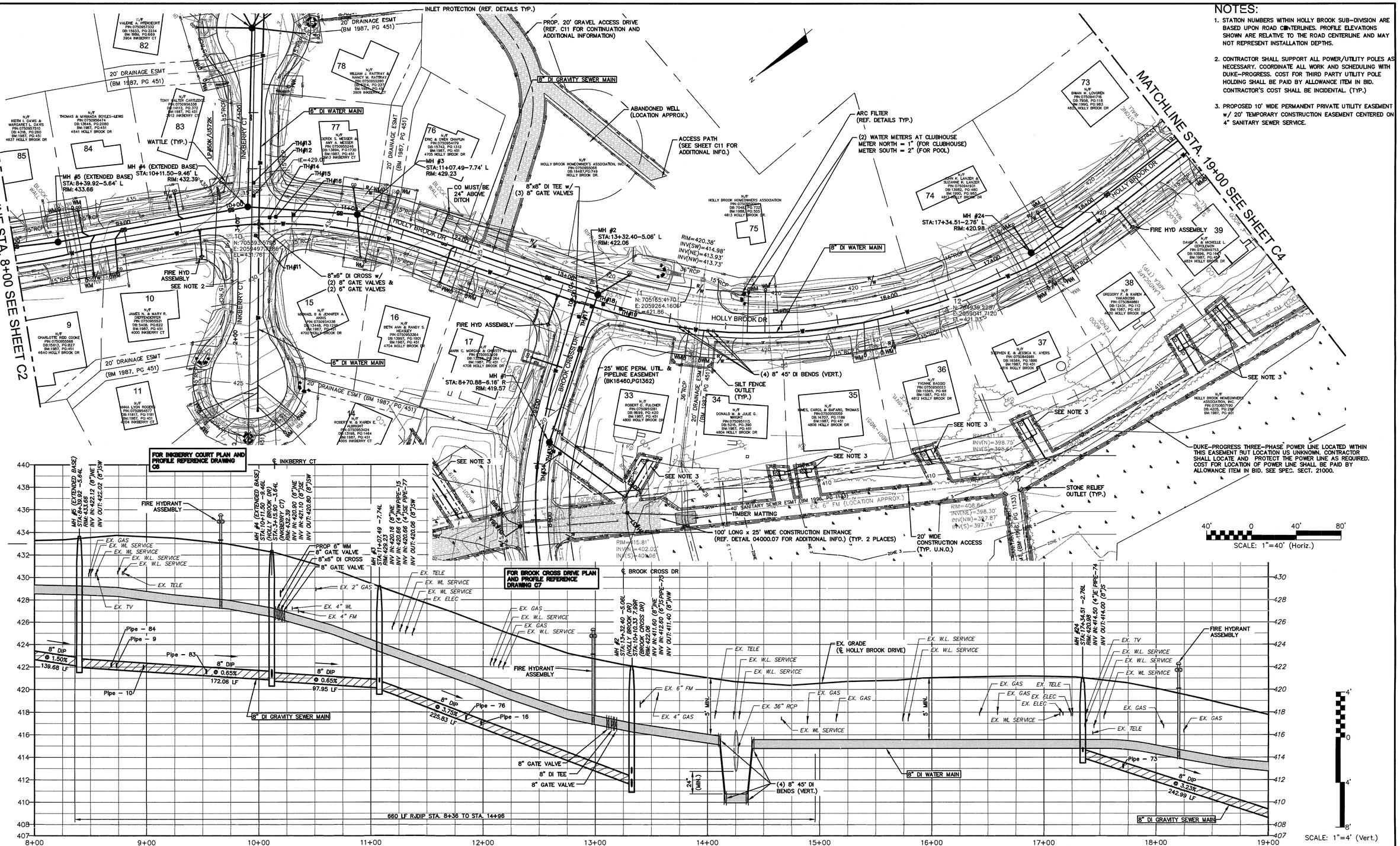
STATUS: ISSUED FOR BID

REVISION: E

S:\03117\0011\BD-Drawings\DM\C1-C10 AND N4-3-N4-5.dwg, 3/23/2017 3:28 PM, Ed Bonwe

NOTES:

1. STATION NUMBERS WITHIN HOLLY BROOK SUB-DIVISION ARE BASED UPON ROAD CENTERLINES. PROFILE ELEVATIONS SHOWN ARE RELATIVE TO THE ROAD CENTERLINE AND MAY NOT REPRESENT INSTALLATION DEPTHS.
2. CONTRACTOR SHALL SUPPORT ALL POWER/UTILITY POLES AS NECESSARY. COORDINATE ALL WORK AND SCHEDULING WITH DUKE-PROGRESS. COST FOR THIRD PARTY UTILITY POLE HOLDING SHALL BE PAID BY ALLOWANCE ITEM IN BID. CONTRACTOR'S COST SHALL BE INCIDENTAL. (TYP.)
3. PROPOSED 10' WIDE PERMANENT PRIVATE UTILITY EASEMENT w/ 20' TEMPORARY CONSTRUCTION EASEMENT CENTERED ON 4" SANITARY SEWER SERVICE.



REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034428 — BERT R. LATINO, JR. — 3/24/17

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HOLLY BROOK WATER AND SEWER EXTENSION HOLLY BROOK DRIVE

8" WATER MAIN AND 8" SANITARY SEWER STA. 8+00 TO STA. 19+00

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

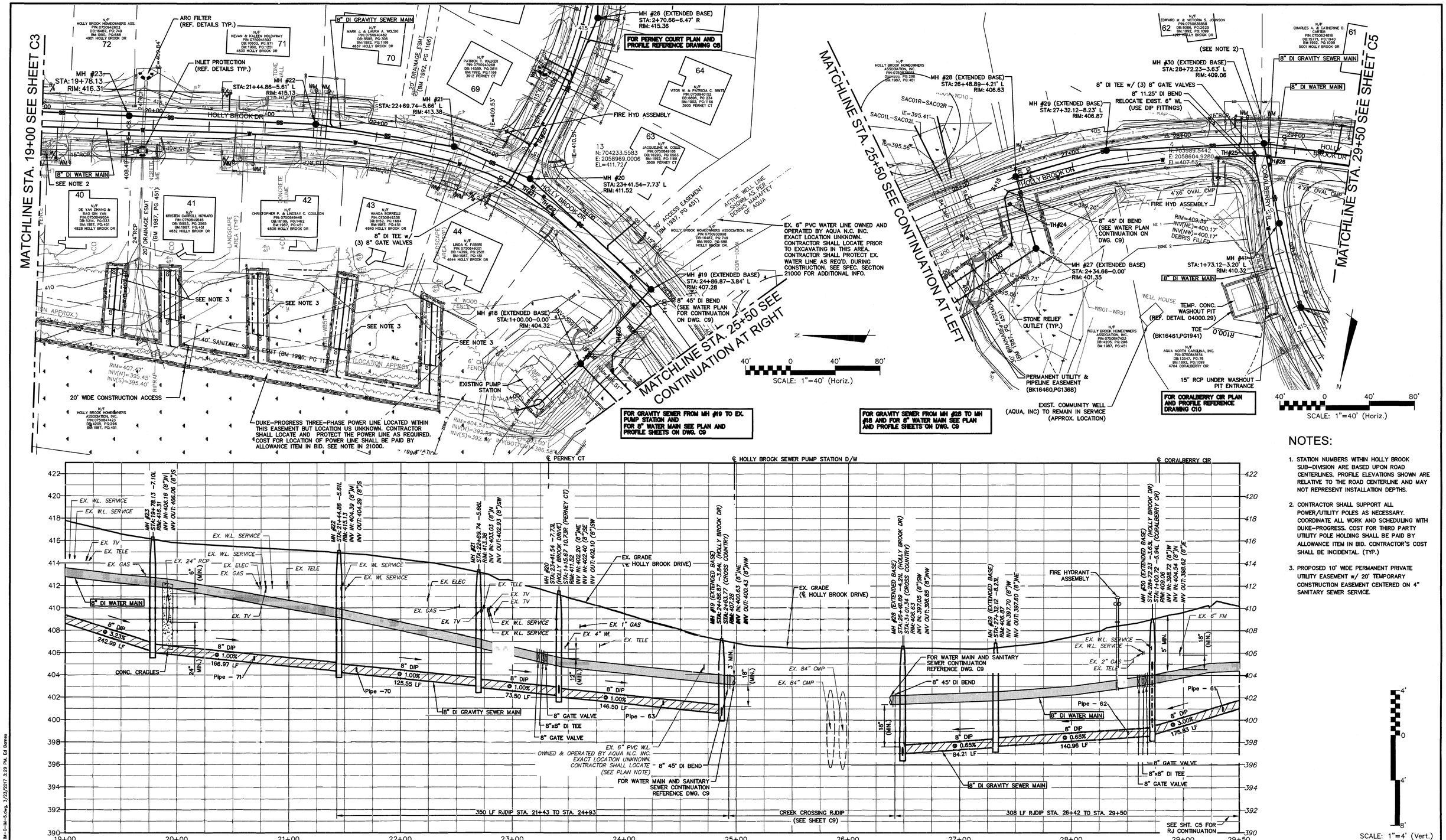
SCALE — HORIZONTAL: 1"=40' VERTICAL: 1"=4'

M&C FILE NUMBER

DRAWING NUMBER: C3

STATUS: ISSUED FOR BID — REVISION: E

S:\03117\0011\90-Drawings\DWG\01-C10 AND 04-C-Sw-S.dwg, 3/23/2017 3:29 PM, Ed Barnes



NOTES:

1. STATION NUMBERS WITHIN HOLLY BROOK SUB-DIVISION ARE BASED UPON ROAD CENTERLINES. PROFILE ELEVATIONS SHOWN ARE RELATIVE TO THE ROAD CENTERLINE AND MAY NOT REPRESENT INSTALLATION DEPTHS.
2. CONTRACTOR SHALL SUPPORT ALL POWER/UTILITY POLES AS NECESSARY. COORDINATE ALL WORK AND SCHEDULING WITH DUKE-PROGRESS. COST FOR THIRD PARTY UTILITY POLE HOLDING SHALL BE PAID BY ALLOWANCE ITEM IN BID. CONTRACTOR'S COST SHALL BE INCIDENTAL. (TYP.)
3. PROPOSED 10' WIDE PERMANENT PRIVATE UTILITY EASEMENT w/ 20' TEMPORARY CONSTRUCTION EASEMENT CENTERED ON 4" SANITARY SEWER SERVICE.

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL — NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BERR. LATINO JR. 3/24/17

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1730 Varsity Drive, Suite 500
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316 North Academy Street
Cary, N.C. 27513
Tel: 919-469-4030 Fax: 919-460-4935
www.townofcary.org

HOLLY BROOK WATER AND SEWER EXTENSION HOLLY BROOK DRIVE

8" WATER MAIN AND 8" SANITARY SEWER STA. 19+00 TO STA. 29+50

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE — HORIZONTAL: 1"=40' VERTICAL: 1"=4'

M&C FILE NUMBER

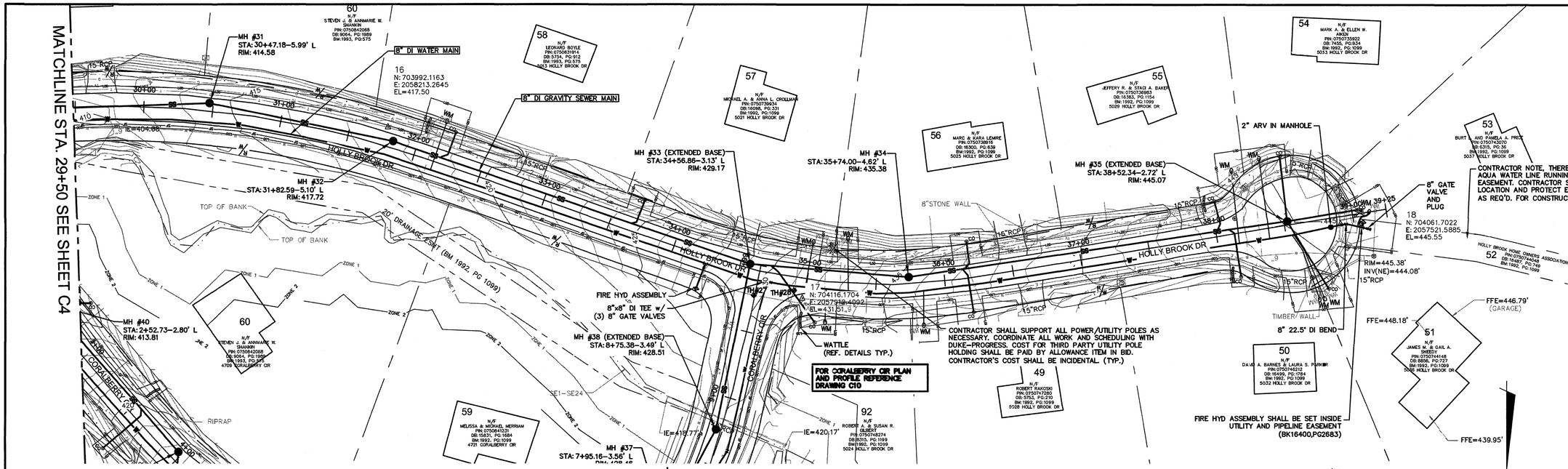
DRAWING NUMBER C4

STATUS: ISSUED FOR BID

REVISION E

S:\3117\0011\90-Drawings\CIVIL\C1-C10 AND IM-D-IM-5.dwg, 3/23/2017 3:29 PM, Ed Barnes

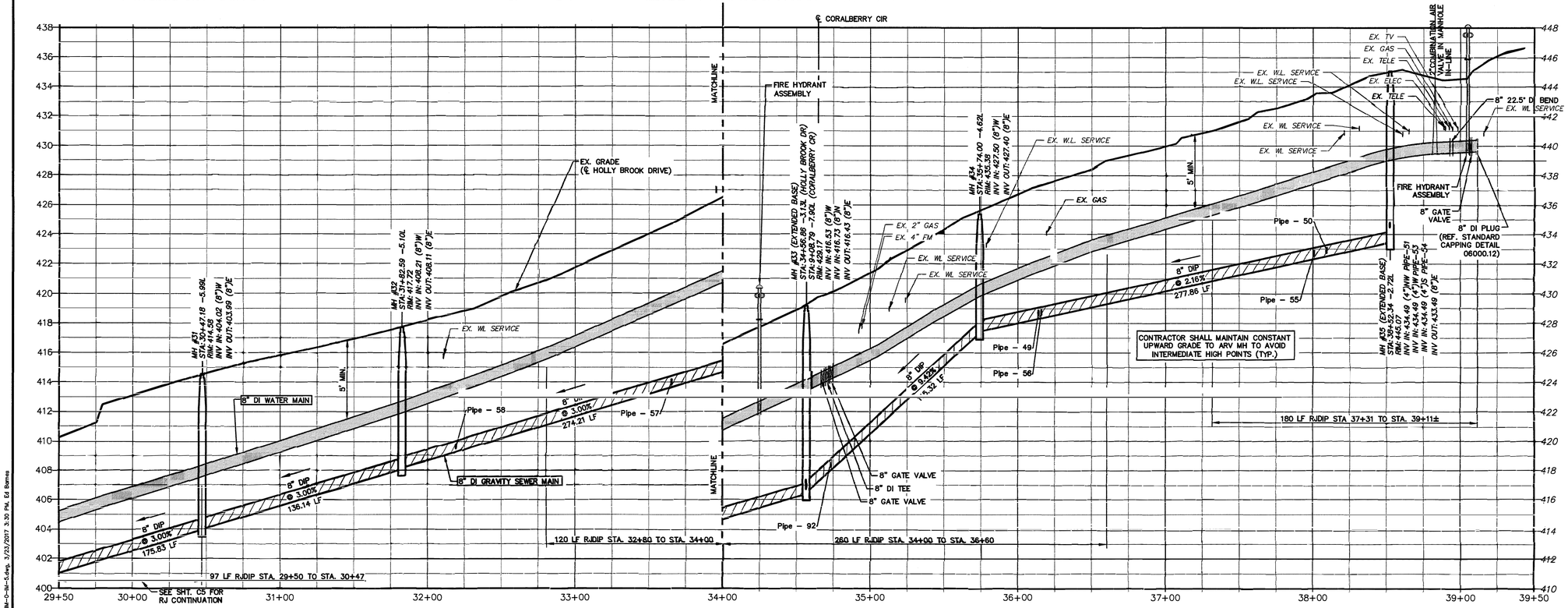
MATCHLINE STA. 29+50 SEE SHEET C4



NOTES:

1. STATION NUMBERS WITHIN HOLLY BROOK SUB-DIVISION ARE BASED UPON ROAD CENTERLINES. PROFILE ELEVATIONS SHOWN ARE RELATIVE TO THE ROAD CENTERLINE AND MAY NOT REPRESENT INSTALLATION DEPTHS.

40' 0 40' 80'
SCALE: 1"=40' (Horiz.)



4' 0 4' 8'
SCALE: 1"=4' (Vert.)

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

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SEAL — NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BEN R. LATINO JR. 3/24/17

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HOLLY BROOK WATER AND SEWER EXTENSION HOLLY BROOK DRIVE

8" WATER MAIN AND 8" SANITARY SEWER STA. 29+50 TO STA. 39+50

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE — HORIZONTAL: 1"=40' VERTICAL: 1"=4'

M&C FILE NUMBER

DRAWING NUMBER C5

STATUS: ISSUED FOR BID

REVISION E

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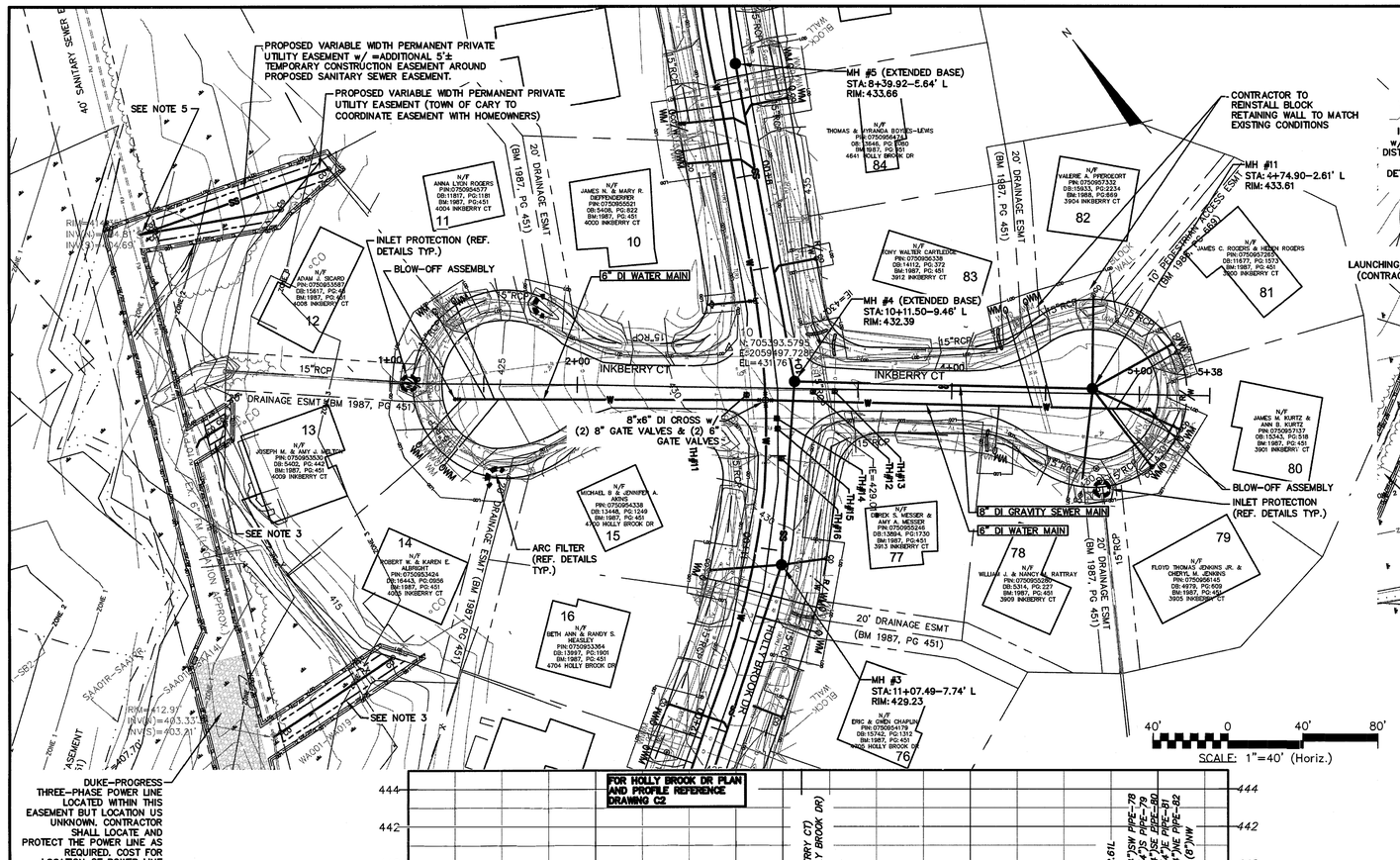

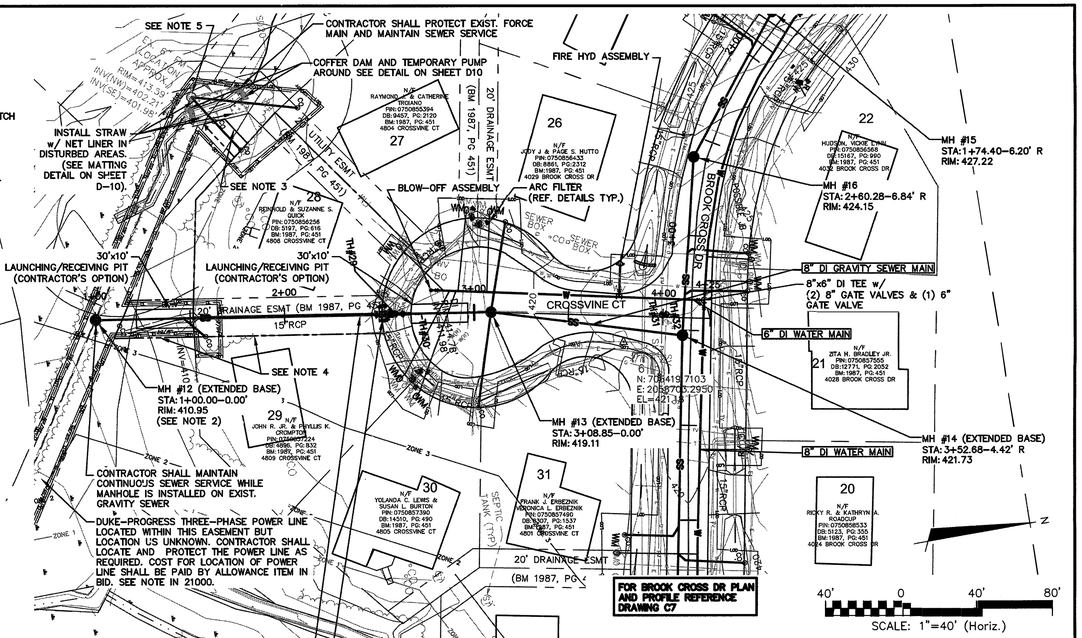

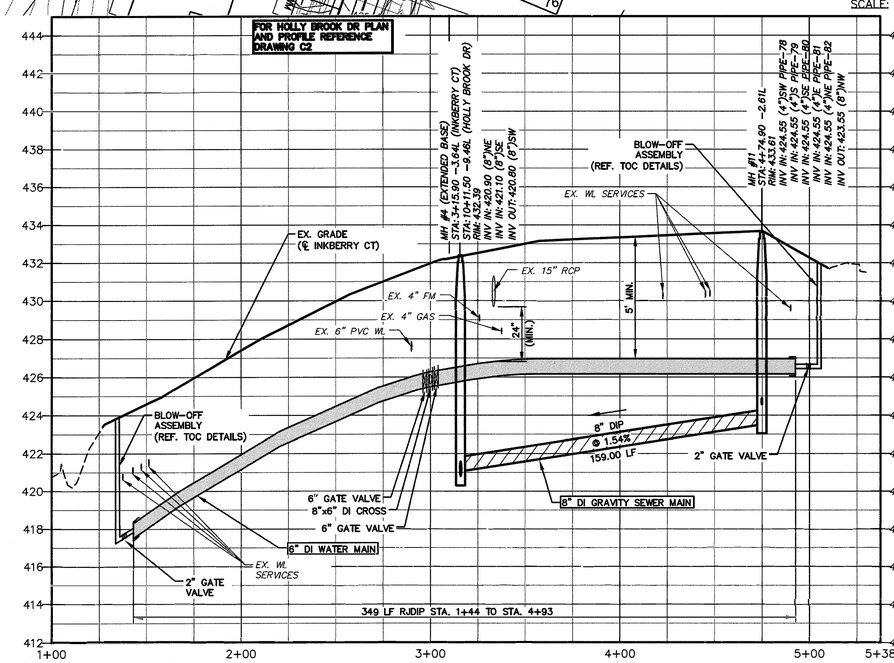

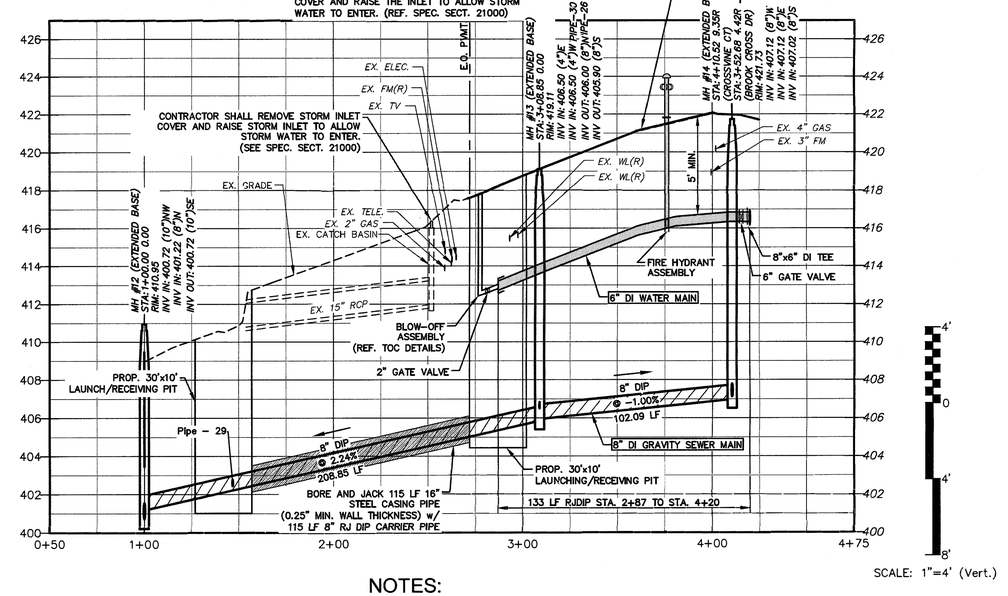

NOTES:

1. STATION NUMBERS WITHIN HOLLY BROOK SUB-DIVISION ARE BASED UPON ROAD CENTERLINES. PROFILE ELEVATIONS SHOWN ARE RELATIVE TO THE ROAD CENTERLINE AND MAY NOT REPRESENT INSTALLATION DEPTHS.
2. MANHOLE #12 SHALL NOT BE DOGHOUSE STYLE MANHOLE. TEMPORARY BY-PASS PUMPING OF THE EXISTING SEWER WILL BE REQUIRED FOR THE MANHOLE INSTALLATION.
3. PROPOSED 10' WIDE PERMANENT PRIVATE UTILITY EASEMENT w/ 20' TEMPORARY CONSTRUCTION EASEMENT CENTERED ON 4" SANITARY SEWER SERVICE.
4. EXISTING 20' WIDE STORM DRAINAGE EASEMENT AND NEW 20' SANITARY SEWER EASEMENT (BK16460,PG1533 & BK16533,PG1946).
5. CONTRACTOR SHALL VERIFY INVERTS OF EXISTING MANHOLE PRIOR TO CONSTRUCTION.
   CONTRACTOR SHALL PROVIDE AN APPROVED CONNECTION TO EXISTING MANHOLE. CONNECTION SHALL BE CORED THROUGH BENCH WITH A CONCRETE CORING MACHINE. RESHAPE INVERT AS NECESSARY.
   PROVIDE SANITARY SEWER PROTECTION. SEE STANDARD DETAIL 07000.16.

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL — NORTH CAROLINA PROFESSIONAL SEAL 044426 ENGINEER BEN R. LATINO, JR. 3/24/17

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HOLLY BROOK WATER AND SEWER EXTENSION INKBERRY CT AND CROSSVINE CT

6" WATER MAIN AND 8" SANITARY SEWER INKBERRY STA. 1+00 TO STA. 5+38 CROSSVINE STA. 1+00 TO STA. 4+75

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE — HORIZONTAL: 1"=40' VERTICAL: 1"=4'

M&C FILE NUMBER

DRAWING NUMBER C6

STATUS: ISSUED FOR BID

REVISION E

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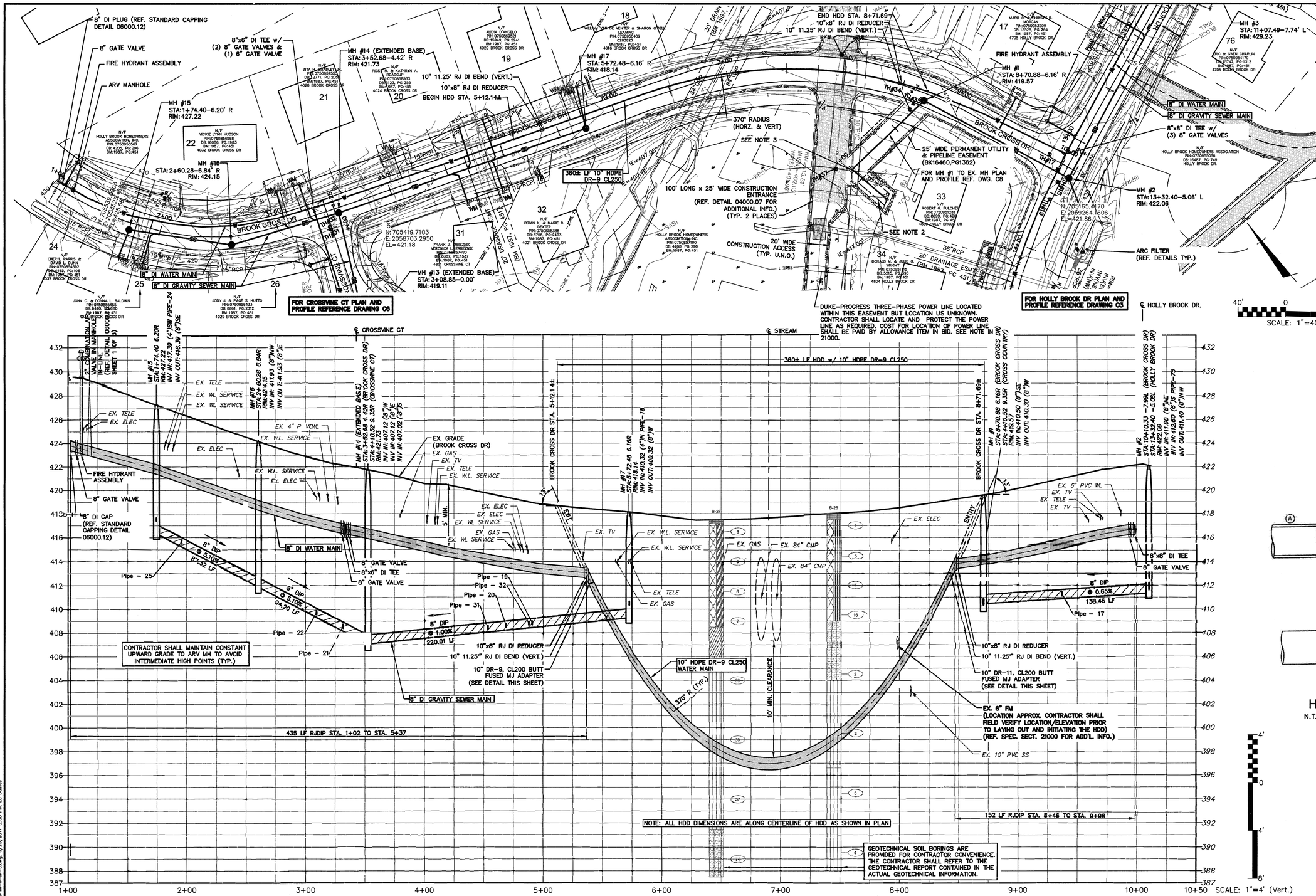
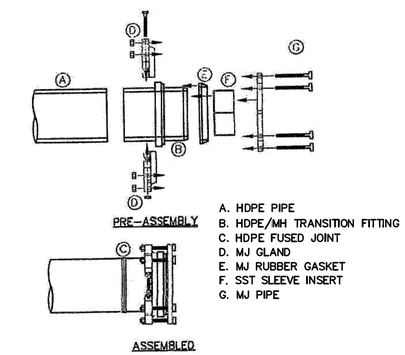


NOTES:

1. STATION NUMBERS WITHIN HOLLY BROOK SUB-DIVISION ARE BASED UPON ROAD CENTERLINES. PROFILE ELEVATIONS SHOWN ARE RELATIVE TO THE ROAD CENTERLINE AND MAY NOT REPRESENT INSTALLATION DEPTHS.
2. PROPOSED 10' WIDE PERMANENT PRIVATE UTILITY EASEMENT w/ 20' TEMPORARY CONSTRUCTION EASEMENT CENTERED ON 4" SANITARY SEWER SERVICE.
3. CONTRACTOR SHALL VERIFY INVERTS OF EXISTING MANHOLE PRIOR TO CONSTRUCTION.
   CONTRACTOR SHALL PROVIDE AN APPROVED CONNECTION TO EXISTING MANHOLE. CONNECTION SHALL BE CORED THROUGH BENCH WITH A CONCRETE CORING MACHINE. RESHAPE INVERT AS NECESSARY.
   PROVIDE SANITARY SEWER PROTECTION. SEE STANDARD DETAIL 07000.16.



HDPE TO DI ADAPTER DETAIL
N.T.S.

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BERT R. LATINO, JR. 3/24/17

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HOLLY BROOK WATER AND SEWER EXTENSION BROOK CROSS DRIVE

8" WATER MAIN AND 8" SANITARY SEWER
STA. 1+00 TO STA. 10+10.33
HDD STA. 5+12.14± TO STA. 8+71.69±

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE: HORIZONTAL: 1"=40' VERTICAL: 1"=4'

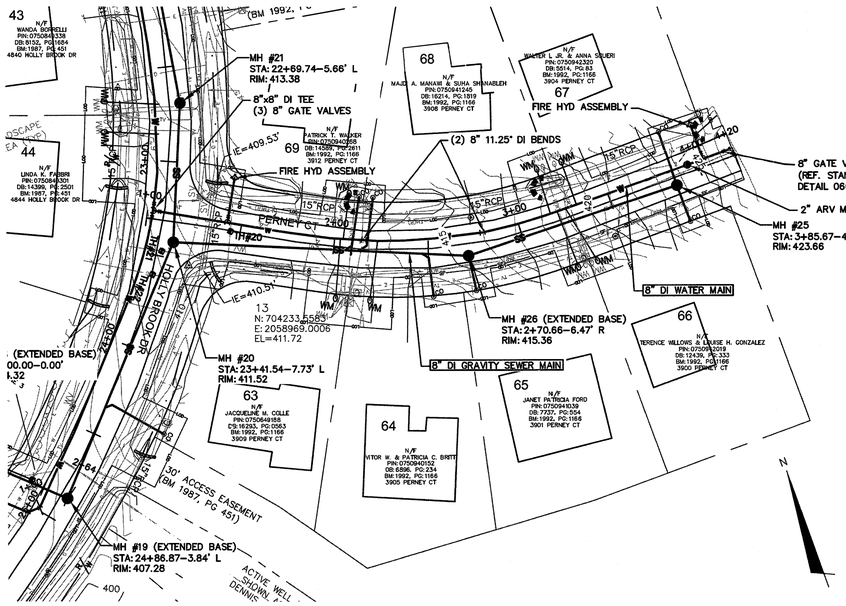
M&C FILE NUMBER

DRAWING NUMBER: C7

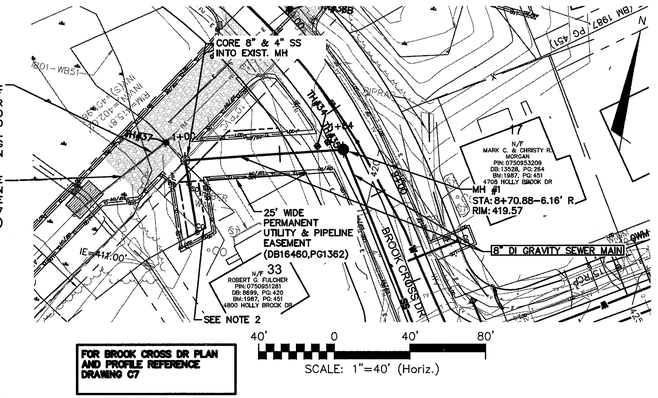
STATUS: ISSUED FOR BID

REVISION: E

S:\03117\0011\90-Drawings\DWG\C1-C10 AND M-4-M-5.dwg, 3/23/2017 3:30 PM, Ed Barnes



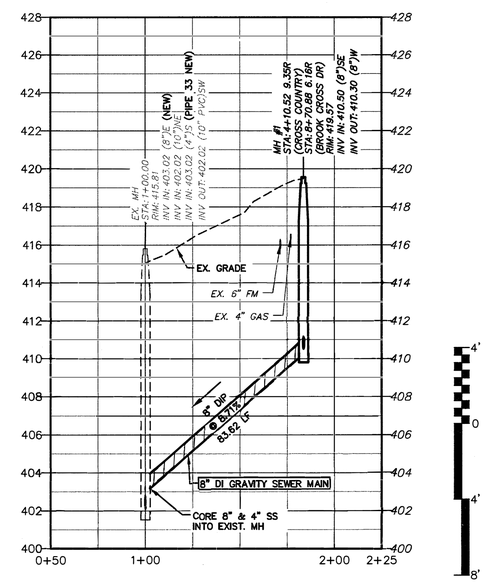
FOR HOLLY BROOK DR PLAN AND PROFILE REFERENCE DRAWING C4

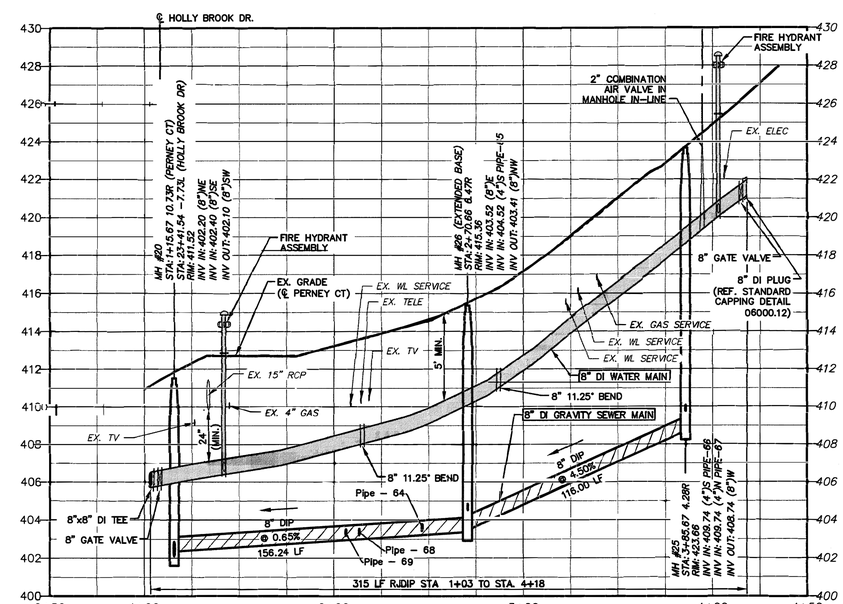


FOR BROOK CROSS DR PLAN AND PROFILE REFERENCE DRAWING C7

NOTES:

1. STATION NUMBERS WITHIN HOLLY BROOK SUB-DIVISION ARE BASED UPON ROAD CENTERLINES. PROFILE ELEVATIONS SHOWN ARE RELATIVE TO THE ROAD CENTERLINE AND MAY NOT REPRESENT INSTALLATION DEPTHS.
2. PROPOSED 10' WIDE PERMANENT PRIVATE UTILITY EASEMENT w/ 20' TEMPORARY CONSTRUCTION EASEMENT CENTERED ON 4" SANITARY SEWER SERVICE.





REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

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NORTH CAROLINA PROFESSIONAL SEAL 034426 ENGINEER BERT R. LATINO, JR. 3/24/17

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www.townofcary.org

HOLLY BROOK
WATER AND SEWER EXTENSION
PERNEY COURT & CROSS COUNTRY

8" WATER MAIN AND 8" SANITARY SEWER
PERNEY STA. 1+00 TO STA. 4+50
MH #1 TO EXIST. MH STA. 1+00 TO STA. 1+83.62

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: 1"=40'
VERTICAL: 1"=4'

M&C FILE NUMBER

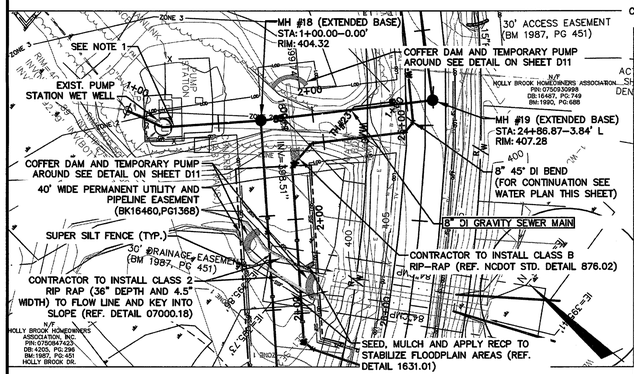
DRAWING NUMBER C8

STATUS: ISSUED FOR BID

REVISION E

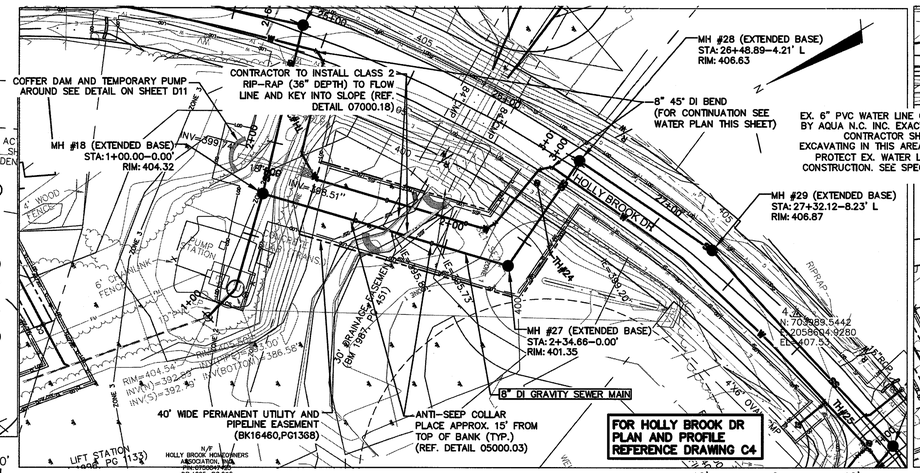
S:\03117\0011\90-Drawings\CIVIL\C1-C10 AND M-0-M-5.dwg, 3/23/2017 3:31 PM, Ed Barnes

NOTE:
CONTRACTOR SHALL MAINTAIN OPERATION OF AND ACCESS TO PUMP STATION SITE BY TOWN OF CARY PUBLIC WORKS AND UTILITIES DEPARTMENTS AS WELL AS SECURITY OF PUMP STATION SITE AT ALL TIMES.



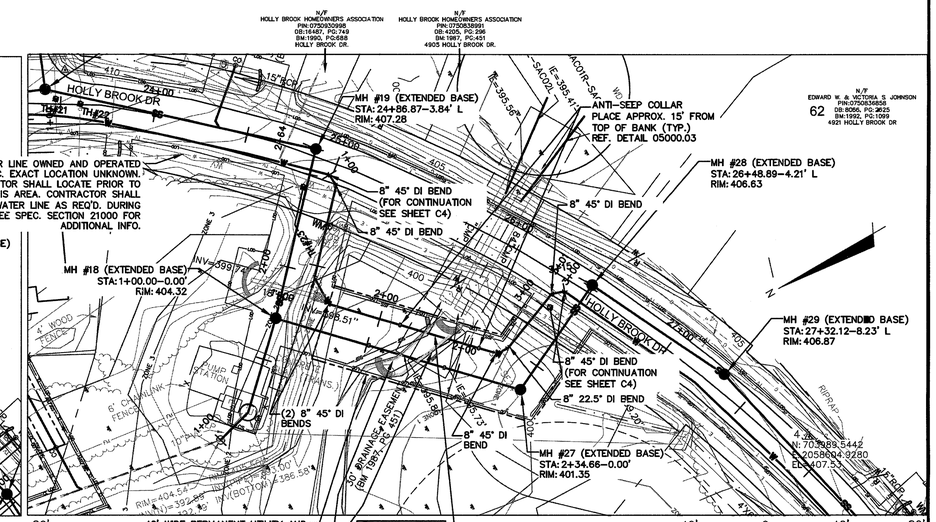
8" GRAVITY SEWER PLAN

SCALE: 1"=40' (Horiz.)



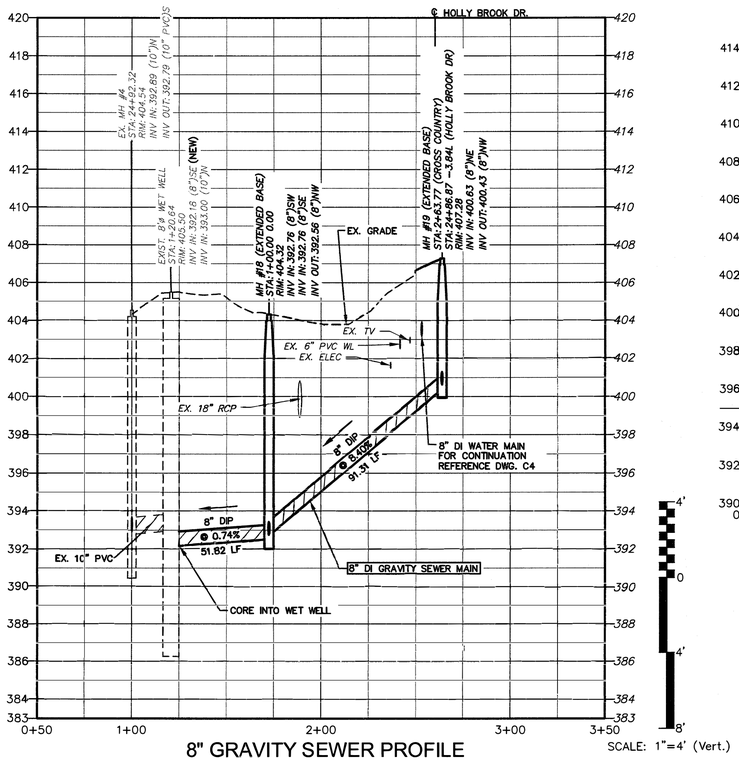
8" GRAVITY SEWER PLAN

SCALE: 1"=40' (Horiz.)



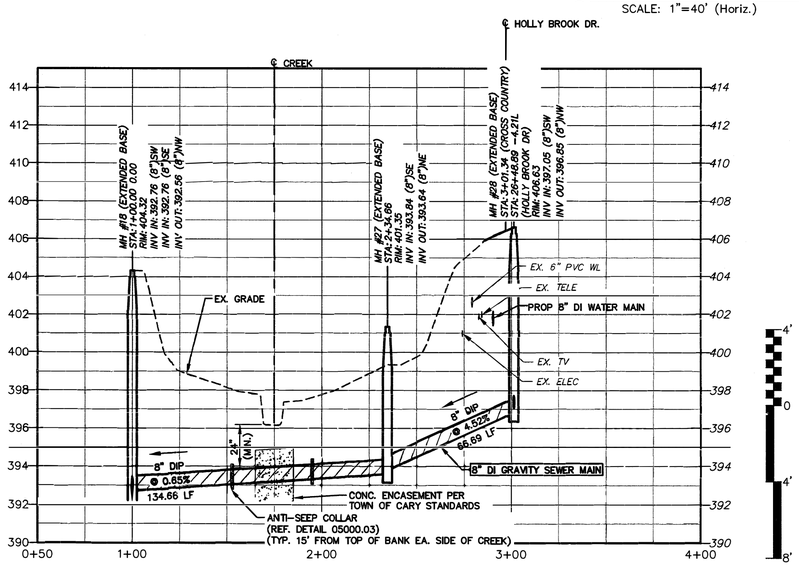
8" WATER MAIN PLAN

SCALE: 1"=40' (Horiz.)



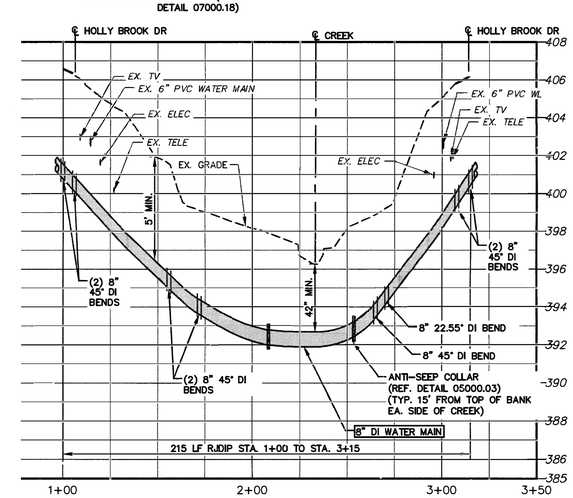
8" GRAVITY SEWER PROFILE

SCALE: 1"=4' (Vert.)



8" GRAVITY SEWER PROFILE

SCALE: 1"=4' (Vert.)



8" WATER MAIN PROFILE

SCALE: 1"=4' (Vert.)

PLAN TITLE

1. CORE 8" SS INTO EXISTING WET WELL.
CONTRACTOR SHALL VERIFY INVERTS OF EXISTING WETWELL PRIOR TO CONSTRUCTION. CONTRACTOR SHALL PROVIDE AN APPROVED CONNECTION TO EXISTING WETWELL. CONNECTION SHALL BE CORED WITH A CONCRETE CORING MACHINE.

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BERT R. LATINO, JR.
3/24/17

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HOLLY BROOK
WATER AND SEWER EXTENSION
CROSS COUNTRY ALIGNMENT 8" WATER & SEWER
MH #19 TO EX. P.S. STA. 1+00 TO STA. 2+63.77
MH #28 TO MH #18 STA. 1+00 TO STA. 3+01.34
8" WATER MAIN - STA. 1+00 TO STA. 3+15

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: 1"=40'
VERTICAL: 1"=4'

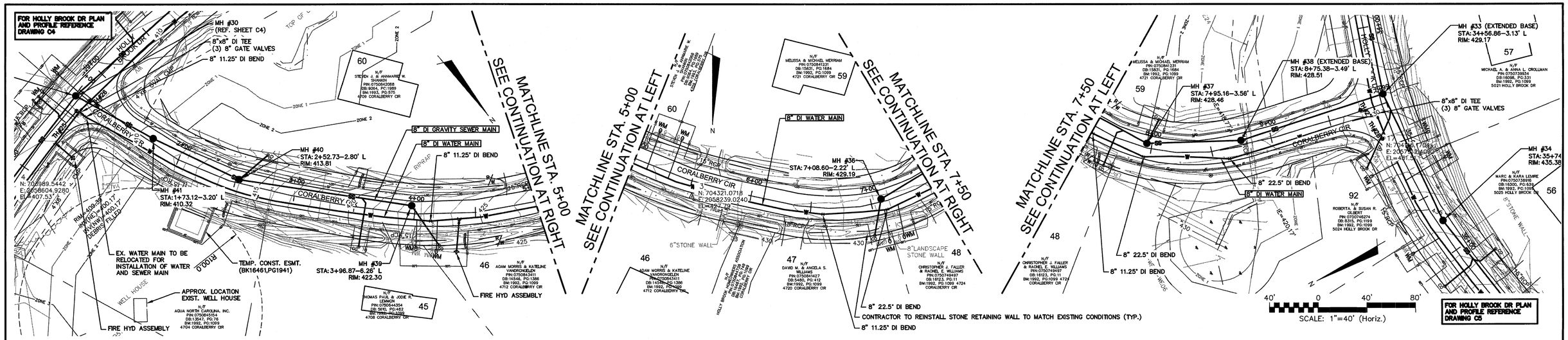
M&C FILE NUMBER

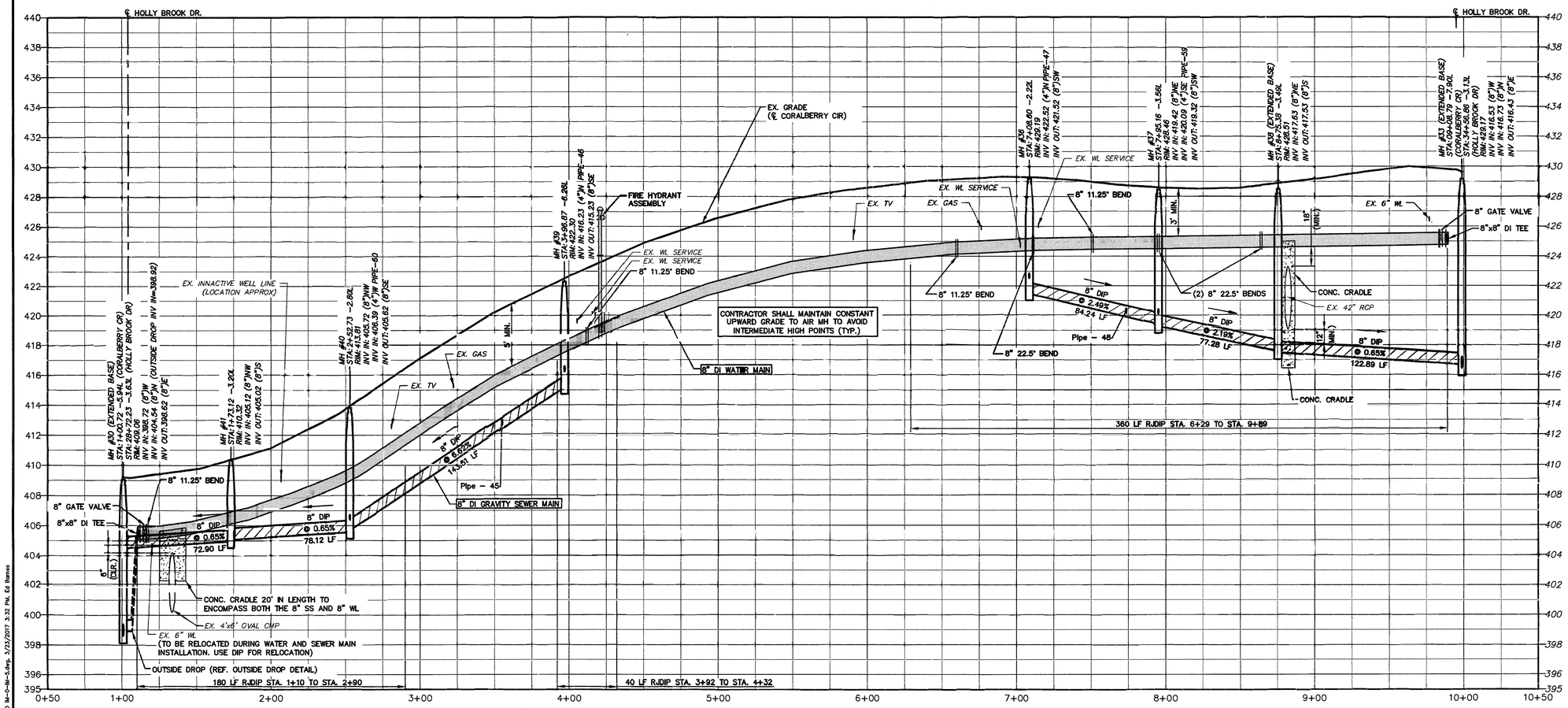
DRAWING NUMBER
C9

STATUS: ISSUED FOR BID

REVISION
E

S:\03117\0011\05-Drawings\CIVIL\C1-C10 AND IM-D-IM-5.dwg, 3/23/2017 3:32 PM, Ed Barnes





NOTES:

1. STATION NUMBERS WITHIN HOLLY BROOK SUB-DIVISION ARE BASED UPON ROAD CENTERLINES. PROFILE ELEVATIONS SHOWN ARE RELATIVE TO THE ROAD CENTERLINE AND MAY NOT REPRESENT INSTALLATION DEPTHS.

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL — NORTH CAROLINA PROFESSIONAL SEAL 034426 ENGINEER BEN R. LATINO JR. 3/24/17

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www.townofcary.org

HOLLY BROOK WATER AND SEWER EXTENSION CORALBERRY CIRCLE

8" WATER MAIN AND 8" SANITARY SEWER STA. 1+00 TO STA. 9+98.80

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE: HORIZONTAL: 1"=40' VERTICAL: 1"=4'

M&C FILE NUMBER

DRAWING NUMBER C10

STATUS: ISSUED FOR BID

REVISION E

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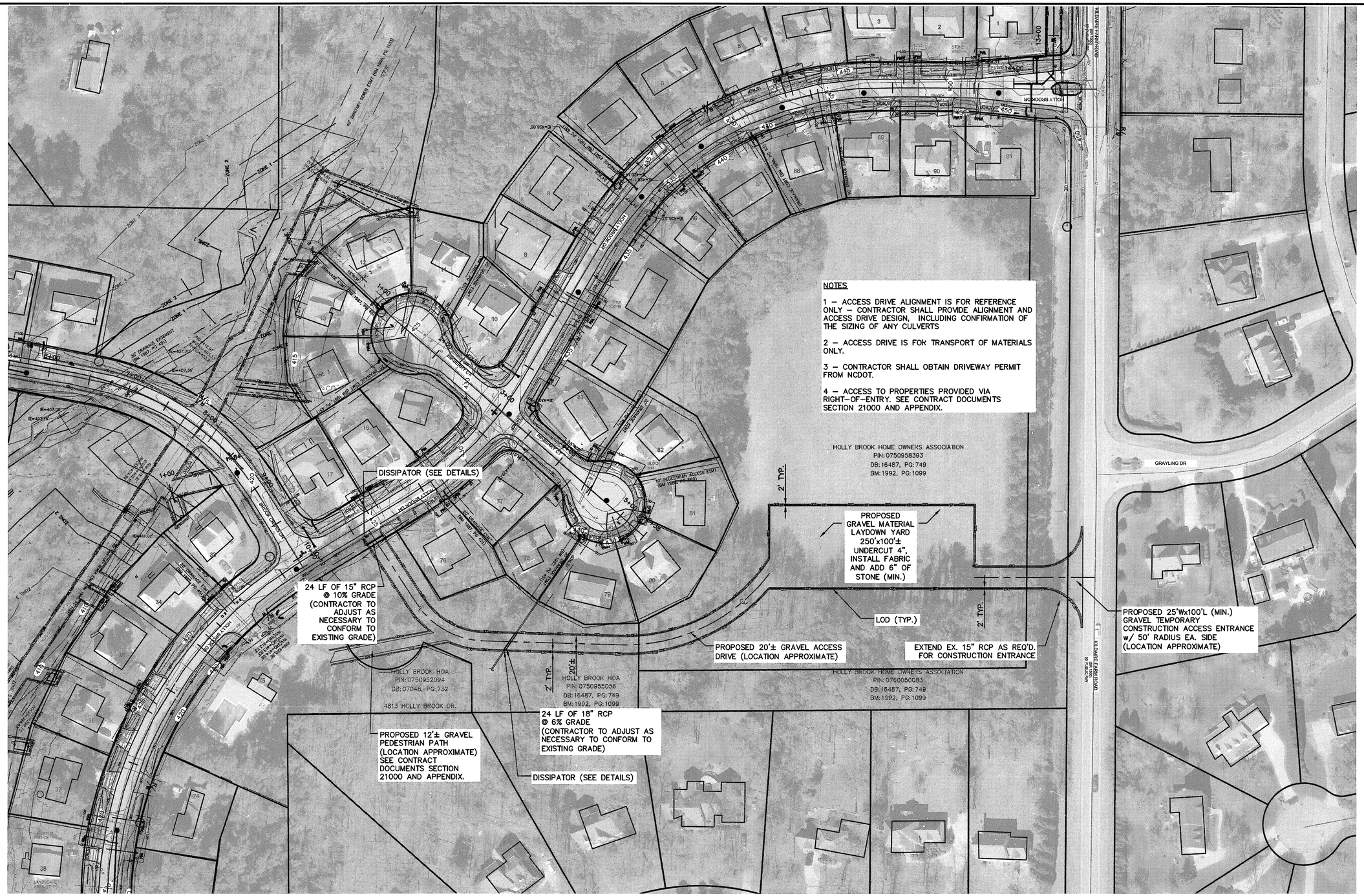

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 103428 ENGINEER BENJ. R. LATINO, JR. 3/24/17

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HOLLY BROOK WATER AND SEWER EXTENSION

LAYDOWN YARD

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	EJB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: 1"=60'
VERTICAL: NA

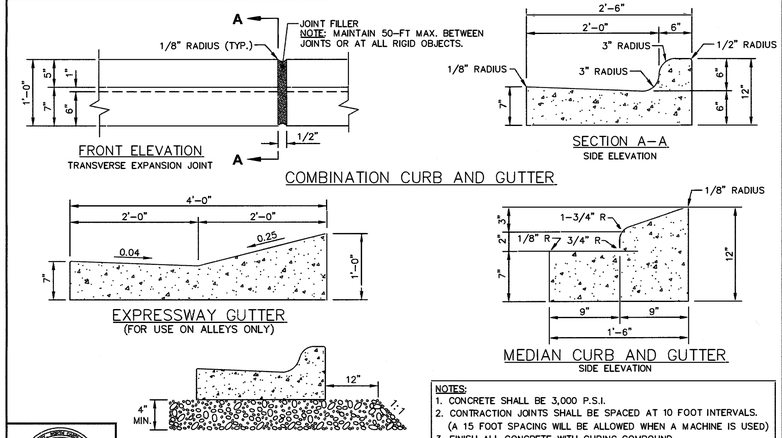
M&C FILE NUMBER

DRAWING NUMBER C11

STATUS: ISSUED FOR BID

REVISION E

S:\0317\0011\90-Drawings\CIVIL\C11.dwg, 3/23/2017 3:33 PM, Ed Barnes

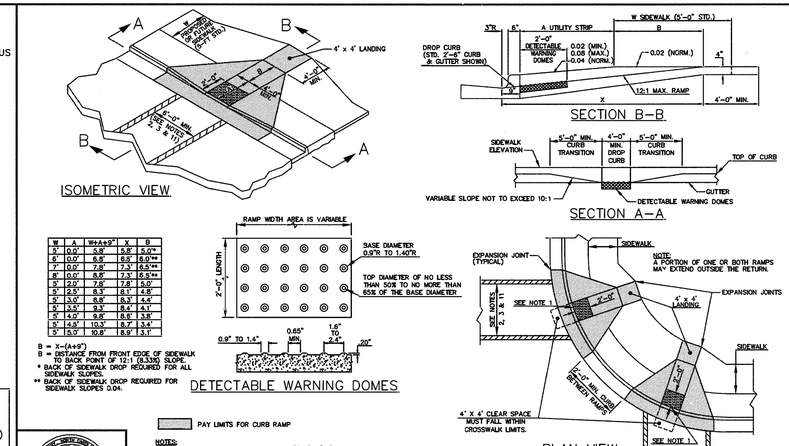


NOTES:
1. CONCRETE SHALL BE 3,000 P.S.I.
2. CONTRACTION JOINTS SHALL BE SPACED AT 10 FOOT INTERVALS. (A 15 FOOT SPACING WILL BE ALLOWED WHEN A MACHINE IS USED)
3. FINISH ALL CONCRETE WITH CURING COMPOUND.
4. REFER TO **NCDOT** DETAIL 846.01 FOR CURB AND GUTTER SUPERELEVATION RATES.

EFFECTIVE: 01/05/17

STANDARD CONCRETE CURB AND GUTTER

DETAIL No. 03000.02
SHEET 1 OF 1



W	A	W+A+9"	X	B
5'	0.0'	5.8'	5.8'	5.0"*
6'	0.0'	6.8'	6.8'	6.0"*
7'	0.0'	7.8'	7.3'	6.5"**
8'	0.0'	8.8'	7.3'	6.5"**
5'	2.0'	7.8'	7.8'	5.0"
5'	2.5'	8.3'	8.1'	4.8"
5'	3.0'	8.8'	8.3'	4.4"
5'	3.5'	9.3'	8.4'	4.1"
5'	4.0'	9.8'	8.6'	3.8"
5'	4.5'	10.3'	8.7'	3.4"
5'	5.0'	10.8'	8.9'	3.1"

B = X-(A+9")
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.333%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.

PAY LIMITS FOR CURB RAMP

NOTES:
1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

EFFECTIVE: 01/05/17

CURB RAMPS - PROPOSED CURB & GUTTER

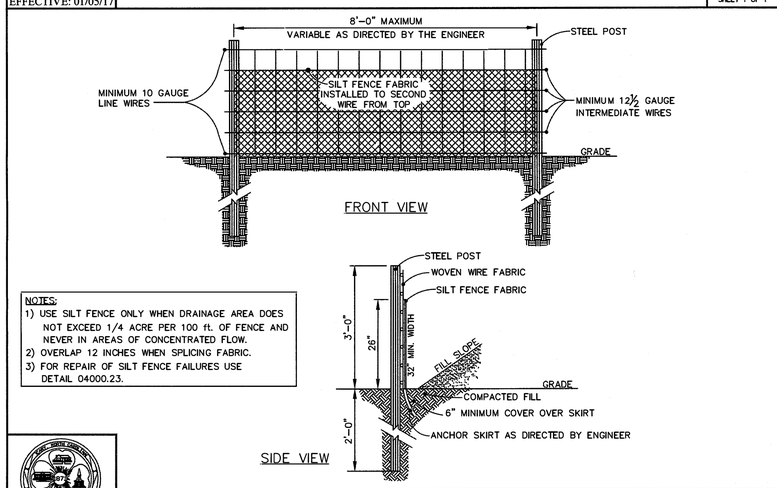
DETAIL No. 03000.14
SHEET 1 OF 3

NOTES:
1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4-FT MINIMUM.
5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
6. TERMINATE PARKING A MINIMUM OF 20-FT BACK OF A PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4-FT WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6-FT WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGH THE ISLAND.
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'X5' LANDING AT THE TOP OF A RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB.
17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE **MUTCD**.
18. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED RIGHT-OF-WAY SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

EFFECTIVE: 01/05/17

CURB RAMPS - PROPOSED CURB & GUTTER

DETAIL No. 03000.14
SHEET 3 OF 3

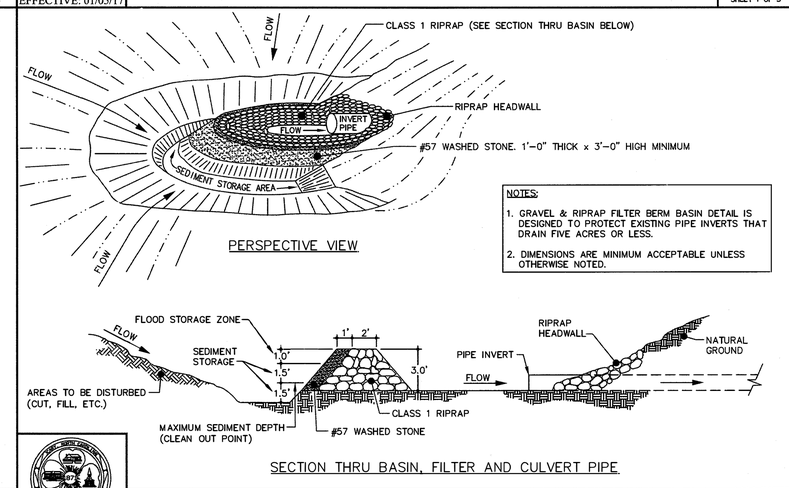


NOTES:
1) USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE PER 100 ft. OF FENCE AND NEVER IN AREAS OF CONCENTRATED FLOW.
2) OVERLAP 12 INCHES WHEN SPLICING FABRIC.
3) FOR REPAIR OF SILT FENCE FAILURES USE DETAIL 04000.23.

EFFECTIVE: 01/05/17

STANDARD TEMPORARY SILT FENCE

DETAIL No. 04000.01
SHEET 1 OF 1

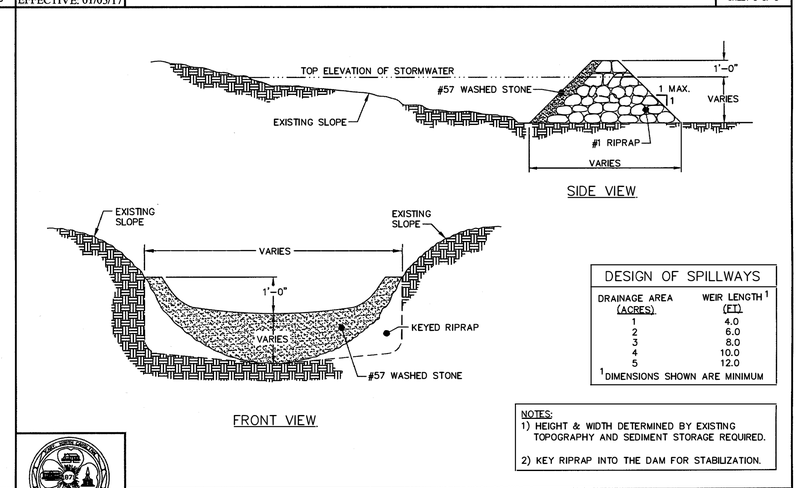


NOTES:
1. GRAVEL & RIPRAP FILTER BERM BASIN DETAIL IS DESIGNED TO PROTECT EXISTING PIPE INVERTS THAT DRAIN FIVE ACRES OR LESS.
2. DIMENSIONS ARE MINIMUM ACCEPTABLE UNLESS OTHERWISE NOTED.

EFFECTIVE: 01/05/17

(EXISTING PIPE INVERTS) GRAVEL & RIPRAP FILTER BERM BASIN

DETAIL No. 04000.04
SHEET 1 OF 1



DESIGN OF SPILLWAYS

DRAINAGE AREA (ACRES)	WEIR LENGTH[1] (FT)
1	4.0
2	6.0
3	8.0
4	10.0
5	12.0

[1] DIMENSIONS SHOWN ARE MINIMUM

NOTES:
1) HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
2) KEY RIPRAP INTO THE DAM FOR STABILIZATION.

EFFECTIVE: 01/05/17

STANDARD CHECK DAM

DETAIL No. 04000.06
SHEET 1 OF 2

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER D1

STATUS: ISSUED FOR BID
REVISION E

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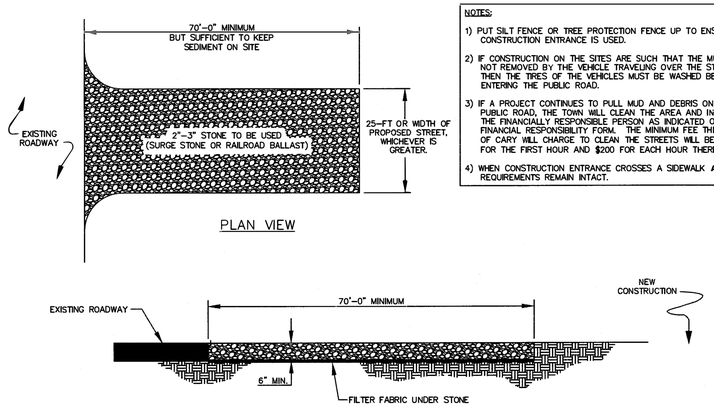


NOTES:

1) PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.

2) IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLES MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD.

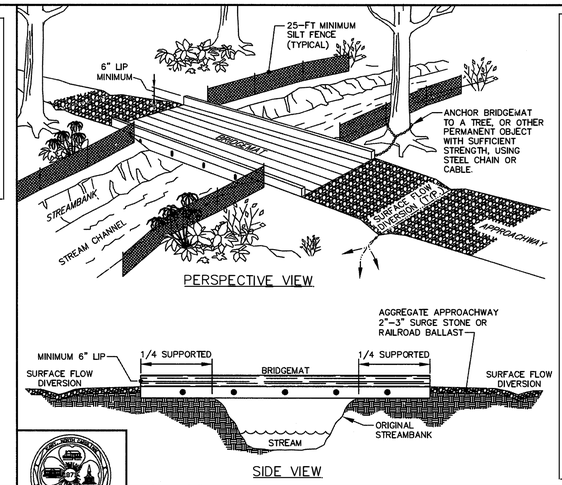
3) IF A PROJECT CONTINUES TO PULL MUD AND DEBRIS ON TO THE PUBLIC ROAD, THE TOWN WILL CLEAN THE AREA AND INVOICE THE FINANCIALLY RESPONSIBLE PERSON AS INDICATED ON THE FINANCIAL RESPONSIBILITY FORM. THE MINIMUM FEE THE TOWN OF CARY WILL CHARGE TO CLEAN THE STREETS WILL BE $300 FOR THE FIRST HOUR AND $200 FOR EACH HOUR THEREAFTER.

4) WHEN CONSTRUCTION ENTRANCE CROSSES A SIDEWALK **ADA** REQUIREMENTS REMAIN INTACT.

EFFECTIVE: 01/05/17

STANDARD CONSTRUCTION ENTRANCE

DETAIL No. 04000.07 SHEET 1 OF 1



INSTALLATION NOTES:

1. REFER TO "NORTH CAROLINA DIVISION OF FOREST RESOURCES" LITERATURE, INSTALLATION MAINTENANCE GUIDELINES, & "NORTH CAROLINA FORESTRY BMP MANUAL-2006".
2. INSTALL WATER DIVERSION DEVICES (WATER BARS, TURNOUTS, BROAD-BASED DIPS, ETC.) ON BOTH SIDES OF THE MATS.
3. STABILIZE EXPOSED MINERAL SOIL WITH TREE TOPS OR BRUSH DURING MAT INSTALLATION, AND SEEDING/MULCH AFTER MAT REMOVAL.
4. INSTALL MATS TO CREATE A MINIMUM TEN FOOT BRIDGE WIDTH.
5. INCLUDE COARSE AGGREGATE ON THE APPROACHWAY FOR A MINIMUM OF 25 FEET AND SILT FENCE ALONG STREAMBANKS ADJACENT TO CROSSING FOR A MINIMUM OF 25 FEET.

MAINTENANCE NOTES:

1. KEEP MATS SURFACE FREE OF MINERAL SOIL AND DEBRIS THAT COULD ENTER STREAM.
2. PERIODICALLY CHECK MAT HARDWARE; RETIGHTEN NUTS & CABLE CLAMPS AS NECESSARY TO MAINTAIN BRIDGE STRENGTH AND INTEGRITY.
3. IMMEDIATELY REMOVE ANY DEBRIS WHICH ENTERS THE STREAM AT THE CROSSING LOCATION.

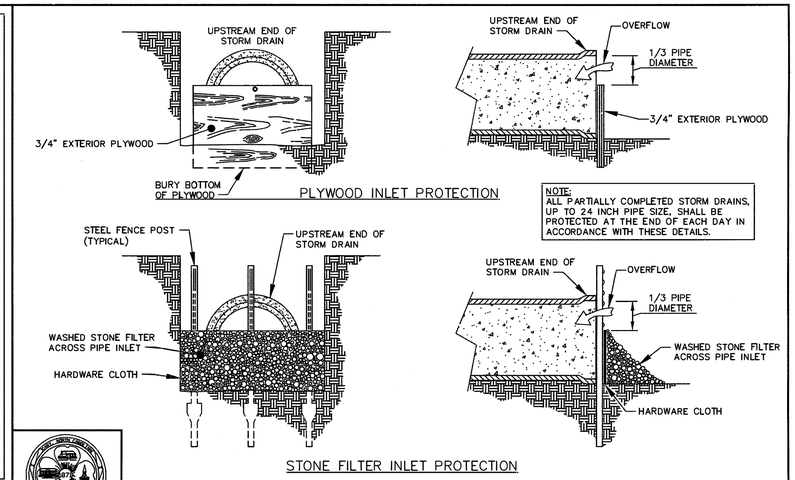
REMOVAL NOTES:

1. CLEAN OFF BRIDGE SURFACE.
2. REMOVE MATS BY USING MAT CABLE LOOP OR SKIDDER GRAPPLE.
3. PERMANENTLY STABILIZE DISTURBED PORTIONS OF STREAMBANK AND APPROACH ROADS WITH PERENNIAL GRASSES/MULCH (OR WETLAND MIX WHEN APPLICABLE).
4. LEAVE APPROPRIATE WATER DIVERSION STRUCTURES IN PLACE ON BOTH SIDES OF STREAM.
5. RESTORE THE STREAM CHANNEL TO ITS ORIGINAL CROSS-SECTION, AND SMOOTH AND APPROPRIATELY STABILIZE ALL DISTURBED AREAS.

EFFECTIVE: 01/05/17

STANDARD TEMPORARY STREAM CROSSING OPTION

DETAIL No. 04000.11 SHEET 3 OF 3

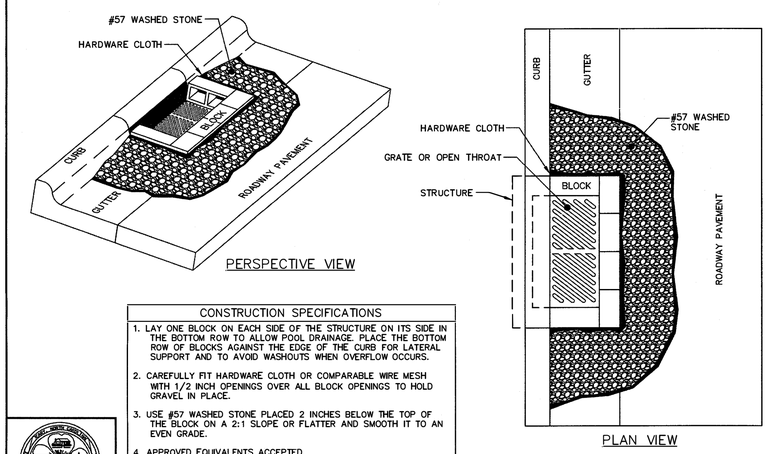


NOTE:
ALL PARTIALLY COMPLETED STORM DRAINS, UP TO 24 INCH PIPE SIZE, SHALL BE PROTECTED AT THE END OF EACH DAY IN ACCORDANCE WITH THESE DETAILS.

EFFECTIVE: 01/05/17

STANDARD PIPE INLET PROTECTION (PLYWOOD & STONE)

DETAIL No. 04000.12 SHEET 1 OF 1



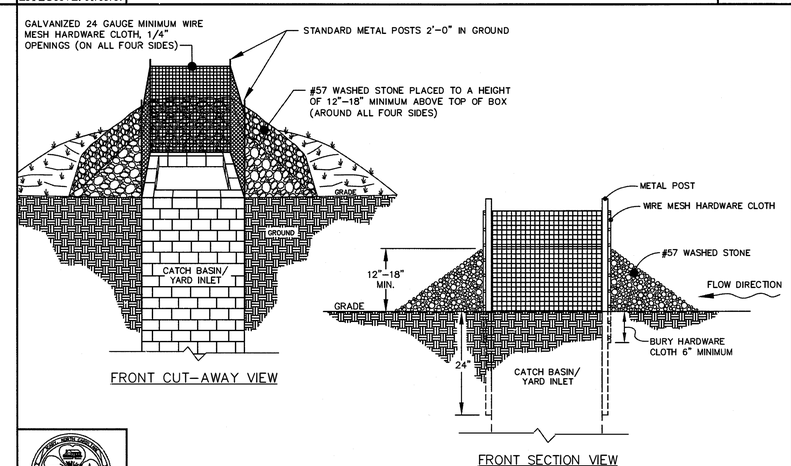
CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE IN THE BOTTOM ROW TO ALLOW POOL DRAINAGE. PLACE THE BOTTOM ROW OF BLOCKS AGAINST THE EDGE OF THE CURB FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS.
2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2 INCH OPENINGS OVER ALL BLOCK OPENINGS TO HOLD GRAVEL IN PLACE.
3. USE #57 WASHED STONE PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE.
4. APPROVED EQUIVALENTS ACCEPTED.

EFFECTIVE: 01/05/17

STANDARD BLOCK & GRAVEL PROTECTION

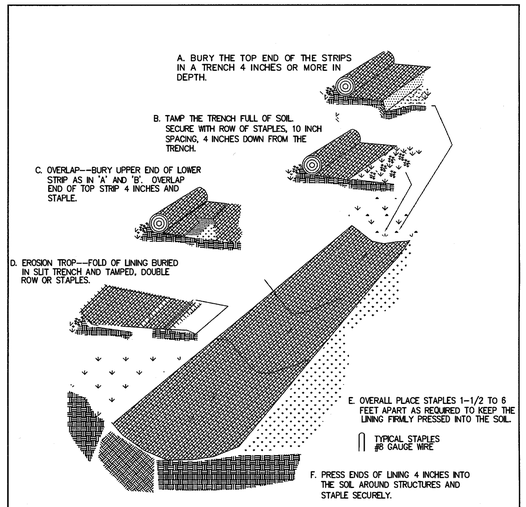
DETAIL No. 04000.13 SHEET 1 OF 1



EFFECTIVE: 01/05/17

STANDARD CATCH BASIN/YARD INLET PROTECTION

DETAIL No. 04000.14 SHEET 1 OF 1



TYPICAL STRAW WITH NET LINING DETAIL

N.T.S

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER D2

STATUS: ISSUED FOR BID

REVISION E

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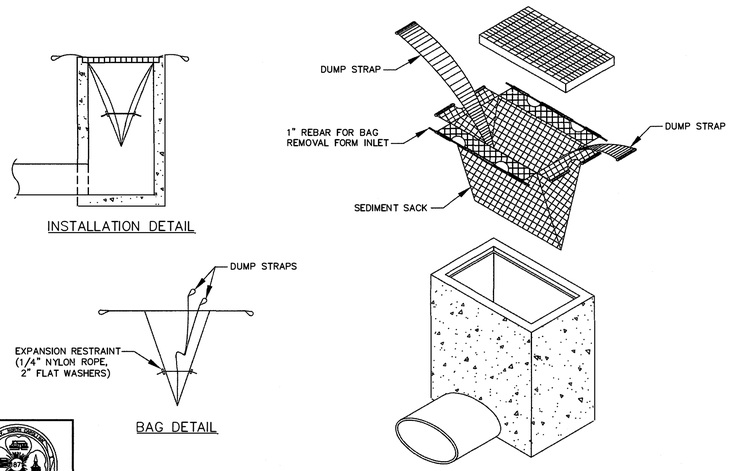
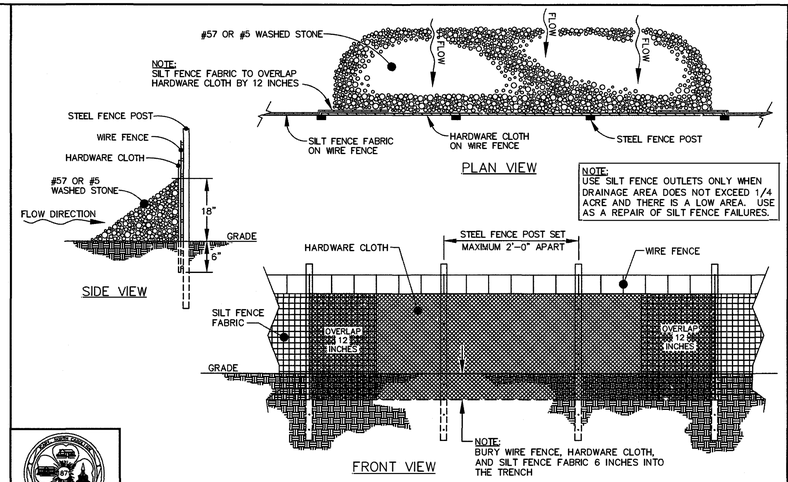


EFFECTIVE: 01/05/17

STANDARD INLET SEDIMENT CONTROL DEVICE

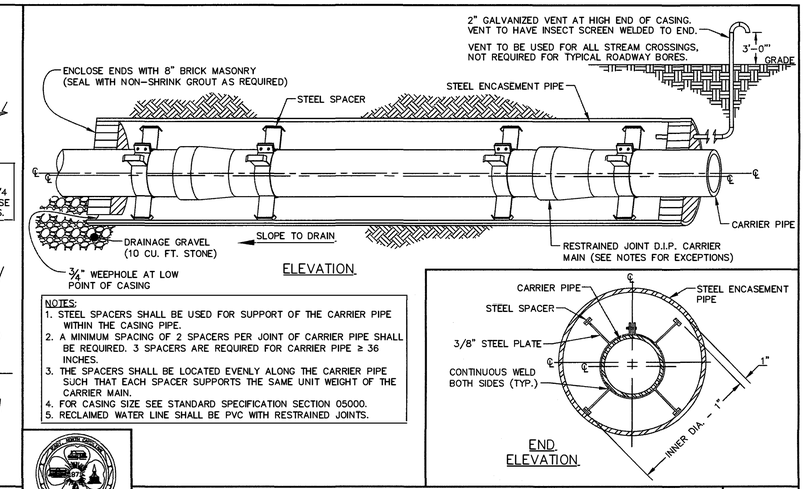
DETAIL No. 04000.19 SHEET 1 OF 1



EFFECTIVE: 01/05/17

STANDARD SILT FENCE OUTLET

DETAIL No. 04000.23 SHEET 1 OF 1

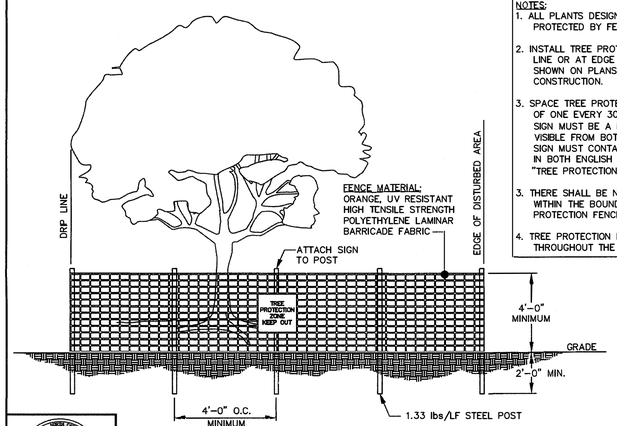


NOTES:
1. STEEL SPACERS SHALL BE USED FOR SUPPORT OF THE CARRIER PIPE WITHIN THE CASING PIPE.
2. A MINIMUM SPACING OF 2 SPACERS PER JOINT OF CARRIER PIPE SHALL BE REQUIRED. 3 SPACERS ARE REQUIRED FOR CARRIER PIPE ≥ 36 INCHES.
3. THE SPACERS SHALL BE LOCATED EVENLY ALONG THE CARRIER PIPE SUCH THAT EACH SPACER SUPPORTS THE SAME UNIT WEIGHT OF THE CARRIER MAIN.
4. FOR CASING SIZE SEE STANDARD SPECIFICATION SECTION 05000.
5. RECLAIMED WATER LINE SHALL BE PVC WITH RESTRAINED JOINTS.

EFFECTIVE: 01/05/17

STEEL ENCASEMENT & CARRIER PIPE

DETAIL No. 05000.02 SHEET 1 OF 2

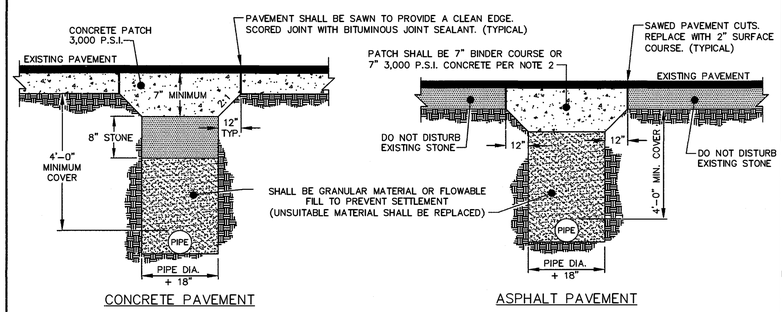


NOTES:
1. ALL PLANTS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY FENCING, AS ILLUSTRATED.
2. INSTALL TREE PROTECTION FENCE AT TREE DRIP LINE OR AT EDGE OF DISTURBED AREA, AS SHOWN ON PLANS, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. SPACE TREE PROTECTION ZONE SIGNS A MINIMUM OF ONE EVERY 300 FEET. THE SIZE OF EACH SIGN MUST BE A MINIMUM OF 2' x 2' AND BE VISIBLE FROM BOTH SIDES OF THE FENCE. THE SIGN MUST CONTAIN THE FOLLOWING LANGUAGE IN BOTH ENGLISH & SPANISH: "TREE PROTECTION ZONE, KEEP OUT".
3. THERE SHALL BE NO STORAGE OF MATERIAL WITHIN THE BOUNDARIES OF THE TREE PROTECTION FENCING.
4. TREE PROTECTION FENCING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.

EFFECTIVE: 01/05/17

TREE PROTECTION FENCE

DETAIL No. 04000.25 SHEET 1 OF 1

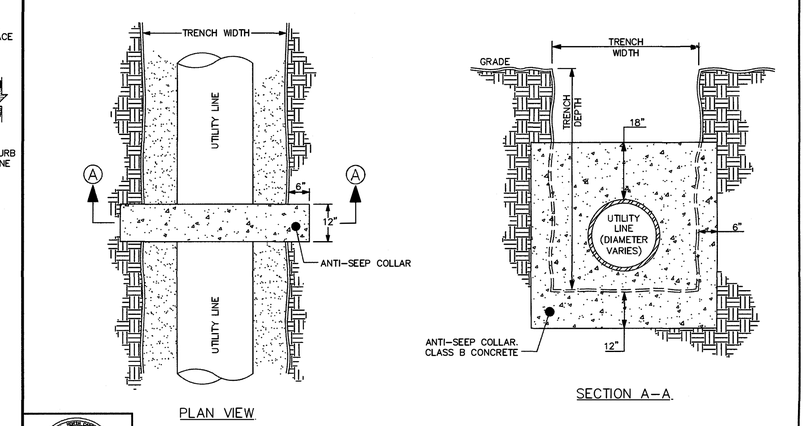


NOTES:
1. ALL PAVEMENT CUTS SHALL BE REPAIRED WITHIN A MAXIMUM OF THREE (3) DAYS FROM THE DATE THE CUT IS MADE.
2. CONCRETE TRENCH CAP ON ASPHALT STREETS SHALL BE USED ONLY DURING INCLEMENT WEATHER WHEN ASPHALT PLANTS ARE NOT OPERATING.
3. IN ALL OPEN TRENCHES, BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING COMPACTION REQUIREMENTS BY SOILS TESTING CERTIFIED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER.
4. BACKFILL WITH A HIGH CLAY CONTENT, HIGH SHRINK-SWELL POTENTIAL, OR HIGH MOISTURE CONTENT THAT CANNOT MEET COMPACTION REQUIREMENTS SHALL BE DEEMED UNSUITABLE AND SHALL BE REPLACED WITH SUITABLE BACKFILL MATERIAL.
5. ALL PAVEMENT PATCHES SHALL PROVIDE A UNIFORM AND SMOOTH DRIVING SURFACE.

EFFECTIVE: 01/05/17

STANDARD TRENCH AND PAVEMENT REPAIR SECTIONS

DETAIL No. 05000.01 SHEET 1 OF 1



EFFECTIVE: 01/05/17

ANTI-SEEP COLLAR

DETAIL No. 05000.03 SHEET 1 OF 1

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

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3/24/17

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER D3

STATUS: ISSUED FOR BID

REVISION E

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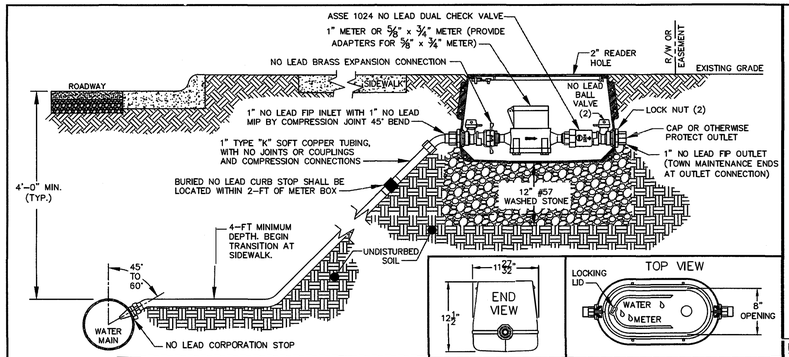
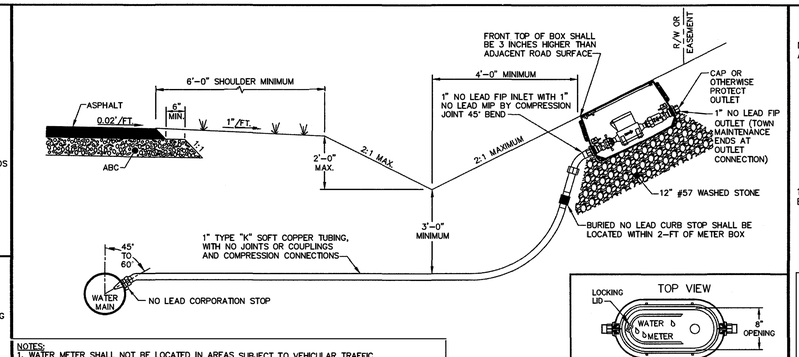


NOTES:
1. WATER METER SHALL NOT BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC.
2. ALL METER BOXES AND LIDS SHALL BE APPROVED BY THE TOWN.
3. ALL SERVICE LINES, VALVES AND FITTINGS SHALL COMPLY WITH AWWA C800.
4. FOR NON-RESIDENTIAL APPLICATIONS THAT REQUIRE AN ABOVE-GROUND BACKFLOW PREVENTER, THE DUAL CHECK ASSEMBLY MAY BE OMITTED.
5. BOX AND LID SHALL BE CAST GRAY IRON, ASTM A48, CLASS 25 OR ASTM A126 CLASS B.
6. ALL BRASS COMPONENTS SHALL BE 'NO LEAD' BRASS MEETING UNS C89833 AS PER ASTM B584.
7. ONE 2 OR 6 INCH GRADE ADJUSTER MAY BE UTILIZED WHEN NEEDED TO MEET FINAL GRADE (NO GRADE ADJUSTERS MAY BE USED ON NEW CONSTRUCTION PROJECTS). GRADE ADJUSTER AND BOX SHALL BE BY THE SAME MANUFACTURER.
8. MARKING TAPE SHALL BE INSTALLED FOR ALL SERVICE CONNECTIONS FROM THE MAIN LINE TO THE METER FOR ALL NEW CONSTRUCTION OR RETROFIT INSTALLATIONS USING OPEN TRENCH METHODS.

EFFECTIVE: 01/05/17

STANDARD 1" WATER SERVICE & METER BOX INSTALLATION FOR ROADWAY WITH CURB & GUTTER

DETAIL No. 06000.01 SHEET 1 OF 2



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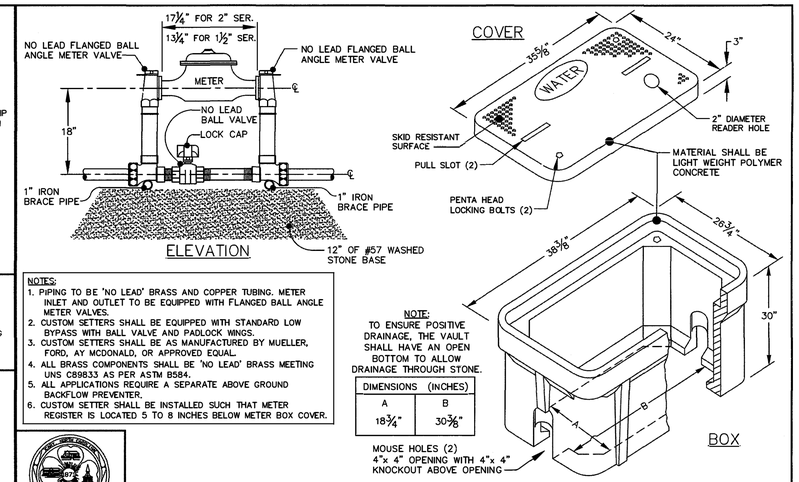
4. FOR NON-RESIDENTIAL APPLICATIONS THAT REQUIRE AN ABOVE-GROUND BACKFLOW PREVENTER, THE DUAL CHECK ASSEMBLY MAY BE OMITTED.
5. BOX AND LID SHALL BE CAST GRAY IRON, ASTM A48, CLASS 25 OR ASTM A126 CLASS B.
6. ALL BRASS COMPONENTS SHALL BE 'NO LEAD' BRASS MEETING UNS C89833 AS PER ASTM B584.
7. ONE 2 OR 6 INCH GRADE ADJUSTER MAY BE UTILIZED WHEN NEEDED TO MEET FINAL GRADE (NO GRADE ADJUSTERS MAY BE USED ON NEW CONSTRUCTION PROJECTS). GRADE ADJUSTER AND BOX SHALL BE BY THE SAME MANUFACTURER.
8. MARKING TAPE SHALL BE INSTALLED FOR ALL SERVICE CONNECTIONS FROM THE MAIN LINE TO THE METER FOR ALL NEW CONSTRUCTION OR RETROFIT INSTALLATIONS USING OPEN TRENCH METHODS.

EFFECTIVE: 01/05/17

STANDARD 1" WATER SERVICE & METER BOX FOR ROADWAY DITCH SECTION WITHOUT CURB & GUTTER

DETAIL No. 06000.01 SHEET 2 OF 2



NOTES:
1. PIPING TO BE 'NO LEAD' BRASS AND COPPER TUBING. METER INLET AND OUTLET TO BE EQUIPPED WITH FLANGED BALL ANGLE METER VALVES.
2. CUSTOM SETTERS SHALL BE EQUIPPED WITH STANDARD LOW BYPASS WITH BALL VALVE AND PADLOCK WINGS.
3. CUSTOM SETTERS SHALL BE AS MANUFACTURED BY MUELLER, FORD, AY MCDONALD, OR APPROVED EQUAL.
4. ALL BRASS COMPONENTS SHALL BE 'NO LEAD' BRASS MEETING UNS C89833 AS PER ASTM B584.
5. ALL APPLICATIONS REQUIRE A SEPARATE ABOVE GROUND BACKFLOW PREVENTER.
6. CUSTOM SETTER SHALL BE INSTALLED SUCH THAT METER REGISTER IS LOCATED 5 TO 8 INCHES BELOW METER BOX COVER.

NOTE:
TO ENSURE POSITIVE DRAINAGE, THE VAULT SHALL HAVE AN OPEN BOTTOM TO ALLOW DRAINAGE THROUGH STONE.

DIMENSIONS (INCHES)	
A	B
18 3/4"	30 3/8"

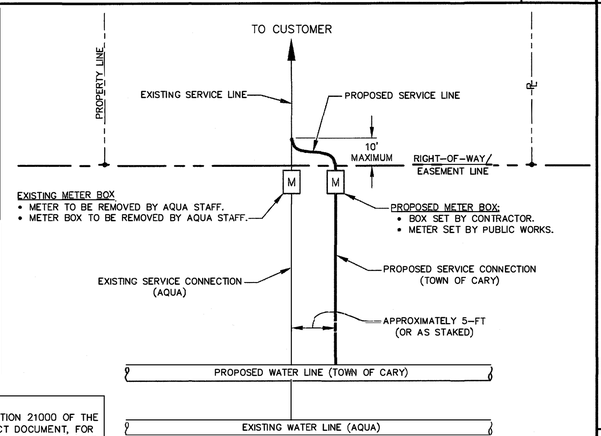
EFFECTIVE: 01/05/17

STANDARD 1 1/2" & 2" METER INSTALLATION & VAULT

DETAIL No. 06000.02 SHEET 1 OF 1

CONSTRUCTION SEQUENCE:

1. WATER SERVICE TRANSFER SHALL NOT COMMENCE UNTIL THE PROPOSED MAIN LINE HAS BEEN INSTALLED, TESTED, AND APPROVED.
2. CONTRACTOR SHALL INSTALL THE PROPOSED SERVICE CONNECTION AND METER BOX.
3. CONTRACTOR SHALL COORDINATE A REQUEST WITH ENGINEER FOR PUBLIC WORKS TO INSTALL A METER IN THE NEW METER BOX.
4. AFTER INSTALLATION OF THE NEW METER, CONTRACTOR SHALL TRANSFER THE EXISTING SERVICE LINE TO THE NEW METER BOX.
5. THE CONTRACTOR SHALL BACKFILL, GRADE, AND RESTORE ALL DISTURBED AREAS.
6. THE CONTRACTOR SHALL COORDINATE A FINAL SERVICE INSPECTION.
7. EROSION CONTROL MEASURES AROUND INSTALLATION AREA SHALL REMAIN IN PLACE UNTIL THE SERVICE AND METER ARE APPROVED BY THE TOWN AND THE DISTURBED AREA IS RESEEDED AND STABILIZED WITH APPROPRIATE GROUND COVER.

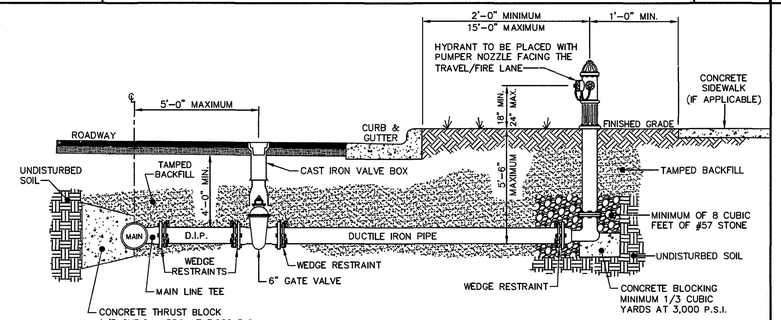


NOTE:
SEE SECTION 21000 OF THE CONTRACT DOCUMENT, FOR SPECIFICS CONCERNING THE BID ALTERNATE.

EFFECTIVE:

BID ALTERNATE - WATER SERVICE TRANSFER

DETAIL No. MS-26 SHEET 1 OF 1

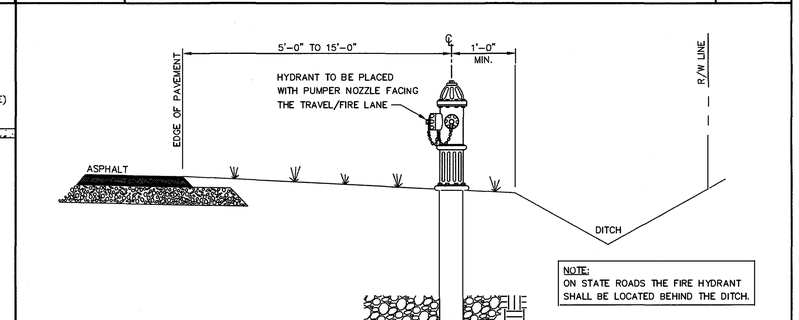


NOTES:
1. TOP OF BLOCKING TO BE 2 INCHES FROM HYDRANT WEEP HOLES.
2. IF HYDRANT IS LOCATED ON A DEPARTMENT OF TRANSPORTATION ROADWAY USE D.O.T. STANDARDS FOR LOCATION OF HYDRANT.
3. HYDRANT SHALL BE LOCATED FROM 2 TO 15 FEET FROM BACK OF CURB.
4. HYDRANT MAY BE LOCATED (AT LEAST 1 FOOT) BEHIND SIDEWALK WHEN IT CANNOT BE LOCATED INSIDE THE UTILITY STRIP.
5. HYDRANT SHALL BE INSTALLED AT LEAST 2 FEET BEYOND TOP SLOPE OF ANY DRAINAGE DITCHES. HYDRANT INSTALLATION WITHIN THE DITCH LINE OR SLOPE SHALL BE PROHIBITED.
6. STANDARD WEDGE ACTION RETAINER GLANDS MAY BE SUBSTITUTED WITH 3/4 INCH STAINLESS STEEL RODDING IN ORDER TO ACHIEVE CONTINUOUS RESTRAINT BETWEEN THE HYDRANT AND THE MAIN.
7. HYDRANT EXTENSIONS ARE PROHIBITED.
8. WITHIN THE TOWN OF MORRISVILLE ONLY, HYDRANTS NEAR FDC'S SHALL BE PROVIDED WITH A STORZ CONNECTION.

EFFECTIVE: 01/05/17

STANDARD HYDRANT INSTALLATION FOR ROADS WITH CURB & GUTTER

DETAIL No. 06000.06 SHEET 1 OF 3



NOTE:
ON STATE ROADS THE FIRE HYDRANT SHALL BE LOCATED BEHIND THE DITCH.

EFFECTIVE: 01/05/17

STANDARD HYDRANT INSTALLATION FOR ROADS WITHOUT CURB & GUTTER

DETAIL No. 06000.06 SHEET 2 OF 3

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034426 ENGINEER BENJ. R. LATINO, JR. 3/24/17

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER D4

STATUS: ISSUED FOR BID

REVISION E

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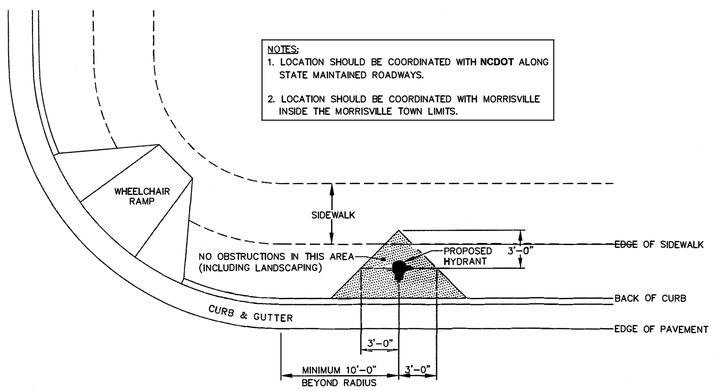
NOTES:
1. LOCATION SHOULD BE COORDINATED WITH **NCDOT** ALONG STATE MAINTAINED ROADWAYS.
2. LOCATION SHOULD BE COORDINATED WITH MORRISVILLE INSIDE THE MORRISVILLE TOWN LIMITS.



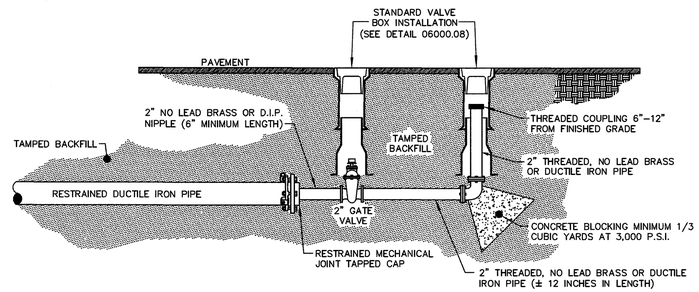
EFFECTIVE: 01/05/17

STANDARD HYDRANT LOCATION

DETAIL No. 06000.07 SHEET 1 OF 2

MAIN SIZE	END PIPE SIZE
4" – 12"	2" BLOW-OFF
14" & GREATER	AS APPROVED BY TOWN

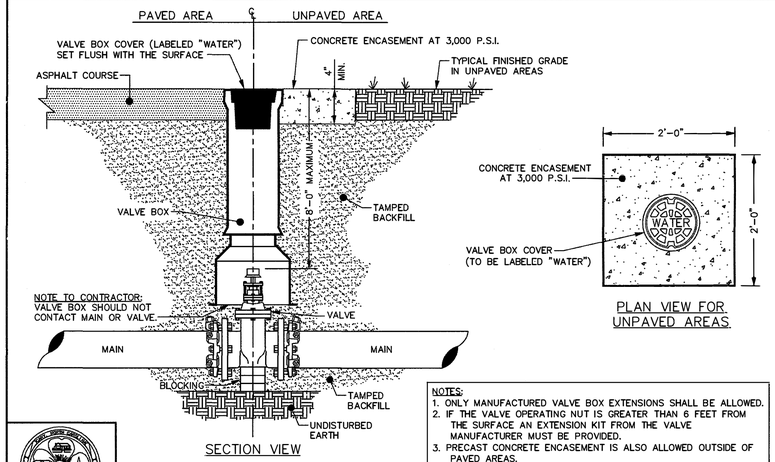
NOTES:
1. FOR MAINS THAT ARE TO BE EXTENDED, USE A VALVE EQUAL TO THE MAIN SIZE AS THE BLOW-OFF VALVE AND THEN REDUCE TO THE 2 INCH STANDPIPE.
2. PIPE SHALL BE RESTRAINED AWAY FROM THE TAPPED CAP AS SPECIFIED IN SECTION 06010.



EFFECTIVE: 01/05/17

STANDARD 2" BLOW-OFF ASSEMBLY

DETAIL No. 06000.11 SHEET 1 OF 1

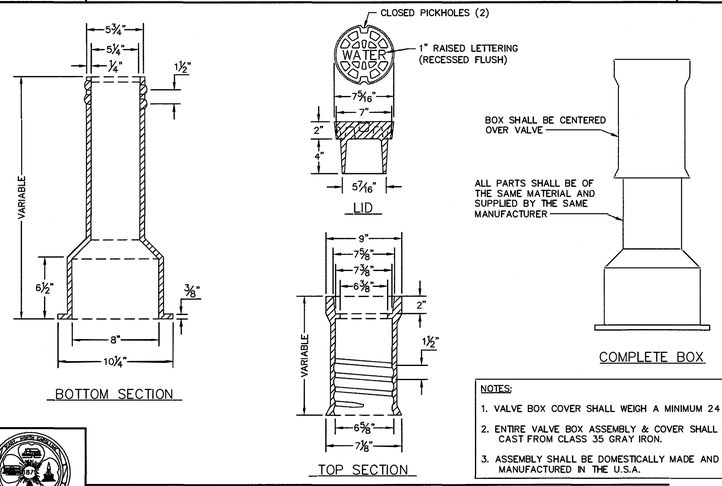


NOTES:
1. ONLY MANUFACTURED VALVE BOX EXTENSIONS SHALL BE ALLOWED.
2. IF THE VALVE OPERATING NUT IS GREATER THAN 6 FEET FROM THE SURFACE AN EXTENSION KIT FROM THE VALVE MANUFACTURER MUST BE PROVIDED.
3. PRECAST CONCRETE ENCASEMENT IS ALSO ALLOWED OUTSIDE OF PAVED AREAS.

EFFECTIVE: 01/05/17

STANDARD WATER VALVE BOX INSTALLATION

DETAIL No. 06000.08 SHEET 1 OF 3

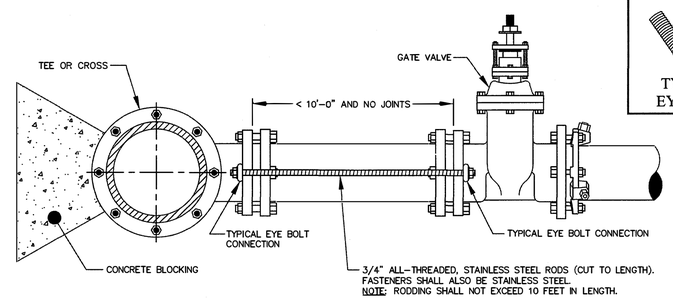


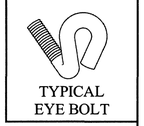
NOTES:
1. VALVE BOX COVER SHALL WEIGH A MINIMUM 24 lbs.
2. ENTIRE VALVE BOX ASSEMBLY & COVER SHALL BE CAST FROM CLASS 35 GRAY IRON.
3. ASSEMBLY SHALL BE DOMESTICALLY MADE AND MANUFACTURED IN THE U.S.A.

EFFECTIVE: 01/05/17

STANDARD VALVE BOX

DETAIL No. 06000.08 SHEET 2 OF 3





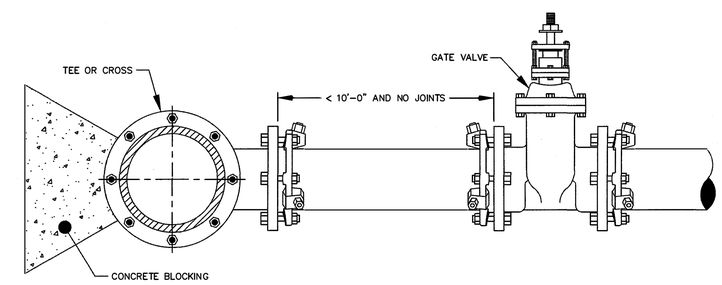
STAINLESS STEEL ROD REQUIREMENTS	
BRANCH SIZE	No. OF RODS
4"	2
6"	2
8"	4
12"	6
16"	8

GENERAL NOTES:
1. SEE STANDARD THRUST BLOCK DETAIL.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
3. RODS SHALL NOT BE COUPLED.

EFFECTIVE: 01/05/17

STANDARD VALVE RESTRAINT WITH RODDING AT A TEE OR CROSS UP TO 16" IN DIAMETER

DETAIL No. 06000.09 SHEET 1 OF 2



GENERAL NOTES:
1. SEE STANDARD THRUST BLOCK DETAIL.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.

EFFECTIVE: 01/05/17

ALTERNATE VALVE RESTRAINT WITH WEDGE ACTION RETAINER GLANDS AT A TEE OR CROSS

DETAIL No. 06000.09 SHEET 2 OF 2

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117–0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER D5

STATUS: ISSUED FOR BID

REVISION E

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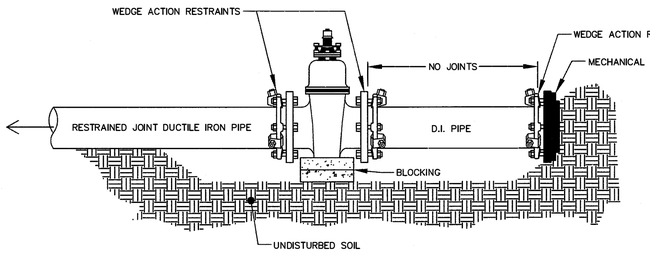
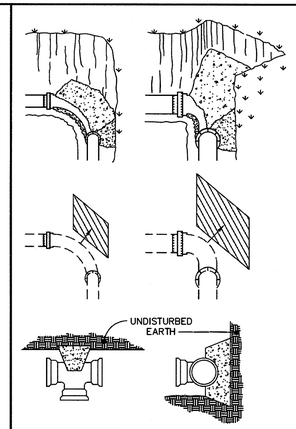


NOTES:
1. THIS DETAIL SHALL APPLY ONLY TO TEMPORARY CAPPING. PERMANENT DEAD END LINES TO BE IN ACCORDANCE WITH STANDARD DETAIL 06000.11.
2. REQUIRED RESTRAINT AWAY FROM THE DEAD END MAY BE MJ PIPE WITH WEDGE ACTION RESTRAINTS FOR PIPE ≤ 12 INCH DIAMETER.

EFFECTIVE: 01/05/17

STANDARD CAPPING DETAIL

DETAIL No. 06000.12
SHEET 1 OF 1



MINIMUM CONCRETE BLOCKING (C.Y.) *					
NOMINAL PIPE DIAMETER INCHES	TEES & DEAD ENDS	90° BEND	45° BEND	22½° BEND	11¼° BEND
4	⅓	⅓	⅓	⅓	⅓
6	⅓	⅓	⅓	⅓	⅓
8	⅓	½	⅓	⅓	⅓
10	⅔	¾	½	⅓	⅓
12	¾	1.0	⅔	⅓	⅓

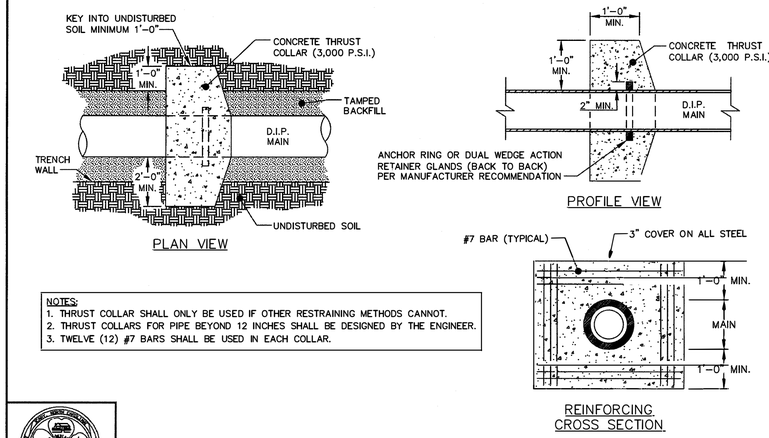
NOTES:
1. FITTING SHALL BE WRAPPED WITH A MINIMUM 4 MIL PLASTIC.
2. NO CONCRETE SHALL COVER BOLTS OR GLANDS.
3. PIPE DIAMETERS BEYOND 12 INCHES SHALL UTILIZE A PROFESSIONAL ENGINEER'S SEALED DESIGN CONSISTING OF RESTRAINED JOINT PIPE OR BLOCKING.

* CONCRETE SHALL BE 3,000 P.S.I. MIX.

EFFECTIVE: 01/05/17

STANDARD REACTION BLOCKING

DETAIL No. 06000.13
SHEET 1 OF 1

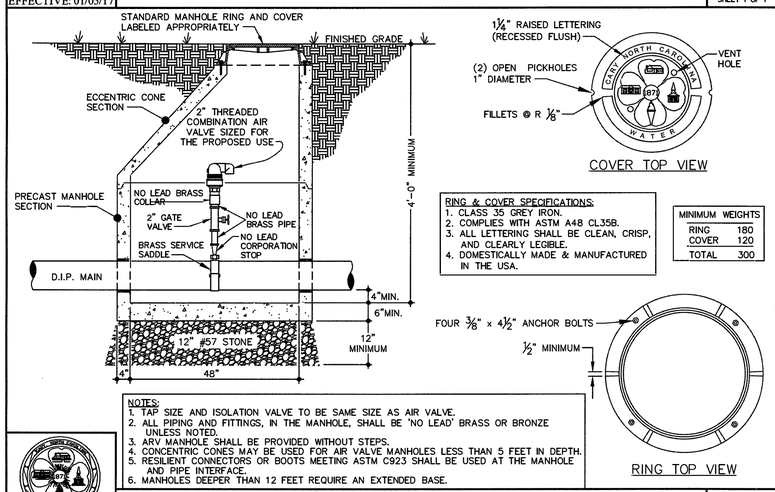


NOTES:
1. THRUST COLLAR SHALL ONLY BE USED IF OTHER RESTRAINING METHODS CANNOT.
2. THRUST COLLARS FOR PIPE BEYOND 12 INCHES SHALL BE DESIGNED BY THE ENGINEER.
3. TWELVE (12) #7 BARS SHALL BE USED IN EACH COLLAR.

EFFECTIVE: 01/05/17

STANDARD THRUST COLLAR INSTALLATION (FOR PIPE DIAMETERS 4-INCH - 12-INCH)

DETAIL No. 06000.14
SHEET 1 OF 1



RING & COVER SPECIFICATIONS:
1. CLASS 35 GREY IRON.
2. COMPLIES WITH ASTM A48 CL35B.
3. ALL LETTERING SHALL BE CLEAN, CRISP, AND CLEARLY LEGIBLE.
4. DOMESTICALLY MADE & MANUFACTURED IN THE USA.

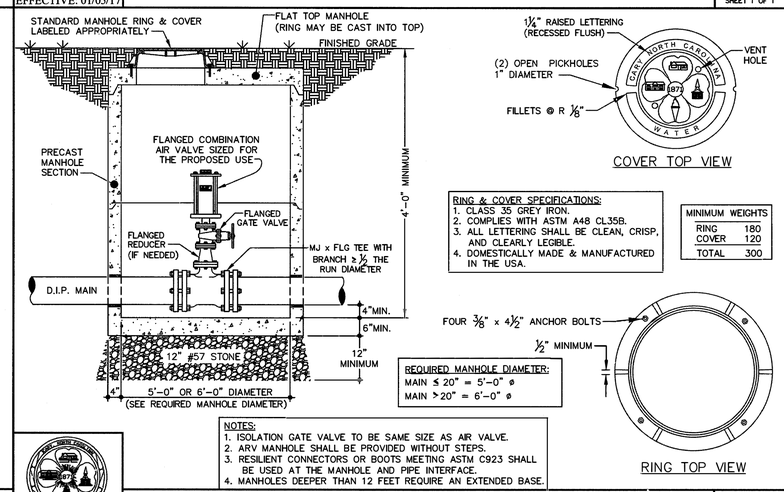
MINIMUM WEIGHTS	
RING	180
COVER	120
TOTAL	300

NOTES:
1. TAP SIZE AND ISOLATION VALVE TO BE SAME SIZE AS AIR VALVE.
2. ALL PIPING AND FITTINGS, IN THE MANHOLE, SHALL BE 'NO LEAD' BRASS OR BRONZE UNLESS NOTED.
3. ARV MANHOLE SHALL BE PROVIDED WITHOUT STEPS.
4. CONCENTRIC CONES MAY BE USED FOR AIR VALVE MANHOLES LESS THAN 5 FEET IN DEPTH.
5. RESILIENT CONNECTORS OR BOOTS MEETING ASTM C923 SHALL BE USED AT THE MANHOLE AND PIPE INTERFACE.
6. MANHOLES DEEPER THAN 12 FEET REQUIRE AN EXTENDED BASE.

EFFECTIVE: 01/05/17

STANDARD 2-INCH COMBINATION AIR VALVE (FOR POTABLE WATER SYSTEMS)

DETAIL No. 06000.15
SHEET 1 OF 3



RING & COVER SPECIFICATIONS:
1. CLASS 35 GREY IRON.
2. COMPLIES WITH ASTM A48 CL35B.
3. ALL LETTERING SHALL BE CLEAN, CRISP, AND CLEARLY LEGIBLE.
4. DOMESTICALLY MADE & MANUFACTURED IN THE USA.

MINIMUM WEIGHTS	
RING	180
COVER	120
TOTAL	300

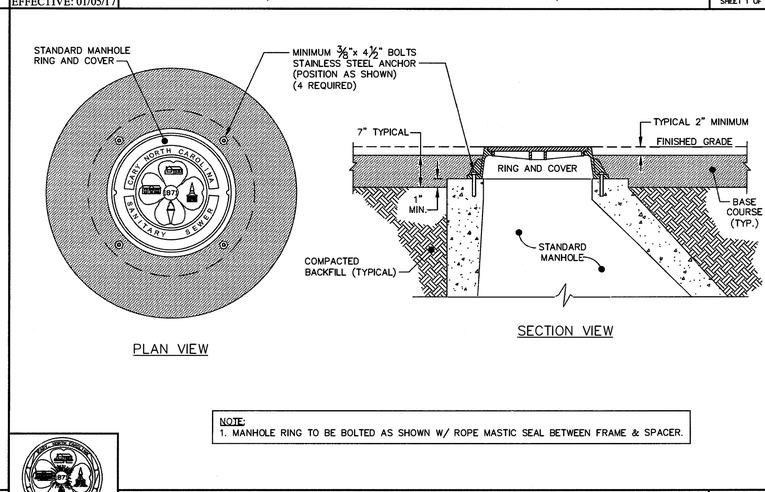
REQUIRED MANHOLE DIAMETER:
MAIN ≤ 20" = 5'-0" ø
MAIN > 20" = 6'-0" ø

NOTES:
1. ISOLATION GATE VALVE TO BE SAME SIZE AS AIR VALVE.
2. ARV MANHOLE SHALL BE PROVIDED WITHOUT STEPS.
3. RESILIENT CONNECTORS OR BOOTS MEETING ASTM C923 SHALL BE USED AT THE MANHOLE AND PIPE INTERFACE.
4. MANHOLES DEEPER THAN 12 FEET REQUIRE AN EXTENDED BASE.

EFFECTIVE: 01/05/17

STANDARD 3" AND GREATER COMBINATION AIR VALVE (FOR POTABLE WATER SYSTEMS)

DETAIL No. 06000.15
SHEET 2 OF 3



NOTE:
1. MANHOLE RING TO BE BOLTED AS SHOWN W/ ROPE MASTIC SEAL BETWEEN FRAME & SPACER.

EFFECTIVE: 01/05/17

STANDARD MANHOLE RING AND COVER INSTALLATION

DETAIL No. 07000.03
SHEET 5 OF 5

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER D6

STATUS: ISSUED FOR BID
REVISION E

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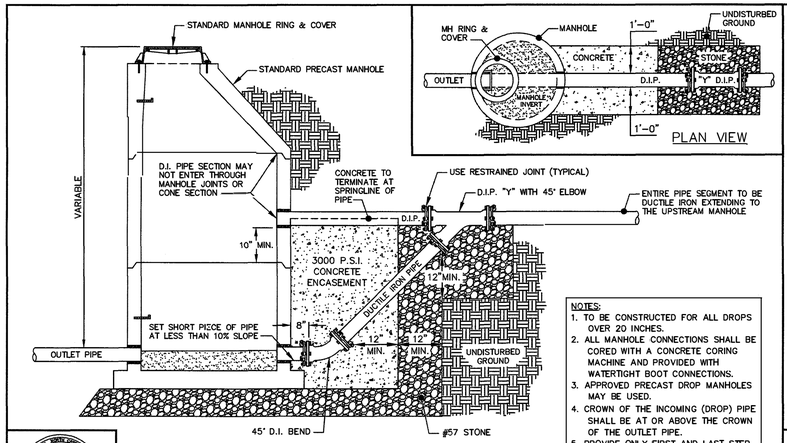
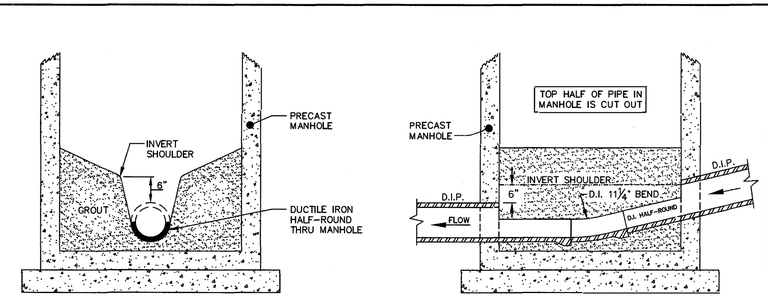


NOTES:
1. TO BE CONSTRUCTED FOR ALL DROPS OVER 20 INCHES.
2. ALL MANHOLE CONNECTIONS SHALL BE CORED WITH A CONCRETE CORING MACHINE AND PROVIDED WITH WATERTIGHT BOOT CONNECTIONS.
3. APPROVED PRECAST DROP MANHOLES MAY BE USED.
4. CROWN OF THE INCOMING (DROP) PIPE SHALL BE AT OR ABOVE THE CROWN OF THE OUTLET PIPE.
5. PROVIDE ONLY FIRST AND LAST STEP IN MANHOLE.

EFFECTIVE: 01/05/17

STANDARD OUTSIDE DROP MANHOLE

DETAIL No. 07000.05 SHEET 1 OF 1

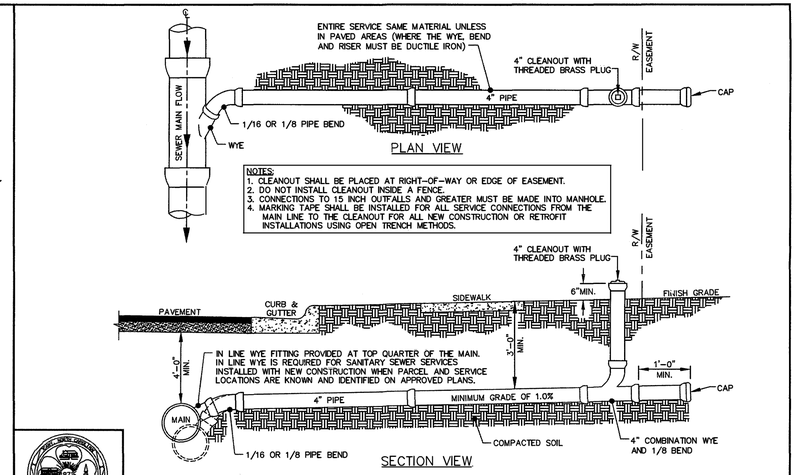


NOTES:
1. NO HORIZONTAL ALIGNMENT CHANGE CAN BE MADE WITHIN THIS MANHOLE TYPE. USE ON GRADES OF 10% OR GREATER.
2. EACH JOINT OF PIPE BETWEEN HIGH VELOCITY MANHOLE & MANHOLE UPGRADE SHALL HAVE A THRUST COLLAR (SEE STANDARD DETAIL 06000.14).

EFFECTIVE: 01/05/17

STANDARD HIGH VELOCITY MANHOLE INVERT

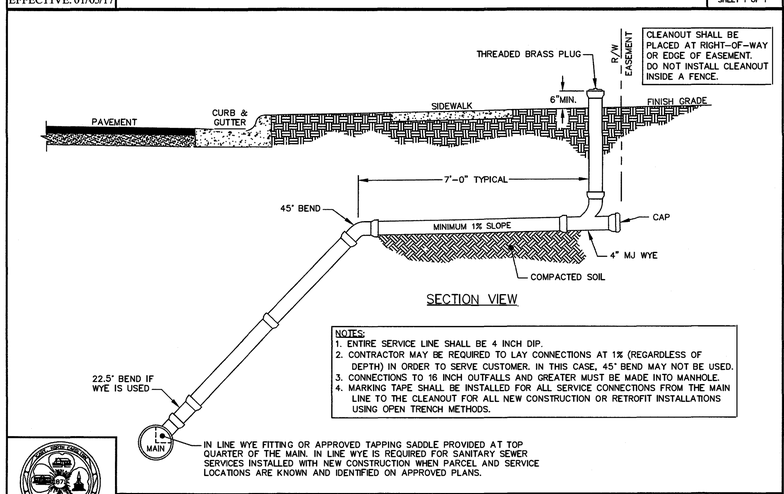
DETAIL No. 07000.08 SHEET 1 OF 1



EFFECTIVE: 01/05/17

STANDARD 4 INCH SANITARY SEWER SERVICE FOR CURB AND GUTTER SECTIONS

DETAIL No. 07000.09 SHEET 1 OF 4

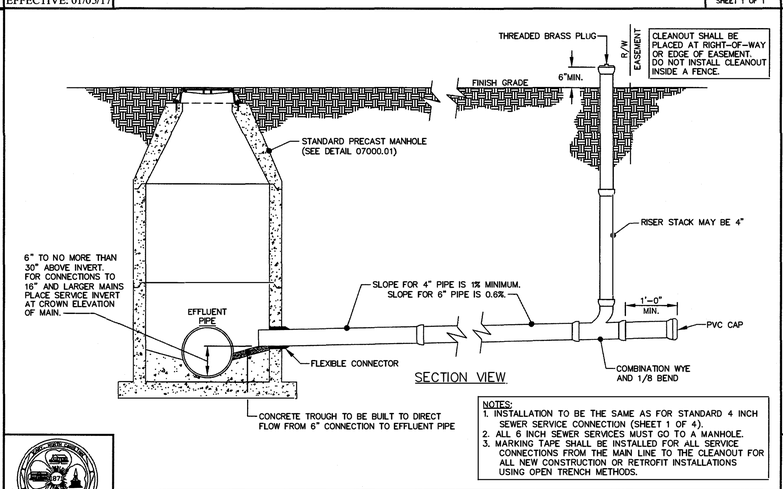


NOTES:
1. ENTIRE SERVICE LINE SHALL BE 4 INCH DIP.
2. CONTRACTOR MAY BE REQUIRED TO LAY CONNECTIONS AT 1% (REGARDLESS OF DEPTH) IN ORDER TO SERVE CUSTOMER. IN THIS CASE, 45° BEND MAY NOT BE USED.
3. CONNECTIONS TO 16 INCH OUTFALLS AND GREATER MUST BE MADE INTO MANHOLE.
4. MARKING TAPE SHALL BE INSTALLED FOR ALL SERVICE CONNECTIONS FROM THE MAIN LINE TO THE CLEANOUT FOR ALL NEW CONSTRUCTION OR RETROFIT INSTALLATIONS USING OPEN TRENCH METHODS.

EFFECTIVE: 01/05/17

STANDARD 4 INCH SANITARY SEWER SERVICE FOR DEEP SEWER MAINS (14-FT AND GREATER)

DETAIL No. 07000.09 SHEET 2 OF 4

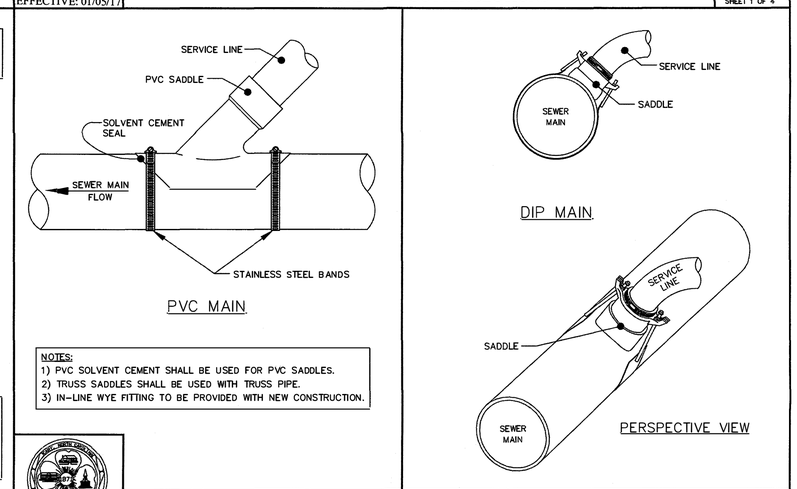


NOTES:
1. INSTALLATION TO BE THE SAME AS FOR STANDARD 4 INCH SEWER SERVICE CONNECTION (SHEET 1 OF 4).
2. ALL 6 INCH SEWER SERVICES MUST GO TO A MANHOLE.
3. MARKING TAPE SHALL BE INSTALLED FOR ALL SERVICE CONNECTIONS FROM THE MAIN LINE TO THE CLEANOUT FOR ALL NEW CONSTRUCTION OR RETROFIT INSTALLATIONS USING OPEN TRENCH METHODS.

EFFECTIVE: 01/05/17

STANDARD SANITARY SEWER SERVICE MANHOLE TAP

DETAIL No. 07000.09 SHEET 3 OF 4



NOTES:
1) PVC SOLVENT CEMENT SHALL BE USED FOR PVC SADDLES.
2) TRUSS SADDLES SHALL BE USED WITH TRUSS PIPE.
3) IN-LINE WYE FITTING TO BE PROVIDED WITH NEW CONSTRUCTION.

EFFECTIVE: 01/05/17

SANITARY SEWER LATERAL SADDLE CONNECTION TO EXISTING MAIN

DETAIL No. 07000.10 SHEET 1 OF 1

REV.NO.	DESCRIPTION	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034428 ENGINEER BEN R. LATINO, JR. 3/24/17

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER D7

STATUS: ISSUED FOR BID

REVISION E

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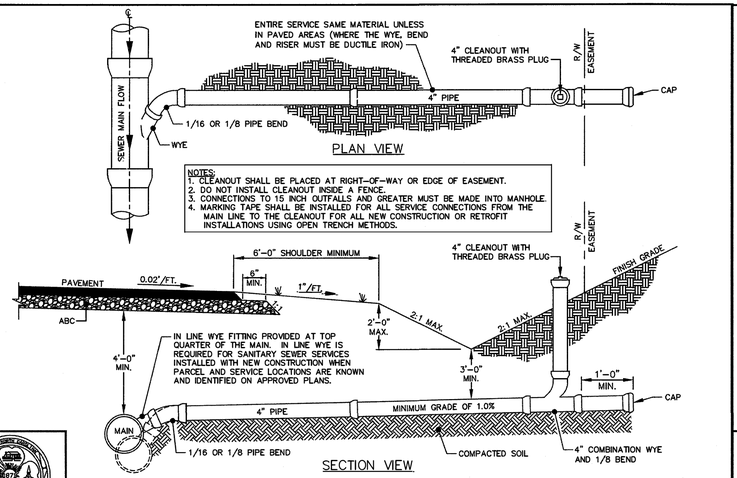


EFFECTIVE: 01/05/17

STANDARD 4 INCH SANITARY SEWER SERVICE FOR DITCH SECTION

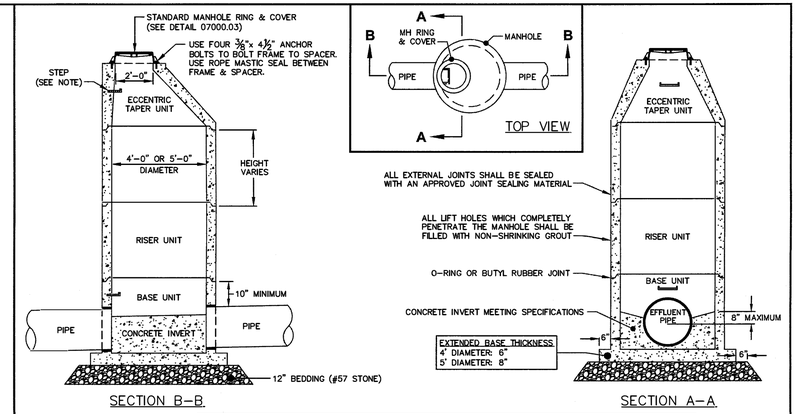
DETAIL No. 07000.09 SHEET 4 OF 4

SPECIFICATION TIME (MIN:SEC) REQUIRED FOR PRESSURE DROP FROM 3-1/2 TO 2-1/2 PSIG														
		NOMINAL PIPE DIAMETER (INCHES)												
		8	10	12	14	15	16	18	20	21	24	27	30	36	42
LENGTH OF TEST SECTION	25	7:33	9:26	11:20	13:13	14:10	15:11	17:00	18:53	19:48	22:40	25:30	28:19	34:00	39:40
	50	7:33	9:26	11:20	13:13	14:10	15:11	17:00	18:53	19:48	22:40	25:30	28:19	34:00	39:40
	75	7:33	9:26	11:20	13:13	14:10	15:11	17:00	18:53	19:48	22:40	25:30	28:19	34:00	52:35
	100	7:33	9:26	11:20	13:13	14:10	15:11	17:00	18:53	19:48	22:47	28:51	35:37	51:17	69:48
	125	7:33	9:26	11:20	13:13	14:10	15:11	17:00	19:47	21:48	28:29	36:03	44:31	64:06	87:15
	150	7:33	9:26	11:20	13:13	14:10	15:12	19:14	23:44	26:10	34:11	43:16	53:25	76:55	104:42
	175	7:33	9:26	11:20	13:34	15:35	17:44	22:26	27:42	30:32	39:53	50:28	62:19	89:45	122:10
	200	7:33	9:26	11:24	15:31	17:48	20:16	25:39	31:39	34:54	45:35	57:42	71:13	102:36	139:36
	225	7:33	9:26	12:49	17:27	20:02	22:48	28:51	35:37	39:16	51:17	64:54	80:08	115:24	157:03
	250	7:33	9:53	14:15	19:23	22:16	25:20	32:03	39:34	43:37	56:58	72:07	89:02	128:12	174:30
	275	7:33	10:52	15:40	21:20	24:29	27:52	35:16	43:31	47:59	62:40	79:19	97:56	141:00	191:57
	300	7:35	11:52	17:06	23:16	26:43	30:23	38:28	47:29	52:21	68:22	86:32	106:48	153:54	209:25
	350	8:52	13:51	19:57	27:09	31:10	35:27	44:52	55:24	61:05	79:46	101:00	124:42	179:30	244:19
	400	10:07	15:50	22:48	31:01	35:37	40:31	51:17	63:19	69:48	91:10	115:24	142:30	205:06	279:13
	450	11:23	17:48	25:39	34:54	40:04	45:35	57:42	71:13	78:31	102:36	129:48	160:18	230:48	314:07
	500	12:39	19:47	28:30	38:47	44:31	50:39	64:06	79:08	87:15	114:00	144:12	178:06	256:24	349:02

EFFECTIVE: 01/05/17

STANDARD AIR TEST TABLE

DETAIL No. 07000.15 SHEET 1 OF 1



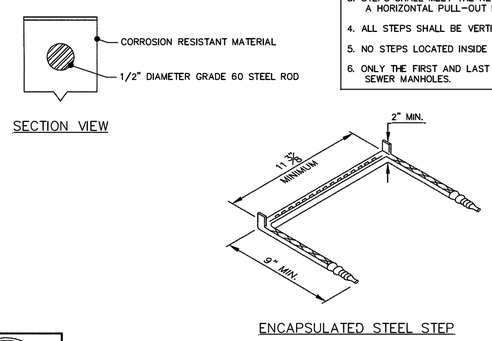
NOTES:
1. ALL MANHOLE CONNECTIONS SHALL BE PREFABRICATED OR CORED WITH A CONCRETE CORING MACHINE.
2. ALL MANHOLES SHALL BE VACUUM TESTED.
3. EXTENDED BASE REQUIRED FOR ALL MANHOLES WITH MORE THAN 12-FT DEPTH OF BURY.
4. PROVIDE A MINIMUM 0.1 FOOT IN-OUT DROP FOR STRAIGHT RUNS AND 0.2 FOOT IN-OUT DROP FOR ANGLE RUNS.
5. PROVIDE ONLY FIRST AND LAST STEP IN MANHOLE.

EFFECTIVE: 01/05/17

STANDARD PRECAST CONCRETE MANHOLE

DETAIL No. 07000.01 SHEET 1 OF 4

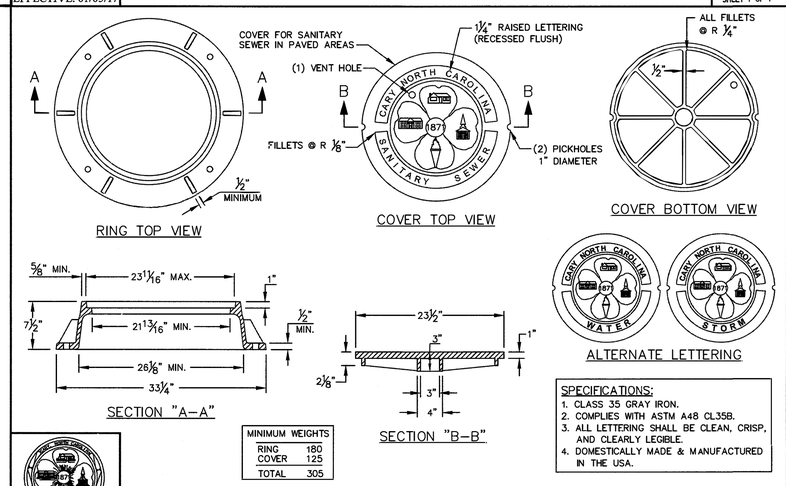
NOTES:
1. VERTICAL SPACING = 16 INCHES ON CENTER, ON VERTICAL WALL ONLY.
2. STEPS TO PROTRUDE MINIMUM 5 INCHES FROM FACE OF STRUCTURE WALL.
3. STEPS SHALL MEET THE REQUIREMENTS OF ASTM C478 IN ADDITION TO A HORIZONTAL PULL-OUT LOAD OF 1000 LBS. WHEN INSTALLED.
4. ALL STEPS SHALL BE VERTICALLY ALIGNED IN A STRAIGHT LINE.
5. NO STEPS LOCATED INSIDE MANHOLE CHIMNEY.
6. ONLY THE FIRST AND LAST STEP SHALL BE PROVIDED IN SANITARY SEWER MANHOLES.



EFFECTIVE: 01/05/17

MANHOLE STEPS

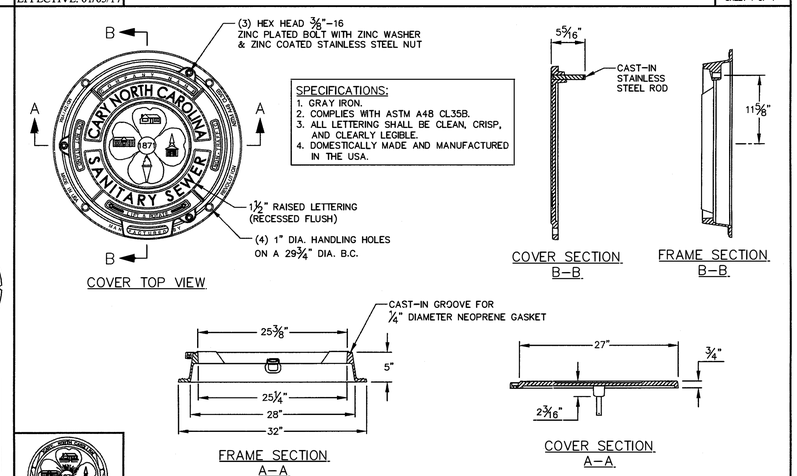
DETAIL No. 07000.01 SHEET 4 OF 4



EFFECTIVE: 01/05/17

STANDARD MANHOLE RING AND COVER (TYPE 1 FOR PAVED AND UNPAVED AREAS WITHIN THE RIGHT-OF-WAY)

DETAIL No. 07000.03 SHEET 1 OF 5



EFFECTIVE: 01/05/17

STANDARD MANHOLE RING AND COVER (TYPE 2A FOR OUTFALLS - WATERTIGHT APPLICATIONS)

DETAIL No. 07000.03 SHEET 2 OF 5

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034428 BEN R. LATINO, JR. 3/24/17

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE: HORIZONTAL: NA VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER: D8

STATUS: ISSUED FOR BID

REVISION: E

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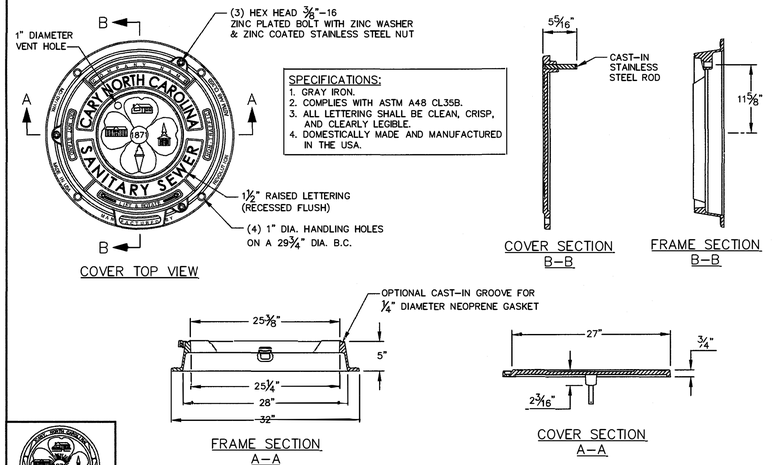
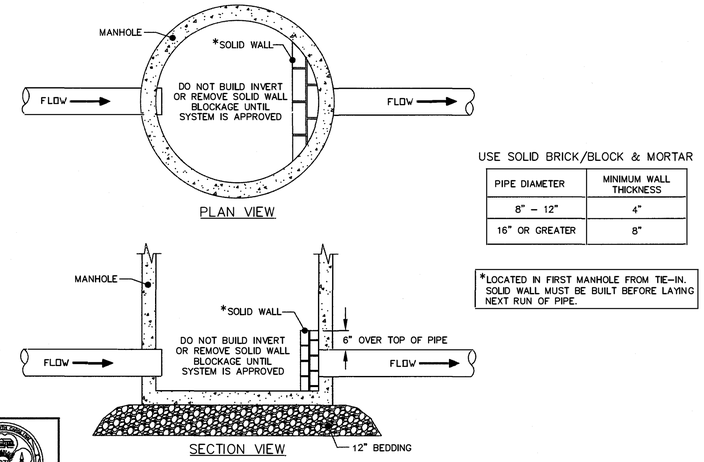


SPECIFICATIONS:
1. GRAY IRON.
2. COMPLIES WITH ASTM A48 CL35B.
3. ALL LETTERING SHALL BE CLEAN, CRISP, AND CLEARLY LEGIBLE.
4. DOMESTICALLY MADE AND MANUFACTURED IN THE USA.

EFFECTIVE: 01/05/17

STANDARD MANHOLE RING AND COVER (TYPE 2B FOR OUTFALLS - NON-WATERTIGHT APPLICATIONS)

DETAIL No. 07000.03 SHEET 3 OF 5



USE SOLID BRICK/BLOCK & MORTAR

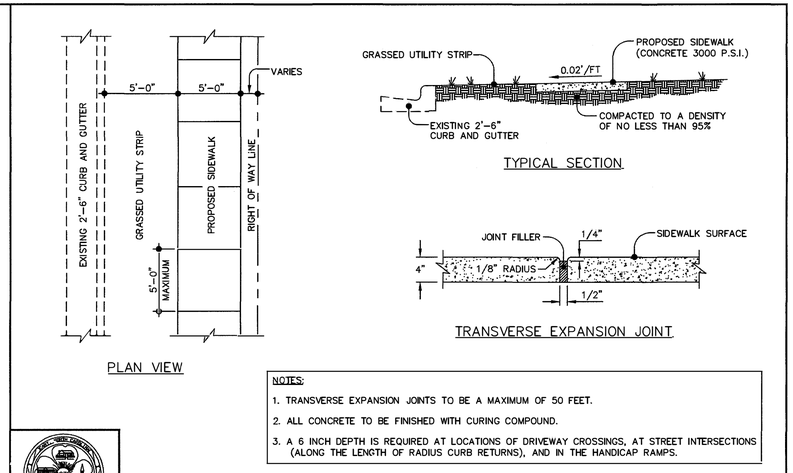
PIPE DIAMETER	MINIMUM WALL THICKNESS
8" – 12"	4"
16" OR GREATER	8"

*LOCATED IN FIRST MANHOLE FROM TIE-IN. SOLID WALL MUST BE BUILT BEFORE LAYING NEXT RUN OF PIPE.

EFFECTIVE: 01/05/17

SANITARY SEWER PROTECTION DURING CONSTRUCTION

DETAIL No. 07000.16 SHEET 1 OF 1

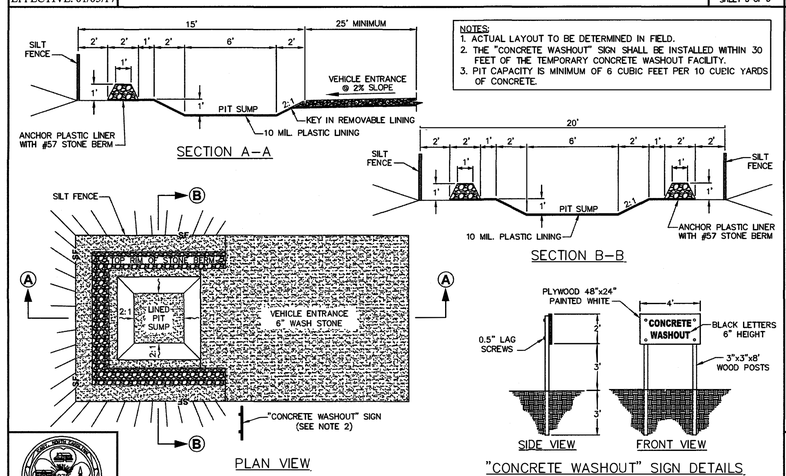


NOTES:
1. TRANSVERSE EXPANSION JOINTS TO BE A MAXIMUM OF 50 FEET.
2. ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.
3. A 6 INCH DEPTH IS REQUIRED AT LOCATIONS OF DRIVEWAY CROSSINGS, AT STREET INTERSECTIONS (ALONG THE LENGTH OF RADIUS CURB RETURNS), AND IN THE HANDICAP RAMPS.

EFFECTIVE: 01/05/17

STANDARD CONCRETE SIDEWALK

DETAIL No. 03000.07 SHEET 1 OF 2

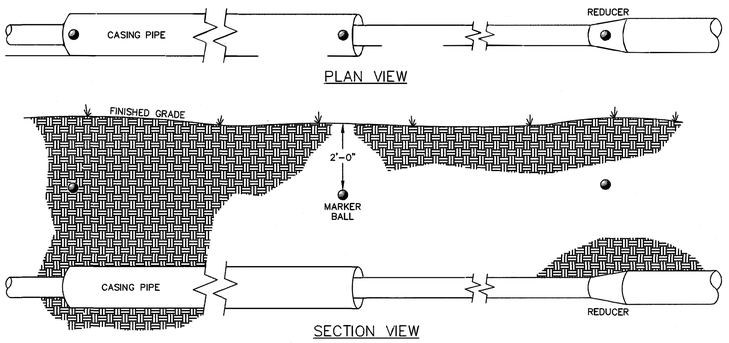


NOTES:
1. ACTUAL LAYOUT TO BE DETERMINED IN FIELD.
2. THE "CONCRETE WASHOUT" SIGN SHALL BE INSTALLED WITHIN 30 FEET OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. PIT CAPACITY IS MINIMUM OF 6 CUBIC FEET PER 10 CUEIC YARDS OF CONCRETE.

EFFECTIVE: 01/05/17

CONCRETE WASHOUT PIT

DETAIL No. 04000.29 SHEET 1 OF 1



UTILITY MARKER BALL COLOR
BLUE – POTABLE WATER

● = NON-PROGRAMMABLE MARKER BALL

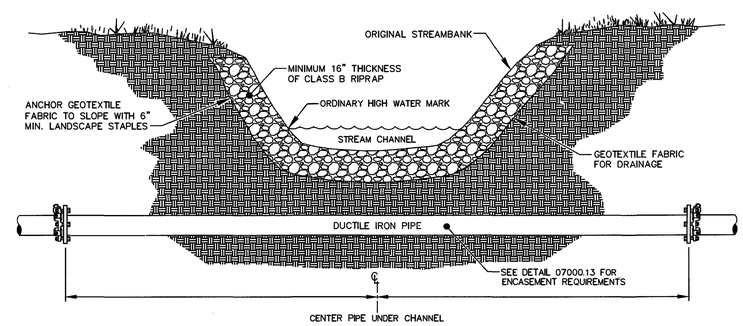
NOTES:
1. MARKER BALLS SHALL BE LOCATED ABOVE THE PIPE, 2 FEET BELOW FINISHED GRADE.
2. ADDITIONAL BALLS MAY BE REQUIRED AS DIRECTED BY THE TOWN IN CONGESTED AREAS OR TO MARK AN ATYPICAL ALIGNMENT.

EFFECTIVE: 01/05/17

STANDARD UTILITY MARKER BALL LOCATIONS FOR WATER MAINS

DETAIL No. 06000.21 SHEET 1 OF 1

NOTES:
1. MAINTAIN ORIGINAL CONTOURS IN STREAMBED AND BANKS.
2. FACE OF PROPOSED RIPRAP BANK TO MATCH EXISTING CONTOURS OF STREAMBANKS.
3. RIPRAP MUST BE KEYED INTO THE GROUND AND THE ORIGINAL CONTOURS SHALL BE MAINTAINED AS PER U.S. ARMY CORPS OF ENGINEERS.



EFFECTIVE: 01/05/17

RIPRAP BANK STABILIZATION

DETAIL No. 07000.18 SHEET 2 OF 2

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

SEAL

SEAL

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER D9

STATUS: ISSUED FOR BID

REVISION E

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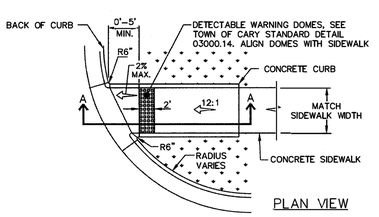
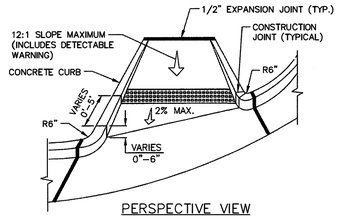


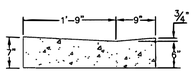
PLAN VIEW



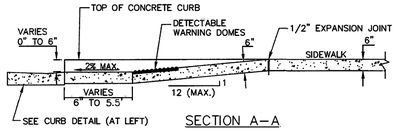
PERSPECTIVE VIEW

NOTES:

1. USE THIS DETAIL ONLY UNDER THE FOLLOWING CIRCUMSTANCE:
   - WHEN A 0' (ZERO) TO 5.5' LANDING IS ACHIEVABLE.
2. ALL CONCRETE SHALL BE AT LEAST 3000 PSI.



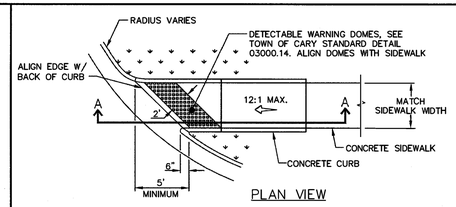
CURB DETAIL



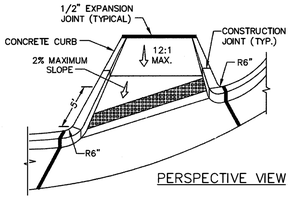
SECTION A–A

DIRECTIONAL ACCESSIBLE RAMP WITH LARGE RADIUS

DETAIL No. MS–10.40A SHEET 1 OF 1



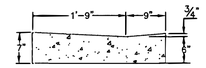
PLAN VIEW



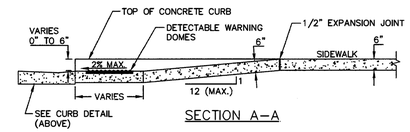
PERSPECTIVE VIEW

NOTES:

1. USE THIS DETAIL ONLY UNDER THE FOLLOWING CIRCUMSTANCE:
   - WHEN THE LANDING DIMENSION VARIES AND IS GREATER THAN 5.5 FEET.
2. ALL CONCRETE SHALL BE AT LEAST 3000 PSI.
3. THE ANGLES ON THE DETECTABLE WARNING WILL VARY WITH THE CURB RADIUS AND SIDEWALK WIDTH. IN THE CONFIGURATION SHOWN IN PLAN VIEW, ONE SIDE OF THE DETECTABLE WARNING TRAPEZOID SHALL BE LOCATED AT THE TOE OF THE 12:1 SLOPE, AND THE OTHER SIDE SHALL BE ALIGNED WITH THE CURB ON THE ACCESSIBLE RAMP.
4. THE TRUNCATED DOME PATTERN MUST ALIGN WITH THE SIDEWALK TO ALLOW WHEELCHAIRS TO PASS FREELY. DO NOT ALIGN DOME PATTERN WITH THE CURB RADIUS.



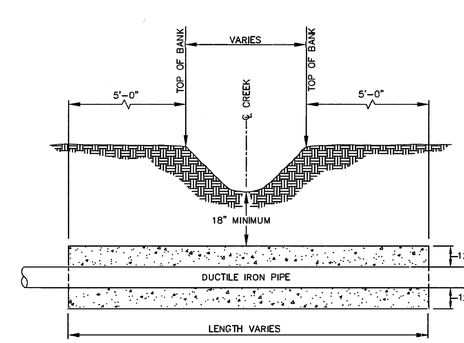
CURB DETAIL



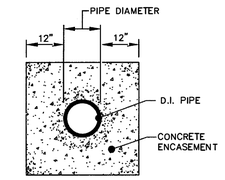
SECTION A–A

DIRECTIONAL ACCESSIBLE RAMP WITH LARGE RADIUS

DETAIL No. MS–10.40B SHEET 1 OF 1



CROSS SECTION



END VIEW

NOTES:

1. CONCRETE SHALL BE 3,000 P.S.I.
2. CONCRETE ENCASEMENT NOT REQUIRED WHEN PIPE IS AT LEAST 3 FEET UNDER CENTERLINE OF CREEK BOTTOM.

EFFECTIVE: 01/05/17

STANDARD CONCRETE ENCASEMENT FOR STREAM CROSSING

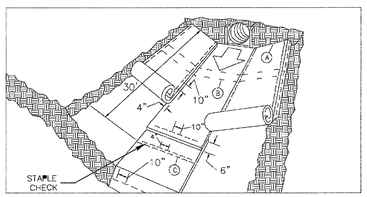
DETAIL No. 07000.13 SHEET 1 OF 1

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

1-12

ENGLISH STANDARD DRAWING FOR

MATTING INSTALLATION



MATTING IN DITCHES

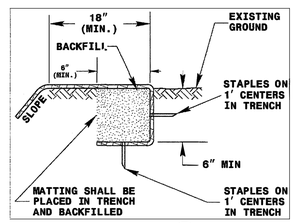
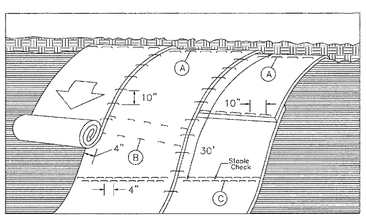


DIAGRAM (A)



MATTING ON SLOPES

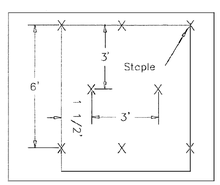


DIAGRAM (B)

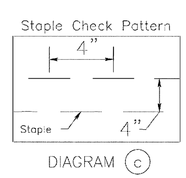


DIAGRAM (C)

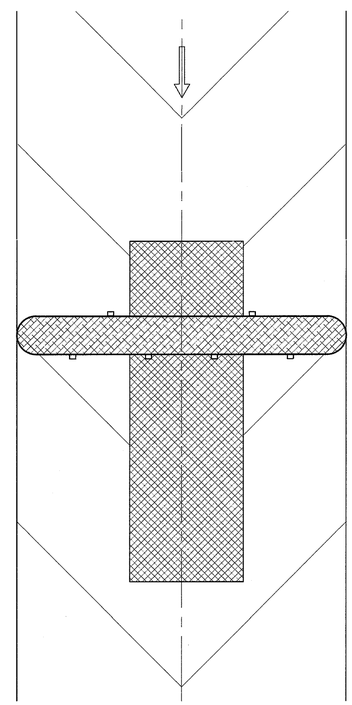
NOTES:

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

NOT TO SCALE

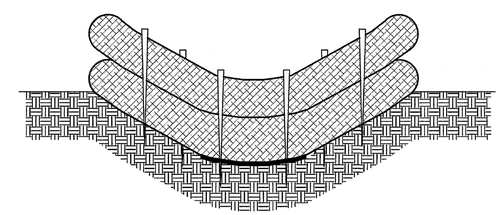
SHEET 1 OF 1 **1631.01**



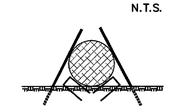
WATTLE PLAN VIEW
N.T.S.

STREAM CROSSING CONSTRUCTION SEQUENCE

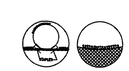
1. INSTALL TEMPORARY EROSION CONTROL MEASURES AS SHOWN.
2. INSTALL COFFER DAMS AS SHOWN ON PLANS. PUMPS SHALL BE PROVIDED FOR EMERGENCY CONDITIONS AND DEWATERING WORK AREAS AS NEEDED. SEE DETAIL THIS SHEET. ONCE BASE FLOW HAS BEEN DIVERTED, CONTRACTOR SHALL OPEN CUT AND INSTALL PIPING TAKING CARE TO NOT IMPACT BEYOND APPROVED LIMITS OF DISTURBANCE SHOWN.
3. ONCE WORK HAS BEEN COMPLETED, THE STREAM SHALL BE RESTORED TO ITS EXISTING CONDITION, INCLUDING RE-INSTALLING CLASS II RIPRAP STREAMBANK PROTECTION TO THE EXTENTS SHOWN ON THESE PLANS. FLOODPLAIN AREAS SHALL BE SEEDED, MULCHED AND ROLLED EROSION CONTROL PRODUCT (RECPS) SHALL BE APPLIED IN ACCORDANCE WITH THESE PLANS.
4. AFTER UTILITY INSTALLATION HAS BEEN COMPLETED, AND SURROUNDING AREAS HAVE BEEN STABLIZED, CONTRACTOR SHALL REMOVE COFFER DAMS AND ALLOW WATER TO FLOW AS IN THE EXISTING CONDITION.
5. CONTRACTOR SHALL RESTORE AREA TO PRE-CONSTRUCTION CONDITION. RESULTING BARE AREAS SHALL BE SEEDED, MULCHED AND RECPS SHALL BE APPLIED IN ACCORDANCE WITH THESE PLANS.



WATTLE SECTION VIEW
N.T.S.



WATTLE INSET
N.T.S.



WATTLE PAM APPLICATION
N.T.S.

WATTLE NOTES:

1. USE MINIMUM 12 INCH DIAMETER FIBER WATTLE.
2. USE WOODEN STAKES WITH A 2 IN. X 2 IN. NOMINAL CROSS SECTION AND LENGTH AS REQUIRED TO MEET DETAIL REQUIREMENTS AND TO ANCHOR WATTLES EFFICENTLY.
3. ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
4. INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
5. PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
6. INSTALL STAPLES APPROXIMATELY EVERY ONE (1) LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
7. INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE NCDOT STANDARD SPECIFICATIONS.
8. PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE. PAM PRODUCT USED SHALL BE LISTED ON THE NORTH CAROLINA DEPARTMENT OF ENVIROMENTAL QUALITY LIST OF APPROVED PAM PRODUCTS USED IN NORTH CAROLINA.
9. INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

REV.NO.	DESCRIPTIONS	DATE
E	ISSUED FOR BID	03/24/17

REVISIONS

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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117–0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE — HORIZONTAL: NA — VERTICAL: NA

M&C FILE NUMBER

DRAWING NUMBER D10

STATUS: ISSUED FOR BID — REVISION E

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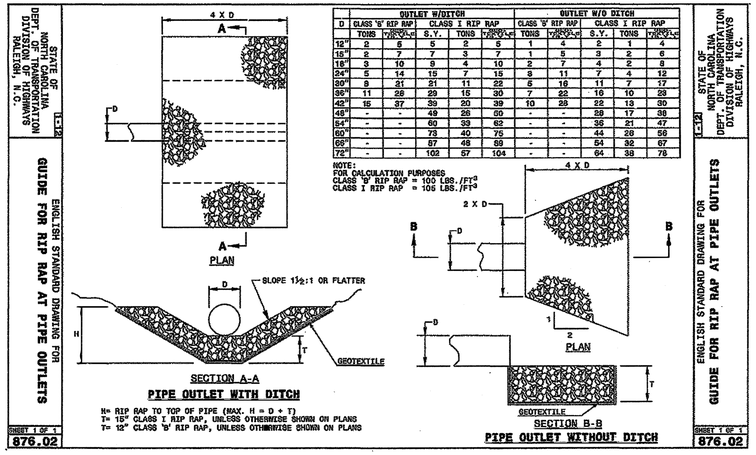
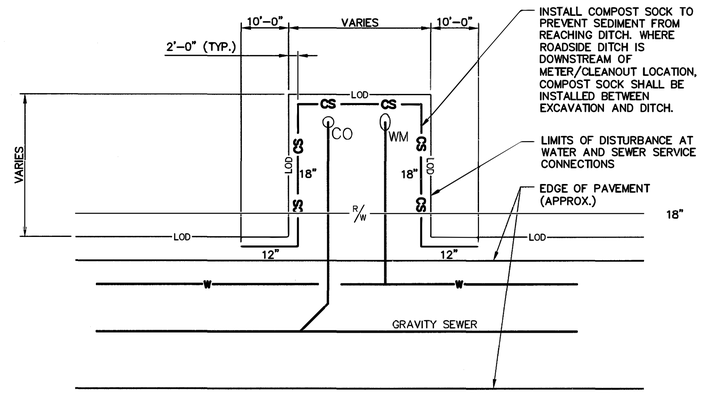


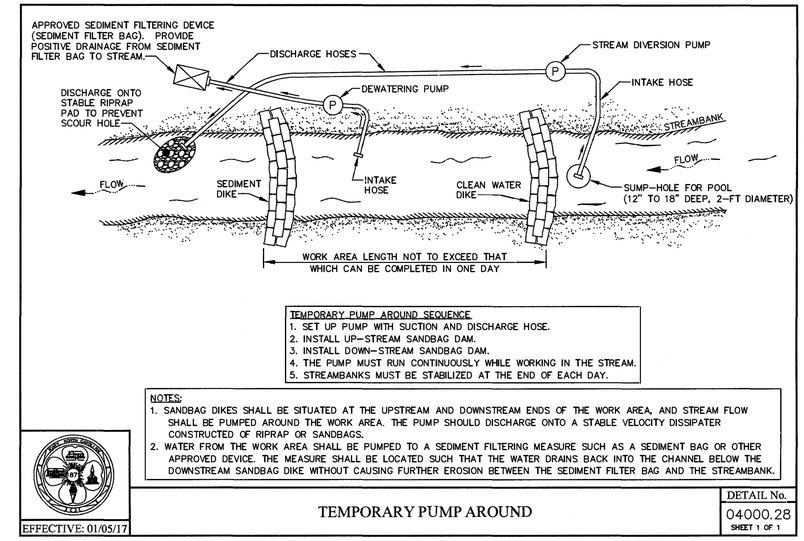
D	OUTLET W/DITCH						OUTLET W/O DITCH					
	CLASS 'B' RIP RAP		CLASS I RIP RAP				CLASS 'B' RIP RAP		CLASS I RIP RAP			
	TONS	T=12"	T=15"	S.Y.	TONS	T=12"	TONS	T=12"	T=15"	S.Y.	TONS	T=12"
12"	2	6	5	6	6	5	1	4	2	1	4	3
15"	2	7	7	3	7	7	1	5	3	2	6	4
18"	3	10	9	4	10	9	2	7	4	2	8	6
24"	5	14	15	7	15	12	3	11	7	4	12	9
30"	8	21	21	11	22	18	5	16	11	7	17	13
36"	11	28	29	15	30	24	7	22	16	10	23	18
42"	15	37	39	20	39	30	10	28	22	13	30	23
48"	-	-	49	26	50	38	-	-	28	17	38	29
54"	-	-	60	33	62	47	-	-	36	21	47	36
60"	-	-	73	40	75	56	-	-	44	26	56	43
66"	-	-	87	48	89	67	-	-	54	32	67	51
72"	-	-	102	57	104	78	-	-	64	38	78	60

NOTE:
FOR CALCULATION PURPOSES
CLASS 'B' RIP RAP = 100 LBS./FT³
CLASS I RIP RAP = 105 LBS./FT³

2 - PIPE OUTLET ENERGY DISSIPATER DETAIL
N.T.S.



2 - COMPOST SOCK INSTALLATION DETAIL
N.T.S.



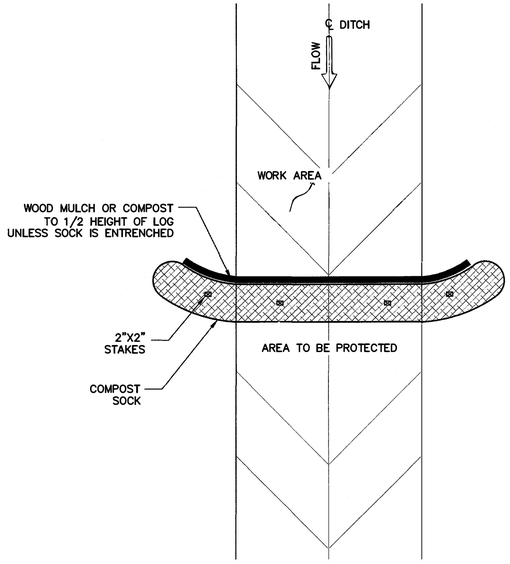
TEMPORARY PUMP AROUND SEQUENCE
1. SET UP PUMP WITH SUCTION AND DISCHARGE HOSE.
2. INSTALL UP-STREAM SANDBAG DAM.
3. INSTALL DOWN-STREAM SANDBAG DAM.
4. THE PUMP MUST RUN CONTINUOUSLY WHILE WORKING IN THE STREAM.
5. STREAMBANKS MUST BE STABILIZED AT THE END OF EACH DAY.

NOTES:
1. SANDBAG DIKES SHALL BE SITUATED AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE WORK AREA, AND STREAM FLOW SHALL BE PUMPED AROUND THE WORK AREA. THE PUMP SHOULD DISCHARGE ONTO A STABLE VELOCITY DISSIPATER CONSTRUCTED OF RIPRAP OR SANDBAGS.
2. WATER FROM THE WORK AREA SHALL BE PUMPED TO A SEDIMENT FILTERING MEASURE SUCH AS A SEDIMENT BAG OR OTHER APPROVED DEVICE. THE MEASURE SHALL BE LOCATED SUCH THAT THE WATER DRAINS BACK INTO THE CHANNEL BELOW THE DOWNSTREAM SANDBAG DIKE WITHOUT CAUSING FURTHER EROSION BETWEEN THE SEDIMENT FILTER BAG AND THE STREAMBANK.

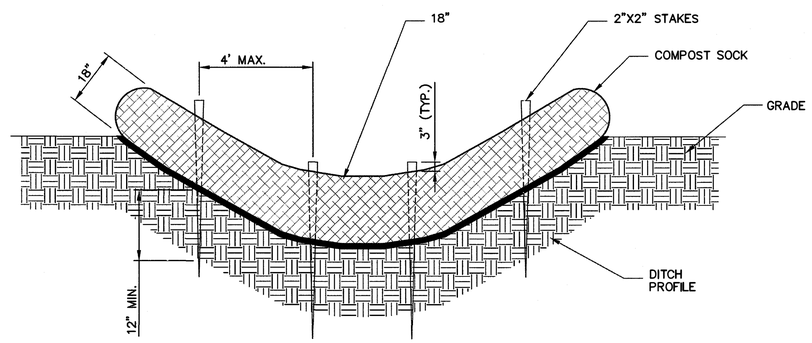
EFFECTIVE: 01/05/17

TEMPORARY PUMP AROUND

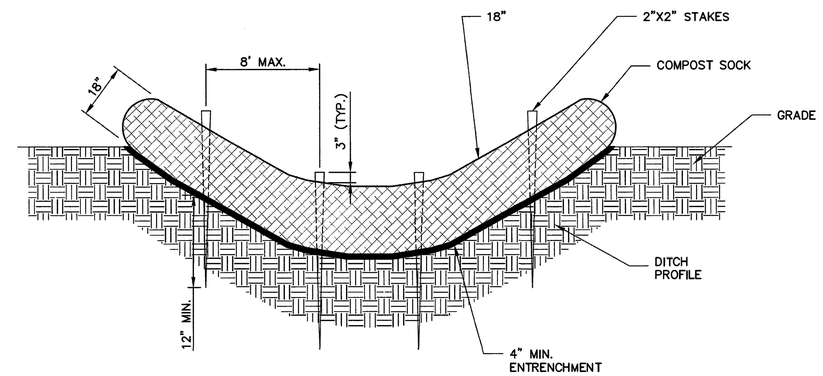
DETAIL No. 04000.28
SHEET 1 OF 1



3 - PLAN COMPOST SOCK
N.T.S.



4 - SECTION COMPOST SOCK - UNTRENCHED INSTALLATION
N.T.S.



5 - SECTION COMPOST SOCK - ENTRENCHED INSTALLATION
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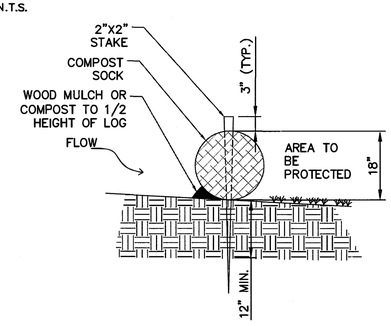
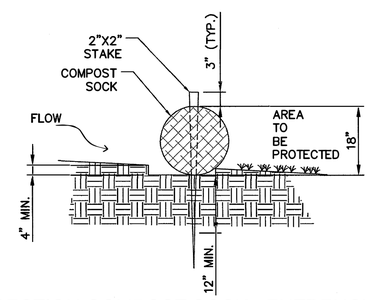


6 - CROSS SECTION COMPOST SOCK - UNTRENCHED INSTALLATION
N.T.S.



7 - CROSS SECTION COMPOST SOCK - ENTRENCHED INSTALLATION
N.T.S.

REV.NO.	DESCRIPTIONS	DATE
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HOLLY BROOK
WATER AND SEWER EXTENSION

DETAILS

DATE:	NOVEMBER 2015
MCE PROJ. #	3117-0011
DRAWN	CEB
DESIGNED	DGM
CHECKED	CLW
PROJ. MGR.	CLW

SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER
DRAWING NUMBER D11

STATUS: ISSUED FOR BID
REVISION E

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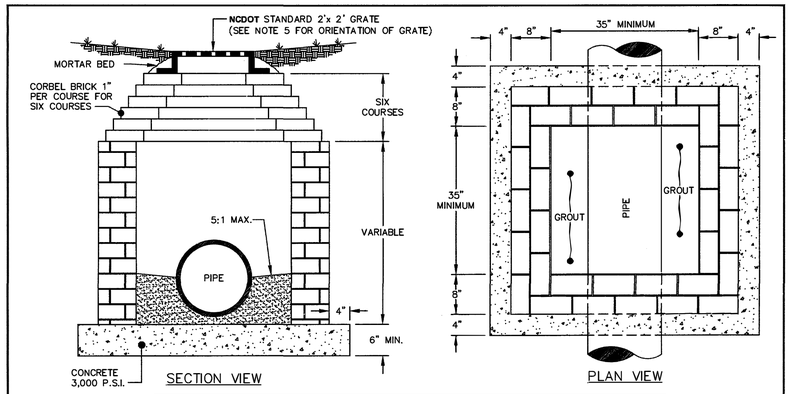
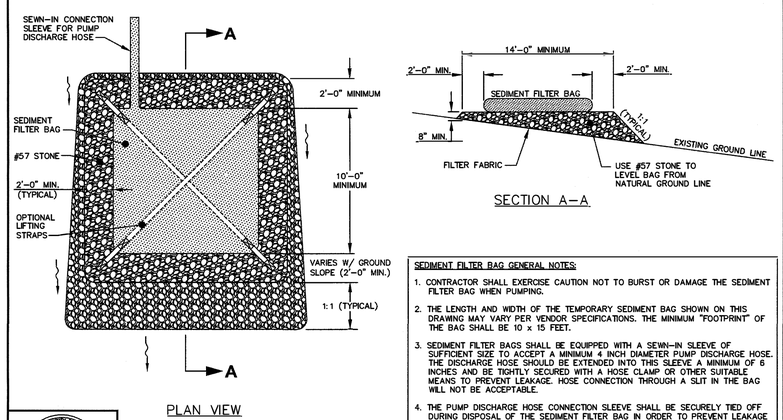


NOTES:
1. EITHER SOLID BRICK, SOLID BLOCK, OR PRECAST CONCRETE MAY BE USED.
2. FOR 24 INCH RCP AND LARGER USE PIPE DIAMETER PLUS 12 INCHES FOR MINIMUM INSIDE DIMENSION.
3. GRATED INLETS SHALL NOT BE USED WITHIN TRAVEL AREAS.
4. STANDARD STEPS REQUIRED, 16 INCHES ON CENTER, WHERE DEPTH EXCEEDS 3 FEET.
5. WHERE STEPS ARE REQUIRED, USE OF PRECAST CONCRETE SLAB SHALL BE USED AS TOP AND GRATE POSITIONED OVER STEPS.
6. YARD INLETS DEEPER THAN 10 FEET SHALL REQUIRE DOUBLE WALLS.

EFFECTIVE: 01/05/17

STANDARD YARD INLET WITH GRATE AND FRAME

DETAIL No. 08000.02
SHEET 1 OF 1



SEDIMENT FILTER BAG GENERAL NOTES:
1. CONTRACTOR SHALL EXERCISE CAUTION NOT TO BURST OR DAMAGE THE SEDIMENT FILTER BAG WHEN PUMPING.
2. THE LENGTH AND WIDTH OF THE TEMPORARY SEDIMENT BAG SHOWN ON THIS DRAWING MAY VARY PER VENDOR SPECIFICATIONS. THE MINIMUM "FOOTPRINT" OF THE BAG SHALL BE 10 x 15 FEET.
3. SEDIMENT FILTER BAGS SHALL BE EQUIPPED WITH A SEWN-IN SLEEVE OF SUFFICIENT SIZE TO ACCEPT A MINIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE DISCHARGE HOSE SHOULD BE EXTENDED INTO THIS SLEEVE A MINIMUM OF 6 INCHES AND BE TIGHTLY SECURED WITH A HOSE CLAMP OR OTHER SUITABLE MEANS TO PREVENT LEAKAGE. HOSE CONNECTION THROUGH A SLIT IN THE BAG WILL NOT BE ACCEPTABLE.
4. THE PUMP DISCHARGE HOSE CONNECTION SLEEVE SHALL BE SECURELY TIED OFF DURING DISPOSAL OF THE SEDIMENT FILTER BAG IN ORDER TO PREVENT LEAKAGE OF COLLECTED SEDIMENTS.
5. SEDIMENT FILTER BAG SHALL BE MAINTAINED AND REPLACED WHEN ONE HALF FULL OF SEDIMENT OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

EFFECTIVE: 01/05/17

SEDIMENT FILTER BAG WITH GRAVEL PAD

DETAIL No. 04000.27
SHEET 1 OF 1

REV.NO.	DESCRIPTIONS	DATE
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HOLLY BROOK
WATER AND SEWER EXTENSION

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SCALE
HORIZONTAL: NA
VERTICAL: NA

M&C FILE NUMBER
DRAWING NUMBER D12

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REVISION E

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