# BRIAR CHAPEL

## US STEEL - SECTION 1

## CONSTRUCTION DRAWINGS

### U.S. HWY 15-501 and MANN'S CHAPEL ROAD
### CHATHAM COUNTY, NORTH CAROLINA

DATE: JUNE 1, 2015
REVISED: JUNE 14, 2016

## COUNTY AND AGENCY CONTACTS

A. Chatham County
Planning Department
Dunlap Building
80 East Street
Pittsboro, NC 27312
(919) 542-8204 phone
Contact: Jason Sullivan
Email: jason.sullivan@chathamnc.org

B. Chatham County
Environmental Services
Dunlap Building
80 East Street
Pittsboro, NC 27312
(919) 542-0945 phone
Contact: Dan LaMontagne, PE
Email: dan.lamontagne@chathamnc.org

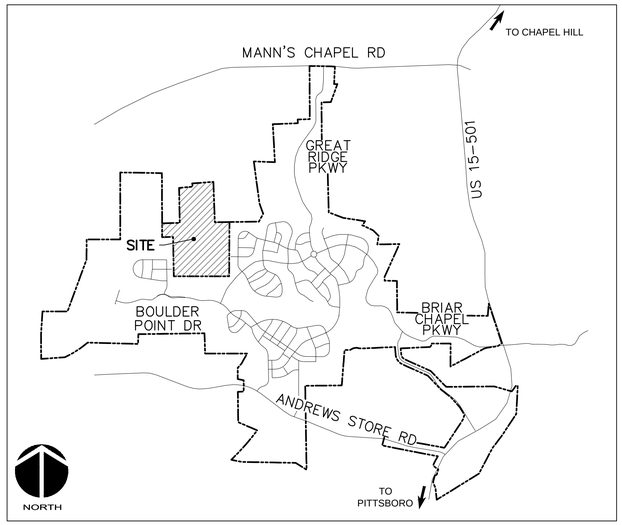
C. Chatham County
Soil Erosion and Sedimentation Control
Dunlap Building
80 East Street
Pittsboro, NC 27312
(919) 545-8339 phone
Contact: Rachael Thorn
Email: rachael.thorn@chathamnc.org

D. Chatham County
Public Works
964 East Street, 2nd Floor, Suite 205
Pittsboro, NC 27312
(919) 542-8270 phone
Contact: Larry Bridges
Email: larry.bridges@chathamnc.org

E. NCDOT
Division 8, District 1
300 DOT Drive
P.O. Box 1164
Asheboro, NC 27204
(336) 318-4000 phone
Contact: Marty Tillman, PE
Email: mtillman@ncdot.gov

F. NCDENR
Division of Environmental Health
Public Water Supply Section
1634 Mail Service Center
Raleigh, NC 27699-1634
(919) 707-9064 phone
Contact: Shashi Bhatta
Email: shashi.bhatta@ncdenr.gov

H. NCDENR
Division of Water Quality
Surface Water Protection
3800 Barrett Drive
Raleigh, NC 27609
(919) 791-4200 phone
Contact: Danny Smith
Email: danny.smith@ncdenr.gov




VICINITY MAP
NTS

## PROJECT DATA

NAME OF PROJECT:

US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

OWNER:

NNP BRIAR CHAPEL, LLC
16 WINDY KNOLL CIRCLE
CHAPEL HILL, NC 27516
PHONE: (919) 951-0700
FAX: (919) 240-4963
CONTACT: LEE BOWMAN
EMAIL: lbowman@newlandco.com

PREPARED BY:

McKIM & CREED
1730 VARSITY DRIVE, SUITE 500
RALEIGH, NORTH CAROLINA 27606
PHONE: (919) 233-8091
FAX: (919) 233-8031
CONTACT: GARETH AVANT, PE
EMAIL: gavant@mckimcreed.com

PROJECT AREA: 34.87 AC

These improvements shall be constructed in accordance with the following plans, and the Standard Specifications of NCDOT and Chatham County.

## SHEET INDEX


| | |
|---|---|
| C0.1 | COVER SHEET |
| C0.2 | EXISTING CONDITIONS/DEMOLITION PLAN |
| C1.0 | OVERALL SITE PLAN |
| C1.1 | SITE PLAN |
| C1.2 | SITE PLAN |
| C2.1 | UTILITY PLAN |
| C2.2 | UTILITY PLAN |
| C3.0 | OVERALL STAGE 1 EROSION CONTROL PLAN |
| C3.1 | STAGE 1 EROSION CONTROL PLAN |
| C3.2 | STAGE 1 EROSION CONTROL PLAN |
| C3.3 | GRADING, DRAINAGE & STAGE 2 EROSION CONTROL PLAN |
| C3.4 | GRADING, DRAINAGE & STAGE 2 EROSION CONTROL PLAN |
| C4.1 | PLAN & PROFILE CLIFFDALE ROAD STA. 10+00 TO 25+00.00 |
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| C4.3 | PLAN & PROFILE WHISPERING WIND DRIVE STA. 10+00 TO 23+25.00 |
| C4.4 | PLAN & PROFILE WHISPERING WIND DRIVE STA. 23+25 TO 29+25.51 FOXBROOK PLACE - SECTION 1 STA. 10+00.00 TO 16+00.00 |
| C4.5 | PLAN & PROFILE FOXBROOK PLACE STA 16+00.00 TO 19+39.00 |
| D1.1 | EROSION AND SEDIMENTATION CONTROL DETAILS |
| D1.2 | EROSION AND SEDIMENTATION CONTROL DETAILS |
| D2.1 | NCDOT ROADWAY DETAILS |
| D2.2 | NCDOT DRAINAGE DETAILS |
| D3.1 | UTILITY DETAILS |
| D3.2 | UTILITY DETAILS |
| D4.1 | BMP #21 PLAN & DETAILS |
| D4.2 | BMP #21 PLAN & DETAILS |
| D4.3 | BMP #21 PLAN & DETAILS |
| D4.4 | BMP #22 PLAN & DETAILS |
| D4.5 | LEVEL SPREADER/VEGETATIVE FILTER STRIP DETAILS |
| D4.6 | STORM DRAINAGE & SANITARY SEWER TABLES |


BRIAR CHAPEL®
by Newland COMMUNITIES


McKIM & CREED
1730 Varsity Drive, Suite 500
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Phone: (919)233-8091, Fax: (919)233-8031
F-1222

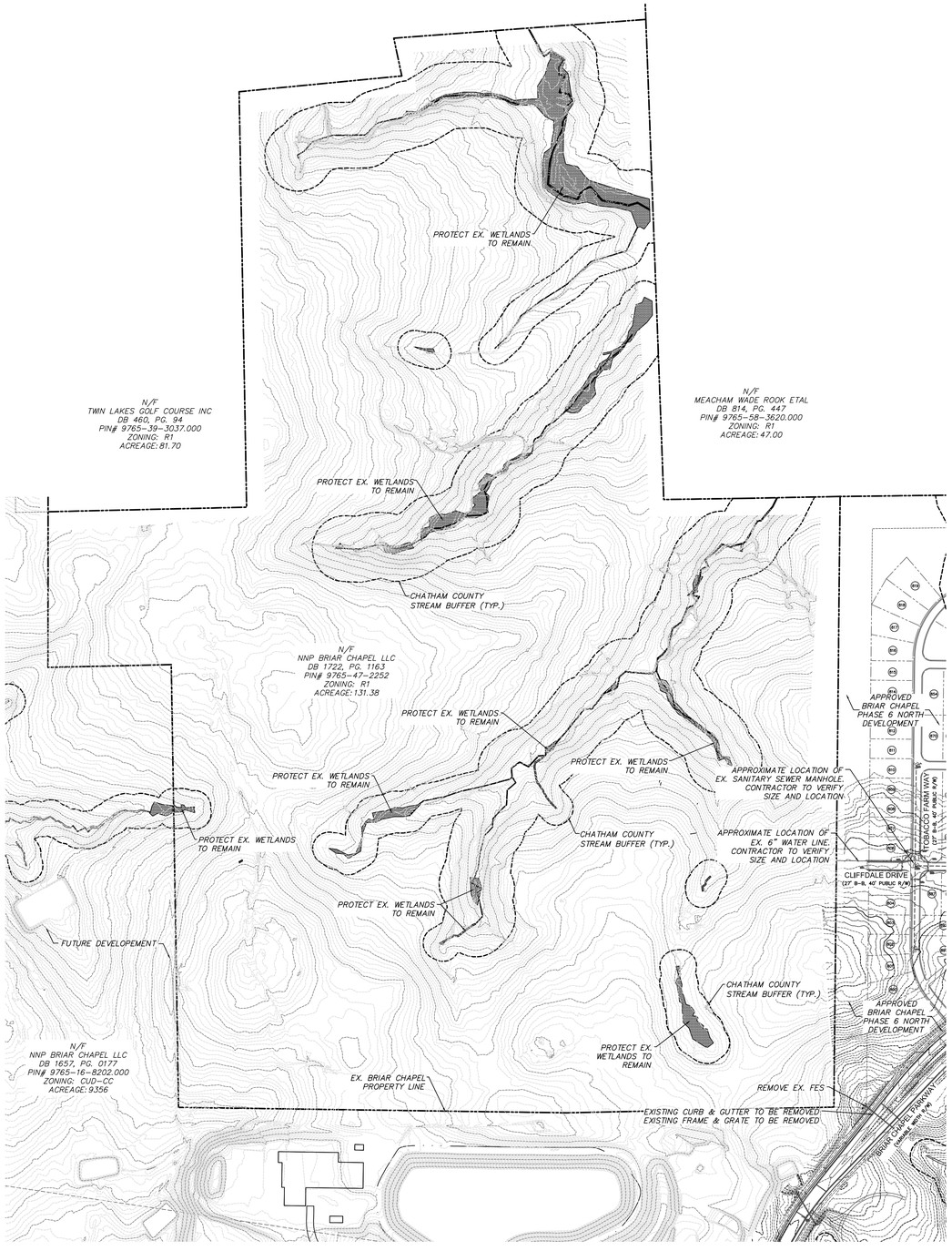
www.mckimcreed.com

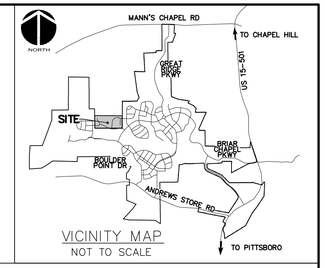

NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT 06/14/2016

CALL N.C. ONE CALL CENTER BEFORE YOU DIG STOP 1-800-632-4949 AVOID UTILITY DAMAGE

FINAL DRAWINGS
FOR REVIEW PURPOSES ONLY

US STEEL - SECTION 1
02735-0159
FINAL DRAWINGS - FOR REVIEW PURPOSES ONLY




VICINITY MAP
NOT TO SCALE

## GENERAL NOTES:

1. THIS PROPERTY IS ZONED R-1.
2. ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASUREMENTS.
3. BEARINGS SHOWN HEREON ARE BASED ON NC GRID NAD83. THIS PROJECT IS LOCALIZED ABOUT NCGS MONUMENT "MEACHAM" HAVING NC GRID COORDINATES N: 768,395.12', E: 1,963,424.93' USING A COMBINED FACTOR OF 0.99990676.
4. EXISTING TOPOGRAPHIC DATA IS BASED ON AERIAL MAPPING PERFORMED BY AVIOIMAGE MAPPING SERVICES IN FEBRUARY 2010. ELEVATIONS ARE BASED ON NAVD 88 NCGS MONUMENT "F-92" WITH AN ELEVATION OF 476.06'.
5. HORIZONTAL AND VERTICAL CONTROL FOR THIS SITE WAS INSTALLED BY GPA PROFESSIONAL LAND SURVEYORS OF NC.
6. PROJECT IS LOCATED IN THE WSIV-PA JORDAN LAKE BUFFER AREA WATERSHED DISTRICT.
7. STREAM AND WETLAND LOCATIONS ARE BASED ON DELINEATIONS PROVIDED BY WETLAND AND NATURAL RESOURCES CONSULTANTS – CONTACT CHRIS HUYSMAN AT 336-406-0906.
8. A PORTION OF THIS PROPERTY IS LOCATED IN SPECIAL FLOOD HAZARD AREA "AE" AS SHOWN ON FEMA FIRM MAP #3710976500J DATED FEBRUARY 2, 2007.

## DEMOLITION NOTES:

1. NO EARTH-DISTURBING ACTIVITIES SHALL COMMENCE UNTIL ALL PERIMETER EROSION CONTROL MEASURES ARE IN PLACE IN ACCORDANCE WITH THE EROSION CONTROL SEQUENCE SHOWN IN THESE PLANS.
2. NO EARTH-DISTURBING ACTIVITY OR OTHER WORK SHALL TAKE PLACE WITHIN WETLAND AREAS NOTED ON SURVEY. CONTRACTOR SHALL FIELD VERIFY WETLAND LIMITS FLAGGING IS IN PLACE AND SHALL NOT ENTER WETLAND AREAS. IF WETLAND FLAGGING IS MISSING OR OTHERWISE DAMAGED, IT IS CONTRACTOR'S RESPONSIBILITY TO NOTE WETLAND LIMITS AND PREVENT DISTURBANCE OR OTHER ACTIVITY WITHIN WETLANDS.
3. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL PROPERTY CORNER MONUMENTS, AND SHALL HAVE, AT HIS EXPENSE, ALL CORNER MONUMENTS REPLACED WHICH ARE DISTURBED BY CONSTRUCTION ACTIVITIES.
4. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING IMPROVEMENTS, AT HIS EXPENSE, DURING CONSTRUCTION, SUCH AS, BUT NOT LIMITED TO, DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. REPAIRS SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE PUBLIC DURING CONSTRUCTION, WHICH INCLUDES, BUT IS NOT LIMITED TO, CONSTRUCTION FENCING, BARRICADES, SIGNAGE, ETC.
6. CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH ALL REGULATIONS GOVERNING THE DEMOLITION, REMOVAL, TRANSPORTATION AND DISPOSAL OF ALL DEMOLITION DEBRIS.
7. CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH THE LATEST OSHA STANDARDS FOR EXCAVATION AND TRENCHING PROCEDURES. CONTRACTOR SHALL USE SUPPORT SYSTEMS, SLOPING, BENCHING, ETC. AS NECESSARY FOR THESE OPERATIONS, AND SHALL COMPLY WITH ALL OSHA PERFORMANCE CRITERIA.
8. CONTRACTOR SHALL TAKE SPECIAL CARE TO PROTECT ALL UTILITIES AND APPURTENANCES TO REMAIN.

## LEGEND:

- EXISTING WETLANDS
- AREA OF DEMOLITION
- OVERALL PROPERTY BOUNDARY
- 100' PROPERTY BOUNDARY BUFFER
- STREAM BUFFER LINE
- 480 EX. CONTOUR
- EX. POWER LINE EASEMENT
- IRR EX. REUSE IRRIGATION MAIN
- W EX. WATER MAIN
- X EX. FENCE
- TWC EX. TIME WARNER CABLE UTILITY LINE
- AT&T EX. AT&T UTILITY LINE
- EX. STORM DRAINAGE PIPE
- PROJECT LIMITS

NORTH
200' 0 200' 400'
SCALE: 1"=200' (Horiz.)

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811
1-800-632-4949
AVOID UTILITY DAMAGE

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AYAN
03/02/2016

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1730 Varsity Drive, Suite 500
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by Newland COMMUNITIES

BRIAR CHAPEL
US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

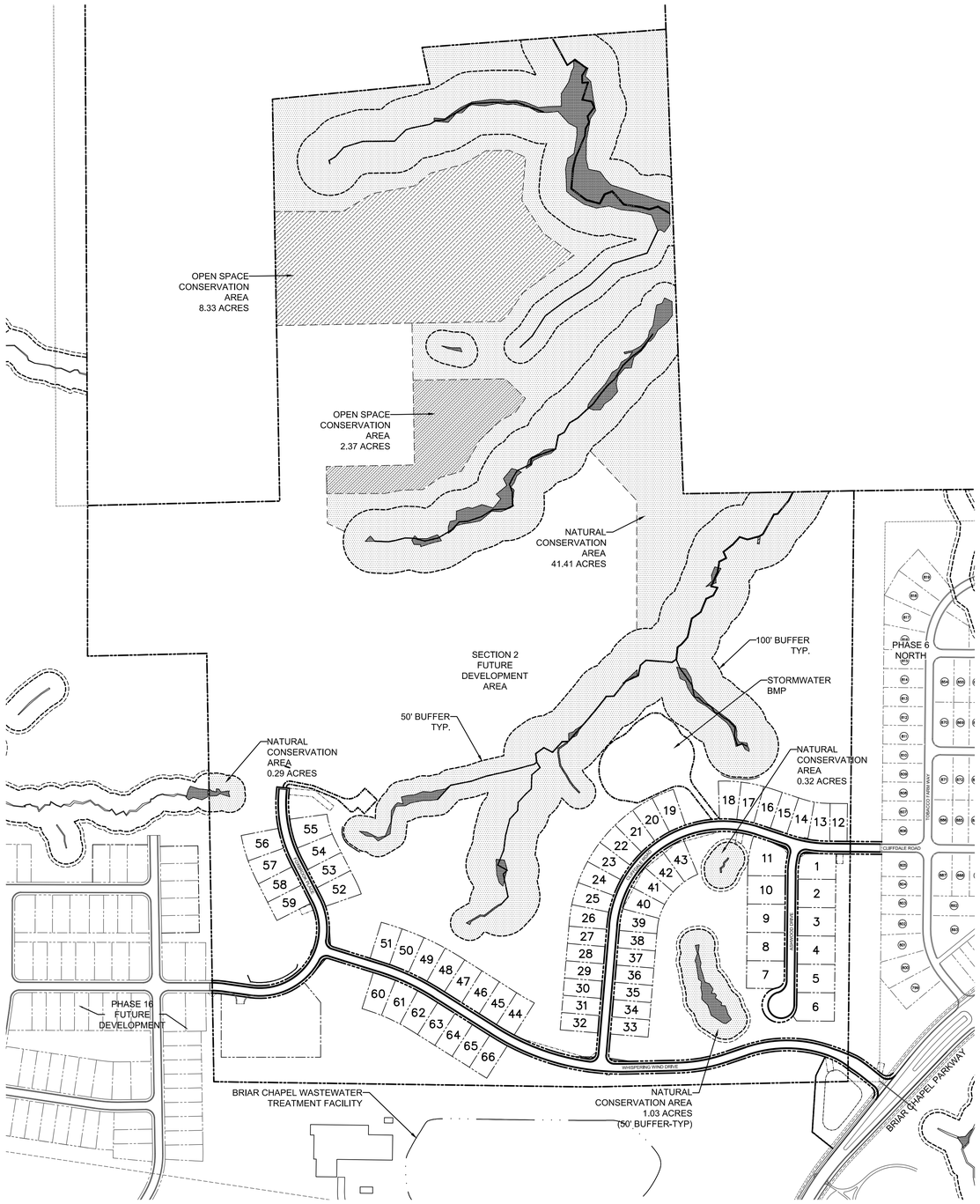
EXISTING CONDITIONS/DEMOLITION PLAN

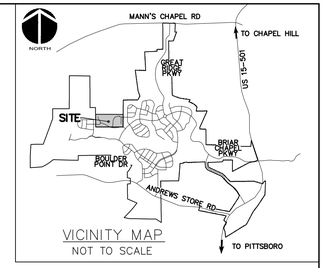
| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

M&C FILE NUMBER: CR101
DRAWING NUMBER: C0.2

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 5




VICINITY MAP
NOT TO SCALE

## SITE GENERAL NOTES:

1. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY OWNER IF ANY DISCREPANCIES EXIST PRIOR TO CONSTRUCTION. NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
2. STREAM AND WETLAND LOCATIONS ARE BASED ON DELINEATIONS PROVIDED BY WETLAND AND NATURAL RESOURCES CONSULTANTS – CONTACT CHRIS HUYSMAN AT 336-406-0906.
3. A PORTION OF THIS PROPERTY IS LOCATED IN SPECIAL FLOOD HAZARD AREA "AE" AS SHOWN ON FEMA FIRM MAP #3710976500J DATED FEBRUARY 2, 2007.
4. ALL PROPOSED ROADWAY DIMENSIONS AS SHOWN ARE MEASURED FROM BACK OF CURB TO BACK OF CURB, ALL PROPOSED ALLEY DIMENSIONS AS SHOWN ARE MEASURED FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT, UNLESS NOTED OTHERWISE.
5. BEFORE STARTING ANY CONSTRUCTION OF IMPROVEMENTS WITHIN ANY NCDOT STREET OR HIGHWAY RIGHT-OF-WAY, CONTACT NCDOT DISTRICT OFFICE AND OBTAIN ALL PERMITS AND ENCROACHMENTS. KEEP COPIES ON CONSTRUCTION SITE. ALSO CONTACT NCDOT DISTRICT OFFICE 24 HOURS IN ADVANCE BEFORE PLACING CURB AND GUTTER AT 336-629-1423.
6. REFER TO PLAN AND PROFILE SHEETS FOR DETAILED SANITARY SEWER AND STORM DRAINAGE INFORMATION WITHIN PUBLIC ROADS AND PRIVATE ALLEYS.

## CHATHAM COUNTY REQUIRED SITE NOTES

1. PROPERTY OWNER/DEVELOPER:
   NNP BRIAR CHAPEL, LLC
   16 WINDY KNOLL CIRCLE
   CHAPEL HILL, NC 27516
   PHONE: (919) 951-0700
2. SITE AKPAR #: 2177
3. TOTAL ENTITLED LOTS: 127
4. TOTAL LOTS THIS PHASE: 66
5. CONSERVATION ACREAGE TOTALS:

| | | |
|---|---|---|
| –TOTAL PARCEL ACREAGE 131.384 | | |
| –TOTAL NATURAL SPACE | 1,875,360 SF | 43.05 AC |
| –TOTAL OPEN SPACE | 466,255 SF | 10.71 AC |
| TOTAL CONSERVATION AREA | 2,341,615 SF | 53.76 AC |
| ADDITIONAL CONSIDERATIONS | | |
| –WITHIN RIPARIAN BUFFERS AND FLOODPLAIN | 1,320,163 SF | 30.30 AC |
| –CONTIGUOUS NATURAL SPACE | 1,803,968 SF | 37.47 AC |

6. BUILT UPON AREA CALCULATIONS – SECTION 1

| | | |
|---|---|---|
| –ROADWAYS: | 138,296 SF | 3.17 AC |
| –SIDEWALKS | 34,919 SF | 0.80 AC |
| –LOT | 256,100 SF | 5.88 AC |
| TOTALS | 429,315 SF | 9.86 AC |

IMPERVIOUS % FOR SECTION 1 DEVELOPMENT: 7.50%

## LEGEND

- ROADWAY CENTERLINE
- ROW
- LOT LINE
- CHATHAM COUNTY STREAM BUFFER
- 4' H.O.A. EASEMENT
- 4' PRIVATE UTILITY EASEMENT
- BMP MAINTENANCE & ACCESS EASEMENT
- SIDEWALK EASEMENT
- SIGN
- EXISTING WETLANDS
- 10'x70' SIGHT TRIANGLE
- NEW ROADWAY PAVEMENT

NORTH

CALL N.C. ONE CALL CENTER BEFORE YOU DIG STOP 1-800-632-4949 AVOID UTILITY DAMAGE

200 0 200 400
SCALE: 1"=200' (Horiz.)

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT
05/10/2016

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BRIAR CHAPEL
US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

OVERALL SITE PLAN

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

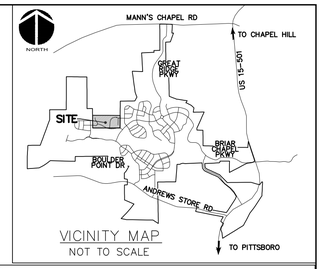
SCALE
HORIZONTAL: 1" = 200'
VERTICAL: N/A

M&C FILE NUMBER C1.0
DRAWING NUMBER C1.0

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 6

| ALIGNMENT CURVE DATA | | | | | |
|---|---|---|---|---|---|
| CURVE # | RADIUS | ARCH LENGTH | CHORD BEARING | CHORD LENGTH | DELTA |
| C3 | 750.00' | 448.28' | N74°05'42"W | 441.64' | 34°14'46" |
| C7 | 745.00' | 194.47' | N65°11'15"W | 193.92' | 14°57'23" |
| C8 | 300.00' | 41.53' | S85°52'25"E | 41.49' | 7°55'52" |
| C9 | 200.00' | 436.32' | N35°32'58"E | 354.80' | 124°59'45" |
| C10 | 400.00' | 322.23' | N3°52'13"W | 313.59' | 46°09'23" |

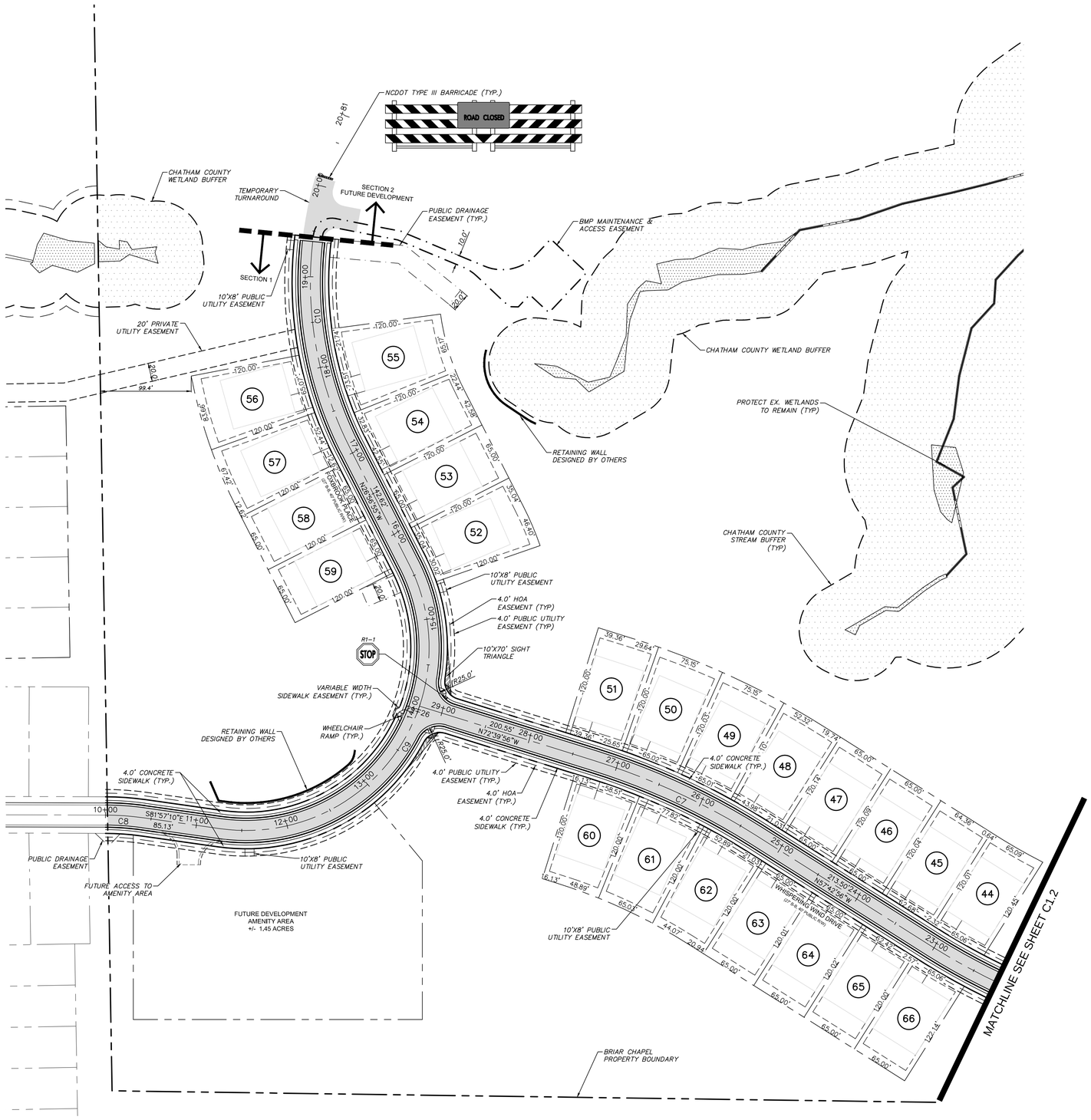
| LOT AREA TABLE | | |
|---|---|---|
| LOT # | AREA (SF) | AREA (AC) |
| 44 | 7808.70 | 0.18 |
| 45 | 7800.91 | 0.18 |
| 46 | 7804.23 | 0.18 |
| 47 | 7807.58 | 0.18 |
| 48 | 8233.46 | 0.19 |
| 49 | 8414.28 | 0.19 |
| 50 | 8411.25 | 0.19 |
| 51 | 8040.23 | 0.18 |
| 52 | 8789.89 | 0.20 |
| 53 | 7800.00 | 0.18 |
| 56 | 8923.21 | 0.20 |
| 57 | 8705.38 | 0.20 |
| 58 | 7800.00 | 0.18 |
| 59 | 7800.00 | 0.18 |
| 60 | 8379.75 | 0.19 |
| 61 | 8570.71 | 0.20 |
| 62 | 8335.78 | 0.19 |
| 63 | 7800.46 | 0.18 |
| 64 | 7801.02 | 0.18 |
| 65 | 7801.35 | 0.18 |
| 66 | 7839.97 | 0.18 |




VICINITY MAP
NOT TO SCALE

LEGEND

- ROADWAY CENTERLINE
- ROW
- LOT LINE
- CHATHAM COUNTY STREAM BUFFER
- 4' H.O.A. EASEMENT
- 4' PRIVATE UTILITY EASEMENT
- BMP MAINTENANCE & ACCESS EASEMENT
- SIDEWALK EASEMENT
- SIGN
- EXISTING WETLANDS
- 10'x70' SIGHT TRIANGLE
- NEW ROADWAY PAVEMENT




NORTH

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60 0 60 120

SCALE: 1"=60' (Horiz.)

| REVISIONS | | |
|---|---|---|
| REV.NO. | DESCRIPTIONS | DATE |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

SEAL

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NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT
03/02/2016


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BRIAR CHAPEL™ by Newland COMMUNITIES

BRIAR CHAPEL
US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

SITE PLAN - EAST

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: 1" = 60'
VERTICAL: N/A

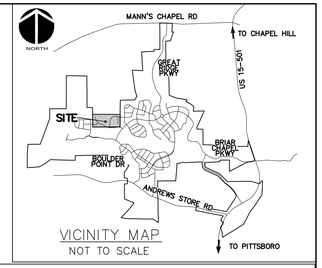
M&C FILE NUMBER C1.1
DRAWING NUMBER C1.1

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

REVISION 5

| ALIGNMENT CURVE DATA | | | | | |
|---|---|---|---|---|---|
| CURVE # | RADIUS | ARCH LENGTH | CHORD BEARING | CHORD LENGTH | DELTA |
| C1 | 400.00' | 399.52' | N80°00'35"W | 383.12' | 57°13'40" |
| C2 | 500.00' | 151.89' | S80°04'45"W | 151.31' | 17°24'20" |
| C3 | 750.00' | 448.28' | N74°05'42"W | 441.64' | 34°14'46" |
| C4 | 400.00' | 124.36' | N80°30'31"W | 123.86' | 17°48'50" |
| C5 | 350.00' | 632.72' | S56°36'35"W | 550.01' | 103°34'37" |
| C6 | 250.00' | 60.90' | S7°33'45"W | 60.75' | 13°57'23" |

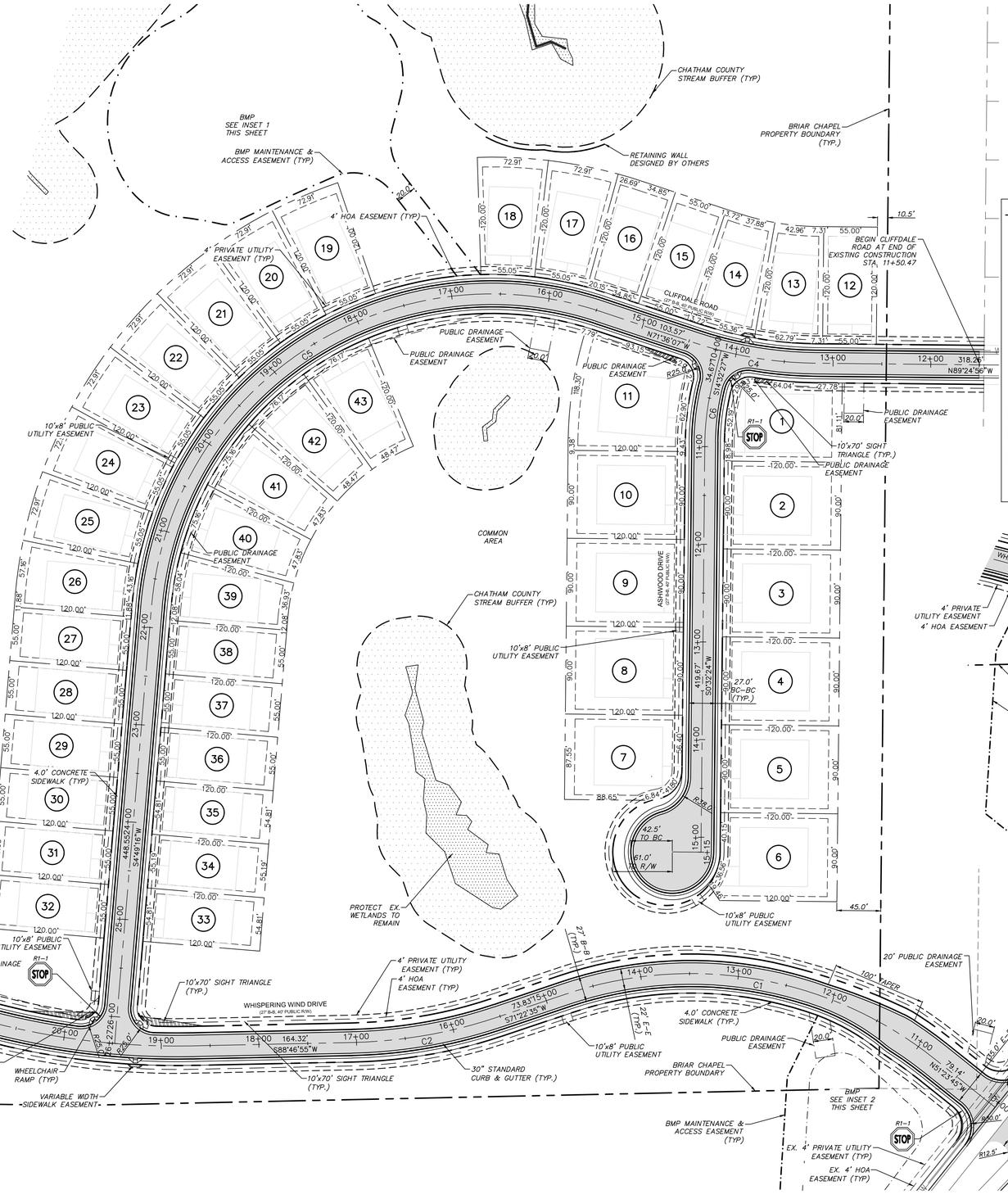
| LOT AREA TABLE | | |
|---|---|---|
| LOT # | AREA (SF) | AREA (AC) |
| 1 | 9712.29 | 0.22 |
| 2 | 10800.00 | 0.25 |
| 3 | 10800.00 | 0.25 |
| 4 | 10800.00 | 0.25 |
| 5 | 10800.00 | 0.25 |
| 6 | 11010.83 | 0.25 |
| 7 | 10279.07 | 0.24 |
| 8 | 10800.00 | 0.25 |
| 9 | 10799.44 | 0.25 |
| 10 | 10799.44 | 0.25 |
| 11 | 13018.73 | 0.30 |
| 12 | 6600.00 | 0.15 |
| 13 | 7221.63 | 0.17 |
| 14 | 7240.44 | 0.17 |
| 15 | 6600.00 | 0.15 |
| 16 | 6993.04 | 0.16 |
| 17 | 7677.35 | 0.18 |
| 18 | 7677.35 | 0.18 |
| 19 | 7677.35 | 0.18 |
| 20 | 7677.35 | 0.18 |
| 21 | 7677.35 | 0.18 |
| 22 | 7677.35 | 0.18 |
| 23 | 7677.35 | 0.18 |
| 24 | 7677.35 | 0.18 |
| 25 | 7677.35 | 0.18 |
| 26 | 7444.69 | 0.17 |
| 27 | 6600.00 | 0.15 |
| 28 | 6600.00 | 0.15 |
| 29 | 6600.00 | 0.15 |
| 30 | 6600.00 | 0.15 |
| 31 | 6600.00 | 0.15 |
| 32 | 6600.00 | 0.15 |
| 33 | 6576.65 | 0.15 |
| 34 | 6623.35 | 0.15 |
| 35 | 6576.65 | 0.15 |
| 36 | 6600.00 | 0.15 |
| 37 | 6600.00 | 0.15 |
| 38 | 6600.00 | 0.15 |
| 39 | 7147.33 | 0.16 |
| 40 | 7379.58 | 0.17 |
| 41 | 7379.58 | 0.17 |
| 42 | 7478.41 | 0.17 |
| 43 | 7478.41 | 0.17 |

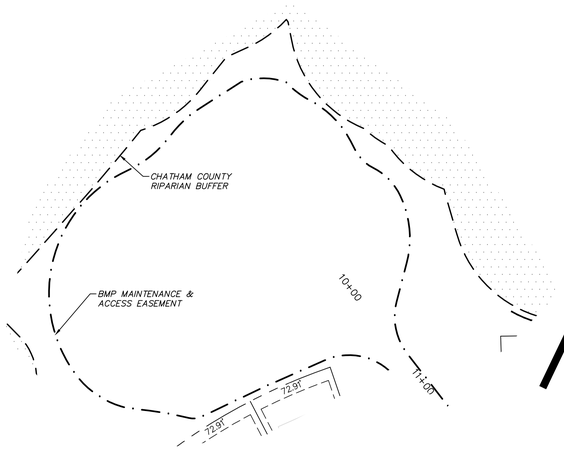



VICINITY MAP
NOT TO SCALE

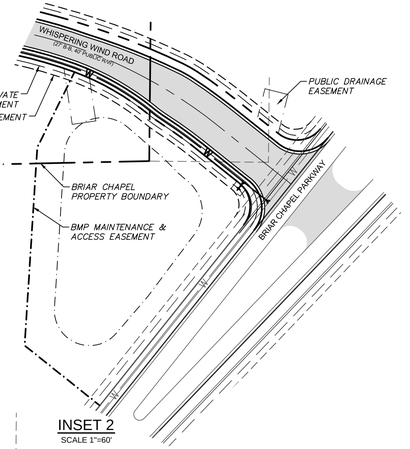
LEGEND

- ROADWAY CENTERLINE
- ROW
- LOT LINE
- CHATHAM COUNTY STREAM BUFFER
- 4' H.O.A. EASEMENT
- 4' PRIVATE UTILITY EASEMENT
- BMP MAINTENANCE & ACCESS EASEMENT
- SIDEWALK EASEMENT
- SIGN
- EXISTING WETLANDS
- 10'x70' SIGHT TRIANGLE
- NEW ROADWAY PAVEMENT




INSET 1
SCALE 1"=60'




INSET 2
SCALE 1"=60'

NORTH

CALL N.C. ONE CALL CENTER BEFORE YOU DIG
STOP
1-800-632-4949
AVOID UTILITY DAMAGE

60 0 60 120
SCALE: 1"=60' (Horiz.)

| REV. NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C AVANT
03/02/2016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BRIAR CHAPEL™
by Newland COMMUNITIES

# BRIAR CHAPEL
# US STEEL - SECTION 1
# CHATHAM COUNTY, NORTH CAROLINA

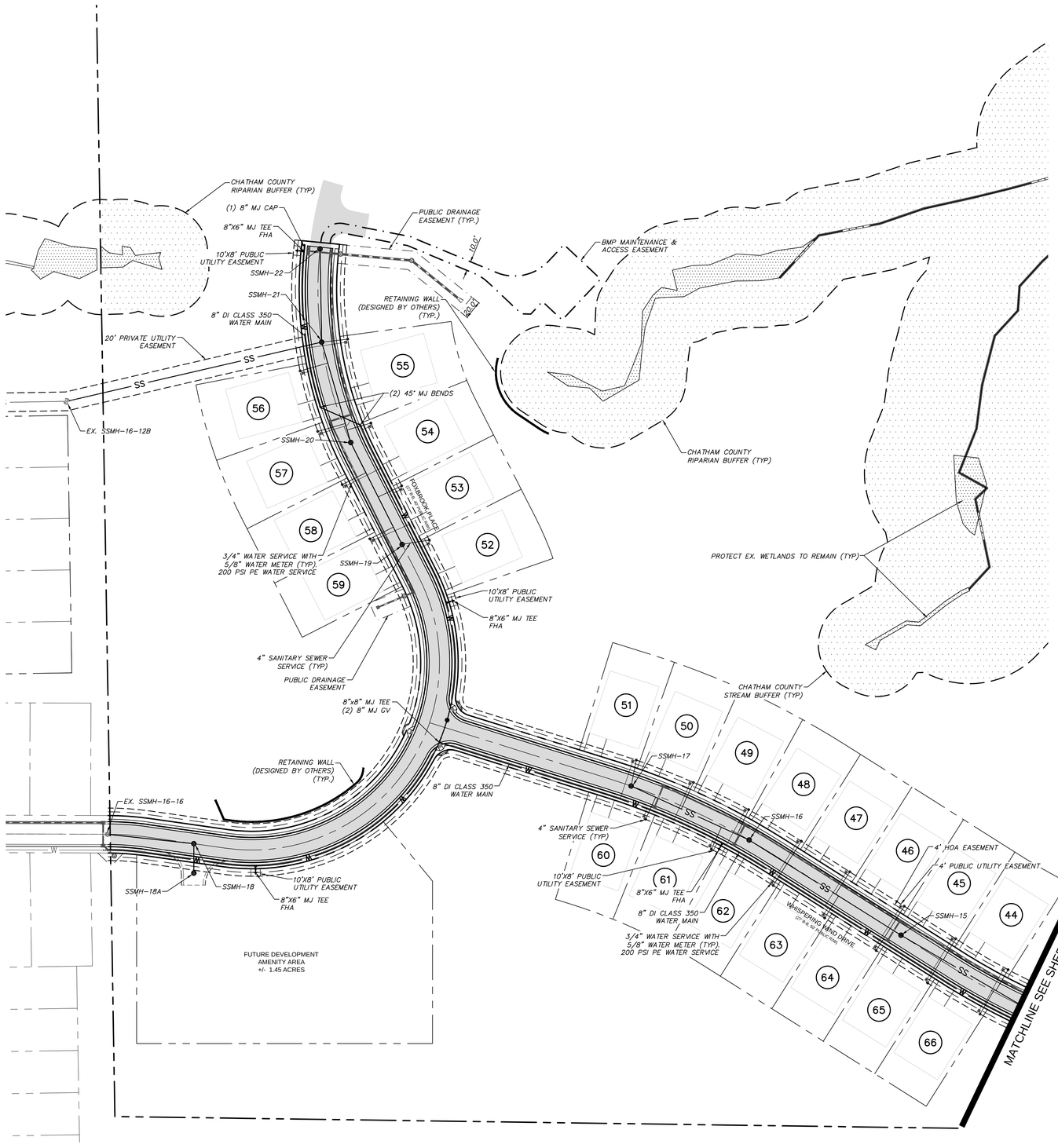
## SITE PLAN - EAST

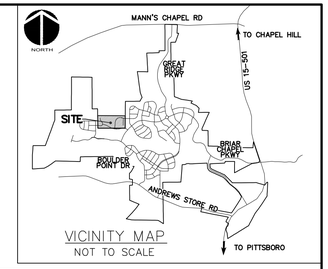
| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: 1" = 60'
VERTICAL: N/A

M&C FILE NUMBER: C1.1
DRAWING NUMBER: C1.2

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 5




VICINITY MAP
NOT TO SCALE

## LEGEND

| | |
|---|---|
| SS | SANITARY SEWER LINE |
| W | WATER MAIN |
| FM | SANITARY SEWER FORCE MAIN (DESIGNED BY OTHERS) |
| SS | EXISTING SANITARY SEWER LINE |
| W | EXISTING SS FORCE MAIN |
| W | EXISTING WATER MAIN |
| OE | EXISTING OVERHEAD ELECTRIC |
| ELEC | EXISTING UNDERGROUND ELECTRIC |
| TWC | EXISTING TIME WARNER CABLE LINE |
| AT&T | EXISTING AT&T LINE |
| (SS) | SANITARY SEWER MANHOLE |
| ⊗ | SANITARY SEWER CLEANOUT |
| WM | WATER METER |
| | FIRE HYDRANT ASSEMBLY (FHA) |
| | ROW |
| | LOT LINE |
| | CHATHAM COUNTY STREAM BUFFER |
| | 4' H.O.A. EASEMENT |
| | 4' PRIVATE UTILITY EASEMENT |
| | EXISTING WETLANDS |

## UTILITY NOTES:

1. ALL SANITARY SEWER CONSTRUCTION IS TO BE PERFORMED IN ACCORDANCE WITH CURRENT NCDENR & CHATHAM COUNTY STANDARDS, SPECIFICATIONS & DETAILS.
2. ALL WATER MAIN CONSTRUCTION IS TO BE PERFORMED IN ACCORDANCE WITH CURRENT CHATHAM COUNTY STANDARDS, SPECIFICATIONS & DETAILS.
3. ALL PERMITS RELATING TO THIS PROJECT MUST BE OBTAINED PRIOR TO CONSTRUCTION.
4. ALL WATER MAINS SHALL HAVE A MIN. OF 3'-6" OF COVER AS MEASURED FROM FINISHED GRADE TO TOP OF PIPE AT THE LOCATION WHERE INSTALLED.
5. WATER MAINS SHALL BE LAID AT LEAST 10 FEET LATERALLY FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A 10-FOOT LATERAL SEPARATION, IN WHICH CASE:

   (1) THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER; OR

   (2) THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.

   WHERE A WATER MAIN CROSSES OVER A SANITARY SEWER, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN 18-INCH VERTICAL SEPARATION — IN WHICH CASE BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF DUCTILE IRON AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.

   WHERE A WATER MAIN CROSSES UNDER A SANITARY SEWER, BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF DUCTILE IRON AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE POINT OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING. SEE NCAC 15A, 18C, SECTION .0906.
6. CONTRACTOR SHALL USE A MIN. 20' SECTION DIP CLASS 350 CENTERED UNDER STORMWATER PIPE WHERE 18" MIN. VERTICAL CLEARANCE CANNOT BE MET BETWEEN STORMWATER AND WATER.
7. TRACER WIRE AND TRACER WIRE TEST STATIONS ARE TO BE INSTALLED ON ALL WATER MAINS. TRACER WIRE TEST STATIONS ARE TO BE LOCATED AT ALL FIRE HYDRANTS WITHIN A 3 FOOT RADIUS OF THE HYDRANT AND PREFERABLY TO THE REAR OF THE HYDRANT.
8. WATER SERVICES SHALL BE EXTENDED FROM THE MAIN TO A METER BOX LOCATED WITHIN THE RIGHT OF WAY. THE METER SHALL BE PLACED AT THE EDGE OF THE SERVICED LOT'S RIGHT OF WAY LINE OR EASEMENT. SERVICE LINE SHALL BE RUN ON A TRUE LINE FROM THE WATER MAIN TO THE METER BOX, AND WHERE POSSIBLE, SERVICE LINE SHALL BE PERPENDICULAR TO THE MAIN LINE. NO WATER BOXES OR VAULTS SHALL BE PLACED IN STREETS, SIDEWALKS, PARKING AREAS, OR DRIVEWAYS.

## UTILITY NOTES (CONT.):

9. MANHOLES SHALL BE SPACED A MAXIMUM DISTANCE OF 400 FEET APART.
10. MANHOLES SHALL BE INSTALLED AT EACH DEFLECTION OF LINE AND/OR GRADE WITH A MINIMUM DROP OF 0.2 FEET. MANHOLES FOR SEWERS GREATER THAN 21 INCHES IN DIAMETER SHALL BE 5 FOOT MANHOLES. MANHOLES FOR SEWERS 12 FEET OR DEEPER SHALL BE MINIMUM 5 FOOT DIAMETER. MANHOLE TOPS SHALL BE SET FLUSH WITH PAVEMENT WHERE INSTALLED IN A STREET.
11. SERVICE CONNECTIONS FOR THE SANITARY SEWER LINES SHOULD BE PERPENDICULAR FROM THE MAIN LINE TO THE EDGE OF THE SERVICED LOT'S RIGHT OF WAY LINE OR EASEMENT WITH A MINIMUM GRADE OF 1/4 INCH/FOOT FOR 4 INCH AND .6 FOOT/100 FOOT FOR 6 INCH. ALL CLEANOUTS SHALL EXTEND A MINIMUM OF 6 INCHES ABOVE THE FINISHED GRADE. WHERE A SERVICE LINE IS CONNECTED TO A MANHOLE, THE LINE SHALL TERMINATE AT THE EDGE OF THE INVERT IN THE MANHOLE. NO CLEANOUTS SHALL BE PLACED IN STREETS, SIDEWALKS, PARKING AREAS, OR DRIVEWAYS.
12. ALL SANITARY SEWER LINES ARE 8" PVC SDR 35 UNLESS OTHERWISE NOTED AND ALL WATER MAIN LINES ARE 8" DI CLASS 350 UNLESS OTHERWISE NOTED. ALL SANITARY SEWER SERVICES ARE 4" SCHEDULE 40 PVC AND ALL WATER MAIN SERVICES ARE 3/4" WITH 5/8" METERS.
13. MINIMUM COVER OF 5 FEET IN TRAFFIC AREAS TO BE PROVIDED FOR ALL COLLECTOR LINES 4 INCHES AND LARGER. IF LESS THAN 5 FEET, DUCTILE IRON PIPE SHALL BE REQUIRED.
14. SANITARY SEWER WITHIN PRIVATE EASEMENTS TO BE OWNED, OPERATED AND MAINTAINED BY HOME OWNERS ASSOCIATION OR AGENT THEREOF.
15. WATER MAINS WILL BE 3.5' AS MEASURED HORIZONTALLY BEHIND CURB AND GUTTER UNLESS SHOWN OTHERWISE.
16. ALL WATER MAINS WITHIN PUBLIC EASEMENTS AND PUBLIC RIGHT-OF-WAY TO BE OWNED, OPERATED AND MAINTAINED BY CHATHAM COUNTY, AND WILL BE CONTAINED WITHIN 20' WIDE PUBLIC WATER LINE EASEMENT (MINIMUM) CENTERED ON THE PROPOSED WATER MAIN.
17. CONTRACTOR TO COORDINATE WITH CHATHAM COUNTY PUBLIC WORKS FOR ALL IRRIGATION SLEEVE SIZING.

NORTH

60 0 60 120

SCALE: 1"=60' (Horiz.)

CALL N.C. ONE CALL CENTER BEFORE YOU DIG
STOP
1-800-632-4949
AVOID UTILITY DAMAGE

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| | REVISIONS | |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER 03/02/2016 GARETH C. AYAN


McKIM&CREED
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Raleigh, North Carolina 27606
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F-1222

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BRIAR CHAPEL™ by Newland COMMUNITIES

# BRIAR CHAPEL
# US STEEL - SECTION 1
# CHATHAM COUNTY, NORTH CAROLINA

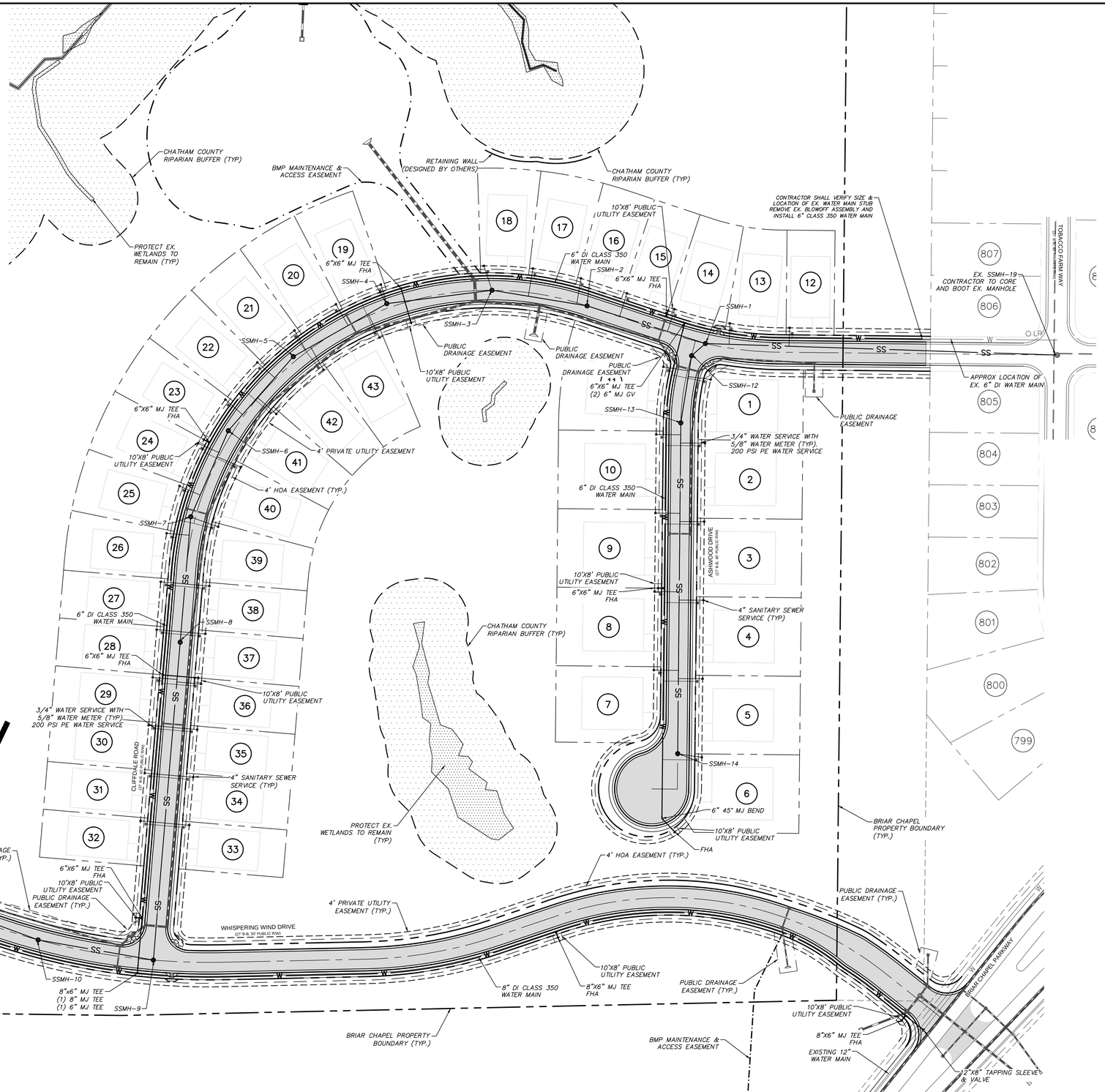
## UTILITY PLAN

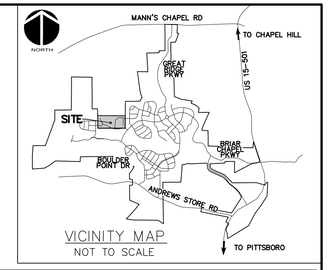
| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: 1" = 60'
VERTICAL: N/A

M&C FILE NUMBER: C2.X
DRAWING NUMBER: C2.1

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 5




## LEGEND

- SS — SANITARY SEWER LINE
- W — WATER MAIN
- FM — SANITARY SEWER FORCE MAIN (DESIGNED BY OTHERS)
- SS — EXISTING SANITARY SEWER LINE
- W — EXISTING SS FORCE MAIN
- W — EXISTING WATER MAIN
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- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEANOUT
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- 4' H.O.A. EASEMENT
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- EXISTING WETLANDS

NORTH

60 0 60 120

SCALE: 1"=60' (Horiz.)

CALL N.C. ONE CALL CENTER BEFORE YOU DIG STOP 1-800-632-4949 AVOID UTILITY DAMAGE

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REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT
03/02/2016


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BRIAR CHAPEL™ by Newland COMMUNITIES

# BRIAR CHAPEL
# US STEEL - SECTION 1
# CHATHAM COUNTY, NORTH CAROLINA

## UTILITY PLAN

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

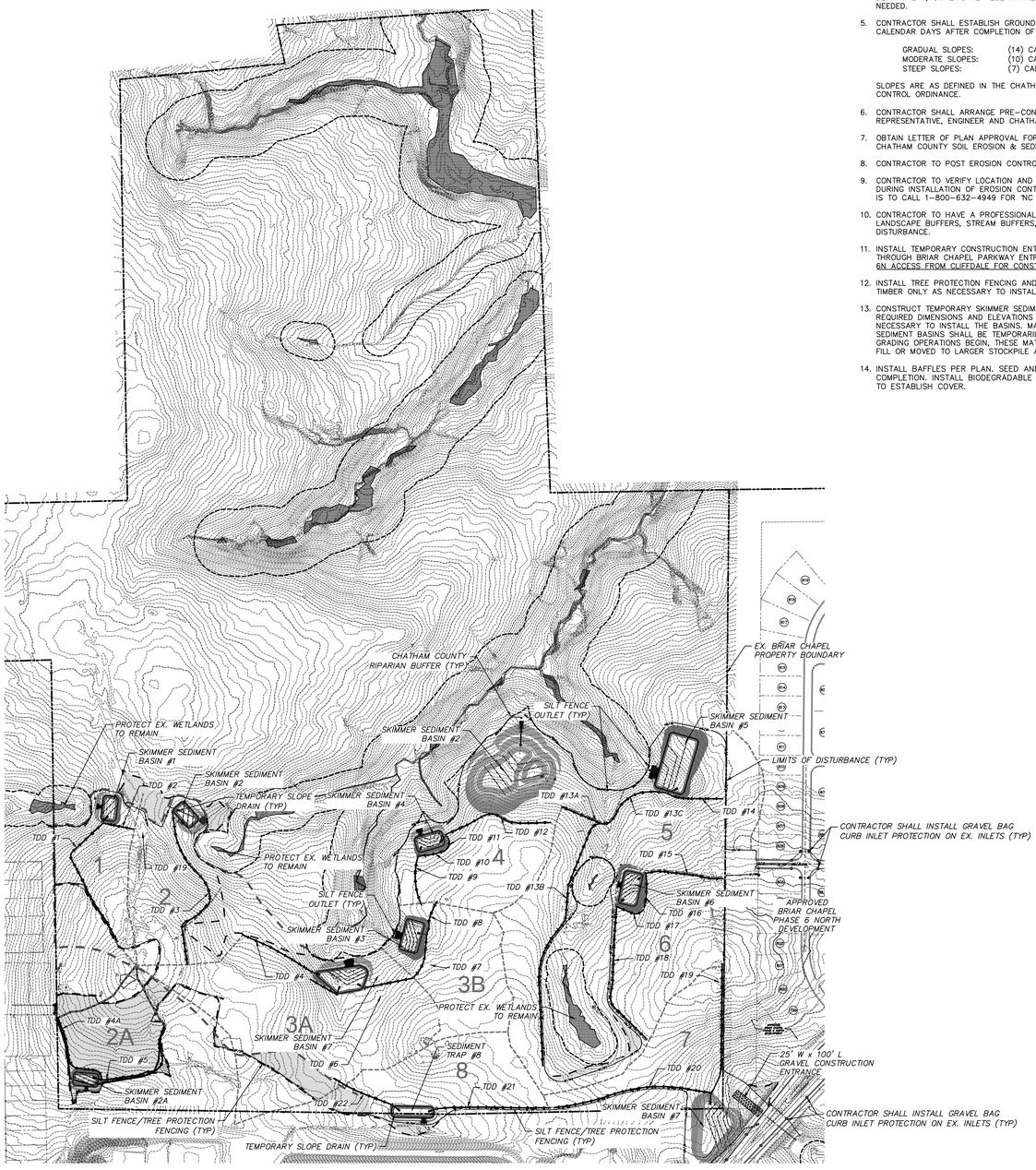
SCALE: HORIZONTAL: 1" = 60' VERTICAL: N/A

M&C FILE NUMBER: C2.X

DRAWING NUMBER: C2.2

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

REVISION: 5




## STAGE 1 CONSTRUCTION SEQUENCE;

1. THE INTENT OF THE CONSTRUCTION SEQUENCE IS TO PROVIDE THE CONTRACTOR WITH A GENERAL GUIDE FOR CONSTRUCTION PURPOSES. THIS SEQUENCE IS NOT INTENDED TO OUTLINE ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.
2. ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CHATHAM COUNTY SOIL EROSION AND SEDIMENTATION CONTROL ORDINANCE.
3. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER RAINFALL EVENTS. NEEDED REPAIRS SHALL BE MADE IMMEDIATELY.
4. IF IT IS DETERMINED DURING CONSTRUCTION THAT SIGNIFICANT SEDIMENT IS LEAVING THE SITE, DESPITE PROPER IMPLEMENTATION AND MAINTENANCE, THE CONTRACTOR IS OBLIGATED TO TAKE ADDITIONAL CORRECTIVE ACTION. CONTACT CHATHAM COUNTY ENVIRONMENTAL QUALITY DEPARTMENT, OWNER'S REPRESENTATIVE AND ENGINEER WITH ANY ADDITIONAL MEASURES NEEDED.
5. CONTRACTOR SHALL ESTABLISH GROUNDCOVER ON DISTURBED AREAS WITHIN THE NUMBER OF CALENDAR DAYS AFTER COMPLETION OF GRADING PER THE SCHEDULE BELOW:

| | |
|---|---|
| GRADUAL SLOPES: | (14) CALENDAR DAYS |
| MODERATE SLOPES: | (10) CALENDAR DAYS |
| STEEP SLOPES: | (7) CALENDAR DAYS |

SLOPES ARE AS DEFINED IN THE CHATHAM COUNTY SOIL EROSION AND SEDIMENTATION CONTROL ORDINANCE.

6. CONTRACTOR SHALL ARRANGE PRE-CONSTRUCTION MEETING WITH THE OWNER'S REPRESENTATIVE, ENGINEER AND CHATHAM COUNTY.
7. OBTAIN LETTER OF PLAN APPROVAL FOR SEDIMENTATION AND EROSION CONTROL FROM CHATHAM COUNTY SOIL EROSION & SEDIMENTATION CONTROL.
8. CONTRACTOR TO POST EROSION CONTROL PERMIT PROMINENTLY ON SITE AT ALL TIMES.
9. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES TO AVOID CONFLICT DURING INSTALLATION OF EROSION CONTROL MEASURES AND STORM DRAINAGE. CONTRACTOR IS TO CALL 1-800-632-4949 FOR 'NC ONE CALL' TO HAVE UTILITIES LOCATED.
10. CONTRACTOR TO HAVE A PROFESSIONAL LAND SURVEYOR FLAG PROPERTY LINES, EASEMENTS, LANDSCAPE BUFFERS, STREAM BUFFERS, TREE PROTECTION AREAS AND LIMITS OF DISTURBANCE.
11. INSTALL TEMPORARY CONSTRUCTION ENTRANCES. CONTRACTOR SHALL ONLY ACCESS SITE THROUGH BRIAR CHAPEL PARKWAY ENTRANCE. NO CONSTRUCTION TRAFFIC SHALL USE PHASE 6N ACCESS FROM CLIFFDALE FOR CONSTRUCTION ACTIVITIES.
12. INSTALL TREE PROTECTION FENCING AND SILT FENCING AS SHOWN AND DETAILED ON PLAN. TIMBER ONLY AS NECESSARY TO INSTALL THESE DEVICES.
13. CONSTRUCT TEMPORARY SKIMMER SEDIMENT BASINS & TEMPORARY SEDIMENT TRAPS TO THE REQUIRED DIMENSIONS AND ELEVATIONS AS DETAILED IN THESE PLANS. GRUB ONLY AS NECESSARY TO INSTALL THE BASINS. MATERIAL EXCAVATED DURING THE CONSTRUCTION OF SEDIMENT BASINS SHALL BE TEMPORARILY STOCKPILED ADJACENT TO BASINS. ONCE ROUGH GRADING OPERATIONS BEGIN, THESE MATERIALS SHALL BE PLACED AS NEEDED IN AREAS OF FILL OR MOVED TO LARGER STOCKPILE AREAS.
14. INSTALL BAFFLES PER PLAN. SEED AND MULCH SIDE SLOPES OF SEDIMENT BASINS UPON COMPLETION. INSTALL BIODEGRADABLE MATTING ON SIDE SLOPES OF BASINS IF NECESSARY TO ESTABLISH COVER.

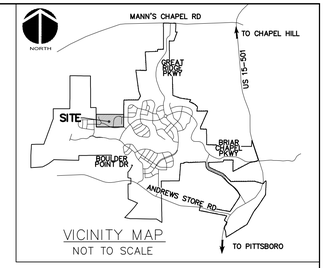
| US STEEL DRAINAGE AREAS | |
|---|---|
| DRAINAGE AREA NUMBER | TOTAL AREA WITHIN DRAINAGE AREA |
| 1 | 1.12 ACRES |
| 2 | 1.90 ACRES |
| 2A | 1.63 ACRES |
| 3 | 7.51 ACRES |
| 4 | 2.52 ACRES |
| 5 | 8.92 ACRES |
| 6 | 3.10 ACRES |
| 7 | 1.81 ACRES |
| 8 | 2.21 ACRES |

## STAGE 1 CONSTRUCTION SEQUENCE (CONT.);

15. CONSTRUCT DIVERSION DITCHES AS SHOWN AND DETAILED IN THESE PLANS. SEED, MULCH AND INSTALL REQUIRED LINERS IN THESE DITCHES. INSTALL CHECK DAMS IN DITCHES AS SHOWN AND DETAILED ON PLANS. CLEAR ONLY AS NECESSARY TO INSTALL THESE EROSION CONTROL MEASURES.
16. CONTACT CHATHAM COUNTY SOIL EROSION & SEDIMENTATION AT 919-545-8339 AND ENGINEER UPON COMPLETION OF INITIAL EROSION CONTROL MEASURES.
17. ONCE TEMPORARY SKIMMER SEDIMENT BASINS AND DIVERSION DITCHES HAVE BEEN INSTALLED, GRUB WITHIN DELINEATED DRAINAGE AREAS ASSOCIATED WITH THE INSTALLED TEMPORARY SKIMMER SEDIMENT BASINS.
18. CONTRACTOR SHALL STRIP TOPSOIL AND STORE AT DESIGNATED LOCATION. PROVIDE SILT FENCE AROUND PERIMETER OF SLOPE OF ANY STOCKPILE LOCATIONS. CONTRACTOR SHALL REMOVE ALL ROOT MATTER AND ORGANICS FROM WITHIN THE CLEARING LIMITS.
19. AFTER COMPLETION OF CLEARING AND GRUBBING, THE SITE SHALL BE TEMPORARILY STABILIZED EXCEPT IN AREAS OF ACTIVE CUT/FILL. ACTIVE AREAS SHOULD NOT EXCEED 25 ACRES AT ONE TIME.
20. BEGIN ROUGH GRADING WITHIN CLEARING LIMITS, INCLUDING GRADING FOR PERMANENT WET DETENTION POND.
21. MAINTAIN AND PROTECT EXISTING UTILITIES AT ALL TIMES. MAINTAIN DIVERSION DITCHES, BASINS, SILT FENCE AND OTHER EROSION CONTROL MEASURES UNTIL THEY ARE APPROVED TO BE REMOVED.
22. PERFORM SEEDING AND MULCHING AS REQUIRED IN ACCORDANCE WITH THE PLANS.
23. ONCE GROUNDCOVER HAS BEEN ESTABLISHED AND OTHER CONSTRUCTION IS COMPLETE, CONTACT CHATHAM COUNTY SOIL EROSION AND SEDIMENTATION AND ENGINEER FOR SITE INSPECTION BEFORE REMOVING ANY TEMPORARY EROSION CONTROL MEASURES.

## GENERAL NOTES:

1. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY OWNER IF ANY DISCREPANCIES EXIST PRIOR TO CONSTRUCTION. NO ADDITIONAL COMPENSATION WILL BE PAID TO CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
2. CONTRACTOR SHALL NOTIFY "NORTH CAROLINA ONE CALL AT 1-800-632-4949 AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR TO CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NORTH CAROLINA ONE CALL".
3. OVERHEAD ELECTRIC LINES MAY EXIST ON THE SITE. CONTRACTOR SHALL CONTACT DUKE POWER AT (336) 634-4633 PRIOR TO COMMENCING ANY ACTIVITY WITHIN 200-FT OF DUKE POWER RIGHT OF WAY.
4. EXISTING UTILITIES AND STRUCTURES SHOWN, BOTH UNDERGROUND AND ABOVE GROUND, ARE BASED ON BEST AVAILABLE RECORD DRAWINGS.
5. SOIL UNDER PROPOSED BUILDINGS, PAVED AREAS AND WITHIN SLOPES GREATER THAN 3:1 (H:V) SHALL BE APPROVED, PLACED AND COMPACTED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. THESE SOILS SHALL BE COMPACTED TO THE STANDARD PROCTOR MAXIMUM DRY DENSITY UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
6. ALL GRADED AREAS SHALL BE SLOPED SUCH THAT NO AREAS OF STANDING WATER OCCUR AND ALL AREAS POSITIVELY DRAIN TO DRAINAGE STRUCTURES, SWALES OR STORMWATER MANAGEMENT FACILITIES.
7. GRADED SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH CURLEX SINGLE NET (CURLEX I) MATTING BY AMERICAN EXCELSIOR COMPANY OR APPROVED EQUAL.
8. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL PROPERTY CORNERS AND SHALL REPLACE ALL MARKERS REMOVED IF DAMAGED DURING CONSTRUCTION.
9. CONTRACTOR IS RESPONSIBLE FOR DEWATERING AS NECESSARY THROUGHOUT CONSTRUCTION.
10. CONTRACTOR IS RESPONSIBLE FOR ADHERING TO ALL PERMIT CONDITIONS, MONITORING AND REPORTING REQUIREMENTS.
11. STREAM AND WETLAND LOCATIONS ARE BASED ON DELINEATIONS PROVIDED BY WETLAND AND NATURAL RESOURCES CONSULTANTS – CONTACT CHRIS HUYSMAN AT 336-406-0906.
12. NO PORTION OF THIS PROPERTY IS LOCATED IN SPECIAL FLOOD HAZARD AREA "AE" AS SHOWN ON FEMA FIRM MAP #3710976500J DATED FEBRUARY 2, 2007.




VICINITY MAP
NOT TO SCALE

## LIMITS OF DISTURBANCE NOTES:

1. LIMITS OF DISTURBANCE LINES ARE CLEARING LIMIT LINES WHICH WILL BE FLAGGED FOR A MINIMUM OF ONE PER 50-FT OR CLOSER DEPENDING ON VISIBILITY.
2. SILT FENCE AND TREE PROTECTION FENCE LINES ALSO DELINEATE THE LIMITS OF DISTURBANCE. ALL SILT FENCING OR TREE PROTECTION FENCING SHALL BE INSTALLED INSIDE LIMITS OF DISTURBANCE.
3. TOTAL DISTURBED AREA: 34.87 ACRES
   - NEW DISTURBED AREA: 3.18 ACRES
   - AREA NO LONGER DISTURBED: 1.88 ACRES

## SELF INSPECTION NOTICE;

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

THE SEDIMENTATION POLLUTION CONTROL ACT WAS AMENDED IN 2006 TO REQUIRE THAT PERSONS RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES INSPECT A PROJECT AFTER EACH STAGE 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 STAGE 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.

| NPDES GROUNDCOVER STABILIZATION TIMEFRAMES | | |
|---|---|---|
| SITE AREA DESCRIPTION | STABILIZATION | TIMEFRAME EXCEPTIONS |
| PERIMETER DIKES, SWALES, DITCHES, SLOPES | 7 DAYS | NONE |
| HIGH QUALITY WATER (HQW) ZONES | 7 DAYS | NONE |
| SLOPES STEEPER THAN 3:1 | 7 DAYS | 14 DAYS FOR SLOPES 10' OR LESS IN LENGTH AND NOT STEEPER THAN 2:1 |
| SLOPES 3:1 OR FLATTER | 14 DAYS | 7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH |
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## LEGEND:

- EXISTING WETLANDS
- EX. R/W LINE
- RIPARIAN BUFFER LINE
- SF/TPF — COMBINATION SILT/TREE PROTECTION FENCING
- TPF — TREE PROTECTION FENCING
- 480 — EXISTING CONTOUR
- EX. LIMITS OF DISTURBANCE
- NEW LIMITS OF DISTURBANCE
- NEW DISTURBED AREA
- NEW DIVERSION DITCH
- NEW CHECK DAM
- TEMPORARY CONSTRUCTION ENTRANCE
- 400 — SLOPE DRAIN
- TDD — TEMPORARY DIVERSION DITCH
- SILT FENCE OUTLET
- INLET PROTECTION
- EXISTING DRAINAGE DIVIDE
- 5 — DRAINAGE AREA

NORTH

200' 0 200' 400'

SCALE: 1"=200' (Horiz.)

CALL N.C. ONE CALL CENTER BEFORE YOU DIG STOP 1-800-632-4949 AVOID UTILITY DAMAGE

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

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NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT
06/13/2016


McKIM & CREED
1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606
Phone: (919)233-8091, Fax: (919)233-8031
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www.mckimcreed.com


BRIAR CHAPEL™ by Newland COMMUNITIES

BRIAR CHAPEL
US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

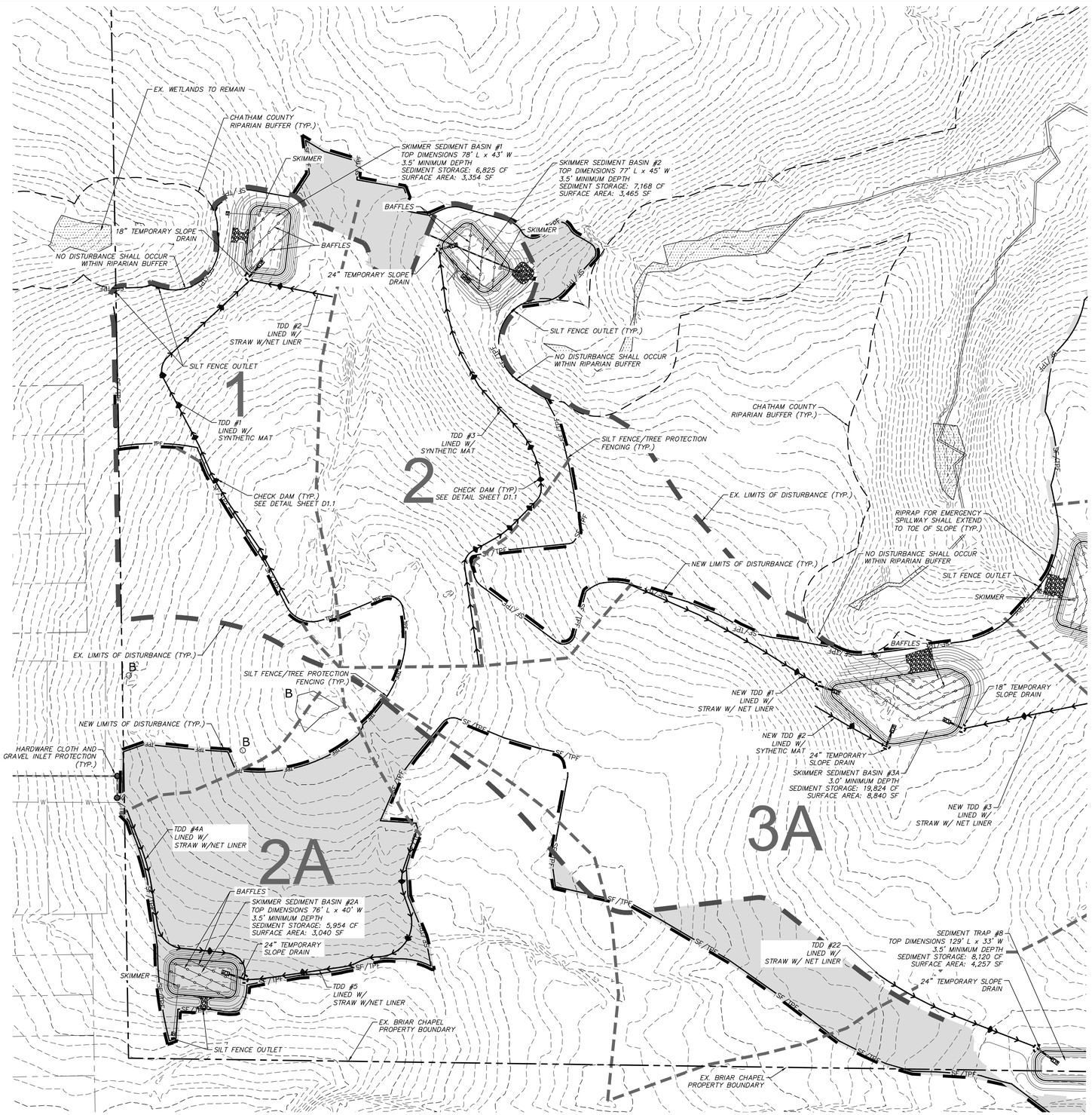
STAGE 1
OVERALL EROSION CONTROL PLAN

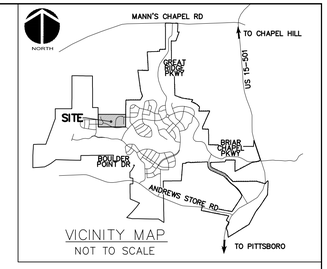
| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: 1" = 200'
VERTICAL: N/A

M&C FILE NUMBER C3.X
DRAWING NUMBER C3.0

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 7




VICINITY MAP
NOT TO SCALE

## LIMITS OF DISTURBANCE NOTES:

1. SILT FENCE AND TREE PROTECTION FENCE LINES ALSO DELINEATE THE LIMITS OF DISTURBANCE. ALL SILT FENCING OR TREE PROTECTION FENCING SHALL BE INSTALLED INSIDE LIMITS OF DISTURBANCE.
2. LIMITS OF DISTURBANCE BEYOND PREVIOUSLY APPROVED AREAS: 2.56 ACRES

## LEGEND:

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NORTH

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60' 0 60' 120'
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# BRIAR CHAPEL
# US STEEL - SECTION 1
# CHATHAM COUNTY, NORTH CAROLINA

## STAGE 1
## EROSION CONTROL PLAN

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SCALE
HORIZONTAL: 1" = 60'
VERTICAL: N/A

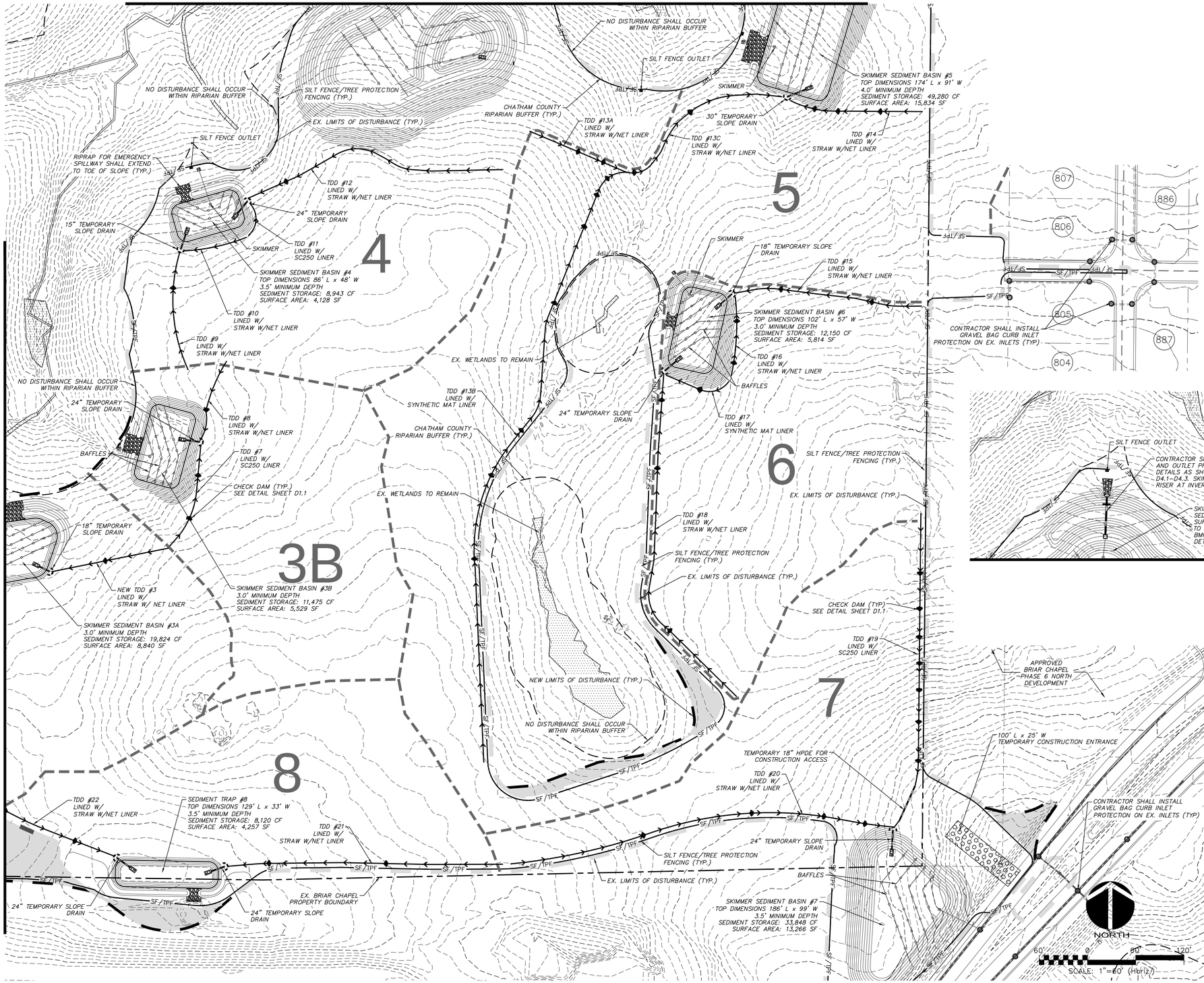
M&C FILE NUMBER C3.X
DRAWING NUMBER C3.1

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 7

MATCHLINE - THIS SHEET

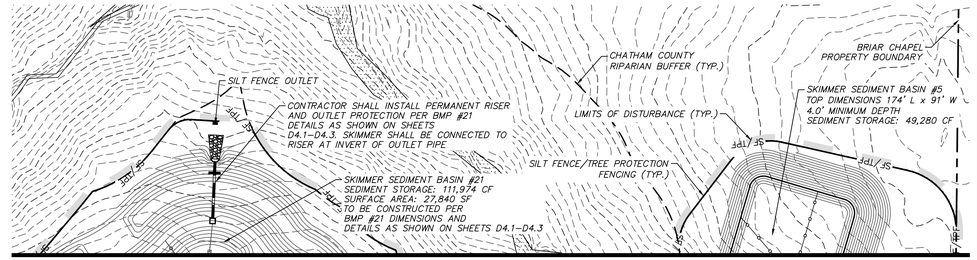
MATCHLINE - SEE SHEET C3.1

MATCHLINE - THIS SHEET







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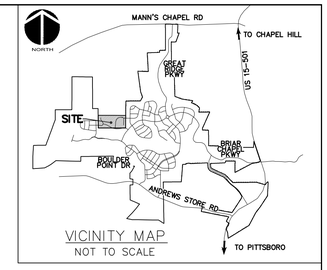


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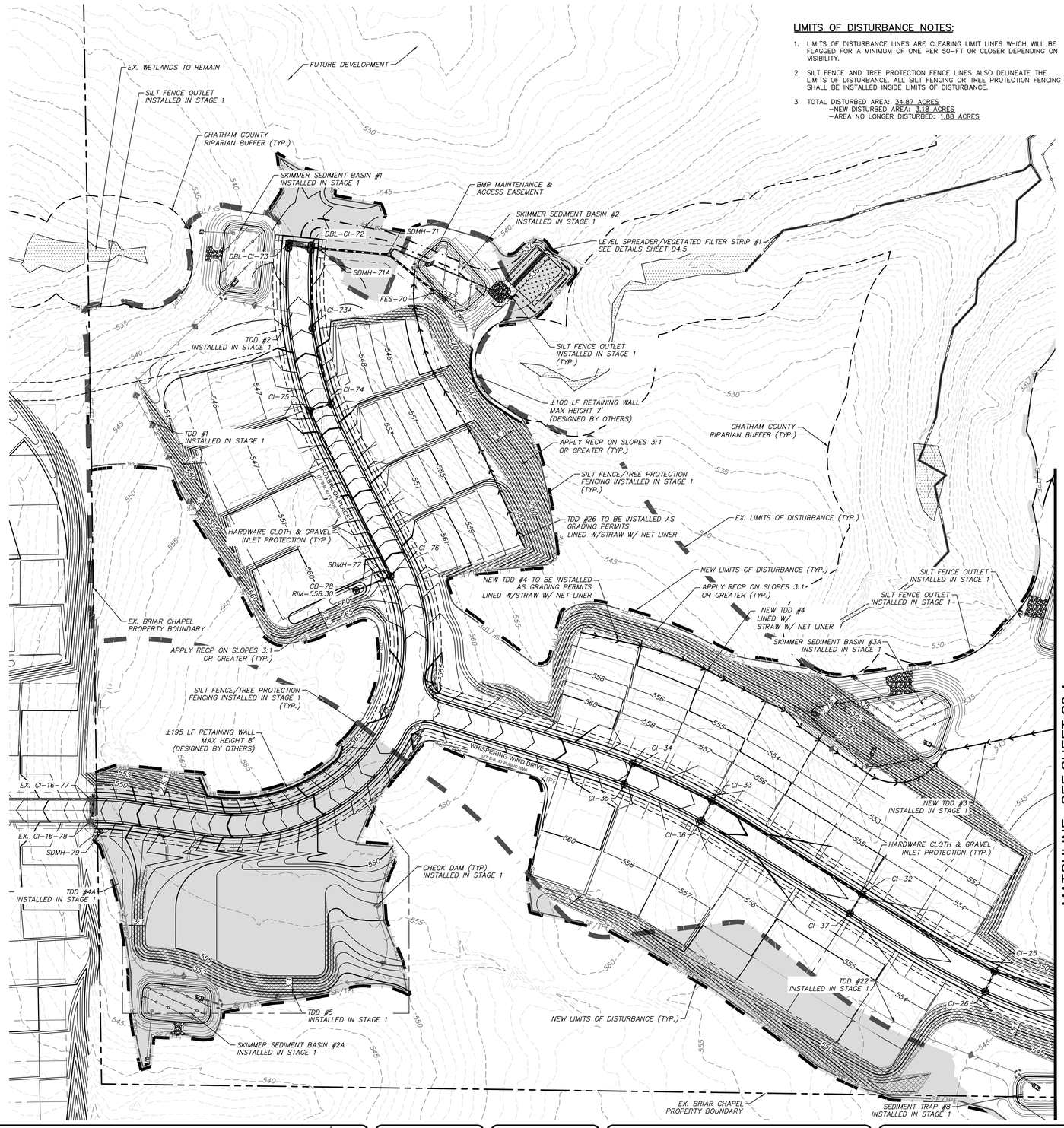



## LIMITS OF DISTURBANCE NOTES:

1. LIMITS OF DISTURBANCE LINES ARE CLEARING LIMIT LINES WHICH WILL BE FLAGGED FOR A MINIMUM OF ONE PER 50-FT OR CLOSER DEPENDING ON VISIBILITY.
2. SILT FENCE AND TREE PROTECTION FENCE LINES ALSO DELINEATE THE LIMITS OF DISTURBANCE. ALL SILT FENCING OR TREE PROTECTION FENCING SHALL BE INSTALLED INSIDE LIMITS OF DISTURBANCE.
3. TOTAL DISTURBED AREA: 34.87 ACRES
   - NEW DISTURBED AREA: 3.18 ACRES
   - AREA NO LONGER DISTURBED: 1.88 ACRES

## STAGE 2 CONSTRUCTION SEQUENCE:

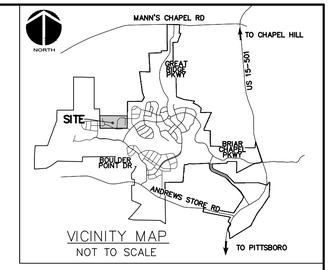
1. THE INTENT OF THE CONSTRUCTION SEQUENCE IS TO PROVIDE THE CONTRACTOR WITH A GENERAL GUIDE FOR CONSTRUCTION PURPOSES. THIS SEQUENCE IS NOT INTENDED TO OUTLINE ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.
2. ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CHATHAM COUNTY SOIL EROSION AND SEDIMENTATION CONTROL ORDINANCE.
3. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER RAINFALL EVENTS. NEEDED REPAIRS SHALL BE MADE IMMEDIATELY.
4. IF IT IS DETERMINED DURING CONSTRUCTION THAT SIGNIFICANT SEDIMENT IS LEAVING THE SITE, DESPITE PROPER IMPLEMENTATION AND MAINTENANCE, THE CONTRACTOR IS OBLIGATED TO TAKE ADDITIONAL CORRECTIVE ACTION. CONTACT CHATHAM COUNTY ENVIRONMENTAL QUALITY DEPARTMENT, OWNER'S REPRESENTATIVE AND ENGINEER WITH ANY ADDITIONAL MEASURES NEEDED.
5. CONTRACTOR SHALL ESTABLISH GROUNDCOVER ON DISTURBED AREAS WITHIN THE NUMBER OF CALENDAR DAYS AFTER COMPLETION OF GRADING PER THE SCHEDULE BELOW:

   | | |
   |---|---|
   | GRADUAL SLOPES: | (14) CALENDAR DAYS |
   | MODERATE SLOPES: | (10) CALENDAR DAYS |
   | STEEP SLOPES: | (7) CALENDAR DAYS |

   SLOPES ARE AS DEFINED IN THE CHATHAM COUNTY SOIL EROSION AND SEDIMENTATION CONTROL ORDINANCE.
6. CONTRACTOR TO POST EROSION CONTROL PERMIT PROMINENTLY ON SITE AT ALL TIMES.
7. TEMPORARY CONSTRUCTION ENTRANCES, TEMPORARY DIVERSION DITCHES, SILT FENCING, TREE PROTECTION FENCING AND TEMPORARY SKIMMER BASINS WERE INSTALLED AS PART OF THE STAGE 1 EROSION CONTROL PLANS. CONTRACTOR SHALL INSPECT THESE DEVICES TO ENSURE COMPLIANCE PRIOR TO FINAL GRADING OPERATIONS.
8. BEGIN FINAL GRADING OPERATIONS FOR US STEEL – SECTION 1 INCLUDING GRADING FOR BMP #21.
9. DURING THE TRANSITION FROM STAGE 1 EROSION CONTROL WORK TO STAGE 2 GRADING, AND AS SITE BEGINS TO REACH FINAL GRADES, EROSION CONTROL DEVICES INSTALLED IN STAGE 1 (SUCH AS TDD'S AND TSB'S) SHALL BE REVIEWED AND REMOVED IF THEY ARE IN CONFLICT WITH STAGE 2 WORK SO LONG AS THE AREAS CAN BE IMMEDIATELY STABILIZED OR ADDITIONAL MEASURES ARE INSTALLED TO PREVENT SEDIMENT LADEN RUNOFF. SPECIFICALLY, ONCE FINAL GRADES HAVE BEEN REACHED FOR THE BMP #21 AND SKIMMER, BAFFLES AND SLOPE DRAINS HAVE BEEN INSTALLED, TDDS #23 & #24 SHALL BE INSTALLED AND SKIMMER BASIN #4 SHALL BE REMOVED IN ORDER TO REDIRECT DRAINAGE INTO BMP #21. ONCE THESE MEASURES HAVE BEEN COMPLETED AND ARE FUNCTIONING AS INTENDED, SKIMMER SEDIMENT BASIN #7 CAN ALSO BE REMOVED.
10. ANY ADDITIONAL BASINS MEASURES THAT CONFLICT WITH GRADING OPERATIONS SHALL ONLY BE REMOVED WITH APPROVAL FROM CHATHAM COUNTY
11. CONTRACTOR SHALL ENSURE THAT ALL SEDIMENT LADEN RUNOFF IS DIRECTED TO APPROVED MEASURES AND AREAS OF NON-ACTIVE CUT AND FILL SHOULD BE STABILIZED AS THE SITE IS REACHES FINAL GRADES.
12. ANY AREAS WITH FINAL GRADES OF 3:1 OR GREATER SHALL BE TREATED WITH MATTING INSTALLED PER DETAIL ON SHEET D1.1.
13. PERFORM SEEDING AND MULCHING AS REQUIRED IN ACCORDANCE WITH THE TEMPORARY AND PERMANENT SEEDING SCHEDULES LOCATED ON SHEET D1.1 AND NOTE #5 OF THIS SEQUENCE.
14. UPON REMOVAL OF ANY TEMPORARY DEVICE, CONTRACTOR SHALL IMMEDIATELY STABLIZE ANY RESULTING BARE AREAS.
15. ONCE GROUNDCOVER HAS BEEN ESTABLISHED AND OTHER CONSTRUCTION IS COMPLETE, CONTACT CHATHAM COUNTY SOIL EROSION AND SEDIMENTATION AND ENGINEER FOR SITE INSPECTION BEFORE REMOVING ANY TEMPORARY EROSION CONTROL MEASURES.
16. PERMANENT BMPS #21 & #22 CAN BE CONVERTED FROM SEDIMENT STORAGE DEVICES TO STORMWATER MANAGEMENT FACILITIES ONCE ALL UPSTREAM CONTRIBUTING AREAS HAVE BEEN STABILIZED. ONCE CONVERSION HAS BEEN COMPLETED, CONSTRUCTION DETAILS FOR THESE DEVICES ARE PROVIDED ON SHEETS D4.1 THROUGH D4.4.

## STORM DRAINAGE NOTES:

1. STORM DRAINAGE PIPES SHALL BE:
   - RCP/CLASS III UNLESS OTHERWISE NOTED IN THESE PLANS. ALL PIPES INSIDE THE PUBLIC RIGHT-OF-WAY SHALL ADHERE TO PIPE DEPTH, COVER AND MATERIAL REQUIREMENTS IN ACCORDANCE WITH THE NCDOT PIPE MATERIAL SELECTION GUIDE AS LOCATED ON THE NCDOT HYDRAULICS WEBSITE.
2. ALL CONCRETE SHALL MEET A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH.
3. ALL PIPE IN STORM DRAIN STRUCTURES SHALL BE STRUCK EVEN WITH INSIDE WALL.
4. THE INTERIOR SURFACES OF ALL STORM DRAINAGE STRUCTURES SHALL BE POINTED UP AND SMOOTHED TO AN ACCEPTABLE STANDARD USING MORTAR MIXED TO MANUFACTURER'S SPECIFICATIONS.
5. ALL BACKFILL SHALL BE NON-PLASTIC IN NATURE, FREE FROM ROOTS, VEGETATION MATTER, WASTE CONSTRUCTION MATERIAL OR OTHER OBJECTIONABLE MATERIAL. UTILIZED MATERIAL SHALL BE CAPABLE OF BEING COMPACTED BY MECHANICAL MEANS AND SHALL HAVE NO TENDENCY TO FLOW OR BEHAVE IN A PLASTIC MANNER UNDER THE TAMPING BLOWS OR PROOF ROLLING.
6. MATERIALS DEEMED AS UNSUITABLE FOR BACKFILL PURPOSES BY THE OWNER'S REPRESENTATIVE SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL.
7. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE THOROUGHLY COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST. THE TOP EIGHT (8) INCHES SHALL BE COMPACTED TO 100% STANDARD PROCTOR.
8. UNDER NO CIRCUMSTANCES SHALL WATER BE ALLOWED TO RISE IN UNBACKFILLED TRENCHES AFTER PIPE HAS BEEN PLACED.
9. ALL FLARED END SECTIONS DISCHARGING INTO WATER QUALITY PONDS WILL HAVE A CONCRETE PAD POURED UNDERNEATH THE FLARED END SECTION IN ACCORDANCE WITH PROVIDED CONSTRUCTION DETAILS.
10. RIM ELEVATIONS OF STORM DRAIN STRUCTURES SHALL BE FIELD VERIFIED.
11. STORM DRAINAGE WITHIN PRIVATE EASEMENTS TO BE OWNED, OPERATED AND MAINTAINED BY HOME OWNER'S ASSOCIATION OR AGENT THEREOF.
12. LENGTHS SHOWN FOR STORM DRAINAGE PIPES ARE MEASURED FROM CENTER OF STORM STRUCTURES AND TO ENDS OF FLARED END SECTIONS. SLOPES CALCULATED ARE BASED ON THIS LENGTH.
13. CB DENOTES CATCH BASINS TO BE INSTALLED NON-PAVED AREAS. REFER TO NCDOT DETAILS 840.18 AND 840.24 ON SHEET D2.2.
14. CI DENOTES CURB INLETS TO BE INSTALLED IN THE CURB LINES OF ROADWAYS. REFER TO NCDOT DETAILS 840.02 AND 840.03 ON SHEET D2.2.
15. DRAINAGE STRUCTURES EX. BCP DBL-CI-53 AND SDMH-58 ARE TRAFFIC BEARING MANHOLES. REFER TO NCDOT DETAILS 840.31 AND 840.46 ON SHEET D2.2.




VICINITY MAP
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NPDES GROUNDCOVER STABILIZATION TIMEFRAMES

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- HARDWARE CLOTH & GRAVEL INLET PROTECTION
- NEW DISTURBED AREA

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GRADING, DRAINAGE & STAGE 2 EROSION CONTROL PLAN

| | |
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| DATE: | JUNE 1, 2015 |
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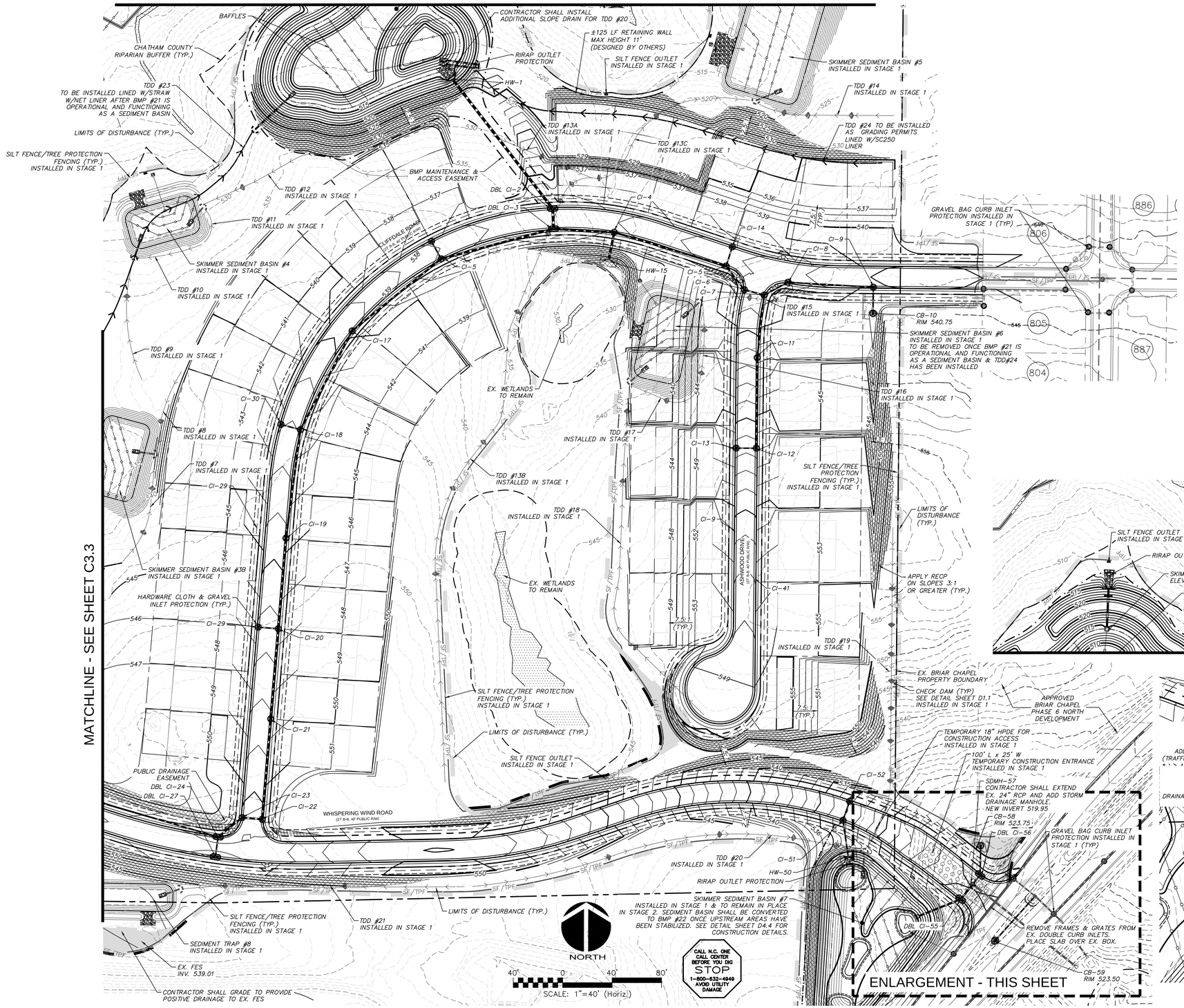
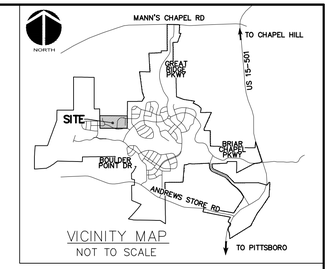
MATCHLINE - SEE SHEET C3.3




VICINITY MAP
NOT TO SCALE

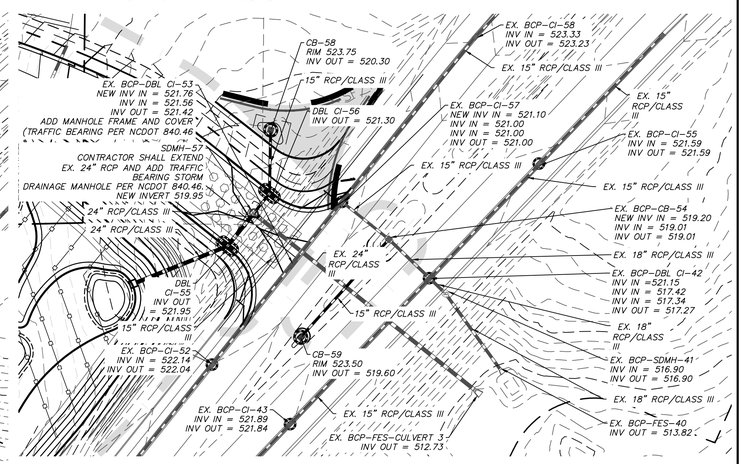
LEGEND:

- EXISTING WETLANDS
- EX. R/W LINE
- RIPARIAN BUFFER LINE
- SF/TPF — COMBINATION SILT/TREE PROTECTION FENCING
- TPF — TPF — TREE PROTECTION FENCING
- 480 — EXISTING CONTOUR
- 480 — PROPOSED CONTOUR
- NEW LIMITS OF DISTURBANCE
- EX. LIMITS OF DISTURBANCE
- STAGE 1 DIVERSION DITCH
- STAGE 1 CHECK DAM
- STAGE 1 CONSTRUCTION ENTRANCE
- 480 — STAGE 1 SLOPE DRAIN
- TDD — TEMPORARY DIVERSION DITCH
- SF/TPF — STAGE 1 SILT FENCE OUTLET
- HARDWARE CLOTH & GRAVEL INLET PROTECTION
- NEW DISTURBED AREA




MATCHLINE - THIS SHEET

ENLARGEMENT - THIS SHEET




ENLARGEMENT - 1" = 40'

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

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US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

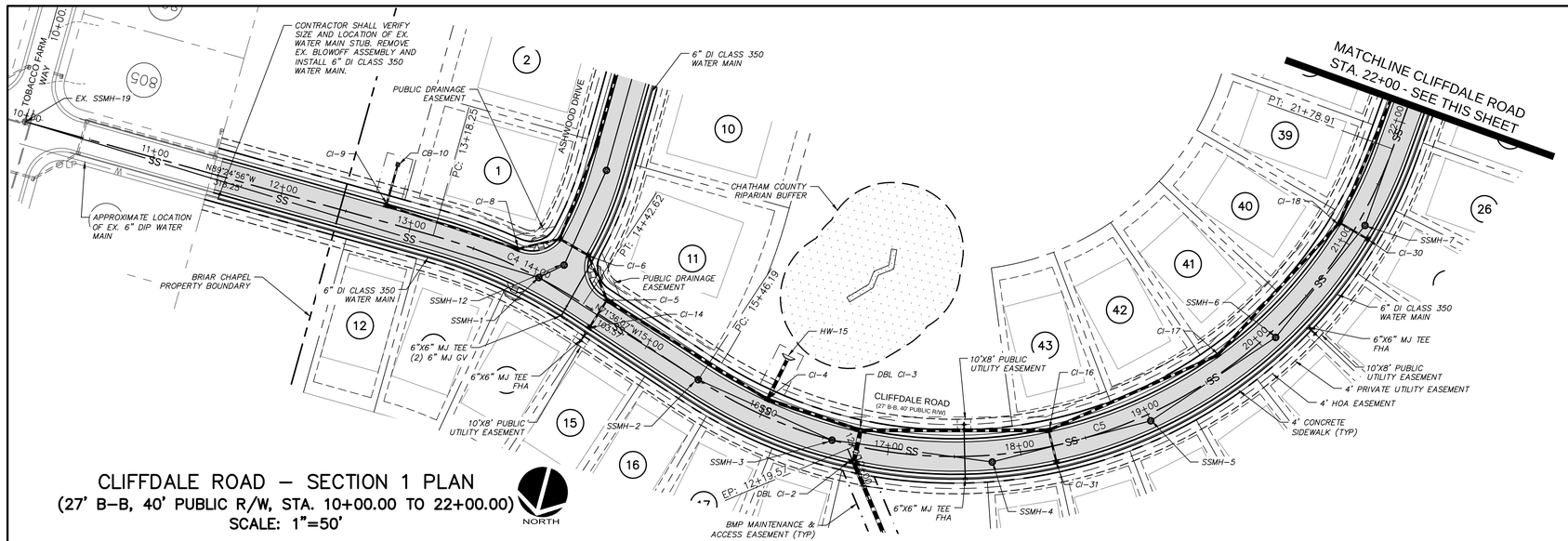
GRADING, DRAINAGE & STAGE 2 EROSION CONTROL PLAN

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

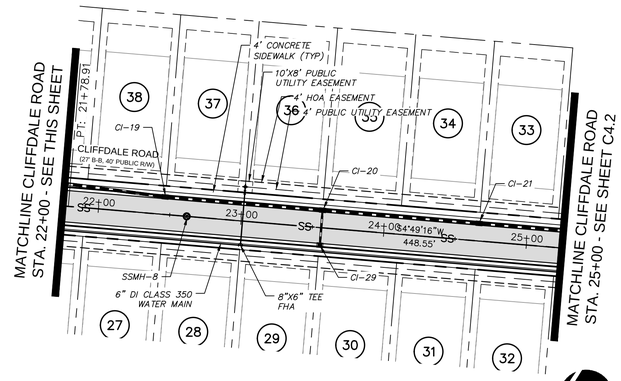
SCALE
HORIZONTAL: 1" = 60'
VERTICAL: N/A

M&C FILE NUMBER C3.3
DRAWING NUMBER C3.4

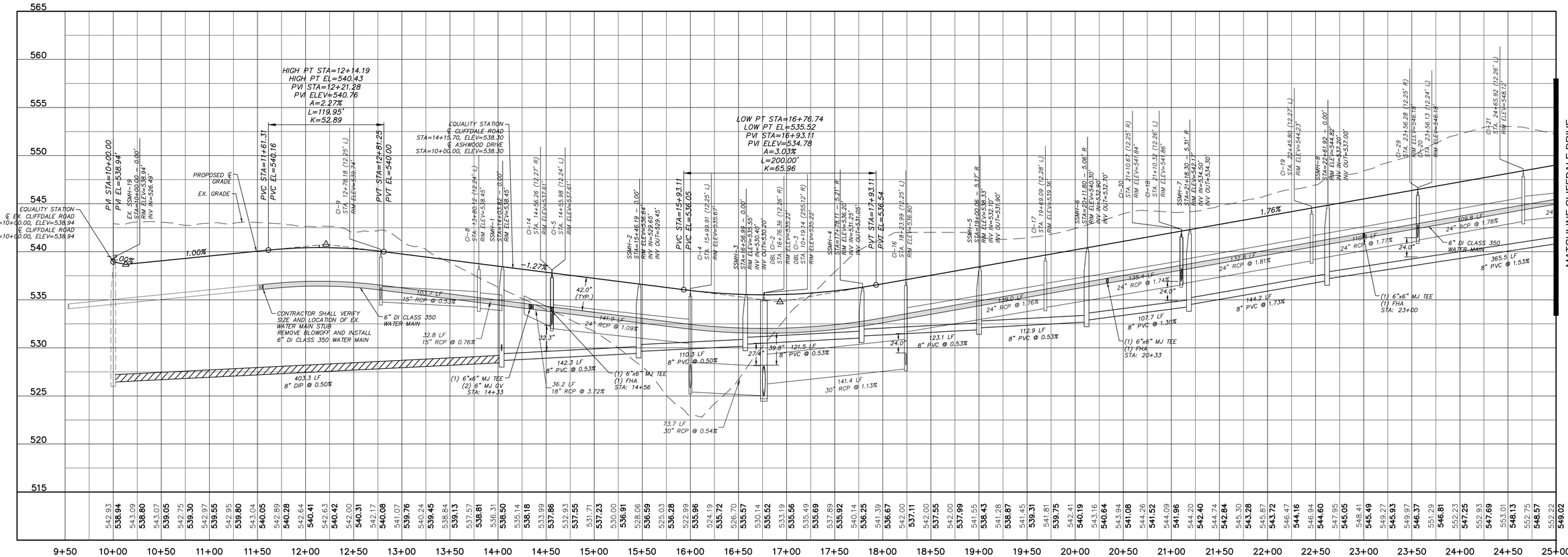
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 7




## CLIFFDALE ROAD – SECTION 1 PLAN
(27' B–B, 40' PUBLIC R/W, STA. 10+00.00 TO 22+00.00)
SCALE: 1"=50'




## CLIFFDALE ROAD – SECTION 1 PLAN
(27' B–B, 40' PUBLIC R/W, STA. 22+00.00 TO 25+00.00)
SCALE: 1"=50'




## CLIFFDALE ROAD – PROFILE
(27' B–B, 40' PUBLIC R/W, STA. 10+00.00 TO 25+56)
SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

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CHATHAM COUNTY, NORTH CAROLINA

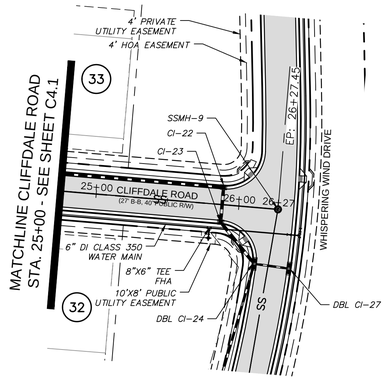
PLAN & PROFILE
CLIFFDALE ROAD
STA. 10+00.00 TO STA. 25+00.00

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: AS NOTED
VERTICAL: 1" = 5'

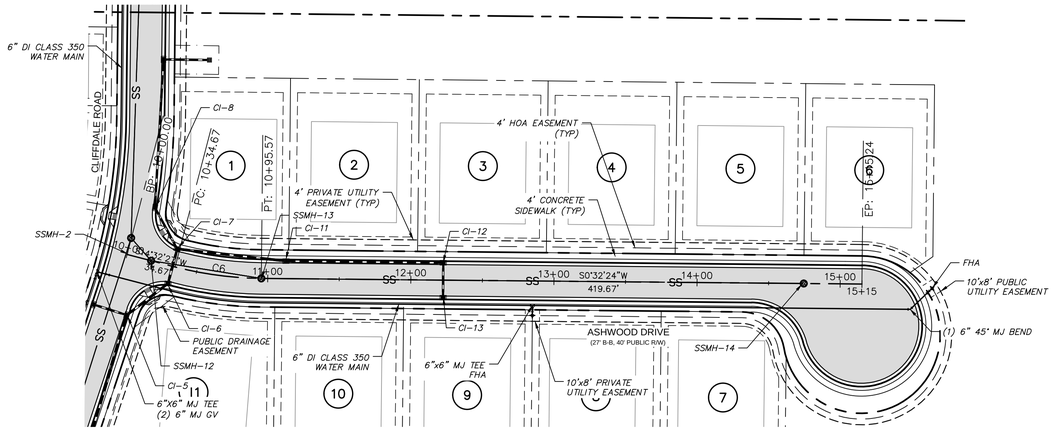
M&C FILE NUMBER
C4.X
DRAWING NUMBER
C4.1

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 7



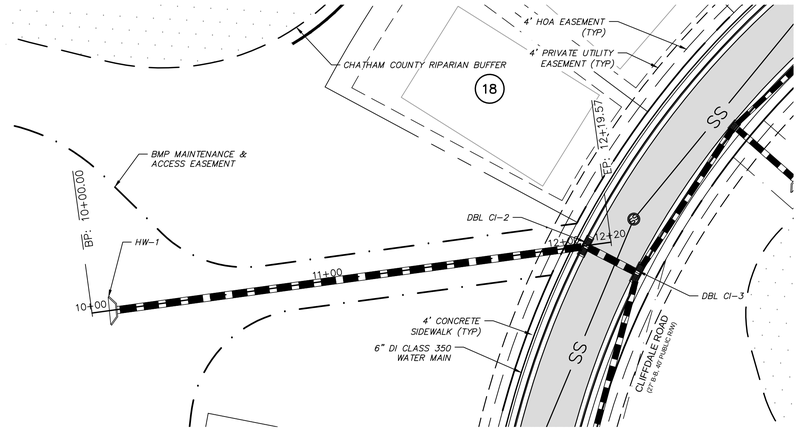

NORTH

## CLIFFDALE ROAD – PLAN
(27' B–B, 40' PUBLIC R/W, STA. 25+00.00 TO 26+27.45)
SCALE: 1"=50'



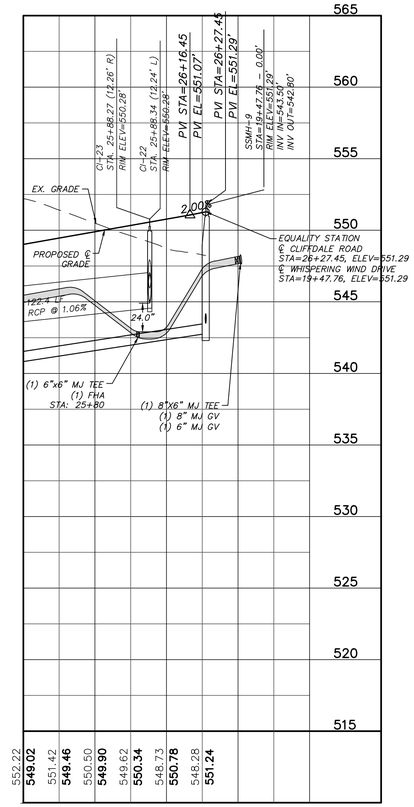

NORTH

## ASHWOOD DRIVE – PLAN
(27' B–B, 40' PUBLIC R/W, STA. 10+00.00 TO 15+03.39)
SCALE: 1"=50'

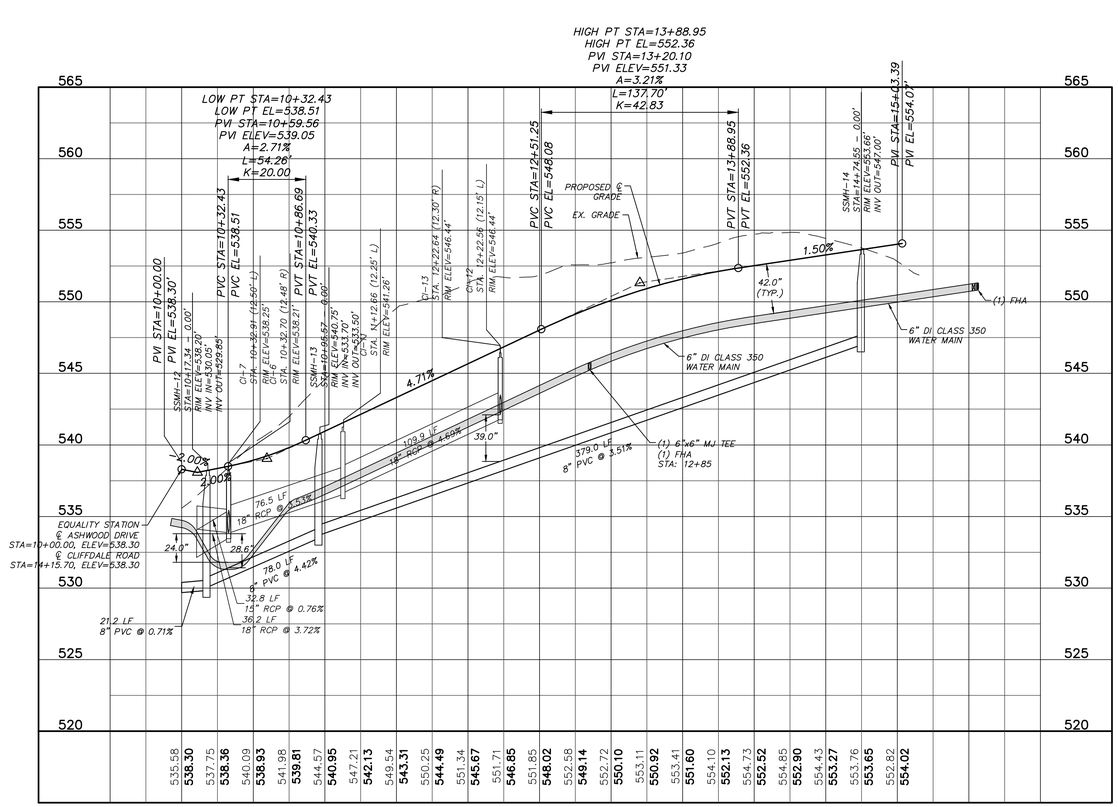



NORTH

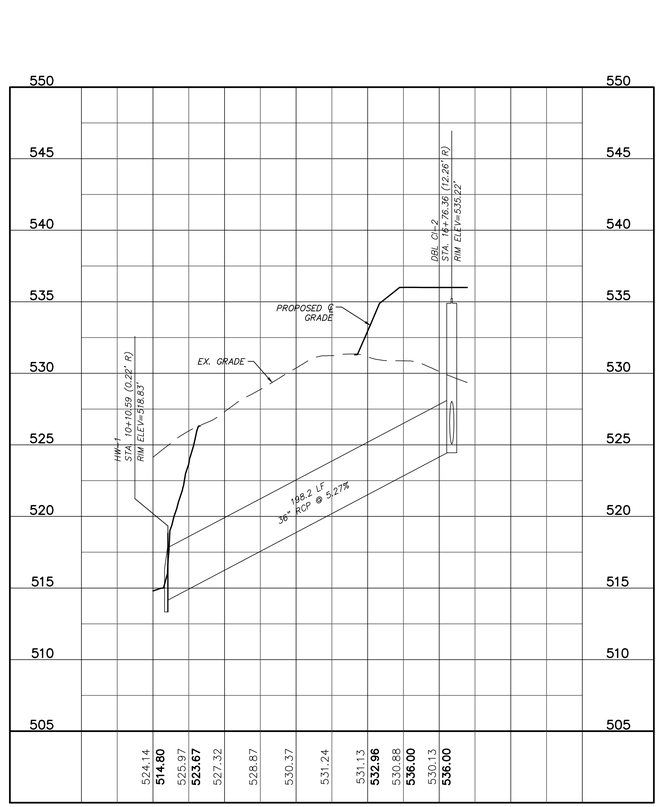
## STORM DRAINAGE OUTFALL – PLAN
(STA. 10+00.00 TO 12+25)
SCALE: 1"=30'




## CLIFFDALE ROAD – PROFILE
(27' B–B, 40' PUBLIC R/W, STA. 25+00.00 TO 26+27.45)
SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'




## ASHWOOD DRIVE – PROFILE
(27' B–B, 40' PUBLIC R/W, STA. 10+00.00 TO 15+03.39)
SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'




## STORM DRAINAGE OUTFALL – PROFILE
(STA. 10+00.00 TO 12+25)
SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| | REVISIONS | |
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

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CHATHAM COUNTY, NORTH CAROLINA

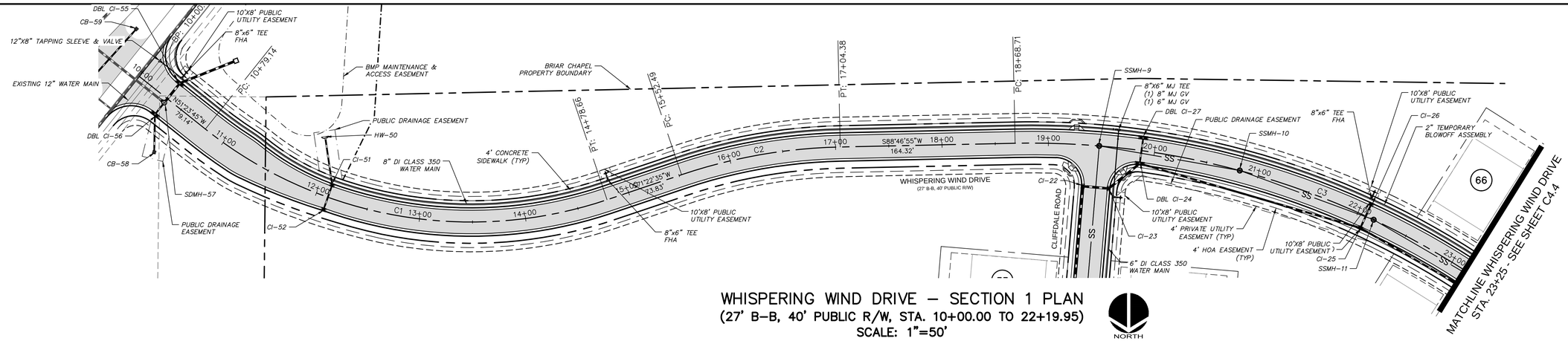
PLAN & PROFILE
ASHWOOD DRIVE
STORM DRAINAGE OUTFALL

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: AS NOTED
VERTICAL: 1" = 5'

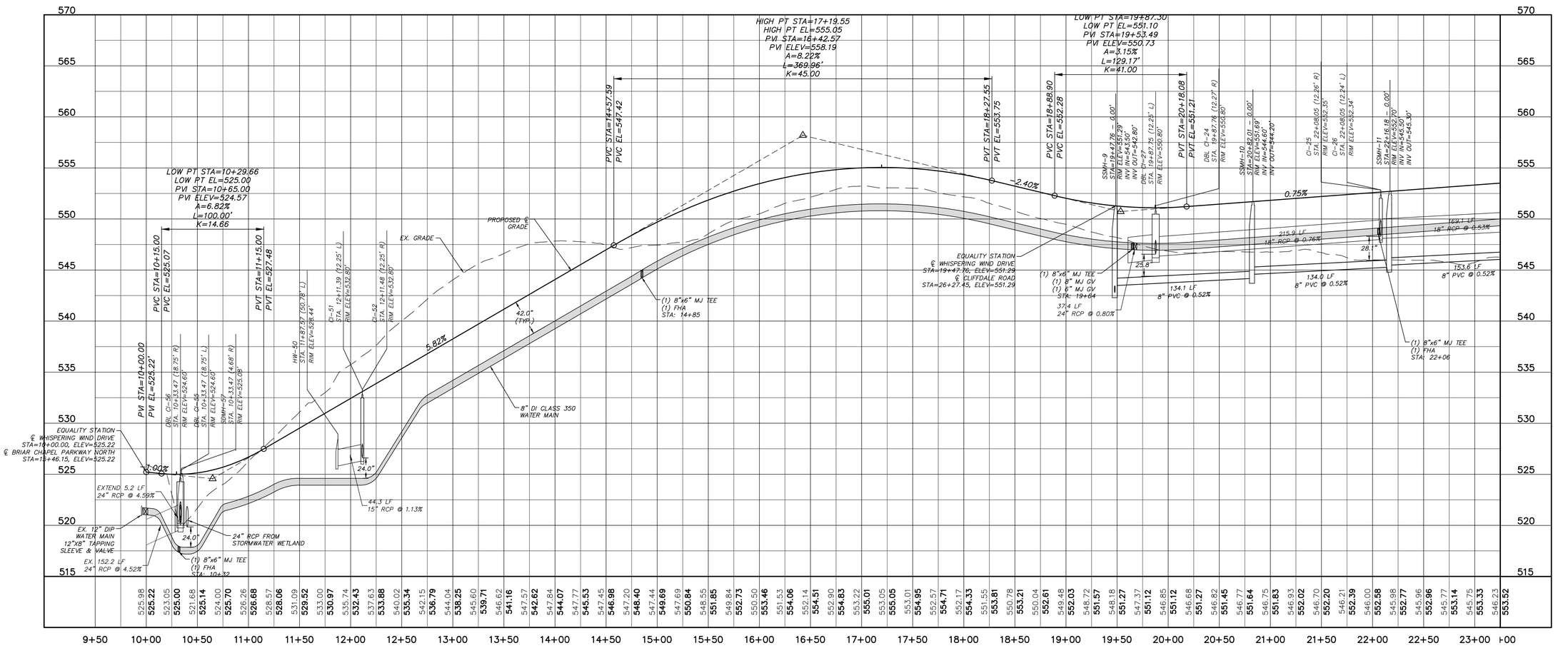
M&C FILE NUMBER: C4.X
DRAWING NUMBER: C4.2

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 7




## WHISPERING WIND DRIVE – SECTION 1 PLAN
**(27' B–B, 40' PUBLIC R/W, STA. 10+00.00 TO 22+19.95)**
**SCALE: 1"=50'**

NORTH




## WHISPERING WIND DRIVE – SECTION 1 PROFILE
**(27' B–B, 40' PUBLIC R/W, STA. 10+00.00 TO 22+19.95)**
**SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'**

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

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NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C AVANT
06/13/2016

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CHATHAM COUNTY, NORTH CAROLINA

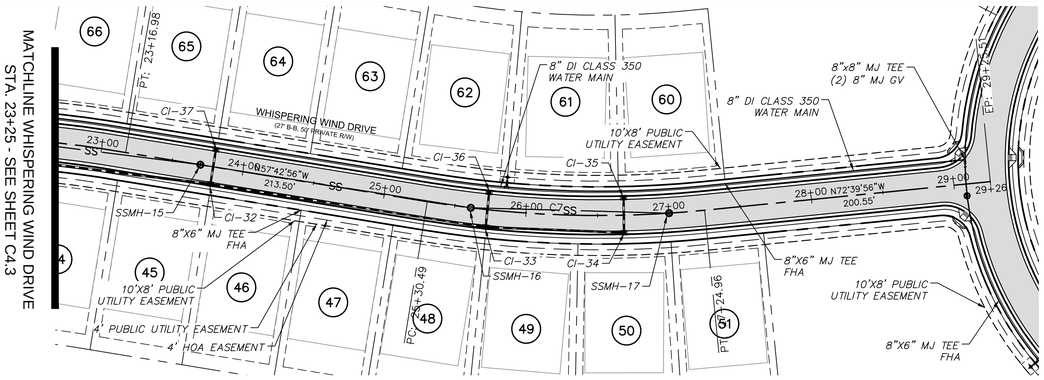
PLAN & PROFILE
WHISPERING WIND DRIVE
STA. 10+00 TO STA. 22+19.50

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

| SCALE | M&C FILE NUMBER |
|---|---|
| HORIZONTAL: AS NOTED VERTICAL: 1" = 5' | C4.X |
| | DRAWING NUMBER C4.3 |

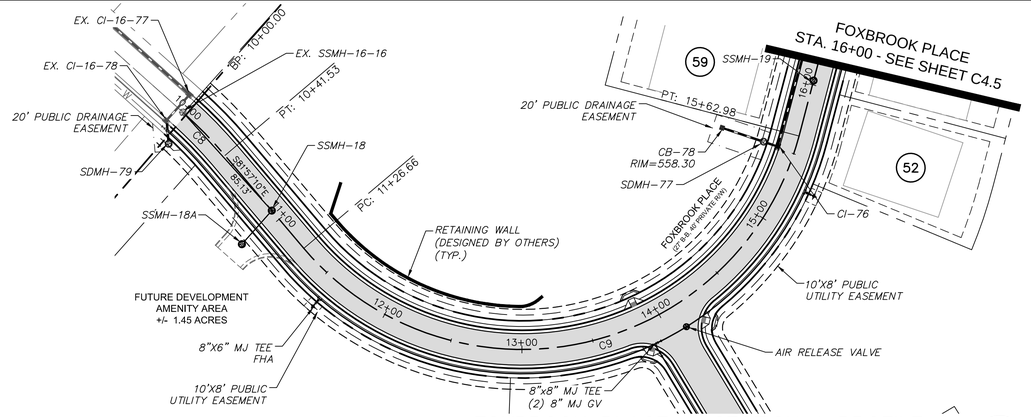
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

REVISION 7



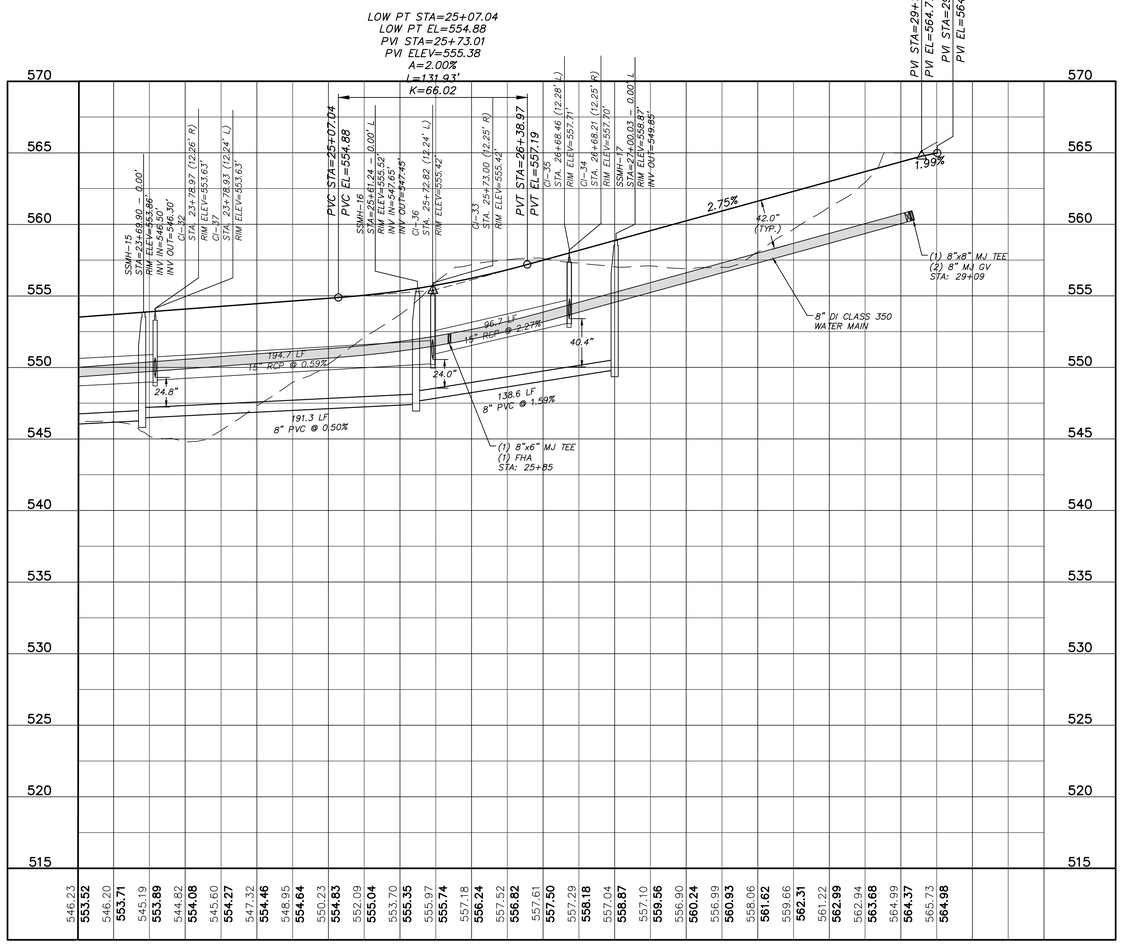

## WHISPERING WIND DRIVE – SECTION 1 PLAN
(27' B–B, 40' PUBLIC R/W, STA. 23+25.00 TO 29+25.51)
SCALE: 1"=50'

NORTH

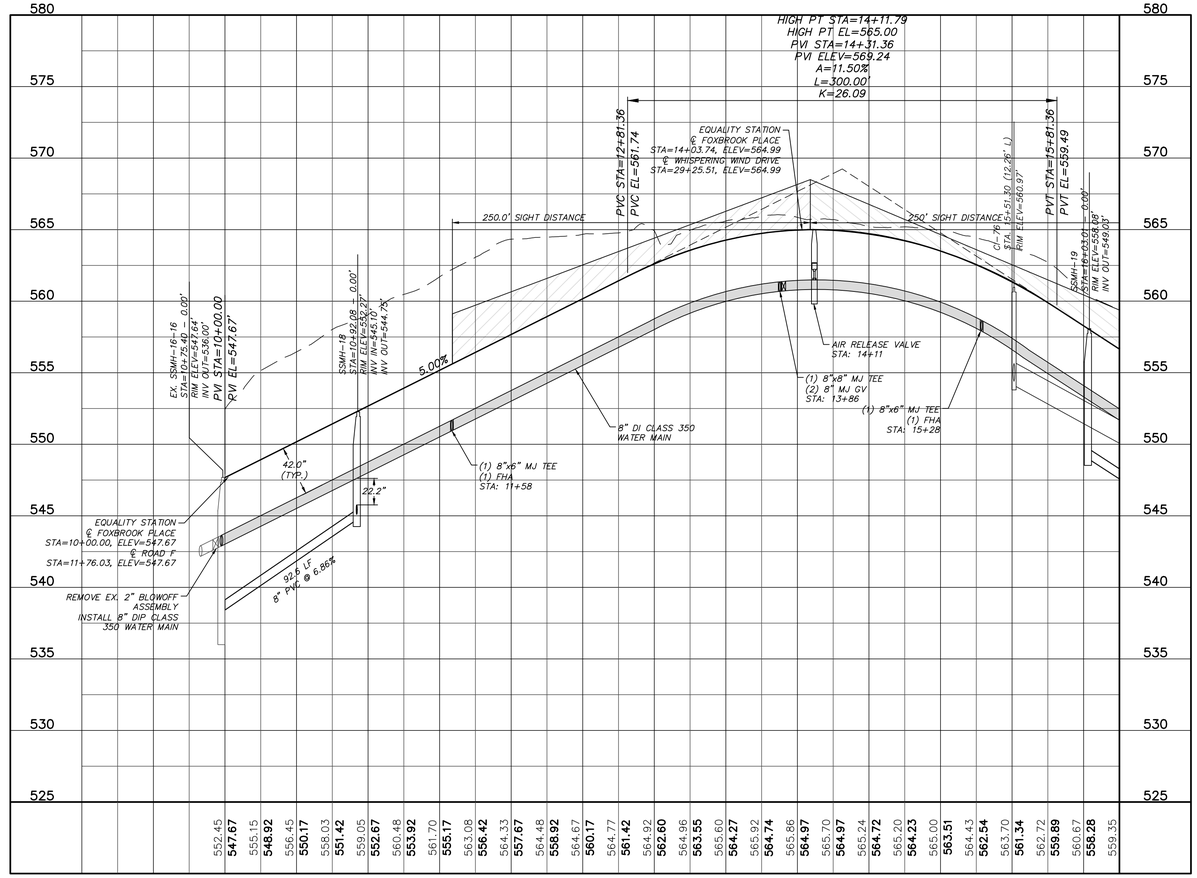



## FOXBROOK PLACE – SECTION 1 PROFILE
(27' B–B, 40' PUBLIC R/W, STA. 10+00.00 TO 16+00.00)
SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'

NORTH




## WHISPERING WIND DRIVE – SECTION 1 PROFILE
(27' B–B, 40' PUBLIC R/W, STA. 23+25.00 TO 29+25.51)
SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'




## FOXBROOK PLACE – SECTION 1 PROFILE
(27' B–B, 40' PUBLIC R/W, STA. 10+00.00 TO 16+00.00)
SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

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PLAN & PROFILE
WHISPERING WIND DRIVE
STA. 23+50 TO STA. 34+20

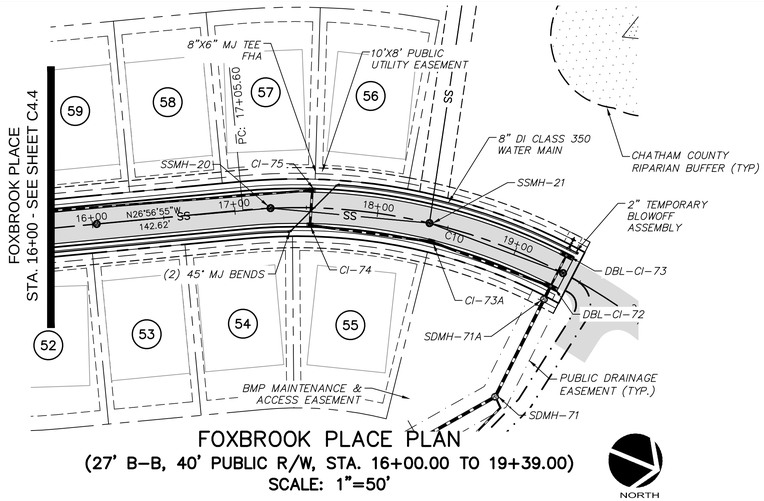
| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: AS NOTED
VERTICAL: 1" = 5'

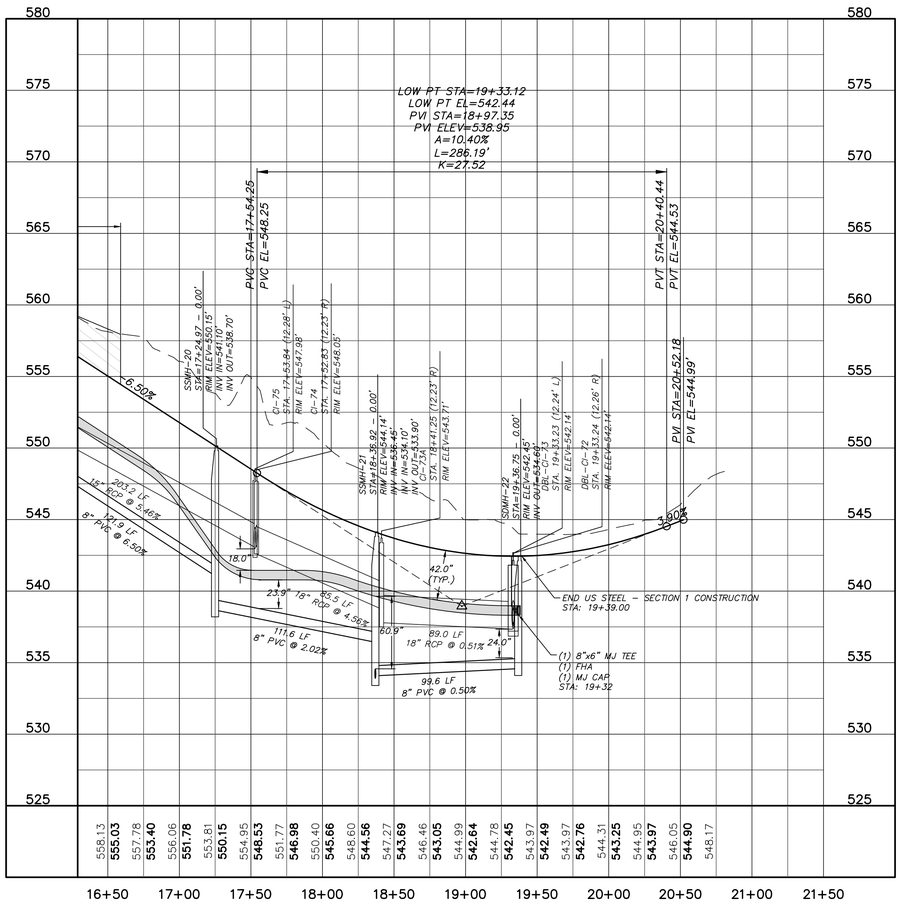
MSC FILE NUMBER C4.X
DRAWING NUMBER C4.4

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

REVISION 7




## FOXBROOK PLACE PLAN
**(27' B-B, 40' PUBLIC R/W, STA. 16+00.00 TO 19+39.00)**
**SCALE: 1"=50'**




## FOXBROOK PLACE PROFILE
**(27' B-B, 40' PUBLIC R/W, STA. 16+00.00 TO 19+39.00)**
**SCALE: (Horiz.) 1"=50'; (Vert.) 1"=5'**

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.16 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

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ENGINEER
GARETH C. AYAN
06/13/2016

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CHATHAM COUNTY, NORTH CAROLINA

PLAN & PROFILE
FOXBROOK PLACE
SWEET SPRING AVENUE

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: AS NOTED
VERTICAL: 1" = 5'

M&C FILE NUMBER C4.X
DRAWING NUMBER C4.5

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 7

## RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| TALL FESCUE | 80 |
| KOBE LESPEDEZA | 40 |

NURSE PLANTS:
BETWEEN MAY 1 AND AUG. 15, ADD 10 lb/acre GERMAN MILLET OR 15 lb/acre SUDANGRASS. PRIOR TO MAY 1 OR AFTER AUG. 15, ADD 40 lb/ac RYE (GRAIN)

SEEDING DATES:

| | BEST | POSSIBLE |
|---|---|---|
| FALL | AUG. 15 – SEPT. 15 | AUG. 20 – OCT. 25 |
| LATE WINTER: | FEB. 15 – MAR. 21 | FEB. 1 – APR. 15. |

FALL IS BEST FOR TALL FESCUE AND LATER WINTER FOR LESPEDEZAS. OVERSEEDING OF KOBE LESPEDEZA OVER FALL–SEEDED TALL FESCUE IS VERY EFFECTIVE.

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER

MULCH:
APPLY 4,000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REFERTILIZE IN THE SECOND YEAR UNLESS GROWTH IS FULLY ADEQUATE. MAY BE MOWED ONCE OR TWICE A YEAR, BUT MOWING IS NOT NECESSARY. RESEED, FERTILIZE AND MULCH DAMAGED AREAS IMMEDIATELY.

## RECOMMENDATIONS FOR GRASS–LINED CHANNELS

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| TALL FESCUE | 200 |

NURSE PLANTS:
BETWEEN MAY 1 AND AUG. 15, ADD 10 lb/acre SUDANGRASS OR 15 lb/acre GERMAN MILLET. PRIOR TO MAY 1 OR AFTER AUG. 15, ADD 40 lb/ac RYE (GRAIN)

SEEDING DATES:
BEST: AUG. 25 – OCT.
POSSIBLE: FEB. – APR. 15

AVOID SEEDING FROM NOV. TO JAN. IF SEEDING MUST BE DONE AT THIS TIME, ADD 40 lb/acre RYE GRAIN AND USE A CHANNEL LINING THAT OFFERS MAXIMUM PROTECTION

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 1,000 lb/acre 10–10–10 FERTILIZER

MULCH:
USE ROLLED EROSION CONTROL PRODUCT TO COVER THE BOTTOM OF THE CHANNELS AND DITCHES, AND STAPLE SECURELY. THE LINING SHOULD EXTEND ABOVE THE HIGHEST CALCULATED DEPTH OF FLOW. ON CHANNEL SIDE SLOPES ABOVE THIS HEIGHT, AND IN DRAINAGES NOT REQUIRING TEMPORARY LININGS, APPLY 4,000 lb/acre GRAIN STRAW, AND ANCHOR STRAW BY STAPLING NETTING OVER THE TOP.

MULCH AND ANCHORING MATERIALS MUST NOT BE ALLOWED TO WASH DOWN SLOPES WHERE THEY CAN CLOG DRAINAGE DEVICES.

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

**NOTE:**
**SEE NCDENR'S EROSION AND SEDIMENT CONTROL PLANNING DESIGN MANUAL SECTION 6.11 FOR ADDITIONAL PERMANENT SEEDING OPTIONS.**

## PERMANENT SEEDING SCHEDULE
NTS

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW*).
5. CONTINUE TILLAGE UNTIL A WELL – PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

* APPLY: AGRICULTURAL LIMESTONE – 2 TONS/ACRE OR 3 TONS/ACRE IN CLAY SOILS
FERTILIZER – 1000 LBS/ACRE (10–10–10)
SUPERPHOSPHATE – 500 LBS/ACRE (20%)
MULCH – 2 TONS/ACRE (SMALL GRAIN STRAW)ANCHOR – ASPHALT EMULSION AT 450 GAL./ACRE

## SEEDBED PREPARATION
NTS

## RECOMMENDATIONS FOR LATE WINTER AND EARLY SPRING

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| RYE (GRAIN) | 120 |
| ANNUAL LESPEDEZA (KOBE IN PIEDMONT & COASTAL PLAIN, KOREAN IN MOUNTAINS | 50 |

OMIT ANNUAL LESPEDEZA WHEN DURATION OF TEMPORARY COVER IS NOT TO EXTEND BEYOND JUNE

SEEDING DATES:

| | | |
|---|---|---|
| MOUNTAINS | (ABOVE 2,500'): | FEB. 15 – MAY 15 |
| | (BELOW 2,500'): | FEB. 1 – MAY 1 |
| PIEDMONT: | | JAN. 1 – MAY 1 |
| COASTAL PLAIN: | | DEC. 1 – APR. 15 |

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER

MULCH:
APPLY 4,000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

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

## RECOMMENDATIONS FOR SUMMER

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| GERMAN MILLET | 40 |

IN THE PIEDMONT AND MOUNTAINS, A SMALL–STEMMED SUDANGRASS MAY BE SUBSTITUTED AT A RATE OF 50 lb/acre.

SEEDING DATES:

| | |
|---|---|
| MOUNTAINS | MAY 15 – AUG. 15 |
| PIEDMONT: | MAY 1 – AUG. 15 |
| COASTAL PLAIN: | APR. 15 – AUG. 15 |

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER

MULCH:
APPLY 4,000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

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

## RECOMMENDATIONS FOR FALL

SEEDING MIXTURE

| SPECIES | RATE (lb/acre) |
|---|---|
| RYE (GRAIN) | 120 |

SEEDING DATES:

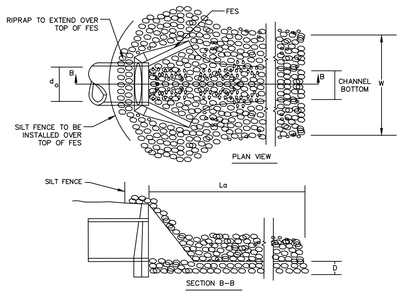
| | |
|---|---|
| MOUNTAINS: | AUG. 15 – DEC. 15 |
| COASTAL PLAIN AND PIEDMONT: | AUG. 15 – DEC. 30 |

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 lb/acre GROUND AGRICULTURAL LIMESTONE AND 750 lb/acre 10–10–10 FERTILIZER

MULCH:
APPLY 4,000 lb/acre STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REPAIR AND REFERTILIZE DAMAGED AREAS IMMEDIATELY. TOPDRESS WITH 50 lb/acre OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 lb/acre KOBE (PIEDMONT AND COASTAL PLAIN) OR KOREAN (MOUNTAINS) LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

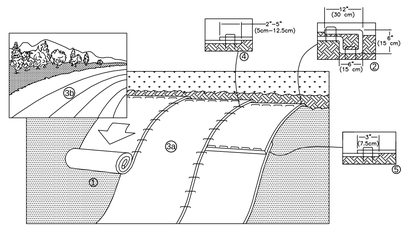
## TEMPORARY SEEDING SCHEDULE
NTS




| OUTLET NO. | Do (IN.) | La (FT.) | W (FT.) | DEPTH (IN.) | LINING CLASSIFICATION |
|---|---|---|---|---|---|
| HW–1 | 36 | 30.0 | 9.0 | 30 | CLASS 2 |
| HW–50 | 15 | 7.5 | 4.0 | 22 | CLASS B |
| FES–70 | 24 | 12.0 | 6.0 | 22 | CLASS B |

STONE CLASSIFICATIONS OF CLASS B REQUIRE A SUBLAYER OF FILTER FABRIC OR FS–2 FILTER STONE WITH A BEDDING THICKNESS OF 6".

## RIPRAP OUTLET PROTECTION
NTS



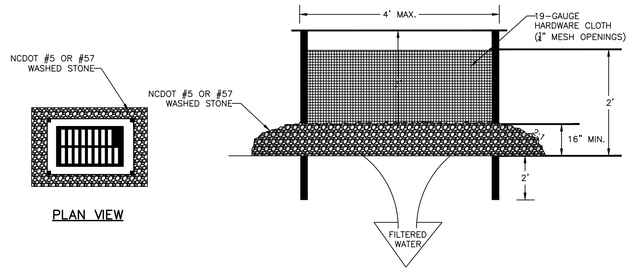

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPS), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPS IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECPS EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECPS WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECPS BACK OVER SEED AND COMPACTED SOIL. SECURE RECPS OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECPS.
3. ROLL THE RECPS (A.) DOWN (FOR SLOPES 3:1 OR GREATER) OR (B.) HORIZONTALLY (FOR SLOPES LESS THAN 3:1) ACROSS THE SLOPE. RECPS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECPS MUST BE STAPLED WITH APPROXIMATELY 2" –5" (5 CM –12.5 CM) OVERLAP DEPENDING ON RECP'S TYPE.
5. CONSECUTIVE RECPS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP'S WIDTH.

NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECPS.

## TEMPORARY STABILIZATION FOR SLOPES GREATER THAN 10 FEET
NTS

**NOTES:**

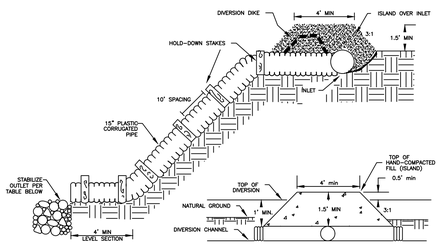
1. UNIFORMLY GRADE A SHALLOW DEPRESSION APPROACHING THE INLET.
2. DRIVE .5–FOOT STEEL POSTS 2 FEET INTO THE GROUND SURROUNDING THE INLET. SPACE POSTS EVENLY AROUND THE PERIMETER OF THE INLET, A MAXIMUM OF 4 FEET APART.
3. SURROUND THE POSTS WITH WIRE MESH HARDWARE CLOTH. SECURE THE WIRE MESH TO THE STEEL POSTS AT THE TOP, MIDDLE, AND BOTTOM. PLACING A 2–FOOT FLAP OF THE WIRE MESH UNDER THE GRAVEL FOR ANCHORING IS RECOMMENDED.
4. PLACE CLEAN GRAVEL (NC DOT #5 OR #57 STONE) ON A 2:1 SLOPE WITH A HEIGHT OF 16 INCHES AROUND THE WIRE, AND SMOOTH TO AN EVEN GRADE.
5. ONCE THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE ACCUMULATED SEDIMENT, AND ESTABLISH FINAL GRADING ELEVATIONS.
6. COMPACT THE AREA PROPERLY AND STABILIZED IT WITH GROUNDCOVER.




## HARDWARE CLOTH & GRAVEL INLET PROTECTION
NTS

## STORM DRAINAGE NOTES:

1. STORM DRAINAGE PIPES SHALL BE:
   - RCP/CLASS III UNLESS OTHERWISE NOTED IN THESE PLANS. ALL PIPES INSIDE THE PUBLIC RIGHT–OF–WAY SHALL ADHERE TO PIPE DEPTH, COVER AND MATERIAL REQUIREMENTS IN ACCORDANCE WITH THE NCDOT PIPE MATERIAL SELECTION GUIDE AS LOCATED ON THE NCDOT HYDRAULICS WEBSITE.
2. ALL CONCRETE SHALL MEET A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH.
3. ALL PIPE IN STORM DRAIN STRUCTURES SHALL BE STRUCK EVEN WITH INSIDE WALL.
4. THE INTERIOR SURFACES OF ALL STORM DRAINAGE STRUCTURES SHALL BE POINTED UP AND SMOOTHED TO AN ACCEPTABLE STANDARD USING MORTAR MIXED TO MANUFACTURER'S SPECIFICATIONS.
5. ALL BACKFILL SHALL BE NON–PLASTIC IN NATURE, FREE FROM ROOTS, VEGETATION MATTER, WASTE CONSTRUCTION MATERIAL OR OTHER OBJECTIONABLE MATERIAL. UTILIZED MATERIAL SHALL BE CAPABLE OF BEING COMPACTED BY MECHANICAL MEANS AND SHALL HAVE NO TENDENCY TO FLOW OR BEHAVE IN A PLASTIC MANNER UNDER THE TAMPING BLOWS OR PROOF ROLLING.
6. MATERIALS DEEMED AS UNSUITABLE FOR BACKFILL PURPOSES BY THE OWNER'S REPRESENTATIVE SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL.
7. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE THOROUGHLY COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST. THE TOP EIGHT (8) INCHES SHALL BE COMPACTED TO 100% STANDARD PROCTOR.
8. UNDER NO CIRCUMSTANCES SHALL WATER BE ALLOWED TO RISE IN UNBACKFILLED TRENCHES AFTER PIPE HAS BEEN PLACED.
9. ALL FLARED END SECTIONS DISCHARGING INTO WATER QUALITY PONDS WILL HAVE A CONCRETE PAD POURED UNDERNEATH THE FLARED END SECTION IN ACCORDANCE WITH PROVIDED CONSTRUCTION DETAILS.
10. RIM ELEVATIONS OF STORM DRAIN STRUCTURES SHALL BE FIELD VERIFIED.
11. STORM DRAINAGE WITHIN PRIVATE EASEMENTS TO BE OWNED, OPERATED AND MAINTAINED BY HOME OWNER'S ASSOCIATION OR AGENT THEREOF.
12. LENGTHS SHOWN FOR STORM DRAINAGE PIPES ARE MEASURED FROM CENTER OF STORM STRUCTURES AND TO ENDS OF FLARED END SECTIONS. SLOPES CALCULATED ARE BASED ON THIS LENGTH.
13. CB DENOTES CATCH BASINS TO BE INSTALLED NON–PAVED AREAS. REFER TO NCDOT DETAILS 840.18 AND 840.24 ON SHEET D–2.2.
14. CI DENOTES CURB INLETS TO BE INSTALLED IN THE CURB LINES OF ROADWAYS. REFER TO NCDOT DETAILS 840.02 AND 840.03 ON SHEET D–2.2.




OUTLET PROTECTION SIZING

| OUTLET SIZE | La (FT.) | W (FT.) | DEPTH (IN.) | LINING CLASSIFICATION |
|---|---|---|---|---|
| 12" | 6.0 | 3.0 | 22 | CLASS B |
| 15" | 7.5 | 3.75 | 22 | CLASS B |
| 18" | 9.0 | 4.5 | 22 | CLASS B |
| 24" | 12.0 | 6.0 | 22 | CLASS B |
| 30" | 15.0 | 7.5 | 22 | CLASS B |

## TEMPORARY SLOPE DRAIN
NTS

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. EVANS
Gareth C. Evans
05/10/2016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BRIAR CHAPEL™ by Newland COMMUNITIES

BRIAR CHAPEL
US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

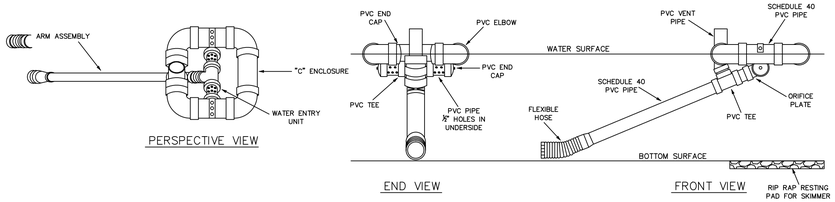
EROSION AND SEDIMENTION CONTROL DETAILS

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

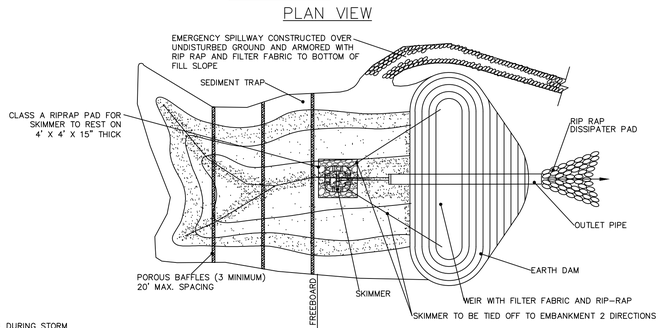
SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

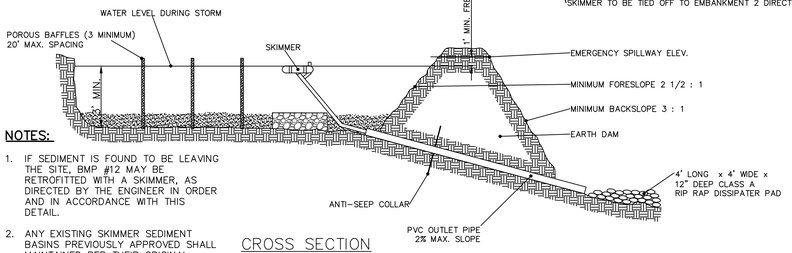
M&C FILE NUMBER: D1.X
DRAWING NUMBER: D1.1

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 6




SKIMMER DETAIL




CROSS SECTION

**NOTES:**

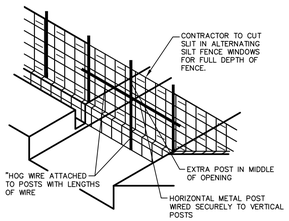
1. IF SEDIMENT IS FOUND TO BE LEAVING THE SITE, BMP #12 MAY BE RETROFITTED WITH A SKIMMER, AS DIRECTED BY THE ENGINEER IN ORDER AND IN ACCORDANCE WITH THIS DETAIL.
2. ANY EXISTING SKIMMER SEDIMENT BASINS PREVIOUSLY APPROVED SHALL MAINTAINED PER THEIR ORIGINAL DIMENSIONS AND IN ACCORDANCE WITH THIS DETAIL.

## TEMPORARY SKIMMER SEDIMENT BASIN

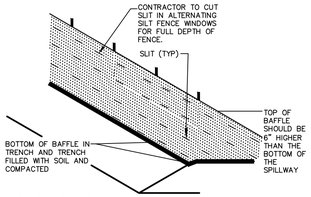
**NTS**

| BASIN # | DISTURBED AREA (ac) | TOTAL DRAINAGE AREA (ac) | REQUIRED STORAGE | REQUIRED SURFACE AREA | MINIMUM DEPTH | BOTTOM ELEVATION | TOP WIDTH | TOP LENGTH | PROVIDED STORAGE | PROVIDED SURFACE AREA | STORAGE/ SPILLWAY ELEVATION | SPILLWAY WIDTH | TOP OF DAM ELEVATION | SKIMMER SIZE | SKIMMER ORIFICE DIAMETER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.76 | 1.76 | 6,340 CF | 2,850 SF | 3.5' | 534.5' | 43' | 78' | 6,825 CF | 3,354 SF | 538.0' | 8.0' | 540.0' | 2.0" | 1.6" |
| 2 | 1.90 | 1.90 | 6,840 CF | 3,080 SF | 3.5' | 534.5' | 45' | 77' | 7,168 CF | 3,465 SF | 538.0' | 8.0' | 540.0' | 2.0" | 1.6" |
| 2A | 1.63 | 1.63 | 5,870 CF | 2,640 SF | 3.5' | 540.5' | 40' | 76' | 5,954 CF | 3,040 SF | 544.0' | 7.0' | 546.0' | 2.0" | 1.5" |
| 3A | 4.76 | 5.39 | 17,140 CF | 8,740 SF | 3.0' | 533.0' | PER PLAN | PER PLAN | 19,824 CF | 8,840 SF | 536.0' | 23.0' | 538.0' | 3.0" | 2.5" |
| 3B | 2.88 | 2.88 | 10,370 CF | 4,670 SF | 3.0' | 531.0' | PER PLAN | PER PLAN | 11,475 CF | 5,529 SF | 534.0' | 31.0' | 536.0' | 2.5" | 2.0" |
| 4 | 2.32 | 2.62 | 8,350 CF | 3,760 SF | 3.5' | 522.5' | 48' | 86' | 8,943 CF | 4,128 SF | 526.0' | 10.0' | 528.0' | 2.0" | 1.8" |
| 5 | 6.00 | 8.90 | 21,600 CF | 14,440 SF | 4.0' | 511.0' | 91' | 174' | 49,280 CF | 15,834 SF | 514.0' | 37.0' | 516.0' | 4.0" | 3.6" |
| 6 | 3.09 | 3.09 | 11,120 CF | 5,010 SF | 3.0' | 530.0' | 57' | 102' | 12,150 CF | 5,814 SF | 533.0' | 13.0' | 535.0' | 2.5" | 2.0" |
| 7/BMP #22 | 1.81 | 1.81 | 6,520 CF | 2,940 SF | 3.5' | 525.0' | PER PLAN | | 33,848 CF | 13,266 SF | 528.0' | N/A | 530.0' | 4.0" | 3.7" |
| BMP #21 | 16.02 | 18.92 | 57,670 CF | 22,470 SF | 5.0' | 508.0' | PER PLAN | | 92,565 CF | 25,170 SF | 515.0' | 40.0' | 520.0' | 6.0" | 5.1" |

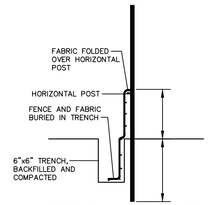
BAFFLE INSTALLATION DETAIL




BAFFLE INSTALLATION - STEP 1



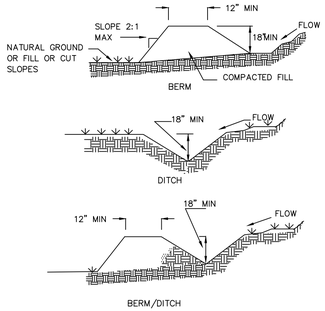

BAFFLE INSTALLATION - STEP 2




SECTION AT OPENING

NOTES:

1. DRIVE STEEL FENCE POST AT LEAST 18" INTO SOLID GROUND
2. WOOD POSTS ARE NOT ACCEPTABLE
3. USE STAPLES 1" APART TO ATTACH FABRIC TO "HOG WIRE"
   BAFFLE SPACED AS PER APPROVED PLAN.
4.




NOTES:

POSITIVE GRADE MUST BE PROVIDED TO ASSURE DRAINAGE. IF SLOPE EXCEEDS 2%, SEED AND MULCH DIVERSION. TRY NOT TO EXCEED 5% MAXIMUM D.A.= 5 ACRES WITHOUT SUPPORTING CALCS.. DIVERSIONS AT THE TOP OF SLOPES MUST EMPTY INTO AN APPROVED SLOPE DRAIN. BERM/DITCH IS MOST COMMONLY USED.

a. MACHINE COMPACTION OF ALL FILL IS REQUIRED. DIVERSIONS SUFFICIENT TO DIRECT ALL SEDIMENT- LADEN STORMWATER INTO A SEDIMENT CONTROL DEVICE MUST BE INSTALLED PRIOR TO CLEARING AND GRUBBING OF THE AREA (OR IN CONJUNCTION WITH THIS OPERATION) IF SEDIMENT CONTROLS AND DIVERSIONS ARE INSTALLED AS EACH CRITICAL POINT IS REACHED).
b. DIVERSIONS SHOULD BE LOCATED TO MINIMIZE DAMAGES BY CONSTRUCTION OPERATIONS.
c. DIVERSIONS SHOULD BE SEEDED AND MULCHED IF THEY ARE TO REMAIN IN PLACE OVER 30 DAYS.
d. CHECK DEVICE AFTER EACH RAIN, BUT ONCE A WEEK REGARDLESS. REPAIR AS NECESSARY.

MAINTENANCE

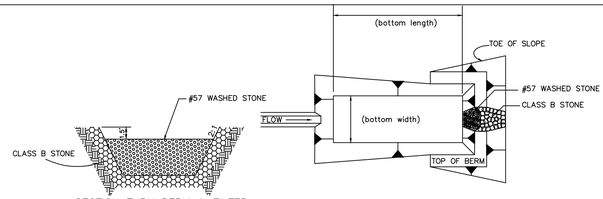
1. INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.

2. ALL TEMPORARY DIVERSION AND CLEAN WATER DITCHES SHALL BE MAINTAINED PER THEIR ORIGINAL DESIGN DIMENSIONS DURING CONSTRUCTION ACTIVITIES. ANY DITCHES THAT REQUIRE REMOVAL OR RELOCATION SHALL RECEIVE APPROVAL FROM CHATHAM COUNTY EROSION CONTROL INSPECTOR.

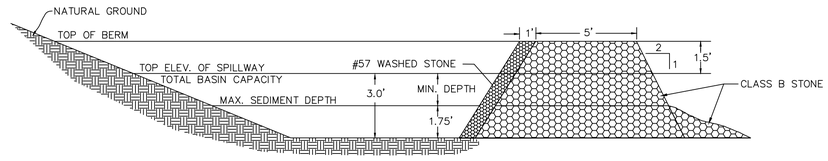
| TDD # | TOTAL LENGTH | SLOPE (%) | LINER | RECEIVING SLOPE DRAIN SIZE (IN.) |
|---|---|---|---|---|
| STAGE 1 DIVERSIONS | | | | |
| 1 | 436' | 5.4 | SYNTHETIC MAT | 18 |
| 2 | 92' | 7.6 | STRAW W/NET | 18 |
| 3 | 533' | 4.2 | SYNTHETIC MAT | 24 |
| NEW 1 | 240' | 2.5 | SYNTHETIC MAT | 18 |
| NEW 2 | 91' | 7.2 | STRAW W/ NET | 24 |
| NEW 3 | 148' | 4.2 | SYNTHETIC MAT | 18 |
| NEW 4 | 460' | 4.0 | STRAW W/ NET | 18 |
| 4A | 264' | 2.3 | STRAW W/NET | 24 |
| 5 | 316' | 4.1 | STRAW W/NET | 24 |
| 6 | 186' | 4.6 | SYNTHETIC MAT | 30 |
| 7 | 116' | 7.3 | SC250 | 24 |
| 8 | 153' | 1.3 | STRAW W/NET | 24 |
| 9 | 150' | 4.0 | STRAW W/NET | 15 |
| 10 | 80' | 1.3 | STRAW W/NET | 15 |
| 11 | 44' | 9.1 | SC250 | 24 |
| 12 | 337' | 2.1 | STRAW W/NET | 24 |
| 13A | 133' | 7.2 | STRAW W/NET | N/A |
| 13B | 793' | 3.9 | SYNTHETIC MAT | N/A |
| 13C | 233' | 1.7 | STRAW W/NET | 30 |
| 14 | 166' | 7.8 | SC250 | 30 |
| 15 | 235' | 3.6 | STRAW W/NET | 18 |
| 16 | 99' | 8.6 | STRAW W/NET | 18 |
| 17 | 86' | 7.0 | SYNTHETIC MAT | 24 |
| 18 | 446' | 2.6 | STRAW W/NET | 24 |
| 19 | 340' | 7.4 | SC250 | 24 |
| 20 | 482' | 4.1 | STRAW W/NET | 24 |
| 21 | 349' | 2.6 | STRAW W/NET | 24 |
| 22 | 198' | 2.5 | STRAW W/NET | 24 |
| STAGE 2 DIVERSIONS | | | | |
| 23 | 359' | 1.7 | STRAW W/NET | 24 |
| 24 | 484' | 3.1 | SC250 | 30 |
| 25 | 474' | 2.6 | STRAW W/NET | 18 |
| 26 | 335' | 3.3 | STRAW W/NET | 15 |

## TEMPORARY DIVERSION/CLEAN WATER DIVERSION DITCH

**NTS**



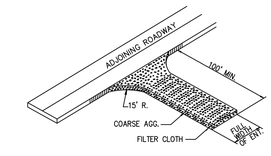

| TRAP # | DISTURBED AREA (ac) | TOTAL DRAINAGE AREA (ac) | REQUIRED STORAGE | REQUIRED SURFACE AREA | MINIMUM DEPTH | BOTTOM ELEVATION | TOP WIDTH | TOP LENGTH | PROVIDED STORAGE | PROVIDED SURFACE AREA | STORAGE/ SPILLWAY ELEVATION | SPILLWAY WIDTH | TOP OF DAM ELEVATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 2.25 | 2.25 | 8,100 CF | 3,970 SF | 3.5' | 539.5' | 33' | 129' | 8,120 CF | 4,257 SF | 543.0' | 10.0' | 545.0' |




SECTION THRU SEDIMENT TRAP

## TEMPORARY SEDIMENT TRAP

**NTS**




A. COARSE AGGREGATE (2"-3" STONE) SHALL BE USED. PAD TO BE 100'L X 25'W X 6"D MIN. PLACE A MINIMUM OF 3" OF STONE IN A CUT SECTION TO HELP SECURE FILTER CLOTH.

B. TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS IS TO BE PROVIDED.

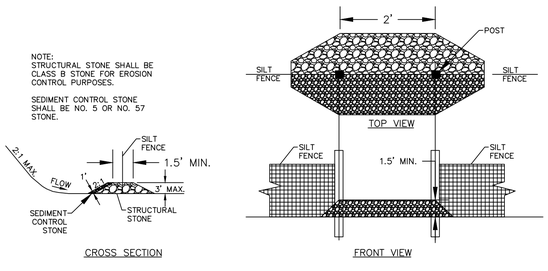
C. ENTRANCES SHOULD BE LOCATED TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES.

D. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOP DRESSING MAY BE NECESSARY. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.

E. TEMPORARY PADS MUST BE LOCATED ON EACH SIDE OF ADJOINING ROADWAY.

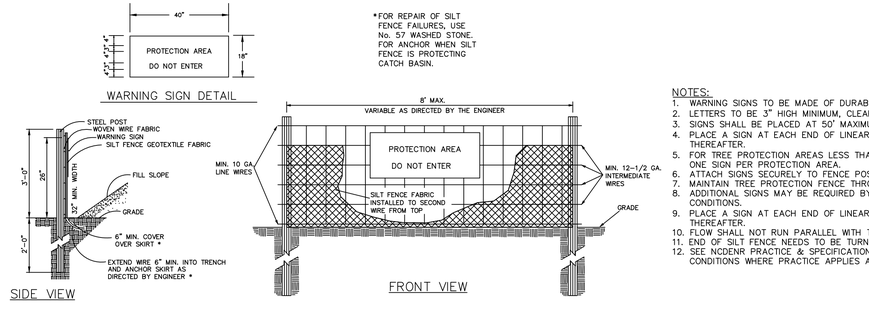
## TEMPORARY CONSTRUCTION ENTRANCE

**NTS**




## SILT FENCE OUTLET

**NTS**




NOTES:

1. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL.
2. LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
3. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS.
4. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
5. FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
6. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
7. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.
8. ADDITIONAL SIGNS MAY BE REQUIRED BY CHATHAM COUNTY BASED ON ACTUAL FIELD CONDITIONS.
9. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER.
10. FLOW SHALL NOT RUN PARALLEL WITH THE FENCE.
11. END OF SILT FENCE NEEDS TO BE TURNED UPHILL.
12. SEE NCDENR PRACTICE & SPECIFICATIONS MANUAL SEDIMENTS FENCE SECTION FOR CONDITIONS WHERE PRACTICE APPLIES AND DESIGN CRITERIA.

## COMBINATION SILT/TREE PROTECTION FENCE

**NTS**

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT
06/13/2016


McKIM&CREED
1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606
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F-1222
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BRIAR CHAPEL
US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

EROSION AND SEDIMENTION CONTROL DETAILS

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

M&C FILE NUMBER: D1.X
DRAWING NUMBER: D1.2

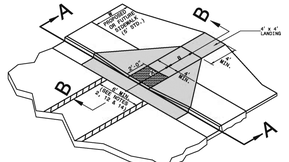
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 7

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

1-12

ENGLISH STANDARD DRAWING FOR
**CURB RAMP**
PROPOSED CURB AND GUTTER

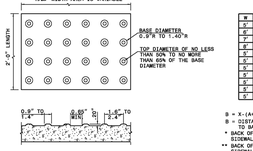
SHEET 1 OF 3
**848.05**




ISOMETRIC VIEW

PAY LIMITS FOR CURB RAMP

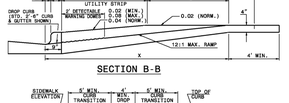
NOTES:
1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



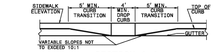

**DETECTABLE WARNING DOMES**

| W | A | B=A+0.5" | X | S |
|---|---|---|---|---|
| 5' | 0.0" | 5.8" | 5.8" | 3.0"* |
| 6' | 0.0" | 6.8" | 6.8" | 6.0"* |
| 7' | 0.0" | 7.8" | 7.3" | 6.5"** |
| 8' | 0.0" | 8.8" | 7.8" | 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" |

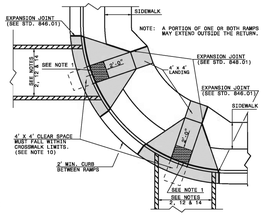
B = X-(A+9")
S = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK OF POINT OF 12:1 (8.3%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.




SECTION B-B




SECTION A-A




PLAN VIEW
DUAL RAMPS
ANY RADII
(4' MIN. FLOOR WIDTH)

STATE OF
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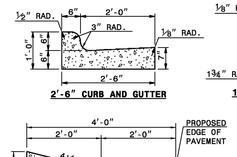
RALEIGH, N.C.

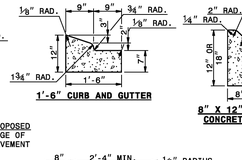
1-12

ENGLISH STANDARD DRAWING FOR
**CONCRETE CURB, GUTTER AND CURB & GUTTER**

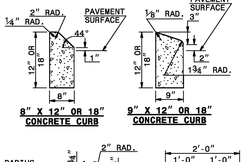
SHEET 1 OF 3
**846.01**




**2'-6" CURB AND GUTTER**



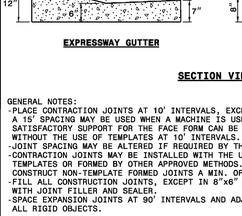

**1'-6" CURB AND GUTTER**



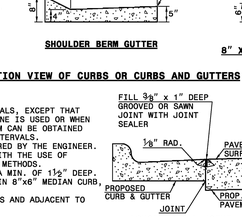

**8" X 12" OR 18" CONCRETE CURB**



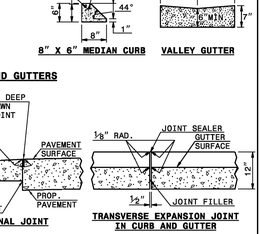

**9" X 12" OR 18" CONCRETE CURB**




**EXPRESSWAY GUTTER**




**SHOULDER BERM GUTTER**



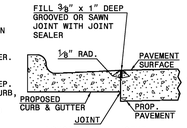

**8" X 6" MEDIAN CURB**



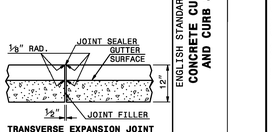

**VALLEY GUTTER**

**SECTION VIEW OF CURBS OR CURBS AND GUTTERS**

GENERAL NOTES:
-PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
-JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
-CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS.
-CONSTRUCT NON-TEMPLATE FORMED JOINTS A MIN. OF 1½" DEEP.
-FILL ALL CONSTRUCTION JOINTS, EXCEPT IN 8"x6" MEDIAN CURB, WITH JOINT FILLER AND SEALER.
-SPACE EXPANSION JOINTS AT 90' INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.




**LONGITUDINAL JOINT**




**TRANSVERSE EXPANSION JOINT IN CURB AND GUTTER**

**SECTION VIEW OF JOINTS**

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1-12

ENGLISH STANDARD DRAWING FOR
**CONCRETE CURB, GUTTER AND CURB & GUTTER**

SHEET 1 OF 3
**846.01**

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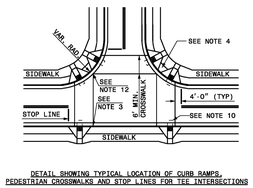
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

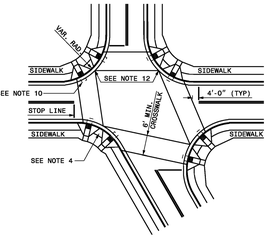
1-12

ENGLISH STANDARD DRAWING FOR
**CURB RAMP**
PROPOSED CURB AND GUTTER

SHEET 2 OF 3
**848.05**




DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS




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

ROADWAY PLAN SYMBOL
CR
FOR PROPOSED CURB RAMP

PROPOSED CURB RAMP W/ LANDING
PROPOSED OR FUTURE SIDEWALK

ALLOWABLE LOCATIONS
DUAL RAMP RADII.....ANY

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ENGLISH STANDARD DRAWING FOR
**CURB RAMP**
PROPOSED CURB AND GUTTER

SHEET 2 OF 3
**848.05**

STATE OF
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DEPT. OF TRANSPORTATION
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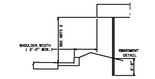
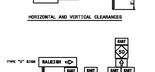
1-12

ENGLISH STANDARD DRAWING FOR
**MOUNTING OF 'F' SIGNS ON 'U' CHANNEL POSTS**

SHEET 1 OF 2
**904.50**

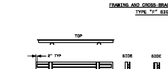
HORIZONTAL AND VERTICAL CLEARANCES




TYPICAL SIGN SHAPES AND COMBINATIONS

FRAMING AND CROSS BRACING DETAILS
TYPE "F" SIGNS




FRAMING AND CROSS BRACE DETAILS
FOR COMBINATION TYPE "D" & "E" SIGNS
WIDE SIDE OF CROSS BRACE GOES TO BACK OF SIGN

FRAMING AND CROSS BRACE DETAILS
FOR COMBINATION TYPE "D" & "E" SIGNS
WIDE SIDE OF FLANGE TO BACK OF "F" SIGN

NOTES:
1. EVERY TYPE "D", "E", AND "F" SIGNS OR PIERWAYS WITH THE NEAR EDGE OF THE SIGN 50 FT. OR LESS FROM THE TRAVEL LANE. DIRECT ALL OTHER "D", "E", AND "F" SIGNS WITH THE NEAR EDGE OF THE SIGN AT THE EDGE OF THE SHOULDER BREAK (8 FT. MINIMUM CLEARANCE, 10 FT. DESIRABLE, FROM THE EDGE OF TRAVEL LANE), OR AS DIMENSIONED ON PLAN SHEETS.
2. DIRECT TYPE "D", "E", AND "F" SIGNS WITH THE BOTTOM OF SIGN ASSEMBLY AT LEAST 7 FT., ABOVE THE EDGE OF THE TRAVEL LANE ON ROADS WITH 2 OR MORE LANES AND AT LEAST 5 FT. ON OTHER ROUTES. THE VERTICAL CLEARANCE IS 7 FT. WHERE REQUIRED FOR PEDESTRIAN TRAFFIC AND/OR PARKED VEHICLES.
3. THE VERTICAL DIMENSION BETWEEN MOUNTING HOLE CENTERS ON ALL TYPES "D", "E", AND "F" SIGNS IS 30" MAXIMUM. THE VERTICAL AND HORIZONTAL DIMENSIONS BETWEEN MOUNTING HOLES IS TO THE WHOLE INCH. EACH SIGN PANEL HAS A MINIMUM OF 2 BOLTS PER SUPPORT.
4. ATTACH SIGN W/ ⅜" HEX HEAD BOLT, NYLON WASHER, DRISK, FLAT WASHER, LOCK WASHER, HEX NUT NO BUCKLING OF THE SIGN WILL BE PERMITTED. SEE ASSEMBLY DETAIL SHEET# 2 OF 904.50.
5. FURNISH AND INSTALL CROSS-BRACING AS SHOWN IN DITAIL. PAINT ENDS OF CROSS BRACES W/ APPROVED. ZINC PAINT
6. INSTALL POST AND CROSS-BRACING WITH THE WIDE SIDE OF THE FLANGE TOWARD THE BACK OF SIGN(S) FOR COMBINATION TYPE "D" AND "F" SIGNS.
7. THE SHIELD HEIGHTS IN THESE ASSEMBLIES CAN NOT BE LARGER THAN 24".

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ENGLISH STANDARD DRAWING FOR
**CURB RAMPS**
NOTES

SHEET 3 OF 3
**848.05**

NOTES:
1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
6. TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGHT 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 ½" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
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 R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

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1-12

ENGLISH STANDARD DRAWING FOR
**CURB RAMPS**
NOTES

SHEET 3 OF 3
**848.05**

STATE OF
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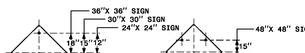
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
**TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS**

SHEET 2 OF 2
**904.50**

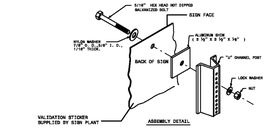



TYPE "E" SIGNS

| NO. SUPPORTS | | | |
|---|---|---|---|
| | 2 | 3 | 4 |
| P | .207W | .140W | .107W |
| R | .586W | .355W | .262W |

UNITS ON ATTACHED SHEET
*MINIMUM 4 FT. BETWEEN CHANNEL POSTS

HOLE PUNCHING DETAIL




ASSEMBLY DETAIL

DETAIL FOR INSTALLATION OF CHANNEL POST IN CONCRETE

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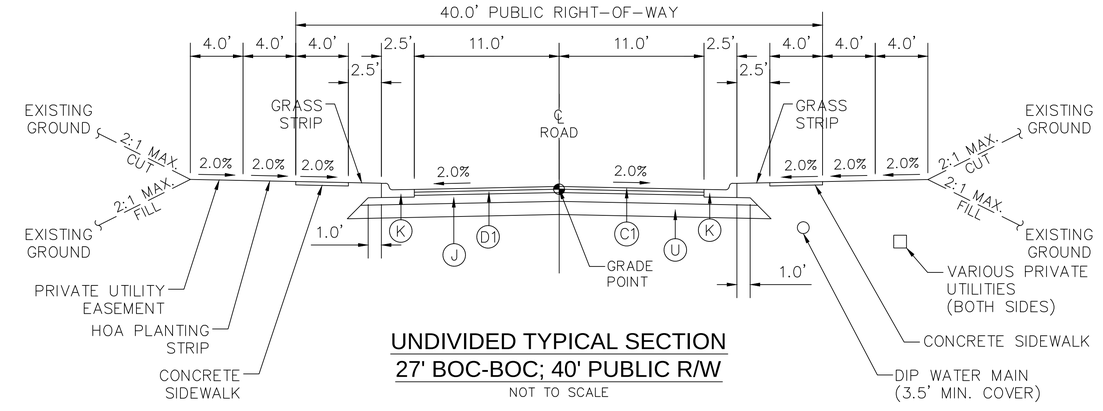
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
**TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS**

SHEET 2 OF 2
**904.50**




**UNDIVIDED TYPICAL SECTION**
**27' BOC-BOC; 40' PUBLIC R/W**
NOT TO SCALE

| PAVEMENT SCHEDULE | |
|---|---|
| C1 | 1.0" SF9.5A ASPHALT SURFACE COURSE AT AN AVERAGE RATE OF 110 LBS. PER SQ. YARD. |
| D1 | 2.0" S9.5B ASPHALT SURFACE COURSE AT AN AVERAGE RATE OF 224 LBS. PER SQ. YARD. |
| J | 8" COMPACTED ABC STONE BASE COURSE |
| K | 30" CURB AND GUTTER |
| U | COMPACTED SUBGRADE |
| G | GEOTEXTILE FABRIC (IF NECESSARY) COORDINATE WITH GEOTECHNICAL ENGINEER |

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| | REVISIONS | |
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT
06/13/2016


McKIM & CREED
1730 Varsity Drive, Suite 500
Raleigh, North Carolina 27606
Phone: (919)233-8091, Fax: (919)233-8031
F-1222
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US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

NCDOT ROADWAY DETAILS

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

M&C FILE NUMBER
D2.X
DRAWING NUMBER
D2.1

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION 7

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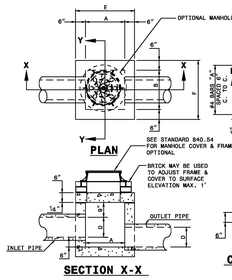
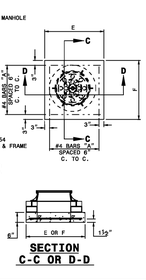
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
**CONCRETE JUNCTION BOX**
(WITH OPTIONAL MANHOLE)
12" THRU 66" PIPE

SHEET 1 OF 1
**840.31**




GENERAL NOTES:

CHAMFER ALL EXPOSED CORNERS 1".

USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS TO CONSTRUCT THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.

PROVIDE ALL JUNCTION BOXES OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.

ADJUST THE STEEL, CONCRETE AND BRICK MASONRY QUANTITIES TO INCLUDE THE ADDITION OF THE MANHOLE (I.E. DIAGONAL BARS SHORTENED AROUND OPENING IN TOP SLAB, ADDITIONAL VARIABLE HEIGHT BRICK MASONRY, OPENING IN TOP SLAB.)

MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

**DIMENSIONS AND QUANTITIES FOR CONCRETE JUNCTION BOXES**

| DIMENSIONS OF BOX AND PIPE | | | | REINFORCEMENT BARS "A" | | TOP SLAB DIMENSIONS | | CUBIC YARDS IN BOX | | | TOTAL QUANTITIES BOX AND SLABS | | DEDUCTIONS FOR ONE PIPE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIPE | SPAN | WIDTH | HEIGHT | NO. | LENGTH | E | F | TOP SLAB | BOTTOM SLAB | WALL (T. OF W.) | LBS. REINF | CU. YDS. CONC. MIN. "m" | C.S. | R.C. |
| 12" | 2'-0" | 2'-0" | 2'-3" | 12 | 2'-9" | 3'-0" | 3'-0" | 0.167 | 0.167 | 0.185 | 22 | 0.750 | 0.015 | 0.024 |
| 15" | 2'-3" | 2'-3" | 2'-6" | 12 | 3'-0" | 3'-3" | 3'-3" | 0.196 | 0.196 | 0.204 | 24 | 0.902 | 0.023 | 0.038 |
| 18" | 2'-6" | 2'-6" | 2'-9" | 14 | 3'-3" | 3'-6" | 3'-6" | 0.227 | 0.227 | 0.222 | 30 | 1.065 | 0.033 | 0.049 |
| 24" | 3'-0" | 3'-0" | 3'-3" | 16 | 3'-9" | 4'-0" | 4'-0" | 0.296 | 0.296 | 0.259 | 40 | 1.434 | 0.059 | 0.085 |
| 30" | 3'-6" | 3'-6" | 3'-9" | 18 | 4'-3" | 4'-6" | 4'-6" | 0.375 | 0.375 | 0.296 | 51 | 1.860 | 0.092 | 0.127 |
| 36" | 4'-0" | 4'-0" | 4'-3" | 20 | 4'-9" | 5'-0" | 5'-0" | 0.463 | 0.463 | 0.333 | 64 | 2.341 | 0.132 | 0.178 |
| 42" | 4'-6" | 4'-6" | 4'-9" | 22 | 5'-3" | 5'-6" | 5'-6" | 0.560 | 0.560 | 0.370 | 77 | 2.878 | 0.180 | 0.243 |
| 48" | 5'-0" | 5'-0" | 5'-3" | 26 | 6'-3" | 6'-0" | 6'-0" | 0.743 | 0.743 | 0.407 | 111 | 3.623 | 0.235 | 0.317 |
| 54" | 5'-10" | 5'-10" | 5'-9" | 28 | 6'-7" | 6'-10" | 6'-10" | 0.865 | 0.865 | 0.444 | 126 | 4.283 | 0.297 | 0.401 |
| 60" | 6'-6" | 6'-6" | 6'-3" | 30 | 7'-3" | 7'-6" | 7'-6" | 1.042 | 1.042 | 0.481 | 145 | 5.090 | 0.367 | 0.490 |
| 66" | 7'-1" | 7'-1" | 6'-9" | 32 | 7'-10" | 8'-1" | 8'-1" | 1.210 | 1.210 | 0.518 | 169 | 5.917 | 0.444 | 0.589 |

STATE OF NORTH CAROLINA
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RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR
**CONCRETE JUNCTION BOX**
(WITH OPTIONAL MANHOLE)
12" THRU 66" PIPE

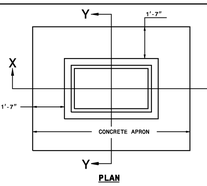
SHEET 1 OF 1
**840.31**

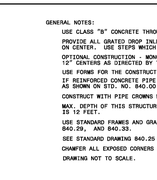
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

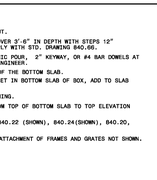
1-12

ENGLISH STANDARD DRAWING FOR
**CONCRETE GRATED DROP INLET TYPE 'B'**
12" THRU 36" PIPE

SHEET 1 OF 1
**840.18**




GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL GRATED DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20, 840.29, AND 840.33.

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

**MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET**

| PIPE | SPAN | WIDTH | HEIGHT | CUBIC YARDS OF CONCRETE IN BOX | | | | DEDUCTIONS FOR ONE PIPE | |
|---|---|---|---|---|---|---|---|---|---|
| D | A | B | H | BOTTOM SLAB | H PER FT. - HT. | H MIN. TOTAL | TOTAL | C.S. | R.C. |
| 12" | 3'-8" | 2'-0" | 2'-6" | 0.382 | 0.247 | 0.597 | 0.958 | 0.020 | 0.032 |
| 15" | 3'-8" | 2'-0" | 2'-9" | 0.382 | 0.247 | 0.659 | 1.021 | 0.023 | 0.036 |
| 18" | 3'-8" | 2'-0" | 3'-0" | 0.382 | 0.247 | 0.720 | 1.082 | 0.033 | 0.049 |
| 24" | 3'-8" | 2'-0" | 3'-6" | 0.382 | 0.247 | 0.842 | 1.227 | 0.059 | 0.085 |
| 30" | 3'-8" | 2'-0" | 4'-0" | 0.382 | 0.247 | 0.964 | 1.350 | 0.092 | 0.127 |
| 36" | 3'-8" | 2'-0" | 4'-6" | 0.382 | 0.247 | 1.112 | 1.474 | 0.132 | 0.178 |

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1-12

ENGLISH STANDARD DRAWING FOR
**CONCRETE GRATED DROP INLET TYPE 'B'**
12" THRU 36" PIPE

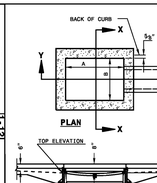
SHEET 1 OF 1
**840.18**

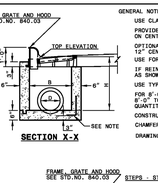
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

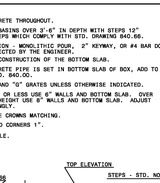
1-12

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

SHEET 2 OF 2
**840.02**




GENERAL NOTES:

USE CLASS "A" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 12'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

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1-12

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

SHEET 2 OF 2
**840.02**

STATE OF NORTH CAROLINA
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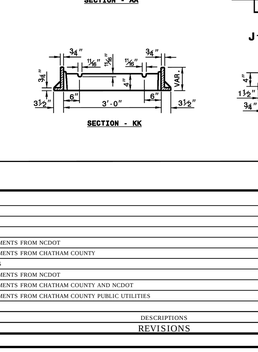
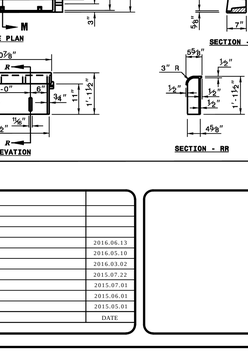
1-12

ENGLISH STANDARD DRAWING FOR
**MANHOLE FRAME AND COVER**

SHEET 1 OF 1
**840.54**




MINIMUM WEIGHTS - LBS.
FRAME - 180
COVER - 120
TOTAL - 300

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1-12

ENGLISH STANDARD DRAWING FOR
**MANHOLE FRAME AND COVER**

SHEET 1 OF 1
**840.54**

STATE OF NORTH CAROLINA
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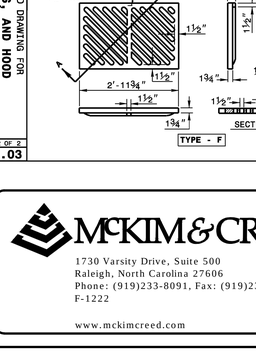
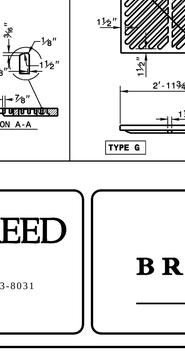
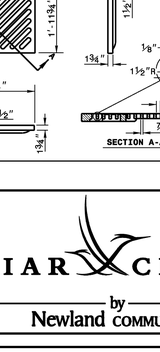
1-12

ENGLISH STANDARD DRAWING FOR
**FRAMES AND NARROW SLOT SAG GRATES**

SHEET 1 OF 1
**840.24**




NOTE:
SEE STD. DWG. 840.25 FOR FRAME ANCHORAGE.

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1-12

ENGLISH STANDARD DRAWING FOR
**FRAMES AND NARROW SLOT SAG GRATES**

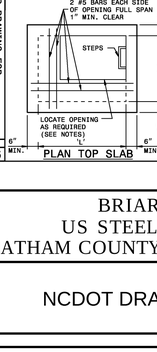
SHEET 1 OF 1
**840.24**

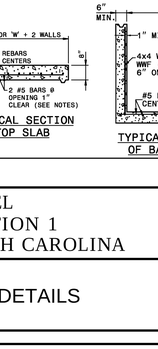
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-12

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

SHEET 2 OF 2
**840.02**




**MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) ***

| DIMENSIONS OF BOX AND PIPE | | | | | | COVER DIMENSION | | BARS-U | | BARS-V | | BARS-W | | TOTAL LBS. | TOP SLAB | BOTTOM SLAB | CU.YDS. CONC. IN BOX | | DEDUCTIONS ONE PIPE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | A | B | WIDTH | SPAN | MIN. HEIGHT | E | F | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | | | | TOP SLAB | WALLS & BOTTOM SLAB | C.S. | R.C. |
| 12" | 3'-0" | 2'-2" | -- | | 2'-9" | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.235 | 0.772 | 0.015 | 0.026 |
| 15" | 3'-0" | 2'-2" | -- | | 3'-0" | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.235 | 0.829 | 0.023 | 0.036 |
| 18" | 3'-0" | 2'-2" | -- | | 3'-3" | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.235 | 0.887 | 0.033 | 0.049 |
| 24" | 3'-0" | 2'-2" | -- | | 3'-9" | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.235 | 1.001 | 0.059 | 0.085 |
| 30" | 3'-0" | 2'-2" | 3'-4" | | 4'-3" | -- | -- | 1'-2" | 4'-0" | 4 | 1'-5" | 2 | 3'-9" | 3 | 3'-9" | 39 | 0.123 | 1.323 | 0.092 | 0.127 |
| 36" | 3'-0" | 2'-2" | 3'-10" | | 4'-9" | -- | -- | 1'-8" | 4'-0" | 4 | 1'-11" | 3 | 3'-9" | 3 | 3'-9" | 43 | 0.161 | 2.358 | 1.714 | 0.132 | 0.178 |
| 42" | 3'-0" | 2'-2" | | 4'-5" | 5'-3" | -- | -- | 1'-8" | 4'-0" | 4 | 2'-5" | 2 | 2'-11" | 3 | 2'-11" | 52 | 0.112 | 2.218 | 1.238 | 0.180 | 0.243 |
| 48" | 3'-0" | 2'-2" | | 5'-0" | 5'-9" | -- | -- | 2'-0" | 3'-2" | 4 | 2'-9" | 3 | 2'-11" | 3 | 2'-11" | 35 | 0.145 | 2.352 | 2.062 | 0.235 | 0.317 |
| 54" | 3'-0" | 2'-2" | | 5'-7" | 6'-3" | -- | -- | 2'-7" | 3'-2" | 4 | 2'-10" | 5 | 2'-11" | 3 | 2'-11" | 41 | 0.180 | 2.386 | 2.387 | 0.297 | 0.401 |

* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

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

1-12

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

SHEET 2 OF 2
**840.02**

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

1-12

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

SHEET 1 OF 2
**840.03**










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

1-12

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

SHEET 1 OF 2
**840.03**

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

1-12

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

SHEET 2 OF 2
**840.03**







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

1-12

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

SHEET 2 OF 2
**840.03**

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

1-12

ENGLISH STANDARD DRAWING FOR
**TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE**

SHEET 1 OF 1
**840.46**










GENERAL NOTES:

- THIS PRECAST BOX MAY BE USED FOR THE FOLLOWING STANDARDS: 840.04, 840.05, 840.14, 840.15, 840.31, 840.32, 840.34, 840.35, 840.36 AND 840.41.
- INSTALL AND PAY FOR PRECAST DRAINAGE STRUCTURES IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATION SECTION 840.
- USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.
- USE ASTM A615 GRADE 60 REINFORCING STEEL. USE ASTM A185 WELDED WIRE FABRIC (WWF).
- LIMIT MAXIMUM DEPTH TO TOP OF BOTTOM SLAB TO 15'-0".
- PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
- ORIENT STRUCTURES SO THAT CORNERS WILL NOT BE CUT OR MODIFIED UNLESS ALLOWED BY DETAIL IN PLANS.
- PRECAST ALL ELEMENTS TO MEET ASTM C913.
- FRAME AND GRATE HEIGHT MAY BE ADJUSTED WITH CONCRETE OR BRICK IN ACCORDANCE WITH STANDARD 840.25.
- PROVIDE PRECAST STRUCTURES OVER 4'-0" IN DEPTH WITH STEPS 12" ON CENTERS IN ACCORDANCE WITH STD. NO. 840.66.
- WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR IF THE SAME MIN. AREA OF STEEL IS PROVIDED.
- SEAL JOINTS WITH AN APPROVED SEALANT (SEE SECTION 840 OF NCDOT STANDARD SPECIFICATIONS.
- LIMIT MAXIMUM STRUCTURE SIZE INSIDE CLEAR DIMENSIONS TO 6'-0" X 6'-0".
- THE OUTSIDE PIPE DIAMETER PLUS 2" IS THE MINIMUM STRUCTURE SIZE OR THE OPENING REQUIRED FOR GRATE AND FRAME WHICHEVER IS GREATER.
- ROUND MANHOLE MAY BE USED IN LIEU OF SQUARE PROVIDED 2 EXTRA #5'S ARE PLACED ON EVERY SIDE NOT ADJACENT TO A WALL. SEE STD. DWG. 840.34 FOR MANHOLE INSTALLATION.

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

1-12

ENGLISH STANDARD DRAWING FOR
**TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE**

SHEET 1 OF 1
**840.46**

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

1-12

ENGLISH STANDARD DRAWING FOR
**CONCRETE PRECAST DRAINAGE STRUCTURE**
12" THRU 54" PIPE

SHEET 2 OF 2
**840.02**

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| | REVISIONS | |
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036348 06/13/2016 GARETH C. EVANS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BRIAR CHAPEL
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CHATHAM COUNTY, NORTH CAROLINA

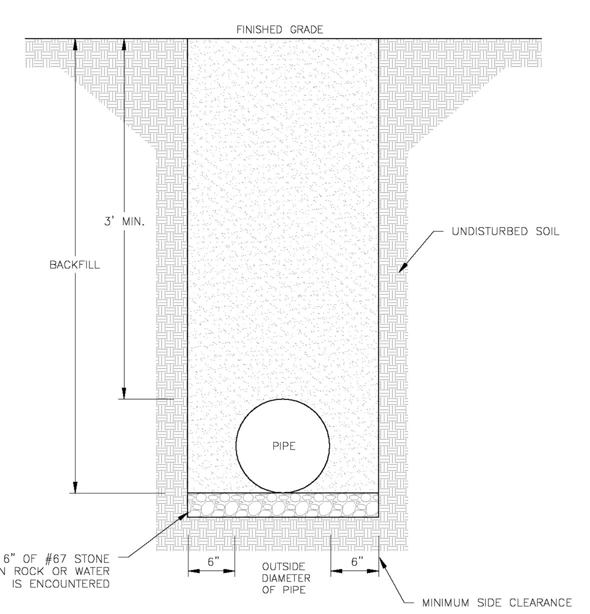
NCDOT DRAINAGE DETAILS

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

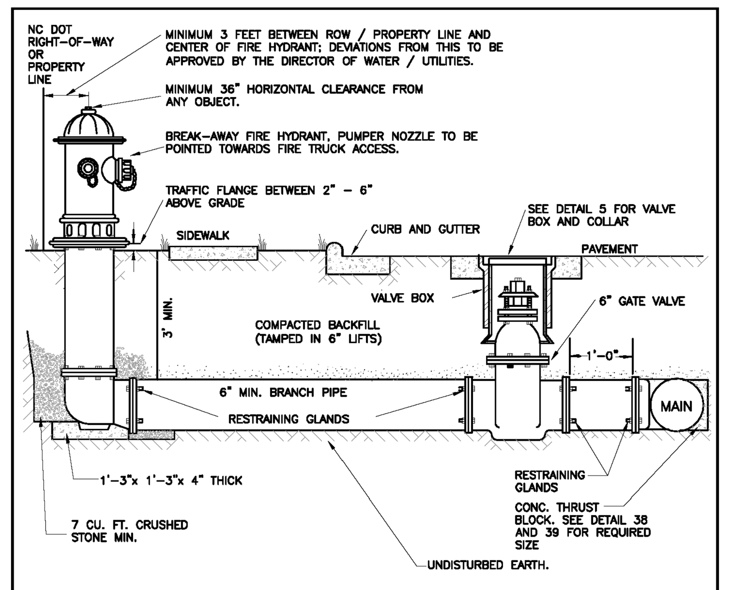
M&C FILE NUMBER: D2.X
DRAWING NUMBER: D2.2

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 7




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

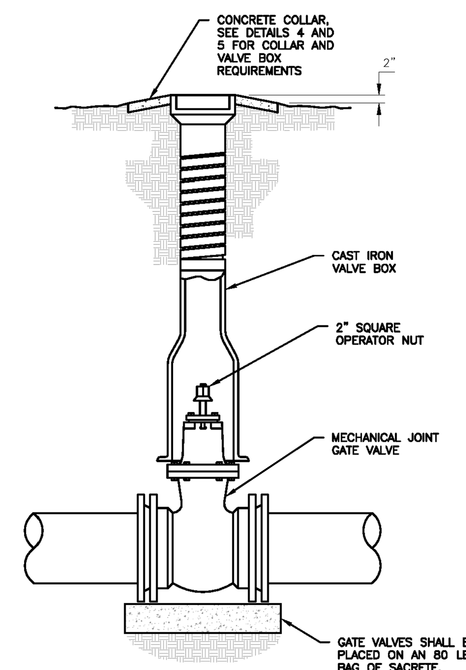
DETAIL 35 — DUCTILE IRON PIPE TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)




NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED BY: MUELLER, AMERICAN DARLING, KENNEDY, M&H, WATEROUS, CLOW, EAST JORDAN IRON WORKS, OR US PIPE.
2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150
3. 6" GATE VALVE SHALL BE AWWA C500 OPEN LEFT
4. STEEL RODS AND BOLTS SHALL BE ¾" HOT DIPPED GALVANIZED
5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION
FIRE HYDRANTS TO BE LOCATED IN ROW OR 5 FOOT EASEMENT ADJACENT TO ROW

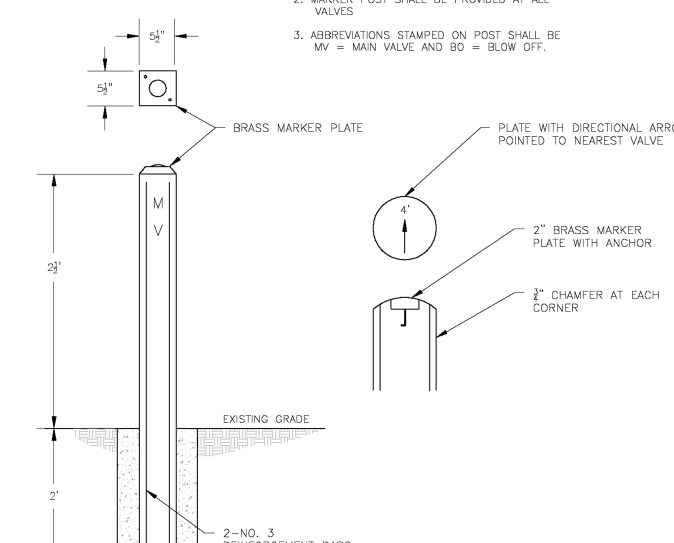
ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

DETAIL 1 — FIRE HYDRANT ASSEMBLY
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)

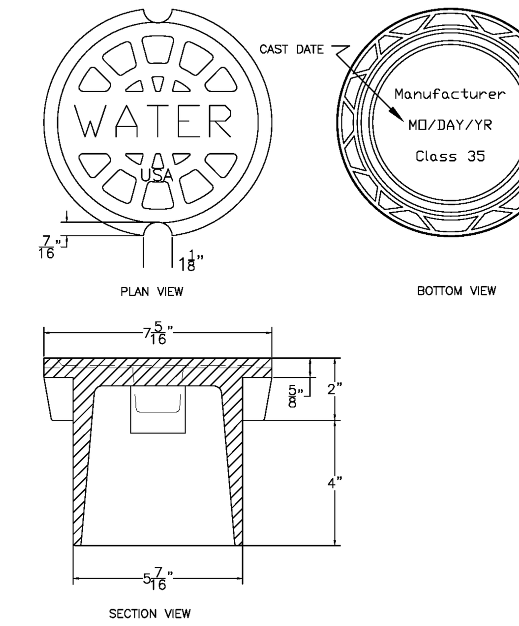



DETAIL 3 — GATE VALVE ASSEMBLY
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)

NOTES:
1. MARKER POST SHALL BE INSTALLED AT THE EDGE OF THE DOT RIGHT-OF-WAY OR PROPERTY LINE.
2. MARKER POST SHALL BE PROVIDED AT ALL VALVES
3. ABBREVIATIONS STAMPED ON POST SHALL BE MV = MAIN VALVE AND BO = BLOW OFF.

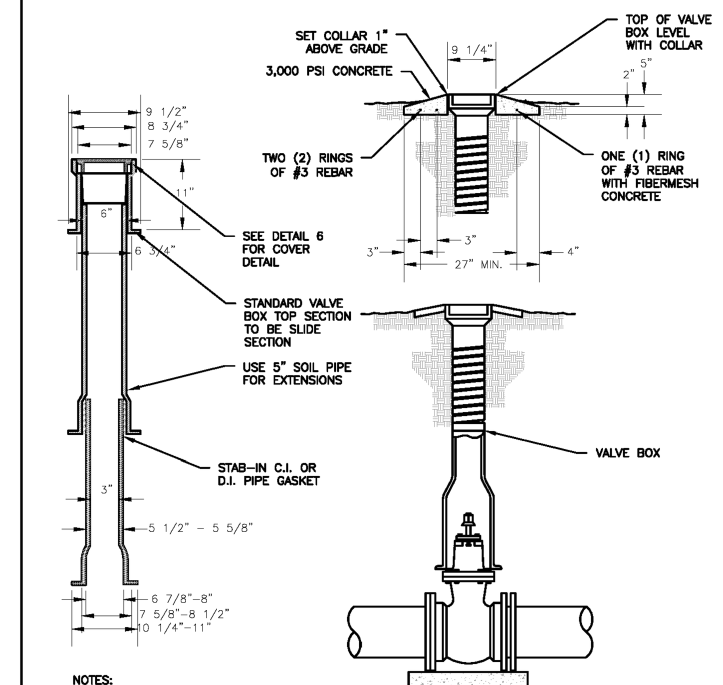



DETAIL 7 — VALVE MARKER POST
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)




NOTES:
1. "WATER" LETTERING MUST BE 1" RAISED (RECESSED FLUSH)
2. VALVE COVER SHALL BE DOMESTICALLY CAST.
3. COVER MUST HAVE A MINIMUM WEIGHT OF 25 POUNDS.
4. COVER MUST BE CLASS 35 OR GREATER.
5. COVER MUST MEET OR EXCEED AASHTO H-20 LOAD REQUIREMENTS.

DETAIL 6 — VALVE BOX COVER
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)




NOTES:
1) VALVE BOX NOT TO CONTACT WATER MAIN
2) ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER.
3) FOR ANY VALVES OVER 10' DEEP, A VALVE STEM EXTENSION MUST BE USED TO BRING TO A DEPTH OF NO MORE THAN 5', EXTENSION MUST BE A MINIMUM OF 1" SOLID STOCK.
4) TOTAL VALVE BOX WEIGHT: MINIMUM OF 85 LBS.

DETAIL 4 — VALVE BOX AND COLLAR NOT IN PAVEMENT
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
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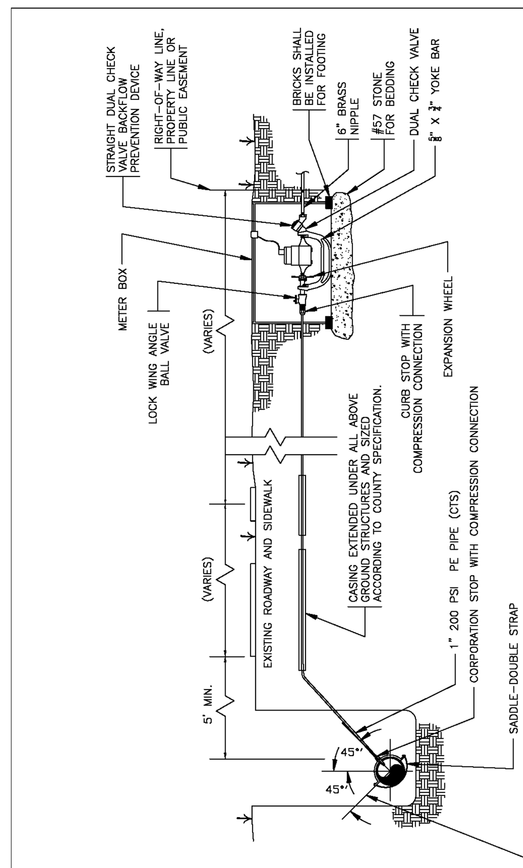
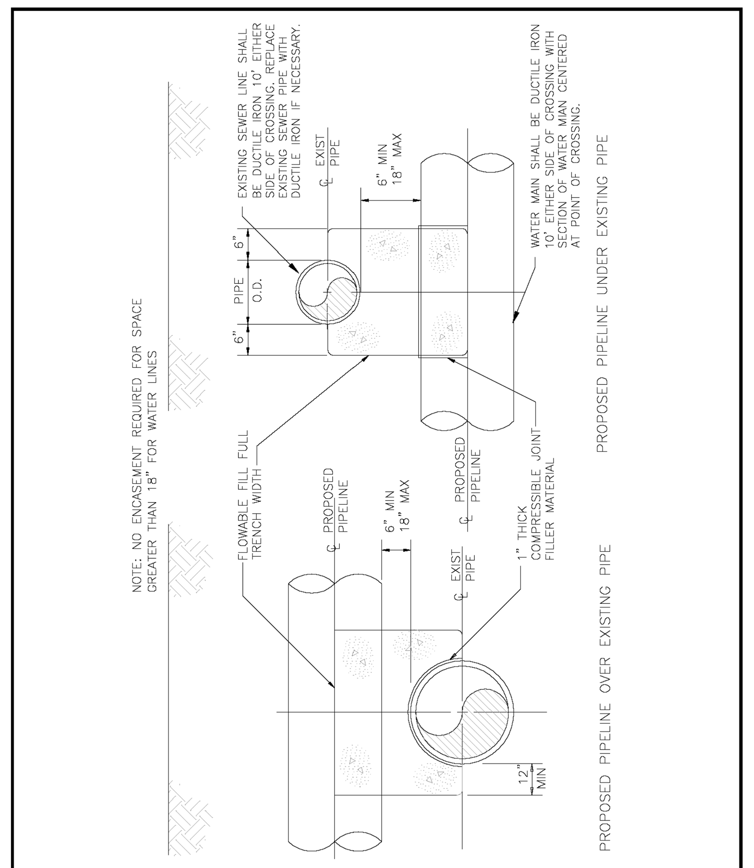
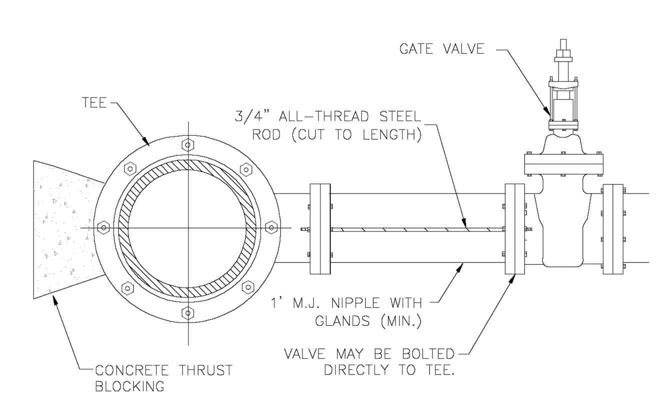



NOTES:
1. METERS SHALL BE 5/8"X3/4" OR 1" BADGER WATER METER WITH ADE ENCODER (1,000 GALLON RESOLUTION) AND ITRON 100W ENDPOINT.
2. METER BOX TO BE LOCATED IN RIGHT-OF-WAY ADJACENT TO PROPERTY LINE OR IN APPROVED EASEMENT ADJACENT TO RIGHT-OF-WAY.
3. WHEN THE GRADE CHANGES, A COPPER RESETTER CAN BE USED TO ADJUST TO PROPER GRADE.

DETAIL 16 — 5/8" X 3/4" – 1" METER SERVICE CONNECTION
REVISION DATE: NOVEMBER 16, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)




DETAIL 45 — WATER AND SEWER CROSSING
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)




| ROD REQUIREMENTS | |
|---|---|
| BRANCH SIZE | NO. OF RODS |
| 4" | 2 |
| 6" | 2 |
| 8" | 4 |
| 12" | 4 |
| 16" | 6 |
| 24" | 6 |
| 30" | 8 |
| 36" | 8 |

NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
3. THIS RODDING REQUIREMENT DOES NOT APPLY TO FIRE HYDRANTS.
4. SEE DETAILS 38 AND 39 FOR THRUST BLOCK SIZING.

DETAIL 42 — 4" - 24" RESTRAINED TEE AND VALVE ON DEAD ENDS
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
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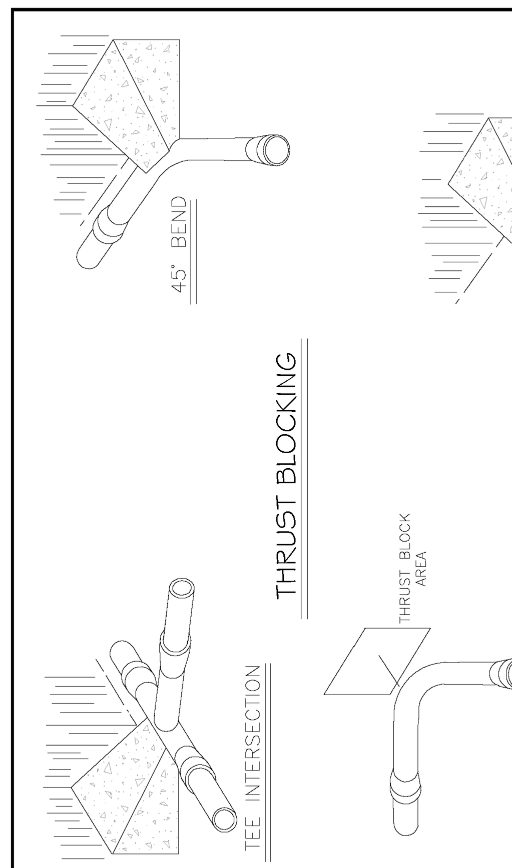


NOTES:
1. CONCRETE SHALL BE 3000 PSI
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
3. TRENCHES SHALL CONFORM TO DETAILS 35 AND 36, AS APPROPRIATE.
4. SEE STANDARD THRUST BLOCK TABLES, DETAILS 38 AND 39, FOR AREA OF CONCRETE REQUIRED.
5. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

DETAIL 37 — STANDARD THRUST BLOCKING VIEWS
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.
ALL AREAS GIVEN IN SQUARE FEET.

| SIZE AND DEGREE OF BEND | STATIC THRUST IN POUNDS | MODERATELY DRY CLAY 4000 LBS/FT² | SOFT CLAY 2000 LBS/FT² | GRAVEL / COARSE SAND 1600 LBS/FT² | DRY CLAY – ALWAYS DRY 8000 LBS/FT² | SAND, COMPACT FIRM 8000 LBS/FT² | SAND – CLEAN DRY 4000 LBS/FT² | QUICKSAND – VERY POOR SOIL 1000 LBS/FT² | ROCK – POOR 10,000 LBS/FT² |
|---|---|---|---|---|---|---|---|---|---|
| 6" | | | | | | | | | |
| 11 1/4° | 1,108 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| 22 1/2° | 2,207 | 1 | 2 | 2 | 1 | 1 | 1 | 3 | 1 |
| 45° | 4,328 | 2 | 3 | 3 | 1 | 1 | 2 | 5 | 1 |
| 90° | 7,996 | 2 | 4 | 5 | 1 | 1 | 2 | 8 | 1 |
| PLUG | 5,655 | 2 | 3 | 4 | 1 | 1 | 2 | 6 | 1 |
| 8" | | | | | | | | | |
| 11 1/4° | 1,970 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| 22 1/2° | 3,922 | 1 | 2 | 3 | 1 | 1 | 1 | 4 | 1 |
| 45° | 7,694 | 2 | 4 | 5 | 1 | 1 | 2 | 8 | 1 |
| 90° | 14,215 | 4 | 8 | 9 | 2 | 2 | 4 | 15 | 2 |
| PLUG | 10,053 | 3 | 5 | 6 | 2 | 2 | 3 | 10 | 1 |
| 12" | | | | | | | | | |
| 11 1/4° | 4,433 | 2 | 3 | 3 | 1 | 1 | 2 | 5 | 1 |
| 22 1/2° | 8,826 | 3 | 5 | 6 | 2 | 2 | 3 | 9 | 1 |
| 45° | 17,312 | 5 | 9 | 11 | 3 | 3 | 5 | 18 | 2 |
| 90° | 31,983 | 8 | 16 | 19 | 4 | 4 | 8 | 32 | 4 |
| PLUG | 22,619 | 6 | 12 | 14 | 3 | 3 | 6 | 23 | 3 |
| 16" | | | | | | | | | |
| 11 1/4° | 7,881 | 2 | 4 | 5 | 1 | 1 | 2 | 8 | 1 |
| 22 1/2° | 15,691 | 4 | 8 | 10 | 2 | 2 | 4 | 16 | 2 |
| 45° | 30,779 | 8 | 16 | 19 | 4 | 4 | 8 | 31 | 4 |
| 90° | 56,861 | 15 | 29 | 35 | 8 | 8 | 15 | 57 | 6 |
| PLUG | 40,213 | 10 | 21 | 25 | 5 | 5 | 10 | 41 | 5 |

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90 TO THE THRUST VECTOR.
USE 6" – 90 DEGREE BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

DETAIL 38 — CONCRETE THRUST BLOCKING QUANTITY TABLE, 6" - 16" PIPE
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.
ALL AREAS GIVEN IN SQUARE FEET.

| SIZE AND DEGREE OF BEND | STATIC THRUST IN POUNDS | MODERATELY DRY CLAY 4000 LBS/FT² | SOFT CLAY 2000 LBS/FT² | GRAVEL/COARSE SAND 1600 LBS/FT² | DRY CLAY – ALWAYS DRY 8000 LBS/FT² | SAND, COMPACT FIRM 8000 LBS/FT² | SAND – CLEAN DRY 4000 LBS/FT² | QUICKSAND – VERY POOR SOIL 1000 LBS/FT² | ROCK – POOR 10,000 LBS/FT² |
|---|---|---|---|---|---|---|---|---|---|
| 24" | | | | | | | | | |
| 11 1/4° | 17,734 | 5 | 9 | 11 | 3 | 3 | 5 | 18 | 2 |
| 22 1/2° | 35,305 | 9 | 18 | 22 | 5 | 5 | 9 | 36 | 4 |
| 45° | 69,252 | 18 | 35 | 42 | 9 | 9 | 18 | 70 | 7 |
| 90° | 127,936 | 32 | 64 | 77 | 16 | 16 | 32 | 128 | 13 |
| PLUG | 90,478 | 23 | 46 | 55 | 12 | 12 | 23 | 91 | 10 |
| 30" | | | | | | | | | |
| 11 1/4° | 27,709 | 7 | 14 | 17 | 4 | 4 | 7 | 2 | 3 |
| 22 1/2° | 55,163 | 14 | 28 | 34 | 7 | 7 | 14 | 56 | 6 |
| 45° | 108,206 | 28 | 55 | 65 | 14 | 14 | 28 | 109 | 11 |
| 90° | 199,900 | 50 | 100 | 120 | 25 | 25 | 50 | 200 | 20 |
| PLUG | 141,372 | 36 | 71 | 85 | 18 | 18 | 36 | 142 | 15 |
| 36" | | | | | | | | | |
| 11 1/4° | 39,901 | 10 | 20 | 24 | 5 | 5 | 10 | 40 | 4 |
| 22 1/2° | 79,439 | 20 | 40 | 48 | 10 | 10 | 20 | 30 | 8 |
| 45° | 155,816 | 39 | 78 | 94 | 20 | 20 | 39 | 156 | 16 |
| 90° | 287,855 | 72 | 144 | 172 | 36 | 36 | 72 | 288 | 29 |
| PLUG | 203,575 | 51 | 102 | 122 | 26 | 26 | 51 | 204 | 21 |
| 48" | | | | | | | | | |
| 11 1/4° | 70,935 | 18 | 36 | 43 | 9 | 9 | 18 | 71 | 8 |
| 22 1/2° | 141,218 | 36 | 71 | 85 | 18 | 18 | 36 | 142 | 15 |
| 45° | 277,007 | 70 | 139 | 166 | 35 | 35 | 70 | 277 | 28 |
| 90° | 511,742 | 128 | 256 | 320 | 64 | 64 | 128 | 512 | 52 |
| PLUG | 361,911 | 91 | 181 | 217 | 46 | 46 | 91 | 362 | 37 |

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90 TO THE THRUST VECTOR.
USE 6" – 90 DEGREE BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

DETAIL 39 — CONCRETE THRUST BLOCKING QUANTITY TABLE, 24" - 48" PIPE
REVISION DATE: JULY 1, 2015
CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION
P.O. BOX 910, PITTSBORO, NC 27312
964 EAST STREET, SUITE 205, PITTSBORO, NC 27312
(919) 852-8270 (BUS)
(919) 852-8282 (FAX)

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036348
03/02/2016
GARETH C. AVANT

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# BRIAR CHAPEL
# US STEEL - SECTION 1
# CHATHAM COUNTY, NORTH CAROLINA

## UTILITY DETAILS

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

M&C FILE NUMBER: D3.X
DRAWING NUMBER: D3.1

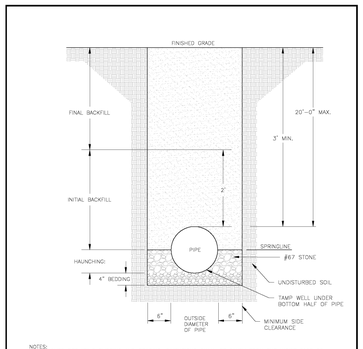
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 5

DETECTABLE WARNING TAPE NOTES:

1. THE TAPE SHALL BE AN INERT, BONDED LAYER PLASTIC WITH A METALIZED FOIL CORE AND SHALL BE HIGHLY RESISTANT TO ALKALIS, ACID, OR OTHER DESTRUCTIVE CHEMICAL COMPONENTS LIKELY TO BE ENCOUNTERED IN SOILS.
2. THE TAPE SHALL BE BRIGHTLY COLORED TO CONTRAST WITH SOIL AND SHALL BEAR AN IMPRINT IDENTIFYING THE TYPE OF LINE BURIED BELOW. THE TAPE SHALL BE A MINIMUM OF 2" WIDE.
3. THE TAPE SHALL BE BURIED A MINIMUM OF 6" AND A MAXIMUM OF 12" BELOW THE GROUND SURFACE DIRECTLY ABOVE THE WATER LINE WITH PRINTED SIDE UP.

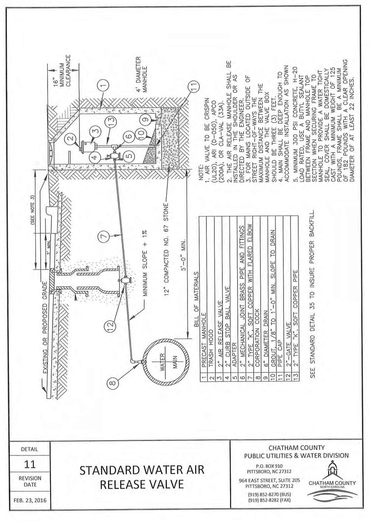
TRACER WIRE NOTES:

1. TRACER WIRE IS TO BE STANDARD NO. 12 GAUGE COATED COPPER WIRE.
2. LOCATION WIRE CONNECTIONS ARE TO BE A WATER TIGHT CONNECTION USING TWISTER DB PLUS WATERPROOF WIRE CONNECTORS OR AN APPROVED EQUAL.

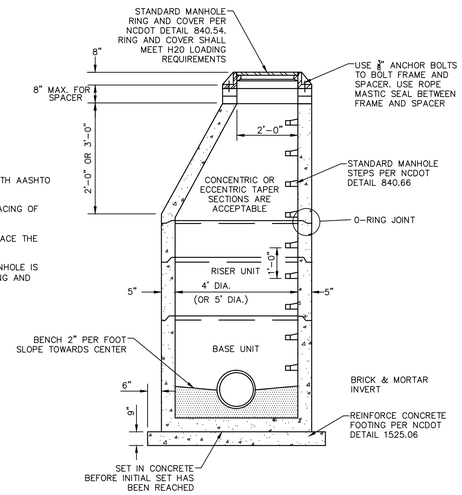



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 2" OR LARGER IN DIAMETER TO BE USED IN BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
5.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

| DETAIL | PVC PIPE TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS | CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION |
|---|---|---|
| 36 | | P.O. BOX 930 PITTSBORO, NC 27312 |
| REVISION DATE | | 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 |
| JULY 1, 2015 | | (919) 852-8270 (BUS) (919) 852-8080 (FAX) |



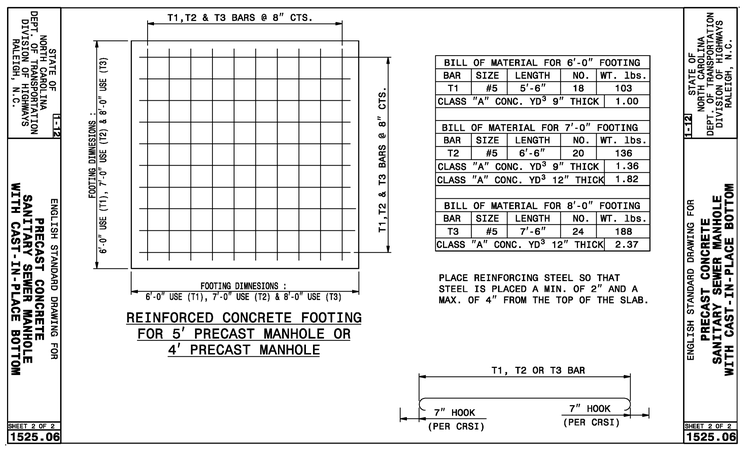

| DETAIL | STANDARD WATER AIR RELEASE VALVE | CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION |
|---|---|---|
| 11 | | P.O. BOX 930 PITTSBORO, NC 27312 |
| REVISION DATE | | 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 |
| FEB. 23, 2016 | | (919) 852-8270 (BUS) (919) 852-8080 (FAX) |



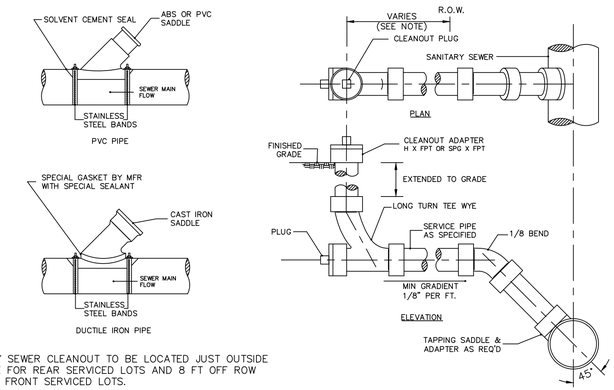

NOTES:
1. PROVIDE PRECAST MANHOLE COMPONENTS WHICH COMPLY WITH AASHTO M199.
2. ASSEMBLE RISERS AND GRADE RINGS SO STPES HAVE A SPACING OF 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.
3. WHERE THE MANHOLE IS EXPOSED TO ROADWAY TRAFFIC, PLACE THE TOP OF THE MANHOLE FLUSH WITH THE GROUND.
4. REINFORCED CONCRETE FOOTING IS REQUIRED WHEN THE MANHOLE IS OVER 12' IN DEPTH OR ON A POOR SOIL BASE. THE FOOTING AND BASE SECTION MAY BE PRECAST.

## STANADARD SANITARY SEWER PRECAST CONCRETE MANHOLE

NTS




## REINFORCED CONCRETE FOOTING FOR 5' PRECAST MANHOLE OR 4' PRECAST MANHOLE

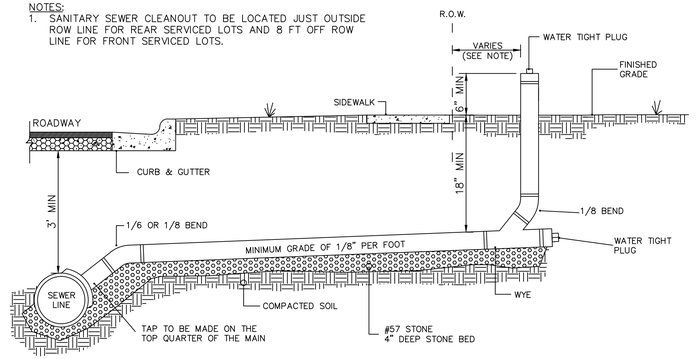



NOTES:
1. SANITARY SEWER CLEANOUT TO BE LOCATED JUST OUTSIDE ROW LINE FOR REAR SERVICED LOTS AND 8 FT OFF ROW LINE FOR FRONT SERVICED LOTS.

## SANITARY SEWER SERVICE CONNECTIONS

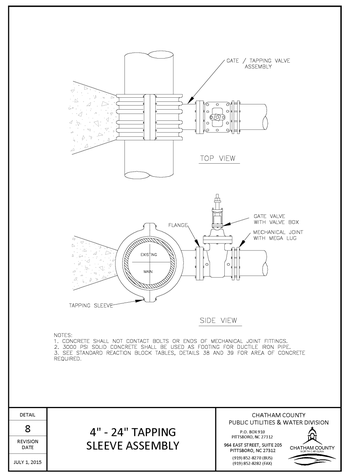
NTS

NOTES:
1. SANITARY SEWER CLEANOUT TO BE LOCATED JUST OUTSIDE ROW LINE FOR REAR SERVICED LOTS AND 8 FT OFF ROW LINE FOR FRONT SERVICED LOTS.



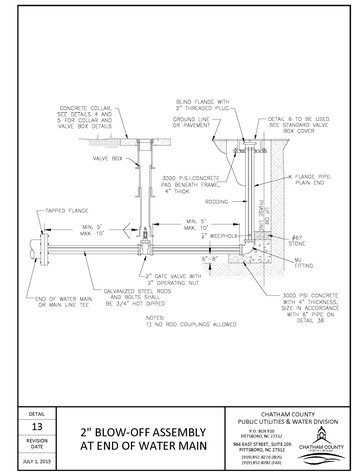

## STANDARD SANITARY SEWER TAP AND SERVICE

NTS




NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. 3000 PSI SOLID CONCRETE SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE.
3. SEE STANDARD REACTION BLOCK TABLES, DETAILS 38 AND 39 FOR AREA OF CONCRETE REQUIRED.

| DETAIL | 4" - 24" TAPPING SLEEVE ASSEMBLY | CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION |
|---|---|---|
| 8 | | P.O. BOX 930 PITTSBORO, NC 27312 |
| REVISION DATE | | 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 |
| JULY 1, 2015 | | (919) 852-8270 (BUS) (919) 852-8080 (FAX) |




NOTES:
1) NO ROD COUPLINGS ALLOWED

| DETAIL | 2" BLOW-OFF ASSEMBLY AT END OF WATER MAIN | CHATHAM COUNTY PUBLIC UTILITIES & WATER DIVISION |
|---|---|---|
| 13 | | P.O. BOX 930 PITTSBORO, NC 27312 |
| REVISION DATE | | 964 EAST STREET, SUITE 205 PITTSBORO, NC 27312 |
| JULY 1, 2015 | | (919) 852-8270 (BUS) (919) 852-8080 (FAX) |

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AYAN
03/02/2016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Raleigh, North Carolina 27606
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BRIAR CHAPEL
US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

UTILITY DETAILS

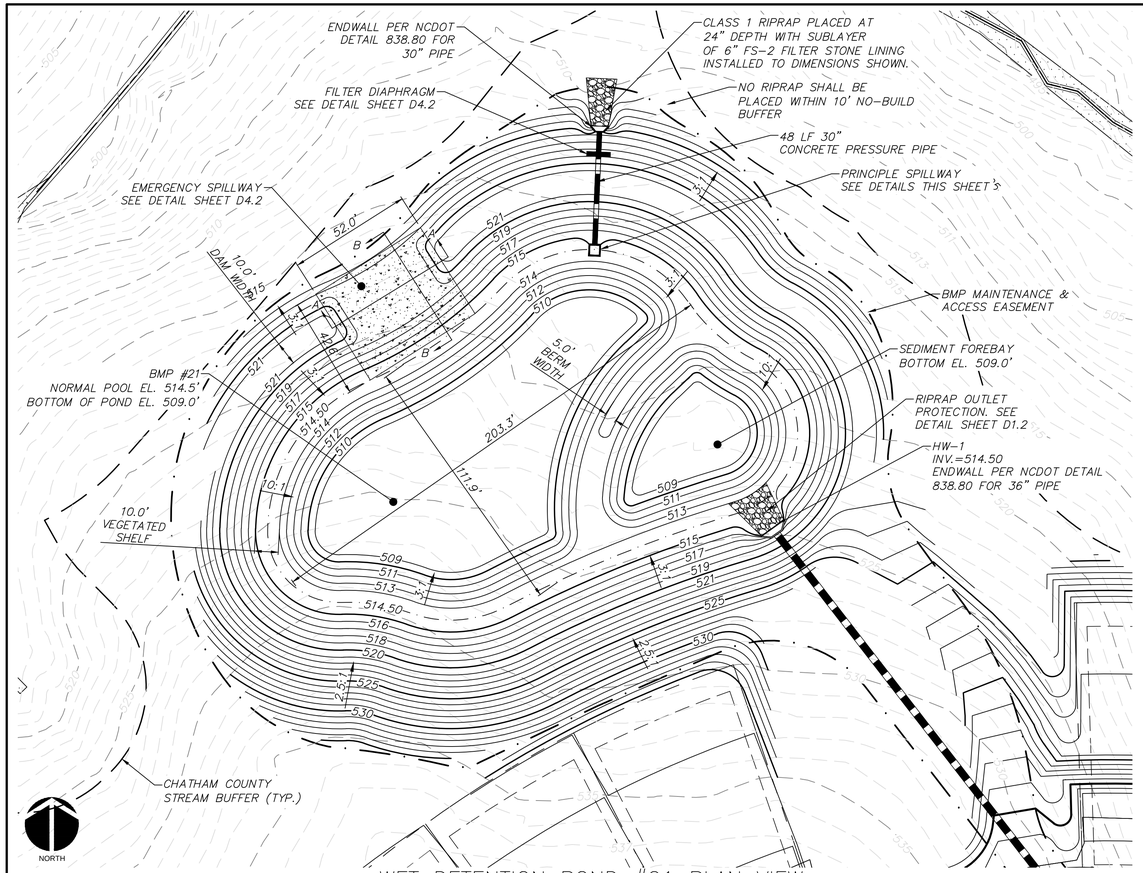
| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

M&C FILE NUMBER D3.X
DRAWING NUMBER D3.2

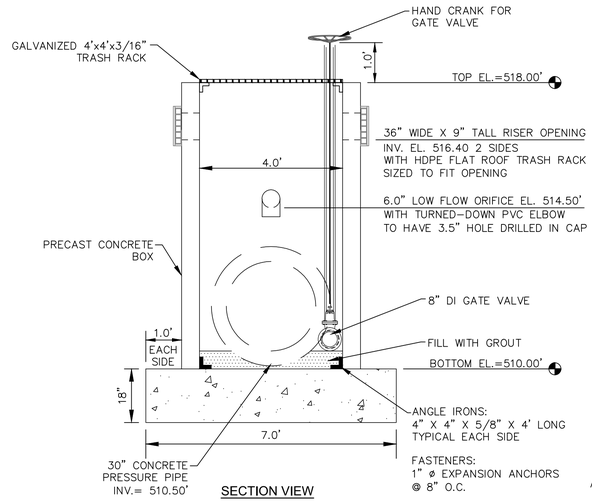
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

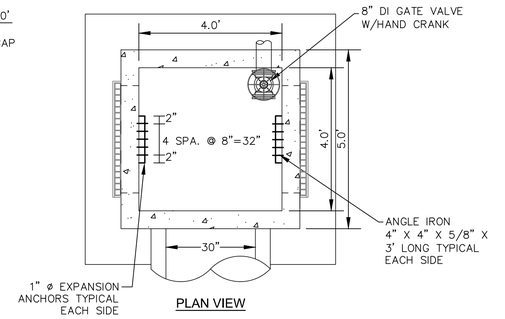
REVISION 5




## WET DETENTION POND #21 PLAN VIEW

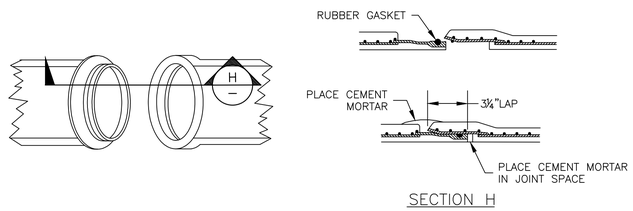
SCALE = 1" = 30'



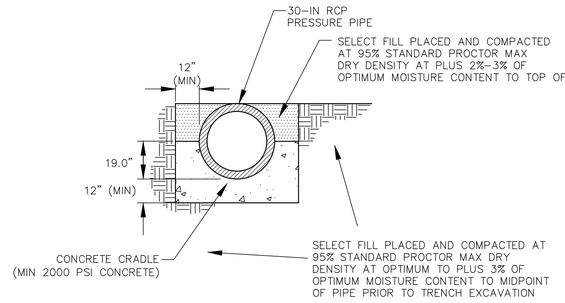

## PRINCIPLE SPILLWAY

SCALE = 1" = 2'



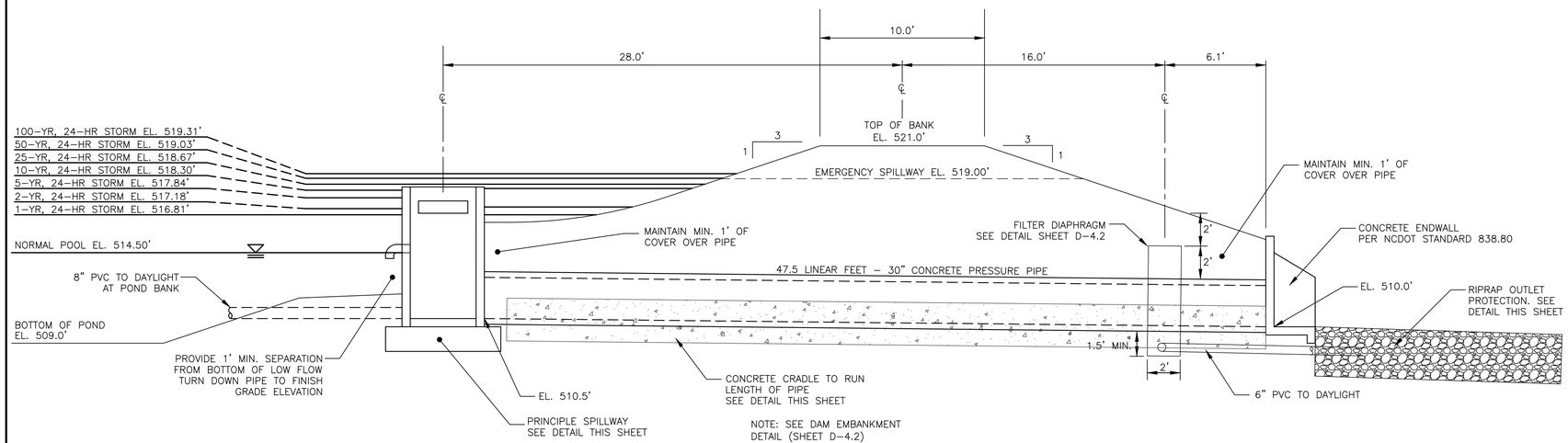

## CONCRETE PRESSURE PIPE JOINT DETAIL

NTS



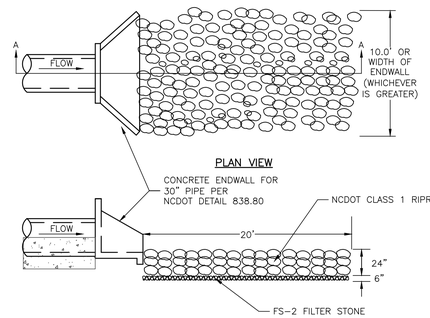

## CONCRETE CRADLE DETAIL

NTS




## SECTION AT PRINCIPLE SPILLWAY

SCALE = 1" = 4'




## RIPRAP OUTLET PROTECTION

NTS

### DESIGNER'S CERTIFICATION:

THE DESIGN OF STORMWATER MANAGEMENT FACILITIES AND PRACTICES WILL CONTROL AND TREAT THE RUNOFF FROM THE 1-YEAR/1-HOUR STORM OF THE ASSOCIATED DRAINAGE AREA. THESE DESIGNS AND PLANS ARE SUFFICIENT TO COMPLY WITH THE APPLICABLE STANDARDS AND POLICIES FOUND IN THE NCDENR STORMWATER BMP DESIGN MANUAL AND CHATHAM COUNTY'S STORMWATER ORDINANCE.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036348 06/14/2016 GARETH C. AVANT

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 8 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.06.14 |
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036348 06/14/2016 GARETH C. AVANT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BRIAR CHAPEL
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CHATHAM COUNTY, NORTH CAROLINA

BMP #21 PLAN & DETAILS

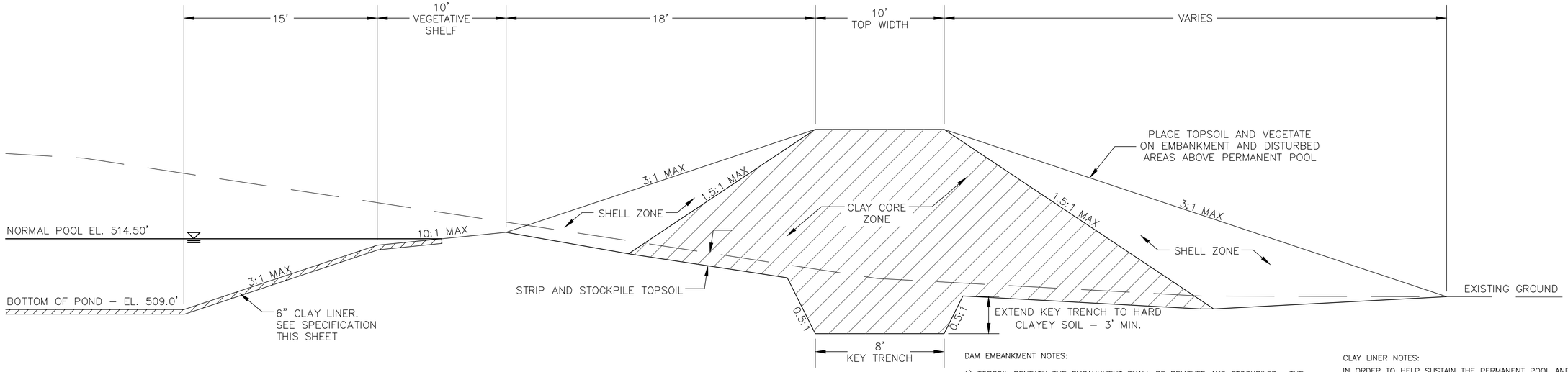
| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

M&C FILE NUMBER: D4.X
DRAWING NUMBER: D4.1

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

REVISION: 8




## DAM EMBANKMENT DETAIL

NTS

DAM EMBANKMENT NOTES:

1) TOPSOIL BENEATH THE EMBANKMENT SHALL BE REMOVED AND STOCKPILED. THE FOUNDATION WILL BE PROOF ROLLED AND ANY SOFT OR ORGANIC MATERIALS WILL BE REMOVED.

2) ALL MATERIAL SHALL BE COMPACTED IN 6–8 INCH LIFTS TO 95% OF MAXIMUM STANDARD PROCTOR DRY DENSITY OR HIGHER (ASTM D–698). THE CLAY CORE ZONE WILL HAVE A MOISTURE CONTENT OF OPTIMUM TO 4 PERCENT ABOVE OPTIMUM MOISTURE CONTENT. THE SHELL ZONE FILL WILL HAVE A MOISTURE CONTENT FROM 2 PERCENT BELOW OPTIMUM MOISTURE CONTENT TO 4 PERCENT ABOVE OPTIMUM.

3) EMBANKMENT FILL:

SHELL ZONE: SOILS WITH LESS THAN 30% PASSING THE NO. 200 SIEVE OR A PI OF LESS THAN 10 WHEN THE PERCENTAGE OF MATERIAL PASSING THE NO. 200 SIEVE IS GREATER THAN 30 PERCENT. SOILS WHICH ARE CLASSIFIED AS CLAYS (CH OR CL) SHOULD NOT BE USED AT THE FACE OF THE SHELL ZONES.

CLAY CORE ZONE: CH, CL OR SC MATERIAL WITH A PI RANGING BETWEEN 15 AND 60

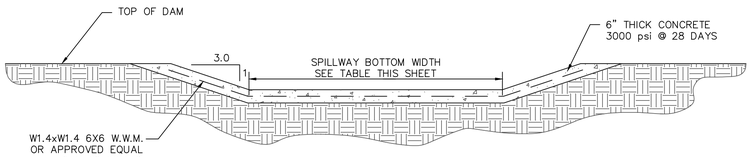
4) NO FILL SHALL CONTAIN ROCKS OR GRAVEL LARGER THAN 4 INCHES IN DIAMETER.

5) A PROFESSIONAL GEOTECHNICAL ENGINEER SHALL APPROVE ALL MATERIALS USED FOR THE EMBANKMENT AND SUPERVISE CONSTRUCTION.

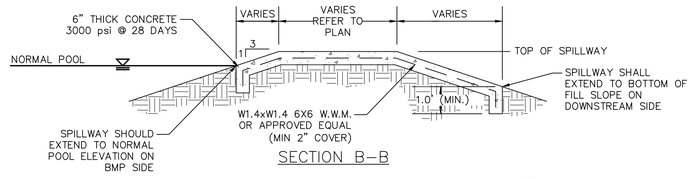
6) ALL DISTURBED AREAS ABOVE PERMANENT POOL SHALL BE SEEDED USING THE FOLLOWING GRASS SEED MIX MANUFACTURED BY ERNST SEED COMPANY: Carolina FACW Meadow Mix ERNMX–182

CLAY LINER NOTES:

IN ORDER TO HELP SUSTAIN THE PERMANENT POOL AND TO PREVENT WATER FROM INFILTRATING TOO QUICKLY INTO THE UNDERLYING SOIL, THE CONTRACTOR SHALL INSTALL A 6" THICK CLAY LINER ON THE BOTTOM OF THE BMP AREA UP TO THE NORMAL POOL ELEVATION. THE LINER CAN BE ACCOMPLISHED BY BLENDING EXISTING SITE SOILS WITH CLAY TO ACHIEVE A LOW PERMEABILITY MIXTURE OR BY INSTALLING A GEOSYNTHETIC LINER MADE OF A BENTOMAT CL. IF THE CONTRACTOR CHOOSES TO BLEND THE EXISTING SITE SOILS WITH CLAY, THE ONSITE GEOTECHNICAL ENGINEER SHALL DETERMINE THE AMOUNT OF CLAY TO ADD, THE DEGREE OF COMPACTION, AND WILL OVERSEE THE INSTALLATION OF THE CLAY LINER. THE MAXIMUM PERMEABILITY RATE FOR THE LINER SHALL BE 0.01 IN/HR IN ACCORDANCE WITH THE NCDENR BMP MANUAL. THE PROPOSED MATERIAL FOR THIS LINER SHALL BE TESTED BY THE ONSITE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT. THE RESULTS OF THIS TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR REVIEW PRIOR TO PLACEMENT. UPON COMPLETION OF LINER INSTALLATION, A 4" MINIMIMUM LAYER OF TOPSOIL SHALL BE ADDED OVER THE LINER TO PROVIDE A HEALTHY MEDIA FOR VEGETATION GROWTH.




## SECTION A–A



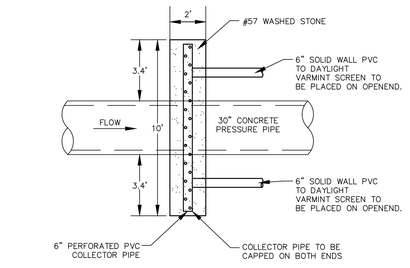

## SECTION B–B

| | NORMAL POOL EL. | TOP DAM EL. | SPILLWAY BOTTOM EL. | SPILLWAY BOTTOM WIDTH |
|---|---|---|---|---|
| BMP #21 | 514.50 | 521.00 | 519.00 | 40' |

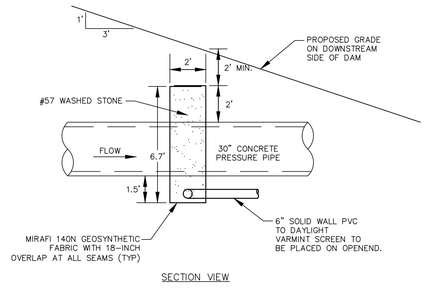
NOTE:
EXPANSION/CONTRACTION JOINTS PER AMERICAN CONCRETE INSTITUTE (ACI) STANDARDS FOR SLABS ON GRADE.

## EMERGENCY SPILLWAY DETAIL

NTS




PLAN VIEW




SECTION VIEW

## FILTER DIAPHRAGM DETAIL

NTS

### DESIGNER'S CERTIFICATION:

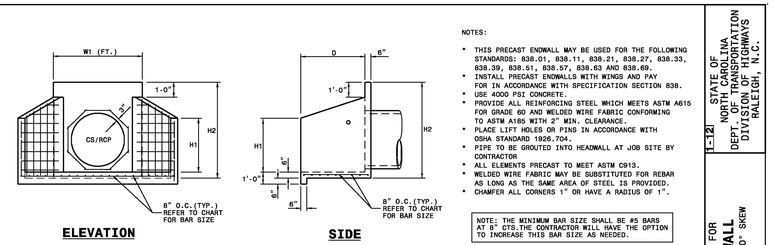
THE DESIGN OF STORMWATER MANAGEMENT FACILITIES AND PRACTICES WILL CONTROL AND TREAT THE RUNOFF FROM THE 1–YEAR/1–HOUR STORM OF THE ASSOCIATED DRAINAGE AREA. THESE DESIGNS AND PLANS ARE SUFFICIENT TO COMPLY WITH THE APPLICABLE STANDARDS AND POLICIES FOUND IN THE NCDENR STORMWATER BMP DESIGN MANUAL AND CHATHAM COUNTY'S STORMWATER ORDINANCE.

NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. VANN 05/10/2016

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 1-12

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

SHEET 1 OF 1 **838.80**




NOTES:

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

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

**ENDWALL DIMENSIONS**

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

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 1-12

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

SHEET 1 OF 1 **838.80**

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| | REVISIONS | |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

SEAL

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. VANN 05/10/2016


McKIM&CREED
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BRIAR CHAPEL
US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

BMP #21 PLAN & DETAILS

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

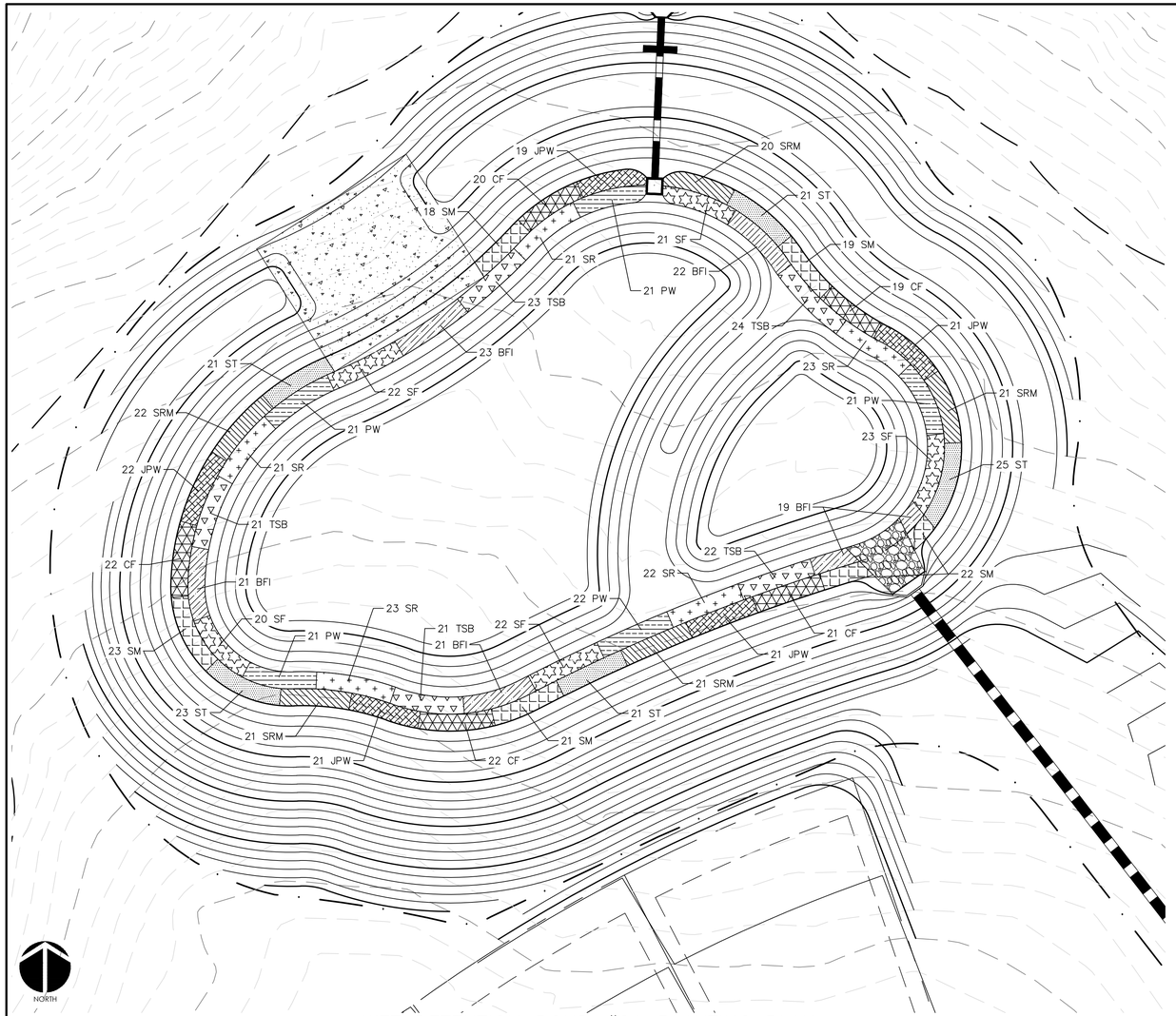
SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

M&C FILE NUMBER D4.X

DRAWING NUMBER D4.2

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

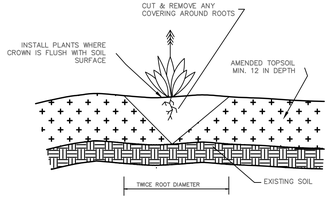
REVISION 6




WET DETENTION POND #21 PLANTING PLAN

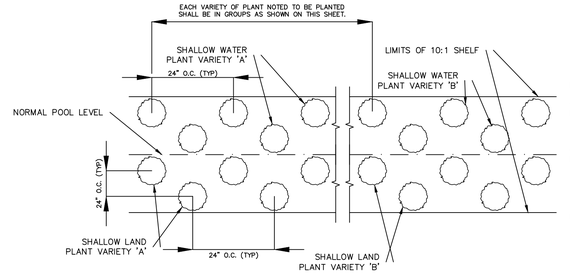
SCALE = 1" = 20'

| PLANTING SCHEDULE | | | | | | |
|---|---|---|---|---|---|---|
| SYM. | ABB. | COMMON NAME | BOTANICAL NAME | QUANTITY | SPACING | CONTAINER SIZE AT PLANTING |
| SHALLOW WATER PLANTINGS | | | | | | |
| | SF | SWEETFLAG | *Acorus subcordatum* | 108 | 24"–30" O.C. | 1 QT. |
| | PW | PICKERELWEED | *Pontederia cordata* | 106 | 24"–30" O.C. | 1 QT. |
| | BFI | BLUE FLAG IRIS | *Iris virginica* | 106 | 24"–30" O.C. | 1 QT. |
| | SR | SOFT RUSH | *Juncus effusus var. pylaei or solutus* | 110 | 24"–30" O.C. | 1 QT. |
| | TSB | THREE SQUARE BULRUSH | *Schoenoplectus americanus* | 111 | 24"–30" O.C. | 1 QT. |
| SHALLOW LAND PLANTINGS | | | | | | |
| | SM | SWAMP MILKWEED | *Asclepias incarnata* | 103 | 24"–30" O.C. | 1 QT. |
| | CF | CARDINAL FLOWER | *Lobelia cardinalis* | 104 | 24"–30" O.C. | 1 QT. |
| | SRM | SCARLET ROSE MALLOW | *Hibiscus coccineus* | 105 | 24"–30" O.C. | 1 QT. |
| | JPW | DWARF JOE PYE WEED | *Eupatoriadelphus dubius* | 104 | 24"–30" O.C. | 1 QT. |
| | ST | SPOTTED TRUMPETWEED | *Eupatoriadelphus maculatus* | 111 | 24"–30" O.C. | 1 QT. |




GENERAL PLANTING DETAIL

NTS




NOTES:
1. CONTINUE PLANTING SCHEME SHOWN FOR EACH OF THE 5 PLANT VARIETIES NOTED BELOW AROUND ENTIRE LENGTH OF THE SHALLOW WATER PLANTING ZONE
2. CONTINUE PLANTING SCHEME SHOWN FOR EACH OF THE 5 PLANT VARIETIES NOTED BELOW AROUND ENTIRE LENGTH OF THE SHALLOW LAND PLANTING ZONE
3. OTHER SPECIES WITH SIMILAR GROWTH HABITS AND MAY BE APPROVED AS LISTED IN THE "STORMWATER BEST MANAGEMENT PRACTICES MANUAL" TABLE 9–1.

VEGETATED PLANTING SHELF DETAIL

NTS

GENERAL PLANTING NOTES:

1. AVOID COMPACTING TOPSOIL TO PROMOTE HEALTHY ENVIRONMENTAL CONDITIONS FOR THE PLANTS.
2. ALL PLANTS SHOULD BE PLANTED IN THE INDICATED RANGE TO ENSURE SURVIVAL.
3. SHALLOW WATER AND SHALLOW LAND AREAS TO BE PLANTED WITH BARE ROOT, PLUGS, OR CONTAINER LIVE PLANTINGS AS SPECIFIED.
4. EXCAVATE A HOLE TWICE THE DIAMETER OF ROOT BALL AND EQUAL TO THE ROOT DEPTH OF THE INDIVIDUAL PLANT. PLACE PLANT IN HOLE WITH CROWN FLUSH WITH SOIL SURFACE. BACKFILL WITH TOPSOIL AND LIGHTLY PLANT.
5. BEGIN PLANTING DURING LOCAL GROWING SEASON IN ORDER TO ENSURE THAT PLANTS HAVE ADEQUATE TIME TO ESTABLISH BEFORE WINTER MONTHS.
6. OBTAIN PLANTS FROM: COASTAL PLAIN CONSERVATION NURSERY (252–482–5707), MELLOW MARSH FARMS (919–742–1200), CURE NURSERY (919–542–6186) OR ENGINEER APPROVED SUBSTITUTE.
7. REFER TO EROSION CONTROL DETAIL SHEET D1.1 FOR SEEDBED PREPARATION AND SEEDING SCHEDULES FOR AREAS NOT SPECIFIED IN THIS PLAN.

SHALLOW WATER PLANTING NOTES:

1. 70% OF PICKERELWEED SHOULD BE PLANTED WITHIN 5–6 INCHES BELOW NORMAL POOL.
2. 70% OF SWEETFLAG AND 70% OF SOUTHERN BLUE FLAG IRIS SHOULD BE PLANTED IN THE 2–3 INCHES BELOW NORMAL POOL.
3. 70% OF SOFT RUSH SHOULD BE PLANTED AT THE NORMAL POOL ELEVATION.

SHALLOW LAND PLANTING NOTES:

1. PLANTS IN THIS GROUP SHOULD NOT BE PLANTED IN AREAS THAT ARE INUNDATED FOR EXTENDED PERIODS.

**DESIGNER'S CERTIFICATION:**

THE DESIGN OF STORMWATER MANAGEMENT FACILITIES AND PRACTICES WILL CONTROL AND TREAT THE RUNOFF FROM THE 1–YEAR/1–HOUR STORM OF THE ASSOCIATED DRAINAGE AREA. THESE DESIGNS AND PLANS ARE SUFFICIENT TO COMPLY WITH THE APPLICABLE STANDARDS AND POLICIES FOUND IN THE NCDENR STORMWATER BMP DESIGN MANUAL AND CHATHAM COUNTY'S STORMWATER ORDINANCE.

NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT — Gareth C. Avant — 06/14/2016

| REVISIONS | | |
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| REV.NO. | DESCRIPTIONS | DATE |
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| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
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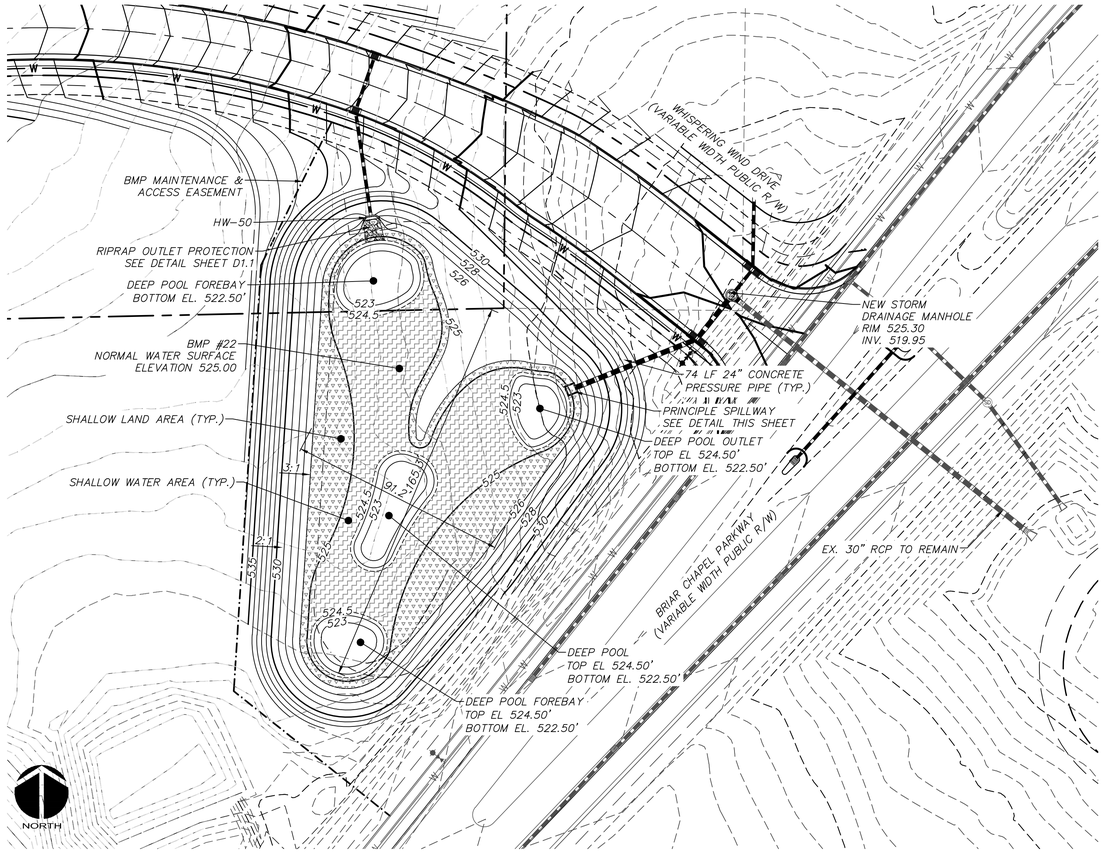
SCALE
HORIZONTAL: AS NOTED
VERTICAL: N/A

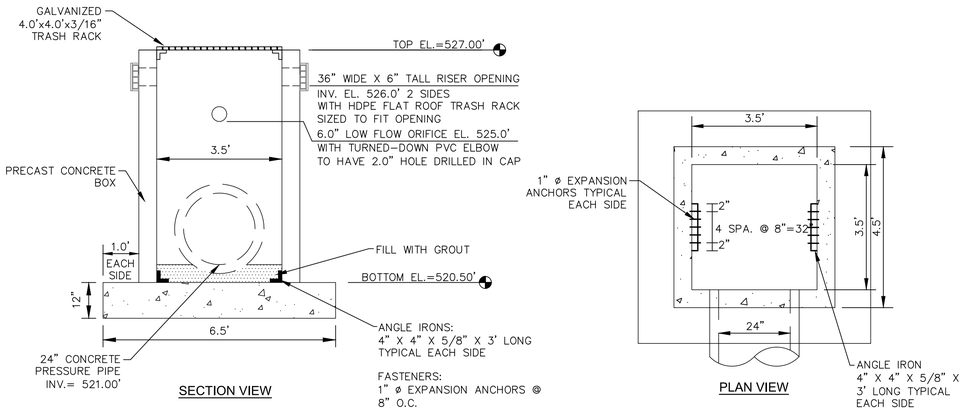
M&C FILE NUMBER: D4.X
DRAWING NUMBER: D4.3

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY
REVISION: 8




## STORMWATER WETLAND #22 PLAN VIEW

SCALE = 1" = 30'




## PRINCIPLE SPILLWAY

SCALE = 1" = 2'

## STORMWATER WETLAND PLANTING SCHEDULE

DEEP POOL ZONE: ALLOWABLE PLANT SPECIES (ELEVATION 524.5' – 523.0')

| COMMON NAME | BOTANICAL NAME | DEPTH RANGE (INCHES BELOW NORMAL POOL) | SPACING (O.C., FT) | QUANTITY | PERCENTAGE | SIZE |
|---|---|---|---|---|---|---|
| SPATTERDOCK | NUPHAR POLYESPALUM | 6–18 | 5 | 20 | 33% | 2 IN PLUG (MIN) |
| FRAGRANT WHITE LILY | NYMPHAEA LUTEA | 6–18 | 5 | 20 | 33% | 2 IN PLUG (MIN) |
| AMERICAN LOTUS | NELUMBO LUTEA | 6–18 | 5 | 20 | 33% | 2 IN PLUG (MIN) |

SHALLOW WATER ZONE: ALLOWABLE PLANT SPECIES (ELEVATION 525.0' – 524.5')

| COMMON NAME | BOTANICAL NAME | DEPTH RANGE (INCHES BELOW NORMAL POOL) | SPACING (O.C., FT) | QUANTITY | PERCENTAGE | SIZE |
|---|---|---|---|---|---|---|
| ARROW ARUM | PELTANDRA VIRGINICA | 0–6 | 3.0 | 150 | 10% | PINT |
| PICKERELWEED | PONTEDERIA CORDATA | 0–6 | 3.0 | 150 | 10% | 2 IN PLUG (MIN) |
| DUCK POTATO | SAGITTARIA LATIFOLIA | 0–6 | 3.0 | 150 | 10% | BARE ROOT |
| SOFTSTEM BULRUSH | SCHOENOPLECTUS TABERNAEMONTANI | 0–6 | 3.0 | 150 | 10% | 2 IN PLUG (MIN) |
| SWEETFLAG | ACORUS CALAMUS | 0–6 | 3.0 | 150 | 10% | BARE ROOT |
| THREE WAY SEDGE | DULICHIUM ARUNDINACEUM | 0–6 | 3.0 | 150 | 10% | BARE ROOT |
| SPIKERUSH | ELEOCHARIS OBTUSA | 0–6 | 3.0 | 150 | 10% | 2 IN PLUG (MIN) |
| SOUTHERN BLUE FLAG IRIS | IRIS VIRGINICA | 0–6 | 3.0 | 150 | 10% | 2 IN PLUG (MIN) |
| LIZARD'S TAIL | SAURURUS CERNUUS | 0–6 | 3.0 | 150 | 10% | 3 IN PLUG (MIN) |
| SOFT RUSH | JUNCUS EFFUSUS | 0–6 | 3.0 | 150 | 10% | 2 IN PLUG (MIN) |

SHALLOW LAND ZONE: ALLOWABLE PLANT SPECIES (ELEVATION 526.0' – 525.0')

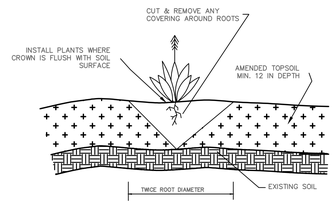
| COMMON NAME | BOTANICAL NAME | DEPTH RANGE (INCHES ABOVE NORMAL POOL) | SPACING (O.C., FT) | QUANTITY | PERCENTAGE | SIZE |
|---|---|---|---|---|---|---|
| SWAMP MILKWEED | ASCLEPIAS INCARNATA | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| FRINGED SEDGE | CAREX CRINITA | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| GREAT BLADDER SEDGE | CAREX INTUMESCENS | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| HOP SEDGE | CAREX LUPULINA | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| SHALLOW SEDGE | CAREX LURIDA | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| SCARLET ROSE MALLOW | HIBISCUS COCCINEUS | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| ROSE MALLOW | HIBISCUS MOSCHEUTOS | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| SPIDER LILY | HYMENOCALLIS EULAE | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| SWAMP LILY | CRINUM ERUBESCENS | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| CARDINAL FLOWER | LOBELIA CARDINALIS | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |
| SWAMP SUNFLOWER | HELIANTHUS ANGUSTIFOLIUS | 0–12 | 3.0 | 105 | 9.0% | 2 IN PLUG (MIN) |

### STORMWATER WETLAND PLANTING LEGEND:

DEEP POOL (6" BELOW – 30" BELOW)

SHALLOW WATER (NORMAL POOL – 6" BELOW)

SHALLOW LAND (NORMAL POOL – 12" ABOVE)




## GENERAL PLANTING DETAIL

NTS

### DESIGNER'S CERTIFICATION:

THE DESIGN OF STORMWATER MANAGEMENT FACILITIES AND PRACTICES WILL CONTROL AND TREAT THE RUNOFF FROM THE 1-YEAR/1-HOUR STORM OF THE ASSOCIATED DRAINAGE AREA. THESE DESIGNS AND PLANS ARE SUFFICIENT TO COMPLY WITH THE APPLICABLE STANDARDS AND POLICIES FOUND IN THE NCDENR STORMWATER BMP DESIGN MANUAL AND CHATHAM COUNTY'S STORMWATER ORDINANCE.

NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT
Gareth Avant
06/14/2016

## STORMWATER WETLAND PLANTING NOTES

### GENERAL PLANTING NOTES

1. AVOID COMPACTING TOPSOIL TO PROMOTE HEALTHY ENVIRONMENTAL CONDITIONS FOR THE PLANTS.
2. PLANTS OF THE SAME SPECIES SHOULD BE PLANTED IN CLUSTERS, THESE CLUSTERS SHOULD CONTAIN MIN. 4–6 PLANTS OF THAT SPECIES.
3. ALL PLANTS SHOULD BE PLANTED IN THE INDICATED RANGE TO ENSURE SURVIVAL.
4. AVOID PLANTING INDIVIDUAL SPECIES IN LARGE GROUPS BY SPACING CLUSTERS A MIN. OF 5' APART.
5. SHALLOW WATER AND SHALLOW LAND AREAS TO BE PLANTED WITH BARE ROOT, PLUGS, OR CONTAINER LIVE PLANTINGS AS SPECIFIED.
6. EXCAVATE A HOLE TWICE THE DIAMETER OF ROOT BALL AND EQUAL TO THE ROOT DEPTH OF THE INDIVIDUAL PLANT. PLACE PLANT IN HOLE WITH CROWN FLUSH WITH SOIL SURFACE. BACKFILL WITH TOPSOIL AND LIGHTLY PLANT.
7. BEGIN PLANTING DURING LOCAL GROWING SEASON IN ORDER TO ENSURE THAT PLANTS HAVE ADAQUET TIME TO ESTABLISH BEFORE WINTER MONTHS.
8. OBTAIN PLANTS FROM: COASTAL PLAIN CONSERVATION NURSERY (252–482–5707), MELLOW MARSH FARMS (919–742–1200), CURE NURSERY (919–542–6186) OR ENGINEER APPROVED SUBSTITUTE.

### SHALLOW WATER PLANTING NOTES:

1. 70% OF SOFT STEM BULRUSH SHOULD BE PLANTED WITHIN 3–4 INCHES BELOW NORMAL POOL.
2. 70% OF PICKERELWEED AND 70% OF ARROW ARUM SHOULD BE PLANTED WITHIN 5–6 INCHES BELOW NORMAL POOL.
3. SEDGES SHOULD BE PLANTED WITHIN 0–2 INCHES BELOW NORMAL POOL.
4. 70% OF SWEETFLAG, 70% OF LIZARDS TAIL, AND 70% OF SOUTHERN BLUE FLAG IRIS SHOULD BE PLANTED IN THE 2–3 INCHES BELOW NORMAL POOL.
5. 70% OF SOFT RUSH SHOULD BE PLANTED AT THE NORMAL POOL ELEVATION.

### SHALLOW LAND PLANTING NOTES:

1. PLANTS IN THIS GROUP SHOULD NOT BE PLANTED IN AREAS THAT ARE INUNDATED FOR EXTENDED PERIODS.
2. 70% OF CARDINAL FLOWER AND 70% OF BLUE LOBELIA SHOULD BE PLANTED WITHIN 0–1 INCH OF THE NORMAL POOL ELEVATION.

### DEEP POOL PLANTING NOTES:

1. ENSURE ALL PLANTS ARE PLACED IN WATER NO DEEPER THAN 24 INCHES BELOW NORMAL POOL

### GRADING PLAN NOTES:

1. WETLAND MUST BE STABILIZED WITHIN 14 DAYS OF CONSTRUCTION
2. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR LOCATING AND PROTECTION OF EXISTING ABOVE AND BELOW GROUND UTILITIES AND STRUCTURES. ANY AND ALL MAINS OR INDIVIDUAL SERVICES LINES PRESENTLY IN SERVICE WHICH ARE DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED IMMEDIATELY AT NO ADDITIONAL EXPENSE TO THE UTILITY OWNER.
3. CONTRACTOR SHALL KEEP ALL PARKING AREAS AND STREETS ADJACENT TO THE CONSTRUCTION SITE CLEAN AND OPEN AT ALL TIMES DURING CONSTRUCTION.
4. ALL SHALLOW WATER AND SHALLOW LAND AREAS WITHIN THE WETLAND CELL SHALL BE TOP DRESSED WITH A MINIMUM OF 12 IN OF TOPSOIL.
5. ALL ITEMS WHICH ARE SHOWN FOR REMOVAL SHALL BE REMOVED FROM THE CONSTRUCTION SITE AND LEGALLY DISPOSED OF OFF SITE.
6. CONTRACTOR SHALL AT ALL TIMES MAINTAIN ADEQUATE SAFETY MEASURES, ACTIVITIES, AND BARRICADES FOR THE PROTECTION OF ALL PERSONS ON OR ABOUT THE LOCATION OF THE SITE.
7. GRADE TO ELEVATIONS AND DIMENSIONS SHOWN ON DRAWINGS. ELEVATIONAL GRADING TOLERANCE IS ±0.1 FT.
8. NO GRADING IS TO OCCUR IN THE DEEP POOL AREAS BEYOND THE SPECIFIED GRADING LIMITS.

### TOPSOIL SPECIFICATION:

1. TOPSOIL TO BE ADDED TO TOP OF WETLAND SHELF IS TO MEET CRITERIA SPECIFIED BELOW.
2. TOPSOIL SHALL BE WELL MIXED, FREE OF TRASH AND DEBRIS, UNCOMPACTED, AND VOID OF LARGE STONES (>2 INCHES) AND WOODY MATERIAL (>3 INCHES).
3. TOPSOIL SHALL MEET THE FOLLOWING SPECIFICATIONS:
   SOIL TYPE: CLAY < 60%, SAND < 80%, SILT < 80%
   ORGANIC CONTENT: 5–8%
   P–I: 20<50
   pH: 6.0–7.0
4. IN THE EVENT THAT SELECTED TOPSOIL DOES NOT MEET SPECIFICATION LISTED ABOVE, SOIL CAN BE AMENDED BY ADDITION OF APPROPRIATE MATERIALS (MASON SAND OR MATURE STABLE COMPOST, OR LIME).
5. UPON PLACEMENT OF TOPSOIL, AREA SHOULD BE LIGHTLY COMPACTED TO ENSURE STABILIZATION OF MATERIAL.
6. EXCESSIVE TRAFFICKING OF EQUIPMENT OVER WETLAND PLANTING AREAS SHOULD BE AVOIDED.
7. MINIMUM DEPTH OF TOPSOIL SHOULD BE 12 INCHES.

### EARTHWORK SPECIFICATIONS

1. GRADE TO ELEVATIONS AND DIMENSIONS SHOWN ON DRAWINGS. GRADED ELEVATIONAL TOLERANCE SHALL BE ±0.1 FT.
2. TOPSOIL MATERIAL SHALL BE APPROVED BY ENGINEER PRIOR TO USE BASED ON SOIL PROPERTY TEST SUBMITTALS THAT INCLUDE STANDARD TEST METHOD FOR PARTICLE–SIZE ANALYSIS (ASTM D422), PARTICLE SIZE ANALYSIS OF SOILS (AASHTO T88), AND NCDA SOIL ANALYSIS.
3. INSTALL FINAL COVER IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS WHERE APPLICABLE.

### CLAY LINER SPECIFICATIONS

IN ORDER TO HELP SUSTAIN THE PERMANENT POOL AND TO PREVENT WATER FROM INFILTRATING TOO QUICKLY INTO THE UNDERLYING SOIL, THE CONTRACTOR SHALL INSTALL A 6" THICK CLAY LINER ON THE BOTTOM OF THE BMP AREA UP TO THE NORMAL POOL ELEVATION. THE LINER CAN BE ACCOMPLISHED BY BLENDING EXISTING SITE SOILS WITH CLAY TO ACHIEVE A LOW PERMEABILITY MIXTURE OR BY INSTALLING A GEOSYNTHETIC LINER MADE OF A BENTOMAT CL. IF THE CONTRACTOR CHOOSES TO BLEND THE EXISTING SITE SOILS WITH CLAY, THE ONSITE GEOTECHNICAL ENGINEER SHALL DETERMINE THE AMOUNT OF CLAY TO ADD, THE DEGREE OF COMPACTION, AND WILL OVERSEE THE INSTALLATION OF THE CLAY LINER. THE MAXIMUM PERMEABILITY RATE FOR THE LINER SHALL BE 0.01 IN/HR OR LESS IN ACCORDANCE WITH THE NCDENR BMP MANUAL. THE PROPOSED MATERIAL FOR THIS LINER SHALL BE TESTED BY THE ONSITE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT. THE RESULTS OF THIS TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR REVIEW PRIOR TO PLACEMENT. UPON COMPLETION OF LINER INSTALLATION, A 4" MINIMUM LAYER OF TOPSOIL SHALL BE ADDED OVER THE LINER TO PROVIDE A HEALTHY MEDIA FOR VEGETATION GROWTH.

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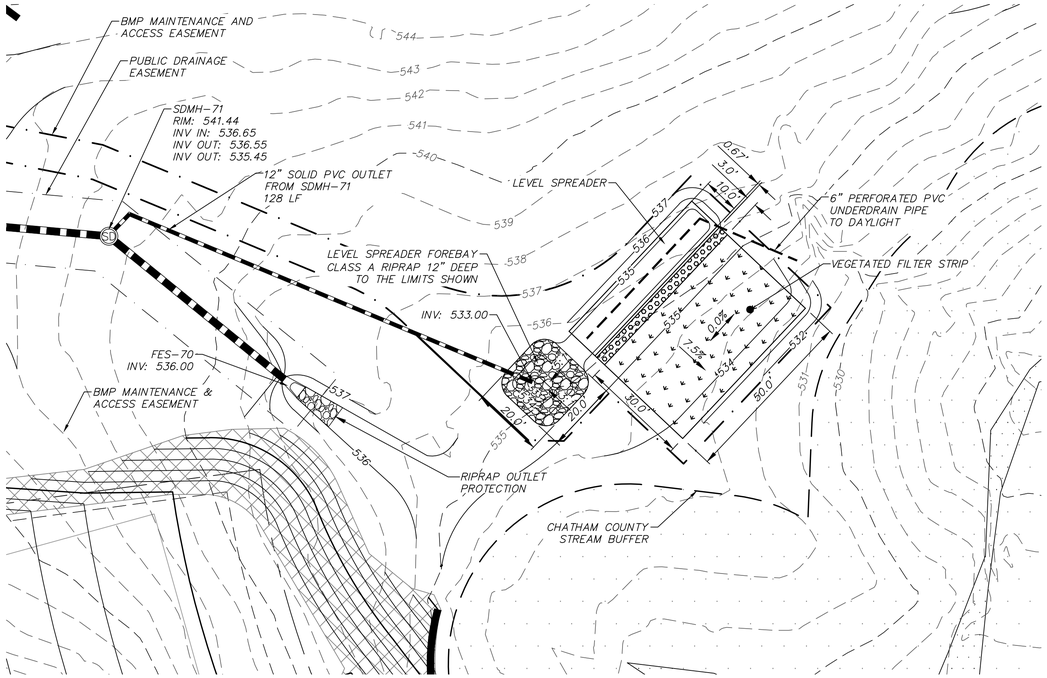
M&C FILE NUMBER D4.X

DRAWING NUMBER D4.4

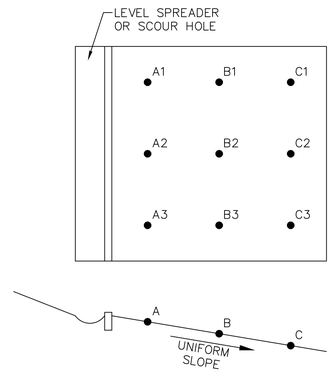
STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

REVISION 8




LEVEL SPREADER/VEGETATIVE FILTER STRIP #1

SCALE: 1"=20'

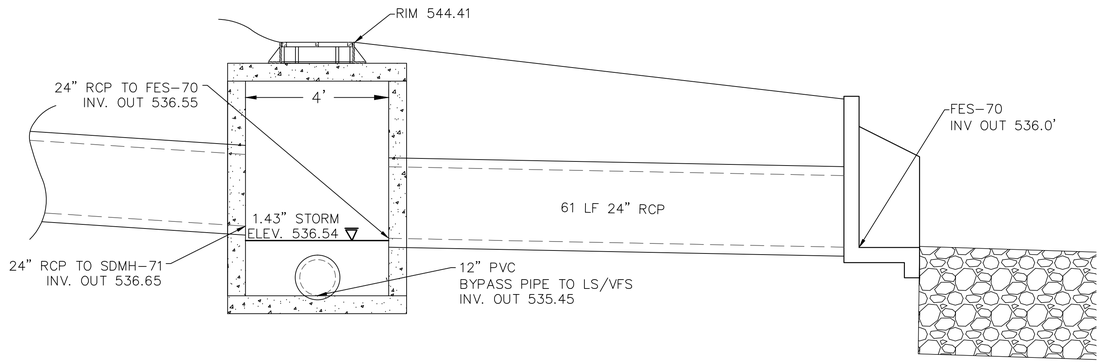



NOTES:

1. THE VEGETATED FILTER STRIP SHALL HAVE A UNIFORMLY GRADED SLOPE. ALL SLOPES A1–A3, B1–B3 & C1–C3 SHALL HAVE EQUAL ELEVATIONS.
2. THE VEGETATED FILTER STRIP SHALL BE GRADED PER THE SLOPES SHOWN ON THE PLAN VIEWS.
3. THE VEGETATED FILTER STRIP AND ANY ADJOINING SIDE SLOPES SHOULD BE COVERED WITH A MINIMUM OF 6" OF TOPSOIL.
4. THE TOPSOIL SHOULD BE AMENDED WITH:
   - 2 CUBIC YARDS OF PEAT MOSS/1,000 SF OF TOPSOIL
   - 75 LBS GROUND LIMESTONE/1,000 SF OF TOPSOIL
   - 40 LBS 5-10-10 STARTER FERTILIZER/1,000 SF OF TOPSOIL
5. VEGETATED FILTER STRIP SHALL BE PLANTED WITH TALL FESCUE SOD ON TOP OF AMENDED TOPSOIL. SOD SHOULD BE GROWN IN NON-CLAYEY SOILS OR SHOULD BE WASHED SOD.
6. THE SOD SHOULD BE WATERED SEVERAL TIMES A WEEK FOR 1 TO 3 WEEKS, KEEPING THE TOP 1.5 INCHES OF SOIL MOIST, UNTIL ROOTS BEGIN TO BECOME ESTABLISHED.

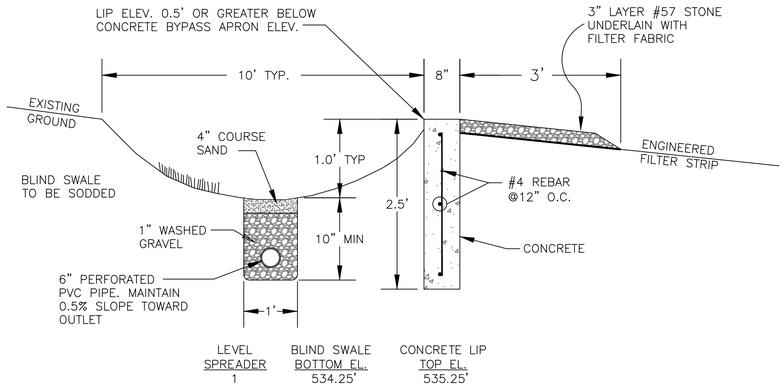
VEGETATIVE FILTER STRIP

NTS




MANHOLE/FLOW SPLITTER DETAIL

NTS




LEVEL SPREADER SECTION VIEW

NTS

| REV. NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER GARETH C. AVANT 05/10/2016

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BRIAR CHAPEL
US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

LEVEL SPREADER/VEGETATED FILTER STRIP

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: AS NOTED
VERTICAL: 1"=#.6'

M&C FILE NUMBER D4.X
DRAWING NUMBER D4.5

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

REVISION 6

## SANITARY SEWER SUMMARY TABLE

| UPSTREAM STRUCTURE | DOWNSTREAM STRUCTURE | UPSTREAM INVERT | DOWNSTREAM INVERT | PIPE DIAMETER | PIPE MATERIAL | LENGTH (ft) | SLOPE |
|---|---|---|---|---|---|---|---|
| SDMH-22 | SSMH-21 | 534.60 | 534.10 | 8" | PVC | 99.6 | 0.50% |
| SSMH-1 | EX. SSMH-19 | 528.50 | 526.49 | 8" | DIP | 403.3 | 0.50% |
| SSMH-2 | SSMH-1 | 529.45 | 528.70 | 8" | PVC | 142.3 | 0.53% |
| SSMH-3 | SSMH-2 | 530.20 | 529.65 | 8" | PVC | 110.3 | 0.50% |
| SSMH-4 | SSMH-3 | 531.05 | 530.40 | 8" | PVC | 121.5 | 0.53% |
| SSMH-5 | SSMH-4 | 531.90 | 531.25 | 8" | PVC | 123.1 | 0.53% |
| SSMH-6 | SSMH-5 | 532.70 | 532.10 | 8" | PVC | 112.9 | 0.53% |
| SSMH-7 | SSMH-6 | 534.30 | 532.90 | 8" | PVC | 107.7 | 1.30% |
| SSMH-8 | SSMH-7 | 537.00 | 534.50 | 8" | PVC | 144.2 | 1.73% |
| SSMH-9 | SSMH-8 | 542.80 | 537.20 | 8" | PVC | 365.5 | 1.53% |
| SSMH-10 | SSMH-9 | 544.20 | 543.50 | 8" | PVC | 134.1 | 0.52% |
| SSMH-11 | SSMH-10 | 545.30 | 544.60 | 8" | PVC | 134.0 | 0.52% |

## SANITARY SEWER SUMMARY TABLE

| UPSTREAM STRUCTURE | DOWNSTREAM STRUCTURE | UPSTREAM INVERT | DOWNSTREAM INVERT | PIPE DIAMETER | PIPE MATERIAL | LENGTH (ft) | SLOPE |
|---|---|---|---|---|---|---|---|
| SSMH-12 | SSMH-1 | 529.85 | 529.70 | 8" | PVC | 21.2 | 0.71% |
| SSMH-13 | SSMH-12 | 533.50 | 530.05 | 8" | PVC | 78.0 | 4.42% |
| SSMH-14 | SSMH-13 | 547.00 | 533.70 | 8" | PVC | 379.0 | 3.51% |
| SSMH-15 | SSMH-11 | 546.30 | 545.50 | 8" | PVC | 153.6 | 0.52% |
| SSMH-16 | SSMH-15 | 547.45 | 546.50 | 8" | PVC | 191.3 | 0.50% |
| SSMH-17 | SSMH-16 | 549.85 | 547.65 | 8" | PVC | 138.6 | 1.59% |
| SSMH-18 | EX. SSMH-16-16 | 544.75 | 538.40 | 8" | PVC | 92.6 | 6.86% |
| SSMH-18A | SSMH-18 | 545.50 | 545.10 | 8" | PVC | 31.4 | 1.27% |
| SSMH-19 | SSMH-20 | 549.03 | 541.10 | 8" | PVC | 121.9 | 6.50% |
| SSMH-20 | SSMH-21 | 538.70 | 536.45 | 8" | PVC | 111.6 | 2.02% |
| SSMH-21 | EX. SSMH-16-12B | 533.90 | 528.10 | 8" | DIP | 279.5 | 2.07% |

## STORM DRAINAGE SUMMARY TABLE

| UPSTREAM STRUCTURE | DOWNSTREAM STRUCTURE | UPSTREAM INVERT | DOWNSTREAM INVERT | PIPE DIAMETER | PIPE MATERIAL | LENGTH (ft) | SLOPE |
|---|---|---|---|---|---|---|---|
| BMP#22 | DBL CI-55 | 521.00 | 520.35 | 24" | RCP | 55.0 | 1.18% |
| CB-10 | CI-9 | 535.25 | 535.05 | 15" | RCP | 32.1 | 0.62% |
| CB-58 | DBL CI-56 | 521.00 | 520.80 | 15" | RCP | 35.5 | 0.56% |
| CB-59 | BCP - EX. CB-54 | 519.60 | 519.20 | 15" | RCP | 72.2 | 0.55% |
| CB-78 | SDMH-77 | 554.80 | 554.60 | 15" | RCP | 30.6 | 0.65% |
| CI-4 | DBL CI-3 | 525.70 | 525.30 | 30" | RCP | 73.7 | 0.54% |
| CI-5 | CI-4 | 532.25 | 530.70 | 24" | RCP | 141.9 | 1.09% |
| CI-6 | CI-5 | 533.70 | 532.35 | 18" | RCP | 36.2 | 3.72% |
| CI-7 | CI-6 | 533.95 | 533.80 | 18" | RCP | 25.0 | 0.60% |
| CI-8 | CI-7 | 534.30 | 534.05 | 15" | RCP | 32.8 | 0.76% |
| CI-9 | CI-8 | 534.95 | 534.40 | 15" | RCP | 103.7 | 0.53% |
| CI-11 | CI-7 | 536.75 | 534.05 | 18" | RCP | 76.5 | 3.53% |
| CI-12 | CI-11 | 542.00 | 536.85 | 18" | RCP | 109.9 | 4.69% |
| CI-13 | CI-12 | 542.25 | 542.10 | 15" | RCP | 24.4 | 0.61% |
| CI-14 | CI-5 | 532.50 | 532.35 | 15" | RCP | 24.5 | 0.61% |
| CI-16 | DBL CI-3 | 528.10 | 526.50 | 30" | RCP | 141.4 | 1.13% |
| CI-17 | CI-16 | 534.35 | 531.90 | 24" | RCP | 139.0 | 1.76% |
| CI-18 | CI-17 | 536.80 | 534.45 | 24" | RCP | 135.4 | 1.74% |
| CI-19 | CI-18 | 539.30 | 536.90 | 24" | RCP | 132.8 | 1.81% |
| CI-20 | CI-19 | 541.35 | 539.40 | 24" | RCP | 110.3 | 1.77% |

## STORM DRAINAGE SUMMARY TABLE

| UPSTREAM STRUCTURE | DOWNSTREAM STRUCTURE | UPSTREAM INVERT | DOWNSTREAM INVERT | PIPE DIAMETER | PIPE MATERIAL | LENGTH (ft) | SLOPE |
|---|---|---|---|---|---|---|---|
| CI-21 | CI-20 | 543.40 | 541.45 | 24" | RCP | 109.8 | 1.78% |
| CI-22 | CI-21 | 544.80 | 543.50 | 24" | RCP | 122.4 | 1.06% |
| CI-23 | CI-22 | 545.05 | 544.90 | 24" | RCP | 24.5 | 0.61% |
| CI-25 | DBL CI-24 | 548.20 | 546.55 | 18" | RCP | 215.9 | 0.76% |
| CI-26 | CI-25 | 548.45 | 548.30 | 18" | RCP | 24.5 | 0.61% |
| CI-29 | CI-20 | 541.60 | 541.45 | 15" | RCP | 24.5 | 0.61% |
| CI-30 | CI-18 | 537.05 | 536.90 | 15" | RCP | 24.5 | 0.61% |
| CI-31 | CI-16 | 528.35 | 528.20 | 15" | RCP | 24.5 | 0.61% |
| CI-32 | CI-25 | 549.20 | 548.30 | 18" | RCP | 169.1 | 0.53% |
| CI-33 | CI-32 | 550.45 | 549.30 | 15" | RCP | 194.7 | 0.59% |
| CI-34 | CI-33 | 553.30 | 551.10 | 15" | RCP | 96.7 | 2.27% |
| CI-35 | CI-34 | 553.55 | 553.40 | 15" | RCP | 24.5 | 0.61% |
| CI-36 | CI-33 | 550.70 | 550.55 | 15" | RCP | 24.5 | 0.61% |
| CI-37 | CI-32 | 549.45 | 549.30 | 15" | RCP | 24.5 | 0.61% |
| CI-51 | HW-50 | 526.50 | 526.00 | 15" | RCP | 44.3 | 1.13% |
| CI-52 | CI-51 | 526.75 | 526.60 | 15" | RCP | 24.5 | 0.61% |
| CI-73A | DBL-CI-72 | 538.00 | 537.55 | 18" | RCP | 89.0 | 0.51% |
| CI-74 | CI-73A | 542.85 | 538.95 | 18" | RCP | 85.5 | 4.56% |
| CI-75 | CI-74 | 543.10 | 542.95 | 18" | RCP | 24.5 | 0.61% |
| CI-76 | CI-75 | 554.30 | 543.20 | 15" | RCP | 203.2 | 5.46% |

## STORM DRAINAGE SUMMARY TABLE

| UPSTREAM STRUCTURE | DOWNSTREAM STRUCTURE | UPSTREAM INVERT | DOWNSTREAM INVERT | PIPE DIAMETER | PIPE MATERIAL | LENGTH (ft) | SLOPE |
|---|---|---|---|---|---|---|---|
| DBL-CI-72 | SDMH-71A | 537.35 | 537.25 | 24" | RCP | 10.1 | 0.99% |
| DBL-CI-73 | DBL-CI-72 | 537.70 | 537.55 | 15" | RCP | 24.5 | 0.61% |
| DBL CI-2 | HW-1 | 524.95 | 514.50 | 36" | RCP | 198.2 | 5.27% |
| DBL CI-3 | DBL CI-2 | 525.20 | 525.05 | 36" | RCP | 24.5 | 0.61% |
| DBL CI-24 | CI-23 | 546.25 | 545.95 | 24" | RCP | 37.4 | 0.80% |
| DBL CI-27 | DBL CI-24 | 546.70 | 546.55 | 15" | RCP | 24.5 | 0.61% |
| DBL CI-55 | SDMH-57 | 520.25 | 520.00 | 24" | RCP | 23.4 | 1.07% |
| DBL CI-56 | SDMH-57 | 520.70 | 520.50 | 15" | RCP | 14.1 | 1.42% |
| EX. CULVERT - UPSTREAM | EX. CULVERT - DOWNSTREAM | 519.61 | 512.73 | 24" | RCP | 152.2 | 4.52% |
| HW-15 | CI-4 | 526.00 | 525.80 | 30" | RCP | 33.8 | 0.59% |
| SDMH-57 | EX. CULVERT - UPSTREAM | 519.85 | 519.61 | 24" | RCP | 5.2 | 4.59% |
| SDMH-71 | FES-70 | 536.55 | 536.00 | 24" | RCP | 63.2 | 0.87% |
| SDMH-71A | SDMH-71 | 537.05 | 536.65 | 24" | RCP | 76.2 | 0.52% |
| SDMH-77 | CI-76 | 554.50 | 554.40 | 15" | RCP | 10.3 | 0.97% |
| SDMH-79 | EX. CI-16-78 | 540.65 | 540.05 | 15" | RCP | 14.3 | 4.21% |

## STORM DRAINAGE RIM TABLE

| STRUCTURE | RIM ELEVATION |
|---|---|
| CB-10 | 540.75 |
| CB-58 | 524.84 |
| CB-59 | 523.50 |
| CB-78 | 558.30 |
| CI-4 | 535.67 |
| CI-5 | 537.61 |
| CI-6 | 538.21 |
| CI-7 | 538.25 |
| CI-8 | 538.45 |
| CI-9 | 539.74 |
| CI-11 | 541.26 |
| CI-12 | 546.44 |
| CI-13 | 546.44 |
| CI-14 | 537.61 |
| CI-16 | 536.80 |
| CI-17 | 539.36 |
| CI-18 | 541.86 |
| CI-19 | 544.23 |
| CI-20 | 546.18 |
| CI-21 | 548.12 |

## STORM DRAINAGE RIM TABLE

| STRUCTURE | RIM ELEVATION |
|---|---|
| CI-22 | 550.28 |
| CI-23 | 550.28 |
| CI-25 | 552.35 |
| CI-26 | 552.34 |
| CI-29 | 546.18 |
| CI-30 | 541.84 |
| CI-31 | 536.81 |
| CI-32 | 553.63 |
| CI-33 | 555.42 |
| CI-34 | 557.70 |
| CI-35 | 557.71 |
| CI-36 | 555.42 |
| CI-37 | 553.63 |
| CI-51 | 532.80 |
| CI-52 | 532.80 |
| CI-73A | 543.71 |
| CI-74 | 548.05 |
| CI-75 | 547.98 |
| CI-76 | 560.97 |
| DBL-CI-72 | 542.14 |

## STORM DRAINAGE RIM TABLE

| STRUCTURE | RIM ELEVATION |
|---|---|
| DBL-CI-73 | 542.14 |
| DBL CI-2 | 535.22 |
| DBL CI-3 | 535.22 |
| DBL CI-24 | 550.80 |
| DBL CI-27 | 550.80 |
| DBL CI-55 | 524.60 |
| DBL CI-56 | 524.60 |
| FES-70 | 538.18 |
| HW-1 | 518.83 |
| HW-15 | 529.79 |
| HW-50 | 528.44 |
| SDMH-57 | 525.08 |
| SDMH-71 | 541.43 |
| SDMH-71A | 542.77 |
| SDMH-77 | 561.57 |
| SDMH-79 | 544.95 |

| REV.NO. | DESCRIPTIONS | DATE |
|---|---|---|
| 7 | REVISIONS PER COMMENTS FROM NCDOT | 2016.06.13 |
| 6 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY | 2016.05.10 |
| 5 | SITE PLAN REVISIONS | 2016.03.02 |
| 4 | REVISIONS PER COMMENTS FROM NCDOT | 2015.07.22 |
| 3 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY AND NCDOT | 2015.07.01 |
| 2 | REVISIONS PER COMMENTS FROM CHATHAM COUNTY PUBLIC UTILITIES | 2015.06.01 |
| 1 | INITIAL SUBMITTAL | 2015.05.01 |

REVISIONS

SEAL

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036348 ENGINEER Garrett Clinard 06/13/2016 GARRETT C. CLINARD

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US STEEL - SECTION 1
CHATHAM COUNTY, NORTH CAROLINA

STORM DRAINAGE &
SANITARY SEWER TABLES

| | |
|---|---|
| DATE: | JUNE 1, 2015 |
| MCE PROJ. # | 02735-0130 |
| DRAWN | BSS |
| DESIGNED | BSS |
| CHECKED | GCA |
| PROJ. MGR. | CHS |

SCALE
HORIZONTAL: N/A
VERTICAL: N/A

M&C FILE NUMBER D4.6
DRAWING NUMBER D4.6

STATUS: FINAL DRAWINGS FOR REVIEW PURPOSES ONLY

REVISION 7