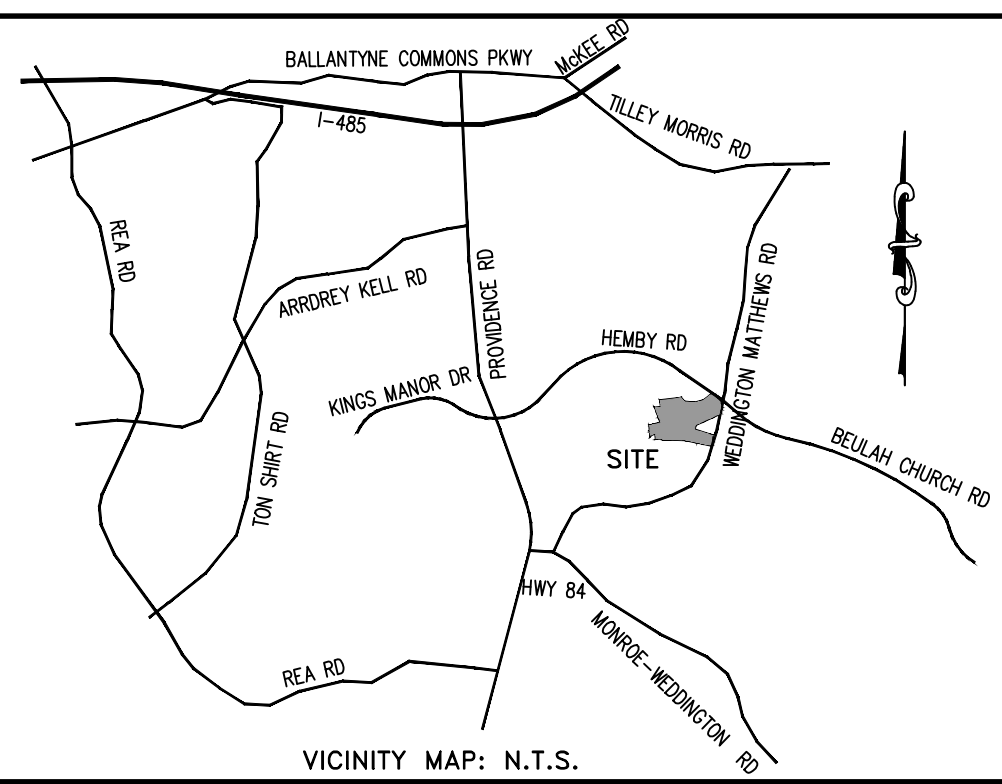


WEDDINGTON-MATTHEWS ROAD SUBDIVISION

TOWN OF WEDDINGTON, NORTH CAROLINA



DEVELOPER: JBH DEVELOPMENT, LLC
 CONTACT: CLAY MCCULLOUGH
 EMAIL: cmccullough@hoppercommunities.com
 ADDRESS: 229 EAST KINGSTON AVE., CHARLOTTE, N.C. 28203
 PHONE: 704-805-4802 FAX: 704-805-4812
 SURVEY COMPLETED MAY OF 2017.
 CIVIL ENGINEER/SURVEYOR: THE ISAACS GROUP, P.C.
 CONTACT: BRENT COWAN, P.E.
 EMAIL: bcowan@isaacsgroup.com
 ADDRESS: 8720 RED OAK BLVD, SUITE 420, CHARLOTTE, N.C. 28217
 PHONE: (704) 227-9402 FAX: (704) 227-9403

UTILITY PROVIDERS:
 WATER AND SEWER:
 UNION COUNTY WATER AND SEWER DEPT
 UNION COUNTY PUBLIC WORKS OFFICE
 500 N. MAIN ST., SUITE 500
 MONROE, NC 28112
 ANTICIPATED 35 DOMESTIC WATER METERS.
 ANTICIPATED DOMESTIC WATER DEMAND FOR THIS PROJECT WILL BE 14,000 GPD.
 (35 LOTS X 400 GPD/LOT = 14,000 GPD)
 ANTICIPATED SEWER FLOW DEMAND FOR THIS PROJECT WILL BE 6,500 GPD.
 (35 LOTS X 190 GPD/LOT = 6,500 GPD)

PARCEL ID: 06120003
 OWNER: TUDOR SANDRA H TRUSTEE
 ADDRESS: 4200 SATTERWYTHE LN CHARLOTTE NC 28215
 EMAIL: STUDOR1952@AOL.COM
 PARCEL ID: 06120002B
 OWNER: SIMPSON JASON N
 ADDRESS: 8920 BLAKEWOOD CT GAINESVILLE GA 30506
 EMAIL: SKINS143@GMAIL.COM

A PORTION OF:
 PARCEL ID: 06123012
 OWNER: ORR GERALD D & MARTHA P
 ADDRESS: 2959 PINE LEVEL CHURCH RD NAKINA NC 28455
 EMAIL: GDMNORR@AOL.COM

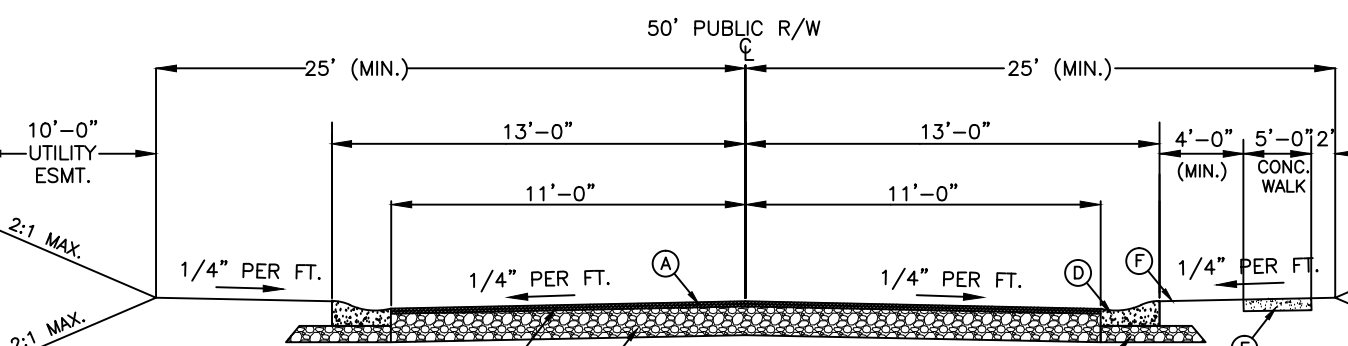
DEVELOPMENT DATA
 ZONING: RCD
 JURISDICTION: TOWN OF WEDDINGTON
 COUNTY: UNION COUNTY
 TOTAL PROJECT ACREAGE: ±49.02 AC.
 MIN. LOT WIDTH ALLOWED: 80 FT.
 TYP. LOT WIDTH SHOWN: 100 FT.
 MIN. LOT AREA: 12,000 S.F.
 TYP. LOT AREA SHOWN: 15,000 S.F.
 MIN. SETBACK: 20 FT.
 REAR YARD: 30 FT.
 SIDE YARD: 15 FT.
 MAXIMUM BUILDING HEIGHT: 35 FT.
 NUMBER OF LOTS SHOWN: 35 LOTS

CONSERVATION LAND CALCULATIONS
 CONSERVATION LAND REQUIRED = 50% OF 49.02 AC. = 24.51 AC.
 EXISTING PRIMARY CONSERVATION LAND = 3.41 AC.
 EXISTING SECONDARY CONSERVATION LAND TIER A = 21.03
 EXISTING SECONDARY CONSERVATION LAND TIER B = 24.58

PRIMARY CONSERVATION LAND SAVED = 3.41 AC.
 SECONDARY CONSERVATION LAND SAVED = 27.42 AC.
 TOTAL CONSERVATION LAND POST DEVELOPMENT = 3.41 + 27.42 = 30.83 ACRES
 *ONLY 50% OF POWER R/W IN POST DEVELOPMENT CONSERVATION LAND CAN BE COUNTED TOWARDS CONSERVATION LAND
 AREA OF EXIST. / PROP. POWER R/W = 214,378 SF (4.92 AC.)
 50% OF EXIST. / PROP. POWER R/W = 107,189 SF (2.46 AC.)
 TOTAL CONSERVATION LAND PROVIDED W/ REDUCTION OF 50% POWER R/W = 30.83 - 2.46 = 28.37 AC. (58% > 50%, THEREFORE OK)

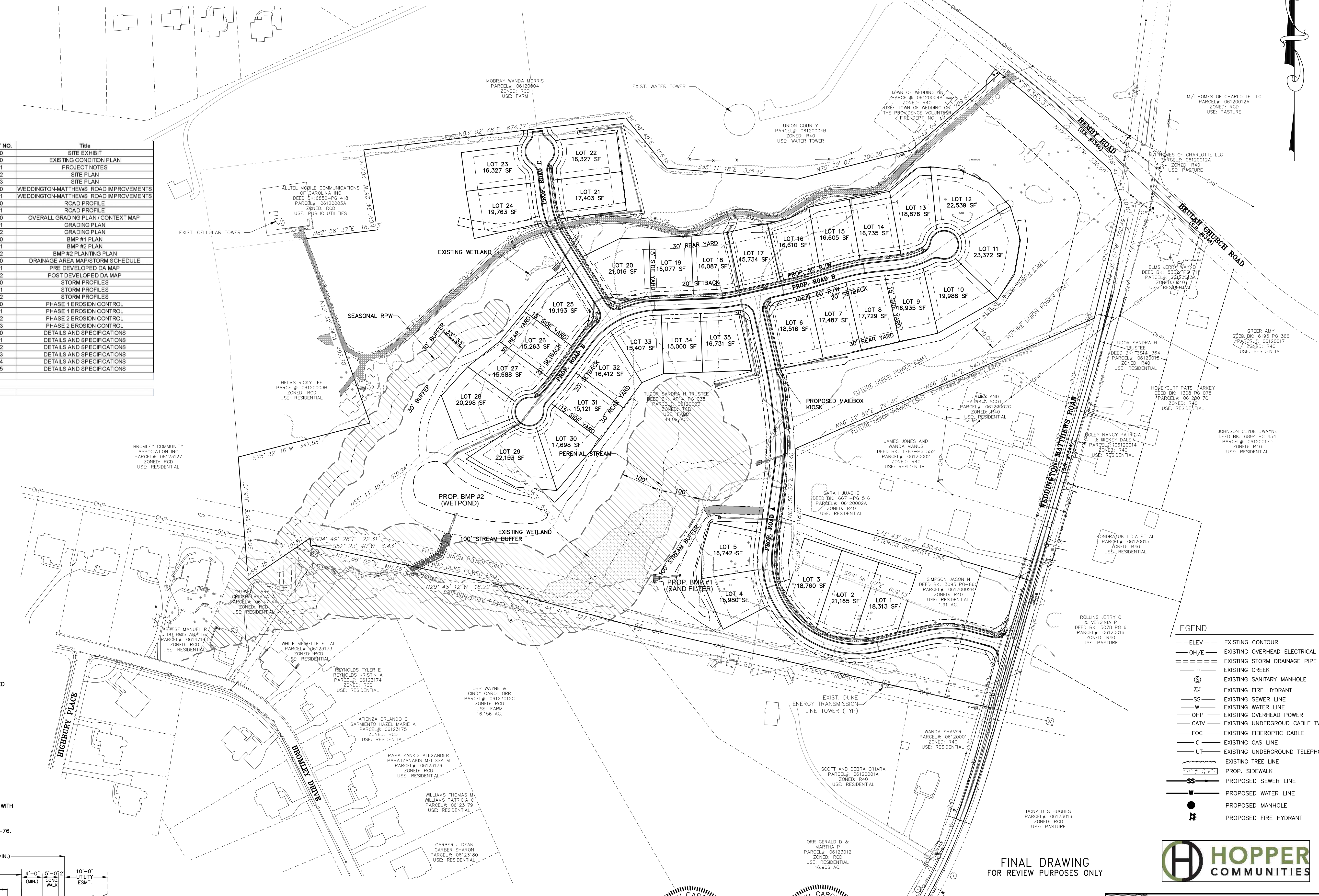
NOTE:
 PROPOSED CONSERVATION LAND INCLUDES PROPOSED BMPS AREAS.
 VARIATIONS IN THE PRINCIPAL BUILDING POSITION AND ORIENTATION ON LOTS ARE ENCOURAGED, BUT SHALL OBSERVE THE FOLLOWING MINIMUM STANDARDS:
 I. FRONT YARD: 20 FEET
 II. REAR YARD: 30 FEET
 III. SIDE YARD: 30 FEET SEPARATION FOR PRINCIPLE BUILDINGS ON ADJACENT LOTS, WITH NO SIDE YARD LESS THAN 15 FT. THE STREETSIDE SIDE YARD ON A CORNER LOT SHALL BE AT LEAST 15 FEET.

PLANTING ALONG THROUGHFARES WILL BE REQUIRED PER TOWN ORDINANCE SECTION 46-76.



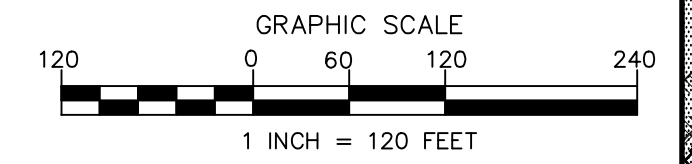
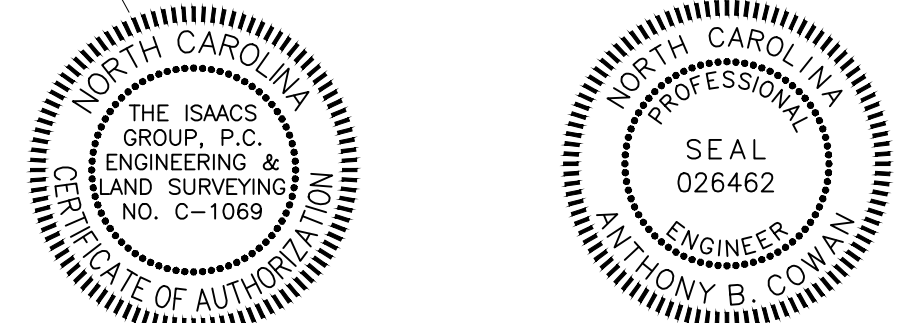
- NOTES:
- SUBGRADE SHALL BE COMPACTED TO A DENSITY OF 100% IN ACCORDANCE WITH AASHTO-99 AND NCDOT SPECIFICATIONS SECTION 500.
 - AGGREGATE BASE COURSE SHALL BE COMPACTED TO A DENSITY OF 100%.
 - ASPHALT COMPACTION SHALL BE IN ACCORDANCE WITH NCDOT SPECIFICATION SECTION 610.
 - IF REQUIRED BY THE TOWN, TESTS SHALL BE CONDUCTED BY AN INDEPENDENT TESTING FIRM AT THE DEVELOPERS EXPENSE.
 - FINAL LIFT OF PAVEMENT SHALL NOT BE PLACED UNTIL 80% OF HOME SITES ARE DEVELOPED. THE FINAL LIFT OF PAVEMENT SHALL NOT BE PLACED FOR STREETS THAT WILL BE USED TO ACCESS FUTURE PHASES UNTIL THOSE PHASES REACH 80% BUILD-OUT.
- (A) 1 1/2" BITUMINOUS CONCRETE SURFACE COURSE, 99.5B
 - (B) 1 1/2" BITUMINOUS CONCRETE SURFACE COURSE, 99.5B
 - (C) 10" COMPACTED AGGREGATE BASE COURSE OR 5" BITUMINOUS CONCRETE BASE COURSE, B29.0C
 - (D) 2"-0" VALLEY GUTTER
 - (E) 4" CONCRETE SIDEWALK (OPTIONAL)
 - (F) 4"-0" PLANTING STRIP
 - (G) 6" MINIMUM COMPACTED AGGREGATE BASE COURSE

SHEET NO.	Title
C0.0	SITE EXHIBIT
C1.0	EXISTING CONDITION PLAN
C1.1	PROJECT NOTES
C1.2	SITE PLAN
C1.3	SITE PLAN
C2.0	WEDDINGTON-MATTHEWS ROAD IMPROVEMENTS
C2.1	WEDDINGTON-MATTHEWS ROAD IMPROVEMENTS
C3.0	ROAD PROFILE
C3.1	ROAD PROFILE
C4.0	OVERALL GRADING PLAN/CONTEXT MAP
C4.1	GRADING PLAN
C4.2	GRADING PLAN
C5.0	BMP #1 PLAN
C5.1	BMP #2 PLAN
C5.2	BMP #2 PLANTING PLAN
C6.0	DRAINAGE AREA MAP/STORM SCHEDULE
C6.1	PRE DEVELOPED DA MAP
C6.2	POST DEVELOPED DA MAP
C7.0	STORM PROFILES
C7.1	STORM PROFILES
C7.2	STORM PROFILES
C8.0	PHASE 1 EROSION CONTROL
C8.1	PHASE 1 EROSION CONTROL
C8.2	PHASE 2 EROSION CONTROL
C8.3	PHASE 2 EROSION CONTROL
C9.0	DETAILS AND SPECIFICATIONS
C9.1	DETAILS AND SPECIFICATIONS
C9.2	DETAILS AND SPECIFICATIONS
C9.3	DETAILS AND SPECIFICATIONS
C9.4	DETAILS AND SPECIFICATIONS
C9.5	DETAILS AND SPECIFICATIONS



- LEGEND
- ELEV— EXISTING CONTOUR
 - OH/E— EXISTING OVERHEAD ELECTRICAL
 - SS— EXISTING STORM DRAINAGE PIPE
 - C— EXISTING CREEK
 - ⊙ EXISTING SANITARY MANHOLE
 - ⊕ EXISTING FIRE HYDRANT
 - SS— EXISTING SEWER LINE
 - W— EXISTING WATER LINE
 - OHP— EXISTING OVERHEAD POWER
 - CATV— EXISTING UNDERGROUND CABLE TV
 - FOC— EXISTING FIBEROPTIC CABLE
 - G— EXISTING GAS LINE
 - UT— EXISTING UNDERGROUND TELEPHONE
 - T— EXISTING TREE LINE
 - SS— PROPOSED SEWER LINE
 - W— PROPOSED WATER LINE
 - ⊙ PROPOSED MANHOLE
 - ⊕ PROPOSED FIRE HYDRANT

FINAL DRAWING FOR REVIEW PURPOSES ONLY



NO.	BY	DATE	REVISION

Project: WEDDINGTON MATTHEWS RD. DEV. WEDDINGTON, NORTH CAROLINA

Title: COVER SHEET

File #: 16157-SF-DWG Date: 06/28/17 Project Egr: ABC

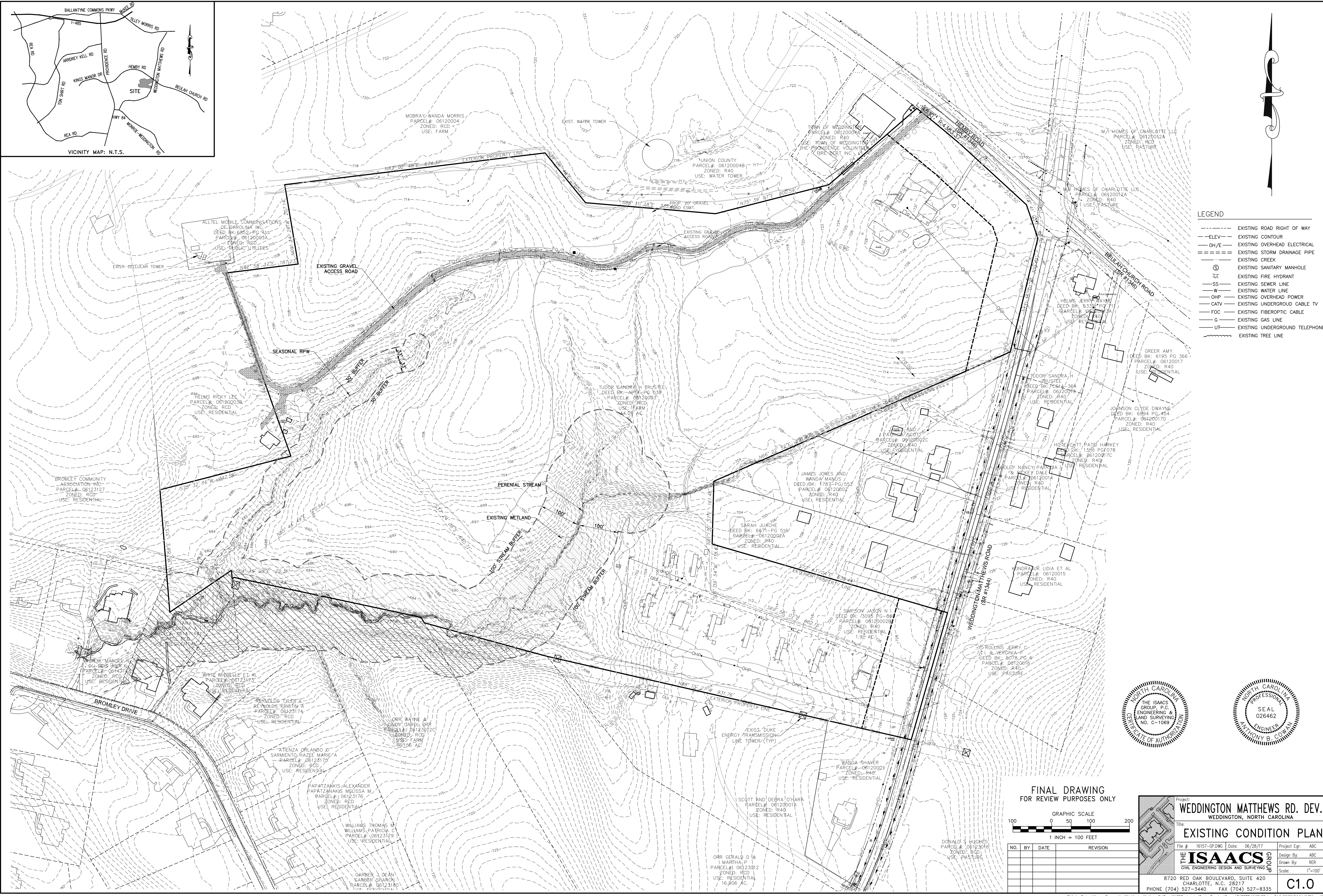
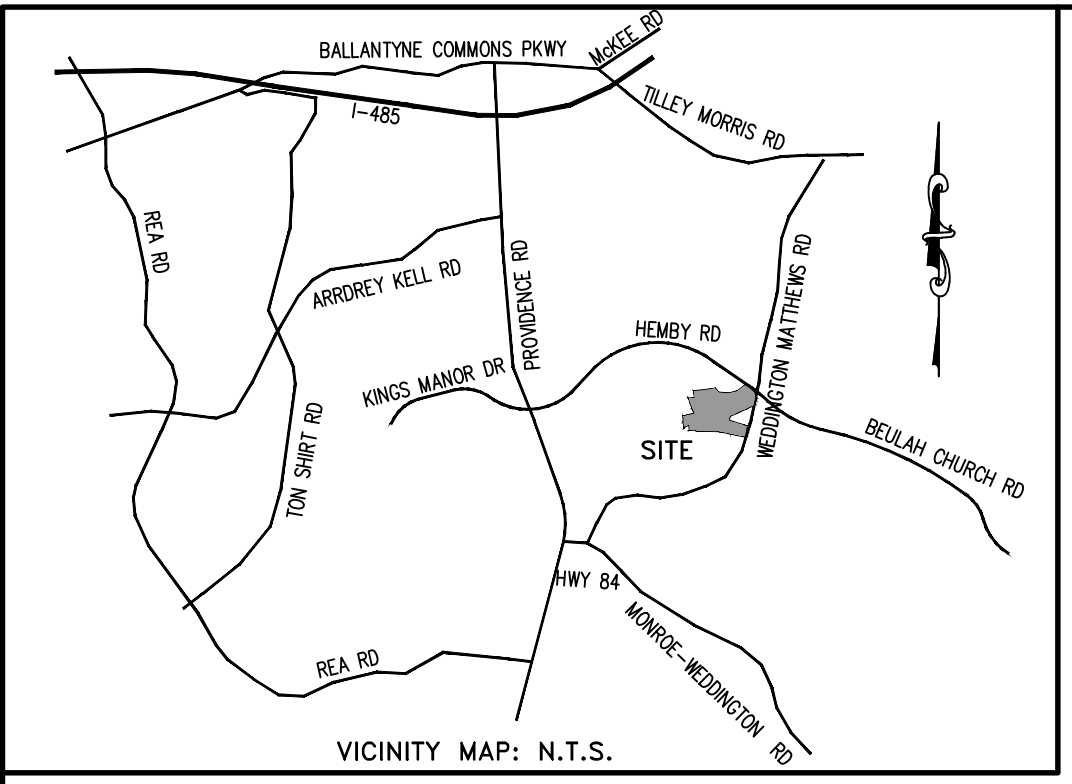
Design By: ABC

Drawn By: BER

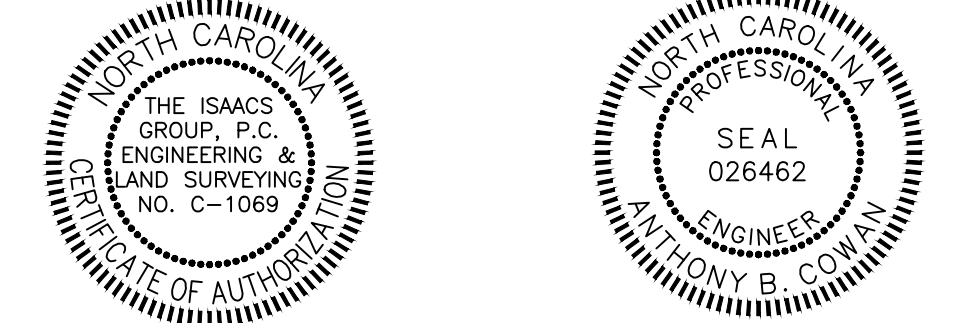
Scale: 1"=120'

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CO.0



- LEGEND**
- EXISTING ROAD RIGHT OF WAY
 - - - - - ELEVATION CONTOUR
 - OH/E - EXISTING OVERHEAD ELECTRICAL
 - == == == EXISTING STORM DRAINAGE PIPE
 - EXISTING CREEK
 - ⊙ EXISTING SANITARY MANHOLE
 - ⊕ EXISTING FIRE HYDRANT
 - SS --- EXISTING SEWER LINE
 - W --- EXISTING WATER LINE
 - OHP --- EXISTING OVERHEAD POWER
 - CATV --- EXISTING UNDERGROUND CABLE TV
 - FOC --- EXISTING FIBEROPTIC CABLE
 - G --- EXISTING GAS LINE
 - UT --- EXISTING UNDERGROUND TELEPHONE
 - EXISTING TREE LINE



**FINAL DRAWING
FOR REVIEW PURPOSES ONLY**

GRAPHIC SCALE
100 0 50 100 200
1 INCH = 100 FEET

NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **EXISTING CONDITION PLAN**

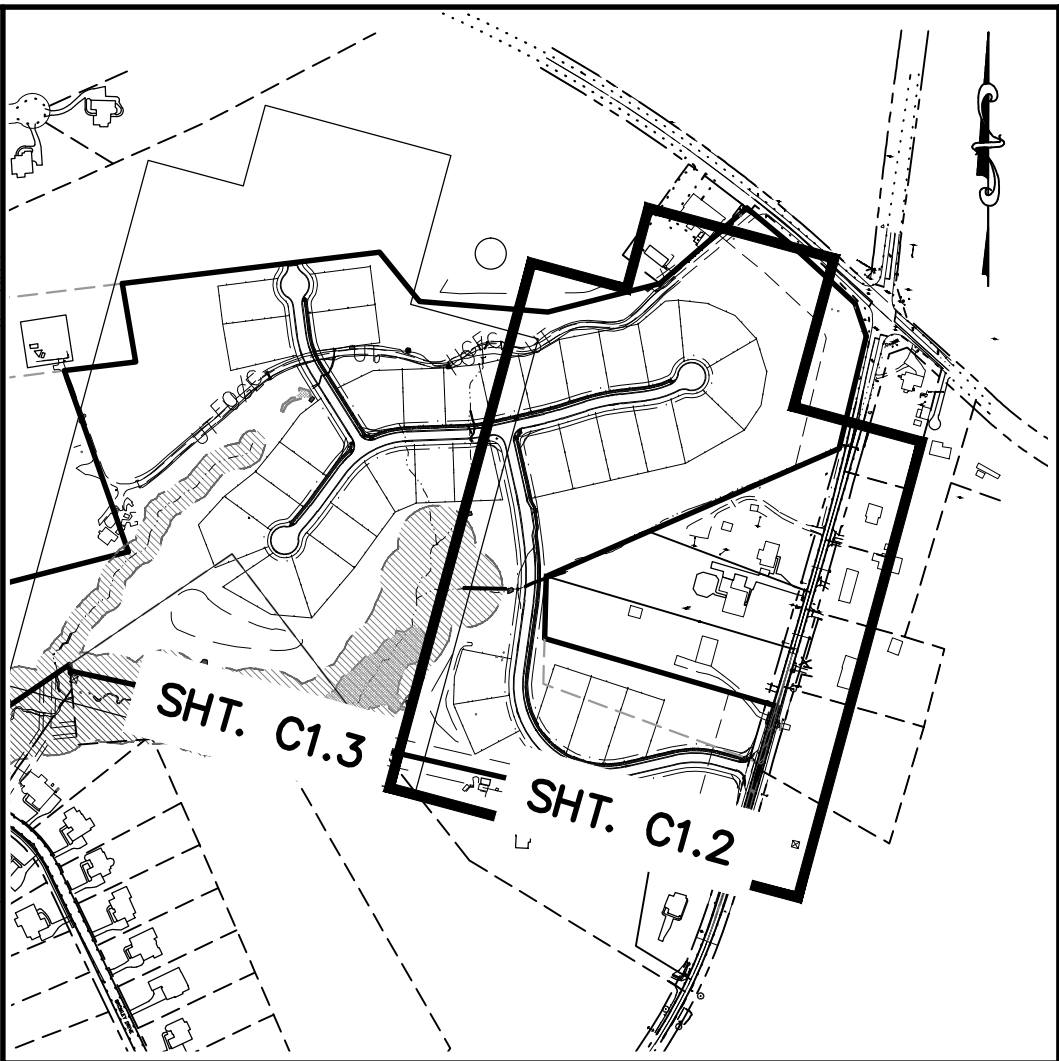
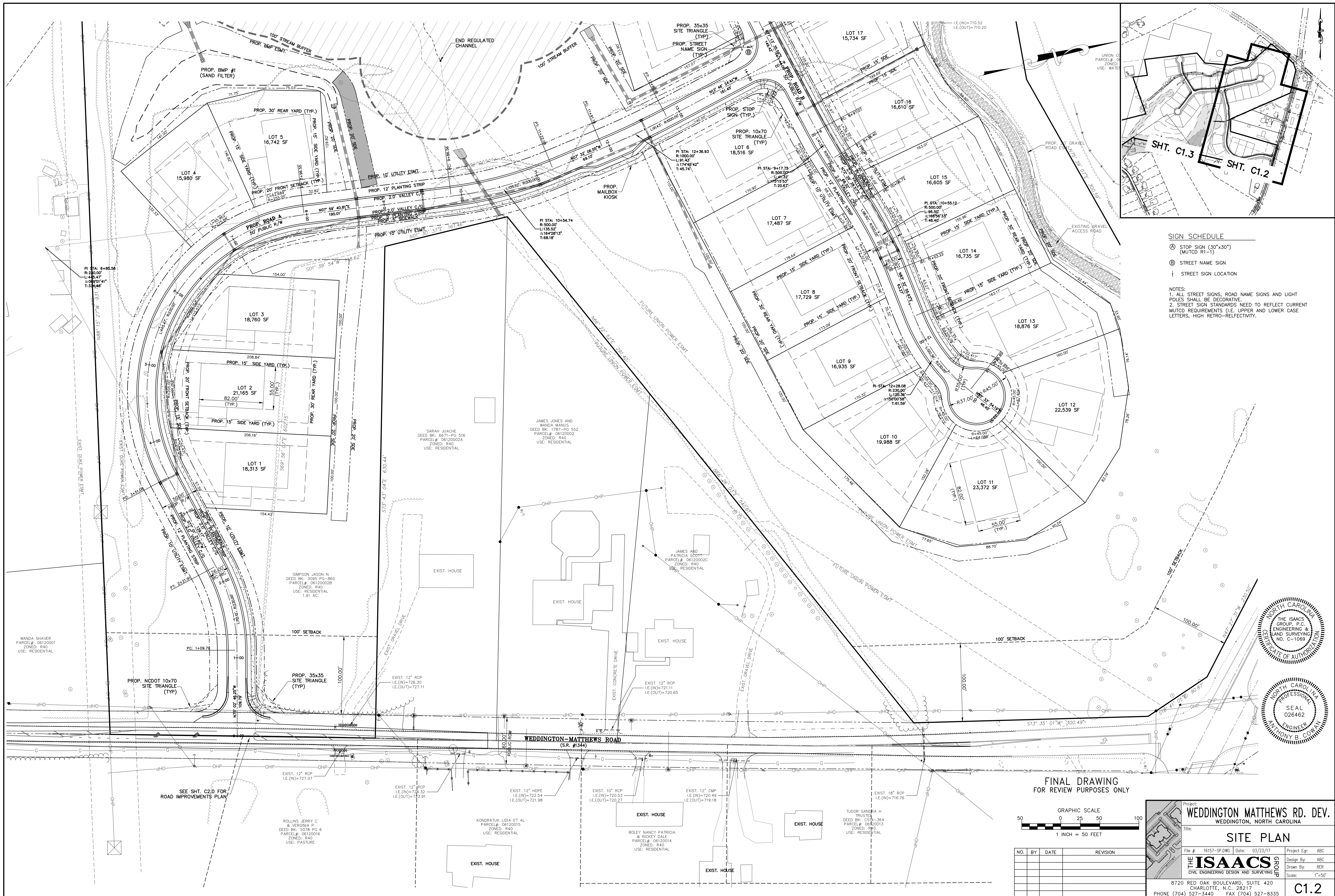
File #: 16157-GP-DWG Date: 06/28/17 Project Egr: ABC

THE ISAACS GROUP, P.C.
ENGINEERING & LAND SURVEYING
NO. C-10669

Design By: ABC
Drawn By: BER
Scale: 1"=100'

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C1.0



SIGN SCHEDULE

Ⓐ STOP SIGN (30"x30")
(MUTC R1-1)

Ⓑ STREET NAME SIGN

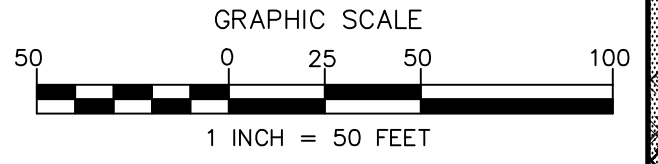
† STREET SIGN LOCATION

NOTES:

- ALL STREET SIGNS, ROAD NAME SIGNS AND LIGHT POLES SHALL BE DECORATIVE.
- STREET SIGN STANDARDS NEED TO REFLECT CURRENT MUTCD REQUIREMENTS (I.E. UPPER AND LOWER CASE LETTERS, HIGH RETRO-REFLECTIVITY).



FINAL DRAWING
FOR REVIEW PURPOSES ONLY



Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **SITE PLAN**

File #: 16157-SP.DWG Date: 03/23/17 Project Egr: ABC

Design By: ABC

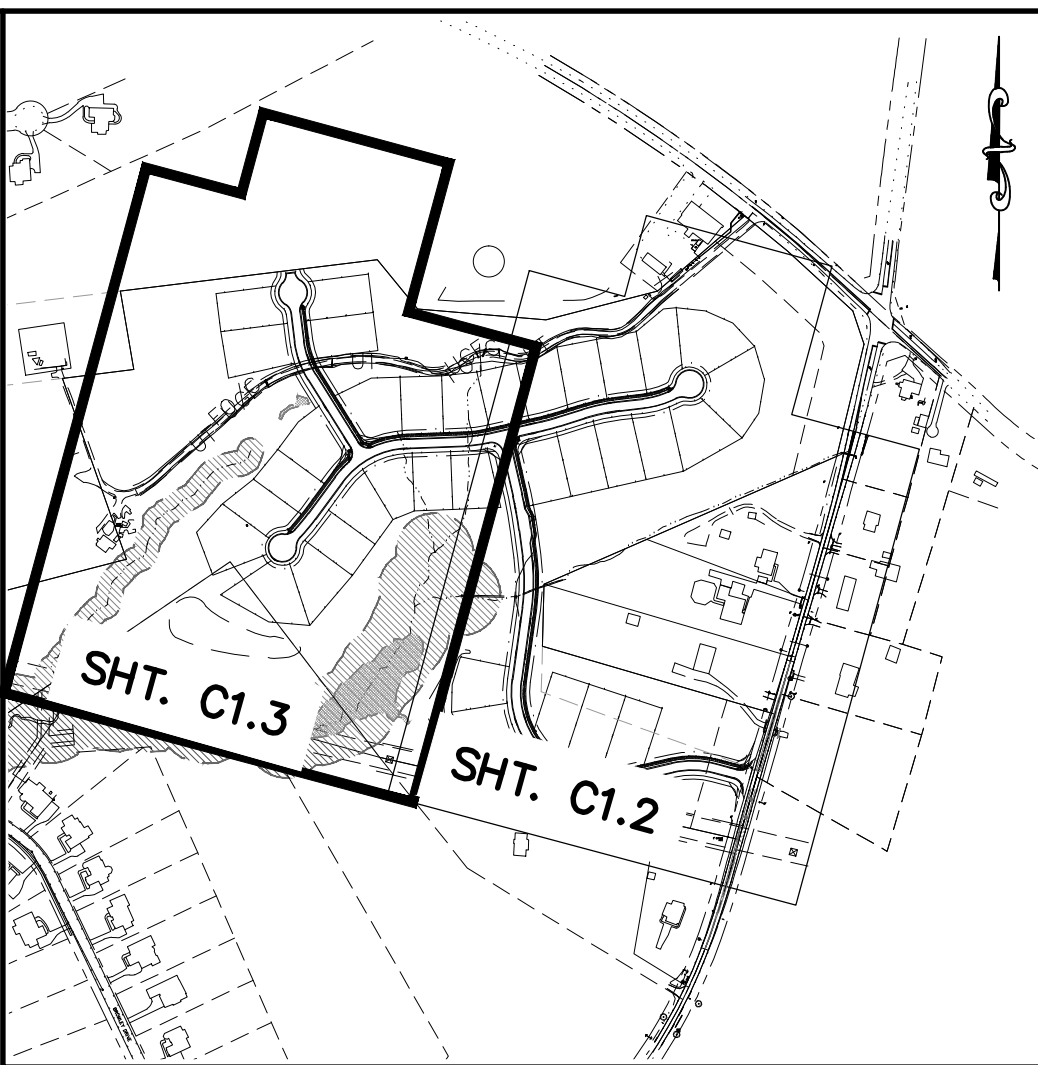
Drawn By: BER

Scale: 1"=50'

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C1.2

NO.	BY	DATE	REVISION



SIGN SCHEDULE

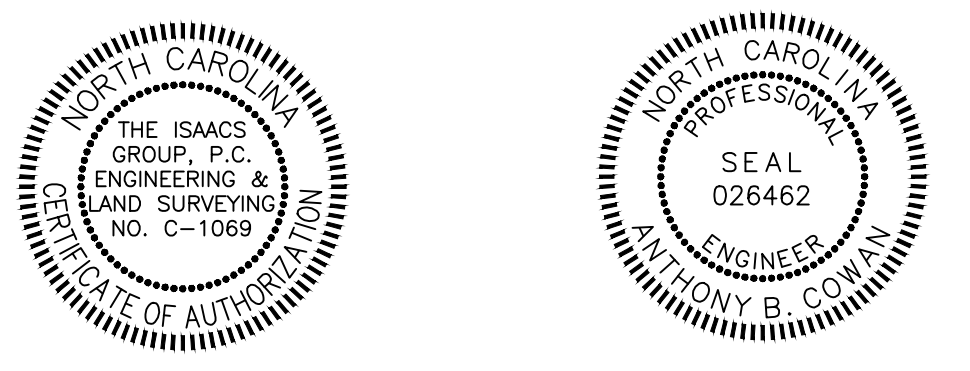
- ⊙ STOP SIGN (30"x30") (MUTCD R1-1)
- ⊙ STREET NAME SIGN
- † STREET SIGN LOCATION

NOTES:

1. ALL STREET SIGNS, ROAD NAME SIGNS AND LIGHT POLES SHALL BE DECORATIVE.
2. STREET SIGN STANDARDS NEED TO REFLECT CURRENT MUTCD REQUIREMENTS (I.E. UPPER AND LOWER CASE LETTERS, HIGH RETRO-REFLECTIVITY).

WETLAND NOTES:

WETLANDS SHOWN ON THIS MAP WERE FLAGGED BY LEN RINDNER WITH WETLANDS & ENVIRONMENTAL PLANNING GROUP (WEPG) AND SURVEYED BY THE ISAACS GROUP. REFERENCE REPORT PREPARED BY WEPG DATED 11/18/2016.



FINAL DRAWING FOR REVIEW PURPOSES ONLY

GRAPHIC SCALE
 1 INCH = 50 FEET

NO.	BY	DATE	REVISION

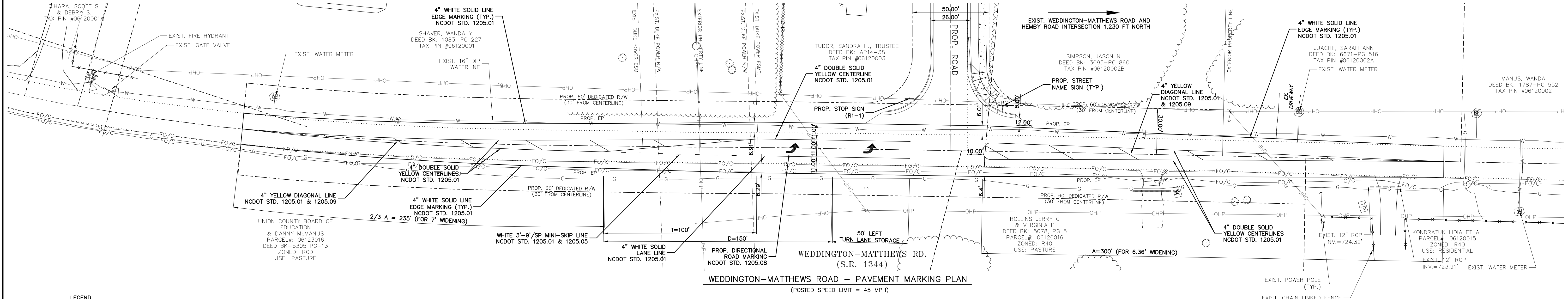
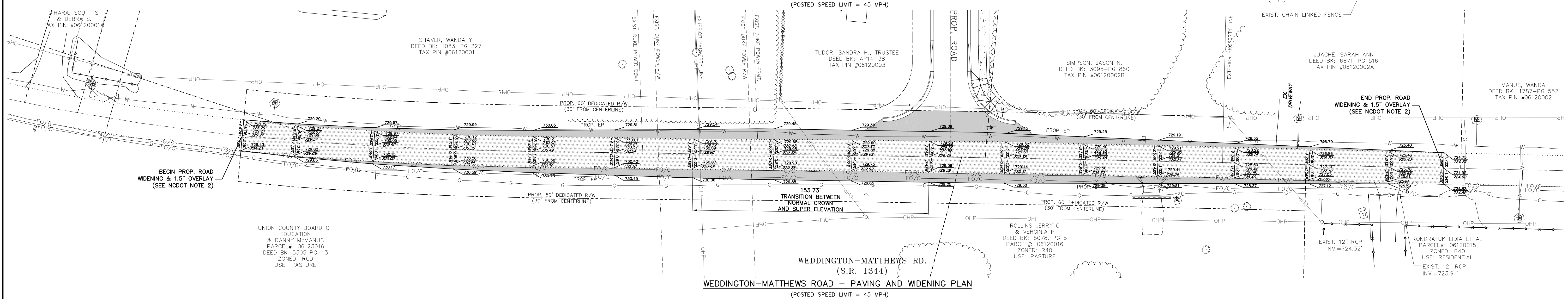
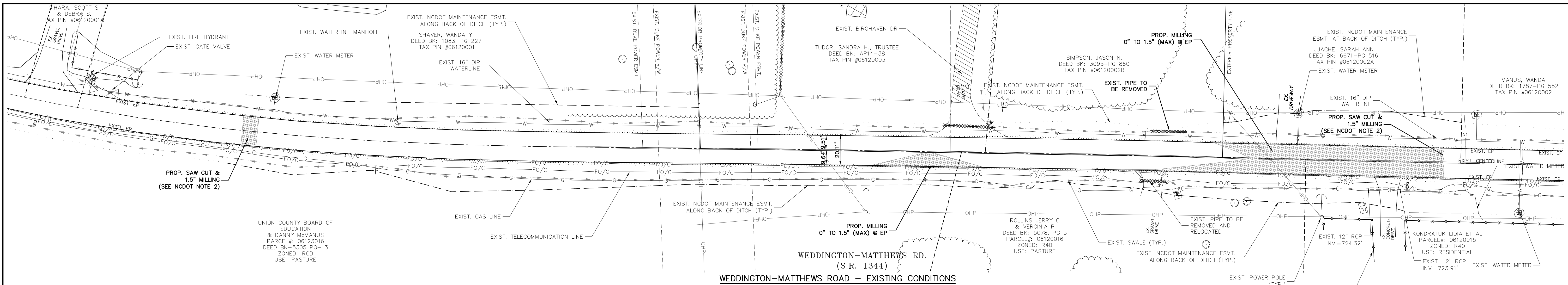
Project: **WEDDINGTON MATTHEWS RD. DEV.**
 WEDDINGTON, NORTH CAROLINA

Title: **SITE PLAN**

File #: 16157-SP.DWG | Date: 06/28/17 | Project Egr: ABC
 Design By: ABC
 Drawn By: BER
 Scale: 1"=50'

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C1.3



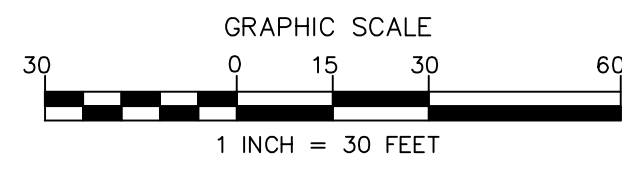
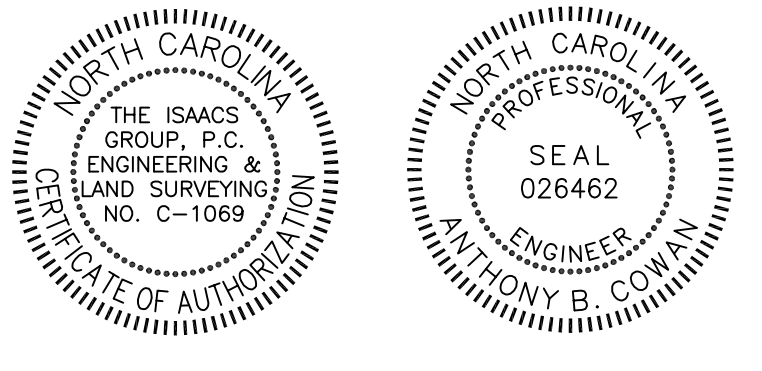
LEGEND

- EXISTING R/W
- PROPOSED R/W
- EXISTING WATER LINE
- EXISTING STORM DRAINAGE PIPE
- EXISTING EDGE OF PAVEMENT
- EXISTING OVERHEAD UTILITIES
- EXISTING FENCE
- PROP. STORM DRAINAGE PIPE
- 1.5" PAVEMENT OVERLAY
- PROPOSED PAVEMENT

NOTE:
THE TOPO PROVIDED BY THE PE CAN ONLY BE IN SUPPORT OF THE PE'S PROJECT AND CANNOT BE ISSUED TO BE RELIED UPON BY OTHERS. THE PE WILL BE TAKING RESPONSIBILITY FOR THE TOPO AS IT IMPACTS THE PROJECT UNDER THE PE LICENSE.

- NCDOT NOTES:**
- ALL WORK TO BE DONE ON EXISTING NCDOT MAINTAINED STREETS SHALL REQUIRE NCDOT ENCROACHMENT/ACCESS APPLICATIONS, SUBMITTED TO THE CITY/COUNTY ENGINEER AND APPROVED BY NCDOT.
 - ALL PAVEMENT JOINTS ASSOCIATED WITH THE WIDENING OF WEDDINGTON-MATTHEWS ROAD TO BE SAW CUT AND MILLED FOR FLUSH TRANSITION.
 - ALL PROPOSED IMPROVEMENTS ON NCDOT ROADS TO BE PERFORMED IN ACCORDANCE WITH NCDOT STANDARDS.
 - SEE SHEET C7.1 & C7.4 FOR EROSION CONTROL MEASURES.

100.00 (PROP. GRADE EL.)
98.87 (EX. GROUND EL.)



NO.	BY	DATE	REVISION

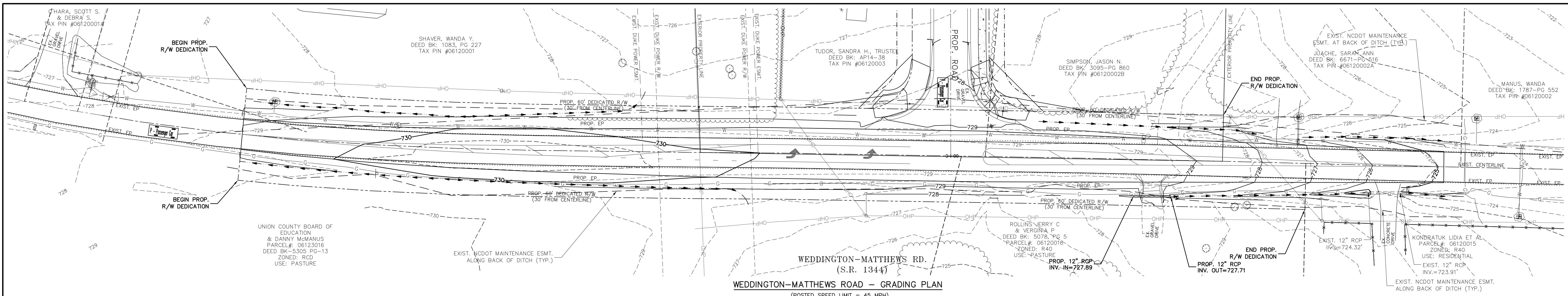
Project: WEDDINGTON MATTHEWS RD. DEV.
WEDDINGTON, NORTH CAROLINA

Title: WEDDINGTON-MATTHEWS ROAD IMPROVEMENTS PLAN

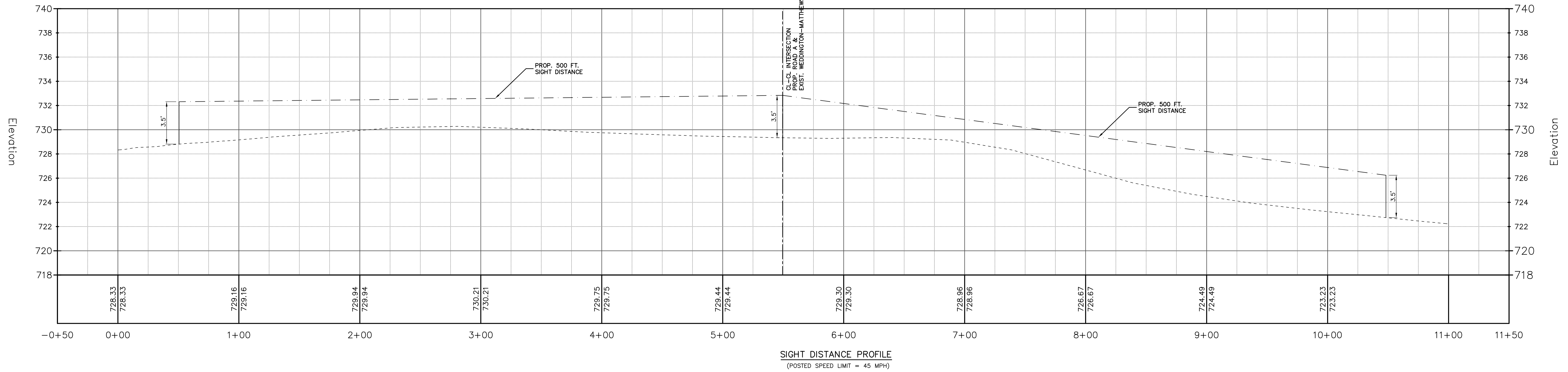
File #: 16157-RLDWS Date: 07/03/17 Project Egr: ABC
 Design By: ABC
 Drawn By: AEN
 Scale: 1"=30'

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 CHARLOTTE, N.C. 28217
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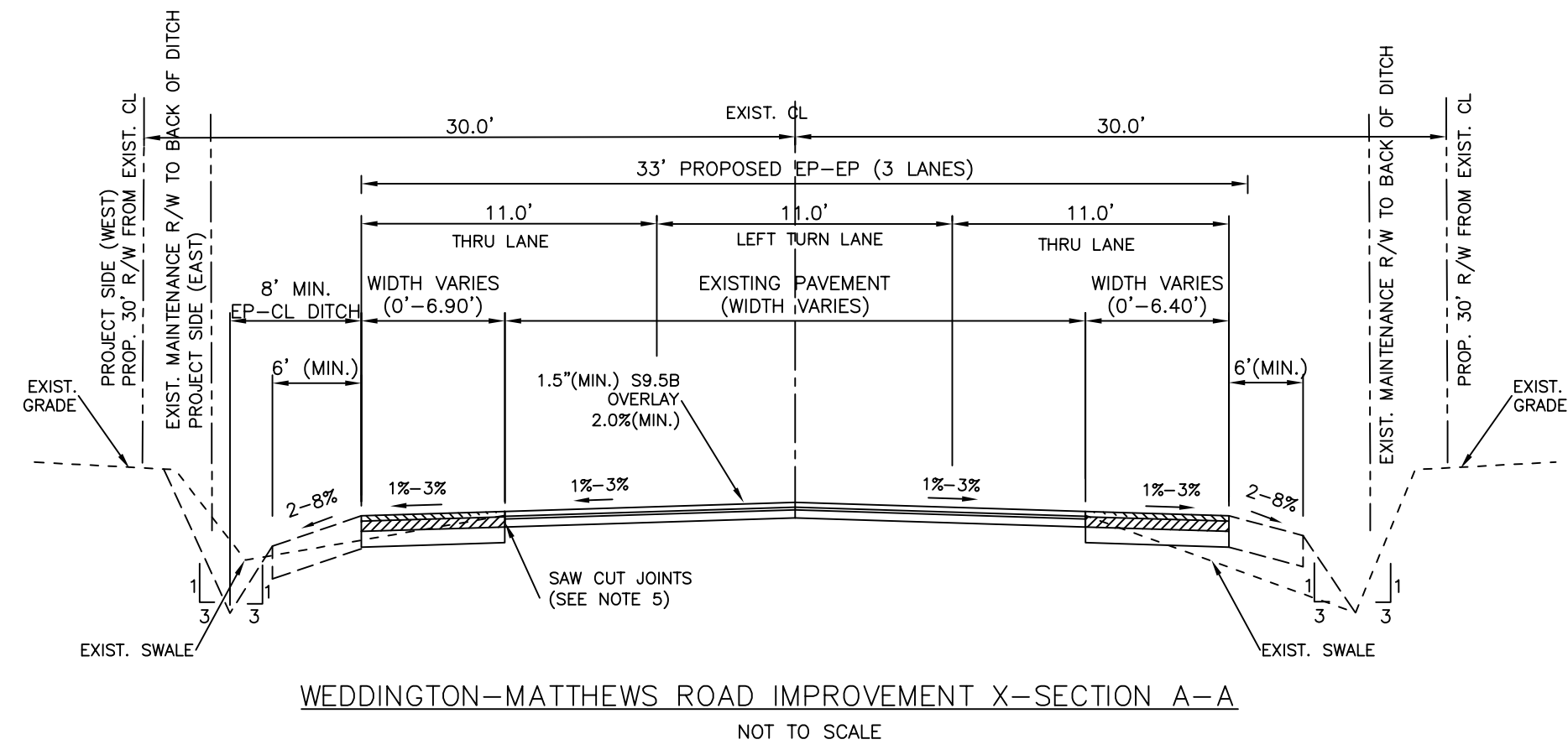
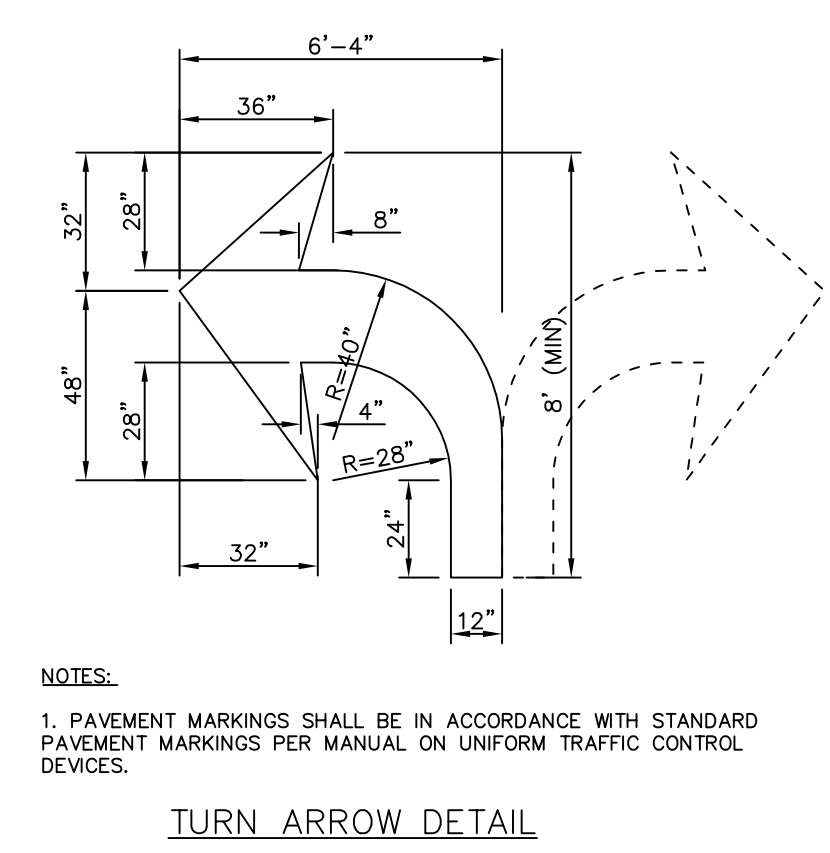
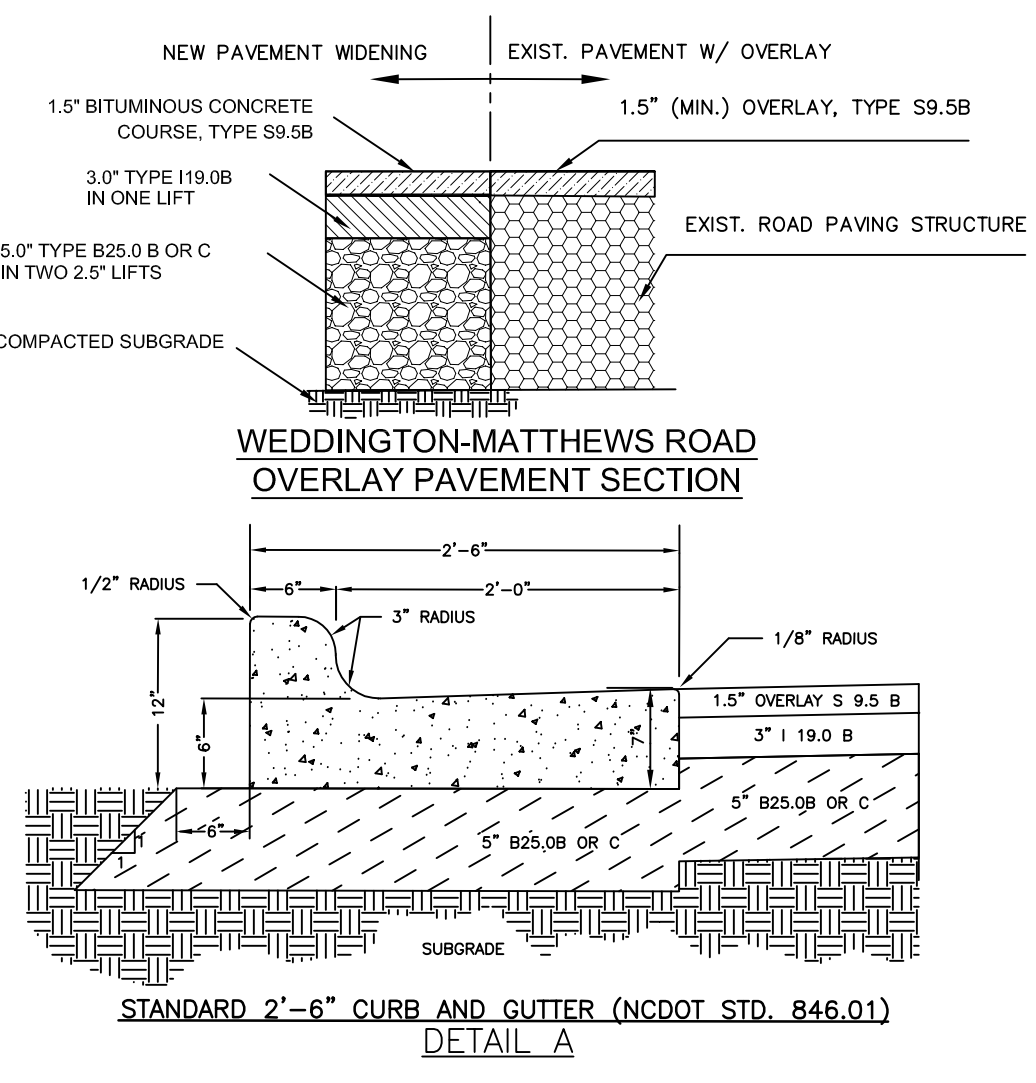
C2.0



WEDDINGTON-MATTHEWS ROAD - GRADING PLAN
(POSTED SPEED LIMIT = 45 MPH)



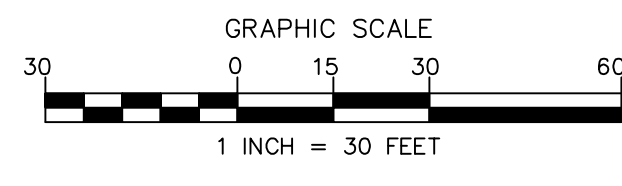
SIGHT DISTANCE PROFILE
(POSTED SPEED LIMIT = 45 MPH)



NOTE: THE TOPO PROVIDED BY THE PE CAN ONLY BE IN SUPPORT OF THE PE'S PROJECT AND CANNOT BE ISSUED TO BE RELIED UPON BY OTHERS. THE PE WILL BE TAKING RESPONSIBILITY FOR THE TOPO AS IT IMPACTS THE PROJECT UNDER THE PE LICENSE.

LEGEND

- EXISTING R/W
- - - - - PROPOSED R/W
- - - - - EXISTING WATER LINE
- - - - - EXISTING STORM DRAINAGE PIPE
- - - - - EXISTING EDGE OF PAVEMENT
- - - - - EXISTING OVERHEAD UTILITIES
- - - - - EXISTING FENCE
- - - - - PROP. STORM DRAINAGE PIPE



WEDDINGTON-MATTHEWS RD. DEV.
WEDDINGTON, NORTH CAROLINA

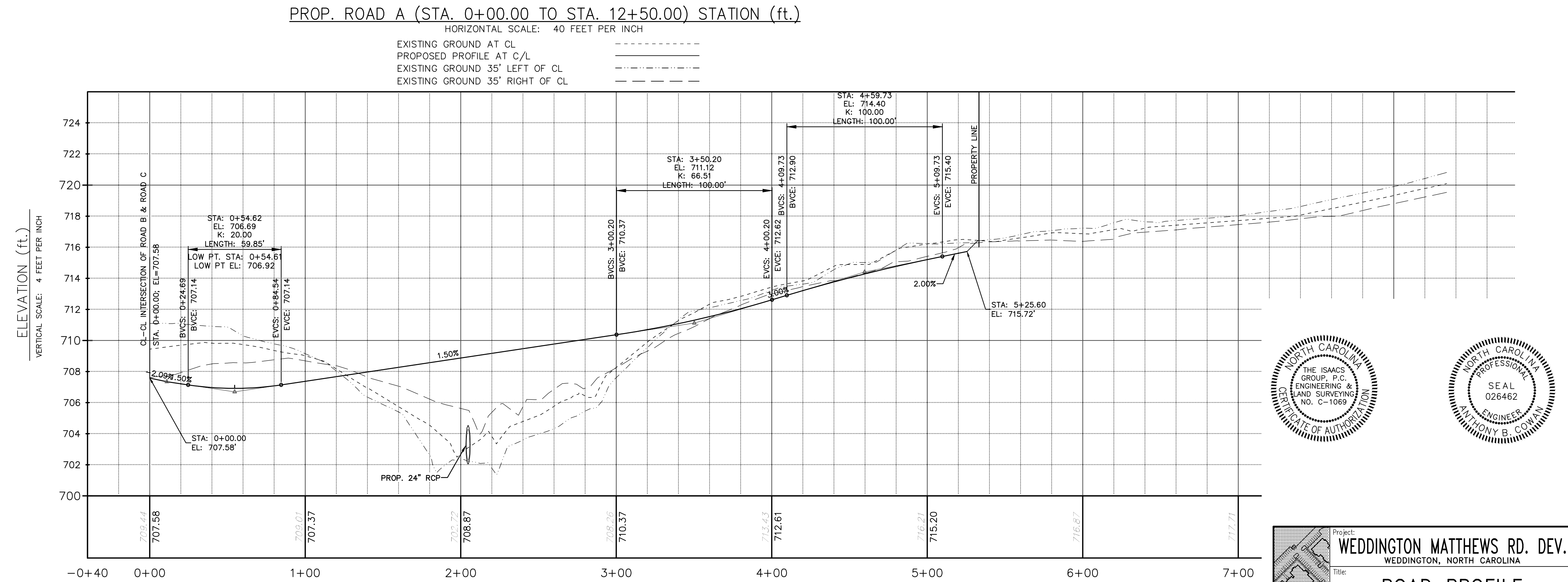
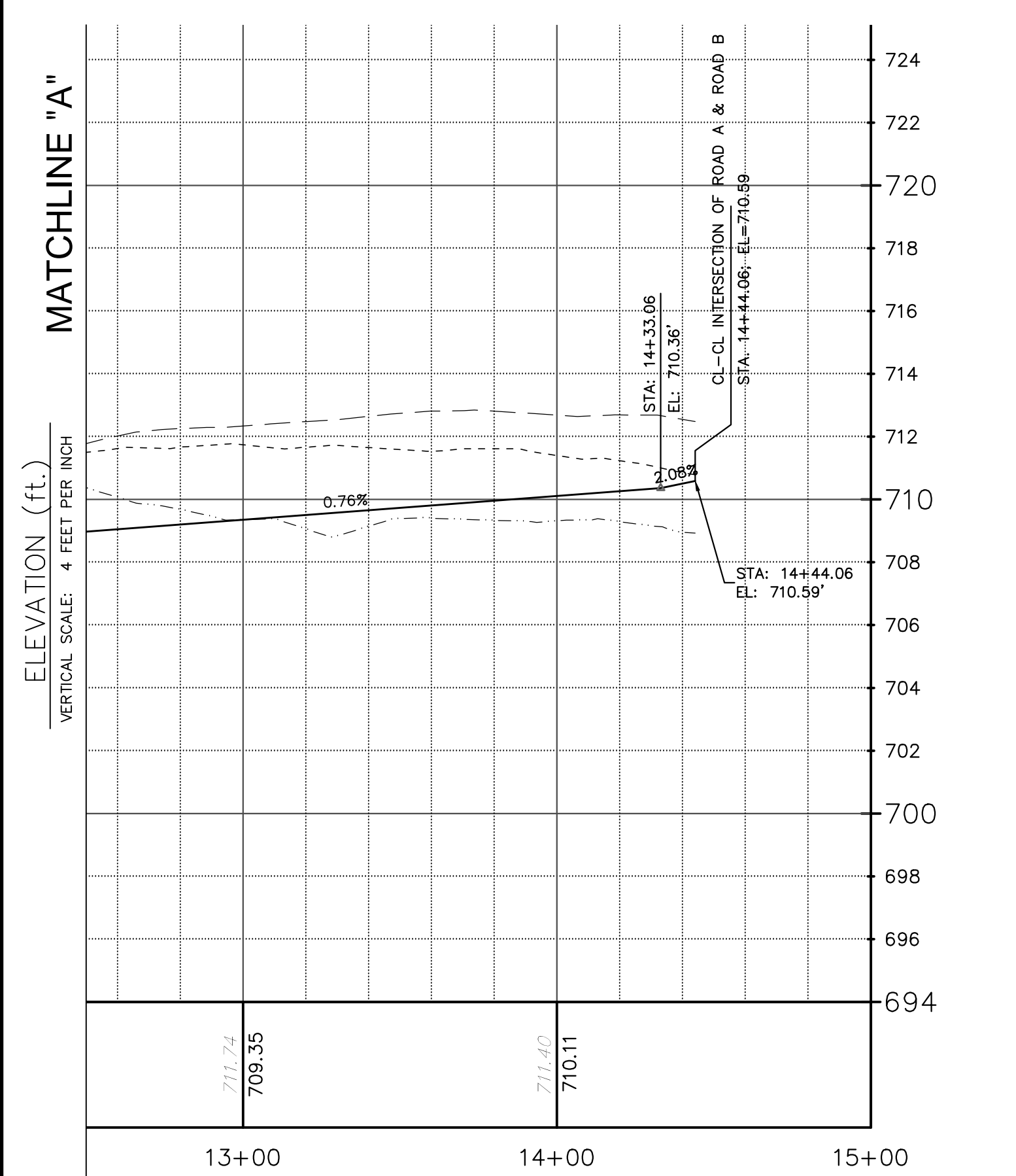
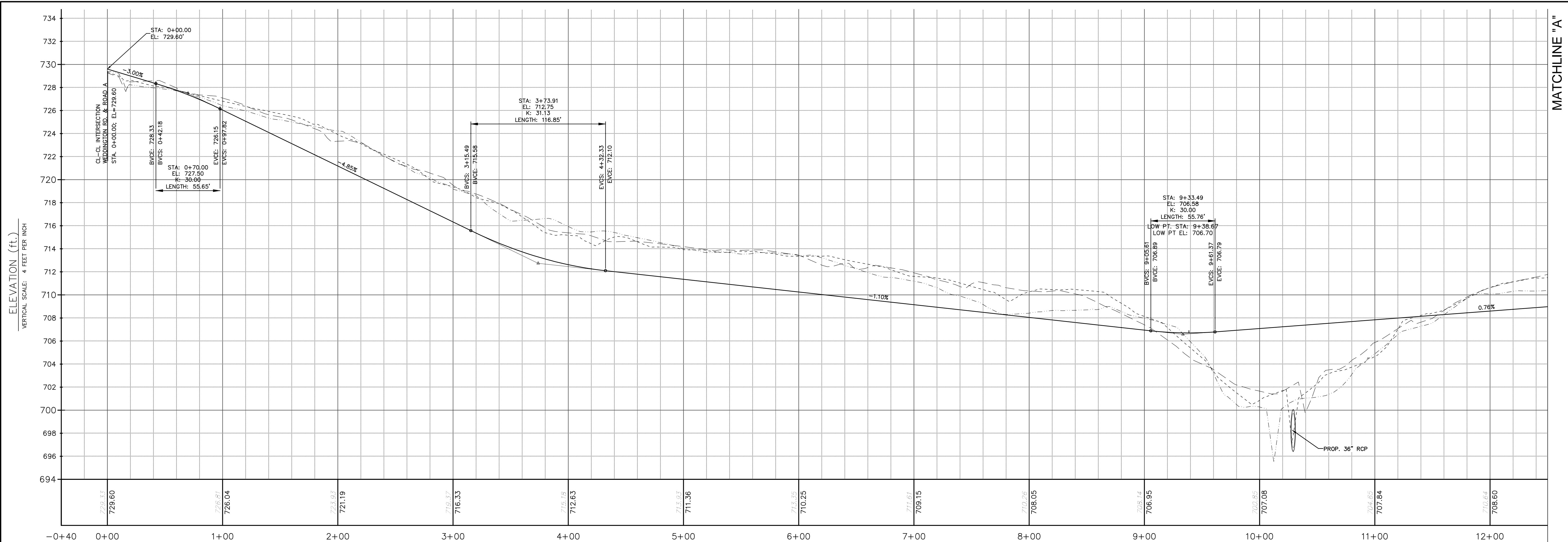
WEDDINGTON-MATTHEWS ROAD IMPROVEMENTS PLAN

File #: 16157-RLDWG Date: 07/03/17 Project Egr: ABC
 Design By: ABC
 Drawn By: AEN
 Scale: 1"=30'

THE ISAACS GROUP
CIVIL ENGINEERING DESIGN AND SURVEYING

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C2.1



PROPR. ROAD A (STA. 12+50.00 TO STA. 14+44.06) STATION (ft.)
 HORIZONTAL SCALE: 40 FEET PER INCH

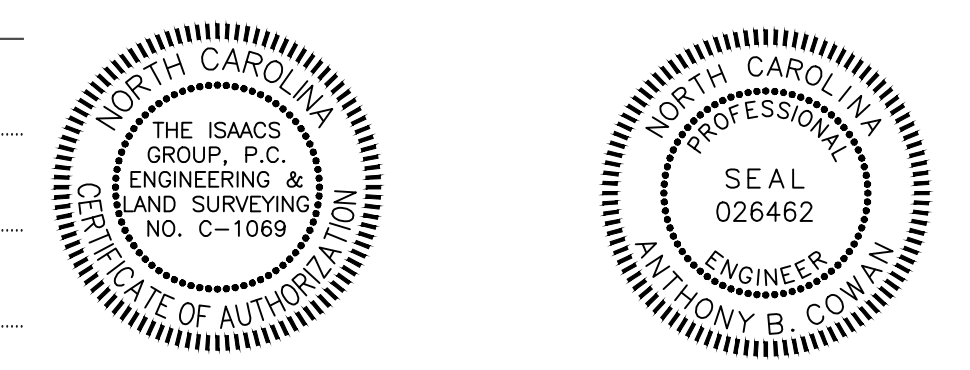
EXISTING GROUND AT CL: - - - - -
 PROPOSED PROFILE AT C/L: ————
 EXISTING GROUND 35' LEFT OF CL: - · - · -
 EXISTING GROUND 35' RIGHT OF CL: - · - · -

PROPR. ROAD C (STA. 0+00.00 TO STA. 5+25.60) STATION (ft.)
 HORIZONTAL SCALE: 40 FEET PER INCH

EXISTING GROUND AT CL: - - - - -
 PROPOSED PROFILE AT C/L: ————
 EXISTING GROUND 35' LEFT OF CL: - · - · -
 EXISTING GROUND 35' RIGHT OF CL: - · - · -

GRAPHIC SCALE: 1 INCH = 40 FEET

NO.	BY	DATE	REVISION



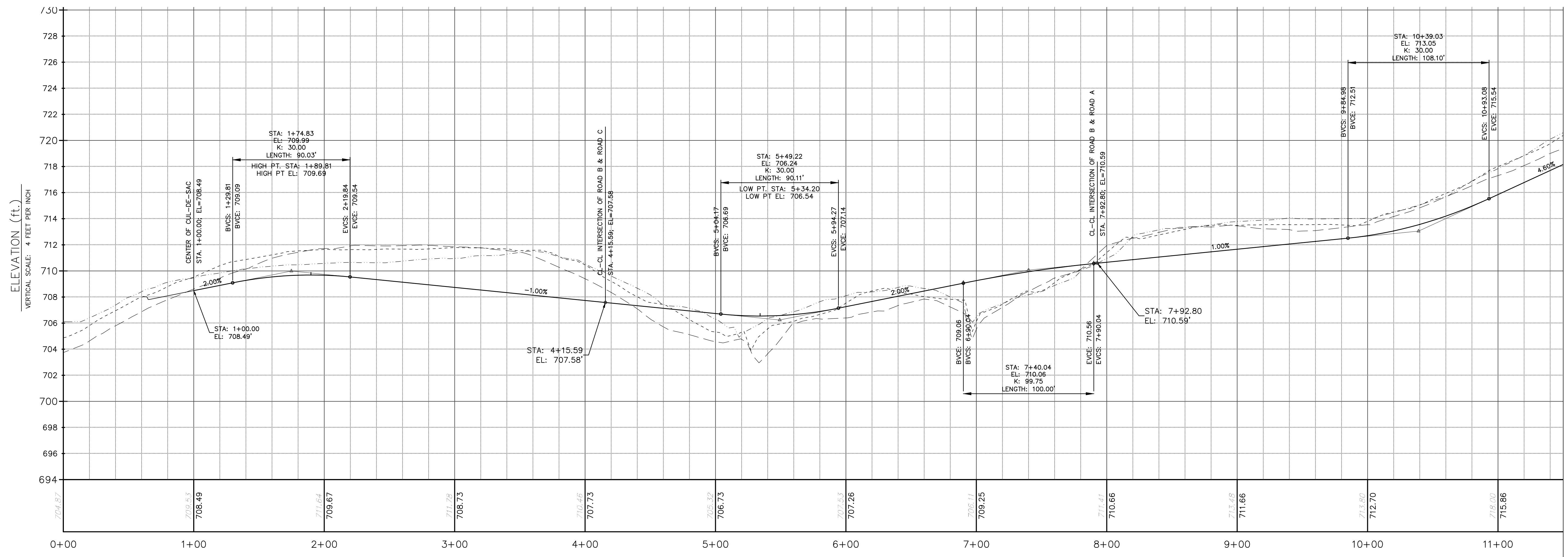
Project: **WEDDINGTON MATTHEWS RD. DEV.**
 WEDDINGTON, NORTH CAROLINA

Title: **ROAD PROFILE**

File #: 16157-RP.DWG | Date: 06/28/17 | Project Egr: ABC
 Design By: ABC
 Drawn By: RER
 Scale: 1"=40'

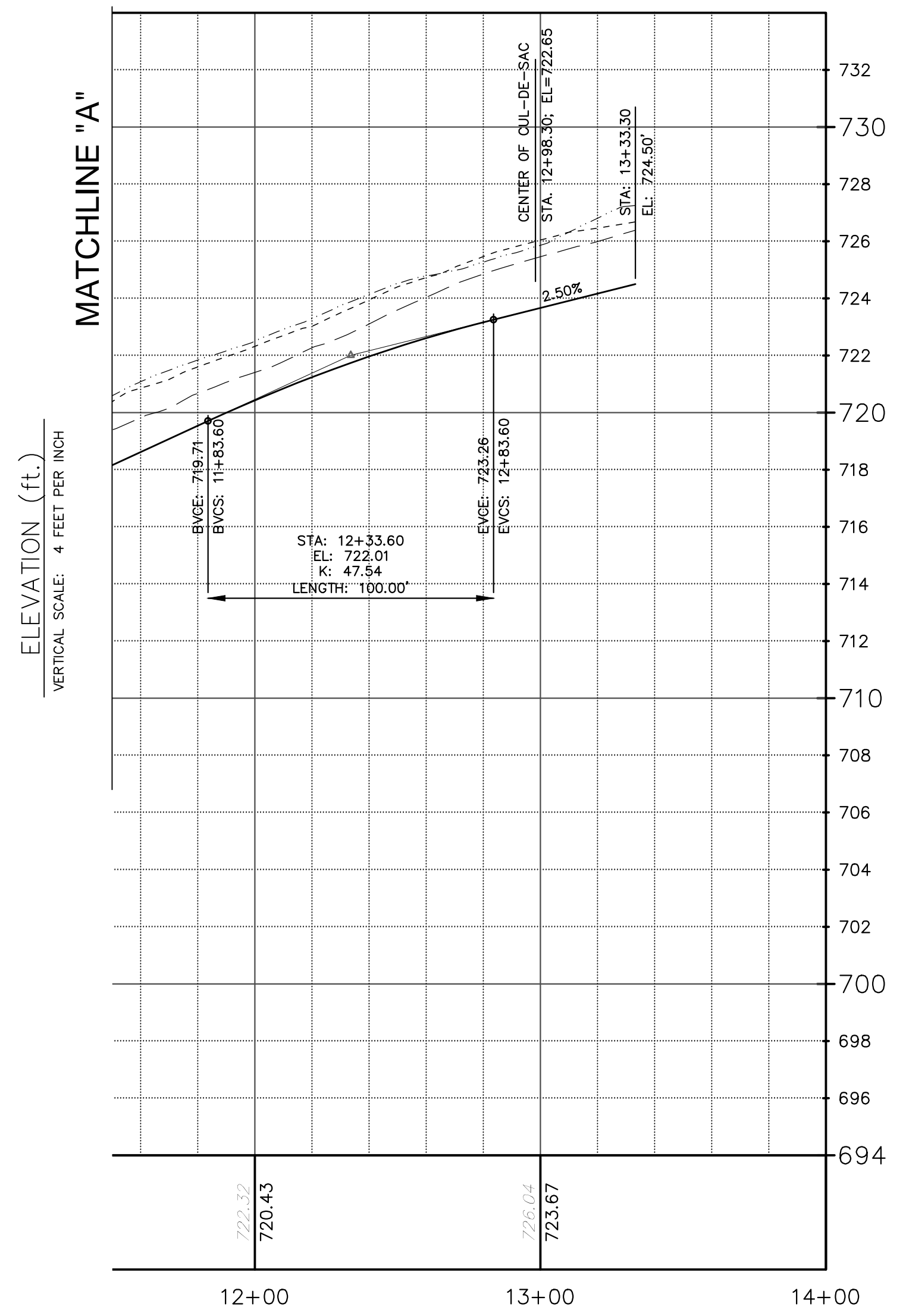
8720 RED OAK BOULEVARD, SUITE 420
 CHARLOTTE, N.C. 28217
 PHONE (704) 527-3440 FAX (704) 527-8335

C3.0



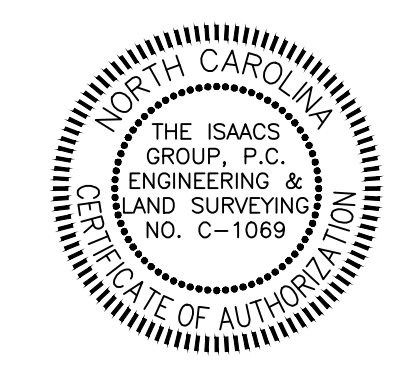
PROP. ROAD B (STA. 0+00.00 TO STA. 11+50.00) STATION (ft.)

HORIZONTAL SCALE: 40 FEET PER INCH
 EXISTING GROUND AT CL -----
 PROPOSED PROFILE AT C/L -----
 EXISTING GROUND 35' LEFT OF CL - - - - -
 EXISTING GROUND 35' RIGHT OF CL - - - - -

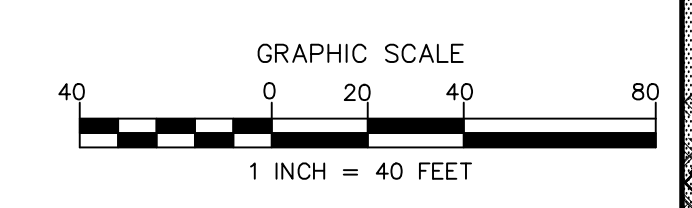


PROP. ROAD B (STA. 11+50.00 TO STA. 13+33.30) STATION (ft.)

HORIZONTAL SCALE: 40 FEET PER INCH
 EXISTING GROUND AT CL -----
 PROPOSED PROFILE AT C/L -----
 EXISTING GROUND 35' LEFT OF CL - - - - -
 EXISTING GROUND 35' RIGHT OF CL - - - - -



FINAL DRAWING
 FOR REVIEW PURPOSES ONLY



NO.	BY	DATE	REVISION

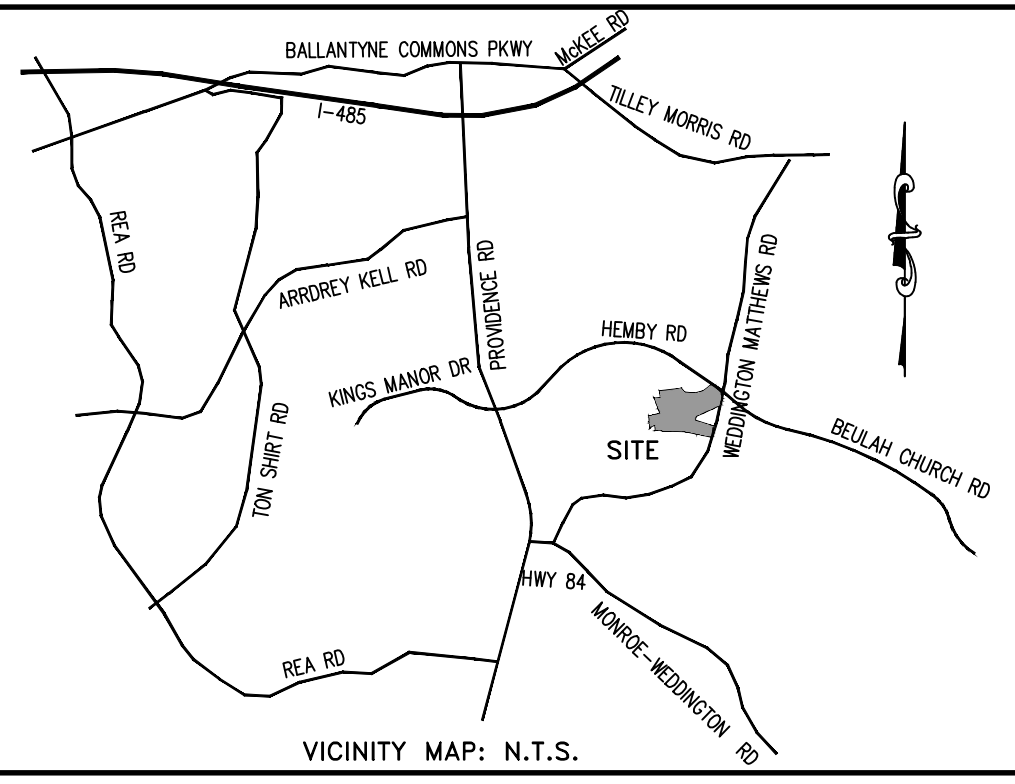
Project: **WEDDINGTON MATTHEWS RD. DEV.**
 WEDDINGTON, NORTH CAROLINA

Title: **ROAD PROFILE**

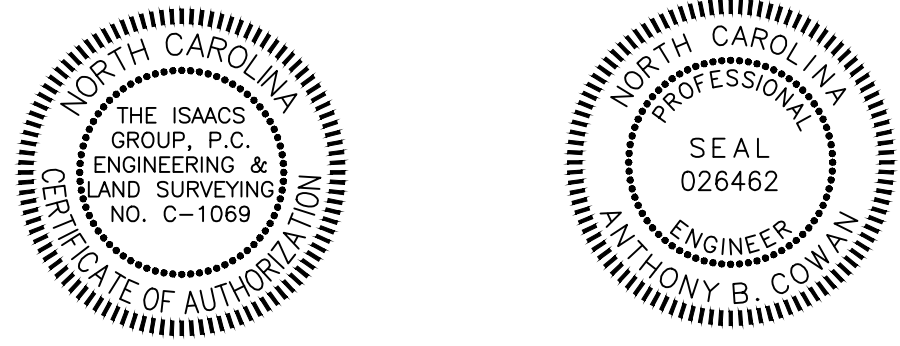
File #: 16157-RP.DWG | Date: 06/28/17 | Project Egr: ABC
 Design By: ABC
 Drawn By: BER
 Scale: 1"=40'

THE ISAACS GROUP, P.C.
 CIVIL ENGINEERING DESIGN AND SURVEYING
 8720 RED OAK BOULEVARD, SUITE 420
 CHARLOTTE, N.C. 28217
 PHONE (704) 527-3440 FAX (704) 527-8335

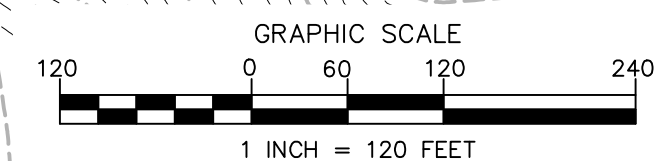
C3.1



- LEGEND**
- ELEV— EXISTING CONTOUR
 - OH/E— EXISTING OVERHEAD ELECTRICAL
 - ==== EXISTING STORM DRAINAGE PIPE
 - ==== EXISTING CREEK
 - ⊙ EXISTING SANITARY MANHOLE
 - ⊕ EXISTING FIRE HYDRANT
 - SS— EXISTING SEWER LINE
 - W— EXISTING WATER LINE
 - OHP— EXISTING OVERHEAD POWER
 - CATV— EXISTING UNDERGROUND CABLE TV
 - FOC— EXISTING FIBEROPTIC CABLE
 - G— EXISTING GAS LINE
 - UT— EXISTING UNDERGROUND TELEPHONE
 - EXISTING TREE LINE
 - PROP. SIDEWALK
 - SS— PROPOSED SEWER LINE
 - W— PROPOSED WATER LINE
 - PROPOSED MANHOLE
 - ⊕ PROPOSED FIRE HYDRANT



FINAL DRAWING
FOR REVIEW PURPOSES ONLY



Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **OVERALL GRADING PLAN/
CONTEXT MAP**

File #: 16157-0P.DWG Date: 06/28/17 Project Egr: ABC

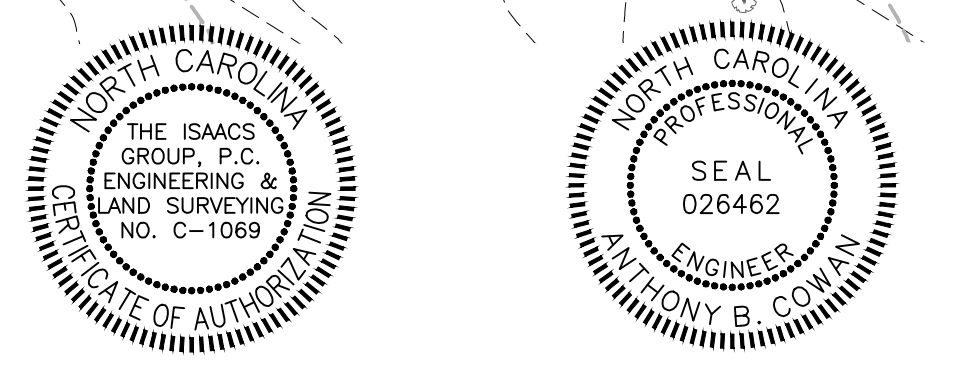
THE ISAACS GROUP, P.C.
CIVIL ENGINEERING DESIGN AND SURVEYING
Scale: 1"=120'

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C4.0

NO.	BY	DATE	REVISION

P:\Active Projects\Hopper Communities\Weddington Matthews Rd Dev. 16157\Engineering\Design Drawings\Curent\Sheets\16157-GP.dwg, C4.0, 7/3/2017 4:32:41 PM, rlv016, 1.1



FINAL DRAWING
FOR REVIEW PURPOSES ONLY

GRAPHIC SCALE
0 25 50 100
1 INCH = 50 FEET

NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **GRADING PLAN**

File #: 16157-GP-DWG Date: 06/28/17 Project Egr: ABC

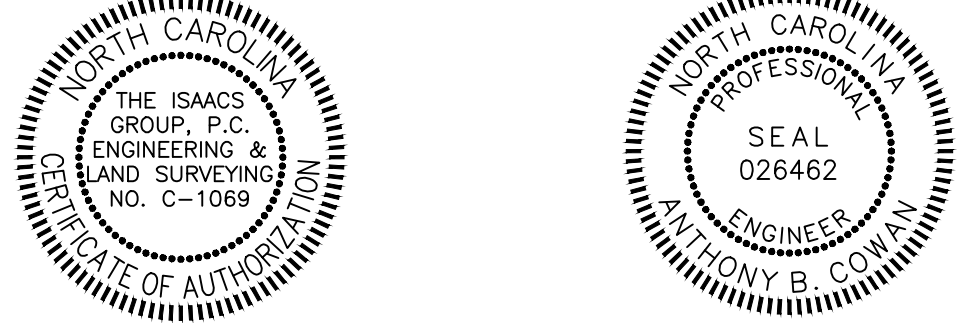
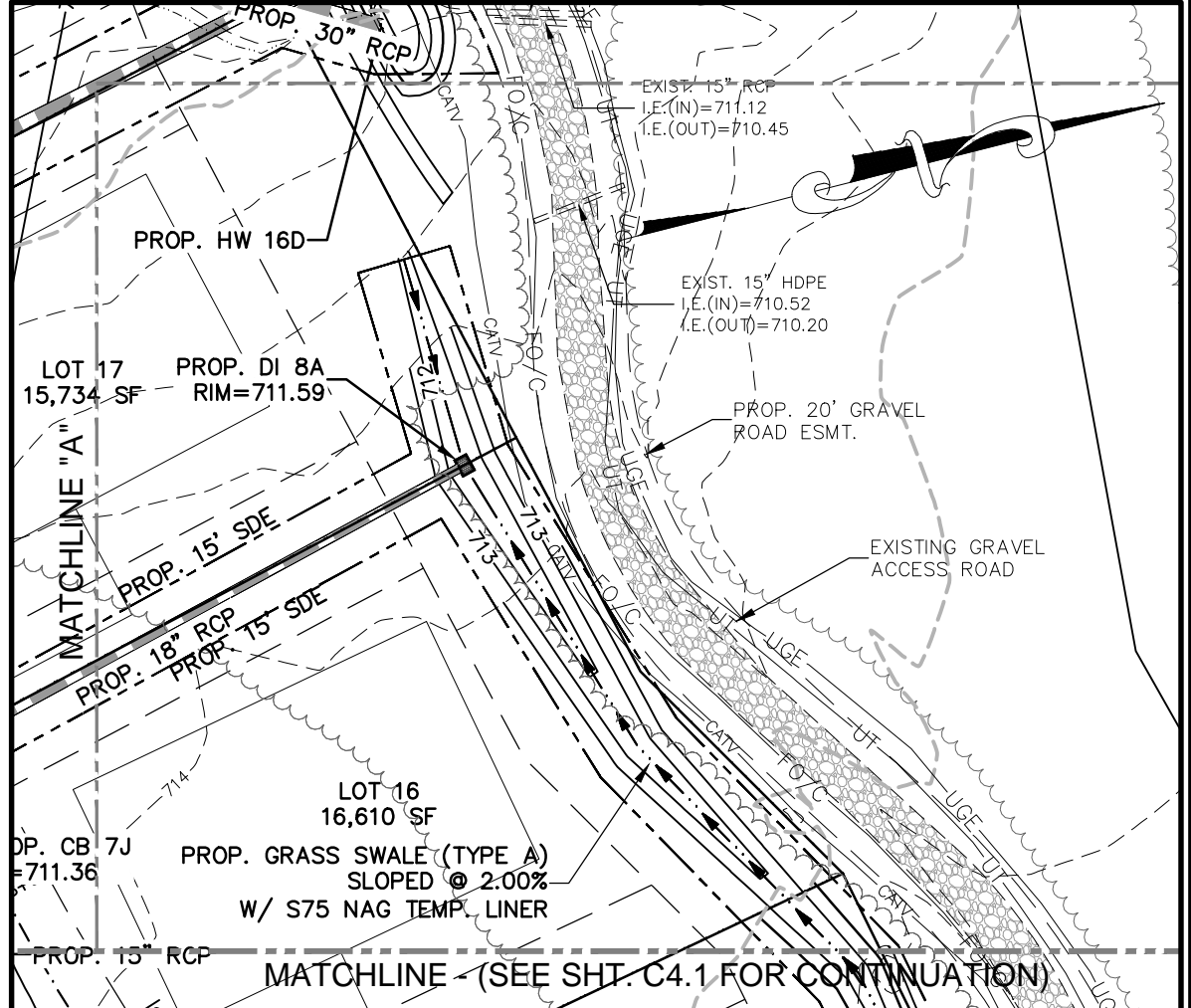
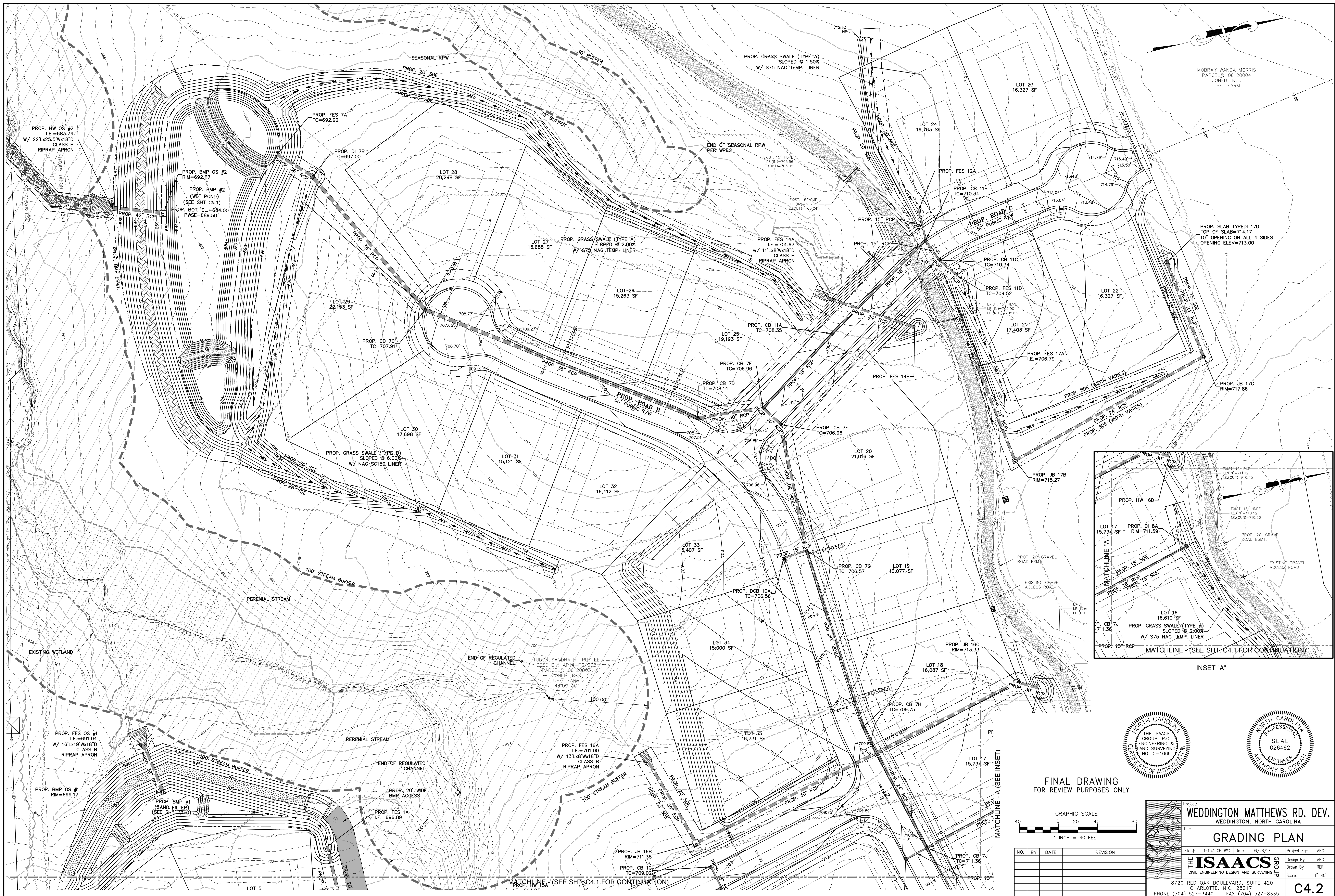
Design By: ABC
Drawn By: BER
Scale: 1"=40'

8720 RED OAK BOULEVARD, SUITE 420
CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

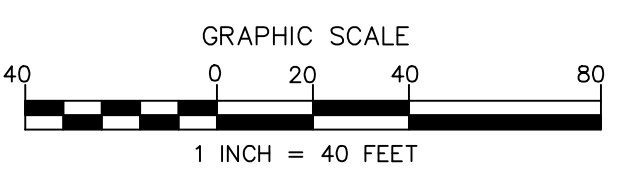
ISAACS
CIVIL ENGINEERING DESIGN AND SURVEYING

C4.1

P:\Active Projects\Popper Communities\Weddington-Matthews Rd Dev 16157\Engineering\Design Drawings\Current\SHEETS\16157-GP-Avg_C4.1_7/20/17 11:50:47 AM.rvt(16157)



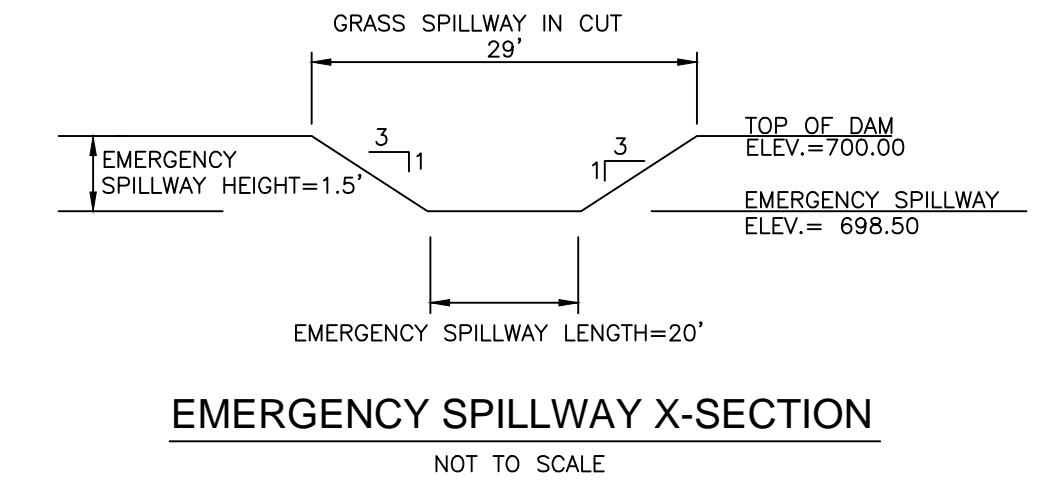
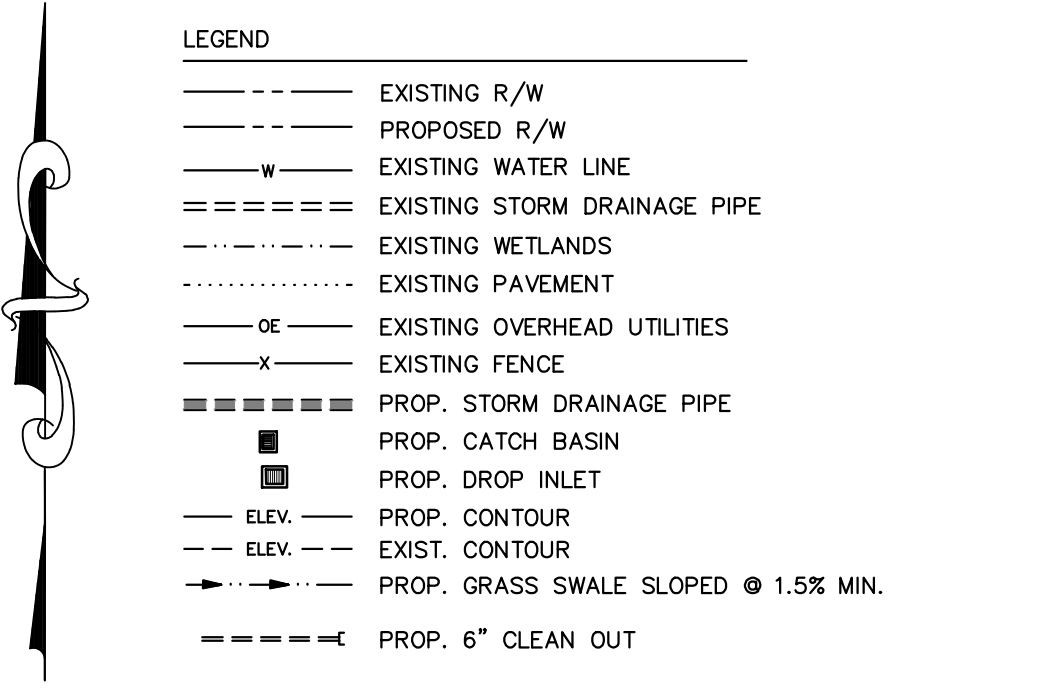
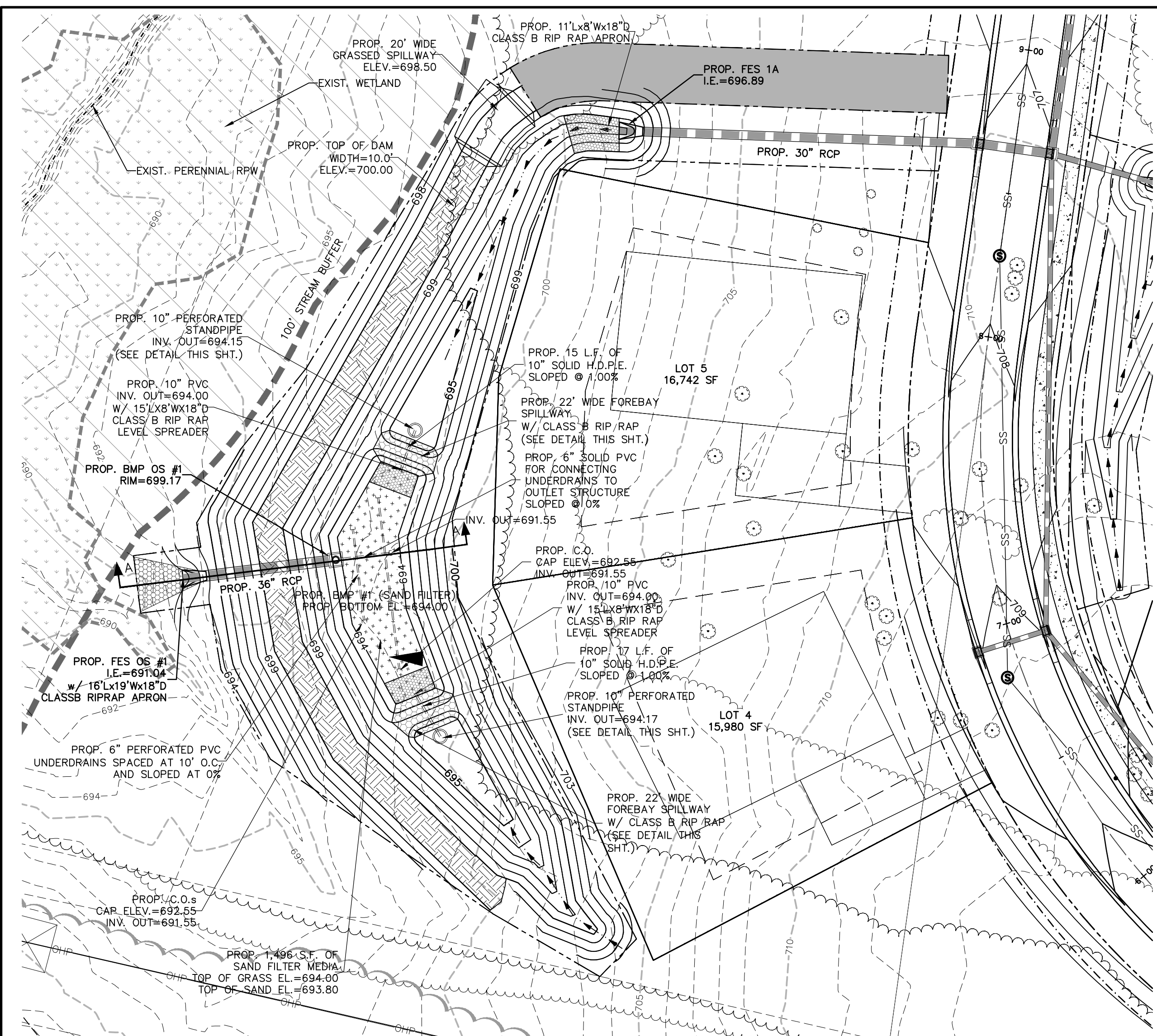
FINAL DRAWING FOR REVIEW PURPOSES ONLY



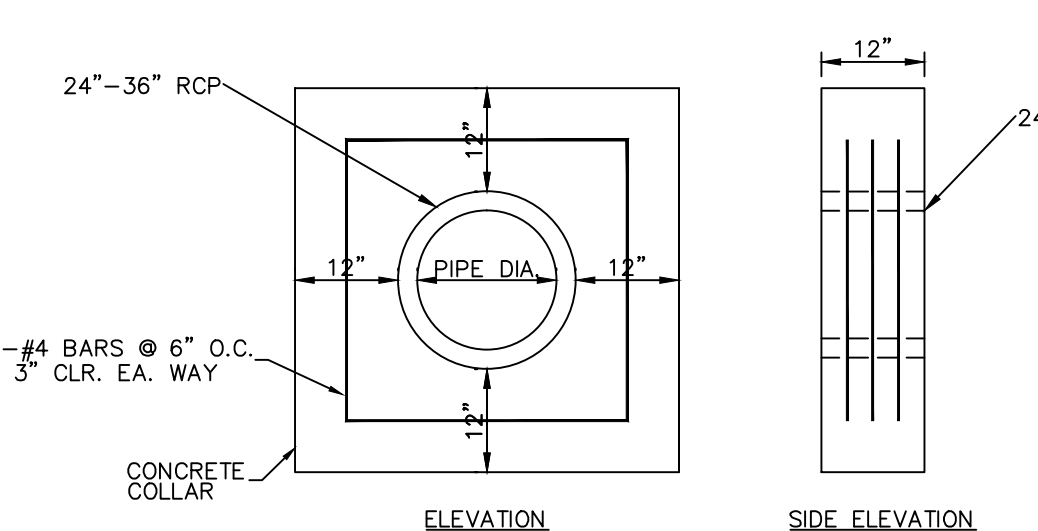
NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
 WEDDINGTON, NORTH CAROLINA
GRADING PLAN
 File #: 16157-GP-DWG Date: 06/28/17 Project Egr: ABC
 Design By: ABC
 Drawn By: BER
 Scale: 1"=40'
 8720 RED OAK BOULEVARD, SUITE 420
 CHARLOTTE, N.C. 28217
 PHONE (704) 527-3440 FAX (704) 527-8335

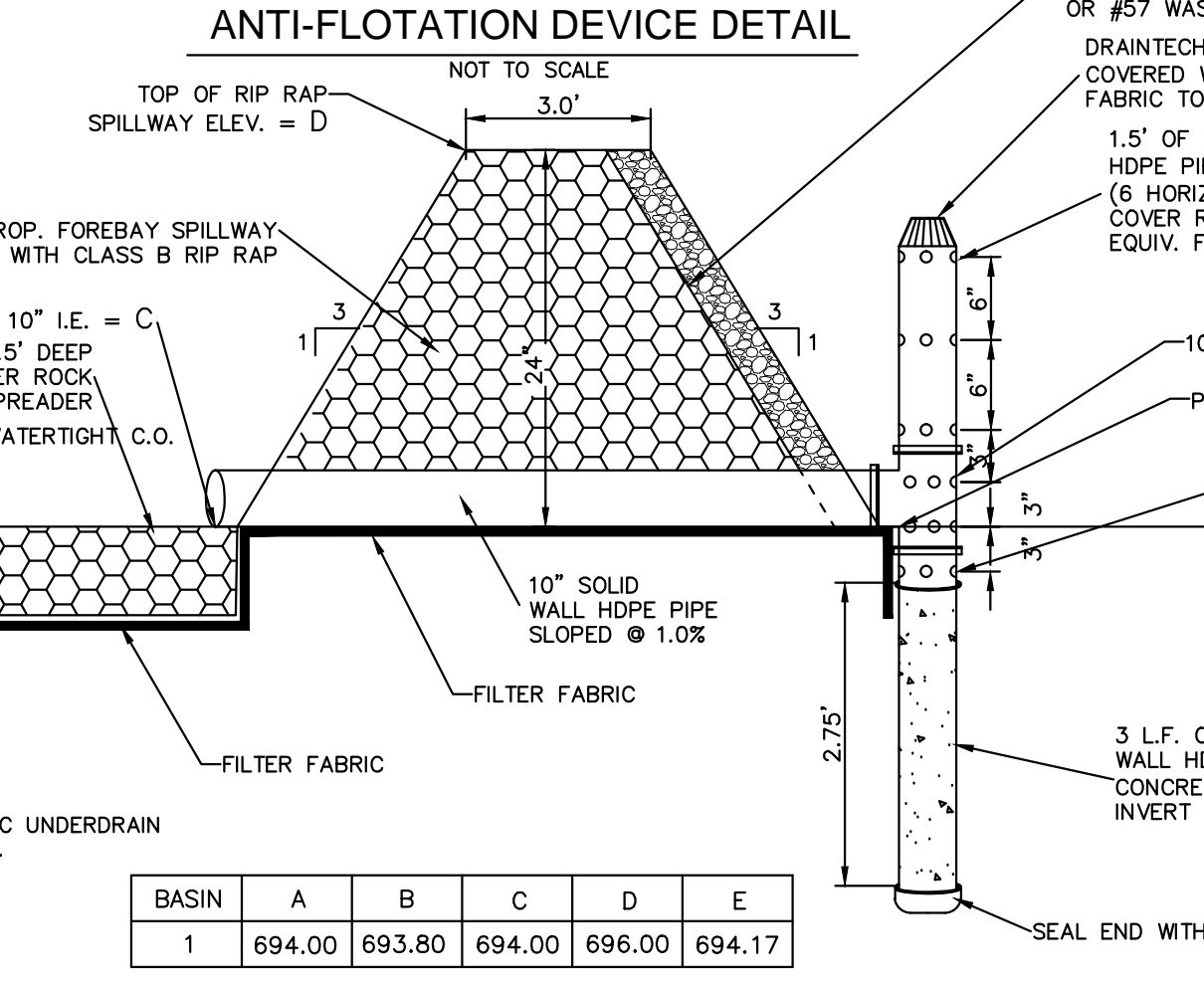
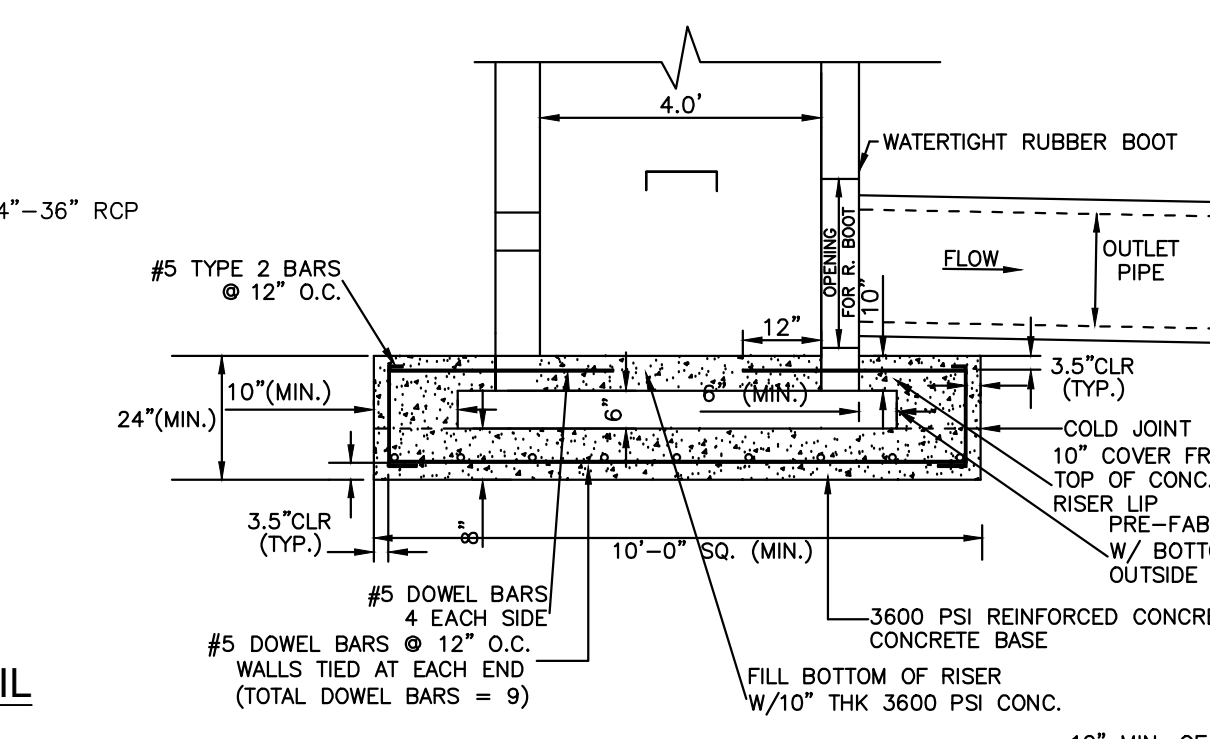
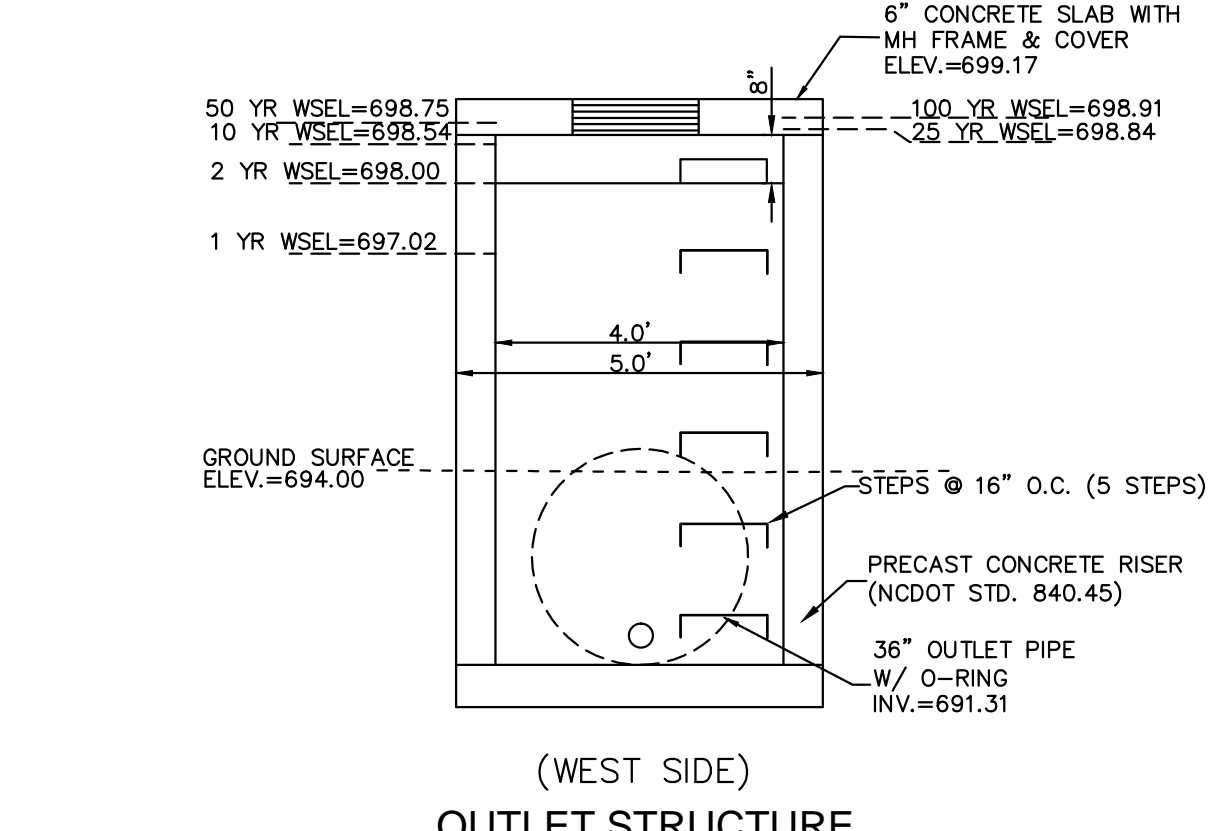
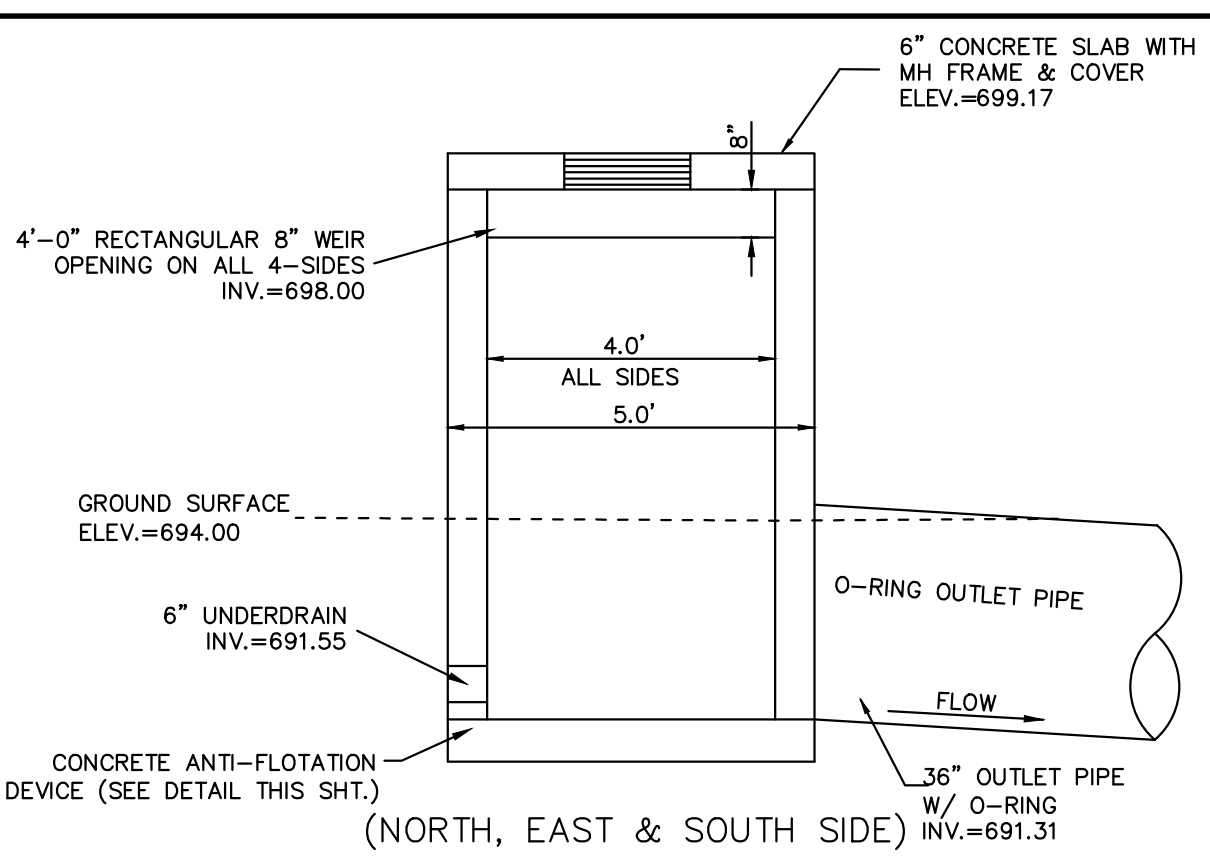
C4.2



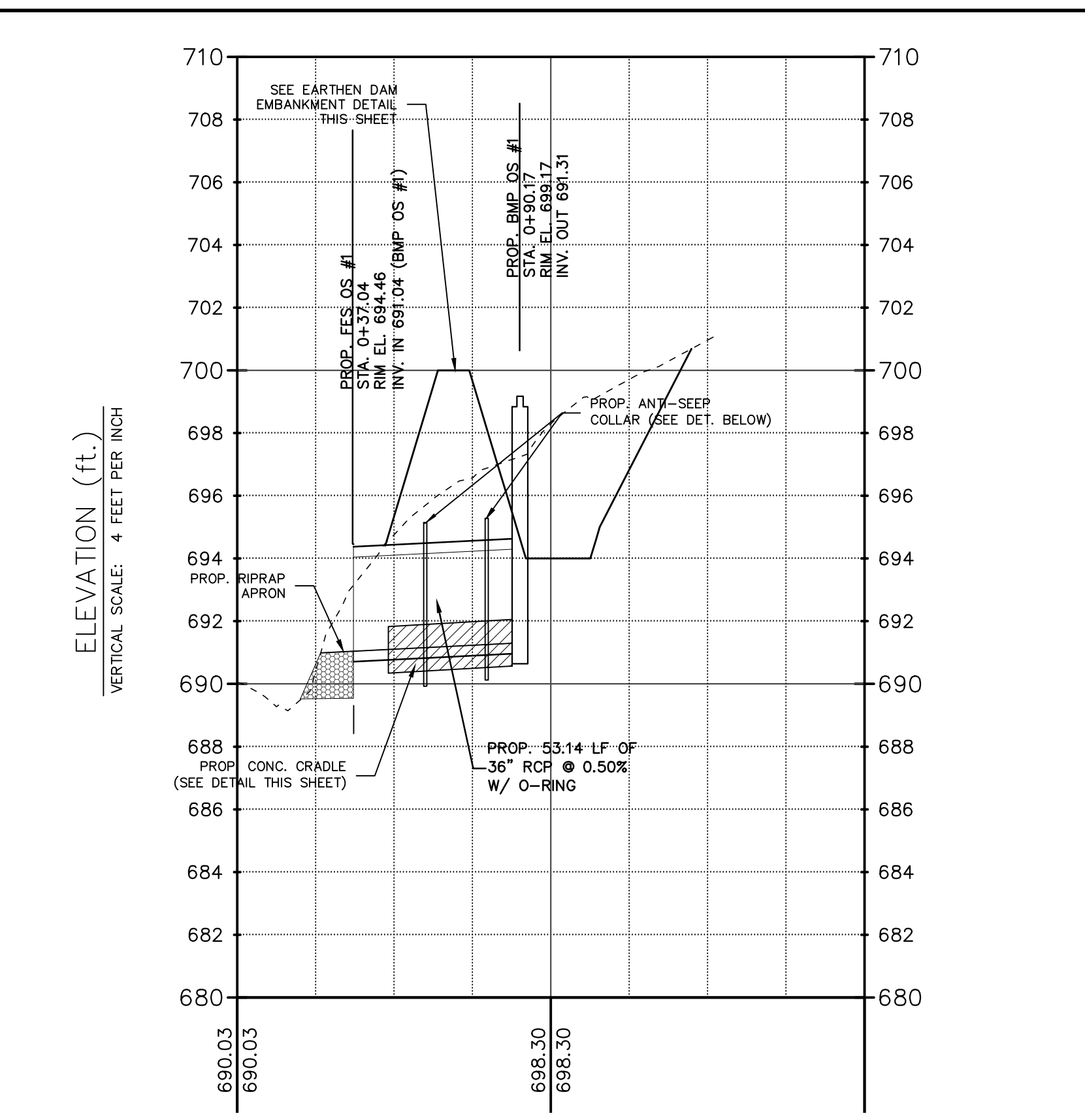
- GENERAL NOTES:**
1. SEE CONCRETE BARREL AND RISER SPECIFICATIONS (THIS SHEET)
 2. ALL SOIL UNDERLYING AND ADJACENT TO RISER AND FOOTING TO BE COMPACTED TO 98% MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 (STANDARD PROCTOR) UNDER THE DIRECTION OF THE GEOTECHNICAL ENGINEER.
 3. WATERTIGHT RUBBER BOOTS TO MEET THE ASTM C923-84 STANDARD SPECIFICATIONS FOR RESILIENT CONNECTORS BETWEEN REINFORCED CONCRETE MANHOLE STRUCTURES AND PIPES.
 4. POND TO BE EXCAVATED AN ADDITIONAL 0.5' BELOW PERMANENT POND BOTTOM TO ALLOW FOR SEDIMENT STORAGE.
 5. SEE C5.2 FOR DAM CONSTRUCTION SPECIFICATIONS.



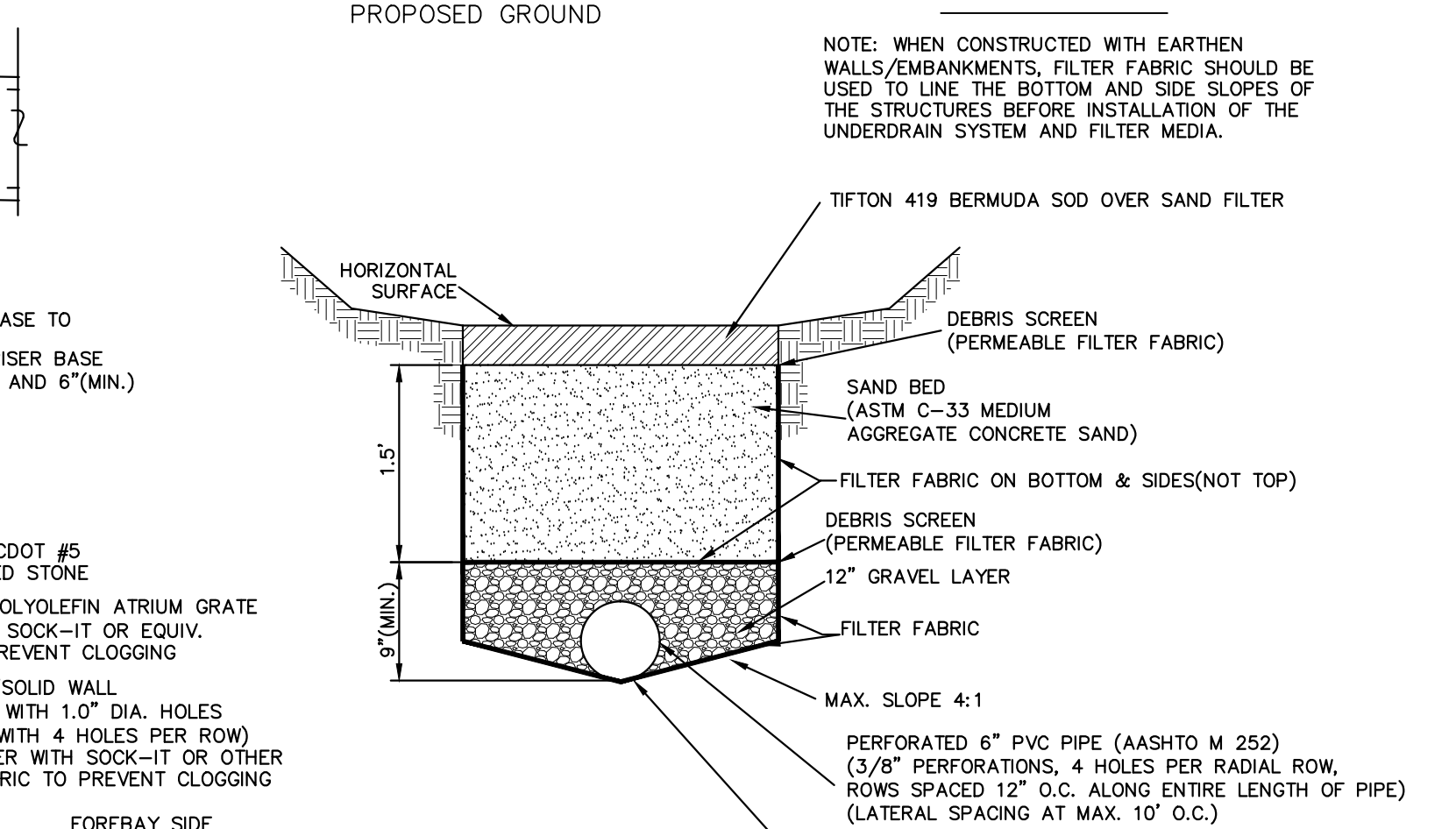
CONCRETE ANTI-SEEP COLLAR TYPICAL DETAIL
N.T.S.



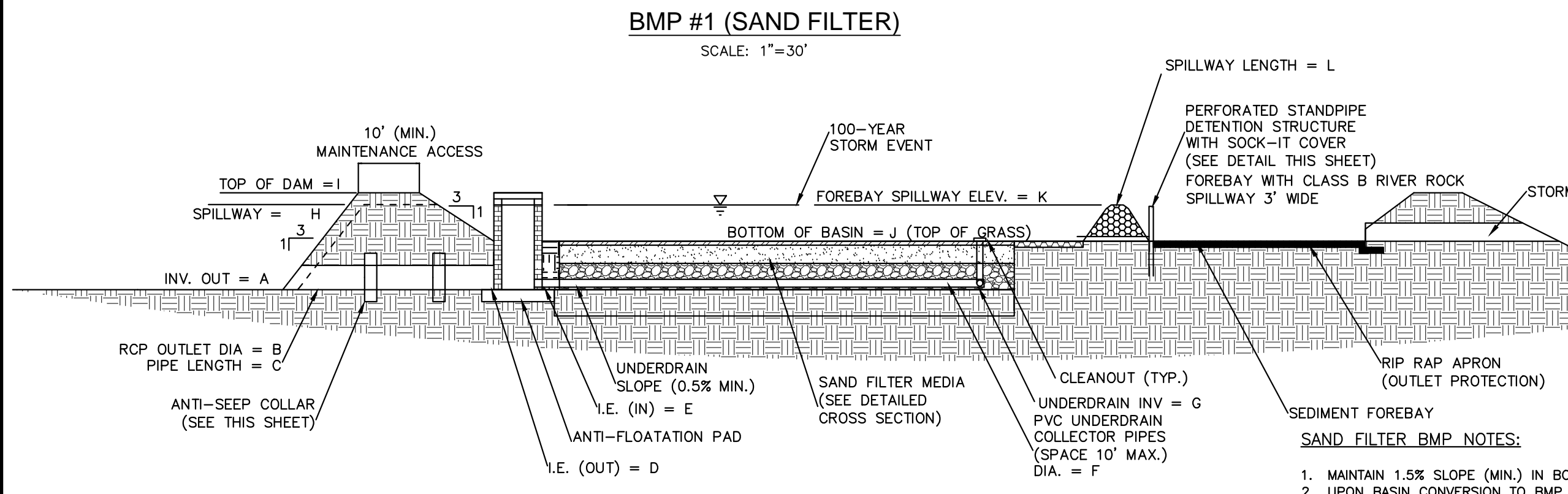
BMP (SAND FILTER) FOREBAY BERM DETAIL



BMP #1 OUTLET PIPE PROFILE
HORIZONTAL SCALE: 40 FEET PER INCH

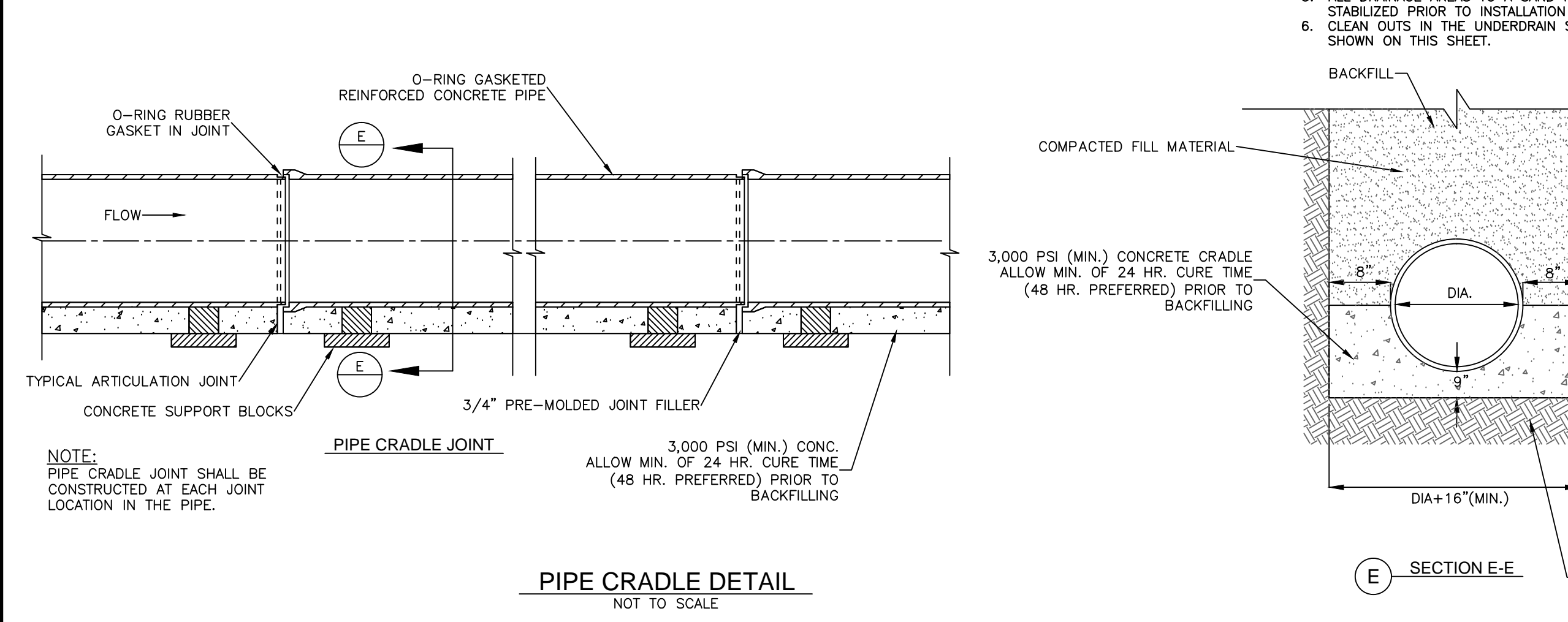


SAND FILTER MEDIA SECTION



BMP	A	B	C	D	E	F	G	H	I	J	K	L
#1	691.04	36"	53.14'	691.31	691.55	6"	691.55	698.50	700.00	694.00	696.00	22'

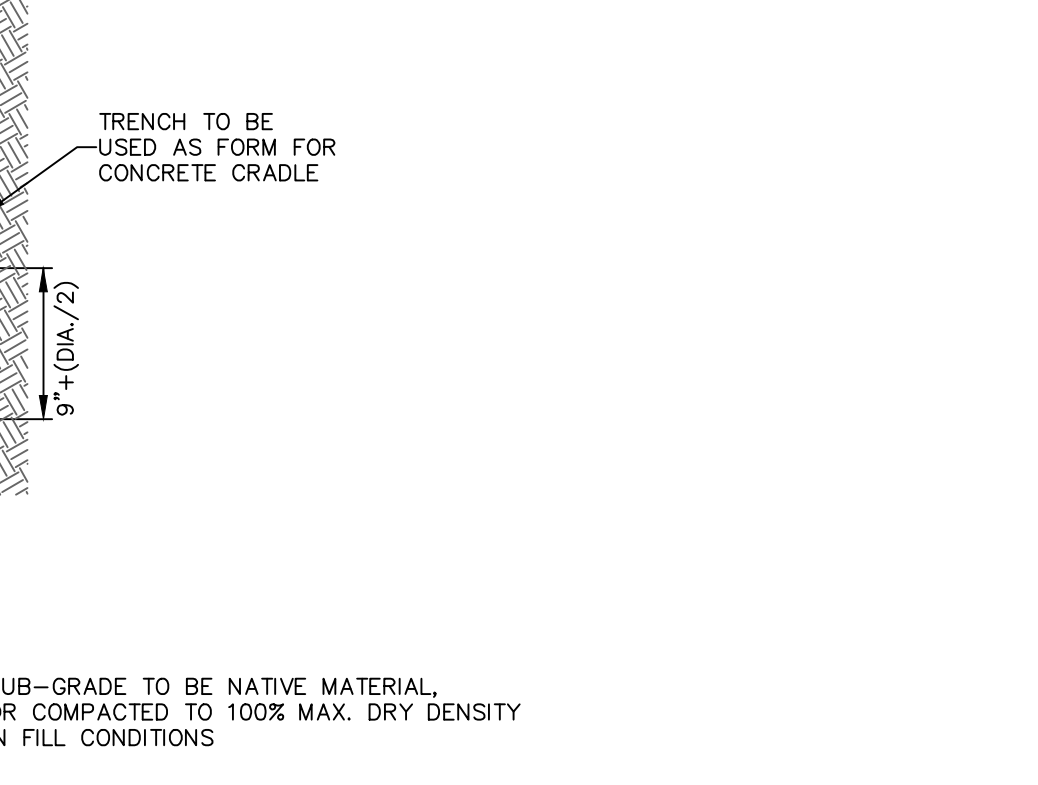
BEST MANAGEMENT PRACTICES SAND FILTER / DETENTION POND DETAILS



PIPE CRADLE DETAIL
NOT TO SCALE

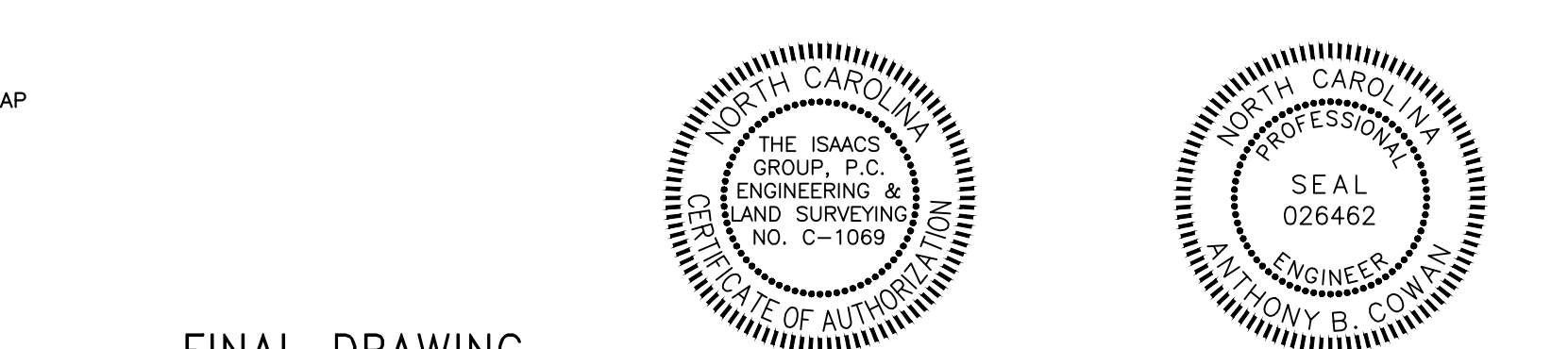
- SAND FILTER BMP NOTES:**
1. MAINTAIN 1.5% SLOPE (MIN.) IN BOTTOM OF BASIN TO SAND FILTER
 2. UPON BASIN CONVERSION TO BMP, SOD BOTTOM OF BASIN (EXCLUDING SAND FILTER), SIDE SLOPES (UP TO 5' DEPTH), AND EMERGENCY SPILLWAY WITH TIFTON 419 BERMUDA GRASS.
 3. SOD USED SHALL BE GROWN ON SANDY SOIL (NOT CLAY).
 4. ALL SAND FILTERS SHALL HAVE A MINIMUM 20 FOOT ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY. ACCESS ROAD SHALL HAVE MIN. 12' STABILIZED WIDTH, MAX. LONG. GRADE OF 15% MAX. CROSS-SLOPE 5% IN ADDITION, A 10'-FOOT WIDE PERMANENT MAINTENANCE ACCESS EASEMENT MUST BE PROVIDED AROUND THE PERIMETER OF ALL BMPs TO ALLOW FOR ADEQUATE MAINTENANCE AND REPAIR.
 5. ALL DRAINAGE AREAS TO A SAND FILTER FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF SAND.
 6. CLEAN OUTS IN THE UNDERDRAIN SYSTEM ARE TO BE PROVIDED AS SHOWN ON THIS SHEET.

BASIN	A	B	C	D	E
1	694.00	693.80	694.00	696.00	694.17



SECTION E-E
SUB-GRADE TO BE NATIVE MATERIAL, OR COMPACTED TO 100% MAX. DRY DENSITY IN FILL CONDITIONS

- DESIGN REQUIREMENTS:**
1. THE TOP OF THE SAND FILTER MEDIA MUST BE PROTECTED WITH A DEBRIS SCREEN (TIFTON 419 SOD OR #5 WASHED STONE)
- MAINTENANCE CONSIDERATIONS:**
1. INSPECT FOR CLOGGING - RAKE DEBRIS SCREEN AND FIRST INCH OF SAND.
 2. REMOVE SEDIMENT FROM FOREBAY/CHAMBER WHEN MORE THAN 1 FOOT OF STORAGE IS LOST.
 3. SEDIMENT, TOPSOIL, AND 3 INCHES OF FILTER MATERIAL MUST BE REMOVED AFTER THE ALLOWABLE DRAWDOWN TIME IS EXCEEDED BY 25 PERCENT.
 4. ENTIRE FILTER MATERIAL AND UNDERDRAIN SYSTEM MUST BE REPLACED IF REMOVAL OF 3 INCHES OF MEDIA DOES NOT RESTORE FILTRATION RATE.
- ANNUAL INSPECTIONS:**
- OWNER SHALL SUBMIT AN ANNUAL INSPECTION REPORT TO THE STORM WATER ADMINISTRATOR WHICH PROVIDES DOCUMENTATION OF THE CONDITION OF EACH BMP PRIOR TO EACH (NO EARLIER THAN 30 DAYS) ANNIVERSARY DATE (BEGINNING ON THE FINAL CONSTRUCTION INSPECTION APPROVAL DATE) INTO PERPETUITY. ALL ANNUAL INSPECTION REPORTS ARE TO BE COMPLETED BY A PROFESSIONAL ENGINEER OR REGISTERED LANDSCAPE ARCHITECT THAT HAS COMPLETED THE CERTIFICATION PROGRAM PROVIDED BY THE CITY/COUNTY.



FINAL DRAWING FOR REVIEW PURPOSES ONLY

GRAPHIC SCALE: 1 INCH = 30 FEET

Project: WEDDINGTON MATTHEWS RD. DEV. WEDDINGTON, NORTH CAROLINA

Title: BMP #1 PLAN

File #: 16157-B-BMP.DWG Date: 06/28/17 Project Egr: ABC

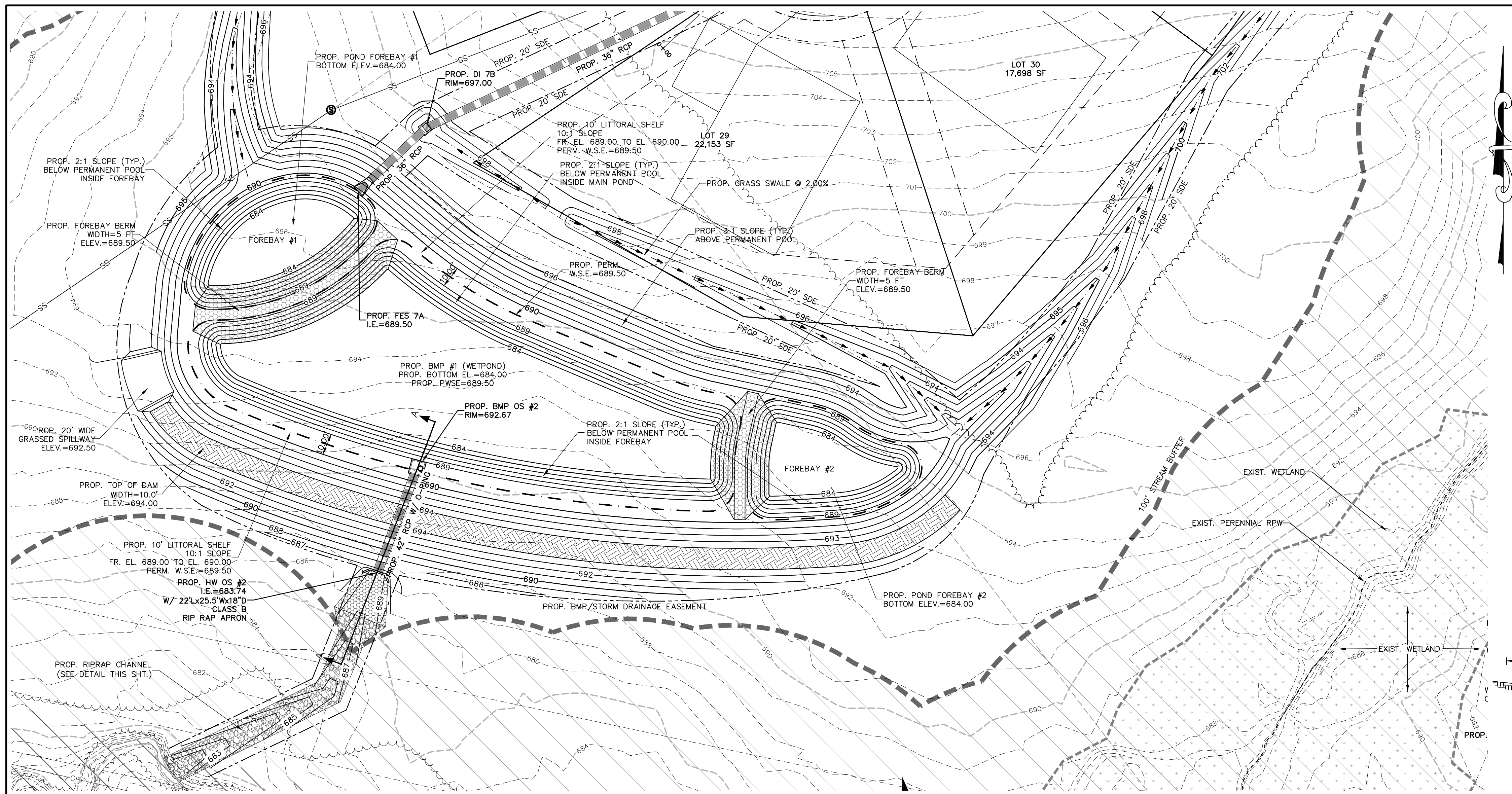
Design By: ABC

Drawn By: BER

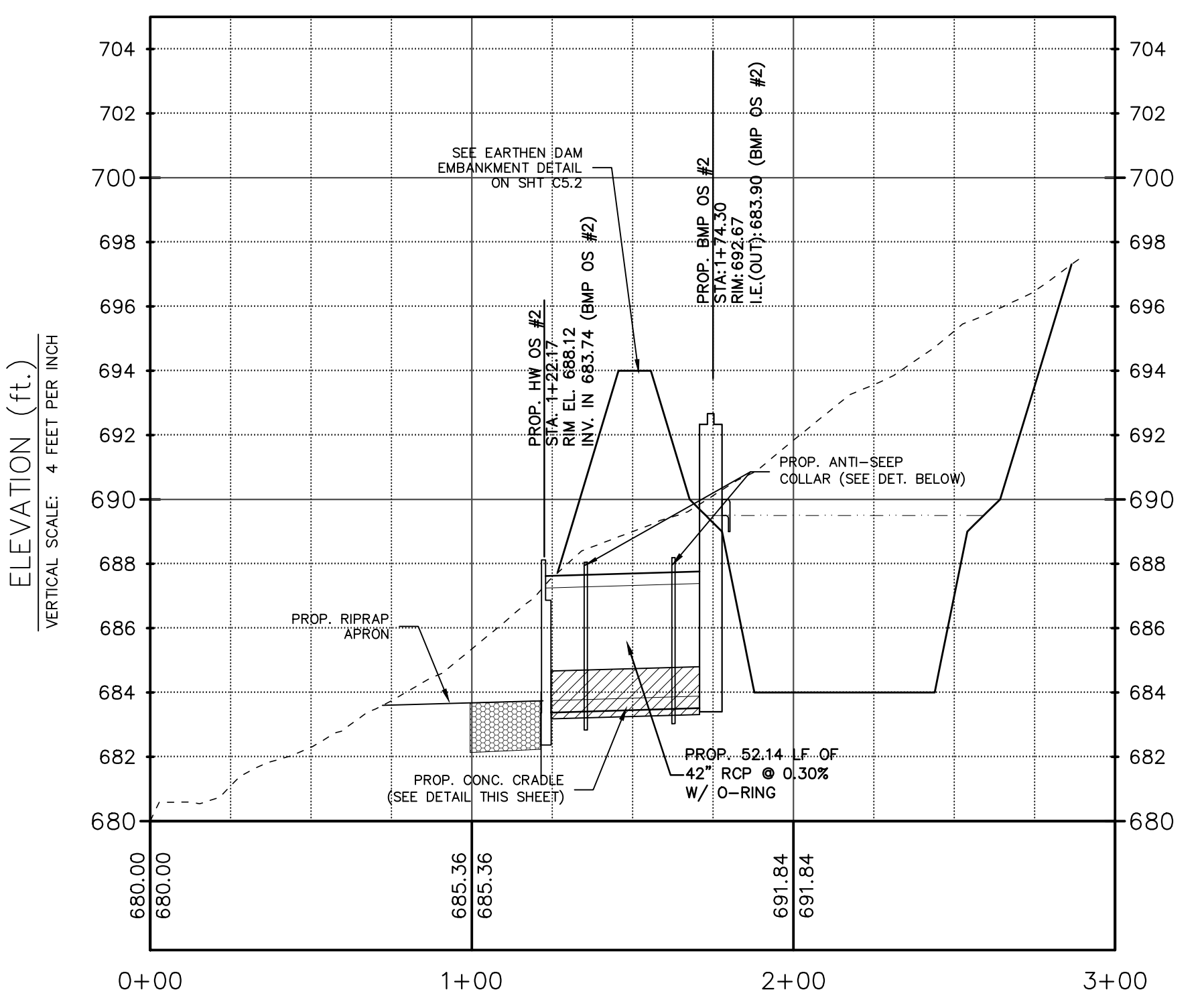
Scale: 1"=30'

8720 RED OAK BOULEVARD, SUITE 420 CHARLOTTE, N.C. 28217 PHONE (704) 527-3440 FAX (704) 527-8335

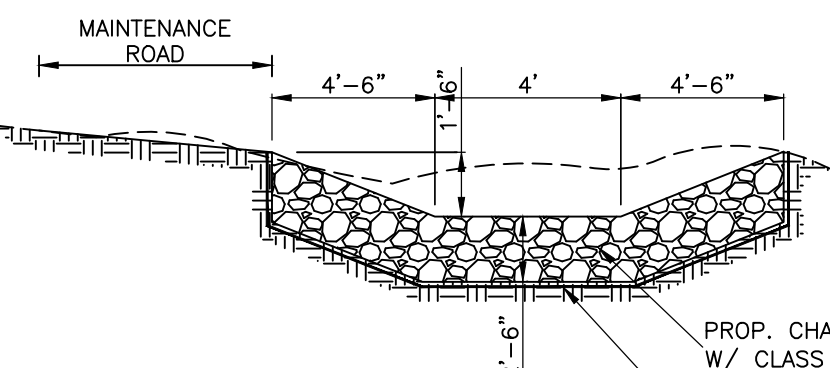
C5.0



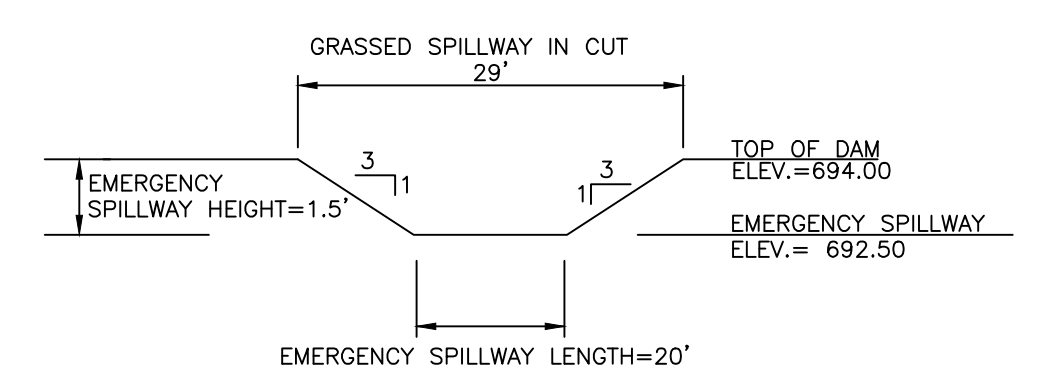
BMP #2 (WET POND)
SCALE: 1"=30'



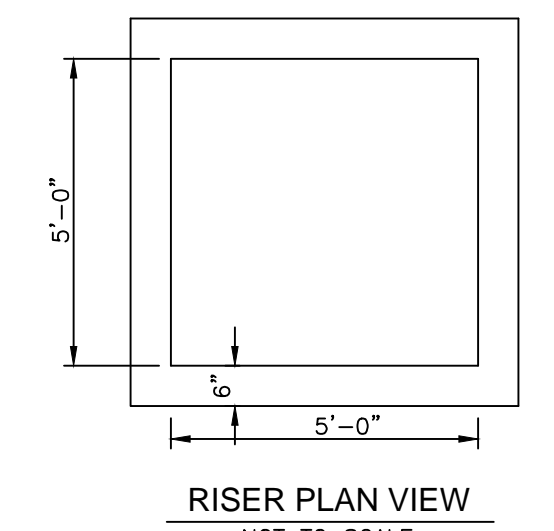
BMP #2 OUTLET PIPE PROFILE
HORIZONTAL SCALE: 40 FEET PER INCH



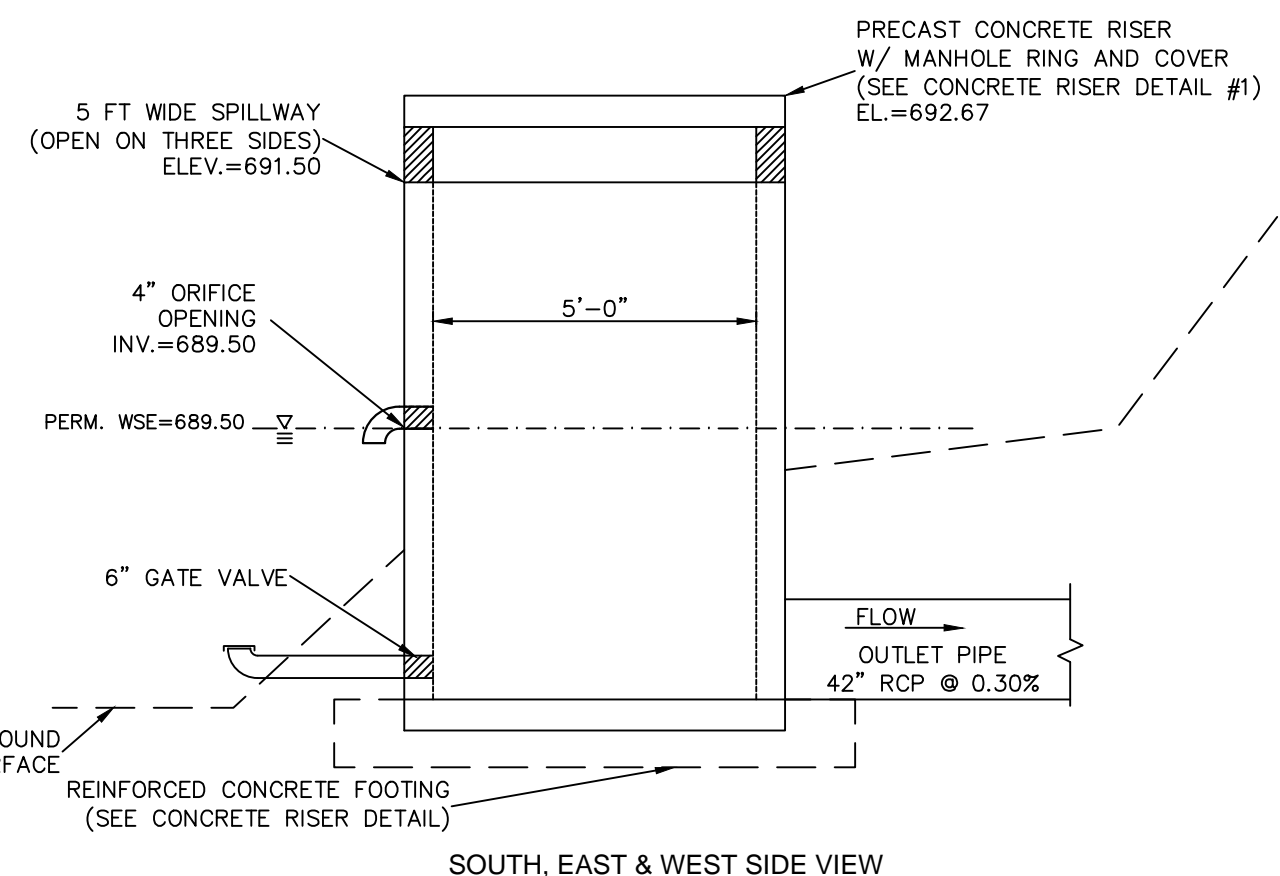
PROP. BUFFER IMPACT CHANNEL FOR WETPOND BMP #2 OUTLET FLOW TO STREAM



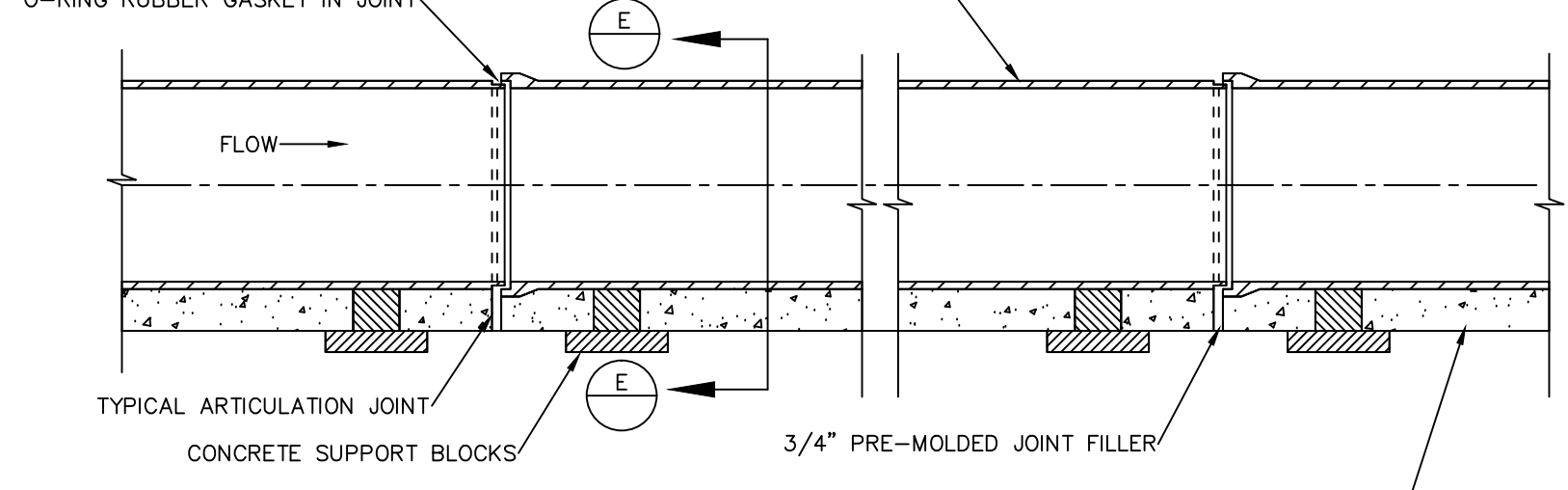
EMERGENCY SPILLWAY X-SECTION
NOT TO SCALE



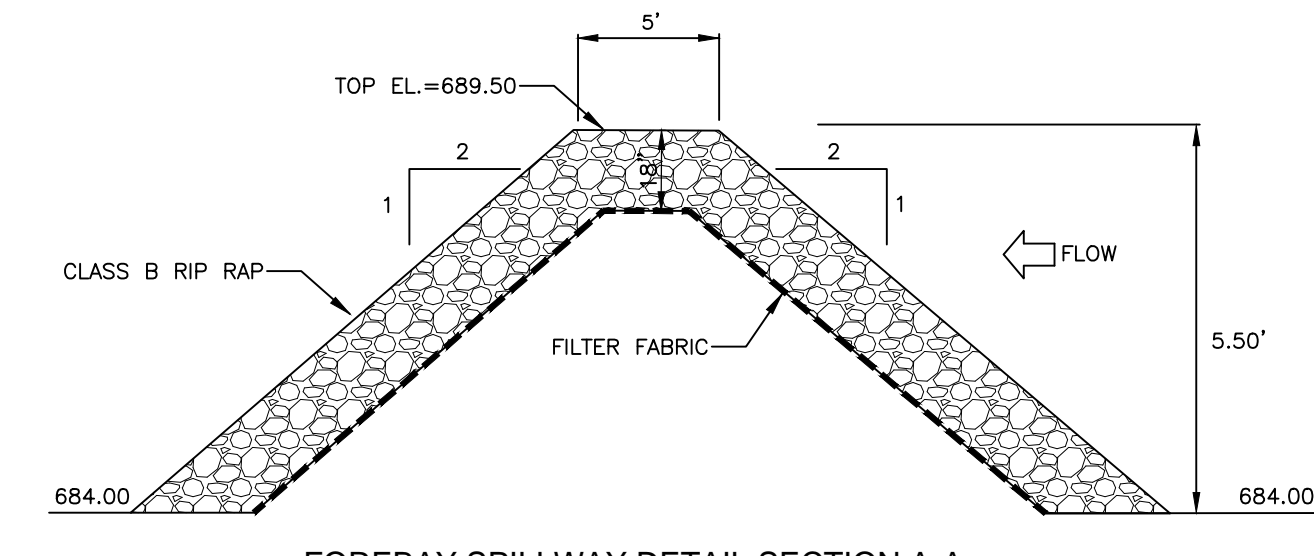
RISER PLAN VIEW
NOT TO SCALE



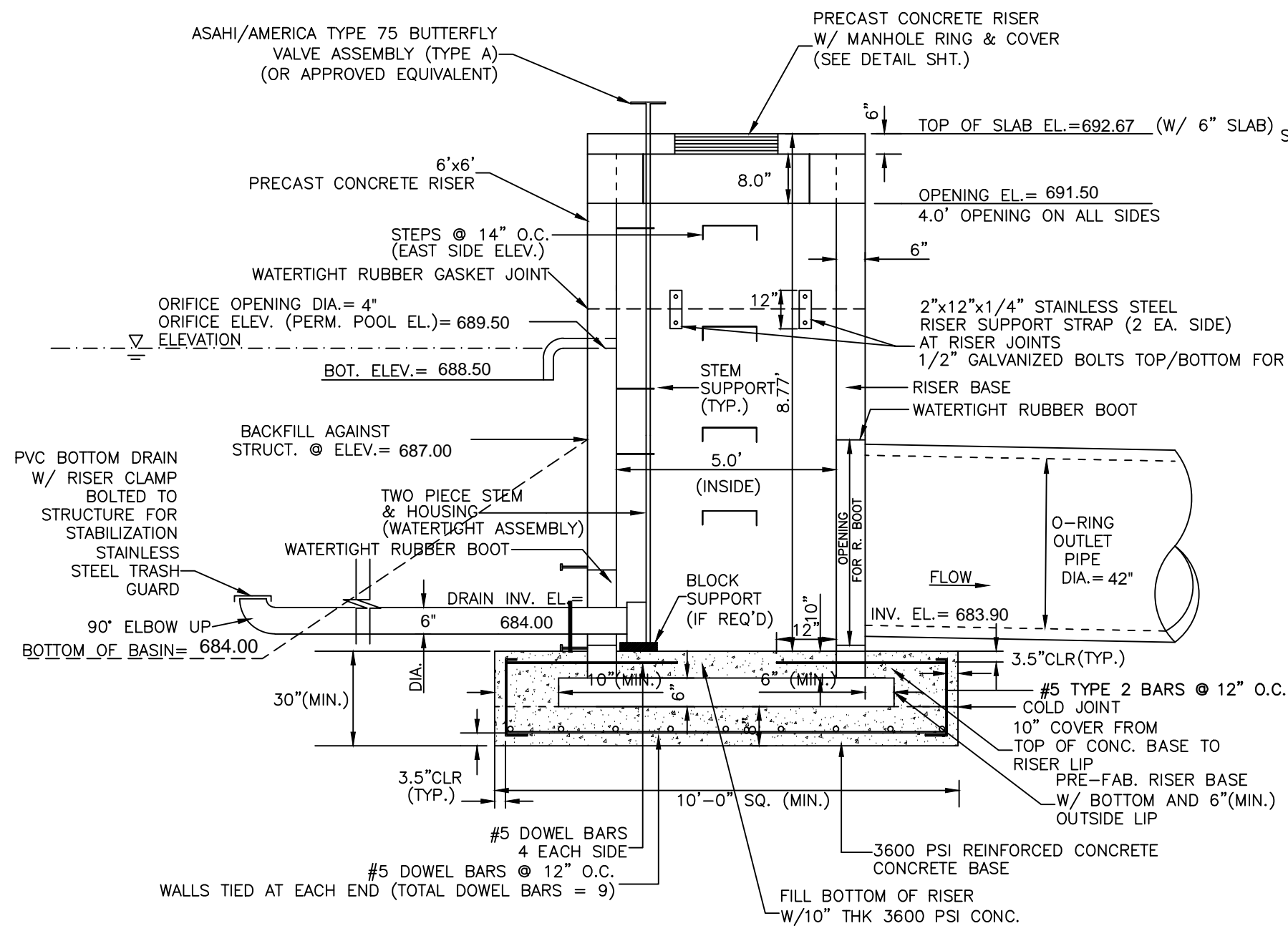
SOUTH, EAST & WEST SIDE VIEW



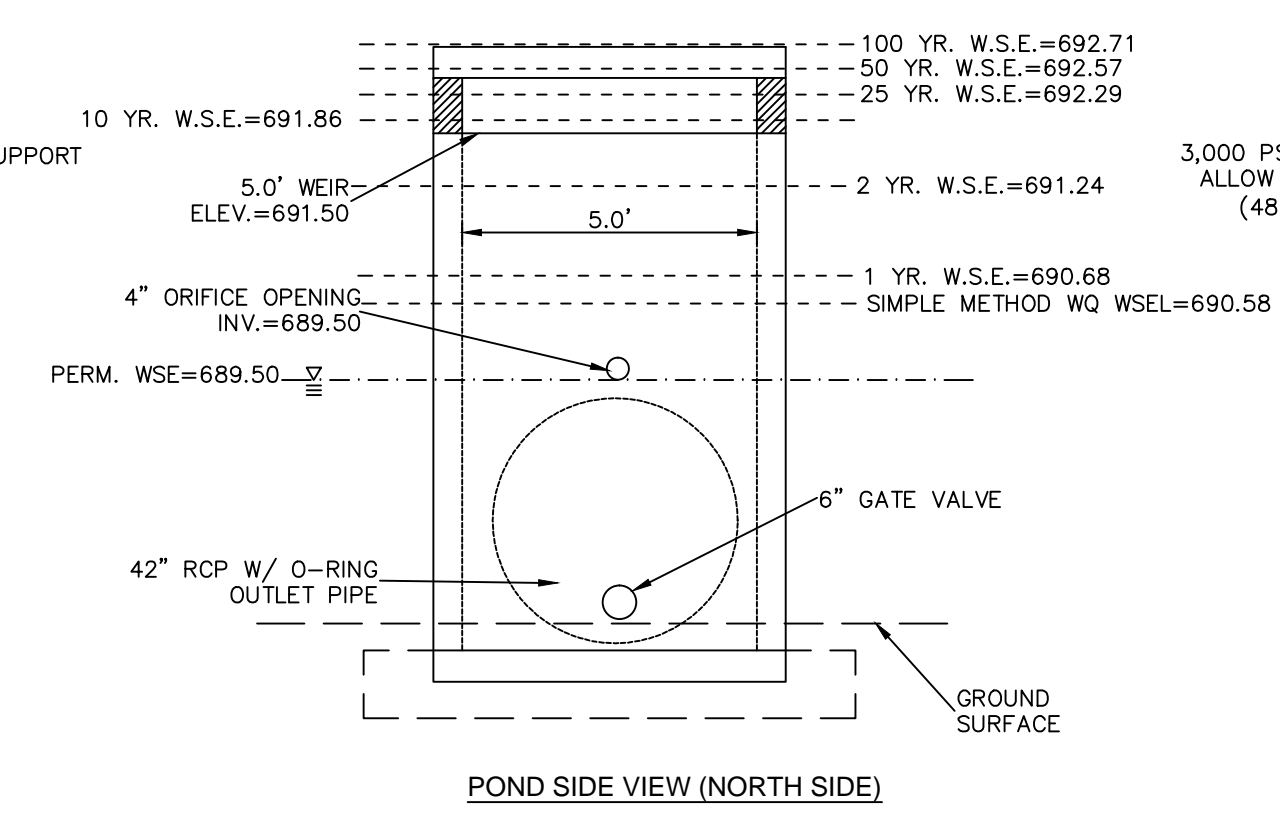
PIPE CRADLE JOINT
NOTE: PIPE CRADLE JOINT SHALL BE CONSTRUCTED AT EACH JOINT LOCATION IN THE PIPE.



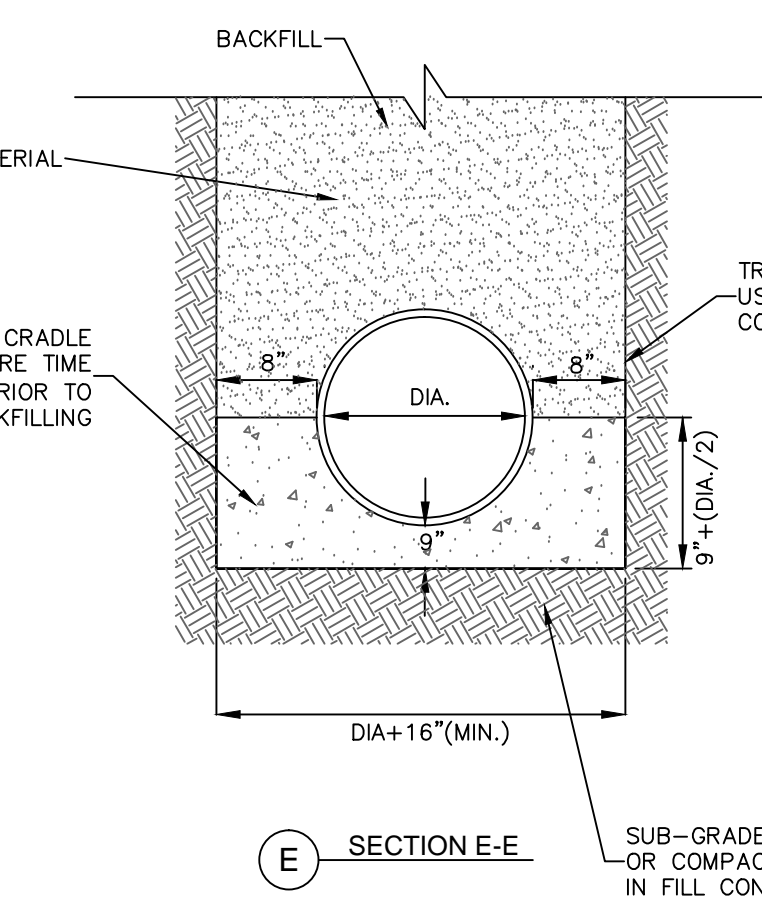
FOREBAY SPILLWAY DETAIL SECTION A-A
NOT TO SCALE



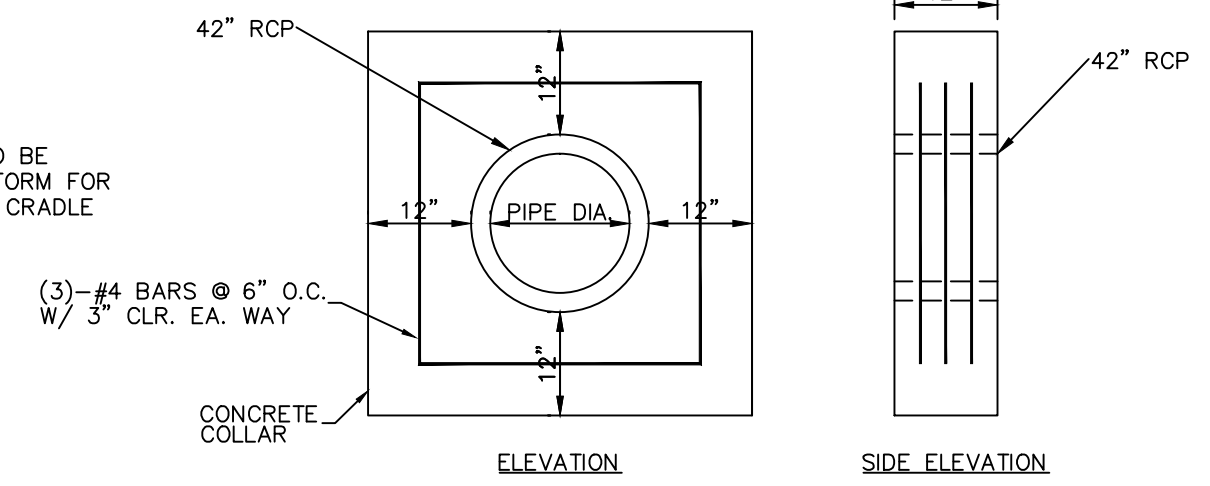
CONCRETE RISER DETAIL BMP#2
NOT TO SCALE



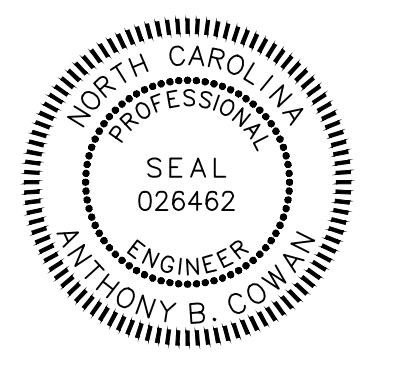
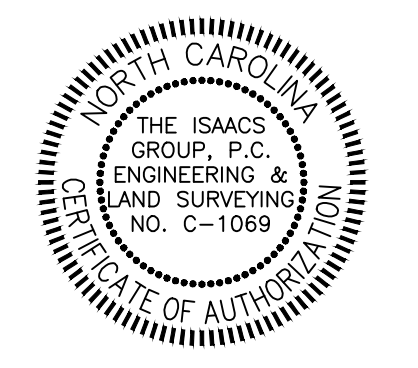
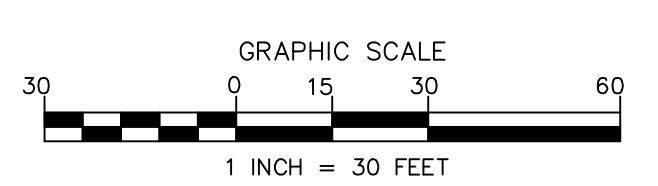
BMP #2 OUTLET STRUCTURE ORIFICE AND WEIR DETAIL
NOT TO SCALE



PIPE CRADLE DETAIL
NOT TO SCALE



CONCRETE ANTI-SEEP COLLAR TYPICAL DETAIL
N.T.S.



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NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **BMP #2 PLAN**

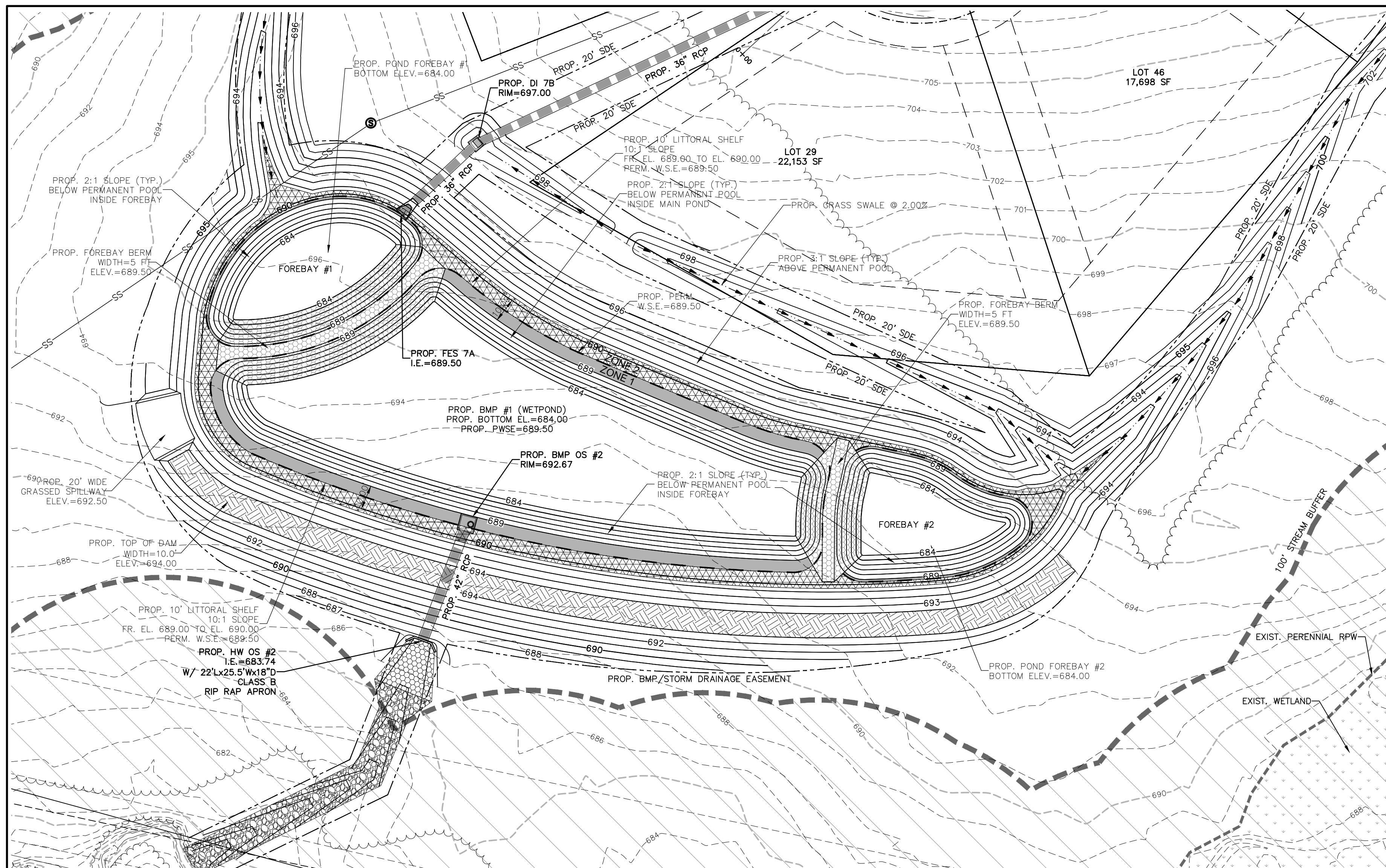
File #: 16157-D-BMP.DWG Date: 06/28/17 Project Egr: ABC

ISAACS
CIVIL ENGINEERING DESIGN AND SURVEYING

8720 RED OAK BOULEVARD, SUITE 420
CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

Scale: 1"=30'

C5.1



PLANTING PLAN: BMP #1 (WET POND)

LEGEND

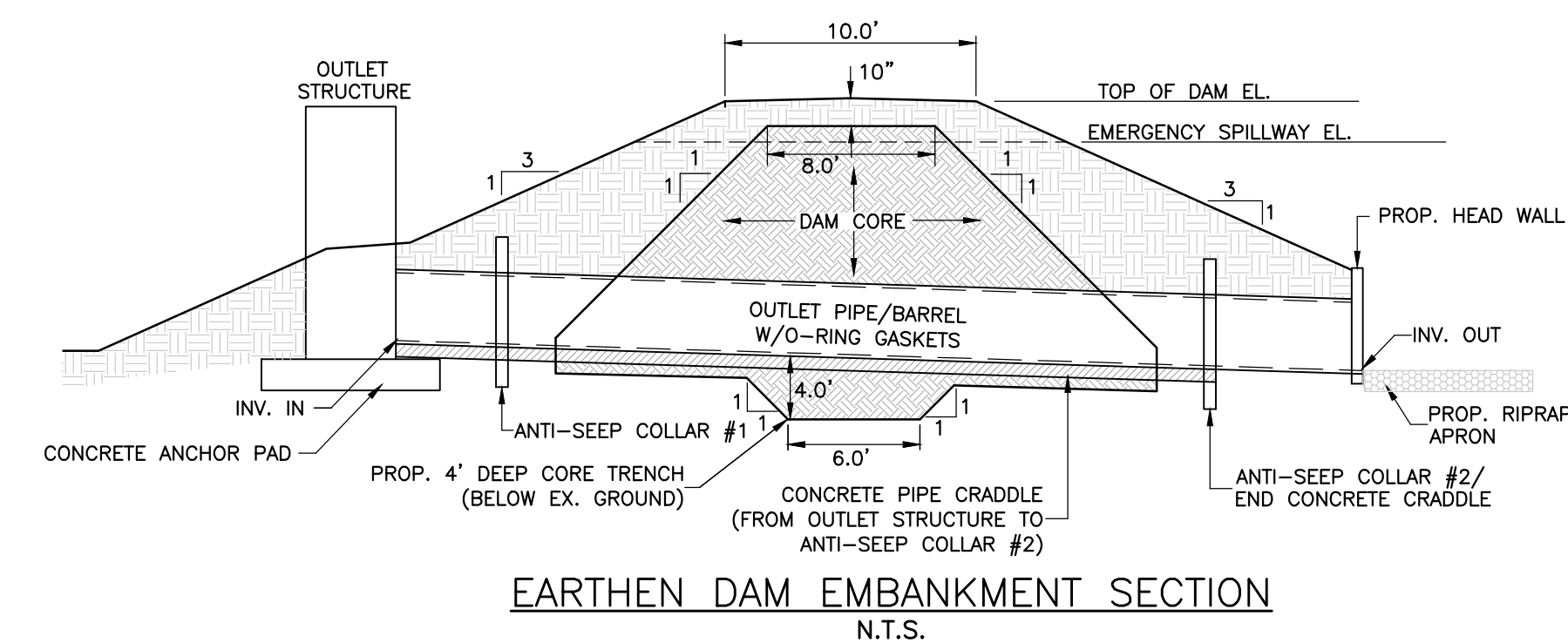
- ZONE 1: SHALLOW WATER (6" BELOW PWSE)
 BMP #1: ELEV. 689.00 TO 689.50
- ZONE 2: SHALLOW LAND (PWSE TO TEMP. WQ STORAGE)
 BMP #1: ELEV. 689.50 TO 690.58
- RIP RAP

PLANTING ZONE REQUIREMENTS:

- ZONE 1: MINIMUM PLANT QUANTITIES PER 200 SQ. FT. OF SHALLOW WATER AREA**
- 50 HERBACEOUS PLANTS OF AT LEAST 4 CUBIC-INCH CONTAINER (EQUIVALENT TO 2 FT. ON CENTER MINIMUM; 1.5 FT. ON CENTER RECOMMENDED)
- BMP #1: AREA PROVIDED = 2,548 SF
PLANT REQUIRED = 637 HERBACEOUS PLANTS (CHOOSE 3 FROM THE LIST BELOW)**
- ZONE 2: MINIMUM PLANT QUANTITIES PER 200 SQ. FT. OF SHALLOW WATER AREA**
- 50 HERBACEOUS PLANTS OF AT LEAST 4 CUBIC-INCH CONTAINER OR
 - 8 SHRUBS OF AT LEAST 1-GALLON CONTAINER (EQUIVALENT TO 5 FT. ON CENTER MINIMUM; 3 FT. ON CENTER RECOMMENDED), OR
 - 1 TREE OF AT LEAST 3 GALLON CONTAINER AND 40 GRASS LIKE HERBACEOUS PLANTS OF AT LEAST 4 CUBIC-INCH CONTAINER.
- BMP #1: AREA PROVIDED = 4,584 SF
PLANT REQUIRED = 1,146 HERBACEOUS PLANTS (CHOOSE 4 FROM THE LIST BELOW) OR 183 SHRUBS OR 23 TREES AND 763 GRASS LIKE HERBACEOUS PLANTS**

STORMWATER WETLAND PLANT RECOMMENDATIONS

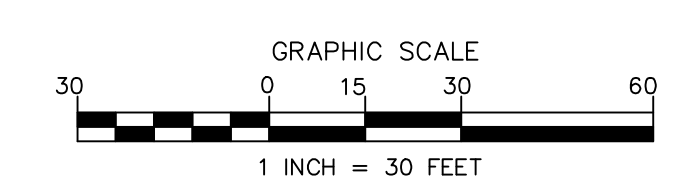
DEEP POOL		SHALLOW LAND	
BOTANICAL NAME	COMMON NAME	BOTANICAL NAME	COMMON NAME
FLOATING AQUATIC PLANTS		HERBACEOUS PLANTS	
<i>LEMNA SPP.</i>	DUCKWEED	<i>ASCLEPIAS INCARNATA</i>	SWAMP MILKWEED
<i>NELUMBO LUTEA</i>	AMERICAN LOTUS	<i>CAREX TENERA</i>	QUILL SEDGE
<i>NUPHAR LUTEA SPP. POLYSEPALA</i>	ROCKY MTN. POND-LILY	<i>CHELONE GLABRA</i>	WHITE TURTLEHEAD
<i>NUPHAR LUTEA SPP. ADVENA</i>	YELLOW POND-LILY	<i>EUPATORIADALPHIS DUBIUS</i>	DWARF JOE PYE WEED
SUBMERGED AQUATIC PLANTS		<i>EUPATORIADALPHIS FISTULOSUS</i>	JOE PYE WEED
<i>ELEOCHARIS ACICULARIS</i>	NEEDLE SPIKERUSH	<i>EUPATORIADALPHIS MACULATUS</i>	SPOTTED TRUMPETWEED
<i>ELEOCHARIS QUADRANGULATA</i>	SQUARESTEM SPIKERUSH	<i>HIBISCUS CROCINEUS</i>	SCARLET ROSEMALLOW
<i>ELODEA CANADENSIS</i>	CANADIAN WATERWEED	<i>HIBISCUS LAEVIS</i>	HALBERDLEAF ROSEMALLOW
<i>ELODEA MUTTALLII</i>	WESTERN WATERWEED	<i>KOSTELETZKYA VIRGINICA</i>	SEASHORE MALLOW
SHALLOW WATER		<i>LOBELIA CARDINALIS</i>	CARDINAL FLOWER
BOTANICAL NAME		<i>LOBELIA LONGIFOLIA</i>	LONGLEAF LOBELIA
COMMON NAME		<i>LOBELIA SIPHILITICA</i>	GREAT BLUE LOBELIA
HERBACEOUS PLANTS		<i>RHYNCHOSPORA COLORATA</i>	STARRUSH WHITE TOP
<i>ACORUS SUBCORDATUM</i>	SWEETFLAG	<i>SACHARUM BALDWINII</i>	NARROW PLUMEGRASS
<i>ALISMA SUBCORDATUM</i>	WATER PLANTAIN	SHRUBS	
<i>HYDROLEA QUORIVALVIS</i>	WATERPOD	<i>ARONIA ARBUTIFOLIA</i>	RED CHOKEBERRY
<i>IRIS VIRGINICA</i>	BLUE FLAG IRIS	<i>CEPHALANTHUS OCCIDENTALIS</i>	COMMON BUTTONBUSH
<i>JUNCUS ETJUSUS VAR. PYLEI OR SOLITUS</i>	SOFT RUSH	<i>CLETHRA ALNIFOLIA</i>	SWEET PEPPERBUSH
<i>LUDWIGIA SPP.</i>	PRIMEROSE WILLOW	<i>CORNUS ANONUM</i>	SILKY DOGWOOD
<i>PELONDIA VIRGINICA</i>	ARROW ARUM	<i>CYRILLA FACEMIFLORA</i>	TITI
<i>PONZERIA CORDATA</i>	PICKERELWEED	<i>GORNONIA LACINATHUS</i>	LOBLOLLY BAY
<i>SAGITTARIA LATIFOLIA</i>	DUCK POTATO	<i>HYPERICUM DENSIFLORUM</i>	BUSHY ST. JOHNSWORT
<i>SAGITTARIA LANCEIFOLIA</i>	BULLTONGUE	<i>ILEX DECIDUAS</i>	POSSUMHAW
<i>SAURURUS CERNUIS</i>	LIZARD'S TAIL	<i>ILEX GLABRA</i>	INKBERRY
<i>SCHENOPLECTUS TABERNAEMONTANI</i>	SOFT STEM BULRUSH	<i>ITEA VIRGINICA</i>	VIRGINIA SWEETSPICE
<i>SCHENOPLECTUS AMERICANUS</i>	THREE-SQUARE BULRUSH	<i>ROSA PALUSTRIS</i>	SWAMP ROSE
<i>SCHENOPLECTUS PUNGENS VAR. PUNGENS</i>		<i>VACCINIUM CRASSIFOLIUM</i>	CREeping BLUEBERRY
<i>SORBUS CYPERINUS</i>		<i>VIURNUM NUDUM VAR. NUDUM</i>	POSSUMHAW
<i>ZIZANIOPSIS MILACEA</i>	WOOLGRASS		
	GIANT CUTGRASS		



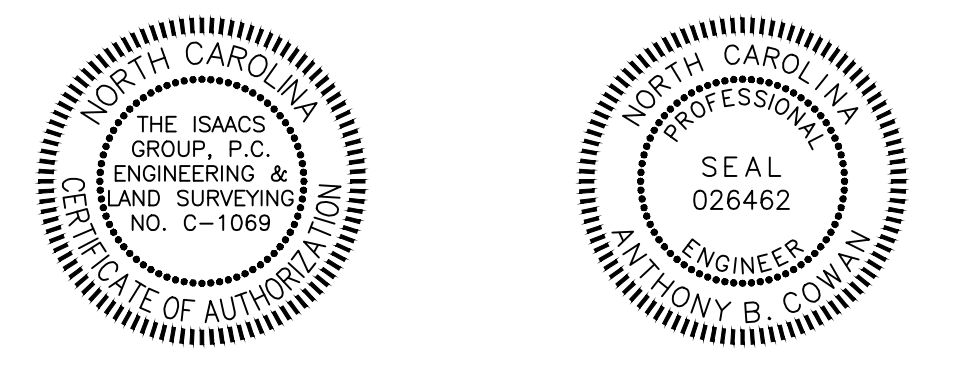
DAM CONSTRUCTION SPECIFICATIONS:

- SITE PREPARATIONS—CLEAR GRUB, AND STRIP TOPSOIL FROM AREAS UNDER THE EMBANKMENT TO REMOVE TREES, VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL. DELAY CLEARING POOL AREA UNTIL THE DAM IS COMPLETE AND THEN REMOVE BRUSH, TREES, AND OTHER OBJECTIONABLE MATERIALS TO FACILITATE SEDIMENT CLEANOUT. STOCKPILE ALL TOPSOIL OR SOIL CONTAINING ORGANIC MATTER FOR USE ON THE OUTER SHELL OF THE EMBANKMENT TO FACILITATE VEGETATIVE ESTABLISHMENT. PLACE TEMPORARY SEDIMENT CONTROL MEASURES BELOW BASIN AS NEEDED.
- CUT-OFF TRENCH—EXCAVATE A CUT-OFF TRENCH ALONG THE CENTER LINE OF THE EARTH FILL EMBANKMENT. CUT THE TRENCH TO STABLE SOIL MATERIAL, BUT IN NO CASE MAKE IT LESS THAN 4 FEET DEEP. THE CUT-OFF TRENCH MUST EXTEND INTO BOTH ABUTMENTS TO AT LEAST THE ELEVATION OF THE RISER CREST. MAKE THE MINIMUM BOTTOM WIDTH WIDE ENOUGH TO PERMIT OPERATION OF EXCAVATION AND COMPACTION EQUIPMENT, BUT IN NO CASE LESS THAN 6 FEET. MAKE SIDE SLOPES OF THE TRENCH NO STEEPER THAN 1:1. COMPACTION REQUIREMENTS ARE THE SAME AS THOSE FOR THE EMBANKMENT. KEEP THE TRENCH DRY DURING BACKFILLING AND COMPACTION OPERATIONS.
- GEOTECHNICAL SPECIFICATIONS FOR DAM CONSTRUCTION:
 - A MINIMUM OF ONE (1) IN-PLACE DENSITY TEST SHOULD BE PERFORMED IN ACCORDANCE WITH ASTM D-1556 FOR EACH 2,500 S.F. OF LIFT AREA WITH A MINIMUM OF TWO TESTS PER LIFT. IMPROPER COMPACTION MAY RESULT IN PREMATURE DETERIORATION OF THE EMBANKMENT AREA AND/OR DIFFERENTIAL SETTLEMENT OF FOUNDATIONS. SEE GEOTECHNICAL REPORT FOR MORE DETAILED SPECIFICATIONS RELATING TO SELECTION AND PLACEMENT OF STRUCTURAL FILL.
 - FILL PLACED WITHIN THE CONSTRUCTED DAM EMBANKMENTS SHOULD BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 (STANDARD PROCTOR). ALL FILL PLACED WITHIN THE UPPER ONE (1) FOOT OF THE RISER FOUNDATION AND THE SPILLWAY SUBGRADE SHOULD BE COMPACTED TO A MINIMUM OF 98 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 (STANDARD PROCTOR). ALL FILL MATERIAL SHOULD BE PLACED AND MECHANICALLY COMPACTED IN UNIFORM LIFTS, NOT EXCEEDING NINE (9) INCHES IN LOOSE THICKNESS. THE MOISTURE CONTENT OF ALL FILL AT THE TIME OF THE PLACEMENT SHOULD BE WITHIN +3 PERCENT OF THE OPTIMUM MOISTURE CONTENT AS ESTABLISHED BY THE STANDARD PROCTOR TEST. SEE GEOTECHNICAL REPORT FOR MORE DETAILED SPECIFICATIONS RELATING TO THE SELECTION AND PLACEMENT OF STRUCTURAL FILL.
 - ALL FILL TO BE UTILIZED AT THE SITE SHOULD BE SELECTED ON THE BASIS OF ITS PLASTICITY CHARACTERISTICS AND LABORATORY COMPACTION TESTS. ON-SITE SOILS WHICH ARE FOUND TO CONTAIN DELETERIOUS MATERIAL, INCLUDING ORGANICS AND TOPSOIL, SHOULD NOT BE USED AS STRUCTURAL FILL FOR THE EMBANKMENT.
 - DAM CORE AND CORE TRENCH MATERIAL — THE CORE MATERIAL SHOULD HAVE A USCS CLASSIFICATION OF MH, CH, CL OR ML. PRIOR TO EXCAVATION THE CONTRACTOR SHOULD HAVE THE CORE TRENCH MATERIAL TESTED AND APPROVED BY THE GEOTECHNICAL ENGINEER. THIS TESTING SHOULD INCLUDE DOUBLE HYDROMETER TESTING TO ENSURE THAT THE SOILS ARE NOT DISPERSIVE IN NATURE.
 - IMPERMEABLE LINER AND CUT-OFF WALL MATERIAL — MATERIAL UTILIZED SHALL HAVE A CLASSIFICATION OF CH OR MH ONLY. HYDRAULIC CONDUCTIVITY RATES OF MATERIAL UTILIZED MUST BE 0.01 FT/DAY MAXIMUM. LINER MATERIAL SHALL BE TESTED AND APPROVED BY GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION. BENTONITE MAY BE UTILIZED TO SUPPLEMENT LINER MATERIAL TO ACHIEVE A LOWER INFILTRATION RATE. LINER MATERIAL SHALL BE FREE FROM ALL TOPSOIL, ORGANICS AND ROCK FRAGMENTS HAVING A MAJOR DIAMETER GREATER THAN 3 INCHES. FILL PLACEMENT SHOULD BE IN MAXIMUM 6-INCH THICK, LOOSE HORIZONTAL LIFTS COMPACTED UNIFORMLY WITH THE PROPER EQUIPMENT. FILL SHOULD BE COMPACTED TO AT LEAST 92 PERCENT OF THE MAXIMUM DRY DENSITY AS ESTABLISHED BY ASTM D698 TEST METHOD. THE MOISTURE CONTENT OF THE FILL SHOULD BE WITHIN PLUS 4 PERCENTAGE POINTS ABOVE THE OPTIMUM MOISTURE CONTENT.
 - IMPERMEABLE LINER — IF REQUIRED, LINER SHALL HAVE A 2.0' MINIMUM THICKNESS.
 - CUT-OFF WALL — CUT-OFF WALL SHALL BE 2.0' WIDE MINIMUM AND EXTENDED FROM ELEVATION 761.00 TO 754.00 IN THE LOCATION SHOWN ON THE PLAN. CUT-OFF WALL MATERIAL SHALL BE SUPPLEMENTED WITH BENTONITE TO ACHIEVE A MAXIMUM HYDRAULIC CONDUCTIVITY OF 0.001 FT/DAY. BENTONITE MATERIAL SHALL BE APPROVED BY GEOTECHNICAL ENGINEER.
 - CONTRACTOR TO COORDINATE CONSTRUCTION OF DAMS WITH A GEOTECHNICAL FIRM EXPERIENCED IN FIELD TESTING SERVICES FOR EARTHEN DAM CONSTRUCTION. SPECIFICATIONS GIVEN ON THESE PLANS ARE RECOMMENDATIONS ONLY. REFER TO GEOTECHNICAL REPORT FOR ADDITIONAL SPECIFICATIONS.
 - ALL FILL MATERIAL USED FOR CONSTRUCTION OF DAM CORE AND EMBANKMENTS TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
 - CONDUIT SPILLWAYS—SECURELY ATTACH THE RISER TO THE BARREL OR BARREL STUB TO MAKE A WATER TIGHT STRUCTURAL CONNECTION. SECURE ALL CONNECTIONS BETWEEN BARREL SECTIONS BY APPROVED WATER TIGHT ASSEMBLIES. PLACE THE BARREL AND RISER ON A FIRM, SMOOTH FOUNDATION OF IMPERVIOUS SOIL. DO NOT USE PERVIOUS MATERIAL SUCH AS SAND, GRAVEL, OR CRUSHED STONE AS BACKFILL AROUND THE PIPE OR ANTI-SEEP COLLARS. PLACE THE FILL MATERIAL AROUND THE PIPE SPILLWAY IN 4-INCH LAYERS, AND COMPACT IT UNDER AND AROUND THE PIPE TO AT LEAST THE SAME DENSITY AS THE ADJACENT EMBANKMENT. CARE MUST BE TAKEN NOT TO RAISE THE PIPE FROM FIRM CONTACT WITH ITS FOUNDATION WHEN COMPACTION UNDER THE PIPE HAUNCHES. PLACE A MINIMUM DEPTH OF 2 FEET OF COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT. ANCHOR THE RISER IN PLACE BY CONCRETE OR OTHER SATISFACTORY MEANS TO PREVENT FLotation. IN NO CASE SHOULD THE PIPE CONDUIT BE INSTALLED BY CUTTING A TRENCH THROUGH THE DAM AFTER THE EMBANKMENT IS COMPLETE.
 - EMERGENCY SPILLWAYS—INSTALL THE EMERGENCY SPILLWAY IN UNDISTURBED SOIL. THE ACHIEVEMENT OF PLANNED ELEVATIONS, GRADE, DESIGN WIDTH, AND ENTRANCE AND EXIT CHANNEL SLOPES ARE CRITICAL TO THE SUCCESSFUL OPERATION OF THE EMERGENCY SPILLWAY. INSTALL NAG 575 EROSION CONTROL MATTING STABILIZATION IMMEDIATELY AFTER THE SPILLWAY IS CONSTRUCTED.
 - INLETS—DISCHARGE WATER INTO THE BASIN IN A MANNER TO PREVENT EROSION. USE DIVERSIONS WITH OUTLET PROTECTION TO DIVERT SEDIMENT-LADEN WATER TO THE UPPER END OF THE POOL AREA TO IMPROVE BASIN TRAP EFFICIENCY (REFERENCES: RUNOFF CONTROL MEASURES AND OUTLET PROTECTION).
 - EROSION CONTROL—CONSTRUCT THE STRUCTURE SO THAT THE DISTURBED AREA IS MINIMIZED. DIVERT SURFACE WATER AWAY FROM BARE AREAS. COMPLETE THE EMBANKMENT BEFORE THE AREA IS CLEARED. STABILIZE THE EMERGENCY SPILLWAY EMBANKMENT AND ALL OTHER DISTURBED AREAS ABOVE THE CREST OF THE PRINCIPAL SPILLWAY IMMEDIATELY AFTER CONSTRUCTION.
 - INSTALL POROUS BAFFLES AS SPECIFIED IN PRACTICE 6.65, POROUS BAFFLES, IF WET POND IS TO BE USED TEMPORARILY AS A SEDIMENT BASIN.
 - EMBANKMENT STABILIZATION — ALL EMBANKMENTS SHALL BE STABILIZED IMMEDIATELY WITH EXCELSIOR CURLEX 1 EROSION CONTROL MATTING (OR APPROVED EQUAL).

FINAL DRAWING FOR REVIEW PURPOSES ONLY



NO.	BY	DATE	REVISION



Project: **WEDDINGTON MATTHEWS RD. DEV.**
 WEDDINGTON, NORTH CAROLINA

Title: **BMP PLANTING PLAN**

File #: 16157-D-BMP.DWG Date: 06/28/17 Project Egr: ABC

ISAACS GROUP
 CIVIL ENGINEERING DESIGN AND SURVEYING

8720 RED OAK BOULEVARD, SUITE 420
 CHARLOTTE, N.C. 28217
 PHONE (704) 527-3440 FAX (704) 527-8335

Design By: ABC
 Drawn By: RER
 Scale: 1"=30'

C5.2

STORM DRAINAGE SCHEDULE

STORM NETWORK-1 (STORM TO BMP #1)

STORM DRAINAGE TABLE											
STRUCTURE	STRUCTURE TC/RE (DESIGN)	STRUCTURE TC/RE (AS-BUILT)	DIAMETER INCHES (DESIGN)	DIAMETER INCHES (AS-BUILT)	INVERT IN (DESIGN)	INVERT IN (AS-BUILT)	INVERT OUT (DESIGN)	PIPE LENGTH (DESIGN)	PIPE LENGTH (AS-BUILT)	SLOPE (DESIGN)	SLOPE (AS-BUILT)
CB 4D	714.16		15 RCP				(4D) INV OUT=710.37	24.64			
CB 4C	714.14		15 RCP		(4D) INV IN=710.12		(4C) INV OUT=709.92	157.34		(4D) 1.00%	
CB 4B	711.17		15 RCP		(4C) INV IN=707.36		(4B) INV OUT=707.56	160.69		(4C) 1.50%	
CB 5A	709.26		15 RCP				(5A) INV OUT=705.51	23.45			
CB 4A	709.26		15 RCP		(4B) INV IN=705.04 (5A) INV IN=705.04		(4A) INV OUT=704.84	164.67		(4B) 1.44% (5A) 2.00%	
CB 1F	709.03		24 RCP		(1C) INV IN=705.03 (2A) INV IN=704.52		(1F) INV OUT=704.32	152.91		(1C) 0.97% (2A) 0.80%	
CB 1G	709.02		15 RCP				(1G) INV OUT=705.27	25.08			
FES 2A	708.33		24 RCP				(2A) INV OUT=706.00	184.06			
CB 1E	708.00		24 RCP		(1F) INV IN=703.25		(1E) INV OUT=703.05	152.22		(1F) 0.70%	
CB 1C	707.35		30 RCP		(1D) INV IN=698.81 (4A) INV IN=703.25 (6A) INV IN=703.25		(1C) INV OUT=698.21	25.20		(1D) 3.52% (4A) 0.97% (6A) 2.50%	
CB 1B	707.35		30 RCP		(1C) INV IN=697.96		(1B) INV OUT=697.76	124.50		(1C) 1.00%	
CB 1D	706.84		24 RCP		(1E) INV IN=701.99 (3A) INV IN=702.50		(1D) INV OUT=701.79	84.29		(1E) 0.70% (3A) 1.00%	
CB 3A	706.76		15 RCP				(3A) INV OUT=702.75	25.08			
FES 6A	705.99		18 RCP				(6A) INV OUT=704.20	38.15			
FES 1A	699.76				(1B) INV IN=696.89					(1B) 0.70%	

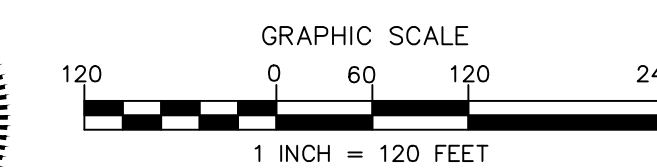
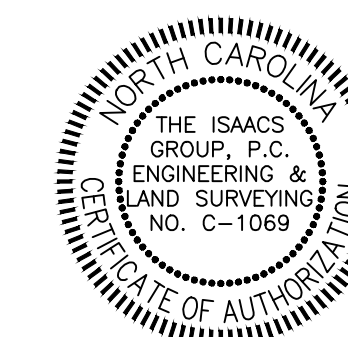
STORM NETWORK-2 (STORM TO BMP #2)

STORM DRAINAGE TABLE											
STRUCTURE	STRUCTURE TC/RE (DESIGN)	STRUCTURE TC/RE (AS-BUILT)	DIAMETER INCHES (DESIGN)	DIAMETER INCHES (AS-BUILT)	INVERT IN (DESIGN)	INVERT IN (AS-BUILT)	INVERT OUT (DESIGN)	PIPE LENGTH (DESIGN)	PIPE LENGTH (AS-BUILT)	SLOPE (DESIGN)	SLOPE (AS-BUILT)
CB 7L	715.04		15 RCP				(7L) INV OUT=711.28	24.45			
CB 7K	715.04		15 RCP		(7L) INV IN=710.79		(7K) INV OUT=710.59	215.04		(7L) 2.00%	
DI 8A	711.59		18 RCP				(8A) INV OUT=708.38	148.92			
CB 7J	711.36		24 RCP		(7K) INV IN=707.36 (9A) INV IN=707.34 (8A) INV IN=707.34		(7J) INV OUT=706.84	140.39		(7K) 1.50% (9A) 1.24% (8A) 0.70%	
CB 9A	711.36		15 RCP				(9A) INV OUT=707.63	23.62			
CB 11C	710.34		15 RCP		(11D) INV IN=706.85		(11C) INV OUT=706.65	23.12		(11D) 4.71%	
CB 11B	710.34		18 RCP		(11C) INV IN=706.42 (12A) INV IN=706.42		(11B) INV OUT=706.22	134.17		(11C) 1.00% (12A) 3.76%	
CB 7H	709.75		24 RCP		(7J) INV IN=706.00		(7H) INV OUT=705.80	189.70		(7J) 0.60%	
FES 11D	709.52		15 RCP				(11D) INV OUT=708.00	24.33			
FES 12A	709.20		15 RCP				(12A) INV OUT=707.68	33.39			
CB 11A	708.35		18 RCP		(11B) INV IN=704.48		(11A) INV OUT=704.28	104.30		(11B) 1.30%	
CB 7D	708.14		36 RCP		(7E) INV IN=699.26		(7D) INV OUT=698.76	300.39		(7E) 1.20%	
CB 7C	707.91		36 RCP		(7D) INV IN=697.26		(7C) INV OUT=697.06	178.75		(7D) 0.50%	
CB 7F	706.96		30 RCP		(7G) INV IN=700.72		(7F) INV OUT=700.52	24.60		(7G) 0.60%	
CB 7E	706.96		30 RCP		(7F) INV IN=700.27 (11A) INV IN=702.71		(7E) INV OUT=700.07	67.73		(7F) 1.00% (11A) 1.50%	
CB 7G	706.57		30 RCP		(7H) INV IN=702.01 (10A) INV IN=702.35		(7G) INV OUT=701.51	131.93		(7H) 2.00% (10A) 2.00%	
DCB 10A	706.56		15 RCP				(10A) INV OUT=702.84	24.50			
DI 7B	697.00		36 RCP		(7C) INV IN=691.70		(7B) INV OUT=689.71	42.79		(7C) 3.00%	
FES 7A	692.92				(7B) INV IN=689.50					(7B) 0.50%	

STORM NETWORK-3

STORM DRAINAGE TABLE											
STRUCTURE	STRUCTURE TC/RE (DESIGN)	STRUCTURE TC/RE (AS-BUILT)	DIAMETER INCHES (DESIGN)	DIAMETER INCHES (AS-BUILT)	INVERT IN (DESIGN)	INVERT IN (AS-BUILT)	INVERT OUT (DESIGN)	PIPE LENGTH (DESIGN)	PIPE LENGTH (AS-BUILT)	SLOPE (DESIGN)	SLOPE (AS-BUILT)
JB 17C	717.86		24 RCP		(17D) INV IN=709.25		(17C) INV OUT=709.05	219.08		(17D) 0.60%	
JB 17B	715.27		24 RCP		(17C) INV IN=707.73		(17B) INV OUT=707.52	104.14		(17C) 0.60%	
DI 17D	714.17		24 RCP				(17D) INV OUT=709.85	100.51			
JB 16C	713.33		30 RCP		(16D) INV IN=707.55		(16C) INV OUT=703.41	365.28		(16D) 2.00%	
HW 16D	712.04		30 RCP				(16D) INV OUT=708.00	22.61			
JB 16B	711.38		30 RCP		(16C) INV IN=701.58		(16B) INV OUT=701.48	95.32		(16C) 0.50%	
FES 17A	709.12				(17B) INV IN=706.79					(17B) 0.70%	
FES 14B	705.32		24 RCP				(14b) INV OUT=702.99	94.09			
HW 15B	704.37		36 RCP				(15B) INV OUT=698.21	87.30			
FES 14A	704.01				(14b) INV IN=701.67					(14b) 1.40%	
FES 16A	703.87				(16B) INV IN=701.00					(16B) 0.50%	
HW 15A	701.40				(15B) INV IN=694.83					(15B) 3.87%	

FINAL DRAWING
FOR REVIEW PURPOSES ONLY



NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **STORM DRAINAGE AREA MAP AND STORM DRAINAGE SCHEDULE**

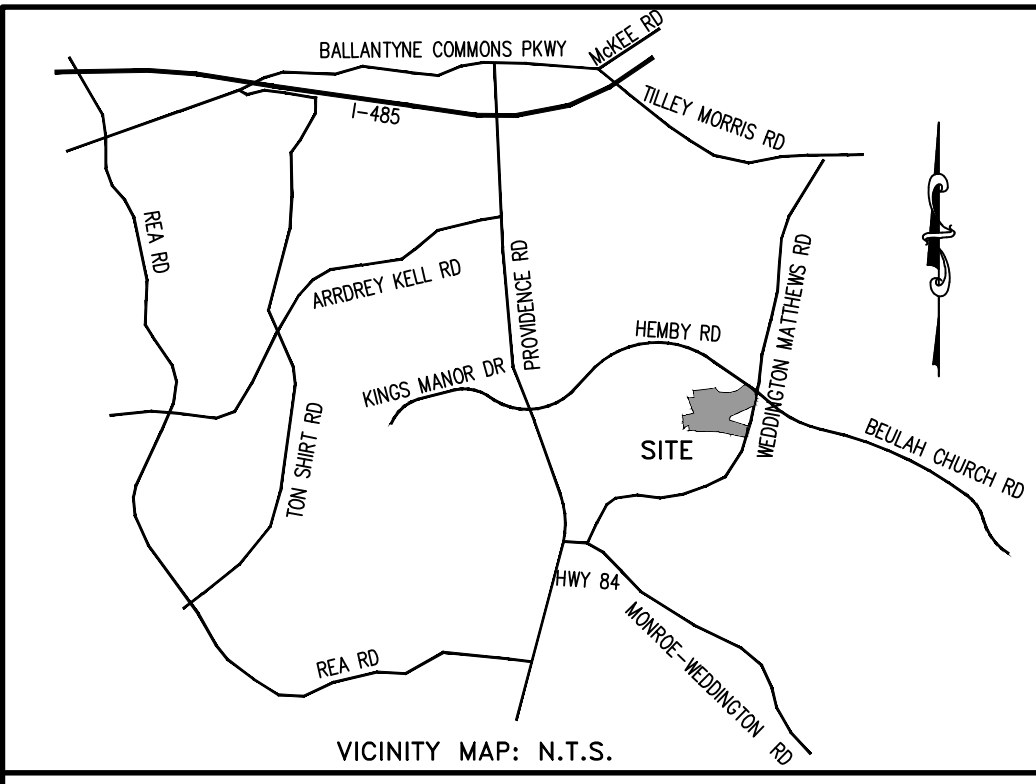
File # 16157-D-STM.DWG Date: 06/28/17 Project Egr: ABC

ISAACS GROUP
CIVIL ENGINEERING DESIGN AND SURVEYING

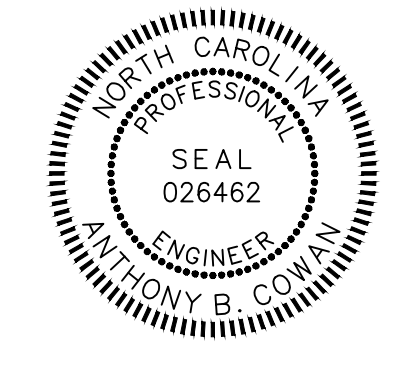
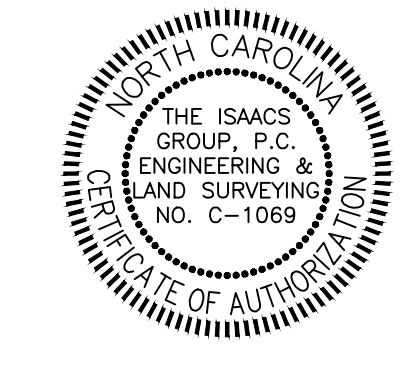
8720 RED OAK BOULEVARD, SUITE 420
CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

Scale: 1"=120'

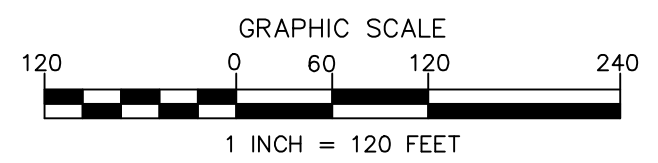
C6.0



- LEGEND**
- EXIST. R/W
 - OHP
 - EXISTING OVERHEAD POWER
 - EXISTING STORM DRAINAGE PIPE
 - EXISTING CREEK
 - ⊙ EXISTING SANITARY MANHOLE
 - ⊙ EXISTING FIRE HYDRANT
 - SS
 - EXISTING SEWER LINE
 - W
 - EXISTING WATER LINE
 - EXISTING TREE LINE
 - ELEV. ---
 - EXIST. CONTOUR
 - EXIST. STREAM TOP OF BANK
 - EXIST. SOIL TYPE
 - PROP. R/W
 - PROP. STORM DRAINAGE PIPE
 - PROP. BUFFER
 - DRAINAGE AREA
 - PROP. TC (SHEET FLOW)
 - PROP. TC (UNPAVED SHALLOW CONCENTRATED FLOW)
 - PROP. TC (CHANNEL FLOW)
 - ELEV. ---
 - PROP. CONTOUR
 - PROP. 100 FT SIX MILE CREEK STREAM BUFFER
 - PROP. SIDEWALK



FINAL DRAWING
FOR REVIEW PURPOSES ONLY



NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **PRE-DEV DRAINAGE AREA MAP**

File #: 16157-B-BMP.DWG Date: 06/28/17 Project Egr: ABC

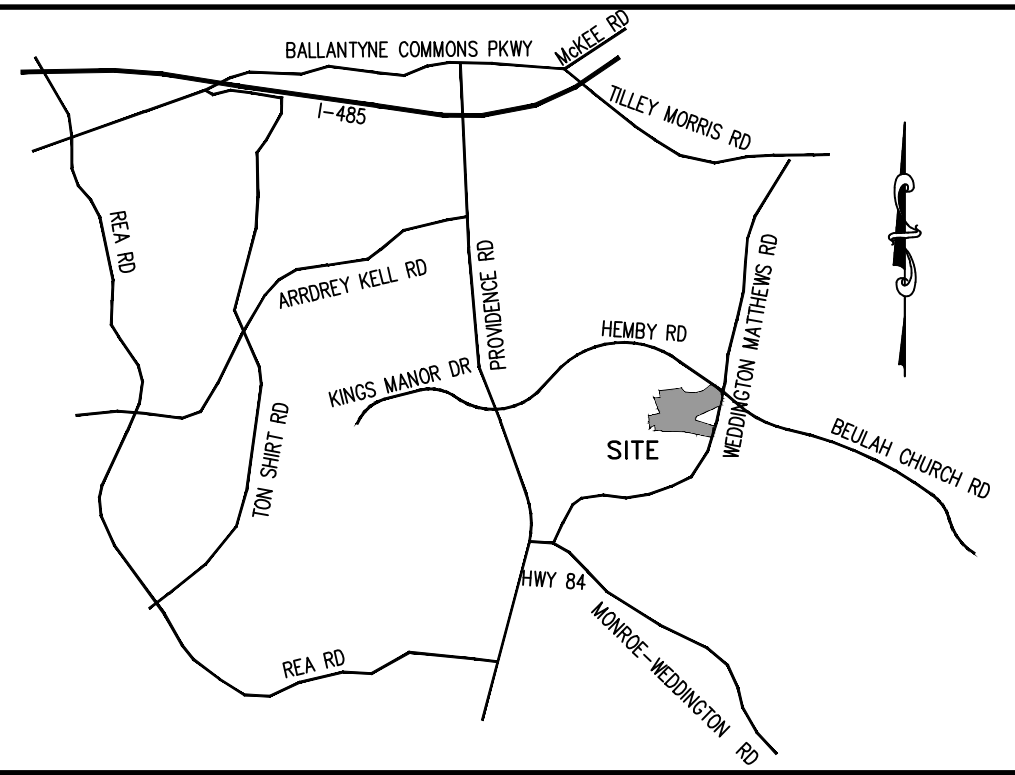
ISAACS GROUP, P.C.
CIVIL ENGINEERING DESIGN AND SURVEYING

8720 RED OAK BOULEVARD, SUITE 420
CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

Scale: 1"=120'

C6.1

POST-DEVELOPED DRAINAGE AREA MAP



VICINITY MAP: N.T.S.

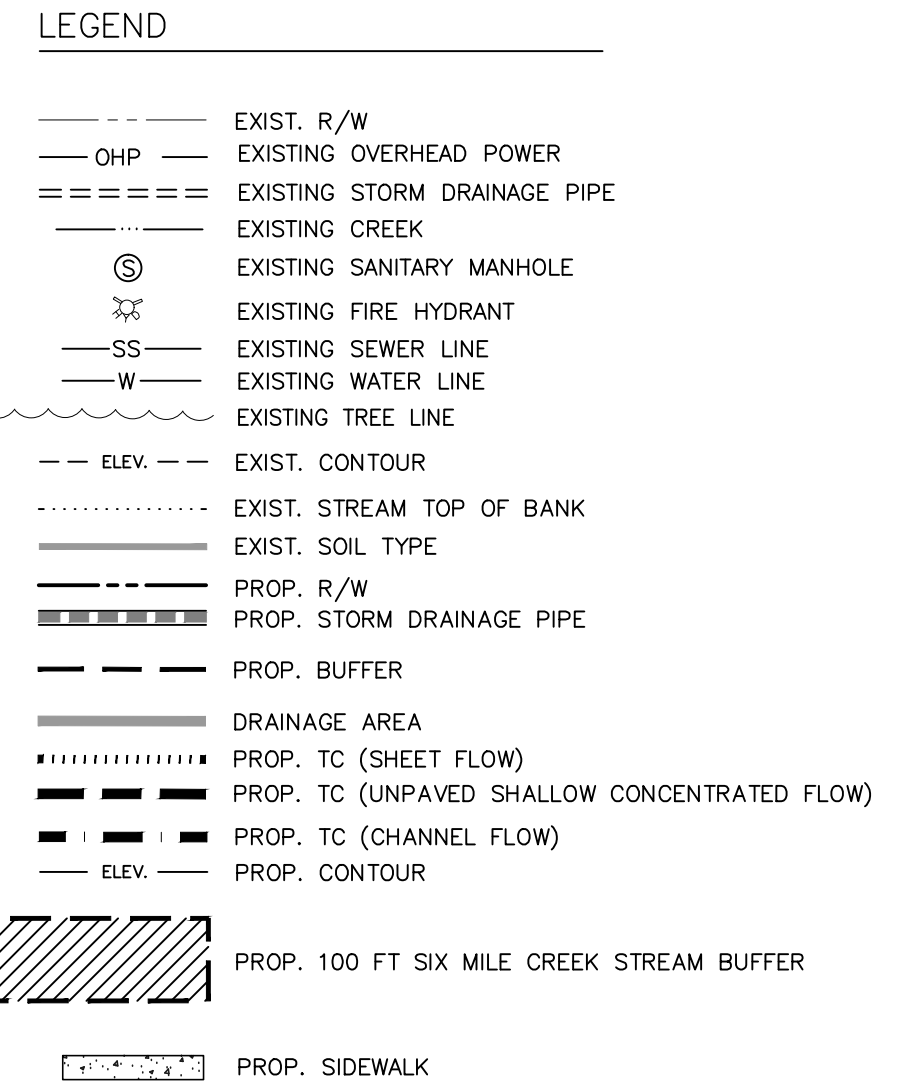
Proposed BMP Summary

Proposed BMP #1 (Sand Filter)
 BMP #1 (Sand Filter) has been designed per the NCDEQ requirements of the contributing drainage area (8.28 ac.) to meet 85% TSS removal, 25% TN and 40% TP removal targets. The hydraulic conductivity of the existing soils at the location of BMP #1 are _____ cm/sec. and do not support infiltration measures. Additionally, the SHWT was established as required to establish the minimum vertical separations as outlined by the NCDEQ requirements. BMP #1 meets or exceeds the following requirements:

- The control and treatment of the difference in the stormwater runoff from the pre-development and post-development conditions for the one-year, 24-hour storm.
- Removal of an 85 percent average annual amount of Total Suspended Solids (85% TSS removal), 25% TN (min) and 40% TP (min) removals
- Draw down the treatment volume no faster than 48 hours, but no slower than 120 hours.
- Discharge the storage volume at a rate equal or less than the pre-development discharge rate for the one-year, 24-hour storm
- Meet design of Stormwater Management Measures set forth in 15A NCAC 02H. 1008.
- The post developed discharge rate at the property boundary is less than or equal to the pre development rate for the (1,2,10,25,50 & 100) one, two, ten, twenty-five, fifty and one hundred year storm events.

Proposed BMP #2 (Wet Pond)
 BMP #2 (Wet Pond) has been designed per the NCDEQ requirements of the contributing drainage area (16.731 ac.) to meet 85% TSS removal, 25% TN and 40% TP removal targets. The hydraulic conductivity of the existing soils at the location of BMP #2 are _____ cm/sec. and do not support infiltration measures. Additionally, the SHWT was established as required to establish the minimum vertical separations as outlined by the NCDEQ requirements. BMP #2 meets or exceeds the following requirements:

- The control and treatment of the difference in the stormwater runoff from the pre-development and post-development conditions for the one-year, 24-hour storm.
- Removal of an 85 percent average annual amount of Total Suspended Solids (85% TSS removal), 25% TN (min) and 40% TP (min) removals
- Draw down the treatment volume no faster than 48 hours, but no slower than 120 hours.
- Discharge the storage volume at a rate equal or less than the pre-development discharge rate for the one-year, 24-hour storm
- Meet design of Stormwater Management Measures set forth in 15A NCAC 02H. 1008.
- The post developed discharge rate at the property boundary is less than or equal to the pre development rate for the (1,2,10,25,50 & 100) one, two, ten, twenty-five, fifty and one hundred year storm events.



Project Narrative

Project Description
 The project site is located in the Town of Weddington, Union County N.C. and is an approximately 50 acre parcel along Weddington-Matthews Road (S.R. 1344). The proposed project consists of thirty-five (35) single family residential units, driveway access road and two (2) BMP's designed in accordance with Town of Weddington, NCDEQ and NCDOT requirements. The project area drains to unknown tributary that eventually flows to Siamle Creek and is subject to the site specific Water Quality Management requirements prescribed by the N.C. Division of Environmental Quality (NCDEQ).

NCDEQ requirements that have been met in the design of this project include the control and treatment of the difference in the stormwater runoff from the pre-development and post-development conditions for the one-year, 24-hour storm, with structural stormwater controls that promote infiltration of flows and groundwater recharge, if practicable based upon soil conditions.

The rainfall amounts used in the analysis of this project were obtained from current data from NOAA.

Structural stormwater controls have been provided to meet the following minimum requirements:

- Remove an 85 percent average annual amount of Total Suspended Solids
- Draw down the treatment volume no faster than 48 hours, but no slower than 120 hours, for detention ponds
- Discharge the storage volume at a rate equal or less than the pre-development discharge rate for the one-year 24-hour storm.
- Meet design of Stormwater Management Measures set forth in 15A NCAC 02H. 1008.

Additional stormwater management measures have been provided for this project as required by Town of Weddington to include the following:

- In accordance with Town of Weddington, the post developed discharge rate at the property boundary is less than or equal to the pre development rate for the (1,2,10,25,50 & 100) one, two, ten, twenty-five, fifty and one hundred year storm events.

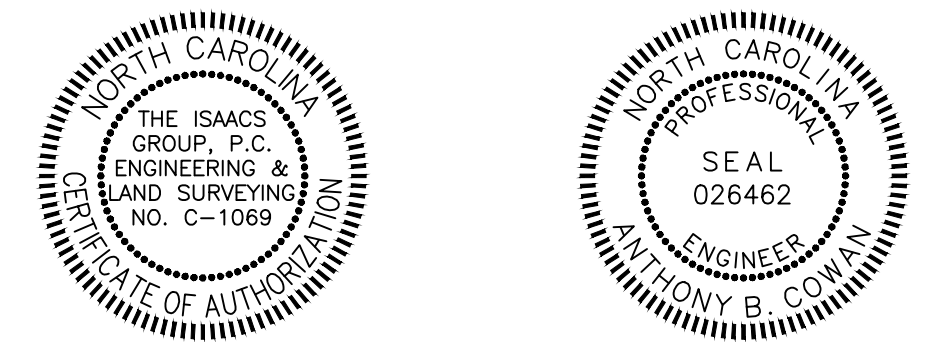
Natural Resources Inventory
 The parcel is covered in approximately 65% woods and 35% grass fields. Wetlands and Environmental Planning Group has performed a wetland and riparian buffer delineation and as a result identified two jurisdictional wetlands, one along the east side and one on the west portion of the property and also identified two jurisdictional streams that bisect the property. No Wetland impact will be made as part of this project.

Existing on-site slopes range from 2 to 20 percent on average and existing soil types on site are Cecil (Hydrologic Group B) and Helena (Hydrologic group C). Soil and Forestry Services of the Carolinas Summit has performed on-site geotechnical testing to establish hydraulic conductivity of on-site soils for suitability for infiltration devices along with the vertical location of Seasonal High Water Table at the location of the proposed BMP 1 & 2.

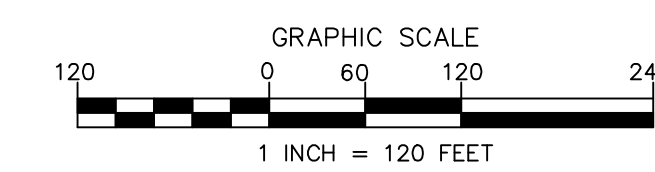
Existing and Proposed Drainage Patterns
 Proposed drainage patterns to the proposed on-site BMP are maintaining existing drainage patterns to the maximum extent practicable as need to create a balanced distribution of storm water flow thru BMP 1 and BMP 2 in a consistent manner with existing flows.

BUILT UPON AREA NOTE:

PROPOSED BUILT UPON AREA (BUA) FOR EACH POST-DEVELOPED DRAINAGE AREA CONTRIBUTING FLOW TO PROPOSED BMP'S BASED UPON PROPOSED ROADWAYS BUA FOR ROADWAY CONSTRUCTION PHASE AND A CONSERVATIVE ESTIMATE OF 6,500 S.F. BUA PER RESIDENTIAL LOT AT FINAL BUILD-OUT. (TOTAL OF 35 PROPOSED LOTS)



FINAL DRAWING
 FOR REVIEW PURPOSES ONLY



NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
 WEDDINGTON, NORTH CAROLINA

Title: **POST-DEV DRAINAGE AREA MAP**

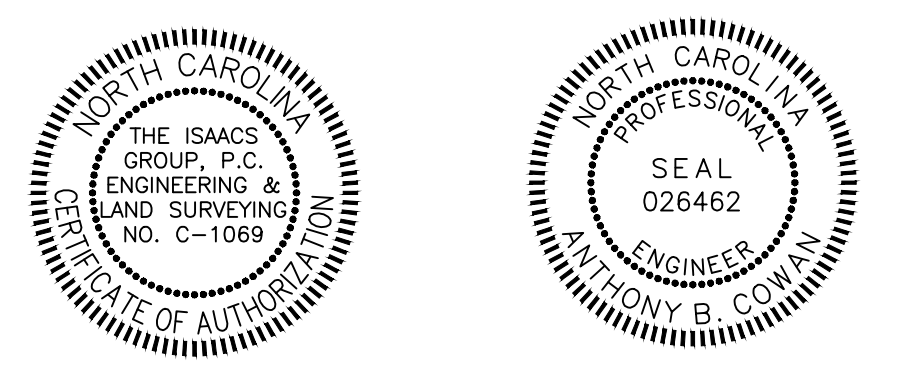
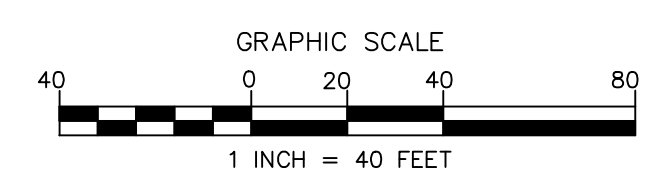
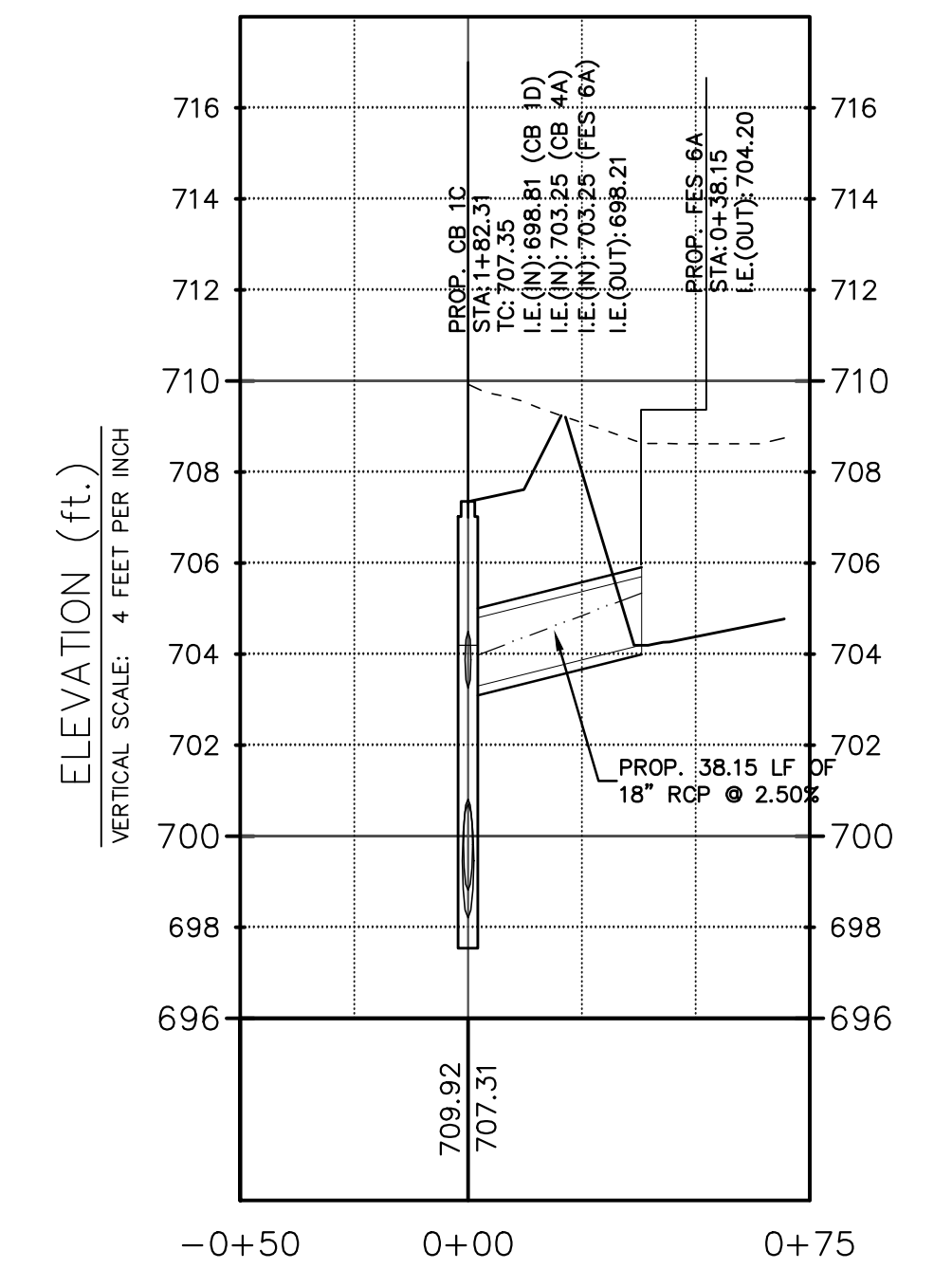
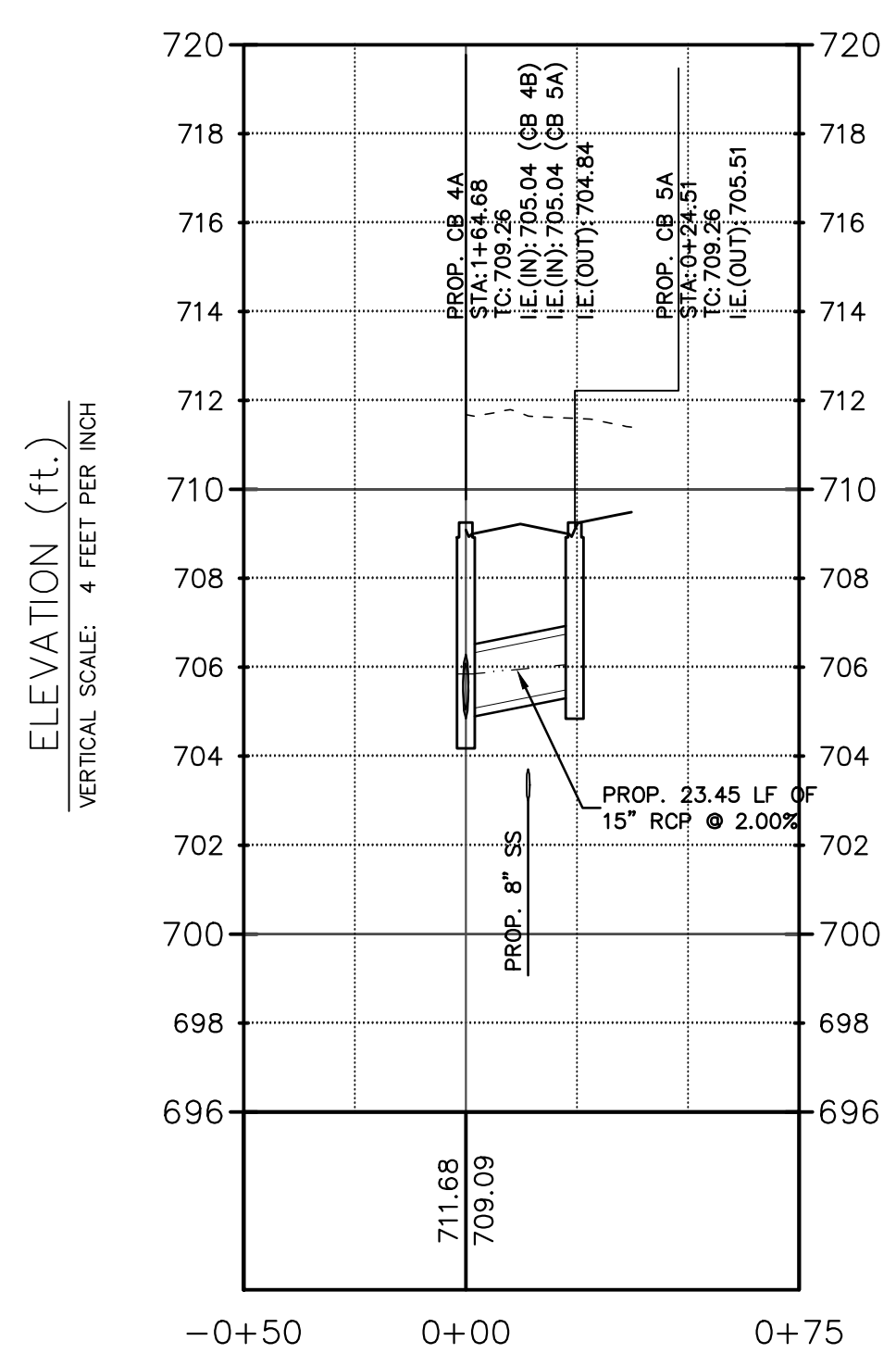
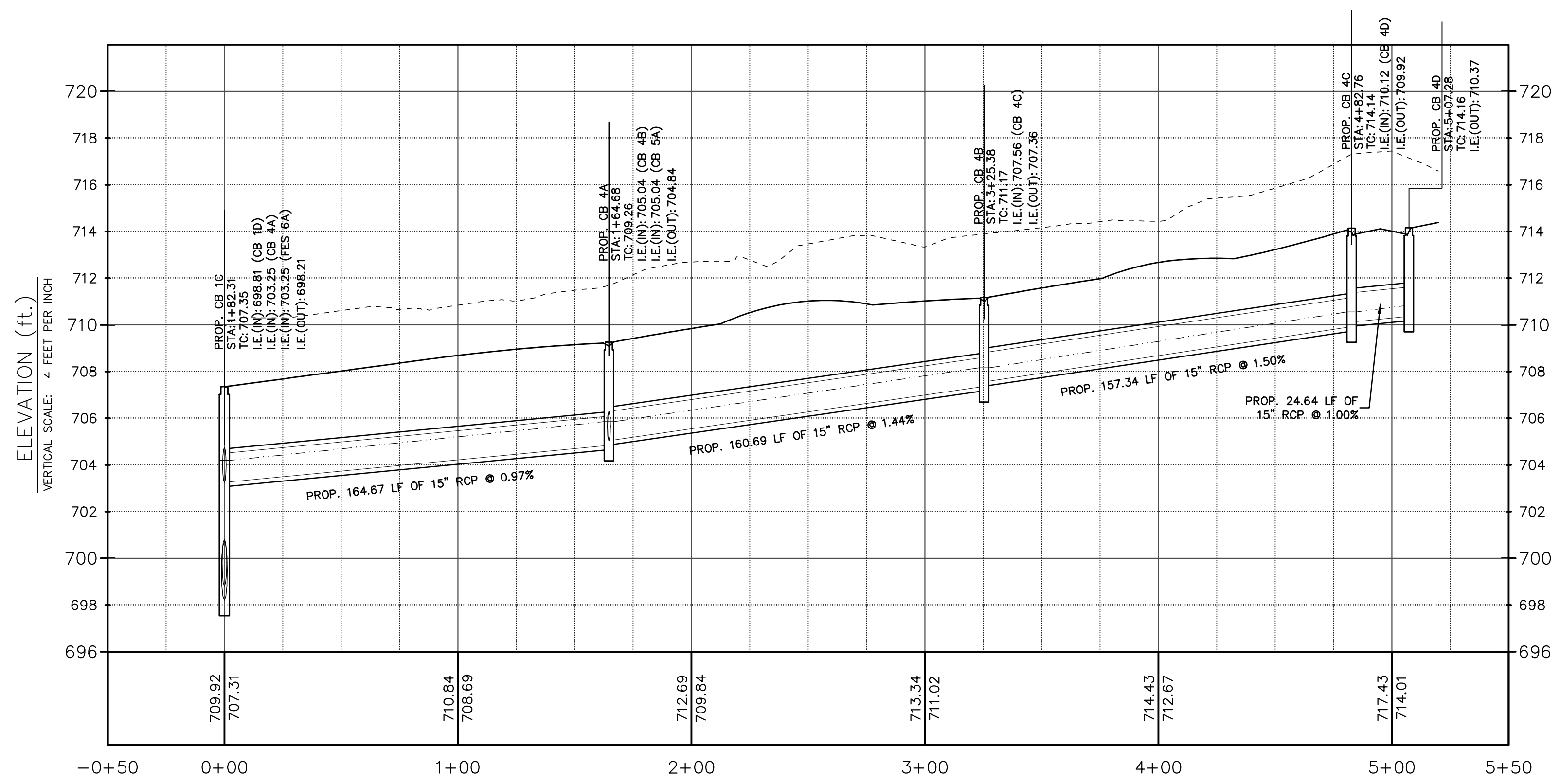
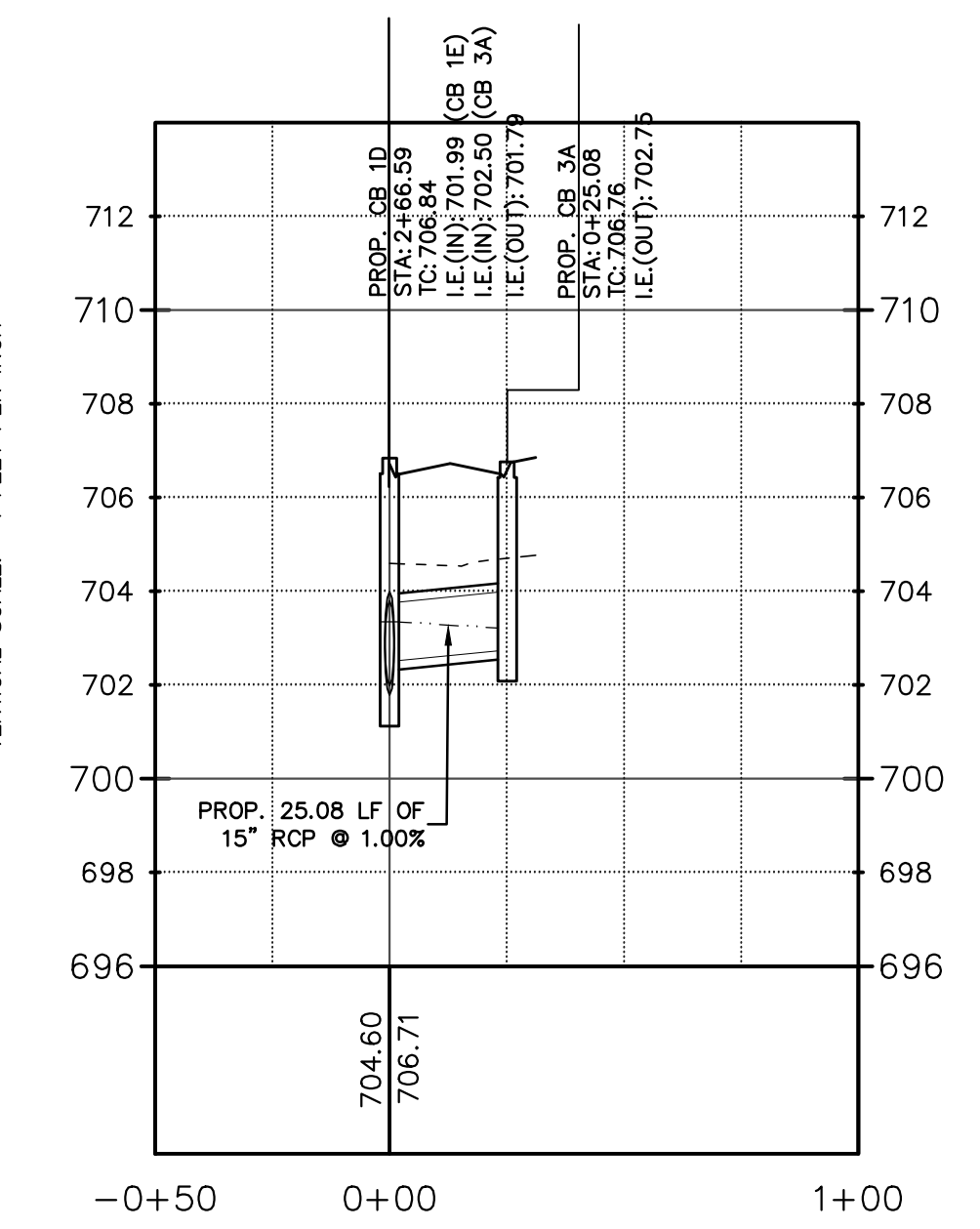
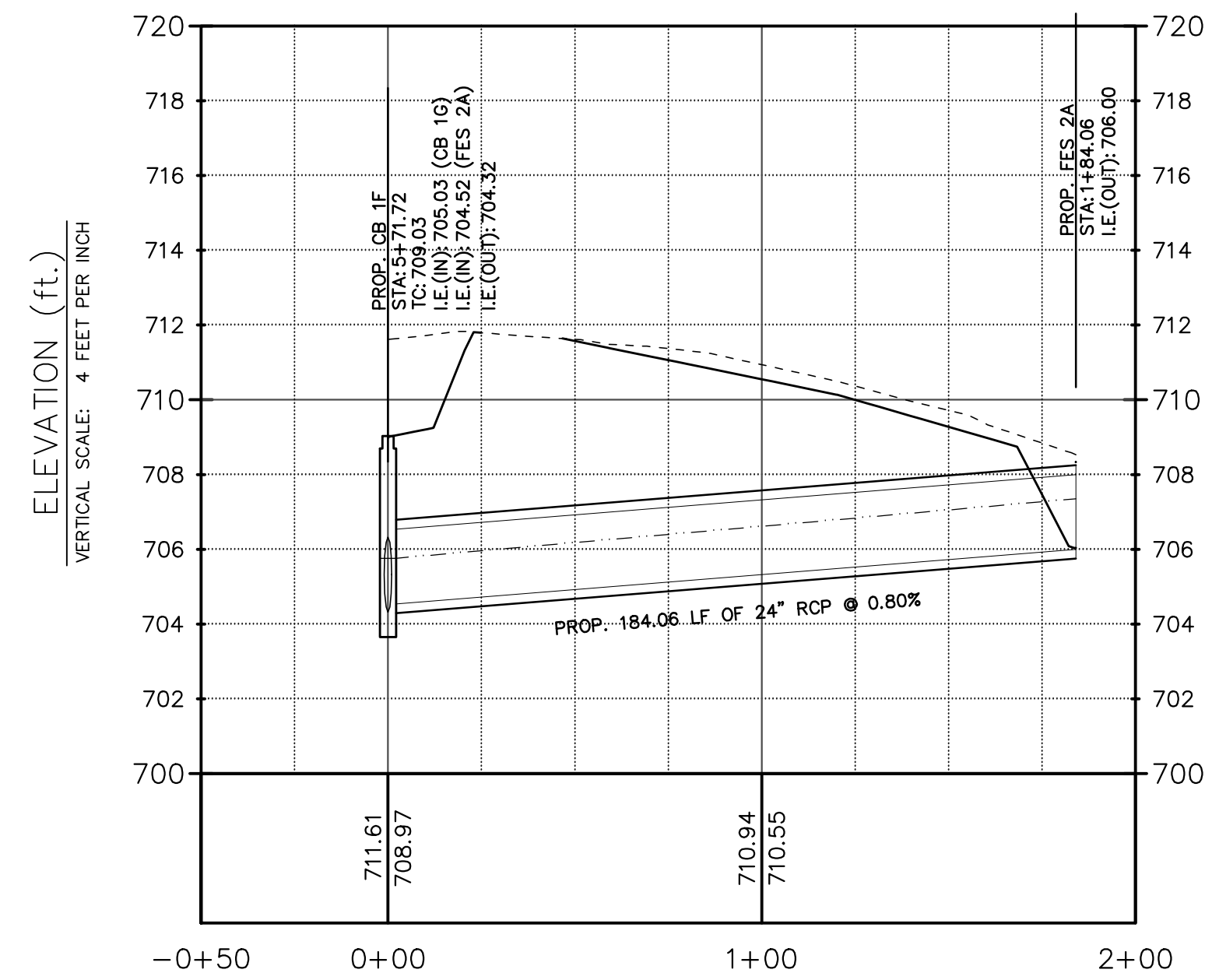
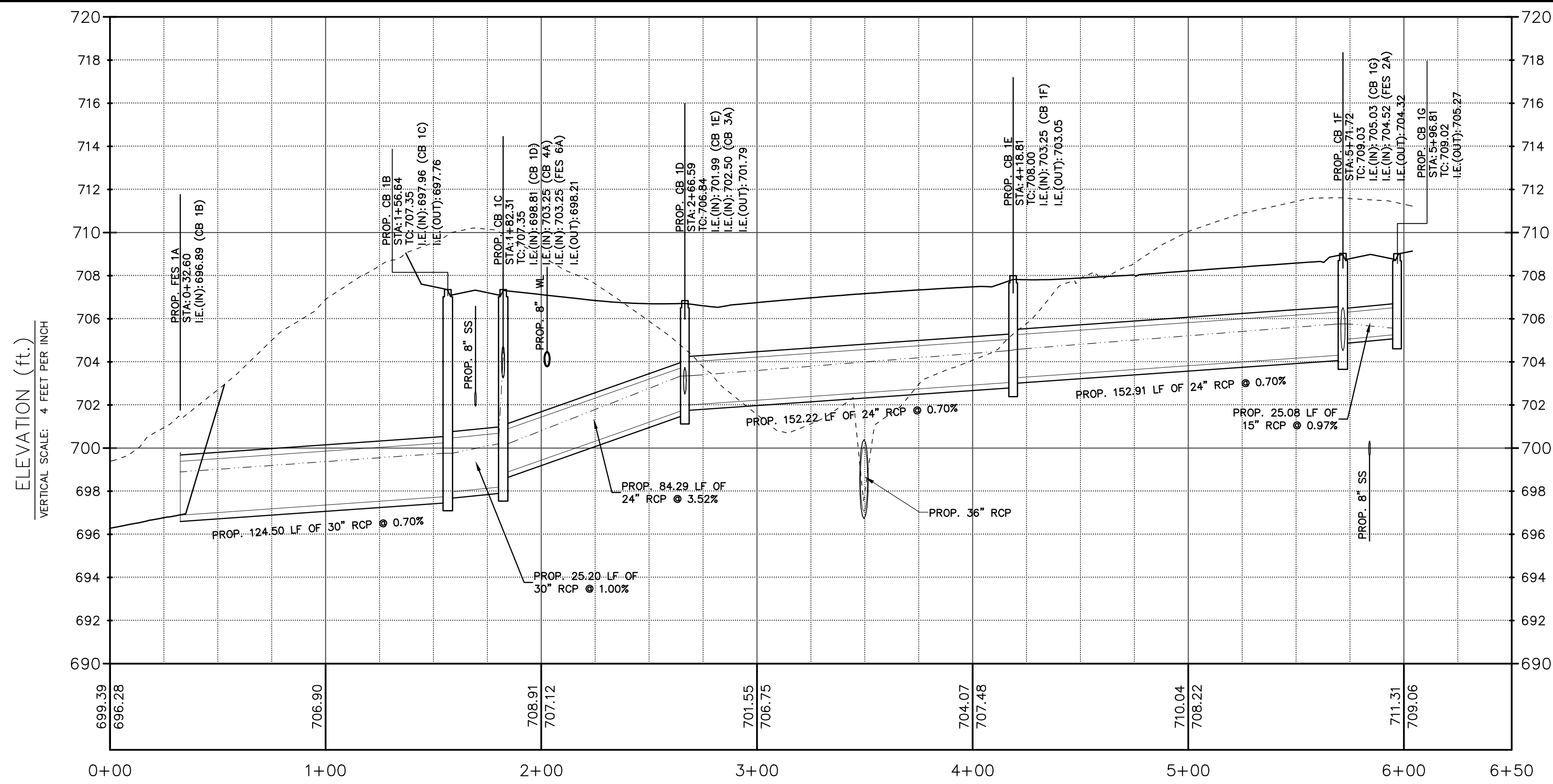
File #: 16157-B-BMP.DWG Date: 06/28/17 Project Egr: ABC

THE ISAACS GROUP, P.C.
 CIVIL ENGINEERING DESIGN AND SURVEYING

8720 RED OAK BOULEVARD, SUITE 420
 CHARLOTTE, N.C. 28217
 PHONE (704) 527-3440 FAX (704) 527-8335

Scale: 1"=120'

C6.2



FINAL DRAWING
 FOR REVIEW PURPOSES ONLY

Project: **WEDDINGTON MATTHEWS RD. DEV.**
 WEDDINGTON, NORTH CAROLINA

Title: **STORM PROFILE**

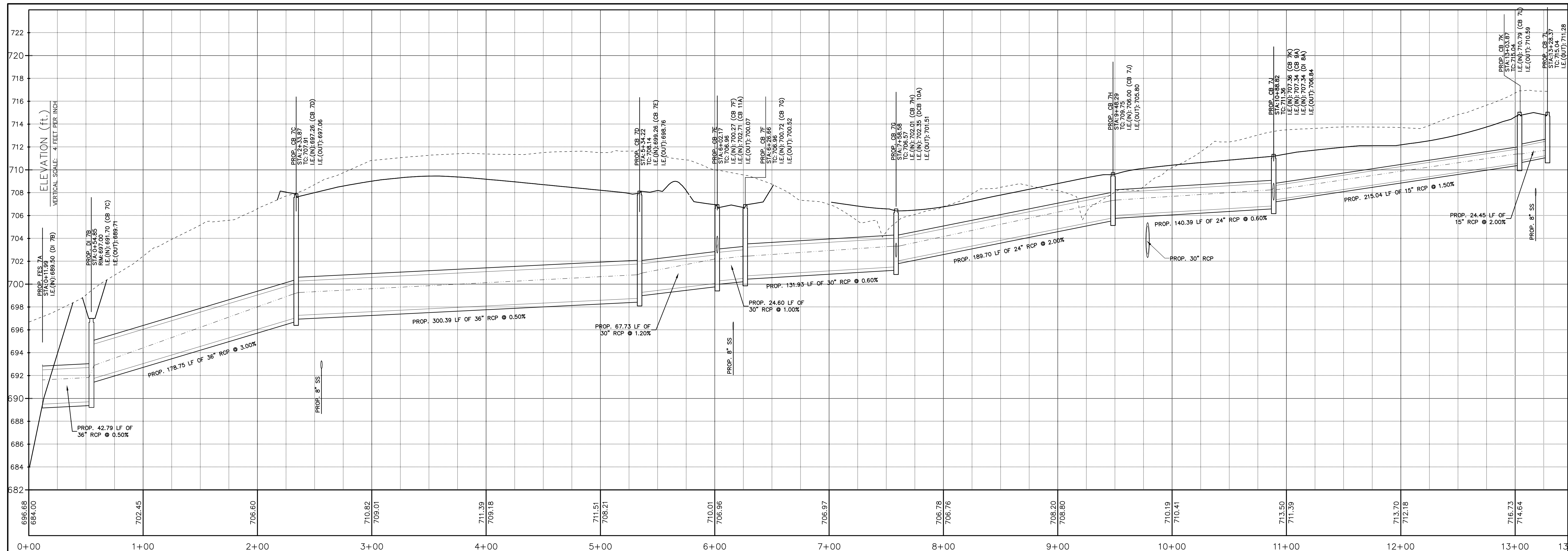
File #: 16157-D-STM.DWG | Date: 06/28/17 | Project Egr: ABC

THE ISAACS GROUP
 CIVIL ENGINEERING DESIGN AND SURVEYING

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 CHARLOTTE, N.C. 28217
 PHONE (704) 527-3440 FAX (704) 527-8335

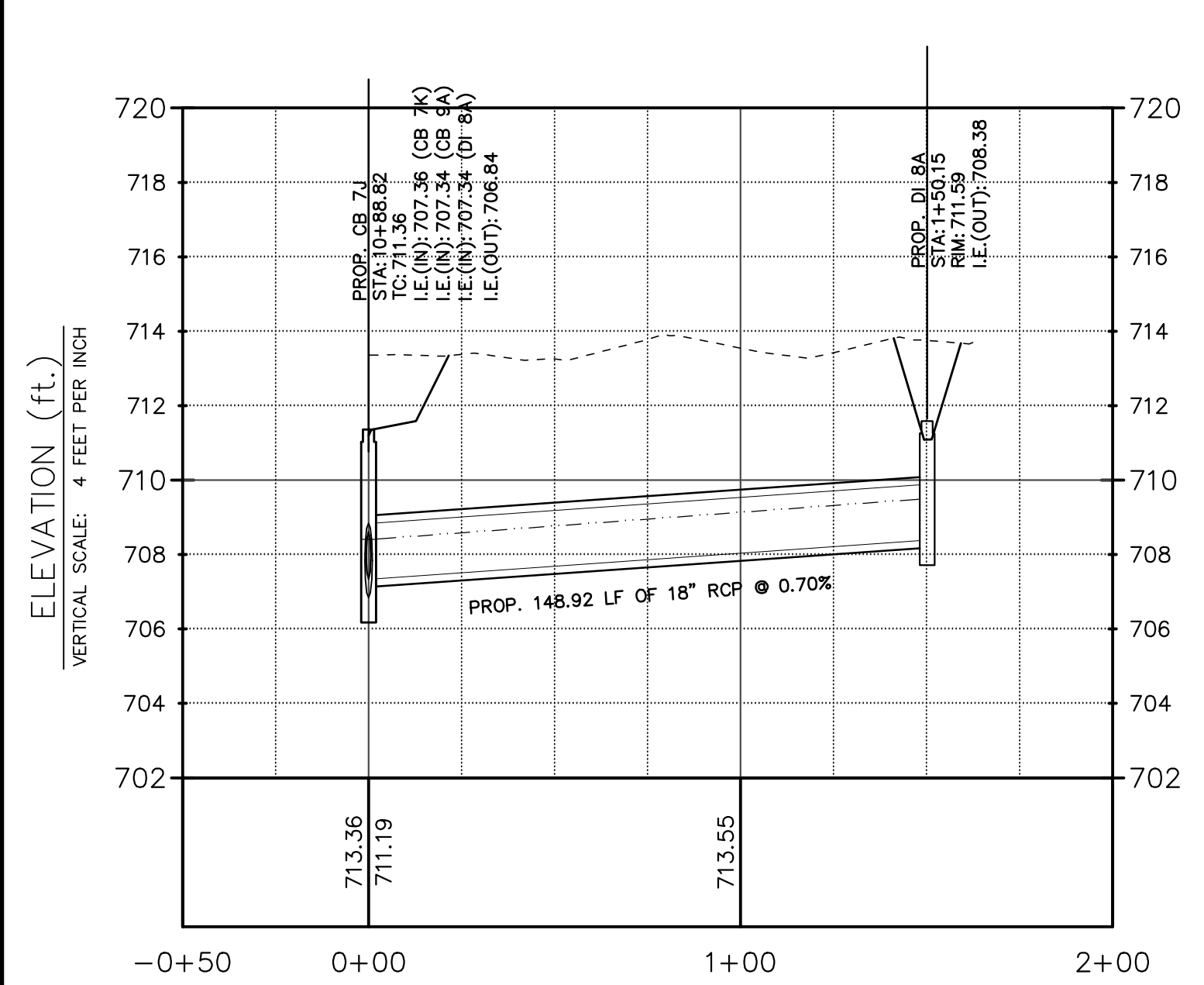
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C7.0

NO.	BY	DATE	REVISION



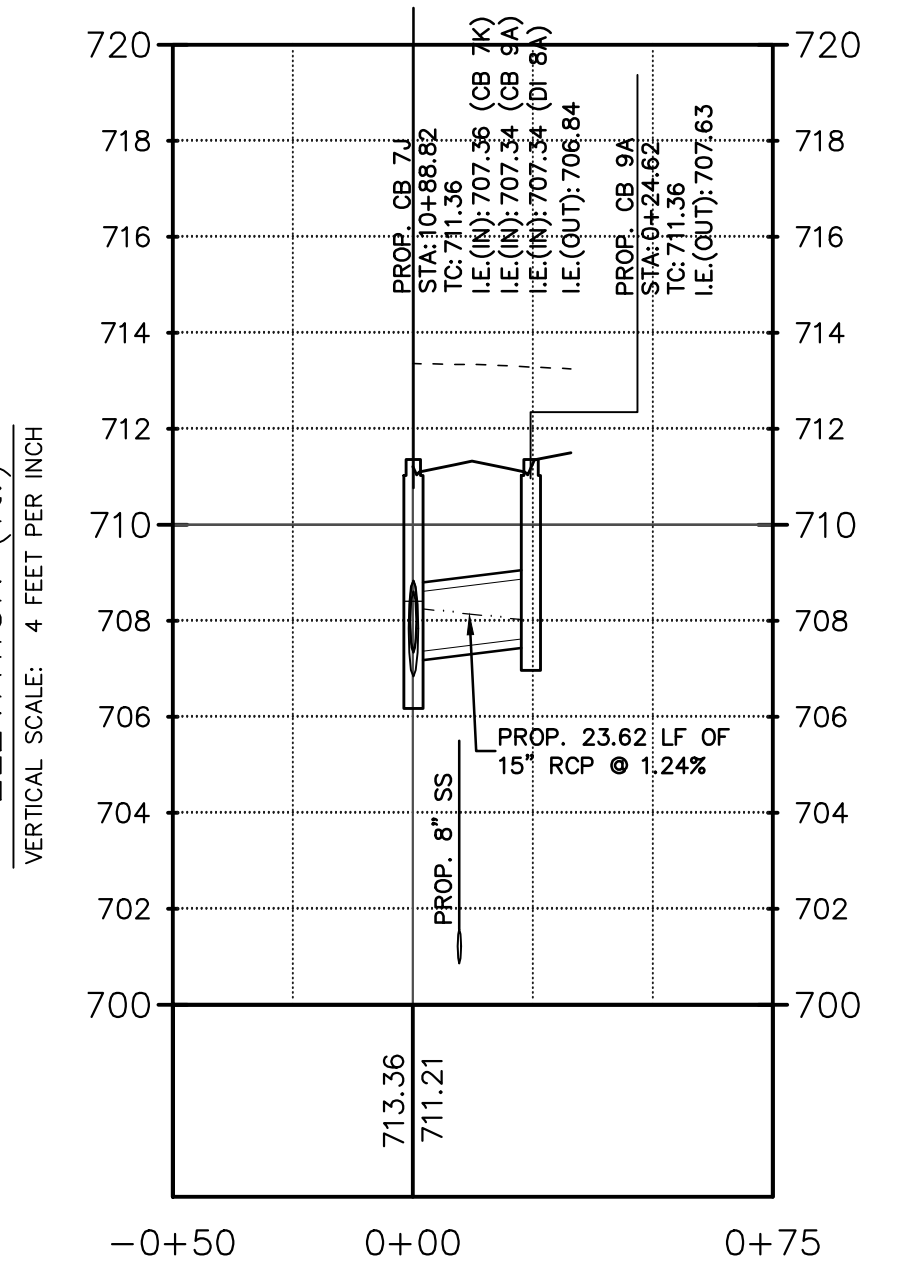
STORM PIPE RUN 7 (ft.)
HORIZONTAL SCALE: 40 FEET PER INCH

EXISTING GROUND AT CL
PROPOSED GROUND
HYDRAULIC GRADELINE



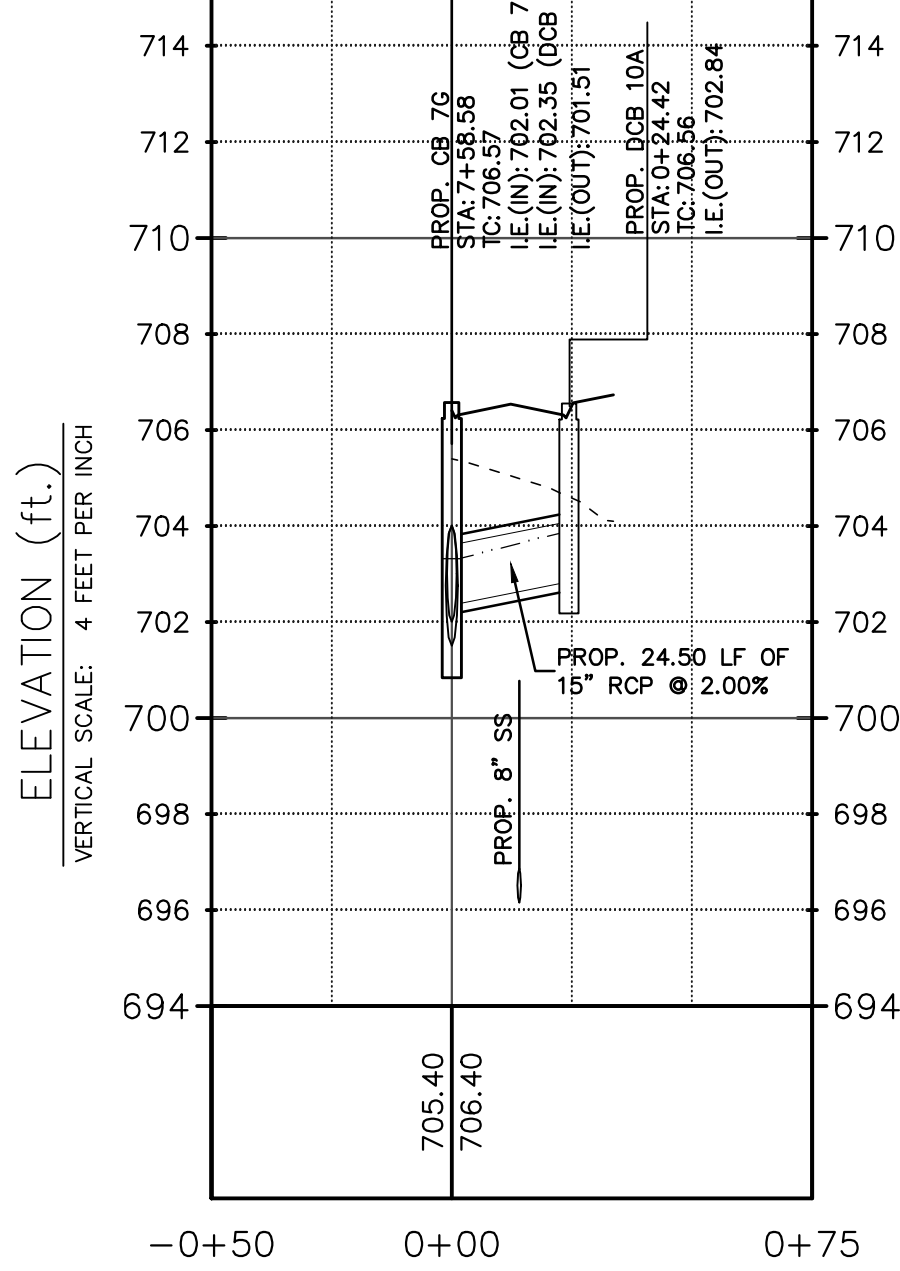
STORM PIPE RUN 8 (ft.)
HORIZONTAL SCALE: 40 FEET PER INCH

EXISTING GROUND AT CL
PROPOSED GROUND
HYDRAULIC GRADELINE



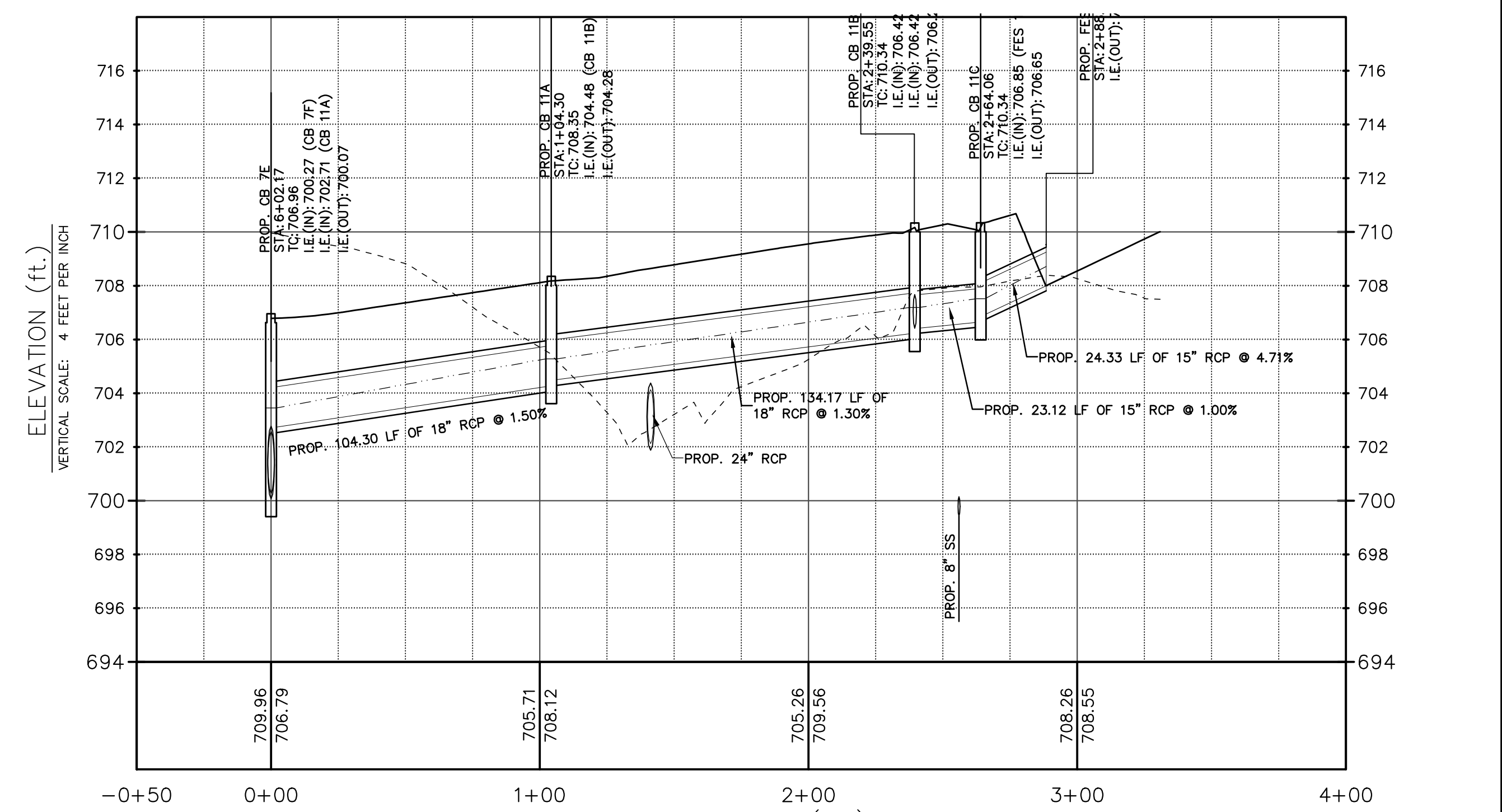
STORM PIPE RUN 9 (ft.)
HORIZONTAL SCALE: 40 FEET PER INCH

EXISTING GROUND AT CL
PROPOSED GROUND
HYDRAULIC GRADELINE



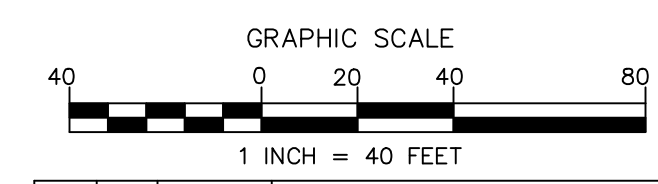
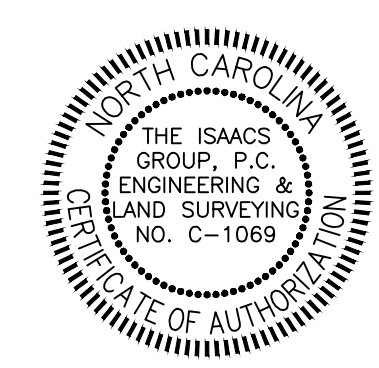
STORM PIPE RUN 10 (ft.)
HORIZONTAL SCALE: 40 FEET PER INCH

EXISTING GROUND AT CL
PROPOSED GROUND
HYDRAULIC GRADELINE



STORM PIPE RUN 11 (ft.)
HORIZONTAL SCALE: 40 FEET PER INCH

EXISTING GROUND AT CL
PROPOSED GROUND
HYDRAULIC GRADELINE



NO.	BY	DATE	REVISION

FINAL DRAWING
FOR REVIEW PURPOSES ONLY

Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

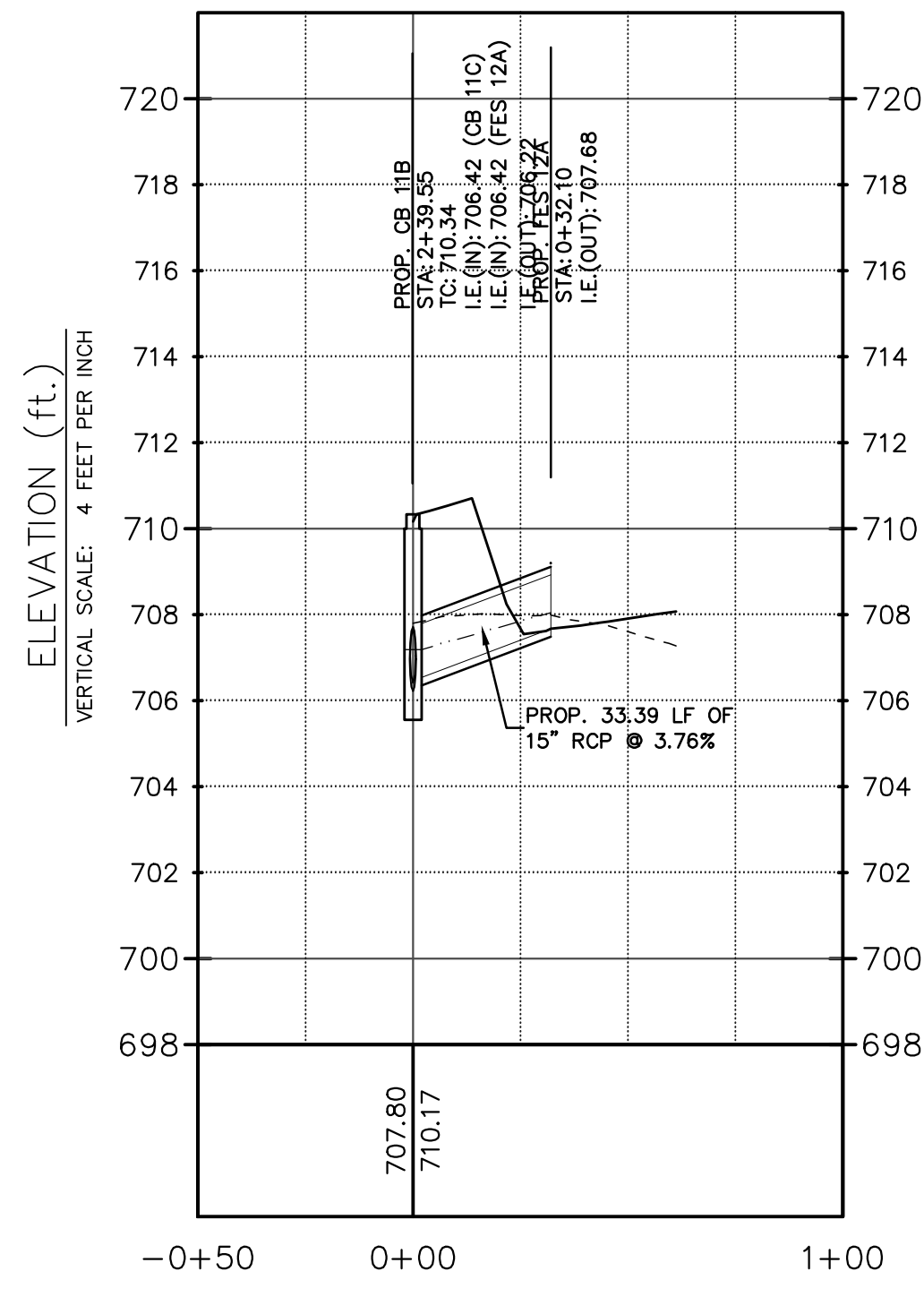
Title: **STORM PROFILE**

File #: 16157-D-STM.DWG | Date: 03/23/17 | Project Egr: ABC

Design By: ABC
Drawn By: BER
Scale: 1"=40'

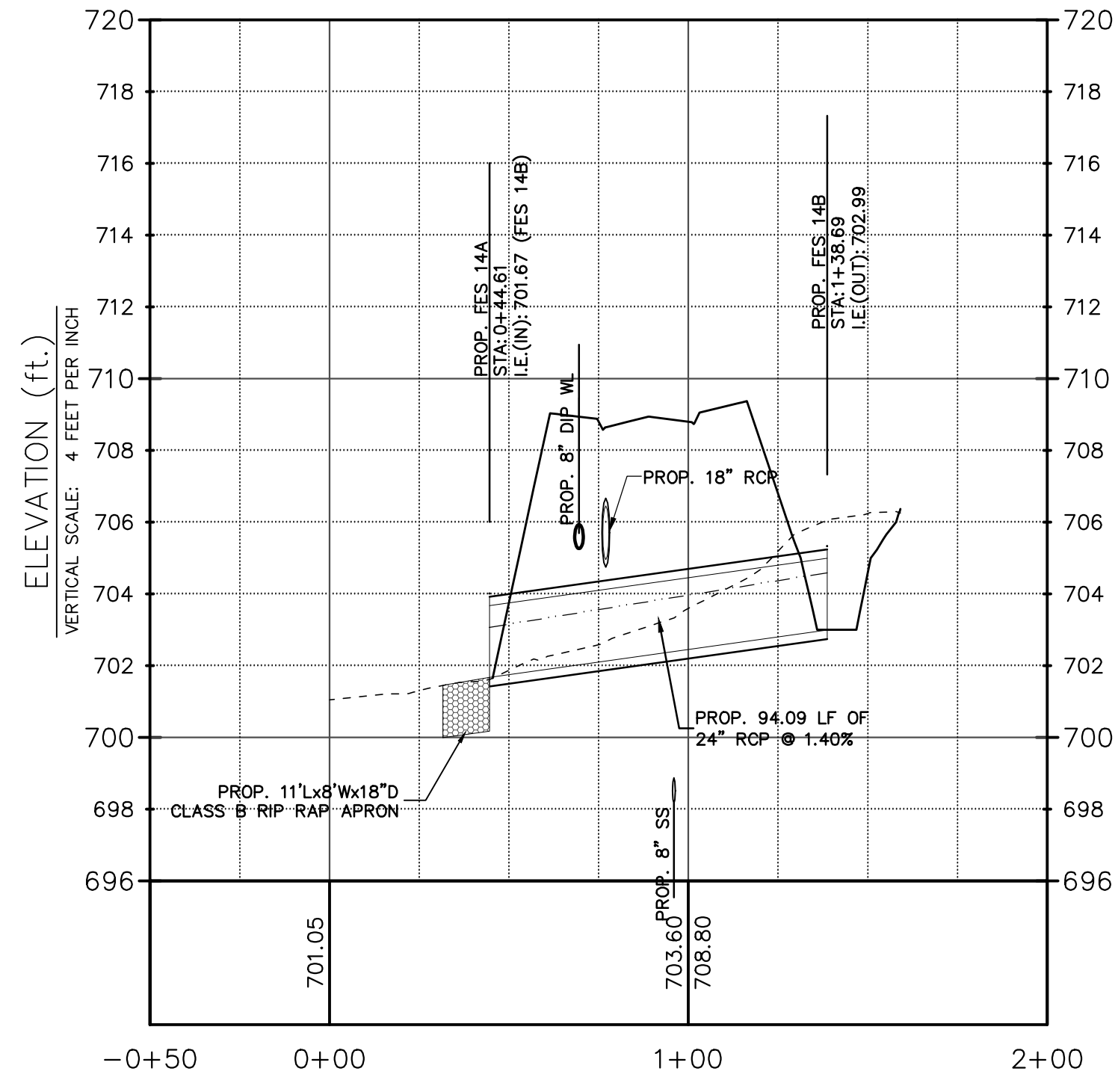
8720 RED OAK BOULEVARD, SUITE 420
CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

C7.1



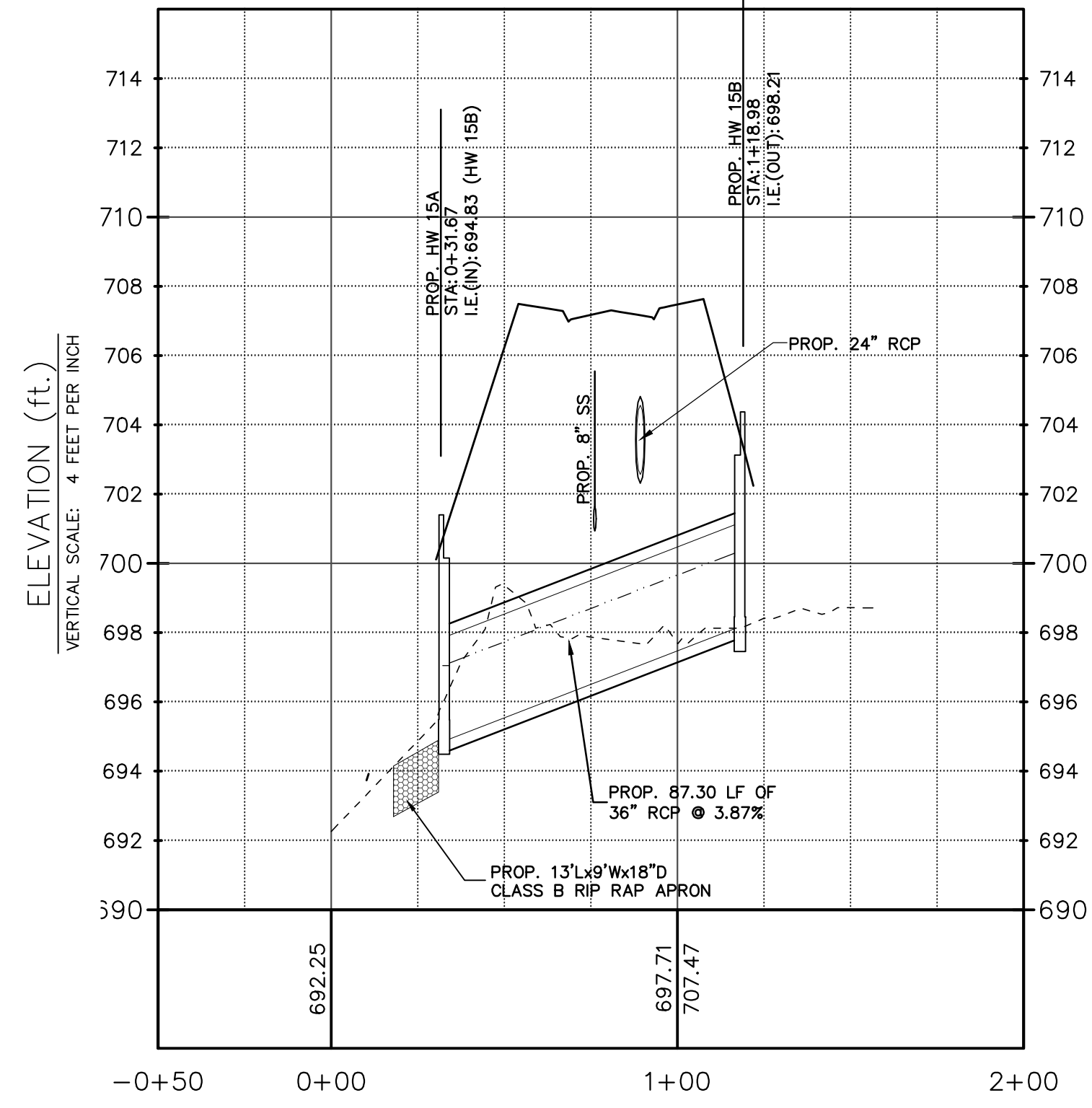
STORM PIPE RUN 12 (ft.)

HORIZONTAL SCALE: 40 FEET PER INCH
 EXISTING GROUND AT CL
 PROPOSED GROUND
 HYDRAULIC GRADELINE



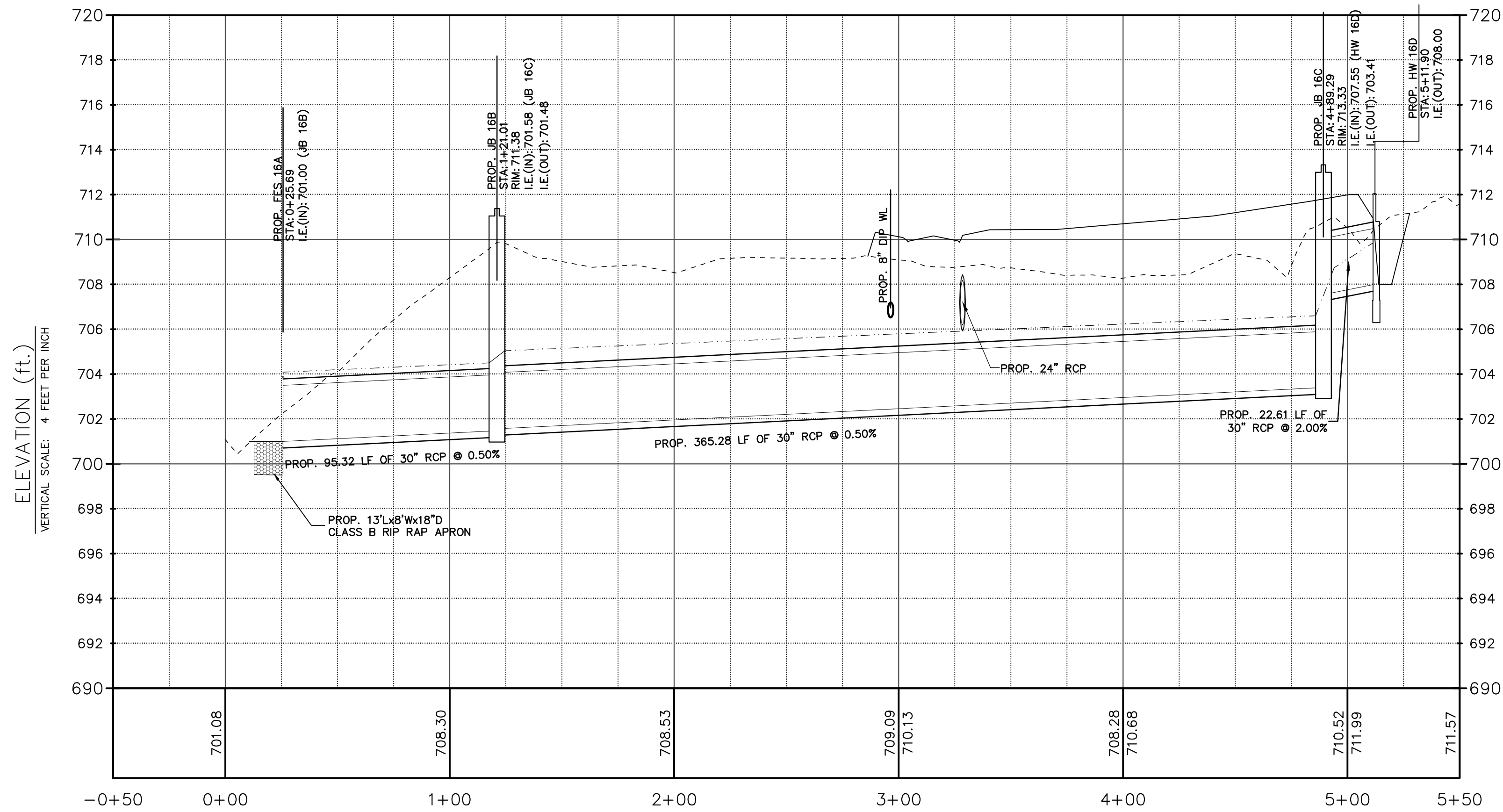
STORM PIPE RUN 14 (ft.)

HORIZONTAL SCALE: 40 FEET PER INCH
 EXISTING GROUND AT CL
 PROPOSED GROUND
 HYDRAULIC GRADELINE



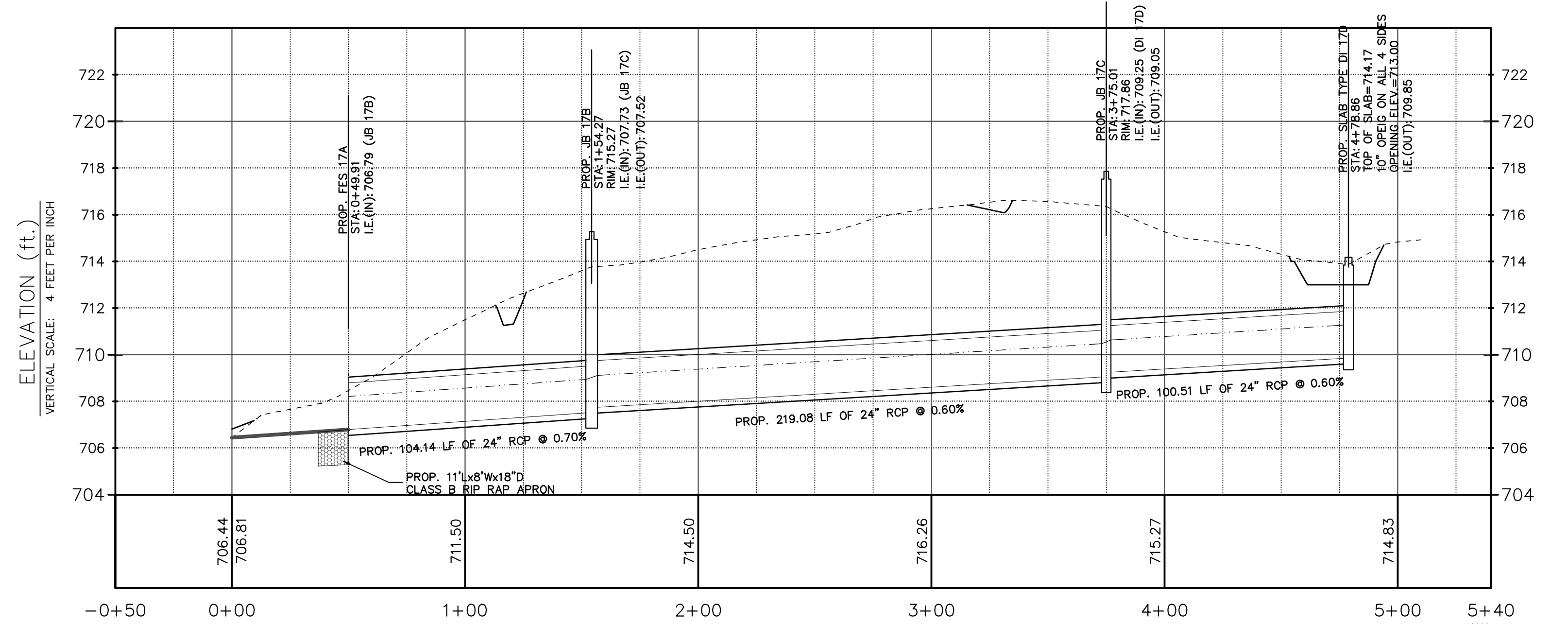
STORM PIPE RUN 15 (ft.)

HORIZONTAL SCALE: 40 FEET PER INCH
 EXISTING GROUND AT CL
 PROPOSED GROUND
 HYDRAULIC GRADELINE



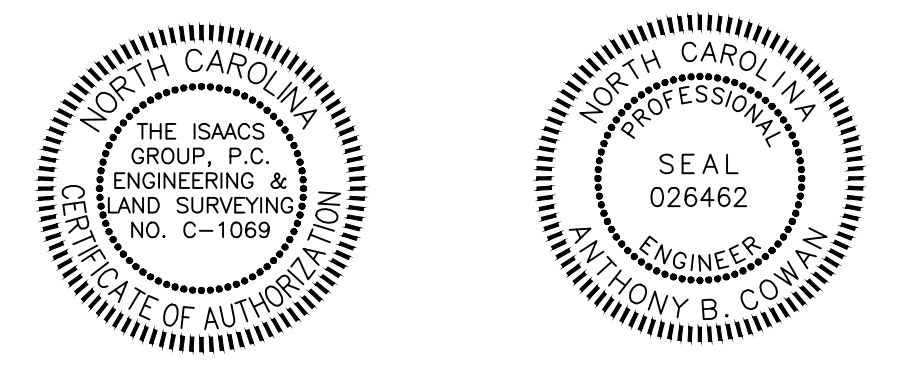
STORM PIPE RUN 16 (ft.)

HORIZONTAL SCALE: 40 FEET PER INCH
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 PROPOSED GROUND
 HYDRAULIC GRADELINE

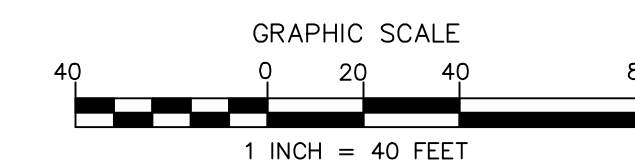


STORM PIPE RUN 17 (ft.)

HORIZONTAL SCALE: 40 FEET PER INCH
 EXISTING GROUND AT CL
 PROPOSED GROUND
 HYDRAULIC GRADELINE



FINAL DRAWING
 FOR REVIEW PURPOSES ONLY



NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
 WEDDINGTON, NORTH CAROLINA

Title: **STORM PROFILE**

File #: 16157-D-STM.DWG | Date: 06/28/17 | Project Egr: ABC

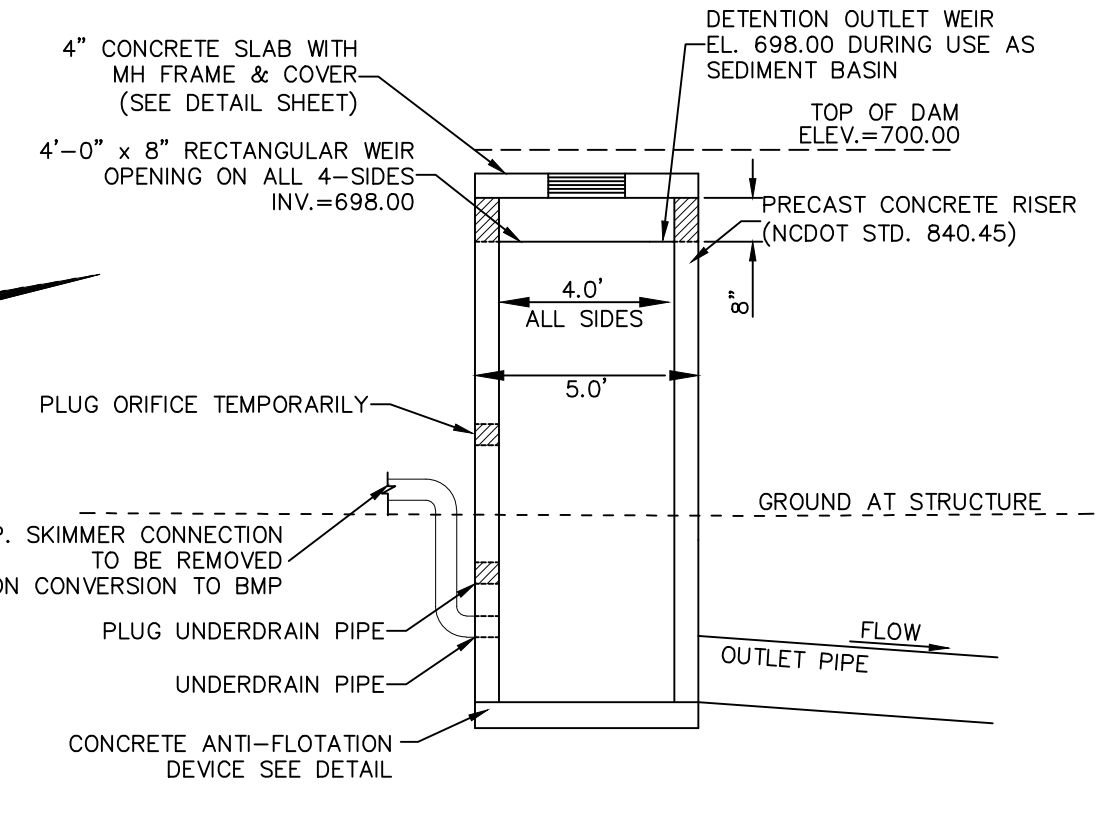
THE ISAACS GROUP, P.C.
 ENGINEERING AND SURVEYING
 NO. C-1069

Design By: ABC
 Drawn By: BER
 Scale: 1"=40'

8720 RED OAK BOULEVARD, SUITE 420
 CHARLOTTE, N.C. 28217
 PHONE (704) 527-3440 FAX (704) 527-8335

C7.2

MATCHLINE - (SEE SHEET C8.1 FOR CONTINUATION)

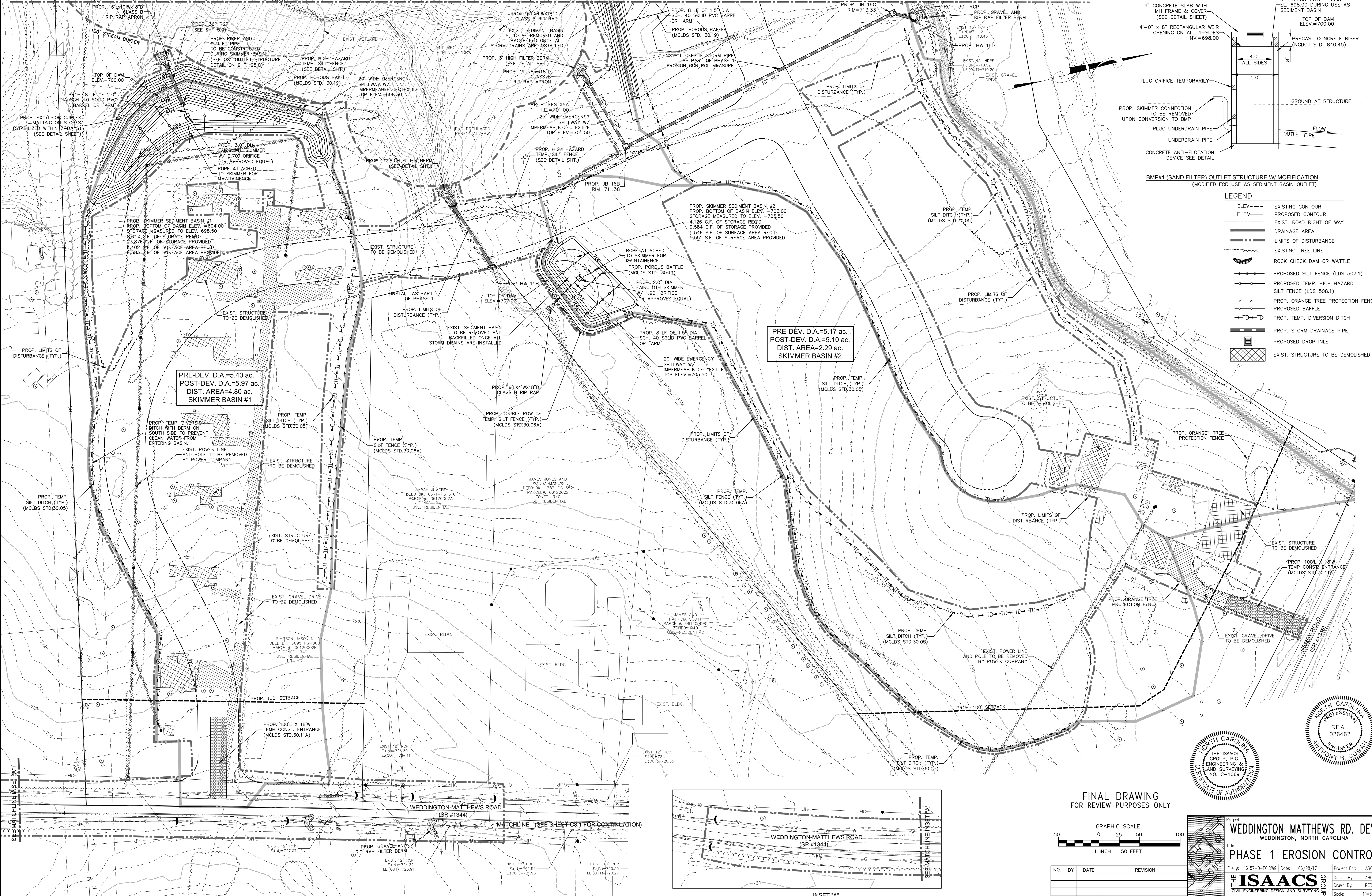


LEGEND

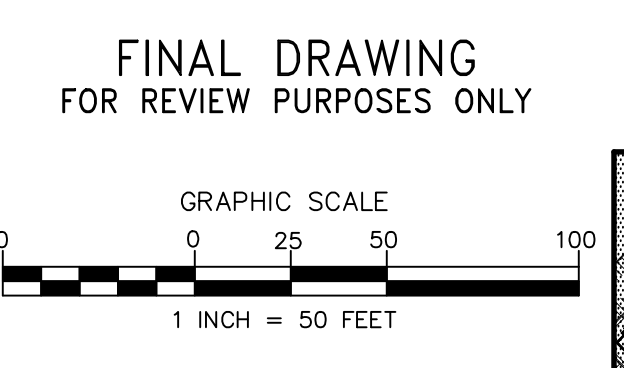
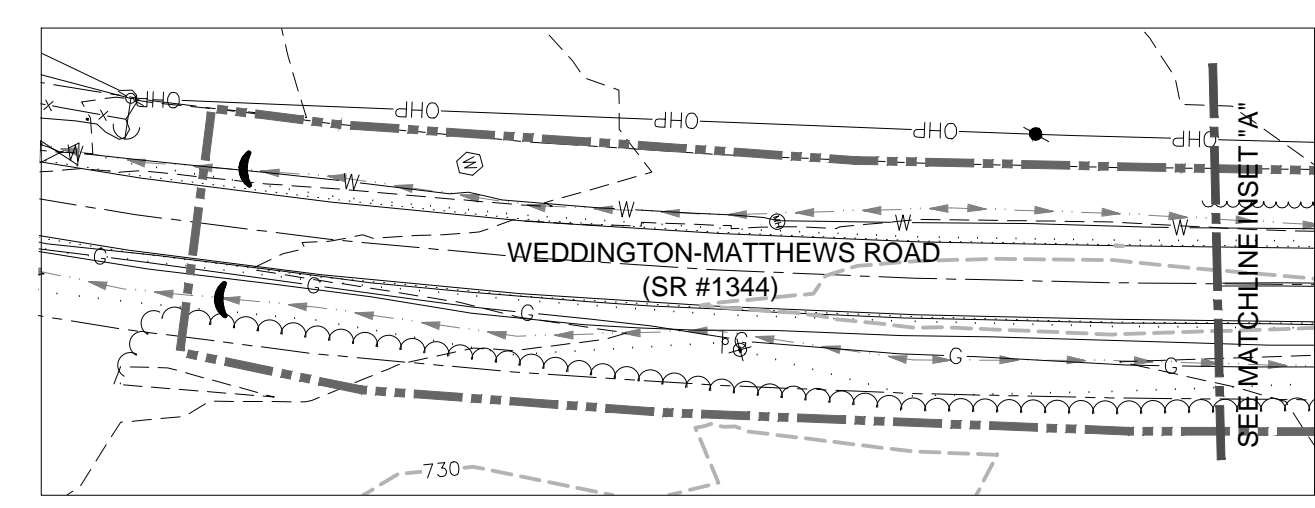
- ELEV. --- EXISTING CONTOUR
- EXISTING CONTOUR
- EXIST. ROAD RIGHT OF WAY
- DRAINAGE AREA
- LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- ROCK CHECK DAM OR WALL
- PROPOSED SILT FENCE (LDS 507.1)
- PROPOSED TEMP. HIGH HAZARD SILT FENCE (LDS 508.1)
- PROP. ORANGE TREE PROTECTION FENCE
- PROP. TEMP. DIVERSION DITCH
- PROP. STORM DRAINAGE PIPE
- PROPOSED DROP INLET
- EXIST. STRUCTURE TO BE DEMOLISHED

PRE-DEV. D.A.=5.40 ac.
POST-DEV. D.A.=5.97 ac.
DIST. AREA=4.80 ac.
SKIMMER BASIN #1

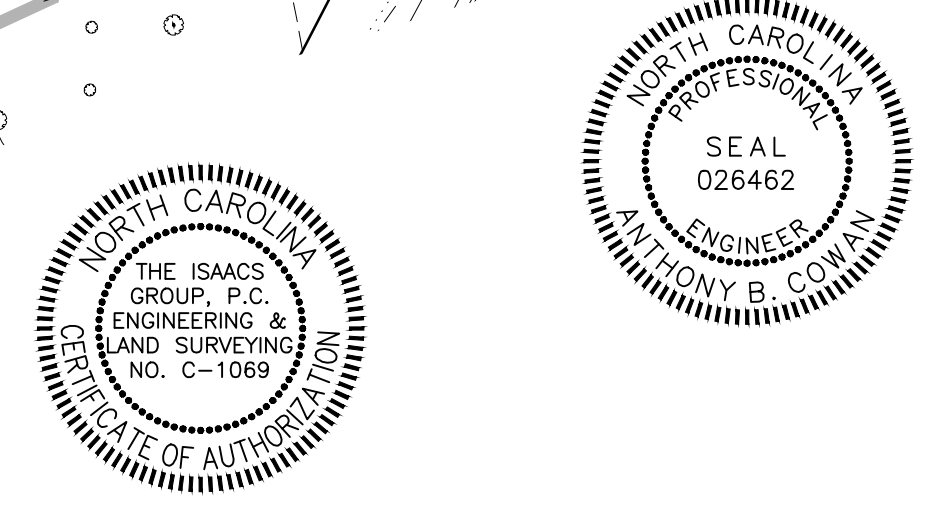
PRE-DEV. D.A.=5.17 ac.
POST-DEV. D.A.=5.10 ac.
DIST. AREA=2.29 ac.
SKIMMER BASIN #2



SEE MATCHLINE INSET 'A'



NO.	BY	DATE	REVISION



Project: WEDDINGTON MATTHEWS RD. DEV. WEDDINGTON, NORTH CAROLINA

Title: PHASE 1 EROSION CONTROL

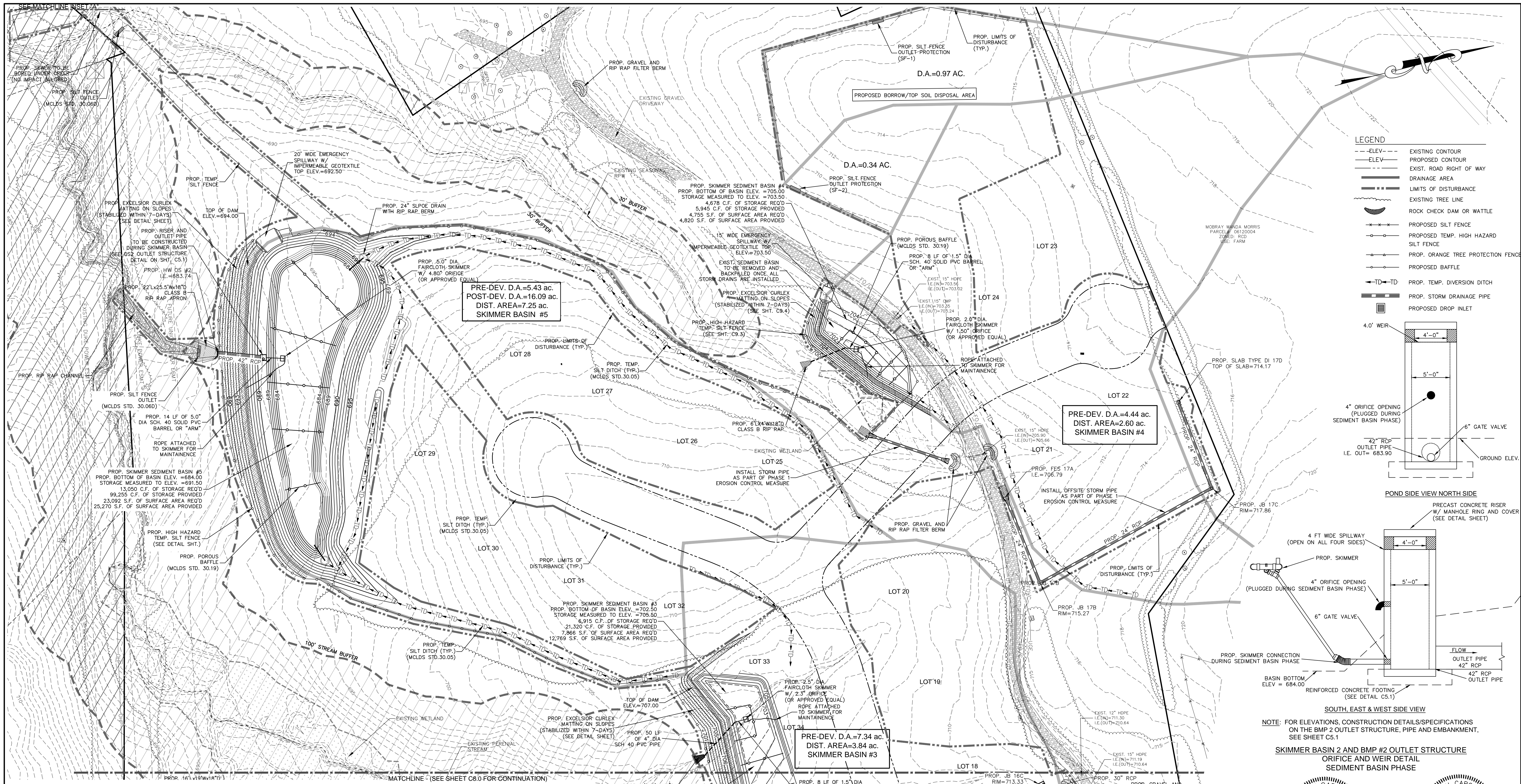
File #: 16157-B-EC.DWG Date: 06/28/17 Project Egr: ABC

ISAACS
THE ISAACS GROUP, P.C.
ENGINEERING & LAND SURVEYING
NO. C-10969

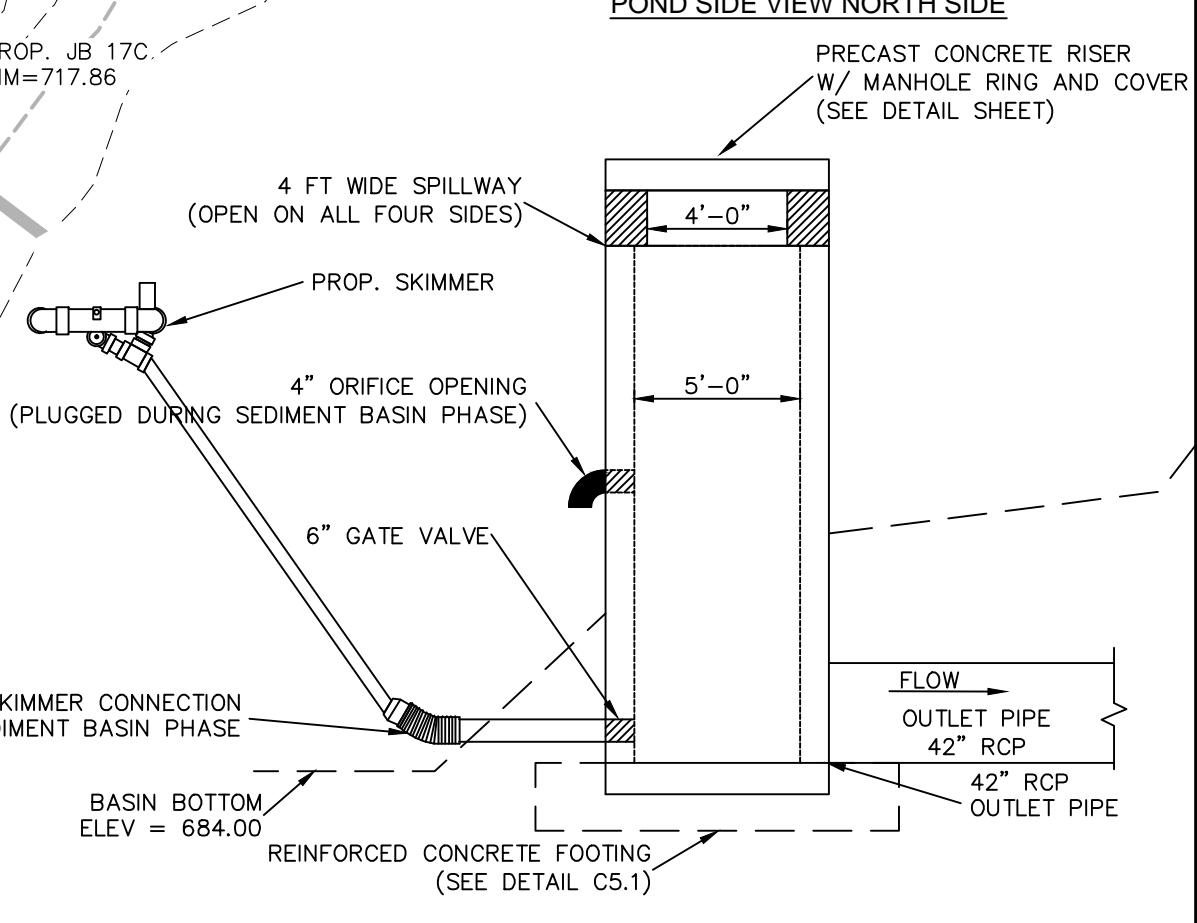
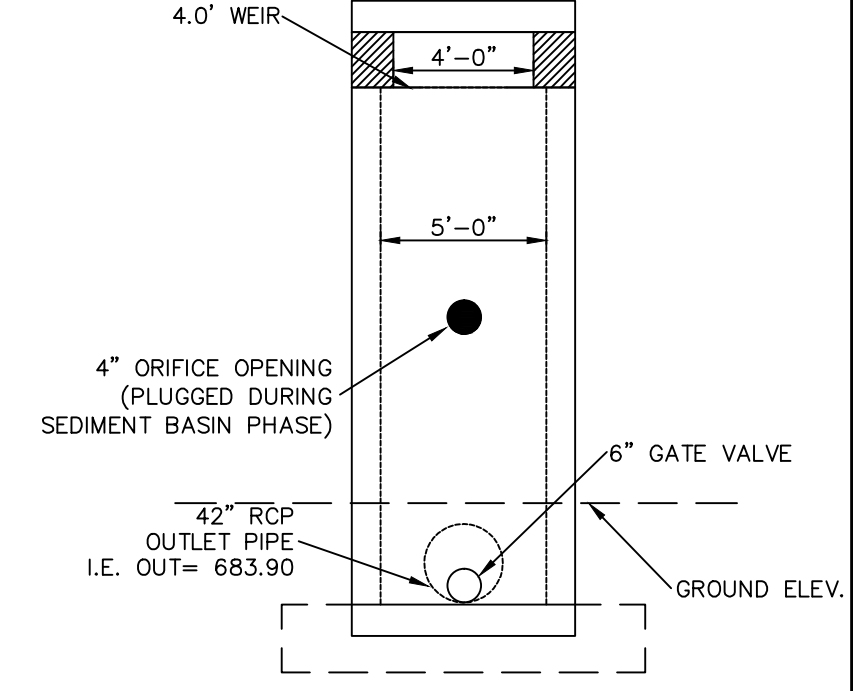
Design By: ABC
Drawn By: BER
Scale: 1"=50'

8720 RED OAK BOULEVARD, SUITE 420
CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

C8.0

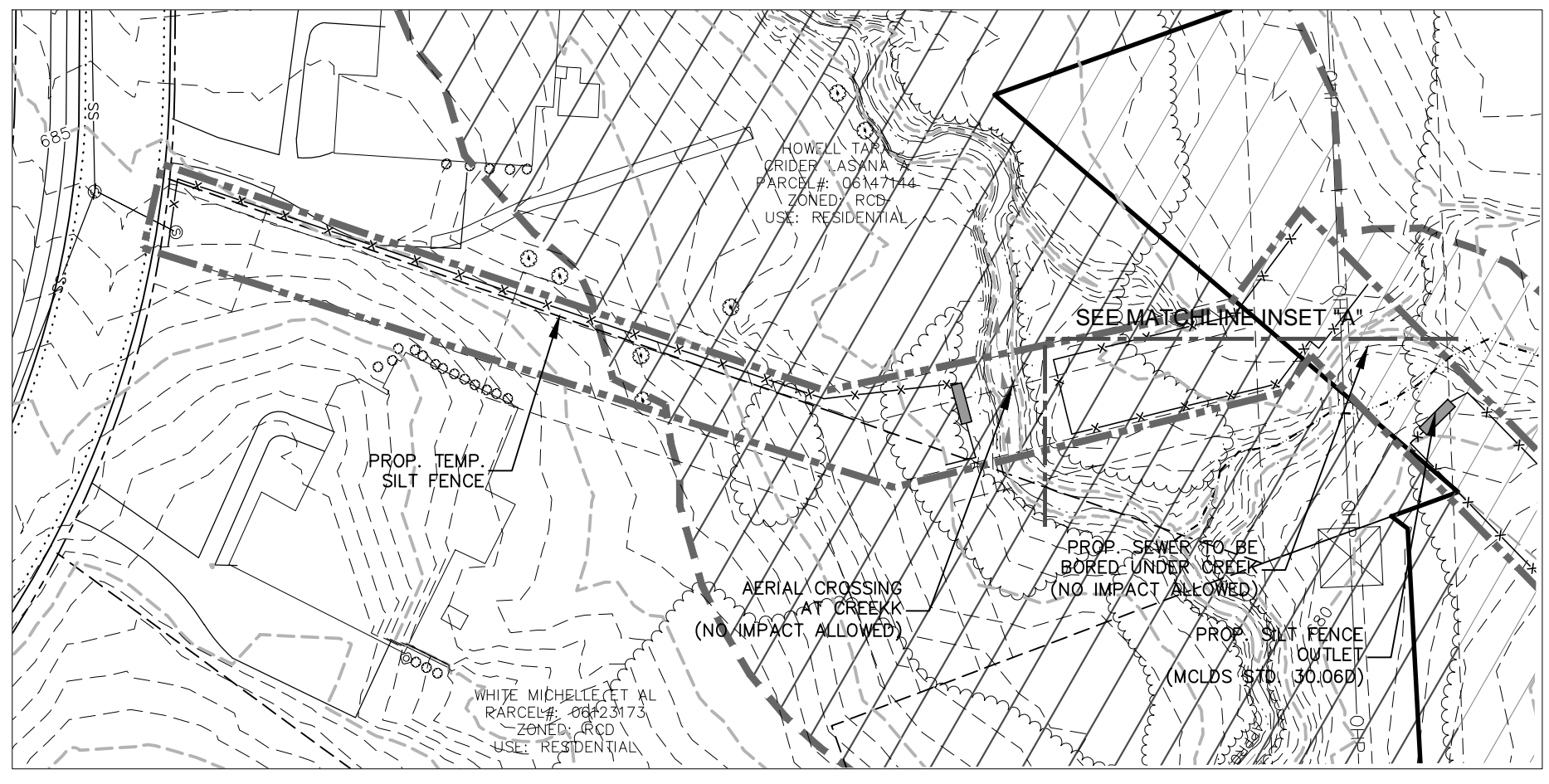
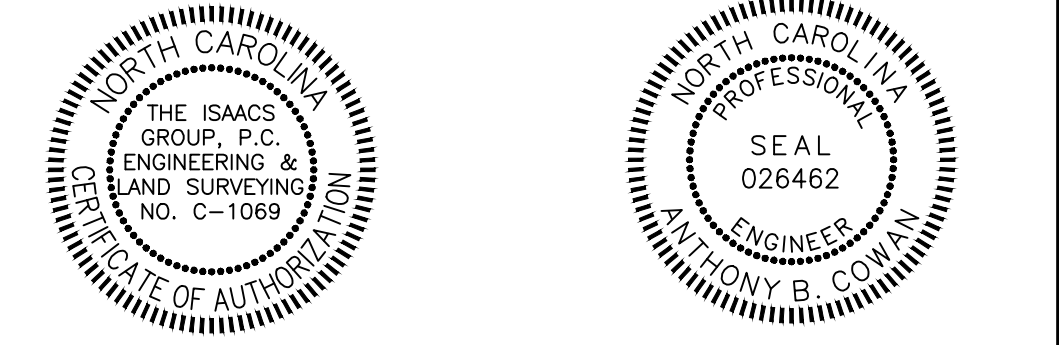


- LEGEND**
- ELEV- EXISTING CONTOUR
 - ELEV PROPOSED CONTOUR
 - EXIST. ROAD RIGHT OF WAY
 - DRAINAGE AREA
 - LIMITS OF DISTURBANCE
 - EXISTING TREE LINE
 - ROCK CHECK DAM OR WATTLE
 - PROPOSED SILT FENCE
 - PROPOSED TEMP. HIGH HAZARD SILT FENCE
 - PROPOSED ORANGE TREE PROTECTION FENCE
 - PROPOSED BAFFLE
 - TD-TD PROPOSED TEMP. DIVERSION DITCH
 - PROPOSED STORM DRAINAGE PIPE
 - PROPOSED DROP INLET



NOTE: FOR ELEVATIONS, CONSTRUCTION DETAILS/SPECIFICATIONS ON THE BMP 2 OUTLET STRUCTURE, PIPE AND EMBANKMENT, SEE SHEET C5.1

SKIMMER BASIN 2 AND BMP #2 OUTLET STRUCTURE ORIFICE AND WEIR DETAIL SEDIMENT BASIN PHASE



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

FINAL DRAWING FOR REVIEW PURPOSES ONLY

GRAPHIC SCALE
1 INCH = 50 FEET

NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **PHASE 1 EROSION CONTROL**

File #: 16157-B-EC.DWG Date: 06/28/17 Project Egr: ABC

ISAACS GROUP, P.C.
CIVIL ENGINEERING DESIGN AND SURVEYING
No. C-1089

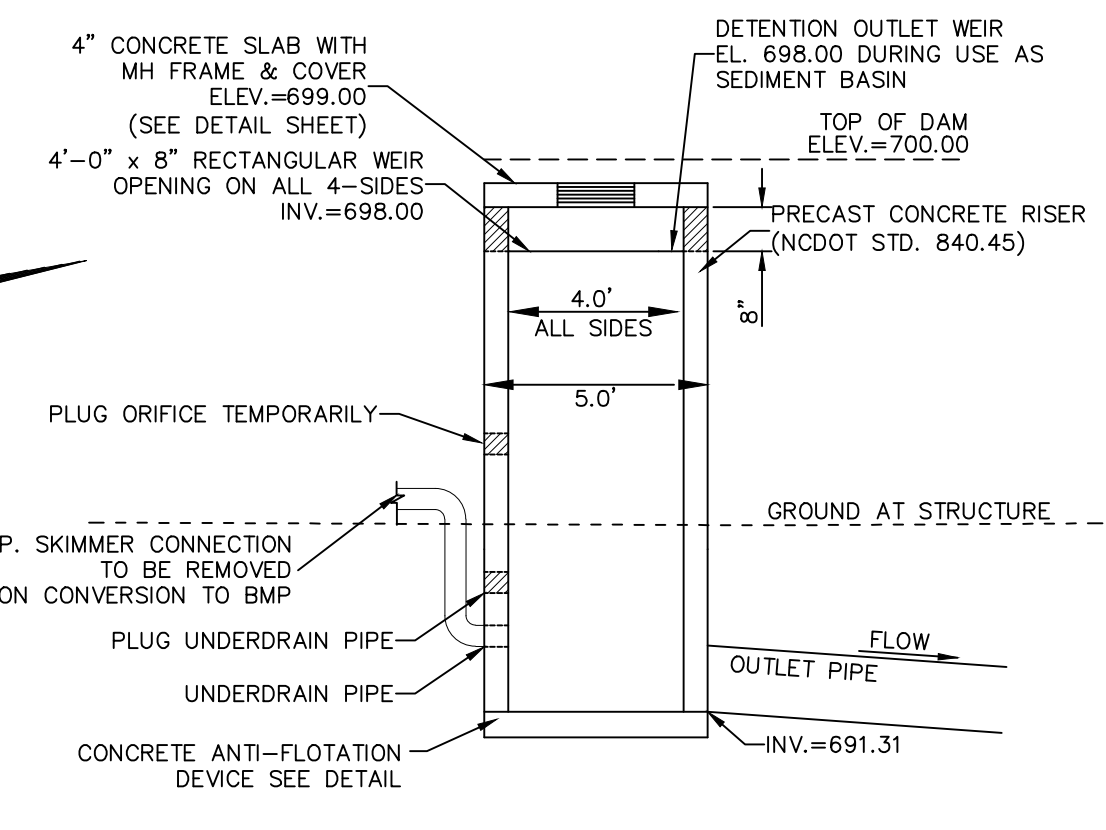
Design By: ABC
Drawn By: BER
Scale: 1"=50'

8720 RED OAK BOULEVARD, SUITE 420
CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

C8.1

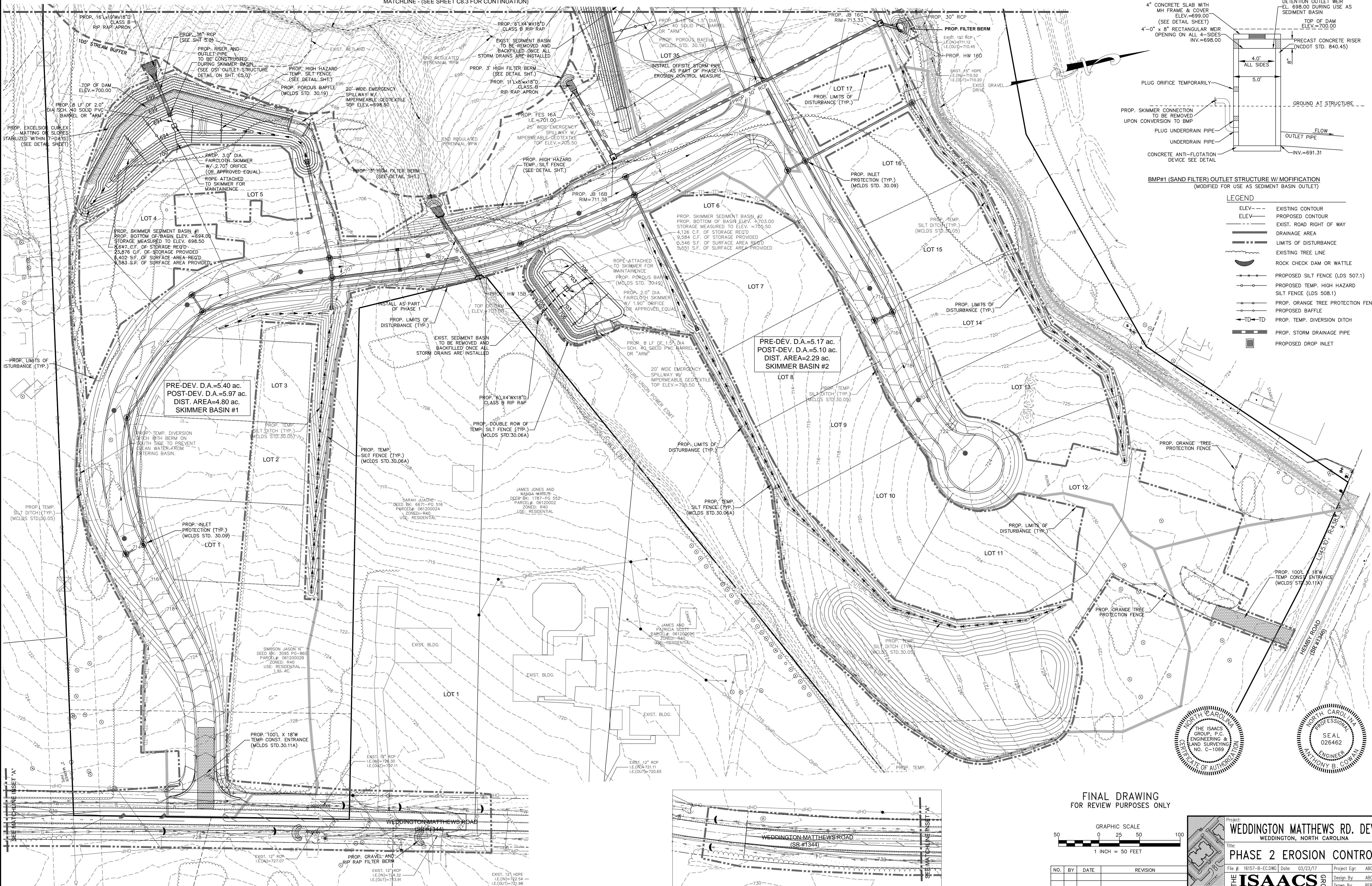
NOTE:
EXISTING DRIVEWAY TO HELMS PROPERTY TO REMAIN OPEN AT ALL TIMES.

MATCHLINE - (SEE SHEET C8.3 FOR CONTINUATION)



BMP#1 (SAND FILTER) OUTLET STRUCTURE W/ MODIFICATION (MODIFIED FOR USE AS SEDIMENT BASIN OUTLET)

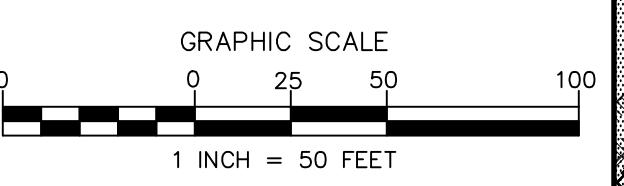
- LEGEND**
- ELEV --- EXISTING CONTOUR
 - ELEV - - - PROPOSED CONTOUR
 - EXIST. ROAD RIGHT OF WAY
 - DRAINAGE AREA
 - LIMITS OF DISTURBANCE
 - EXISTING TREE LINE
 - ROCK CHECK DAM OR WALL
 - PROPOSED SILT FENCE (LDS 507.1)
 - PROPOSED TEMP. HIGH HAZARD SILT FENCE (LDS 508.1)
 - PROPOSED ORANGE TREE PROTECTION FENCE
 - PROPOSED BAFFLE
 - TD---TD PROPOSED DIVERSION DITCH
 - PROPOSED STORM DRAINAGE PIPE
 - PROPOSED DROP INLET



PRE-DEV. D.A.=5.40 ac.
POST-DEV. D.A.=5.97 ac.
DIST. AREA=4.80 ac.
SKIMMER BASIN #1

PRE-DEV. D.A.=5.17 ac.
POST-DEV. D.A.=5.10 ac.
DIST. AREA=2.29 ac.
SKIMMER BASIN #2

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NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **PHASE 2 EROSION CONTROL**

File #: 16157-B-EC.DWG Date: 03/23/17 Project Egr: ABC

THE ISAACS GROUP, P.C.
ENGINEERING & LAND SURVEYING
NO. C-1069

Design By: ABC
Drawn By: BER
Scale: 1"=50'

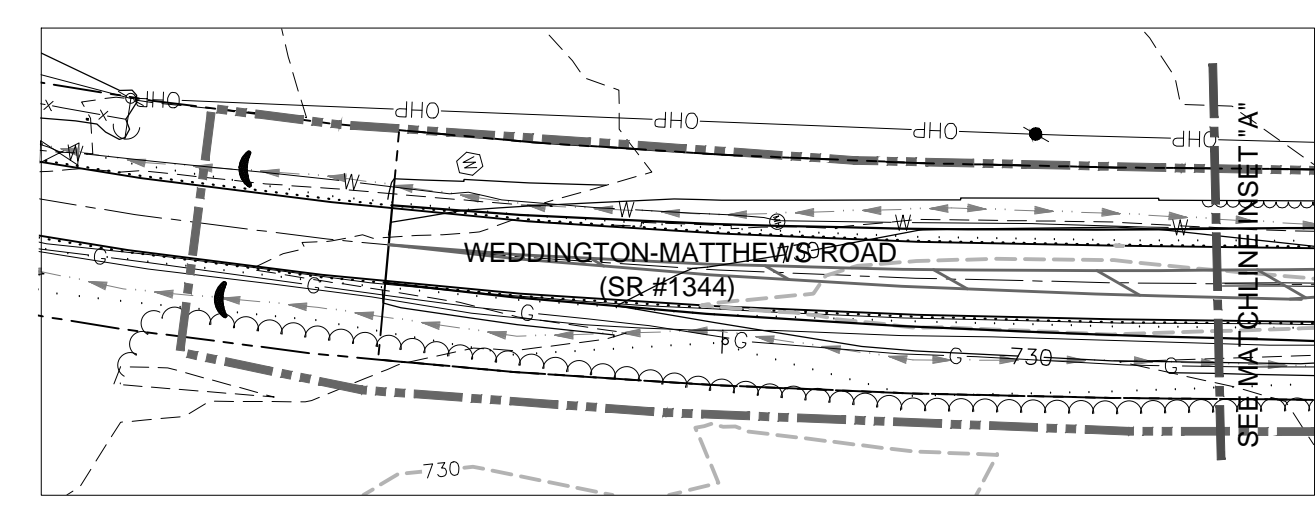
8720 RED OAK BOULEVARD, SUITE 420
CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

C8.2

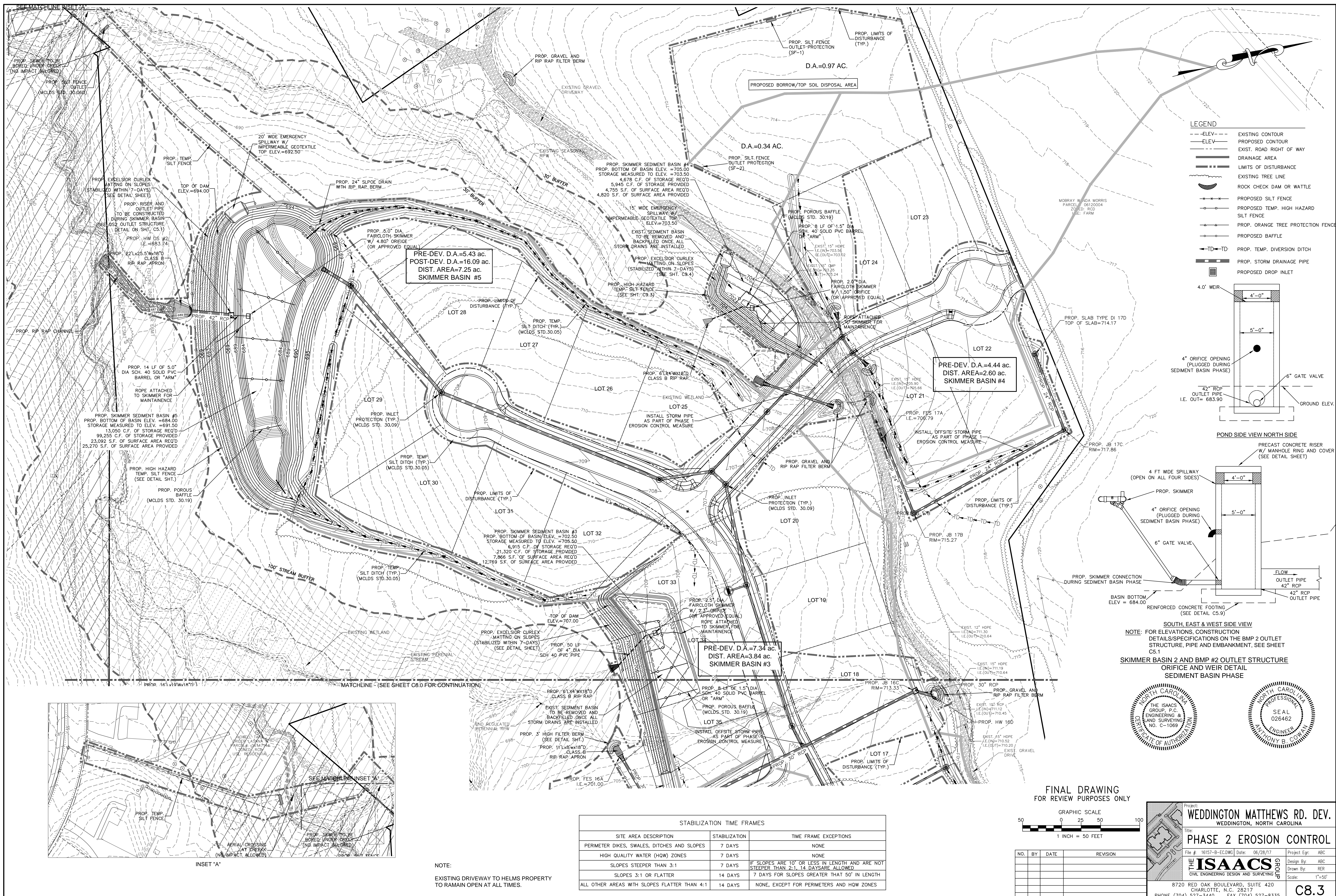


SEE MATCHLINE INSET 'A'

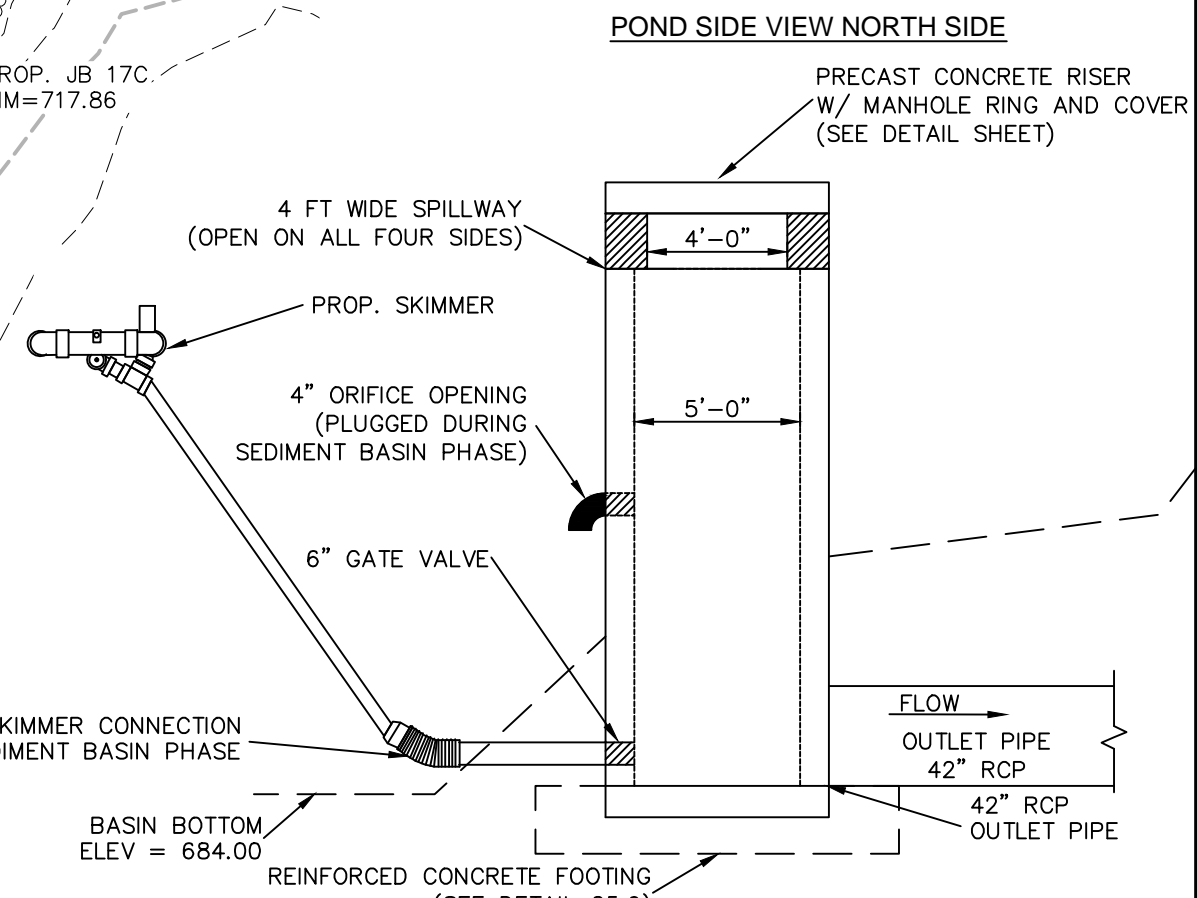
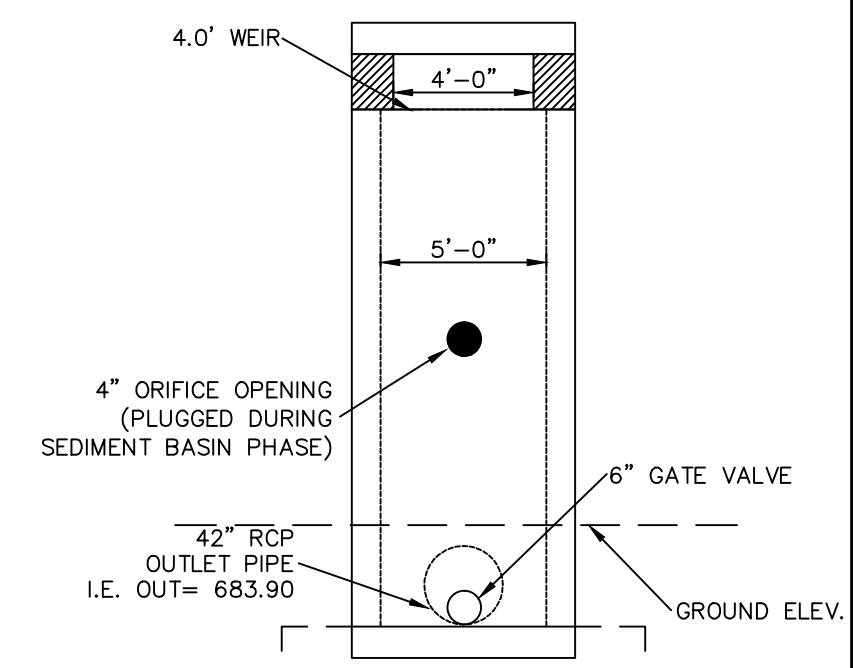
SEE MATCHLINE INSET 'A'



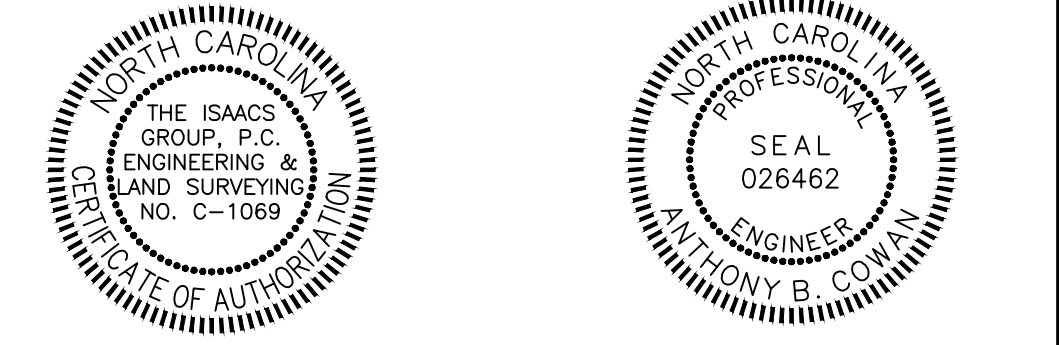
INSET 'A'



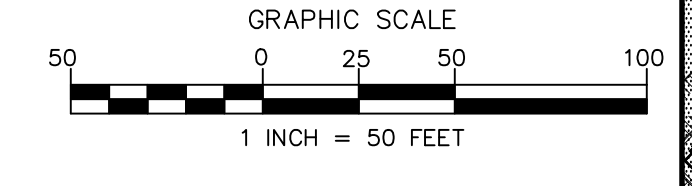
- LEGEND**
- ELEV--- EXISTING CONTOUR
 - ELEV--- PROPOSED CONTOUR
 - EXIST. ROAD RIGHT OF WAY
 - DRAINAGE AREA
 - LIMITS OF DISTURBANCE
 - EXISTING TREE LINE
 - ROCK CHECK DAM OR WATTLE
 - PROPOSED SILT FENCE
 - PROPOSED TEMP. HIGH HAZARD SILT FENCE
 - PROPOSED ORANGE TREE PROTECTION FENCE
 - PROPOSED BAFFLE
 - TD---TD--- PROPOSED TEMP. DIVERSION DITCH
 - PROPOSED STORM DRAINAGE PIPE
 - PROPOSED DROP INLET



NOTE: FOR ELEVATIONS, CONSTRUCTION DETAILS/SPECIFICATIONS ON THE BMP 2 OUTLET STRUCTURE, PIPE AND EMBANKMENT, SEE SHEET C5.1
SKIMMER BASIN 2 AND BMP #2 OUTLET STRUCTURE ORIFICE AND WEIR DETAIL SEDIMENT BASIN PHASE



FINAL DRAWING FOR REVIEW PURPOSES ONLY



NO.	BY	DATE	REVISION

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

NOTE:
 EXISTING DRIVEWAY TO HELMS PROPERTY TO REMAIN OPEN AT ALL TIMES.

Project: **WEDDINGTON MATTHEWS RD. DEV.**
 WEDDINGTON, NORTH CAROLINA

Title: **PHASE 2 EROSION CONTROL**

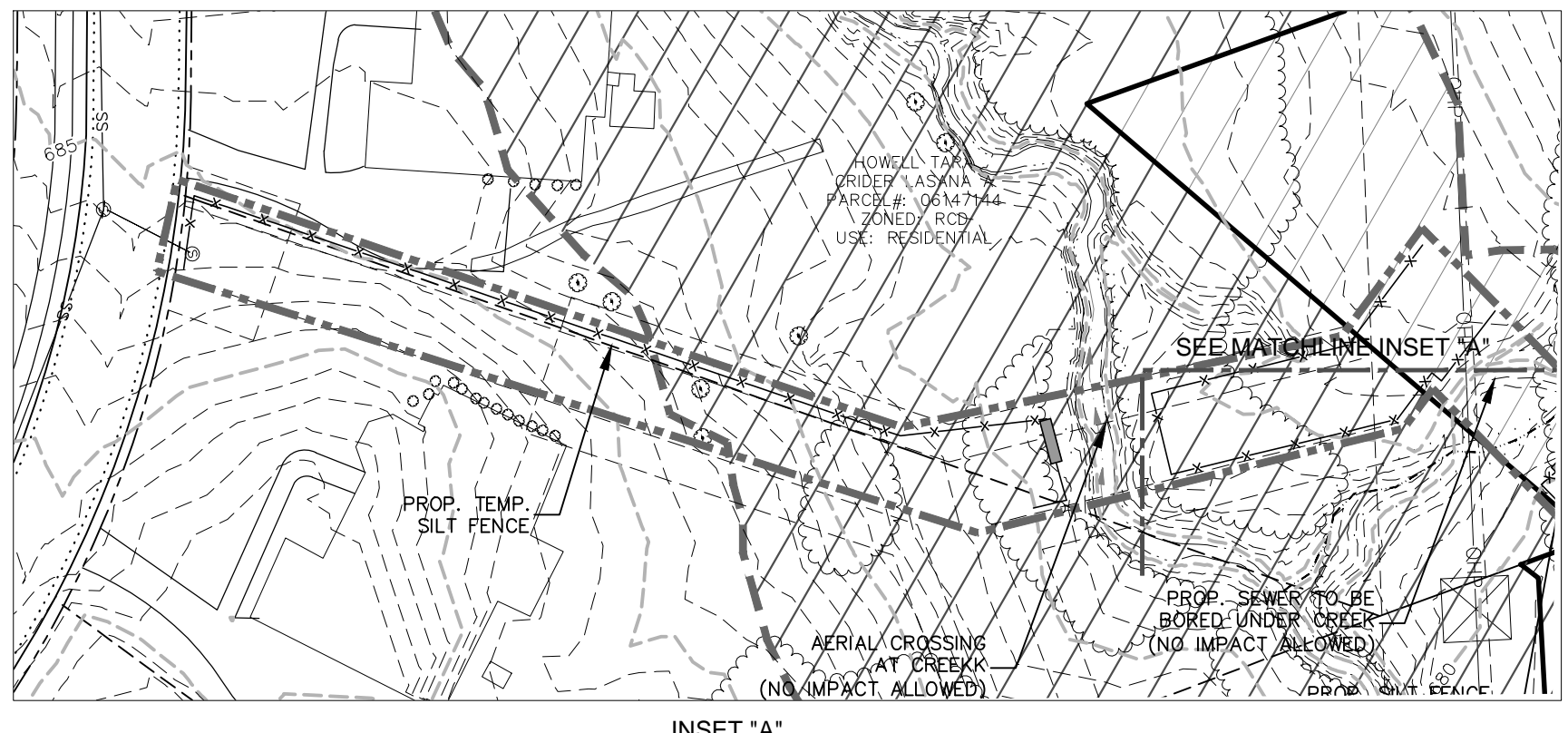
File #: 16157-B-EC.DWG Date: 06/28/17 Project Egr: ABC

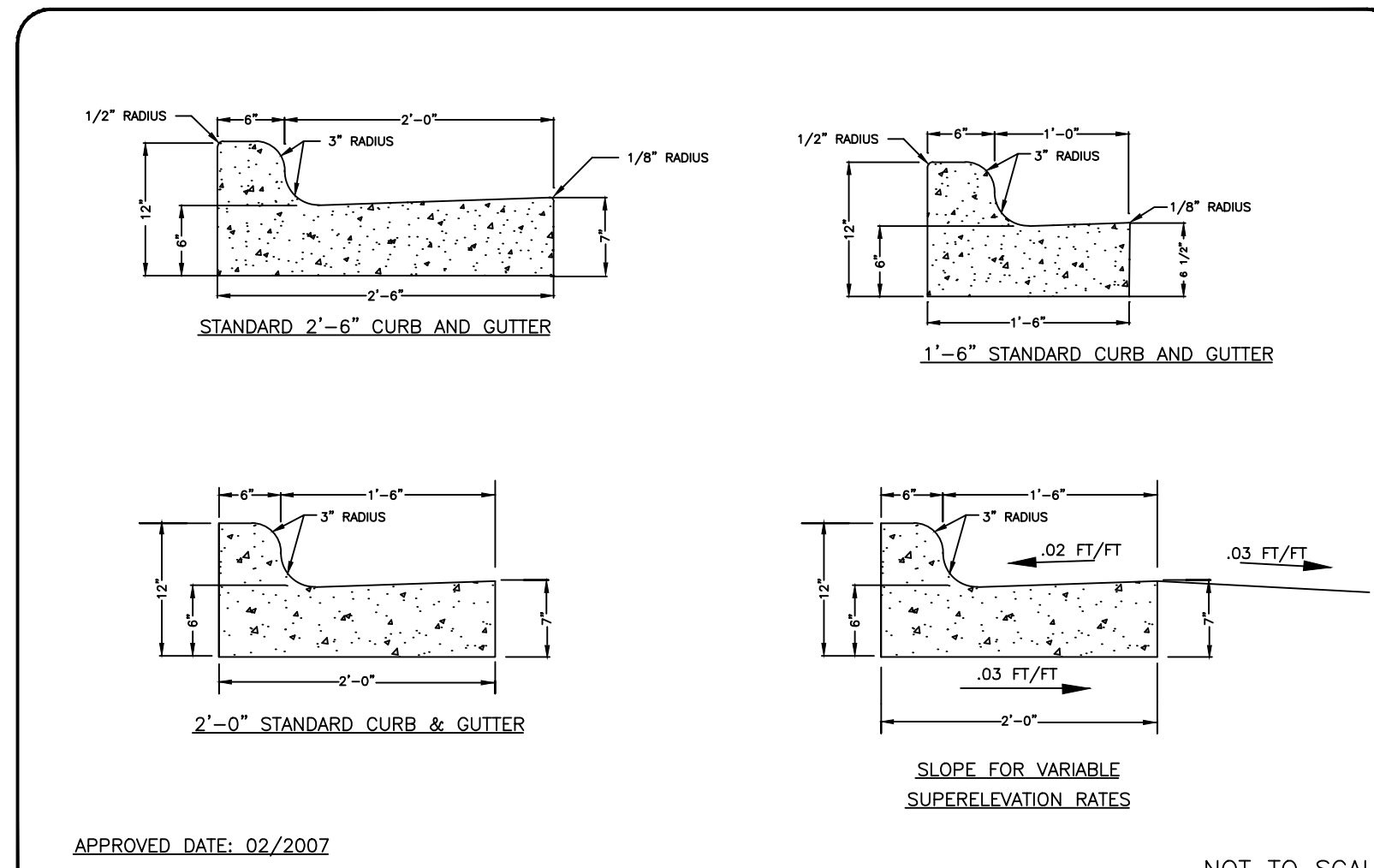
ISAACS GROUP, P.C.
 CIVIL ENGINEERING DESIGN AND SURVEYING
 NO. C-1069

Design By: ABC
 Drawn By: BER
 Scale: 1"=50'

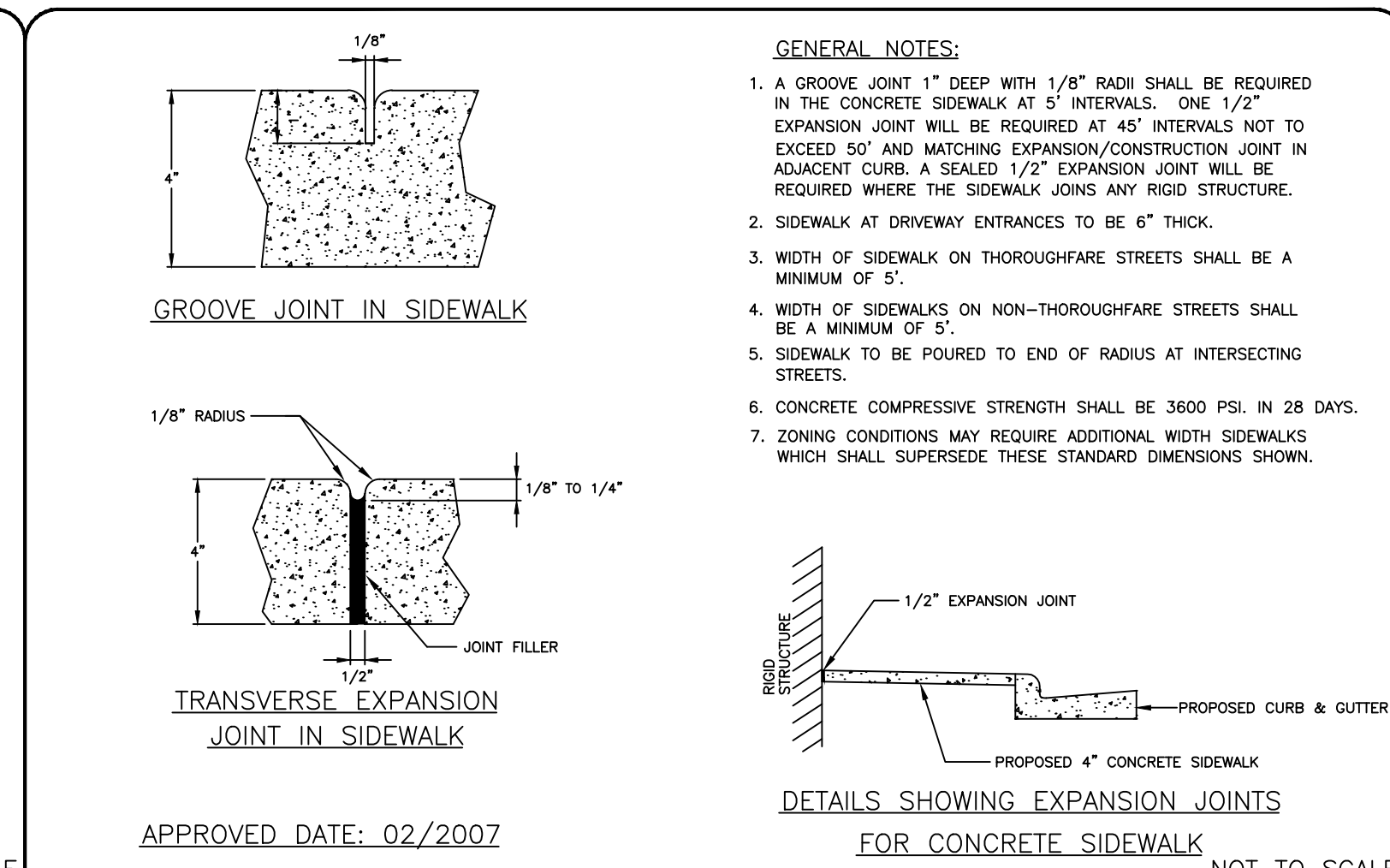
8720 RED OAK BOULEVARD, SUITE 420
 CHARLOTTE, N.C. 28217
 PHONE (704) 527-3440 FAX (704) 527-8335

C8.3

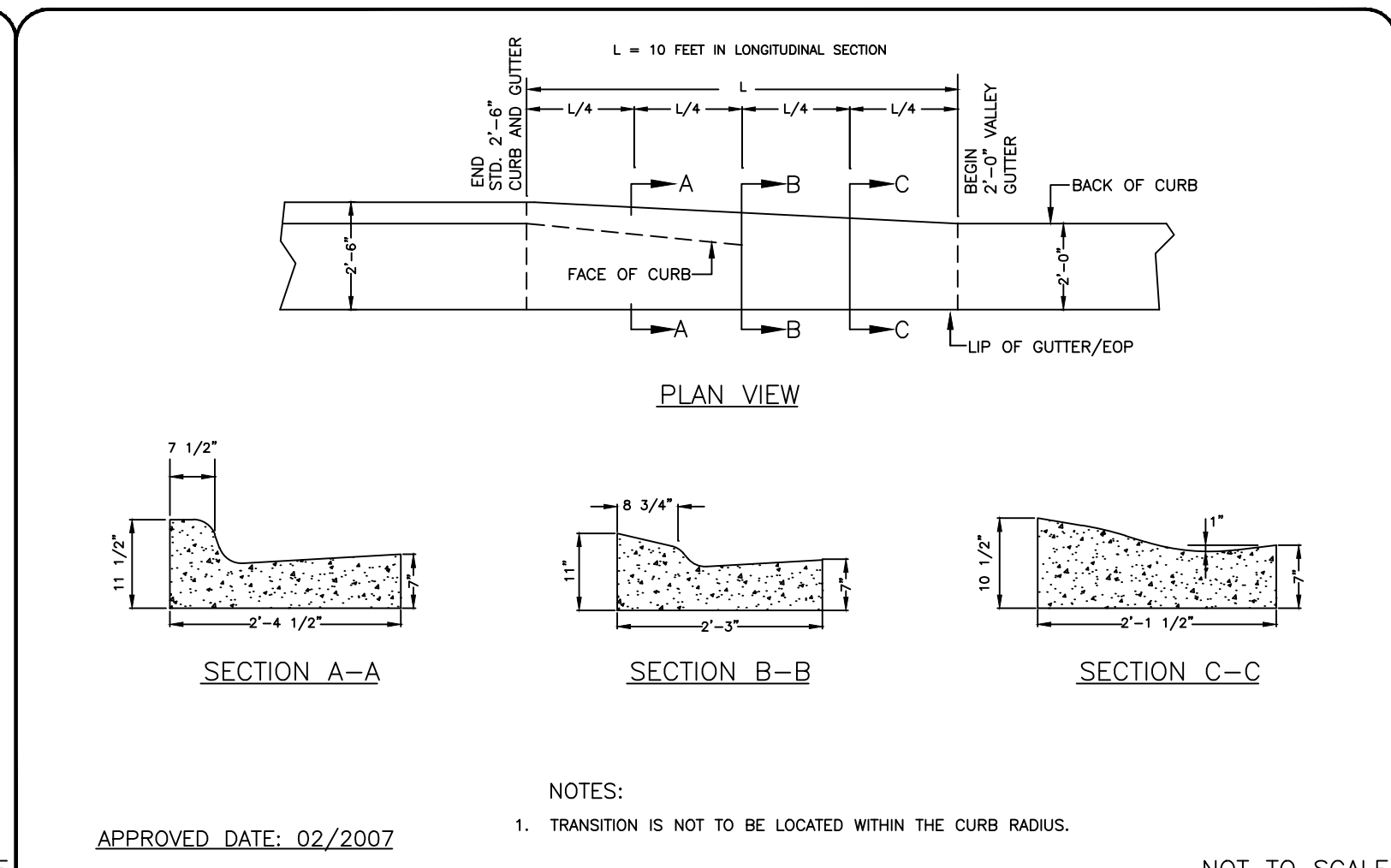




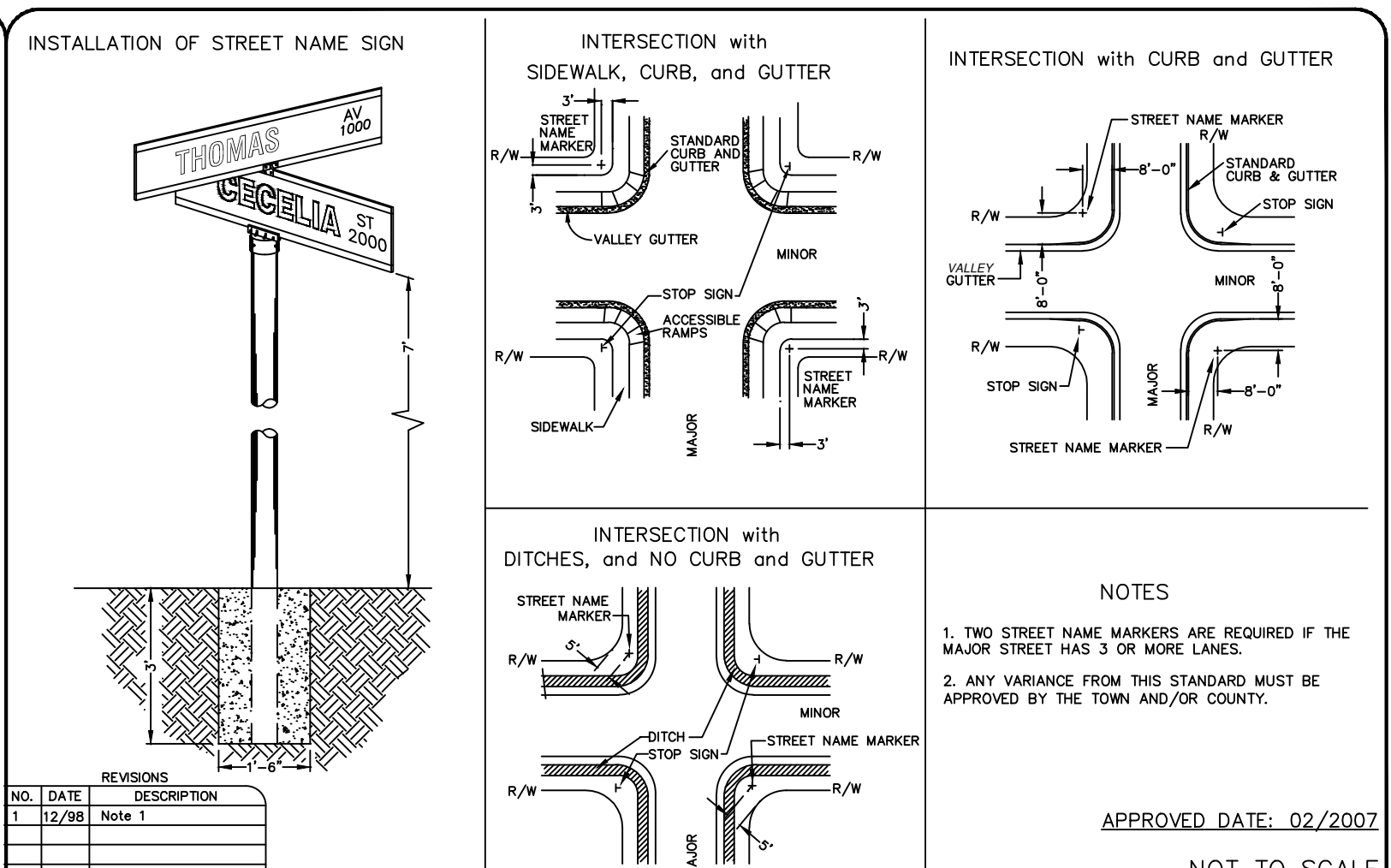
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
STANDARD CURB AND GUTTER
STANDARD NO. 10.17A



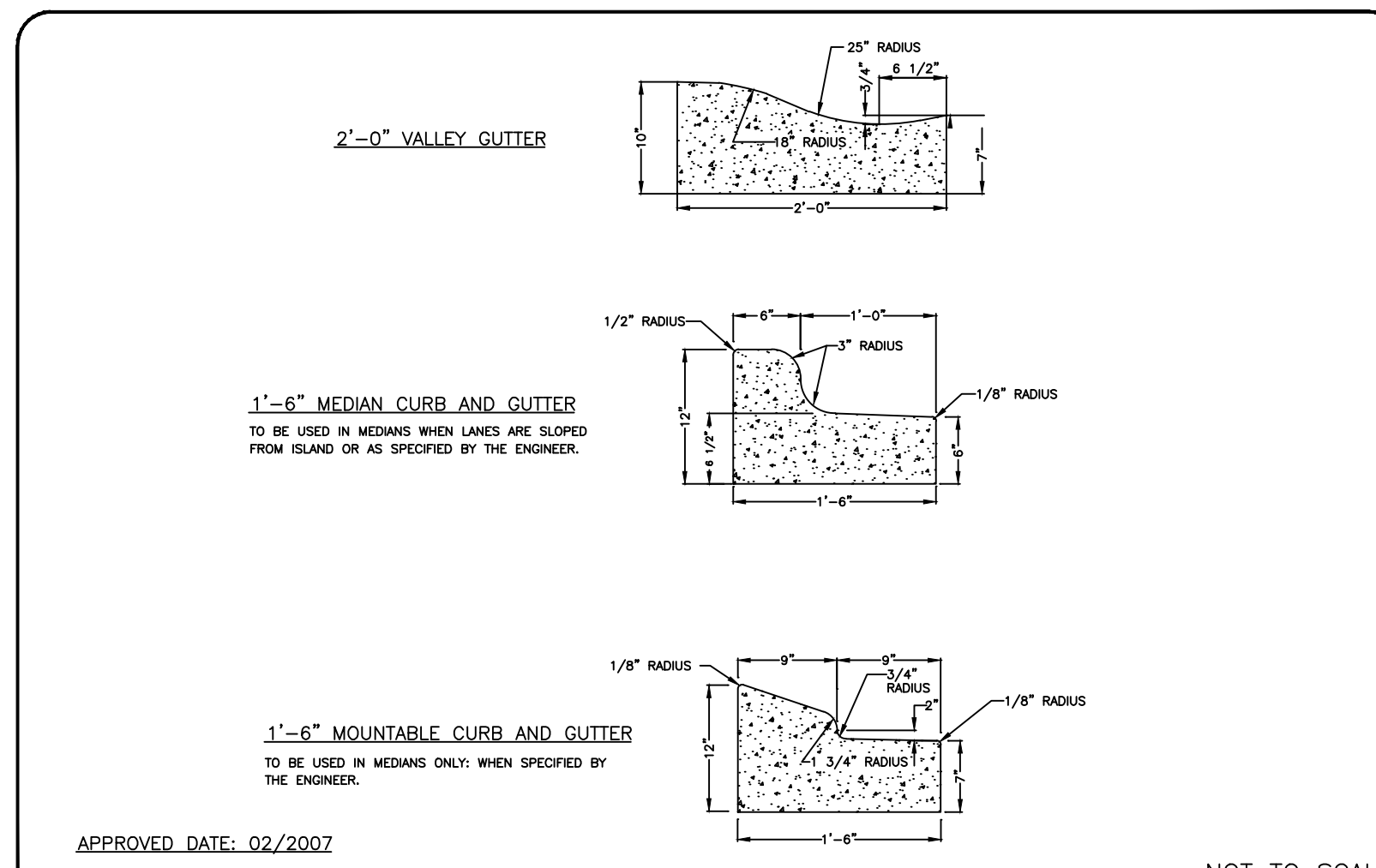
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
CONCRETE SIDEWALKS
STANDARD NO. 10.22



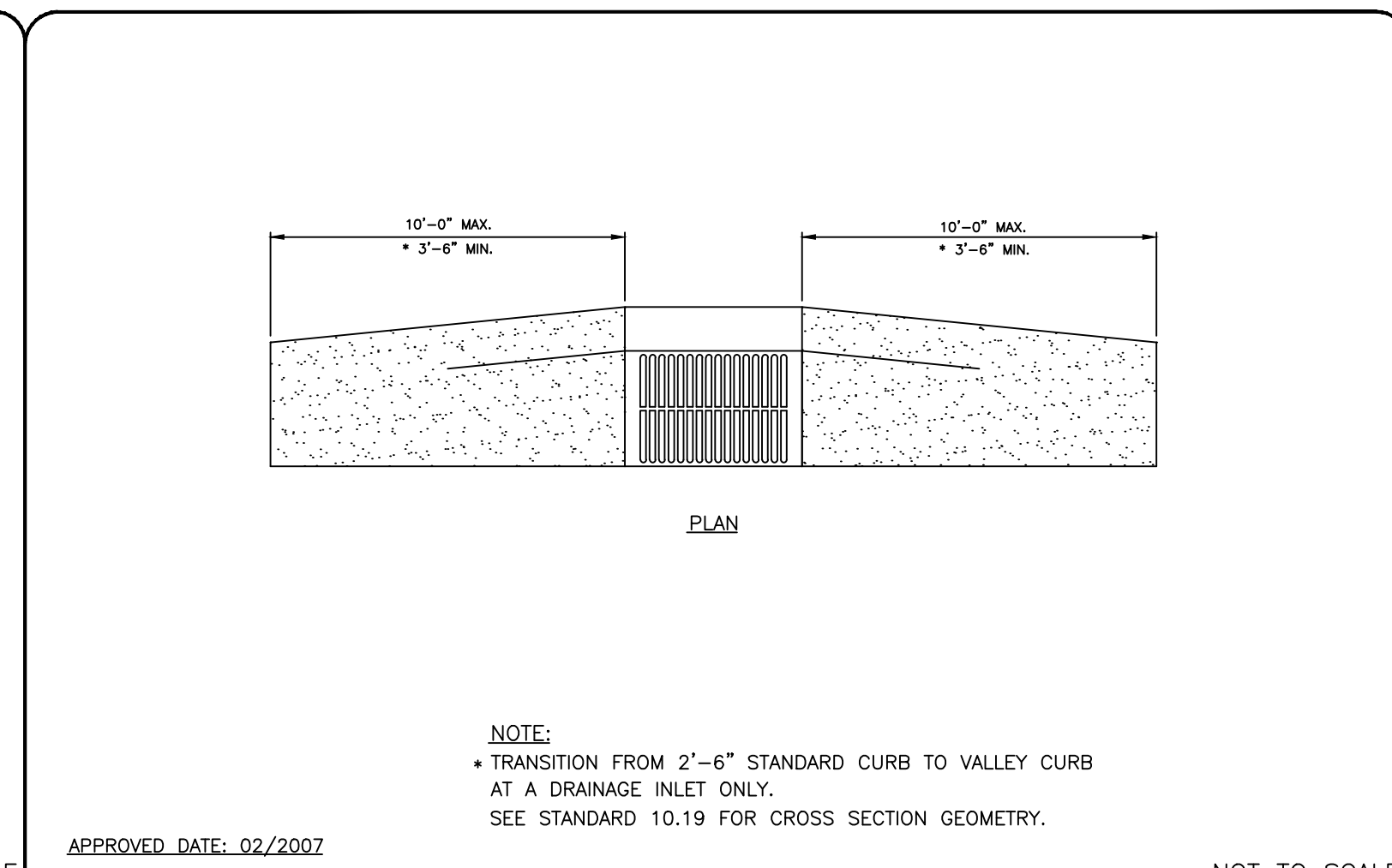
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
CURB TRANSITION
2'-6" CURB AND GUTTER TO 2'-0" VALLEY GUTTER
STANDARD NO. 10.19



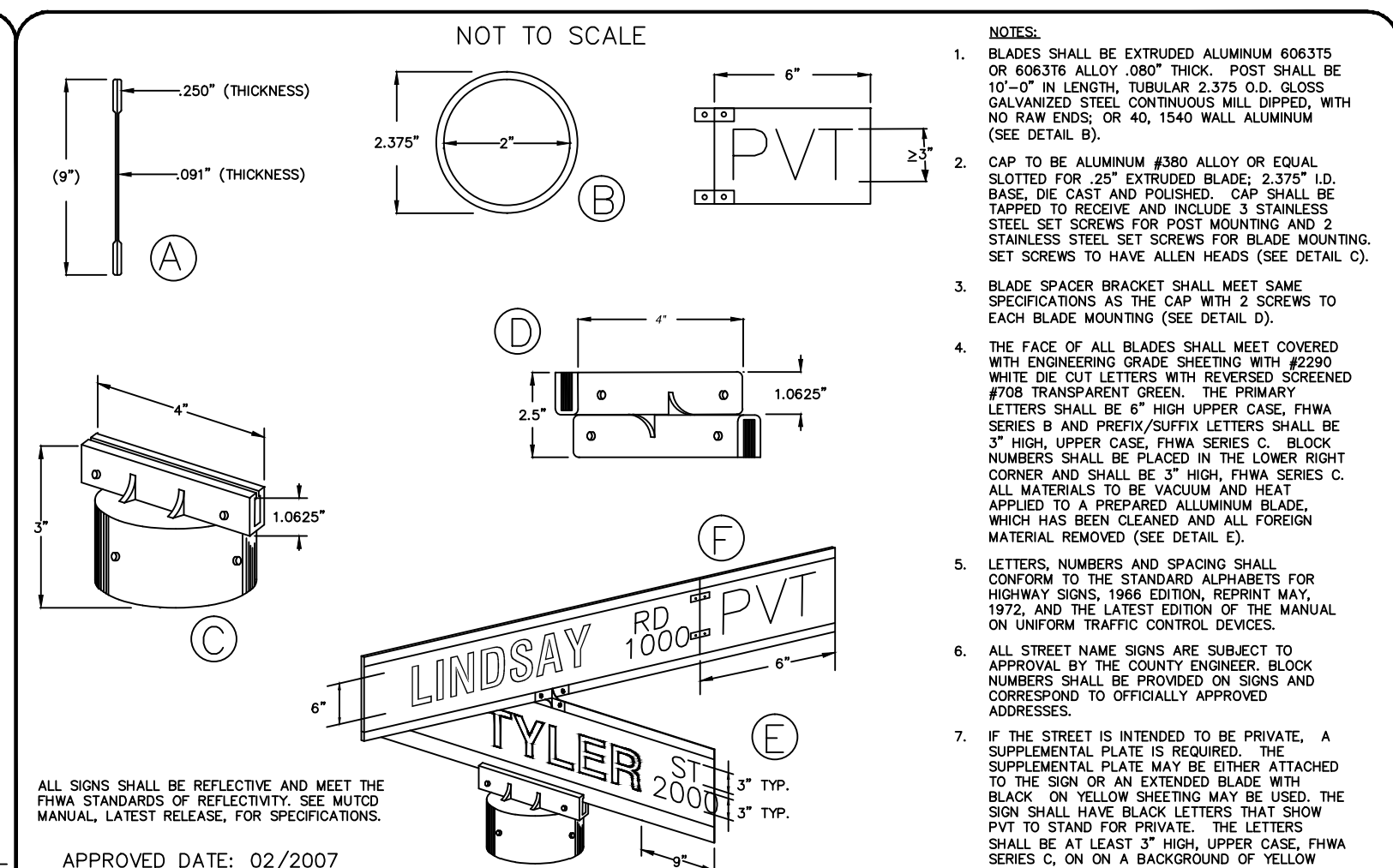
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
STREET NAME SIGN INSTALLATION LOCATIONS
STANDARD NO. 50.06



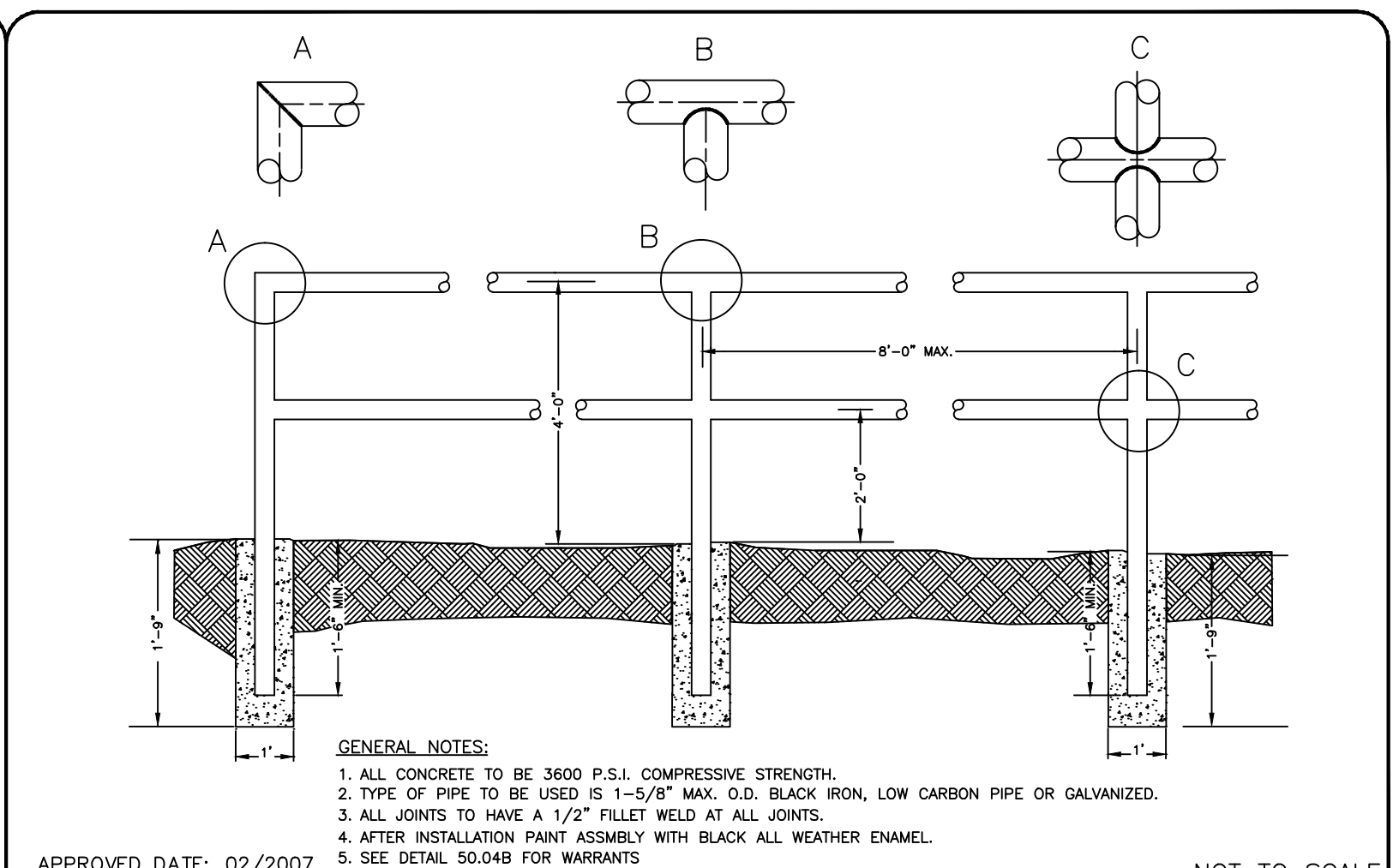
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
CURB AND GUTTER
STANDARD NO. 10.17B



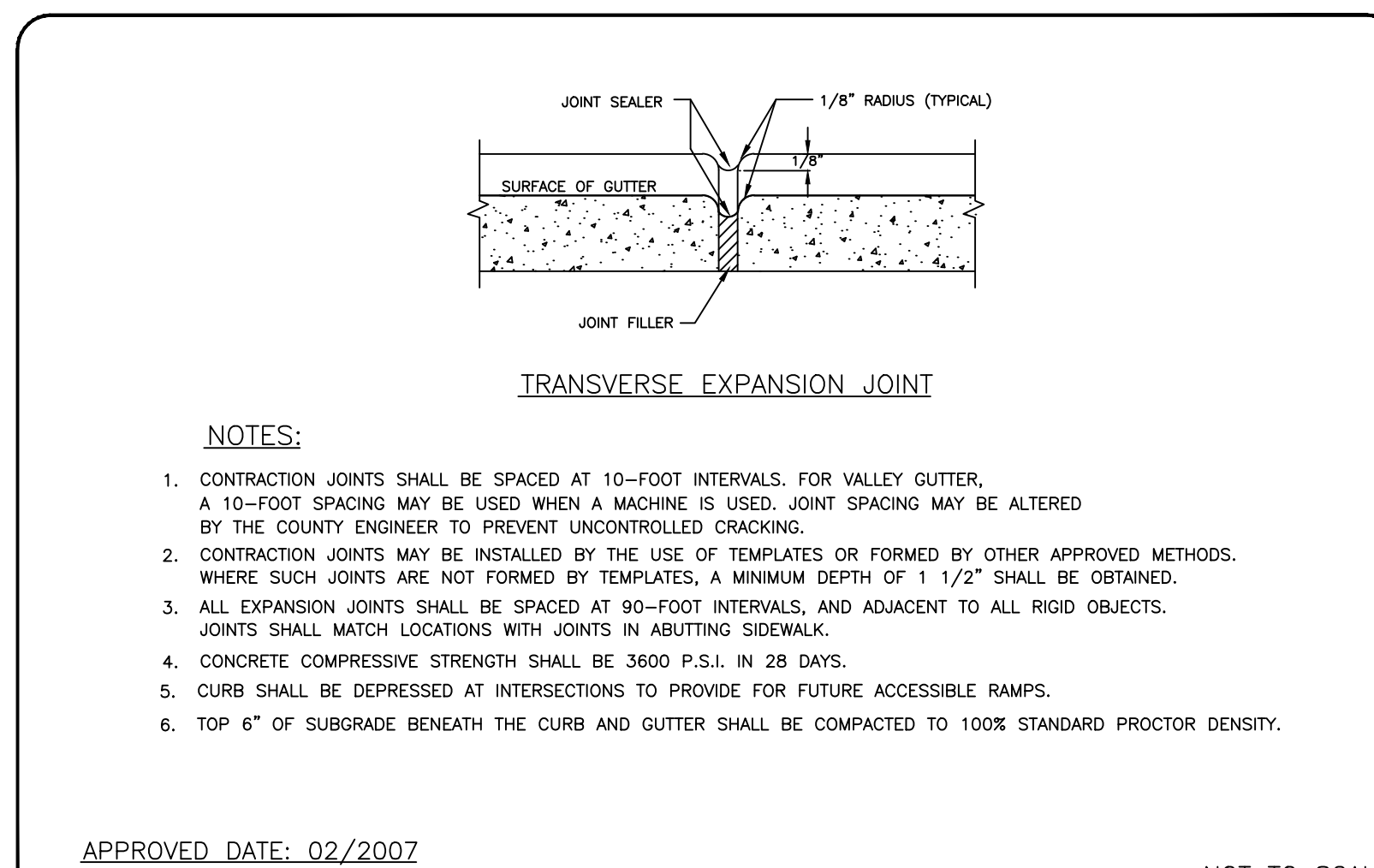
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
CATCH BASIN FRAME IN VALLEY GUTTER
STANDARD NO. 10.29



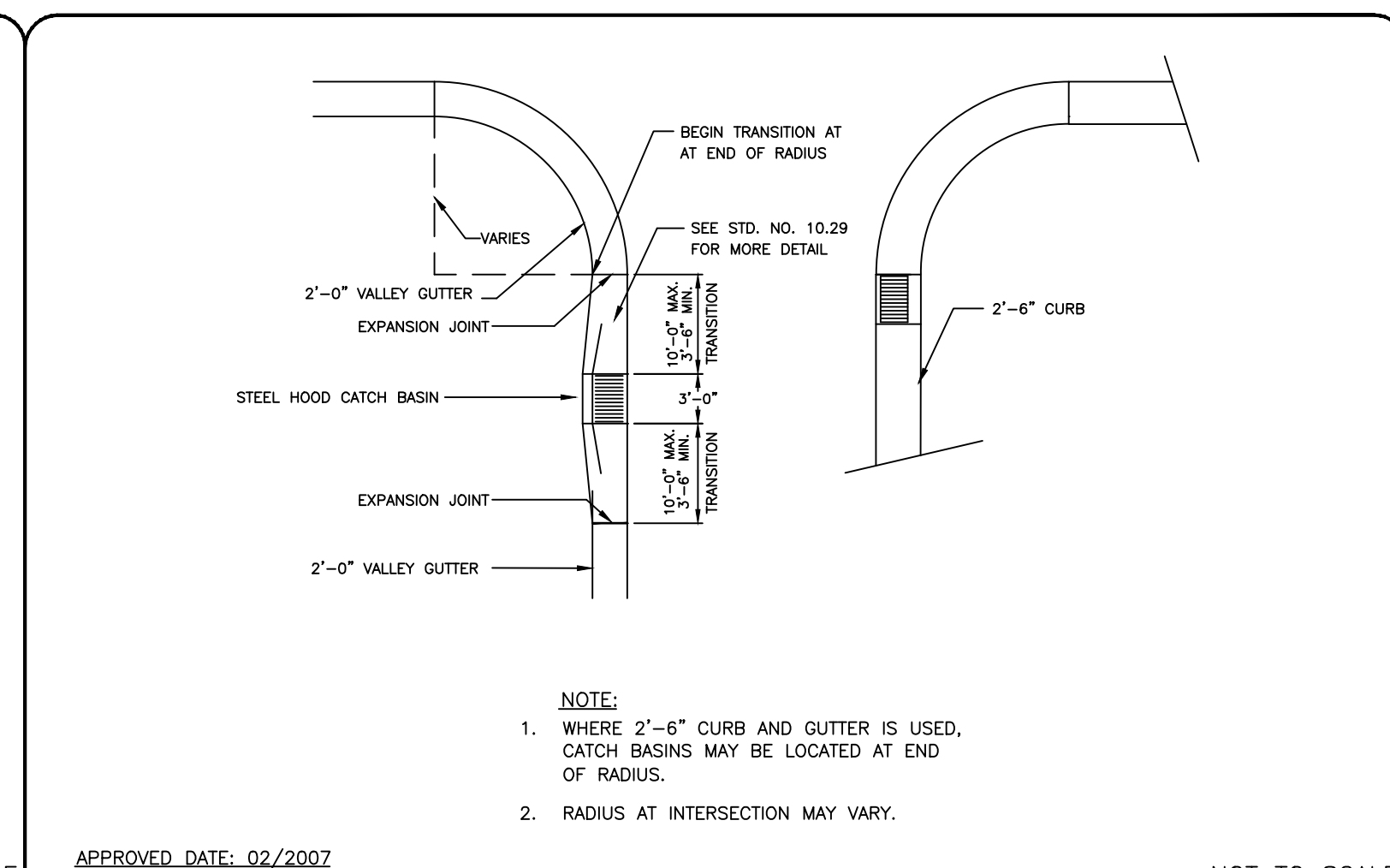
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
STREET NAME SIGN
STANDARD NO. 50.05A



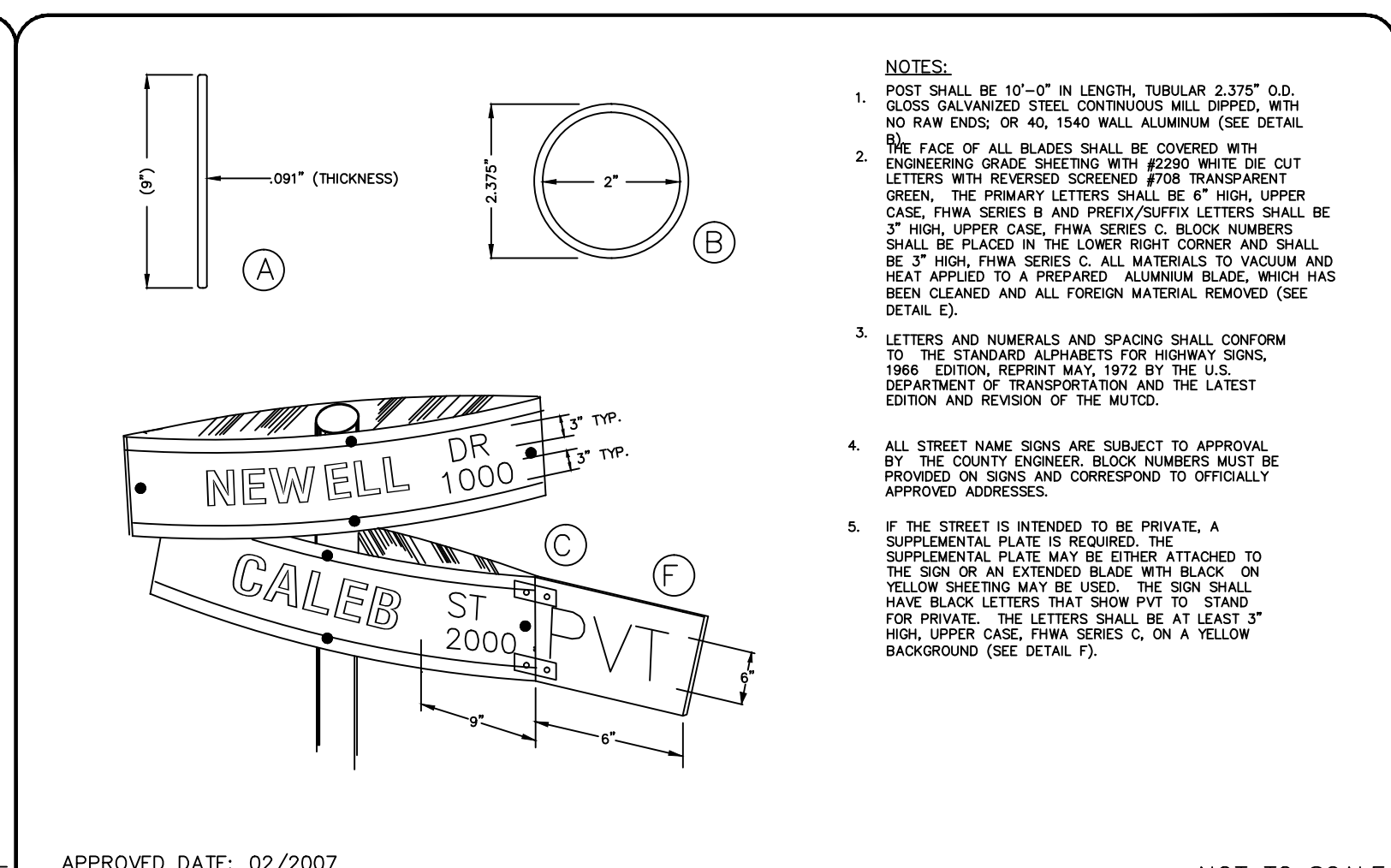
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
TYPICAL HANDRAIL
STANDARD NO. 50.04A



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
CONCRETE CONTRACTION JOINT
STANDARD NO. 10.17C



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
CATCH BASIN PLACEMENT AT INTERSECTIONS
STANDARD NO. 10.30



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
STREET NAME SIGN (OPTIONAL)
STANDARD NO. 50.05B

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

FINAL DRAWING FOR REVIEW PURPOSES ONLY

GRAPHIC SCALE: 1 INCH = 50 FEET

Project: WEDDINGTON MATTHEWS RD. DEV. WEDDINGTON, NORTH CAROLINA

Title: DETAILS AND SPECIFICATIONS

File #: 16157-DE.DWG Date: 06/28/17 Project Egr: ABC

Design By: ABC

Drawn By: BER

Scale: NTS

8720 RED OAK BOULEVARD, SUITE 420 CHARLOTTE, N.C. 28217 PHONE (704) 527-3440 FAX (704) 527-8335

C9.0

GENERAL NOTES:

- A GROOVE JOINT 1" DEEP WITH 1/8" RADI SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 45' INTERVALS NOT TO EXCEED 50' AND MATCHING EXPANSION/CONSTRUCTION JOINT IN ADJACENT CURB. A SEALED 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
- SIDEWALK AT DRIVEWAY ENTRANCES TO BE 6" THICK.
- WIDTH OF SIDEWALK ON THOROUGHFARE STREETS SHALL BE A MINIMUM OF 5'.
- WIDTH OF SIDEWALKS ON NON-THOROUGHFARE STREETS SHALL BE A MINIMUM OF 5'.
- SIDEWALK TO BE POURED TO END OF RADIUS AT INTERSECTING STREETS.
- CONCRETE COMPRESSIVE STRENGTH SHALL BE 3600 PSI. IN 28 DAYS.
- ZONING CONDITIONS MAY REQUIRE ADDITIONAL WIDTH SIDEWALKS WHICH SHALL SUPERSEDE THESE STANDARD DIMENSIONS SHOWN.

DETAILS SHOWING EXPANSION JOINTS FOR CONCRETE SIDEWALK

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

CONCRETE SIDEWALKS

SHEET NO. REV. 10.22

ACCESSIBLE RAMP STANDARD 2'-0" VALLEY GUTTER

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

ACCESSIBLE RAMP STANDARD 2'-0" VALLEY GUTTER

SHEET NO. REV. 10.33A

TRUNCATED DOMES PLAN AND CROSS-SECTION

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

TRUNCATED DOMES PLAN AND CROSS-SECTION

SHEET NO. REV. 10.35B

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
838.51	REINFORCED BRICK ENDWALL FOR SINGLE 54" PIPE 90° SKEW	NOTE 1 SEE MOLDS 20.17 FOR SPLASH PAD
838.52	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 54" PIPES 90° SKEW	SEE MOLDS 20.17 FOR SPLASH PAD
838.57	REINFORCED BRICK ENDWALL FOR SINGLE 60" PIPE 90° SKEW	SEE MOLDS 20.17 FOR SPLASH PAD
838.58	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 60" PIPES 90° SKEW	SEE MOLDS 20.17 FOR SPLASH PAD
838.63	REINFORCED BRICK ENDWALL FOR SINGLE 66" PIPE 90° SKEW	SEE MOLDS 20.17 FOR SPLASH PAD
838.64	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 66" PIPES 90° SKEW	SEE MOLDS 20.17 FOR SPLASH PAD
838.69	REINFORCED BRICK ENDWALL FOR SINGLE 72" PIPE 90° SKEW	SEE MOLDS 20.17 FOR SPLASH PAD
838.70	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 72" PIPES 90° SKEW	SEE MOLDS 20.17 FOR SPLASH PAD
838.72	NOTES FOR REINFORCED BRICK ENDWALL STANDARD DRAWINGS 838.51 THRU 838.70	SEE MOLDS 20.17 FOR SPLASH PAD
838.80	PRECAST CONCRETE ENDWALLS FOR SINGLE 12" THRU 72" PIPE 90° SKEW	
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURES	
840.01	BRICK CATCH BASIN 12" THRU 54" PIPE	
840.02	CONCRETE CATCH BASIN 12" THRU 54" PIPE	
840.03	FRAME, GRATES AND HOOD FOR USE ON STANDARD BASIN 12" THRU 54" PIPE	TYPE F AND G GRATES ARE OPTIONAL WITHIN THE TOWN LIMITS
840.04	CONCRETE OPEN THROAT CATCH BASIN 12" THRU 48" PIPE	NOTE 1 - OPENINGS PERMITTED IN 4 SIDES OUTSIDE OF STREET R/W
840.05	BRICK OPEN THROAT CATCH BASIN 12" THRU 48" PIPE	MANHOLE RING AND COVER REQUIRED IN TOP SLAB SEE STD. 840.54
840.14	CONCRETE DROP INLET 12" THRU 30" PIPE	NOTE 1
840.15	BRICK DROP INLET 12" THRU 30" PIPE	NOTE 1
840.16	DROP INLET FRAME AND GRATES FOR USE WITH STANDARD DWGS. 840.14 & 840.15	NOTE 1
840.17	CONCRETE GRATED DROP INLET TYPE "A" 12" THRU 72" PIPE	NOTE 1
840.18	CONCRETE GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	NOTE 1
840.19	CONCRETE GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	NOTE 1
840.20	FRAMES AND NARROW SLOT FLAT GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.21	FRAMES AND NARROW SLOT FLAT GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.22	FRAMES AND NARROW SLOT SAG GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.23	ANCHORAGE FOR FRAMES BRICK OR CONCRETE	
840.26	BRICK GRATED DROP INLET TYPE "A" 12" THRU 72" PIPE	
840.27	BRICK GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	
840.28	BRICK GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	
840.29	FRAMES AND NARROW SLOT FLAT GRATES	
840.30	DRIVEWAY DROP INLET	

NOTE 1: FOR ALL STRUCTURES - NCDOT REQUIRES CLASS B CONCRETE (2500PSI). THE COUNTY REQUIRES 3600 PSI CONCRETE STRENGTH @ 28 DAYS. 3600 PSI CONCRETE SHALL BE USED IN ALL PROJECTS.

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

NCDOT STANDARDS APPROVED FOR USE IN MECKLENBURG COUNTY AND TOWNS, INCLUDING ETJ

SHEET NO. REV. 20.00B

ACCESSIBLE RAMP STANDARD WITH PLANTING STRIP 2'-6" CURB AND GUTTER

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

ACCESSIBLE RAMP STANDARD WITH PLANTING STRIP 2'-6" CURB AND GUTTER

SHEET NO. REV. 10.31A

ACCESSIBLE RAMP SECTIONS 2'-0" VALLEY GUTTER

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

ACCESSIBLE RAMP SECTIONS 2'-0" VALLEY GUTTER

SHEET NO. REV. 10.33B

DIRECTIONAL ACCESSIBLE RAMP

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

DIRECTIONAL ACCESSIBLE RAMP

SHEET NO. REV. 10.40

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
840.31	CONCRETE JUNCTION BOX (WITH OPTIONAL MANHOLE) 12" THRU 66" PIPE	NOTE 1 OPTIONAL MANHOLE IS REQUIRED
840.32	BRICK JUNCTION BOX 12" THRU 66" PIPE	OPTIONAL MANHOLE IS REQUIRED
840.34	TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER	NOTE 1 OPTIONAL MANHOLE IS REQUIRED
840.35	TRAFFIC BEARING DROP INLET FOR CAST IRON DOUBLE FRAME AND GRATES	NOTE 1 OPTIONAL MANHOLE IS REQUIRED
840.36	TRAFFIC BEARING DROP INLET FOR STEEL (840.37) DOUBLE FRAME AND GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.37	STEEL GRATE AND FRAME	NOT FOR USE IN PEDESTRIAN AREAS
840.41	SPRING BOX CONCRETE OR BRICK	NOTE 1
840.45	PRECAST DRAINAGE STRUCTURE (SOLID AND WAFLE WALL)	WAFLE WALL IS NOT PERMITTED. OPENINGS SHALL BE PRECAST
840.46	TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE	
840.51	BRICK MANHOLE 12" THRU 36" PIPE	
840.52	PRECAST MANHOLE 4", 5" AND 6" DIAMETER 12" THRU 42" PIPE	
840.53	PRECAST MANHOLE WITH MASONRY BASE 12" THRU 42" PIPE	
840.54	MANHOLE FRAME AND COVER	
840.66	DRAINAGE STRUCTURE STEPS	
840.71	CONCRETE AND BRICK PIPE PLUG	
840.72	PIPE COLLAR	
850.01	CONCRETE PAVED DITCHES	
852.04	METHOD FOR PLACEMENT OF DROP INLETS IN GRASSSED MEDIUM (USING 1'-6" CURB AND GUTTER)	
852.05	METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS	
852.06	METHOD OF PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS	
876.01	RIIP RAP IN CHANNELS	
876.03	DRAINAGE DITCHES WITH CLASS "A" RIIP RAP	
876.04	DRAINAGE DITCHES WITH CLASS "B" RIIP RAP	

NOTE 1: FOR ALL STRUCTURES - NCDOT REQUIRES CLASS B CONCRETE (2500PSI). THE COUNTY REQUIRES 3600 PSI CONCRETE STRENGTH @ 28 DAYS. 3600 PSI CONCRETE SHALL BE USED IN ALL PROJECTS.

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

NCDOT STANDARDS APPROVED FOR USE IN MECKLENBURG COUNTY AND TOWNS, INCLUDING ETJ

SHEET NO. REV. 20.00C

ACCESSIBLE RAMP SECTIONS WITH PLANTING STRIP 2'-6" CURB AND GUTTER

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

ACCESSIBLE RAMP SECTIONS WITH PLANTING STRIP 2'-6" CURB AND GUTTER

SHEET NO. REV. 10.31B

STANDARD PLACEMENT OF ACCESSIBLE RAMPS AND GENERAL NOTES

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

STANDARD PLACEMENT OF ACCESSIBLE RAMPS AND GENERAL NOTES

SHEET NO. REV. 10.35A

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
350.01	METHOD OF PIPE INSTALLATION - METHOD A	
310.01	PARALLEL PIPE END SECTION-CAST CONCRETE FOR 15" TO 24" PIPE	REQUIRED IN RIGHT OF WAY WITHIN THE ETJ
310.03	CROSS PIPE END SECTION-CAST CONCRETE FOR 18" TO 30" PIPE	REQUIRED IN RIGHT OF WAY WITHIN THE ETJ
310.10	DRIVEWAY PIPE CONSTRUCTION USING NO SPECIAL END SECTIONS	ONLY AT LOCATIONS APPROVED BY THE COUNTY ENGINEER
815.03	PIPE UNDERDRYAN AND BUND DRAIN	
816.03	GEOCOMPOSITE SHOULDER DRAIN	
838.01	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 15" THRU 48" PIPE 90° SKEW	NOTE 1
838.02	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 17"x13" THRU 71"x47" PIPE ARCH 90° SKEW	NOTE 1
838.04	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 15" THRU 48" PIPE	NOTE 1
838.05	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 17"x13" THRU 71"x47"	NOTE 1
838.06	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 17"x13" THRU 71"x47"	NOTE 1
838.07	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 40"x31" THRU 66"x51" PIPE ARCH	NOTE 1
838.08	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 40"x31"	NOTE 1
838.10	CONCRETE ENDWALL FOR OUTFALL 4", 6" OR 8" PIPE	NOTE 1
838.11	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 15" THRU 48" PIPE 90° SKEW	
838.14	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 17"x13" THRU 71"x47" PIPE ARCH 90° SKEW	
838.15	BRICK "L" ENDWALL FOR SINGLE PIPE CULVERTS 15" THRU 48" PIPE	
838.16	BRICK "L" ENDWALL FOR SINGLE PIPE CULVERTS 17"x13" THRU 71"x47" PIPE ARCH	
838.17	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 40"x31" THRU 66"x51" PIPE ARCH	
838.18	BRICK ENDWALL FOR SINGLE PIPE CULVERTS 40"x31" THRU 66"x51" PIPE ARCH	
838.20	BRICK ENDWALL FOR OUTFALL 4", 6" OR 8" PIPE	
838.21	REINFORCED CONCRETE ENDWALL FOR SINGLE 54" PIPE 90° SKEW	NOTE 1 SEE MOLDS 20.17 FOR SPLASH PAD
838.22	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 54" PIPES 90° SKEW	NOTE 1 SEE MOLDS 20.17 FOR SPLASH PAD
838.27	REINFORCED CONCRETE ENDWALL FOR SINGLE 60" PIPE 90° SKEW	NOTE 1 SEE MOLDS 20.17 FOR SPLASH PAD
838.28	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 60" PIPES 90° SKEW	NOTE 1 SEE MOLDS 20.17 FOR SPLASH PAD
838.33	REINFORCED CONCRETE ENDWALL FOR SINGLE 66" PIPE 90° SKEW	NOTE 1 SEE MOLDS 20.17 FOR SPLASH PAD
838.34	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 66" PIPES 90° SKEW	NOTE 1 SEE MOLDS 20.17 FOR SPLASH PAD
838.39	REINFORCED CONCRETE ENDWALL FOR SINGLE 72" PIPE 90° SKEW	NOTE 1 SEE MOLDS 20.17 FOR SPLASH PAD
838.40	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 72" PIPES 90° SKEW	NOTE 1 SEE MOLDS 20.17 FOR SPLASH PAD

NOTE 1: FOR ALL STRUCTURES - NCDOT REQUIRES CLASS B CONCRETE (2500PSI). THE COUNTY REQUIRES 3600 PSI CONCRETE STRENGTH @ 28 DAYS. 3600 PSI CONCRETE SHALL BE USED IN ALL PROJECTS.

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

NCDOT STANDARDS APPROVED FOR USE IN MECKLENBURG COUNTY AND TOWNS, INCLUDING ETJ

SHEET NO. REV. 20.00A

BEFORE YOU DIG STOP CALL 1-800-632-4949 N.C. ONE-CALL CENTER IT'S THE LAW

ISAACS GROUP, P.C. ENGINEERING & LAND SURVEYING

SEAL 026462

FINAL DRAWING FOR REVIEW PURPOSES ONLY

Project: WEDDINGTON MATTHEWS RD. DEV. WEDDINGTON, NORTH CAROLINA

Title: DETAILS AND SPECIFICATIONS

File #: 16157-DE.DWG Date: 06/28/17 Project Egr: ABC

Design By: ABC

Drawn By: BER

Scale: NTS

8720 RED OAK BOULEVARD, SUITE 420 CHARLOTTE, N.C. 28217

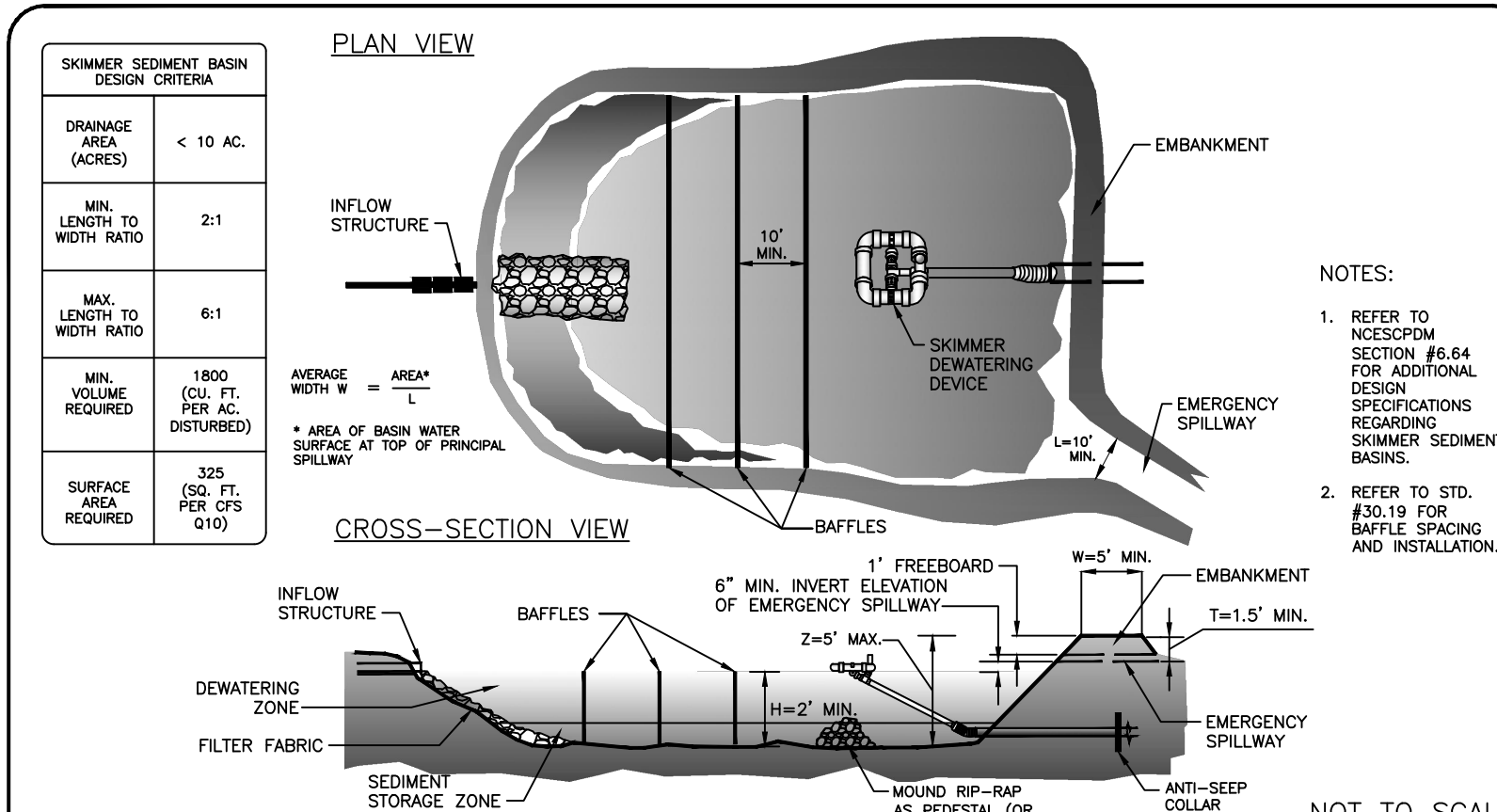
PHONE (704) 527-3440 FAX (704) 527-8335

C9.1

NO.	BY	DATE	REVISION

GRAPHIC SCALE
1 INCH = 50 FEET

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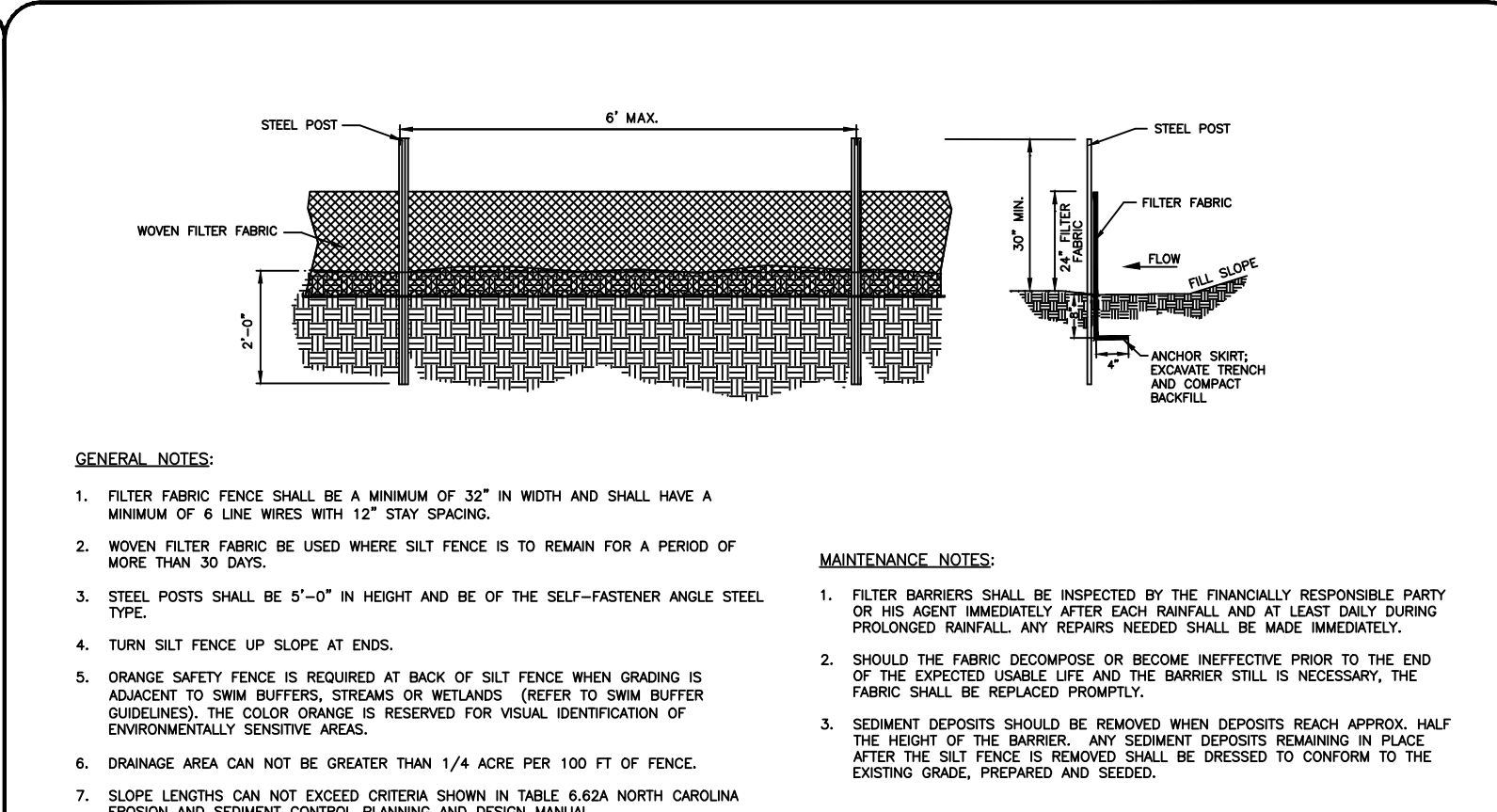


BASIN NO.	DRAINAGE AREA (ACRES)	DENIED AREA (ACRES)	Q ₁₀	BASIN VOLUME (C.F.)	REQUIRED (C.F.)	PROVIDED (C.F.)	CLEANOUT DEPTH (FT.)	H (FEET)	L (FEET)	T (FEET)	W (FEET)	Z (FEET)	SKIMMER ORIFICE DIAMETER (INCHES)	SKIMMER PIPE DIAMETER (INCHES)
1	5.17	2.29	17.07 CFS	4,126	9,584	5,546	3.50	2.5	20	1.50	10	4.0	2"	1.8"
2	7.44	3.65	23.81 CFS	6,915	15,589	7,856	10.15	1.50	3.0	2.0	10	5.0	2.5"	2.0"
3	4.24	2.00	14.83 CFS	4,876	3,342	2,755	1.80	3.0	12	1.50	10	3.0	2"	2.0"

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

SKIMMER SEDIMENT BASIN

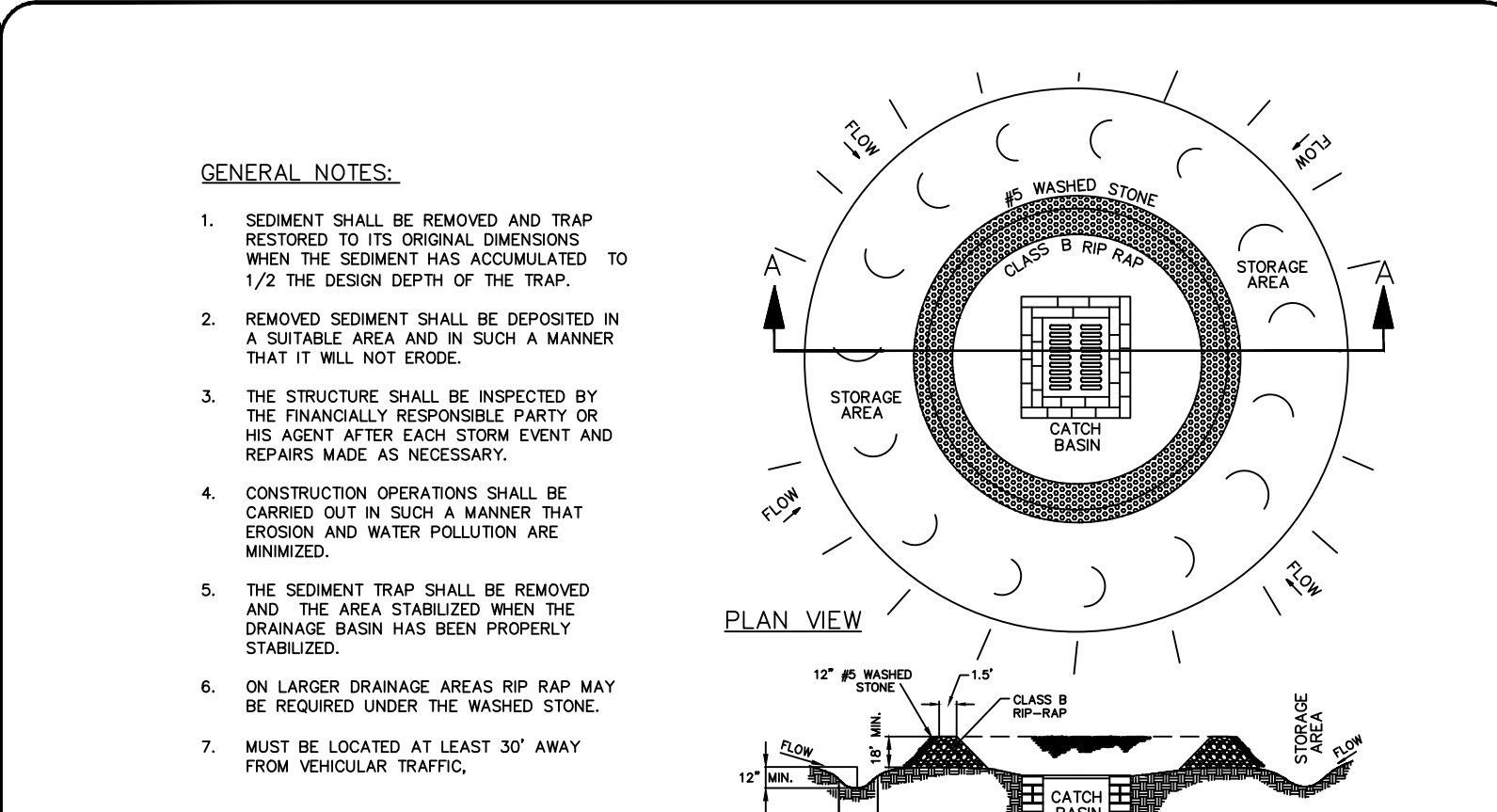
STD. NO. REV. 30.02A



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

TEMPORARY SILT FENCE

STD. NO. REV. 30.06A



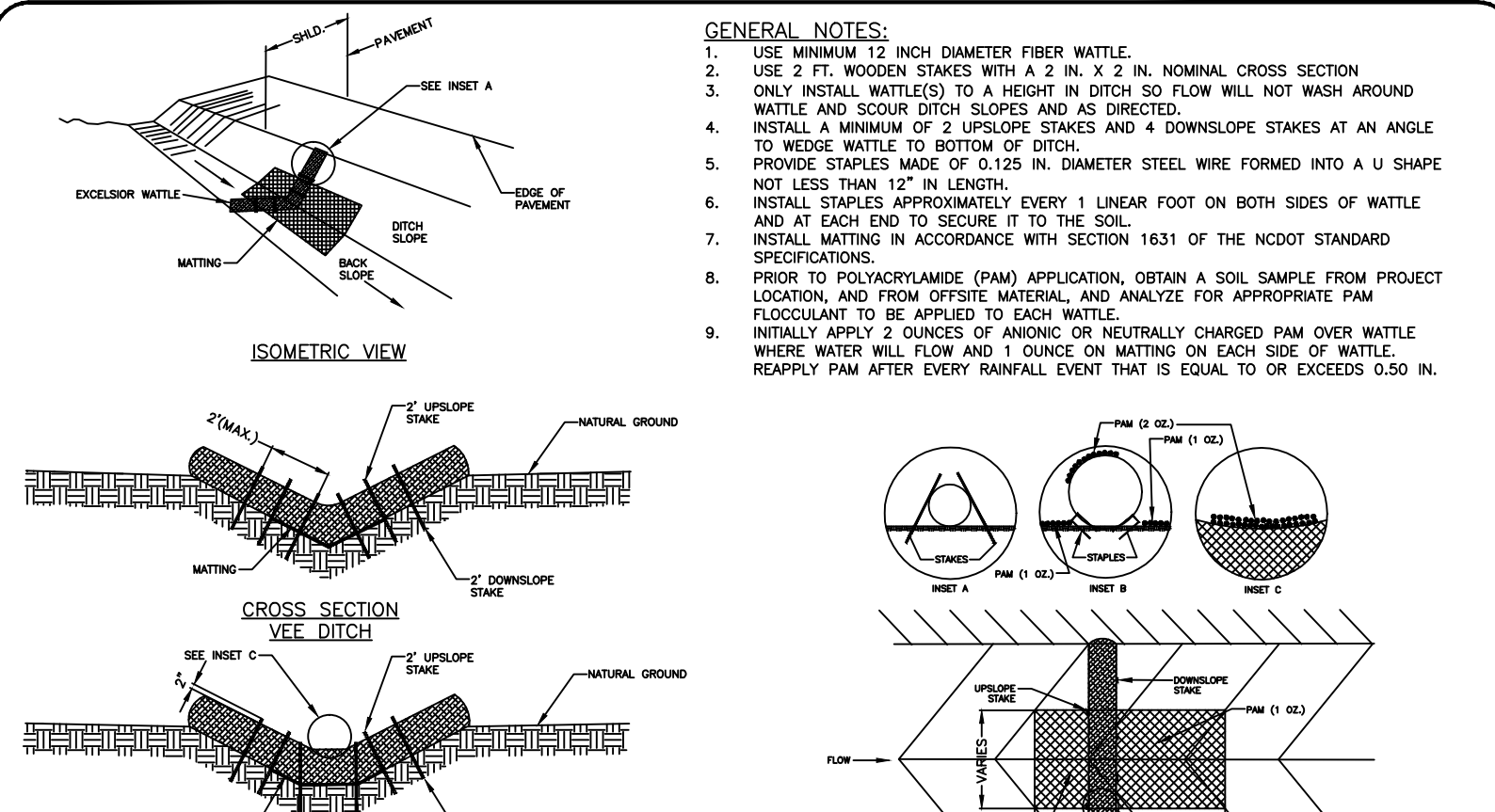
GENERAL NOTES:

1. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP.
2. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. THE STRUCTURE SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT AFTER EACH STORM EVENT AND REPAIRS MADE AS NECESSARY.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
5. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE BASIN HAS BEEN PROPERLY STABILIZED.
6. ON LARGER DRAINAGE AREAS RIP RAP MAY BE REQUIRED UNDER THE WASHED STONE.
7. MUST BE LOCATED AT LEAST 30' AWAY FROM VEHICULAR TRAFFIC.

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

STONE INLET PROTECTION

STD. NO. REV. 30.08



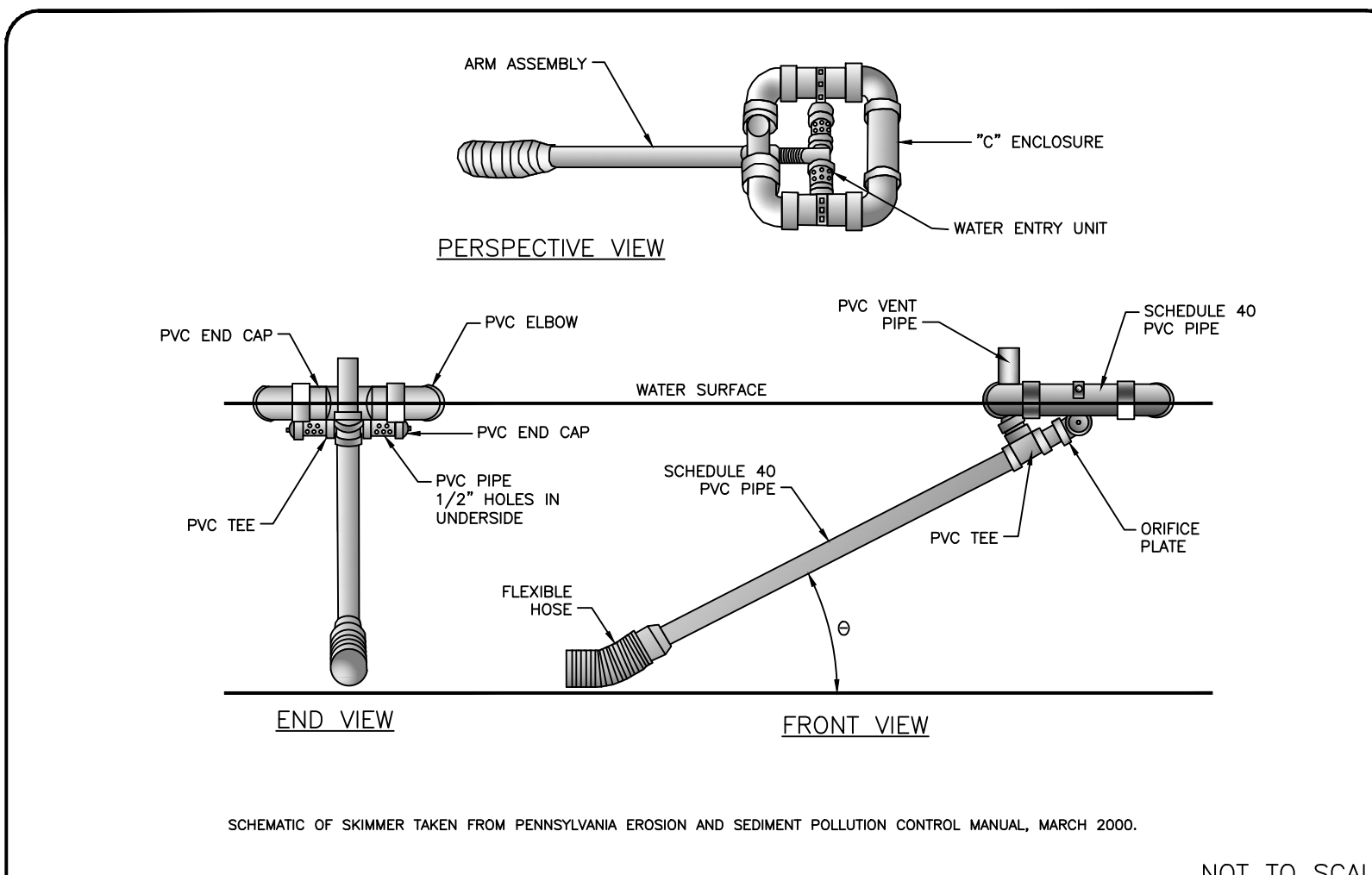
GENERAL NOTES:

1. USE MINIMUM 1/2 INCH DIAMETER FIBER WATTLE.
2. USE 2 FT. WOODEN STAKES WITH A 2 IN. X 2 IN. NOMINAL CROSS SECTION WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
3. ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
4. INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
5. PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPED NOT LESS THAN 12" IN LENGTH.
6. INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
7. INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE NCDOT STANDARD SPECIFICATIONS.
8. PRIOR TO POLYCHLORAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OTHER MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
9. INITIALLY APPLY 2 GUNZES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 GUNZE ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

TEMPORARY WATTLE CHECK DAM WITH MATTING AND OPTIONAL PAM

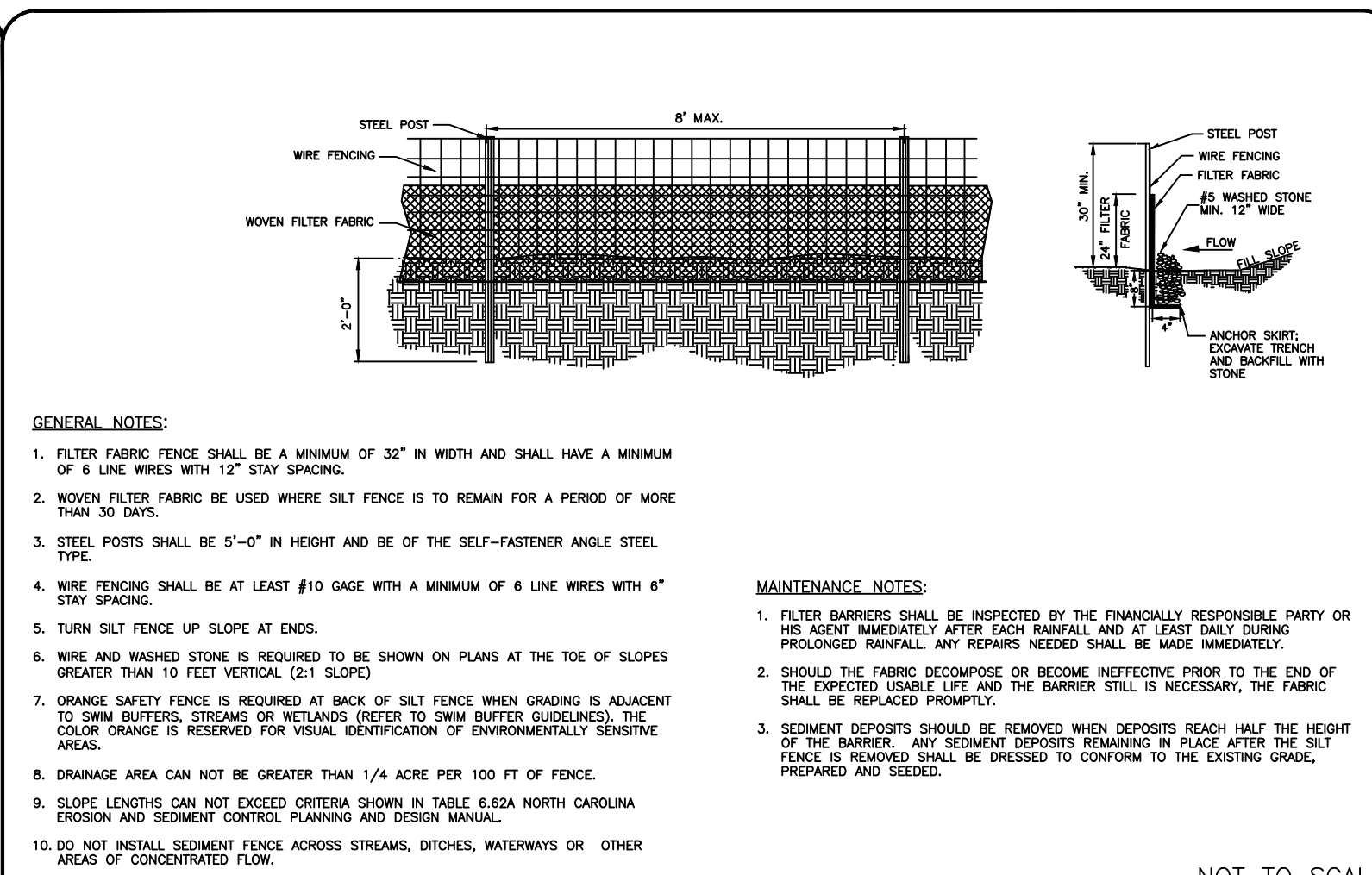
STD. NO. REV. 30.10C



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

SKIMMER

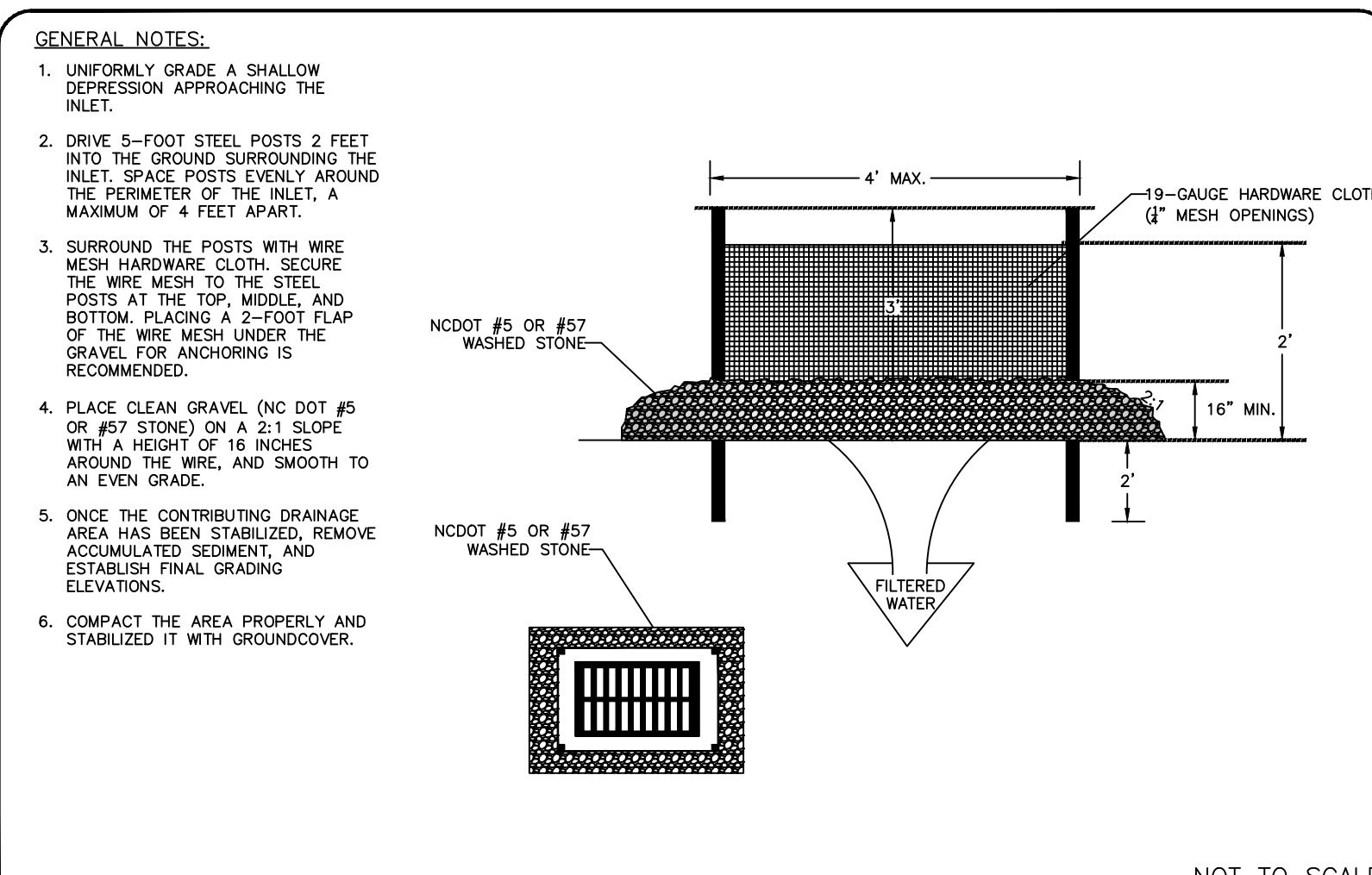
STD. NO. REV. 30.02B



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

HIGH HAZARD TEMPORARY SILT FENCE

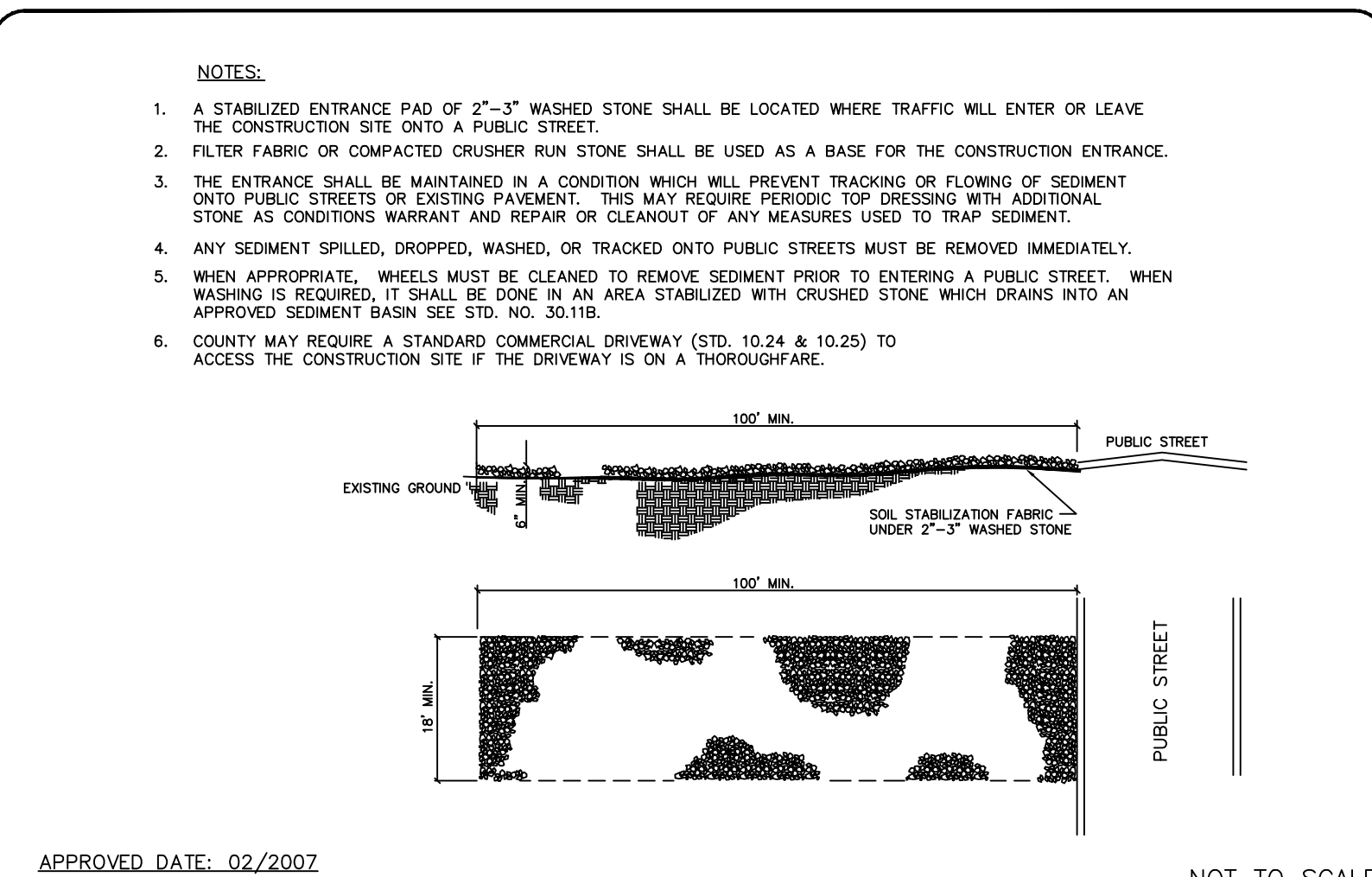
STD. NO. REV. 30.06B



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

HARDWARE CLOTH AND GRAVEL INLET PROTECTION

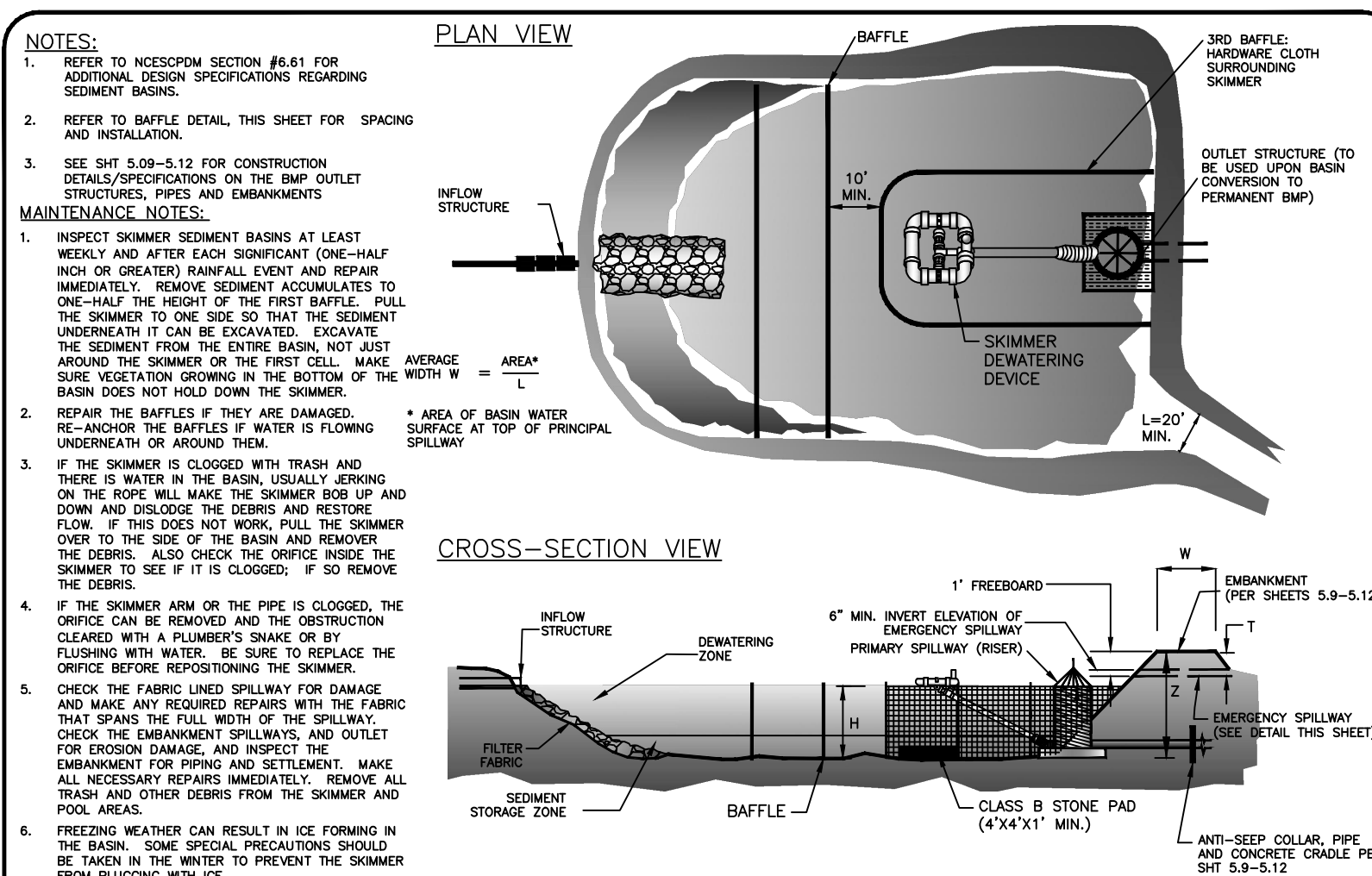
STD. NO. REV. 30.09



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

STABILIZED CONSTRUCTION ENTRANCE

STD. NO. REV. 30.11A

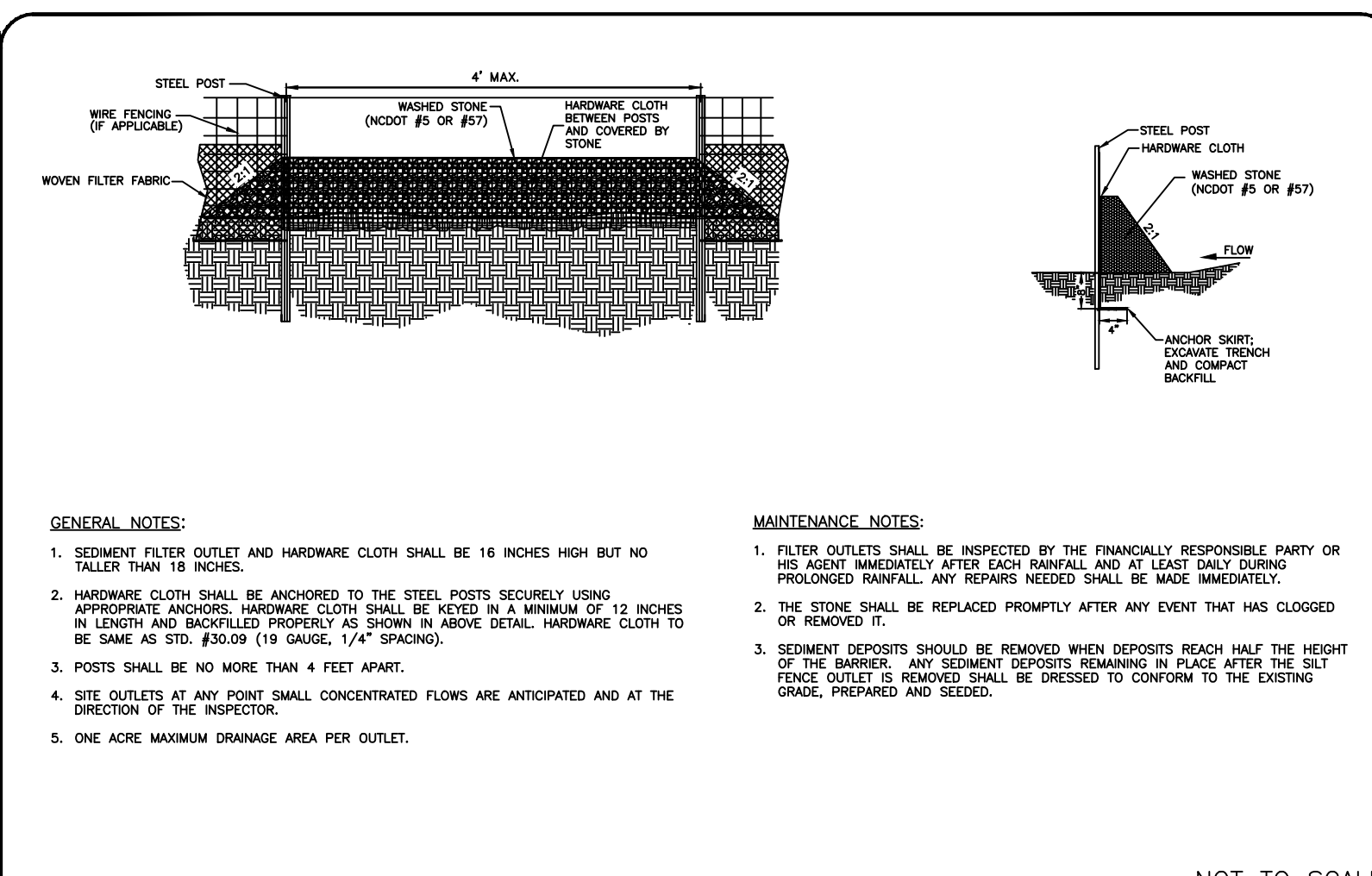


BASIN NO.	DRAINAGE AREA (ACRES)	DENIED AREA (ACRES)	Q ₁₀	BASIN VOLUME (CUBIC FT.)	REQUIRED (CUBIC FT.)	PROVIDED (CUBIC FT.)	CLEANOUT DEPTH (FT.)	H (FEET)	L (FEET)	T (FEET)	W (FEET)	Z (FEET)	SKIMMER ORIFICE DIAMETER (INCHES)	SKIMMER PIPE DIAMETER (INCHES)	
1	3.87	1.70	12.78	2,847	23,818	14,481	3.08	2.0	10	1.50	10	3.0	1.5"	1.5"	
2	18.09	18.43	53.09	13,050	89,235	23,092	25.20	3.75	7.5	9.0	20	1.5	10	6.0"	3.8"

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

SEDIMENT BASIN WITH OUTLET STRUCTURE

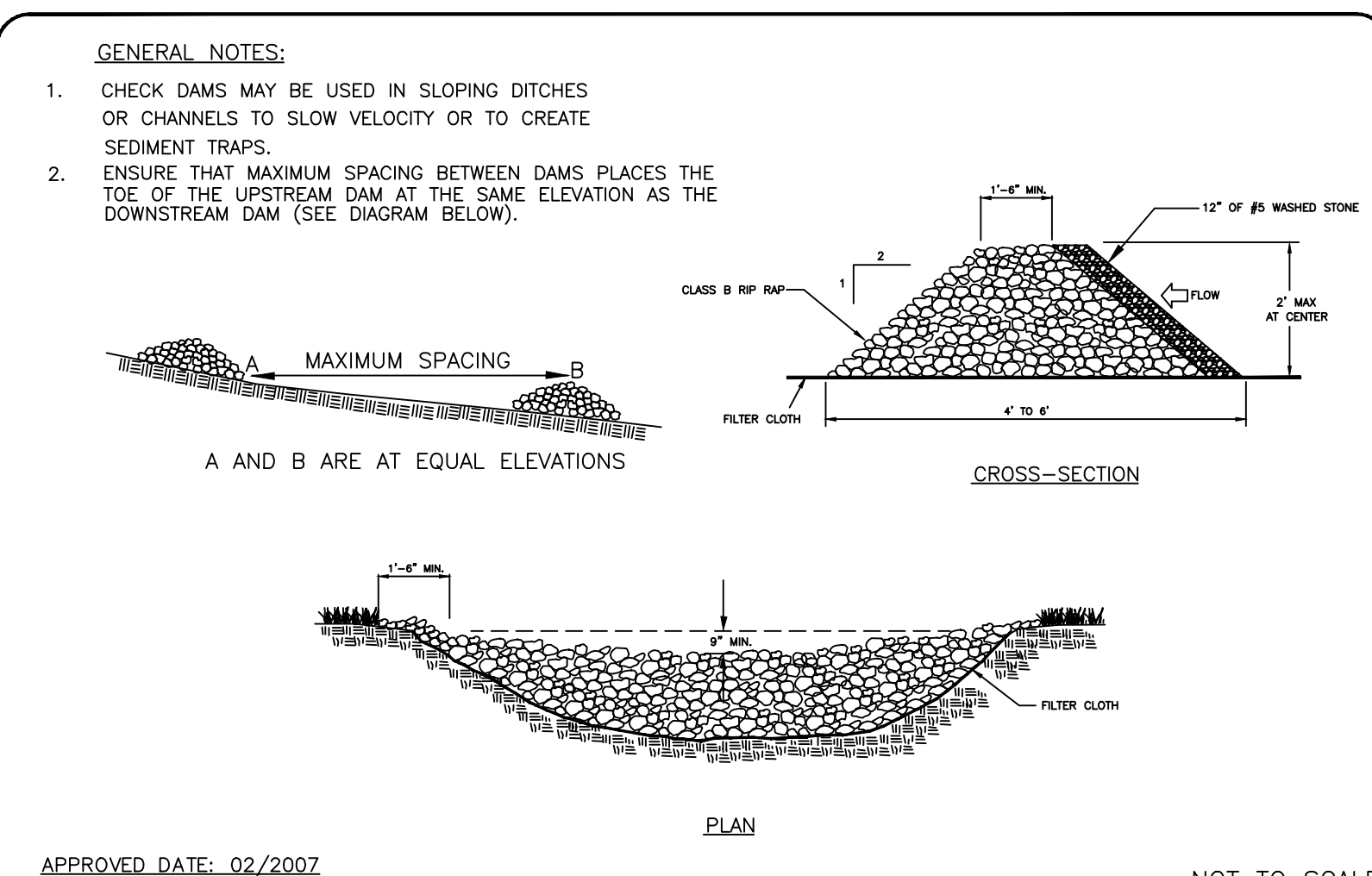
STD. NO. REV. 30.06D



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

SILT FENCE OUTLET OPTION 2

STD. NO. REV. 30.06D



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS

TEMPORARY ROCK CHECK DAM

STD. NO. REV. 30.10A

BEFORE YOU DIG STOP CALL 1-800-632-4949 N.C. ONE-CALL CENTER IT'S THE LAW

GRAPHIC SCALE 1 INCH = 50 FEET

FINAL DRAWING FOR REVIEW PURPOSES ONLY

Project: WEDDINGTON MATTHEWS RD. DEV. WEDDINGTON, NORTH CAROLINA

Title: DETAILS AND SPECIFICATIONS

File #: 16157-DCDWS Date: 06/28/17 Project Egr: ABC

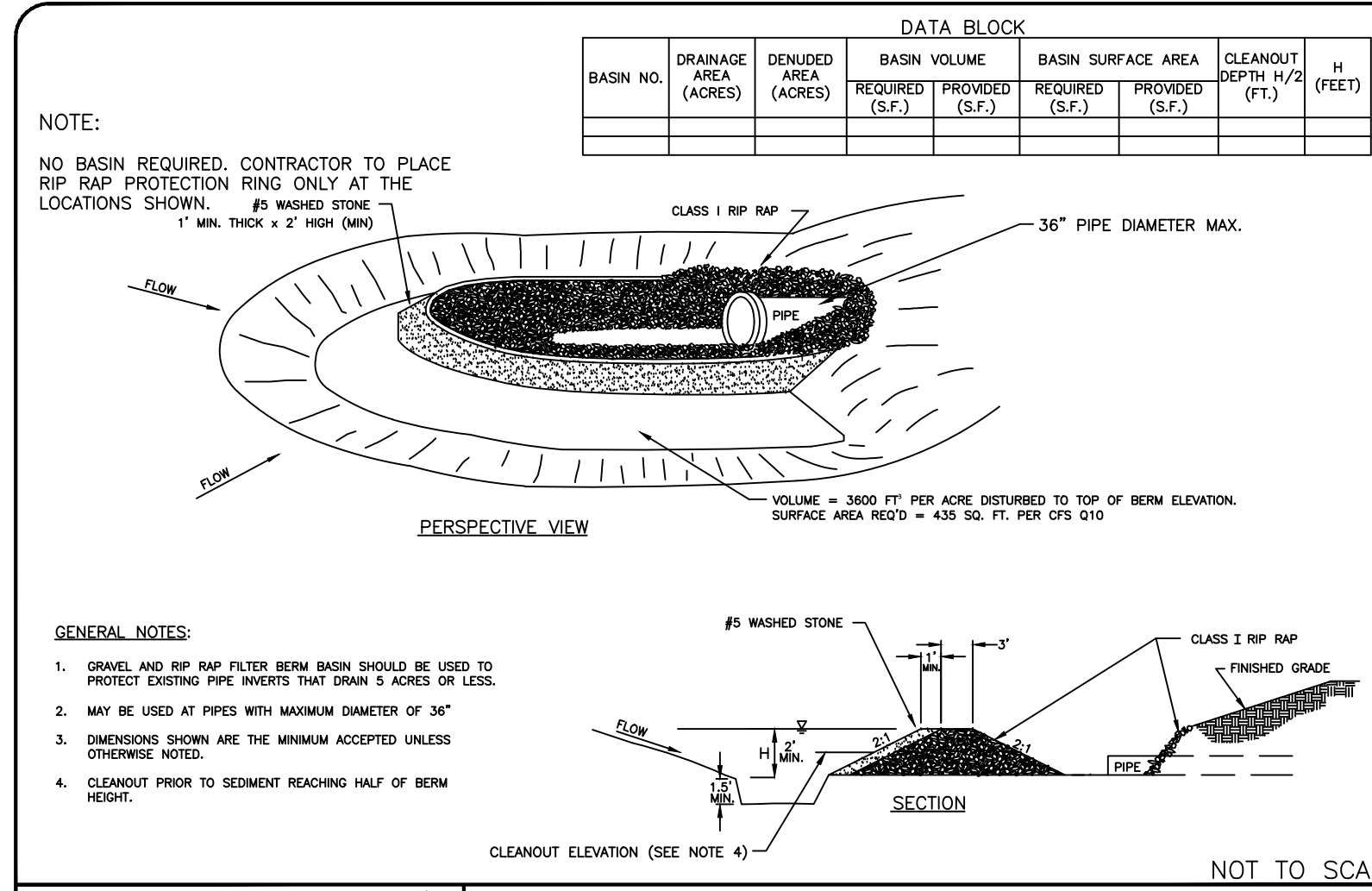
THE ISAACS GROUP, P.C. ENGINEERING & LAND SURVEYING NO. C-1069

Design By: ABC
Drawn By: RER
Scale: NTS

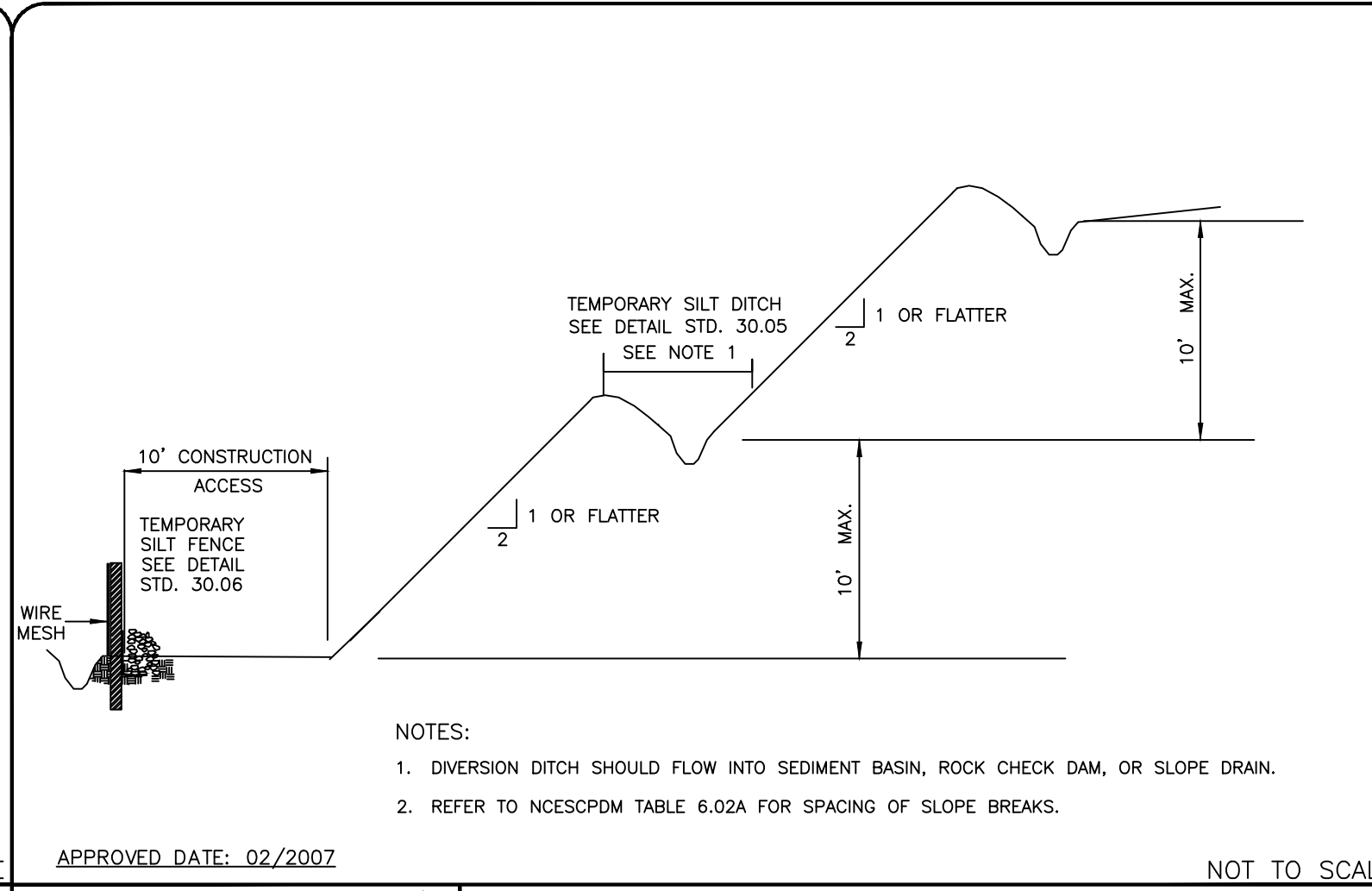
8720 RED OAK BOULEVARD, SUITE 420 CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

C9.3

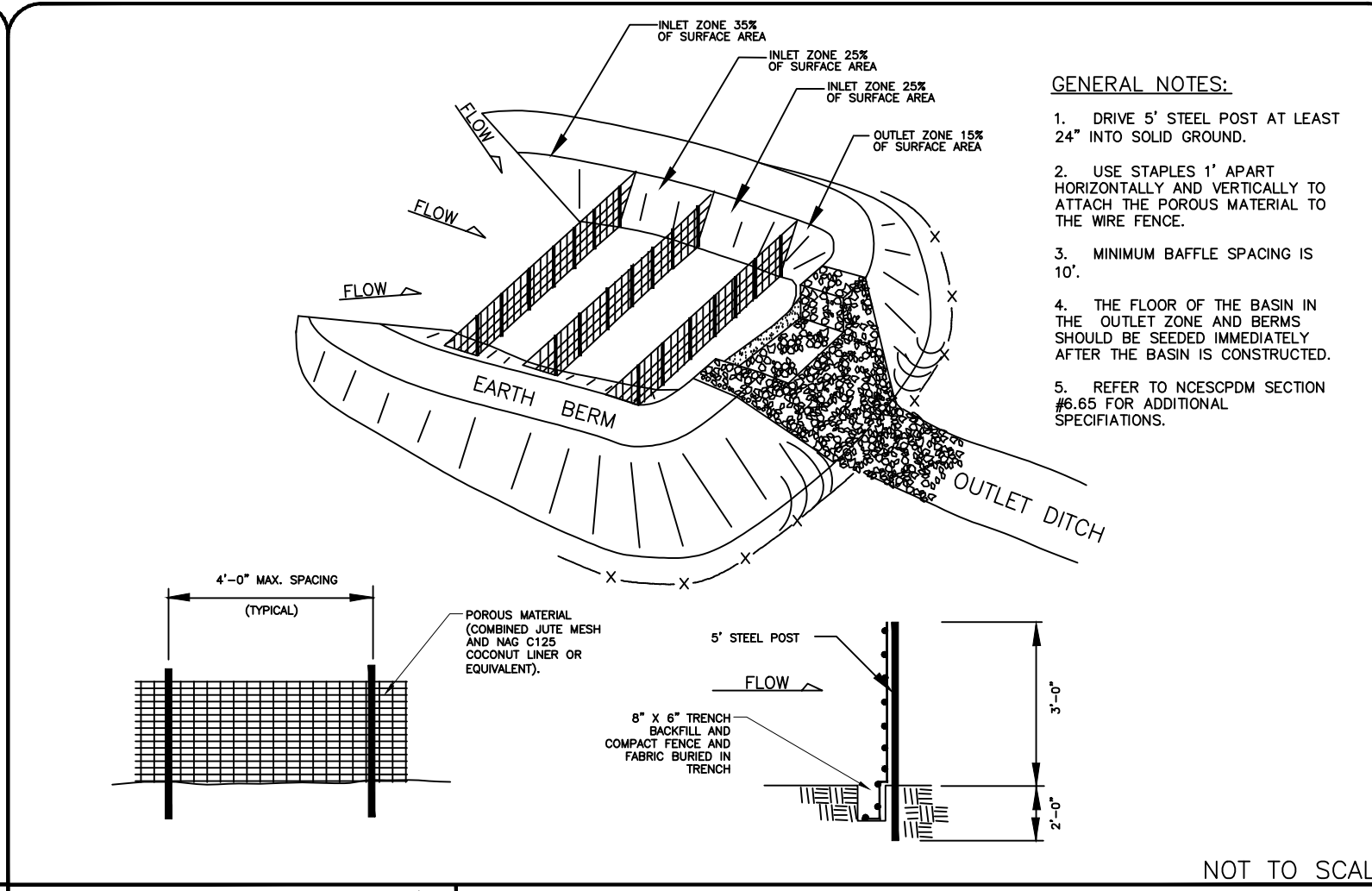
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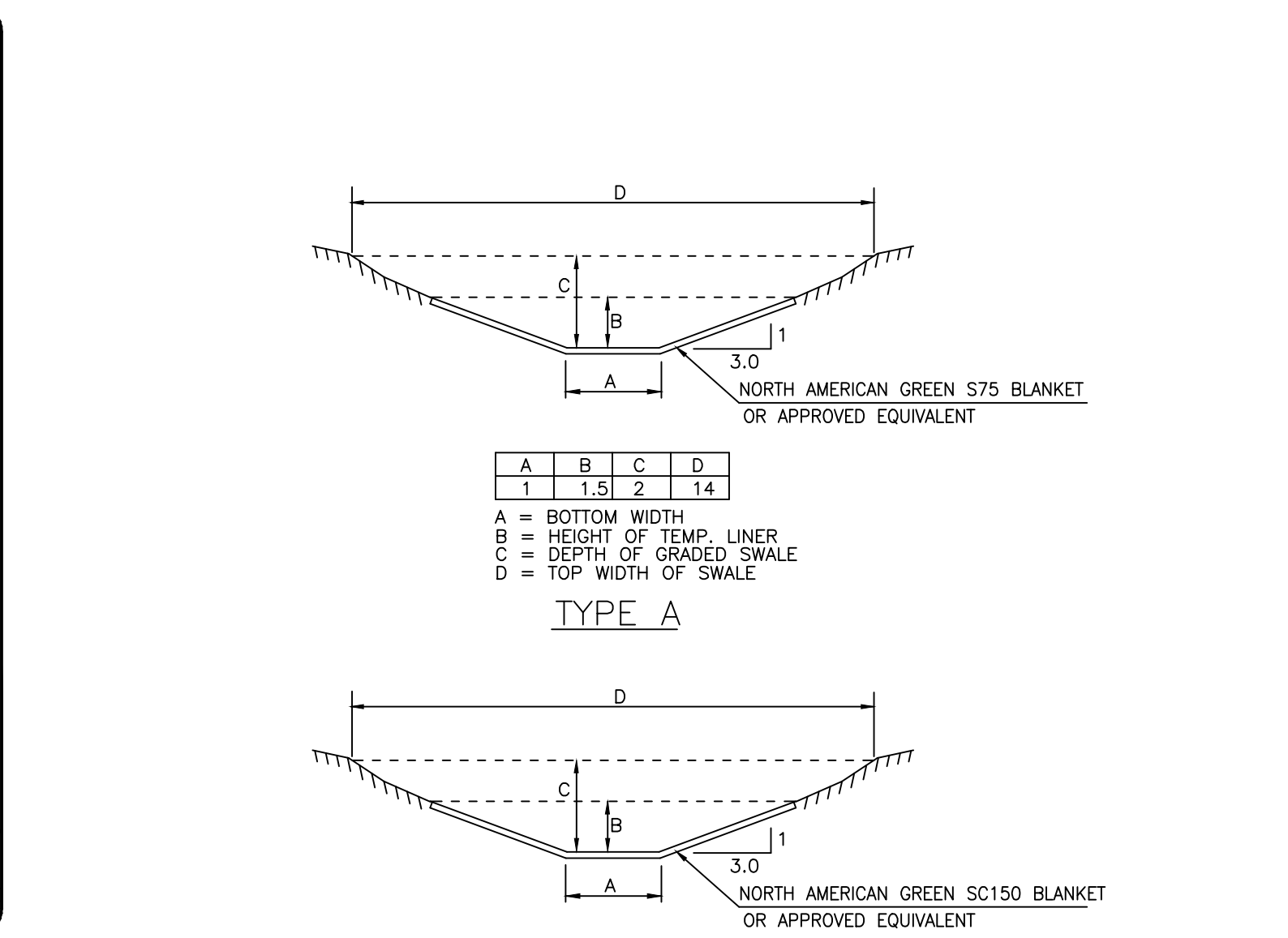
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
GRAVEL AND RIP RAP FILTER BERM BASIN
SHEET NO. 30.12



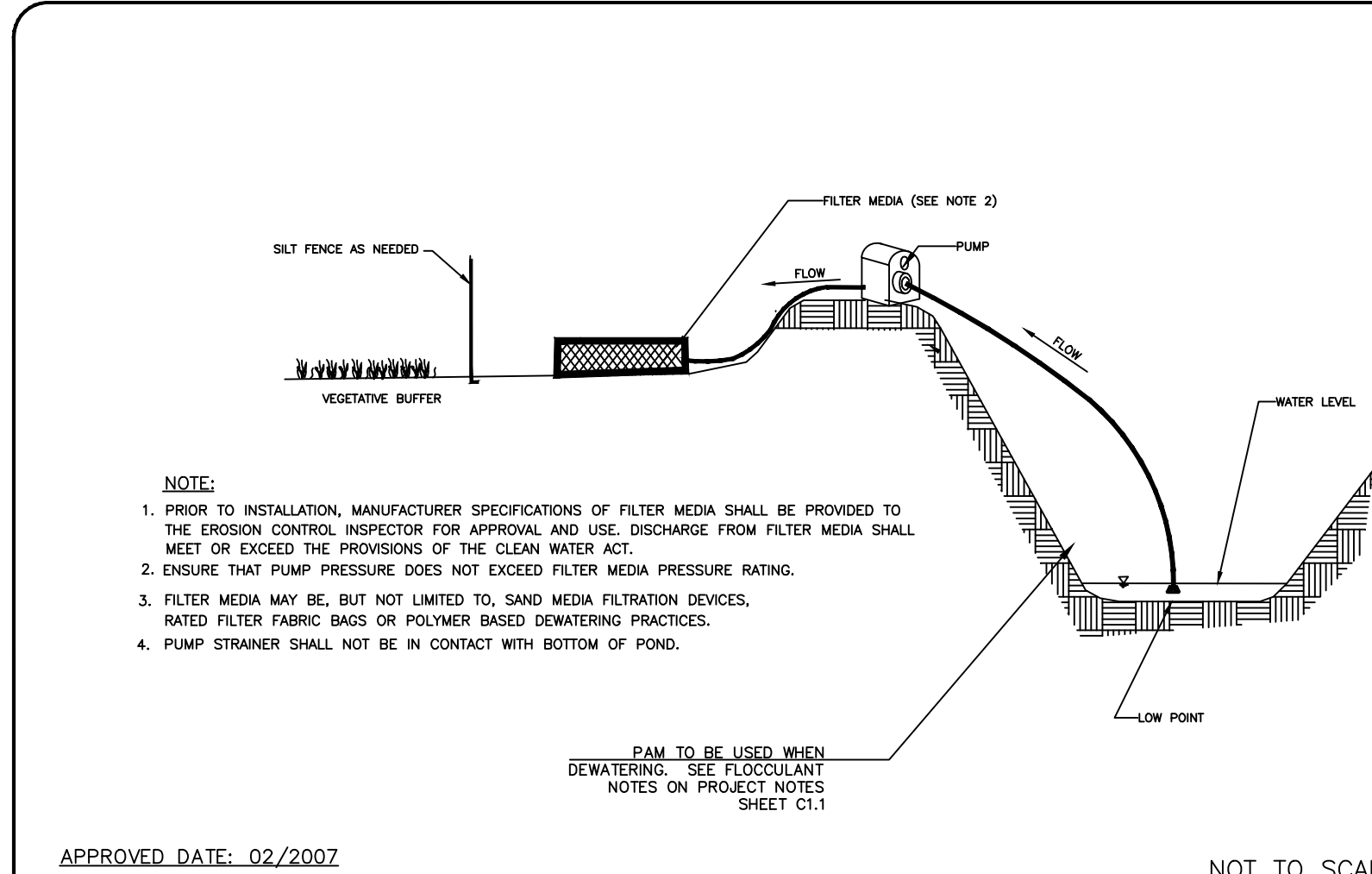
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
SLOPE STABILITY
SHEET NO. 30.16



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
BAFFLE INSTALLATION
SHEET NO. 30.19



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
GRASS SWALE
SHEET NO. 30.20



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
EROSION CONTROL DEWATERING
SHEET NO. 30.13

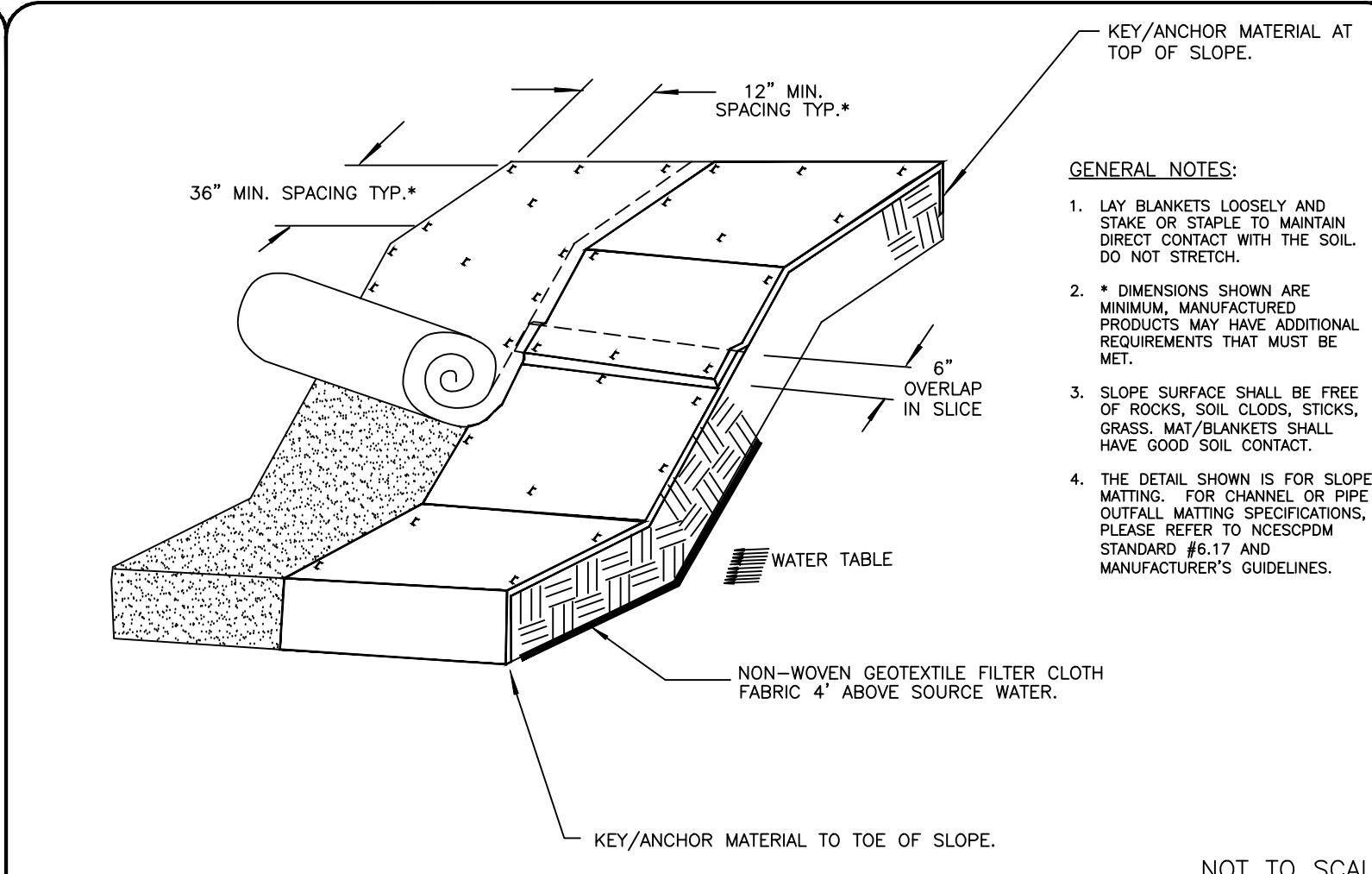
	GENTLE SLOPES	STEEP SLOPES
SEEDING MIXTURE	80 lbs/acre of tall fescue	100 lbs/acre tall fescue 30 lbs/acre Sericea lespedeza (unscarified after August 15) 10 lbs/acre Kobe lespedeza
SEEDING DATES	FALL: August 25 - October Late winter: February 15 - April 15 To extend spring seeding into June, add 15 lbs/acre hulled Bermudagrass Overseeding of Kobe lespedeza over fall-seeded tall fescue is very effective.	FALL: August 25 - October 15 Late winter: February 15 - April 15 To extend spring seeding into June, add 15 lbs/acre hulled Bermudagrass Overseeding of Kobe lespedeza over fall-seeded tall fescue is very effective.
SEEDING AMENDMENTS	Apply lime and fertilizer per soil tests, or 4000 lbs/acre limestone and 1000 lbs/acre 10-10-10 fertilizer.	Apply lime and fertilizer per soil tests, or 4000 lbs/acre limestone and 1000 lbs/acre 10-10-10 fertilizer.

Soil stabilization shall be required on any area of a site where land disturbing activities have temporarily or permanently ceased according to the following schedule:

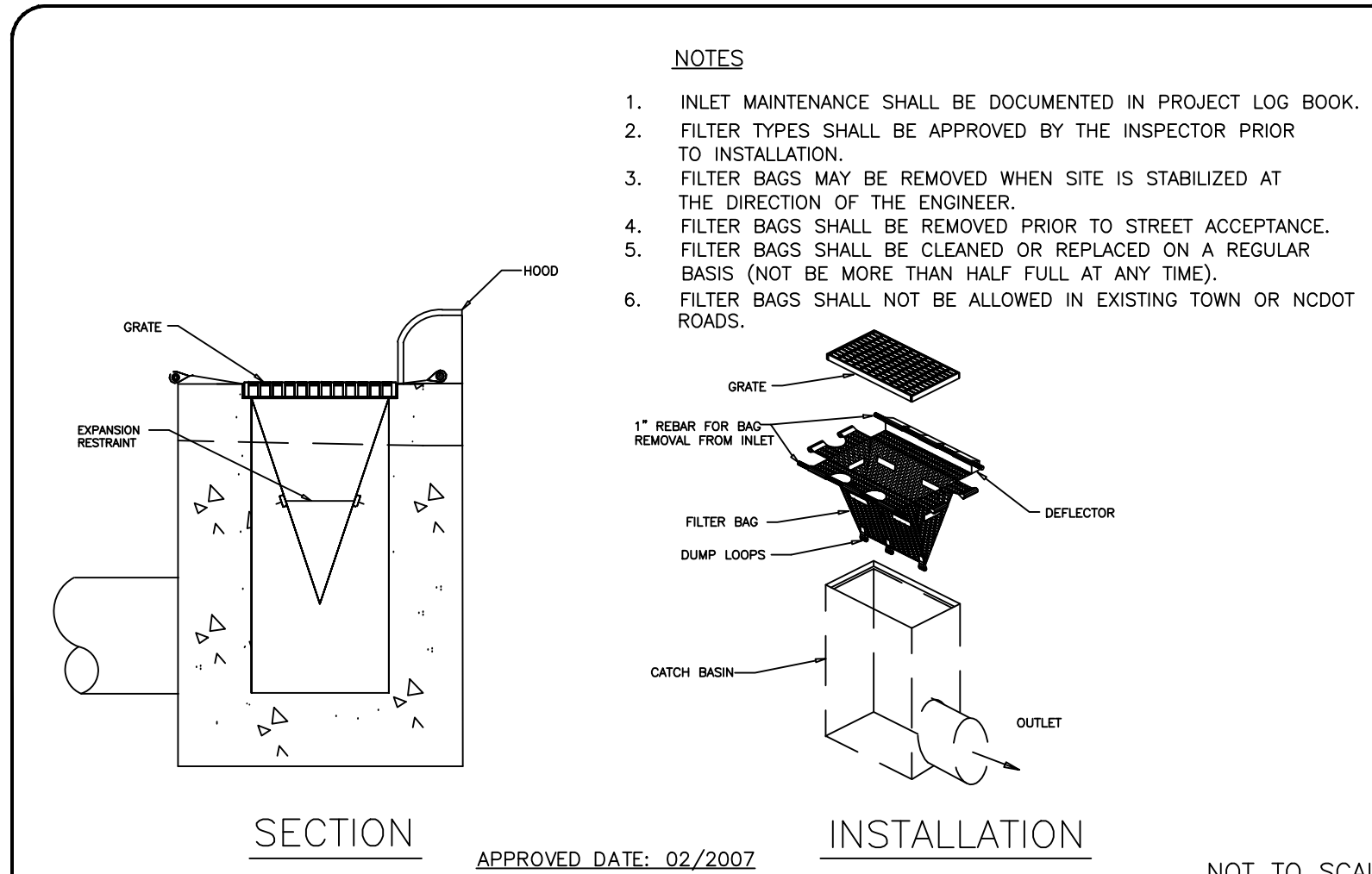
- Perimeter dikes, swales, ditches, perimeter slopes steeper than 3 horizontal to 1 vertical (3:1) shall be provided temporary or permanent stabilization with ground cover as soon as practicable but in any event within 7 calendar days from the last-land disturbing activity.
- All other disturbed areas shall be provided temporary or permanent stabilization with ground cover as soon as practicable but in any event within 14 days from the last land disturbing activity.
- SEE ADDITIONAL REQUIREMENTS UNDER "ENHANCED EROSION CONTROL NOTES:" ON PROJECT NOTES SHEET C1.1.

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
SEEDING SCHEDULE
SHEET NO. 30.17A



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
EMBANKMENT MATTING DETAIL
SHEET NO. 30.20



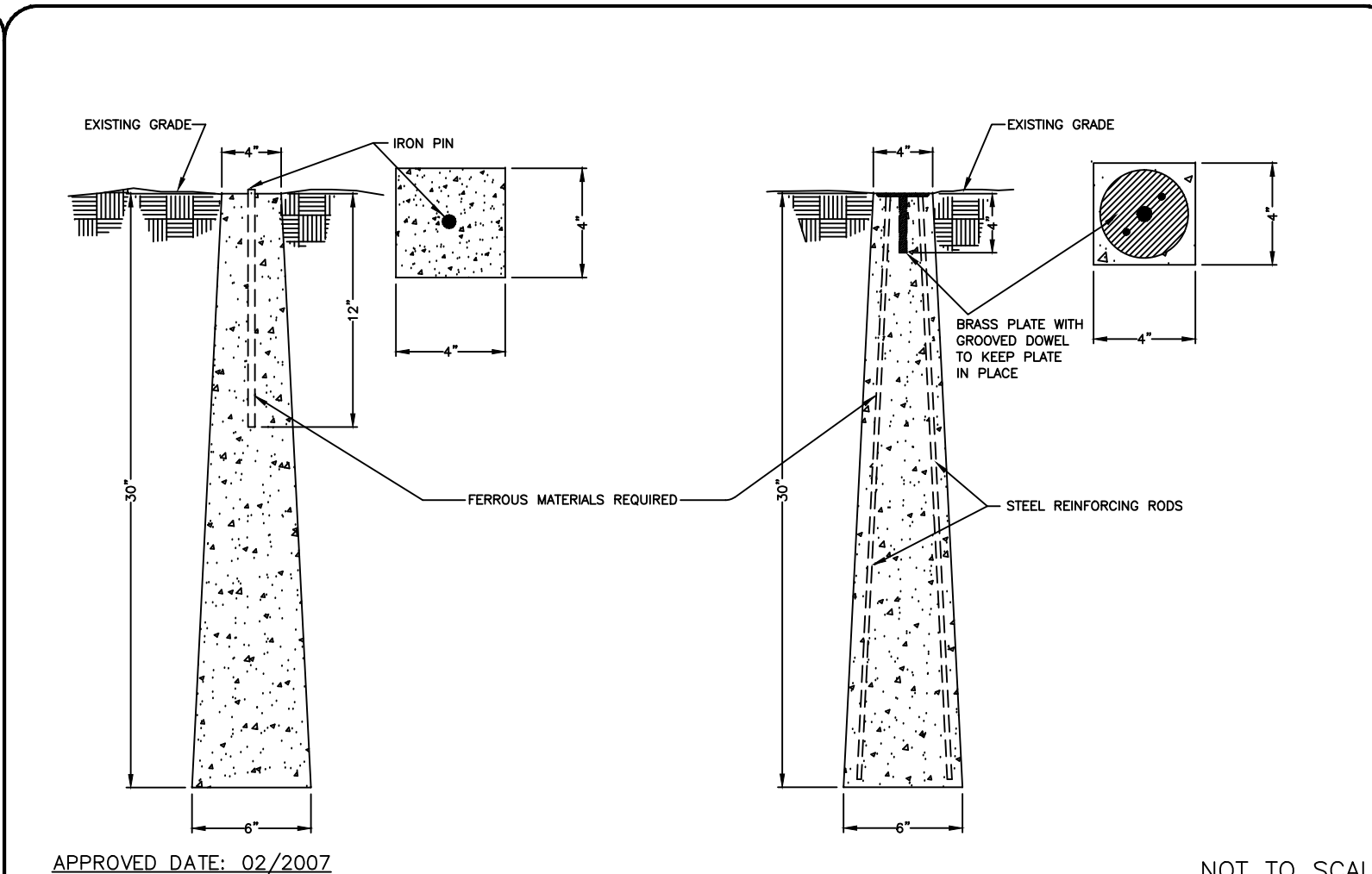
MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
CATCH BASIN INLET PROTECTION
SHEET NO. 30.15

TEMPORARY SEEDING FOR WARM AND COOL SEASON

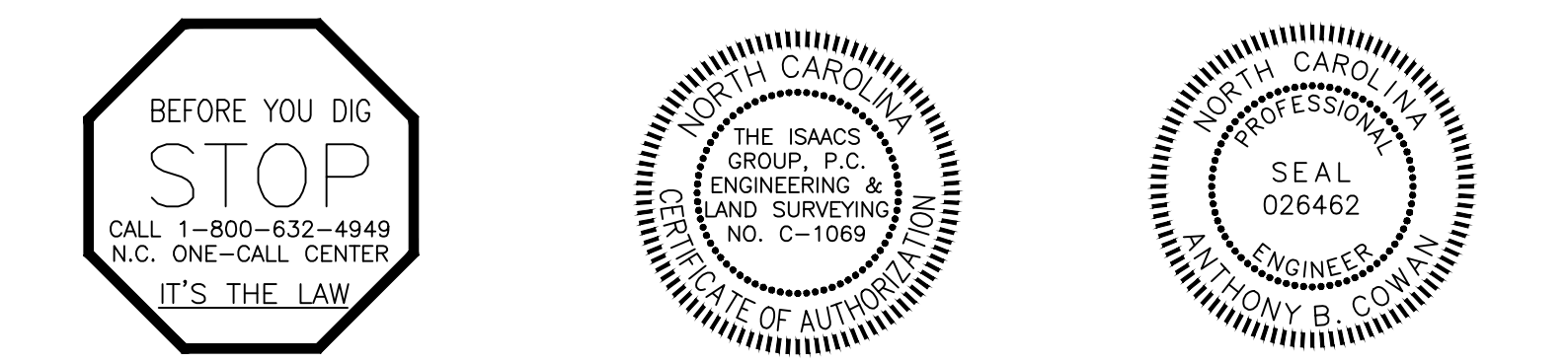
	EARLY SUMMER SEASON	STEEP SLOPES
SEEDING MIXTURE	40 lbs/acre of German millet 80 lbs/acre of tall fescue	120 lbs/acre Rye (grain) 80 lbs/acre tall fescue
SEEDING DATES	May 1 - August 15 Refertilize if growth is not fully adequate. Apply 4000 lbs/acre straw or equivalent hydroseeding.	October 25 - December 30 Between December 30 - February 15, add 50 lbs/acre of annual Kobe lespedeza. Apply 4000 lbs/acre straw or equivalent hydroseeding.
SEEDING AMENDMENTS	Apply lime and fertilizer per soil tests, or 2000 lbs/acre limestone and 750 lbs/acre 10-10-10 fertilizer.	Apply lime and fertilizer per soil tests, or 2000 lbs/acre limestone and 750 lbs/acre 10-10-10 fertilizer.

APPROVED DATE: 02/2007

MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
SEEDING SCHEDULE (SEASONAL)
SHEET NO. 30.17B



MECKLENBURG COUNTY LAND DEVELOPMENT STANDARDS
TYPICAL CONCRETE CONTROL MONUMENT
SHEET NO. 50.03



FINAL DRAWING FOR REVIEW PURPOSES ONLY

GRAPHIC SCALE
0 25 50 100
1 INCH = 50 FEET

Project: WEDDINGTON MATTHEWS RD. DEV. WEDDINGTON, NORTH CAROLINA
Title: DETAILS AND SPECIFICATIONS
File #: 16157-DE-DWG Date: 03/23/17 Project Egr: ABC
Design By: ABC
Drawn By: RER
Scale: NTS

8720 RED OAK BOULEVARD, SUITE 420 CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

C9.4

**USPS APPROVED MANUFACTURERS OF
CLUSTER BOX UNITS (CBUs) & WALL-MOUNTED CENTRALIZED MAIL RECEPTACLES
(USPS-B-1118F, USPS-STD-4B+ AND USPS-STD-4C)**

USPS-STD-B-118F

COMPANY	ADDRESS	CITY	STATE	ZIP	PHONE	WEB SITE	DESIGN TYPES
Auth-Florence Manufacturing	5935 Corporate Dr.	Manhattan	KS	66503-9875	800-275-5081	www.auth-florence.com	Types 1, 11, 111 & IV

USPS -STD-4B+

COMPANY	ADDRESS	CITY	STATE	ZIP	PHONE	WEB SITE	DESIGN TYPES
American Device Manufacturing	5935 Corporate Dr.	Manhattan	KS	66503-9875	800-275-5081	www.auth-florence.com	Horizontal units only
American Eagle	3017 Wheel Lock St.	Dallas	TX	75220-2944	214-358-5544	www.americaneaglemailbox.com	Horizontal units only
Auth-Florence Manufacturing	5935 Corporate Dr.	Manhattan	KS	66503-9875	800-275-5081	www.auth-florence.com	Horizontal & Vertical Units
Bommer Industries	PO Box 187	Landrum	SC	29366-0187	800-334-1654	www.bommer.com	Horizontal & Vertical Units
Jensen Industries	1848 E 46th St.	Los Angeles	CA	90058-2098	800-235-8351	www.jensen-ind.com	Horizontal & Vertical Units
Salisbury Industries	1010 East 62nd St.	Los Angeles	CA	90001-1598	800-323-3003	www.mailboxes.com	Horizontal & Vertical Units
Security Manufacturing	815 S Main St.	Grapevine	TX	76051-5535	800-782-8937	www.securitymanufacturing.com	Horizontal & Vertical Units

USPS -STD-4C

COMPANY	ADDRESS	CITY	STATE	ZIP	PHONE	WEB SITE	DESIGN TYPES
Postal Products Unlimited	500 W Oklahoma Ave	Milwaukee	WI	53207-2849	800-239-4500	www.mailproducts.com	Horizontal

Notes: Buildings with permits dated on or after October 5th, 2006 must have USPS-STD-4C receptacles.

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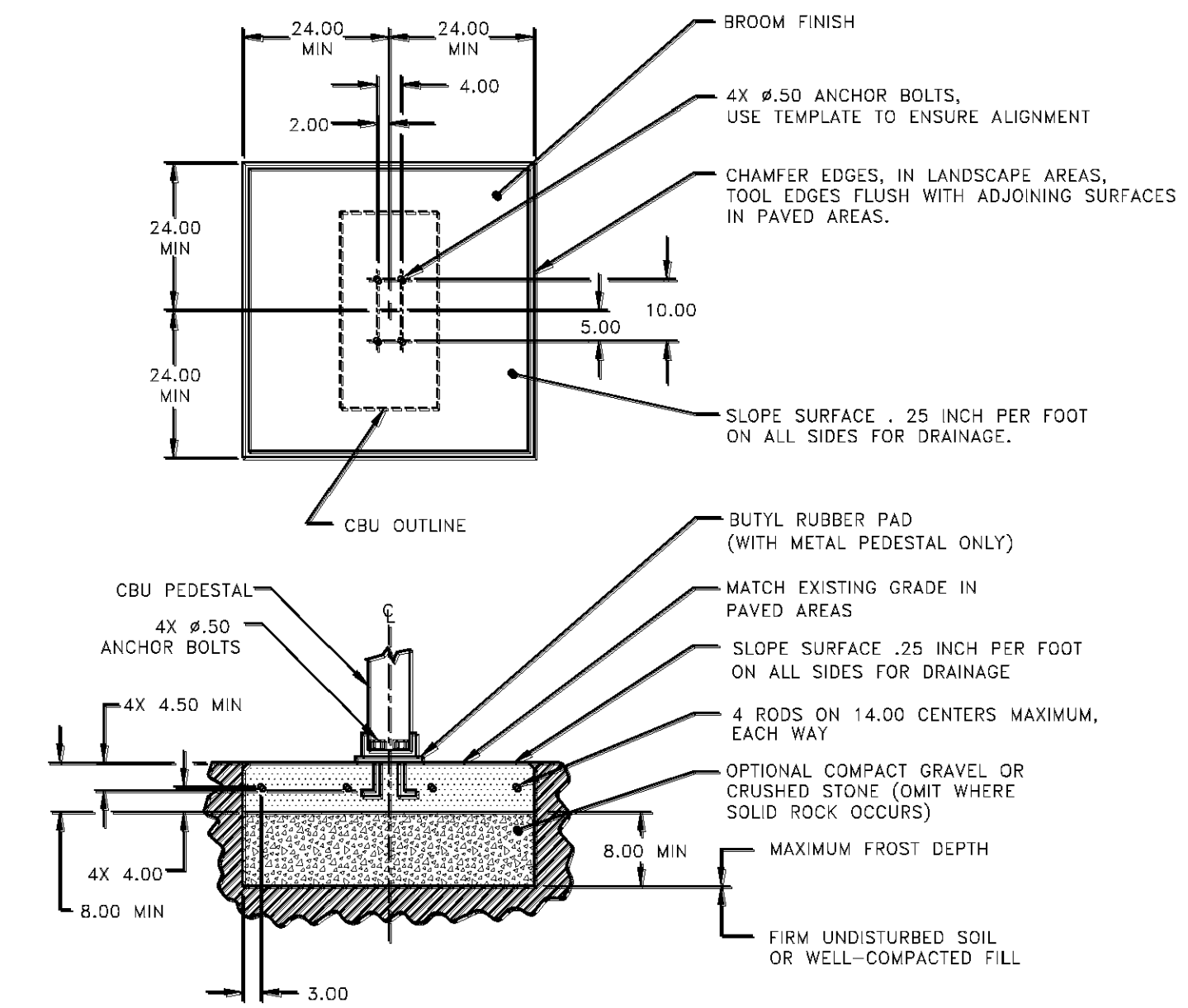
**ADDITIONAL INFORMATION ON
CLUSTER BOX UNITS (CBU)**

- STANDARD UNITS AVAILABLE -



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USPS APPROVED SPECIFICATIONS – CONCRETE PAD (SINGLE UNIT)
(All measurements are in inches)



- NOTES:
1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS, CONTAIN 4% MIN – 6% MAX AIR ENTRAINMENT AND BE PLACED WITH A 3.50 – 4.50 SLUMP IN ACCORDANCE WITH ACI 301.
 2. REINFORCING STEEL RODS SHALL CONFORM TO ASTM A615, GRADE 60.
 3. ANCHOR BOLTS SHALL CONFORM TO ASTM A193, GRADE 8M, TYPE 316 STAINLESS STEEL.

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**CLUSTER BOX UNIT (CBU)
-ANCHORING METHODS-**

CBU's must be level and mounted firmly in concrete, using one of the following methods.

1. The J-bolt method is the preferred method of installation of CBU's on concrete pads; however, the J-bolt pattern must be accurate with the CBU pedestal plate. When using J-bolts, in order to prevent any damage or accidents that could result from the exposed bolts, consideration should be given as to the time lapse between pouring the concrete and the actual installation. Expansion anchors must be installed in accordance with the manufacturer's instructions.
2. The use of anchor bolts for the installation of CBU's on concrete pads is also acceptable as long as the methods described below are followed.
 - a. Hilti Kwik bolt II, 1/2" diameter X 5-1/2" overall length
Catalog Number: 000-453-696, KB II 12-512
Stainless Steel Catalog Number: 000-454-744
Minimum embedment in concrete must be no less than 3-1/2"
 - b. ITW Ramset Redhead Trublot, galvanized, 1/2" diameter X 7" overall length
 - c. Rawl Stud, 1/2" diameter X 5 1/2" overall length, galvanized.
Catalog Number: 7324
Minimum embedment in concrete must be no less than 4"

**CLUSTER BOX UNIT (CBU)
-CONCRETE PAD REQUIREMENTS-**

- ALL FREE STANDING PADS MUST BE 8" THICK -

1 UNIT	SINGLE PAD	4' X 4'
2 UNITS	DOUBLE PAD	4' X 7'
3 UNITS	TRIPLE PAD	4' X 10'
4 UNITS	QUAD PAD	4' X 13'

*** WHEN PLACING A PARCEL LOCKER AT ANY CBU LOCATION,
INCREASE THE PAD SIZE BY AN ADDITIONAL 4' X 4'***

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**CLUSTER BOX UNIT (CBU)
- CONCRETE PAD SPECIFICATIONS -
-ANCHORING METHODS-**

The following documents are the only USPS approved specifications for pouring concrete pads for the anchoring of CBU's.

CONCRETE SPECIFICATIONS FOR SINGLE UNIT CONCRETE PAD

CONCRETE SPECIFICATIONS FOR MULTIPLE UNIT CONCRETE PAD

ANCHORING METHODS FOR CENTRALIZED BOX UNITS (CBU)

CBU's must be installed approximately one week prior to customer occupancy.

CBU's must not be installed until the local USPS representative has conducted an on-site visit to ensure compliance with the official specifications. **Contact the local USPS representative to have the pads inspected prior to pouring the concrete.**

CBU's must be installed facing the correct direction. CBU's installed on concrete pads poured behind the sidewalk should face the sidewalk. CBU's installed on concrete pads located in landscape strips between the curb and the sidewalk should face the sidewalk. Do not install CBU facing the curb or street—causing the carrier and the customer to stand in the street to deliver or retrieve mail.

CBU's should not be installed so close to an intersection or traffic lane that they block visibility for approaching traffic or could be struck by a passing motor vehicle.

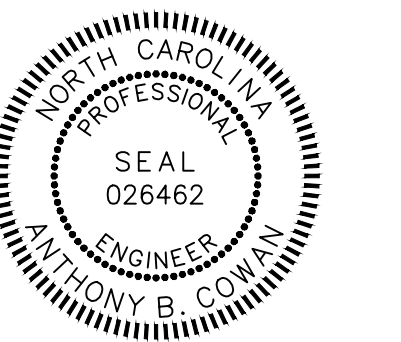
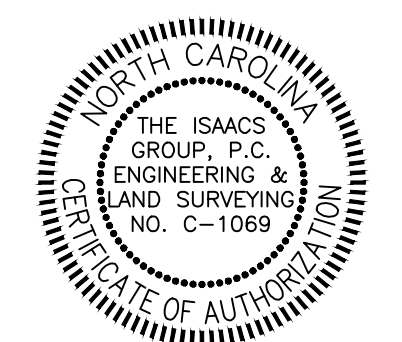
CBU's should not be located on dead-end streets where there is no safe turnaround for Postal delivery vehicles.

Notify your local USPS representative immediately upon completion of the CBU installation so that we can install the arrow lock and secure the unit.

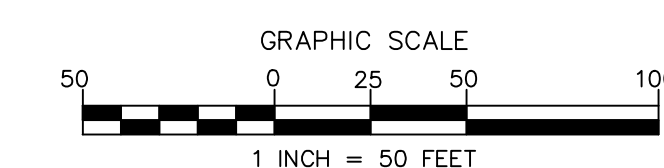
All CBU compartment keys will be distributed by the builder/developer at the time of move in. The local USPS representative needs to be contacted by the builder/developer for the box address assignments. Each homeowner should receive a copy of the Mode of Delivery Agreement at the time of move in.

Any deviations from the USPS designated location of the CBU must not occur without first receiving authorization from the local USPS representative.

14



FINAL DRAWING
FOR REVIEW PURPOSES ONLY



NO.	BY	DATE	REVISION

Project: **WEDDINGTON MATTHEWS RD. DEV.**
WEDDINGTON, NORTH CAROLINA

Title: **DETAILS AND SPECIFICATIONS**

File #: 16157-DE.DWG | Date: 03/23/17 | Project Egr: ABC
Design By: ABC
Drawn By: RER
Scale: NTS

ISAACS
CIVIL ENGINEERING DESIGN AND SURVEYING

8720 RED OAK BOULEVARD, SUITE 420
CHARLOTTE, N.C. 28217
PHONE (704) 527-3440 FAX (704) 527-8335

C9.5