DUKE ENERGY CAROLINAS, LLC

MARSHALL STEAM STATION

STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
DEQ SOLID WASTE PERMIT DRAWINGS



SITE VICINITY MAP

DWG. NO.	DWG. DESCRIPTION
MAR_C907.005.001	COVER
MAR_C907.005.002	OVERALL SITE PLAN -SHEET INDEX
MAR_C907.005.003	MAIN CHANNEL PLAN & PROFILE STA. 0+00 - 11+50
MAR_C907.005.004	MAIN CHANNEL PLAN & PROFILE STA. 11+50 - 22+50
MAR_C907.005.005	MAIN CHANNEL PLAN & PROFILE STA. 22+50 - 33+00
MAR_C907.005.006	MAIN CHANNEL PLAN & PROFILE STA. 33+00 - 42+62
MAR_C907.005.007	PLAN & PROFILE NS CULVERT AT EX. CULVERT PIPE #2
MAR_C907.005.008	CHANNEL B PLAN & PROFILE STA. 0+00 - 3+66
MAR_C907.005.009	ACCESS ROAD PLAN & PROFILE STA. 0+00 TO STA. 10+00
MAR_C907.005.010	ACCESS ROAD PLAN & PROFILE STA. 10+00 TO STA. 13+97
MAR_C907.005.011	CHANNEL CROSS SECTION STA. 0+00 - 3+50
MAR_C907.005.012	CHANNEL CROSS SECTION STA. 4+00 - 7+50
MAR_C907.005.013	CHANNEL CROSS SECTION STA. 8+00 -11+50
MAR_C907.005.014	CHANNEL CROSS SECTION STA. 12+00 - 15+50
MAR_C907.005.015	CHANNEL CROSS SECTION STA. 16+00 - 19+50
MAR_C907.005.016	CHANNEL CROSS SECTION STA. 20+00 - 23+50
MAR_C907.005.017	CHANNEL CROSS SECTION STA. 24+00 - 27+50
MAR_C907.005.018	CHANNEL CROSS SECTION STA. 28+00 - 31+50
MAR_C907.005.019	CHANNEL CROSS SECTION STA. 32+00 - 35+50
MAR_C907.005.020	CHANNEL CROSS SECTION STA. 36+00 - 39+50
MAR_C907.005.021	CHANNEL CROSS SECTION STA. 40+00 - 42+62
MAR_C907.005.022	STA.-0+50 - 7+50 ACCESS ROAD CROSS SECTION
MAR_C907.005.023	STA. 7+75 - 14+00 ACCESS ROAD CROSS SECTION
MAR_C907.005.024	DETAILS
MAR_C907.005.025	DETAILS II
MAR_C907.005.026	DRAINAGE AREA EXHIBIT

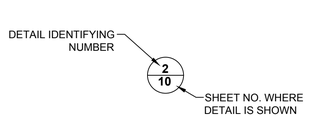
OWNER'S CONTACT INFORMATION:

KYLE BAUCOM, P.E.
DUKE ENERGY
400 S. TRYON STREET
CHARLOTTE, NC 28202
PHONE (980) 373-6344

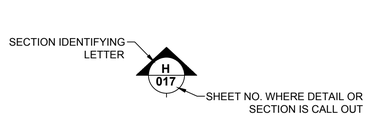
ENGINEER'S CONTACT INFORMATION:

JOHN BOVE, P.E.
AECOM
1600 PERIMETER PARK DR., STE. 400
MORRISVILLE, NC 27560
PHONE (919) 461-1100

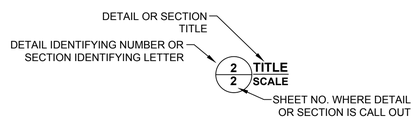
NOT FOR CONSTRUCTION



DETAIL REFERENCE
ON SHEET WHERE DETAIL IS CALLED OUT



SECTION REFERENCE
ON SHEET WHERE SECTION IS CALLED OUT



DETAIL OR SECTION, NUMBER OR LETTER & TITLE
ON SHEET WHERE DETAIL OR SECTION IS SHOWN

DETAILING & SECTION IDENTIFICATION NOMENCLATURE

\\USCHA3PFPSW001\DATA\200\DUKECCP\MARSHALL (60515724)_DKCMARSWFL\900-CAD-GIS\910-CAD\20-SHEETS\60515724_TITLE_SHEET.DWG 5/7/2018 10:43:39 AM

AECOM	TITLE: TITLE SHEET STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION		
N.C. ENGINEERING LICENSE NO. F-0342	FOR: ISSUED FOR PERMITTING		
SEAL: NORTH CAROLINA PROFESSIONAL SEAL 039391 ENGINEER JOHN A. BOVE 5/7/2018	DUKE ENERGY	SCALE: N.T.S.	DES: CP
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		DATE: 05/07/18	ENGR: CP
		FILENAME: 60515724_TITLE_SHEET.DWG	APPD: JB
DWG SIZE: ANSI D 22.0"x34.0"	DRAWING NO.: MAR_C907.005.001		REVISION: 0



N

LEGEND

- FLOW ARROW
- PROPOSED ALIGNMENT
- EXIST. WETLANDS
- EXIST. STREAMS
- APPROX. LIMIT OF STRUCTURAL FILL BOUNDARY (TO BE FIELD VERFIED)
- APPROX. PROPERTY BOUNDARY
- GRADING LIMITS
- EXISTING CULVERT

NOTES:

1. CONTOUR DATA BASED ON COMPILED TOPO DATA FROM WSP DATED 2014 AND LOCALIZED SURVEY DATA FROM ESP DATED 5/17/17.
2. CONTRACTOR SHALL NOT ENTER UPON OR IMPACT JURISDICTIONAL STREAMS AND WETLANDS UNTIL DUKE ENERGY OBTAINS ALL APPLICABLE PERMITS. CONTRACTOR TO ANTICIPATE THAT STORMWATER REDIRECTION CHANNEL WILL BE CONSTRUCTED IN PHASES TO AVOID IMPACTS TO JURISDICTIONAL AREAS.
3. APPLICATION FOR REGULATORY APPROVAL FOR TEMPORARY STORMWATER PONDS SUBMITTED SEPARATELY

STRUCTURAL FILL AREA STORMWATER CULVERTS PIPE DATA				
PIPE ID	DIAMETER (in)	MATERIAL	INVERT UPSTREAM	INVERT DOWNSTREAM
4	42	HDPE	828.06	826.32
3	42	HDPE	827.53	822.42
2	48	HDPE	827.32	822.42
1	30	CMP	849.31	821.74

0 400 800 1200
GRAPHIC SCALE (IN FEET)

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032391 ENGINEER JOHN A. BOVE
5/7/2018

TITLE

OVERALL SITE PLAN -SHEET INDEX

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

FOR

ISSUED FOR PERMITTING

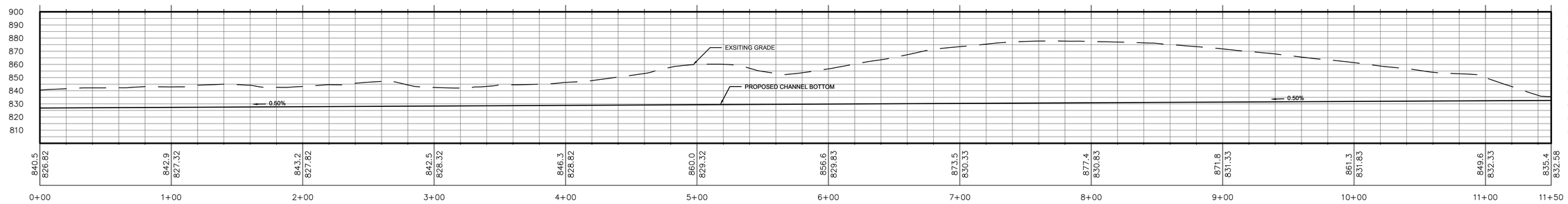
DUKE ENERGY®

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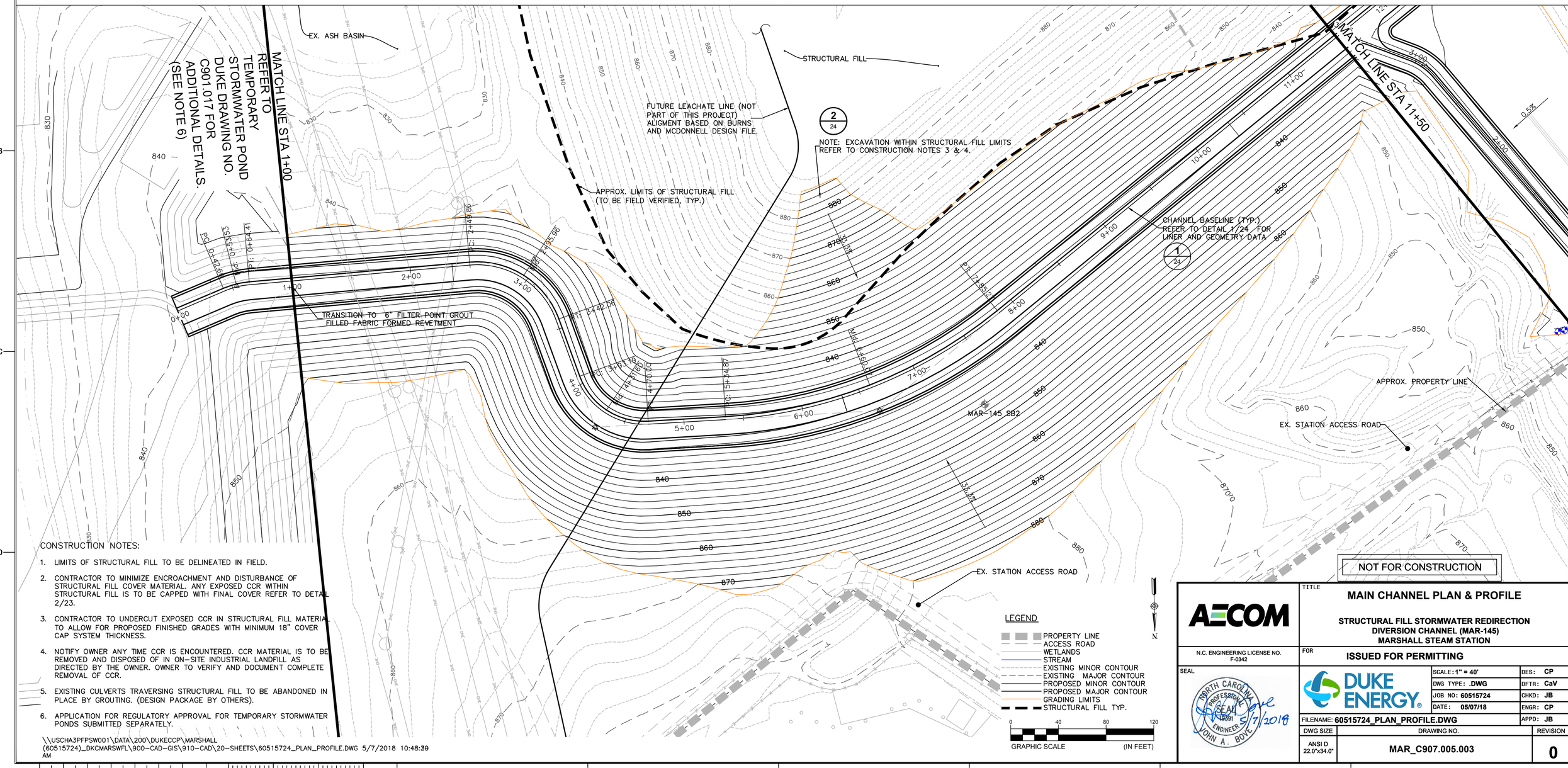
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0 1 2 3 TENTHS 10 20 30



PROFILE VIEW
SCALE: 1"=40' H, 1"=40' V



CONSTRUCTION NOTES:

1. LIMITS OF STRUCTURAL FILL TO BE DELINEATED IN FIELD.
2. CONTRACTOR TO MINIMIZE ENCROACHMENT AND DISTURBANCE OF STRUCTURAL FILL COVER MATERIAL. ANY EXPOSED CCR WITHIN STRUCTURAL FILL IS TO BE CAPPED WITH FINAL COVER REFER TO DETAIL 2/23.
3. CONTRACTOR TO UNDERCUT EXPOSED CCR IN STRUCTURAL FILL MATERIAL TO ALLOW FOR PROPOSED FINISHED GRADES WITH MINIMUM 18" COVER CAP SYSTEM THICKNESS.
4. NOTIFY OWNER ANY TIME CCR IS ENCOUNTERED. CCR MATERIAL IS TO BE REMOVED AND DISPOSED OF IN ON-SITE INDUSTRIAL LANDFILL AS DIRECTED BY THE OWNER. OWNER TO VERIFY AND DOCUMENT COMPLETE REMOVAL OF CCR.
5. EXISTING CULVERTS TRAVERSING STRUCTURAL FILL TO BE ABANDONED IN PLACE BY GROUTING. (DESIGN PACKAGE BY OTHERS).
6. APPLICATION FOR REGULATORY APPROVAL FOR TEMPORARY STORMWATER PONDS SUBMITTED SEPARATELY.

LEGEND
- PROPERTY LINE
- ACCESS ROAD
- WETLANDS
- STREAM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- GRADING LIMITS
- STRUCTURAL FILL TYP.

0 40 80 120
GRAPHIC SCALE (IN FEET)

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 19391 ENGINEER JOHN A. BOYE
5/7/2018

TITLE
MAIN CHANNEL PLAN & PROFILE

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

FOR
ISSUED FOR PERMITTING

DUKE ENERGY®

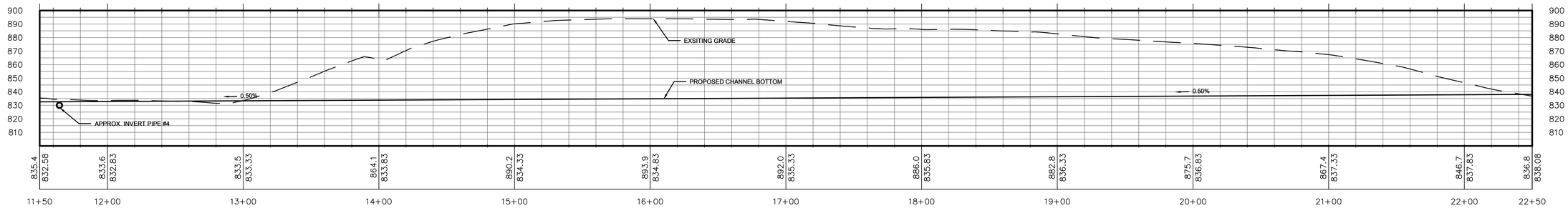
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	APPD: JB

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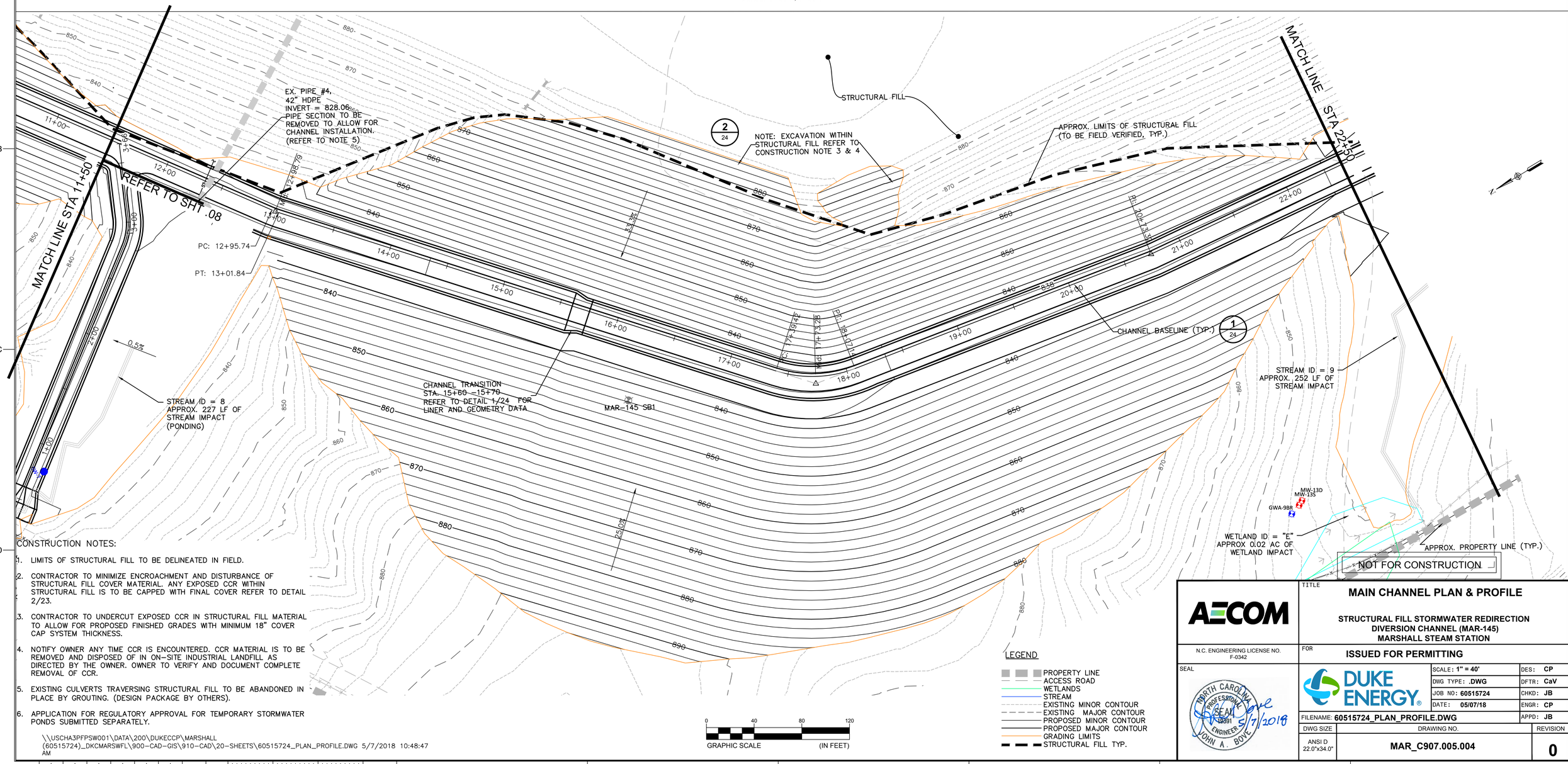
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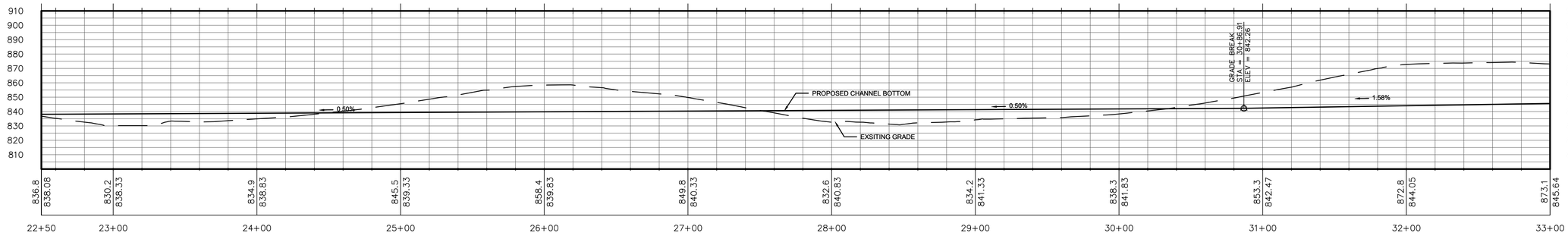
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PROFILE VIEW

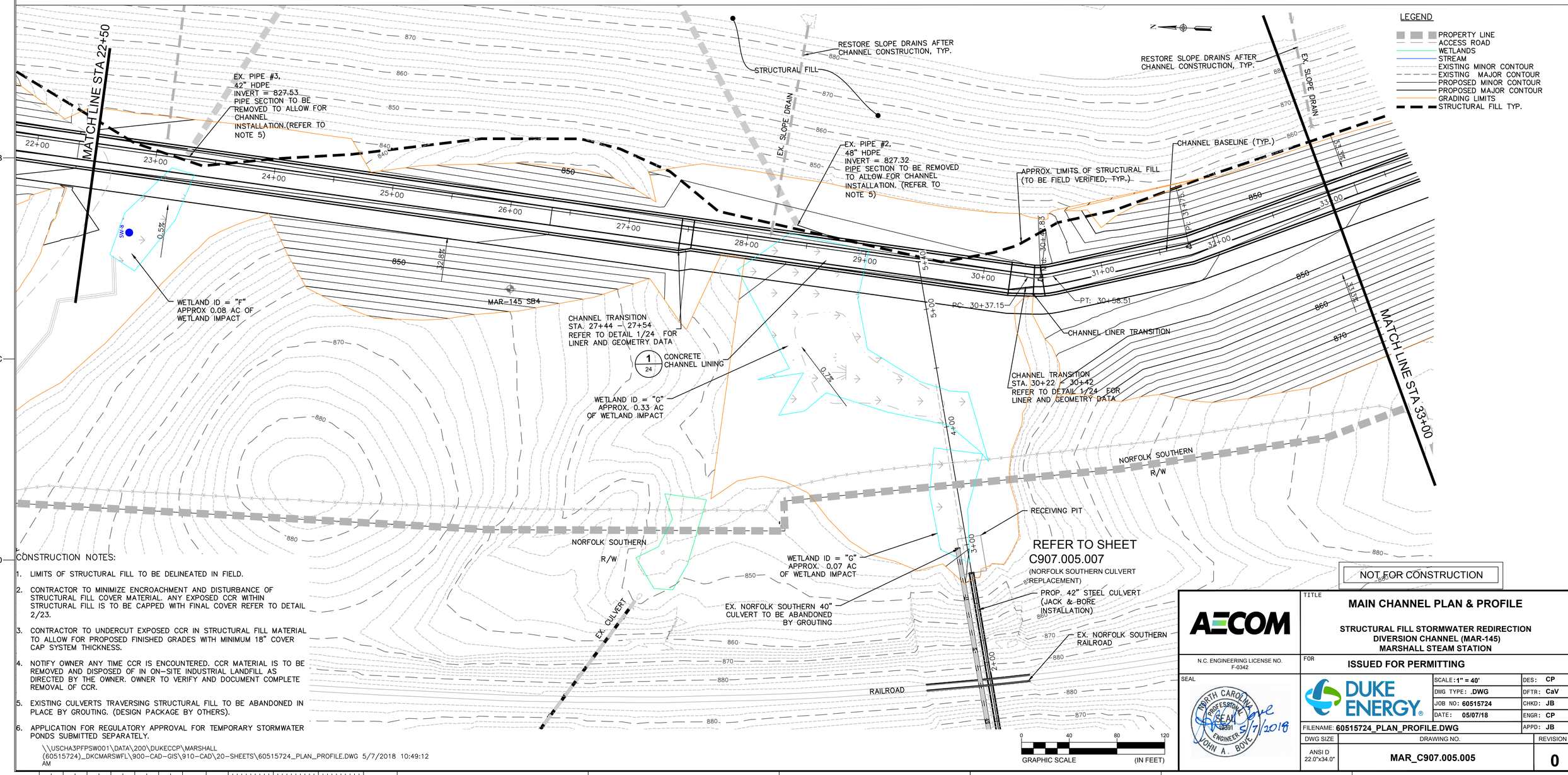
SCALE: 1"=40' H, 1"=40' V


MATCH LINE STA 11+50
MATCH LINE STA 22+50
REFER TO SHT .08
EX. PIPE #4, 42" HDPE INVERT = 828.06 PIPE SECTION TO BE REMOVED TO ALLOW FOR CHANNEL INSTALLATION. (REFER TO NOTE 5)
STRUCTURAL FILL
2/24
NOTE: EXCAVATION WITHIN STRUCTURAL FILL REFER TO CONSTRUCTION NOTE 3 & 4
APPROX. LIMITS OF STRUCTURAL FILL (TO BE FIELD VERIFIED, TYP.)
PC: 12+95.74
PT: 13+01.84
CHANNEL TRANSITION STA. 15+60 –15+70 REFER TO DETAIL 1/24 FOR LINER AND GEOMETRY DATA
MAR–145 SB1
CHANNEL BASELINE (TYP.)
1/24
STREAM ID = 8 APPROX. 227 LF OF STREAM IMPACT (PONDING)
STREAM ID = 9 APPROX. 252 LF OF STREAM IMPACT
MW-13D
MW-13S
GWA-9BR
WETLAND ID = "E" APPROX 0.02 AC OF WETLAND IMPACT
APPROX. PROPERTY LINE (TYP.)
NOT FOR CONSTRUCTION
0.5%
2.00%
2.50%
3.32%
3.00%
3.00%
3.00



PROFILE VIEW

SCALE: 1"=40' H, 1"=40' V



LEGEND

- PROPERTY LINE
- ACCESS ROAD
- WETLANDS
- STREAM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- GRADING LIMITS
- STRUCTURAL FILL TYP.

CONSTRUCTION NOTES:

1. LIMITS OF STRUCTURAL FILL TO BE DELINEATED IN FIELD.
2. CONTRACTOR TO MINIMIZE ENCROACHMENT AND DISTURBANCE OF STRUCTURAL FILL COVER MATERIAL. ANY EXPOSED CCR WITHIN STRUCTURAL FILL IS TO BE CAPPED WITH FINAL COVER REFER TO DETAIL 2/23.
3. CONTRACTOR TO UNDERCUT EXPOSED CCR IN STRUCTURAL FILL MATERIAL TO ALLOW FOR PROPOSED FINISHED GRADES WITH MINIMUM 18" COVER CAP SYSTEM THICKNESS.
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5. EXISTING CULVERTS TRAVERSING STRUCTURAL FILL TO BE ABANDONED IN PLACE BY GROUTING. (DESIGN PACKAGE BY OTHERS).
6. APPLICATION FOR REGULATORY APPROVAL FOR TEMPORARY STORMWATER PONDS SUBMITTED SEPARATELY.

NOT FOR CONSTRUCTION

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AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 038391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

MAIN CHANNEL PLAN & PROFILE

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

FOR

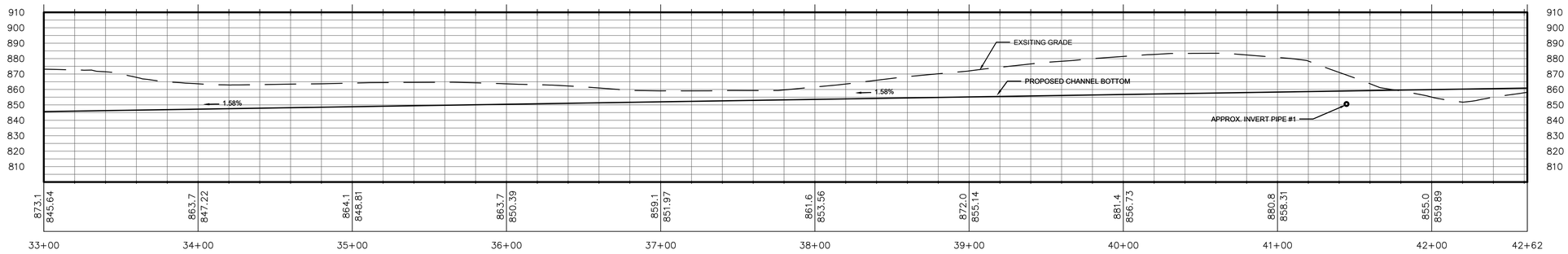
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DUKE ENERGY®

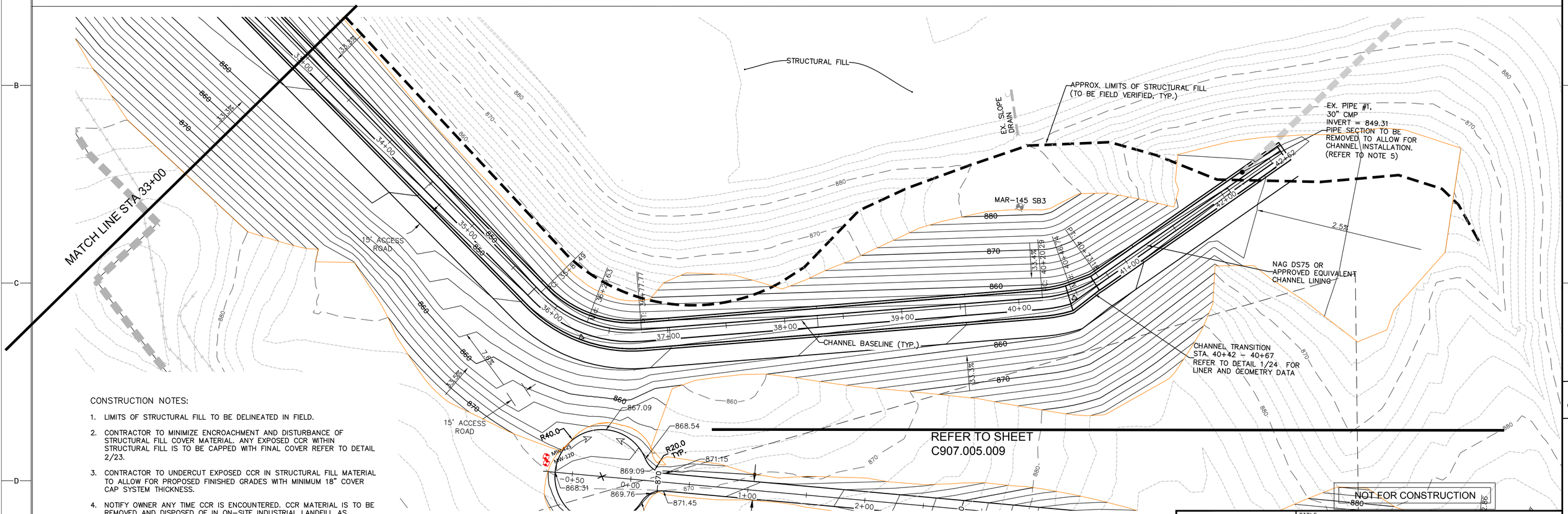
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MAR_C907.005.005 REV. 0



PROFILE VIEW
SCALE: 1"=40' H, 1"=40' V



CONSTRUCTION NOTES:

1. LIMITS OF STRUCTURAL FILL TO BE DELINEATED IN FIELD.
2. CONTRACTOR TO MINIMIZE ENCROACHMENT AND DISTURBANCE OF STRUCTURAL FILL COVER MATERIAL. ANY EXPOSED CCR WITHIN STRUCTURAL FILL IS TO BE CAPPED WITH FINAL COVER REFER TO DETAIL 2/23.
3. CONTRACTOR TO UNDERCUT EXPOSED CCR IN STRUCTURAL FILL MATERIAL TO ALLOW FOR PROPOSED FINISHED GRADES WITH MINIMUM 18" COVER CAP SYSTEM THICKNESS.
4. NOTIFY OWNER ANY TIME CCR IS ENCOUNTERED. CCR MATERIAL IS TO BE REMOVED AND DISPOSED OF IN ON-SITE INDUSTRIAL LANDFILL AS DIRECTED BY THE OWNER. OWNER TO VERIFY AND DOCUMENT COMPLETE REMOVAL OF CCR.
5. EXISTING CULVERTS TRAVERSING STRUCTURAL FILL TO BE ABANDONED IN PLACE BY GROUTING. (DESIGN PACKAGE BY OTHERS).
6. APPLICATION FOR REGULATORY APPROVAL FOR TEMPORARY STORMWATER PONDS SUBMITTED SEPARATELY.

LEGEND
- PROPERTY LINE
- ACCESS ROAD
- WETLANDS
- STREAM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- GRADING LIMITS
- STRUCTURAL FILL TYP.

GRAPHIC SCALE (IN FEET): 0, 40, 80, 120

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 040391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE: **MAIN CHANNEL PLAN & PROFILE**

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

FOR: **ISSUED FOR PERMITTING**

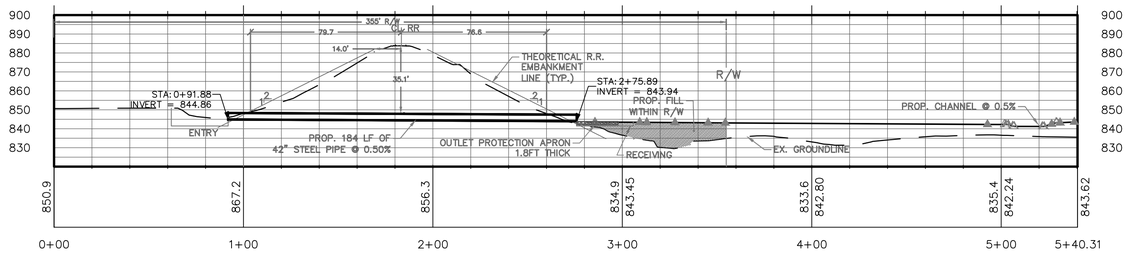
DUKE ENERGY®

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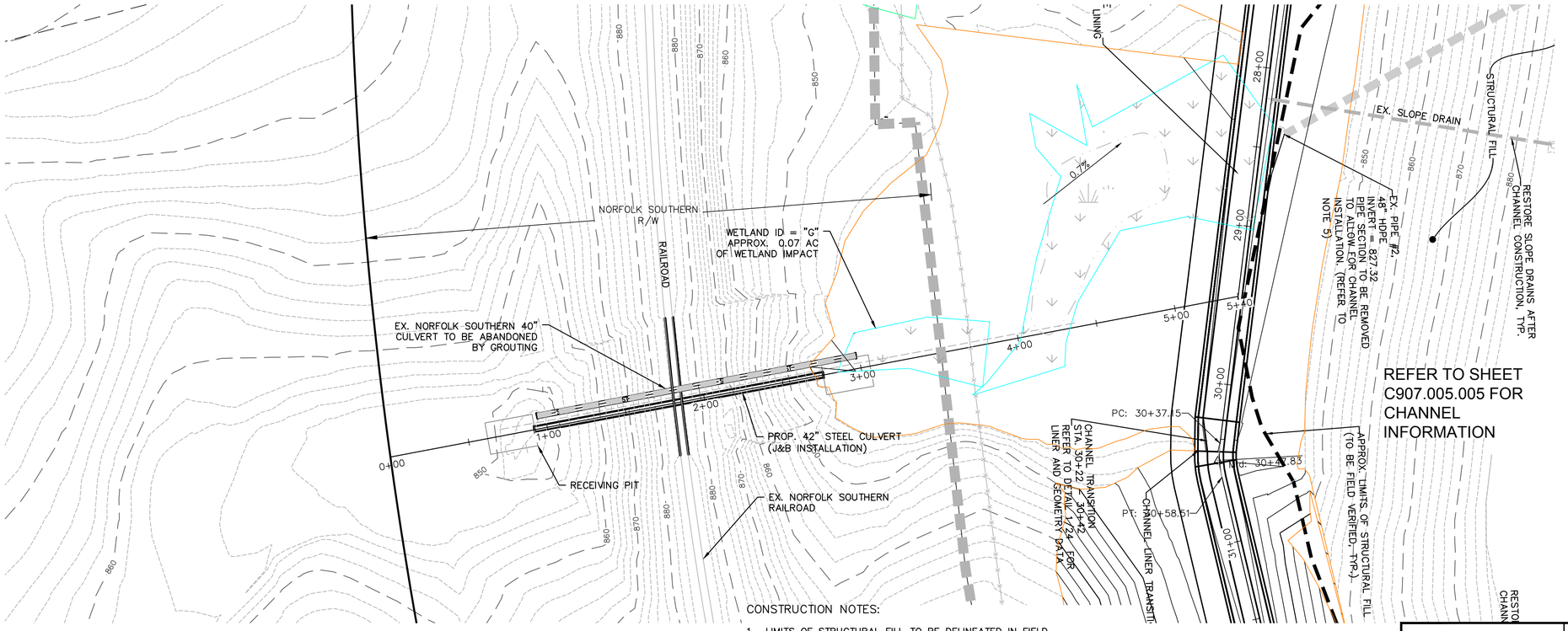
PROFILE VIEW

SCALE: 1"=40' H, 1"=40' V

Pipe Data Sheet	
Contents to be handled	Stormwater
Max. Allow. Operating Pressure	non-pressure flow
Nominal Size of Pipe	42"
Outside Diameter	42"
Inside Diameter	40.75"
Wall Thickness	.625"
Weight per Foot	276 lb/ft
Material	Steel
Process of Manufacture	ERW
Specification	ASTM A139
Grade or Class	B
Test Presssure	N/A
Type of Joint	Fully Welded
Type of Coating	N/A
Details of Cathodic Protection	N/A
Details of Seals or Protection at End of Casing	N/A
Character of Subsurface Material	Native Soil
Approx. Ground Water Level	Unknown
Source of info. on subsurface conditions	Design Assumption

NOTES:

1. EXISTING CONTOUR DATA BASED ON COMPILED TOPO DATA FROM WSP DATED 2014 AND LOCALIZED SURVEY DATA FROM ESP DATED 5/17/17.
2. EXISTING 40" CMP CULVERT TO BE ABANDONED IN–PLACE. PIPE TO BE COMPLETELY FILLED WITH CEMENT GROUT PER NSCE–8 SECTION 2.6.
3. PROPOSED FILL WITHIN NS RIGHT OF WAY TO MAINTAIN POSITIVE DRAINAGE TO PROPOSED CHANNEL. APPROX. 1470 CYDS OF FILL MATERIAL TO BE PLACED. DEPTH VARIES FROM 1 FT TO 14 FT. FILL REQUIRED TO ALLOW POSITIVE DRAINAGE TOWARD PROPOSED CHANNEL DRAINING TO EXISTING ASH BASIN ON MARSHALL STEAM STATION.
4. NO ADDITIONAL EXCAVATION PROPOSED WITHIN NS RIGHT OF WAY OTHER THAN THAT SHOWN FOR THE BORING PITS FOR CULVERT INSTALLATION.
5. ON JUNE 21,2017 ESP ASSOCIATES PREFORMED A UTILITY LOCATE UTILIZING INDUCTIVE ELECTROMAGNETIC SWEEPS AND NO UTILITIES WERE LOCATED WITHIN 75' OFFSET OF THE PROPOSED PIPE LOCATION.
6. CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS OF NORFOLK SOUTHERN'S NSCE–8 SPECIFICATIONS.
7. PIPELINE AND CROSSING TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH LAST APPROVED AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION SPECIFICATIONS FOR PIPELINES CONVEYING FLAMMABLE AND NON–FLAMMABLE SUBSTANCES.
8. BLASTING IS NOT PERMITTED.



LEGEND

- PROPERTY LINE
- ACCESS ROAD
- WETLANDS
- STREAM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- GRADING LIMITS
- STRUCTURAL FILL TYP.

CONSTRUCTION NOTES:

1. LIMITS OF STRUCTURAL FILL TO BE DELINEATED IN FIELD.
2. CONTRACTOR TO MINIMIZE ENCROACHMENT AND DISTURBANCE OF STRUCTURAL FILL COVER MATERIAL. ANY EXPOSED CCR WITHIN STRUCTURAL FILL IS TO BE CAPPED WITH FINAL COVER REFER TO DETAIL 2/23.
3. CONTRACTOR TO UNDERCUT EXPOSED CCR IN STRUCTURAL FILL MATERIAL TO ALLOW FOR PROPOSED FINISHED GRADES WITH MINIMUM 18" COVER CAP SYSTEM THICKNESS.
4. NOTIFY OWNER ANY TIME CCR IS ENCOUNTERED. CCR MATERIAL IS TO BE REMOVED AND DISPOSED OF IN ON–SITE INDUSTRIAL LANDFILL AS DIRECTED BY THE OWNER. OWNER TO VERIFY AND DOCUMENT COMPLETE REMOVAL OF CCR.
5. EXISTING CULVERTS TRAVERSING STRUCTURAL FILL TO BE ABANDONED IN PLACE BY GROUTING. (DESIGN PACKAGE BY OTHERS).
6. APPLICATION FOR REGULATORY APPROVAL FOR TEMPORARY STORMWATER PONDS SUBMITTED SEPARATELY.

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043891 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

PLAN & PROFILE NS CULVERT

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

FOR

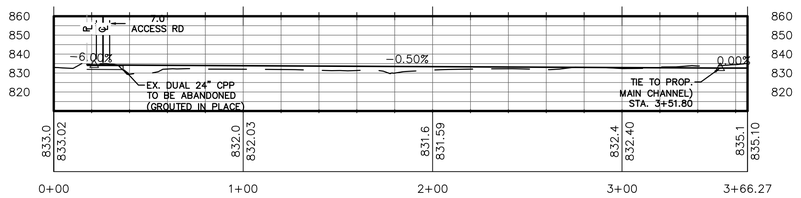
ISSUED FOR PERMITTING

DUKE ENERGY®

SCALE: 1" = 40'	DES: CP		
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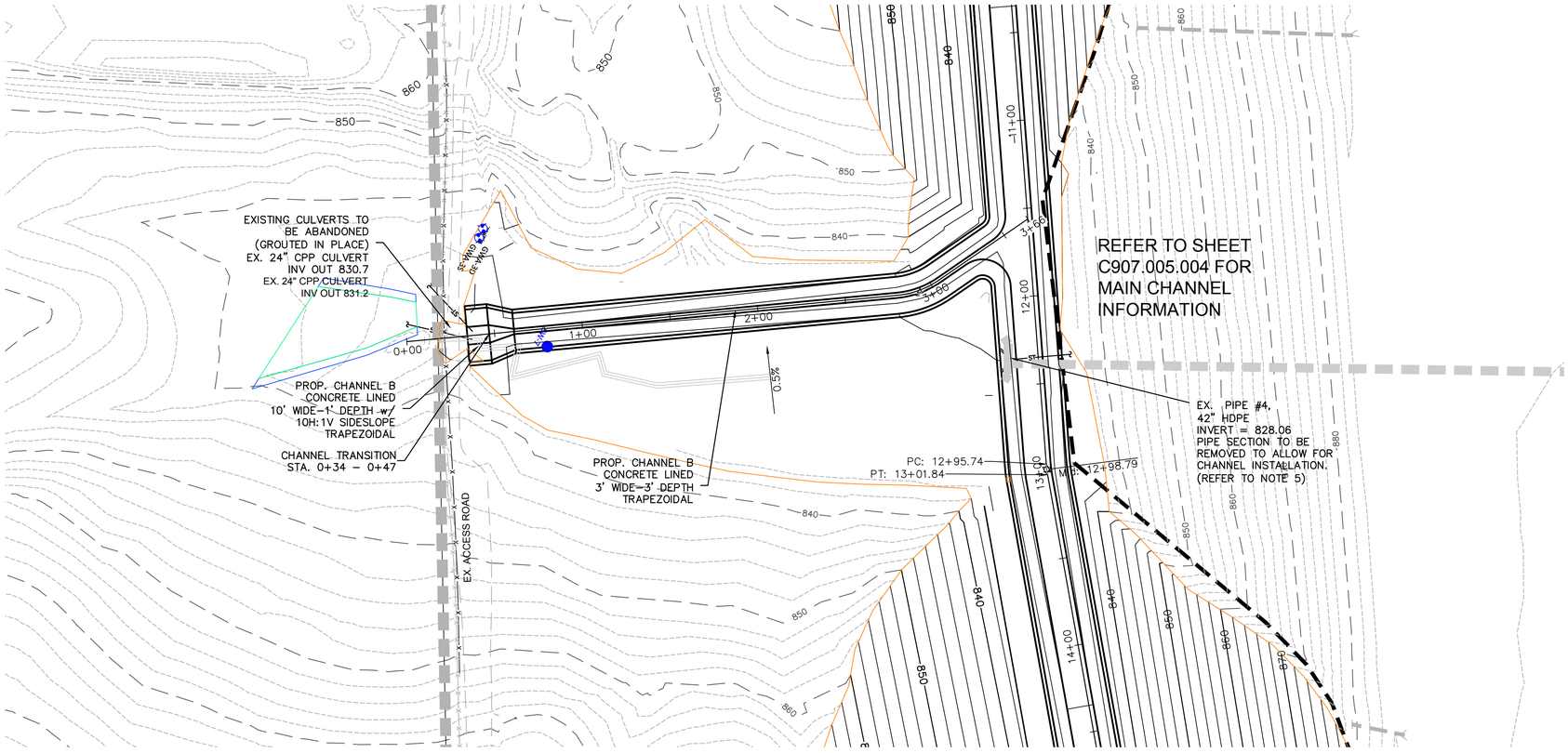
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MAR_C907.005.007 REV. 0



CHANNEL 'B'
PROFILE VIEW

SCALE: 1"=40' H, 1"=40' V



CONSTRUCTION NOTES:

1. LIMITS OF STRUCTURAL FILL TO BE DELINEATED IN FIELD.
2. CONTRACTOR TO MINIMIZE ENCROACHMENT AND DISTURBANCE OF STRUCTURAL FILL COVER MATERIAL. ANY EXPOSED CCR WITHIN STRUCTURAL FILL IS TO BE CAPPED WITH FINAL COVER REFER TO DETAIL 2/23.
3. CONTRACTOR TO UNDERCUT EXPOSED CCR IN STRUCTURAL FILL MATERIAL TO ALLOW FOR PROPOSED FINISHED GRADES WITH MINIMUM 18" COVER CAP SYSTEM THICKNESS.
4. NOTIFY OWNER ANY TIME CCR IS ENCOUNTERED. CCR MATERIAL IS TO BE REMOVED AND DISPOSED OF IN ON-SITE INDUSTRIAL LANDFILL AS DIRECTED BY THE OWNER. OWNER TO VERIFY AND DOCUMENT COMPLETE REMOVAL OF CCR.
5. EXISTING CULVERTS TRAVERSING STRUCTURAL FILL TO BE ABANDONED IN PLACE BY GROUTING. (DESIGN PACKAGE BY OTHERS).
6. APPLICATION FOR REGULATORY APPROVAL FOR TEMPORARY STORMWATER PONDS SUBMITTED SEPARATELY.

LEGEND

- PROPERTY LINE
- ACCESS ROAD
- WETLANDS
- STREAM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- GRADING LIMITS
- STRUCTURAL FILL TYP.

0 40 80 120
GRAPHIC SCALE (IN FEET)

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 038391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

CHANNEL B PLAN & PROFILE STA. 0+00 - 3+66

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

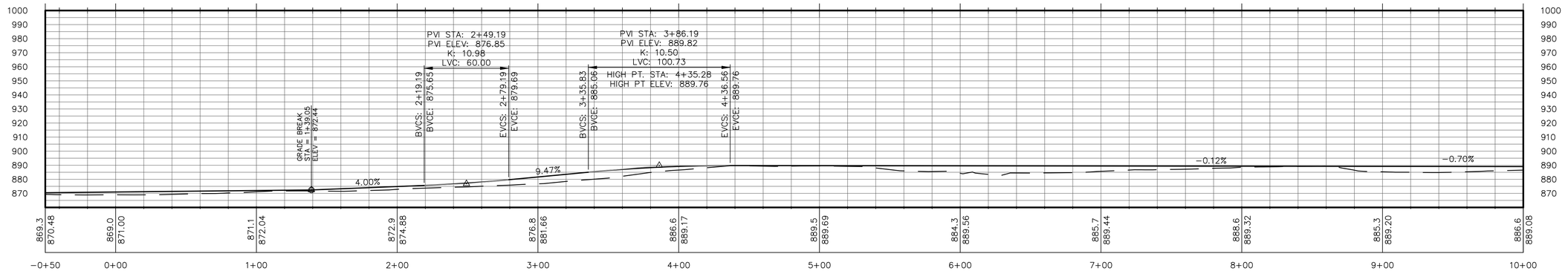
FOR **ISSUED FOR PERMITTING**

DUKE ENERGY®

SCALE: 1" = 40'		DES: CP	
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DATE: 05/07/18		ENGR: CP	
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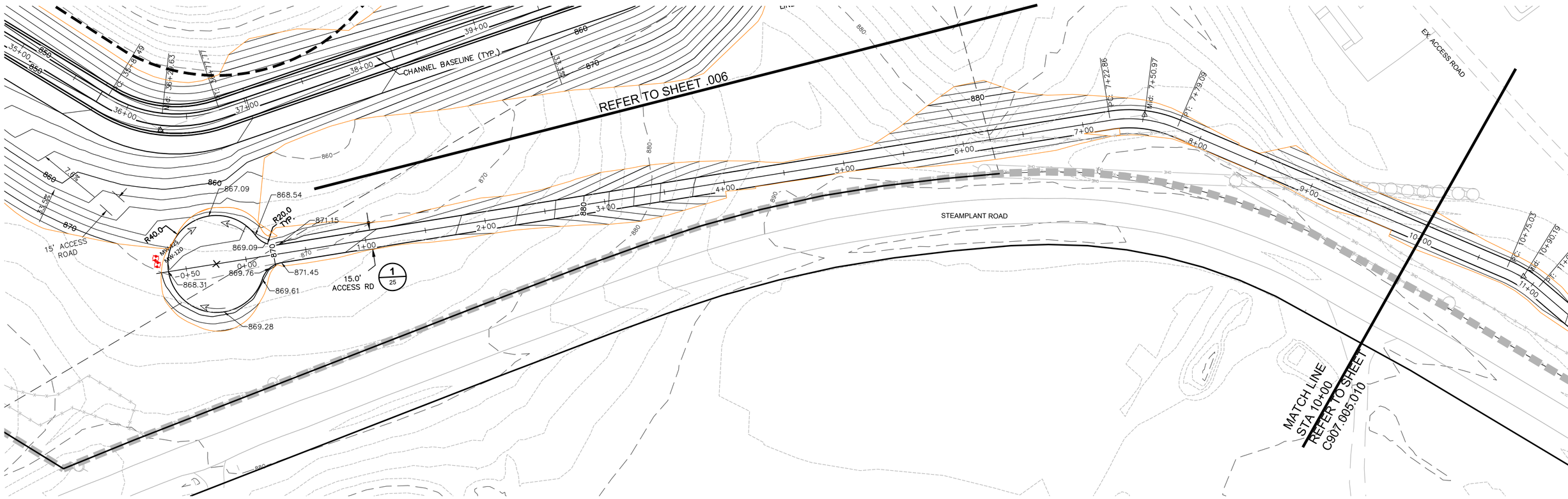
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MAR_C907.005.008 REV. 0



PROFILE VIEW

SCALE: 1"=40' H, 1"=40' V



CONSTRUCTION NOTES:

1. LIMITS OF STRUCTURAL FILL TO BE DELINEATED IN FIELD.
2. CONTRACTOR TO MINIMIZE ENCROACHMENT AND DISTURBANCE OF STRUCTURAL FILL COVER MATERIAL. ANY EXPOSED CCR WITHIN STRUCTURAL FILL IS TO BE CAPPED WITH FINAL COVER REFER TO DETAIL 2/23.
3. CONTRACTOR TO UNDERCUT EXPOSED CCR IN STRUCTURAL FILL MATERIAL TO ALLOW FOR PROPOSED FINISHED GRADES WITH MINIMUM 18" COVER CAP SYSTEM THICKNESS.
4. NOTIFY OWNER ANY TIME CCR IS ENCOUNTERED. CCR MATERIAL IS TO BE REMOVED AND DISPOSED OF IN ON-SITE INDUSTRIAL LANDFILL AS DIRECTED BY THE OWNER. OWNER TO VERIFY AND DOCUMENT COMPLETE REMOVAL OF CCR.
5. EXISTING CULVERTS TRAVERSING STRUCTURAL FILL TO BE ABANDONED IN PLACE BY GROUTING. (DESIGN PACKAGE BY OTHERS).
6. APPLICATION FOR REGULATORY APPROVAL FOR TEMPORARY STORMWATER PONDS SUBMITTED SEPARATELY.

LEGEND

- PROPERTY LINE
- ACCESS ROAD
- WETLANDS
- STREAM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- GRADING LIMITS
- STRUCTURAL FILL TYP.

GRAPHIC SCALE (IN FEET): 0, 40, 80, 120

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 040391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

ACCESS ROAD PLAN & PROFILE STA. 0+00 TO STA. 10+00

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

FOR

ISSUED FOR PERMITTING

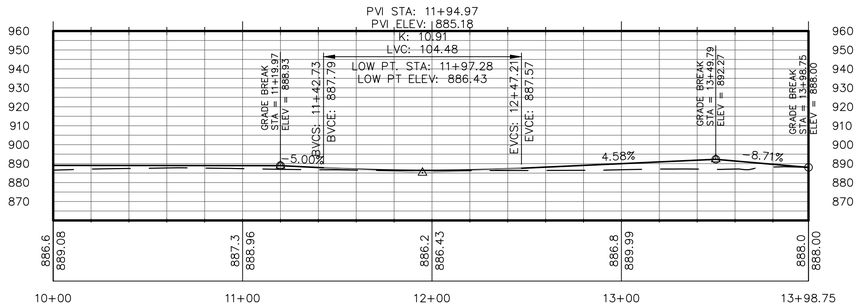
DUKE ENERGY®

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DATE: 05/07/18	ENGR: CP
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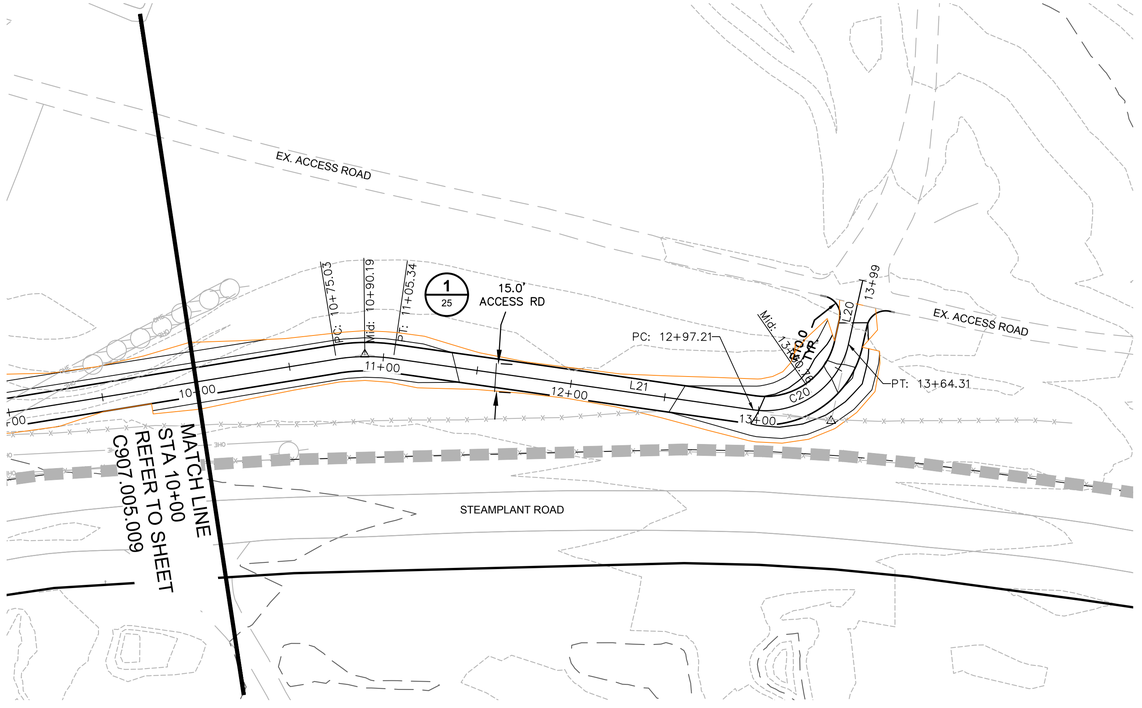
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MAR_C907.005.009 REV. 0



PROFILE VIEW

SCALE: 1"=40' H, 1"=40' V



LEGEND

- PROPERTY LINE
- ACCESS ROAD
- WETLANDS
- STREAM
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- GRADING LIMITS
- STRUCTURAL FILL TYP.

GRAPHIC SCALE 0 40 80 120 (IN FEET)

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 040391 ENGINEER JOHN A. BOVE

TITLE

ACCESS ROAD PLAN & PROFILE STA. 10+00 TO STA. 13+97

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

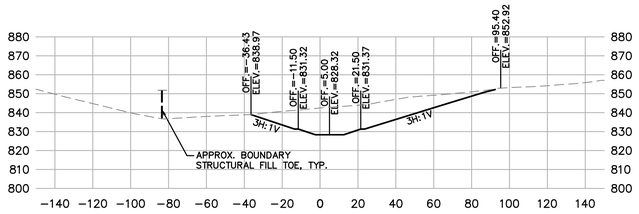
FOR **ISSUED FOR PERMITTING**

DUKE ENERGY®

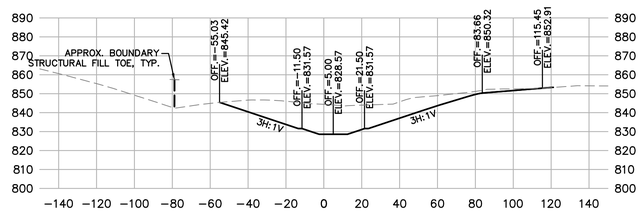
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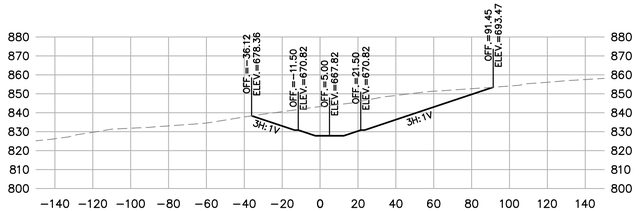
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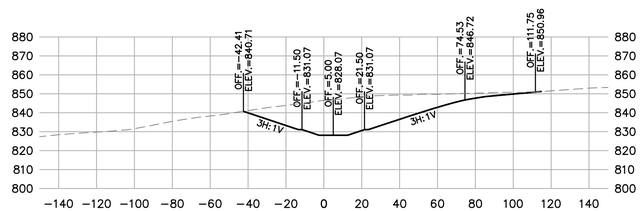
STA. 3+00



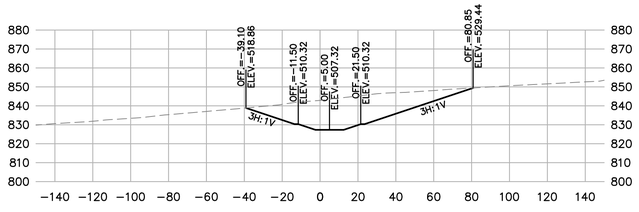
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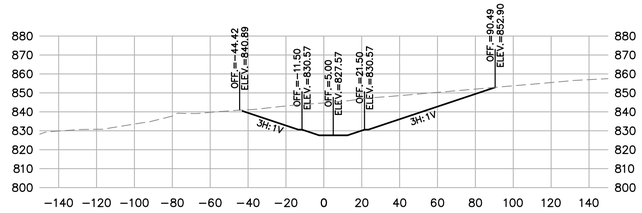
STA. 2+00



STA. 2+50



STA. 1+00



STA. 1+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

GRAPHIC SCALE (IN FEET)

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

CHANNEL CROSS SECTION
STA. 0+00 - 3+50
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

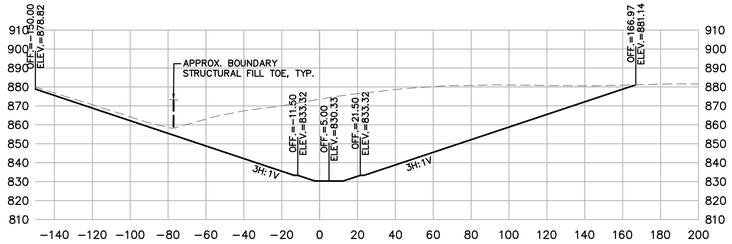
FOR **ISSUED FOR PERMITTING**

DUKE ENERGY®

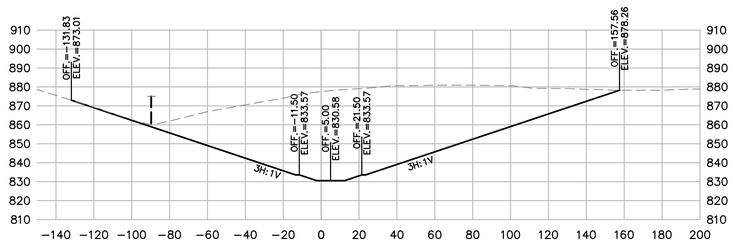
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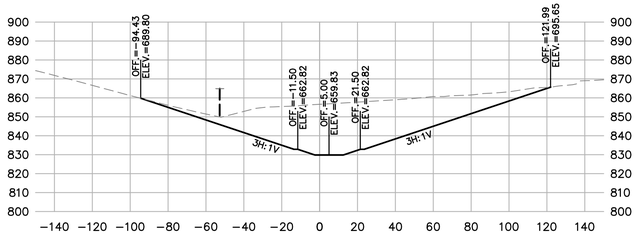
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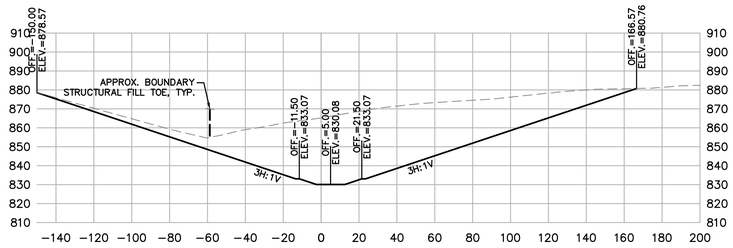
STA. 7+00



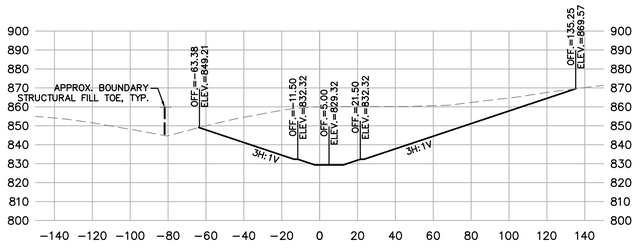
STA. 7+50



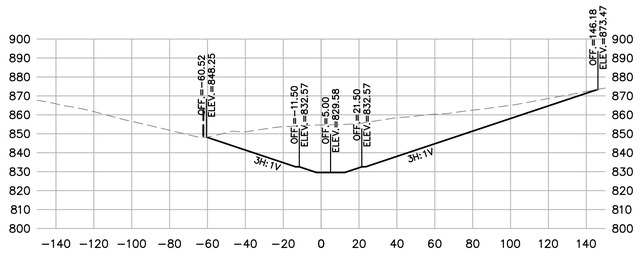
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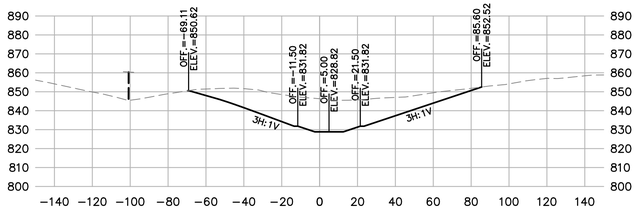
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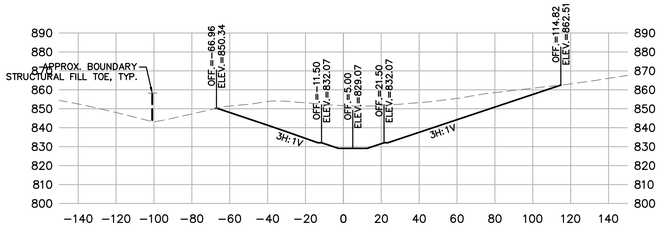
STA. 5+00



STA. 5+50



STA. 4+00



STA. 4+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

GRAPHIC SCALE 0 40 80 120 (IN FEET)

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

TITLE

CHANNEL CROSS SECTION
STA. 4+00 - 7+50
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

FOR **ISSUED FOR PERMITTING**

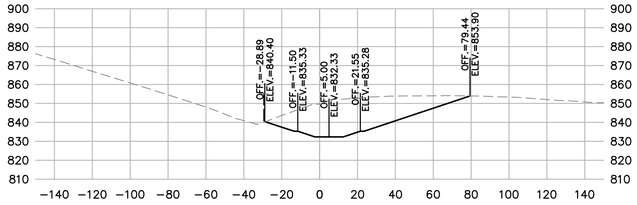
DUKE ENERGY®

SCALE: **1" = 40'**	DES: **CP**
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JOB NO: **60515724**	CHKD: **JB**
DATE: **05/07/18**	ENGR: **CP**
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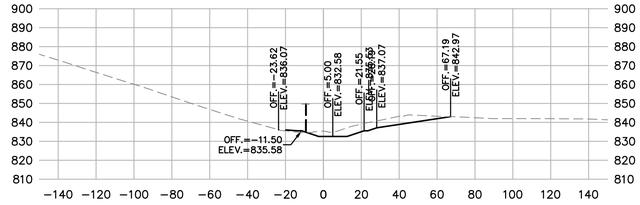
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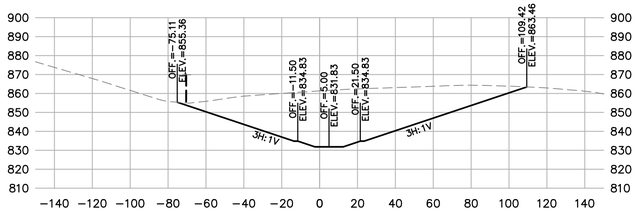
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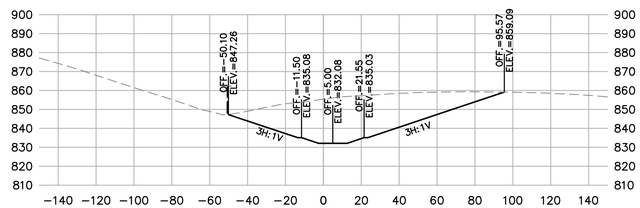
STA. 11+00



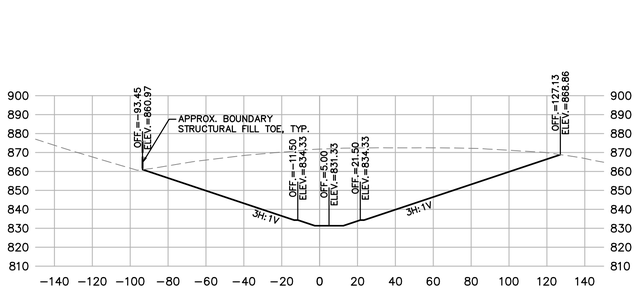
STA. 11+50



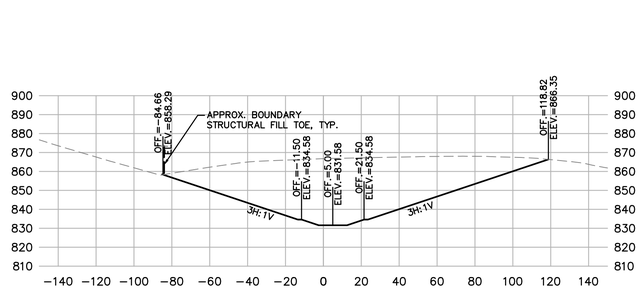
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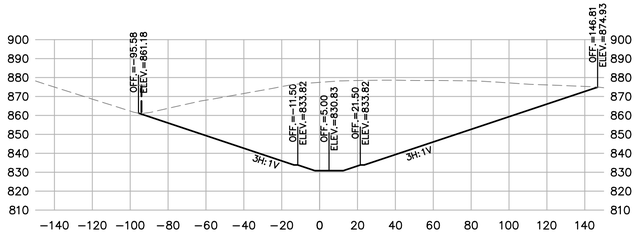
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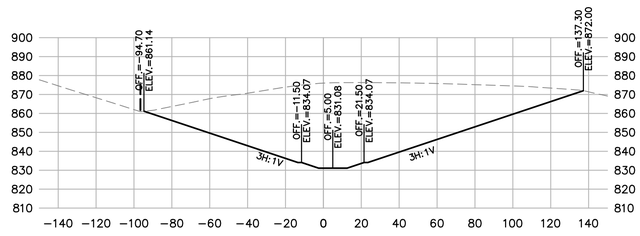
STA. 9+00



STA. 9+50



STA. 8+00



STA. 8+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

GRAPHIC SCALE (IN FEET)

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 39391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

CHANNEL CROSS SECTION
STA. 8+00 -11+50
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

FOR **ISSUED FOR PERMITTING**

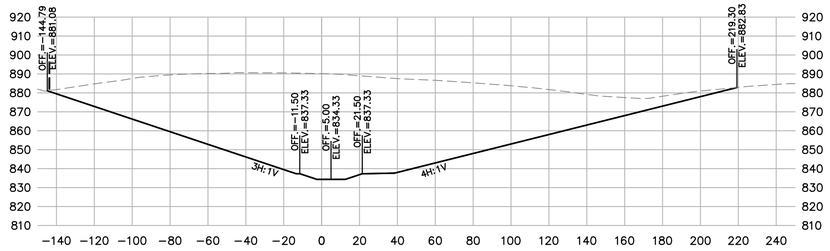
DUKE ENERGY®

SCALE: **1" = 40'**	DES: **CP**
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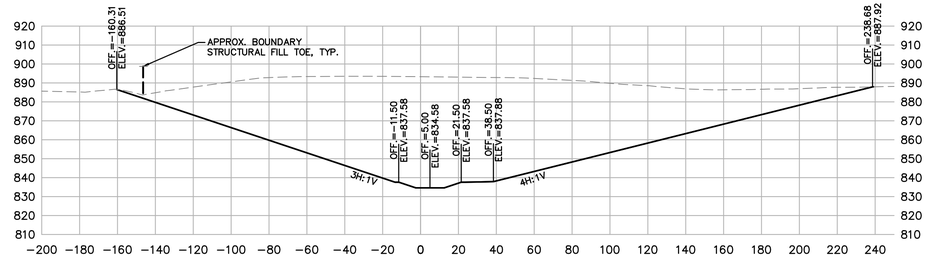
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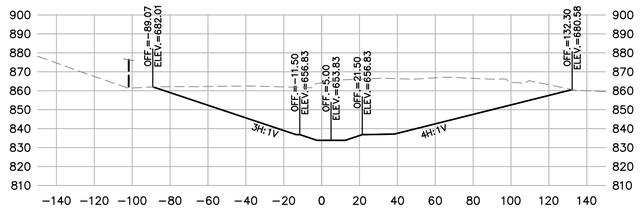
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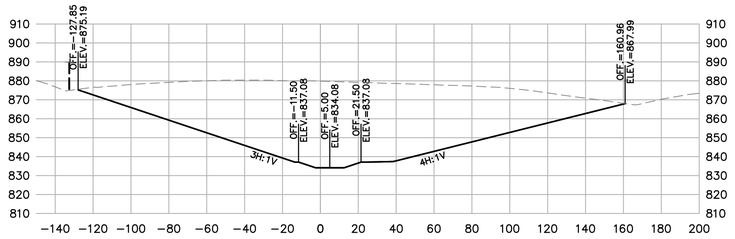
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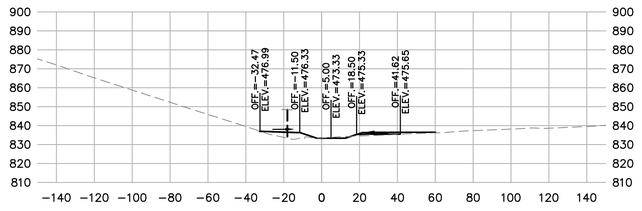
STA. 15+50



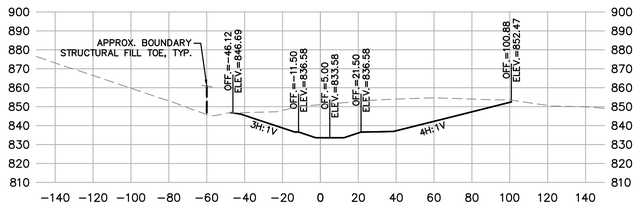
STA. 14+00



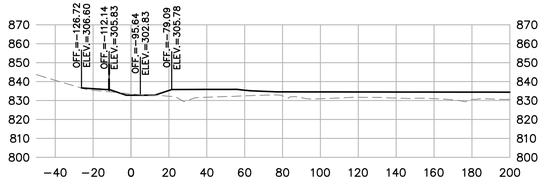
STA. 14+50



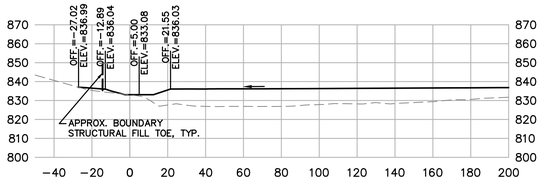
STA. 13+00



STA. 13+50



STA. 12+00



STA. 12+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

GRAPHIC SCALE (IN FEET) 0 40 80 120

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

CHANNEL CROSS SECTION STA. 12+00 - 15+50

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

FOR **ISSUED FOR PERMITTING**

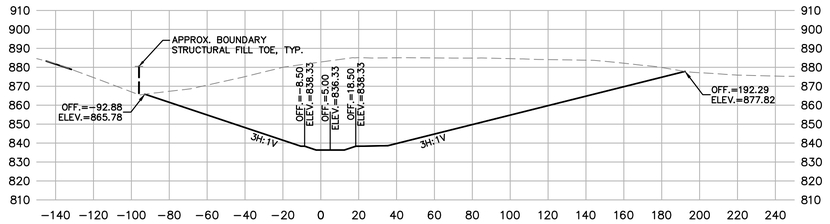
DUKE ENERGY®

SCALE: **1" = 40'**	DES: **CP**
DWG TYPE: **.DWG**	DFTR: **CaV**
JOB NO: **60515724**	CHKD: **JB**
DATE: **05/07/18**	ENGR: **CP**
FILENAME: **60515724_SECTIONS.DWG**	APPD: **JB**

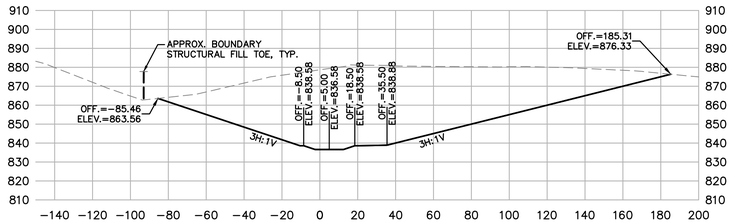
DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	**MAR_C907.005.014**	**0**

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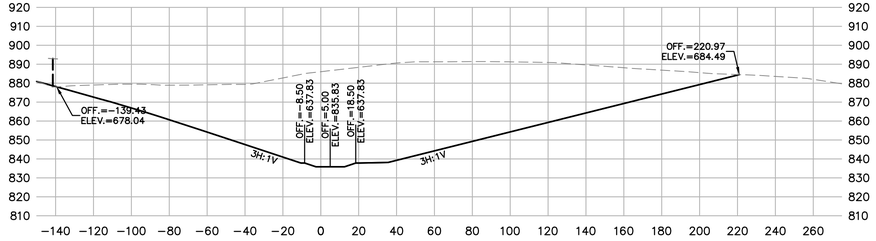
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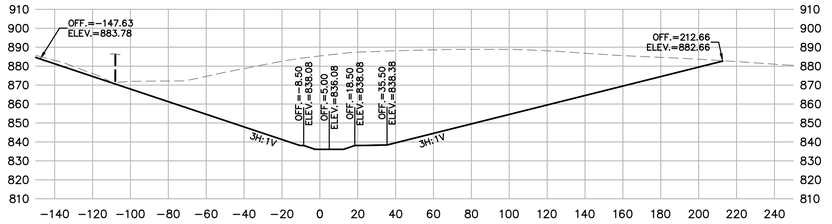
STA. 19+00



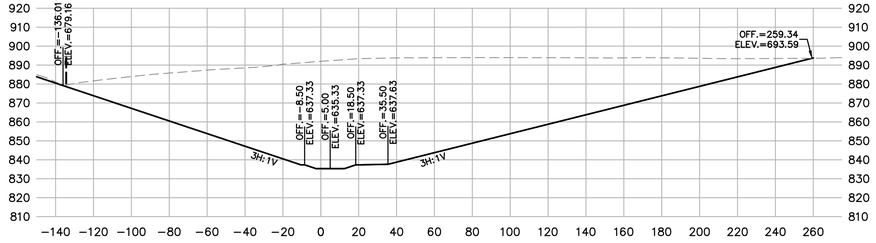
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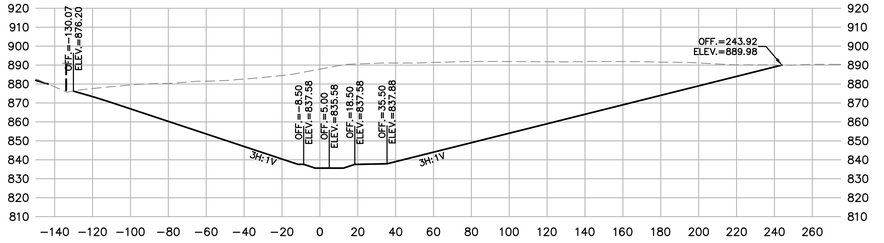
STA. 18+00



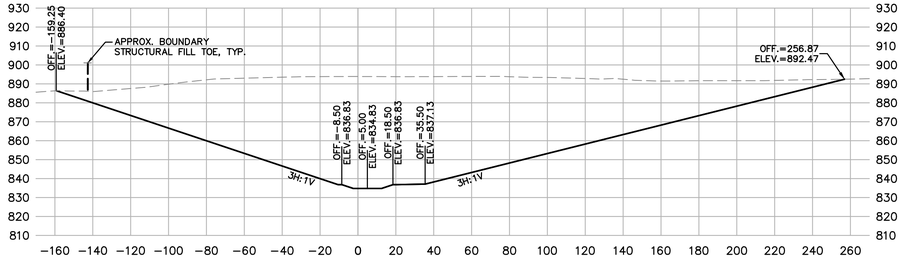
STA. 18+50



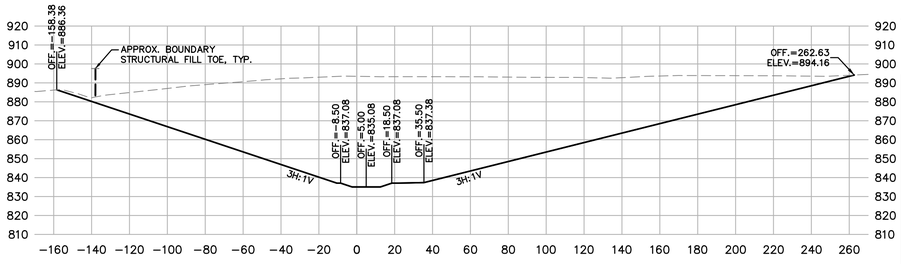
STA. 17+00



STA. 17+50



STA. 16+00



STA. 16+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

GRAPHIC SCALE (IN FEET): 0, 40, 80, 120

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19991 JOHN A. BOYCE — 5/7/2018

TITLE

CHANNEL CROSS SECTION
STA. 16+00 - 19+50
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

FOR

ISSUED FOR PERMITTING

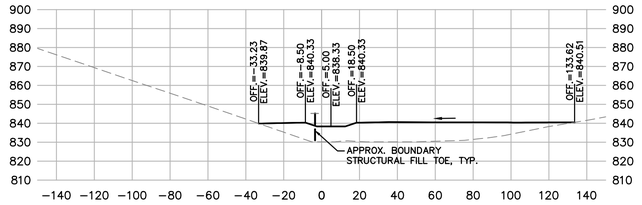
DUKE ENERGY®

SCALE: 1" = 40'	DES: CP
DWG TYPE: .DWG	DFTR: CaV
JOB NO: 60515724	CHKD: JB
DATE: 05/07/18	ENGR: CP
FILENAME: 60515724_SECTIONS.DWG	APPD: JB

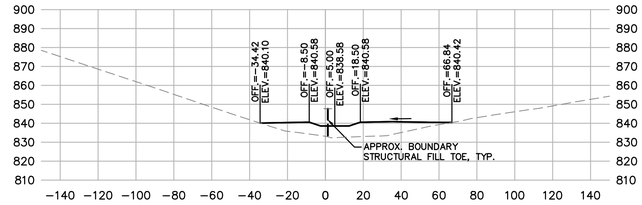
DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	MAR_C907.005.015	0

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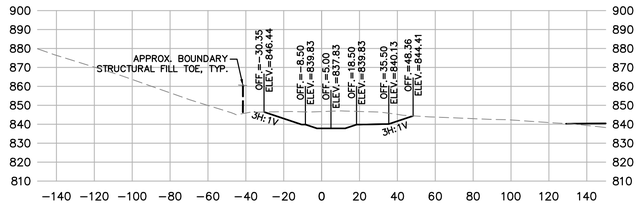
MAR_C907.005.015 REV. 0



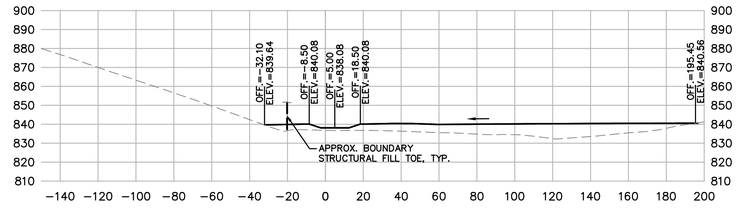
STA. 23+00



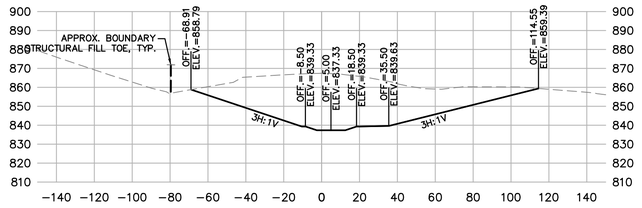
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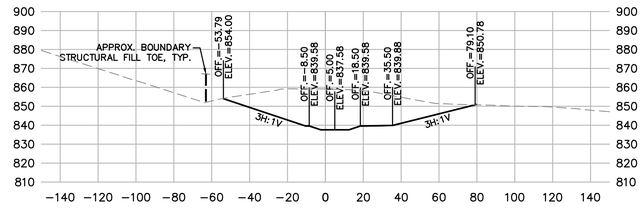
STA. 22+00



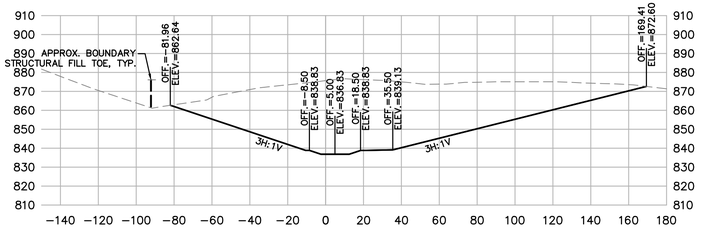
STA. 22+50



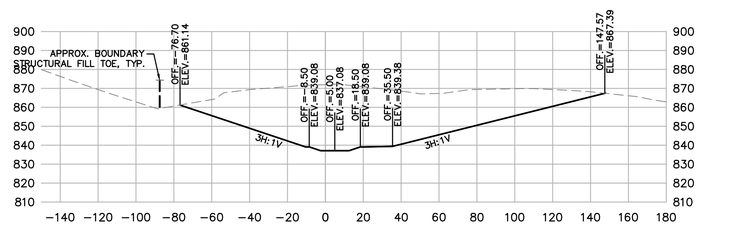
STA. 21+00



STA. 21+50



STA. 20+00



STA. 20+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

GRAPHIC SCALE 0 40 80 120 (IN FEET)

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 18391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

CHANNEL CROSS SECTION
STA. 20+00 - 23+50
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

FOR

ISSUED FOR PERMITTING

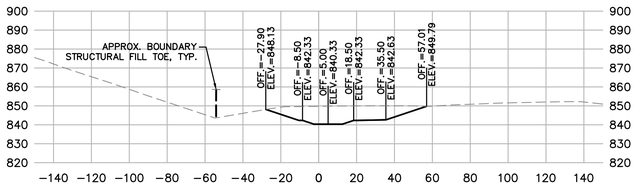
DUKE ENERGY®

SCALE: 1" = 40'	DES: CP
DWG TYPE: .DWG	DFTR: CaV
JOB NO: 60515724	CHKD: JB
DATE: 05/07/18	ENGR: CP
FILENAME: 60515724_SECTIONS.DWG	APPD: JB

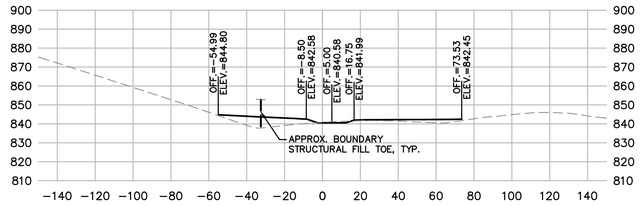
DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	MAR_C907.005.016	0

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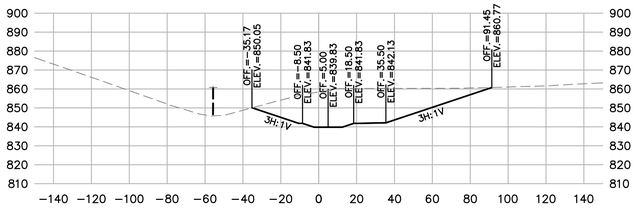
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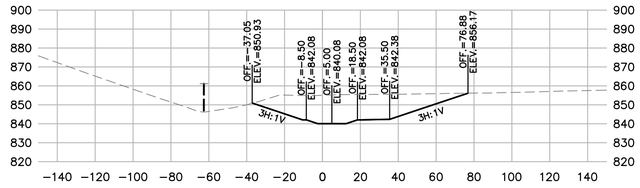
STA. 27+00



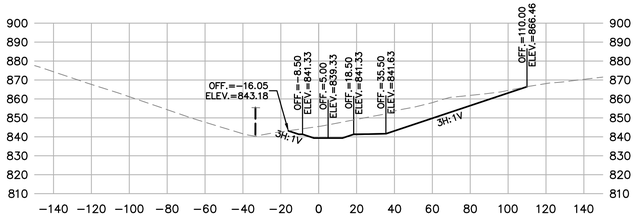
STA. 27+50



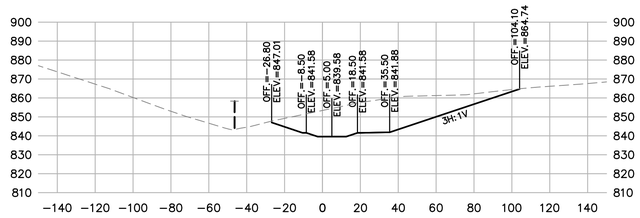
STA. 26+00



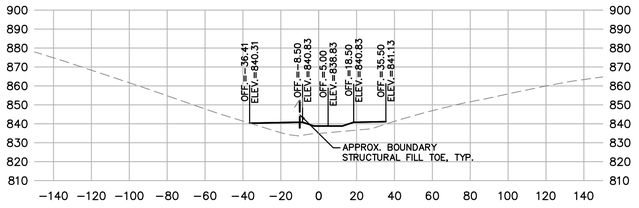
STA. 26+50



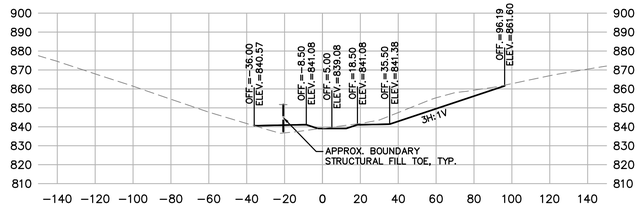
STA. 25+00



STA. 25+50



STA. 24+00



STA. 24+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

0 40 80 120
GRAPHIC SCALE (IN FEET)

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 039391 ENGINEER JOHN A. BOYE 5/7/2018

TITLE

CHANNEL CROSS SECTION
STA. 24+00 - 27+50
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

FOR **ISSUED FOR PERMITTING**

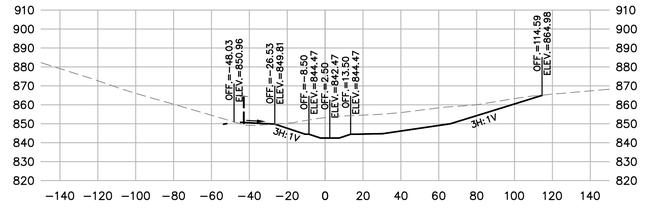
DUKE ENERGY®

SCALE: **1" = 40'**	DES: **CP**
DWG TYPE: **.DWG**	DFTR: **CaV**
JOB NO: **60515724**	CHKD: **JB**
DATE: **05/07/18**	ENGR: **CP**
FILENAME: **60515724_SECTIONS.DWG**	APPD: **JB**

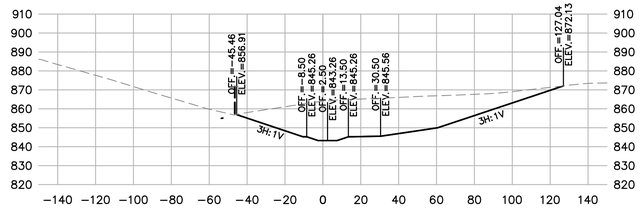
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MAR_C907.005.017 REV. 0

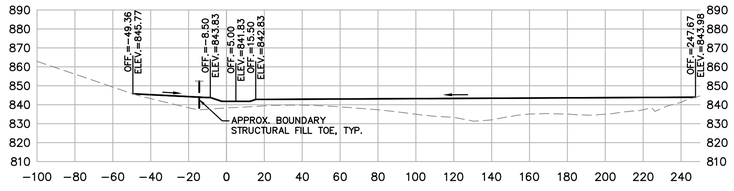
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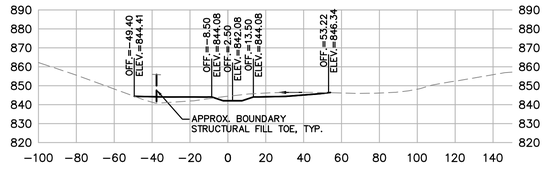
STA. 31+00



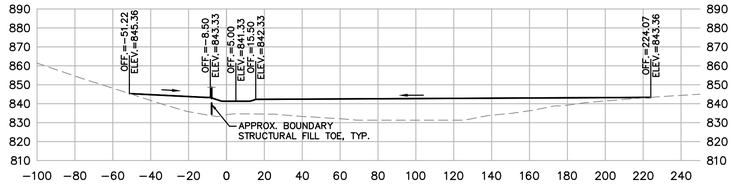
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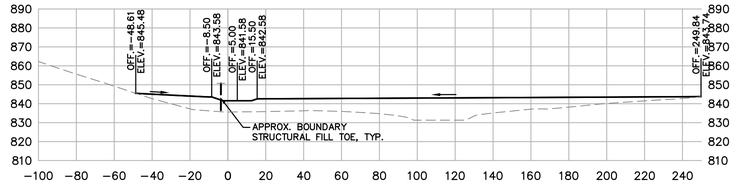
STA. 30+00



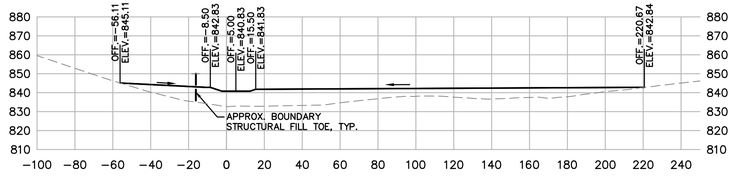
STA. 30+50



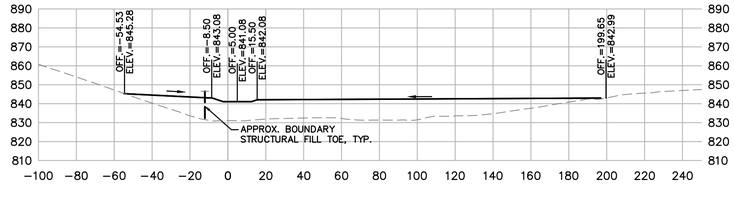
STA. 29+00



STA. 29+50



STA. 28+00



STA. 28+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

GRAPHIC SCALE 0 40 80 120 (IN FEET)

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19391 ENGINEER JOHN A. BOYE 5/7/2018

TITLE

CHANNEL CROSS SECTION
STA. 28+00 - 31+50
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

FOR **ISSUED FOR PERMITTING**

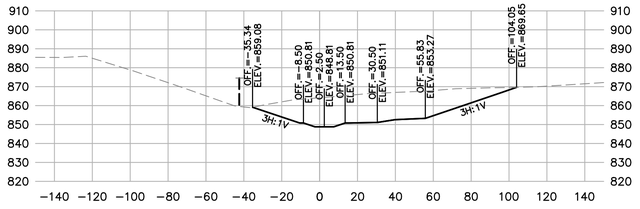
DUKE ENERGY®

SCALE: **1" = 40'**	DES: **CP**
DWG TYPE: **.DWG**	DFTR: **CaV**
JOB NO: **60515724**	CHKD: **JB**
DATE: **05/07/18**	ENGR: **CP**
FILENAME: **60515724_SECTIONS.DWG**	APPD: **JB**

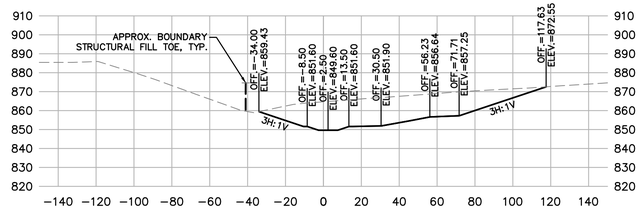
DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	**MAR_C907.005.018**	**0**

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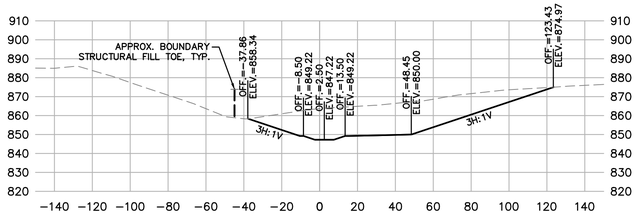
MAR_C907.005.018 REV. 0



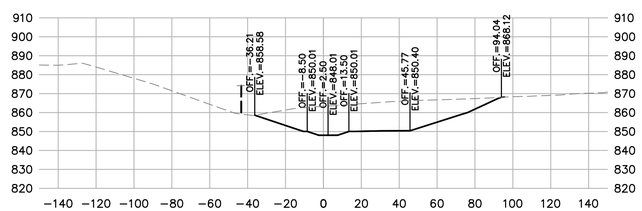
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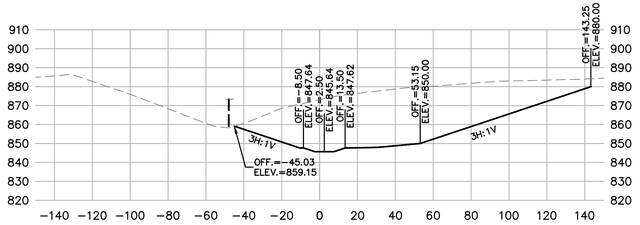
STA. 35+50



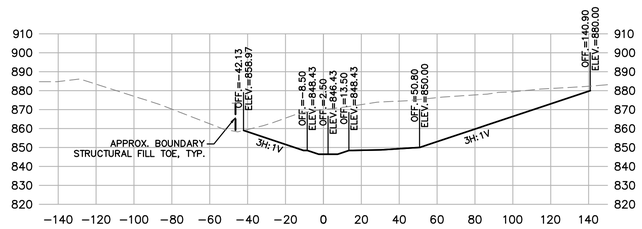
STA. 34+00



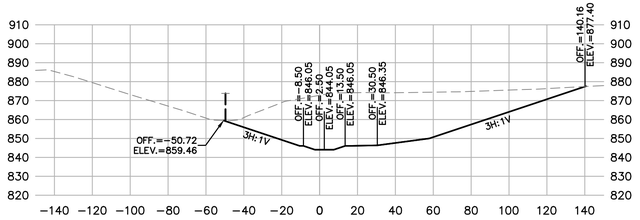
STA. 34+50



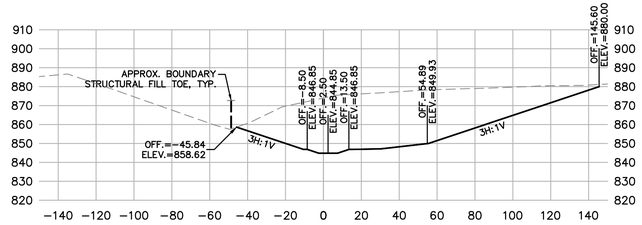
STA. 33+00



STA. 33+50



STA. 32+00



STA. 32+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

GRAPHIC SCALE 0 40 80 120 (IN FEET)

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

CHANNEL CROSS SECTION
STA. 32+00 - 35+50
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

FOR **ISSUED FOR PERMITTING**

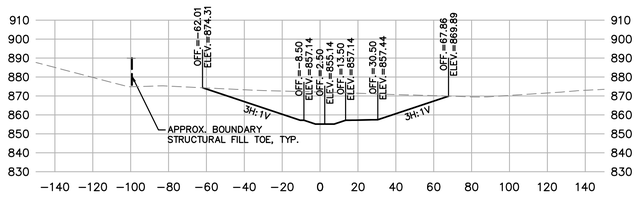
DUKE ENERGY®

SCALE: **1" = 40'**	DES: **CP**
DWG TYPE: **.DWG**	DFTR: **CaV**
JOB NO: **60515724**	CHKD: **JB**
DATE: **05/07/18**	ENGR: **CP**
FILENAME: **60515724_SECTIONS.DWG**	APPD: **JB**

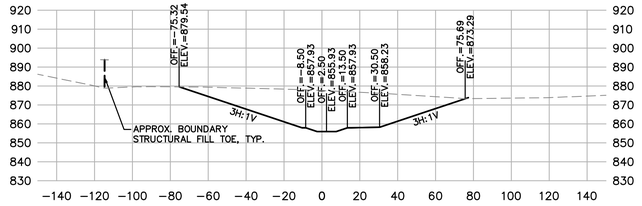
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ANSI D 22.0"x34.0"	**MAR_C907.005.019**	**0**

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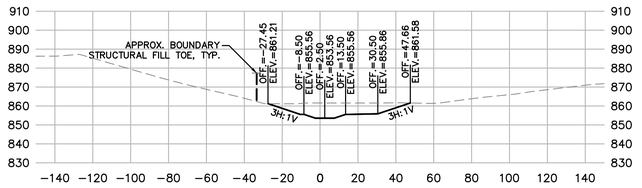
MAR_C907.005.019 REV. 0



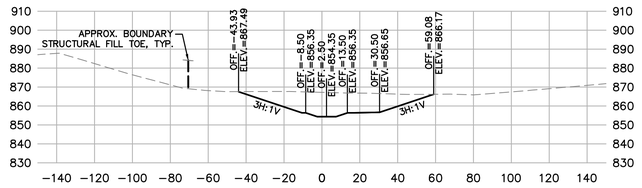
STA. 39+00



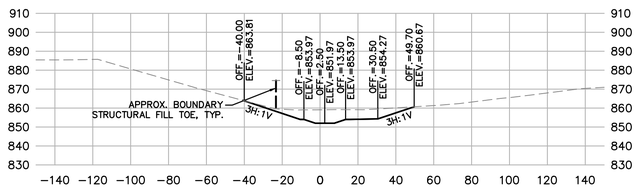
STA. 39+50



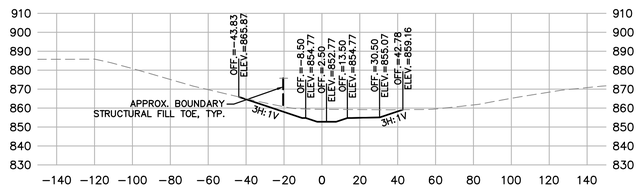
STA. 38+00



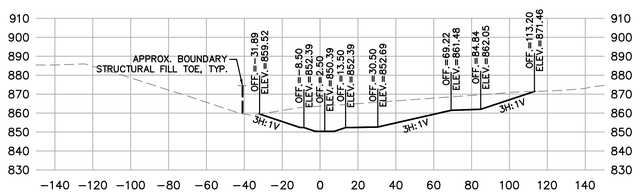
STA. 38+50



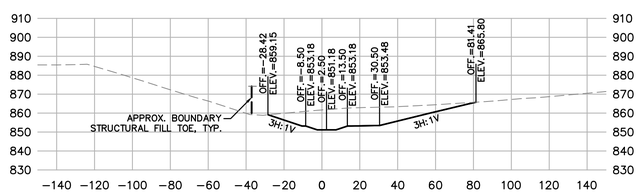
STA. 37+00



STA. 37+50



STA. 36+00



STA. 36+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

GRAPHIC SCALE 0 40 80 120 (IN FEET)

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 039391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

CHANNEL CROSS SECTION
STA. 36+00 - 39+50
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

FOR **ISSUED FOR PERMITTING**

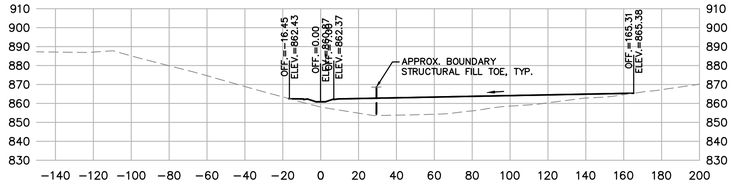
DUKE ENERGY®

SCALE: **1" = 40'**	DES: **CP**
DWG TYPE: **.DWG**	DFTR: **CaV**
JOB NO: **60515724**	CHKD: **JB**
DATE: **05/07/18**	ENGR: **CP**
FILENAME: **60515724_SECTIONS.DWG**	APPD: **JB**

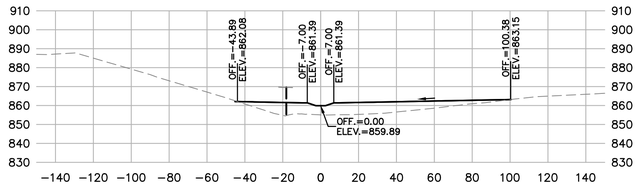
DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	**MAR_C907.005.020**	**0**

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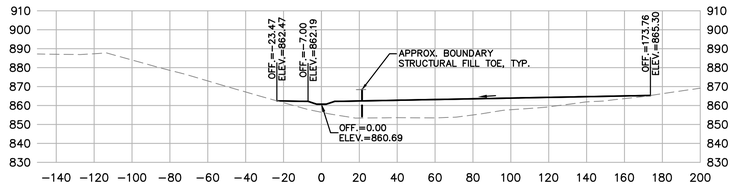
MAR_C907.005.020 REV. 0



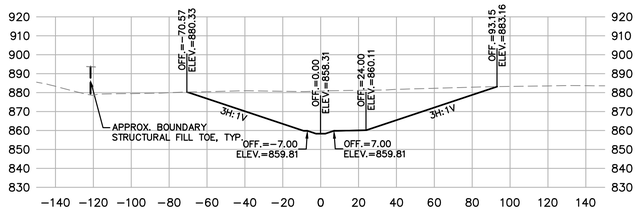
STA. 42+62



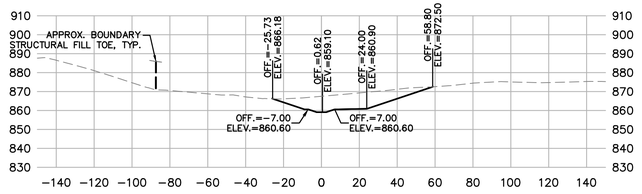
STA. 42+00



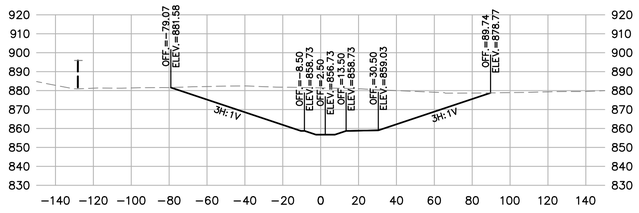
STA. 42+50



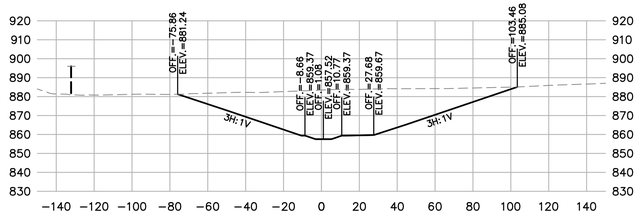
STA. 41+00



STA. 41+50



STA. 40+00



STA. 40+50

LEGEND

- EXISTING GROUND
- PROPOSED FINISH GRADE
- APPROXIMATE LIMITS OF STRUCTURAL FILL

NOT FOR CONSTRUCTION

0 40 80 120
GRAPHIC SCALE (IN FEET)

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

TITLE

CHANNEL CROSS SECTION
STA. 40+00 - 42+62
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

FOR **ISSUED FOR PERMITTING**

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 039391 ENGINEER JOHN A. BOVE 5/7/2018

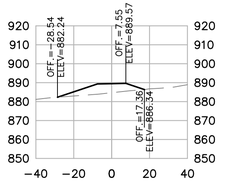
DUKE ENERGY®

SCALE: **1" = 40'**	DES: **CP**
DWG TYPE: **.DWG**	DFTR: **CaV**
JOB NO: **60515724**	CHKD: **JB**
DATE: **05/07/18**	ENGR: **CP**
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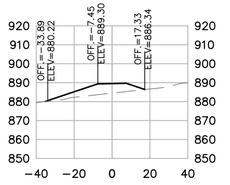
DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	**MAR_C907.005.021**	**0**

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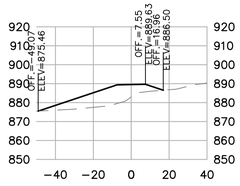
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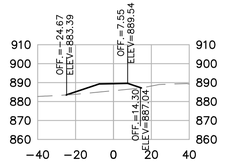
STA. 6+75



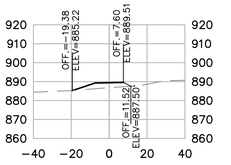
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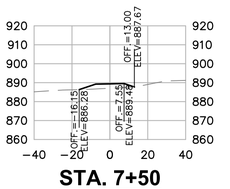
STA. 6+25



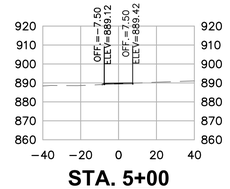
STA. 7+00



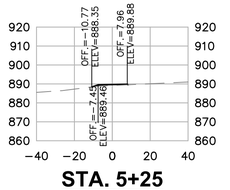
STA. 7+25



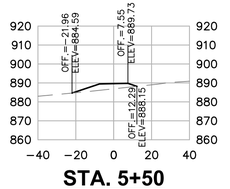
STA. 7+50



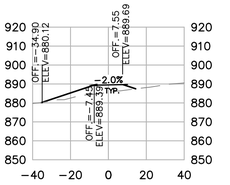
STA. 5+00



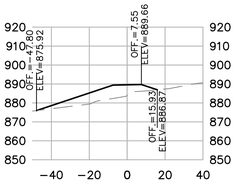
STA. 5+25



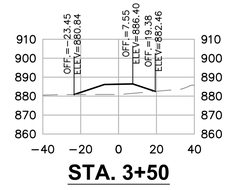
STA. 5+50



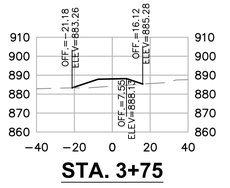
STA. 5+75



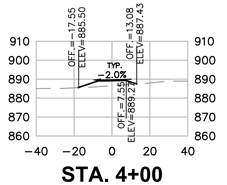
STA. 6+00



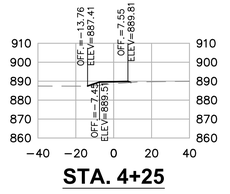
STA. 3+50



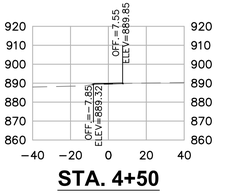
STA. 3+75



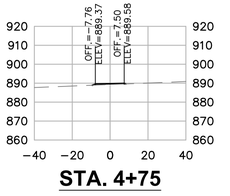
STA. 4+00



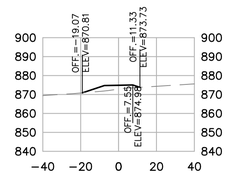
STA. 4+25



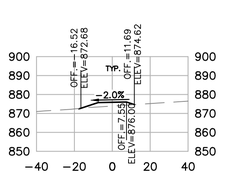
STA. 4+50



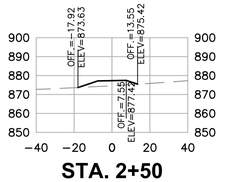
STA. 4+75



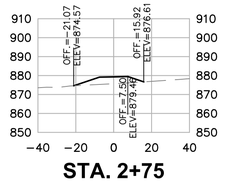
STA. 2+00



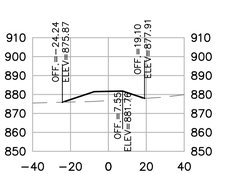
STA. 2+25



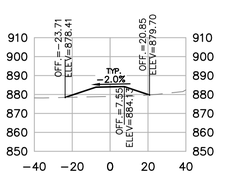
STA. 2+50



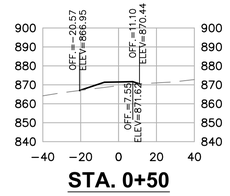
STA. 2+75



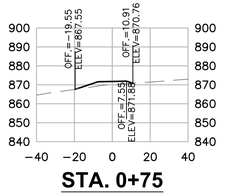
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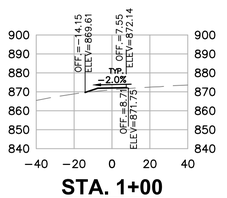
STA. 3+25



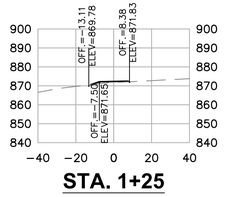
STA. 0+50



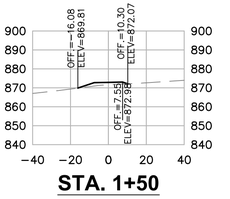
STA. 0+75



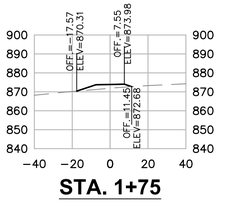
STA. 1+00



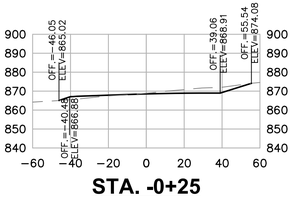
STA. 1+25



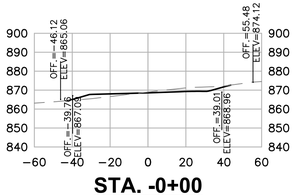
STA. 1+50



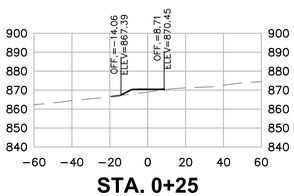
STA. 1+75



STA. -0+25



STA. -0+00



STA. 0+25

LEGEND

EXISTING GROUND

PROPOSED FINISH GRADE

0 40 80 120

GRAPHIC SCALE (IN FEET)

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 039911 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

STA.-0+50 - 7+50
ACCESS ROAD CROSS SECTION
STRUCTURAL FILL STORMWATER REDIRECTION
DIVERSION CHANNEL (MAR-145)
MARSHALL STEAM STATION

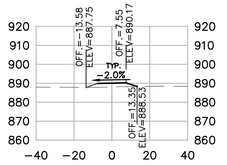
FOR

ISSUED FOR PERMITTING

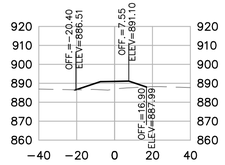
DUKE ENERGY®

SCALE: 1" = 40'		DES: CP	
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DATE: 05/07/18		ENGR: CP	
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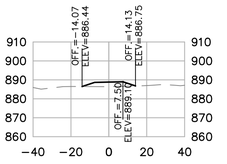
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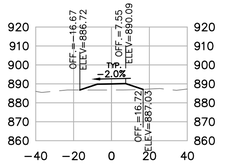
STA. 13+75



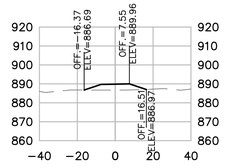
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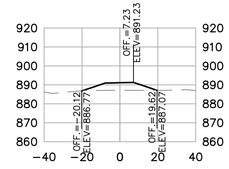
STA. 12+75



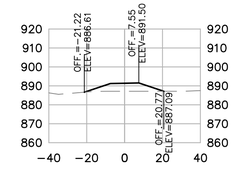
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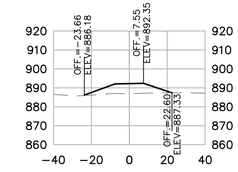
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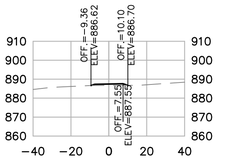
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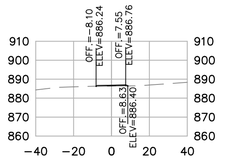
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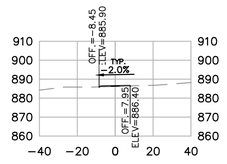
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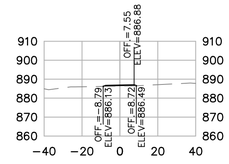
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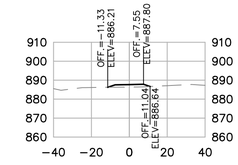
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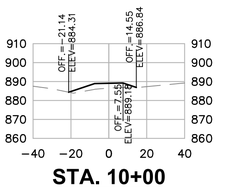
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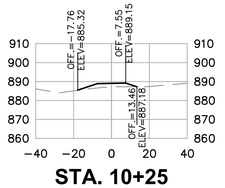
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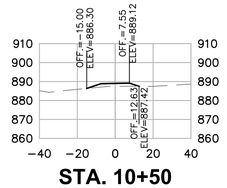
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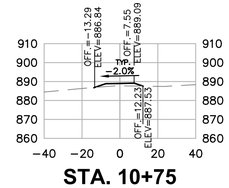
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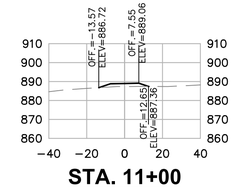
STA. 10+25



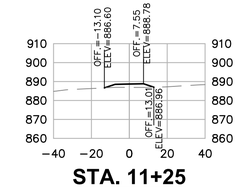
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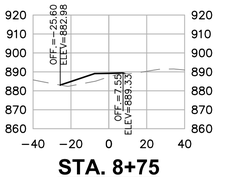
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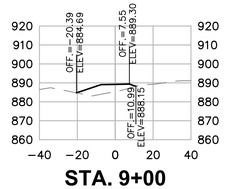
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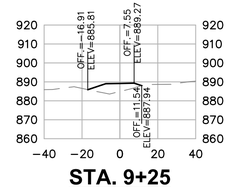
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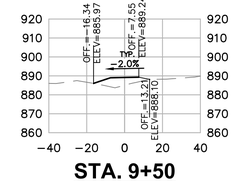
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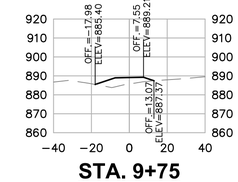
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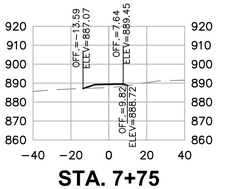
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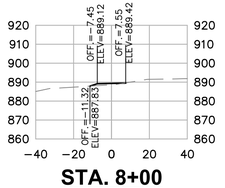
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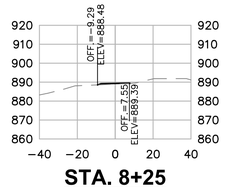
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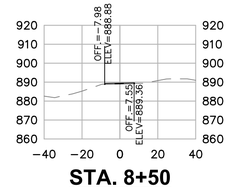
STA. 7+75



STA. 8+00



STA. 8+25



STA. 8+50

LEGEND

EXISTING GROUND

PROPOSED FINISH GRADE

0 40 80 120

GRAPHIC SCALE (IN FEET)

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

STA. 7+75 - 14+00
ACCESS ROAD CROSS SECTION
STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

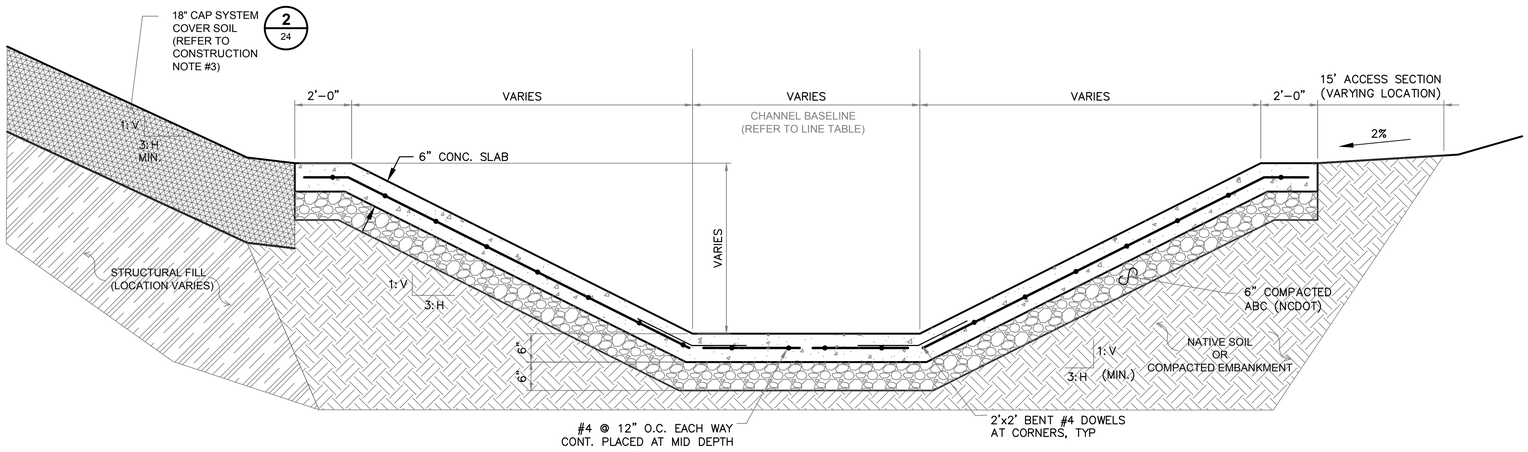
FOR **ISSUED FOR PERMITTING**

DUKE ENERGY®

SCALE: 1" = 40'	DES: CP
DWG TYPE: .DWG	DFTR: CaV
JOB NO: 60515724	CHKD: JB
DATE: 05/07/18	ENGR: CP
FILENAME: 60515724_ACC-CROSS_SECTION.DWG	APPD: JB

DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	MAR_C907.005.023	0

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1/24 CHANNEL SECTION - STA 1+00 - STA 30+42

NOT TO SCALE

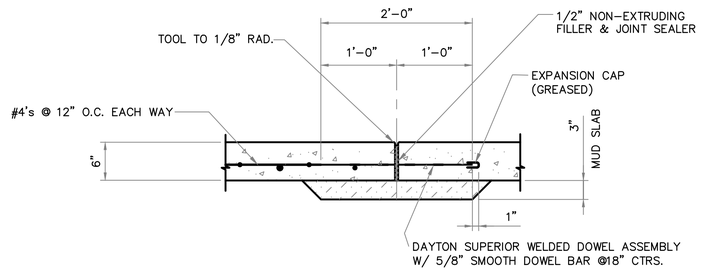
NOTES

1. REFER TO CHANNEL SECTION DATA TABLE FOR STATION-DITCH SECTION.
2. EXPANSION JOINTS SHALL BE PLACED AT 250' CTRS. MAXIMUM AT POINTS OF CURVATURE AND SECTION TRANSITIONS. TRANSVERSE CONTROL JOINTS SHALL BE PLACED AT 15'-0" O.C. MAX INTERVALS AND IN SQUARED PANELS. IF A POUR IS DELAYED 30 MINUTES OR MORE A TRANSVERSE CONSTRUCTION JOINT SHALL BE SUBSTITUTED FOR A CONSTRUCTION JOINT AND EXCESS CONCRETE WASTED.
3. REINFORCING STEEL SHALL BE NEW BILLET, MINIMUM GRADE 60 AS PER ASTM A615.
4. ALL LAP SPLICES NOT SHOWN SHALL BE A MINIMUM 40 BAR DIAMETERS.
5. CHANNEL LINING MAY VARY (CONCRETE, HYDROTURF, VEGETATIVE LINING, AND FABRIFORM-FINE POINT).

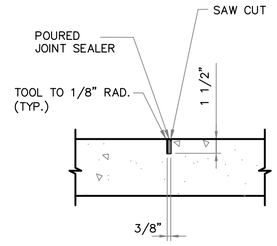
CHANNEL SECTION			
SECTION	BEGIN STATION	END STATION	LINER
15' WIDE 3' DEPTH	0+50	1+00	6" GROUT FILLED FABRIC FORMED REVETMENT
15' WIDE 3' DEPTH	1+00	15+60	CONCRETE
15' WIDE 2' DEPTH	15+70	27+44	CONCRETE
15' WIDE 1' DEPTH	27+54	30+22	CONCRETE
10' WIDE 2' DEPTH	30+42	40+42	VEGETATIVE LINER (NAG DS75)
5' WIDE 1.5' DEPTH	40+67	42+61	VEGETATIVE LINER (NAG DS75)
NOTE: STATION GAP INDICATES TRANSITION ZONE BETWEEN DITCH CROSS SECTIONS.			
CHANNEL 'B' SECTION			
10' WIDE 1' DEPTH	0+34	0+47	CONCRETE
3' WIDE 3' DEPTH	0+61	3+45	CONCRETE

ALTERNATE HYDROTURF LINER SECTIONS	
BEGIN STATION	END STATION
1+00	8+18
15+75	27+25

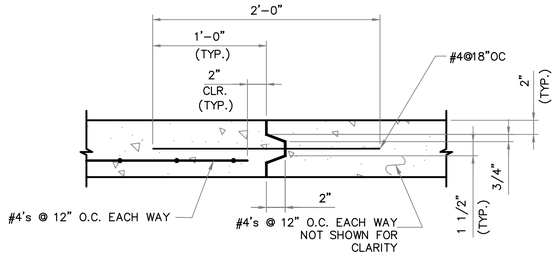
NOTES:
1. AT DUKE'S DISCRETION THE SECTIONS OF CONCRETE LINER CAN BE REPLACED WITH THE USE OF HYDROTURF LINER SYSTEM. REFER TO DETAIL 2&3 ON SHEET 25.
2. USE OF HYDROTURF WILL REQUIRE A RIPRAP TRANSITION ZONE BETWEEN CONCRETE AND HYDROTURF FOR SCORE PROTECTION. RIPRAP TRANSITION ZONE WILL COMPRISE OF 12" CLASS B RIPRAP WITH TYPE 2 TEXTILE, FOR A LENGTH OF 20', WIDTH TO MATCH PROPOSED CHANNEL GEOMETRY.



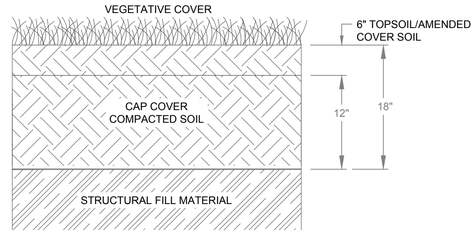
EXPANSION JOINT
(SEE NOTE #2)
1"=1'–0"



TRANSVERSE CONTROL JOINT
(SEE NOTE #2)
1–1/2"=1'–0"



TRANSVERSE CONSTRUCTION JOINT
(SEE NOTE #2)
1 1/2"=1'–0"



2/24 TYPICAL COVER CAP SYSTEM

NOT TO SCALE

CONSTRUCTION NOTES:

1. LIMITS OF STRUCTURAL FILL TO BE DELINEATED IN FIELD.
2. CONTRACTOR TO MINIMIZE ENCROACHMENT AND DISTURBANCE OF STRUCTURAL FILL COVER MATERIAL. ANY EXPOSED CCR IS TO BE CAPPED WITH FINAL COVER REFER TO DETAIL 2/24.
3. CONTRACTOR TO UNDERCUT STRUCTURAL FILL MATERIAL TO ALLOW FOR PROPOSED FINISHED GRADES WITH MINIMUM 18" COVER CAP SYSTEM THICKNESS.
4. ANY ENCOUNTERED CCR MATERIAL IS TO BE DISPOSED OF AT ON–SITE INDUSTRIAL LANDFILL.
5. EXISTING CULVERTS TRAVERSING STRUCTURAL FILL TO BE ABANDONED IN PLACE BY GROUTING. (DESIGN PACKAGE BY OTHERS).

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 18391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

DETAILS

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

FOR

ISSUED FOR PERMITTING

DUKE ENERGY®

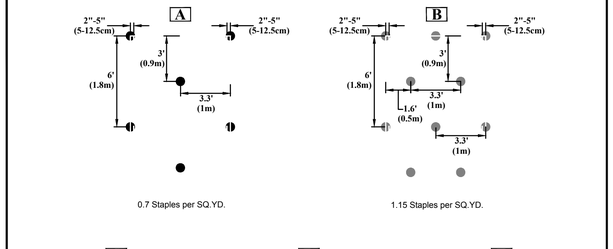
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	JOB NO: **60515724**	CHKD:	**JB**
	DATE: **05/07/18**	ENGR:	**CP**
FILENAME: **60515724_DETAILS.DWG**		APPD:	**JB**

DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	**MAR_C907.005.024**	**0**

G:\200\DUKECCP\MARSHALL (60515724)_DKCMARSWFL\900-CAD-GIS\910-CAD\20-SHEETS\60515724_DETAILS.DWG 5/7/2018 11:20:00 AM

MAR_C907.005.024 REV. 0

STAPLE PATTERN GUIDE



0.7 Staples per SQ.YD. | 1.15 Staples per SQ.YD. | 1.7 Staples per SQ.YD. | 3.4 Staples per SQ.YD. | 3.75 Staples per SQ.YD.

- 4:1 Slopes (A)
- 3:1 Slopes (B)
- 2:1 Slopes (C)
- 1:1 & Steeper Slopes (D)
- Medium/High Flow Channel (D)
- High Flow Channel And Shoreline (E)

NOTES:

* Use ECMDS© for more accurate staple pattern selection.

NORTH AMERICAN GREEN
5401 St. Wendel - Cynthiana Rd. PH: 800-722-2040
Poseyville, IN 47633 www.nagreen.com

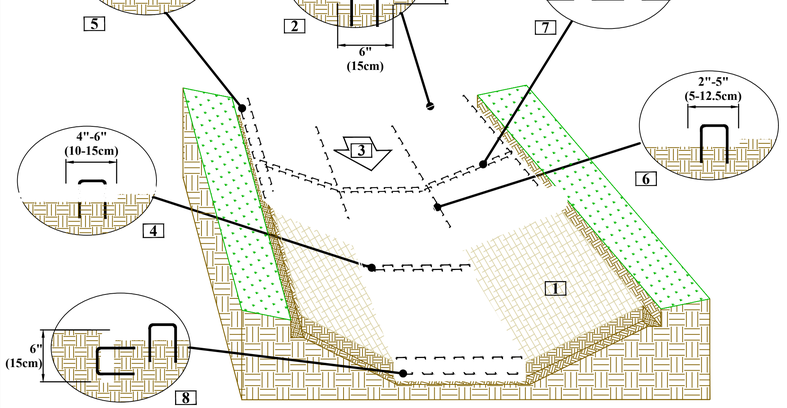
Disclaimer:
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 5-4-17

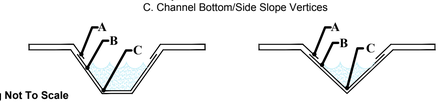
Drawing Not To Scale

NOTE: USE STAPLE PATTERN 'D' FOR NAG DS75 ONLY. NOT FOR USE WITH HYDROTURF.

5/25 STAPLE PATTERN GUIDE (FOR NAG DS75 ONLY)
NORTH AMERICAN GREEN



CRITICAL POINTS
A. Overlaps and Seams
B. Projected Water Line
C. Channel Bottom/Side Slope Vertices



Drawing Not To Scale

CHANNEL INSTALLATION DETAIL

1. Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the channel by anchoring the RECPs in a 6"(15cm) deep X 6"(15cm) wide trench with approximately 12"(30cm) of RECPs extended beyond the up-slope portion of the trench. Use ShoreMax mat at the channel/culvert outlet as supplemental scour protection as needed. Anchor the RECPs with a row of staples/stakes approximately 12"(30cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12"(30cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12" apart across the width of the RECPs.
3. Roll center RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
4. Place consecutive RECPs end-over-end (Shingle style) with a 4"-6" overlap. Use a double row of staples staggered 4" apart and 4" on center to secure RECPs.
5. Full length edge of RECPs at top of side slopes must be anchored with a row of staples/stakes approximately 12"(30cm) apart in a 6"(15cm) deep X 6"(15cm) wide trench. Backfill and compact the trench after stapling.
6. Adjacent RECPs must be overlapped approximately 2"-5" (5-12.5cm) (Depending on RECPs type) and stapled.
7. In high flow channel applications a staple check slot is recommended at 30 to 40 foot (9 -12m) intervals. Use a double row of staples staggered 4"(10cm) apart and 4"(10cm) on center over entire width of the channel.
8. The terminal end of the RECPs must be anchored with a row of staples/stakes approximately 12" (30cm) apart in a 6"(15cm) deep X 6"(15cm) wide trench. Backfill and compact the trench after stapling.

NOTES:

*Horizontal staple spacing should be altered if necessary to allow staples to secure the critical points along the channel surface.

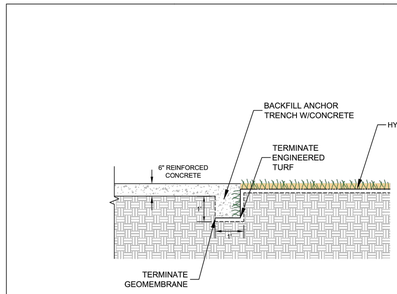
**In loose soil conditions, the use of staple or stake lengths greater than 6"(15cm) may be necessary to properly secure the RECP's.

NORTH AMERICAN GREEN
5401 St. Wendel - Cynthiana Rd. PH: 800-722-2040
Poseyville, IN 47633 www.nagreen.com

Disclaimer:
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 5-4-17

4/25 REINFORCED VEGETATIVE CHANNEL LINER STA. 30+42–STA. 42+62
NORTH AMERICAN GREEN



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WG WatershedGeo® Unearthing Solutions

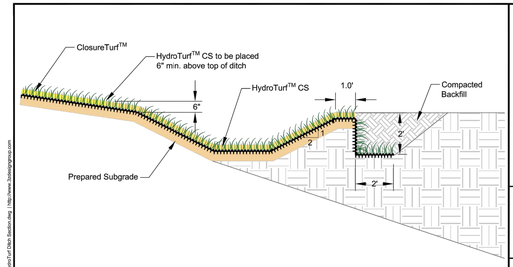
PRODUCT HydroTurf®

TITLE TRANSITION OF HYDROTURF®CS TO CONCRETE ANCHOR TRENCH CHANNEL

File #	DRAWING 1	
Rev #	Scale	Date
0	NTS	10/24/2017

FIGURE 1

3/25 HYDROTURF LINER TRANSITIONS
NOT TO SCALE



A/1 HydroTurf™ CS Ditch Section
N.T.S.

NOTE: REFER TO DETAIL 1 ON SHEET 24 FOR CHANNEL GEOMETRY

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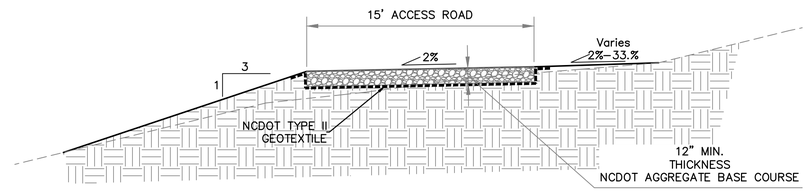
PRODUCT ClosureTurf® HydroTurf®

TITLE HydroTurf™ CS Ditch Section

FILE No.	2013-110-HTC004-R5	
REV. 5	SCALE	AS SHOWN
CADD	T.A.R.	09-12-2014

Figure 6

2/25 HYDROTURF CS DITCH SECTION
NOT TO SCALE



1/25 ACCESS ROAD (15 FT WIDE)
NOT TO SCALE

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19391 JOHN A. BOVE
Signature 5/7/2018

TITLE
DETAILS II
STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

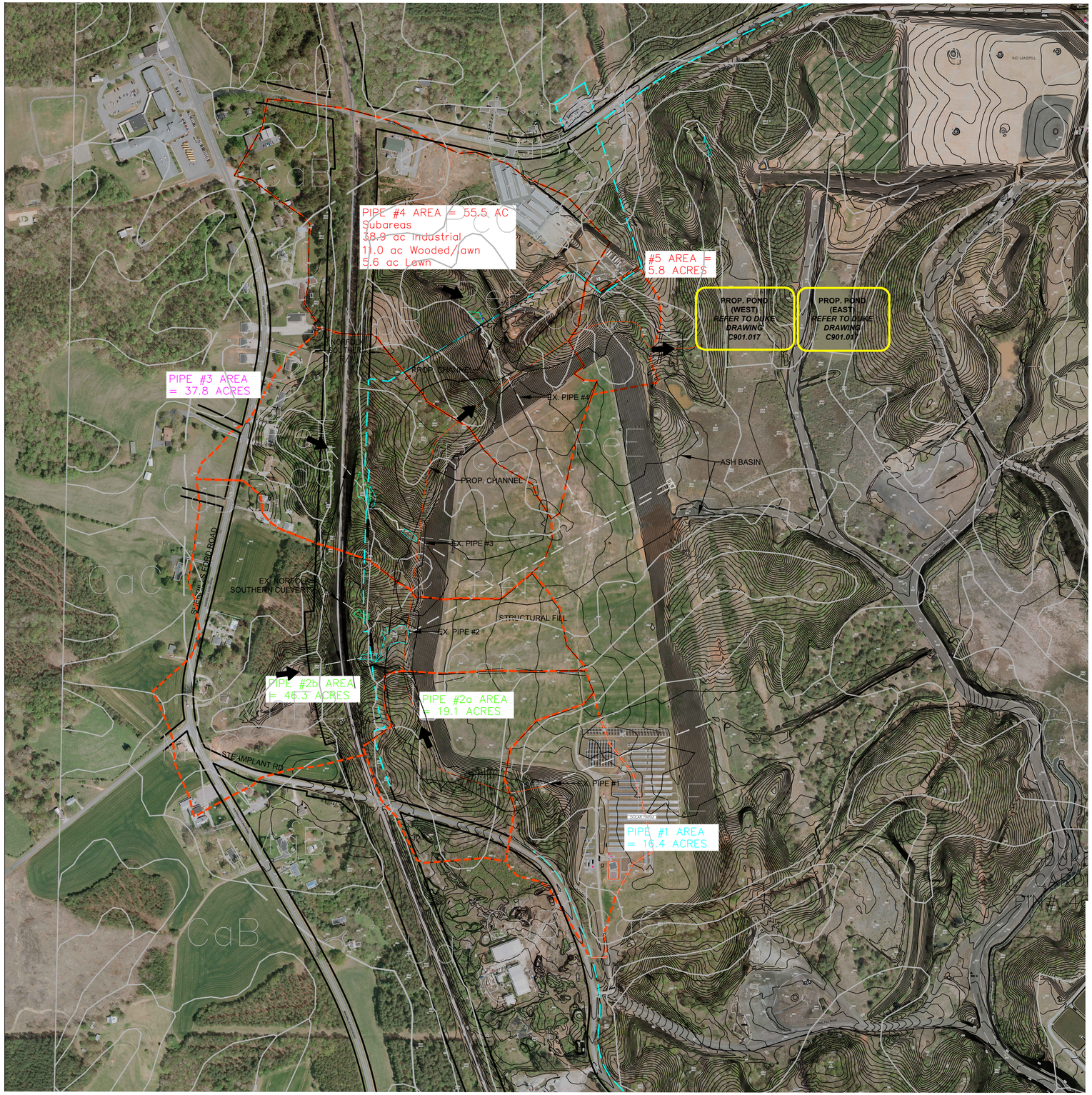
FOR
ISSUED FOR PERMITTING

DUKE ENERGY®

SCALE: NTS		DES: CP	
DWG TYPE: .DWG		DFTR: CaV	
JOB NO: 60515724		CHKD: JB	
DATE: 05/07/18		ENGR: CP	
FILENAME: 60515724_DETAILS.DWG		APPD: JB	
DWG SIZE	DRAWING NO.		REVISION
ANSI D 22.0"x34.0"	MAR_C907.005.025		0

\\USCHA3PFPSW001\DATA\200\DUKECCP\MARSHALL (60515724)_DKCMARSWFL\900-CAD-GIS\910-CAD\20-SHEETS\60515724_DETAILS.DWG 5/7/2018 10:55:22 AM

MAR_C907.005.025 REV. 0



LEGEND

- FLOW ARROW
- PROPOSED ALIGNMENT
- EXIST. WETLANDS
- EXIST. STREAMS
- APPROX. LIMIT OF STRUCTURAL FILL BOUNDARY (TO BE FIELD VERFIED)
- APPROX. PROPERTY BOUNDARY
- DRAINAGE AREA BOUNDARY
- USGS SOIL BOUNDARY
- EXISTING CULVERT

NOTES:

1. CONTOUR DATA BASED ON COMPILED TOPO DATA FROM WSP DATED 2014 AND LOCALIZED SURVEY DATA FROM ESP DATED 5/17/17.
2. CONTRACTOR SHALL NOT ENTER UPON OR IMPACT JURISDICTIONAL STREAMS AND WETLANDS UNTIL DUKE ENERGY OBTAINS ALL APPLICABLE PERMITS. CONTRACTOR TO ANTICIPATE THAT STORMWATER REDIRECTION CHANNEL WILL BE CONSTRUCTED IN PHASES TO AVOID IMPACTS TO JURISDICTIONAL AREAS.
3. PROPOSED PONDS DESIGN INFORMATION UNDER SEPARATE COVER, REFER TO DUKE DWG NO. C901.017

N

0 300 600 900
GRAPHIC SCALE (IN FEET)

NOT FOR CONSTRUCTION

AECOM

N.C. ENGINEERING LICENSE NO. F-0342

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 19391 ENGINEER JOHN A. BOVE 5/7/2018

TITLE

DRAINAGE AREA EXHIBIT

STRUCTURAL FILL STORMWATER REDIRECTION DIVERSION CHANNEL (MAR-145) MARSHALL STEAM STATION

FOR

ISSUED FOR PERMITTING

DUKE ENERGY®

SCALE: **N.T.S.**	DES: **CP**
DWG TYPE: **.DWG**	DFTR: **CaV**
JOB NO: **60515724**	CHKD: **JB**
DATE: **05/07/18**	ENGR: **CP**
FILENAME: **60515724_DRAINAGEAREAMAP.DWG**	APPD: **JB**

DWG SIZE	DRAWING NO.	REVISION
ANSI D 22.0"x34.0"	**MAR_C907.005.026**	**0**

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