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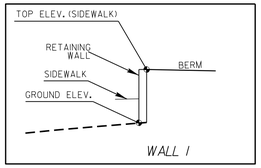
DCN 0400DEL-P30

WALL 1



amec
AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900
NC Engineering F-1253 NC Geology C-247

PROJECT REFERENCE NO.	SHEET NO.
U-5008	W-1
R/W SHEET NO.	

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038977 ENGINEER SHAWN C. GOLLAHON

DocuSigned by: Shawn Chamberlain 2/19/2015
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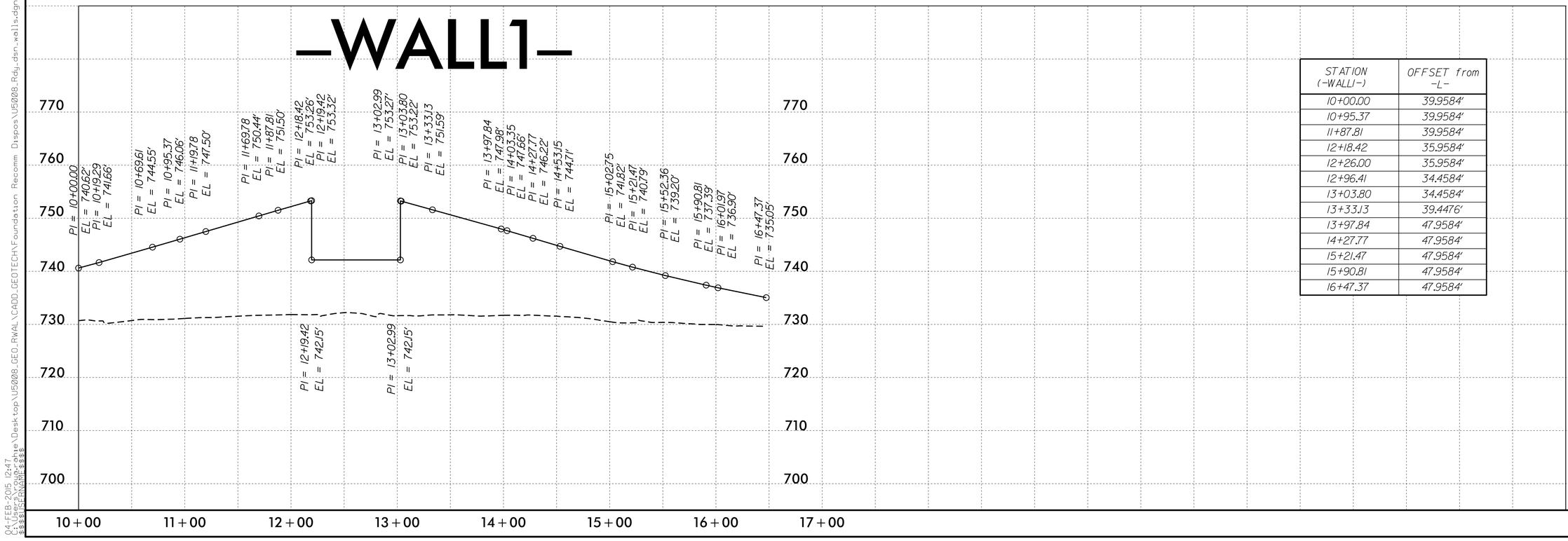
ENGINEER



STATION (-WALL1-)	OFFSET from -L-
10+00.00	39.9584'
10+95.37	39.9584'
11+87.81	39.9584'
12+18.42	35.9584'
12+26.00	35.9584'
12+96.41	34.4584'
13+03.80	34.4584'
13+33.13	39.4476'
13+97.84	47.9584'
14+27.77	47.9584'
15+21.47	47.9584'
15+90.81	47.9584'
16+47.37	47.9584'

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DCN

PROJECT REFERENCE NO.	SHEET NO.
U-5008	W-2
R/W SHEET NO.	
GEOTECHNICAL ENGINEER	ENGINEER

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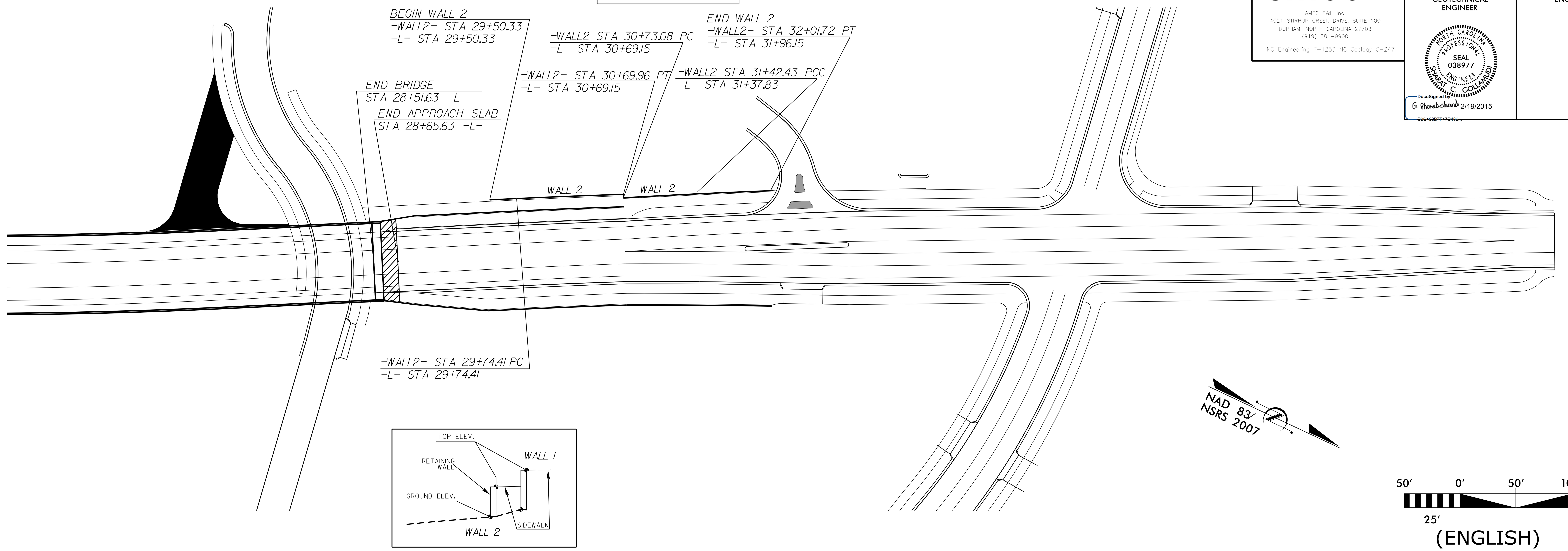
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900

NC Engineering F-1253 NC Geology C-247

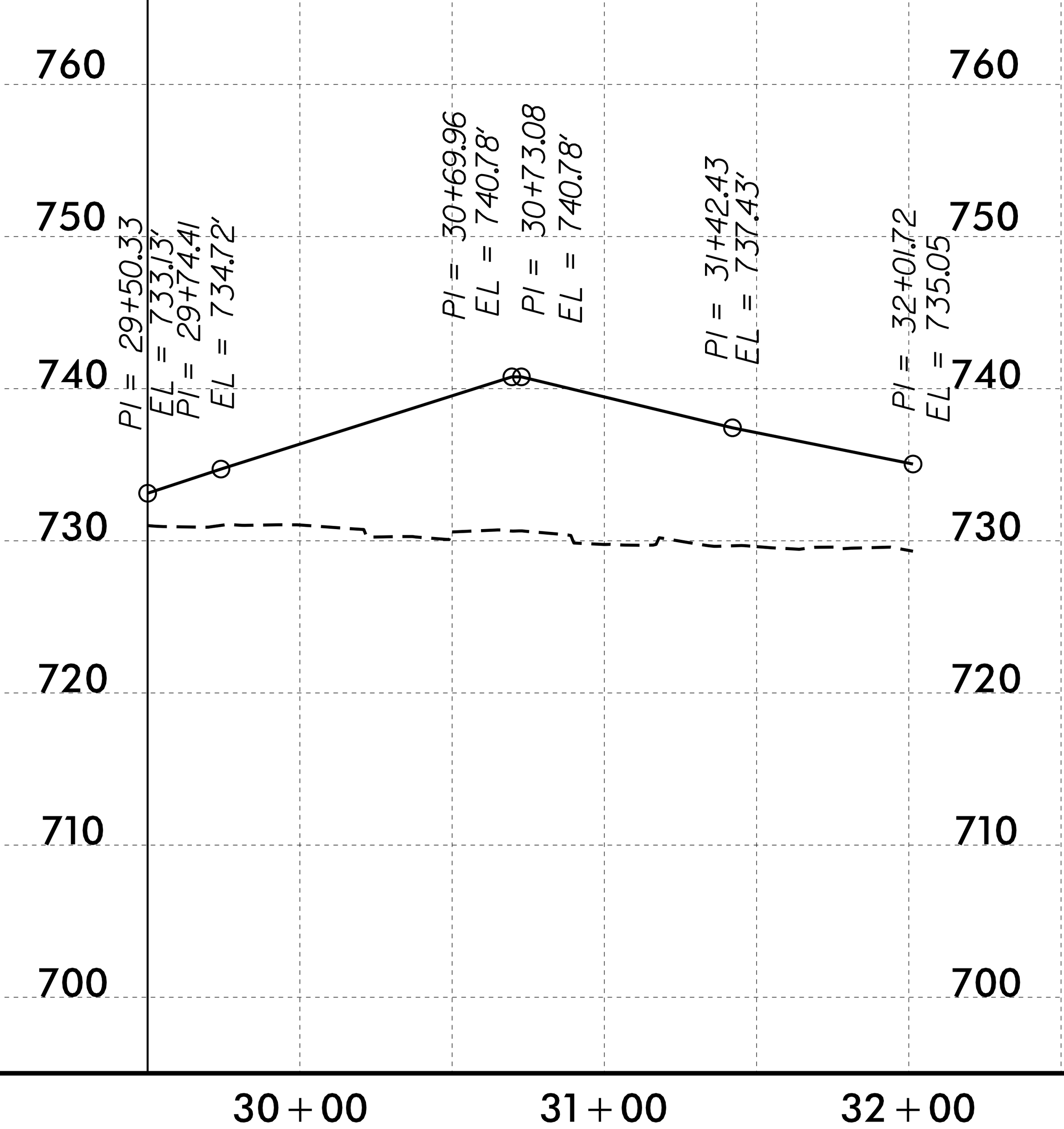
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038977 SHARAT C. GOLAMUDI

DocuSigned by: 2/19/2015

WALL 2



-WALL2-



STATION (-WALL2-)	OFFSET from -L-
29+50.33	51.0834'
29+74.41	51.0834'
30+69.96	51.0834'
30+73.08	47.9688'
31+42.43	49.8645'
32+01.72	51.4848'

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WALL 3

PROJECT REFERENCE NO.	SHEET NO.
U-5008	W-3
R/W SHEET NO.	
GEOTECHNICAL ENGINEER	ENGINEER

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4021 STIRRUP CREEK DRIVE, SUITE 100
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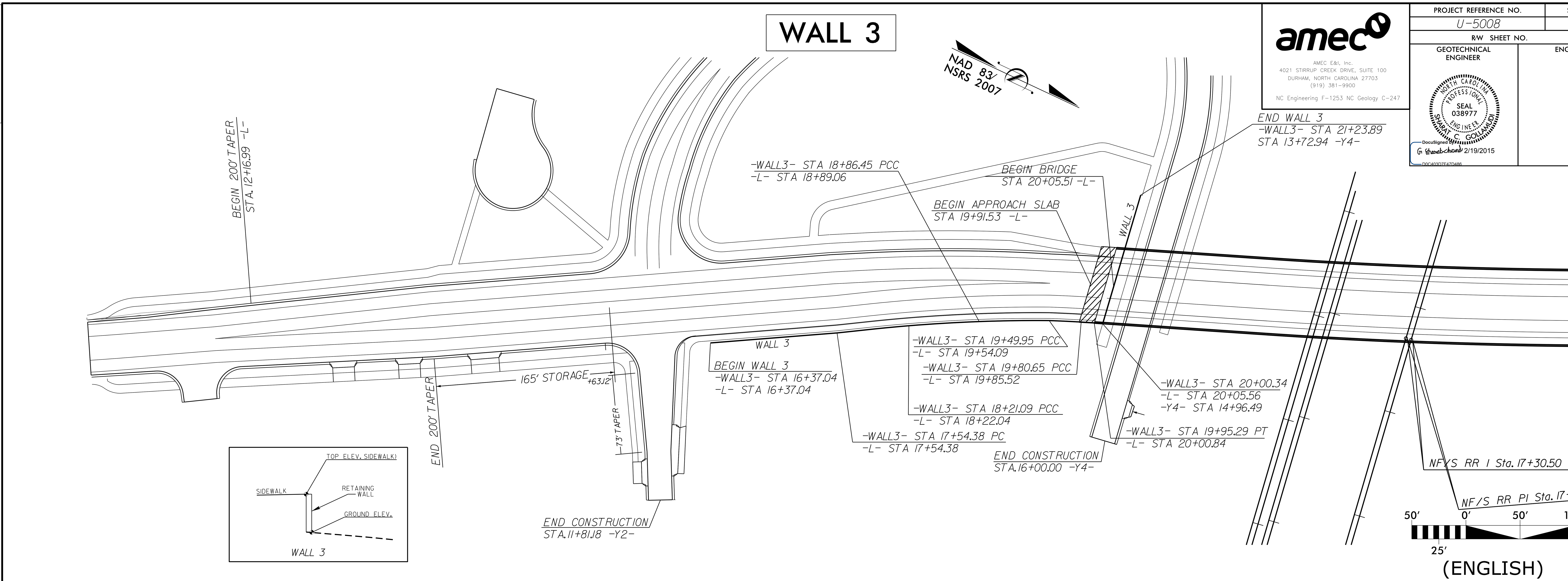
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038977 SHARAT C. GOLLAMUDI
DocuSigned by: G. Gollamudi 2/19/2015



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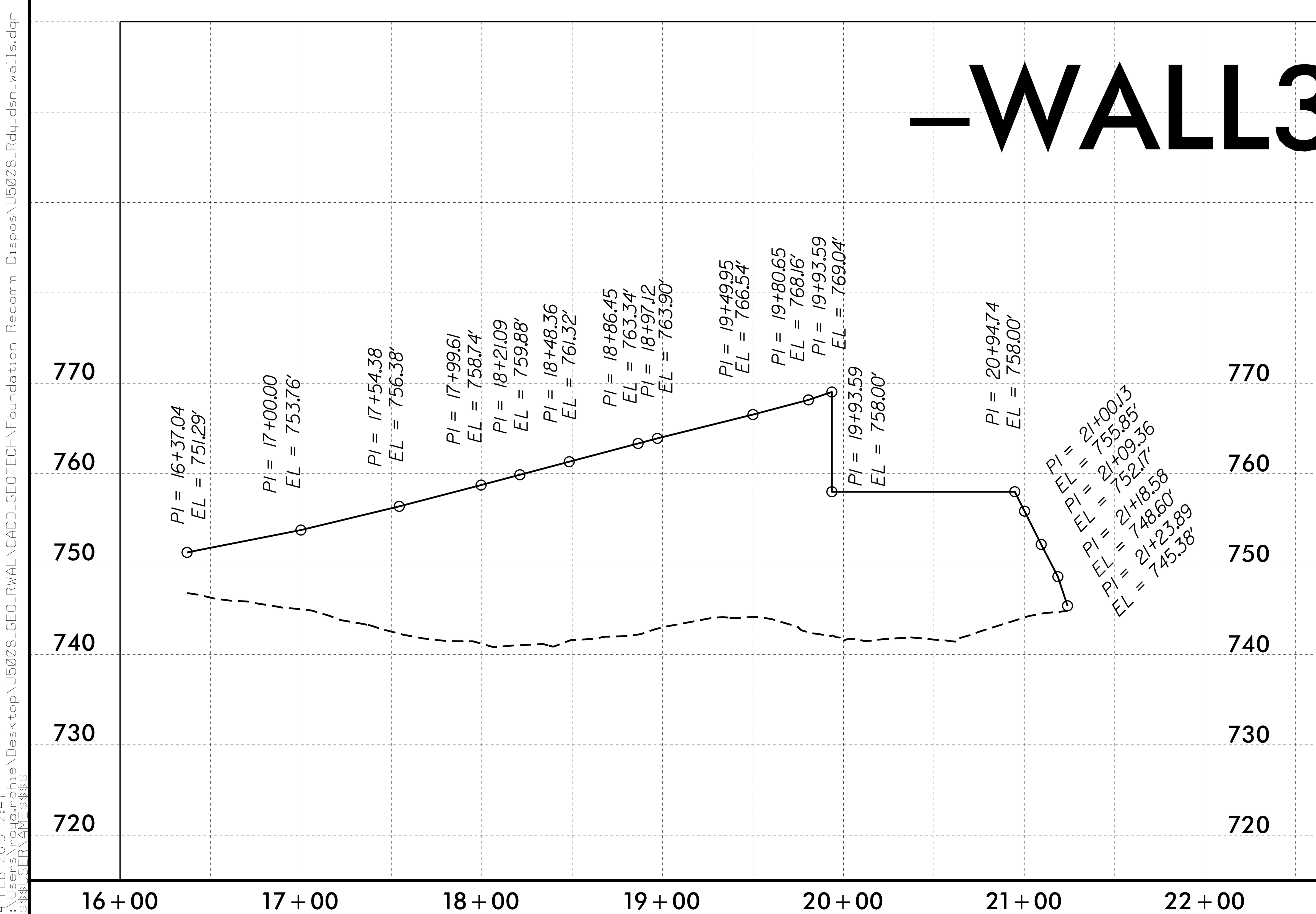


STATION (-WALL3-)	OFFSET
16+37.04	39.9584' -L-
17+54.38	39.9584' -L-
18+21.09	38.0973' -L-
18+86.45	36.2547' -L-
19+49.95	34.4584' -L-
19+80.65	34.4584' -L-
19+95.29	34.4584' -L-
20+00.34	34.4584' -L-
21+23.89	31.0000' -Y4-

DGN 0400DEL-P30

RETAINING WALL GENERAL NOTES

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

USE AN MSE WALL SYSTEM WITH PRECAST CONCRETE PANELS THAT MEETS SECTION 1077 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALLS 1, 2, AND 3.

DRIVE PILES AT END BENT 1 BEFORE CONSTRUCTING RETAINING WALL 3;
DRIVE PILES AT END BENT 2 BEFORE CONSTRUCTING RETAINING WALL 1.

USE OF PILE SLEEVES (YELLOW JACKET™ OR SIMILAR) OR INSTALLATION OF CORRUGATED METAL CANS AROUND THE PILES FROM THE TOP OF THE LEVELING PAD ELEVATION TO BOTTOM OF THE PILE CAP IS REQUIRED FOR PILES AT END BENTS 1 AND 2. THE CANS SHALL BE DESIGNED TO WITHSTAND THE PRESSURES FROM COMPACTION OPERATIONS ON ADJACENT FILL WITHOUT DISTORTION.

A DRAIN IS REQUIRED FOR RETAINING WALLS NO. 1, 2, AND 3.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L) SHOWN. CAST REINFORCEMENT CONNECTORS INTO CAP BACKWALL FOR END BENT 1 LOCATED AT STATION 20+05.51 -L- AND FOR END BENT 2 LOCATED AT STATION 28+51.63 -L-. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN CONNECTORS AND REINFORCING STEEL IN CAP.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL 1, 2, OR 3 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED BY THE GEOTECHNICAL ENGINEER.

FOUNDATIONS FOR END BENT 1 LOCATED AT STATION 20+05.51 -L- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL 3. FOUNDATIONS FOR END BENT 2 LOCATED AT STATION 28+51.63 -L- WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL 1. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS. A MINIMUM CLEARANCE OF 2 INCHES SHALL BE MAINTAINED BETWEEN THE MSE WALL STEEL REINFORCING AND THE CANS.

SLOPES IN FRONT OF THE MSE WALLS SHOULD BE 6:1 (H:V) OR FLATTER.

UNDERCUT SILTY CLAY MATERIAL (AASHTO CLASSIFICATION A-7-6/A-7-5) IF ENCOUNTERED AT THE LEVELING PAD BEARING ELEVATION DURING WALL CONSTRUCTION. UNDERCUTTING SHALL BE PERFORMED TO A DEPTH OF 2 FEET BELOW THE LOWEST LEVELING PAD ELEVATION. BACKFILLING SHALL CONTINUE UNTIL THE LEVELING PAD ELEVATIONS ARE ACHIEVED. BACKFILL MATERIAL SHALL MEET THE REQUIREMENTS PRESENTED IN THE STANDARD SPECIFICATIONS, SECTION 1016 SELECT MATERIAL CLASS III TYPE 2.

MSE WALLS WITH RECTANGULAR PANELS WITH VERTICAL JOINTS LINED UP FROM TOP TO BOTTOM SHALL BE USED FOR RETAINING WALLS 1, 2, AND 3.

INSTALL GEOTEXTILE FOR SEPARATION BETWEEN COARSE AGGREGATE IN THE MSE REINFORCED ZONE AND RETAINED ROADWAY EMBANKMENT SOIL AT RETAINING WALLS 1 AND 2. GEOTEXTILE SHALL MEET THE REQUIREMENTS OF NCDOT STANDARD SPECIFICATIONS SECTION 1056, TYPE 2.

A HANDRAIL IS REQUIRED ON TOP OF RETAINING WALL 2. SEE PLANS FOR HANDRAIL ATTACHMENT DETAILS.

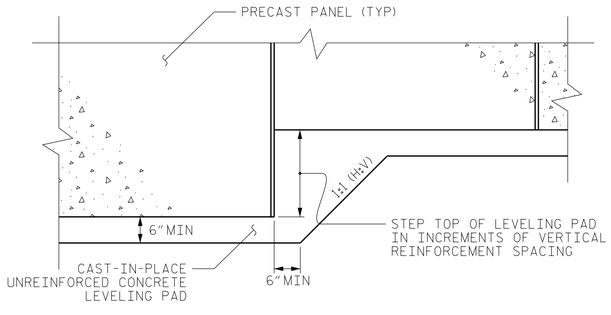
A CONCRETE PARAPET WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALLS 1, 2, AND 3. SEE PLANS FOR CONCRETE PARAPET WITH MOMENT SLAB DETAILS.

FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALLS 1, 2, OR 3.

FOR ARCHITECTURAL CONCRETE SURFACE FINISH, SEE SPECIAL PROVISIONS.

FOR ANTI-GRAFFITI COATING, SEE SPECIAL PROVISIONS.

WHERE ELECTRICAL AND LIGHTING CONDUIT IS REQUIRED, THE COPING AND MOMENT SLAB SHALL BE CAST-IN-PLACE.



PRECAST CONCRETE PANELS

LEVELING PAD STEP DETAILS

RETAINING WALL 1 NOTES

DESIGN MSE RETAINING WALLS FOR THE FOLLOWING:
A) H = DESIGN HEIGHT + EMBEDMENT
B) MINIMUM DESIGN LIFE = 100 YEARS
C) MAXIMUM FACTORED BEARING VERTICAL STRESS ON FOUNDATION MATERIAL SHALL BE AS SHOWN IN THE TABLE BELOW.
D) MSE WALLS SOIL REINFORCEMENT LENGTH SHALL BE AS SHOWN IN THE TABLE BELOW TO SATISFY EXTERNAL AND GLOBAL STABILITY.

STATION		REINFORCEMENT LENGTH RATIO	MAXIUM FACTORED VERTICAL STRESS ON FOUNDATION MATERIAL	REQUIRED EMBEDMENT DEPTH RATIO
FROM	TO		PSF	
-WALL1- 10+00	-WALL1- 10+75	1.0H	3,000	GREATER OF 2 FEET OR H/10
-WALL1- 10+75	-WALL1- 16+47.37	GREATER OF 8 FEET OR 1.0H	5,000	GREATER OF 2 FEET OR H/10

E) AGGREGATE PARAMETERS:

AGGREGATE TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (C) PSF
COARSE AGGREGATE	110	38	0

F) IN-SITU ASSUMED MATERIAL PROPERTIES:

MATERIAL STANDARD SIZE NO. (IN ACCORDANCE WITH SECTIONS 1005 AND 1014 OF THE NCDOT STANDARD SPECIFICATIONS)	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (C) PSF
RANDOM BACKFILL	120	30	0

G) FOUNDATION SOILS:

STATION		UNIT WEIGHT (γ) PCF	DRAINED FRICTION ANGLE (ϕ') DEGREES	DRAINED COHESION (C') PSF	UNDRAINED SHEAR STRENGTH (Su) PSF
FROM	TO				
-WALL1- 10+00	-WALL1- 10+75	110	28	0	900
-WALL1- 10+75	-WALL1- 13+25	115	28	0	1500
-WALL1- 13+25	-WALL1- 16+47.37	115	30	0	-

H) DESIGN RETAINING WALL 1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

CONSTRUCTION OF MSE RETAINING WALL NO. 1 SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:

A) CONSTRUCT THE PRECAST WALL PANELS TO THE FINAL DESIGN HEIGHT. THE GRADE BEHIND THE WALL PANELS INCLUDING THE REINFORCED ZONE AND THE EMBANKMENT SHALL BE AT THE ELEVATION OF THE BOTTOM OF THE PROPOSED PAVEMENT STRUCTURE.
B) PERFORM SETTLEMENT MONITORING AS SPECIFIED IN THE NOTES BELOW. A 1-MONTH WAITING PERIOD IS ANTICIPATED TO ACHIEVE THE ESTIMATED SETTLEMENT OF 1.5 TO 3.5 INCHES BENEATH THE MSE WALL.
C) CAST-IN-PLACE REINFORCED CONCRETE COPING IS REQUIRED FOR MSE WALL 1. CONSTRUCT COPING, PERFORM FINAL GRADING AND PAVING OPERATIONS AFTER THE WAITING PERIOD HAS ENDED FOLLOWING THE PROCEDURES IN THE NOTES BELOW WITH THE APPROVAL OF GEOTECHNICAL ENGINEER.

INSTALL SETTLEMENT MONITORING PLATES AT THE LEVELING PAD BEARING ELEVATION.

SETTLEMENT PLATES SHALL BE INSTALLED AT APPROXIMATE STATIONS -L-28+65, 10 FT LEFT AND -L- 28+65, 10 FT RIGHT TO MONITOR SETTLEMENTS DURING THE CONSTRUCTION AND WAITING PERIOD.

CONTINUE SETTLEMENT MONITORING DURING CONSTRUCTION AND RECORD READINGS USING THE EMBANKMENT SETTLEMENT GAUGE FORM PROVIDED BY NCDOT. THE INFORMATION SHOULD INCLUDE TOP OF EXISTING PIPE AND TOP OF NEW PIPE WHENEVER AN EXTENSION IS ADDED, EMBANKMENT ELEVATION AT TIME OF PIPE EXTENSION AND EMBANKMENT ELEVATION AT TIME OF EACH SETTLEMENT READING.

THE FOLLOWING MINIMUM SETTLEMENT READINGS SHALL BE OBTAINED BY THE PROJECT SURVEYOR AND PROVIDED TO THE GEOTECHNICAL ENGINEER TO DETERMINE WHEN THE WAITING PERIOD MAY BE STOPPED.
(A) IMMEDIATELY AFTER PLATE INSTALLATION
(B) WHEN HALF OF THE MSE WALL FILL IS PLACED
(C) ONCE A WEEK DURING THE WAITING PERIOD

SETTLEMENT MONITORING DEVICES SHALL BE PROTECTED AT ALL TIMES AGAINST DAMAGE BY CONSTRUCTION EQUIPMENT, VEHICLES AND PERSONNEL.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038977 ENGINEER SHARAD C. GOLLAMUDI

DocuSigned by: S Gollamudi 2/19/2015
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SIGNATURE DATE

ENGINEER

SIGNATURE DATE

MSE RETAINING WALLS	
-WALL 1-	8,695 SF
-WALL 2-	1,810 SF
-WALL 3-	7,745 SF
TOTAL AREA	18,250 SF

ANTI_GRAFFITI COATING	
-WALL 1-	8,695 SF
-WALL 2-	1,810 SF
-WALL 3-	7,745 SF
TOTAL AREA	18,250 SF

PROJECT NO.: U-5008
MECKLENBURG ***COUNTY***
STATION: 20+45.05 -L- P.O.T = 14+54.24 -Y4- P.O.T.

DRAWN BY: E. C. DECOLA	DATE: 10/22/14
CHECKED BY: R. C. LARSON	DATE: 10/22/14
PREPARED BY: R. RAHIE	DATE: 01/07/15
REVIEWED BY: S. C. GOLLAMUDI	DATE: 01/07/15

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AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900
NC Engineering F-1253 NC Geology C-247

MSE RETAINING WALL NOTES AND DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-4
1			3			TOTAL SHEETS
2			4			19

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RETAINING WALL 2 NOTES

DESIGN MSE RETAINING WALLS FOR THE FOLLOWING:
A) H = DESIGN HEIGHT + EMBEDMENT
B) MINIMUM DESIGN LIFE = 100 YEARS
C) MAXIMUM FACTORED BEARING VERTICAL STRESS ON FOUNDATION MATERIAL SHALL BE AS SHOWN IN THE TABLE BELOW.
D) MSE WALLS SOIL REINFORCEMENT LENGTH SHALL BE AS SHOWN IN THE TABLE BELOW TO SATISFY EXTERNAL AND GLOBAL STABILITY.

STATION		REINFORCEMENT LENGTH RATIO	MAXIUM FACTORED VERTICAL STRESS ON FOUNDATION MATERIAL	REQUIRED EMBEDMENT DEPTH RATIO
FROM	TO		PSF	
-WALL2- 29+50.33	-WALL2- 30+73.08	GREATER OF 8 FEET OR 1.0H *	3,000	GREATER OF 2 FEET OR H/10
-WALL2- 30+73.08	-WALL2- 32+01.72	GREATER OF 8 FEET OR 1.0H	3,000	GREATER OF 2 FEET OR H/10

* MSE WALL SOIL REINFORCEMENT IN THE OVERLAP AREA OF WALL 1 AND WALL 2 BETWEEN STATIONS -WALL2- 29+50.33 AND 33+73.08 SHALL EXTEND FROM BACKFACE OF WALL 2 TO THE BURIED FRONT FACE OF WALL 1 (REINFORCEMENT LENGTH BETWEEN THESE STATIONS IS APPROXIMATELY 13 FEET).

E) AGGREGATE PARAMETERS:

AGGREGATE TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (C) PSF
COARSE AGGREGATE	110	38	0

F) IN-SITU ASSUMED MATERIAL PROPERTIES:

MATERIAL STANDARD SIZE NO. (IN ACCORDANCE WITH SECTIONS 1005 AND 1014 OF THE NCDOT STANDARD SPECIFICATIONS)	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (C) PSF
RANDOM BACKFILL	120	30	0

G) FOUNDATION SOILS:

STATION		UNIT WEIGHT (γ) PCF	DRAINED FRICTION ANGLE (ϕ') DEGREES	DRAINED COHESION (C') PSF	UNDRAINED SHEAR STRENGTH (Su) PSF
FROM	TO				
-WALL2- 29+50.33	-WALL2- 32+01.72	110	28	0	900

H) DESIGN RETAINING WALL 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

CONSTRUCTION OF MSE RETAINING WALL 2 SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:

A) OBSERVE A 1-MONTH WAITING PERIOD AFTER CONSTRUCTING THE PRECAST WALL PANELS TO THE FINAL DESIGN HEIGHT. THE GRADE BEHIND THE WALL PANELS INCLUDING THE REINFORCED ZONE AND THE EMBANKMENT SHALL BE AT THE ELEVATION OF THE BOTTOM OF THE PROPOSED PAVEMENT STRUCTURE.
B) CAST-IN-PLACE REINFORCED CONCRETE COPING IS REQUIRED FOR MSE WALL 2. CONSTRUCT COPING, PERFORM FINAL GRADING AND PAVING OPERATIONS AFTER THE WAITING PERIOD HAS ENDED WITH THE APPROVAL OF GEOTECHNICAL ENGINEER.

RETAINING WALL 3 NOTES

DESIGN MSE RETAINING WALLS FOR THE FOLLOWING:
A) H = DESIGN HEIGHT + EMBEDMENT
B) MINIMUM DESIGN LIFE = 100 YEARS
C) MAXIMUM FACTORED BEARING VERTICAL STRESS ON FOUNDATION MATERIAL SHALL BE AS SHOWN IN THE TABLE BELOW.
D) MSE WALLS SOIL REINFORCEMENT LENGTH SHALL BE AS SHOWN IN THE TABLE BELOW TO SATISFY EXTERNAL AND GLOBAL STABILITY.

STATION		REINFORCEMENT LENGTH RATIO	MAXIUM FACTORED VERTICAL STRESS ON FOUNDATION MATERIAL	REQUIRED EMBEDMENT DEPTH RATIO
FROM	TO		PSF	
-WALL3- 16+37.04	-WALL3- 17+25	GREATER OF 8 FEET OR 1.1H	2,500	GREATER OF 2 FEET OR H/10
-WALL3- 17+25	-WALL3- 21+23.89	1.1H	4,000	GREATER OF 2 FEET OR H/10

E) AGGREGATE PARAMETERS:

AGGREGATE TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (C) PSF
COARSE AGGREGATE	110	38	0
LIGHTWEIGHT AGGREGATE	65	40	0

F) IN-SITU ASSUMED MATERIAL PROPERTIES:

MATERIAL STANDARD SIZE NO. (IN ACCORDANCE WITH SECTIONS 1005 AND 1014 OF THE NCDOT STANDARD SPECIFICATIONS)	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (C) PSF
RANDOM BACKFILL	120	32	0

G) FOUNDATION SOILS:

STATION		UNIT WEIGHT (γ) PCF	DRAINED FRICTION ANGLE (ϕ') DEGREES	DRAINED COHESION (C') PSF	UNDRAINED SHEAR STRENGTH (Su) PSF
FROM	TO				
-WALL3- 16+37.04	-WALL3- 17+75	115	28	0	650
-WALL3- 17+75	-WALL3- 21+23.89	115	28	0	800

H) DESIGN RETAINING WALL 3 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

CONSTRUCTION OF MSE RETAINING WALL 3 SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:

A) CONSTRUCT THE PRECAST WALL PANELS TO THE FINAL DESIGN HEIGHT. THE GRADE BEHIND THE WALL PANELS INCLUDING THE REINFORCED ZONE AND THE EMBANKMENT SHALL BE AT THE ELEVATION OF THE BOTTOM OF THE PROPOSED PAVEMENT STRUCTURE.
B) PERFORM SETTLEMENT MONITORING AS SPECIFIED IN NOTES BELOW. A 3-MONTH WAITING PERIOD IS ANTICIPATED TO ACHIEVE THE ESTIMATED SETTLEMENT OF 4 INCHES BENEATH THE MSE WALL.
C) CAST-IN-PLACE REINFORCED CONCRETE COPING IS REQUIRED FOR MSE WALL 3. CONSTRUCT COPING, PERFORM FINAL GRADING AND PAVING OPERATIONS AFTER THE WAITING PERIOD HAS ENDED FOLLOWING THE PROCEDURES IN NOTES BELOW WITH THE APPROVAL OF GEOTECHNICAL ENGINEER.
D) POST CONSTRUCTION SETTLEMENT OF UP TO 1 INCH SHOULD BE EXPECTED UNDER THE MSE WALL.

INSTALL SETTLEMENT MONITORING PLATES 15 FEET BEHIND THE BACK FACE OF THE FIRST ROW OF MSE WALL PANELS AT THE LEVELING PAD BEARING ELEVATION.

SETTLEMENT PLATES SHALL BE INSTALLED AT APPROXIMATE STATIONS -L-17+00, -L-18+25 AND -L-19+75 TO MONITOR SETTLEMENTS DURING THE CONSTRUCTION AND WAITING PERIOD.

CONTINUE SETTLEMENT MONITORING DURING CONSTRUCTION AND RECORD READINGS USING THE EMBANKMENT SETTLEMENT GAUGE FORM PROVIDED BY NCDOT. THE INFORMATION SHOULD INCLUDE TOP OF EXISTING PIPE AND TOP OF NEW PIPE WHENEVER AN EXTENSION IS ADDED. EMBANKMENT ELEVATION AT TIME OF PIPE EXTENSION AND EMBANKMENT ELEVATION AT TIME OF EACH SETTLEMENT READING.

THE FOLLOWING MINIMUM SETTLEMENT READINGS SHALL BE OBTAINED BY THE PROJECT SURVEYOR AND PROVIDED TO THE GEOTECHNICAL ENGINEER TO DETERMINE WHEN THE WAITING PERIOD MAY BE STOPPED.
(A) IMMEDIATELY AFTER PLATE INSTALLATION
(B) WHEN HALF OF THE MSE WALL FILL IS PLACED
(C) ONCE A WEEK DURING THE WAITING PERIOD

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038977 ENGINEER SHARI C. GOLLAMUDI

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ENGINEER

SIGNATURE DATE

RETAINING WALL 3 NOTES (CONT'D)

SETTLEMENT MONITORING DEVICES SHALL BE PROTECTED AT ALL TIMES AGAINST DAMAGE BY CONSTRUCTION EQUIPMENT, VEHICLES AND PERSONNEL.

INCLUDE SURVEY POINTS ON THE FRONT FACE OF PANELS IMMEDIATELY ABOVE THE LEVELING PAD FOLLOWING PANEL INSTALLATION AT APPROXIMATE STATIONS -L-17+00, -L- 18+25 AND -L- 19+75 TO MONITOR THE VERTICAL AND HORIZONTAL MOVEMENTS OF MSE WALL 3 DURING AND AFTER CONSTRUCTION. READINGS SHOULD BE OBTAINED ONCE A WEEK AND PROVIDED TO THE GEOTECHNICAL ENGINEER.

LIGHTWEIGHT AGGREGATE MEETING THE REQUIREMENTS OF MSE RETAINING WALLS SPECIAL PROVISIONS SHALL BE REQUIRED IN THE MSE WALL REINFORCED ZONE BETWEEN ELEVATIONS SHOWN IN THE TABLE BELOW AND THE BOTTOM OF PROPOSED PAVEMENT SUBGRADE ELEVATION.

STATION		LIGHTWEIGHT AGGREGATE BOTTOM ELEVATION
FROM	TO	
-WALL3- 17+25	-WALL3- 18+25	+751 FEET
-WALL3- 18+25	-WALL3- 19+00	+749 FEET
-WALL3- 19+00	-WALL3- 21+23.89	VARIES (BEGIN AT LEVELING PAD ELEV.)

INSTALL GEOTEXTILE SEPARATION FABRIC AT THE BOTTOM OF THE LIGHTWEIGHT AGGREGATE AND AT INTERFACES BETWEEN DIFFERENT FILL MATERIALS AS SHOWN IN THE DRAWINGS. GEOTEXTILE SHALL MEET THE REQUIREMENTS OF THE NCDOT STANDARD SPECIFICATIONS SECTION 1056, TYPE 2.

LIGHTWEIGHT AGGREGATE MEETING THE REQUIREMENTS OF LIGHTWEIGHT AGGREGATE SPECIAL PROVISIONS SHALL BE REQUIRED IN THE EMBANKMENT BETWEEN ELEVATIONS SHOWN IN THE TABLE BELOW AND THE BOTTOM OF PROPOSED PAVEMENT SUBGRADE ELEVATION.

STATION		LIGHTWEIGHT AGGREGATE BOTTOM ELEVATION
FROM	TO	
-L- 17+25	-L- 20+05 *	+759 FEET

* TIE TO THE END OF REINFORCED ZONE FOR MSE WALL 3 AT END BENT 1.

INSTALL GEOTEXTILE SEPARATION FABRIC AT THE BOTTOM AND TOP OF THE LIGHTWEIGHT AGGREGATE AND AT INTERFACES BETWEEN DIFFERENT FILL MATERIALS AS SHOWN. GEOTEXTILE SHALL MEET THE REQUIREMENTS OF THE NCDOT STANDARD SPECIFICATIONS SECTION 1056, TYPE 2.

FILL WITHIN THE MSE RETAINING WALL 3 REINFORCED ZONE AND ROADWAY EMBANKMENT ADJACENT TO THE REINFORCED ZONE SHALL BE PLACED IN LIFTS CONCURRENTLY. LIGHTWEIGHT AGGREGATE WITHIN THE EMBANKMENT SHALL BE CONSTRUCTED FOLLOWING THE LINES AND GRADES AS SHOWN.

PROJECT NO.: U-5008
MECKLENBURG ***COUNTY***
STATION: 20+45.05 -L- P.O.T = 14+54.24 -Y4- P.O.T.

DRAWN BY: E. C. DECOLA	DATE: 10/22/14
CHECKED BY: R. C. LARSON	DATE: 10/22/14
PREPARED BY: R. RAHIE	DATE: 01/07/15
REVIEWED BY: S. C. GOLLAMUDI	DATE: 01/07/15

amec
AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900
NC Engineering F-1253 NC Geology C-247

MSE RETAINING WALL NOTES

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-5
1			3			TOTAL SHEETS
2			4			19

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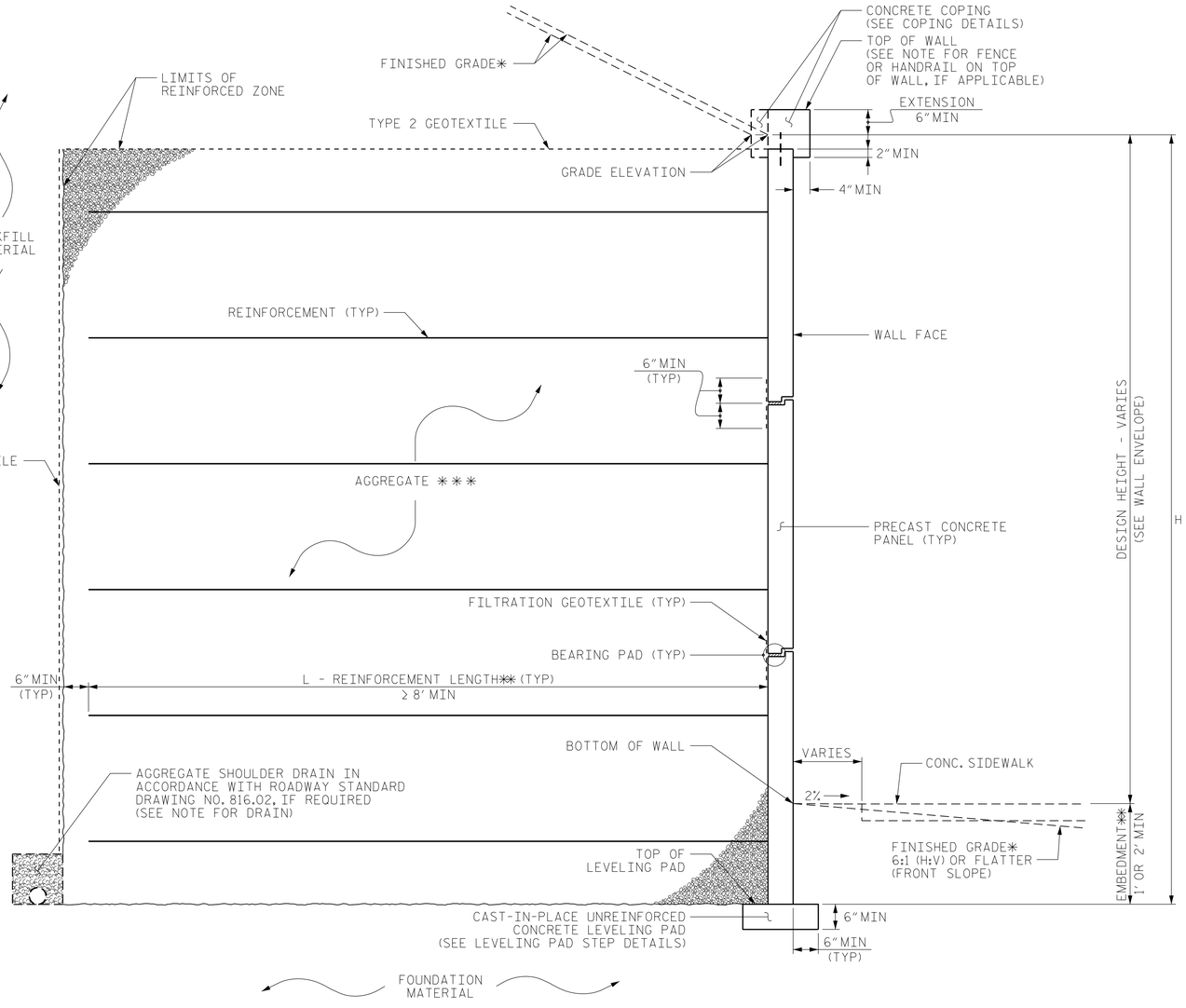


MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

* SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.

** SEE MSE RETAINING WALLS PROVISION FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

*** SEE DRAWINGS WALL W-12 THRU WALL W-18 FOR DETAILS OF LIGHTWEIGHT AGGREGATE IN MSE WALL 3

**** SEE ROADWAY PLANS AND DRAWINGS WALL W-13 THRU WALL W-17 FOR DETAILS OF LIGHTWEIGHT AGGREGATE WITHIN EMBANKMENT.

GEOTECHNICAL ENGINEER

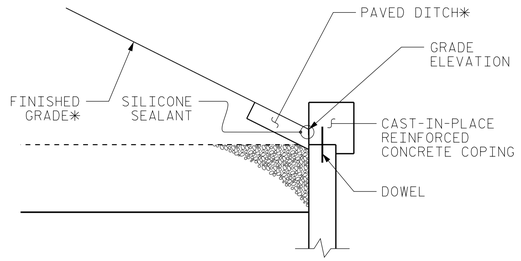
NORTH CAROLINA PROFESSIONAL SEAL 038977 ENGINEER SHARI C. GOLLAMUDI

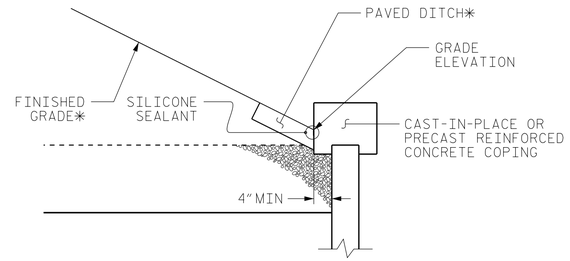
DocuSigned by: G Ramchand 2/19/2015
D0C403D7F47D486...
SIGNATURE DATE

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032954 ENGINEER JARED C. MEDLIN

DocuSigned by: Jared C. Medlin 2/19/2015
BAF5EE71A33B4F8...
SIGNATURE DATE





COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.
*SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.

PROJECT NO.: U-5008
MECKLENBURG ***COUNTY***
STATION: 20+45.05 -L- P.O.T = 14+54.24 -Y4- P.O.T.

DRAWN BY:	D.L.KEENER	DATE:	MAY 2013
CHECKED BY:	R. C. LARSON	DATE:	10/22/14
PREPARED BY:	R. RAHIE	DATE:	01/07/15
REVIEWED BY:	S. C. GOLLAMUDI	DATE:	01/07/15

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MSE RETAINING WALL TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-6
1			3			TOTAL SHEETS
2			4			19

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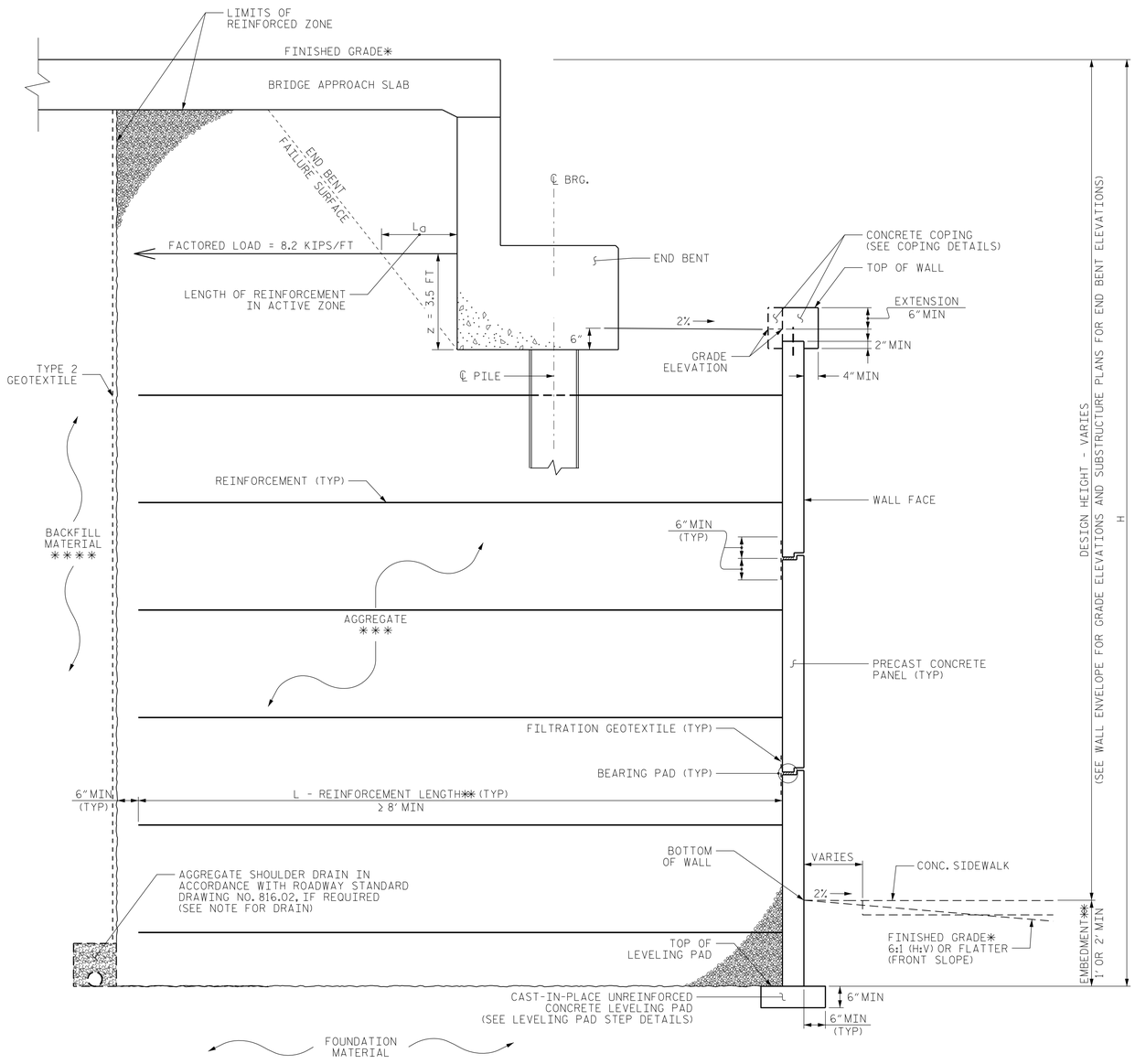
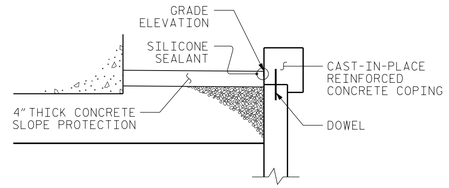
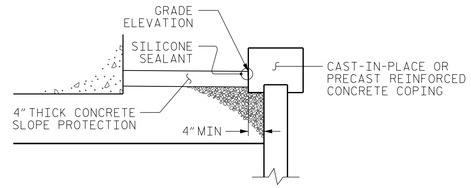


MSE ABUTMENT WALL WITH PRECAST PANELS - TYPICAL SECTION

* SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
** SEE MSE RETAINING WALLS PROVISION FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.
*** SEE DRAWINGS WALL W-12 THRU WALL W-18 FOR DETAILS OF LIGHTWEIGHT AGGREGATE IN MSE WALL 3
**** SEE ROADWAY PLANS AND DRAWINGS WALL W-13 THRU WALL W-17 FOR DETAILS OF LIGHTWEIGHT AGGREGATE WITHIN EMBANKMENT.





COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038977 ENGINEER SHARI C. GOLLAMUDI

DocuSigned by: G Gollamudi 2/19/2015
DOC403D7F47D486...
SIGNATURE DATE

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032954 ENGINEER JARED C. MEDLIN

DocuSigned by: Jared C. Medlin 2/19/2015
BAF5EE71A33B4F8...
SIGNATURE DATE

PROJECT NO.: U-5008
MECKLENBURG ***COUNTY***
STATION: 20+45.05 -L- P.O.T = 14+54.24 -Y4- P.O.T.

DRAWN BY:	D.L.KEENER	DATE:	MAY 2013
CHECKED BY:	R. C. LARSON	DATE:	NOV 2014
PREPARED BY:	R. RAHIE	DATE:	01/07/15
REVIEWED BY:	S. C. GOLLAMUDI	DATE:	01/07/15

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NC Engineering F-1253 NC Geology C-247

MSE RETAINING WALL TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-7
1			3			TOTAL SHEETS
2			4			19

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DGN 0400DEL-P30

GEOTECHNICAL ENGINEER

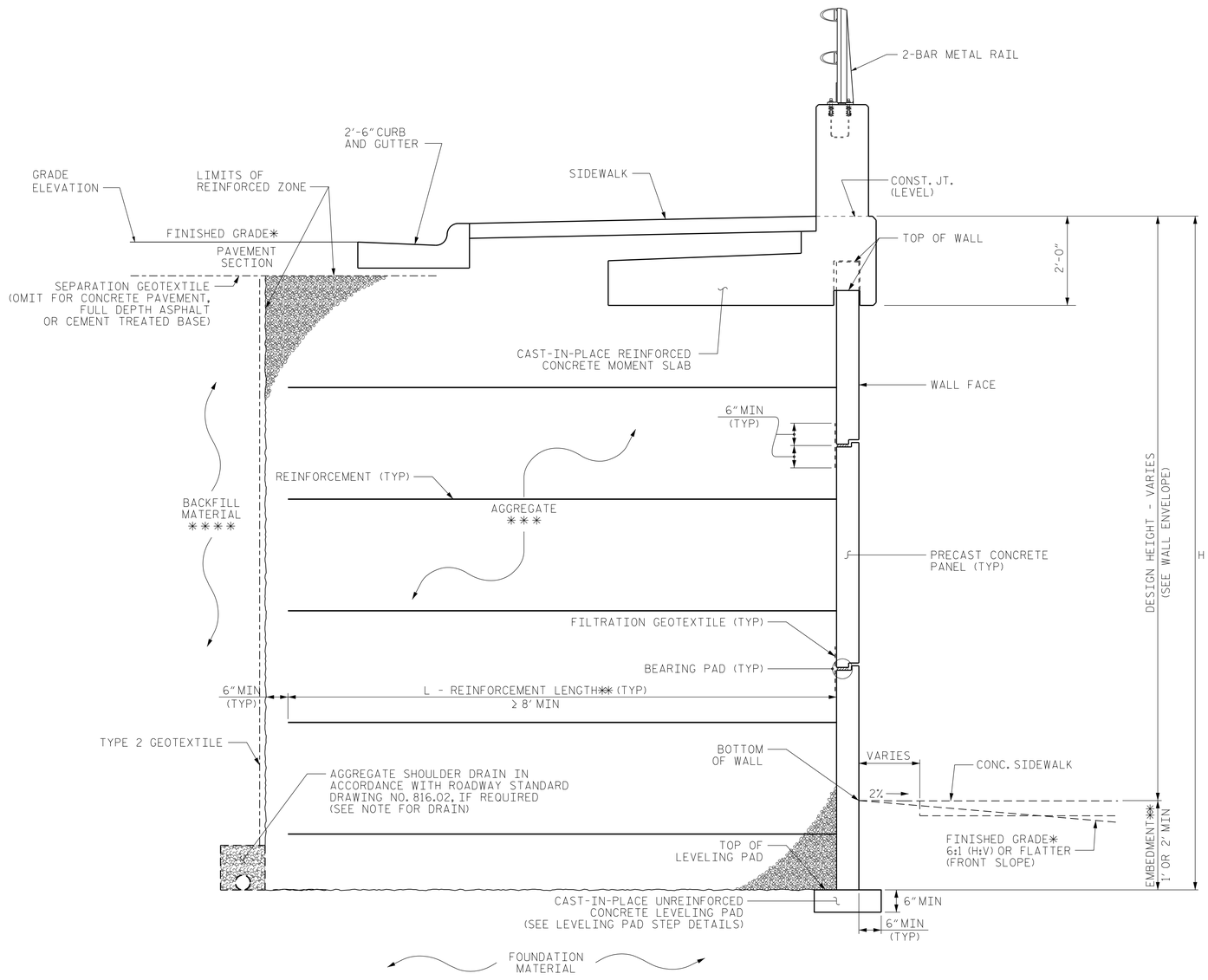
NORTH CAROLINA PROFESSIONAL SEAL 038977 ENGINEER SHARI C GOLLAMUDI

DocuSigned by: S C Gollamudi 2/19/2015
DOC4032F847D486... SIGNATURE DATE

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032954 ENGINEER JARED C MEDLIN

DocuSigned by: Jared C. Medlin 2/19/2015
BAF5EE71A33B4F8... SIGNATURE DATE



MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

* SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

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PROJECT NO.: U-5008

MECKLENBURG ***COUNTY***

STATION: 20+45.05 -L- P.O.T = 14+54.24 -Y4- P.O.T.

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MSE RETAINING WALL TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-8
1			3			TOTAL SHEETS
2			4			19

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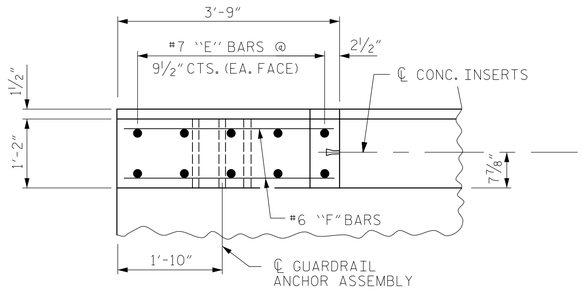
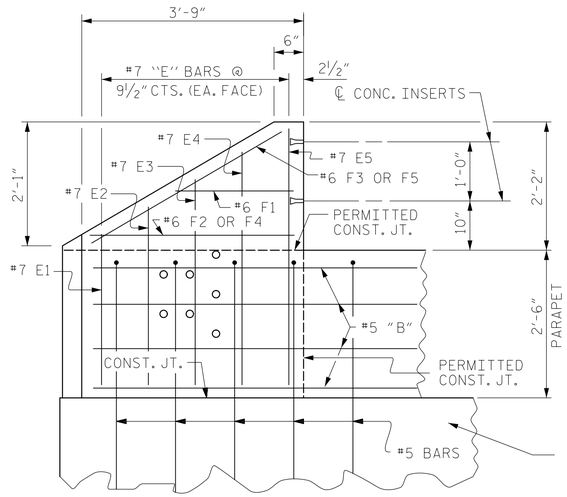
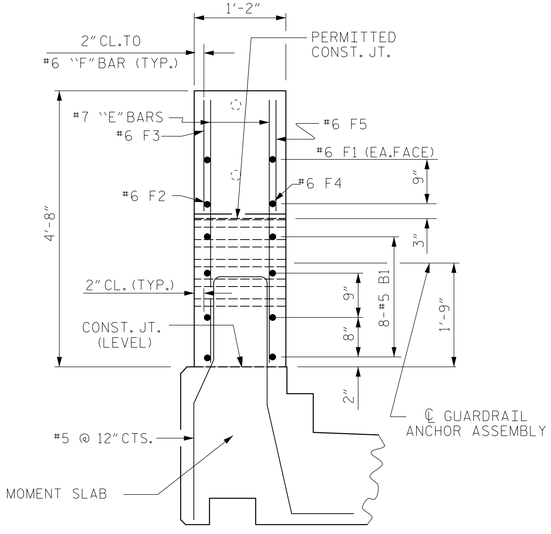


PLAN OF END POST



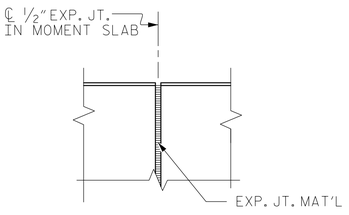
ELEVATION



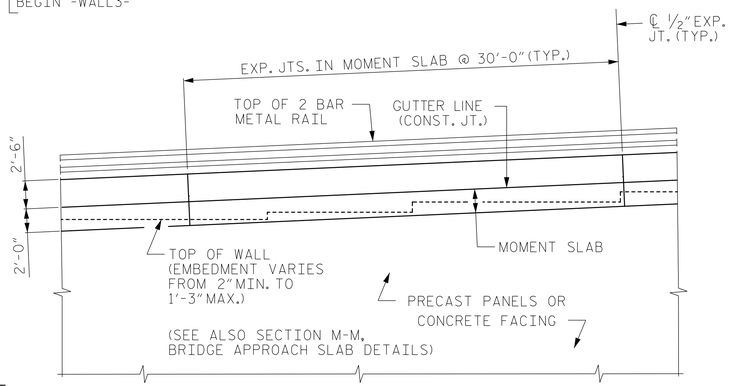
END VIEW

PARAPET AND END POST FOR TWO BAR RAIL

4 END POSTS REQ'D @ :
- BEGIN -WALL1-
- END -WALL1-
- END -WALL2-
- BEGIN -WALL3-



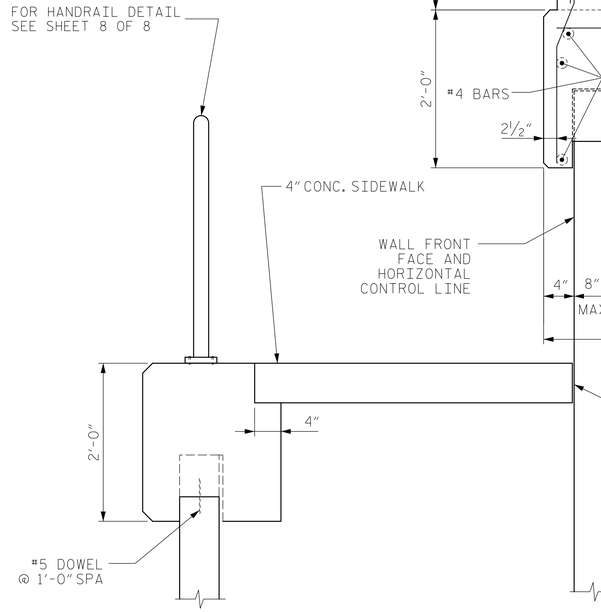
ELEV. @ EXP. JOINTS

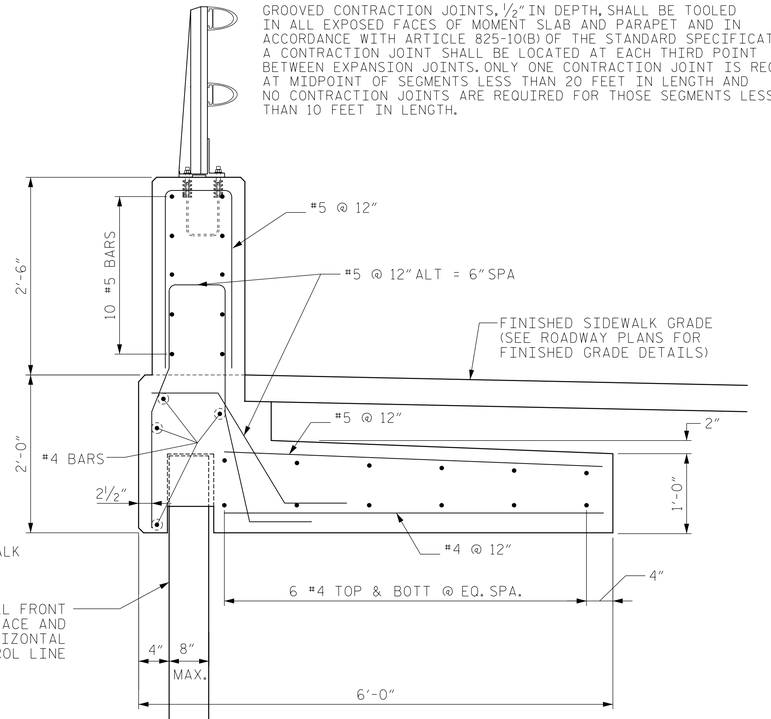


EXPANSION JOINT DETAIL

PARAPET WITH MOMENT SLAB - PARTIAL ELEVATION

1'-2" × 2'-6" CONCRETE PARAPET WITH MOMENT SLAB	
-WALL 1-	533.46 LIN FT
-WALL 2-	128.64 LIN FT
-WALL 3-	341.53 LIN FT
TOTAL PAY LENGTH =	1003.63 LIN FT





2-BAR METAL RAIL WITH MOMENT SLAB

NOTES:

SEE "2 BAR METAL RAIL" STANDARD DRAWINGS FOR METAL RAIL DETAILS.

ALL REINFORCING STEEL IN THE PARAPET AND MOMENT SLAB SHALL BE EPOXY COATED.

EXPANSION JOINTS SHALL BE PLACED IN THE MOMENT SLAB AT A MAXIMUM SPACING OF 30'. SEE SHEET 6 OF 7 FOR JOINT LOCATIONS.

THE 2 BAR METAL RAIL SHALL NOT BE INSTALLED UNTIL THE MOMENT SLAB HAS ATTAINED AN AGE OF THREE CURING DAYS OR A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI. IN ADDITION, NO FILL MATERIAL, ASPHALT, OR CONSTRUCTION EQUIPMENT IS ALLOWED ON THE MOMENT SLAB PRIOR TO SATISFYING THEMINIMUM CONCRETE CURING AND STRENGTH REQUIREMENTS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF MOMENT SLAB AND PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PROJECT NO. U-5008
MECKLENBURG COUNTY
STATION: 20+45.05 -L- P.O.T. =
14+54.24 -Y4- P.O.T.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE PARAPET WITH MOMENT SLAB FOR PRECAST PANELS AND CONCRETE FACING

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

NORTH CAROLINA PROFESSIONAL SEAL 032954 ENGINEER JARED C. MEDLIN
DocuSigned by: Jared C. Medlin 2/19/2015
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-9
1			3			SHEETS
2			4			19

DRAWN BY : R.J. FLORY DATE : 11/13/14
CHECKED BY : R.C. LARSON DATE : 11/14/14

DJD 2/19/2015 Y:\Drawings\2011 DWGS\B11-11 Sugar Creek Rd - NCDOT\Structures\RFC\SH87_U-5008_SD_RW-09.dgn

DGN 0400DEL_P30

NOTES:

1. UTILITIES NOT SHOWN.
2. LOCATION OF ANCHOR BOLTS AND PVC CONDUITS FOR LIGHT POLES SHALL BE COORDINATED WITH DUKE ENERGY COMPANY PRIOR TO PLACEMENT OF THE LIGHT PEDESTAL CONCRETE. DUKE ENERGY COMPANY SHALL SUPPLY THE CONTRACTOR WITH ANCHOR BOLTS FOR THE LIGHT POLES. ANCHOR BOLTS SHALL BE CAST IN PLACE.
3. DUKE ENERGY COMPANY WILL SUPPLY AND INSTALL THE WIRING, POLES AND LIGHTS.
4. FOR DETAILS ON CONDUIT LOCATION, SEE SHEET TITLED "CONDUIT AND JUNCTION BOX DETAILS." AND THE ELECTRICAL CONDUIT SYSTEM SHEETS.
5. CONCRETE FOR THE LIGHT PEDESTAL SHALL BE CLASS AA CONCRETE.
6. ALL ITEMS (INCLUDING, BUT NOT LIMITED TO CONCRETE, PVC CONDUIT, AND LABOR) REQUIRED TO CONSTRUCT THE LIGHT PEDESTAL SHALL BE INCLUDED IN THE UNIT BID PRICE FOR "1'-2" x 2'-6" CONCRETE PARAPET WITH MOMENT SLAB."
7. ELECTRICAL DETAILS SHALL BE SUBMITTED TO THE ENGINEER AT LEAST 60 DAYS PRIOR TO POURING THE MOMENT SLAB.
8. CONTRACTOR MAY PROVIDE CONSTRUCTION JOINTS IN THE PARAPET AS NECESSARY TO FACILITATE SLIP FORMING.
9. CONTRACTOR SHALL INSTALL NON-DETERIORATING "STRINGS" IN ALL CONDUITS PRIOR TO POURING CONCRETE FOR THE PARAPET AND LIGHT PEDESTALS. THESE "STRINGS" WILL FACILITATE THE WIRING INSTALLATION FOR THE OVERHEAD LIGHTS AND FUTURE UTILITES. THE "STRINGS" SHALL BE DIFFERENT COLORS FOR EACH INDIVIDUAL CONDUIT.
10. CONTRACTOR MAY SHIFT REINFORCING STEEL SLIGHTLY TO AVOID INTERFERENCE WITH CONDUIT, ANCHOR BOLTS, AND/OR METAL RAIL ANCHORS.
11. CONTRACTOR SHALL COORDINATE WITH DUKE ENERGY TO HAVE DUKE ENERGY INSTALL AND WIRE THE LIGHTS PRIOR TO INSTALLING 2-BAR METAL RAIL.
12. FOR LIGHT PEDESTAL LOCATIONS, SEE SHEET W-10.

BILL OF MATERIAL

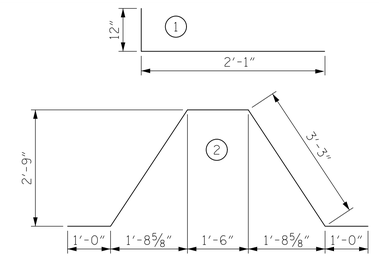
ONE LIGHT PEDESTAL (10 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳C1	9	#5	1	3'-1"	29
✳C2	5	#4	2	10'-0"	33

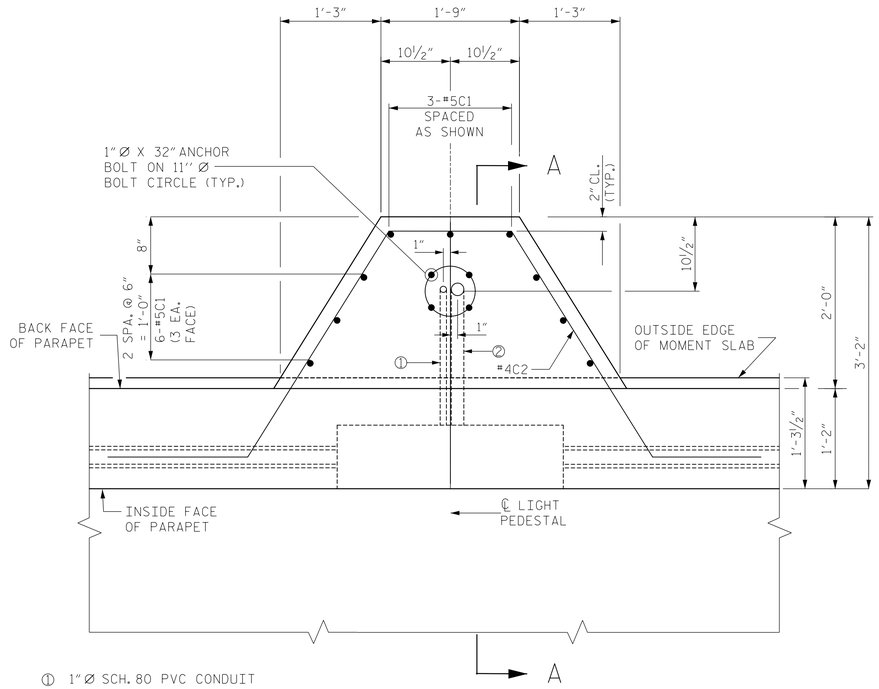
EPOXY COATED REINFORCING STEEL LBS. 62

CLASS AA CONCRETE C.Y. 0.6

BAR TYPES



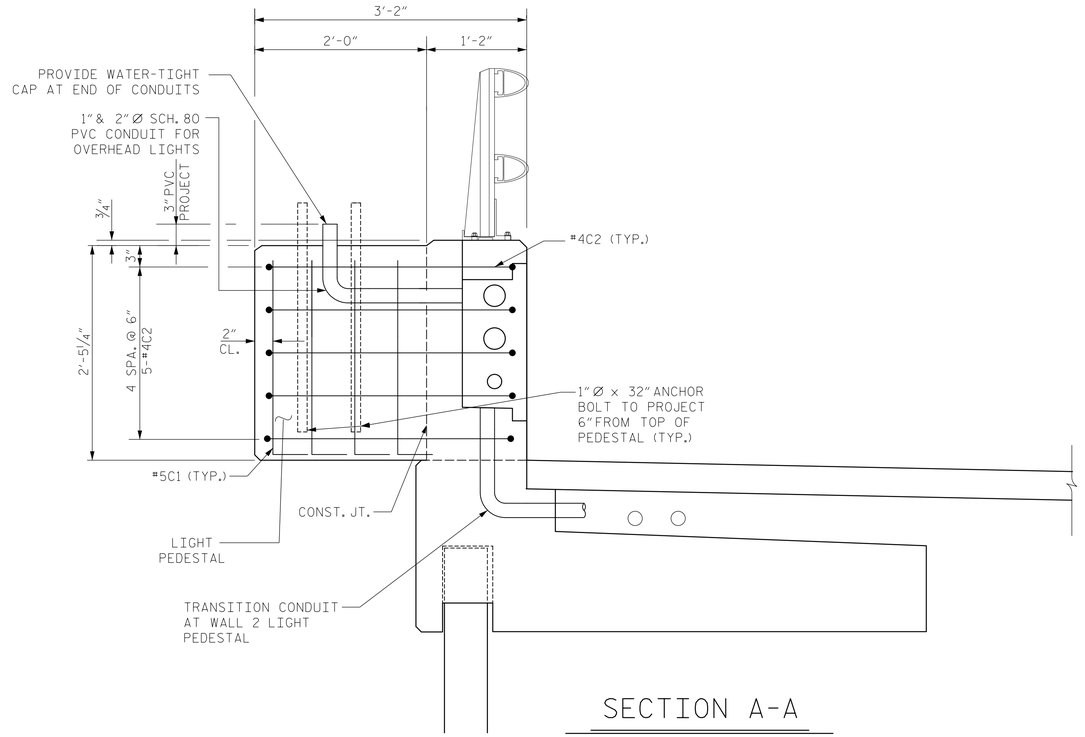
ALL BAR DIMENSIONS ARE OUT TO OUT



① 1" Ø SCH. 80 PVC CONDUIT

② 2" Ø SCH. 80 PVC CONDUIT

PLAN VIEW OF PEDESTAL



SECTION A-A

(PARAPET REINFORCING NOT SHOWN FOR CLARITY.)

PROJECT NO. U-5008

MECKLENBURG COUNTY

STATION: 20+45.05 -L- P.O.T. = 14+54.24 -Y4- P.O.T.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LIGHT PEDESTAL DETAILS

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

NORTH CAROLINA PROFESSIONAL SEAL 032954 ENGINEER HARED C. MEDLIN

DocuSigned by: Jared C. Medlin 2/19/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-9A
1			3			SHEETS
2			4			19

DRAWN BY : J. LOUIS DATE : 10/15/14
CHECKED BY : R. C. LARSON DATE : 10/20/14

DJD 2/19/2015 Y:\Drawings\2011 DWGS\B11-11 Sugar Creek Rd - NCDOT\Structures\RFC\SH87A_U-5008_SD_RW-09A.dgn

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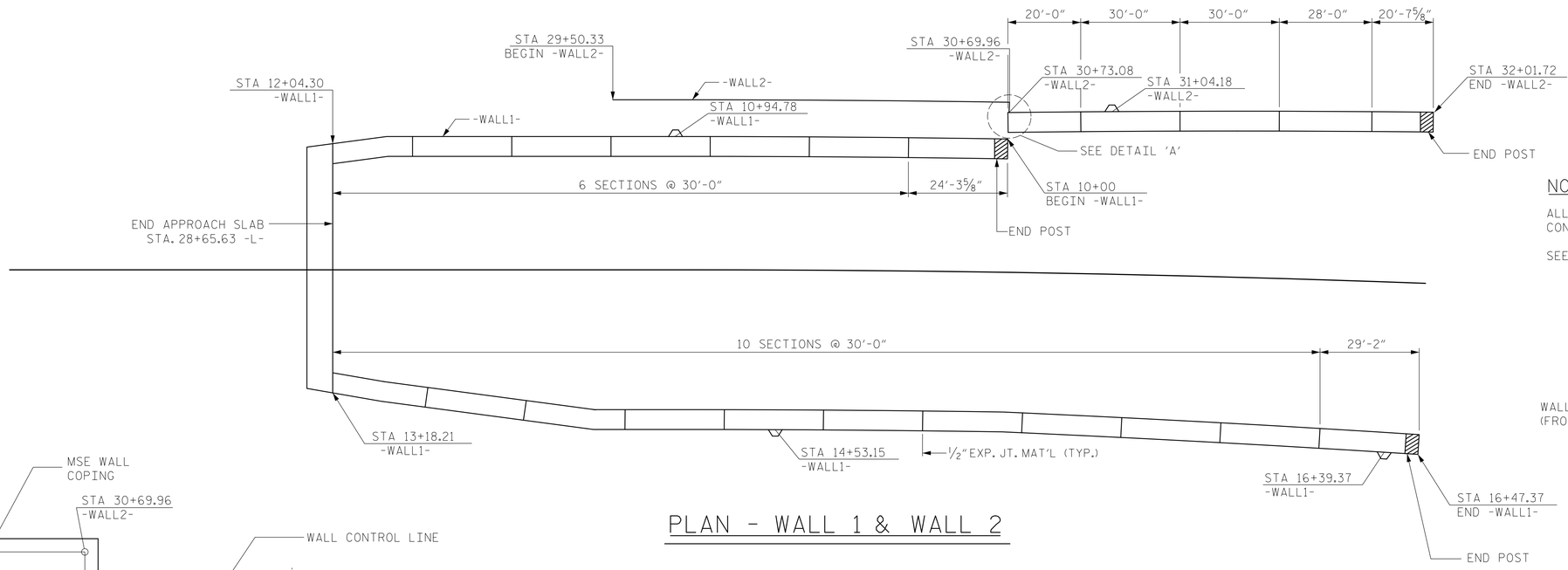
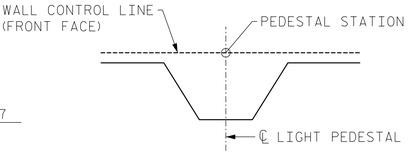


PLAN - WALL 1 & WALL 2

NOTES:

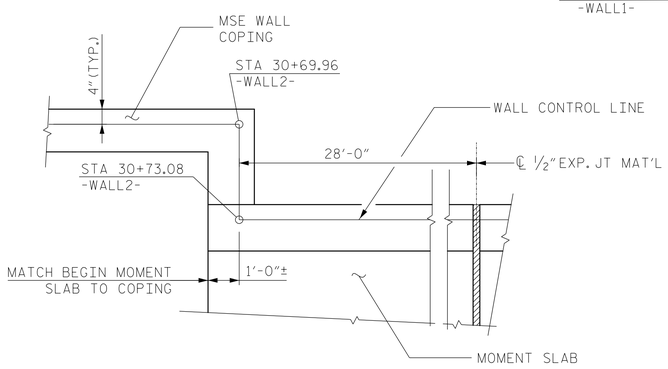
ALL DIMENSIONS ARE ALONG THE WALL HORIZONTAL CONTROL LINE.

SEE ROADWAY PLANS FOR WALL ALIGNMENTS.

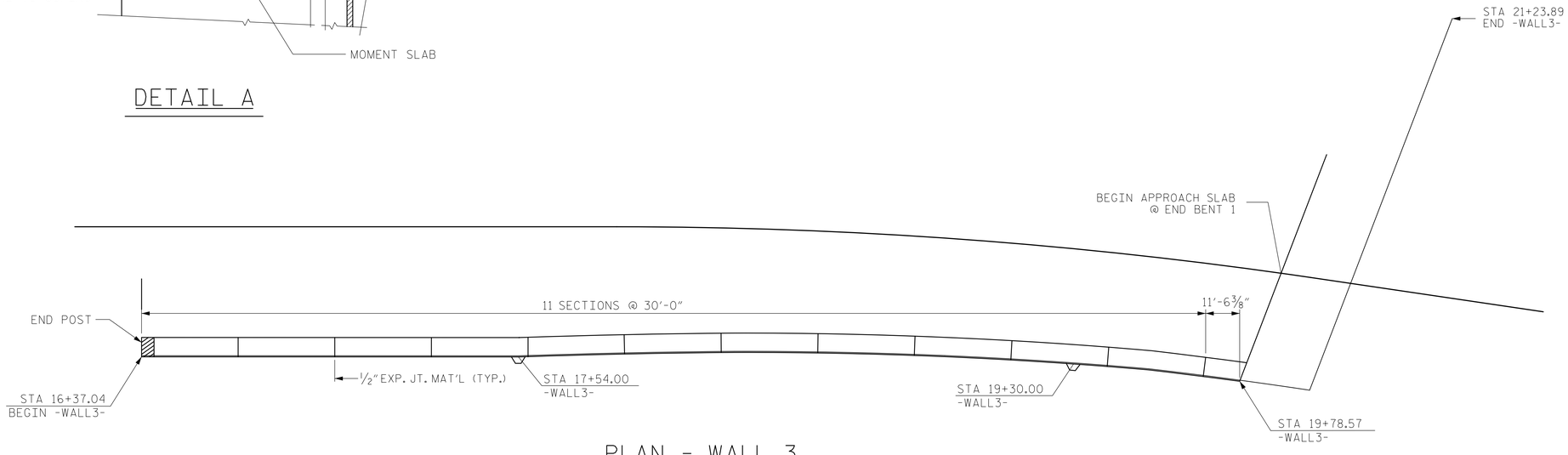


LIGHT PEDESTAL LOCATION DETAIL

(SEE SHEET W-9A FOR PEDESTAL DETAILS)



DETAIL A



PLAN - WALL 3

PROJECT NO. U-5008

MECKLENBURG COUNTY

STATION: 20+45.05 -L- P.O.T. =
14+54.24 -Y4- P.O.T.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN - CONCRETE PARAPET WITH MOMENT SLAB ON MSE RETAINING WALL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-10
1			3			SHEETS
2			4			19

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

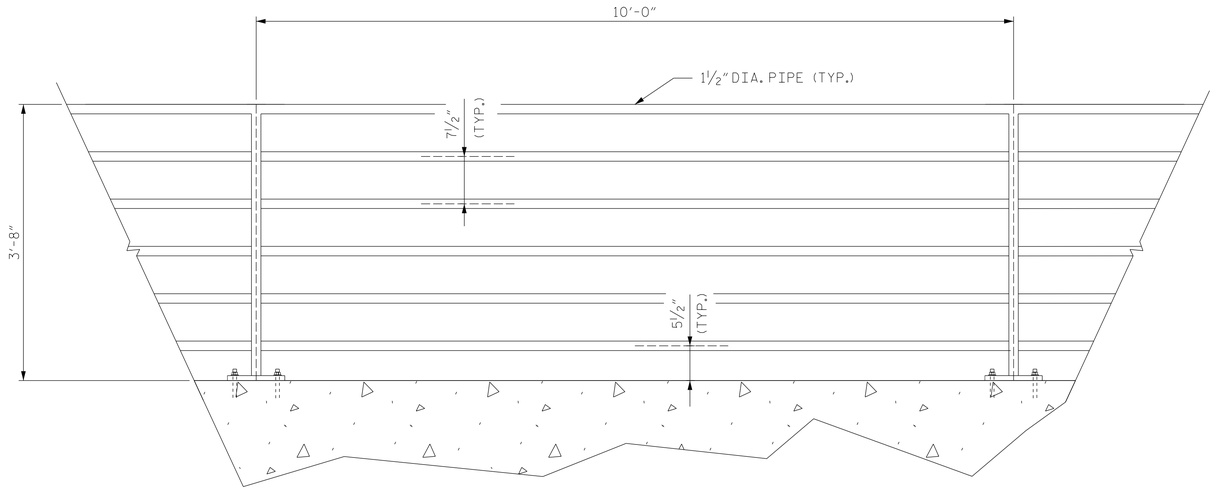
NORTH CAROLINA PROFESSIONAL SEAL 032954 ENGINEER JARED C. MEDLIN

DocuSigned by: Jared C. Medlin 2/19/2015

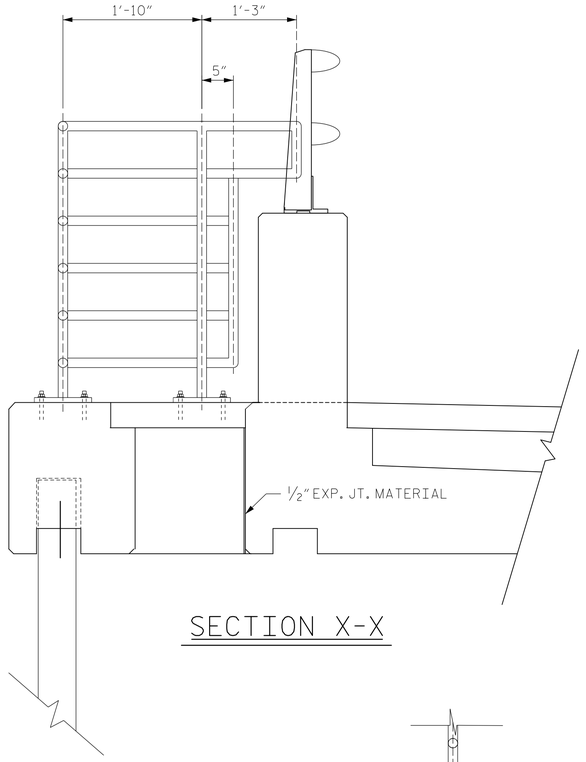
DRAWN BY : E.C. DECOLA DATE : 10/09/14
CHECKED BY : R. C. LARSON DATE : 10/10/14

2/19/2015 Y:\Drawings\2011 DWGS\B11-11 Sugar Creek Rd - NCDOT\Structures\RFC\SH88_U-5008_SD_RW-10.dgn DJD

DGN 0400DEL_P30



ELEVATION OF HANDRAIL



SECTION X-X

NOTES:

CONSTRUCT THE PROPOSED STEEL PIPE RAIL OF 1½" DIAMETER SCHEDULE 40 PLAN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A 53. USE ASTM A-36 STEEL FOR THE BASE PLATES.

REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.

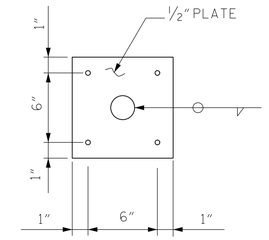
PAINT, IF REQUIRED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 1080 OF THE STANDARD SPECIFICATIONS.

CENTER THE PROPOSED RAILING ON TOP OF THE WALL COPING.

WELD AS NEEDED IN ACCORDANCE WITH ARTICLE 1072-18 OF THE STANDARD SPECIFICATIONS.

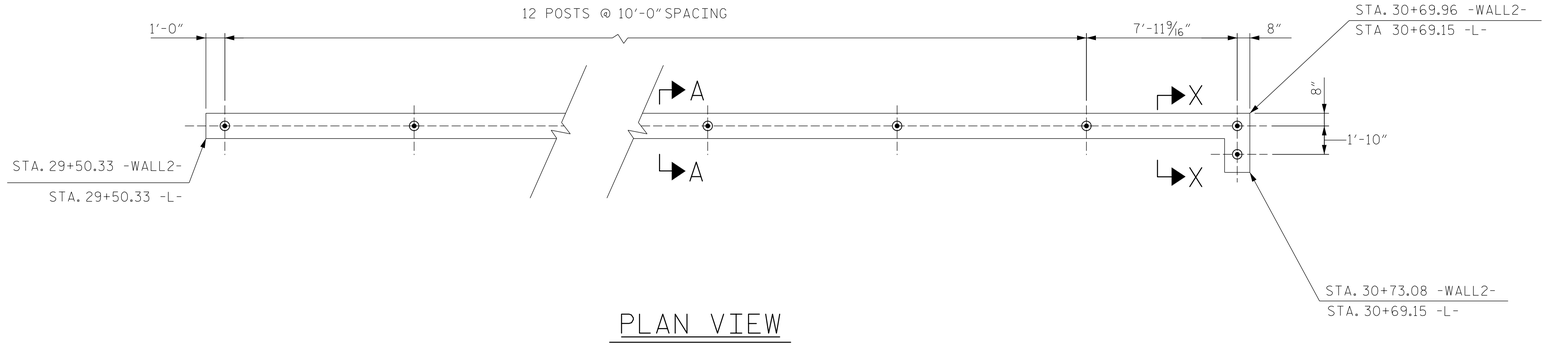
PROVIDE ADHESIVE ANCHOR BOLTS WITH A WORKING LOAD TENSION CAPACITY OF 1850 LBS AFTER INCLUDING REDUCTION FACTORS FOR EDGE DISTANCE AND SPACING PER MANUFACTURER'S RECOMMENDATIONS.

NO FIELD TESTING OF ANCHORS REQUIRED.

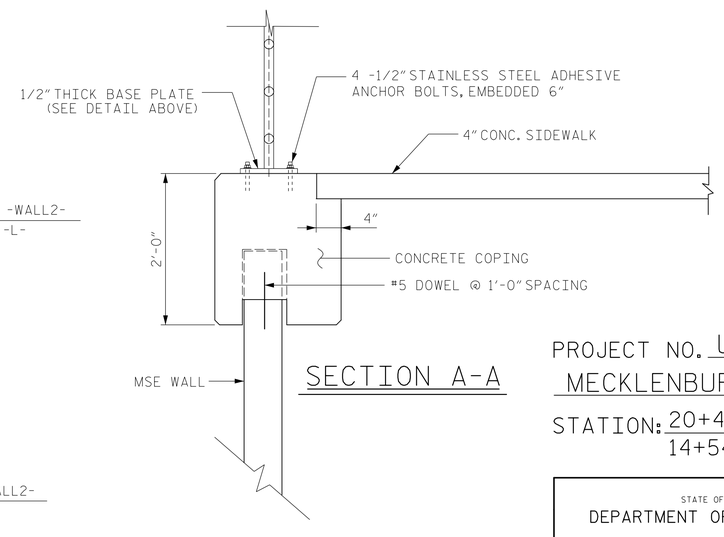


BASE PLATE DETAIL

1½" GALVANIZED STEEL PIPE RAIL
PAY LENGTH = 119.79 LIN FT



PLAN VIEW



SECTION A-A

PROJECT NO. U-5008

MECKLENBURG COUNTY

STATION: 20+45.05 -L- P.O.T. = 14+54.24 -Y4- P.O.T.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MSE RETAINING WALL HANDRAIL

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

NORTH CAROLINA PROFESSIONAL SEAL 032954 ENGINEER JARED C. MEDLIN

DocuSigned by: Jared C. Medlin 2/19/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-11
1			3			SHEETS
2			4			19

DRAWN BY : E. C. DECOLA DATE : 10/06/2014
CHECKED BY : R. C. LARSON DATE : 10/07/2014

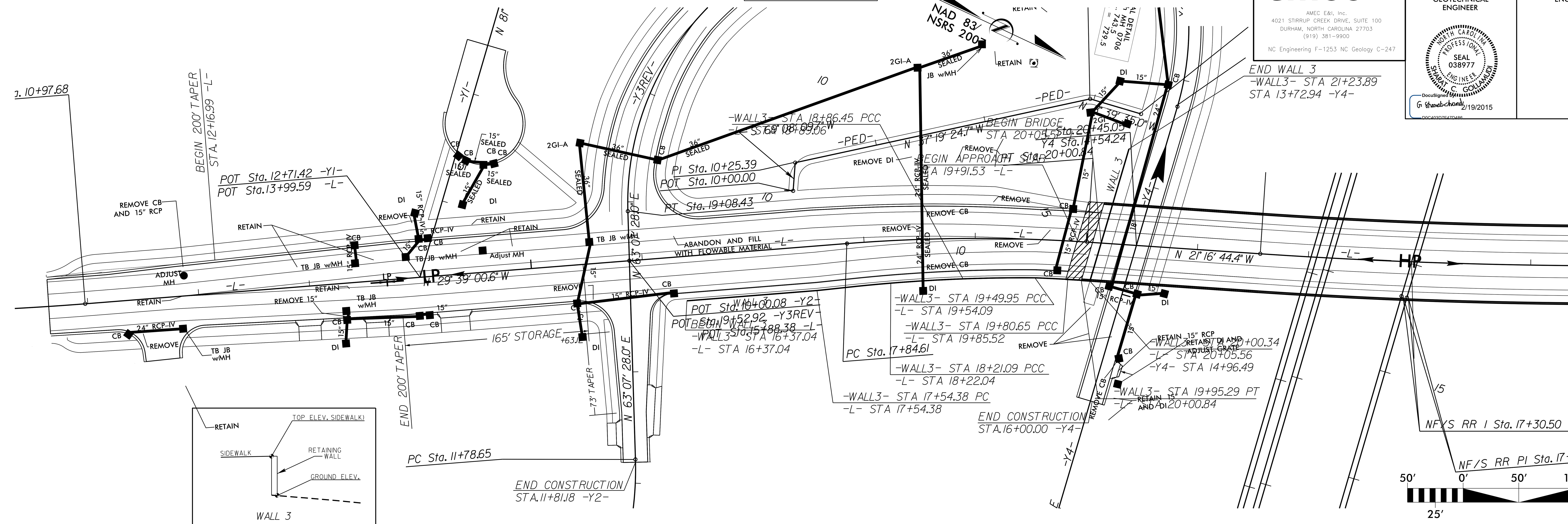
DJD 2/19/2015 Y:\Drawings\2011 DWGS\B11-11 Sugar Creek Rd - NCDOT\Structures\RFC\SHEET\SHEET.dgn

0400DEL-P30

DCN

amec
AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900
NC Engineering F-1253 NC Geology C-247
GEOTECHNICAL ENGINEER
ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 038977 ENGINEER
2/19/2015

WALL 3



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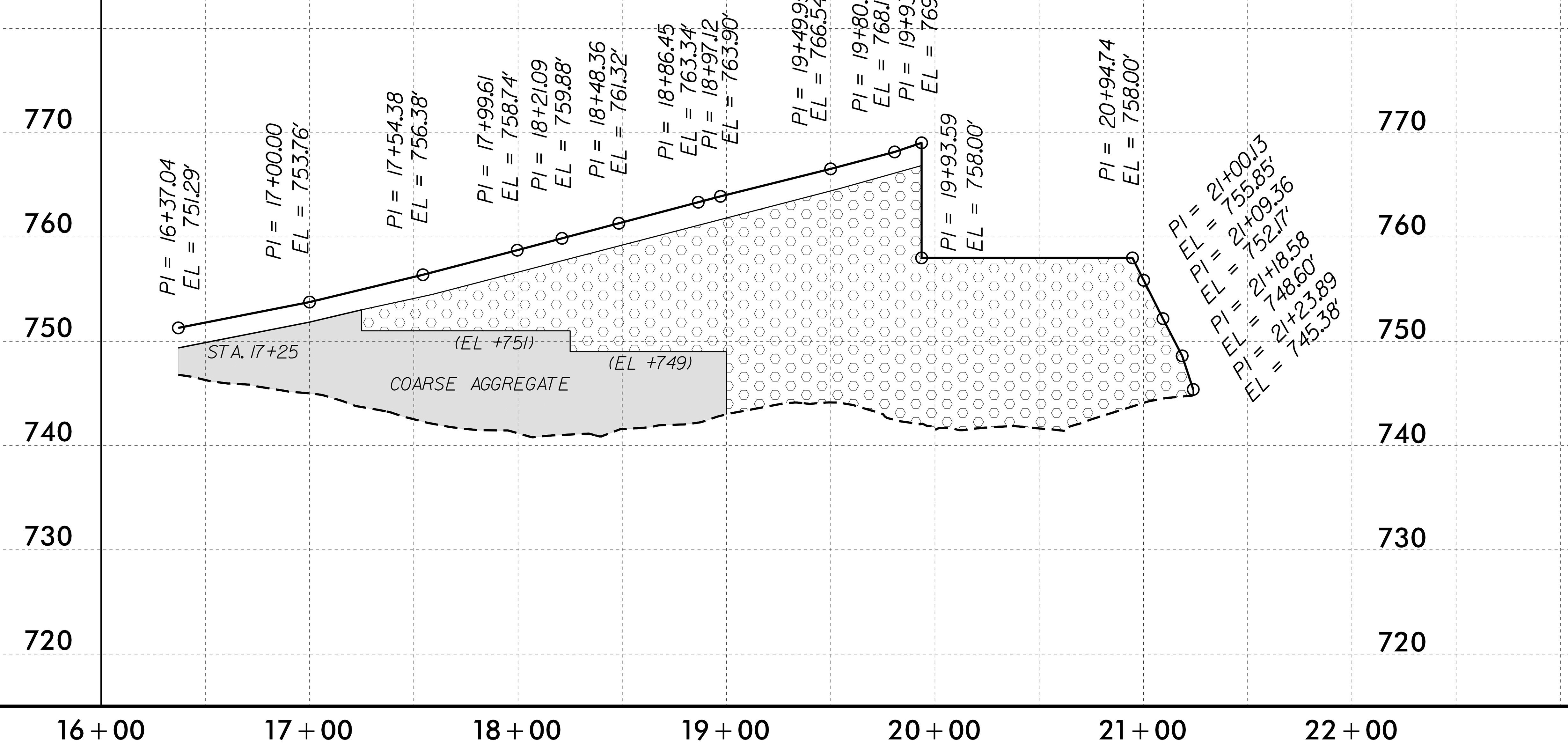


LIGHTWEIGHT AGGREGATE IN MSE WALL REINFORCED ZONE

FROM -L- STATION 19+00 TO -L- STATION 20+05 LIGHTWEIGHT AGGREGATE SHALL BE PLACED FROM THE ELEVATION OF THE TOP OF LEVELING PAD

STATION (-WALL3-)	OFFSET
16+37.04	39.9584' -L-
17+54.38	39.9584' -L-
18+21.09	38.0973' -L-
18+86.45	36.2547' -L-
19+49.95	34.4584' -L-
19+80.65	34.4584' -L-
19+95.29	34.4584' -L-
20+00.34	34.4584' -L-
21+23.89	31.0000' -Y4-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038977 SHARAT C. GOLLANDI

2/19/2015

NOTES:

LIGHTWEIGHT AGGREGATE IN EMBANKMENT ZONE (ROADWAY PAY ITEM)

LIGHTWEIGHT AGGREGATE IN MSE REINFORCED ZONE

LIMIT OF LIGHTWEIGHT AGGREGATE IN THE REINFORCED ZONE IS BASED ON REINFORCEMENT LENGTH (L) = 1.1 X H TO SATISFY GLOBAL STABILITY.

H = DESIGN HEIGHT + EMBEDMENT

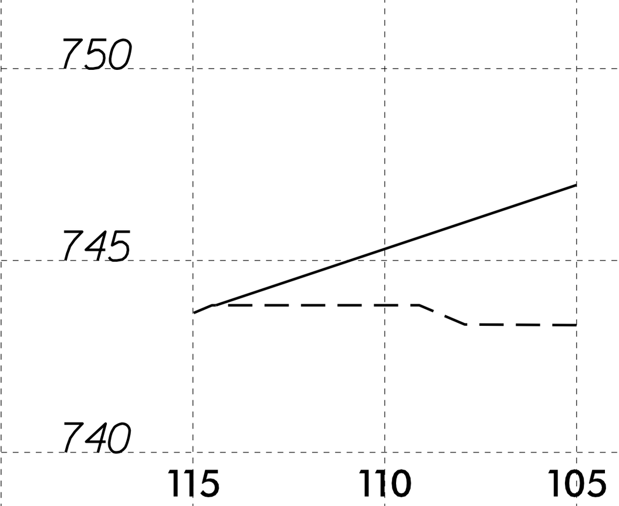
-DESIGN HEIGHT IS THE EXPOSED WALL HEIGHT ABOVE THE FINISHED GRADE

REINFORCEMENT LENGTH (L) AND LIGHTWEIGHT AGGREGATE LIMIT SHALL BE INCREASED AS NEEDED TO MEET INTERNAL STABILITY REQUIREMENTS.

LEVELING PAD EMBEDMENT FROM FINISHED GRADE TO THE TOP OF LEVELING PAD SHALL BE GREATER OF H/10 OR 2 FEET.

FILL WITHIN THE MSE RETAINING WALL No.3 REINFORCED ZONE AND BACKFILL WITHIN THE EMBANKMENT IMMEDIATELY BEHIND THE MSE WALL SHALL BE PLACED IN LIFTS CONCURRENTLY.

LIGHTWEIGHT AGGREGATE WITHIN THE EMBANKMENT SHALL BE CONSTRUCTED FOLLOWING THE LINES AND GRADES AS SHOWN ON THE DRAWINGS.



17+50.00

BEGIN LIGHTWEIGHT AGGREGATE IN EMBANKMENT STA.17+25

BEGIN LIGHTWEIGHT AGGREGATE IN MSE REINFORCED ZONE STA.17+25

17+50.00

-WALL3-

DGN 0400DEL-P30 8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-5008	W-14

0 2.5 5

NOTES:

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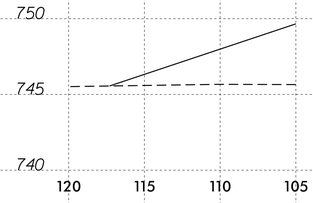
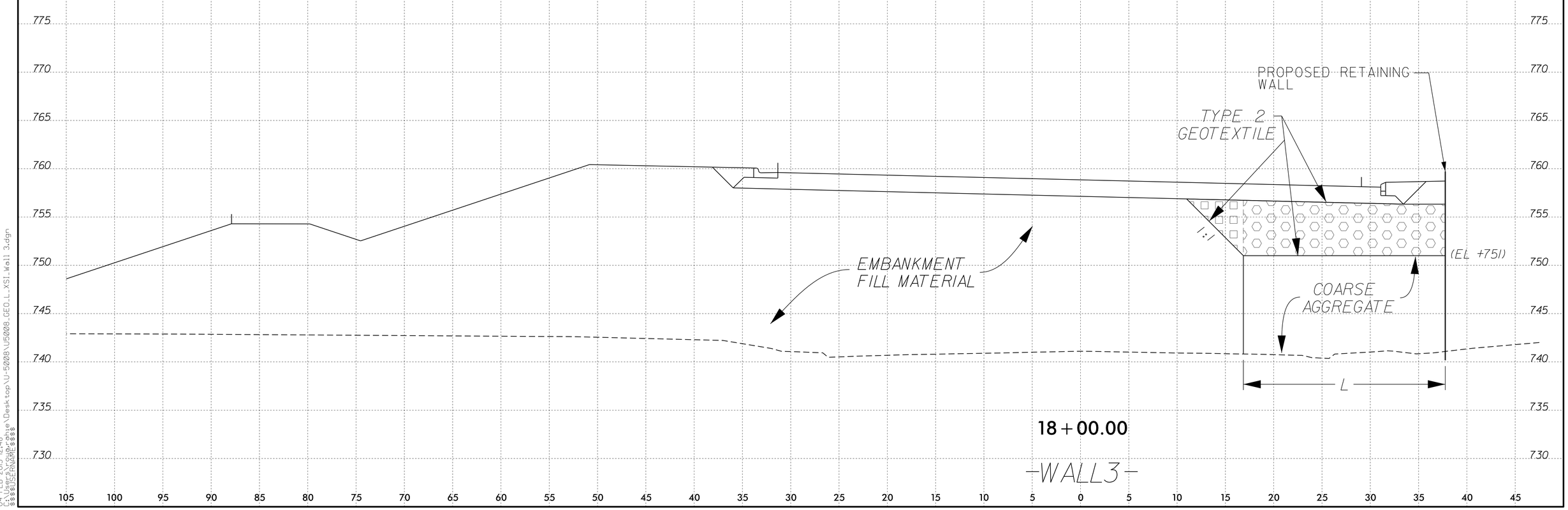
SEAL 038977 NORTH CAROLINA PROFESSIONAL ENGINEER SHAWN C. GOLLMAR
DocuSigned by: G Shawn Chand 2/19/2015
DOC46307DE4774486



18+00.00



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DGN 0400DEL-P30 8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-5008	W-15

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038977 SHARON G. GOLLMAR
DocuSigned by: G Gollmar 2/19/2015
DOC403D7F47D486

NOTES:

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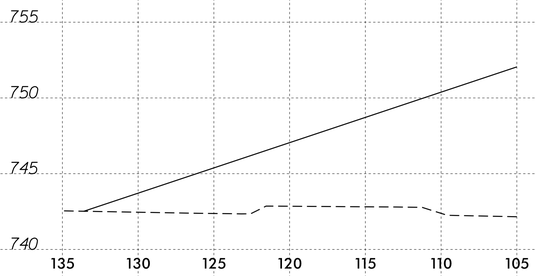

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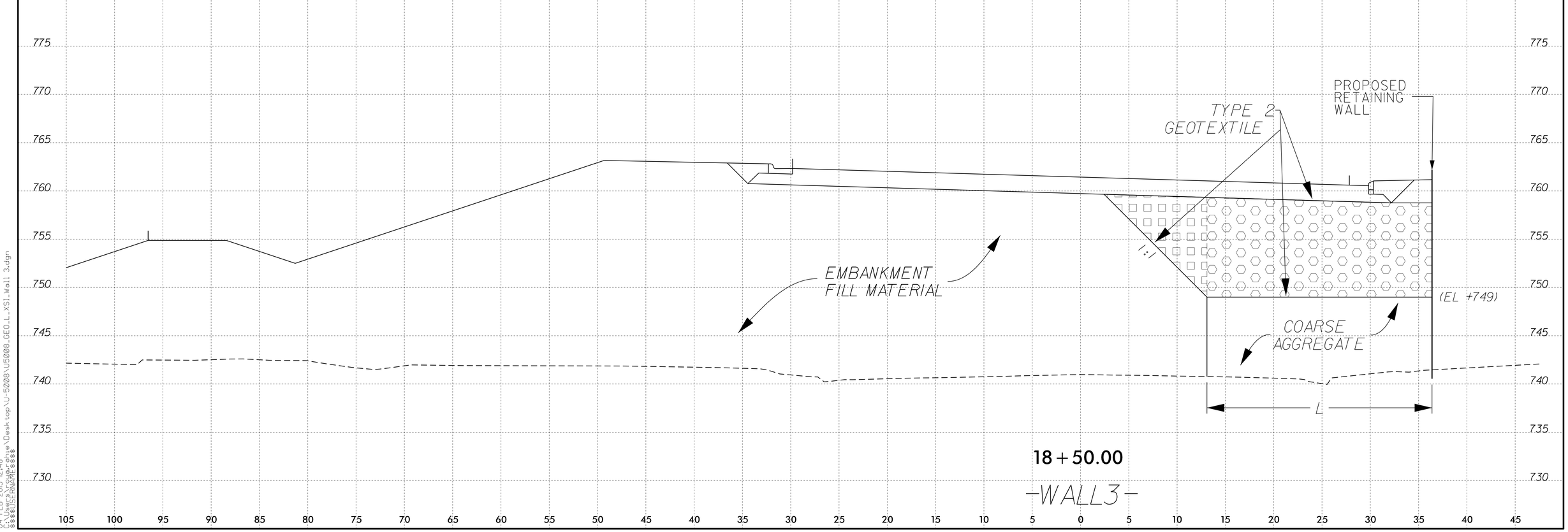

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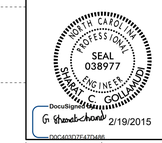
	U-5008	W-16



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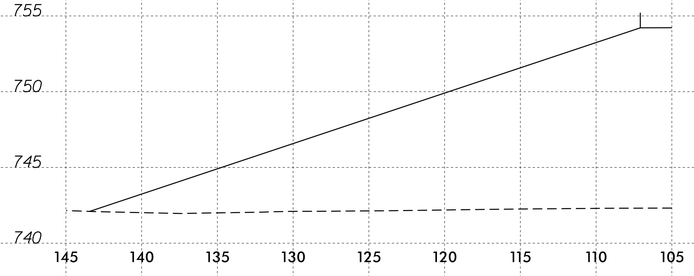

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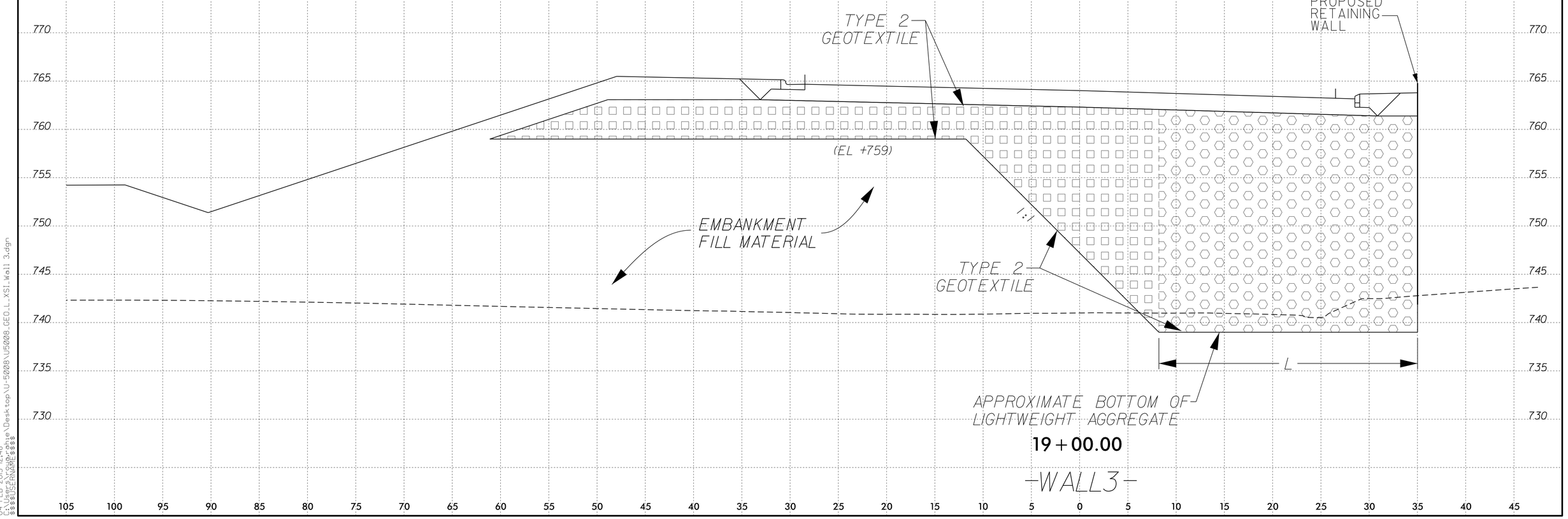

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DGN 0400DEL-P30 8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-5008	W-17

0 2.5 5

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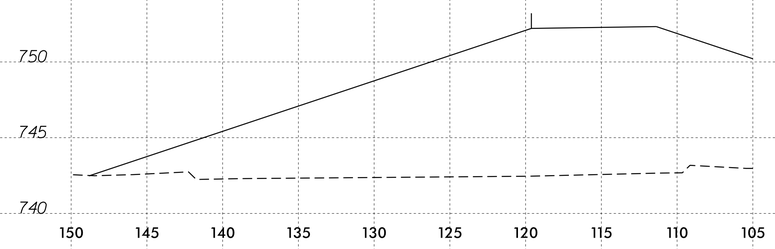

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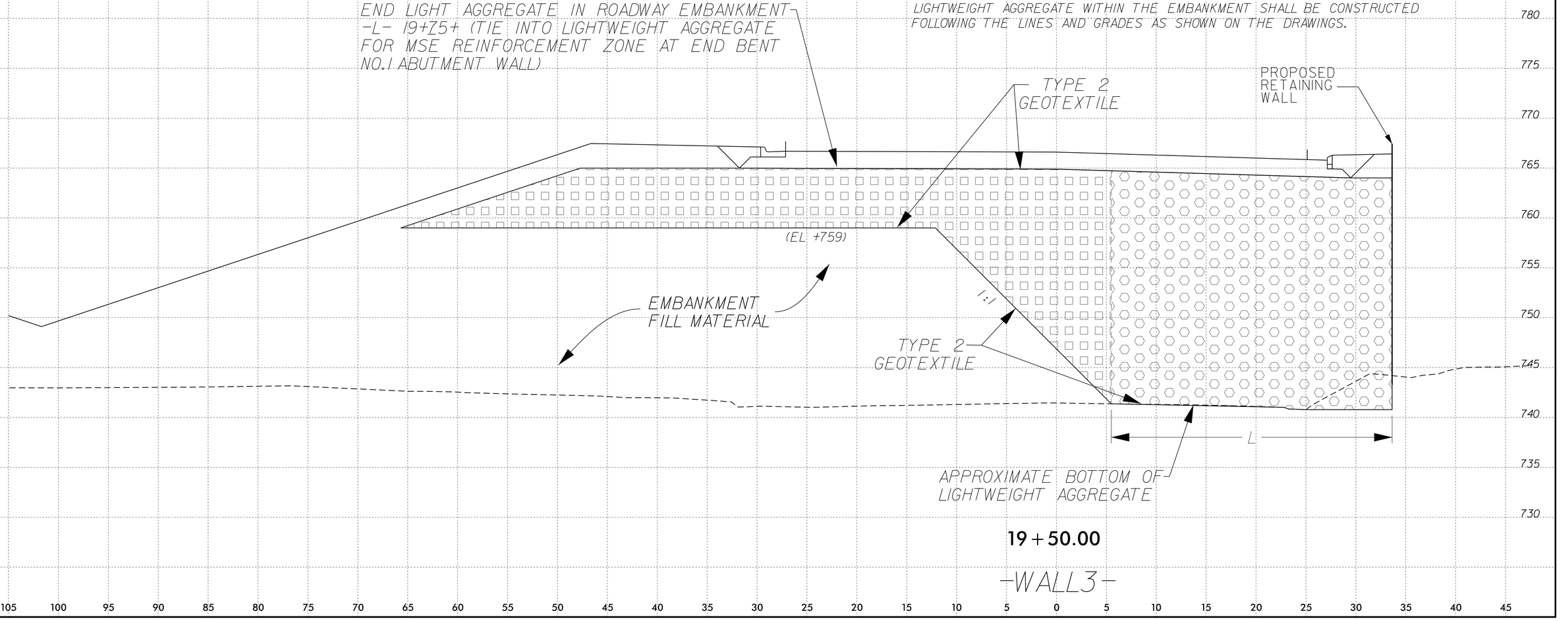

19+50.00

-WALL3-

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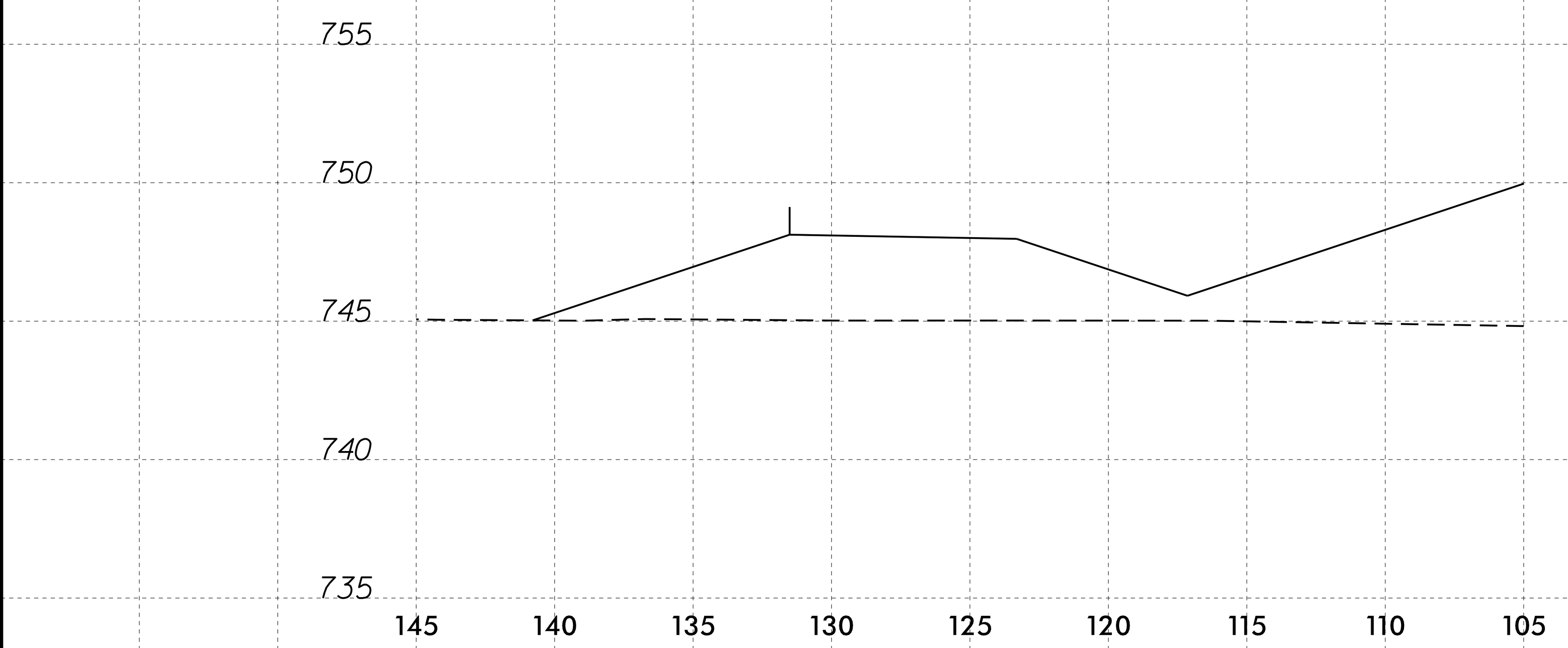
SEAL 038977 NORTH CAROLINA PROFESSIONAL ENGINEER STUART C. GOLLANDI

DocuSigned by: 2/19/2015



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NOTES:

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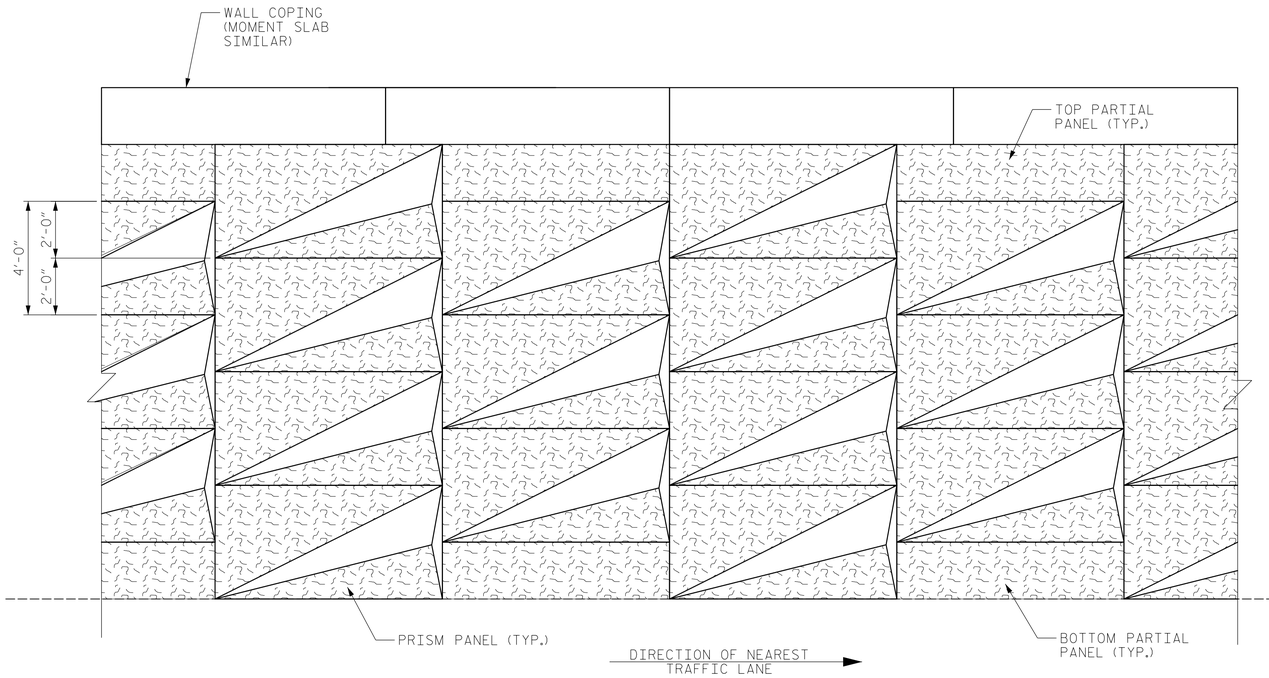
-WALL3-

DGN 0400DEL_P30



PARTIAL WALL ELEVATION

FRACTURED GRANITE FORMLINER

SMOOTH SURFACE FINISH

NOTES:

FOR ARCHITECTURAL CONCRETE SURFACE TREATMENT, SEE SPECIAL PROVISIONS.

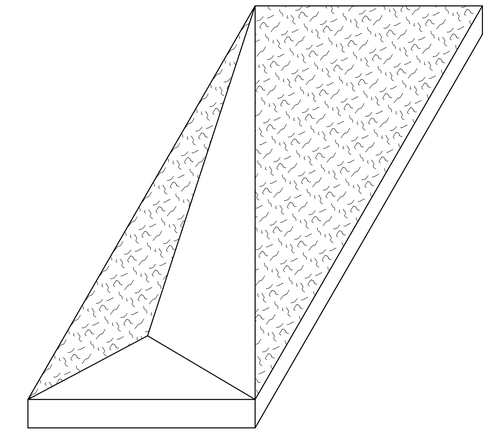
FORMLINER SHALL BE A FRACTURED GRANITE PATTERN WITH A MINIMUM RELIEF OF 0.375". FORMLINER PATTERN SHALL BE CONTINOUS FOR EACH PANEL.

FORMLINER PATTERN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

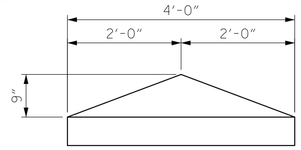
PANELS SHALL JOINTS SHALL BE BE ALIGNED VERTICALLY.

PARTIAL PANELS SHALL NOT HAVE THE PRISM PATTERN, BUT SHALL BE FLAT WITH THE FRACTURED GRANITE FORMLINER. PARTIAL PANEL SHALL BE DEFINED AS A PANEL FOR WHICH THE VERTICAL OR HORIZONTAL DIMENSION IS LESS THAN THE SPECIFIED DIMENSION.

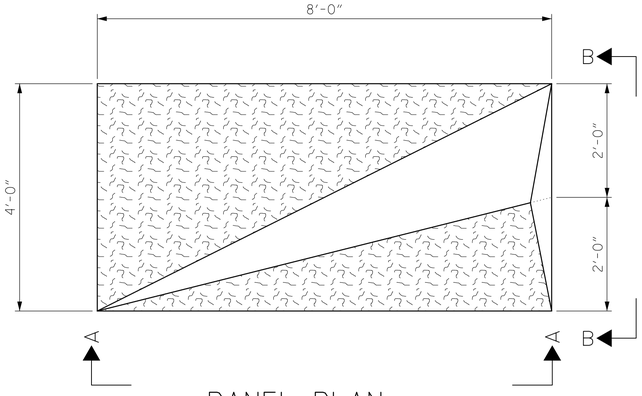
PANEL COLOR SHALL BE NATURAL CONCRETE COLOR, AND PANELS SHALL BE CONSISTENT IN COLOR.



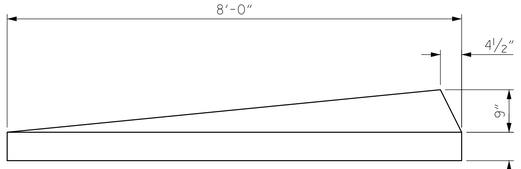
PANEL ISOMETRIC VIEW



VIEW B-B



PANEL PLAN



VIEW A-A

PROJECT NO. U-5008

MECKLENBURG COUNTY

STATION: 20+45.05 -L- P.O.T. =
14+54.24 -Y4- P.O.T.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WALL AESTHETIC DETAILS

KCI ASSOCIATES OF NC, P.A.
9741 SOUTHERN PINE BLVD
SUITE J
CHARLOTTE, NC 28273
704-499-9452
NC LICENSE No. C-0764

NORTH CAROLINA PROFESSIONAL SEAL 032954 ENGINEER JARED C. MEDLIN
DocuSigned by: Jared C. Medlin 2/19/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	W-19
1			3			SHEETS
2			4			19

DRAWN BY : J.C. MEDLIN DATE : JAN. 2015
CHECKED BY : J.D.FITZMORRIS DATE : JAN. 2015

DJD 2/19/2015 Y:\Drawings\2011 DWGS\811-11 Sugar Creek Rd - NCDOT\Structures\RFC\SH97_U-5008_SD_RW-19.dgn

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

REV. 6-16-95 EEM (c) RGW REV. 5-7-03 RWW (c) JTE REV. 10-1-11 MAA (c) GM
REV. 8-16-99 RWW (c) LES REV. 5-1-06 TLA (c) GM

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