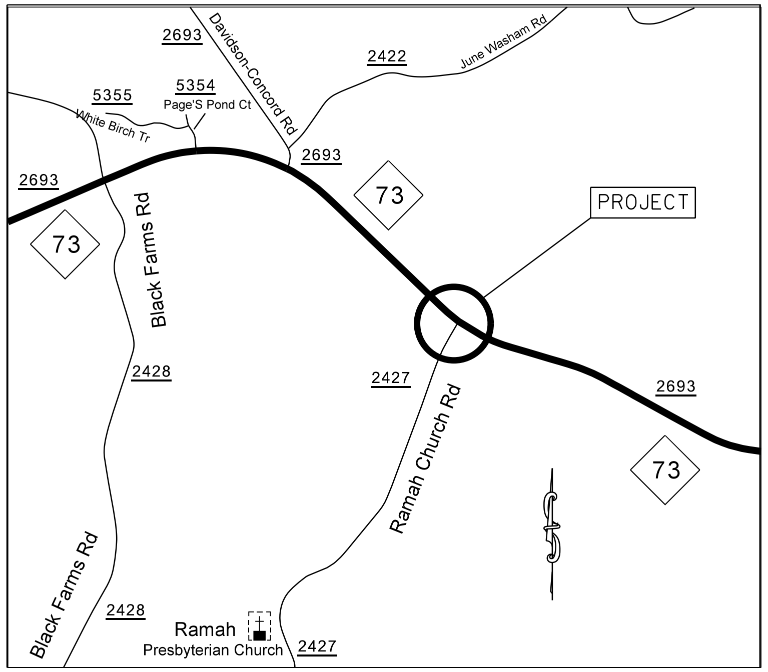
PROJECT: 50138.3.167 TIP: W-5601FJ

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	50138.3.167	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
50138.1.167	HSIP-0073(044)	P.E.
50138.2.167	HSIP-0073(044)	R/W
50138.3.167	HSIP-0073(044)	CONST.

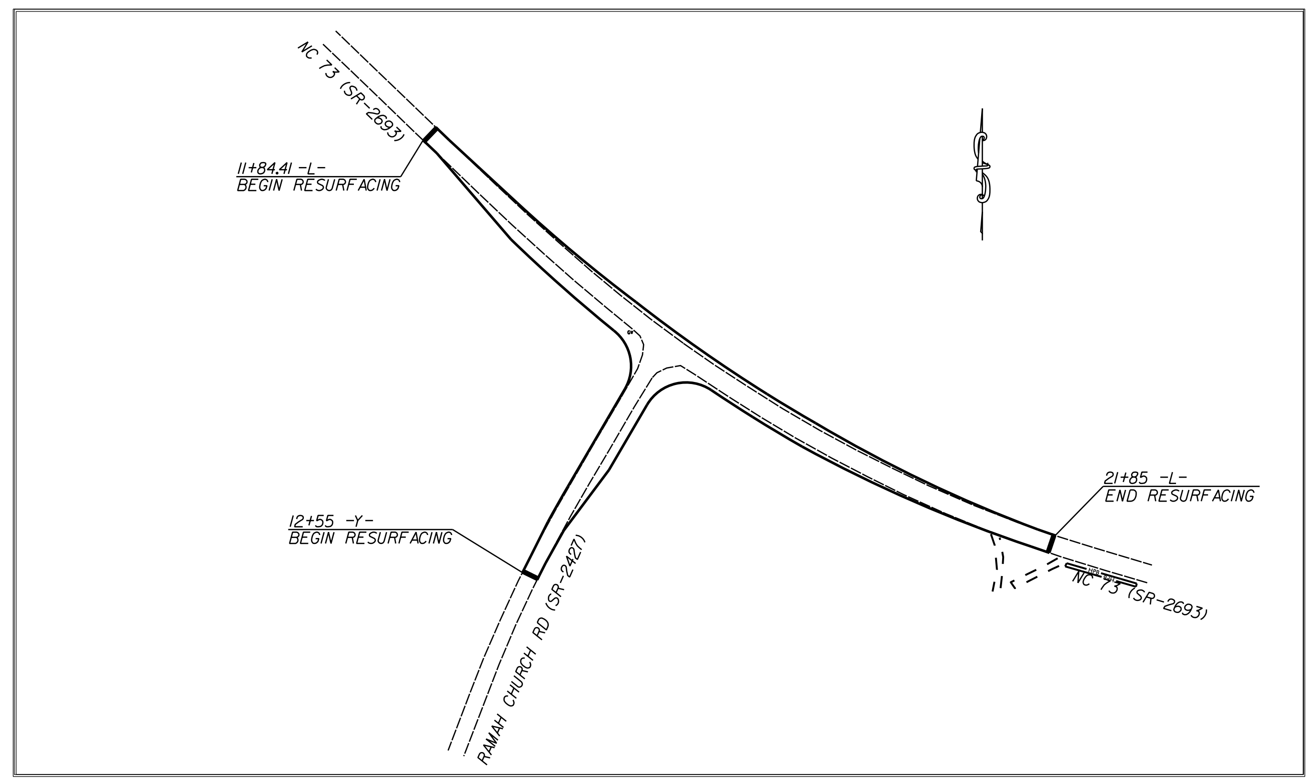
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
MECKLENBURG COUNTY



VICINITY MAP NOT TO SCALE

LOCATION: *INTERSECTION OF NC 73 AND RAMAH CHURCH ROAD (SR-2427)*

TYPE OF WORK: *GRADING, PAVING, MILLING, DRAINAGE, THERMOPLASTIC PAVEMENT MARKING, AND TRAFFIC SIGNAL.*



CLEARING ON THIS PROJECT SHALL BE TO THE LIMITS ESTABLISHED BY METHOD II AS DESCRIBED IN THE NCDOT STANDARD DRAWINGS

GRAPHIC SCALES

0 50 100
PLANS

0 50 100
PROFILE (HORIZONTAL)

0 5 10
PROFILE (VERTICAL)

DESIGN DATA

ADT =
ADT =
DHV = %
D = %
T = %
V = MPH

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT	50138.3.167	=	0.25	MILES
TOTAL LENGTH OF STATE PROJECT	50138.3.167	=	0.25	MILES

Prepared in the Office of:

DIVISION OF HIGHWAYS
DIVISION TEN
DIVISION DESIGN / CONSTRUCT UNIT

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

DONALD GRIFFITH
PROJECT ENGINEER

DONALD HARWARD
PROJECT DESIGN ENGINEER

DIVISION OF HIGHWAYS — DIVISION 10 — STATE OF NORTH CAROLINA — DEPARTMENT OF TRANSPORTATION — DIVISION DESIGN CONSTRUCT UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER SEAN MICHAEL EPPERSON

DocuSigned by:
A92E75CC0FFB43B...
SIGNATURE

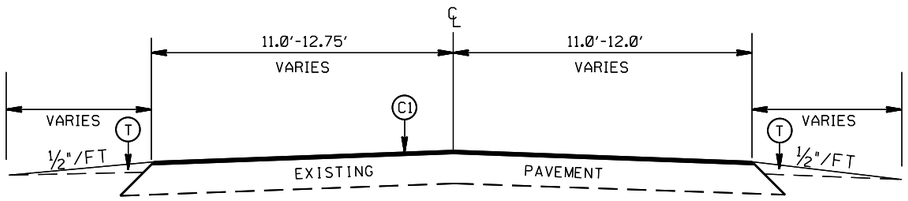
13-JUN-2018 15:19

PROJECT NO.	SHEET NO.
50138.3.167	2
F.A. PROJECT NO. HSIP-0073(044)	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER JENNY MICHAEL EMERSON

DocuSigned by:



TYPICAL SECTION NO. 1

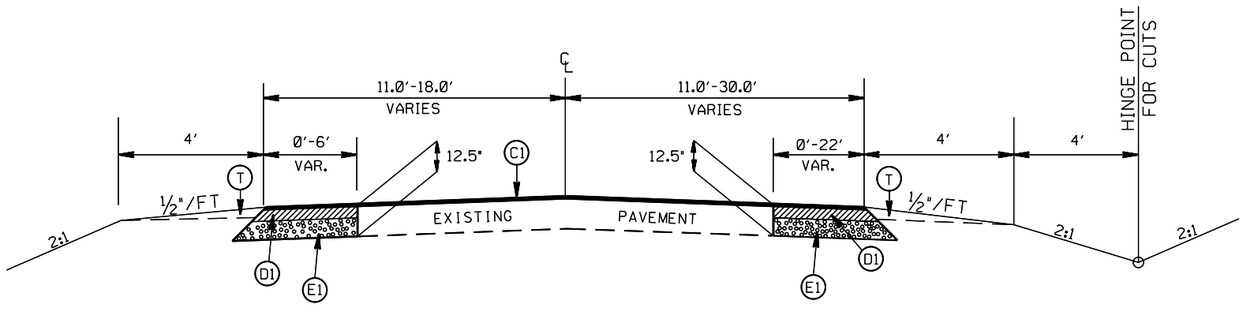
STA. 11+84.41 TO 12+09.41 -L-

STA. 21+60.00 TO 21+85.00 -L-

STA. 12+55.00 TO 12+80.00 -Y-

PAVEMENT SCHEDULE

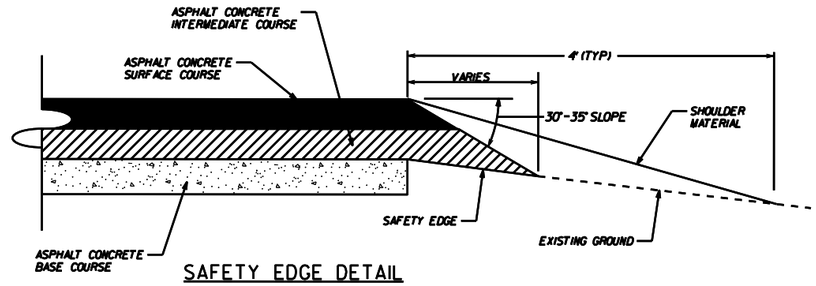
C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 3" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E1	PROP. APPROX. 8.0" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
T	EARTH MATERIAL



TYPICAL SECTION NO. 2

STA. 12+09.41 TO 21+60.00 -L-

STA. 12+80.00 TO 15+85.00 -Y-



SAFETY EDGE DETAIL

TURN LANES AT NC 73 (SR-2693) AND RAMAH CHURCH RD. (SR-2427)

SCALE	1"=50'
DATE	4-2018
DWG. BY	JDH
DESIGN BY	JDH
APPROVED	DCG

REVISIONS	

COMPUTED BY: TBL	DATE: 8-30-2016
CHECKED BY: JDH	DATE: 6-13-2018

PROJECT REFERENCE NO.	SHEET NO.
50138.3J67	3

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, or HDPE) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
21+15 -L-	RT	401								20'									
15+68 -Y-	CL	402			761.91	760.07													
TOTAL										20'									

STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"
21+15 -L-																						
15+68 -Y-																	92'					
TOTAL																	92'					

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET		G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
21+15 -L-																												DRIVEWAY PIPE
15+68 -Y-																												
TOTAL																												

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

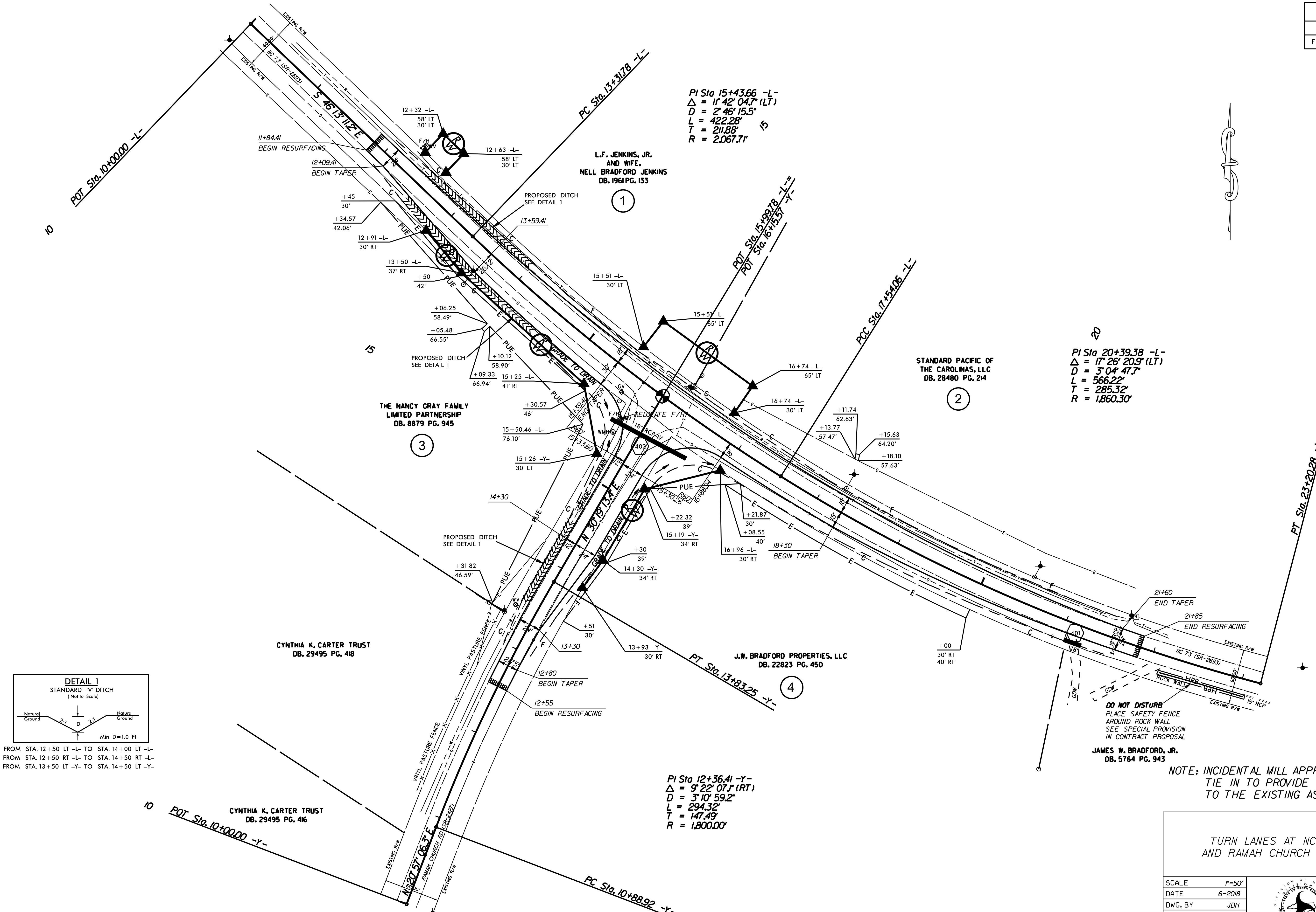
RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING	TEMP. CONST. EASE.	AERIAL UTILITY EASE.	PERM. UTILITY EASE.	DUAL USE EASE.
1	L.F.JENKINS,JR.& WIFE,NELL BRADFORD JENKINS		0.055 AC				613 SF	
2	STANDARD PACIFIC OF THE CAROLINAS,LLC		0.044 AC				25 SF	
3	THE NANCY GRAY FAMILY LIMITED PARTNERSHIP		0.078 AC		1294 SF		8625 SF	
4	JW BRADFORD PROPERTIES		0.059 AC		3642 SF		810 SF	

PROJECT NO.	SHEET NO.
50138.1.167	4
F.A. PROJECT NO.	HSIP-0073(044)

ROADWAY DESIGN ENGINEER

SEAL 034357 — NORTH CAROLINA PROFESSIONAL ENGINEER — SEAN MICHAEL EPPERSON



FROM STA. 12+50 LT -L- TO STA. 14+00 LT -L-
FROM STA. 12+50 RT -L- TO STA. 14+50 RT -L-
FROM STA. 13+50 LT -Y- TO STA. 14+50 LT -Y-

NOTE: INCIDENTAL MILL APPROX.25' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT.

TURN LANES AT NC 73 (SR-2693) AND RAMAH CHURCH ROAD (SR-2427)

SCALE	1"=50'
DATE	6-2018
DWG. BY	JDH
DESIGN BY	JDH
APPROVED	DCG

REVISIONS

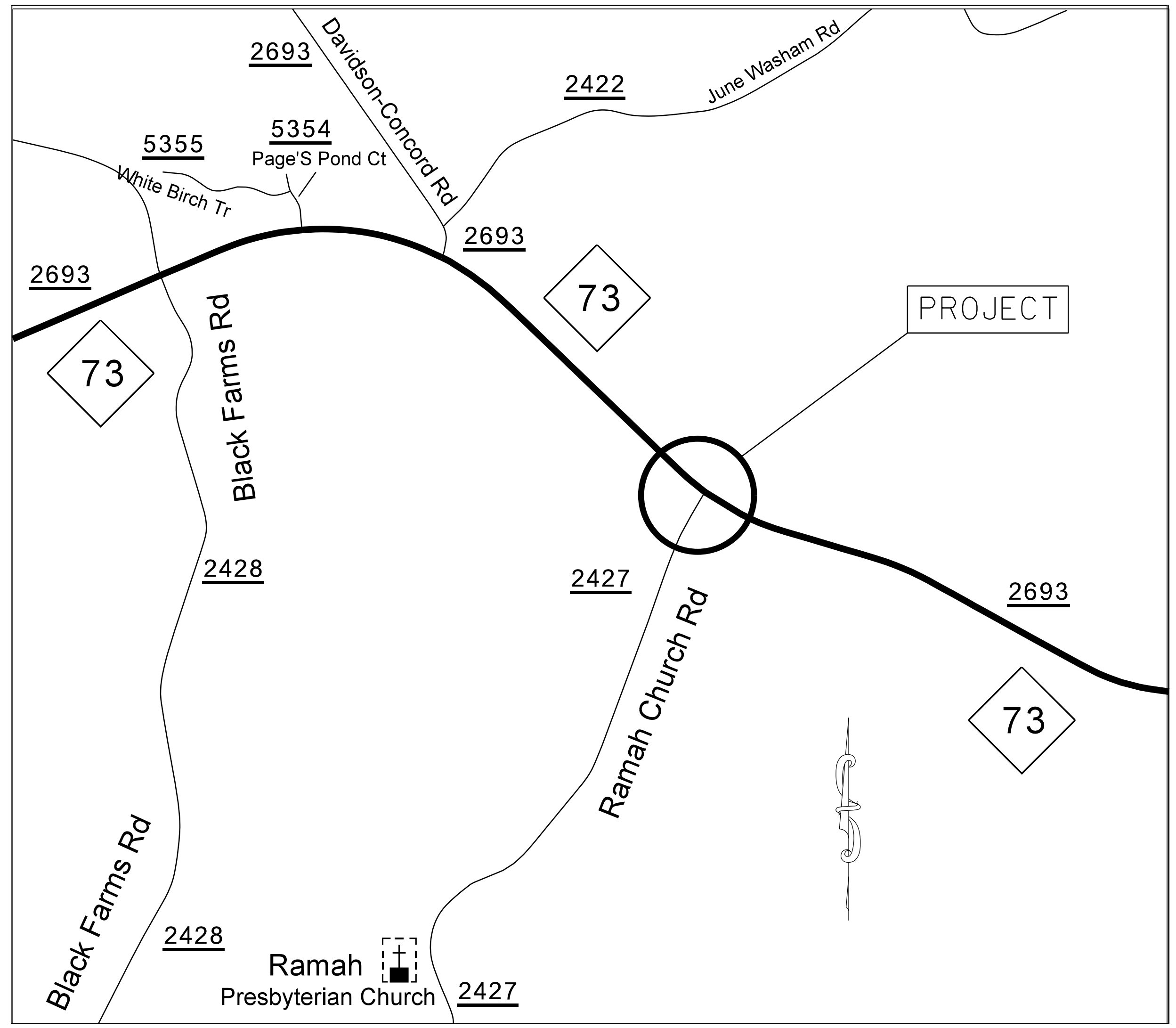
PROJECT: 50138.3.167 TIP: W-5601FJ

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5601FJ	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

GRAPHIC SCALE

0
PLANS

0
PROFILE (HORIZONTAL)

0
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Prepared In the Office of:

DDC UNIT DIVISION 10
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

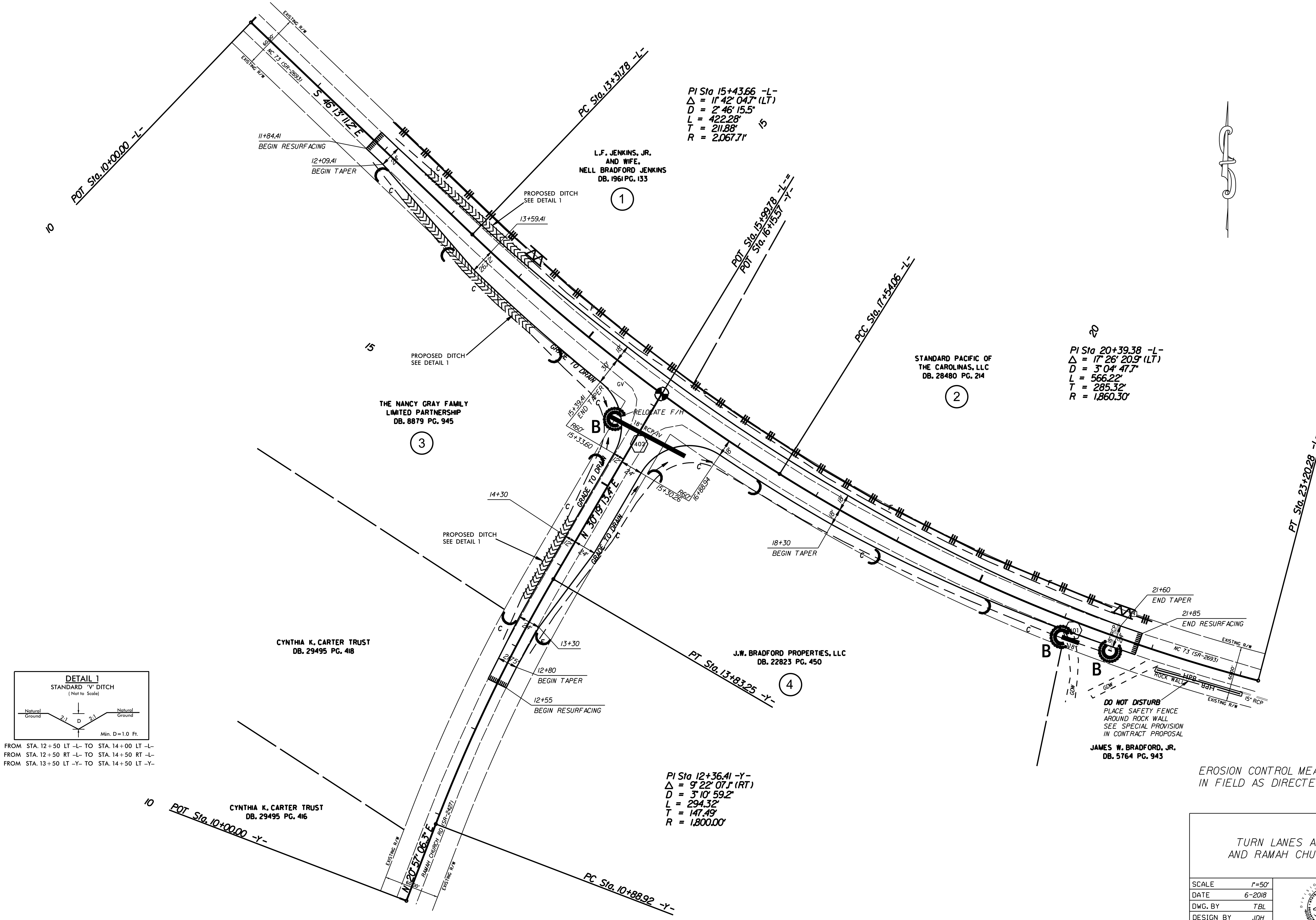
TRAVIS LOWDER — *EROSION CONTROL DESIGNER*
3742 — *LEVEL III CERTIFICATION #*

Roadway Standard Drawings

The following roadway <u>english</u> standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail
1605.01 Temporary Silt Fence
1606.01 Special Sediment Control Fence
1607.01 Gravel Construction Entrance
1622.01 Temporary Berms and Slope Drains
1630.01 Riser Basin
1630.02 Silt Basin Type B
1630.03 Temporary Silt Ditch
1630.04 Stilling Basin
1630.05 Temporary Diversion
1630.06 Special Stilling Basin
1631.01 Matting Installation
1632.01 Rock Inlet Sediment Trap Type A
1632.02 Rock Inlet Sediment Trap Type B
1632.03 Rock Inlet Sediment Trap Type C
1633.01 Temporary Rock Silt Check Type A
1633.02 Temporary Rock Silt Check Type B
1634.01 Temporary Rock Sediment Dam Type A
1634.02 Temporary Rock Sediment Dam Type B
1635.01 Rock Pipe Inlet Sediment Trap Type A
1635.02 Rock Pipe Inlet Sediment Trap Type B
1640.01 Coir Fiber Baffle
1645.01 Temporary Stream Crossing

PROJECT NO.	SHEET NO.
50138.3.167	EC-2
F.A. PROJECT NO.	HSIP-0073(044)



POT Sta. 10+00.00 -L-
S 46°13'11.2" E
NC 73 (SR-2693)
EXISTING R/W
11+84.41
BEGIN RESURFACING
12+09.41
BEGIN TAPER
PC Sta. 13+31.78 -L-
PI Sta 15+43.66 -L-
Δ = 11° 42' 04.7" (LT)
D = 2° 46' 15.5"
L = 422.28'
T = 211.88'
R = 2,067.71'
L.F. JENKINS, JR.
AND WIFE,
NELL BRADFORD JENKINS
DB. 1961 PG. 133
1
PROPOSED DITCH
SEE DETAIL 1
13+59.41
POT Sta. 15+99.78 -L- =
POT Sta. 16+15.57 -Y-
PCC Sta. 17+54.06 -L-
STANDARD PACIFIC OF
THE CAROLINAS, LLC
DB. 28480 PG. 214
2
PI Sta 20+39.38 -L-
Δ = 17° 26' 20.9" (LT)
D = 3° 04' 47.7"
L = 566.22'
T = 285.32'
R = 1,860.30'
PT Sta. 23+20.28 -L-
GRADE TO DRAIN
15+39.41
END TAPER
R60'
15+33.60
RELOCATE F/H
18" RCP/IV
402
15+30.26
16+88.94
THE NANCY GRAY FAMILY
LIMITED PARTNERSHIP
DB. 8879 PG. 945
3
B
14+30
N 30°19'13.4" E
18+30
BEGIN TAPER
21+60
END TAPER
21+85
END RESURFACING
13+30
12+80
BEGIN TAPER
12+55
BEGIN RESURFACING
CYNTHIA K. CARTER TRUST
DB. 29495 PG. 418
J.W. BRADFORD PROPERTIES, LLC
DB. 22823 PG. 450
4
PT Sta. 13+83.25 -Y-
ROCK WALL
15" RCP
DO NOT DISTURB
PLACE SAFETY FENCE
AROUND ROCK WALL
SEE SPECIAL PROVISION
IN CONTRACT PROPOSAL
JAMES W. BRADFORD, JR.
DB. 5764 PG. 943
PI Sta 12+36.41 -Y-
Δ = 9° 22' 07.1" (RT)
D = 3° 10' 59.2"
L = 294.32'
T = 147.49'
R = 1,800.00'
CYNTHIA K. CARTER TRUST
DB. 29495 PG. 416
POT Sta. 10+00.00 -Y-
N 20°57'06.3" E
RAMAH CHURCH RD (SR-2427)
PC Sta. 10+88.92 -Y-
DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Natural Ground
2:1
D
2:1
Min. D=1.0 Ft.
FROM STA. 12+50 LT -L- TO STA. 14+00 LT -L-
FROM STA. 12+50 RT -L- TO STA. 14+50 RT -L-
FROM STA. 13+50 LT -Y- TO STA. 14+50 LT -Y-

EROSION CONTROL MEASURES MAY BE CHANGED.
IN FIELD AS DIRECTED BY THE ENGINEER.

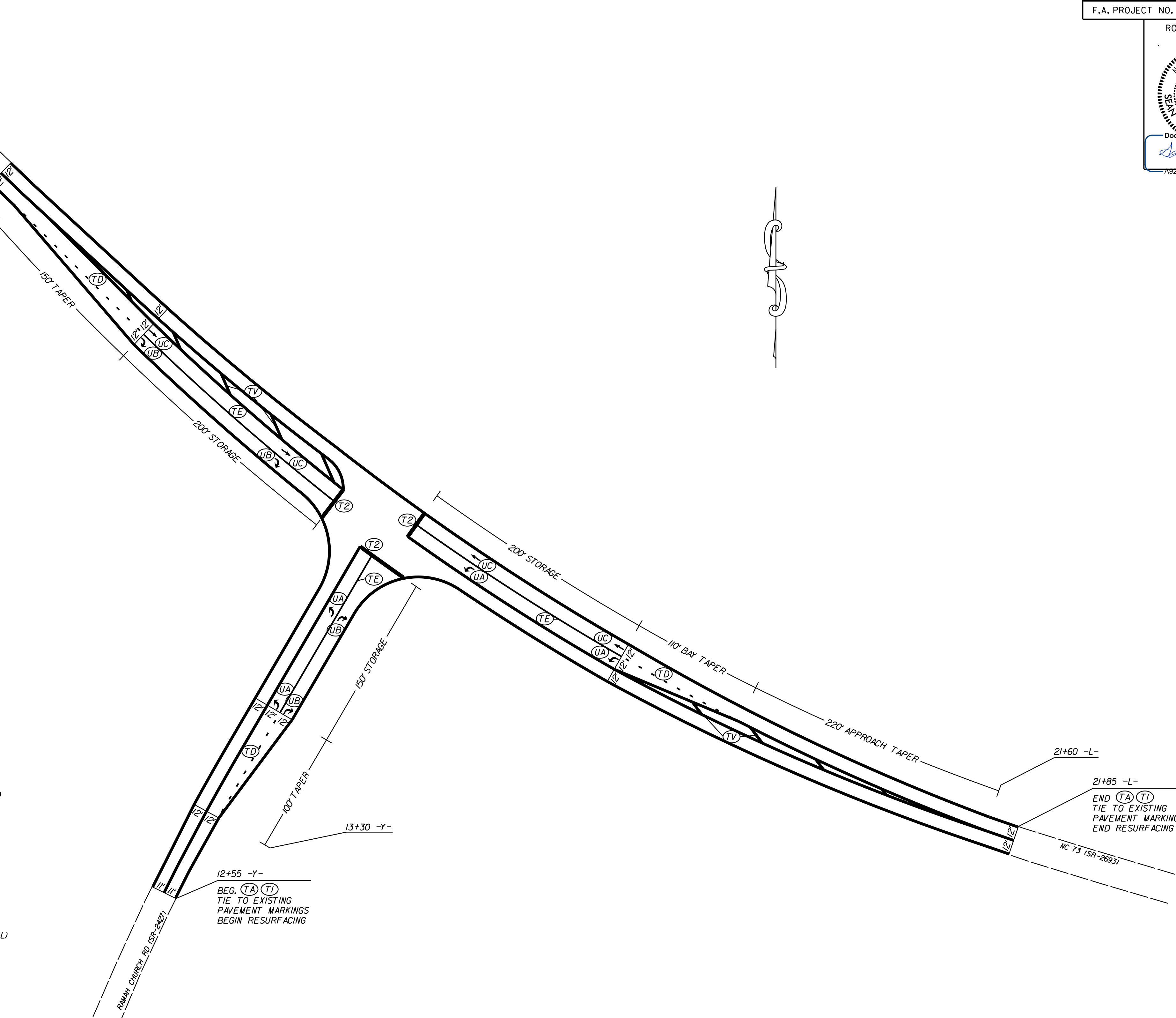
TURN LANES AT NC 73 (SR-2693)
AND RAMAH CHURCH ROAD (SR-2427)

		REVISIONS
SCALE	1"=50'	
DATE	6-2018	
DWG. BY	TBL	
DESIGN BY	JDH	
APPROVED	DCG	

PROJECT NO.	SHEET NO.
50138.3.167	PMP-1
F.A. PROJECT NO.	HSIP-0073(044)

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034357 ENGINEER SEAN MICHAEL EPPERSON



PAVEMENT MARKING SCHEDULE

PAVEMENT MARKING LINES

TA - WHITE EDGELINE (4",90 MIL)
TB - YELLOW EDGELINE (4",90 MIL)
TC - 10FT.WHITE SKIP (4",120 MIL)
TD - 3FT.-9FT./SP WHITE MINISKIP (4",120 MIL)
TE - WHITE SOLID LANE LINE (4",120 MIL)
TF - 10FT.YELLOW SKIP (4",120 MIL)
TH - YELLOW SINGLE CENTER (4",120 MIL)
TI - YELLOW DOUBLE CENTER (4",120 MIL)
TJ - 10FT.WHITE SKIP (6",120 MIL)
TK - 3FT.-9FT./SP WHITE MINISKIP (6",120 MIL)
TL - WHITE SOLID LANE LINE (6",120 MIL)
TM - 10FT.YELLOW SKIP (6",120 MIL)
TN - WHITE GORELINE (8",90 MIL)
TO - WHITE DIAGONAL (8",90 MIL)
TP - YELLOW DIAGONAL (8",90 MIL)
TQ - WHITE CROSSWALK LINE (8",120 MIL)
TR - WHITE SOLID LANE LINE (8",120 MIL)
TS - WHITE GORELINE (12",90 MIL)
TT - WHITE SOLID LANE LINE (12",120 MIL)

TU - WHITE DIAGONAL (12",90 MIL)
TV - YELLOW DIAGONAL (12",90 MIL)
T1 - WHITE LINE, RR X (16",120 MIL)
T2 - WHITE STOPBAR (24",120 MIL)
T3 - WHITE CROSSWALK LINE (24",120 MIL)
T4 - WHITE RUMBLE STRIP (4",240 MIL)
T5 - YELLOW RUMBLE STRIP (4",240 MIL)
T6 - WHITE EDGELINE (6",90 MIL)
T7 - YELLOW EDGELINE (6",90 MIL)
T8 - 2FT.-6FT./SP WHITE MINISKIP (4",120 MIL)
T9 - 2FT.-6FT./SP YELLOW MINISKIP (4",120 MIL)
T10 - 3FT.-3FT./SP WHITE MINISKIP (12",120 MIL)
T11 - 2FT.-6FT./SP WHITE MINISKIP (6",120 MIL)
T12 - 2FT.-6FT./SP YELLOW MINISKIP (6",120 MIL)
T13 - 3FT.-9FT./SP WHITE MINISKIP (8",120 MIL)
T14 - 3FT.-9FT./SP WHITE MINISKIP (12",120 MIL)
T15 - YELLOW SINGLE CENTER (6",120 MIL)
T16 - YELLOW DOUBLE CENTER (6",120 MIL)
T17 - 3FT.-3FT./SP WHITE MINISKIP ENTRANCE LINE (8",120 MIL)

PAVEMENT MARKING SYMBOLS

UA -LEFT TURN ARROW (90 MIL)
UB - RIGHT TURN ARROW (90 MIL)
UC - STRAIGHT ARROW (90 MIL)
UD - COMBO.LEFT/STRAIGHT ARROW (90 MIL)
UE - COMBO.RIGHT/STRAIGHT ARROW (90 MIL)
UF - COMBO.LEFT/RIGHT ARROW (90 MIL)
UG - COMBO.LEFT/RIGHT/STRAIGHT ARROW (90 MIL)
UH - HANDICAP PARKING (90 MIL)
UI - ALPHANUMERIC CHAR.(120 MIL)
UJ - BICYCLE SYMBOL (90 MIL)
UK - BICYCLE STRAIGHT ARROW (90 MIL)
UL - BICYCLE CHAR.(120 MIL)
UM - 12" YIELD LINE TRIANGLE (90 MIL)
UN - 24" YIELD LINE TRIANGLE (90 MIL)
UO - BICYCLE LEFT ARROW (90 MIL)
UP - MERGE ARROW (90 MIL)
UQ - RAMP ARROW SYMBOL (90 MIL)
UR - SHARROW (90 MIL)
US - BICYCLE LOOP DETECTOR (90 MIL)
UT - U-TURN ARROW (90 MIL)

UU - FISH-HOOK STRAIGHT ARROW (90 MIL)
UV - FISH-HOOK LEFT/STRAIGHT ARROW (90 MIL)
UW - FISH-HOOK RIGHT/STRAIGHT ARROW (90 MIL)
UX - FISH-HOOK LEFT/RIGHT ARROW (90 MIL)
UY - FISH-HOOK LEFT/RIGHT/STRAIGHT ARROW (90 MIL)
UZ - FISH-HOOK W/CIRCLE STRAIGHT ARROW (90 MIL)

WA - FISH-HOOK W/CIRCLE LEFT ARROW (90 MIL)
WB - FISH-HOOK W/CIRCLE LEFT/STRAIGHT ARROW (90 MIL)
WC - FISH-HOOK W/CIRCLE LEFT/RIGHT/STRAIGHT ARROW (90 MIL)

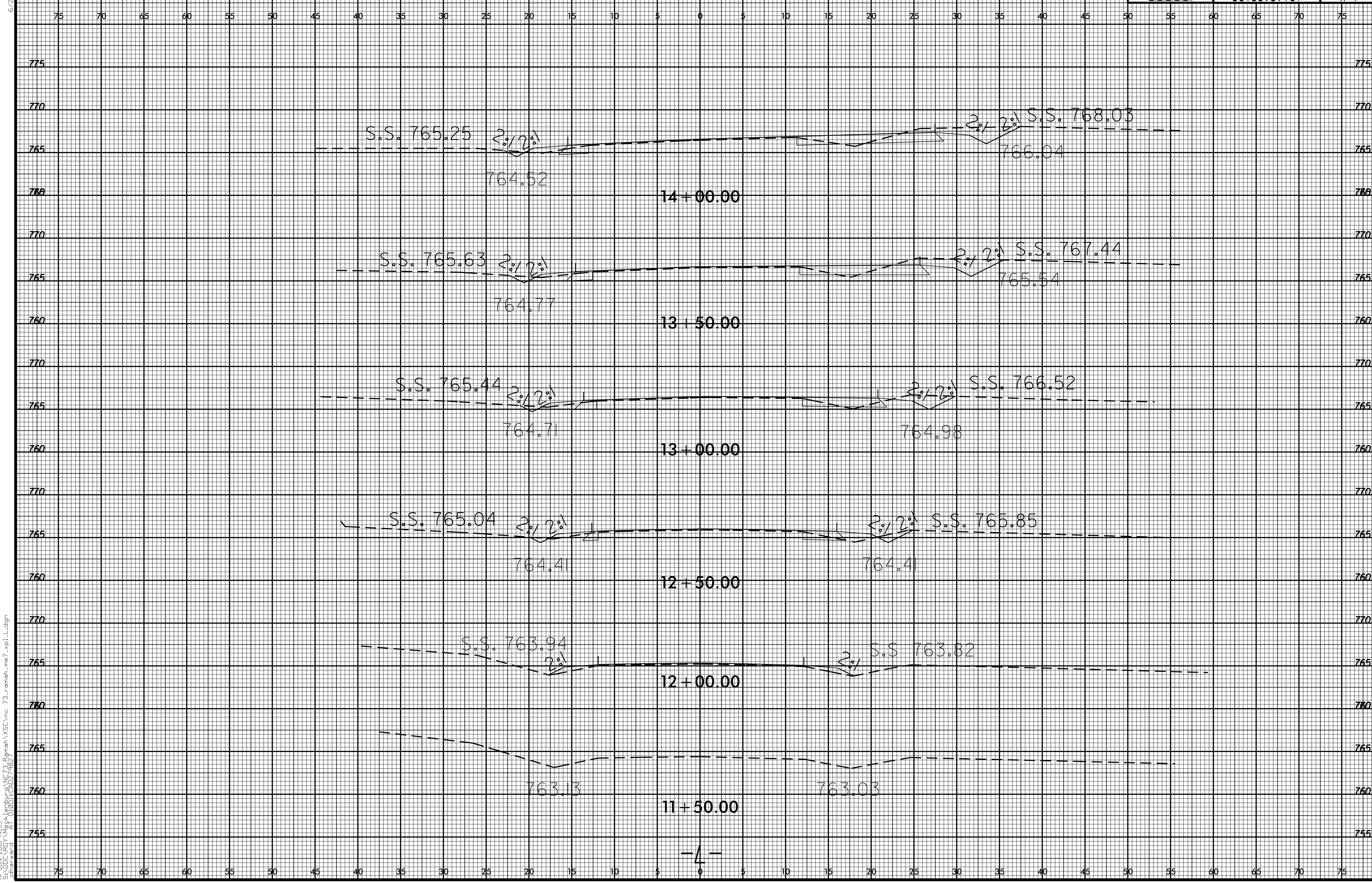
MA - PERMANENT RAISED MARKER (YELLOW & YELLOW)
MB - PERMANENT RAISED MARKER (CRYSTAL & RED)
MC - PERMANENT RAISED MARKER (YELLOW & RED)
MD - PERMANENT RAISED MARKER (YELLOW)
ME - SNOWPLOWABLE MARKER (YELLOW & YELLOW)
MF - SNOWPLOWABLE MARKER (CRYSTAL & RED)
MG - SNOWPLOWABLE MARKER (YELLOW & RED)
ML - PERMANENT RAISED MARKER (CRYSTAL & CRYSTAL)
MO - SNOWPLOWABLE MARKER (CRYSTAL & CRYSTAL)

TURN LANES AT NC 73 (SR-2693) AND RAMAH CHURCH ROAD (SR-2427)

SCALE	1"=50'
DATE	6-2018
DWG. BY	JDH
DESIGN BY	JDH
APPROVED	DCG

REVISIONS

PROJ. REFERENCE NO.	SHEET NO.
50138.3.167	X-1



6/23/16

14-JUN-2018 14:35
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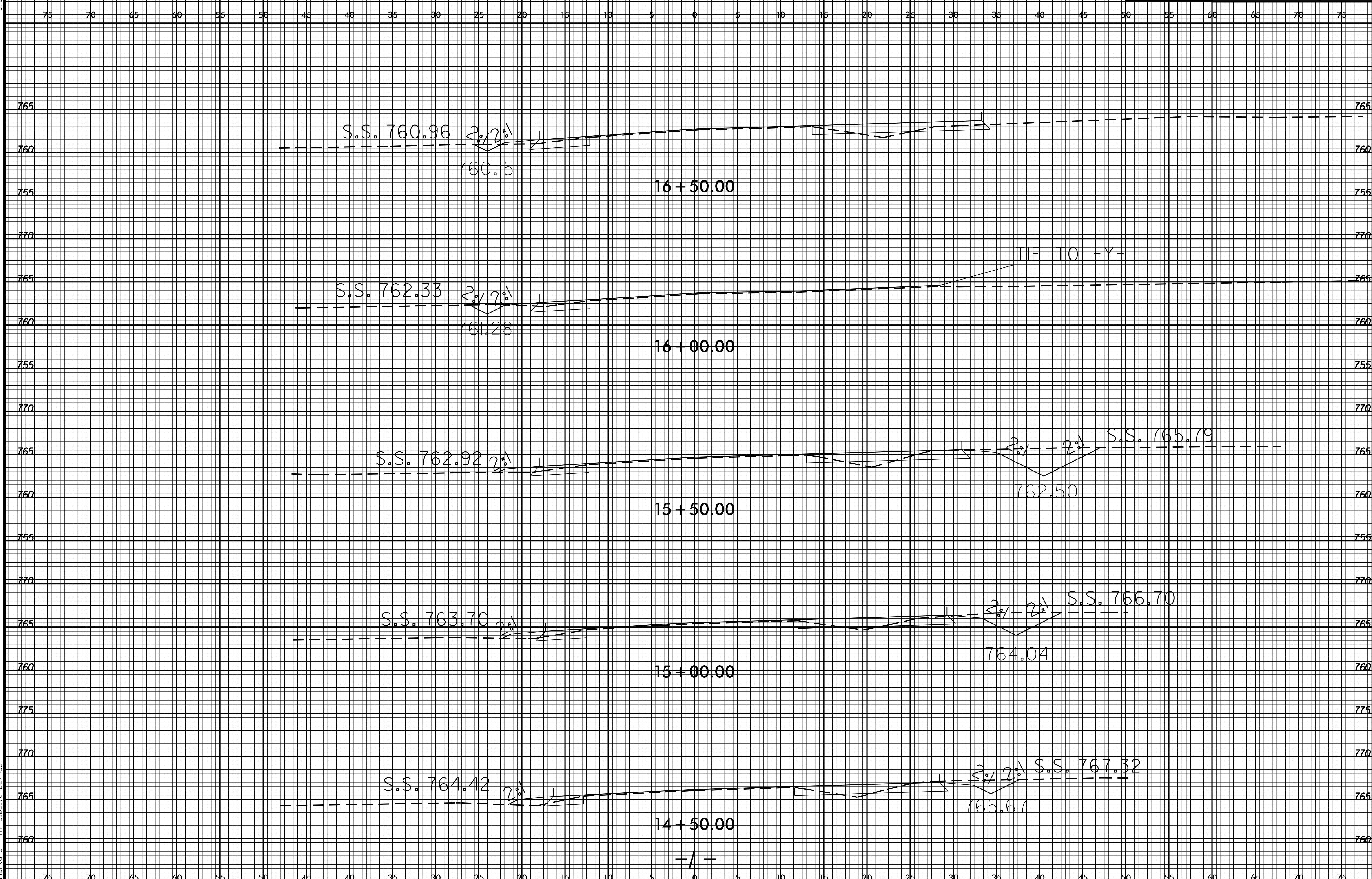
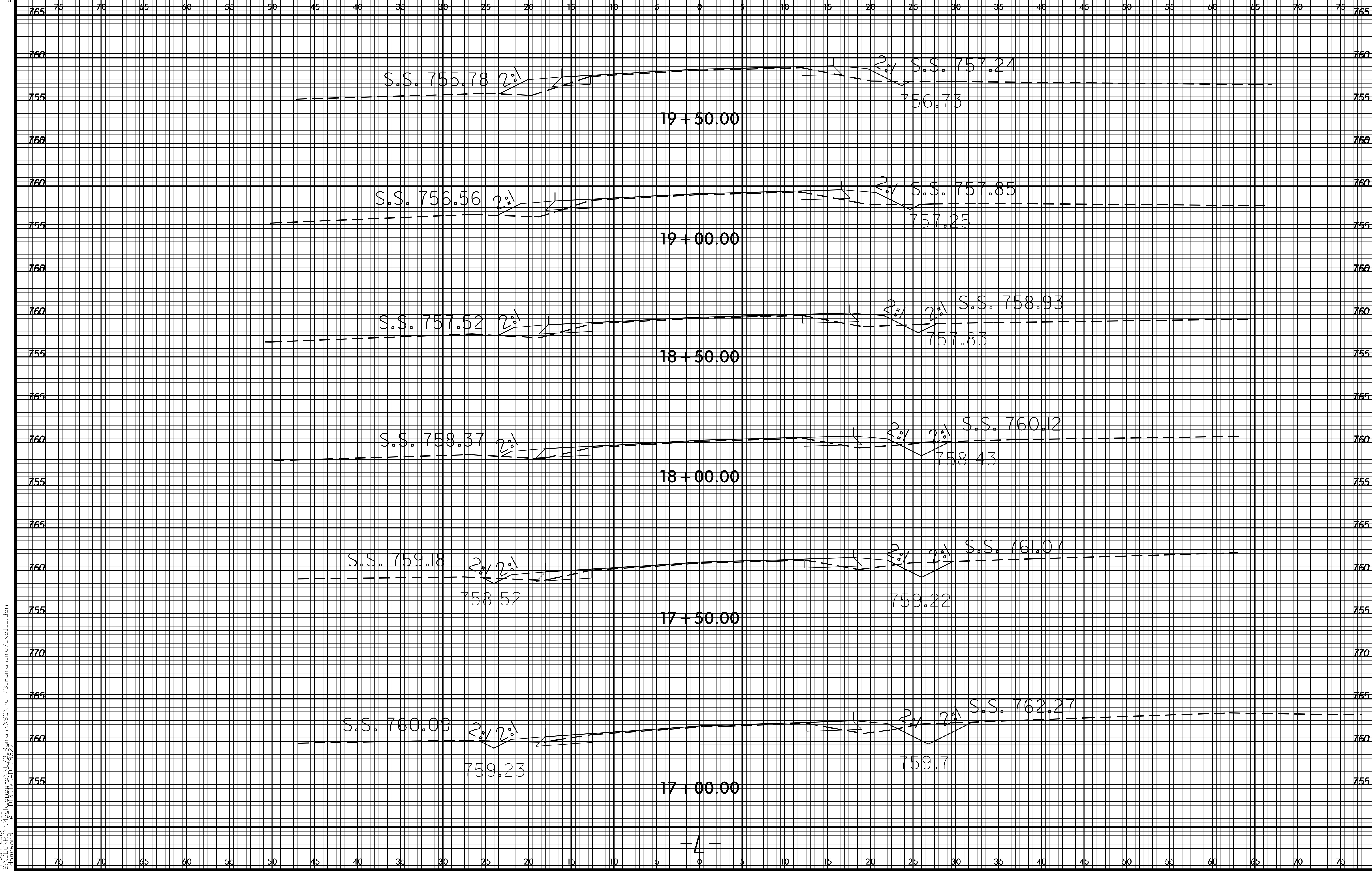
jdharward AT D10D1VCAD279827

PROJ. REFERENCE NO.	SHEET NO.
50138.3.167	X-2



PROJ. REFERENCE NO.	SHEET NO.
50138.3.167	X-3



6/23/16

14-JUN-2018 14:39
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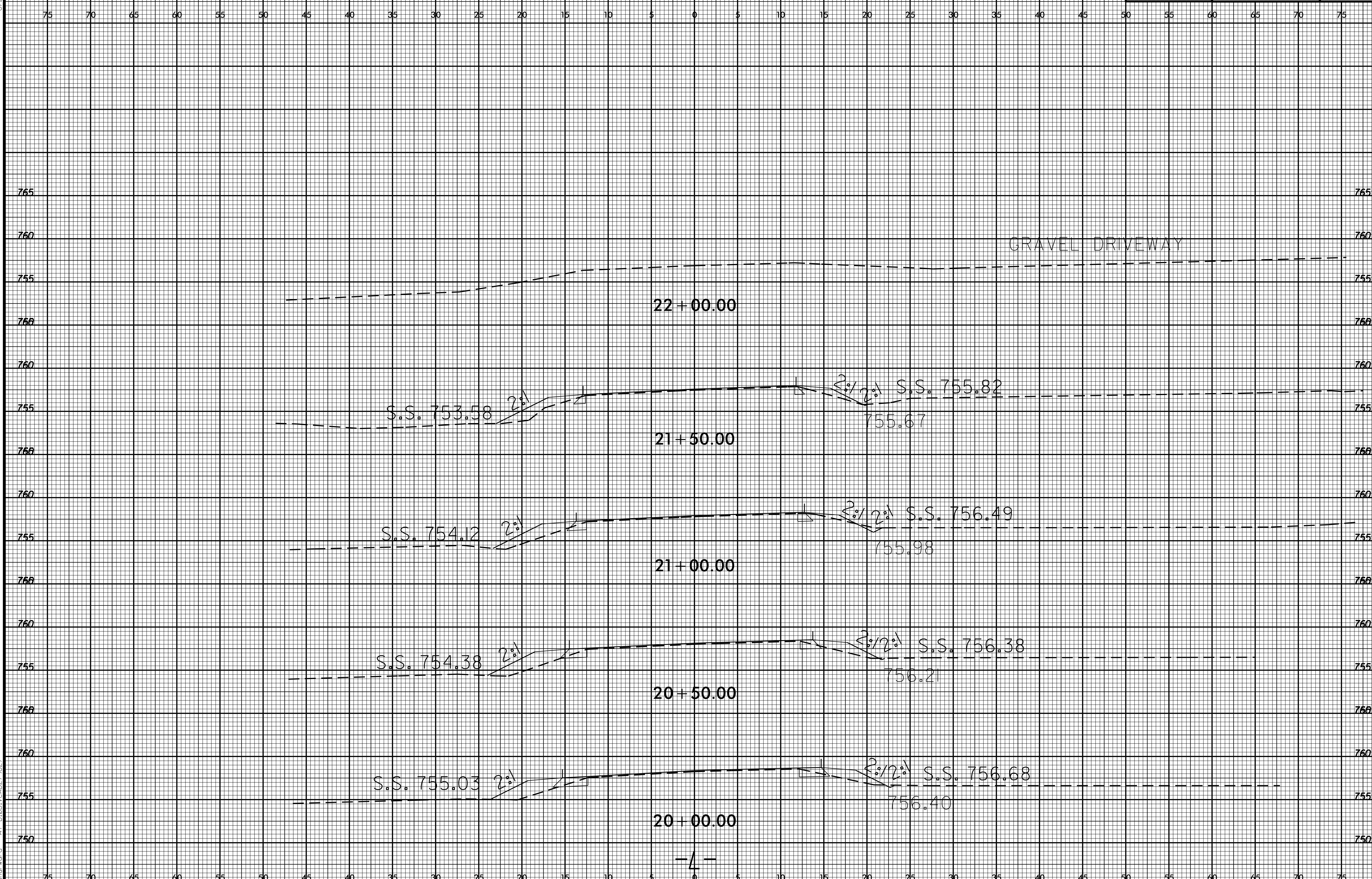
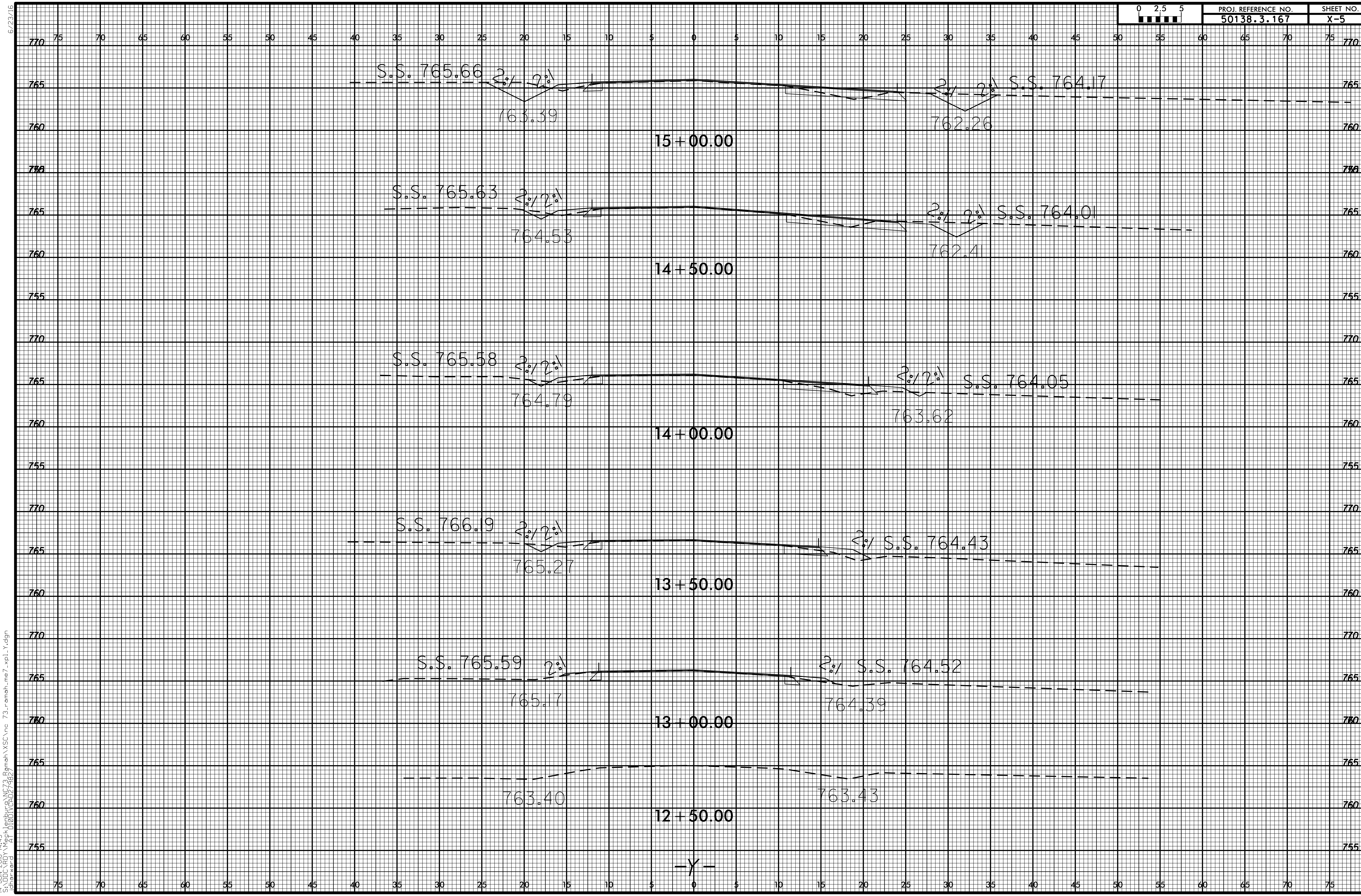
jdharward AT DI0DIVCAD279827

PROJ. REFERENCE NO.	SHEET NO.
50138.3.167	X-4



PROJ. REFERENCE NO.	SHEET NO.
50138.3.167	X-5



6/23/16

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6/23/16

PROJ. REFERENCE NO.	SHEET NO.
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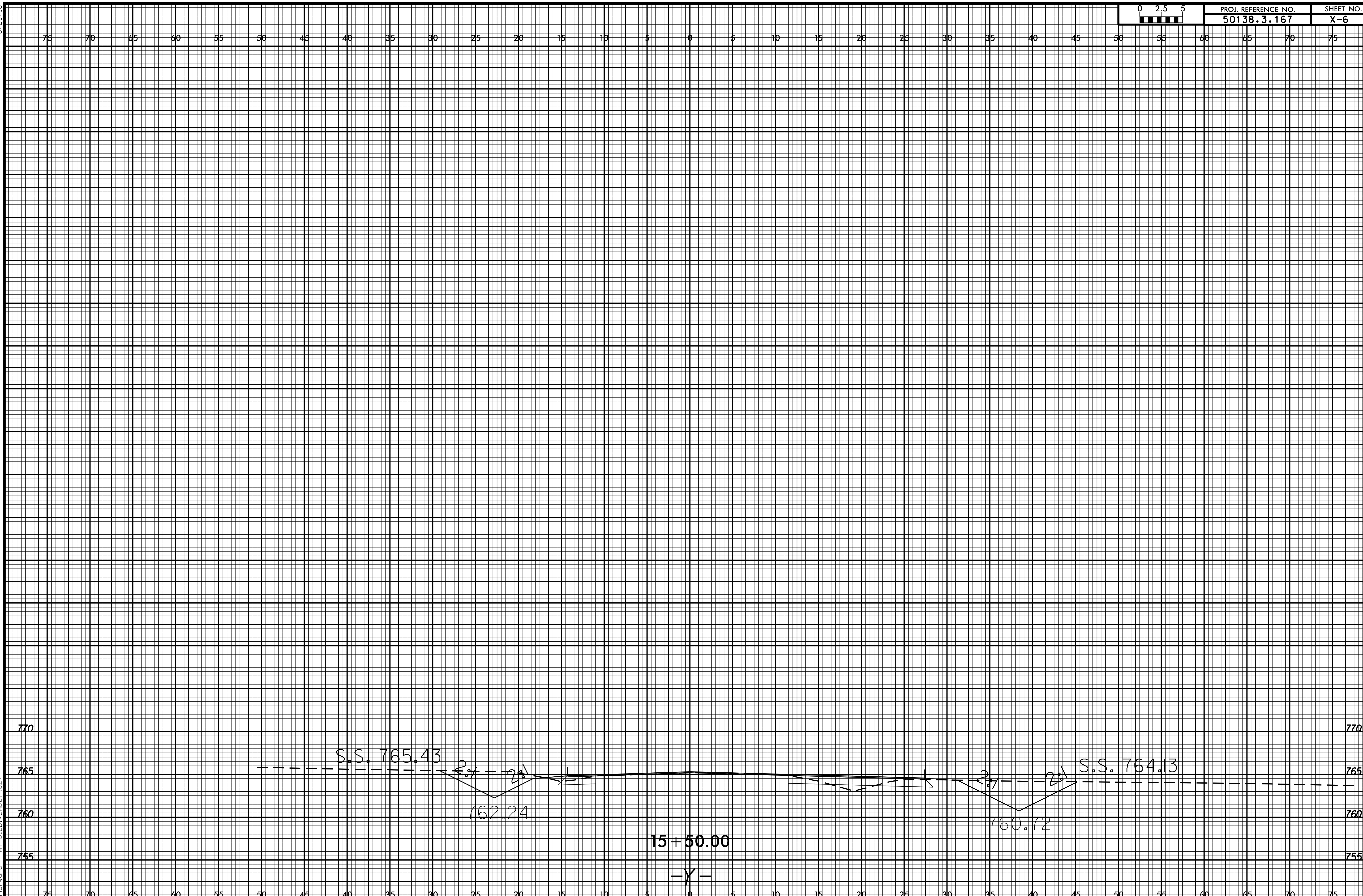

15+50.00

-Y-

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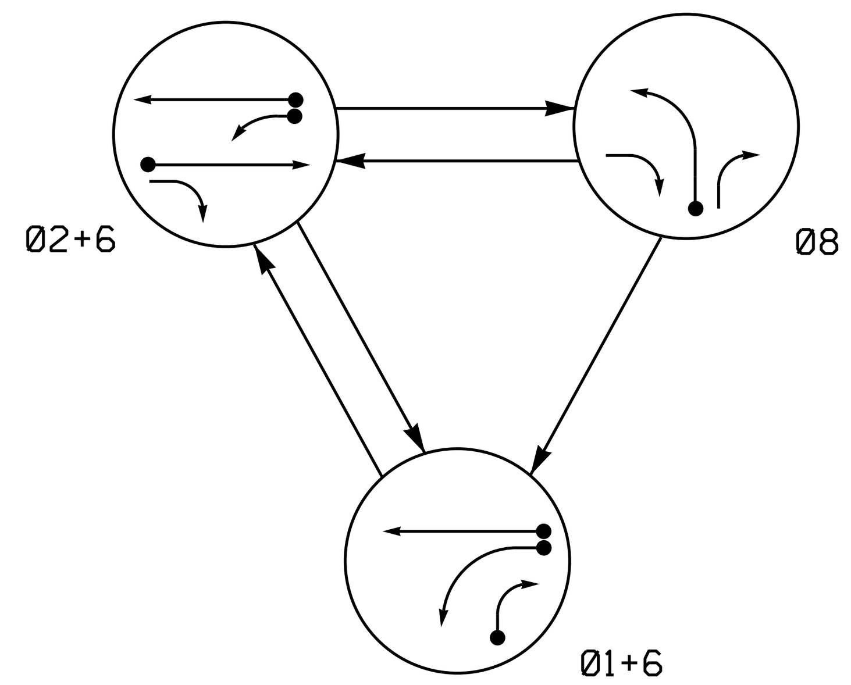
jdharward AT D10DIVCAD279827

PROJECT REFERENCE NO.	SHEET NO.
W-5601 FJ	Sig. 1.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

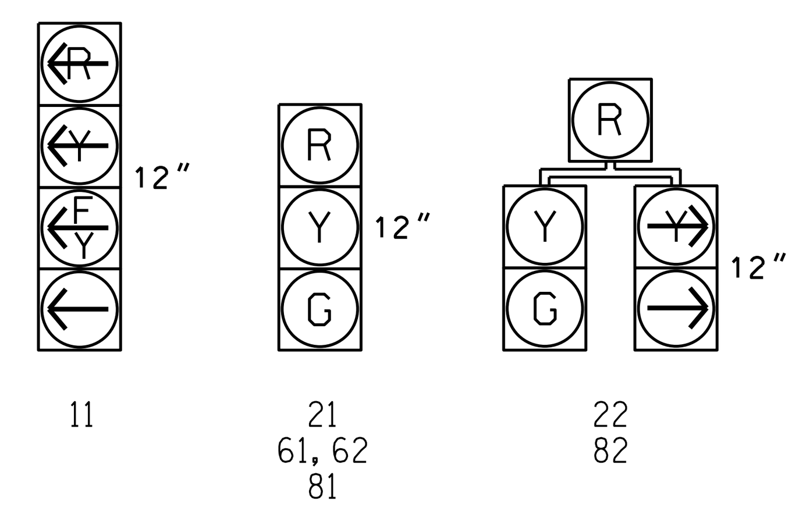
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø8	FLASH
11	←	F/Y ←	←R	←Y
21	R	G	R	Y
22	R	G	R/→	Y
61, 62	G	G	R	Y
81	R	R	G	R
82	R/→	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



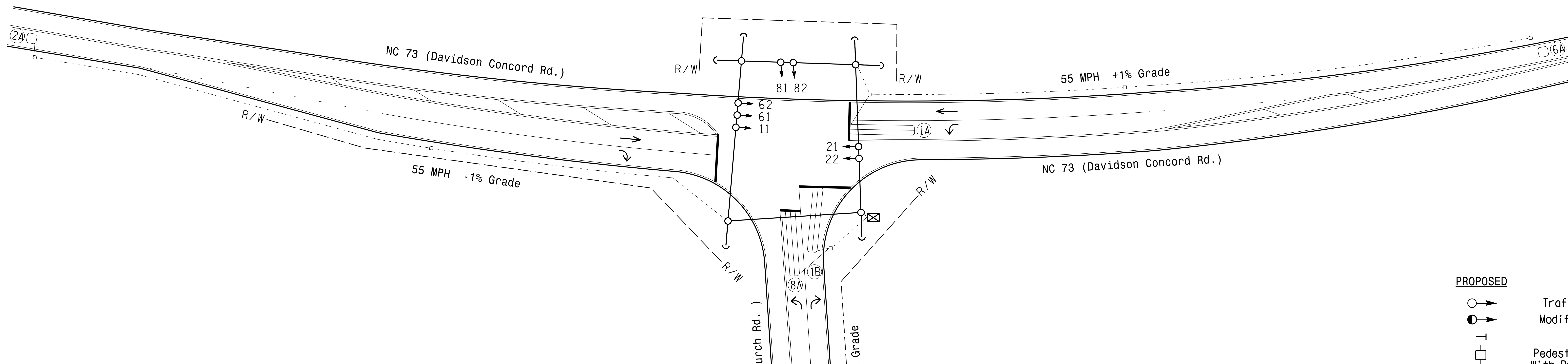
OASIS 2070 LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
					6	Y	Y	Y	-	3	-	Y
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A	6X6	420	6	Y	2	Y	Y	-	-	-	-	Y
6A	6X6	420	6	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

3 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.



LEGEND

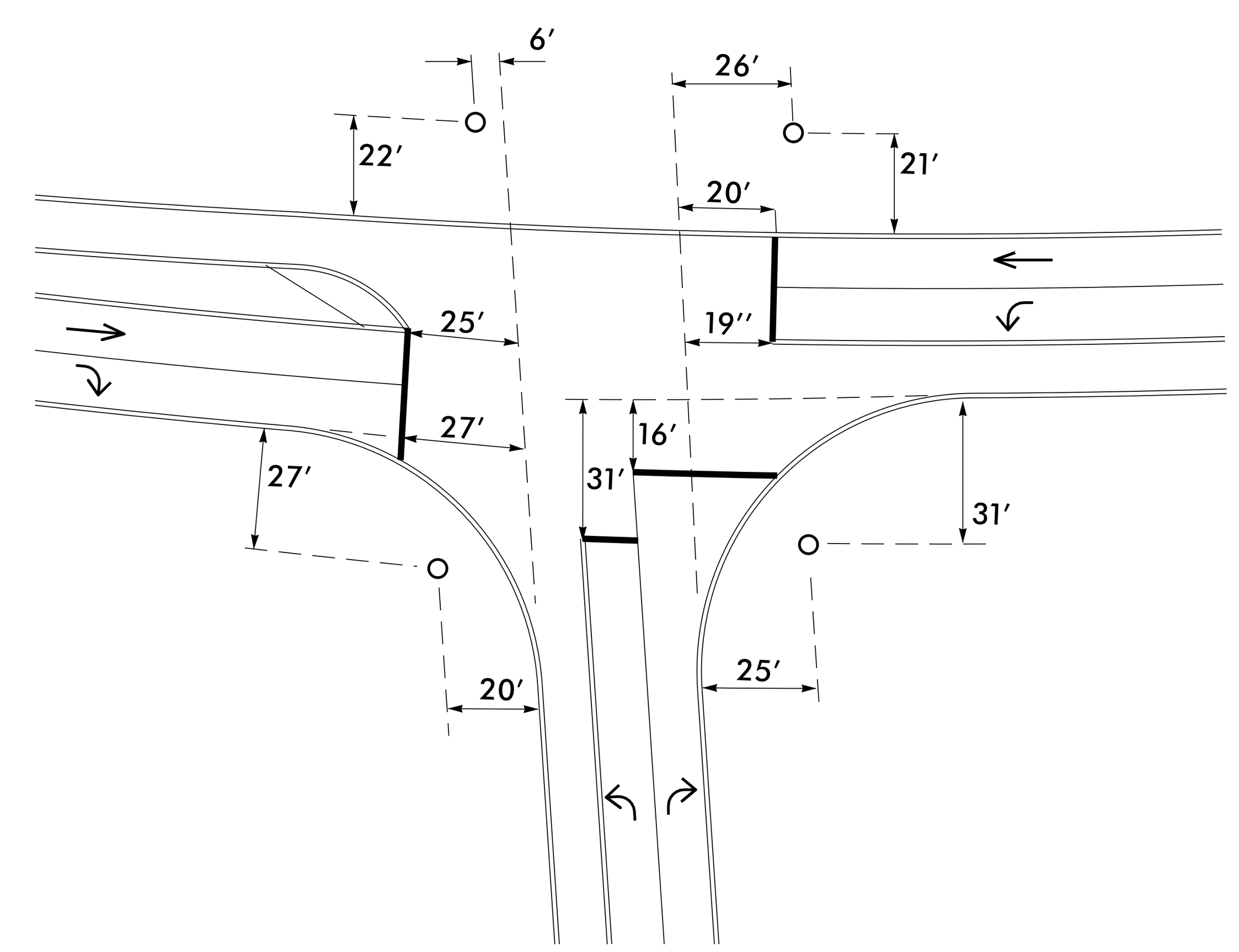
PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	

This plan supersedes the one signed and sealed on 11/21/2016.

OASIS 2070 TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	7	14	14	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	15	90	90	20
Yellow Clearance	3.0	5.3	5.3	3.0
Red Clearance	2.1	1.0	1.0	2.3
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	2.5	2.5	-
Max Variable Initial *	-	46	46	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.4	3.4	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



PROPOSED STOP BAR & POLE LOCATIONS

New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of: Transportation Mobility and Safety Division, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

NC 73 (Davidson Concord Rd.)
at
SR 2427 (Ramah Church Rd.)

Division 10	Mecklenburg County	Huntersville
PLAN DATE: April 2018	REVIEWED BY: T.J Williams	
PREPARED BY: R.N. Zinser	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043914 ENGINEER RICHARD N. ZINSER

DocuSigned by: R. N. Zinser 5/1/2018 DATE

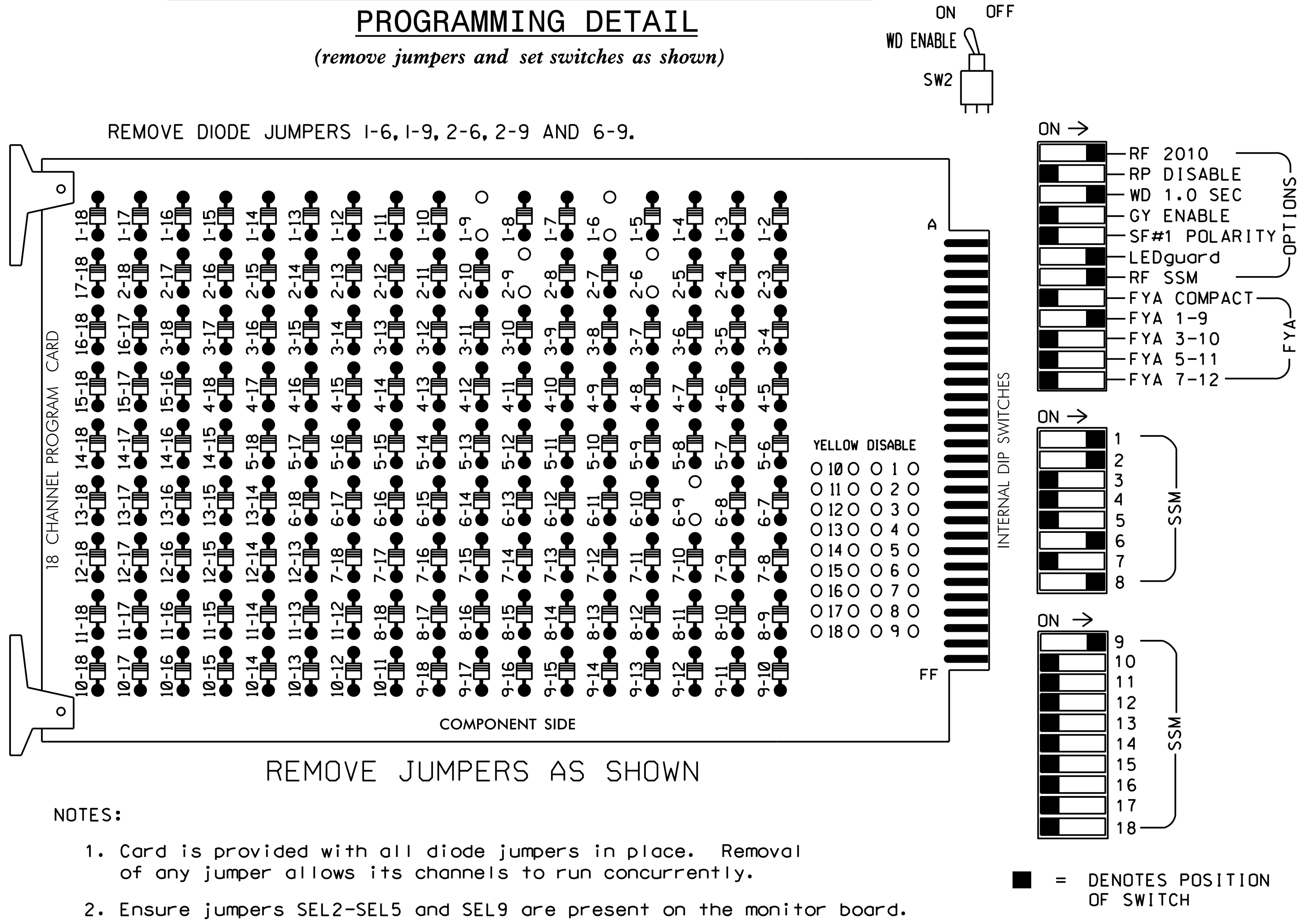
SIG. INVENTORY NO. 10-2244

01-MAY-2018 13:13
S:*ITS&SU*ITS Signals*Signal Design Section*Western Region*Div-10*10-2244*102244_sig_dsn_2018mmdd.dgn
rnzinser

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-6, 1-9, 2-6, 2-9 AND 6-9.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controlloer. Ensure conflict monitor communicates with 2070.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Enable Simultaneous Gap-Out for all phases.
3. Program phases 2 and 6 for Variable Initial and Gap Reduction.
4. Program phases 2 and 6 for Start Up In Green.
5. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.

EQUIPMENT INFORMATION

CONTROLLER..............2070
CABINET.................332 W/ AUX
SOFTWARE................ECONOLITE OASIS
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED......S1,S2,S8,S11,AUX S1
PHASES USED.............1,2,6,8
OVERLAP "A".............1+2
OVERLAP "B".............NOT USED
OVERLAP "C".............NOT USED
OVERLAP "D".............NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1		S2	S3	S4	S5	S6	S7	S8	S9	S10	S11		S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1		2	13	3	4	14	5	6	15	7	8		16	9	10	17	11	12	18
PHASE	1		2	2 PED	3	4	4 PED	5	6	6 PED	7	8		8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	82	21,22	NU	NU	NU	NU	NU	61,62	NU	NU	81,82	22	NU	11★	NU	NU	NU	NU	NU
RED	✳		128						134			107								
YELLOW			129						135			108								
GREEN			130						136			109								
RED ARROW															A121					
YELLOW ARROW		126											108		A122					
FLASHING YELLOW ARROW															A123					
GREEN ARROW	127	127											109							

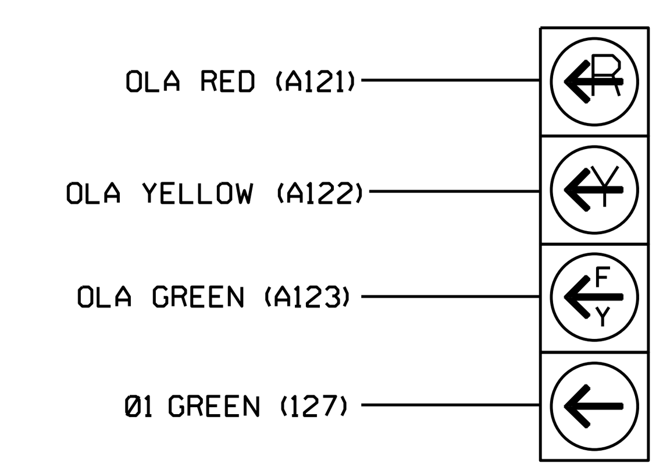
NU = Not Used

✳ Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail below.

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



NOTE

1. The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	ø1 1A	ø1 1B	ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED	NOT USED											ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	ø6 6A	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		NOT USED				NOT USED								

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3

[1] Add jumper from I1-W to J4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

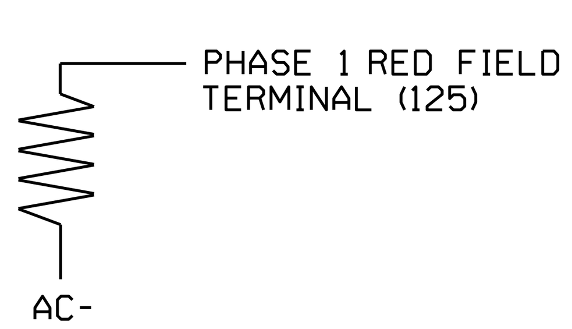
D. Todd Joyce

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2244
DESIGNED: April 2018
SEALED: 5/1/2018
REVISED:

THIS ELECTRICAL DETAIL SUPERSEDES THE DETAIL SEALED ON 12/1/16

Electrical Detail Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 73 (Davidson Concord Rd.)
at
SR 2427 (Ramah Church Road)

Division 10 Mecklenburg County Huntersville

PLAN DATE: May 2018 REVIEWED BY: Todd Joyce
PREPARED BY: B. Christian REVIEWED BY:

REVISIONS INIT. DATE

Prepared in the Offices of: Transportation Mobility and Safety Division, ITS & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031001 D. TODD JOYCE

DocuSigned by: D. Todd Joyce 5/9/2018
DATE

SIG. INVENTORY NO. 10-2244

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bbchristian

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.

2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

```
  LOGICAL I/O COMMAND #1  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON
AND RED CLEAR ON PHASE #1  IS ON

              SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #50 ON
SET OUTPUT  ASSIGNMENT #51 OFF
```

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

PRESS '+'

```
  LOGICAL I/O COMMAND #2  (+/-COMMAND#)
IF  ACTIVE PHASE        #1  IS ON

              SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #52 OFF
```

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

PRESS '+'

```
  LOGICAL I/O COMMAND #3  (+/-COMMAND#)
IF  YELLOW ON PHASE     #1  IS ON

              SCROLL DOWN

THEN:
SET OUTPUT  ASSIGNMENT #51 ON
```

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```
 PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE:          |12345678910111213141516
VEH OVL PARENTS: |XX
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR: _ RED   _ YELLOW  _ GREEN
FLASH COLORS:  _ RED   _ YELLOW  X GREEN
SELECT VEHICLE OVERLAP OPTIONS:    (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2244
DESIGNED: April 2018
SEALED: 5/1/2018
REVISED:

THIS ELECTRICAL DETAIL SUPERSEDES THE DETAIL SEALED ON 12/1/16

Electrical Detail Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 73 (Davidson Concord Rd.)
at
SR 2427 (Ramah Church Road)

Division 10 | Mecklenburg County | Huntersville

Prepared in the Offices of:
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

PLAN DATE: May 2018	REVIEWED BY: Todd Joyce
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REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce
A90CADEDBD4241D
5/9/2018
DATE

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