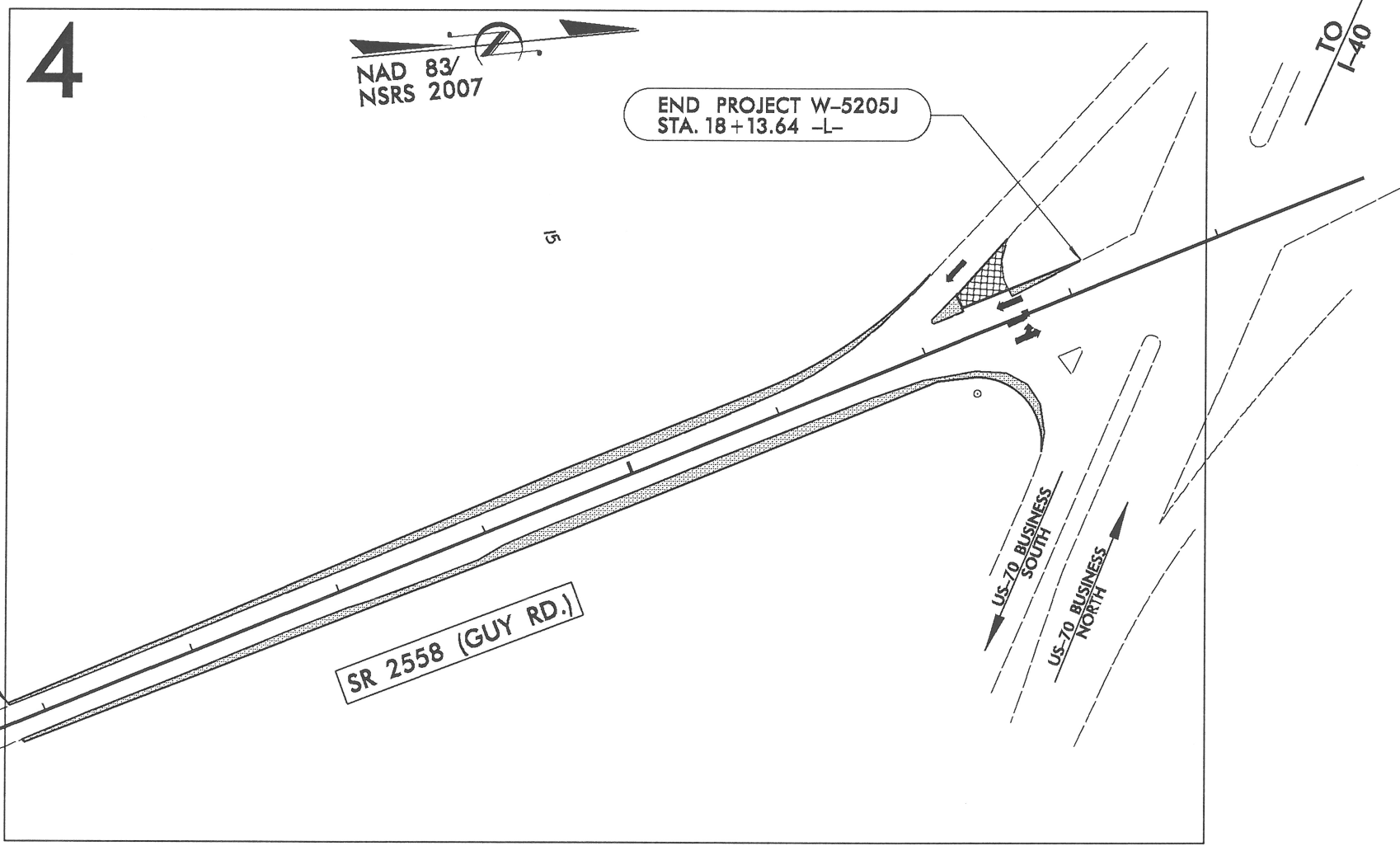
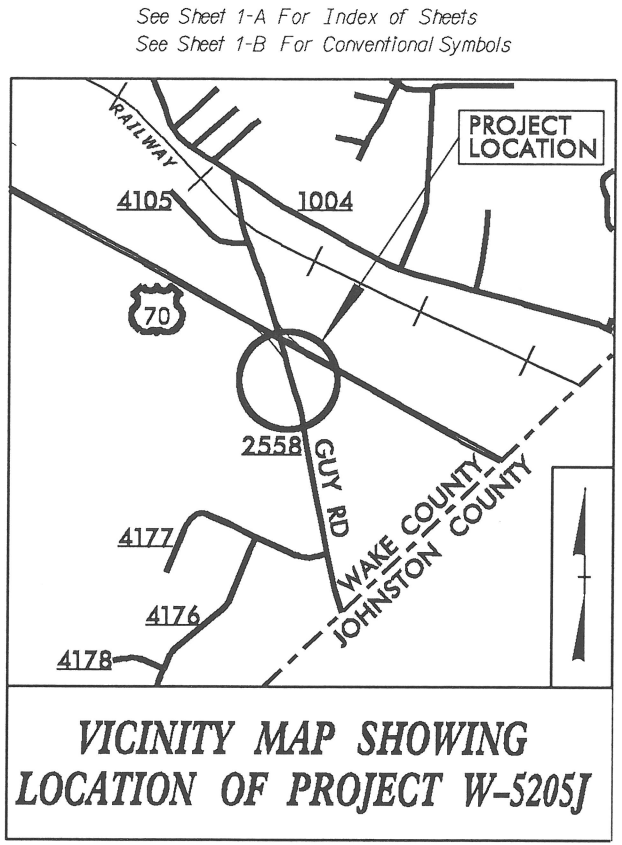


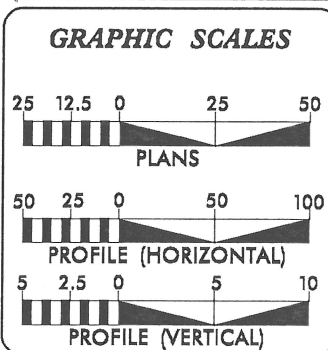
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5205J	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45335.1.10	HSIP-0070(164)	PE	
45335.2.FD10	HSIP-0070(164)	R /W & UTIL.	
45335.3.FD10	HSIP-0070(164)	CONST.	

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**WAKE COUNTY**

LOCATION: SR 2558 (GUY RD.) AT US-70 BUSINESS  
 TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND SIGNALS



CONTRACT: DE00097 PROJECT: W-5205J  
 JUN-2014 07:20 W-5205J\_Rdy\_SHT-1.dgn  
 \$\$\$USERNAME\$\$\$



**DESIGN DATA**

ADT 2011 = 6,800
V = 50 MPH

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT W-5205J = 0.139 MILES
--

Prepared In the Office of:  
**DIVISION OF HIGHWAYS**  
 2612 N. DUKE ST

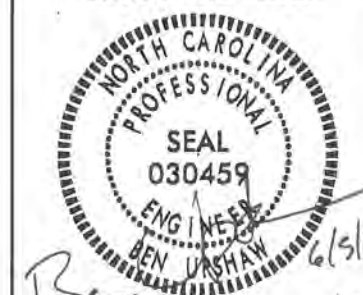
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: OCTOBER, 2013	BEN J UPSHAW, P.E. PROJECT ENGINEER
LETTING DATE:	SUNIL PATEL PROJECT DESIGN ENGINEER

DIVISION DESIGN ENGINEER  
 ROADWAY DESIGN AND HYDRAULICS

SIGNATURE: *[Signature]* P.E.

DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

FIFTH DIVISION  
 J. WALLY BOWMAN, P.E.  
 DIVISION ENGINEER

**INDEX OF SHEETS**

<u>SHEET NUMBER</u>	<u>SHEET</u>
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2-A	SHOULDER WEDGE DETAIL
3-A	DRAINAGE & EARTHWORK SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
PM-1	PAVEMENT MARKING PLAN
EC-2 THRU EC-4	EROSION CONTROL PLANS
SIG-1 THRU SIG-6	SIGNAL PLANS
X-0 THRU X-5	CROSS-SECTIONS

**GENERAL NOTES:**

2012 SPECIFICATIONS  
EFFECTIVE: 01-17-2012  
REVISED: 07-30-2012

**GRADING:**

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED OR FUTURE SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

**SHOULDER CONSTRUCTION:**

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

**UTILITIES:**

UTILITY OWNERS ON THIS PROJECT ARE TIME WARNER CABLE, CENTURY LINK, EARTHLINK, PSNC, PIEDMONT NATURAL GAS AND DUKE ENERGY.

**2012 ROADWAY ENGLISH STANDARD DRAWINGS**

EFF. 01-17-2012  
REV. 10-30-2012

**2012 ROADWAY ENGLISH STANDARD DRAWINGS**

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
<b>DIVISION 2 - EARTHWORK</b>	
200.02	Method of Clearing - Method II
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
<b>DIVISION 8 - INCIDENTALS</b>	
815.02	Subsurface Drain
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter

04/16/11

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	⊙
Property Corner	-----
Property Monument	⊠
Parcel/Sequence Number	Ⓜ
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ☠

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙
Well	⊙
Small Mine	⊗
Foundation	⊠
Area Outline	⊠
Cemetery	⊠
Building	⊠
School	⊠
Church	⊠
Dam	⊠

## HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	⊠
Jurisdictional Stream	-----
Buffer Zone 1	-----
Buffer Zone 2	-----
Flow Arrow	-----
Disappearing Stream	-----
Spring	⊙
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	⊠

## RAILROADS:

Standard Gauge	-----
RR Signal Milepost	⊙
Switch	⊠
RR Abandoned	-----
RR Dismantled	-----

## RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	⊙
Proposed Right of Way Line with Concrete or Granite RW Marker	⊙
Proposed Control of Access Line with Concrete CA Marker	⊙
Existing Control of Access	⊙
Proposed Control of Access	⊙
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Curb Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	⊠

## VEGETATION:

Single Tree	⊙
Single Shrub	⊙
Hedge	-----
Woods Line	-----

Orchard	⊙
Vineyard	⊙

## EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	⊠
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊙
Storm Sewer	-----

## UTILITIES:

POWER:	
Existing Power Pole	⊙
Proposed Power Pole	⊙
Existing Joint Use Pole	⊙
Proposed Joint Use Pole	⊙
Power Manhole	⊙
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	⊙
H-Frame Pole	⊙
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

## TELEPHONE:

Existing Telephone Pole	⊙
Proposed Telephone Pole	⊙
Telephone Manhole	⊙
Telephone Booth	⊠
Telephone Pedestal	⊠
Telephone Cell Tower	⊙
U/G Telephone Cable Hand Hole	⊙
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

## WATER:

Water Manhole	⊙
Water Meter	⊙
Water Valve	⊙
Water Hydrant	⊙
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

## TV:

TV Satellite Dish	⊙
TV Pedestal	⊠
TV Tower	⊙
U/G TV Cable Hand Hole	⊙
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

## GAS:

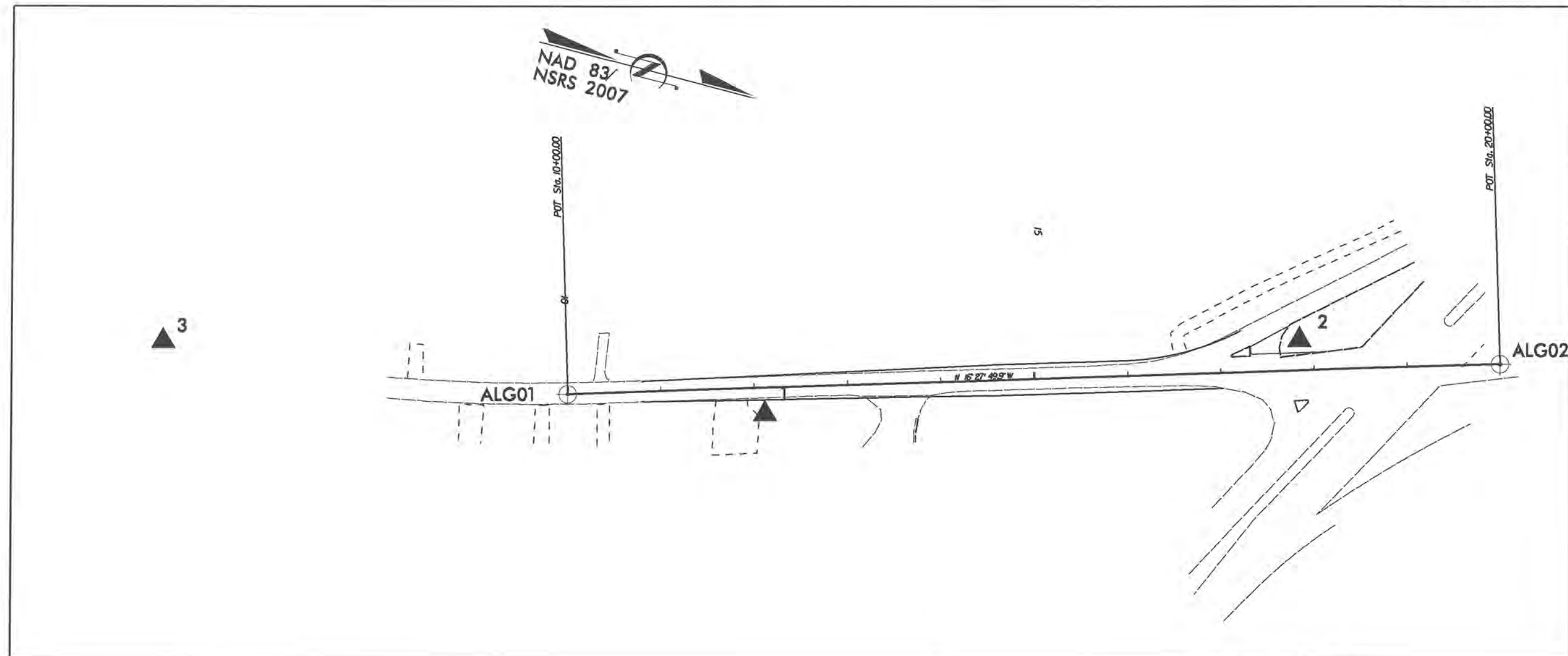
Gas Valve	⊙
Gas Meter	⊙
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

## SANITARY SEWER:

Sanitary Sewer Manhole	⊙
Sanitary Sewer Cleanout	⊙
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

## MISCELLANEOUS:

Utility Pole	⊙
Utility Pole with Base	⊙
Utility Located Object	⊙
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	⊠
Underground Storage Tank, Approx. Loc.	⊠
A/G Tank; Water, Gas, Oil	⊠
Geoenvironmental Boring	⊙
U/G Test Hole (S.U.E.*)	⊙
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.



SURVEY CONTROL SYMBOL

SURVEY CONTROL DATA

POINT	NORTH	EAST	ELEVATION
1	700801.369	214389.583	365.698
2	701335.061	2142168.645	366.651
3	700158.734	2142477.220	362.603

BENCHMARK CONTROL DATA (SYMBOL )

POINT	DISCRIPTION	ELEVATION
---	---	--
---	---	--

ALIGNMENT DATA

POINT	NORTH	EAST
ALG01	700591.299	2142422.525
ALG02	701550.2985	2142139.115
---	---	---
---	---	---
---	---	---

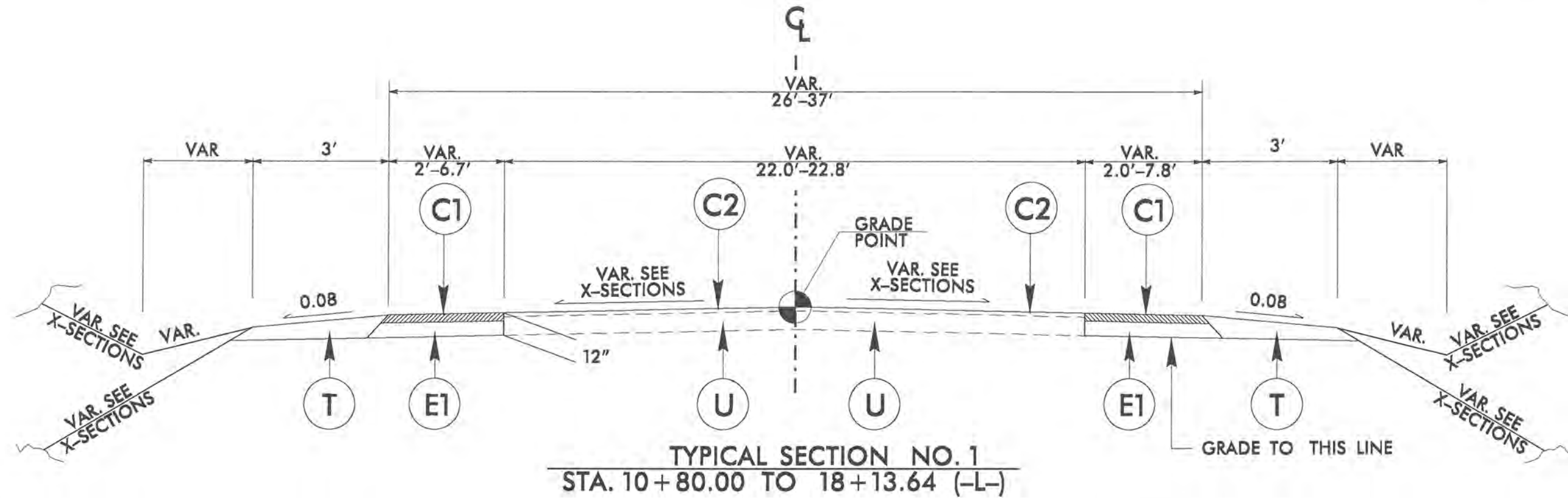
**WIDENING FOR EXTENSION  
OF TURN LANE ON SR-2558  
(GUY RD.) AT US-70 BUSINESS**  
DIVISION 05 WAKE COUNTY CLAYTON

REVISIONS	INT.	DATE

N.C. DEPARTMENT of TRANSPORTATION  
DIVISION of HIGHWAYS  
DIVISION FIVE DESIGN UNIT



SCALE: N/A DATE: 02/2014  
PREPARED BY: BOB WILLIAMS  
REVIEWED BY: BEN UPSHAW  
REVIEWED BY:



PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C2	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	PROP. APPROX. 9" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.

**NOTES:**  
 1). THE PORTION OF EACH EXISTING PAVED SHOULDER THAT IS NOT FULL DEPTH IS TO BE REMOVED AND PAVED TO FULL DEPTH.  
 2). PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.  
 2). SEE SHEET 2-A FOR SHOULDER WEDGE DETAIL.

DIVISION FIVE DESIGN

SEAL  
030459  
ENGINEER  
BEN UPSHAW

6/5/14  
P.E.

SIGNATURE

WIDENING FOR EXTENSION OF TURN LANE ON  
SR 2558 (GUY RD.) AT US-70 BUSINESS

DIVISION 05    WAKE COUNTY    CLAYTON

REVISIONS	INIT.	DATE

N.C. DEPARTMENT of TRANSPORTATION  
DIVISION of HIGHWAYS  
DIVISION FIVE DESIGN UNIT

DIVISION OF HIGHWAYS  
DEPARTMENT OF TRANSPORTATION  
DESIGN UNIT

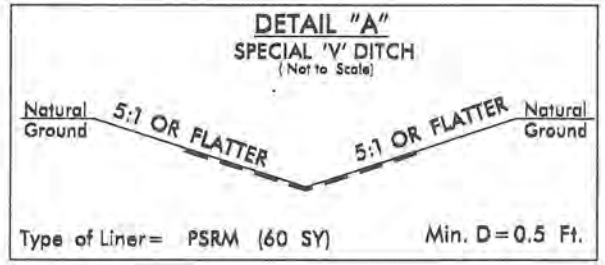
SCALE: N/A    DATE: 08/2013

PREPARED BY: SUNIL PATEL  
REVIEWED BY: BEN UPSHAW  
REVIEWED BY:





END PROJECT W-5205J  
STA. 18+13.64 -L-



1  
A PEACOCK HOLDING CO.  
DB 7368 PG 443

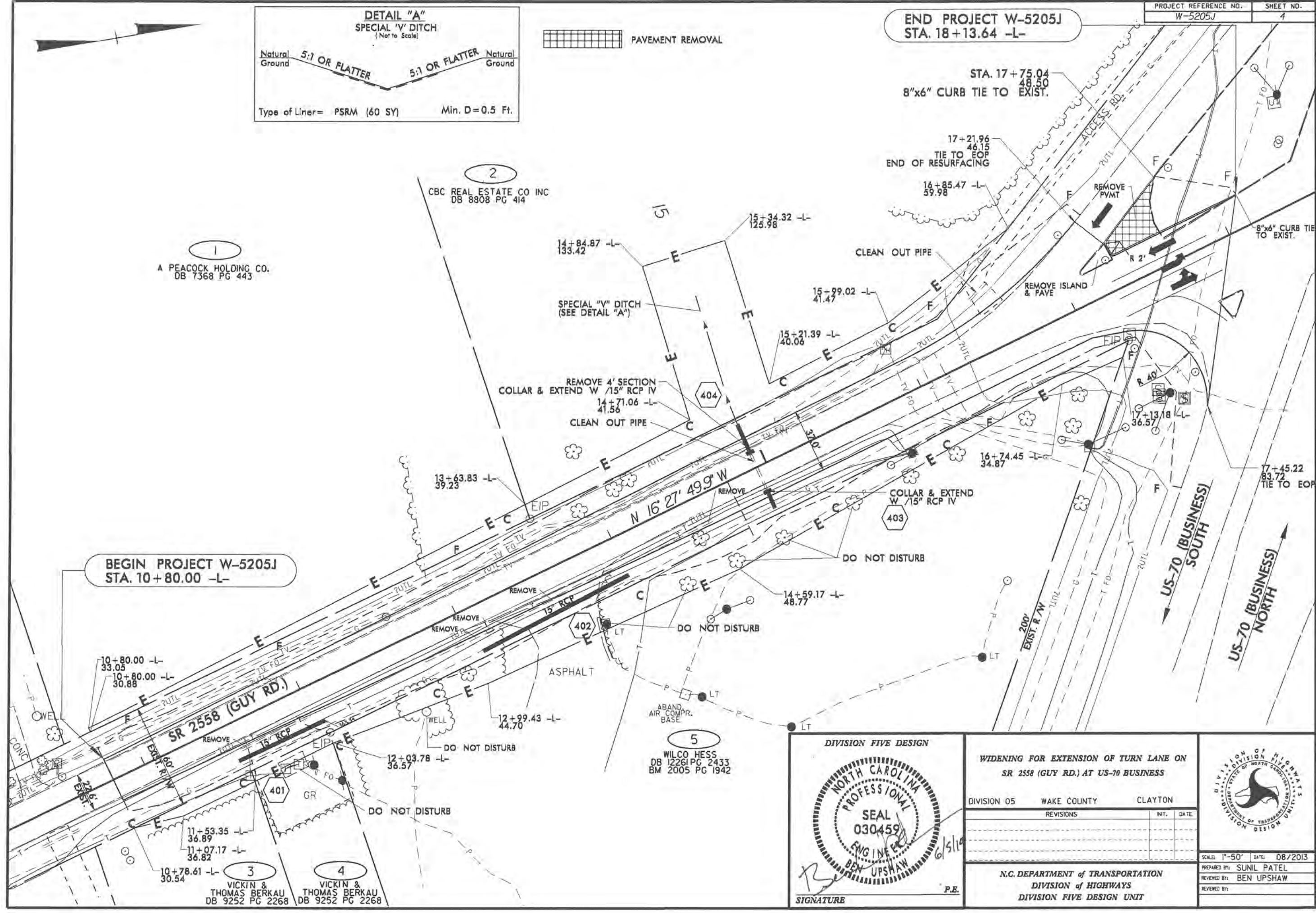
2  
CBC REAL ESTATE CO INC  
DB 8808 PG 414

5  
WILCO HESS  
DB 1226 PG 2433  
BM 2005 PG 1942

3  
VICKIN & THOMAS BERKAU  
DB 9252 PG 2268

4  
VICKIN & THOMAS BERKAU  
DB 9252 PG 2268

BEGIN PROJECT W-5205J  
STA. 10+80.00 -L-



DIVISION FIVE DESIGN

SIGNATURE

WIDENING FOR EXTENSION OF TURN LANE ON  
SR 2558 (GUY RD.) AT US-70 BUSINESS

DIVISION 05	WAKE COUNTY	CLAYTON
REVISIONS	INT.	DATE

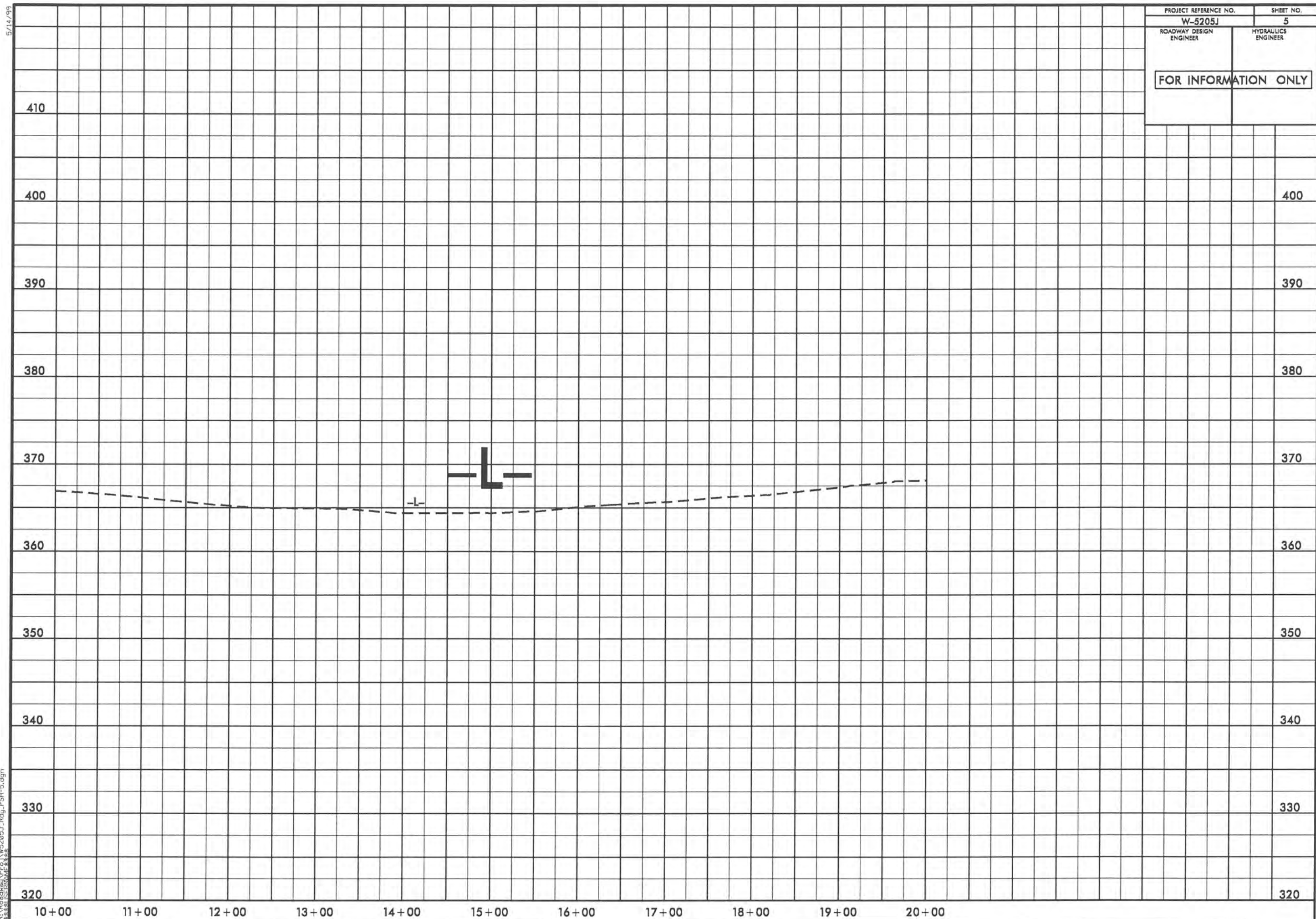
N.C. DEPARTMENT of TRANSPORTATION  
DIVISION of HIGHWAYS  
DIVISION FIVE DESIGN UNIT

SCALE: 1"=50' DATE: 08/2013  
PREPARED BY: SUNIL PATEL  
REVIEWED BY: BEN UPSHAW  
REVIEWED BY:



5/14/99

PROJECT REFERENCE NO. W-5205J	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
FOR INFORMATION ONLY	



07-FEB-2014 11:28  
 R:\Roadway\Proj\W5205J\_Rdy\_PSH-5.dgn  
 5/14/99

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO.		SHEET NO.
W-5205J		TMP-1
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
45335.1.10	HSIP-0070(164)	P.E.
45335.3.FD10	HSIP-0070(164)	CONST.

**TRANSPORTATION MANAGEMENT PLAN**  
**WAKE COUNTY**

**ROADWAY STANDARD DRAWINGS**

REV. SEPTEMBER 2011

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO. \_\_\_\_\_ TITLE

1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1115.01	FLASHING ARROW BOARDS
1135.01	CONES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEM AND TMA DELINEATION
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

**INDEX OF SHEETS**

SHEET NO.

TITLE

TMP-1

LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS,  
INDEX OF SHEETS AND LEGEND

TMP-2

PROJECT NOTES

**LEGEND**

**GENERAL**

- DIRECTION OF TRAFFIC FLOW
- NORTH ARROW
- PROPOSED PVMT. EXIST. PVMT.
- WORK AREA
- REMOVAL OF EXISTING PAVEMENT

**TRAFFIC CONTROL DEVICES**

- TYPE I BARRICADE
- TYPE II BARRICADE
- TYPE III BARRICADE
- CONE
- DRUM
- FLASHING ARROW PANEL (TYPE C)
- TYPE 'B' WARNING LIGHT
- STATIONARY SIGN
- PORTABLE SIGN
- WARNING FLAGS
- CRASH CUSHION
- CHANGEABLE MESSAGE SIGN
- TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
- POLICE
- FLAGGER

**PAVEMENT MARKINGS**

- CRYSTAL PAVEMENT MARKER
- YELLOW/YELLOW PAVEMENT MARKER
- CRYSTAL/RED PAVEMENT MARKER
- PAVEMENT MARKING SYMBOLS

**PROJECT: W-5205J**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO.		SHEET NO.
W-5205J		TMP-2
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
45335.1.10	HSIP-0070(164)	P.E.
45335.3.FD10	HSIP-0070(164)	CONST.

## TRANSPORTATION MANAGEMENT PLAN

### WAKE COUNTY

#### PROJECT NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

#### TIME RESTRICTIONS

- A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
US-70 BUS. SOUTH	MONDAY THRU FRIDAY 7 AM TO 9 AM & 4 PM TO 6 PM
SR-2558 (GUY RD.)	MONDAY THRU FRIDAY 7 AM TO 9 AM & 4 PM TO 6 PM

#### LANE AND SHOULDER CLOSURE REQUIREMENTS

- B) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- F) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

#### PAVEMENT EDGE DROP OFF REQUIREMENTS

- G) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

#### TRAFFIC PATTERN ALTERATIONS

- H) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

#### SIGNING

- I) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

#### TRAFFIC CONTROL DEVICES

- K) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

#### PAVEMENT MARKINGS AND MARKERS

- L) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- M) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

PROJECT: W-5205J

END PROJECT W-5205J  
STA. 18+13.64 -L-

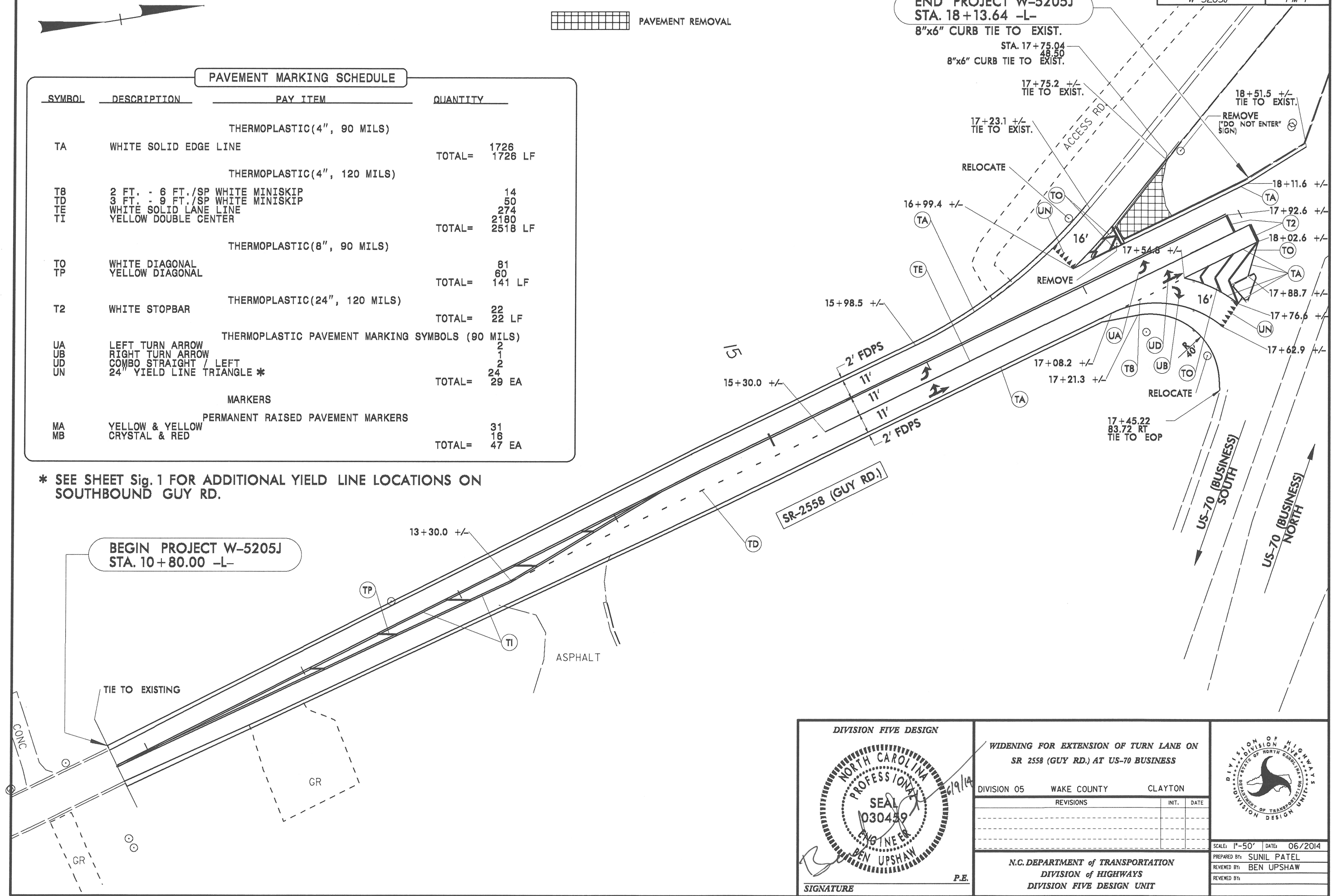
PAVEMENT REMOVAL

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM	QUANTITY
TA	WHITE SOLID EDGE LINE	THERMOPLASTIC(4", 90 MILS)	1726 LF
T8	2 FT. - 6 FT./SP WHITE MINISKIP	THERMOPLASTIC(4", 120 MILS)	14
TD	3 FT. - 9 FT./SP WHITE MINISKIP		50
TE	WHITE SOLID LANE LINE		274
TI	YELLOW DOUBLE CENTER		2180
			TOTAL= 2518 LF
TO	WHITE DIAGONAL	THERMOPLASTIC(8", 90 MILS)	81
TP	YELLOW DIAGONAL		60
			TOTAL= 141 LF
T2	WHITE STOPBAR	THERMOPLASTIC(24", 120 MILS)	22 LF
			TOTAL= 22 LF
UA	LEFT TURN ARROW	THERMOPLASTIC PAVEMENT MARKING SYMBOLS (90 MILS)	2
UB	RIGHT TURN ARROW		1
UD	COMBO STRAIGHT / LEFT		2
UN	24" YIELD LINE TRIANGLE *		24
			TOTAL= 29 EA
MA	PERMANENT RAISED PAVEMENT MARKERS	MARKERS	31
MB	YELLOW & YELLOW CRYSTAL & RED		16
			TOTAL= 47 EA

\* SEE SHEET Sig. 1 FOR ADDITIONAL YIELD LINE LOCATIONS ON SOUTHBOUND GUY RD.

BEGIN PROJECT W-5205J  
STA. 10+80.00 -L-



DIVISION FIVE DESIGN

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030459 BEN UPSHAW

SIGNATURE

WIDENING FOR EXTENSION OF TURN LANE ON SR 2558 (GUY RD.) AT US-70 BUSINESS

DIVISION 05 WAKE COUNTY CLAYTON

REVISIONS	INIT.	DATE

N.C. DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
DIVISION FIVE DESIGN UNIT

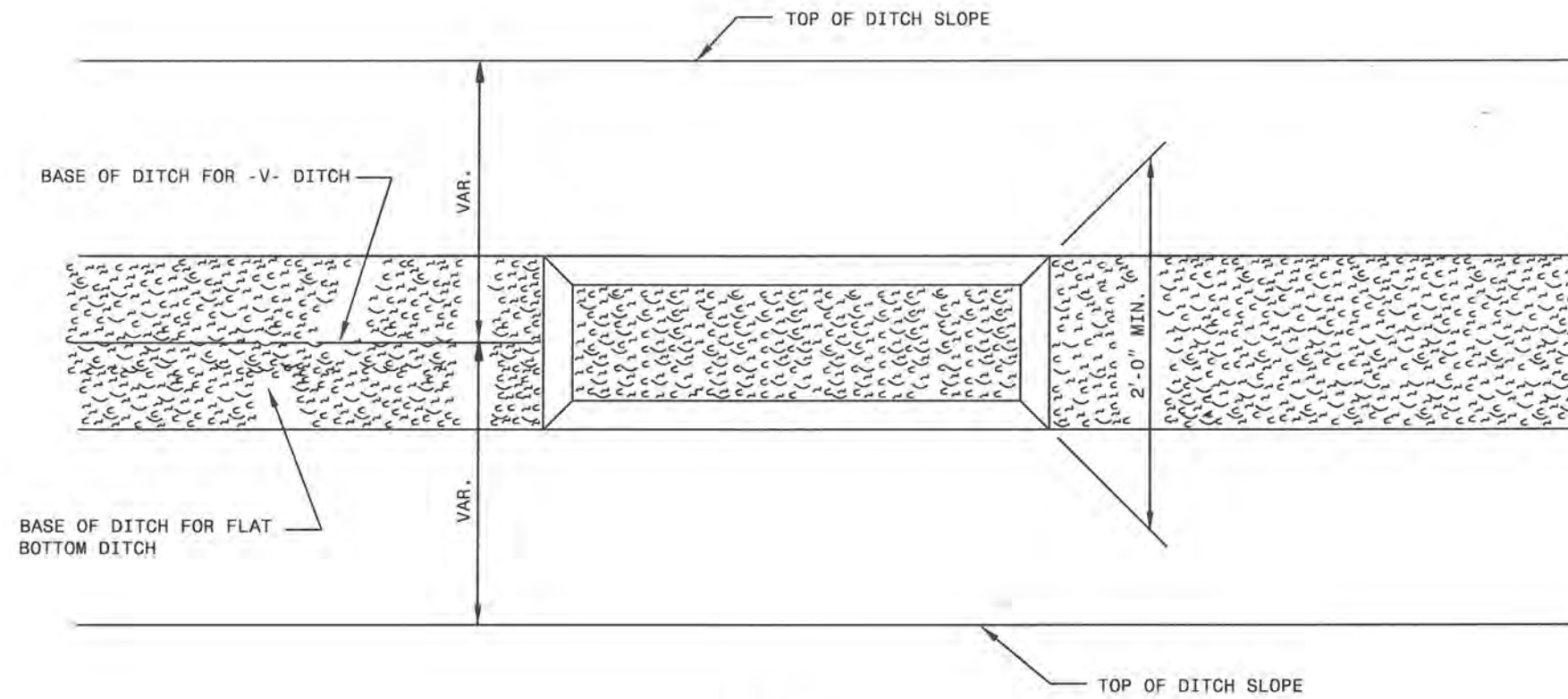
DIVISION OF HIGHWAYS

SCALE: 1"=50' DATE: 06/2014

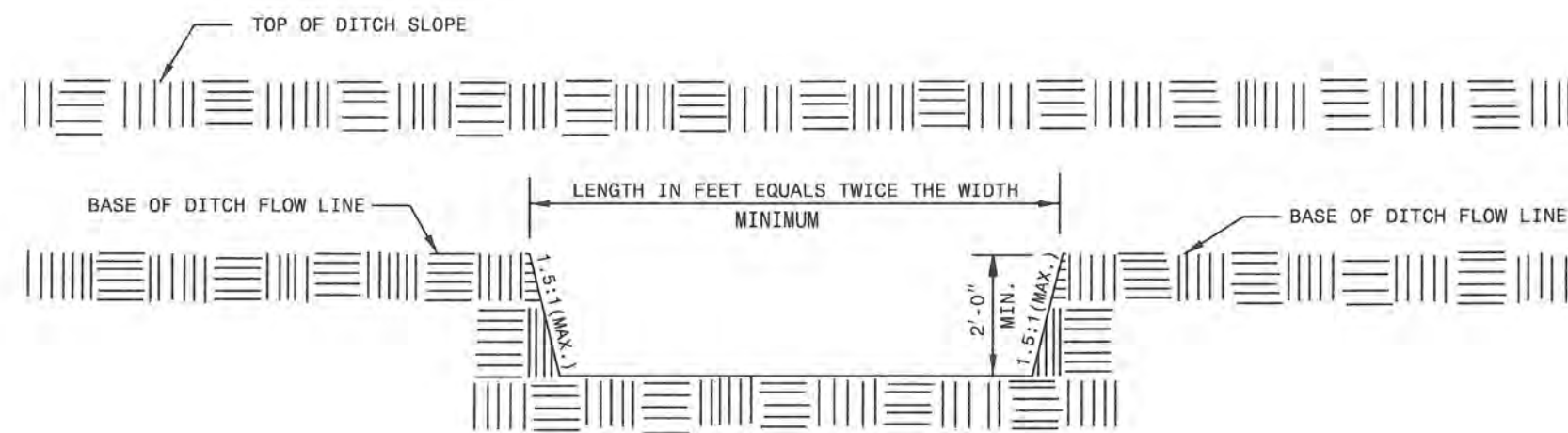
PREPARED BY: SUNIL PATEL  
REVIEWED BY: BEN UPSHAW

PROJECT REFERENCE NO.	SHEET NO.
W-5205J	EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# SILT BASIN 'B' DETAIL

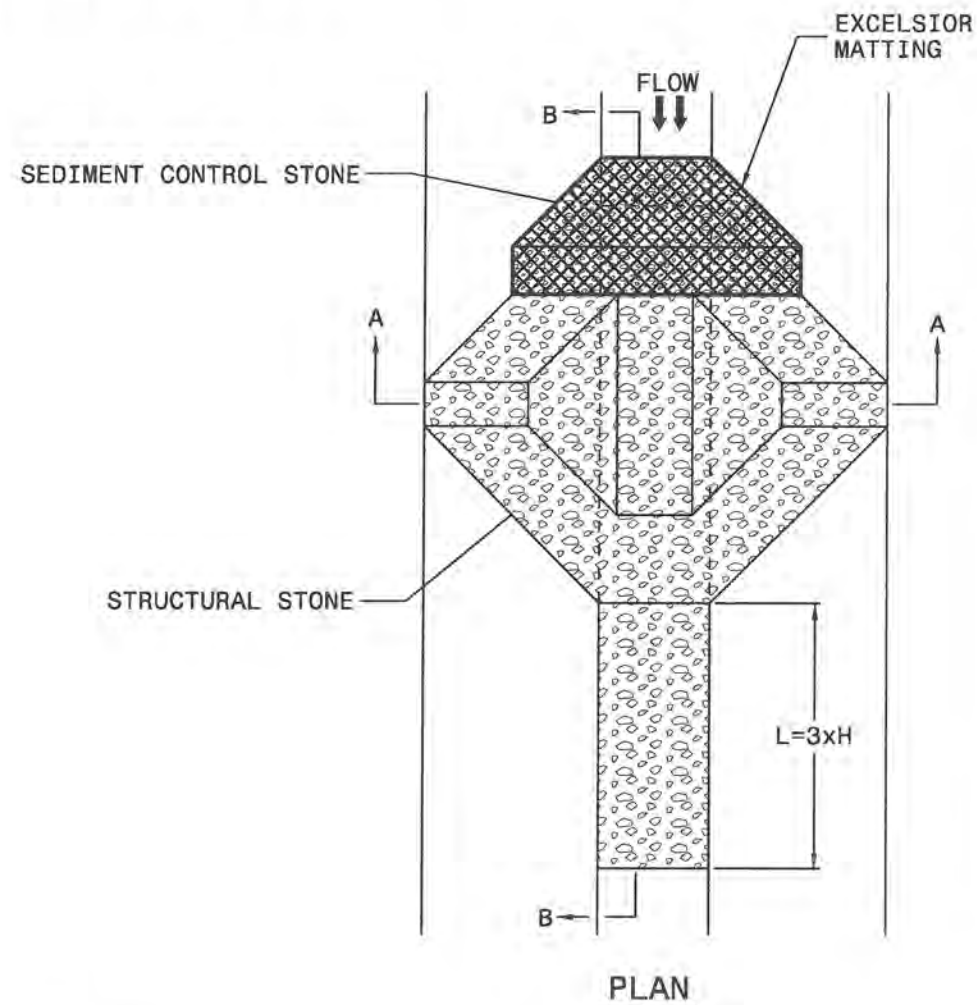


PLAN



ELEVATION

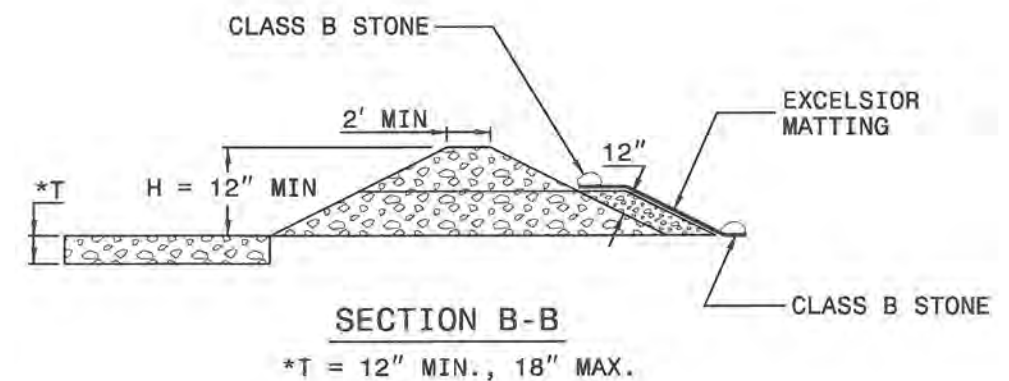
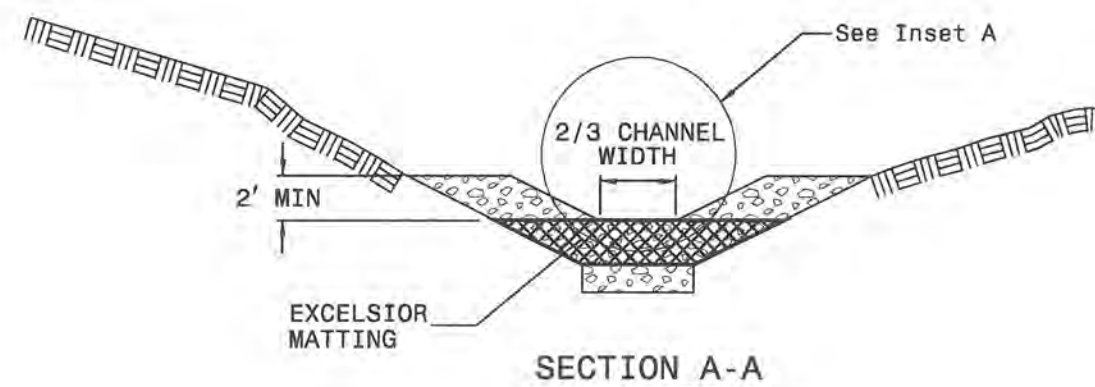
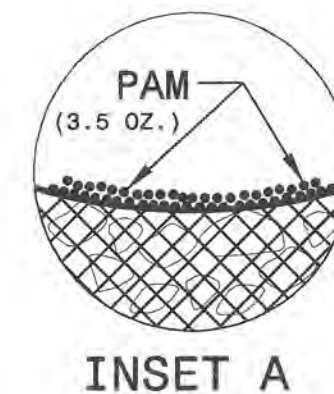
# TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM) DETAIL

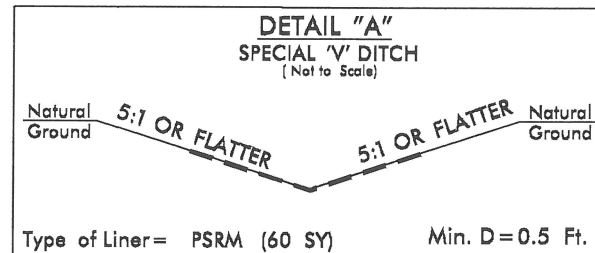


**NOTE**

USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.

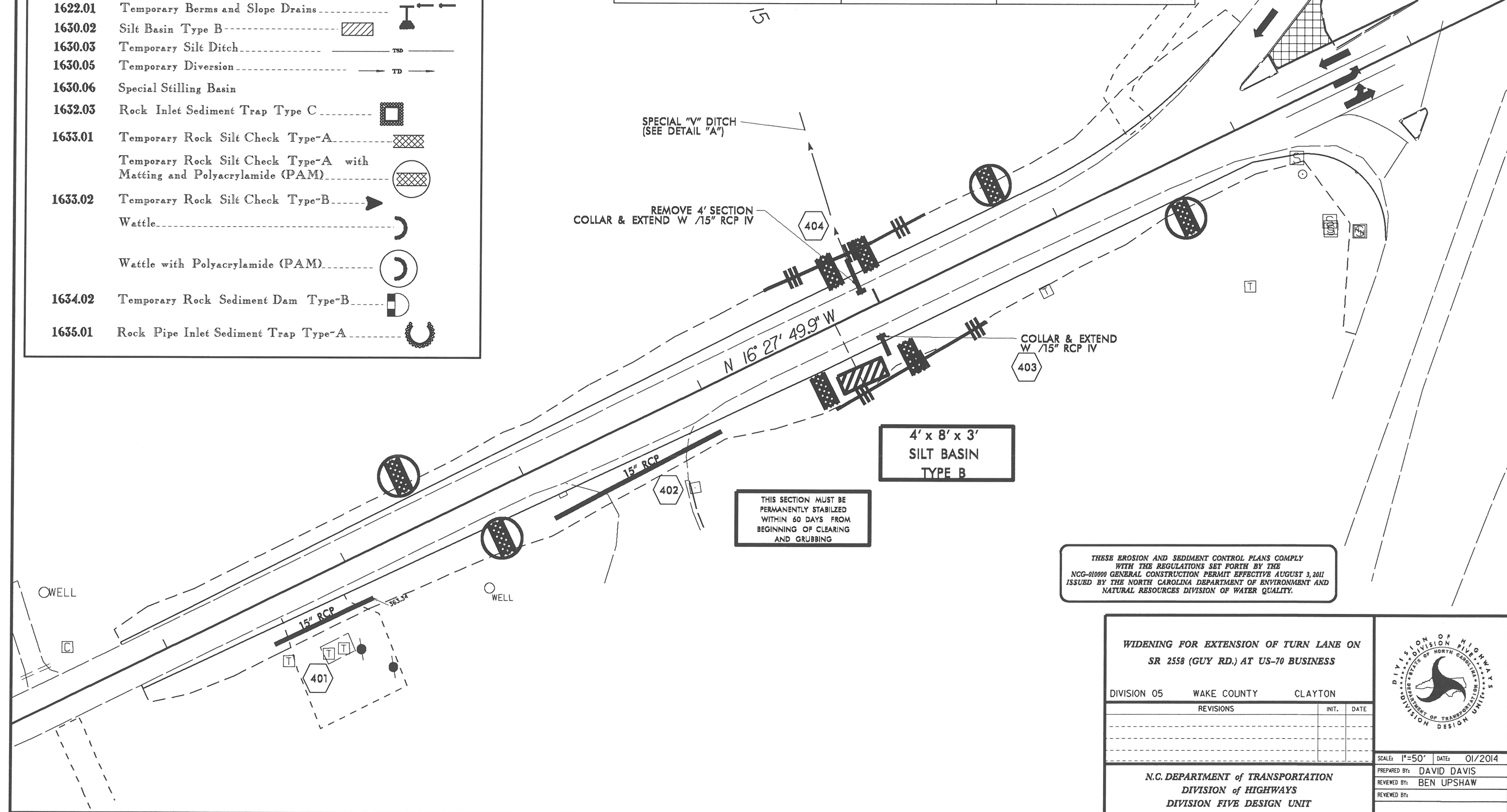




### SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERMETER DIKS, SOALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER BODI ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERMETERS AND BODI ZONES.

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	
1630.05	Temporary Diversion	
1630.06	Special Stilling Basin	
1632.03	Rock Inlet Sediment Trap Type C	
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	
	Wattle with Polyacrylamide (PAM)	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	



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.

**WIDENING FOR EXTENSION OF TURN LANE ON SR 2558 (GUY RD.) AT US-70 BUSINESS**

DIVISION 05 WAKE COUNTY CLAYTON

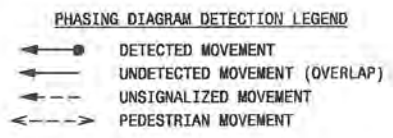
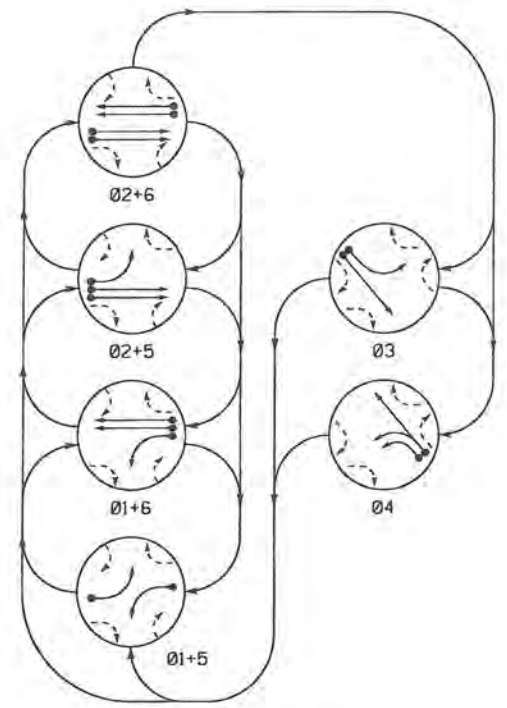
REVISIONS	INT.	DATE

SCALES: 1"=50' DATE: 01/2014

N.C. DEPARTMENT of TRANSPORTATION  
DIVISION of HIGHWAYS  
DIVISION FIVE DESIGN UNIT

PREPARED BY: DAVID DAVIS  
REVIEWED BY: BEN UPSHAW  
REVIEWED BY:

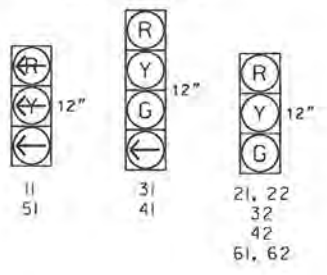
**PHASING DIAGRAM**



**TABLE OF OPERATION**

SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	03	04
11	---	---	---	---	---	---
21, 22	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	R	R	R	R	R	G
42	R	R	R	R	R	G
51	---	---	---	---	---	---
61, 62	R	G	R	G	R	Y

**SIGNAL FACE I.D.**  
All Heads L.E.D.



**DYNAMIC RED EXTENSION SYSTEM**  
NORTHSTAR N04 LOOP & DETECTOR INSTALLATION CHART

LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW EXISTING	DETECTOR UNITS				TIMING	PLACE CALL DURING PHASE	INHIBIT DELAY DURING GREEN	
					INDUCTIVE	DETECTOR	PHASE	CHANNEL				
DR1	6X6	5	256	X	1	1	1	2	NONE	- SEC.	ALL	NO
DR2	6X6	5	240	X	1	1	2	2	NONE	- SEC.	ALL	NO
DR3	6X6	5	256	X	1	2	1	2	NONE	- SEC.	ALL	NO
DR4	6X6	5	240	X	2	2	1	2	NONE	- SEC.	ALL	NO
SET SPEED (MPH)					50			2				
SET LENGTH (FT)					1			2				
ALARM TIME (SEC)					5*			2				

\*if output is present during associated phase's red clear, place stop time on red clearance interval.

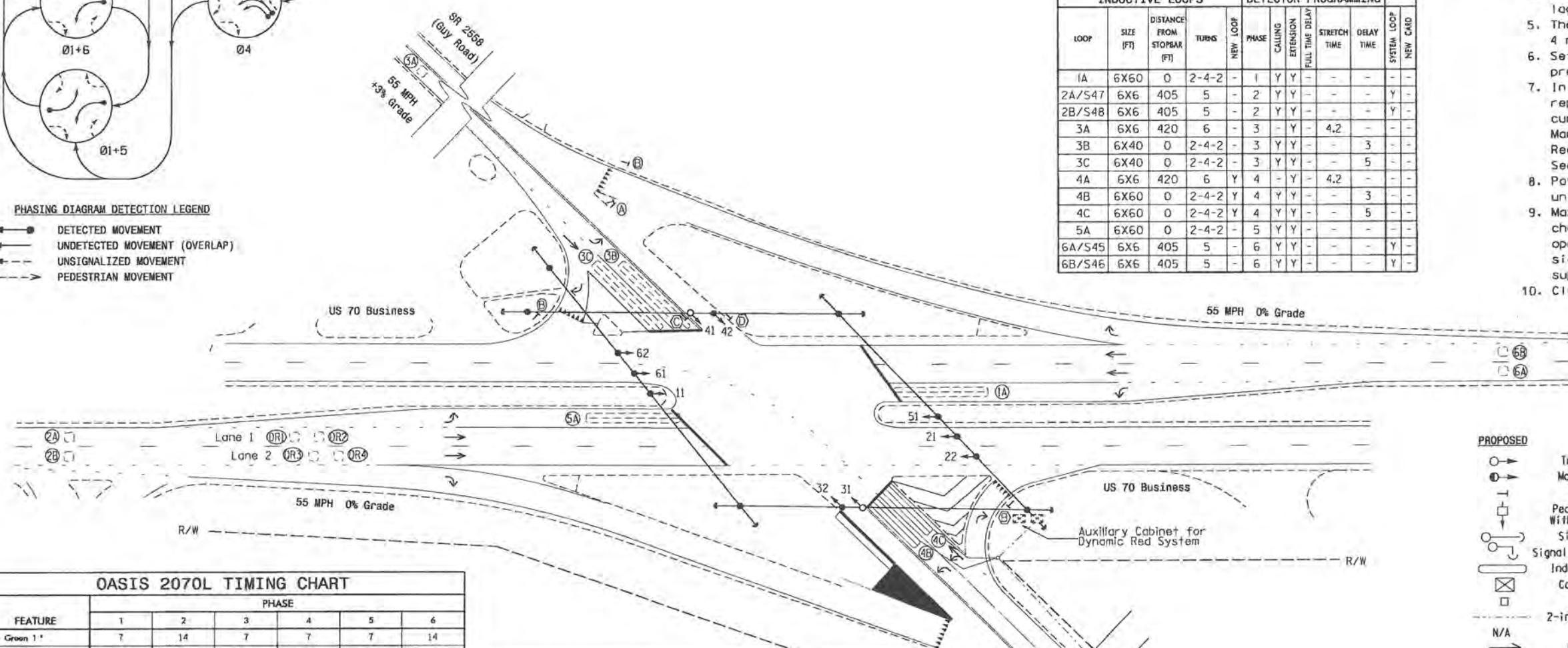
**OASIS 2070L LOOP & DETECTOR INSTALLATION CHART**

LOOP	SIZE (ft)	DISTANCE FROM STOPBAR (ft)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	STRETCH TIME		
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	-
2A/S47	6X6	405	5	-	2	Y	Y	-	-	Y
2B/S48	6X6	405	5	-	2	Y	Y	-	-	Y
3A	6X6	420	6	-	3	-	Y	4.2	-	-
3B	6X40	0	2-4-2	-	3	Y	Y	-	3	-
3C	6X40	0	2-4-2	-	3	Y	Y	-	5	-
4A	6X6	420	6	Y	4	-	Y	4.2	-	-
4B	6X60	0	2-4-2	Y	4	Y	Y	-	3	-
4C	6X60	0	2-4-2	Y	4	Y	Y	-	5	-
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	-
6A/S45	6X6	405	5	-	6	Y	Y	-	-	Y
6B/S46	6X6	405	5	-	6	Y	Y	-	-	Y

**6 Phase Fully Actuated US 70 Bus./NC 42 (Clayton) CLS**

**NOTES**

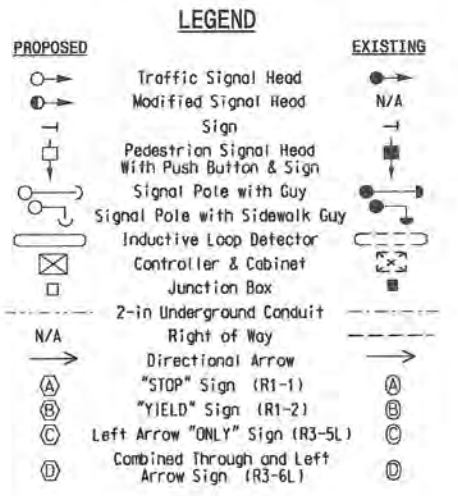
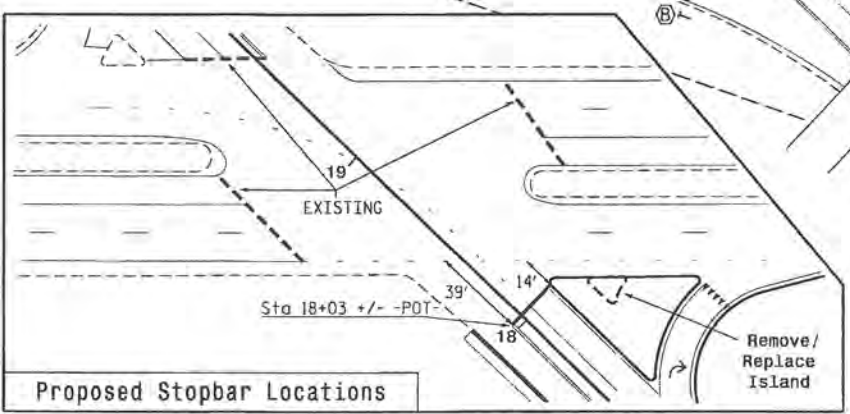
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Renumber existing loops, signal heads, and phases as shown.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Pavement markings are existing unless otherwise shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #: 1142.



**OASIS 2070L TIMING CHART**

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green 1*	7	14	7	7	7	14
Extension 1	2.0	6.0	2.0	2.0	2.0	6.0
Max Green 1*	15	90	20	35	15	90
Yellow Clearance	3.0	5.2	4.9	5.1	3.0	5.2
Red Clearance	2.8	1.2	1.7	2.1	1.9	1.8
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1*	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5
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	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.



**Signal Upgrade**

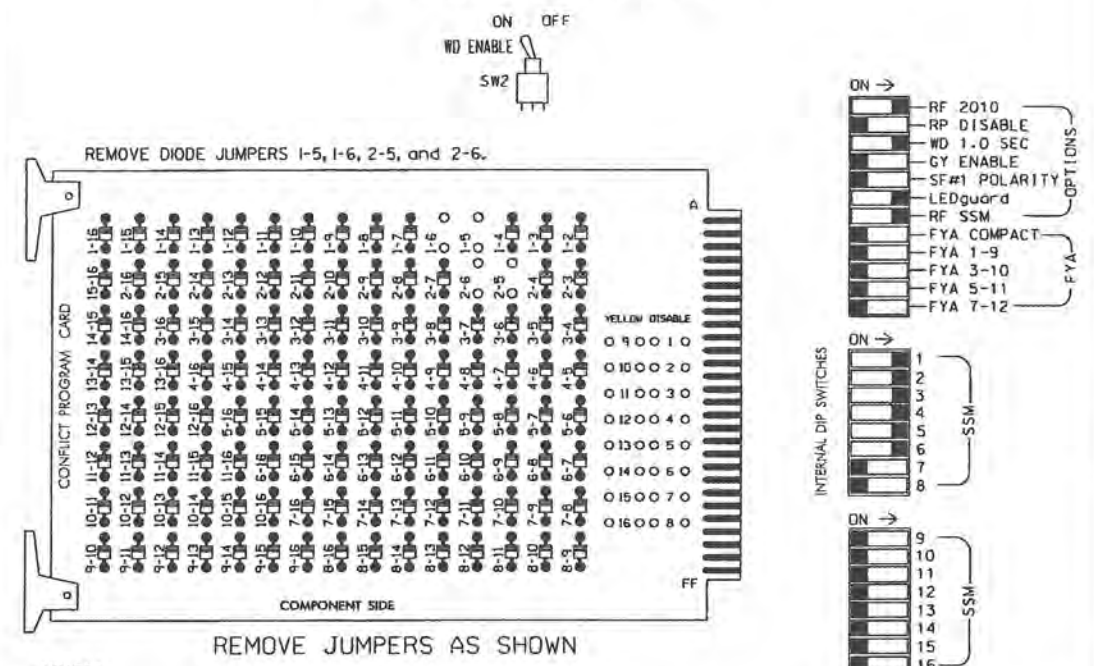
Prepared in the Office of:  
**US 70 Business at SR 2558 (Guy Road)**  
 Division 5 Wake County Garner  
 PLAN DATE: November 2013 REVIEWED BY:  
 PREPARED BY: C.E. Carter REVIEWED BY:  
 REVISIONS: \_\_\_\_\_ INIT. DATE: \_\_\_\_\_  
 SCALE: 0 40  
 1" = 40'  
 SEAL  
  
 SIGNATURE: \_\_\_\_\_ DATE: 11/14/13  
 SIG. INVENTORY NO. 05-1142

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 C:\Users\mrbg



### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
  - Make sure jumpers SEL2-SEL5 are present on the monitor board.

### NOTES

- 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.
- To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
- Remove phases 4 and 8 from Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up in Green.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the US 70 Bus./NC 42 (Clayton) Closed Loop System.

### EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L  
 CABINET.....McCAIN/CONTROL TECHNOLOGIES (DWG. NO. 9500-332-NCDDT)  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6  
 PHASES USED.....1,2,3,4,5,6  
 OVERLAPS.....NONE

### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21,22	NU	31	32	41	42	NU	51,61,62	NU	NU	NU
RED	128			116	116	101	101		134			
YELLOW	129			117	117	102	102		135			
GREEN	130			118	118	103	103		136			
RED ARROW	125								131			
YELLOW ARROW	126								132			
GREEN ARROW	127			118	103		133					

NU = Not Used

### INPUT FILE POSITION LAYOUT

(front view)

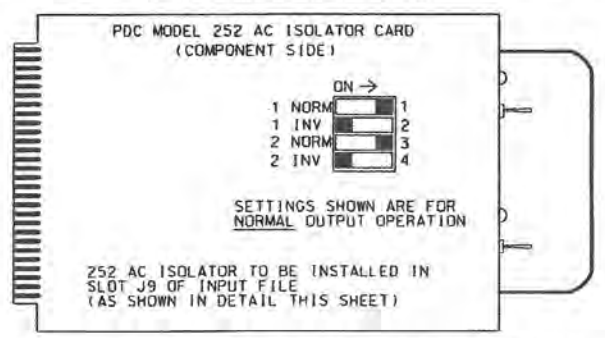
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE U	∅ 1	∅ 2/sys	∅ 3	∅ 3	∅ 3	∅ 3	∅ 4	∅ 4	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	FS
"I"	1A	2A/S47		3A	3B	4A	4C							DC ISOLATOR
L	NOT USED	∅ 2/sys		NOT USED	∅ 3	∅ 4	NOT USED							ST
		2B/S48			3C	4B								DC ISOLATOR
FILE U	∅ 5	∅ 6/sys	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14	∅ 15	∅ 16	∅ 17	∅ 18
"J"	5A	6A/S45												ST
L	NOT USED	∅ 6/sys												DC ISOLATOR
		6B/S46												NOT USED

EX. : 1A, 2A, ETC. = LOOP NO.'S  
 FS = FLASH SENSE  
 ST = STOP TIME

**!! CAUTION!** BE SURE TO REMOVE SURGE ARRESTORS EXISTING ON INPUT PANEL TERMINALS TB7-9&10 AND TB7-11&12. THIS WILL EQUIP SLOT J9 FOR USE WITH THE AC ISOLATOR CARD AS SHOWN ABOVE.

### PHASE 2 STOP TIME (SLOT J9) AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)



NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

### INPUT FILE CONNECTION & PROGRAMMING CHART

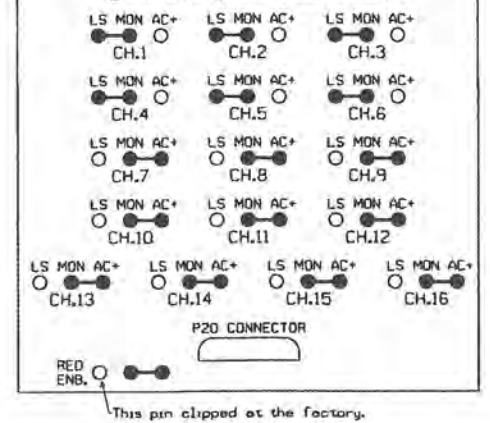
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	J1U	56	18	1	1	Y	Y			
2A/S47	TB2-5,6	J2U	39	1	2	2/SYS	Y	Y			
2B/S48	TB2-7,8	J2L	43	5	12	2/SYS	Y	Y			
3A	TB4-5,6	J5U	58	20	3	3		Y		4.2	
3B	TB4-9,10	J6U	41	3	4	3	Y	Y			3
3C	TB4-11,12	J6L	45	7	14	3	Y	Y			5
4A	TB6-1,2	J7U	65	27	34	4	Y	Y		4.2	
4B	TB6-3,4	J7L	78	40	44	4	Y	Y			3
4C	TB6-5,6	J8U	49	11	24	4	Y	Y			5
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
6A/S45	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S46	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			

INPUT FILE POSITION LEGEND: J2L

FILE J  
SLOT 2  
LOWER

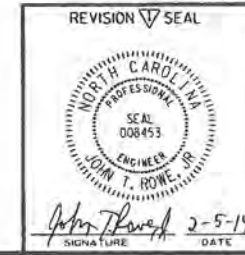
### RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-1142  
 DESIGNED: November 2013  
 SEALED: 2-04-14  
 REVISED: N/A

Electrical Detail - Sheet 1 of 5



US 70 Business at SR 2558 (Guy Road)

Division 05 Wake County Garner

PLAN DATE: December 2012 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS

INIT. DATE

2-5-14

SEAL

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SIGNATURE DATE

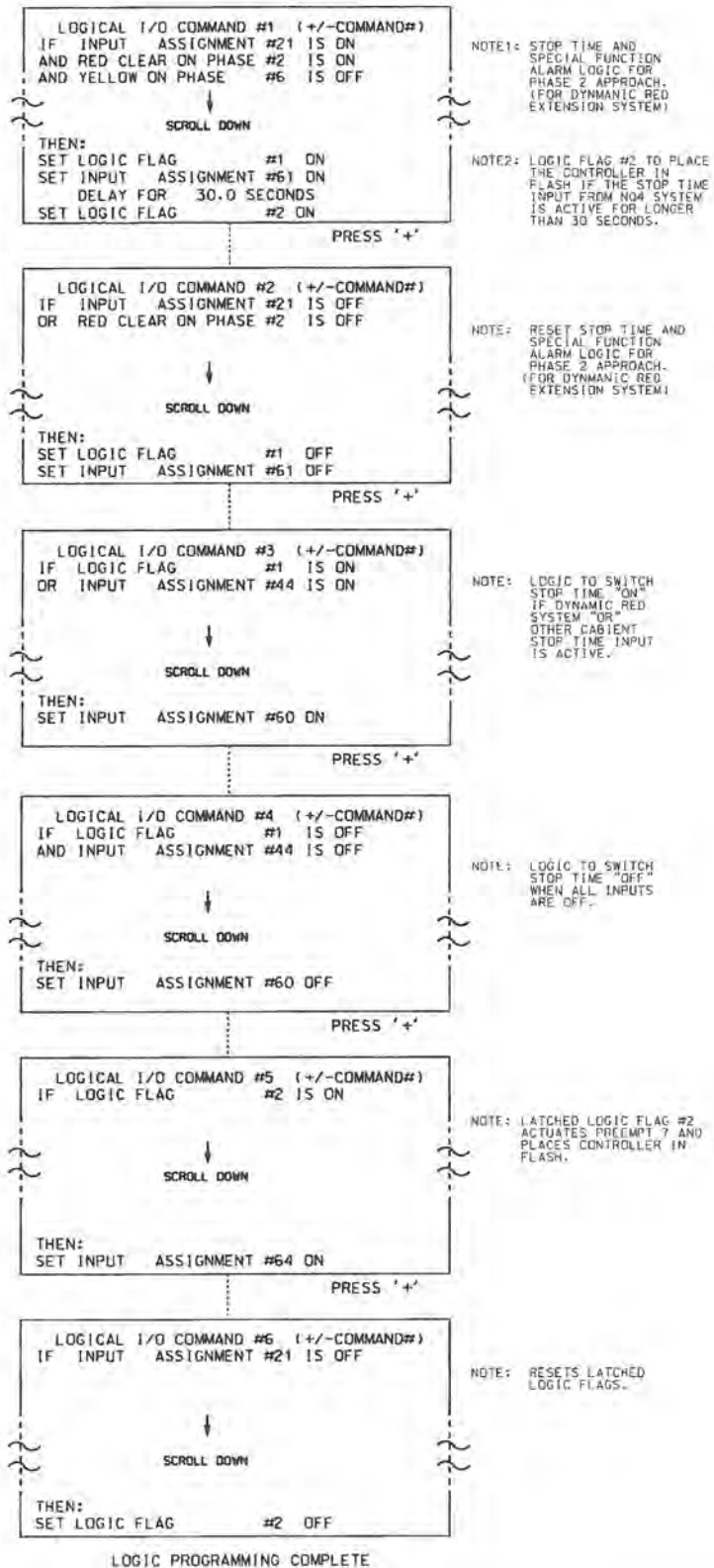
SIG. INVENTORY NO. 05-1142

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**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL  
FOR DYNAMIC RED EXTENSION SYSTEM**

(program controller as shown below)

- 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, 3, 4, 5 AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



NOTE1: STOP TIME AND SPECIAL FUNCTION ALARM LOGIC FOR PHASE 2 APPROACH (FOR DYNAMIC RED EXTENSION SYSTEM)

NOTE2: LOGIC FLAG #2 TO PLACE THE CONTROLLER IN FLASH IF THE STOP TIME INPUT FROM N44 SYSTEM IS ACTIVE FOR LONGER THAN 30 SECONDS.

NOTE: RESET STOP TIME AND SPECIAL FUNCTION ALARM LOGIC FOR PHASE 2 APPROACH (FOR DYNAMIC RED EXTENSION SYSTEM)

NOTE: LOGIC TO SWITCH STOP TIME "ON" IF DYNAMIC RED SYSTEM "OR" OTHER CABINET STOP TIME INPUT IS ACTIVE.

NOTE: LOGIC TO SWITCH STOP TIME "OFF" WHEN ALL INPUTS ARE OFF.

NOTE: LATCHED LOGIC FLAG #2 ACTUATES PREEMPT 7 AND PLACES CONTROLLER IN FLASH.

NOTE: RESETS LATCHED LOGIC FLAGS.

LOGIC PROGRAMMING COMPLETE

**NOTE:** THIS LOGIC IS BASED UPON CHANGES MADE TO INPUT MAPS WHICH ARE SHOWN ON SHEETS 3 AND 4 OF THIS ELECTRICAL DETAIL.

**INPUT/OUTPUT REFERENCE SCHEDULE**  
USE TO INTERPRET LOGIC PROCESSOR

INPUT 21	= OUTPUT FROM DYNAMIC RED EXTENSION SYSTEM (PHASE 2)
INPUT 44	= CABINET CIRCUITRY STOP TIME CONTROL INPUT
INPUT 60	= STOP TIME
INPUT 61	= SPECIAL FUNCTION ALARM 1
INPUT 64	= PREEMPT 7

**FLASH PREEMPTION PROGRAMMING DETAIL  
FOR PREEMPT 7**

(program controller as shown below)

THIS PREEMPT PLACES THE CONTROLLER IN FLASH IF RED EXTENSION IS GREATER THAN 30 SECONDS.  
FROM MAIN MENU PRESS 'A' (PREEMPTION), THEN '1' (STANDARD PREEMPTIONS). PRESS 'NEXT' UNTIL PREEMPTION #7 IS REACHED.

PREEMPTION #7	SETTINGS (NEXT:1-10)	CLEAR/DWELL PHASES
INTERVAL/TIMING	GRN YEL RED	12345678910111213141516
1	255 0.0 0.0	X X
2	0 0.0 0.0	
3	0 0.0 0.0	
4	0 0.0 0.0	
5	1 0.0 0.0	X X

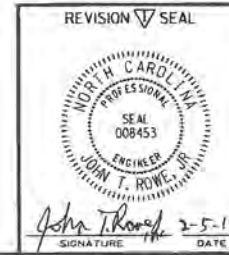
EXIT CALLS

OPTIONS

PRIORITY (Y/N TO SELECT) .....HIGH  
 DELAY TIMER (0-255 SEC) .....0.0  
 MIN GREEN BEFORE PRE (0= DEFAULT).....0  
 PED CLEAR BEFORE PRE (0= DEFAULT).....0  
 YELLOW CLEAR BEFORE PRE (0= DEFAULT).....0.0  
 RED CLEAR BEFORE PRE (0= DEFAULT).....0.0  
 DWELL MIN TIMER (0-255 SEC) .....10  
 DWELL MAX TIMER (0-OFF,1-255MIN) .....0  
 DWELL HOLD-OVER TIMER (0-255) .....0  
 LATCH CALL? .....N  
 LINK TO NEXT PREEMPT? .....N  
 ENABLE BACKUP PROTECTION? .....N  
 HOLD CLEAR 1 PHASES DURING DELAY? .....N  
 FAST GREEN FLASH DWELL PHASES? .....N  
 PED CLEARANCE THROUGH YELLOW? .....N  
 INHIBIT OVERLAP GREEN EXTENSION? .....N  
 SERVICE DURING SOFTWARE FLASH? .....N  
 REST IN RED DURING DWELL INTERVAL? ..N  
 FLASH DWELL INTERVAL? .....Y  
 ALLOW PDS IN DWELL INTERVAL? .....N  
 RE-TIME DWELL INTERVAL? .....N  
 OVERLAPS: ..... ABCDEFGHIJKLMNPQ  
 DWELL INT FLASH YELLOW .....  
 OMIT OVERLAPS: .....

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-1142  
DESIGNED: November 2013  
SEALED: 2-04-14  
REVISED: N/A

Electrical Detail - Sheet 2 of 5



REVISION SEAL

Electrical AND PROGRAMMING DETAILS FOR:

US 70 Business at SR 2558 (Guy Road)

Division 05	Wake County	Garner
PLAN DATE: December 2012	REVIEWED BY: T. Joyce	
PREPARED BY: C. Strickland	REVIEWED BY:	
REVISIONS	INIT.	DATE
1 (Correcting to 2011 IT side street signal map)	JTR	2-5-14

SEAL

Not a certified document as to the Original Document but Only as to the Revisions - This document originally issued and sealed by George C. Brown, PE22013, on 12/12/12. This document is only certified as to the revisions.

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
SIG. INVENTORY NO. 05-1142

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John Rowell

INPUT RE-ASSIGNMENT PROGRAMMING DETAIL FOR DYNAMIC RED EXTENSION SYSTEM

(Program Controller as shown below)

START HERE

- FROM MAIN MENU PRESS '5' (INPUTS).
- WITH CURSOR IN "INPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE INPUT ASSIGNMENT NUMBER 21, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

PAGE:1 C1 PIN:59 VEHICLE DETECTOR  
 INPUT ASSIGNMENT #.....21  
 DEBOUNCE TIME (0-25.5 SEC).....0.5  
 DELAY TIME (0-25.5 SEC).....0.0  
 HOLD-OVER TIME (0-25.5 SEC).....0.0  
 ASSIGNMENT SELECTION:  
 NOT ENABLED.....Y  
 VEHICLE DETECTOR (1-64).....15  
 PEDESTRIAN DETECTOR (1-16).....  
 ALTERNATE PED DETECTOR (1-16).....  
 PREEMPT (1-10).....  
 INVERTED PREEMPT (1-10).....  
 STOP TIME (Y/N).....  
 FLASH SENSE (Y/N).....  
 DOOR OPEN (Y/N).....  
 MANUAL CONTROL ENABLE (Y/N).....  
 MANUAL CONTROL ADVANCE (Y/N).....  
 SPECIAL FUNCTION ALARM (1-8).....  
 TOD HOUR SYNCHRONIZATION (0-23).....  
 FORCE OFF RING (1-4).....  
 HOLD PHASES (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 OVERRIDE PHASE CONTROL FUNCTION (Y).....

ENTER A "Y" FOR NOT ENABLED

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT

PAGE:1 C1 PIN:59 NOT ENABLED  
 INPUT ASSIGNMENT #.....21  
 DEBOUNCE TIME (0-25.5 SEC).....0.5  
 DELAY TIME (0-25.5 SEC).....0.0  
 HOLD-OVER TIME (0-25.5 SEC).....0.0  
 ASSIGNMENT SELECTION:  
 NOT ENABLED.....Y  
 VEHICLE DETECTOR (1-64).....  
 PEDESTRIAN DETECTOR (1-16).....  
 ALTERNATE PED DETECTOR (1-16).....  
 PREEMPT (1-10).....  
 INVERTED PREEMPT (1-10).....  
 STOP TIME (Y/N).....  
 FLASH SENSE (Y/N).....  
 DOOR OPEN (Y/N).....  
 MANUAL CONTROL ENABLE (Y/N).....  
 MANUAL CONTROL ADVANCE (Y/N).....  
 SPECIAL FUNCTION ALARM (1-8).....  
 TOD HOUR SYNCHRONIZATION (0-23).....  
 FORCE OFF RING (1-4).....  
 HOLD PHASES (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 OVERRIDE PHASE CONTROL FUNCTION (Y).....

PAGE:1 C1 PIN:0 NOT ENABLED  
 INPUT ASSIGNMENT #.....60  
 DEBOUNCE TIME (0-25.5 SEC).....0.5  
 DELAY TIME (0-25.5 SEC).....0.0  
 HOLD-OVER TIME (0-25.5 SEC).....0.0  
 ASSIGNMENT SELECTION:  
 NOT ENABLED.....Y  
 VEHICLE DETECTOR (1-64).....  
 PEDESTRIAN DETECTOR (1-16).....  
 ALTERNATE PED DETECTOR (1-16).....  
 PREEMPT (1-10).....  
 INVERTED PREEMPT (1-10).....  
 STOP TIME (Y/N).....  
 FLASH SENSE (Y/N).....  
 DOOR OPEN (Y/N).....  
 MANUAL CONTROL ENABLE (Y/N).....  
 MANUAL CONTROL ADVANCE (Y/N).....  
 SPECIAL FUNCTION ALARM (1-8).....  
 TOD HOUR SYNCHRONIZATION (0-23).....  
 FORCE OFF RING (1-4).....  
 HOLD PHASES (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 OVERRIDE PHASE CONTROL FUNCTION (Y).....

ENTER A "Y" IN STOP TIME FIELD

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT

PAGE:1 C1 PIN:0 STOP TIME  
 INPUT ASSIGNMENT #.....60  
 DEBOUNCE TIME (0-25.5 SEC).....0.5  
 DELAY TIME (0-25.5 SEC).....0.0  
 HOLD-OVER TIME (0-25.5 SEC).....0.0  
 ASSIGNMENT SELECTION:  
 NOT ENABLED.....Y  
 VEHICLE DETECTOR (1-64).....  
 PEDESTRIAN DETECTOR (1-16).....  
 ALTERNATE PED DETECTOR (1-16).....  
 PREEMPT (1-10).....  
 INVERTED PREEMPT (1-10).....  
 STOP TIME (Y/N).....Y  
 FLASH SENSE (Y/N).....  
 DOOR OPEN (Y/N).....  
 MANUAL CONTROL ENABLE (Y/N).....  
 MANUAL CONTROL ADVANCE (Y/N).....  
 SPECIAL FUNCTION ALARM (1-8).....  
 TOD HOUR SYNCHRONIZATION (0-23).....  
 FORCE OFF RING (1-4).....  
 HOLD PHASES (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 OVERRIDE PHASE CONTROL FUNCTION (Y).....

SCROLL DOWN TO VIEW ALL DATA

SCROLL DOWN TO VIEW ALL DATA

PRESS "+" KEY 23 TIMES TO ADVANCE TO INPUT 44

PRESS "+" KEY TO ADVANCE TO INPUT 61

PAGE:1 C1 PIN:82 STOP TIME  
 INPUT ASSIGNMENT #.....44  
 DEBOUNCE TIME (0-25.5 SEC).....0.5  
 DELAY TIME (0-25.5 SEC).....0.0  
 HOLD-OVER TIME (0-25.5 SEC).....0.0  
 ASSIGNMENT SELECTION:  
 NOT ENABLED.....Y  
 VEHICLE DETECTOR (1-64).....  
 PEDESTRIAN DETECTOR (1-16).....  
 ALTERNATE PED DETECTOR (1-16).....  
 PREEMPT (1-10).....  
 INVERTED PREEMPT (1-10).....  
 STOP TIME (Y/N).....Y  
 FLASH SENSE (Y/N).....  
 DOOR OPEN (Y/N).....  
 MANUAL CONTROL ENABLE (Y/N).....  
 MANUAL CONTROL ADVANCE (Y/N).....  
 SPECIAL FUNCTION ALARM (1-8).....  
 TOD HOUR SYNCHRONIZATION (0-23).....  
 FORCE OFF RING (1-4).....  
 HOLD PHASES (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 OVERRIDE PHASE CONTROL FUNCTION (Y).....

ENTER A "Y" FOR NOT ENABLED

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT

PAGE:1 C1 PIN:82 NOT ENABLED  
 INPUT ASSIGNMENT #.....44  
 DEBOUNCE TIME (0-25.5 SEC).....0.5  
 DELAY TIME (0-25.5 SEC).....0.0  
 HOLD-OVER TIME (0-25.5 SEC).....0.0  
 ASSIGNMENT SELECTION:  
 NOT ENABLED.....Y  
 VEHICLE DETECTOR (1-64).....  
 PEDESTRIAN DETECTOR (1-16).....  
 ALTERNATE PED DETECTOR (1-16).....  
 PREEMPT (1-10).....  
 INVERTED PREEMPT (1-10).....  
 STOP TIME (Y/N).....  
 FLASH SENSE (Y/N).....  
 DOOR OPEN (Y/N).....  
 MANUAL CONTROL ENABLE (Y/N).....  
 MANUAL CONTROL ADVANCE (Y/N).....  
 SPECIAL FUNCTION ALARM (1-8).....  
 TOD HOUR SYNCHRONIZATION (0-23).....  
 FORCE OFF RING (1-4).....  
 HOLD PHASES (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 OVERRIDE PHASE CONTROL FUNCTION (Y).....

PAGE:1 C1 PIN:0 NOT ENABLED  
 INPUT ASSIGNMENT #.....61  
 DEBOUNCE TIME (0-25.5 SEC).....0.5  
 DELAY TIME (0-25.5 SEC).....0.0  
 HOLD-OVER TIME (0-25.5 SEC).....0.0  
 ASSIGNMENT SELECTION:  
 NOT ENABLED.....Y  
 VEHICLE DETECTOR (1-64).....  
 PEDESTRIAN DETECTOR (1-16).....  
 ALTERNATE PED DETECTOR (1-16).....  
 PREEMPT (1-10).....  
 INVERTED PREEMPT (1-10).....  
 STOP TIME (Y/N).....  
 FLASH SENSE (Y/N).....  
 DOOR OPEN (Y/N).....  
 MANUAL CONTROL ENABLE (Y/N).....  
 MANUAL CONTROL ADVANCE (Y/N).....  
 SPECIAL FUNCTION ALARM (1-8).....  
 TOD HOUR SYNCHRONIZATION (0-23).....  
 FORCE OFF RING (1-4).....  
 HOLD PHASES (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 OVERRIDE PHASE CONTROL FUNCTION (Y).....

ENTER A "1" FOR SPECIAL FUNCTION ALARM

SCREEN SHOULD NOW APPEAR AS SHOWN TO THE RIGHT

PAGE:1 C1 PIN:0 SPECIAL FUNCTION ALAR  
 INPUT ASSIGNMENT #.....61  
 DEBOUNCE TIME (0-25.5 SEC).....0.5  
 DELAY TIME (0-25.5 SEC).....0.0  
 HOLD-OVER TIME (0-25.5 SEC).....0.0  
 ASSIGNMENT SELECTION:  
 NOT ENABLED.....Y  
 VEHICLE DETECTOR (1-64).....  
 PEDESTRIAN DETECTOR (1-16).....  
 ALTERNATE PED DETECTOR (1-16).....  
 PREEMPT (1-10).....  
 INVERTED PREEMPT (1-10).....  
 STOP TIME (Y/N).....  
 FLASH SENSE (Y/N).....  
 DOOR OPEN (Y/N).....  
 MANUAL CONTROL ENABLE (Y/N).....  
 MANUAL CONTROL ADVANCE (Y/N).....  
 SPECIAL FUNCTION ALARM (1-8).....1  
 TOD HOUR SYNCHRONIZATION (0-23).....  
 FORCE OFF RING (1-4).....  
 HOLD PHASES (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 OVERRIDE PHASE CONTROL FUNCTION (Y).....

SCROLL DOWN TO VIEW ALL DATA

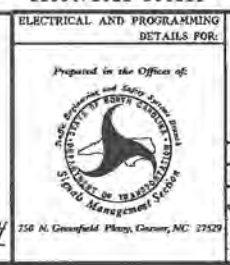
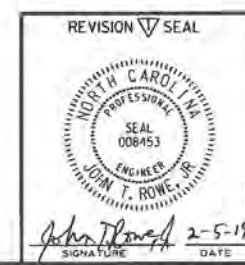
SCROLL DOWN TO VIEW ALL DATA

PRESS "+" KEY 15 TIMES TO ADVANCE TO INPUT 60

PRESS "+" 3 TIMES TO ADVANCE TO INPUT 64 PROGRAMMING CONTINUED ON NEXT PAGE

Electrical Detail - Sheet 3 of 5

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-1142  
 DESIGNED: November 2013  
 SEALED: 2-04-14  
 REVISED: N/A



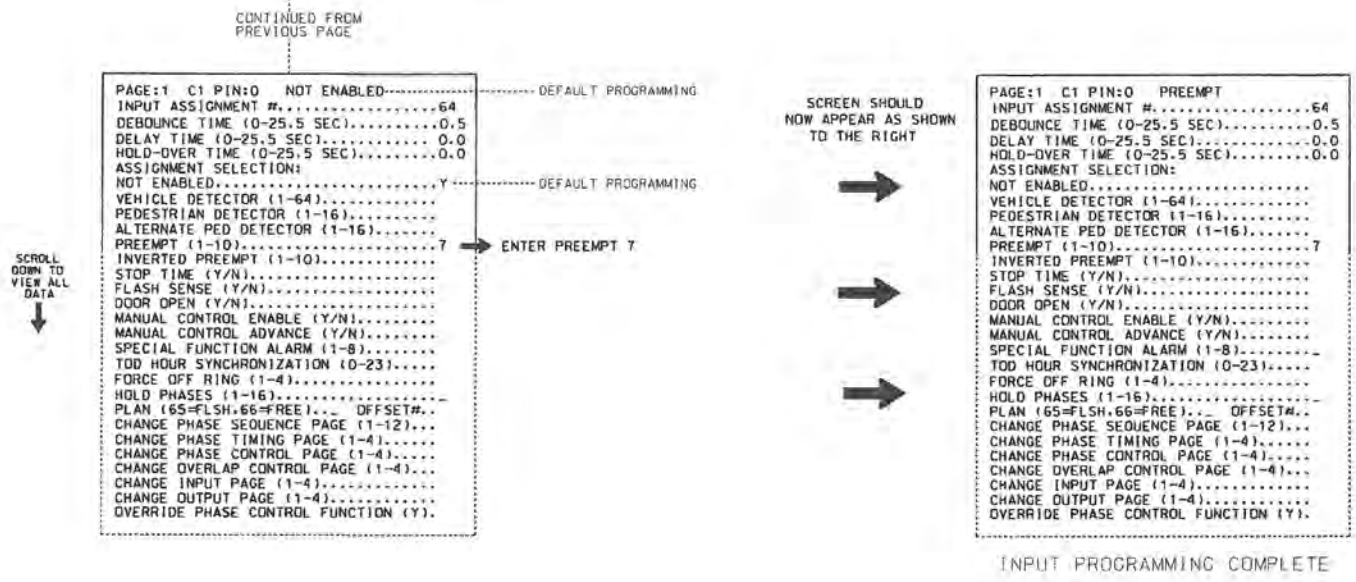
US 70 Business at SR 2558 (Guy Road)	
Division 05	Wake County East of Garner
Plan Date: December 2012	Reviewed By: T. Joyce
Prepared By: C. Strickland	Reviewed By:
Revisions	INIT. DATE
1. Connected to 30111 along street (Phase 1, 2)	J.T.R. 2-3-14

SEAL  
 Not a certified document as to the Original Document but only as to the Revisions - This document originally issued and sealed by George C. Brown, #022013, on 12/12/12.  
 This document is only certified as to the revisions.  
 SIGNATURE DATE  
 SIG. INVENTORY NO. 05-1142

04-EEB-2014 10046  
 5-M11550M15 5 (p)5 (rev) 12/12/12  
 1-Detailed

**INPUT RE-ASSIGNMENT PROGRAMMING DETAIL (continued from previous page)**  
(program controller as shown below)

CONTINUE INPUT PROGRAMMING  
HERE



THIS ELECTRICAL DETAIL IS FOR  
 THE SIGNAL DESIGN: 05-1142  
 DESIGNED: November 2013  
 SEALED: 2-04-14  
 REVISED: N/A

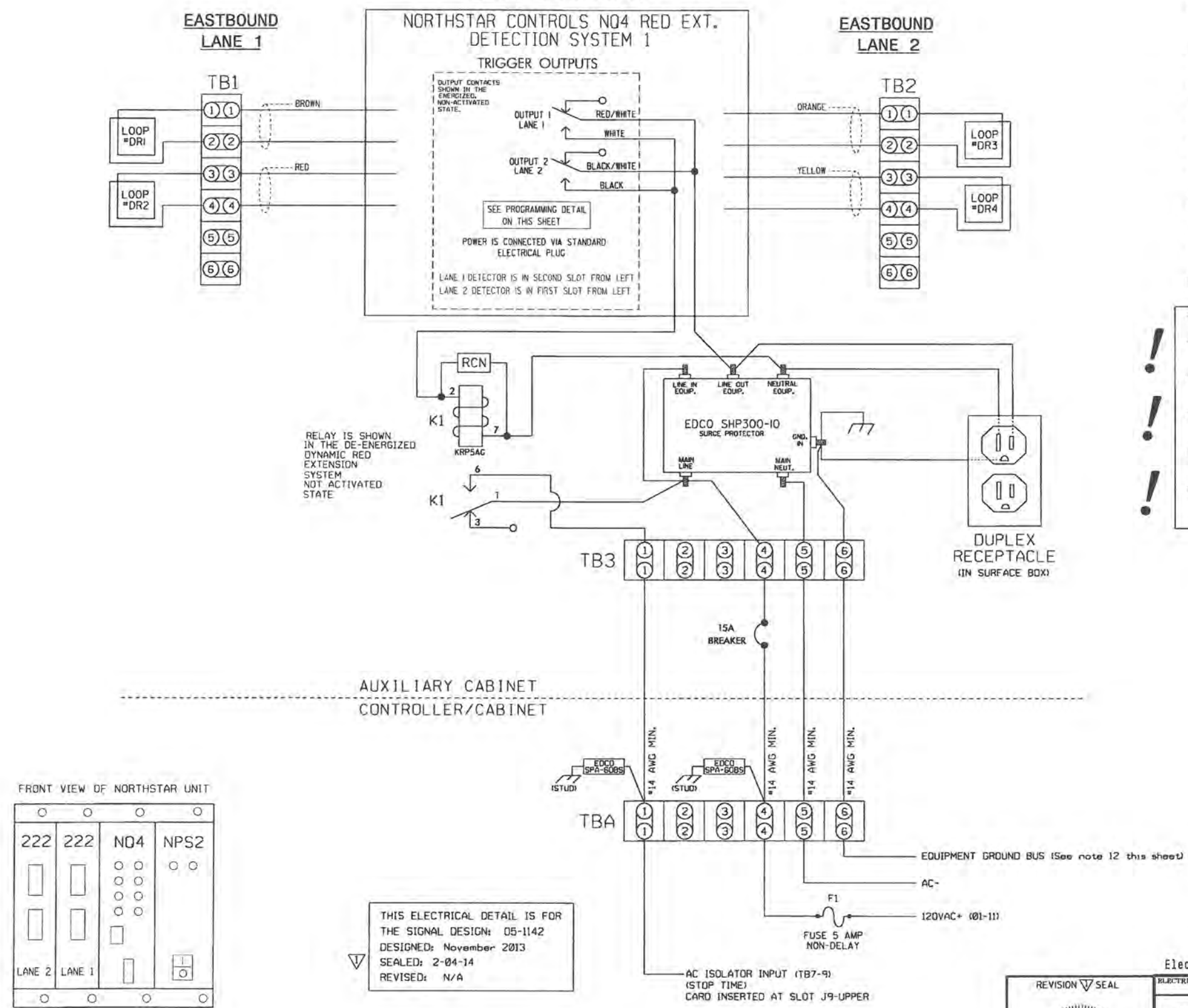
Electrical Detail - Sheet 4 of 5

REVISION SEAL 	ELECTRICAL AND PROGRAMMING DETAILS FOR: 	<b>US 70 Business          at          SR 2558 (Guy Road)</b>		SEAL <small>Not a certified document as to the Original Document but only as to the Revisions - this document originally issued and sealed by George E. Brown #22815- on 12/12/12. This document is only certified as to the revisions.</small>
		Division 05 Wake County East of Garner PLAN DATE: December 2012 REVIEWED BY: T. JOYCE PREPARED BY: C. Strickland REVIEWED BY:	REVISIONS 1. Corrected to split side airset phasing (P)	
Signature: <i>John T. Rowe</i> Date: 2-5-14		750 N. Greenfield Place, Garner, NC 27529		S.C. INVENTORY NO. 05-1142

04-FEB-2014 10:53  
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 J:\mason

WIRING DETAIL FOR NORTHSTAR CONTROLS NQ4  
USED FOR DYNAMIC RED EXTENSION - SYSTEM NO. 1

EASTBOUND - PHASE 2 APPROACH  
(wire unit as shown below)



- NOTES**
- All loop lead-ins shall be twisted.
  - Loop spacing is critical to the proper operation of this Overspeed Detection System. Make sure loop spacing is correctly programmed in NQ4 Unit.
  - Insure that connectors on rear of NQ4 are seated securely.
  - NQ4 Unit shall be located in an auxiliary cabinet next to 332 controller cabinet.
  - Unit power is connected by standard electrical plug.
  - Terminal strips TB1, TB2, TB3 & TBA to be added by installer.
  - Relay 'K1' is a SPDT with an 120VAC coil. Potter & Brumfield no. KRP5AGAG. Dot Material no. 625028600.
  - The RC Network across the coil of 'K1' is a .1 micro farad, 100 ohm. Dot Material no. 106018075. ITW no. 104M060C100
  - EDCO SPA-60BS is a surge protector for 120VAC interconnect circuits. Dot Material no. 625022076.
  - EDCO SHP300-10 is an AC service surge protector. Dot Material no. 625022075.
  - Do not install ground rods at auxiliary cabinet.
  - Install equipment ground from controller cabinet to auxiliary cabinet if not already present.
  - Install disconnect if there is no disconnect present at auxiliary cabinet.
  - IMPORTANT! A jumper must be installed between input file terminals J9-E and J9-K.
  - IMPORTANT! For proper operation of the Dynamic Red Extension System, tie TB7-12 to AC neutral.
  - IMPORTANT! Make sure both channels of AC Isolator card inserted at input file position J9 are set for NORMAL OUTPUT operation. See sheet 1 of this Electrical Detail.

**NORTHSTAR CONTROLS MODEL NQ4  
PROGRAMMING DETAIL**  
(program unit as shown)

NOTE: UNIT MUST BE PROGRAMMED USING PC AND HYPERTERMINAL PROGRAM. FOR CONNECTION TO HYPERTERMINAL REFER TO NQ4 OPERATION MANUAL.

PROGRAM NQ4 BY TYPING THE FOLLOWING COMMANDS

- SET SPEED=50
- SET LENGTH=1'
- SET ALARMTIME=5
- SET SEPARATION=16' (LEADING EDGE TO LEADING EDGE) (THIS VALUE MAY VARY. PROGRAM ACTUAL MEASURED SEPARATION)
- SET LOOP LENGTH=6' (THIS VALUE MAY VARY. PROGRAM ACTUAL MEASURED LOOP LENGTH)
- SAVE

ALARM LOG NOTE: WHEN DYNAMIC RED EXTENSION SYSTEM 1 DETECTS A VIOLATION, A SPECIAL FUNCTION 1 ALARM IS RECORDED WITHIN THE OASIS ALARM LOG (WITH TIME AND DATE STAMP).

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-1142  
DESIGNED: November 2013  
SEALED: 2-04-14  
REVISED: N/A

Electrical Detail - Sheet 5 of 5

<p>REVISION SEAL</p> <p>John T. Rowe 2-5-14</p>	<p>Prepared in the Office of:</p> <p>750 N. Greenfield Place, Garner, NC 27529</p>	<p>US 70 Business at SR 2558 (Guy Road)</p>		<p>SEAL</p> <p>Not a certified document as to the Original Document but Only as to the Revisions - this document originally issued and sealed by George C. Brown, 4/22/13, on 12/12/12. This document is only certified as to the revisions.</p>				
		<p>Division 05 Wake County East of Garner</p> <p>PLAN DATE: December 2012 REVIEWED BY: T. Joyce</p> <p>PREPARED BY: G. Strickland REVIEWED BY:</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td>1</td> <td>2-5-14</td> <td>JTK</td> </tr> </table>		NO.	DATE	BY	1
NO.	DATE	BY						
1	2-5-14	JTK						

04-FEB-2014 10:56 5-MTSASU415 51pro-2-wiring-nq4s1g KonWelder051142.dwg, e...20121212.dgn

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**CROSS-SECTION SUMMARY**

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)																		
11+00.00	4	5																		
11+25.00	9	10																		
11+50.00	11	9																		
11+75.00	11	7																		
12+00.00	8	11																		
12+25.00	9	13																		
12+50.00	12	9																		
12+70.00	11	6																		
13+00.00	23	7																		
13+15.00	10	3																		
13+50.00	18	5																		
13+75.00	18	1																		
14+00.00	30	0																		
14+25.00	36	1																		
14+50.00	37	3																		
14+75.00	34	7																		
14+94.00	17	14																		
15+25.00	20	24																		
15+50.00	15	12																		
15+80.00	17	11																		
16+00.00	11	6																		
16+25.00	14	6																		
16+50.00	13	7																		
16+75.00	13	4																		
17+00.00	12	0																		
17+25.00	9	0																		
14+50.00	4	3																		
17+83.00	0	9																		
18+00.00	1	3																		
<b>TOTAL=</b>	<b>427</b>	<b>196</b>																		

**Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".**

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

370 370

365 365

360 360

370 370

365 365

360 360

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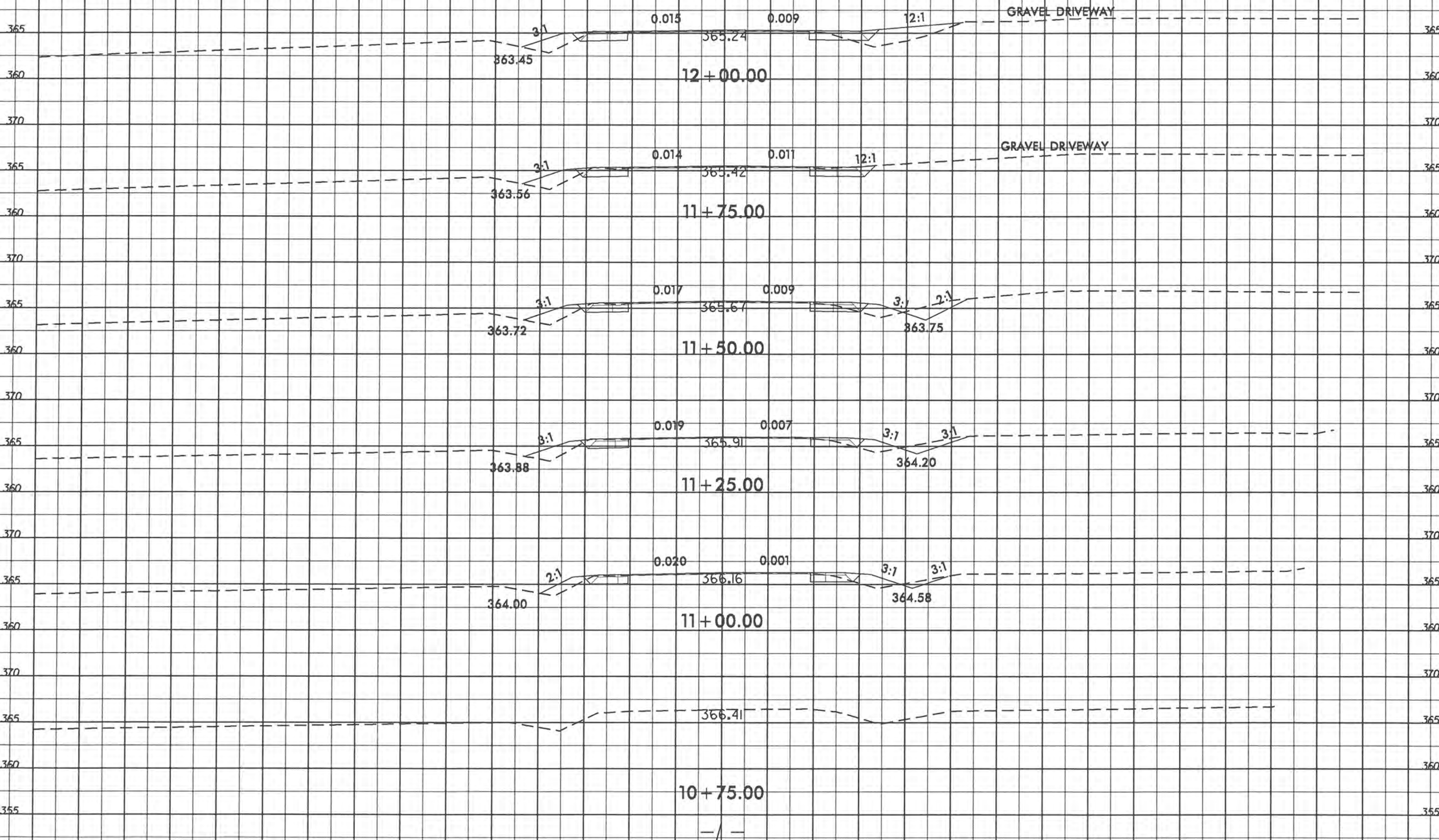
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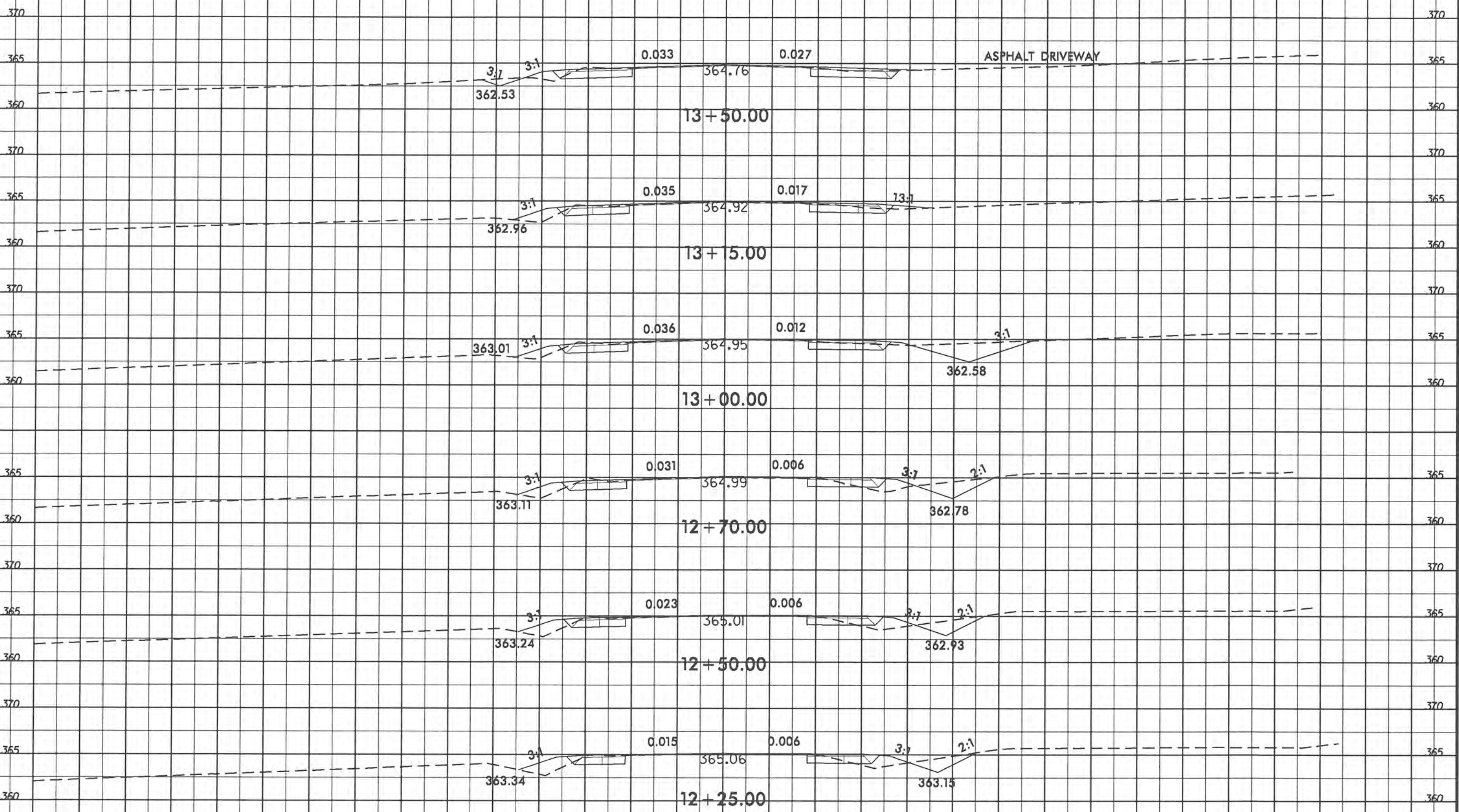
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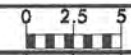
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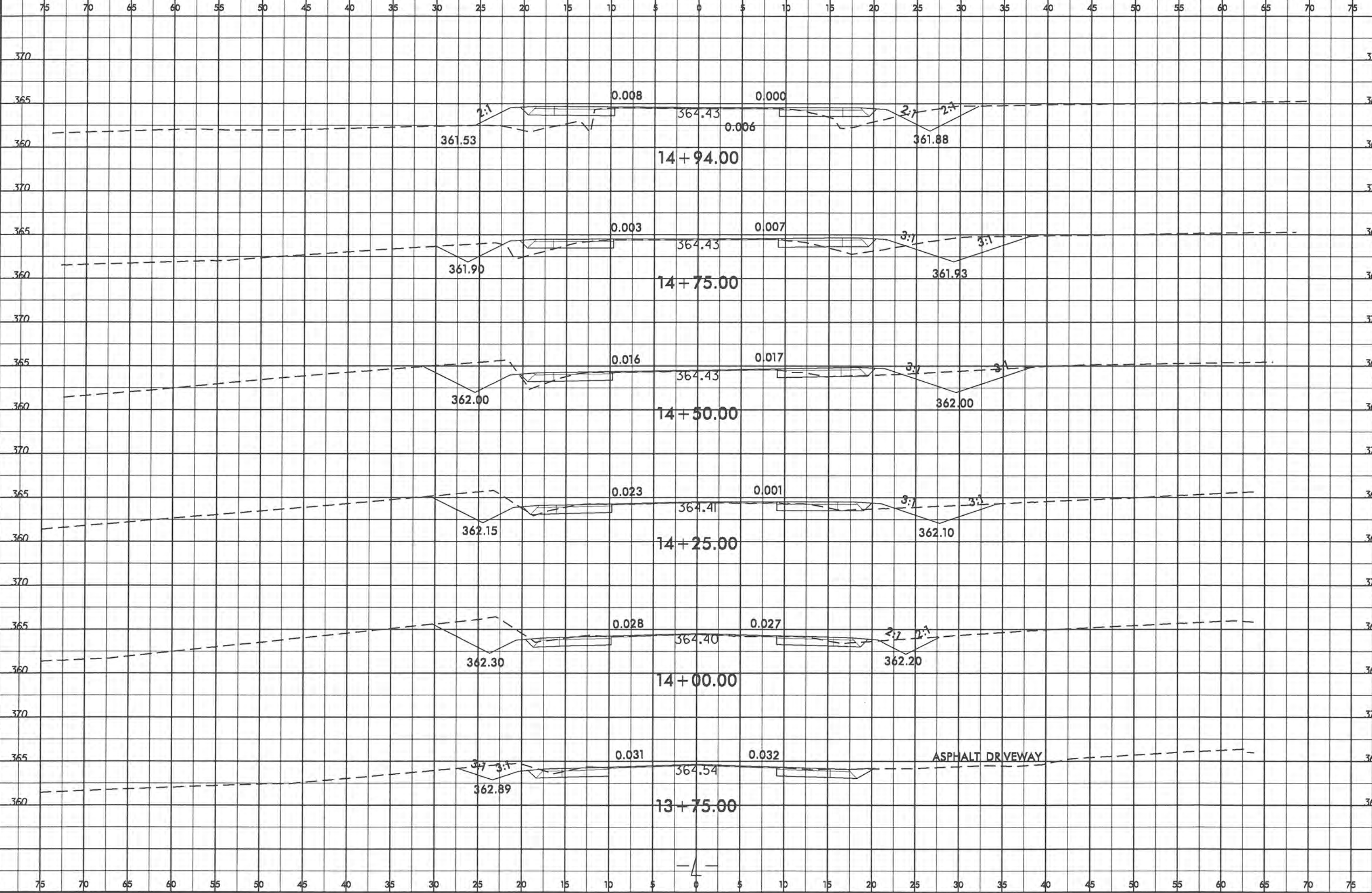
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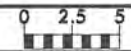


PROJ. REFERENCE NO. W-5205J SHEET NO. X-3



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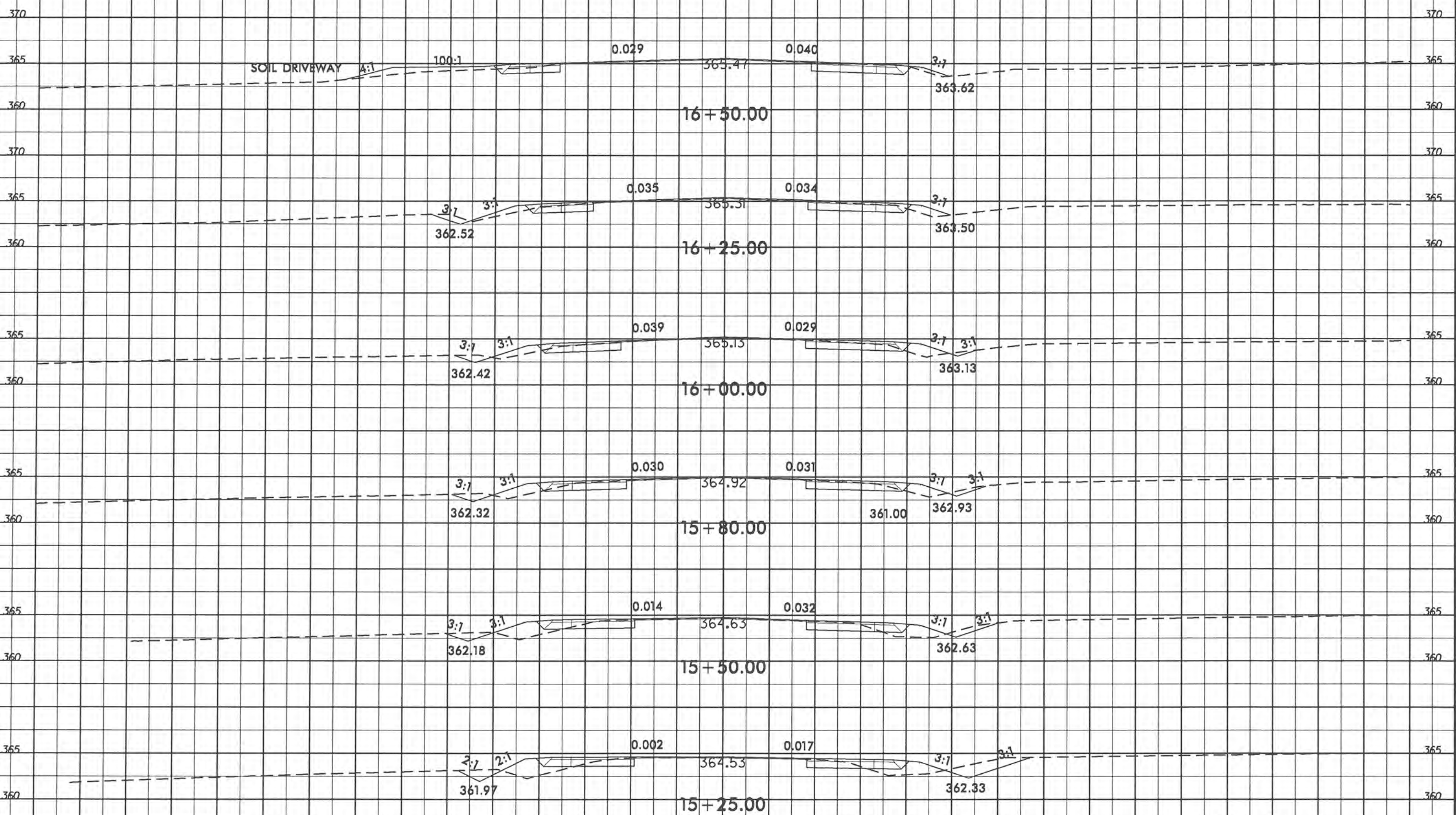
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PROJ. REFERENCE NO.  
W-5205J

SHEET NO.  
X-4

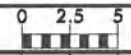
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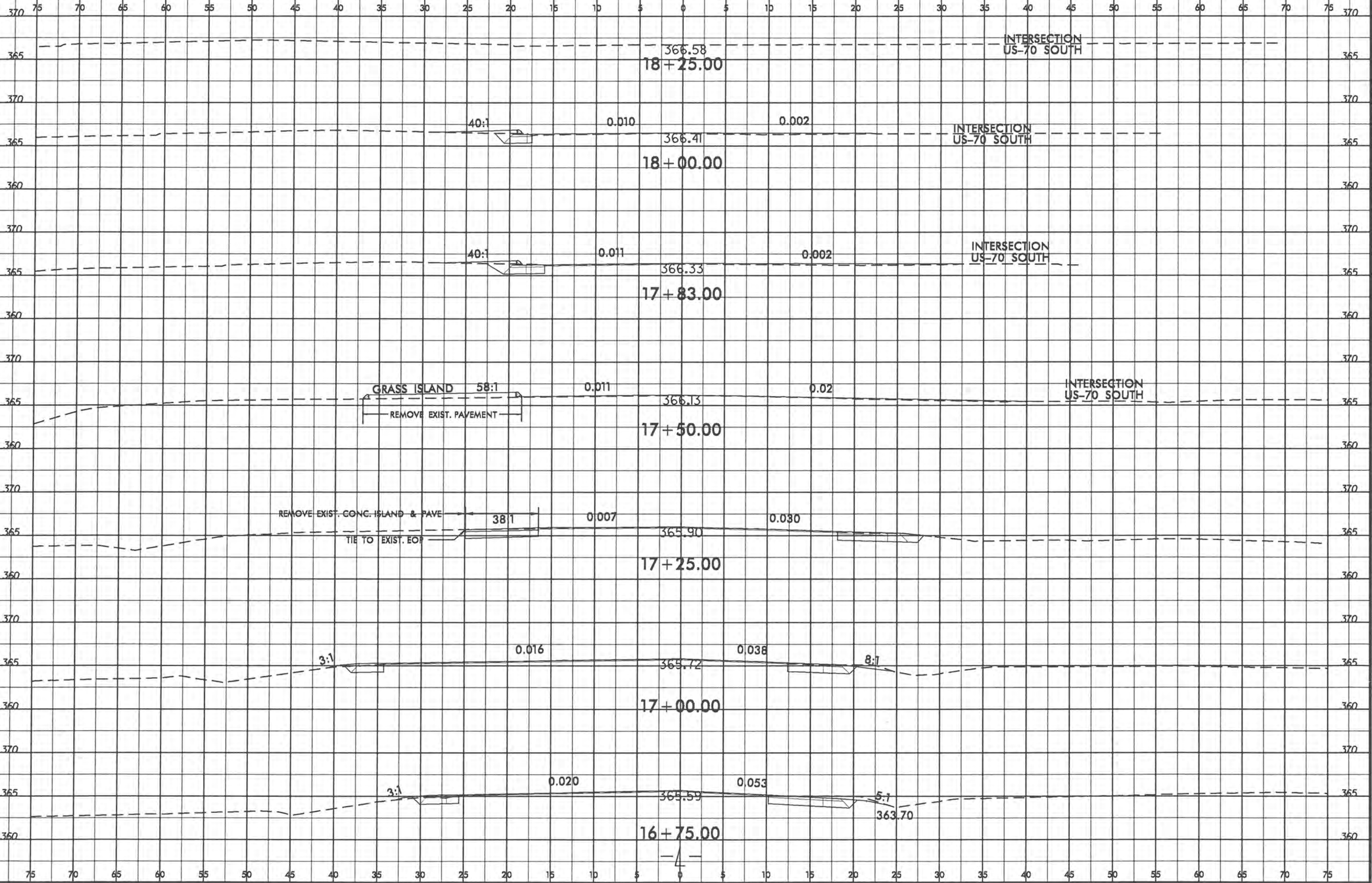
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PROJ. REFERENCE NO. W-5205J SHEET NO. X-5



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