

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO.	SHEET NO.
R - 2245	TCP-1

**PLAN FOR PROPOSED
TRAFFIC CONTROL, MARKING & DELINEATION
BRUNSWICK COUNTY**

R-2245

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS"-ROADWAY DESIGN UNIT-N.C. DEPARTMENT OF TRANSPORTATION-RALEIGH, N.C., DATED JULY 2006 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD 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
1115.01	FLASHING ARROW PANELS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED IMPACT ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - THRU LANE DROPS
1205.08	PAVEMENT MARKINGS - SYMBOLS & WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	PAVEMENT MARKER SPACING
1251.01	RAISED PAVEMENT MARKERS (TEMPORARY & PERMANENT)
1253.01	SNOWPLOWABLE RAISED PAVEMENT MARKERS
1261.01	GUARDRAIL & BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL & BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

INDEX OF SHEETS

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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
 - STATIONARY OR PORTABLE SIGN
 - WARNING FLAGS
 - CRASH CUSHION
 - CHANGEABLE MESSAGE SIGN
 - TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
 - POLICE
 - FLAGGER
- PAVEMENT MARKINGS**
- CRYSTAL/CRYSTAL PAVEMENT MARKER
 - YELLOW/YELLOW PAVEMENT MARKER
 - CRYSTAL/RED PAVEMENT MARKER
 - PAVEMENT MARKING SYMBOLS

TIP PROJECT:

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mwashaya AT WZTC224168

APPROVED: DATE: 16 JAN 07	PLAN PREPARED BY: N.C.D.O.T. WORK ZONE TRAFFIC CONTROL UNIT
SEAL 	J. S. BOURNE, P.E. TRAFFIC CONTROL ENGINEER
	G. L. GETTIER, P.E. TRAFFIC CONTROL PROJECT ENGINEER
	J. W. GILSTRAP TRAFFIC CONTROL PROJECT DESIGN ENGINEER
	M. WASHAYA TRAFFIC CONTROL DESIGN ENGINEER

PROJECT NOTES

GENERAL NOTES

ADAPT THE TRAFFIC CONTROL PLANS, WHEN DIRECTED BY THE ENGINEER, TO MEET FIELD CONDITIONS TO PROVIDE SAFE AND EFFICIENT TRAFFIC MOVEMENT. CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE, OR RESULT IN DUPLICATE, OR UNDESIRE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES.

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
1. NC 211	MONDAY THRU SUNDAY 7:00 A.M. TO 7:00 P.M.

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME	HOLIDAY
1. NC 211	

- FOR ANY EVENT THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- FOR NEW YEAR'S, BETWEEN THE HOURS 7:00 P.M. DECEMBER 31st TO 7:00 A.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A SATURDAY OR A SUNDAY, THEN UNTIL 7:00 A.M. THE FOLLOWING TUESDAY.
- FOR EASTER, BETWEEN THE HOURS 7:00 P.M. THURSDAY AND 7:00 A.M. MONDAY.
- FOR MEMORIAL DAY, BETWEEN THE HOURS 7:00 P.M. FRIDAY TO 7:00 A.M. TUESDAY.
- FOR INDEPENDENCE DAY, BETWEEN THE HOURS 7:00 P.M. THE DAY BEFORE INDEPENDENCE DAY TO 7:00 A.M. THE DAY AFTER INDEPENDENCE DAY.

IF INDEPENDENCE DAY IS ON A SATURDAY OR SUNDAY, THEN BETWEEN THE HOURS 7:00 P.M. THE THURSDAY BEFORE INDEPENDENCE DAY TO 7:00 A.M. THE TUESDAY AFTER INDEPENDENCE DAY.

- FOR LABOR DAY, BETWEEN THE HOURS 7:00 P.M. FRIDAY AND 7:00 A.M. TUESDAY.
- FOR THANKSGIVING DAY, BETWEEN THE HOURS 7:00 P.M. TUESDAY TO 7:00 A.M. MONDAY.
- FOR CHRISTMAS, BETWEEN THE HOURS 7:00 P.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY TO 7:00 A.M. THE FOLLOWING MONDAY AFTER THE WEEK OF CHRISTMAS.

C) DO NOT STOP TRAFFIC OR CLOSE ROADS AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTION
1. YACHT DRIVE	MONDAY THRU FRIDAY 4:00 P.M. TO 9:00 A.M. FRIDAY 4:00 P.M. TO MONDAY 9:00 A.M.

D) DO NOT STOP TRAFFIC FOR MORE THAN 10 MINUTES AS FOLLOWS:

ROAD NAME	OPERATIONS
1. ALL ROADS	SHIFTING TRAFFIC/ SIGNAL INSTALLATION

E) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR OTHERWISE DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

F) 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.

G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 40 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.

H) 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.

I) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

J) DO NOT WORK SIMULTANEOUSLY, ON BOTH SIDES OF AN OPEN TRAVELWAY, WITHIN THE SAME LOCATION, ON A TWO-LANE, TWO-WAY ROAD.

K) DO NOT PERFORM WORK INVOLVING HEAVY EQUIPMENT WITHIN 15 FT OF THE EDGE OF TRAVELWAY WHEN WORK IS BEING PERFORMED BEHIND A LANE CLOSURE ON THE OPPOSITE SIDE OF THE TRAVELWAY.

L) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

PAVEMENT EDGE DROP OFF REQUIREMENTS

M) 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 A 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.

N) DO NOT EXCEED A DIFFERENCE OF 1.5 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT IN ADVANCE AND A MINIMUM OF ONCE EVERY MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

O) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

P) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 100 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

WHEN NO WORK IS BEING CONDUCTED FOR A PERIOD LONGER THAN ONE WEEK, REMOVE OR COVER ALL ADVANCE WORK ZONE WARNING SIGNS, AS DIRECTED BY THE ENGINEER, AT NO COST TO THE DEPARTMENT.

Q) PROVIDE PERMANENT SIGNING.

R) STATE FORCES WILL BE RESPONSIBLE FOR DETOUR SIGNING OFF THE PROJECT LIMITS.

S) STATE FORCES WILL COVER OR REMOVE ALL DETOUR SIGNS OFF THE PROJECT LIMITS WHEN A DETOUR IS NOT IN OPERATION.

T) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC BARRIER

U) INSTALL MOVABLE/PORTABLE CONCRETE BARRIER ACCORDING TO THE TRAFFIC CONTROL PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE MOVABLE/PORTABLE CONCRETE BARRIER IS INSTALLED AT ANY LOCATION, PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRAFFIC CONTROL PLANS OR AS DIRECTED BY THE ENGINEER.

ONCE MOVABLE/PORTABLE CONCRETE BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE MOVABLE/PORTABLE CONCRETE BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE/RESET MOVABLE/PORTABLE CONCRETE BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRAFFIC CONTROL PLANS, BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

V) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED IMPACT ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS:

POSTED SPEED LIMIT	MINIMUM OFFSET
LESS THAN 50 MPH	20 FT
50 MPH OR HIGHER	30 FT

INSTALL MOVABLE/PORTABLE CONCRETE BARRIER WITH THE TRAFFIC FLOW, BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE MOVABLE/PORTABLE CONCRETE BARRIER AGAINST THE TRAFFIC FLOW, BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP CLOSED THE SECTION OF THE ROADWAY UNTIL THE BARRIER CAN BE PLACED OR AFTER BARRIER IS REMOVED.

TRAFFIC CONTROL DEVICES

W) SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT ON-CENTER IN RADIUS, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY, WHEN LANE CLOSURES ARE NOT IN EFFECT.

X) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY. STAGGER OR OVERLAP BARRICADES TO ALLOW FOR INGRESS OR EGRESS.

Y) PLACE SETS OF THREE DRUMS PERPENDICULAR TO THE EDGE OF THE TRAVELWAY ON 200 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC. THESE DRUMS SHALL BE IN ADDITION TO CHANNELIZING DEVICES.

PAVEMENT MARKINGS AND MARKERS

Z) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
1. ALL ROADS	POLYUREA	SNOWPLOWBLE
2. STRUCTURES	POLYUREA	PERMANENT RAISED

AA) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
1. ALL ROADS	PAINT	TEMPORARY RAISED
2. STRUCTURES	COLD APPLIED PLASTIC (TYPE IV REMOVABLE TAPE)	TEMPORARY RAISED

BB) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

CC) REPLACE ANY PAVEMENT MARKINGS THAT HAVE BEEN DAMAGED BY THE END OF EACH DAY'S OPERATION.

DD) REMOVE ALL CONFLICTING PAVEMENT MARKINGS BY THE END OF EACH DAY'S OPERATION.



EE) PLACE AT LEAST TWO APPLICATIONS OF PAINT ON NEW ASPHALT WITH TEMPORARY TRAFFIC PATTERNS WHICH WILL REMAIN IN PLACE OVER THREE (3) MONTHS. PLACE ADDITIONAL APPLICATIONS OF PAINT UPON SUFFICIENT DRYING TIME, AS DETERMINED BY THE ENGINEER.

TEMPORARY/FINAL SIGNALS

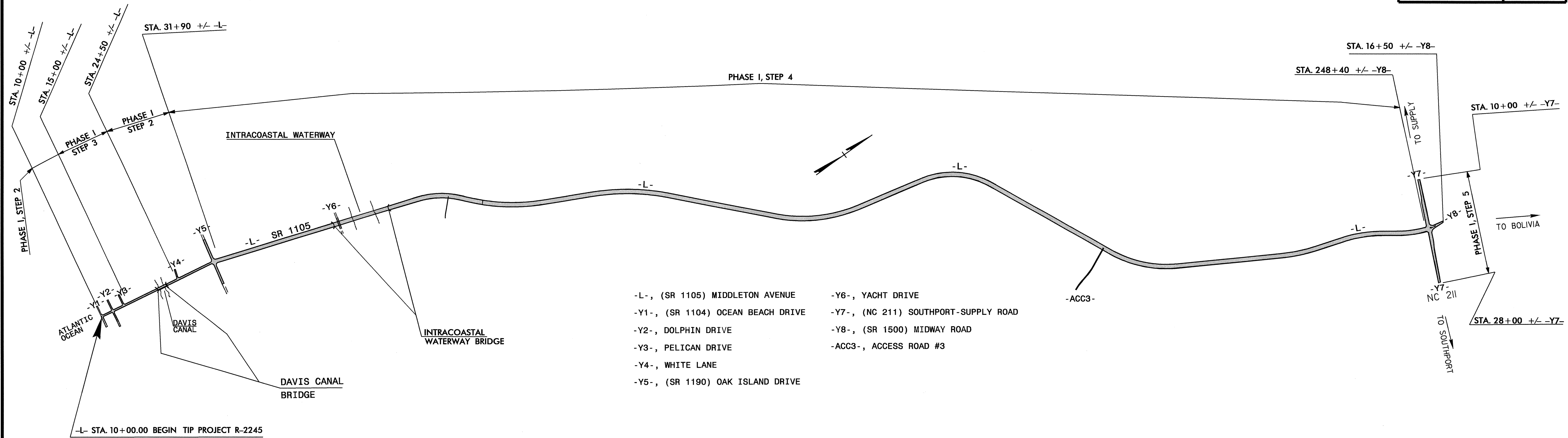
FF) SHIFT AND REVISE ALL SIGNAL HEADS AS SHOWN ON THE SIGNAL PLANS.

MISCELLANEOUS

GG) POLICE MAY BE USED TO MAINTAIN TRAFFIC THROUGH INTERSECTIONS.

APPROVED: 	DATE: 1/6/02	PROJECT NOTES	
	SCALE: NONE	REVISIONS	
	DATE: 10/06		
	DWG. BY: MW		
	DESIGN BY: MW		
REVIEWED BY: JWG			

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FOLLOWING IS A GENERAL OUTLINE AND SHALL IN NO WAY REPLACE OR SUPERSEDE THE GENERAL NOTES AND PROJECT PHASING CONTAINED IN THIS TRAFFIC CONTROL PLAN.

PHASE I, STEP 1

- INSTALL WORK ZONE WARNING SIGNS AND CHANGEABLE MESSAGE SIGNS (CMS).

NOTE: CONTRACTOR SHALL WORK PHASE I, STEPS 2, 3, 4 and 5 SIMULTANEOUSLY.

PHASE I, STEP 2

- CONSTRUCT, UTILIZING PAVING & WEDGING OPERATIONS, THE FOLLOWING:
 - PROPOSED MIDDLETON AVE. (-L-) FROM STA. 10+00 +/- -L- TO STA. 15+00 +/- -L- AND STA. 24+50 +/- -L- TO STA. 31+90 +/- -L-,
 - PROPOSED OCEAN BEACH DRIVE (-Y1-),
 - PROPOSED DOLPHIN DRIVE (-Y2-),
 - PROPOSED WEST PELICAN DRIVE (-Y3-),
 - PROPOSED WHITE LANE (-Y4-), AND
 - PROPOSED OAK ISLAND DRIVE (-Y5-).
- INSTALL PROPOSED SIGNAL AT THE INTERSECTION OF MIDDLETON AVE. (-L-) & OAK ISLAND DRIVE (-Y5-).

PHASE I, STEP 3

INTERMEDIATE CONTRACT TIME WITH LIQUIDATED DAMAGES (SEE SPECIAL PROVISIONS).

- CLOSE EXISTING MIDDLETON AVE. (-L-) AND CONSTRUCT PROPOSED MIDDLETON AVE. (-L-) FROM STA. 15+00 +/- -L- TO STA. 24+50 +/- -L-, INCLUDING PROPOSED STRUCTURE OVER DAVIS CANAL.

PHASE I, STEP 4

- CLOSE EXISTING MIDDLETON AVE. (-L-) AND CONSTRUCT PROPOSED MIDDLETON AVE. (-L-) FROM STA. 31+90 +/- -L- TO STA. 248+40 +/- -L-, INCLUDING PROPOSED STRUCTURE OVER INTRACOASTAL WATERWAY.
- INSTALL AND ACTIVATE PROPOSED SIGNAL AT THE INTERSECTION OF PROPOSED MIDDLETON AVE. (-L-) & NC 211 (-Y7-)/MIDWAY ROAD (-Y8-) TO CONTROL HAULING OPERATIONS DURING CONSTRUCTION.

PHASE I, STEP 5

- REDUCE SPEED LIMIT ON NC 211 AND CONSTRUCT, UTILIZING PAVING & WEDGING OPERATIONS, PROPOSED NC 211 (-Y7-), MIDWAY ROAD (-Y8-), INCLUDING STAGE CONSTRUCTION OF PROPOSED CULVERT.
- INSTALL PROPOSED SIGNAL AT THE INTERSECTION OF MIDDLETON AVE. (-L-) AND NC 211 (-Y7-)/MIDWAY ROAD (-Y8-).

PHASE II

- PLACE THE FINAL LAYER OF SURFACE COURSE, FINAL PAVEMENT MARKINGS (POLYUREA), SNOWPLOWABLE RAISED PAVEMENT MARKERS (ON ASPHALT PAVEMENT) & PERMANENT RAISED PAVEMENT MARKERS (ON STRUCTURES) FOR PROPOSED MIDDLETON AVE. (-L-) AND ALL -Y- LINES.

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APPROVED:	DATE: 8 Jan 07	GENERAL PHASING OVERVIEW	
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SCALE: NONE	REVISIONS		
DATE: 01/07			
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REVIEWED BY: JWG		CADD FILE	

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 -Y1-11+99.95

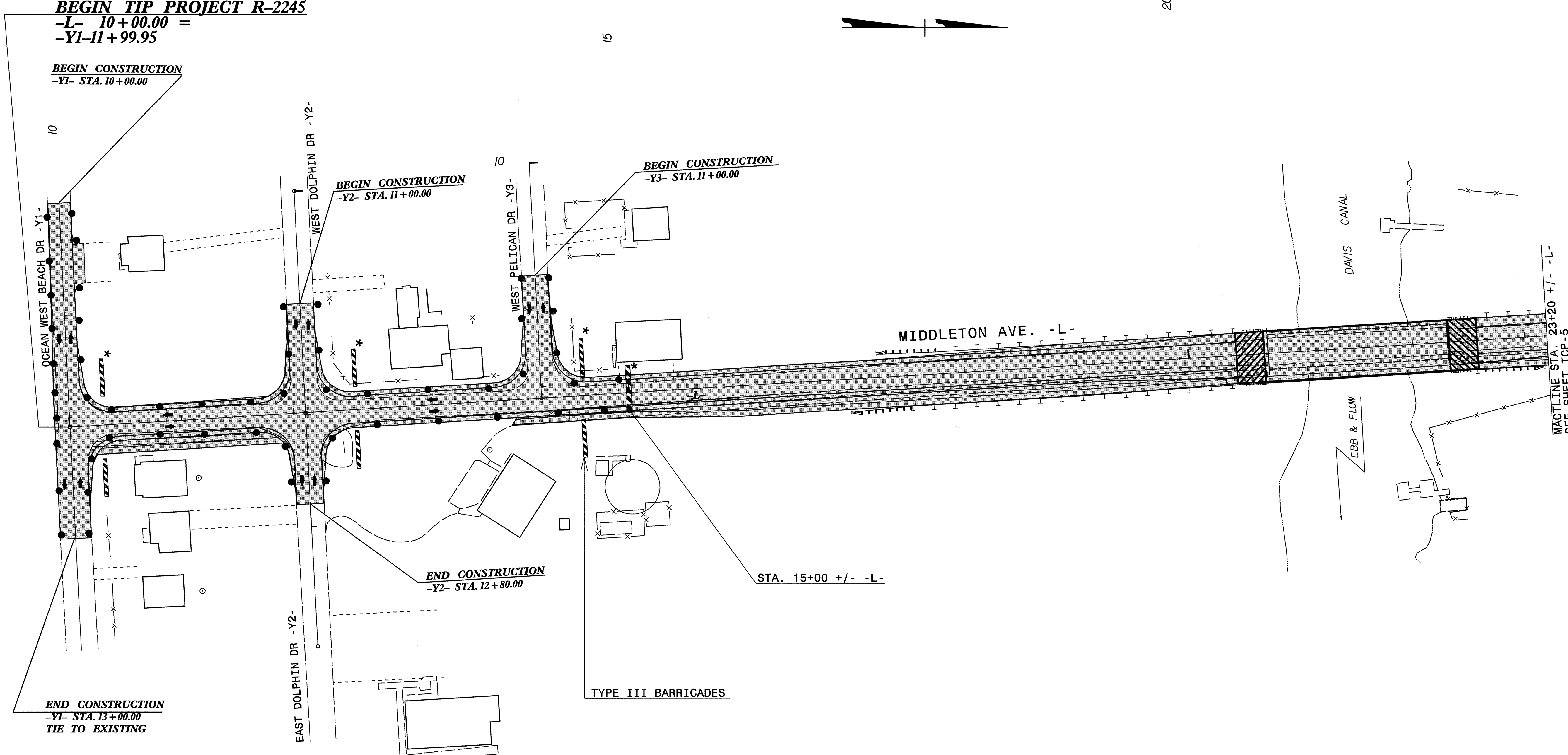
BEGIN CONSTRUCTION
 -Y1- STA. 10+00.00

BEGIN CONSTRUCTION
 -Y2- STA. 11+00.00

BEGIN CONSTRUCTION
 -Y3- STA. 11+00.00

END CONSTRUCTION
 -Y2- STA. 12+80.00

END CONSTRUCTION
 -Y1- STA. 13+00.00
 TIE TO EXISTING

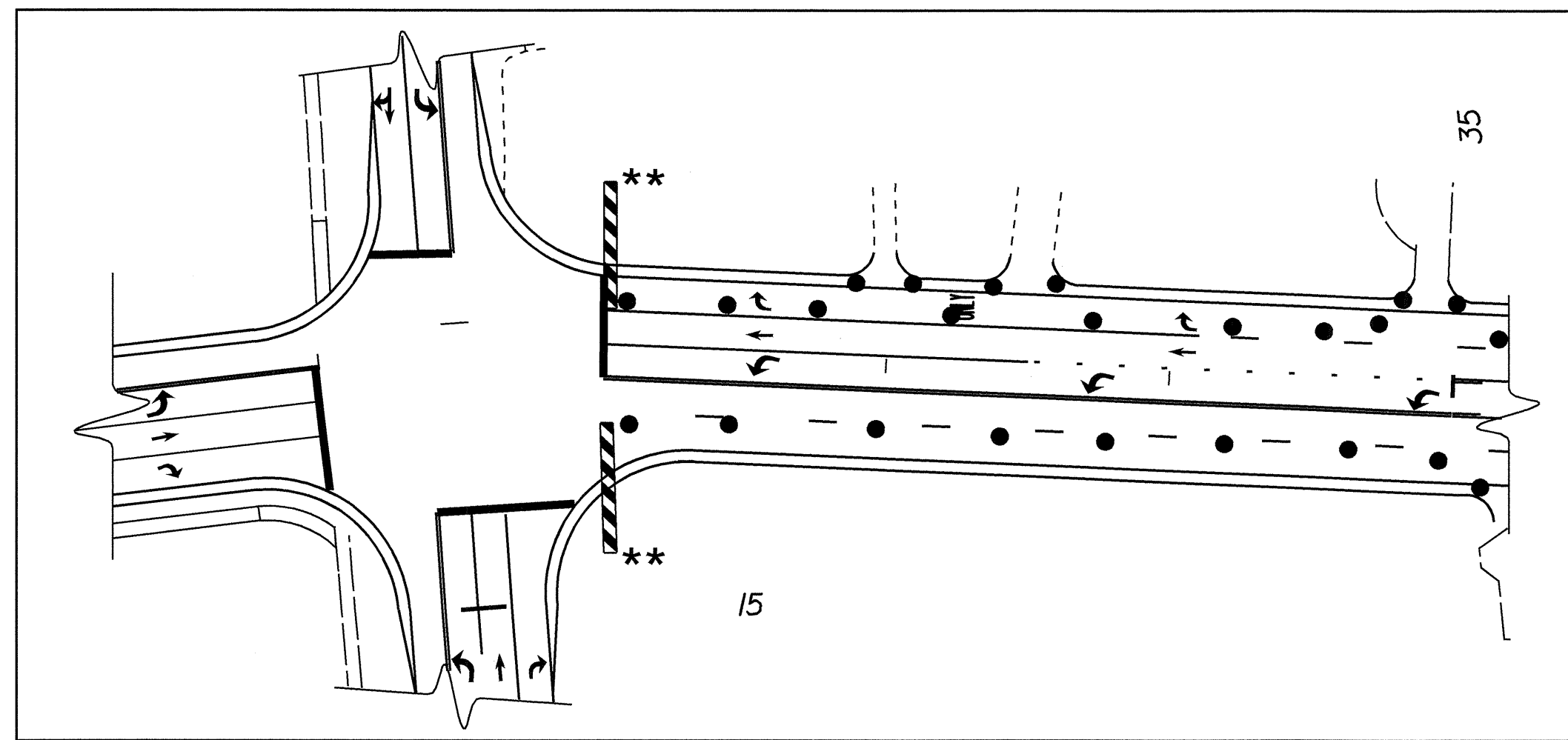


MACTLINE STA. 23+20 +/- -L-
 SEE SHEET TCP-5

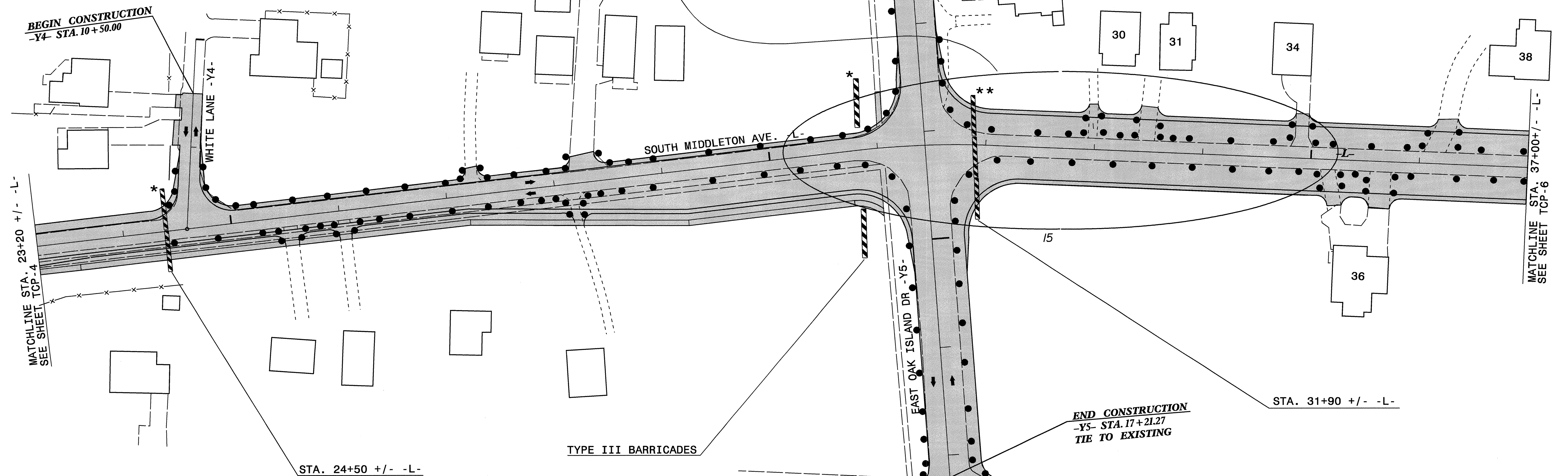
* SEE ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9, FOR ADDITIONAL WORK ZONE SIGNS MOUNTED ON TYPE III BARRICADES AND FOR ADDITIONAL WORK ZONE SIGNS ON MIDDLETON AVENUE.

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 mwshaya AT WZTC22468

APPROVED:	DATE: 05/06	PHASE I, STEPS 2 & 3	
	SCALE: NONE		
	DATE: 05/06		
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REVIEWED BY: JWG		REVISIONS	



TEMPORARY TRAFFIC PATTERN PHASE I, STEP 4B



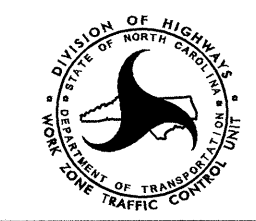
- * SEE ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9, FOR ADDITIONAL WORK ZONE SIGNS MOUNTED ON TYPE III BARRICADES AND FOR ADDITIONAL WORK ZONE SIGNS ON MIDDLETON AVENUE.
- ** SEE ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 2 OF 9, FOR SIGNS MOUNTED ON TYPE III BARRICADES AND FOR WORK ZONE SIGN LOCATIONS ON MIDDLETON AVENUE.

APPROVED: *[Signature]* DATE: 05/06

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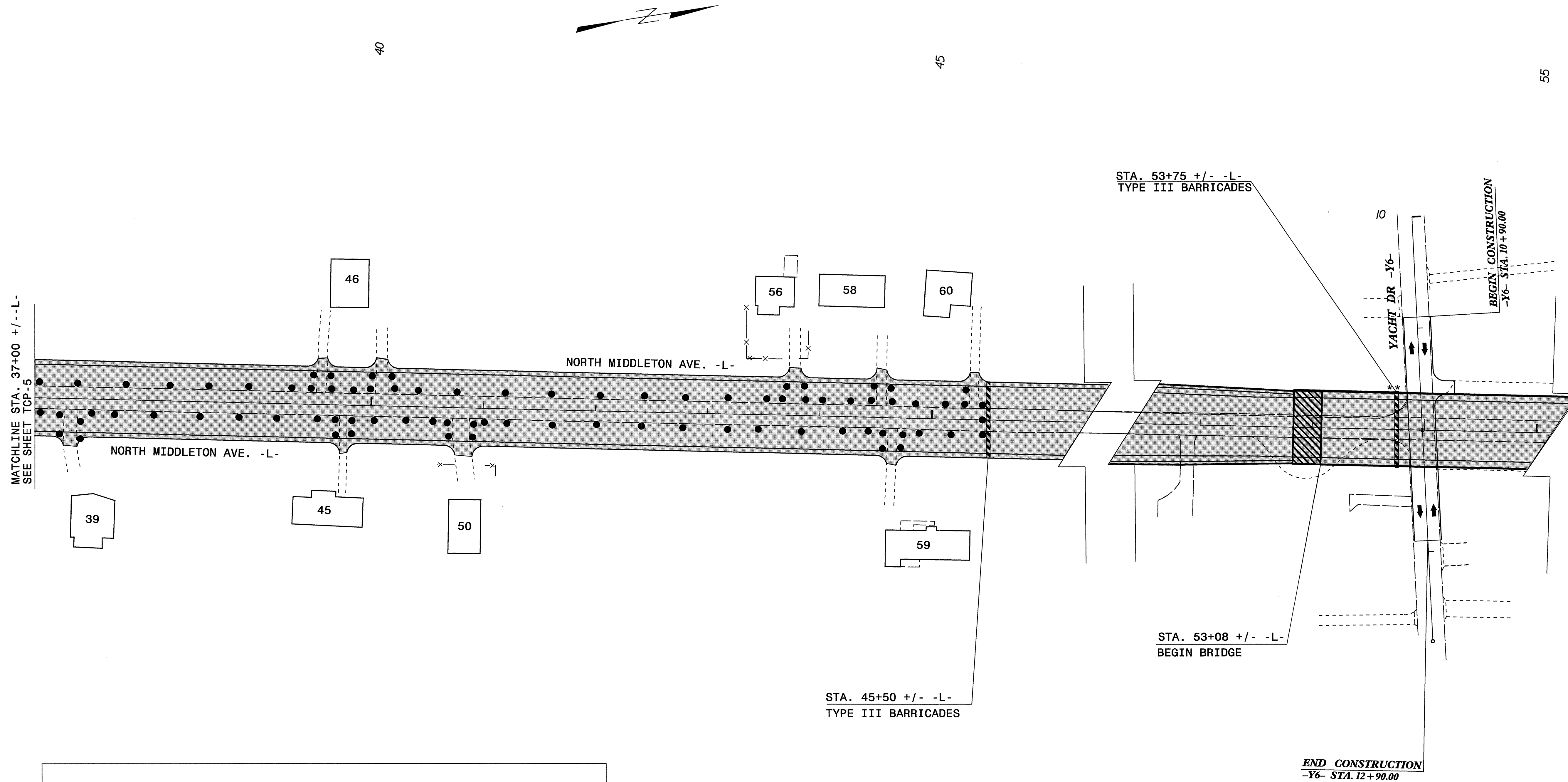
PHASE I, STEPS 2, 3 & 4

SCALE: NONE
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 DWG. BY: MW
 DESIGN BY: MW
 REVIEWED BY: JWG



REVISIONS	

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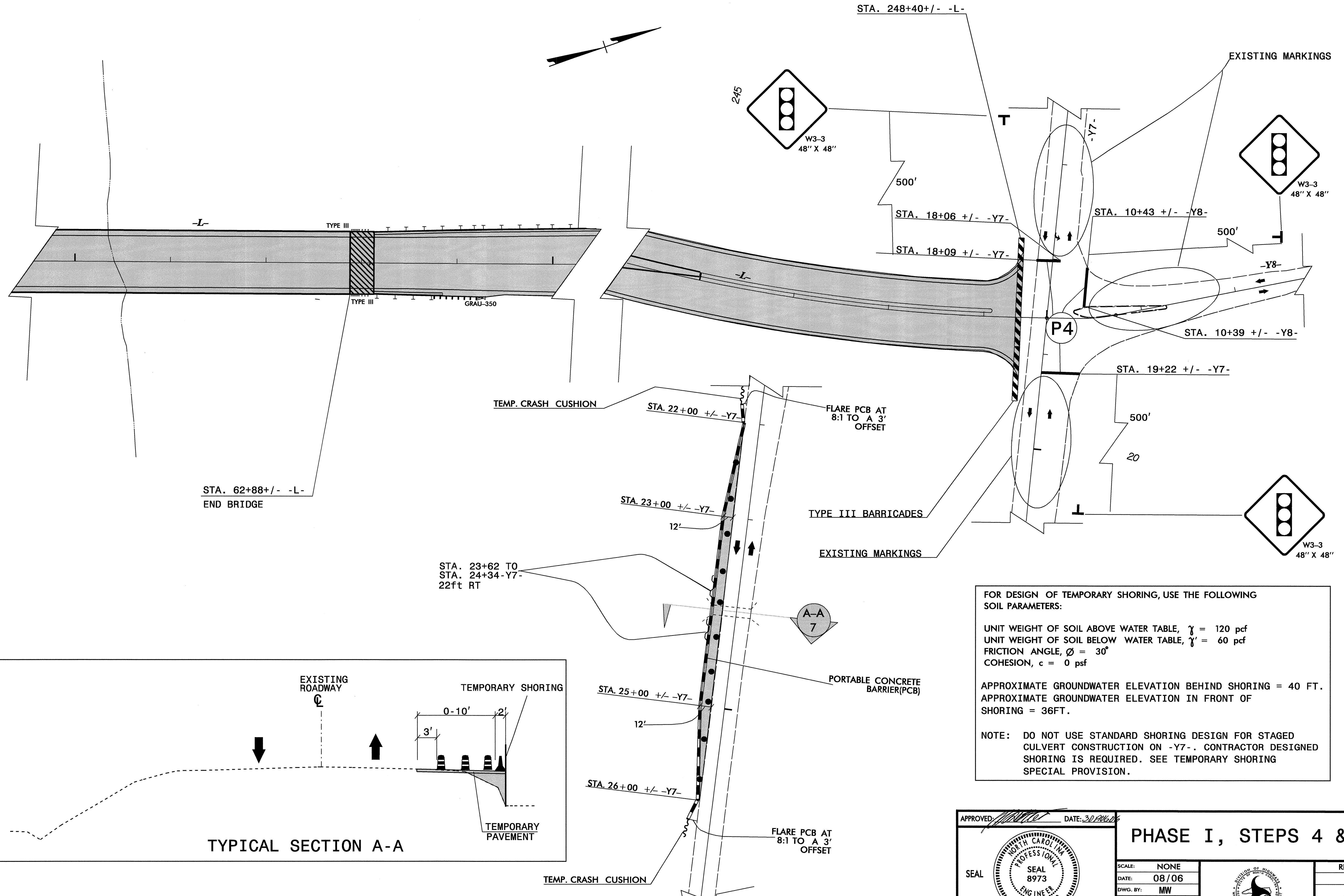
** SEE ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 2 OF 9, FOR ADDITIONAL WORK ZONE SIGNS MOUNTED ON TYPE III BARRICADES AND FOR ADDITIONAL WORK ZONE SIGNS ON MIDDLETON AVE.

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 mwshaya AT WZTC22468

APPROVED:	DATE: 05/06	PHASE I, STEP 4							
	SCALE: NONE								
	DATE: 05/06								
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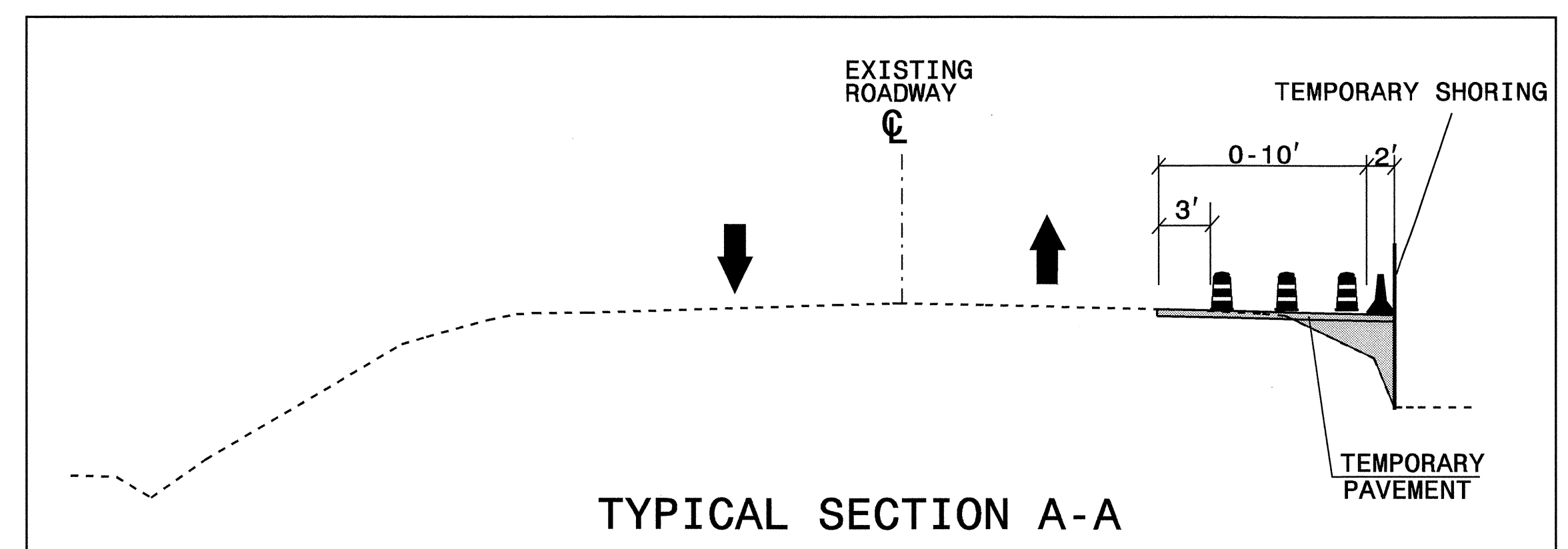
60

65



STA. 62+88 +/- -L-
END BRIDGE

STA. 23+62 TO
STA. 24+34 -Y7-
22ft RT



TYPICAL SECTION A-A

FOR DESIGN OF TEMPORARY SHORING, USE THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF SOIL ABOVE WATER TABLE, $\gamma = 120$ pcf
 UNIT WEIGHT OF SOIL BELOW WATER TABLE, $\gamma' = 60$ pcf
 FRICTION ANGLE, $\phi = 30^\circ$
 COHESION, $c = 0$ psf

APPROXIMATE GROUNDWATER ELEVATION BEHIND SHORING = 40 FT.
 APPROXIMATE GROUNDWATER ELEVATION IN FRONT OF SHORING = 36FT.

NOTE: DO NOT USE STANDARD SHORING DESIGN FOR STAGED CULVERT CONSTRUCTION ON -Y7-. CONTRACTOR DESIGNED SHORING IS REQUIRED. SEE TEMPORARY SHORING SPECIAL PROVISION.

APPROVED:	DATE: 30/06/06	PHASE I, STEPS 4 & 5A											
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DWG. BY: MW	DESIGN BY: MW	REVIEWED BY: JWQ											

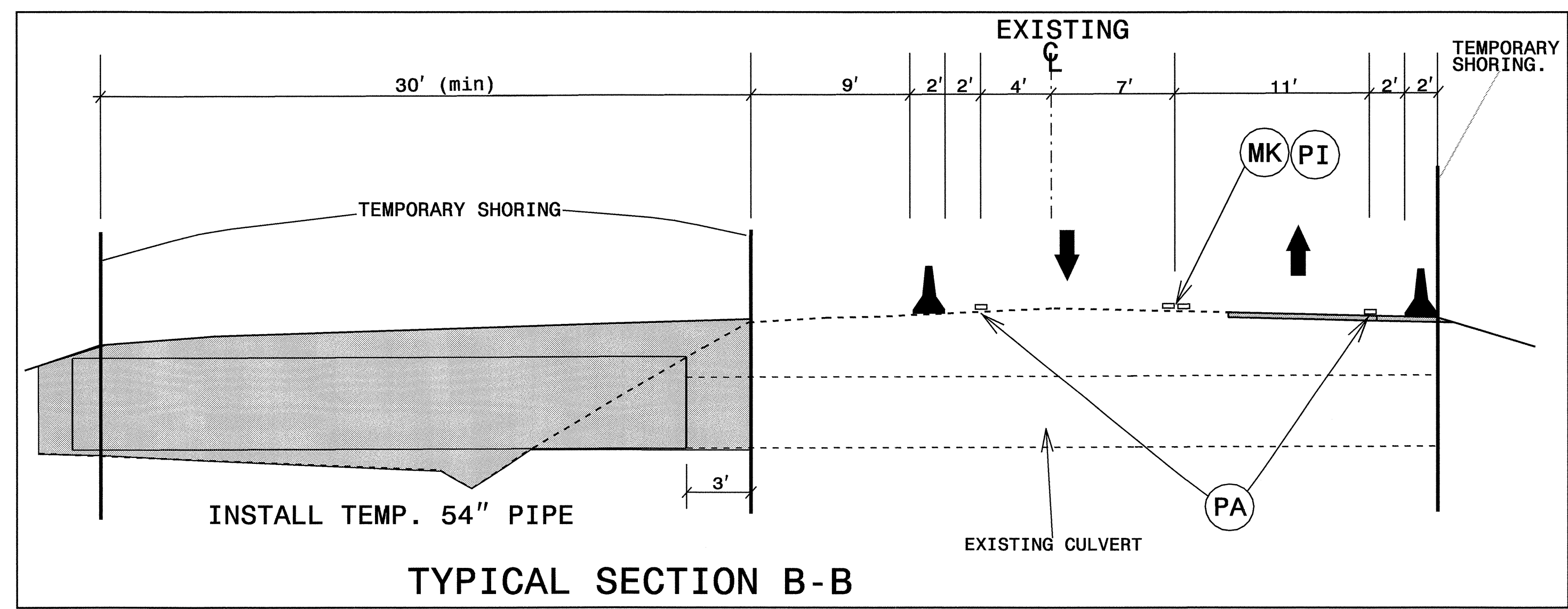
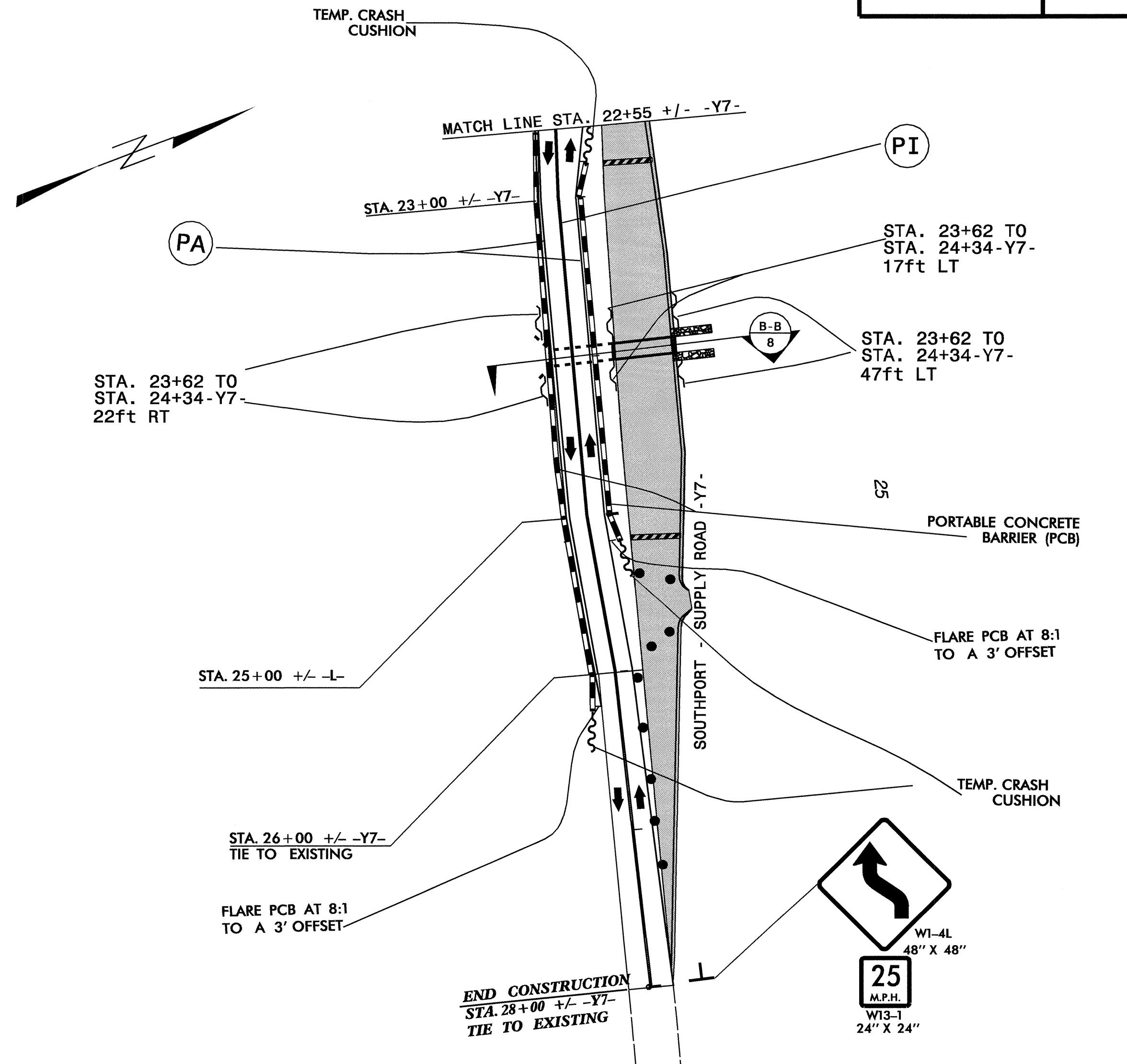
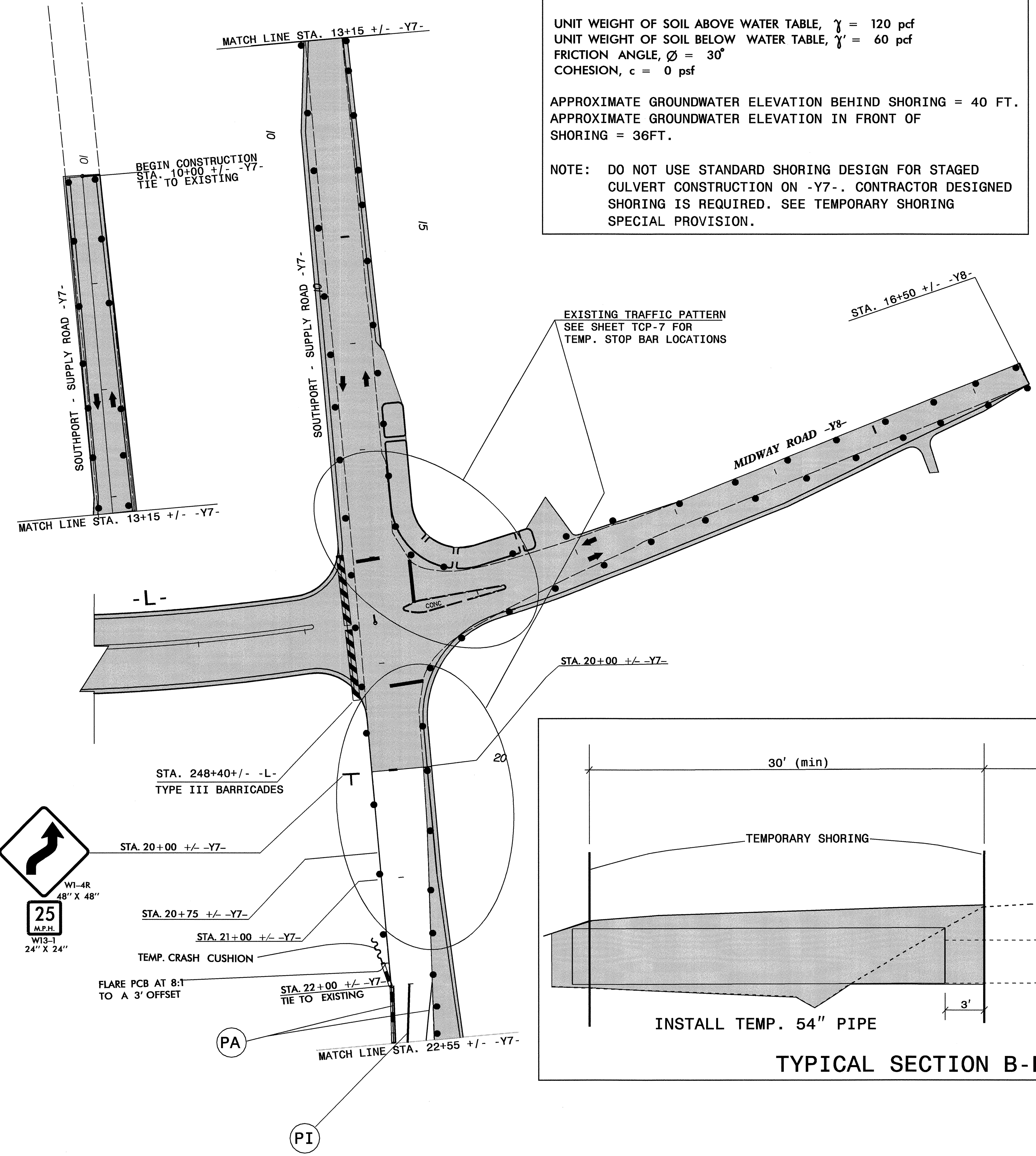
30-AUG-2006 08:46
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FOR DESIGN OF TEMPORARY SHORING, USE THE FOLLOWING SOIL PARAMETERS:

UNIT WEIGHT OF SOIL ABOVE WATER TABLE, $\gamma = 120$ pcf
 UNIT WEIGHT OF SOIL BELOW WATER TABLE, $\gamma' = 60$ pcf
 FRICTION ANGLE, $\phi = 30^\circ$
 COHESION, $c = 0$ psf

APPROXIMATE GROUNDWATER ELEVATION BEHIND SHORING = 40 FT.
 APPROXIMATE GROUNDWATER ELEVATION IN FRONT OF SHORING = 36FT.

NOTE: DO NOT USE STANDARD SHORING DESIGN FOR STAGED CULVERT CONSTRUCTION ON -Y7-. CONTRACTOR DESIGNED SHORING IS REQUIRED. SEE TEMPORARY SHORING SPECIAL PROVISION.



APPROVED: *[Signature]* DATE: 08/06/06

SEAL

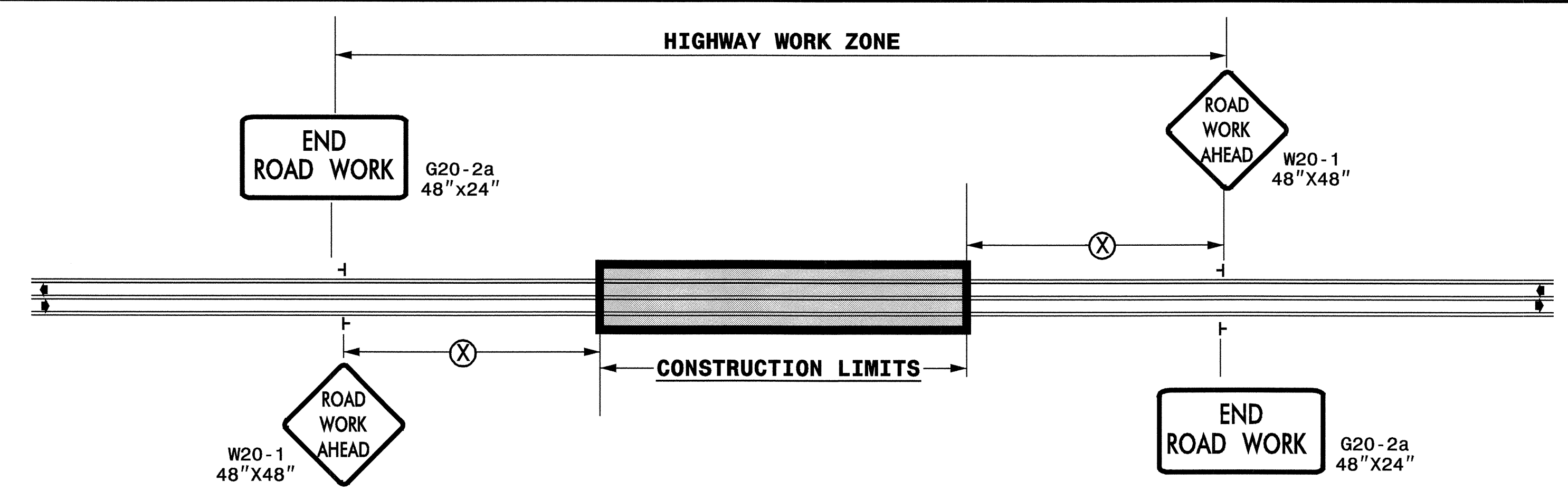
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8973 G. L. GETTNER

PHASE I, STEPS 5A & B

SCALE: NONE		REVISIONS
DATE: 08/06		
DWG. BY: MW		
DESIGN BY: MW		
REVIEWED BY: JWG		

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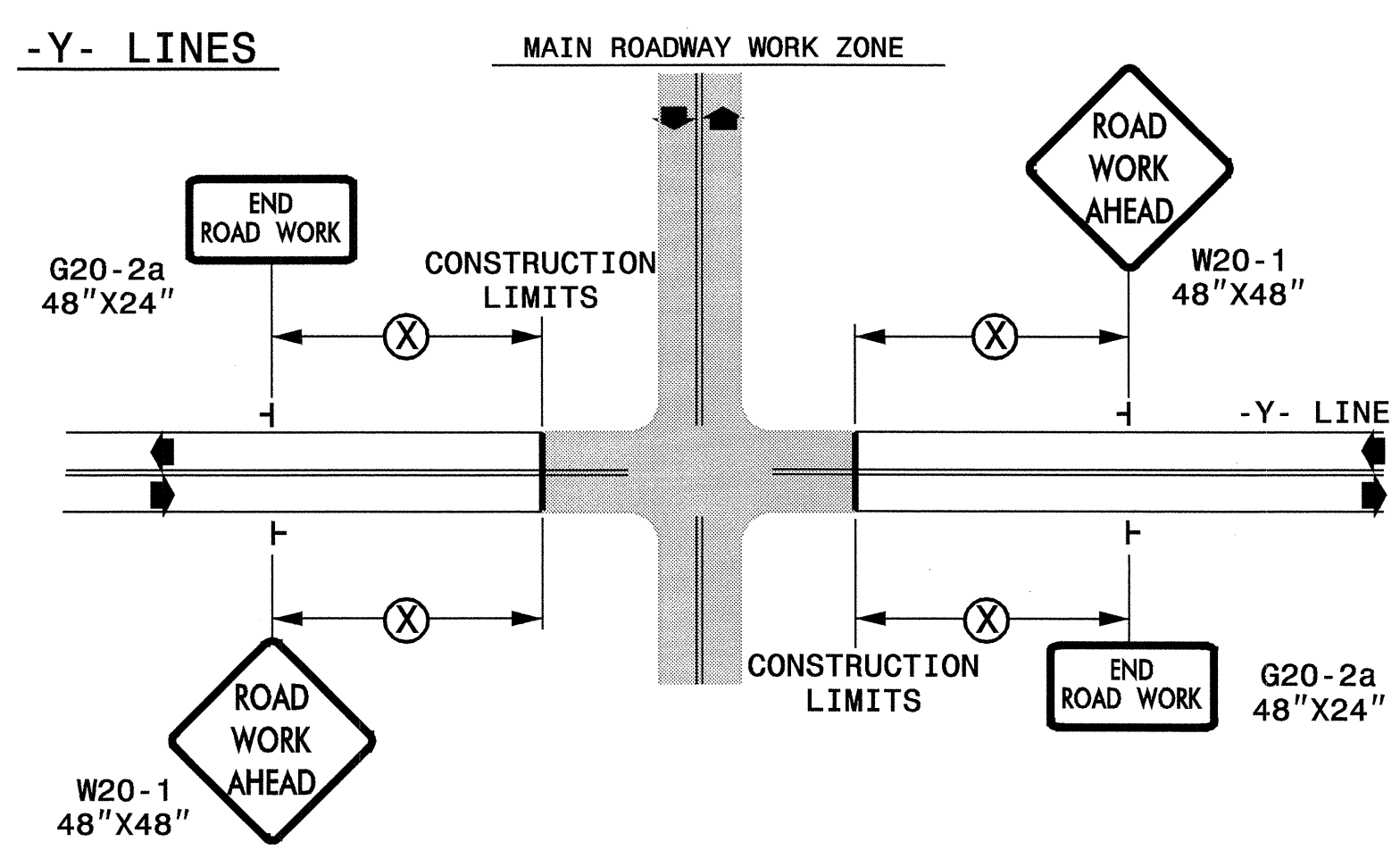
TWO-WAY UNDIVIDED ** (L-LINES)



POSTED SPEED LIMIT (M.P.H.)	RECOMMENDED MINIMUM SIGN SPACING
≤ 50	500'
≥ 55	1000'

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAYS INTERSECTING ALONG 2 WAY UNDIVIDED WORK ZONE (Y-LINES)



DETAIL DRAWING FOR
TWO-WAY UNDIVIDED
WORK ZONE WARNING SIGNS

GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B), MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.
- ** TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

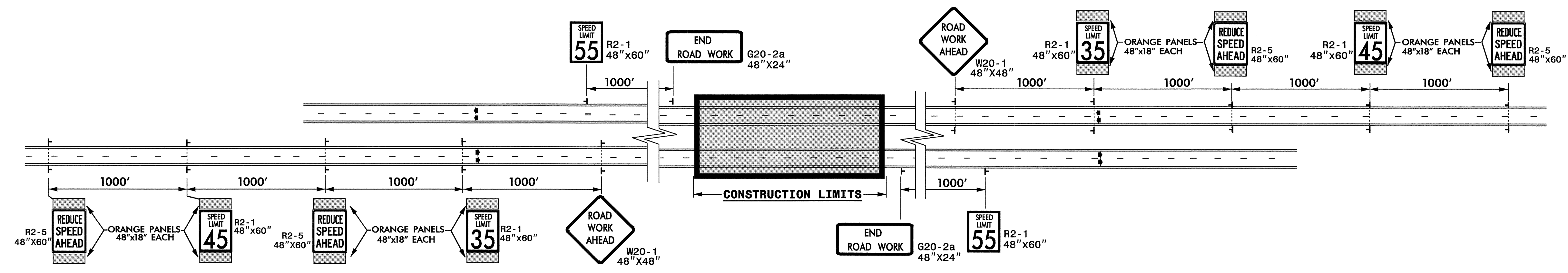
LEGEND

- ┆ STATIONARY SIGN
- ◀ DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1

APPROVED:	DATE: 2/20/06	DETAIL DRAWING FOR TWO-WAY UNDIVIDED AND URBAN FREEWAYS ADVANCED WORK ZONE WARNING SIGNS	
SEAL 	SCALE: NONE	REVISIONS	
	DATE:	7-98	10/01
	DWG. BY:	10-98	03/04
	DESIGN BY:	01/01	11/04
REVIEWED BY:			

23-MAY-2006 09:21
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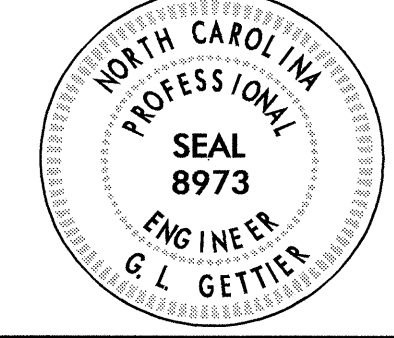
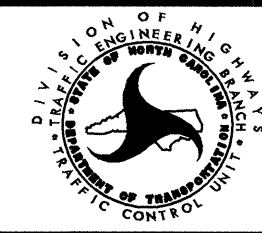
GENERAL NOTES

- FOR UNDIVIDED AND TWO LANE-TWO WAY ROADWAYS, SIGNS ARE REQUIRED ONLY ON THE RIGHT SIDE OF THE ROADWAY.
- USE MULTIPLE "REDUCE SPEED AHEAD" SIGNS ON ROADWAYS WHEN REDUCING THE SPEED LIMIT MORE THAN 10 MPH. EXAMPLE: WHEN REDUCING THE SPEED LIMIT FROM 70 MPH TO 50 MPH THE FIRST SIGN A DRIVER SEES IS "REDUCE SPEED AHEAD" FOLLOWED BY "SPEED LIMIT 60 MPH" FOLLOWED BY "REDUCE SPEED AHEAD" FOLLOWED BY "SPEED LIMIT 50MPH". (SEE ABOVE DETAIL FOR SIGN SPACING)
- SEE SHEET TCP-11 FOR ALL OTHER WORK ZONE SIGNS SIZE AND SPACING OTHER THAN THE "REDUCE SPEED AHEAD" SIGN.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

DETAIL DRAWING FOR
WORK ZONE SIGNS
"REDUCE SPEED AHEAD SIGN"

23-MAY-2006 08:35
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 mwshaya AT WJ/TCP22468

APPROVED:  DATE: 05/06	<p align="center">DETAIL DRAWING FOR WORK ZONE SIGNS</p>	
		
SCALE: NONE		REVISIONS
DATE: 05/06		7-98 100
DESIGN BY: MW		10-98 500
REVIEWED BY: JWQ		12-99 0304

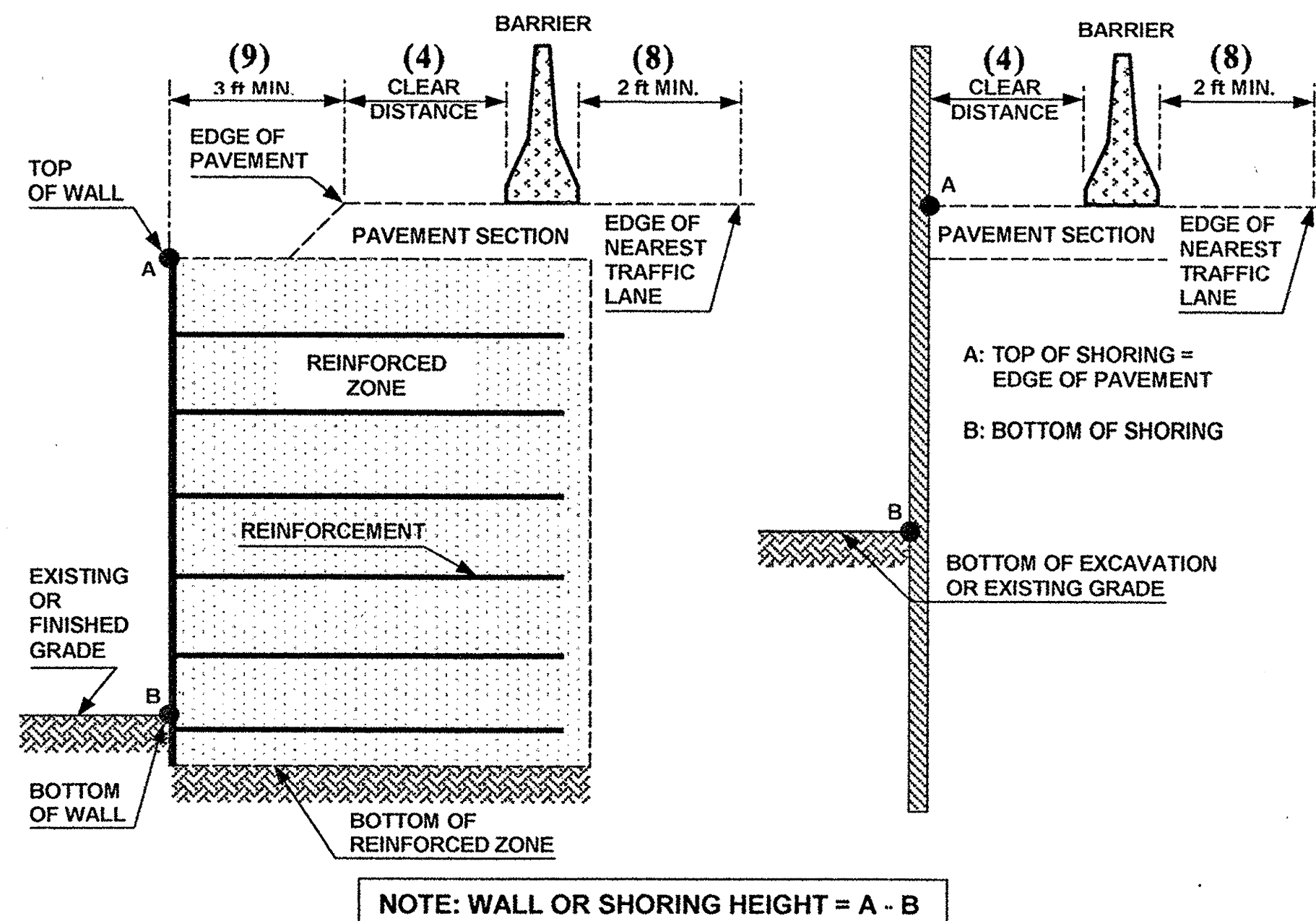


FIGURE A

NOTES

- 1- REFER TO THE TRAFFIC CONTROL PLANS FOR SHORING LOCATIONS AND SOIL PARAMETERS.
- 2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR MORE INFORMATION ABOUT TEMPORARY SHORING, MEASUREMENT AND PAYMENT.
- 3- PROVIDE PORTABLE CONCRETE BARRIER TO PROTECT TEMPORARY SHORING IF SHORING IS LOCATED WITHIN THE CLEAR ZONE AS DEFINED IN THE AASHTO ROADSIDE DESIGN GUIDE.
- 4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED PCB, ANCHORED PCB OR AN OREGON BARRIER FROM THE TABLE SHOWN IN FIGURE B. FOR TRAFFIC LANES AND PORTABLE CONCRETE BARRIER LOCATED ABOVE AND BEHIND TEMPORARY SHORING, THE FOLLOWING ARE DEFINED AS:

CLEAR DISTANCE - HORIZONTAL DISTANCE FROM THE BACK FACE OF THE BARRIER TO THE EDGE OF PAVEMENT FOR TEMPORARY MSE WALL OR TO THE FACE OF NON-ANCHORED TEMPORARY SHORING AS SHOWN IN FIGURE A.

OFFSET - HORIZONTAL DISTANCE FROM THE FRONT FACE OF THE BARRIER TO CENTERLINE OF THE FURTHEST TRAFFIC LANE AS SHOWN IN FIGURE B FOR 3 TRAFFIC LANES.
- 5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET AN UNANCHORED PCB AGAINST THE TRAFFIC SIDE OF THE SHORING AND DESIGN SHORING FOR TRAFFIC IMPACT OR USE THE "SURCHARGE CASE WITH TRAFFIC IMPACT" FOR THE STANDARD TEMPORARY SHORING.
- 6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.
- 7- USE OREGON TALL F-SHAPE CONCRETE BARRIER IN ACCORDANCE WITH DETAIL DRAWING AND SPECIAL PROVISION OBTAINED FROM: [HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/WZTC/DESRES/ENGLISH/DESRESENG.HTML](http://www.ncdot.org/DOH/PRECONSTRUCT/WZTC/DESRES/ENGLISH/DESRESENG.HTML)
- 8- UNLESS NOTED OTHERWISE ON THE PLANS, SET PORTABLE CONCRETE BARRIER WITH A MINIMUM DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A.
- 9- FOR PORTABLE CONCRETE BARRIER ABOVE AND BEHIND TEMPORARY MSE WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.
- 10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES AND WET OR DRY PAVEMENT.

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset (4) ft	Design Speed, mph					
			<30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
	>56	32	36	42	45	47	51	
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
50-56		26	26	28	32	35	38	
>56	26	27	29	32	36	38		
Anchored PCB or Oregon Barrier	Asphalt	All Offsets (4)	24 for All Design Speeds					
Anchored PCB or Oregon Barrier	Concrete (including bridge approach slabs)	All Offsets (4)	12 for All Design Speeds					

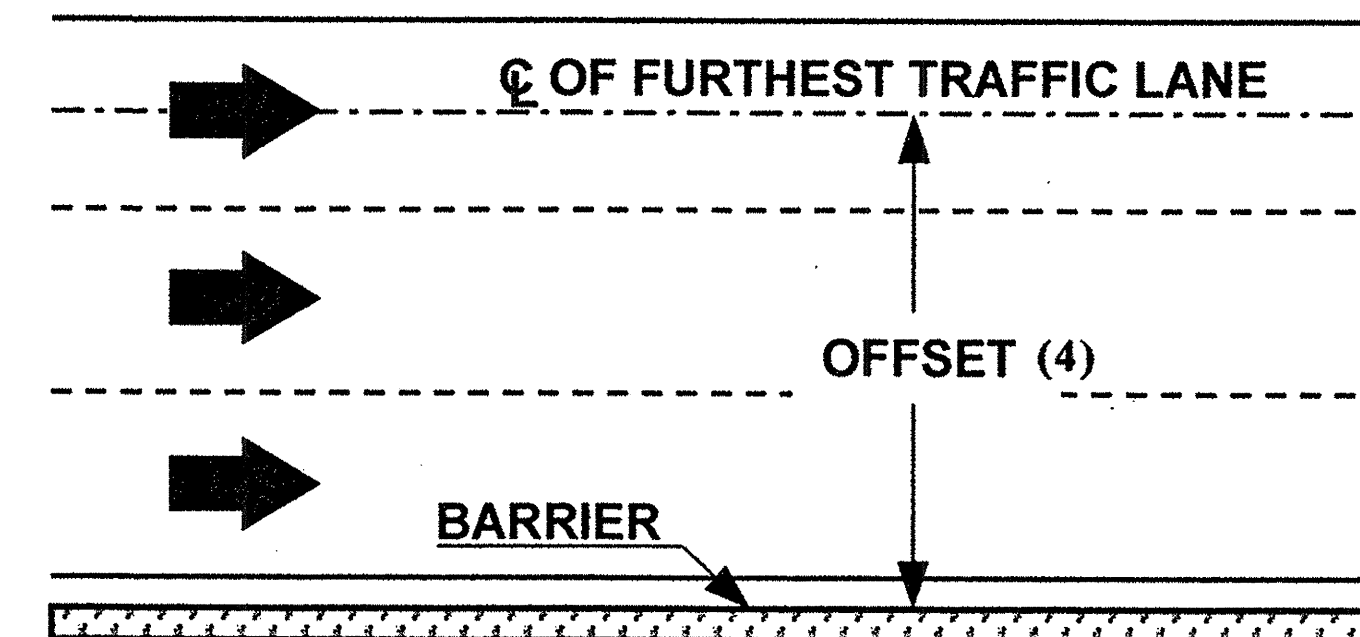


FIGURE B

APPROVED: <i>[Signature]</i>	DATE: 1/07	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS	
SEAL: <i>[Seal]</i>	SCALE: NONE	DESIGN BY: JI	REVISIONS:
REVIEWED BY: JI	DATE: 1/07	DESIGN BY: JI	
		REVIEWED BY: JI	

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