

TIP NO. U-4020	SHEET NO. SIGN-1
APPROVED: <i>[Signature]</i>	
DATE: 1/14/09	
SEAL	

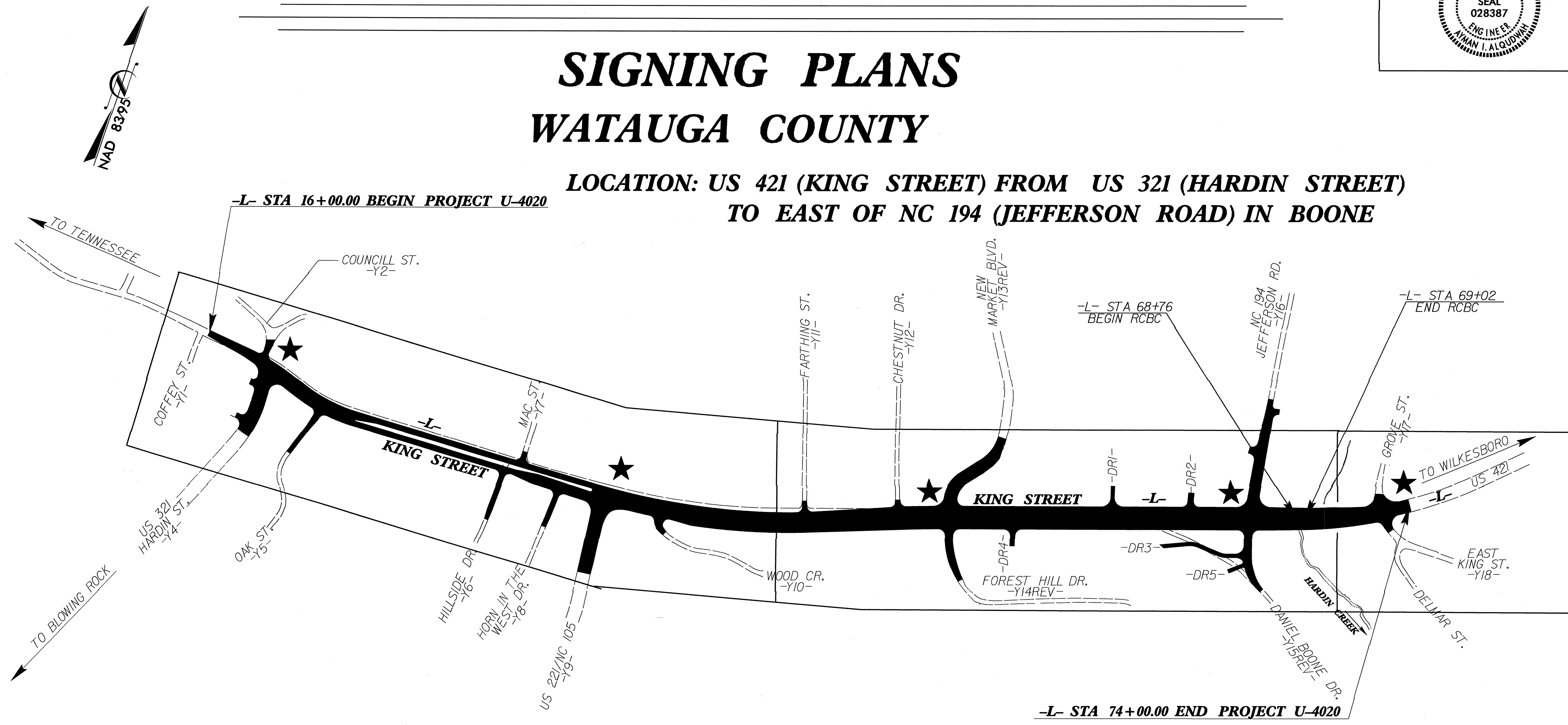
**STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION**

**SIGNING PLANS  
WATAUGA COUNTY**

**LOCATION: US 421 (KING STREET) FROM US 321 (HARDIN STREET)  
TO EAST OF NC 194 (JEFFERSON ROAD) IN BOONE**

**T.I.P.: U-4020**

**CONTRACT: 202084**



★ **SIGNALIZED INTERSECTION**

PLAN PREPARED BY: N.C.D.O.T. SIGNING SECTION


Ron King, P.E.	SIGNING ENGINEER
Ayman Alqudwah, P.E.	SIGNING PROJECT ENGINEER
Walter Johnson	SIGNING DESIGN ENGINEER

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14-17	SIGN ROADWAY SHEETS

13-JAN-2009 16:32: u:\4020\tr\aff\signing\cadd\signing layout plans\engsees\dgn walter.johnson AT 1221737

# SIGNS SUMMARY OF QUANTITIES

TIP NO. U-4020	SHEET NO. SIGN-2
APPROVED: <i>[Signature]</i>	
DATE: 2/2/09	
SEAL	
	


ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT	ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT	ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.				DESC. NO.	SECT. NO.				DESC. NO.	SECT. NO.			
0001000000	800	MOBILIZATION		L.S.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4235000000	907	STOCKPILE SIGN, A OR B (GROUND MOUNTED)		EA.
4025000000	901	CONTRACTOR FURNISHED, TYPE A SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4236000000	907	DISPOSAL OF SIGN, A OR B (GROUND MOUNTED)		EA.
4025000000	901	CONTRACTOR FURNISHED, TYPE B SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4237000000	907	STOCKPILE SIGN, D, E OR F		EA.
4025000000	901	CONTRACTOR FURNISHED, TYPE D SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4237500000	907	STOCKPILE SIGN, MILEMARKERS		EA.
4025000000	901	CONTRACTOR FURNISHED, TYPE E SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4238000000	907	DISPOSAL OF SIGN, D, E OR F	4	EA.
4025000000	901	CONTRACTOR FURNISHED, TYPE F SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4238500000	907	DISPOSAL OF SIGN, MILEMARKERS		EA.
4025000000	901	CONTRACTOR FURNISHED, OVERLAYS SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4241000000	907	DISPOSAL OF SIGN, OVERLAY (OVERHEAD)		EA.
4025000000	901	CONTRACTOR FURNISHED, MILEMARKER SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4242000000	907	DISPOSAL OF SIGN, OVERLAY (GROUND MOUNTED)		EA.
4026000000	902	DEPARTMENT FURNISHED, TYPE A SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4250000000	907	STOCKPILE LIGHTING SYSTEM		EA.
4026000000	902	DEPARTMENT FURNISHED, TYPE B SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4251000000	907	DISPOSAL OF LIGHTING SYSTEM		EA.
4026000000	902	DEPARTMENT FURNISHED, TYPE D SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4252000000	907	STOCKPILE LIGHTING FIXTURES		EA.
4026000000	902	DEPARTMENT FURNISHED, TYPE E SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4258000000	907	DISPOSAL OF LIGHTING FIXTURES		EA.
4026000000	902	DEPARTMENT FURNISHED, TYPE F SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4262000000	907	STOCKPILE WALKWAY		EA.
4026000000	902	DEPARTMENT FURNISHED, OVERLAYS SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4263000000	907	DISPOSAL OF WALKWAY		EA.
4026000000	902	DEPARTMENT FURNISHED, MILEMARKER SIGN		S.F.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355000000	SP	DYNAMIC MESSAGE SIGN SYSTEM INTEGRATION		L.S.
4048000000	902	REINFORCED CONCRETE SIGN FOUNDATION	6	C.Y.	4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355100000	SP	DYNAMIC MESSAGE SIGN SYSTEM "DMS-***"		L.S.
4054000000	902	PLAIN CONCRETE SIGN FOUNDATION		C.Y.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355100000	SP	DYNAMIC MESSAGE SIGN SYSTEM "DMS-***"		L.S.
4057000000	SP	OVERHEAD FOOTING	22	C.Y.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355200000	SP	DMS SYSTEM SERVER COMPUTER		EA.
4060000000	903	SUPPORTS, BREAKAWAY STEEL BEAM	3385	LB.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355210000	SP	DMS SYSTEM CLIENT COMPUTER		EA.
4066000000	903	SUPPORTS, SIMPLE STEEL BEAM		LB.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355220000	SP	DMS SYSTEM LAPTOP COMPUTER		EA.
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	1084	L.F.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355230000	SP	DMS SYSTEM CONTROL SOFTWARE		EA.
4078000000	903	SUPPORTS, 2 LB STEEL U-CHANNEL		EA.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355300000	SP	DYNAMIC MESSAGE SIGN MAINTENANCE TRAINING		EA.
4079000000	903	SUPPORTS, BARRIER (SMALL)		EA.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355310000	SP	DYNAMIC MESSAGE SIGN SYSTEM DESIGN APPROVAL TESTS		EA.
4080000000	903	SUPPORTS, BARRIER (LARGE)		EA.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355320000	SP	DYNAMIC MESSAGE SIGN SYSTEM OPERATIONAL FACTORY TESTS		L.S.
4080200000	903	SUPPORTS, STEEL SQUARE TUBE		L.F.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355330000	SP	DYNAMIC MESSAGE SIGN SYSTEM OPERATIONAL FIELD TESTS		L.S.
4082000000	903	SUPPORTS, WOOD		L.F.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355340000	SP	DYNAMIC MESSAGE SIGN BENCH TEST UNIT		EA.
4082100000	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STATION "38+50 -L-"	1	L.S.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4355350000	SP	DYNAMIC MESSAGE SIGN SYSTEM NTCIP TESTS		EA.
4082100000	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STATION "13+00 -Y9-"	1	L.S.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4096000000	904	SIGN ERECTION, TYPE D	2	EA.	4127500000	SP	LRS LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4102000000	904	SIGN ERECTION, TYPE E	44	EA.	4128000000	SP	STATIC LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4108000000	904	SIGN ERECTION, TYPE F	21	EA.	4128000000	SP	STATIC LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4109000000	904	SIGN ERECTION, TYPE A (OVERHEAD)		EA.	4128000000	SP	STATIC LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4109000000	904	SIGN ERECTION, TYPE B (OVERHEAD)		EA.	4128000000	SP	STATIC LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4110000000	904	SIGN ERECTION, TYPE A (GROUND MOUNTED)	3	EA.	4128000000	SP	STATIC LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4110000000	904	SIGN ERECTION, TYPE B (GROUND MOUNTED)		EA.	4128000000	SP	STATIC LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4114000000	904	SIGN ERECTION, MILEMARKERS		EA.	4128000000	SP	STATIC LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4115000000	904	SIGN ERECTION, OVERLAY (OVERHEAD)		EA.	4128000000	SP	STATIC LIGHTING SYSTEM FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.					
4116000000	904	SIGN ERECTION, OVERLAY (GROUND MOUNTED)		EA.	4132000000	907	STOCKPILE SUPPORT, STEEL BEAM		EA.					
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE A (OVERHEAD)		EA.	4138000000	907	DISPOSAL OF SUPPORT, STEEL BEAM		EA.					
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE B (OVERHEAD)		EA.	4140000000	907	STOCKPILE SUPPORT, WOOD		EA.					
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE A (GROUND MOUNTED)		EA.	4141000000	907	DISPOSAL OF SUPPORT, WOOD		EA.					
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE B (GROUND MOUNTED)		EA.	4142000000	907	STOCKPILE SUPPORT, OVERHEAD STRUCTURE		EA.	2				
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE D		EA.	4143000000	907	DISPOSAL OF SUPPORT, OVERHEAD STRUCTURE		EA.					
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE E	6	EA.	4148000000	907	STOCKPILE SIGN SYSTEM, OVERHEAD		EA.					
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE F		EA.	4149000000	907	DISPOSAL OF SIGN SYSTEM, OVERHEAD		EA.	5				
4116100000	904	SIGN ERECTION, RELOCATE SIGN MILEMARKERS		EA.	4151000000	907	STOCKPILE SIGN SYSTEM, STEEL BEAM		EA.					
4116200000	904	SIGN ERECTION, REPOSITION OVERHEAD		EA.	4152000000	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM		EA.					
4116300000	904	SIGN ERECTION, LOGO TO PANEL		EA.	4154000000	907	STOCKPILE SIGN SYSTEM, U-CHANNEL		EA.					
4116400000	904	SIGN ERECTION, LOGO TRAILBLAZER		EA.	4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL		EA.	57				
4116500000	904	SIGN ERECTION, WALKWAY		L.F.	4157000000	907	STOCKPILE SIGN SYSTEM, WOOD		EA.					
4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4158000000	907	DISPOSAL OF SIGN SYSTEM, WOOD		EA.	10				
4127000000	SP	LIGHTING FOR OVERHEAD SIGN ASSEMBLY AT STA *****		L.S.	4186000000	907	STOCKPILE SUPPORT, U-CHANNEL		EA.					
					4192000000	907	DISPOSAL OF SUPPORT, U-CHANNEL		EA.	4				
					4228000000	907	STOCKPILE SIGN, A OR B (OVERHEAD)		EA.					
					4234000000	907	DISPOSAL OF SIGN, A OR B (OVERHEAD)		EA.	1				

ROADWAY STANDARD DRAWINGS  
APPLICABLE TO THESE SIGNING PLANS

901.10 904.10  
901.30 903.10  
901.50 904.50

**SIGNS  
SUMMARY OF QUANTITIES**

02-FEB-2009 13:55 u:\4020\tr\aff\c\signing\codd\signing layout plans\engseed\dgn  
walter.johnson AT 12/21/07

TIP NO. U-4020	SHEET NO. SIGN-3
APPROVED: <i>[Signature]</i>	
DATE: 1/14/09	
SEAL	
	

**Pay Item Notes:**

- 1 DISPOSAL OF SIGN, D, E OR F
- 2 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
- 3 DISPOSAL OF SIGN SYSTEM, OVERHEAD
- 4 DISPOSAL OF SIGN SYSTEM, WOOD
- 5 RELOCATE SIGN, TYPE E
- 6 DISPOSAL OF SUPPORT, WOOD
- 7 DISPOSAL OF SUPPORT, U-CHANNEL
- 8 DISPOSAL OF SIGN, A OR B (OVERHEAD)

**General Notes:**

. SIGNS FURNISHED BY STATE

. ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.

. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.

. SIGNING PLANS DO NOT INCLUDE TEMPORARY CONSTRUCTION SIGNING OR PAVEMENT MARKINGS. SEE TRAFFIC CONTROL PLANS.

. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER

. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.

. WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.

. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT TO THE N.C.D.O.T. FOR APPROVAL, DETAIL DRAWINGS OF LUMINAIRE RETRIEVAL SYSTEM MOUNTING ON OHS ASSEMBLY.

. THE CONTRACTOR SHALL USE LUMINAIRE RETRIEVAL SYSTEM ON ALL OVERHEAD STRUCTURES. WALKWAY AND HANDRAIL IS NOT REQUIRED.

. INSTALLATION OF LUMINAIRE RETRIEVAL SYSTEM SHALL ALLOW LUMINAIRE MAINTENANCE FROM THE SHOULDER WITHOUT THE NEED FOR LANE CLOSURE. THE DRIVE HANDLE OF THE LUMINAIRE RETRIEVAL SYSTEM SHALL BE LOCATED A MINIMUM OF 0.92M (3') FROM THE RIGHT EDGE OF THE SHOULDER AWAY FROM THE ROADWAY TRAFFIC.

. THE CONTRACTOR SHALL ENSURE THAT COORDINATION IS ESTABLISHED BETWEEN THE OHS ASSEMBLY AND LUMINAIRE RETRIEVAL SYSTEM FABRICATORS SO THAT A FULLY FUNCTIONAL SIGN AND LIGHTING SYSTEM IS INSTALLED. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY OHS ASSEMBLY AND LUMINAIRE RETRIEVAL SYSTEM INCOMPATIBILITIES, OR INSTALLATION OF A LIGHTING SYSTEM NOT FUNCTIONING TO ITS INTENDED PURPOSE.

DO NOT BEGIN FABRICATION FOR TYPES A & B SIGNS MOUNTED ON OVERHEAD STRUCTURES OR STEEL SUPPORTS UNTIL "S" DIMENSIONS HAVE BEEN FIELD VERIFIED.

SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

**Project Notes:**

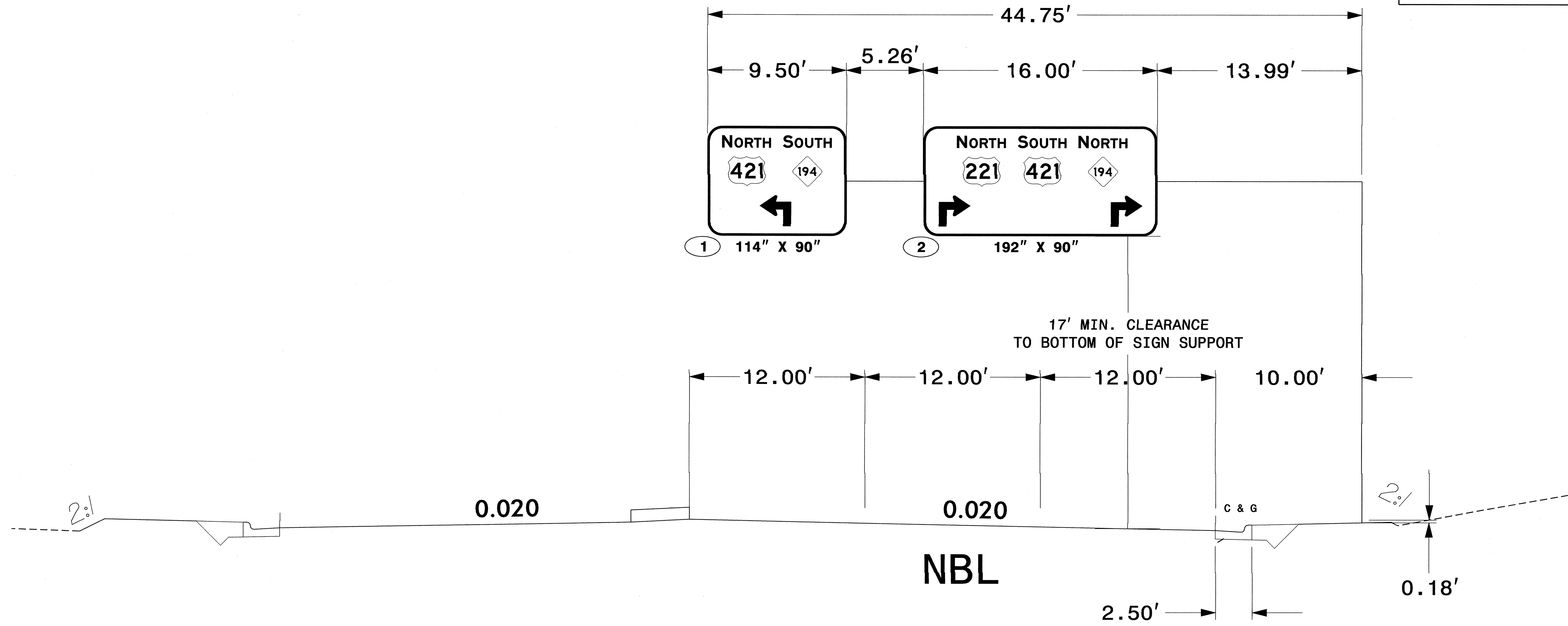
NOTES

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 p:\projects-u\14020\office\signing\cead\signing\_layout\_plans\engseed.dgn  
 AT 1/14/09 11:57 AM  
 alquodhi

STATE	PROJECT NO.	SHEET NO.	TOTAL SHTS.
N.C.	U-4020	SIGN-4	

APPROVED: *[Signature]*  
DATE: 1/14/09

SEAL

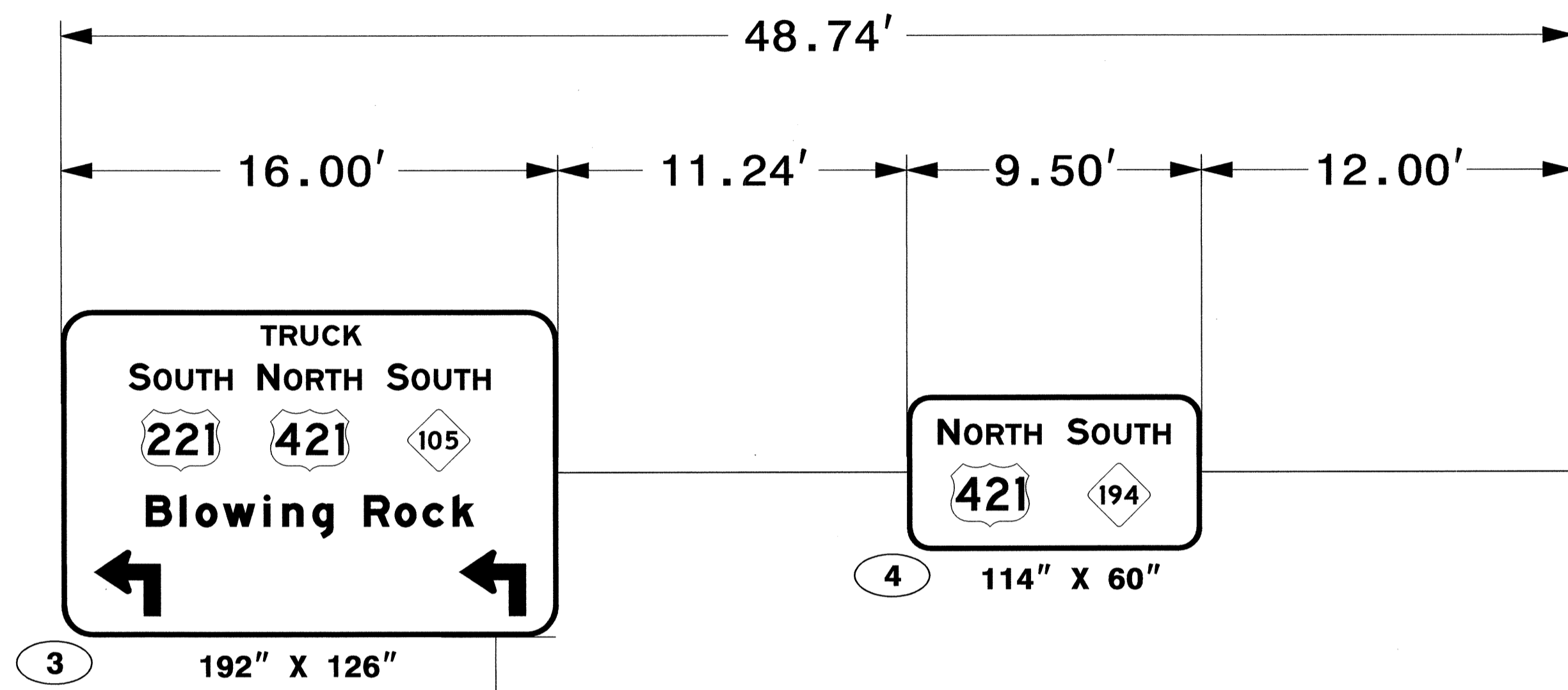


NOTES:

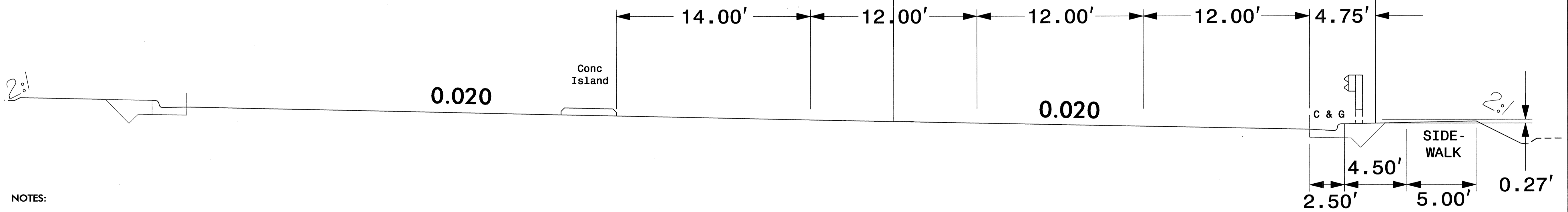
- IF THE CONTRACTOR BIDS ALUMINUM SIGN STRUCTURE, EACH SHALL BE PROVIDED WITH AN APPROVED HIGHWAY TRUSS DAMPER DEVICE IN ACCORDANCE WITH AASHTO SPECIFICATIONS.
- MOUNT SIGNS VERTICALLY CENTERED ON HORIZONTAL MEMBER OF STRUCTURE.
- FIELD VERIFICATION SHALL BE REQUIRED FOR ALL FOOTING ELEVATIONS, PER THE LATEST NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. PROVIDE FIELD VERIFICATION TO THE SIGNING SECTION.
- THE TOP OF THE FOOTING SHALL EXTEND AT LEAST 4 INCHES AND NOT MORE THAN 24 INCHES ABOVE THE HIGHEST POINT OF THE GROUND SURFACE AT THE FOOTING.
- SIGN HANGERS AND ATTACHMENT HARDWARE SHALL BE PROVIDED AND INSTALLED ON THE ASSEMBLY TO ACCOMMODATE ALL SIGNS SHOWN IN THIS PLAN SHEET.
- DESIGN AND CONSTRUCTION REQUIREMENTS FOR SIGN STRUCTURES SHALL ACCOMMODATE WIND VELOCITY OF 120 M.P.H.

OVERHEAD SIGN ASSEMBLY "A"  
AT STA.13+00 -Y9-

STATE	PROJECT NO.	SHEET NO.	TOTAL SHTS.
N.C.	U-4020	SIGN-5	
APPROVED: <i>[Signature]</i>			
DATE: 2/2/07			
SEAL			



17' MIN. CLEARANCE  
TO BOTTOM OF SIGN SUPPORT



NOTES:

- IF THE CONTRACTOR BIDS ALUMINUM SIGN STRUCTURE, EACH SHALL BE PROVIDED WITH AN APPROVED HIGHWAY TRUSS DAMPER DEVICE IN ACCORDANCE WITH AASHTO SPECIFICATIONS.
- MOUNT SIGNS VERTICALLY CENTERED ON HORIZONTAL MEMBER OF STRUCTURE.
- FIELD VERIFICATION SHALL BE REQUIRED FOR ALL FOOTING ELEVATIONS, PER THE LATEST NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. PROVIDE FIELD VERIFICATION TO THE SIGNING SECTION.
- THE TOP OF THE FOOTING SHALL EXTEND AT LEAST 4 INCHES AND NOT MORE THAN 24 INCHES ABOVE THE HIGHEST POINT OF THE GROUND SURFACE AT THE FOOTING.
- SIGN HANGERS AND ATTACHMENT HARDWARE SHALL BE PROVIDED AND INSTALLED ON THE ASSEMBLY TO ACCOMMODATE ALL SIGNS SHOWN IN THIS PLAN SHEET.
- DESIGN AND CONSTRUCTION REQUIREMENTS FOR SIGN STRUCTURES SHALL ACCOMMODATE WIND VELOCITY OF 120 M.P.H.

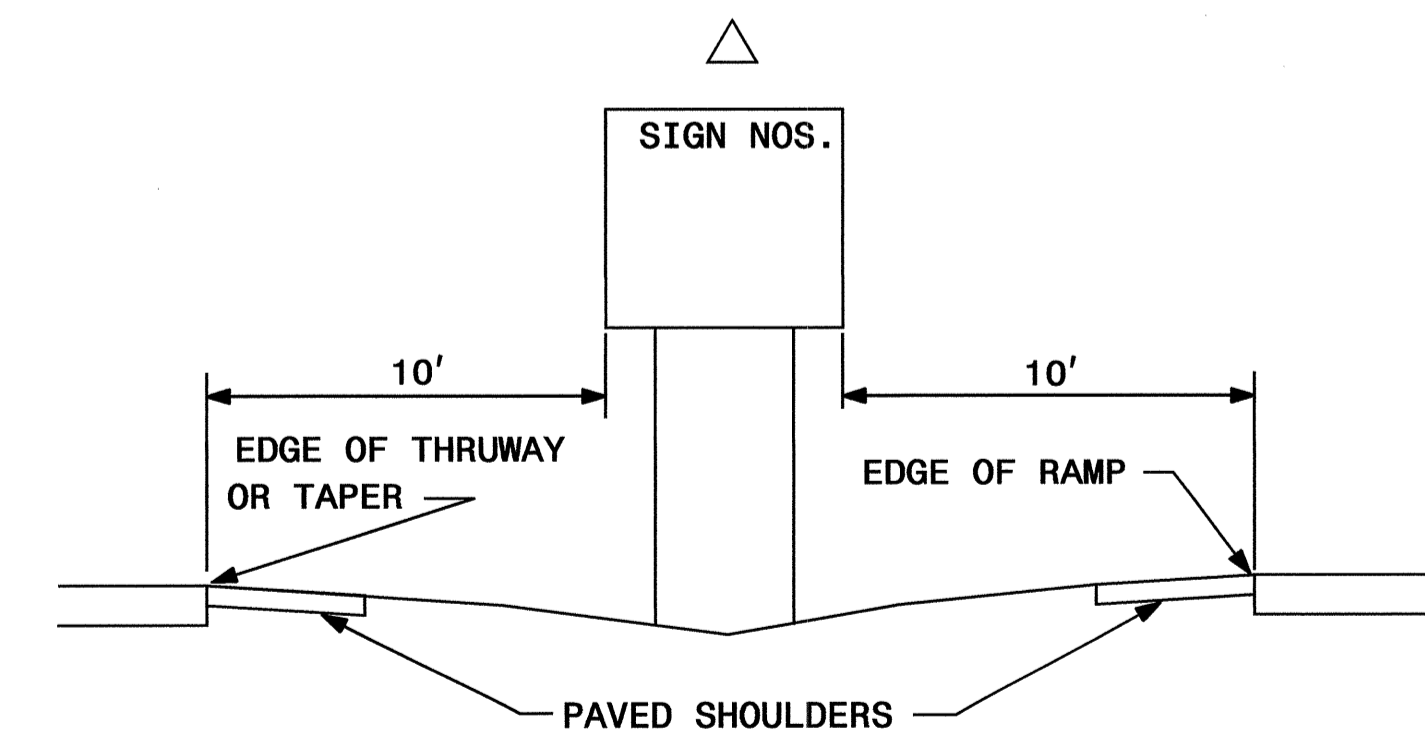
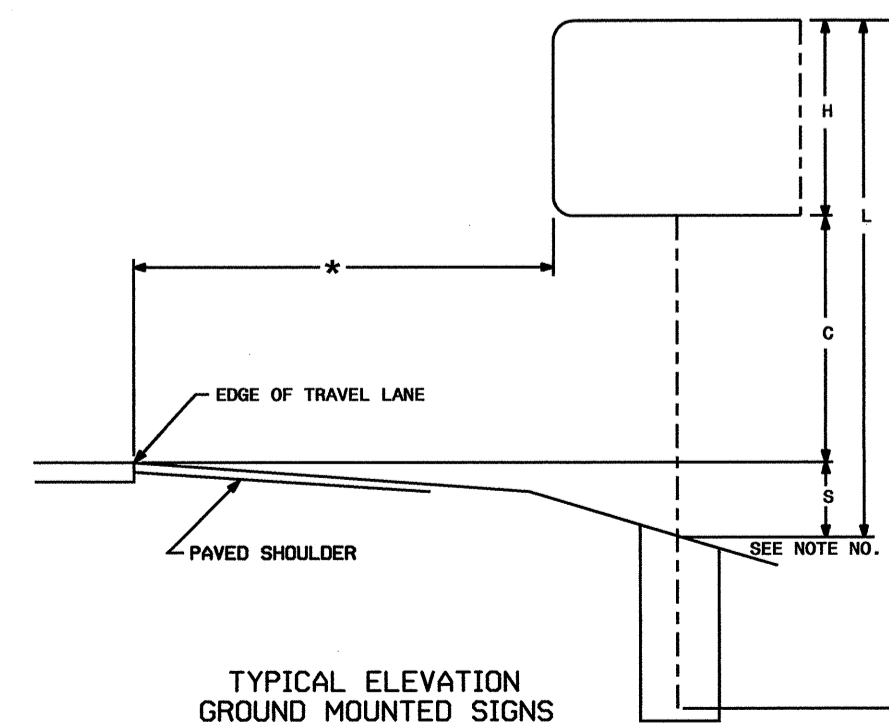
OVERHEAD SIGN ASSEMBLY "B"  
AT STA.38+50 -L-

TIP NO. U-4020	SHEET NO. SIGN-6
APPROVED: <i>[Signature]</i>	
DATE: 2/2/09	
SEAL	

SIGN NO.	SIGN TYPE	SIGN SIZE (in.)			ROADWAY STATION	NO. OF SUP.	BEAM SECTION	SUPPORT TYPE BA or S	ATTACH METHOD	MOUNTING METHOD	HORIZ. CLR.* (ft.)	LENGTH (ft)				LEFT SUPPORT (ft)			CENTER SUPPORT (ft)			RIGHT SUPPORT (ft)			FOOTING DIAMETER (ft.)	FOOTING DEPTH (ft.)	B/A SUPPORT WEIGHTS (lbs.)	SIMPLE SUPPORT WEIGHTS (lbs.)	REINF. FTGS. (c.y.)	FIELD VERIFIED SEE NOTE 2 (mm/dd/yy)
		w	x	h								SNS H	HT H	MTG HT C	EMBED-MENT	S	L	TOTAL LENGTH	S	L	TOTAL LENGTH	S	L	TOTAL LENGTH						
101	A	162	X	144	13+00 -Y4-	2	W8x18	BA	N/A	N/A	14.00	12.00	7.00	6	2.00	21.00	27.00	0.00	0.00	0.00	1.86	20.86	26.86	2.5	6.5	1131.56	0.00	2.36		
102	A	168	X	168	18+00 -Y16-	2	W8x18	BA	N/A	N/A	14.00	14.00	7.54	6.5	-0.54	21.00	27.50	0.00	0.00	0.00	-0.04	21.50	28.00	2	7	1161.20	0.00	1.63		
103	A	162	X	126	25+50 -L-	2	W8x18	BA	N/A	N/A	14.00	10.50	10.85	6	0.82	22.17	28.17	0.00	0.00	0.00	-3.85	17.50	23.50	2.00	6.5	1092.13	0.00	1.51		
																									3384.89	0.00	5.51			
																									USE:	3385	0	6		

**NOTES**

- DIMENSION "S" REPRESENTS AN INCREASE (+), OR A DECREASE (-) IN POLE LENGTH, RELATIVE TO THE ELEVATION OF THE EDGE OF PAVEMENT.
- FIELD VERIFICATIONS SHALL BE REQUIRED FOR ALL SUPPORTS, SEE (\*) ARTICLE 903-3. FABRICATORS SHALL BE AISC CERTIFIED IN CATEGORY 1, SEE (\*) ARTICLE 1072-1. (\*) = N.C.D.O.T. STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES
- PLAN LOCATIONS FOR EXISTING UTILITIES ARE BASED ON THE BEST AVAILABLE INFORMATION AND, THEREFORE MAY NOT BE PRECISELY ACCURATE. THEREFORE, IT IS INCUMBENT UPON THE CONTRACTOR TO DETERMINE THE EXACT LOCATION OF UTILITIES BEFORE BEGINNING WORK IN A LOCATION.



**TYPE "A" AND TYPE "B" GROUND MOUNTED SIGNS**

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TIP NO. U-4020	SHEET NO. SIGN-7
APPROVED: <i>[Signature]</i>	
DATE: 2/2/09	
SEAL	

SIGN NUMBER: 1 TYPE: A QUANTITY: 1 SIGN WIDTH: 9'-6" HEIGHT: 7'-6" TOTAL AREA: 71.3 Sq.Ft. BORDER TYPE: FLUSH RECESS: 0" WIDTH: 2" RADII: 12" NO. Z BARS: 3 LENGTH: 106.0 USE NOTES: 1,2,3,4 1. Legend and border shall be direct applied Grade A sheeting. 2. Background shall be Grade C reflective sheeting. 3. Shields shall be on 0.032" (0.8mm) aluminum and demountable. 4. Shields shall be Grade A sheeting. 5. Bottom panel shall be yellow Grade C sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:	BACKG COLOR: Green COPY COLOR: White SYMBOL X Y WID HT M1_4 16.9 40.8 30.3 24 NC243A 70 40.8 24 24 AR90L1 42.6 7.7 25.7 25.7 MAT'L: 0.125" (3.2 mm) ALUMINUM	DESIGN BY: W. Johnson PROJECT ID: U-4020 CHECKED BY: DIV: 11 DATE: Jan 06, 2009
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Letter positions table:

Letter	N	O	R	T	H	Series/Size	Text Length
N	12.1	8.1	2.1	8.6	7.4	7.4	6.5 61.9
S	62.1	8.1	1.5	8.6	7.8	7.4	6.5 12.1

FILENAME: proposed sign design NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: 2 TYPE: A QUANTITY: 1 SIGN WIDTH: 16'-0" HEIGHT: 7'-6" TOTAL AREA: 120.0 Sq.Ft. BORDER TYPE: FLUSH RECESS: 0" WIDTH: 2" RADII: 12" NO. Z BARS: 3 LENGTH: 184.0 USE NOTES: 1,2,3,4 1. Legend and border shall be direct applied Grade A sheeting. 2. Background shall be Grade C reflective sheeting. 3. Shields shall be on 0.032" (0.8mm) aluminum and demountable. 4. Shields shall be Grade A sheeting. 5. Bottom panel shall be yellow Grade C sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:	BACKG COLOR: Green COPY COLOR: White SYMBOL X Y WID HT M1_4 32.5 40.8 30.3 24 M1_4 82.4 40.8 30.3 24 NC243A 135.4 40.8 24 24 AR90L1 12.6 7.7 25.7 25.7 AR90L1 153.8 7.7 25.7 25.7 MAT'L: 0.125" (3.2 mm) ALUMINUM	DESIGN BY: W. Johnson PROJECT ID: U-4020 CHECKED BY: DIV: 11 DATE: Jan 06, 2009
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Letter positions table:

Letter	N	O	R	T	H	Series/Size	Text Length
N	27.7	8.1	2.1	8.6	7.4	7.4	6.5 124.4
S	77.6	8.1	1.5	8.6	7.8	7.4	6.5 74.5
N	127.5	8.1	2.1	8.6	7.4	7.4	6.5 24.6

FILENAME: proposed sign design NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: 3 TYPE: A QUANTITY: 1 SIGN WIDTH: 16'-0" HEIGHT: 10'-6" TOTAL AREA: 168.0 Sq.Ft. BORDER TYPE: FLUSH RECESS: 0" WIDTH: 2" RADII: 12" NO. Z BARS: 3 LENGTH: 184.0 USE NOTES: 1,2,3,4 1. Legend and border shall be direct applied Grade A sheeting. 2. Background shall be Grade C reflective sheeting. 3. Shields shall be on 0.032" (0.8mm) aluminum and demountable. 4. Shields shall be Grade A sheeting. 5. Bottom panel shall be yellow Grade C sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:	BACKG COLOR: Green COPY COLOR: White SYMBOL X Y WID HT M1_4 31 63.7 30.3 24 M1_4 80.9 63.7 30.3 24 NC243A 133.9 63.7 24 24 AR90L1 12.6 8 25.7 25.7 AR90L1 153.8 8 25.7 25.7 MAT'L: 0.125" (3.2 mm) ALUMINUM	DESIGN BY: W. Johnson PROJECT ID: U-4020 CHECKED BY: DIV: 11 DATE: Jan 28, 2009
--	---	---

Letter positions table:

Letter	T	R	U	C	K	Series/Size	Text Length
T	77.3	7.4	8.1	8.3	8.3	6.6	76
S	26.2	8.1	1.5	8.6	7.8	7.4	6.5 126
N	76	8.1	2.1	8.6	7.4	7.4	6.5 76
S	126	8.1	1.5	8.6	7.8	7.4	6.5 26.2
B	32.8	13.1	6.1	10.6	15.7	7.2	11.6 7.9 12 11.9 10.8 11.6 7.9 32.8

FILENAME: Proposed Sign Design NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: 4 TYPE: A QUANTITY: 1 SIGN WIDTH: 9'-6" HEIGHT: 5'-0" TOTAL AREA: 47.5 Sq.Ft. BORDER TYPE: FLUSH RECESS: 0" WIDTH: 2" RADII: 9" NO. Z BARS: 2 LENGTH: 106.0 USE NOTES: 1,2,3,4 1. Legend and border shall be direct applied Grade A sheeting. 2. Background shall be Grade C reflective sheeting. 3. Shields shall be on 0.032" (0.8mm) aluminum and demountable. 4. Shields shall be Grade A sheeting. 5. Bottom panel shall be yellow Grade C sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:	BACKG COLOR: Green COPY COLOR: White SYMBOL X Y WID HT M1_4 16.9 9.3 30.3 24 NC243A 70 9.3 24 24 MAT'L: 0.125" (3.2 mm) ALUMINUM	DESIGN BY: W. Johnson PROJECT ID: U-4020 CHECKED BY: DIV: 11 DATE: Jan 05, 2009
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Letter positions table:

Letter	N	O	R	T	H	Series/Size	Text Length
N	12.1	8.1	2.1	8.6	7.4	7.4	6.5 61.9
S	62.1	8.1	1.5	8.6	7.8	7.4	6.5 12.1

FILENAME: Proposed Sign Design NORTH CAROLINA D.O.T. SIGN DETAIL

# SIGN DESIGN

02-FEB-2009 14:01 p:\projects-u-4020\aff\signing\coord\signing layout plans\engseiddgn walter.johnson

TIP NO. U-4020	SHEET NO. SIGN-8
APPROVED: <i>[Signature]</i>	
DATE: 2/2/09	
SEAL	

SIGN NUMBER: 101      BACKG COLOR: Green/Green      DESIGN BY: W. Johnson      CHECKED BY:      DATE: Jan 28, 2009  
 TYPE: A      COPY COLOR: White      PROJECT ID: U-4020      DIV: 11

SYMBOL	X	Y	WID	HT
M1_4	16	83.9	30.3	24
M1_4	65.9	83.9	30.3	24
NC243A	119	83.9	24	24
ARMED	65.9	59.2	17.3	27.2
ARMED	117.3	18.7	17.3	27.2
M1_4	22.3	6.6	30.3	24
NC243A	75.3	6.6	24	24

NO. Z BARS: 3      MAT'L: 0.125" (3.2 mm) ALUMINUM  
 LENGTH: 154.0

USE NOTES: 1,2,3,4

- Legend and border shall be direct applied Grade B sheeting.
- Background shall be Grade C reflective sheeting.
- Shields shall be on 0.032" (0.8mm) aluminum and demountable.
- Shields shall be Grade B sheeting.

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

N	O	R	T	H	Series/Size			
11.1	8.1	2.1	8.6	7.4	7.4	6.5	110.9	E 2000
								40
								E 2000
61.1	8.1	2.1	8.6	7.4	7.4	6.5	61	E 2000
								40
								E 2000
111	8.1	1.5	8.6	7.8	7.4	6.5	11.1	E 2000
								39.8
								E 2000
17.5	8.1	1.5	8.6	7.8	7.4	6.5	104.7	E 2000
								39.8
								E 2000
67.3	8.1	2.1	8.6	7.4	7.4	6.5	54.7	E 2000
								40

FILENAME: Proposed Sign Design      NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: 102      BACKG COLOR: Green/Green      DESIGN BY: W. Johnson      CHECKED BY:      DATE: Jan 08, 2009  
 TYPE: A      COPY COLOR: White      PROJECT ID: U-4020      DIV: 11

SYMBOL	X	Y	WID	HT
M1_4	19	118.6	30.3	24
M1_4	68.9	118.6	30.3	24
NC243A	121.9	118.6	24	24
ARMED	103.5	92.4	17.3	27.2
ARMED	41.5	35.6	30.3	24
M1_4	91.4	35.6	30.3	24
ARMED	13.9	9.4	17.3	27.2

NO. Z BARS: 0      MAT'L: 0.125" (3.2 mm) ALUMINUM  
 LENGTH: 160.0

USE NOTES: 1,2,3,4

- Legend and border shall be direct applied Grade B sheeting.
- Background shall be Grade C reflective sheeting.
- Shields shall be on 0.032" (0.8mm) aluminum and demountable.
- Shields shall be Grade B sheeting.

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

S	O	U	T	H	Series/Size							
14.2	8.1	1.5	8.6	7.8	7.4	6.5	114	E 2000				
								39.8				
								E 2000				
64	8.1	2.1	8.6	7.4	7.4	6.5	64	E 2000				
								40				
								E 2000				
114	8.1	1.5	8.6	7.8	7.4	6.5	14.2	E 2000				
								39.8				
								EM 2000				
37.3	12	10.8	11.9	11.6	7.9	76.5		54.2				
								E 2000				
								40				
								E 2000				
36.7	8.1	2.1	8.6	7.4	7.4	6.5	91.4	E 2000				
								40				
								E 2000				
86.6	8.1	1.5	8.6	7.8	7.4	6.5	41.5	E 2000				
								39.8				
								E 2000				
53.2	15.6	7.2	7.2	10.6	10.3	11.6	10.6	11.9	7.8	8.2	13.9	EM 2000
												100.9

FILENAME: proposed sign design      NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: 103      BACKG COLOR: Green/Green      DESIGN BY: W. Johnson      CHECKED BY:      DATE: Jan 28, 2009  
 TYPE: A      COPY COLOR: White      PROJECT ID: U-4020      DIV: 11

SYMBOL	X	Y	WID	HT
M1_4	17.5	77.6	30.3	24
M1_4	67.5	77.6	30.3	24
NC243A	120.5	77.6	24	24
ARUP	73.9	44.2	17.3	25.9
AR90L1	23.1	6.9	25.7	25.7
M1_4	58.8	7.7	30.3	24

NO. Z BARS: 3      MAT'L: 0.125" (3.2 mm) ALUMINUM  
 LENGTH: 154.0

USE NOTES: 1,2,3,4

- Legend and border shall be direct applied Grade B sheeting.
- Background shall be Grade C reflective sheeting.
- Shields shall be on 0.032" (0.8mm) aluminum and demountable.
- Shields shall be Grade B sheeting.

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

N	O	R	T	H	Series/Size			
11.1	8.1	2.1	8.6	7.4	7.4	6.5	110.9	E 2000
								40
								E 2000
61.1	8.1	2.1	8.6	7.4	7.4	6.5	61	E 2000
								40
								E 2000
111	8.1	1.5	8.6	7.8	7.4	6.5	11.1	E 2000
								39.8
								E 2000
99	8.1	1.5	8.6	7.8	7.4	6.5	23.1	E 2000
								39.8

FILENAME: proposed sign design      NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: 302      BACKG COLOR: Green      DESIGN BY: W. Johnson      CHECKED BY:      DATE: Jan 28, 2009  
 TYPE: D      COPY COLOR: White      PROJECT ID: U-4020      DIV: 11

SYMBOL	X	Y	WID	HT
ARUP	41	8	9	12

NO. Z BARS: 1      MAT'L: 0.125" (3.2 mm) ALUMINUM  
 LENGTH: 5'-0"

USE NOTES: 1,2

- Legend and border shall be direct applied Grade C sheeting.
- Background shall be Grade C reflective sheeting.

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

T	O	D	D	Series/Size		
7	6	7.4	7.2	5.4	27	E 2000
						26.1

FILENAME: proposed sign design      NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: 301      BACKG COLOR: Green      DESIGN BY: W. Johnson      CHECKED BY:      DATE: Jan 28, 2009  
 TYPE: D      COPY COLOR: White      PROJECT ID: U-4020      DIV: 11

SYMBOL	X	Y	WID	HT
ARUP	7	8	9	12

NO. Z BARS: 1      MAT'L: 0.125" (3.2 mm) ALUMINUM  
 LENGTH: 5'-0"

USE NOTES: 1,2

- Legend and border shall be direct applied Grade C sheeting.
- Background shall be Grade C reflective sheeting.

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

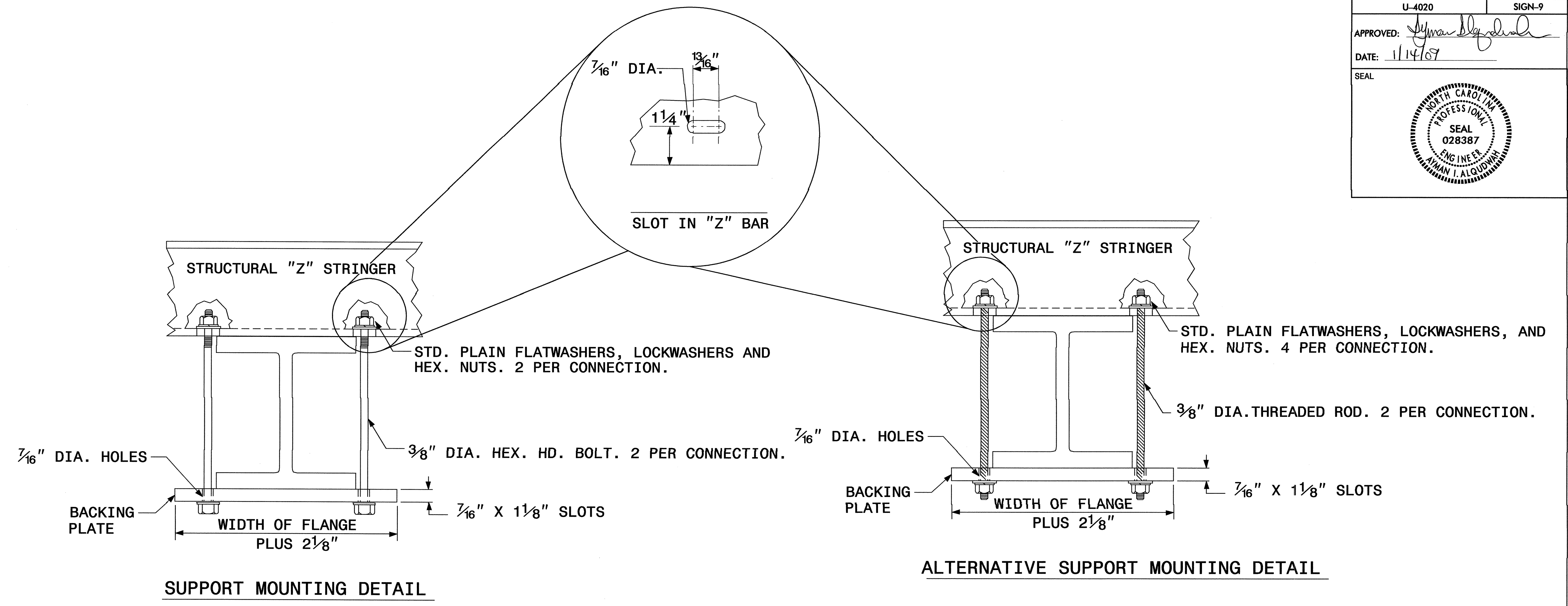
T	O	D	D	Series/Size		
7	6	7.4	7.2	5.4	7	E 2000
						26.1

FILENAME: proposed sign design      NORTH CAROLINA D.O.T. SIGN DETAIL

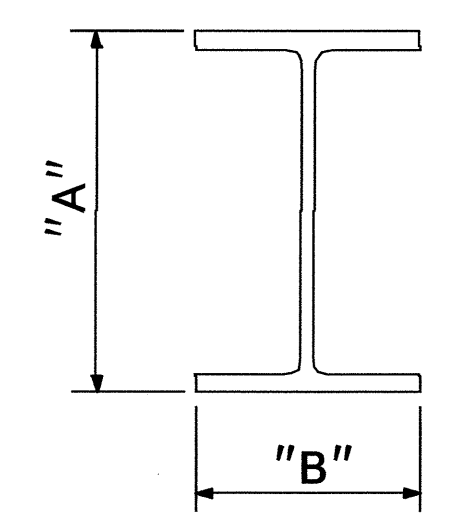
SIGN DESIGN

03-FEB-2009 14:01 C:\tpp\projects\4020\trf\c\signing\cedd\signing layout plans\engseed.dgn Walter Johnson AT 12/21/09



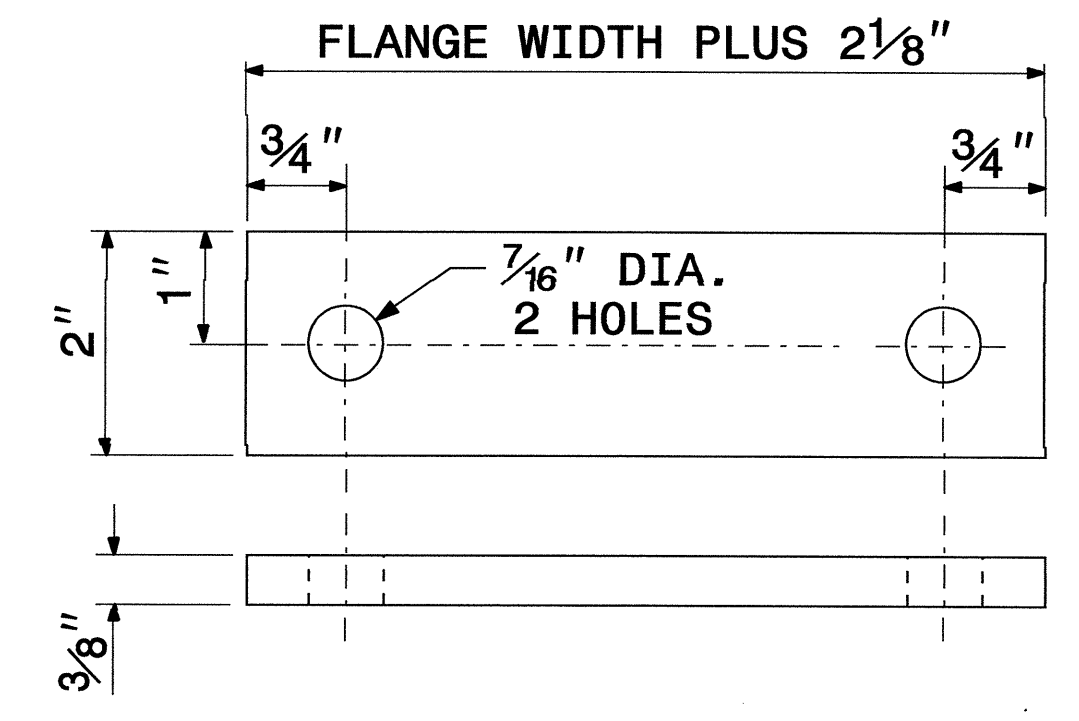


**SIGN SUPPORTS SECTION DIMENSIONS**




SECTION	A	B
S3 X 5.7	3"	2 3/8"
S4 X 7.7	4"	2 5/8"
W6 X 9	6"	4"
W6 X 12	6"	4"
W6 X 16	6 1/4"	4"
W8 X 18	8 1/8"	5 1/4"
W8 X 21	8 1/4"	5 1/4"
W10 X 22	10 1/8"	5 3/4"
W10 X 26	10 3/8"	5 3/4"
W12 X 26	12 1/4"	6 1/2"
W14 X 30	13 7/8"	6 3/4"
W16 X 31	15 7/8"	5 1/2"
W18 X 35	17 3/4"	6"
W18 X 40	17 7/8"	6"
W21 X 44	20 5/8"	6 1/2"

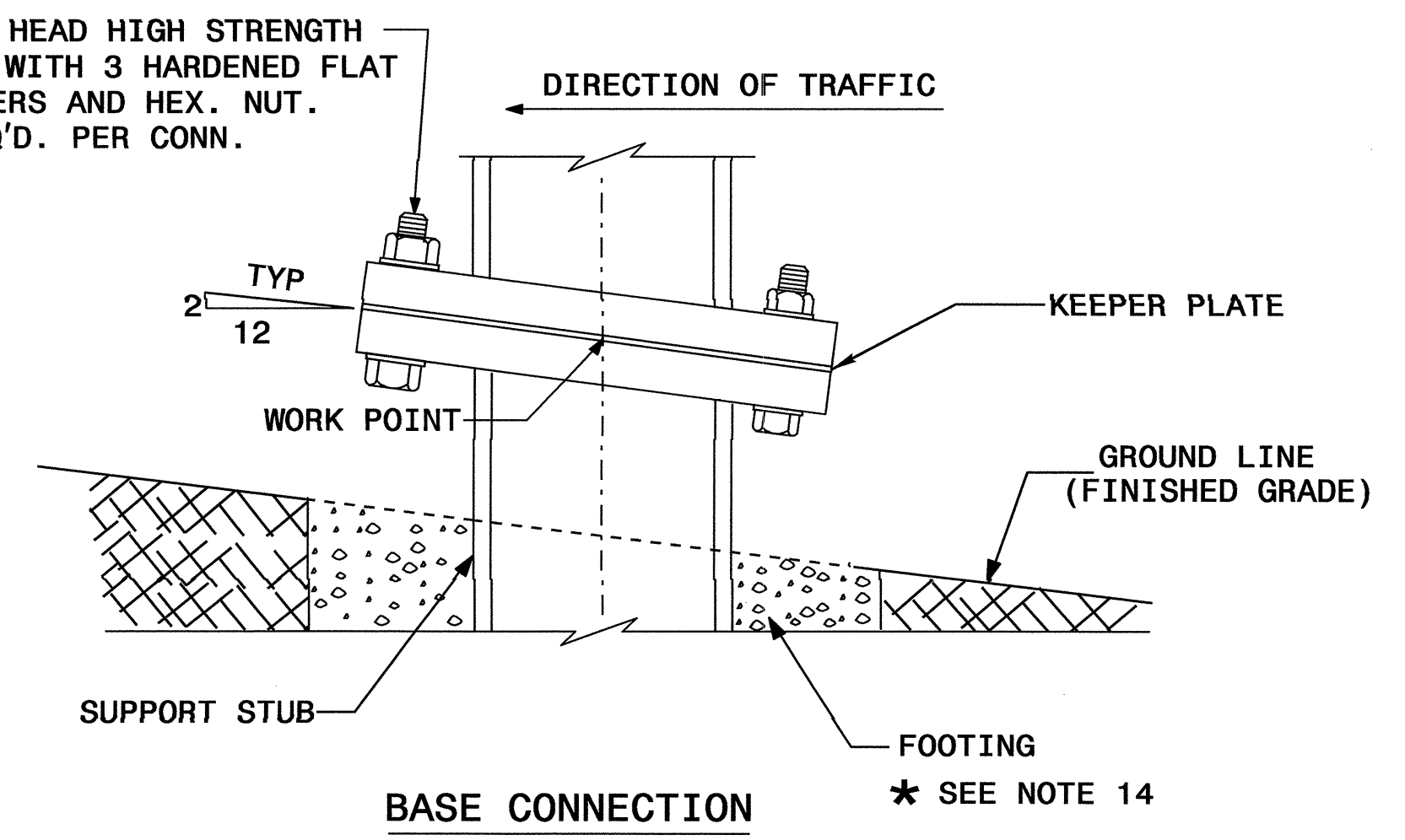
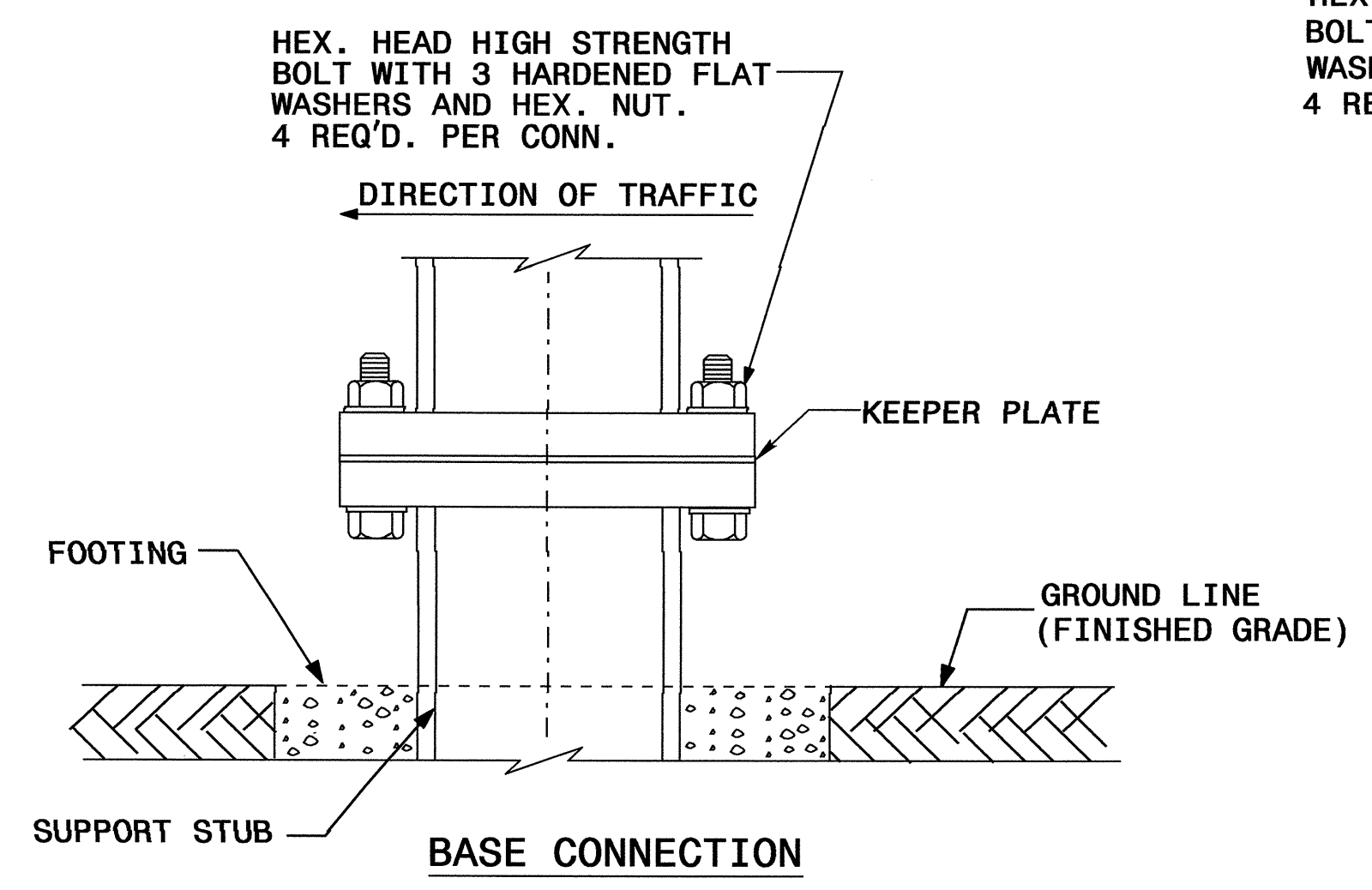
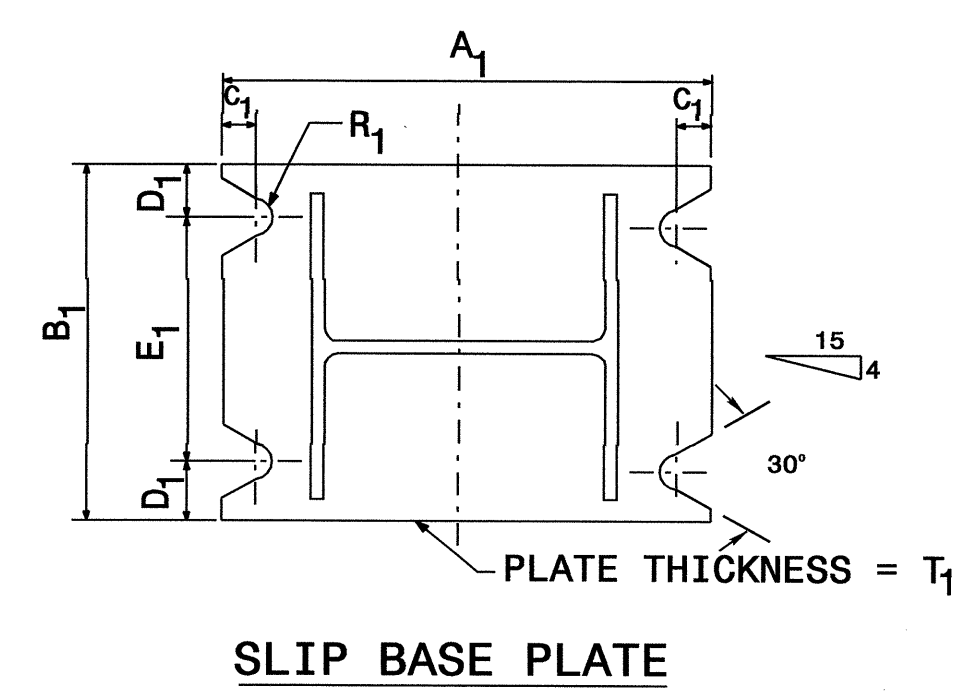
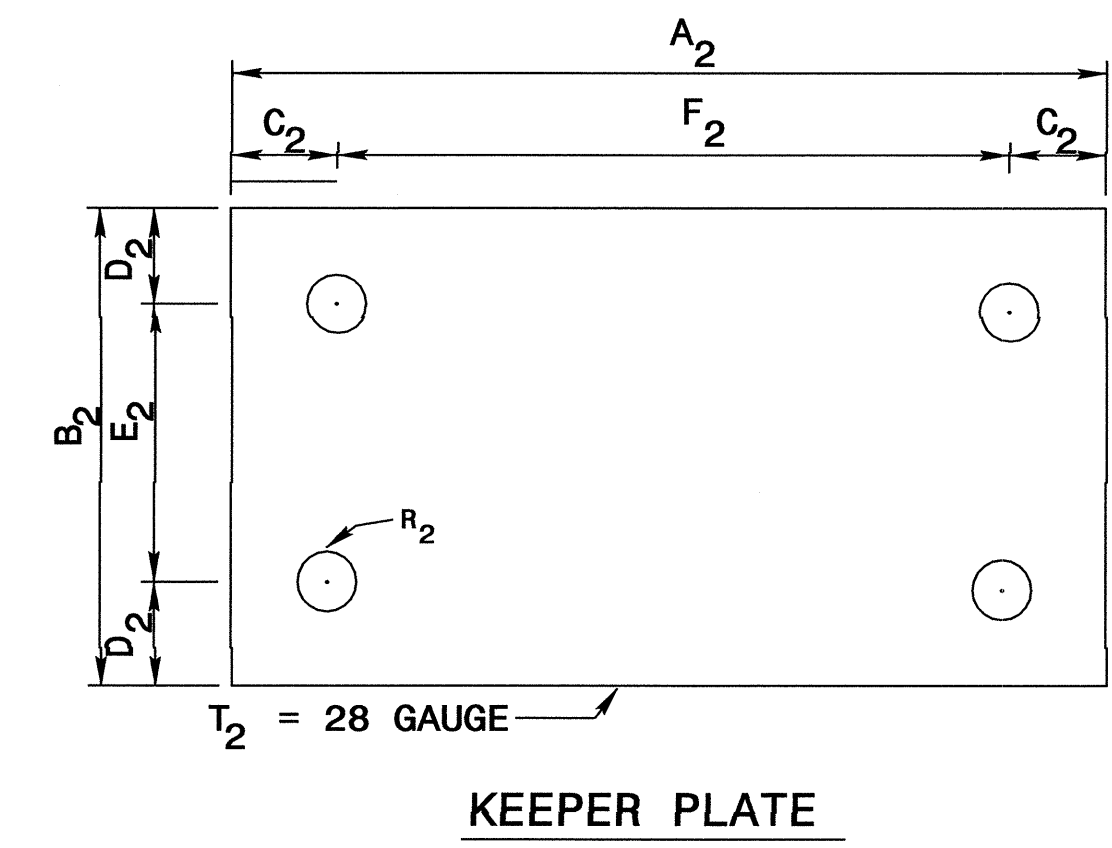
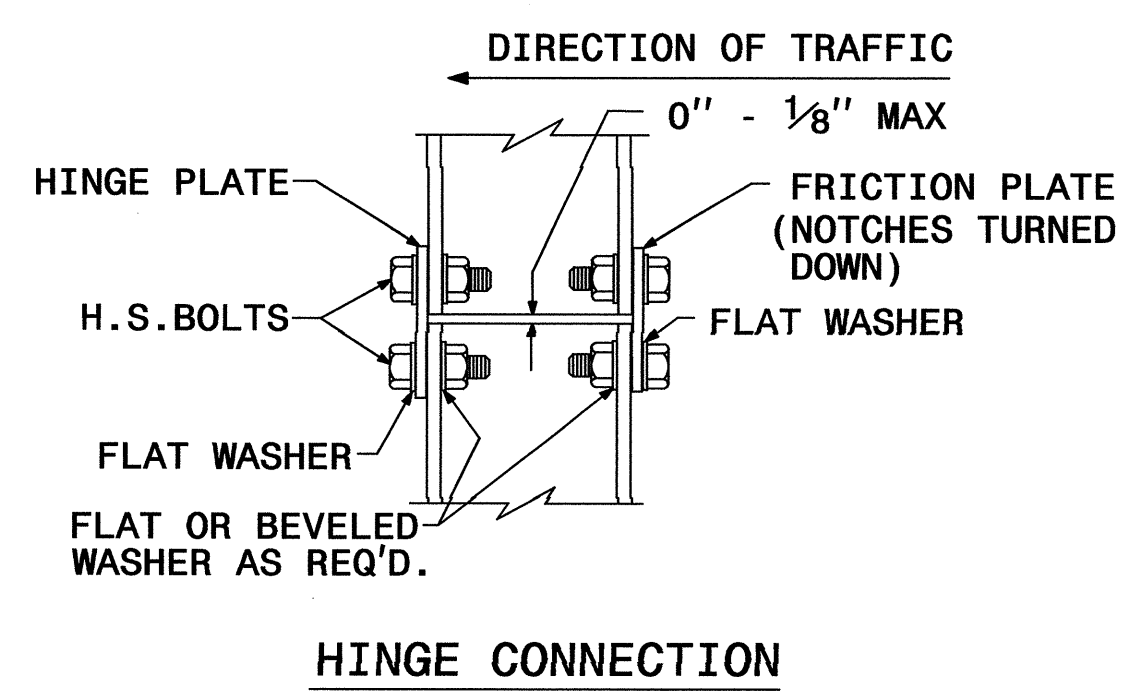
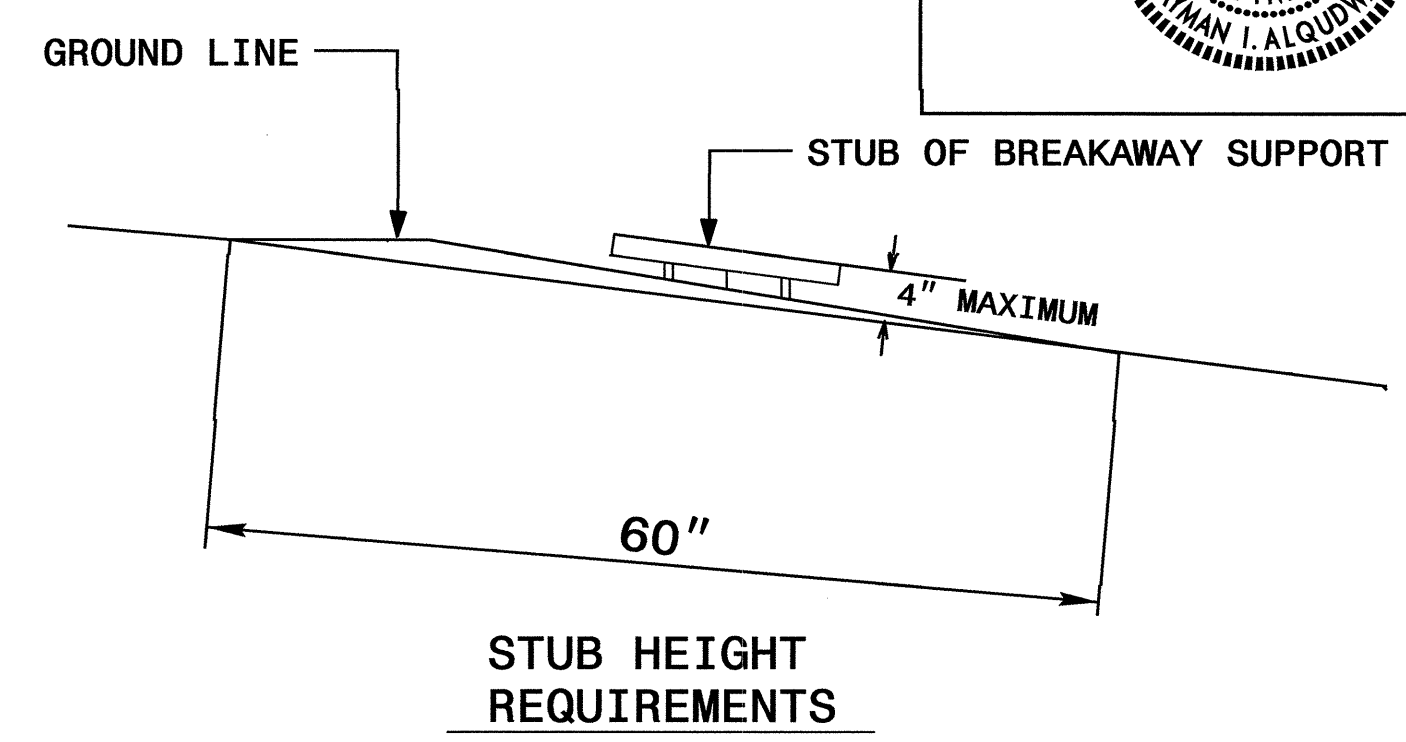
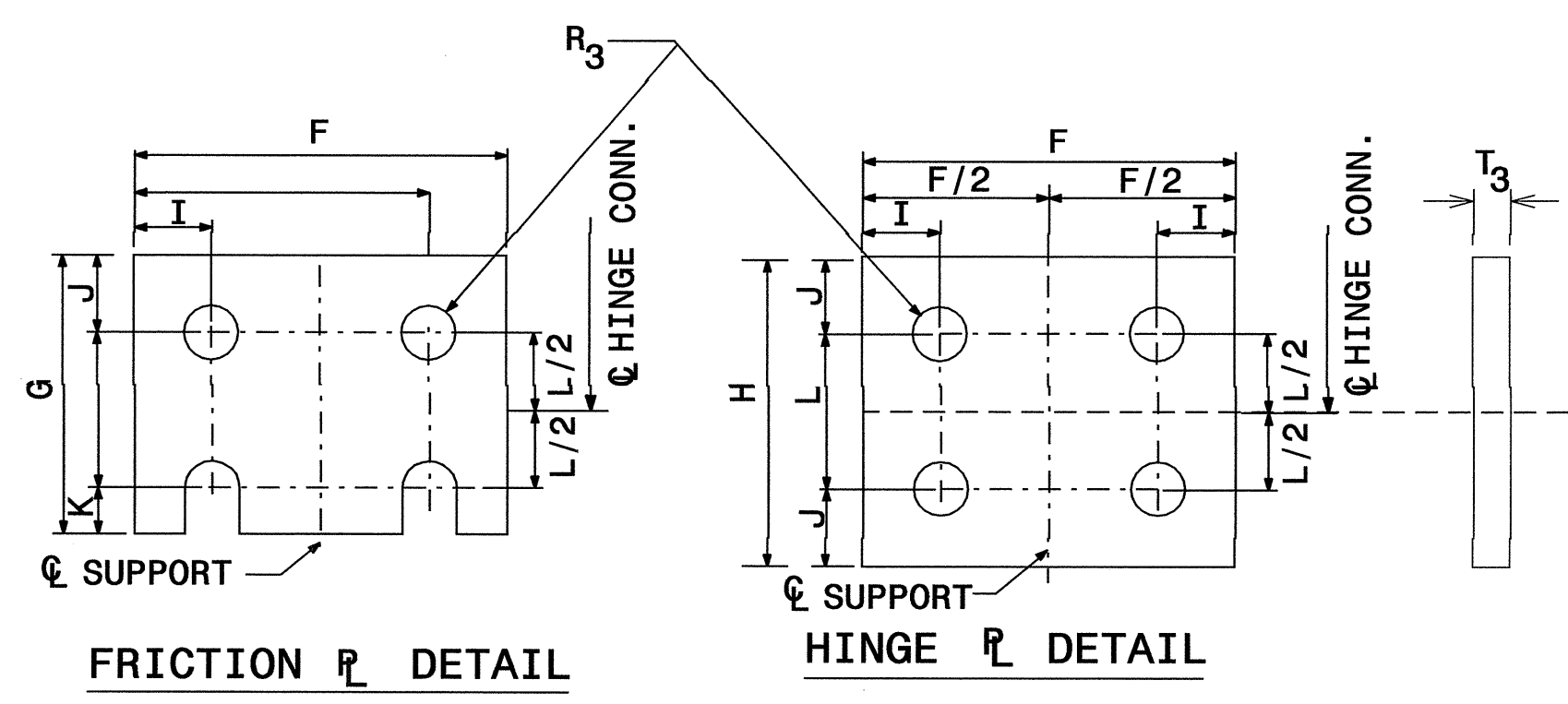
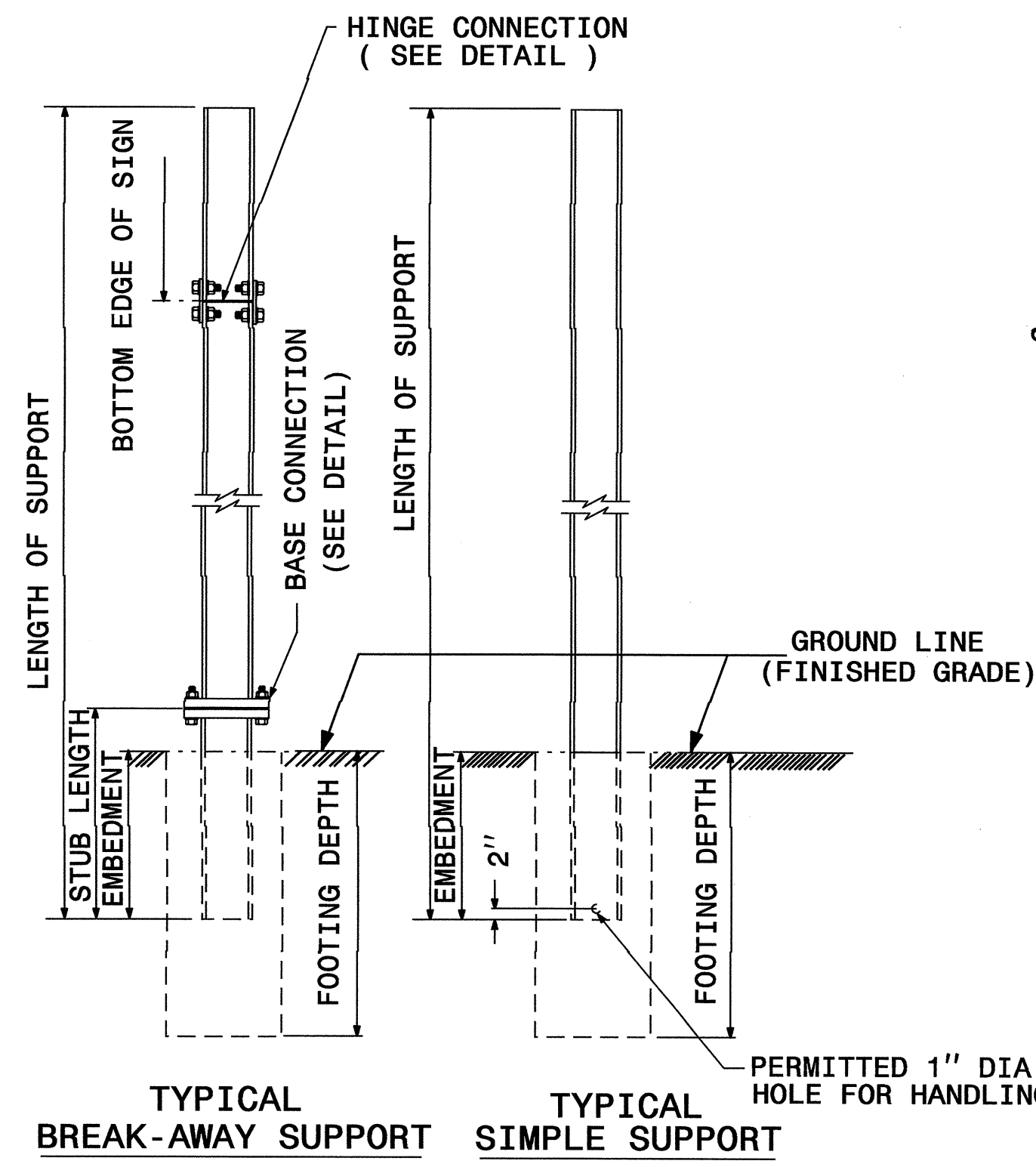
**BACKING PLATE DETAIL**



1. THE SUPPORT MOUNTING DETAIL SHOWS A "W" OR "S" BEAM. THIS DETAIL IS ALSO USED FOR MOUNTING SIGNS TO WOOD OR SQUARE TUBE SUPPORTS.
2. USE GALVANIZED STEEL FOR BACKING PLATES AND MOUNTING BOLTS IN ACCORDANCE WITH ASTM A123.
3. SEE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES FOR TYPE OF MATERIAL TO BE USED FOR SIGN HANGER ASSEMBLIES AND SUPPORTS.
4. USE GALVANIZED STEEL FOR MOUNTING BOTS AND THREADED RODS IN COMPLIANCE WITH ASTM A307 AND ASTM A153.

**SIGN MOUNTING DETAILS**


TIP NO. U-4020	SHEET NO. SIGN-10
APPROVED: <i>[Signature]</i>	
DATE: 1/14/09	
SEAL	
	



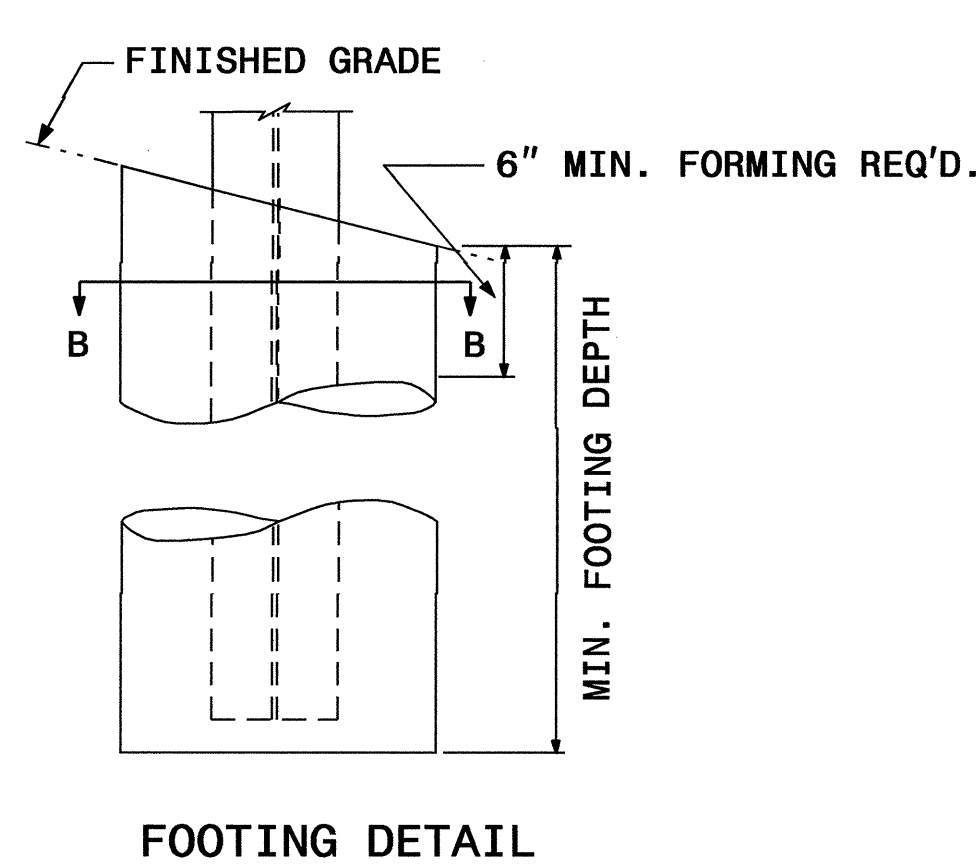
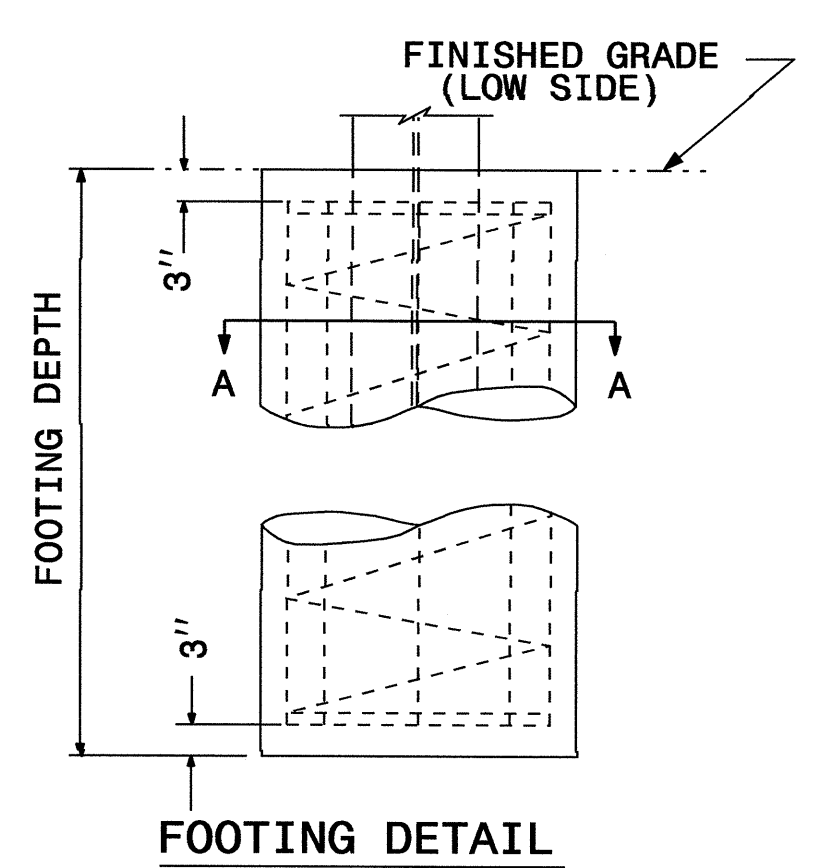
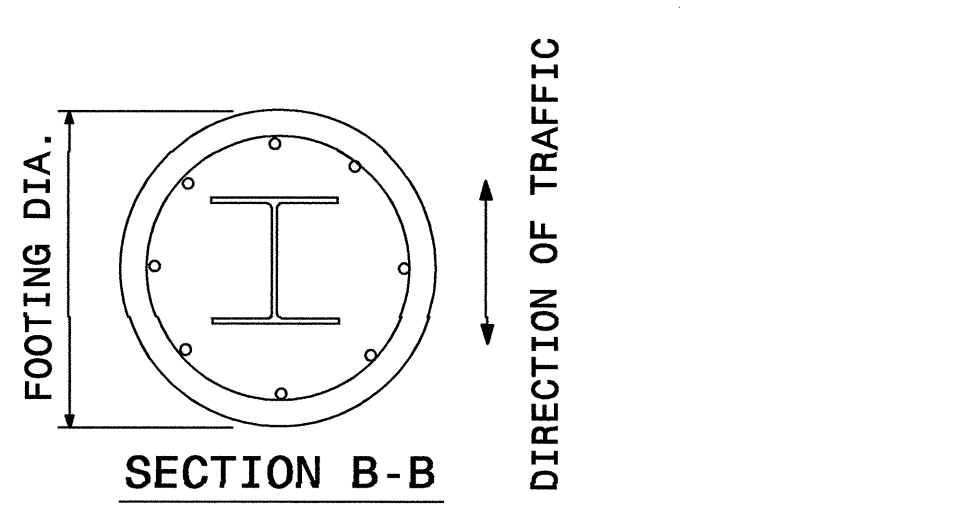
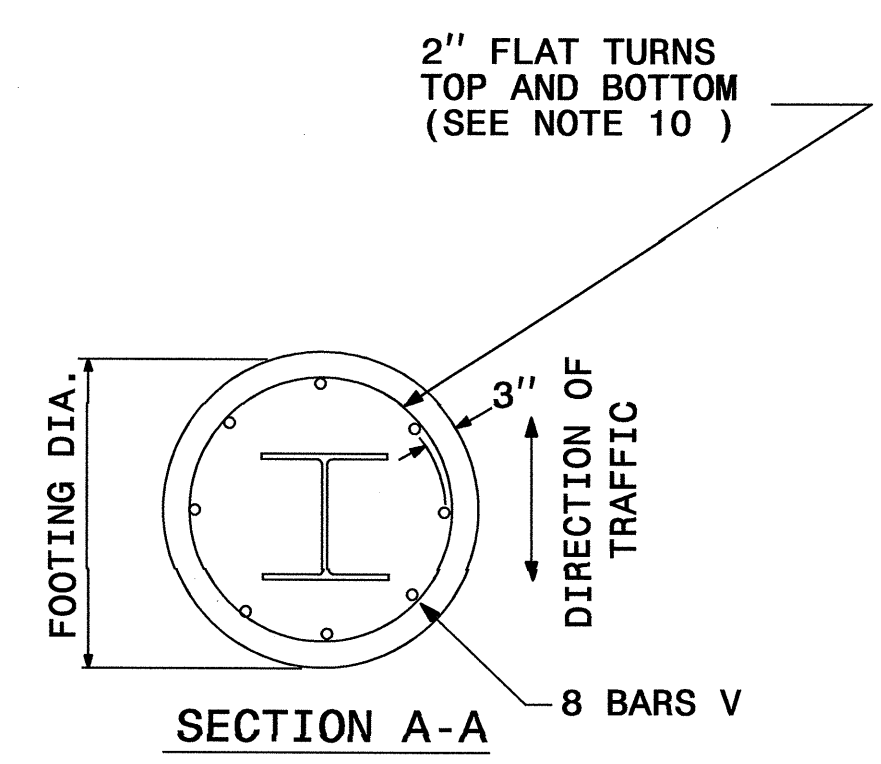
SEE SHEET SIGN-7 FOR DIMENSIONS.  
SEE SHEET SIGN-8 FOR NOTES.

**GROUND MOUNTED SIGN SUPPORT**

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TIP NO. U-4020	SHEET NO. SIGN-11
APPROVED: <i>[Signature]</i>	
DATE: 1/14/09	
SEAL	
	

BEAM SHAPE	SLIP BASE PLATE DATA								KEEPER PLATE DATA								HINGE CONNECTION DATA								BREAK AWAY SUPPORT WEIGHT CONSTANT LBS.	
	BOLT SIZE	A <sub>1</sub>	B <sub>1</sub>	C <sub>1</sub>	D <sub>1</sub>	E <sub>1</sub>	T <sub>1</sub>	R <sub>1</sub>	A <sub>2</sub>	B <sub>2</sub>	C <sub>2</sub>	D <sub>2</sub>	E <sub>2</sub>	R <sub>2</sub>	T <sub>2</sub>	BOLT SIZE	F	G	H	I	J	K	L	R <sub>3</sub>		T <sub>3</sub>
S3X5.7	1/2"DIA. X 3"	7"	4"	1"	3/4"	2 1/2"	1"	9/32"	7"	4"	1"	3/4"	2 1/2"	9/32"	28 GAUGE	1/2"DIA. X 1 1/4"	2 1/4"	3 1/2"	4"	1 1/2"	1"	1 1/2"	2"	9/32"	3/8"	18
S4X7.7	1/2"DIA. X 3"	8"	4"	1"	3/4"	2 1/2"	1"	9/32"	8"	4"	1"	3/4"	2 1/2"	9/32"	28 GAUGE	1/2"DIA. X 1 1/4"	2 5/8"	3 1/2"	4"	1 1/2"	1"	1 1/2"	2"	9/32"	3/8"	20
W6X9	1/2"DIA. X 3"	10"	5"	1"	3/4"	3 1/2"	1"	9/32"	10"	5"	1"	3/4"	3 1/2"	9/32"	28 GAUGE	1/2"DIA. X 1 1/4"	4"	3 1/2"	4"	3/4"	1"	1 1/2"	2"	9/32"	3/8"	32
W6X12	5/8"DIA. X 3 3/4"	11"	5"	1 1/4"	7/8"	3 1/4"	1 1/4"	1 1/32"	11"	5"	1 1/4"	7/8"	3 1/4"	1 1/32"	28 GAUGE	5/8"DIA. X 2 1/4"	4"	4"	4 1/2"	3/4"	1 1/8"	5/8"	2 1/4"	1 1/32"	3/8"	39
W6X16	5/8"DIA. X 3 3/4"	12"	6"	1 1/4"	7/8"	4 1/4"	1 1/2"	1 1/32"	12"	6"	1 1/4"	7/8"	4 1/4"	1 1/32"	28 GAUGE	5/8"DIA. X 2 1/2"	4"	4"	4 1/2"	3/4"	1 1/8"	5/8"	2 1/4"	1 1/32"	1/2"	47
W8X18	5/8"DIA. X 4 1/4"	13 1/2"	6 1/2"	1 1/4"	7/8"	4 3/4"	1 1/2"	1 1/32"	13 1/2"	6 1/2"	1 1/4"	7/8"	4 3/4"	1 1/32"	28 GAUGE	5/8"DIA. X 2 1/2"	5 1/4"	4"	4 1/2"	1"	1 1/8"	5/8"	2 1/4"	1 1/32"	1/2"	70
W8X21	3/4"DIA. X 4 1/4"	14"	7"	1 1/2"	1"	5"	1 1/2"	1 1/32"	14"	7"	1 1/2"	1"	5"	1 1/32"	28 GAUGE	3/4"DIA. X 2 3/4"	5 1/4"	6"	7"	1"	1 3/4"	3/4"	3 1/2"	1 1/32"	1/2"	73
W10X22	3/4"DIA. X 4 1/4"	16"	8"	1 1/2"	1"	6"	1 1/2"	1 1/32"	16"	8"	1 1/2"	1"	6"	1 1/32"	28 GAUGE	3/4"DIA. X 2 3/4"	5 3/4"	6"	7"	1"	1 3/4"	3/4"	3 1/2"	1 1/32"	1/2"	119
W10X26	3/4"DIA. X 4 3/4"	16 1/2"	8"	1 1/2"	1"	6"	1 3/4"	1 1/32"	16 1/2"	8"	1 1/2"	1"	6"	1 1/32"	28 GAUGE	3/4"DIA. X 2 3/4"	5 3/4"	6"	7"	1"	1 3/4"	3/4"	3 1/2"	1 1/32"	5/8"	140
W12X26	3/4"DIA. X 4 3/4"	18 1/2"	9"	1 1/2"	1"	7"	1 3/4"	1 1/32"	18 1/2"	9"	1 1/2"	1"	7"	1 1/32"	28 GAUGE	3/4"DIA. X 2 3/4"	6 1/2"	6"	7"	1"	1 3/4"	3/4"	3 1/2"	1 1/32"	5/8"	176
W14X30	1"DIA. X 5"	22"	9"	2"	1 1/2"	6"	2"	1 7/32"	22"	9"	2"	1 1/2"	6"	1 7/32"	28 GAUGE	1"DIA. X 3"	6 3/4"	7"	8"	1 1/4"	2"	1"	4"	1 7/32"	5/8"	205
W16X31	1"DIA. X 5"	24"	9"	2"	1 1/2"	6"	2"	1 7/32"	24"	9"	2"	1 1/2"	6"	1 7/32"	28 GAUGE	1"DIA. X 3 1/4"	5 1/2"	7"	8"	1 1/4"	2"	1"	4"	1 7/32"	3/4"	223
W18X35	1"DIA. X 5"	25"	9"	2"	1 1/2"	6"	2"	1 7/32"	25"	9"	2"	1 1/2"	6"	1 7/32"	28 GAUGE	1"DIA. X 3 1/4"	6"	7"	8"	1 1/4"	2"	1"	4"	1 7/32"	3/4"	243
W18X40	1"DIA. X 5 1/2"	26"	9"	2"	1 1/2"	6"	2 1/4"	1 7/32"	26"	9"	2"	1 1/2"	6"	1 7/32"	28 GAUGE	1"DIA. X 3 3/4"	6"	7"	8"	1 1/4"	2"	1"	4"	1 7/32"	7/8"	278
W21X44	1"DIA. X 5 1/2"	29"	9"	2"	1 1/2"	6"	2 1/2"	1 7/32"	29"	9"	2"	1 1/2"	6"	1 7/32"	28 GAUGE	1"DIA. X 3 3/4"	6 1/2"	7"	8"	1 1/4"	2"	1"	4"	1 7/32"	7/8"	310




FOUNDATION DATA *		
FOOTING DIAMETER	REINFORCEMENT	SPIRAL BAR
1' 6"	8 # 6 BARS	#3 BAR, 3" PITCH
2'	8 # 7 BARS	#3 BAR, 3" PITCH
2' 6"	8 # 9 BARS	#3 BAR, 3" PITCH
3'	8 # 11 BARS	#3 BAR, 3" PITCH
3' 6"	8 # 12 BARS	#3 BAR, 3" PITCH
4'	8 # 14 BARS	#3 BAR, 3" PITCH

\* FOUNDATION DIMENSIONS ARE SHOWN IN PLANS  
SEE SHEET SIGN-8 FOR NOTES.

**GROUND MOUNTED SIGN SUPPORT**

13-JAN-2009 15:59  
 P:\tjpr\projects-u\4020\signing\cadd\signing layout plans\engsees.dgn  
 User: johnson\_mh\_1221737

TIP NO. U-4020	SHEET NO. SIGN-12
APPROVED: <i>[Signature]</i>	
DATE: 1/14/09	
SEAL	
	

**NOTES:**

1. DESIGN CONFORMS WITH THE SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS - A.A.S.H.T.O.
2. USE MATERIALS, FABRICATE AND ERECT SIGNS AND SUPPORTS THAT CONFORM TO THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
3. USE HIGH STRENGTH BOLTS, NUTS AND WASHERS THAT CONFORM TO A.S.T.M. A-325 AND THAT ARE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-153.
4. USE BACKING PLATES, SLIP BASE PLATES, FRICTION PLATES, AND HINGE PLATES THAT CONFORM TO A.S.T.M. A-36 AND THAT ARE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-123 PRIOR TO GALVANIZING, GRIND SMOOTH ANY METAL PROJECTION BEYOND THE PLATE FACE. KEEPER PLATES SHALL BE MANUFACTURED FROM 28 GAUGE SHEET STEEL THAT CONFORMS TO A.S.T.M. A-36 AND IS GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-123
5. ASSEMBLE HINGE CONNECTIONS IN THE SHOP. SHOP TIGHTEN BOLTS BY USE OF EITHER A CALIBRATED POWER WRENCH OR A MANUAL TORQUE WRENCH. TIGHTEN EACH HINGE CONNECTION BOLT TO 1/3 PAST SNUG.
6. BASE PLATES DETAILS ARE FOR INSTALLATIONS ON THE RIGHT SHOULDER AND IN GORE AREAS.
7. ASSEMBLE UPPER SUPPORT TO STUB AS SHOWN IN DETAIL. SLIP BASE PLATES SHALL BE FILLET WELDED ONTO POSTS ALL AROUND THE STRUCTURAL SHAPE SO AS TO INSURE NO LOSS OF STRENGTH. ASSEMBLE IN EITHER SHOP OR FIELD. 28 GAUGE KEEPER PLATE IS PLACED BETWEEN SLIP BASE PLATES TO PREVENT BOLT SLIPPING. TIGHTEN BOLTS TO THE FOLLOWING PRESCRIBED TORQUE:


BOLT DIAMETER	TORQUE (LB. FT.)
1/2"	9
5/8"	22
3/8"	37
1"	48

COMPLETELY ASSEMBLE B/A POSTS PRIOR TO ERECTION. B/A POST TO BE SET IN ONE PIECE. AFTER SUPPORT HAS BEEN ERECTED AND THE CONCRETE FOOTINGS HAS CURED AT LEAST 48 HRS., CLEAN CONCRETE FROM BASE CONNECTION BOLTS THEN LOOSEN AND RETIGHTEN EACH BOLT IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE. DO NOT OVERTIGHTEN. BURR ALL BOLT THREADS OF BASE CONNECTIONS TO PREVENT LOOSENING.

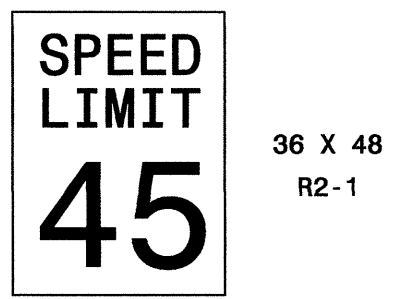
8. USE REINFORCED FOOTINGS WITH DIMENSIONS AS SHOWN IN PLANS. WHERE SOLID ROCK IS ENCOUNTERED, THE ENGINEER DIRECTS WHETHER TO PLACE THE FOOTING AT THE PRESCRIBED DEPTH OR EXTEND IT AT LEAST TWO FEET INTO THE ROCK. CONSTRUCT ALL FOOTINGS OF CLASS A CONCRETE.
9. FORM TOP 6" OF FOOTINGS. ENGINEER APPROVES THE METHOD USED.
10. THE FINAL FLAT TURN OF SPIRAL OR HOOPS NO. 3 OR LARGER PLACED 3" FROM TOP AND BOTTOM OF FOOTING MAY BE WELDED TO VERTICAL REINFORCING BARS. NO OTHER WELDING WILL BE PERMITTED.
11. ELIMINATE HINGE CONNECTION FOR ALL SINGLE SUPPORT SIGNS.
12. DETAIL IS FOR ONE DIRECTION BREAKAWAY. WHEN PLANS REQUIRE A TWO DIRECTION BREAKAWAY, TWO FRICTION PLATES SHALL BE USED IN LIEU OF ONE FRICTION PLATE AND ONE HINGE PLATE.
13. SHAPE THE TOPS OF THE FOOTINGS TO CONFORM WITH FINISHED GROUND ELEVATIONS SUCH THAT WATER WILL NOT COLLECT AGAINST THE SUPPORTS.
14. IF THE GROUNDWATER IS ENCOUNTERED AT AN DEPTH SHALLOWER THAN 7 FEET, THE SIGN FOUNDATION MUST BE REDESIGNED BASED UPON THE ACTUAL FIELD CONDITIONS. THE FOUNDATION DESIGN DOES NOT APPLY TO VERY SOFT OR LOOSE SOIL, MUCK, WEATHERED ROCK, OR HARD ROCK.

**GROUND MOUNTED SIGN SUPPORT**

13-JAN-2009 15:59  
 ps:\tippro\projects-u-4020\signing\ceadd\signing layout plans\engseal.dgn  
 11-1221737  
 W. Ben Johnson

TIP NO. U-4020	SHEET NO. SIGN-13
APPROVED: <i>[Signature]</i>	
DATE: 2/2/09	
SEAL	
	

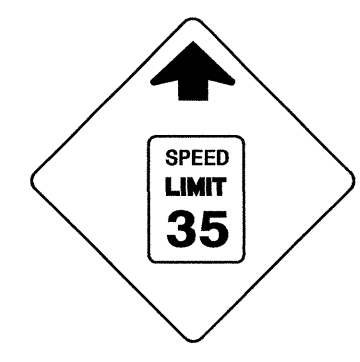
401 QUANTITY REQ'D 1



36 X 48  
R2-1

TWO "U" POSTS PER SIGN

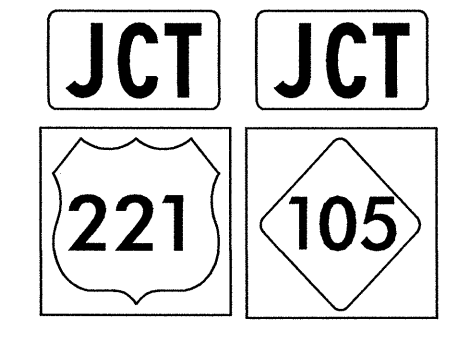
406 QUANTITY REQ'D 1



36 X 36  
W3-5

TWO "U" POSTS PER SIGN

505

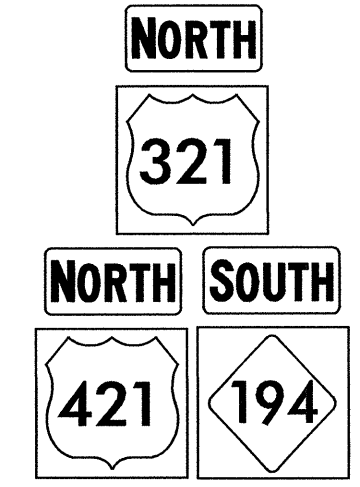


2 - 21 X 15

1 - 30 X 24  
1 - 24 X 24

TWO "U" POSTS

510



1 - 24 X 12

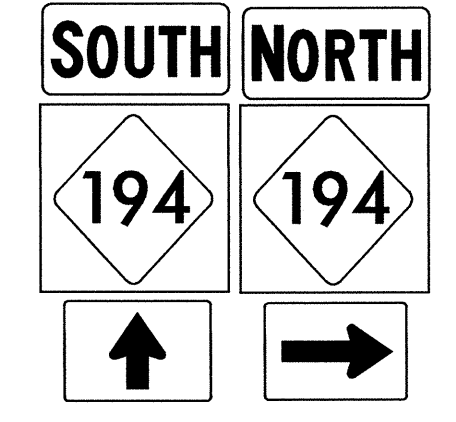
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2 - 24 X 12

1 - 30 X 24  
1 - 24 X 24

TWO "U" POSTS

515



2 - 24 X 12

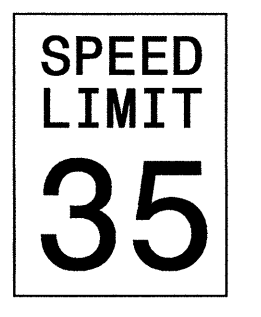
1 - 30 X 24

1 - 24 X 24

2 - 21 X 15

MOUNTED BELOW SIGN 302

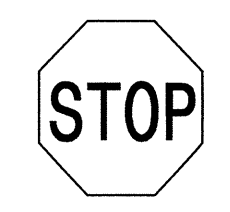
402 QUANTITY REQ'D 4



36 X 48  
R2-1

TWO "U" POSTS PER SIGN

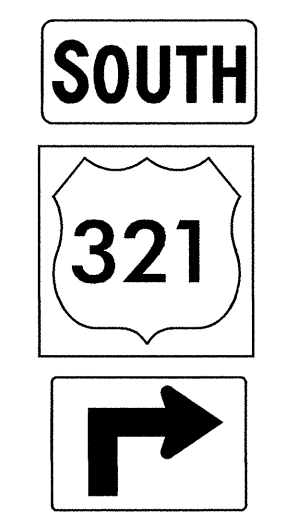
407 QUANTITY REQ'D 9



30 X 30  
R1-1

ONE "U" POST PER SIGN

501



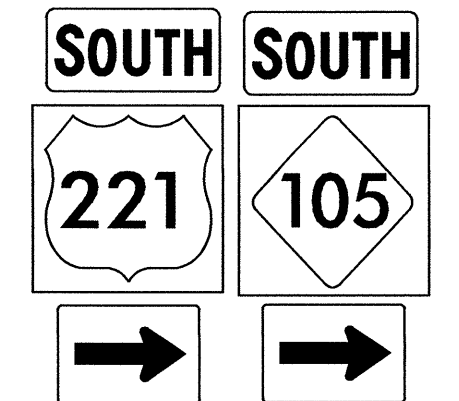
1 - 24 X 12

1 - 30 X 24

1 - 21 X 15

ONE "U" POST

506



2 - 24 X 12

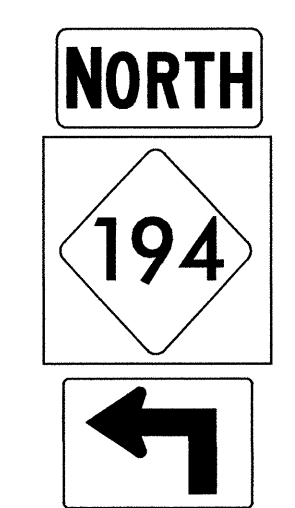
1 - 30 X 24

1 - 24 X 24

2 - 21 X 15

TWO "U" POSTS

511



1 - 24 X 12

1 - 24 X 24

1 - 21 X 15

ONE "U" POST

516

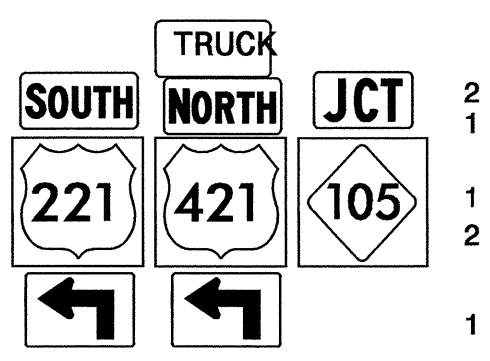


1 - 24 X 12

1 - 24 X 24

ONE "U" POST

519



2 - 24 X 12  
1 - 21 X 15

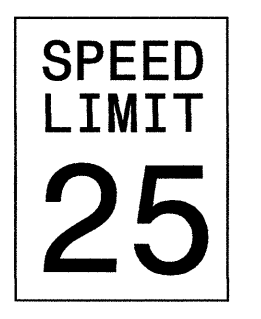
1 - 24 X 24

2 - 30 X 24

1 - 21 X 15

TWO "U" POSTS

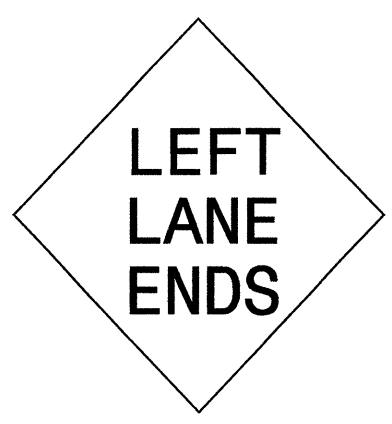
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36 X 48  
R2-1

TWO "U" POSTS PER SIGN

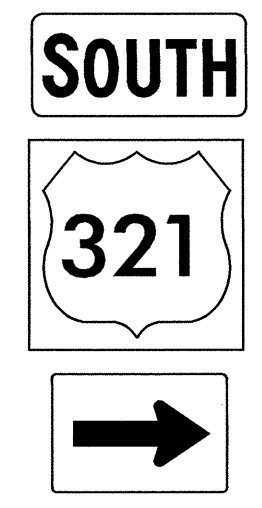
408 QUANTITY REQ'D 4



36 X 36  
W3-1(L)

TWO "U" POSTS PER SIGN

502



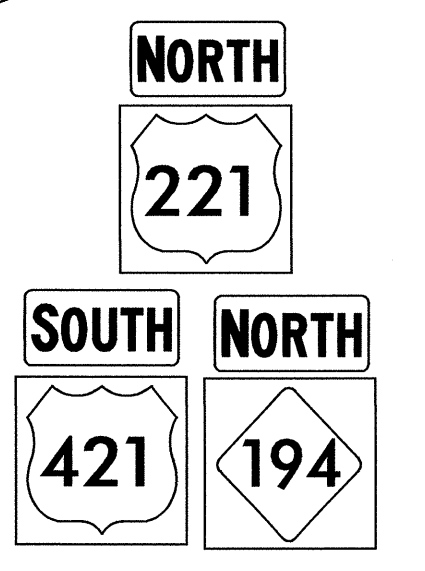
1 - 24 X 12

1 - 30 X 24

1 - 21 X 15

ONE "U" POST

507



1 - 24 X 12

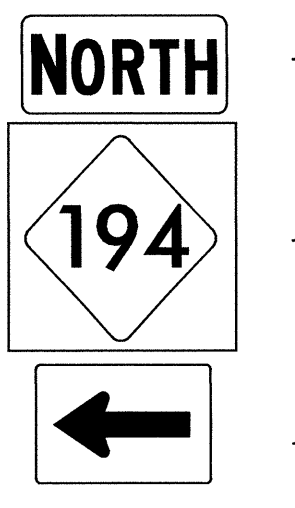
1 - 30 X 24

2 - 24 X 12

1 - 30 X 24  
1 - 24 X 24

TWO "U" POSTS

512



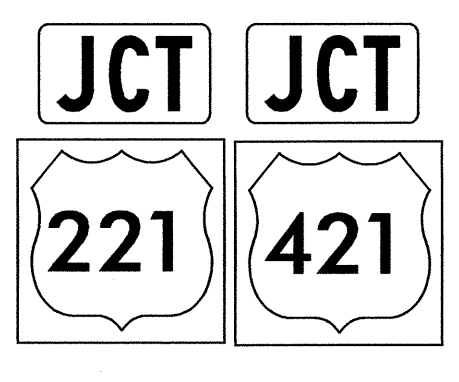
1 - 24 X 12

1 - 24 X 24

1 - 21 X 15

MOUNTED BELOW SIGN 301

517

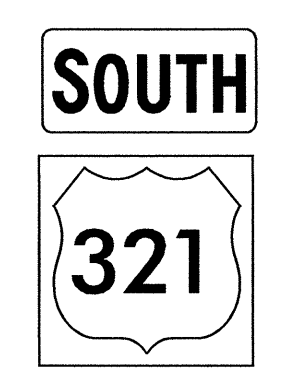


2 - 21 X 15

2 - 30 X 24

TWO "U" POSTS

520

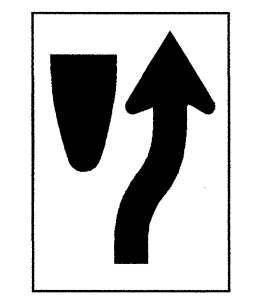


1 - 24 X 12

1 - 30 X 24

ONE "U" POST

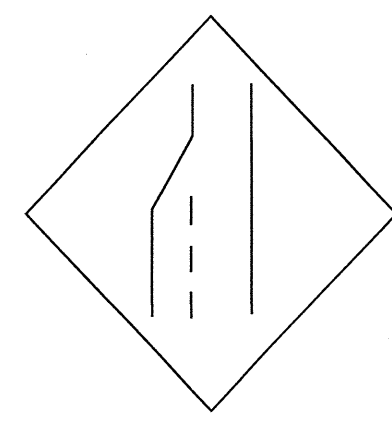
404 QUANTITY REQ'D 10



24 X 30  
R4-7

ONE "U" POST PER SIGN

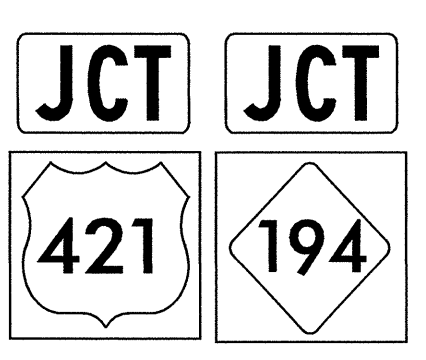
409 QUANTITY REQ'D 4



36 X 36  
W4-2(L)

TWO "U" POSTS PER SIGN

503



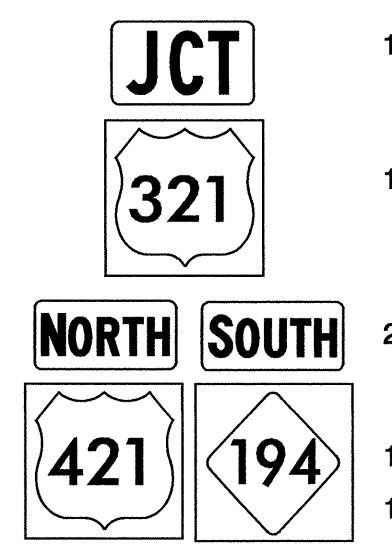
2 - 21 X 15

1 - 30 X 24

1 - 24 X 24

TWO "U" POSTS

508



1 - 21 X 15

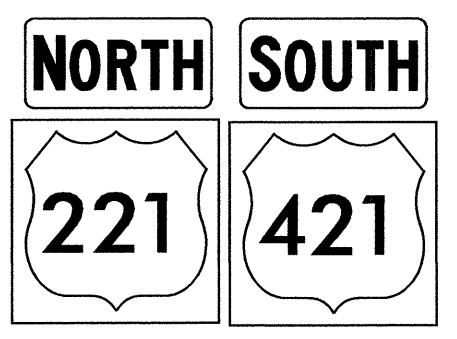
1 - 30 X 24

2 - 24 X 12

1 - 30 X 24  
1 - 24 X 24

TWO "U" POSTS

513

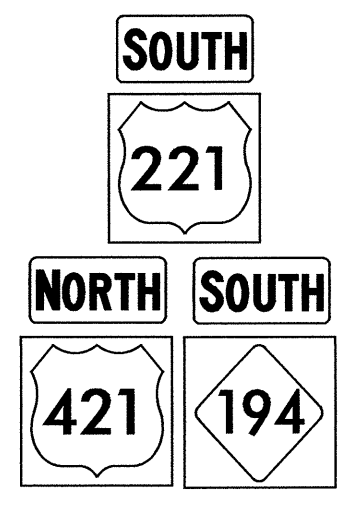


2 - 24 X 12

2 - 30 X 24

TWO "U" POSTS

518



1 - 24 X 12

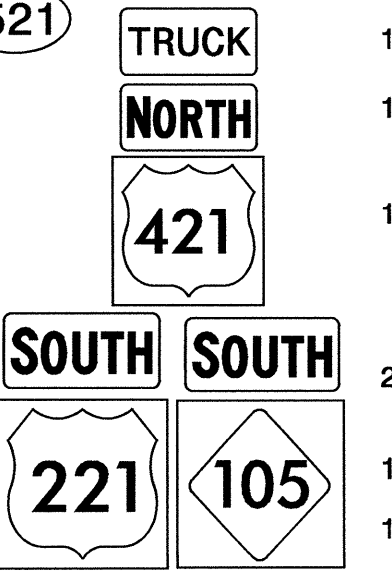
1 - 30 X 24

2 - 24 X 12

1 - 30 X 24  
1 - 24 X 24

TWO "U" POSTS

521



1 - 24 X 12

1 - 24 X 12

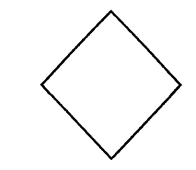
1 - 30 X 24

2 - 24 X 12

1 - 30 X 24  
1 - 24 X 24

TWO "U" POSTS

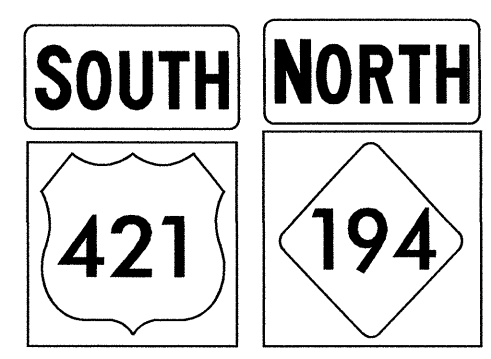
405 QUANTITY REQ'D 10



18 X 18  
W23-15

MOUNT BELOW SIGN 404  
IN 10 INSTALLATIONS

504



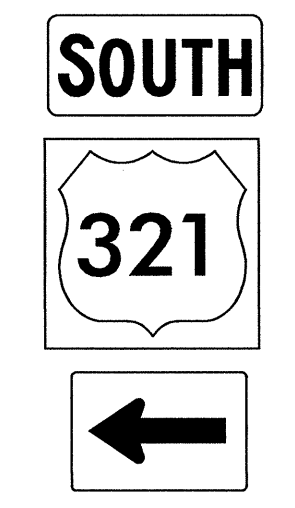
2 - 24 X 12

1 - 30 X 24

1 - 24 X 24

ONE "U" POST

509



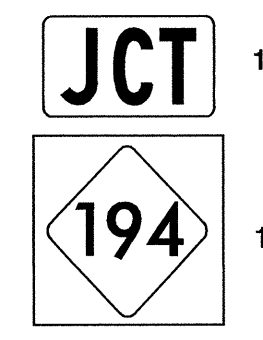
1 - 24 X 12

1 - 30 X 24

1 - 21 X 15

ONE "U" POST

514




1 - 21 X 15

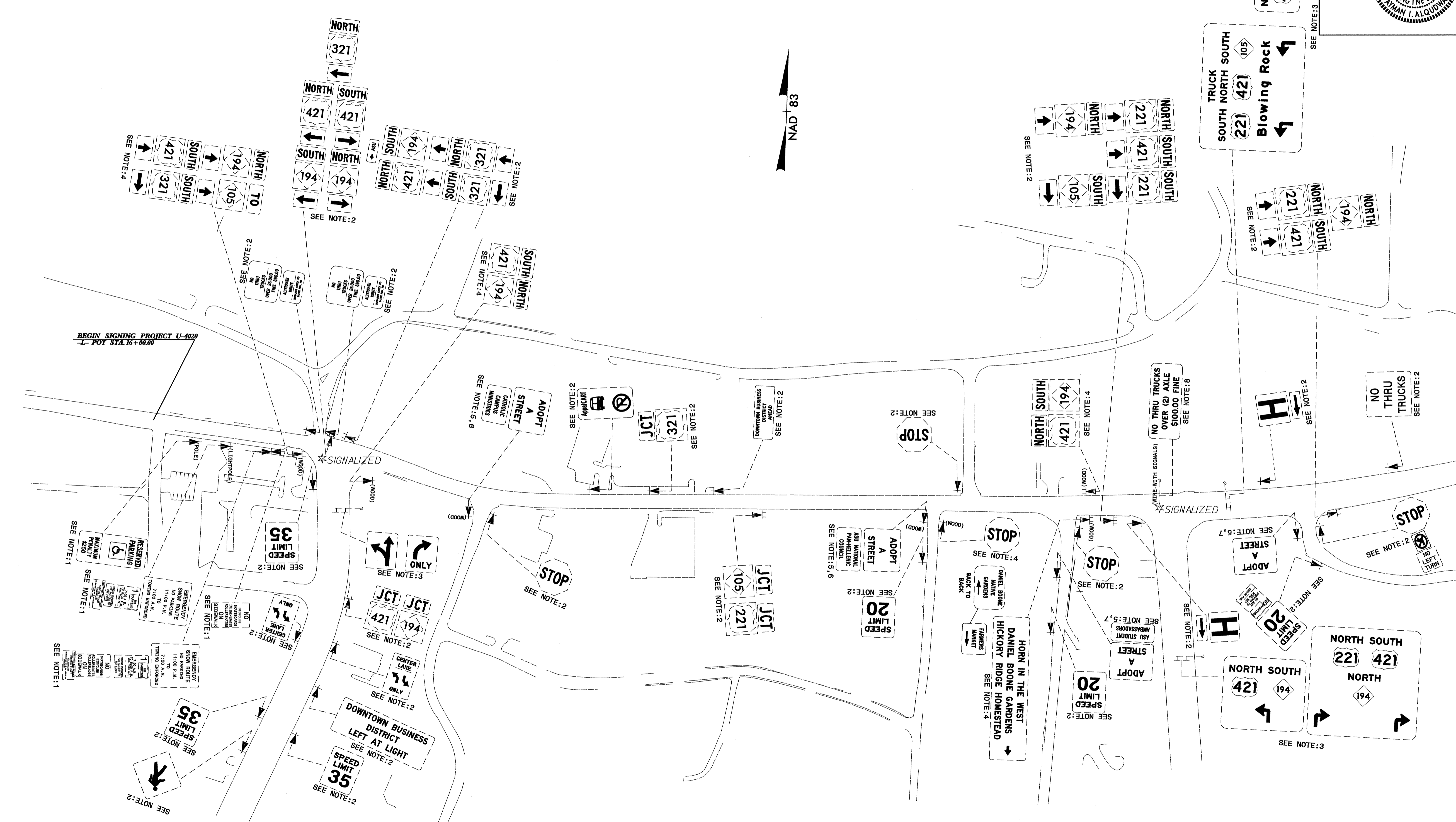
1 - 24 X 24

ONE "U" POST

TYPE "E" and "F" SIGNS

02-FEB-2009 13:57 C:\p1\work\4020\traffic\signing\layout\_plans\engseed\dgn AT TE221737 Walter Johnson


TIP NO. U-4020	SHEET NO. SIGN-14
APPROVED: <i>[Signature]</i>	
DATE: 2/2/09	
SEAL	
	



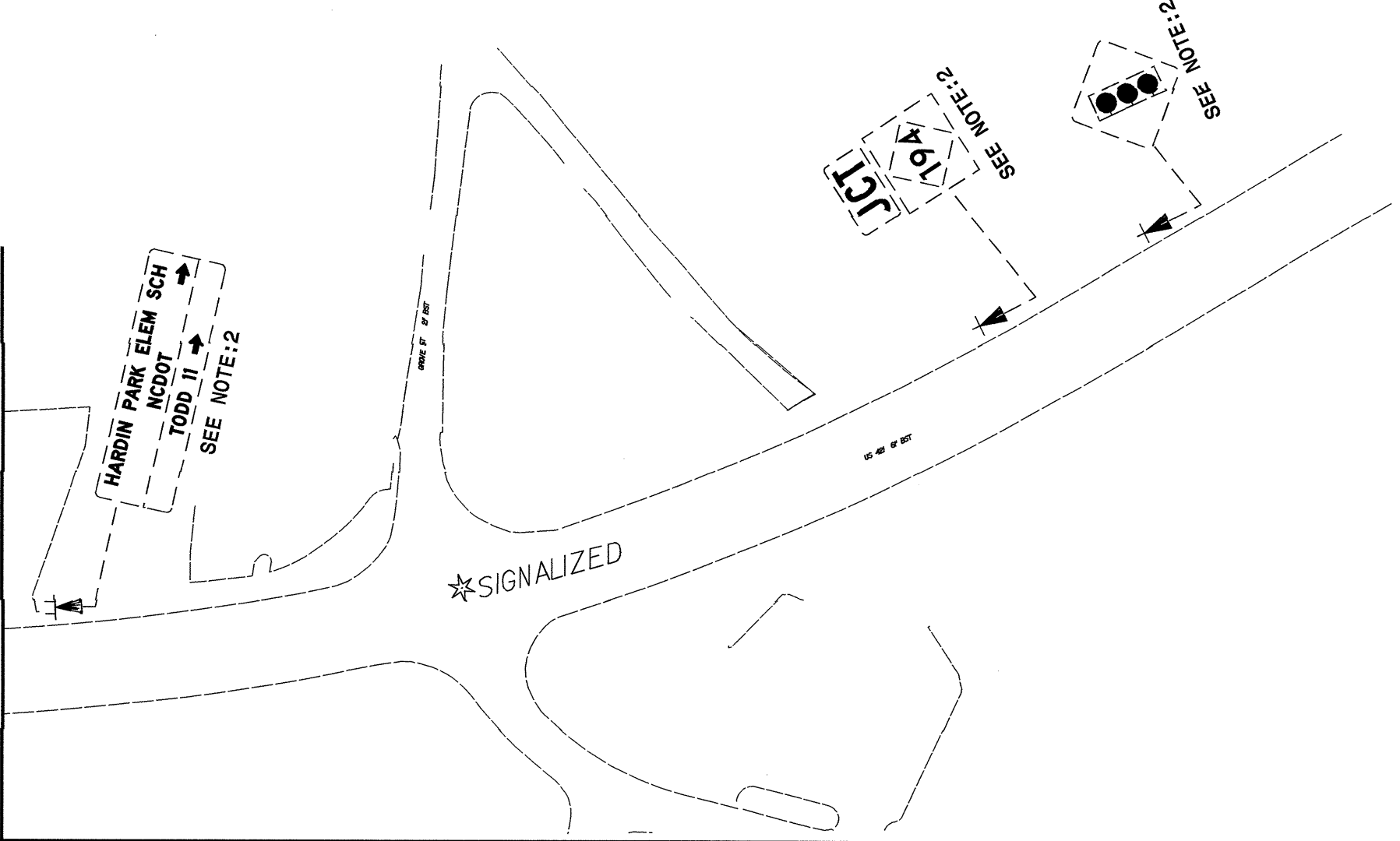
MATCHLINE A

EXISTING SIGNS

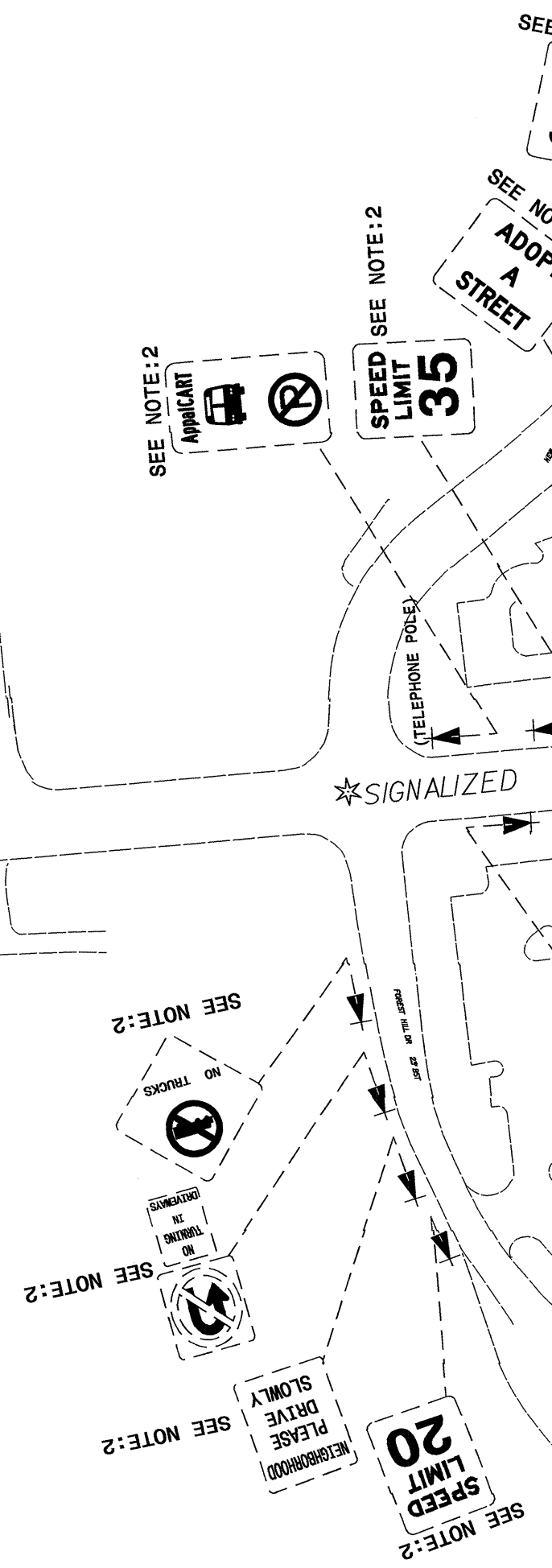
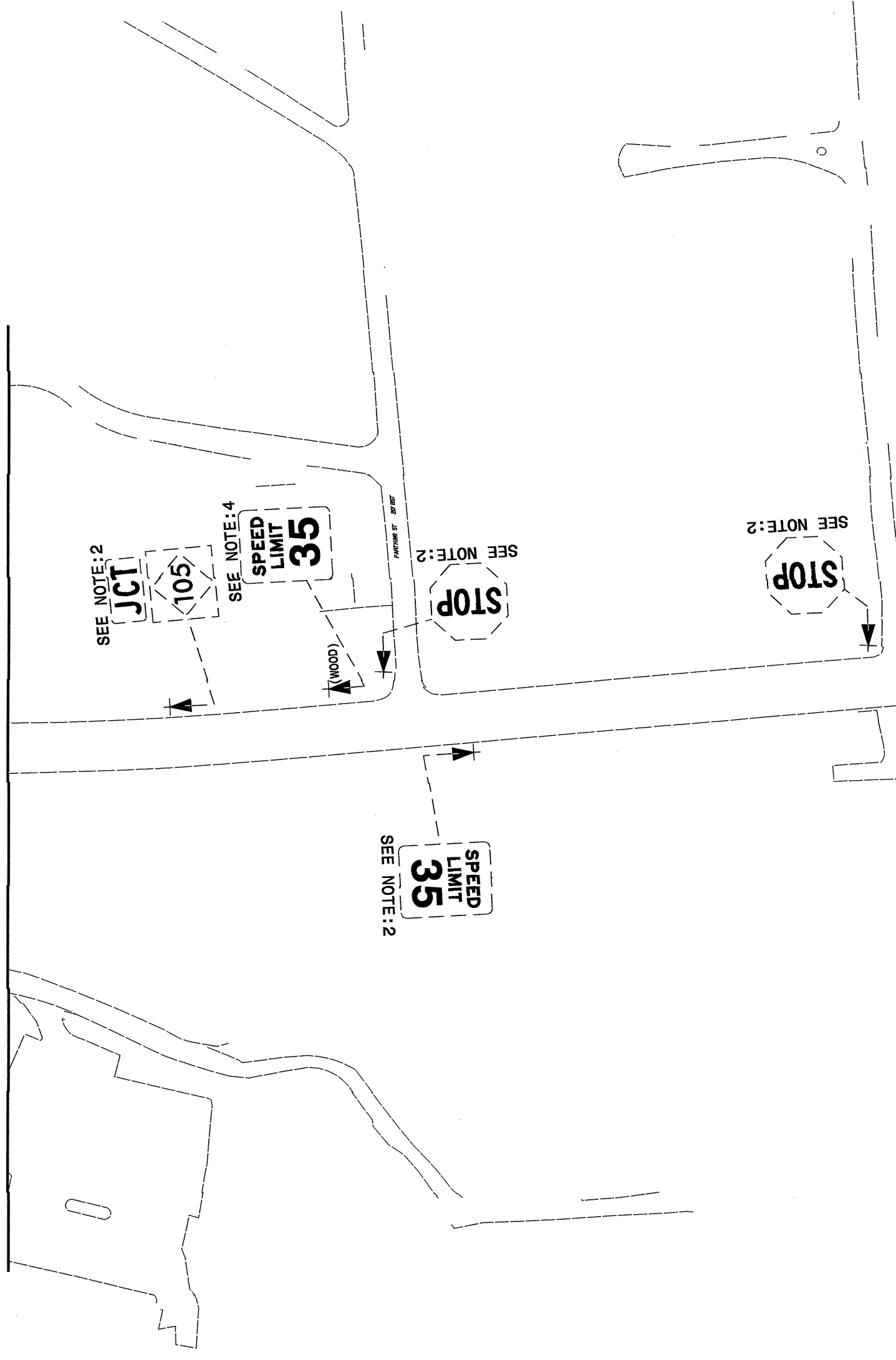
02-FEB-2009 14:06 p:\tipp-r\c\ecss-u\4020\signing\layout\plans\U-4020\_Sgn\_Existing\_Sheet\_1.dgn

TIP NO. U-4020	SHEET NO. SIGN-15
APPROVED: <i>Sydney Alexander</i>	
DATE: 1/14/09	
SEAL	
	

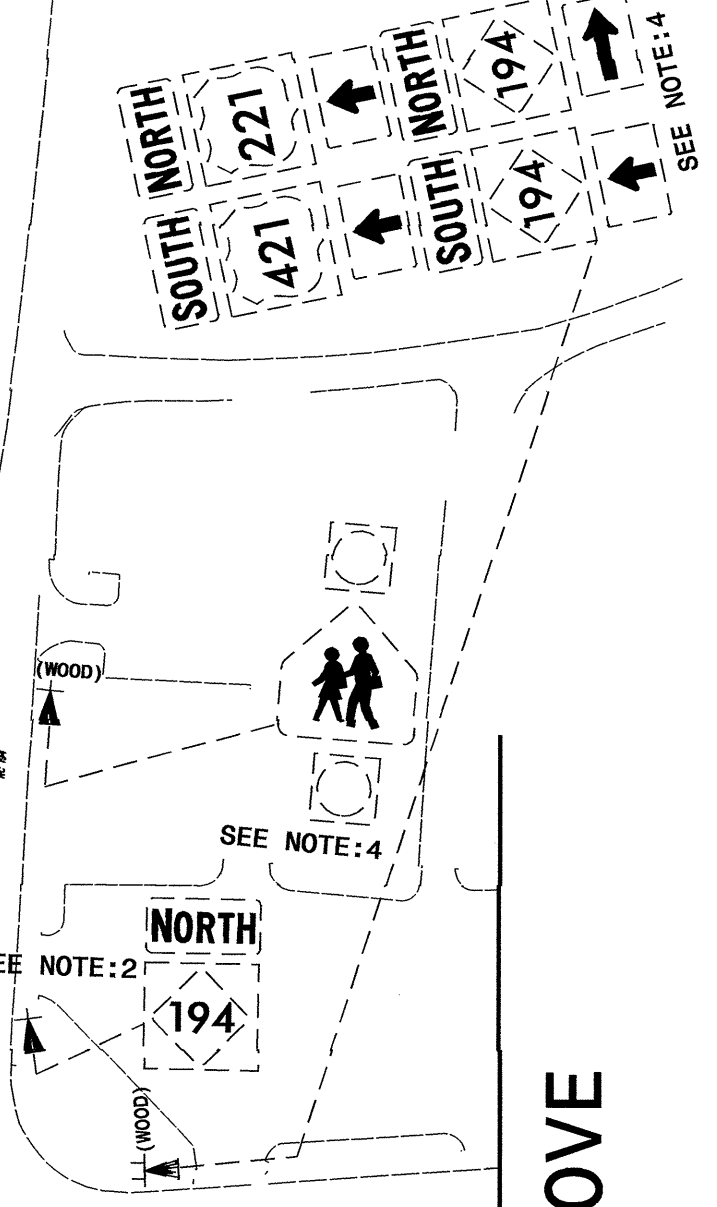
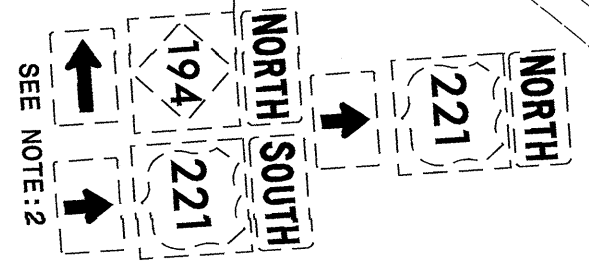
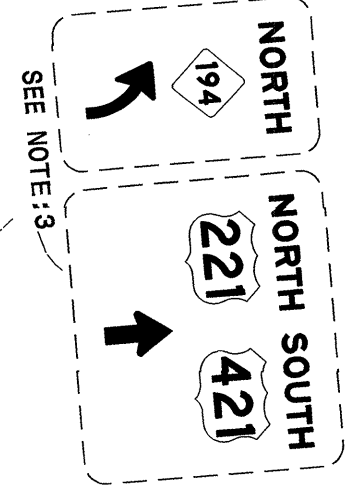
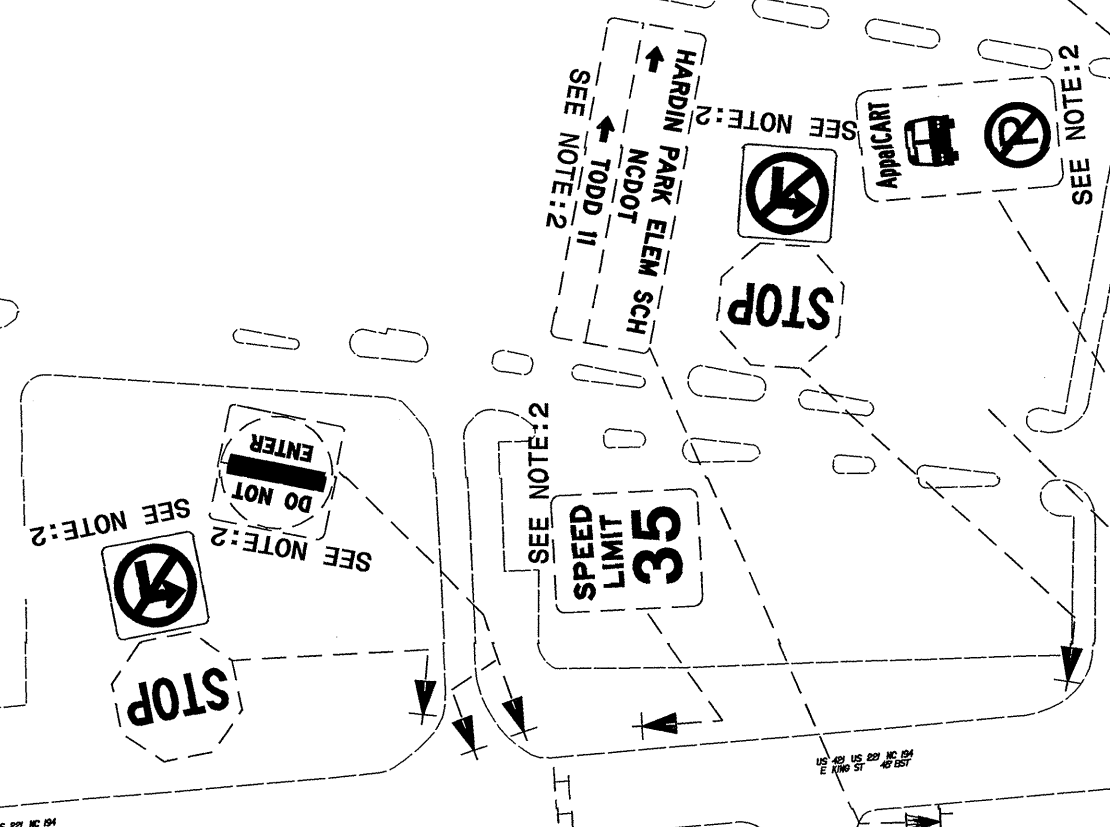
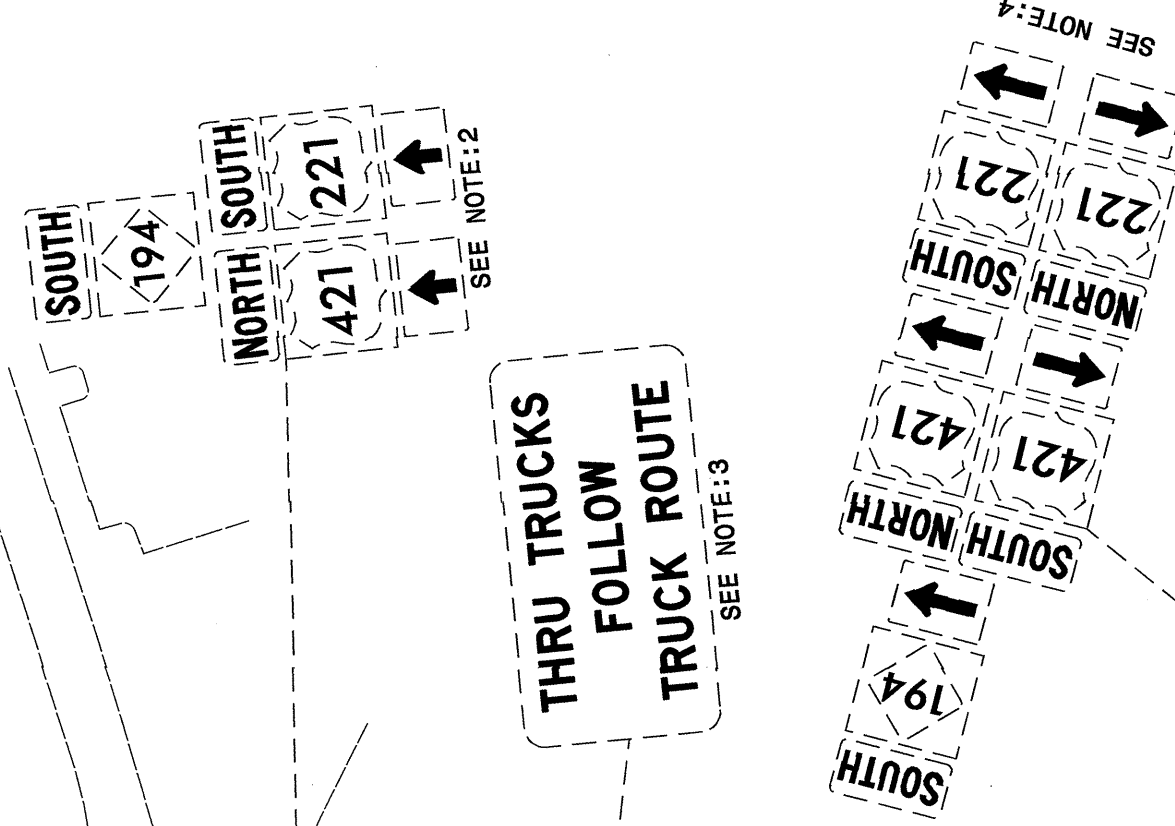
SEE BELOW



MATCHLINE A



THRU TRUCKS FOLLOW TRUCK ROUTE

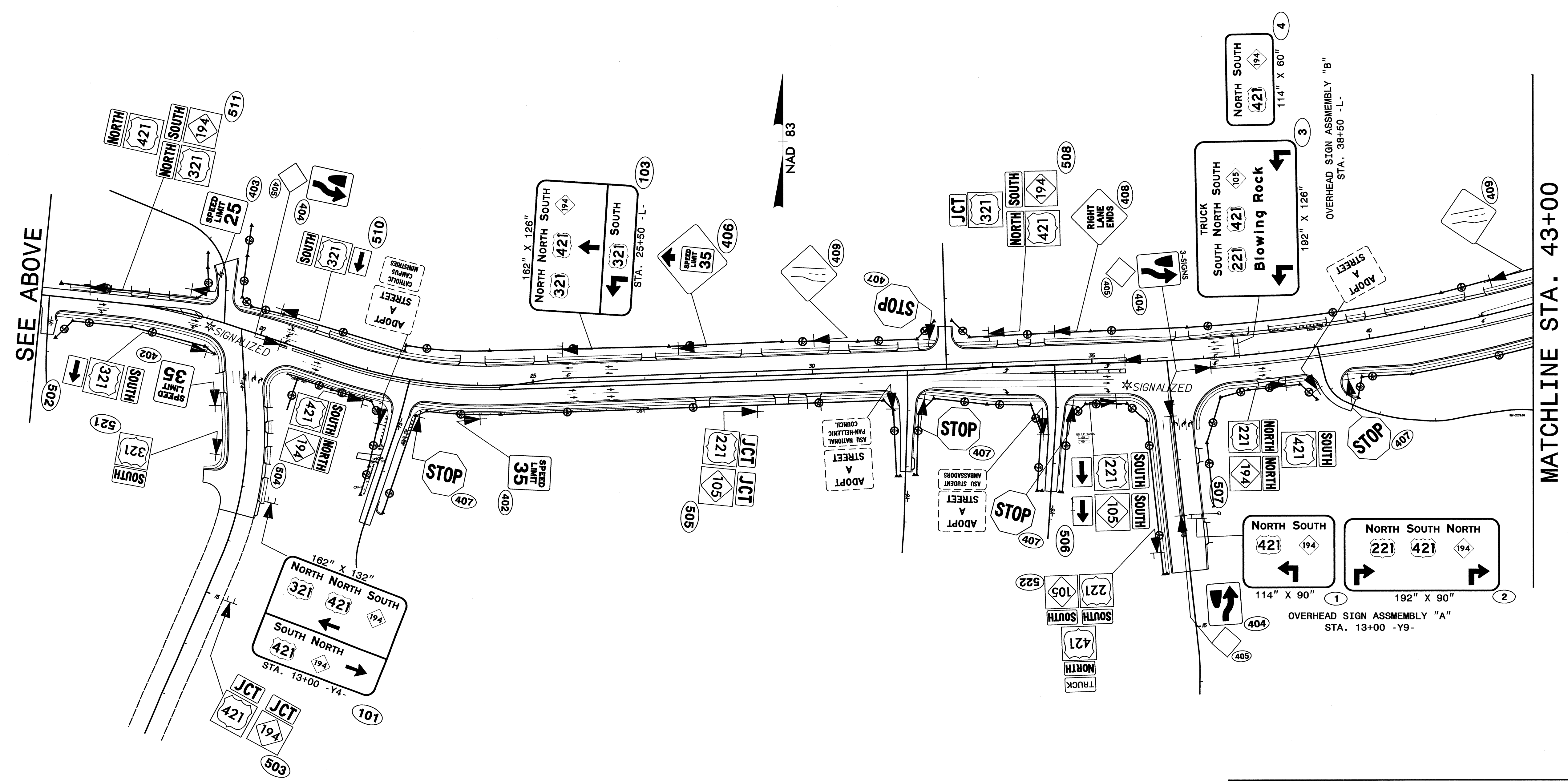
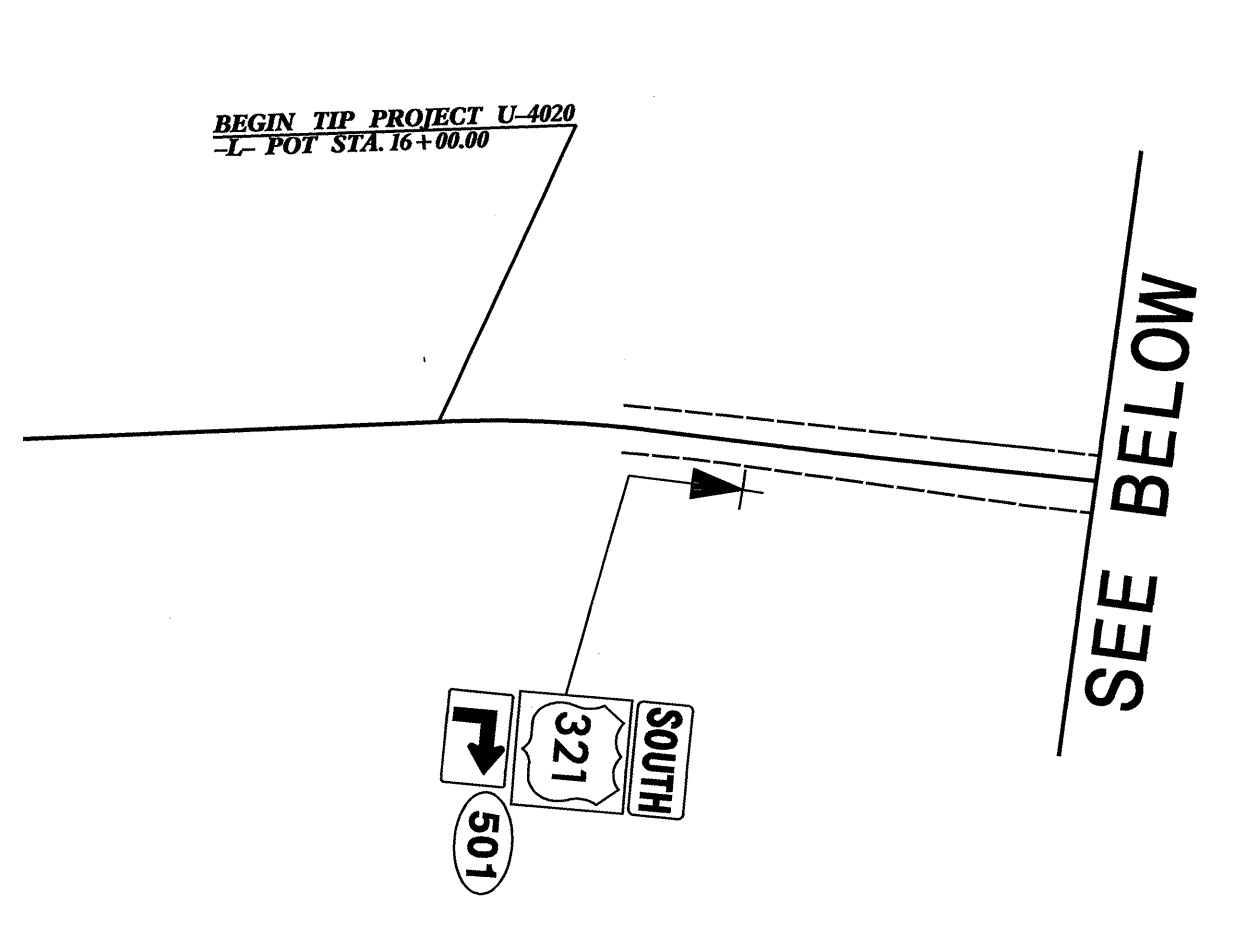


SEE ABOVE

EXISTING SIGNS

13-JAN-2009 16:11  
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 P:\tpp\projects\U-4020\signing\cadd\signing\cadd\Signing Layout Plans\U-4020\_Sgn\_Existing Sheet 2.dgn  
 User: jhanson Date: 1/14/09

TIP NO. U-4020	SHEET NO. SIGN-16
APPROVED: <i>[Signature]</i>	
DATE: 2/2/09	
SEAL	




SEE ABOVE

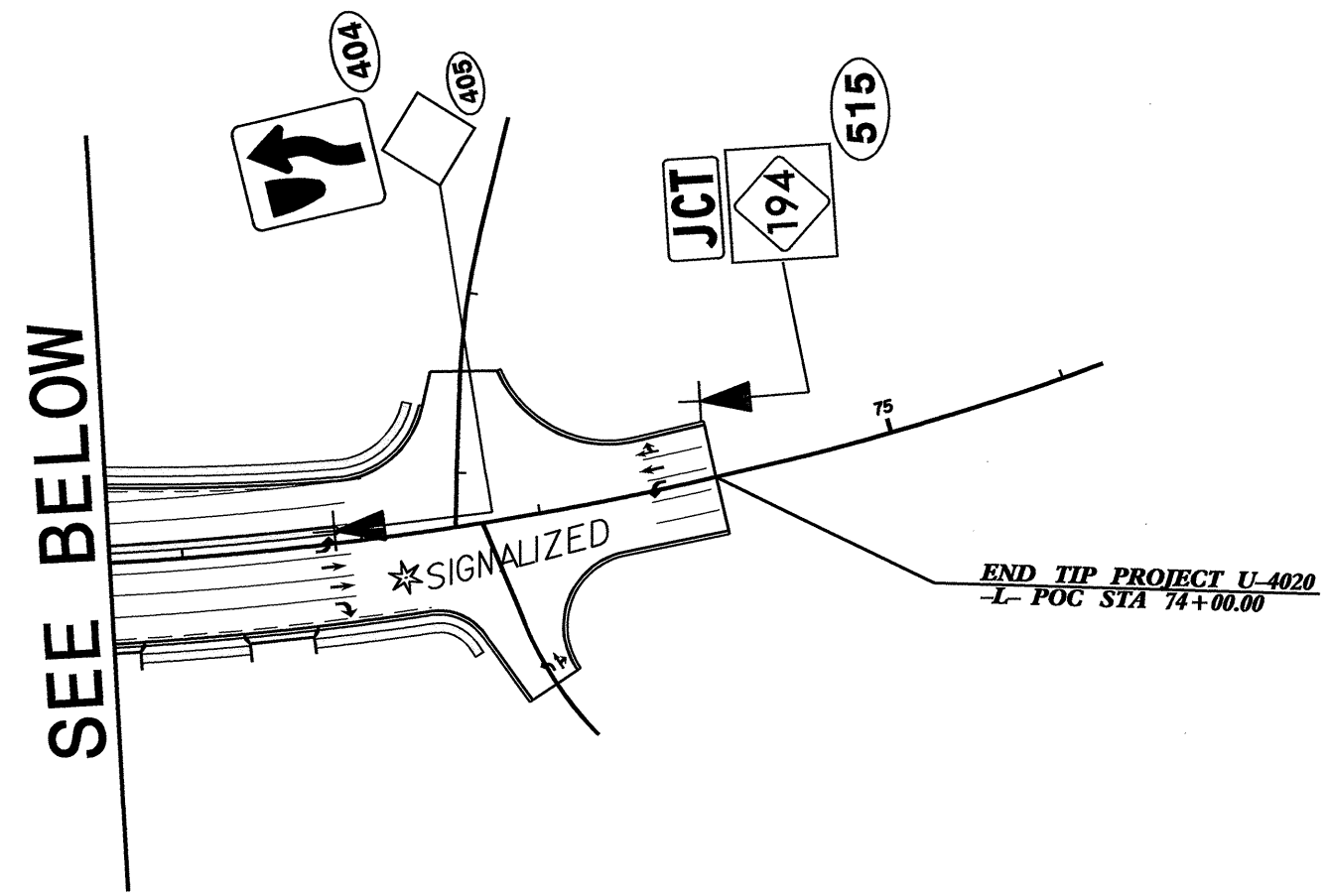
MATCHLINE STA. 43+00

# PROPOSED SIGNS

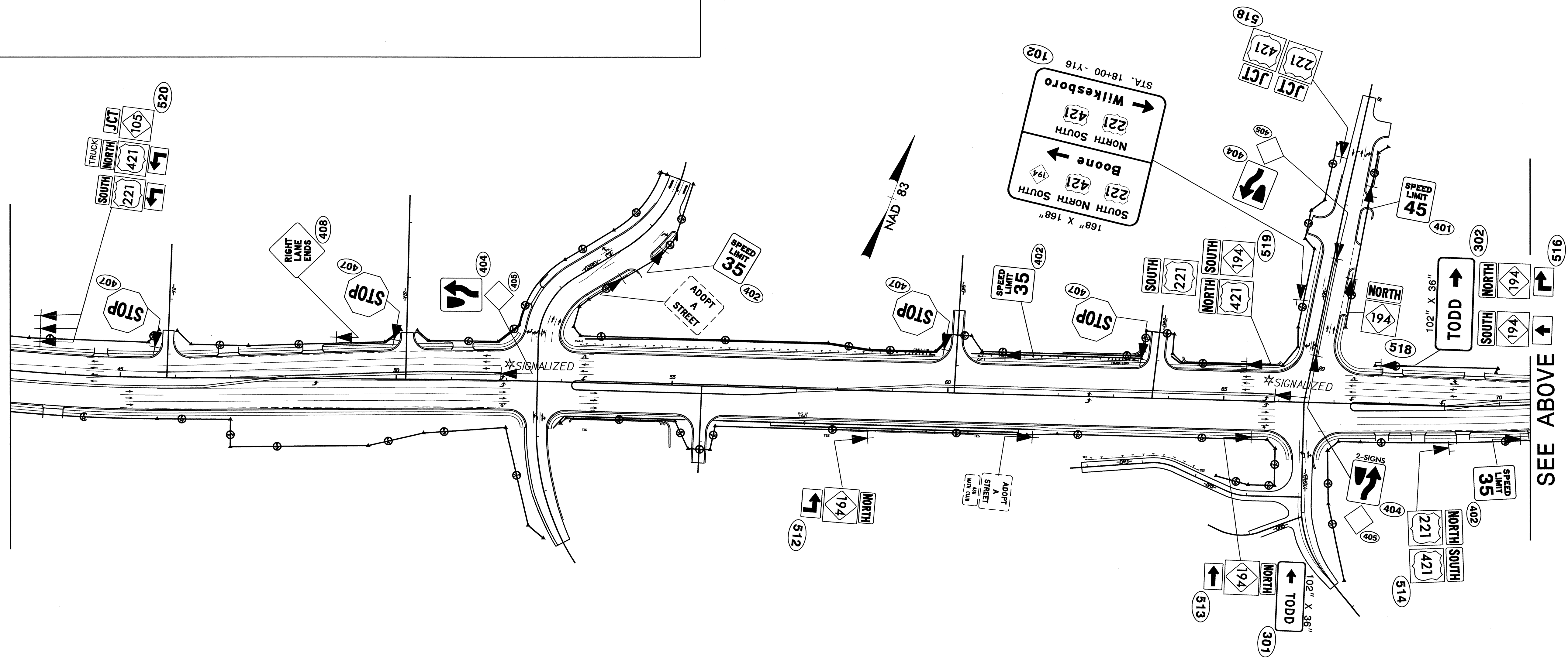
02-FEB-2009 14:02  
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 Walter Johnson AT 12221737



TIP NO. U-4020	SHEET NO. SIGN-17
APPROVED: <i>[Signature]</i>	
DATE: 2/2/09	
SEAL	
	



MATCHLINE STA. 43+00



PROPOSED SIGNS

02-FEB-2009 14:31  
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 N. Alan I. Alquist