
SUPPLEMENTARY TECHNICAL SPECIFICATIONS

Edition 2011

**SUPPLEMENTARY SPECIFICATIONS
FOR
RUSS HALL DRAINAGE IMPROVEMENTS
MONTCLAIR STATE UNIVERSITY
IN THE TOWNSHIP OF MONTCLAIR
COUNTY OF ESSEX**

SPECIFICATIONS TO BE USED

The 2007 Standard Specifications for Road and Bridge Construction, of the New Jersey Department of Transportation and as amended herein, shall govern the construction of this project.

GENERAL

Whenever any section, subsection, subpart or subheading is amended by such terms as changed to, deleted or added it is construed to mean that it amends that section, subsection, subpart or subheading of the 2007 Standard Specifications unless otherwise noted.

Whenever reference to page number is made, it is construed to refer to the 2007 Standard Specifications unless otherwise noted.

Henceforth in this supplementary specification whenever reference to the State, Department, ME, RE or Inspector is made, it is construed to mean the particular municipality or county executing this contract.

DIVISION 100 - GENERAL PROVISIONS

SECTION 101 - GENERAL INFORMATION

101.03 TERMS

THE FOLLOWING IS ADDED:

PARCEL. Property to be acquired for transportation purposes, described by metes and bounds.

101.04 INQUIRIES REGARDING THE PROJECT

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

Direct inquiries regarding the various types of work to the following representatives of the Department:

1. Before Award of the Contract

Mr. Christopher J. Nash, P.E.
Boswell Engineering
330 Phillips Avenue
South Hackensack, New Jersey 07606
Phone (201) 373-8904
Fax (201) 641-1831

All inquiries must include the following:

- a. Name of the company;
- b. Telephone number, fax number, and contact person; and
- c. Specifics of the inquiry, including anticipated impacts.

The Department will investigate the information provided in the inquiry and then respond through an addendum only if determined to be necessary.

2. After Award of the Contract

Mr. Christopher J. Nash, P.E.
Boswell Engineering
330 Phillips Avenue
South Hackensack, New Jersey 07606
Phone (201) 373-8904
Fax (201) 641-1831

SECTION 105 - CONTROL OF WORK

105.07 COOPERATION WITH UTILITIES

THE FOLLOWING IS ADDED BEFORE THE FIRST PARAGRAPH:

The corporations, companies, agencies, or municipalities owning or controlling the utilities, and the name, title, address, and telephone number of their local representative are as listed in Appendix B.

Bidders are advised to verify the above information; its accuracy and completeness are not guaranteed.

DIVISION 600 - MISCELLANEOUS CONSTRUCTION

SECTION 602 – DRAINAGE STRUCTURES

602.03.03 SETTING CASTINGS, RESETTING CASTINGS, AND RECONSTRUCTING INLETS AND MANHOLES

THE FOLLOWING IS ADDED AFTER THE LAST PARAGRAPH:

Existing inlet and manhole castings which are no longer required become the property of the Owner.

602.03.07 CURB PIECES

THE FOLLOWING IS ADDED AFTER THE LAST PARAGRAPH:

All curb pieces will be NJDEP-compliant, Campbell Foundry Pattern No. 2618N4W2 with "DUMP NO WASTE – DRAINS TO WATERWAYS" on the top of the curb piece or approved equal/equivalent.

SECTION 601 - PIPE

601.02 MATERIALS

THE FOLLOWING IS ADDED:

601.02.01 Perforated High Density Polyethylene Pipe:

- A. Pipe: Perforated, round, corrugated, single wall HDPE pipe with smooth interior wall and corrugated exterior wall meeting requirements of AASHTO M252, Type C or CP.
- B. Fittings: Pipe is to be joined using split of snap couplings. The coupling joint shall meet the soil-tight requirements of AASHTO M252 OR M294. Casketed connections shall meet requirements of ASTM D1056, Grade 2A2.
- C. Manufacturer: ADS Single Wall, perforated soil tight pipe, manufactured by Advanced Drainage Systems, 4640 Trueman Boulevard, Hilliard, Ohio, Tel. No. (800) 821-6710 or approved equal.

THE FOLLOWING SECTION IS ADDED:

SECTION 613 – FOUNDATION WATERPROOFING

613.01 DESCRIPTION

This Section describes the requirements for installing foundation waterproofing systems.

613.02 MATERIALS

613.02.01 Materials

Provide materials as specified:

Coarse Aggregate (No. 57)	901.03
I-9 Soil Aggregate	901.11
Class B Bedding.....	909.01.02
Class C Bedding	909.01.03
HDPE Pipe	909.02.02
Asphalt Waterproofing	912.02.03
Subsurface Drainage Geotextile	919.01

Air gap membrane shall be a UV stabilized, high-density polyethylene (HDPE) dimpled sheet with the following properties:

- Minimum Thickness 24 mil.
- Minimum Compressive Strength 5,000 psf.
- Minimum Water flow Rate 150 gal. / sq.ft. per ASTM D-4491
- Shall meet all requirements of the International Code Council ICC ESR #3107.

Air gap membrane system shall include all cap and corner units of compatible materials with the HDPE sheets.

613.03 CONSTRUCTION

613.03.01 Foundation Waterproofing

Excavate along foundation wall as specified in Section 202.03.03.A.2.

Clean, point, and apply 2 coats of Asphalt Waterproofing material to wall foundations.

Install air gap membrane over the waterproofing material. The membrane shall be continuous from the ground line to underdrain with only vertical seams. Vertical seams in the membrane shall be lapped 20 inches minimum. The membrane shall be mechanically fastened to the foundation wall in accordance with the Manufacturer's specifications. Membrane caps and corner pieces shall be installed in accordance with the Manufacturer's recommendations.

Underdrain shall be constructed in accordance with specification Section 601.03.03. The underdrain shall be connected to the existing site drainage system. The underdrain shall be wrapped with coarse aggregate and drainage geotextile.

The excavation shall be backfilled and compacted with a porous backfill in accordance with Section 203.03.02.C.

DIVISION 900 - MATERIALS

SECTION 903 – CONCRETE

903.02.02 CHEMICAL ADMIXTURES

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

Corrosion inhibitor products that are to be used in the fabrication of concrete Items will be as follows:

Calcium Nitrite Based as produced by
W.R. Grace & Company
2133 85th Street
North Bergen, NJ 07047
Telephone: 201-869-5220

Calcium Nitrite Based as produced by
The Euclid Chemical Company
5 Joanna Court
East Brunswick, NJ 08816
Telephone: 732-390-9770

Calcium Nitrite Based as produced by
Master Builders Inc.
798 Welsh Road
Huntingdon Valley, PA 19006
Telephone: 215-938-7501

Calcium Nitrite Based as produced by
SIKA Corporation
201 Polito Avenue
Lyndhurst, NJ 07071
Telephone: 800 - 933 - SIKA (7452)

Calcium Nitrite Based as produced by
Great Eastern Technologies, LLC
"Chem Strong CI"
515 Route 528
P. O. Box 3015
Lakewood, NJ 08701
Telephone: 888 - 452 – 9348

APPENDIX A: PUBLIC UTILITIES

Revised 8/18

**TOWNSHIP OF MONTCLAIR
PUBLIC UTILITIES**

The following is a list of all corporations, companies, agencies or municipalities owning or controlling the utilities in the vicinity of the project site, and the name, address and telephone number of their local representatives:

WATER

Montclair Water Department
54 Watchung Avenue
Montclair, New Jersey 07042
Attn: Gary Obszarny, Director
Tel: (973) 744-4600

GAS

Public Service Electric and Gas Company
40 Rock Avenue
Plainfield, NJ 07063
Attn: James Cavanagh
Tel: (908) 668-3840

ELECTRIC

Public Service Electric and Gas Company
150 Circle Avenue
Clifton, New Jersey 07011
Attn: Henry Gregerson
Tel: (973) 365-2990

SEWERS

Montclair Sewer Department
54 Watchung Avenue
Montclair, New Jersey 07042
Attn: Gary Obszarny, Director
Tel: (973) 744-4600

FIBER OPTICS

Fibertech Networks
9 N. Hockey Drive
Mansfield, NJ 08022
Attn: Mr. Alan R. Kothe
Tel: (609) 203-3723

CABLE

Comcast
800 Rahway Avenue
Union, NJ 07083
Attn: Bob Knoepfel
Tel: (732) 602-7444

TELEPHONE

Verizon
6000 Hadley Rd
South Plainfield, New Jersey 07080
Attn: Thomas Grabowski
Tel: (908) 412-6169
Email: thomas.j.grabowski@verizon.com

Notification of major utilities for markout may be accomplished by calling Garden State Underground Location Service at 1-800-272-1000.

PSE&G's PROCEDURE FOR RESETTING OR REPLACING OF MANHOLE FRAMES AND COVERS.

Please be advised that the following steps need to be maintained in order to meet local milling and paving schedules.

Once the contract has been awarded, your contractor should:

- Contact Public Service Electric & Gas (Engineering) 4 to 6 weeks prior to milling to discuss the scope of the project. Sufficient lead-time is essential in obtaining materials and coordinating schedules between PSE&G and local paving projects.
- Provide milling schedule. Project specific dates are required in hard copy.
- Conduct a walk through with job sponsor to identify resets and/or replacements. Please be advised that the final decision to replace facilities due to its condition resides with PSE&G.
- Provide reset elevations to PSE&G's contractor.

Once this information is received, the PSE&G job sponsor will order material (if required) in accordance with vendors lead time and schedule our contractor to complete manhole resets or replacements immediately following the milling process.

The successful contractor should proceed with care; damage to existing facilities or debris contaminating PSE&G manholes and or transformer vaults will be repaired or remedied at the contractor's expense.

Please be aware of the Underground Facilities Protection Act, codified NJSA 48:2-73 to 91, which requires contractors to notify "New Jersey One-Call" for utility markout "New Jersey One Call" Can be reached at 1-800-272-1000. PSE&G's contractor cannot begin work until four (4) business days after the markout request.

Please bring to the successful contractor's attention in New Jersey High Voltage Proximity Act, codified at N.J.S.A. 34:6-47.1 to 47.10, concerning precautions to be taken when working the proximity of high voltage wires.

In addition, we would also recommend that the contractor review the requirements for operators of construction equipment under the Occupational Safety and Health Act of 1970 (OSHA) and of Subpart "N", Paragraph 1926.550 of the Rules and Regulations issued thereunder and codified at 29 CFR 1926.550, which, in part, requires different working clearance than the State Law.

If you should have any questions, please contact me at (201) 330-6629 or Richard.dwyer@pseg.com.

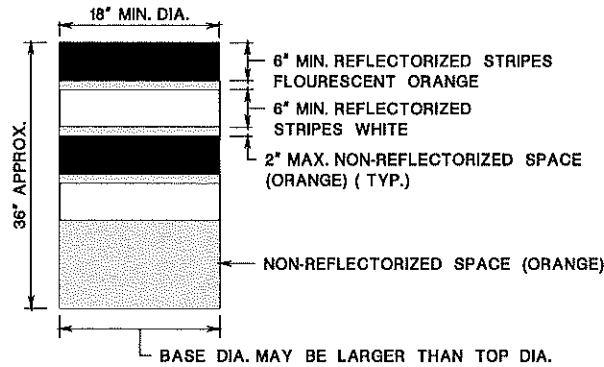
APPENDIX B: STANDARD CONSTRUCTION DETAILS

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ENSURE DRUMS ARE MADE OF ORANGE PLASTIC WITH A MINIMUM OF FOUR ALTERNATE FLUORESCENT ORANGE AND WHITE RETROREFLECTIVE STRIPES. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE STRIPES, THEY ARE TO BE NO MORE THAN 2" WIDE. ENSURE RETROREFLECTIVE SHEETING FOR STRIPES CONFORMS WITH ASTM D4956 TYPE VII OR VIII WITH S2 REQUIREMENTS.

ENSURE THE TOP OF THE DRUM IS NOT OPEN. CONSTRUCT DRUMS TO INHIBIT ROLLING IF KNOCKED OVER.

ENSURE THE REFLECTORIZED AREA OF DRUMS IS ROUND EXCEPT OTHER SHAPES, WHICH PROVIDE THE SAME VISIBILITY AS AN 18 INCH DIAMETER ROUND DRUM REGARDLESS OF ORIENTATION, MAY BE USED.



WHEN BALLAST IS REQUIRED BY THE RE, USE SAND. THE MAXIMUM WEIGHT OF THE BALLAST IS 50 LBS. AND IS TO BE LOCATED APPROXIMATELY AT GROUND LEVEL. ALTERNATE TYPES OF BALLAST MUST BE APPROVED BY THE RE.

DRUMS

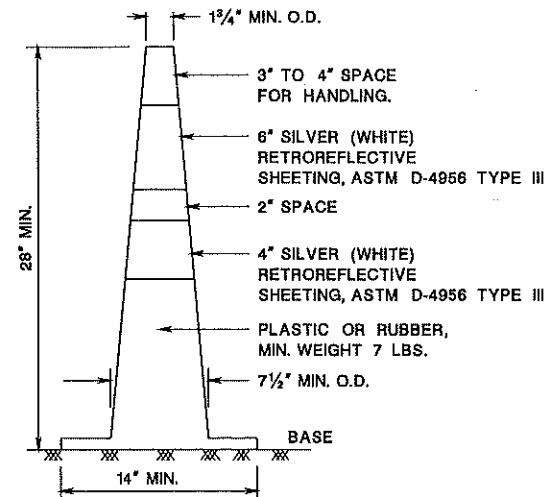
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NOTES:

TRAFFIC CONES MUST BE PREDOMINATELY ORANGE IN COLOR.

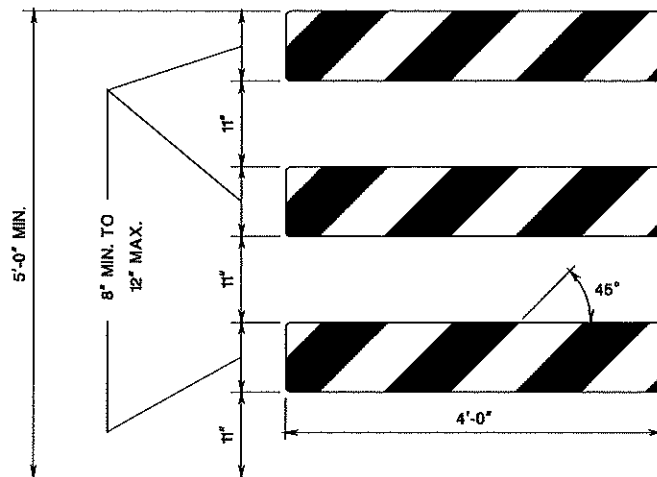
BASES MAY BE OF BREAKAWAY BALLASTED TYPE.

MINOR MANUFACTURER'S VARIATIONS MAY BE ACCEPTABLE UPON APPROVAL OF THE RE.



TRAFFIC CONES

CD-159-1.2



TYPE III BARRICADE - FRONT VIEW

NOTES:

1. ENSURE THE 8" MIN. x 48", TO 12" MAX. x 48" BARRICADE RAILS TO BE ATTACHED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.
2. ENSURE ORANGE AND SILVER (WHITE) STRIPES TO BE RETROREFLECTIVE SHEETING, ASTM D4956 TYPE III. ALTERNATE ORANGE AND SILVER (WHITE) STRIPES 6" WIDE SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS.
3. THE FRAMING, RAILS, AND BALLAST FOR BREAKAWAY BARRICADE TO BE NCHRP-350 CRASHED TESTED AND FHWA APPROVED.
4. IF NECESSARY, FABRICATE THE BALLAST AND PLACE ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.

BREAKAWAY BARRICADES

CD-159-1.3

TRAFFIC CONTROL DEVICES

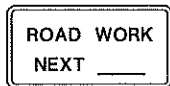
N.T.S.

CD-159-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

13
164



G20 - 1 [60" x 24"]
(10 S.F.)



G20 - 2A [48" x 24"]
(8 S.F.)



M4 - 9L (LEFT) [30" x 24"]
M4 - 9R (RIGHT) [30" x 24"]
(5 S.F.)
M4 - 9 (L or R) (S) [48" x 36"]
(12 S.F.)



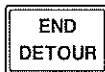
M4 - 9LX (LEFT) [30" x 24"]
M4 - 9RX (RIGHT) [30" x 24"]
(5 S.F.)
M4 - 9 (L or R) XS [48" x 36"]
(12 S.F.)



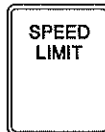
M4 - 9X [30" x 24"]
(6 S.F.)
M4 - 9X (S) [48" x 36"]
(12 S.F.)



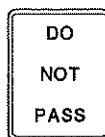
M4 - 10L (LEFT) [48" x 18"]
M4 - 10R (RIGHT) [48" x 18"]
(6 S.F.)



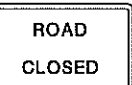
M4 - 8a [24" x 18"]
(3 S.F.)
M4 - 11 (S) [48" x 36"]
(12 S.F.)



R2 - 1 [36" x 48"]
(12 S.F.)
R2 - 1 (S) [48" x 60"]
(20 S.F.)



R4 - 1 [24" x 30"]
(5 S.F.)



R11 - 2 [48" x 30"]
(10 S.F.)



R11 - 3 [60" x 30"]
(12.5 S.F.)



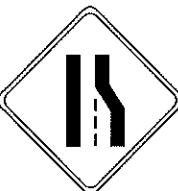
R11 - 4 [60" x 30"]
(12.5 S.F.)



(L OR R)
W1 - 4a [48" x 48"]
(16 S.F.)



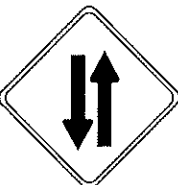
(L OR R)
W1 - 6 [48" x 24"]
(8 S.F.)
W1 - 6 (S) [60" x 30"]
(12.5 S.F.)



(L OR R)
W4 - 2 [48" x 48"]
(16 S.F.)



W5 - 1 (S) [48" x 48"]
(16 S.F.)



W6 - 3 [48" x 48"]
(16 S.F.)



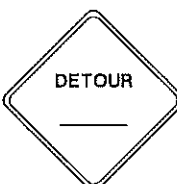
W20 - 7b [48" x 48"]
(16 S.F.)



W13 - 1 [18" x 18"]
(2.3 S.F.)
W13 - 1 (S) [24" x 24"]
(4 S.F.)



W20 - 1A [48" x 48"]
(16 S.F.)



W20 - 2 [48" x 48"]
(16 S.F.)



W20 - 3 [48" x 48"]
(16 S.F.)



W20 - 4 [48" x 48"]
(16 S.F.)



(L OR R) (CENTER)
W20 - 5 [48" x 48"]
(16 S.F.)



W20 - 7a [48" x 48"]
(16 S.F.)



W21 - 5 (S) [48" x 48"]
(16 S.F.)



M4 - 9N [30" x 12" MIN.]
(2.5 S.F.)
(SIZE WILL VARY WITH LENGTH OF STREET NAME)
STREET NAME SIGN TO BE USED IN CONJUNCTION WITH M4 - 9 SIGNS BLACK ON ORANGE



[24" x 24"]
(4 S.F.)
[30" x 30"] (S)
(6.3 S.F.)



[24" x 24"]
(4 S.F.)
[30" x 30"] (S)
(6.3 S.F.)



W8 - 1 (S) [48" x 48"]
(16 S.F.)



W8 - 11a [48" x 48"]
(16 S.F.)



W8 - 15F [48" x 48"]
(16 S.F.)



W8 - 15P [36" x 30"]
(7.5 S.F.)



W8 - 15 [48" x 48"]
(16 S.F.)



W99 - 2 [48" x 48"]
(16 S.F.)

GENERAL NOTES:

- DIMENSIONS, COLORS, AND DETAILS OF VARIOUS SIZE SIGNS AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGN PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
- (S) REPRESENTS A SPECIAL SIZE SIGN.
- LETTERS AND NUMERALS TO CONFORM TO THE CURRENT MANUAL, "STANDARD ALPHABETS FOR HIGHWAY SIGNS" U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
- OBTAIN RE'S APPROVAL FOR THE DISTANCE TO BE USED ON THE ADVANCE WARNING SIGNS AND FOR THE SPEED LIMIT TO BE USED ON THE R2-1 SIGN.
- DISTANCE LEGEND: SIGN NUMBER FOLLOWED BY A LETTER AND DISTANCE, ARE THE SIGN PLACEMENTS FOR USE WITH TCD-3 THROUGH TCD-21 AND PROJECT SPECIFIC PLANS. ALL DISTANCES ARE FROM THE TRANSITION OR POINT OF RESTRICTION.

LETTER	DISTANCE
A	1500'
B	1000'
C	500'
D	1 MILE
E	1/2 MILE
F	1/4 MILE

BACKING MATERIAL

- USE ALUMINUM FLAT SHEET OF ALLOY AND TEMPER 5052-H38 OR 6061-T6 :
A. 0.10" THICK FOR ALL CONSTRUCTION SIGNS EXCEPT SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.
B. 0.024" THICK FOR ALL CONSTRUCTION SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.

TEMPORARY SIGN SUPPORTS

- USE WELL SEASONED LUMBER FOR SIGN SUPPORTS, FREE OF SPLITS, KNOTS AND WARPS, OR OF STEEL COMPONENTS.
- WOOD POSTS TO HAVE A UNIFORM CROSS-SECTION AND NOT TO EXCEED THE FOLLOWING DIMENSIONS FOR:
SINGLE POST = 4" x 6"
TWO POSTS = 3" x 6" OR 4" x 5"
THREE POSTS = 3" x 5" OR 4" x 4"
4" x 6" WOOD POSTS TO BE MODIFIED BY DRILLING 1/2 INCH DIAMETER HOLES 4 INCHES AND 18 INCHES ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
- NO BRACING IS PERMITTED. VERTICAL CLEARANCES FOR SIGNS MOUNTED ON WOOD SUPPORTS TO BE 7 FOOT MINIMUM. EMBEDMENT DEPTH FOR THE WOOD POST NOT TO EXCEED 3.5 FEET.
- USE STEEL POSTS IN ACCORDANCE WITH THE STANDARD DETAIL FOR U-POST SIGN SUPPORT.
- TEMPORARY SIGN SUPPORTS NOT MEETING THIS CRITERIA TO BE SHIELDED BY A LONGITUDINAL BARRIER OR CRASH CUSHIONS.
- USE WOOD POST ONLY ON TEMPORARY SIGN SUPPORT.

SIGN FACES

- USE SIGN FACES OF ASTM D4956 TYPE VII OR VIII FLUORESCENT ORANGE SHEETING.

FASTENING

- SECURELY FASTEN ALL SIGNS TO THEIR SUPPORTS WITH BOLTS, NUTS, AND WASHERS, AS SPECIFIED.

CONSTRUCTION SIGNS

N.T.S.

CD-159-6

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

NOTE:

THE BORDER, THE WORDS "GIVE US A", "SLOW DOWN", AND THE BRAKE PEDAL ARE BLACK; LEAVING THE WORD "BRAKE" ORANGE.

CD-159-6.1

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E5 - 1 [60" x 48"]
(20 S.F.)



W50 - 1C [60" x 48"]
(20 S.F.)



W5 - 4 [48" x 48"]
(16 S.F.)



W(NJ)100 - 1(L OR R)
48" x 48"
(16 S.F.)



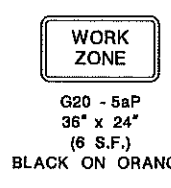
W9 - 3 [48" x 48"]
(16 S.F.)



W3 - 5
48" x 48"
(16 S.F.)



W20 - 4F(M) [48" x 48"]
(16 S.F.)



G20 - 5aP
36" x 24"
(6 S.F.)
BLACK ON ORANGE



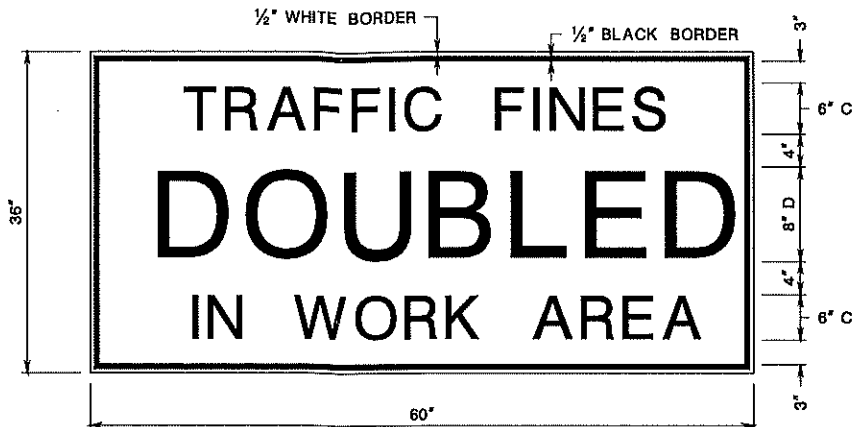
W20 - 10(G) [48" x 48"]
(16 S.F.)



EP1
60" x 36"
(15 S.F.)
BLACK ON ORANGE



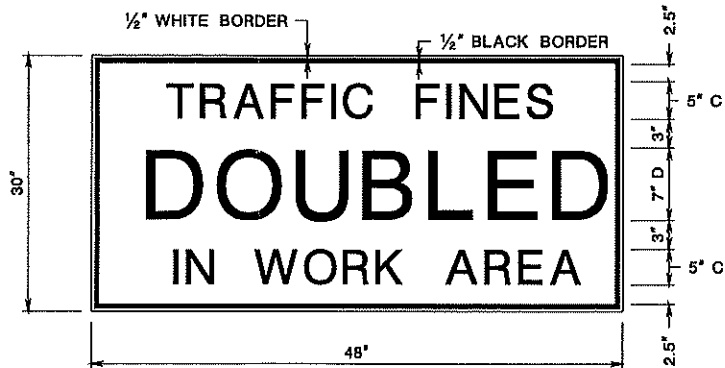
EP2
60" x 36"
(15 S.F.)
BLACK ON ORANGE



NOTE:

MESSAGE TO BE BLACK LETTERS
ON WHITE REFLECTIVE BACKGROUND.

R(NJ)5-17 60" x 36"
(15 S.F.)



NOTE:

MESSAGE TO BE BLACK LETTERS
ON WHITE REFLECTIVE BACKGROUND.

R(NJ)5-17 48" x 30"
(10 S.F.)

GENERAL NOTES:

- DIMENSIONS, COLORS, AND DETAILS OF VARIOUS SIZE SIGNS, AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGN PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".
- LETTERS AND NUMERALS TO CONFORM TO THE CURRENT MANUAL, "STANDARD ALPHABETS FOR HIGHWAY SIGNS" U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
- OBTAIN RE'S APPROVAL FOR THE DISTANCE TO BE USED ON THE ADVANCE WARNING SIGNS AND FOR THE SPEED LIMIT TO BE USED ON THE R2-1 SIGN.
- DISTANCE LEGEND: SIGN NUMBER FOLLOWED BY A LETTER AND DISTANCE, ARE THE SIGN PLACEMENTS FOR USE WITH TCD-3 THROUGH TCD-21 AND PROJECT SPECIFIC PLANS. ALL DISTANCES ARE FROM THE TRANSITION OR POINT OF RESTRICTION.

LETTER	DISTANCE
A	1500'
B	1000'
C	500'
D	1/2 MILE
E	1/4 MILES AHEAD
F	1/8 MILES AHEAD

BACKING MATERIAL

- USE ALUMINUM FLAT SHEET OF ALLOY AND TEMPER 5052-H38 OR 8061-T8:
 - 0.10" THICK FOR ALL CONSTRUCTION SIGNS EXCEPT SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.
 - 0.024" THICK FOR ALL CONSTRUCTION SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.

TEMPORARY SIGN SUPPORTS

- USE WELL SEASONED LUMBER SIGN SUPPORTS, FREE OF SPLITS, KNOTS AND WARPS, OR OF STEEL COMPONENTS.
- WOOD POSTS TO HAVE A UNIFORM CROSS-SECTION AND NOT TO EXCEED THE FOLLOWING DIMENSIONS FOR:

SINGLE POST = 4" x 6"
TWO POSTS = 3" x 6" OR 4" x 5"
THREE POSTS = 3" x 5" OR 4" x 4"

4" X 6" WOOD POSTS TO BE MODIFIED BY DRILLING 1 1/2 INCH DIAMETER HOLES 4 INCHES AND 18 INCHES ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
- NO BRACING IS PERMITTED. VERTICAL CLEARANCES FOR SIGNS MOUNTED ON WOOD SUPPORTS TO BE 7 FOOT MINIMUM. EMBEDMENT DEPTH FOR THE WOOD POST NOT TO EXCEED 3.5 FEET.
- USE STEEL POSTS IN ACCORDANCE WITH THE STANDARD DETAIL FOR U-POST SIGN SUPPORT.
- TEMPORARY SIGN SUPPORTS NOT MEETING THIS CRITERIA TO BE SHIELDED BY A LONGITUDINAL BARRIER OR CRASH CUSHIONS.
- USE WOOD POST ONLY ON TEMPORARY SIGN SUPPORT.

SIGN FACES

- USE SIGN FACES OF ASTM D4956 TYPE VII OR VIII FLUORESCENT ORANGE SHEETING.

FASTENING

- SECURELY FASTEN ALL SIGNS TO THEIR SUPPORTS WITH BOLTS, NUTS, AND WASHERS, AS SPECIFIED.

CONSTRUCTION SIGNS

N.T.S.

CD-159-7

NEW JERSEY DEPARTMENT OF TRANSPORTATION

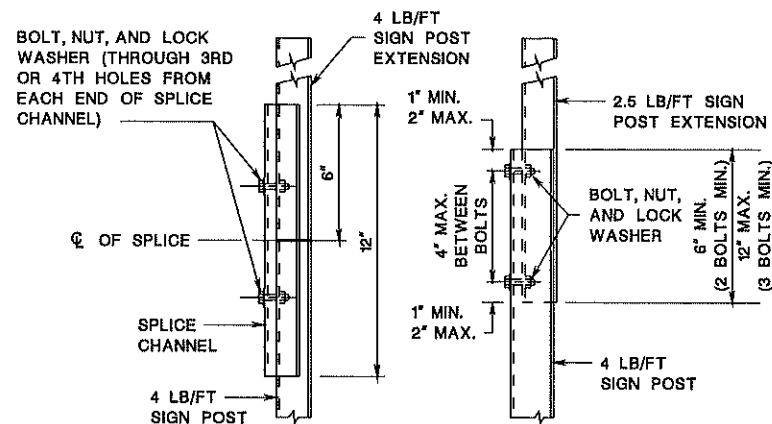
CONSTRUCTION DETAILS

CD-159-7.1

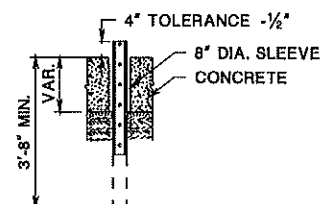
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164

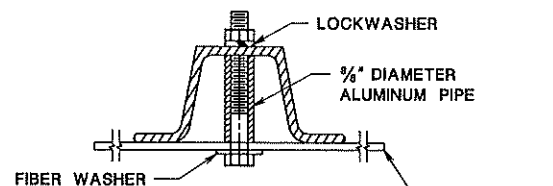
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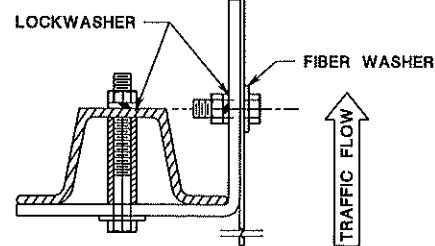
**SIGN POST EXTENSION
SPLICE DETAILS**



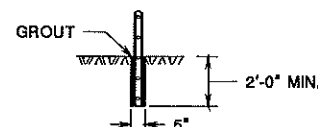
**CONCRETE
INSTALLATION**



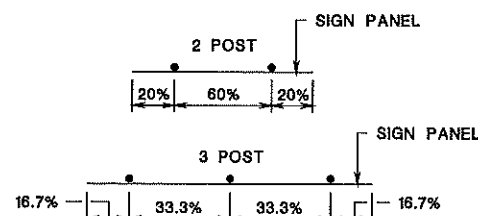
FRONT MOUNT BRACKET



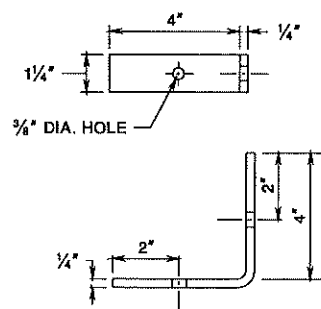
SIDE MOUNT BRACKET



**ROCK
INSTALLATION**



STEEL U-POST SPACING

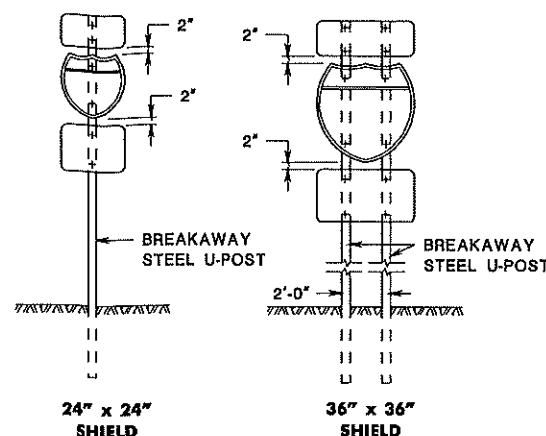


**DETAIL OF BRACKET
FOR SIDE MOUNTED SIGNS**

PANEL SIZE (W x H)	# OF POSTS	POST SIZE (LB/FT)
18" x 18"	1	2.5
18" x 24"	1	2.5
24" x 24"	1	2.5
24" x 30"	1	2.5
24" x 36"	1	2.5
30" x 24"	1	2.5
30" x 30"	1	2.5
36" x 12"	2	2.5
36" x 36" x 36"	2	2.5
30" x 36"	1	4.0

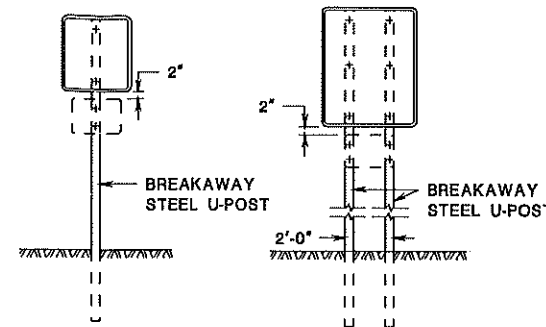
PANEL SIZE (W x H)	# OF POSTS	POST SIZE (LB/FT)
36" x 36"	2	2.5
36" x 48"	2	2.5
48" x 36"	2	2.5
48" x 24"	2	2.5
48" x 36"	2	2.5
48" x 48"	2	4.0
48" x 64" x 64"	2	2.5
60" x 36"	2	4.0
48" x 60"	2	4.0
60" x 30"	2	4.0

**U-POST SELECTION TABLE
BREAKAWAY SIGN SUPPORT**



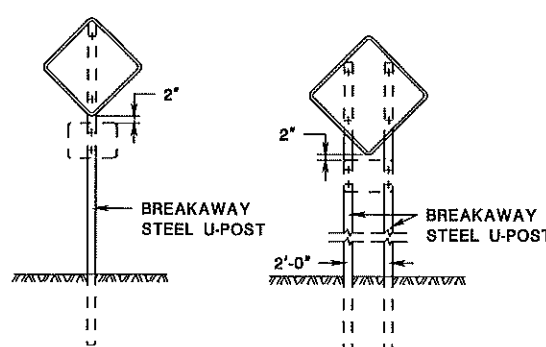
**24" x 24"
SHIELD**

**36" x 36"
SHIELD**



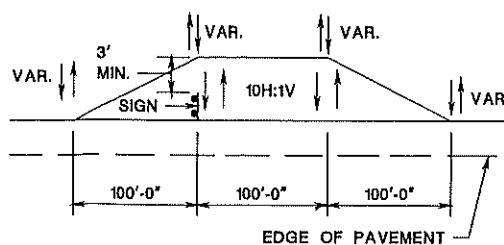
**30" x 30"
OR
SMALLER**

**36" x 36"
OR
LARGER**



**30" x 30"
OR
SMALLER**

**36" x 36"
OR
LARGER**



STEEL U-POST GRADING DETAIL

GENERAL NOTES:

1. ALL POSTS TO BE OF ADEQUATE LENGTH TO MEET THE REQUIREMENTS FOR ERECTION AS STATED IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND AS INDICATED BELOW.
2. ALL SMALL SIGN SUPPORTS TO BE OF THE BREAKAWAY TYPE WITH EXCEPTION OF THOSE INSTALLED BEHIND GUIDE RAIL OR OTHER ROADSIDE BARRIER.
3. ALL STEEL POSTS AND BRACKETS TO BE CUT, BENT, AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVANIZING TO BE ACCORDING TO ASTM A123.
4. ALL STEEL U-POST SIGN SUPPORTS MUST BE INSTALLED FACING THE PREDOMINANT TRAFFIC FLOW. USE A MOUNTING BRACKET ON SIDE MOUNTED SIGNS SUCH AS "ONE WAY" SIGNS INSTALLED IN MEDIANS.
5. SIGN PANEL SIZES ARE TO DETERMINE POST TYPE AND NUMBER AS SHOWN ON THIS DETAIL.
6. BOLTS ARE NOT TO PROTRUDE MORE THAN 1/4" BEYOND THE NUT WHEN TIGHT, BUT ARE TO ENGAGE ALL THREADS IN THE NUT.
7. WHEN SIGNS ARE INSTALLED ON SLOPES 10H:1V OR FLATTER, THE MINIMUM VERTICAL CLEARANCE REQUIREMENTS FOR SIGNS ARE:

FOR SINGLE POST INSTALLATIONS - THE MINIMUM DISTANCE BETWEEN THE EDGE OF THE PAVEMENT AND THE BOTTOM OF ANY PANEL MUST BE 7 FEET, AND THE MINIMUM DISTANCE FROM EDGE OF PAVEMENT TO THE TOP OF ANY SIGN PANEL MUST BE 9 FEET.

FOR MULTI-POST INSTALLATIONS - THE MINIMUM DISTANCE BETWEEN THE EDGE OF PAVEMENT AND THE BOTTOM OF A MAIN SIGN PANEL MUST BE 7 FEET.

SECONDARY SIGN PANELS (LAND SERVICE HIGHWAYS) - THE MINIMUM DISTANCE BETWEEN THE EDGE OF PAVEMENT AND THE BOTTOM OF A SECONDARY SIGN PANEL IS 6 FEET.

SECONDARY SIGN PANELS (INTERSTATE AND FREEWAYS) - THE BOTTOM OF THE MAIN SIGN TO BE A MINIMUM OF 8 FEET AND THE SECONDARY SIGN PANEL A MINIMUM OF 5 FEET ABOVE THE EDGE OF PAVEMENT.

WHERE GRADING OF 10H:1V OR FLATTER CANNOT BE OBTAINED, OR WHERE CURB OR BERM IS GREATER THAN 4 INCHES, THE MINIMUM VERTICAL CLEARANCE WILL BE MEASURED FROM THE GROUND LINE TO THE BOTTOM OF THE SIGN.

8. THE HORIZONTAL OFFSET FROM EDGE OF PAVEMENT TO EDGE OF SIGN IS DERIVED FROM SECTION 2A.19 OF THE MUTCD AS FOLLOWS:

FOR URBAN INSTALLATIONS - IN AREAS WHERE LATERAL OFFSETS ARE LIMITED, A MINIMUM LATERAL OFFSET OF 2 FEET IS DESIRABLE. A MINIMUM OFFSET OF 1 FOOT FROM THE FACE OF THE CURB MAY BE USED IN AREAS WHERE THE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.

FOR RURAL INSTALLATIONS - 6 FEET MINIMUM DESIRABLE FROM EDGE OF SHOULDER, BUT 12 FEET MINIMUM DESIRABLE FROM EDGE OF TRAFFIC OR AUXILIARY LANE.

FOR INTERSTATE AND FREEWAY INSTALLATIONS - 8 FEET MINIMUM DESIRABLE FROM EDGE OF SHOULDER, BUT NOT LESS THAN 12 FEET FROM THE EDGE OF TRAFFIC OR AUXILIARY LANE.

FOR RAMP INSTALLATIONS - 6 FEET MINIMUM FROM EDGE OF ROAD.

WHERE BEHIND GUIDE RAIL - 4 FEET MINIMUM FROM BACK OF BEAM GUIDE RAIL ELEMENT TO SIGN POST.

9. DO NOT INSTALL PERMANENT SIGN SUPPORTS ON SLOPES GREATER THAN 10H:1V, EXCEPT WHERE GRADING OF 10H:1V CANNOT BE OBTAINED OR THE SIGN SUPPORTS WILL BE BEHIND A TRAFFIC BARRIER. THE SLOPE IS TO EXTEND A MINIMUM OF 3 FEET BEYOND THE OUTSIDE EDGE OF SIGN (SEE GRADING DETAIL FOR SLOPE TREATMENT).
10. EXTRUDED ALUMINUM SIGN PANELS ARE NOT PERMITTED FOR USE WITH STEEL U-POST SIGN SUPPORTS.
11. DO NOT PLACE STEEL U-POST SIGN SUPPORTS IN FRONT OF GUIDE RAIL AND THE POSTS MUST NOT STRADDLE GUIDE RAIL.
12. TO EXTEND THE HEIGHT OF A SIGN POST, A MAXIMUM OF ONE SPLICE MAY BE MADE AND MUST BE A MINIMUM OF 9 FEET FROM THE GROUNDLINE TO CENTER LINE OF SPLICE.

**STEEL U-POST SIGN
SUPPORTS**

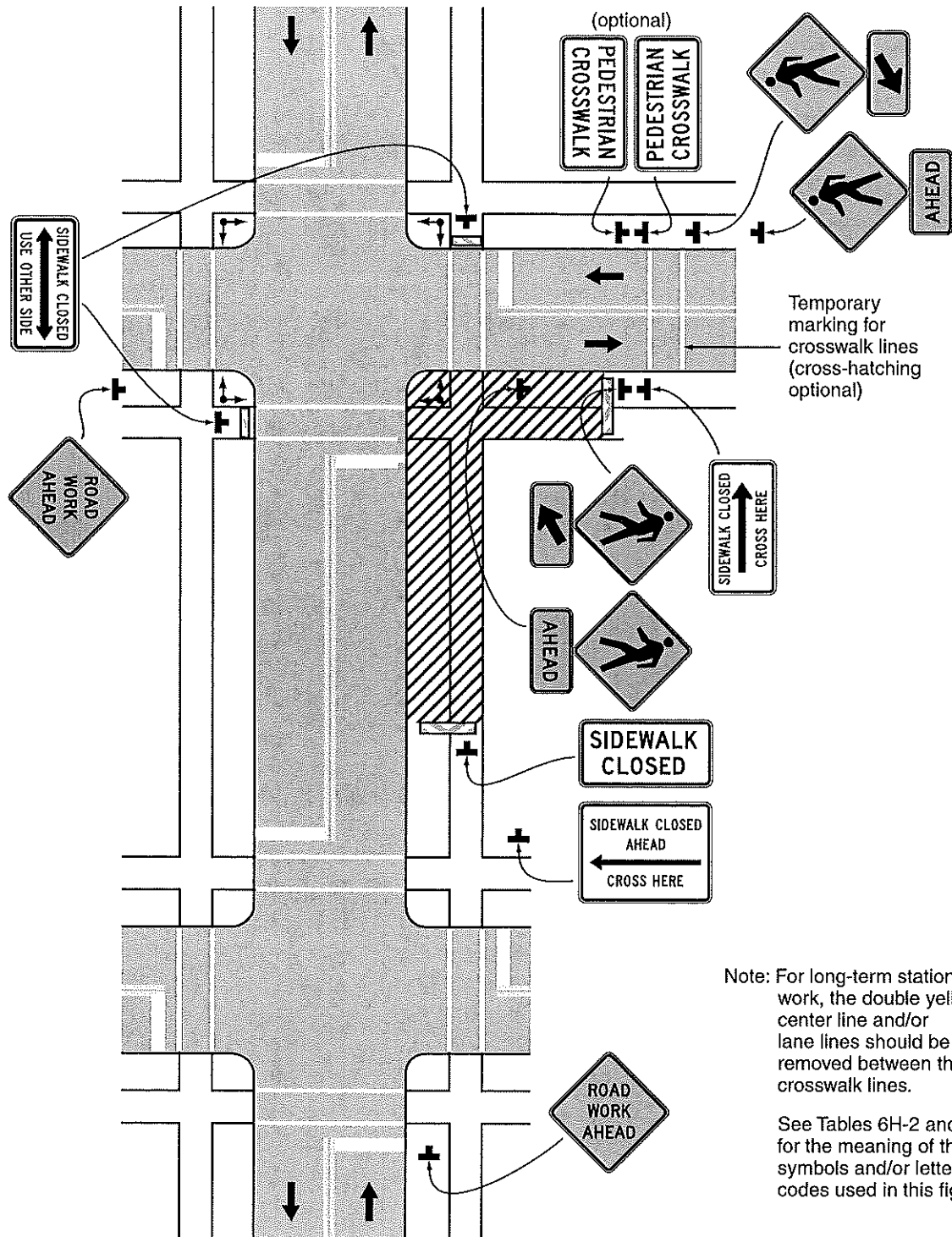
N.T.S.

CD-612-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-612-4.1

Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)**Typical Application 29**