

Edition 2011

**SUPPLEMENTARY SPECIFICATIONS
FOR
ENTRY 4 SIDEWALK AND RECREATION CENTER ENTRANCE IMPROVEMENTS
AT WILLIAM PATERSON UNIVERSITY
IN THE TOWNSHIP OF WAYNE
COUNTY OF PASSAIC
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 Owner 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 McClave 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. William Siegrist
Associate Director
Capital Planning, Design & Construction
William Paterson University
300 Pompton Road
Wayne, NJ 07470
Phone (973) 720-3363

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.

SECTION 159 – TRAFFIC CONTROL

159.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED:

If the contractor fails to deliver to the job site or provide the traffic control devices listed below, payment is subject to being withheld. The following signs shall be the minimum required for the project.

Construction Signs, 48" X 48" (W20-1A).....	8 Unit
Construction Signs, 48" X 24" (G20-2A)	2 Unit
Construction Identification Signs, 84" X 42" ("On or About" – Start Date of Construction).....	2 Unit

DIVISION 200 – EARTHWORK

SECTION 201 – CLEARING SITE

201.03.01 Clearing Site

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

H. Removal of Existing Features

1. Removal and disposal of all existing features, as shown on the Contract Plans and/or as determined in the field by the RE, necessary to construct the proposed improvements.

SECTION 202 – EXCAVATION

202.03 CONSTRUCTION

202.03.03 Excavating Unclassified Material

A. Excavating.

THE SECOND SENTENCE OF THE FIRST PARAGRAPH OF SUBPART 'A' IS CHANGED TO:

Unclassified excavation consists of excavation and management of material of whatever nature encountered, except for regulated material, acid producing soil, or rock excavation.

THE ENTIRE TEXT OF SUBPART 'A3' (ROCK AREAS) IS DELETED.

THE FOLLOWING SUBSECTION IS ADDED:

202.03.10 Rock Excavation

- A. Rock Areas.** Rock Excavation consists of the excavation of boulders more than 1 cubic yard in volume and rock in ledge formations that cannot be excavated except by drilling or drilling and blasting.

The Contractor may remove entire boulders extending beyond the specified limits of excavation. Backfill and compact space created outside the specified limits by such boulder removal using the directed method as specified in 203.03.02.C. Ensure that undrained pockets are not left in the surface of the rock.

After completing the excavation of each lift of rock slope construction and before beginning the next lift, scale the completed slopes to remove loose rock fragments. The RE will examine rock slopes during the excavation to identify possible unstable

conditions and to determine the need for stabilization. Provide assistance and equipment necessary for such examination.

If it is determined that in-place stabilization is required, use rock bolting or other stabilization techniques as directed. Before drilling and blasting, remove existing overburden to the top of rock. Take necessary precautions in drilling and blasting operations to preserve the rock remaining in the specified finished slope in a natural undamaged condition. Conduct blasting operations according to the following:

1. **Blasting Plan.** Submit a blasting plan at least 14 days before commencing drilling and blasting operations and before each subsequent shot thereafter. Include the full details of the drilling and blasting patterns and controls to be used for both the presplitting and production blasting. Additionally, include the following minimum information:
 - a. Station limits of proposed shot.
 - b. Plan and section views of proposed drill pattern, including free face, burden, blasthole spacing, diameters and angles, lift height, and subdrill depth.
 - c. Loading diagram showing type and amount of explosives, primers, initiators, and location and depth of stemming.
 - d. Manufacturers' data sheets for explosives, primers, and initiators to be employed.
 - e. Initiation sequence of blastholes including delay times and delay system.
 - f. Planned security measures for storage of explosives.
 - g. Safety plan for personnel and public.
 - h. Copy of blasting license.
 - i. Name and qualifications of blasting supervisor.

The blasting plan submittal is for quality control and record keeping purposes. A review of the blasting plan does not relieve responsibility for the accuracy and adequacy of the plan when implemented in the field.

2. **Blasting Test Sections.** Before commencing full-scale blasting operations, demonstrate the adequacy of the proposed blasting plan by drilling, blasting, and excavating short test sections, up to 100 feet in length, to determine which combination of method, hole spacing, and charge works best. The RE may direct additional test sections when field conditions warrant.

Conform to the requirements for controlled and production blasting operations when blasting in conjunction with the test shots.

Do not drill ahead of the test shot area until the test section has been excavated and the results evaluated. If the results of the test shots are unsatisfactory, revise methods to achieve the required results. Unsatisfactory test shot results

include an excessive amount of fragmentation beyond the shown lines and grade, excessive flyrock, or violation of other requirements.

If, at any time during the progress of the work, the methods of drilling and blasting do not produce the desired result of a uniform slope and shear face, within the tolerances specified, drill, blast, and excavate in short sections, not exceeding 100 feet long, until a technique is arrived at that produces the desired results.

3. **Safety.** Handle explosive materials and conduct blasting operations as specified in 105.10. Use only standard explosives, blasting agents, detonating cord, delays, blasting caps, and other blasting accessories prepared and packaged by explosive manufacturing firms.

Restrict access to the entire blast area for a minimum of 5 minutes following a blast to guard against rock fall before commencing work in the cut.

The RE will prohibit or halt the blasting operations if it is apparent that through the methods being employed, the required slopes are not being obtained in a stable condition, or the safety and convenience of the traveling public is being jeopardized.

4. **Methods of Drilling and Blasting.**

- a. **Presplitting.** Presplitting is a controlled blasting method for constructing a shear plane along a specified cut slope through the controlled use of explosives and accessories in properly aligned and spaced drill holes.

After removing the overburden and weathered rock, drill slope holes for presplitting along the line and in the plane of the cut slope. Drill slope holes between 2-1/2 and 3 inches in diameter. Control operations to ensure that the drill holes do not deviate from the plane of the slope by more than 6 inches and do not deviate within the plane of the slope by more than 6 inches.

Ensure that the drilling equipment for drilling the presplit holes has mechanical devices affixed to accurately determine the angle at which the drill steel enters the rock. The RE will not allow presplit hole drilling if these devices are either missing or inoperative. Do not space slope holes more than 3 feet on centers, and adjust spacing as required to produce a uniform and stable shear plane between slope holes. Under certain conditions, to produce a uniform and stable shear plane, the RE may also require auxiliary holes, which are identical to the slope holes but are not loaded with explosives.

The Contractor may extend the length of the slope holes to the full depth of the cut, to a maximum of 50 feet, if hole alignment is maintained. Otherwise, drill and blast slope holes in lifts. If presplitting in lifts, the RE will allow a maximum offset of 6 inches to accommodate the drill head. Arrange lifts so that the toe of the finished cut slope coincides with the toe of slope. Before placing explosives or blasting agents, ensure that the hole is free of obstructions for its entire depth.

Provide explosives for use in presplit holes with a maximum diameter less than 1/2 the diameter of the presplit hole, and ensure that explosives do not touch the side of the hole. Use only standard explosives manufactured especially for presplitting in presplit holes, unless otherwise approved. Do not load bulk ammonium nitrate and fuel oil in the presplit holes.

Use an amount of explosives in the presplit hole that produces the shearing without causing overbreak. Ensure that the top of the load is far enough below the collar to avoid overbreak at the surface. Extend the detonator cord downline from the collar to the bottom of the bore hole and from the collar to the detonator trunkline or electric blasting caps. Prime the explosive charge according to the recommendations of the manufacturer of the commercial explosive or blasting agent.

If using fractional portions of standard explosive cartridges, firmly affix them to the detonating cord so that the cartridges do not slip down the detonating cord or bridge across the hole. Do not space fractional cartridges along the length of the detonating cord farther than 30 inches on center. Adjust spacing to give the desired results.

Assemble continuous column cartridge type of explosives used with detonating cord, and affix them to the detonating cord according to the explosive manufacturer's recommendations. Provide a copy of these instructions to the RE.

The Contractor may make the bottom charge of a presplit hole larger than the line charges but not so large as to cause overbreak. Place the top charge of the presplitting hole far enough below the collar, and reduce the charge sufficiently, to avoid overbreaking and heaving.

Stem the upper portion of presplit holes, from the topmost charge to the hole collar. Stemming materials shall consist of drill cutting or 3/8-inch clean stone chips.

The Contractor does not need to stem below the topmost charge unless the Department determines that the rock is very seamy and incompetent, in which case, the Contractor may need to full stem such zones.

The Contractor may detonate presplit holes instantaneously or on short delays between each hole. Ensure that delay detonating does not exceed 25 milliseconds between holes. Detonate presplit holes before detonating any production holes.

Extend presplitting a minimum of 50 feet ahead of the production blasting limits, but not more than 100 feet beyond the exposed presplit face.

- b. Production Blasting.** Production blasting is a method of drilling and blasting to produce a high degree of fragmentation of the rock mass to be excavated.

Drill the adjacent line of production holes inside the presplit lines so as to avoid damage to the presplit face. If necessary, the Contractor may drill the first line of production holes parallel to the presplit face to reduce overbreak of this face.

The Contractor may vary hole diameter, spacing, delay patterns, explosives, blasting agents, and other variables to obtain a fragmentation acceptable to the RE, provided that the existing presplit face is not damaged.

- B. Temporarily Storing.** Store rock excavation as specified in 203.03.03B.

DIVISION 500 – BRIDGES AND STRUCTURES

SECTION 513 – RETAINING WALLS

513.02.01 Materials

THE FOLLOWING IS ADDED:

For MSE Walls, use either Soil Aggregate, I-15 or Coarse Aggregate, No. 57. For Prefabricated Modular Retaining Walls and T-Wall, use either Soil Aggregate, I-9 or Coarse Aggregate, No. 57.

513.03.01 Proprietary Retaining Walls

F. Backfilling.

THE HEADING AND FIRST PARAGRAPH UNDER SUBPART (1) ARE CHANGED TO:

- 1. Soil Aggregate.**

G. Compacting.

THE HEADING AND FIRST PARAGRAPH UNDER SUBPART (1) ARE CHANGED TO:

- 1. Soil Aggregate.** With the exception of the 5-foot zone directly behind the units, compact soil aggregate with large, smooth drum, vibratory rollers using the density control method as specified in 203.03.02.D.

THE FOLLOWING SECTION IS ADDED:

SECTION 526 – REMOVE AND REPLACE WALL PANELS

526.01 DESCRIPTION

This Section describes the requirements for removing and replacing exterior steel wall panels.

526.01 MATERIALS

526.02.01 Materials

Provide materials as specified:

Stainless Steel Screws	908.04
Structural Steel Paint (Organic Zinc)	912.01.01

Wall panels shall be 55% Al-Zn alloy Coated Steel with acrylic coating conforming to ASTM A 792. The contractor shall be responsible for measuring the existing steel wall panels and procuring similar and compatible wall panels for this work.

Paint color to match the existing building or chosen by the owner.

526.03 CONSTRUCTION

526.03.01 Removal of Existing Wall Panels

The contractor shall locate and mark out all existing columns, studs, and girts prior to the start of demolition. The contractor shall identify all panels and portions of panels to a height not to exceed 12 feet above the finished exterior grade. The upper limit of removal shall be 6 inches below the top girt in the damaged area. All panels to remain shall be cut in a neat and workman like fashion.

All cut panel ends to remain shall be painted in accordance with section 554.

Contractor shall be responsible for ensuring that the building is secure and watertight at all times.

526.03.02 Installation of Wall Panels

Wall panels shall be shop painted in accordance with section 906.06. All panels shall be fastened to all existing adjacent structural elements at spacing's not to exceed 48 inches. Panels shall be connected to adjacent panel thru the manufacturer's standard interlock method. All shall be installed with longitudinal lap of 6 inches minimum. All longitudinal laps shall be made with the higher elevation panel to the exterior of the lower elevation panel. The contractor shall touch up paint any damage to the new panels. Installation of new wall panels shall include all new trim, corners, and fasteners.

THE FOLLOWING SECTION IS ADDED:

SECTION 527 – CLEAN AND PAINT HANDRAIL

527.01 DESCRIPTION

This Section describes the requirements for cleaning and painting existing handrails. This section also includes repairs to existing handrails.

527.01 MATERIALS

527.02.01 Materials

Provide materials as specified:

Structural Steel Paint (Organic Zinc) 912.01.01

Paint color to be chosen by the owner.

526.03 CONSTRUCTION

527.03.01 Clean and Paint Existing Handrails

Steel handrails shall be cleaned and painted as specified in section 554.

527.03.02 Repair of Handrails.

After cleaning the existing handrails the contract shall make repairs to any disconnected or severely deteriorated section of the existing handrail. Severely deteriorated shall be defined by sections with full depth holes or cross section loss exceeding 25%.

Sections that are severely deteriorated shall be cut at locations a minimum of 3 inches beyond the deterioration. New steel tube shall be fabricated and welded into place as necessary. All welding shall be in accordance with AWS D1.1.

DIVISION 600 - MISCELLANEOUS CONSTRUCTION

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.

SECTION 602 – DRAINAGE STRUCTURES

THE FOLLOWING SUBSECTION IS ADDED:

602.02.03 Trench Drain

- A. Dimensions: Refer to Construction Details.
- B. Features: Trench drain grate (Pattern #4526A)
- B. Manufacturer: Provide one of the following:
 - 1) Campbell Foundry Company, 800 Bergen Street, Harrison, NJ 07029, Tel.: (973) 483-5480.
 - 2) Or approved equal.

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. 2618N6W2 with “DUMP NO WASTE – DRAINS TO WATERWAYS” on the top of the curb piece or approved equal/equivalent.

THE FOLLOWING SUBSECTION IS ADDED:

602.03.10 Converting ‘E’ Inlet to ‘B’ Inlet

Remove castings, grates, damaged wall portions, and ladder runs as directed by the RE. Reuse concrete as specified in 202.03.07A. Dispose of other material as specified in 202.03.07B.

Reconstruct walls to the elevations shown, and, if necessary, install new ladder rungs. Install curb pieces. Bolt the curb piece to the frame before setting the frame in concrete or mortar. Ensure that all castings are set firm and snug. Set castings in mortar beds or anchor castings to the masonry as shown before finishing adjoining items of work with the same final elevation. If excavation is required to reconstruct, backfill and compact using the directed method as specified in 202.03.02C.

Set the bicycle safe grate on the casting. If the bicycle safe grate is loose or wobbles, grind to obtain a tight fit. Do not open to traffic until 3 days after grout was set.

SECTION 606 – SIDEWALKS, DRIVEWAYS, AND ISLANDS

606.03.03 DETECTABLE WARNING SURFACES

THE FOLLOWING IS ADDED TO THE END OF THIS SUBSECTION:

Materials for Detectable Warning Surfaces will be safety red, unless otherwise directed by the RE, and should appear uniform in color after curing. The surface coating material will be an abrasion, UV and chemical resistant, and capable of adhering to existing or new portland cement concrete surfaces. The minimum final dry coat thickness will be 40 mils.

The cured coating will exhibit the following minimum coefficients of friction when tested according to ASTM D 1894:

Static coefficient of friction

Dry 0.95 – 0.99

Wet 1.39 – 1.42

Dynamic coefficient of friction

Dry 0.91 – 0.95

Wet 1.27 – 1.36

THE FOLLOWING IS ADDED TO THIS SECTION:

The Contractor shall construct all sidewalks, handicap ramps and pedestrian facilities within the public right-of-way or easements in full compliance with the “Proposed Accessibility Guidelines for Pedestrian Facilities in the Public “Right-of-Way” located at <http://www.access-board.gov/prowac/nprm.htm> as published in the Federal Register on July 26, 2011 and the Manual on Uniform Traffic Control Devices (MUTCD). Workmanship and materials shall be in conformance with the New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction as amended and supplemented by County and/or Municipal requirements. The Contractor is notified that the improperly constructed ramps and facilities, as determined by the Municipality and/or County, will require replacement with compliant ramps and facilities at the sole cost and expense of the Contractor.

THE FOLLOWING SECTION IS ADDED:

SECTION 609A – TIMBER GUIDE RAIL

609A.01 DESCRIPTION

This Section describes the requirements for installing single steel-backed timber guide rail fastened to steel posts as shown on the plans. It shall be erected in the locations sited and fabricated in conformity with the designations, dimensions and details shown on the plans or as ordered by the engineer.

609A.02 MATERIALS

Provide materials as specified:

Steel: All steel posts, back-up rails, splice plates and channel rubrails which are to be used as “Weathering Steel”, shall meet the requirements of ASTM A588. The fabricator shall notify the manufacturer that it is “Weathering Steel” (structural steel for use in bare, unpainted applications) and that the steel shall not be marked with paint or steel die stamped, but identification shall be stenciled with permanent ink. The dimensions of each component shall conform to the plans and ASTM A6. All steel posts shall be galvanized after fabrication to meet the requirements of ASTM A123 and conform to the galvanizing limits and tolerances shown on the plans. A single $\frac{3}{4}$ ” diameter hole may be drilled 2” from the top of each post, in the center of the web, to facilitate the galvanizing process on the bottom of all posts.

Timber: All timber rail and block-out components shall conform with the following:

1. Commercial lumber grade No. 1 or better after treatment;
2. AASHTO M 168;
3. Minimum stress rating of 1350 psi
4. Rough sawn (non-planed) or S4S (surface four side) Southern Yellow Pine or Douglas Fir- Larch with nominal dimensions as indicated on the plans. Variations in the size of any dimension shall not be more than $\pm \frac{1}{4}$ ”
5. All timber components shall be pressure treated with CCA or ACZA depending on species supplied conforming to AWPA Standard P5 to a minimum net retention of 0.60lb/cubic foot in the assay zone in accordance with AWPA Standard C14.

6. All timber components shall be fabricated (including but not necessarily limited to cutting, drilling, dapping and chamfering) prior to treatment.
7. All timber components shall be free of excess preservative and solvent at the conclusion of the treating process. Post treatment cleaning shall be by expansion bath or steaming in accordance with AWWA Standard C2;
8. Kiln or air dried to a maximum moisture content of 25% after treatment (KDAT - 25);
9. Grade-marked after treatment by an agency certified by the American Lumber Standard Committee (ALSC).

Fasteners: Round head bolts shall be manufactured in accordance with the sizes designated on the plans, the geometric specifications included in ANSI B18.5.1.2.2 and the material specifications for ASTM A588 steel. All round head bolts shall be marked with the manufactures symbol and A588. Hex Lag Screws shall be manufactured in accordance with ASTM A307 Grade A specifications. All Hex Lag Screws shall be hot-dipped galvanized in accordance with ASTM A153 Class C.

609A.03 CONSTRUCTION

The steel posts shall be driven. The Contractor shall use suitable caps and equipment to prevent damage to the posts during driving. Where rock or boulders are encountered in driving the posts, the material shall be removed so as to make a hole of sufficient size to permit the setting of the post. The hole shall then be backfilled and thoroughly compacted before the driving of the posts.

The Contractor is cautioned that within the limits of any project, buried cables for illumination or utilities, which may be energized, may be present.

The posts shall be located as shown on the plans, set plumb and in alignment with the rail or rail treatments. The block outs and rail elements shall then be erected to produce a smooth continuous rail as shown on the plans.

Whenever rail or rail treatments are being constructed adjacent to roadways open to traffic, the Contractor shall complete the installation to and including the designated terminal treatment at the close of each day's work.

On long runs or other locations where it is not practical to complete the installation to and including the designed terminal treatment by the end of each day's work, the Contractor shall use temporary methods for terminating the beam rail so as to minimize any hazard caused by leaving the end of the beam rail exposed to traffic. Temporary methods for terminating the beam rail shall include lowering the rail end to the ground and providing adequate anchorage of the rail end by bolting, securing, burying, etc.

The Contractor shall submit to the Engineer for approval details of his proposed methods for temporary terminating the end section. No work shall be performed adjacent to the areas open to traffic until approval is given.

The Contractor shall be required to furnish extra length posts at transition areas or where field conditions warrant. These posts shall be of such length that the minimum depth in the ground, as shown on the plans, is maintained.

Before final erection, all galvanized elements which have been cut or worked so as to destroy the zinc coating and cause the base metal to be exposed shall have the exposed base metal thoroughly cleaned and brush coated with zinc rich touch up material.

SECTION 607 – CURB

607.03.02 CONCRETE VERTICAL CURB AND CONCRETE SLOPING CURB

D. Placing Concrete.

THE SECOND SENTENCE OF THE FIRST PARAGRAPH IS CHANGED TO:

Do not construct concrete curb between November 1 to March 15, except as approved by the RE. When placing concrete, adhere to the limitations specified in 504.03.02.C.

SECTION 610 – TRAFFIC STRIPES, TRAFFIC MARKINGS, AND RUMBLE STRIPS

610.03.01 LONG-LIFE TRAFFIC STRIPES

THE SUBPART HEADING AND THE ENTIRE TEXT IS CHANGED TO:

610.03.01 TRAFFIC STRIPES

A. Striping Plan. At least 20 days before beginning the work, submit to the RE for approval a striping plan that includes:

1. Schedule of operations for applying traffic stripes.
2. Number and type of equipment.
3. Manufacturer's recommendations for use of the materials, including, but not limited to, mixing ratios and application temperatures.
4. Details on the means and methods for surface preparation
5. Details on the means and methods for premarking
6. Details on the proposed test strip such as location, length, etc.

B. Surface Preparation. Immediately before striping the pavement surface, clean the surface of dirt, oil, grease, and foreign material, including curing compound on new concrete. Clean the surface 2 inches beyond the perimeter of the stripes to be placed.

C. Striping Test Strip. Before beginning striping operations, construct 1 or more striping test strips to demonstrate the Contractor's ability to meet the requirements specified in 610.03.01.D. For each striping test strip, apply striping to approximately 500 linear feet of pavement with the same striping procedure that will be used for the Project. Construct a test strip for each applicator unit and epoxy resin material used. Provide the RE with 50 test cards made of heavy stock paper measuring 8 inches by 2 inches, and two wet film thickness gauges. Construct

additional test strips when major equipment repairs or adjustments are made or when the traffic stripes are determined to be defective. Construct additional test strips when traffic striping operations are performed on multiple, non-continuous occasions. Perform additional test strips as requested by the RE. When the test strip is in compliance, as determined by the RE, proceed with striping operations. Each test strip may remain in place and become part of the finished stripes subject to the requirements of 610.03.01.E.

- D. Applying Striping.** Mix epoxy resin with an automatic proportioning and mixing machine, and hot-spray the compound at a temperature of between 100 and 130 °F onto dry surfaces. Apply the compound with a wet film thickness of 20 ± 1 mil. Apply the material during dry weather conditions when the ambient temperature is a minimum of 45 °F and the surface temperature is a minimum of 50 °F. Adjust operations as required for the prevailing ambient and surface conditions to achieve a no-track drying time of 30 minutes or less.

Immediately after, or in conjunction with, the compound application, uniformly apply 12 pounds of large glass beads per gallon of epoxy resin to the compound. After applying the large glass beads, uniformly apply 12 pounds of small glass beads per gallon of epoxy resin to the compound.

Remove all compound that has been tracked or spilled outside of the intended placement areas.

- E. Performance.** Ensure that the traffic Stripes, show no fading, lifting, cracking, chipping for any reason including but not limited to traffic wear, maintenance activities including snow plowing, until Acceptance. Ensure that 60 days after application, traffic stripes have a minimum retroreflectance value of:

375 millicandelas per square meter per lux for white traffic stripe

250 millicandelas per square meter per lux for yellow traffic stripe

- F. Defective work.** Replace traffic stripes that are determined by the RE before Acceptance to be defective or that are damaged during construction. Remove defective stripes as specified in 610.03.08.

Replace an entire 10-foot skip line if the RE determines the stripe to have a deficiency.

If the RE determines, based upon calculated and measured yields, that the striping has a wet film thickness of less than 19 mils, restripe the entire length with 20 mils of new compound.

Provide the RE with an LTL-X Reflectometer that has been certified by the manufacturer as being calibrated within the last two years. The RE will test the retroreflectance of traffic stripes. Replace traffic stripes that do not meet the retroreflectance values indicated in 610.03.01.E. Replace the entire length of striping where improper curing or discoloration has occurred. Discoloration is localized areas or patches of brown or grayish colored compound. Where improper curing or discoloration occurs intermittently in intervals of 100 feet or less throughout the striping length, replace the entire length of striping from the beginning of the first occurrence until the end of the last occurrence,

plus 5 feet on each end.

Replace the entire length of striping that has failed to bond to the pavement, or has chipped or cracked. Where more than 25 spots of chipping, cracking, or poor bonding have occurred within 1000 linear feet of striping, replace the entire 1000 foot length of striping as indicated in 610.03.01.E.

- G. Opening to Traffic.** Complete each application of all types of traffic stripes and allow to thoroughly dry before opening to traffic. At a minimum, delineate center lines on undivided roadways and broken lines between lanes before the traveled way is opened. The RE will determine when the traveled way can be opened to traffic.

610.03.02 Thermoplastic Traffic Markings

THE SUBPART HEADING AND THE ENTIRE TEXT IS CHANGED TO:

610.03.02 Traffic Markings

- A. Marking Plan.** At least 20 days before beginning the work, submit to the RE for approval a marking plan that includes:
1. Schedule of operations for applying traffic markings,
 2. Number and type of equipment,
 3. Manufacturer's recommendations for use of the materials, including mixing ratios and application temperatures.
 4. Details on the means and methods for surface preparation
 5. Details on the means and methods for pre-marking
- B. Surface Preparation.** Immediately before marking the pavement surface, clean the surface of dirt, oil, grease, and foreign material, including curing compound on new concrete. Clean the surface 2 inches beyond the perimeter of the marking to be placed.
- C. Applying Traffic Markings.** Place preformed thermoplastic or hot extruded thermoplastic traffic markings on thoroughly dry surfaces and during dry weather conditions. Apply using equipment and procedures that produce markings of the specified color, width, and thickness with well-defined edges, uniform retroreflectivity, and proper bonding to the pavement. Apply the thermoplastic material as follows:
1. **Preformed Thermoplastic.** Melt the preformed thermoplastic tape to bond the traffic markings permanently in position according to the manufacturer's recommendations.

Meet the minimum initial retroreflectance value, as specified in 610.03.01.D for thermoplastic tape, by applying additional glass beads to the hot-wet material in a uniform pattern as necessary.
 2. **Extruded Thermoplastic.** Uniformly heat the thermoplastic material. When the ambient and surface temperatures are at least 50 °F, apply the melted material at a temperature of between 400 and 425 °F. Extrude the thermoplastic traffic markings on the HMA or concrete pavement ensuring a thickness of 90 1 mils.

Immediately after, or in conjunction with the thermoplastic extrusion, uniformly apply glass beads to the wet material at a minimum rate of 10 pounds per 100 square feet of markings. Apply glass beads by mechanical means only.

D. Performance. Ensure that the traffic markings show no fading, lifting, cracking, chipping for any reason including but not limited to traffic wear, maintenance activities including snow plowing, until Acceptance. Ensure that 60 days after application, traffic markings have a minimum retroreflectance value of:

375 millicandelas per square meter per lux for white traffic markings

250 millicandelas per square meter per lux for yellow traffic markings

E. Defective work. Replace thermoplastic traffic markings that are determined by the RE before Acceptance to be defective or that are damaged during construction. Remove defective markings as specified in 610.03.08.

Replace the entire area of thermoplastic traffic markings determined to be less than the required thickness, to have incorrect color or width, to have failed to bond to the pavement, or to have chipped or cracked. The minimum replacement area is an individual word or symbol, or for longitudinal lines the entire length from where the deficiency first occurs to where it no longer exists.

The RE will determine initial retroreflectance as follows:

Provide the RE with an LTL-X Reflectometer that has been certified by the manufacturer as being calibrated within the last two years. The RE will test the retroreflectance of traffic markings. Replace traffic markings that do not meet the retroreflectance values indicated in 610.03.02.D.

F. Opening to Traffic. Complete each application of thermoplastic traffic markings and allow to thoroughly dry before opening to traffic. The RE will determine when the traveled way can be opened to traffic.

THE FOLLOWING SECTION IS ADDED:

SECTION 625 – SITE AMENITIES

625.01 DESCRIPTION

This work shall consist of the furnishing, assembly, and installation of various site amenities where shown on the plans or as directed by the Engineer.

625.02 MATERIALS

Provide materials as specified:

Concrete per Section 903.03.

625.02.01 Bollard

- A. Features: 1/4" gauge steel bollard filled with concrete. Color shall be as per the Construction Details and approved by the Owner prior to construction.
- B. Dimensions: 7' in length; 4' above grade and 3' below grade encased in a concrete foundation.
- C. Concrete to be included in the cost for the bollard item.

625.03 CONSTRUCTION

Install various site amenities as per Manufacturer's recommendation and as directed by the Engineer.

DIVISION 650 – UTILITIES

SECTION 651 – WATER

651.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED TO THE END OF THIS SUBSECTION:

Reset Water Valve Box will not be measured for payment, but the cost will be included in various Items in the project.

SECTION 652 – SANITARY SEWERS

652.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED TO THE END OF THIS SUBSECTION:

Reset Sanitary Sewer Clean-Outs will not be measured for payment, but the cost will be included in various Items in the project.

SECTION 653 – GAS

653.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED TO THE END OF THIS SUBSECTION:

Reset Gas Valve Box will not be measured for payment, but the cost will be included in various Items in the project.

DIVISION 700 - ELECTRICAL

SECTION 701 – GENERAL ITEMS

701.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED TO THE END OF THIS SUBSECTION:

Resetting of electrical manhole castings will not be measured for payment, but the cost will be included in various Items in the project. Refer to Appendix B of the specification for appropriate procedure.

DIVISION 900 – MATERIALS

SECTION 902 – ASPHALT

902.02.03 MIX DESIGN

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH:

Unless otherwise approved by the engineer, only one source of supply for hot mix asphalt surface course may be used on the project.

902.02.04 SAMPLING AND TESTING

DETERMINATION OF CONFORMANCE TO THE VOLUMETRIC PROPERTIES BY SAMPLING AND TESTING AT THE HMA PLANT BY AN INDEPENDENT TESTING AGENCY AND/OR LABORATORY IS PREFERRED; HOWEVER, THE FOLLOWING CHANGES TO SUBSECTION 902.02.04 MAY BE USED AS AN ALTERNATE TO THE SAMPLING AND TESTING PROVISIONS LISTED IN SUBSECTION 902.02.04 TO DETERMINE CONFORMANCE TO THE SPECIFICATION REQUIREMENTS.

- F. Acceptance of HMA.** The Department may accept the HMA as specified in 902.02.04.A through 902-02.04,E by employing staff or an independent testing agency at the HMA plant during production. The inspector who performs the quality assurance sampling shall be certified by the Society of Asphalt Technologists of New Jersey as an Asphalt Plant Technologist, Level 2.

Alternatively, the Department may accept the HMA by Certification of Compliance according to 106.07.

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

SECTION 906 – STRUCTURAL STEEL

906.01 STRUCTURAL STEEL MATERIALS

THE ENTIRE SUBSECTION IS CHANGED TO:

Provide structural steel materials conforming to the requirements in Table 906.01-1 and as shown on the Plans.

Table 906.01-1 Structural Steel Materials Requirements

Product	Test Method	Type/Grade/Class
Structural Steel Plate ¹	ASTM A 36	Grade 36
Tie rods, plate washers, tie backs, turnbuckles, plates, shapes, and shims	ASTM A 36	Grade 36

Before using, submit to the ME a representative sample of each size for material testing and approval. Provide a mill certification that indicates the chemical and physical properties for each type of material.

906.04.01 AISC Certification

THE ENTIRE SUBPART IS CHANGED TO:

Ensure that the structural steel fabricating plant is certified under the AISC Quality Certification Program in the applicable categories by the type of work performed.

SECTION 912 – PAINTS, COATINGS, TRAFFIC STRIPES AND TRAFFIC MARKINGS

912.03.01 Epoxy Traffic Stripes

THE SUBPART HEADING IS CHANGED TO:

912.03.01 Traffic Stripes

A. Epoxy Resin.

THE FIRST SENTENCE IS CHANGED TO:

For pavement striping, use an epoxy resin that is a 2 component, 100 percent solids formulation conforming to the following requirements:

912.03.02 Thermoplastic Traffic Markings

THE SUBPART HEADING IS CHANGED TO:

912.03.02 Traffic Markings

THE FIRST SENTENCE OF THE FIRST PARAGRAPH IS CHANGED TO:

For traffic markings, use either preformed or hot extruded thermoplastic conforming to AASHTO M 249, except that for preformed thermoplastic, the minimum thickness requirement is 90 mils.

SECTION 915 – TIMBER AND TIMBER TREATMENT

915.05 TIMBER TREATMENT

THE ENTIRE SUBSECTION IS CHANGED TO:

Treat wood species according to AASHTO M 133 and AWWA Standards U1-11 and T1-11 as summarized in Table 915.05-1, Table 915.05-2, and Table 915.05-3.

915.05-1 Treatment for Sawn Timber

Type of Wood	Location/ Environment	Allowable Treatments	AWPA Standard Reference for Minimum Retention Level
Southern Pine	Soil or Fresh Water	CCA or Pentachlorophenol	UC4A
Douglas Fir	Soil or Fresh Water	ACZA	UC4A

Notify the ME at least 14 days before treating timber. If directed by the ME, perform an assay to determine the retention of preservative according to AASHTO M 133. Submit certification of compliance as specified in 106.07. Attach the assay report to the certification.

APPENDIX A: PUBLIC UTILITIES

**TOWNSHIP OF WAYNE
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:

Electric
Public Service Electric and Gas Company
150 Circle Avenue
Clifton, NJ 07011
Attn: Mr. Charles King
Tel: (973) 365-2810

Gas
Public Service Electric and Gas Company
20 Van Vooren Drive
Oakland, NJ 07436
Attn: Mr. Paul Caffery
Tel: (201) 337-2527

Telephone
6000 Hadley Rd
03 Floor Room T-12
South Plainfield, New Jersey 07080
Attn: Elhadji Gueye,
Email: Elhadji.1.Gueye@one.verizon.com
Tel: (908) 412-6171

Water
Division of Water and Sewer
201 Dey Road
Wayne, NJ 07470
Attn: Mrs. Heather Vitz-Del Rio, P.E.
Tel: (973)694-5090 Ext. 4217
Fax: (973) 628-5377

Cable
Cablevision
159 Windermere Ave.
Greenwood Lake, NY 19025
Tel.: (845) 395-0244

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.

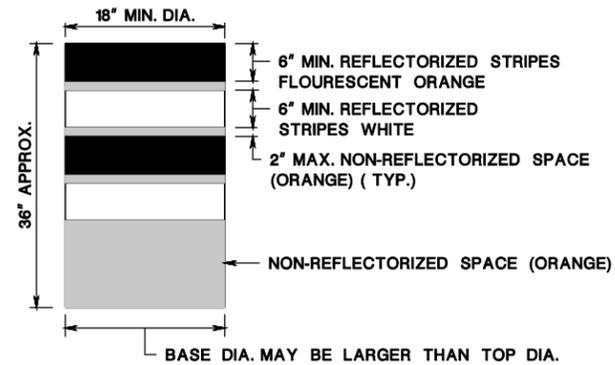
If you should have any questions, please contact me at (201) 330-6629 or Richard.dwyer@pseg.com.

APPENDIX B: STANDARD CONSTRUCTION DETAILS

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

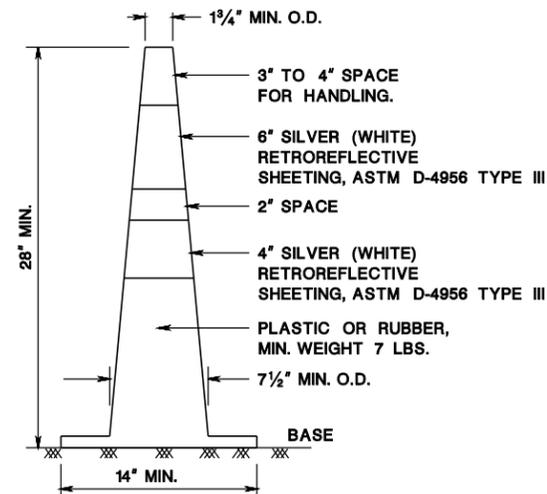
CD-159-1.1

NOTES:

TRAFFIC CONES MUST BE PREDOMINATELY ORANGE IN COLOR.

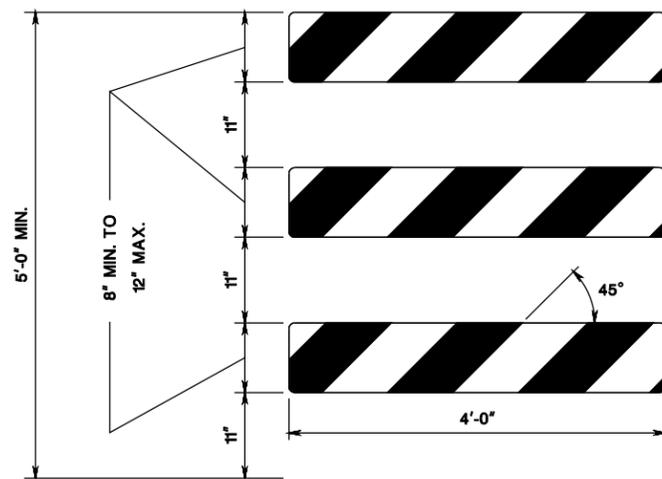
BASES MAY BE OF BREAKAWAY BALLASTED TYPE.

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

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 BDC100-ORIGINAL SHEET



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



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



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



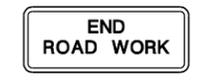
W13 - 1 [18" x 18"]
(2.3 S.F.)
W13 - 1 (S) [24" x 24"]
(4 S.F.)



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



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



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



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



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



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



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



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



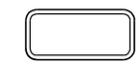
R4 - 1 [24" x 30"]
(5 S.F.)



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



W20 - 2 [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



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



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



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



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



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



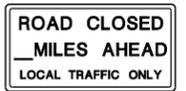
W8 - 15P [36" x 30"]
(7.5 S.F.)



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



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



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



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



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



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



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



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



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



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



(L OR R) (CENTER)
W20 - 5 [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 MILES AHEAD
F	1/4 MILES AHEAD

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.

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

CD-159-6

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 BDC180-01 ORIGINAL SHEET



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.)



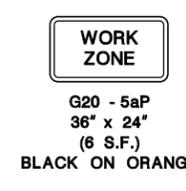
W9 - 3 [48" X 48"]
(16 S.F.)



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



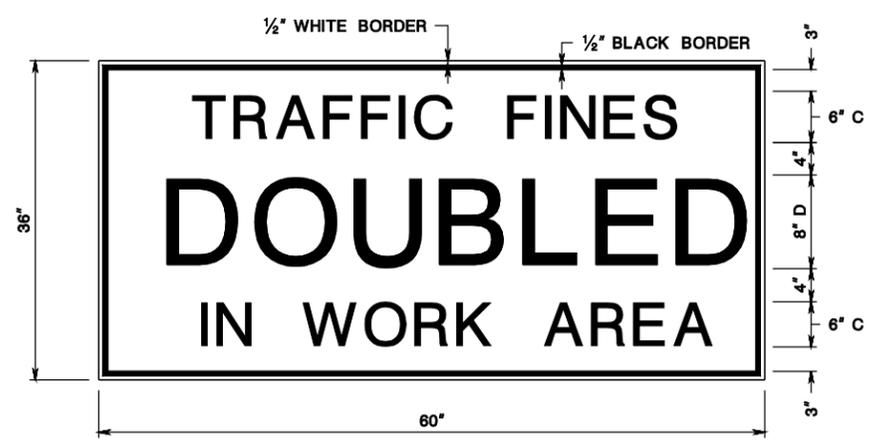
W20 - 10(G) [48" x 48"]
(16 S.F.)



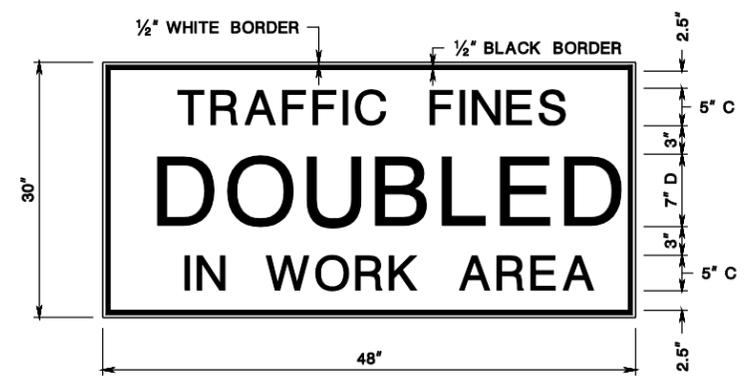
EP1
60" X 36"
(15 S.F.)
BLACK ON ORANGE



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 6061-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 1/2 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.

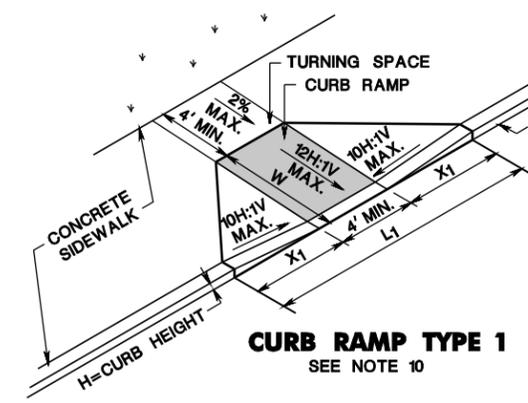
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

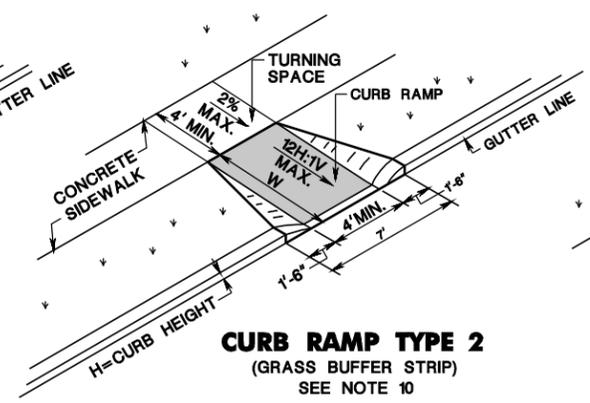
CD-159-7.1

CD-159-7

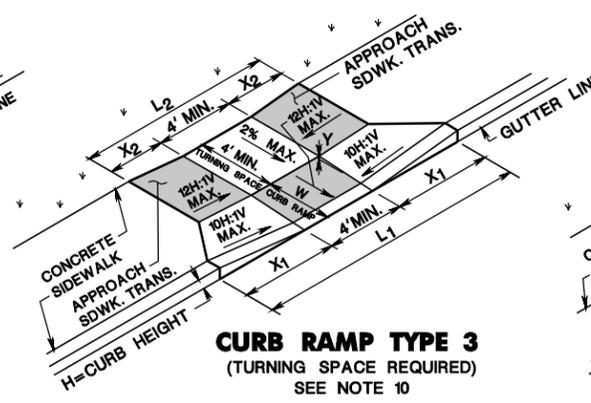
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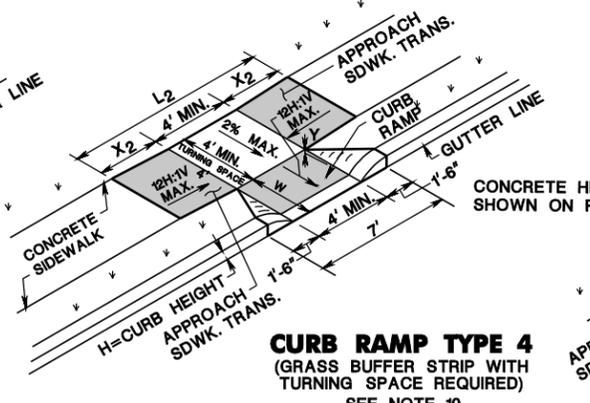
CURB RAMP TYPE 1
SEE NOTE 10



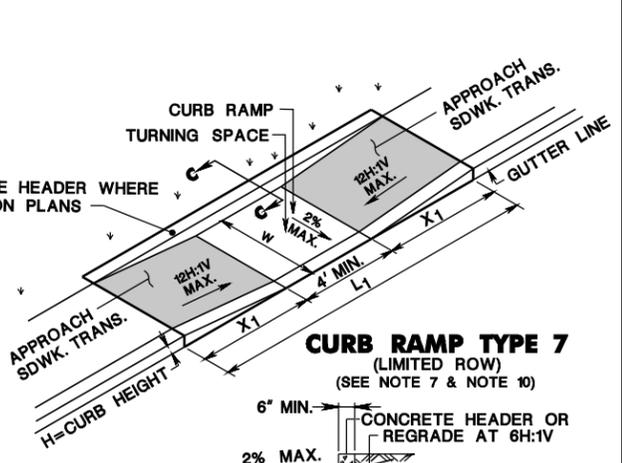
CURB RAMP TYPE 2
(GRASS BUFFER STRIP)
SEE NOTE 10



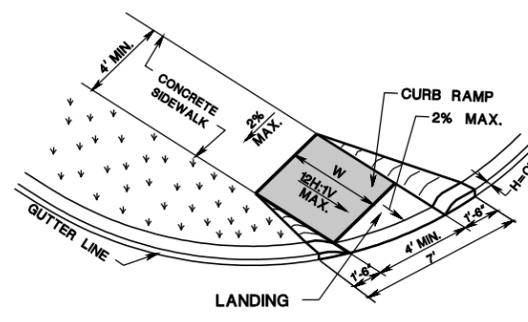
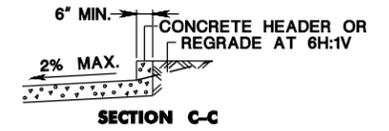
CURB RAMP TYPE 3
(TURNING SPACE REQUIRED)
SEE NOTE 10



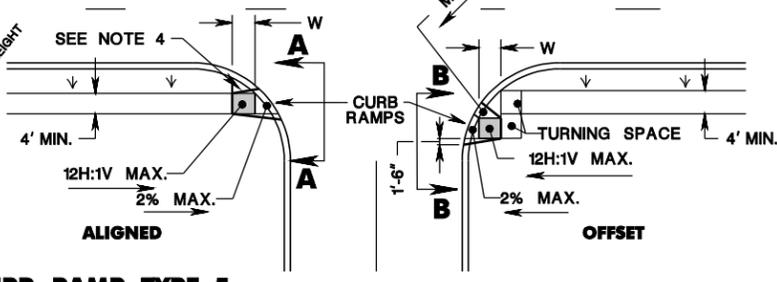
CURB RAMP TYPE 4
(GRASS BUFFER STRIP WITH
TURNING SPACE REQUIRED)
SEE NOTE 10



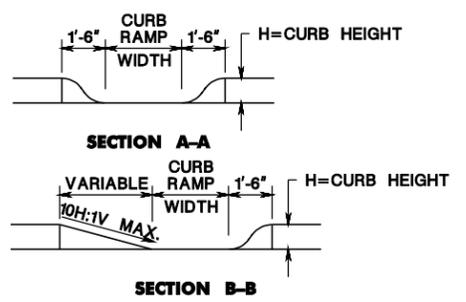
CURB RAMP TYPE 7
(LIMITED ROW)
(SEE NOTE 7 & NOTE 10)



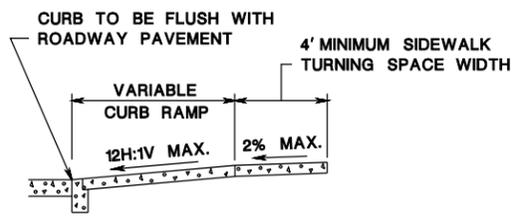
CURB RAMP TYPE 5



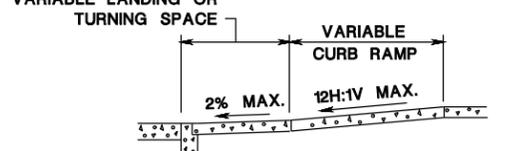
CURB RAMP TYPE 6



NOTE:
CURB RAMP OPENING TO BE FLUSH WITH ROADWAY PAVEMENT (CURB RAMP TYPES 5 & 6).



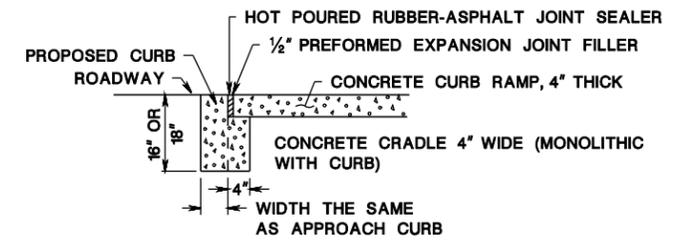
SECTION THROUGH CURB RAMPS 1 THROUGH 4



SECTION THROUGH CURB RAMPS 5 AND 6

NOTES:

- KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SURFACE.
- FOR DIMENSIONS SEE CD-606-3 AND CD-606-4
- CURB (DROPPED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT THE ENTIRE WIDTH OF THE RAMP (4 FEET MIN.) AT ALL CURB RAMPS.
- FOR CURB RAMP TYPES 5 AND 6, IF A GRASS BUFFER DOES NOT EXIST, SLOPE CURB TO EQUAL SLOPE OF ADJACENT CURB RAMP.
- SIDEWALK AND CURB RAMP WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR CONCRETE SIDEWALK OF THE APPROPRIATE ADJACENT THICKNESS.
- CURB AND HEADER WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR VERTICAL CURB OR SLOPING CURB OF THE APPROPRIATE ADJACENT SIZE AND KIND.
- WHERE THE DISTANCE FROM THE GUTTER LINE TO THE OUTSIDE EDGE OF SIDEWALK IS 6 FEET OR LESS, USE CURB RAMP TYPE 7, INSTEAD OF CURB RAMP TYPE 1 THROUGH 4.
- CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED. SEE PLANS.
- THE 12H:1V MAX SLOPE IS THE RUNNING SLOPE FOR CURB RAMPS, BUT ONLY THE 12H:1V SLOPE MEASURED AS X_2 IS THE RUNNING SLOPE FOR TYPE 3 AND TYPE 4 CURB RAMPS. ENSURE THE RUNNING SLOPE OF CURB RAMPS DOES NOT REQUIRE ITS LENGTH TO EXCEED 15 FEET. THE RUNNING SLOPE MAY EXCEED THE 12H:1V MAX SLOPE SO AS NOT TO EXCEED THE 15 FEET MAXIMUM LENGTH.
- CURB RAMP TYPE 1 THROUGH 7 ARE NORMALLY PLACED ON THE RADIUS RETURN AT THE INTERSECTION AND ON A TANGENT SECTION AS DRAWN.



DROPPED CURB AND CRADLE

CONCRETE SIDEWALK
(PUBLIC SIDEWALK CURB RAMP)
N.T.S.

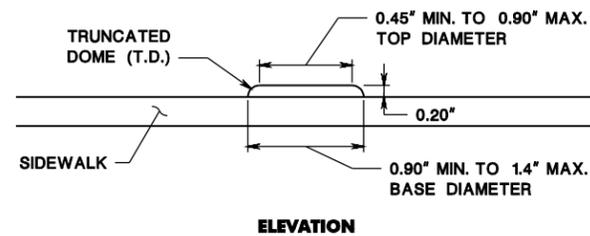
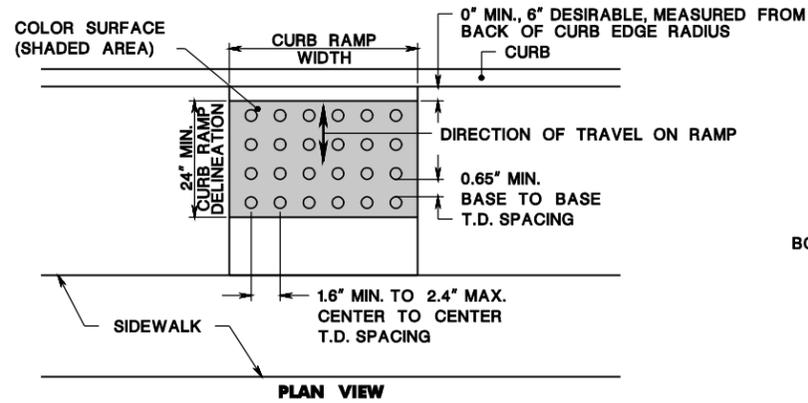
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

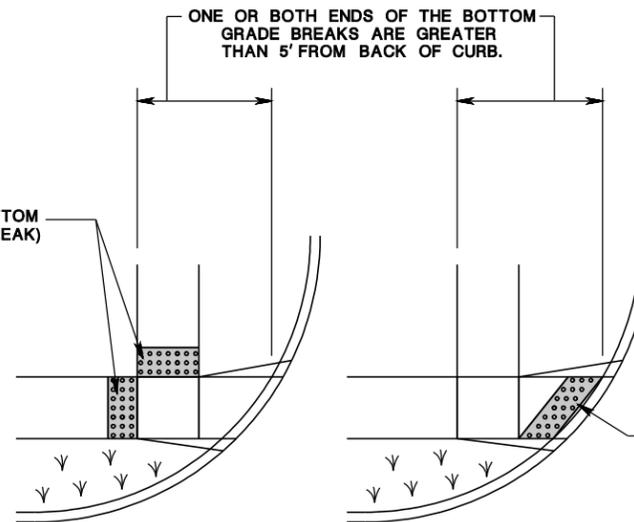
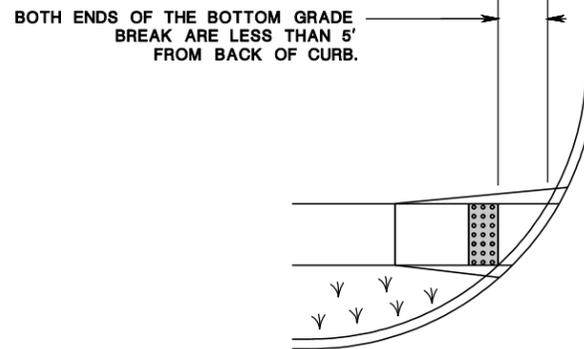
CURB RAMPS

CD-606-1.1

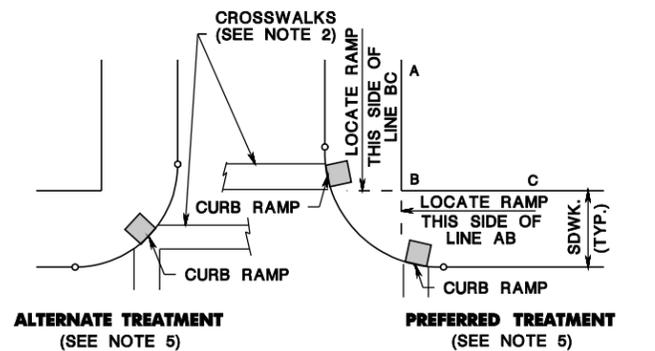
CD-606-1



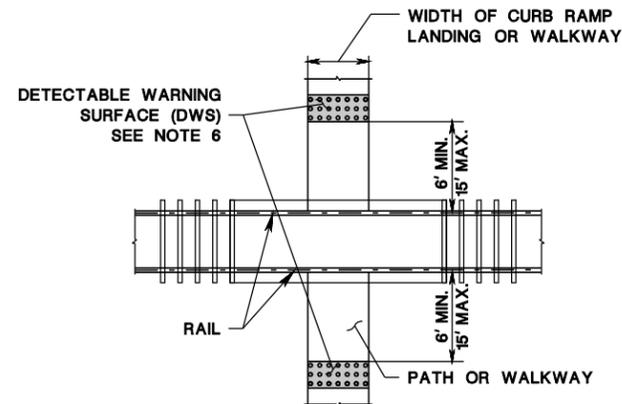
DETECTABLE WARNING SURFACE



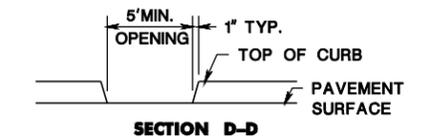
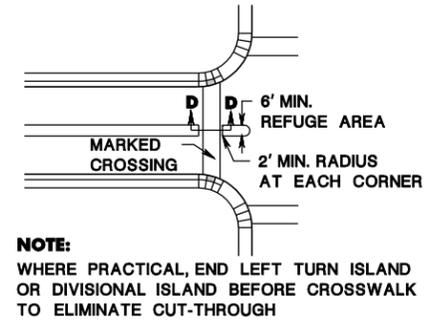
PLACEMENT OF DETECTABLE WARNING SURFACE FOR CURB RAMP TYPE 5 AND 6



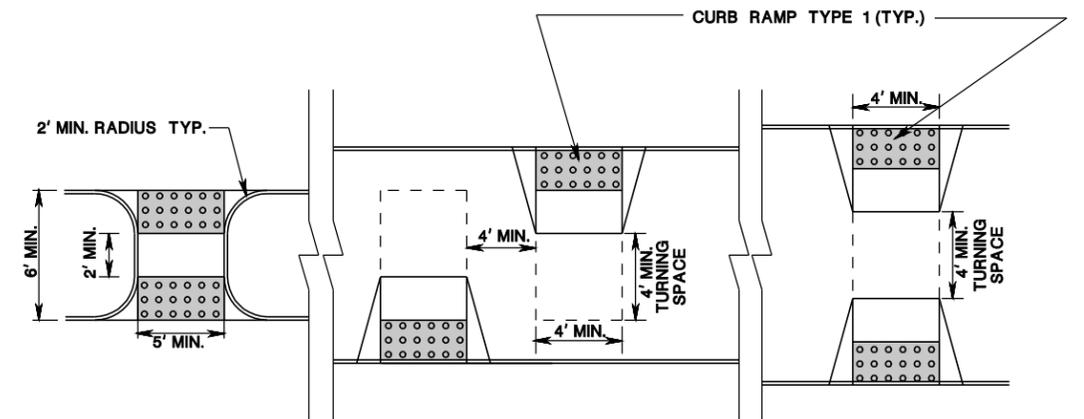
LOCATION OF CURB RAMP TYPES 1, 2, 3, 4, & 7 FOR CROSSING PARALLEL AND PERPENDICULAR TO HIGHWAY



PEDESTRIAN RAILROAD CROSSING



PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS



PEDESTRIAN REFUGE ISLAND

DETECTABLE WARNING SURFACE N.T.S.

- NOTES:**
- KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SURFACE.
 - CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED, SEE PLANS.
 - FOR NARROW ISLAND WIDTH, SEE PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS DETAIL.
 - FOR MEDIUM AND LARGE ISLAND WIDTH, SEE CURB RAMP TYPE 1 ON CD-606-1.
 - CONSTRUCT CURB RAMP TYPES 1, 2, 3, 4, & 7 PERPENDICULAR TO CURBLINE, AS SHOWN.
 - IF A CURB RAMP IS REQUIRED, THE LOCATION OF THE DETECTABLE WARNING SURFACE MUST BE AT THE BOTTOM OF THE RAMP AND WITHIN THE REQUIRED DISTANCE FROM THE RAIL.
 - A STANDARD DETECTABLE WARNING (DWS) SURFACE IS NOT AVAILABLE TO FIT THIS APPLICATION, AND THEREFORE ONE WILL NEED TO BE CUSTOMIZED. THE DWS SHOULD COVER THE ENTIRE WIDTH OF THE RAMP. THE ROWS OF DOMES ON THE DWS SHOULD FOLLOW THE DIRECTION OF TRAVEL OF THE RAMP, SO PEDESTRIANS WHO USE MOBILE DEVICES CAN TRACK BETWEEN THE DOMES.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-606-2

CURB RAMP TYPE 1

0.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	2.50	2.50	9.00
4	4	3.33	3.33	10.67
5	5	4.17	4.17	12.33
6	6	5.00	5.00	14.00
7	7	5.83	5.83	15.67
8	8	6.67	6.67	17.33
9	9	7.50	7.50	19.00

1.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	2.78	2.27	9.05
4	4	3.70	3.03	10.73
5	5	4.63	3.79	12.42
6	6	5.56	4.55	14.10
7	7	6.48	5.30	15.78
8	8	7.41	6.06	17.47
9	9	8.33	6.82	19.15

2.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	3.13	2.08	9.21
4	4	4.17	2.78	10.94
5	5	5.21	3.47	12.68
6	6	6.25	4.17	14.42
7	7	7.29	4.86	16.15
8	8	8.33	5.56	17.89
9	9	9.38	6.25	19.63

3.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	3.57	1.92	9.49
4	4	4.76	2.56	11.33
5	5	5.95	3.21	13.16
6	6	7.14	3.85	14.99
7	7	8.33	4.49	16.82
8	8	9.52	5.13	18.65
9	9	10.71	5.77	20.48

4.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	4.17	1.79	9.95
4	4	5.56	2.38	11.94
5	5	6.94	2.98	13.92
6	6	8.33	3.57	15.90
7	7	9.72	4.17	17.89
8	8	11.11	4.76	19.87
9	9	12.50	5.36	21.86

5.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	5.00	1.67	10.67
4	4	6.67	2.22	12.89
5	5	8.33	2.78	15.11
6	6	10.00	3.33	17.33
7	7	11.67	3.89	19.56
8	8	13.33	4.44	21.78
9	9	15.00	5.00	24.00

6.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	6.25	1.56	11.81
4	4	8.33	2.08	14.42
5	5	10.42	2.60	17.02
6	6	12.50	3.13	19.63
7	7	14.58	3.65	22.23
8	8	16.67	4.17	24.84
9	9	18.75	4.69	27.45

7.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	3	8.33	1.47	13.80
4	4	11.11	1.96	17.07
5	5	13.89	2.45	20.34
6	6	16.67	2.94	23.61
7	7	19.44	3.43	26.88
8	8	22.22	3.92	30.15
9	9	25.00	4.41	33.42

CURB RAMP TYPE 3

0.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	2.50	2.50	9.00	2.75	0.91	0.91	5.82	
4	4	3.33	3.33	10.67	2.75	1.91	1.91	7.82	
5	5	4.17	4.17	12.33	2.75	2.91	2.91	9.82	
6	6	5.00	5.00	14.00	2.75	3.91	3.91	11.83	
7	7	5.83	5.83	15.67	2.75	4.91	4.91	13.83	
8	8	6.67	6.67	17.33	2.75	5.91	5.91	15.83	
9	9	7.50	7.50	19.00	2.75	6.91	6.91	17.83	

1.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	3.33	3.33	10.67	3.0	1.72	1.72	7.44	
4	4	4.17	4.17	12.33	3.0	2.72	2.72	9.44	
5	5	5.00	5.00	14.00	3.0	3.72	3.72	11.45	
6	6	5.83	5.83	15.67	3.0	4.72	4.72	13.45	
7	7	6.67	6.67	17.33	3.0	5.72	5.72	15.45	
8	8	7.50	7.50	19.00	3.0	6.72	6.72	17.45	

2.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	4.17	4.17	12.33	3.5	2.34	2.34	8.68	
4	4	5.00	5.00	14.00	3.5	3.34	3.34	10.69	
5	5	5.83	5.83	15.67	3.5	4.34	4.34	12.69	
6	6	6.67	6.67	17.33	3.5	5.34	5.34	14.69	
7	7	7.50	7.50	19.00	3.5	6.34	6.34	16.69	

3.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	5.00	5.00	14.00	4.0	2.96	2.96	9.93	
4	4	5.83	5.83	15.67	4.0	3.96	3.96	11.93	
5	5	6.67	6.67	17.33	4.0	4.96	4.96	13.93	
6	6	7.50	7.50	19.00	4.0	5.96	5.96	15.93	

4.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	6.25	6.25	17.02	4.5	3.58	3.58	12.51	
4	4	7.50	7.50	19.00	4.5	4.58	4.58	14.51	
5	5	8.75	8.75	20.98	4.5	5.58	5.58	16.51	
6	6	10.00	10.00	23.00	4.5	6.58	6.58	18.51	
7	7	11.25	11.25	25.00	4.5	7.58	7.58	20.51	

5.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	7.50	7.50	21.86	5.0	4.17	4.17	13.92	
4	4	8.75	8.75	23.84	5.0	5.17	5.17	15.92	
5	5	10.00	10.00	25.82	5.0	6.17	6.17	17.92	
6	6	11.25	11.25	27.80	5.0	7.17	7.17	19.92	
7	7	12.50	12.50	29.80	5.0	8.17	8.17	21.92	

6.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	8.75	8.75	23.84	5.5	4.76	4.76	15.33	
4	4	10.00	10.00	25.82	5.5	5.76	5.76	17.33	
5	5	11.25	11.25	27.80	5.5	6.76	6.76	19.33	
6	6	12.50	12.50	29.80	5.5	7.76	7.76	21.33	
7	7	13.75	13.75	31.80	5.5	8.76	8.76	23.33	

7.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	10.00	10.00	25.82	6.0	5.36	5.36	16.74	
4	4	11.25	11.25	27.80	6.0	6.36	6.36	18.74	
5	5	12.50	12.50	29.80	6.0	7.36	7.36	20.74	
6	6	13.75	13.75	31.80	6.0	8.36	8.36	22.74	
7	7	15.00	15.00	33.80	6.0	9.36	9.36	24.74	

8.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	11.25	11.25	27.80	6.5	5.96	5.96	18.15	
4	4	12.50	12.50	29.80	6.5	6.96	6.96	20.15	
5	5	13.75	13.75	31.80	6.5	7.96	7.96	22.15	
6	6	15.00	15.00	33.80	6.5	8.96	8.96	24.15	
7	7	16.25	16.25	35.80	6.5	9.96	9.96	26.15	

1.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	2.78	2.27	9.05	2.75	1.04	0.81	5.85	
4	4	3.70	3.03	10.73	2.75	2.17	1.71	7.88	
5	5	4.63	3.79	12.42	2.75	3.31	2.60	9.91	
6	6	5.56	4.55	14.10	2.75	4.45	3.49	11.94	
7	7	6.48	5.30	15.78	2.75	5.58	4.39	13.97	
8	8	7.41	6.06	17.47	2.75	6.72	5.28	16.00	
9	9	8.33	6.82	19.15	2.75	7.86	6.17	18.03	

2.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	3.13	2.08	9.21	3.0	1.20	0.73	5.93	
4	4	4.17	2.78	10.94	3.0	2.52	1.54	8.06	
5	5	5.21	3.47	12.68	3.0	3.83	2.35	10.18	
6	6	6.25	4.17	14.42	3.0	5.15	3.16	12.30	
7	7	7.29	4.86	16.15	3.0	6.47	3.96	14.43	
8	8	8.33	5.56	17.89	3.0	7.78	4.77	16.55	
9	9	9.38	6.25	19.63	3.0	9.10	5.58	18.67	

3.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET	
3	3	3.57	1.92	9.49	3.5	1.42	0.67	6.09	
4	4	4.76	2.56	11.33	3.5	2.99	1.41	8.39	
5	5	5.95	3.21	13.16	3.5	4.55	2.14	10.69	
6	6	7.14	3.85	14.99	3.5	6.11	2.88	12.99	
7	7	8.33	4.49	16.82	3.5	7.68	3.61	15.29	
8	8	9.52	5.13	18.65	3.5	9.24	4.35	17.59	
9	9	10.71	5.77	20.48	3.5	10.81	5.08	19.89	

4.0 % GUTTER LINE PROFILE									
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET	Y INCHES	X _{2U} FEET			

CURB RAMP TYPE 4

0.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	0.91	0.91	5.82		
4			1.91	1.91	7.82		
5			2.91	2.91	9.82		
6			3.91	3.91	11.82		
7			4.91	4.91	13.83		
8			5.91	5.91	15.83		
9			6.91	6.91	17.83		
3			3.0	3.0	**	**	**
4					1.72	1.72	7.44
5	2.72	2.72			9.44		
6	3.72	3.72			11.45		
7	4.72	4.72			13.45		
8	5.72	5.72			15.45		
9	6.72	6.72			17.45		
3	3.5	3.5			**	**	**
4					1.34	1.34	6.68
5			2.34	2.34	8.68		
6			3.34	3.34	10.69		
7			4.34	4.34	12.69		
8			5.34	5.34	14.69		
9			6.34	6.34	16.69		
3			4.0	4.0	**	**	**
4					1.96	1.96	7.92
5	2.96	2.96			9.93		
6	3.96	3.96			11.93		
7	4.96	4.96			13.93		
8	5.96	5.96			15.93		
9	6.96	6.96			17.93		

1.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	1.04	0.81	5.85		
4			2.17	1.71	7.88		
5			3.31	2.60	9.91		
6			4.45	3.49	11.94		
7			5.58	4.39	13.97		
8			6.72	5.28	16.00		
9			7.86	6.17	18.03		
3			3.0	3.0	0.82	0.64	5.46
4					1.96	1.54	7.49
5	3.09	2.43			9.52		
6	4.23	3.32			11.55		
7	5.37	4.22			13.58		
8	6.50	5.11			15.61		
9	7.64	6.00			17.64		
3	3.5	3.5			0.39	0.30	4.69
4					1.53	1.20	6.72
5			2.66	2.09	8.75		
6			3.80	2.98	10.78		
7			4.94	3.88	12.81		
8			6.07	4.77	14.84		
9			7.21	5.66	16.87		
3			4.0	4.0	**	**	**
4					1.09	0.86	5.95
5	2.23	1.75			7.98		
6	3.37	2.65			10.01		
7	4.50	3.54			12.04		
8	5.64	4.43			14.07		
9	6.78	5.32			16.10		

2.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	1.20	0.73	5.93		
4			2.52	1.54	8.06		
5			3.83	2.35	10.18		
6			5.15	3.16	12.30		
7			6.47	3.96	14.43		
8			7.78	4.77	16.55		
9			9.10	5.58	18.67		
3			3.0	3.0	0.95	0.58	5.53
4					2.27	1.39	7.65
5	3.58	2.20			9.78		
6	4.90	3.00			11.90		
7	6.22	3.81			14.02		
8	7.53	4.62			16.15		
9	8.85	5.42			18.27		
3	3.5	3.5			0.45	0.28	4.72
4					1.77	1.08	6.85
5			3.08	1.89	8.97		
6			4.40	2.70	11.09		
7			5.72	3.50	13.22		
8			7.03	4.31	15.34		
9			8.35	5.12	17.46		
3			4.0	4.0	**	**	**
4					1.27	0.78	6.04
5	2.58	1.58			8.16		
6	3.90	2.39			10.29		
7	5.22	3.20			12.41		
8	6.53	4.00			14.53		
9	7.85	4.81			16.66		

3.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	1.42	0.67	6.09		
4			2.99	1.41	8.39		
5			4.55	2.14	10.69		
6			6.11	2.88	12.99		
7			7.68	3.61	15.29		
8			9.24	4.35	17.59		
9			10.81	5.08	19.89		
3			3.0	3.0	1.13	0.53	5.66
4					2.69	1.27	7.96
5	4.25	2.00			10.26		
6	5.82	2.74			12.55		
7	7.38	3.47			14.85		
8	8.94	4.21			17.15		
9	10.51	4.94			19.45		
3	3.5	3.5			0.53	0.25	4.78
4					2.10	0.99	7.08
5			3.66	1.72	9.38		
6			5.22	2.46	11.68		
7			6.79	3.19	13.98		
8			8.35	3.93	16.28		
9			9.91	4.66	18.58		
3			4.0	4.0	**	**	**
4					1.50	0.71	6.21
5	3.07	1.44			8.51		
6	4.63	2.18			10.81		
7	6.19	2.91			13.11		
8	7.76	3.65			15.41		
9	9.32	4.38			17.71		

CURB RAMP TYPE 7

0.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	4' MIN. 7' MAX.	3.00	3.00	10.00
4		4.00	4.00	12.00
5		5.00	5.00	14.00
6		6.00	6.00	16.00
7		7.00	7.00	18.01
8		8.00	8.00	20.01
9		9.00	9.00	22.01

1.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	4' MIN. 7' MAX.	3.41	2.68	10.09
4		4.55	3.57	12.12
5		5.68	4.47	14.15
6		6.82	5.36	16.18
7		7.96	6.25	18.21
8		9.10	7.15	20.24
9		10.23	8.04	22.27

2.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	4' MIN. 7' MAX.	3.95	2.42	10.37
4		5.27	3.23	12.49
5		6.58	4.03	14.62
6		7.90	4.84	16.74
7		9.22	5.65	18.86
8		10.53	6.45	20.99
9		11.85	7.26	23.11

3.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	4' MIN. 7' MAX.	4.69	2.21	10.90
4		6.25	2.94	13.20
5		7.82	3.68	15.49
6		9.38	4.41	17.79
7		10.94	5.15	20.09
8		12.51	5.88	22.39
9		14.07	6.62	24.69

4.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	4' MIN. 7' MAX.	5.77	2.03	11.80
4		7.70	2.70	14.40
5		9.62	3.38	17.00
6		11.55	4.06	19.60
7		13.47	4.73	22.20
8		15.40	5.41	24.80
9		17.32	6.08	27.40

5.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	4' MIN. 7' MAX.	7.51	1.88	13.38
4		10.01	2.50	16.51
5		12.51	3.13	19.64
6		15.00	3.75	22.75
7		17.50	4.38	25.88
8		20.00	5.00	29.00
9		22.50	5.63	32.13

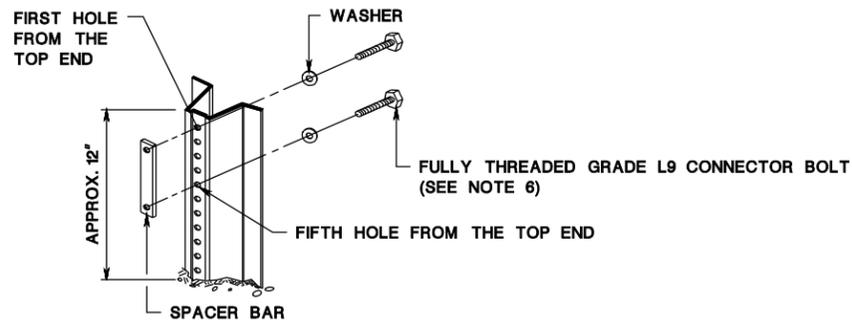
6.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	4' MIN. 7' MAX.	10.73	1.74	16.47
4		14.31	2.33	20.63
5		17.90	2.91	24.79
6		21.50	3.49	28.95
7		25.10	4.07	33.11
8		28.70	4.65	37.27
9		32.30	5.23	41.43

7.0 % GUTTER LINE PROFILE				
H INCHES	W FEET	X _{1U} FEET	X _{1L} FEET	L ₁ FEET
3	4' MIN. 7' MAX.	15.00	1.63	20.63
4		20.00	2.17	26.17
5		25.00	2.72	31.72
6		30.00	3.26	37.26
7		35.00	3.81	42.81
8		40.00	4.35	48.35
9		45.00	4.89	53.89

4.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	1.75	0.62	6.37		
4			3.68	1.29	8.97		
5			5.60	1.97	11.57		
6			7.53	2.64	14.17		
7			9.45	3.32	16.77		
8			11.38	4.00	19.37		
9			13.30	4.67	21.97		
3			3.0	3.0	1.39	0.49	5.88
4					3.31	1.16	8.48
5	5.24	1.84			11.08		
6	7.16	2.52			13.68		
7	9.09	3.19			16.28		
8	11.01	3.87			18.88		
9	12.94	4.54			21.48		
3	3.5	3.5			0.66	0.23	4.89
4					2.58	0.91	7.49
5			4.51	1.58	10.09		
6			6.43	2.26	12.69		
7			8.36	2.93	15.29		
8			10.28	3.61	17.89		
9			12.20	4.29	20.49		
3			4.0	4.0	**	**	**
4					1.85	0.65	6.50
5	3.78	1.33			9.10		
6	5.70	2.00			11.70		
7	7.62	2.68			14.30		
8	9.55	3.35			16.90		
9	11.47	4.03			19.50		

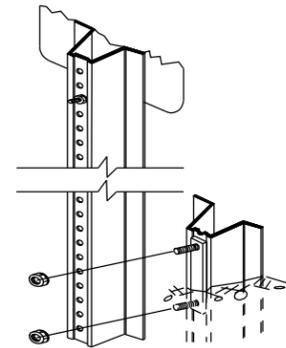
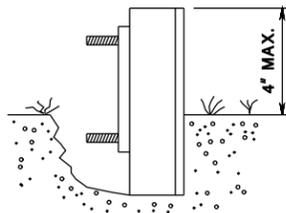
5.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	2.28	0.57	6.85		
4			4.78	1.19	9.98		
5			7.29	1.82	13.10		
6			9.79	2.45	16.23		
7			12.29	3.07	19.36		
8			14.79	3.70	22.49		
9			17.29	4.32	25.62		
3			3.0	3.0	1.80	0.45	6.26
4					4.31	1.08	9.38
5	6.81	1.70			12.51		
6	9.31	2.33			15.64		
7	11.81	2.95			18.77		
8	14.32	3.58			21.89		
9	16.82	4.20			25.02		
3	3.5	3.5			0.85	0.21	5.07
4					3.36	0.84	8.20
5			5.86	1.46	11.32		
6			8.36	2.09	14.45		
7			10.86	2.71	17.58		
8			13.37	3.34	20.71		
9			15.87	3.96	23.84		
3			4.0	4.0	**	**	**
4					2.41	0.60	7.01
5	4.91	1.23			10.14		
6	7.41	1.85			13.26		
7	9.91	2.48			16.39		
8	12.42	3.10			19.52		
9	14.92	3.73			22.65		

6.0 % GUTTER LINE PROFILE							
H INCHES	W FEET	Y INCHES	X _{2U} FEET	X _{2L} FEET	L ₂ FEET		
3	2.75	2.75	3.26	0.53	7.79		
4			6.84	1.11	11.95		
5			10.41	1.69	16.10		
6			13.99	2.27	20.26		
7			17.57	2.86	24.41		
8			21.15	3.44	28.57		
9			24.73	4.02	32.72		
3			3.0	3.0	2.58	0.42	7.00
4					6.16	1.00	11.16
5	9.73	1.58			15.31		
6	13.31	2.16			19.47		
7	16.89	2.75			23.62		
8	20.47	3.33			27.78		
9	24.05	3.91			31.93		
3	3.5	3.5			1.22		

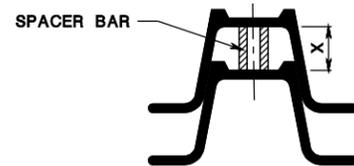
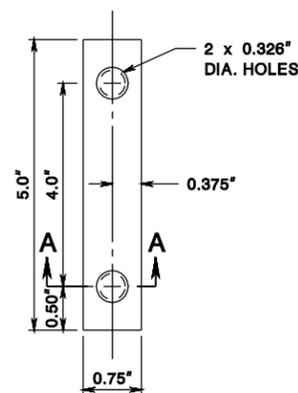


NOTES:

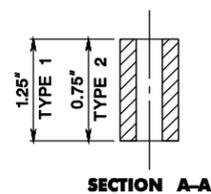
1. DRIVE ANCHOR POST ASSEMBLY TO WITHIN APPROXIMATELY 12 INCHES ABOVE GROUND LEVEL. PLACE BOLT AND WASHER IN FIRST AND FIFTH HOLES FROM THE TOP END, AND SECURE BOLTS ONTO SPACER.
2. DRIVE ANCHOR POST ASSEMBLY TO WITHIN A MAXIMUM OF 4 INCHES ABOVE GROUND LEVEL.
3. DIG OUT AROUND BACK OF ANCHOR POST ASSEMBLY TO ALLOW ROOM FOR TOP POST TO BE ATTACHED.
4. NEST TOP POST ASSEMBLY ONTO PROTRUDING ANCHOR POST ASSEMBLY BOLTS, THROUGH THE FIRST AND FIFTH HOLES FROM THE BOTTOM OF THE TOP POST.
5. PLACE AND TIGHTEN A SELF-LOCKING FLANGE NUT ON EACH BOLT. WHEN INSTALLATION IS COMPLETE, TOP OF GROUND POST NOT TO EXCEED 4 INCHES ABOVE GROUND LEVEL.
6. SIZE OF CONNECTOR BOLT FOR TYPE 1, $\frac{5}{16}$ " x $1\frac{1}{2}$ "
SIZE OF CONNECTOR BOLT FOR TYPE 2, $\frac{9}{16}$ " x 2"
7. THE CONNECTOR BOLTS ARE TO BE FULLY THREADED. EACH CONNECTOR BOLT AND NUT TO BE CLEARLY STAMPED WITH MANUFACTURER'S IDENTIFYING MARK.



**ANCHOR POST ASSEMBLY
SIGN SUPPORTS**



WHEN X IS GREATER THAN 0.75", USE TYPE 1 SPACER BAR
WHEN X IS 0.75" OR LESS, USE TYPE 2 SPACER BAR

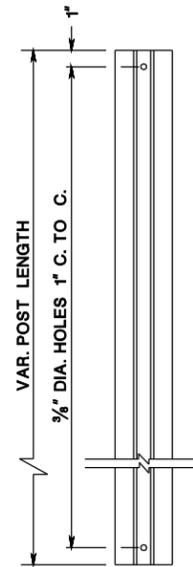


SECTION A-A

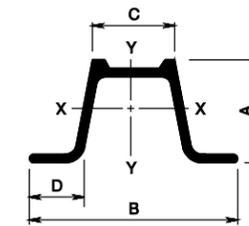
SPACER BAR

WEIGHT * LBS./FT.	DIMENSIONS (IN)				AREA IN. ²	X-X AXIS **		Y-Y AXIS	
	"A"	"B"	"C"	"D"		I(IN. ⁴)	S(IN. ³)	I(IN. ⁴)	S(IN. ³)
2.50	1.516	3.062	1.278	0.669	0.760	0.228	0.313	0.539	0.352
4.00	1.968	3.500	1.336	0.834	1.187	0.611	0.707	1.161	0.664

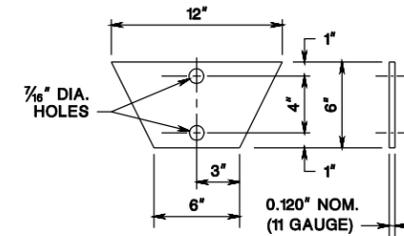
* ± 5% **TYPE 1 STEEL U-POST PROPERTIES**
** GOVERNING SECTION



**TOP POST
U-POST**



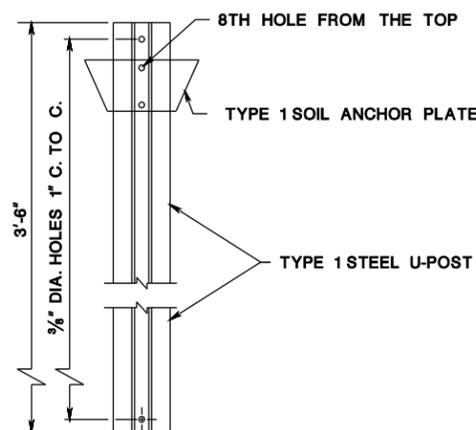
**TYPE 1 STEEL
U-POST**



**TYPE 1
SOIL ANCHOR PLATE**

NOTES:

1. ANCHOR POST AND TOP POST TO BE OF EQUAL WEIGHT / FEET.
2. SOIL ANCHOR PLATE TO BE ATTACHED TO ALL ANCHOR POSTS.
3. THE MATERIAL FOR THE SOIL ANCHOR PLATES TO BE CARBON SHEET STEEL.
4. THE STEEL "U" POST TO BE GRADE 60.



**TYPE 1
ANCHOR POST
ASSEMBLY**

**STEEL U-POST SIGN
SUPPORTS**

N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

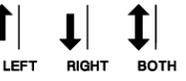
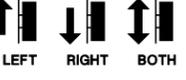
CONSTRUCTION DETAILS

CD-612-5

CD-612-5.2

CD-612-5.1

LEGEND

-  BREAKAWAY BARRICADES
-  BREAKAWAY BARRICADES WITH SIGN
-  CONSTRUCTION SIGNS
-  DRUMS
-  CONE
-  CONSTRUCTION BARRIER CURB (TYPE SPECIFIED)
-  DIRECTION OF TRAFFIC FLOW
-  TRAFFIC DIRECTOR, FLAGGER
-  TRAILER MOUNTED MOUNTED ARROW BOARD SHOWING CAUTION MODE
-  ILLUMINATED FLASHING ARROW MOUNTED ON TOWING VEHICLE SHOWING ARROW PATTERN (LEFT, RIGHT, BOTH)
-  TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION AND ARROW BOARD SHOWING CAUTION MODE
-  TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION AND ARROW BOARD SHOWING ARROW PATTERN (LEFT, RIGHT, BOTH)
-  TEMPORARY CRASH CUSHION, INERTIAL BARRIER SYSTEM
-  TEMPORARY CRASH CUSHION, (ALL OTHER APPROVED)
-  BUFFER ZONE
-  WORK AREA
-  PAINT STRIPING TRUCK OR OTHER OPERATING VEHICLE

GENERAL NOTES:

1. ADVANCE WARNING SIGNS DISTANCES AND TAPER LENGTHS MAY BE EXTENDED, AT DIRECTION OF THE DEPARTMENT, TO ADJUST FOR REDUCED VISIBILITY DUE TO HORIZONTAL AND VERTICAL CURVATURE OF THE ROADWAY.
2. THE APPROXIMATE LOCATIONS OF THE ILLUMINATED FLASHING ARROW BOARDS ARE SHOWN ON THE TRAFFIC CONTROL PLANS. THESE LOCATIONS MAY BE MODIFIED AS APPROVED BY RE TO ADJUST FOR VISIBILITY DUE TO HORIZONTAL OR VERTICAL CURVATURE OF THE ROADWAY OR TO POSITION AT A SAFER LOCATION. ILLUMINATED FLASHING ARROW BOARDS ARE TO BE USED FOR TEMPORARY LANE CLOSINGS AND AT LOCATIONS SHOWN ON THE TRAFFIC CONTROL PLANS.
3. PRIOR TO ANY ROAD CONSTRUCTION, TRAFFIC CONTROL SIGNS AND DEVICES ARE TO BE IN PLACE.
4. RAMPS AND/OR SIDE STREETS ENTERING THE ROADWAY AFTER THE FIRST ADVANCE WARNING SIGN ARE TO BE PROVIDED WITH AT LEAST ONE W20-IF SIGN (ROAD WORK AHEAD) AS A MINIMUM.
5. ALL EXISTING ROAD SIGNS, PAVEMENT MARKINGS, AND / OR PLOWABLE PAVEMENT REFLECTORS WHICH CONFLICT WITH THE PROPOSED TRAFFIC CONTROL PLAN ARE TO BE COVERED, REMOVED, OR RELOCATED AS DIRECTED BY THE RE.
6. CONFLICTING OR NON-OPERATING SIGNAL INDICATIONS ON EITHER THE EXISTING, TEMPORARY, OR PROPOSED TRAFFIC SIGNAL SYSTEMS ARE TO BE BAGGED OR COVERED.
7. MAINTENANCE AND PROTECTION OF TRAFFIC TO BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - PART VI STANDARDS AND GUIDES FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY, AND INCIDENT MANAGEMENT OPERATIONS, UNLESS OTHERWISE NOTED IN THE PLANS AND SPECIFICATIONS.
8. CONSTRUCTION SIGN W99-2 (GIVE US A BRAKE) TO BE LOCATED 200 FEET IN ADVANCE OF PROJECT LIMITS.
9. A W1-6 (ARROW) SIGN MOUNTED ON A BREAKAWAY BARRICADE AND CENTERED ON THE CLOSED WIDTH TO BE LOCATED 100 FEET BEYOND EACH INTERSECTION OR MAIN ACCESS POINT WITHIN THE AREA OF A LANE OR SHOULDER CLOSURE.
10. CONSTRUCTION SIGNS R11-4 (ROAD CLOSED THRU TRAFFIC) TO BE PLACED AT THE INTERSECTING STREETS WHICH ARE CLOSED TO TRAFFIC BECAUSE OF CONSTRUCTION.
11. CONSTRUCTION SIGNS W8-9A (SYMBOL FOR UNEVEN PAVEMENT) AND W8-44A (GROOVED PAVEMENT) TO BE USED WHEN SUCH PAVEMENT CONDITIONS EXIST. THE PLACEMENT OF THESE SIGNS TO BE AS DIRECTED BY THE RE.
12. MOVING WORK AREAS IN A LANE CLOSURE REQUIRE A TRAILER MOUNTED ILLUMINATED FLASHING ARROW TO REMAIN AT THE END OF THE TAPER, THE TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION THAT IS TO MOVE WITH THE WORK AREAS TO KEEP A 70 FEET MIN. AND 150 FEET MAX. BUFFER IN ADVANCE OF EACH WORK AREA.
13. THE CONTRACTOR TO SUBMIT A PLAN FOR THE SAFE ACCESS OF CONSTRUCTION VEHICLES THROUGHOUT THE WORK SITE WHERE SPACE CONSTRAINTS PREVENT THE USE OF LANE CLOSURES. THE PLAN TO BE SUBMITTED TO THE RE AS SPECIFIED IN THE SPECIFICATIONS.
14. BACKFILL ALL EXCAVATED AREAS WITHIN OR ADJACENT TO THE ROADWAY AND PLACE ON AT LEAST 6H:1V SLOPE BEFORE THE END OF EACH WORK DAY. OTHER EXCAVATED AREA WITHIN THE CLEAR ZONE ARE TO BE BACKFILLED.
15. WHERE REQUIRED, THE CONTRACTOR IS TO MAKE PROVISIONS FOR MAINTAINING PEDESTRIAN CROSSING LOCATIONS AND TYPE AS DIRECTED BY THE RE.
16. BITUMINOUS CONCRETE PLACED DURING THE VARIOUS CONSTRUCTION STAGES TO BE TRANSITIONED ON A MINIMUM 20H:1V SLOPE TO MEET THE ADJACENT EXISTING GRADE AT THE LONGITUDINAL AND TRANSVERSE LIMITS OF THE STAGE CONSTRUCTION AREAS UNLESS OTHERWISE NOTED ON THE STAGE CONSTRUCTION PLANS.
17. THE PLACEMENT AND / OR RELOCATION OF CONSTRUCTION BARRIER CURB TO BE DONE DURING APPROVED OFF-PEAK HOURS WHEN TRAFFIC MAY BE REDUCED TO ONE LANE IN EACH DIRECTION.
18. CONSTRUCTION ZONE SPEED LIMIT WILL BE DETERMINED BY THE BUREAU OF TRAFFIC ENGINEERING, REGIONAL TRAFFIC ENGINEER - WORK ZONE, AT THE TIME OF OR DURING CONSTRUCTION, AS REQUESTED BY THE RE.
19. THE SPEED LIMIT, R2-1 (BLACK ON WHITE) WITH ADDED WORK ZONE PLATE (BLACK ON ORANGE) SIGNS TO BE LOCATED THROUGH WORK AREAS AS DIRECTED BY THE BUREAU OF TRAFFIC ENGINEERING, REGIONAL TRAFFIC ENGINEER - WORK ZONE.
20. THE REDUCED SPEED AHEAD SIGN, W3-5(S) (BLACK ON ORANGE) TO BE LOCATED IN ADVANCE OF SPEED LIMIT R2-1 SIGNS WHICH REDUCE THE NORMAL POSTED SPEED LIMIT THROUGH THE CONSTRUCTION ZONE.
21. TRAFFIC FINES DOUBLED IN WORK AREA R(NJ)5-17(S), 4 FEET BY 2.5 FEET SIGN TO BE LOCATED 500 FEET AFTER THE FIRST ADVANCE WARNING SIGN, (W20 SERIES) AT EACH WORK AREA LOCATED WITHIN URBAN AREAS. THIS SIGN TO ALSO BE USED ON PROJECTS REQUIRING MOVING OPERATIONS IN WHICH CASE THE SIGN IS TO BE MOUNTED ON A SLOW MOVING CONSTRUCTION VEHICLE.
22. DO NOT CONSTRUCT THE FINAL HMA SURFACE PAVEMENT UNTIL THE FINAL STAGE OF THE PROJECT UNLESS OTHERWISE DIRECTED BY THE RE OR INDICATED ON THE PLANS. SET MANHOLES AND INLETS TO FINISHED GRADE AND CONSTRUCT TEMPORARY PAVEMENT RAMPS AROUND THEM WITH A MINIMUM 20H:1V SLOPE IN ALL DIRECTIONS USING HOT MIX ASPHALT PAVEMENT. THIS TEMPORARY MATERIAL WILL BE REMOVED IMMEDIATELY PRIOR TO PLACING THE SURFACE COURSE.

23. PLACE TRAFFIC CONTROL DEVICES FOR LANE CLOSURES INCLUDING SIGNS, CONES, BARRICADES, ETC. AS SHOWN ON PLANS. NO SIGNS ARE TO BE PLACED WITHOUT ACTUAL LANE CLOSURES AND REMOVE IMMEDIATELY UPON REMOVAL OF THE CLOSURES.
24. CONES MAY BE SUBSTITUTED FOR DRUMS AND INSTALLED UPON THE APPROVAL OF THE RE.
25. TRAFFIC IMPACT NOTICES AND CHANGES

A. TERMS:
WHEN THE FOLLOWING TERMS ARE USED, THE INTENT AND MEANING IS AS FOLLOWS:

I. IMPACTS TO NORMAL TRAFFIC FLOW - WORK THAT REQUIRES A PORTION OF THE PAVED ROADWAY BEING BLOCKED OR CLOSED WITH SAFETY DEVICES OR VEHICLES, INCLUDING, BUT NOT LIMITED TO, FULL OR PARTIAL LANE CLOSURES, FULL OR PARTIAL RAMP CLOSURES, SHOULDER CLOSURES, MOVING OPERATIONS SUCH AS TRAFFIC STRIPING OR SWEEPING, LANE SHIFTS, OR ALTERNATING TRAFFIC. THIS APPLIES EVEN WHEN DETOURS ARE PROVIDED.

II. TEMPORARY LANE CLOSURES - WORK DESCRIBED UNDER "IMPACTS TO NORMAL TRAFFIC FLOW" WHICH IS ROUTINELY SET UP AND REMOVED ON A DAILY BASIS.

III. PERMANENT LANE CLOSURES - WORK DESCRIBED UNDER "IMPACTS TO NORMAL TRAFFIC FLOW" WHICH REMAINS IN PLACE CONTINUOUSLY FOR 24 HOURS OR MORE.

B. ADVANCE NOTICES

FOR THE INITIAL START OF WORK THAT REQUIRES "IMPACTS TO NORMAL TRAFFIC FLOW", THE CONTRACTOR IS TO NOTIFY THE RE IN WRITING, ON THE ADVANCE FORM TO-103 PROVIDED BY THE DEPARTMENT, OF THE PROPOSED DATE. THE NOTICE IS TO BE SUBMITTED AT LEAST TWENTY-EIGHT CALENDAR DAYS, BUT NOT MORE THAN SIXTY CALENDAR DAYS, BEFORE THE PROPOSED DATE. START OF WORK THAT IMPACTS NORMAL TRAFFIC FLOW WILL NOT BE PERMITTED PRIOR TO THE DATE STATED IN THE NOTICE. THE CONTRACTOR IS TO CONFIRM, IN WRITING TO THE RE, THE PROPOSED DATE SEVEN (AND/OR FOURTEEN) CALENDAR DAYS BEFORE STARTING THE ESTABLISHMENT OF THE TRAFFIC CONTROL MEASURES FOR THE TRAFFIC IMPACT. THE CONTRACTOR IS TO IMMEDIATELY NOTIFY THE RE IF THE PROPOSED ESTABLISHMENT CANNOT BE COMPLETED ON THE PROPOSED DATE.

FOR A "PERMANENT LANE CLOSURE", THE CONTRACTOR IS TO NOTIFY THE RE IN WRITING, ON ADVANCE FORM TO-103, OF THE PROPOSED DATE A NEW TRAFFIC PATTERN WILL BE ESTABLISHED. THE NOTICE IS TO BE SUBMITTED AT LEAST TWENTY-EIGHT CALENDAR DAYS, BUT NOT MORE THAN SIXTY CALENDAR DAYS, IN ADVANCE OF THE PROPOSED DATE. START OF A NEW TRAFFIC PATTERN WILL NOT BE PERMITTED PRIOR TO THE DATE STATED IN THE NOTICE. THE CONTRACTOR IS TO CONFIRM, IN WRITING TO THE RE, THE PROPOSED DATE OF THE NEW TRAFFIC PATTERN SEVEN (AND/OR FOURTEEN) DAYS BEFORE STARTING TRAFFIC CONTROL MEASURES FOR THE ESTABLISHMENT OF THE NEW PATTERN. THE CONTRACTOR IS TO IMMEDIATELY NOTIFY THE RE IF THE PROPOSED ESTABLISHMENT CANNOT BE COMPLETED ON THE PROPOSED DATE.

STARTING THE ESTABLISHMENT OF A NEW PERMANENT TRAFFIC PATTERN IS TO BEGIN NO EARLIER THAN 11:00 PM FRIDAY AND BE COMPLETED AND READY FOR OPERATIONS BY 6:00 PM THE FOLLOWING SUNDAY. THE ESTABLISHMENT IS TO BE COMPLETED IN ACCORDANCE WITH THE LANE CLOSURE HOURS SPECIFIED IN THE CONTRACT.

ADVANCE NOTICES SENT PRIOR TO THE PRE-CONSTRUCTION MEETING ARE TO BE ADDRESSED TO THE CONTACT PERSON AS SPECIFIED IN SUBSECTION 101.04 OF THE SPECIAL PROVISIONS.

C. PROGRESS NOTICES

ALL "IMPACTS TO NORMAL TRAFFIC FLOW" SCHEDULED FOR THE SEVEN DAY PERIOD STARTING ON THE FOLLOWING MONDAY ARE TO BE SUBMITTED TO THE RE BY 9:00 AM OF EACH FRIDAY ON WEEKLY FORM TO-100 PROVIDED BY THE DEPARTMENT.

EACH DAY OF "TEMPORARY LANE CLOSURES" ARE TO BE SUBMITTED TO THE RE BY 9:00 AM THE DAY IN ADVANCE OF THE START OF THOSE OPERATIONS ON DAILY FORM TO-101 PROVIDED BY THE DEPARTMENT.

"TEMPORARY LANE CLOSURES" FOR WEEKENDS ARE TO BE SUBMITTED TO THE RE BY 9:00 AM ON THE IMMEDIATELY PRECEDING FRIDAY ON THE DAILY FORM TO-101 PROVIDED BY THE DEPARTMENT.

D. CHANGES TO THE SCHEDULED CLOSURES

REQUEST FOR A CHANGE TO THE TRAFFIC CONTROL REQUIREMENTS IN THE CONTRACT DOCUMENTS ARE TO BE SUBMITTED IN WRITING TO THE RE AS FOLLOWS:

CHANGES TO THE SCHEDULED HOURS FOR "TEMPORARY LANE CLOSURES" ARE TO BE SUBMITTED TO THE RE AT LEAST EIGHT CALENDAR DAYS IN ADVANCE OF WHEN THE CHANGE IS PROPOSED TO START.

OTHER PROPOSED CHANGES TO "TEMPORARY LANE CLOSURES" AND ALL CHANGES TO "PERMANENT LANE CLOSURES" ARE TO BE SUBMITTED TO THE RE AS SPECIFIED IN THE SPECIFICATIONS.

26. WHERE MILLING OR HMA PAVING IS PERFORMED AND THE LANE IS TO BE RE-OPENED TO TRAFFIC EACH DAY, APPLY TEMPORARY TRAFFIC STRIPES.

NOTE TO DESIGNER:

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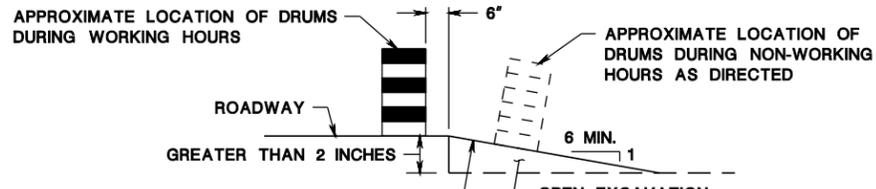
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NEW JERSEY DEPARTMENT OF TRANSPORTATION

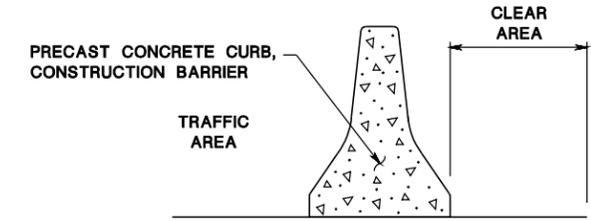
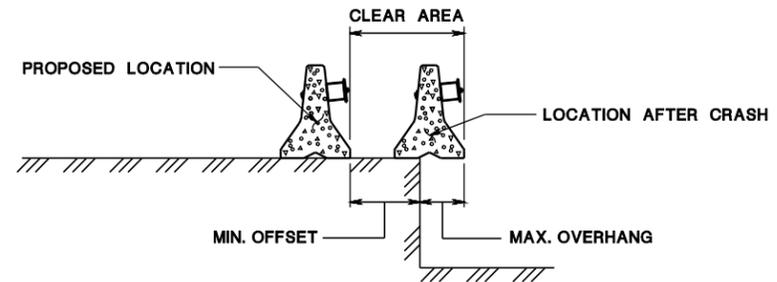
TRAFFIC CONTROL DETAILS



FILLET OF MATERIAL DENSE GRADED AGGREGATE BASE COURSE OR OTHER MATERIAL AS APPROVED BY THE RE.

NOTE:
ESCAPE RAMPS MUST BE CONSTRUCTED AND MAINTAINED DURING NON-WORKING HOURS WHERE A VERTICAL DROP GREATER THAN 2 INCHES EXISTS ADJACENT TO TRAVELED LANE.

ESCAPE RAMP DETAIL



NOTES:

1. CHANGES TO THE PROPOSED CONNECTION TYPE AT ANY LOCATION MUST BE APPROVED BY THE DEPARTMENT.
2. NO ROADWAY DROP OFFS, OBSTRUCTIONS, STORAGE OF MATERIALS, OR WORK WILL BE PERMITTED IN THE CLEAR AREA UNLESS APPROVED BY THE RE. EXCEPT ROADWAY DROP OFFS ARE PERMITTED ONLY WHEN USING THE OPTIONAL CONNECTION TYPE B TREATMENT AT VERTICAL DROP OFF.

REGULATORY APPROACH SPEED OF TRAFFIC MILES/HOUR	RECOMMENDED SIGHT DISTANCE TO BEGINNING OF CHANNELIZING TAPERS		
	DESIRABLE		MINIMUM
	RURAL FEET	URBAN FEET	RURAL AND URBAN FEET
25	375	525	150
30	450	625	200
35	525	725	250
40	600	825	325
45	675	925	400
50	750	1025	475
55	875	1150	550
60	1000	1275	650
65	1050		725

- NOTES:**
1. AVOIDANCE MANEUVER IS FOR A SPEED, PATH, AND / OR DIRECTION CHANGE PRIOR TO THE BEGINNING OF CHANNELIZING TAPERS.
 2. RECOMMENDED DISTANCES BETWEEN TWO SEPARATE LANE CLOSURES ARE DOUBLE THE VALUES SHOWN ABOVE.
 3. RURAL AND URBAN ROAD DESIGNATIONS ARE AS DEFINED IN THE NJDOT STATE HIGHWAY STRAIGHT LINE DIAGRAMS.
 4. PROVIDE DESIRABLE VALUES WHEREVER POSSIBLE. IF IT IS NOT FEASIBLE OR PRACTICAL TO PROVIDE DESIRABLE VALUES BECAUSE OF HORIZONTAL OR VERTICAL CURVATURE OR IF RELOCATION OF THE TAPER IS NOT POSSIBLE, THEN MINIMUM VALUES CAN BE APPLIED. WHEN MINIMUM VALUES ARE USED, PAY SPECIAL ATTENTION TO THE USE OF SUITABLE TRAFFIC CONTROL DEVICES WHEN PROVIDING ADVANCED WARNING OF THE CONDITIONS THAT ARE LIKELY TO BE ENCOUNTERED.
 5. LOCATE TAPERS TO MAXIMIZE THE VISIBILITY OF THEIR TOTAL LENGTH.

STAGE	LOCATION RTE. STA. TO STA.	CONNECTION TYPE

CONNECTION TYPE	MIN. OFFSET	MAX. OVERHANG	CLEAR AREA
B	12"	16"	28"

OPTIONAL CONNECTION TYPE B TREATMENT AT VERTICAL DROP OFF

REGULATORY APPROACH SPEED OF TRAFFIC MILES / HOUR	MINIMUM TAPER RATIO IN LENGTH PER FOOT OF WIDTH	RECOMMENDED TAPER LENGTH AND SPACING FOR CHANNELIZING TAPERS			MAXIMUM DEVICE (B) SPACING ALONG TAPERS IN FEET	RECOMMENDED SPACING ALONG TANGENTS
		MINIMUM TAPER LENGTH L - FOR LANE WIDTHS				
		10'	11'	12'		
25	10.5:1	105	115	125	25	50
30	15:1	150	165	180	30	60
35	20.5:1	205	225	245	35	70
40	27:1	270	300	325	40	80
45	45:1	450	495	540	45	90
50	50:1	500	550	600	50	100
55	55:1	550	605	660	55	110
60	60:1	600	660	720	60	120
65	65:1	650	715	780	65	130

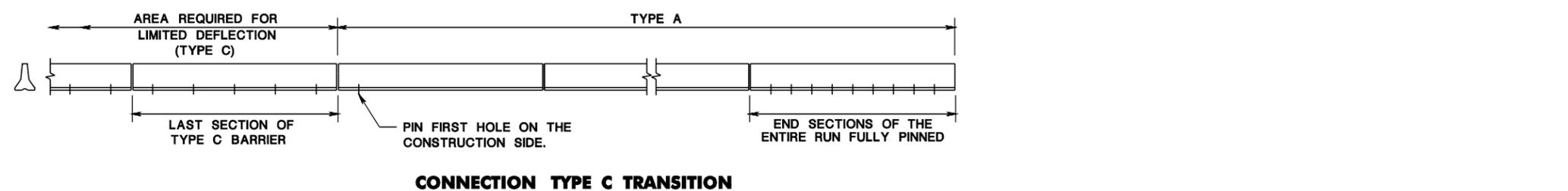
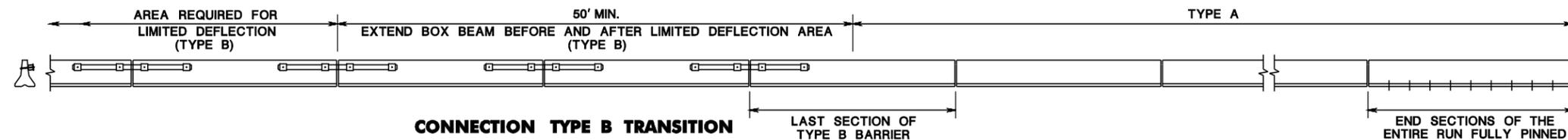
NOTE:
THE MAXIMUM DEVICE SPACING ALONG CURVES IS DEFINED FOR TAPERS (B) IN THE ABOVE TABLE.

STAGE	LOCATION RTE. STA. TO STA.	CONNECTION TYPE

CONNECTION TYPE	CLEAR AREA
A	41 INCHES
B	28 INCHES
C	11 INCHES

CONSTRUCTION BARRIER CURB CONNECTION TYPE AND CLEAR AREA

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N.T.S.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

TCD-2

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