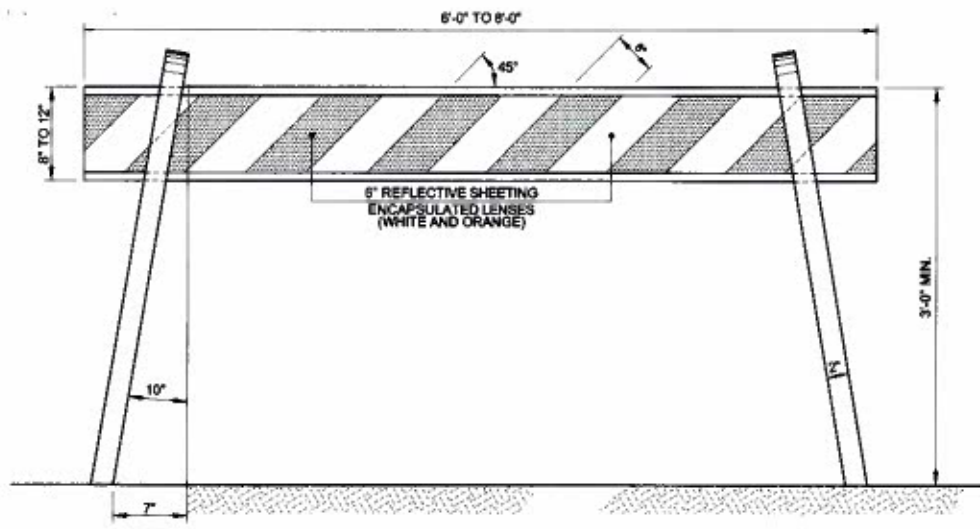
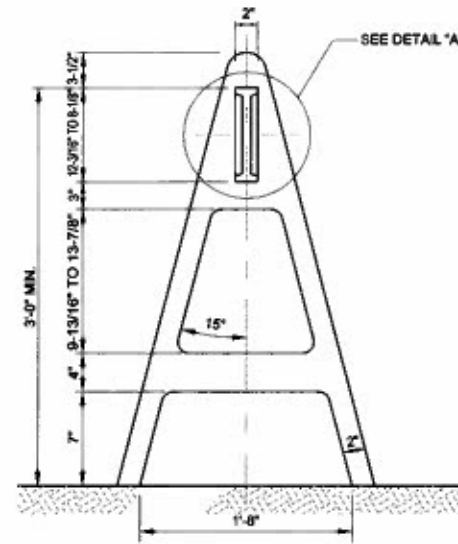


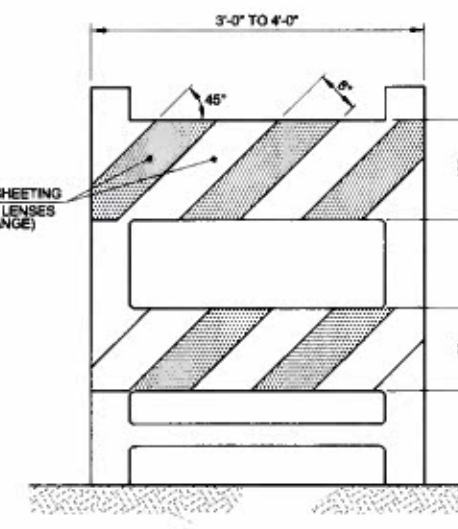
DATE	REVISION	BY
DEC 98	GENERAL NOTE 8	IV
DEC 99	GENERAL NOTE 14	IV
SEPT 00	ADDED NOTE 15	IV
JUN 12	GENERAL REVISION	JMO
DATE	REVISION	BY
DATE	REVISION	BY



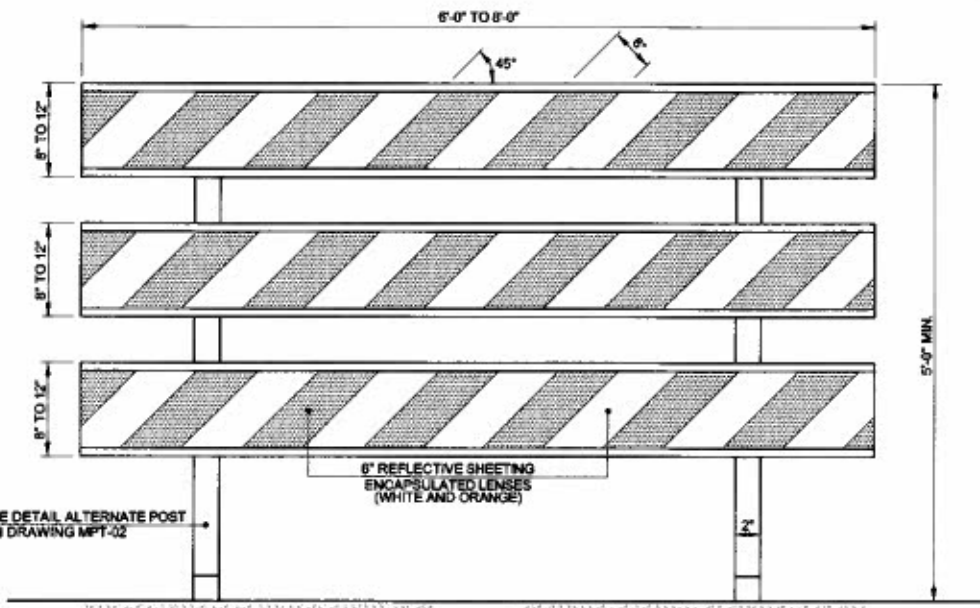
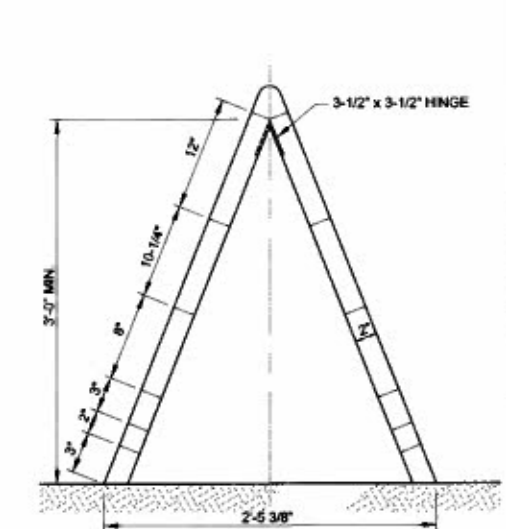
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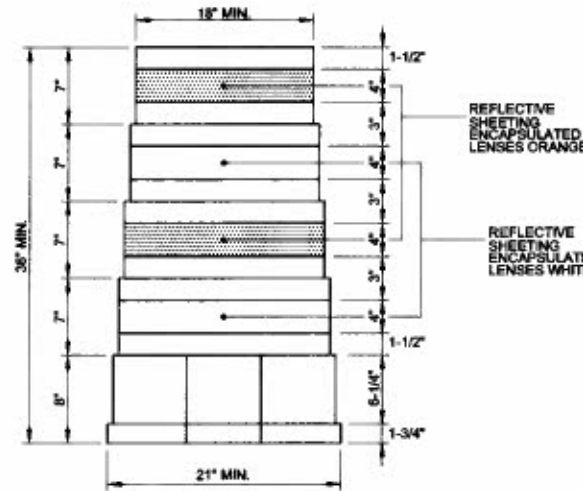
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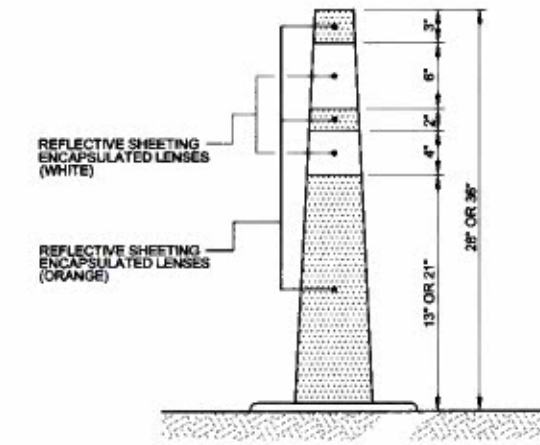
TYPE II BARRICADE
NOT TO SCALE



TYPE III BARRICADE
NOT TO SCALE



REFLECTORIZED PLASTIC DRUM
NOT TO SCALE



CONE
NOT TO SCALE

GENERAL NOTES:

- ALL TRAFFIC CONTROL DEVICES AND TRAFFIC CONTROL OPERATIONS SHALL BE IN ACCORDANCE WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 EDITION OR A LATER EDITION ADOPTED AND APPROVED BY THE PUERTO RICO HIGHWAY AND TRANSPORTATION AUTHORITY.
- STRIPES ON BARRICADE SHALL BE 6 INCHES WIDE, EXCEPT WHERE RAIL LENGTHS ARE LESS THAN 36 INCHES, WHEN 4 INCH WIDE STRIPES MAY BE USED.
- DRUMS FOR TRAFFIC WARNING OR CHANNELIZATION SHALL BE CONICROUND OR WITH A SQUARE SECTION, APPROXIMATELY 36" IN HEIGHT AND A MINIMUM OF 18" IN DIAMETER OR 18" SQUARE AT THE TOP. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL AND IN THE TOTAL PERIMETER OF THE DEVICE.
- THERE SHALL BE TWO 4" ORANGE AND TWO 4" WHITE REFLECTIVE SHEETING STRIPES ON EACH DRUM. NONREFLECTORIZED SPACES SHALL BE ORANGE.
- REFLECTIVE SHEETING FOR USE ON PLASTIC REBOUNDABLE DEVICES SUCH AS DRUMS AND FLEXIBLE DELINEATORS POSTS, SUFFICIENT ELONGATION CAPABILITY TO RESIST REPEATED IMPACTING AND REBOUNDING CYCLES WITHOUT CRACKING OR LOSING ADHESION.
- DRUMS, CONES AND BARRICADES SHALL BE CONSTRUCTED OF PLASTIC.
- DRUMS, BARRICADES AND CONES SHALL REMAIN UPRIGHT AS DESIGNED.
- ALL TRAFFIC CONTROL DEVICES SHALL BE PROVIDED AS A SUBSIDIARY OBLIGATION WITH WATER OR SAND BALLAST OR OTHER APPROVED DEVICES WHICH WILL PREVENT THEM FROM BEING BLOWN AWAY BY THE DRAFTS CAUSED BY PASSING TRAFFIC.
- ALL TRAFFIC CHANNELIZING DEVICES FOR EACH PROJECT SHALL BE OF UNIFORM CONSTRUCTION AND APPEARANCE.
- CONES SHALL BE 36" IN HEIGHT, EXCEPT WHEN USED FOR PAVEMENT MARKING IT SHALL BE 28".
- ALL TRAFFIC CONTROL DEVICES SHALL BE CLEANED, PAINTED, REFLECTORIZED OR REPLACED AS NECESSARY TO PROVIDE ADEQUATE VISIBILITY AND LEGIBILITY AT ALL TIMES.
- TRAFFIC CONTROL DEVICES MANUFACTURED WITH SUBSTANTIALLY SIMILAR DIMENSIONS WOULD BE ACCEPTABLE SUBJECT TO THE APPROVAL OF THE P.R.H.T.A.
- REFLECTIVE SHEETING USED ON ALL SIGNS AND TRAFFIC CONTROL DEVICES EITHER TEMPORARY OR PERMANENT, SHALL CONFORM TO ASTM D4856, TYPE III. FOR PERMANENT INSTALLATIONS, THE ADHESIVE BACKING OF REFLECTIVE SHEETING SHALL BE CLASS 1 OR 2.
- ALL TRAFFIC CHANNELIZING DEVICES SHALL COMPLY WITH NCHRP 350. IT SHALL BE THE CONTRACTOR AND VENDORS RESPONSIBILITY TO CERTIFY THAT THEIR PRODUCT IS CRASHWORTHY. ARROW PANELS ARE EXCEPTED.
- REFLECTIVE SHEETING FROM DIFFERENT MANUFACTURERS SHALL NOT BE MIXED WITHIN THE SAME SIGN PANEL. SIGN PANELS FABRICATED WITH REFLECTIVE SHEETING FROM DIFFERENT MANUFACTURERS SHALL NOT BE MIXED WITHIN THE SAME SIGN SUPPORT.

IMPORTANT NOTE:

THESE STANDARD DRAWINGS PROVIDE FOR THE DESIGN OF TRAFFIC CONTROL DEVICES FOR USE IN THE MAINTENANCE AND PROTECTION OF TRAFFIC DURING CONSTRUCTION. HOWEVER, THE DECISION TO USE A PARTICULAR DEVICE AT A PARTICULAR LOCATION SHOULD BE BASED ON AN ENGINEERING STUDY OF THE LOCATION AND THE APPLICATION OF ENGINEERING JUDGEMENT BY THOSE RESPONSIBLE FOR THE WORK. THESE DRAWINGS ARE INTENDED TO PROVIDE STANDARDS FOR TRAFFIC CONTROL DEVICES BUT NOT AS LEGAL REQUIREMENT FOR THEIR INSTALLATION.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:
 [Signature]
 DATE: 4/27/12
 ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
 [Signature]
 DATE: 4/27/12
 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

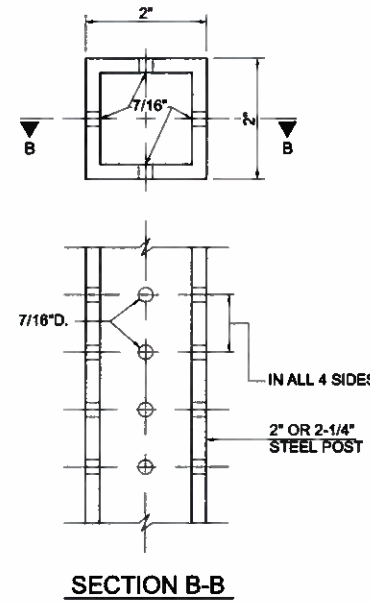
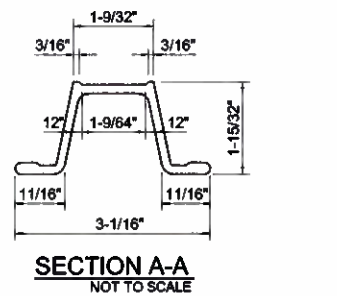
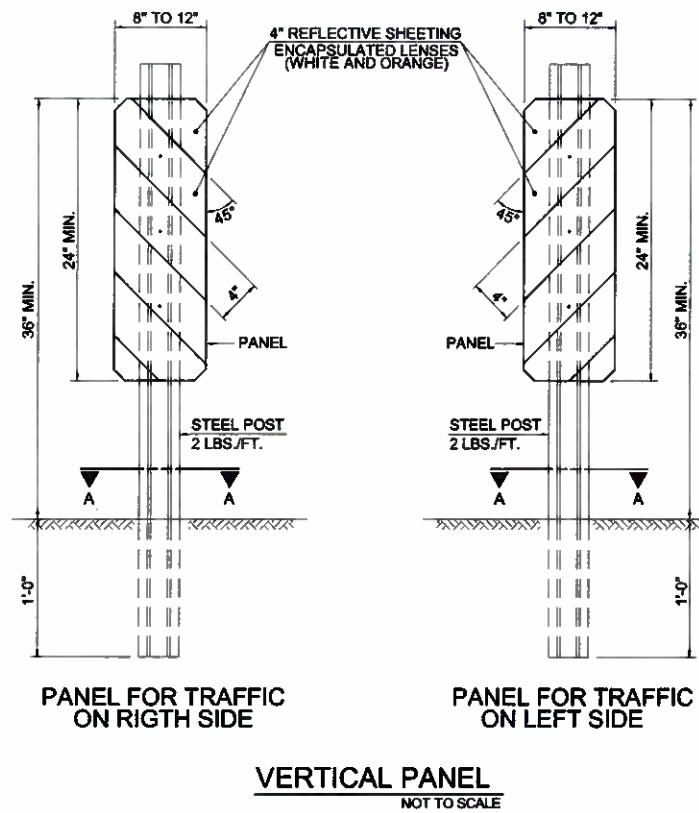
MAINTENANCE AND PROTECTION OF TRAFFIC
CHANNELIZING DEVICES

MPT-01

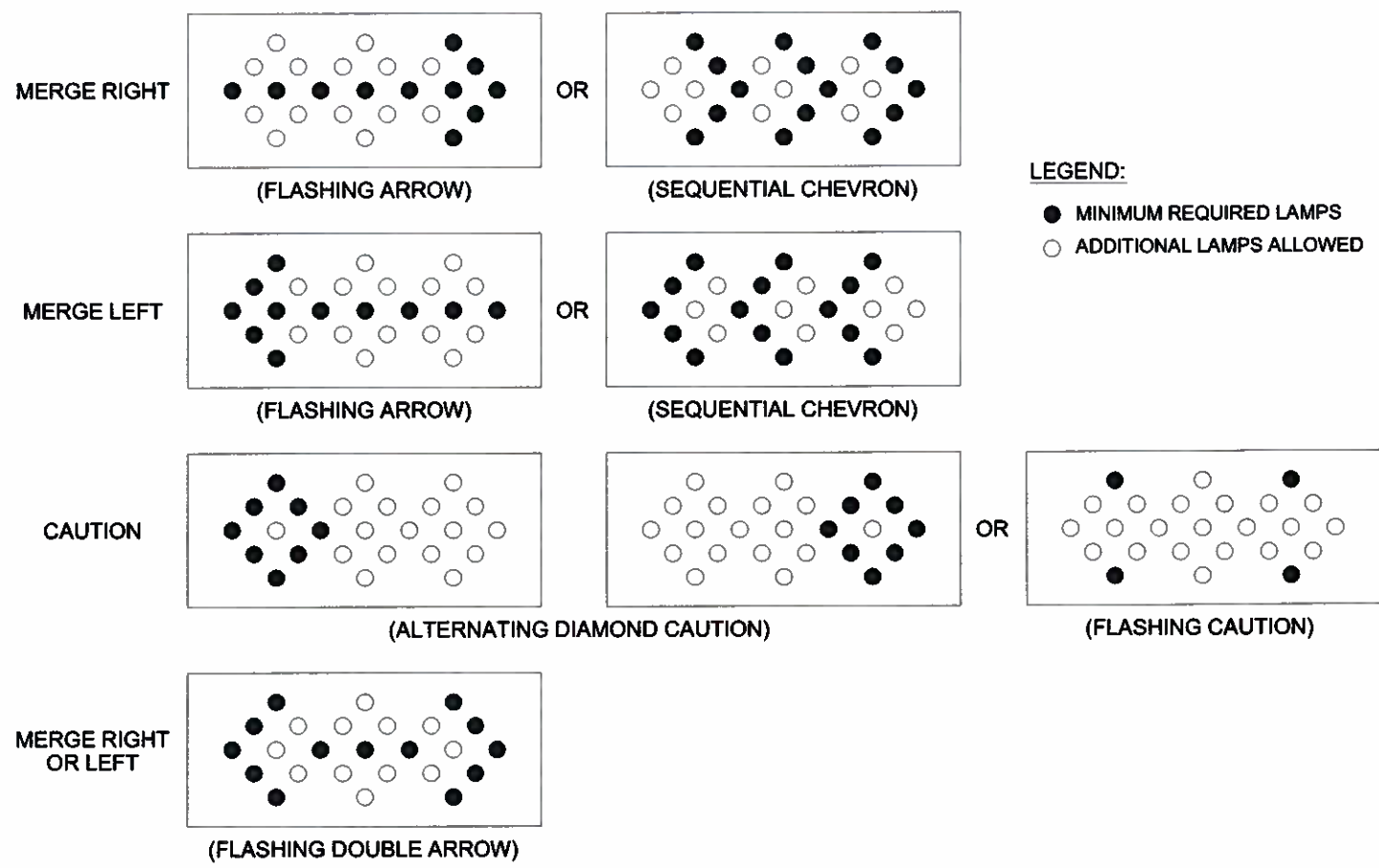
JUNE 2012

DWG BY: LMARTINEZ 2934

DATE	REVISION	BY	DATE	REVISION	BY
DEC. 99	GENERAL NOTE 4 & 6	IV			
JUN. 12	REVISED WARNING ARROW PANEL MODES	JMO			

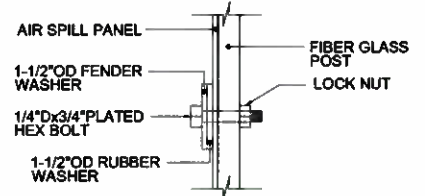
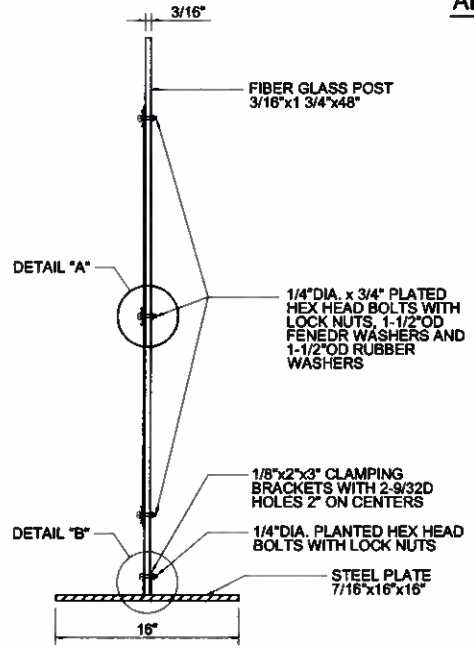
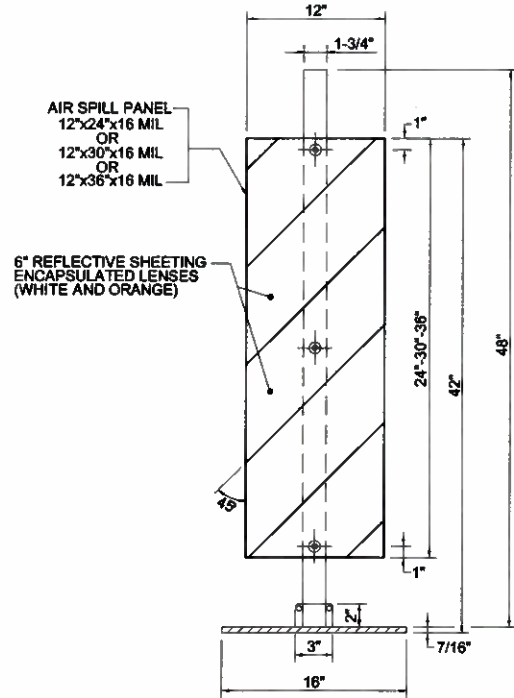


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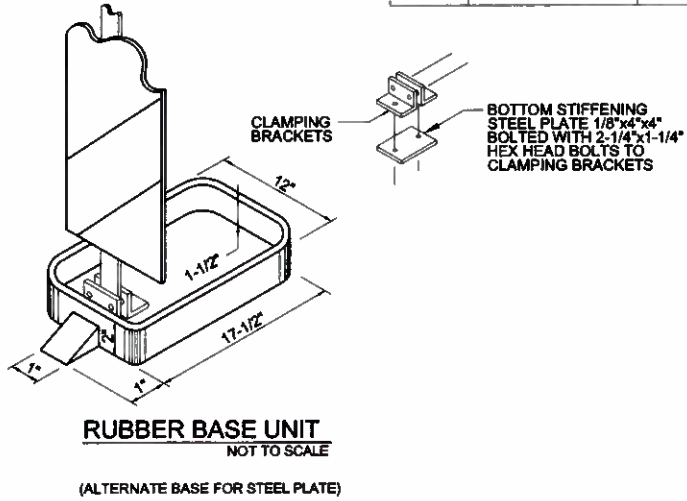


ADVANCE WARNING ARROW PANEL MODES

PANEL SIZE	MINIMUM SIZE (INCHES)	MINIMUM LEGIBILITY DISTANCE (MILES)	MINIMUM NUMBER OF ELEMENTS
A	48 x 24	1/2	12
B	60 x 30	3/4	13
C	96 x 48	1	15



"AIR SPILL" TRAFFIC CONTROL PANEL MODEL #DSTA-MRB
AS MANUFACTURED BY FLASHER HANDLING CORPORATION



- GENERAL NOTES:**
- VERTICAL PANELS AND AIR-SPILL SHALL BE USED IN NARROW AREAS WHERE BARRICADES AND DRUMS WOULD BE TOO WIDE.
 - AIR-SPILL TRAFFIC CONTROL PANEL MAY BE USED AS AN ALTERNATE TO DRUMS, VERTICAL PANELS AND TYPE II BARRICADES.
 - ALL ARROW PANELS SHALL BE RECTANGULAR AND HAVE A FLAT BLACK FINISH. YELLOW LAMPS MUST BE RECESSED INTO THE PANEL OR HAVE HOODS THAT COVER AT LEAST 3 RED (180°) OF LAMP CIRCUMFERENCE.
 - MINIMUM HEIGHT FOR ALL ARROW PANELS SHALL BE 7 FEET, MEASURED FROM THE EDGE OF THE ROADWAY (M.U.T.C.D. DEFINITION) TO THE BOTTOM OF THE PANEL (EXCEPTION: VEHICLE-MOUNTED ARROW PANELS SHALL HAVE TO BE LOWER, BUT MOUNTED AS HIGH AS POSSIBLE.)
 - ARROW PANELS SHALL NOT BE USED TO CLOSE A LANE ON A TWO-LANE TWO-WAY ROAD.
 - ALL TRAFFIC CHANNELIZING DEVICES SHALL COMPLY WITH NCHRP REPORT 350. IT SHALL BE THE CONTRACTOR AND VENDORS RESPONSIBILITY TO CERTIFY THAT THEIR PRODUCT IS CRASHWORTHY. ARROW PANELS ARE EXCEPTED.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:

DATE: 6/11/12

ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

DATE: 6/11/12

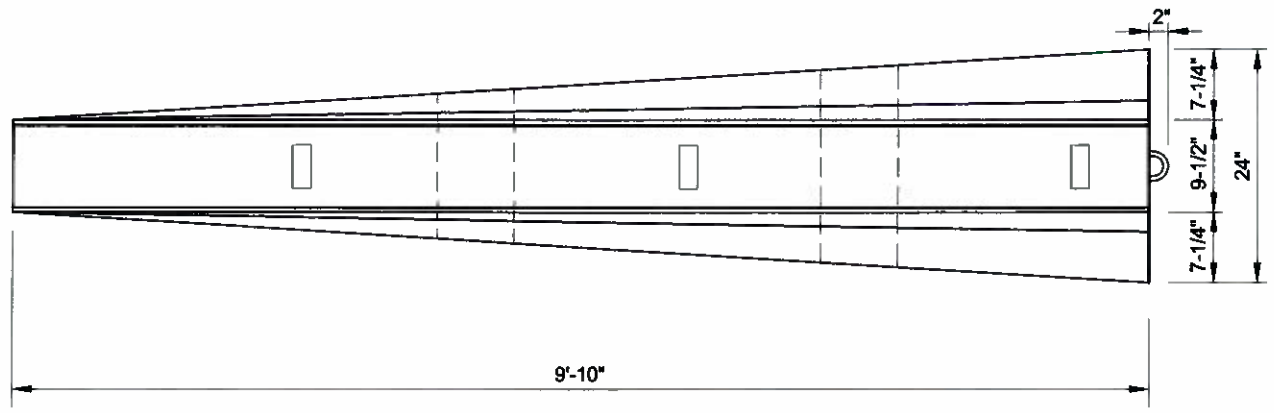
ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
CHANNELIZING DEVICES

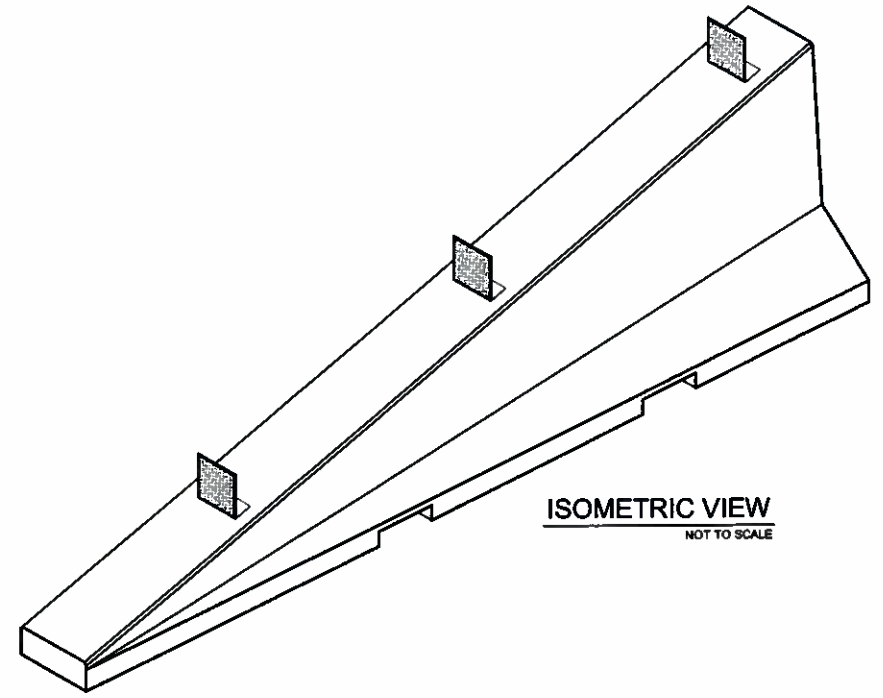
MPT-02
JUNE 2012

ENGINEERING STANDARDS OFFICE

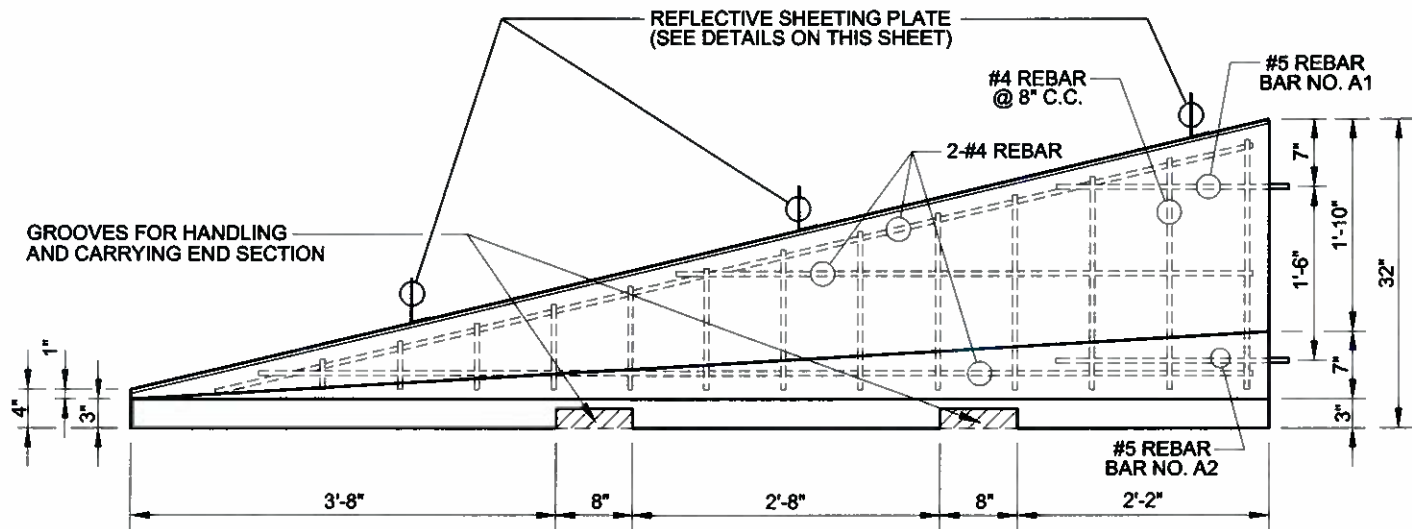
DATE	REVISION	BY
APR. 96	ORIGINAL	JMO
SEP. 09	ADDED DIMENSIONS (MPT-8)	JMO
JUN. 12	SHEET RENUMBERING (MPT-03)	JMO
JUN. 12	ADDED STEEL REINFORCEMENT	JMO
JUN. 12	GENERAL REVISION AND ADDED NOTE 12	JMO



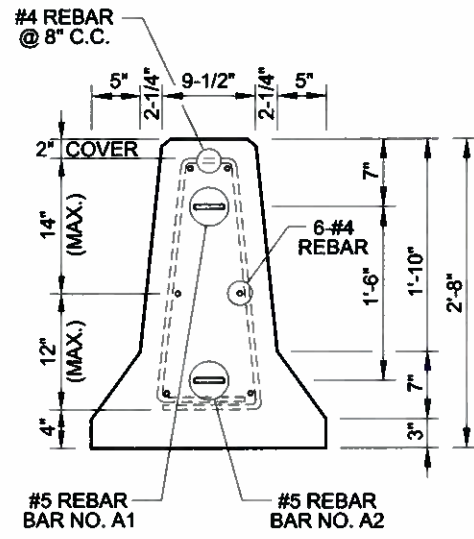
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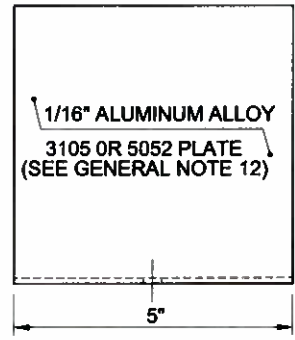
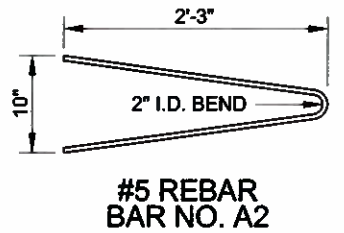
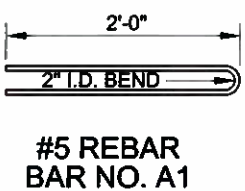
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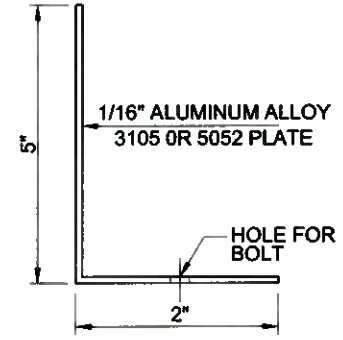
ELEVATION
NOT TO SCALE



REAR VIEW
NOT TO SCALE



FRONT VIEW
NOT TO SCALE



SIDE VIEW
NOT TO SCALE

REFLECTIVE SHEETING PLATE DETAILS

GENERAL NOTES:

1. CONCRETE SHALL HAVE A MINIMUM COMPRESIVE STRENGTH OF 3,000 PSI.
2. CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1-1/2" (MIN.)
3. A MINIMUM OF TWO (2) RECESSED LIFTING DEVICES SHALL BE USED ON EACH SECTION.
4. AFTER A BARRIER UNIT HAS BEEN PLACED AND THE CONNECTING PINS INSERTED, REMOVE ANY SLACK IN THE JOINT BY PULLING THE UNIT IN A DIRECTION PARALLEL TO ITS LONGITUDINAL AXIS.
5. TEMPORARY END SECTION SHALL BE PRECAST IN STEEL FORMS. THE REQUIREMENT FOR CURING OF SPECIFICATION 601-"STRUCTURAL CONCRETE" SHALL APPLY, THE UNITS SHALL HAVE A SMOOTH FINISHED, NO RUBBING, BROOMING OR OTHER WORKING SHALL BE PERMITTED AFTER THE FORMS ARE REMOVED EXCEPT FOR NECESSARY REPAIRS WHICH SHALL BE FINISHED TO MATCH WITH THE SURROUNDING SURFACE.
6. THE CONTRACTOR SHALL DESIGN THE REINFORCING STEEL FOR LIFTING AND HANDLING THE END SECTIONS.
7. ALL END SECTIONS SHALL BE PAINTED WITH WHITE OR YELLOW IN ACCORDANCE WITH SPECIFICATION TTP-115 F TRAFFIC PAINT, TYPE II.
8. CONTRACTOR SHALL DESIGN THE CONNECTION OF REFLECTIVE SHEETING PLATE TO BARRIER.
9. WHEN END SECTION IS PLACED ON A BRIDGE DECK WHERE THE EXISTING BRIDGE PARAPET HAS BEEN DEMOLISHED, WALL TIES AND ANCHORS AS DEPICTED ON DRAWING MPT-06 SHALL BE USED TO ANCHOR THE BARRIER TO THE BRIDGE DECK.
10. CONNECTION SHALL BE OF DESIGN TYPE SELECTED FOR THE TEMPORARY BARRIER AS DEPICTED ON DRAWINGS MPT-05 TO MPT-07 INCLUSIVE.
11. THE CONTRACTOR MAY USE IMPACT ATTENUATORS AS SHOWN IN OUR STANDARD DRAWINGS IA-1 AND IA-2 FOR THE POSTED SPEED OF THE SITE. FIVE (5) METERS OF TEMPORARY BARRIER SHALL BE PAID FOR THE PLACEMENT, RELOCATION AND REMOVAL OF THE IMPACT ATTENUATORS.
12. THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE WHITE ALONG BOTH SIDES OF TWO-WAY ROADWAYS AND THE RIGHT-HAND SIDE OF ONE-WAY ROADWAYS. ALONG THE LEFT-HAND SIDE OF ONE-WAY ROADWAYS, THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE YELLOW.



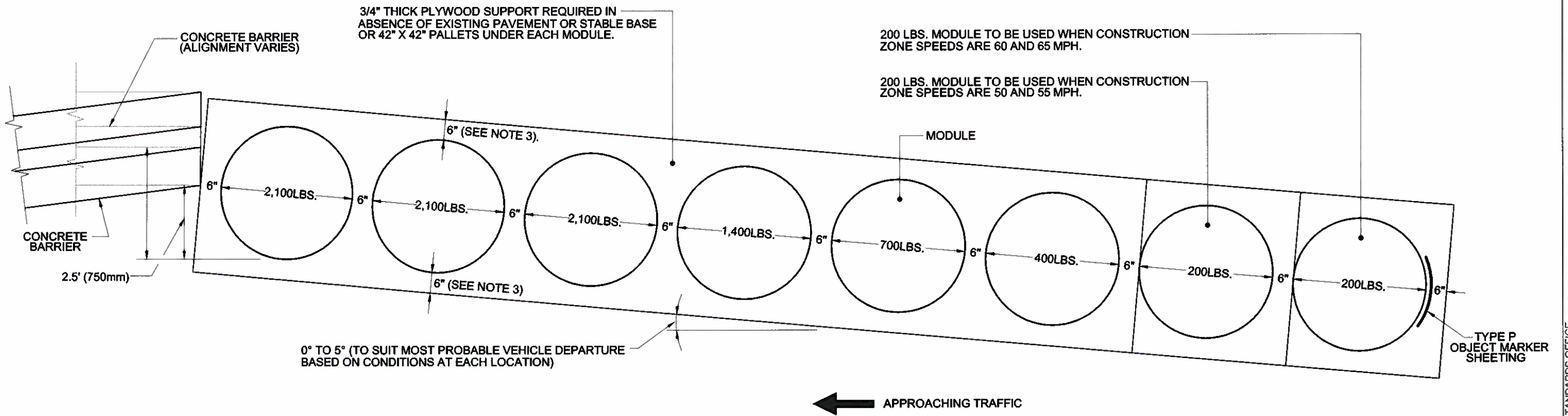
COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:
 [Signature] DATE: 3/6/12
 [Signature] DATE: 6/21/12

MAINTENANCE AND PROTECTION OF TRAFFIC
CONCRETE BARRIER TEMPORARY END SECTION

MPT-03
JUNE 2012

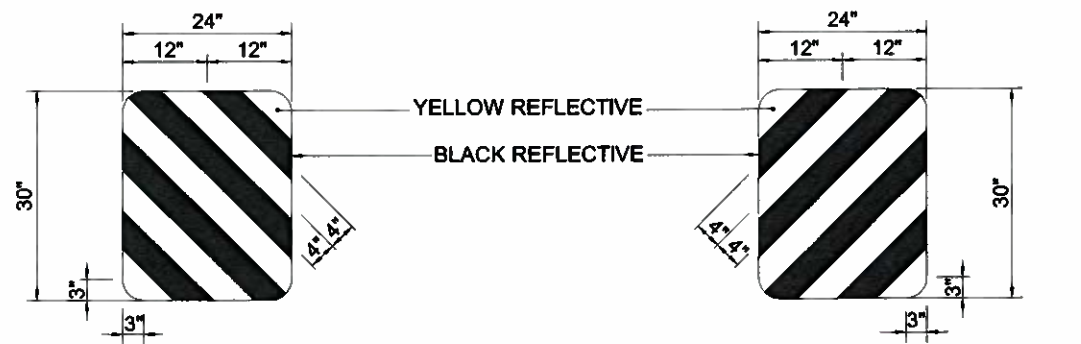
DATE	REVISION	BY
OCT. 98	ORIGINAL (MPT-04)	JMO
JUN. 12	SHEET RE numbering (MPT-04)	JMO
JUN. 12	GENERAL REVISION	JMO



PLAN

NOTES:

1. NUMBER SHOWN INSIDE MODULE INDICATES THE WEIGHT IN POUNDS OF SAND. ALL MODULES ARE APPROXIMATELY 36" IN DIAMETER WITH HEIGHT RANGING FROM 36" TO 45".
2. IMPACT ATTENUATOR TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.
3. 3" OUTSIDE WHEN PALLETS ARE USED.
4. THE ENTIRE AREA OF THE CRASH CUSHION INSTALLATION AND APPROACHES SHALL BE GRADED SO THAT THE MAXIMUM SLOPE DOES NOT EXCEED 10:1 IN ANY DIRECTION.
5. WEIGHT OF SAND AND OUTLINE OF EACH MODULE SHALL BE PAINTED ON THE SURFACE AT EACH MODULE LOCATION.
6. OBJECT MARKER SHEETING SHALL BE A SELF-ADHESIVE FLEXIBLE SHEETING WITH ENCAPSULATED LENS GLASS-BEAD RETROFLECTIVE MATERIAL MEETING THE REQUIREMENTS OF ASTM D4596 TYPE III. THE ADHESIVE BACKING OF REFLECTIVE SHEETING SHALL BE CLASS 1. OBJECT MARKER SHEETING SHALL BE CONSIDERED AS SUBSIDIARY OBLIGATION OF THE CONTRACTOR COVERED UNDER PAY ITEMS FOR STANDARD SPECIFICATION 620-"TRAFFIC IMPACT ATTENUATOR".
7. THIS END SECTION CAN BE USED AS AN ALTERNATE TO THE TEMPORARY END SECTION (DRAWING MPT-03).



**TYPE P
OBJECT MARKER SHEETING DETAIL**



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 DATE: 6/12/12
 ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
 [Signature]
 DATE: ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

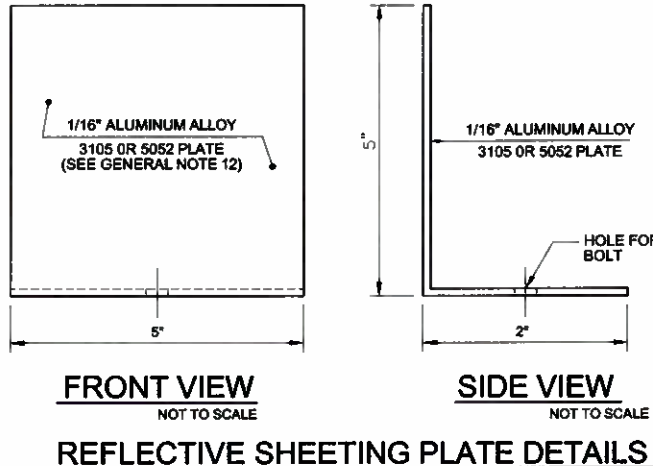
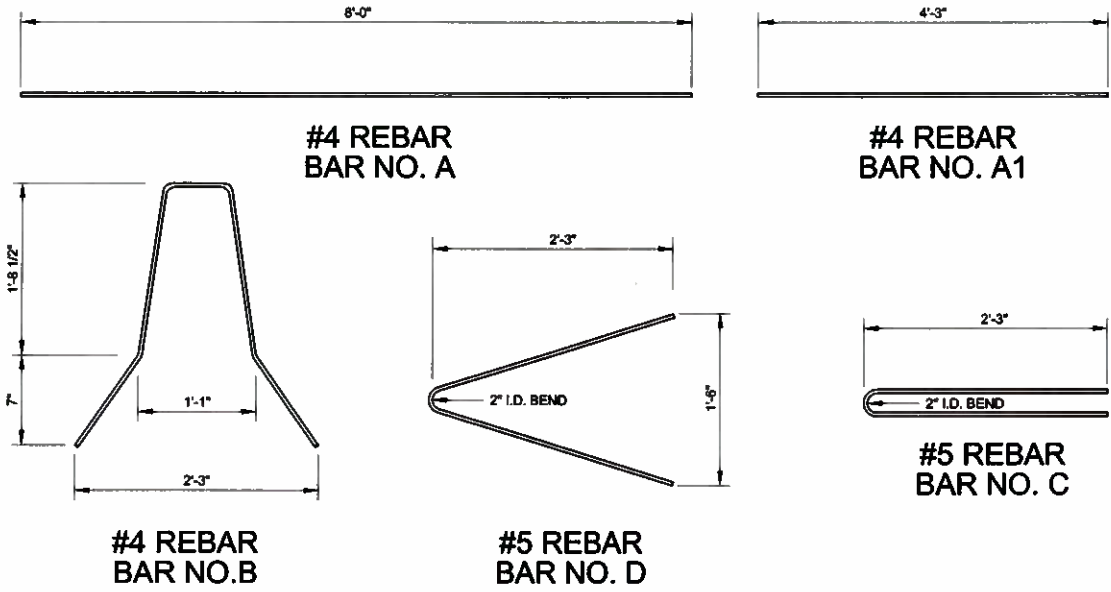
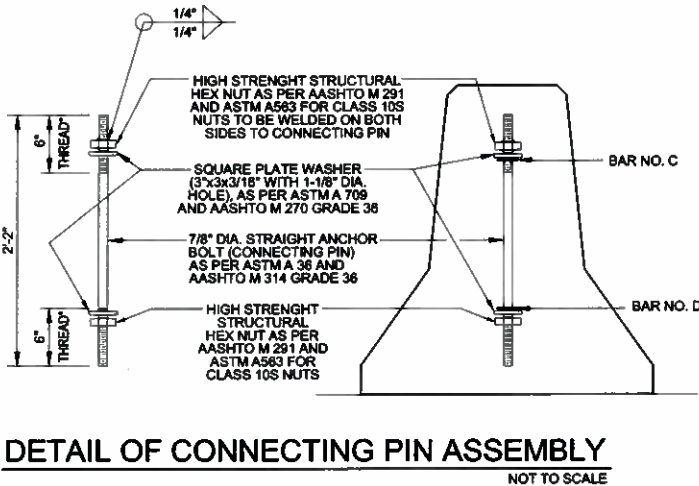
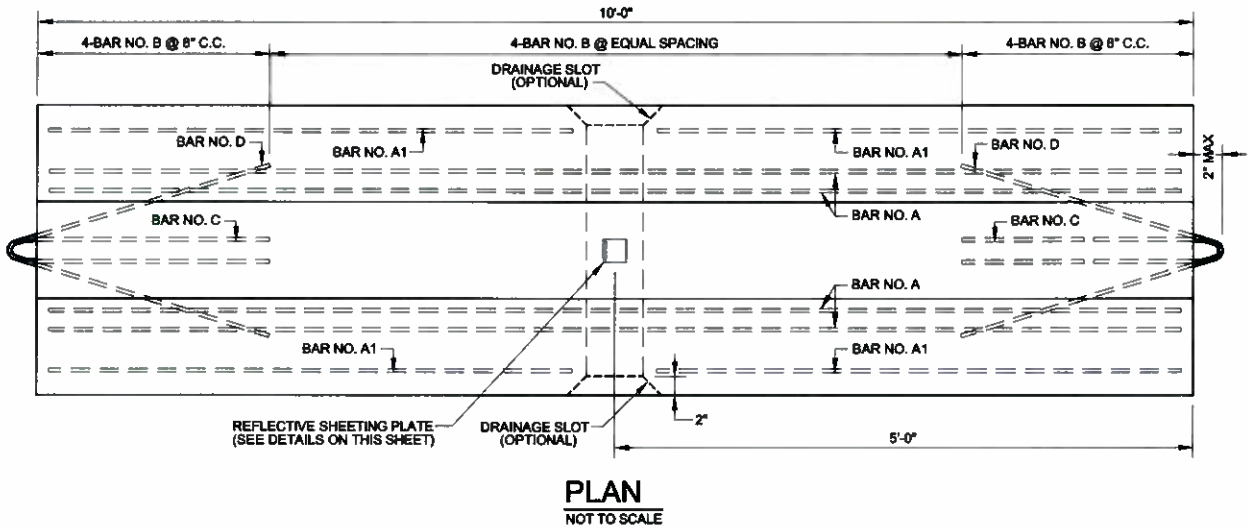
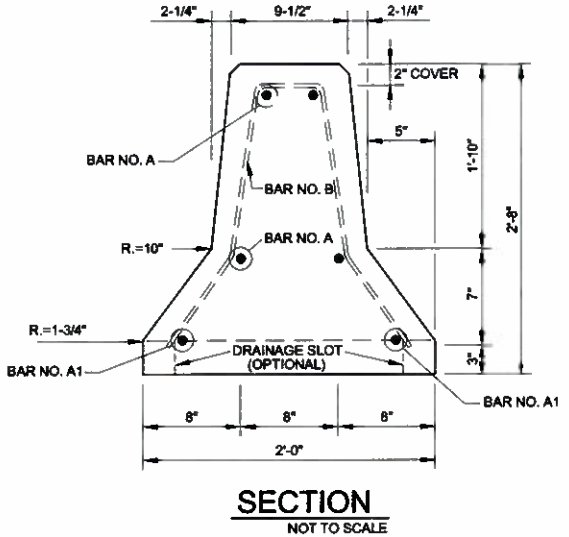
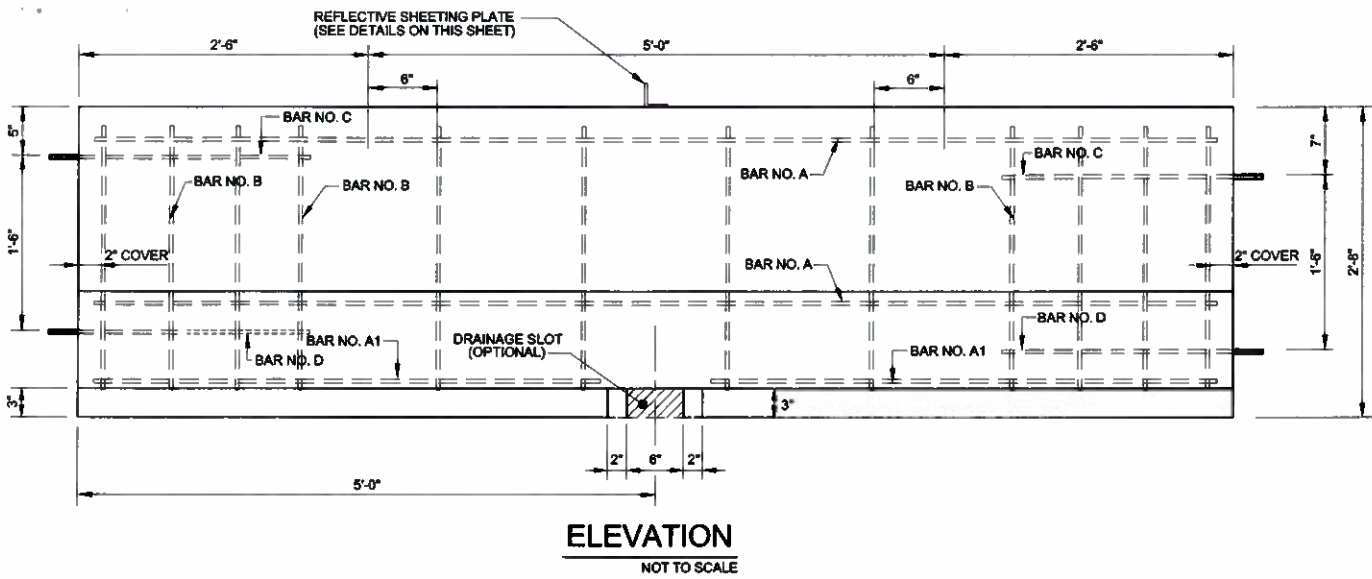
MAINTENANCE AND PROTECTION OF TRAFFIC
TEMPORARY IMPACT ATTENUATOR

MPT-04

JUNE 2012

DWG BY: LMARTINEZ 2934

DATE	REVISION	BY
APR. 98	ORIGINAL (MPT-3)	JMO
JUN. 12	SHEET RENUMBERING (MPT-05)	JMO
JUN. 12	GENERAL REVISION	JMO
JUN. 12	DELETED REBAR CONNECTION	JMO
JUN. 12	ADDED NOTES 15, 16 AND 17	JMO



GENERAL NOTES:

- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1-1/2" (MIN.)
- A MINIMUM OF TWO (2) RECESSED LIFTING DEVICES SHALL BE USED ON EACH SECTION.
- TUBE STEEL SHALL BE ASTM A 500, GRADE B OR C.
- AS END TERMINAL FOR TEMPORARY CONCRETE BARRIER, THE CONTRACTOR WILL INSTALL TEMPORARY END SECTION AS PER DRAWING MPT-03 OR IMPACT ATTENUATORS AS PER SHEETS IA-1 AND IA-2 OF STANDARD DRAWINGS. THE END TERMINAL SELECTION SHALL COMPLY WITH PRHTA SPECIFICATIONS, CONTRACT DOCUMENTS, STANDARDS FOR ROADSIDE DESIGN, AND NCHRP REPORT 350 CRITERIA.
- AFTER A BARRIER UNIT HAS BEEN PLACED AND THE CONNECTING PINS INSERTED, REMOVE ANY SLACK IN THE JOINT BY PULLING THE UNIT IN A DIRECTION PARALLEL TO ITS LONGITUDINAL AXIS.
- THE TEMPORARY CONCRETE BARRIER SHALL BE PRECAST UNITS OF 10 FEET LENGTH.
- TEMPORARY CONCRETE BARRIER SHALL BE PRECAST IN STEEL FORMS, THE REQUIREMENT FOR CURING OF SPECIFICATION 601-STRUCTURAL CONCRETE SHALL APPLY, THE BARRIER UNITS SHALL HAVE A SMOOTH FINISHED, NO RUBBING, BROOMING OR OTHER WORKING SHALL BE PERMITTED AFTER THE FORMS ARE REMOVED EXCEPT FOR NECESSARY REPAIRS WHICH SHALL BE FINISHED TO MATCH WITH THE SURROUNDING SURFACE.
- THE CONTRACTOR SHALL DESIGN THE REINFORCING STEEL FOR LIFTING AND HANDLING THE CONCRETE BARRIER SECTIONS.
- ALL BARRIER SECTIONS SHALL BE PAINTED WITH WHITE PAINT IN ACCORDANCE WITH SPECIFICATION TT-P-115 F TRAFFIC PAINT, TYPE II.
- THE BARRIER SYSTEM SHALL BE INSTALLED IN A CONTINUOUS WAY AND CONNECTED TOGETHER WITH THE CONNECTING PIN AS SHOWN IN THE ASSEMBLY DETAIL ON DRAWING MPT-05.
- CONTRACTOR SHALL DESIGN CONNECTION OF REFLECTIVE SHEETING PLATE TO BARRIER.
- WHEN BARRIER IS PLACED ON A BRIDGE DECK WHERE THE EXISTING BRIDGE PARAPET HAS BEEN DEMOLISHED, WALL TIES AND ANCHORS AS DEPICTED ON DRAWING MPT-06 SHALL BE USED TO ANCHOR THE BARRIER TO THE BRIDGE DECK.
- REFLECTIVE SHEETING PLATES, CONNECTING PINS, BOLTS, WASHERS, NUTS, WHITE PAINT AND COLD GALVANIZING COMPOUND FOR BARRIER SHALL BE CONSIDERED A SUBSIDIARY OBLIGATION OF THE UNDER PAY ITEMS FOR SPECIFICATION 638.
- ALL CONNECTING PINS, BOLTS, WASHERS AND NUTS SHALL BE HOT DIP GALVANIZED (ZINC-COATED) ACCORDING TO AASHTO M 111 AND ASTM A 123.
- BEFORE INSTALLATION OF BARRIER REINFORCING STEEL, A COLD GALVANIZING COMPOUND SHALL BE APPLIED TO BARRIER REINFORCING STEEL OF BAR NO. C AND BAR NO. D ONLY. THE COLD GALVANIZING COMPOUND SHALL CONTAIN A 90% PURE ZINC (MINIMUM) IN DRY FILM TO PROTECT ALL STEEL SURFACE. THE APPLICATION OF COLD GALVANIZING COMPOUND SHALL BE IN SPRAY OR PAINT.
- THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE WHITE ALONG BOTH SIDES OF TWO-WAY ROADWAYS AND THE RIGHT-HAND SIDE OF ONE-WAY ROADWAYS. ALONG THE LEFT-HAND SIDE OF ONE-WAY ROADWAYS, THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE YELLOW.

NOTES:

- MATERIALS:
 - A. CONCRETE: CLASS "A" CONCRETE AS PER SPECIFICATION 601 OR CLASS III (GENERAL USE)-(1) AS PER SPECIAL PROVISION 934.
 - B. STEEL REINFORCEMENT: GRADE 60 STEEL AS PER AASHTO M 31, ASTM A 615, AND SPECIFICATION 602.
- BARRIERS SHALL BE PLACED SUCH THAT OPENINGS BETWEEN INDIVIDUAL SECTIONS SHALL BE KEPT TO A MINIMUM.
- BARRIER SECTION SHALL BE CONNECTED TOGETHER WITH THE 7/8" DIA. CONNECTING PIN. CONNECTIONS SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF THE BARRIER INSTALLATION.

NOTICE

TEMPORARY CONCRETE BARRIER UNITS PRODUCED ON AND AFTER OCTOBER 1, 2002 FOR USE ON STATE HIGHWAY PROJECTS MUST MEET NCHRP REPORT 350 CRITERIA.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:
DATE: 3/11/14
ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
DATE: 6/11/12
ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

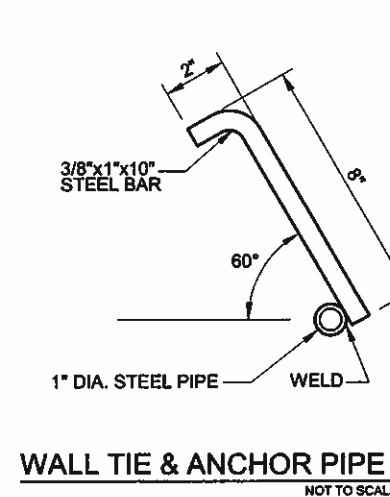
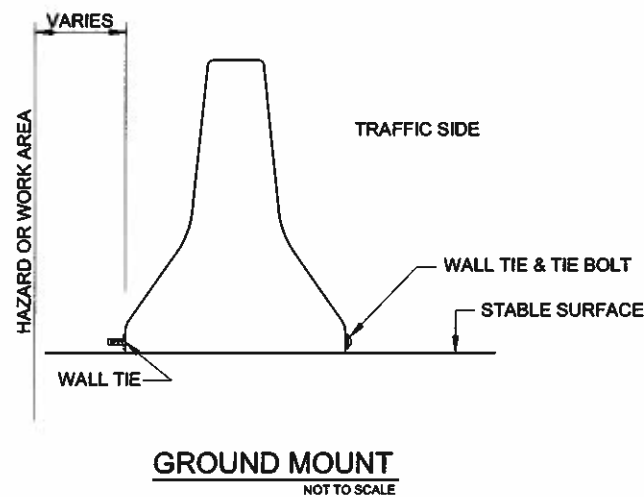
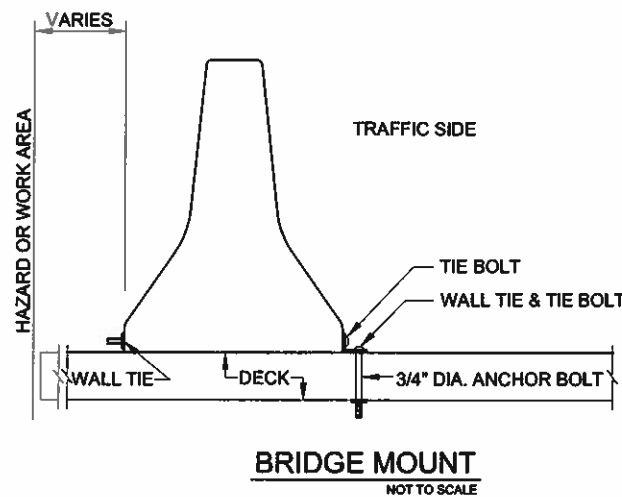
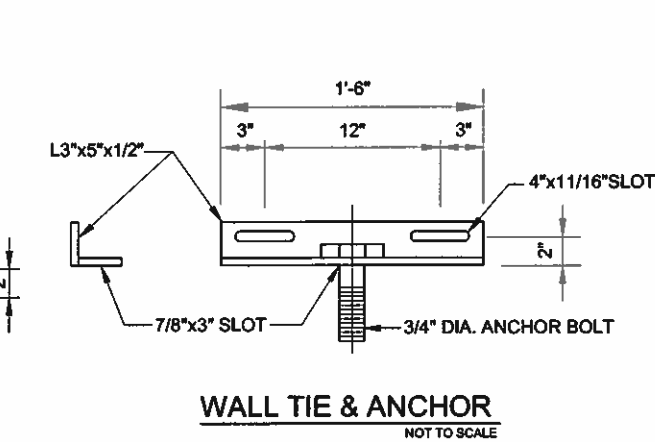
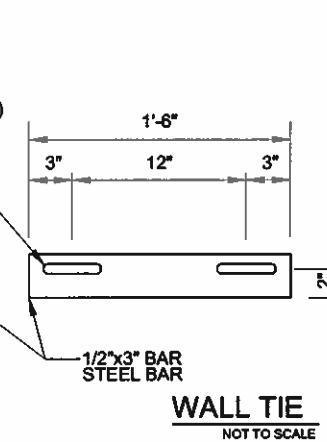
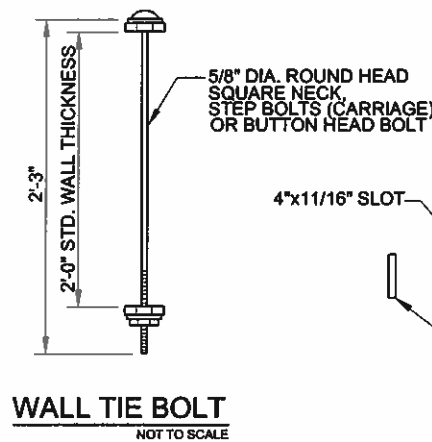
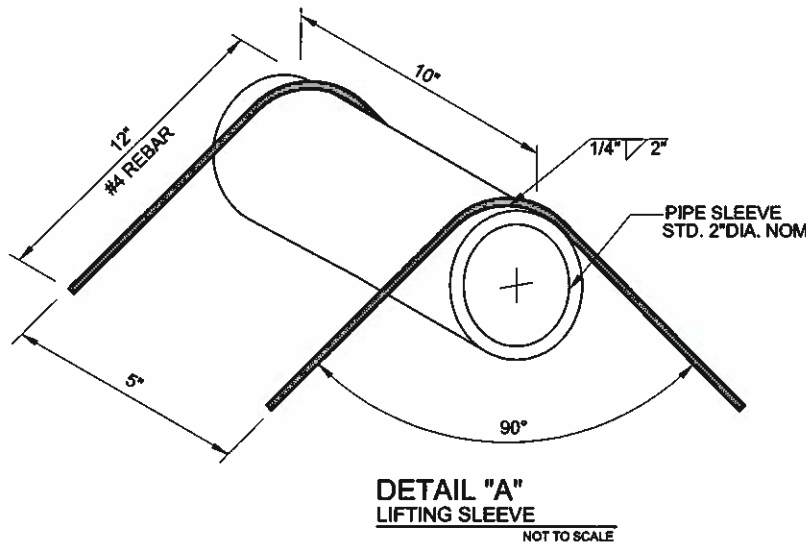
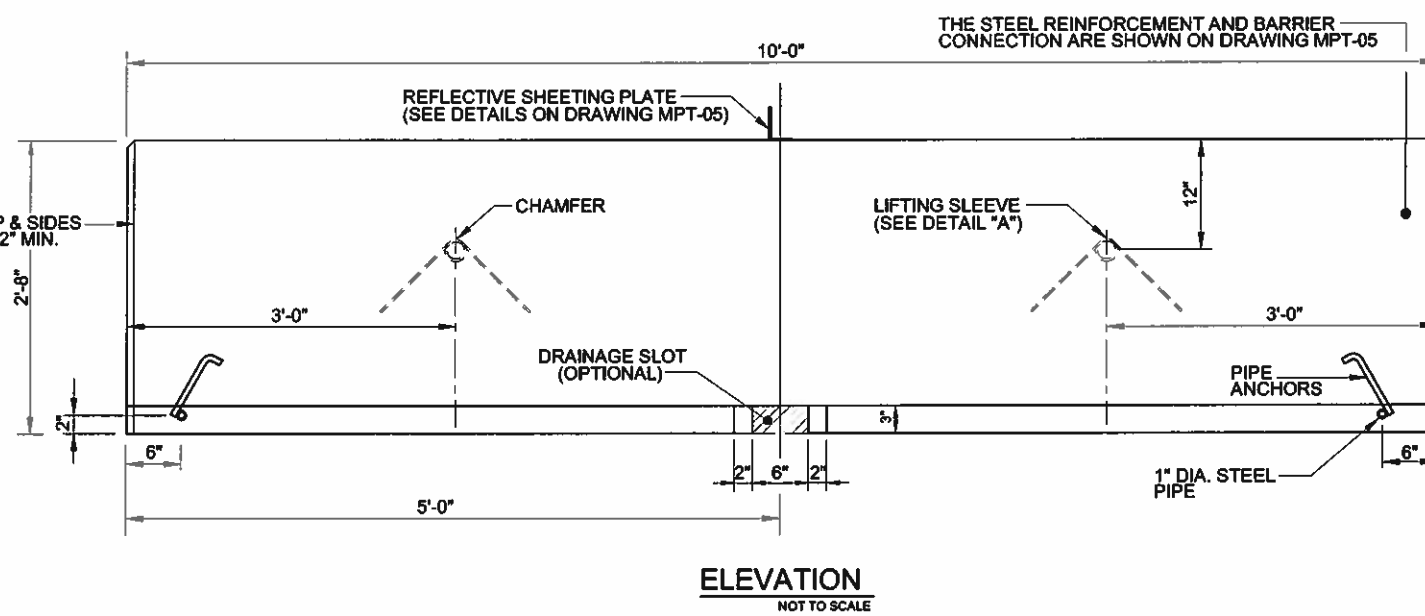
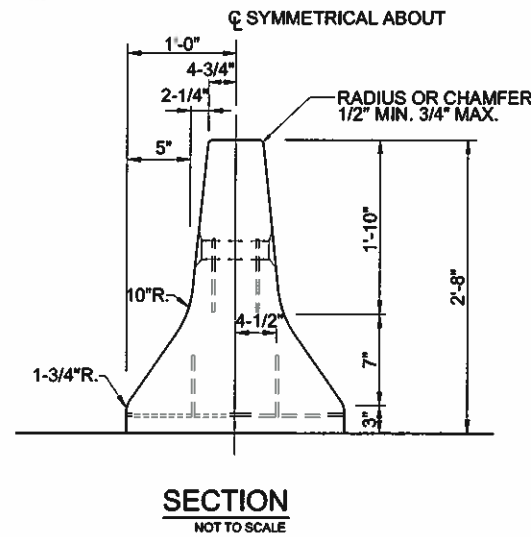
MAINTENANCE AND PROTECTION OF TRAFFIC
F-SHAPE TEMPORARY CONCRETE BARRIER WITH CONNECTING PIN

MPT-05
JUNE 2012

ENGINEERING STANDARDS OFFICE

DWG BY: LMARTINEZ 2934

DATE	REVISION	BY	DATE	REVISION	BY
JUN 12	ADDED NOTES 15, 16 AND 17	JMO			
JUN 12	SHEET RENUMBERING (MPT-06)	JMO			
JUN 12	GENERAL REVISION	JMO			
APR 98	ADDED GENERAL NOTE 4 (MPT-5)	JMO			



ANCHOR BOLTS SHALL HAVE A PULLOUT AND SHEAR CAPACITY OF 14,000 LBS. WEDGE OR CHEMICAL ANCHOR BOLTS MAY BE USED IN LIEU OF BOLT, WASHER AND NUT ASSEMBLY SHOWN. CORE DRILLS SHALL BE USED TO CONSTRUCT THROUGH BOLT HOLES, AND DRILLS SPECIFIED BY THE MANUFACTURER SHALL BE USED TO CONSTRUCT EXPANSION AND CHEMICAL ANCHOR BOLT HOLES. AFTER REMOVAL OF WALLS, ANCHORS SHALL BE REMOVED TO 1" MIN. BELOW DECK SURFACE AND HOLES FILLED WITH EPOXY GROUT.

WALL TIES & ANCHORAGE

GENERAL NOTES:

- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1-1/2" (MIN.)
- A MINIMUM OF TWO (2) RECESSED LIFTING DEVICES SHALL BE USED ON EACH SECTION.
- TUBE STEEL SHALL BE ASTM A-500, GRADE B OR C.
- AS END TERMINAL FOR TEMPORARY CONCRETE BARRIER, THE CONTRACTOR WILL INSTALL TEMPORARY END SECTION AS PER DRAWING MPT-03 OR IMPACT ATTENUATORS AS PER SHEETS IA-1 AND IA-2 OF STANDARD DRAWINGS. THE END TERMINAL SELECTION SHALL COMPLY WITH PRHTA SPECIFICATIONS, CONTRACT DOCUMENTS, STANDARDS FOR ROADSIDE DESIGN, AND NCHRP 350 CRITERIA.
- AFTER A BARRIER UNIT HAS BEEN PLACED AND THE CONNECTING PINS INSERTED, REMOVE ANY SLACK IN THE JOINT BY PULLING THE UNIT IN A DIRECTION PARALLEL TO ITS LONGITUDINAL AXIS.
- THE TEMPORARY CONCRETE BARRIER SHALL BE PRECAST UNITS OF 10 FEET LENGTH.
- TEMPORARY CONCRETE BARRIER SHALL BE PRECAST IN STEEL FORMS. THE REQUIREMENT FOR CURING OF SPECIFICATION 601 "STRUCTURAL CONCRETE" SHALL APPLY. THE BARRIER UNITS SHALL HAVE A SMOOTH FINISH, NO RUBBING, BROOMING OR OTHER WORKING SHALL BE PERMITTED AFTER THE FORMS ARE REMOVED EXCEPT FOR NECESSARY REPAIRS WHICH SHALL BE FINISHED TO MATCH WITH THE SURROUNDING SURFACE.
- THE CONTRACTOR SHALL DESIGN THE REINFORCING STEEL FOR LIFTING AND HANDLING THE CONCRETE BARRIER SECTIONS.
- ALL BARRIER SECTIONS SHALL BE PAINTED WITH WHITE PAINT IN ACCORDANCE WITH SPECIFICATION TT-P-115 F TRAFFIC PAINT, TYPE II.
- THE BARRIER SYSTEM SHALL BE INSTALLED IN A CONTINUOUS WAY AND CONNECTED TOGETHER WITH THE CONNECTING PIN AS SHOWN IN THE ASSEMBLY DETAIL ON DRAWING MPT-05.
- CONTRACTOR SHALL DESIGN CONNECTION OF REFLECTIVE SHEETING PLATE TO BARRIER.
- WHEN BARRIER IS PLACED ON A BRIDGE DECK WHERE THE EXISTING BRIDGE PARAPET HAS BEEN DEMOLISHED, WALL TIES AND ANCHORS AS DEPICTED ON DRAWING MPT-06 SHALL BE USED TO ANCHOR THE BARRIER TO THE BRIDGE DECK.
- REFLECTIVE SHEETING PLATES, CONNECTING PINS, BOLTS WASHERS, NUTS, WHITE PAINT AND COLD GALVANIZING COMPOUND BARRIER SHALL BE CONSIDERED A SUBSIDIARY OBLIGATION OF THE UNDER PAY ITEMS FOR SPECIFICATION 638.
- ALL CONNECTING PINS, BOLTS, WASHERS AND NUTS SHALL BE HOT DIP GALVANIZED (ZINC-COATED) ACCORDING TO AASHTO M 111 AND ASTM A 123.
- BEFORE INSTALLATION OF BARRIER REINFORCING STEEL, A COLD GALVANIZING COMPOUND SHALL BE APPLIED TO BARRIER REINFORCING STEEL OF BAR NO. C AND BAR NO. D ONLY. THE COLD GALVANIZING COMPOUND SHALL CONTAIN A 90% PURE ZINC (MINIMUM) IN DRY FILM TO PROTECT ALL STEEL SURFACE. THE APPLICATION OF COLD GALVANIZING COMPOUND SHALL BE IN SPRAY OR PAINT.
- THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE WHITE ALONG BOTH SIDES OF TWO-WAY ROADWAYS AND THE RIGHT-HAND SIDE OF ONE-WAY ROADWAYS. ALONG THE LEFT-HAND SIDE OF ONE-WAY ROADWAYS, THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE YELLOW.

NOTES:

- MATERIALS:
 - A. CONCRETE: CLASS "A" CONCRETE AS PER SPECIFICATION 601 OR CLASS III (GENERAL USE)-(1) AS PER SPECIAL PROVISION 934.
 - B. STEEL REINFORCEMENT: GRADE 60 STEEL AS PER AASHTO M 31, ASTM A 615, AND SPECIFICATION 602.
- BARRIERS SHALL BE PLACED SUCH THAT OPENINGS BETWEEN INDIVIDUAL SECTIONS SHALL BE KEPT TO A MINIMUM.
- BARRIER SECTION SHALL BE CONNECTED TOGETHER WITH THE 7/8" DIA. CONNECTING PIN. CONNECTIONS SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF THE BARRIER INSTALLATION.

NOTICE

TEMPORARY CONCRETE BARRIER UNITS PRODUCED ON AND AFTER OCTOBER 1, 2002 FOR USE ON STATE HIGHWAY PROJECTS MUST MEET NCHRP REPORT 350 CRITERIA.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY: *[Signature]*
DATE: 3/11/12
ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

[Signature]
DATE: 6/11/12
ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
F-SHAPE TEMPORARY CONCRETE BARRIER WITH SIDE PLATE

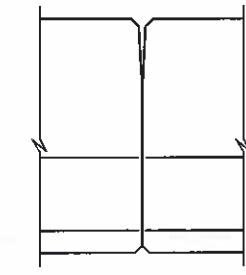
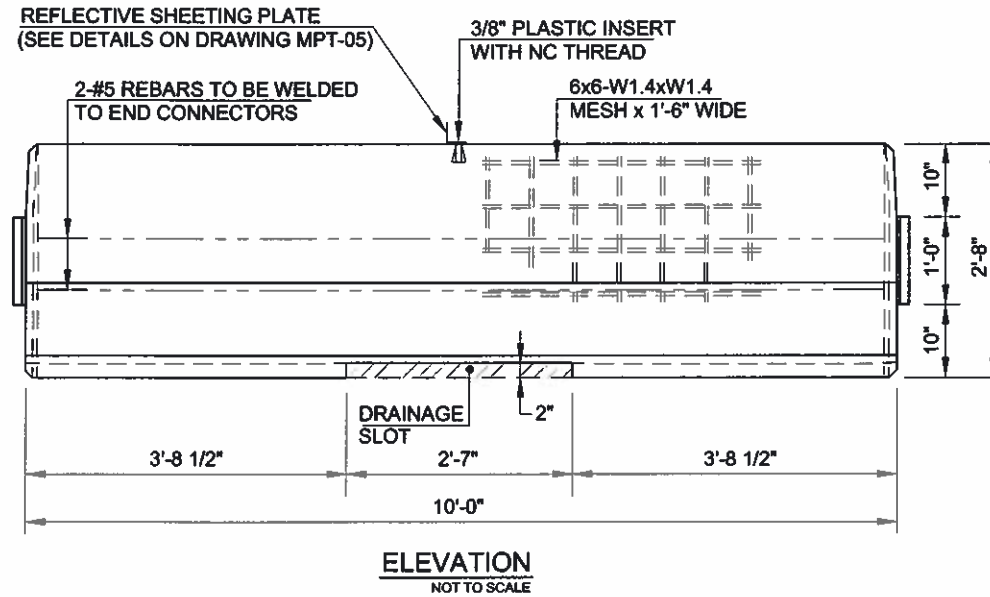
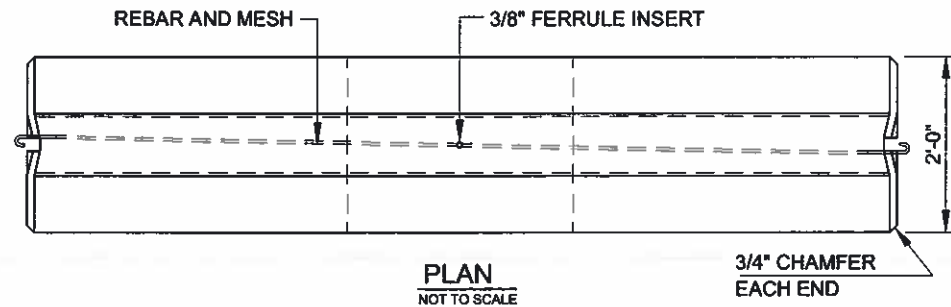
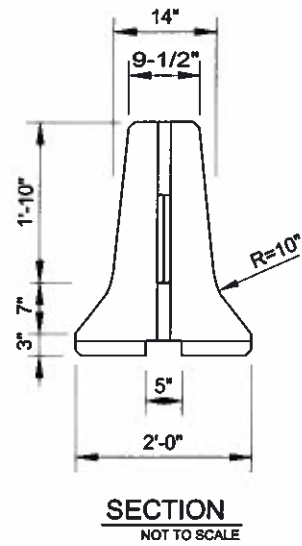
MPT-06

JUNE 2012

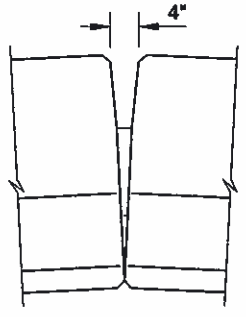
ENGINEERING STANDARDS OFFICE

DWG BY: LMARTINEZ 2934

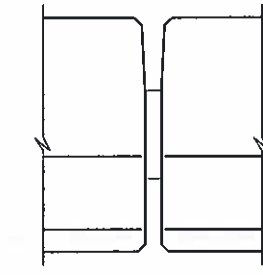
DATE	REVISION	BY
APR 98	ORIGINAL (MPT-7)	
JUN 12	GENERAL REVISION AND ADDED NOTE 10	



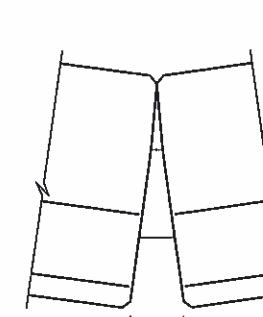
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NOT TO SCALE



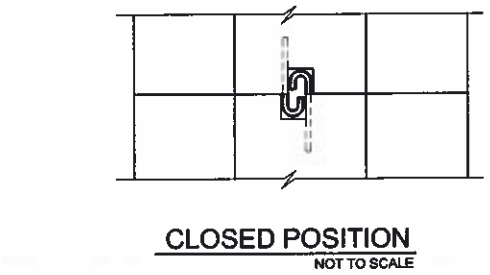
VERTICAL ROTATION
NOT TO SCALE
(MINIMUM VERTICAL CURVE RADIUS=175')



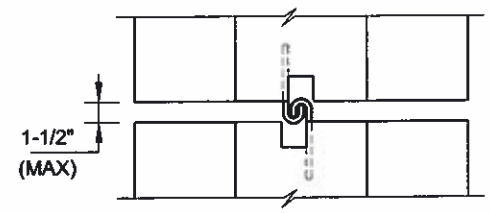
MAXIMUM SEPARATION
NOT TO SCALE



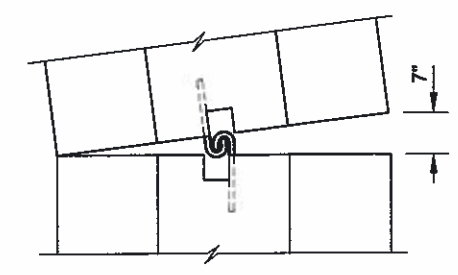
VERTICAL ROTATION
NOT TO SCALE
(MINIMUM VERTICAL CURVE RADIUS=100')



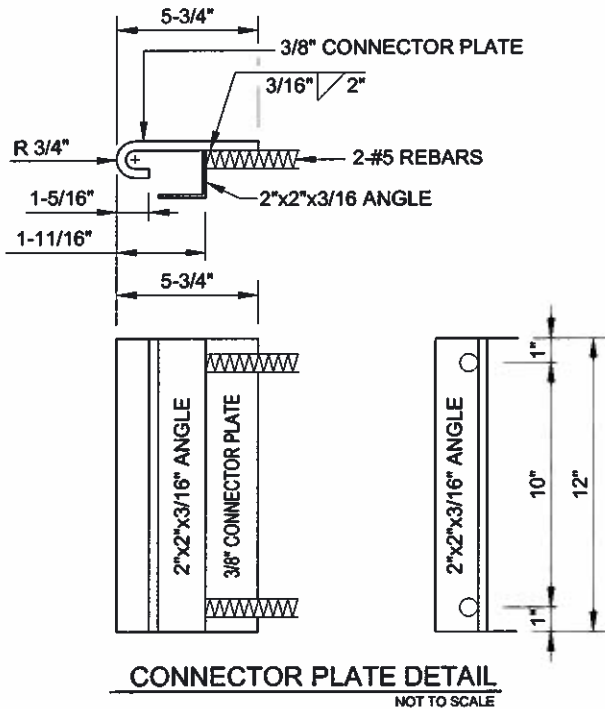
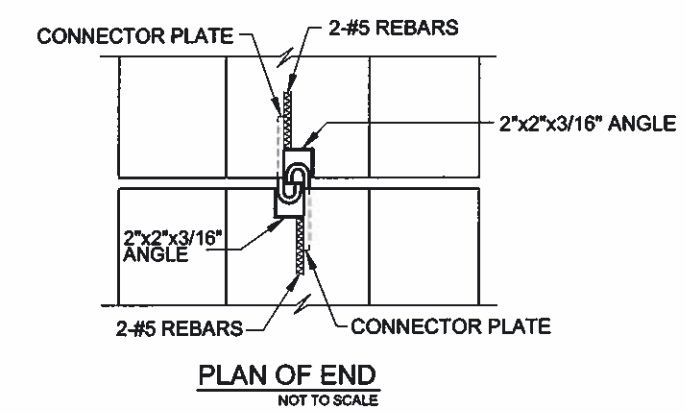
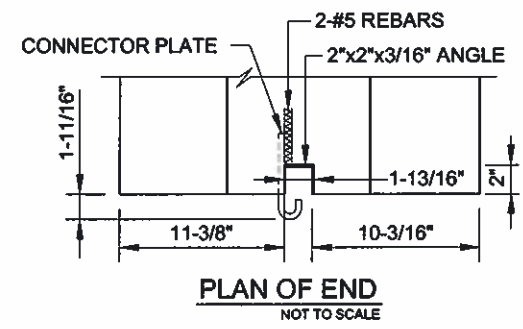
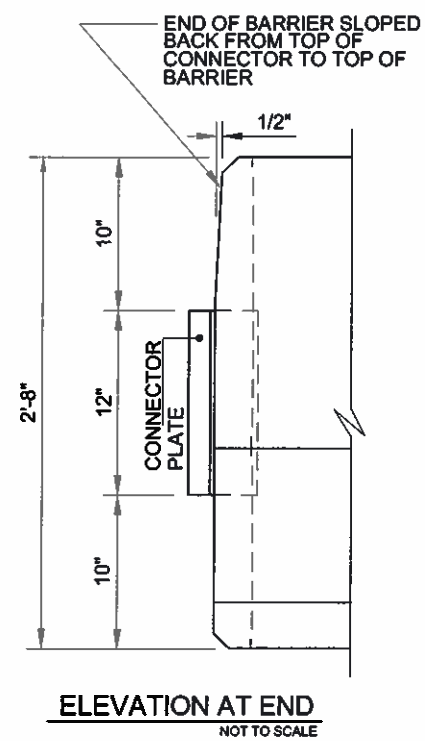
CLOSED POSITION
NOT TO SCALE



MAXIMUM SEPARATION
NOT TO SCALE



VERTICAL ROTATION
NOT TO SCALE
(MINIMUM VERTICAL CURVE RADIUS=100')



NOTES:

1. CLASS A-4 CONCRETE MINIMUM STRENGTH - 4000 PSI.
2. TOLERANCE - CONNECTOR LOCATION +/- 1/16" LENGTH +/- 1/4.
3. CHAMFERS 3/4".
4. WEIGHT - 4800 LBS. OR 400 PLF.
5. CONNECTOR PLATE TOLERANCE 1/16" +/- (EXCEPT LENGTH 5-3/4" +).
6. PLATE AS PER ASTM A 36.
7. REBAR AS PER ASTM 706 GRADE 60.
8. WELDED WIRE FABRIC FOR CONCRETE AS PER ASTM A 185.
9. REFLECTIVE SHEETING PLATES SHALL BE SPACED AT 10 FEET (SEE LOCATION ON DRAWING MPT-05).
10. THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE WHITE ALONG BOTH SIDES OF TWO-WAY ROADWAYS AND THE RIGHT-HAND SIDE OF ONE-WAY ROADWAYS. ALONG THE LEFT-HAND SIDE OF ONE-WAY ROADWAYS, THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE YELLOW.

POSITIVE CONNECTING BARRIER J-J HOOKS® DESIGN AS MANUFACTURED BY
EASI-SET INDUSTRIES, 5119 CATLETT ROAD P.O. BOX 400, MIDLAND, VA 22728, (800) 547-4045

NOTICE
TEMPORARY CONCRETE BARRIER UNITS PRODUCED ON AND AFTER OCTOBER 1, 2002 FOR USE ON STATE HIGHWAY PROJECTS MUST MEET NCHRP REPORT 350 CRITERIA.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY
DATE: 3/19/12
ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
DATE: 6/12/12
ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

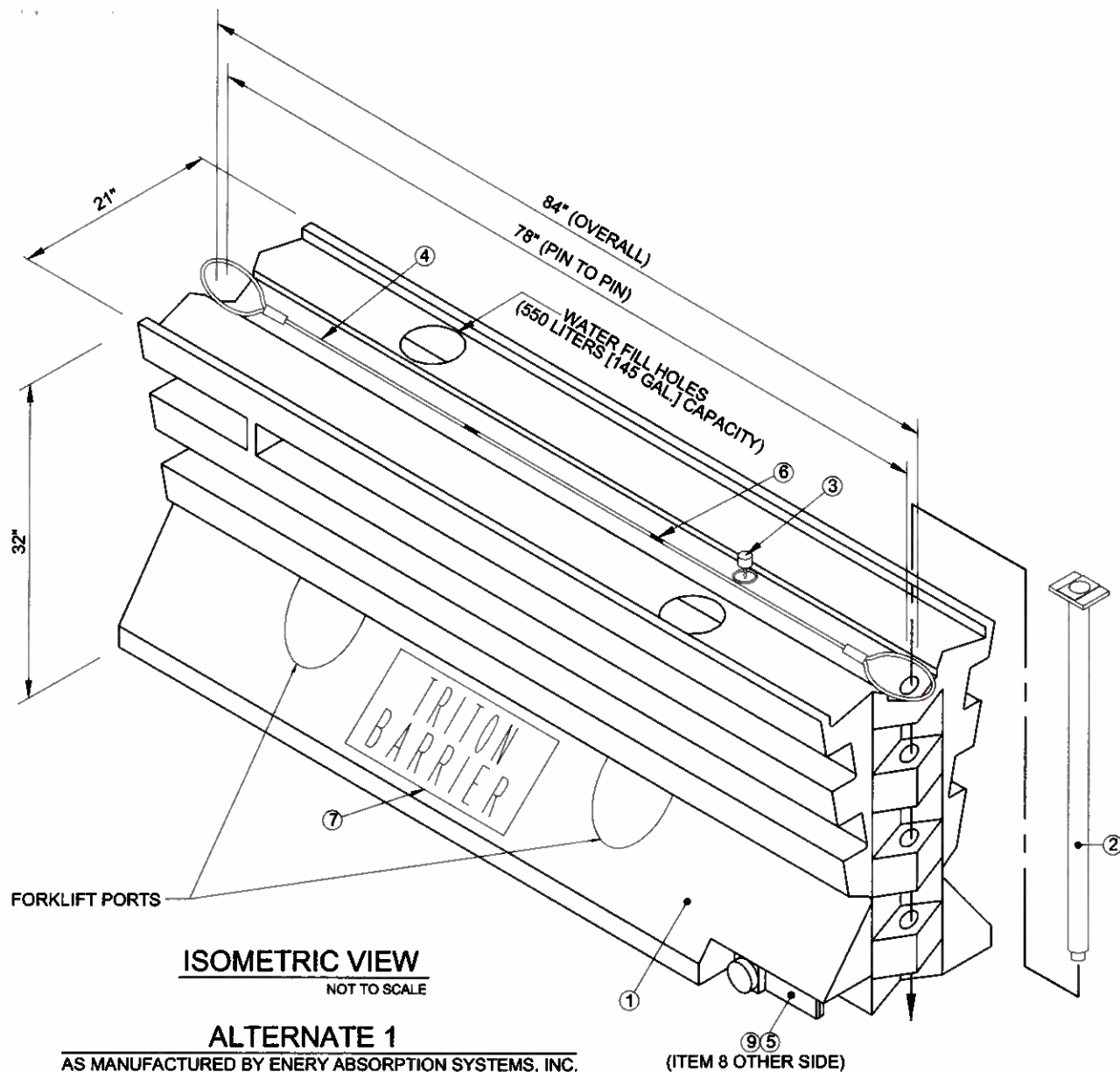
MAINTENANCE AND PROTECTION OF TRAFFIC
TEMPORARY CONCRETE BARRIER
POSITIVE CONNECTION BARRIER
J-J HOOK DESIGN

MPT-07
JUNE 2012

ENGINEERING STANDARDS OFFICE

DWG BY: LMARTINEZ 2934

DATE	REVISION	BY
APR. 06	ORIGINAL (MPT-9)	JMO
JUN. 12	SHEET RENUMBERING (MPT-08)	JMO
JUN. 12	GENERAL REVISION AND ADDED NOTE 7, JMO	



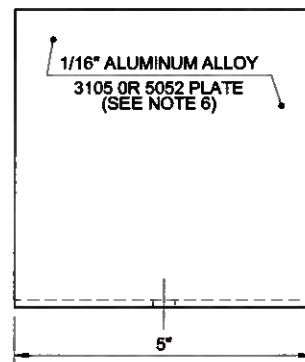
ISOMETRIC VIEW
NOT TO SCALE

ALTERNATE 1

AS MANUFACTURED BY ENERY ABSORPTION SYSTEMS, INC.

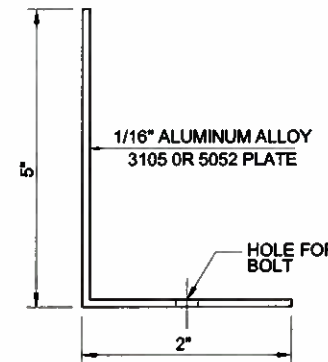
LEGEND:

- ① BARRIER SECTION
- ② PIN, CONNECTING
- ③ INDICATOR, WATER LEVEL
- ④ CABLE, TENSION
- ⑤ VALVE, GATE, QUICK-RELEASE
- ⑥ CLAMP, WIRE ROPE 3/8 W/O SADDLE
- ⑦ DECAL, TRITON
- ⑧ PLUG, 1-1/2", SCHED 40, PVC
- ⑨ ADAPTER, ABS, 1-1/2" NP1 - 1-1/2" SLIP



FRONT VIEW

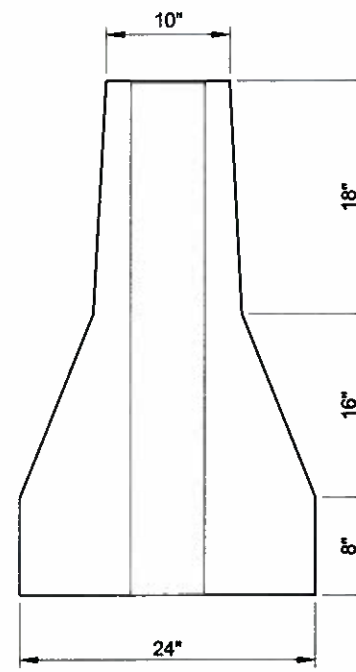
NOT TO SCALE



SIDE VIEW

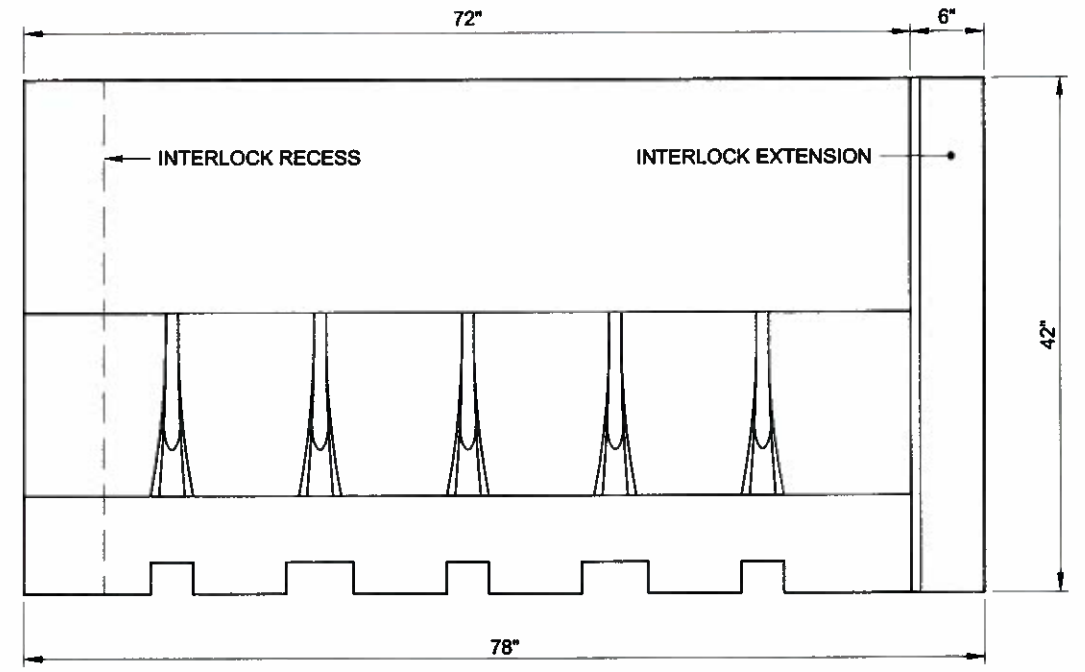
NOT TO SCALE

REFLECTIVE SHEETING PLATE DETAILS



SECTION

NOT TO SCALE



ELEVATION

NOT TO SCALE

ALTERNATE 2

AS MANUFACTURED BY THE TRIPLEX GROUP, INC.

NOTES:

1. THE POLYETHYLENE BARRIER SYSTEM IS ONE ALTERNATE TO THE PORTABLE CONCRETE MEDIAN BARRIERS AND OTHER SUCH DEVICES USED TO CONTROL, DIRECT, CHANNEL AND STOP VEHICULAR AND PEDESTRIAN TRAFFIC.
2. THE WEIGHT OF THE BARRIER SHALL NOT EXCEED 140 LBS. EMPTY.
3. EACH SECTION SHALL BE CONSTRUCTED OF A LIGHTWEIGHT POLYETHYLENE PLASTIC SHALL BE DESIGNED TO ACCEPT WATER BALLAST OR SOLID BALLAST AND RETAIN ITS SHAPE AND STRUCTURAL INTEGRITY.
4. IT SHALL BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR TO FILL AND DRAIN THE MODULES WITH WATER.
5. PLASTIC BARRIER SHALL NOT BE USED ON BRIDGE DECK WHEN THE EXISTING BRIDGE PARAPET HAS BEEN DEMOLISHED. ONLY CONCRETE BARRIER USING THE WALL TIE AND ANCHOR AS THE DEPICTED ON DRAWING MPT-06 SHALL BE USED IN THIS INSTANCE.
6. REFLECTIVE SHEETING PLATE SHALL BE ATTACHED WITH GLUE.
7. THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE WHITE ALONG BOTH SIDES OF TWO-WAY ROADWAYS AND THE RIGHT-HAND SIDE OF ONE-WAY ROADWAYS. ALONG THE LEFT-HAND SIDE OF ONE-WAY ROADWAYS, THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE YELLOW.

NOTICE

TEMPORARY CONCRETE BARRIER UNITS PRODUCED ON AND AFTER OCTOBER 1, 2002 FOR USE ON STATE HIGHWAY PROJECTS MUST MEET NCHRP REPORT 350 CRITERIA.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

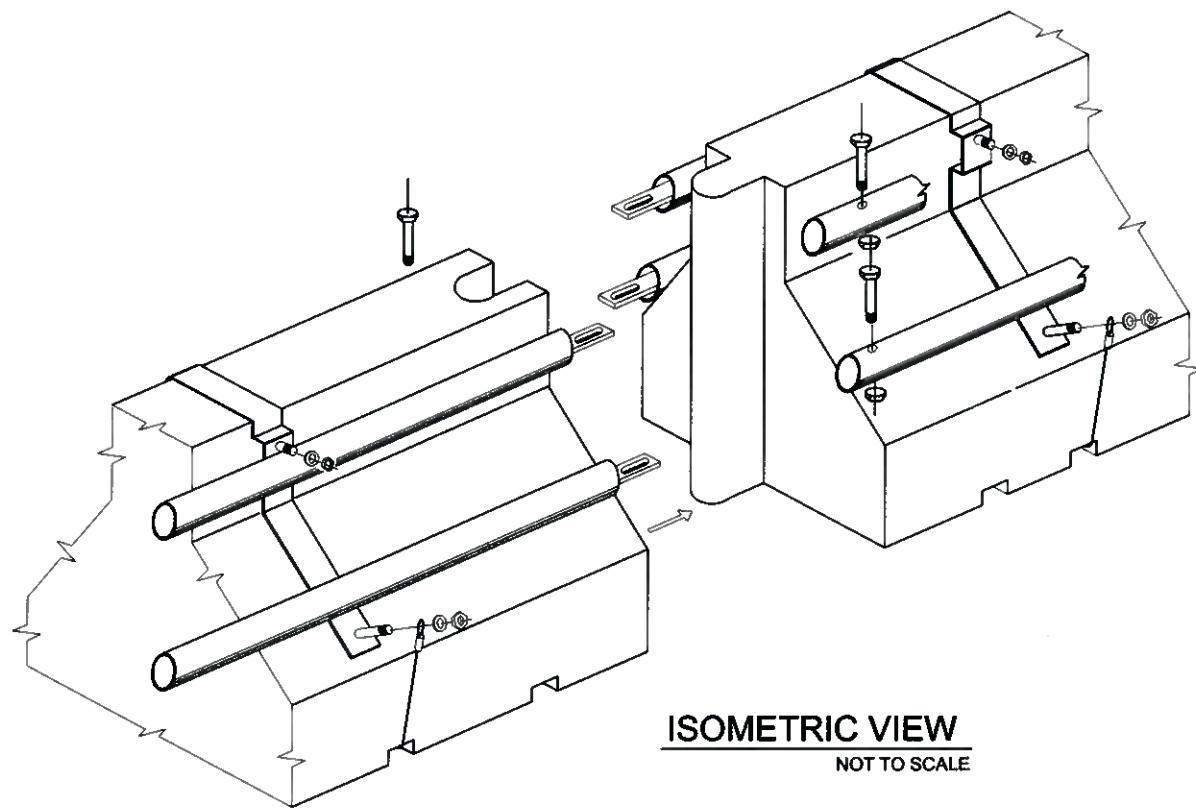
STANDARD DRAWING APPROVED BY:
DATE: 6/14/12
ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
DATE: 6/14/12
ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
POLYETHYLENE BARRIER SYSTEM

MPT-08
JUNE 2012

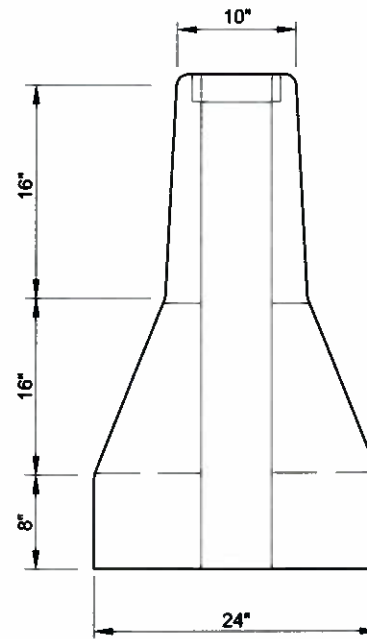
ENGINEERING STANDARDS OFFICE

DATE	REVISION	BY
APR. 96	ORIGINAL (MPT-9A)	JMO
JUN. 12	SHEET RENUMBERING (MPT-09)	JMO
JUN. 12	GENERAL REVISION AND ADDED NOTE 7, JMO	JMO

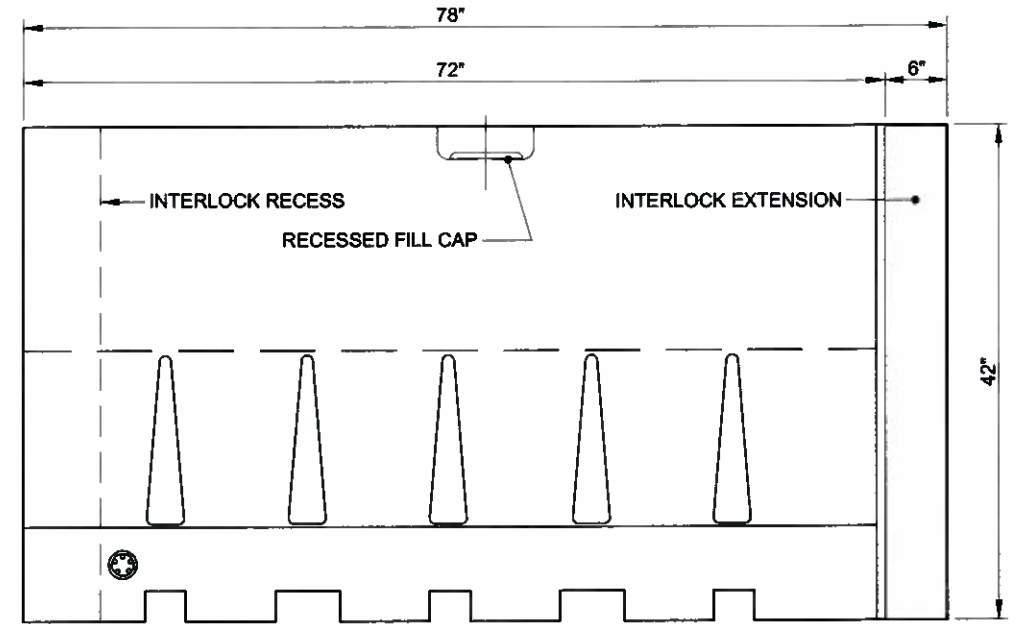


ISOMETRIC VIEW
NOT TO SCALE

ALTERNATE 3
GUARDIAN BARRIER* AND 350 HIGHWAY KIT*
AS MANUFACTURED BY THE SAFETY BARRIER SYSTEMS
*REGISTERED TRADEMARKS OF YEW CORP.



SECTION
NOT TO SCALE

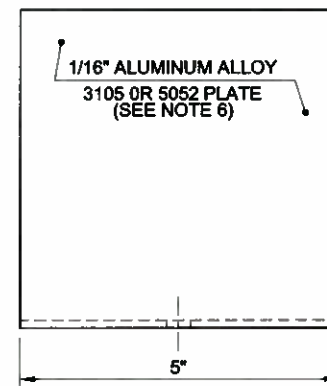


ELEVATION
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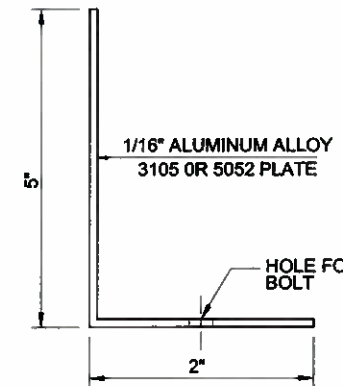
ALTERNATE 3
GUARDIAN BARRIER AND 350 HIGHWAY KIT
AS MANUFACTURED BY THE SAFETY BARRIER SYSTEMS

NOTES:

1. THE POLYETHYLENE BARRIER SYSTEM IS ONE ALTERNATE TO THE PORTABLE CONCRETE MEDIAN BARRIERS AND OTHER SUCH DEVICES USED TO CONTROL, DIRECT, CHANNEL AND STOP VEHICULAR AND PEDESTRIAN TRAFFIC.
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4. IT SHALL BE A SUBSIDIARY OBLIGATION OF THE CONTRACTOR TO FILL AND DRAIN THE MODULES WITH WATER.
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6. REFLECTIVE SHEETING PLATE SHALL BE ATTACHED WITH GLUE.
7. THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE WHITE ALONG BOTH SIDES OF TWO-WAY ROADWAYS AND THE RIGHT-HAND SIDE OF ONE-WAY ROADWAYS. ALONG THE LEFT-HAND SIDE OF ONE-WAY ROADWAYS, THE REFLECTIVE SHEETING COLOR FOR PLATES SHALL BE YELLOW.



FRONT VIEW
NOT TO SCALE



SIDE VIEW
NOT TO SCALE

REFLECTIVE SHEETING PLATE DETAILS

NOTICE

TEMPORARY CONCRETE BARRIER UNITS PRODUCED ON AND AFTER OCTOBER 1, 2002 FOR USE ON STATE HIGHWAY PROJECTS MUST MEET NCHRP REPORT 350 CRITERIA.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

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 [Signature]
 DATE: 6/24/12
 ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
POLYETHYLENE BARRIER SYSTEM





MPT-09

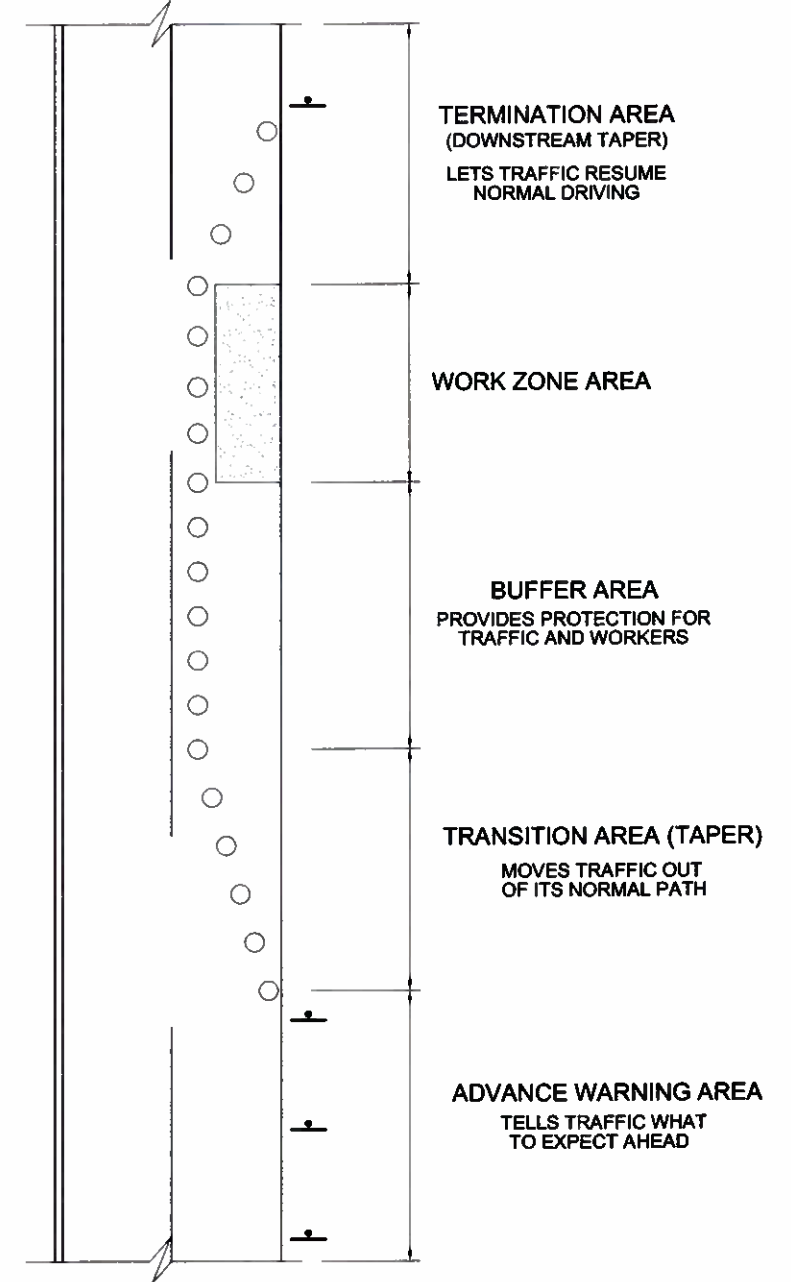
JUNE 2012

NUMBER OF CHANNELIZING DEVICES NEEDED

LENGTH (FT.)	V < 35 MPH		35 MPH < V ≤ 45 MPH		45 MPH < V ≤ 55 MPH	
	TAPER	BUFFER/WORK	TAPER	BUFFER/WORK	TAPER	BUFFER/WORK
≤ 100	5	2-3	5	2-3	5	2-3
150	6	3-5	6	2-4	6	2-3
200	7	3-6	6	3-5	6	2-4
250	9	4-8	7	3-6	6	3-5
300	10	5-9	8	4-7	6	3-6
350	11	5-10	9	4-8	8	4-7
400	13	6-12	10	5-9	9	4-8
450	14	7-13	11	5-10	10	5-9
500	16	8-15	13	6-12	11	5-10
550	17	8-16	14	7-13	11	5-10
600	19	9-18	15	7-14	12	6-11
650	20	10-19	16	8-15	13	6-12

LEGEND:

-  TRAFFIC SIGNS
-  FLAGGER
-  CHANNELIZING DEVICE
-  WORK ZONE AREA
- V - POSTED SPEED IN MPH



FIVE PARTS OF A TRAFFIC CONTROL ZONE

TAPER LENGTH CRITERIA FOR WORK ZONES

TYPE OF TAPER	TAPER LENGTH
MERGING TAPER	L MINIMUM
SHIFTING TAPER	1/2 L MINIMUM
SHOULDER TAPER	1/3 L MINIMUM
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT. MINIMUM 100 FT. MAXIMUM
DOWNSTREAM TAPER	50 FT. MINIMUM 100 FT. MAXIMUM
FORMULAS FOR L (FT.)	
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR GREATER	$L = W \times S$

ADVANCE WARNING SIGN MINIMUM SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS (*)		
	A	B	C
URBAN (LOW SPEED)	100 FEET	100 FEET	100 FEET
URBAN (HIGH SPEED)	350 FEET	350 FEET	350 FEET
RURAL	500 FEET	500 FEET	500 FEET
EXPRESSWAY / FREEWAY	1,000 FEET	1,500 FEET	2,640 FEET

(*) THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "FIRST SIGN" IS THE SIGN IN A THREE-SIGN SERIES THAT IS CLOSEST TO THE TEMPORARY TRAFFIC CONTROL ZONE. THE "THIRD SIGN" IS THE SIGN THAT IS FURTHEST UPSTREAM FROM THE TEMPORARY TRAFFIC CONTROL ZONE.)

LEGEND:

- L - TAPER LENGTH IN FEET
- W - WIDTH OF OFFSET IN FEET
- S - POSTED SPEED LIMIT OR OFF-PEAK 85 PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH.

NOTICE

TEMPORARY CONCRETE BARRIER UNITS PRODUCED ON AND AFTER OCTOBER 1, 2002 FOR USE ON STATE HIGHWAY PROJECTS MUST MEET NCHRP 350 CRITERIA.

DATE	REVISION	BY
APR 96	ORIGINAL (MPT-10)	JMO
JUN 12	GENERAL REVISIONS PER MUTCO 2008	



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:

[Signature]
DATE: 5/20/14
ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

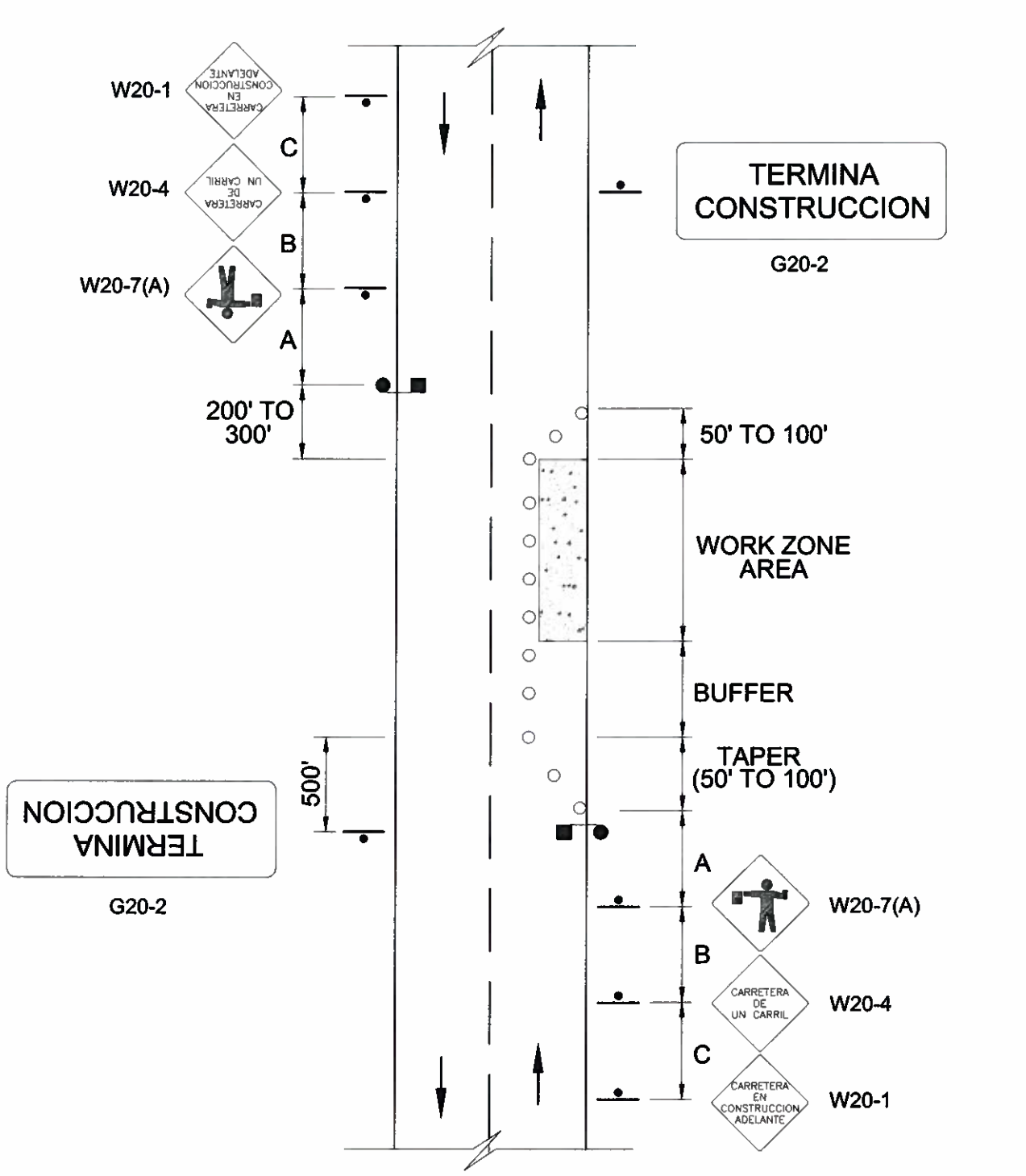
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DATE: 6/21/12
ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
WORK ZONE DESIGN CRITERIA

MPT-10

JUNE 2012

DATE	REVISION	BY
APR. 96	ORIGINAL (MPT-11)	JMO
JUN. 12	RELOCATED DETAILS (MPT-12)	JMO
JUN. 12	GENERAL REVISIONS PER MUTCD-2009	JMO



TWO LANE TWO-WAY TRAFFIC CONTROL

TWO LANE: BUFFER TABLE		
SPEED LIMIT (S, MPH)	WORK ZONE AREA	LENGTH (FEET) ALL LANE WIDTHS
20	BUFFER	90
25	BUFFER	115
30	BUFFER	150
35	BUFFER	185
40	BUFFER	230
45	BUFFER	340
50	BUFFER	370
55	BUFFER	400

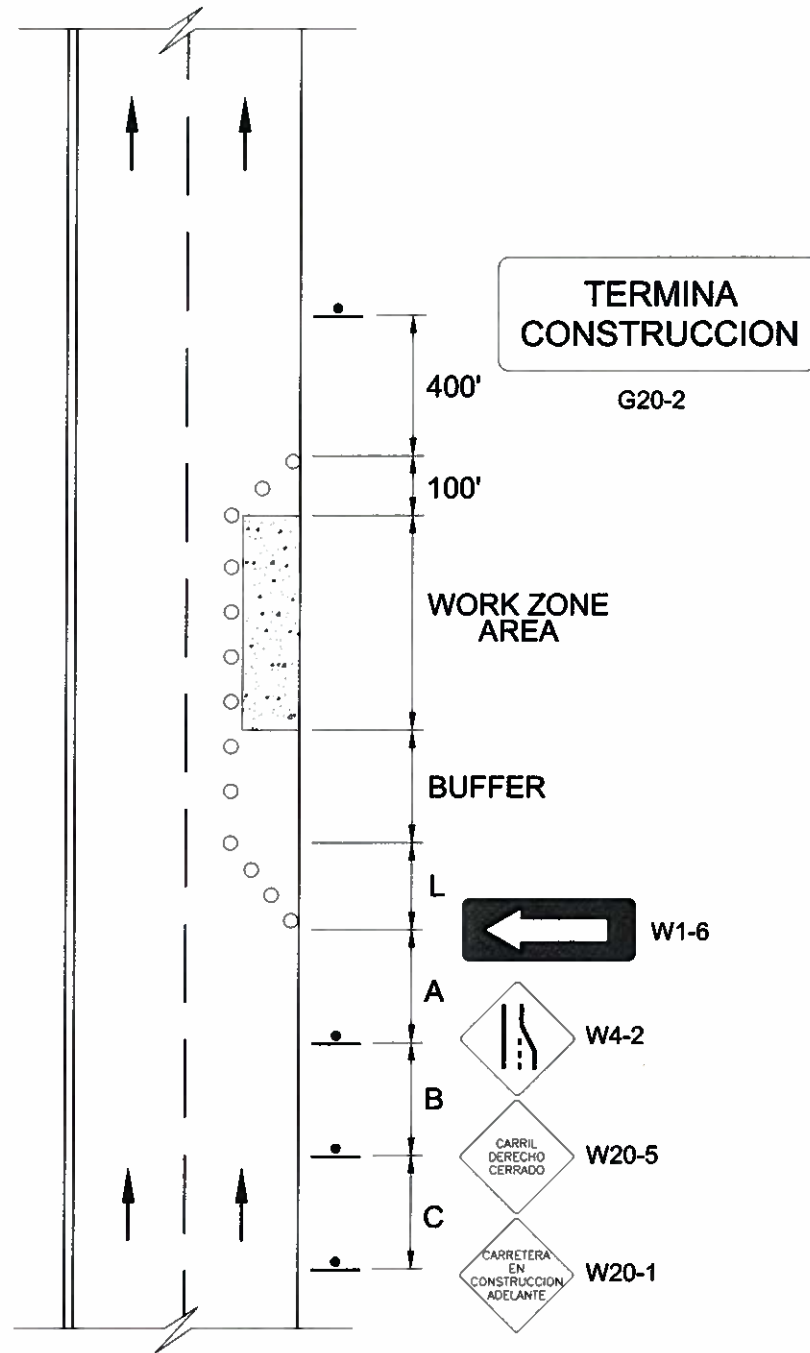
NOTES:

- FOR TWO LANE CITY STREETS WITH POSTED SPEED OF 35 MPH OR LESS, A 200 FEET SIGN SPACING SHALL BE USED.
- A TWO WAY TRAFFIC TAPER SHOULD BE 50 TO 100 FEET IN LENGTH AND MADE UP OF FIVE DEVICES 20 FEET APART.
- FOR THE WORK AND BUFFER SPACE, DEVICES SHALL BE SPACED AT A DISTANCE OF TWICE THE SPEED LIMIT IN FEET.
- THE DOWNSTREAM TAPER LENGTH SHOULD BE 100 FEET AND MADE UP OF FIVE CHANNELIZING DEVICES SPACED 20 FEET APART.
- THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
- THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

GENERAL NOTE:

THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 AND-27.

DATE	REVISION	BY
APR. 96	ORIGINAL (MPT-11)	JMO
JUN. 12	RELOCATED DETAILS (MPT-12)	JMO
JUN. 12	GENERAL REVISIONS PER MUTCD 2009	JMO



MULTILANE LANE CLOSURE

SPEED LIMIT (S, MPH)	WORK ZONE AREA	LENGTH (FEET) ALL LANE WIDTHS		
		10'	11'	12'
20	TAPER, L BUFFER	70 100	75 100	80 100
25	TAPER, L BUFFER	105 100	115 100	125 100
30	TAPER, L BUFFER	150 125	165 120	180 110
35	TAPER, L BUFFER	205 125	225 120	245 110
40	TAPER, L BUFFER	270 150	295 130	320 120
45	TAPER, L BUFFER	450 150	495 130	540 120
50	TAPER, L BUFFER	500 150	550 130	600 120
55	TAPER, L BUFFER	550 175	605 150	660 120

NOTES:

- FOR FREEWAYS OR EXPRESSWAYS, CONSULT THE MUTCD.
- USE OF AN ARROW PANEL IS OPTIONAL BASED ON TRAFFIC VOLUME, SPEED AND VISIBILITY.
- FOR THE MERGING TAPER, DEVICES SHOULD BE SPACED AT A MAXIMUM DISTANCE OF THE SPEED LIMIT IN FEET.
- FOR THE WORK AND BUFFER SPACE, DEVICES SHALL BE SPACED AT A DISTANCE OF TWICE THE SPEED LIMIT IN FEET.
- IF USED, THE DOWNSTREAM TAPER LENGTH SHOULD BE 100 FEET AND MADE UP OF FIVE CHANNELIZING DEVICES SPACED 20 FEET.
- THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
- THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

GENERAL NOTE:

THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 AND-27.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:

DATE:

ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

DATE:

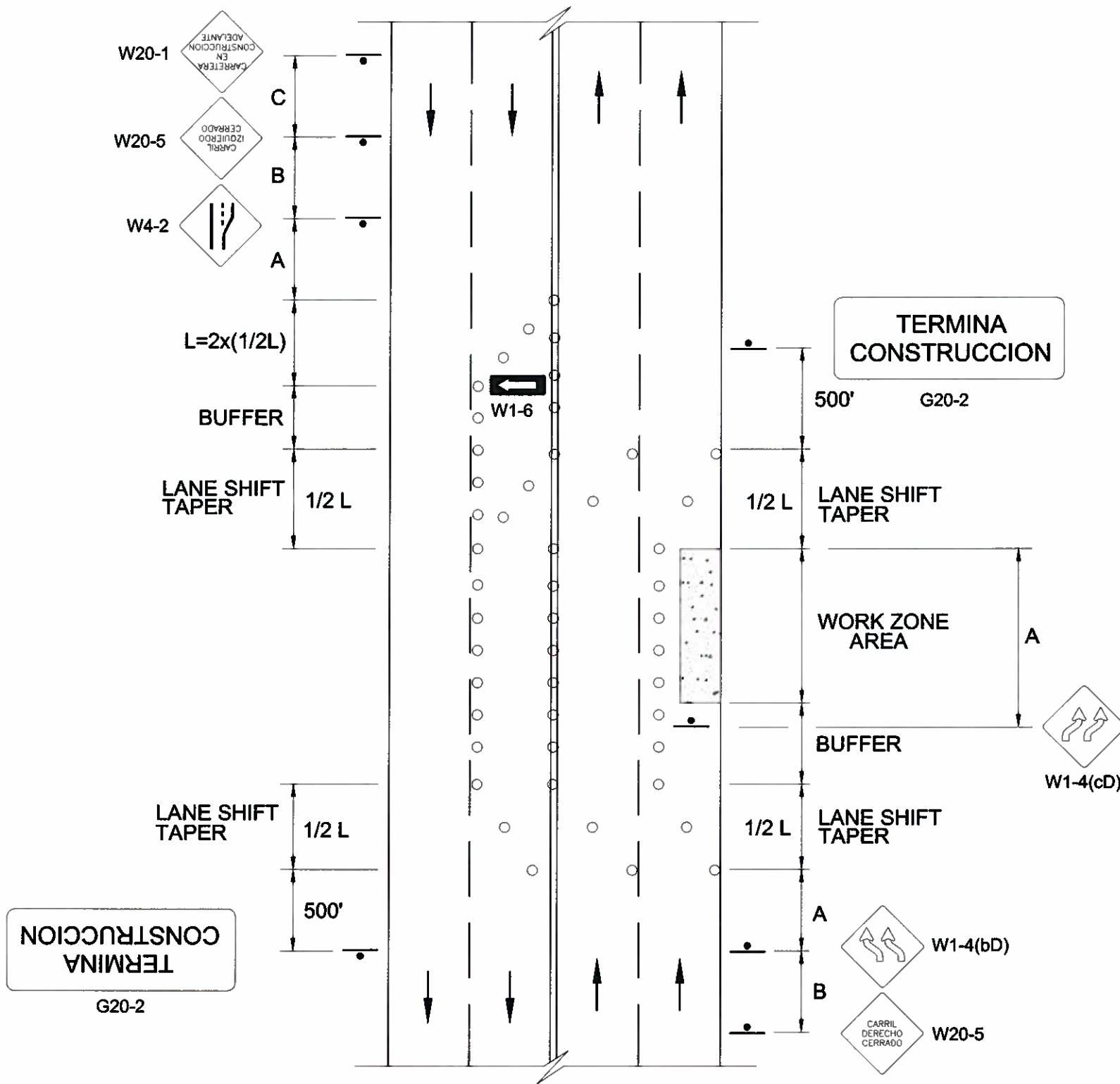
ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

MPT-12

JUNE 2012

DATE	REVISION	BY
APR 96	ORIGINAL (MPT-12)	
JUN 12	RELOCATED DETAILS (MPT-13 & MPT-14)	JMO
JUN 12	GENERAL REVISIONS PER MUTCD 2008	JMO



MULTILANE LANE SHIFT

SPEED LIMIT (S, MPH)	WORK ZONE AREA	LENGTH (FEET) ALL LANE WIDTHS		
		10'	11'	12'
20	TAPER, 1/2 L BUFFER	35 120	40 120	40 120
25	TAPER, 1/2 L BUFFER	55 125	60 130	65 130
30	TAPER, 1/2 L BUFFER	75 165	85 160	90 155
35	TAPER, 1/2 L BUFFER	105 175	115 175	125 170
40	TAPER, 1/2 L BUFFER	135 220	150 205	160 200
45	TAPER, 1/2 L BUFFER	225 265	250 255	270 255
50	TAPER, 1/2 L BUFFER	250 275	275 270	300 270
55	TAPER, 1/2 L BUFFER	275 315	305 300	330 285

NOTES:

- FOR FREEWAYS OR EXPRESSWAYS, CONSULT THE MUTCD.
- FOR THE LANE SHIFT TAPERS, DEVICES SHOULD BE SPACED AT A MAXIMUM DISTANCE OF THE SPEED LIMIT IN FEET.
- FOR THE WORK AND BUFFER SPACE, DEVICES SHALL BE SPACED AT A DISTANCE OF TWICE THE SPEED LIMIT IN FEET.
- THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
- THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

GENERAL NOTE:

THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:

 DATE: 6/24/14
 ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

DATE: 6/24/14
 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

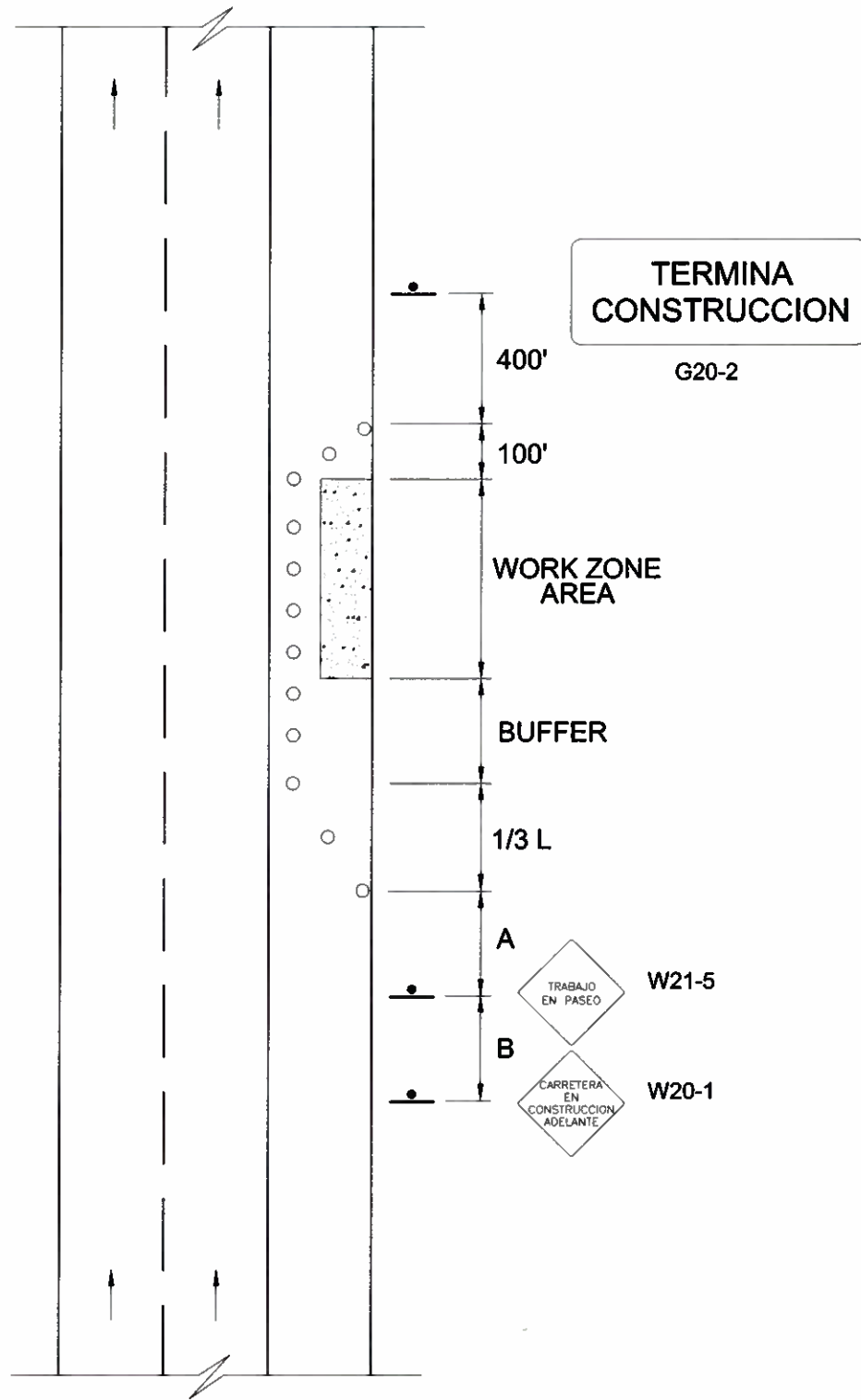
MPT-13

JUNE 2012

DWG BY: LMARTINEZ 2934

DATE	REVISION	BY
APR. 98	ORIGINAL (MPT-12)	
JUN. 12	RELOCATED DETAILS (MPT-13 & MPT-14) JMO	
JUN. 12	GENERAL REVISION AS PER MUTCD 2008 JMO	

SHOULDER CLOSURE



SPEED LIMIT (S, MPH)	WORK ZONE AREA	LENGTH (FEET) ALL LANE WIDTHS				
		8'	9'	10'	11'	12'
20	TAPER, 1/3 L BUFFER	20 115	20 120	25 125	25 125	30 130
25	TAPER, 1/3 L BUFFER	30 140	30 140	35 135	40 140	40 145
30	TAPER, 1/3 L BUFFER	40 180	45 180	50 175	55 175	60 170
35	TAPER, 1/3 L BUFFER	55 200	60 200	70 195	75 195	80 195
40	TAPER, 1/3 L BUFFER	70 250	80 245	90 240	100 230	105 230
45	TAPER, 1/3 L BUFFER	120 315	135 310	150 300	165 295	180 300
50	TAPER, 1/3 L BUFFER	135 335	150 325	165 320	185 315	200 320
55	TAPER, 1/3 L BUFFER	150 375	165 370	185 360	200 355	220 340

NOTES:

1. A SHOULDER TAPER IS USED WHEN WORK IS PERFORMED ON AN IMPROVED (PAVED) SHOULDER EIGHT METERS OR MORE IN WIDTH.
2. FOR SHOULDER TAPERS, DEVICES SHOULD BE SPACED AT A MAXIMUM DISTANCE OF THE SPEED LIMIT IN FEET.
3. FOR THE WORK AND BUFFER SPACE, DEVICES SHALL BE SPACED AT A DISTANCE OF TWICE THE SPEED LIMIT IN FEET.
4. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
5. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

GENERAL NOTE:

THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.

ENGINEERING STANDARDS OFFICE



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:

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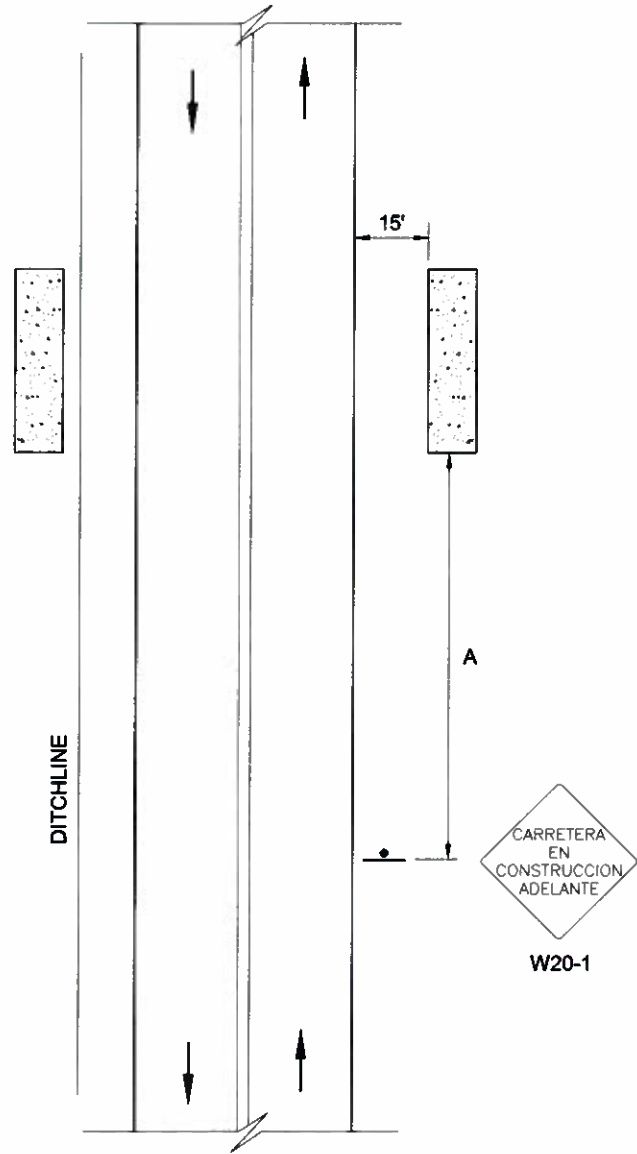
[Signature] DATE: 6/14/12 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

MPT-14

JUNE 2012

DATE	REVISION	BY
APR 96	ORIGINAL (MPT-15)	JMO
JUN 12	SHEET RENUMBERING (MPT-15)	JMO
JUN 12	GENERAL REVISIONS PER MUTCD 2008	JMO



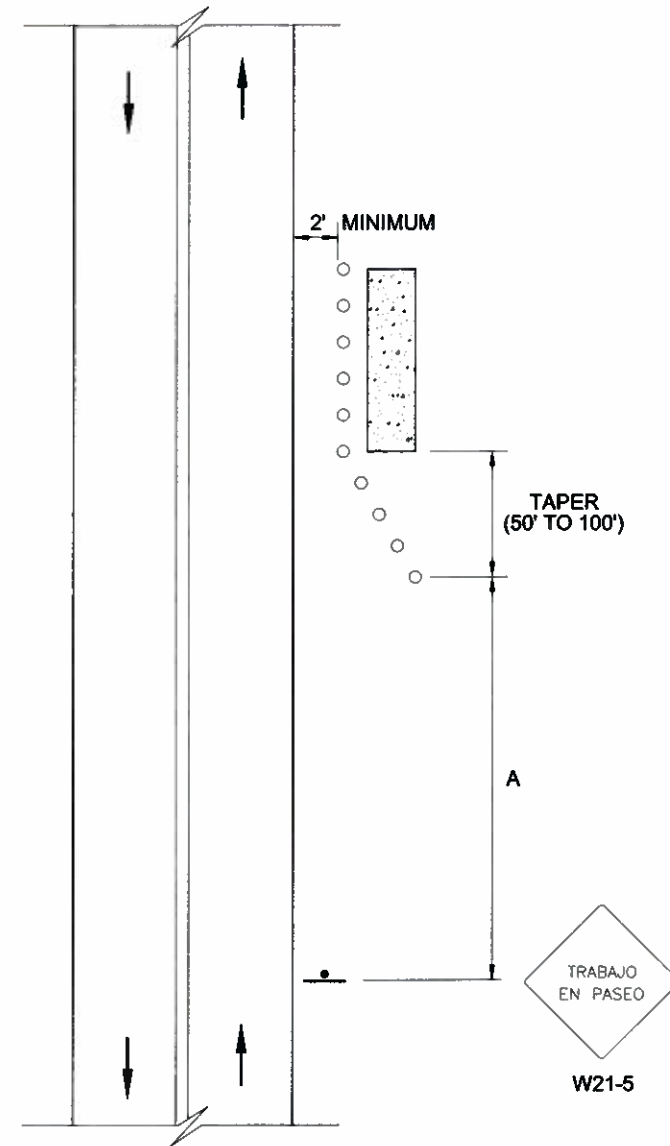
WORK OUTSIDE THE SHOULDER
15' OR GREATER FROM THE EDGE OF PAVEMENT

NOTES:

- IF VEHICLE AND WORK ACTIVITY ARE BOTH OUTSIDE THE RIGHT-OF-WAY, BEHIND THE DITCHLINE, BEHIND THE GUARD RAIL, MORE THAN 2' BEHIND CURB, OR 15' OR MORE FROM THE EDGE OF ANY ROADWAY, THEN ONLY AN ACTIVATED FLASHING OR REVOLVING YELLOW LIGHT IS NEEDED.
- FOR TWO-LANE, LOW-SPEED (35 MPH OR LESS) URBAN STREETS, A 200 FEET SIGN SPACING SHALL BE USED.
- AN ADVANCE WARNING SIGN SHALL BE USED: IF THE WORK WILL BE PERFORMED IMMEDIATELY ADJACENT TO THE SHOULDER, IF EQUIPMENT WILL CROSS OR MOVE ALONG THE ROADWAY, OR IF THE ACTIVITY MAY DISTRACT MOTORISTS.
- OTHER ACCEPTABLE ADVANCE WARNING SIGN IS "TRABAJO EN PASEO" (W21-5).
- THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

GENERAL NOTE:

THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.



SHOULDER WORK
2' TO 15' FROM THE EDGE OF PAVEMENT

NOTES:

- FOR OPERATIONS OF 15 MINUTES OR LESS, ALL SIGNS AND CHANNELIZING DEVICES SHALL BE ELIMINATED IF A VEHICLE WITH AN ACTIVATED FLASHING OR REVOLVING YELLOW LIGHT IS USED. FOR OPERATIONS OF 15-60 MINUTES, CHANNELIZING DEVICES MAY BE ELIMINATED.
- FOR TWO LANE, LOW-SPEED (35 MPH OR LESS) URBAN STREETS, A 50 FEET SHOULDER TAPER AND 200 FEET SIGN SPACING SHALL BE USED.
- SIGN W20-1 ("CARRETERA EN CONSTRUCCION ADELANTE") MAY BE USED INSTEAD OF SIGN W21-5 ("TRABAJO EN PASEO").
- THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
- THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.



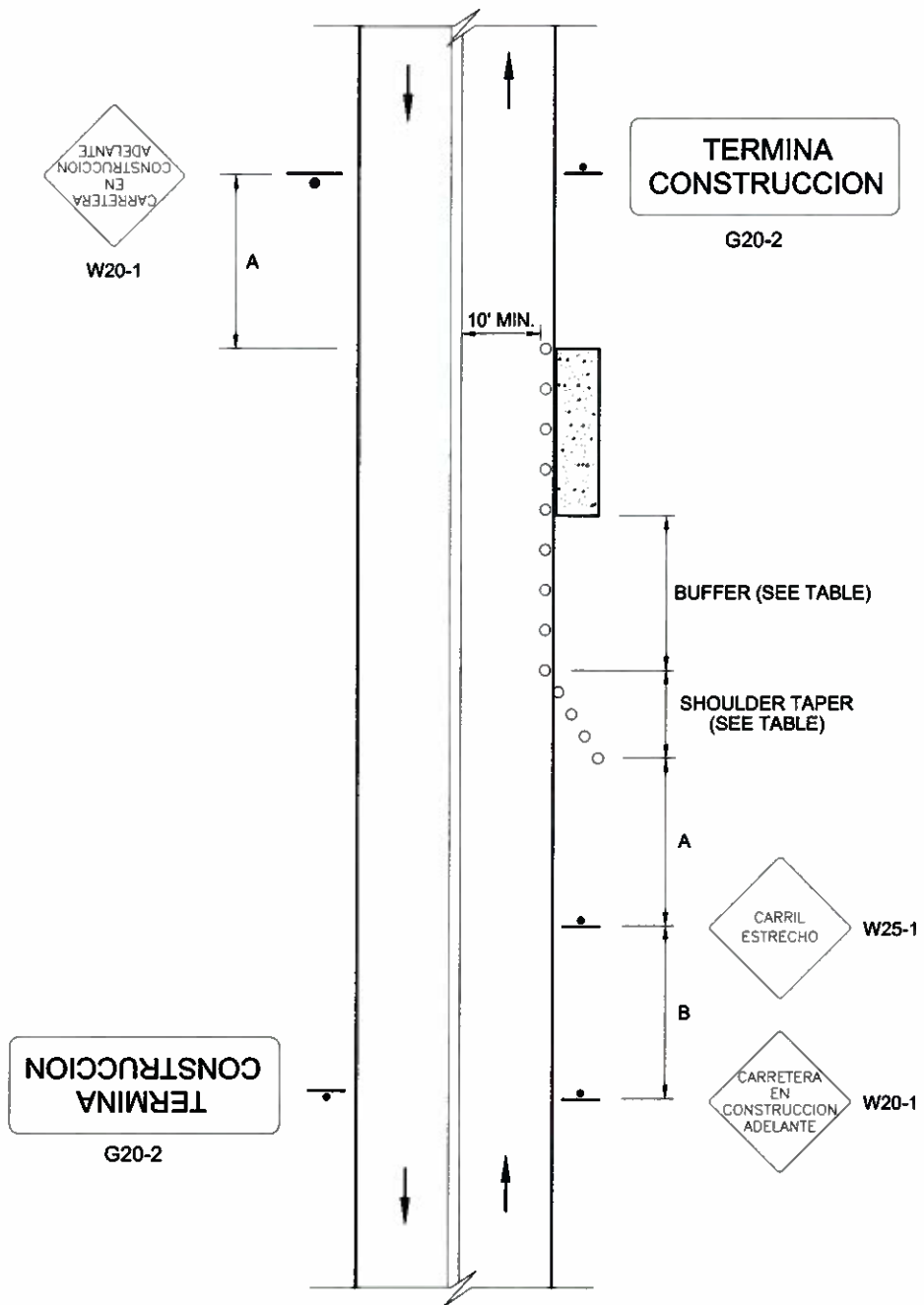
COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:
 DATE: 5/11/12 ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
 DATE: 6/11/12 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

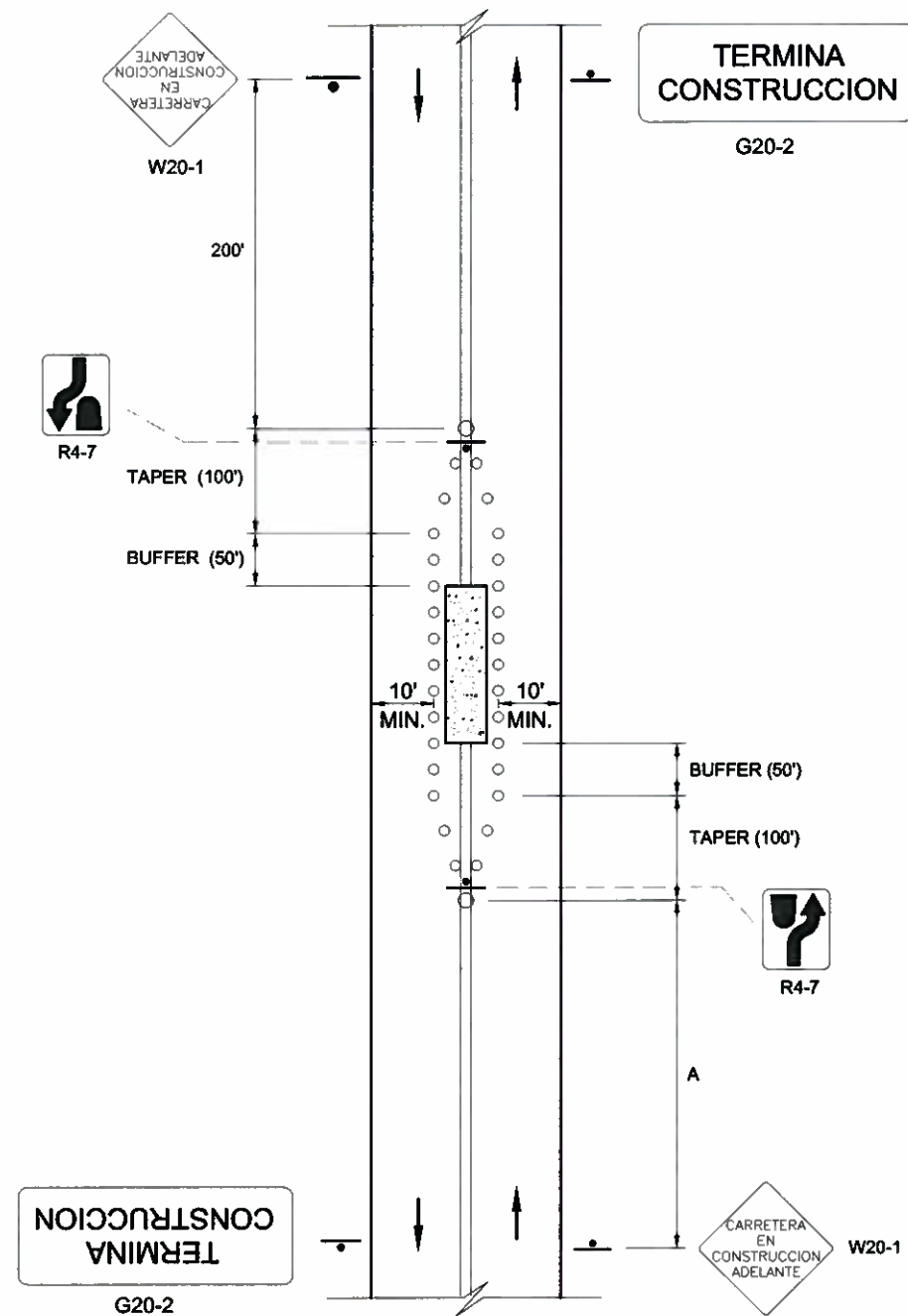
MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

MPT-15
JUNE 2012

DATE	REVISION	BY
APR. 98	ORIGINAL (MPT-16)	JMK
JUN. 12	SHEET RE numbering (MPT-16)	JMK
JUN. 12	GENERAL REVISION AS PER MUTCD 2009	JMK



**SHOULDER WORK WITH MINOR ENCROACHMENT
WITHIN 2' OF THE EDGE OF PAVEMENT**



**WORK IN CENTER OF MINOR URBAN STREET
MAINTAINING TWO-WAY TRAFFIC**

GENERAL NOTE:
THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.

NOTES:

- FOR TRAFFIC CONDITIONS WITH SPEEDS GREATER THAN 35 MPH, A LANE CLOSURE SHOULD BE CONSIDERED (SEE DRAWINGS MPT-11 AND MPT-12).
- THE LANE ENCROACHMENT SHOULD EITHER PERMIT A REMAINING LANE WIDTH OF 10', OR THE LANE SHOULD BE CLOSED. HOWEVER, 9' WIDTH IS ACCEPTABLE FOR USE ON LOW VOLUME, LOW SPEED ROADWAYS, PROVIDED THE TRAFFIC DOES NOT INCLUDE LONG AND/OR WIDE HEAVY COMMERCIAL VEHICLES.
- FOR TWO-LANE, LOW-SPEED (35 MPH OR LESS) URBAN STREETS, A 200 FEET SIGN SPACING SHALL BE USED.
- "CARRIL ESTRECHO" SIGN (W25-1) MAY BE DELETED ON LOW-VOLUME, LOW-SPEED ROADWAYS.
- THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
- THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

SPEED LIMIT (MPH)	SHOULDER TAPER (FT.)	BUFFER (FT.)
35	70	200
45	150	300
55	200	350

NOTES:

- THIS LAYOUT IS ONLY APPROPRIATE FOR LOW-VOLUME, LOW-SPEED (35 MPH OR LESS) URBAN STREETS.
- A MINIMUM LANE WIDTH OF 10' SHOULD BE PROVIDED IN BOTH DIRECTIONS AS MEASURED FROM THE CHANNELIZING DEVICES TO THE EDGE OF PAVEMENT.
- THE "SIGA POR SU DERECHA" SYMBOL SIGNS (R4-7) MAY BE REPLACED WITH "CARRIL ESTRECHO" SIGNS (W25-1) PLACED 200 FEET FROM THE BEGINNING OF THE TAPER.
- THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
- THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.



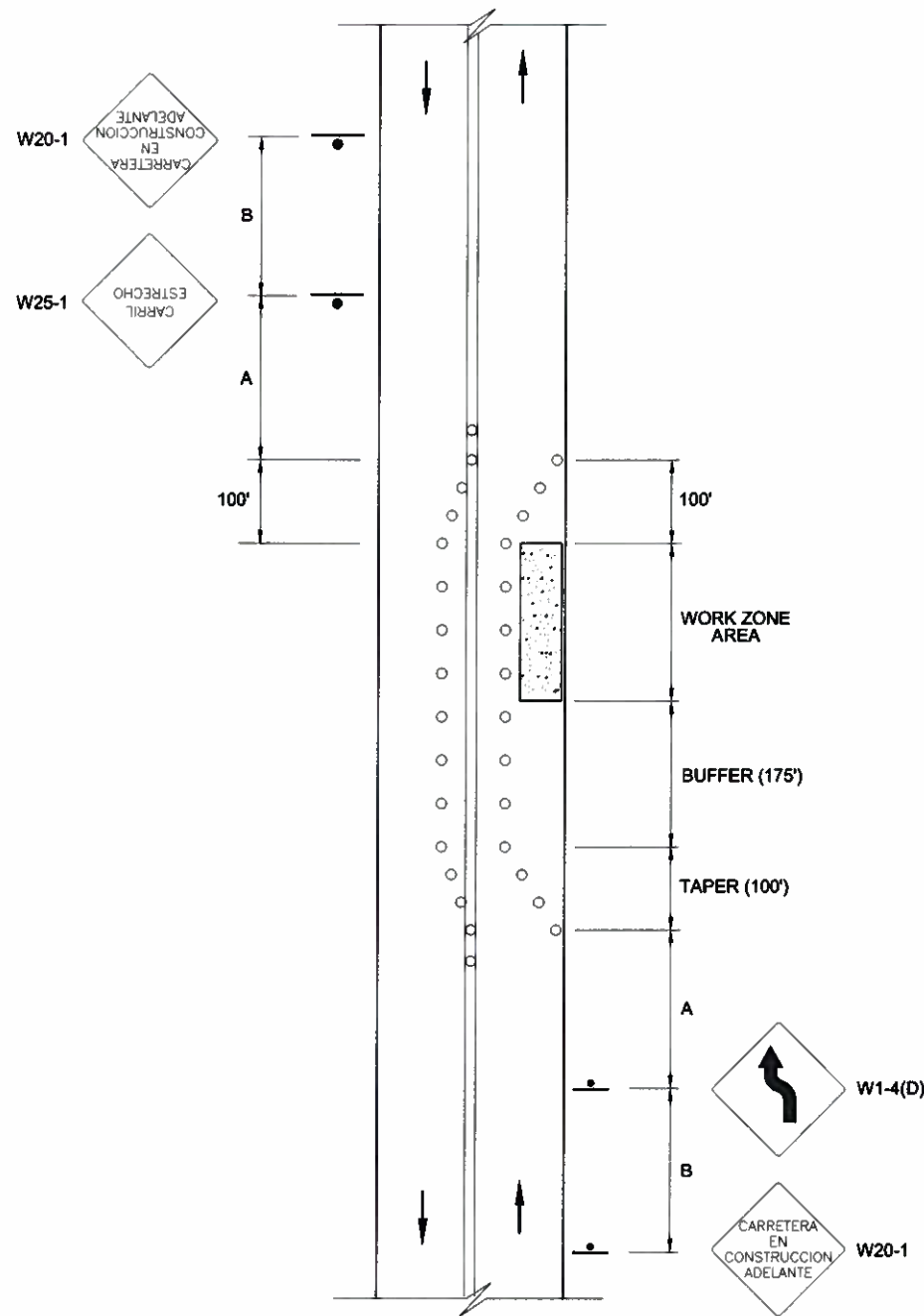
COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:
 DATE: 3/11/12 ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
 DATE: 6/11/12 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

MPT-16
JUNE 2012

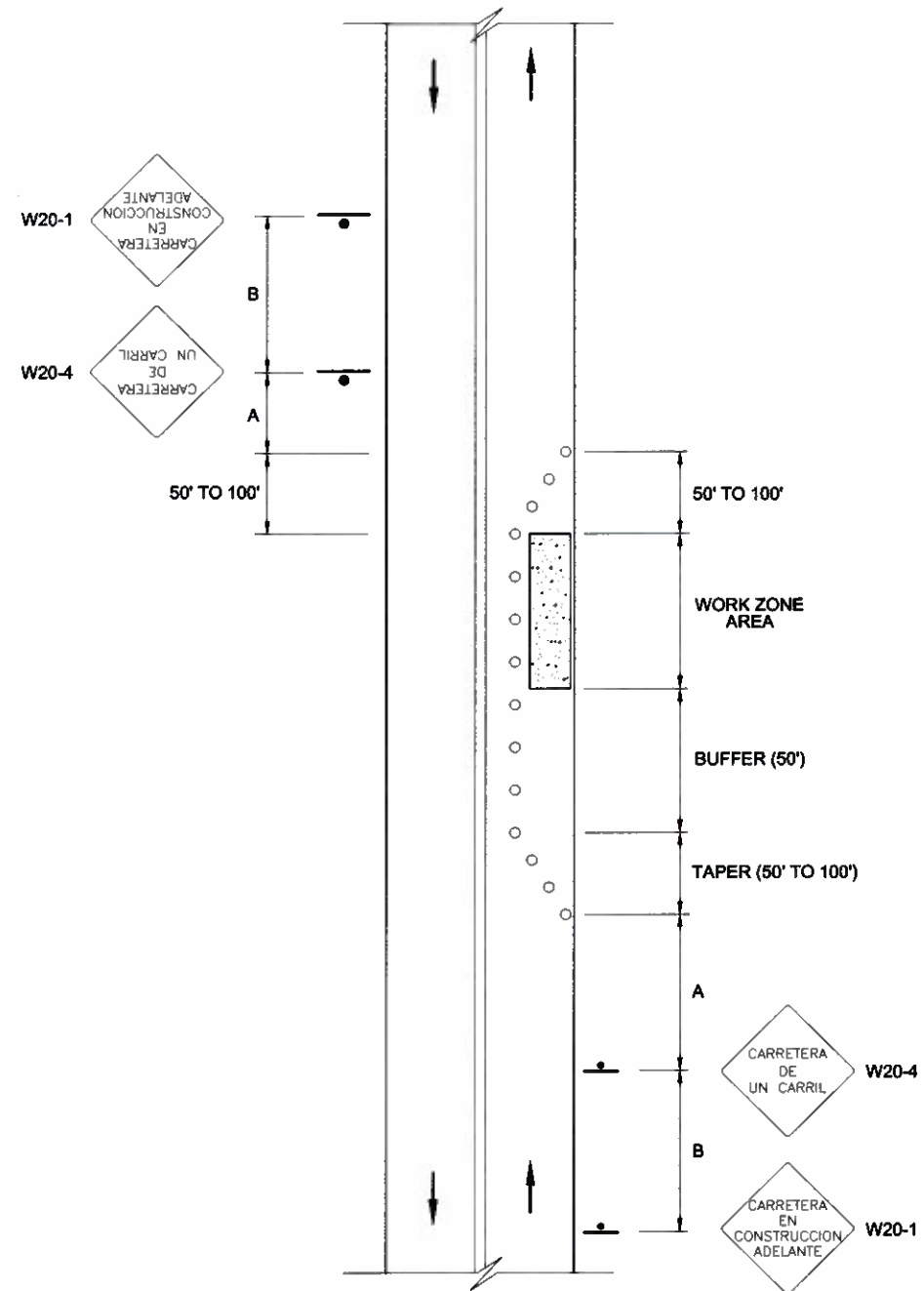
DATE	REVISION	BY
APR 96 <td>ORIGINAL (MPT-15) <td>JMO</td> </td>	ORIGINAL (MPT-15) <td>JMO</td>	JMO
JUN 12 <td>SHEET RE numbering (MPT-17) <td>JMO</td> </td>	SHEET RE numbering (MPT-17) <td>JMO</td>	JMO
JUN 12 <td>GENERAL REVISIONS PER MUTCD 2009</td> <td>JMO</td>	GENERAL REVISIONS PER MUTCD 2009	JMO



**WORK IN TRAVEL LANE ON MINOR URBAN STREET
MAINTAINING TWO-WAY TRAFFIC**

NOTES:

1. THIS LAYOUT IS ONLY APPROPRIATE FOR LOW-VOLUME, LOW-SPEED (35 MPH OR LESS) URBAN STREETS.
2. A MINIMUM LANE WIDTH OF 10' SHOULD BE PROVIDED IN BOTH DIRECTIONS (THE LANE WIDTH SHOULD NOT EXTEND BEYOND THE EDGE OF PAVEMENT.)
3. ADDITIONAL ADVANCE WARNING MAY BE APPROPRIATE, SUCH AS "LANE SHIFTS" (W1-4(D)) AND "CARRIL ESTRECHO" SIGNS (W25-1).
4. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
5. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.



**LANE CLOSURE ON A MINOR URBAN STREET
NO FLAGGER, TRAFFIC SELF-REGULATING**

NOTES:

1. THIS LAYOUT IS ONLY APPROPRIATE FOR LOW-VOLUME, LOW-SPEED (35 MPH OR LESS) STREETS, SUCH AS LOCAL RESIDENTIAL STREETS. THIS PROCEDURE IS NOT TO BE USED IN RURAL AREAS.
2. TRAFFIC CAN REGULATE ITSELF WHILE VOLUMES ARE LOW AND THE LENGTH OF THE WORK SPACE IS SHORT, THUS ALLOWING TRAFFIC TO READILY SEE THE ROADWAY BEYOND.
3. WHERE TRAFFIC DOES NOT SELF-REGULATE EFFECTIVELY, USE ONE OR TWO FLAGGERS. (SEE DRAWING MPT-20).
4. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
5. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

GENERAL NOTE:

THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

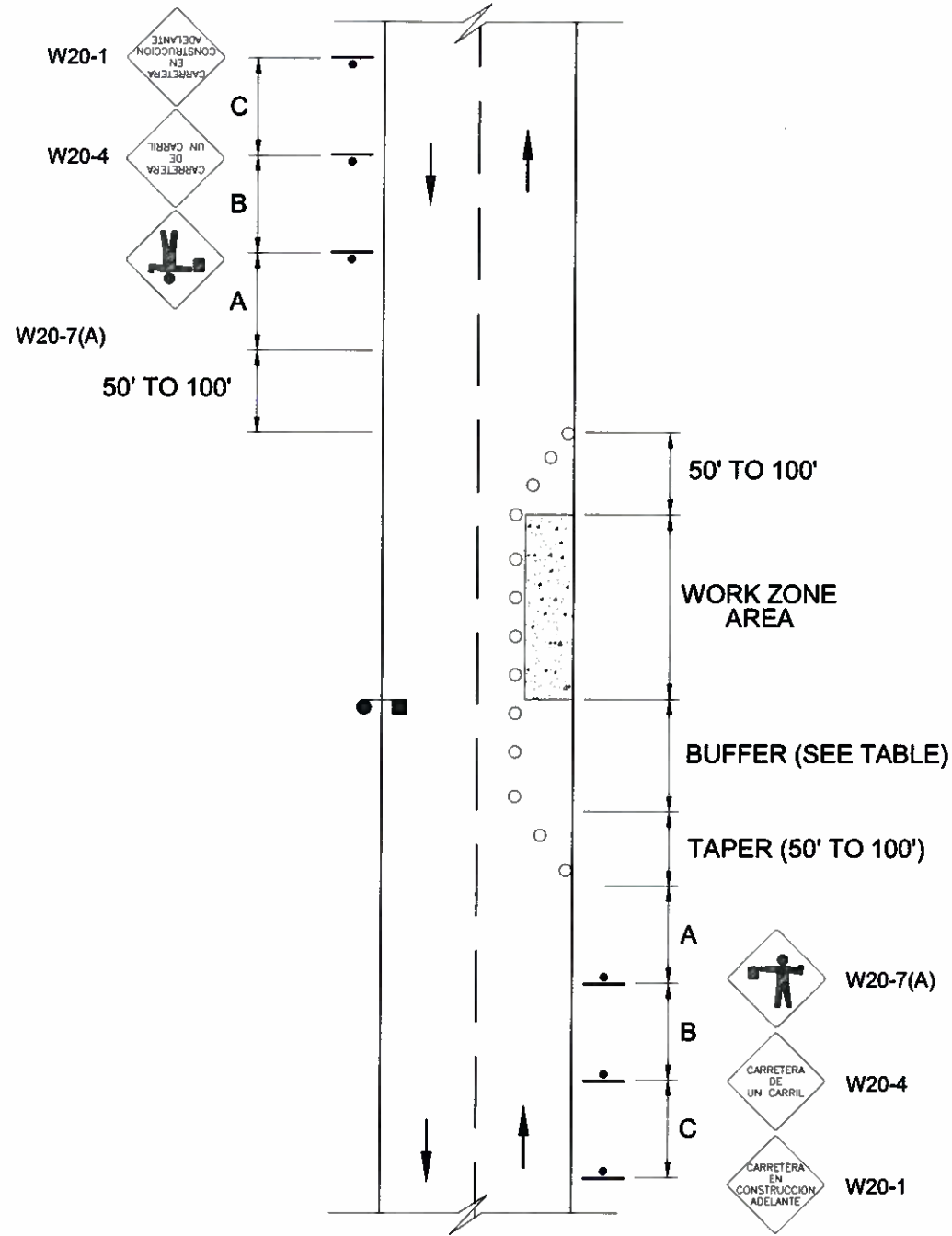
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 [Signature] DATE: [] ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
 [Signature] DATE: [] ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

MPT-17

JUNE 2012

DATE	REVISION	BY
APR. 96	ORIGINAL (MPT-18)	
JUN. 12	SHEET RENUMBERING (MPT-18)	
JUN. 12	GENERAL REVISIONS PER MUTCD 2009	

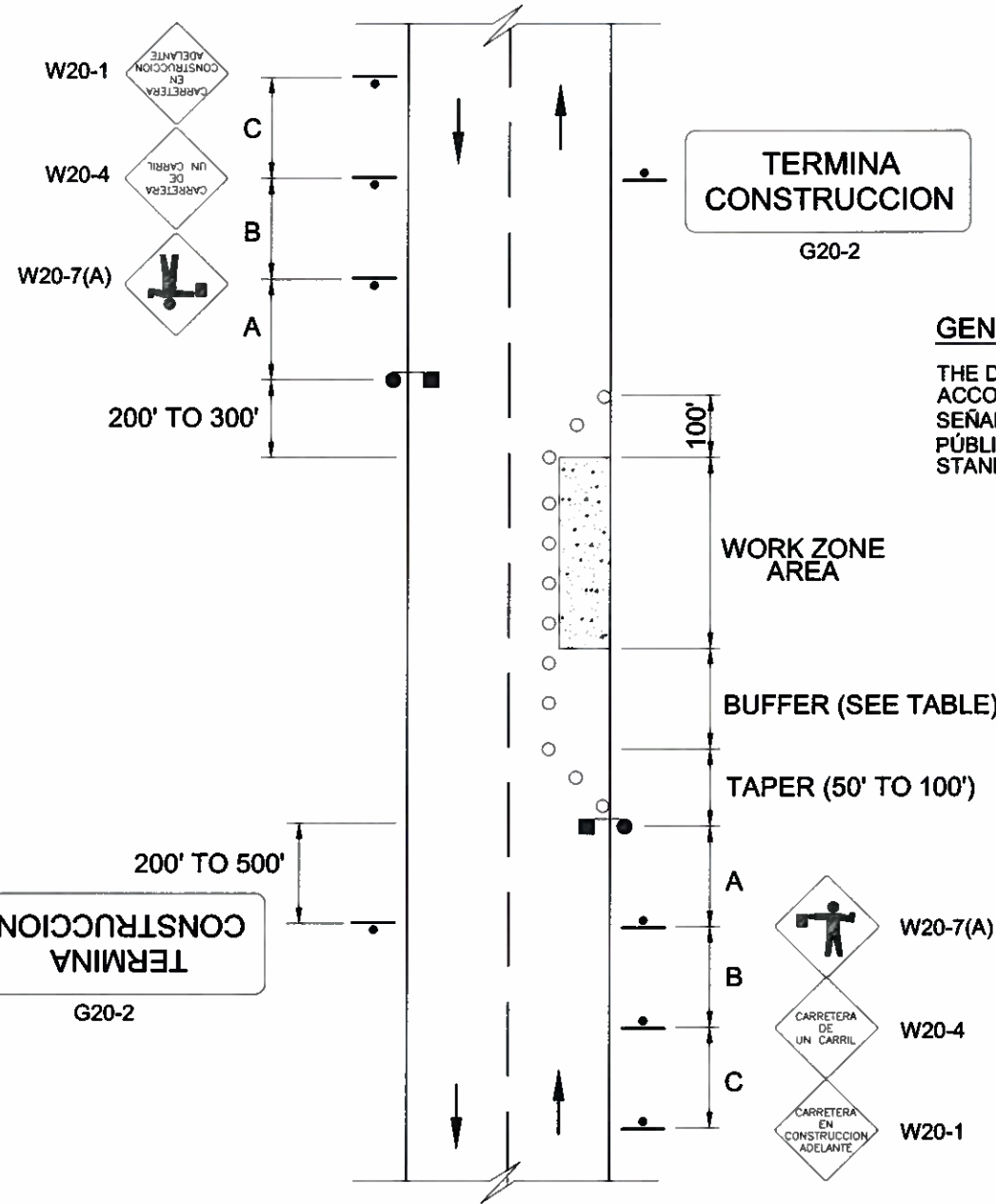


LANE CLOSURE ON A TWO-LANE LOW-VOLUME ROAD WITH STRAIGHT ALIGNMENT
ONE FLAGGER OPERATION

NOTES:

1. A SINGLE FLAGGER MAY BE ADEQUATE FOR LOW VOLUME APPLICATIONS. WHERE ONE FLAGGER IS USED, SUCH AS FOR SHORT WORK AREAS ON STRAIGHT ROADWAYS, THE FLAGGER MUST BE VISIBLE TO APPROACHING TRAFFIC FROM BOTH DIRECTIONS.
2. FOR OPERATIONS OF 60 MINUTES OR LESS, THE "CARRETERA EN CONSTRUCCION ADELANTE" SIGN (W20-1) MAY BE OMITTED.
3. FOR TWO-LANE, LOW SPEED (35 MPH OR LESS) URBAN STREET, A 200 FEET SIGN SPACING MAY BE USED.
4. 4 - COST OF FLAGGER WILL BE A SUBSIDIARY OBLIGATION.
5. WHEN GOOD VISIBILITY AND TRAFFIC CONTROL CANNOT BE MAINTAINED BY ONE FLAGGER STATION, THE TRAFFIC SHALL BE CONTROLLED BY A FLAGGER AT EACH END OF THE SECTION.
6. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
7. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

SPEED LIMIT (MPH)	BUFFER (FT.)
35	200
45	350
55	400



LANE CLOSURE ON A TWO-LANE ROAD
TWO FLAGGER OPERATION

NOTES:

1. FOR OPERATIONS OF 60 MINUTES OR LESS, THE "CARRETERA EN CONSTRUCCION ADELANTE" SIGN MAY BE OMITTED.
2. FOR TWO-LANE, LOW-SPEED (35 MPH OR LESS) URBAN STREET, A 200 FEET SIGN SPACING SHALL BE USED.
3. GENERALLY, THE USE OF "TERMINA CONSTRUCCION" SIGNS IS OPTIONAL FOR SHORT DURATION WORK SITES. HOWEVER, IF THE WORK SITE, ITSELF, IS LONG, OR THE BEGINNING AND END OF THE WORK SITE ARE NOT VISIBLE TO A DRIVER PASSING THROUGH IT, THEN "TERMINA CONSTRUCCION" SIGNS SHOULD BE USED.
4. COST OF FLAGGER WILL BE A SUBSIDIARY OBLIGATION.
5. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
6. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

SPEED LIMIT (MPH)	BUFFER (FT.)
35	200
45	350
55	400

GENERAL NOTE:

THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:

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ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

DATE:

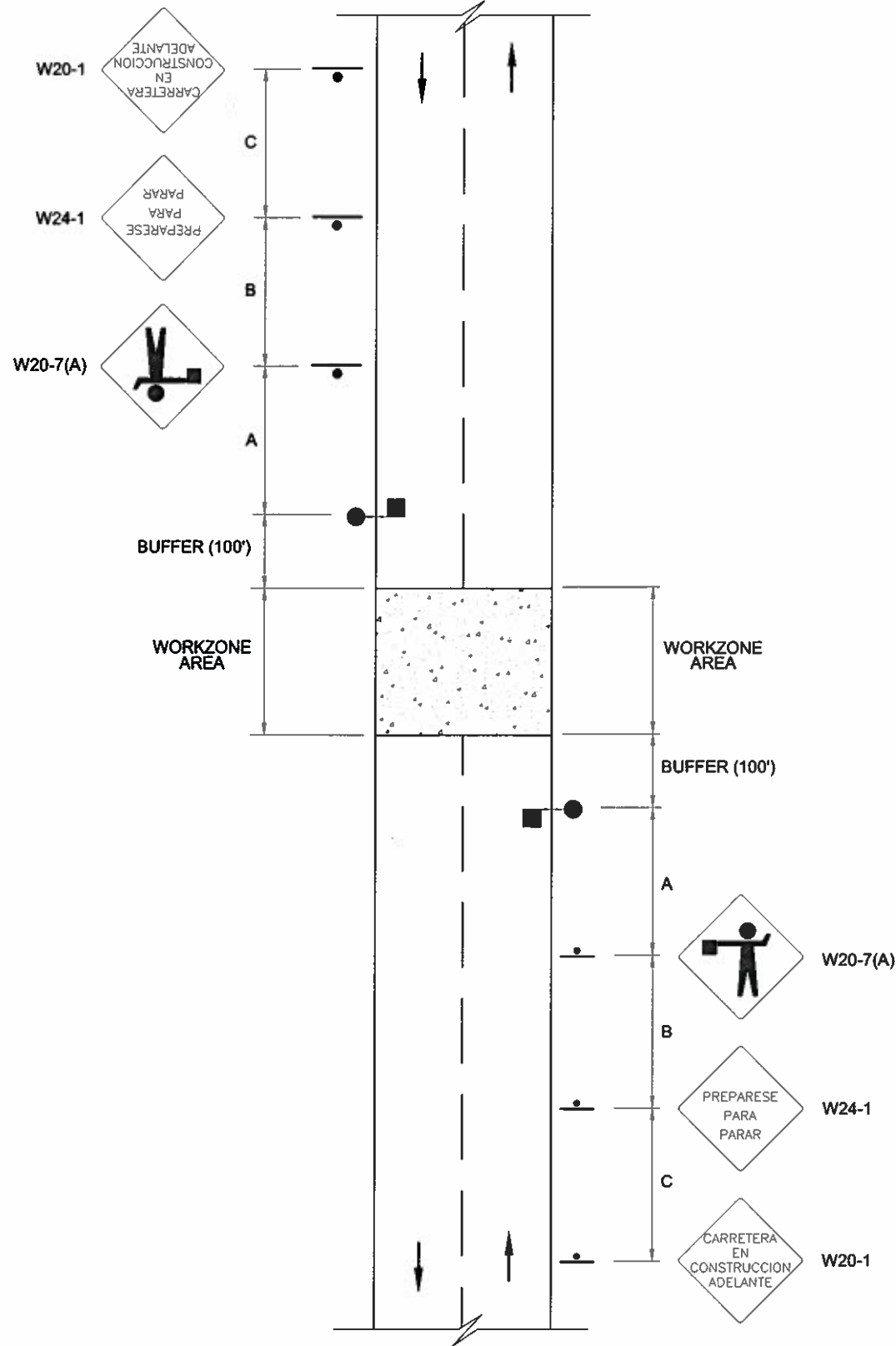
ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

MPT-18

JUNE 2012

DATE	REVISION	BY	DATE	REVISION	BY
FEB. 97	GENERAL REVISION (MPT-17)	JMO			
JUN. 12	SHEET RE numbering (MPT-19)	JMO			
JUN. 12	GENERAL REVISION AS PER MUTCD 2009, JMO	JMO			



TEMPORARY ROAD CLOSURE
NOT TO EXCEED 15-20 MINUTES

NOTES:

1. CONDITIONS REPRESENTED ARE FOR WORK WHICH REQUIRES CLOSURE DURING DAYTIME HOURS ONLY.
2. THIS APPLICATION IS INTENDED FOR A PLANNED TEMPORARY CLOSURE NOT TO EXCEED 15-20 MINUTES.
3. FOR HIGH VOLUME ROADS, A POLICE PATROL CAR IS RECOMMENDED.
4. FOR TWO-LANE, LOW-SPEED (35 MPH OR LESS) URBAN STREETS, A 200 FEET SIGN SPACING SHALL BE USED.
5. COST OF FLAGGER WILL BE A SUBSIDIARY OBLIGATION.
6. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

GENERAL NOTE:

1. THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.



COMMONWEALTH OF PUERTO RICO
 DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
 HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY: *[Signature]*
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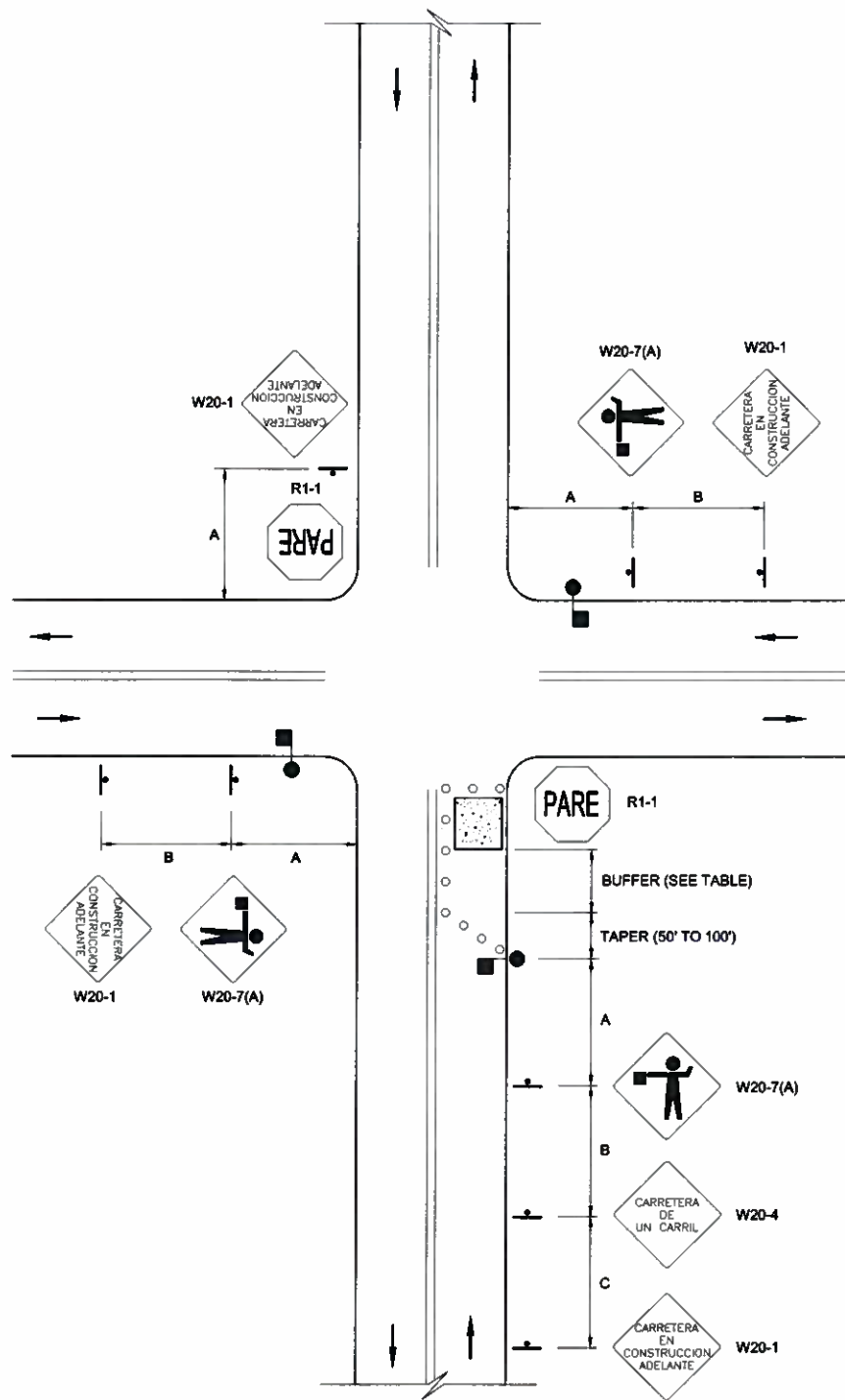
DATE: 6/11/14
 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
 TYPICAL APPLICATION DIAGRAMS

MPT-19
 JUNE 2012

DATE	REVISION	BY

DATE	REVISION	BY
APR. 08	ORIGINAL (MPT-10)	JMO
JUN. 12	SHEET RENUMBERING (MPT-20)	JMO
JUN. 12	GENERAL REVISION AS PER MUTCD 2009	JMO



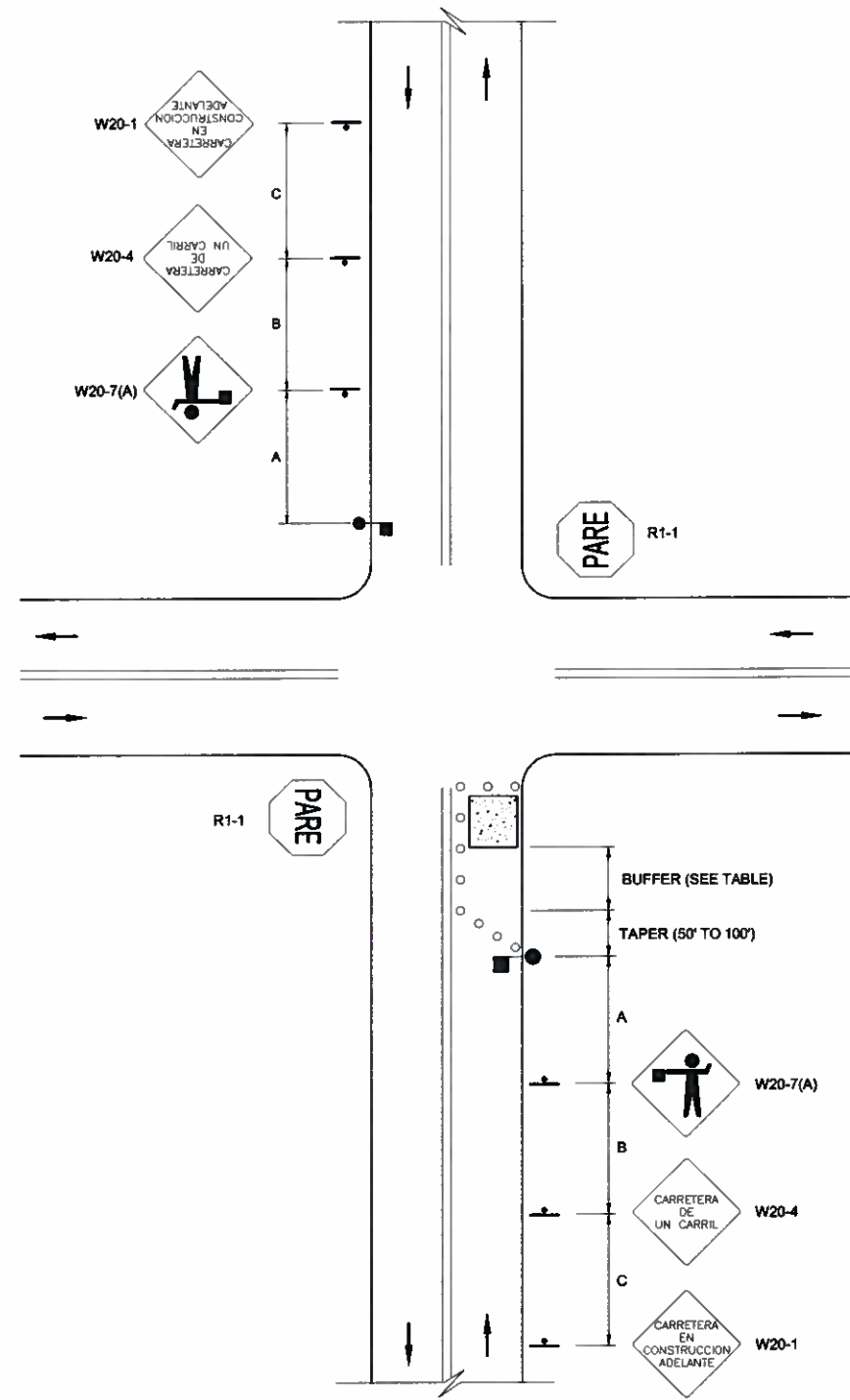
LANE CLOSURE IN ADVANCE OF INTERSECTION
STOP SIGNS ON NORTH/SOUTH APPROACHES

NOTES:

1. DEPENDING ON TRAFFIC CONDITIONS, ADDITIONAL TRAFFIC CONTROL, SUCH AS FLAGGERS AND APPROPRIATE SIGNAGE, MAY BE NEEDED ON THE CROSS ROAD APPROACHES.
2. FOR TWO-LANE, LOW-SPEED (35 MPH OR LESS) URBAN STREETS, A 200 FEET SIGN SPACING SHALL BE USED.
3. COST OF FLAGGER WILL BE A SUBSIDIARY OBLIGATION.
4. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
5. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

SPEED LIMIT (MPH)	BUFFER (FT.)
35	200
45	350
55	400

GENERAL NOTE:
THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.



LANE CLOSURE IN ADVANCE OF INTERSECTION
STOP SIGNS ON EAST/WEST APPROACHES

NOTES:

1. DEPENDING ON TRAFFIC CONDITIONS, ADDITIONAL TRAFFIC CONTROL, SUCH AS FLAGGERS AND APPROPRIATE SIGNAGE, MAY BE NEEDED ON THE CROSS ROAD APPROACHES.
2. FOR TWO-LANE, LOW-SPEED (35 MPH OR LESS) URBAN STREETS, A 200 FEET SIGN SPACING SHALL BE USED.
3. COST OF FLAGGER WILL BE A SUBSIDIARY OBLIGATION.
4. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
5. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

SPEED LIMIT (MPH)	BUFFER (FT.)
35	200
45	350
55	400



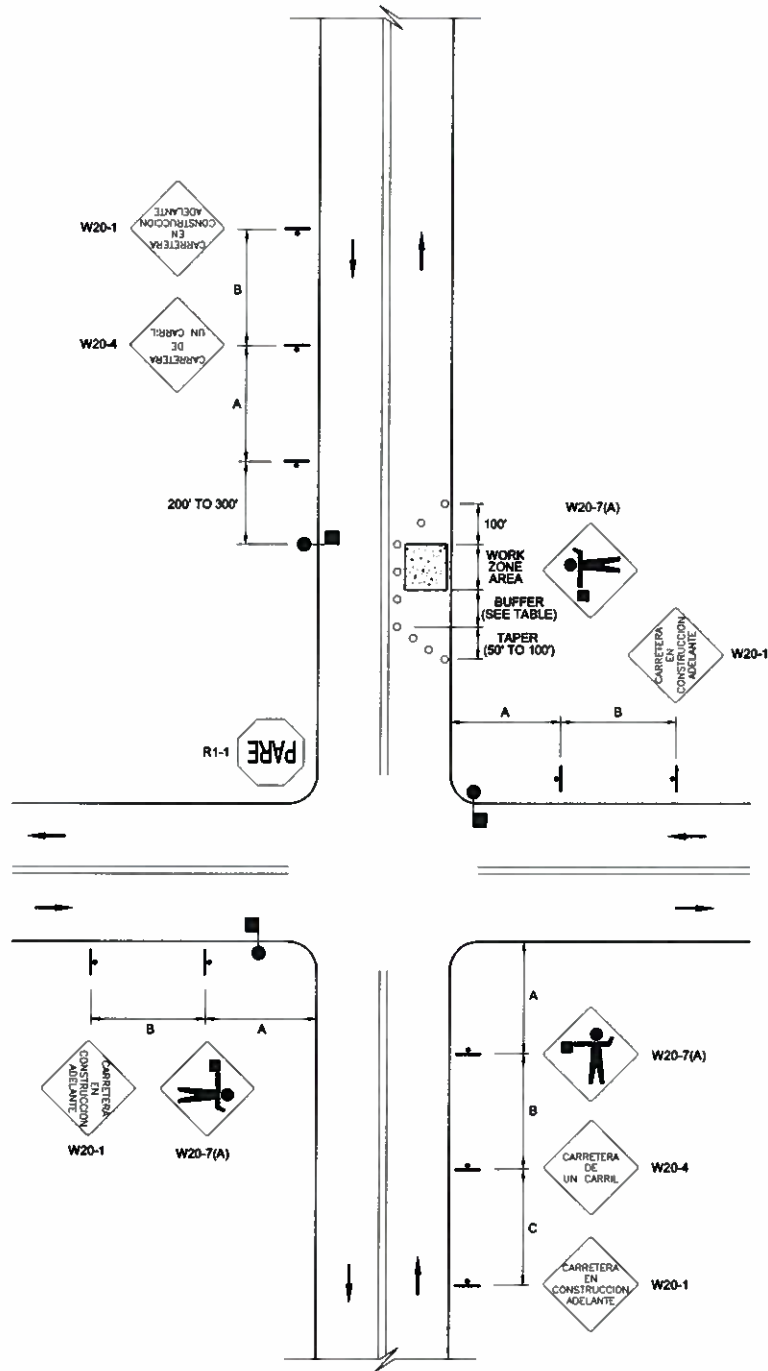
COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:
[Signature]
DATE: *[Date]*
ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

MPT-20
JUNE 2012

DATE	REVISION	BY
APR. 96	ORIGINAL (MPT-10)	JMO
JUN. 12	SHEET RENUMBERING (MPT-21)	JMO
JUN. 12	GENERAL REVISIONS PER MUTCD 2008	JMO

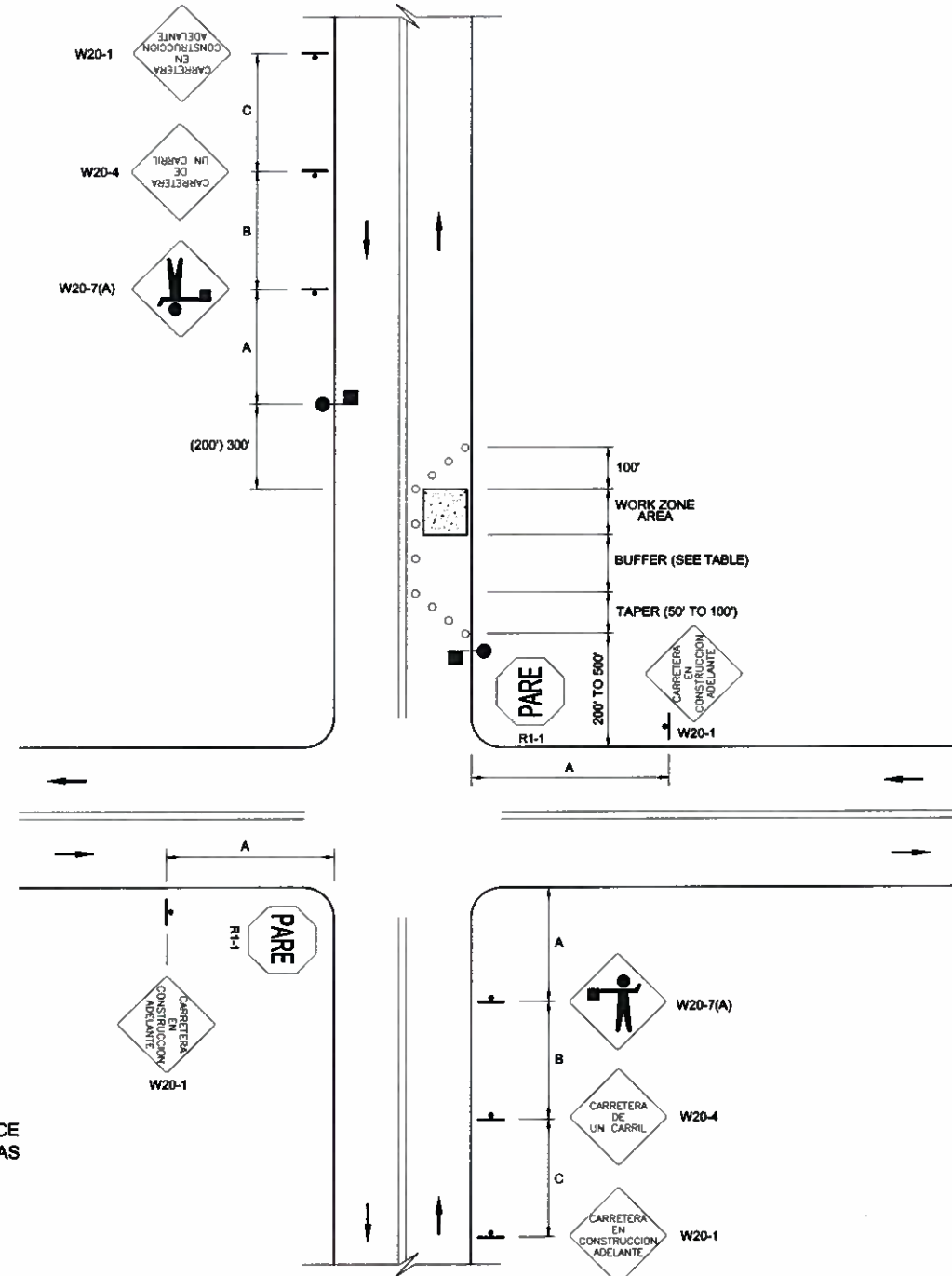


LANE CLOSURE BEYOND INTERSECTION
STOP SIGNS ON NORTH/ SOUTH APPROACHES

NOTES:

1. DEPENDING ON TRAFFIC CONDITIONS, ADDITIONAL TRAFFIC CONTROL, SUCH AS FLAGGERS AND APPROPRIATE SIGNAGE, MAY BE NEEDED ON THE CROSS ROAD APPROACHES.
2. FOR TWO-LANE, LOW-SPEED (35 MPH OR LESS) URBAN STREETS, A 200 FEET SIGN SPACING SHALL BE USED.
3. COST OF FLAGGER WILL BE A SUBSIDIARY OBLIGATION.
4. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
5. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

SPEED LIMIT (MPH)	BUFFER (FT.)
35	200
45	350
55	400



LANE CLOSURE BEYOND INTERSECTION
STOP SIGNS ON EAST/WEST APPROACHES

NOTES:

1. DEPENDING ON TRAFFIC CONDITIONS, ADDITIONAL TRAFFIC CONTROL, SUCH AS FLAGGERS AND APPROPRIATE SIGNAGE, SHALL BE NEEDED ON THE CROSS ROAD APPROACHES.
2. FOR TWO-LANE, LOW-SPEED (35 MPH OR LESS) URBAN STREETS, A 200 FEET SIGN SPACING SHALL BE USED.
3. COST OF FLAGGER WILL BE A SUBSIDIARY OBLIGATION.
4. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.
5. THE A, B AND C DIMENSIONS ARE SHOWN ON DRAWING MPT-10.

SPEED LIMIT (MPH)	BUFFER (FT.)
35	200
45	350
55	400

GENERAL NOTE:

THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.



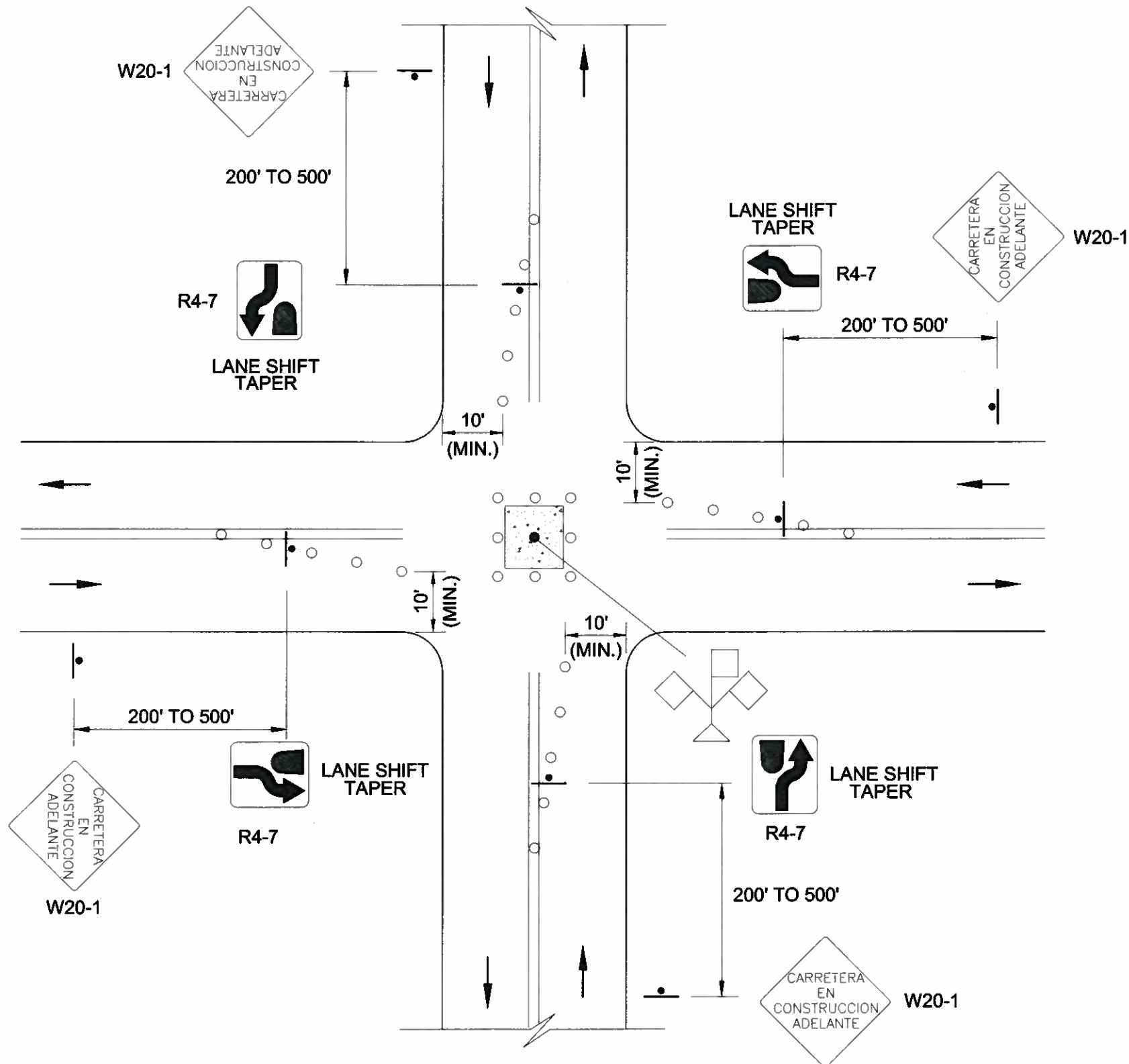
COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:
 DATE: 3/11/12 ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
 DATE: 6/11/12 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

MPT-21
JUNE 2012

DATE	REVISION	BY
SEP 57	ORIGINAL (MPT-20)	JMO
JUN 12	SHEET RENUMBERING (MPT-22)	JMO
JUN 12	GENERAL REVISIONS PER MUTCD 2009	JMO



GENERAL NOTE:

THE DESIGN OF SIGN PLATES SHALL BE IN ACCORDANCE WITH THE "MANUAL DE SEÑALES DE TRÁNSITO PARA LAS VÍAS PÚBLICAS DE PUERTO RICO" AND THE STANDARD DRAWINGS MPT-24 TO MPT-27.

NOTES:

1. PROHIBIT LEFT TURNS AS REQUIRED BY TRAFFIC CONDITIONS. UNLESS THE STREETS ARE WIDE, IT MAY BE PHYSICALLY IMPOSSIBLE TO TURN LEFT, ESPECIALLY FOR LARGE VEHICLES.
2. A MINIMUM OF SIX CHANNELIZING DEVICES SHALL BE USED FOR EACH TAPER.
3. FOR OPERATIONS 15 MINUTES OR LESS IN DURATION, THE CHANNELIZING DEVICES MAY BE ELIMINATED IF A FLASHING OR REVOLVING YELLOW LIGHT IS DISPLAYED IN THE WORK SPACE.
4. A HIGH-LEVEL FLAG TREE SHOULD BE PLACED IN THE WORK SPACE IF THERE IS SUFFICIENT ROOM.
5. THE "SIGA POR SU DERECHA" SYMBOL SIGNS MAY BE REPLACED WITH "CARRIL ESTRECHO" SIGNS PLACED 200 FEET TO 500 FEET FROM THE BEGINNING OF THE TAPER.
6. THE NUMBER OF CHANNELIZING DEVICES FOR PARTS OF TRAFFIC CONTROL ZONE IS SHOWN ON DRAWING MPT-10.

SPEED LIMIT (MPH)	BUFFER (FT.)
35	125
45	275
55	330

CLOSURE IN CENTER OF INTERSECTION



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

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 DATE: ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
 6/10/12 [Signature]
 DATE: ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
TYPICAL APPLICATION DIAGRAMS

MPT-22

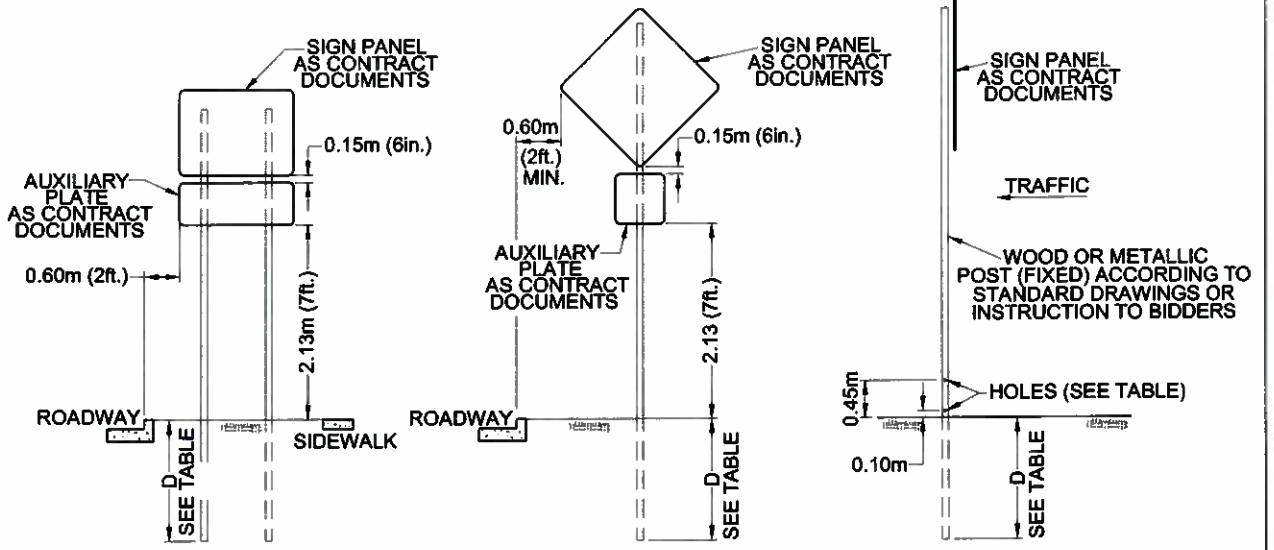
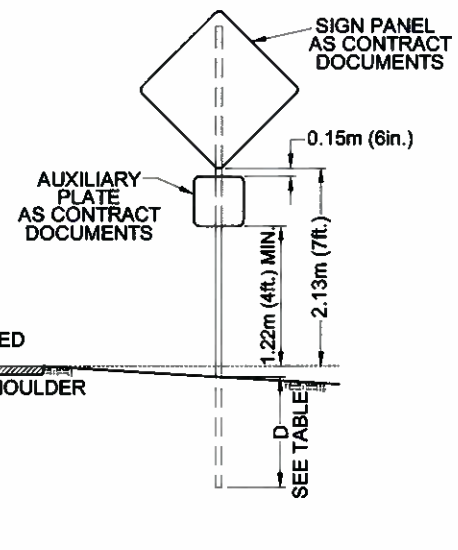
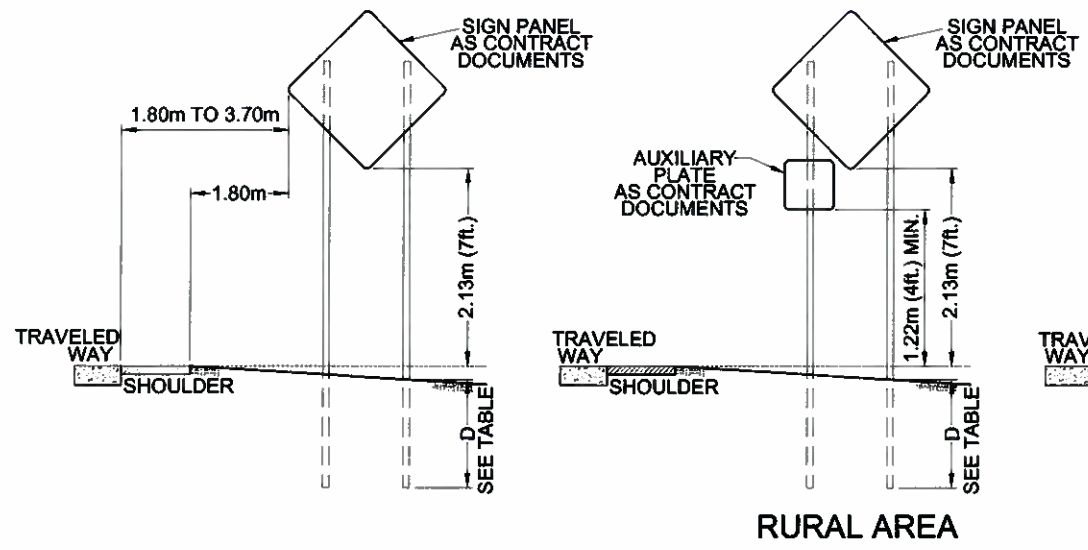
JUNE 2012

REVISION	DATE	BY

REVISION	DATE	BY

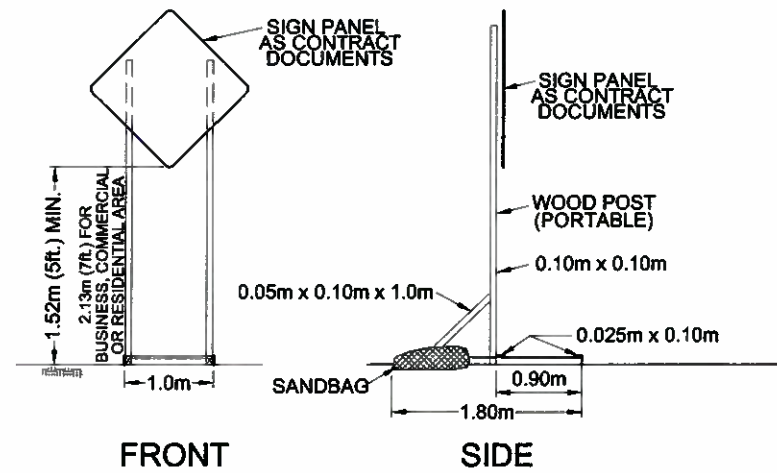
REVISION	DATE	BY

REVISION	DATE	BY
ORIGINAL (MPT 23)	SEP. 09	JMO
GENERAL REVISION AS PER MUTCD 2009	JUN. 12	JMO



FIXED ROADWAY SIGNS

**BREAKAWAY SUPPORT DETAIL
(FIXED SIGNS - 0.10m x 0.10m
AND GREATER POSTS)**



PORTABLE SIGNS

WOOD POST SIZE		D (MINIMUM)		HOLE DIAMETER		MAXIMUM SIGN PANEL AREA (SQUARE METERS)	
MT. x MT.	IN. x IN.	MT.	FT.	MT.	IN.	1 POST	2 POSTS
0.10 x 0.10	4 x 4	1.22	4	NONE REQ'D		1.0	2.0
0.10 x 0.15	4 x 6	1.22	4	0.04	1.5	N/A	3.0
0.15 x 0.15	6 x 6	1.52	5	0.05	2.0	N/A	4.5
0.15 x 0.20	6 x 8	1.52	5	0.07	3.0	N/A	8.0

NOTES:

- UNLESS OTHERWISE SHOWN, DIMENSIONS ARE IN METERS.
- MOUNT SIGNS THAT ARE WIDER THAN 0.90 METER OR LARGER THAN 1.0 SQUARE METER ON TWO POSTS. SEE TABLE.
- ALL LUMBER DIMENSIONS ARE NOMINAL.
- THE CONTRACTOR MAY SUBMIT, FOR APPROVAL BY THE ENGINEER, ALTERNATE TEMPORARY SIGN MOUNTING WHICH FULLY COMPLIES WITH NCHRP REPORT 350 TL-3.
- FOR POSTS GREATER THAN 0.10m X 0.10m, SEE THE BREAKAWAY SUPPORT DETAIL.
- THE PORTABLE SIGNS SHALL NOT BE LEANED IN THE SHOULDER AND/OR ROADSIDE AT ANY TIME.
- MOUNTING FOR PORTABLE SIGNS SHALL HOLD THE SIGN FACE IN A VERTICAL PLANE.
- FOR SIGNS REQUIRING POSTS 0.15m X 0.15m AND GREATER, SIGNS ARE CONSIDERED TO BE NON-BREAKAWAY IF MULTIPLE POSTS ARE REQUIRED AND THE POSTS CANNOT BE SPACED A MINIMUM OF 2.1 METERS APART. DO NOT PLACE HOLES IN POST OF NON-BREAKAWAY SIGNS.
- SIGN MOUNTED ON PORTABLE SUPPORTS SHALL NOT BE USED FOR A DURATION OF MORE THAN THREE DAYS.
- THE BACKGROUND FOR CONSTRUCTION WARNING SIGNS SHALL BE FLUORESCENT ORANGE COLOR ACCORDING TO SUPPLEMENTAL SPECIFICATION 638-2.02.
- THE FINAL LOCATION OF TEMPORARY TRAFFIC SIGNS SHALL BE AS DIRECTED BY THE ENGINEER CONSIDERING OPTIMUM VISIBILITY AND, SAFETY IN EXISTING FIELD CONDITIONS.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

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DATE: [Signature] ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE
DATE: [Signature] ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
TEMPORARY TRAFFIC SIGNS MOUNTING DETAILS

MPT-23

JUNE 2012

DATE	REVISION	BY
APR. 06	ORIGINAL (MPT-21)	JMO
JUN. 12	SHEET RE numbering (MPT-24)	JMO
JUN. 12	RELOCATED DETAILS (MPT-25)	JMO
DATE	REVISION	BY
DATE	REVISION	BY
DATE	REVISION	BY

WARNING SIGNS USE IN TEMPORARY TRAFFIC CONTROL ZONE														
SPEED LIMIT (MPH)	W1-4(D)	W1-4(bD)	W1-6	W4-2	W20-1	W20-4	W20-5	W20-7(A)	W21-5	W23-1	W24-1	W25-1	G20-2	R4-7
20	30"x30"	30"x30"	36"x36"	30"x30"	36"x36"	36"x36"	36"x36"	30"x30"	24"x24"	30"x30"	30"x30"	30"x30"	40"x16"	24"x24"
25	30"x30"	30"x30"	36"x36"	30"x30"	36"x36"	36"x36"	36"x36"	30"x30"	24"x24"	30"x30"	30"x30"	30"x30"	40"x16"	24"x24"
30	36"x36"	36"x36"	48"x48"	36"x36"	48"x48"	48"x48"	48"x48"	36"x36"	30"x30"	36"x36"	36"x36"	36"x36"	50"x20"	36"x36"
35	36"x36"	36"x36"	48"x48"	36"x36"	48"x48"	48"x48"	48"x48"	36"x36"	30"x30"	36"x36"	36"x36"	36"x36"	50"x20"	36"x36"
40	36"x36"	36"x36"	48"x48"	36"x36"	48"x48"	48"x48"	48"x48"	36"x36"	30"x30"	36"x36"	36"x36"	36"x36"	50"x20"	36"x36"
45	48"x48"	48"x48"	60"x60"	48"x48"	60"x60"	60"x60"	60"x60"	48"x48"	36"x36"	48"x48"	48"x48"	48"x48"	60"x24"	48"x48"
50	48"x48"	48"x48"	60"x60"	48"x48"	60"x60"	60"x60"	60"x60"	48"x48"	36"x36"	48"x48"	48"x48"	48"x48"	60"x24"	48"x48"
55	48"x48"	48"x48"	60"x60"	48"x48"	60"x60"	60"x60"	60"x60"	48"x48"	36"x36"	48"x48"	48"x48"	48"x48"	60"x24"	48"x48"



COMMONWEALTH OF PUERTO RICO
 DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
 HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:

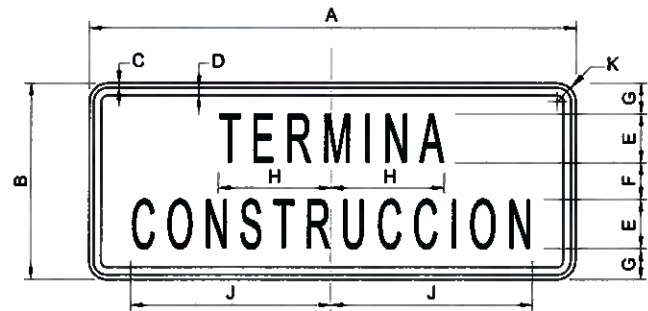
[Signature]
 DATE: 3/20/12 ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

[Signature]
 DATE: 6/10/12 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
 WARNING SIGNS

MPT-24
 JUNE 2012

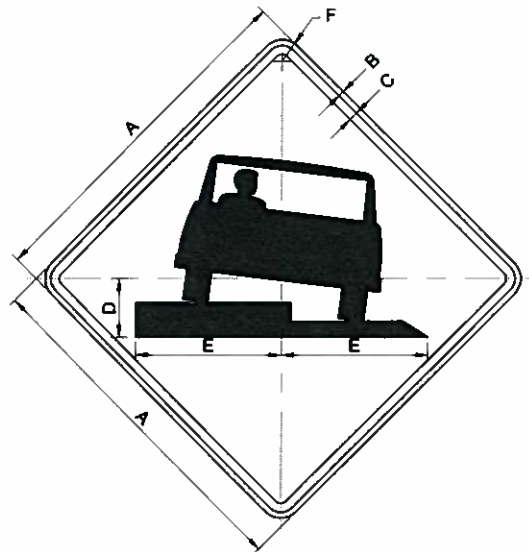
DATE	REVISION	BY	DATE	REVISION	BY
APR. 06	ORIGINAL (MPT-21)	JMO			
JUN. 12	RELOCATED DETAILS (MPT-25)	JMO			
JUN. 12	GENERAL REVISION	JMO			



G20-2

COLORS
LEGEND - NON REFLECTORIZED BLACK
BACKGROUND - REFLECTORIZED ORANGE

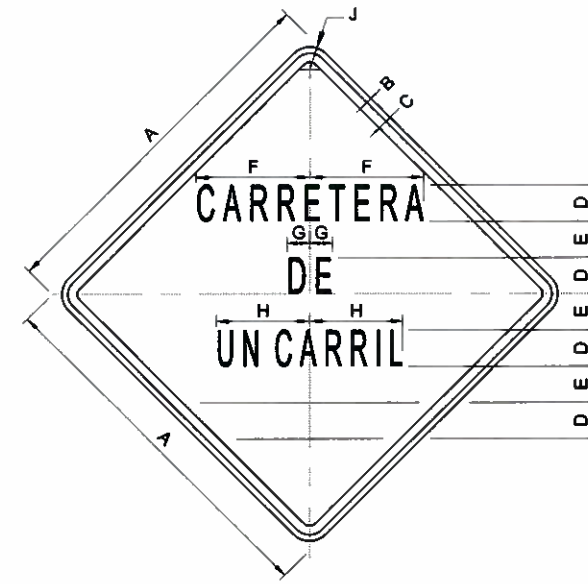
	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	K
MINIMUM	40.00	16.00	0.38	0.63	4C	3.00	2.50	9.28	16.54	1.50
NORMAL	50.00	20.00	0.38	0.63	5C	3.00	3.50	11.59	20.66	1.50
SPECIAL	60.00	24.00	0.38	0.63	6C	4.00	4.00	13.92	24.81	1.50



W8-9A

COLORS
LEGEND - NON REFLECTORIZED BLACK
BACKGROUND - REFLECTORIZED ORANGE

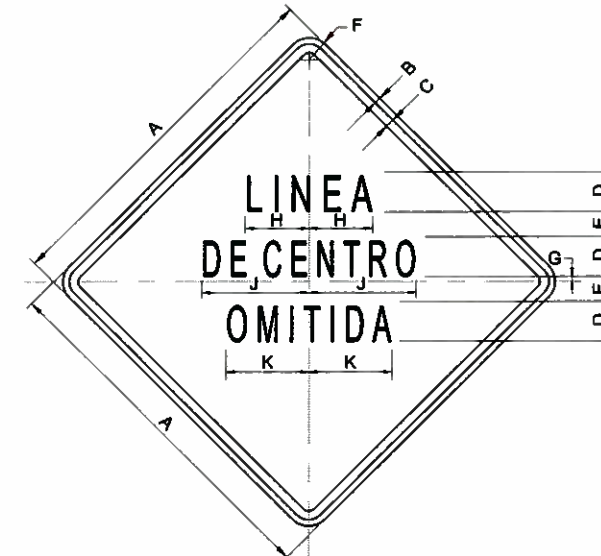
	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
MINIMUM	24.00	0.38	0.63	4.00	10.00	1.50
STANDARD	30.00	0.50	0.75	5.00	12.50	1.88
NORMAL	36.00	0.63	0.88	6.00	15.00	2.25
SPECIAL	48.00	0.75	1.25	8.00	20.00	3.00



W20-4

COLORS
LEGEND - NON REFLECTORIZED BLACK
BACKGROUND - REFLECTORIZED ORANGE

	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
MINIMUM	36.00	0.63	0.88	4C	2.00	15.46	2.52	12.25	2.25	
NORMAL	48.00	0.75	1.25	5C	4.00	15.62	3.14	15.29	3.00	
SPECIAL	60.00	0.75	1.25	6C	6.00	18.77	7.54	18.36	3.00	



W8-12

COLORS
LEGEND - NON REFLECTORIZED BLACK
BACKGROUND - REFLECTORIZED ORANGE

	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
MINIMO	36.00	0.00	0.88	5C	5.00	2.25	7.53	15.78	10.77	
NORMAL	48.00	0.75	1.25	6C	6.00	3.00	9.04	18.95	12.94	
SPECIAL	60.00	0.75	1.25	8C	8.00	3.75	12.05	25.26	17.25	

NOTE:
SEE TABLE ON DRAWING MPT-24.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

DATE: 3/10/12
ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

STANDARD DRAWING APPROVED BY:

DATE: 3/10/12
ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
WARNING SIGNS

MPT-25

JUNE 2012

DATE	REVISION	BY
APR. 96	ORIGINAL (MPT-21A)	JMO
JUN. 12	SHEET RENUMBERING (MPT-26)	JMO
JUN. 12	GENERAL REVISION	JMO

DATE	REVISION	BY

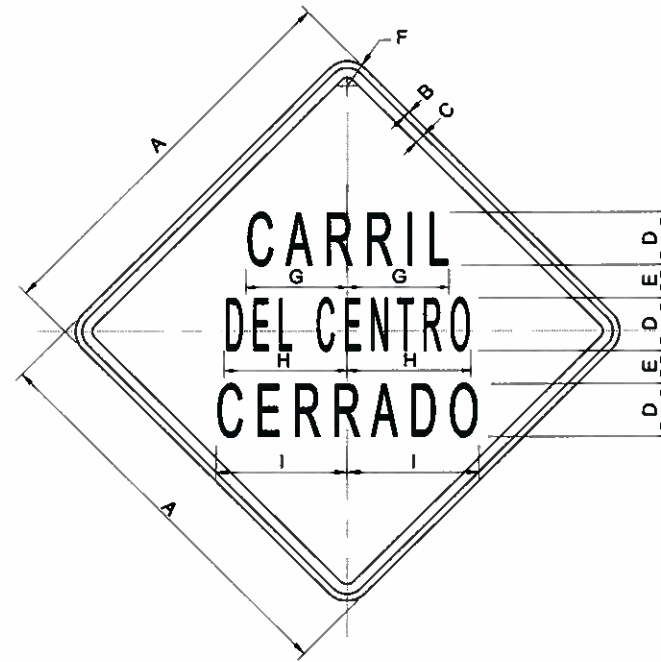


M4-8A

COLORS

LEGEND - NON REFLECTORIZED BLACK
BACKGROUND - REFLECTORIZED ORANGE

	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	I	J	K
MINIMUM	24.00	18.00	0.38	0.63	4.00	4C	9.28	7.69	2.00	1.50	4C
NORMAL	30.00	23.00	0.50	0.75	5.00	5C	11.59	9.61	3.00	1.50	5C
SPECIAL	48.00	36.00	0.63	0.88	8.00	8C	18.56	15.38	4.00	1.88	8C
SPECIAL	60.00	45.00	0.75	1.25	10.00	10C	23.24	19.25	5.00	2.25	10C

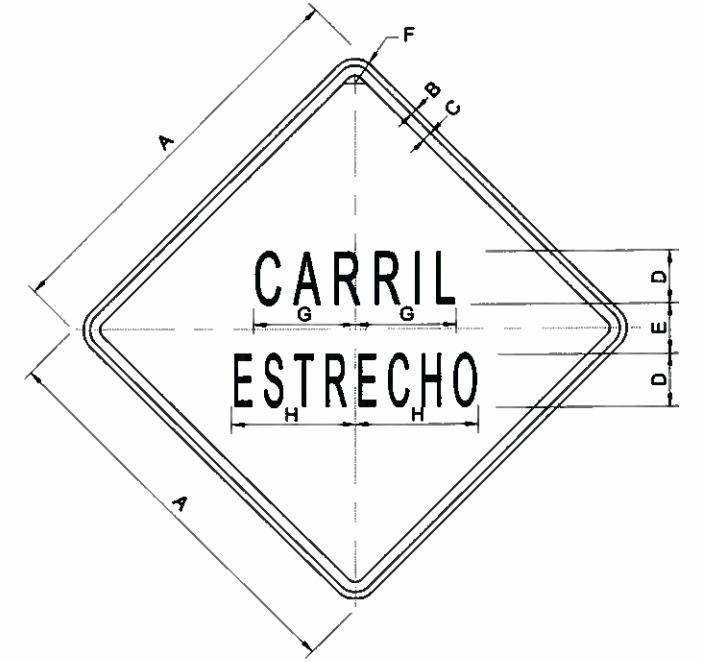


W23-1

COLORS

LEGEND - NON-REFLECTORIZED BLACK
BACKGROUND - REFLECTORIZED ORANGE

	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	I	
MINIMUM	30.00	0.50	0.75	4C	3.00	1.88	7.84	13.97	9.88	
NORMAL	36.00	0.63	0.88	5C	5.00	2.25	9.53	17.45	12.34	
SPECIAL	48.00	0.75	1.00	6C	6.00	3.00	11.45	21.01	14.83	



W25-1

COLORS

LEGEND - NON-REFLECTORIZED BLACK
BACKGROUND - REFLECTORIZED ORANGE

	DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G	H
MINIMUM	30.00	0.50	0.75	5C	4.00	1.88	9.53	13.81
NORMAL	36.00	0.63	0.88	6C	5.00	2.25	22.90	16.58
ESPECIAL	48.00	0.75	1.00	8C	6.00	3.00	30.54	21.01

NOTE:

SEE TABLE ON DRAWING MPT-24.



COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

STANDARD DRAWING APPROVED BY:
[Signature]
 DATE: 3/10/12
 ASSISTANT EXECUTIVE DIRECTOR FOR INFRASTRUCTURE

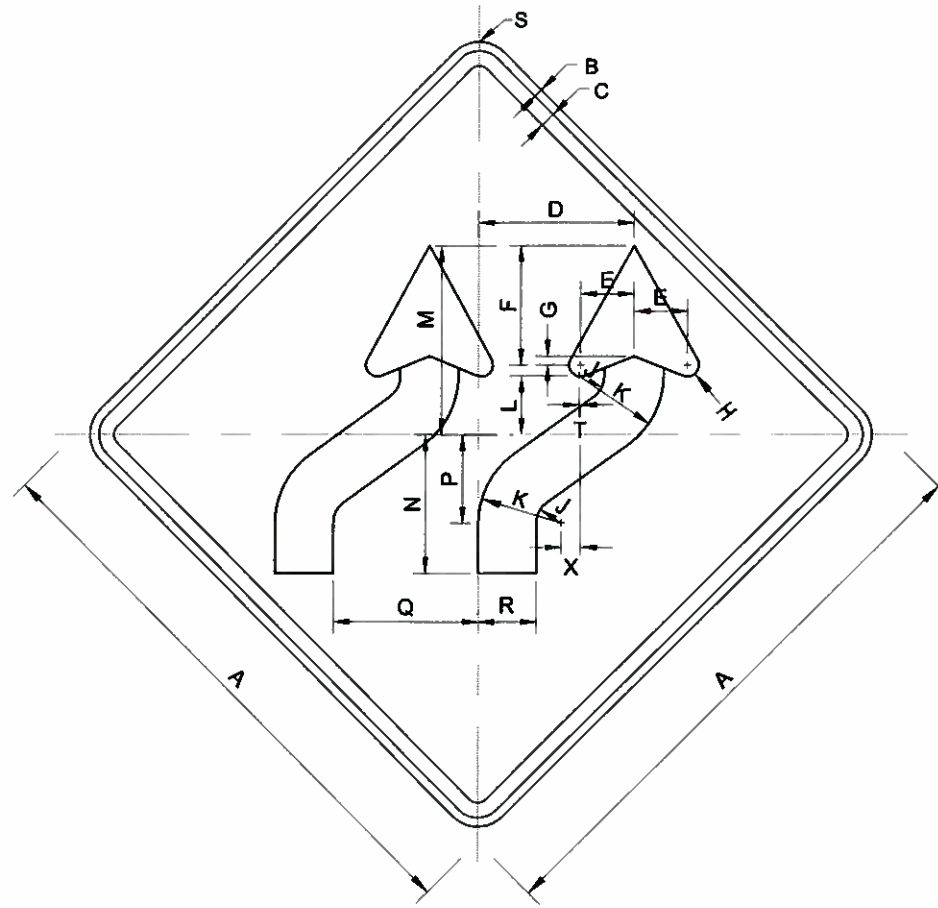
DATE: 6/11/12
 ASSISTANT EXECUTIVE DIRECTOR FOR TRAFFIC AND POLL ROADS

MAINTENANCE AND PROTECTION OF TRAFFIC
WARNING SIGNS

MPT-26

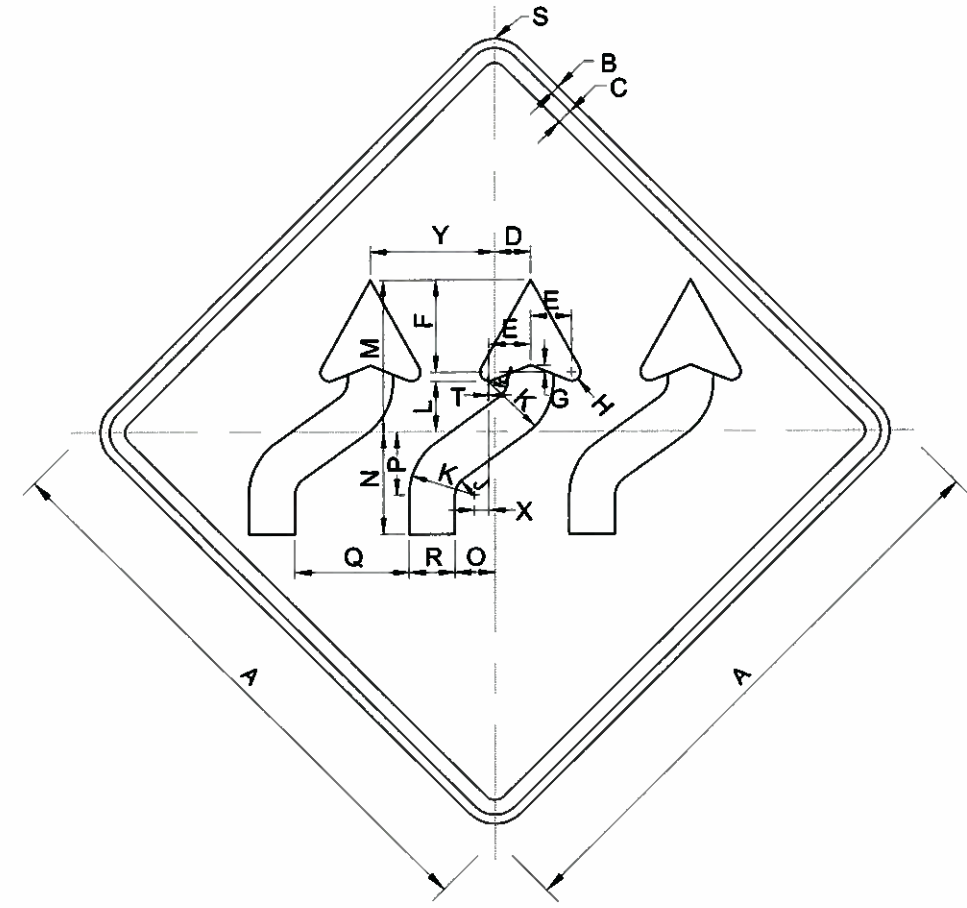
JUNE 2012

DATE	REVISION	BY	DATE	REVISION	BY
NOV 98	TITLE & COLOR LEGEND (MPT-22)	JV			
JUN 12	SHEET RE numbering (MPT-27)	JMO			
JUN 12	GENERAL REVISION				



W1-4bD
 CODE
 LEGEND - NON-REFLECTORIZED BLACK
 BACKGROUND - REFLECTORIZED ORANGE

SIGN	TWO ARROWS SIGN DIMENSION (INCHES)																		
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	X
30"	30	1/2	3/4	2.170	2.750	3.901	0.365	0.473	1.031	3.437	2.406	7.734	5.672	3.609	5.414	2.406	1-7/8	0.078	5.241
36"	36	5/8	7/8	2.603	3.300	4.877	0.438	0.567	1.238	4.125	2.888	9.281	6.806	4.331	6.497	2.887	2-1/4	0.094	6.291
48"	48	3/4	1-1/4	3.471	4.400	7.800	0.584	0.756	1.650	5.500	3.850	12.375	9.075	5.775	8.662	3.850	3	0.125	8.389



W1-4cD
 CODE
 LEGEND - NON-REFLECTORIZED BLACK
 BACKGROUND - REFLECTORIZED ORANGE

SIGN	THREE ARROWS SIGN DIMENSION (INCHES)																			
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	X	Y
30"	30	1/2	3/4	8.121	2.762	6.207	0.465	0.6016	1.312	4.375	3.0625	9.843	7.219	4.593	7.656	3.062	1-7/8	0.078	0.984	3.062
36"	36	5/8	7/8	9.745	3.314	7.448	0.558	0.7218	1.575	5.25	3.675	11.812	8.662	5.512	9.188	3.675	2-1/4	0.094	1.181	3.675
48"	48	3/4	1-1/4	12.994	4.419	9.931	0.744	0.962	2.100	7.000	4.9	15.75	11.55	7.35	12.25	4.9	3	0.125	1.575	4.9

NOTE:
 SEE TABLE ON DRAWING MPT-24.



COMMONWEALTH OF PUERTO RICO
 DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
 HIGHWAY AND TRANSPORTATION AUTHORITY

DATE: 3/10/12
 ASSISTANT EXECUTIVE DIRECTOR
 FOR INFRASTRUCTURE

DATE: 6/11/12
 ASSISTANT EXECUTIVE DIRECTOR
 FOR TRAFFIC AND TOLL ROADS

MAINTENANCE AND
 PROTECTION OF TRAFFIC
 WARNING SIGNS

MPT-27

JUNE 2012