

THE PORT AUTHORITY OF NY & NJ

Traffic Standard Details

TD200

Permanent Barriers

No.	Date	Revision	Approved

DEPUTY DIRECTOR – DESIGN _____ DATE _____

PROGRAM DIRECTOR _____ DATE _____

CHIEF ENGINEER _____ DATE _____

Drawing Number **TD200.00**
PID#

CHIEF

GENERAL NOTES:
TD200.01.01

1. WHERE BARRIER CURB, DOWELLED IS TO BE CONSTRUCTED ON EXISTING CONCRETE PAVEMENT OR EXISTING CONCRETE BASE COURSE.

TRANSVERSE JOINTS SHALL BE INSTALLED IN THE CURBS AT AND DIRECTLY OVER TRANSVERSE JOINTS IN THE PAVEMENT. DEFINITE CRACKS THROUGH THE PAVEMENT SHALL ALSO BE TREATED AS JOINTS. ADDITIONAL JOINTS SHALL ALSO BE CONSTRUCTED IN THE CURB SO SPACED AS TO MAKE EQUAL SECTIONS NOT OVER 15'-0" IN LENGTH.

THE TRANSVERSE JOINTS SHALL BE FILLED WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER, COMPLYING WITH THE REQUIREMENTS OF ASSHTO SPECIFICATION M-213, RECESSED 1/4" FROM FACES AND TOP OF CURB. THE THICKNESS OF THE TRANSVERSE EXPANSION JOINT FILLER SHALL BE AS FOLLOWS:

- 1/2" FOR IMMEDIATE JOINTS AND JOINTS OVER DEFINITE CRACKS.
- 1/2" OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS 50' OR LESS.
- 1" OVER PAVEMENT JOINTS WHERE SLAB LENGTH IS MORE THAN 50'.

VARIABLE IN MULTIPLES OF 1/2" BUT NOT LESS THAN THE EXISTING WIDTH OF THE TRANSVERSE JOINTS IN BRIDGES AND JOINTS BETWEEN THE APPROACH SLABS AND BRIDGES.

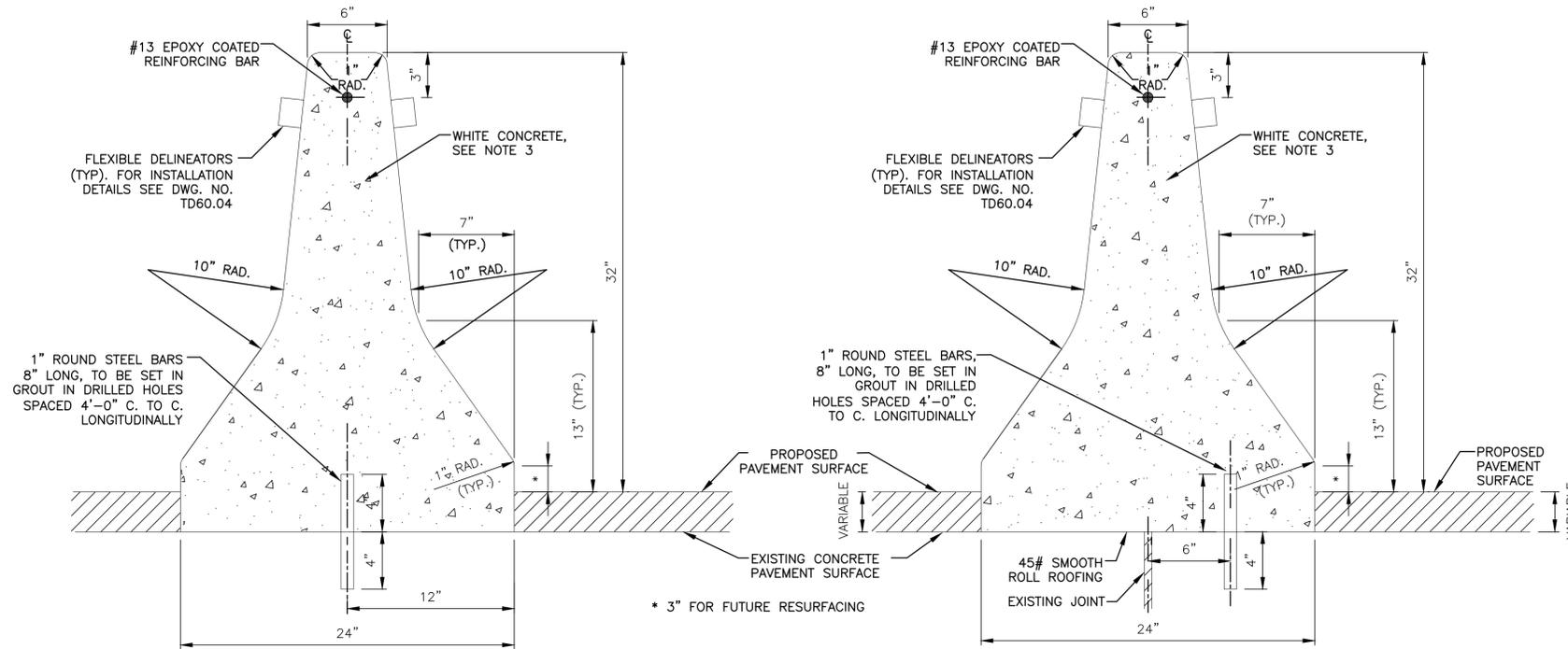
THE THICKNESSES OF 1" OR MORE, LAYERS OF 1/2" MATERIAL MAY BE GLUED OR OTHERWISE FASTENED TOGETHER BY A MEANS SATISFACTORY TO THE ENGINEER. WHERE THE REQUIRED JOINT OPENING EXCEEDS 1", THE CONTRACTOR MAY CONSTRUCT OPEN JOINTS.

THE SURFACE OF THE EXISTING CONCRETE PAVEMENT OR CONCRETE BASE COURSE SHALL BE CLEANED IN ACCORDANCE WITH THE SPECIFICATIONS PRIOR TO THE CONSTRUCTION OF THE CURB THEREON.

WHERE DOWELLED CURB IS TO BE CONSTRUCTED ACROSS A LONGITUDINAL JOINT IN THE EXISTING CONCRETE OR BASE COURSE, THE DOWELS IN THE SHORTER PORTION OF THE CURB PANEL SHALL BE OMITTED AND THE CURB IN THIS PORTION OF THE PANEL SHALL BE CONSTRUCTED WITH 45# SMOOTH ROLL ROOFING BETWEEN IT AND THE EXISTING PAVEMENT.

2. THE FINISHED SURFACE OF THE BARRIER CURB SHALL BE SMOOTH, DENSE, UNPITTED AND FREE FROM AIR BUBBLE POCKETS, DEPRESSIONS AND HONEY COMB. IF THE ENGINEER DEEMS IT NECESSARY, THE CURB SHALL BE GIVEN A WOOD FLOAT FINISH RUBBED WITH A MIXTURE OF CEMENT, SAND AND WATER TO OBTAIN THE ABOVE-MENTIONED FINISHED SURFACE. THE COST OF THE TRANSVERSE EXPANSION JOINTS IN THE CURB SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE BARRIER CURB.

3. CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.



TYPE "A" - WHITE CONCRETE BARRIER CURB, DOWELLED, 24" x VARIES
N.T.S. TD200.01.02

No.	Date	Revision	Approved
ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

TRAFFIC

Title
PERMANENT BARRIERS

**TYPE A CONCRETE
BARRIER CURB,
DOWELLED**

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent. All recipients of Contract documents, including bidders and those who do not bid and their prospective subcontractors and suppliers who may receive all or a part of the Contract documents or copies thereof, shall make every effort to ensure the secure and appropriate disposal of the Contract documents to prevent further disclosure of the information contained in the documents. Secure and appropriate disposal includes methods of document destruction such as shredding or arrangements with release handlers that ensure that third persons will not have access to the documents' contents either before, during, or after disposal. Documents may also be returned for disposal purposes to the Contract Desk on the 3rd Floor, 3 Gateway Center, Newark NJ 07102 or the office of the Director of Procurement, One Madison Avenue, 7th Floor, New York, NY 10017. It is a violation of law for any person to alter a document in any way, unless acting under the direction of a licensed professional engineer or registered architect. If this document bearing the seal of an engineer/architect is altered, the altering engineer/architect shall affix to the document their seal and the notation "altered by" followed by their signature and the date of such alteration, and a specific description of the alteration.

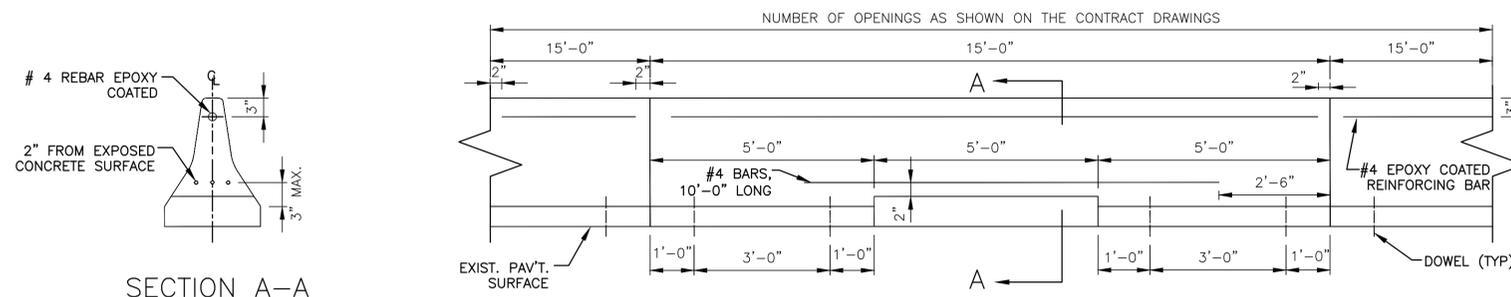
Designed by _____ Drawn by _____ Checked by _____

Date _____ 11/01/2010

Contract Number _____

Drawing Number **TD200.01**

PID#



SECTION A-A

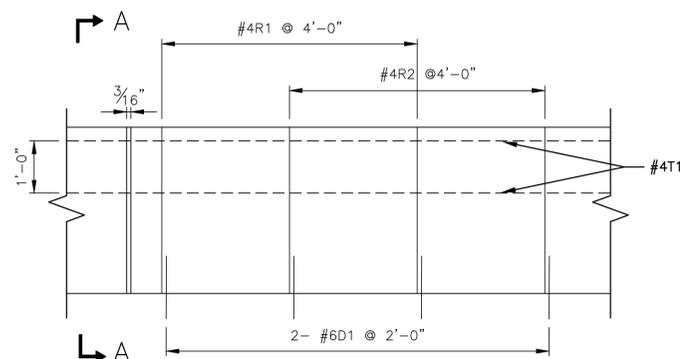
DETAIL OF OPENINGS TO BE CONSTRUCTED IN BARRIER CURB
N.T.S. TD200.01.03

CHIEF

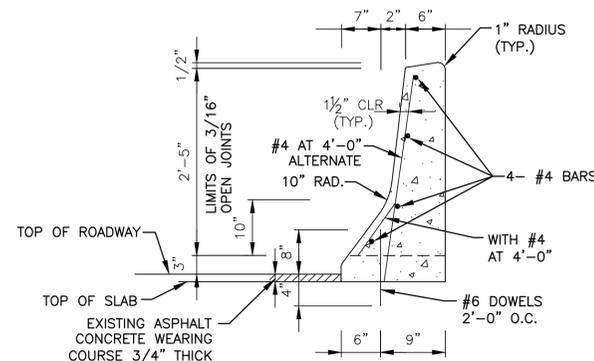
NOTES:

TD200.03.01

1. BARRIER CURB SHALL HAVE $\frac{3}{8}$ " OPEN JOINTS AT INTERVALS OF 15 FEET OR LESS BETWEEN DECK JOINTS.
2. CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.
3. REFER TO BRIDGE PLANS FOR NECESSARY MODIFICATIONS AS REQUIRED.

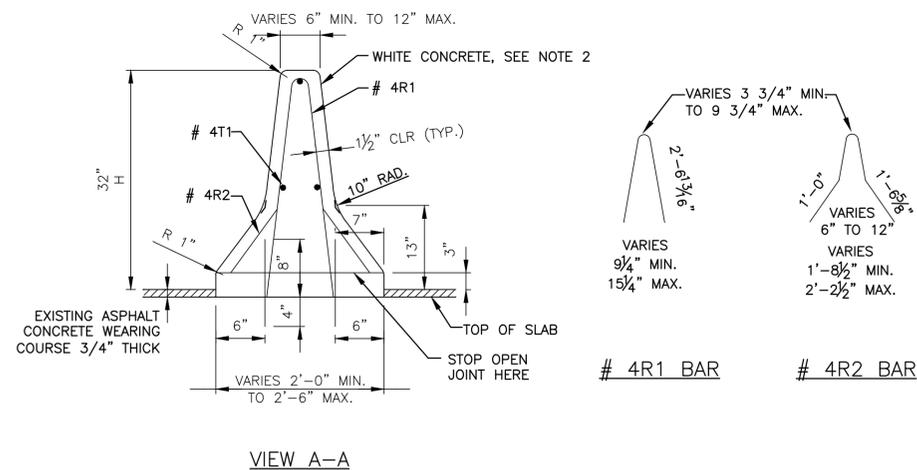


ELEVATION



HALF SECTION BARRIER CURB,
ON BRIDGE (CAST-IN-PLACE)

N.T.S. TD200.03.03

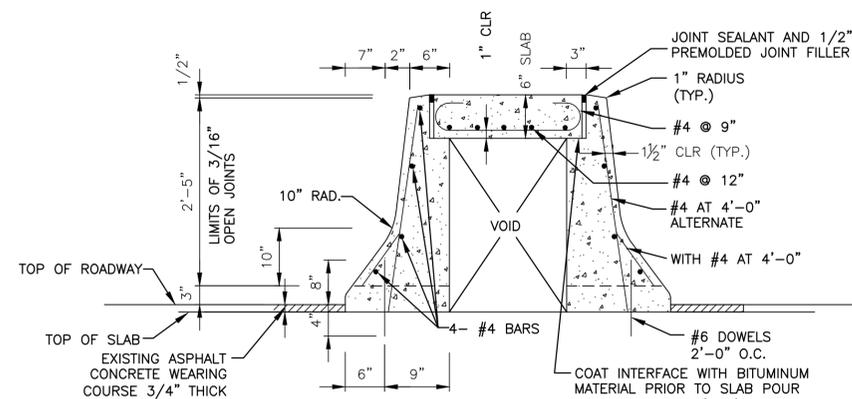


VIEW A-A

BARRIER CURB, ON BRIDGE (CAST-IN-PLACE)

N.T.S.

TD200.03.02



VARIABLE WIDTH BARRIER CURB,
ON BRIDGE (CAST-IN-PLACE)

N.T.S.

TD200.03.04

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

PANYNJ
Traffic Standard
Details

TRAFFIC

Title

PERMANENT BARRIERS

ON BRIDGE
CONCRETE BARRIER
CURB

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Designed by _____ Drawn by _____ Checked by _____

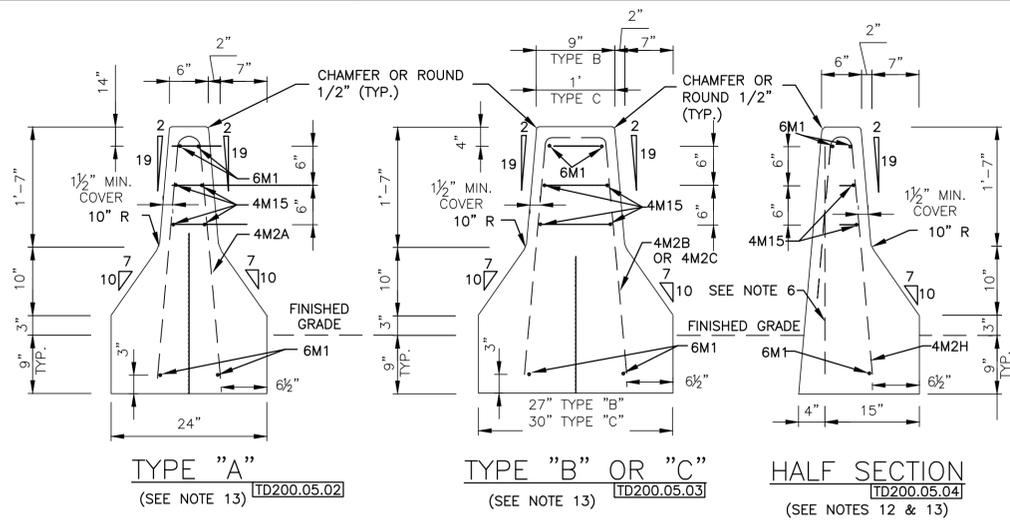
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Contract Number _____

Drawing Number **TD200.03**

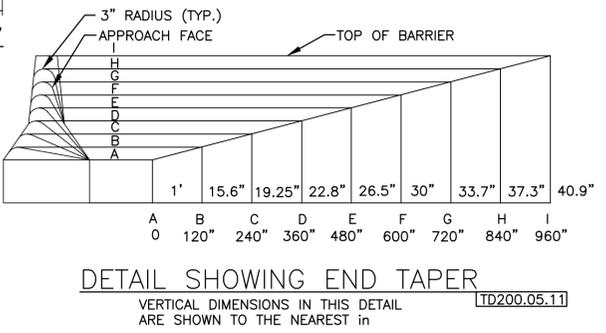
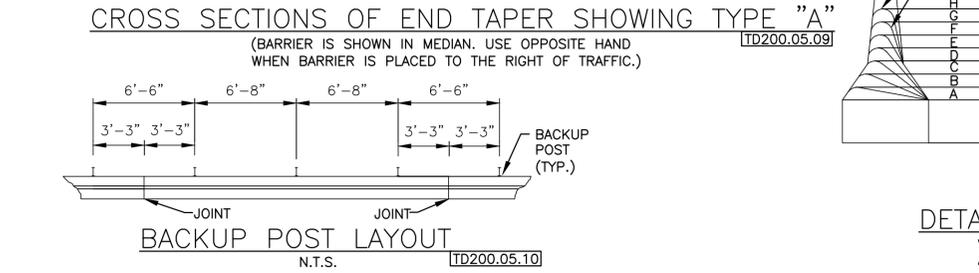
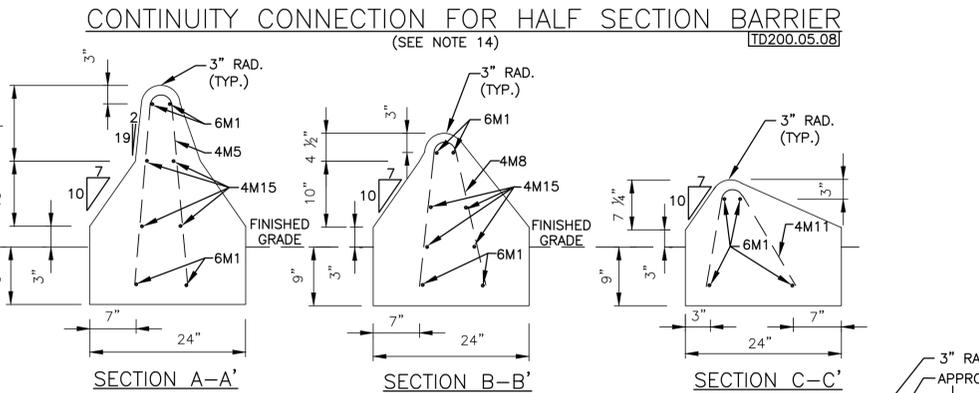
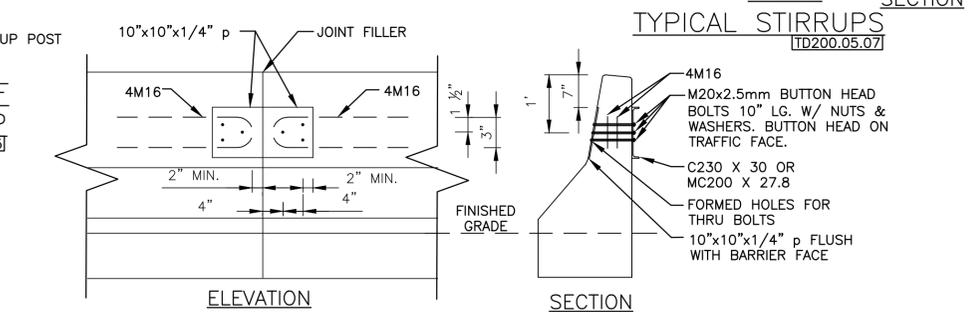
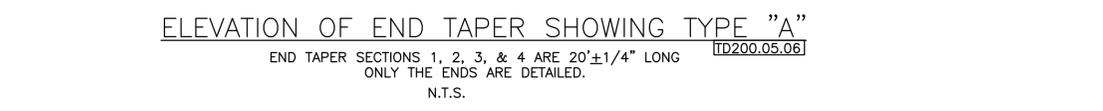
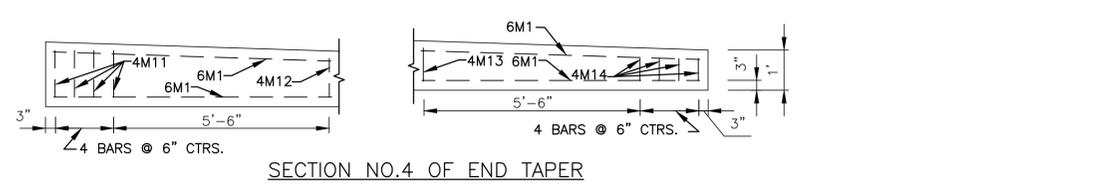
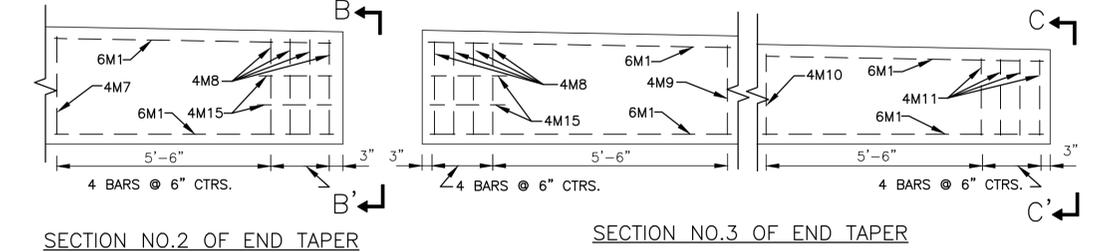
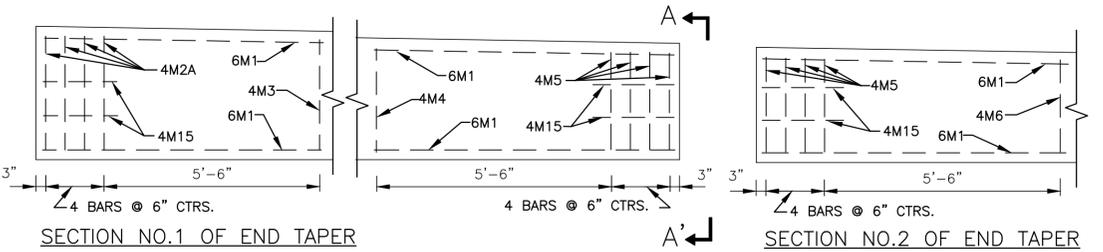
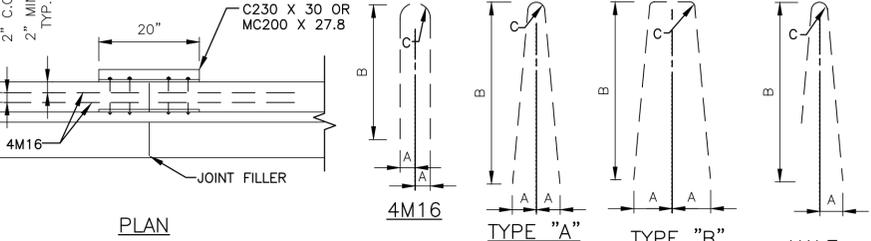
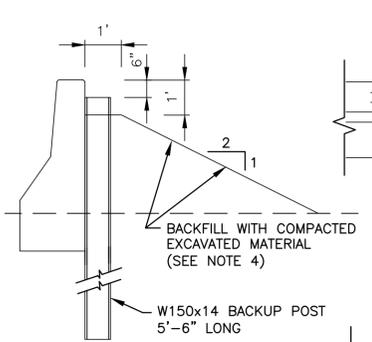
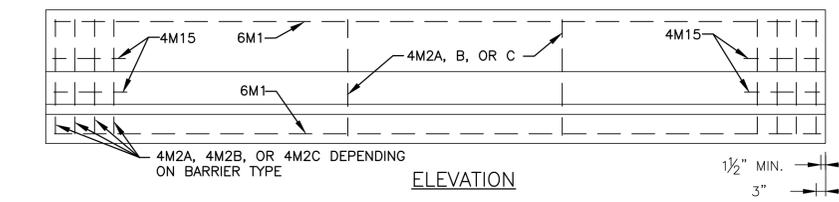
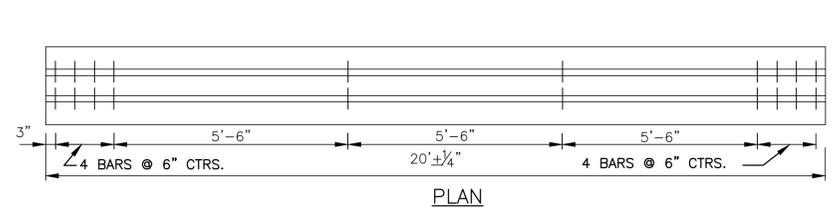
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CHIEF



BAR LIST										
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION	
6M1	6	4*	234"	STRINGER						LONGITUDINAL - 2 BOTTOM (EXCEPT HALF SECTION) *HALF SECTION - 1 BOTTOM - 2 TOP
4M2A	4	10**	73"	STIRRUP	5 1/2"	36"	1 1/2"			STIRRUP - TYPE A, UNIT * * 4 IN END TAPER NO.1
4M2B	4	10	77"	STIRRUP	7"	36"	1 1/2"			STIRRUP - TYPE B UNIT
4M2C	4	10	80"	STIRRUP	8 1/2"	36"	1 1/2"	9 1/2"		STIRRUP - TYPE C UNIT
4M2H	4	10	55"	STIRRUP	3"	36"	1"			STIRRUP - HALF SECTION
4M3	4	1	68"	STIRRUP	5 1/2"	34"	1 1/2"			STIRRUP IN END TAPER SECTION NO.1
4M4	4	1	66"	STIRRUP	5"	32"	1 1/2"			STIRRUP IN END TAPER SECTION NO.1
4M5	4	4	60"	STIRRUP	5"	29"	1 1/2"			STIRRUP IN END TAPER SECTION NO.1 & NO.2 (4 IN EACH PIECE)
4M6	4	1	56"	STIRRUP	5"	27"	1 1/2"			STIRRUP IN END TAPER SECTION NO.2
4M7	4	1	51"	STIRRUP	5"	25"	1 1/2"			STIRRUP IN END TAPER SECTION NO.2
4M8	4	4	44"	STIRRUP	5"	22"	1 1/2"			STIRRUP IN END TAPER SECTION NO.2 & NO.3 (4 IN EACH PIECE)
4M9	4	1	40"	STIRRUP	5"	19"	1 1/2"			STIRRUP IN END TAPER SECTION NO.3
4M10	4	1	37"	STIRRUP	6"	17"	1 1/2"			STIRRUP IN END TAPER SECTION NO.3
4M11	4	4	34"	STIRRUP	7"	15"	1 1/2"			STIRRUP IN END TAPER SECTION NO.3 & NO.4 (4 IN EACH PIECE)
4M12	4	1	29"	STIRRUP	8"	12"	1 1/2"			STIRRUP IN END TAPER SECTION NO.4
4M13	4	1	27"	STIRRUP	9"	10"	1 1/2"			STIRRUP IN END TAPER SECTION NO.4
4M14	4	4	34"	STIRRUP	10"	8"	1 1/2"			STIRRUP IN END TAPER SECTION NO.4
4M15	4	8	24"	STRAIGHT						LONGITUDINAL - 4 AT EACH END EXCEPT, END SECTION NO.3 WHICH HAS 4 AT END ABUTTING END TAPER SECTION NO.2 AND NONE AT THE OTHER END, END TAPER SECTION NO.4 WHICH HAS NONE, AND HALF SECTION WHICH HAS 2 AT EACH END.
4M16	4	4	58"	STIRRUP	3 1/2"	27"	3"			STIRRUP FOR CONTINUITY CONNECTION, 2 AT EACH END WITH CONTINUITY CONNECTION.

- NOTES:** TD200.05.01
- THE 9" EMBEDMENT IS TYPICAL FOR NEW AND RECONSTRUCTED MEDIANS.
 - ANY VARIATION OF THE 9" (TYPICAL) EMBEDMENT WILL BE DETAILED ON THE CONTRACT DRAWINGS.
 - FREE STANDING HALF-SECTION BARRIERS ON STRUCTURES, AND SPECIAL SECTIONS WILL BE DETAILED ON THE CONTRACT DRAWINGS.
 - HALF-SECTION BARRIERS SHALL BE BACKED UP WITH W150x14 POSTS AT 6'-6" CENTERS OR EARTH BACKFILL PLACED IN LAYERS NOT TO EXCEED 6" AND COMPACTED TO THE SATISFACTION OF THE ENGINEER, EXCEPT WHEN THE METHOD FOR BACKING UP THE BARRIER IS SPECIFIED IN THE CONTRACT DOCUMENTS. UNLESS SPECIFIED OTHERWISE CONTINUITY CONNECTIONS SHALL BE REQUIRED ONLY WHEN STEEL BACKUP POSTS ARE USED.
 - TOLERANCES SHALL BE AS FOLLOWS:
A. CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/5", THE VERTICAL CENTERLINE SHALL NOT BE OUT OF PLUMB BY MORE THAN 1/5".
B. LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN MORE THAN 1/5" PER 9'-10" OF BARRIER.
C. SURFACE STRAIGHTNESS WHEN CHECKED WITH A 10' STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED 1/5".
 - ON HALF-SECTION BARRIER UNIT, BEND THE STIRRUP MARK 4M2H SO THAT IT WILL LIE PARALLEL TO BOTH FACES OF THE BARRIER.
 - ON HIGH SPEED HIGHWAYS AND ASSOCIATED RAMPS [DESIGN OR OPERATING SPEED W 50 MPH], THE APPROACH END OF THE CONCRETE MEDIAN BARRIER SHALL BE TERMINATED WITH AN END TAPER PLACED OUTSIDE THE CLEAR ZONE, THE BARRIER SHALL CONVERGE WITH THE ROADWAY WITH A FLARE RATE OF 1:15. IF IT IS NOT POSSIBLE TO TERMINATE THE BARRIER OUTSIDE THE CLEAR ZONE THE END OF THE BARRIER SHALL BE SHIELDED WITH A PROPERLY DESIGNED CRASH CUSHION.
 - ON REDUCED SPEED FACILITIES [OPERATING OR DESIGN SPEED < 50 MPH], AT SIGNAL CONTROLLED INTERSECTIONS, AND AT THE STOP CONDITIONS CONCRETE MEDIAN BARRIER MAY BE TERMINATED WITH A TAPERED END SECTION.
 - SURFACES SHALL HAVE A SMOOTH FINISH.
 - ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.
 - CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.
 - HALF SECTION BARRIERS WITH A VERTICAL BACK FACE SHALL BE USED WHEN TWO HALF SECTION BARRIERS ARE USED BACK-TO-BACK WITH 8" OR LESS BETWEEN THEM, WHEN A HALF SECTION BARRIER IS PLACED 4" OR LESS FROM A VERTICAL WALL, OR WHEN A HALF SECTION BARRIER IS BACKED UP WITH W6X9 POSTS. ALL OTHER APPLICATIONS OF HALF SECTION BARRIER SHALL USE BARRIER WITH A BATTERED BACK FACE.
 - THE 2:19 AND 7:10 SLOPES ARE TYPICAL FOR ALL CONCRETE BARRIERS AND SHALL NOT BE CHANGED EXCEPT AT END TAPERS AND TRANSITIONS, THE BREAK BETWEEN THE 2:19 AND 7:10 SLOPES SHALL ALWAYS BE 13" ABOVE THE FINISHED GRADE EXCEPT IN TRANSITIONS.
 - UNLESS SPECIFIED OTHERWISE THE CONTRACTOR SHALL HAVE THE OPTION OF SUPPLYING THE TYPE "A" END TAPER SHOWN ON THIS STANDARD SHEET REGARDLESS OF THE TYPE OF BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED ON THE TYPE "B" OR "C" BARRIERS A 240" TRANSITION PIECE SHALL BE PLACED BETWEEN THE TYPE "A" END TAPER AND THE BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED WITH THE HALF SECTION BARRIER EARTH BACKFILL SHALL BE PLACED BEHIND END TAPER SECTION NO. 1 AND THE FIRST SECTION OF THE BARRIER. THE BACKFILL SHALL BE PLACED IN ACCORDANCE WITH REQUIREMENTS OF NOTE 4.



No.	Date	Revision	Approved

ENGINEERING DEPARTMENT			

**PANYNJ
Traffic Standard
Details**

TRAFFIC			

Title

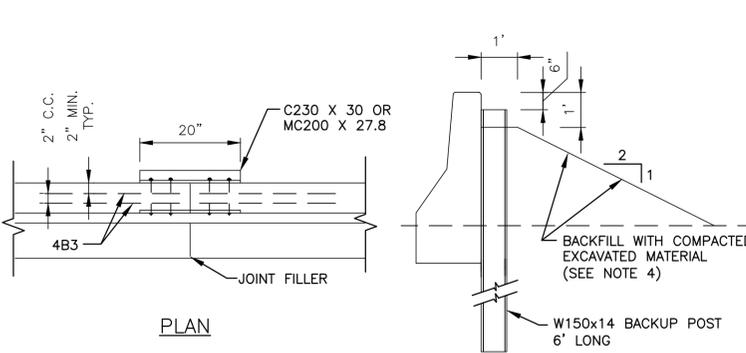
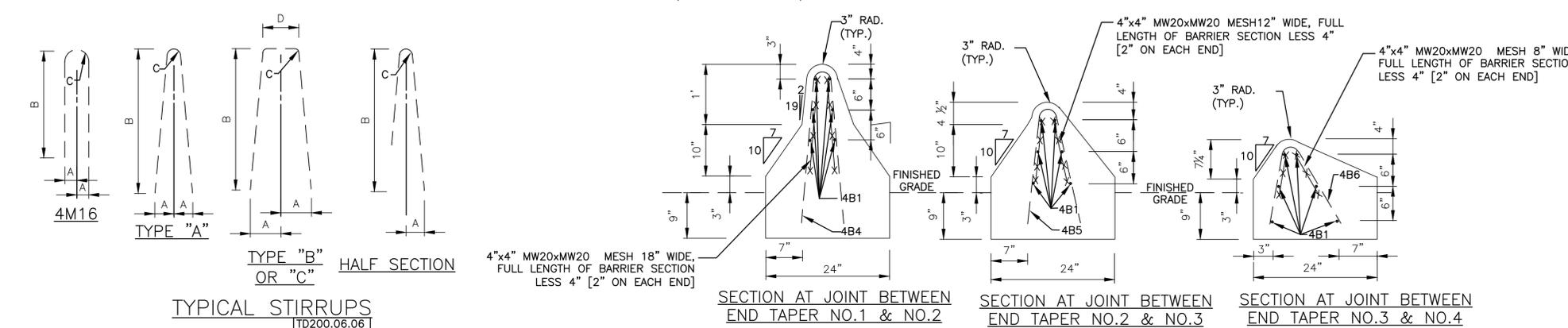
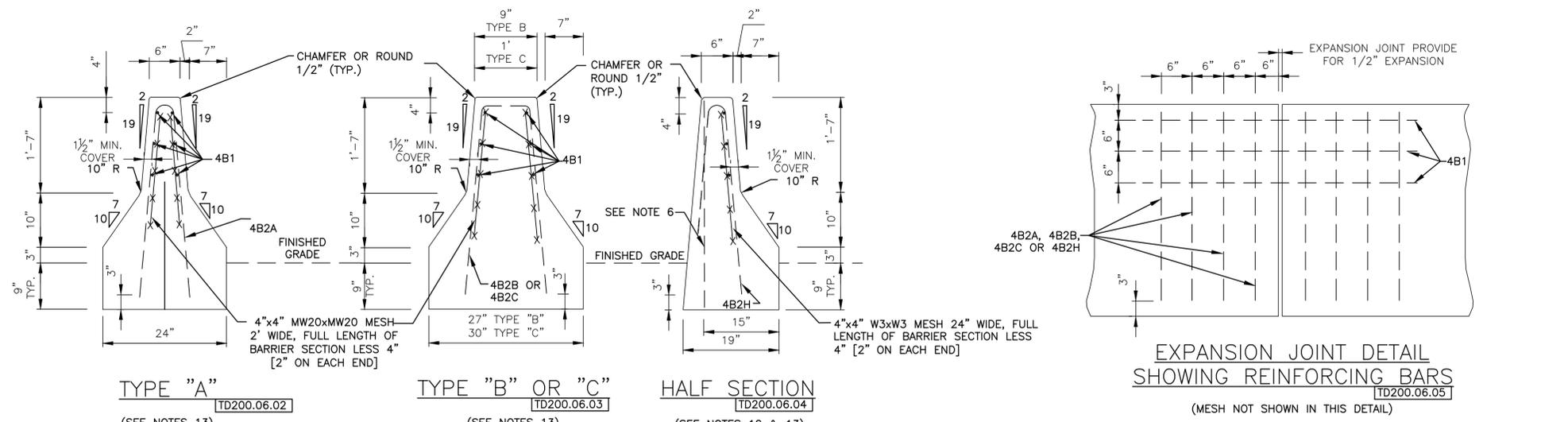
PERMANENT BARRIERS

**CONCRETE BARRIER
PRECAST**

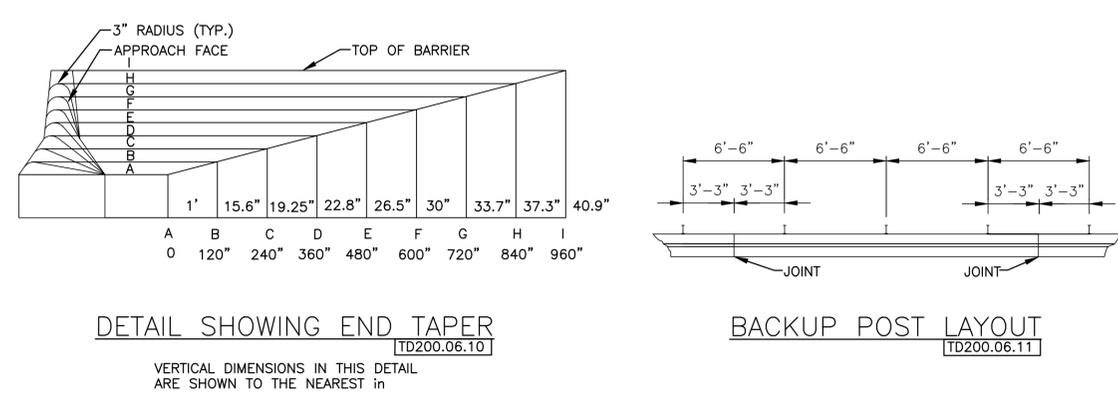
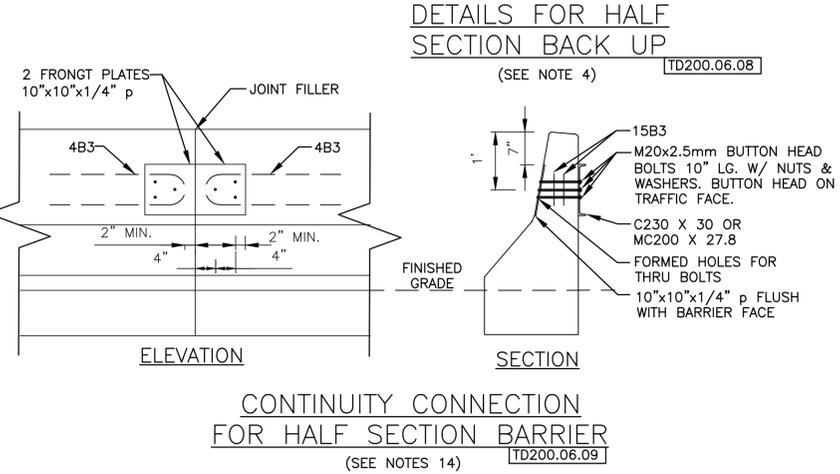
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Designed by	Drawn by	Checked by
Date	11/01/2010	
Contract Number		
Drawing Number	TD200.05	
	PID#	

CHIEF



BAR LIST									
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4B1	4	12	24"	STRINGER					LONGITUDINAL 6 AT EACH END EXCEPT FOR THE HALF SECTION BARRIER WHICH HAS 3 AT EACH END
4B2A	4	8 **	74"	STIRRUP	5 1/4"	36"	1 1/2"		STIRRUP - 4 IN EACH END OF THE TYPE "A" BARRIER ** 4 IN END TAPER NO. 1
4B2B	4	8	77"	STIRRUP	6 3/4"	36"	1 1/2"	6"	STIRRUP - 4 IN EACH END OF THE TYPE "B" BARRIER
4B2C	4	8	80"	STIRRUP	8 1/4"	36"	1 1/2"	9"	STIRRUP - 4 IN EACH END OF THE TYPE "C" BARRIER
4B2H	4	8	48"	STIRRUP	5 1/4"	36"	1"		STIRRUP - 4 IN EACH END OF THE HALF SECTION BARRIER
4B3	4	4	58"	STIRRUP	3 1/2"	27"	3"		STIRRUP FOR CONTINUITY CONNECTION
4B4	4	8	60"	STIRRUP	5"	29"	1 1/2"		4 IN END TAPER NO. 1 & 4 IN END TAPER NO. 2
4B5	4	8	46"	STIRRUP	5"	22"	1 1/2"		4 IN END TAPER NO. 2 & 4 IN END TAPER NO. 3
4B6	4	8	33"	STIRRUP	7"	15"	1 1/2"		4 IN END TAPER NO. 3 & 4 IN END TAPER NO. 4

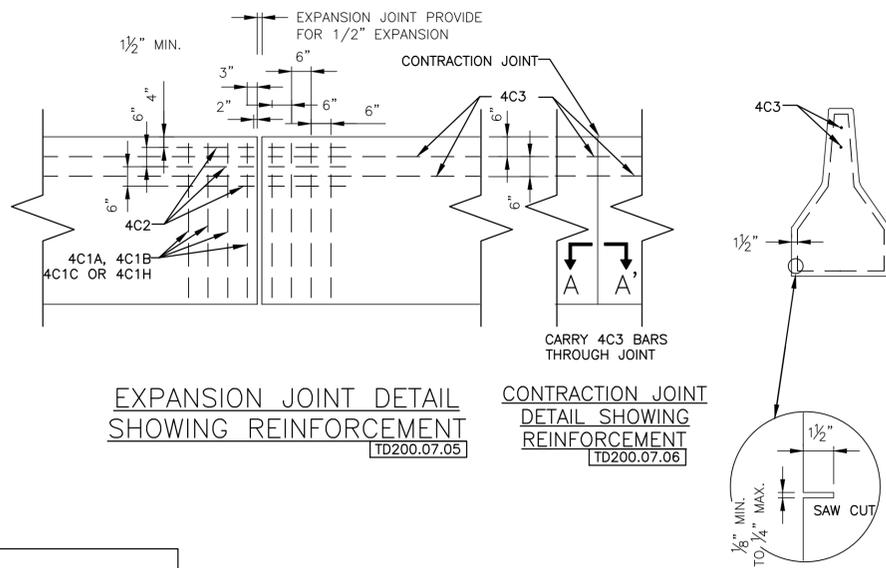
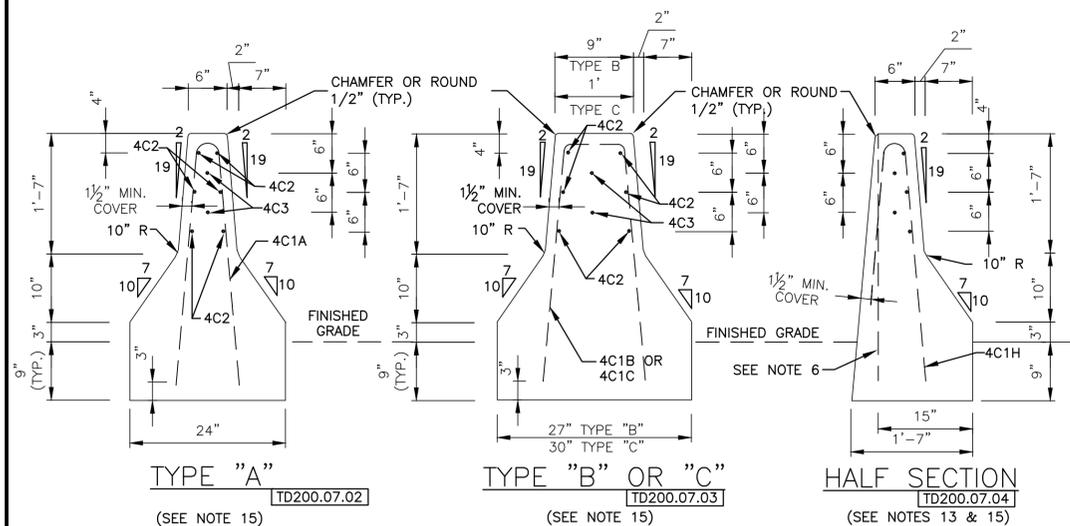


NOTES:

- THE 9" EMBEDMENT IS TYPICAL FOR NEW AND RECONSTRUCTED MEDIANS.
- ANY VARIATION OF THE 9" (TYPICAL) EMBEDMENT WILL BE DETAILED ON THE CONTRACT DRAWINGS.
- FREE STANDING HALF-SECTION BARRIERS ON STRUCTURES, AND SPECIAL SECTIONS WILL BE DETAILED ON THE CONTRACT DRAWINGS.
- HALF-SECTION BARRIERS SHALL BE BACKED UP WITH W150x14 POSTS AT 6'-6" CENTERS OR EARTH BACKFILL PLACED IN LAYERS NOT TO EXCEED 6" AND COMPACTED TO THE SATISFACTION OF THE ENGINEER, EXCEPT WHEN THE METHOD FOR BACKING UP THE BARRIER IS SPECIFIED IN THE CONTRACT DOCUMENTS. UNLESS SPECIFIED OTHERWISE CONTINUITY CONNECTIONS SHALL BE REQUIRED ONLY WHEN STEEL BACKUP POSTS ARE USED.
- THE END TAPER IS COMPOSED OF FOUR 20' SECTIONS REINFORCED AS FOLLOWS: SECTION 1, WHERE IT JOINS WITH THE BARRIER, IS REINFORCED ACCORDING TO THE DETAIL FOR TITLED TYPE "A". THE REINFORCEMENT FOR THE END TAPER AT THE JOINTS BETWEEN SECTIONS 1 AND 2, SECTIONS 2 AND 3 AND SECTIONS 3 AND 4 IS SHOWN IN THE CROSS SECTIONS OF THE END TAPER. ONLY TYPE "A" END TAPERS ARE SHOWN AND IF END TAPERS FOR TYPE "B", "C", OR "HALF SECTION" BARRIERS ARE REQUIRED THE REINFORCEMENT WILL HAVE TO BE DETAILED ON THE CONTRACT DRAWINGS.
- ON HALF-SECTION BARRIER UNIT, BEND THE STIRRUP MARK 4B2H SO THAT IT WILL LIE PARALLEL TO BOTH FACES OF THE BARRIER.
- TOLERANCES SHALL BE AS FOLLOWS:
 - CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/5". THE VERTICAL CENTERLINE SHALL NOT BE OUT OF PLUMB BY MORE THAN 1/5".
 - LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN MORE THAN 1/5" PER 10' OF BARRIER.
 - SURFACE STRAIGHTNESS WHEN CHECKED WITH A 10' STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED 1/5".
- ON HIGH SPEED HIGHWAYS AND ASSOCIATED RAMPS [DESIGN OR OPERATING SPEED >50 MPH], THE APPROACH END OF THE CONCRETE MEDIAN BARRIER SHALL BE TERMINATED WITH AN END TAPER PLACED OUTSIDE THE CLEAR ZONE, THE BARRIER SHALL CONVERGE WITH THE ROADWAY WITH A FLARE RATE OF 1:15. IF IT IS NOT POSSIBLE TO TERMINATE THE BARRIER OUTSIDE THE CLEAR ZONE THE END OF THE BARRIER SHALL BE SHIELDED WITH A PROPERLY DESIGNED CRASH CUSHION.
- ON REDUCED SPEED FACILITIES [OPERATING OR DESIGN SPEED < 50 MPH], AT SIGNAL CONTROLLED INTERSECTIONS, AND AT THE STOP CONDITIONS CONCRETE MEDIAN BARRIER MAY BE TERMINATED WITH A TAPERED END SECTION.
- CAST IN PLACE BARRIER SHALL HAVE A SMOOTH FINISH AND THE CONTRACTOR SHALL STEEL TROWEL ANY SURFACE AS DIRECTED BY THE ENGINEER.
- CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.
- HALF SECTION BARRIERS WITH A VERTICAL BACK FACE SHALL BE USED WHEN TWO HALF SECTION BARRIERS ARE USED BACK-TO-BACK WITH 8" OR LESS BETWEEN THEM, WHEN A HALF SECTION BARRIER IS PLACED 4" OR LESS FROM A VERTICAL WALL, OR WHEN A HALF SECTION BARRIER IS BACKED UP WITH W6X9 POSTS. ALL OTHER APPLICATIONS OF HALF SECTION BARRIER SHALL USE BARRIER WITH A BATTERED BACK FACE.
- THE 19:2 AND 10:7 SLOPES ARE TYPICAL FOR ALL CONCRETE BARRIERS AND SHALL NOT BE CHANGED EXCEPT AT END TAPERS AND TRANSITIONS, THE BREAK BETWEEN THE 19:2 AND 10:7 SLOPES SHALL ALWAYS BE 13" ABOVE THE FINISHED GRADE EXCEPT IN TRANSITIONS.
- UNLESS SPECIFIED OTHERWISE, THE CONTRACTOR SHALL HAVE THE OPTION OF SUPPLYING THE TYPE "A" END TAPER SHOWN ON THIS STANDARD SHEET REGARDLESS OF THE TYPE OF BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED TYPE "B" OR "C" BARRIERS, A 240" TRANSITION PIECE SHALL BE PLACED BETWEEN THE TYPE "A" END TAPER AND THE BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED WITH THE HALF SECTION BARRIER, EARTH BACKFILL SHALL BE PLACED BEHIND END TAPER SECTION NO. 1 AND THE FIRST SECTION OF THE BARRIER. THE BACKFILL SHALL BE PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF NOTE 4.

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent. All recipients of Contract documents, including bidders and those who do not bid and their prospective subcontractors and suppliers who may receive all or a part of the Contract documents and copies thereof, shall make every effort to ensure the secure and appropriate disposal of the Contract documents to prevent further disclosure of the information contained in the documents. Secure and appropriate disposal includes methods of document destruction such as shredding or arrangements with release handlers that ensure that third persons will not have access to the documents' contents either before, during, or after disposal. Documents may also be returned for disposal purposes to the Contract Desk on the 3rd Floor, 3 Gateway Center, Newark NJ 07102 or the office of the Director of Procurement, One Madison Avenue, 7th Floor, New York NY 10010. It is a violation of law for any person to alter a document in any way, unless acting under the direction of a licensed professional engineer or registered architect. If this document bearing the seal of an engineer/architect is altered, the altering engineer/architect shall affix to the document their seal and the notation "altered" followed by their signature and the date of such alteration, and a specific description of the alteration.

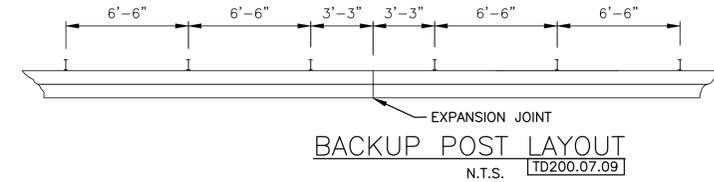
Designed by _____ Drawn by _____ Checked by _____
 Date _____ 11/01/2010
 Contract Number _____
 Drawing Number **TD200.06**
 PID# _____



EXPANSION JOINT DETAIL
SHOWING REINFORCEMENT
TD200.07.05

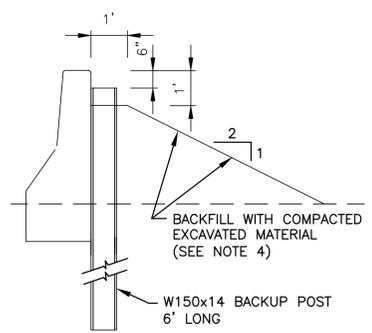
CONTRACTION JOINT
DETAIL SHOWING
REINFORCEMENT
TD200.07.06

SECTION A-A'

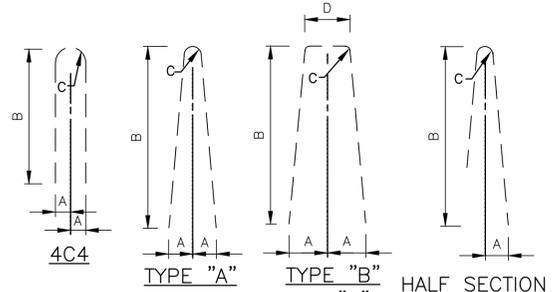


BACKUP POST LAYOUT
N.T.S. TD200.07.09

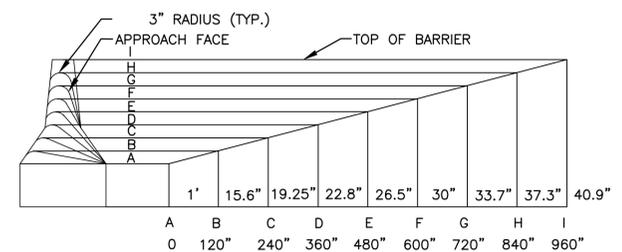
BAR LIST									
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4C1A	4	8	6'-2"	STIRRUP	5 1/2"	36"	1 1/2"	---	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT ON THE TYPE "A" BARRIER
4C1B	4	8	6'-5"	STIRRUP	7"	35.8"	1 1/2"	---	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT ON THE TYPE "B" BARRIER
4C1C	4	8	6'-8"	STIRRUP	8 1/2"	36"	1 1/2"	6"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT ON THE TYPE "C" BARRIER
4C1H	4	8	4'	STIRRUP	5 1/2"	36"	1"	---	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT ON THE HALF SECTION BARRIER
4C2	4	12	2'-6"	STRINGER	---	---	---	---	LONGITUDINAL - 6 EACH SIDE OF THE EXPANSION JOINT EXCEPT FOR THE HALF SECTION BARRIER WHICH HAS 3 ON EACH SIDE OF THE EXPANSION JOINT
4C3	4	2	---	STRINGER	---	---	---	---	CONTINUOUS FROM EXPANSION JOINT TO EXPANSION JOINT
4C4	4	4	4'-10"	STIRRUP	3 1/2"	27"	3"	---	STIRRUP FOR CONTINUITY CONNECTION



DETAILS FOR HALF
SECTION BACK UP
TD200.07.08
(SEE NOTE 4)



TYPICAL STIRRUPS
TD200.07.10

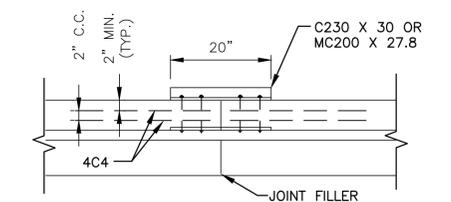


DETAIL SHOWING END TAPER
TD200.07.11

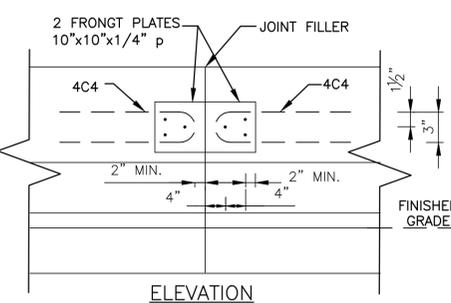
VERTICAL DIMENSIONS IN THIS DETAIL
ARE SHOWN TO THE NEAREST IN

NOTES:

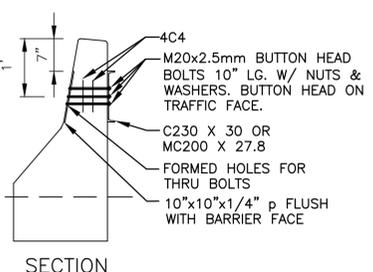
- THE 9" EMBEDMENT IS TYPICAL FOR NEW AND RECONSTRUCTED MEDIANS.
- ANY VARIATION OF THE 9" (TYPICAL) EMBEDMENT WILL BE DETAILED ON THE CONTRACT DRAWINGS.
- FREE STANDING HALF-SECTION BARRIERS ON STRUCTURES, AND SPECIAL SECTIONS WILL BE DETAILED ON THE CONTRACT DRAWINGS.
- HALF-SECTION BARRIERS SHALL BE BACKED UP WITH W150x14 POSTS AT 6'-6" CENTERS OR EARTH BACKFILL PLACED IN LAYERS NOT TO EXCEED 6" AND COMPACTED TO THE SATISFACTION OF THE ENGINEER, EXCEPT WHEN THE METHOD FOR BACKING UP THE BARRIER IS SPECIFIED IN THE CONTRACT DOCUMENTS. UNLESS SPECIFIED OTHERWISE CONTINUITY CONNECTIONS SHALL BE REQUIRED ONLY WHEN STEEL BACKUP POSTS ARE USED.
- REINFORCEMENT IS REQUIRED IN END TAPERS. MARK 4C1 A, B, C, OR H BARS, DEPENDING ON THE BARRIER TYPE, AND MARK 4C2 ARE REQUIRED ONLY ON THE END ADJACENT TO THE FULL SECTION.
- ON HALF-SECTION BARRIER UNIT, BEND THE STIRRUP MARK 4C1H SO THAT IT WILL LIE PARALLEL TO BOTH FACES OF THE BARRIER.
- TOLERANCES SHALL BE AS FOLLOWS:
A. CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/4". THE VERTICAL CENTERLINE SHALL NOT BE OUT OF PLUMB BY MORE THAN 1/4".
B. LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN MORE THAN 1/4" PER 10' OF BARRIER.
C. SURFACE STRAIGHTNESS WHEN CHECKED WITH A 10' STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED 1/4".
- THE BARRIER SHALL CONVERGE WITH THE ROADWAY WITH A FLARE OF 1:15 IF IT IS NOT POSSIBLE TO TERMINATE THE BARRIER OUTSIDE THE CLEAR ZONE, THE END OF THE BARRIER SHALL BE SHIELDED WITH CUSHION.
- ON REDUCED SPEED FACILITIES [OPERATING OR DESIGN SPEED < 50 MPH], AT SIGNAL CONTROLLED INTERSECTIONS, AND AT THE STOP CONDITIONS CONCRETE MEDIAN BARRIER MAY BE TERMINATED WITH A TAPERED END SECTION.
- THE TAPERED END SECTION SHALL BE EITHER CAST-IN-PLACE OR PRECAST AND SHALL CONFORM TO THE DETAILS FOR TAPERED END SECTIONS ON THE STANDARD SHEET TITLED "CONCRETE BARRIER (CAST-IN-PLACE)" OR "PRECAST CONCRETE BARRIER." MACHINE FORMED BARRIERS SHALL HAVE A SMOOTH FINISH AND THE CONTRACTOR SHALL STEEL TROWEL ANY SURFACE AS DIRECTED BY THE ENGINEER.
- WHEN CONCRETE BARRIER IS PLACED ADJACENT TO PORTLAND CEMENT CONCRETE PAVEMENT OR SHOULDERS, THE BARRIER SHALL BE SEPARATED FROM THE CONCRETE AS FOLLOWS: PREMOULDED RESILIENT JOINT FILLER SHALL BE PLACED IN THE JOINT BETWEEN THE BARRIER AND THE CONCRETE PAVEMENT OR SHOULDER. THE PREMOULDED JOINT FILLER SHALL BE 1/2" WIDE AND EXTEND TO THE BOTTOM OF THE CONCRETE PAVEMENT OR SHOULDER. A RECESS OF APPROXIMATELY 1" SHALL BE PROVIDED AT THE TOP OF THE JOINT FOR INSTALLATION OF A BACKER ROD AND JOINT SEALANT. THE JOINT SEALANT SHALL BE A SILICONE SEALANT AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PRIOR APPROVAL FROM THE ENGINEER IS REQUIRED.
- CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.
- HALF SECTION BARRIERS WITH A VERTICAL BACK FACE SHALL BE USED WHEN TWO HALF SECTION BARRIERS ARE USED BACK-TO-BACK WITH 8" OR LESS BETWEEN THEM. WHEN A HALF SECTION BARRIER IS PLACED 4" OR LESS FROM A VERTICAL WALL, OR WHEN A HALF SECTION BARRIER IS BACKED UP WITH W6X9 POSTS. ALL OTHER APPLICATIONS OF HALF SECTION BARRIER SHALL USE BARRIER WITH A BATTERED BACK FACE.
- THE CONTRACTOR SHALL HAVE THE OPTION OF SUPPLYING PRECAST CONCRETE SECTIONS OR CAST-IN-PLACE FOR THE END TAPER. THE TYPE "A" END TAPER MAY BE USED WITH ANY TYPE BARRIER UNLESS SPECIFIED OTHERWISE. WHEN THE TYPE "A" END TAPER IS USED WITH TYPE "B" OR TYPE "C" BARRIERS, A 20' TRANSITION PIECE SHALL BE PLACED BETWEEN THE TYPE "A" END TRANSITION AND THE BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED WITH THE HALF SECTION BARRIER, EARTH BACKFILL SHALL BE PLACED BEHIND END SECTION NO. 1 OF THE END TAPER AND THE FIRST SECTION OF THE BARRIER. THE BACKFILL SHALL BE PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF NOTE 4.
- THE 19:2 AND 10:7 SLOPES ARE TYPICAL FOR ALL CONCRETE BARRIERS AND SHALL NOT BE CHANGED EXCEPT AT END TAPERS AND TRANSITIONS. THE BREAK BETWEEN THE 19:2 AND 10:7 SLOPES SHALL ALWAYS BE 13" ABOVE THE FINISHED GRADE EXCEPT IN TRANSITIONS.



PLAN



ELEVATION



SECTION

CONTINUITY CONNECTION
FOR HALF SECTION BARRIER
TD200.07.07

(FOR USE AT EXPANSION JOINTS IN
HALF SECTION CONCRETE BARRIER)
N.T.S.

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT			
PANYNJ			
Traffic Standard			
Details			

TRAFFIC

Title
PERMANENT BARRIERS

**CONCRETE BARRIER
MACHINE FORMED**

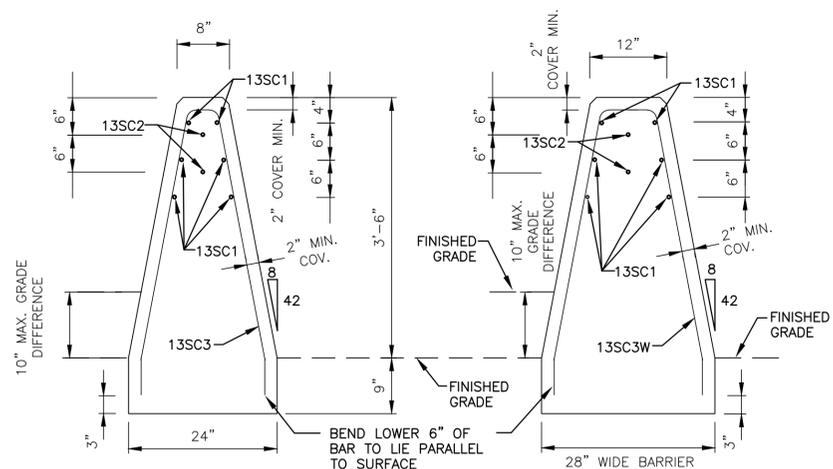
This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent. All recipients of Contract documents, including bidders and those who do not bid and their prospective subcontractors and suppliers who may receive all or a part of the Contract documents and copies thereof, shall make every effort to ensure the secure and appropriate disposal of the Contract documents to prevent further disclosure of the information contained in the documents. Secure and appropriate disposal includes methods of document destruction such as shredding or arrangements with release handlers that ensure that third persons will not have access to the documents' contents either before, during, or after disposal. Documents may also be returned for disposal purposes to the Contract Desk on the 3rd Floor, 3 Gateway Center, Newark NJ 07102 or the office of the Director of Procurement, One Madison Avenue, 7th Floor, New York NY 10010. It is a violation of law for any person to alter a document in any way, unless acting under the direction of a licensed professional engineer or registered architect. If this document bearing the seal of an engineer/architect is altered, the altering engineer/architect shall affix to the document their seal and the notation "altered" followed by their signature and the date of such alteration, and a specific description of the alteration.

Designed by _____ Drawn by _____ Checked by _____

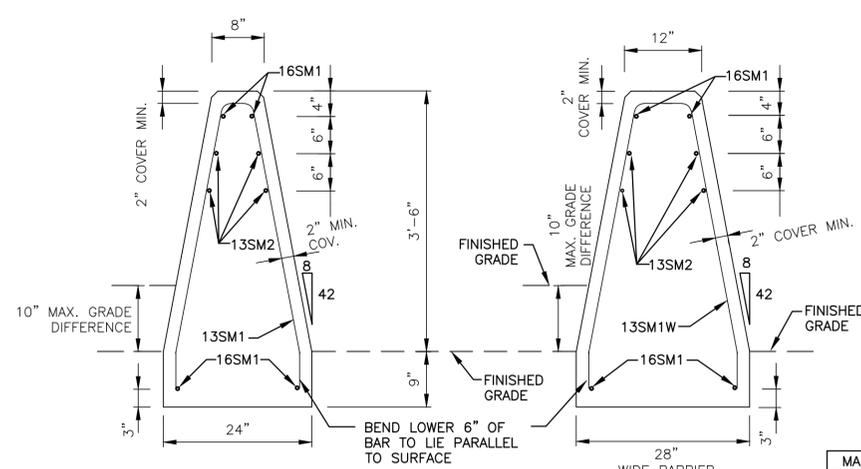
Date **11/01/2010**

Contract Number _____

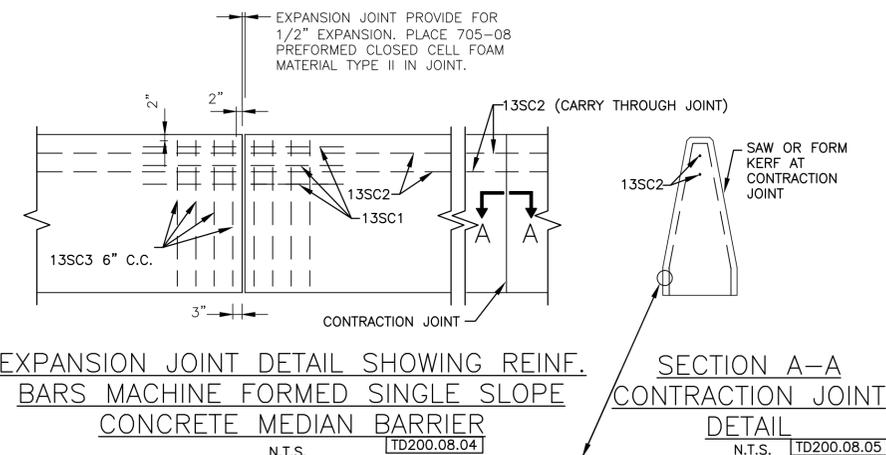
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PID# _____



SECTION SHOWING MACHINE FORMED SINGLE SLOPE CONCRETE MEDIAN BARRIER
(SHOWN AT EXPANSION JOINT) [TD200.08.02]
N.T.S.

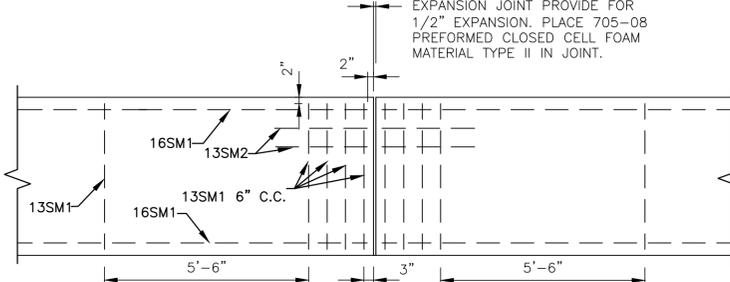


SECTION SHOWING PRECAST SINGLE SLOPE CONCRETE MEDIAN BARRIER
(SHOWN AT EXPANSION JOINT) [TD200.08.03]
N.T.S.

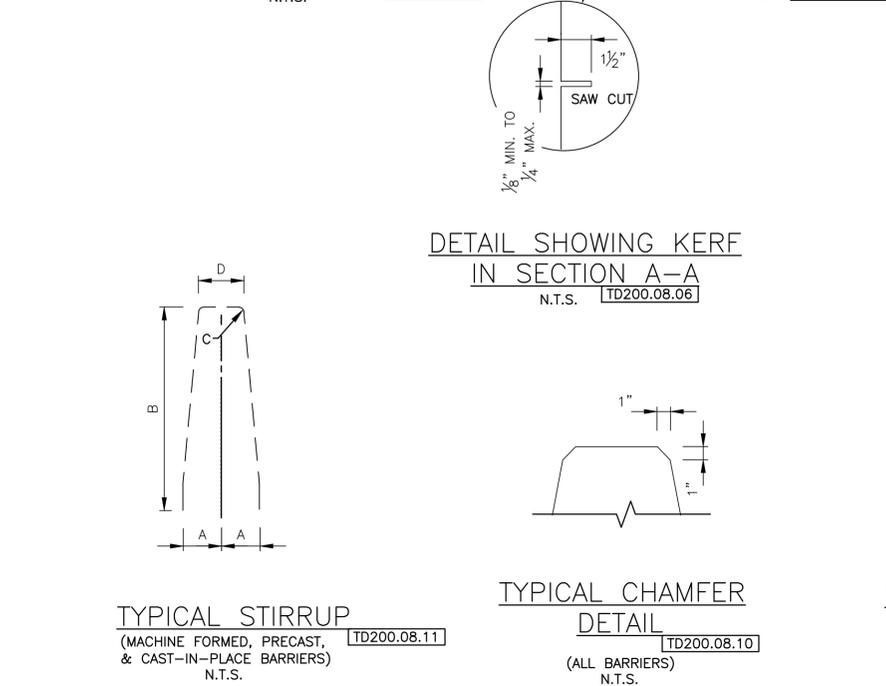


EXPANSION JOINT DETAIL SHOWING REINFORCING BARS MACHINE FORMED SINGLE SLOPE CONCRETE MEDIAN BARRIER
N.T.S. [TD200.08.04]

SECTION A-A CONTRACTION JOINT DETAIL
N.T.S. [TD200.08.05]

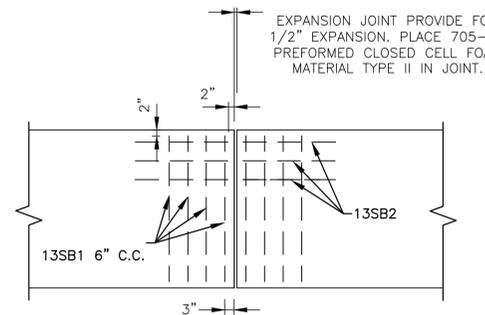


EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR PRECAST SINGLE SLOPE MEDIAN BARRIER
(SEE NOTE 4) [TD200.08.07]
N.T.S.

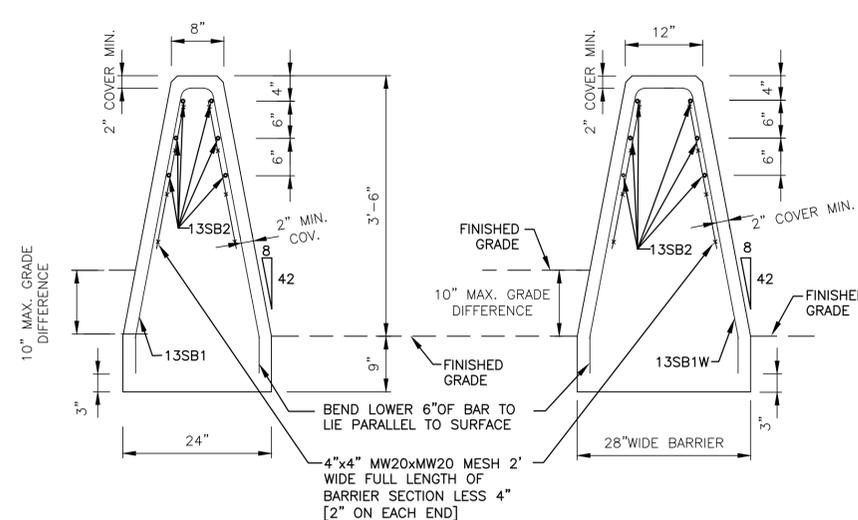


TYPICAL STIRRUP
(MACHINE FORMED, PRECAST, & CAST-IN-PLACE BARRIERS)
N.T.S. [TD200.08.11]

TYPICAL CHAMFER DETAIL
(ALL BARRIERS)
N.T.S. [TD200.08.10]



EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR CAST-IN-PLACE SINGLE SLOPE CONCRETE MEDIAN BARRIER
(MESH NOT SHOWN IN THIS DETAIL) [TD200.08.09]
N.T.S.



SECTION SHOWING CAST-IN-PLACE SINGLE SLOPE CONCRETE MEDIAN BARRIER
(SHOWN AT EXPANSION JOINT - SEE NOTE 5) [TD200.08.08]
N.T.S.

NOTES:

[TD200.08.01]

- FINISH TOLERANCES FOR ALL BARRIERS SHALL BE AS FOLLOWS:
A. CROSS-SECTIONAL DIMENSIONS - CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/4".
B. LONGITUDINAL DIMENSIONS - LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/4" PER 9'-10" OF BARRIER.
C. SURFACE STRAIGHTNESS - WHEN CHECKED WITH A 9'-10" STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED 1/4".
- 2" MINIMUM COVER FOR ALL REINFORCEMENT.
- CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.
- THE NOMINAL LENGTH OF PRECAST SECTIONS IS 20' BUT MAY BE MODIFIED TO A MINIMUM OF 10' AND A MAXIMUM OF 24' TO FIT CONDITIONS. UNLESS THE MODIFIED BARRIER IS DETAILED BY THE DEPARTMENT THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS TO THE ENGINEER.
- AS AN OPTION TO THE REINFORCEMENT SHOWN FOR THE CAST-IN-PLACE BARRIER THE CONTRACTOR MAY USE THE REINFORCEMENT SHOWN FOR PRECAST BARRIER.

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SM1	4	10	96"	STIRRUP	10"	46"	1 1/2"	4"	4 AT 6" CENTERS AT EACH END OF BARRIER UNIT. 2 AT 5'-6" CENTERS PLACED 33" EITHER SIDE OF THE MIDPOINT OF THE BARRIER UNIT.
13SM1W	4	10	100"	STIRRUP	12"	46"	1 1/2"	8"	4 AT 6" CENTERS AT EACH END OF BARRIER UNIT. 2 AT 5'-6" CENTERS PLACED 33" EITHER SIDE OF THE MIDPOINT OF THE BARRIER UNIT.
13SM2	4	8	2'-6"	STRAIGHT					4 ON EITHER SIDE OF JOINT
16SM1	5	4	19'-6"	STRINGER					LONGITUDINAL - 2 IN BOTTOM - 2 IN TOP

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SC1	4	12	2'-6"	STRAIGHT					LONGITUDINAL - 6 ON EACH SIDE OF THE EXPANSION JOINT
13SC2	4	2		STRINGER					CONTINUOUS FROM EXPANSION JOINT TO EXPANSION JOINT
13SC3	4	8	96"	STIRRUP	10"	46"	1 1/2"	4"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT
13SC3W	4	8	8'-4"	STIRRUP	12"	46"	1 1/2"	8"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SB1	4	8	96"	STIRRUP	10"	46"	1 1/2"	4"	4 ON EACH SIDE OF EXPANSION JOINT
13SB1W	4	8	100"	STIRRUP	6"	46"	1 1/2"	8"	4 ON EACH SIDE OF EXPANSION JOINT
13SB2	4	12	2'-6"	STRAIGHT					6 ON EACH SIDE OF EXPANSION JOINT

No.	Date	Revision	Approved
1	12/22/04	TABLE MODIFICATIONS SIZE INFO	

ENGINEERING DEPARTMENT

**PANYNJ
Traffic Standard
Details**

TRAFFIC

Title
PERMANENT BARRIERS

**CONCRETE BARRIER
SINGLE SLOPE**

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Designed by _____ Drawn by _____ Checked by _____
Date **11/01/2010**

Contract Number _____

Drawing Number **TD200.08**
PID# _____

NOTES:

TD200.09.01

- FINISH TOLERANCES FOR ALL BARRIERS SHALL BE AS FOLLOWS:
A. THE VERTICAL FACE SHALL NOT BE OUT OF PLUMB BY MORE THAN 1/5".
B. LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/5" PER 9'-10" OF BARRIER.
C. CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/5".
D. SURFACE STRAIGHTNESS- WHEN CHECKED WITH A 9'-10" STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED 1/5".
- CONTINUITY CONNECTIONS SHALL BE USED AT ALL JOINTS IN PRECAST AND CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIER. MACHINE FORMED SINGLE SLOPE CONCRETE HALF SECTION BARRIER REQUIRES THE USE OF CONTINUITY CONNECTIONS ONLY AT THE EXPANSION JOINTS. ALL HARDWARE IN CONTINUITY CONNECTIONS SHALL BE GALVANIZED.
- PRECAST AND CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIER SHALL BE BACKED UP WITH EARTH OR BACK UP POSTS FOR ITS ENTIRE LENGTH AS SHOWN IN BACKUP POST LAYOUT.
- MACHINE FORMED SINGLE SLOPE CONCRETE HALF SECTION BARRIER SHALL BE BACKED UP WITH EARTH OR BACK UP POSTS AT EVERY EXPANSION JOINT AND AT THE END OF EACH RUN OF BARRIER. WHEN EARTH BACK UP IS USED IT SHALL BE PLACED 19"-8" EITHER SIDE OF THE EXPANSION JOINT AND FOR THE FIRST AND LAST 19"-8" OF THE BARRIER EXCLUDING ANY END SECTIONS. WHEN BACK UP POSTS ARE USED THREE (3) POSTS SHALL BE PLACED ON EITHER SIDE OF THE EXPANSION JOINT IN THE PATTERN SHOWN IN THE BACKUP POST LAYOUT AND AT THE BEGINNING AND END OF EACH BARRIER RUN. THE POSTS AT THE ENDS OF BARRIER RUNS SHALL BE PLACED AT 6"-8" CENTERS COMMENCING AND ENDING 3"-4" FROM THE END OF THE BARRIER OR THE JOINT BETWEEN THE BARRIER AND ANY END SECTIONS.
- WHEN SINGLE SLOPE CONCRETE HALF SECTION BARRIER IS TERMINATED AT APPROACH END A FULL SECTION RAMPED TERMINAL OR A CRASH ATTENUATOR SHOULD BE USED AS SPECIFIED.
- 2" MINIMUM COVER FOR ALL REINFORCEMENT.
- THESE BENDS MAY BE ELIMINATED PROVIDED 2" MINIMUM COVER IS MAINTAINED.
- SURFACES SHALL BE SMOOTH.
- IF 19S4 BARS ARE USED, THEN THESE 13S4 BAR NEED NOT BE USED.
- AS AN OPTION TO THE REINFORCEMENT SHOWN FOR THE CAST-IN-PLACE BARRIER THE CONTRACTOR MAY USE THE REINFORCEMENT SHOWN FOR PRECAST BARRIER.
- CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.
- EARTH BACKUP SHALL CONSIST OF FULLY COMPACTED SUITABLE MATERIAL HAVING NO PARTICLES GREATER THAN 1 1/2" INCLUDED.
- THE NOMINAL LENGTH OF PRECAST SECTIONS IS 20' BUT MAY BE MODIFIED TO A MINIMUM OF 10' AND A MAXIMUM OF 24' TO FIT CONDITIONS.

No.	Date	Revision	Approved
1	10/20/04	TABLE MODIFICATIONS SIZE INFO	

ENGINEERING DEPARTMENT

**PANYNJ
Traffic Standard
Details**

TRAFFIC

Title
PERMANENT BARRIERS

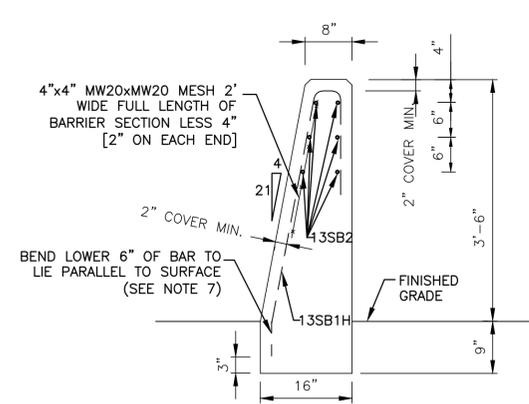
**CONCRETE BARRIER
HALF SECTION
SINGLE SLOPE**

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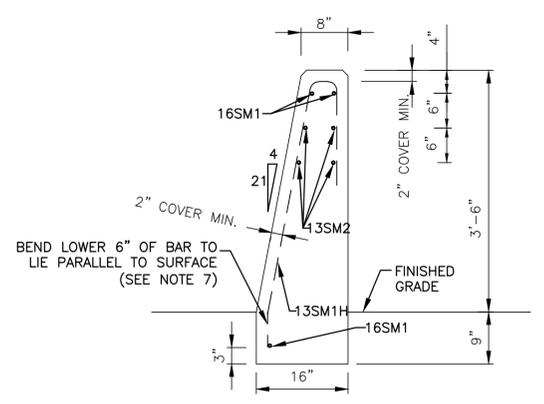
Designed by _____ Drawn by _____ Checked by _____
Date **11/01/2010**

Contract Number _____

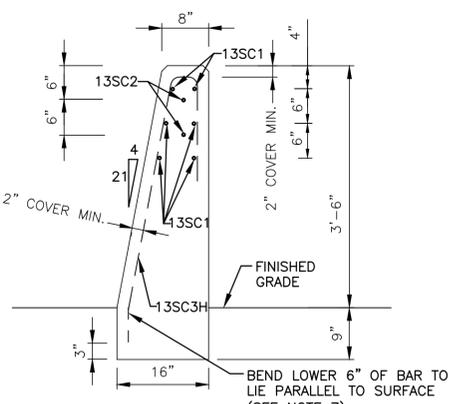
Drawing Number **TD200.09**
PID# _____



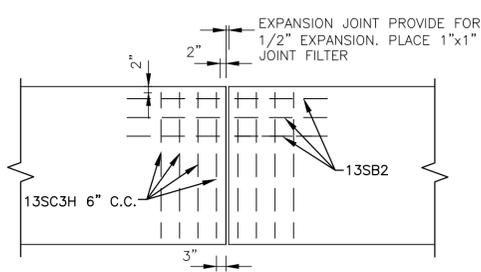
SECTION SHOWING CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIER (SHOWN AT EXPANSION JOINT - SEE NOTE 10) N.T.S. TD200.09.04



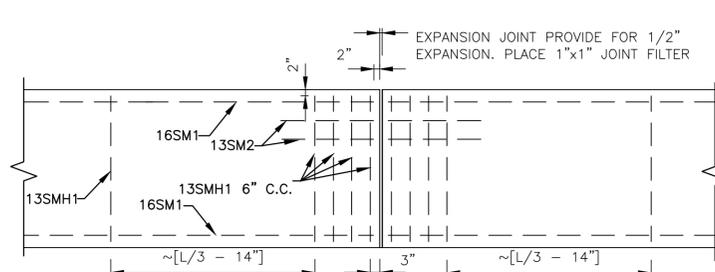
SECTION SHOWING PRECAST SINGLE SLOPE CONCRETE HALF SECTION BARRIER (SHOWN AT EXPANSION JOINT - SEE NOTE 13) N.T.S. TD200.09.03



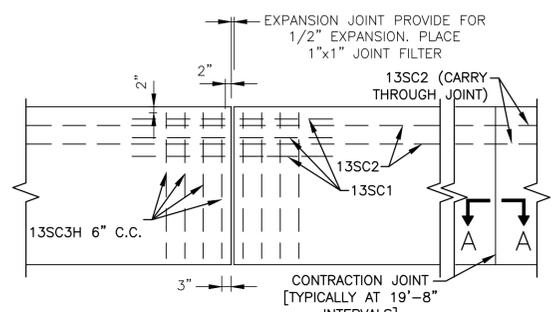
SECTION SHOWING MACHINE FORMED SINGLE SLOPE CONCRETE HALF SECTION BARRIER (SHOWN AT EXPANSION JOINT) N.T.S. TD200.09.02



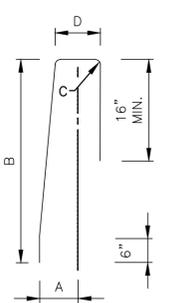
EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIER (MESH NOT SHOWN IN THIS DETAIL) N.T.S. TD200.09.07



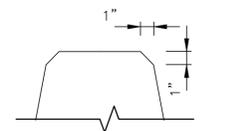
EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR PRECAST CONCRETE SINGLE SLOPE CONCRETE HALF SECTION BARRIER N.T.S. TD200.09.06



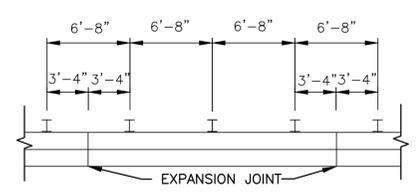
EXPANSION JOINT DETAIL SHOWING REINFORCING BARS MACHINE FORMED SINGLE SLOPE CONCRETE HALF SECTION BARRIER N.T.S. TD200.09.05



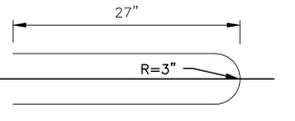
TYPICAL STIRRUP (MACHINE FORMED, PRECAST, & CAST-IN-PLACE BARRIERS) N.T.S. TD200.09.11



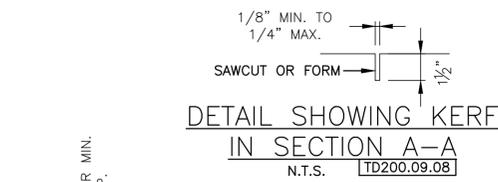
TYPICAL CHAMFER DETAIL (ALL BARRIERS) N.T.S. TD200.09.12



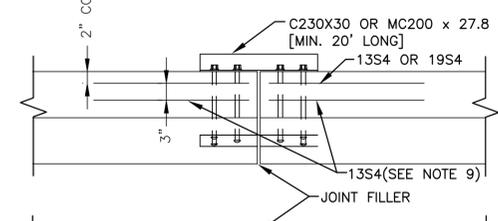
TYPICAL BACKUP POST LAYOUT TD200.09.10



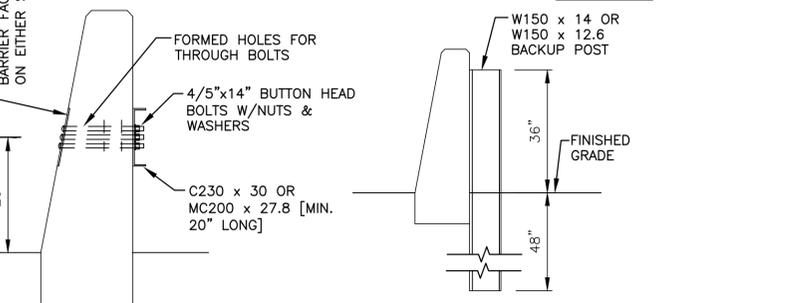
DETAIL OF S4 BAR TD200.09.09



DETAIL SHOWING KERF IN SECTION A-A N.T.S. TD200.09.08



CONTINUITY CONNECTION FOR HALF SECTION SINGLE SLOPE BARRIER (SEE NOTE 2) N.T.S. TD200.09.13



SINGLE SLOPE CONCRETE HALF SECTION BARRIER WITH BACKUP POST (SEE NOTES 3 AND 4) N.T.S. TD200.09.14



SINGLE SLOPE CONCRETE HALF SECTION BARRIER WITH EARTH BACKUP (SEE NOTES 3, 4 AND 12) N.T.S. TD200.09.15

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SC1	4	12	2'-6"	STRAIGHT	—	—	—	—	LONGITUDINAL - 6 ON EACH SIDE OF THE EXPANSION JOINT
13SC2	4	2	—	STRINGER	—	—	—	—	CONTINUOUS FROM EXPANSION JOINT TO EXPANSION JOINT
13SC3H	4	8	5'-6"	STIRRUP	10"	46"	1 1/2"	4"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT
13S4	4	4	4'-10"	STIRRUP	*	*	*	*	2 EACH SIDE OF EXPANSION JOINT
19S4	6	2	4'-10"	STIRRUP	*	*	*	*	1 EACH SIDE OF EXPANSION JOINT

* SEE DETAIL OF S4 BAR

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SM1H	4	10	5'-6"	STIRRUP	10"	46"	1 1/2"	4"	4 AT EACH END OF BARRIER UNIT 2 STIRRUPS TO APPROXIMATELY DIVIDE REMAINING SPACE INTO THREE EQUAL PARTS
16SM1	5	3	0'-6"	STRINGER	—	—	—	—	LONGITUDINAL - 1 IN BOTTOM - 2 IN TOP
13SM2	4	8	2'-6"	STRAIGHT	—	—	—	—	4 AT EACH END OF BARRIER UNIT
13S4	4	4	4'-10"	STIRRUP	*	*	*	*	2 EACH SIDE OF EXPANSION JOINT
19S4	6	2	4'-10"	STIRRUP	*	*	*	*	1 EACH SIDE OF EXPANSION JOINT

* SEE DETAIL OF S4 BAR

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SB1H	4	8	5'-6"	STIRRUP	10"	46"	1 1/2"	4"	AT EACH END OF BARRIER UNIT
13SB2	4	12	2'-6"	STRAIGHT	—	—	—	—	AT EACH END OF BARRIER UNIT
13S4	4	4	4'-10"	STIRRUP	*	*	*	*	2 EACH SIDE OF EXPANSION JOINT
19S4	6	2	4'-10"	STIRRUP	*	*	*	*	1 EACH SIDE OF EXPANSION JOINT

* SEE DETAIL OF S4 BAR

No.	Date	Revision	Approved
1	10/22/04	TABLE MODIFICATIONS SIZE INFO	

ENGINEERING DEPARTMENT

**PANYNJ
Traffic Standard
Details**

TRAFFIC

Title **PERMANENT BARRIERS**

**SINGLE - SLOPE
CONCRETE BARRIER
TERMINAL
SECTION - RAMP
TERMINAL**

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Designed by _____ Drawn by _____ Checked by _____
Date **11/01/2010**

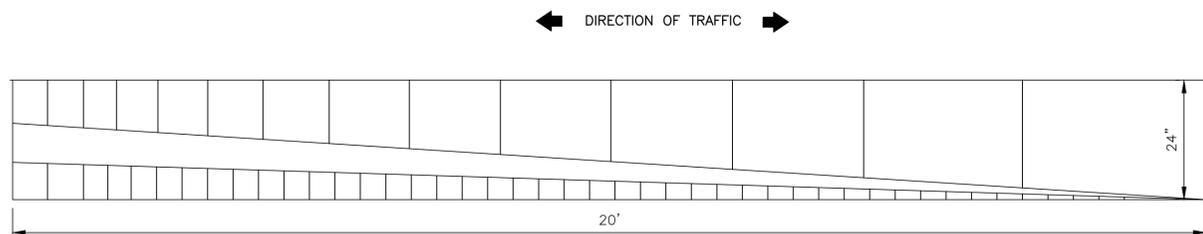
Contract Number

Drawing Number **TD200.10**

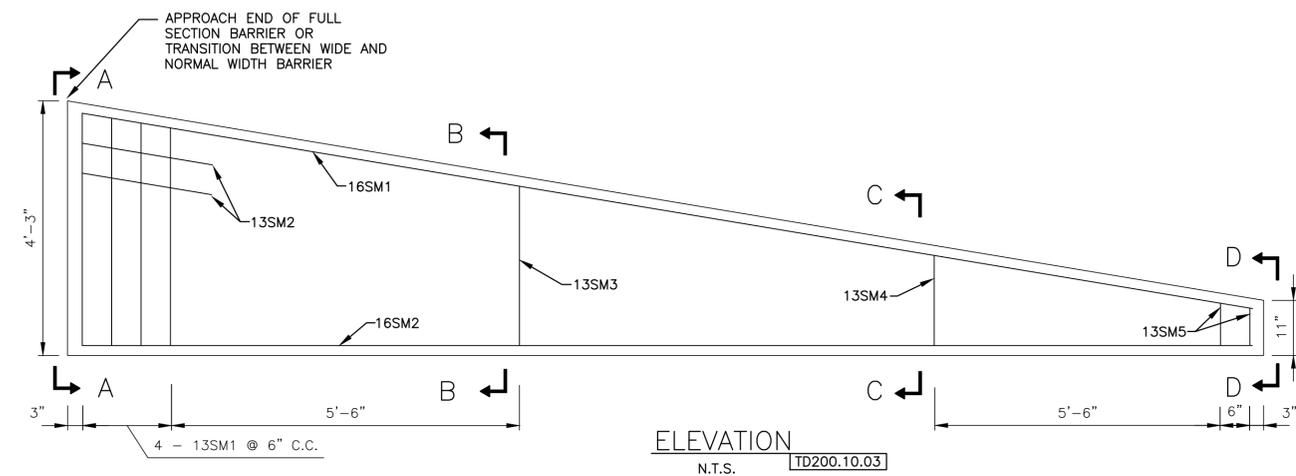
PID#

NOTES:
TD200.10.01

- FINISH TOLERANCES FOR ALL BARRIERS SHALL BE AS FOLLOWS:
 - A. CROSS SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/5".
 - B. THE VERTICAL CENTERLINE SHALL NOT BE OUT OF PLUMB BY MORE THAN 1/5".
 - C. LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/5" PER 9'-10" OF BARRIER.
 - D. WHEN CHECKED WITH A 9'-10" STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED 1/5".
- 2" MIN. COVER ON ALL REINFORCEMENTS.
- STIRRUPS SHOULD LIE AS CLOSE AND PARALLEL TO FACE OF BARRIER AS POSSIBLE.
- THESE BENDS MAY BE ELIMINATED PROVIDED 2" MINIMUM COVER IS MAINTAINED.
- SURFACES SHALL BE SMOOTH.
- PROVIDE FOR 1/2" EXPANSION AT JOINT WITH MEDIAN (NORMAL WIDTH), TRANSITION BETWEEN WIDE AND NORMAL WIDTH OR HALF SECTION BARRIER. PLACE 1" x 1" JOINT FILLER.
- CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.

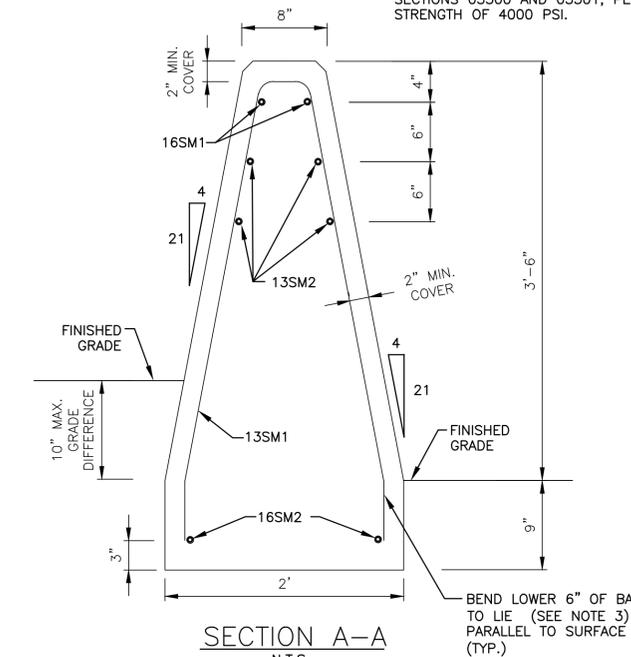


PLAN VIEW
N.T.S. TD200.10.02

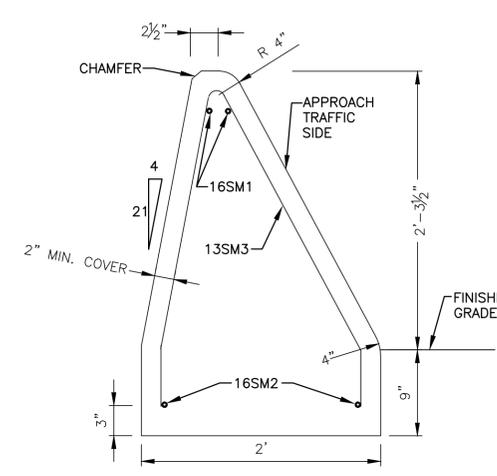


ELEVATION
N.T.S. TD200.10.03

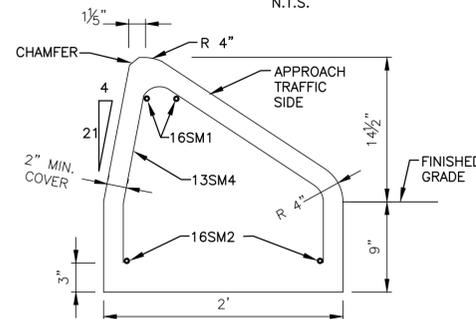
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	E	LOCATION
13SM1	4	4	VARIES FROM 7'-5 1/2" TO 7'-11"	STIRRUP	10"	VARIES FROM 3'-6 2/3" TO 3'-9 1/2"	1 1/2"	2"	—	4 AT 6" CENTERS AT THE FULL SECTION END OF TERMINAL.
13SM2	4	4	30"	STRAIGHT	—	—	—	—	—	4 AT FULL SECTION END OF TERMINAL
13SM3	4	1	66"	STIRRUP	—	2'-6 1/4"	1 1/2"	5 1/2"	20"	1 AT 5'-6" FROM LAST 13SM1 STIRRUP
13SM4	4	1	43 1/2"	STIRRUP	—	1'-5"	1 1/2"	2 1/2"	20"	1 AT 5'-6" FROM FIRST 13SM1 STIRRUP
13SM5	4	2	28 1/2"	STIRRUP	10"	5"	1 1/2"	—	—	2 AT 6" CENTER AT TAIL END OF BARRIER
16SM1	5	2	19'-11 1/2"	STRAIGHT	—	—	—	—	—	LONGITUDINAL - 2 AT TOP
16SM2	5	2	19'-8 1/4"	STRAIGHT	—	—	—	—	—	LONGITUDINAL - 2 AT BOTTOM



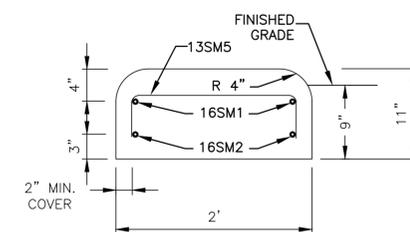
SECTION A-A
N.T.S.



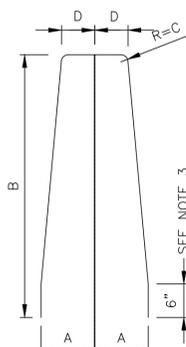
SECTION B-B
N.T.S.



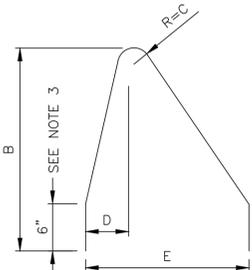
SECTION C-C
N.T.S.



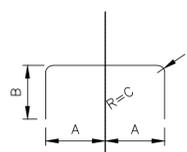
SECTION D-D
N.T.S.



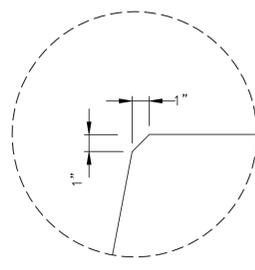
**STIRRUP
13SM1**
N.T.S. TD200.10.04



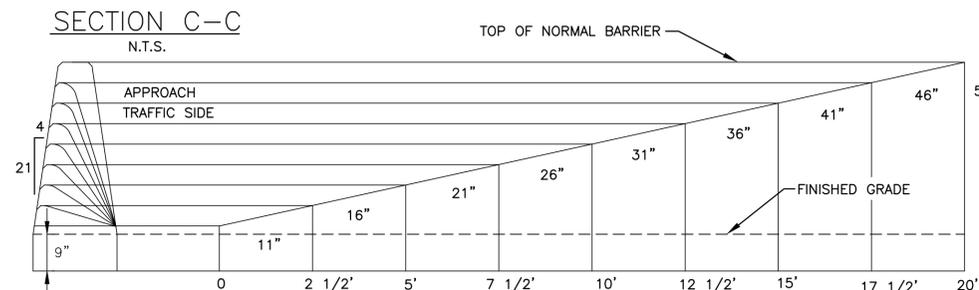
**STIRRUP 13SM3,
13SM4**
N.T.S. TD200.10.05



13SM5
N.T.S. TD200.10.06



**TYPICAL CHAMFER
DETAIL**
N.T.S. TD200.10.07
(ALL SECTIONS)

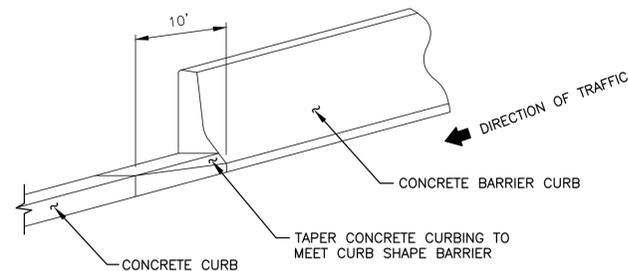


SINGLE SLOPE CONCRETE BARRIER TERMINAL DETAIL
USE OPPOSITE HAND WHEN BARRIER IS PLACED TO THE RIGHT OF TRAFFIC FLOW TD200.10.08

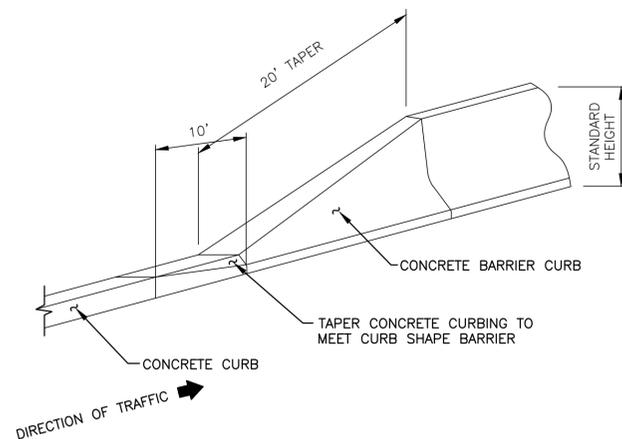
CHIEF

NOTE:
TD200.11.01

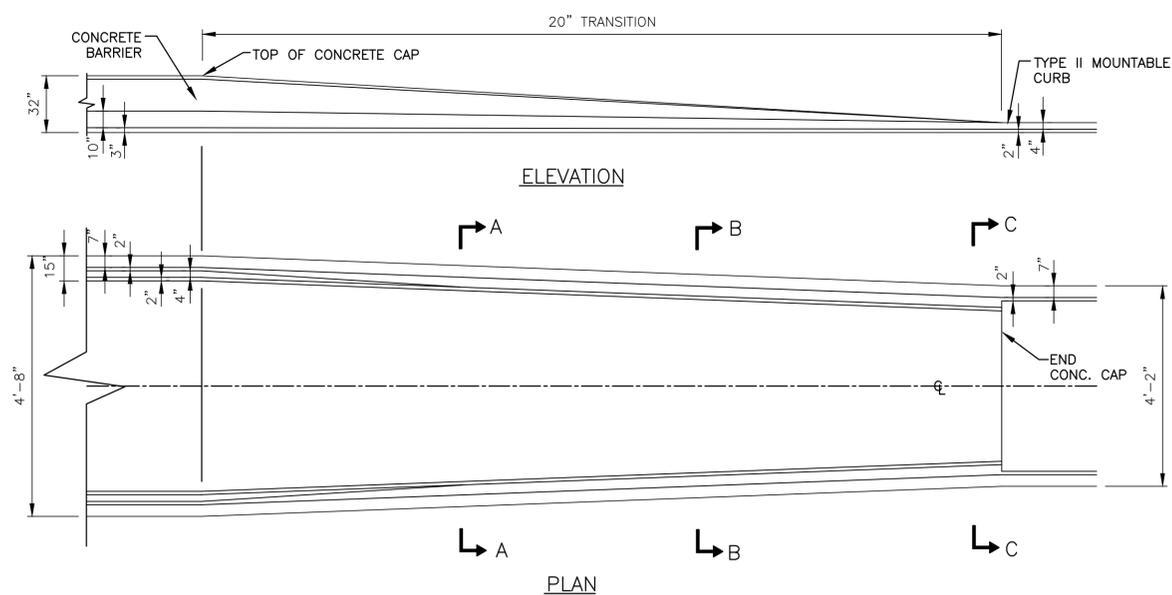
1. TO BE UTILIZED WHENEVER A CONCRETE BARRIER CURB SHAPE MEETS CONCRETE VERTICAL CURBING.
2. CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.



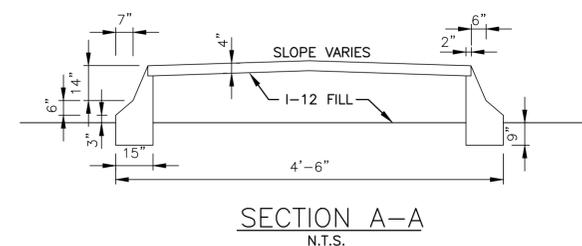
BARRIER TRANSITION TO CURB
N.T.S. TD200.11.02



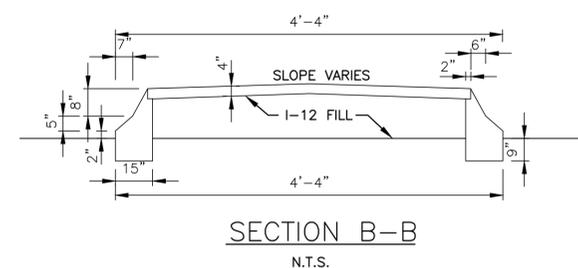
CURB TRANSITION TO BARRIER
N.T.S. TD200.11.03



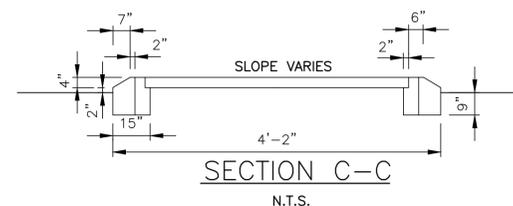
TRANSITION DETAIL FOR VARIABLE WIDTH BARRIER CURB,
ON BRIDGE (CAST-IN PLACE) TO CURB
N.T.S. TD200.11.04



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

No.	Date	Revision	Approved

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Details

TRAFFIC

Title
PERMANENT BARRIERS

**BARRIER TRANSITION
DETAILS**

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Designed by _____ Drawn by _____ Checked by _____
Date **11/01/2010**

Contract Number _____

Drawing Number **TD200.11**

PID#

No.	Date	Revision	Approved
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ENGINEERING DEPARTMENT

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Details

TRAFFIC

Title
PERMANENT BARRIERS

**TRANSITION BETWEEN
WIDE AND NORMAL
WIDTH SINGLE SLOPE
CONCRETE MEDIAN
BARRIER**

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Designed by _____ Drawn by _____ Checked by _____

Date _____ 11/01/2010

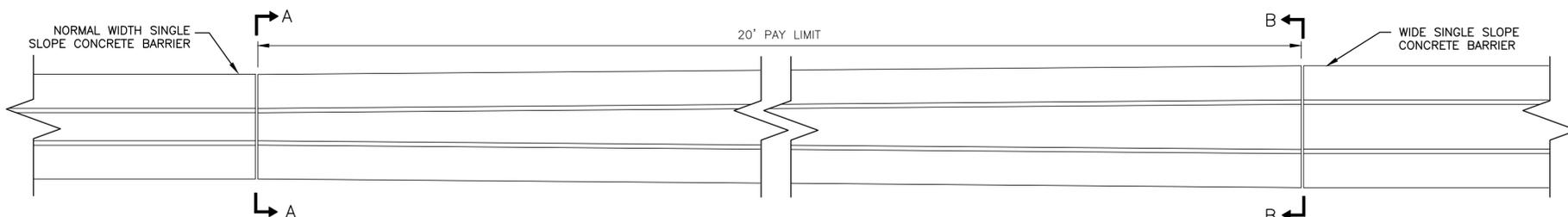
Contract Number _____

Drawing Number **TD200.12**

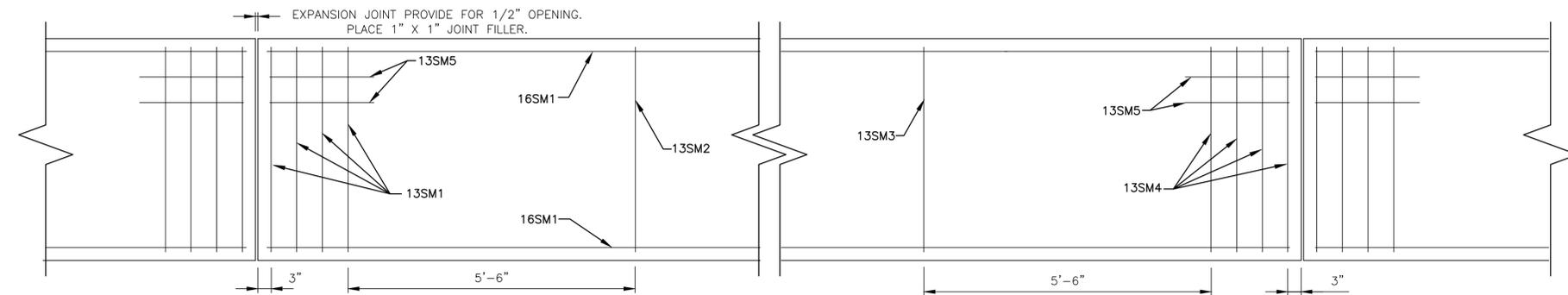
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NOTES:
[TD200.12.01]

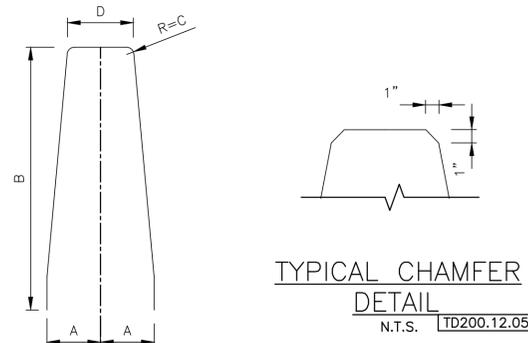
- FINISH TOLERANCES FOR TRANSITION SHALL BE AS FOLLOWS:
 - CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN $\frac{1}{8}$ ".
 - THE VERTICAL CENTERLINE SHALL NOT BE OUT OF PLUMB BY MORE THAN $\frac{1}{8}$ ".
 - LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN $\frac{1}{8}$ " PER 9'-10" OF BARRIER.
 - WHEN CHECKED WITH A 9'-10" STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED $\frac{1}{8}$ ".
- SURFACES SHALL BE SMOOTH.
- UNLESS INDICATED OTHERWISE, MATERIALS AND CONSTRUCTION DETAILS SHOULD CONFORM AND/OR BE PERFORMED IN ACCORDANCE WITH CURRENT PORT AUTHORITY, NYSDOT AND/OR NJDOT SPECIFICATION FOR SUCH ITEM. PRIOR APPROVAL FROM THE ENGINEER IS REQUIRED.
- BENDING OF BOTTOM OF STIRRUPS SHOWN IN SECTION A-A & B-B IS NOT NECESSARY, PROVIDED 2" COVER REQUIREMENTS ARE SATISFIED.
- CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.



PLAN
N.T.S. [TD200.12.02]



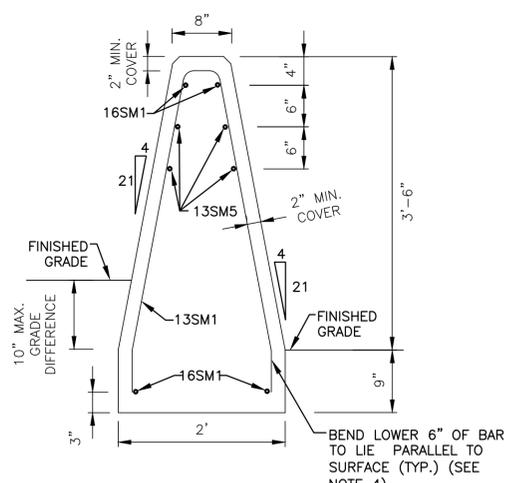
ELEVATION
N.T.S. [TD200.12.03]



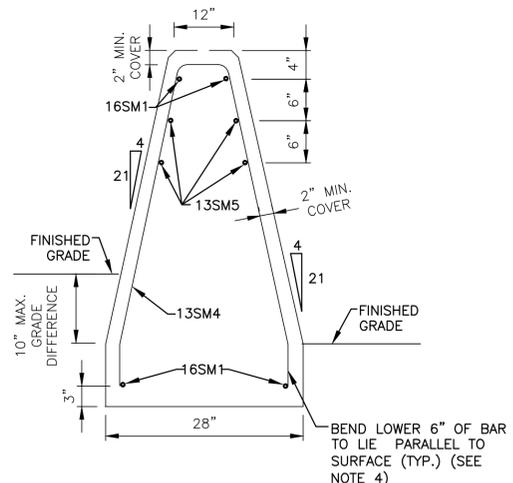
TYPICAL CHAMFER
DETAIL
N.T.S. [TD200.12.05]



TYPICAL STIRRUP
N.T.S. [TD200.12.04]



SECTION A-A
N.T.S. [TD200.12.06]



SECTION B-B
N.T.S. [TD200.12.07]

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SM1	13	4	8'	STIRRUP	10"	46"	1 1/2"	4"	4 AT 6" CENTERS AT NARROW END OF BARRIER UNIT.
13SM2	13	4	8'-2"	STIRRUP	10 4/5"	46"	1 1/2"	5 1/2"	5'-6" FROM NEAREST 13SM1 BAR
13SM3	13	1	8'-3"	STIRRUP	11 1/4"	46"	1 1/2"	6 2/3"	5'-6" FROM NEAREST 13SM4 BAR
13SM4	13	1	8'-4"	STIRRUP	12"	46"	1 1/2"	8"	4 AT 6" CENTERS AT NARROW END OF BARRIER UNIT.
13SM5	13	8	2'-6"	STRAIGHT	---	---	---	---	4 ON BOTH ENDS OF BARRIER
16SM1	16	4	19'-8"	STRINGER	---	---	---	---	LONGITUDINAL - 2 IN BOTTOM - 2 IN TOP

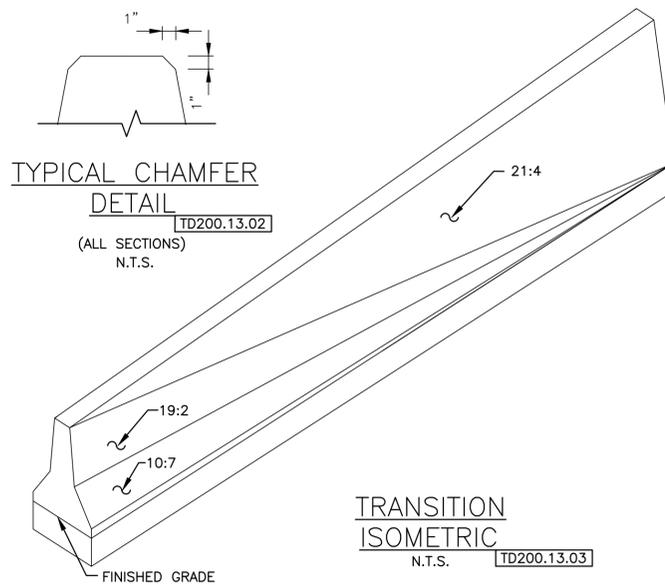
CHIEF

NOTES:
TD200.13.01

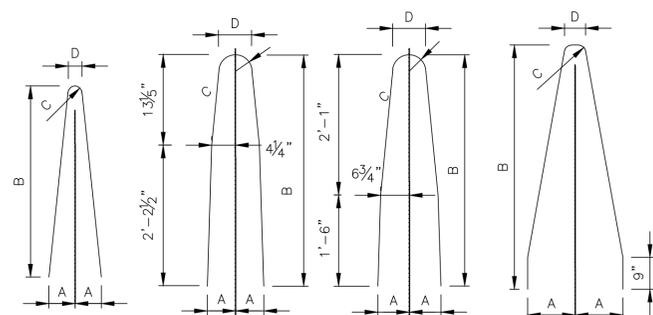
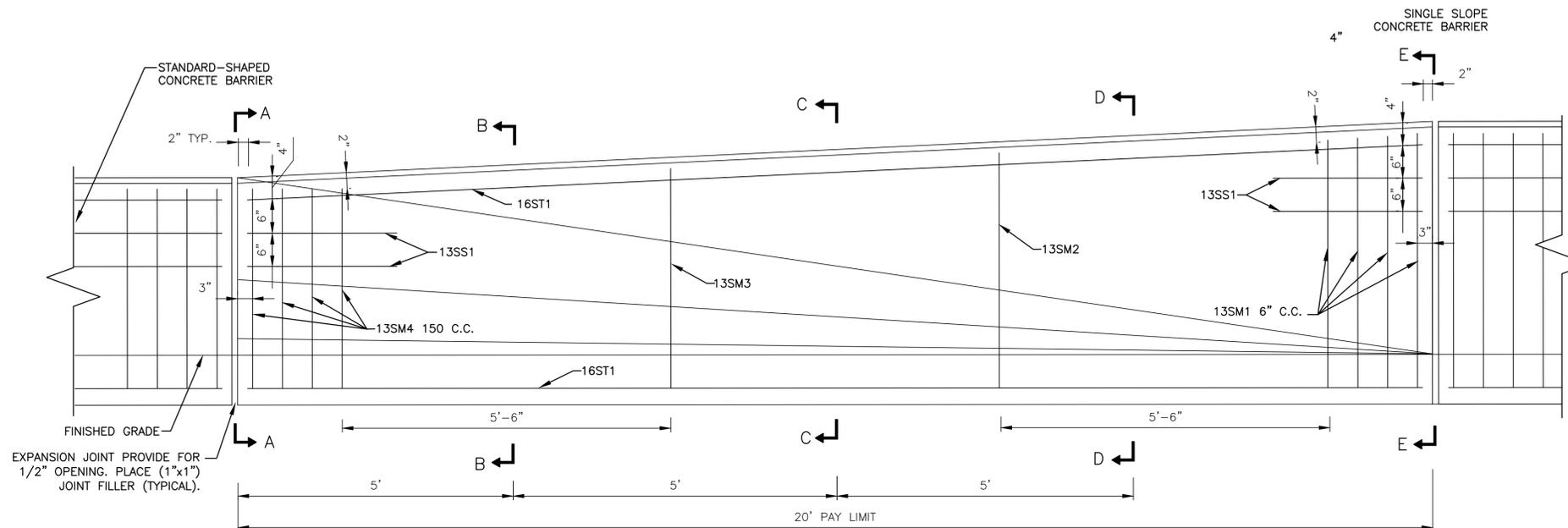
- ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.
- SURFACES SHALL BE SMOOTH.
- UNLESS INDICATED OTHERWISE, MATERIALS AND CONSTRUCTION DETAILS SHOULD CONFORM AND/OR BE PERFORMED IN ACCORDANCE WITH CURRENT PORT AUTHORITY, NYSDOT AND/OR NJDOT SPECIFICATION FOR SUCH ITEM. PRIOR APPROVAL FROM THE ENGINEER IS REQUIRED.
- BENDING OF BOTTOM OF STIRRUPS SHOWN IN SECTION E-E IS NOT NECESSARY, PROVIDED COVER REQUIREMENTS ARE SATISFIED.
- CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SM1	13	4	VARIABLES FROM 94 1/2" TO 96"	STIRRUP	10"	VARIABLES FROM 45 1/4" TO 46"	1 1/2"	4"	4 AT 6" CENTERS AT END ADJACENT TO THE SINGLE SLOPE BARRIER
13SM2	13	1	95"	STIRRUP	8 2/3"	42 1/2"	1 1/2"	3 3/8"	5'-6" FROM 13SM1 BARS
13SM3	13	1	88 1/3"	STIRRUP	7"	39 3/4"	1 1/2"	2 3/4"	5'-6" FROM 13SM4 BARS
13SM4	13	4	VARIABLES FROM 75" TO 76 1/2"	STIRRUP	5 1/2"	VARIABLES FROM 36" TO 36 1/2"	1 1/2"	2 3/4"	4 AT 6" CENTERS AT END ADJACENT TO THE JERSEY BARRIER
13SS1	13	8	30"	STRAIGHT	---	---	---	---	4 AT EACH END OF TRANSITION
16ST1	16	4	19'-8 1/4"	STRINGER	---	---	---	---	LONGITUDINAL 2 IN TOP - 2 IN BOTTOM

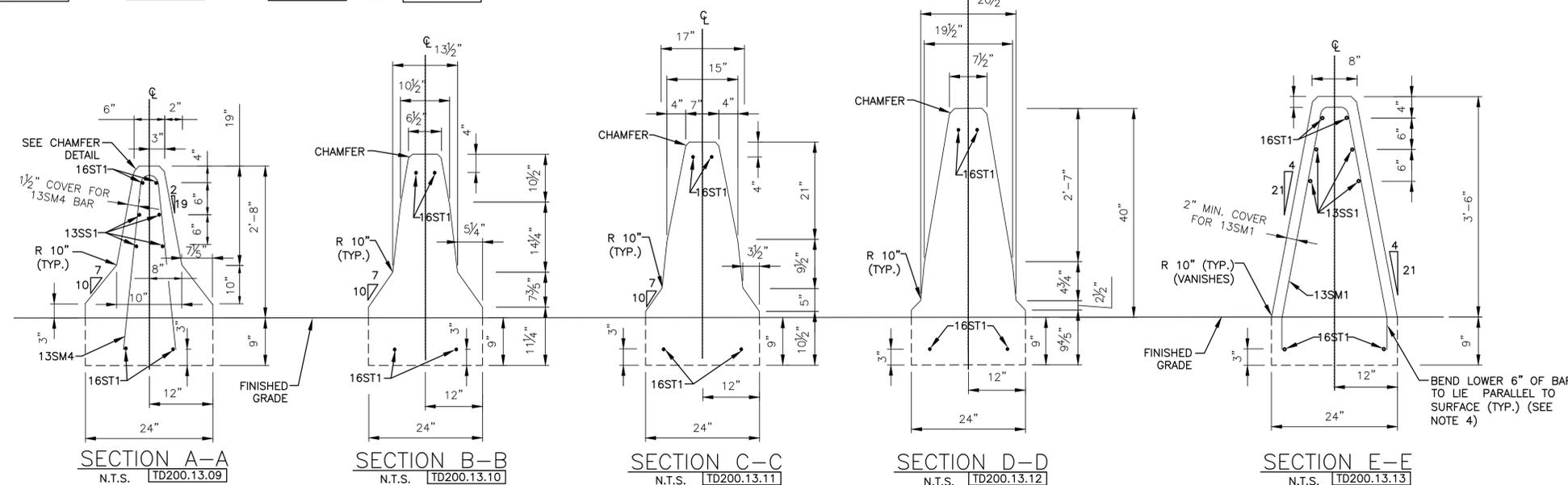
BARS TO BE EPOXY COATED GRADE 420



TRANSITION ISOMETRIC
N.T.S. TD200.13.03



STIRRUP 13SM4 TD200.13.04
STIRRUP 13SM3 TD200.13.05
STIRRUP 13SM2 TD200.13.06
STIRRUP 13SM1 TD200.13.07



No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

PANYNJ
Traffic Standard
Details

TRAFFIC

Title
PERMANENT BARRIERS

**TRANSITION OF
CONCRETE BARRIER
BETWEEN STANDARD
(NJ) AND SINGLE
SLOPE CONCRETE
SHAPES**

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent. All recipients of Contract documents, including bidders and those who do not bid and their prospective subcontractors and suppliers who may receive all or a part of the Contract documents or copies thereof, shall make every effort to ensure the secure and appropriate disposal of the Contract documents to prevent further disclosure of the information contained in the documents. Secure and appropriate disposal includes methods of document destruction such as shredding or arrangements with release handlers that ensure that third persons will not have access to the documents' contents either before, during, or after disposal. Documents may also be returned for disposal purposes to the Contract Desk on the 3rd Floor, 3 Gateway Center, Newark NJ 07102 or the office of the Director of Procurement, One Madison Avenue, 7th Floor, New York NY 10010. It is a violation of law for any person to alter a document in any way, unless acting under the direction of a licensed professional engineer or registered architect. If this document bearing the seal of an engineer/architect is altered, the altering engineer/architect shall affix to the document their seal and the notation "altered by" followed by their signature and the date of such alteration, and a specific description of the alteration.

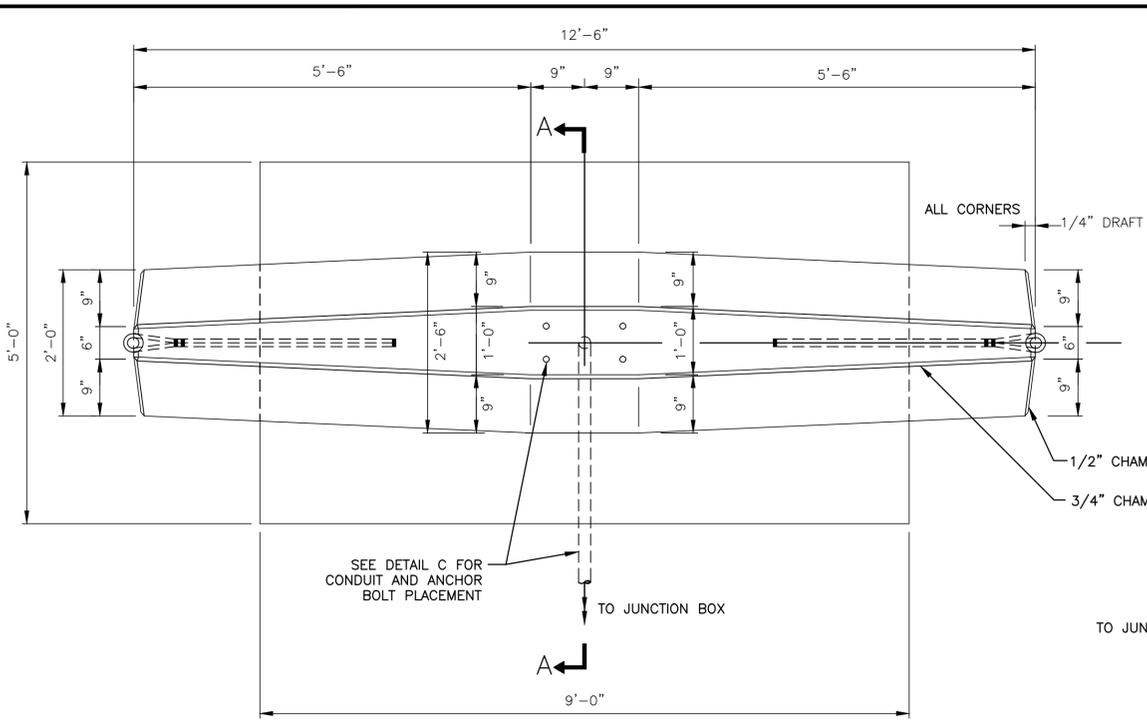
Designed by _____ Drawn by _____ Checked by _____

Date **11/01/2010**

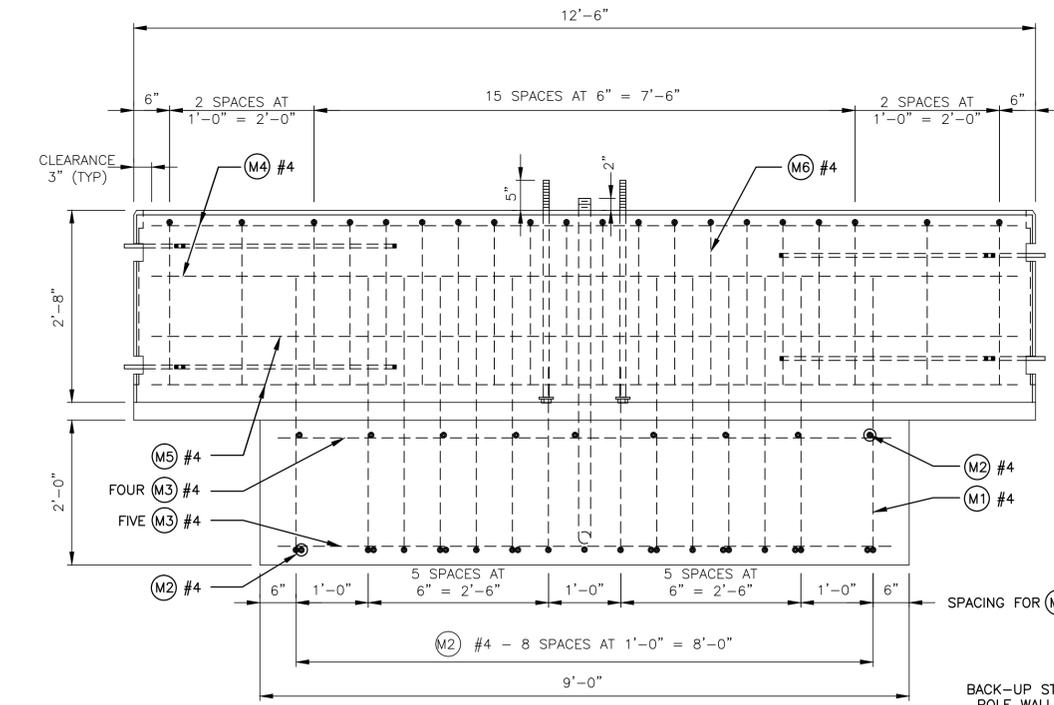
Contract Number _____

Drawing Number **TD200.13**

PID#



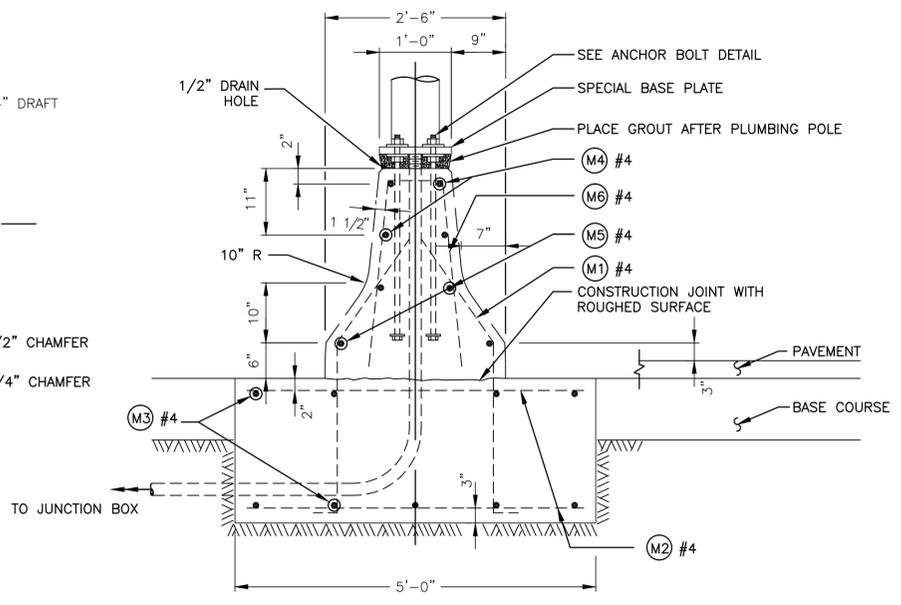
PLAN
TD200.14.02



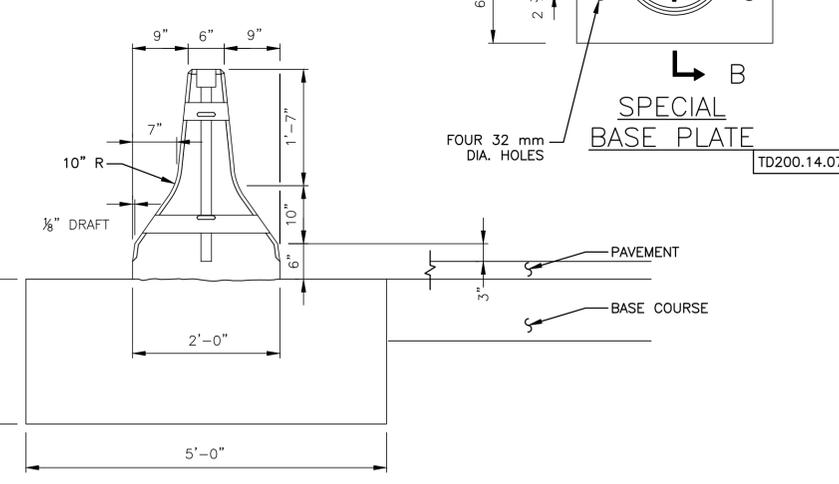
ELEVATION
TD200.14.03



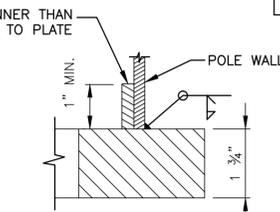
SECTION B-B
TD200.14.06



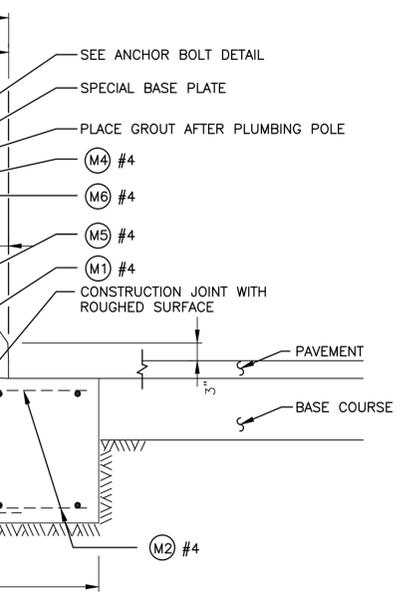
SECTION A-A
TD200.14.05



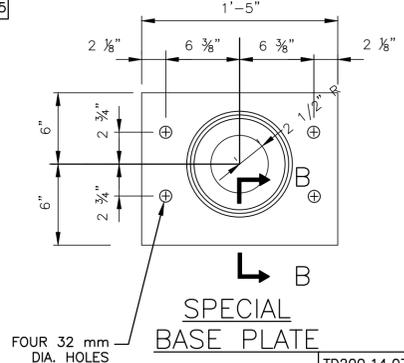
END VIEW
TD200.14.04



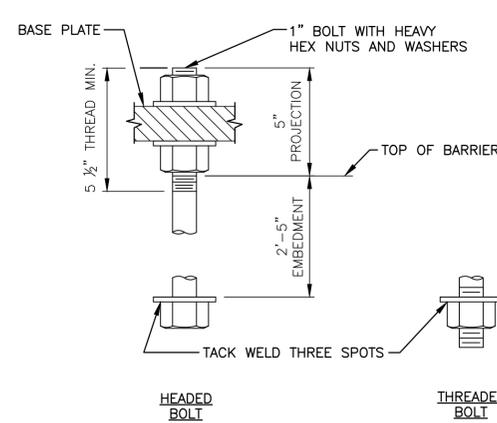
SECTION B-B
TD200.14.06



DETAIL C
TD200.14.08



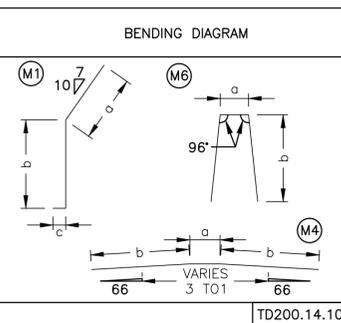
SPECIAL
BASE PLATE
TD200.14.07



ANCHOR BOLT DETAIL
TD200.14.09

BAR LIST
ALL DIMENSIONS ARE OUT TO OUT

MARK	LOCATION	QTY.	SIZE	a	b	c	LENGTH
M1	FOOTING-DOWEL	28	4	1'-9"	2'-3 1/2"	4"	4'-3"
M2	FOOTING	18	4		STRAIGHT		4'-8"
M3	FOOTING	9	4		STRAIGHT		8'-8"
M4	CONCRETE BARRIER	4	4	1'-6"	5'-3"		12'-0"
M5	CONCRETE BARRIER	4	4		STRAIGHT		12'-0"
M6	CONCRETE BARRIER	20	4	3" to 9"	2'-7"		5'-3" to 5'-9"



TD200.14.10

NOTES:
TD200.14.01

- THIS PLAN SHALL BE USED FOR 40' AND 50' LIGHT STANDARDS WITH 12' MAX. LENGTH DOUBLE MAST ARMS.

Sheet of

**THE PORT AUTHORITY
OF NY & NJ**

CHIEF

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

PANYNJ
Traffic Standard
Details

TRAFFIC

Title

PERMANENT BARRIERS

**CONCRETE BARRIER
WITH LIGHT POST
DETAIL**

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent. All recipients of Contract documents, including bidders and those who do not bid and their prospective subcontractors and suppliers who may receive all or a part of the Contract documents or copies thereof, shall make every effort to ensure the secure and appropriate disposal of the Contract documents to prevent further disclosure of the information contained in the documents. Secure and appropriate disposal includes methods of document destruction such as shredding or arrangements with release handlers that ensure that third persons will not have access to the documents' contents either before, during, or after disposal. Documents may also be returned for disposal purposes to the Contract Desk on the 3rd Floor, 3 Gateway Center, Newark NJ 07102 or the office of the Director of Procurement, One Madison Avenue, 7th Floor, New York, NY 10017. It is a violation of law for any person to alter a document in any way, unless acting under the direction of a licensed professional engineer or registered architect. If this document bearing the seal of an engineer/architect is altered, the altering engineer/architect shall affix to the document their seal and the notation "altered" followed by their signature and the date of such alteration, and a specific description of the alteration.

Designed by _____ Drawn by _____ Checked by _____

Date _____ 11/01/2010

Contract Number _____

Drawing Number **TD200.14**
PID#