PORT AUTHORITY NY NJ

AIR LAND RAIL SEA

PORT AUTHORITY

TRAFFIC ENGINEERING DETAILS

No.	Date	Revision	Approved

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Drawing Number

GENERAL SYMBOLS

NEW	EXISTING	REMOVAL	
			GANTRY SIGN STRUCTURE WITH FIXED MESSAGE PANELS
			CANTILEVER SIGN STRUCTURE WITH FIXED MESSAGE
			POST MOUNTED SIGN WITH FIXED MESSAGE PANEL
			POST MOUNTED BACK TO BACK SIGNS WITH FIXED MESSAGE PANELS
			POST MOUNTED RIGHT ANGLE SIGNS WITH FIXED MESSAGE PANELS
			POLE MOUNTED SIGN WITH FIXED MESSAGE PANEL
			POLE MOUNTED BACK TO BACK SIGNS
			POLE MOUNTED RIGHT ANGLE SIGNS WITH FIXED MESSAGE PANELS
			FENCE MOUNTED SIGN WITH FIXED MESSAGE PANEL
			GANTRY SIGN STRUCTURE WITH CHANGEABLE MESSAGE PANELS
			CANTILEVER SIGN STRUCTURE WITH CHANGEABLE MESSAGE PANEL
			DUAL POST GROUND MOUNTED SIGN
			DOUBLE POST MOUNTED SIGN WITH CHANGEABLE MESSAGE PANEL
X	X	X	SIGN STRUCTURE LOCATION IDENTIFIER
101 / A	101 / A	101 / A	SIGN PANEL IDENTIFIER — SIGN STRUCTURE LOCATION; SIGN TEXT DESIGNATION
		101 / A	EXISTING SIGN PANEL TO BE RELOCATED
	XXX / X		EXISTING SIGN PANEL TO BE MODIFIED AND/OR REPOSITIONED
X	X	X	PEDESTRIAN PUSH BUTTON STANDARD WITH IDENTIFIER
X	X	X	TRAFFIC SIGNAL STANDARD WITH IDENTIFIER
X	X	X	TRAFFIC SIGNAL SPAN WIRE INSTALLATION WITH SPAN LENGTH
X	X	X	TRAFFIC SIGNAL STANDARD WITH MAST ARM LENGTH
			TRAFFIC POST-TOP/SIDE-OF-POLE MOUNTED SIGNAL
X	X	X	VEHICULAR SIGNAL HEAD WITH IDENTIFIER
X	X	X	PEDESTRIAN SIGNAL HEAD WITH IDENTIFIER
			SIGNAL CONTROLLER AND CABINET GROUND MOUNTED
			SIGNAL CONTROLLER AND CABINET POLE MOUNTED
X	X	X	VEHICLE DETECTOR WITH IDENTIFIER
X	X	X	ROADWAY SURVEILLANCE SENSOR WITH IDENTIFIER
			PAVEMENT MARKING ARROW SYMBOL
			PAVEMENT MARKING LINE
			DIRECTION OF TRAFFIC (PERMANENT CONDITIONS)
			DIRECTION OF DETOUR (TEMPORARY TRAFFIC FLOW)
			DIRECTION OF HAUL ROUTE

NEW	EXISTING	REMOVAL	
			BOX BEAM
			THRIE BEAM
			W BEAM
			DUAL FACE W BEAM
			CONCRETE BARRIER (PERMANENT)
			CONCRETE BARRIER TO CURB TRANSITION SECTION
			PRECAST CONCRETE CONSTRUCTION BARRIER
			PRECAST CONCRETE CONSTRUCTION BARRIER WITH ATTACHED WARNING LIGHTS
			PRECAST CONCRETE CONSTRUCTION BARRIER TAPERED END SECTION
			TIMBER BARRICADE (ALL TYPES)
			WATER-FILLED BARRIER
			CURBED TRAFFIC GUIDE SYSTEM
			CURBED TRAFFIC GUIDE SYSTEM POSTS WITH BASE PLATE (WITHOUT CURB)
			TRAFFIC GUIDE POSTS (SEE NOTE 4, GENERAL NOTES)
			TWO-WAY PLOWABLE MONO-DIRECTIONAL WHITE PAVEMENT REFLECTOR
			TWO-WAY PLOWABLE MONO-DIRECTIONAL AMBER PAVEMENT REFLECTOR
			TWO-WAY PLOWABLE BI-DIRECTIONAL AMBER PAVEMENT REFLECTOR
			CRASH CUSHION ATTENUATOR
			SAND FILLED BARREL ARRAY
			DURA-CURB / QWICK KURB
			VIDEO DETECTION CAMERA

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3	05/27/2024	DISCLAIMER ADDED	
2	02/27/2018	UPDATE FILE FORMAT TO AUTOCAD 2018	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

LEGEND AND ABBREVIATIONS

TRAFFIC SYMBOLS LEGEND

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Date 07 / 15 / 2024

Drawing Number TD10.01

FACILITY

AKG	GOETHALS BRIDGE
AKB	BAYONNE BRIDGE
AKO	OUTER BRIDGE CROSSING
EPAMT	ELIZABETH PORT AUTHORITY MARINE TERMINAL
EWR	NEWARK LIBERTY INTERNATIONAL AIRPORT
GWB	GEORGE WASHINGTON BRIDGE
HH	HOWLAND HOOK MARINE TERMINAL
HT	HOLLAND TUNNEL
JFK	JOHN F. KENNEDY INTERNATIONAL AIRPORT
LGA	LAGUARDIA AIRPORT
LT	LINCOLN TUNNEL
PA	PORT AUTHORITY
PN	PORT NEWARK

PAVEMENT MARKINGS

BWLL	BROKEN WHITE LANE LINE - 6" EXCEPT AS NOTED BROKEN
BYLL	YELLOW LANE LINE - 6" EXCEPT AS NOTED REGULAR
CW	CROSSWALK (12" WIDE)
CWHV	HIGH VISIBILITY CROSSWALK
D-BYBL	DOUBLE BROKEN YELLOW BARRIER LINE
	- TWO 6" BYLL, WITH 6" SPACE BETWEEN
D-BWBL	DOUBLE BROKEN WHITE BARRIER LINE
	- TWO 6" BWLL, WITH 6" SPACE BETWEEN
DWLL-S	DOTTED WHITE LANE LINE - SHORT
	- 6" EXCEPT AS NOTED
DWLL-L	DOTTED WHITE LANE LINE - LONG
	- 6" EXCEPT AS NOTED
DYDLL	DOUBLE YELLOW DOTTED LANE LINE
EZPL	EZ PASS LINE FULL YELLOW BARRIER LINE
FYBL	- TWO 6" SYLL, WITH 6" SPACE BETWEEN
FWBL	FULL WHITE BARRIER LINE
	- TWO 6" SWLL, WITH 6" SPACE BETWEEN
HC	DISABLED (HANDICAP) PARKING STALL
HCBL	HIGH CONTRAST BROKEN LINE
PYBL	PARTIAL YELLOW BARRIER LINE
	- ONE 6" SYLL AND ONE 6" BYLL, WITH 6" SPACE BETWEEN
PWBL	PARTIAL WHITE BARRIER LINE - ONE 6" SWLL AND ONE 6"
	BWLL, WITH 6" SPACE BETWEEN
SL	STOP LINE, 18" WHITE LINE 4' MINIMUM BEHIND CROSSWALK
SP	STANDARD PARKING STALL, 8'-6" x 18' TYPICAL
SWCHL	SOLID WHITE CHANNELIZING LINE
	- 12" EXCEPT AS NOTED
SWEL	SOLID WHITE EDGE LINE - 6" EXCEPT AS NOTED
SWLL	SOLID WHITE LANE LINE - 6" EXCEPT AS NOTED
SYCHL	SOLID YELLOW CHANNELIZING LINE
	- 12" EXCEPT AS NOTED
SYEL	SOLID YELLOW EDGE LINE - 6" EXCEPT AS NOTED
WPA	WHITE PREFORMED ARROW
WPW	WHITE PREFORMED WORD MESSAGE
WTA	WHITE THERMOPLASTIC ARROW
WTW	WHITE THERMOPLASTIC WORD MESSAGE
YL	YIELD LINE
ZM	ZIPPER MARKING (AIRSIDE ONLY)

ROADWAY FEATURES

CONC.	CONCRETE
D	DRAINAGE
DEG.	DEGREES
DGABC	DENSE GRADED AGGREGATE BASE COURSE
DIA.	DIAMETER
ELEV.	ELEVATION
HORIZ.	HORIZONTAL
HW	HEADWALL
JT.	JOINT
LF	LINEAR FEET
O.D.	OUTSIDE DIAMETER
PAV'T	PAVEMENT
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE
POC	POINT ON CURVE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENT
R	RADIUS
STA	STATION
TC	TOP OF CURB
TG	TOP OF GRATE
VERT.	VERTICAL
WA.M.	WALL MOUNT

UTILITIES

COND.	CONDUIT
D.I.	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DMH	DRAINAGE MANHOLE
EMH	ELECTRICAL MANHOLE
FH	FIRE HYDRANT
HPW	HIGH PRESSURE WATER
I.D.	INSIDE DIAMETER
LP	LIGHT POST
LPW	LOW PRESSURE WATER
MH	MANHOLE
UGE	UNDERGROUND ELECTRIC
UP	UTILITY POLE
S	SANITARY
VDC-M	VIDEO DETECTION CAMERA MOUNTED ON MAST ARM
WV	WATER VALVE
W	WATER

DIRECTION

EB	EAST BOUND
WB	WEST BOUND
NB	NORTH BOUND
SB	SOUTH BOUND

GENERAL

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
A.B.C.	AGGREGATE BASE COURSE
A.C.	ASPHALT CONCRETE
ADA	AMERICAN DISABILITY ACT
A.O.B.E.	AS ORDERED BY ENGINEER
APPROX.	APPROXIMATELY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
C. TO C.	CENTER TO CENTER
DWG.	DRAWING
EQ.	EQUAL
EXIST.	EXISTING
EXPWY	EXPRESSWAY
FT.	FEET
GR.M.	GROUND MOUNT
LBS.	POUNDS
MAX.	MAXIMUM
MB	MAILBOX
MIN.	MINIMUM
MPH	MILES PER HOUR
MOT	MAINTENANCE OF TRAFFIC
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
N/A	NOT AVAILABLE
NFF	NOT FOUND IN FIELD
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
REV.	REVISION
SF	SQUARE FEET
TD	TRAFFIC STANDARD DETAIL
TEMP.	TEMPORARY
TMA	TRUCK MOUNTED IMPACT ATTENUATOR
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
VMS	VARIABLE MESSAGE SIGN
VMSU	VARIABLE MESSAGE SIGN UNIT
WMS	TEMPORARY SIGN STAND

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3	06/27/2024	DISCLAIMER ADDED	
2	02/27/2018	UPDATE FILE FORMAT TO AUTOCAD 2018	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

LEGEND AND ABBREVIATIONS

LIST OF TRAFFIC ABBREVIATIONS

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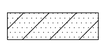
Drawing Number TD10.02

MAINTENANCE OF TRAFFIC SYMBOLS

● ● ●	TRAFFIC CONES
ⓘ ⓘ ⓘ	DRUMS
ⓘ ⓘ ⓘ	DRUMS WITH "CAUTION" TAPE
⊢▸	SIGN LOCATION AND ORIENTATION ON TEMPORARY SIGN STAND
⊣	BREAKAWAY BARRICADE (TYPE III)
⊣▸	BREAKAWAY BARRICADE (TYPE III) WITH ATTACHED SIGN
☒▸	TRAILER MOUNTED VARIABLE MESSAGE SIGN UNIT (VMSU)
■▸	TRAILER MOUNTED FLASHING ARROW SIGN UNIT (FASU)
◀■▸	BACK-UP VEHICLE WITH IMPACT ATTENUATOR AND FLASHING ARROW SIGN UNIT (FASU)
◀■	BACK-UP VEHICLE WITH IMPACT ATTENUATOR WITHOUT FASU
◁	BACK-UP VEHICLE WITH FLASHING LIGHTS ONLY
FASU	FLASHING ARROW SIGN UNIT (FASU) DOUBLE ARROW INDICATION
FASU FASU	FLASHING ARROW SIGN UNIT (FASU) LEFT OR RIGHT ARROW INDICATION
FASU	FLASHING ARROW SIGN UNIT (FASU) CAUTION MODE INDICATION
■•	FLAGGER
	TRAFFIC ENFORCEMENT AGENT
	SAND-FILLED BARREL ARRAY
	TEMPORARY IMPACT ATTENUATOR
	CONTRACTOR VEHICLE
	TRAFFIC LANE OR OTHER AREA CLOSED TO TRAFFIC
	WORK AREA
	PRECAST CONCRETE CONSTRUCTION BARRIER
	PRECAST CONCRETE CONSTRUCTION BARRIER WITH ATTACHED WARNING LIGHTS
	PRECAST CONCRETE CONSTRUCTION BARRIER TAPERED END SECTION
	TIMBER BARRICADE (ALL TYPES)
	WATER-FILLED BARRIER
	CURBED TRAFFIC GUIDE SYSTEM
	CURBED TRAFFIC GUIDE SYSTEM POSTS WITH BASE PLATE (WITHOUT CURB)
	TRAFFIC GUIDE POSTS
	TAXIWAY CLOSED MARKING

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1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

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LEGEND AND ABBREVIATIONS

MAINTENANCE OF TRAFFIC SYMBOLS AND LEGEND

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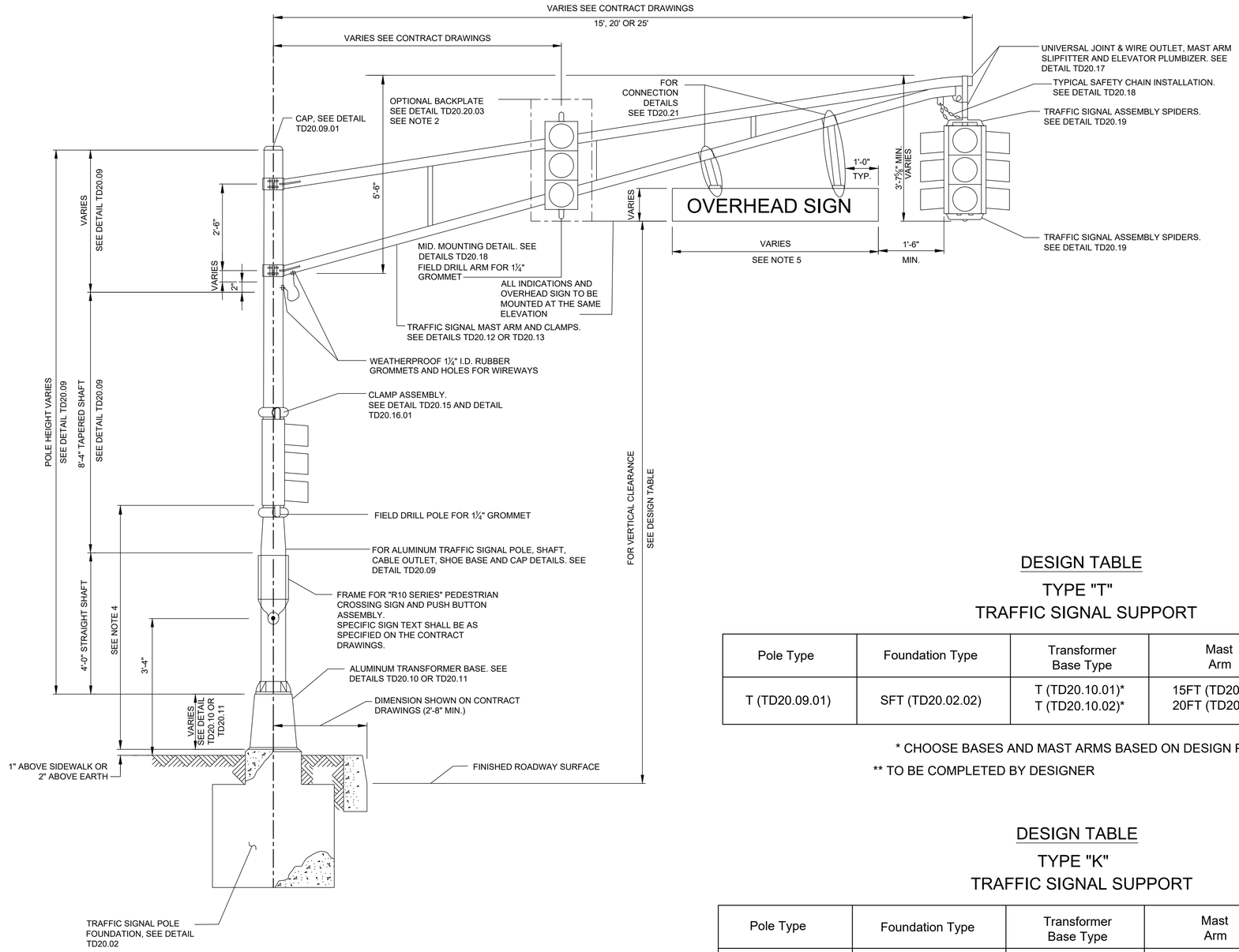

TYPICAL ALUMINUM TRAFFIC SIGNAL INSTALLATION

N.T.S.

NOTES:

1. ALL ALUMINUM SIGNAL STRUCTURE ELEMENTS SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION, WITH 2015 INTERIM REVISIONS OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS. DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
    1. DESIGN LIFE: 25 YEARS
    2. BASIC WIND SPEED: 110 MPH (IN ACCORDANCE W/ SECTION 3.8)
    3. FATIGUE DESIGN SHALL BE WAIVED.
    4. THE MANUFACTURER SHALL PROVIDE A STATEMENT CERTIFYING THAT ALL ELEMENTS OF THE ALUMINUM SIGNAL STRUCTURE HAVE BEEN ANALYZED AND FABRICATED IN ACCORDANCE WITH ALL DESIGN CRITERIA PROVIDED AND CAN SUPPORT LOADING THAT MEETS OR EXCEEDS THE LOAD REQUIREMENTS FOUND IN NOTE 2.
2. SIGNAL ARM, POLE, BASE, CONNECTIONS, ETC. SHALL BE DESIGNED TO SUPPORT ALL LOAD COMBINATIONS SHOWN IN THE CONTRACT PLANS. AS A MINIMUM, THE DESIGN LOAD SHALL BE:

    T POLE ARM W/ 15' ARM :
    1-4 WAY 3 SECTION SIGNAL LOCATED AT 14'-6" (FREE SWINGING)
    1-1 WAY 3 SECTION SIGNAL LOCATED AT 4'-6" (FIX MOUNT)

    T POLE ARM W/ 20' ARM :
    1-4 WAY 3 SECTION SIGNAL LOCATED AT 19'-6" (FREE SWINGING)
    1-1 WAY 3 SECTION SIGNAL LOCATED AT 7'-6" (FIX MOUNT)

    K POLE ARM W/ 25' ARM :
    1-4 WAY 3 SECTION SIGNAL LOCATED AT 24'-6" (FREE SWINGING)
    1-18" X 48" OVERHEAD SIGN PANEL LOCATED AT 18'-9" (FREE SWINGING)
    1-1 WAY 3 SECTION SIGNAL LOCATED AT 12'-6" (FIX MOUNT)

    ALL DISTANCES ARE MEASURED FROM THE ℄ POLE.

    DESIGN LOAD DOES NOT INCLUDE EFFECTS OF BACKPLATES ON SIGNAL HEADS. IF BACKPLATES ARE NEEDED THEY CONSTITUTE ADDITIONAL LOADING AND SHALL BE INCLUDED IN THE DESIGN OF THE STRUCTURE.

    THE ALUMINUM SIGNAL STRUCTURE SIZES AND DETAILS PROVIDED IN THE DRAWINGS ARE FOR REFERENCE ONLY. THE MANUFACTURER SHALL DESIGN AND ANALYZE THE ALUMINUM SIGNAL STRUCTURE WITH THE PROPOSED ATTACHMENTS AND CONFIGURATIONS AS PER AASHTO STANDARD AND SHALL VERIFY, CONFIRM AND/OR REVISE (IF REQUIRED) STRUCTURAL ELEMENT SIZES AND CONNECTIONS AT NO ADDITIONAL COST TO THE AUTHORITY.
3. MINIMUM VERTICAL CLEARANCE SHALL BE AS NOTED IN DESIGN TABLE OR ON CONTRACT DRAWINGS.
4. CLAMP MOUNTED TRAFFIC SIGNAL HEAD HEIGHT SHALL BE 12 FEET.

    FOR PEDESTRIAN SIGNAL HEADS, THE HEIGHT IS 8 FEET UNLESS OTHERWISE NOTED IN DESIGN TABLE OR ON CONTRACT DRAWINGS.
5. OVERHEAD SIGNS SHALL BE MOUNTED PERPENDICULAR TO THE DIRECTION OF TRAFFIC WHICH THEY ARE INTENDED TO SERVE.
6. HEX LOCK NUT, HEAD POSITIONING RING AND HARDWARE SHALL BE INSTALLED FOR ALL TRAFFIC SIGNAL HEADS. SEE DETAILS TD20.17.
7. ALL FREE-SWINGING TRAFFIC SIGNAL HEADS MUST BE ALUMINUM.
8. FOR SIGNAL HEAD ASSEMBLY AND INSTALLATION DETAILS, SEE TD20.17, TD20.18 AND TD20.19.

DESIGN TABLE

TYPE "T"
TRAFFIC SIGNAL SUPPORT

Pole Type	Foundation Type	Transformer Base Type	Mast Arm	**Vertical Clearance
T (TD20.09.01)	SFT (TD20.02.02)	T (TD20.10.01)* T (TD20.10.02)*	15FT (TD20.12)* 20FT (TD20.12)*	

* CHOOSE BASES AND MAST ARMS BASED ON DESIGN PLANS

** TO BE COMPLETED BY DESIGNER

DESIGN TABLE

TYPE "K"
TRAFFIC SIGNAL SUPPORT

Pole Type	Foundation Type	Transformer Base Type	Mast Arm	**Vertical Clearance
K (TD20.09.02)	SFK (TD20.02.01)	K (TD20.11)	25FT (TD20.13)	

** TO BE COMPLETED BY DESIGNER

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

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TRAFFIC SIGNALS

TYPICAL ALUMINUM TRAFFIC SIGNAL INSTALLATION

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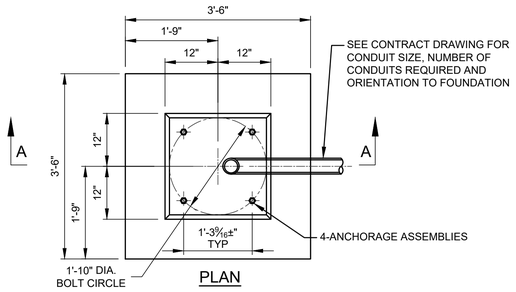
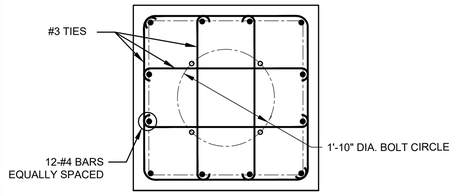
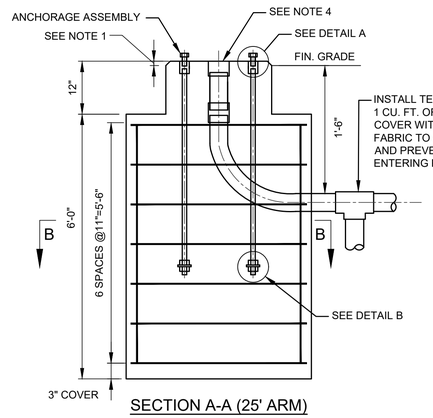


PLAN



PROVIDE 2" COVER UNLESS NOTED OTHERWISE

SECTION B-B



SECTION A-A (25' ARM)

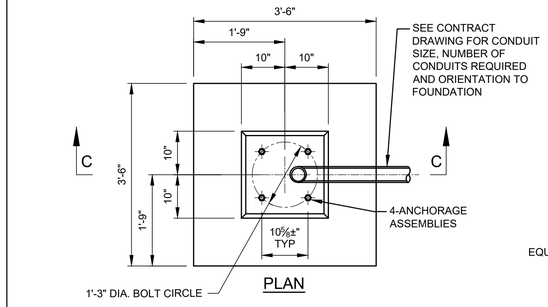
FOUNDATION TYPE "SFK"

N.T.S.

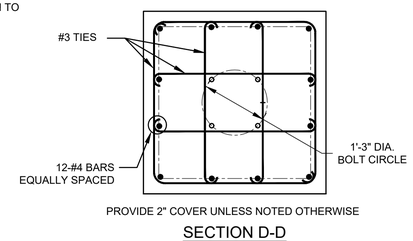
25' ARM

TOP OF FOUNDATION LOAD: (UNITS IN LBS AND FT)					
	GR I	GR IIA	GR IIB	GR IIIA	GR IIIB
AXIAL	573	573	573	1096	1096
SHEAR	0	918	604	641	420
MOMENT	6556	17567	14078	18294	17352
TORSION	0	11048	6689	6399	3839

TD20.02.01

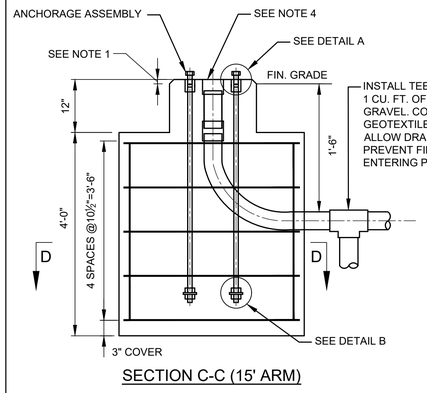


PLAN

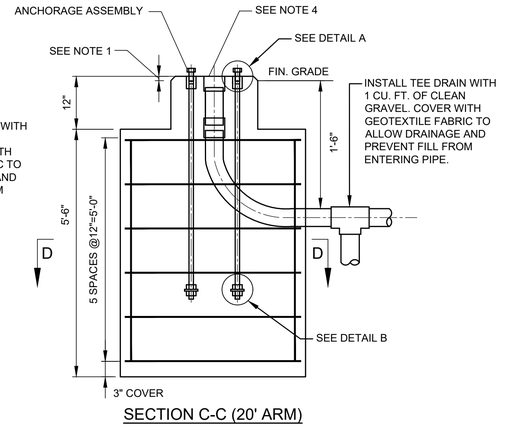


PROVIDE 2" COVER UNLESS NOTED OTHERWISE

SECTION D-D



SECTION C-C (15' ARM)



SECTION C-C (20' ARM)

FOUNDATION TYPE "SFT"

N.T.S.

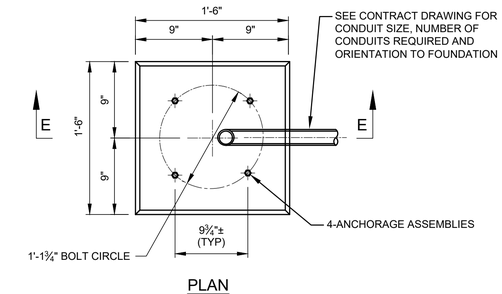
15' ARM

TOP OF FOUNDATION LOAD: (UNITS IN LBS AND FT)					
	GR I	GR IIA	GR IIB	GR IIIA	GR IIIB
AXIAL	383	383	383	938	938
SHEAR	0	736	484	450	296
MOMENT	2820	11961	8913	10661	9886
TORSION	0	4794	2876	2655	1593

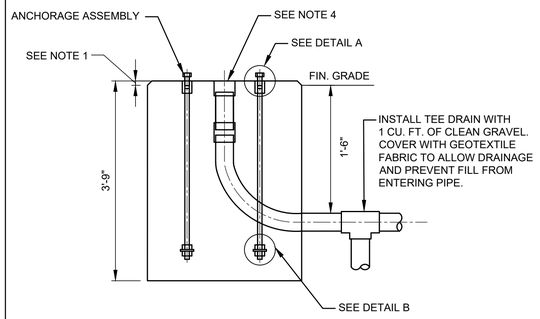
20' ARM

TOP OF FOUNDATION LOAD: (UNITS IN LBS AND FT)					
	GR I	GR IIA	GR IIB	GR IIIA	GR IIIB
AXIAL	450	450	450	970	970
SHEAR	0	782	514	498	327
MOMENT	4407	13525	10595	13688	13039
TORSION	0	7106	4264	4095	2457

TD20.02.02



PLAN



SECTION E-E

PEDESTAL FOUNDATION TYPE "SPF"

N.T.S.

TOP OF FOUNDATION LOAD: (UNITS IN LBS AND FT)			
	GR I	GR II	GR III
AXIAL	172	172	363
SHEAR	0	533	263
MOMENT	82	5663	2936
TORSION	0	180	90

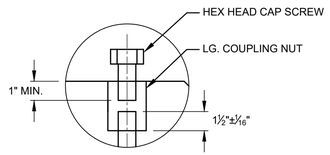
TD20.02.03

ANCHORAGE ASSEMBLY:

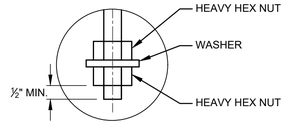
1 - 1" STAINLESS STEEL HEX HEAD CAP SCREW (ASTM A193 GR B8)
1 - 1" STAINLESS STEEL LOCK WASHER (SS304)
1 - 1" STAINLESS STEEL FLAT WASHER (SS304)
1 - 1" X 3" LG. HEAVY HEX COUPLING NUT (ASTM A194 GR 8)
1 - 1" X 48" LG ANCHOR ROD OR THREADED ROD (ASTM FI554 GR 55)
HOT DIP GALVANIZED (ASTM F2329 OR A153)
1 - 1" HEAVY HEX NUTS (ASTM A563A)
HOT DIP GALVANIZED (ASTM F2329 OR A153)
1 - 1" WASHER (ASTM F436) HOT DIP GALVANIZED (ASTM F2329 OR A153)
1 - 1" HEAVY HEX NUT (ASTM A563A) HOT DIP GALVANIZED (ASTM F2329 OR A153)

NOTE:

FOR SPF FOUNDATION USE ¾" HARDWARE WITH 24" ANCHOR ROD OR THREADED ROD.



DETAIL A



DETAIL B

NOTES:

1. TOP OF FOUNDATION SHALL EXTEND ABOVE THE SURROUNDING GROUND SURFACE A MINIMUM HEIGHT AS FOLLOWS:
   1" IF SURROUNDING GROUND SURFACE IS CONCRETE PAVEMENT OR SIMILAR.
   2" IF SURROUNDING GROUND SURFACE IS EARTH OR SIMILAR.
2. MATERIALS
   CONCRETE : CATEGORY VI; f'c = 4000 PSI
   REINFORCING STEEL : ASTM A615 GR.60
3. FOUNDATION SHALL BE POURED MONOLITHICALLY AND THE TOP FINISHED LEVEL.
4. CONDUIT SHALL BE INSTALLED SO THAT COUPLING IS EMBEDDED PLUMB AND FLUSH WITH TOP OF CONDUIT FOUNDATION.
5. PROVIDE 1" X 1" CHAMFER ON ALL EXPOSED EDGES.
6. ANCHOR BOLTS SHOWN IN THIS DRAWING ARE DESIGNED FOR LOADS SHOWN.
7. WHERE UNSUITABLE SOIL IS ENCOUNTERED AT THE FOUNDATION SUBGRADE LEVEL, OVER-EXCAVATE BY 3 FEET AND REPLACE WITH SUITABLE FILL MATERIAL AS DIRECTED BY THE ENGINEER.
8. TRAFFIC SIGNAL POLES TO BE CENTERED ON FOUNDATIONS AS SHOWN.

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

ALUMINUM TRAFFIC SIGNAL POLE FOUNDATION (SFT, SPF, SFK)

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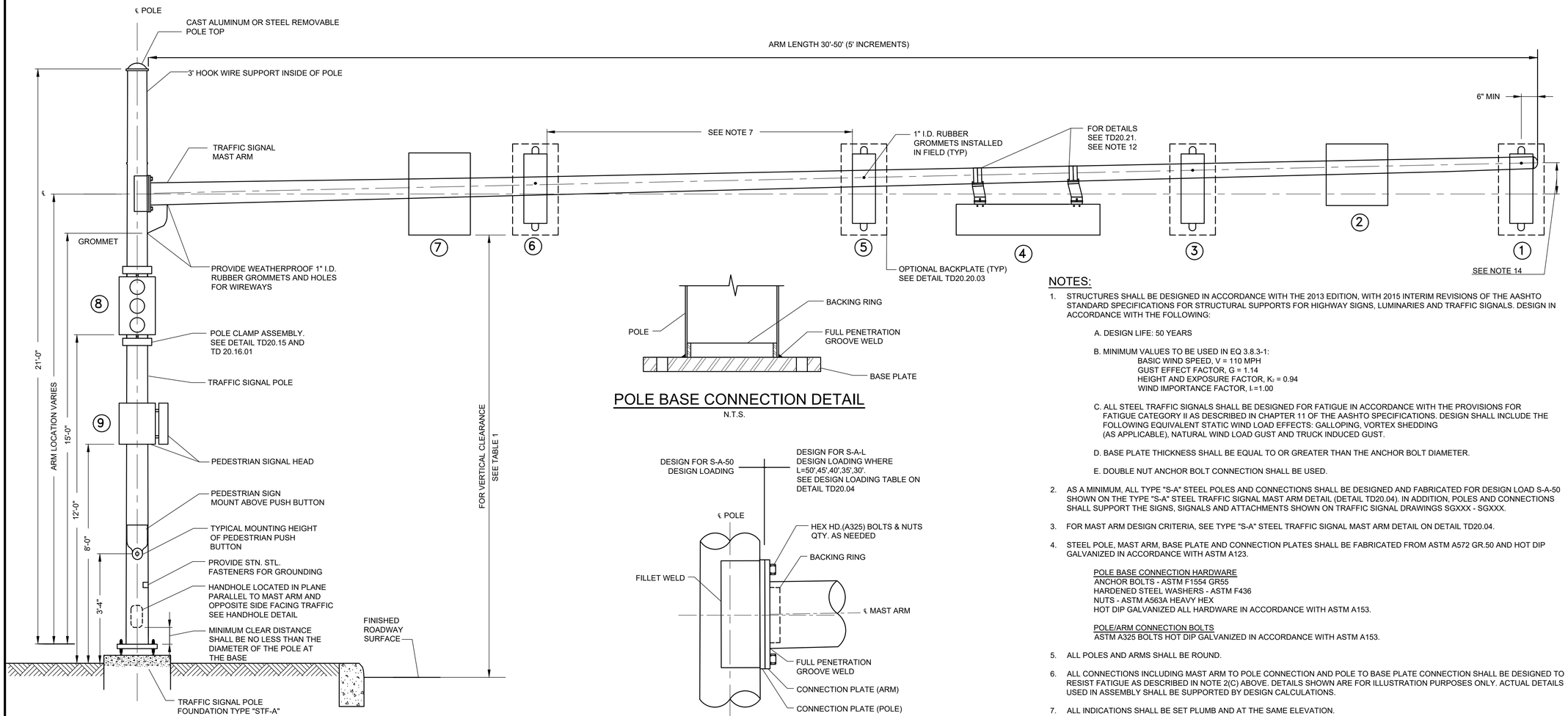
Drawing Number TD20.02

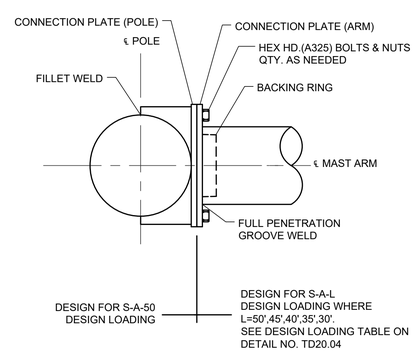


TYPICAL TYPE "S-A" STEEL TRAFFIC SIGNAL INSTALLATION

N.T.S.

POLE BASE CONNECTION DETAIL

N.T.S.



ARM CONNECTION DETAIL

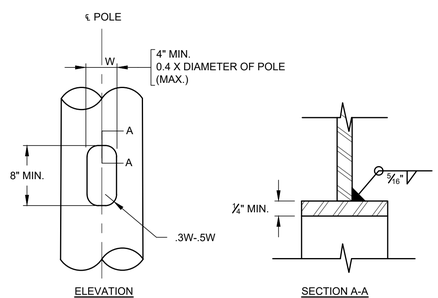
N.T.S.

TABLE 1

TYPE "S-A"
TRAFFIC SIGNAL SUPPORT

FOUNDATION TYPE	*VERTICAL CLEARANCE
STF-A	

*(TO BE COMPLETED BY DESIGNER)



HANDHOLE DETAIL

N.T.S.

NOTES:

1. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION, WITH 2015 INTERIM REVISIONS OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:

   A. DESIGN LIFE: 50 YEARS

   B. MINIMUM VALUES TO BE USED IN EQ 3.8.3-1:
   BASIC WIND SPEED, V = 110 MPH
   GUST EFFECT FACTOR, G = 1.14
   HEIGHT AND EXPOSURE FACTOR, K_z = 0.94
   WIND IMPORTANCE FACTOR, I_r=1.00

   C. ALL STEEL TRAFFIC SIGNALS SHALL BE DESIGNED FOR FATIGUE IN ACCORDANCE WITH THE PROVISIONS FOR FATIGUE CATEGORY II AS DESCRIBED IN CHAPTER 11 OF THE AASHTO SPECIFICATIONS. DESIGN SHALL INCLUDE THE FOLLOWING EQUIVALENT STATIC WIND LOAD EFFECTS: GALLOPING, VORTEX SHEDDING (AS APPLICABLE), NATURAL WIND LOAD GUST AND TRUCK INDUCED GUST.

   D. BASE PLATE THICKNESS SHALL BE EQUAL TO OR GREATER THAN THE ANCHOR BOLT DIAMETER.

   E. DOUBLE NUT ANCHOR BOLT CONNECTION SHALL BE USED.

2. AS A MINIMUM, ALL TYPE "S-A" STEEL POLES AND CONNECTIONS SHALL BE DESIGNED AND FABRICATED FOR DESIGN LOAD S-A-50 SHOWN ON THE TYPE "S-A" STEEL TRAFFIC SIGNAL MAST ARM DETAIL (DETAIL TD20.04). IN ADDITION, POLES AND CONNECTIONS SHALL SUPPORT THE SIGNS, SIGNALS AND ATTACHMENTS SHOWN ON TRAFFIC SIGNAL DRAWINGS SGXXX - SGXXX.
3. FOR MAST ARM DESIGN CRITERIA, SEE TYPE "S-A" STEEL TRAFFIC SIGNAL MAST ARM DETAIL ON DETAIL TD20.04.
4. STEEL POLE, MAST ARM, BASE PLATE AND CONNECTION PLATES SHALL BE FABRICATED FROM ASTM A572 GR.50 AND HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.

   POLE BASE CONNECTION HARDWARE
   ANCHOR BOLTS - ASTM F1554 GR55
   HARDENED STEEL WASHERS - ASTM F436
   NUTS - ASTM A563A HEAVY HEX
   HOT DIP GALVANIZED ALL HARDWARE IN ACCORDANCE WITH ASTM A153.

   POLE/ARM CONNECTION BOLTS
   ASTM A325 BOLTS HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.

5. ALL POLES AND ARMS SHALL BE ROUND.
6. ALL CONNECTIONS INCLUDING MAST ARM TO POLE CONNECTION AND POLE TO BASE PLATE CONNECTION SHALL BE DESIGNED TO RESIST FATIGUE AS DESCRIBED IN NOTE 2(C) ABOVE. DETAILS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL DETAILS USED IN ASSEMBLY SHALL BE SUPPORTED BY DESIGN CALCULATIONS.
7. ALL INDICATIONS SHALL BE SET PLUMB AND AT THE SAME ELEVATION.
8. ALL HEX NUTS SHALL BE INSTALLED BY "TURN OF THE NUT METHOD", SEAT NUT, THEN TORQUE MINIMUM ½ TURN.
9. ANCHOR BOLTS, LOCK WASHERS, FLAT WASHERS, NUTS AND LEVELING NUTS SHALL BE SUPPLIED WITH EACH POLE.
10. ALL ARMS SHALL BE FABRICATED IN ONE PIECE FOR LENGTHS UP TO 40 FEET. FOR LENGTHS MEASURING 45 FEET AND 50 FEET FABRICATE ARMS USING TWO-PIECE CONSTRUCTION WITH AN OVERLAP JOINT LENGTH OF 1 1/2 TIMES THE MAXIMUM INSIDE DIAMETER OF THE OUTER SHAFT. SECURE THE OVERLAP JOINT WITH A THROUGH BOLT AND LOCK NUT. FOR NON-STANDARD SIZES BETWEEN 40 FEET AND 45 FEET, SEE SPECIFICATIONS SECTION 16572 - "TRAFFIC SIGNAL POLES, MAST ARMS, SPAN WIRE AND POLE FOUNDATION."
11. CLAMP MOUNTED TRAFFIC SIGNAL HEAD AND PEDESTRIAN SIGNAL HEADS SHALL BE MOUNTED AT HEIGHTS SHOWN.
12. OVERHEAD SIGNS SHALL BE MOUNTED PERPENDICULAR TO THE DIRECTION OF TRAFFIC WHICH THEY ARE INTENDED TO SERVE.
13. THE CONTRACTOR SHALL SUBMIT A CERTIFICATION FOR EACH TRAFFIC SIGNAL ASSEMBLY PROVIDED. THE CERTIFICATION SHALL BE MADE BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE SIGNAL RESIDES AND SHALL INCLUDE A STATEMENT, WITH SUPPORTING CALCULATIONS, THAT THE SIGNAL ASSEMBLY HAS BEEN DESIGNED AND FABRICATED TO MEET OR EXCEED ALL REQUIREMENTS SPECIFIED IN THE CONTRACT DOCUMENTS.

    THE CERTIFICATION SHALL BE FOR ALL ELEMENTS LOCATED ABOVE THE TOP OF THE FOUNDATION INCLUSIVE OF THE POLE BASE CONNECTION ELEMENTS (ANCHOR BOLTS, NUTS, WASHERS). THE BOLT CIRCLE SHOWN ON DRAWING NO. TD20.08 SHALL BE USED WHEREVER POSSIBLE.

    IF THE CONTRACTOR, OR THEIR REPRESENTATIVE, DETERMINES THE LOADS EXCEED THE CAPACITY OF THE POLE BASE CONNECTION ELEMENTS SHOWN IN THE DETAILS ON DETAIL TD20.08, THEY SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION OF FOUNDATIONS.

14. FINAL ELEVATION OF FREE END OF MAST ARM SHALL BE BASED ON A RISE OF $\frac{1}{2}$" PER FOOT OF MAST ARM.
15. SIZE OF BASE PLATE SHALL BE DETERMINED BY THE MANUFACTURER. A MINIMUM OF SIX ANCHOR BOLTS SHALL BE USED FOR THE CONNECTION.
16. DO NOT INSTALL SUPPORT WITHOUT MAST ARM.

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
TRAFFIC SIGNALS

TYPE "S-A" STEEL TRAFFIC SIGNAL POLE, ARM AND BASE -1-

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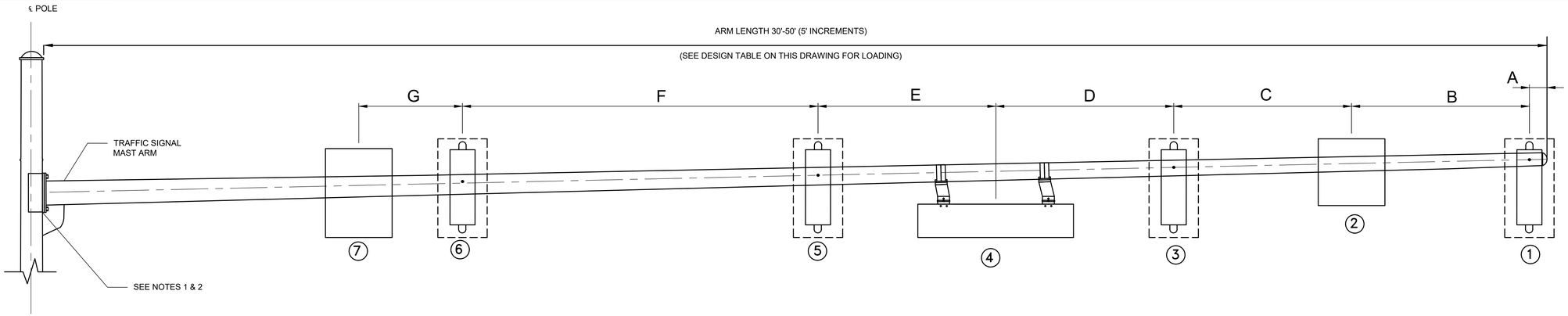
Date 07 / 15 / 2024

Drawing Number **TD20.03**



TYPE "S-A" STEEL TRAFFIC SIGNAL MAST ARM DETAIL

DESIGN TABLE

DESIGN LOADING FOR TYPE "S-A" STEEL TRAFFIC SIGNAL INSTALLATION

NUMBER	ATTACHMENT [1]	FIXED/FREE SWINGING	DEAD LOAD	WIND AREA[2]		ICE LOAD	ATTACHMENT LOCATIONS					
				VERTICAL PROJECTION	HORIZONTAL PROJECTION		DIMENSION	DESIGN LOADING S-A-50	DESIGN LOADING S-A-45	DESIGN LOADING S-A-40	DESIGN LOADING S-A-35	DESIGN LOADING S-A-30
1	2 WAY SIGNAL WITH BACKPLATE	FIXED	72.6 LBS	9.83 SF[3]	6.05 SF	168 LBS	A	0.5'	0.5'	0.5'	0.5'	0.5'
2	36" X 36" SIGN	FIXED	36 LBS	10.08 SF	0 SF	27 LBS	B	6'	6'	6'	6'	6'
3	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	84 LBS	C	6'	6'	6'	6'	6'
4	84" X 18" SIGN	FREE SWINGING	39 LBS	0.72 SF/10.33 SF[4]	0 SF	31.5 LBS	D	6'	6'	6'	6'	6'
5	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	84 LBS	E	6'	6'	6'	-	-
6	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	84 LBS	F	12'	-	-	-	-
7	36" X 48" SIGN	FIXED	42 LBS	13.68 SF	0 SF	36 LBS	G	3.5'	3.5' (FROM NO. 5)	3.5' (FROM NO. 5)	7' (FROM NO. 4)	7' (FROM NO. 4)
8	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	N/A	84 LBS		ON POLE	ON POLE	ON POLE	ON POLE	ON POLE
9	2 WAY PEDESTRIAN SIGNAL	FIXED	30 LBS	3.6 SF	N/A	40.5 LBS		ON POLE	ON POLE	ON POLE	ON POLE	ON POLE

ALL SIGNAL HEADS CONSIST OF 3-12" SECTIONS

[1] WIND AREA INCLUDES DRAG COEFFICIENT, Cd

[2] SIGNALS ARE BACK TO BACK

[3] LEFT SIDE VALUE REFLECTS EXPOSED AREA UNDER DESIGN WIND;

[4] RIGHT SIDE VALUE REFLECTS EXPOSED AREA UNDER NATURAL WIND GUST (11.2 MPH) - FATIGUE

NOTES:

1. ALL TYPE "S-A" POLES & CONNECTIONS, INCLUDING CONNECTION PLATE (POLE) SHALL BE DESIGNED TO ACCOMMODATE DESIGN LOAD S-A-50.
2. CONNECTION PLATE (ARM), BOLT PATTERN AND BOLT SIZE SHALL BE DESIGNED TO BE CONSISTENT WITH CONNECTION PLATE (POLE) AS DESCRIBED IN NOTE 1.
3. AS A MINIMUM, ALL TYPE "S-A" MAST ARMS SHALL BE DESIGNED AND FABRICATED TO ACCOMMODATE THE DESIGN LOADINGS SHOWN IN THE DESIGN TABLE ON THIS DRAWING. IN ADDITION, MAST ARMS AND CONNECTIONS SHALL SUPPORT THE ATTACHMENTS SHOWN ON TRAFFIC SIGNAL DRAWINGS SGXXX-SGXXX.
4. DESIGN IN ACCORDANCE WITH THE FOLLOWING:

   A. DESIGN LIFE: 50 YEARS

   B. MINIMUM VALUES TO BE USED IN EQ 3.8.3-1:
      BASIC WIND SPEED, V = 110 MPH
      GUST EFFECT FACTOR, G = 1.14
      HEIGHT AND EXPOSURE FACTOR, K2 = 0.94
      WIND IMPORTANCE FACTOR, IR =1.00

   C. ALL STEEL TRAFFIC SIGNALS SHALL BE DESIGNED FOR FATIGUE IN ACCORDANCE WITH THE PROVISIONS FOR FATIGUE CATEGORY II AS DESCRIBED IN CHAPTER 11 OF THE AASHTO SPECIFICATIONS. DESIGN SHALL INCLUDE THE FOLLOWING EQUIVALENT STATIC WIND LOAD EFFECTS: GALLOPING, VORTEX SHEDDING (AS APPLICABLE), NATURAL WIND LOAD GUST AND TRUCK INDUCED GUST.

   D. BASE PLATE THICKNESS SHALL BE EQUAL TO OR GREATER THAN THE ANCHOR BOLT DIAMETER.

   E. DOUBLE NUT ANCHOR BOLT CONNECTION SHALL BE USED.

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

TYPE "S-A"
STEEL TRAFFIC SIGNAL
POLE, ARM AND BASE
-2-

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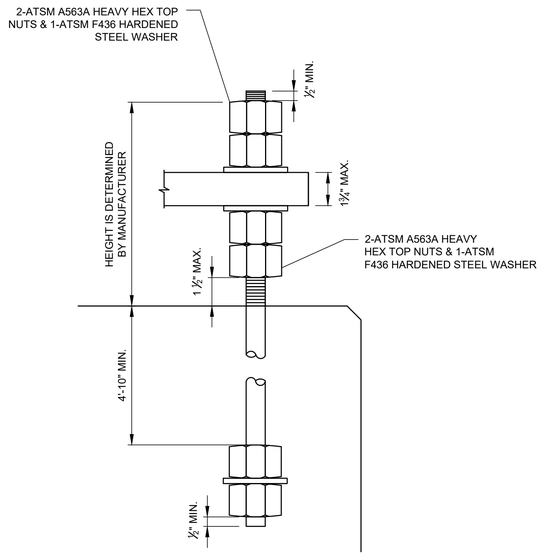
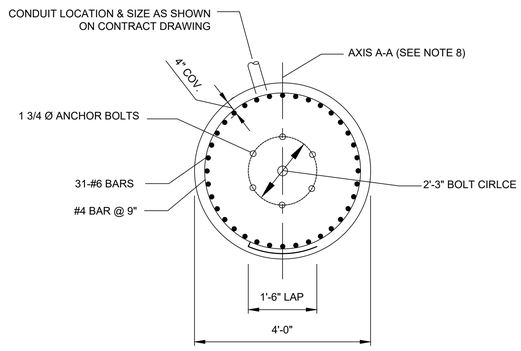
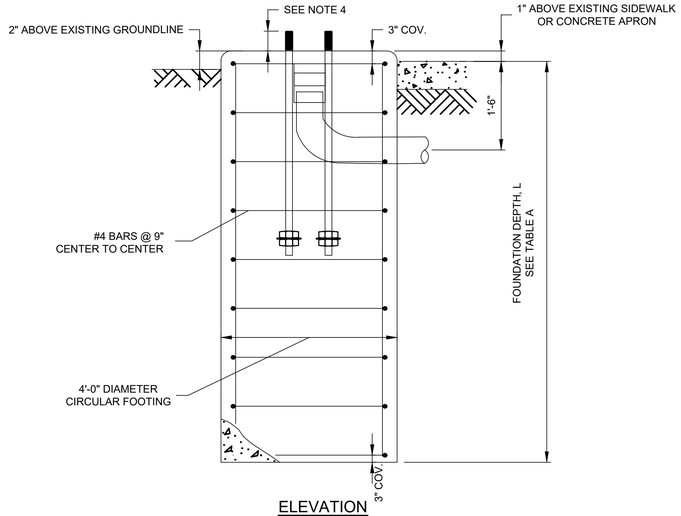
Drawing Number TD20.04



ANCHOR BOLT DETAIL
(FOUNDATION REINFORCEMENT NOT SHOWN)
N.T.S.



PLAN
N.T.S.



ELEVATION

TYPE "STF-A"
STEEL TRAFFIC SIGNAL POLE
FOUNDATION
N.T.S.

TABLE A (TYPE "STF-A" FOUNDATION)			
CAISSON NO.	LOCATION	BORING NO.	FOUNDATION DEPTH, (L)
1			
2			
3			
4			

* TO BE COMPLETED BY DESIGNER

NOTES:

1. USE WITH TYPE "S-A" STEEL TRAFFIC SIGNAL POLE, ARM AND BASE SHOWN ON DETAILS TD20.03 & TD20.04.
2. MATERIALS
   CONCRETE SHALL HAVE A MINIMUM CONCRETE STRENGTH, f'c=4000 PSI AT 28 DAYS
   CONCRETE FOUNDATIONS SHALL BE POURED MONOLITHICALLY
   REINFORCEMENT STEEL SHALL BE ASTM A615 GR.60
3. ANCHOR BOLTS SHALL BE HOT DIPPED GALVANIZED STEEL ASTM F1554 GRADE 55, GALVANIZE IN ACCORDANCE WITH ASTM A153.
4. MANUFACTURER SHALL DETERMINE HEIGHT OF ANCHOR BOLT ABOVE TOP OF FOUNDATION.
5. FOUNDATION DEPTH IS CALCULATED BASED ON TYPE "S-A" DESIGN LOADING PROVIDED ON DETAILS TD20.04 AND SHALL BE AS SHOWN IN TABLE A.
6. CONFORM TO THE SPECIFICATION 02379, "CAISSON (DRILL SHAFT)", FOR THE INSTALLATION OF THE POLE FOUNDATIONS, BEFORE STARTING THE POLE FOUNDATION, INSTALLATION, BACKFILL ANY OPEN EXCAVATION NEAR THE POLE FOOTING AS PER SPECIFICATION 02221, "EXCAVATION, BACKFILLING AND FILLING".
7. ANCHOR BOLT DIAMETER AND BOLT CIRCLE PATTERN SHALL BE AS SHOWN ON PLANS. MANUFACTURER SHALL PROVIDE CERTIFICATION THAT ANCHOR BOLT DIAMETER AND PATTERN ARE ACCEPTABLE. IF OTHER THAN SHOWN, CONTRACTOR SHALL NOTIFY PANYNJ.
8. ORIENT ANCHOR BOLT PATTERN SO AXIS A-A IS AT 90° TO THE MAST ARM. POLE SHALL BE CENTERED ON FOUNDATION AS SHOWN

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
TRAFFIC SIGNALS

TYPE "STF-A"
STEEL
TRAFFIC SIGNAL
POLE FOUNDATION

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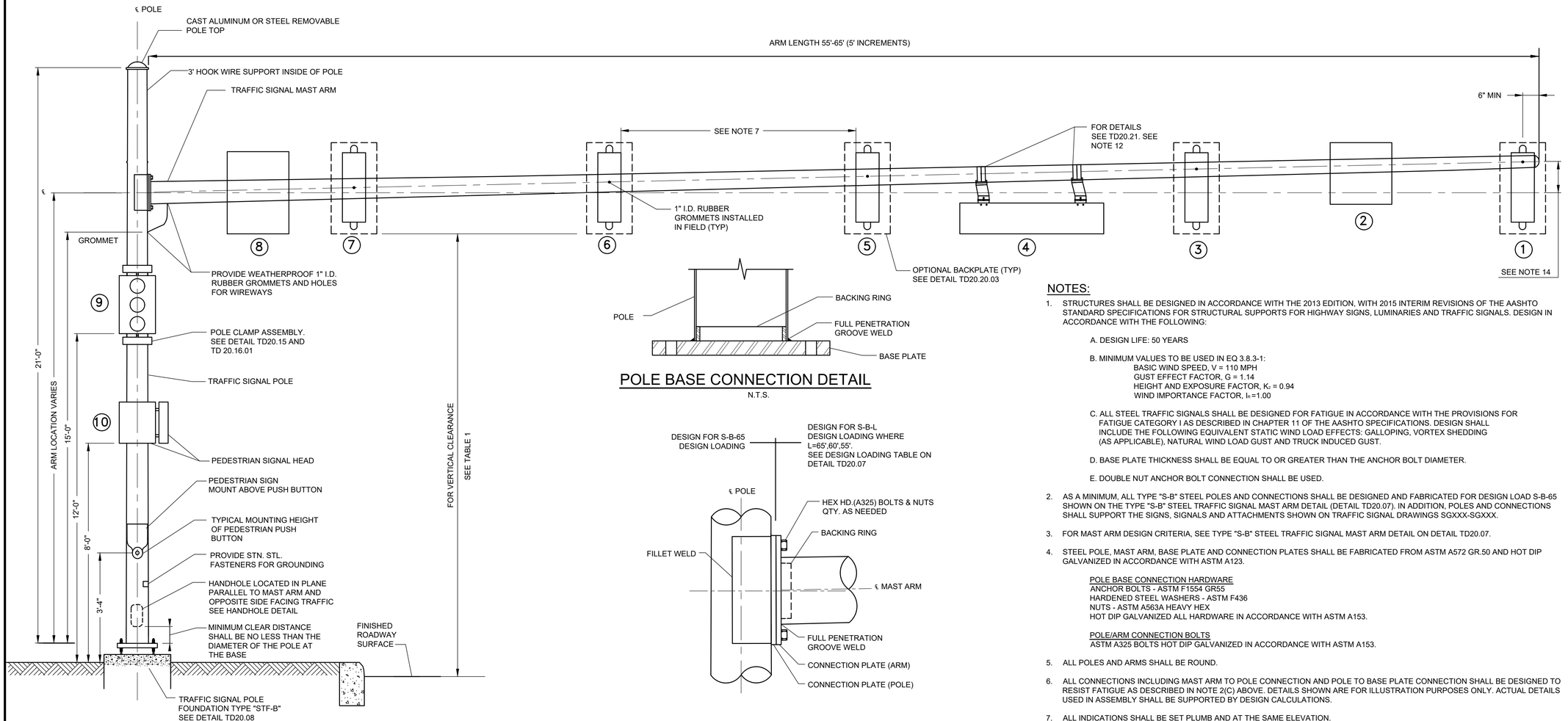
Drawing Number TD20.05



TYPICAL TYPE "S-B" STEEL TRAFFIC SIGNAL INSTALLATION

N.T.S.

POLE BASE CONNECTION DETAIL

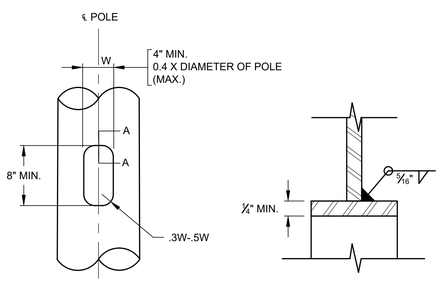
N.T.S.

TABLE 1

TYPE "S-B"
TRAFFIC SIGNAL SUPPORT

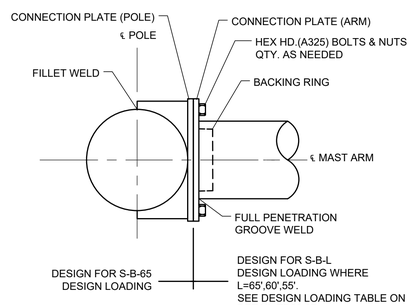
FOUNDATION TYPE	*VERTICAL CLEARANCE
STF-B	

*(TO BE COMPLETED BY DESIGNER)



HANDHOLE DETAIL

N.T.S.



ARM CONNECTION DETAIL

N.T.S.

NOTES:

1. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION, WITH 2015 INTERIM REVISIONS OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:

   A. DESIGN LIFE: 50 YEARS

   B. MINIMUM VALUES TO BE USED IN EQ 3.8.3-1:
   BASIC WIND SPEED, V = 110 MPH
   GUST EFFECT FACTOR, G = 1.14
   HEIGHT AND EXPOSURE FACTOR, K_z = 0.94
   WIND IMPORTANCE FACTOR, I_R=1.00

   C. ALL STEEL TRAFFIC SIGNALS SHALL BE DESIGNED FOR FATIGUE IN ACCORDANCE WITH THE PROVISIONS FOR FATIGUE CATEGORY I AS DESCRIBED IN CHAPTER 11 OF THE AASHTO SPECIFICATIONS. DESIGN SHALL INCLUDE THE FOLLOWING EQUIVALENT STATIC WIND LOAD EFFECTS: GALLOPING, VORTEX SHEDDING (AS APPLICABLE), NATURAL WIND LOAD GUST AND TRUCK INDUCED GUST.

   D. BASE PLATE THICKNESS SHALL BE EQUAL TO OR GREATER THAN THE ANCHOR BOLT DIAMETER.

   E. DOUBLE NUT ANCHOR BOLT CONNECTION SHALL BE USED.

2. AS A MINIMUM, ALL TYPE "S-B" STEEL POLES AND CONNECTIONS SHALL BE DESIGNED AND FABRICATED FOR DESIGN LOAD S-B-65 SHOWN ON THE TYPE "S-B" STEEL TRAFFIC SIGNAL MAST ARM DETAIL (DETAIL TD20.07). IN ADDITION, POLES AND CONNECTIONS SHALL SUPPORT THE SIGNS, SIGNALS AND ATTACHMENTS SHOWN ON TRAFFIC SIGNAL DRAWINGS SGXXX-SGXXX.

3. FOR MAST ARM DESIGN CRITERIA, SEE TYPE "S-B" STEEL TRAFFIC SIGNAL MAST ARM DETAIL ON DETAIL TD20.07.

4. STEEL POLE, MAST ARM, BASE PLATE AND CONNECTION PLATES SHALL BE FABRICATED FROM ASTM A572 GR.50 AND HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.

   POLE BASE CONNECTION HARDWARE
   ANCHOR BOLTS - ASTM F1554 GR55
   HARDENED STEEL WASHERS - ASTM F436
   NUTS - ASTM A563A HEAVY HEX
   HOT DIP GALVANIZED ALL HARDWARE IN ACCORDANCE WITH ASTM A153.

   POLE/ARM CONNECTION BOLTS
   ASTM A325 BOLTS HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.

5. ALL POLES AND ARMS SHALL BE ROUND.

6. ALL CONNECTIONS INCLUDING MAST ARM TO POLE CONNECTION AND POLE TO BASE PLATE CONNECTION SHALL BE DESIGNED TO RESIST FATIGUE AS DESCRIBED IN NOTE 2(C) ABOVE. DETAILS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY. ACTUAL DETAILS USED IN ASSEMBLY SHALL BE SUPPORTED BY DESIGN CALCULATIONS.

7. ALL INDICATIONS SHALL BE SET PLUMB AND AT THE SAME ELEVATION.

8. ALL HEX NUTS SHALL BE INSTALLED BY "TURN OF THE NUT METHOD", SEAT NUT, THEN TORQUE MINIMUM ½ TURN.

9. ANCHOR BOLTS, LOCK WASHERS, FLAT WASHERS, NUTS AND LEVELING NUTS SHALL BE SUPPLIED WITH EACH POLE.

10. ALL ARMS SHALL BE FABRICATED OF TWO-PIECE CONSTRUCTION WITH AN OVERLAP JOINT LENGTH OF 1 1/2 TIMES THE MAXIMUM INSIDE DIAMETER OF THE OUTER SHAFT. SECURE THE OVERLAP JOINT WITH A THROUGH BOLT AND LOCK NUT.

11. CLAMP MOUNTED TRAFFIC SIGNAL HEAD AND PEDESTRIAN SIGNAL HEADS SHALL BE MOUNTED AT HEIGHTS SHOWN.

12. OVERHEAD SIGNS SHALL BE MOUNTED PERPENDICULAR TO THE DIRECTION OF TRAFFIC WHICH THEY ARE INTENDED TO SERVE.

13. THE CONTRACTOR SHALL SUBMIT A CERTIFICATION FOR EACH TRAFFIC SIGNAL ASSEMBLY PROVIDED. THE CERTIFICATION SHALL BE MADE BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE SIGNAL RESIDES AND SHALL INCLUDE A STATEMENT, WITH SUPPORTING CALCULATIONS, THAT THE SIGNAL ASSEMBLY HAS BEEN DESIGNED AND FABRICATED TO MEET OR EXCEED ALL REQUIREMENTS SPECIFIED IN THE CONTRACT DOCUMENTS.

    THE CERTIFICATION SHALL BE FOR ALL ELEMENTS LOCATED ABOVE THE TOP OF THE FOUNDATION INCLUSIVE OF THE POLE BASE CONNECTION ELEMENTS (ANCHOR BOLTS, NUTS, WASHERS). THE BOLT CIRCLE SHOWN ON DETAIL TD20.09 SHALL BE USED WHEREVER POSSIBLE.

    IF THE CONTRACTOR, OR THEIR REPRESENTATIVE, DETERMINES THE LOADS EXCEED THE CAPACITY OF THE POLE BASE CONNECTION ELEMENTS SHOWN IN THE DETAILS ON DETAIL TD20.09, THEY SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION OF FOUNDATIONS.

14. FINAL ELEVATION OF FREE END OF MAST ARM SHALL BE BASED ON A RISE OF ¼" PER FOOT OF MAST ARM.

15. SIZE OF BASE PLATE SHALL BE DETERMINED BY THE MANUFACTURER. A MINIMUM OF SIX ANCHOR BOLTS SHALL BE USED FOR THE CONNECTION.

16. DO NOT INSTALL SUPPORT WITHOUT MAST ARM.

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

TYPE "S-B"
STEEL TRAFFIC SIGNAL
POLE, ARM AND BASE
-1-

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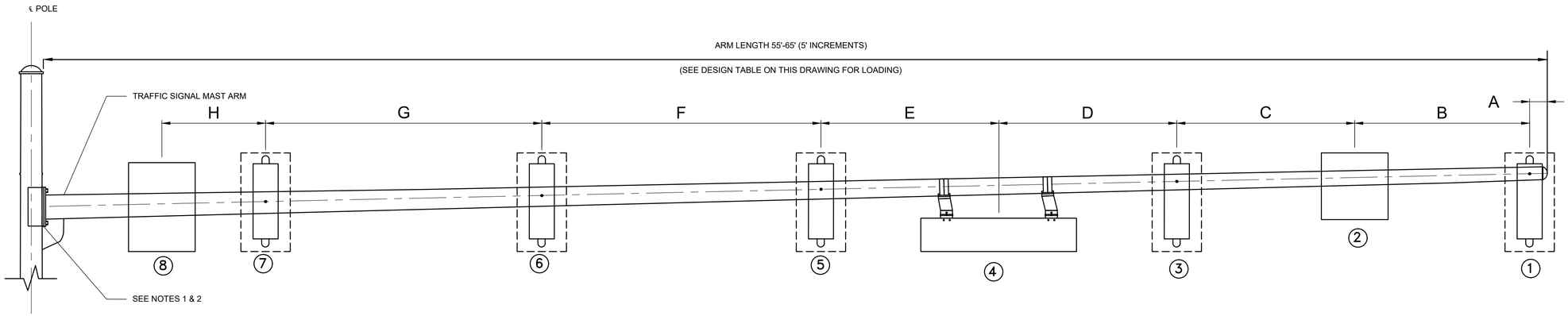

TYPE "S-B" STEEL TRAFFIC SIGNAL MAST ARM DETAIL

DESIGN TABLE

DESIGN LOADING FOR TYPE "S-B" STEEL TRAFFIC SIGNAL INSTALLATION

NUMBER	ATTACHMENT [1]	FIXED/FREE SWINGING	DEAD LOAD	WIND AREA [2]		ICE LOAD	ATTACHMENT LOCATIONS			
				VERTICAL PROJECTION	HORIZONTAL PROJECTION		DIMENSION	DESIGN LOADING S-B-65	DESIGN LOADING S-B-60	DESIGN LOADING S-B-55
1	2 WAY SIGNAL WITH BACKPLATE	FIXED	72.6 LBS	9.83 SF [3]	6.05 SF	168 LBS	A	0.5'	0.5'	0.5'
2	36" X 36" SIGN	FIXED	36 LBS	10.08 SF	0 SF	27 LBS	B	6'	6'	6'
3	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	84 LBS	C	6'	6'	6'
4	84" X 18" SIGN	FREE SWINGING	39 LBS	0.72 SF/10.33 SF [4]	0 SF	31.5 LBS	D	6'	6'	6'
5	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	84 LBS	E	6'	6'	6'
6	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	84 LBS	F	12'	12'	12'
7	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	3.02 SF	84 LBS	G	12'	-	-
8	36" X 48" SIGN	FIXED	42 LBS	13.68 SF	0 SF	36 LBS	H	3.5'	3.5' (FROM NO. 6)	3.5' (FROM NO. 6)
9	1 WAY SIGNAL WITH BACKPLATE	FIXED	36.3 LBS	9.83 SF	N/A	84 LBS		ON POLE	ON POLE	ON POLE
10	2 WAY PEDESTRIAN SIGNAL	FIXED	30 LBS	3.6 SF	N/A	40.5 LBS		ON POLE	ON POLE	ON POLE

[1] ALL SIGNAL HEADS CONSIST OF 3-12" SECTIONS
[2] WIND AREA INCLUDES DRAG COEFFICIENT, Cd
[3] SIGNALS ARE BACK TO BACK
[4] LEFT SIDE VALUE REFLECTS EXPOSED AREA UNDER DESIGN WIND; RIGHT SIDE VALUE REFLECTS EXPOSED AREA UNDER NATURAL WIND GUST (11.2 MPH) - FATIGUE

NOTES:

1. ALL TYPE "S-B" POLES & CONNECTIONS, INCLUDING CONNECTION PLATE (POLE) SHALL BE DESIGNED TO ACCOMMODATE DESIGN LOAD S-B-65.
2. CONNECTION PLATE (ARM), BOLT PATTERN AND BOLT SIZE SHALL BE DESIGNED TO BE CONSISTENT WITH CONNECTION PLATE (POLE) AS DESCRIBED IN NOTE 1.
3. AS A MINIMUM, ALL TYPE "S-B" MAST ARMS SHALL BE DESIGNED AND FABRICATED TO ACCOMMODATE THE DESIGN LOADINGS SHOWN IN THE DESIGN TABLE ON THIS DRAWING. IN ADDITION, MAST ARMS AND CONNECTIONS SHALL SUPPORT THE ATTACHMENTS SHOWN ON TRAFFIC SIGNAL DRAWINGS SGXXX-SGXXX.

4. DESIGN IN ACCORDANCE WITH THE FOLLOWING:

   A. DESIGN LIFE: 50 YEARS

   B. MINIMUM VALUES TO BE USED IN EQ 3.8.3-1:
      BASIC WIND SPEED, V = 110 MPH
      GUST EFFECT FACTOR, G = 1.14
      HEIGHT AND EXPOSURE FACTOR, K2 = 0.94
      WIND IMPORTANCE FACTOR, IR =1.00

   C. ALL STEEL TRAFFIC SIGNALS SHALL BE DESIGNED FOR FATIGUE IN ACCORDANCE WITH THE PROVISIONS FOR FATIGUE CATEGORY I AS DESCRIBED IN CHAPTER 11 OF THE AASHTO SPECIFICATIONS. DESIGN SHALL INCLUDE THE FOLLOWING EQUIVALENT STATIC WIND LOAD EFFECTS: GALLOPING, VORTEX SHEDDING (AS APPLICABLE), NATURAL WIND LOAD GUST AND TRUCK INDUCED GUST.

   D. BASE PLATE THICKNESS SHALL BE EQUAL TO OR GREATER THAN THE ANCHOR BOLT DIAMETER.

   E. DOUBLE NUT ANCHOR BOLT CONNECTION SHALL BE USED.

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
TRAFFIC SIGNALS

TYPE "S-B"
STEEL TRAFFIC SIGNAL
POLE, ARM AND BASE
-2-

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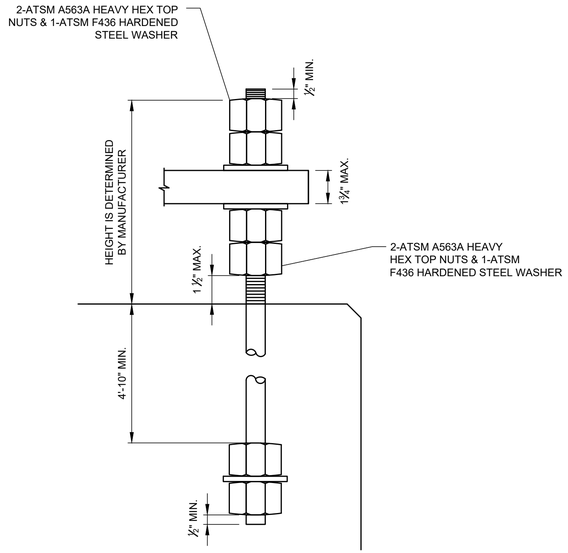
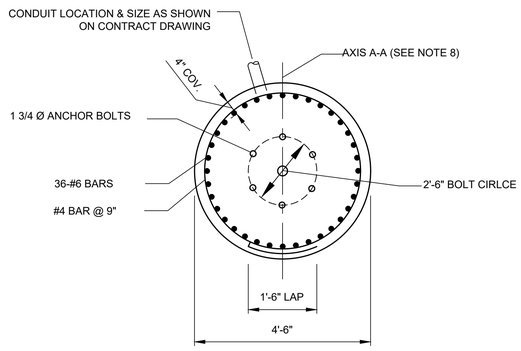


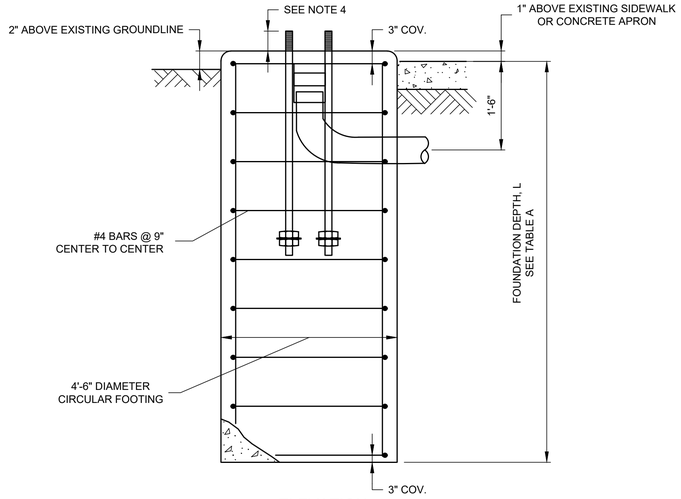
ANCHOR BOLT DETAIL
(FOUNDATION REINFORCEMENT NOT SHOWN)

N.T.S.



PLAN

N.T.S.



ELEVATION

TYPE "STF-B"
STEEL TRAFFIC SIGNAL POLE FOUNDATION

N.T.S.

TABLE A (TYPE "STF-B" FOUNDATION)			
CAISSON NO.	LOCATION	BORING NO.	FOUNDATION DEPTH, (L)
1			
2			
3			
4			

* TO BE COMPLETED BY DESIGNER

NOTES:

1. USE WITH TYPE "S-B" STEEL TRAFFIC SIGNAL POLE, ARM AND BASE SHOWN ON DETAIL TD20.06 & TD20.07.
2. MATERIALS
   CONCRETE SHALL HAVE A MINIMUM CONCRETE STRENGTH, f'c=4000 PSI AT 28 DAYS
   CONCRETE FOUNDATIONS SHALL BE POURED MONOLITHICALLY
   REINFORCEMENT STEEL SHALL BE ASTM A615 GR.60
3. ANCHOR BOLTS SHALL BE HOT DIPPED GALVANIZED STEEL ASTM F1554 GRADE 55, GALVANIZE IN ACCORDANCE WITH ASTM A153.
4. MANUFACTURER SHALL DETERMINE HEIGHT OF ANCHOR BOLT ABOVE TOP OF FOUNDATION.
5. FOUNDATION DEPTH IS CALCULATED BASED ON TYPE "S-B" DESIGN LOADING PROVIDED ON DETAIL TD20.07 AND SHALL BE AS SHOWN IN TABLE A.
6. CONFORM TO THE SPECIFICATION 02379, "CAISSON (DRILL SHAFT)", FOR THE INSTALLATION OF THE POLE FOUNDATIONS, BEFORE STARTING THE POLE FOUNDATION, INSTALLATION, BACKFILL ANY OPEN EXCAVATION NEAR THE POLE FOOTING AS PER SPECIFICATION 02221, "EXCAVATION, BACKFILLING AND FILLING".
7. ANCHOR BOLT DIAMETER AND BOLT CIRCLE PATTERN SHALL BE AS SHOWN ON PLANS. MANUFACTURER SHALL PROVIDE CERTIFICATION THAT ANCHOR BOLT DIAMETER AND PATTERN ARE ACCEPTABLE. IF OTHER THAN SHOWN, CONTRACTOR SHALL NOTIFY PANYNJ.
8. ORIENT ANCHOR BOLT PATTERN SO AXIS A-A IS AT 90° TO THE MAST ARM. POLE SHALL BE CENTERED ON FOUNDATION AS SHOWN

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

TYPE "STF-B"
STEEL
TRAFFIC SIGNAL
POLE FOUNDATION

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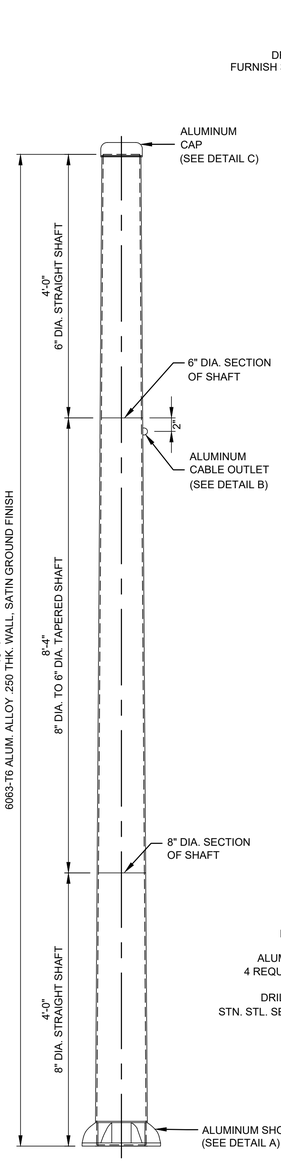
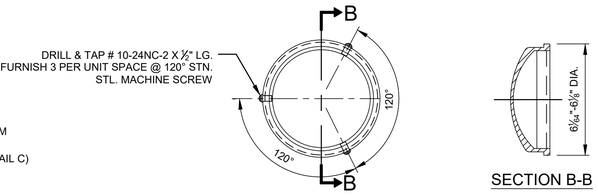
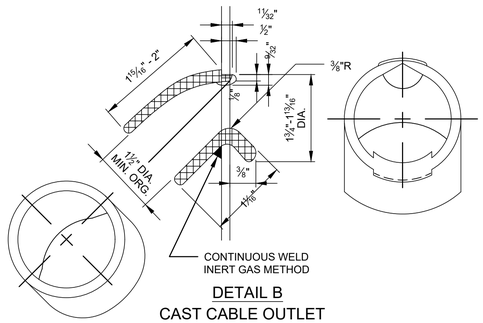
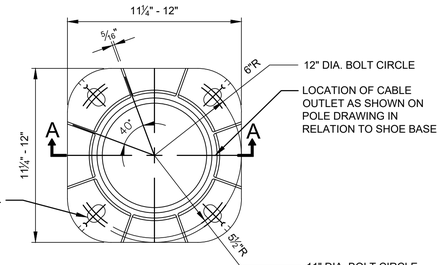


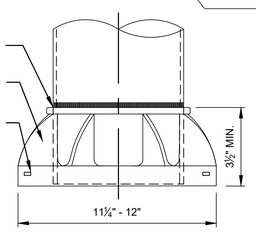


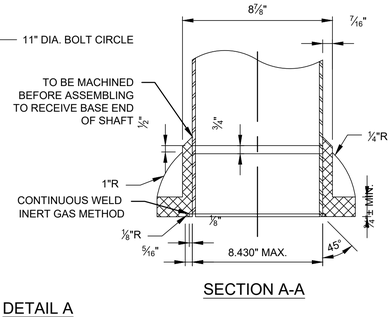
DETAIL C
CAST ALUMINUM CAP



DETAIL B
CAST CABLE OUTLET







SECTION A-A

DETAIL A
CAST ALUMINUM SHOE BASE

TRAFFIC SIGNAL POLE TYPE "T"

N.T.S.

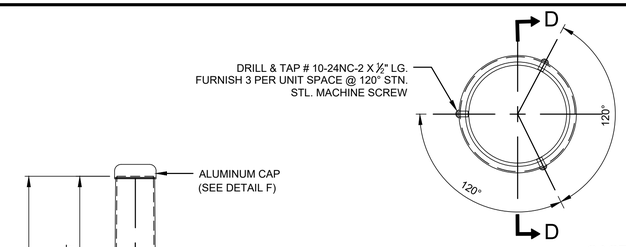
FURNISH WITH EACH POLE

QTY	DESCRIPTION
4	1" DIA. X 3" LONG HEX HEAD BOLTS, 8 THREADS PER INCH CLASS 2 - FREE FIT STAINLESS STEEL ASTM A193 GRADE B8
8	1" DIA. PLAIN WASHERS, STAINLESS STEEL (4-2" O.D., 4-2 1/2" O.D.)
4	1" DIA. LOCK WASHERS, STN. STL.
4	1" DIA. HEX NUTS, STAINLESS STEEL
4	BOLT COVERS ALUMINUM ALLOY WITH STAINLESS STEEL SCREWS
1	POLE CAP

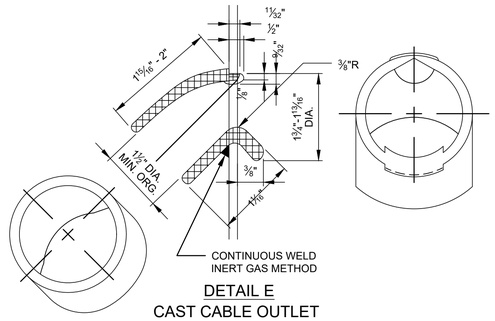
NOTES:

1. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION, WITH 2015 INTERIM REVISIONS OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:
   A. DESIGN LIFE: 25 YEARS
   B. BASIC WIND SPEED: 110 MPH
   C. FATIGUE DESIGN SHALL BE WAIVED
2. ALL TOLERANCES FOR CASTINGS SHALL BE ±1/32".
3. HOLE SHALL BE OF SUFFICIENT DIAMETER TO ACCEPT 1" DIAMETER BOLT.
4. MATERIAL - ALUMINUM CASTINGS
   ALUMINUM ALLOY 356-T6 (ASTM ALLOY DESIGNATION SG 70A)
   SAND CASTING : ASTM B26
   PERMANENT MOLD CASTING ASTM BIO8
5. POLES SHALL BE CENTERED ON FOUNDATION.

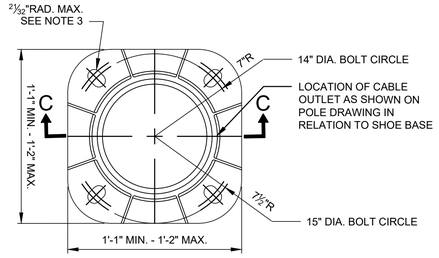
TD20.09.01

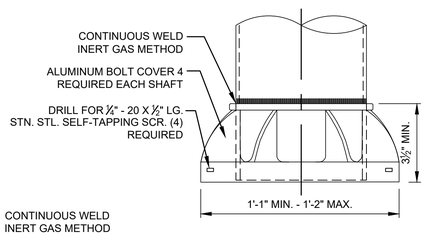


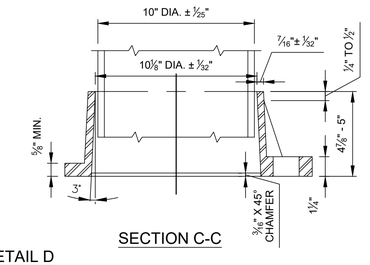
DETAIL F
CAST ALUMINUM CAP



DETAIL E
CAST CABLE OUTLET

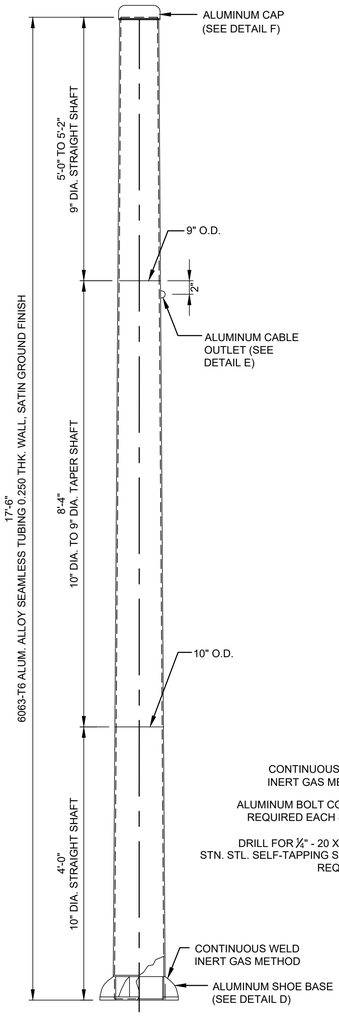






SECTION C-C

DETAIL D
ALUMINUM SHOE BASE



TRAFFIC SIGNAL POLE TYPE "K"

N.T.S.

FURNISH WITH EACH POLE

QTY	DESCRIPTION
4	1" DIA. X 4½" LONG HEX HD. BOLTS 8 THDS. PER INCH, CLASS 2 - FREE FIT STAINLESS STEEL. ASTM A-193 GRADE B8.
4	1" DIA. PLAIN WASHERS, STAINLESS STEEL. (2" O.D. X ⅛" THICK)
4	1" DIA. LOCK WASHERS, STAINLESS STEEL. (⅛" THICK)
4	1" DIA. HEX NUTS, STAINLESS STEEL.
4	BOLT COVERS, ALUMINUM ALLOY WITH GR. B8 STAINLESS STEEL SCREWS.
4	1" DIA. PLAIN WASHERS, STAINLESS STEEL (2½" O.D. ⅛" THK OR 2" O.D. ⅛" THK AS RECOMMENDED BY MANUFACTURER.)
1	POLE CAP

NOTES:

1. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION, WITH 2015 INTERIM REVISIONS OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:
   A. DESIGN LIFE: 25 YEARS
   B. BASIC WIND SPEED: 110 MPH
   C. FATIGUE DESIGN SHALL BE WAIVED
2. ALL TOLERANCES FOR CASTINGS SHALL BE ±1/32".
3. HOLE SHALL BE OF SUFFICIENT DIAMETER TO ACCEPT 1" DIAMETER BOLT.
4. MATERIAL - ALUMINUM CASTINGS
   ALUMINUM ALLOY 356-T6 (ASTM ALLOY DESIGNATION SG 70A)
   SAND CASTING : ASTM B26
   PERMANENT MOLD CASTING ASTM BIO8
5. POLES SHALL BE CENTERED ON FOUNDATION.

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

TYPE "T" AND "K" POLES ELEVATION, SHOE BASE, CABLE OUTLET, AND CAP

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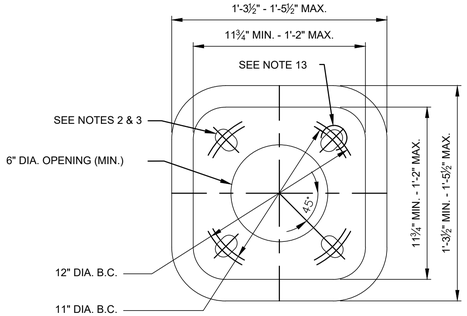
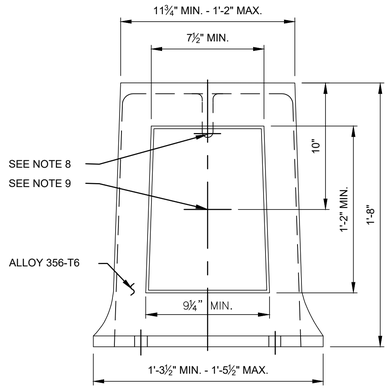
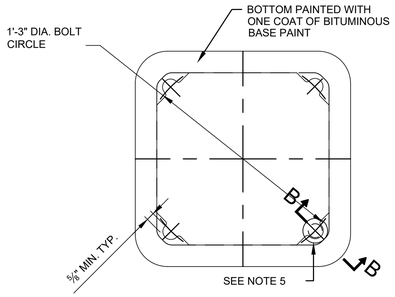


TOP VIEW



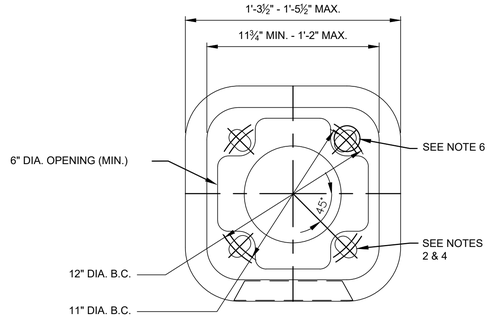
ELEVATION



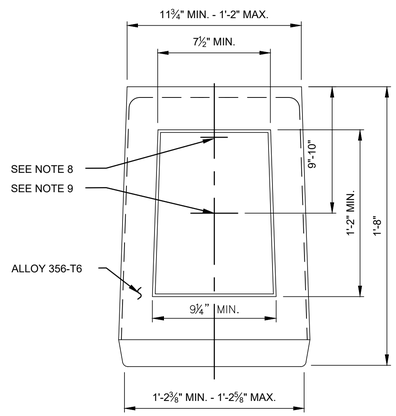
BOTTOM VIEW OF BASE

TYPE 'T'
ALUMINUM TRANSFORMER BASE

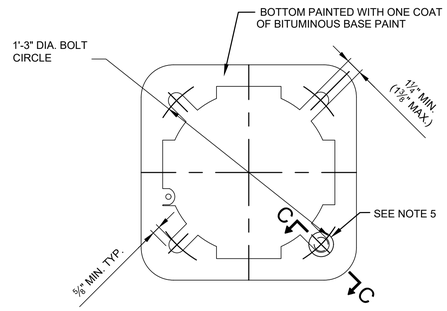
TD20.10.01



TOP VIEW



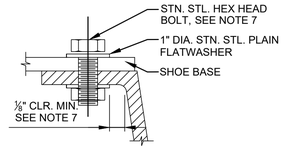
ELEVATION



BOTTOM VIEW OF BASE

TYPE 'T' ALTERNATE
ALUMINUM TRANSFORMER BASE

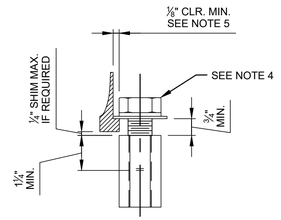
TD20.10.02



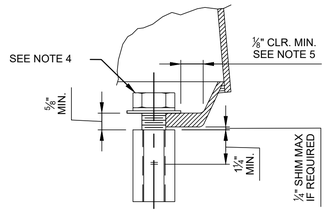
BOLTING DETAIL

NOTES:

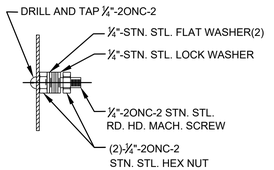
1. THE "T" POLE TRANSFORMER BASE SHALL MEET THE STRENGTH REQUIREMENTS NECESSARY TO SUPPORT AND TRANSFER ALL LOADS FROM THE "T" POLE SHOE BASE TO THE SFT FOUNDATION.
2. THE SLOT SHALL BE OF SUFFICIENT SIZE TO ACCEPT 1" DIA. BOLTS.
3. THE MAXIMUM LENGTH OF THE SLOT SHALL BE SUCH WHEN A 11¼" SQUARE SHOE BASE IS MOUNTED ON THAT TOP OF THE TRANSFORMER BASE, THE SLOTS SHALL BE COMPLETELY COVERED BY SHOE BASE.
4. THE MAXIMUM ALLOWABLE TRANSFORMER BASE THICKNESS SHALL BE DETERMINED BY GUARANTEEING A 3" ANCHOR BOLT WITH LOCK WASHER, FLAT WASHER AND ¼" SHIM INSTALLED CAN ACHIEVE A MINIMUM INSERTION OF 1¼" INTO THE COUPLING NUT. SEE SECTION C-C.
5. THE BASE SHALL BE DESIGNED SUCH THAT THERE IS ½" MINIMUM CLEARANCE FROM THE 2½" FLAT WASHER A TO THE INNER SIDES.
6. THE BASE SHALL BE DESIGNED SUCH THAT THERE IS ½" MINIMUM CLEARANCE FROM THE 1" FLAT WASHER A TO THE OUTER SIDES OF THE BASE.
7. THE MANUFACTURER SHALL PROVIDE INSTRUCTIONS AS WELL AS ALL HARDWARE THEY DEEM NECESSARY FOR INSTALLATION OF "T" POLE TRANSFORMER BASE.
8. PROVIDE ALUMINUM DOOR AND ATTACH DOOR TO BASE. LOCKING DEVICE SHOULD USE A ½" OR ⅝" STN. STL. GRADE B8 SOCKET HD. CAP SCREW WITH AN APPROVED VANDAL RESISTANT LOCKING DEVICE.
9. INSTALL GROUND STUD ON THE WALL OPPOSITE DOOR (SEE DETAIL A OR ALTERNATE DETAIL B).
10. THE BOTTOM OF THE TRANSFORMER BASE STRUCTURE THAT IS IN CONTACT WITH THE FOUNDATION SHALL BE PAINTED WITH ONE COAT OF BITUMINOUS BASE PAINT.
11. ALL HEX. HD. BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL, ASTM A193, GRADE B8.
12. EITHER TRANSFORMER BASE STYLE MAY BE USED AS LONG AS IT IS CONSISTENT THROUGHOUT THE PROJECT
13. SUPPLIER SHALL FURNISH DETAIL DRAWINGS OF TRANSFORMER BASE FOR APPROVAL.
14. CERTIFIED MILL TEST REPORTS SHALL BE FURNISHED THAT ALLOYS AND TEMPER SHOWN MEET REQUIREMENTS AS INDICATED ON DRAWING.



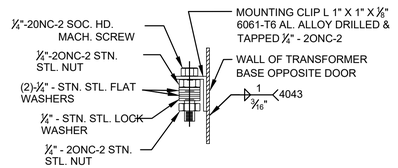
SECTION B-B



SECTION C-C



DETAIL A
(GROUND STUD DETAIL OPPOSITE DOOR OPENING)



DETAIL B
(ALT. GROUND STUD DETAIL OPPOSITE DOOR OPENING)

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

ALUMINUM "T" POLE TRANSFORMER BASE

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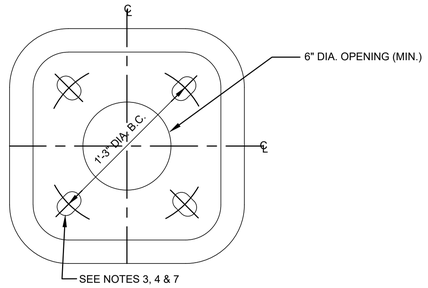
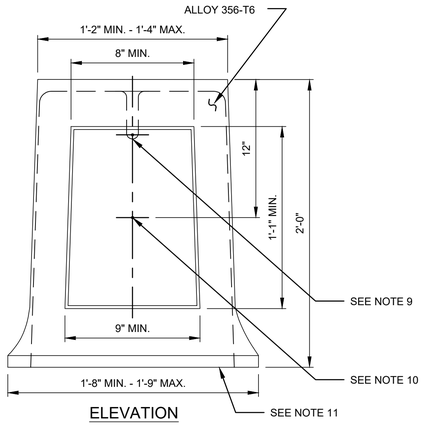
Date 07 / 15 / 2024

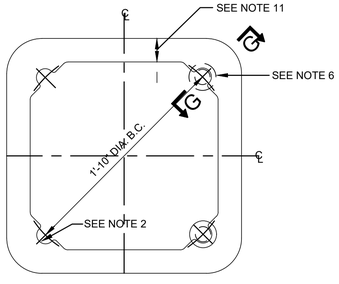
Drawing Number TD20.10



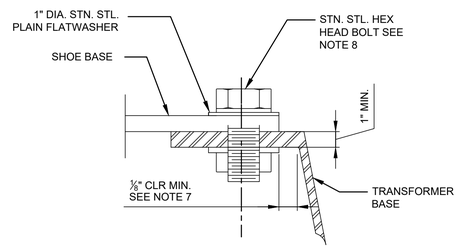
TOP VIEW



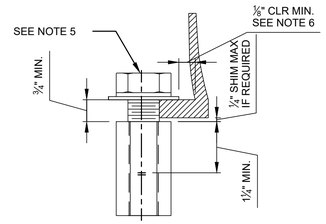
ELEVATION



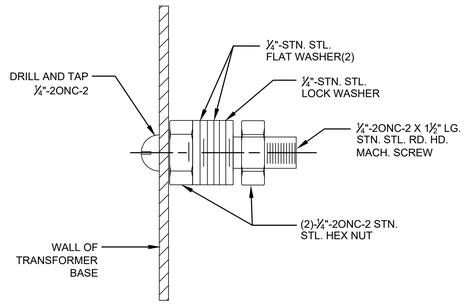
BOTTOM VIEW



BOLTING DETAIL

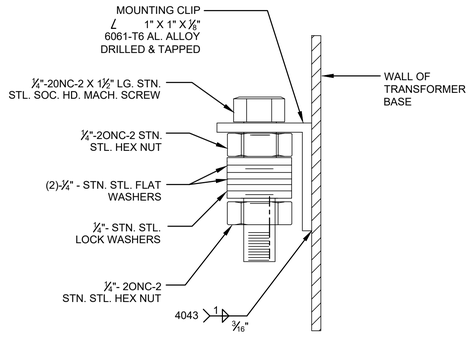


SECTION G-G



DETAIL E

(GROUND STUD DETAIL OPPOSITE DOOR OPENING)
N.T.S.



DETAIL F

(ALT. GROUND STUD DETAIL OPPOSITE DOOR OPENING)
N.T.S.

NOTES:

1. THE "K" POLE TRANSFORMER BASE SHALL MEET THE STRENGTH REQUIREMENTS NECESSARY TO SUPPORT AND TRANSFER ALL LOADS FROM "K" POLE SHOE BASE TO THE SFK FOUNDATION.
2. SLOT SHALL BE OF SUFFICIENT SIZE TO ACCEPT 1" DIA. BOLTS ON A 1'-10" DIA. BOLT CIRCLE.
3. SLOT SHALL BE OF SUFFICIENT SIZE TO ACCEPT 1" DIA. BOLTS ON A 1'-3" DIA. BOLT CIRCLE.
4. THE MAXIMUM LENGTH OF SLOT SHALL BE SUCH THAT WHEN A 1'-1½" SQUARE SHOE BASE IS MOUNTED ON TOP OF THE TRANSFORMER BASE, THE SLOTS SHALL BE COMPLETELY COVERED BY SHOE BASE.
5. THE MAXIMUM ALLOWABLE TRANSFORMER BASE THICKNESS SHALL BE DETERMINED BY GUARANTEEING A 3" ANCHOR BOLT, WITH LOCK WASHER, FLAT WASHER AND ¼" SHIM INSTALLED CAN ACHIEVE A MINIMUM INSERTION OF 1¼" INTO THE COUPLING NUT. SEE SECTION G-G.
6. THE BASE SHALL BE DESIGNED SUCH THAT THERE IS A ⅛" MINIMUM CLEARANCE FROM THE 2½" FLAT WASHER TO THE INNER SIDES.
7. THE BASE SHALL BE DESIGNED SUCH THAT A 2" OR 2½" FLATWASHER AS SUPPLIED BY THE MANUFACTURER SHALL HAVE A CLEARANCE TO THE INNER SIDES.
8. THE MANUFACTURER SHALL PROVIDE INSTRUCTIONS AS WELL AS ALL HARDWARE THEY DEEM NECESSARY FOR INSTALLATION OF "K" POLE TRANSFORMER BASE.
9. PROVIDE ALUMINUM DOOR AND ATTACH DOOR TO THE BASE WITH AN APPROVED, VANDAL RESISTANT LOCKING DEVICE, LOCKING DEVICE SHOULD USE A ¼" OR ⅜" STN. STL. GRADE B8 SOCKET HD. CAP SCREW.
10. INSTALL GROUND STUD ON WALL OPPOSITE DOOR. (SEE DETAIL E OR ALTERNATE DETAIL F)
11. THE BOTTOM OF THE TRANSFORMER BASE STRUCTURE THAT IS IN CONTACT WITH THE FOUNDATION SHALL BE PAINTED WITH ONE COAT OF BITUMINOUS BASE PAINT.
11. ALL HEX HD. BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL, ASTM A193, GRADE B8.
13. SUPPLIER SHALL FURNISH DETAIL DRAWINGS OF TRANSFORMER BASE FOR APPROVAL.
14. THE MANUFACTURER SHALL FURNISH CERTIFIED MILL TEST REPORTS THAT SHOW ALL ALLOYS AND TEMPER ARE IN ACCORDANCE WITH WHAT IS SHOWN ON THE DRAWINGS.

TYPE "K" ALUMINUM TRANSFORMER BASE

N.T.S.

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

ALUMINUM "K" POLE TRANSFORMER BASE

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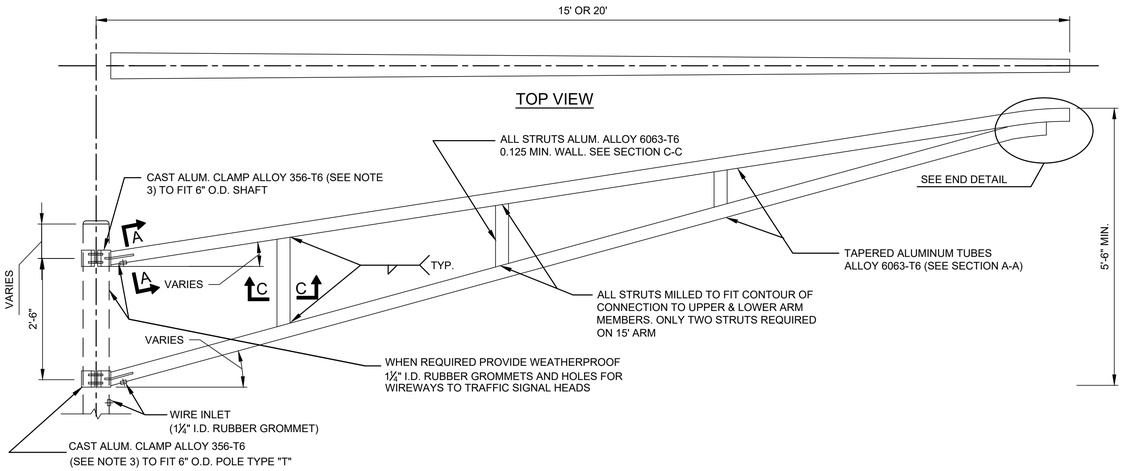
Date 07 / 15 / 2024

Drawing Number TD20.11



TRUSS TYPE MAST ARM FOR TYPE "T" POLES

N.T.S.

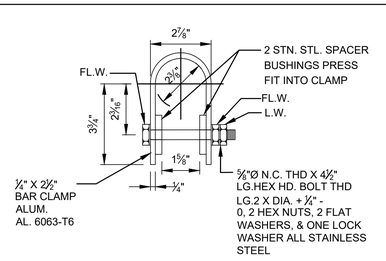
NOTES:

1. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:
   1. DESIGN LIFE: 25 YEARS
   2. BASIC WIND SPEED: 110 MPH
   3. FATIGUE DESIGN SHALL BE WAIVED
2. SIGNAL ARM, CONNECTIONS, ETC. SHALL BE DESIGNED TO SUPPORT ALL LOAD COMBINATIONS SHOWN IN THE CONTRACT PLANS. AS A MINIMUM, THE DESIGN LOAD SHALL BE:

   15' ARM:
   1-4 WAY, 3 SECTION SIGNAL HEAD (FREE SWINGING) LOCATED 14'-6" FROM THE ℄ OF POLE.
   1-1 WAY, 3 SECTION SIGNAL HEAD (FIXED MOUNT) LOCATED 4'-6" FROM THE ℄ OF POLE.
   20' ARM:
   1-4 WAY, 3 SECTION SIGNAL HEAD (FREE SWINGING) LOCATED 19'-6" FROM THE ℄ OF POLE.
   1-1 WAY, 3 SECTION SIGNAL HEAD (FIXED MOUNT) LOCATED 7'-6" FROM THE ℄ OF POLE.

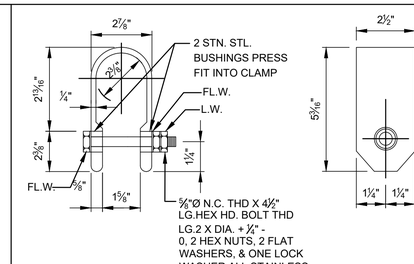
   DESIGN LOAD DOES NOT INCLUDE EFFECTS OF BACKPLATES ON SIGNAL HEADS. IF BACKPLATES ARE NEEDED THEY CONSTITUTE ADDITIONAL LOADING AND SHALL BE INCLUDED IN THE DESIGN OF THE STRUCTURE.

   THE ALUMINUM SIGNAL STRUCTURE SIZES AND DETAILS PROVIDED IN THE DRAWINGS ARE FOR REFERENCE ONLY. THE MANUFACTURER SHALL DESIGN AND ANALYZE THE ALUMINUM SIGNAL STRUCTURE WITH THE PROPOSED ATTACHMENTS AND CONFIGURATIONS AS PER AASHTO STANDARD AND SHALL VERIFY, CONFIRM AND/OR REVISE (IF REQUIRED) STRUCTURAL ELEMENT SIZES AND CONNECTIONS AT NO ADDITIONAL COST TO THE AUTHORITY.
3. DO NOT USE THIS STANDARD DETAIL FOR 12" SIGNAL FACE(S) OF 4 SECTIONS OR MORE SUSPENDED AT THE END OF THE MAST ARM FOR TYPE "T" POLES DUE TO VERTICAL CLEARANCE REQUIREMENTS.
4. MAST ARMS WILL BE INSTALLED ON THE PORT AUTHORITY STANDARD ALUMINUM TRAFFIC SIGNAL POLE CONFORMING TO DETAIL TD20.09.01 WITH TRANSFORMER BASE DETAIL TD20.10.01 OR TD20.10.02.
5. AN EXTRUDED CLAMP MAY BE SUPPLIED AS AN ALTERNATE TO THE CAST BAND INDICATED. GENERAL CONFIGURATION MUST BE SIMILAR AND STIFFENERS MUST BE INSTALLED AS INDICATED. CLAMP MUST FIT A 6" POLE AND BOLT ARRANGEMENT MUST BE IDENTICAL STRENGTH OF ASSEMBLED ARM MUST EQUAL OR EXCEED CAST CLAMP CONSTRUCTION EXTRUSION ALLOY 6061-T6.
6. ALL STAINLESS STEEL ITEMS SHALL CONFORM TO ASTM A193 GRADE B8.
7. CASTINGS SHALL BE FABRICATED TO THE DIMENSIONS SHOWN ±1/32".
8. THE TOP AND BOTTOM CHORDS FOR THE 15' AND 20' MAST ARMS SHALL BE FABRICATED FROM A TAPERED TUBE. MINIMUM TAPERED TUBE DIMENSIONS SHALL BE 5" DIA. X 0.125" THICK AT THE LARGER END AND SHALL TAPER SUFFICIENTLY TO ACCOMMODATE ELEMENTS SHOWN IN DETAILS 1, 2, 3 AND 4 ON THIS SHEET.



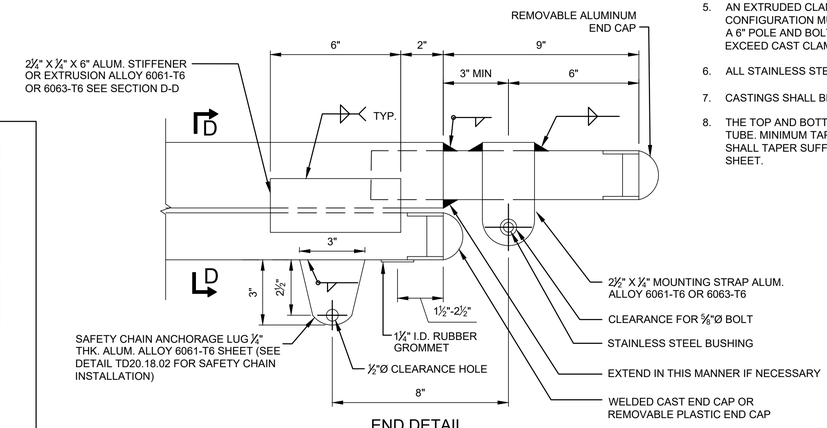
MOUNTING STRAP DETAIL

TD20.12.02



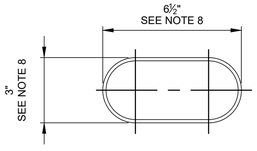
ALTERNATE MOUNTING STRAP

TD20.12.03



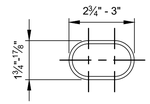
END DETAIL

TD20.12.01



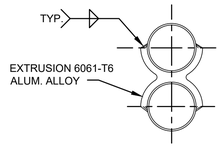
SECTION A-A

(TYPICAL BOTH MEMBERS)

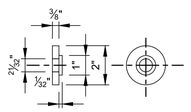


SECTION C-C

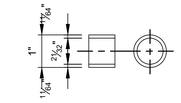
(TYPICAL ALL STRUTS)



SECTION D-D

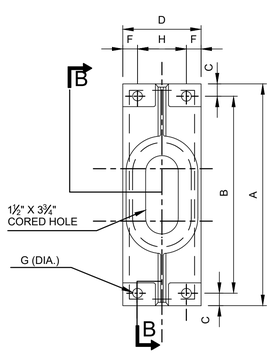


STN. STL. SPACER BUSHING



STN. STL. BUSHING FOR ALTERNATE MOUNTING STRAP

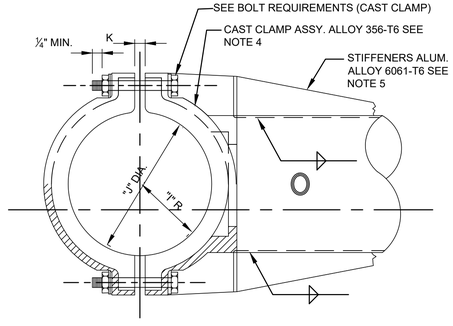
TD20.12.04



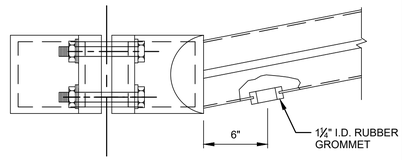
CAST CLAMP

BOLT REQUIREMENTS

8 - ⅝" Ø STN. STL. HEX HD. BOLTS ASTM 193, GRADE B8
16 -⅝" Ø STN. STL. FLATWASHERS
8 -⅝" Ø STN. STL. LOCK WASHERS
8 -⅝" Ø STN. STL. HEX NUTS



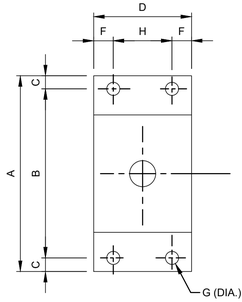
SECTION B-B



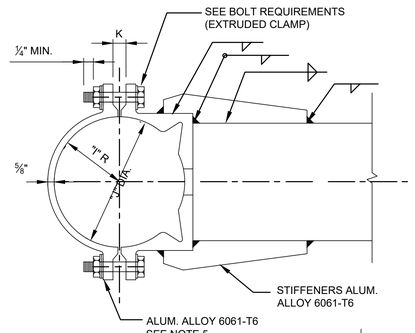
BOTTOM CLAMP DETAIL

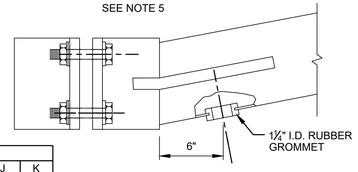
ALUM. ALLOY 356-T6 MIN. DRAFT WHERE REQUIRED

TD20.12.05



ALTERNATE EXTRUDED CLAMP





BOLT REQUIREMENTS

8-⅝" Ø STN. STL. HEX HD. BOLTS ASTM 193, GRADE B8
16-⅝" Ø STN. STL. FLAT WASHERS
8-⅝" Ø STN. STL. LOCK WASHERS
8-⅝" Ø STN. STL. HEX NUTS

DIMENSION CHART - CAST & EXTRUDED CLAMP											
LETTER	A	B	C	D	E	F	G	H	I	J	K
MIN.	9¼"	7⅞"	⅝"	4½"	-	¾"	1⅛"	2⅛"	3"	6⅛"	½"
MAX.	10½"	8⅛"	⅞"	5"	-	1⅛"	1⅛"	3"	3 3/32"	6⅛"	½"

TD20.12.06

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

"T" POLE
TRUSS TYPE
MAST ARM,
CLAMP AND END

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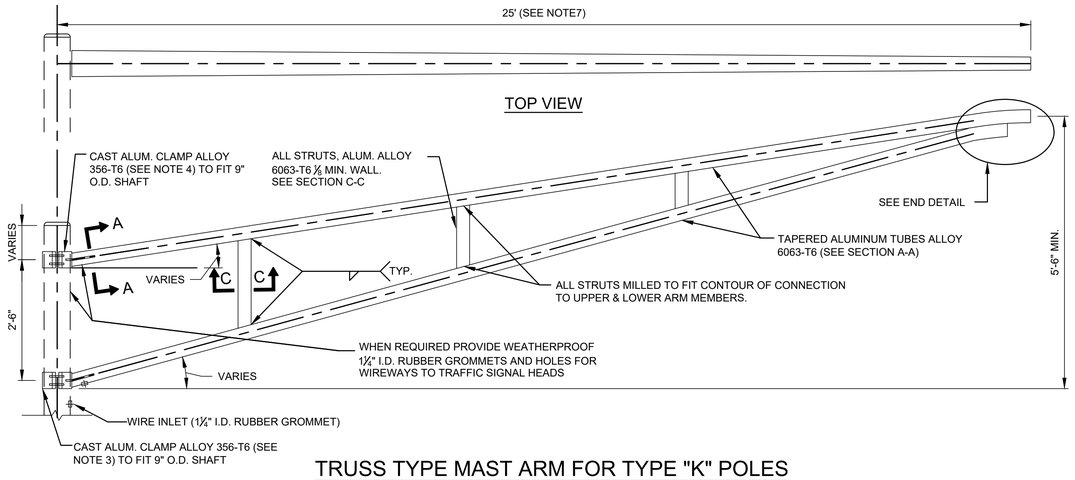
Date 07 / 15 / 2024

Drawing Number TD20.12



TRUSS TYPE MAST ARM FOR TYPE "K" POLES

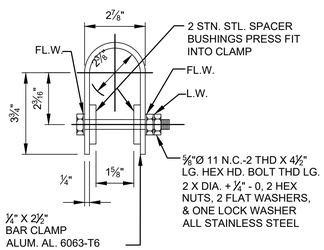
N.T.S.

NOTES:

1. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:
   1. DESIGN LIFE: 25 YEARS
   2. BASIC WIND SPEED: 110 MPH
   3. FATIGUE DESIGN SHALL BE WAIVED.
2. SIGNAL ARM, CONNECTIONS, ETC. SHALL BE DESIGNED TO SUPPORT ALL LOAD COMBINATIONS SHOWN IN THE CONTRACT PLANS. AS A MINIMUM, THE DESIGN LOAD SHALL BE:
   25' ARM:
   1-4 WAY, 3 SECTION SIGNAL HEAD (FREE SWINGING) LOCATED 24'-6" FROM THE ℄ OF POLE.
   1-18" X 48" SIGN (FREE SWINGING) WITH CENTER LOCATED 18'-9" FROM THE ℄ OF POLE.
   1-1 WAY, 3 SECTION SIGNAL HEAD (FIXED MOUNT) LOCATED 12'-6" FROM THE ℄ OF POLE.

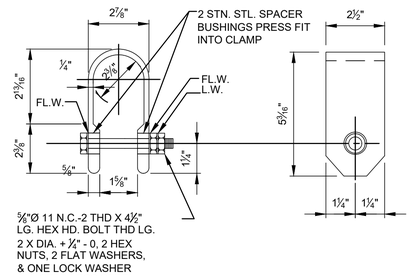
   DESIGN LOAD DOES NOT INCLUDE EFFECTS OF BACKPLATES ON SIGNAL HEADS. IF BACKPLATES ARE NEEDED THEY CONSTITUTE ADDITIONAL LOADING AND SHALL BE INCLUDED IN THE DESIGN OF THE STRUCTURE.

   THE ALUMINUM SIGNAL STRUCTURE SIZES AND DETAILS PROVIDED IN THE DRAWINGS ARE FOR REFERENCE ONLY. THE MANUFACTURER SHALL DESIGN AND ANALYZE THE ALUMINUM SIGNAL STRUCTURE WITH THE PROPOSED ATTACHMENTS AND CONFIGURATIONS AS PER AASHTO STANDARD AND SHALL VERIFY, CONFIRM AND/OR REVISE (IF REQUIRED) STRUCTURAL ELEMENT SIZES AND CONNECTIONS AT NO ADDITIONAL COST TO THE AUTHORITY.
3. MAST ARMS WILL BE INSTALLED ON THE PORT AUTHORITY STANDARD ALUMINUM TRAFFIC SIGNAL POLE TYPE "K" WITH TRANSFORMER BASE CONFORMING TO DETAIL TD20.11.
4. AN EXTRUDED CLAMP MAY BE SUPPLIED AS AN ALTERNATE TO THE CAST BAND INDICATED. GENERAL CONFIGURATION MUST BE SIMILAR AND STIFFENERS MUST BE INSTALLED AS INDICATED. CLAMP MUST FIT A 9" POLE AND BOLT ARRANGEMENT MUST BE IDENTICAL STRENGTH OF ASSEMBLED ARM MUST EQUAL OR EXCEED CAST CLAMP CONSTRUCTION EXTRUSION ALLOY 6061-T6.
5. ALL STAINLESS STEEL ITEMS SHALL CONFORM TO ASTM A193 GRADE B8.
6. CASTINGS SHALL BE FABRICATED TO THE DIMENSIONS SHOWN ±1/32".
7. THE TOP AND BOTTOM CHORD FOR THE 25' ARM SHALL BE FABRICATED FROM A TAPERED TUBE. MINIMUM TAPERED TUBE DIMENSIONS SHALL BE 6" DIA. X 0.188" THICK AT THE LARGER END AND SHALL TAPER SUFFICIENTLY TO ACCOMMODATE ELEMENTS SHOWN IN DETAILS 1, 2, 3 AND 4 ON THIS SHEET.



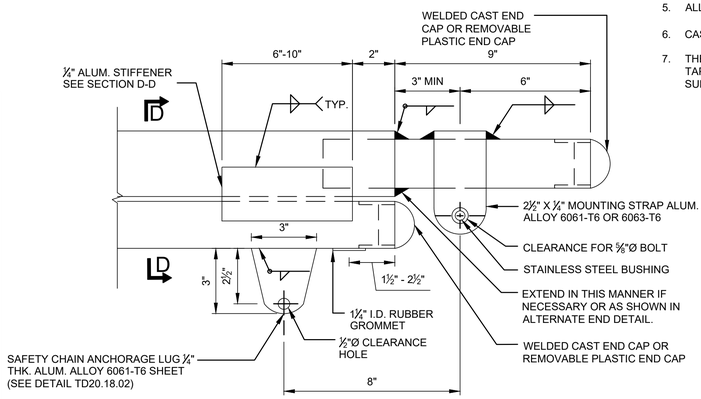
MOUNTING STRAP DETAIL

TD20.13.02

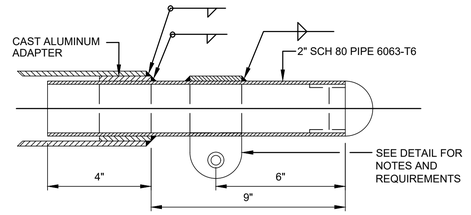


ALTERNATE MOUNTING STRAP

TD20.13.03



END DETAIL



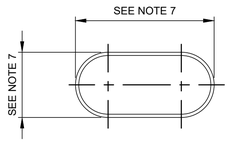
ALTERNATE END DETAIL

TD20.13.01

No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

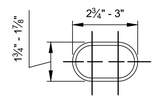
ENGINEERING DEPARTMENT

PANYNJ DETAILS



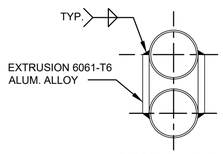
SECTION A-A

(TYPICAL BOTH MEMBERS)

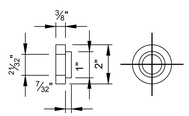


SECTION C-C

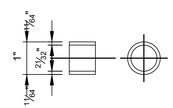
(TYPICAL ALL STRUTS)



SECTION D-D

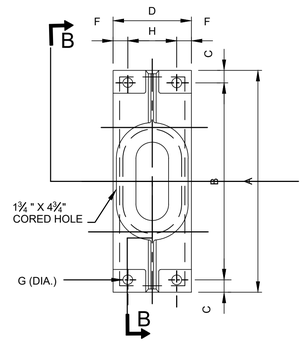


STN. STL. SPACER BUSHING



STN. STL. BUSHING FOR ALTERNATE MOUNTING STRAP

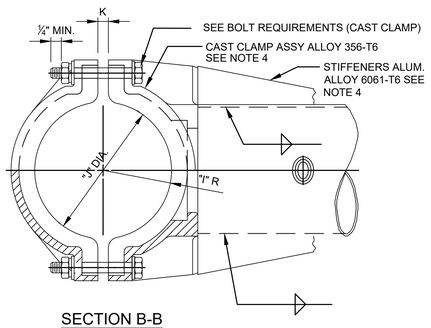
TD20.13.04



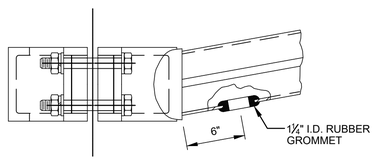
CAST CLAMP

BOLT REQUIREMENTS

8 - ¾" Ø STN. STL. HEX HD. BOLTS
16 - ¾" Ø STN. STL. FLAT WASHERS
8 - ¾" Ø STN. STL. LOCK WASHERS
8 - ¾" Ø STN. STL. HEX NUTS



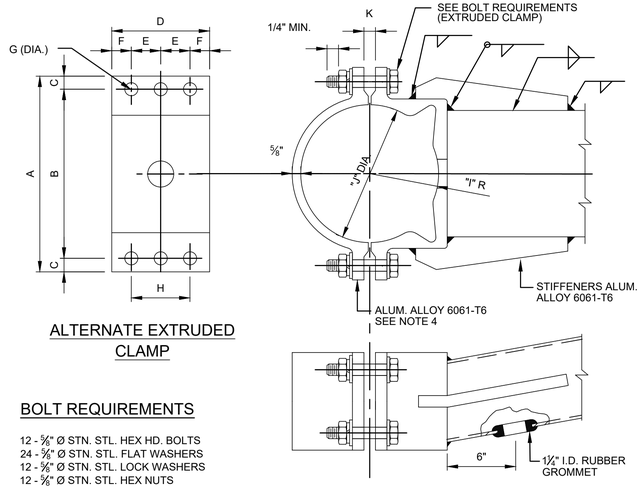
SECTION B-B



BOTTOM CLAMP DETAIL

ALUM. ALLOY 356-T6 MIN. DRAFT WHERE REQUIRED

TD20.13.05



ALTERNATE EXTRUDED CLAMP

BOLT REQUIREMENTS

12 - ⅝" Ø STN. STL. HEX HD. BOLTS
24 - ⅝" Ø STN. STL. FLAT WASHERS
12 - ⅝" Ø STN. STL. LOCK WASHERS
12 - ⅝" Ø STN. STL. HEX NUTS

DIMENSION CHART - CAST & EXTRUDED CLAMP

LETTER	A	B	C	D	E	F	G	H	I	J	K
MIN.	12⅛"	10⅞"	15/16"	5"	1½"	15/16"	1⅛"	3"	4½"	9"	½"
MAX.	14⅜"	12⅜"	1"	7"	1 15/16"	1½"	25/32"	3⅞"	4 17/32"	9 9/16"	2¼"

TD20.13.06

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PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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TRAFFIC

Title

TRAFFIC SIGNALS

"K" POLE
TRUSS TYPE
MAST ARM,
CLAMP AND END

DISCLAIMER:

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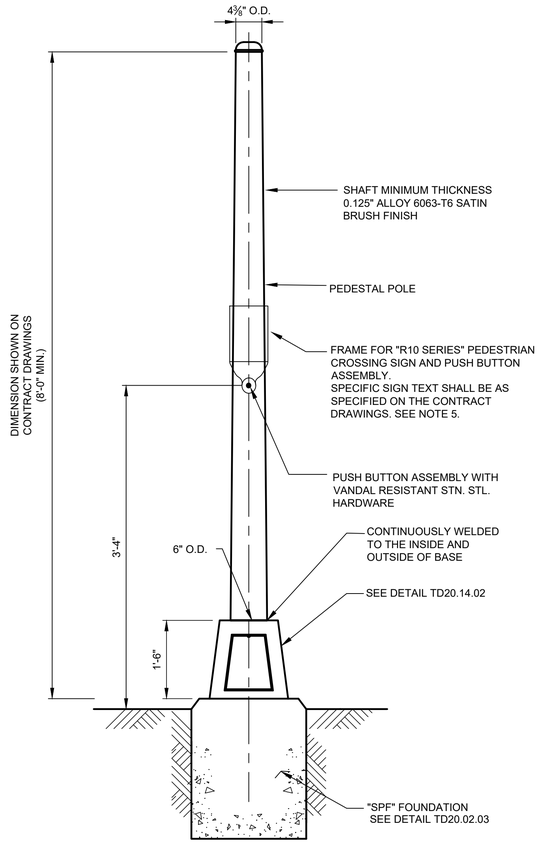
SAMPLE DRAWING
TO BE UPDATED AS PER DISCLAIMER ABOVE.

Date 07 / 15 / 2024

Drawing Number TD20.13



SIGNAL PEDESTAL

N.T.S.

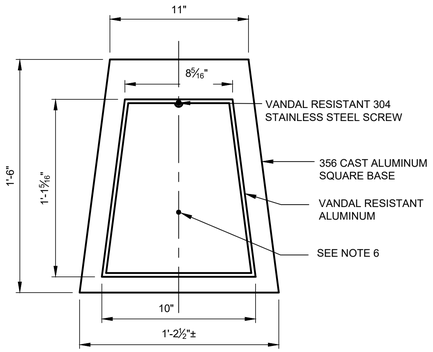
NOTES:

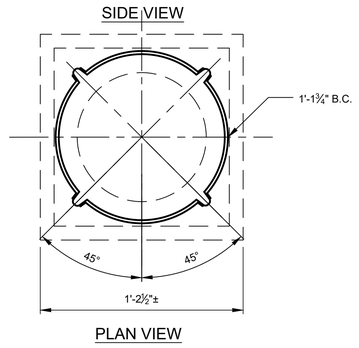
1. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION, WITH 2015 INTERIM REVISIONS OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:
   1. DESIGN LIFE: 25 YEARS
   2. BASIC WIND SPEED: 110 MPH
   3. FATIGUE DESIGN SHALL BE WAIVED
2. POLE, BASE, CONNECTIONS, ETC. SHALL BE DESIGNED TO SUPPORT ALL LOAD COMBINATIONS SHOWN IN THE CONTRACT PLANS. AS A MINIMUM, THE DESIGN LOAD FOR A SIGNAL PEDESTAL ASSEMBLY SHALL BE:

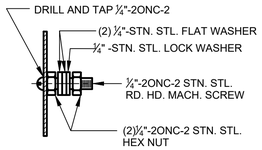
   1-PEDESTRIAN SIGNAL HEAD CLAMP MOUNTED AT 8' (MEASURED FROM FINISHED GRADE)

   THE ALUMINUM SIGNAL STRUCTURE SIZES AND DETAILS PROVIDED IN THE DRAWINGS ARE FOR REFERENCE ONLY. THE MANUFACTURER SHALL DESIGN AND ANALYZE THE ALUMINUM SIGNAL STRUCTURE WITH THE PROPOSED ATTACHMENTS AND CONFIGURATIONS AS PER AASHTO STANDARD AND SHALL VERIFY, CONFIRM AND/OR REVISE (IF REQUIRED) STRUCTURAL ELEMENT SIZES AND CONNECTIONS AT NO ADDITIONAL COST TO THE AUTHORITY.
3. ALL TOLERANCES OF CASTINGS SHALL BE ± 1/32".
4. FOR ALTERNATIVE VEHICULAR AND PEDESTRIAN SIGNAL MOUNTING DETAILS, SEE DETAIL TD20.16.
5. SIGN SHALL BE ALUMINUM MOUNTED IN A VANDAL RESISTANT FRAME MOUNTED ON THE PEDESTAL POLE.
6. INSTALL GROUND STUD WALL OPPOSITE ACCESS DOOR.

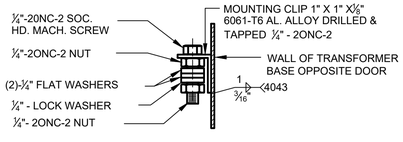
TD20.14.01







DETAIL A
(GROUND STUD DETAIL OPPOSITE DOOR OPENING)

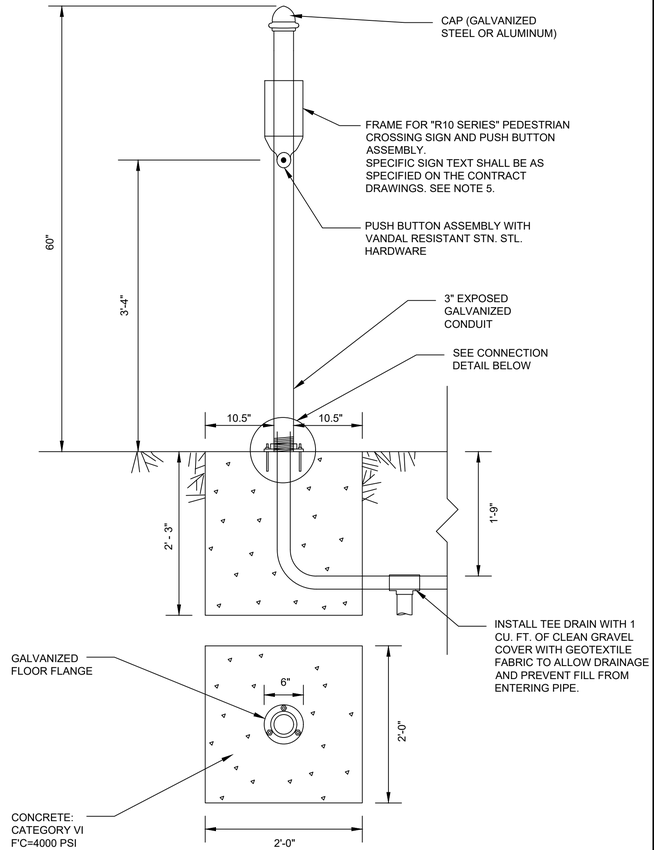


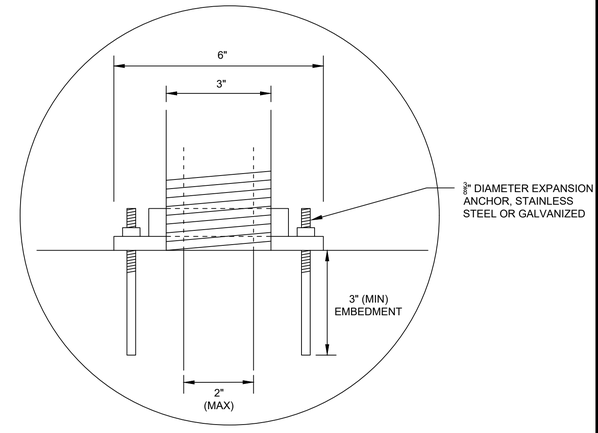
ALTERNATE DETAIL B
(GROUND STUD DETAIL OPPOSITE DOOR OPENING)

RECTANGULAR TRANSFORMER BASE

N.T.S.

TD20.14.02





CONNECTION DETAIL

NOTES:

1. TOP OF FOUNDATION SHALL BE FLUSH WITH EXISTING GROUND SURFACE (CONCRETE PAVEMENT OR SIMILAR).
2. FOUNDATION SHALL BE POURED MONOLITHICALLY AND THE TOP FINISHED LEVEL.

STUB PEDESTRIAN PUSHBUTTON POLE

N.T.S.

TD20.14.03

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

TRAFFIC SIGNAL PEDESTAL ASSEMBLY

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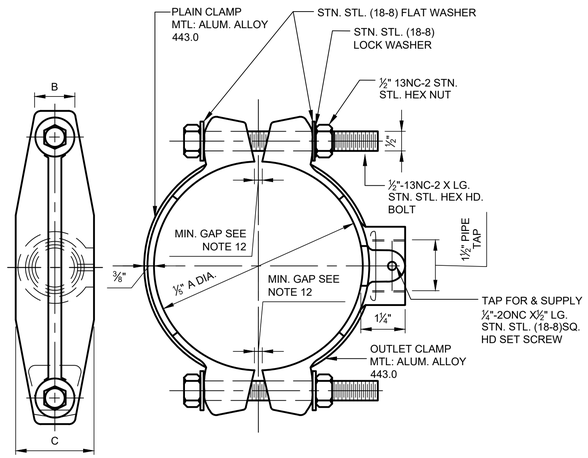
Date 07 / 15 / 2024

Drawing Number **TD20.14**



CLAMP TYPE POLE CLAMP ASSEMBLY

N.T.S.

NOTE:

TIGHTEN HARDWARE AS PER TORQUE RATING AS RECOMMENDED BY THE MANUFACTURER.

CLAMP

LIST OF MATERIALS

DESCRIPTION	MATERIAL	NO.REQ'D
PLAIN CLAMP	ALUM. ALLOY 443.0	2
OUTLET CLAMP	ALUM. ALLOY 443.0	2
BOLT, HEX HD. ½" -13NC-2 X LG.	STN. STL.	4
LOCK WASHER ½"	STN. STL.	4
FLAT WASHER ½"	STN. STL.	8
HEX NUT ½" - 13NC-2	STN. STL.	4
SET SCREW, SO. HD. ¼ -20 X ½" LG.	STN. STL.	2
1½" CHASE NIPPLE	BRZ. 85-5-5-5	2
90° SERRATED ELBOW	ALUM. ALLOY 443.0	2
STD. 1½" NIPPLE X LG.	ALUM. 6061-T6	2

CLAMP DIMENSIONS

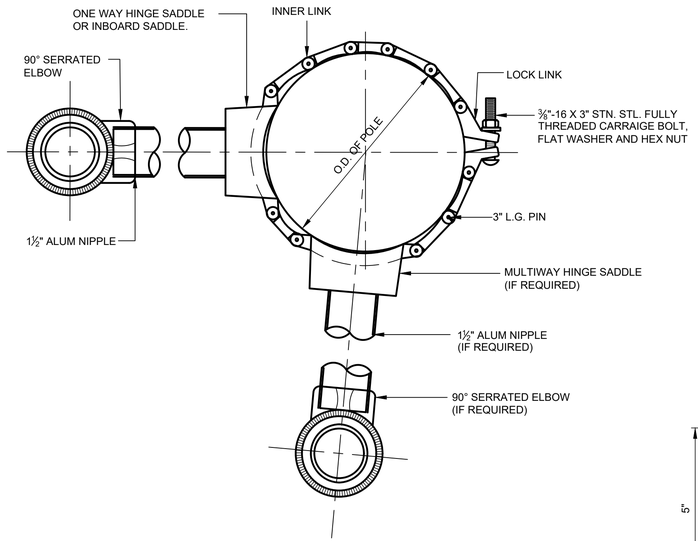
A	B	C	BOLT LENGTH
6"-8"	1¼"	2½"	6"
8"-10"	1⅛"	2½"	7½"
10"-12"	1½"	2⅞"	9"

TD20.15.01

NOTE:

(FOR HINGE STRAP TYPE ONLY)

ALL HINGE STRAPS INNER LINK AND LOCK LINK PARTS SHALL BE TUMBLED FOR 18 HOURS MINIMUM USING ¾" CERAMIC MEDIA TO PROVIDE A UNIFORM AND SMOOTH SURFACE.



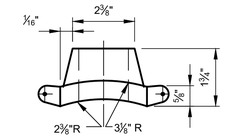
HINGE STRAP TYPE POLE CLAMP ASSEMBLY

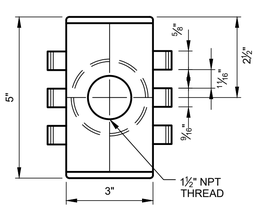
N.T.S.

HINGE STRAP LIST OF MATERIALS

DESCRIPTION	MATERIAL	NO.REQ'D
HINGE SADDLE	B26-82 CAST ALUM.	2
INNER LINK	B26-82 CAST ALUM.	23*(32)
LOCK LINK	B26-82 CAST ALUM.	4
STD. 1 1/2" NIPPLE	ALUM. ALLOY	2
90 SERRATED ELBOW	ALUM. ALLOY 443.0	2
3" ALUMINUM PIN	ALUM. ALLOY 443.0	30*(38)
BOLT 3/8" - 16 X 3"	STN. STL.	4
FLAT WASHER	STN. STL.	4
LOCK WASHER	STN. STL.	4
NUT, HEX 3/16" - 16	STN. STL.	4
MULTI-WAY HINGE SADDLE	CAST ALUM.	AS REQ'D
INBOARD SADDLE	CAST ALUM.	AS REQ'D
1 1/2" CHASE NIPPLE	BRZ. 85-5-5-5	2

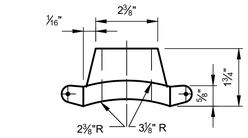
*( ) NUMBER REQUIRED WHEN INSTALLED ON "K" POLE
(NUMBER REQUIRED MAY VARY ON STEEL POLES)

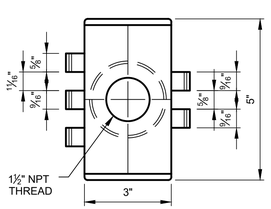




ONE-WAY HINGE SADDLE

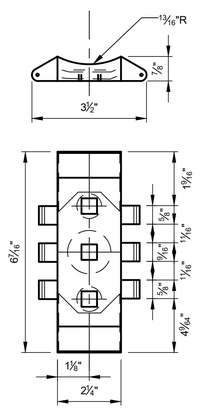
(MTL: ALUM. CASTING)





MULTI-WAY HINGE SADDLE

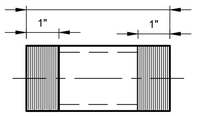
(MTL: ALUM. CASTING)



INBOARD SADDLE

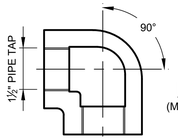
(MTL: ALUM. CASTING)

6", 12" OR 1'-4" AS REQ'D
TRAFFIC SIGNAL HEAD INSTALLATION



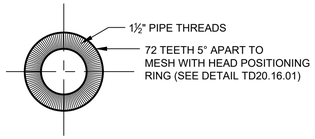
STD. 1-1/2" NIPPLE

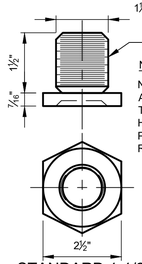
(MTL:ALUM. ALLOY 6061-T6
ASTM B-241)



ELBOW

(MTL: ALUM. ALLOY 443.0)





STANDARD 1-1/2" CHASE NIPPLE

(MTL: BRZ. 85-5-5-5)
N.T.S.

NOTES:

1. CLAMP TYPE POLE ASSEMBLY (CAST ALUMINUM) SHOWN MUST MEET THE FOLLOWING TEST: 6" DIA. CLAMP TEST.

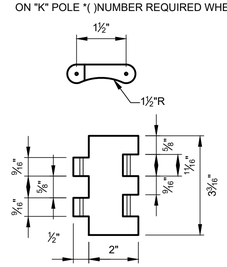
   COMPLETE CLAMP SHALL BE SET ON 6" DIA. POLE.
   COMPLETE CLAMP WITH 6.5" DIA. SET SHALL BE SET ON 8" DIA. POLE.
   COMPLETE CLAMP AFTER BEING SET FROM 8" DIA. POLE SHALL BE RESET ON 6" DIA. POLE.
   CLAMPS SHALL NOT SHOW ANY FRACTURES AFTER THE SETTING AND RESETTING PROCEDURE.
   THIS TEST TO BE CONDUCTED IN THE PRESENCE OF A REPRESENTATIVE OF THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY.
   MANUFACTURER SHALL ALSO SUBMIT DRAWING OF CLAMP TO BE FURNISHED FOR APPROVAL BY THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY-DEPT. OF ELECTRICAL ENGINEERING.

2. CAST ALUM. CLAMPS OF LARGER DIA. WILL BE TESTED IN A SIMILAR MANNER.
3. PROVIDE SLOTS OR SERRATIONS IN FACE OF ELBOW OR SLOTS & SERRATED POSITIONING RING. SLOTS TO BE 5/32" DP X 3/16" W. SERRATIONS TO MATCH HOUSING AND ALLOW 5° ADJUSTMENT.
4. STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS. DESIGN IN ACCORDANCE WITH THE FOLLOWING:
   1. DESIGN LIFE: 25 YEARS
   2. BASIC WIND SPEED: 110 MPH
   3. FATIGUE DESIGN SHALL BE WAIVED
5. INSTALL 1¼" I.D. RUBBER GROMMET IN TRAFFIC SIGNAL STANDARD.
6. ALL STN. STL. BOLTS PER ASTM A-193 GRADE B8 OR ASTM F593 ALLOY 304.
7. ALL ALUM. SAND CASTINGS SHALL BE ASTM B26 ALLOY.
8. ALL ALUM. NIPPLES SHALL BE 6061-T6, ASTM B-241 ALLOY; MIL. SPEC. QQA 200/80F.
9. HINGE STRAP IS ADAPTABLE TO ANY POLE DIA. BY ADDING OR REMOVING INNER LINKS.
10. HINGE STRAP CAN BE INSTALLED ON ROUND, SQUARE, OCTAGONAL OR ANY SHAPE POLE DESIRED.
11. ALL TOLERANCES OF CASTINGS SHALL BE ±1/32".
12. WHEN PEDESTRIAN CLAMP IS INSTALLED ON A 6" DIA. POLE, CLAMP SHALL BE DESIGNED TO PROVIDE A MINIMUM GAP OF ¼".

HINGE STRAP LIST OF MATERIALS

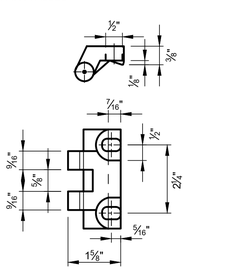
DESCRIPTION	MATERIAL	NO.REQ'D
HINGE SADDLE	B26-82 CAST ALUM.	2
INNER LINK	B26-82 CAST ALUM.	23*(32)
LOCK LINK	B26-82 CAST ALUM.	4
STD. 1½" NIPPLE	ALUM. ALLOY	2
90 SERRATED ELBOW	ALUM. ALLOY 443.0	2
3" ALUMINUM PIN	ALUM. ALLOY 443.0	30*(38)
BOLT ⅜" - 16 X 3"	STN. STL.	4
FLAT WASHER	STN. STL.	4
LOCK WASHER	STN. STL.	4
NUT, HEX 3/16" - 16	STN. STL.	4
MULTI-WAY HINGE SADDLE	CAST ALUM.	AS REQ'D
INBOARD SADDLE	CAST ALUM.	AS REQ'D
1½" CHASE NIPPLE	BRZ. 85-5-5-5	2

ON "K" POLE *( )NUMBER REQUIRED WHEN INSTALLED



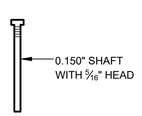
INNER LINK

(MTL: ALUM. CASTING)



LOCK LINK

(MTL: ALUM. CASTING)



3" ALUM. ALLOY PIN

(PROVIDED WITH SADDLES AND LINKS)

⅜" - 16 X 3" STN. STL. FULLY THREADED CARRIAGE BOLT WITH HEX NUT AND FLAT WASHER.

TD20.15.02

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

POLE CLAMP
MOUNTING
ASSEMBLIES

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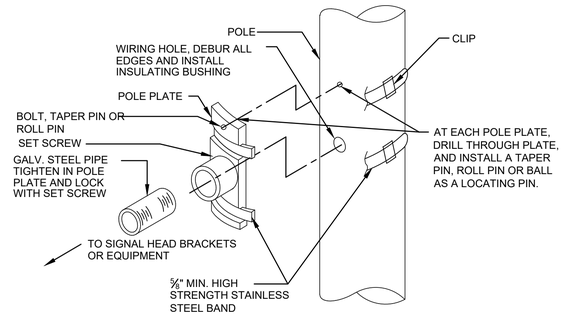
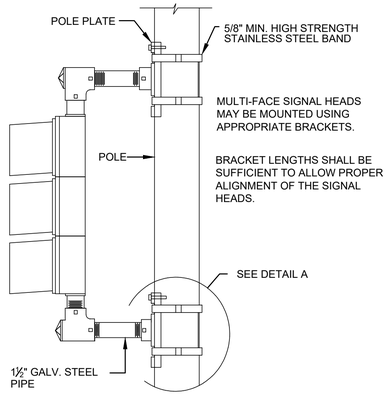
Date 07 / 15 / 2024

Drawing Number TD20.15



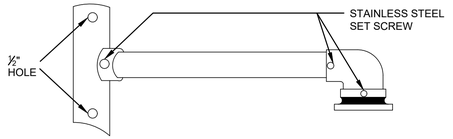
DETAIL A



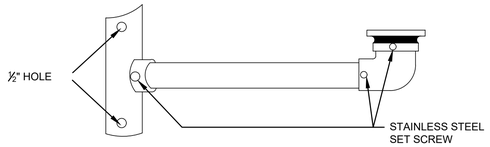
POLE CLAMP ASSEMBLY BAND TYPE

N.T.S.

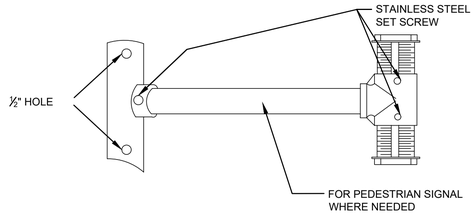
TD20.16.01



IF MOUNTED ON WOOD POLE A CONDUIT BODY SHALL BE INSTALLED IN BRACKET ARM TO CONNECT SIGNAL HEAD CABLE CONDUIT.



STEEL POLE SHALL BE DRILLED AND TAPPED AND MOUNTING ACCOMPLISHED UTILIZING ½" STAINLESS STEEL BOLTS.



POLE BRACKET MOUNTING SIGNAL HEADS AND PEDESTRIAN SIGNAL BRACKETS

N.T.S.

TD20.16.02

NOTES:

1. IF PEDESTRIAN SIGNALS ARE BEING INSTALLED, THE MOUNTING ATTACHMENTS SHALL BE A TYPE SPECIFICALLY MANUFACTURED FOR THAT PURPOSE.
2. MOUNTING DETAILS SHOWN ARE TYPICAL FOR ONE WAY AND TWO WAY SIGNAL DISPLAY. MULTI-WAY ASSEMBLIES, WHEN REQUIRED, SHALL BE OF SIMILAR APPROPRIATE DESIGN.
3. SEE DETAIL TD20.14 FOR TRAFFIC SIGNAL PEDESTAL STANDARD DETAILS.
4. POLE AND HARDWARE COLOR SHALL MATCH.

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

SIGNAL HEAD POLE TOP AND BRACKET MOUNTING

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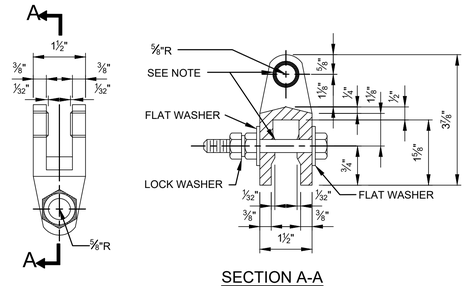
Date 07 / 15 / 2024

Drawing Number TD20.16

NOTE:

DRILL CASTING FOR C304 STN. STL 1/16" THK. WALL BUSHINGS. FURNISH AND PRESS FIT INTO CASTING.

FURNISH WITH EACH UNIVERSAL JOINT:
(1) 5/8" 11NC X 3" L.G. STN. STL. HEX BOLT
(2) 5/8" 11NC STN. STL. HEX NUTS
(2) 5/8" STN. STL. FLAT WASHERS
(1) 5/8" STN. STL. LOCK WASHER



SECTION A-A

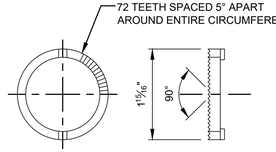
UNIVERSAL JOINT DETAIL

(MATL: BRONZE, 85-5-5-5)
N.T.S.

TD20.17.01

NOTE:

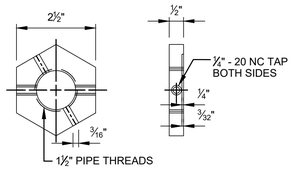
SERRATED POSITIONING RING TO BE PROVIDED WHEN TRAFFIC SIGNAL IS DIRECTLY ATTACHED TO WIRE OUTLET FITTING.



HEAD POSITIONING RING DETAIL

(MATERIAL: DELRIN) N.T.S.

TD20.17.02



HEX LOCK NUT

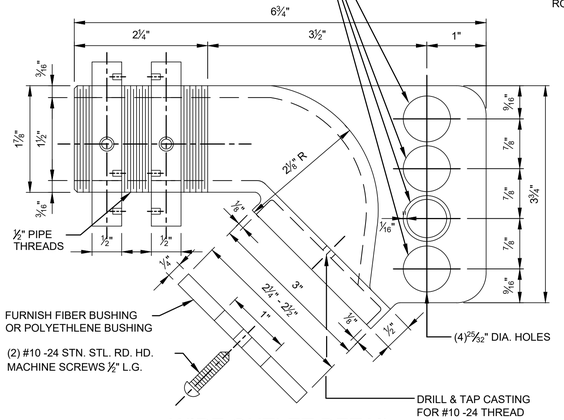
(MATL: BRONZE, 85-5-5-5)
N.T.S.

TD20.17.03

DRILL HOLES (4) INSERT (1) STN. STL. BUSHING -1/16" THK. WALL I.D. TO TAKE 5/8"Ø STN. STL. BOLT SLIDING FIT. BUSHING SHALL BE INSERTED BY THE FABRICATOR IN HOLE OF CASTING AS SHOWN AND TO BE OF A FIT WHERE AS BUSHING CAN BE READILY CHANGED FROM ONE HOLE TO ANOTHER. BUSHING 0.640" I.D. BY 0.765" O.D. BY 9/16" L.G.

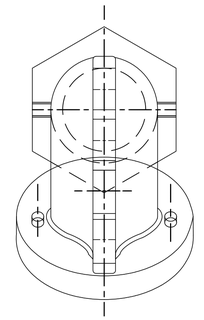
NOTE:

ON INSTALLATION THE CONTRACTOR SHALL PLACE THE BUSHING IN THE APPROPRIATE MOUNTING HOLE AS REQUIRED TO OBTAIN VERTICAL POSITIONING AND MAXIMUM VISIBILITY OF THE SIGNAL ASSEMBLY TO THE APPROACH ROADWAY.

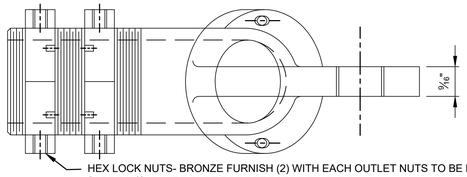


WIRE OUTLET DETAIL

(MATL: BRONZE, 85-5-5-5)
N.T.S.



FRONT VIEW



TOP VIEW

TD20.17.04

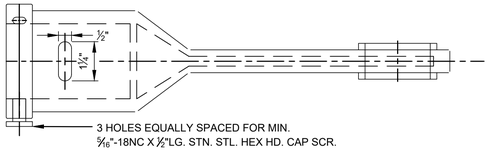
NOTES:

(APPLIES TO TD20.17.01, TD20.17.02, TD20.17.03, TD20.17.04, TD20.17.05, TD20.17.06)

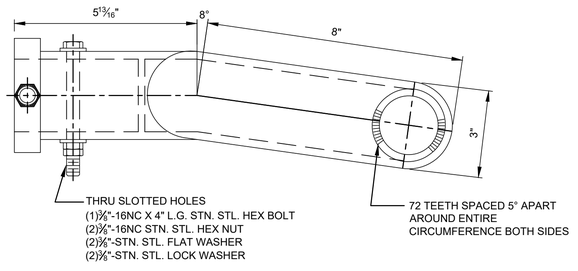
1. ALL TOLERANCES OF CASTINGS SHALL BE ± 1/32"
2. ALL STAINLESS STEEL BOLTS ON THIS SHEET PER ASTM A193, GRADE B8.

NOTE:

AN 8° OFFSET REQUIRED WHEN BACKING PLATE IS USED. PLUMBIZER TO FIT A 2"DIA. MAST ARM END.



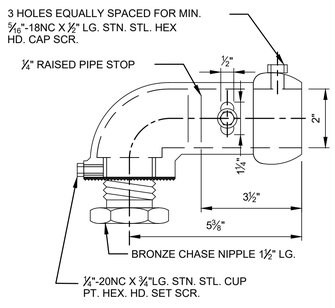
TOP VIEW

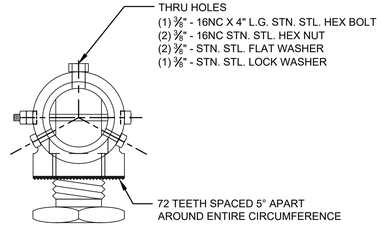


ELEVATOR PLUMBIZER DETAIL

(MATL - ALUMINUM ALLOY 356)
N.T.S.

TD20.17.05



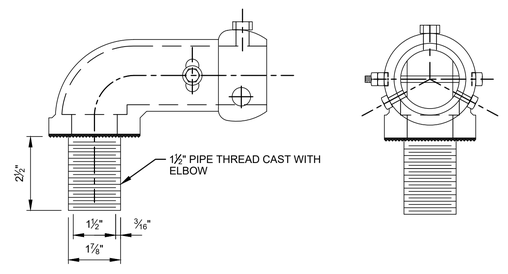


MAST ARM SLIP FITTER DETAIL

(MATL: BRONZE, 85-5-5-5)

NOTES:

1. THE SLIP FITTER SHALL BE UTILIZED IN MOUNTING OPTICALLY PROGRAMMED TRAFFIC SIGNALS
2. WHEN USED FOR MOUNTING SIGNALS BACK TO BACK DRILL THRU NIPPLE AND USE A 1" L.G. CAP SCREW.
3. SLIP FITTER TO FIT A 2"DIA. MAST ARM END



ALTERNATE MAST ARM SLIP FITTER

(SAME AS LEFT EXCEPT WHERE NOTED)

MAST ARM SLIP FITTERS

N.T.S.

TD20.17.06

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

UNIVERSAL JOINT, WIRE OUTLET, ELEVATOR, PLUMBIZER, AND MAST ARM SLIP FITTER

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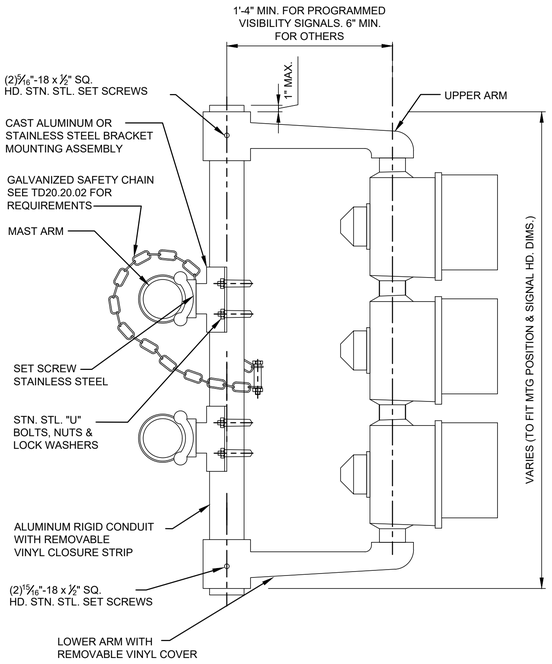
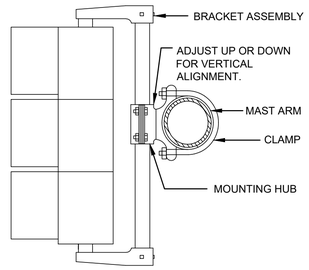
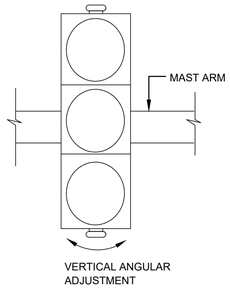
Drawing Number **TD20.17**



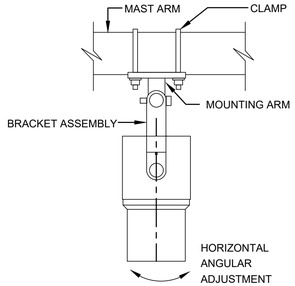
MID-MAST ARM MOUNTING DETAIL
N.T.S.



SIDE VIEW



FRONT VIEW

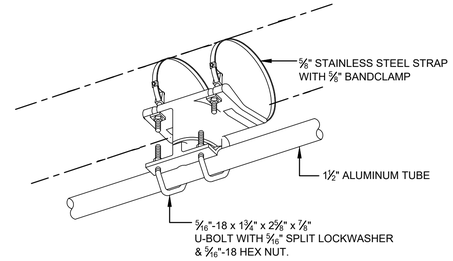


TOP VIEW

TD20.18.01

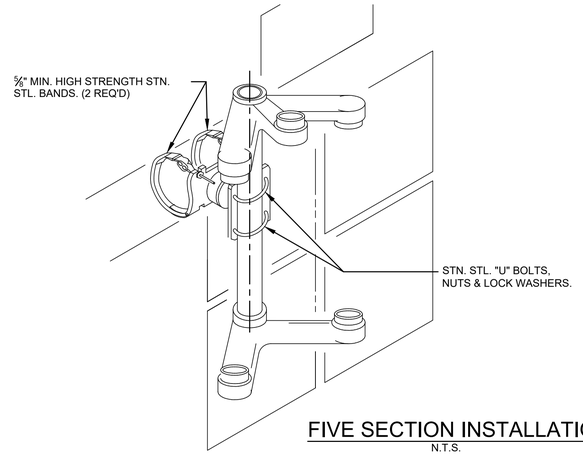
NOTES:

1. SIGNAL HEAD CABLES SHALL BE CONTINUOUS FROM THE CONTROLLER TO THE BASE OF THE TRAFFIC SIGNAL SUPPORT WITHOUT ANY SPLICES. THE CABLE SHALL ALSO BE CONTINUOUS FROM THE FIRST SIGNAL HEAD TO ANY ADDITIONAL HEADS WITH TERMINATION ON THE TERMINALS WITHIN THE SIGNAL HEAD HOUSING. SPARE WIRES SHOULD BE TERMINATED IN THE TRAFFIC SIGNAL HEAD TERMINAL BLOCKS.
2. ALL BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL.
3. ALTERNATIVE SIMILAR MAST ARM MOUNTING BRACKET DESIGNS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
4. ALL HARDWARE SHALL BE STAINLESS STEEL EXCEPT AS NOTED.
5. ALL WIRING SHALL BE INTERNAL.
6. SEE DETAIL TD20.19 FOR VEHICULAR SIGNAL HEAD DETAILS.
7. USE APPROPRIATE BRACKET ASSEMBLY FOR 5-SECTION OR MULTI-FACE SIGNALS.
8. POLE AND HARDWARE COLOR SHALL MATCH.



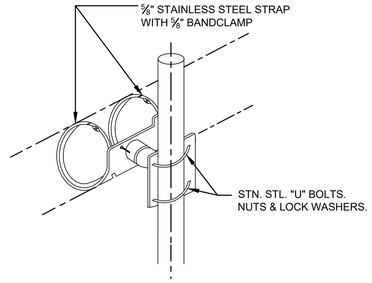
HORIZONTAL MAST-ARM MOUNTING
N.T.S.

TD20.18.03



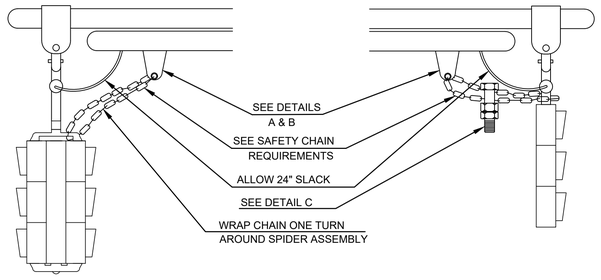
FIVE SECTION INSTALLATION
N.T.S.

TD20.18.06



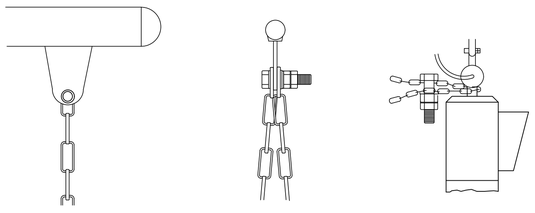
VERTICAL MAST-ARM MOUNTING
N.T.S.

TD20.18.04



TYPICAL INSTALLATION FOR TWO OR MORE TRAFFIC SIGNALS

TYPICAL INSTALLATION FOR ONE TRAFFIC SIGNAL



DETAIL A DETAIL B DETAIL C

TYPICAL SAFETY CHAIN INSTALLATIONS
N.T.S.

TD20.18.02

NOTE:

SAFETY CHAIN REQUIRED TO BE FURNISHED & INSTALLED ON ALL INSTALLATIONS.

SAFETY CHAIN REQUIREMENTS FOR ONE TRAFFIC SIGNAL

FURNISH:

1. 42" OF ¼" HOT DIPPED GALVANIZED COILPROOF STRAIGHT LINK CHAIN
2. 2 - 5/16" DIA. X 2½" LG. STN. STL. HEX HEAD BOLT FULLY THREADED
3. 4 -5/16"Ø STAINLESS STEEL HEX NUTS
4. 4 -5/16"Ø STAINLESS STEEL FLAT WASHERS
5. 2 -5/16"Ø STAINLESS STEEL LOCK WASHERS

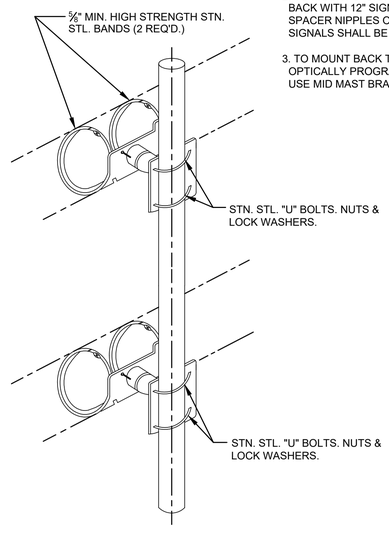
SAFETY CHAIN REQUIREMENTS FOR TWO OR MORE TRAFFIC SIGNALS

FURNISH:

1. 42" OF ¼" HOT DIPPED GALVANIZED COILPROOF STRAIGHT LINK CHAIN
2. 1 - 5/16"Ø X 2½" LG. STN. STL. HEX HEAD BOLT FULLY THREADED
3. 2 -5/16"Ø STAINLESS STEEL HEX NUTS
4. 2 -5/16"Ø STAINLESS STEEL FLAT WASHERS
5. 1 -5/16"Ø STAINLESS STEEL LOCK WASHERS

NOTES:

1. TO MOUNT SIGNALS ON A PEDESTAL STANDARD INVERT 3 IN LINE BRACKETS WITH PIPE AND ELBOWS, USE A 4½" SLIPFITTER IN PLACE OF THE MAST ARM PLUMBIZER.
2. TO MOUNT 8" SIGNALS BACK TO BACK WITH 12" SIGNALS USE SPACER NIPPLES ON BOTTOM. RED SIGNALS SHALL BE IN LINE.
3. TO MOUNT BACK TO BACK OPTICALLY PROGRAMMED SIGNALS USE MID MAST BRACKET.



MID MAST BRACKET DETAIL
N.T.S.

TD20.18.05

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ENGINEERING DEPARTMENT

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DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

SIGNAL HEAD MID-MAST ARM AND SAFETY CHAIN MOUNTING

DISCLAIMER:

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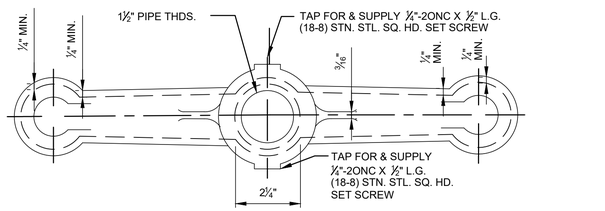
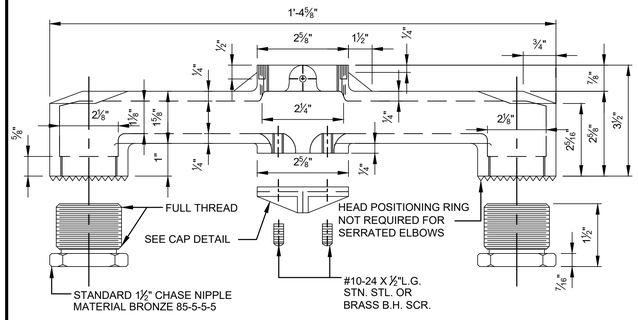
Date 07 / 15 / 2024

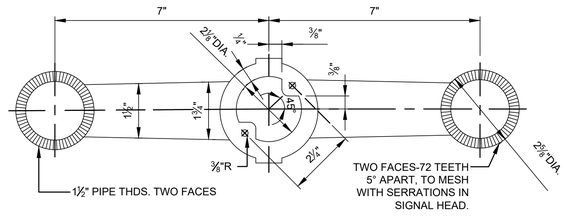
Drawing Number **TD20.18**

NOTE:

EACH HOLLOW SPIDER FOR 2-WAY ASSEMBLY SHALL CONSIST OF:
(1)-2-WAY SPIDER
(2)-STANDARD 1½" CHASE NIPPLE, BRONZE 85-5-5-5
(1)-CAP
(2)-10-24 X⅜" LG. STN. STL. OR BRASS BH. SCREWS
(2)-HEAD POSITIONING RINGS, IF NON SERRATED HUBS
(1)-T-BAR ASSEMBLY (SEE T-BAR NOTE 2)

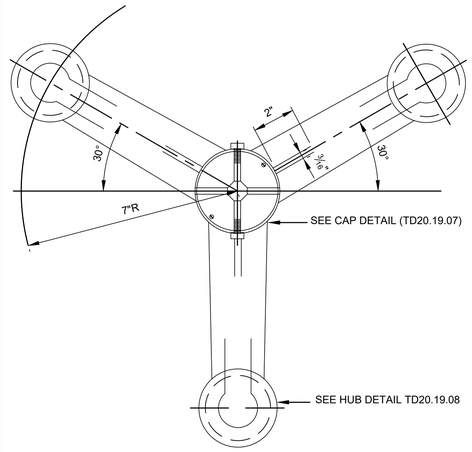






HOLLOW SPIDER FOR 2-WAY ASSEMBLY
N.T.S.

TD20.19.01

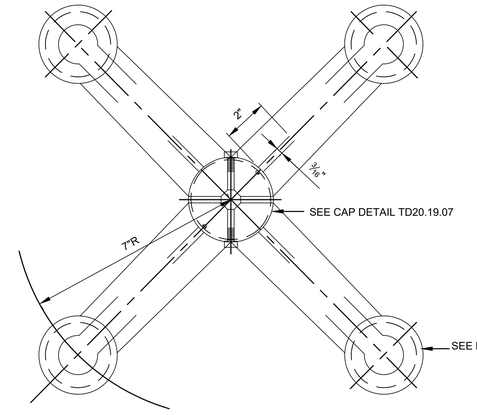


NOTES:

1. FOR DETAILED DIMENSIONS OF 3-WAY SPIDER SEE DETAILED VIEWS OF 2-WAY ASSEMBLY (TD20.19.01).
2. EACH HOLLOW SPIDER FOR 3-WAY ASSEMBLY SHALL CONSIST OF:
   (2)-3-WAY SPIDERS
   (6)-STANDARD 1½" CHASE NIPPLES, BRONZE 85-5-5-5
   (3)-CAPS
   (6)-10-24 X ½" LG. STN. STL. OR BRASS BH. SCREWS
   (6)-HEAD POSITIONING RINGS. IF NON-SERRATED HUBS.

HOLLOW SPIDER FOR 3-WAY ASSEMBLY
N.T.S.

TD20.19.02



NOTES:

1. FOR DETAILED DIMENSIONS OF 4-WAY SPIDER SEE DETAILED VIEWS OF 2-WAY ASSEMBLY (TD20.19.01).
2. EACH HOLLOW SPIDER FOR 4-WAY ASSEMBLY SHALL CONSIST OF:
   (2)-4-WAY SPIDERS
   (8)-STANDARD 1½" CHASE NIPPLES, BRONZE 85-5-5-5
   (3)-CAPS
   (6)-10-24 X ½" LG. STN. STL. OR BRASS BH. SCREWS
   (8)-HEAD POSITIONING RINGS. IF NON-SERRATED HUBS.

HOLLOW SPIDER FOR 4-WAY ASSEMBLY
N.T.S.

TD20.19.03

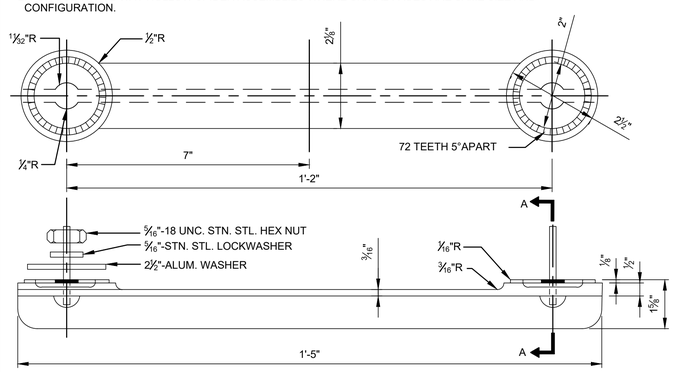
NOTES:

(APPLIES TO TD20.19.01 THROUGH TD20.19.08.)

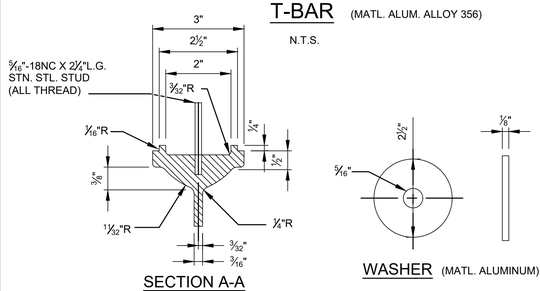
1. UNITS SHALL BE MANUFACTURED IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS.
2. ALL TOLERANCES OF CASTINGS SHALL BE ±1/32".
3. ALL STAINLESS STEEL ITEMS ON THIS SHEET PER ASTM A193 GRADE B8.
4. PAINT: THE SURFACE OF THE ALUMINUM CASTING MUST BE CLEANED. DEGREASED AND SHOP PAINTED WITH ONE COAT OF ZINC CHROMATE-IRON-OXIDE PAINT CONFORMING TO THE CURRENT REQUIREMENTS OF SPECIFICATION M-142 OF AASHTO. WHEN THIS PAINT HAS THOROUGHLY DRIED, IT SHALL THEN BE SHOP PAINTED WITH A COAT OF YELLOW ENAMEL PAINT READY MIXED CONFORMING TO THE REQUIREMENTS OF FEDERAL SPECIFICATIONS 595a FOR ENAMEL; GLOSS, SYNTHETIC (FOR EXTERIOR AND INTERIOR SURFACES) CLASS A, AIR DRYING THE TINT OF WHICH SHALL MATCH GLOSS-YELLOW STANDARD COLOR NO.13538, AS SHOWN IN THE FEDERAL SPECIFICATION 595a COLOR; (FOR READY MIXED PAINT).

NOTES:

1. EACH T-BAR ASSEMBLY SHALL CONSIST OF: (1)-T-BAR, (2)-WASHERS, (2)-⅜" DIA. STN. STL. LOCKWASHERS, AND (2)-⅜" -18NC STN. STL. HEX NUTS.
2. FOR USE WITH 2-WAY HOLLOW SPIDER ASSEMBLIES WHERE SIGNAL FACES ARE SAME SIZE AND CONFIGURATION.



T-BAR (MATL. ALUM. ALLOY 356)
N.T.S.



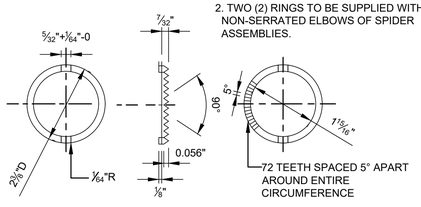
SECTION A-A

WASHER (MATL. ALUMINUM)

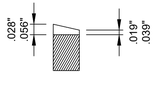
TD20.19.04

NOTES:

1. RING SHALL BE MADE OF DELRIN
2. TWO (2) RINGS TO BE SUPPLIED WITH NON-SERRATED ELBOWS OF SPIDER ASSEMBLIES.



DETAIL OF HEAD POSITIONING RING
N.T.S.

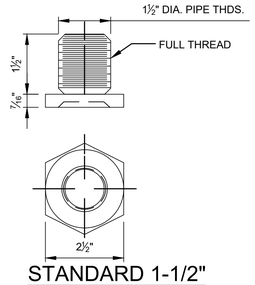


TOOTH PROFILE
N.T.S.

TD20.19.05

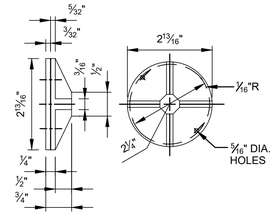
NOTE:

NIPPLE, ELBOW AND/OR CHASE NIPPLE TO BE USED WITH HINGE STRAP OR PEDESTRIAN CLAMP AS REQUIRED.



STANDARD 1-1/2" CHASE NIPPLE
(MTL:BRZ. 85-5-5-5)
N.T.S.

TD20.19.06

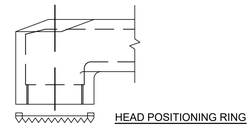


CAP (MAT. ALUM. ALLOY 356)
N.T.S.

TD20.19.07

NOTE:

PROVIDE SLOTS 3/16" DEEP X 3/16" WIDE FOR SERRATED POSITIONING RING



HEAD POSITIONING RING

HOLLOW SPIDER HUB
NON-SERRATED HUB (TYPICAL)
N.T.S.

TD20.19.08

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
TRAFFIC SIGNALS

HOLLOW SPIDER ASSEMBLY

DISCLAIMER:

THIS IS ONLY A
SAMPLE DRAWING
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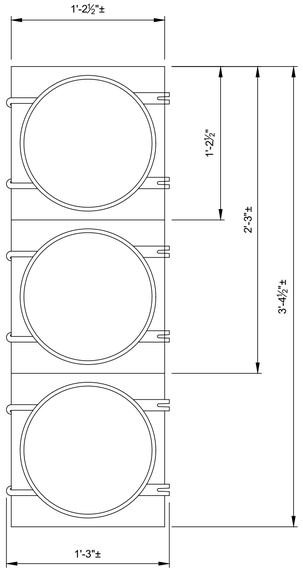
Date 07 / 15 / 2024

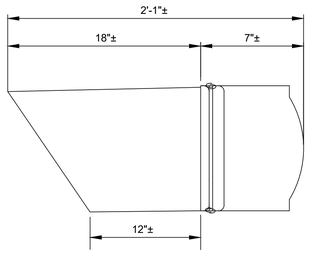
Drawing Number TD20.19

NOTES:

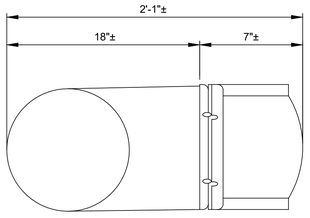
1. THE STANDARD SIGNAL IS COMPOSED OF THREE POLYCARBONATE BODY SECTIONS CONTAINING THE OPTICAL UNIT, LENS, DOOR, AND VISOR. ALUMINUM SIGNAL HEADS ARE STILL USED IN CERTAIN APPLICATIONS.
2. SIGNAL SECTIONS SHALL BE INCANDESCENT LOOK LED-TYPE.
3. USE OPEN TUNNEL VISORS UNLESS SHOWN OTHERWISE ON CONTRACT DRAWINGS.



12" SIGNAL DIMENSIONS

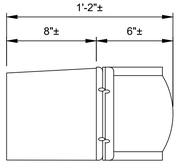


45° ANGLE VISOR (TOP VIEW)

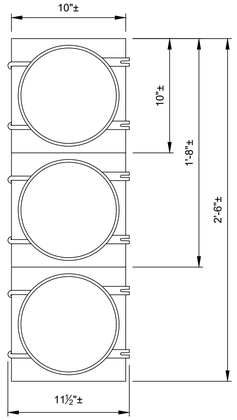


45° ANGLE VISOR (SIDE VIEW)

OPEN TUNNEL VISOR



OPEN TUNNEL VISOR



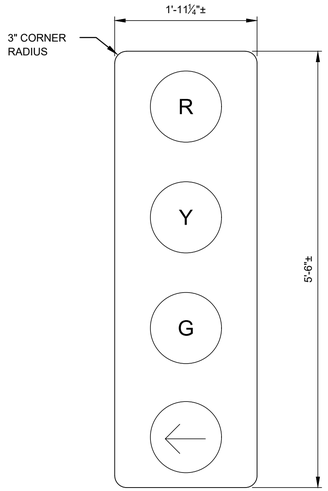
8" SIGNAL DIMENSIONS

VEHICULAR SIGNAL HEAD
N.T.S.

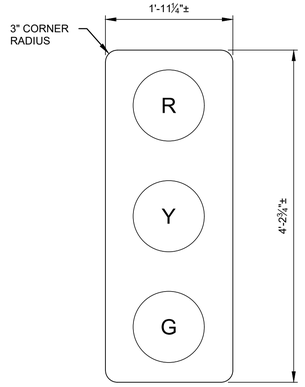
TD20.20.01

NOTES:

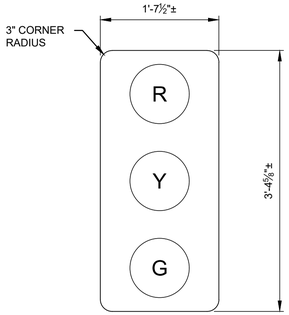
1. ANY COMBINATION OF BACKPLATES FOR SIGNAL HEADS, INCLUDING MIXED 12" AND 8" SIGNAL HEADS, ARE AVAILABLE. REFER TO MANUFACTURER FOR DETAILS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.
2. MATERIAL: ⅛" BLACK ABS WITH HAIRCELL FINISH FRONT SIDE.
3. FABRICATION: VACUUM FORMED.
4. IF A BACKPLATE IS USED, THE VERTICAL CLEARANCE SHALL BE MEASURED FROM THE BOTTOM OF THE BACKPLATE TO THE FINISHED GRADE OF ROADWAY. REFER TO CONTRACT DRAWINGS.
5. DETAILS SHOWN ARE TYPICAL ONLY. SLIGHT VARIATIONS EXIST DEPENDING ON SIGNAL MANUFACTURER. THE CONTRACTOR SHALL SUBMIT SHOP DRAWING FOR APPROVAL.
6. BACKPLATES SHALL BE REFLECTORIZED AND CONFORM TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES



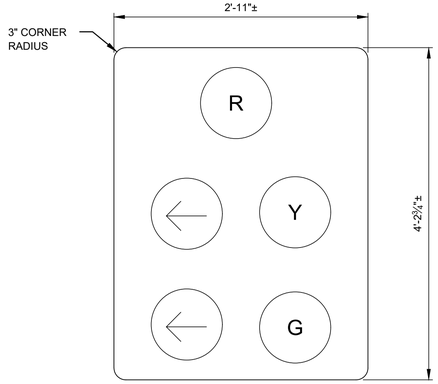
4 SECTION BACKPLATE (TYP.)
FOR 12" SIGNAL HEAD



BACKPLATE FOR 12"
SIGNAL HEAD



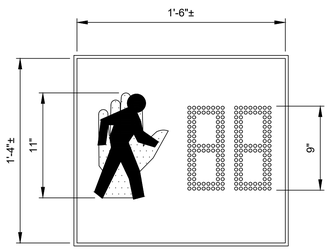
BACKPLATE FOR 8"
SIGNAL HEAD



5 SECTION CLUSTER (TYP.)
FOR 12" SIGNAL HEAD

BACKPLATES
N.T.S.

TD20.20.03



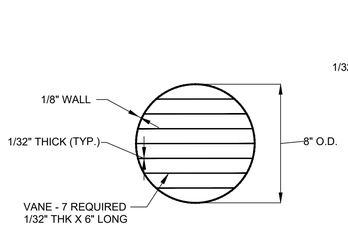
COUNTDOWN DISPLAY

PEDESTRIAN SIGNAL HEAD
N.T.S.

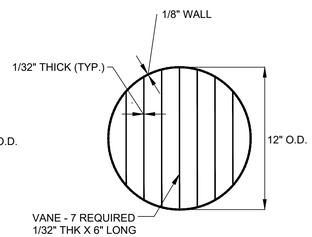
NOTES:

1. PEDESTRIAN SIGNALS FACES SHALL BE LED UNITS. SYMBOL HEIGHT SHALL BE A MINIMUM OF 11".
2. ALL PEDESTRIAN SIGNAL HEADS SHALL BE EQUIPPED WITH EGG CRATE VISORS.

TD20.20.02



8" ALUMINUM INSERT
(SHOWN HORIZONTAL ORIENTATION)

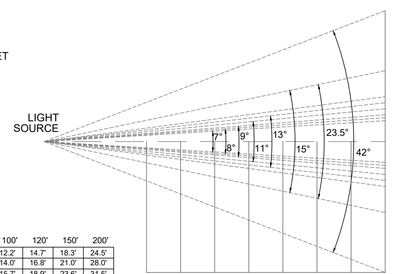


12" ALUMINUM INSERT
(SHOWN VERTICAL ORIENTATION)

STRAIGHT VANE LOUVERS
N.T.S.

NOTES:

1. GEOMETRICALLY PROGRAMMED LOUVERS SHALL MEET THE VIEWING ANGLES SHOWN IN TABLE 1 BELOW.



DISTANCE (FEET)

VIEW ANGLE (DEGREES)	40'	50'	60'	70'	80'	90'	100'	120'	150'	200'
7°	4.9'	6.1'	7.3'	8.6'	9.8'	11.0'	12.2'	14.7'	18.3'	24.5'
8°	5.6'	7.0'	8.4'	9.8'	11.2'	12.6'	14.0'	16.8'	21.0'	28.0'
9°	6.3'	7.9'	9.4'	11.0'	12.6'	14.2'	15.7'	18.9'	23.6'	31.5'
11°	7.7'	9.6'	11.6'	13.5'	15.4'	17.3'	19.3'	23.1'	28.9'	38.5'
13°	9.1'	10.5'	13.7'	16.0'	18.2'	20.5'	22.8'	27.3'	34.2'	45.6'
15°	10.5'	13.2'	15.8'	18.4'	21.1'	23.7'	26.3'	31.6'	39.5'	52.7'
23.5°	16.6'	20.8'	25'	29.1'	33.3'	37.4'	41.6'	49.9'	62.4'	83.2'
42°	30.7'	38.4'	46.1'	53.7'	61.4'	69.1'	76.8'	92.1'	115.2'	153.5'

TABLE-1 GEOMETRICALLY PROGRAMMED LOUVER VIEW ANGLE

GEOMETRICALLY PROGRAMMED LOUVER - 12"

TD20.20.04

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PORT AUTHORITY NY NJ
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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
TRAFFIC SIGNALS

SIGNAL HEADS
AND BACKPLATES

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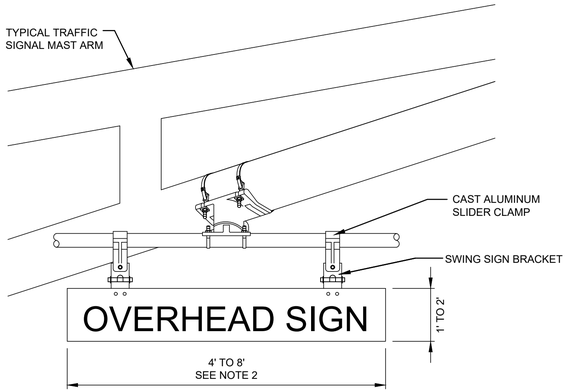
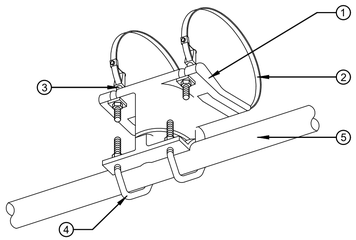
Date 07 / 15 / 2024

Drawing Number TD20.20

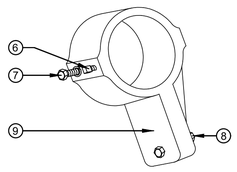


MAST ARM ASSEMBLY BRACKET

N.T.S.



CLAMP DETAIL



SLIDER CLAMP

NOTES:

1. INSTALLATION OF SLIDER: DRILL 3/8" HOLE THRU ONE WALL OF PIPE. TIGHTEN 5/16" x 1½" HEX BOLT WITH LOCKWASHER INTO SLIDER THRU HOLE IN PIPE. ATTACH 3/8" SQUARE HEAD SET SCREW.

2. MAST-ARM SIGNS EXCEEDING 60 INCHES IN WIDTH SHALL BE FITTED WITH ALUMINUM EDGING RIVETED TO THE SIGN PANEL BETWEEN THE SWING BRACKETS. THE EDGING SHALL HAVE A 1½" FLANGE PERPENDICULAR TO THE SIGN FACE AND SHALL BE RIVETED AT THE TOP EDGE OF THE SIGN PANEL AS FOLLOWS:

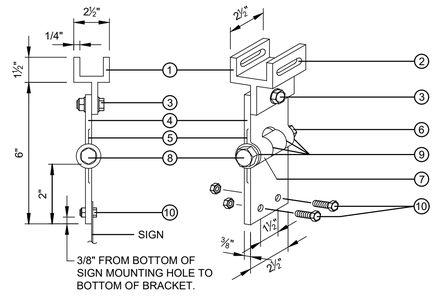
   SINGLE-FACED SIGN PANELS:
   ALUMINUM EDGING SHALL BE MOUNTED TO THE FACE OF THE SIGN PANEL NOT CARRYING THE LEGEND.

   DUAL-FACED SIGN PANELS:
   ALUMINUM EDGING SHALL BE MOUNTED TO THE FACE OF THE SIGN PANEL OPPOSING THE FLOW OF TRAFFIC IN THE TRAVEL LANES BELOW. THE PORTION OF THE FLANGE COVERING THE SIGN LEGEND SHALL BE COVERED WITH THE REFLECTIVE SHEETING IN KIND WITH THE SIGN BORDER, OR IN CASE WHERE A BORDER IS NOT USED, IN KIND WITH THE SIGN BACKGROUND. THE REFLECTIVE SHEETING SHALL BE APPLIED TO THE EDGING PRIOR TO INSTALLING THE EDGING ON THE SIGN PANEL.

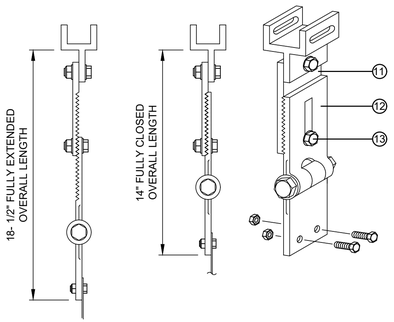
PARTS:

1. CLAMP ALUMINUM ALLOY (356-T6)
2. 5/8" STAINLESS STEEL STRAP (2) WITH 5/8" BANDCLAMP.
3. STAINLESS STEEL CLAMP SCREW WITH BEARING WASHER, 7/16" FLATWASHER & 7/16" - 14 HEX NUT. CLAMP SCREW SHALL BE INSTALLED WITH MAINTAINING A MINIMUM OF 1/4" CLEARANCE TO THE MAST ARM CLAMP.
4. 5/16" - 18 x 1¾" x 2⅝" x 7/8" U-BOLT WITH 5/16" SPLIT LOCKWASHER & 5/16" - 18 HEX NUT.
5. 1½" ALUMINUM TUBE
6. 3/8" SQUARE HEAD SET SCREW
7. 5/16" x 1½" HEX BOLT WITH LOCKWASHER
8. 3/8" x 1½" STAINLESS STEEL HEX HEAD BOLT WITH STAINLESS STEEL HEX LOCK NUT AND 1/16" STAINLESS STEEL WASHER (BOTH SIDES). A BRONZE REDUCER BUSHING (1/2" TO 3/8") SHALL BE USED INSIDE THE SLIDER CLAMP.
9. CAST ALUMINUM SLIDER CLAMP

TD20.21.01



FIXED LENGTH NON-ADJUSTABLE SWING SIGN BRACKET



ADJUSTABLE LENGTH SWING SIGN BRACKET

PARTS:

1. PIVOTAL UPPER BRACKET.
2. 1⅝" x 1/4" SLOT FOR DOUBLE STRAPPING TO MAST ARM. (M2G-34S(HD) 0.030 x 3/4" HEAVY DUTY STAINLESS STEEL STRAP WITH M2G-34B(HD) BUCKLE RECOMMENDED.)
3. 1/2" - 13 x 1½" STAINLESS STEEL HEX HEAD BOLT WITH STAINLESS STEEL HEX LOCK NUT AND 1/16" STAINLESS STEEL WASHER (BOTH SIDES). ALLOWS UPPER BRACKET TO PIVOT AND ALIGN WITH MAST ARM.
4. 6" OVERALL DROP WITH FIXED LENGTH SIGN BRACKET.
5. STAINLESS STEEL DAMPENER SPRING (REMOVABLE).
6. STAINLESS STEEL HEX LOCK NUT WITH 1/16" STAINLESS STEEL WASHER.
7. 1" O.D. AXLE HOUSING.
8. 1/2" - 13 x 4" STAINLESS STEEL HEX HEAD BOLT WITH 1/16" STAINLESS WASHER.
9. OILITE BUSHING.
10. SIGN MOUNTING SETS, CONSISTING OF TWO EACH 5/16" - 18 x 1" STAINLESS STEEL HEX HEAD BOLT WITH STAINLESS STEEL HEX LOCK NUT. TWO HOLES ON 1½" CENTERS PROVIDE POSITIVE LOCK SIGN MOUNTING TO BRACKET.
11. 8¼" OVERALL LENGTH UPPER ADJUSTABLE SIGN BRACKET SECTION.
12. 9" OVERALL LENGTH LOWER ADJUSTABLE SIGN BRACKET SECTION, INCLUDING AXLE HOUSING (8" OVERALL LENGTH TO TOP OF AXLE HOUSING).
13. 1/2" - 13 x 1½" STAINLESS STEEL HEX BOLT WITH STAINLESS STEEL HEX LOCK NUT AND 1/16" STAINLESS STEEL WASHERS (BOTH SIDES). LOOSEN LOCK NUT, ADJUST BRACKET TEETH TO LEVEL SIGN.

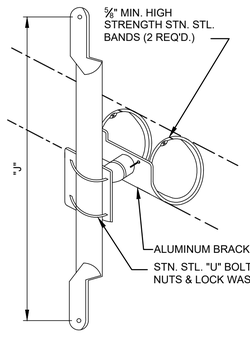
NOTES:

1. EXTENDER ADAPTERS ARE ALL ALUMINUM 6061T6 ALLOY. 3/8" THICK x 2½" WIDE BAR x VARIABLE LENGTH COMPLETE WITH ONE HOLE EACH END FOR 1/2" BOLT. EACH EXTENDER BAR INCLUDES ONE PIVOT POINT 1/2" - 13 x 1½" STAINLESS STEEL HEX HEAD BOLT WITH HEX LOCK NUT AND 2 WASHERS. (EXTENDER ADAPTERS ARE AVAILABLE IN VARIABLE LENGTHS ON REQUEST.)

2. MAST-ARM SIGNS EXCEEDING 60 INCHES IN WIDTH SHALL BE FITTED WITH ALUMINUM EDGING RIVETED TO THE SIGN PANEL BETWEEN THE SWING BRACKETS. THE EDGING SHALL HAVE A 1½" FLANGE PERPENDICULAR TO THE SIGN FACE AND SHALL BE RIVETED AT THE TOP EDGE OF THE SIGN PANEL AS FOLLOWS:

   SINGLE-FACED SIGN PANELS:
   ALUMINUM EDGING SHALL BE MOUNTED TO THE FACE OF THE SIGN PANEL NOT CARRYING THE LEGEND.

   DUAL-FACED SIGN PANELS:
   ALUMINUM EDGING SHALL BE MOUNTED TO THE FACE OF THE SIGN PANEL OPPOSING THE FLOW OF TRAFFIC IN THE TRAVEL LANES BELOW. THE PORTION OF THE FLANGE COVERING THE SIGN LEGEND SHALL BE COVERED WITH THE REFLECTIVE SHEETING IN KIND WITH THE SIGN BORDER, OR IN CASE WHERE A BORDER IS NOT USED, IN KIND WITH THE SIGN BACKGROUND. THE REFLECTIVE SHEETING SHALL BE APPLIED TO THE EDGING PRIOR TO INSTALLING THE EDGING ON THE SIGN PANEL.



NOTES:

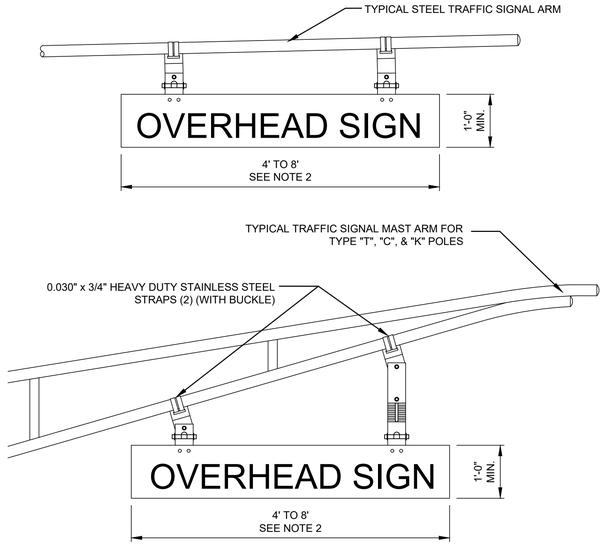
1. SIGN BRACKET SHALL PERMIT ROTATIONAL ADJUSTMENT ABOUT BRACKET AXIS, VERTICAL AND ROTATIONAL ADJUSTMENT ABOUT MAST ARM, AND ROTATIONAL ADJUSTMENT RIGHT & LEFT IN VERTICAL PLANE.
2. THE SIGN BRACKET SHALL BE DESIGNED TO SUPPORT A 35 LB. SIGN WITH A PROJECTED AREA OF 19 SQ. FT.
3. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
4. TWO BRACKETS SHALL BE FURNISHED FOR EACH SIGN.

SIGN SIZE	DIM. "J"
12" X 5'-0"	10"
2'-0" X 2'-6"	1'-6"
2'-0" X 2'-0"	1'-6"
2'-6" X 2'-6"	2'-0"
3'-0" X 3'-0"	2'-6"
4'-0" X 4'-0"	3'-6"

ALUMINUM SIGN BRACKET DETAIL

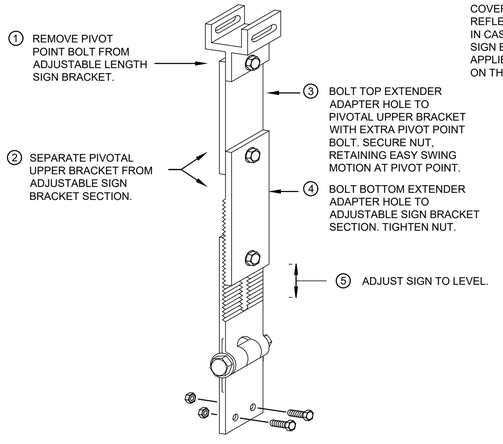
N.T.S.

TD20.21.02



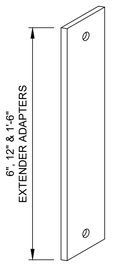
SWING SIGN ASSEMBLY DETAILS

N.T.S.



EXTENDER ADAPTERS

FOR ADJUSTABLE LENGTH SWING SIGN BRACKET. EXTENDS BRACKET TO LEVEL SIGN. FITS ANY DEGREE OF MAST ARM RISE.



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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

OVERHEAD MAST ARM SWING SIGN BRACKET

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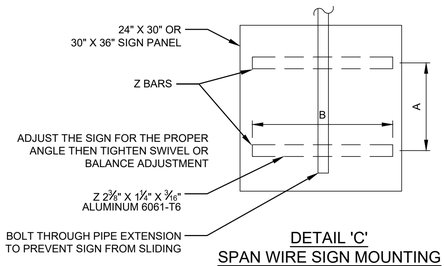


DETAIL 'C'
SPAN WIRE SIGN MOUNTING

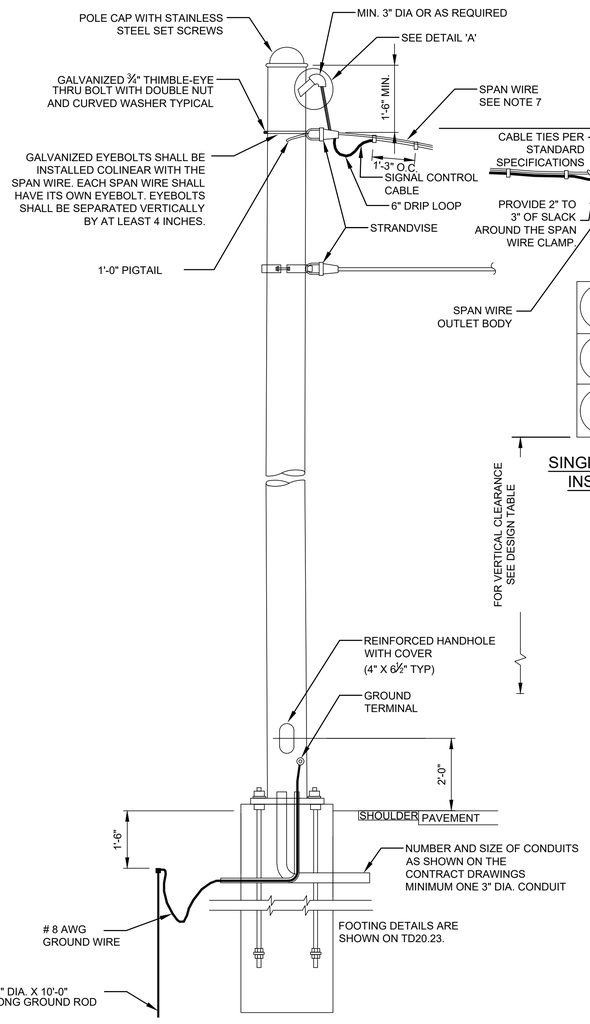
SIGN SIZE	DIMENSION	
	A	B
24 X 30	24"	18"
30 X 36	30"	24"

NOTES:

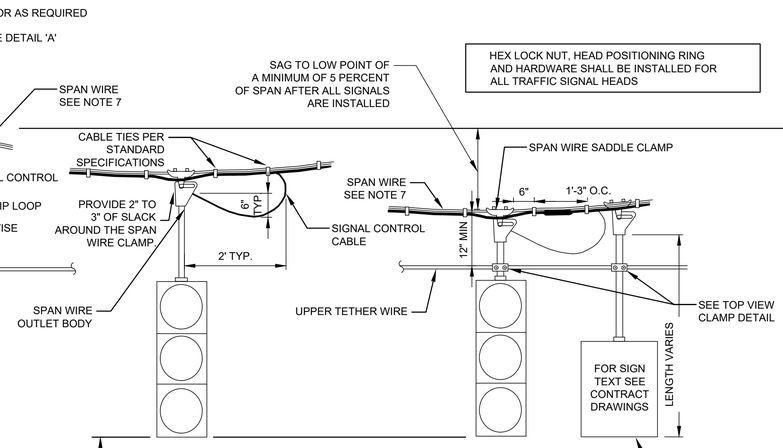
1. THE BOTTOM OF THE SIGNAL HEADS ON EACH APPROACH SHALL BE ALIGNED.
2. POLES SHALL BE ADJUSTED BY USE OF THE NUTS ON THE ANCHOR BOLTS SO THAT THEY ARE VERTICAL WHEN ALL SIGNAL HEADS & SIGNS HAVE BEEN INSTALLED. A POLE RAKE OF ONE HALF OF DESIGN LOAD DEFLECTION, SET WHEN THE POLE IS FIRST ERECTED, MAY PROVIDE A CLOSE INITIAL SETTING.
3. SIGNED AND SEALED SHOP DRAWINGS, PREPARED BY A PROFESSIONAL ENGINEER, SHALL BE SUBMITTED FOR APPROVAL FOR ALL SPAN POLES INSTALLED AT PANYNJ FACILITIES.
4. ALL HARDWARE TO BE PAINTED YELLOW.
5. ALL FITTINGS USED WITH SPAN AND TETHER WIRES SHALL DEVELOP THE FULL BREAKING STRENGTH OF THE WIRE, EXCEPT "S HOOK" INSTALLED ON TETHER WIRES. SPAN WIRE DIAMETER SHALL BE SELECTED FROM THE FOLLOWING TABLE BASED ON THE POLE DESIGN LOAD SHOWN IN TABLE 1 OR CALCULATED BY THE POLE FABRICATOR.

POLE DESIGN LOAD LBS	SPAN WIRE DIA. IN	SPAN WIRE BREAKING STRENGTH LBS	TETHER WIRE DIA. IN	TETHER WIRE BREAKING STRENGTH LBS
11,300	7/16	16,900	5/16	9,190
13,700	1/2	20,500	5/16	9,190
16,500	9/16	24,650	3/8	13,900
19,750	5/8	29,450	3/8	13,900

6. SPAN WIRE MOUNTING HEIGHT MAY BE ADJUSTED IN THE FIELD TO THE ALLOWABLE CLEARANCE A FIVE PERCENT MINIMUM SAG SHALL BE PROVIDED. THE SPAN WIRE ATTACHMENT DISTANCE TO THE TOP OF THE POLE SHALL NOT BE LESS THAN 18".
7. CIRCUMFERENTIAL POLE CLAMPS, AS AN ALTERNATE TO GALVANIZED THIMBLE EYE BOLTS, MAY BE USED TO CONNECT SPAN WIRE(S) TO THE TOPS OF POLYGONAL SHAPED SIGNAL POLES. HOWEVER, ONLY GALVANIZED THIMBLE EYE BOLTS SHALL BE USED FOR CONNECTING SPAN WIRE(S) TO ROUND SIGNAL POLES. IN EITHER CASE, THE DESIGN LOAD OF THE CONNECTING HARDWARE SHALL BE CERTIFIED TO BE NO MORE THAN 70% OF ITS YIELD STRENGTH.

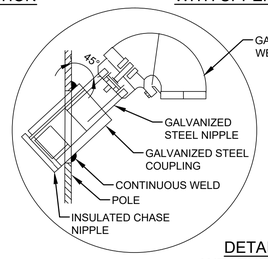


SPAN WIRE MOUNTED INSTALLATION
N.T.S.

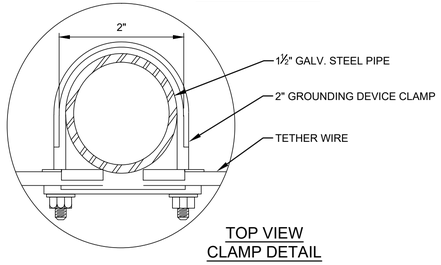


SINGLE SPAN WIRE
INSTALLATION

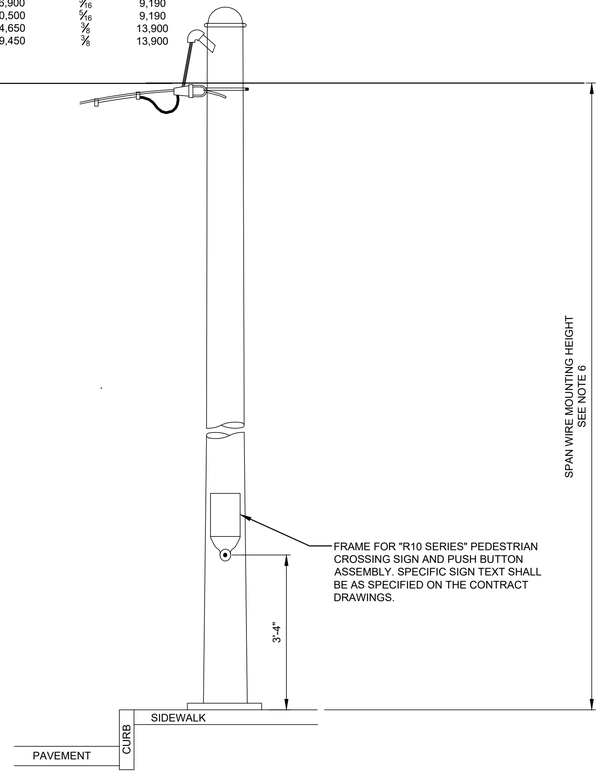
SPAN WIRE INSTALLATION
WITH UPPER TETHER WIRE



DETAIL 'A'
WEATHERHEAD



TOP VIEW
CLAMP DETAIL



DESIGN TABLE

SPAN WIRE POLE
AND CLEARANCE

POLE HEIGHT	POLE DESIGN LOAD	VERTICAL CLEARANCE

(DESIGN TABLE TO BE COMPLETED BY DESIGNER)

Sheet of

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

SPAN WIRE MOUNTED
INSTALLATION

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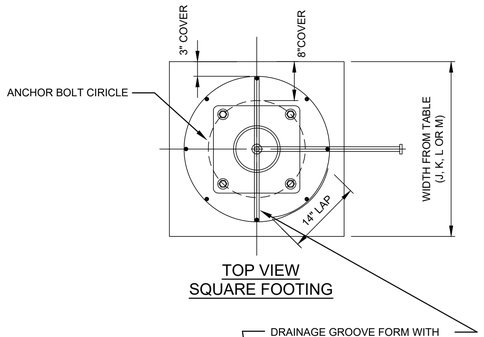
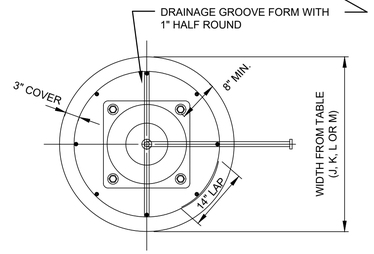
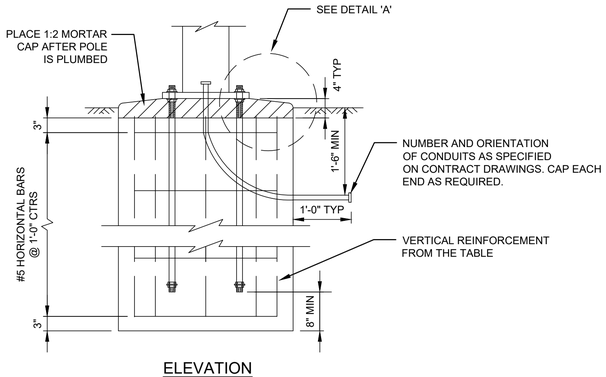


TOP VIEW
SQUARE FOOTING

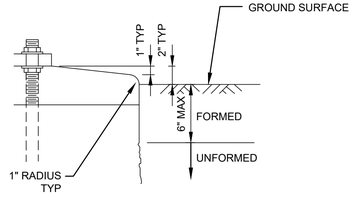


TOP VIEW
CIRCULAR FOOTING



ELEVATION

NOTE:
ANCHOR BOLTS SHOWN ARE
TYPICAL ONLY. SHOP DRAWINGS
SHALL BE PROVIDED.



DETAIL 'A'

CODE NO.	FOOTING CAPACITY MOMENT IN FT - KIP AT TOP OF EARTH	J (2'-6" FOOTING)				K (3'-0" FOOTING)				L (3'-6" FOOTING)				M (4'-0" FOOTING)			
		CU YDS	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BARS		CU YDS	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BARS		CU YDS	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BARS		CU YDS	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BARS	
				NO.	TYPE			NO.	TYPE			NO.	TYPE			NO.	TYPE
1	40 & UNDER	1.1	6'-0"	8	# 5	1.4	5'-3"	8	# 5	-	-	-	-	-	-	-	-
2	50	1.2	6'-6"	8	# 5	1.6	5'-9"	8	# 5	1.9	5'-4"	8	# 5	2.4	5'-0"	8	# 5
3	60	1.3	7'-0"	14	# 5	1.8	6'-6"	12	# 5	2.1	5'-10"	12	# 5	2.6	5'-6"	8	# 5
4	70	1.4	7'-6"	14	# 5	1.8	6'-9"	12	# 5	2.4	6'-6"	12	# 5	2.8	6'-0"	12	# 5
5	80	1.5	8'-0"	14	# 5	1.9	7'-3"	16	# 5	2.5	6'-9"	12	# 5	3.1	6'-6"	12	# 5
6	90	1.6	8'-6"	14	# 6	2.1	7'-9"	16	# 5	2.6	7'-3"	16	# 5	3.2	6'-9"	12	# 5
7	100	1.7	9'-0"	14	# 6	2.2	8'-3"	16	# 5	2.7	7'-6"	16	# 5	3.3	7'-0"	16	# 5
8	120	1.9	10'-0"	14	# 6	2.5	9'-3"	16	# 5	3.0	8'-3"	16	# 5	3.7	7'-9"	16	# 5
9	140	2.0	11'-0"	14	# 7	2.7	10'-0"	16	# 6	3.3	9'-3"	16	# 5	4.0	8'-6"	16	# 5
10	160					2.9	10'-9"	16	# 6	3.5	9'-9"	16	# 6	4.2	9'-0"	16	# 5
11	180					3.1	11'-6"	16	# 7	3.8	10'-6"	16	# 6	4.6	9'-9"	16	# 5
12	200					3.3	12'-3"	16	# 7	4.1	11'-3"	16	# 6	4.8	10'-3"	16	# 6
13	220					3.4	12'-9"	16	# 7	4.2	11'-9"	16	# 7	5.1	10'-9"	16	# 6
14	250					3.6	13'-9"	16	# 8	4.6	12'-10"	16	# 7	5.5	11'-9"	16	# 7
15	275					3.9	14'-9"	16	# 8	4.9	13'-6"	16	# 8	5.9	12'-6"	16	# 7
16	300													6.1	13'-0"	16	# 8
17	350													6.7	14'-4"	16	# 8
18	400													7.2	15'-6"	16	# 10
19	450													7.8	16'-9"	19	# 10
20	500													8.4	18'-0"	21	# 10

TABLE 2

DESIGN TABLE

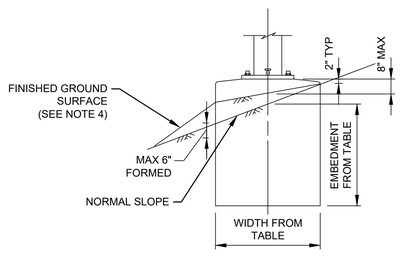
SPAN WIRE POLE FOUNDATIONS

LOCATION	FOOTING CAPACITY (FT-KIPS)	WIDTH

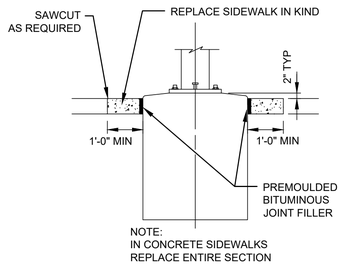
TABLE 1
(TO BE COMPLETED BY DESIGNER)

NOTES:

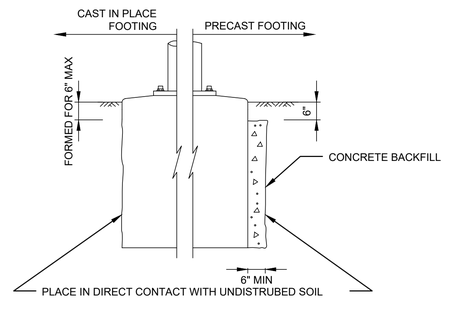
1. FOOTING CAPACITY AND WIDTH ARE SPECIFIED IN TABLE 1. FOOTING EMBEDMENT SHALL BE DETERMINED FROM TABLE 2 BY THE CONTRACTOR AND APPROVED BY THE ENGINEER BEFORE INSTALLATION.
2. FOOTINGS FOR SPAN WIRE POLES MAY BE EITHER CIRCULAR OR SQUARE.
3. ADJUST THE FINISHED GROUND SURFACE IN THE VICINITY OF THE FOOTING AS NECESSARY SO THAT NO FILL SPILLS ON THE TOP OF THE FOOTING AND SO THAT THE MAXIMUM DISTANCE FROM THE TOP OF FOOTING TO THE FINISHED GROUND AT THE C DOES NOT EXCEED 8 INCHES.
4. THE PANYNJ GEOTECHNICAL GROUP SHALL BE CONSULTED IF THE FOOTING WILL BE PLACED ON SOFT CLAY, ORGANIC DEPOSITS OR ANY OTHER UNSUITABLE MATERIALS.



FOOTINGS IN EMBANKMENTS



FOOTINGS IN SIDEWALKS



AUGERED OR DUG FOOTING

METHODS FOR PLACING FOOTINGS

SPAN WIRE TRAFFIC SIGNAL
POLE FOUNDATION
N.T.S.

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ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

SPAN WIRE
TRAFFIC SIGNAL POLE
FOUNDATION

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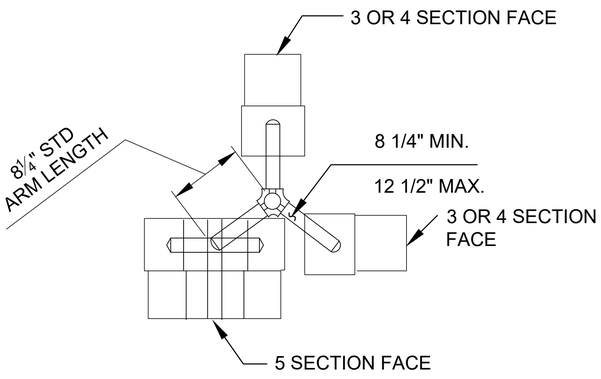
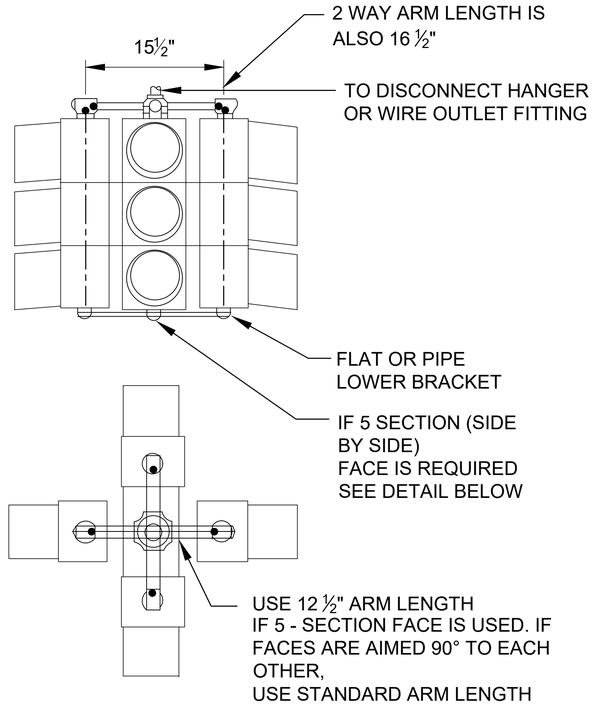
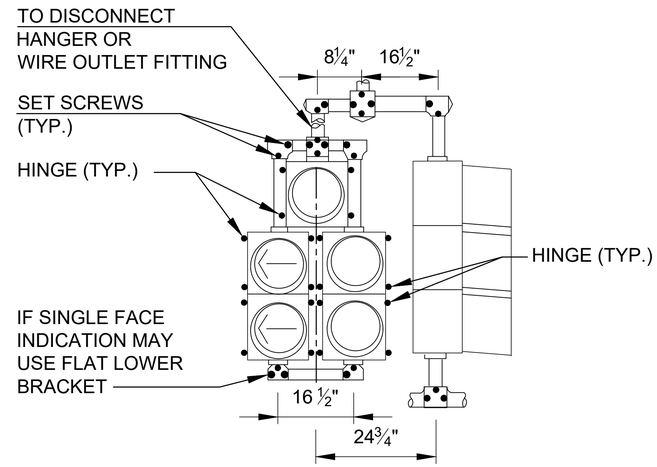
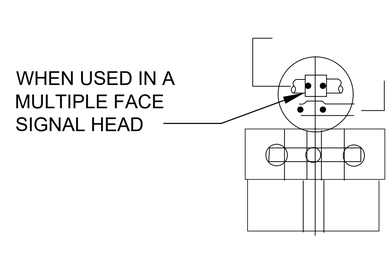


3 - WAY, 3,4, OR 5 SECTION SIGNAL HEAD



4 - WAY 3 SECTION SIGNAL HEAD





5 - SECTION SIGNAL FACE

TRAFFIC SIGNAL ASSEMBLIES

N.T.S.

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PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

TRAFFIC SIGNAL ASSEMBLY

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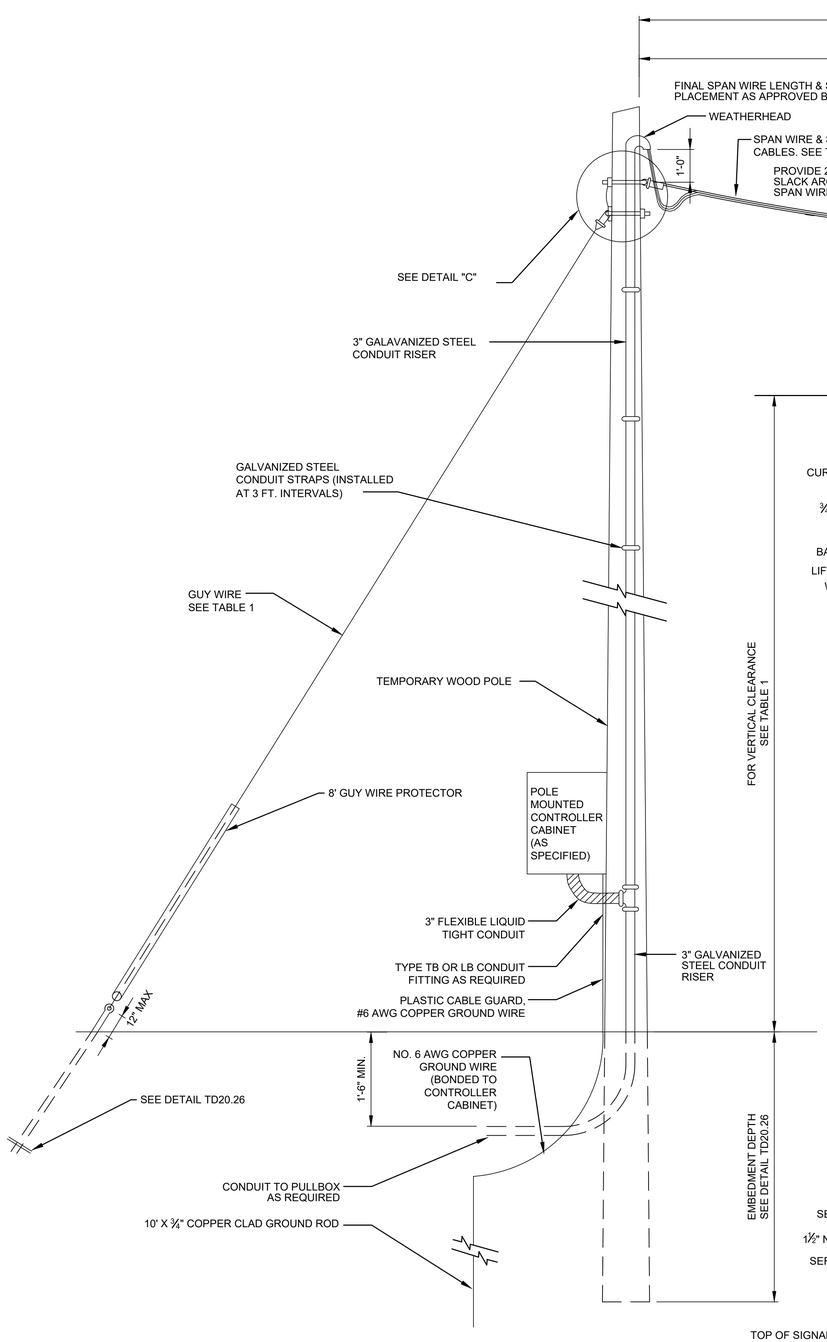
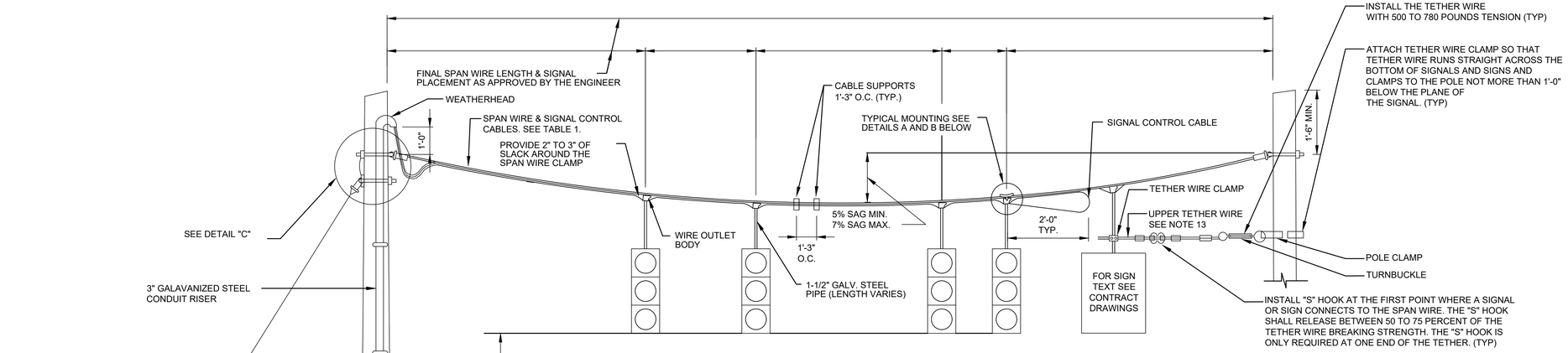
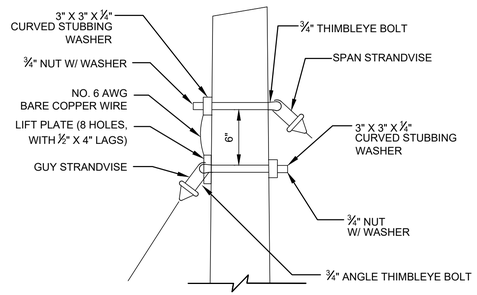


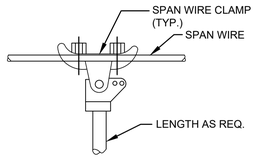
ELEVATION
N.T.S.

TEMPORARY SPAN WIRE SIGNAL INSTALLATION
N.T.S.

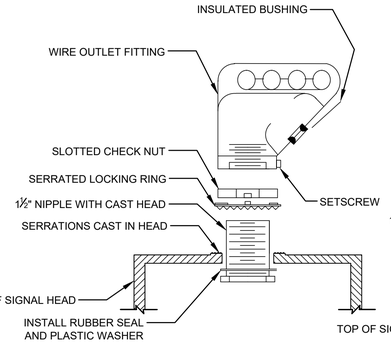




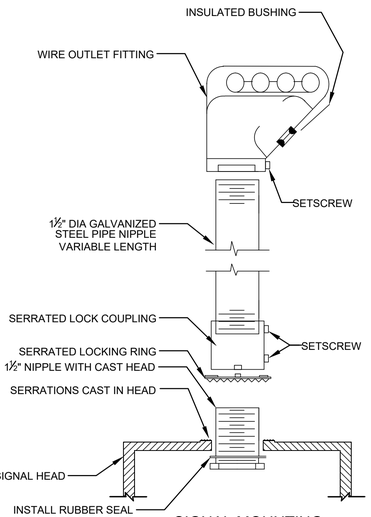
DETAIL "C"



DETAIL "A"



SIGNAL MOUNTING DETAIL



SIGNAL MOUNTING DETAIL WITH PIPE NIPPLE

DETAIL "B"

DESIGN TABLE
TEMPORARY WOOD POLE

LOCATION	POLE DIA. (IN.)	POLE HEIGHT ABOVE GROUND (FT.)	MIN. VERTICAL CLEARANCE (FT.)	GUY WIRE DIA. (IN.)	SPAN WIRE DIA. (IN.)

TABLE 1
(TO BE COMPLETED BY DESIGNER)

NOTES:

1. DETAILS SHOWN ARE TYPICAL ONLY AND NOT INTENDED TO INDICATE THE PRODUCTS OF ANY SPECIFIC MANUFACTURER.
2. SIGNAL HEAD ARRANGEMENTS ARE SHOWN FOR EXAMPLE ONLY. NUMBER OF DIRECTIONS THE HEADS FACE, NUMBER OF SECTIONS, SIZE OF FACES, SIGNAL INDICATIONS AND ARRANGEMENT OF FACES ARE SPECIFIED ON CONTRACT DRAWINGS.
3. SIGNAL HEADS ARE TO BE FURNISHED WITH A CONVENTIONAL WIRE OUTLET BODY UNLESS OTHERWISE NOTED.
4. ELBOWS, PIPE CROSSES, WIRE OUTLET AND OTHER FITTINGS SHALL BE EQUIPPED WITH SET SCREWS.
5. UNUSED HOLES SHALL BE CAPPED.
6. SIGNAL HEADS SHALL BE ASSEMBLED TO BALANCE AND HANG VERTICALLY.
7. THREADS ON FITTINGS ARE NATIONAL PIPE STRAIGHT THREADS.
8. POLE HEIGHT AND SPAN WIRE MOUNTING HEIGHT SHALL BE DETERMINED BY THE CONTRACTOR TO PROVIDE THE SPECIFIED WIRE SAG AND CLEARANCES.
9. DETAILS SHOWN ON THIS DRAWING ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN DETAILS FOR APPROVAL.
10. UPPER TETHER SHALL BE USED WHEN SIGN PANELS ARE INSTALLED ON THE SPAN WIRE AND AS SHOWN ON THE CONTRACT DRAWINGS.
11. THE POLES SHALL BE DOUGLAS FIR OR SOUTHERN PINE. AFTER INSTALLATION, THE POLES SHALL BE CUT FROM THE TOP OF THEIR PROPER HEIGHT, WITH A 15° SLANT ROOF.
12. ALL SIGNAL FACES SHALL BE FURNISHED WITH THE INDUSTRY STANDARD SERRATED LOCK RINGS TO LOCK THE FACE IN POSITION. (72 TEETH SPACED FIVE DEGREES APART)
13. ALL FITTINGS USED WITH SPAN AND TETHER WIRES SHALL DEVELOP THE FULL BREAKING STRENGTH OF THE WIRE, EXCEPT "S HOOK" INSTALLED ON TETHER WIRES.
14. IF GUY WIRE CANNOT BE INSTALLED PER CONSTRAINTS THEN POLE MUST BE DESIGNED TO SUPPORT LOAD.

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PORT AUTHORITY NY NJ
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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

TEMPORARY SPAN WIRE SIGNAL INSTALLATION -1-

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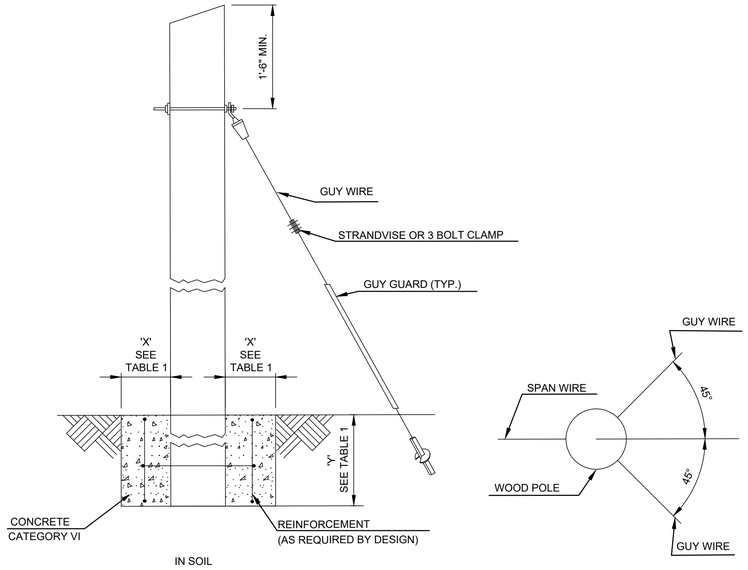
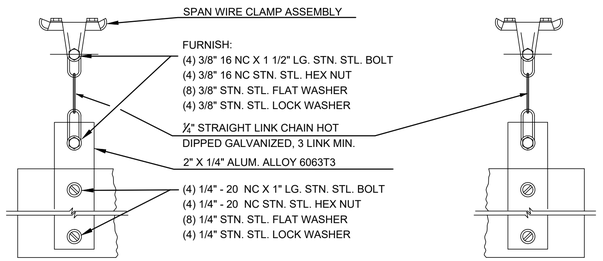


SIDE VIEW

TOP VIEW

WOOD POLE INSTALLATION

(FOR SPANS WITH OVER-THE-ROADWAY TRAFFIC SIGNALS)



SIGN INSTALLATION

TEMPORARY WOOD POLE FOUNDATION DESIGN TABLE

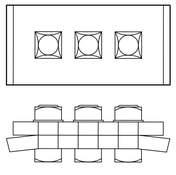
LOCATION	X (FT.)	Y (FT.)	NUMBER OF HELICES

TABLE 1
(TO BE COMPLETED BY DESIGNER)

DESIGN TABLE SPAN WIRE

WIRE DIAMETER IN.	BREAKING STRENGTH LBS.
5/16"	6,000
3/8"	11,500
1/2"	25,000

TABLE 2



3 - BOLT GUY CLAMP

TEMPORARY SPAN WIRE SIGNAL INSTALLATION

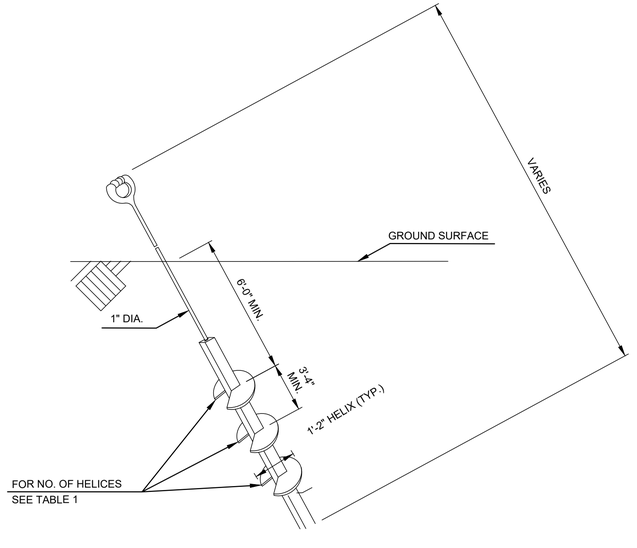
N.T.S.

SPECIFICATIONS:

1. MINIMUM DEPTH TO UPPER MOST HELIX = 6'.
2. MINIMUM SPACING OF HELICES = 3'-4".
3. MINIMUM HELIX DIAMETER = 1'-2".
4. MINIMUM SHAFT AREA = 2.25 SQ. IN.

NOTES:

1. PROVIDE GALVANIZED HELICAL ANCHOR SYSTEM AS MANUFACTURED BY CHANCE CO. OR APPROVED EQUAL.
2. INSTALL HELICAL ANCHOR SYSTEM IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. SUBMIT CATALOG CUT FOR ACCEPTANCE PRIOR TO INSTALLATION.



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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

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Title

TRAFFIC SIGNALS

TEMPORARY SPAN WIRE SIGNAL INSTALLATION -2-

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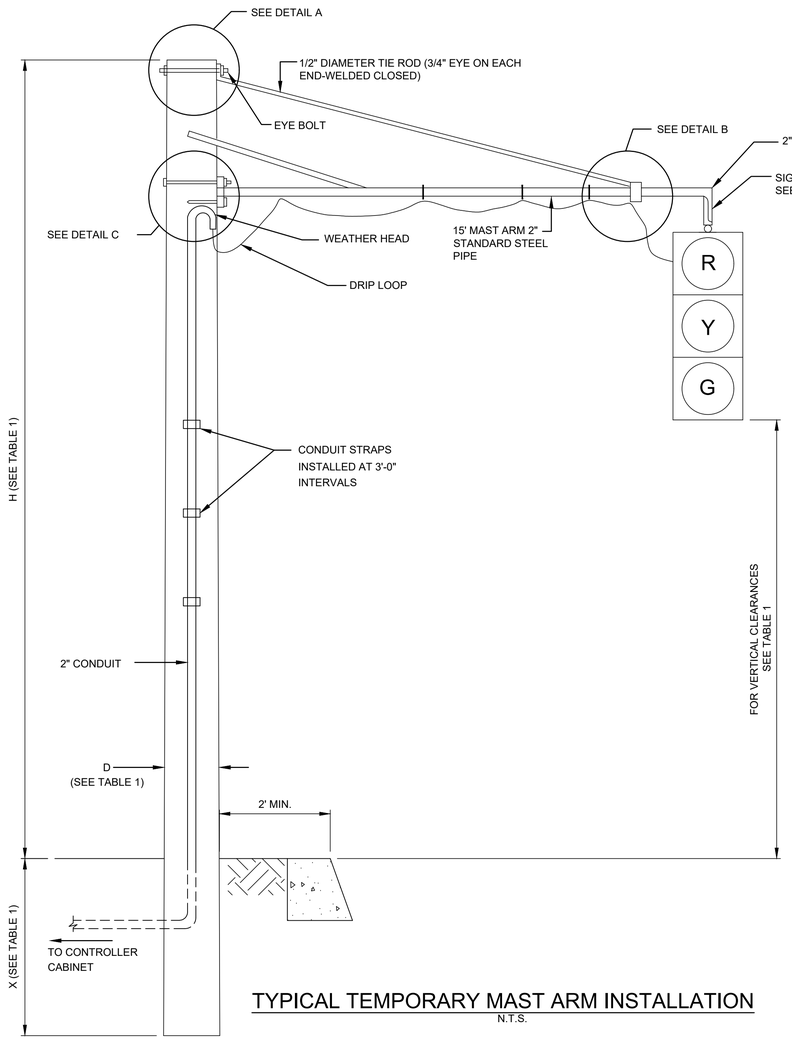
Date 07 / 15 / 2024

Drawing Number TD20.26



TYPICAL TEMPORARY MAST ARM INSTALLATION
N.T.S.

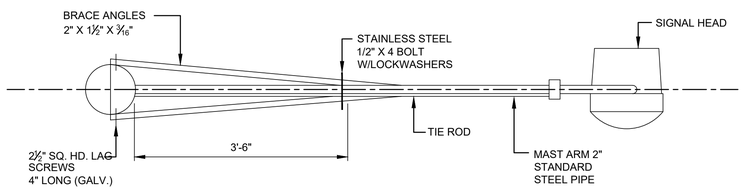
NOTE:

1. DETAILS SHOWN ON THIS DRAWING ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN DETAILS FOR APPROVAL.
2. ALTERNATIVE MOUNTING DESIGN MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

DESIGN TABLE
TEMPORARY WOOD POLE

	D	H	X
LOCATION	POLE DIAMETER	POLE HEIGHT ABOVE GROUND	DEPTH OF EMBEDMENT

TABLE 1
(TO BE COMPLETED BY DESIGNER)

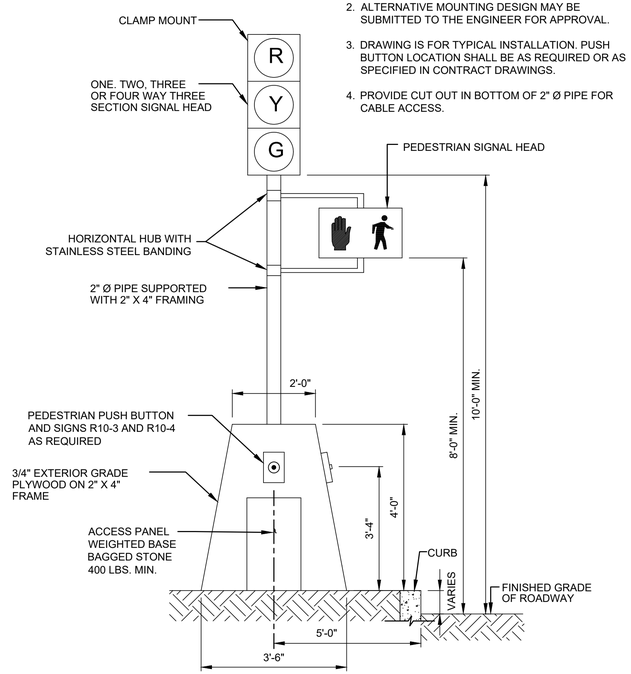


PLAN

TEMPORARY MAST ARM

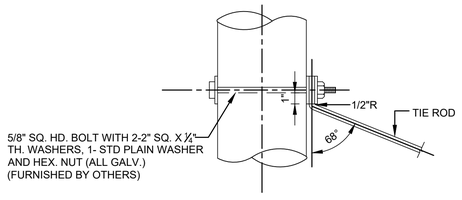
NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE FOR ILLUSTRATION ONLY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN DETAILS FOR APPROVAL.
2. ALTERNATIVE MOUNTING DESIGN MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
3. DRAWING IS FOR TYPICAL INSTALLATION. PUSH BUTTON LOCATION SHALL BE AS REQUIRED OR AS SPECIFIED IN CONTRACT DRAWINGS.
4. PROVIDE CUT OUT IN BOTTOM OF 2" Ø PIPE FOR CABLE ACCESS.

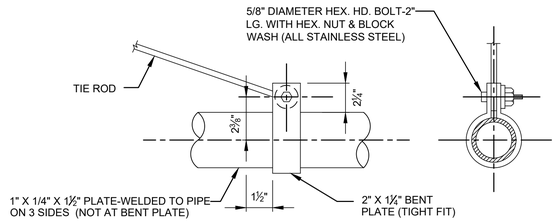


TEMPORARY PEDESTAL POLE
N.T.S.

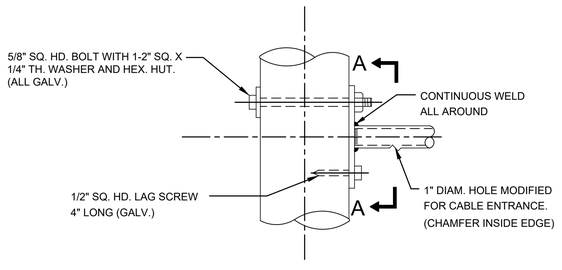
TD20.27.02



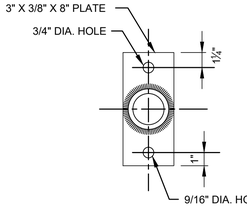
DETAIL A



DETAIL B



DETAIL C



SECTION A-A

TD20.27.01

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

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TRAFFIC

Title

TRAFFIC SIGNALS

TEMPORARY MAST ARM AND PEDESTAL

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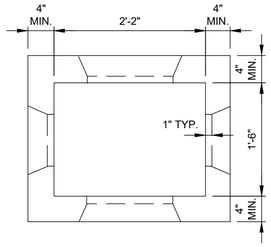
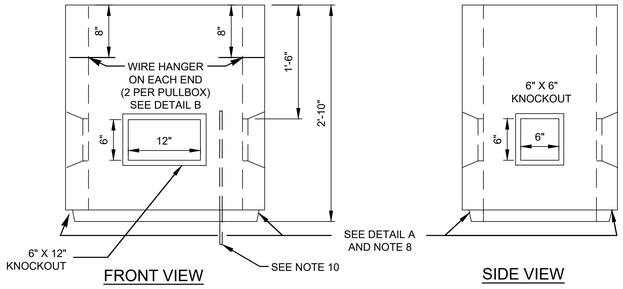
Drawing Number TD20.27



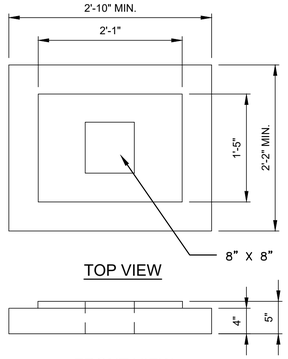
TOP VIEW



FRONT VIEW SIDE VIEW

REINFORCED CONCRETE RECTANGULAR PULLBOX

MINIMUM VERTICAL & HORIZONTAL
REINFORCEMENT 0.12 IN²/FT (SEE NOTE 9)

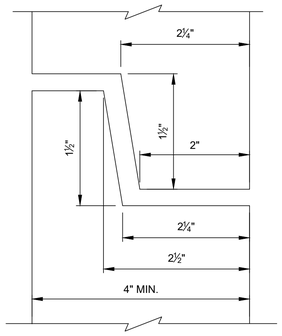


TOP VIEW

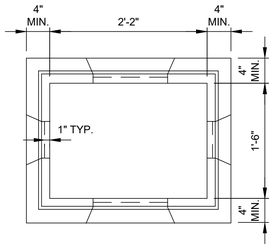
FRONT VIEW

RECTANGULAR PULLBOX BASE

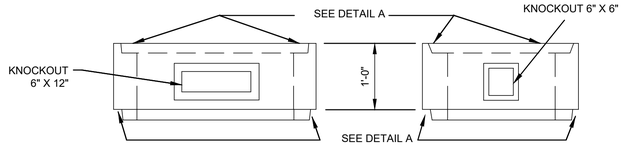
MINIMUM VERTICAL & HORIZONTAL
REINFORCEMENT 0.12 IN²/FT (SEE NOTE 9)



JOINT DETAIL DETAIL A



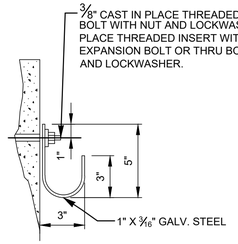
TOP VIEW



FRONT VIEW SIDE VIEW

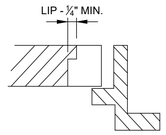
EXTENSION FOR RECTANGULAR PULLBOX

MINIMUM VERTICAL & HORIZONTAL
REINFORCEMENT 0.12 IN /FT (SEE NOTE 9)



WIRE HANGER DETAIL DETAIL B

DETAIL C



SECTION A-A
LIFTING NOTCH OR EQUAL

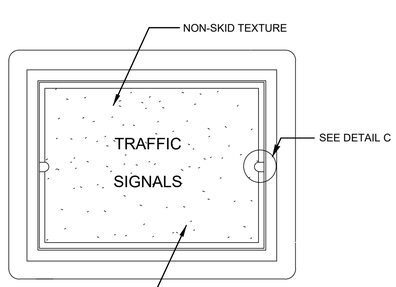
NOTES:

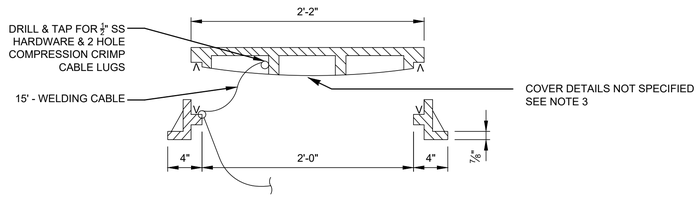
(APPLIES TO TD20.28.01)

1. CONCRETE CATEGORY VI SHALL BE POURED MONOLITHICALLY.
2. STANDARD KNOCKOUT LOCATIONS ARE SHOWN FOR EACH PULLBOX. THE CONTRACTOR MAY ALSO ELECT TO FURNISH PULLBOXES WITH ONLY THE NUMBER AND SIZE CONDUIT OPENINGS THAT ARE REQUIRED FOR THAT PARTICULAR INSTALLATION.
3. FRAMES AND COVERS SHALL BE HEAVY DUTY TO SUPPORT AN H-20 WHEEL LOADING.
4. A NON-SKID TEXTURE SHALL BE CAST INTO THE TOP SURFACE OF THE COVER.
5. PULLBOX BASES ARE REQUIRED ONLY FOR PULLBOXES PLACED IN THE PAVEMENT SHOULDER AND AS INDICATED ON THE PLANS. BASES, WHEN REQUIRED, MAY BE CAST OR INTEGRAL WITH THE PULLBOX.
6. A ROUGH FINISH IS ACCEPTABLE FOR PULLBOX KNOCKOUTS.
7. THE CONTRACTOR MAY ELECT TO FURNISH PULLBOXES PRECAST TO GREATER DEPTH, IN ONE FOOT INCREMENTS, INSTEAD OF USING EXTENSIONS.
8. WHERE PULLBOXES ARE INTENDED FOR USE WITHOUT EXTENSIONS THE JOINT SHOWN IN "DETAIL A" MAY BE OMITTED.
9. STEEL REINFORCEMENT SHALL BE PLACED WITHIN THE CENTER THIRD OF THE WALL. MINIMUM COVER SHALL BE 1".
10. ¾" X 10'-0" LG. COPPER CLAD GROUND ROD.
11. THE TOP OF THE PULLBOX COVER SHALL BE SET FLUSH WITH THE SURROUNDING GRADE.
12. PULL BOX COVERS SHALL BE BONDED AND GROUNDED.

PULL BOX, FRAME AND COVER

N.T.S.

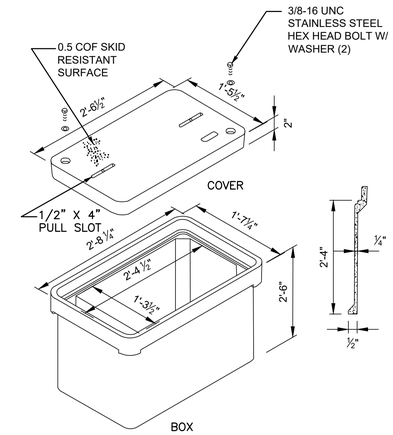




CAST IRON FRAME AND COVER FOR RECTANGULAR PULLBOX

APPROXIMATE WEIGHT 300 LBS.

TD20.28.01



NOTES:

(APPLIES TO TD20.28.02)

1. LOADINGS FOR COVERS SHALL COMPLY WITH ALL TEST PROVISIONS OF ANSI/SCTE 77 EXCEPT THAT THE VERTICAL DESIGN LOAD IS 22,500 LBS. WITH A TEST LOAD OF 33,750 LBS. OVER A 10"x1'-8" PLATE.
2. METHODS FOR CUTTING HOLDS SHALL BE ACCOMPLISHED BY USING EITHER A MASONRY HOLE SAW OR KNOCKOUT PUNCH DRIVER IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
3. SPLICE BOX SHALL BE A QUAZITE MATERIAL, OR APPROVED EQUAL.
4. SPLICE BOX COVER SHALL BE GROUNDED.

LOOP DETECTOR SPLICE BOX

N.T.S.

TD20.28.02

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1	06/27/2024	DISCLAIMER ADDED	

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PULL BOX FRAME, COVER, AND LOOP DETECTOR SPLICE BOX

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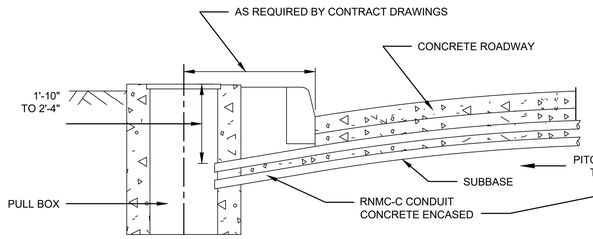
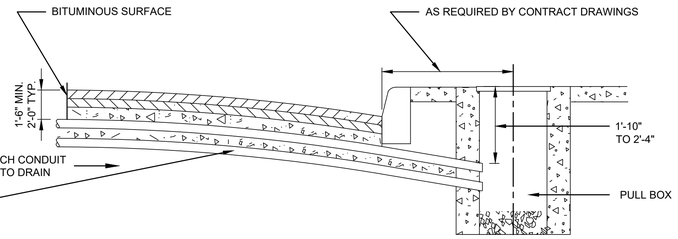
Date 07 / 15 / 2024

Drawing Number **TD20.28**

RNMC-C CONDUIT INSTALLED IN SUBBASE OF CONCRETE ROAD



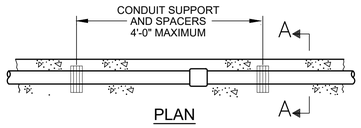
RNMC-C CONDUIT INSTALLED IN SUBBASE OF BITUMINOUS SURFACE ROAD



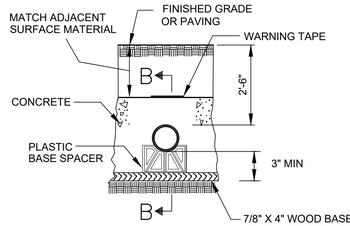
TYPICAL CONDUIT INSTALLATION UNDER ROADWAY

N.T.S.

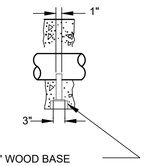
TD20.29.01



PLAN



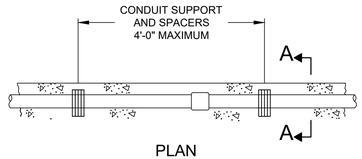
SECTION A-A



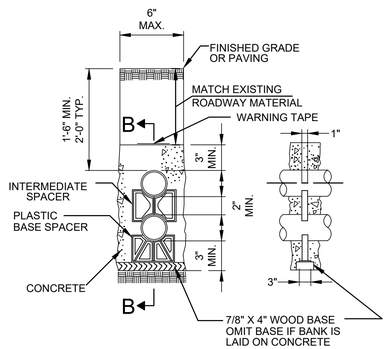
SECTION B-B

1 RNMC-C CONDUIT INSTALLATION NON-ROADWAY

TD20.29.02



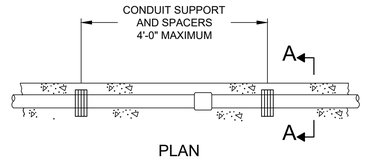
PLAN



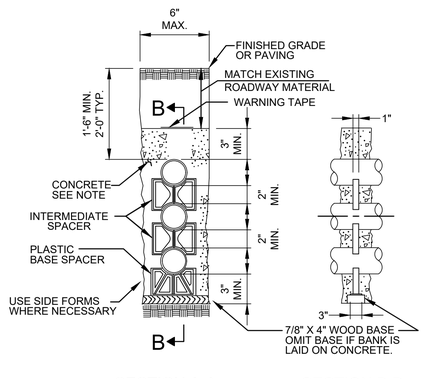
SECTION A-A SECTION B-B

2 RNMC-C CONDUIT INSTALLATION OPEN CUT METHOD - IN ROADWAY

TD20.29.03



PLAN

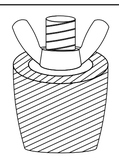


SECTION A-A SECTION B-B

3 RNMC-C CONDUIT INSTALLATION OPEN CUT METHOD - IN ROADWAY

N.T.S.

TD20.29.04



CONDUIT CAPPING PLUG

N.T.S.

NOTES:

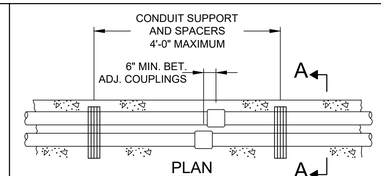
1. CONDUIT CAPPING PLUG SHALL BE CONSTRUCTED OF CONSTRUCTION RUBBER.
2. NOMINAL SIZE OF BASE OF CAPPING PLUG SHALL HAVE A MINIMUM DIAMETER OF 0.2" LESS THAN CONDUIT OPENING. NOMINAL SIZE OF TOP OF CAPPING PLUG SHALL HAVE MAXIMUM DIAMETER OF 0.2" GREATER THAN CONDUIT OPENING
3. PLUGS ONLY TO BE USED IN PULL BOXES

TD20.29.08

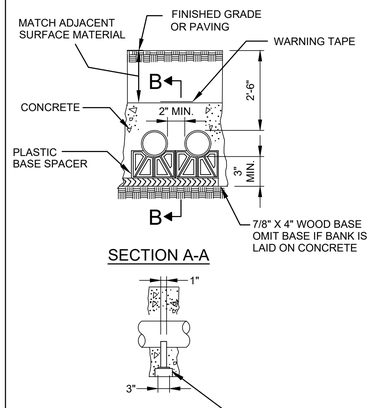
NOTES:

(APPLIES TO TD20.29.01 THROUGH TD20.29.09.)

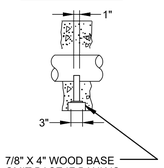
1. ALL CONCRETE FOR ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 03300 AND 03301, CATEGORY VI, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH 4000 PSI.



PLAN



SECTION A-A

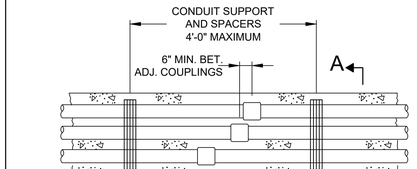


SECTION B-B

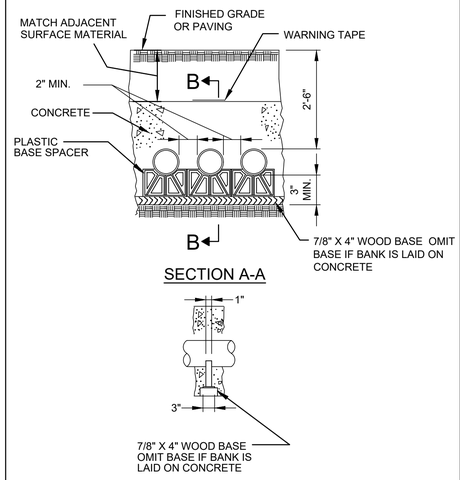
2 RNMC-C CONDUIT INSTALLATION NON-ROADWAY

N.T.S.

TD20.29.05



PLAN



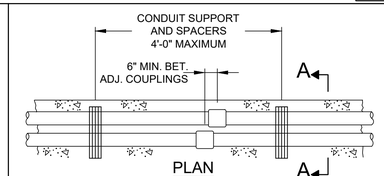
SECTION A-A

SECTION B-B

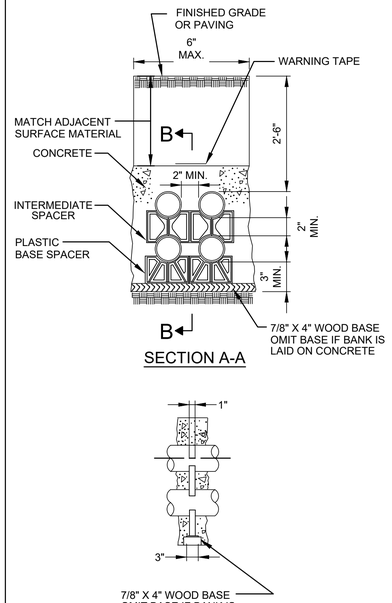
3 RNMC-C CONDUIT INSTALLATION NON-ROADWAY

N.T.S.

TD20.29.06



PLAN



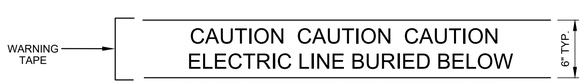
SECTION A-A

SECTION B-B

4 RNMC-C CONDUIT INSTALLATION

N.T.S.

TD20.29.07



BLACK LETTERS ON RED BACKGROUND

WARNING TAPE

N.T.S.

TD20.29.09

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

CONDUIT INSTALLATION

DISCLAIMER:

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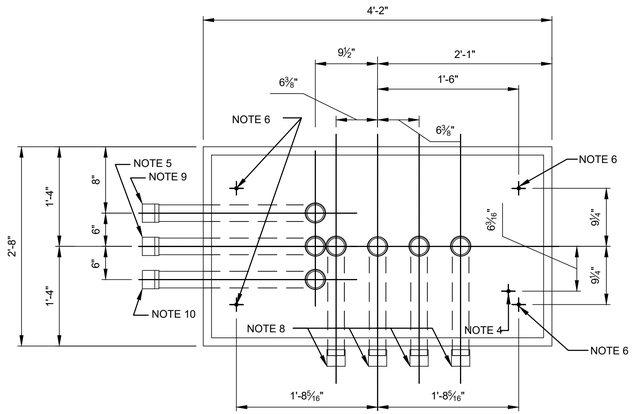
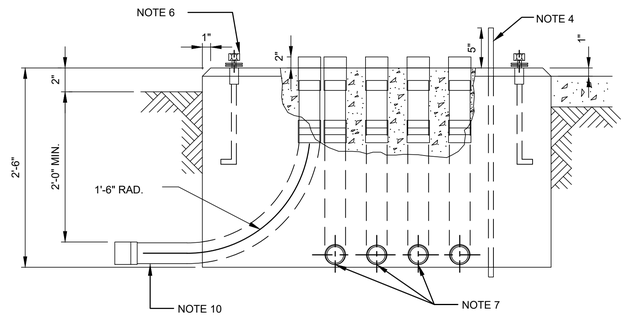
Date 07 / 15 / 2024

Drawing Number TD20.29



PLAN



ELEVATION

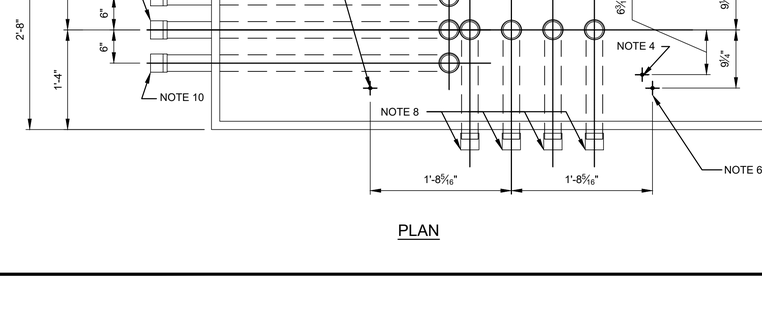
FOUNDATION TYPE "P"

N.T.S.

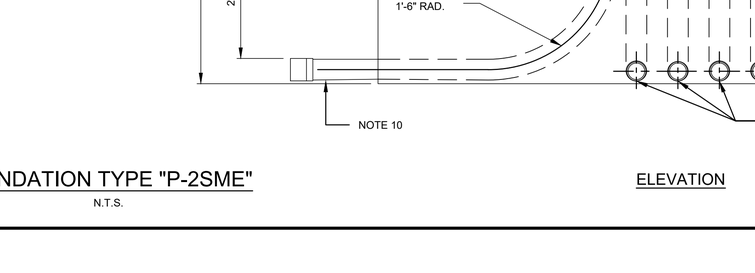
TD20.30.01

NOTES:

1. CONCRETE SHALL BE POURED MONOLITHICALLY.
2. ALL CONDUIT SHALL BE INSTALLED SO THAT COUPLINGS ARE EMBEDDED PLUMB AND FLUSH WITH TOP OF CONCRETE FOUNDATION.
3. J-BOLTS MUST BE INSERTED 1½" ± 1/16" INTO 3" COUPLING
4. ¾" X 10'-0" LG. GROUND ROD.
5. RIGID GALVANIZED STEEL CONDUIT (SERVICE CONDUIT). SEE ELECTRICAL CONTRACT DRAWINGS FOR DIRECTION AND SIZE.
6. ¾" DIA. ANCHOR BOLTS. ANCHOR BOLTS WITH 1" OF THREAD COUPLINGS, STN. STL. HEX HEAD CAP SCREWS 1½" LG. ASTM A193, GRADE B8, STN. STL. LOCK WASHERS AND STN. STL. FLAT WASHERS. ALL THREAD SHALL BE ¾" 10NC CL. 2 FIT.
7. RIGID METALLIC CONDUIT (ALL SHALL CONNECT TO RNMC CONDUIT WITH THE APPROPRIATE ADAPTER). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE. ANY CONDUITS NOT DESIGNATED FOR USE ON THE CONTRACT DRAWINGS SHALL BE EXTENDED BEYOND THE FOUNDATION A MINIMUM OF 12" AND CAPPED.
8. JOINT SEALANT SHALL CONFORM TO SPECIFICATION SECTION 02578 "PAVEMENT JOINT SEALING."
9. 3" RIGID NON-METALLIC CONDUIT FOR COMMUNICATION (FIBER OPTIC).
10. RIGID GALVANIZED STEEL CONDUIT FOR TELEPHONE SERVICE (IF REQUIRED).



PLAN



ELEVATION

FOUNDATION TYPE "P-SME"

N.T.S.

TD20.30.02

GALVANIZED COUPLING

(GALVANIZED PER ASTM A-153 CONTINUOUS THREADS)

N.T.S.

TD20.30.03

PLAN

ELEVATION

FOUNDATION TYPE "P-2SME"

N.T.S.

TD20.30.04

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

CONTROLLER CABINET FOUNDATIONS (P, P-SME, P-2SME)

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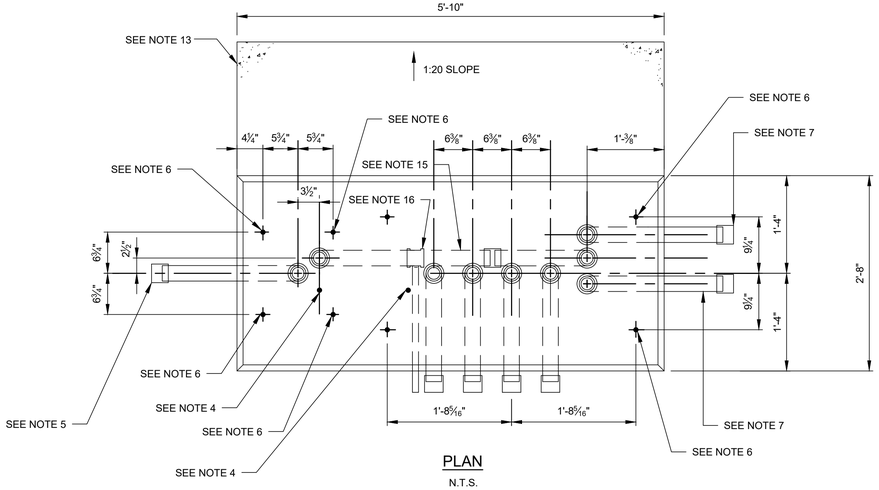
Date 07 / 15 / 2024

Drawing Number **TD20.30**

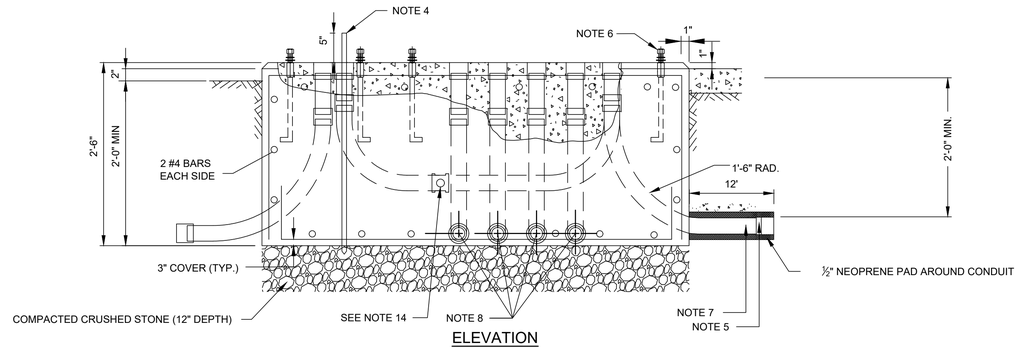
NOTES:

1. CONCRETE SHALL BE POURED MONOLITHICALLY.
2. ALL CONDUIT SHALL BE INSTALLED SO THAT COUPLINGS HAVE A 2" STUB ABOVE THE FOUNDATION.
3. J-BOLTS SHALL BE INSERTED 1½" ± 1/16" INTO 3" COUPLING
4. ⅝" X 10'-0" LG. GROUND ROD.
5. RIGID GALVANIZED STEEL CONDUIT (SERVICE CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION, SIZE, AND NUMBER.
6. ¾" DIA. ANCHOR BOLTS. ANCHOR BOLTS WITH 1" OF THREAD COUPLINGS, STN. STL. HEX HEAD CAP SCREWS 1½" LG. ASTM A193, GRADE B8, STN. STL. LOCK WASHERS AND STN. STL. FLAT WASHERS. ALL THREAD TO BE ¾" 10NC CL. 2 FIT.
7. RIGID GALVANIZED STEEL CONDUIT (INTERCONNECT CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE. IF NOT SPECIFIED 2" DIA. RIGID METALLIC CONDUIT TO BE INSTALLED.
8. RIGID GALVANIZED STEEL CONDUIT (ALL SHALL CONNECT TO PVC-H CONDUIT WITH THE APPROPRIATE ADAPTER). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE. ANY CONDUITS NOT DESIGNATED FOR USE ON THE CONTRACT DRAWINGS SHALL BE EXTENDED BEYOND THE FOUNDATION A MINIMUM OF 12" AND CAPPED.
9. ALL REINFORCEMENT STEEL SHALL BE EPOXY COATED CONFORMING TO ASTM A775. REPAIR OF EPOXY COATING DUE TO DAMAGE FROM FABRICATION, SHIPPING, HANDLING, MINOR ADJUSTMENTS AND INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM A775.
10. DEVELOPMENT LENGTH AND SPLICES OF BAR REINFORCEMENT SHALL CONFORM TO CLASS B, UNLESS OTHERWISE NOTED.
11. ALL INSTALLED CONCRETE PADS AND FOUNDATIONS ARE TO RECEIVE BROOM FINISH. FINISH AND TREATMENT OF ALL EXPOSED CONCRETE FORMED SURFACES SHALL MATCH THE EXISTING CONCRETE, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
12. JOINT SEALANT SHALL CONFORM TO SPECIFICATION SECTION 02578 "PAVEMENT JOINT SEALING".
13. CONCRETE PAD FOR ACCESS TO CONTROLLER CABINET, PAD SHALL BE INSTALLED ON THE SAME SIDE AS THE CABINET DOOR.
14. DRAIN: 1" DIAMETER RIGID METALLIC CONDUIT (PITCH AWAY FROM FOUNDATION).
15. 2" RIGID GALVANIZED STEEL CONDUIT.
16. 2"x2"x1" GALVANIZED TEE FITTING.



PLAN

N.T.S.



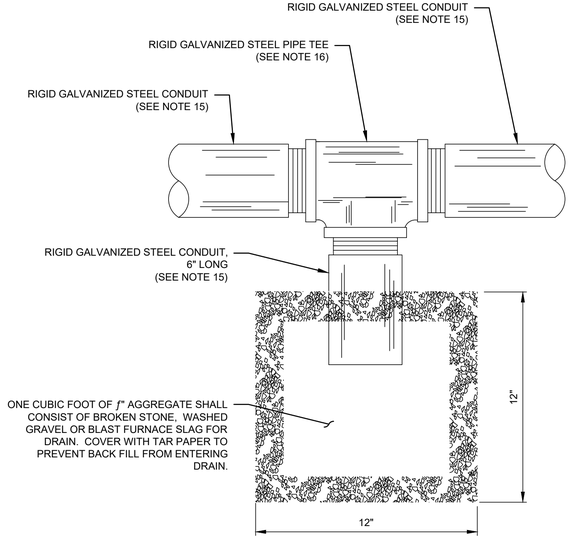
ELEVATION

N.T.S.

FOUNDATION TYPE "P-MC"

N.T.S.

TD20.31.01



TEE DRAIN

N.T.S.

TD20.31.02

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

FOUNDATION TYPE
"P-MC"

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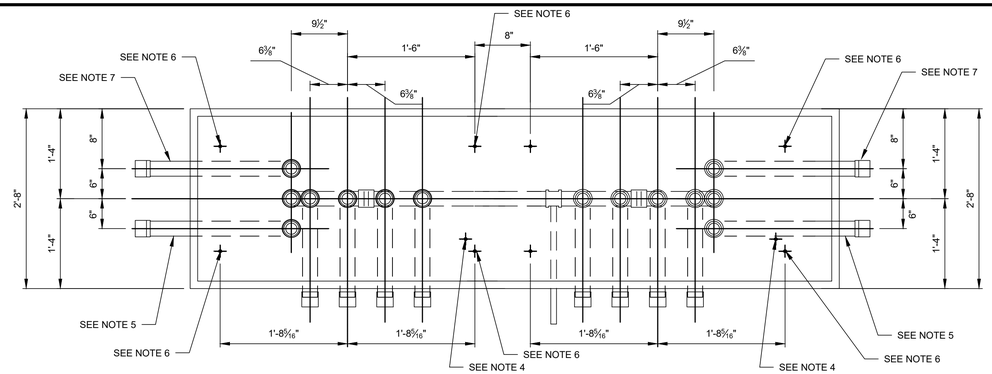
Date 07 / 15 / 2024

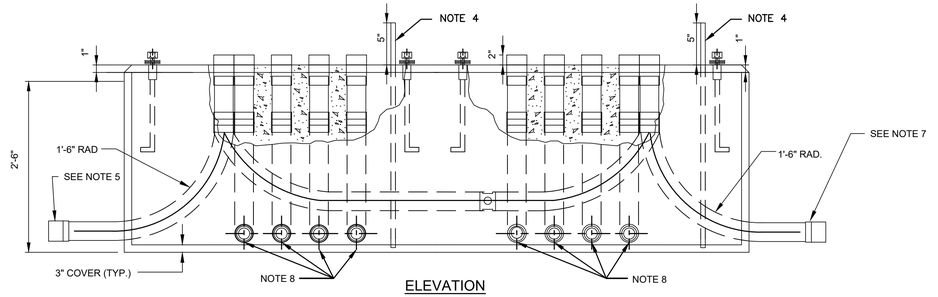
Drawing Number TD20.31

NOTES:

1. CONCRETE SHALL BE POURED MONOLITHICALLY.
2. ALL CONDUIT SHALL BE INSTALLED SO THAT COUPLINGS HAVE A 2" STUB ABOVE THE FOUNDATION.
3. J-BOLTS SHALL BE INSERTED 1½" ± 1/16" INTO 3" COUPLING
4. ⅝" X 10'-0" LG. GROUND ROD.
5. RIGID GALVANIZED STEEL CONDUIT (SERVICE CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION, SIZE, AND NUMBER.
6. ¾" DIA. ANCHOR BOLTS. ANCHOR BOLTS WITH 1" OF THREAD COUPLINGS, STN. STL. HEX HEAD CAP SCREWS 1½" LG. ASTM A193, GRADE B8, STN. STL. LOCK WASHERS AND STN. STL. FLAT WASHERS. ALL THREAD TO BE ¾" 10NC CL. 2 FIT.
7. RIGID GALVANIZED STEEL CONDUIT (INTERCONNECT CONDUIT). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE. IF NOT SPECIFIED 2" DIA. RIGID METALLIC CONDUIT TO BE INSTALLED.
8. RIGID GALVANIZED STEEL CONDUIT (ALL SHALL CONNECT TO PVC-H CONDUIT WITH THE APPROPRIATE ADAPTER). SEE CONTRACT DRAWINGS FOR DIRECTION AND SIZE. ANY CONDUITS NOT DESIGNATED FOR USE ON THE CONTRACT DRAWINGS SHALL BE EXTENDED BEYOND THE FOUNDATION A MINIMUM OF 12" AND CAPPED.
9. ALL INSTALLED CONCRETE PADS AND FOUNDATIONS ARE TO RECEIVE BROOM FINISH. FINISH AND TREATMENT OF ALL EXPOSED CONCRETE FORMED SURFACES SHALL MATCH THE EXISTING CONCRETE, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
10. JOINT SEALANT SHALL CONFORM TO SPECIFICATION SECTION 02578 "PAVEMENT JOINT SEALING".
11. CONCRETE PAD FOR ACCESS TO CABINET, PAD SHALL BE INSTALLED ON THE SAME SIDE AS THE CABINET DOOR.
12. DRAIN: 1" DIAMETER RIGID METALLIC CONDUIT (PITCH AWAY FROM FOUNDATION).
13. 2" RIGID GALVANIZED STEEL CONDUIT.
14. 2"x2"x1" GALVANIZED TEE FITTING.



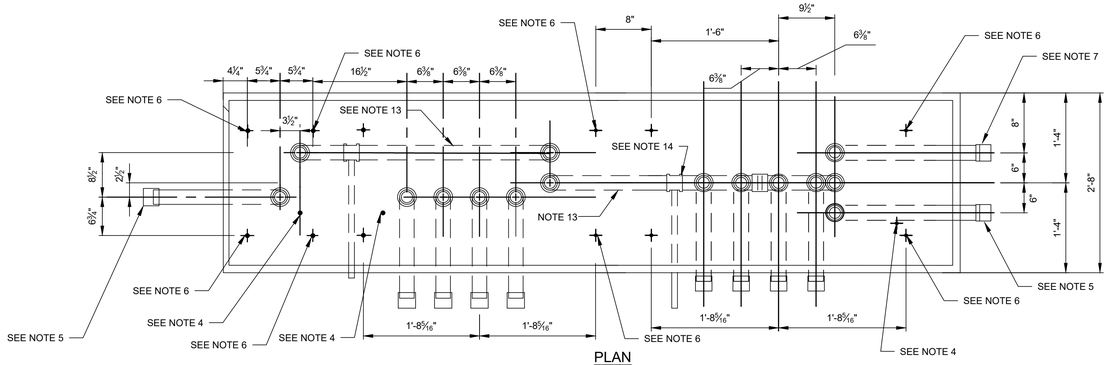
PLAN



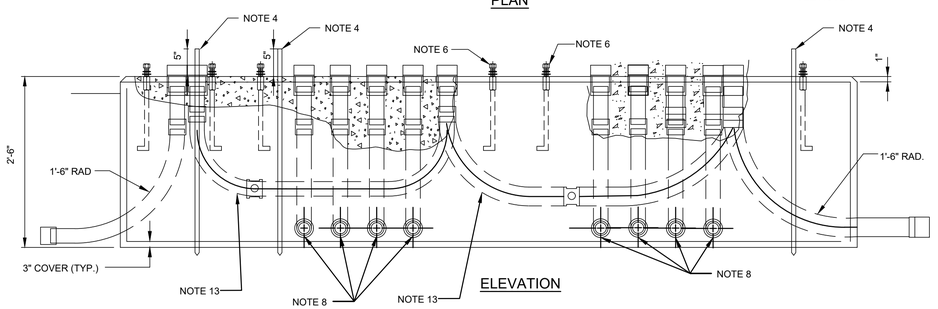
ELEVATION

FOUNDATION TYPE "2-P"

N.T.S.



PLAN



ELEVATION

FOUNDATION TYPE "2P-MC"

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

FOUNDATION TYPE "2-P" & "2P-MC"

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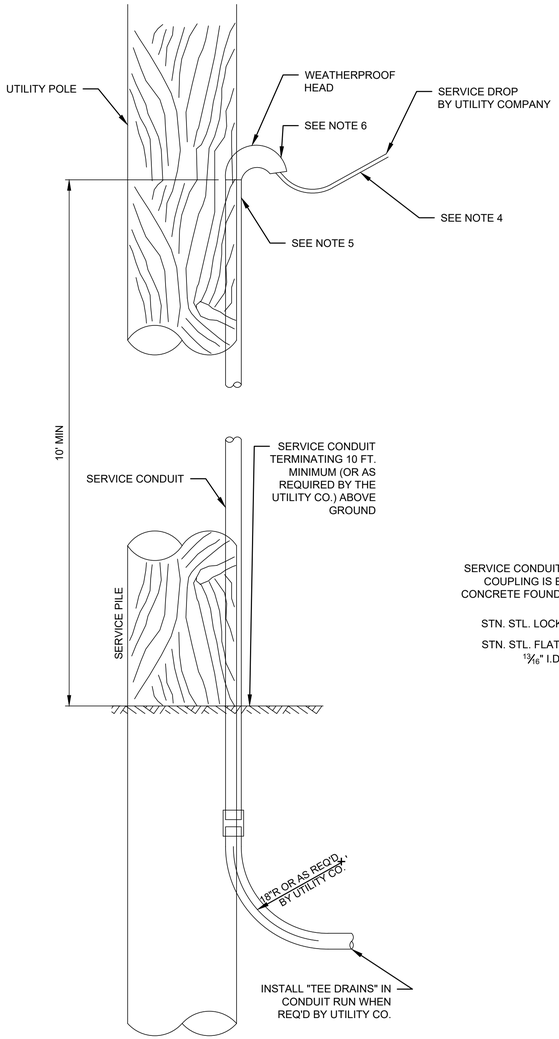
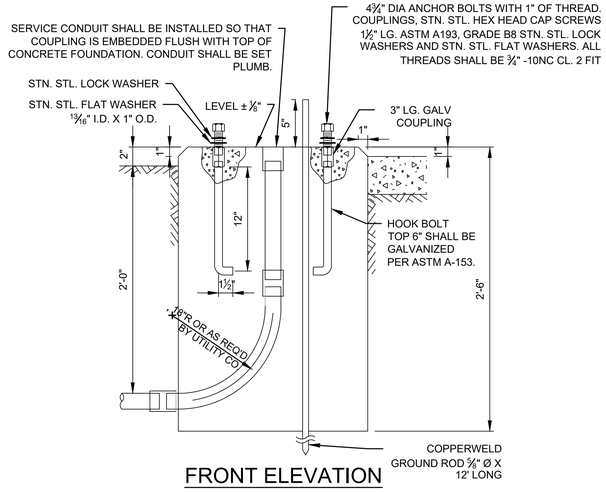
Drawing Number TD20.32



CONDUIT RISER AT UTILITY POLE

N.T.S.



FRONT ELEVATION

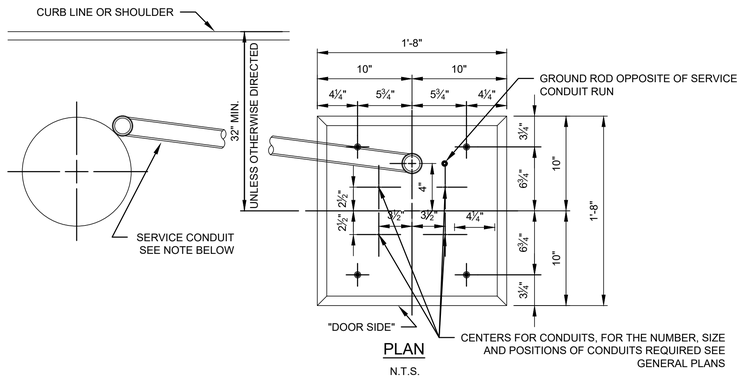
N.T.S.

FOUNDATION TYPE "MCF"

N.T.S.

NOTES:

1. ALL CONDUIT SHALL BE INSTALLED SO THAT COUPLINGS ARE EMBEDDED PLUMB AND FLUSH WITH TOP OF CONCRETE FOUNDATION.
2. J-BOLT MUST BE INSERTED 1 "± INTO 3" COUPLING.
3. ALL FOUNDATIONS SHALL BE POURED MONOLITHIC.
4. FURNISH AND INSTALL SERVICE ENTRANCE CONDUCTORS AND RISER CONDUIT. LEAVE SUFFICIENT SLACK IN CONDUCTORS TO ALLOW POINT OF CONNECTION BY UTILITY COMPANY. FOR CONDUCTOR SIZES SEE ELECTRICAL PLAN DRAWINGS.
5. FURNISH AND INSTALL ALL MATERIALS ACCORDING TO PSEG'S "ELECTRICAL SERVICE INSTALLATION INFORMATION & REQUIREMENTS" MANUAL AND PSE&G SERVICE DEPARTMENT INSTRUCTIONS.
6. FURNISH AND INSTALL WEATHER HEAD AT 10' FEET ABOVE GROUND MIN OR AS DIRECTED BY THE ENGINEER.
7. COORDINATE ELECTRICAL SERVICE LAYOUT WITH ENGINEER PRIOR TO INSTALLATION.



PLAN

N.T.S.

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

CONDUIT RISER AT UTILITY POLE AND FOUNDATION TYPE "MCF"

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Date 07 / 15 / 2024

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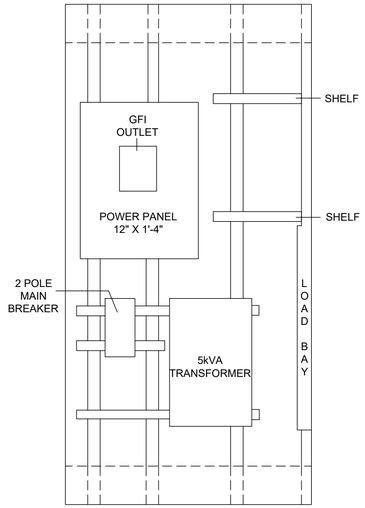
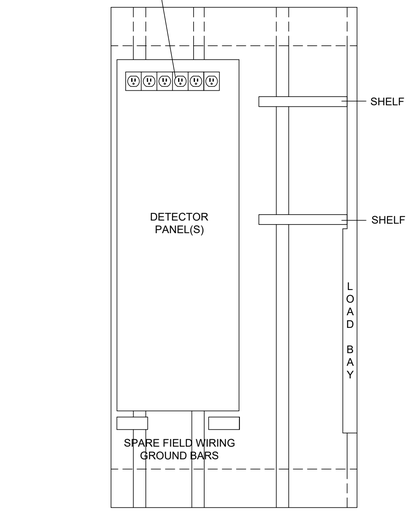
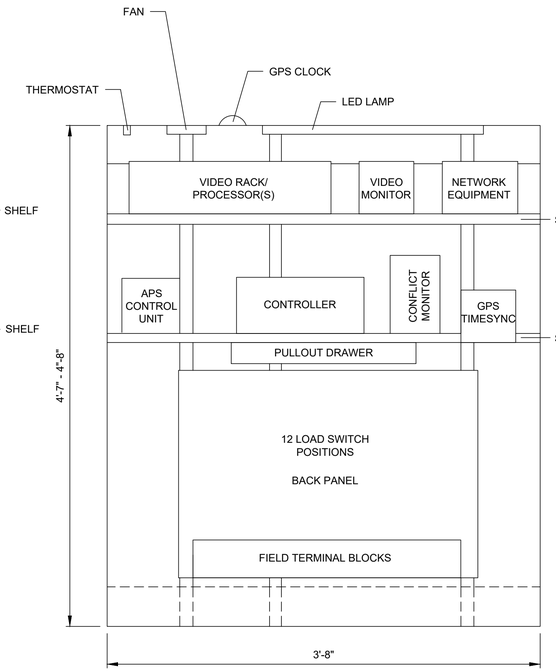


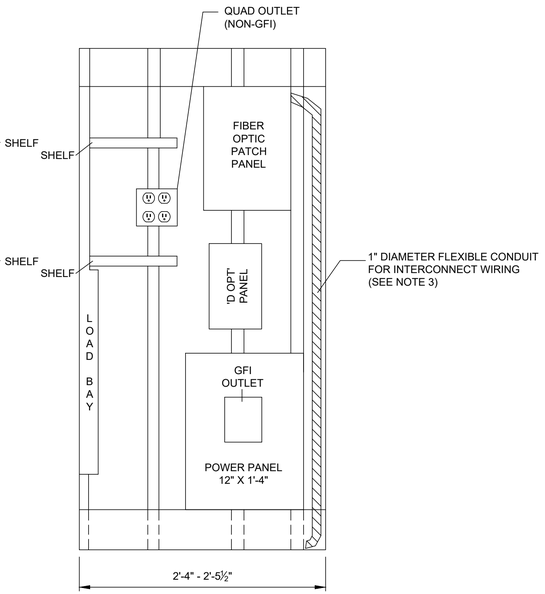
CABINET LEFT WALL



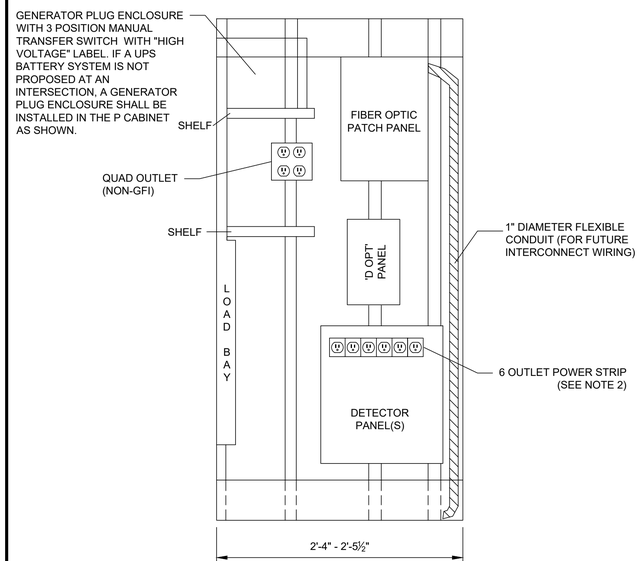
CABINET LEFT WALL



CABINET REAR WALL



CABINET RIGHT WALL



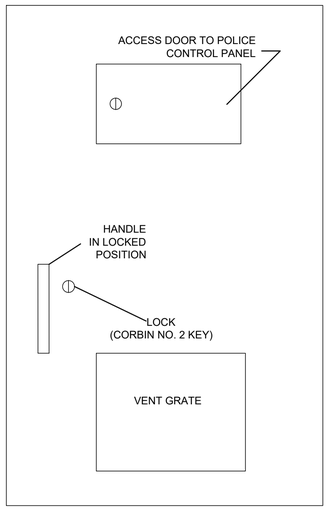
CABINET RIGHT WALL

ALTERNATE P CABINET LAYOUT

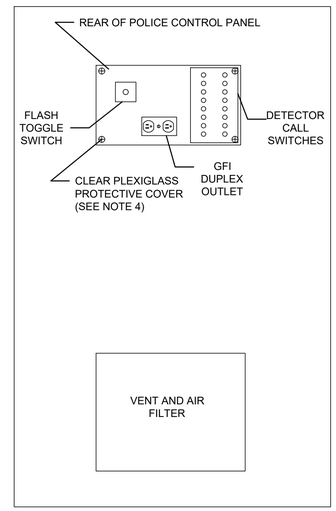
N.T.S.

NOTES:

1. ALL AUXILIARY PANELS SHALL BE INSTALLED AS FAR BACK FROM THE OUTSIDE EDGE OF THE CABINET WITHOUT INTERFERING WITH THE BACK PANEL OR ADJUSTMENT OF SHELVES.
2. POWER STRIP SHALL PLUG INTO NON-GFI OUTLET.
3. FLEXIBLE CONDUIT SHALL BE RUN CONTINUOUS FROM POINT OF ENTRY IN CABINET TO PATCH PANEL.
4. CLEAR PROTECTIVE COVER SHALL ALLOW FOR FULL VISIBILITY OF ALL ITEMS WHILE IN PLACE. COVER SHALL BE EASILY DETACHABLE FOR FULL ACCESS TO OUTLET AND SWITCHES.



FRONT FACE OF DOOR



REAR FACE OF DOOR

P CABINET LAYOUT

N.T.S.

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AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

P CABINET
LAYOUT

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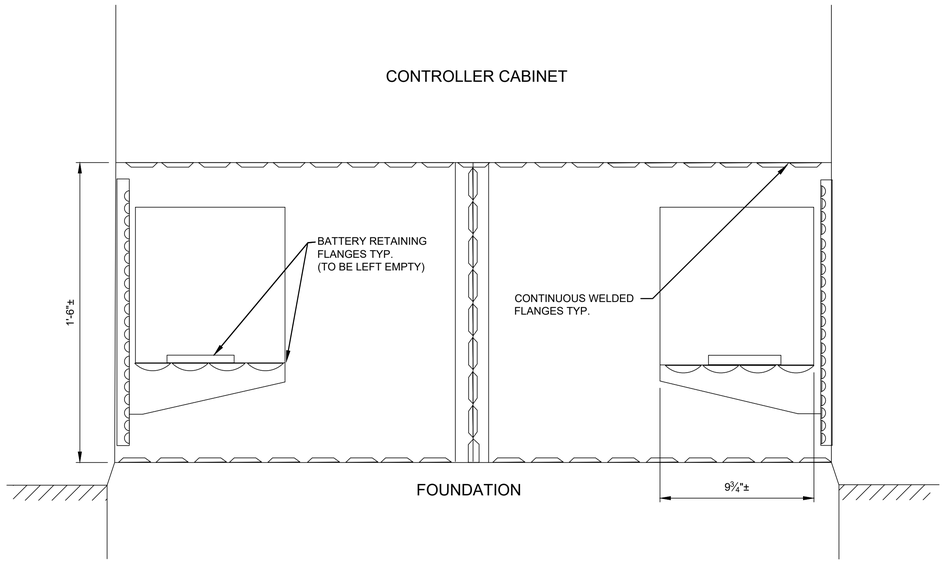
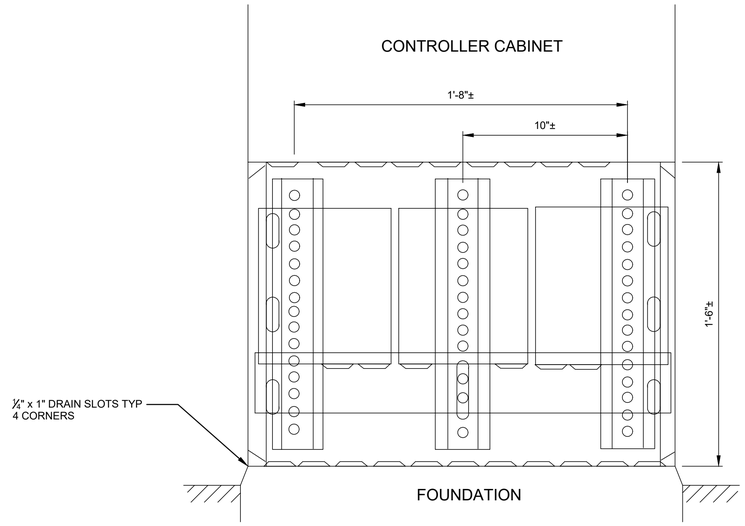
Date 07 / 15 / 2024

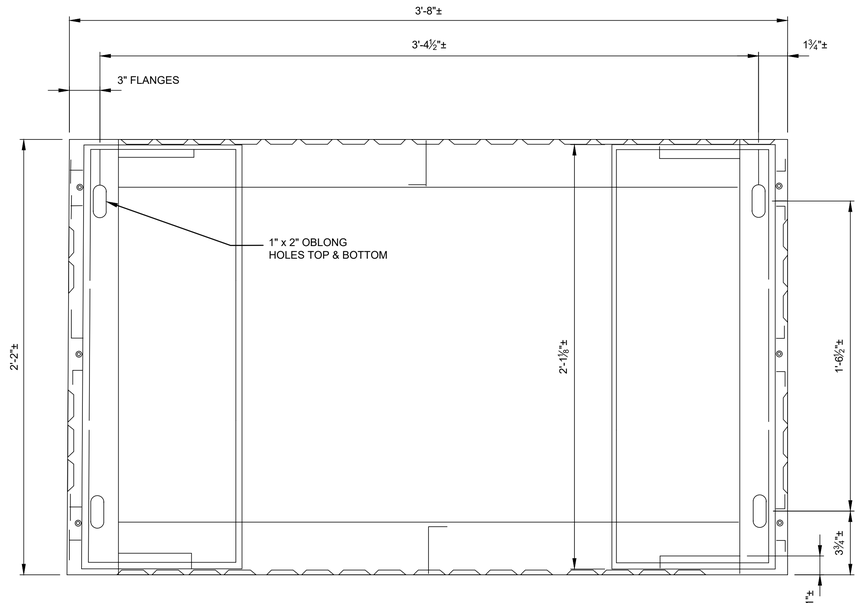
Drawing Number TD20.34



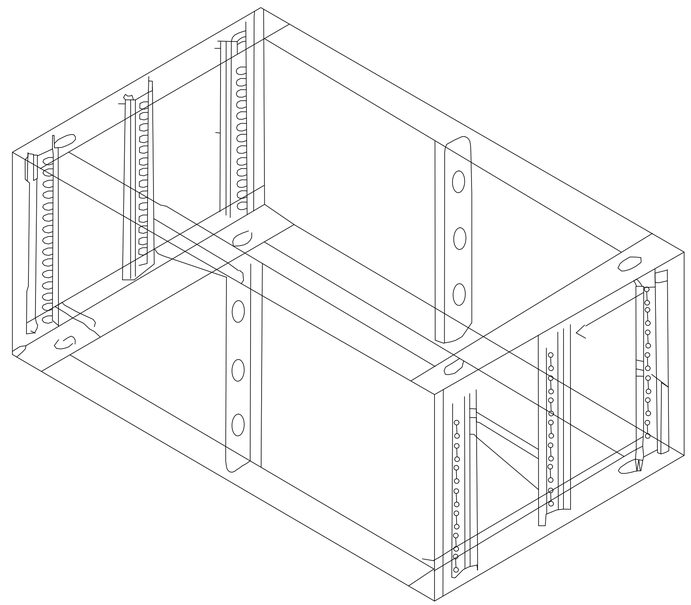
FRONT VIEW



SIDE VIEW



TOP VIEW



UL LISTED - E216745

ALUMINUM CONTROLLER CABINET SKIRT

N.T.S.

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AIR LAND RAIL SEA

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

CONTROLLER CABINET SKIRT FOR UPS

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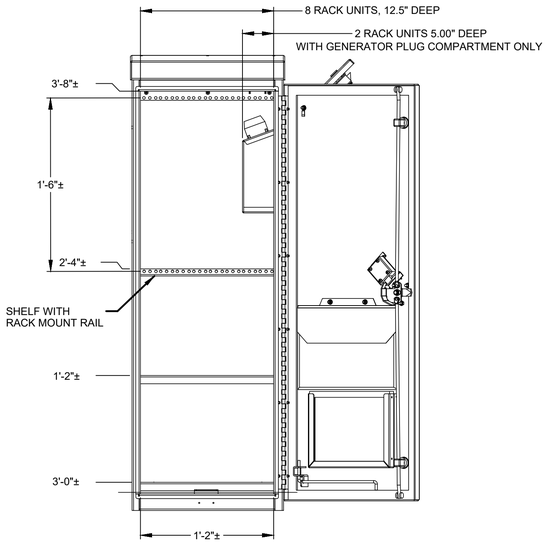
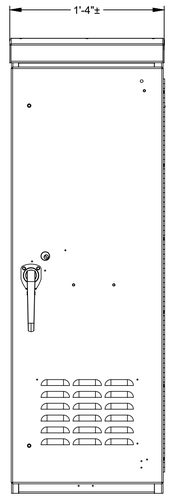
Date 07 / 15 / 2024

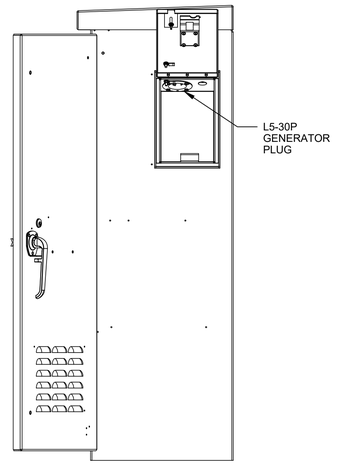
Drawing Number TD20.35



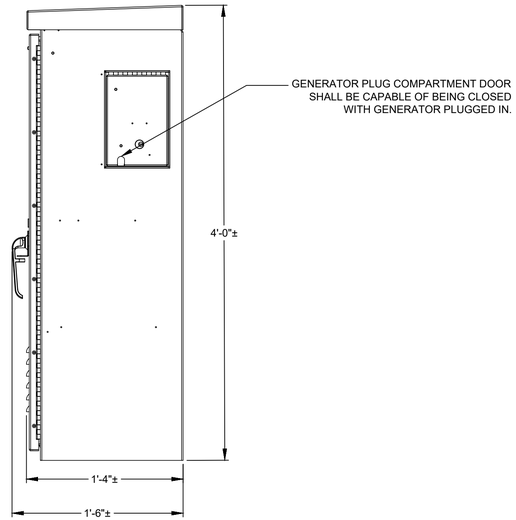
FRONT VIEW (DOOR OPEN)



FRONT VIEW

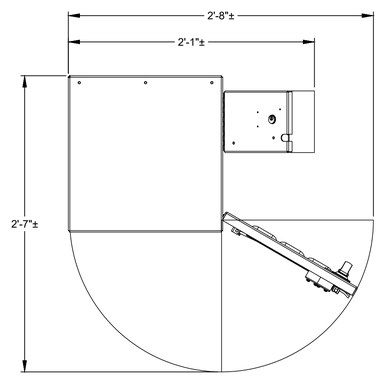


SIDE VIEW (DOORS OPEN)



ENCLOSURE
WITH GEN PORT

SIDE VIEW



SIDE VIEW (DOORS OPEN)

ALUMINUM SIDEMOUNT ENCLOSURE FOR UNINTERRUPTIBLE POWER SOURCE (UPS)

N.T.S.

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

SIDE-MOUNT
ENCLOSURE (SME)
FOR UPS

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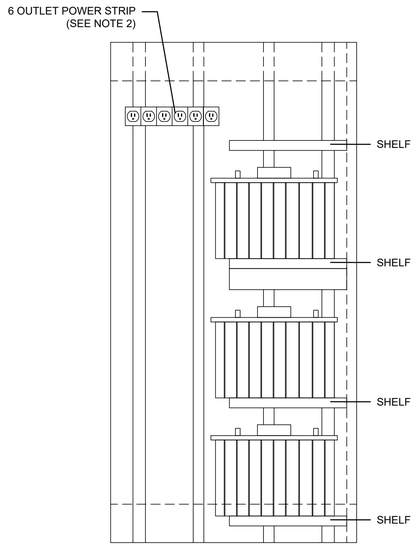
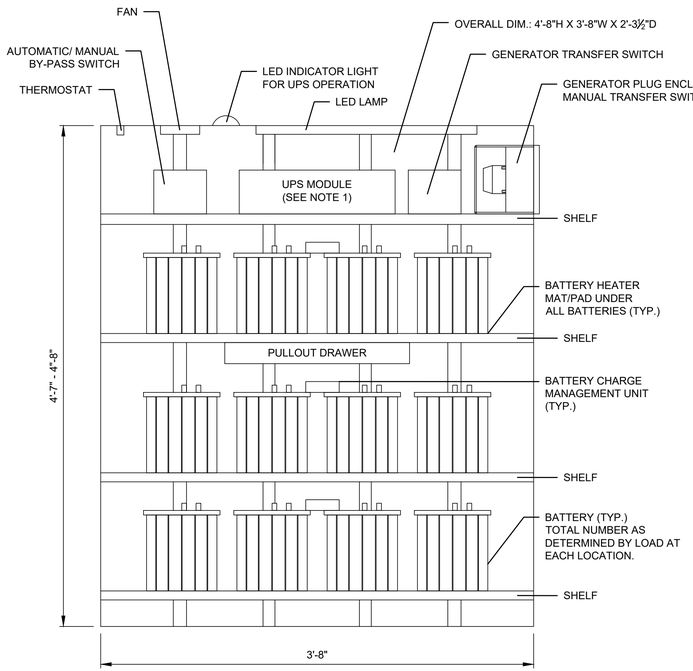
Date 07 / 15 / 2024

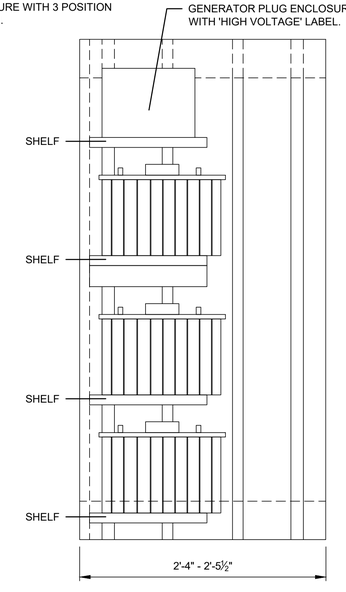
Drawing Number TD20.36



CABINET LEFT WALL



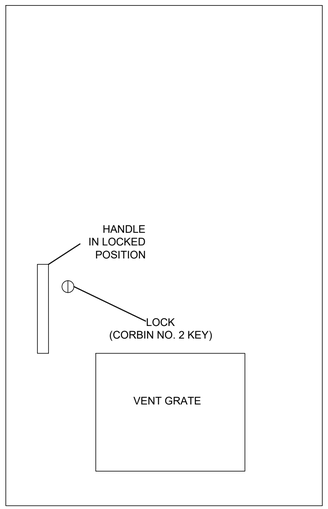
CABINET REAR WALL



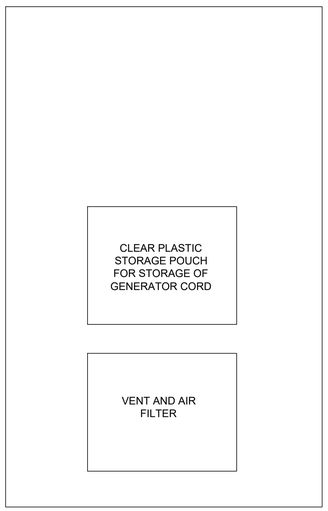
CABINET RIGHT WALL

NOTES:

1. FOR UPS EQUIPMENT INFORMATION, SEE CONTRACT DRAWING SGXXX.
2. POWER STRIP SHALL PLUG INTO AUXILIARY RECEPTACLE LOCATED ON THE AUTOMATIC TRANSFER SWITCH.
3. CABINET SHALL CONTAIN A PERMANENT VANDAL-PROOF GENERATOR SECURITY BOLT. SEE SPECIFICATION 16611.



FRONT FACE OF DOOR



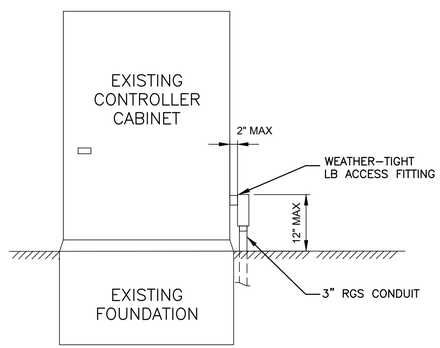
REAR FACE OF DOOR

UPS CABINET LAYOUT
N.T.S.

TD20.37.01

NOTE:

1. APPLY SILICON SEALANT AT CONNECTION IF REQUIRED BY THE ENGINEER TO CREATE WEATHER TIGHT CONNECTION.



ABOVE–GROUND CONTROLLER CABINET CONNECTION DETAIL
N.T.S.

TD20.37.02

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ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
TRAFFIC SIGNALS

ABOVE-GROUND CONTROLLER CABINET CONNECTION DETAIL AND UPS CABINET LAYOUT

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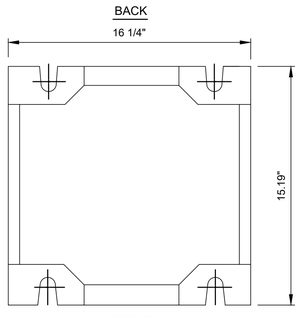
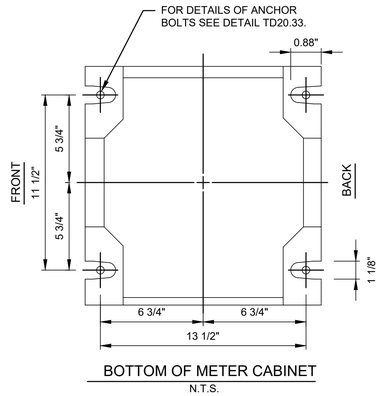
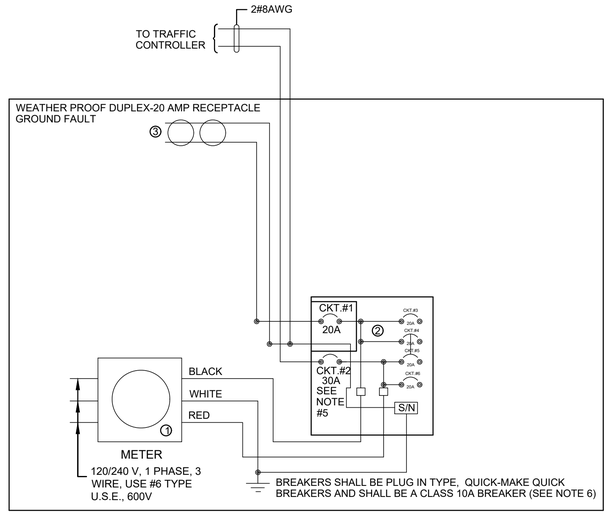
Drawing Number TD20.37



TOP OF METER CABINET
N.T.S.



BOTTOM OF METER CABINET
N.T.S.

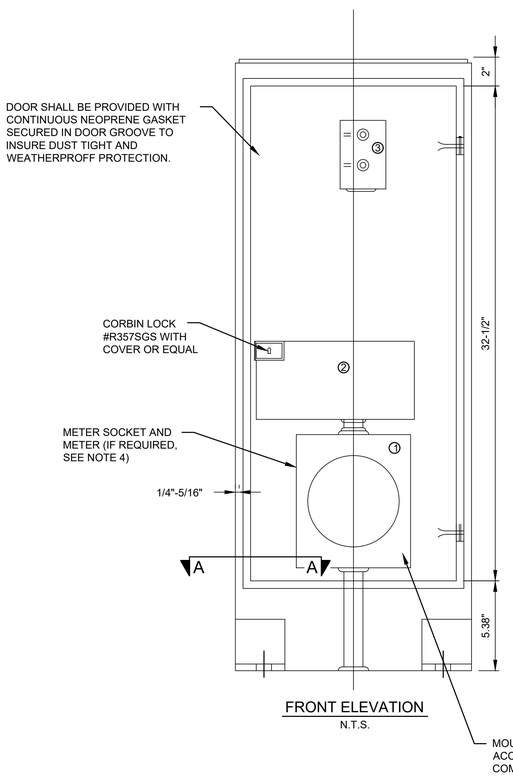


NOTE:
ALL WIRE SHALL BE #6-AWG-600 VOLT OR AS OTHERWISE SHOWN.

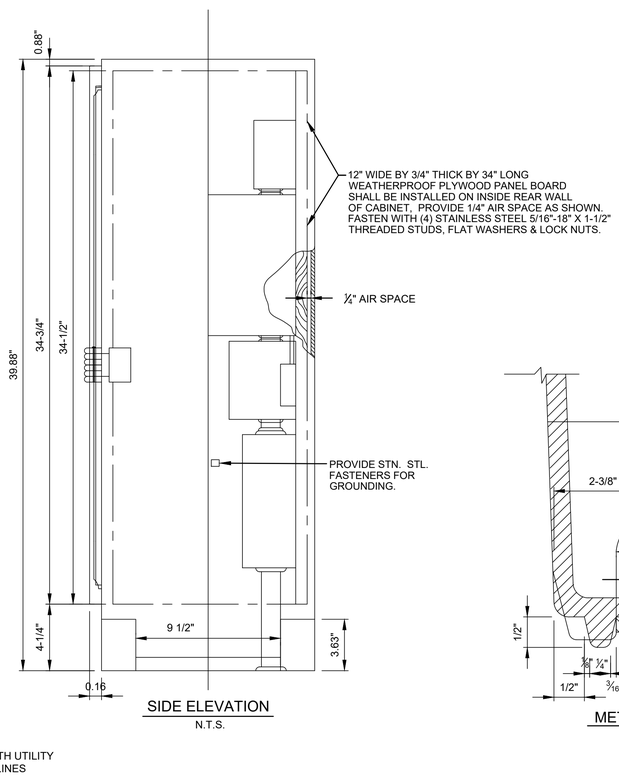
SCHEMATIC WIRING DIAGRAM: 120/240 VOLT

LEGEND

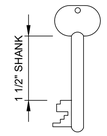
1. METER SOCKET-INSTALLED BY CONTRACTOR-PROVIDED BY UTILITY COMPANY ON REQUEST.
2. 4 /8 CIRCUIT LOAD CENTER WITH ENCLOSURE COMPLETE WITH 1-30A & 5-20A CIRCUIT BREAKERS.
3. WEATHERPROOF, 20A DUPLEX RECEPTICAL GROUND FAULT.
4. IF METER IS NOT REQUIRED, INSTALL 1," I.D. SEALTITE FLEX CONDUIT AND 1," I.D. NIPPLE FROM REDUCER COUPLING TO MAIN BREAKER PANEL.
5. A 40 AMP BREAKER SHALL BE INSTALLED WITH EIGHT PHASE CONTROLLER ASSEMBLIES.
6. THE TOTAL NUMBER OF CIRCUIT BREAKERS SHALL NOT EXCEED SIX.



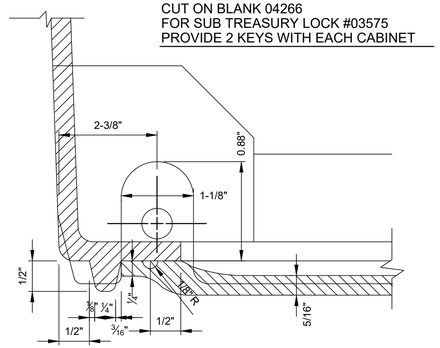
FRONT ELEVATION
N.T.S.



SIDE ELEVATION
N.T.S.



KEY ALIKE CHANGE #1
CUT ON BLANK 04266
FOR SUB TREASURY LOCK #03575
PROVIDE 2 KEYS WITH EACH CABINET



METER CABINET CORNER SECTION
SHOWING DOOR GASKET GROOVE DETAIL.

SECTION A-A
N.T.S.

ALUMINUM METER CABINET
N.T.S.

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

METER CABINET TYPE "T"

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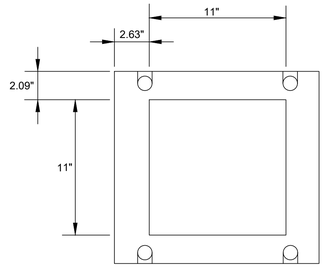
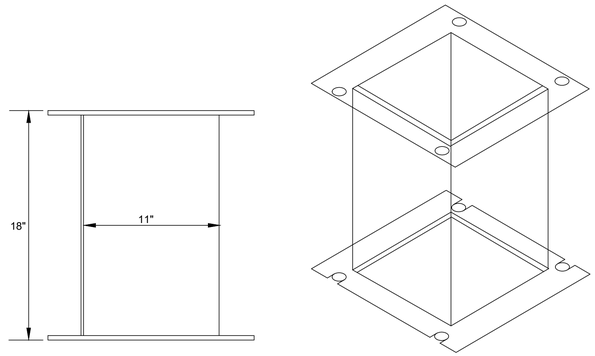
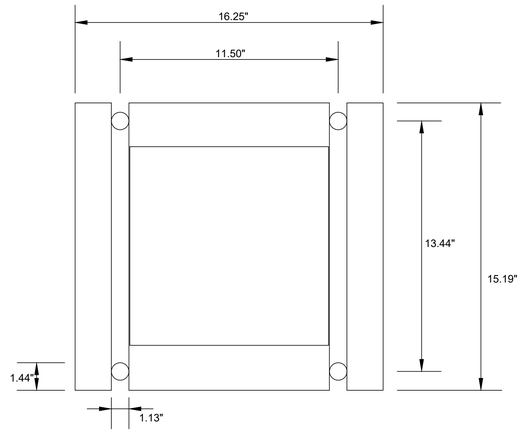
Date 07 / 15 / 2024

Drawing Number TD20.38







NOTE:
METER CABINET SKIRTS SHALL BE FURNISHED AND INSTALLED AT ALL NEW METER CABINET LOCATIONS.

ALUMINUM METER CABINET SKIRT
N.T.S.

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
TRAFFIC SIGNALS

METER CABINET SKIRT

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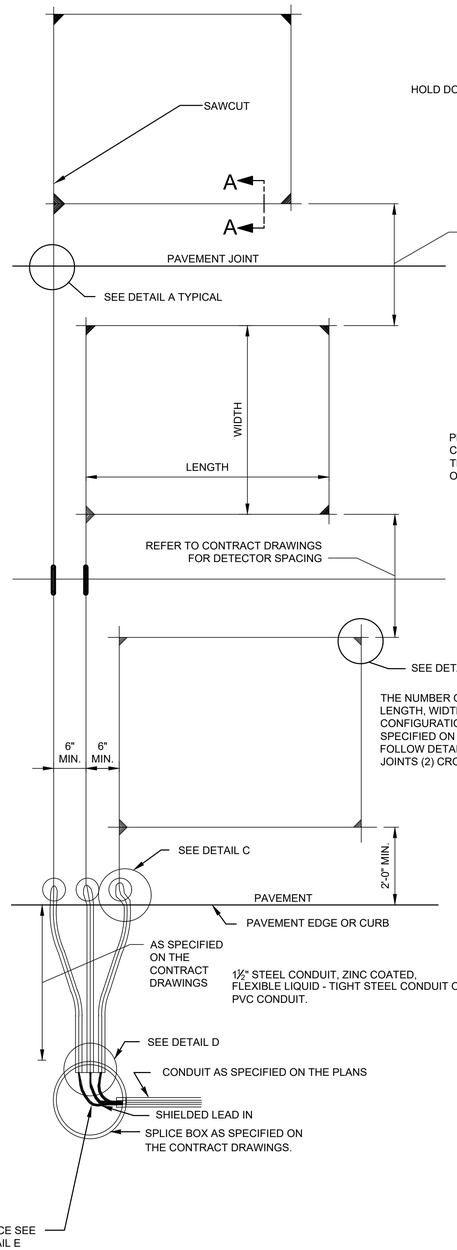
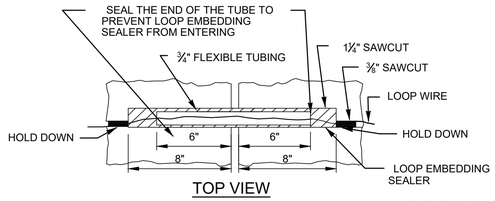
Drawing Number TD20.39

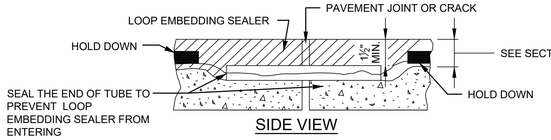


LOOP INSTALLATION DETAILS

N.T.S.

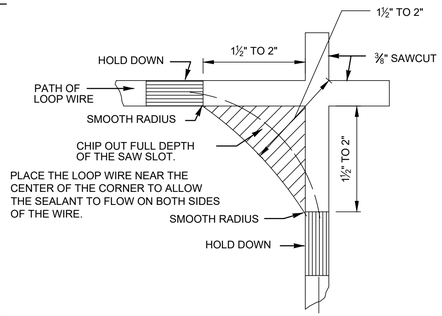


TOP VIEW

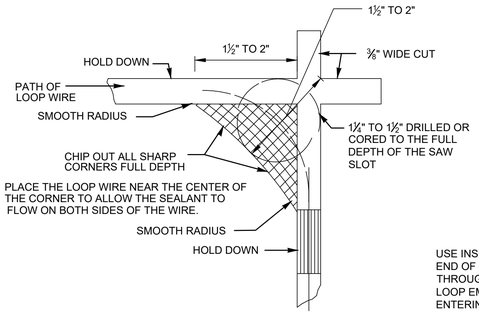


SIDE VIEW

DETAIL A - CROSSING PAVEMENT JOINTS OR CRACKS

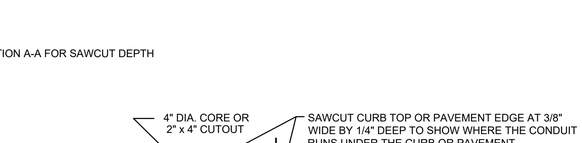


CHIPPED OUT CORNER

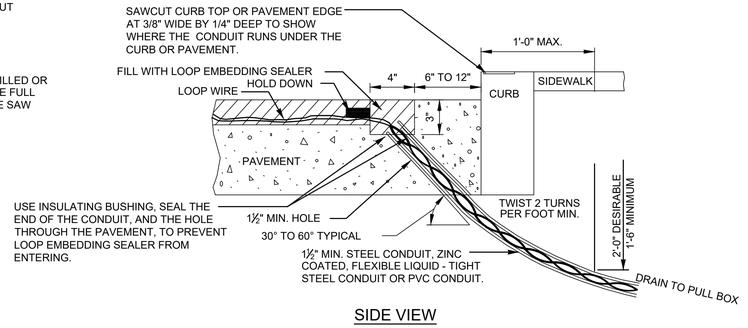


CORE CORNER

DETAIL B - CORNER DETAILS

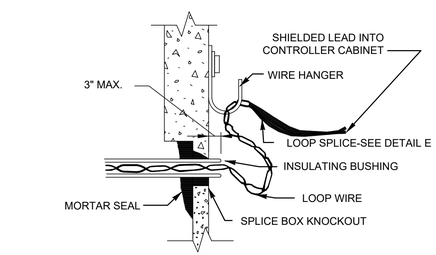


TOP VIEW

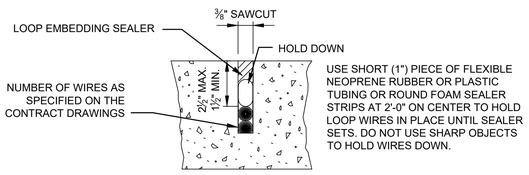


SIDE VIEW

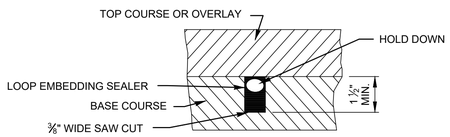
DETAIL C - LOOP LEAD IN AT PAVEMENT EDGE



DETAIL D

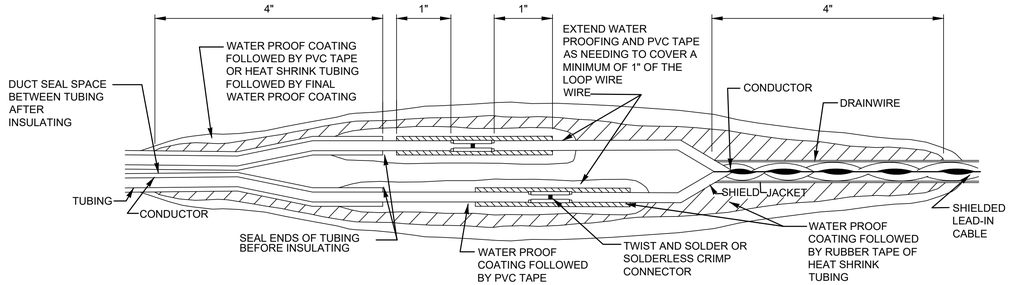


SAWCUT CROSS SECTION IN CONCRETE OR ASPHALT



SAWCUT CROSS SECTION IN ASPHALT WHERE AN OVERLAY IS BEING PLACED

SECTION A-A



DETAIL E - LOOP SPLICE

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

LOOP DETECTOR INSTALLATION

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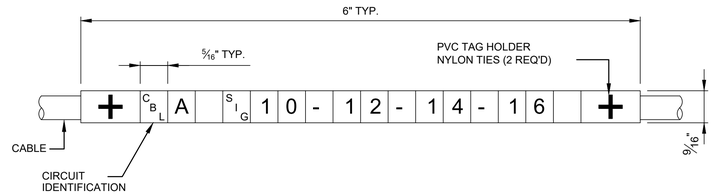
Date 07 / 15 / 2024

Drawing Number **TD20.40**

CIRCUIT IDENTIFICATION:

CBL = CABLE
PED = PEDESTRIAN
PB = PUSH BUTTON

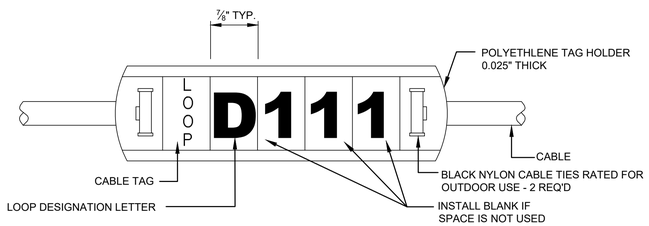
(TAG LETTERS SHALL BE BLACK ON YELLOW)



TRAFFIC SIGNAL
CABLE IDENTIFICATION TAG DETAIL

N.T.S.

TD20.41.01



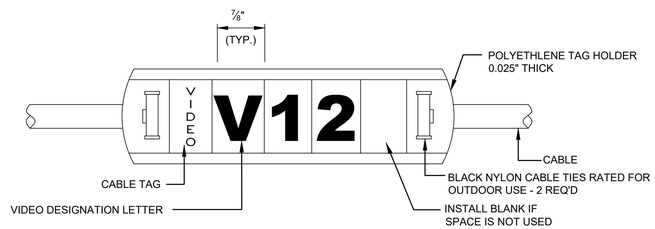
LOOP DETECTOR
CABLE IDENTIFICATION TAG DETAIL

(TAG LETTERS SHALL BE BLACK ON YELLOW)
N.T.S.

LOOP DESIGNATION LETTERING

1st COLUMN: DETECTOR TYPE
2nd COLUMN: PHASE
3rd COLUMN: DETECTOR UNIT NUMBER
4th COLUMN: CHANNEL

TD20.41.02



VIDEO DETECTOR
CABLE IDENTIFICATION TAG DETAIL

(TAG LETTERS SHALL BE BLACK ON YELLOW)
N.T.S.

VIDEO DESIGNATION LETTERING

1st COLUMN: DETECTOR TYPE
2nd COLUMN: CAMERA NUMBER
3rd COLUMN: PHASE NUMBER

NOTE: VIDEO DESIGNATION NUMBER SHALL BE LABELED
IN ACCORDANCE TO CONTRACT DRAWINGS

TD20.41.03

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AIR LAND RAIL SEA

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PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

CABLE
IDENTIFICATION
TAG

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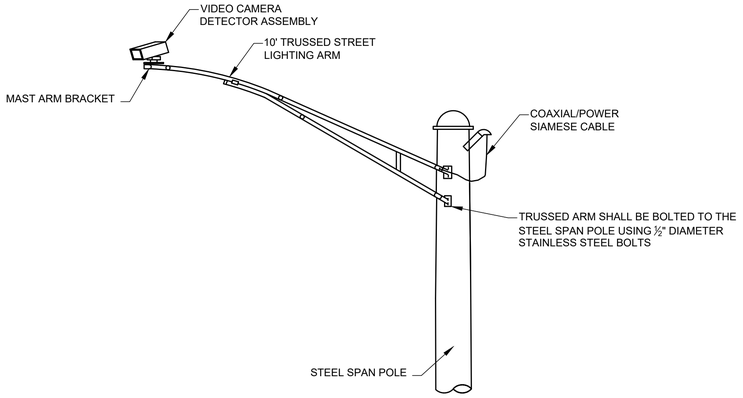
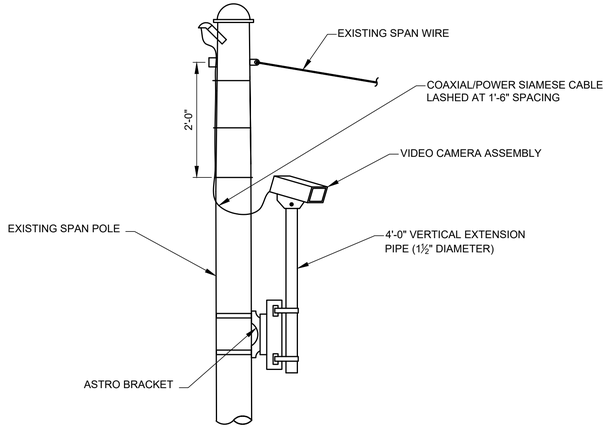
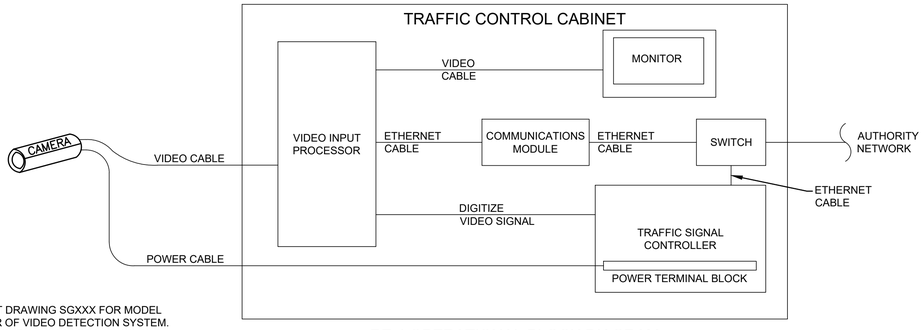
Drawing Number TD20.41



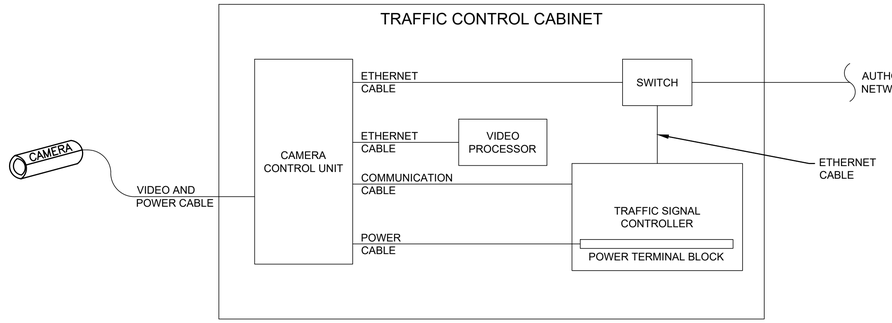
CAMERA MOUNTING ON ROADWAY LIGHTING MAST ARM



CAMERA MOUNTING ON SPAN WIRE SIGNAL POLE



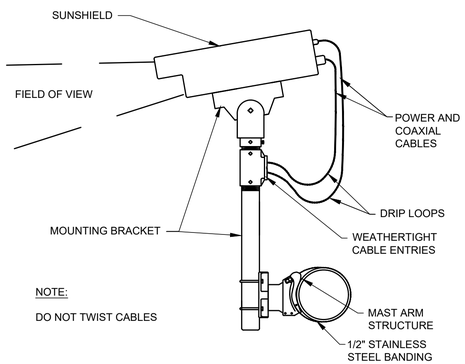
RZ-4 OPERATIONAL BLOCK DIAGRAM



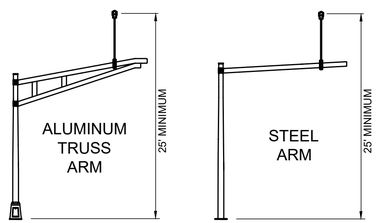
VANTAGENEXT OPERATIONAL BLOCK DIAGRAM

NOTES:

1. REFER TO CONTRACT DRAWING SGXXX FOR MODEL AND MANUFACTURER OF VIDEO DETECTION SYSTEM. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.
2. COMPLY WITH MANUFACTURER'S INSTALLATION DETAILS AND DETECTION ZONE SETUPS.
3. CONTINUOUS WIRE SHALL BE INSTALLED FROM CAMERA TO CONTROLLER. NO SPLICES ALLOWED.
4. VANTAGENEXT INSTALLATIONS TO HAVE COMBINED POWER AND COMMUNICATIONS CABLE.



CAMERA DETAIL



POLE MOUNTING DETAILS ARE FOR ILLUSTRATIVE PURPOSES ONLY. FINAL MOUNTING LOCATIONS TO BE DETERMINED DURING INSTALLATION.

TYPICAL MAST ARM MOUNTING DETAIL

CAMERA MOUNTING ON TRAFFIC SIGNAL MAST ARM

VIDEO CAMERA MOUNTING DETAILS

N.T.S.

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AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TRAFFIC SIGNALS

VIDEO CAMERA MOUNTING DETAILS

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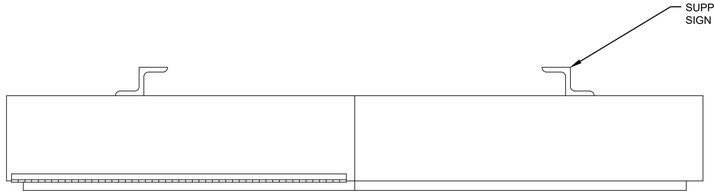
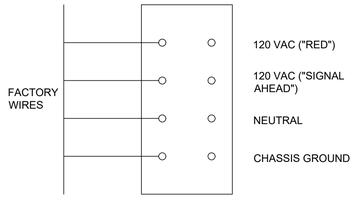
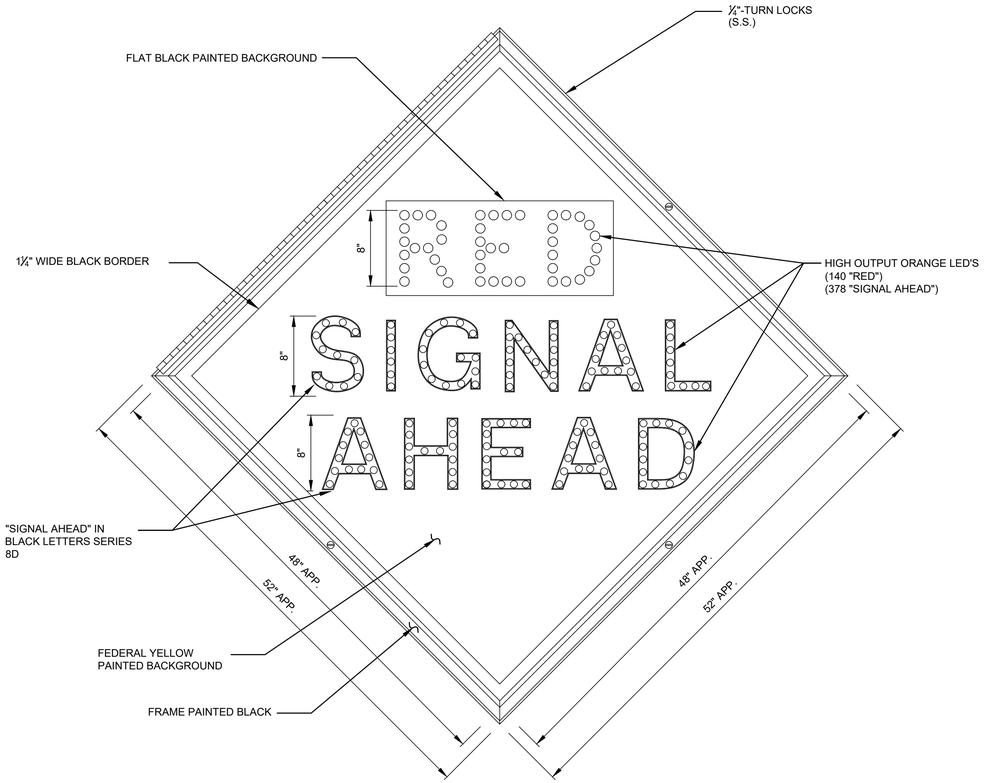
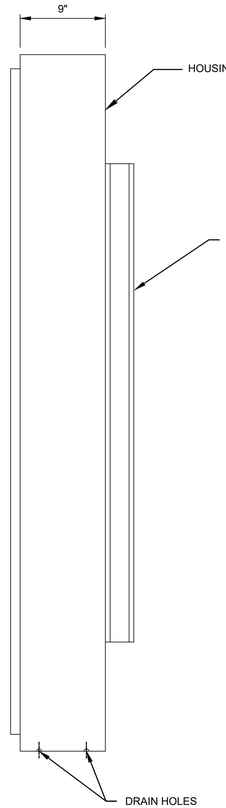




TERMINAL STRIP CONNECTION





RED SIGNAL AHEAD SIGN
N.T.S.

NOTES:

1. "SIGNAL AHEAD" CONTINUOUSLY LIT. "SIGNAL AHEAD" AND "RED" SHALL FLASH ALTERNATELY DURING FLASH OPERATION. FLASHING OPERATION TO BEGIN PRIOR TO TERMINATION OF HIGHWAY GREEN AS SPECIFIED. THE LEGEND "RED" IS PORTLAND ORANGE. THE LEGEND "SIGNAL AHEAD" IS LUNAR WHITE.
2. MINIMUM OF 2 LAMPS REQUIRED FOR EACH LINE OF LEGEND.
3. SIGN CASE SHALL BE FULLY GASKETED AND WATERTIGHT.
4. HINGE AND ALL HARDWARE SHALL BE STAINLESS STEEL.
5. FOR INSTALLATION ON STEEL MAST ARM SEE CONTRACT DRAWING SGXXX.

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
TRAFFIC SIGNALS

RED SIGNAL AHEAD SIGN

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Date 07 / 15 / 2024

Drawing Number TD20.43

GENERAL NOTES:

1. ALL SMALL SIGN SUPPORTS SHALL BE OF THE BREAKAWAY TYPE WITH EXCEPTION OF THOSE INSTALLED BEHIND GUIDERAIL OR OTHER ROADSIDE BARRIER.
2. STEEL U-POST SIGN SUPPORTS SHALL NOT BE PLACED IN FRONT OF GUIDE RAIL AND THE POSTS MUST NOT STRADDLE GUIDE RAIL.
3. ALL CONCRETE FOOTINGS SHALL BE CATEGORY VI CONCRETE.
4. ALL MEASUREMENT IN U.S. CUSTOMARY ENGLISH UNITS.
5. ALL CONCRETE FOOTINGS TO BE MADE OF CATEGORY VI CONCRETE.
6. ALL DIMENSIONS SHOWN SHALL BE IN FEET AND INCHES UNLESS OTHERWISE SHOWN.
7. PRIOR TO ANY EXCAVATION THE CONTRACTOR SHALL LOCATE ALL THE UNDERGROUND UTILITIES THAT MAY INTERFERE WITH THE PROPOSED CONSTRUCTION IN COMPLIANCE WITH THE INDUSTRIAL CODE RULE 53. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANY IF THEIR UTILITY LINES ARE TO BE DISTURBED, EXPOSED OR UNDERMINED.
8. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING ADJACENT TO EXISTING POWER, COMMUNICATION, WATER AND GAS LINES TO PREVENT DAMAGE TO THESE LINES. THE CONTRACTOR SHALL HAND EXCAVATE TO EXPOSE THESE LINES PRIOR TO PERFORMING ANY EXCAVATION WORK IN THE AREA. THE CONTRACTOR SHALL IMMEDIATELY REPAIR ANY DAMAGE TO POWER, COMMUNICATION, WATER OR GAS SERVICE CAUSED BY HIS OPERATIONS AT NO ADDITIONAL COST TO THE PORT AUTHORITY.
9. THE CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION, AS APPROVED BY THE ENGINEER, FOR ALL UTILITIES THAT ARE EXPOSED DURING CONSTRUCTION TO INSURE AGAINST DAMAGE.
10. UNDERGROUND UTILITY MARK-OUTS SHALL BE REQUESTED FROM THE APPROPRIATE AGENCIES PRIOR TO INSTALLING GROUND PENETRATING POSTS OR PERFORMING ANY UNDERGROUND EXCAVATION WORK.
11. THE CONTRACTOR SHALL PRIOR TO INSTALLATION SUBMIT SHOP DRAWINGS FOR ALL ITEMS FURNISHED UNDER THIS CONTRACT.

MATERIALS

CONCRETE

1. CONCRETE SHALL BE CATEGORY VI.
2. REINFORCING BARS SHALL BE AASHTO M31 (ASTM A615) GRADE 60.
3. ALL REINFORCING BARS SHALL BE UNCOATED.

STEEL

1. WELDING SHALL CONFORM TO THE BRIDGE WELDING CODE AWS D1.5 IN ADDITION TO THE REQUIREMENTS IN THE CONTRACT SPECIFICATIONS.
2. HIGH STRENGTH BOLTS SHALL BE AASHTO M164 (ASTM A325) SLIP-CRITICAL.
3. UNLESS OTHERWISE NOTED FIELD CONNECTIONS SHALL BE BOLTED USING HIGH STRENGTH BOLTS.
4. BUTT WELDS SHALL BE FULL (COMPLETE) PENETRATION WELDS. PROVIDE BACK-UP PLATES AS REQUIRED.
5. UNLESS OTHERWISE NOTED SHOP CONNECTIONS SHALL BE WELDED. FILLET WELDS SHALL BE $\frac{1}{4}$" INCH U.N.O.
6. E70XX LOW HYDROGEN ELECTRODES SHALL BE USED FOR ALL WELDS.
7. PAINTING OF STRUCTURAL STEEL SHALL BE IN CONFORMANCE WITH SPECIFICATION SECTION 09910 AND THE FOLLOWING:

SURFACE PREPARATION SHALL BE SSPC-SP10.
ALL PAINTING SHALL BE SYSTEM DESIGNATION S-1S.
PRIMER - ZINC RICH EPOXY POLYAMIDE (3 MILS DFT MIN.)
INTERMED. COAT - EPOXY ENAMEL (LOW GLOSS) (3 MILS DFT MIN.)
FINISH COAT - ALIPHATIC POLYURETHANE (1 $\frac{1}{2}$ MILS DFT MIN.)

HARDWARE AND FASTENERS

1. UNLESS OTHERWISE SHOWN, ALL HARDWARE SHALL BE ALUM. ALLOY 6061-T6 , 6262-T9, 2024-T4 OR 7075-T6 ASTM F468M OR STAINLESS STEEL ASTM A193 & A194.
2. CMS BOX SHALL BE ATTACHED WITH $\frac{5}{16}$" S.S. BOLTS (ASTM F593) AND $\frac{5}{16}$" HEX HEAD NUTS (ASTM F594). HOLES FOR THE BOLTS SHALL BE $\frac{3}{8}$" DIA.
3. ALL 2024-T4 HARDWARE SHALL BE COATED WITH TYPE 205 FINISH IN ACCORDANCE WITH ALUMINUM ANODIC COATINGS SPECIFICATION. THIS SPECIFICATION COVERS THE MATERIAL REQUIREMENTS FOR ANODIC COATINGS FOR ALUMINUM AND ALUMINUM ALLOYS. ANODIC COATINGS FOR ALUMINUM AND ITS ALLOYS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS FOR THE COATING DESIGNATION SHOWN ON THE PLANS OR IN THE PROPOSAL:

		MINIMUM COATING WEIGHT, MILLIGRAMS PER SQUARE INCH		
COATING DESIGNATION	SEALED WITH	MINUMUM COATING THICKNESS, MILS*	ON ALLOYS 1100, 3003 5052, 5005, 5357, 5457 6463, 6563, 6061, 6063	ON ALLOY 2014, 2024
TYPE 202	BOILING WATER	0.3	14.0	7.0
TYPE 302	NICKEL ACETATE	0.3	14.0	-
TYPE 204	BOILING WATER	0.4	21.0	11.0
TYPE 205	CHROMATE.	0.2	-	-
TYPE 210	CHROMATE.	0.4	-	-
TYPE 215	BOILING WATER	0.8	40.0	17.0
TYPE 226	NONE REQUIRED	2.0	86.0	66.0

*1 MIL. = $\frac{1}{1000}$ OF AN INCH.

4. UNLESS OTHERWISE SHOWN, HOLES SHALL NOT BE MORE THAN $\frac{1}{16}$" LARGER IN DIAMETER THAN THE NOMINAL DIAMETER OF THE FASTENER.
5. ALUMINUM Z-BARS MAY BE PREPUNCHED WITH $\frac{5}{16}$" Ø HOLES AT 1" CENTERS ALONG THE ENTIRE LENGTH.

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

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DETAILS

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SIGN MOUNTING

GENERAL NOTES

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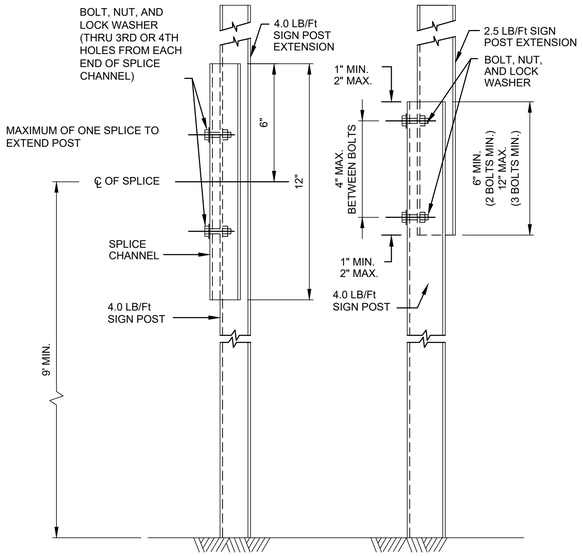
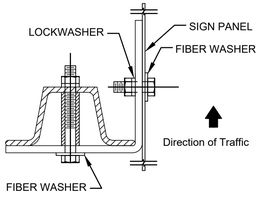
Date 07 / 15 / 2024

Drawing Number TD30.00



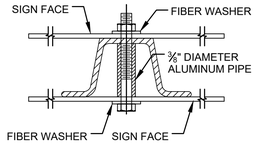
SIGN POST EXTENSION SPLICE DETAILS

N.T.S.



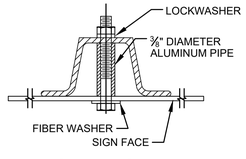
SIDE MOUNT

N.T.S. TD30.01.09



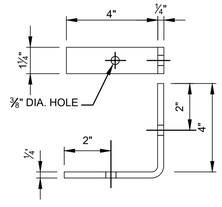
BACK TO BACK MOUNTING

N.T.S. TD30.01.11



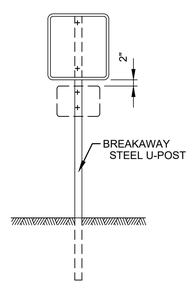
FRONT MOUNT

N.T.S. TD30.01.10



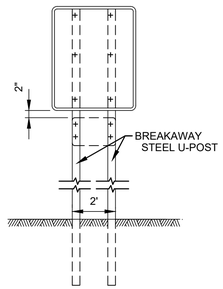
DETAIL OF BRACKET FOR SIDE MOUNTED SIGNS

N.T.S. TD30.01.12



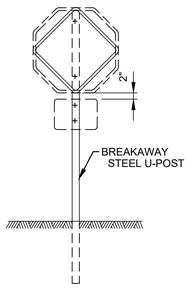
30" x 30" OR SMALLER

TD30.01.03



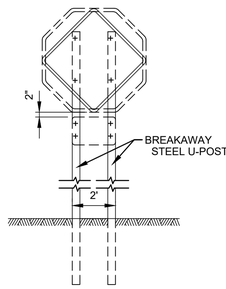
36" x 36" OR LARGER

TD30.01.04



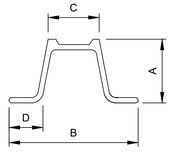
30" x 30" OR SMALLER

TD30.01.05



36" x 36" OR LARGER

TD30.01.06



TYPE 1

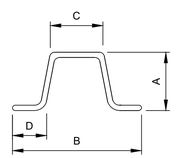
N.T.S. TD30.01.19

TYPE 1 - STEEL U-POST PROPERTIES

WEIGHT * LB/Ft	DIMENSIONS (in)				AREA in 2
	"A"	"B"	"C"	"D"	
2.5	1.516	3.062	1.278	0.669	0.760
4.0	1.968	3.500	1.336	0.834	1.187

TD30.01.21

* +/- 5%



TYPE 2

N.T.S. TD30.01.20

TYPE 2 - STEEL U-POST PROPERTIES

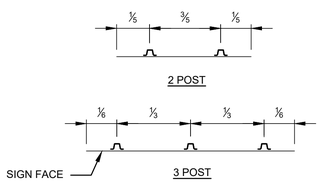
WEIGHT * LB/Ft	DIMENSIONS (in)				AREA in 2
	"A"	"B"	"C"	"D"	
2.5	1.549	3.125	1.250	0.625	0.748
4.0	1.845	3.500	1.625	0.718	1.190

TD30.01.22

* +/- 5%

NOTES:

1. ALL STEEL U-POSTS AND BRACKETS SHALL BE CUT, BENT AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVANIZING SHALL BE IN CONFORMANCE WITH ASTM A123.
2. ALL STEEL U-POST SIGN SUPPORTS MUST BE INSTALLED FACING THE PREDOMINANT TRAFFIC FLOW. A MOUNTING BRACKET SHALL BE USED ON SIDE MOUNTED SIGNS SUCH AS "ONE WAY" SIGNS INSTALLED IN MEDIANS.
3. SIGN PANEL SIZES SHALL DETERMINE POST TYPE AND NUMBER AS SHOWN ON POST SELECTION TABLE.
4. ALL BOLTS SHOWN ON THIS SHEET SHALL NOT PROTRUDE MORE THAN ¾" BEYOND THE NUT WHEN TIGHT AND SHALL ENGAGE ALL THREADS IN THE NUT.
5. ALL SIGNS SHALL BE MOUNTED MINIMUM 7 FEET CLEARANCE FROM EDGE OF PAVEMENT TO THE BOTTOM OF THE SIGN PANEL UNLESS OTHERWISE SHOWN ON CONTRACT DRAWING.
6. FOR LATERAL CLEARANCE OF SIGNS FROM ROADWAY REFER TO DRAWING TD30.07.
7. EXTRUDED ALUMINUM SIGN PANELS ARE NOT PERMITTED FOR USE WITH STEEL U-POST SIGN SUPPORTS.
8. STEEL U-POSTS SHALL BE PRODUCED FROM HIGH STRENGTH STEEL IN ACCORDANCE WITH ASTM A499-81, GRADE 60.
9. ANCHOR POST AND TOP POST SHALL BE EQUAL WEIGHT/FT AND SAME TYPE (BOTH TYPE 1 OR BOTH TYPE 2) FOR EACH BREAKAWAY SIGN SUPPORT INSTALLATION.



STEEL U-POST SPACING

N.T.S. TD30.01.08

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

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

U-POST SELECTION TABLE

BREAKAWAY SIGN SUPPORT

TD30.01.24

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

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SIGN MOUNTING

BREAKAWAY SIGN SUPPORTS AND U-POST ASSEMBLY DETAILS (1 of 2)

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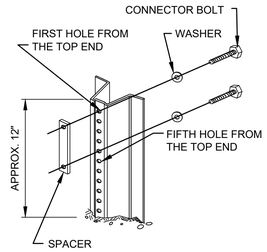
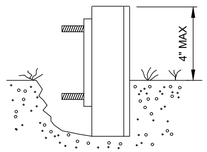
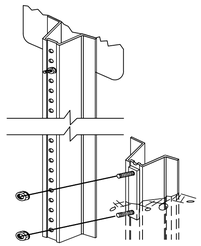
Date 07 / 15 / 2024

Drawing Number TD30.01





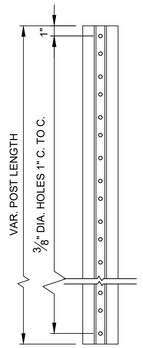


BREAKAWAY SIGN SUPPORT ASSEMBLY

N.T.S. TD30.01.02

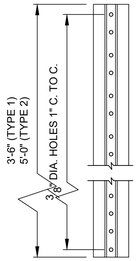
NOTES:

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



TOP U-POST

N.T.S. TD30.01.13

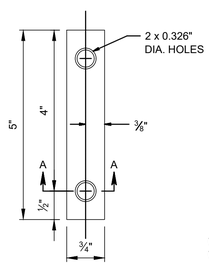


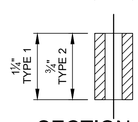
ANCHOR U-POST

N.T.S. TD30.01.14

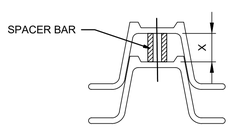
NOTES:

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





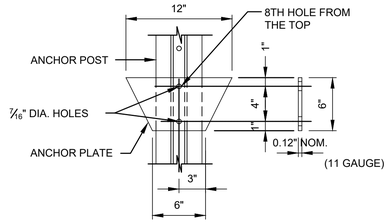
SECTION A-A



WHEN X IS GREATER THAN ¾", USE TYPE 1 SPACER BAR
WHEN X IS ¾" OR LESS, USE TYPE 2 SPACER BAR

SPACER BAR

N.T.S.

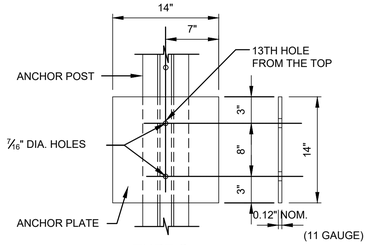


TYPE 1

SOIL ANCHOR PLATE ASSEMBLY

N.T.S. TD30.01.17

MATERIAL: CARBON SHEET STEEL

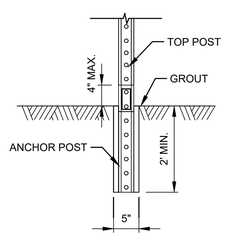


TYPE 2

SOIL ANCHOR PLATE ASSEMBLY

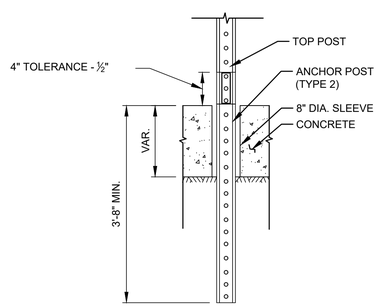
N.T.S. TD30.01.18

MATERIAL: CARBON SHEET STEEL



ROCK INSTALLATION

N.T.S. TD30.01.16



CONCRETE INSTALLATION

N.T.S. TD30.01.15

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN MOUNTING

BREAKAWAY SIGN SUPPORTS AND U-POST ASSEMBLY DETAILS (2 of 2)

DISCLAIMER:

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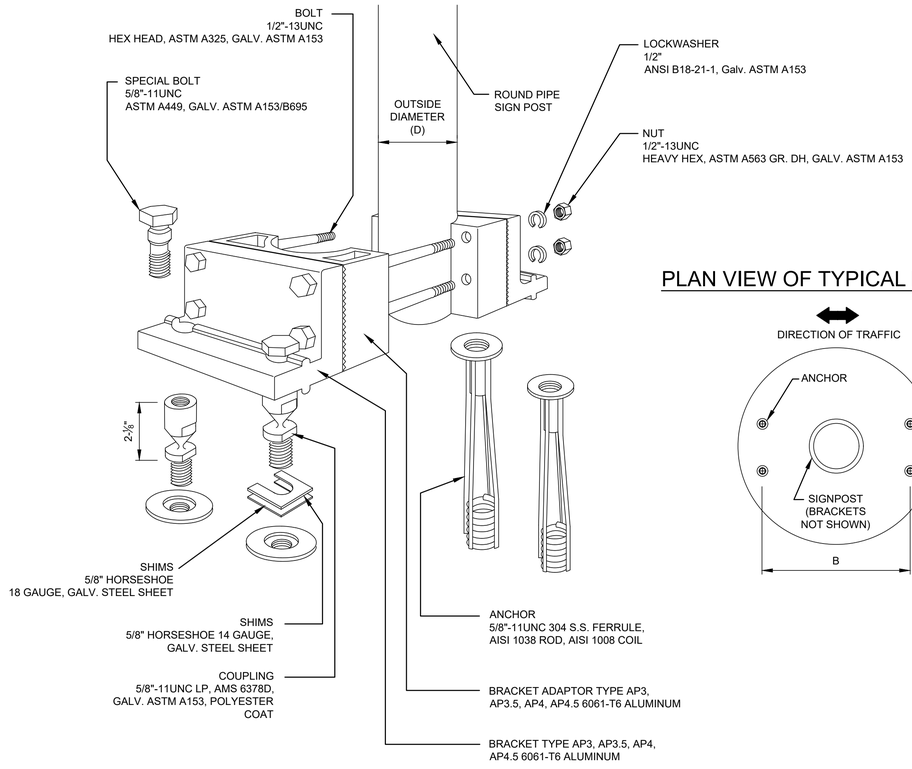
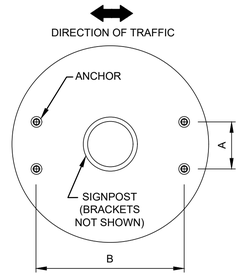
Date 07 / 15 / 2024

Drawing Number TD30.01



PLAN VIEW OF TYPICAL FOUNDATION



BREAK-SAFE MODEL AP ANCHOR SPACING

BREAK-SAFE MODEL *	POST OUTSIDE DIAMETER (D)	NOMINAL PIPE SIZE	A	B
AP3	3"		2-1/4"	7-7/16"
AP3.5	3-1/2"	3"	2-3/4"	7-15/16"
AP4	4"	3-1/2"	3-1/4"	8-15/16"
AP4.5	4-1/2"	4"	3-1/4"	8-15/16"

* SEE NOTE 7

BREAK-SAFE MODEL AP SELECTION TABLE

BREAK-SAFE MODEL *	OUTSIDE PIPE DIAMETER (D)	NOMINAL SCH. 40 PIPE SIZE
AP3	3"	-
AP3.5	3-1/2"	3"
AP4	4"	3-1/2"
AP4.5	4-1/2"	4"

* SEE NOTE 7

GENERAL NOTES:

1. BREAK-SAFE MEETS ALL REQUIREMENTS OF "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS."
2. BREAK-SAFE MODEL AP IS DESIGNED TO FIT STEEL OR ALUMINUM ROUND PIPE SIGNPOSTS. SEE TABLE BELOW FOR PIPE SIZES.
3. ALL HARDWARE ITEMS ARE AMERICAN STANDARD SIZES, GALVANIZED IN ACCORDANCE WITH ASTM A153 (HOT DIPPED) OR ASTM B695 (MECHANICALLY APPLIED).
4. FASTENERS, EXCEPT FOR SPECIAL BOLT AND COUPLING, ARE INSTALLED WITH LOCKWASHERS, AND DO NOT HAVE SPECIFIC TORQUE REQUIREMENTS. FASTENERS SHOULD BE SECURED AS TIGHT AS POSSIBLE WITH CONVENTIONAL WRENCHES, UNLESS NOTED OTHERWISE.
5. SQUARE-UP AND LEVEL INDIVIDUAL COMPONENTS, PARTICULARLY ANCHORS TO MINIMIZE THE NEED FOR SHIMMING BETWEEN THE COUPLINGS AND ANCHORS.
6. NO MORE THAN TWO SHIMS SHALL BE PLACED UNDER ANY ONE COUPLING. NO MORE THAN THREE SHIMS UNDERNEATH ANY PAIR OF COUPLINGS.
7. BREAK-SAFE MODEL AS4-H IS A PROPRIETARY SYSTEM VENDED BY TRANSPO INDUSTRIES. FOR DETAILS OF THE SYSTEM CONTACT MANUFACTURER DIRECTLY AT 914-636-1000. CONTRACTOR MAY USE A SIMILAR SYSTEM UPON APPROVAL BY THE ENGINEER.

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

NOTE: PRECISE POSITIONING OF THE ANCHORS IS CRITICAL TO PROPER ASSEMBLY OF THE SYSTEM. IT IS RECOMMENDED THAT ACTUAL POSTS BE USED TO LOCATE THE CORRECT POSTION OF THE ANCHORS.

1. FABRICATE A FLAT, RIGID TEMPLATE WITH FOUR 5/8" DIAMETER HOLES LOCATED TO MATCH THE SPECIFIED ANCHOR PATTERN OF THE BREAK-SAFE BRACKETS ATTACHED TO THE SIGNPOST. SEE DIAGRAM BELOW.
2. ATTACH FOUR TRANSPO TYPE A FEMALE ANCHORS TO THE TEMPLATE USING FOUR 5/8" DIAMETER BOLTS. ENSURE THAT EACH ANCHOR WASHER IS SNUG AGAINST THE BOTTOM OF THE TEMPLATE.
3. LOWER ANCHOR ASSEMBLY INTO FRESH CONCRETE FOUNDATION, AND VIBRATE INTO POSITION SUCH THAT THE TOPS OF THE ANCHOR WASHERS ARE FLUSH WITH THE FINISHED TOP SURFACE OF THE FOUNDATION. SUPPORT THE TEMPLATE SUCH THAT ALL ANCHORS ARE LEVEL AND IN THEIR PROPER LOCATIONS.
4. ALLOW CONCRETE TO CURE, AND THEN REMOVE THE BOLTS AND TEMPLATE FROM THE TOP OF THE FOUNDATION.

BRACKET ASSEMBLY:

1. PLACE BRACKET ADAPTORS AND BRACKETS SQUARELY ON THE BOTTOM OF THE POST, SUCH THAT THE LOWER END OF THE POST IS FLUSH WITH THE BOTTOM OF BOTH BRACKET ADAPTORS.
2. SECURE THE BRACKET ASSEMBLY WITH BOLTS, LOCK WASHERS, AND NUTS. THEN, TIGHTEN ALL 1/2 TURN BEYOND SNUG.

COUPLING ASSEMBLY:

1. THREAD FOUR BREAK-SAFE COUPLINGS INTO ANCHORS. DO NOT TIGHTEN.
2. SUSPEND POST ASSEMBLY OVER FOUNDATION, INSERT SPECIAL BOLTS THROUGH HOLES IN THE BRACKETS, AND THREAD THEM SNUG INTO THE COUPLINGS.
3. IF POST IS NOT PLUMB, INSERT SHIMS (14g AND/OR 18g) BETWEEN THE COUPLINGS AND ANCHORS, WHERE NEEDED.
4. USE LOWER WRENCH FLATS TO TIGHTEN COUPLINGS INTO ANCHORS AS TIGHT AS POSSIBLE USING A CONVENTIONAL WRENCH. DO NOT USE A PIPE WRENCH. COUPLINGS MUST BE SEATED SQUARELY.
5. TIGHTEN SPECIAL BOLTS WHILE HOLDING COUPLINGS BY THE UPPER WRENCH FLATS WITH AN ADDITIONAL WRENCH TO PREVENT AN INDUCED TORQUE STRESS ACROSS THE NECKED PORTION OF THE COUPLING. ALL SPECIAL BOLTS SHALL ALSO BE TIGHTENED AS TIGHT AS POSSIBLE USING CONVENTIONAL WRENCHES.

SIGN PANEL ASSEMBLY:

1. AFTER ALL SIGNPOSTS ARE SECURED IN PLACE, ATTACH SIGN PANEL ASSEMBLY TO POSTS IN ACCORDANCE WITH THE SIGN MANUFACTURER'S RECOMMENDATIONS.

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

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DETAILS

TRAFFIC

Title

SIGN MOUNTING

BREAKAWAY SUPPORT SYSTEM FOR SIGN POST BREAK-SAFE MODEL AP

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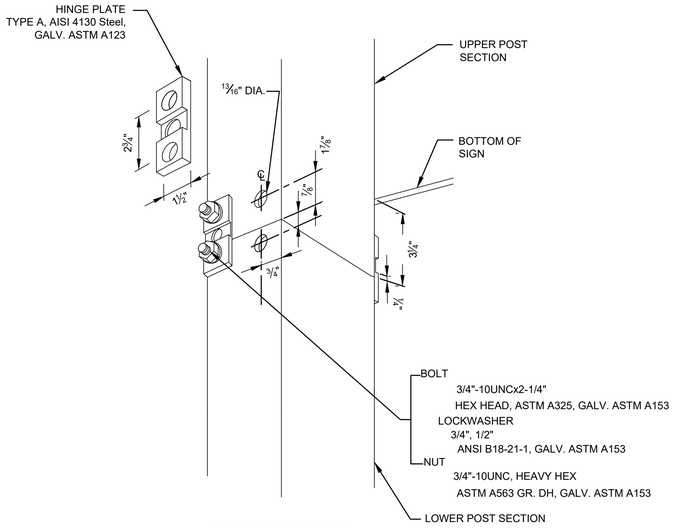
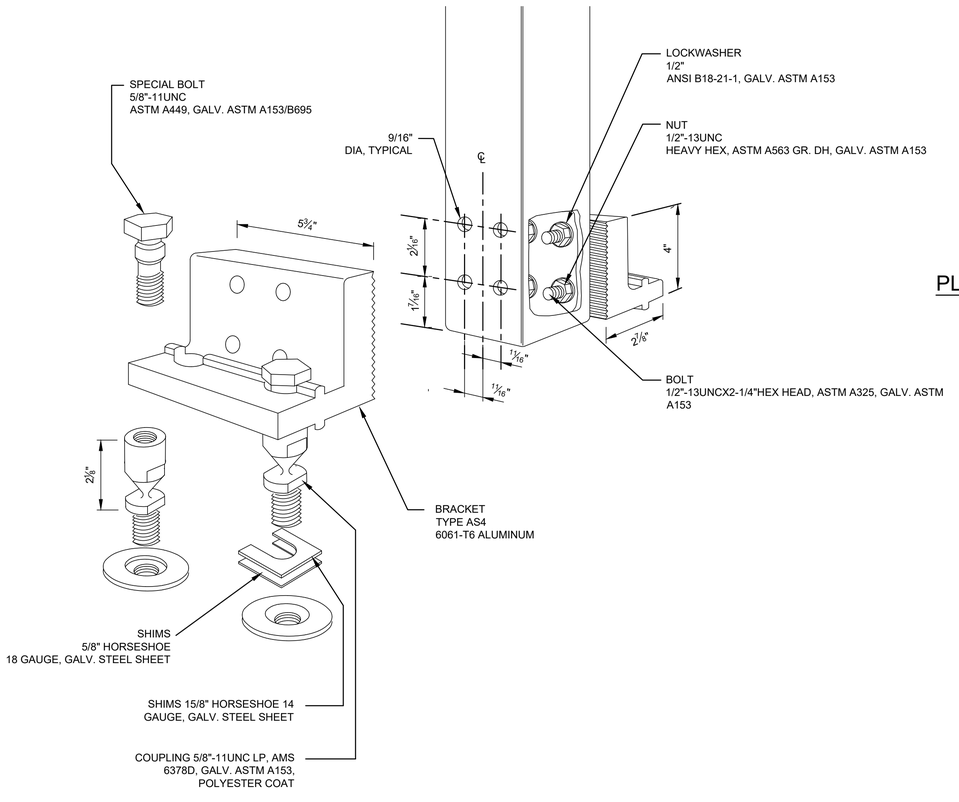
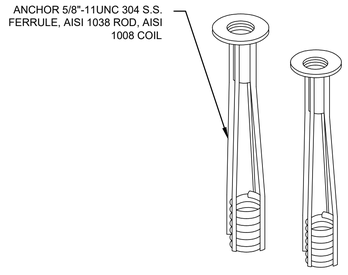
Date 07 / 15 / 2024

Drawing Number TD30.02

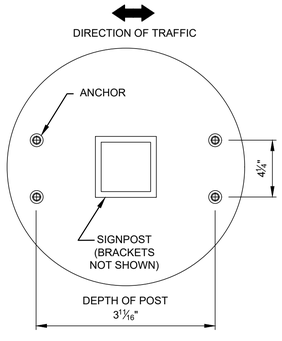


HINGE DETAIL





PLAN VIEW OF TYPICAL FOUNDATION



GENERAL NOTES:

1. BREAK-SAFE MEETS ALL REQUIREMENTS OF "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS."
2. BREAK-SAFE MODEL AS4 IS DESIGNED TO FIT 3-1/2" AND 4" STEEL OR ALUMINUM SQUARE TUBE SIGNPOSTS.
3. ALL HARDWARE ITEMS ARE AMERICAN STANDARD SIZES, GALVANIZED IN ACCORDANCE WITH ASTM A153 (HOT DIPPED) OR ASTM B695 (MECHANICALLY APPLIED).
4. FASTENERS, EXCEPT FOR SPECIAL BOLT AND COUPLING, ARE INSTALLED WITH LOCKWASHERS, AND DO NOT HAVE SPECIFIC TORQUE REQUIREMENTS. FASTENERS SHOULD BE SECURED AS TIGHT AS POSSIBLE WITH CONVENTIONAL WRENCHES, UNLESS NOTED OTHERWISE.
5. SQUARE-UP AND LEVEL INDIVIDUAL COMPONENTS, PARTICULARLY ANCHORS TO MINIMIZE THE NEED FOR SHIMMING BETWEEN THE COUPLINGS AND ANCHORS.
6. NO MORE THAN TWO SHIMS SHALL BE PLACED UNDER ANY ONE COUPLING. NO MORE THAN THREE SHIMS UNDERNEATH ANY PAIR OF COUPLINGS.
7. BREAK-SAFE MODEL AS4-H IS A PROPRIETARY SYSTEM VENDED BY TRANSPO INDUSTRIES. FOR DETAILS OF THE SYSTEM CONTACT MANUFACTURER DIRECTLY AT 914-636-1000. CONTRACTOR MAY USE A SIMILAR SYSTEM UPON APPROVAL BY THE ENGINEER.

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

NOTE: PRECISE POSITIONING OF THE ANCHORS IS CRITICAL TO PROPER ASSEMBLY OF THE SYSTEM. IT IS RECOMMENDED THAT ACTUAL POSTS BE USED TO LOCATE THE CORRECT POSTION OF THE ANCHORS.

1. FABRICATE A FLAT, RIGID TEMPLATE WITH FOUR 5/8" DIAMETER HOLES LOCATED TO MATCH THE SPECIFIED ANCHOR PATTERN OF THE BREAK-SAFE BRACKETS ATTACHED TO THE SIGNPOST. SEE DIAGRAM BELOW.
2. ATTACH FOUR TRANSPO TYPE A FEMALE ANCHORS TO THE TEMPLATE USING FOUR 5/8" DIAMETER BOLTS. ENSURE THAT EACH ANCHOR WASHER IS SNUG AGAINST THE BOTTOM OF THE TEMPLATE.
3. LOWER ANCHOR ASSEMBLY INTO FRESH CONCRETE FOUNDATION, AND VIBRATE INTO POSITION SUCH THAT THE TOPS OF THE ANCHOR WASHERS ARE FLUSH WITH THE FINISHED TOP SURFACE OF THE FOUNDATION. SUPPORT THE TEMPLATE SUCH THAT ALL ANCHORS ARE LEVEL AND IN THEIR PROPER LOCATIONS.
4. ALLOW CONCRETE TO CURE, AND THEN REMOVE THE BOLTS AND TEMPLATE FROM THE TOP OF THE FOUNDATION.

BRACKET ASSEMBLY:

1. DRILL EIGHT 9/16" DIAMETER HOLES IN THE BOTTOM END OF THE POST SECTION AS SHOWN.
2. PLACE BRACKETS SQUARELY ON OUTER SURFACE OF THE POST, AND SECURE WITH BOLTS, LOCK WASHERS, AND NUTS. THEN, TIGHTEN ALL 1/2 TURN BEYOND SNUG.

COUPLING ASSEMBLY:

1. THREAD FOUR BREAK-SAFE COUPLINGS INTO ANCHORS. DO NOT TIGHTEN.
2. SUSPEND POST ASSEMBLY OVER FOUNDATION, INSERT SPECIAL BOLTS THROUGH HOLES IN THE BRACKETS, AND THREAD THEM SNUG INTO THE COUPLINGS.
3. IF POST IS NOT PLUMB, INSERT SHIMS (14g AND/OR 18g) BETWEEN THE COUPLINGS AND ANCHORS, WHERE NEEDED.
4. USE LOWER WRENCH FLATS TO TIGHTEN COUPLINGS INTO ANCHORS AS TIGHT AS POSSIBLE USING A CONVENTIONAL WRENCH. DO NOT USE A PIPE WRENCH. COUPLINGS MUST BE SEATED SQUARELY.
5. TIGHTEN SPECIAL BOLTS WHILE HOLDING COUPLINGS BY THE UPPER WRENCH FLATS WITH AN ADDITIONAL WRENCH TO PREVENT AN INDUCED TORQUE STRESS ACROSS THE NECKED PORTION OF THE COUPLING. ALL SPECIAL BOLTS SHALL ALSO BE TIGHTENED AS TIGHT AS POSSIBLE USING CONVENTIONAL WRENCHES.

SIGN PANEL ASSEMBLY:

1. AFTER ALL SIGNPOSTS ARE SECURED IN PLACE, ATTACH SIGN PANEL ASSEMBLY TO POSTS IN ACCORDANCE WITH THE SIGN MANUFACTURER'S RECOMMENDATIONS.

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

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DETAILS

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Title

SIGN MOUNTING

BREAKAWAY SUPPORT SYSTEM FOR SIGN POST BREAK-FREE MODEL AS4-H

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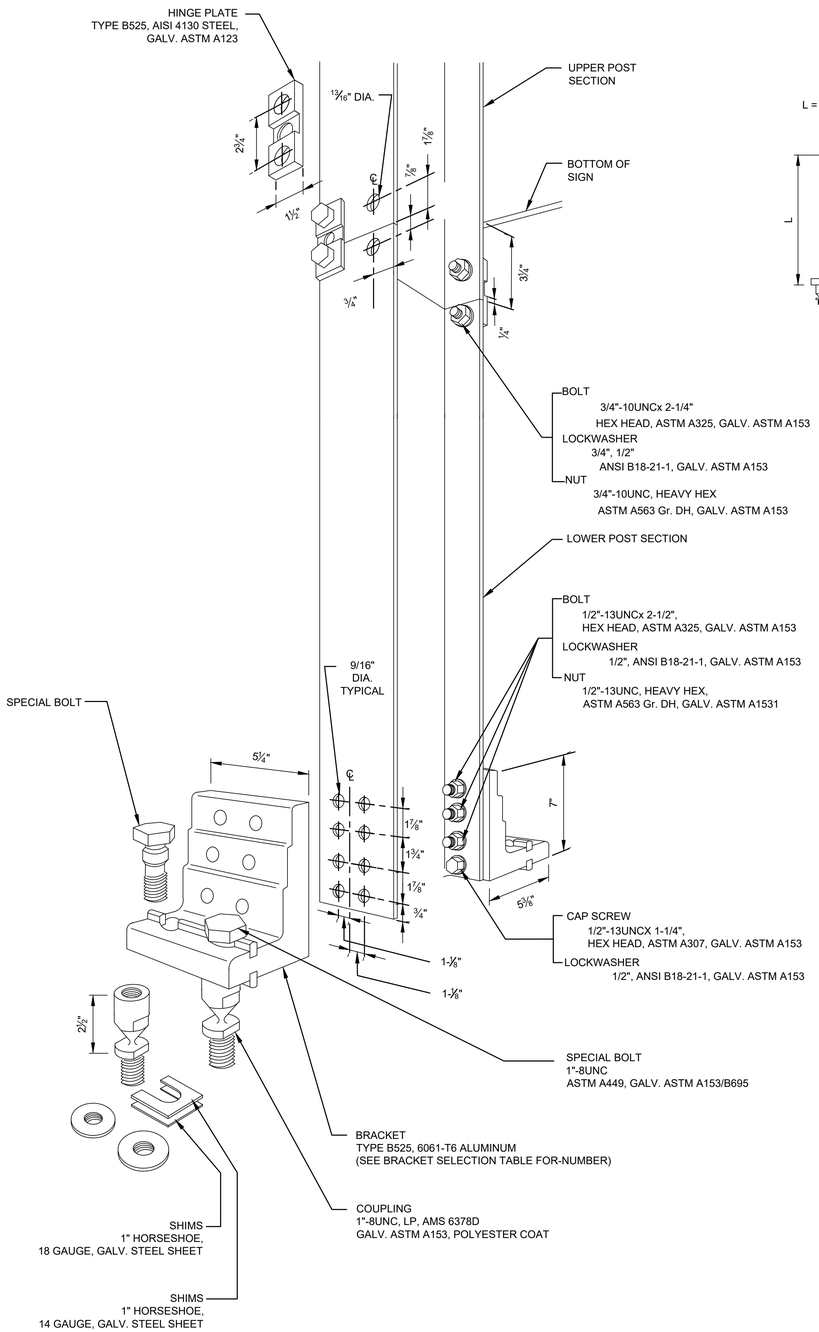
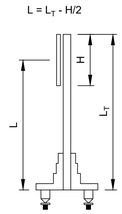
Date 07 / 15 / 2024

Drawing Number TD30.03



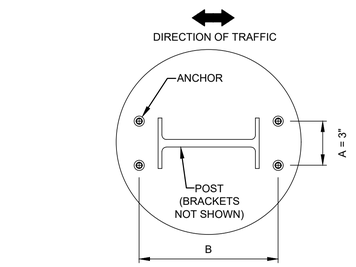


BRACKET SELECTION TABLE

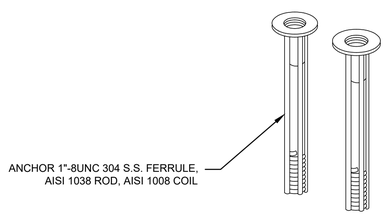
SELECT CORRECT BREAK-SAFE BRACKET NUMBER FROM TABLE, USING 'L' VALUE FROM THE LONGEST POST. USE FIGURE TO THE LEFT TO DETERMINE 'L'.

POST SIZE	BRACKET No. 1		BRACKET No. 2		BRACKET No. 3	
	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'	Min. 'L'	Max. 'L'
6"	12'	29'	9'	12'	0	9'
8"	14'	29'	10'	14'	0	10'

PLAN VIEW OF TYPICAL FOUNDATION



B (BRACKET NO. 1) = DEPTH OF POST + 7-15/16"
B (BRACKET NO. 2) = DEPTH OF POST + 8-1/16"
B (BRACKET NO. 3) = DEPTH OF POST + 8-1/8"



GENERAL NOTES:

1. BREAK-SAFE MEETS ALL REQUIREMENTS OF "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS."
2. BREAK-SAFE MODEL B525 IS DESIGNED TO FIT 6" AND 8" WIDE FLANGE I-BEAM, AND 5" AND 6" SQUARE TUBE SIGNPOSTS.
3. SELECT PROPER BRACKET NUMBER BY REFERRING TO BRACKET SELECTION TABLE.
4. ALL HARDWARE ITEMS ARE AMERICAN STANDARD SIZES, GALVANIZED IN ACCORDANCE WITH ASTM A153 (HOT DIPPED) OR ASTM B695 (MECHANICALLY APPLIED).
5. FASTENERS, EXCEPT FOR SPECIAL BOLT AND COUPLING, ARE INSTALLED WITH LOCKWASHERS, AND DO NOT HAVE SPECIFIC TORQUE REQUIREMENTS. FASTENERS SHOULD BE SECURED AS TIGHT AS POSSIBLE WITH CONVENTIONAL WRENCHES, UNLESS NOTED OTHERWISE.
6. SQUARE-UP AND LEVEL INDIVIDUAL COMPONENTS, PARTICULARLY ANCHORS TO MINIMIZE THE NEED FOR SHIMMING BETWEEN THE COUPLINGS AND ANCHORS.
7. NO MORE THAN TWO SHIMS SHALL BE PLACED UNDER ANY ONE COUPLING. NO MORE THAN THREE SHIMS UNDERNEATH ANY PAIR OF COUPLINGS.
8. BREAK-SAFE MODEL B525 IS A PROPRIETARY SYSTEM VENDED BY TRANSPO INDUSTRIES. FOR DETAILS OF THE SYSTEM CONTACT MANUFACTURER DIRECTLY AT 914-636-1000. CONTRACTOR MAY USE A SIMILAR SYSTEM UPON APPROVAL BY THE ENGINEER.

INSTALLATION INSTRUCTIONS

ANCHOR ASSEMBLY:

NOTE: PRECISE POSITIONING OF THE ANCHORS IS CRITICAL TO PROPER ASSEMBLY OF THE SYSTEM. IT IS RECOMMENDED THAT ACTUAL POSTS BE USED TO LOCATE THE CORRECT POSTION OF THE ANCHORS.

1. DETERMINE PROPER BREAK-SAFE BRACKET NUMBER FROM THE BRACKET SELECTION TABLE. ALL POSTS WITHIN A SIGN STRUCTURE SHALL USE THE SAME BRACKET NUMBER, DETERMINED BY THE LENGTH OF THE LONGEST POST.
2. FABRICATE A FLAT, RIGID TEMPLATE WITH FOUR 1" DIAMETER HOLES LOCATED TO MATCH THE SPECIFIED ANCHOR PATTERN OF THE BREAK-SAFE BRACKETS ATTACHED TO THE SIGNPOST. SEE DIAGRAM BELOW.
3. ATTACH FOUR TRANSPO TYPE B FEMALE ANCHORS TO THE TEMPLATE USING FOUR 1" DIAMETER BOLTS. ENSURE THAT EACH ANCHOR WASHER IS SNUG AGAINST THE BOTTOM OF THE TEMPLATE.
4. LOWER ANCHOR ASSEMBLY INTO FRESH CONCRETE FOUNDATION, AND VIBRATE INTO POSITION SUCH THAT THE TOPS OF THE ANCHOR WASHERS ARE FLUSH WITH THE FINISHED TOP SURFACE OF THE FOUNDATION. SUPPORT THE TEMPLATE SUCH THAT ALL ANCHORS ARE LEVEL AND IN THEIR PROPER LOCATIONS.
5. ALLOW CONCRETE TO CURE, AND THEN REMOVE THE BOLTS AND TEMPLATE FROM THE TOP OF THE FOUNDATION.

HINGE ASSEMBLY:

1. BUTT UPPER AND LOWER POST SECTIONS TOGETHER ON A FLAT SURFACE.
2. DRILL EIGHT 13/16" HOLES IN THE FLANGES OF THE POST SECTIONS AS SHOWN.
3. PLACE HINGE PLATES ON OUTER SURFACE OF THE POST FLANGES AND SECURE WITH BOLTS, LOCK WASHERS, AND NUTS. ENSURE THAT UPPER AND LOWER POST SECTIONS ARE IN ALIGNMENT, AND THEN TIGHTEN ALL NUTS 1/2 TURN BEYOND SNUG.

BRACKET ASSEMBLY:

1. DRILL 16 9/16" DIAMETER HOLES IN THE FLANGES OF THE LOWER POST SECTION AS SHOWN.
2. PLACE BRACKETS SQUARELY ON OUTER SURFACE OF THE POST FLANGES, AND SECURE WITH BOLTS, LOCK WASHERS, NUTS, AND CAP SCREWS. THEN, TIGHTEN ALL 1/2 TURN BEYOND SNUG.

COUPLING ASSEMBLY:

1. THREAD FOUR BREAK-SAFE COUPLINGS INTO ANCHORS. DO NOT TIGHTEN.
2. SUSPEND POST ASSEMBLY OVER FOUNDATION, INSERT SPECIAL BOLTS THROUGH HOLES IN THE BRACKETS, AND THREAD THEM SNUG INTO THE COUPLINGS.
3. IF POST IS NOT PLUMB, INSERT SHIMS (14g AND/OR 18g) BETWEEN THE COUPLINGS AND ANCHORS, WHERE NEEDED.
4. USE LOWER WRENCH FLATS TO TIGHTEN COUPLINGS INTO ANCHORS AS TIGHT AS POSSIBLE USING A CONVENTIONAL WRENCH. DO NOT USE A PIPE WRENCH. COUPLINGS MUST BE SEATED SQUARELY.
5. TIGHTEN SPECIAL BOLTS WHILE HOLDING COUPLINGS BY THE UPPER WRENCH FLATS WITH AN ADDITIONAL WRENCH TO PREVENT AN INDUCED TORQUE STRESS ACROSS THE NECKED PORTION OF THE COUPLING. ALL SPECIAL BOLTS SHALL ALSO BE TIGHTENED AS TIGHT AS POSSIBLE USING CONVENTIONAL WRENCHES.

SIGN PANEL ASSEMBLY:

1. AFTER ALL SIGNPOSTS ARE SECURED IN PLACE, ATTACH SIGN PANEL ASSEMBLY TO POSTS IN ACCORDANCE WITH THE SIGN MANUFACTURER'S RECOMMENDATIONS.

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

SIGN MOUNTING

BREAKAWAY SUPPORT SYSTEM FOR SIGN POST BREAK-SAFE MODEL B525

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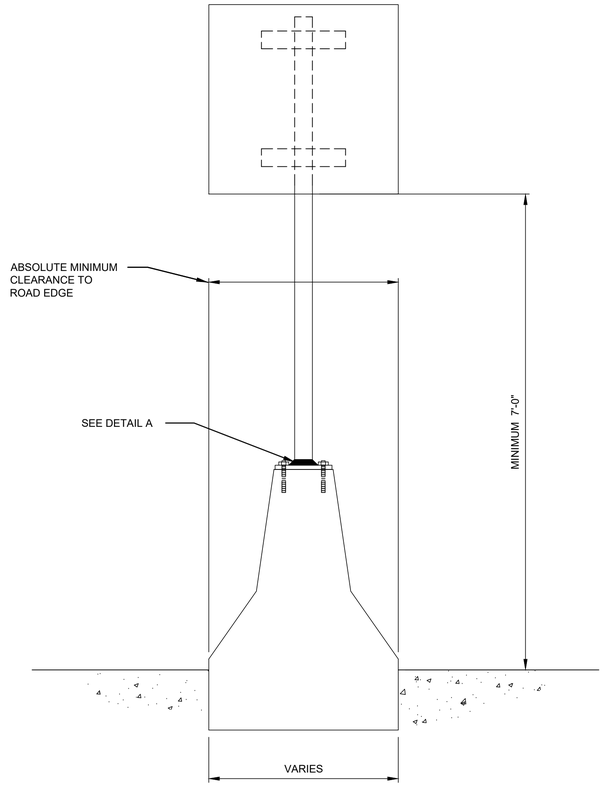
Date 07 / 15 / 2024

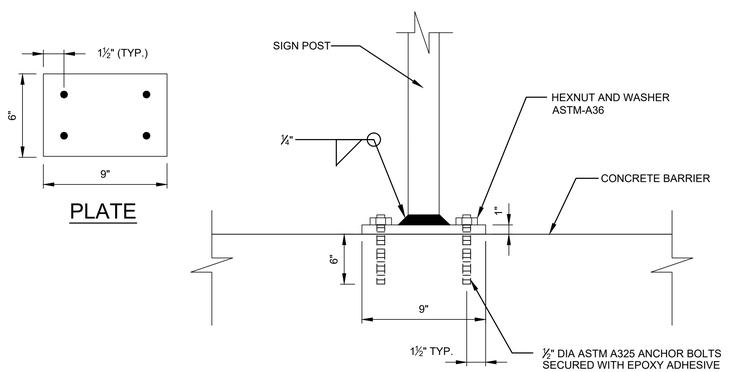
Drawing Number TD30.04



SIGN MOUNTED ON CONCRETE BARRIER

N.T.S.

TD30.05.01



PLATE

DETAIL A - POST

N.T.S.

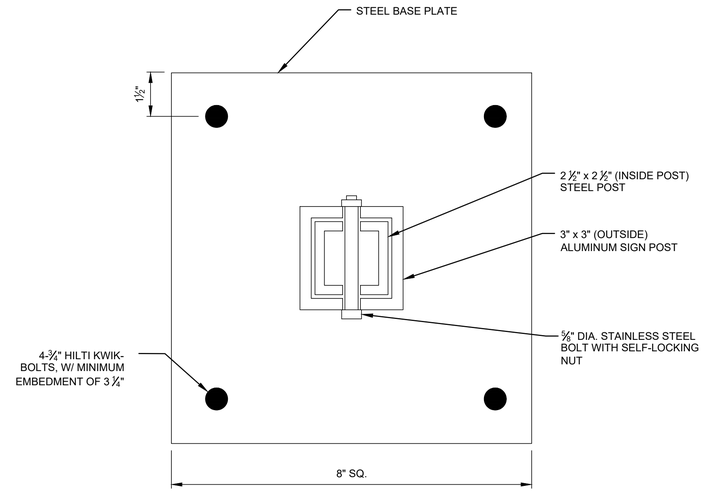
TD30.05.04

(SIGN MOUNTING TO CONCRETE BARRIER)

NOTES:

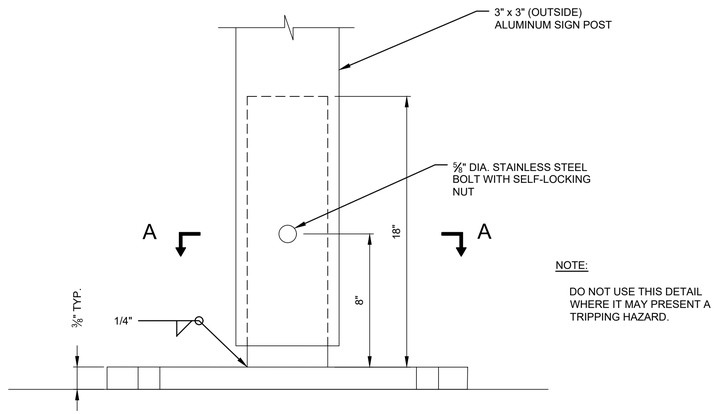
TD30.12.01

1. DIMENSIONS PROVIDED ARE APPROXIMATE AND MAY BE SLIGHTLY MODIFIED BY THE MANUFACTURER.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS FOR THIS ASSEMBLY/INSTALLATION TO THE ENGINEER FOR APPROVAL.



SECTION A-A

N.T.S.



NOTE:

DO NOT USE THIS DETAIL WHERE IT MAY PRESENT A TRIPPING HAZARD.

GROUND MOUNTING & POSTS DETAILS ON SIDEWALK

N.T.S.

TD30.12.02

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN MOUNTING

SIGN MOUNTED ON CONCRETE BARRIER AND SIDEWALK

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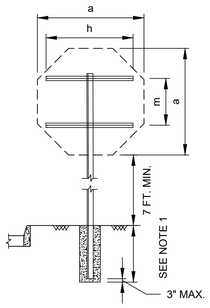
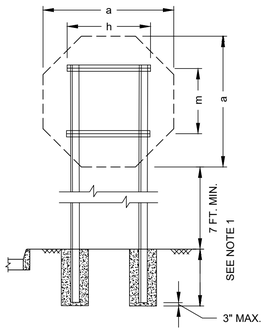
Date 07 / 15 / 2024

Drawing Number TD30.05



SINGLE POST
(24" OR 30" SIZE PANEL)



TWO POSTS
(42" SIZE PANEL)

DIMENSIONS						
SIGN PANEL DIMENSIONS		H-MEMBERS		POSTS		
		H-LENGTHS	SPACING	NO.	SPAC-ING	TYPE (SEE TD30.06.31)
a	b	h	m			
24	-	14	14	1	-	2
30	-	18	18	1	-	3
42	-	26	26	2	22	8

('-' NOT APPLICABLE) TD30.06.02

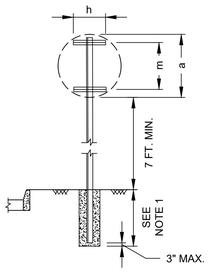
STANDARD OCTAGONAL SIGN ASSEMBLY DETAIL
TD30.06.01

POST TYPE	POST SIZE
	ALUMINUM TUBE
1	2.25 x 2.25 x 0.120
2	3.00 x 3.00 x 0.188
3	3.00 x 3.00 x 0.188
4	3.00 x 3.00 x 0.188
5	2.50 x 2.50 x 0.120
6	3.00 x 3.00 x 0.120
7	3.00 x 3.00 x 0.120
8	3.00 x 3.00 x 0.219
9	3.00 x 3.00 x 0.120
10	3.00 x 3.00 x 0.219

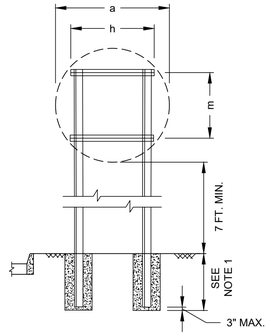
TD30.06.31

NOTES:
TD30.06.30

1. FOR DEPTH OF FOUNDATION REFER TO FOUNDATION DRAWINGS (TD30.01.15 AND TD30.01.16)
2. ALL STEEL POSTS TO BE HOT DIP GALVANIZED AFTER FABRICATION FOR FULL LENGTH AND TOTAL AREA AS PER ASTM A123 OR ASTM A153.
3. UNLESS OTHERWISE SHOWN, ALL H-MEMBERS, HORIZONTAL Z BARS AND POSTS SHALL BE CENTERED ON THE SIGN PANELS. FOR VERTICAL SPACING, THE H-MEMBERS SHALL BE CENTERED BASED ON THE LOCATION OF THE H-MEMBER-SIGN PANEL CONNECTIONS
4. POST SPACING GIVEN IN DIMENSION TABLE IS CENTER TO CENTER SPACING.
5. ZINC CHROMATE SHALL BE APPLIED TO ALL ALUMINUM POSTS A MINIMUM OF 4'-0" FROM THE BOTTOM OF THE POST PRIOR TO EMBEDMENT IN CONCRETE.
6. THESE DETAILS TO BE USED ONLY WHERE GUIDERAIL OR OTHER TRAFFIC BARRIER PROTECTS SIGN SUPPORT POSTS.



SINGLE POST
(30" DIAM. PANEL)

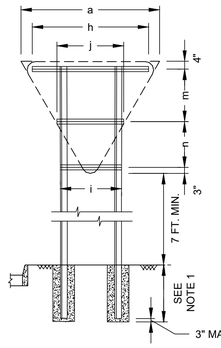


TWO POSTS
(36" DIAM. PANEL)

STANDARD ROUND SIGN ASSEMBLY DETAIL
TD30.06.05

DIMENSIONS							
SIGN PANEL DIMENSIONS		H-MEMBERS			POSTS		
		H-LENGTHS	SPACING		NO.	SPAC-ING	TYPE (SEE TD30.06.31)
a	b	h	m	n			
30	-	8	24	-	1	-	3
36	-	23	22	-	2	22	5

('-' NOT APPLICABLE) TD30.06.06

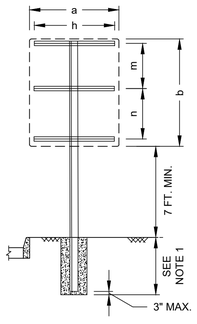


(36",48"or 60" size panel)

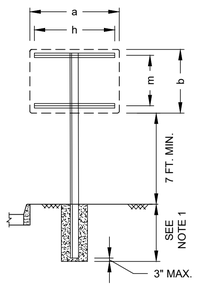
DIMENSIONS								
SIGN PANEL DIMENSIONS		H-MEMBERS				POSTS		
		H-LENGTHS		SPACING		NO.	SPAC-ING	TYPE (SEE TD30.06.31)
a	b	h	i	j	m	n			
36	-	26	23	-	-	-	1	-	2
48	-	38	23	24	16	16	2	22	5
60	-	48	23	28	20	22	2	22	6

('-' NOT APPLICABLE) TD30.06.04

STANDARD TRIANGULAR SIGN ASSEMBLY DETAIL
TD30.06.03



(6 - 10 S.F.)

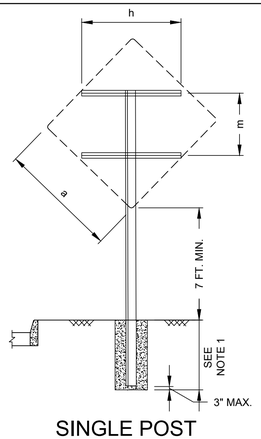


(2 - 6.25 S.F.)

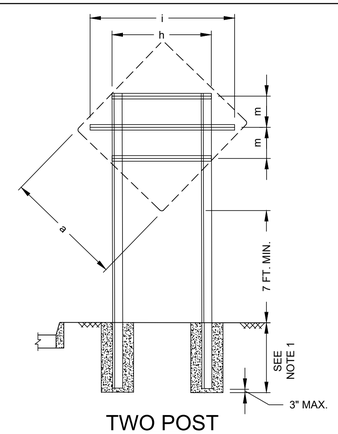
DIMENSIONS						
SIGN PANEL DIMENSIONS		H-MEMBERS			POSTS	
		H-LENGTHS	SPACING		NO.	TYPE SEE (TD30.06.31)
a	b	h	m	n		
24	30	18	24	-	1	3
30	30	24	24	-	1	3
24	12	18	6	-	1	2
30	12	24	6	-	1	2
24	18	18	12	-	1	2
24	18	24	12	-	1	2
30	24	18	18	-	1	2
24	24	24	18	-	1	2
30	36	18	16	16	1	4
24	36	24	16	16	1	4
24	42	18	18	20	1	4
30	42	24	18	20	1	4
24	48	18	22	22	1	4
30	48	24	22	22	1	4

('-' NOT APPLICABLE) TD30.06.10

STANDARD RECTANGULAR SINGLE POST SIGN ASSEMBLY DETAIL
TD30.06.09



SINGLE POST
(4 - 6.25 S.F.)



TWO POST
(9 - 16 S.F.)

DIMENSIONS							
SIGN PANEL DIMENSION	H-MEMBERS			POSTS			
	H-LENGTHS		SPACING	NO.	SPAC-ING	TYPE (SEE TD30.06.31)	
a	h	i	m				
24	14	-	12	1	-	2	
30	22	-	16	1	-	4	
36	23	44	12	2	22	7	
42	23	52	16	2	22	10	
48	23	60	20	2	22	10	

('-' NOT APPLICABLE) TD30.06.21

STANDARD DIAMOND SIGN ASSEMBLY DETAIL
TD30.06.20

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1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

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DETAILS

TRAFFIC

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SIGN MOUNTING

STANDARD SIGN ASSEMBLY DETAILS (1 OF 3)

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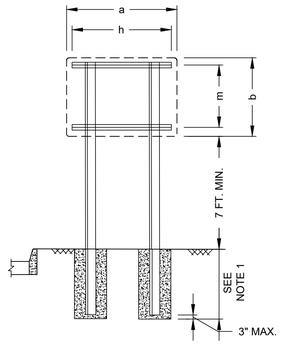


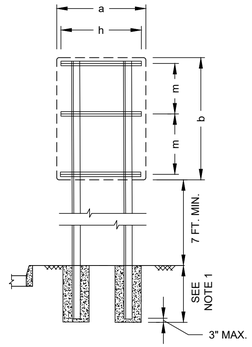
(4.5 - 10 S.F.)

DIMENSIONS						
SIGN PANEL DIMENSIONS		H-MEMBERS		POSTS		
		H-LENGTHS	SPACING	NO.	SPAC-ING	TYPE (SEE TD30.06.31)
a	b	h	m			
48	24	42	28	2	26	6
48	30	42	24	2	26	7
48	18	42	12	2	26	5
60	24	54	18	2	30	6
36	18	30	12	2	22	5
42	18	36	12	2	22	5
36	24	30	18	2	22	5
42	24	36	18	2	22	5
36	30	30	24	2	22	7
42	30	36	24	2	22	7

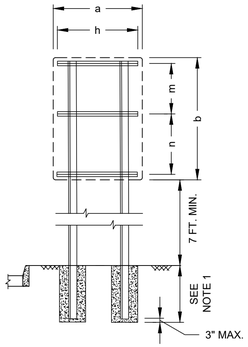
TD30.06.23

STANDARD TWO POST REGULATORY AND GUIDE SIGN ASSEMBLY DETAIL

TD30.06.22



(12 - 20 S.F.)



(9 - 20 S.F.)

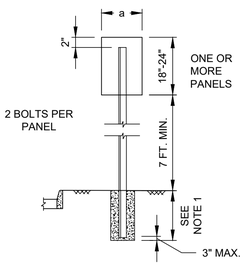
DIMENSIONS							
SIGN PANEL DIMENSIONS		H-MEMBERS			POSTS		
		H-LENGTHS	SPACING		NO.	SPAC-ING	TYPE (SEE TD30.06.31)
a	b	h	m	n			
48	60	42	28	-	2	26	10
48	36	42	16	-	2	26	10
48	48	42	22	-	2	26	10
36	36	30	16	16	2	22	8
42	36	36	16	16	2	22	8
36	42	30	18	20	2	22	8
42	42	36	18	20	2	22	8
36	48	30	22	22	2	22	10
42	48	36	22	22	2	22	10

('-' NOT APPLICABLE)

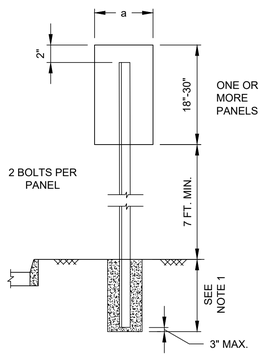
TD30.06.08

STANDARD RECTANGULAR TWO POST SIGN ASSEMBLY DETAIL

TD30.06.07



(1.5 -2 S.F.)



(1.50 -3.75 S.F.)

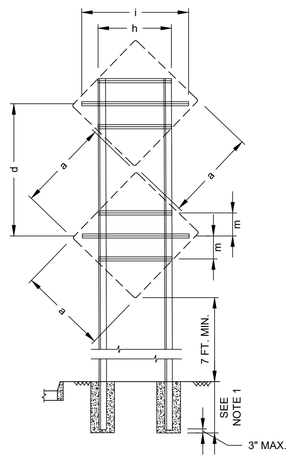
DIMENSIONS								
SIGN PANEL DIMENSIONS		H-MEMBERS				POSTS		
		H-LENGTHS		SPACING		NO.	SPAC-ING	TYPE (SEE TD30.06.31)
a	-	-	-	-	-			
12	-	-	-	-	-	1	-	1
18	-	-	-	-	-	1	-	3

('-' NOT APPLICABLE)

TD30.06.25

STANDARD SINGLE POST SIGN ASSEMBLY DETAIL

TD30.06.24



30" AND 36" SIZE PANELS

DIMENSIONS							
SIGN PANEL DIMENSIONS	H-MEMBERS			PANEL MOUNTING	POSTS		
	H-LENGTHS		SPACING	VERT. SPACE	NO.	SPAC-ING	TYPE (SEE TD30.06.31)
a	h	i	m	d			
30	22	-	8	44	2	22	7
36	23	42	12	52	2	22	10

('-' NOT APPLICABLE)

TD30.06.12

DUAL SIGN ASSEMBLY DETAIL

TD30.06.11

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

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SIGN MOUNTING

STANDARD SIGN ASSEMBLY DETAILS (2 OF 3)

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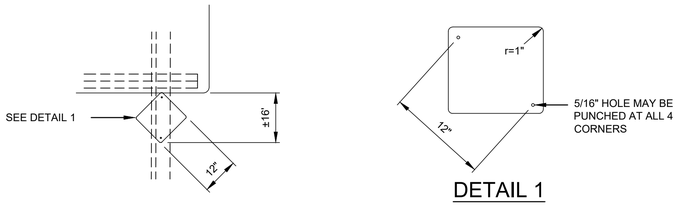
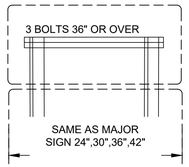


DETAIL 1

SUPPLEMENTARY SIGN PANEL AT BOTTOM OF LARGE SIGN

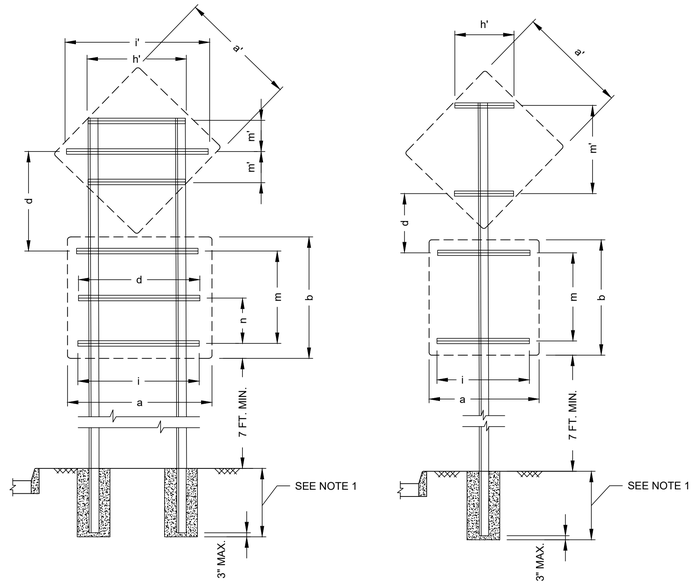


SUPPLEMENTARY SIGN PANEL (TOP OR BOTTOM)

DIMENSIONS													
LOWER PANEL						UPPER PANEL							
LOWER SIGN PANEL DIMENSIONS		H-MEMBERS				UPPER SIGN PANEL DIMENSIONS	H-MEMBERS			UPPER PANEL VERT SPACE	POSTS		
		H-LENGTHS		SPACING			H-LENGTHS		SPACING		NO.	SPAC-ING	TYPE (SEE TD30.06.31)
a	b	i	j	m	n	a'	h'	i'	m'	d			
30	30	24	-	24	-	30	22	-	16	26	2	22	9
36	12	30	-	6	-	36	23	44	12	26	2	22	6
24	18	18	-	12	-	30	22	-	16	26	2	22	6
24	24	18	-	18	-	30	22	-	16	14	1	-	4
36	12	30	-	6	-	24	14	-	12	14	1	-	4
30	24	24	-	18	-	24	14	-	12	30	2	22	10
36	24	30	-	18	-	36	23	44	12	30	2	22	10
36	26	30	30	32	16	36	23	44	12	30	2	22	10
36	12	30	-	6	-	36	23	44	12	30	2	22	8
36	36	30	30	32	16	48	23	60	20	38	2	26	10
42	30	36	-	26	-	48	23	60	20	38	2	26	10
48	36	42	42	32	16	48	23	60	20	38	2	26	10
36	12	30	-	6	-	48	23	60	20	38	2	22	10
36	36	30	30	32	16	42	23	52	16	34	2	22	10
36	12	30	-	6	-	42	23	52	16	34	2	22	10

('-' NOT APPLICABLE)

TD30.06.27



TWO POST MOUNT
(12 - 28) S.F.

SINGLE POST MOUNT
(7 - 10.25) S.F.

COMBINATION SIGN ASSEMBLY DETAIL

TD30.06.26

Sheet of

PORT AUTHORITY NY NJ
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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN MOUNTING

STANDARD SIGN ASSEMBLY DETAILS (3 OF 3)

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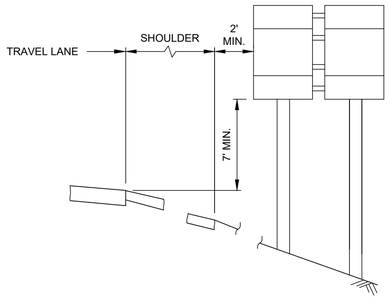
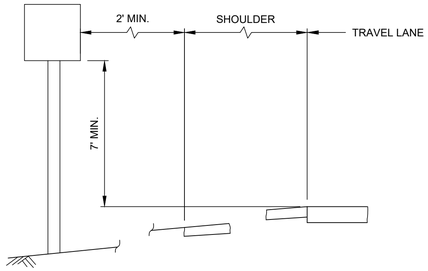
Date 07 / 15 / 2024

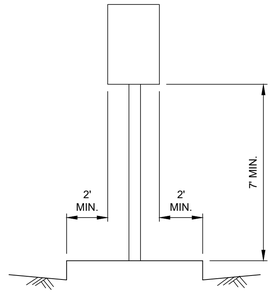
Drawing Number TD30.06



ROUTE MARKER
TD30.07.02



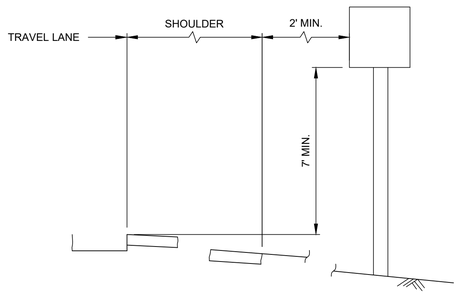
MEDIAN
TD30.07.03



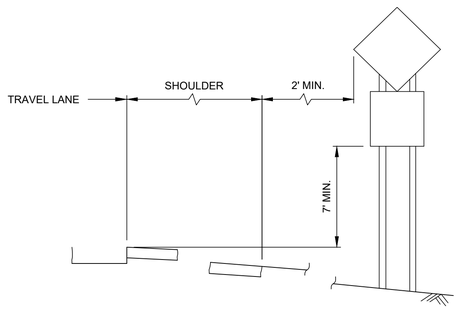
NARROW MEDIAN
TD30.07.04

NOTES:
TD30.07.01

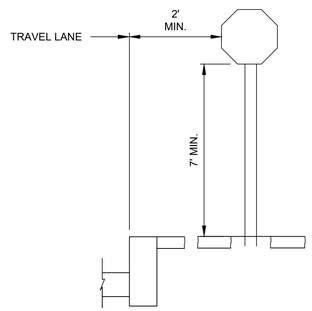
1. 2 FEET MINIMUM LATERAL CLEARANCE UNLESS OTHERWISE SHOWN ON CONTRACT DRAWINGS.
2. 7 FEET VERTICAL DISTANCE TO THE BOTTOM OF THE SIGN UNLESS OTHERWISE SHOWN ON CONTRACT DRAWINGS.
3. SIGNS ALONG BICYCLE PATHS MINIMUM LATERAL CLEARANCE 3 FEET MAXIMUM 6 FEET FROM THE EDGE OF THE PATH AND A HEIGHT TO THE BOTTOM OF THE PANEL MINIMUM 4 FEET MAXIMUM 5 FEET ABOVE THE PATH.



STANDARD
TD30.07.05



STANDARD WITH SUPPLEMENTARY PANEL
TD30.07.06



CURBED SECTION
TD30.07.07

STANDARD HEIGHT AND LATERAL LOCATION FOR TRAFFIC SIGNS

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
SIGN MOUNTING

STANDARD HEIGHT AND LATERAL LOCATION FOR TRAFFIC SIGN ASSEMBLY

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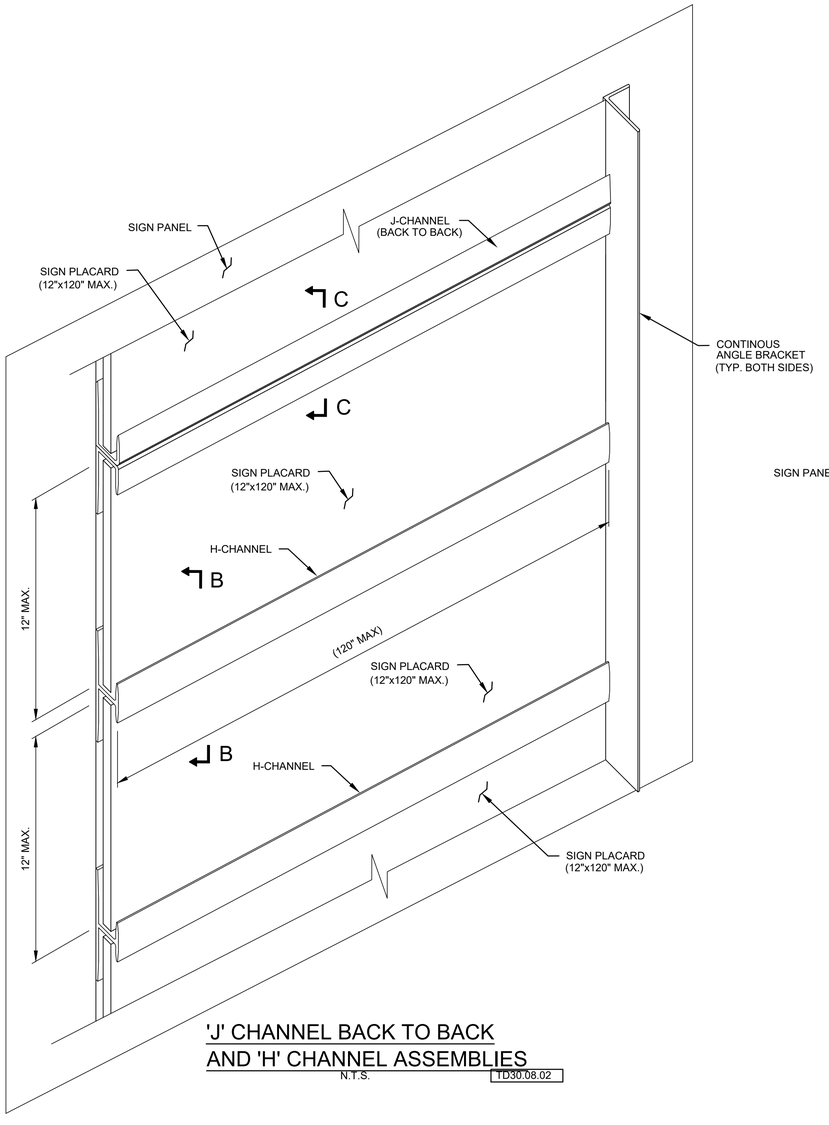
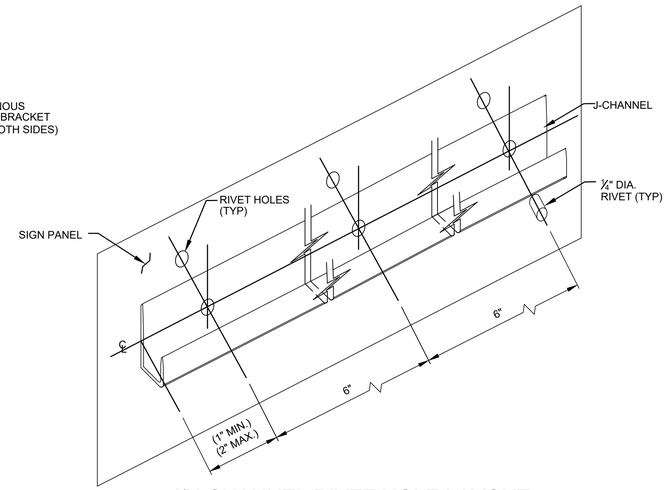


'J' CHANNEL BACK TO BACK AND 'H' CHANNEL ASSEMBLIES

N.T.S. TD30.08.02



J/H CHANNEL RIVET HOLE LAYOUT

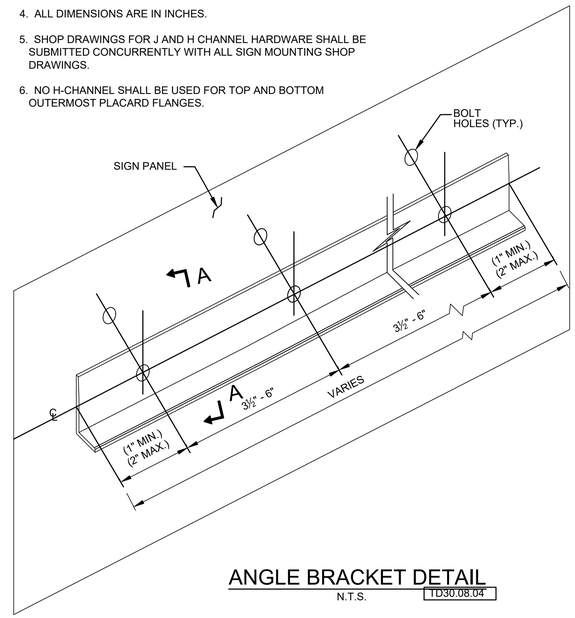
N.T.S. TD30.08.03

(SEE NOTE 3)

NOTES:

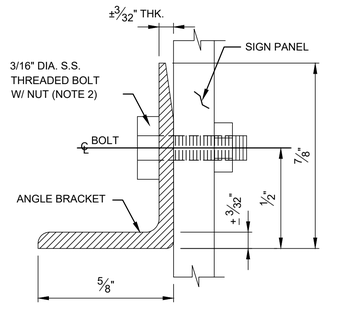
TD30.08.01

1. MINOR MANUFACTURING VARIATIONS MAY BE ACCEPTABLE UPON APPROVAL OF THE ENGINEER.
2. ANGLE BRACKET SHALL BE BOLTED TO SIGN BASE WITH TORQUE WRENCH AT TORQUE SETTING APPROVED BY THE ENGINEER.
3. PROVIDE A MINIMUM OF 1" OFFSET BETWEEN RIVETS FOR ADJACENT J OR H CHANNELS THAT HOLD SAME PLACARD.
4. ALL DIMENSIONS ARE IN INCHES.
5. SHOP DRAWINGS FOR J AND H CHANNEL HARDWARE SHALL BE SUBMITTED CONCURRENTLY WITH ALL SIGN MOUNTING SHOP DRAWINGS.
6. NO H-CHANNEL SHALL BE USED FOR TOP AND BOTTOM OUTERMOST PLACARD FLANGES.



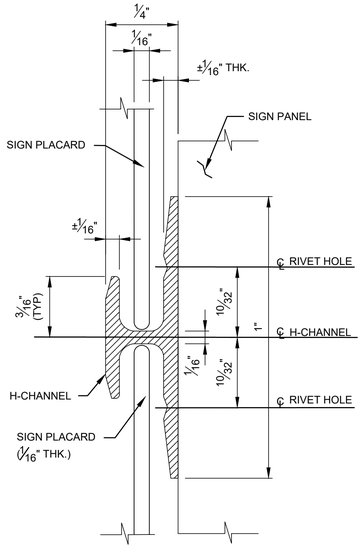
ANGLE BRACKET DETAIL

N.T.S. TD30.08.04



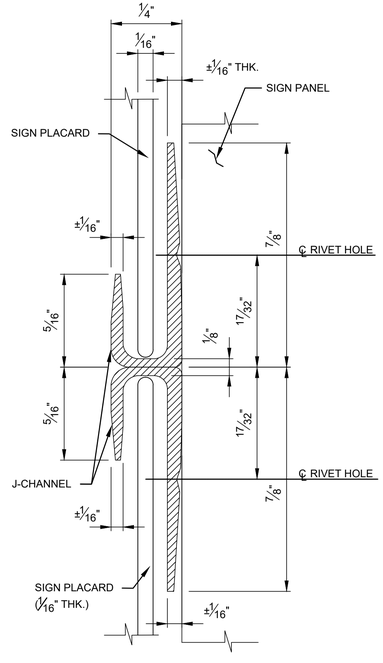
SECTION A-A

N.T.S. TD30.08.05



SECTION B-B

N.T.S. TD30.08.06



SECTION C-C

N.T.S. TD30.08.07

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN MOUNTING

J-CHANNEL AND H-CHANNEL DETAILS

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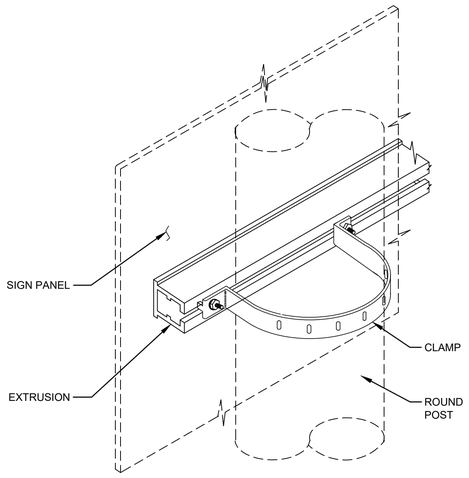
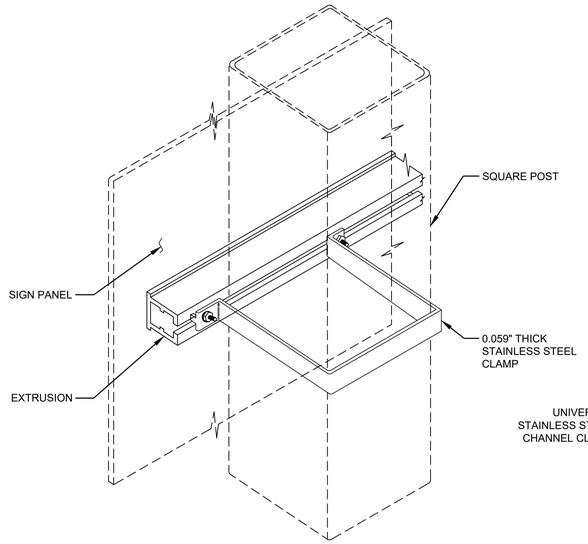


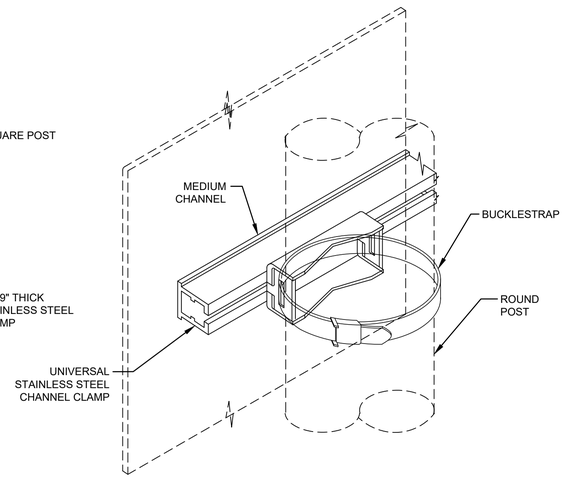
TYPICAL ANTI-ROTATIONAL 2-BOLT "D" CLAMP ASSEMBLY

N.T.S. TD30.11.03



RHS CLAMP ASSEMBLY

N.T.S. TD30.11.05

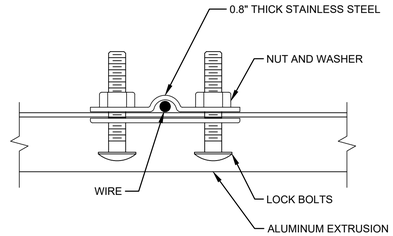


BUCKLESTRAP AND CHANNEL CLAMP ASSEMBLY

N.T.S. TD30.11.04

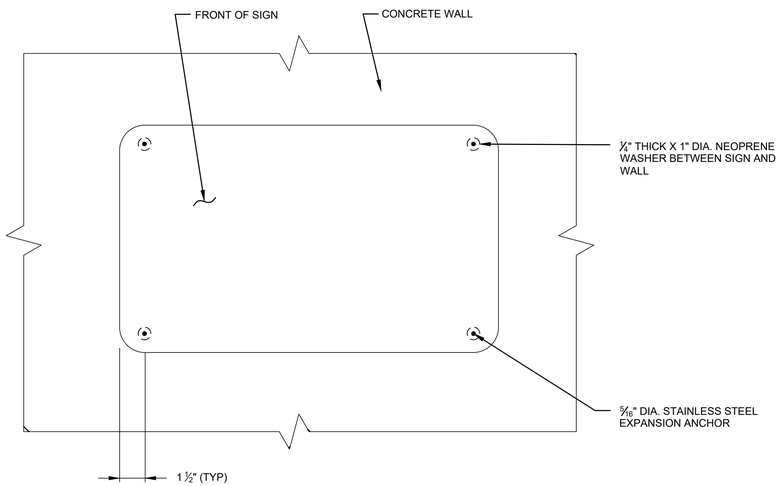
NOTES: TD30.11.01

1. ALL CANTILEVER ARMS ARE USED IN PAIRS
2. ALL PARTS STAINLESS STEEL UNLESS NOTED OTHERWISE.
3. MINOR MANUFACTURER'S VARIATIONS MAY BE ACCEPTABLE UPON APPROVAL OF THE ENGINEER.
4. PROPRIETARY SYSTEM VENDED BY BAND-IT. FOR DETAILS OF THE CLAMPING SYSTEM, APPLICATION TO VARIOUS POST DIAMETER AND INSTALLATION CRITERIA CONTACT MANUFACTURER DIRECTLY AT (215) 245 7290. CONTRACTOR MAY USE A SIMILAR SYSTEM UPON APPROVAL BY THE ENGINEER.



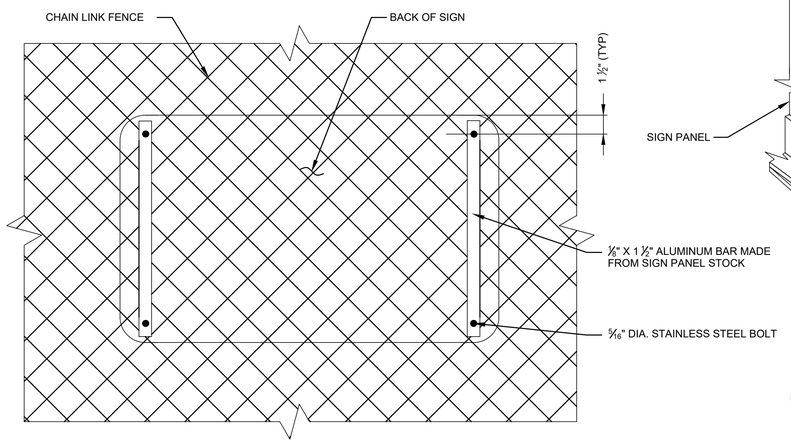
SPAN WIRE CLIP DETAIL

N.T.S. TD30.11.06



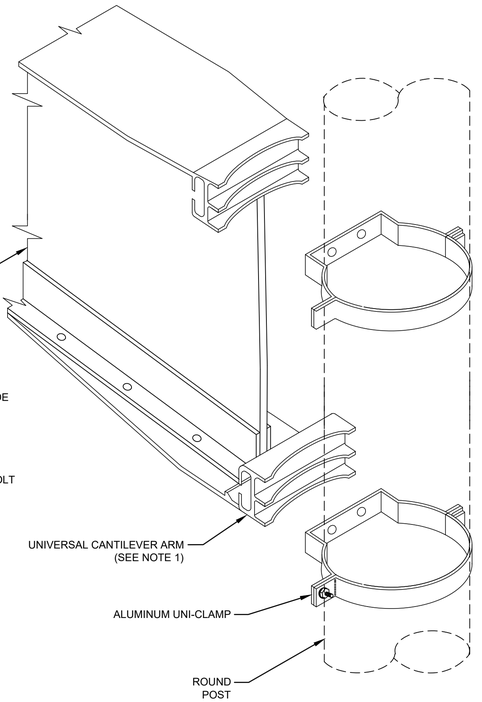
CONCRETE WALL SIGN MOUNTING DETAIL

N.T.S. TD30.11.02



CHAIN LINK AND PICKET FENCE SIGN MOUNTING DETAIL

N.T.S. TD30.11.01



TYPICAL CANTILEVER ARM ASSEMBLY

N.T.S. TD30.11.07

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN MOUNTING

BUCKLESTRAP, CLAMP AND CLIP MOUNTING DETAIL

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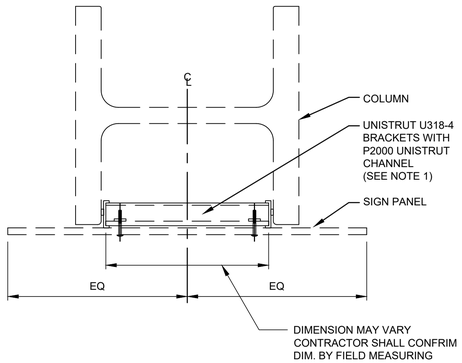
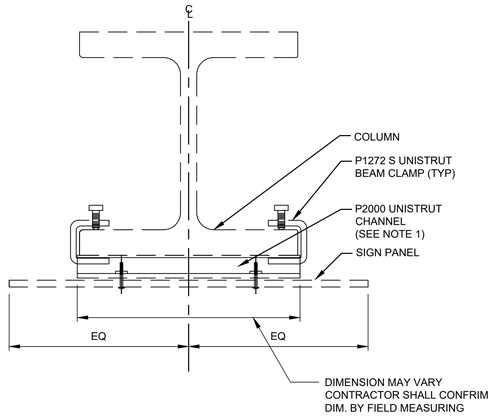
NOTE:

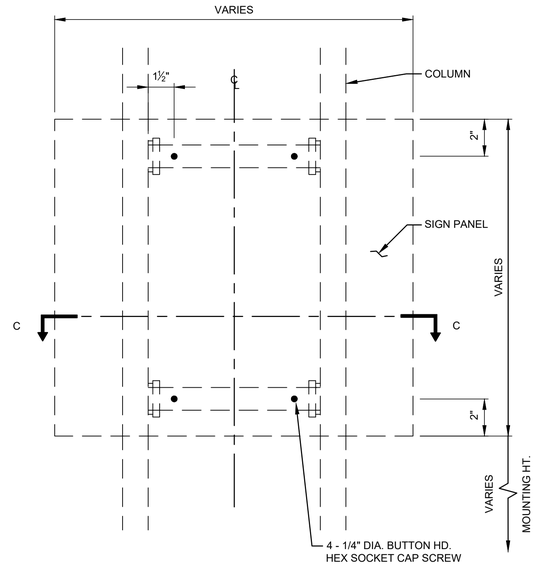
1. UNISTRUT CORP. BRACKETS SHOWN. EQUIVALENT PRODUCTS MAY BE USED AS APPROVED BY THE ENGINEER.



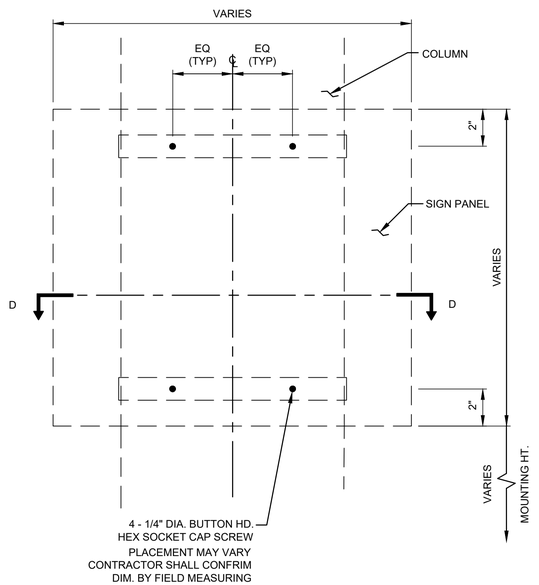
SECTION C-C
N.T.S.



SECTION D-D
N.T.S.



STEEL COLUMN MOUNTING (TYPE A)
N.T.S.
TD30.14.03



STEEL COLUMN MOUNTING (TYPE B)
N.T.S.
TD30.14.04

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PANYNJ DETAILS

TRAFFIC

Title

SIGN MOUNTING

STEEL COLUMN MOUNTING DETAILS

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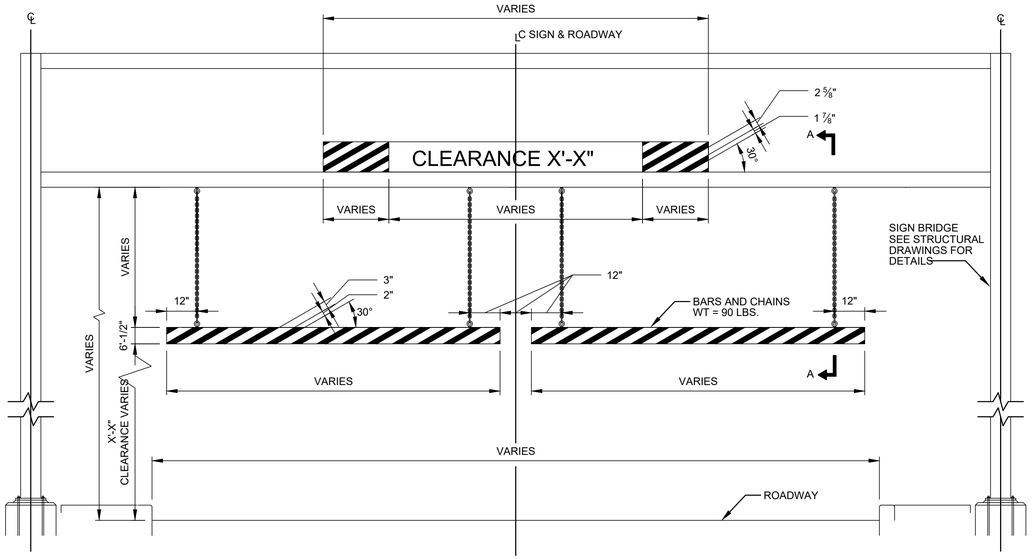
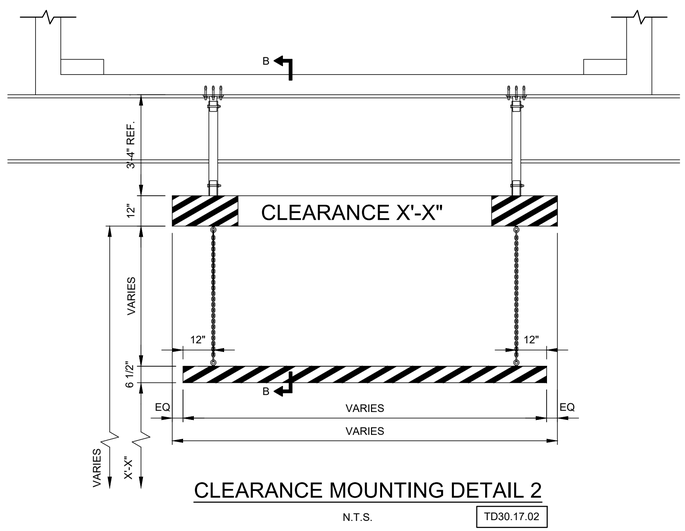


OVERHEAD SIGN CLEARANCE MOUNTING DETAIL 1

N.T.S. TD30.17.01

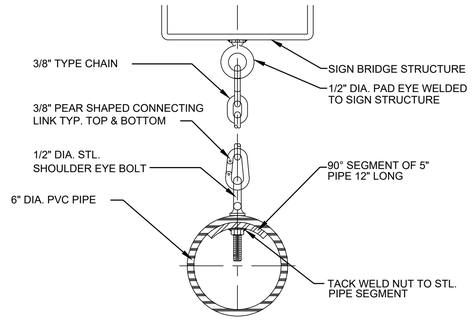


CLEARANCE MOUNTING DETAIL 2

N.T.S. TD30.17.02

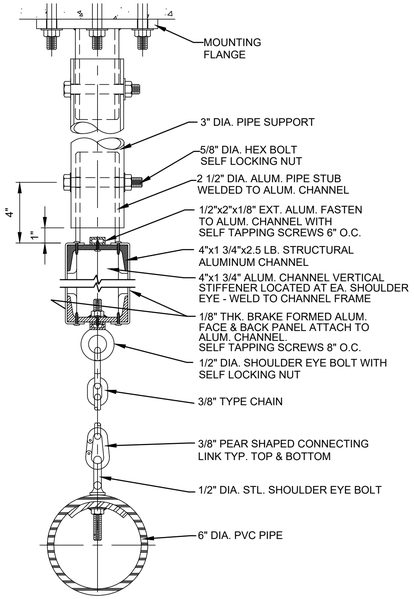
NOTES:

HORIZONTAL AND VERTICAL DIMENSIONS WILL CHANGE DEPENDING ON INSTALLATION REQUIREMENTS.



SECTION A-A

N.T.S.



SECTION B-B

N.T.S.

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TRAFFIC

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SIGN MOUNTING

OVERHEAD CLEARANCE MOUNTING DETAILS

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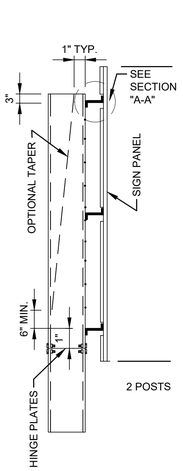
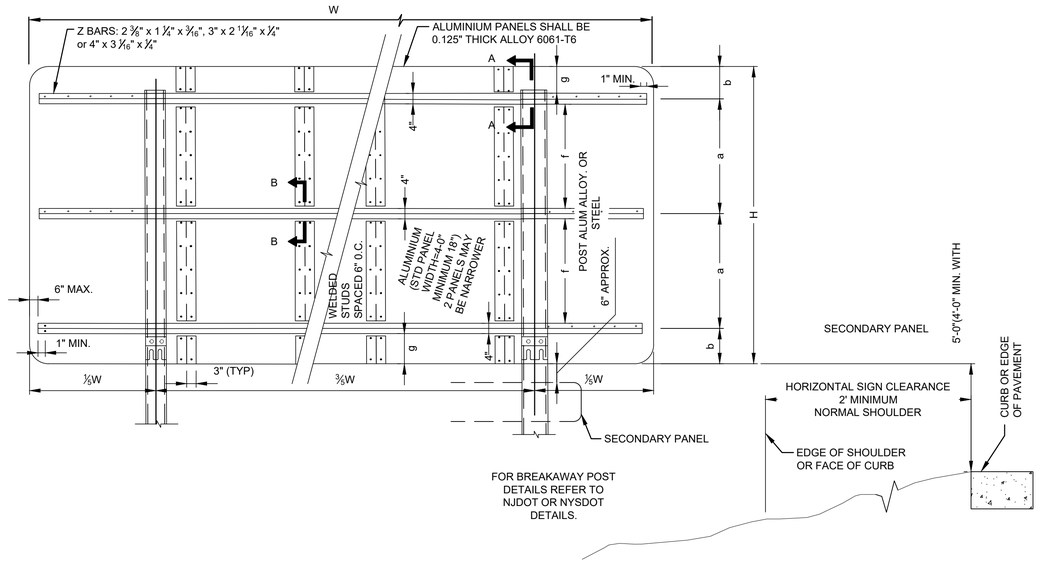


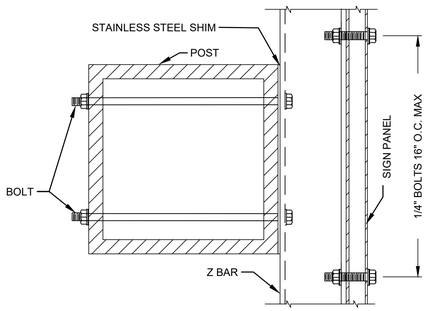
SIDE VIEW
N.T.S. TD30.21.03



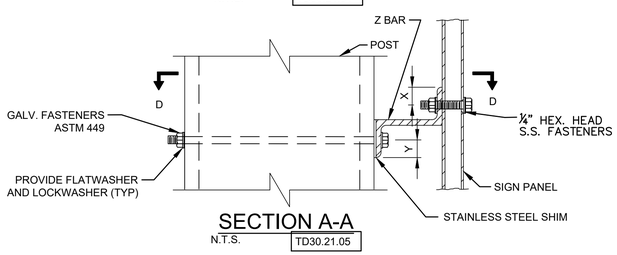
BACK VIEW
N.T.S. TD30.21.02

NOTES:
TD30.21.01

1. THE ORIENTATION OF THE GUIDE SIGN SHALL BE AS SHOWN ON CONTRACT DRAWINGS.
2. WHERE SIGN POSTS ARE NOT PROTECTED FROM VEHICULAR IMPACT, BREAKAWAY SIGN POSTS SHALL BE PROVIDED. SEE NJDOT OR NYSDOT STANDARD DETAILS, OR PROVIDE PROPRIETARY TRANSPO CORP. BREAKAWAY SIGN POSTS, OR APPROVED EQUAL.
3. COMPONENTS OF LOCKBOLTS MAY HAVE MODIFIED TEMPERS IN COLD-FORMED ELEMENTS.
4. THE GROUND MOUNTED SIGNS POST SELECTION SCHEDULE IS FOR POSTS FABRICATED OF A-36 STEEL. POSTS FOR SIGNS WITH SLIP-IMPACT BASES MUST BE OF WELDABLE QUALITY.
5. STEEL POSTS SHALL BE ASTM A36 HOT DIP GALVANIZED PER ASTM A123.
6. SIGNS OVER ONE STANDARD PANEL HEIGHT (12 FT FOR ALUMINUM) MAY BE CONSTRUCTED AS TWO SEPARATE SIGNS OF APPROX. EQUAL HEIGHT WITH A HORIZONTAL CONSTRUCTION JOINT SIMILAR TO THE VERTICAL JOINTS DETAILED ON THIS SHEET; SAID HORIZONTAL JOINT TO FALL BETWEEN LINES OF MAJOR LEGEND, SECONDARY PANELS SHALL BE FABRICATED AND ERECTED IN SAME MANNER AS MAIN PANEL. THE WIDER PANEL DETERMINES HORIZ CLEARANCE. THE LARGER PANEL DETERMINES POST SPACING. MIN. VERTICAL CLEARANCE TO BOTTOM PANEL SHALL BE 5'-0".
7. PROVIDE HORIZONTAL Z-BARS OF EQUAL SPACING (MAX. SPACING 36" C.TO C.)

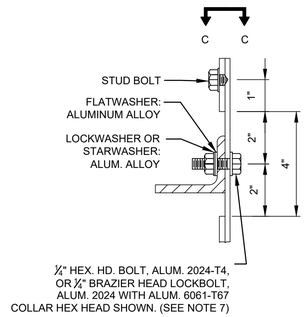


SECTION D-D
N.T.S. TD30.21.04

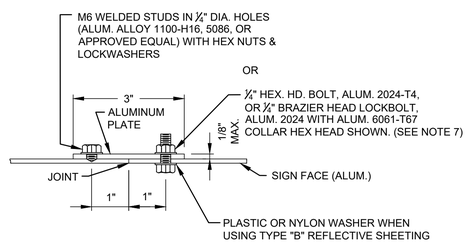


SECTION A-A
N.T.S. TD30.21.05

Z BAR	X	Y	BOLT
2 3/8"	1/2"	1/2"	1/4" STAINLESS STEEL OR 3/8" ALUM
3"	1 3/8"	1"	1/2" STAINLESS STEEL OR 1/2" ALUM
4"	1 3/8"	1"	1/2" STAINLESS STEEL OR 1/2" ALUM



SECTION B-B
N.T.S. TD30.21.06



SECTION C-C
N.T.S. TD30.21.07

GROUND MOUNTED SIGNS POST SELECTION SCHEDULE

GUIDE SIGN #	AREA OF SIGN IN SQ. FT.	2-POST SIGNS POST MATERIAL & SIZE	EMBEDMENT		TYPE OF POSTS
			K (DIA.)	D* (DEPTH)	

TD30.21.08

* EMBEDMENT DEPTH (D) SHOWN IN POST SELECTION CHART TABLE IS FOR PLACEMENT IN SOIL. WHEN SOUND SOLID ROCK IS ENCOUNTERED, POSTS SHALL BE FOUNDED INTO ROCK AT A DEPTH EQUAL TO EMBEDMENT DIAMETER (K) OR TO DEPTH (D), WHICHEVER IS LESS. ANCHORAGE DIAMETER IN ROCK MAY BE REDUCED TO SUIT POST.

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ENGINEERING DEPARTMENT

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TRAFFIC

Title
SIGN MOUNTING

LARGE GUIDE SIGN ASSEMBLY DETAILS

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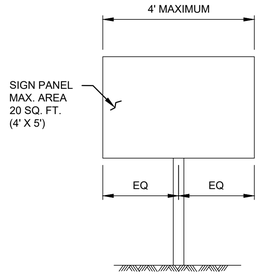
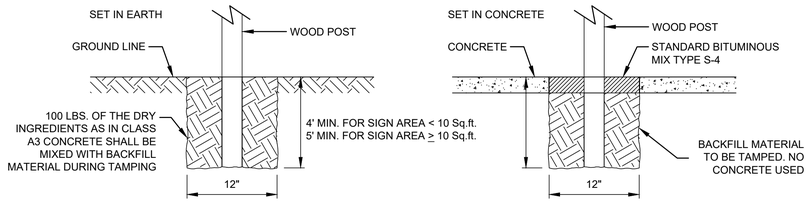


SINGLE POST ASSEMBLY

N.T.S. TD30.22.04



INSTALLATION DETAILS

N.T.S. TD30.22.11

NOTES:

TD30.22.01

1. IF THE POST LENGTH REQUIRED IS LONGER THAN WHAT IS AVAILABLE, SPLICING BY OVERLAPPING AND BOLTING 2 POSTS TOGETHER IS PERMISSIBLE WITH APPROVAL OF THE ENGINEER.

WOOD POST	
SIZES	AVAILABLE LENGHTS
4"x4"	10', 12', AND 14'
4"x6"	16', 18', 20', 22', AND 24'

SEE NOTE 1 TD30.22.03

2. ALL POST ABOVE 4x6 SIZE MUST BE BREAKAWAY TYPE WHERE TWO HOLES ARE DRILLED PERPENDICULAR TO TRAFFIC FLOW. (SEE TABLE TD30.22.02)

BREAKAWAY HOLE SIZE FOR POST GREATER THAN 4"x6"	
SIZES	HOLES
6"x6"	2" DIAMETER
6"x8"	3" DIAMETER

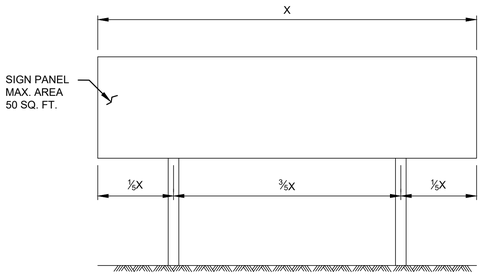
TD30.22.02

3. NYLON WASHER SHALL BE ⅛" THICK MINIMUM WITH AN OUTSIDE DIAMETER OF 1" AND AN INSIDE DIAMETER OF 7/16".

4. PLYWOOD SIGN PANELS, POSTS, AND FOOTINGS FOR USE IN THE CONSTRUCTION OF TEMPORARY GUIDE, WARNING AND REGULATORY ROADWAY SIGNS REFER TO SPECIFICATION:

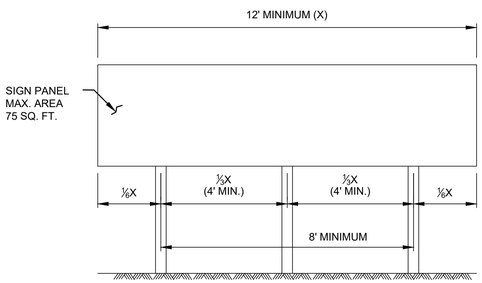
   02850 - PLYWOOD SIGN PANELS AND WOOD SIGN POSTS.

5. WOOD SIGN POSTS SHALL BE PRESSURE TREATED WOOD.



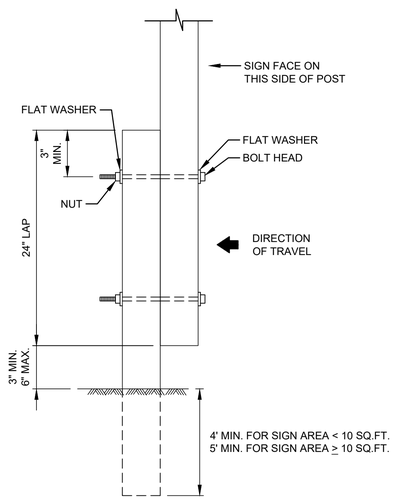
TYPICAL 2 POST ASSEMBLY

N.T.S. TD30.22.05



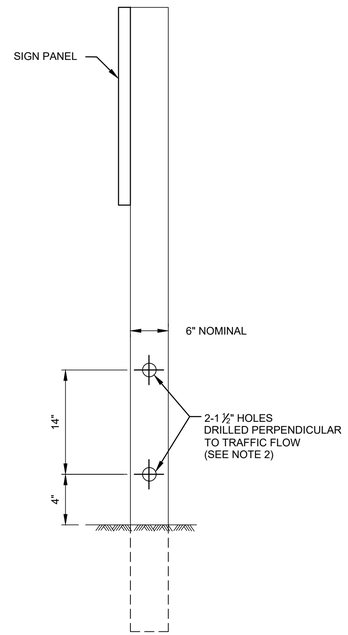
TYPICAL 3 POST ASSEMBLY

N.T.S. TD30.22.06



POST SPLICING DETAIL

N.T.S. TD30.22.07

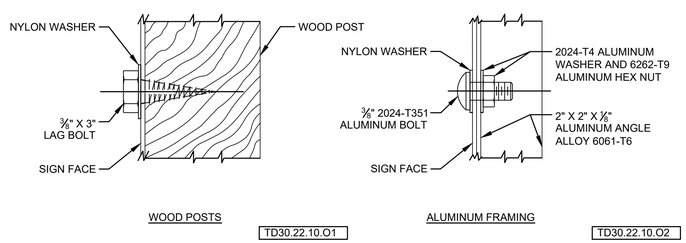


WOOD 4"x6" BREAKAWAY DETAIL

N.T.S. TD30.22.08

WOOD POST SELECTION TABLE		
SIGN AREA	POST NUMBER AND SIZE	MINIMUM SPACING
LESS THAN 10 SQ. FT.	ONE OR TWO 4"x4"s	MIN. 3'
10-20 SQ. FT.	ONE 4"x6" OR TWO 4"x4"s	MIN. 3'
20-50 SQ. FT.	TWO 4"x6"s	MIN. 8'
50-75 SQ. FT.	THREE 4"x6"s OR STEEL	MIN. 8'
GREATER THAN 75 SQ. FT.	STEEL POSTS	-

TD30.22.09



WOOD POSTS TD30.22.10.O1

ALUMINUM FRAMING TD30.22.10.O2

SIGN PANEL ATTACHMENT DETAILS

N.T.S. TD30.22.10

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN MOUNTING

TEMPORARY WOOD SIGN POST DETAILS

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Date 07 / 15 / 2024

Drawing Number TD30.22

CONSTRUCTION SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W1-1L		-" x -"	BLACK	YELLOW ORANGE
W1-1R		-" x -"	BLACK	YELLOW ORANGE
W1-1aL	25	-" x -"	BLACK	YELLOW
W1-1aR	25	-" x -"	BLACK	YELLOW
W1-2L		-" x -"	BLACK	YELLOW ORANGE
W1-2R		-" x -"	BLACK	YELLOW ORANGE
W1-2aL	35	-" x -"	BLACK	YELLOW
W1-2aR	35	-" x -"	BLACK	YELLOW
W1-3L		-" x -"	BLACK	YELLOW ORANGE
W1-3R		-" x -"	BLACK	YELLOW ORANGE
W1-4L		-" x -"	BLACK	YELLOW ORANGE
W1-4R		-" x -"	BLACK	YELLOW ORANGE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W1-4bL		-" x -"	BLACK	ORANGE
W1-4bR		-" x -"	BLACK	ORANGE
W1-4cL		-" x -"	BLACK	ORANGE
W1-4cR		-" x -"	BLACK	ORANGE
W1-6L		-" x -"	BLACK	YELLOW ORANGE
W1-6R		-" x -"	BLACK	YELLOW ORANGE
W1-7		-" x -"	BLACK	YELLOW
W1-8L		-" x -"	BLACK	YELLOW ORANGE
W1-8R		-" x -"	BLACK	YELLOW ORANGE
W1-10L		-" x -"	BLACK	YELLOW
W1-10R		-" x -"	BLACK	YELLOW
W1-10aL		-" x -"	BLACK	YELLOW
W1-10aR		-" x -"	BLACK	YELLOW
W1-10bL		-" x -"	BLACK	YELLOW

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W1-10bR		-" x -"	BLACK	YELLOW
W1-10cL		-" x -"	BLACK	YELLOW
W1-10cR		-" x -"	BLACK	YELLOW
W1-10dL		-" x -"	BLACK	YELLOW
W1-10dR		-" x -"	BLACK	YELLOW
W1-10eL		-" x -"	BLACK	YELLOW
W1-10eR		-" x -"	BLACK	YELLOW
W1-11L		-" x -"	BLACK	YELLOW
W1-11R		-" x -"	BLACK	YELLOW
W1-13L		-" x -"	BLACK	YELLOW
W1-13R		-" x -"	BLACK	YELLOW
W1-15L		-" x -"	BLACK	YELLOW

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W1-15R		-" x -"	BLACK	YELLOW
W2-1		-" x -"	BLACK	YELLOW
W2-2L		-" x -"	BLACK	YELLOW
W2-2R		-" x -"	BLACK	YELLOW
W2-3L		-" x -"	BLACK	YELLOW
W2-3R		-" x -"	BLACK	YELLOW
W2-4		-" x -"	BLACK	YELLOW
W2-5		-" x -"	BLACK	YELLOW
W2-6		-" x -"	BLACK	YELLOW
W2-7L		-" x -"	BLACK	YELLOW
W2-7R		-" x -"	BLACK	YELLOW
W2-8L		-" x -"	BLACK	YELLOW

NOTES TO DESIGNER FOR REGULATORY SIGNS:

1. FOR SIZE OF SIGN IN CONTRACT DRAWINGS, DESIGNER IS TO USE MUTCD APPLICABLE SIZE.

2. FOR COLORS ON TABLE ABOVE, DESIGNER IS TO USE MUTCD & FHWA REQUIREMENTS FOR DESIGNERS' LAYOUT.

3. ALL PA ROADWAY SIGNS INSTALLED BY SIGN SHOP OR CONTRACTOR SHALL INCLUDE AGENCY'S NAME. LINK

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN LAYOUT

MUTCD

WARNING SIGNS (1 OF 5)

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Date 07 / 15 / 2024

Drawing Number TD40.01

CONSTRUCTION SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W2-8R		–" x –"	BLACK	YELLOW
W3-1		–" x –"	BLACK	YELLOW ORANGE
W3-2		–" x –"	BLACK	YELLOW ORANGE
W3-3		–" x –"	BLACK	YELLOW ORANGE
W3-4	BE PREPARED TO STOP	–" x –"	BLACK	YELLOW ORANGE
W3-5	SPEED LIMIT XX	–" x –"	BLACK	YELLOW ORANGE
W3-5a	XX MPH SPEED ZONE AHEAD	–" x –"	BLACK	YELLOW ORANGE
W3-6	DRAW BRIDGE	–" x –"	BLACK	YELLOW
W3-7	RAMP METER AHEAD	–" x –"	BLACK	YELLOW
W3-8	RAMP METERED WHEN FLASHING	–" x –"	BLACK	YELLOW
W4-1L		–" x –"	BLACK	YELLOW ORANGE
W4-1R		–" x –"	BLACK	YELLOW ORANGE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W4-2L		–" x –"	BLACK	YELLOW ORANGE
W4-2R		–" x –"	BLACK	YELLOW ORANGE
W4-3L		–" x –"	BLACK	YELLOW ORANGE
W4-3R		–" x –"	BLACK	YELLOW ORANGE
W4-4aP	TRAFFIC FROM LEFT DOES NOT STOP	–" x –"	BLACK	YELLOW
W4-4bP	ONCOMING TRAFFIC DOES NOT STOP	–" x –"	BLACK	YELLOW
W4-4P	CROSS TRAFFIC DOES NOT STOP	–" x –"	BLACK	YELLOW
W4-5P	NO MERGE AREA	–" x –"	BLACK	YELLOW ORANGE
W4-5L		–" x –"	BLACK	YELLOW ORANGE
W4-5R		–" x –"	BLACK	YELLOW ORANGE
W4-6L		–" x –"	BLACK	YELLOW
W4-6R		–" x –"	BLACK	YELLOW
W5-1	ROAD NARROWS	–" x –"	BLACK	YELLOW ORANGE
W5-2	NARROW BRIDGE	–" x –"	BLACK	YELLOW ORANGE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W5-3	ONE LANE BRIDGE	–" x –"	BLACK	YELLOW ORANGE
W5-4	RAMP NARROWS	–" x –"	BLACK	ORANGE
W6-1		–" x –"	BLACK	YELLOW ORANGE
W6-2		–" x –"	BLACK	YELLOW ORANGE
W6-3		–" x –"	BLACK	YELLOW ORANGE
W6-4		–" x –"	BLACK	ORANGE
W7-1		–" x –"	BLACK	YELLOW ORANGE
W7-1a	X%	–" x –"	BLACK	YELLOW
W7-3aP	NEXT 7 MILES	–" x –"	BLACK	YELLOW ORANGE
W7-4dP	SAND	–" x –"	BLACK	YELLOW
W7-4eP	GRAVEL	–" x –"	BLACK	YELLOW
W7-4fP	PAVED	–" x –"	BLACK	YELLOW
W7-6	HILL BLOCKS VIEW	–" x –"	BLACK	YELLOW
W8-1	BUMP	–" x –"	BLACK	YELLOW ORANGE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W8-2	DIP	–" x –"	BLACK	YELLOW ORANGE
W8-3	PAVEMENT ENDS	–" x –"	BLACK	YELLOW ORANGE
W8-4	SOFT SHOULDER	–" x –"	BLACK	YELLOW ORANGE
W8-5		–" x –"	BLACK	YELLOW ORANGE
W8-5aP	ICE	–" x –"	BLACK	YELLOW
W8-5bP	STEEL DECK	–" x –"	BLACK	YELLOW
W8-5cP	EXCESS OIL	–" x –"	BLACK	YELLOW
W8-5P	WHEN WET	–" x –"	BLACK	YELLOW
W8-6	TRUCK CROSSING	–" x –"	BLACK	YELLOW ORANGE
W8-7	LOOSE GRAVEL	–" x –"	BLACK	YELLOW ORANGE
W8-8	ROUGH ROAD	–" x –"	BLACK	YELLOW ORANGE
W8-9	LOW SHOULDER	–" x –"	BLACK	YELLOW ORANGE
W8-11	UNEVEN LANES	–" x –"	BLACK	YELLOW ORANGE

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN LAYOUT

MUTCD

WARNING SIGNS (2 OF 5)

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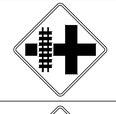
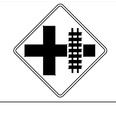
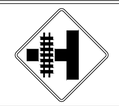
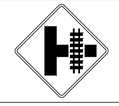
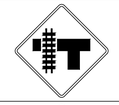
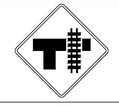
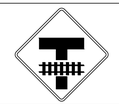
Date 07 / 15 / 2024

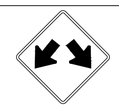
Drawing Number TD40.02

CONSTRUCTION SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W8-12	NO CENTER LINE	–" x –"	BLACK	YELLOW ORANGE
W8-13	BRIDGE ICES BEFORE ROAD	–" x –"	BLACK	YELLOW
W8-15	GROOVED PAVEMENT	–" x –"	BLACK	YELLOW ORANGE
W8-15P		–" x –"	BLACK	YELLOW ORANGE
W8-16	METAL BRIDGE DECK	–" x –"	BLACK	YELLOW
W8-17		–" x –"	BLACK	YELLOW ORANGE
W8-17P	SHOULDER DROP-OFF	–" x –"	BLACK	YELLOW ORANGE
W8-18	ROAD MAY FLOOD	–" x –"	BLACK	YELLOW ORANGE
W8-19		–" x –"	BLACK	YELLOW
W8-21	GUSTY WINDS AREA	–" x –"	BLACK	YELLOW
W8-22	FOG AREA	–" x –"	BLACK	YELLOW

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W8-23	NO SHOULDER	–" x –"	BLACK	YELLOW ORANGE
W8-24	STEEL PLATE AHEAD	–" x –"	BLACK	ORANGE
W8-25	SHOULDER ENDS	–" x –"	BLACK	YELLOW ORANGE
W9-1L	LEFT LANE ENDS	–" x –"	BLACK	YELLOW ORANGE
W9-1R	RIGHT LANE ENDS	–" x –"	BLACK	YELLOW ORANGE
W9-2L	LANE ENDS MERGE LEFT	–" x –"	BLACK	YELLOW ORANGE
W9-2R	LANE ENDS MERGE RIGHT	–" x –"	BLACK	YELLOW ORANGE
W9-3	CENTER LANE CLOSED AHEAD	–" x –"	BLACK	ORANGE
W9-7	RIGHT LANE EXIT ONLY AHEAD	–" x –"	BLACK	YELLOW
W10-1	R R	–" DIA.	BLACK	YELLOW
W10-1aP	EXEMPT	–" x –"	BLACK	YELLOW
W10-2L		–" x –"	BLACK	YELLOW
W10-2R		–" x –"	BLACK	YELLOW

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W10-3L		–" x –"	BLACK	YELLOW
W10-3R		–" x –"	BLACK	YELLOW
W10-4L		–" x –"	BLACK	YELLOW
W10-4R		–" x –"	BLACK	YELLOW
W10-5		–" x –"	BLACK	YELLOW
W10-5P	LOW GROUND CLEARANCE	–" x –"	BLACK	YELLOW
W10-11		–" x –"	BLACK	YELLOW
W10-12L		–" x –"	BLACK	YELLOW
W10-12R		–" x –"	BLACK	YELLOW
W10-13P	NO GATES OR LIGHTS	–" x –"	BLACK	YELLOW
W10-14P	NEXT CROSSING	–" x –"	BLACK	YELLOW
W10-14aP	USE NEXT CROSSING	–" x –"	BLACK	YELLOW
W10-15P	ROUGH CROSSING	–" x –"	BLACK	YELLOW

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W11-1		–" x –"	BLACK	YELLOW
W11-2		–" x –"	BLACK	YELLOW
W11-3		–" x –"	BLACK	YELLOW
W11-7		–" x –"	BLACK	YELLOW
W11-8		–" x –"	BLACK	YELLOW
W11-9		–" x –"	BLACK	YELLOW
W11-10		–" x –"	BLACK	YELLOW ORANGE
W11-12P	EMERGENCY SIGNAL AHEAD	–" x –"	BLACK	YELLOW
W11-15		–" x –"	BLACK	YELLOW
W11-15a	TRAIL CROSSING	–" x –"	BLACK	YELLOW
W11-15P	TRAIL X-ING	–" x –"	BLACK	YELLOW
W12-1		–" x –"	BLACK	YELLOW ORANGE

NOTES TO DESIGNER FOR REGULATORY SIGNS:

1. FOR SIZE OF SIGN IN CONTRACT DRAWINGS, DESIGNER IS TO USE MUTCD APPLICABLE SIZE.
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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN LAYOUT

MUTCD

WARNING SIGNS (3 OF 5)

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Date 07 / 15 / 2024

Drawing Number TD40.03

CONSTRUCTION SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W12–2	12'-6"	–" x –"	BLACK	YELLOW ORANGE
W12–2a	14 FT 4 IN	–" x –"	BLACK	YELLOW
W13–1P	35 MPH	–" x –"	BLACK	YELLOW ORANGE
W13–2	EXIT 25 M.P.H.	–" x –"	BLACK	YELLOW
W13–3	RAMP 30 MPH	–" x –"	BLACK	YELLOW
W13–4P	ON RAMP	–" x –"	BLACK	ORANGE
W13–6	EXIT 25 MPH	–" x –"	BLACK	YELLOW
W13–7	RAMP 25 MPH	–" x –"	BLACK	YELLOW
W14–1	DEAD END	–" x –"	BLACK	YELLOW
W14–1a	DEAD END	–" x –"	BLACK	YELLOW
W14–2	NO OUTLET	–" x –"	BLACK	YELLOW
W14–2a	NO OUTLET	–" x –"	BLACK	YELLOW
W14–3	NO PASSING ZONE	–" x –" x –"	BLACK	YELLOW ORANGE
W15–1		–" x –"	BLACK	YELLOW

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W16–1P	SHARE THE ROAD	–" x –"	BLACK	YELLOW
W16–2aP	XXX FT	–" x –"	BLACK	YELLOW
W16–2P	XX FEET	–" x –"	BLACK	YELLOW ORANGE
W16–3aP	XX MILES	–" x –"	BLACK	YELLOW
W16–3P	XX MILES	–" x –"	BLACK	YELLOW
W16–4P	NEXT XX FT	–" x –"	BLACK	YELLOW
W16–5PL		–" x –"	BLACK	YELLOW
W16–5PR		–" x –"	BLACK	YELLOW
W16–6PL		–" x –"	BLACK	YELLOW
W16–6PR		–" x –"	BLACK	YELLOW
W16–7PL		–" x –"	BLACK	YELLOW
W16–7PR		–" x –"	BLACK	YELLOW
W16–9P	AHEAD	–" x –"	BLACK	YELLOW
W16–10aP	PHOTO ENFORCED	–" x –"	BLACK	YELLOW
W16–10P		–" x –"	BLACK	YELLOW
W16–11P	HOV	–" x –"	BLACK	YELLOW
W16–12P	TRAFFIC CIRCLE	–" x –"	BLACK	YELLOW
W16–13P	WHEN FLASHING	–" x –"	BLACK	YELLOW
W16–15P	NEW	–" x –"	BLACK	YELLOW
W16–17P	ROUNDABOUT	–" x –"	BLACK	YELLOW
W16–18P	NOTICE	–" x –"	BLACK	YELLOW

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W17–1	SPEED HUMP	–" x –"	BLACK	YELLOW
W19–1	FREEWAY ENDS X MILE	–" x –"	BLACK	YELLOW
W19–2	EXPRESSWAY ENDS X MILE	–" x –"	BLACK	YELLOW
W19–3	FREEWAY ENDS	–" x –"	BLACK	YELLOW
W19–4	EXPRESSWAY ENDS	–" x –"	BLACK	YELLOW
W19–5	ALL TRAFFIC MUST EXIT	–" x –"	BLACK	YELLOW
W20–1	ROAD WORK AHEAD	–" x –"	BLACK	ORANGE
W20–1 (MOD.)	ROAD WORK	–" x –"	BLACK	ORANGE
W20–2	DETOUR AHEAD	–" x –"	BLACK	ORANGE
W20–2 (MOD.)	DETOUR ----	–" x –"	BLACK	ORANGE
W20–3	ROAD CLOSED AHEAD	–" x –"	BLACK	ORANGE
W20–3 (MOD.)	ROAD CLOSED ----	–" x –"	BLACK	ORANGE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W20–4	ONE LANE ROAD AHEAD	–" x –"	BLACK	ORANGE
W20–4 (MOD.)	ONE LANE ROAD	–" x –"	BLACK	ORANGE
W20–5aL	2 LEFT LANES CLOSED AHEAD	–" x –"	BLACK	ORANGE
W20–5aL (MOD.)	2 LEFT LANES CLOSED	–" x –"	BLACK	ORANGE
W20–5aR	2 RIGHT LANES CLOSED AHEAD	–" x –"	BLACK	ORANGE
W20–5aR (MOD.)	2 RIGHT LANES CLOSED	–" x –"	BLACK	ORANGE
W20–5L	LEFT LANE CLOSED AHEAD	–" x –"	BLACK	ORANGE
W20–5L (MOD.)	LEFT LANE CLOSED	–" x –"	BLACK	ORANGE
W20–5R	RIGHT LANE CLOSED AHEAD	–" x –"	BLACK	ORANGE
W20–5R (MOD.)	RIGHT LANE CLOSED	–" x –"	BLACK	ORANGE
W20–7		–" x –"	BLACK	ORANGE
W20–7a	FLAGGER AHEAD	–" x –"	BLACK	ORANGE

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

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Title

SIGN LAYOUT

MUTCD

WARNING SIGNS (4 OF 5)

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Date 07 / 15 / 2024

Drawing Number TD40.04

CONSTRUCTION SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
W21-1		–" x –"	BLACK	ORANGE
W21-1a	WORKERS	–" x –"	BLACK	ORANGE
W21-2	FRESH OIL	–" x –"	BLACK	ORANGE
W21-2 (MOD.)	FRESH TAR	–" x –"	BLACK	ORANGE
W21-3	ROAD MACHINERY AHEAD	–" x –"	BLACK	ORANGE
W21-4	SLOW MOVING VEHICLE	–" x –"	BLACK	ORANGE
W21-5	SHOULDER WORK	–" x –"	BLACK	ORANGE
W21-5aL	LEFT SHOULDER CLOSED	–" x –"	BLACK	ORANGE
W21-5aR	RIGHT SHOULDER CLOSED	–" x –"	BLACK	ORANGE
W21-5bL	LEFT SHOULDER CLOSED AHEAD	–" x –"	BLACK	ORANGE
W21-5bR	RIGHT SHOULDER CLOSED AHEAD	–" x –"	BLACK	ORANGE
W21-6	SURVEY CREW	–" x –"	BLACK	ORANGE
W21-7	UTILITY WORK AHEAD	–" x –"	BLACK	ORANGE
W21-8	MOWING AHEAD	–" x –"	BLACK	ORANGE
W23-1	SLOW TRAFFIC AHEAD	–" x –"	BLACK	ORANGE
W23-2	NEW TRAFFIC PATTERN AHEAD	–" x –"	BLACK	YELLOW ORANGE
W24-1L		–" x –"	BLACK	ORANGE
W24-1R		–" x –"	BLACK	ORANGE
W24-1aL		–" x –"	BLACK	ORANGE
W24-1aR		–" x –"	BLACK	ORANGE
W24-1bL		–" x –"	BLACK	ORANGE
W24-1bR		–" x –"	BLACK	ORANGE
W24-1cP	ALL LANES	–" x –"	BLACK	ORANGE
W25-1	ONCOMING TRAFFIC HAS EXTENDED GREEN	–" x –"	BLACK	YELLOW
W25-2	ONCOMING TRAFFIC MAY HAVE EXTENDED GREEN	–" x –"	BLACK	YELLOW

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN LAYOUT

MUTCD

WARNING SIGNS (5 OF 5)

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Date 07 / 15 / 2024

Drawing Number TD40.05

SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R1-1	STOP	–" x –"	WHITE	RED
R1-2	YIELD	–" x –"	WHITE	RED
R1-2aP	TO ONCOMING TRAFFIC	–" x –"	BLACK	WHITE
R1-3P	ALL WAY	–" x –"	WHITE	RED
R1-5	YIELD HERE TO	–" x –"	RED & BLACK	WHITE
R1-5a	YIELD HERE TO PEDESTRIANS		RED & BLACK	WHITE
R1-5b	STOP HERE TO	–" x –"	RED & BLACK	WHITE
R1-5c	STOP HERE TO PEDESTRIANS	–" x –"	RED & BLACK	WHITE
R1-6	STATE LAW YIELD TO WITHIN CROSSWALK	–" x –"	RED & BLACK	WHITE & YELLOW
R1-6a	STATE LAW STOP FOR WITHIN CROSSWALK	–" x –"	RED & BLACK	WHITE & YELLOW
R1-7	WAIT ON STOP	–" x –"	BLACK	WHITE
R1-8	GO ON SLOW	–" x –"	BLACK	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R1-9	STATE LAW YIELD TO PEDESTRIANS	–" x –"	BLACK	WHITE & YELLOW
R1-9a	STATE LAW STOP FOR PEDESTRIANS	–" x –"	BLACK	WHITE & YELLOW
R1-10P	EXCEPT RIGHT TURN	–" x –"	BLACK	WHITE
R2-1	SPEED LIMIT XX	–" x –"	BLACK	WHITE
R2-2P	TRUCKS XX	–" x –"	BLACK	WHITE
R2-3P	NIGHT XX	–" x –"	WHITE	BLACK
R2-4a	SPEED LIMIT XX MINIMUM XX	–" x –"	BLACK	WHITE
R2-6aP	FINES DOUBLE	–" x –"	BLACK	WHITE
R2-6bP	$XX FINE	–" x –"	BLACK	WHITE
R2-6P	FINES HIGHER	–" x –"	BLACK	WHITE
R2-10	BEGIN HIGHER FINES ZONE	–" x –"	BLACK	WHITE
R2-11	END HIGHER FINES ZONE	–" x –"	BLACK	WHITE
R2-12	END WORK ZONE SPEED LIMIT	–" x –"	BLACK	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R3-1		–" x –"	RED & BLACK	WHITE
R3-2		–" x –"	RED & BLACK	WHITE
R3-3	NO TURNS	–" x –"	BLACK	WHITE
R3-4		–" x –"	RED & BLACK	WHITE
R3-5	ONLY	–" x –"	BLACK	WHITE
R3-5a	ONLY	–" x –"	BLACK	WHITE
R3-5b	ONLY	–" x –"	BLACK	WHITE
R3-5bP	LEFT LANE	–" x –"	BLACK	WHITE
R3-5cP	HOV X+	–" x –"	BLACK	WHITE
R3-5dP	TAXI LANE	–" x –"	BLACK	WHITE
R3-5eP	CENTER LANE	–" x –"	BLACK	WHITE
R3-5fP	RIGHT LANE	–" x –"	BLACK	WHITE
R3-5gP	BUS LANE	–" x –"	BLACK	WHITE
R3-6		–" x –"	BLACK	WHITE
R3-7L	LEFT LANE MUST TURN LEFT	–" x –"	BLACK	WHITE
R3-7R	RIGHT LANE MUST TURN RIGHT	–" x –"	BLACK	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R3-8	ONLY	–" x –"	BLACK	WHITE
R3-8b	ONLY ONLY ONLY	–" x –"	BLACK	WHITE
R3-9a	ONLY	–" x –"	BLACK	WHITE
R3-9b	CENTER LANE ONLY	–" x –"	BLACK	WHITE
R3-9cP	BEGIN	–" x –"	BLACK	WHITE
R3-9dP	END	–" x –"	BLACK	WHITE
R3-9i	ONLY END REVERSE LANE	–" x –"	BLACK	WHITE
R3-18		–" x –"	RED & BLACK	WHITE
R3-20L	BEGIN LEFT TURN LANE	–" x –"	BLACK	WHITE
R3-20R	BEGIN RIGHT TURN LANE	–" x –"	BLACK	WHITE
R3-23	ALL TURNS FROM RIGHT LANE	–" x –"	BLACK	WHITE
R3-23a	U TURN FROM RIGHT LANE	–" x –"	BLACK	WHITE
R3-24	ALL TURNS	–" x –"	BLACK	WHITE
R3-24a	U AND LEFT TURNS	–" x –"	BLACK	WHITE

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

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Title

SIGN LAYOUT

MUTCD

REGULATORY SIGNS (1 OF 4)

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Date 07 / 15 / 2024

Drawing Number TD41.01

SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R3-24b	U TURN	–" x –"	BLACK	WHITE
R3-25	ALL TURNS	–" x –"	BLACK	WHITE
R3-25a	U AND LEFT TURNS	–" x –"	BLACK	WHITE
R3-25b	U TURN	–" x –"	BLACK	WHITE
R3-26	U AND LEFT TURNS	–" x –"	BLACK	WHITE
R3-26a	U TURN	–" x –"	BLACK	WHITE
R3-27		–" x –"	RED & BLACK	WHITE
R3-33	RIGHT LANE MUST EXIT	–" x –"	BLACK	WHITE
R4-1	DO NOT PASS	–" x –"	BLACK	WHITE
R4-2	PASS WITH CARE	–" x –"	BLACK	WHITE
R4-3	SLOWER TRAFFIC KEEP RIGHT	–" x –"	BLACK	WHITE
R4-5	TRUCKS USE RIGHT LANE	–" x –"	BLACK	WHITE
R4-7		–" x –"	BLACK	WHITE
R4-7a	KEEP RIGHT	–" x –"	BLACK	WHITE
R4-7b	KEEP RIGHT	–" x –"	BLACK	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R4-7c		–" x –"	BLACK	WHITE
R4-8		–" x –"	BLACK	WHITE
R4-8a	KEEP LEFT	–" x –"	BLACK	WHITE
R4-8b	KEEP LEFT	–" x –"	BLACK	WHITE
R4-8c		–" x –"	BLACK	WHITE
R4-9	STAY IN LANE	–" x –"	BLACK	WHITE
R4-16	KEEP RIGHT EXCEPT TO PASS	–" x –"	BLACK	WHITE
R4-17	DO NOT DRIVE ON SHOULDER	–" x –"	BLACK	WHITE
R4-18	DO NOT PASS ON SHOULDER	–" x –"	BLACK	WHITE
R5-1	DO NOT ENTER	–" x –"	WHITE	RED & WHITE
R5-1a	WRONG WAY	–" x –"	WHITE	RED
R5-2		–" x –"	RED & BLACK	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R5-3	NO MOTOR VEHICLES	–" x –"	BLACK	WHITE
R5-4	NO COMMERCIAL VEHICLES	–" x –"	BLACK	WHITE
R5-5	NO VEHICLES WITH LUGS	–" x –"	BLACK	WHITE
R5-6		–" x –"	RED & BLACK	WHITE
R5-7	NO NON-MOTORIZED TRAFFIC	–" x –"	BLACK	WHITE
R5-8	NO MOTOR-DRIVEN CYCLES	–" x –"	BLACK	WHITE
R5-10a	NO PEDESTRIANS BICYCLES MOTOR-DRIVEN CYCLES	–" x –"	BLACK	WHITE
R5-10b	NO PEDESTRIANS OR BICYCLES	–" x –"	BLACK	WHITE
R5-10c	NO PEDESTRIANS	–" x –"	BLACK	WHITE
R5-11	AUTHORIZED VEHICLES ONLY	–" x –"	BLACK	WHITE
R6-1L	ONE WAY	–" x –"	BLACK	WHITE
R6-1R	ONE WAY	–" x –"	BLACK	WHITE
R6-2L	ONE WAY	–" x –"	BLACK	WHITE
R6-2R	ONE WAY	–" x –"	BLACK	WHITE
R6-3	DIVIDED HIGHWAY	–" x –"	BLACK	WHITE
R6-3a	DIVIDED HIGHWAY	–" x –"	BLACK	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R6-4		–" x –"	BLACK	WHITE
R6-4a		–" x –"	BLACK	WHITE
R6-4b		–" x –"	BLACK	WHITE
R6-5P		–" x –"	BLACK	WHITE
R6-6	BEGIN ONE WAY	–" x –"	BLACK	WHITE
R6-7	END ONE WAY	–" x –"	BLACK	WHITE
R7-1	NO PARKING ANY TIME	–" x –"	RED	WHITE
R7-1L	NO PARKING ANY TIME	–" x –"	RED	WHITE
R7-1R	NO PARKING ANY TIME	–" x –"	RED	WHITE
R7-4	NO STANDING ANY TIME	–" x –"	RED	WHITE
R7-4 (MOD.)	NO STOPPING ANY TIME	–" x –"	RED	WHITE
R7-8	RESERVED PARKING	–" x –"	GREEN & BLUE	WHITE
R7-8P	VAN ACCESSIBLE		GREEN	WHITE

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ENGINEERING DEPARTMENT

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SIGN LAYOUT

MUTCD

REGULATORY SIGNS (2 OF 4)

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Date 07 / 15 / 2024

Drawing Number TD41.02

SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R7-200aL	NO PARKING ANY TIME ← / ONE HOUR PARKING 9AM-7PM →	–" x –"	RED & GREEN	WHITE
R7-200aR	NO PARKING ANY TIME → / ONE HOUR PARKING 9AM-7PM ←	–" x –"	RED & GREEN	WHITE
R7-201P		–" x –"	RED OR BLACK	WHITE
R8-1	NO PARKING ON PAVEMENT	–" x –"	RED	WHITE
R8-2	NO PARKING EXCEPT ON SHOULDER	–" x –"	RED	WHITE
R8-3		–" x –"	RED & BLACK	WHITE
R8-3a	NO PARKING	–" x –"	RED	WHITE
R8-3bP	EXCEPT SUNDAYS AND HOLIDAYS	–" x –"	RED	WHITE
R8-3cP	ON PAVEMENT	–" x –"	RED	WHITE
R8-3dP	ON BRIDGE	–" x –"	RED	WHITE
R8-3eP	ON TRACKS	–" x –"	RED	WHITE
R8-3fP	EXCEPT ON SHOULDER	–" x –"	RED	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R8-3gP	LOADING ZONE ↔	–" x –"	RED	WHITE
R8-3hP	6:00 AM TO 6:00 PM ←	–" x –"	RED	WHITE
R8-4	EMERGENCY PARKING ONLY	–" x –"	BLACK	WHITE
R8-7	EMERGENCY STOPPING ONLY	–" x –"	BLACK	WHITE
R8-8	DO NOT STOP ON TRACKS	–" x –"	BLACK	WHITE
R8-9	TRACKS OUT OF SERVICE	–" x –"	BLACK	WHITE
R8-10	STOP HERE WHEN FLASHING	–" x –"	BLACK	WHITE
R8-10a	STOP HERE ← WHEN FLASHING	–" x –"	BLACK	WHITE
R9-2	CROSS ONLY AT CROSS WALKS	–" x –"	BLACK	WHITE
R9-3		–" x –"	RED & BLACK	WHITE
R9-3a	NO PEDESTRIAN CROSSING	–" x –"	BLACK	WHITE
R9-3bPL	← USE CROSSWALK	–" x –"	BLACK	WHITE
R9-3bPR	USE → CROSSWALK	–" x –"	BLACK	WHITE
R9-8	PEDESTRIAN CROSSWALK	–" x –"	BLACK	WHITE
R9-9	SIDEWALK CLOSED	–" x –"	BLACK	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R9-10	SIDEWALK CLOSED ↔ USE OTHER SIDE	–" x –"	BLACK	WHITE
R9-11	SIDEWALK CLOSED AHEAD ← CROSS HERE	–" x –"	BLACK	WHITE
R9-11aL	SIDEWALK CLOSED ← CROSS HERE	–" x –"	BLACK	WHITE
R9-11aR	SIDEWALK CLOSED → CROSS HERE	–" x –"	BLACK	WHITE
R9-11L	SIDEWALK CLOSED AHEAD ← CROSS HERE	–" x –"	BLACK	WHITE
R9-11R	SIDEWALK CLOSED AHEAD → CROSS HERE	–" x –"	BLACK	WHITE
R10-1	CROSS ONLY ON GREEN ●	–" x –"	BLACK & GREEN	WHITE
R10-2L	CROSS ONLY ON SIGNAL	–" x –"	BLACK	WHITE
R10-2R	CROSS ONLY ON SIGNAL	–" x –"	BLACK	WHITE
R10-3L	PUSH BUTTON FOR ←	–" x –"	BLACK	WHITE
R10-3R	PUSH BUTTON FOR →	–" x –"	BLACK	WHITE
R10-4L	PUSH BUTTON FOR GREEN ● ←	–" x –"	BLACK & GREEN	WHITE
R10-4R	PUSH BUTTON FOR GREEN ● →	–" x –"	BLACK & GREEN	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R10-5	LEFT ON GREEN ARROW ONLY	–" x –"	BLACK	WHITE
R10-6	STOP HERE ON RED ↙	–" x –"	BLACK	WHITE
R10-6a	STOP HERE ↙ ON RED	–" x –"	BLACK	WHITE
R10-7	DO NOT BLOCK INTERSECTION	–" x –"	BLACK	WHITE
R10-8	USE LANE WITH GREEN ARROW	–" x –"	BLACK	WHITE
R10-10	LEFT TURN SIGNAL	–" x –"	BLACK	WHITE
R10-11	NO TURN ON RED ●	–" x –"	BLACK & RED	WHITE
R10-11a	NO TURN ON RED	–" x –"	BLACK	WHITE
R10-11b	NO TURN ON RED	–" x –"	BLACK	WHITE
R10-11c	NO TURN ON RED EXCEPT FROM RIGHT LANE	–" x –"	BLACK	WHITE
R10-11d	NO TURN ON RED FROM THIS LANE ↓	–" x –"	BLACK	WHITE
R10-12	LEFT TURN YIELD ON GREEN ●	–" x –"	BLACK & GREEN	WHITE

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN LAYOUT

MUTCD

REGULATORY SIGNS (3 OF 4)

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Date 07 / 15 / 2024

Drawing Number TD41.03

SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R10-13	EMERGENCY SIGNAL	–" x –"	BLACK	WHITE
R10-14	EMERGENCY SIGNAL / STOP ON FLASHING RED	–" x –"	BLACK	WHITE
R10-14a	EMERGENCY SIGNAL / STOP ON FLASHING RED	–" x –"	BLACK	WHITE
R10-15	TURNING VEHICLES TO	–" x –"	RED & BLACK	WHITE & YELLOW
R10-16	U-TURN YIELD TO RIGHT TURN	–" x –"	BLACK	WHITE
R10-17a	RIGHT ON RED ARROW AFTER STOP	–" x –"	BLACK	WHITE
R10-20aP	MON-FRI 7AM-9AM 4PM-7PM	–" x –"	BLACK	WHITE
R10-23	CROSSWALK STOP ON RED	–" x –"	BLACK	WHITE
R10-25	PUSH BUTTON TO TURN ON WARNING LIGHTS	–" x –"	BLACK	WHITE
R10-28	ONE VEHICLE PER GREEN	–" x –"	BLACK	WHITE
R10-29	1 VEHICLE PER GREEN EACH LANE	–" x –"	BLACK	WHITE
R10-31P	AT SIGNAL	–" x –"	BLACK	WHITE
R11-1	KEEP OFF MEDIAN	–" x –"	BLACK	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R11-2	ROAD CLOSED	–" x –"	BLACK	WHITE
R11-3a	ROAD CLOSED 10 MILES AHEAD LOCAL TRAFFIC ONLY	–" x –"	BLACK	WHITE
R11-4	ROAD CLOSED TO THRU TRAFFIC	–" x –"	BLACK	WHITE
R12-1	WEIGHT LIMIT 10 TONS	–" x –"	BLACK	WHITE
R12-2	AXLE WEIGHT LIMIT 5 TONS	–" x –"	BLACK	WHITE
R12-3	NO TRUCKS OVER 7000 LBS EMPTY WT	–" x –"	BLACK	WHITE
R12-4	WEIGHT LIMIT 2 TONS PER AXLE 10 TONS GROSS	–" x –"	BLACK	WHITE
R12-5	WEIGHT LIMIT 8T 12T 16T	–" x –"	BLACK	WHITE
R14-1	TRUCK ROUTE	–" x –"	BLACK	WHITE
R14-2	HM	–" x –"	BLACK & GREEN	WHITE
R14-3	HM	–" x –"	BLACK & RED	WHITE
R14-4		–" x –"	BLACK & GREEN	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
R14-5		–" x –"	BLACK & RED	WHITE
R15-1	RAILROAD CROSSING	–" x –"	BLACK	WHITE
R15-2P	3 TRACKS	–" x –"	BLACK	WHITE
R15-3P	EXEMPT	–" x –"	BLACK	WHITE
R15-8	LOOK	–" x –"	BLACK	WHITE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND

NOTES TO DESIGNER FOR REGULATORY SIGNS:

1. FOR SIZE OF SIGN IN CONTRACT DRAWINGS, DESIGNER IS TO USE MUTCD APPLICABLE SIZE.
2. FOR COLORS ON TABLE ABOVE, DESIGNER IS TO USE MUTCD & FHWA REQUIREMENTS FOR DESIGNERS' LAYOUT.
3. ALL PA ROADWAY SIGNS INSTALLED BY SIGN SHOP OR CONTRACTOR SHALL INCLUDE AGENCY'S NAME. LINK

Sheet SHEET_NO of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN LAYOUT

MUTCD

REGULATORY SIGNS (4 OF 4)

DISCLAIMER:

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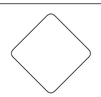
Date 07 / 15 / 2024

Drawing Number TD41.04

SIGN DATA TABLE

MUTCD NO.	TEXT	SIZE WIDTH X HEIGHT	COLOR LEGEND	COLOR BACKGROUND
OM1-1		–" x –"	BLACK	YELLOW
OM1-2		–" x –"	YELLOW	BLACK
OM1-3		–" x –"	YELLOW	–
OM2-1V		–" x –"	YELLOW	WHITE
OM2-2V		–" x –"	YELLOW	–
OM2-1H		–" x –"	YELLOW	WHITE
OM2-2H		–" x –"	YELLOW	–
OM3-3C		–" x –"	BLACK & YELLOW	–
OM3-3L		–" x –"	BLACK & YELLOW	–
OM3-3L		–" x –"	BLACK & YELLOW	–
OM4-1		–" x –"	BLACK	RED
OM4-2		–" x –"	RED	BLACK
OM4-3		–" x –"	RED	–

NOTES TO DESIGNER FOR OBJECT MARKER SIGNS:

1. FOR SIZE OF SIGN IN CONTRACT DRAWINGS, DESIGNER IS TO USE MUTCD APPLICABLE SIZE.
2. FOR COLORS ON TABLE ABOVE, DESIGNER IS TO USE MUTCD & FHWA REQUIREMENTS FOR DESIGNERS' LAYOUT.
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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

SIGN LAYOUT

MUTCD

OBJECT MARKERS

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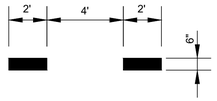
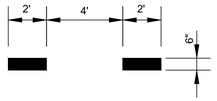
Date 07 / 15 / 2024

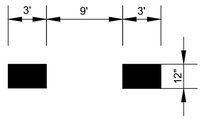
Drawing Number TD42.01



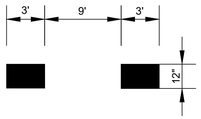
DOTTED WHITE LANE LINE-SHORT
(DWLL-S)
N.T.S.



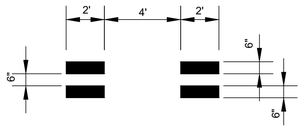
DOTTED YELLOW LANE LINE-SHORT
(DYLL-S)
N.T.S.



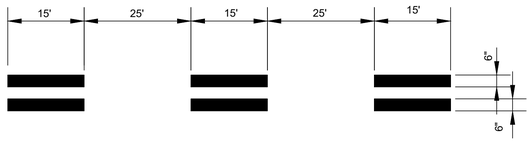
DOTTED WHITE LANE LINE-WIDE
(DWLL-W)
N.T.S.



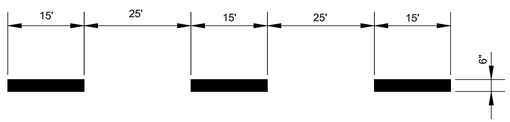
DOTTED YELLOW LANE LINE-WIDE
(DYLL-W)
N.T.S.



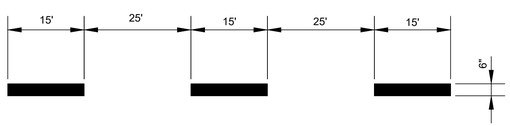
DOUBLE YELLOW DOTTED LANE LINE
(DYDLL)
N.T.S.



DOUBLE YELLOW BROKEN LANE LINE
(DYBLL)
N.T.S.



BROKEN WHITE LANE LINE
(BWLL)
N.T.S.



BROKEN YELLOW LANE LINE
(BYLL)
N.T.S.

SOLID WHITE LANE LINE
(SWLL)
N.T.S.

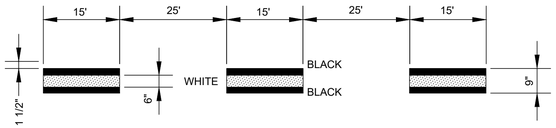
SOLID YELLOW LANE LINE
(SYLL)
N.T.S.

SOLID WHITE LANE LINE - WIDE
(SWLL-W)
N.T.S.

SOLID WHITE EDGE LINE
(SWEL)
N.T.S.

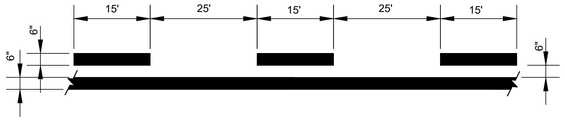
SOLID YELLOW EDGE LINE
(SYEL)
N.T.S.

SOLID YELLOW CHANNELIZING LINE
(SYCHL)
N.T.S.

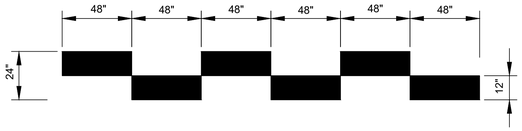


HIGH CONTRAST BROKEN LINE
(HCBL)
N.T.S.

SOLID WHITE CHANNELIZING LINE
(SWCHL)
N.T.S.



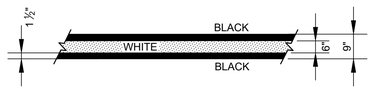
PARTIAL YELLOW BARRIER LINE
(PYBL)
N.T.S.



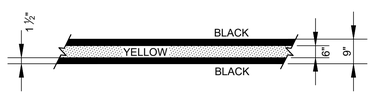
ZIPPER WHITE EDGE LINE
(ZWEL)
N.T.S.

FULL WHITE BARRIER LINE
(FWBL)
N.T.S.

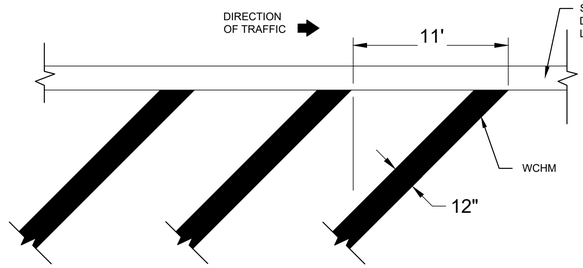
FULL YELLOW BARRIER LINE
(FYBL)
N.T.S.



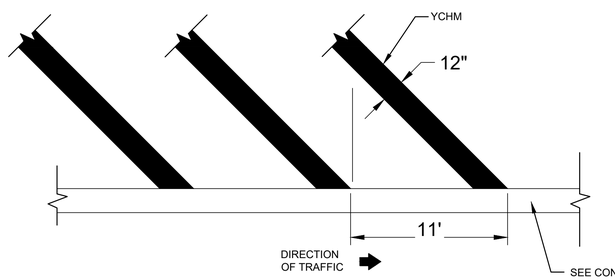
HIGH CONTRAST SOLID LINE-WHITE
(HCSL-W)
N.T.S.



HIGH CONTRAST SOLID LINE-YELLOW
(HCSL-Y)
N.T.S.



WHITE CROSS HATCH MARKING
(WCHM)
N.T.S.



YELLOW CROSS HATCH MARKING
(YCHM)
N.T.S.

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PORT AUTHORITY NY NJ
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No.	Date	Revision	Approved
4	09/27/2024	DISCLAIMER ADDED	
3	07/12/2018	REVISIONS TO STANDARD DETAILS	
2	08/12/2016	REVISIONS TO STANDARD DETAILS	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
PAVEMENT MARKINGS

LONGITUDINAL MARKINGS

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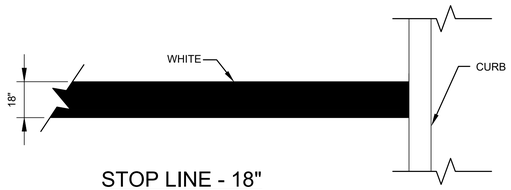
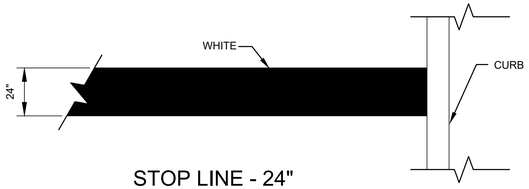
Date 07 / 15 / 2024

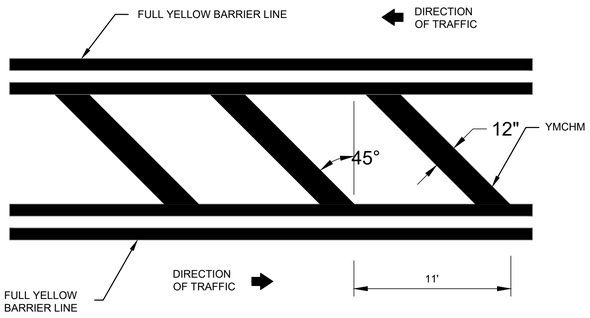
Drawing Number TD50.01



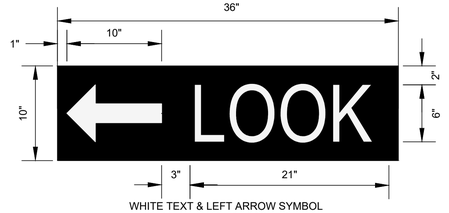
STOP LINE - 18"
(SL-18)
(WHITE ONLY)
N.T.S.



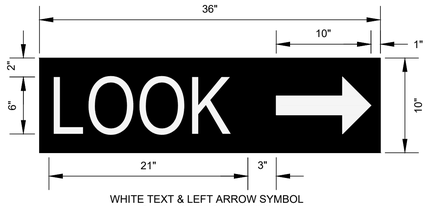
STOP LINE - 24"
(SL-24)
(WHITE ONLY)
N.T.S.



YELLOW MEDIAN CROSSHATCH MARKING
(YMCHM)
N.T.S.

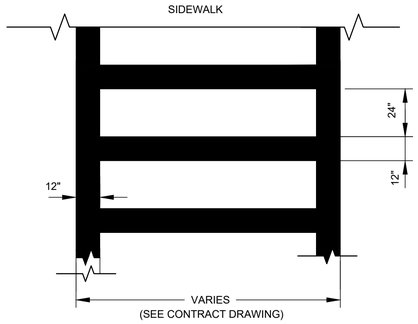


WHITE TEXT & LEFT ARROW SYMBOL
ON BLACK BACKGROUND
(6" HELVETICA BOLD)

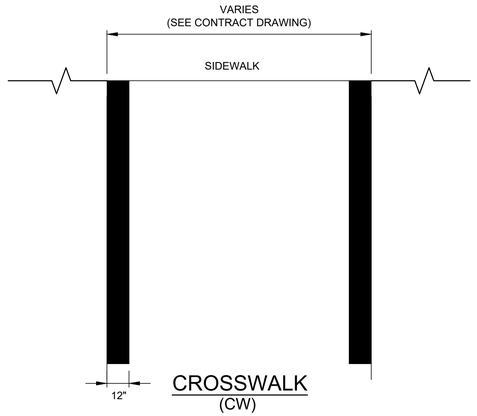


WHITE TEXT & LEFT ARROW SYMBOL
ON BLACK BACKGROUND
(6" HELVETICA BOLD)

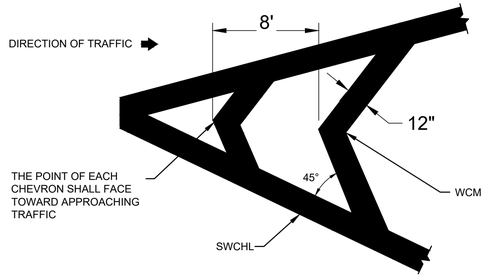
LOOK (ARROW) SYMBOL DETAIL
N.T.S.



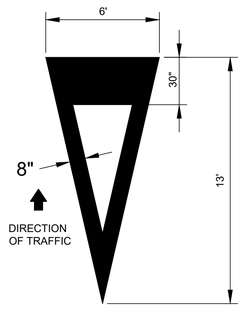
CROSSWALK-HIGH VISIBILITY
(CW-HV)
(WHITE ONLY)
N.T.S.



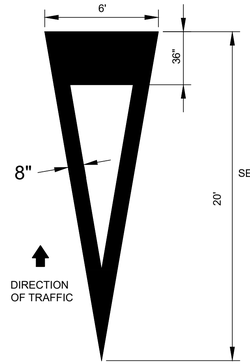
CROSSWALK
(CW)
(WHITE ONLY)
N.T.S.



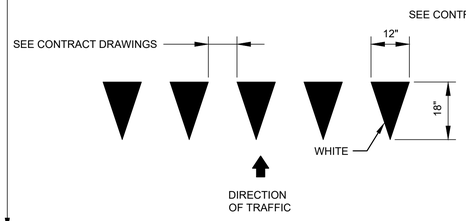
WHITE CHEVRON MARKING
(WCM)
N.T.S.



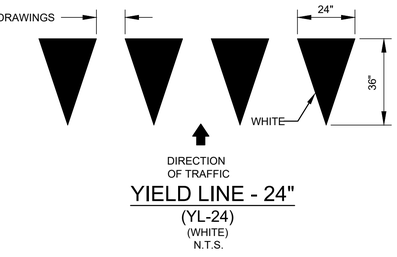
DETAIL OF "YIELD AHEAD"-A
(WHITE ONLY)
N.T.S.



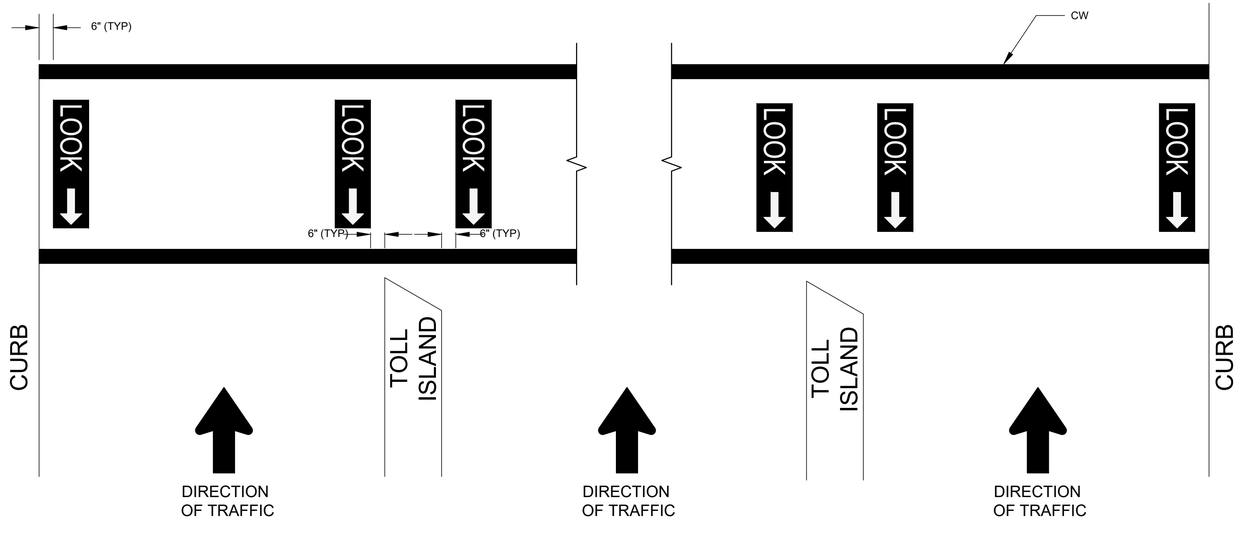
DETAIL OF "YIELD AHEAD"-B
(WHITE ONLY)
N.T.S.



YIELD LINE - 12"
(YL-12)
(WHITE)
N.T.S.



YIELD LINE - 24"
(YL-24)
(WHITE)
N.T.S.



LOOK (ARROW) SYMBOL
INSTALLATION DETAIL
N.T.S.

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PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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2	08/12/2016	REVISIONS TO STANDARD DETAILS	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
PAVEMENT MARKINGS

TRANSVERSE MARKINGS
(1 of 2)

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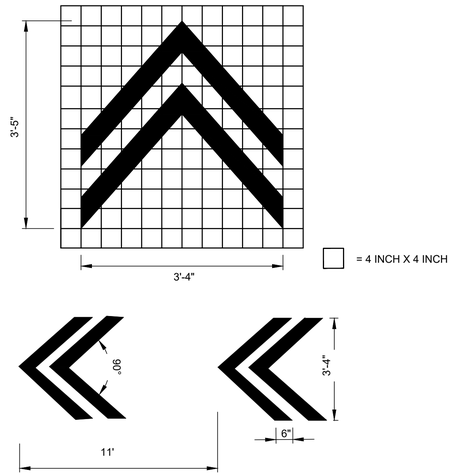
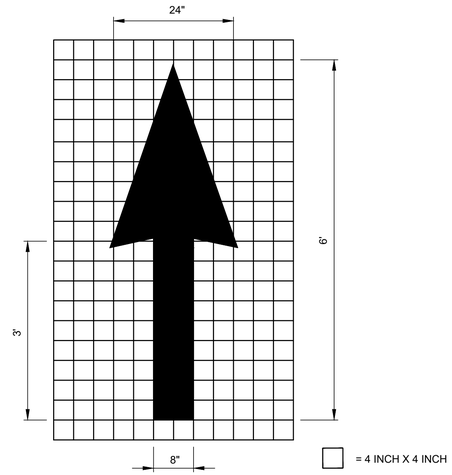
Date 07 / 15 / 2024

Drawing Number TD50.02



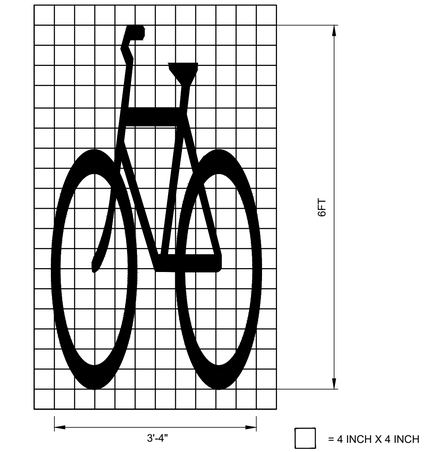
SHARED BIKE LANE MARKINGS

(WHITE)
N.T.S.



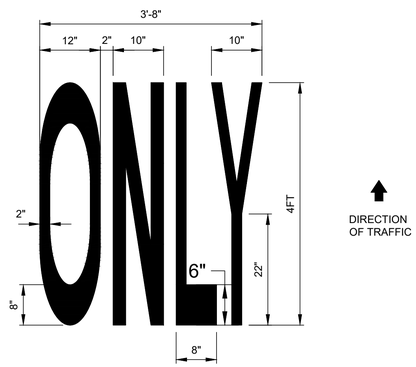
BICYCLE DIRECTIONAL ARROW

(WHITE)
N.T.S.



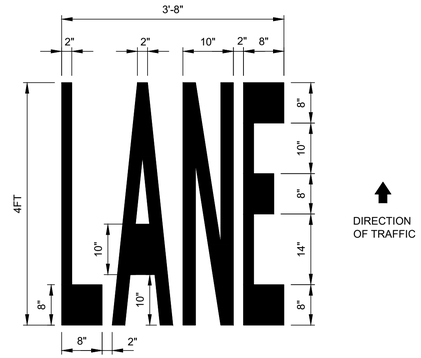
BICYCLE SYMBOL

(WHITE)
N.T.S.



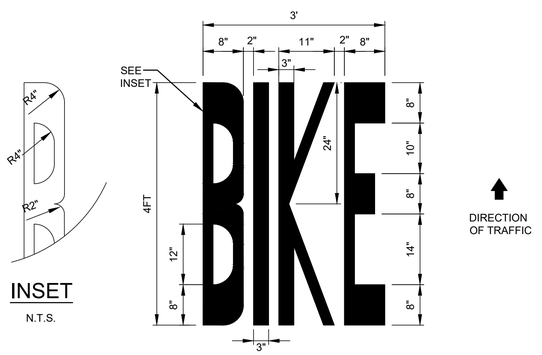
DETAIL OF WORD "ONLY"

(WHITE)
N.T.S.



DETAIL OF WORD "LANE"

(WHITE)
N.T.S.



INSET

N.T.S.

DETAIL OF WORD "BIKE"

(WHITE)
N.T.S.

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
4	06/27/2024	DISCLAIMER ADDED	
3	07/12/2018	REVISIONS TO STANDARD DETAILS	
2	08/12/2016	REVISIONS TO STANDARD DETAILS	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

PAVEMENT MARKINGS

SYMBOL AND ARROW MARKINGS FOR BICYCLE LANE

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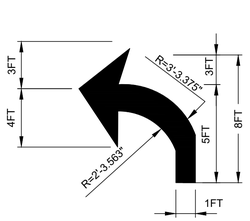
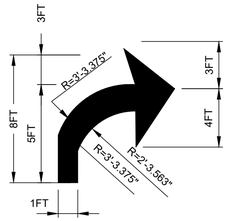
Date 07 / 15 / 2024

Drawing Number TD50.04



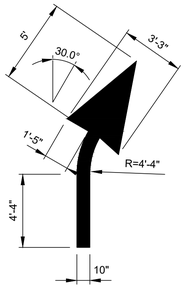
LEFT TURN



RIGHT TURN

DETAIL OF ARROW SYMBOL 'A'

(WHITE)
N.T.S.



DETAIL OF ARROW SYMBOL 'B'

(WHITE)
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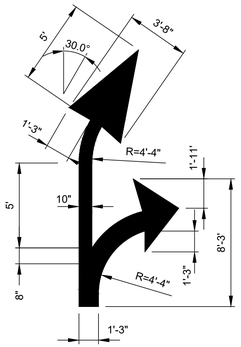

DETAIL OF ARROW SYMBOL 'C'

(WHITE)
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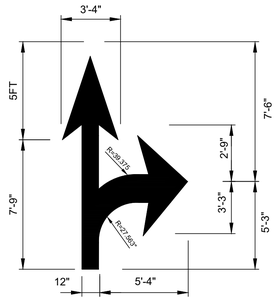
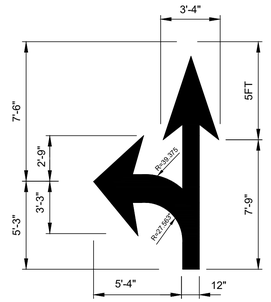


DETAIL OF ARROW SYMBOL 'D'

(WHITE)
N.T.S.



DETAIL OF ARROW SYMBOL 'E'

(WHITE)
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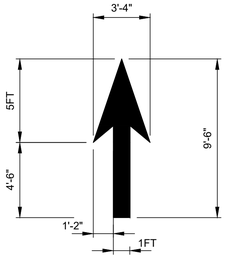

DETAIL OF ARROW SYMBOL 'F'

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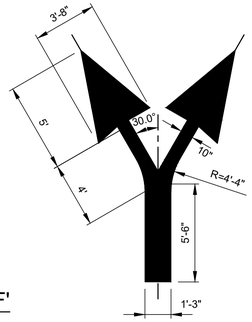

DETAIL OF ARROW SYMBOL 'G'

(WHITE)
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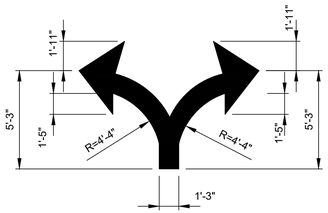

DETAIL OF ARROW SYMBOL 'H'

(WHITE)
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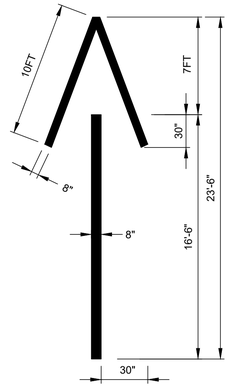
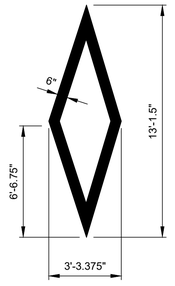


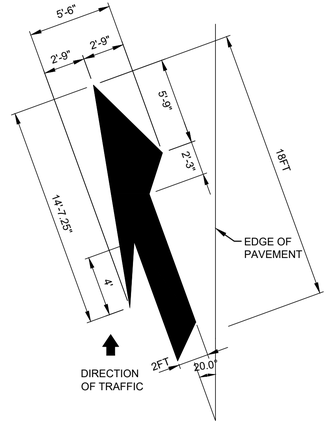
FREEWAY, EXPRESSWAY AND RAMP PAVEMENT ARROW

(WHITE)
N.T.S.



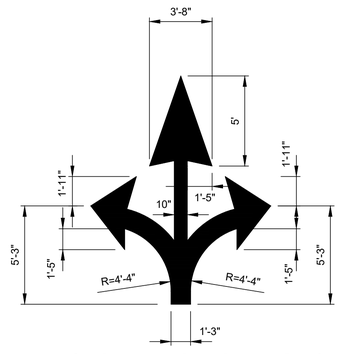
DETAIL OF PREFERENTIAL LANE SYMBOL

(WHITE)
N.T.S.



DETAIL OF LANE REDUCTION ARROW-RIGHT

(WHITE)
N.T.S.



DETAIL OF ARROW SYMBOL 'I'

(WHITE)
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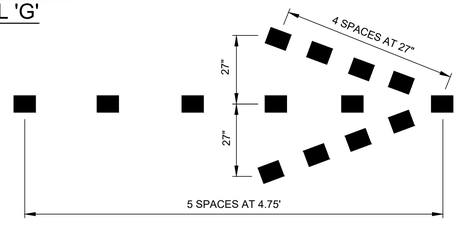
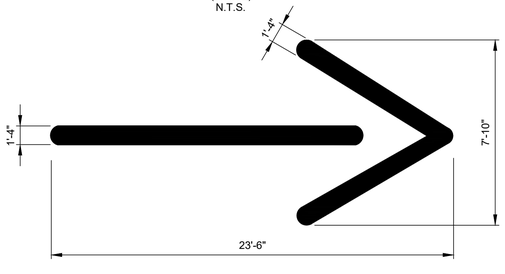


FOR REFLECTORIZED PAVEMENT MARKERS DETAIL SEE DRAWING TD60.06.

DETAIL OF "WRONG-WAY ARROW" USING WHITE RETROREFLECTIVE RAISED PAVEMENT MARKERS

(WHITE)
N.T.S.



DETAIL OF "WRONG-WAY ARROW"

(WHITE)
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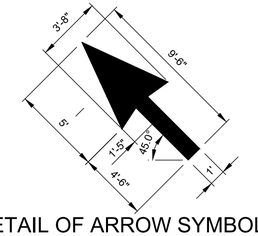
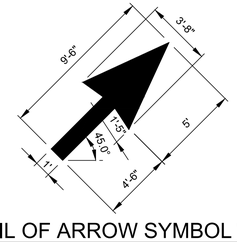


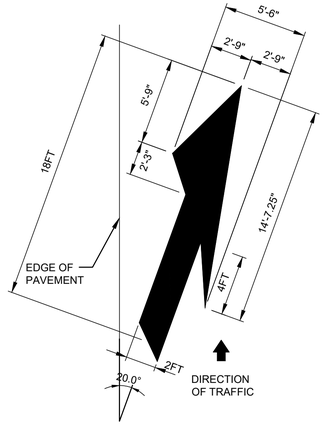
DETAIL OF ARROW SYMBOL 'J' MERGE LEFT

(WHITE)
N.T.S.



DETAIL OF ARROW SYMBOL 'K' MERGE RIGHT

(WHITE)
N.T.S.



DETAIL OF LANE REDUCTION ARROW-LEFT

(WHITE)
N.T.S.

Sheet of

PORT AUTHORITY NY NJ
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5	06/27/2024	DISCLAIMER ADDED	
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3	07/12/2018	REVISIONS TO STANDARD DETAILS	
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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PAVEMENT MARKINGS

ARROW MARKINGS

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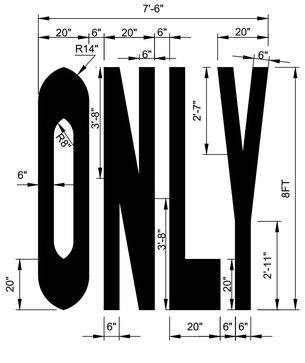
Date 07 / 15 / 2024

Drawing Number TD50.05



DETAIL OF WORD "ONLY"
(WHITE)
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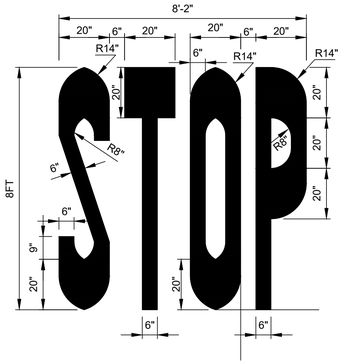

DETAIL OF WORD "STOP"
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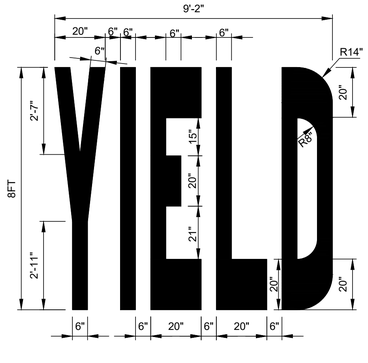

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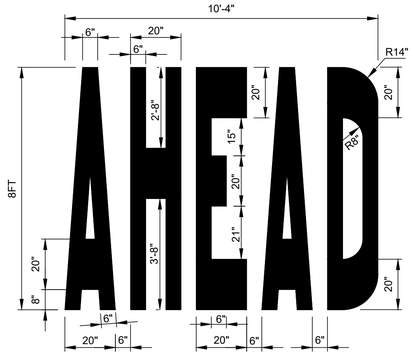

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(WHITE)
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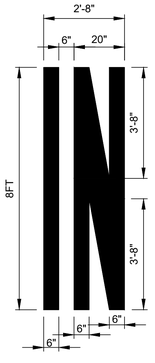

DETAIL OF WORD "IN"
(WHITE)
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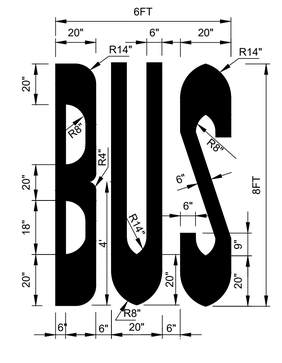

DETAIL OF WORD "BUS"
(WHITE)
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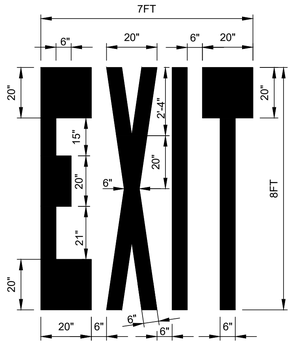

DETAIL OF WORD "EXIT"
(WHITE)
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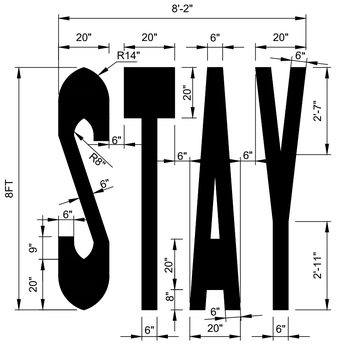

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(WHITE)
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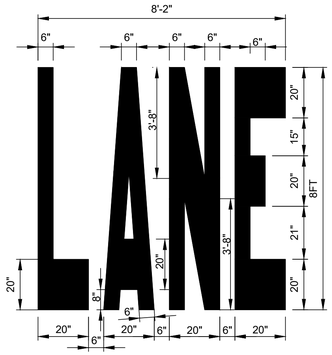

DETAIL OF WORD "LANE"
(WHITE)
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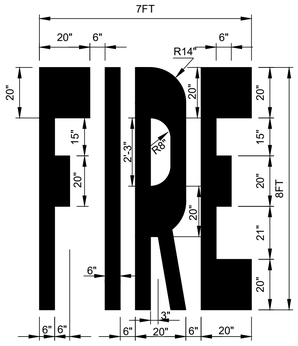

DETAIL OF WORD "FIRE"
(WHITE)
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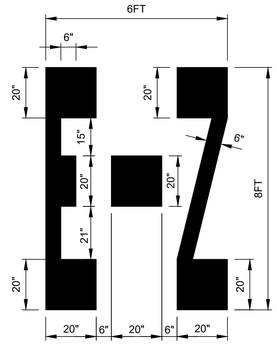

DETAIL OF WORD "E-Z"
(WHITE)
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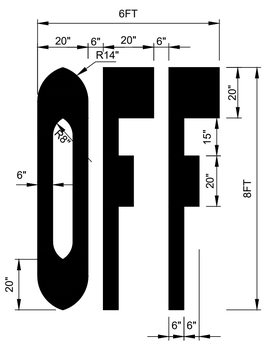

DETAIL OF WORD "OFF"
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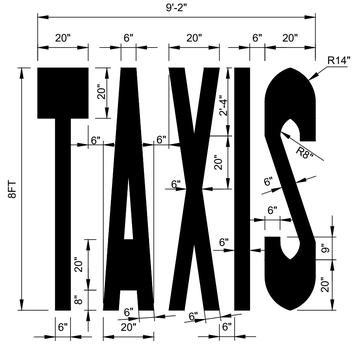

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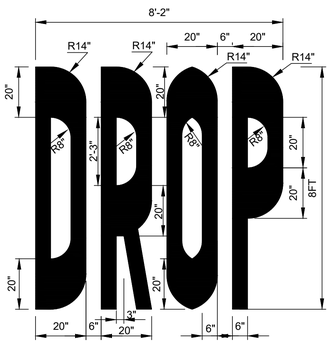

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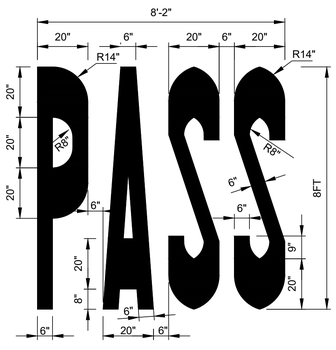

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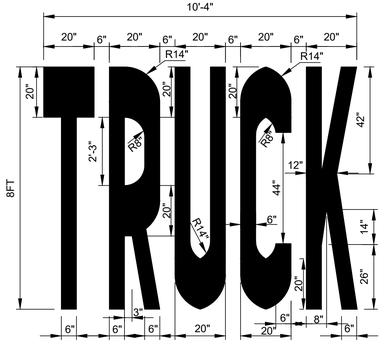

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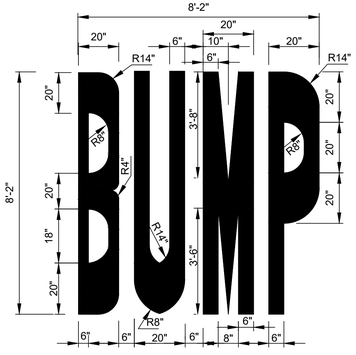

DETAIL OF WORD "BUMP"
(WHITE)
N.T.S.

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ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
PAVEMENT MARKINGS

WORD MARKINGS
(1 OF 2)

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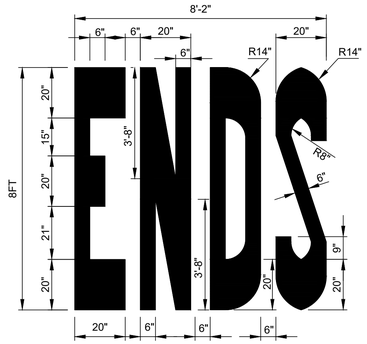
Drawing Number TD50.06



DETAIL OF WORD "ENDS"
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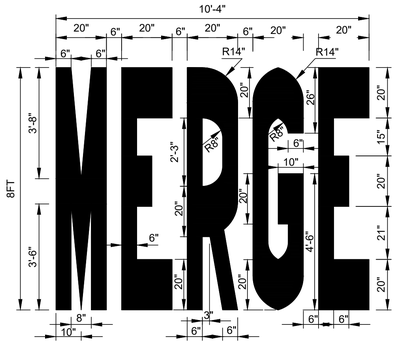

DETAIL OF WORD "MERGE"
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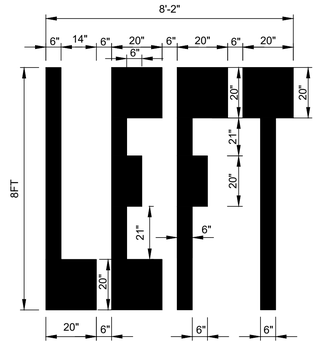

DETAIL OF WORD "LEFT"
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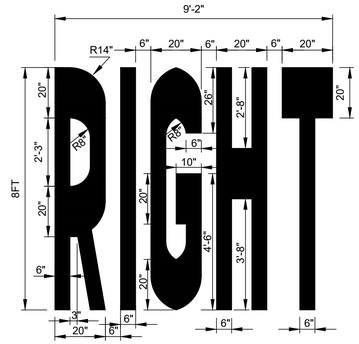

DETAIL OF WORD "RIGHT"
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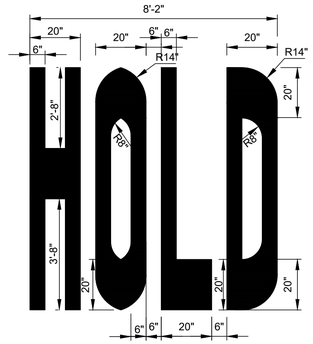

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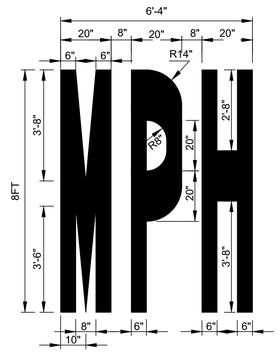

DETAIL OF WORD "MPH"
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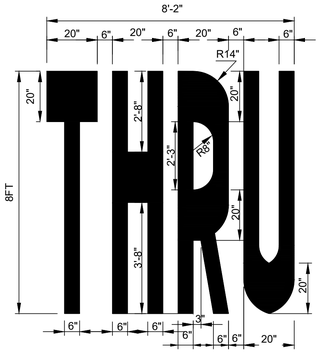

DETAIL OF WORD "THRU"
(WHITE)
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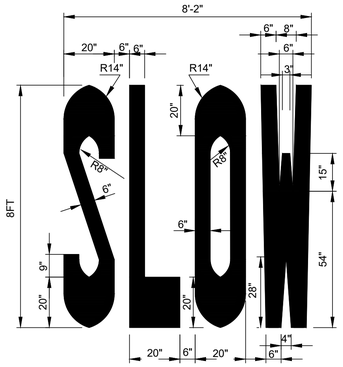

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(WHITE)
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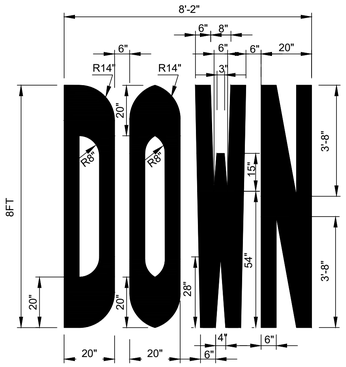
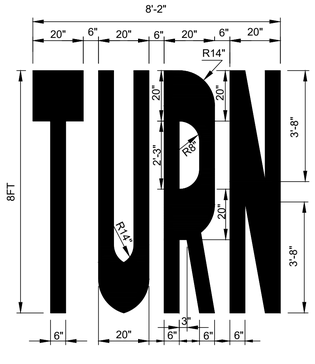
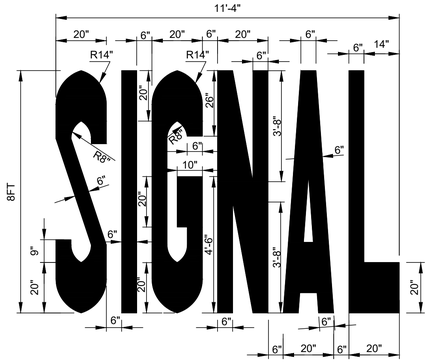


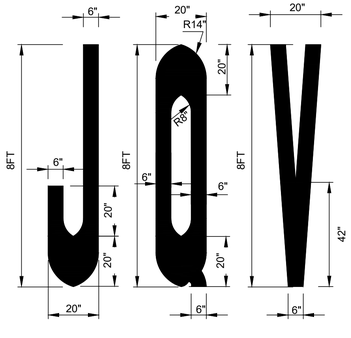
DETAIL OF WORD "DOWN"
(WHITE)
N.T.S.



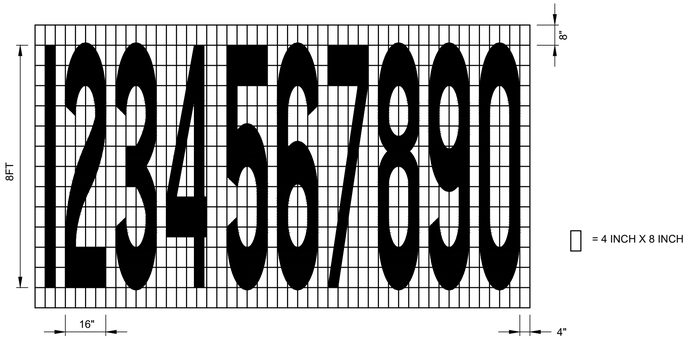
DETAIL OF WORD "TURN"
(WHITE)
N.T.S.



DETAIL OF WORD "SIGNAL"
(WHITE)
N.T.S.



DETAIL OF LETTERS "J,Q,V"
(WHITE)
N.T.S.



DETAIL OF NUMBERS "1 TO 0"
(WHITE)
N.T.S.

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
5	06/27/2024	DISCLAIMER ADDED	
4	06/26/2024	PAVEMENT MARKING "HOLD" ADDED TO DETAILS	
3	07/12/2018	REVISIONS TO STANDARD DETAILS	
2	08/12/2016	REVISIONS TO STANDARD DETAILS	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
PAVEMENT MARKINGS

WORD MARKINGS
(2 OF 2)

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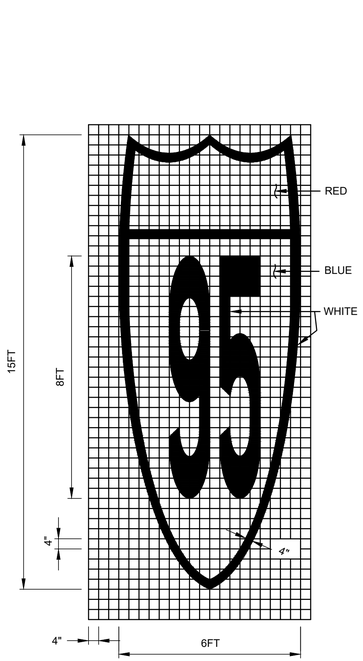
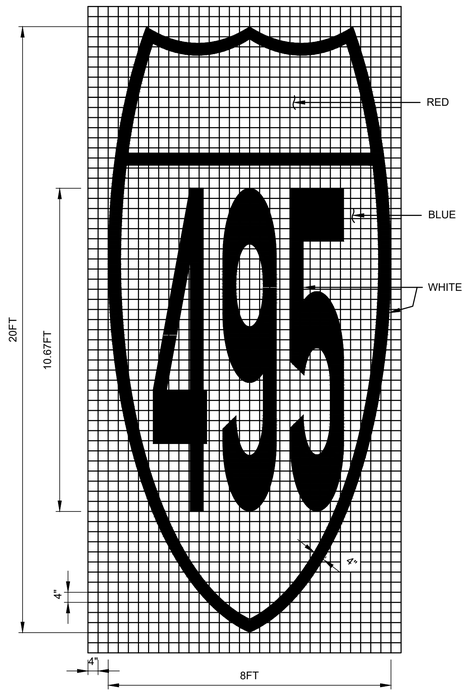
Date 07 / 15 / 2024

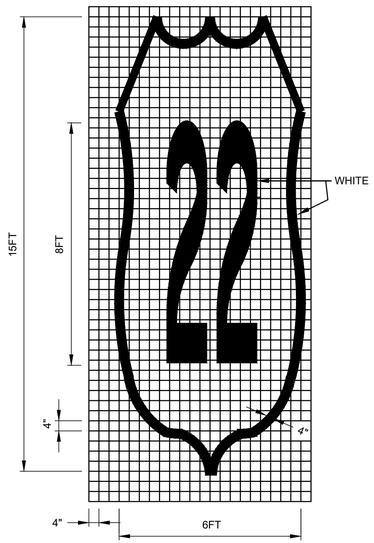
Drawing Number TD50.07





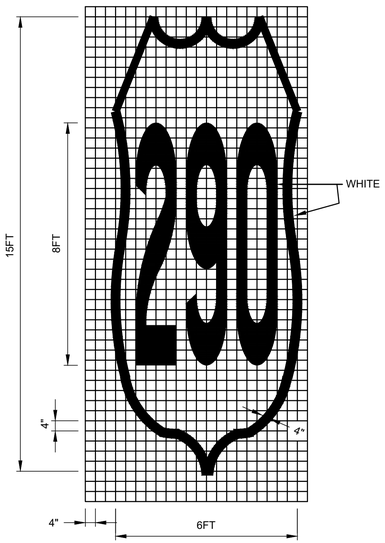
A-INTERSTATE SHIELD

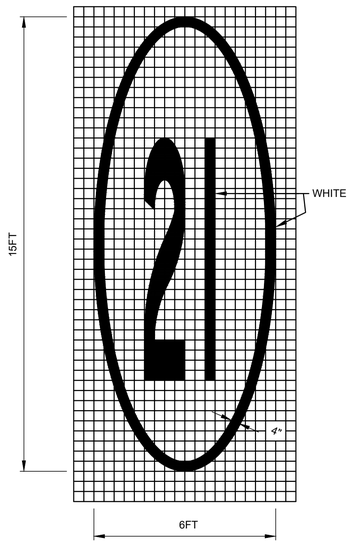
(WHITE)



B-U.S. ROUTE SHIELD

(WHITE)



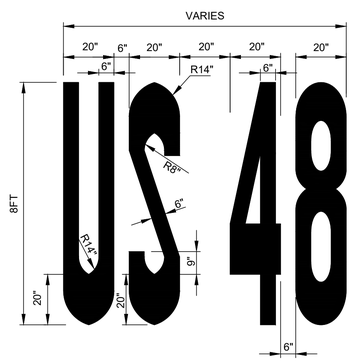


C-STATE ROUTE SHIELD

(WHITE)

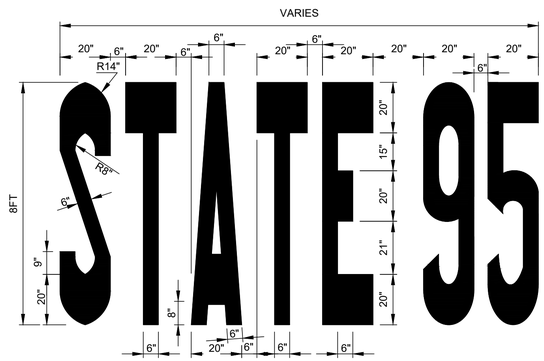
SHIELD SYMBOLS

N.T.S.



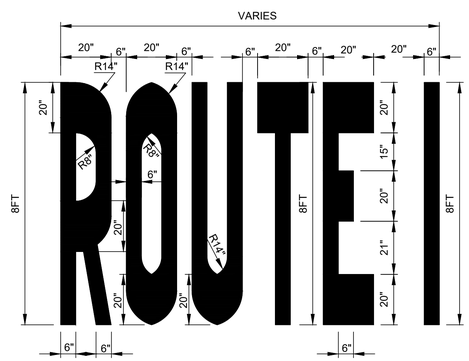
DETAIL OF WORD "US.."

(WHITE)
N.T.S.



DETAIL OF WORD "STATE.."

(WHITE)
N.T.S.



DETAIL OF WORD "ROUTE.."

(WHITE)
N.T.S.

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3	07/12/2018	REVISIONS TO STANDARD DETAILS	
2	08/12/2016	REVISIONS TO STANDARD DETAILS	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PAVEMENT MARKINGS

ROUTE SHIELDS AND WORD MARKINGS

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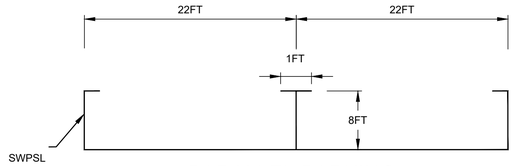
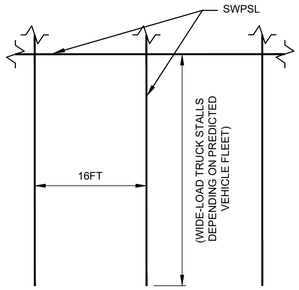
Date 07 / 15 / 2024

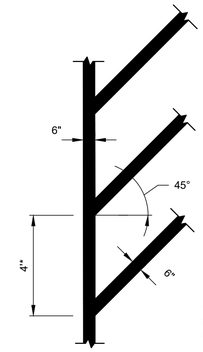
Drawing Number TD50.08



PARALLEL PARKING
N.T.S.

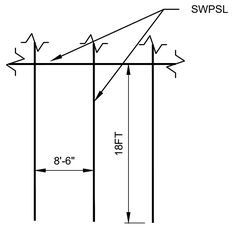


WIDE-LOAD TRUCK STALL
N.T.S.

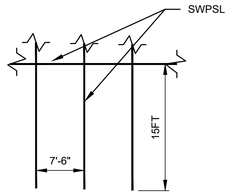


* 3 FOOT SPACING WHERE LENGTH OF CHANNELIZING LINE IS LESS THAN 20 FEET

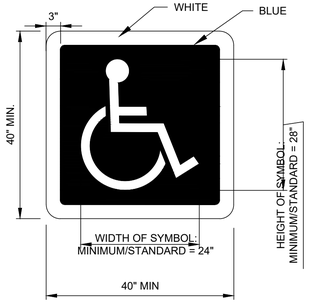
PARKING LOT SOLID WHITE CHANNELIZING LINE
(SWPCHL)
N.T.S.



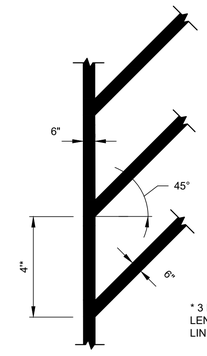
CAR STALL
N.T.S.



COMPACT CAR STALL
N.T.S.

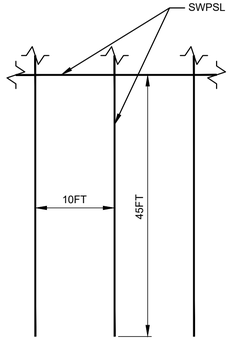


DETAIL OF INTERNATIONAL SYMBOL OF ACCESSIBILITY PARKING SPACE MARKING WITH BLUE BACKGROUND AND WHITE BORDER
N.T.S.

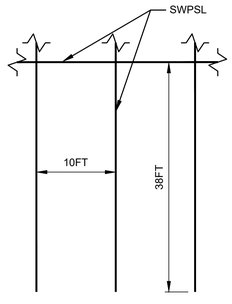


* 3 FOOT SPACING WHERE LENGTH OF CHANNELIZING LINE IS LESS THAN 20 FEET

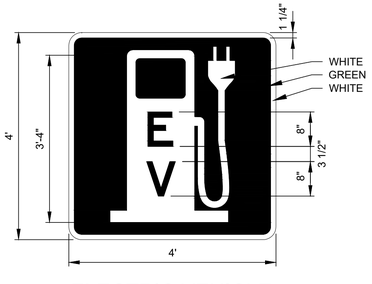
PARKING LOT SOLID YELLOW CHANNELIZING LINE
(SYPCHL)
N.T.S.



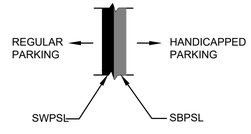
BUS STALL
N.T.S.



LIMO STALL
N.T.S.



ELECTRIC VEHICLE PARKING MARKER
N.T.S.



SOLID WHITE PARKING STALL LINE
(SWPSL)

SOLID BLUE PARKING STALL LINE
(SBPSL)

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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5	06/27/2024	DISCLAIMER ADDED	
4	03/15/2023	REVISIONS OF EV AND ACCESSIBLE SYMBOLS	
3	07/12/2018	REVISIONS TO STANDARD DETAILS	
2	08/12/2016	REVISIONS TO STANDARD DETAILS	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PAVEMENT MARKINGS

PARKING LOT MARKINGS AND SYMBOLS

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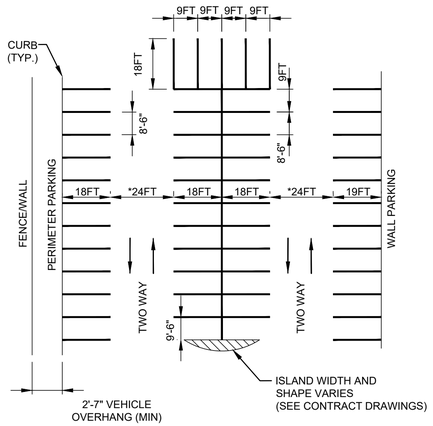
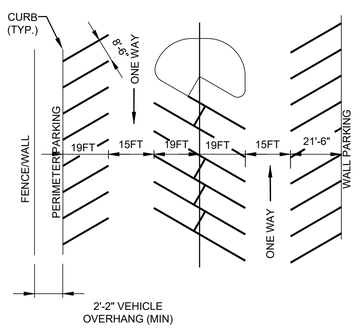
Date 07 / 15 / 2024

Drawing Number TD50.09

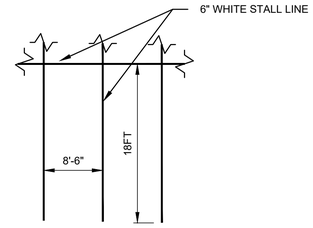


*30' MINIMUM WHEN BUS ROUTE PATH INCLUDED IN DESIGN

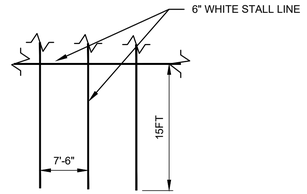
90° PARKING



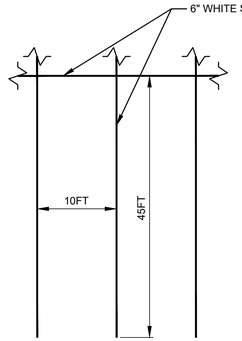
60° PARKING



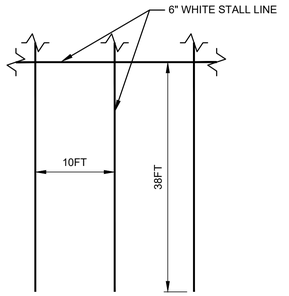
CAR STALL
N.T.S.



COMPACT CAR STALL
N.T.S.



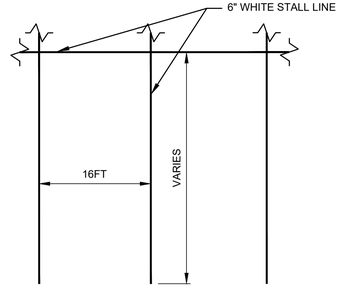
BUS STALL
N.T.S.



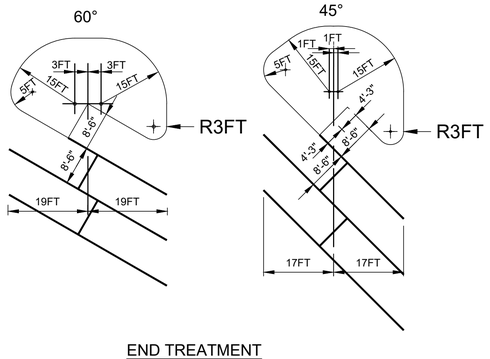
LIMO STALL
N.T.S.

NOTES:

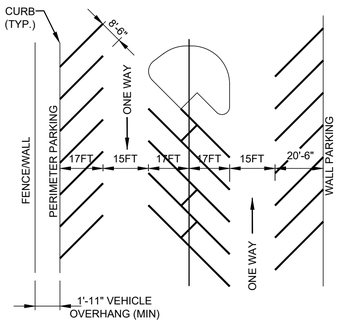
1. COLUMNS AND LIGHT POLES MAY PROTRUDE INTO THE PARKING MODULE A COMBINED MAXIMUM OF 2 ft. AS LONG AS THEY DO NOT AFFECT MORE THAN 25% OF THE STALLS IN THAT BAY.
2. COMPACT CAR ONLY STALLS 7'-6" WIDE 15'-0" LONG SHOULD ONLY BE USED AT CONSTRAINED LOCATIONS OR IN REMNANTS OF SPACE. THE NUMBER OF THESE STALLS SHOULD NOT EXCEED 15% OF THE TOTAL CAPACITY.
3. PRECAST CONCRETE WHEEL STOP SHALL BE SUBSTITUTED WHERE POSSIBLE BY AN APPROVED EQUAL USING RECYCLED MATERIAL AS APPROVED BY THE ENGINEER.



WIDE-LOAD TRUCK STALL
N.T.S.

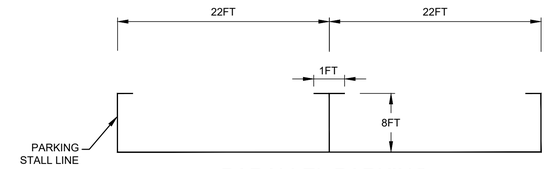


END TREATMENT

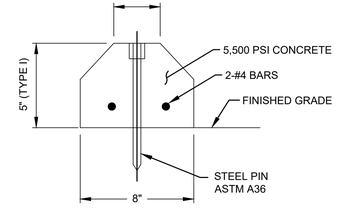


45° PARKING

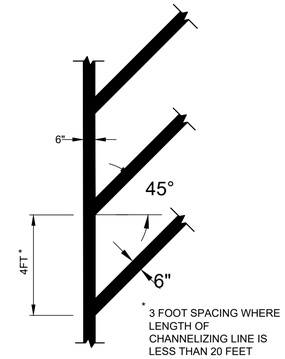
TYPICAL PARKING BAY
N.T.S.



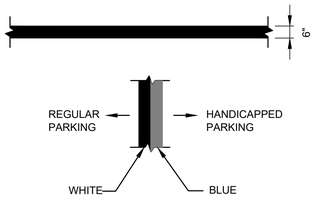
PARALLEL PARKING
N.T.S.



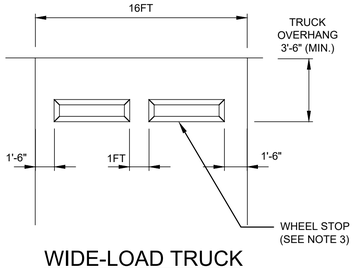
SECTION A-A



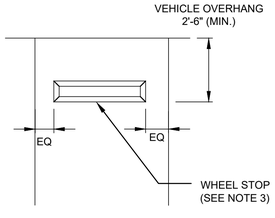
PARKING LOT
SOLID CHANNELIZING LINE
(SWPCHL OR SYPCHL)
(WHITE OR YELLOW)
N.T.S.



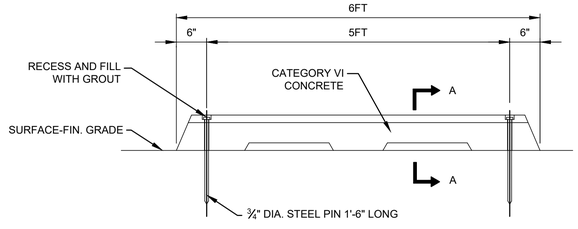
PARKING STALL LINE
(SWPSL OR SBPSL)
(WHITE OR BLUE-HANDICAPPED)
PARKING LOTS ONLY



WIDE-LOAD TRUCK
WHEEL STOP PLACEMENT
N.T.S.



WHEEL STOP
PLACEMENT
N.T.S.



PRECAST CONCRETE WHEEL STOP
(FOR AUTOMOBILE USE)
N.T.S.

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1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PAVEMENT MARKINGS

PARKING LOT MARKINGS

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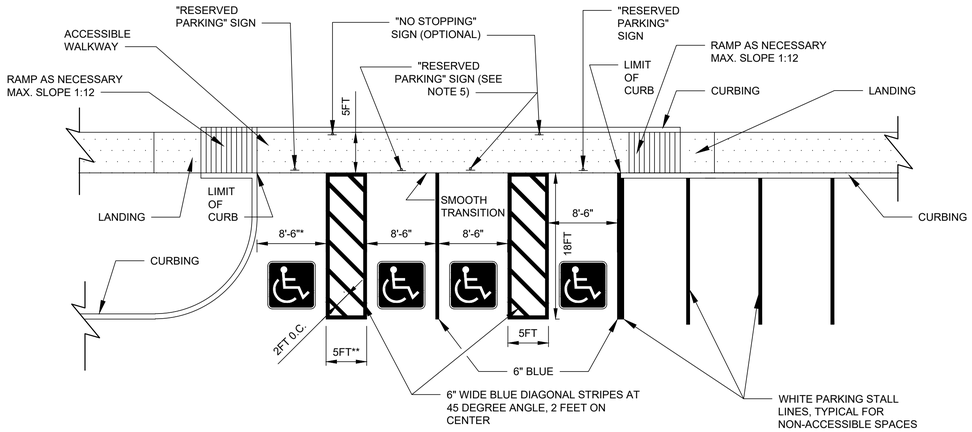
Date 07 / 15 / 2024

Drawing Number TD50.10

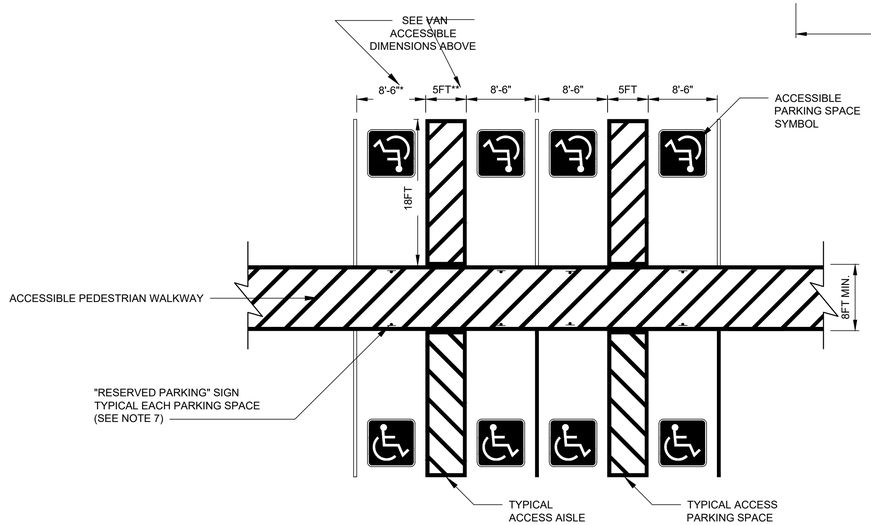


TYPICAL ACCESSIBLE PARKING LAYOUT

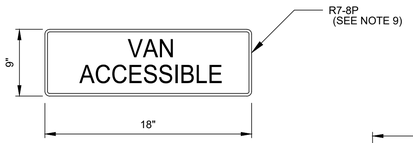
FOR VAN ACCESSIBLE

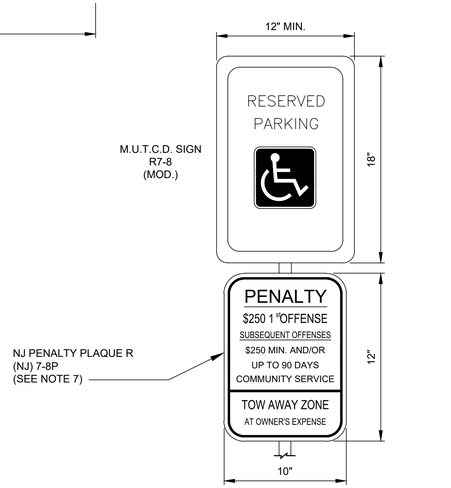
{*8.5FT / **8.0FT} OR {*11FT / **5FT}

NOTE: THE VAN ACCESSIBLE SPACE MUST BE SIGNED WITH VAN ACCESSIBLE PLAQUE BELOW THE RESERVED PARKING SIGN (ALSO SEE NOTE 7)

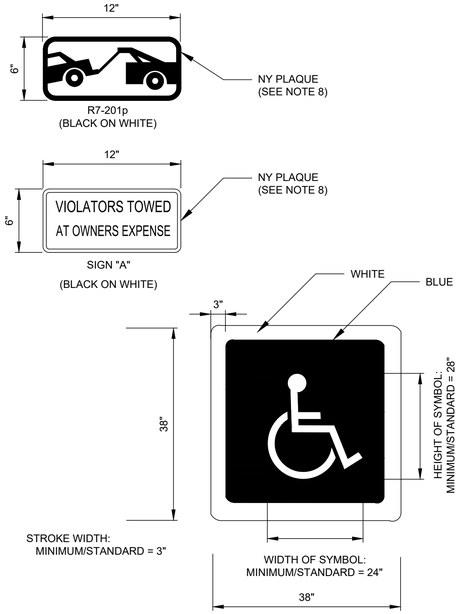


TYPICAL ACCESSIBLE PARKING LAYOUT





TYPICAL FOR PARKING SPACE



DETAIL OF INTERNATIONAL SYMBOL OF ACCESSIBILITY PARKING SPACE MARKING WITH BLUE BACKGROUND AND WHITE BORDER

N.T.S.

NOTES:

1. THIS SHEET IS INTENDED TO DEPICT THE DIMENSIONAL REQUIREMENTS OF TYPICAL ACCESSIBLE PARKING SPACES. THE SIDEWALK, CURBING, AND PAVEMENT MATERIALS SHALL BE AS SPECIFIED ELSEWHERE IN THE CONTRACT DRAWING.
2. MINIMUM NUMBER OF SPACES IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG),

TOTAL SPACES IN LOT	MINIMUM NUMBER OF ACCESSIBLE SPACES	VAN ACCESSIBLE
1 TO 25	1	1
26 TO 50	2	1
51 TO 75	3	1
76 TO 100	4	1
101 TO 150	5	1
151 TO 200	6	1
201 TO 300	7	2
301 TO 400	8	2
401 TO 500	9	2
501 TO 1000	2% OF TOTAL	4
1001 AND OVER	20 PLUS 1 FOR EACH 100 OVER 1000	TBD

3. LOCATION - PARKING SPACES FOR USE BY PERSONS WITH DISABILITIES SHALL BE THE SPACES CLOSEST TO THE NEAREST ACCESSIBLE BUILDING OR FACILITY ENTRANCE ON AN ACCESSIBLE ROUTE.
4. ACCESS AISLES ADJACENT TO ACCESSIBLE PARKING - EACH ACCESSIBLE PARKING SPACE REQUIRES AN ACCESS AISLE. TWO ACCESSIBLE PARKING SPACES MAY SHARE A COMMON ACCESS AISLE AS SHOWN IN THE CONTRACT DRAWING.
5. ACCESSIBLE PARKING SPACE SIGNAGE - EACH ACCESSIBLE PARKING SPACE SHALL BE MARKED BY AN ABOVE GROUND SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY. THE BOTTOM OF THE SIGN MUST BE AT LEAST 7 FEET ABOVE THE WALKWAY SURFACE.
6. OVERHEAD CLEARANCE - VEHICLE ACCESS ROUTES TO AND FROM ACCESSIBLE PARKING SPACES, INCLUDING IN GARAGES AND OPEN PARKING STRUCTURES, SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 9'-6".
7. FOR NEW JERSEY FACILITY, USE "NJ PENALTY PLAQUE" R(NJ)7-8P BELOW R7-8(MOD.) SIGN. THE SIGN MUST BE AT LEAST 7 FEET ABOVE THE WALKWAY SURFACE.
8. FOR NEW YORK FACILITY, USE R7-201p OR SIGN "A" ABOVE R7-8 SIGN.
9. VAN ACCESSIBLE SIGN, IF REQUIRED, SHALL BE MOUNTED UNDER R7-8(MOD.) SIGN.

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No.	Date	Revision	Approved
2	01/23/2015	UPDATE TEXT STYLE TO ARIAL	
1	10/22/2014	R7-8 SIGN PANEL MODIFICATION, ADD NOTE 9	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PAVEMENT MARKINGS

ACCESSIBLE PARKING FOR PEOPLE WITH DISABILITIES

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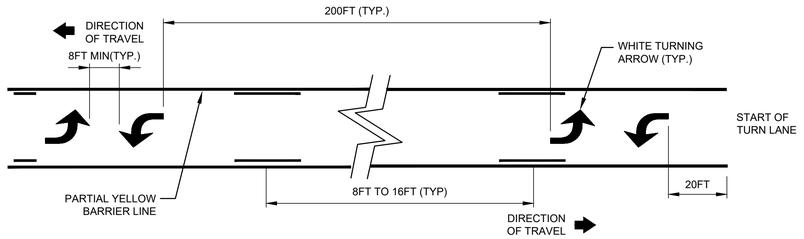
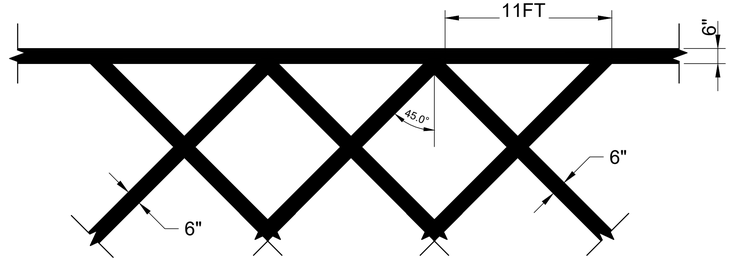
Drawing Number TD50.11



TWO-WAY LEFT TURN LANE DETAIL

N.T.S.

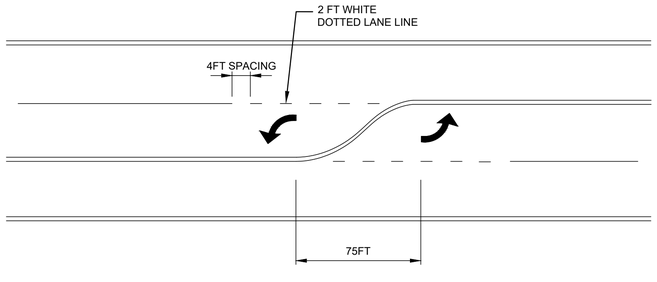


DON'T BLOCK THE BOX MARKING

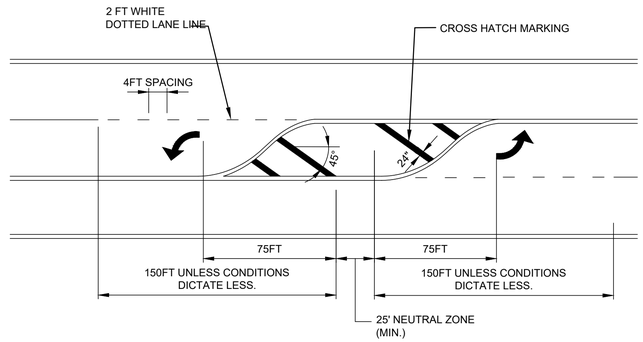
(WHITE)
N.T.S.

NOTES:

1. IF TURNING LANE LENGTH (L) IS LESS THAN 90 FT. ONLY ONE SET OF MARKINGS SHALL BE PLACED 20 FT. FROM THE STOP LINE.
2. IF L IS BETWEEN 90 FT. AND 135 FT., TWO SETS OF MARKINGS SHALL BE PLACED AS SHOWN IN THE DETAIL EXCEPT THE 80 FT SPACING. MAY BE REDUCED TO 25 FT.
3. IF L IS BETWEEN 135 FT. AND 250 FT., TWO SETS OF MARKINGS SHALL BE PLACED AS SHOWN IN THE DETAIL.
4. IF L IS BETWEEN 250 FT AND 500 FT, THREE SETS OF MARKINGS SHALL BE PLACED. THE FIRST TWO SETS OF MARKINGS SHALL BE PLACED AT SPACING SHOWN IN THE DETAIL, WITH THE THIRD SET LOCATED 35 FT FROM END OF BAY (POINT OF FULL LANE WIDTH).
5. IF L IS GREATER THAN 500 FT., REFER TO THE CONTRACT DRAWING OR ENGINEER FOR GUIDANCE.
6. AT AN UNCONTROLLED APPROACH (NO SIGNAL, STOP OR YIELD SIGN), DELETE THE STOP BAR.
7. ARROW AND "ONLY" SHALL BE CENTERED IN LANE.



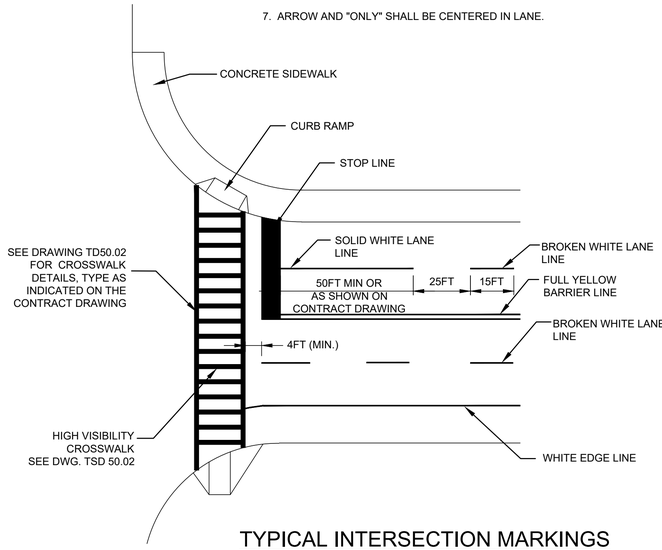
METHOD 1



METHOD 2

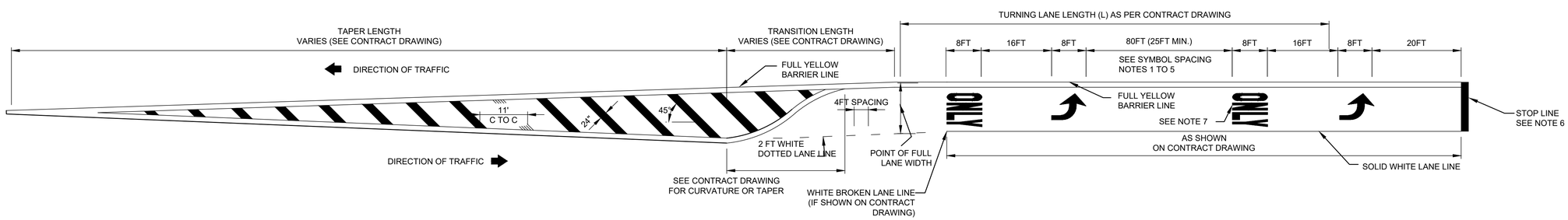
TYPICAL PAVEMENT MARKING FOR LEFT TURN PAVEMENT MARKED MEDIAN

N.T.S



TYPICAL INTERSECTION MARKINGS WITH CROSSWALK

N.T.S.



CHANNELIZED ISLAND DETAIL AND LEFT TURN LANE MARKING (RIGHT TURN LANE SIMILAR)

N.T.S.

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

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PAVEMENT MARKINGS

INTERSECTION MARKINGS

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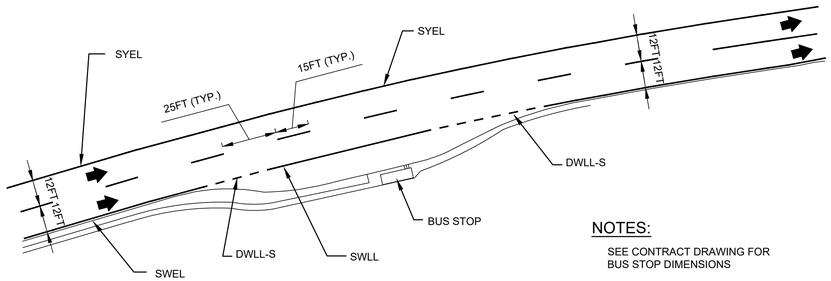
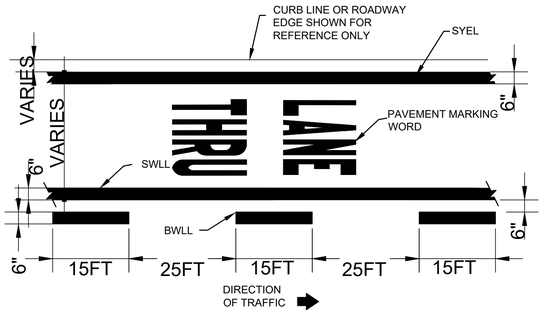


NOTES:

SEE CONTRACT DRAWING FOR BUS STOP DIMENSIONS

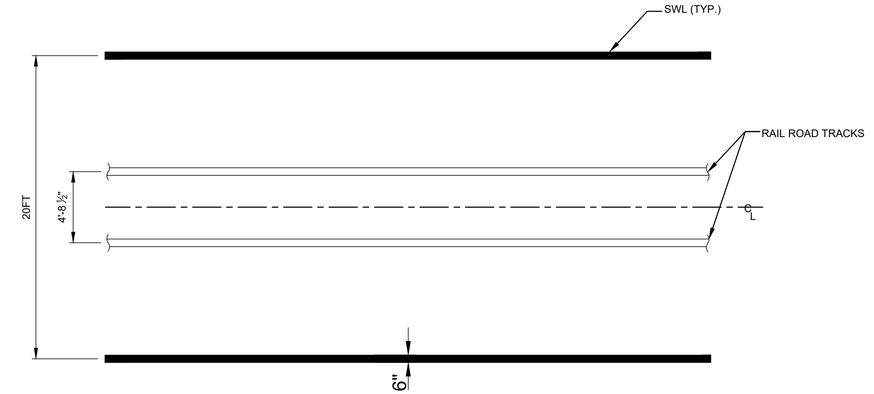
TYPICAL BUS STOP MARKING

N.T.S.



THRU LANE PAVEMENT MARKING

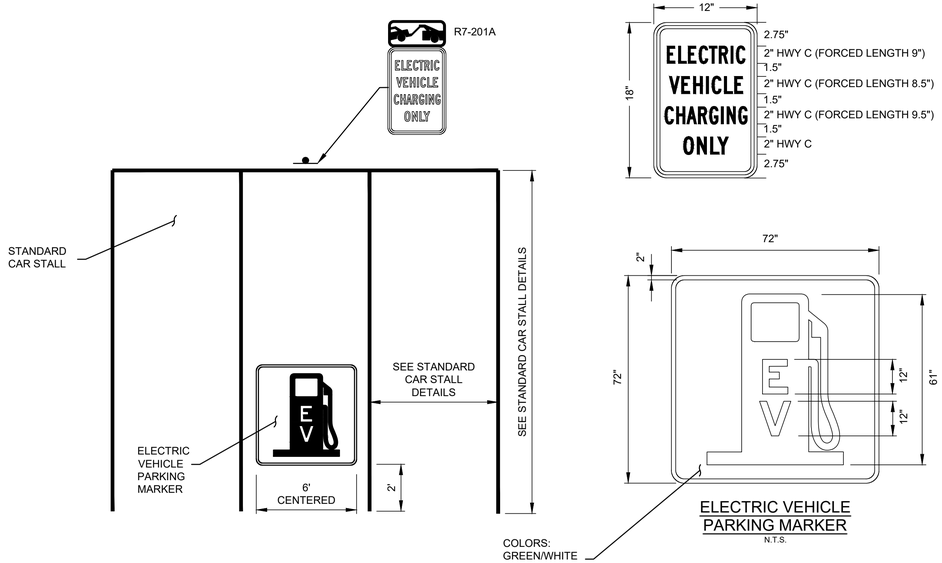
N.T.S.



DYNAMIC ENVELOPE MARKING

(WHITE)

N.T.S.

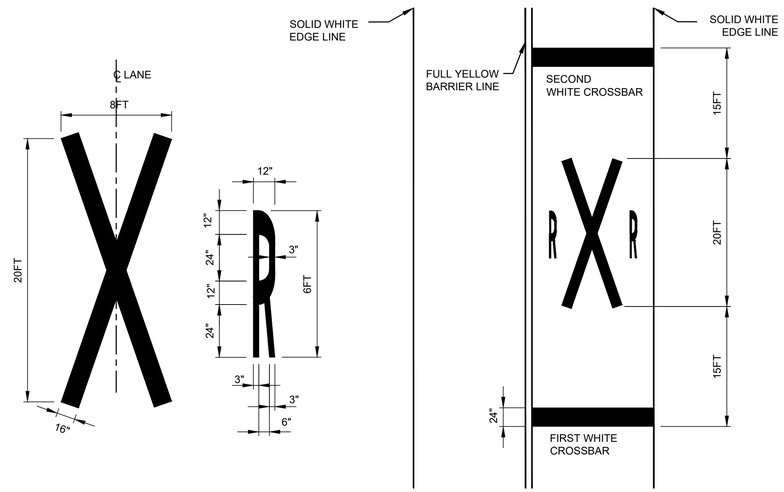


ELECTRIC VEHICLE PARKING MARKER

N.T.S.

ELECTRIC VEHICLE PARKING MARKER LAYOUT

N.T.S.



RAILROAD GRADE CROSSING MARKINGS

(RGCM)

N.T.S.

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1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

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PAVEMENT MARKINGS

MISCELLANEOUS MARKINGS

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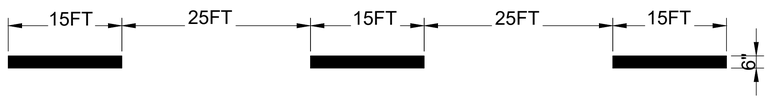
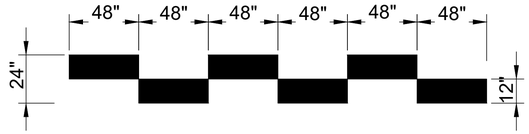
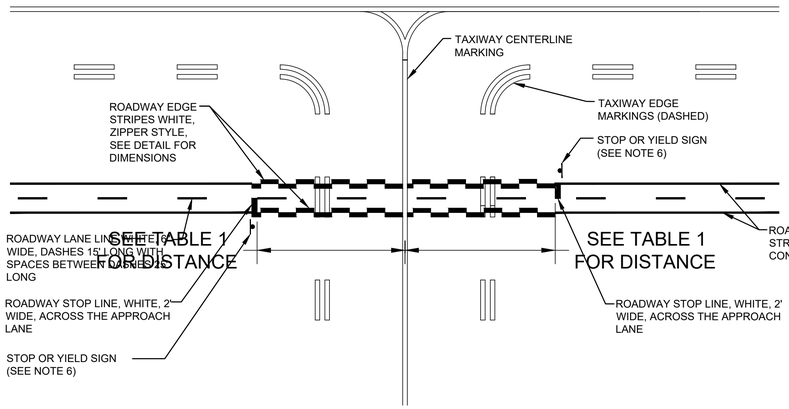


BROKEN WHITE LANE LINE
(BWLL)
N.T.S.

SOLID WHITE STOP LINE - AIR SIDE
(SL-AS)
N.T.S.



ZIPPER WHITE EDGE LINE
(ZWEL)
N.T.S.



TYPICAL ROADWAY-TAXIWAY DESIGN
(SEE NOTE 5)
N.T.S.

SOLID WHITE EDGE LINE
(SWEL)
N.T.S.

TABLE 1
PERPENDICULAR DISTANCES FOR TAXIWAY INTERSECTION MARKINGS FROM CENTERLINE OF CROSSING TAXIWAY
(SEE FAA AC 150/5340-1)

AIRPLANE DESIGN GROUP*					
I	II	III	IV	V	VI
44.5 FT	65.5 FT	93 FT	129.5 FT	160 FT	193 FT

* DESIGN GROUPS ARE BASED ON WING SPAN OR TAIL HEIGHT AND CATEGORY DEPENDS ON APPROACH SPEED OF THE AIRCRAFT AS SHOWN IN TABLE 2.

TABLE 2
FAA AIRPLANE DESIGN GROUP
(SEE FAA AC 150/5300-13)

AIRPLANE DESIGN GROUP	CATEGORY
GROUP I : WING SPAN UP TO 49 FT.	CATEGORY A: SPEED LESS THAN 91 KNOTS
GROUP II : WING SPAN 49 FT. UP TO 73 FT.	CATEGORY B: SPEED 91 KNOTS UP TO 120 KNOTS
GROUP III : WING SPAN UP TO 79 FT. TO 117 FT.	CATEGORY C: SPEED 121 KNOTS UP TO 140 KNOTS
GROUP IV : WING SPAN UP TO 113 FT. TO 170 FT.	CATEGORY D: SPEED 141 KNOTS UP TO 165 KNOTS
GROUP V : WING SPAN UP TO 171 FT. TO 213 FT.	CATEGORY E: SPEED 166 KNOTS OR MORE
GROUP VI : WING SPAN UP TO 214 FT. TO 261 FT.	

AIRSIDE MARKINGS AND SIGN PLACEMENT NOTES:

SIGNS

1. SIGNS ARE TO BE IN ACCORDANCE WITH THE LATEST VERSION OF AC 150/5345-44, "SPECIFICATIONS FOR TAXIWAY AND RUNWAY SIGNS."
2. VEHICLE ROADWAYS THAT INTERSECT RUNWAYS OR TAXIWAYS SHOULD HAVE A RETRO REFLECTIVE HIGHWAY STOP SIGN ON THEM PRIOR TO THE INTERSECTION. AT INTERSECTIONS WITH TAXIWAYS, IT IS PERMISSIBLE TO USE A STANDARD RETRO REFLECTIVE HIGHWAY YIELD SIGN IN LIEU OF A STOP SIGN. THESE SIGNS SHOULD BE LOCATED AT THE EDGE OF THE APPLICABLE RUNWAY SAFETY AREA (RSA), OBSTACLE FREE ZONE (OFZ) OR TAXIWAY SAFETY AREA (TSA) ON FRANGIBLE MOUNTS. THE RSA, OFZ AND TSA ARE CLASSIFIED AS FOLLOWS:
   A) RUNWAY SAFETY AREA (RSA) IS A SURFACE SURROUNDING THE RUNWAY PREPARED OR SUITABLE FOR REDUCING THE RISK OF DAMAGE TO AIRPLANES IN THE EVENT OF AN UNDERSHOOT, OVERSHOOT, OR EXCURSION FROM THE RUNWAY. FOR DETAILS SEE FAA AC 150/5300-13 ITEMS 2 AND 305.
   B) OBSTACLE FREE ZONE (OFZ) IS THE AIRSPACE BELOW 150 FEET ABOVE THE ESTABLISHED AIRPORT ELEVATION AND ALONG THE RUNWAY AND EXTENDED RUNWAY CENTERLINE THAT IS REQUIRED TO BE CLEAR OF ALL OBJECTS, EXCLUDING THE FRANGIBLE VISUAL NAVAIDS THAT NEED TO ILLUMINATE THE RUNWAYS. FOR DETAILS SEE FAA AC 150/5300-13 ITEMS 2 AND 306.
   C) TAXIWAY SAFETY AREA (TSA) IS A SURFACE ALONGSIDE THE TAXIWAY PREPARED OR SUITABLE FOR REDUCING THE RISK OF DAMAGE TO AN AIRPLANE UNINTENTIONALLY DEPARTING THE TAXIWAY. FOR DETAILS SEE FAA AC150/5300-13 ITEMS 2 AND 403.
3. THE SIGN USED MUST PROVIDE AT LEAST 12 INCHES OF CLEARANCE BETWEEN THE TOP OF THE SIGN AND ANY PART OF THE MOST CRITICAL AIRCRAFT USING, OR EXPECTED TO USE, THE AIRPORT WHEN THE AIRCRAFT'S WHEELS ARE AT THE DEFINED PAVEMENT EDGE. (FAA AC 150/5340-18) IT SHOULD BE NOTED THAT AIRCRAFT CLEARANCE REQUIREMENTS AND JET BLAST MAY PRECLUDE THE USE OF THESE SIGNS ON ROADWAYS THAT ARE LOCATED ON THE APRON OR OTHER PARTS OF THE AIR OPERATIONS AREA. (FAA AC 150/5340-18 ITEMS 3 AND 10)

PAVEMENT MARKINGS

1. FOR THE LATEST FEDERAL AVIATION ADMINISTRATION (FAA) STANDARD FOR AIRPORT MARKINGS, REFER TO FAA ADVISORY CIRCULAR AC NO. 150/5340-1 (SECTION 4 OTHER MARKINGS: VEHICLE ROADWAY MARKINGS).
2. ROADWAY PAVEMENT MARKINGS ON AIRSIDE VEHICLE ROADWAYS ARE WHITE ONLY.
3. VEHICLE ROADWAY DELINEATION ON AIRSIDE, A MINIMUM SPACING OF 2 FEET MUST BE MAINTAINED BETWEEN THE ROADWAY EDGE MARKING AND THE NON-MOVEMENT AREA BOUNDARY MARKING.
4. VEHICLE ROADWAY MARKING CONSIST OF A SOLID LINE TO DELINEATE EACH EDGE OF THE ROADWAY AND A DASHED LINE TO SEPARATE LANES WITHIN THE EDGES OF THE ROADWAY. THE EDGE LINES AND LANE LINES ARE BOTH 6 INCHES WIDE AND THE DASHES FOR THE LANE LINES ARE 15 FEET IN LENGTH WITH SPACING OF 25 FEET BETWEEN DASHES.
5. IN LIEU OF THE SOLID LINES, ZIPPER MARKINGS MAY BE USED TO DELINEATE THE EDGES OF THE VEHICLE ROADWAY WHEREVER THE AIRPORT OPERATOR DETERMINES THAT THE ROADWAY EDGES NEED ENHANCED DELINEATION. THE ZIPPER MARKING CONSISTS OF TWO DASHED LINES SIDE BY SIDE WITH ALTERNATING DASHES THAT ARE 12 INCHES WIDE AND 4 FEET IN LENGTH, ALONG EACH EDGE OF THE ROADWAY.
6. WHERE A ROADWAY CROSSES A TAXIWAY, A SOLID WHITE STRIPE 2 FEET WIDE IS PROVIDED ACROSS THE APPROACH LANE AT DISTANCES SPECIFIED IN TABLE 1 TO ASSURE ADEQUATE CLEARANCE FROM THE TAXIING AIRCRAFT. WHEN THE ROADWAY IS NOT LOCATED ON AN AIRCRAFT MANEUVERING AREA, A RETRO-REFLECTIVE STOP OR YIELD SIGN SHOULD BE INSTALLED ON THE RIGHT HAND SIDE OF THE ROADWAY IN CONJUNCTION WITH THE SOLID WHITE STRIPE.
7. MARKINGS FOR ROADWAYS NOT LOCATED ON AIRCRAFT MANEUVERING AREAS SHOULD CONFORM TO THOSE IN THE U.S. DEPARTMENT OF TRANSPORTATION'S MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
PAVEMENT MARKINGS

AIRSIDE MARKINGS AND SIGN PLACEMENT

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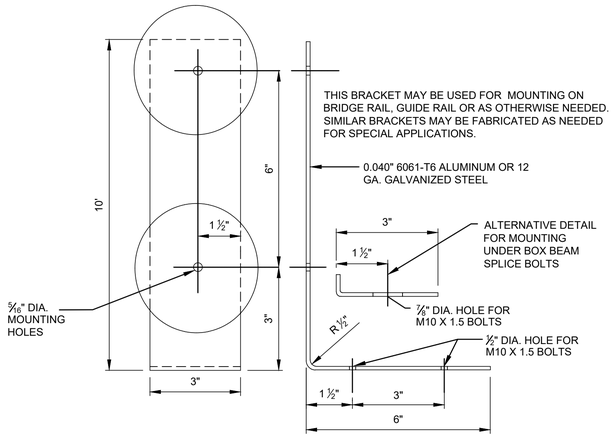
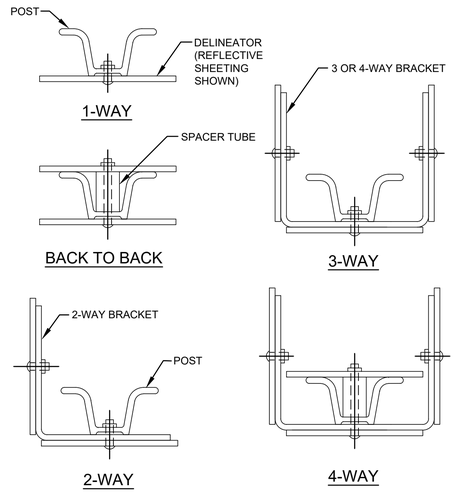
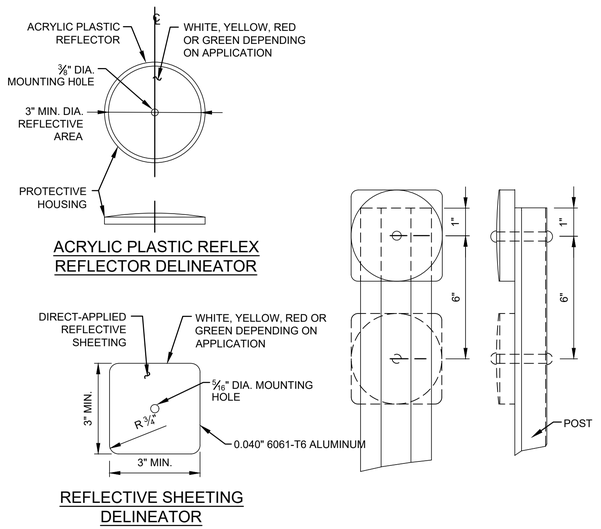


RAIL AND STRUCTURE BRACKET
N.T.S.



DELINEATOR MOUNTING DETAILS
N.T.S.

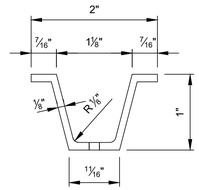


TYPICAL DELINEATOR
N.T.S.

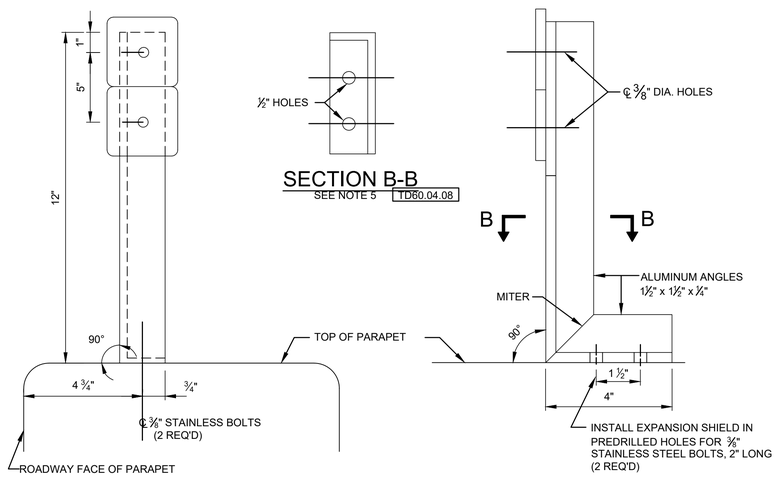
NOTES:

1. DELINEATORS AND SNOWPLOWING MARKERS SHALL BE ATTACHED TO POSTS AND BRACKETS USING VANDAL RESISTANT FASTENERS SUCH AS LOCKBOLTS, PULL THROUGH OR DRIVE BLIND RIVETS, OR OTHER FASTENER, AS APPROVED BY THE ENGINEER. ACRYLIC PLASTIC DELINEATORS MAY USE SMALLER DIAMETER FASTENERS AS NECESSARY TO FIT THE CENTER MOUNT HOLE.
2. FASTENER MATERIALS:

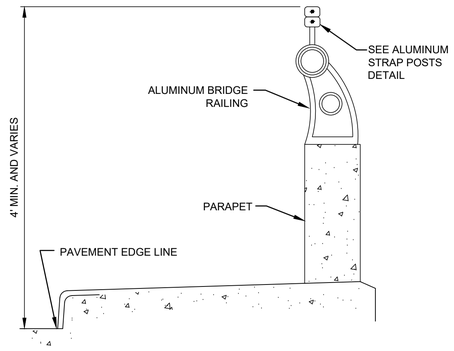
   STAINLESS STEEL
   GALVANIZED STEEL PER ASTM F568 CLASS 4.6 OR 8.8
   A325M ALUMINUM
   BOLTS, LOCKBOLTS, NUTS - ALCAD 2024-T4, 6061-T6
   WASHERS, FLAT - ALCAD 2024-T4
   WASHERS, SPRINGLOCK - 7075-T6
   BLIND RIVETS - 2017-F, 2117-F, 5056-F
   ALLOYS 2024-T4, 2017-F, 2117-F AND 5056-F
   SHALL BE ALCLAD OR FINISHED WITH TYPE 205 FINISH.
3. NUMBER AND COLOR OF DELINEATORS AS SPECIFIED ON THE CONTRACT DRAWING.
4. DELINEATORS MUST MEET THE MINIMUM REQUIREMENTS FOR SIZE, COLOR AND REFLECTIVITY AS PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).



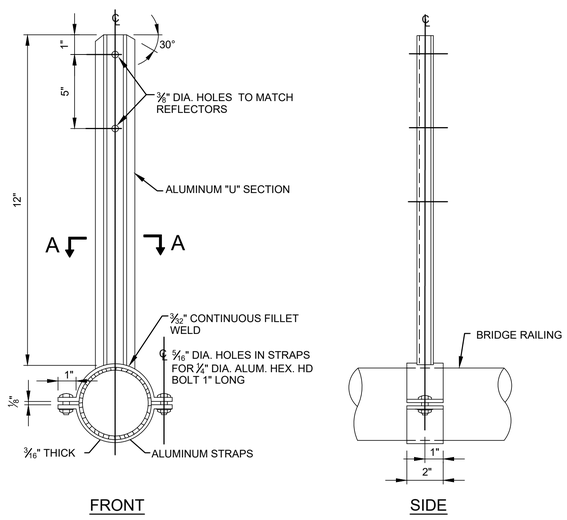
SECTION A-A



BRIDGE PARAPET ANGLE POSTS
N.T.S.



BRIDGE RAILING
N.T.S.



ALUMINUM STRAP POSTS
N.T.S.

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1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

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Title
DELINEATION DEVICES AND MARKERS

DELINEATOR DETAILS AND MOUNTING (1 OF 2)

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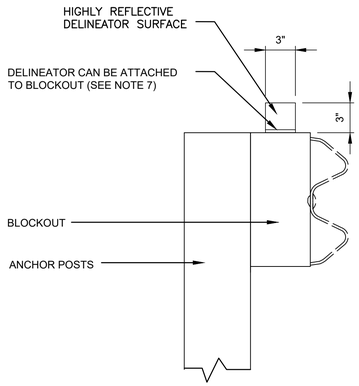
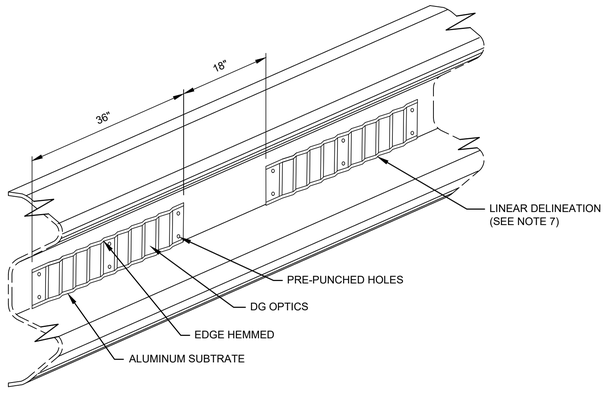


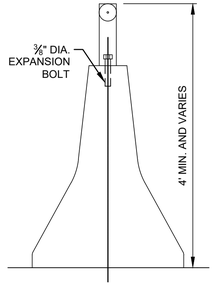
GUIDERAIL DELINEATOR

N.T.S

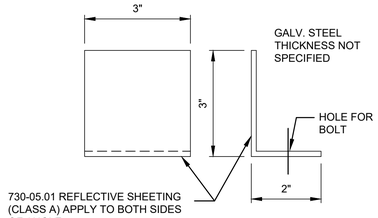


LINEAR GUIDERAIL DELINEATOR

N.T.S



CONCRETE MEDIAN BARRIER

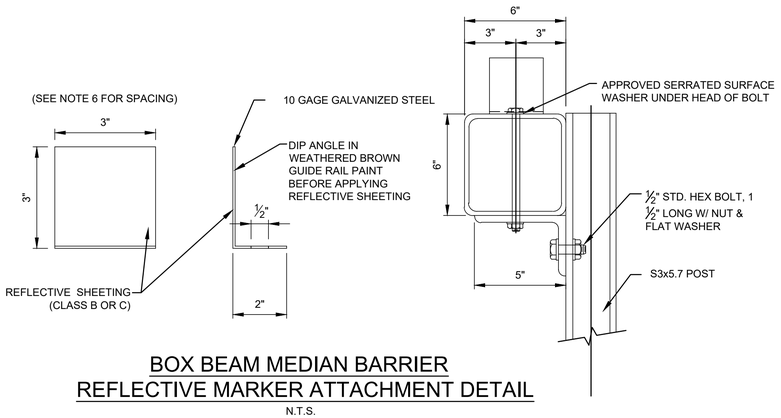


DELINEATOR DETAIL

N.T.S.

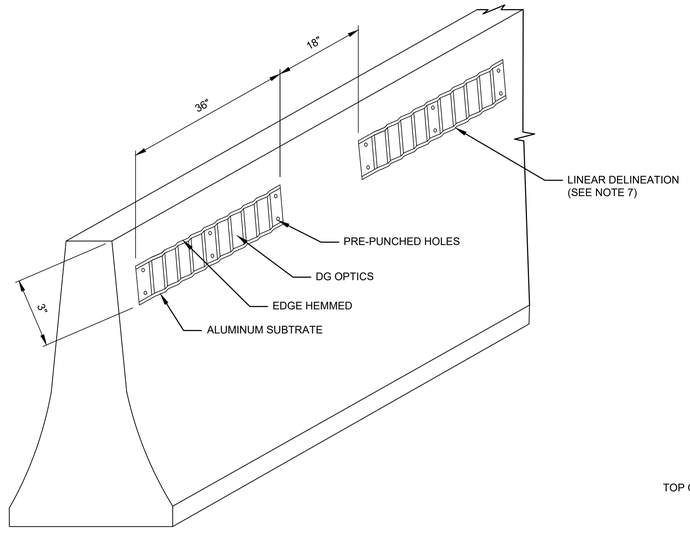
NOTES:

1. DELINEATOR MUST MEET THE MINIMUM REQUIREMENTS FOR REFLECTIVITY PER MUTCD.
2. MOUNTING SHOWN ON CONCRETE BARRIER IS FOR PERMANENT INSTALLATION USING BARRIER ADHESIVE. DELINEATOR CAN ALSO BE MOUNTED TO AN "L" BRACKET AND BOLTED TO THE CONCRETE SURFACE. FOR TEMPORARY MOUNTING, USE BUTYL ADHESIVE PAD ATTACHED TO THE DELINEATOR. STANDARD INSTALLATION DETAILS, DETAILED DESIGN GUIDES AND INSTALLATION PROCEDURES ARE AVAILABLE FROM THE MANUFACTURER.
3. DELINEATOR COLOR SHALL BE WHITE OR YELLOW TO CONFORM TO THE TRAFFIC SEPARATION PAVEMENT MARKING WHICH IT SUPPLEMENTS.
4. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES. MINOR MANUFACTURER VARIATION MAY BE ACCEPTABLE UPON APROVAL OF THE ENGINEER.
5. DELINEATOR SPACING AS SHOWN ON CONTRACT DRAWINGS.
6. FOR BOX BEAM GUIDE RAIL, THE REFLECTIVE MARKERS SHALL BE ATTACHED TO THE BEAM EVERY 10 FT ON TANGENTS AND EVERY 5 FT ON CURVES WITH RAD. LESS THAN OR EQUAL TO 200 FT. THE REFLECTIVE MARKERS SHALL BE ATTACHED TO THE RAIL AS SHOWN IN THE DETAILS HEREIN. THE REFLECTIVE MARKERS SHALL CONFORM TO THE COLOR REQUIREMENTS FOR DELINEATORS IN THE MUTCD. RELFECTIVE MARKERS SHALL NOT BE REQUIRED IN THE APPROACH, TERMINAL ENDS, OR END ASSEMBLIES OF THE GUIDE RAIL AND THE END TREATMENT OF MEDIAN BARRIER.
7. INSTALL AS PER MANUFACTURER'S RECOMMENDED PROCEDURE OR AS APPROVED BY THE ENGINEER.



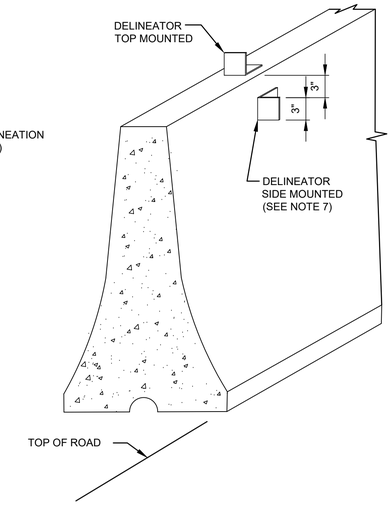
BOX BEAM MEDIAN BARRIER
REFLECTIVE MARKER ATTACHMENT DETAIL

N.T.S.



LINEAR DELINEATOR SYSTEM (LDS)

N.T.S.



CONCRETE BARRIER DELINEATOR

N.T.S.

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

DELINEATION DEVICES AND MARKERS

DELINEATOR DETAILS AND MOUNTING (2 OF 2)

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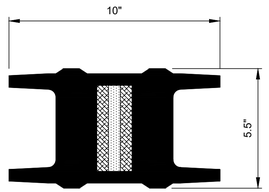
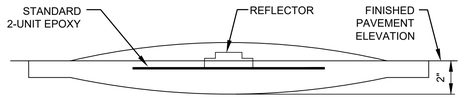
Date 07 / 15 / 2024

Drawing Number TD60.02



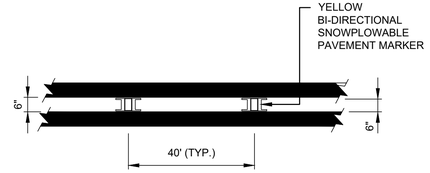
PLAN



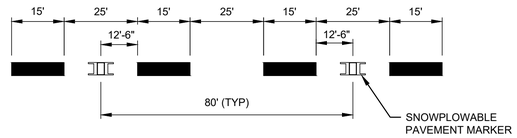
ELEVATION

EPOXY BONDED SNOWPLOWABLE REFLECTORIZED PAVEMENT MARKER

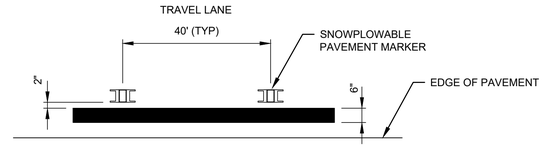
N.T.S.



FULL YELLOW BARRIER LINE
(FYBL)



BROKEN LANE LINE
(WHITE OR YELLOW)
(BWLL OR BYLL)



SOLID EDGE LINE
(WHITE OR YELLOW)
(SWEL OR SYEL)
TD60.06.07

TYPICAL PAVEMENT MARKERS PLACEMENT DETAIL

N.T.S.

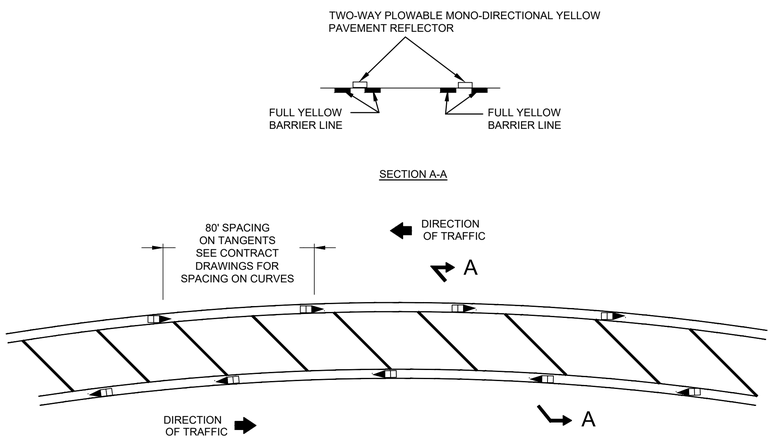
NOTES:

1. EXACT LOCATION OF THE MARKERS SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
2. THE COLOR OF THE RAISED PAVEMENT MARKERS SHOULD FOLLOW THE COLOR OF THE MARKINGS FOR WHICH THEY SUPPLEMENT OR SUBSTITUTE. FOR MONO-DIRECTIONAL PAVEMENT MARKERS, THE SIDE VISIBLE TO TRAFFIC PROCEEDING IN THE WRONG DIRECTION MAY BE RED. IN LOCATIONS WHERE HYDRANTS ARE PRESENT, INSTALL BLUE COLORED PAVEMENT MARKER.
3. INSTALL AS PER MANUFACTURER'S SPECIFICATIONS. (STIMSONITE MODEL #101 LPCR OR APPROVED EQUAL)
4. REFER TO CONTRACT DRAWING FOR COLOR AND TYPE (MONO-DIRECTIONAL OR BI-DIRECTIONAL)
5. DIRECTIONAL COLORS YELLOW, WHITE, BLUE (HYDRANTS) AND RED.
6. ALL PAVEMENT MARKERS SHALL BE IN ACCORDANCE WITH THE SPECIFICATION REQUIREMENTS OF THE CONTRACT:

   SECTION 0258XC RAISED REFLECTORIZED SNOW PLOWABLE PAVEMENT MARKERS
7. REFER TO DRAWING TD50.03 FOR DETAIL OF "WRONG-WAY ARROW" USING WHITE RETROREFLECTIVE RAISED PAVEMENT MARKERS.

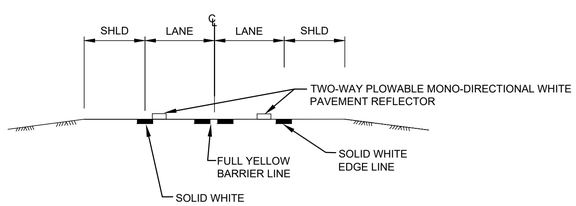
LEGEND

- TWO-WAY PLOWABLE MONO-DIRECTIONAL WHITE PAVEMENT REFLECTOR
- TWO-WAY PLOWABLE MONO-DIRECTIONAL AMBER PAVEMENT REFLECTOR
- TWO-WAY PLOWABLE BI-DIRECTIONAL AMBER PAVEMENT REFLECTOR



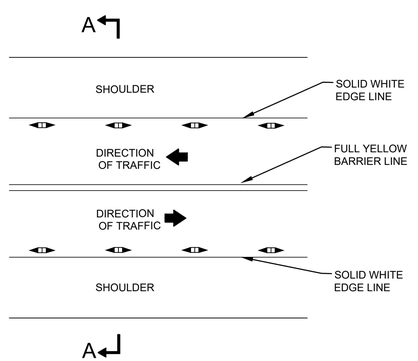
TYPICAL MEDIAN TREATMENT

N.T.S.



TYPICAL SECTION A-A

N.T.S.



TYPICAL ROAD

N.T.S.

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AIR LAND RAIL SEA

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
DELINEATION DEVICES AND MARKERS

REFLECTORIZED PAVEMENT MARKERS, LEGEND AND PLACEMENT DETAIL
(1 OF 2)

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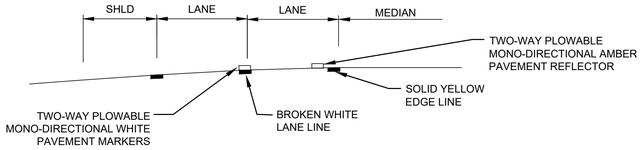
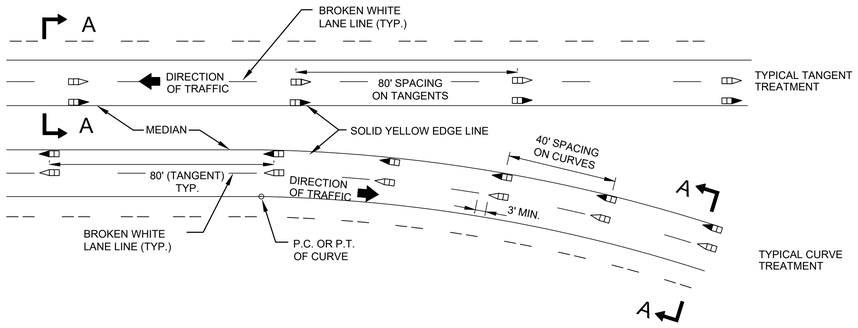
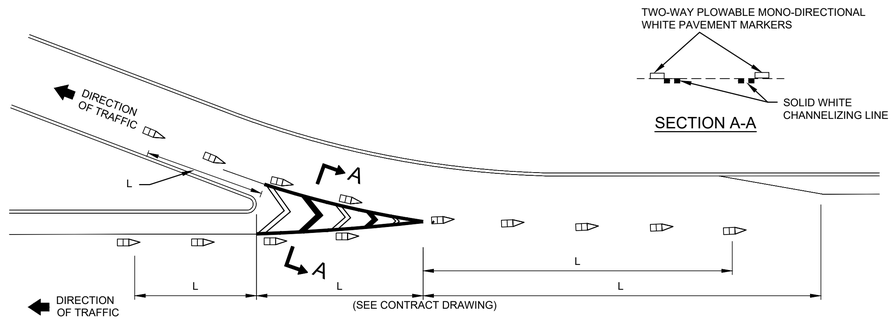
Drawing Number TD60.03



SECTION A-A (TYP.)

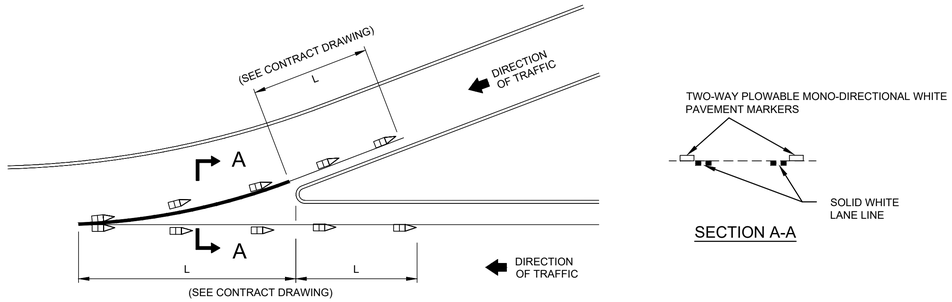


TYPICAL MULTI-LANE DIVIDED SECTION



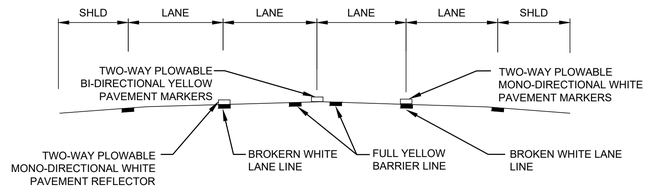
TYPICAL DECELERATION LANE TREATMENT

N.T.S.

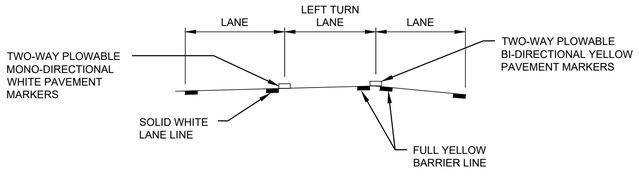


TYPICAL ACCELERATION LANE TREATMENT

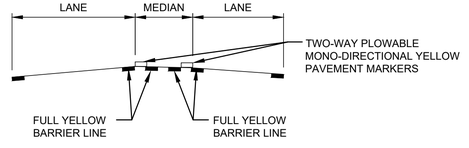
N.T.S.



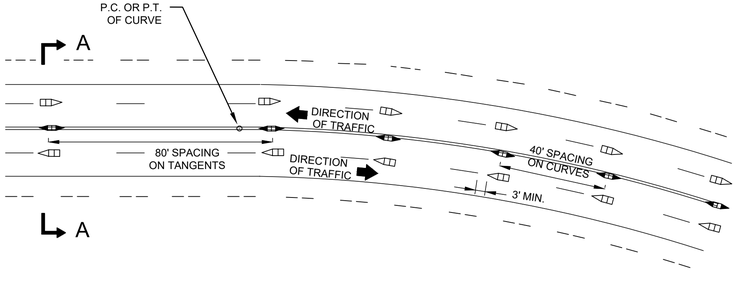
SECTION A-A



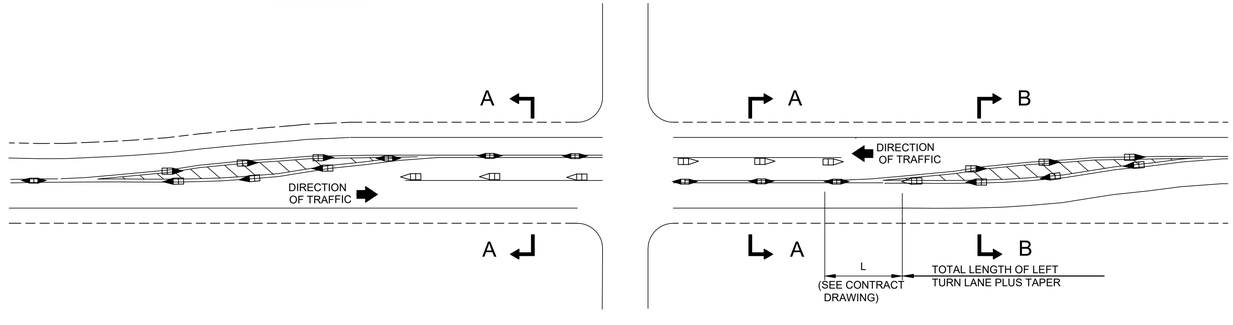
SECTION A-A



SECTION B-B



TYPICAL MULTI-LANE UNDIVIDED SECTION



TYPICAL LEFT TURN LANE SECTION

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

DELINEATION DEVICES AND MARKERS

REFLECTORIZED PAVEMENT MARKERS, LEGEND AND PLACEMENT DETAIL (2 FO 2)

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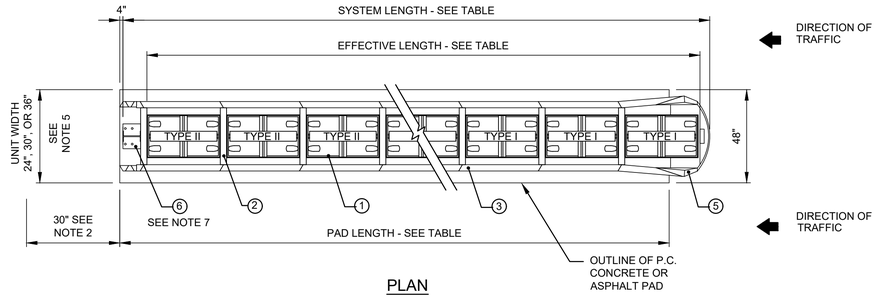
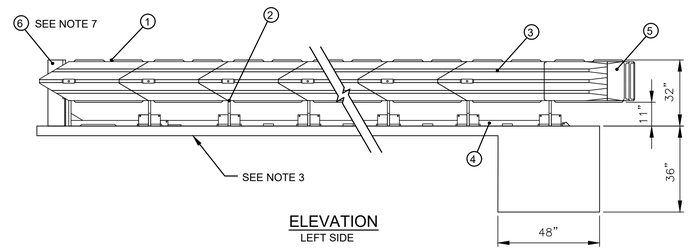
Date 07 / 15 / 2024

Drawing Number TD60.04



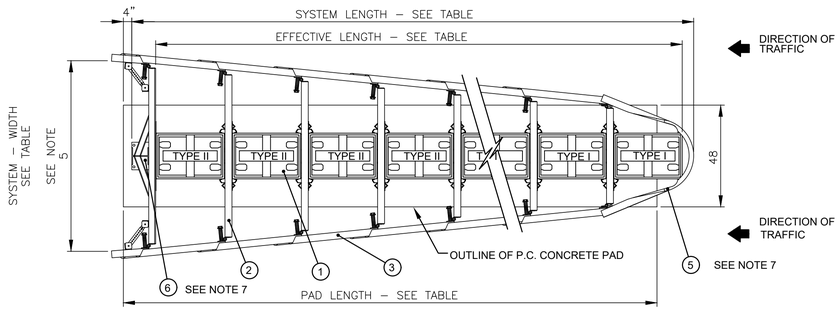
PLAN



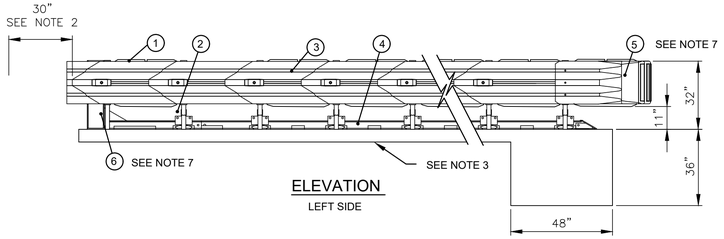
ELEVATION
LEFT SIDE

QUADGUARD SYSTEM FOR NARROW HAZARDS

N.T.S.



PLAN



ELEVATION
LEFT SIDE

QUADGUARD SYSTEM FOR WIDE HAZARDS

N.T.S.

KEY					
1	QUADGUARD CARTRIDGE	3	FENDER PANEL	5	NOSE ASSEMBLY
2	DIAPHRAGM	4	MONORAIL	6	BACKUP

NOTES:

1. IN COMPLIANCE WITH THE AASHTO 1996 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 30" MIN.
3. 6" MIN. REINFORCED (4000 PSI) CONCRETE PAD OR 8" MIN. NON-REINFORCED (4000 PSI) PORTLAND CEMENT (P.C.) CONCRETE ROADWAY.
4. SEE THE "QUADGUARD SYSTEM DESIGN MANUAL" DEVELOPED BY TRANSPO INDUSTRIES, INC. FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE.
5. WHERE NECESSARY, PROVIDE A TRANSITION FROM THE QUADGUARD SYSTEM TO THE OBJECT BEING SHIELDED.
6. UNITS OF MEASUREMENT ARE INCHES, UNLESS OTHERWISE NOTED.
7. BACKUP AND TRANSITION ASSEMBLIES NOT INCLUDED IN MODEL NUMBER.
8. THE BAY LENGTHS INDICATED IN THE TABLE ARE BASED UPON CALCULATED VALUES FOR 2000kg VEHICLES TRAVELING AT THE SPEEDS INDICATED AND HAVING ENOUGH CAPACITY TO DISSIPATE THE VEHICLES LONGITUDINAL IMPACT ENERGY.
9. FOR NOSE COVER ASSEMBLY SEE DRAWING TD70.07.

QUADGUARD SYSTEM FOR NARROW HAZARDS

BAYS	24" WIDTH MODELS	30" WIDTH MODELS	36" WIDTH MODELS	SYSTEM LENGTH ft-in	EFFECTIVE LENGTH ft-in	PAD LENGTH ft-in	MAX DESIGN SPEED (MPH)	NO. OF CARTRIDGES TYPE I (FRONT OF SYSTEM)	NO. OF CARTRIDGES TYPE II (REAR OF SYSTEM)
3	QS2403*	QS3003*	QS3603*	13'-1"	11'-8"	12'-0"	44	3	1
6	QS2406*	QS3006*	QS3606*	22'-1"	20'-8"	21'-0"	62	4	3
7	QS2407*	QS3007*	QS3607*	25'-1"	23'-8"	24'-0"	65	4	4
9	QS2409*	QS3009*	QS3609*	31'-1"	29'-8"	30'-0"	71	4	6
11	QS2411*	QS3011*	QS3611*	37'-1"	35'-8"	36'-0"	75	5	7

*G=GREY OR Y=YELLOW

QUADGUARD SYSTEM FOR WIDE HAZARDS

BAYS	69" WIDTH MODELS	90" WIDTH MODELS	SYSTEM LENGTH ft-in	EFFECTIVE LENGTH ft-in	PAD LENGTH ft-in	MAX DESIGN SPEED (MPH)	NO. OF CARTRIDGES TYPE I (FRONT OF SYSTEM)	NO. OF CARTRIDGES TYPE II (REAR OF SYSTEM)
3	QS6903*	QS9003*	13'-1"	11'-8"	12'-0"	44	3	1
6	QS6906*	QS9006*	22'-1"	20'-8"	21'-0"	62	4	3
7	QS6907*	QS9007*	25'-1"	23'-8"	24'-0"	65	4	4
9	QS6909*	QS9009*	31'-1"	29'-8"	30'-0"	71	4	6
11	QS6911*	QS9011*	37'-1"	35'-8"	36'-0"	75	5	7

*G=GREY OR Y=YELLOW

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
PERMANENT IMPACT ATTENUATORS

QUADGUARD IMPACT ATTENUATORS WITH TENSION STRUT BACKUP

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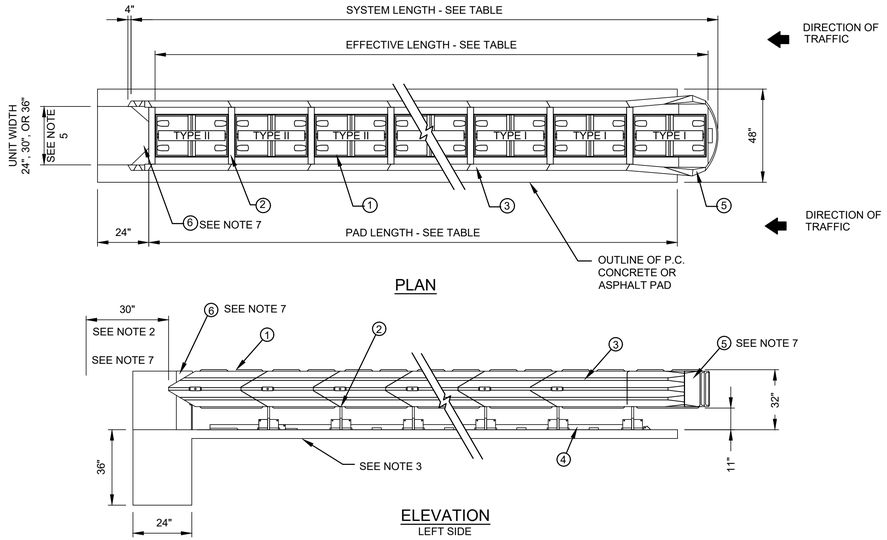
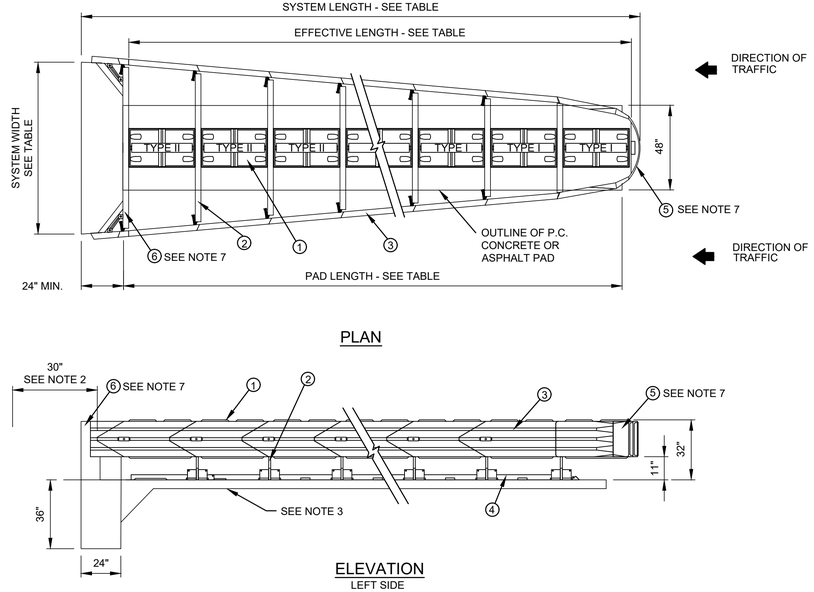
Date 07 / 15 / 2024

Drawing Number TD70.01



QUADGUARD SYSTEM FOR NARROW HAZARDS

N.T.S.



QUADGUARD SYSTEM FOR WIDE HAZARDS

N.T.S.

KEY					
1	QUADGUARD CARTRIDGE	3	FENDER PANEL	5	NOSE ASSEMBLY
2	DIAPHRAGM	4	MONORAIL	6	BACKUP

NOTES:

1. IN COMPLIANCE WITH THE AASHTO 1996 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 30" MIN.
3. 6" MIN. REINFORCED (4000 PSI) CONCRETE PAD OR 8" MIN. NON-REINFORCED (4000 PSI) PORTLAND CEMENT (P.C.) CONCRETE ROADWAY.
4. SEE THE "QUADGUARD SYSTEM DESIGN MANUAL" DEVELOPED BY TRANSPO INDUSTRIES, INC. FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE.
5. WHERE NECESSARY, PROVIDE A TRANSITION FROM THE QUADGUARD SYSTEM TO THE OBJECT BEING SHIELDED.
6. UNITS OF MEASUREMENT ARE INCHES, UNLESS OTHERWISE NOTED.
7. BACKUP AND TRANSITION ASSEMBLIES NOT INCLUDED IN MODEL NUMBER.
8. THE BAY LENGTHS INDICATED IN THE TABLE ARE BASED UPON CALCULATED VALUES FOR 2000kg VEHICLES TRAVELING AT THE SPEEDS INDICATED AND HAVING ENOUGH CAPACITY TO DISSIPATE THE VEHICLES LONGITUDINAL IMPACT ENERGY.
9. FOR NOSE COVER ASSEMBY SEE DRAWING TD70.07.

QUADGUARD SYSTEM FOR NARROW HAZARDS

BAYS	2' WIDTH MODELS	2.5' WIDTH MODELS	3' WIDTH MODELS	SYSTEM LENGTH ft-in	EFFECTIVE LENGTH ft-in	PAD LENGTH ft-in	MAX DESIGN SPEED (MPH)	NO. OF CARTRIDGES TYPE I (FRONT OF SYSTEM)	NO. OF CARTRIDGES TYPE II (REAR OF SYSTEM)
3	QS2403*	QS3003*	OS3603*	14'-6"	11'-8"	11'-6"	44	3	1
6	QS2406*	QS3006*	OS3606*	23'-6"	20'-8"	20'-6"	62	4	3
7	QS2407*	QS3007*	OS3607*	26'-6"	23'-8"	23'-6"	65	4	4
9	QS2409*	QS3009*	OS3609*	32'-6"	29'-8"	29'-6"	71	4	6
11	QS2411*	QS3011*	OS3611*	38'-6"	35'-8"	35'-6"	75	5	7

*G=GREY OR Y=YELLOW

QUADGUARD SYSTEM FOR WIDE HAZARDS

BAYS	5.7' WIDTH MODELS	7.5' WIDTH MODELS	SYSTEM LENGTH ft-in	EFFECTIVE LENGTH ft-in	PAD LENGTH ft-in	MAX DESIGN SPEED (MPH)	NO. OF CARTRIDGES TYPE I (FRONT OF SYSTEM)	NO. OF CARTRIDGES TYPE II (REAR OF SYSTEM)
3	QS6903*	QS9003*	14'-6"	11'-8"	11'-6"	44	3	1
6	QS6906*	QS9006*	23'-6"	20'-8"	20'-6"	62	4	3
7	QS6907*	QS9007*	26'-6"	23'-8"	23'-6"	65	4	4
9	QS6909*	QS9009*	32'-6"	29'-8"	29'-6"	71	4	6
11	QS6911*	QS9011*	38'-6"	35'-8"	35'-6"	75	5	7

*G=GREY OR Y=YELLOW

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT IMPACT ATTENUATORS

QUADGUARD IMPACT ATTENUATORS WITH CONCRETE BACKUP

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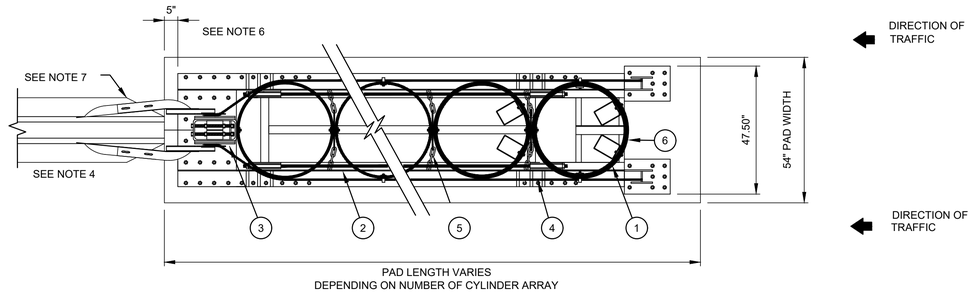
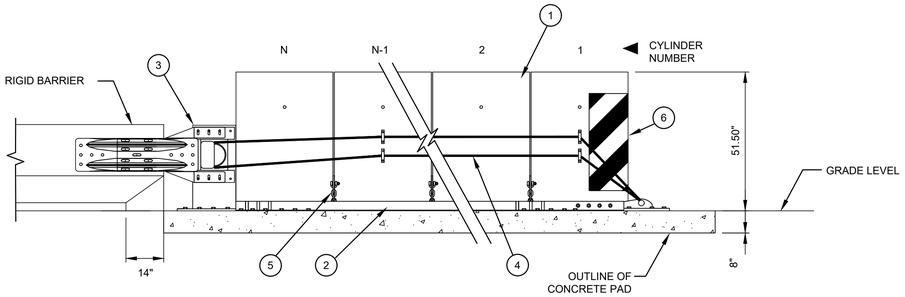


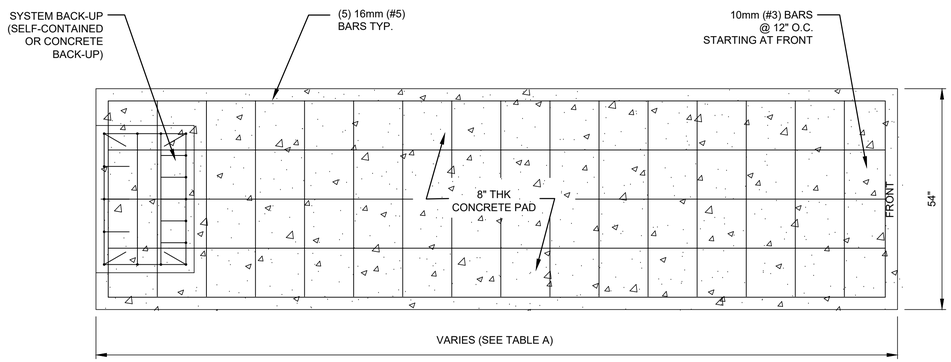
PLAN



ELEVATION

LEFT SIDE

KEY		
	(1) CYLINDER	(4) CABLE
	(2) BASE TRACK	(5) STABILIZER CHAIN
	(3) SYSTEM BACKUP	(6) REFLECTIVE NOSE COVER



CONCRETE PAD REINFORCEMENT PLAN

N.T.S.

TABLE A			
NO. CYLINDERS	SYSTEM		LENGTH
4 CYLINDER	REACT-43B036	REACT-43C036	16'-7"
6 CYLINDER	REACT-55B036	REACT-55C036	22'-7"
9 CYLINDER	REACT-62B036	REACT-62C036	31'-7"

NOTES:

1. IN COMPLIANCE WITH THE AASHTO 1996 ROADSIDE DESIGN GUIDE,MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
2. 8" MIN. REINFORCED 28 MPa (4000 PSI) P.C. CONCRETE PAD OR 8" MIN. NON-REINFORCED 28 MPa (4000 PSI) P.C. CONCRETE ROADWAY, MEASURING AT LEAST 12'-0" WIDE BY 50'-0" LONG.
3. REACT 350 IS A PROPRIETARY SYSTEM VENDED BY TRANSPO INDUSTRIES. FOR FULL DETAILS OF THE SYSTEM, CONTACT MANUFACTURER DIRECTLY. SERVICE DEPARTMENT AT (312) 467-6750.
4. WHERE NECESSARY, A TRANSITION ASSEMBLY MUST BE PLACED FROM THE SYSTEM TO THE OBJECT BEING SHIELDED TO PREVENT SNAGGING OF VEHICLES. TRANSITION ASSEMBLIES ARE SUPPLIED AS ACCESSORIES AND ARE ORDERED SEPARATELY. END SHOES BY OTHERS.
5. UNITS OF MEASUREMENT ARE MILLIMETERS (INCHES) UNLESS OTHERWISE NOTED.
6. PROVIDE 5" GAP. SYSTEM AND SAFETY SHAPED BARRIER TO MATCH CENTERLINES.
7. THE SIDE OF THE BARRIER THAT FACES ON-COMING TRAFFIC MUST BE TRIMMED TO REDUCE WHEEL SNAGGING POTENTIAL.
8. FOR NOSE COVER ASSEMBLY SEE DRAWING TD70.07.
9. ALL CONCRETE WORK AND RE-BAR DETAILS SHALL CONFORM TO THE LATEST ACI CODE AND MANUAL.
10. ALL CONCRETE TO BE 8" MINIMUM THICK 28 MPa (4000 PSI) COMPRESSIVE STRENGTH AT 28 DAY TEST.
11. ALL REINFORCING BARS SHALL BE A615 GRADE 60 NEW BILLET STEEL.
12. PROVIDE MIN. 2" CLEAR CONCRETE COVER OVER REINFORCING STEEL.
13. THE SLAB DETAILED ON THIS SHEET REQUIRES IT TO BE PLACED AGAINST AND SUPPORTED BY A RIGID BARRIER OR OTHER STRUCTURE. THE SUPPORT STRUCTURE OR BARRIER WILL RESIST PAD AND SYSTEM SLIDE DURING IMPACTS. USE THE BELOW GRADE ANCHOR FOR AND INDEPENDENT, SOIL SUPPORTED PAD. THE SYSTEM COULD TRANSFER IMPACT LOADING TO ADJACENT STRUCTURES. PROVIDE ADEQUATE ANCHORAGE.
14. CROSS SLOPE OF PAD SHALL NOT EXCEED 8% AND NOT VARY MORE THAN 2% FROM FRONT TO BACK.

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TRAFFIC

Title

PERMANENT IMPACT ATTENUATORS

REACT 350

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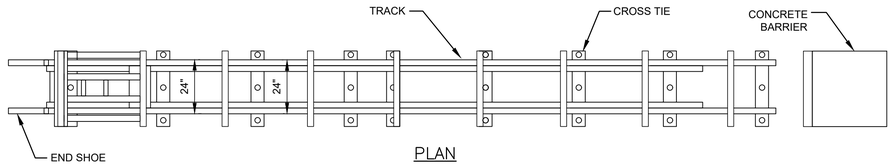
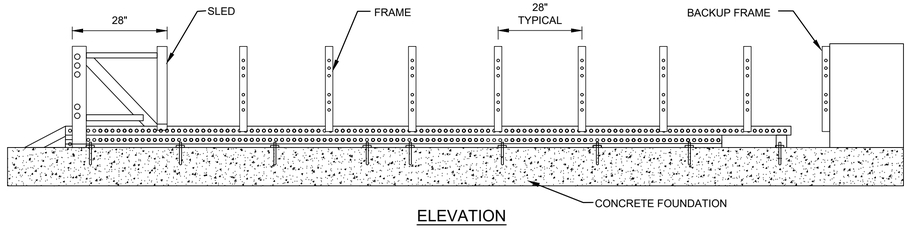


PLAN



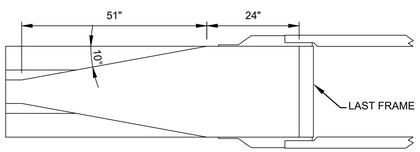
ELEVATION

THE STRUCTURAL COMPONENTS

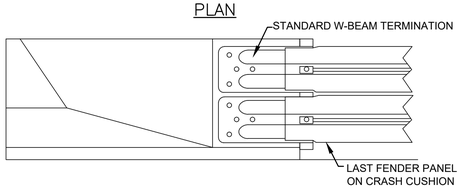
N.T.S.

TRACC ANCHORING OPTIONS

A ASPHALT	B CONCRETE	C SUBBASE (COMPACTED)	D DEPTH	E LENGTH
0"	0" REINFORCED	~	6"	7.5"
0"	0" UNREINFORCED	~	6"	7.5"
3"	3"	~	16.5"	18"
8"	0"	~	16.5"	18"
6"	0"	6"	16.5"	18"



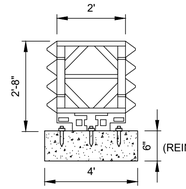
PLAN



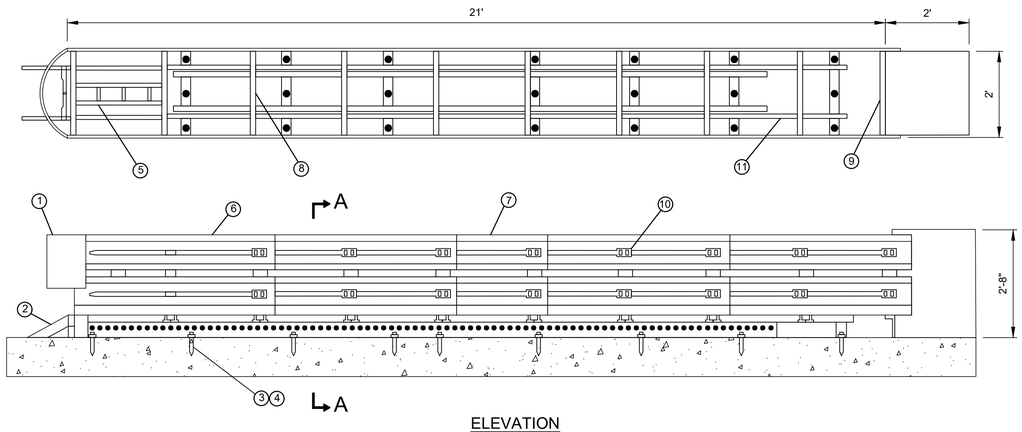
ELEVATION

CONCRETE TRANSITION FOR BI-DIRECTIONAL TRAFFIC APPLICATION OF TRINITY EXODYNE CRASH CUSHION

N.T.S.



SECTION A-A
N.T.S.



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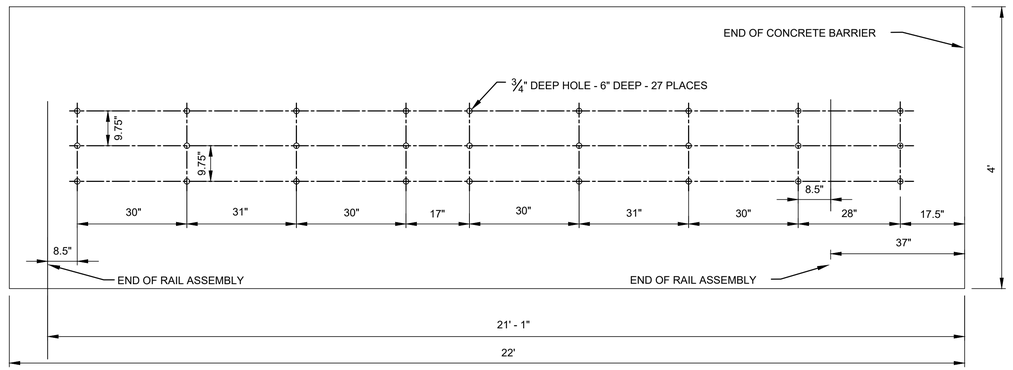

PLAN
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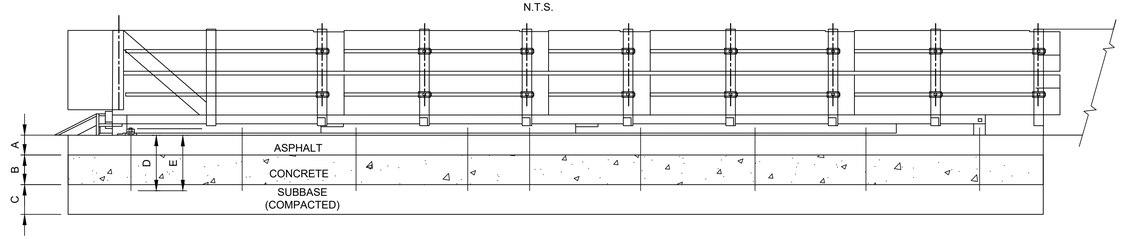

ELEVATION
N.T.S.

FOUNDATION

TRINITY INDUSTRIES, INC. NARROW CRASH CUSHION	
ITEM	DESCRIPTION
1	PLASTIC SHEET WITH REFLECTIVE DELINEATOR
2	SNAG ELIMINATING RAMPS
3	5/8" X 7.5" ANCHOR STUD
4	CHEMICAL GROUT
5	SLED
6	2–BAY FENDER PANEL
7	1–BAY FENDER PANEL
8	INTERMEDIATE FRAME
9	BACKUP FRAME
10	SLOT PLATE
11	GUIDE ANGLES

LENGTH..... 21'

WIDTH (EFFECTIVE)..... 2'
(OUT-TO-OUT)..... 2'7"

WEIGHT..... 260 LBS

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
PERMANENT IMPACT ATTENUATORS

TRACC

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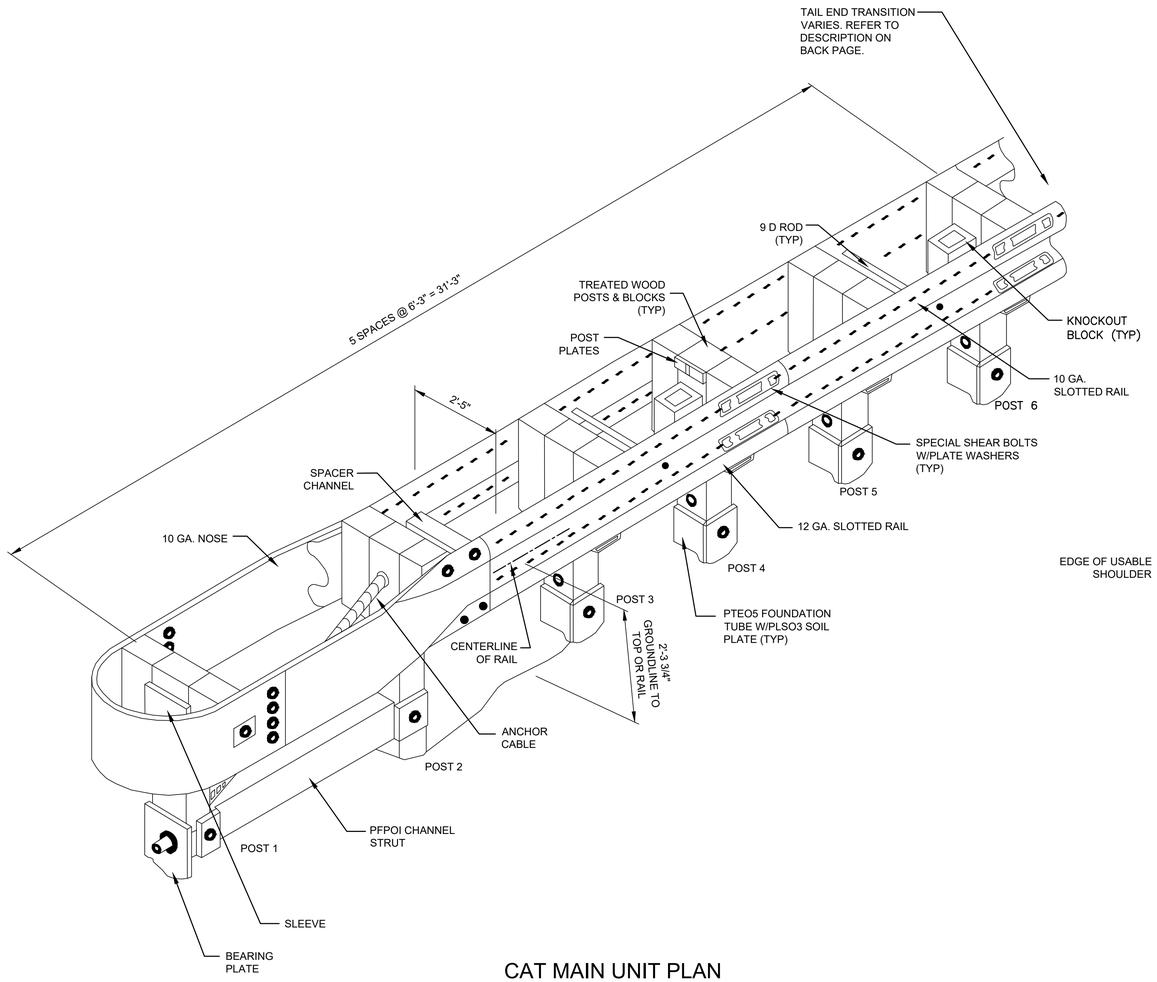
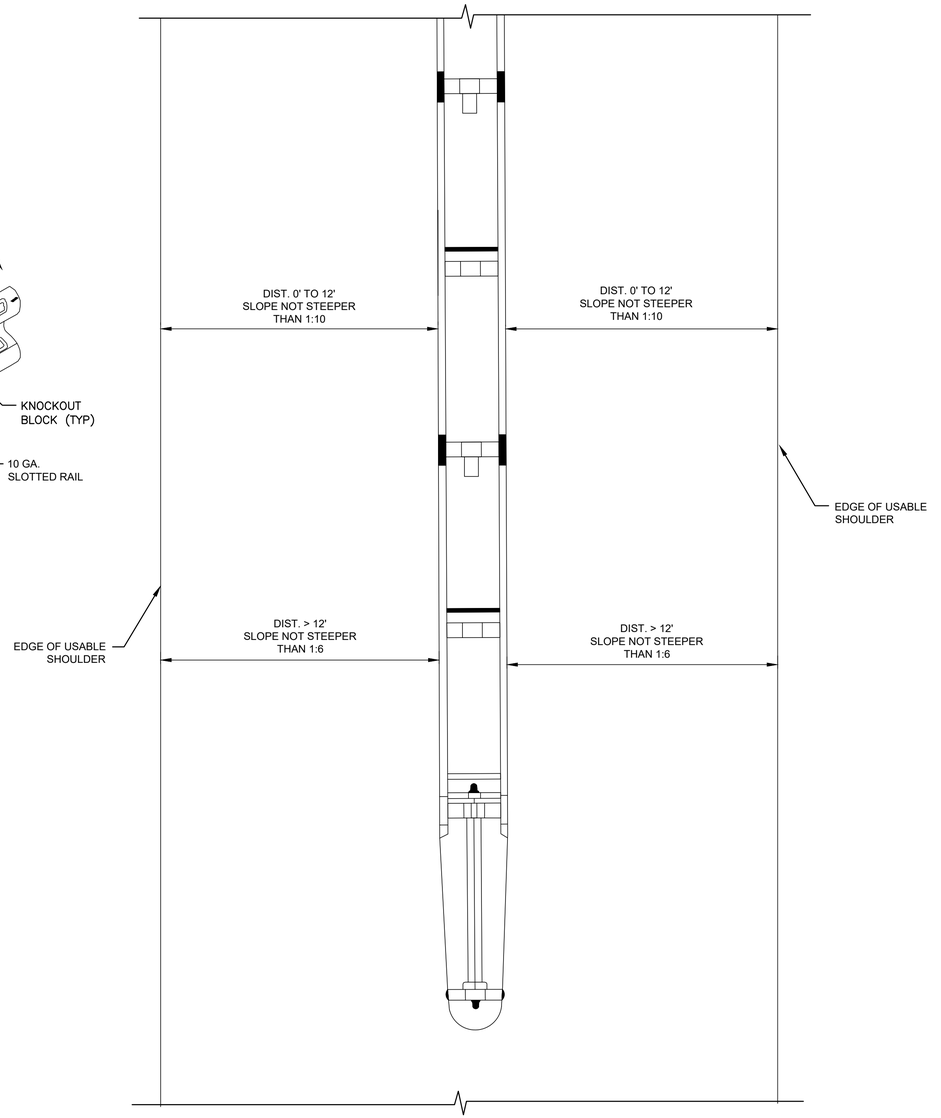


CAT MAIN UNIT PLAN

N.T.S.



MEDIAN BARRIER AND TREATMENT PLAN

N.T.S.

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT IMPACT ATTENUATORS

CAT-350

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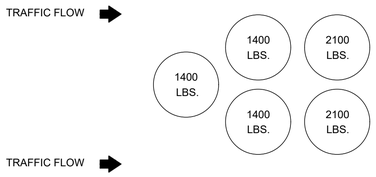
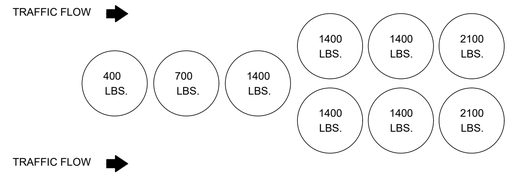
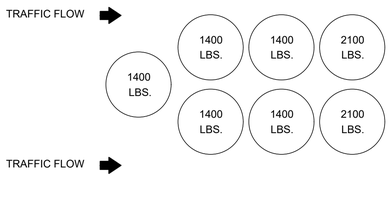


25 MPH DESIGN - 4500 lbs. VEHICLE



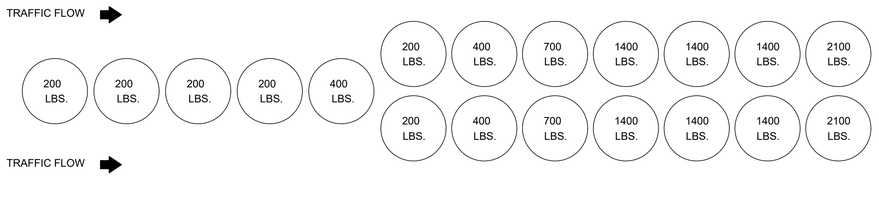
40 MPH DESIGN - 4500 lbs. VEHICLE

60 MPH DESIGN - 4500 lbs. VEHICLE

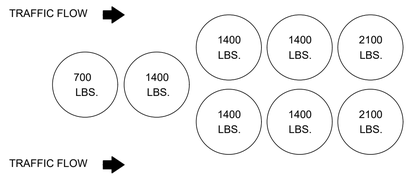


30 MPH DESIGN - 4500 lbs. VEHICLE

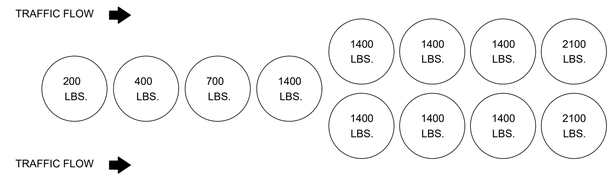
45 MPH DESIGN - 4500 lbs. VEHICLE



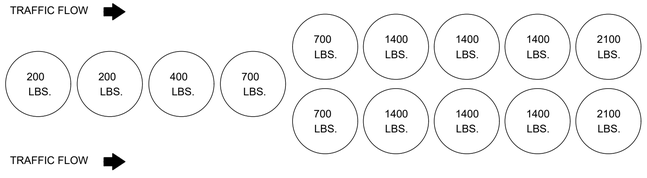
65 MPH DESIGN - 4500 lbs. VEHICLE



35 MPH DESIGN - 4500 lbs. VEHICLE



50 MPH DESIGN - 4500 lbs. VEHICLE



55 MPH DESIGN - 4500 lbs. VEHICLE

70 MPH DESIGN - 4500 lbs. VEHICLE

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT IMPACT ATTENUATORS

INERTIAL SAND FILLED BARREL ARRAYS

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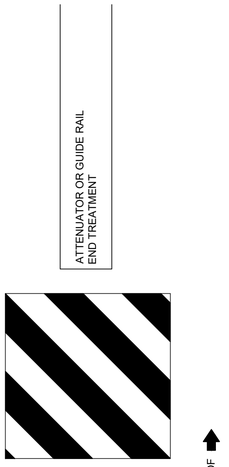
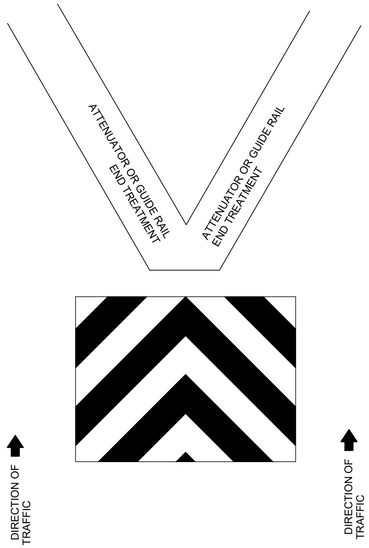


PLAN



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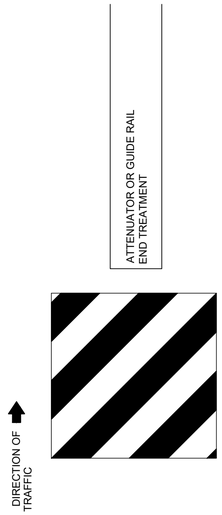

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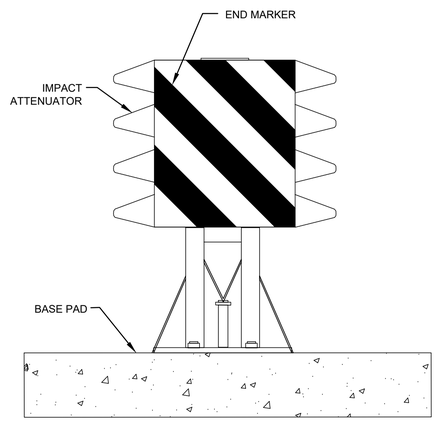
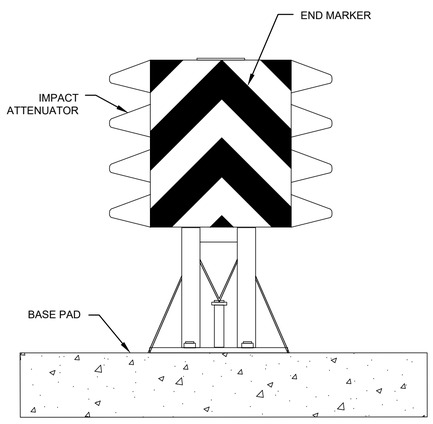


ELEVATION



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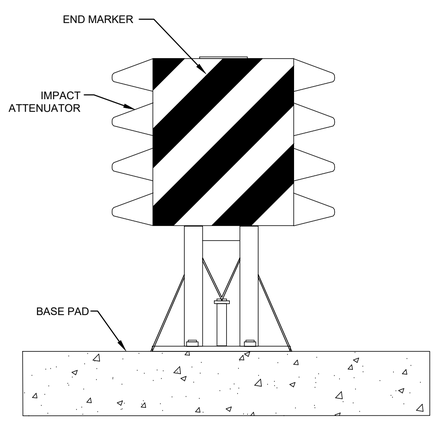

ELEVATION

NOTES:

1. STRIPES SHALL SLOPE DOWNWARD AT AN ANGLE OF 45 DEGREES TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS. WHERE TRAFFIC MAY TURN, OR PASS, EITHER LEFT OR RIGHT, THE STRIPES ON THE LEFT HALF OF THE BARRICADE SHOULD SLOPE DOWNWARD TO THE LEFT, AND THOSE ON THE RIGHT HALF SHOULD SLOPE DOWNWARD TO THE RIGHT. WHERE THE TRAFFIC MUST TURN AROUND, THE STRIPES ON THE LEFT HALF SHOULD SLOPE DOWNWARD TO THE RIGHT, AND THOSE ON THE RIGHT SHOULD SLOPE DOWNWARD TO THE LEFT. STRIPES SHALL BE FOUR TO SIX INCHES WIDE.

2. MANUFACTURER VARIATION ALLOWABLE UPON APPROVAL BY THE ENGINEER.

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PERMANENT IMPACT ATTENUATORS

NOSE COVER MARKER FOR ATTENUATOR WND TREATMENT

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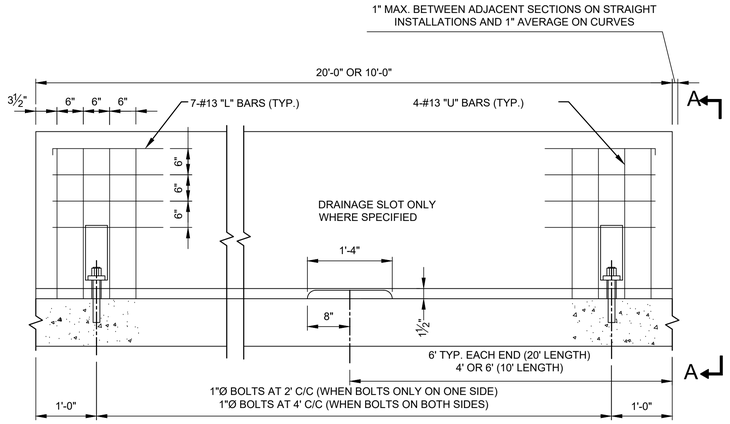
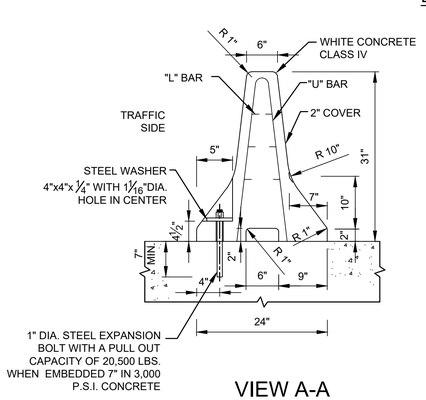
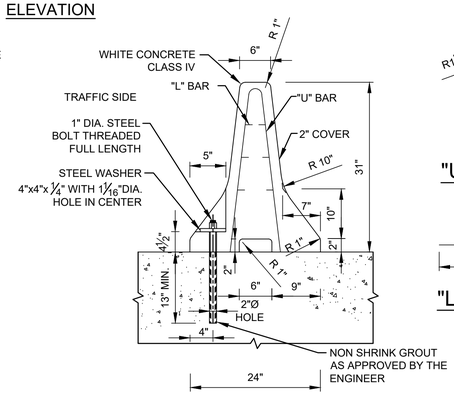


ELEVATION



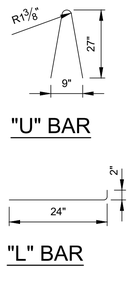
VIEW A-A

CONCRETE PAVEMENT



VIEW A-A

BITUMINOUS PAVEMENT



"U" BAR

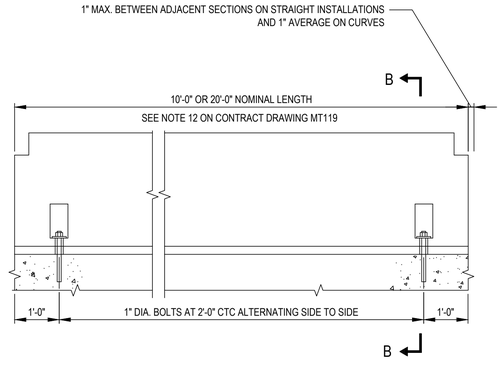
"L" BAR

NOTES:

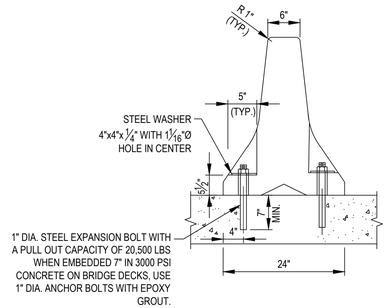
1. THE APPROACH END OF THE PRECAST CONCRETE CONSTRUCTION BARRIER SHOULD BE FLARED AWAY FROM TRAFFIC AT A RATE OF 20:1. WHERE POSTED SPEEDS ARE LESS THAN 50 MPH, A FLARE RATE OF 15:1 MAY BE USED. ON CURVED ROADWAYS, KINKS IN THE BARRIER ALIGNMENT SHOULD BE AVOIDED.
2. REINFORCING SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING NECESSARY FOR HANDLING SHALL BE THE OPTION AND RESPONSIBILITY OF THE CONTRACTOR.
3. IF TRAFFIC WILL BE ON BOTH SIDES OF THE BARRIER, THE CONTRACTOR SHALL PROVIDE BOLT RECESSES SO THE BOLT CAN BE INSTALLED AT 4 FEET C.TO C. ON EACH SIDE. AT THE OPTION OF THE CONTRACTOR BOLT RECESSES AND BOLTS MAY BE PROVIDED AT 4 FEET C. TO C. ON EACH SIDE WHEN TRAFFIC IS ONLY ON ONE SIDE OF THE BARRIER.
4. WHEN THE BARRIER HAS BEEN REMOVED, THE BOLTS SHALL BE REMOVED OR CUT OFF TO A LEVEL OF 1/2" MINIMUM BELOW THE PAVEMENT SURFACE AND THE HOLES SHALL BE FILLED TO THE SATISFACTION OF THE ENGINEER.
5. BOLTS, OTHER THAN EXPANSION BOLTS, SHALL BE THREADED RODS MADE FROM ASTM GRADE 250 STEEL. NUTS SHALL CONFORM TO ASTM A 307.
6. VARIATIONS TO THE DETAILS SHALL BE SUBJECT TO APPROVAL.
7. FOR INSTALLATION ON BRIDGE DECKS, REFER TO BRIDGE PLANS FOR NECESSARY MODIFICATIONS AS REQUIRED.
8. REINFORCING BARS SHALL BE ASTM A615, GRADE 60.

PRECAST CONCRETE CONSTRUCTION BARRIER TYPE 1

N.T.S.

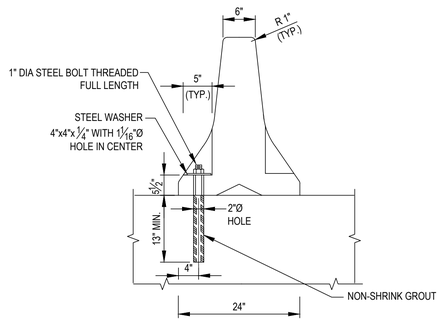


ELEVATION



VIEW B-B

CONCRETE PAVEMENT



VIEW B-B

HOT MIX ASPHALT (HMA) PAVEMENT

NOTES

1. BOLTS AND NUTS SHALL CONFORM TO ASTM A307.
2. BOLTS SHALL BE REQUIRED IN EVERY ANCHOR POCKET HOLE.
3. CONNECTION KEY SHALL BE USED WITH TYPE 1 APPLICATION.
4. WHEN BARRIER HAS BEEN REMOVED, THE BOLTS SHALL BE REMOVED OR CUT OFF TO A LEVEL OF 1/2" MINIMUM BELOW THE SURFACE AND THE HOLE FILLED TO THE SATISFACTION OF THE ENGINEER. SEE NOTE 15 ON TD 110.02.
5. FOR PRECAST CONCRETE CONSTRUCTION BARRIER TYPE 4 (ALTERNATE B) DETAILS SEE TD 110.02.

ANCHORAGE DETAIL FOR TYPE 4 BARRIER

N.T.S.

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	04/10/2018	UPDATE TO ANCHORAGE DETAIL FOR TYPE 4 BARRIER	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TEMPORARY BARRIER

PRECAST CONCRETE CONSTRUCTION BARRIER TYPE 1

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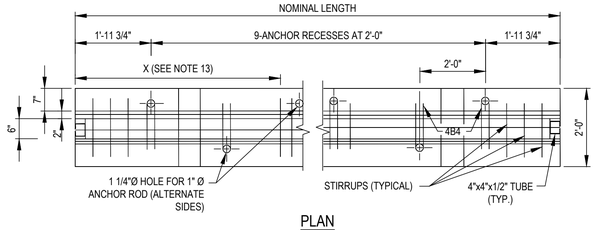
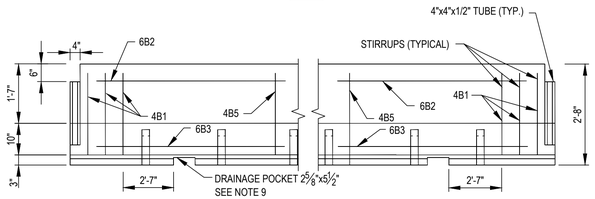
Date 07 / 15 / 2024

Drawing Number TD110.01



PLAN



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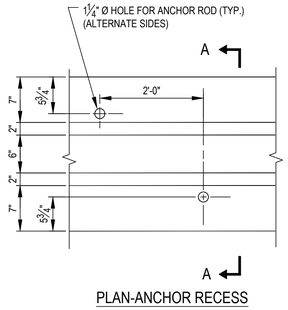
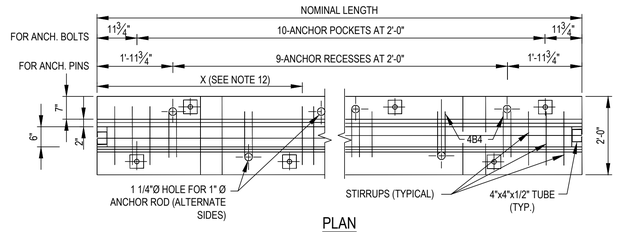
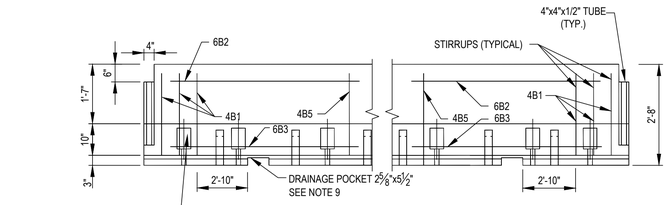


PLAN-ANCHOR RECESS

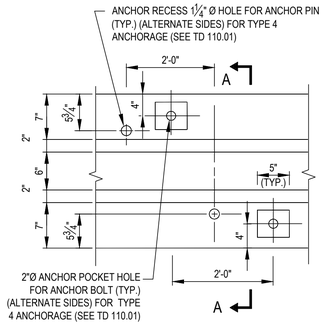
PRECAST CONCRETE BARRIER TYPE 4 ALTERNATE A



PLAN

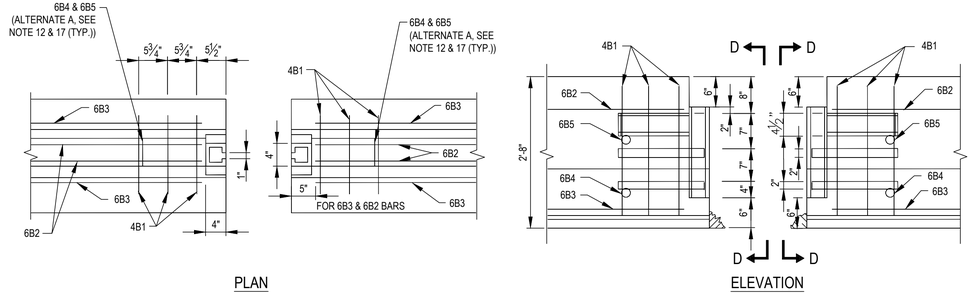


ELEVATION



PLAN-ANCHOR RECESS

PRECAST CONCRETE BARRIER TYPE 4 ALTERNATE B



PLAN ELEVATION

BARRIER AT JOINT

JOINT AND ANCHORAGE TREATMENTS		
JOINT CLASS	MAXIMUM ALLOWABLE MOVEMENT	JOINT TREATMENT
A	41"	CONNECTION KEY & BARRIER END SECTIONS FULLY PINNED
B	28"	CONNECTION KEY & 6" X 6" BOX BEAM & BARRIER END SECTIONS FULLY PINNED
C	11"	CONNECTION KEY & CONSTRUCTION SIDE OF ALL SECTIONS PINNED & BARRIER END SECTIONS FULLY PINNED
D*	0"	CONNECTION KEY & GROUT EVERY JOINT & BOLT EVERY ANCHOR POCKET HOLE IN EVERY UNIT

* ONLY FOR ALTERNATE B

NOTE A: THE LENGTH OF THE ANCHOR RODS SHALL BE SUCH THAT THE FOLLOWING MINIMUM EMBEDMENT LENGTHS ARE OBTAINED:

a) INTO PORTLAND CEMENT CONCRETE PAVEMENTS 0'-5".

b) INTO FLEXIBLE PAVEMENT 1'-6"

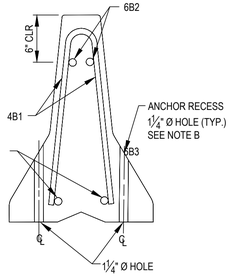
c) INTO UNPAVED AREA 2'-6"

WHEN ANCHOR RODS ARE IN PLACE, THEY SHALL NOT PROJECT ABOVE THE PLANE OF THE CONCRETE SURFACE OF THE BARRIER.

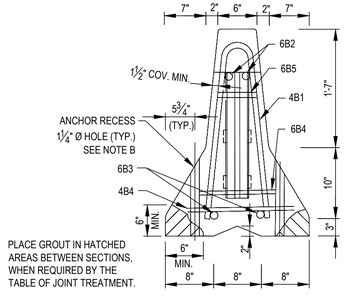
HOLES IN BRIDGE DECKS SHALL BE 1 1/4" Ø MAXIMUM AND MADE WITH A CORE DRILL OR ANY OTHER APPROVED ROTARY DRILLING DEVICE THAT DOES NOT IMPART AN IMPACT FORCE.

NOTE B: IN UNITS THAT ARE TO BE ANCHORED, PINS SHALL BE REQUIRED IN EVERY ANCHOR RECESS.

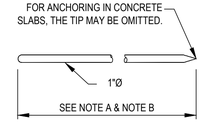
NOTE C: FOR INSTALLATION ON BRIDGE DECKS REFER TO THE STRUCTURAL DRAWINGS FOR NECESSARY MODIFICATIONS AS REQUIRED AND GENERAL NOTE 15 AND NOTE 20 (ALTERNATE B).



SECTION A-A



SECTION D-D



ANCHOR ROD/PIN

GENERAL NOTES:

1. STEEL PLATE SHALL BE IN CONFORMANCE WITH ASTM A36.
2. REINFORCING BARS SHALL BE ASTM A615, GRADE 60.
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 SECTION 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI. WHITE CONCRETE SHALL CONSIST OF WHITE PORTLAND CEMENT, TYPE I CONFORMING TO ASTM C150. ALSO THE WHITE CEMENT SHALL NOT CONTAIN MORE THAN 0.55% BY WEIGHT OF FERRIC OXIDE (Fe_2O_3).
4. CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1 1/2" (MIN).
5. A MINIMUM OF (2) TWO RECESSED LIFTING DEVICES SHALL BE USED ON EACH SECTION. EACH LIFTING DEVICE SHALL HAVE A MINIMUM CAPACITY OF 6 TONS.
6. TUBE STEEL SHALL BE ASTM A500, GRADE B OR C.
7. ANCHOR RODS SHALL BE 1" Ø ASTM A36.
8. ANCHOR RODS ARE NOT REQUIRED IN EVERY UNIT. SEE TABLE OF JOINT AND ANCHORAGE TREATMENTS.
9. 2 5/8" x 5 1/2" DRAINAGE POCKETS - ONE REQUIRED FOR 8' AND 10' LENGTHS, TWO OTHERWISE.
10. AFTER A BARRIER UNIT HAS BEEN PLACED AND THE CONNECTION KEY INSERTED, REMOVE ANY SLACK IN THE JOINT BY PULLING THE UNIT IN A DIRECTION PARALLEL TO ITS LONGITUDINAL AXIS.
11. THE PRECAST CONCRETE CONSTRUCTION BARRIER SHALL BE CAST IN STEEL FORMS.
12. THE TEMPORARY CONCRETE CONSTRUCTION BARRIER SHALL BE PRECAST UNITS OF ONE OF THE FOLLOWING NOMINAL LENGTHS 8', 10', 12', 14', 16', 18' AND 20'. HOWEVER OTHER LENGTHS MAY BE USED TO MEET FIELD CONDITIONS. THE NUMBER AND PLACEMENT OF THE 4B4 AND 4B5 BARS WILL VARY WITH THE LENGTH OF THE BARRIER UNIT AS SHOWN ON THE TABLE OF VARIABLE BARS ON CONTRACT DRAWING MT120. THE 6B2 AND 6B3 BARS SHALL BE 10" SHORTER THAN THE NOMINAL LENGTH OF THE BARRIER UNITS.
13. REINFORCING SHOWN IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING NECESSARY FOR HANDLING SHALL BE THE OPTION AND RESPONSIBILITY OF THE CONTRACTOR.
14. WELDING AND FABRICATION OF STEEL STRUCTURES SHALL BE IN ACCORDANCE WITH SECTIONS 1 THRU 6 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE AND SECTION 10 OF THE ANSI/AWS D.1 STRUCTURAL WELDING CODE. SURFACES TO BE WELDED SHALL BE FREE OF SCALE, SLAG, RUST, MOISTURE, GREASE, OR ANY OTHER MATERIAL THAT WILL PREVENT PROPER WELDING OR PRODUCE OBJECTIONAL FUMES. WELDING SHALL BE SHIELDED METAL ARC WELDING USING PROPERLY DRIED 5/32"Ø E7018 ELECTRODES.
15. AFTER REMOVAL OF THE BARRIER, THE HOLES IN THE SURFACE ON WHICH THE BARRIER SAT WHICH WERE USED TO ANCHOR THE SYSTEM, SHALL BE FILLED. THE ONLY EXCEPTION IS WHEN THE HOLES ARE IN AN AREA WHICH IS TO BE REMOVED. HOLES IN FLEXIBLE PAVEMENT SHALL BE FILLED WITH PAVEMENT JOINT SEALER MEETING THE REQUIREMENTS OF SPECIFICATION 02578. HOLES IN PORTLAND CEMENT CONCRETE PAVEMENTS, OR STRUCTURAL DECKS, SHALL BE FILLED WITH NON-SHRINK GROUT MATERIAL MEETING THE REQUIREMENTS OF SPECIFICATION SECTION 03602, EXCEPT THAT IN LATEX MODIFIED CONCRETE BRIDGE DECK, A COMPATIBLE NON-SHRINK GROUT MATERIAL SHALL BE USED.
16. UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS, TOLERANCES SHALL BE AS FOLLOWS: CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/4 INCH. LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSION BY MORE THAN 1/4 INCH PER 10 FOOT OF BARRIER SECTION. LOCATION OF ANCHORING DEVICES SHALL NOT VARY BY MORE THAN 1/2 INCH SURFACE STRAIGHTNESS, WHEN CHECKED WITH A 10 FOOT STRAIGHT EDGE SHALL NOT BE EXHIBIT IRREGULARITIES EXCEEDING 1/4 INCH.
17. FOR REINFORCEMENT AND JOINT CONNECTION, SEE TD 110.03.
18. THE APPROACH END OF THE PRECAST CONCRETE CONSTRUCTION BARRIER SHOULD BE FLARED AWAY FROM TRAFFIC AT A RATE OF 20:1 UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. ON CURVED ROADWAYS, AVOID KINKS IN THE BARRIER ALIGNMENT.
19. BASED ON SEGMENT LENGTH AND MAXIMUM JOINT ROTATION, TEMPORARY CONCRETE CONSTRUCTION BARRIER SECTIONS SHALL BE INSTALLED TO THE FOLLOWING MINIMUM RADII:
    - A. 8' SECTION - 92' RADIUS
    - B. 10' SECTION - 115' RADIUS
    - C. 12' SECTION - 138' RADIUS
    - D. 14' SECTION - 161' RADIUS
    - E. 16' SECTION - 184' RADIUS
    - F. 18' SECTION - 207' RADIUS
    - G. 20' SECTION - 230' RADIUS
20. ONLY THE TYPE 4 ALTERNATE B, JOINT CLASS D SHALL BE USED AS BRIDGE PARAPETS.

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No.	Date	Revision	Approved
4	06/27/2024	DISCLAIMER ADDED	
3	04/10/2018	COMPLETE REVISION TO DETAIL PAGE	
2	01/23/2015	UPDATE TEXT STYLE TO ARIAL	
1	01/02/2015	UPDATE OF FONT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TEMPORARY BARRIER

PRECAST CONCRETE CONSTRUCTION BARRIER TYPE 4 (ALTERNATES A AND B)

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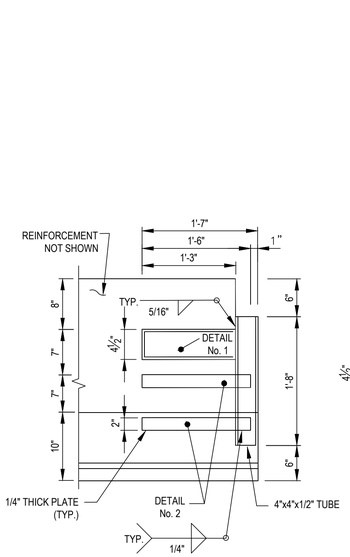
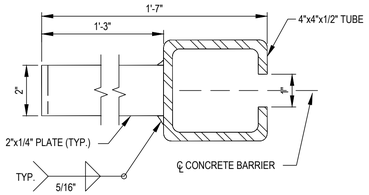
Date 07 / 15 / 2024

Drawing Number TD110.02

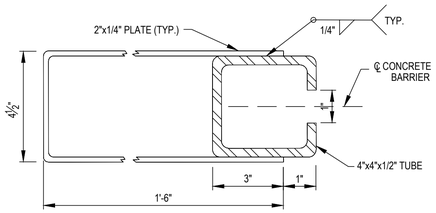


ELEVATION



PLAN VIEW

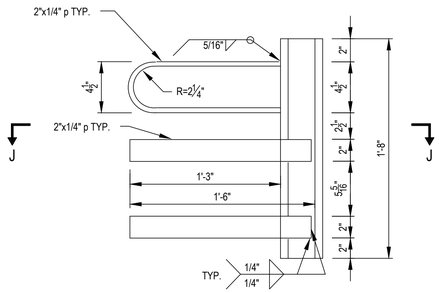
DETAIL NO. 1



PLAN VIEW

DETAIL NO. 2

JOINT CONNECTION DETAIL



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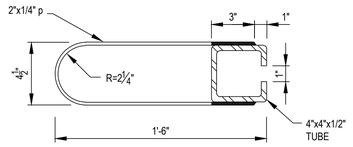

SECTION J-J

ALTERNATE JOINT CONNECTION DETAIL

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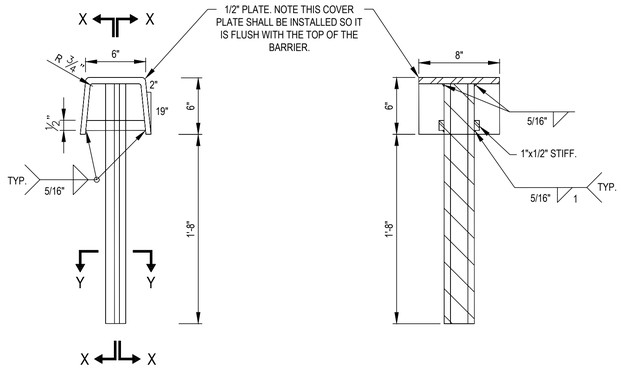
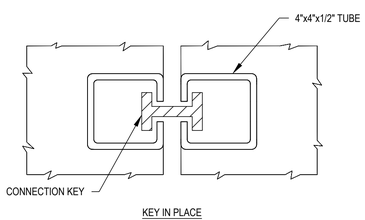


ELEVATION

SECTION X-X

SECTION Y-Y

CONNECTION KEY



KEY IN PLACE

N.T.S.

NOTES:

1. STEEL PLATE SHALL BE IN CONFORMANCE WITH ASTM A36.
2. TUBE STEEL SHALL BE ASTM A500, GRADE B OR C.
3. WELDING AND FABRICATION OF STEEL STRUCTURES SHALL BE IN ACCORDANCE WITH SECTIONS 1 THRU 6 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE AND SECTION 10 OF THE ANSI/AWS D.1 STRUCTURAL WELDING CODE. SURFACES TO BE WELDED SHALL BE FREE OF SCALE, SLAG, RUST, MOISTURE, GREASE, OR ANY OTHER MATERIAL THAT WILL PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES. WELDING SHALL BE SHIELDED METAL ARC WELDING USING PROPERLY DRIED 5/32" Ø E7018 ELECTRODES.
4. FOR DELINEATOR ATTACHMENT, SEE CONCRETE BARRIER DELINEATOR DETAIL ON THIS SHEET (TD 110.03).

PRECAST CONCRETE CONSTRUCTION BARRIER JOINT CONNECTION DETAILS

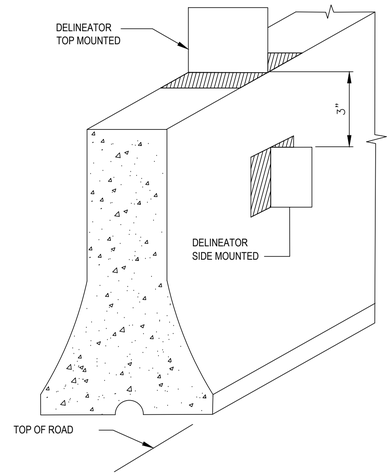
N.T.S.

NOTES:

1. DELINEATOR SHALL MEET THE MINIMUM REQUIREMENTS FOR REFLECTIVITY PER MUTCD.
2. MOUNTING SHOWN IS FOR PERMANENT INSTALLATION USING BARRIER ADHESIVE. DELINEATOR CAN ALSO BE MOUNTED TO AN "L" BRACKET AND BOLTED TO THE CONCRETE SURFACE. ALTERNATIVE DELINEATOR BRACKET DESIGNS MAY BE USED AS APPROVED BY THE ENGINEER. FOR TEMPORARY MOUNTING, USE BUTYL ADHESIVE PAD ATTACHED TO THE DELINEATOR.
3. DELINEATOR COLOR SHALL BE WHITE OR YELLOW TO CONFORM TO THE TRAFFIC SEPARATION PAVEMENT MARKING WHICH IT SUPPLEMENTS.
4. UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS, DELINEATORS SHALL BE SPACED TO ALLOW THE MAXIMUM BENEFIT TO THE DRIVER UNDER ALL TYPES OF WEATHER CONDITIONS. THE FOLLOWING GUIDE IS RECOMMENDED.

SIDE MOUNTED					
STRAIGHT ROAD	LEFT CURVES	RIGHT CURVES	VERTICALS	LIMITED VISIBILITY	
75-100 FT	40 - 50 FT	75 - 100 FT	40 - 50 FT	40- 50 FT	
TOP MOUNTED					
STRAIGHT ROAD	LEFT CURVES	RIGHT CURVES	VERTICALS	LIMITED VISIBILITY	
75-100 FT	40 - 50 FT	75 - 100 FT	60 - 80 FT	40- 50 FT	

5. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES. MINOR MANUFACTURER VARIATION MAY BE ACCEPTABLE UPON APROVAL OF THE ENGINEER.



CONCRETE BARRIER DELINEATOR

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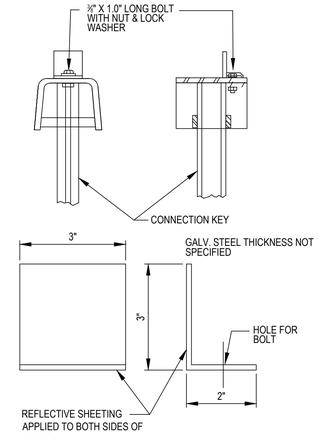
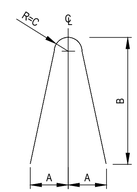


CONNECTION KEY MOUNTED DELINEATOR DETAIL

N.T.S.

BARS LIST (EACH BARRIER SECTION)								
MARK	SIZE	NUMBER IN EACH SECTION	LENGTH	TYPE	A	B	C	LOCATION
4B1	4	6	4'-11"	I	5"	26"	2"	STIRRUPS
4B4	4	SEE NOTE 12 ON MT119	3'-1"	II	15.5"	4"		STIRRUPS
4B5	4	SEE NOTE 12 ON MT119	4'-11"	I	5"	26"	2"	STIRRUPS
6B2	6	2	SEE NOTE 12 ON MT119	STR.				LONGITUDINAL (TOP) NORMAL SECTION
6B3	6	2	SEE NOTE 12 ON MT119	STR.				LONGITUDINAL (BOTTOM) NORMAL SECTION
6B4	6	2	1'-2"	STR.				TRANSVERSE (BOTTOM) NORMAL SECTION
6B5	6	2	0'-6"	STR.				TRANSVERSE (TOP) NORMAL SECTION

TABLE OF VARIABLE BARS			
NOMINAL LENGTH OF BARRIER UNIT	MARK	"X"	NO. EACH SECTION
20'	4B4	N.A.	9
20'	4B5	6'-11"	2
18'	4B4	N.A.	8
18'	4B5	6'-5"	2
16'	4B4	N.A.	7
16'	4B5	5'-11"	2
14'	4B4	N.A.	6
14'	4B5	7'-0"	1
12'	4B4	N.A.	5
12'	4B5	6'-0"	1
10'	4B4	N.A.	4
10'	4B5	5'-0"	1
8'	4B4	N.A.	3
8'	4B5	-	0
"X" DISTANCE FROM END OF BARRIER TO 4B5 BAR			



TYPE "I" BAR

TYPE "II" BAR

PRECAST CONCRETE CONSTRUCTION BARRIER REINFORCEMENT DETAILS

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No.	Date	Revision	Approved
4	06/27/2024	DISCLAIMER ADDED	
3	04/10/2018	ADDED DELINEATOR AND CONNECTION KEY DETAIL	
2	12/15/2016	ADD NOTE 5 TO JOINT CONNECTION DETAILS	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TEMPORARY BARRIER

PRECAST CONCRETE CONSTRUCTION BARRIER TYPE 4 JOINT CONNECTION AND REINFORCEMENT DETAILS

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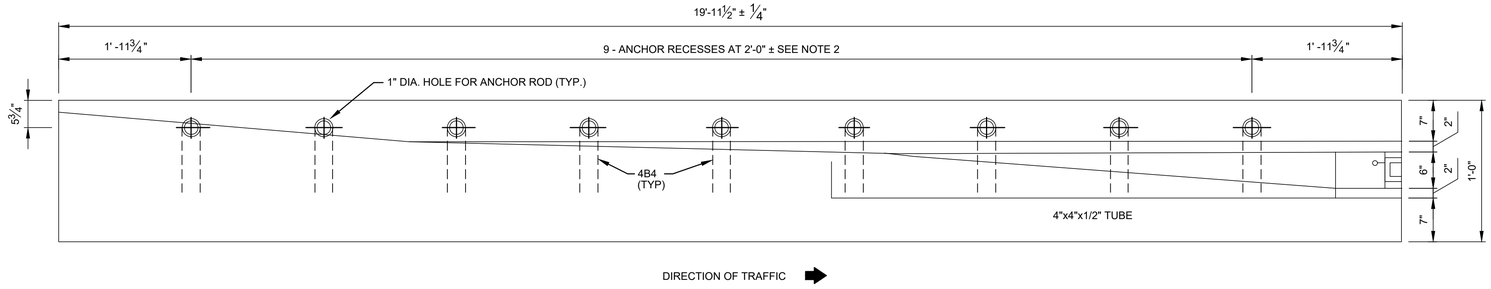
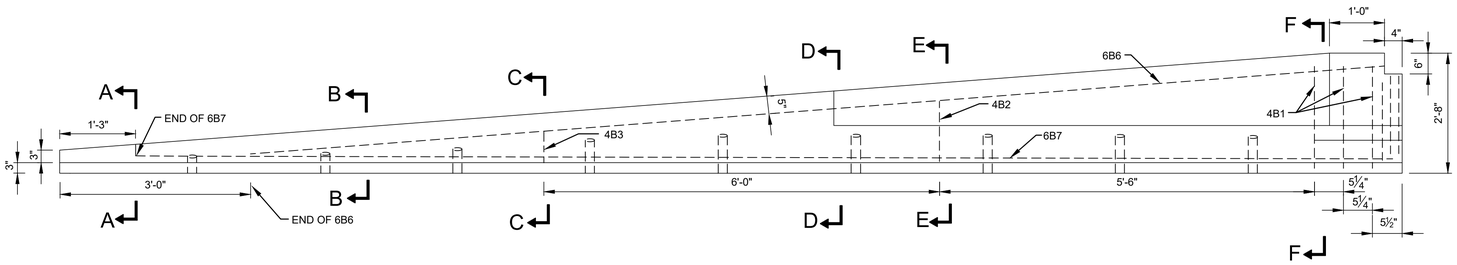
Date 07 / 15 / 2024

Drawing Number TD110.03



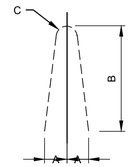
PLAN



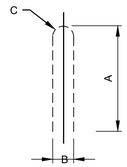
ELEVATION

NOTES:

1. ALL CORNERS ON THE TOP OF THE SECTION SHALL BE ROUNDED TO A 1.0 INCH RADIUS. THE UNIT SHALL HAVE A SMOOTH TRANSITION FROM THE STANDARD SHAPE TO THE 6 INCH END OF SECTION HEIGHT.
2. ALL END SECTIONS SHALL BE PINNED UNLESS OTHERWISE NOTED.
3. THIS TRANSITION END TREATMENT SHOULD ONLY BE USED:
   - IN LOCATIONS WHERE TRAFFIC SPEED IS LOW, 30 MPH OR LESS.
   - IN LOCATIONS WHERE THE SPACE IS LIMITED BY RIGHT-OF-WAY CONSTRAINTS OR PRESENCE OF OTHER ROADSIDE FEATURES.
   - WHERE END-ON IMPACTS ARE NOT THAT LIKELY.
4. FOR GENERAL NOTES SEE DETAIL TD110.02.

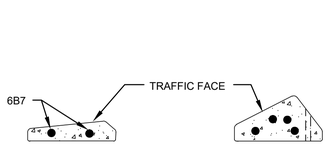


TYPE I BAR



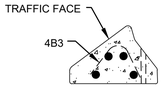
TYPE II BAR

BAR LIST							
MARK	SIZE	No.	LENGTH	TYPE	A	B	C
4B1	4	3	4'-5"	I STIRRUP	5"	26"	2"
4B2	4	1	5'-5"	I STIRRUP	5"	13"	2"
4B3	4	1	1'-5"	I STIRRUP	5"	8"	2"
4B4	4	4	5'-1"	II STIRRUP	5 1/2"	4"	
6B6	6	2	16'-7"	LONGITUDINAL TOP			
6B7	6	2	18'-2"	LONGITUDINAL BOTTOM			

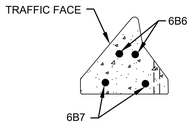


SECTION A-A

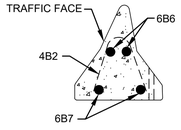
SECTION B-B



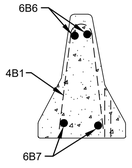
SECTION C-C



SECTION D-D

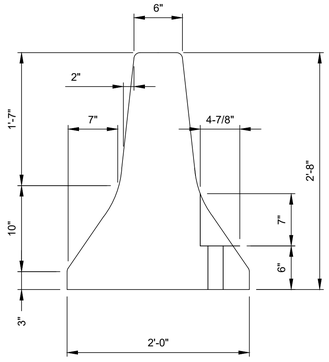


SECTION E-E



SECTION F-F

TRANSITION SECTIONS



END VIEW

PRECAST CONCRETE CONSTRUCTION BARRIER TAPERED END SECTION

N.T.S.

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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THIS DETAIL IS PROVIDED FOR INFORMATIONAL PURPOSES TO BE UTILIZED AS A GUIDE TO DEVELOPING SIMILAR CONTRACT DETAILS FOR PORT AUTHORITY FACILITIES. THIS INFORMATION IS NOT INTENDED TO BE USED FOR CONSTRUCTION IN EVERY SITUATION AND IS REQUIRED TO BE TAILORED FOR THE SPECIFIC CONDITIONS. THE ENGINEER SHALL REVIEW AND MODIFY IT TO COMPLY WITH PROJECT REQIUIREMENTS AND ALL APPLICABLE CODES, ORDINANCES, STATUTES, RULES, REGULATIONS, AND LAWS

No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TEMPORARY BARRIER

PRECAST CONCRETE CONSTRUCTION BARRIER TAPERED END SECTION

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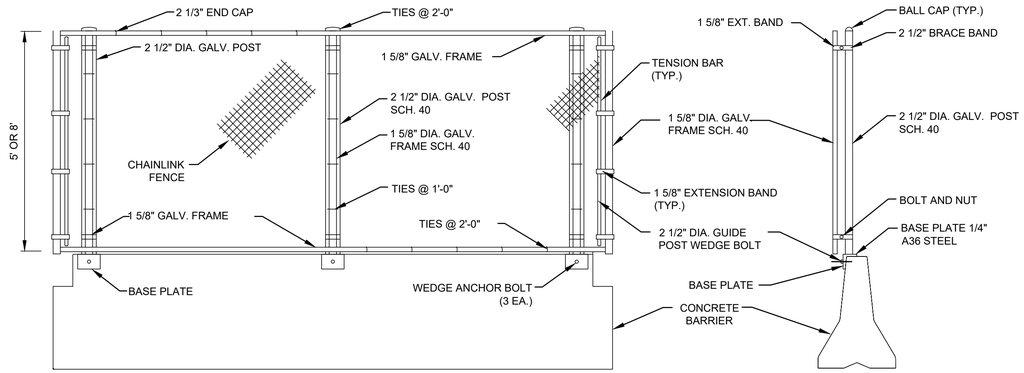
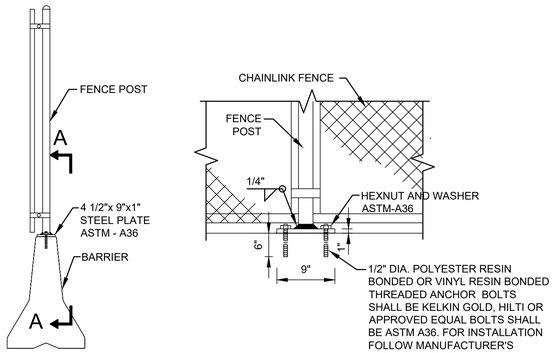
Date 07 / 15 / 2024

Drawing Number TD110.04



ELEVATION

SIDE VIEW



SIDE VIEW

SECCION A-A

ALTERNATE FENCE ATTACHMENT TO BARRIER

NOTES:

1. CONCRETE BARRIER WITH ATTACHED FENCE TO BE PLACED AT THE PERIMETER OF THE AREA OF CONSTRUCTION.
2. SUBMIT SHOP DRAWING OF CHAIN LINK FENCE ON TOP OF TEMPORARY PRECAST CONCRETE BARRIER FOR APPROVAL BY THE ENGINEER. THE SHOP DRAWING SHALL INCLUDE BUT NOT BE LIMITED TO THE METHOD OF SECURING THE FENCE POSTS TO THE CONCRETE BARRIERS.

TEMPORARY SCREEN (ATTACHED TO CHAIN LINK FENCE)

A.) SCREEN FABRIC SHALL BE WOVEN FROM 3.0 OZ./SQ. YD. POLYESTER MATERIAL AND COATED AFTER WEAVING WITH A 6.0 OZ./SQ. YD. COATING OF POLY VINYL CHLORIDE, BLACK IN COLOR. TENSILE STRENGTH WHEN TESTED AS PER THE GRAB METHOD SHALL BE 230 X 220 POUNDS AND WHEN TESTED BY THE STRIP METHOD, SHALL BE 200 X 140 POUNDS.

B.) SCREEN WEATHER COATING SHALL COMPLY TO THE FOLLOWING MINIMUM TEST PERFORMANCE STANDARDS:

C.) FABRICATION OF SCREEN:

PROPERTY	TEST METHOD	SPECIFICATION
WATER ABSORPTION -	ASTM D-471 7 DAYS @ 160 DEG. F.	5.0% MAX. WEIGHT GAIN
PLASTICIZER EXTRACTION BY WATER -	ASTM D-1239 MODIFIED	6.0% MAX. WEIGHT GAIN
WICKING -	7 DAYS @ 160 DEG. F. PROCEDURE 24 HOURS ROOM TEMPERATURE	1/8" MAX.
WEATHERING -	CARBON ARC ASTM D-750 2500 HOURS MIN.	NO APPRECIABLE COLOR CHANGE, NO CRACKING OR CRAZING.

1.) ALL HEMS SHALL BE FOUR-PLY REINFORCED WITH HEAVY DUTY 18 OZ. VINYL COATED NYLON. ALL HEMS AND SEAMS ARE TO BE SEWN WITH #7 WEATHER AND ULTRAVIOLET LIGHT RESISTANT DACRON THREAD.

2.) GROMMETS SHALL BE OF BRASS SPACED AT A MAXIMUM OF 12" APART ON ALL HEMS.

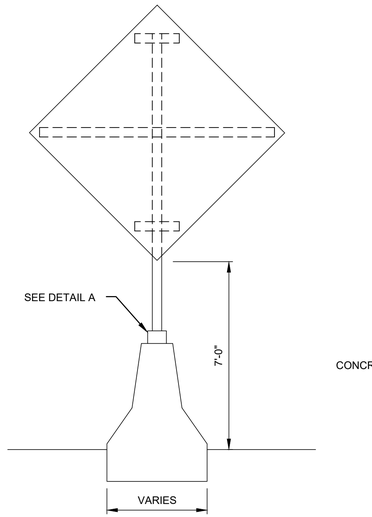
3.) DIE CUT AIR VENTS SHALL BE PLACED A MAXIMUM OF 10'-0" APART.

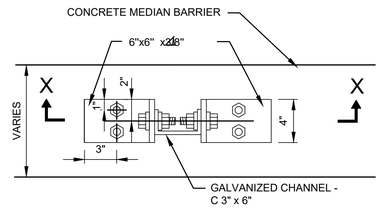
D.) SCREEN FABRIC SHALL BE SECURELY FASTENED ALONG TOP RAIL AND BOTTOM TENSION WIRE OF CHAIN LINK FENCE AS PER THE MANUFACTURER'S DIRECTIONS.

E.) SCREEN PANELS SHALL BE 'TENN-AIRE, BLACK', AS MANUFACTURED BY DEMILIA ACCESSORIES, INC., WEST CALDWELL, NJ, 07006 OR AN APPROVED EQUAL

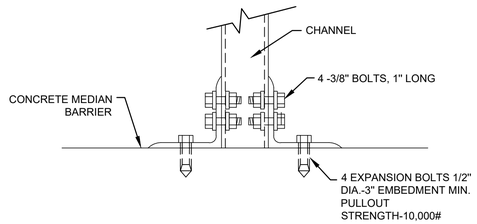
TEMPORARY CONCRETE BARRIER WITH CHAIN LINK FENCE AND SCREEN

N.T.S.





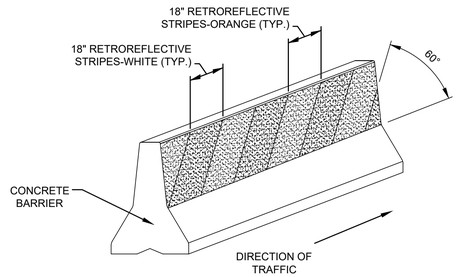
DETAIL A



SECTION X-X

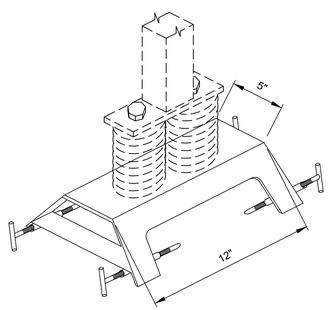
SIGNS MOUNTED ON CONCRETE BARRIER

N.T.S.



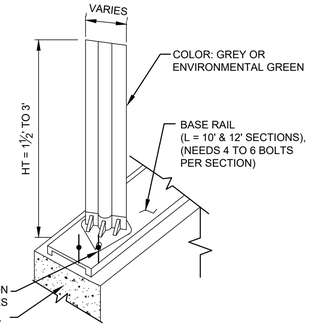
CONCRETE BARRIER WITH ALTERNATED COLOR SPRIPES DETAIL

N.T.S.



ALTERNATE REMOVABLE MEDIAN BARRIER BRACKET DETAIL

N.T.S.



NOTES:

1. BLADES MUST BE OF DESIGN AND SHAPE TO BLOCK THE VIEWING AREA FOR A DRIVER IN A PASSENGER VEHICLE OF INTERMEDIATE SIZE FROM OPPOSING TRAFFIC. TO BLOCK THE VIEWING AREA OF A DRIVER THERE SHOULD BE SUFFICIENT PANELS INSTALLED SUCH THAT A DRIVER IN THE INSIDE LANE CANNOT VIEW LIGHT SOURCES FROM OTHER VEHICLES IN AN OPPOSING INSIDE LANE ACROSS A SEVEN FOOT MEDIAN. THE NUMBER AND SPACING BETWEEN BLADES IS DEPENDENT ON BLADE WIDTH AND CUT-OFF ANGLE. THEY MUST PROVIDE A CUT-OFF ANGLE AS DETERMINED BY USING THE FOLLOWING FORMULA:

   D = Wb (SIN Eb + COS E/TAN Es)

   WHERE Es = 22°
   Eb= angle of blade placement on barrier (0°-52°)
   Wb = width of glare blade
   D = distance between blades.

2. THE BLADE, BASE AND ANCHORING SHALL BE OF SUFFICIENT STRENGTH TO WITHSTAND 5 IMPACTS BEGINNING WITH 15 MPH, AND PROGRESSING THROUGH 25 MPH, 35 MPH, 45 MPH, AND 55 MPH RESPECTIVELY. THE DEVICE USED FOR IMPACTING THE GLARE SCREEN SHALL BE A HORIZONTAL STEEL BAR WITH A 16" BY 24" PLASTIC COVERED STEEL PLATE ATTACHED TO SIMULATE TRUCK BUMPERS, TRAILERS, AND WIDE OR OVERHANGING LOADS. THE LOWEST POINT OF IMPACT BY THE STEEL PLATE WILL BE 10 INCHES ABOVE THE TOP OF THE BARRIER WALL. AFTER 5 IMPACTS ALL BLADES WILL REMAIN ATTACHED TO THE SYSTEM, STAND ERECT, BE SERVICEABLE, AND EXHIBIT NO DELAMINATING OR CRACKING.

3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES. MINOR MANUFACTURE VARIATION MAY BE ACCEPTABLE UPON APROVAL OF THE ENGINEER.

GLARE SCREEN DETAIL

N.T.S.

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TEMPORARY BARRIER

PRECAST CONCRETE CONSTRUCTION BARRIER WITH CHAIN LINK FENCE, SIGN MOUNT AND GLARE SCREEN DETAILS

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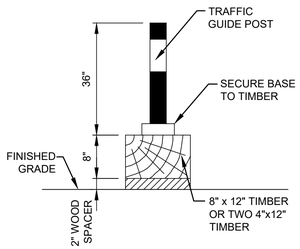
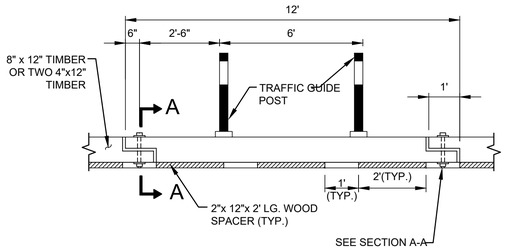
Date 07 / 15 / 2024

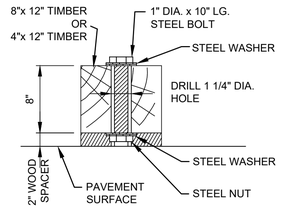
Drawing Number TD110.05



SECTION VIEW



ELEVATION



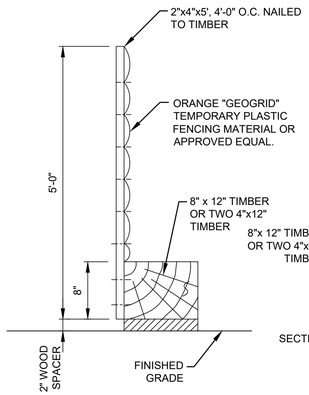
SECTION A-A

NOTES:

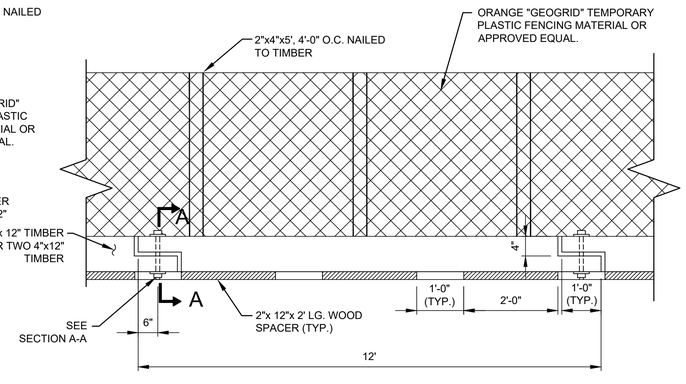
1. DO NOT ANCHOR, ATTACH OR ROD INTO PAVEMENT OR DECK. FASTEN TIMBER BARRICADE SECTIONS AS SHOWN.
2. TIMBER BARRICADE SHOULD BE USED TO DELINEATE PEDESTRIAN TRAFFIC ONLY.

TIMBER BARRICADE WITH TRAFFIC GUIDE POST

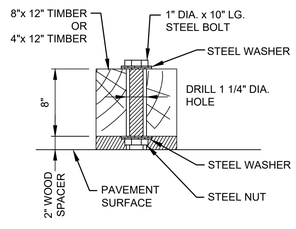
N.T.S.



SECTION VIEW



ELEVATION



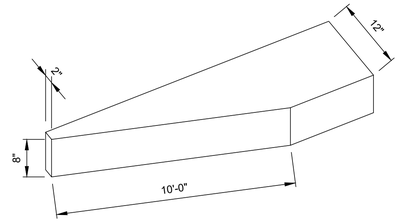
SECTION A-A

NOTES:

1. DO NOT ANCHOR, ATTACH OR ROD INTO PAVEMENT OR DECK. FASTEN TIMBER BARRICADE SECTIONS AS SHOWN.
2. TIMBER BARRICADE SHOULD BE USED TO DELINEATE PEDESTRIAN TRAFFIC ONLY.
3. THE MAXIMUM SIZE OF SIGNS SHALL BE 48"x30" WITH MOUNTING ON CENTER OF MIDDLE RAIL.

TIMBER BARRICADE WITH GEOGRID FENCE

N.T.S.



TAPERED APPROACH END SECTION

TO THE LEFT OF TRAFFIC (SHOWN)
(TO THE RIGHT OF TRAFFIC - OPPOSITE HAND)

N.T.S.

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	04/10/2018	DRAWING NO. FROM 110.07 TO DRAWING NO. 110.08	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TEMPORARY BARRIER

TIMBER BARRICADES
TYPE 1 AND 2

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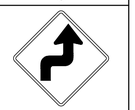
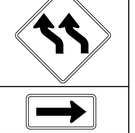
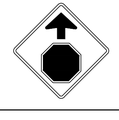
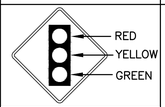
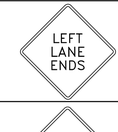
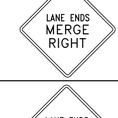
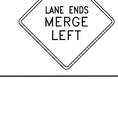
Date 07 / 15 / 2024

Drawing Number TD110.07

SIGN DATA TABLE

N.T.S.

MUTCD NO	TEXT	SIZE OF SIGN (WIDTH x HEIGHT)	COLOR	
			BACKGROUND	LEGEND
W1–1R		SEE NOTE 2.	ORANGE	BLACK
W1–1L			ORANGE	BLACK
W1–2R			ORANGE	BLACK
W1–2L			ORANGE	BLACK
W1–3R			ORANGE	BLACK
W1–3L			ORANGE	BLACK
W1–4R			ORANGE	BLACK
W1–4L			ORANGE	BLACK
W1–4bR			ORANGE	BLACK
W1–4bL			ORANGE	BLACK
W1–6R			ORANGE	BLACK
W1–6L			ORANGE	BLACK
W1–8R			ORANGE	BLACK
W1–8L			ORANGE	BLACK
W3–1A			ORANGE	BLACK RED

MUTCD NO	TEXT	SIZE OF SIGN (WIDTH x HEIGHT)	COLOR	
			BACKGROUND	LEGEND
W3–3		SEE NOTE 2.	ORANGE	BLACK
W4–1R			ORANGE	BLACK
W4–1L			ORANGE	BLACK
W4–2R			ORANGE	BLACK
W4–2L			ORANGE	BLACK
W4–3R			ORANGE	BLACK
W4–3L			ORANGE	BLACK
W5–1			ORANGE	BLACK
W5–1 (MOD.)			ORANGE	BLACK
W9–1R			ORANGE	BLACK
W9–1L			ORANGE	BLACK
W9–2R			ORANGE	BLACK
W9–2L			ORANGE	BLACK

NOTES:

1. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, EXCEPT AS NOTED.
2. FOR SIGN SIZES, REFER TO FEDERAL AND/OR NEW YORK STATE MUTCD STANDARD HIGHWAY SIGNS, LATEST REVISION.

LEGEND	
SYMBOL	DESCRIPTION
M.U.T.C.D.	MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES
N/A	NOT APPLICABLE

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

CONSTRUCTION SIGNS

CONSTRUCTION SIGN DATA SHEET (1 OF 2)

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Date 07 / 15 / 2024

Drawing Number TD130.01

SIGN DATA SHEET

N.T.S.

MUTCD NO	TEXT	SIZE OF SIGN (WIDTH x HEIGHT)	COLOR	
			BACKGROUND	LEGEND
R9–11a (RIGHT)	SIDEWALK CLOSED → CROSS HERE	SEE NOTE 2.	WHITE	BLACK
R9–11a (LEFT)	SIDEWALK CLOSED ← CROSS HERE		WHITE	BLACK
R9–11a (MOD.) (RIGHT)	TEMPORARY PEDESTRIAN WALKWAY →		WHITE	BLACK
R9–11a (MOD.) (LEFT)	TEMPORARY PEDESTRIAN WALKWAY ←		WHITE	BLACK
R9–11a (MOD.) (RIGHT)	CROSSWALK CLOSED →		WHITE	BLACK
R9–11a (MOD.) (LEFT)	CROSSWALK CLOSED ←		WHITE	BLACK
W12–1	↙↘		ORANGE	BLACK
W13–1	30 M.P.H.		ORANGE	BLACK
W13–1	25 M.P.H.		ORANGE	BLACK
W13–1	20 M.P.H.		ORANGE	BLACK
W13–2	EXIT 20 M.P.H.		ORANGE	BLACK
W13–3	RAMP 20 M.P.H.		ORANGE	BLACK
W13–3R (MOD.)	RAMP 15 M.P.H.		ORANGE	BLACK
W13–3L (MOD.)	RAMP 15 M.P.H.		ORANGE	BLACK
N/A	EXIT LANE MERGES		ORANGE	BLACK
N/A	EXIT RAMP CLOSED AHEAD		ORANGE	BLACK
N/A	FORM ONE LANE AHEAD		ORANGE	BLACK

MUTCD NO	TEXT	SIZE OF SIGN (WIDTH x HEIGHT)	COLOR	
			BACKGROUND	LEGEND
W20–1 (MOD.)	ROAD WORK AHEAD	SEE NOTE 2.	ORANGE	BLACK
W20–5	LEFT LANE		ORANGE	BLACK
W20–5 (MOD.)	RIGHT LANE		ORANGE	BLACK
W20–5R (MOD.)	RIGHT LANE CLOSED AHEAD		ORANGE	BLACK
W20–5L (MOD.)	LEFT LANE CLOSED AHEAD		ORANGE	BLACK
W20–6	SINGLE LANE 200 FT		ORANGE	BLACK
W20–6	SINGLE LANE 400 FT		ORANGE	BLACK
W21–5	SHOULDER WORK		ORANGE	BLACK
W21–5 (MOD.)	SHOULDER WORK AHEAD		ORANGE	BLACK
R11–2	ROAD CLOSED		WHITE	BLACK
N/A	EXIT RAMP NARROWS		ORANGE	BLACK

NOTES:

1. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, EXCEPT AS NOTED.
2. FOR SIGN SIZES, REFER TO FEDERAL AND/OR NEW YORK STATE MUTCD STANDARD HIGHWAY SIGNS, LATEST REVISION.

LEGEND	
SYMBOL	DESCRIPTION
M.U.T.C.D.	MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES
N/A	NOT APPLICABLE

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

CONSTRUCTION SIGNS

CONSTRUCTION SIGN DATA SHEET (2 OF 2)

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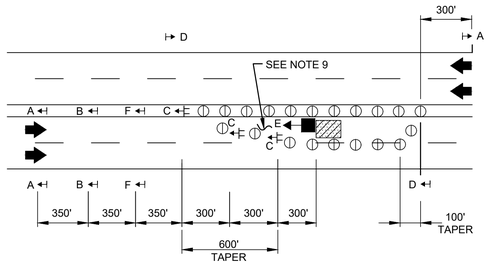
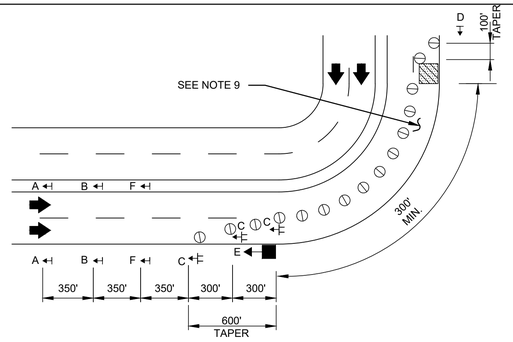
Date 07 / 15 / 2024

Drawing Number TD130.02



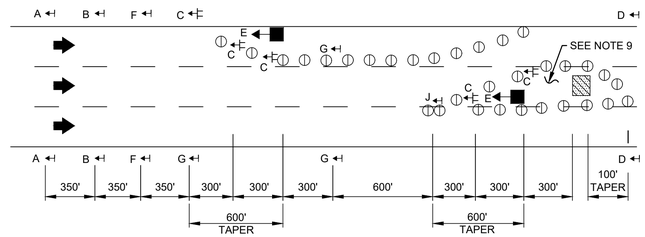
TYPICAL FOR LEFT LANE CLOSURES (50MPH)

N.T.S.



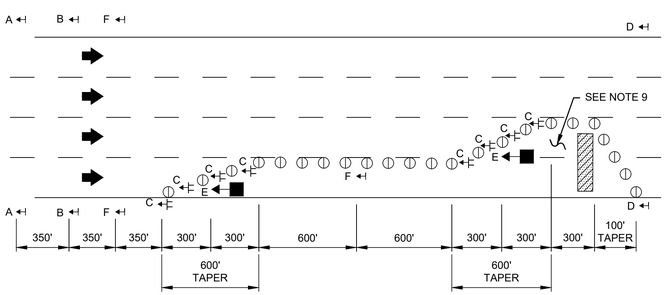
TYPICAL FOR RIGHT LANE AND CURVE CLOSURES (50MPH)

N.T.S.



TYPICAL FOR CENTER LANE ROADWAY CLOSURES (50MPH)

N.T.S.

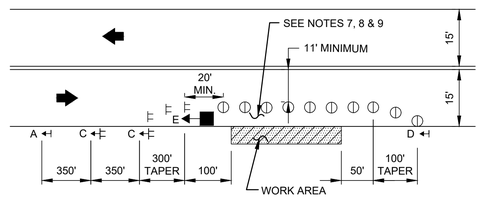


TYPICAL FOR TWO LANE ROADWAY CLOSURES (50MPH)

N.T.S.

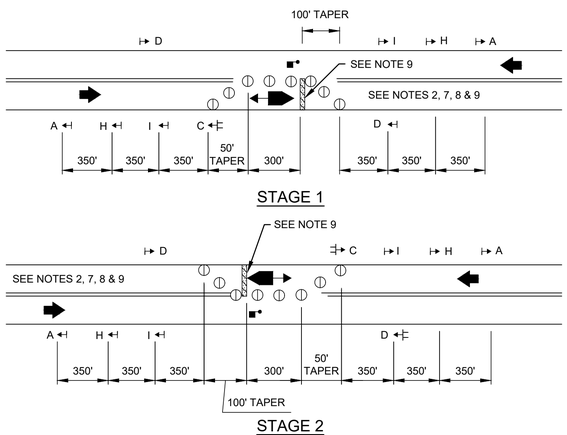
GENERAL NOTES:

1. THE MAINTENANCE OF TRAFFIC CONTROL DEVICE LAYOUTS SHOWN ON THIS DRAWING REPRESENT THE MINIMUM REQUIREMENT. ADDITIONAL DEVICES MAY BE REQUIRED AS SHOWN ON THE CONTRACT DRAWINGS TO SUPPLEMENT THE DEVICES SHOWN ON THESE TYPICAL LAYOUTS. SIGN SPACING AND TAPER LENGTHS MAY DIFFER.
2. ON TWO-LANE, TWO-WAY ROADWAYS LESS THAN 30'-0" IN WIDTH, ONE-WAY TRAFFIC OPERATION SHALL BE MAINTAINED ON A TRAVEL PATH NOT LESS THAN 12'-0" IN WIDTH. TEMPORARY TRAFFIC SIGNAL EQUIPMENT OR TRAINED FLAG PERSONS SHALL BE PROVIDED BY THE CONTRACTOR TO DIRECT TRAFFIC AT EACH END OF THE WORK AREA WHERE A ONE LANE TRAVEL PATH IS USED FOR ALTERNATING TRAFFIC FLOW. FLASHING ARROW SIGN UNIT (FASU) SHALL NOT BE USED IN THE ARROW MODE FOR TWO-WAY ALTERNATING TRAFFIC FLOW OPERATIONS.
3. ON TWO-LANE, TWO-WAY ROADWAYS 30'-0" IN WIDTH OR MORE, TWO-WAY TRAFFIC SHALL BE MAINTAINED AND PROTECTED ON A TWO-LANE TRAVEL PATH NOT LESS THAN 22'-0" IN WIDTH WITH ONE 11'-0" TRAVEL LANE IN EACH DIRECTION.
4. ON ONE-WAY DIRECTIONAL ROADWAYS OF ONE OR TWO LANES, THE TRAVEL PATH MAY BE REDUCED TO A SINGLE LANE, MINIMUM 10'-0" IN WIDTH.
5. ON ONE-WAY DIRECTIONAL ROADWAYS THREE LANES OR GREATER, A MINIMUM OF TWO 10'-0" TRAVEL LANES SHALL BE PROVIDED.
6. UNLESS OTHERWISE NOTED, ALL CHANNELIZING DEVICES (TRAFFIC CONES, PLASTIC BARRELS, VERTICAL PANELS AND BREAKAWAY BARRICADES) SHALL BE PLACED AT 20'-0" INTERVALS.
7. WHERE POSTED SPEED LIMITS ARE LESS THAN 30 MILES PER HOUR (M.P.H.), THE 350'-0" DEVICE SIGN SPACINGS AND 600'-0" LANE REDUCTION TAPERS MAY BE REDUCED TO 100'-0" SPACINGS AND 200'-0" TAPERS.
8. FOR SHORT DURATION STATIONARY WORK, TRAFFIC CONES MAY BE SUBSTITUTED FOR THE BREAKAWAY BARRICADES/PLASTIC DRUM CHANNELIZING SCHEME SHOWN IN THE TYPICAL LAYOUTS, AS DEFINED IN THE SPECIFICATION SECTION OF DIVISION 1 - GENERAL PROVISIONS ENTITLED "MAINTENANCE OF TRAFFIC AND WORK AREA PROTECTION". SAID WORK SHALL INVOLVE THE ESTABLISHMENT AND OCCUPATION OF THE WORK AREA FOR A PERIOD OF TIME ONE DAY OR LESS, ALTHOUGH IT MAY BE NECESSARY TO RE-CONSTRUCT THE MAINTENANCE OF TRAFFIC SCHEMES ON FOLLOWING DAYS; AND MAY INCLUDE SUCH ACTIVITIES AS INSTALLING TRAFFIC SIGNS, INSTALLING OR REPAIRING GUIDE RAIL, REMOVING AND PATCHING DISTRESSED PAVEMENT, PAVEMENT CUTS FOR UTILITY WORK, OVERHEAD UTILITY REPAIR, AND WORK ON UNDERGROUND UTILITIES AT MANHOLES. TRAFFIC CONES SHALL NOT BE UTILIZED WHEN THE WORK AREA IS TO BE OCCUPIED BY EXCAVATIONS, MATERIALS, AND/OR EQUIPMENT AT TIMES WHEN WORKERS ARE NOT PRESENT.
9. SEE WORK AREA DETAIL ON DRAWING TD140.03 FOR BACK-UP TRUCK REQUIREMENTS.



TYPICAL FOR LANE REDUCTION (50MPH)

N.T.S.



STAGE 1

STAGE 2

BI-DIRECTIONAL LANE CLOSURE (50MPH)

N.T.S.

LEGEND

	DIRECTION OF TRAFFIC (PERMANENT CONDITIONS)
	TRAFFIC CONES
	PLASTIC DELINEATOR DRUMS
	BREAKAWAY BARRICADES (TYPE III)
	BACK-UP VEHICLE WITH IMPACT ATTENUATOR AND FLASHING ARROW SIGN UNIT (FASU)
	FLAG PERSON (GENERAL POSITION)
	WORK AREA
	SIGN LOCATION AND ORIENTATION ON TEMPORARY SIGN STAND
	BREAKAWAY BARRICADE (TYPE III) WITH ATTACHED SIGN
	TYPE B FLASHING WARNING LIGHT
A	ROAD WORK AHEAD — 48"X48" (MUTCD W21-4) WITH TYPE B FLASHING WARNING LIGHTS
B	LANE CLOSED AHEAD — 48"X48" (MUTCD W20-5, LEFT, RIGHT OR CENTER AND NUMBER LANES IDENTIFIED) WITH TYPE B FLASHING WARNING LIGHTS
C	48"X24" (MUTCD W1-6, LEFT OR RIGHT AS APPROPRIATE) ATTACHED TO BREAKAWAY BARRICADE (TYPE III) WITH ATTACHED SIGN
D	END ROAD WORK — 48"X24" (MUTCD G20-2)
E	FASU FASU — FLASHING ARROW SIGN UNIT (FASU) LEFT OR RIGHT ARROW INDICATION
F	48"X48" (MUTCD W4-2, LEFT OR RIGHT AS APPROPRIATE) WITH TYPE B FLASHING WARNING LIGHTS
G	48"X24" (MUTCD W6-1 MODIFIED, LEFT OR RIGHT AS APPROPRIATE) ATTACHED TO BREAKAWAY BARRICADE (TYPE III) WITH ATTACHED SIGN
H	ONE LANE ROAD — 48"X48" (MUTCD W20-4 WITH DISTANCE) WITH TYPE B FLASHING WARNING LIGHTS
I	36"X36" (MUTCD W20-7) WITH TYPE B FLASHING WARNING LIGHTS
J	24"X24" (MUTCD W12-1)

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
TYPICAL LANE CLOSURE AND REDUCTION

TYPICAL LANES CLOSURES AND REDUCTION

DISCLAIMER:

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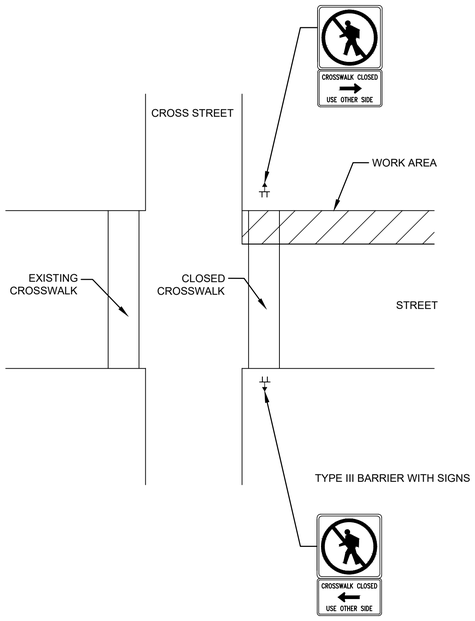
Date 07 / 15 / 2024

Drawing Number TD140.01

NOTES:

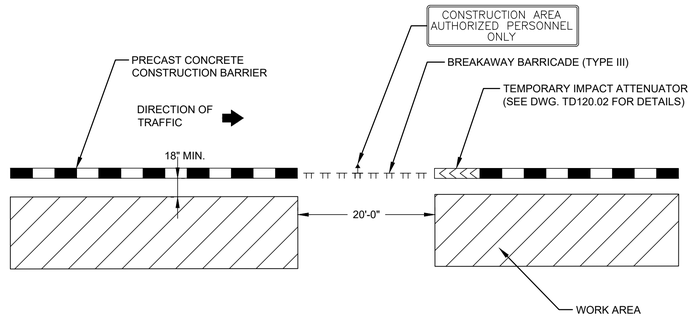
1. WORK ON THE STREET MUST PROGRESS SO THAT ONE CROSSWALK AT EACH INTERSECTION THAT IS CROSSING THE STREET WILL ALWAYS BE OPEN FOR PEDESTRIAN TRAFFIC UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

2. COVER EXISTING PEDESTRIAN SIGNALS ON CLOSED CROSSWALKS. ALL OTHER SIGNAL DISPLAY WILL BE FULLY OPERATIONAL.



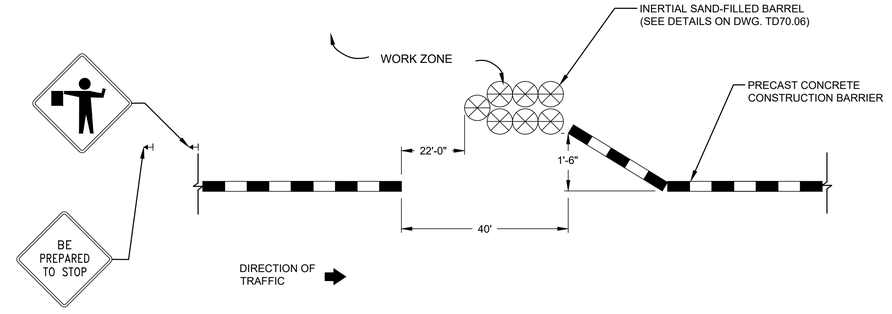
CROSSWALK CLOSING

N.T.S.



CONSTRUCTION ACCESS DETAIL NO. 1

N.T.S.

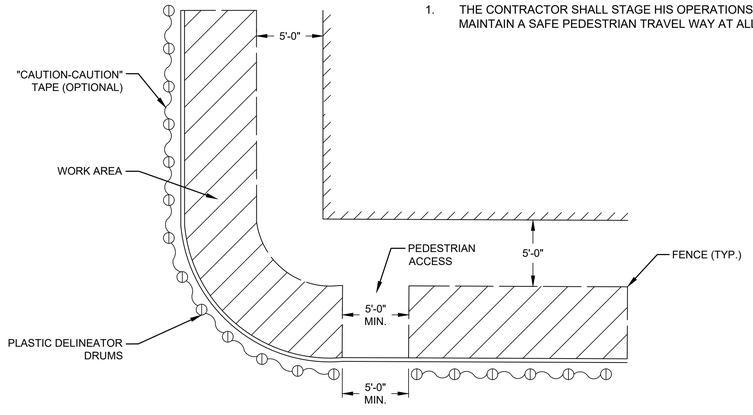


CONSTRUCTION ACCESS DETAIL NO. 2

N.T.S.

NOTE:

1. THE CONTRACTOR SHALL STAGE HIS OPERATIONS TO MAINTAIN A SAFE PEDESTRIAN TRAVEL WAY AT ALL TIMES.



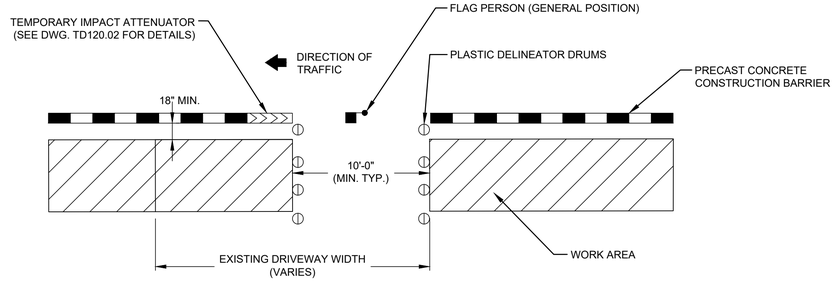
PEDESTRIAN ACCESS THROUGH WORK ZONE

N.T.S.

NOTES:

1. AT THE END OF THE DAILY WORK PERIOD, ALL DRIVEWAYS SHALL BE FULLY OPENED TO TRAFFIC.

2. ANY EXCAVATIONS OR DISCONTINUITY OF PAVEMENT IN EXCESS OF 3" SHALL BE BACKFILLED WITH TEMPORARY ASPHALT PAVEMENT OR COVERED WITH A STEEL PLATE.



DRIVEWAY ACCESS DETAIL

N.T.S.

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	11/27/2017	CORRECTION OF CROSSWALK ARROW SIGN DIRECTION	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

TYPICAL LANE CLOSURE AND REDUCTION

CROSSWALK CLOSING AND ACCESS DETAILS

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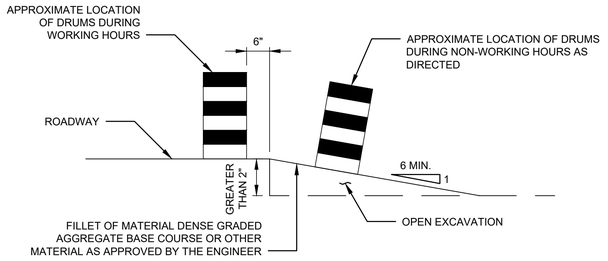
Date 07 / 15 / 2024

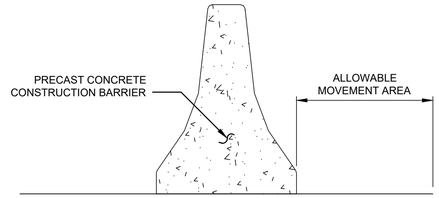
Drawing Number TD140.02



ESCAPE RAMP DETAIL

SEE NOTE NO. 5
N.T.S.

JOINT CLASS	JOINT AND ANCHORAGE TREATMENT	ALLOWABLE MOVEMENT
A	CONNECTION KEY ONLY	OVER 16 TO 20 INCHES
B	CONNECTION KEY & GROUT	11 TO 16 INCHES
C	CONNECTION KEY & MORTAR, IN EVERY JOINT & PIN EVERY OTHER UNIT, IN UNITS THAT ARE TO BE ANCHORED PINS SHALL BE REQUIRED IN EVERY ANCHOR RECESS	LESS THAN 11 INCHES

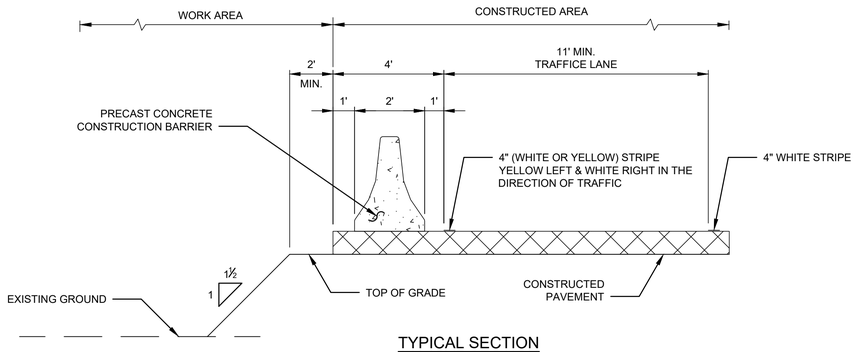


PRECAST CONCRETE CONSTRUCTION BARRIER, TYPE 4 JOINT CLASS AND ALLOWABLE MOVEMENT

SEE NOTE NO. 7
N.T.S.

NOTES:

1. AVOIDANCE MANEUVER IS FOR A SPEED, PATH, AND/OR DIRECTION CHANGE PRIOR TO THE BEGINNING OF CHANNELIZING TAPERS.
2. RECOMMENDED DISTANCES BETWEEN TWO SEPARATE LANE CLOSURES SHALL BE DOUBLE THE VALUES SHOWN IN THE TABLE.
3. DESIRABLE VALUES SHALL BE PROVIDED WHEREVER POSSIBLE. IF IT IS NOT FEASIBLE OR PRACTICAL TO PROVIDE DESIRABLE VALUES BECAUSE OF HORIZONTAL OR VERTICAL CURVATURE OR IF RELOCATION OF THE TAPER IS NOT POSSIBLE, THEN MINIMUM VALUES CAN BE APPLIED. WHEN MINIMUM VALUES ARE USED, SPECIAL ATTENTION SHOULD BE GIVEN TO THE USE OF SUITABLE TRAFFIC CONTROL DEVICES FOR PROVIDING ADVANCED WARNING OF THE CONDITIONS THAT ARE LIKELY TO BE ENCOUNTERED.
4. TAPERS SHALL BE LOCATED TO MAXIMIZE THE VISIBILITY OF THEIR TOTAL LENGTH.
5. ESCAPE RAMPS MUST BE CONSTRUCTED AND MAINTAINED DURING NON-WORKING HOURS WHERE A VERTICAL DROP GREATER THAN 2" EXISTS ADJACENT TO TRAVELED LANE.
6. THE MAXIMUM DEVICE SPACING ALONG CURVES SHALL BE AS DEFINED FOR TAPERS (B) SHOWN IN THE TABLE.
7. CHANGES TO THE PROPOSED JOINT CLASS AT ANY LOCATION MUST BE APPROVED BY THE ENGINEER.
8. NO WORK OR STORAGE OF MATERIALS WILL BE PERMITTED IN THE ALLOWABLE MOVEMENT AREA.
9. TYPICAL WORK AREA:
   - A. MAXIMUM WORK AREA LENGTH L OCCUPIED BY WORKERS ON FOOT SHALL NOT EXCEED 2S AS SHOWN IN TYPICAL WORK AREA DETAIL. ADDITIONAL CONTRACTOR VEHICLES (TIGHTLY GROUPED) MAY BE PARKED IN THE CLOSED LANE IMMEDIATELY BEYOND THE OCCUPIED WORK AREA.
   - B. SIGNS READING "(RIGHT, CENTER OR LEFT) LANE(S) CLOSED", AS APPROPRIATE, SHALL BE INSTALLED IN THE CLOSED LANE(S) ADJACENT TO TRAFFIC AT 500 FT. INTERVALS AFTER THE INITIAL DRUM LINE TAPER, EXCEPT BETWEEN WORK AREAS THAT ARE NOT MORE THAN 500 FT. APART.
   - C. FOR WORK AREAS THAT OCCUPY TWO OR MORE CONTIGUOUS LANES, EACH OCCUPIED LANE MUST BE CLOSED WITH ITS OWN BACK-UP VEHICLE. AT SUCH A LOCATION, ONLY THE BACK-UP VEHICLE(S) ADJACENT TO AN OPEN TRAFFIC LANE ARE REQUIRED TO BE EQUIPPED WITH A FASU.
10. WORK AREAS EXCEEDING THE MAXIMUM WORK AREA LENGTH (L) SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
11. MAINTAIN 30' UNOCCUPIED SPACE UNLESS OTHERWISE APPROVED BY THE ENGINEER.



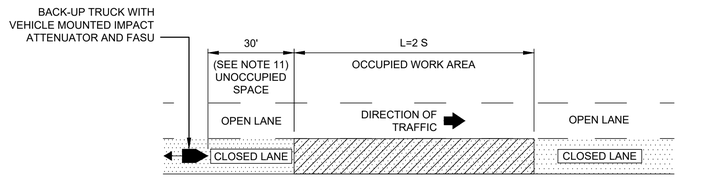
TYPICAL SECTION

PLACEMENT OF PRECAST CONCRETE CONSTRUCTION BARRIER

N.T.S.

REGULATORY APPROACH SPEED OF TRAFFIC (MILES/HOUR)	RECOMMENDED SIGHT DISTANCE TO BEGINNING OF CHANNELIZING TAPERS	
	DESIRABLE (FEET)	MINIMUM (FEET)
25	525	150
30	625	200
35	725	250
40	825	325
45	925	400
50	1025	475
55	1150	550
60	1275	650

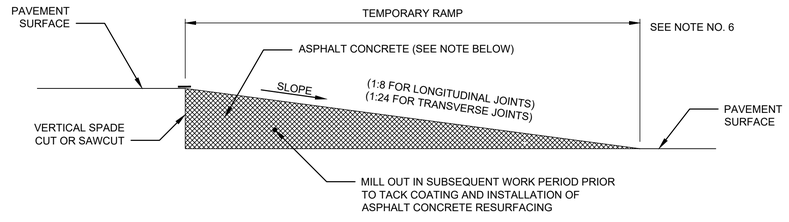
RECOMMENDED TAPER LENGTH AND SPACING FOR CHANNELIZING TAPERS						RECOMMENDED SPACING ALONG TANGENTS
REGULATORY APPROACH SPEED OF TRAFFIC (MILES/HOUR)	MINIMUM TAPER RATIO IN LENGTH PER FOOT OF WIDTH	MINIMUM TAPER LENGTH L - FOR LANE WIDTHS			MAXIMUM DEVICE (B) SPACING ALONG TAPERS IN FEET	MAXIMUM DEVICE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



S=SPEED LIMIT (REGULATORY OR POSTED ADVISORY)	L (SEE NOTE 10)
25 MPH OR LESS	50' MAX.
30 MPH	60' MAX.
35 MPH	70' MAX.
40 MPH	80' MAX.
45 MPH	90' MAX.
50 MPH OR MORE	100' MAX.

WORK AREA DETAIL

SEE NOTE NO. 9
N.T.S.



TYPICAL TEMPORARY RAMPING DETAIL

N.T.S.

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
TYPICAL LANE CLOSURE AND REDUCTION

TRAFFIC CONTROL DEVICE PLACEMENT, RAMPING AND WORK AREA DETAILS

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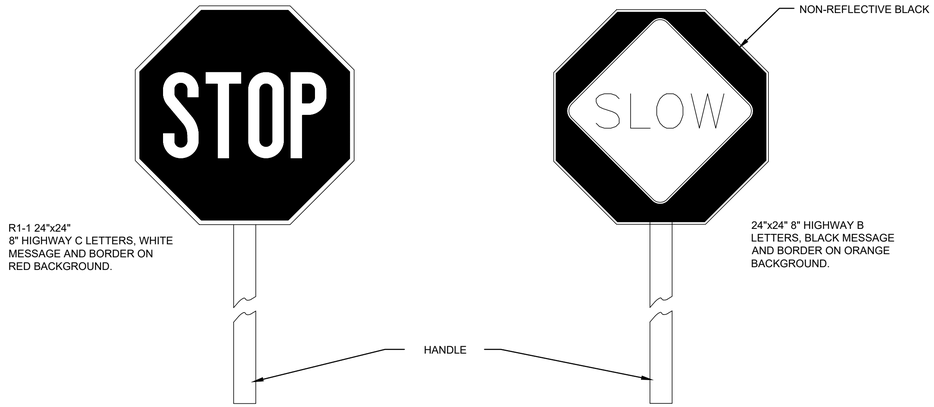
Date 07 / 15 / 2024

Drawing Number TD140.03

NOTE:

1. SIGN FACES SHALL BE RETROREFLECTIVE SHEETING UNLESS OTHERWISE NOTED.



STOP VIEW

SLOW VIEW

STOP/SLOW PADDLE

N.T.S. TD150.01.01

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
MISC. MAINTENANCE OF TRAFFIC DEVICES

STOP / SLOW PADDLE

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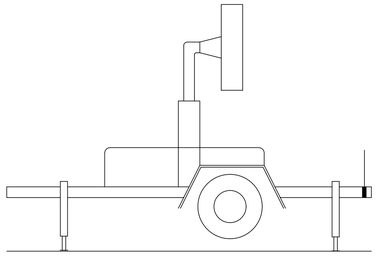
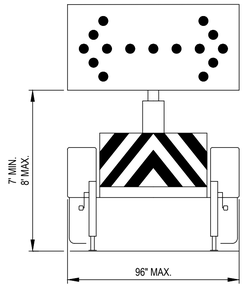
Date 07 / 15 / 2024

Drawing Number TD150.01



SIDE VIEW



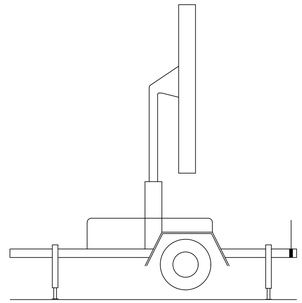
REAR VIEW

NOTES:

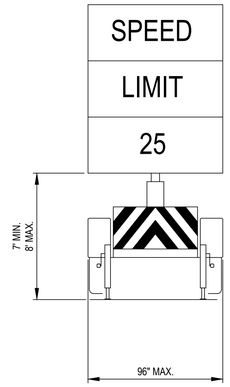
1. CONTROL PANEL, ENGINE, FUEL TANK AND/OR BATTERIES SHALL NOT EXTEND REARWARD PAST THE TRAILER WHEELS.
2. REAR ALUMINUM MARKER PANEL SHALL BE FACED WITH ALTERNATING 6" WIDE ORANGE AND WHITE STRIPES OF 3M CO. ENGINEER GRADE SCOTCHLITE OR APPROVED EQUAL. MINIMUM PANEL SIZE IS 24" HIGH X 48" WIDE OR WIDTH OF CHASSIS, WHICHEVER IS GREATER.
3. CHASSIS SHALL BE EQUIPPED WITH A REAR BUMPER SUFFICIENTLY WIDE TO PROTECT THE REAR SCREW JACKS; AND APPROPRIATE REAR TAIL/STOPLIGHTS AND REFLECTORS, AND SIDE MARKER LIGHTS AND REFLECTORS.
4. UNIT SHALL BE PAINTED STANDARD FEDERAL YELLOW OR BRIGHT ORANGE WITH HIGH GLOSS AUTOMOTIVE PAINT.
5. LIFT MECHANISM OPERATION SHALL NOT REQUIRE OPERATOR TO ENTER ADJACENT ACTIVE TRAFFIC LANE, NOR CLIMB UPON THE UNIT.

TRAILER MOUNTED FLASHING ARROW SIGN UNIT (FASU)

N.T.S.



SIDE VIEW



REAR VIEW

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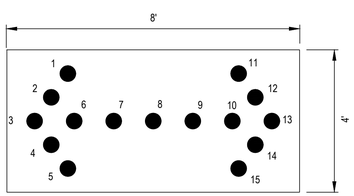
5. LIFT MECHANISM OPERATION SHALL NOT REQUIRE OPERATOR TO ENTER ADJACENT ACTIVE TRAFFIC LANE, NOR CLIMB UPON THE UNIT.
6. MESSAGES TO BE CONTROLLED FROM ON-BOARD COMPUTER WITH NON-VOLATILE MEMORY, BATTERY BACKED SUCH THAT RESIDENT MESSAGES INCLUDING LAST MESSAGE DISPLAYED ARE NOT LOST DURING TEMPORARY SHUT DOWN FOR REFUELING, AND SO THAT THE LAST MESSAGE DISPLAYED PRIOR TO SHUT DOWN IS AUTOMATICALLY REDISPLAYED WHEN THE POWER PLANT IS RESTORED.
7. COMPUTER SHALL RETAIN AT LEAST 50 THREE-LINE MESSAGES, AND BE CAPABLE OF FLASHING THE MESSAGE DISPLAY. FLASH RATE AND PERCENT "ON" TIME SHALL BE PROGRAMMABLE TO THE NEAREST 1/4 SECOND.
8. COMPUTER SHALL BE CAPABLE OF STRINGING TWO 3-LINE MESSAGES TOGETHER TO FORM A REPEATING, SEQUENTIAL DISPLAY, E.G.

WORK	→	SPEED
AREA		LIMIT
AHEAD		25

9. MULTI MESSAGE FLASH RATE AND "ON" TIME SHALL BE INITIALLY SET AT 2 SECONDS "ON" FOLLOWED BY 1/2 SECOND "OFF".
10. THE "ON" AND "OFF" TIMES MAY BE CHANGED AS DIRECTED BY THE ENGINEER.

VARIABLE MESSAGE SIGN UNIT (VMSU)

N.T.S.



4' X 8' BOARD

FLASHING MESSAGES TO LIGHT AS FOLLOWS:

RIGHT ARROW	3,6,7,8,9,11,12,13,14,15
LEFT ARROW	1,2,3,4,5,7,8,9,13
CAUTION MODE	1, 5, 11, 15
DOUBLE ARROW	1,2,3,4,5,7,8,9,11,12,13,14,15

NOTES:

1. DISPLAY SHALL BE A SOLID (NOT SEQUENTIAL) FLASHING ARROW.
2. THE FLASH RATE SHALL BE 35 (±2) TIMES PER MINUTE.
3. THE "ON" TIME SHALL BE 60% OF THE FLASH CYCLE.
4. WHEN WORK IN THE "CAUTION" MODE, THE DISPLAY SHALL FLASH IN UNISON THE FAR OUTER CORNER LAMPS OF THE SIGN PANEL.
5. THE USE OF A FLASHING BAR IS PROHIBITED.
6. PROVIDE FLAT-BLACK SUN VISOR ON EACH LAMP.
7. LAMP ARRAY SHALL CONTAIN AT LEAST 15 LAMPS AS SHOWN, AND MEET MUTCD PART VI "ADVANCE WARNING ARROW BOARD SPECIFICATIONS". ARROW DISPLAY SHALL BE SOLID FLASHING ARROWS, NOT SEQUENTIAL. LAMP DIMMING SHALL BE ADJUSTABLE TO 50% INTENSITY AND AUTOMATICALLY ACTIVATED BY MEANS OF A PHOTOCELL. UNITS SHALL BE FURNISHED WITH NEW LAMPS.
8. MIMIC LIGHTS ON REAR OF FASU ARROW BOARD SHALL INDICATE ARROW DIRECTION DISPLAYED; AND SHALL INDICATE ANY FAILURE OF THE POWER SUPPLY.

FLASHING ARROW SIGN UNIT (FASU)

N.T.S.

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	01/23/2015	UPDATE TEXT STYLE TO ARIAL	
1	10/07/2014	STANDARD DETAIL REVISION	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
MISC. MAINTENANCE OF TRAFFIC DEVICES

FASU

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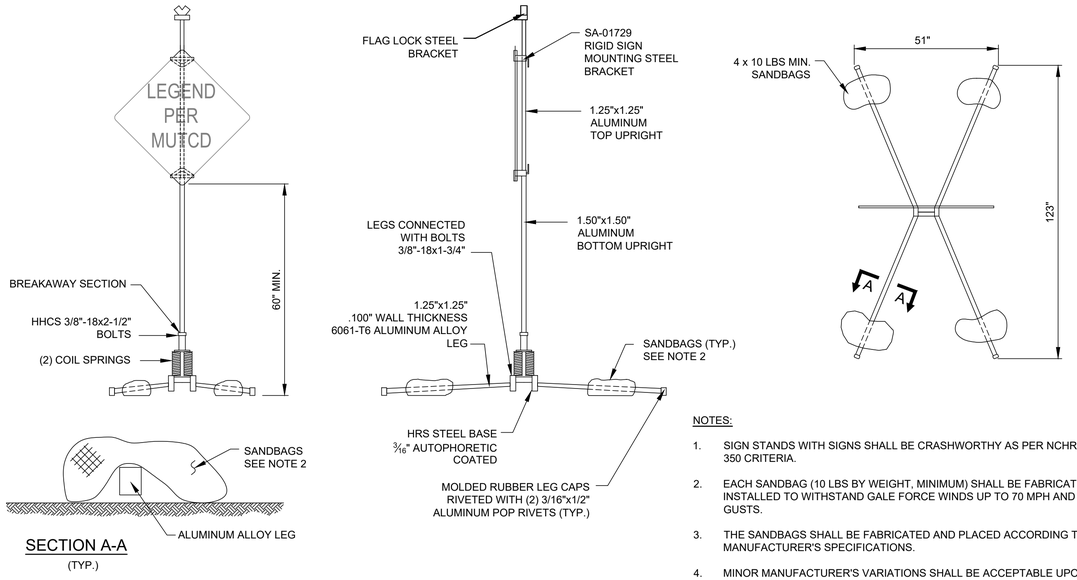


SECTION A-A
(TYP.)

PORTABLE SIGN SUPPORTS

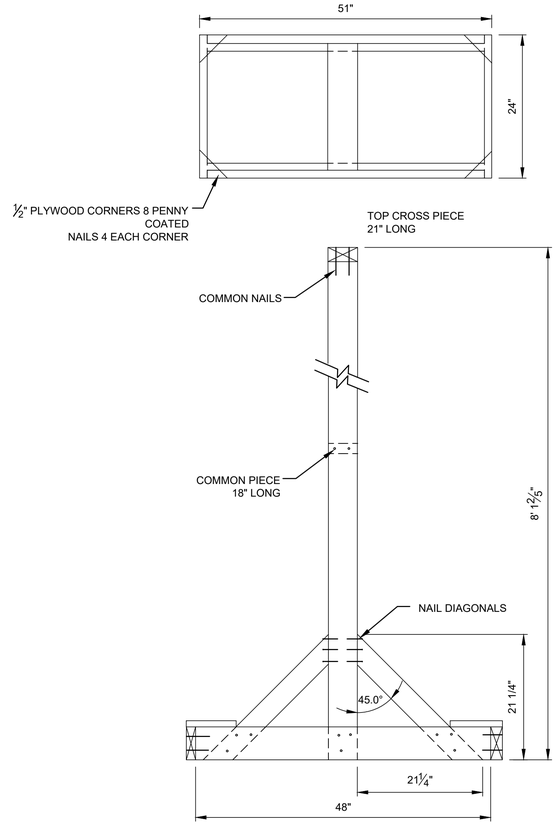
N.T.S.

NOTES:

1. SIGN STANDS WITH SIGNS SHALL BE CRASHWORTHY AS PER NCHRP, REPORT 350 CRITERIA.
2. EACH SANDBAG (10 LBS BY WEIGHT, MINIMUM) SHALL BE FABRICATED AND INSTALLED TO WITHSTAND GALE FORCE WINDS UP TO 70 MPH AND VEHICLE GUSTS.
3. THE SANDBAGS SHALL BE FABRICATED AND PLACED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.
4. MINOR MANUFACTURER'S VARIATIONS SHALL BE ACCEPTABLE UPON APPROVAL BY THE ENGINEER.
5. FOR CONSTRUCTION SIGNS INSTALLED ON SUPPORTS OTHER THAN X-BASE SIGN STANDS WHERE THERE IS EXPECTED PEDESTRIAN ACTIVITY, MOUNT BOTTOM OF SIGN AT 7' MIN.

NOTES:

1. ALL LUMBER SHALL BE 1½" x 3½" ACTUAL.
2. NAILS SHALL BE 16 PENNY COMMON, EXCEPT AS NOTED.
3. PAINT SHALL BE, 2 COATS EXTERIOR WHITE IF DIRECTED.
4. PLYWOOD SHALL BE ½" RIGID SIGN SUBSTRATE.
5. SKIDS SHALL BE BALLASED WITH SANDBAGS AS DIRECTED BY THE ENGINEER.
6. NAILS SHALL BE CLINCHED IF POINTS ARE EXPOSED.
7. SIGN MOUNTING HEIGHT SHALL BE 9'-11" MINIMUM TO BOTTOM OF SIGNS WITH RIGID SUBSTRATES.



WOODEN SIGN SUPPORTS

N.T.S.

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
MISC. MAINTENANCE OF TRAFFIC DEVICES

PORTABLE SIGN SUPPORT DETAILS

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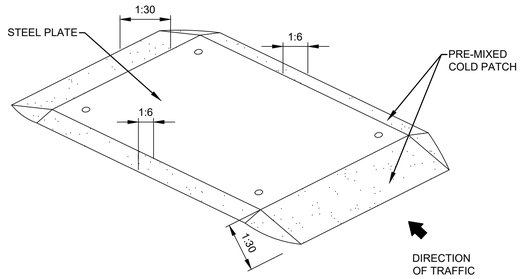
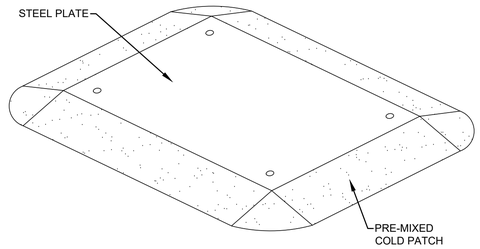
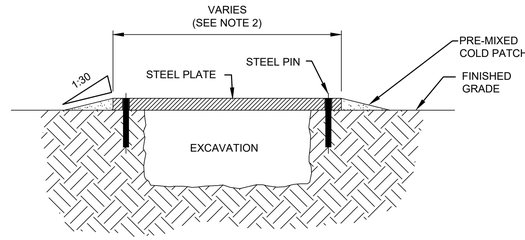
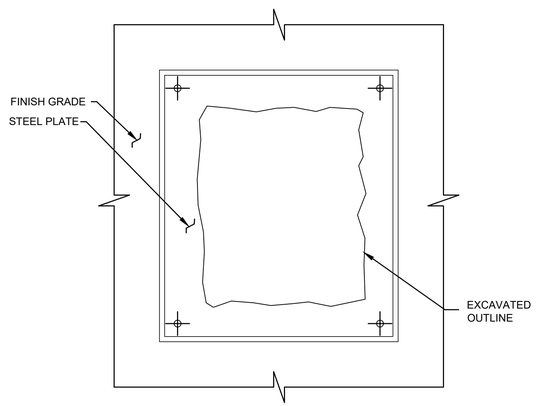
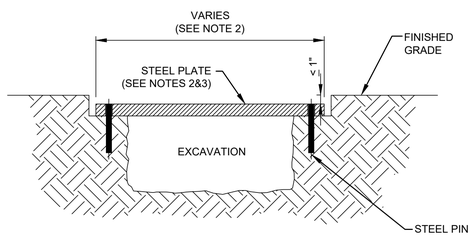




ALTERNATE A - NON-FLUSH AND BED IN
PRE-MIXED COLD PATCH MATERIAL







ALTERNATE B - FLUSH WITH OR LESS THAN ONE
INCH BELOW FINISHED GRADE

TEMPORARY ROADWAY PLATE

N.T.S.

NOTES:

1. TEMPORARY PLATES SHALL BE SIZED TO COVER ROADWAY EXCAVATIONS WITH THICKNESS AND EDGE SUPPORT ADEQUATE TO ACCOMMODATE THE LIVE LOAD PLUS IMPACT OF THE AASHTO HS-20-44 TRUCK LOADING. ALLOWABLE STRESS LEVELS AND IMPACT FACTORS SHALL BE DETERMINED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AASHTO STANDARDS SPECIFICATIONS FOR HIGHWAY BRIDGES.
2. SHOP DRAWINGS AND DESIGN CALCULATIONS FOR ALL TEMPORARY PLATES AS WELL AS THE METHODS OF SECURING THEM TO THE EXISTING STRUCTURE SHALL BE SUBMITTED TO THE ENGINEER.
3. ALL TEMPORARY PLATES, SUPPORTS AND SECURING DEVICES SHALL BE REMOVED UPON COMPLETION OF THE WORK AS DIRECTED BY THE ENGINEER UNLESS OTHERWISE NOTED.
4. INSTALL "RAISE PLOW" SIGN IN ADVANCE (50') OF THE TEMPORARY PLATES.
5. COLD PATCH SHALL ONLY BE UTILIZED FOR A PERIOD OF LESS THAN 48 HOURS ON A SINGLE APPLICATION. PAVEMENT SHALL BE CLEAR OF DEBRIS AND DRY WHEN APPLYING PATCH MATERIALS.
6. ALL TEMPORARY PLATES SHALL BE INSPECTED DAILY, FOLLOWING ADVERSE WEATHER CONDITIONS, OR AS DIRECTED BY THE ENGINEER.
7. TEMPORARY ROADWAY PLATES SHALL BE INSTALLED FLUSH (DETAIL ALTERNATIVE B) AT ASPHALT PAVEMENT LOCATIONS WHERE POSTED SPEED ARE 45 MPH OR GREATER.

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	06/03/2022	NOTES UPDATED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
MISC. MAINTENANCE OF TRAFFIC DEVICES

TEMPORARY
ROADWAY PLATE

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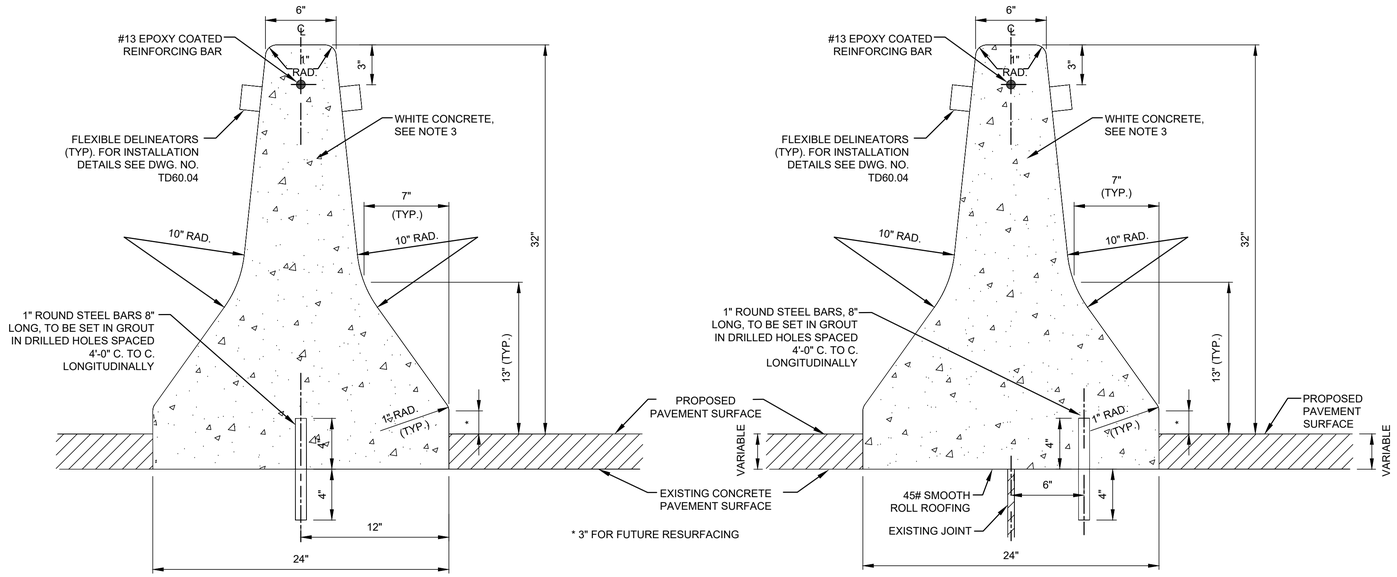


TYPE "A" - WHITE CONCRETE BARRIER CURB,DOWELLED, 24" x VARIES

N.T.S.

GENERAL NOTES:

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 ¼" FROM FACES AND TOP OF CURB. THE THICKNESS OF THE TRANSVERSE EXPANSION JOINT FILLER SHALL BE AS FOLLOWS:

   ½" FOR IMMEDIATE JOINTS AND JOINTS OVER DEFINITE CRACKS.
   ½" 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 ½" BUT NOT LESS THAN THE EXISTING WIDTH OF THE TRANSVERSE JOINTS IN BRIDGES AND JOINTS BETWEEN THE APPROACH SLABS AND BRIDGES.

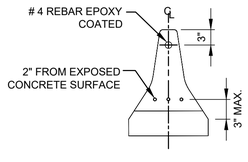
   THE THICKNESSES OF 1" OR MORE, LAYERS OF ½" MATERIAL MAY BE GLUED OR OTHERWISE FASTENED TOGETHER BY A MEANS SATISFACTORY TO THE ENGINEER. WHERE THE REQUIRED JOINT OPENING EXCEEDS 1", THE CONTRACTOR MAY CONSTRUCT OPEN JOINTS.

   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.

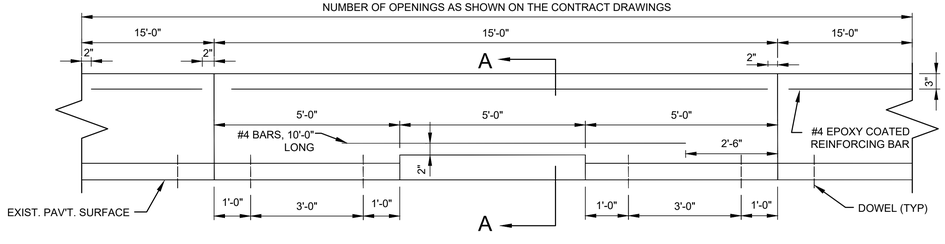
   WHERE DOWELLED CURB IS TO BE CONSTRUCTED ACROSS A LONGITUDINAL JOINT IN THE EXISTING CONCRETE OR BASE COURSE, THE DOWELS IN THE SHORTER PORTION OF THE CURB PANEL SHALL BE OMITTED AND THE CURB IN THIS PORTION OF THE PANEL SHALL BE CONSTRUCTED WITH 45# SMOOTH ROLL ROOFING BETWEEN IT AND THE EXISTING PAVEMENT.

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.



SECTION A-A



DETAIL OF OPENINGS TO BE CONSTRUCTED IN BARRIER CURB

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

TYPE A CONCRETE BARRIER CURB, DOWELLED

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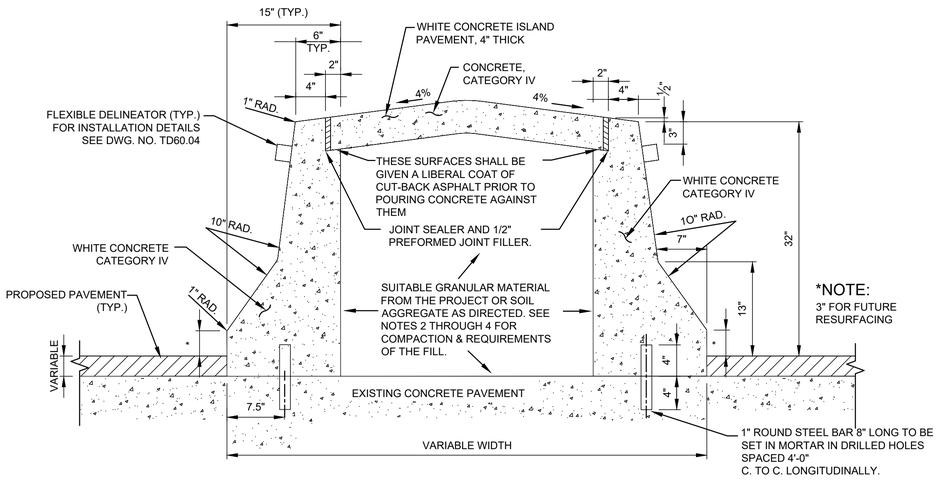
Date 07 / 15 / 2024

Drawing Number TD200.01

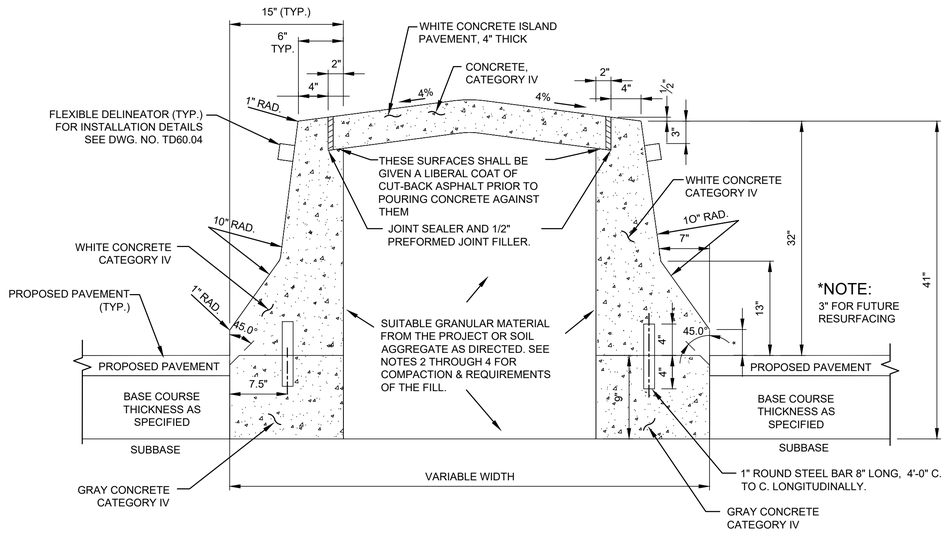
NOTES:

1. SEE GENERAL NOTES APPLYING TO ALL BARRIER CURB TD200.01.01.
2. COMPACTION SHALL BE IN ACCORDANCE WITH THE DENSITY CONTROL METHOD OF THE SPECIFICATIONS.
3. THE FILL BETWEEN THE CURBS SHALL BE SHAPED AND COMPACTED TO A FIRM EVEN SURFACE. UNSTABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE MATERIAL WHICH SHALL BE COMPACTED.
4. SOIL LIFTS SHALL BE LIMITED TO 12 INCHES AND EACH LIFT SHALL BE COMPACTED.



VARIABLE WIDTH - WHITE CONCRETE BARRIER CURB, DOWELLED, 15" x "VAR. HEIGHT"

N.T.S.



VARIABLE WIDTH - WHITE CONCRETE BARRIER CURB, 15" x 41"

N.T.S.

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

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PANYNJ DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

VARIABLE WIDTH MEDIAN BARRIER

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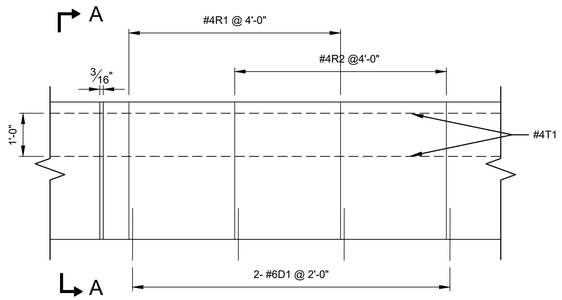
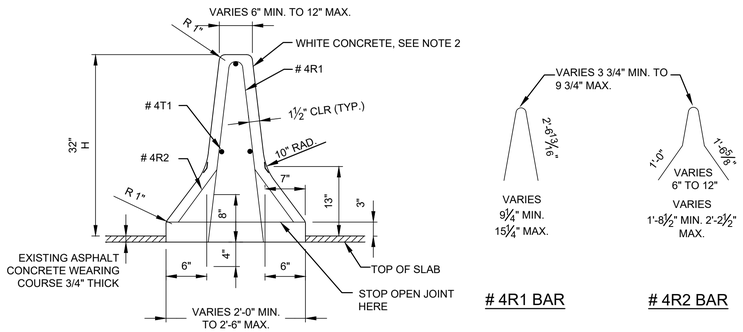


ELEVATION



VIEW A-A

4R1 BAR

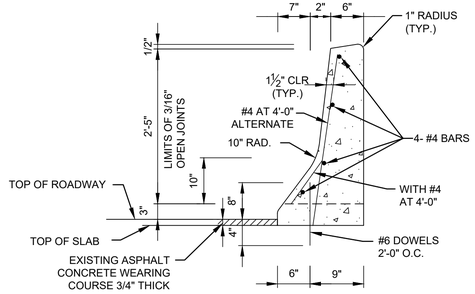
4R2 BAR

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

N.T.S.

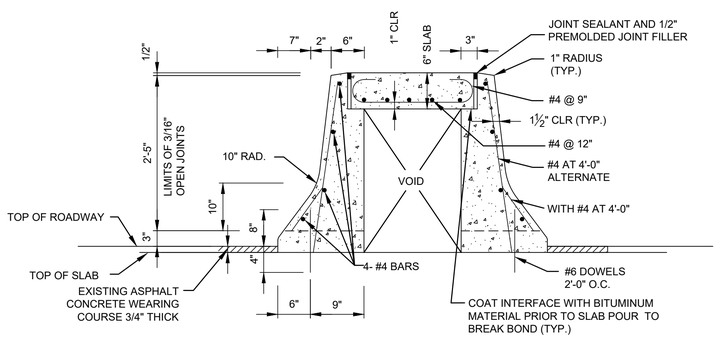
NOTES:

1. BARRIER CURB SHALL HAVE 3/16" 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.



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

N.T.S.



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

N.T.S.

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PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

ON BRIDGE CONCRETE BARRIER CURB

DISCLAIMER:

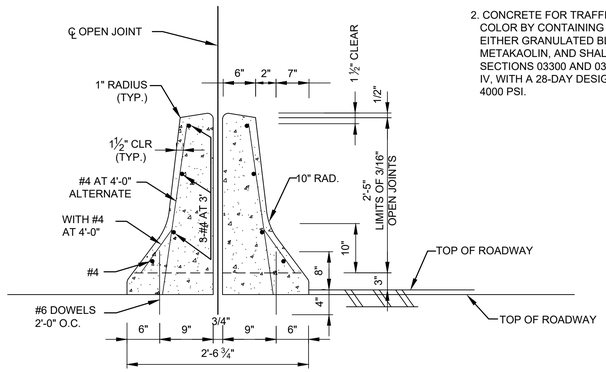
THIS IS ONLY A
SAMPLE DRAWING
TO BE UPDATED AS PER DISCLAIMER ABOVE.

Date 07 / 15 / 2024

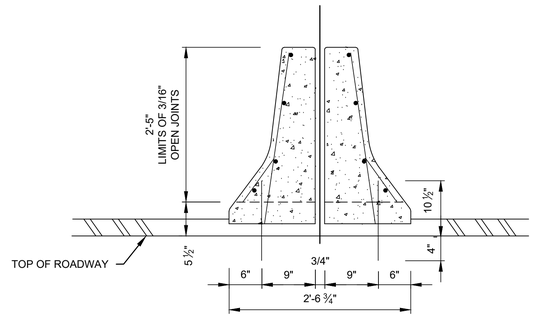
Drawing Number TD200.03

NOTES:

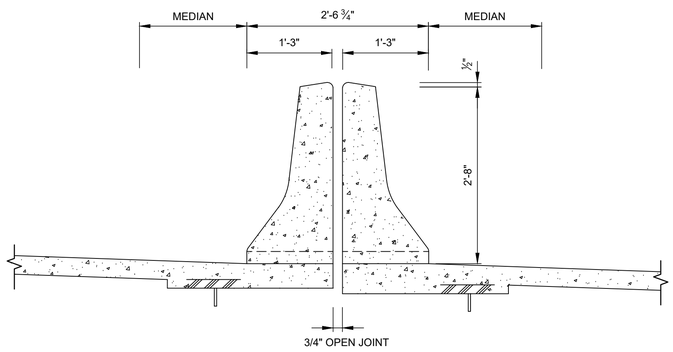
1. AT DECK JOINTS USE FULL DEPTH JOINT, SAME OPENING AS IN DECK JOINT. DOWELS TO BE DRILLED IN AND GROUTED WHEN BARRIER CURB IS PLACED ON EXISTING SLAB.
2. CONCRETE FOR TRAFFIC BARRIER SHALL BE WHITE IN COLOR BY CONTAINING A BLEND OF WHITE CEMENT AND EITHER GRANULATED BLAST FURNACE SLAG OR METAKAOLIN, AND SHALL CONFORM TO SPECIFICATION SECTIONS 03300 AND 03301, PERFORMANCE CATEGORY IV, WITH A 28-DAY DESIGN COMPRESSIVE STRENGTH OF 4000 PSI.



WITHOUT WEARING SURFACE



WITH AN INITIAL WEARING SURFACE



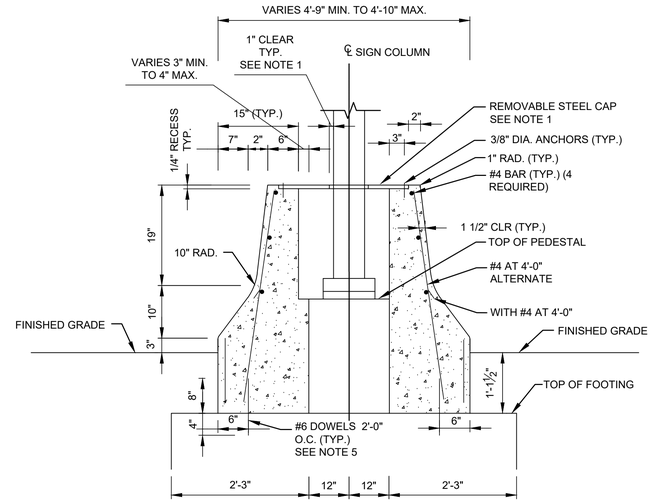
CROSS SECTION

HIGH SPLIT MEDIAN BARRIER CURB, 2'-8"

N.T.S.

NOTES:

1. REMOVABLE STEEL CAP SHALL BE MADE OF 1/4 INCH THICK PLATES, FASTENED TO THE CONCRETE BARRIER WITH 3/8 INCH DIAMETER RESIN ANCHORS (4 REQUIRED PER PLATE). THE STEEL CAP SHALL BE PAINTED TO MATCH THE CONCRETE BARRIER.
2. SIGN COLUMN OPENING SHALL BE FILLED WITH CLOSED CELL FOAM.
3. WHEN BARRIER ELEVATIONS VARY, THE SLOPE OF THE STEEL CAP WILL BE IN ONE DIRECTION.
4. FOR PAVEMENT RESTORATION, SEE CIVIL DRAWINGS.
5. DOWELS TO BE DRILLED IN AND GROUTED WHEN BARRIER CURB IS PLACED ON EXISTING FOOTING.
6. REINFORCEMENT SHALL CONFORM TO ASTM A-615 GR. 60.
7. 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.



WHITE CONCRETE BARRIER CURB, (CAST-IN-PLACE) AT SIGN STRUCTURES

N.T.S.

Sheet of

PORT AUTHORITY NY NJ
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No.	Date	Revision	Approved
2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

MEDIAN CONCRETE BARRIER CURB

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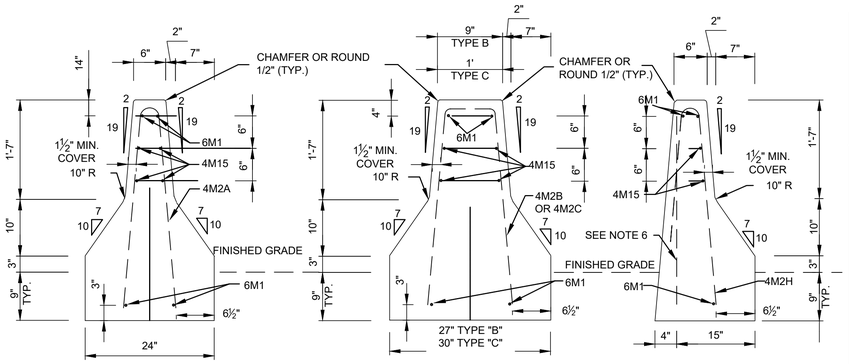
Date 07 / 15 / 2024

Drawing Number TD200.04



TYPE "A"

(SEE NOTE 13)

TYPE "B" OR "C"

(SEE NOTE 13)

HALF SECTION

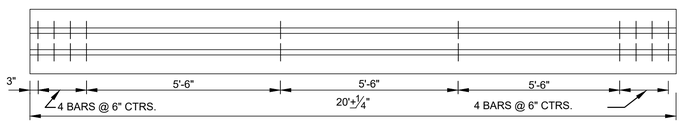
(SEE NOTES 12 & 13)

BAR LIST

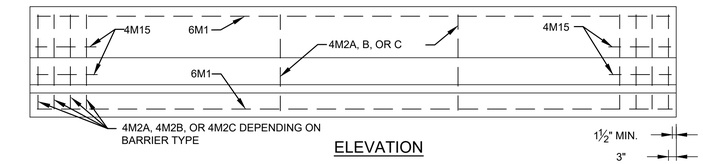
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
6M1	6	4*	234"	STRINGER					LONGITUDINAL - 2 BOTTOM (EXCEPT HALF SECTION) *HALF SECTION -1 BOTTOM -2 TOP
4M2A	4	10**	73"	STIRRUP	5½"	36"	1½"		STIRRUP -TYPE A, UNIT * * 4 IN END TAPER NO.1
4M2B	4	10	77"	STIRRUP	7"	36"	1½"	6"	STIRRUP -TYPE B UNIT
4M2C	4	10	80"	STIRRUP	8½"	36"	1½"	9¾"	STIRRUP -TYPE C UNIT
4M2H	4	10	55"	STIRRUP	3"	36"	1"		STIRRUP - HALF SECTION
4M3	4	1	68"	STIRRUP	5¼"	34"	1½"		STIRRUP IN END TAPER SECTION NO.1
4M4	4	1	66"	STIRRUP	5"	32"	1½"		STIRRUP IN END TAPER SECTION NO.1
4M5	4	4	60"	STIRRUP	5"	29"	1½"		STIRRUP IN END TAPER SECTION NO.1 & NO.2 (4 IN EACH PIECE)
4M6	4	1	56"	STIRRUP	5"	27"	1½"		STIRRUP IN END TAPER SECTION NO.2
4M7	4	1	51"	STIRRUP	5"	25"	1½"		STIRRUP IN END TAPER SECTION NO.2
4M8	4	4	44"	STIRRUP	5"	22"	1½"		STIRRUP IN END TAPER SECTION NO.2 & NO.3 (4 IN EACH PIECE)
4M9	4	1	40"	STIRRUP	5"	19"	1½"		STIRRUP IN END TAPER SECTION NO.3
4M10	4	1	37"	STIRRUP	6"	17"	1½"		STIRRUP IN END TAPER SECTION NO.3
4M11	4	4	34"	STIRRUP	7"	15"	1½"		STIRRUP IN END TAPER SECTION NO.3 & NO.4 (4 IN EACH PIECE)
4M12	4	1	29"	STIRRUP	8"	12"	1½"	20"	STIRRUP IN END TAPER SECTION NO.4
4M13	4	1	27"	STIRRUP	9"	10"	1½"		STIRRUP IN END TAPER SECTION NO.4
4M14	4	4	34"	STIRRUP	10"	8"	1½"		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 ABBUTING 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	3½"	27"	3"		STIRRUP FOR CONTINUITY CONNECTION, 2 AT EACH END WITH CONTINUITY CONNECTION.

NOTES:

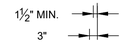
1. THE 9" EMBEDMENT IS TYPICAL FOR NEW AND RECONSTRUCTED MEDIANS.
2. ANY VARIATION OF THE 9" (TYPICAL) EMBEDMENT WILL BE DETAILED ON THE CONTRACT DRAWINGS.
3. FREE STANDING HALF-SECTION BARRIERS ON STRUCTURES, AND SPECIAL SECTIONS WILL BE DETAILED ON THE CONTRACT DRAWINGS.
4. HALF-SECTION BARRIERS SHALL 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.
5. 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".
6. ON HALF-SECTION BARRIER UNIT, BEND THE STIRRUP MARK 4M2H SO THAT IT WILL LIE PARALLEL TO BOTH FACES OF THE BARRIER.
7. 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.
8. 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.
9. SURFACES SHALL HAVE A SMOOTH FINISH.
10. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.
11. 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.
12. 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.
13. 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.
14. UNLESS SPECFIED 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.

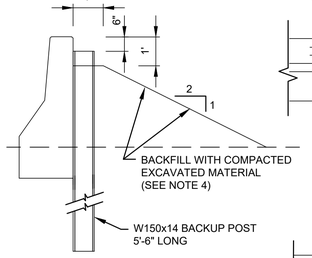


PLAN



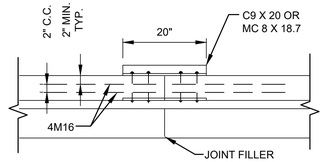
ELEVATION





DETAILS FOR HALF SECTION BACK UP

(SEE NOTE 4)



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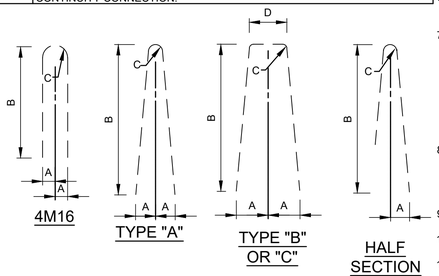
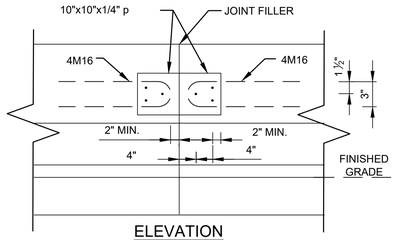


TYPICAL STIRRUPS



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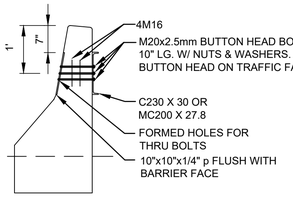
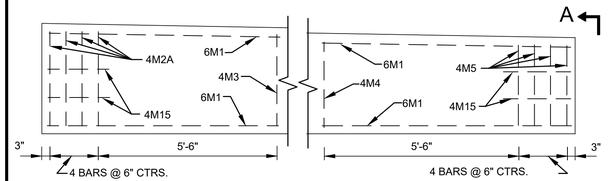


SECTION

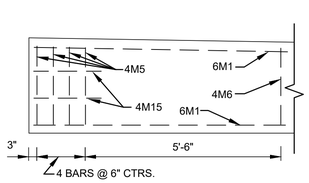
CONTINUITY CONNECTION FOR HALF SECTION BARRIER

(SEE NOTE 14)

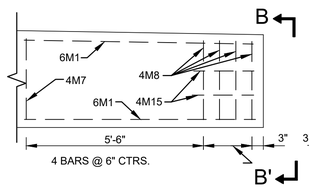


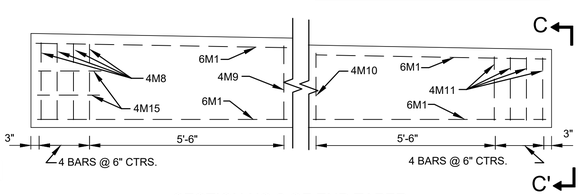
SECTION NO.1 OF END TAPER

SECTION NO.2 OF END TAPER

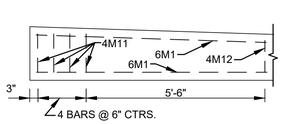


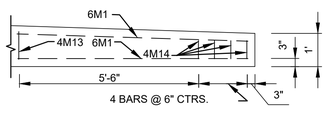
SECTION NO.2 OF END TAPER





SECTION NO.3 OF END TAPER



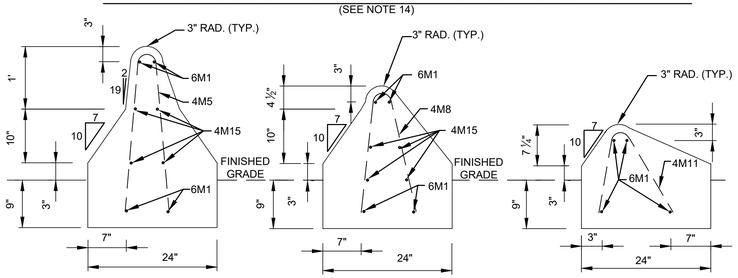


SECTION NO.4 OF END TAPER

ELEVATION OF END TAPER SHOWING TYPE "A"

END TAPER SECTIONS 1, 2, 3, & 4 ARE 20'+1/4" LONG ONLY THE ENDS ARE DETAILED.

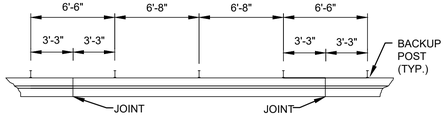
N.T.S.



SECTION A-A' SECTION B-B' SECTION C-C'

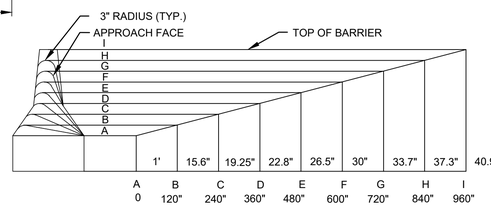
CROSS SECTIONS OF END TAPER SHOWING TYPE "A"

(BARRIER IS SHOWN IN MEDIAN. USE OPPOSITE HAND WHEN BARRIER IS PLACED TO THE RIGHT OF TRAFFIC.)



BACKUP POST LAYOUT

N.T.S.



DETAIL SHOWING END TAPER

VERTICAL DIMENSIONS IN THIS DETAIL ARE SHOWN TO THE NEAREST in

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	12/19/2016	REVISION TO CONVERSION FROM METRIC UNIT	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

CONCRETE BARRIER PRECAST

DISCLAIMER:

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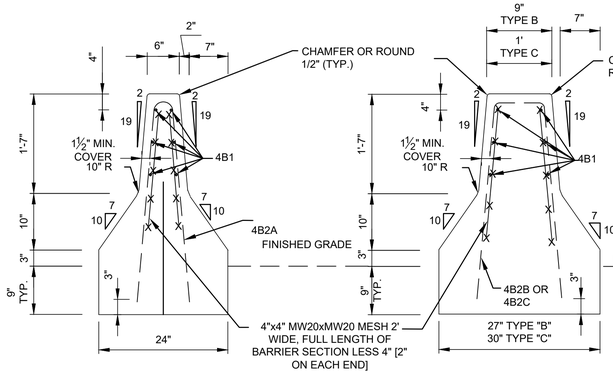
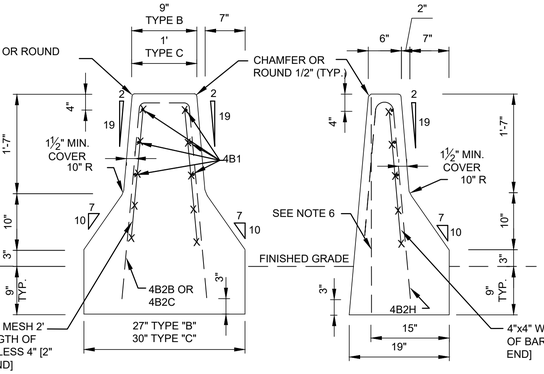
Date 07 / 15 / 2024

Drawing Number TD200.05

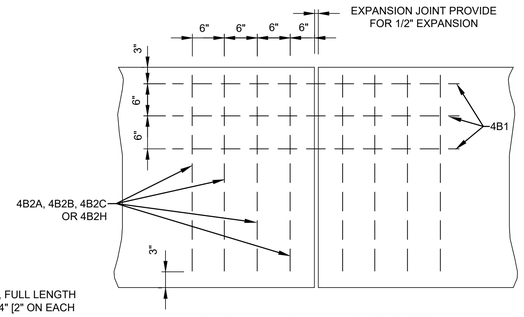


TYPE "A"
(SEE NOTES 13)



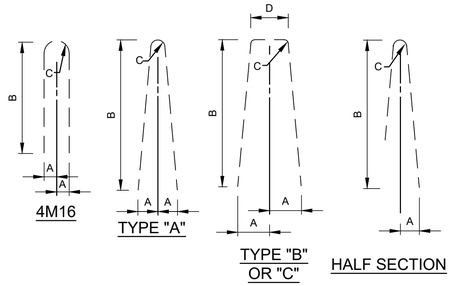
TYPE "B" OR "C"
(SEE NOTES 13)

HALF SECTION
(SEE NOTES 12 & 13)

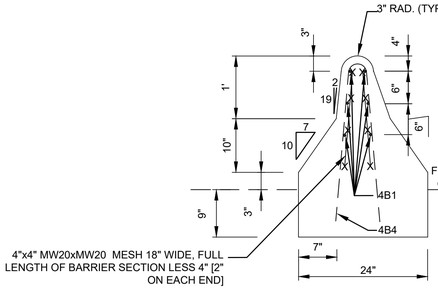


EXPANSION JOINT DETAIL SHOWING REINFORCING BARS

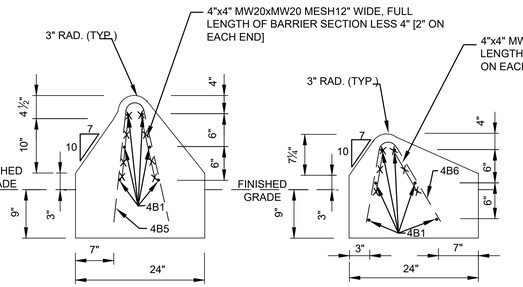
(MESH NOT SHOWN IN THIS DETAIL)



TYPICAL STIRRUPS



SECTION AT JOINT BETWEEN END TAPER NO.1 & NO.2

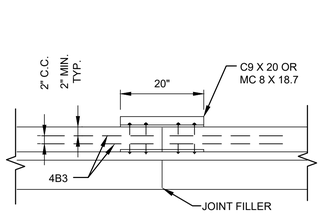


SECTION AT JOINT BETWEEN END TAPER NO.2 & NO.3

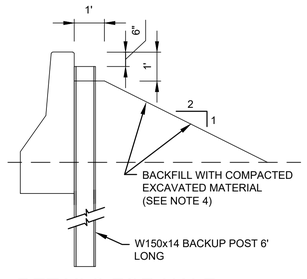
SECTION AT JOINT BETWEEN END TAPER NO.3 & NO.4

CROSS SECTIONS OF END TAPER SHOWING TYPE "A"

(SHOWN IN MEDIAN. USE OPPOSITE HAND WHEN PLACED TO THE RIGHT OF TRAFFIC)



PLAN

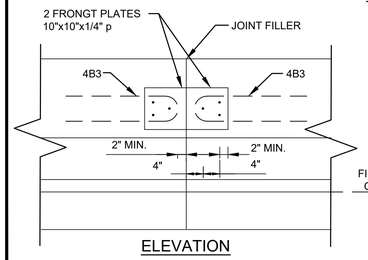


DETAILS FOR HALF SECTION BACK UP

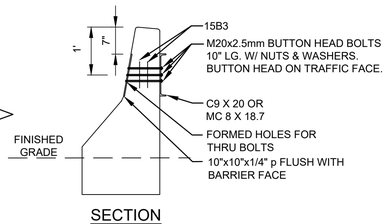
(SEE NOTE 4)

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



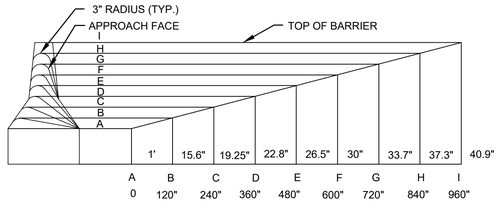
ELEVATION



SECTION

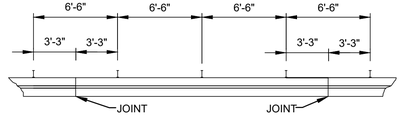
CONTINUITY CONNECTION FOR HALF SECTION BARRIER

(SEE NOTES 14)



DETAIL SHOWING END TAPER

VERTICAL DIMENSIONS IN THIS DETAIL ARE SHOWN TO THE NEAREST in



BACKUP POST LAYOUT

NOTES:

1. THE 9" EMBEDMENT IS TYPICAL FOR NEW AND RECONSTRUCTED MEDIANS.
2. ANY VARIATION OF THE 9" (TYPICAL) EMBEDMENT WILL BE DETAILED ON THE CONTRACT DRAWINGS.
3. FREE STANDING HALF-SECTION BARRIERS ON STRUCTURES, AND SPECIAL SECTIONS WILL BE DETAILED ON THE CONTRACT DRAWINGS.
4. 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.
5. 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.
6. ON HALF-SECTION BARRIER UNIT, BEND THE STIRRUP MARK 4B2H SO THAT IT WILL LIE PARALLEL TO BOTH FACES OF THE BARRIER.
7. 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 10' OF BARRIER.
   C. SURFACE STRAIGHTNESS WHEN CHECKED WITH A 10' STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED 1/5".
8. 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.
9. 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.
10. CAST IN PLACE BARRIER SHALL HAVE A SMOOTH FINISH AND THE CONTRACTOR SHALL STEEL TROWEL ANY SURFACE AS DIRECTED BY THE ENGINEER.
11. 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.
12. 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.
13. 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.
14. 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.

Sheet of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	12/19/2016	REVISION TO CONVERSION FROM METRIC UNIT	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

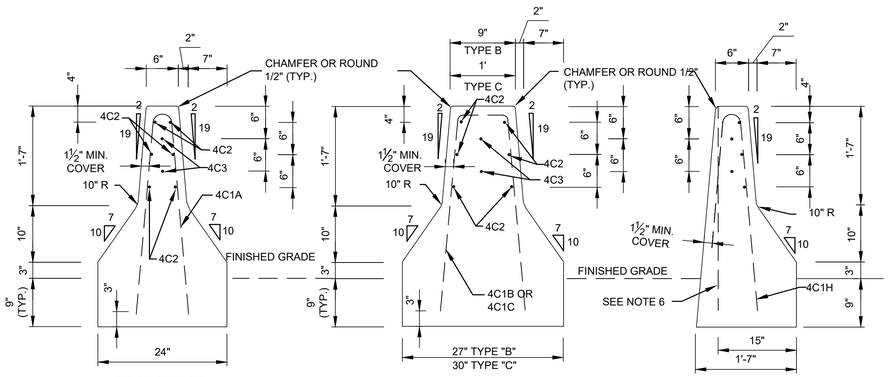
CONCRETE BARRIER CAST-IN-PLACE

DISCLAIMER:

THIS IS ONLY A
SAMPLE DRAWING
TO BE UPDATED AS PER DISCLAIMER ABOVE.

Date 07 / 15 / 2024

Drawing Number TD200.06



TYPE "A"

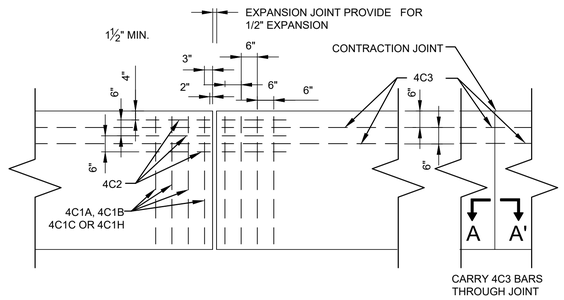
(SEE NOTE 15)

TYPE "B" OR "C"

(SEE NOTE 15)

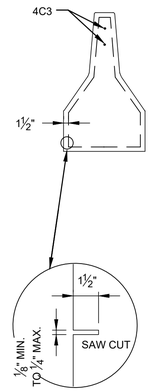
HALF SECTION

(SEE NOTES 13 & 15)



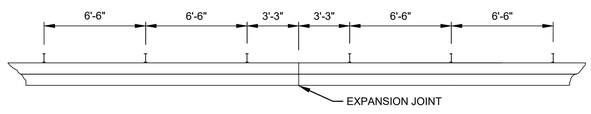
EXPANSION JOINT DETAIL SHOWING REINFORCEMENT

CONTRACTION JOINT DETAIL SHOWING REINFORCEMENT



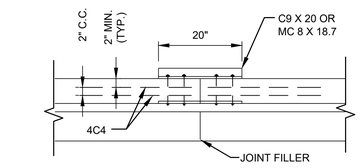
SECTION A-A'

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

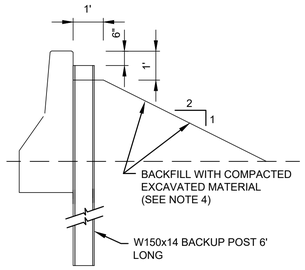


BACKUP POST LAYOUT

N.T.S.

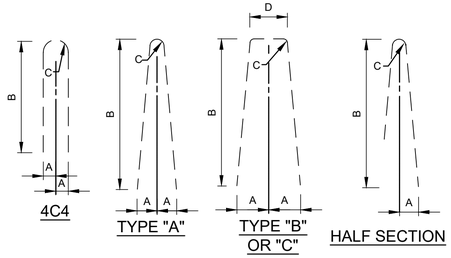


PLAN

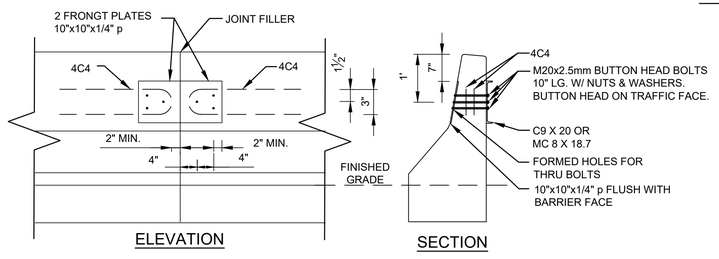


DETAILS FOR HALF SECTION BACK UP

(SEE NOTE 4)



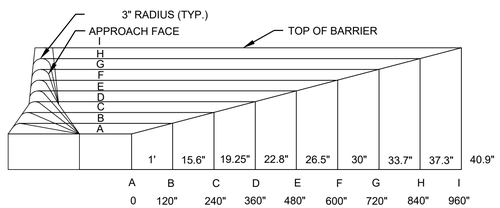
TYPICAL STIRRUPS



CONTINUITY CONNECTION FOR HALF SECTION BARRIER

(FOR USE AT EXPANSION JOINTS IN HALF SECTION CONCRETE BARRIER)

N.T.S.



DETAIL SHOWING END TAPER

VERTICAL DIMENSIONS IN THIS DETAIL ARE SHOWN TO THE NEAREST in

NOTES:

1. THE 9" EMBEDMENT IS TYPICAL FOR NEW AND RECONSTRUCTED MEDIANS.
2. ANY VARIATION OF THE 9" (TYPICAL) EMBEDMENT WILL BE DETAILED ON THE CONTRACT DRAWINGS.
3. FREE STANDING HALF-SECTION BARRIERS ON STRUCTURES, AND SPECIAL SECTIONS WILL BE DETAILED ON THE CONTRACT DRAWINGS.
4. 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.
5. 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.
6. ON HALF-SECTION BARRIER UNIT, BEND THE STIRRUP MARK 4C1H SO THAT IT WILL LIE PARALLEL TO BOTH FACES OF THE BARRIER.
7. 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".
8. 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 CUSHION.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	12/19/2016	REVISION TO CONVERSION FROM METRIC UNIT	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

CONCRETE BARRIER MACHINE FORMED

DISCLAIMER:

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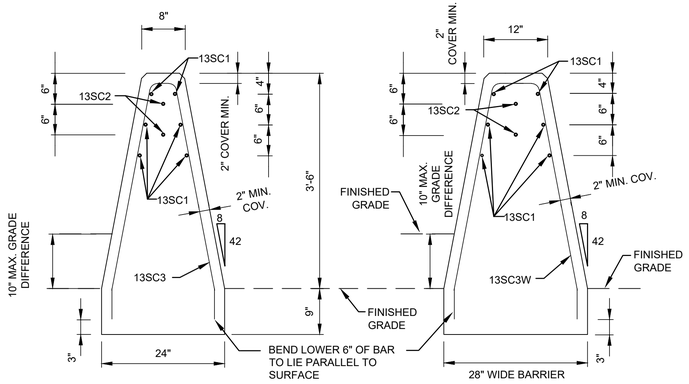
SAMPLE DRAWING
TO BE UPDATED AS PER DISCLAIMER ABOVE.

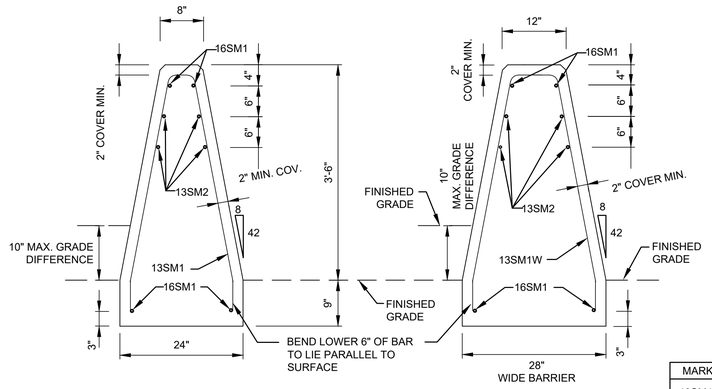
Date 07 / 15 / 2024

Drawing Number TD200.07



SECTION SHOWING MACHINE FORMED SINGLE SLOPE CONCRETE MEDIAN BARRIER

(SHOWN AT EXPANSION JOINT)
N.T.S.



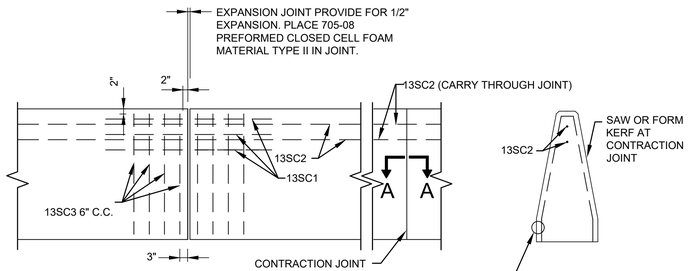
SECTION SHOWING PRECAST SINGLE SLOPE CONCRETE MEDIAN BARRIER

(SHOWN AT EXPANSION JOINT)
N.T.S.

NOTES:

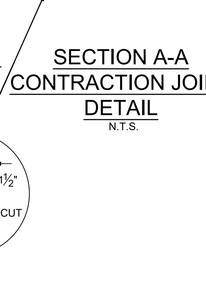
1. FINISH TOLERANCES FOR ALL BARRIERS SHALL BE AS FOLLOWS:
   A. CROSS-SECTIONAL DIMENSIONS - CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/4".
   B. LONGITUDINAL DIMENSIONS - LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/4" PER 9'-10" OF BARRIER.
   C. SURFACE STRAIGHTNESS - WHEN CHECKED WITH A 9'-10" STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED 1/4".
2. 2" MINIMUM COVER FOR ALL REINFORCEMENT.
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.
4. THE NOMINAL LENGTH OF PRECAST SECTIONS IS 20' BUT MAY BE MODIFIED TO A MINIMUM OF 10' AND A MAXIMUM OF 24' TO FIT CONDITONS. UNLESS THE MODIFIED BARRIER IS DETAILED BY THE DEPARTMENT THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS TO THE ENGINEER.
5. 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"	1½"	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"	1½"	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



EXPANSION JOINT DETAIL SHOWING REINF. BARS MACHINE FORMED SINGLE SLOPE CONCRETE MEDIAN BARRIER

N.T.S.

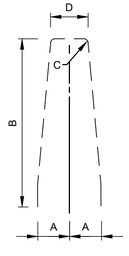


SECTION A-A CONTRACTION JOINT DETAIL

N.T.S.

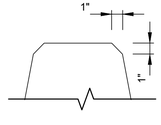
DETAIL SHOWING KERF IN SECTION A-A

N.T.S.



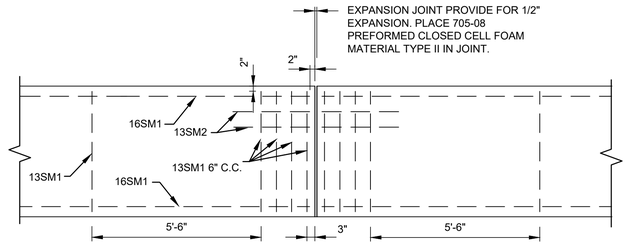
TYPICAL STIRRUP

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



TYPICAL CHAMFER DETAIL

(ALL BARRIERS)
N.T.S.

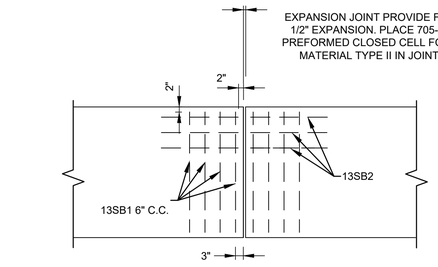


EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR PRECAST CONCRETE SINGLE SLOPE MEDIAN BARRIER

(SEE NOTE 4)
N.T.S.

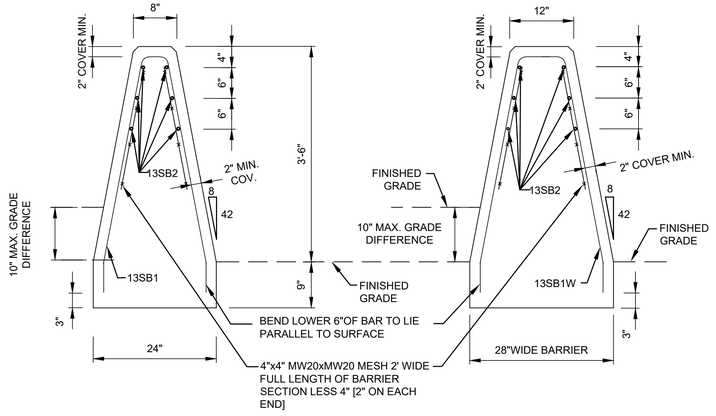
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SC1	4	12	2'-6"	STRAIGHT	—	—	—	—	LONGITUDINAL - 6 ON EACH SIDE OF THE EXPANSION JOINT
13SC2	4	2	—	STRINGER	—	—	—	—	CONTINUOUS FROM EXPANSION JOINT TO EXPANSION JOINT
13SC3	4	8	96"	STIRRUP	10"	46"	1½"	4"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT
13SC3W	4	8	8'-4"	STIRRUP	12"	46"	1½"	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"	1½"	4"	4 ON EACH SIDE OF EXPANSION JOINT
13SB1W	4	8	100"	STIRRUP	6"	46"	1½"	8"	4 ON EACH SIDE OF EXPANSION JOINT
13SB2	4	12	2'-6"	STRAIGHT	—	—	—	—	6 ON EACH SIDE OF EXPANSION JOINT



EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR CAST-IN-PLACE SINGLE SLOPE CONCRETE MEDIAN BARRIER

(MESH NOT SHOWN IN THIS DETAIL)
N.T.S.



SECTION SHOWING CAST-IN-PLACE SINGLE SLOPE CONCRETE MEDIAN BARRIER

(SHOWN AT EXPANSION JOINT - SEE NOTE 5)
N.T.S.

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	01/23/2015	UPDATE TEXT STYLE TO ARIAL	
1	10/22/2014	TABLE MODIFICATIONS SIZE INFO	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

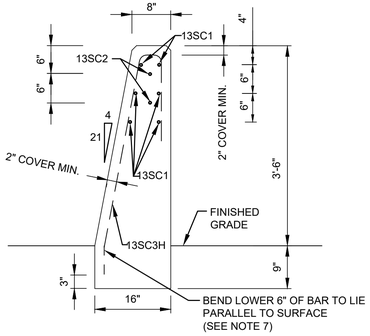
CONCRETE BARRIER SINGLE SLOPE

DISCLAIMER:

THIS IS ONLY A
SAMPLE DRAWING
TO BE UPDATED AS PER DISCLAIMER ABOVE.

Date 07 / 15 / 2024

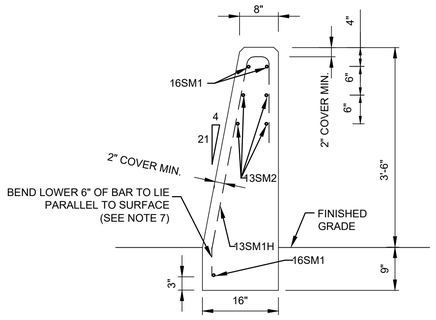
Drawing Number TD200.08



SECTION SHOWING MACHINE FORMED SINGLE SLOPE CONCRETE HALF SECTION BARRIER

TD200.09.02

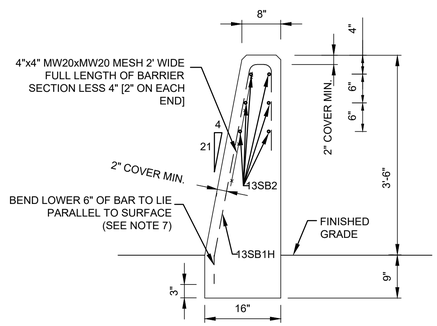
(SHOWN AT EXPANSION JOINT)
N.T.S.



SECTION SHOWING PRECAST SINGLE SLOPE CONCRETE HALF SECTION BARRIER

TD200.09.03

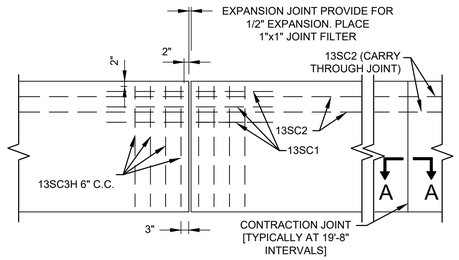
(SHOWN AT EXPANSION JOINT - SEE NOTE 13)
N.T.S.



SECTION SHOWING CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIER

TD200.09.04

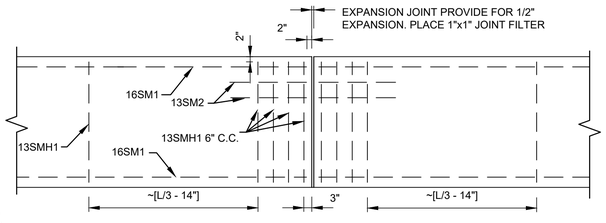
(SHOWN AT EXPANSION JOINT - SEE NOTE 10)
N.T.S.



EXPANSION JOINT DETAIL SHOWING REINF. BARS MACHINE FORMED SINGLE SLOPE CONCRETE HALF SECTION BARRIER

N.T.S.

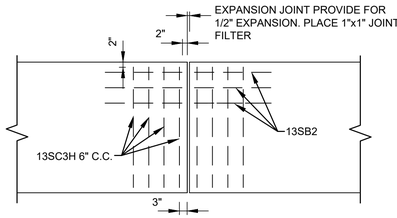
TD200.09.05



EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR PRECAST CONCRETE SINGLE SLOPE CONCRETE HALF SECTION BARRIER

N.T.S.

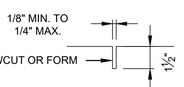
TD200.09.06



EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIER

(MESH NOT SHOWN IN THIS DETAIL)
N.T.S.

TD200.09.07



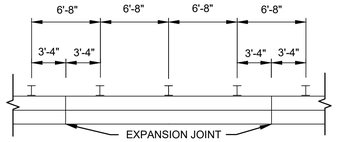
DETAIL SHOWING KERF IN SECTION A-A

N.T.S.

TD200.09.08

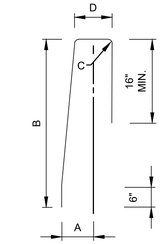
DETAIL OF S4 BAR

TD200.09.09



TYPICAL BACKUP POST LAYOUT

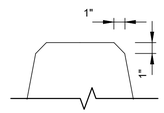
TD200.09.10



TYPICAL STIRRUP

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

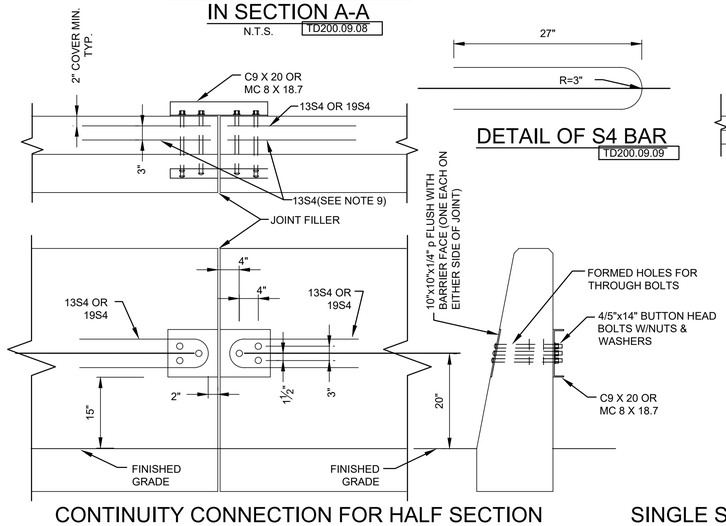
TD200.09.11



TYPICAL CHAMFER DETAIL

(ALL BARRIERS)
N.T.S.

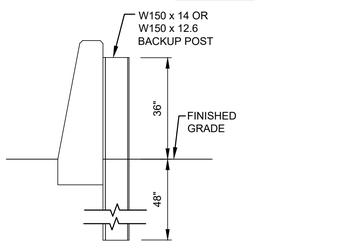
TD200.09.12



CONTINUITY CONNECTION FOR HALF SECTION SINGLE SLOPE BARRIER

(SEE NOTE 2)

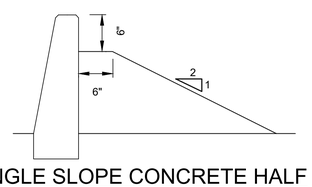
TD200.09.13



SINGLE SLOPE CONCRETE HALF SECTION BARRIER WITH BACKUP POST

(SEE NOTES 3 AND 4)

TD200.09.14



SINGLE SLOPE CONCRETE HALF SECTION BARRIER WITH EARTH BACKUP

(SEE NOTES 3, 4 AND 12)

TD200.09.15

NOTES:

TD200.09.01

1. 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".
2. 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.
3. 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.
4. 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.
5. 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.
6. 2" MINIMUM COVER FOR ALL REINFORCEMENT.
7. THESE BENDS MAY BE ELIMINATED PROVIDED 2" MINIMUM COVER IS MAINTAINED.
8. SURFACES SHALL BE SMOOTH.
9. IF 19S4 BARS ARE USED, THEN THESE 13S4 BAR NEED NOT BE USED.
10. AS AN OPTION TO THE REINFORCEMENT SHOWN FOR THE CAST-IN-PLACE BARRIER THE CONTRACTOR MAY USE THE REINFORCEMENT SHOWN FOR PRECAST BARRIER.
11. 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.
12. EARTH BACKUP SHALL CONSIST OF FULLY COMPACTED SUITABLE MATERIAL HAVING NO PARTICLES GREATER THAN 1 ½" INCLUDED.
13. 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.

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"	1½"	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"	1½"	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

L = NOMINAL LENGTH OF SECTION IN Ft.

* SEE DETAIL OF S4 BAR

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SB1H	4	8	5'-6"	STIRRUP	10"	46"	1½"	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

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No.	Date	Revision	Approved
4	06/27/2024	DISCLAIMER ADDED	
3	12/19/2016	REVISION TO CONVERSION FROM METRIC UNIT	
2	01/23/2015	UPDATE TEXT STYLE TO ARIAL	
1	10/22/2014	TABLE MODIFICATIONS SIZE INFO	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

CONCRETE BARRIER HALF SECTION SINGLE SLOPE

DISCLAIMER:

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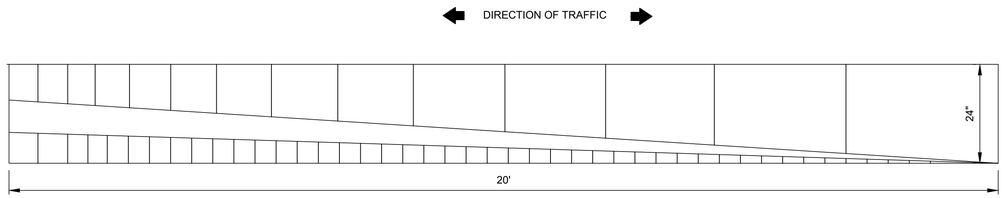
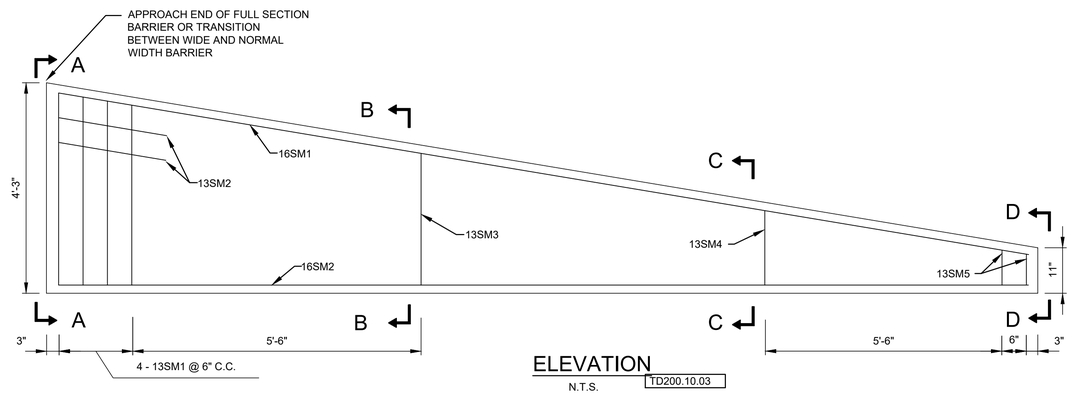
TO BE UPDATED AS PER DISCLAIMER ABOVE.

Date 07 / 15 / 2024

Drawing Number TD200.09

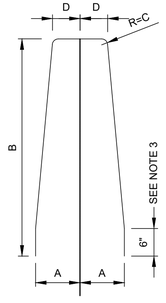


PLAN VIEW
N.T.S. TD200.10.02

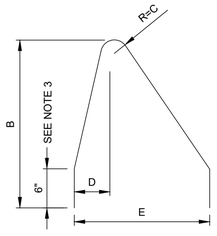


ELEVATION
N.T.S. TD200.10.03

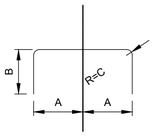
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	E	LOCATION
13SM1	4	4	VARIES FROM 7'-5⅘" TO 7'-11"	STIRRUP	10"	VARIES FROM 3'-6⅔" TO 3'-9½"	1½"	2"	—	4 AT 6" CENTERS AT THE FULL SECTION END OF TERMINAL.
13SM2	4	4	30"	STRAIGHT	—	—	—	—	—	4 AT FULL SECTION END OF TERMINAL
13SM3	4	1	66"	STIRRUP	—	2'-6¼"	1½"	5½"	20"	1 AT 5'-6" FROM LAST 13SM1 STIRRUP
13SM4	4	1	43½"	STIRRUP	—	1'-5"	1½"	2½"	20"	1 AT 5'-6" FROM FIRST 13SM1 STIRRUP
13SM5	4	2	28½"	STIRRUP	10"	5"	1½"	—	—	2 AT 6" CENTER AT TAIL END OF BARRIER
16SM1	5	2	19'-11½"	STRAIGHT	—	—	—	—	—	LONGITUDINAL - 2 AT TOP
16SM2	5	2	19'-8¼"	STRAIGHT	—	—	—	—	—	LONGITUDINAL - 2 AT BOTTOM



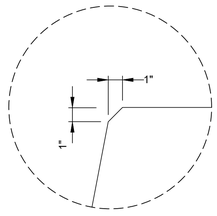
STIRRUP 13SM1
N.T.S. TD200.10.04



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



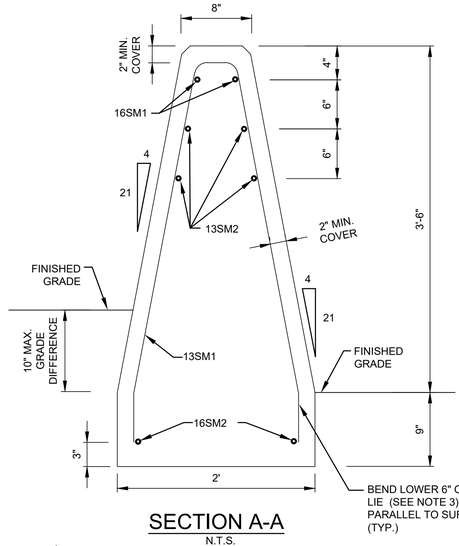
13SM5
N.T.S. TD200.10.06



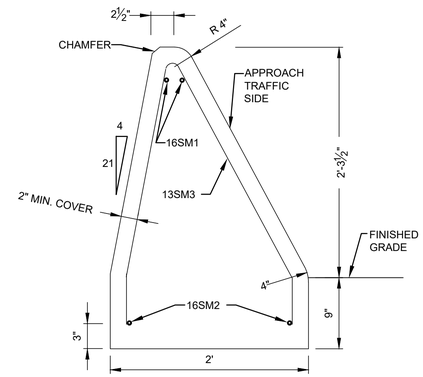
TYPICAL CHAMFER DETAIL
TD200.10.07
(ALL SECTIONS)
N.T.S.

NOTES:
TD200.10.01

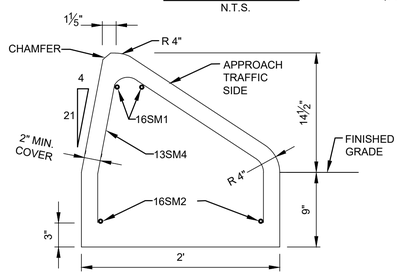
1. FINISH TOLERANCES FOR ALL BARRIERS SHALL BE AS FOLLOWS:
   A. CROSS SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN 1/5".
   B. THE VERTICAL CENTERLINE SHALL NOT BE OUT OF PLUMB BY MORE THAN 1/5".
   C. LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY 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. 2" MIN. COVER ON ALL REINFORCEMENTS.
3. STIRRUPS SHOULD LIE AS CLOSE AND PARALLEL TO FACE OF BARRIER AS POSSIBLE.
4. THESE BENDS MAY BE ELIMINATED PROVIDED 2" MINIMUM COVER IS MAINTAINED.
5. SURFACES SHALL BE SMOOTH.
6. 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.
7. 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.



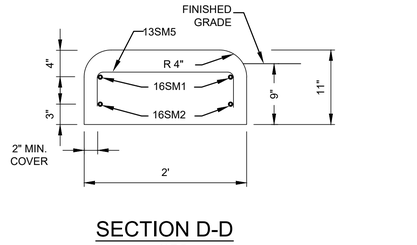
SECTION A-A
N.T.S.



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.



SECTION D-D
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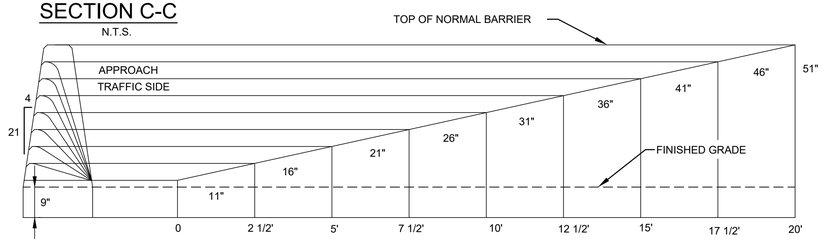

SINGLE SLOPE CONCRETE BARRIER TERMINAL DETAIL
USE OPPOSITE HAND WHEN BARRIER IS PLACED TO THE RIGHT OF TRAFFIC FLOW
TD200.10.08

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AIR LAND RAIL SEA

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No.	Date	Revision	Approved
3	06/27/2024	DISCLAIMER ADDED	
2	01/23/2015	UPDATE TEXT STYLE TO ARIAL	
1	10222014	TABLE MODIFICATIONS SIZE INFO	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
PERMANENT BARRIERS

SINGLE - SLOPE CONCRETE BARRIER TERMINAL SECTION-RAMP TERMINAL

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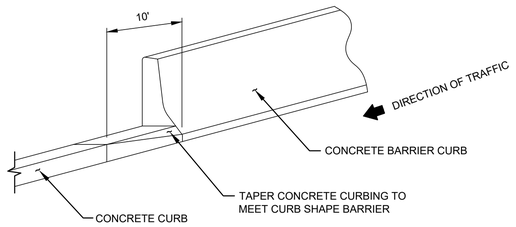
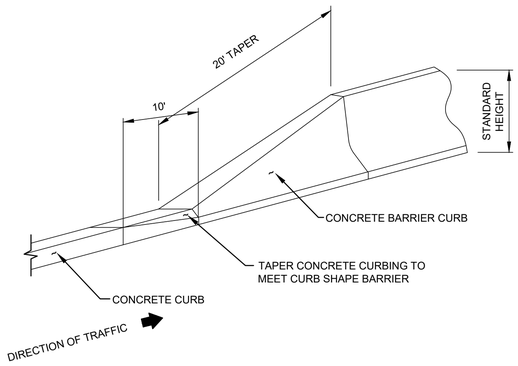
Drawing Number TD200.10



BARRIER TRANSITION TO CURB

N.T.S. TD200.11.02



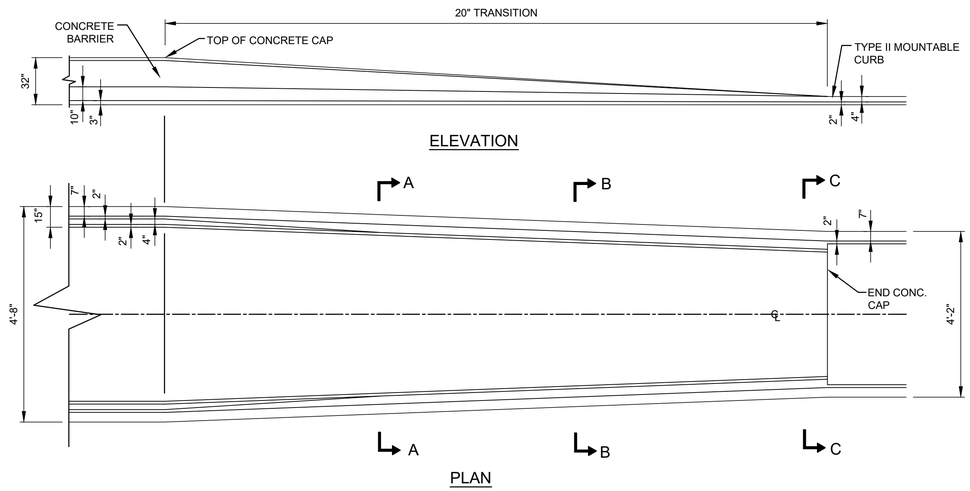
CURB TRANSITION TO BARRIER

N.T.S. TD200.11.03

NOTE:

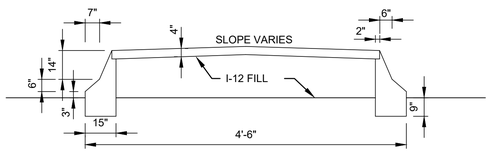
TD200.11.01

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.



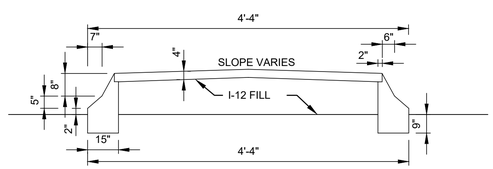
TRANSITION DETAIL FOR VARIABLE WIDTH BARRIER CURB, ON BRIDGE (CAST-IN PLACE) TO CURB

N.T.S. TD200.11.04



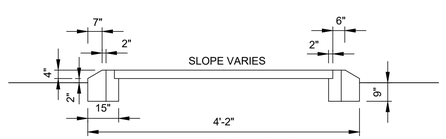
SECTION A-A

N.T.S.



SECTION B-B

N.T.S.



SECTION C-C

N.T.S.

Sheet of

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1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

BARRIER TRANSITION DETAILS

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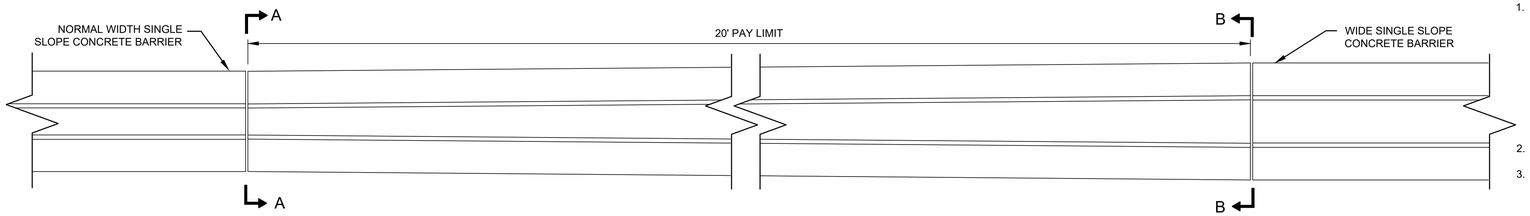
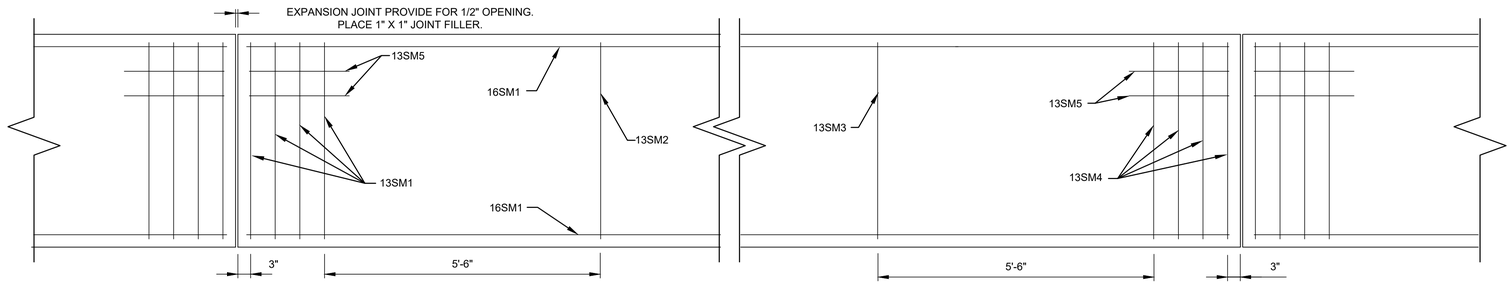


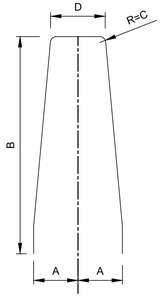
PLAN
N.T.S. TD200.12.02



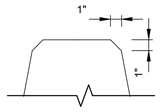
ELEVATION
N.T.S. TD200.12.03

NOTES:
TD200.12.01

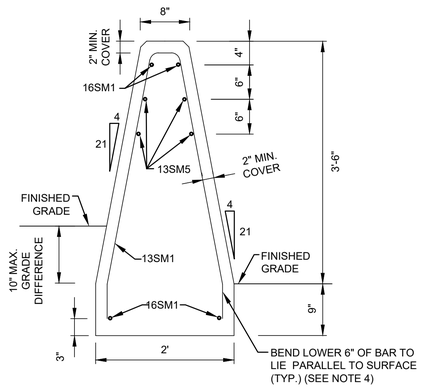
1. FINISH TOLERANCES FOR TRANSITION SHALL BE AS FOLLOWS:
   A. CROSS-SECTIONAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN ½".
   B. THE VERTICAL CENTERLINE SHALL NOT BE OUT OF PLUMB BY MORE THAN ½".
   C. LONGITUDINAL DIMENSIONS SHALL NOT VARY FROM THE DIMENSIONS SHOWN BY MORE THAN ⅛" PER 9'-10" OF BARRIER.
   D. WHEN CHECKED WITH A 9'-10" STRAIGHT EDGE, IRREGULARITIES SHALL NOT EXCEED ½".
2. SURFACES SHALL BE SMOOTH.
3. 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.
4. BENDING OF BOTTOM OF STIRRUPS SHOWN IN SECTION A-A & B-B IS NOT NECESSARY, PROVIDED 2" COVER REQUIREMENTS ARE SATISFIED.
5. 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.



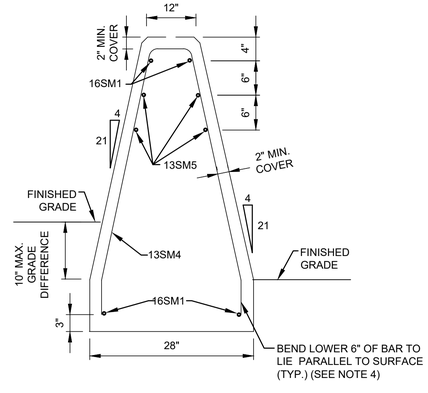
TYPICAL STIRRUP
N.T.S. TD200.12.04



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



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

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PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
PERMANENT BARRIERS

TRANSITION BETWEEN WIDE AND NORMAL WIDTH SINGLE SLOPE CONCRETE MEDIAN BARRIER

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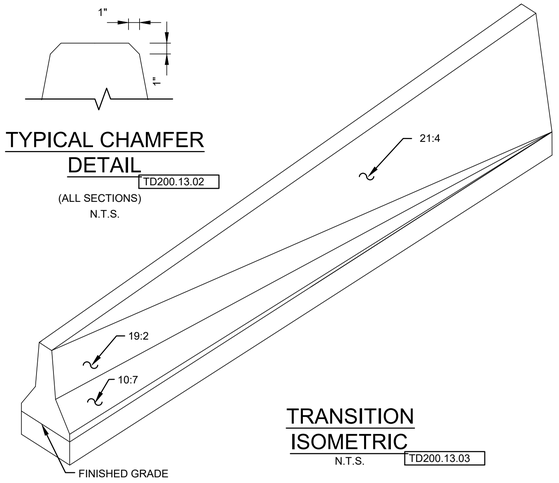


TYPICAL CHAMFER DETAIL
TD200.13.02

(ALL SECTIONS)
N.T.S.

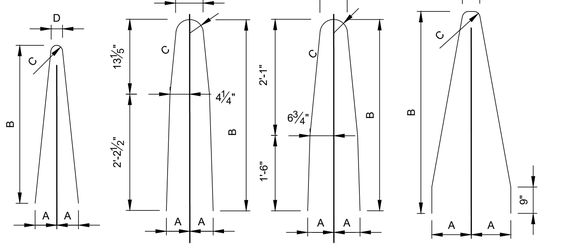
TRANSITION ISOMETRIC
N.T.S. TD200.13.03

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
13SM1	13	4	VARIES FROM 94½" TO 96"	STIRRUP	10"	VARIES FROM 45¼" TO 46"	1½"	4"	4 AT 6" CENTERS AT END ADJACENT TO THE SINGLE SLOPE BARRIER
13SM2	13	1	95"	STIRRUP	8⅔"	42½"	1½"	3⅓"	5'-6" FROM 13SM1 BARS
13SM3	13	1	88⅓"	STIRRUP	7"	39¾"	1½"	2 3/4"	5'-6" FROM 13SM4 BARS
13SM4	13	4	VARIES FROM 75" TO 76½"	STIRRUP	5½"	VARIES FROM 36" TO 36⅔"	1½"	2¾"	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'-8¼"	STRINGER	——	——	——	——	LONGITUDINAL 2 IN TOP - 2 IN BOTTOM

BARS TO BE EPOXY COATED GRADE 420

NOTES:
TD200.13.01

1. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. SURFACES SHALL BE SMOOTH.
3. 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.
4. BENDING OF BOTTOM OF STIRRUPS SHOWN IN SECTION E-E IS NOT NECESSARY, PROVIDED COVER REQUIREMENTS ARE SATISFIED.
5. 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.

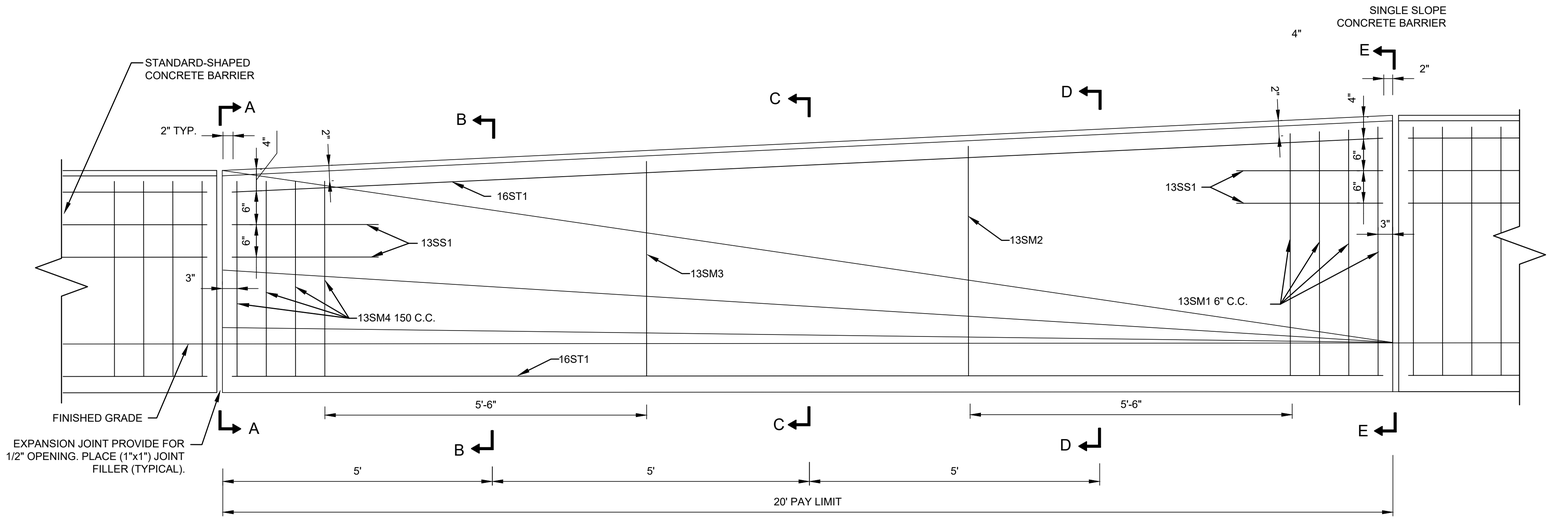


STIRRUP
13SM4 TD200.13.04

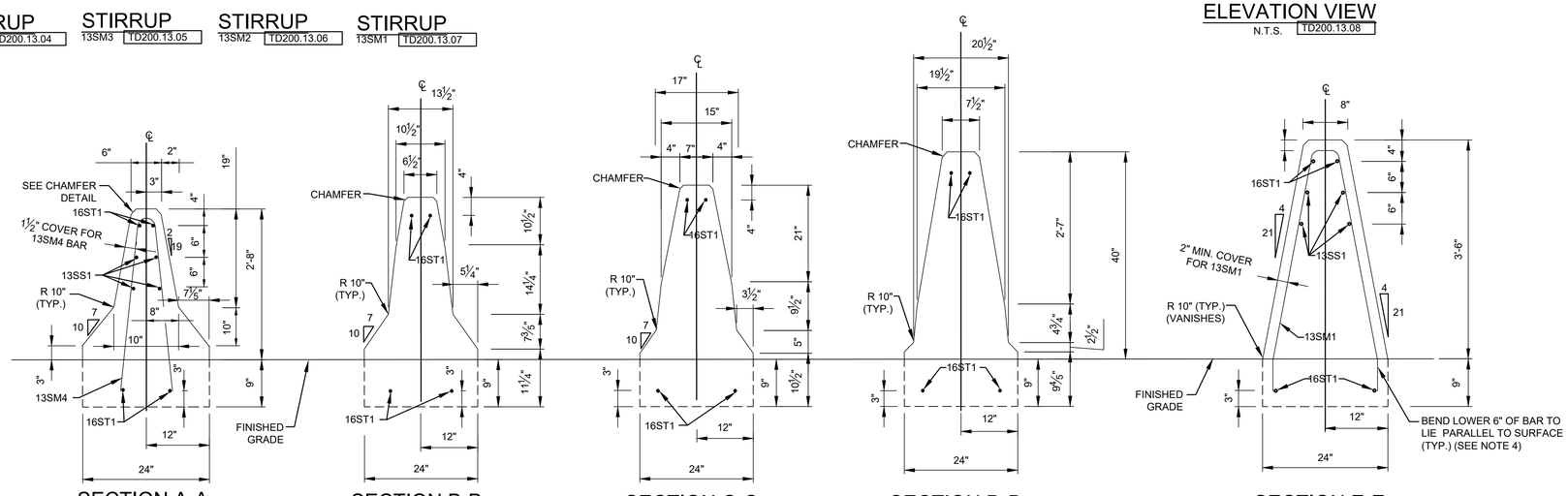
STIRRUP
13SM3 TD200.13.05

STIRRUP
13SM2 TD200.13.06

STIRRUP
13SM1 TD200.13.07



ELEVATION VIEW
N.T.S. TD200.13.08



SECTION A-A
N.T.S. TD200.13.09

SECTION B-B
N.T.S. TD200.13.10

SECTION C-C
N.T.S. TD200.13.11

SECTION D-D
N.T.S. TD200.13.12

SECTION E-E
N.T.S. TD200.13.13

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1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

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

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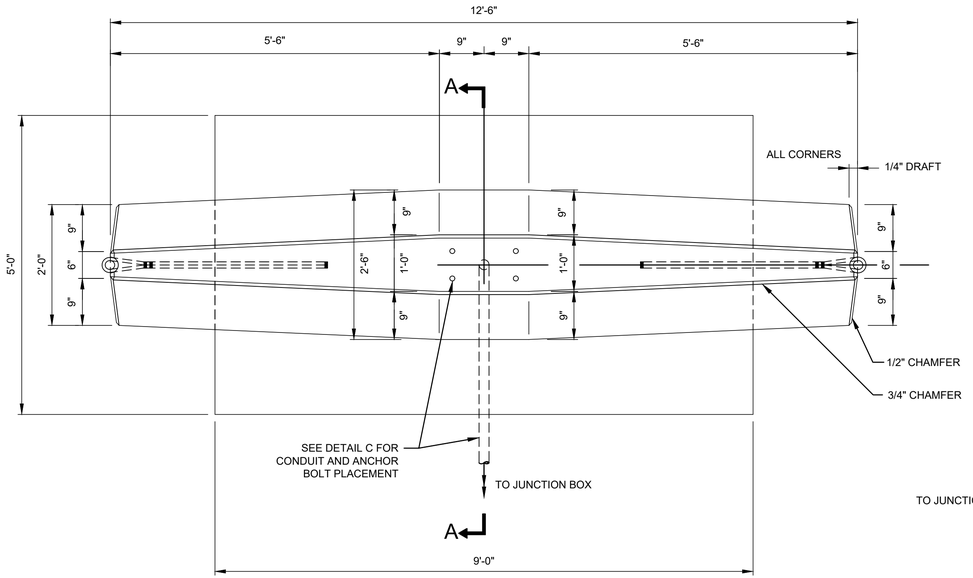
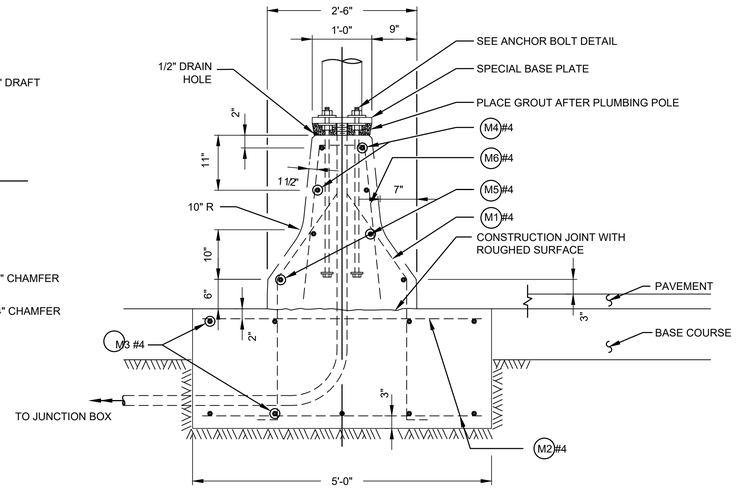


PLAN

TD200.14.02



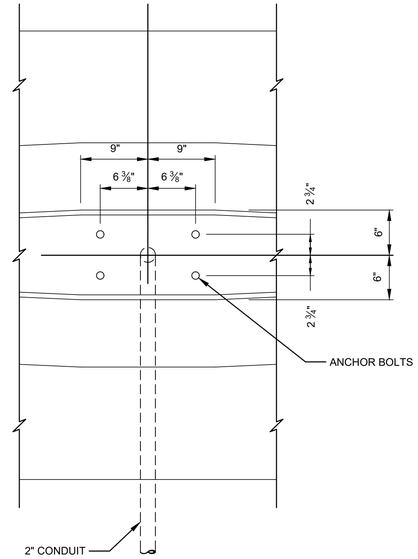
SECTION A-A

TD200.14.05

NOTES:

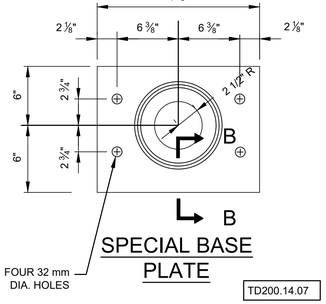
TD200.14.01

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



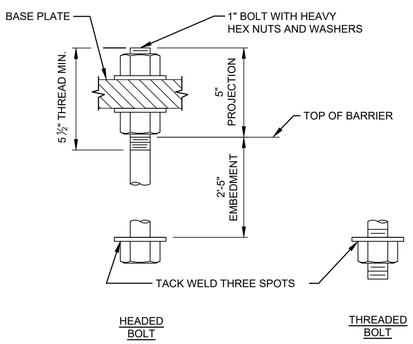
DETAIL C

TD200.14.08



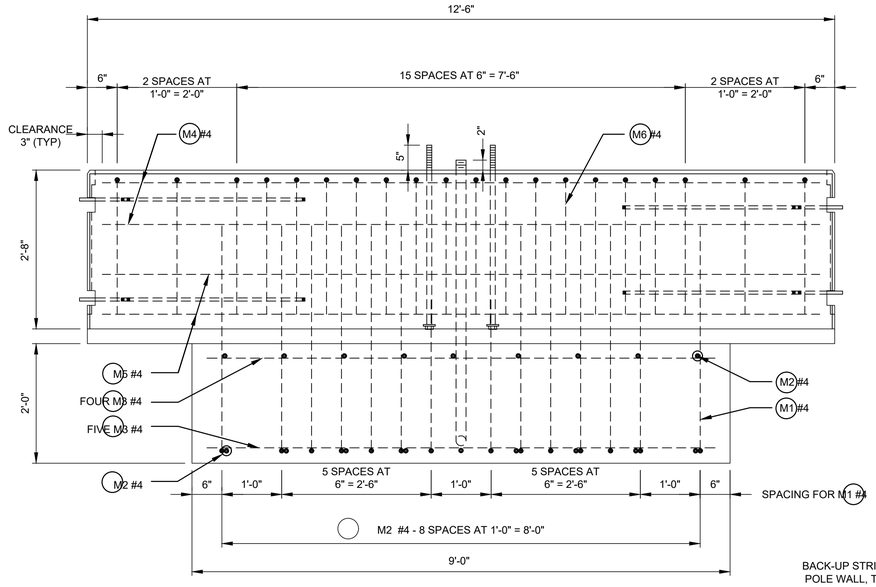
SPECIAL BASE PLATE

TD200.14.07



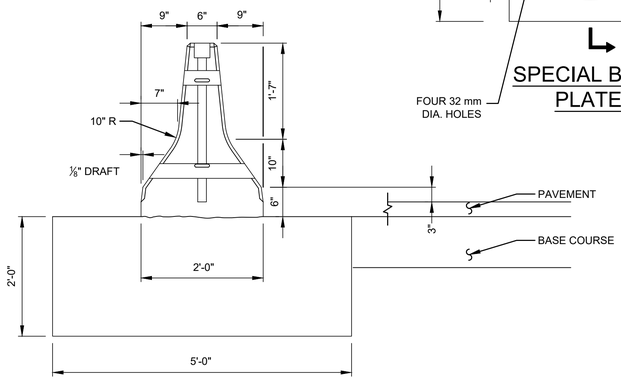
ANCHOR BOLT DETAIL

TD200.14.09



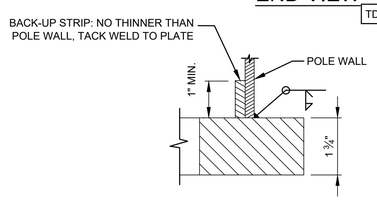
ELEVATION

TD200.14.03



END VIEW

TD200.14.04



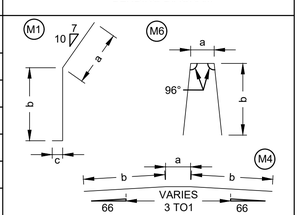
SECTION B-B

TD200.14.06

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"

BENDING DIAGRAM



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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

PERMANENT BARRIERS

CONCRETE BARRIER WITH LIGHT POST DETAIL

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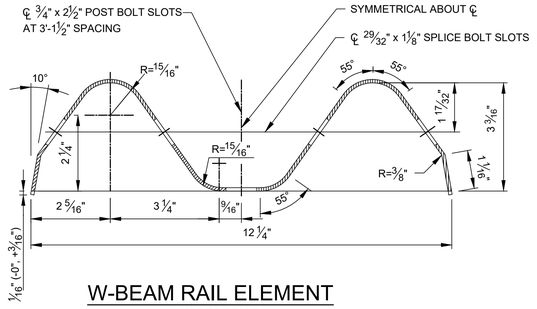
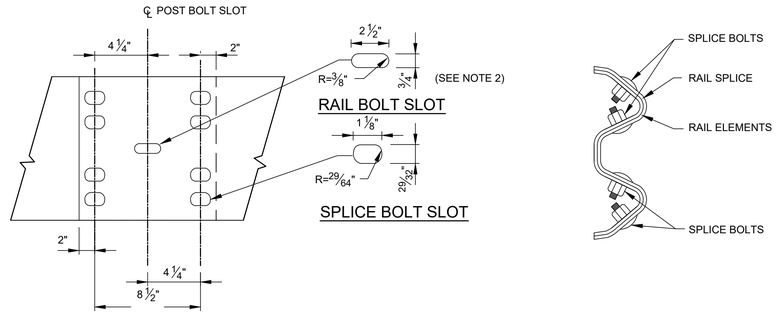


W-BEAM RAIL ELEMENT

NOT TO SCALE

RAIL ELEMENTS SHALL BE SUPPLIED IN LENGTHS OF 13'-6½" OR 26'-0½"

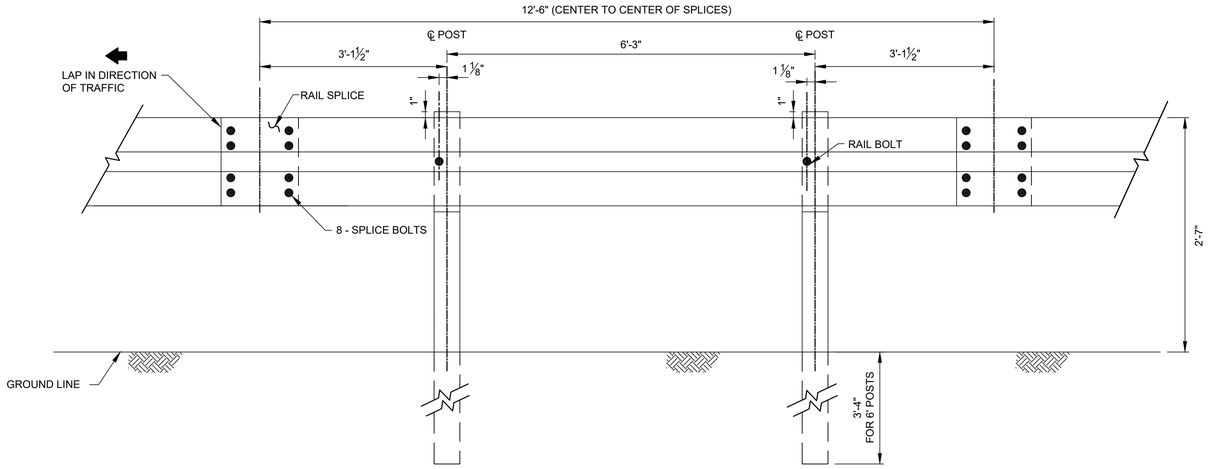


DETAIL OF RAIL SPLICE JOINT

NOT TO SCALE

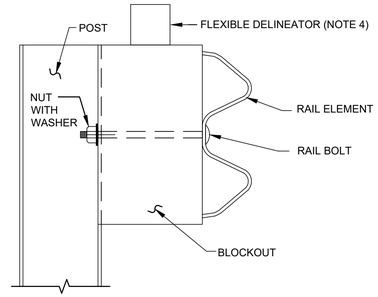
NOTES:

1. RAIL ELEMENTS SHALL BE FURNISHED SHOPCURVED, CONCAVE OR CONVEX, FOR RADII LESS THAN 150 FEET.
2. THE RAIL BOLT SLOT AT THE SPLICE JOINT IS USED WHEN POST SPACING IS REDUCED TO 3'-1½".
3. WHERE TRANSITIONING TO GUIDE RAIL, AN END TERMINAL, OR AN IMPACT ATTENUATOR MOUNTED AT A HEIGHT OTHER THEN 2'-7" THE VERTICAL TRANSITION SHALL BE ACCOMPLISHED IN A MINIMUM LENGTH OF 12'-6" FOR EACH 2 INCHES OF VERTICAL CHANGE.
4. MOUNT FLEXIBLE DELINEATORS APPROXIMATELY EVERY 80 FEET. WHERE THE ROADWAY IS CURVED WITH A RADIUS LESS THAN 1,910 FEET, MOUNT DELINEATORS APPROXIMATELY EVERY 40 FEET. FLEXIBLE DELINEATORS FOR GUIDE RAIL SHALL HAVE A REFLECTIVE AREA WITH A MINIMUM WIDTH OF 3 INCHES AND A MINIMUM HEIGHT OF 3 INCHES. FLEXIBLE DELINEATORS SHALL BE DESIGNED TO MOUNT ON TOP OF THE BLOCKOUT. THE RETROREFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956, TYPE VIII. INSTALL FLEXIBLE DELINEATORS WITH WHITE RETROREFLECTIVE SHEETING ON THE RIGHT SIDE OF THE DIRECTION OF TRAFFIC AND YELLOW RETROREFLECTIVE SHEETING ON THE LEFT SIDE OF THE DIRECTION OF TRAFFIC. ATTACH THE BASE TO THE TOP OF THE BLOCKOUT AS RECOMMENDED BY THE MANUFACTURER.



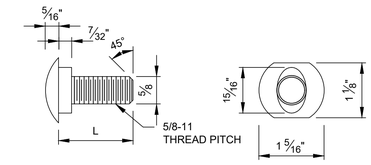
W-BEAM GUIDE RAIL

NOT TO SCALE



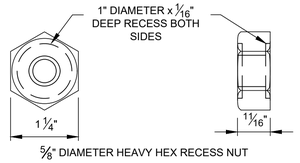
POST ASSEMBLY

NOT TO SCALE



5/8" DIAMETER BUTTON HEAD BOLT

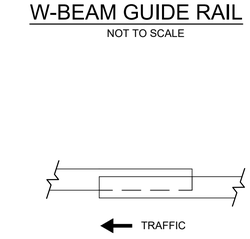
TYPE	L	THREAD LENGTH
SPLICE BOLT	1 ¼"	FULL LENGTH
RAIL BOLT	9 ½"	1 ¾" MINIMUM



5/8" DIAMETER HEAVY HEX RECESS NUT

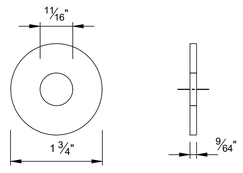
SPLICE & RAIL NUT & BOLT

NOT TO SCALE



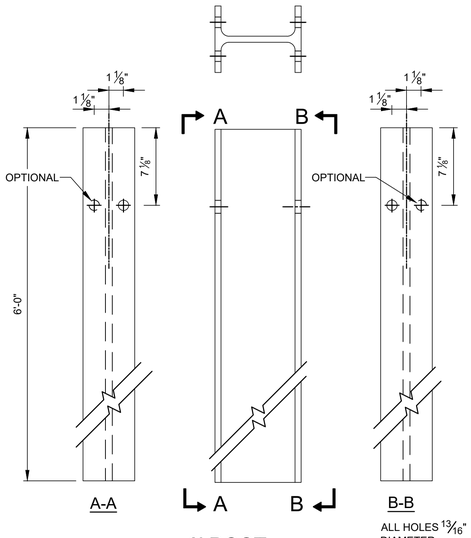
RAIL SPLICE LAP DETAIL

NOT TO SCALE



WASHER

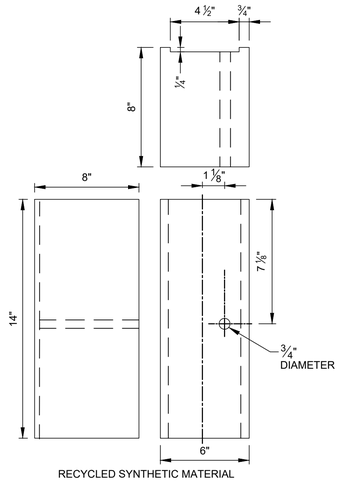
NOT TO SCALE



6' POST

NOT TO SCALE

W6x8.5 OR W6x9



RECYCLED SYNTHETIC MATERIAL

14"x8"x6" BLOCKOUT

NOT TO SCALE

Sheet 2 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL

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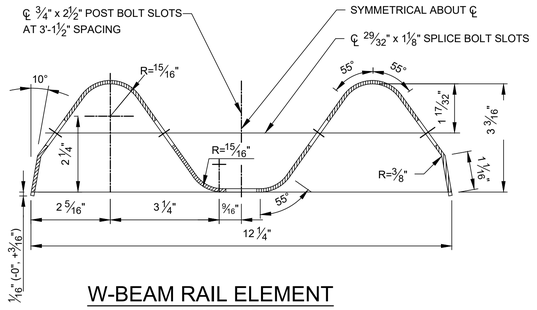
Date 07 / 15 / 2024

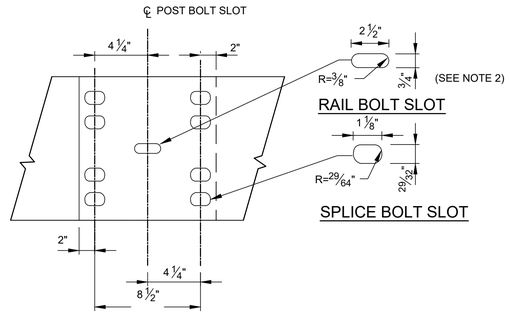
Drawing Number TD300.01



W-BEAM RAIL ELEMENT

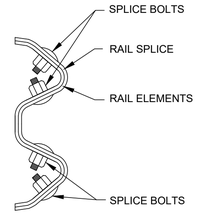
NOT TO SCALE

RAIL ELEMENTS SHALL BE SUPPLIED IN LENGTHS OF 13'-6½" OR 26'-0½"



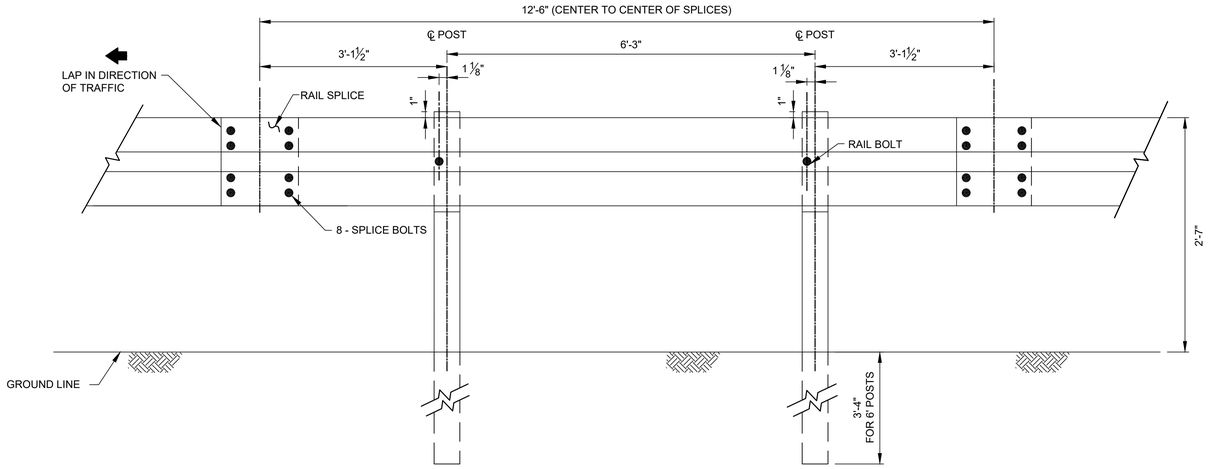
DETAIL OF RAIL SPLICE JOINT

NOT TO SCALE



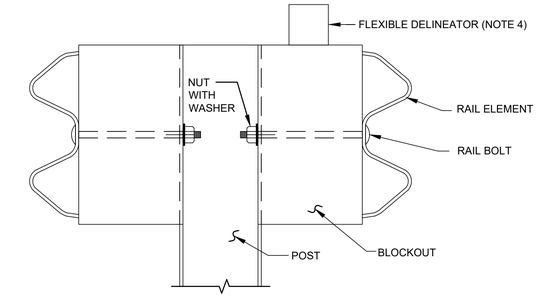
NOTES:

1. RAIL ELEMENTS SHALL BE FURNISHED SHOPCURVED, CONCAVE OR CONVEX, FOR RADII LESS THAN 150 FEET.
2. THE RAIL BOLT SLOT AT THE SPLICE JOINT IS USED WHEN POST SPACING IS REDUCED TO 3'-1½".
3. WHERE TRANSITIONING TO GUIDE RAIL, AN END TERMINAL, OR AN IMPACT ATTENUATOR MOUNTED AT A HEIGHT OTHER THEN 2'-7" THE VERTICAL TRANSITION SHALL BE ACCOMPLISHED IN A MINIMUM LENGTH OF 12'-6" FOR EACH 2 INCHES OF VERTICAL CHANGE.
4. MOUNT FLEXIBLE DELINEATORS APPROXIMATELY EVERY 80 FEET. WHERE THE ROADWAY IS CURVED WITH A RADIUS LESS THAN 1,910 FEET, MOUNT DELINEATORS APPROXIMATELY EVERY 40 FEET. FLEXIBLE DELINEATORS FOR GUIDE RAIL SHALL HAVE A REFLECTIVE AREA WITH A MINIMUM WIDTH OF 3 INCHES AND A MINIMUM HEIGHT OF 3 INCHES. FLEXIBLE DELINEATORS SHALL BE DESIGNED TO MOUNT ON TOP OF THE STEEL POST. THE RETROREFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956, TYPE VIII. INSTALL FLEXIBLE DELINEATORS WITH WHITE RETROREFLECTIVE SHEETING ON THE RIGHT SIDE OF THE DIRECTION OF TRAFFIC AND YELLOW RETROREFLECTIVE SHEETING ON THE LEFT SIDE OF THE DIRECTION OF TRAFFIC. ATTACH THE BASE TO THE TOP OF THE POST AS RECOMMENDED BY THE MANUFACTURER. PLACE THE DELINEATOR ON THE SIDE CLOSEST TO TRAFFIC.



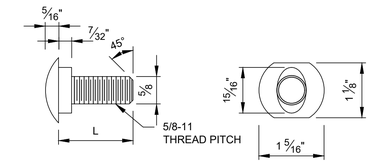
W-BEAM GUIDE RAIL

NOT TO SCALE



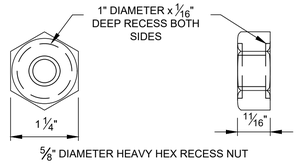
POST ASSEMBLY

NOT TO SCALE



5/8" DIAMETER BUTTON HEAD BOLT

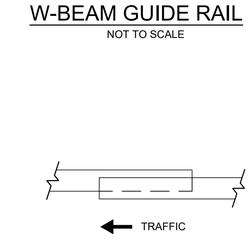
TYPE	L	THREAD LENGTH
SPLICE BOLT	1 ¼"	FULL LENGTH
RAIL BOLT	9 ½"	1 ¾" MINIMUM



5/8" DIAMETER HEAVY HEX RECESS NUT

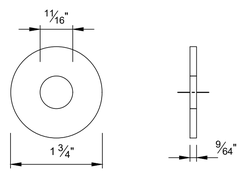
SPLICE & RAIL NUT & BOLT

NOT TO SCALE



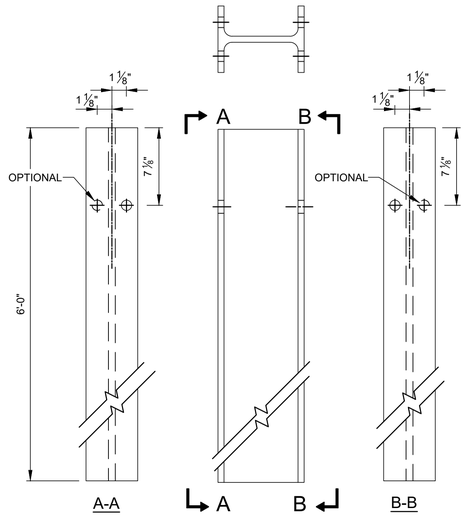
RAIL SPLICE LAP DETAIL

NOT TO SCALE



WASHER

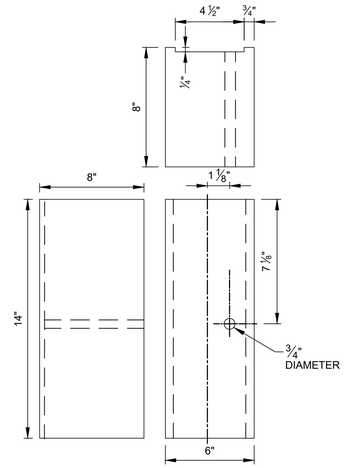
NOT TO SCALE



6' POST

NOT TO SCALE

W6x8.5 OR W6x9



RECYCLED SYNTHETIC MATERIAL

14"x8"x6" BLOCKOUT

NOT TO SCALE

Sheet 3 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

DUAL FACED W-BEAM GUIDE RAIL

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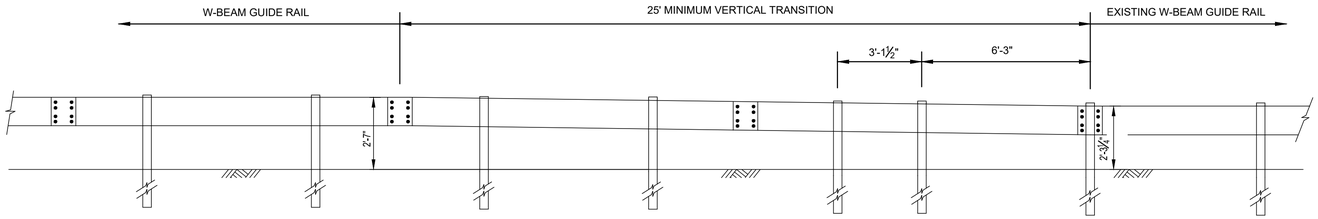
Date 07 / 15 / 2024

Drawing Number TD300.02

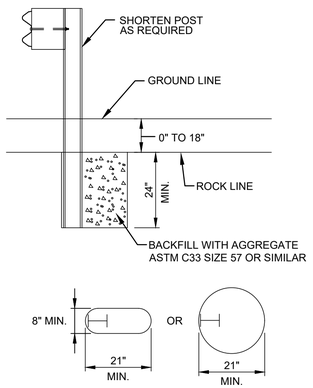


VERTICAL TRANSITION TO EXISTING GUIDE RAIL

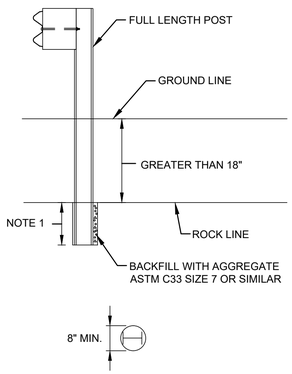
NOT TO SCALE

NOTES:

1. POST IS TO BE EMBEDDED IN ROCK AS REQUIRED TO ACCOMMODATE A FULL LENGTH POST.
2. WHERE TRANSITIONING TO GUIDE RAIL, AN END TERMINAL, OR AN IMPACT ATTENUATOR MOUNTED AT A HEIGHT OTHER THAN 2'-7", THE VERTICAL TRANSITION SHALL BE ACCOMPLISHED IN A MINIMUM LENGTH OF 12'-6" FOR EACH 2 INCHES OF VERTICAL CHANGE.



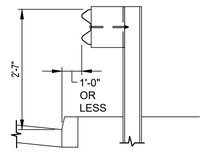
DETAIL A



DETAIL B

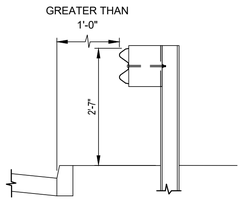
GUIDE RAIL POST INSTALLATION IN ROCK

NOT TO SCALE



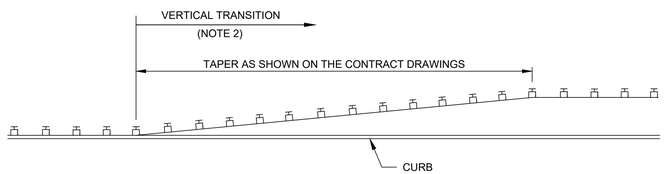
RAIL HEIGHT DETERMINATION ADJACENT TO CURB

NOT TO SCALE



RAIL HEIGHT DETERMINATION SET BACK FROM CURB

NOT TO SCALE



WHERE GUIDE RAIL ADJACENT TO CURB TRANSITIONS TO AN OFFSET SET BACK FROM CURB

NOT TO SCALE

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL INSTALLATION DETAILS

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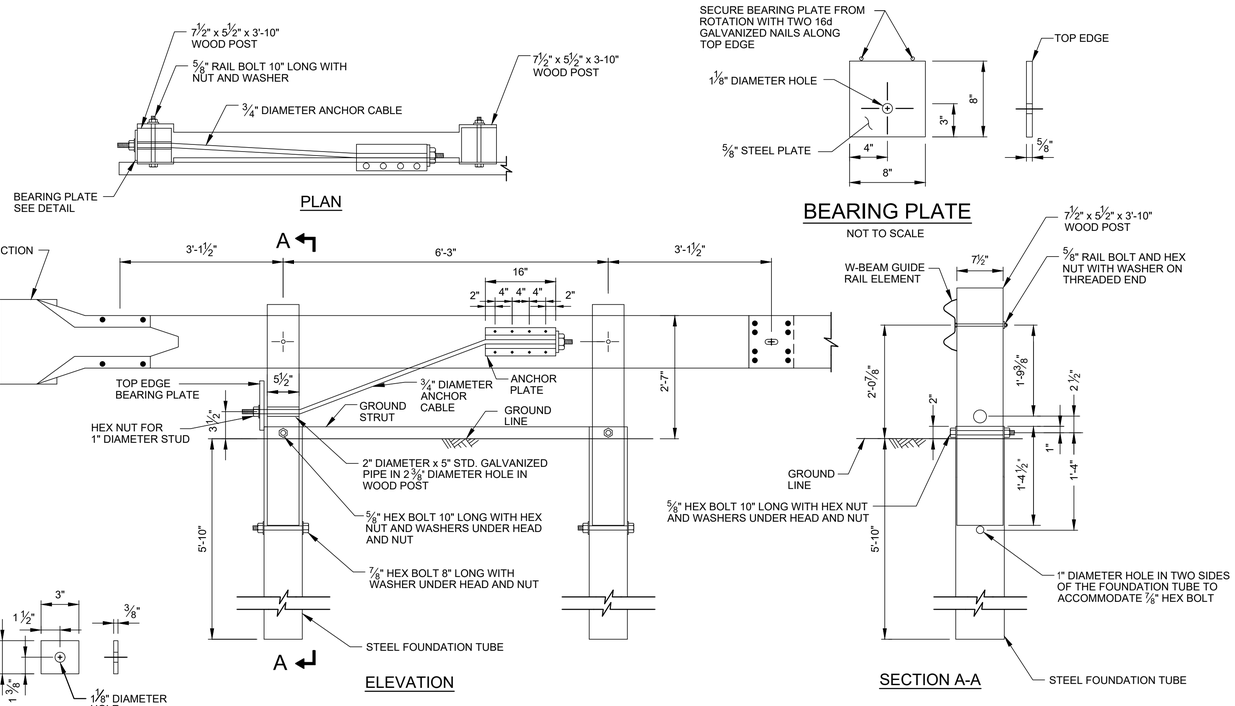
Date 07 / 15 / 2024

Drawing Number TD300.03



Sheet 5 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM
GUIDE RAIL
ANCHORAGE

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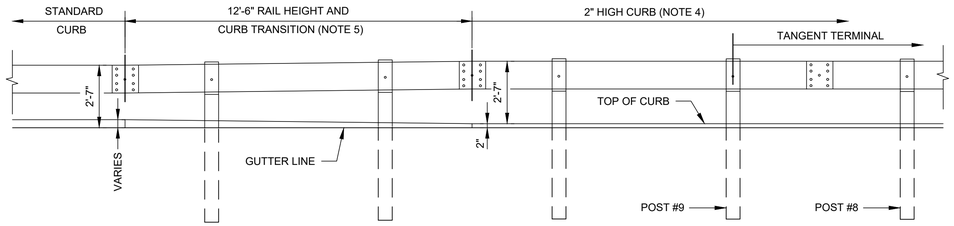
Date 07 / 15 / 2024

Drawing Number TD300.04

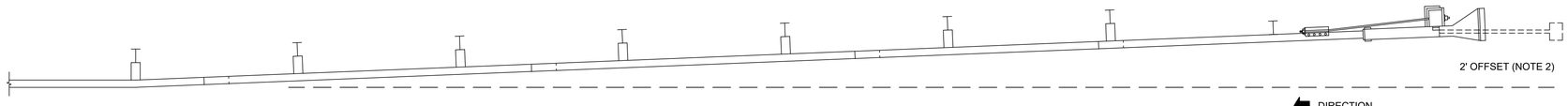


RAIL HEIGHT & CURB TRANSITION FOR W-BEAM TANGENT GUIDE RAIL TERMINAL

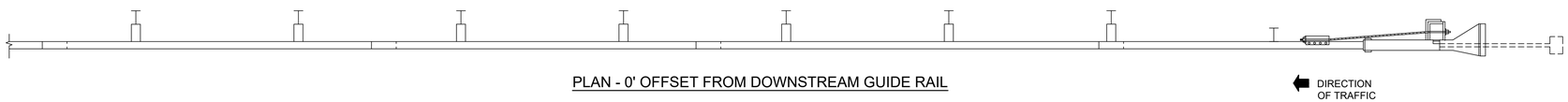
NOT TO SCALE

NOTES:

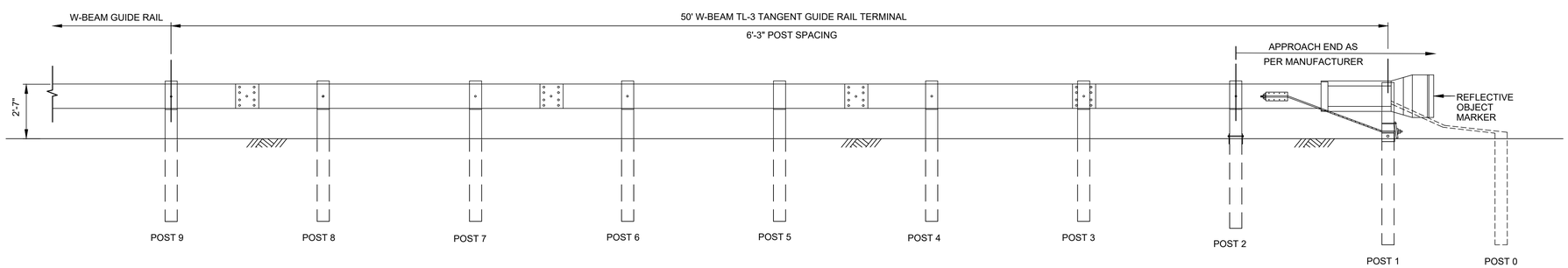
1. NUMBER OF POSTS, TYPE OF POST, POST SPACING, FLARE RATE, SPLICE LOCATIONS AND MATERIALS TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. WHERE SPECIFIED ON THE CONTRACT DRAWINGS, CONSTRUCT THE TANGENT GUIDE RAIL TERMINAL WITH A STRAIGHT TAPER FOR ITS ENTIRE LENGTH FOR A TWO FOOT OFFSET SO THAT THE TERMINAL END DOES NOT PROTRUDE INTO THE ROADWAY.
3. WHERE THE DOWNSTREAM GUIDE RAIL IS ON A HORIZONTAL CURVE, CONSTRUCT THE TANGENT GUIDE RAIL TERMINAL IN A STRAIGHT LINE (DO NOT FOLLOW THE HORIZONTAL CURVE).
4. TWO INCH HIGH CURB LIMITS AS SHOWN ON THE CONTRACT DRAWINGS.
5. WHERE GUIDE RAIL HEIGHT IS MEASURED FROM THE GROUND LINE AS SHOWN IN THE GUIDE RAIL DETAILS, A RAIL HEIGHT TRANSITION IS NOT REQUIRED.
6. INSTALL POST #0 WHERE SPECIFIED BY THE MANUFACTURER.



PLAN - 2' OFFSET FROM DOWNSTREAM GUIDE RAIL



PLAN - 0' OFFSET FROM DOWNSTREAM GUIDE RAIL



ELEVATION

W-BEAM TL-3 TANGENT GUIDE RAIL TERMINAL

NOT TO SCALE

Sheet 6 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM TL-3
TANGENT GUIDE
RAIL TERMINAL

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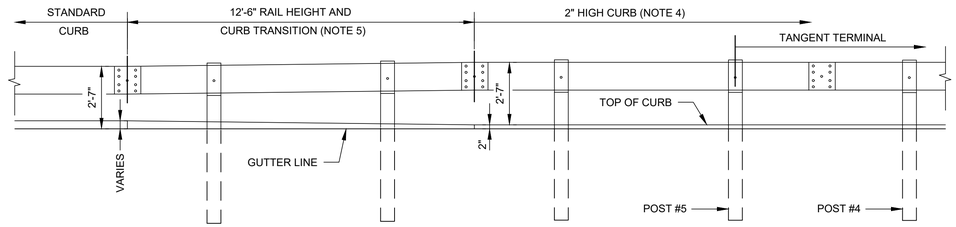
Date 07 / 15 / 2024

Drawing Number TD300.05

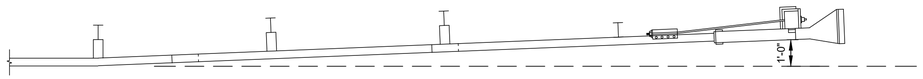


RAIL HEIGHT & CURB TRANSITION FOR W-BEAM TANGENT GUIDE RAIL TERMINAL

NOT TO SCALE

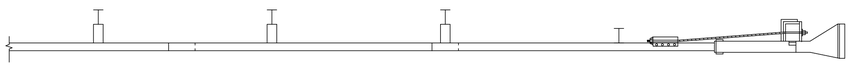
NOTES:

1. NUMBER OF POSTS, TYPE OF POST, POST SPACING, FLARE RATE, SPLICE LOCATIONS AND MATERIALS TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. WHERE W-BEAM GUIDE RAIL IS INSTALLED LESS THAN 1 FOOT FROM THE GUTTER LINE OR WHERE SPECIFIED ON THE CONTRACT DRAWINGS, CONSTRUCT THE TANGENT GUIDE RAIL TERMINAL WITH A STRAIGHT TAPER FOR ITS ENTIRE LENGTH FOR A ONE FOOT OFFSET SO THAT THE TERMINAL END DOES NOT PROTRUDE INTO THE ROADWAY.
3. WHERE THE DOWNSTREAM GUIDE RAIL IS ON A HORIZONTAL CURVE, CONSTRUCT THE TANGENT GUIDE RAIL TERMINAL IN A STRAIGHT LINE (DO NOT FOLLOW THE HORIZONTAL CURVE).
4. TWO INCH HIGH CURB LIMITS AS SHOWN ON THE CONTRACT DRAWINGS.
5. WHERE GUIDE RAIL HEIGHT IS MEASURED FROM THE GROUND LINE AS SHOWN IN THE GUIDE RAIL DETAILS, A RAIL HEIGHT TRANSITION IS NOT REQUIRED.



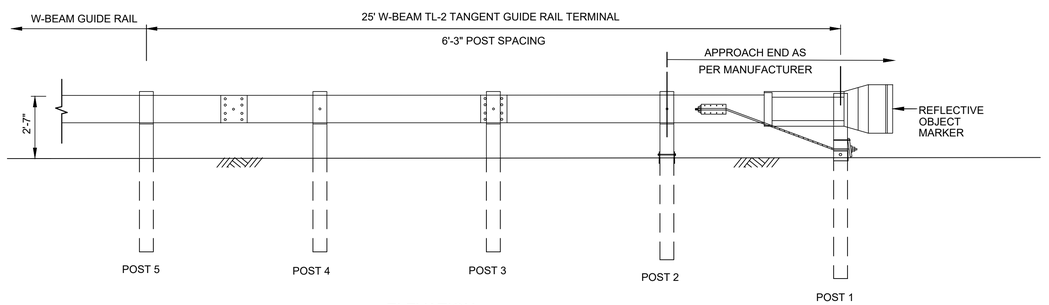
DIRECTION OF TRAFFIC

PLAN - 1' OFFSET FROM DOWNSTREAM GUIDE RAIL



PLAN - 0' OFFSET FROM DOWNSTREAM GUIDE RAIL

DIRECTION OF TRAFFIC



ELEVATION

W-BEAM TL-2 TANGENT GUIDE RAIL TERMINAL

NOT TO SCALE

Sheet 7 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM TL-2
TANGENT GUIDE
RAIL TERMINAL

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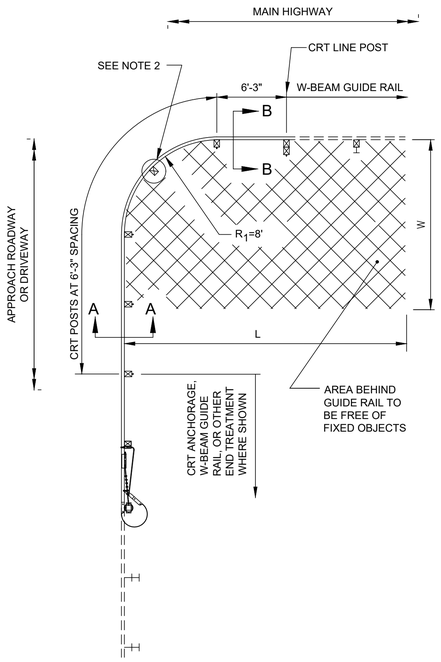
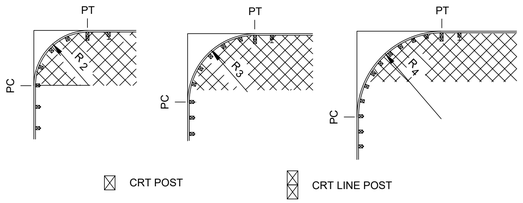
Date 07 / 15 / 2024

Drawing Number TD300.06



CONTROLLED RELEASE TERMINAL
NOT TO SCALE

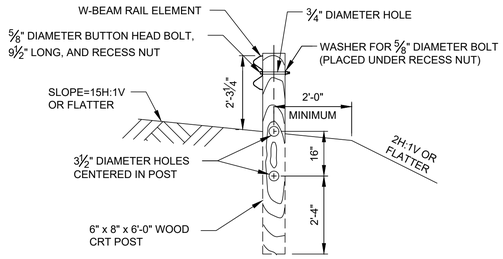
RADIUS	NO. OF CRT POSTS	REQUIRED AREA FREE OF FIXED OBJECTS
		L x W
R_1=8'	5	25' x 15'
R_2=16'	6	30' x 15'
R_3=24'	8	40' x 20'
R_4=32'	10	50' x 20'



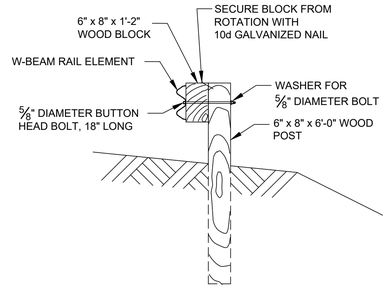
POST LAYOUT (6'-3" SPACING)
NOT TO SCALE

NOTES:

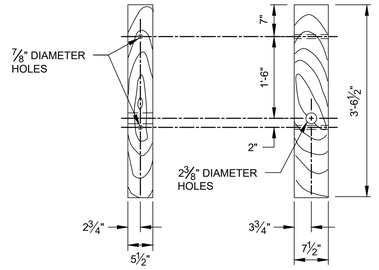
1. NO WASHERS ARE USED ON THE 5/8" DIAMETER BUTTON HEAD BOLTS CONNECTING THE RAIL TO THE CONTROLLED RELEASE TERMINAL (CRT) POSTS.
2. FOR 8 FOOT RADIUS, THE RAIL ELEMENT SHALL NOT BE BOLTED TO THE CRT POST AT THE CENTER OF THE NOSE AS SHOWN.
3. ATTACH W-BEAM TO STEEL PIPE WITH BUTTON HEAD BOLT WITH NO WASHER. NO CONNECTION TO POST IS REQUIRED.
4. WIRE ROPE CABLE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M30 AND SHALL BE 3/4" DIAMETER PREFORMED, 6 x 19, WIRE STRAND CORE OR INDEPENDENT WIRE ROPE CORE, GALVANIZED, RIGHT REGULAR LAY, MANUFACTURED OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 POUNDS.



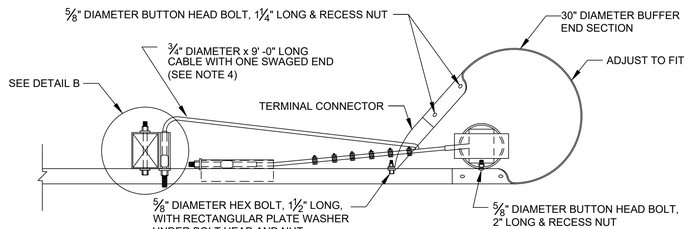
SECTION A-A
CRT POST
NOT TO SCALE



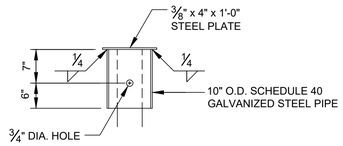
SECTION B-B
CRT LINE POST
NOT TO SCALE



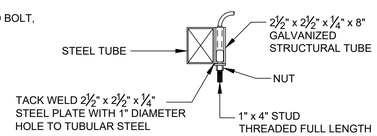
WOOD BREAKAWAY POST
NOT TO SCALE



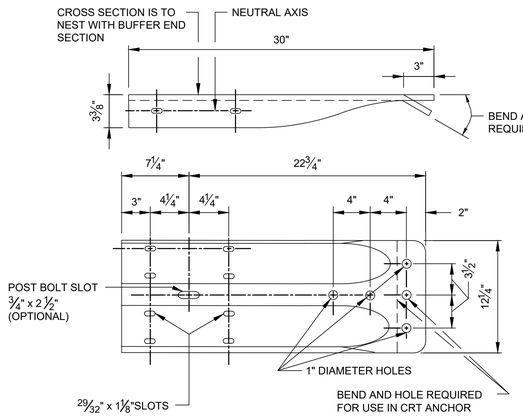
PLAN



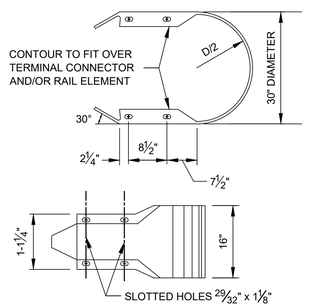
DETAIL A
NOT TO SCALE



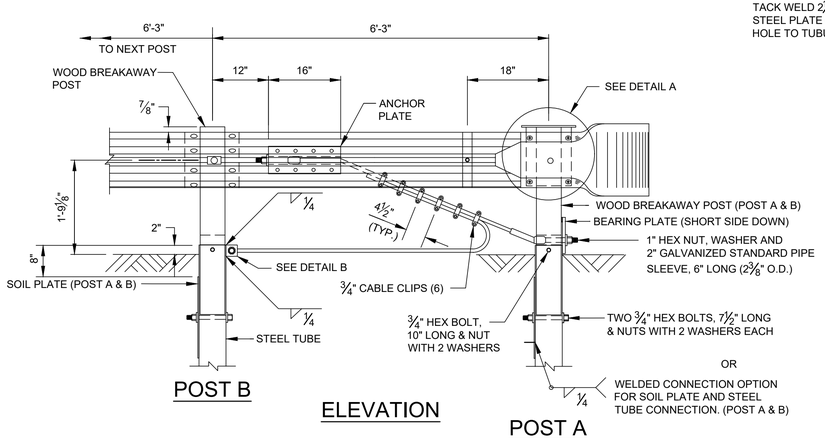
DETAIL B
NOT TO SCALE



TERMINAL CONNECTOR
NOT TO SCALE



BUFFER END SECTION
NOT TO SCALE

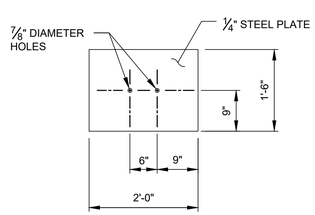


POST B

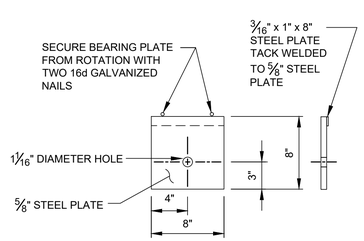
ELEVATION

POST A

CRT ANCHOR
NOT TO SCALE



SOIL PLATE
NOT TO SCALE



BEARING PLATE
NOT TO SCALE

STEEL TUBE
NOT TO SCALE

CONTROLLED RELEASE TERMINAL ANCHORAGE
NOT TO SCALE

Sheet 8 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

CONTROLLED RELEASE TERMINAL AND ANCHORAGE

DISCLAIMER:

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SAMPLE DRAWING
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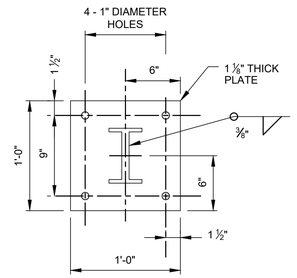
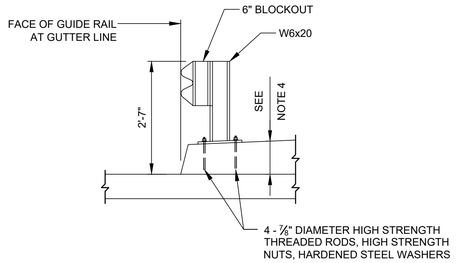
Date 07 / 15 / 2024

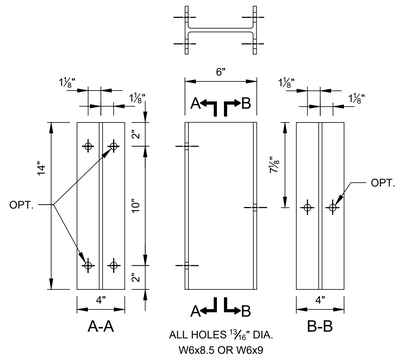
Drawing Number TD300.07



BASE PLATE
NOT TO SCALE



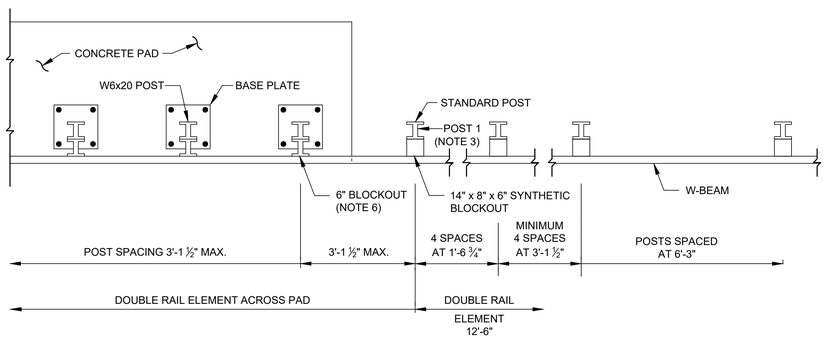
SECTION
NOT TO SCALE



6" BLOCKOUT
NOT TO SCALE

NOTES:

1. HIGH STRENGTH THREADED RODS FOR BASE PLATE ANCHORAGE SHALL BE FULLY THREADED AND INSTALLED IN CORED HOLES NO GREATER THAN THE BOLT DIAMETER PLUS ¼". CARE SHALL BE EXERCISED TO AVOID DAMAGE TO EXISTING REINFORCEMENT AND CONDUITS. MINIMUM EMBEDMENT LENGTH SHALL BE 6". BOLTS SHALL BE EPOXY GROUTED IN PLACE PER MANUFACTURER'S RECOMMENDATIONS TO ATTAIN A MINIMUM PULLOUT STRENGTH OF 24,000 POUNDS.
2. WELDING OF POSTS TO BASE PLATES SHALL CONFORM TO THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.
3. WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMODATE THE INSTALLATION OF POST 1, THE POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.
4. WHERE CONCRETE PAD IS NOT ON STRUCTURE, CONCRETE PAD SHALL BE A MINIMUM 8" THICK.
5. ATTACH BLOCKOUTS TO POSTS WITH TWO ⅝" HEX BOLTS WITH WASHERS UNDER HEX NUTS USING DIAGONALLY OPPOSITE HOLES.
6. TWO 6" BLOCKOUTS MAY BE USED TO OFFSET THE BASE PLATE FROM A LONGITUDINAL CURB JOINT.



PLAN
NOT TO SCALE

GUIDE RAIL ATTACHMENT TO CONCRETE PAD
NOT TO SCALE

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL ATTACHMENT TO CONCRETE PAD

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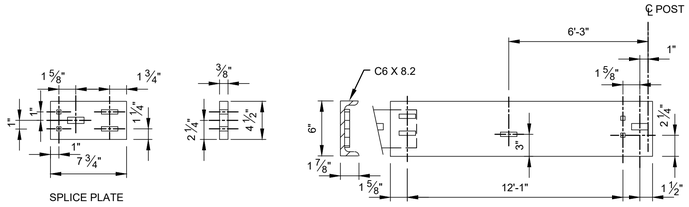
Date 07 / 15 / 2024

Drawing Number TD300.08

ALL SLOTS 1 1/16"x2"
ALL SQUARE HOLES 1 1/16"

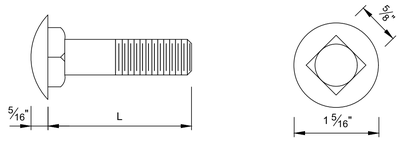
C6 X 8.2 MAY BE SUPPLIED IN LENGTHS
OF 12'-5 3/4" OR 24'-11 3/4"



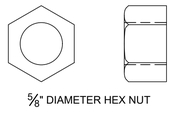
SPLICE PLATE

C6 X 8.2

NOT TO SCALE



5/8" DIAMETER CARRIAGE BOLT

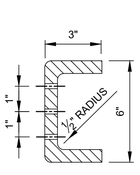


5/8" DIAMETER HEX NUT

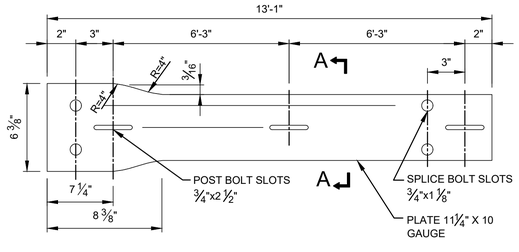
L	THREAD LENGTH
1 ½"	FULL LENGTH
3"	1 ½" MINIMUM
4 ½"	1 ½" MINIMUM

BOLT DETAIL

NOT TO SCALE



SECTION A-A

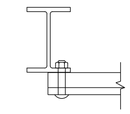


BENT PLATE

NOT TO SCALE

RUB RAIL

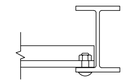
NOT TO SCALE



DIRECTION
OF TRAFFIC

RUB RAIL TRAILING END ATTACHMENT DETAIL

NOT TO SCALE



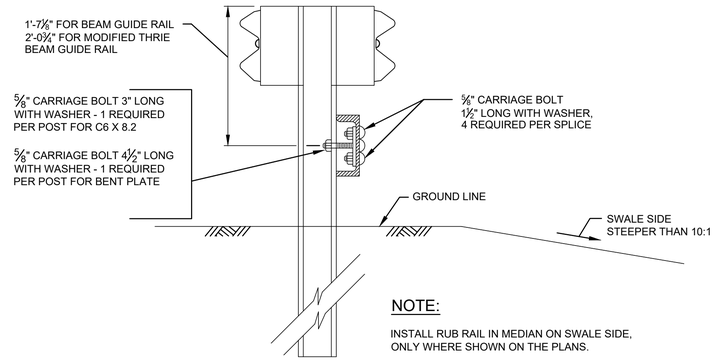
DIRECTION
OF TRAFFIC

RUB RAIL APPROACH END ATTACHMENT DETAIL

NOT TO SCALE

NOTE:

1. USE EITHER C6 X 8.2 OR BENT PLATE FOR RUB RAIL.



NOTE:

INSTALL RUB RAIL IN MEDIAN ON SWALE SIDE,
ONLY WHERE SHOWN ON THE PLANS.

RUB RAIL SECTION IN MEDIAN

NOT TO SCALE

Sheet 10 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

GUIDE RAIL

RUB RAIL

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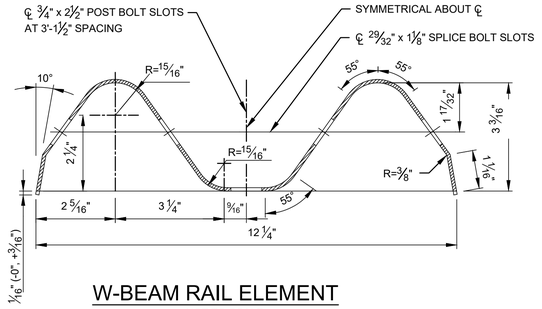
Date 07 / 15 / 2024

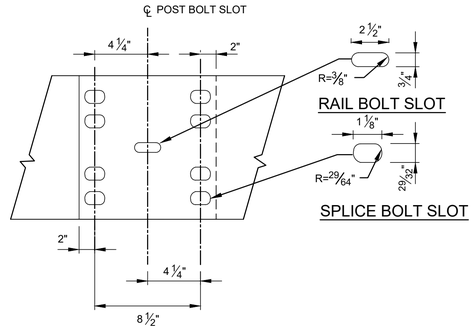
Drawing Number TD300.09



W-BEAM RAIL ELEMENT

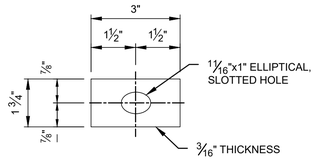
NOT TO SCALE

RAIL ELEMENTS SHALL BE SUPPLIED IN LENGTHS OF 13'-6½" OR 26'-½"



DETAIL OF RAIL SPLICE JOINT

NOT TO SCALE

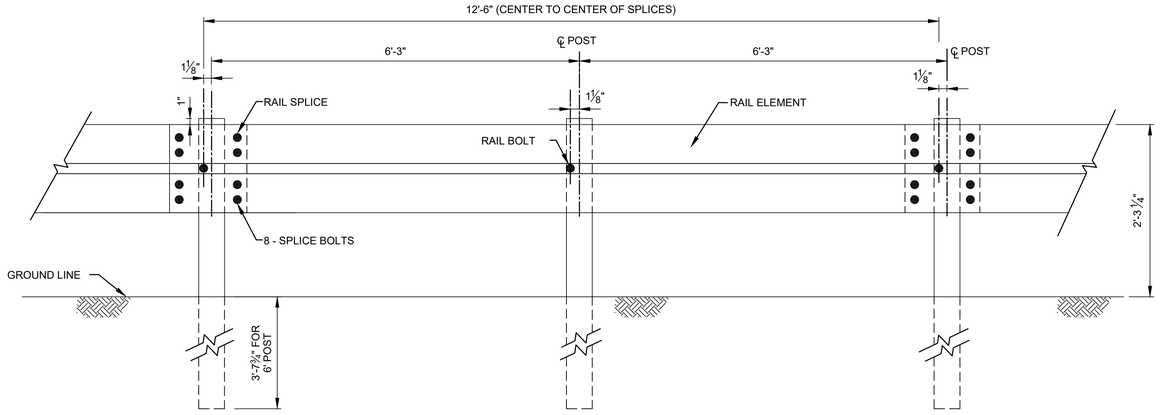


STANDARD WASHER

NOT TO SCALE

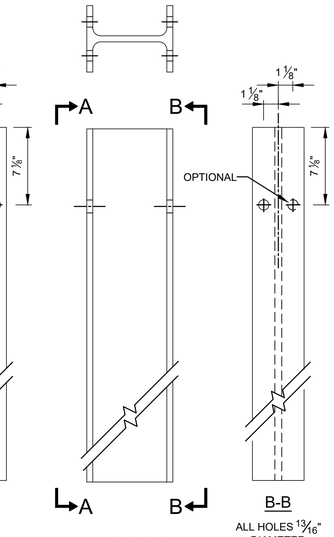
NOTES:

1. RAIL ELEMENTS SHALL BE FURNISHED SHOPCURVED, CONCAVE OR CONVEX, FOR RADII LESS THAN 150 FEET.
2. STANDARD WASHER TO BE USED ON THE LAST 50 FEET OF RUN ONLY.



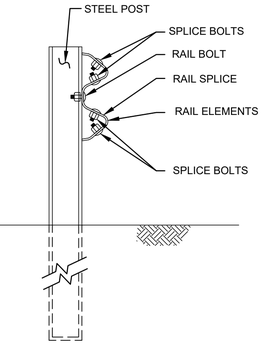
W-BEAM BARRICADE, TYPE A - CARS

NOT TO SCALE



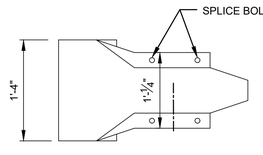
6' POST

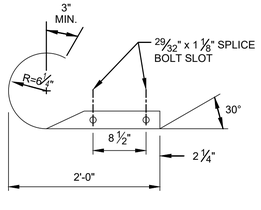
NOT TO SCALE
W6x8.5 OR W6x9



W-BEAM BARRICADE, TYPE A ASSEMBLY

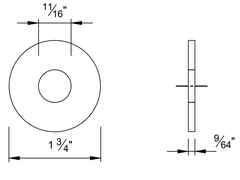
NOT TO SCALE





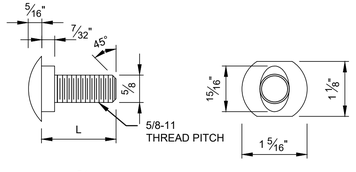
END SECTION (ROUNDED)

NOT TO SCALE



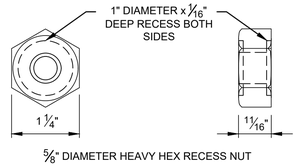
WASHER

NOT TO SCALE



5/8" DIAMETER BUTTON HEAD BOLT

TYPE	L	THREAD LENGTH
SPLICE BOLT	1 ¼"	FULL LENGTH
RAIL BOLT	2"	FULL LENGTH



5/8" DIAMETER HEAVY HEX RECESS NUT

SPLICE & RAIL NUT & BOLT

NOT TO SCALE

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PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM BARRICADE TYPE A

DISCLAIMER:

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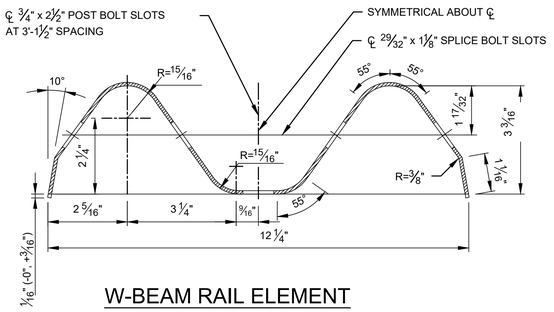
Date 07 / 15 / 2024

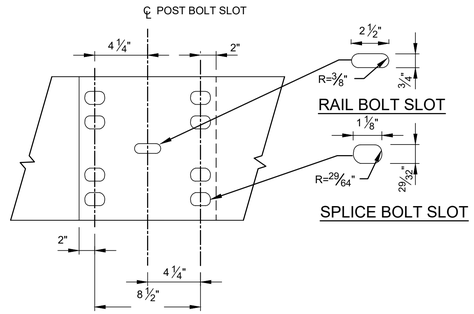
Drawing Number TD310.01



W-BEAM RAIL ELEMENT

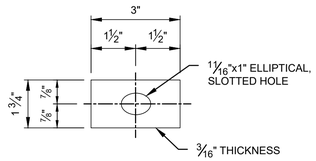
NOT TO SCALE

RAIL ELEMENTS SHALL BE SUPPLIED IN LENGTHS OF 13'-6½" OR 26'-½"



DETAIL OF RAIL SPLICE JOINT

NOT TO SCALE

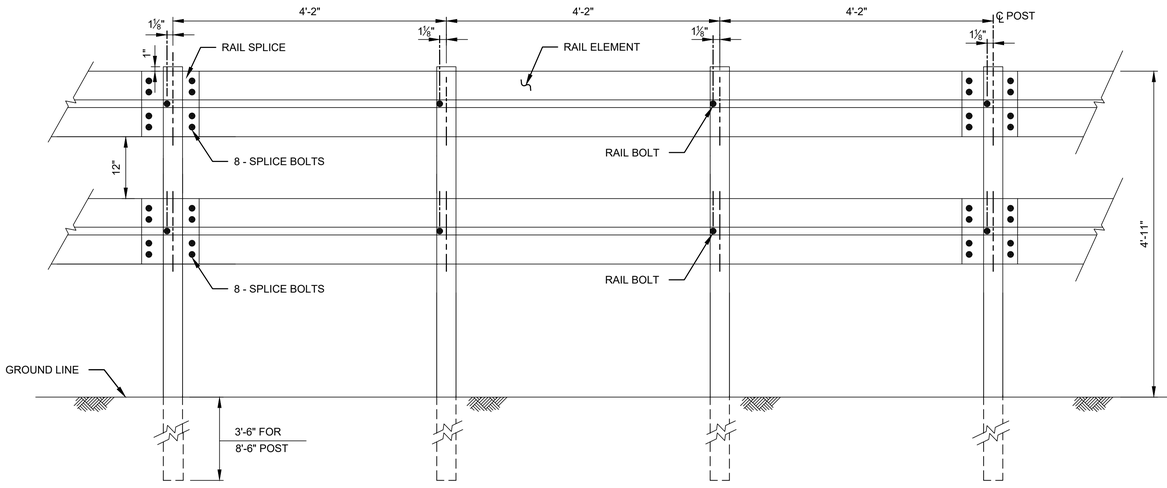


STANDARD WASHER

NOT TO SCALE

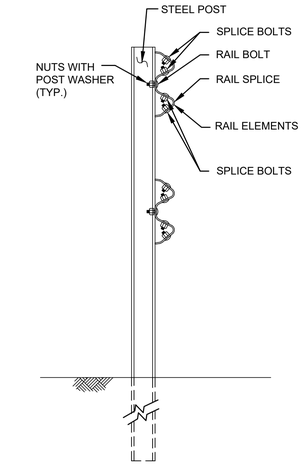
NOTES:

1. RAIL ELEMENTS SHALL BE FURNISHED SHOPCURVED, CONCAVE OR CONVEX, FOR RADII LESS THAN 150 FEET.
2. STANDARD WASHER TO BE USED ON THE LAST 50 FEET OF RUN ONLY.



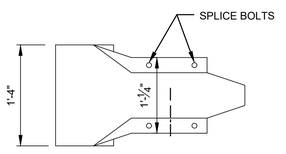
W-BEAM BARRICADE. TYPE B - TRUCKS

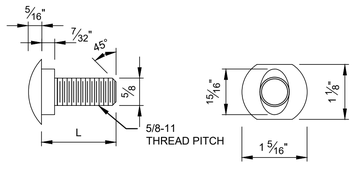
NOT TO SCALE



W-BEAM BARRICADE, TYPE B ASSEMBLY

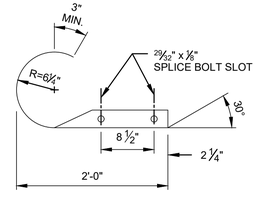
NOT TO SCALE





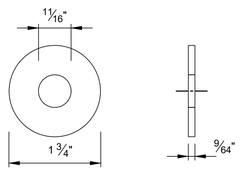
5/8" DIAMETER BUTTON HEAD BOLT

TYPE	L	THREAD LENGTH
SPLICE BOLT	1 ¼"	FULL LENGTH
RAIL BOLT	2"	FULL LENGTH



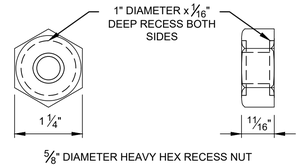
END SECTION (ROUNDED)

NOT TO SCALE



WASHER

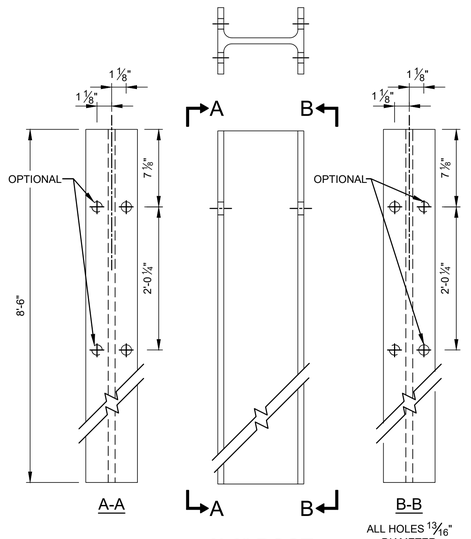
NOT TO SCALE



5/8" DIAMETER HEAVY HEX RECESS NUT

SPLICE & RAIL NUT & BOLT

NOT TO SCALE



8'-6" POST

NOT TO SCALE
W6x8.5 OR W6x9

Sheet 12 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM BARRICADE
TYPE B

DISCLAIMER:

THIS IS ONLY A
SAMPLE DRAWING
TO BE UPDATED AS PER DISCLAIMER ABOVE.

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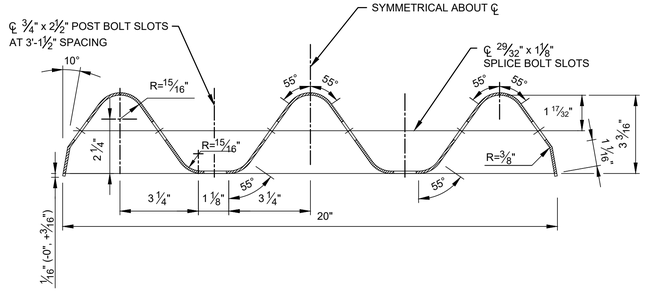
Date 07 / 15 / 2024

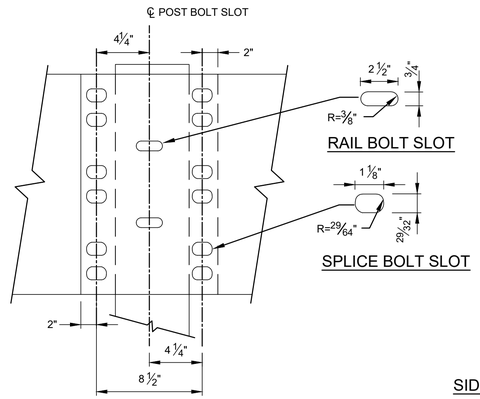
Drawing Number TD310.02



THRIE BEAM RAIL ELEMENT AND BACKUP PLATE

NOT TO SCALE

RAIL ELEMENTS SHALL BE SUPPLIED IN LENGTHS OF 13'-6½" OR 26'-0½"

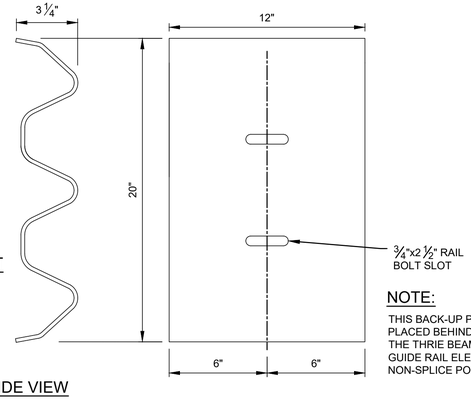


RAIL BOLT SLOT

SPLICE BOLT SLOT

DETAIL OF RAIL SPLICE JOINT

NOT TO SCALE



SIDE VIEW

THRIE BEAM BACK-UP PLATE

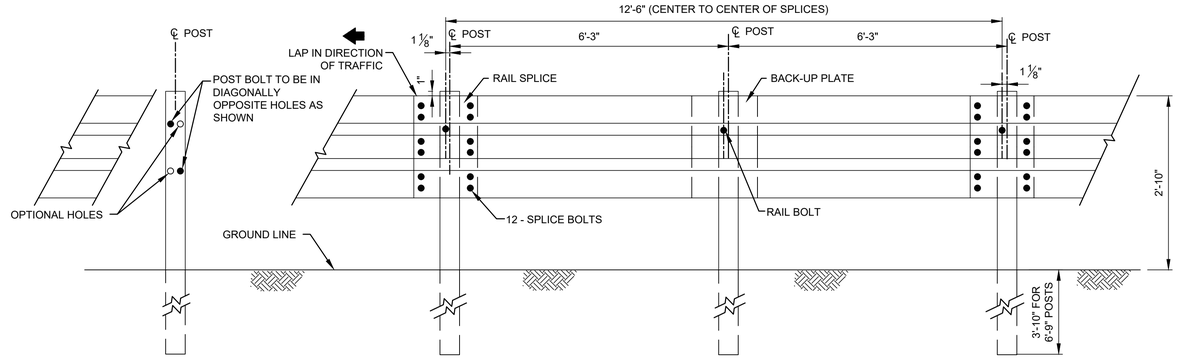
NOT TO SCALE

NOTE:

1. RAIL ELEMENTS SHALL BE FURNISHED SHOPCURVED, CONCAVE OR CONVEX, FOR RADII LESS THAN 150 FEET.
2. MOUNT FLEXIBLE DELINEATORS APPROXIMATELY EVERY 80 FEET. WHERE THE ROADWAY IS CURVED WITH A RADIUS LESS THAN 1,910 FEET, MOUNT DELINEATORS APPROXIMATELY EVERY 40 FEET. FLEXIBLE DELINEATORS FOR GUIDE RAIL SHALL HAVE A REFLECTIVE AREA WITH A MINIMUM WIDTH OF 3 INCHES AND A MINIMUM HEIGHT OF 3 INCHES. FLEXIBLE DELINEATORS SHALL BE DESIGNED TO MOUNT ON TOP OF THE STEEL BLOCKOUT. THE RETROREFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956, TYPE VIII. INSTALL FLEXIBLE DELINEATORS WITH WHITE RETROREFLECTIVE SHEETING ON THE RIGHT SIDE OF THE DIRECTION OF TRAFFIC AND YELLOW RETROREFLECTIVE SHEETING ON THE LEFT SIDE OF THE DIRECTION OF TRAFFIC. ATTACH THE BASE TO THE TOP OF THE STEEL BLOCKOUT AS RECOMMENDED BY THE MANUFACTURER.

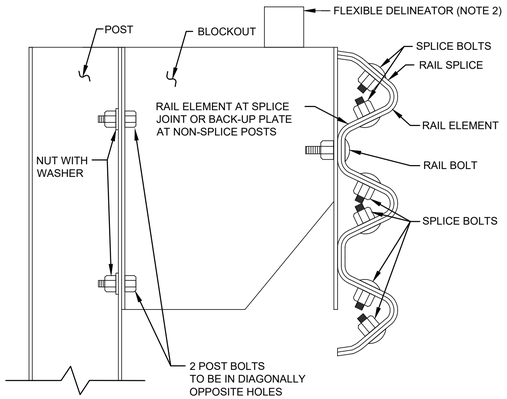
NOTE:

THIS BACK-UP PLATE IS PLACED BEHIND THE THRIE BEAM GUIDE RAIL ELEMENT AT NON-SPLICE POSTS.



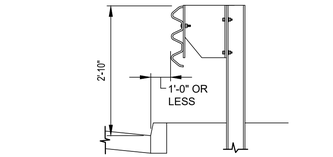
MODIFIED THRIE BEAM GUIDE RAIL

NOT TO SCALE



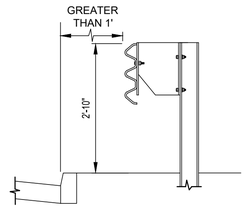
MODIFIED THRIE BEAM GUIDE RAIL POST ASSEMBLY

NOT TO SCALE



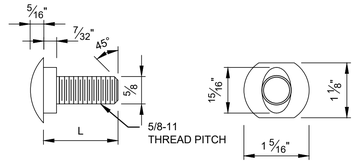
RAIL HEIGHT DETERMINATION ADJACENT TO CURB

NOT TO SCALE



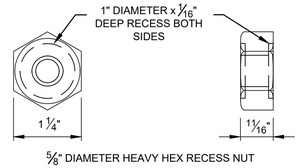
RAIL HEIGHT DETERMINATION SET BACK FROM CURB

NOT TO SCALE



⅝" DIAMETER BUTTON HEAD BOLT

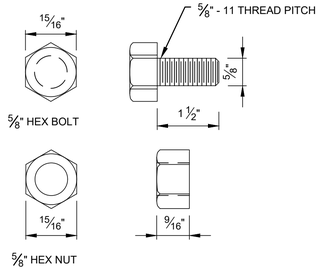
TYPE	L	THREAD LENGTH
SPLICE BOLT	1 ¼"	FULL LENGTH
RAIL BOLT	2"	FULL LENGTH



⅝" DIAMETER HEAVY HEX RECESS NUT

SPLICE & RAIL NUT & BOLT

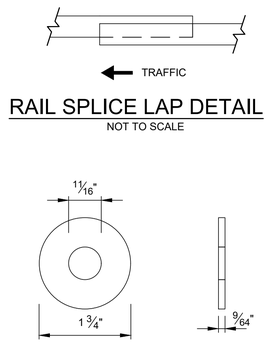
NOT TO SCALE



⅝" HEX NUT

POST NUT & BOLT

NOT TO SCALE

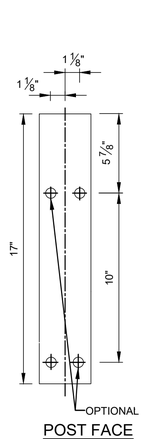


RAIL SPLICE LAP DETAIL

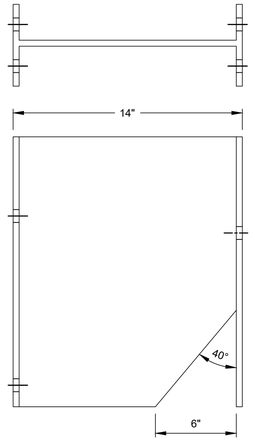
NOT TO SCALE

POST WASHER

NOT TO SCALE



POST FACE

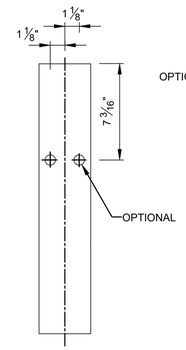


SIDE

M14x18 OR W14x22

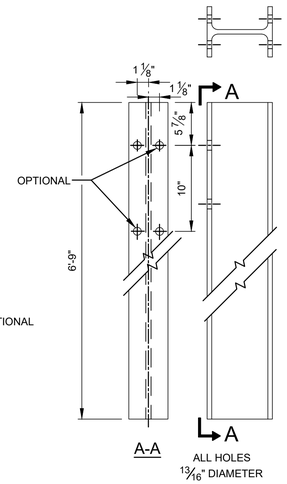
17" BLOCKOUT

NOT TO SCALE



TRAFFIC FACE

ALL HOLES 13/16" DIAMETER



ALL HOLES 13/16" DIAMETER

W6x8.5 OR W6x9

6'-9" POST

NOT TO SCALE

Sheet 13 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

MODIFIED THRIE BEAM GUIDE RAIL

DISCLAIMER:

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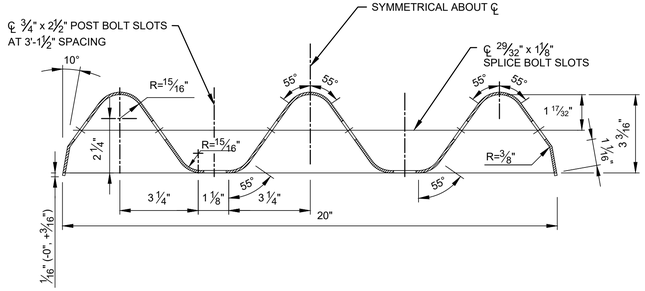
Date 07 / 15 / 2024

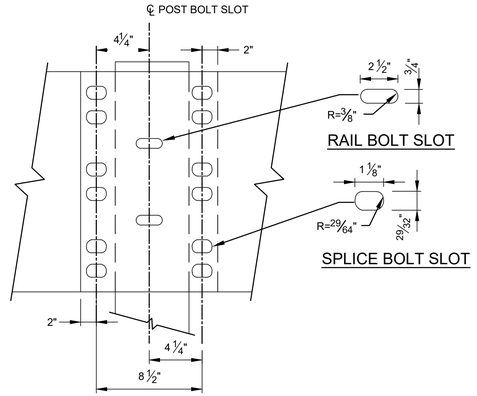
Drawing Number TD320.01



THRIE BEAM RAIL ELEMENT AND BACKUP PLATE

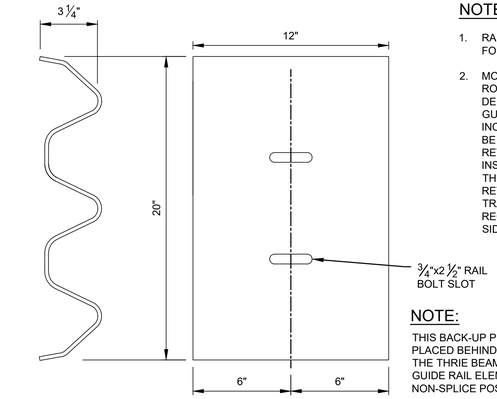
NOT TO SCALE

RAIL ELEMENTS SHALL BE SUPPLIED IN LENGTHS OF 13'-6½" OR 26'-0½"



DETAIL OF RAIL SPLICE JOINT

NOT TO SCALE



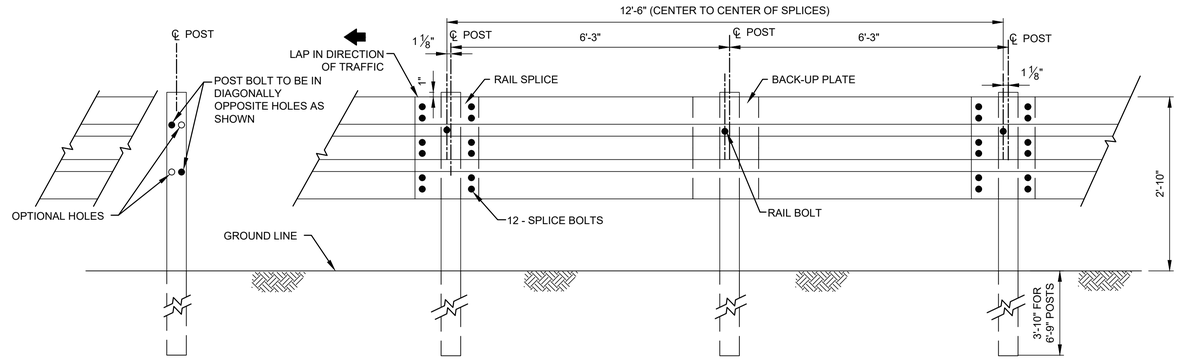
SIDE VIEW

NOTE:

THIS BACK-UP PLATE IS PLACED BEHIND THE THRIE BEAM GUIDE RAIL ELEMENT AT NON-SPLICE POSTS.

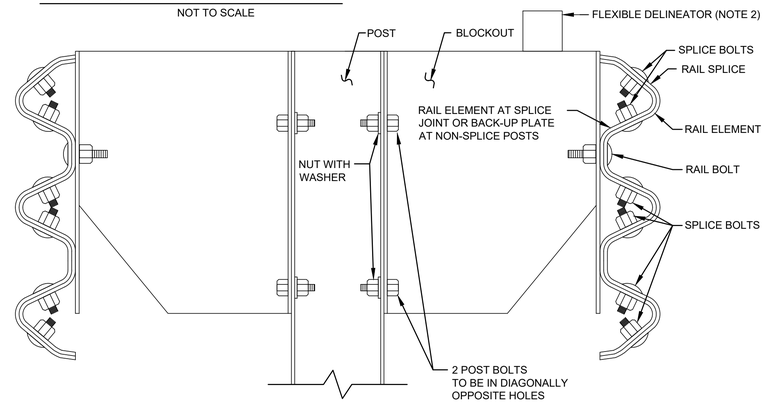
NOTE:

1. RAIL ELEMENTS SHALL BE FURNISHED SHOPCURVED, CONCAVE OR CONVEX, FOR RADII LESS THAN 150 FEET.
2. MOUNT FLEXIBLE DELINEATORS APPROXIMATELY EVERY 80 FEET. WHERE THE ROADWAY IS CURVED WITH A RADIUS LESS THAN 1,910 FEET, MOUNT DELINEATORS APPROXIMATELY EVERY 40 FEET. FLEXIBLE DELINEATORS FOR GUIDE RAIL SHALL HAVE A REFLECTIVE AREA WITH A MINIMUM WIDTH OF 3 INCHES AND A MINIMUM HEIGHT OF 3 INCHES. FLEXIBLE DELINEATORS SHALL BE DESIGNED TO MOUNT ON TOP OF THE STEEL BLOCKOUT. THE RETROREFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956, TYPE VIII. INSTALL FLEXIBLE DELINEATORS WITH WHITE RETROREFLECTIVE SHEETING ON THE RIGHT SIDE OF THE DIRECTION OF TRAFFIC AND YELLOW RETROREFLECTIVE SHEETING ON THE LEFT SIDE OF THE DIRECTION OF TRAFFIC. ATTACH THE BASE TO THE TOP OF THE STEEL BLOCKOUT AS RECOMMENDED BY THE MANUFACTURER. PLACE THE DELINEATOR ON THE SIDE CLOSEST TO TRAFFIC.



DUAL FACED MODIFIED THRIE BEAM GUIDE RAIL

NOT TO SCALE

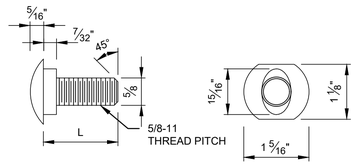


THRIE BEAM BACK-UP PLATE

NOT TO SCALE

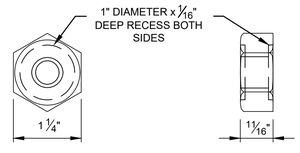
DUAL FACED MODIFIED THRIE BEAM GUIDE RAIL POST ASSEMBLY

NOT TO SCALE



⅝" DIAMETER BUTTON HEAD BOLT

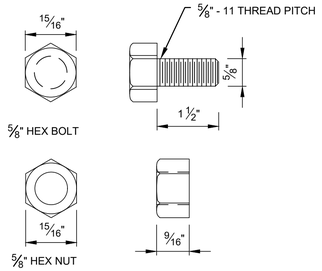
TYPE	L	THREAD LENGTH
SPLICE BOLT	1 ¼"	FULL LENGTH
RAIL BOLT	2"	FULL LENGTH



⅝" DIAMETER HEAVY HEX RECESS NUT

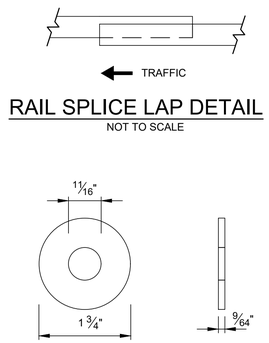
SPLICE & RAIL NUT & BOLT

NOT TO SCALE



POST NUT & BOLT

NOT TO SCALE

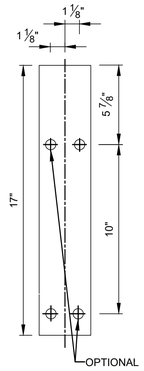


RAIL SPLICE LAP DETAIL

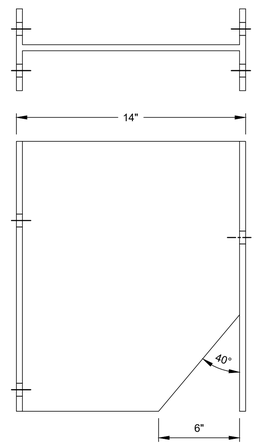
NOT TO SCALE

POST WASHER

NOT TO SCALE



POST FACE

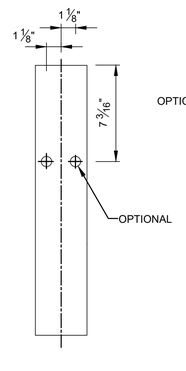


SIDE

M14x18 OR W14x22

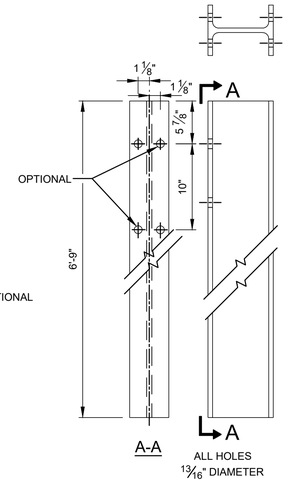
17" BLOCKOUT

NOT TO SCALE



TRAFFIC FACE

ALL HOLES 13/16" DIAMETER



W6x8.5 OR W6x9

6'-9" POST

NOT TO SCALE

Sheet 14 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

DUAL FACED MODIFIED THRIE BEAM GUIDE RAIL

DISCLAIMER:

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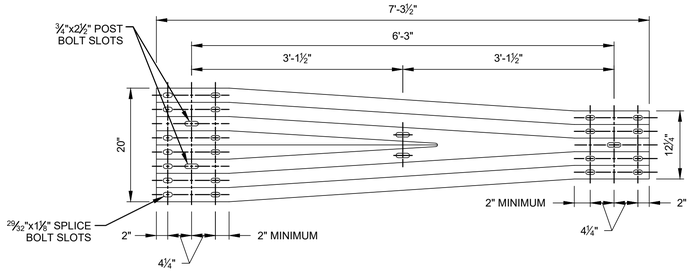
Date 07 / 15 / 2024

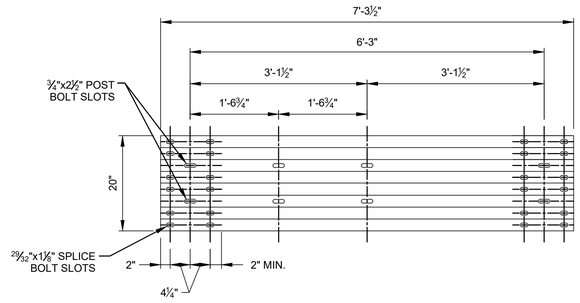
Drawing Number TD320.02



(AASHTO M180, CLASS A, TYPE 1) (12 GAUGE)

THRIE BEAM TO W-BEAM SYMMETRICAL TRANSITION SECTION

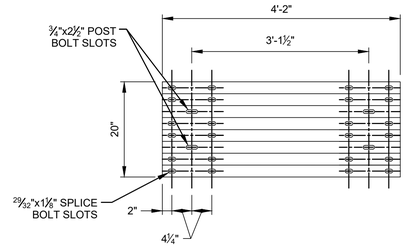
NOT TO SCALE



(AASHTO M180, CLASS A, TYPE 1) (12 GAUGE)

THRIE BEAM SECTION FOR TL-3 BRIDGE ATTACHMENTS

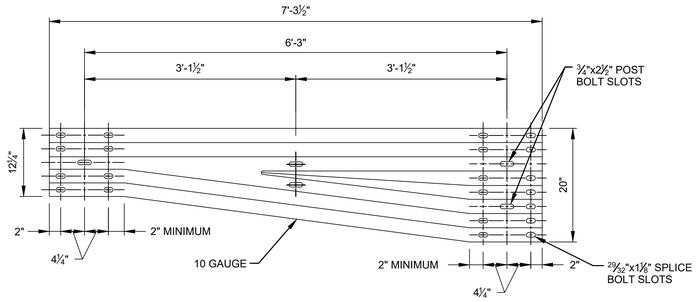
NOT TO SCALE



(AASHTO M180, CLASS B, TYPE 1) (10 GAUGE)

THRIE BEAM SECTION FOR TL-2 BRIDGE ATTACHMENTS

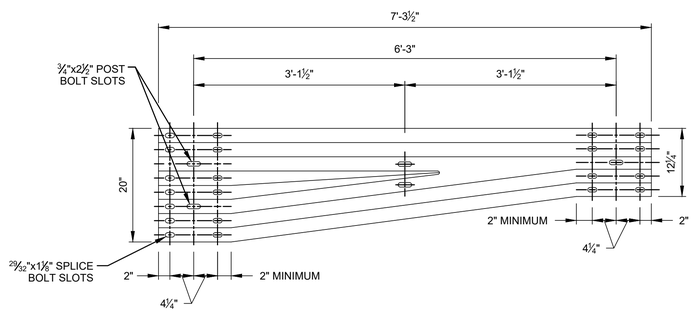
NOT TO SCALE



(AASHTO M180, CLASS B, TYPE 1) (10 GAUGE)

THRIE BEAM LEFT SIDE APPROACH TO W-BEAM ASYMMETRICAL TRANSITION SECTION

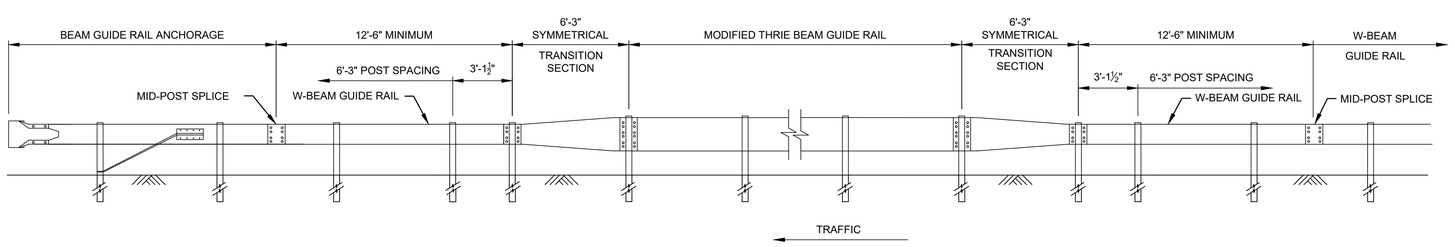
NOT TO SCALE



(AASHTO M180, CLASS B, TYPE 1) (10 GAUGE)

THRIE BEAM RIGHT SIDE APPROACH TO W-BEAM ASYMMETRICAL TRANSITION SECTION

NOT TO SCALE



MODIFIED THRIE BEAM TRANSITION TO W-BEAM GUIDE RAIL

NOT TO SCALE

Sheet 15 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

THRIE BEAM TO W-BEAM TRANSITION SECTIONS

DISCLAIMER:

THIS IS ONLY A
SAMPLE DRAWING
TO BE UPDATED AS PER DISCLAIMER ABOVE.

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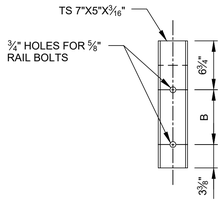
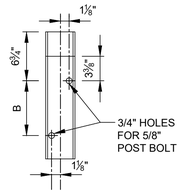
Date 07 / 15 / 2024

Drawing Number TD320.03

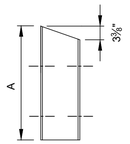


FRONT VIEW



BACK VIEW

TOP VIEW



SIDE VIEW

DIM.	POSTS #1 - #11	POST #12
A	1'-5 3/4"	1'-1 7/8"
B	7 5/8"	3 3/4"

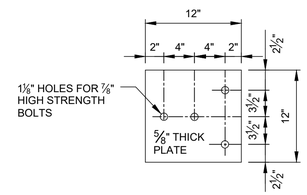
BLOCKOUT DIMENSIONS

NOTES:

1. STEEL FOR STRUCTURAL TUBE TO BE ASTM A500 GRADE B, WELDED AS PER ANSI/AWS D1.1 STRUCTURAL WELDING CODE, AND GALVANIZED.

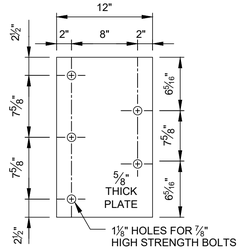
STRUCTURAL TUBE BLOCKOUT TL-3 TYPE A ATTACHMENT

NOT TO SCALE



W-BEAM TERMINAL CONNECTOR BEARING PLATE

NOT TO SCALE



THRIE BEAM TERMINAL CONNECTOR BEARING PLATE

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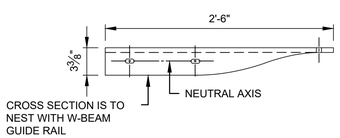

(AASHTO M180, CLASS B, TYPE 1) (10 GAUGE)

W-BEAM TERMINAL CONNECTOR

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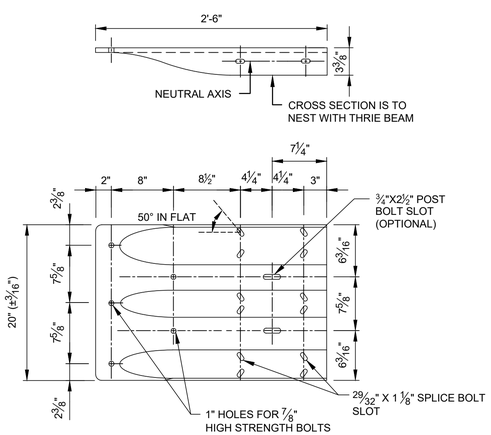
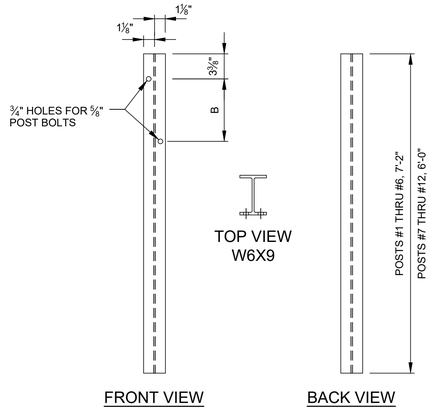


(AASHTO M180, CLASS B, TYPE 1) (10 GAUGE)

THRIE BEAM TERMINAL CONNECTOR

NOT TO SCALE



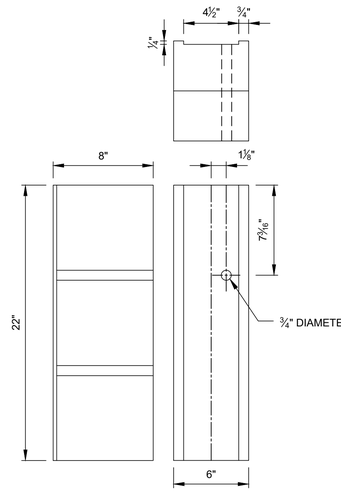
FRONT VIEW BACK VIEW

POSTS - TL-3 TYPE A ATTACHMENT

NOT TO SCALE

NOTES:

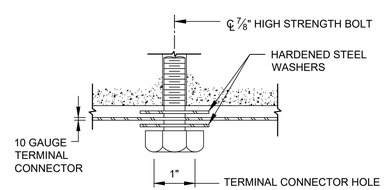
1. STRUCTURAL STEEL PLATES AND SHAPES TO CONFORM TO AASHTO M270 AND BE GALVANIZED PER AASHTO M111.
2. HIGH STRENGTH STEEL BOLTS, NUTS AND WASHERS TO CONFORM TO AASHTO M164. ZINC COATED BOLTS, NUTS AND WASHERS TO BE TREATED ACCORDING TO AASHTO M232.
3. THE THICKNESS OF THE THRIE-BEAM AND W-BEAM RAIL ELEMENTS IS 12-GAUGE UNLESS OTHERWISE NOTED.
4. W-BEAM AND THRIE-BEAM TERMINAL CONNECTORS USE AASHTO M18 MECHANICAL PROPERTIES FOR BEAM AND TRANSITION SECTIONS.



RECYCLED SYNTHETIC MATERIAL

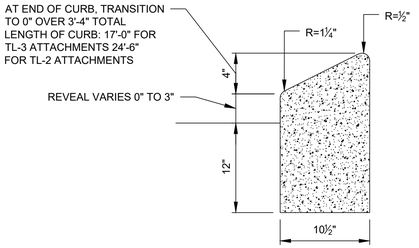
6"X8"X22" BLOCKOUT TL-2 TYPE A ATTACHMENT

NOT TO SCALE

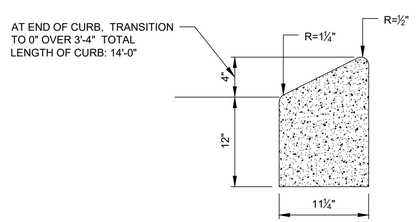


TERMINAL ANCHORAGE

NOT TO SCALE



TYPE A ATTACHMENT



TYPE B ATTACHMENT

CONCRETE LIP CURB FOR BEAM GUIDE RAIL ATTACHMENTS

NOT TO SCALE

Sheet 16 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

DISCLAIMER:

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL ATTACHMENTS

DISCLAIMER:

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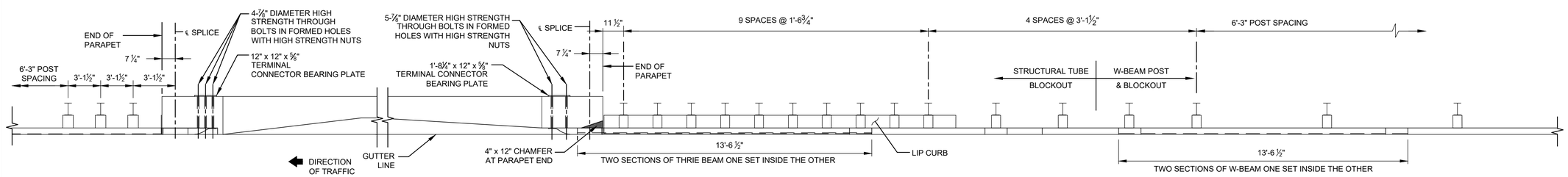
Date 07 / 15 / 2024

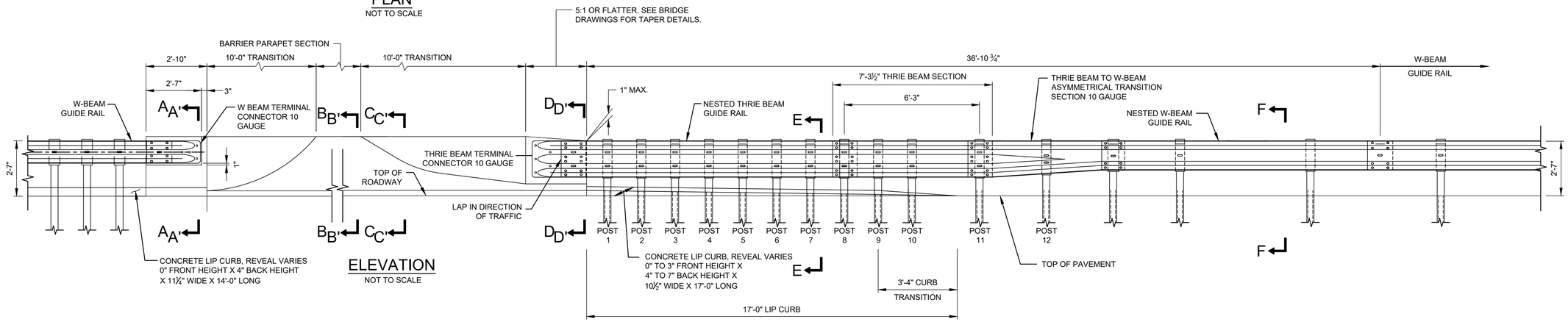
Drawing Number TD330.01



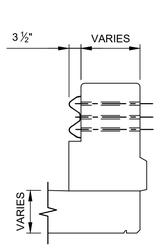
TYPE B ATTACHMENT

PLAN
NOT TO SCALE

TYPE A ATTACHMENT



ELEVATION
NOT TO SCALE



SECTION A-A
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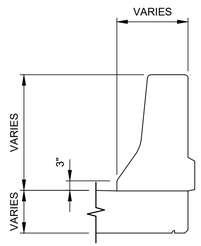

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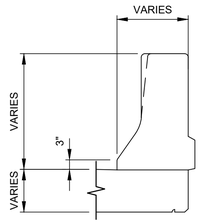

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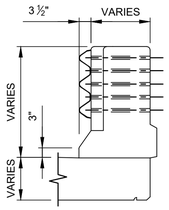
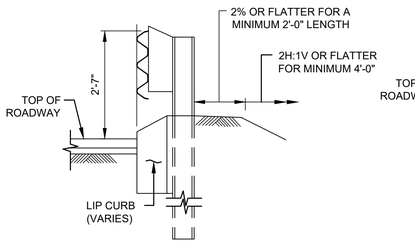
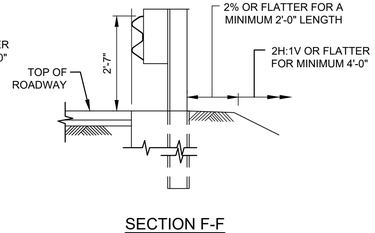


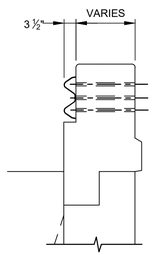
SECTION D-D
(ON SPAN)



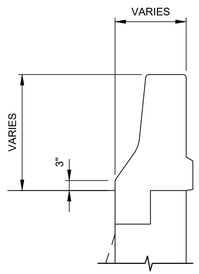
SECTION E-E



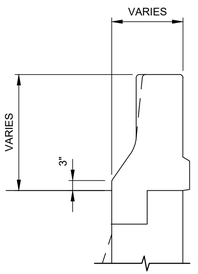
SECTION F-F



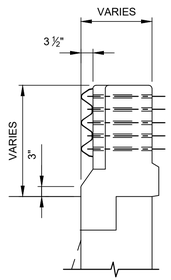
SECTION A'-A' (ON WINGWALL)



SECTION B'-B' (ON WINGWALL)



SECTION C'-C' (ON WINGWALL)



SECTION D'-D' (ON WINGWALL)

NOTES:

1. SEE BRIDGE DRAWINGS FOR PARAPET DIMENSIONS AND STEEL REINFORCEMENT DETAILS.
2. AT TYPE A ATTACHMENTS, THRIE-BEAM RAIL ELEMENT WILL REQUIRE ADDITIONAL RAIL BOLT SLOTS FOR POST #1, #3, #5, #7 AND #9. HOLES ARE TO BE SHOP PUNCHED OR DRILLED BEFORE GALVANIZATION. NO FIELD DRILLING IS PERMITTED.
3. POST 1 THRU 6 TO BE 7'-0" LONG WITH 4'-10" POST EMBEDMENT. POST 7 THRU 12 TO BE 6'-0" LONG WITH 3'-8" POST EMBEDMENT.
4. WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.
5. STRUCTURAL TUBE BLOCKOUTS ARE TO BE USED FOR POSTS 1 THRU 12.

TL-3 ATTACHMENT - NO ROADWAY CURB ON APPROACH
NOT TO SCALE

Sheet 17 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL TL-3 ATTACHMENT TO BARRIER SHAPE PARAPET (NO ROADWAY CURB ON APPROACH)

DISCLAIMER:

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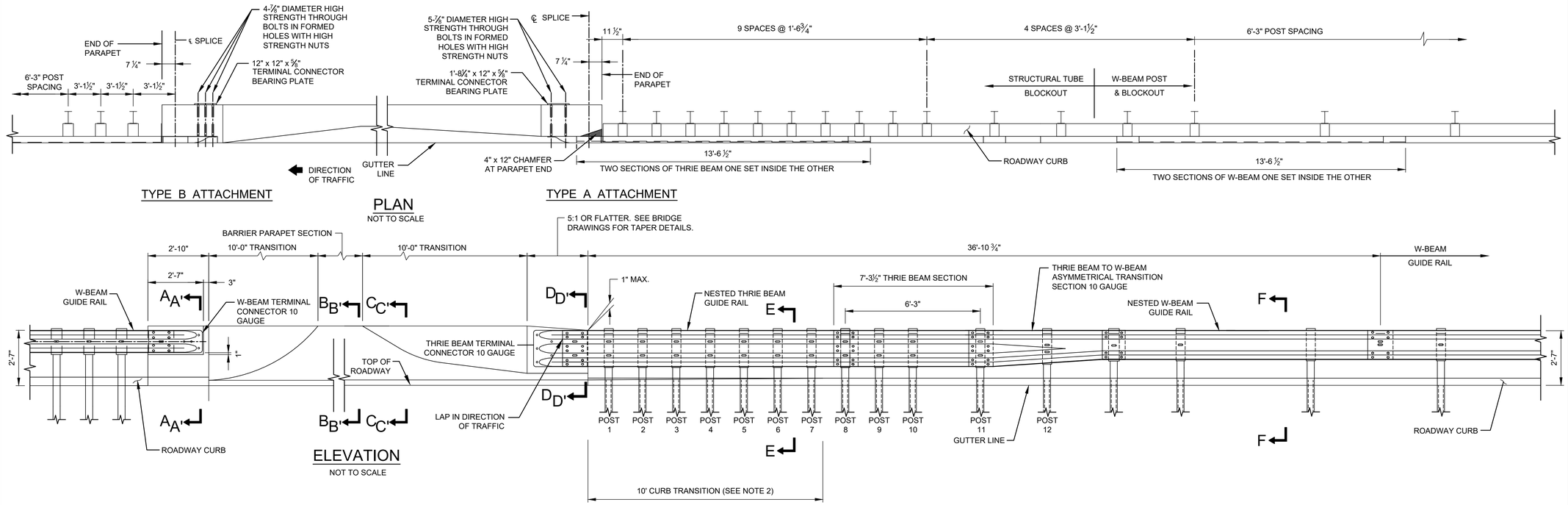
Date 07 / 15 / 2024

Drawing Number TD330.02

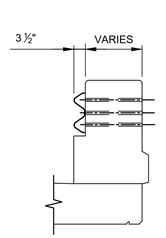


TYPE B ATTACHMENT

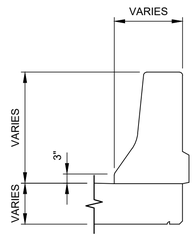
TYPE A ATTACHMENT

PLAN
NOT TO SCALE

ELEVATION
NOT TO SCALE



SECTION A-A
(ON SPAN)



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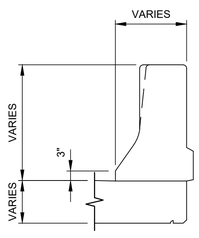
(ON SPAN)



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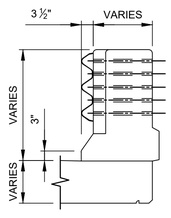

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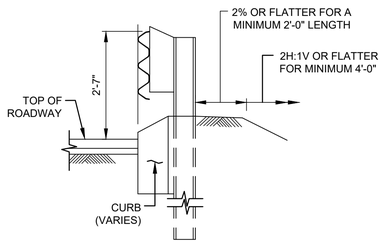

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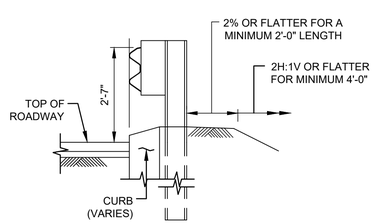
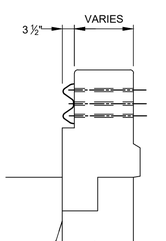
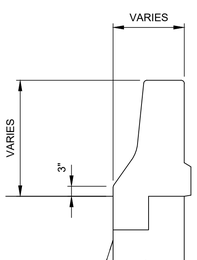


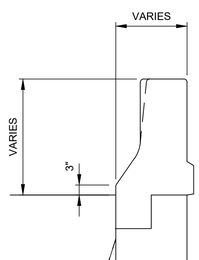
SECTION F-F



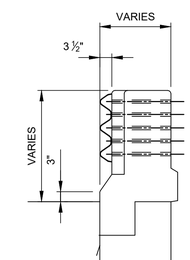
SECTION A'-A' (ON WINGWALL)



SECTION B'-B' (ON WINGWALL)



SECTION C'-C' (ON WINGWALL)



SECTION D'-D' (ON WINGWALL)

NOTES:

1. SEE BRIDGE DRAWINGS FOR PARAPET DIMENSIONS AND STEEL REINFORCEMENT DETAILS.
2. TRANSITION LAST 10 FEET OF ROADWAY CURB TO MATCH BARRIER PARAPET SHAPE.
3. AT TYPE A ATTACHMENTS, THRIE-BEAM RAIL ELEMENT WILL REQUIRE ADDITIONAL RAIL BOLT SLOTS FOR POST #1, #3, #5, #7 AND #9. HOLES ARE TO BE SHOP PUNCHED OR DRILLED BEFORE GALVANIZATION. NO FIELD DRILLING IS PERMITTED.
4. POST 1 THRU 6 TO BE 7'-0" LONG WITH 4'-10" POST EMBEDMENT. POST 7 THRU 12 TO BE 6'-0" LONG WITH 3'-8" POST EMBEDMENT.
5. WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.
6. STRUCTURAL TUBE BLOCKOUTS ARE TO BE USED FOR POSTS 1 THRU 12.

TL-3 ATTACHMENT - WITH ROADWAY CURB ON APPROACH
NOT TO SCALE

Sheet 18 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL
TL-3 ATTACHMENT TO BARRIER SHAPE PARAPET (WITH ROADWAY CURB ON APPROACH)

DISCLAIMER:

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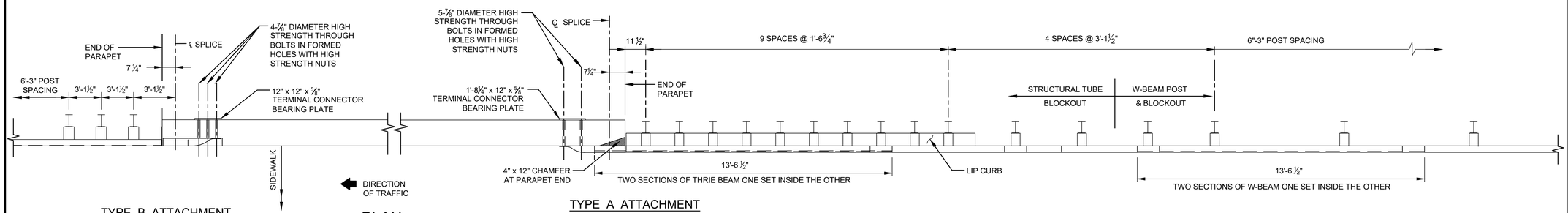
Date 07 / 15 / 2024

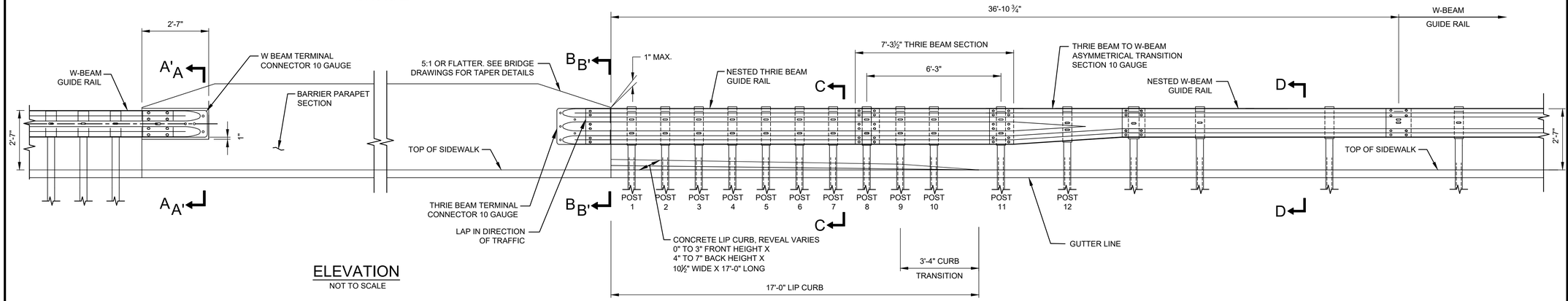
Drawing Number TD330.03



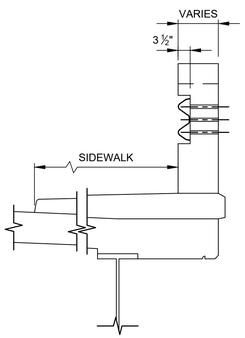
TYPE B ATTACHMENT

TYPE A ATTACHMENT

PLAN
NOT TO SCALE



ELEVATION
NOT TO SCALE



SECTION: A-A
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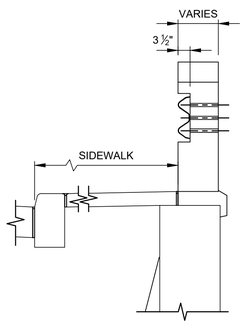
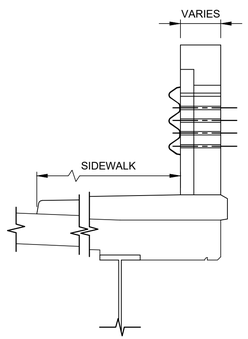


SECTION: A'-A'
(ON WINGWALL)



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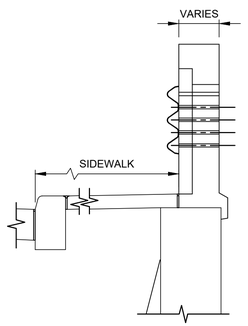
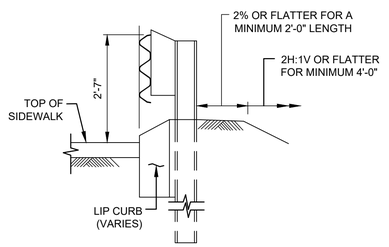
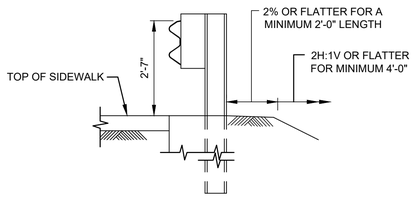


SECTION: B'-B'
(ON WINGWALL)



SECTION C-C



SECTION D-D

NOTES:

1. SEE BRIDGE DRAWINGS FOR PARAPET DIMENSIONS AND STEEL REINFORCEMENT DETAILS.
2. AT TYPE A ATTACHMENTS, THRIE-BEAM RAIL ELEMENT WILL REQUIRE ADDITIONAL RAIL BOLT SLOTS FOR POST #1, #3, #5, #7 AND #9. HOLES ARE TO BE SHOP PUNCHED OR DRILLED BEFORE GALVANIZATION. NO FIELD DRILLING IS PERMITTED.
3. POST 1 THRU 6 TO BE 7'-0" LONG WITH 4'-10" POST EMBEDMENT. POST 7 THRU 12 TO BE 6'-0" LONG WITH 3'-8" POST EMBEDMENT.
4. WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.
5. STRUCTURAL TUBE BLOCKOUTS ARE TO BE USED FOR POSTS 1 THRU 12.

TL-3 ATTACHMENT - SIDEWALK WITH PARAPET
NOT TO SCALE

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL TL-3 ATTACHMENT (SIDEWALK WITH PARAPET)

DISCLAIMER:

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SAMPLE DRAWING
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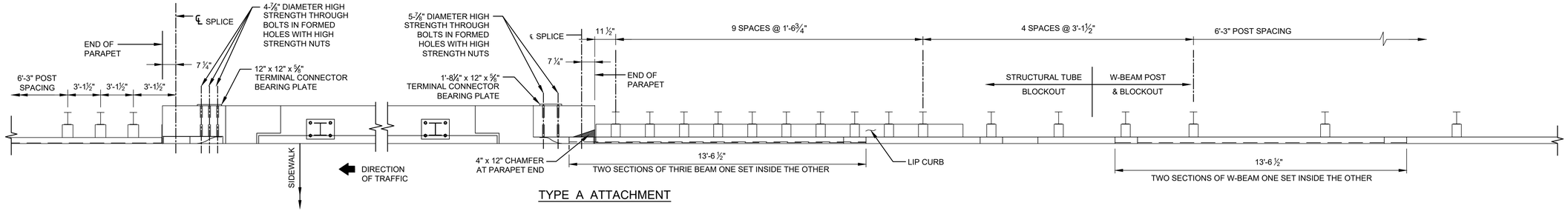
Date 07 / 15 / 2024

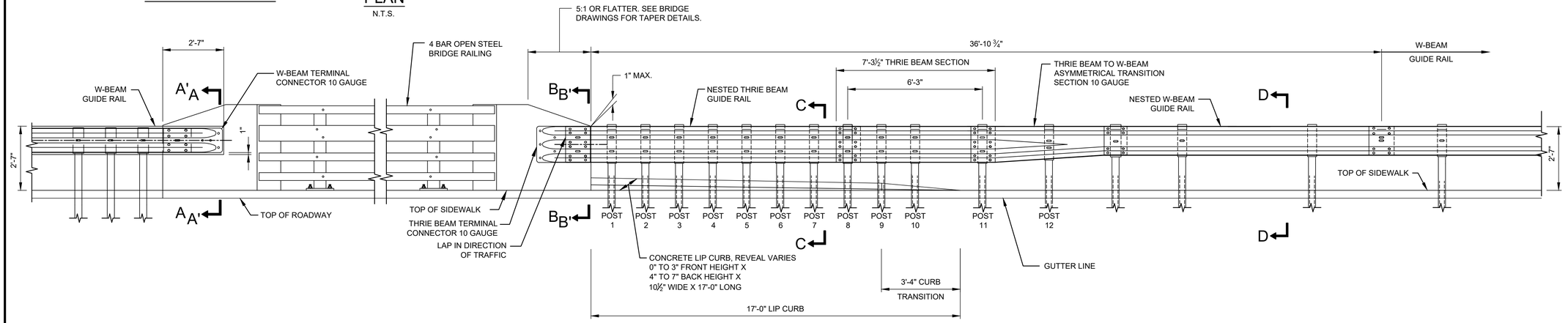
Drawing Number TD330.04



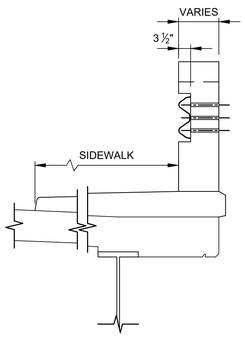
TYPE B ATTACHMENT

TYPE A ATTACHMENT

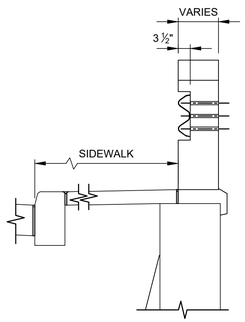
PLAN
N.T.S.



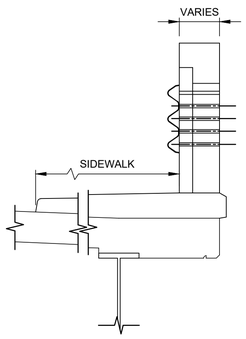
ELEVATION



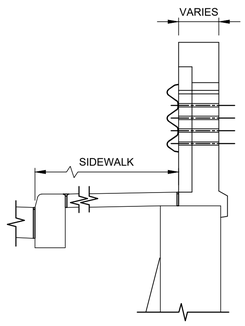
SECTION: A-A
(ON SPAN)



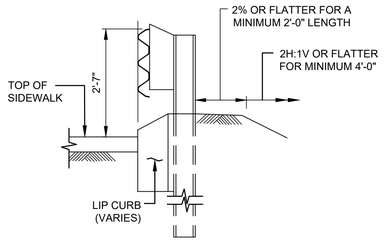
SECTION: A'-A'
(ON WINGWALL)



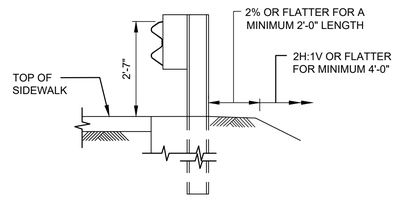
SECTION: B-B
(ON SPAN)



SECTION: B'-B'
(ON WINGWALL)



SECTION C-C



SECTION D-D

NOTES:

1. SEE BRIDGE DRAWINGS FOR PARAPET DIMENSIONS AND STEEL REINFORCEMENT DETAILS.
2. AT TYPE A ATTACHMENTS, THRIE-BEAM RAIL ELEMENT WILL REQUIRE ADDITIONAL RAIL BOLT SLOTS FOR POST #1, #3, #5, #7 AND #9. HOLES ARE TO BE SHOP PUNCHED OR DRILLED BEFORE GALVANIZATION. NO FIELD DRILLING IS PERMITTED.
3. POST 1 THRU 6 TO BE 7'-0" LONG WITH 4'-10" POST EMBEDMENT. POST 7 THRU 12 TO BE 6'-0" LONG WITH 3'-8" POST EMBEDMENT.
4. WHEN THE CONFIGURATION OF BRIDGE ABUTMENTS AND WINGWALLS DO NOT ACCOMMODATE THE INSTALLATION OF POST 1, THE POST MAY BE ATTACHED TO THE ABUTMENT HEADER WITH THE USE OF A BASE PLATE.
5. STRUCTURAL TUBE BLOCKOUTS ARE TO BE USED FOR POSTS 1 THRU 12.

TL-3 ATTACHMENT - SIDEWALK WITH STEEL RAILING

NOT TO SCALE

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL
TL-3 ATTACHMENT
(SIDEWALK WITH STEEL RAILING)

DISCLAIMER:

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SAMPLE DRAWING
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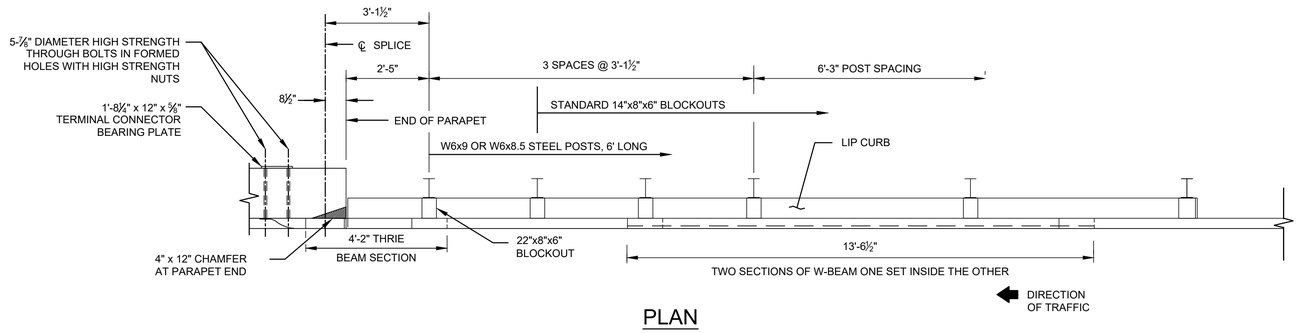
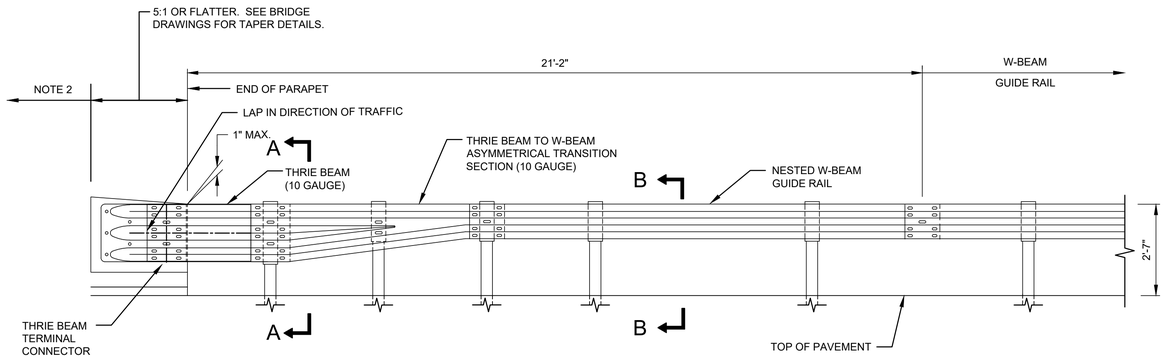
Date 07 / 15 / 2024

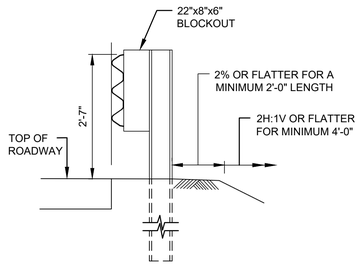
Drawing Number TD330.05



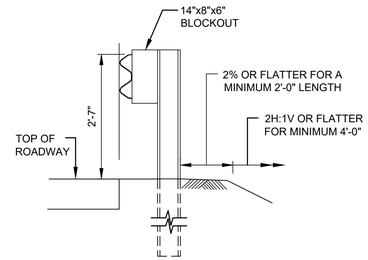
PLAN



ELEVATION



SECTION: A-A



SECTION: B-B

TL-2 TYPE A ATTACHMENT - NO ROADWAY CURB ON APPROACH

NOT TO SCALE

NOTES:

1. SEE BRIDGE DRAWINGS FOR PARAPET DIMENSIONS AND STEEL REINFORCEMENT DETAILS.
2. SEE TL-3 BRIDGE ATTACHMENTS DRAWINGS FOR PARAPET SECTIONS AND ATTACHMENT TYPE B DETAILS.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

DISCLAIMER:

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL
TL-2 TYPE A ATTACHMENT
(NO ROADWAY CURB ON APPROACH)

DISCLAIMER:

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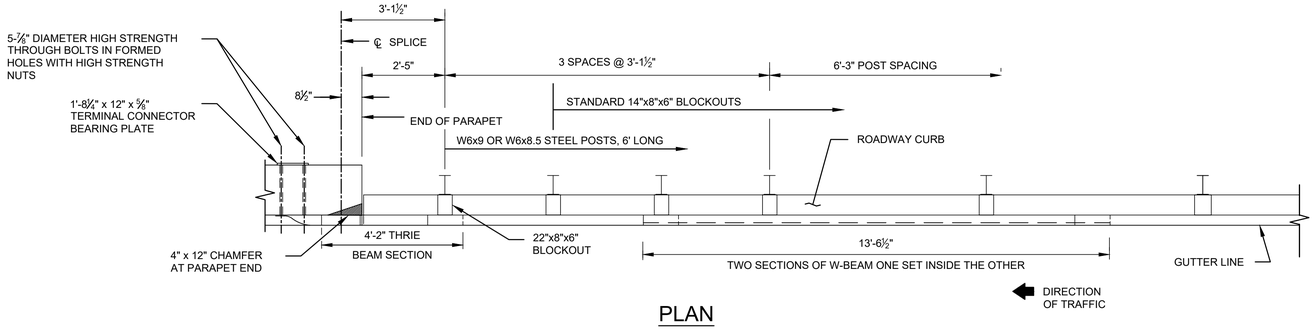
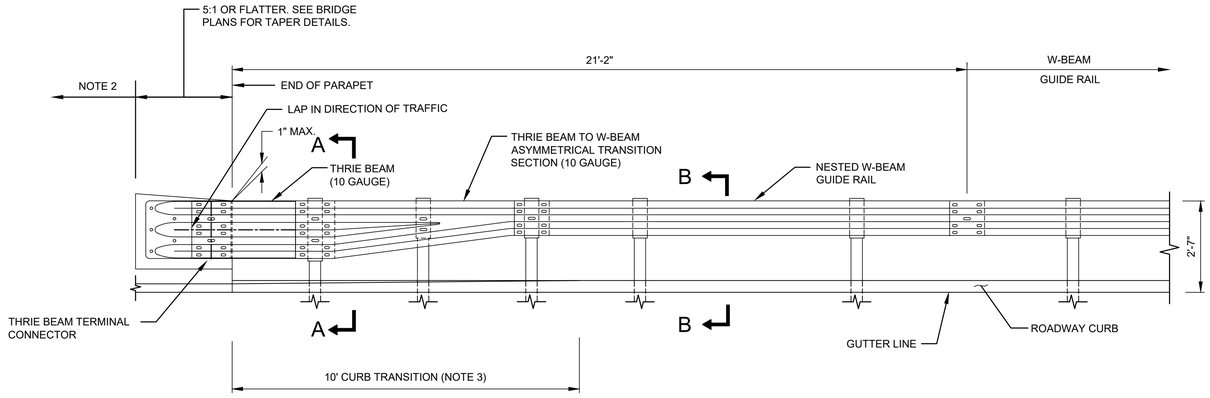
Date 07 / 15 / 2024

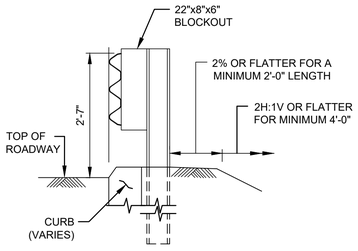
Drawing Number TD330.06



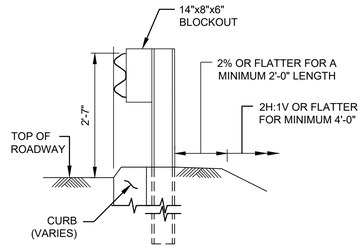
PLAN



ELEVATION



SECTION: A-A



SECTION: B-B

TL-2 TYPE A ATTACHMENT - WITH ROADWAY CURB ON APPROACH

NOT TO SCALE

NOTES:

1. SEE BRIDGE DRAWINGS FOR PARAPET DIMENSIONS AND STEEL REINFORCEMENT DETAILS.
2. SEE TL-3 DETAILS FOR PARAPET SECTIONS AND ATTACHMENT TYPE B DETAILS.
3. TRANSITION LAST 10 FEET OF ROADWAY CURB TO MATCH BARRIER PARAPET SHAPE.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL
TL-2 TYPE A ATTACHMENT
(WITH ROADWAY CURB
ON APPROACH)

DISCLAIMER:

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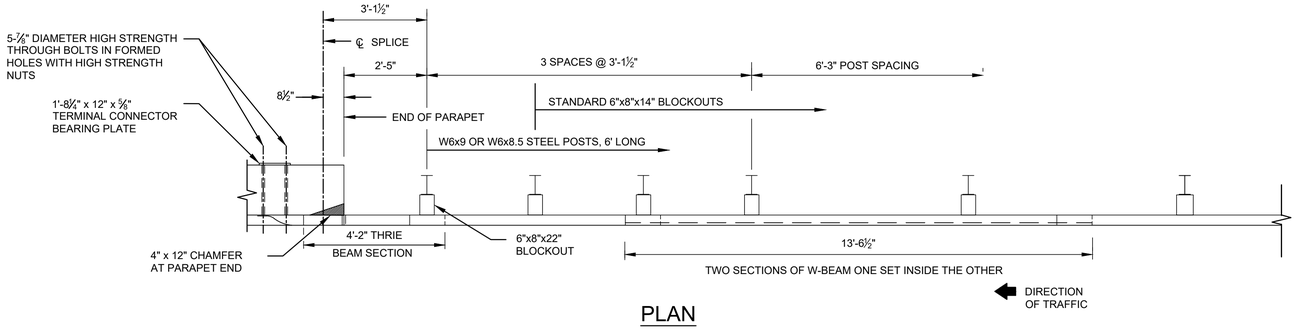
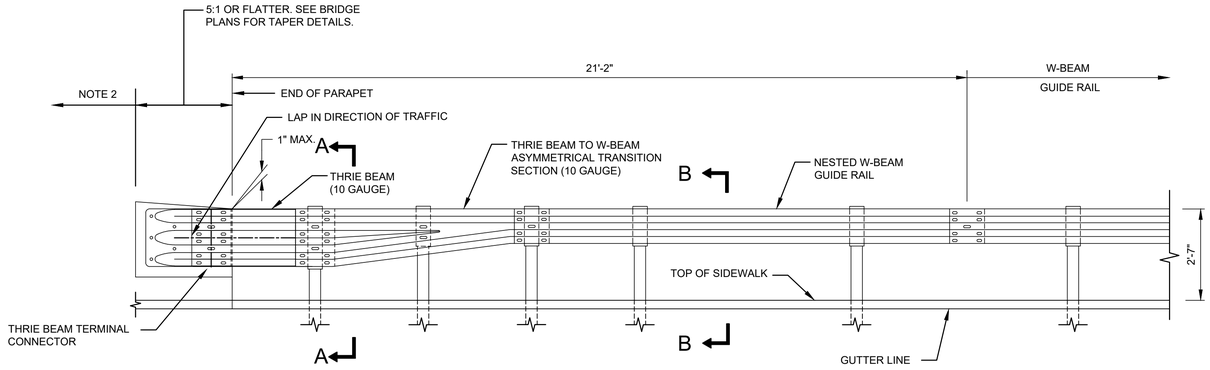
Date 07 / 15 / 2024

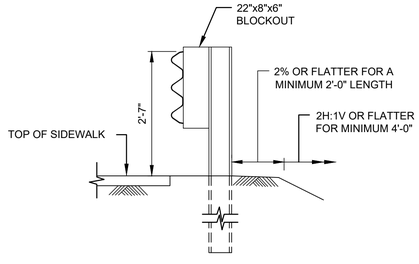
Drawing Number TD330.07



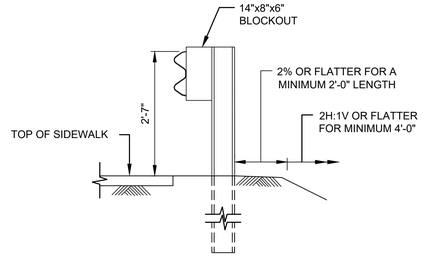
PLAN



ELEVATION



SECTION: A-A



SECTION: B-B

TL-2 TYPE A ATTACHMENT - WITH SIDEWALK

NOT TO SCALE

NOTES:

1. SEE BRIDGE DRAWINGS FOR PARAPET DIMENSIONS AND STEEL REINFORCEMENT DETAILS.
2. SEE TL-3 BRIDGE ATTACHMENT DETAILS FOR PARAPET SECTIONS AND ATTACHMENT TYPE B DETAILS.

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

W-BEAM GUIDE RAIL
TL-2 TYPE A ATTACHMENT
(WITH SIDEWALK)

DISCLAIMER:

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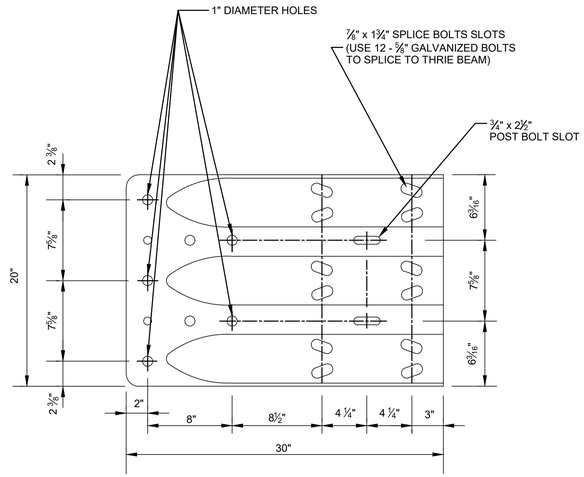
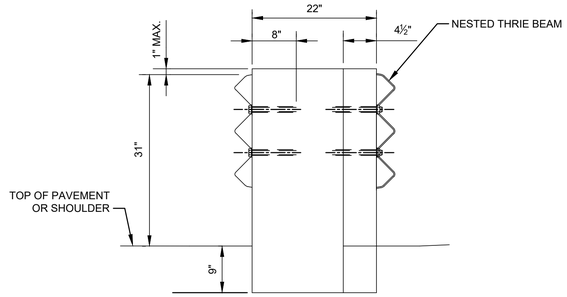
Date 07 / 15 / 2024

Drawing Number TD330.08



THRIE BEAM TERMINAL CONNECTOR

NOT TO SCALE

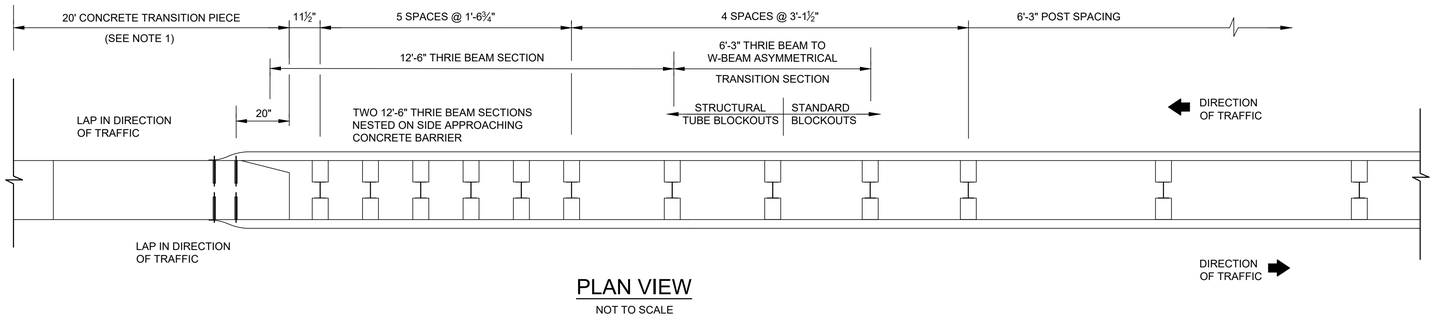


END VIEW (CONCRETE TRANSITION PIECE)

NOT TO SCALE

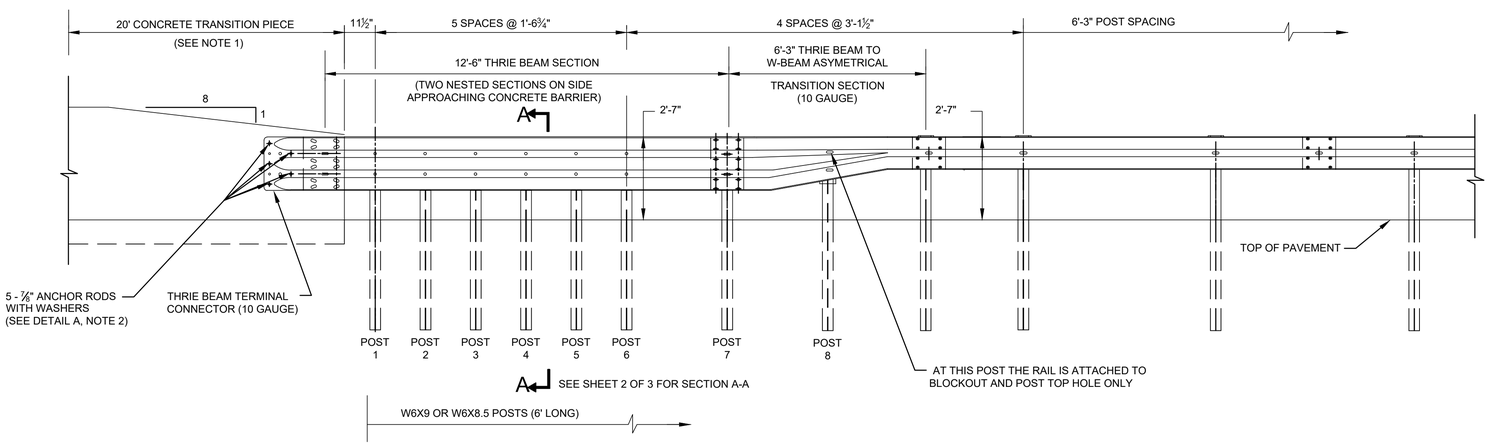
NOTES:

1. THE 20' CONCRETE TRANSITION PIECE TRANSITIONS TO CONCRETE SINGLE SLOPE MEDIAN BARRIER.
2. ANCHOR ROD MINIMUM EMBEDMENT IS 8" AND MINIMUM EDGE DISTANCE IS 3". OPTIONALLY, 1" DIAMETER PVC OR GALVANIZED STEEL PIPE MAY BE CAST DURING FABRICATION OF CONCRETE TRANSITION PIECE (REINFORCEMENT MAY BE ADJUSTED TO ACCOMMODATE PIPE).



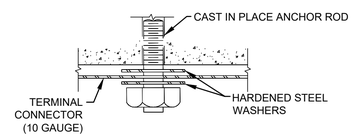
PLAN VIEW

NOT TO SCALE



ELEVATION VIEW

NOT TO SCALE



DETAIL A

NOT TO SCALE

Sheet 24 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

GUIDE RAIL

TRANSITION BETWEEN DUAL FACED W-BEAM GUIDE RAIL AND CONCRETE MEDIAN BARRIER (SHEET 1 OF 3)

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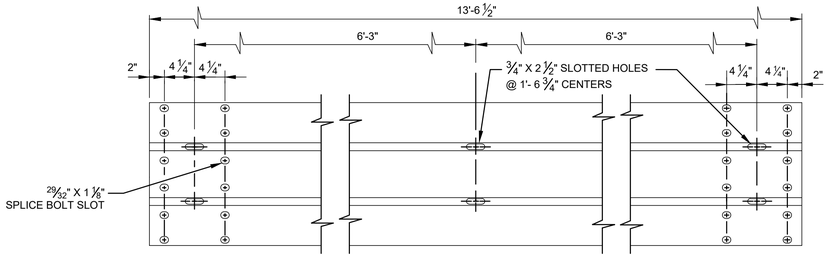
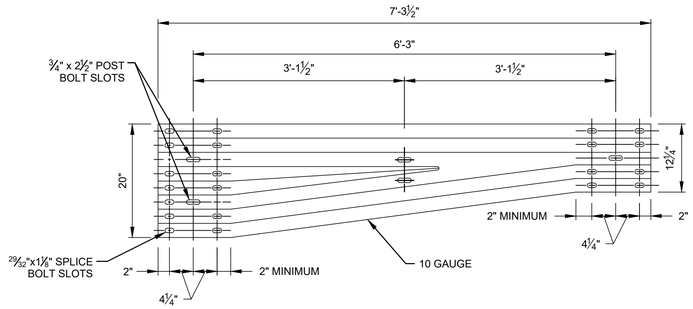
Date 07 / 15 / 2024

Drawing Number **TD330.09**



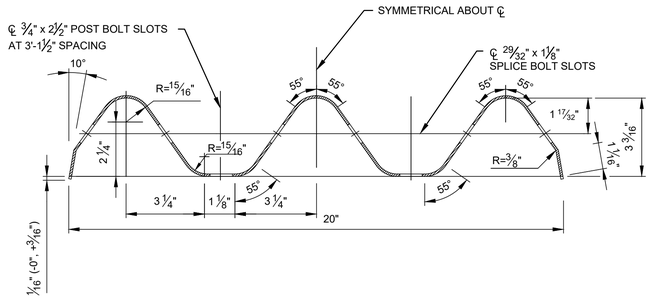
THRIE BEAM ELEMENT

NOT TO SCALE



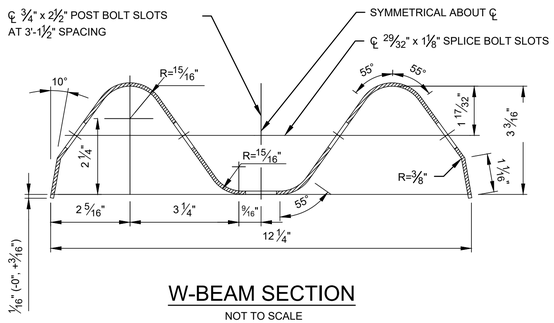
THRIE BEAM TO W-BEAM TRAILING END ASYMMETRICAL TRANSITION SECTION

NOT TO SCALE



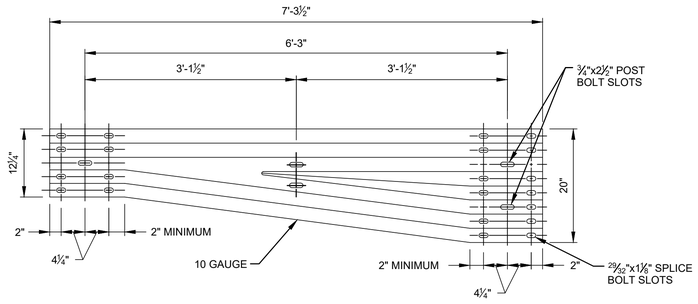
THRIE BEAM SECTION

NOT TO SCALE



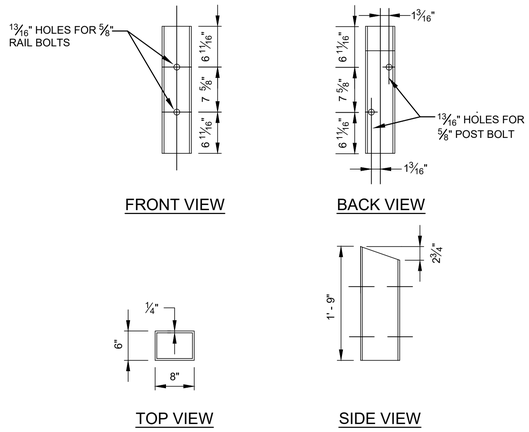
W-BEAM SECTION

NOT TO SCALE



THRIE BEAM TO W-BEAM APPROACH END ASYMMETRICAL TRANSITION SECTION

NOT TO SCALE



FRONT VIEW

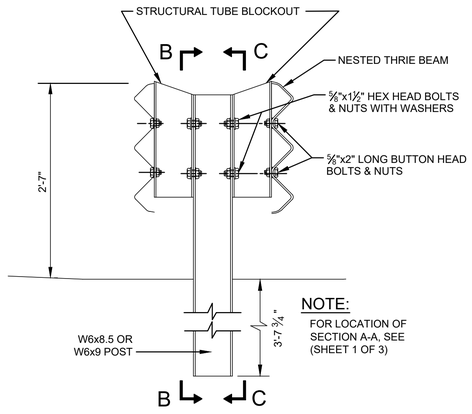
BACK VIEW

TOP VIEW

SIDE VIEW

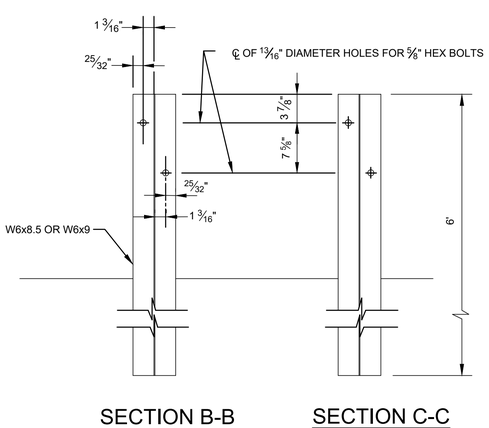
STRUCTURAL TUBE BLOCKOUT

NOT TO SCALE



SECTION A-A

NOT TO SCALE



SECTION B-B

NOT TO SCALE

SECTION C-C

NOT TO SCALE

Sheet 25 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

TRANSITION BETWEEN DUAL FACED W-BEAM GUIDE RAIL AND CONCRETE MEDIAN BARRIER (SHEET 2 OF 3)

DISCLAIMER:

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SAMPLE DRAWING
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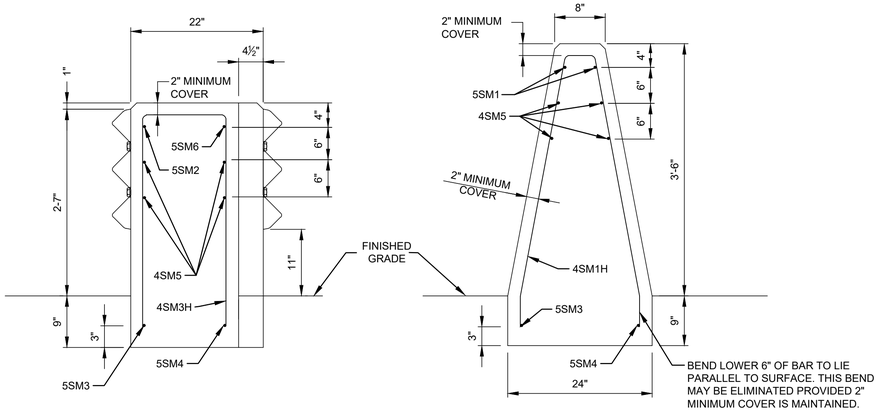
Date 07 / 15 / 2024

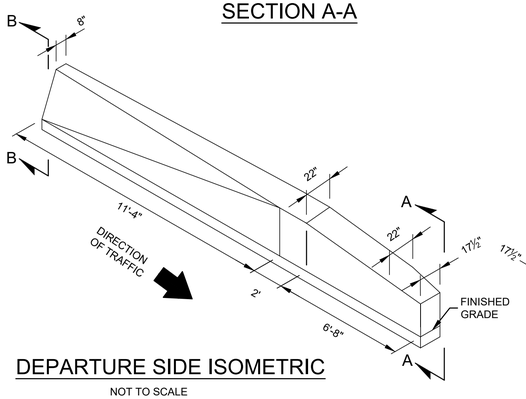
Drawing Number TD330.10

BAR LIST											
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	H	K	LOCATION
4SM1H	4	4	VARIES FROM 8'-0" TO 8'-1¾"	STIRRUP	10"	3'-10"	1½"	VARIES FROM 4" TO 5¾"	—	—	AT CONCRETE BARRIER END
4SM2H	4	1	8'-7"	STIRRUP	9"	3'-10"	1½"	1'-1"	—	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM3H	4	4	VARIES FROM 7'-0½" TO 7'-8½"	STIRRUP	VARIES FROM 1'-2" TO 1'-6"	VARIES FROM 3'-0" TO 3'-2"	1½"	—	—	—	AT CORRUGATED RAIL END
4SM5	4	8	2'-8"	STRAIGHT	—	—	—	—	—	—	4 AT EACH END
4SM6H	4	1	9'-0½"	STIRRUP	1-6"	3'-10"	1½"	—	—	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
5SM1	5	2	13'-2"	STRINGER	—	—	—	11'-2"	¾"	2'-0"	LONGITUDINAL 2 IN TOP
5SM2	5	1	8'-8"	STRINGER	—	—	—	6'-6"	3"	2'-0"	LONGITUDINAL 1 IN TOP
5SM3	5	1	19'-6"	STRAIGHT	—	—	—	—	—	—	LONGITUDINAL 1 IN BOTTOM
5SM4	5	1	19'-6½"	STRINGER	—	—	—	18'-3"	4½"	1'-5"	LONGITUDINAL 1 IN BOTTOM
5SM5	5	1	7'-2"	STRINGER	—	—	—	5'-0"	3"	2'-0"	LONGITUDINAL 1 IN TOP
5SM6	5	1	3'-6"	STRINGER	—	—	—	2'-0"	4½"	1'-5"	LONGITUDINAL 1 IN TOP



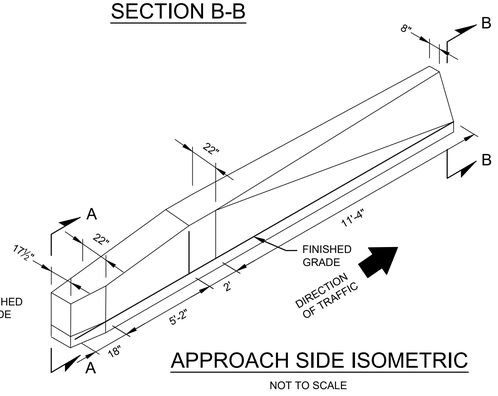
SECTION A-A

SECTION B-B



DEPARTURE SIDE ISOMETRIC

NOT TO SCALE

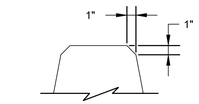


APPROACH SIDE ISOMETRIC

NOT TO SCALE

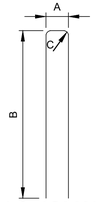
NOTES:

1. CONCRETE FOR BARRIER SHALL BE PERFORMANCE CATEGORY IV AND SHALL ATTAIN A 28-DAY MINIMUM COMPRESSIVE STRENGTH (F'C) OF 4,000 PSI.
2. ALL STEEL REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 AND SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775.

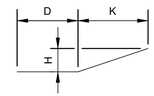


TYPICAL CHAMFER DETAIL

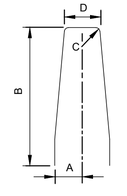
NOT TO SCALE



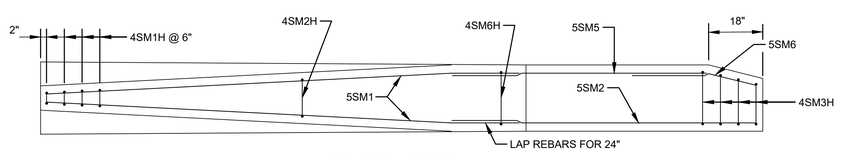
4SM6H & 4SM3H



5SM1, 5SM2, 5SM4, 5SM5, & 5SM6

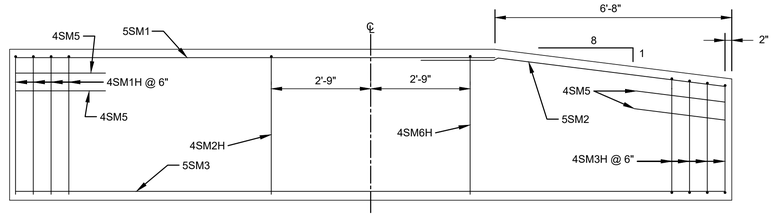


4SM1H & 4SM2H



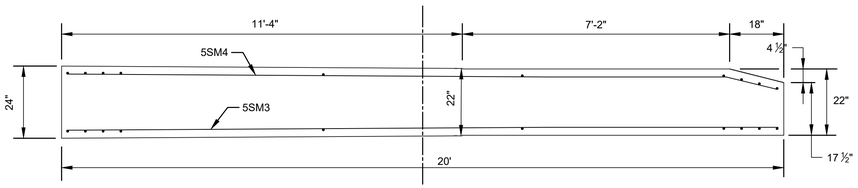
PLAN - TOP

NOT TO SCALE



ELEVATION

NOT TO SCALE



PLAN - BOTTOM

NOT TO SCALE

Sheet 26 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

TRANSITION BETWEEN DUAL FACED W-BEAM GUIDE RAIL AND SINGLE SLOPE CONCRETE BARRIER (SHEET 3 OF 3)

DISCLAIMER:

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SAMPLE DRAWING
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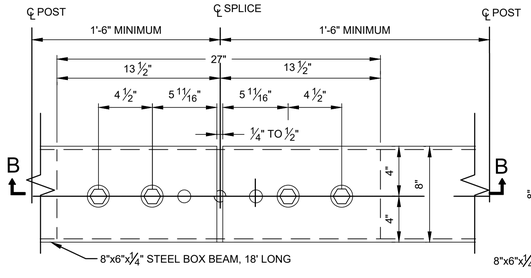
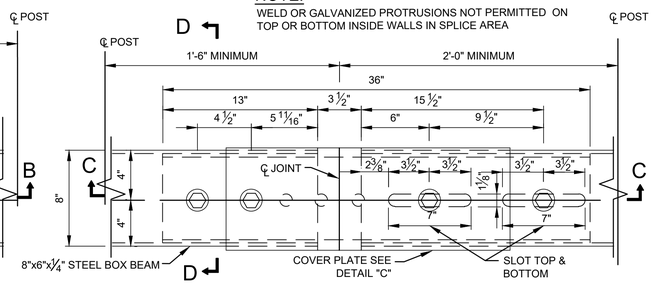
Date 07 / 15 / 2024

Drawing Number TD330.11

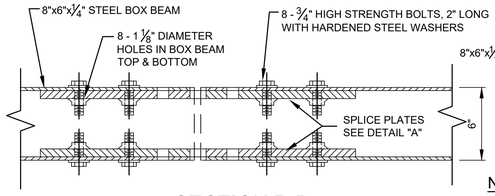


PLAN
NOT TO SCALE

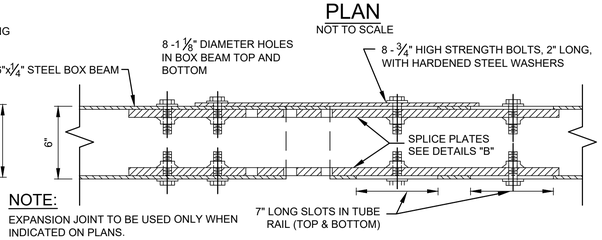


AT FIXED END OF SPAN

AT EXPANSION END OF SPAN

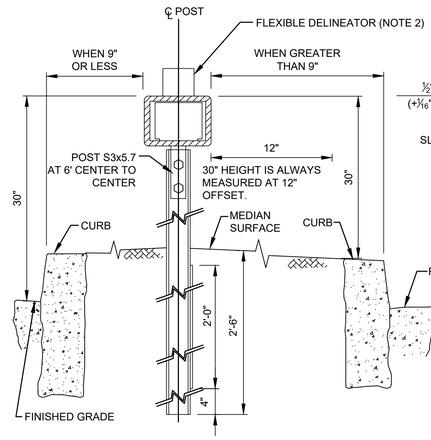


SECTION B-B
TYPICAL RAIL SPLICE DETAIL
NOT TO SCALE

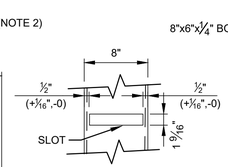


NOTE:
EXPANSION JOINT TO BE USED ONLY WHEN INDICATED ON PLANS.

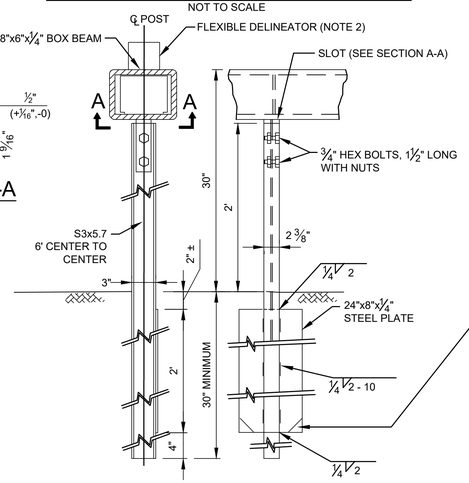
SECTION C-C
TYPICAL EXPANSION JOINT DETAIL
NOT TO SCALE



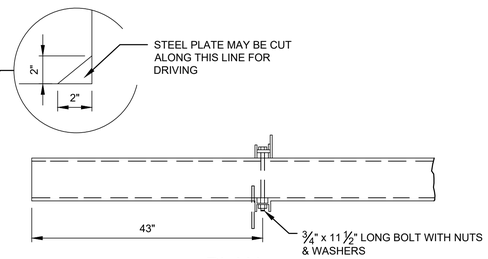
TYPICAL SECTION ON RAISED MEDIANS
NOT TO SCALE



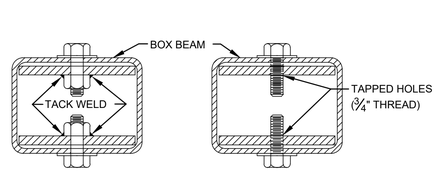
SECTION A-A



TYPICAL SECTION FOR FLUSH MEDIAN
NOT TO SCALE



PLAN

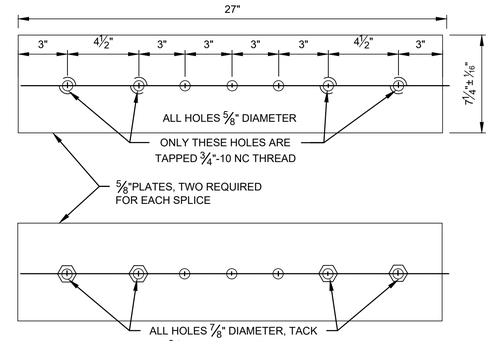


ALTERNATE SECTION D-D
NOT TO SCALE

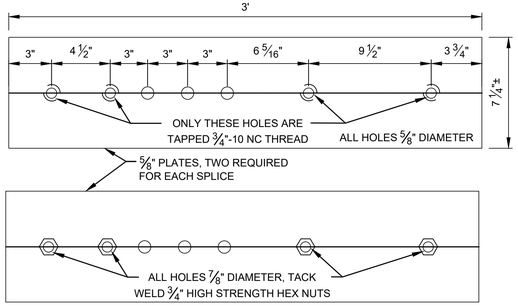
ALTERNATE SECTION D-D
NOT TO SCALE

NOTES:

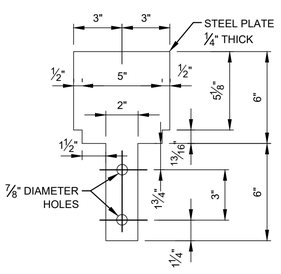
1. BOX BEAM MEDIAN RAIL SHALL BE FURNISHED SHOP CURVED FOR RADII OF 1525' OR LESS.
2. MOUNT FLEXIBLE DELINEATORS APPROXIMATELY EVERY 80 FEET. WHERE THE ROADWAY IS CURVED WITH A RADIUS LESS THAN 1,910 FEET, MOUNT FLEXIBLE DELINEATORS APPROXIMATELY EVERY 40 FEET. FLEXIBLE DELINEATORS SHALL HAVE A REFLECTIVE AREA WITH A MINIMUM WIDTH OF 3 INCHES AND A MINIMUM HEIGHT OF 3 INCHES AND SHALL BE DESIGNED TO MOUNT ON TOP OF THE BOX BEAM RAIL ELEMENT. THE RETROREFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956, TYPE VIII. INSTALL FLEXIBLE DELINEATORS WITH WHITE RETROREFLECTIVE SHEETING ON THE RIGHT SIDE OF THE DIRECTION OF TRAFFIC AND YELLOW RETROREFLECTIVE SHEETING ON THE LEFT SIDE OF THE DIRECTION OF TRAFFIC. ATTACH THE BASE TO THE TOP OF THE BOX BEAM RAIL ELEMENT AS RECOMMENDED BY THE MANUFACTURER.
3. THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER THE SPLICE PLATES WITH WELDED HEX NUTS OR THE SPLICE PLATES WITH BOLT HOLES DRILLED AND TAPPED AS SHOWN IN DETAIL "A".



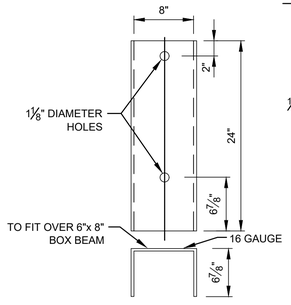
DETAIL "A" - TAPPED AND WELDED SPLICE PLATE ALTERNATIVES
NOT TO SCALE



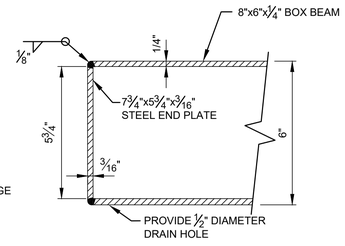
DETAIL "B" ALTERNATE SPLICE PLATE FOR EXPANSION JOINT
NOT TO SCALE



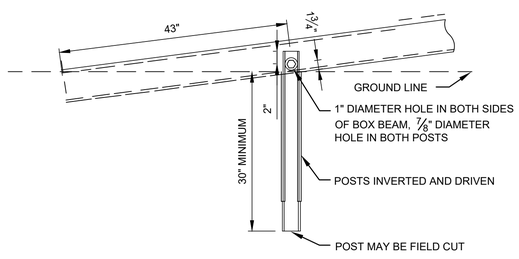
RAIL SUPPORT PLATE
NOT TO SCALE



DETAIL "C" COVER PLATE
NOT TO SCALE



BOX BEAM END PLATE
NOT TO SCALE



ELEVATION

END TREATMENT TYPE A
NOT TO SCALE

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

GUIDE RAIL

BOX BEAM
MEDIAN BARRIER

DISCLAIMER:

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SAMPLE DRAWING
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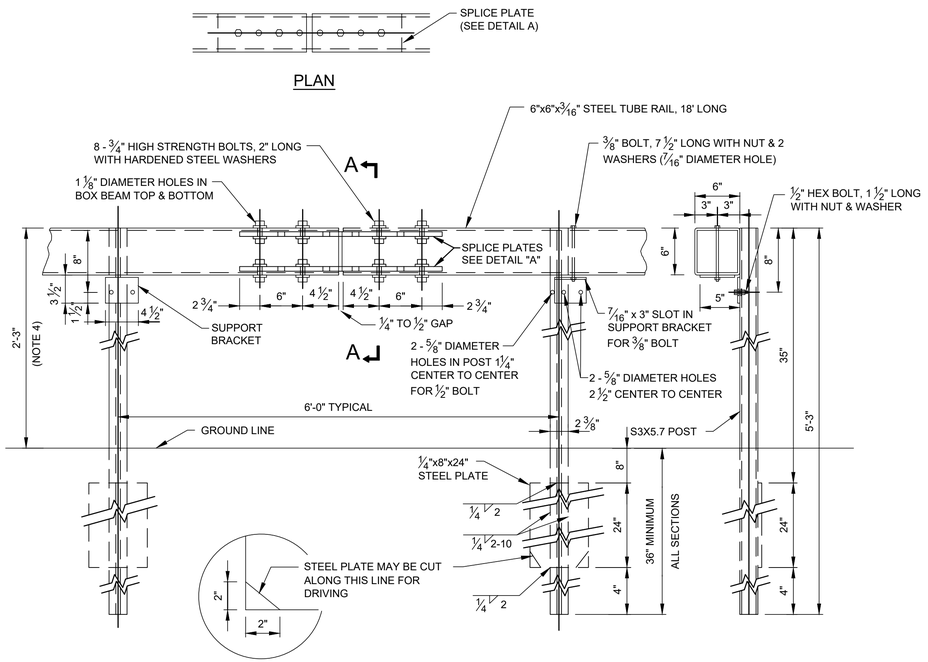
Date 07 / 15 / 2024

Drawing Number TD340.01



ELEVATION

BOX BEAM GUIDE RAIL

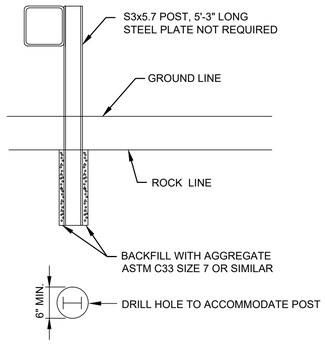
NOT TO SCALE

NOTE:

MOUNT FLEXIBLE DELINEATORS APPROXIMATELY EVERY 80 FEET. WHERE THE ROADWAY IS CURVED WITH A RADIUS LESS THAN 1,910 FEET, MOUNT FLEXIBLE DELINEATORS APPROXIMATELY EVERY 40 FEET. FLEXIBLE DELINEATORS SHALL HAVE A REFLECTIVE AREA WITH A MINIMUM WIDTH OF 3 INCHES AND A MINIMUM HEIGHT OF 3 INCHES AND SHALL BE DESIGNED TO MOUNT ON TOP OF THE BOX BEAM RAIL ELEMENT. THE RETROREFLECTIVE SHEETING SHALL CONFORM TO ASTM D4956, TYPE VIII. INSTALL FLEXIBLE DELINEATORS WITH WHITE RETROREFLECTIVE SHEETING ON THE RIGHT SIDE OF THE DIRECTION OF TRAFFIC AND YELLOW RETROREFLECTIVE SHEETING ON THE LEFT SIDE OF THE DIRECTION OF TRAFFIC. ATTACH THE BASE TO THE TOP OF THE BOX BEAM RAIL ELEMENT AS RECOMMENDED BY THE MANUFACTURER.

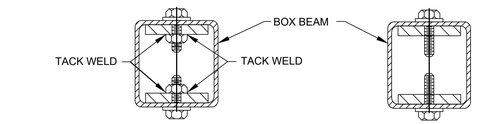
FLEXIBLE DELINEATOR

NOT TO SCALE



POST INSTALLATION IN ROCK

NOT TO SCALE



SECTION A-A

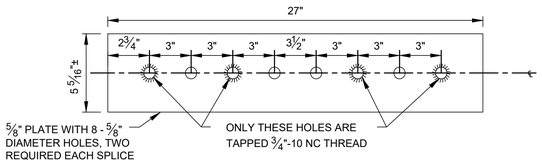
SPLICE PLATE SHOWING 3/4" HEX NUTS WELDED TO PLATE

NOT TO SCALE

SECTION A-A

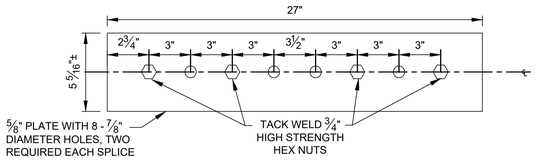
SPLICE PLATE SHOWING TAPPED BOLT HOLES

NOT TO SCALE



DETAIL "A" SPLICE PLATE WITH TAPPED BOLT HOLES

NOT TO SCALE

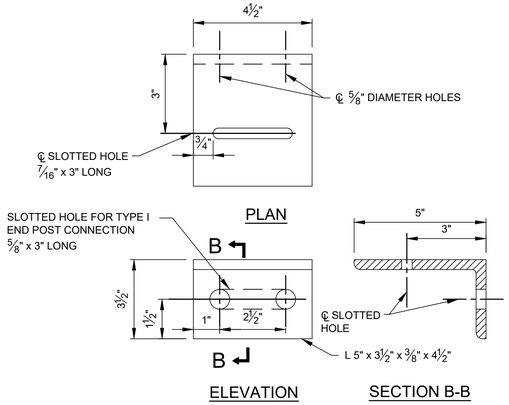


DETAIL "A" SPLICE PLATE WITH HEX NUTS WELDED TO PLATE

NOT TO SCALE

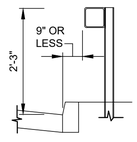
NOTES:

1. STANDARD POST SPACING IS 6'-0". WHERE REDUCED POST SPACING OF 3'-0" IS USED, POSTS ARE CONNECTED TO RAIL AT 6'-0" SPACING.
2. THE LINE OF BOX BEAM GUIDE RAIL, WHEN COMPLETED, SHALL PRESENT A SMOOTH LINE IN BOTH HORIZONTAL AND VERTICAL PLANES.
3. BOX BEAM RAIL SHALL BE FURNISHED SHOP CURVED FOR RADII 720 FEET OR LESS.
4. WHERE THERE IS CURB AND GUIDE RAIL IS SET 9" OR LESS FROM THE CURB FACE, THE RAIL HEIGHT IS MEASURED FROM THE GUTTER LINE. WHERE GUIDE RAIL IS SET MORE THAN 9" FROM THE CURB FACE, THE RAIL HEIGHT IS MEASURED FROM THE GROUND SURFACE.
5. WHERE BOX BEAM GUIDE RAIL ADJACENT TO CURB IS TAPERED TO AN OFFSET SET BACK FROM CURB, A VERTICAL TRANSITION IS REQUIRED. THIS TRANSITION SHALL BE ACCOMPLISHED IN A MINIMUM OF 18' FOR EACH 3" OF VERTICAL CHANGE.
6. THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER THE SPLICE PLATES WITH WELDED HEX NUTS OR THE SPLICE PLATES WITH BOLT HOLES DRILLED AND TAPPED AS SHOWN IN DETAIL "A".



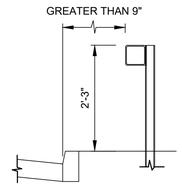
SUPPORT BRACKET

NOT TO SCALE



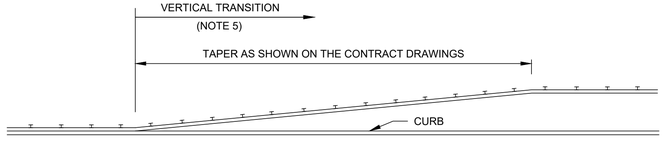
RAIL HEIGHT DETERMINATION ADJACENT TO CURB

NOT TO SCALE



RAIL HEIGHT DETERMINATION SET BACK FROM CURB

NOT TO SCALE



WHERE GUIDE RAIL ADJACENT TO CURB TRANSITIONS TO AN OFFSET SET BACK FROM CURB

NOT TO SCALE

Sheet 28 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

GUIDE RAIL

BOX BEAM
GUIDE RAIL

DISCLAIMER:

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SAMPLE DRAWING
TO BE UPDATED AS PER DISCLAIMER ABOVE.

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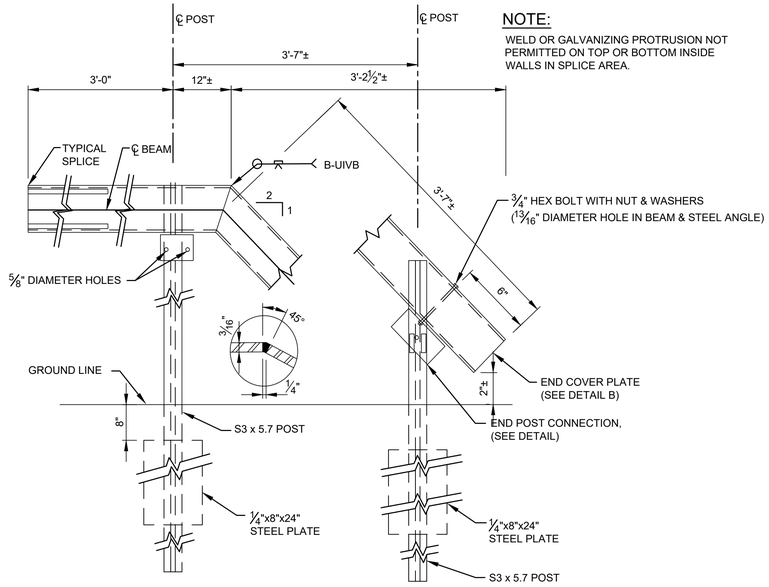
Date 07 / 15 / 2024

Drawing Number TD340.02



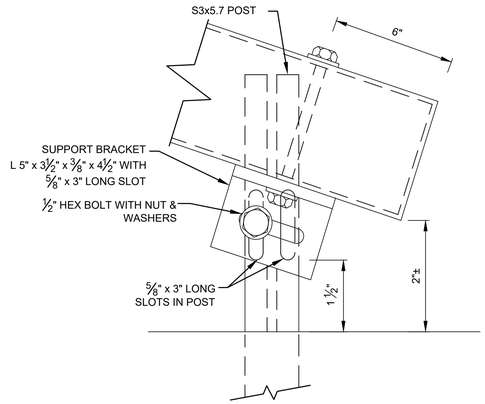
ELEVATION

TYPE I END ASSEMBLY

NOT TO SCALE

NOTE:

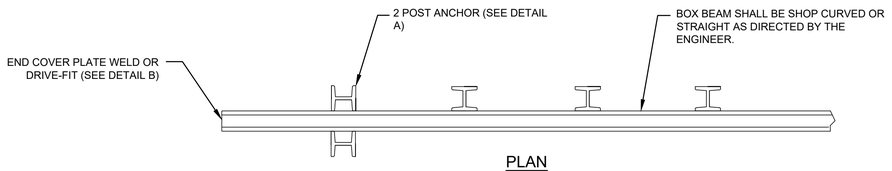
WELD OR GALVANIZING PROTRUSION NOT PERMITTED ON TOP OR BOTTOM INSIDE WALLS IN SPLICE AREA.



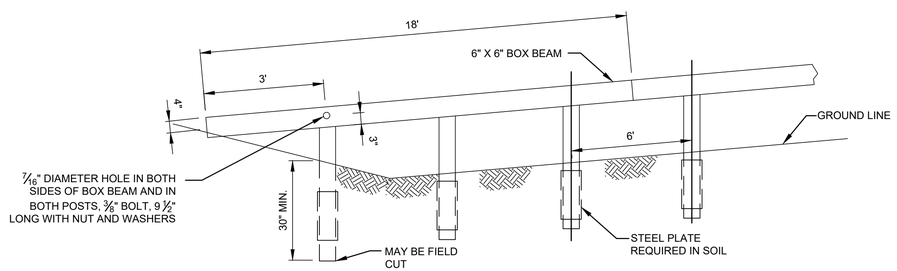
ELEVATION

TYPE I END POST CONNECTION

NOT TO SCALE



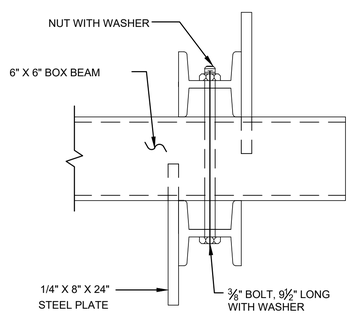
PLAN



ELEVATION

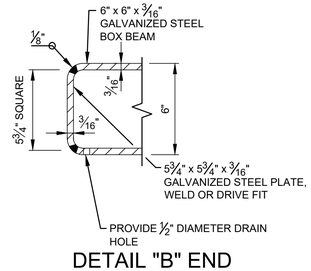
BURIED END TREATMENT

NOT TO SCALE



DETAIL "A" 2 POST ANCHOR ASSEMBLY

NOT TO SCALE



DETAIL "B" END COVER PLATE

NOT TO SCALE

Sheet 29 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

BOX BEAM TYPE 1
END ASSEMBLY
AND BURIED
END TREATMENT

DISCLAIMER:

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SAMPLE DRAWING
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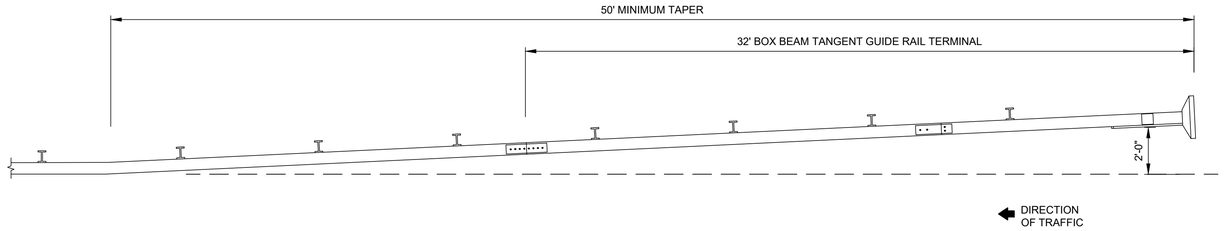
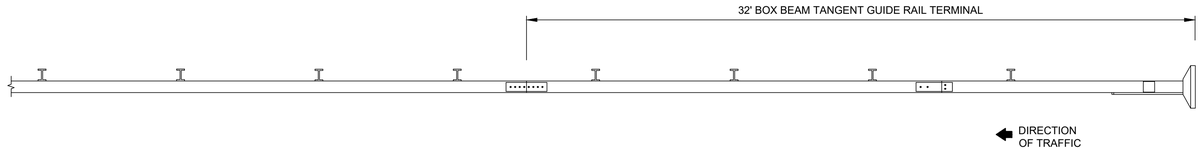
Date 07 / 15 / 2024

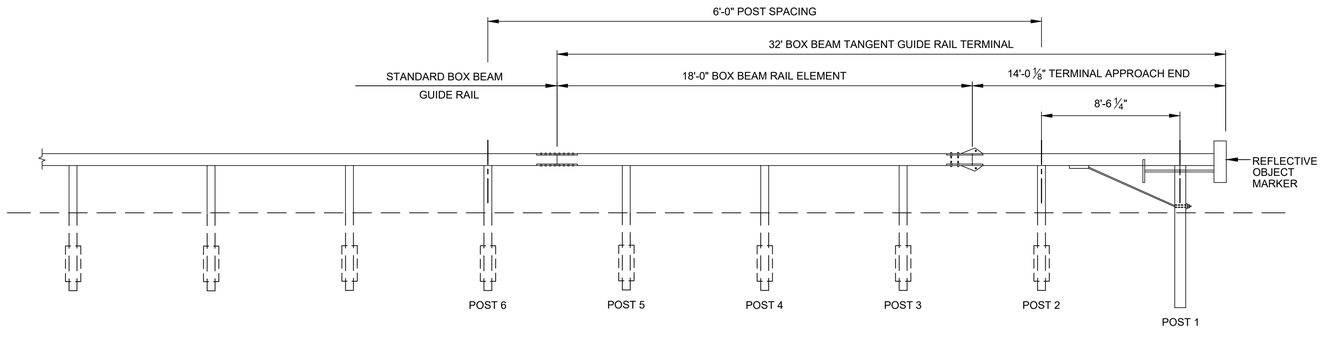
Drawing Number TD340.03



PLAN - 2' OFFSET FROM DOWNSTREAM GUIDE RAIL



PLAN - 0' OFFSET FROM DOWNSTREAM GUIDE RAIL



ELEVATION

BOX BEAM TANGENT GUIDE RAIL TERMINAL

NOT TO SCALE

NOTES:

1. NUMBER OF POSTS, TYPE OF POST, POST SPACING, FLARE RATE, SPLICE LOCATIONS, DETAILS AND MATERIALS TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
2. WHERE BOX BEAM GUIDE RAIL IS INSTALLED LESS THAN 1 FOOT FROM THE GUTTER LINE OR WHERE SHOWN ON THE CONTRACT DRAWINGS, CONSTRUCT THE TANGENT GUIDE RAIL TERMINAL WITH A 50 FOOT MINIMUM TAPER FOR A 2 FOOT OFFSET SO THAT THE TERMINAL END DOES NOT PROTRUDE INTO THE ROADWAY. ACHIEVE THE 2 FOOT OFFSET BY ANGLING THE DOWNSTREAM SPLICE JOINTS OR BY SHOP BENDING THE RAIL ELEMENT BETWEEN SPLICE JOINTS.
3. WHERE THE DOWNSTREAM GUIDE RAIL IS ON A HORIZONTAL CURVE, CONSTRUCT THE TANGENT GUIDE RAIL TERMINAL IN A STRAIGHT LINE. (DO NOT FOLLOW THE HORIZONTAL CURVE).

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

GUIDE RAIL

BOX BEAM
TANGENT GUIDE
RAIL TERMINAL

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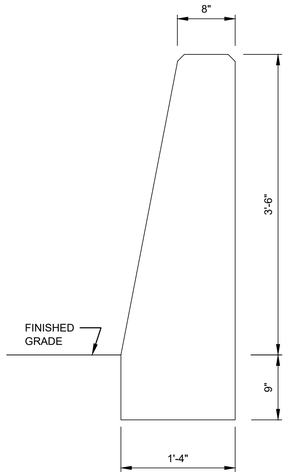
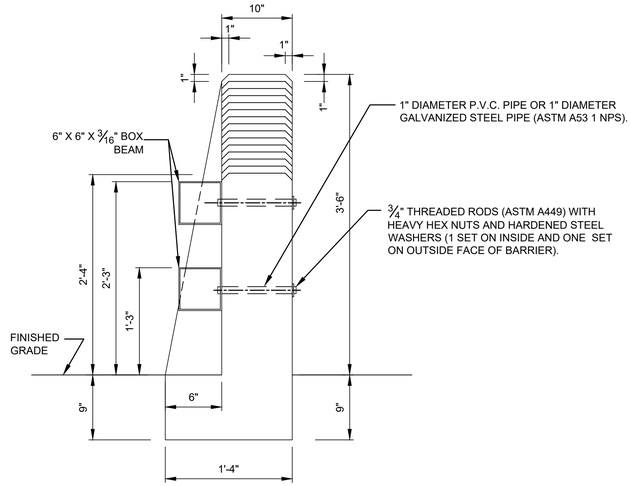
Date 07 / 15 / 2024

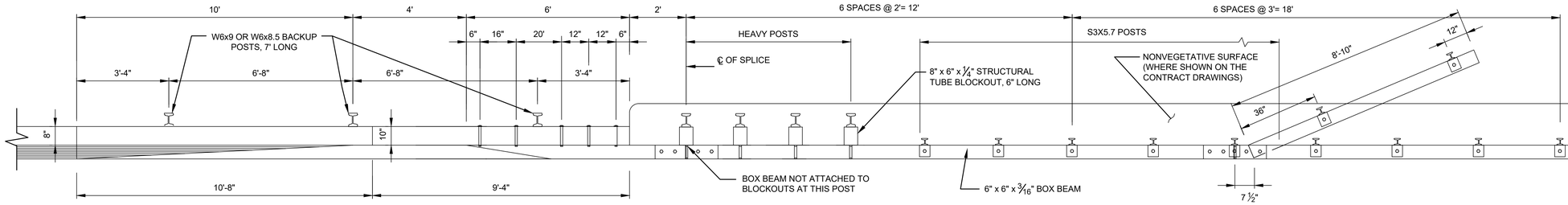
Drawing Number TD340.04



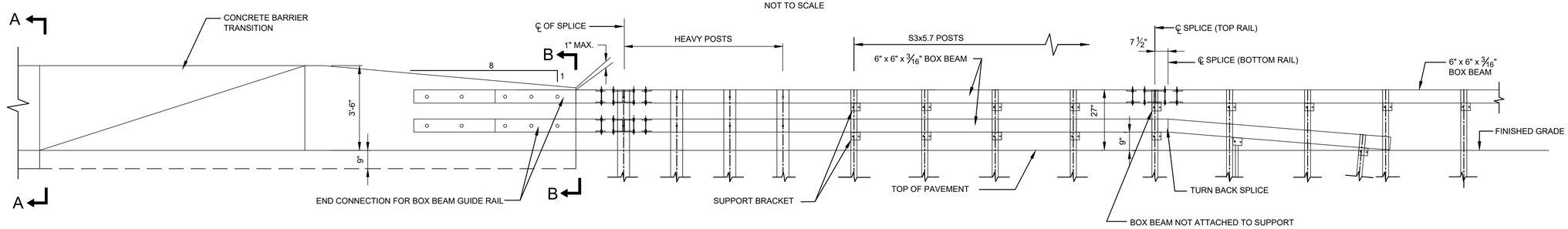
SECTION A-A



SECTION B-B



PLAN
NOT TO SCALE



ELEVATION
NOT TO SCALE

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

BOX BEAM TRANSITION TO SINGLE SLOPE HALF SECTION CONCRETE BARRIER (SHEET 1 OF 3)

DISCLAIMER:

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SAMPLE DRAWING
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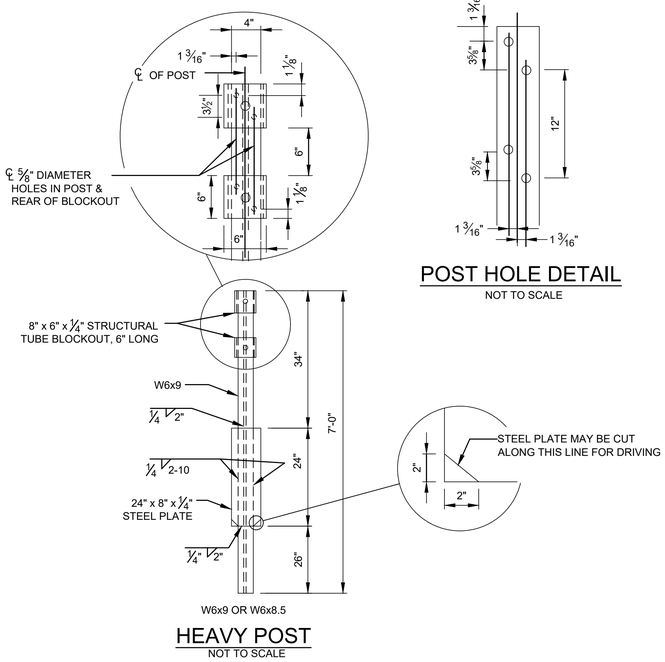
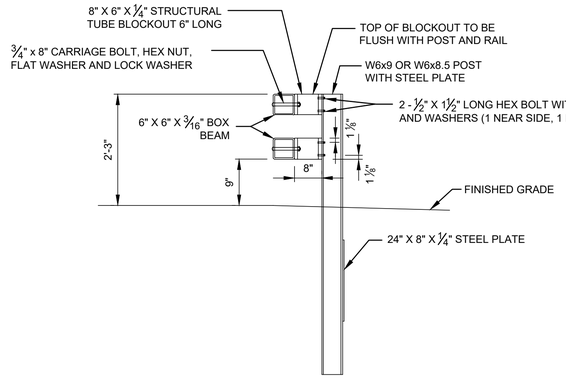
Date 07 / 15 / 2024

Drawing Number TD350.01

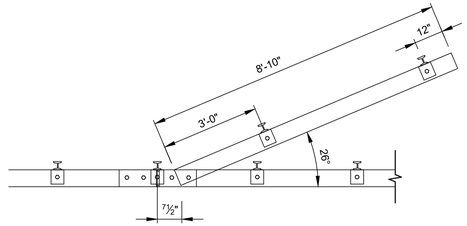


HEAVY POST
NOT TO SCALE

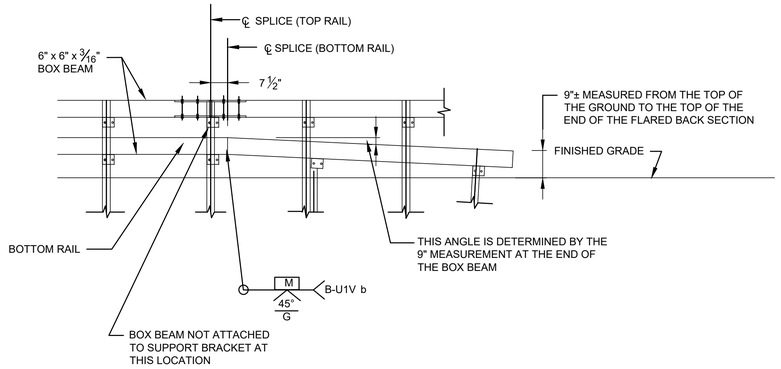
POST HOLE DETAIL
NOT TO SCALE



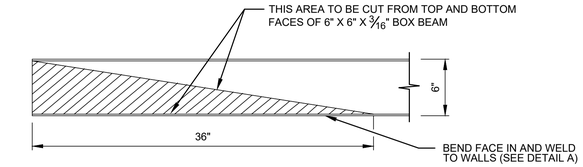
HEAVY POST ELEVATION
NOT TO SCALE



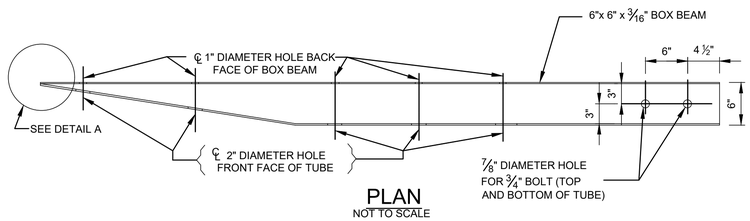
PLAN - BOTTOM RAIL TURNBACK
NOT TO SCALE



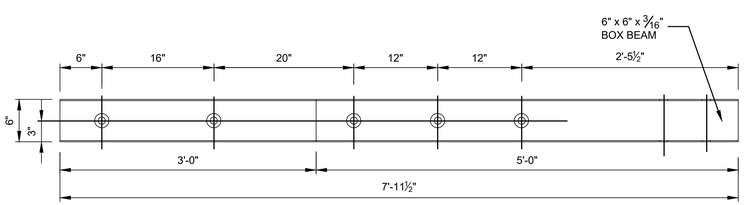
ELEVATION - BOTTOM RAIL TURNBACK
NOT TO SCALE



CUT DETAIL - END CONNECTION
NOT TO SCALE

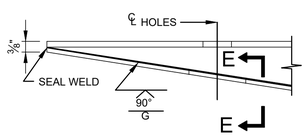


PLAN
NOT TO SCALE

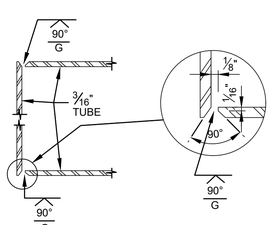


ELEVATION
NOT TO SCALE

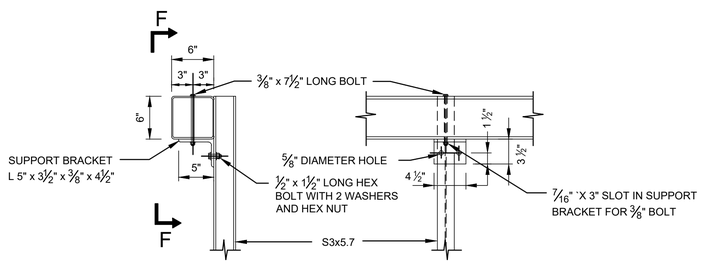
END CONNECTION FOR BOX BEAM GUIDE RAIL
NOT TO SCALE



DETAIL A
NOT TO SCALE



SECTION E-E
NOT TO SCALE



ELEVATION VIEW F-F

TYPICAL RAIL TO POST CONNECTION
NOT TO SCALE

Sheet 32 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

TRANSITION BOX BEAM TO SINGLE SLOPE HALF SECTION CONCRETE BARRIER (SHEET 2 OF 3)

DISCLAIMER:

THIS IS ONLY A
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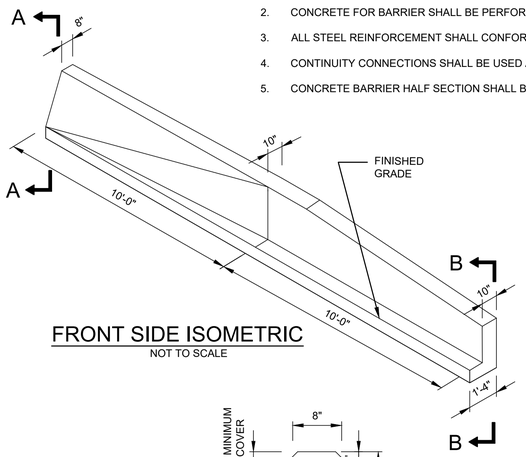
Date 07 / 15 / 2024

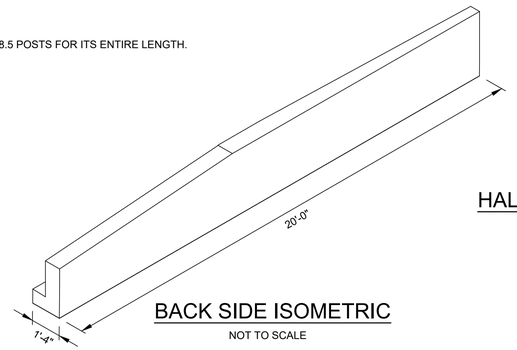
Drawing Number TD350.02

NOTES:

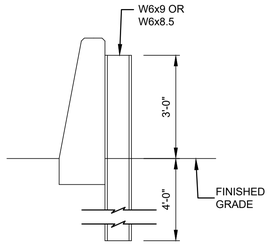
1. THIS BEND MAY BE ELIMINATED PROVIDED 2" MINIMUM COVER IS MAINTAINED.
2. CONCRETE FOR BARRIER SHALL BE PERFORMANCE CATEGORY IV AND SHALL ATTAIN A 28-DAY MINIMUM COMPRESSIVE STRENGTH (F'C) OF 4,000 PSI.
3. ALL STEEL REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 AND SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775.
4. CONTINUITY CONNECTIONS SHALL BE USED AT ALL EXPANSION JOINTS.
5. CONCRETE BARRIER HALF SECTION SHALL BE BACKED UP WITH W6x9 OR W6x8.5 POSTS FOR ITS ENTIRE LENGTH.



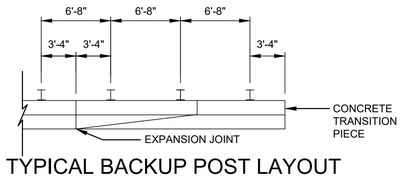
FRONT SIDE ISOMETRIC
NOT TO SCALE



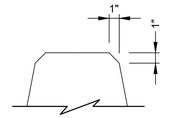
BACK SIDE ISOMETRIC
NOT TO SCALE



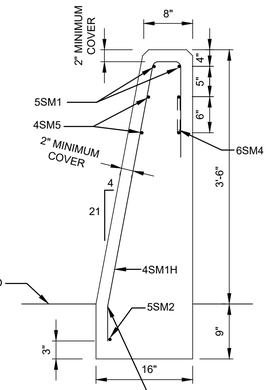
SINGLE SLOPE CONCRETE HALF SECTION TRANSITION BARRIER WITH BACKUP POST
NOT TO SCALE



TYPICAL BACKUP POST LAYOUT
NOT TO SCALE

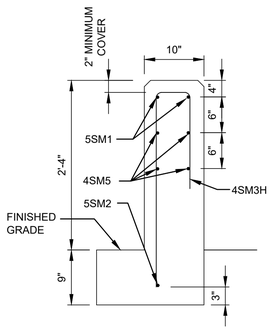


TYPICAL CHAMFER DETAIL

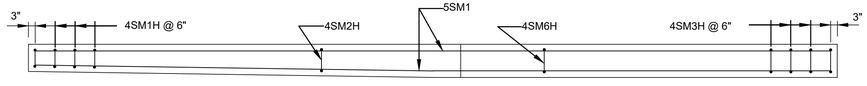


SECTION A-A

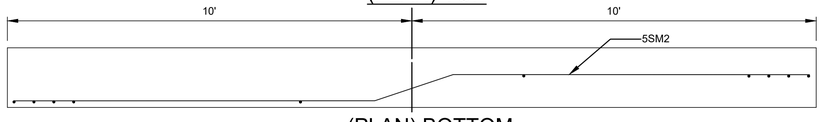
BEND LOWER 6" OF BAR TO LIE PARALLEL TO SURFACE (SEE NOTE 1)



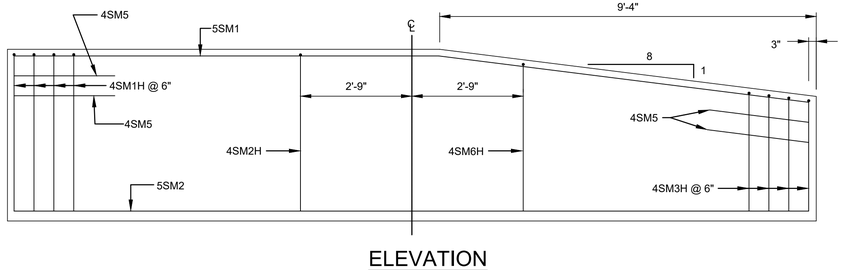
SECTION B-B



(PLAN) TOP



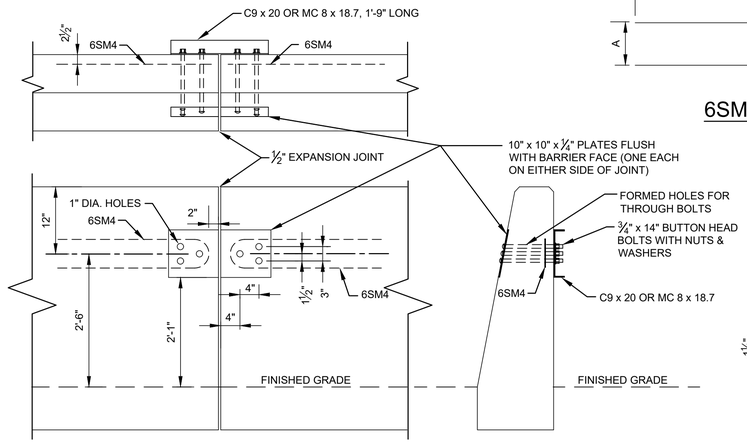
(PLAN) BOTTOM



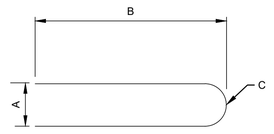
ELEVATION

BAR LIST

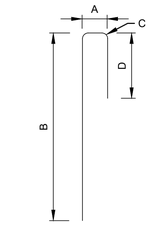
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	H	K	LOCATION
4SM1H	4	4	5'-6"	STIRRUP	10"	3'-10"	1 ½"	4"	6"	—	AT CONCRETE BARRIER END
4SM2H	4	1	5'-7 ½"	STIRRUP	5"	3'-10"	1 ½"	5"	3'-0½"	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM3H	4	4	VARIES FROM 4'-6" TO 4'-8"	STIRRUP	6"	VARIES FROM 2'-8" TO 2'-10"	1 ½"	1'-4"	—	—	AT BOX BEAM END
4SM5	4	6	2'-6"	STRAIGHT	—	———	—	———	—	—	4 AT BOX BEAM END, 2 AT BARRIER END
4SM6H	4	1	5'-4¾"	STIRRUP	6"	3'-6¾"	1 ½"	1'-4"	—	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
5SM1	5	2	19'-9"	STRINGER	—	10'-6"	—	———	1'-2"	9'-2"	LONGITUDINAL 2 IN TOP
5SM2	5	1	19'-9"	STRINGER	—	9'-2"	—	9'-2"	6"	1'-4"	LONGITUDINAL 1 IN BOTTOM
6SM4	6	2	5'-4"	STIRRUP	6"	2'-6"	3"	———	—	—	AT EXPANSION JOINT END



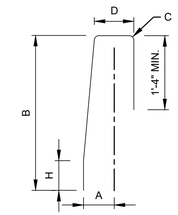
CONTINUITY CONNECTION FOR CONCRETE BARRIER HALF SECTION
(SEE NOTE 2)
NOT TO SCALE



6SM4

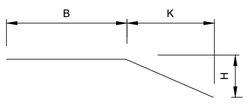


4SM3H, 4SM6H

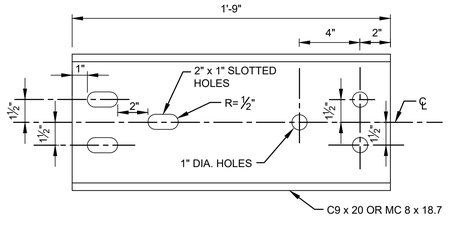


4SM1H AND 4SM2H

5SM2



5SM1



DETAIL OF CONTINUITY PLATE
NOT TO SCALE

Sheet 33 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

TRANSITION BOX BEAM TO SINGLE SLOPE HALF SECTION CONCRETE BARRIER (SHEET 3 OF 3)

DISCLAIMER:

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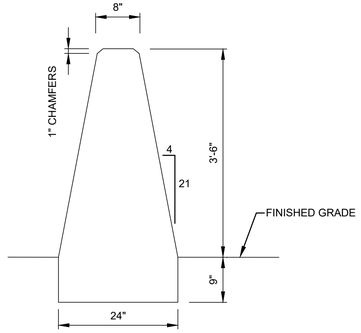
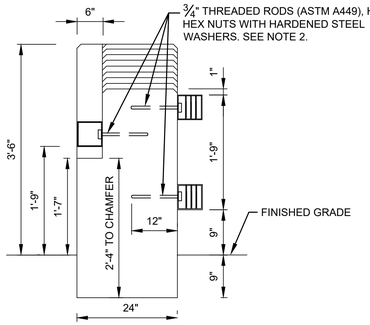
Date 07 / 15 / 2024

Drawing Number TD350.03



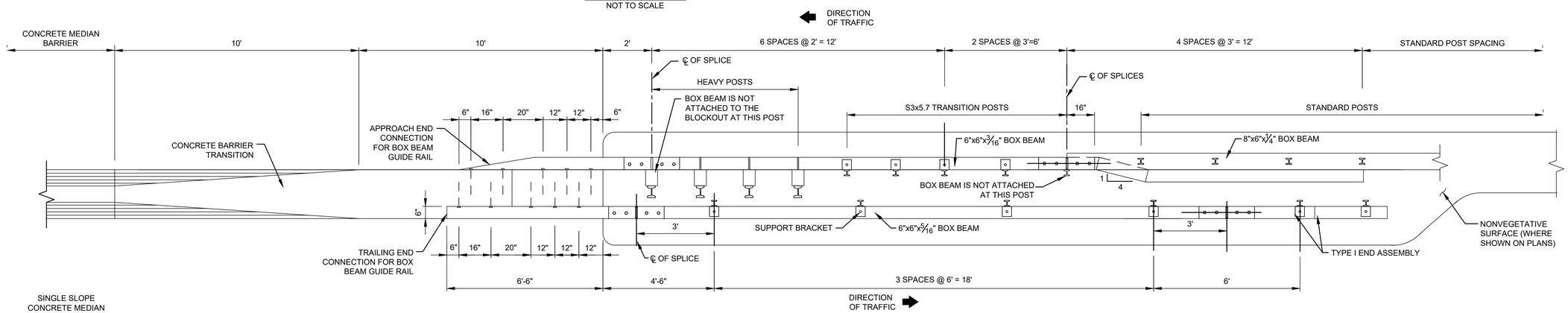
SECTION A-A
NOT TO SCALE



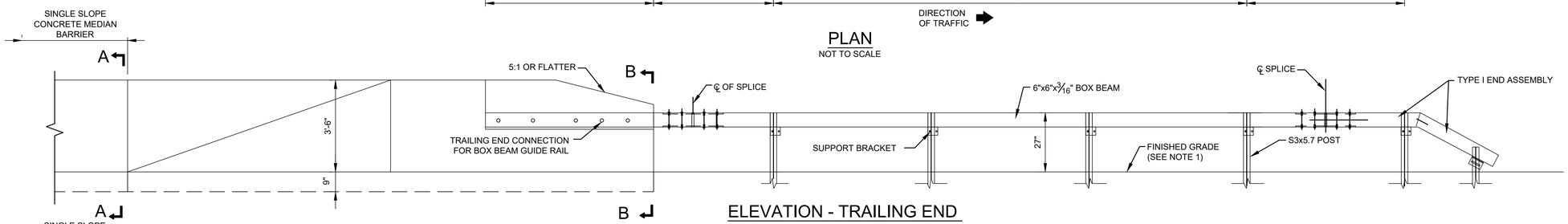
SECTION B-B
NOT TO SCALE

NOTES:

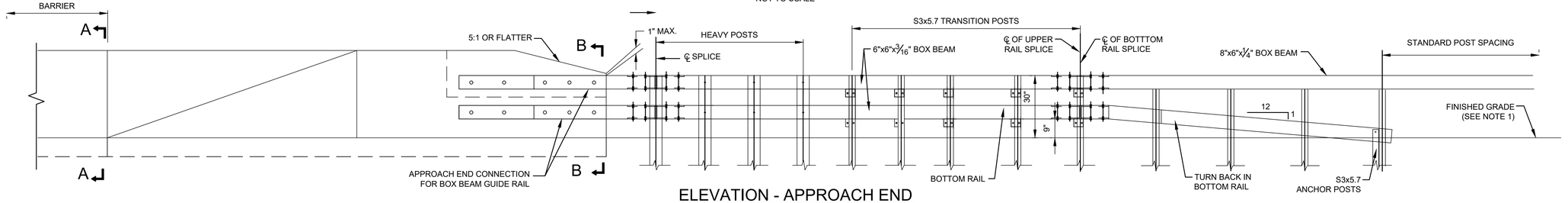
1. THE ELEVATION OF FINISHED GRADES ON EACH SIDE OF THE TRANSITION WILL VARY IN RELATION TO EACH OTHER AND IN RELATION TO THE BARRIER BASED ON ROADWAY GEOMETRY.
2. MINIMUM EMBEDMENT OF ANCHOR RODS SHALL BE 12" AND A MINIMUM EDGE DISTANCE OF 3" SHALL BE MAINTAINED. 1 ¼" HOLES SHALL BE DRILLED AND GROUTED.



PLAN
NOT TO SCALE



ELEVATION - TRAILING END
(APPROACH RAIL NOT SHOWN)
NOT TO SCALE



ELEVATION - APPROACH END
(DEPARTURE RAIL NOT SHOWN)
NOT TO SCALE

Sheet 34 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

DISCLAIMER:

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

GUIDE RAIL

TRANSITION BETWEEN BOX BEAM MEDIAN BARRIER AND SINGLE SLOPE CONCRETE MEDIAN BARRIER (SHEET 1 OF 3)

DISCLAIMER:

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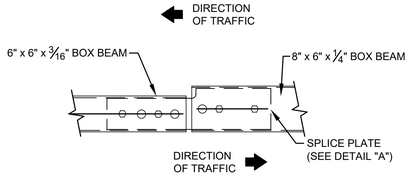
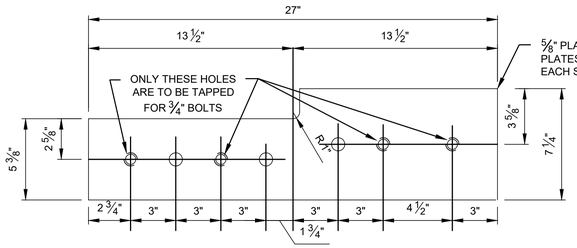
Date 07 / 15 / 2024

Drawing Number TD350.04



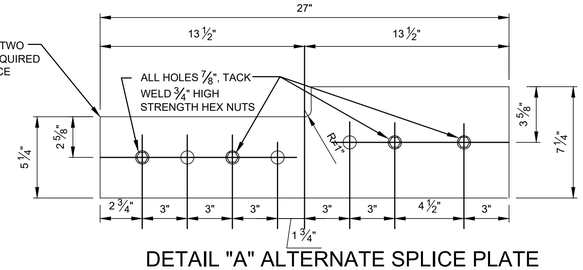
PLAN

NOT TO SCALE



DETAIL "A" ALTERNATE SPLICE PLATE WITH TAPPED BOLT HOLES

NOT TO SCALE

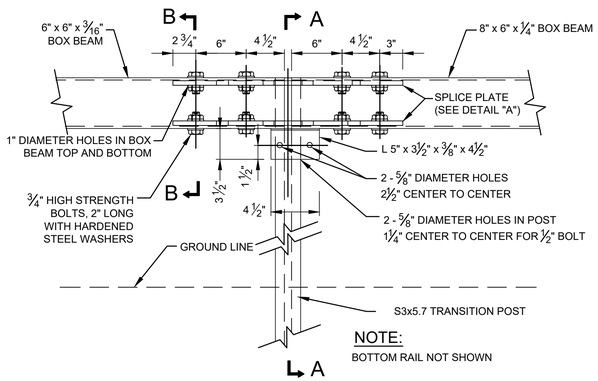


DETAIL "A" ALTERNATE SPLICE PLATE WITH HEX NUTS WELDED TO PLATE

NOT TO SCALE

NOTES:

1. THE BOTTOM PLATE IS SHOWN. THE TOP PLATE IS SIMILAR WITH THE NUTS WELDED ON THE REVERSE SIDE.
2. THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER THE SPLICE PLATES WITH WELDED HEX NUTS OR THE SPLICE PLATES WITH BOLT HOLES DRILLED AND TAPPED AS SHOWN IN DETAIL "A".

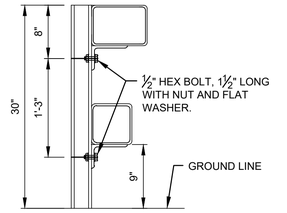


NOTE:

BOTTOM RAIL NOT SHOWN

ELEVATION TRANSITION SPLICE

NOT TO SCALE

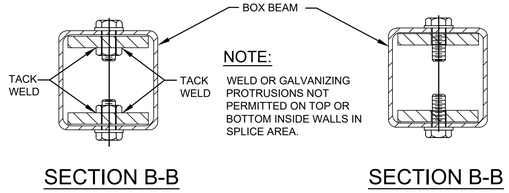


NOTE:

FOR BOTTOM RAIL TURN BACK SPLICE DETAILS SEE THIS SHEET.

SECTION A-A

NOT TO SCALE



NOTE:

WELD OR GALVANIZING PROTRUSIONS NOT PERMITTED ON TOP OR BOTTOM INSIDE WALLS IN SPLICE AREA.

SECTION B-B

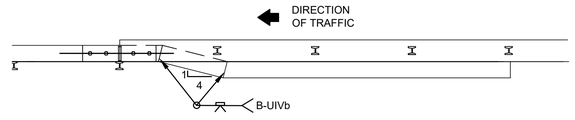
(SPLICE PLATE SHOWING 3/4" HEX NUTS WELDED TO PLATE)

NOT TO SCALE

SECTION B-B

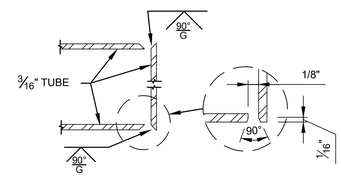
(SPLICE PLATE SHOWING TAPPED BOLT HOLES)

NOT TO SCALE



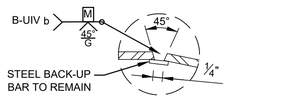
PLAN - BOTTOM RAIL TURNBACK

NOT TO SCALE



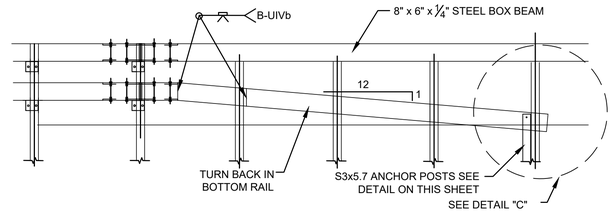
SECTION C-C

NOT TO SCALE



WELD DETAIL FOR BOTTOM RAIL

NOT TO SCALE

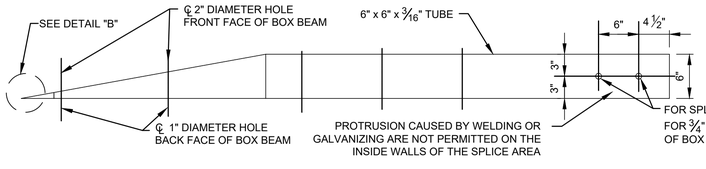


ELEVATION - BOTTOM RAIL TURNBACK

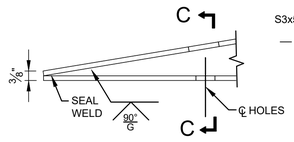
NOT TO SCALE

NOTE "A":

THE END CONNECTION ON THE DEPARTURE SIDE OF TRAFFIC WILL BE SIMILAR BUT WILL NOT HAVE THE CUT DETAIL (IT WILL MAINTAIN ITS SQUARE SHAPE THROUGHOUT).



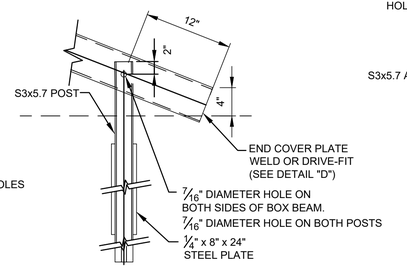
PLAN



DETAIL "B"

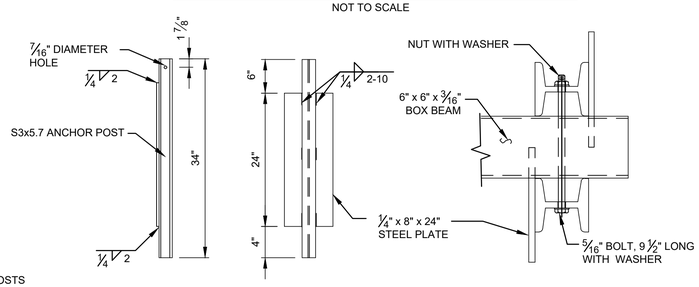
(APPROACH SIDE ONLY)

NOT TO SCALE



DETAIL "C"

NOT TO SCALE

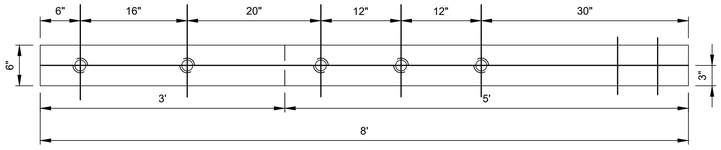


ANCHOR POST DETAIL

NOT TO SCALE

PLAN

NOT TO SCALE

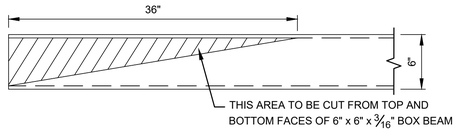


ELEVATION

END CONNECTION FOR BOX BEAM GUIDE RAIL

(SEE NOTE "A")

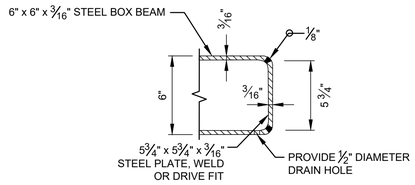
NOT TO SCALE



CUT DETAIL - END CONNECTION

(APPROACH SIDE ONLY)

NOT TO SCALE



DETAIL "D" BOX BEAM END COVER PLATE

NOT TO SCALE

Sheet 35 of

PORT AUTHORITY NY NJ

AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ

DETAILS

TRAFFIC

Title

GUIDE RAIL

TRANSITION BETWEEN BOX BEAM MEDIAN BARRIER AND SINGLE SLOPE CONCRETE MEDIAN BARRIER (SHEET 2 OF 3)

DISCLAIMER:

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SAMPLE DRAWING

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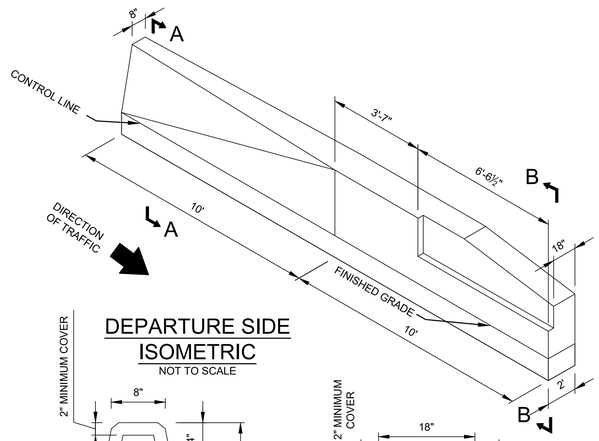
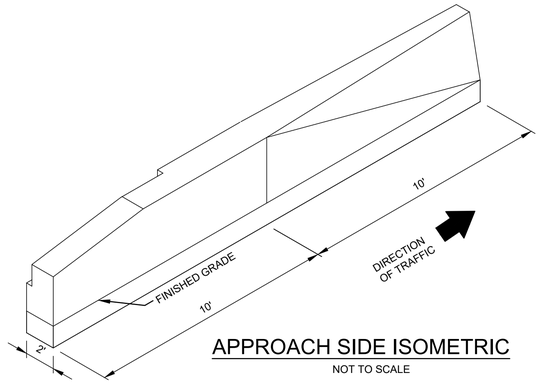
Date 07 / 15 / 2024

Drawing Number TD350.05



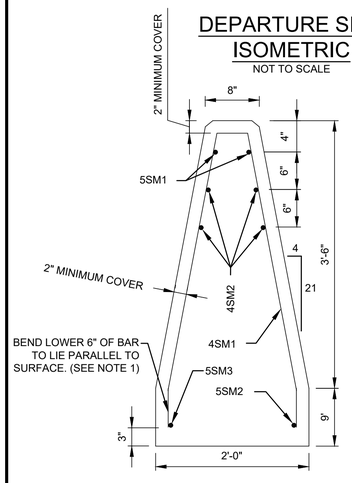
DEPARTURE SIDE ISOMETRIC
NOT TO SCALE



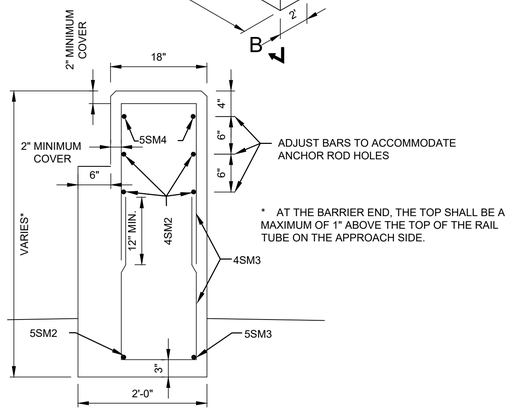
APPROACH SIDE ISOMETRIC
NOT TO SCALE

NOTES:

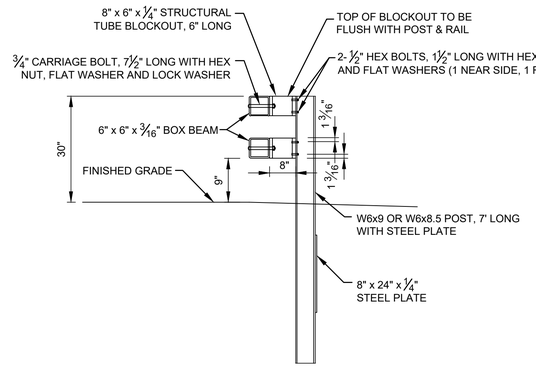
1. THIS BEND MAY BE ELIMINATED PROVIDED 2" MINIMUM COVER IS MAINTAINED.
2. CONCRETE FOR BARRIER SHALL BE PERFORMANCE CATEGORY IV AND SHALL ATTAIN A 28-DAY MINIMUM COMPRESSIVE STRENGTH (F'C) OF 4,000 PSI.
3. ALL STEEL REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60 AND SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775.



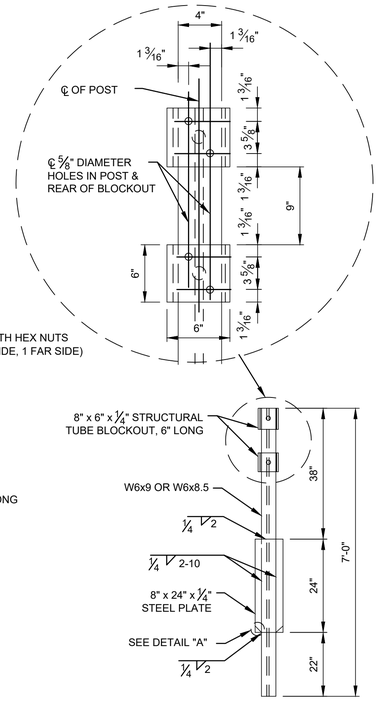
SECTION A-A
NOT TO SCALE



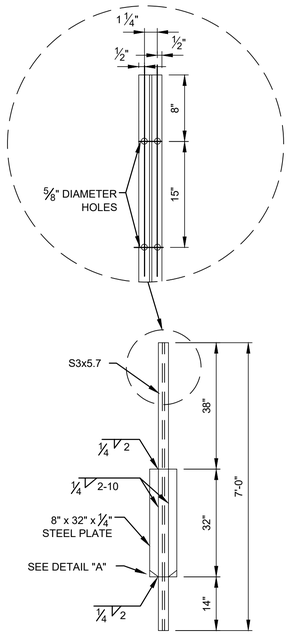
SECTION B-B
NOT TO SCALE



HEAVY POST ELEVATION
NOT TO SCALE



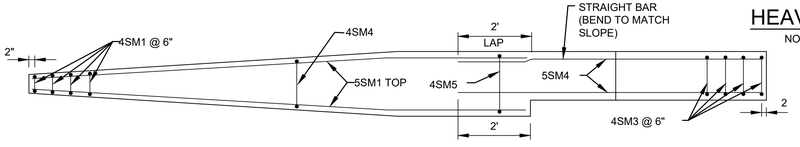
HEAVY POST
NOT TO SCALE



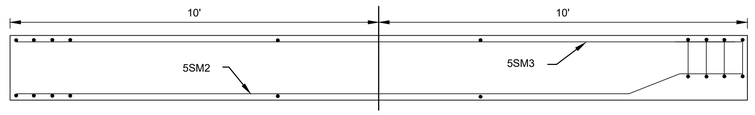
TRANSITION POST *
NOT TO SCALE

* FOR CONNECTION OF RAIL TO POST SEE THE BOX BEAM GUIDE RAIL STANDARD SHEET

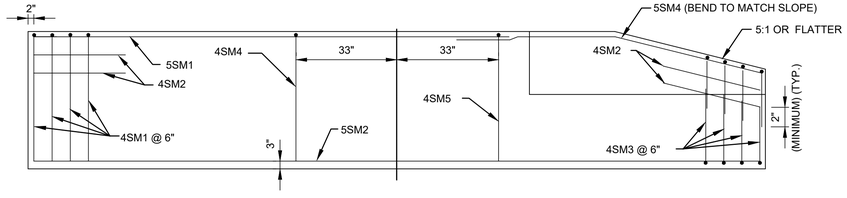
BAR LIST										
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	H	K	LOCATION
4SM1	4	4	VARIES	STIRRUP	10"	3'-10"	1½"	VARIES FROM 4⅜" TO 6¾"	—	—	AT CONCRETE BARRIER END
4SM2	4	8	2'-6"	STRAIGHT	—	—	—	—	—	—	4 AT EACH END OF BARRIER
4SM3	4	8	5'-6"	STIRRUP	1'-2"	2'-2"	1½"	—	—	—	AT BOX BEAM END
4SM4	4	1	8'-11"	STIRRUP	10"	3'-10"	1½"	1'-3"	—	—	AT 33" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM5	4	1	9'-4"	STIRRUP	1'-8"	3'-10"	1½"	—	—	—	AT 33" FROM THE MIDPOINT OF THE BARRIER UNIT
5SM1	5	2	13'-2"	STRINGER	—	9'-10"	—	—	8"	3'-3½"	LONGITUDINAL 2 IN TOP
5SM2	5	1	19'-8"	STRINGER	—	1'-10"	—	16'-4"	6"	1'-6"	LONGITUDINAL 1 IN BOTTOM
5SM3	5	1	19'-8"	STRAIGHT	—	—	—	—	—	—	LONGITUDINAL 1 IN BOTTOM
5SM4	5	2	8'-9"	STRINGER	—	4'-11½"	—	—	11"	3'-8"	LONGITUDINAL 2 IN TOP



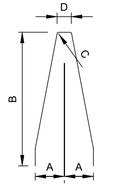
PLAN (TOP)
NOT TO SCALE



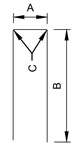
PLAN (BOTTOM)
NOT TO SCALE



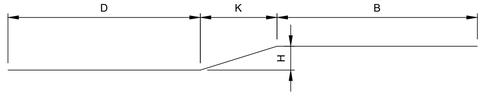
ELEVATION
NOT TO SCALE



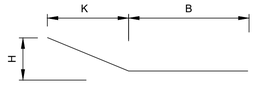
4SM1 & 4SM4



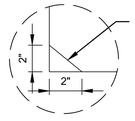
4SM3 & 4SM5



5SM2



5SM1 & 5SM4



DETAIL "A"
NOT TO SCALE

Sheet 36 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

GUIDE RAIL

TRANSITION BETWEEN BOX BEAM MEDIAN BARRIER AND SINGLE SLOPE CONCRETE MEDIAN BARRIER (SHEET 3 OF 3)

DISCLAIMER:

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SAMPLE DRAWING
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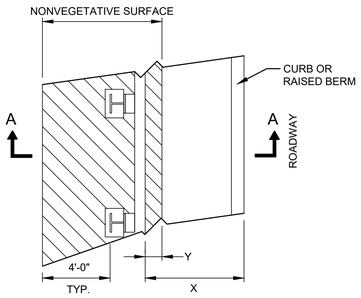
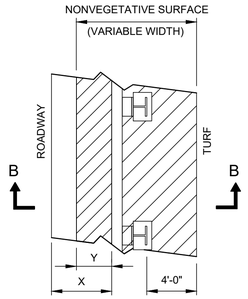
Date 07 / 15 / 2024

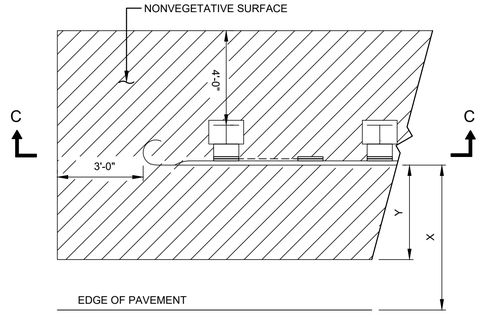
Drawing Number TD350.06



PLAN VIEW
NOT TO SCALE



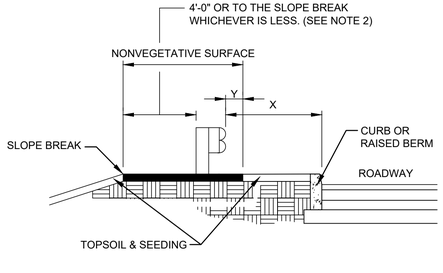
PLAN VIEW
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

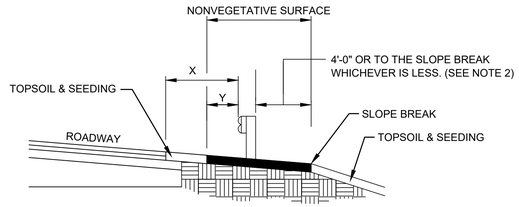
NOTES:

1. CONSTRUCT NONVEGETATIVE SURFACE WHERE SHOWN ON THE CONTRACT DRAWINGS.
2. WHEN DISTANCE FROM BACK OF POST TO THE SLOPE BREAK IS LESS THAN 2 FEET, ELIMINATE NONVEGETATIVE SURFACE BEHIND THE POST.
3. CONSTRUCT LEAVE OUTS WHERE SHOWN ON THE CONTRACT DRAWINGS. WHERE LEAVE OUTS ARE PROPOSED, FILL LEAVE OUTS WITH MATERIAL AS SHOWN ON THE CONTRACT DRAWINGS.



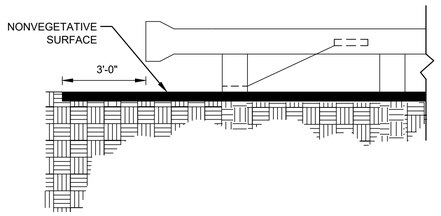
SECTION A-A
NOT TO SCALE

NONVEGETATIVE SURFACES AROUND GUIDE RAIL BEHIND CURB OR RAISED BERM



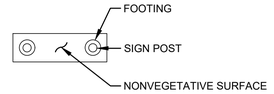
SECTION B-B
NOT TO SCALE

NONVEGETATIVE SURFACE AT EDGE OF PAVEMENT ON UMBRELLA SECTION WHERE GUIDE RAIL IS USED



SECTION C-C
NOT TO SCALE

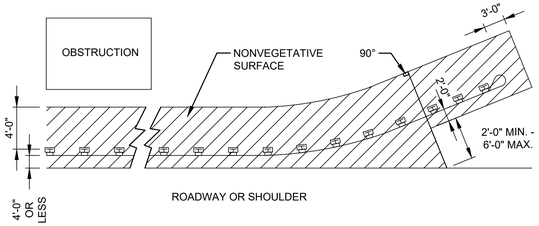
NONVEGETATIVE SURFACES AROUND GUIDE RAIL ANCHORAGE



THE NONVEGETATIVE SURFACE SHALL FORM A RECTANGULAR PAD WHOSE OUTSIDE LIMITS EXTEND A MINIMUM OF 3' -0" BEYOND THE POST FOOTING.

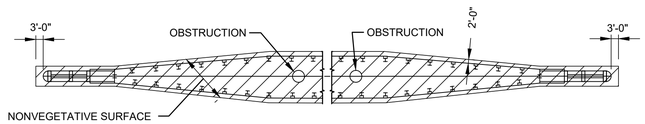
PLAN VIEW
NOT TO SCALE

NONVEGETATIVE SURFACE AROUND OVERHEAD SIGN FOUNDATIONS AND UNDER LARGE GROUND MOUNTED SIGNS



PLAN VIEW
NOT TO SCALE

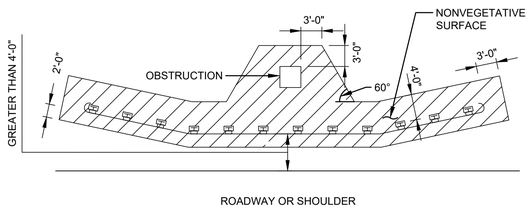
NONVEGETATIVE SURFACE AROUND FLARED GUIDE RAIL WHERE GUIDE RAIL OFFSET FROM EDGE OF PAVEMENT IS 4'-0" OR LESS



PLAN VIEW
NOT TO SCALE

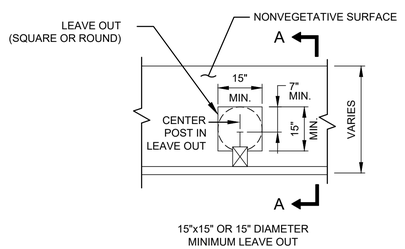
NONVEGETATIVE SURFACE AT MEDIAN GUIDE RAIL

X	Y
GUIDE RAIL OFFSET FROM EDGE OF PAVEMENT	WIDTH OF NONVEGETATIVE SURFACE IN FRONT OF GUIDE RAIL
GREATER than 4'-0" 4'-0" OR LESS	2'-0" Y=X

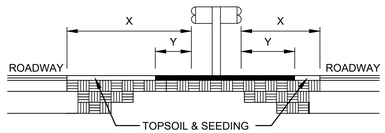


PLAN VIEW
NOT TO SCALE

NONVEGETATIVE SURFACE AROUND FLARED GUIDE RAIL WHERE GUIDE RAIL OFFSET FROM EDGE OF PAVEMENT IS GREATER THAN 4'-0"

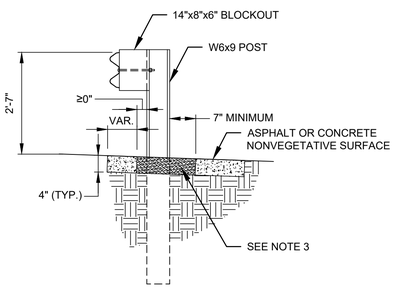


PLAN VIEW
NOT TO SCALE



SECTION VIEW
NOT TO SCALE

NONVEGETATIVE SURFACE AROUND MEDIAN GUIDE RAIL



SECTION A-A
NOT TO SCALE

LEAVE OUT DETAIL

NOT TO SCALE

Sheet 37 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
GUIDE RAIL

W-BEAM NONVEGETATIVE SURFACE DETAILS

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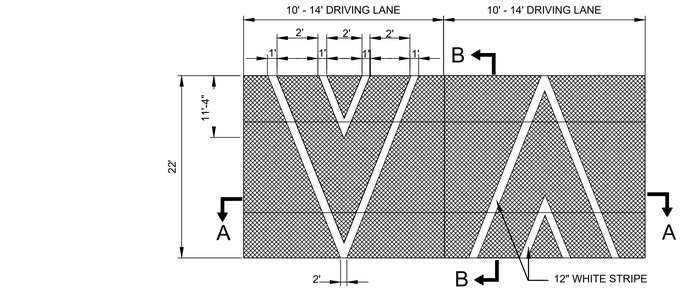
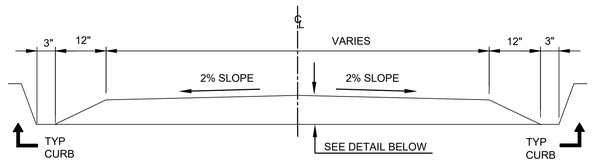
Date 07 / 15 / 2024

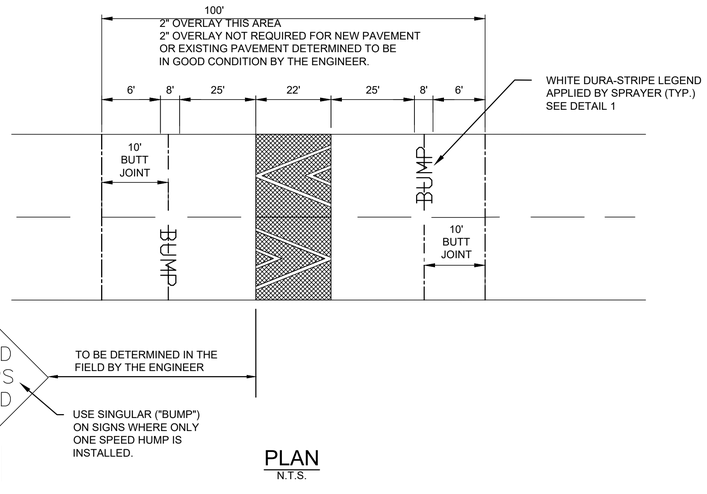
Drawing Number TD360.01





SECTION A-A

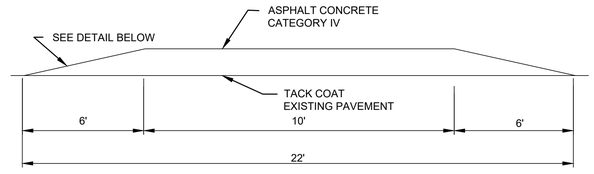
N.T.S.



PLAN

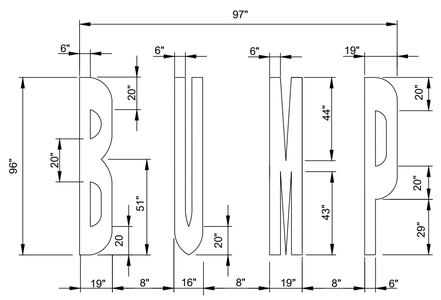
N.T.S.

SIGNS & MARKINGS TYPICAL BOTH DIRECTIONS



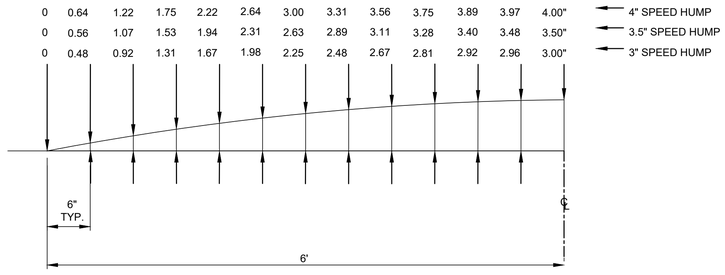
SECTION B-B

N.T.S.



DETAIL 1

N.T.S.



COMPACTED DEPTHS

N.T.S.

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PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title

TRAFFIC CALMING DEVICES

SPEED HUMP

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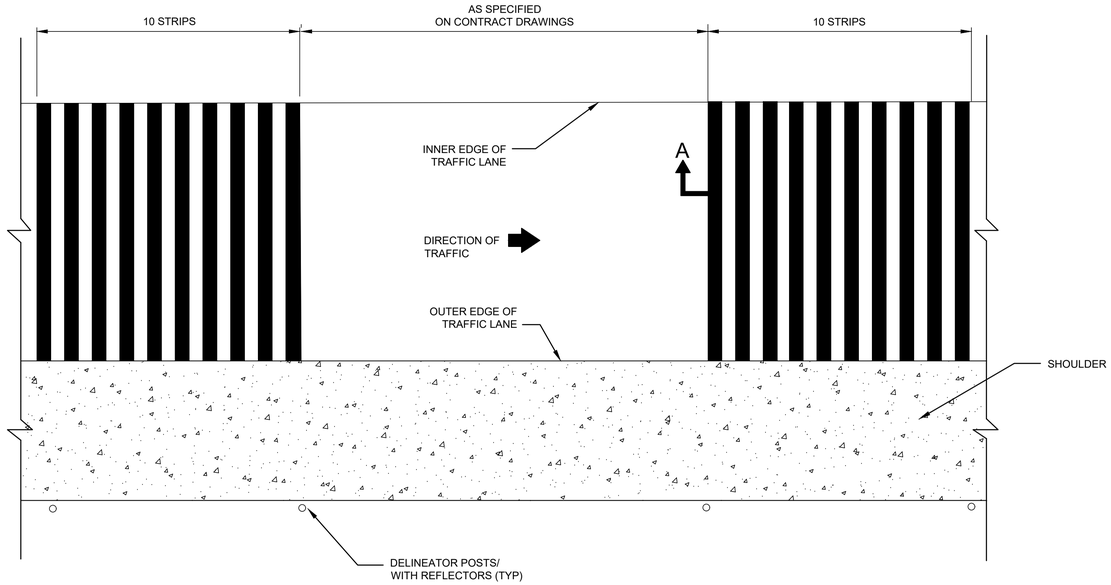
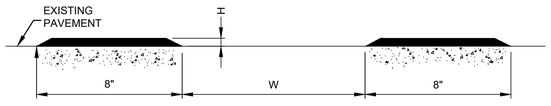


PLAN VIEW
N.T.S.



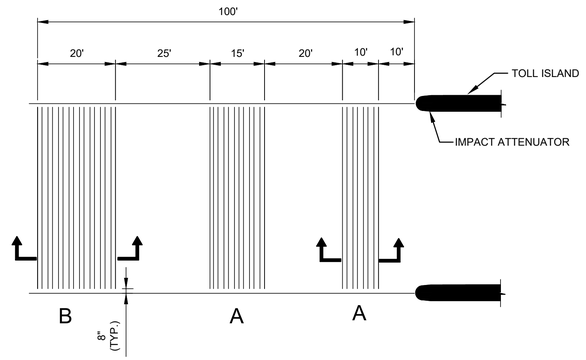
MPH	H	W
0-40	¼"-⅜"	12"
OVER 40	⅜"-½"	24"

SECTION A-A
N.T.S.

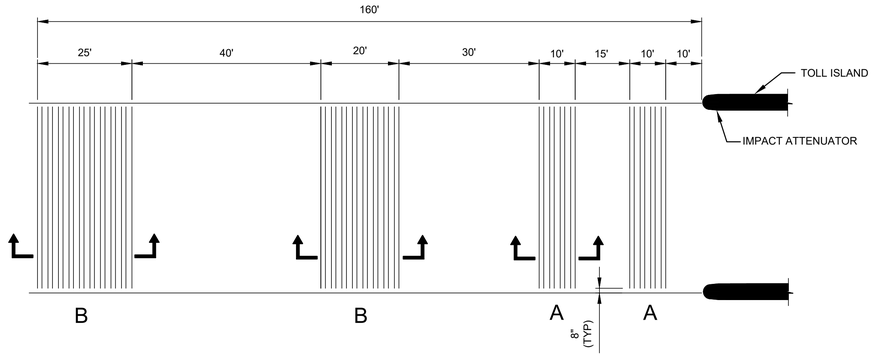
NOTES

1. THE BITUMINOUS MATERIAL SHALL BE EITHER CLASS I SURFACE OR SAND ASPHALT SURFACE EXCEPT THAT ALL THE AGGREGATE RETAINED ON THE NO. 4 SIEVE SHALL BE REMOVED PRIOR TO MIXING THE MATERIAL. NO. 11 STONE MAY BE USED IN CLASS I SURFACE FOR COARSE AGGREGATE IN LIEU OF NO. 9 STONE.
2. TWO 7' LONG. TYPE I DELINEATOR POSTS SHALL BE INSTALLED AT EACH LOCATION.
3. TWO 2 1/2" DIAMETER TYPE III A SILVER WHITE DELINEATOR UNITS SHALL BE INSTALLED AT THE TOP OF EACH DELINEATOR POST WITH A M5 ALUMINUM OR STAINLESS STEEL SLOTTED ROUND HEAD MACHINE SCREW, WASHER AND VANDAL PROOF NUT.
4. THE TACK COAT SHALL BE APPLIED FULL STRENGTH WITH A LIBERAL COAT.
5. SIDE FORMS OR OTHER APPROVED METHODS SHALL BE USED TO ACCOMPLISH THE DESIRED 10 UNIT STRIP SYSTEM. A SUFFICIENT AMOUNT OF BITUMINOUS MIXTURE SHALL BE PLACED IN THE FORMS AND COMPACTED WITH A LIGHT ROLLER SO AS TO PROVIDE A COMPACTED THICKNESS OF 1/4" TO 1/2" AS APPLICABLE.
6. THE DELINEATOR UNIT SHALL BE CONSTRUCTED IN SUCH A MANNER THAT THE TOP OF THE DELINEATOR UNIT IS 4' ABOVE TOP OF PAVEMENT.
7. THE REFLECTIVE SURFACE OF THE DELINEATOR UNIT SHALL FACE TRAFFIC AND POINTS TOWARD THE CENTER LINE OF THE ROADWAY APPROXIMATELY 1300' AWAY.
8. WHEN APPLIED TO RIGID PAVEMENTS THE ENGINEER MAY REQUIRE THE RUMBLESTRIPS TO BE SKEWED PARALLEL TO OTHER SKEWED TRANSVERSE JOINTS.

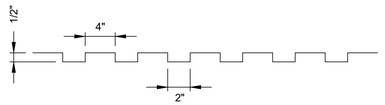
RUMBLE SPRIPS



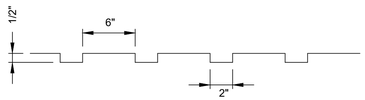
RUMBLE STRIP PATTERN FOR LINCOLN TUNNEL
N.T.S.



RUMBLE STRIP PATTERN FOR GWB, OBX, GB, BB, AND HT
N.T.S.



HIGH PITCH - TYPE A
N.T.S.



MEDIUM PITCH - TYPE B
N.T.S.

TOLL PLAZA APPROACH RUMBLE SPRIPS

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PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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2	06/27/2024	DISCLAIMER ADDED	
1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
TRAFFIC CALMING DEVICES

RUMBLE STRIPS AND TOLL PLAZA APPROACH RUMBLE STRIPS

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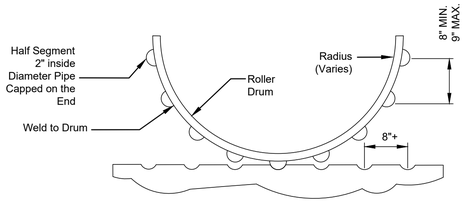
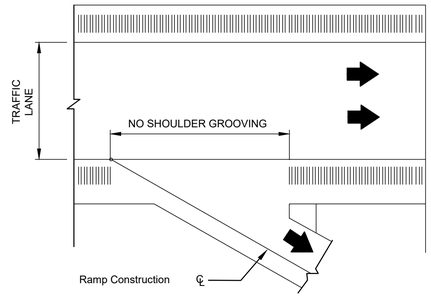


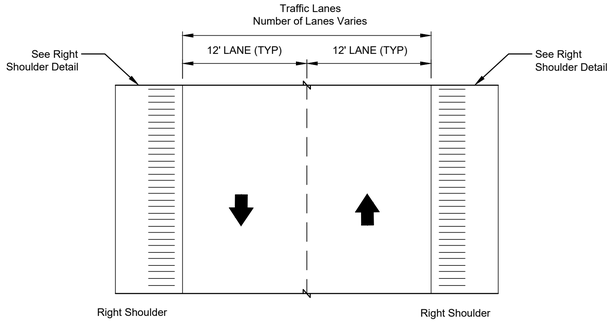
STEEL DRUM DETAIL
(SEE NOTE 3.)



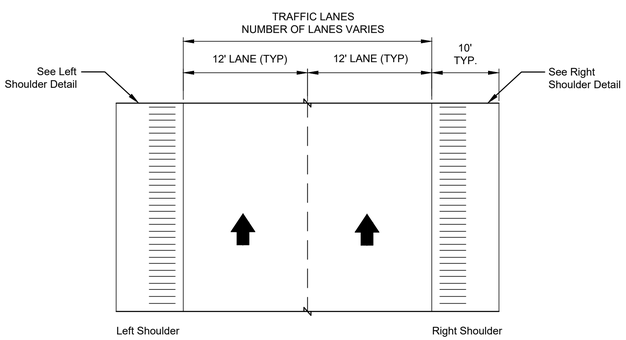
RAMP EXEMPTION DETAIL
ENTRANCE RAMP SIMILAR

GENERAL NOTES

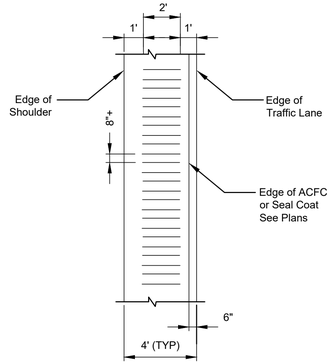
1. SHOULDER GROOVING SHALL BE APPLIED TO THE SHOULDERS WHEN CALLED FOR ON THE CONTRACT DRAWINGS IN ACCORDANCE WITH THE FOLLOWING SHOULDER WIDTHS: UNDIVIDED HIGHWAYS: SHOULDER 6' AND GREATER DIVIDED HIGHWAYS: RIGHT SHOULDER 6' AND GREATER LEFT SHOULDER 4' AND GREATER SHOULDER GROOVING SHALL BE OMITTED ACROSS PRINCIPAL INTERSECTING.
2. ROADWAYS OR OTHER INTERRUPTIONS IN NORMAL SHOULDER WIDTH AS DIRECTED BY THE ENGINEER.
3. SHOULDER GROOVING SHALL BE CONSTRUCTED BY MAKING INDENTATIONS IN THE ASPHALTIC CONCRETE. THE INDENTATIONS MAY BE FORMED BY ROLLING THE HOT ASPHALT CONCRETE WITH A ROLLER TO WHICH HALF SEGMENT OF 2" INSIDE DIAMETER PIPE HAVE BEEN WELDED TO THE DRUM. THE PIPE SEGMENTS SHALL BE 2' LONG AND SPACED AT APPROXIMATE 8" CENTERS.
4. EACH ROLLER SHALL BE EQUIPPED WITH AN ACCEPTABLE GUIDE THAT EXTENDS IN FRONT OF THE ROLLER AND IS CLEARLY VISIBLE TO THE OPERATOR IN ORDER THAT PROPER ALIGNMENT OF THE COMPLETED SCORED SHOULDER IS OBTAINED.
5. THE CONTRACTOR MAY UTILIZE OTHER EQUIPMENT OR METHODS TO CONSTRUCT THE SHOULDER GROOVING IF APPROVED BY THE ENGINEER.



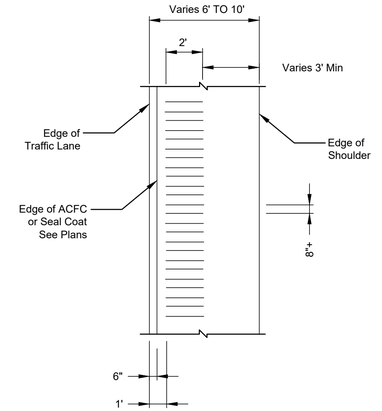
TYPICAL SHOULDER GROOVING PLAN
FOR UNDIVIDED HIGHWAYS



TYPICAL SHOULDER GROOVING PLAN
FOR DIVIDED HIGHWAYS



LEFT SHOULDER GROOVING DETAIL
FOR DIVIDED HIGHWAYS
(TYPICALLY 4' WIDE)



RIGHT SHOULDER GROOVING DETAIL
(SHOULDERS 6' AND WIDER)

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1	01/23/2015	UPDATE TEXT STYLE TO ARIAL	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
TRAFFIC CALMING DEVICES

SHOULDER GROOVING
FOR RUMBLE STRIPS

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Drawing Number TD410.03

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AIC	AMPERE INTERRUPTING CAPACITY
ALUM	ALUMINUM
AMP	AMPERES
AWG	AMERICAN WIRE GAUGE
CAT.	CATALOG
CAT	CATEGORY
CCTV	CLOSED CIRCUIT TELEVISION
CDT(S)	CONDUIT(S)
CIP	CAST IN PLACE
COMM	COMMUNICATION(S)
DC	DIRECT CURRENT
DIA	DIAMETER
DMS	DYNAMIC MESSAGE SIGN
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
FDN	FOUNDATION
FMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
FO	FIBER OPTIC CABLE
FTP	FIBER TERMINATION PANEL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
HAR	HIGHWAY ADVISORY RADIO
H.S.	HIGH STRENGTH
HSS	HOLLOW STRUCTURAL STEEL
IP	INTERNET PROTOCOL
ITS	INTELLIGENT TRANSPORTATION SYSTEM
ITSF-XX	ITS FIBER OPTIC CABLE WITH XX STRANDS
ITSS	INTELLIGENT TRANSPORTATION SYSTEM STATION
LC	LUCENT CONNECTOR
LCS	LANE-USE CONTROL SIGNAL
LED	LIGHT EMITTING DIODE
MAX	MAXIMUM
MIN	MINIMUM
MRVDS	MICROWAVE RADAR VEHICLE DETECTOR SUBSYSTEM
MVDS	MAGNETOMETER VEHICLE DETECTION SUBSYSTEM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
OD	OUTER DIAMETER
PAWANET	PORT AUTHORITY WIDE AREA NETWORK
PCRMC	PVC COATED RIGID METAL CONDUIT
POE	POWER OVER ETHERNET
PTZ	PAN-TILT-ZOOM
PVC	POLYVINYL CHLORIDE
PWR	POWER
REQD	REQUIRED
RGS	RIGID METAL CONDUIT
RMC	RIGID METAL CONDUIT
RNMC-XX	RIGID NONMETALLIC CONDUIT, SCHEDULE XX
RPU	REMOTE PROCESSING UNIT
RTMS	REMOTE TRAFFIC MICROWAVE SENSOR
RWIS	ROAD WEATHER INFORMATION SUBSYSTEM
SC	SUBSCRIBER CONNECTOR
SCC	SYSTEMS CONTROL CABINET
SFP	SMALL FORM-FACTOR PLUGGABLE
SM	SINGLE MODE
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
STD	STANDARD
TD	TRAFFIC DETAILS
TDS	TRAFFIC DETECTION SUBSTATION
TS	THERMOSTAT
TTS	TRAVEL TIME SUBSYSTEM
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UPS	UNINTERRUPTIBLE POWER SUPPLY
UL	UNDERWRITERS' LABORATORIES
UV	ULTRAVIOLET
V	VOLTS
VAC	VOLTAGE ALTERNATING CURRENT
VIDS	VIDEO DETECTION SUBSYSTEM
VIF	VERIFY IN FIELD
VSLS	VARIABLE SPEED LIMIT SIGN
W	WATT(S)
W/	WITH
WAP	WIRELESS ACCESS POINT
WIM	WEIGH-IN-MOTION
WTS	WIRELESS TRAFFIC SENSOR (IN-PAVEMENT WIRELESS SENSOR)
XFMR	TRANSFORMER

NOTES

1. GENERAL NOTES APPLY TO INTELLIGENT TRANSPORTATION SYSTEMS (ITS) DRAWINGS INCLUDED UNDER THIS CONTRACT, REFER TO DISCIPLINE SPECIFIC AND INDIVIDUAL DRAWINGS FOR ADDITIONAL NOTES. THE SCOPE OF WORK FOR EQUIPMENT INSTALLATION SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.
2. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW ALL DETAILS OF CONSTRUCTION. BASEPLAN INFORMATION IS TO APPROXIMATE SCALE AND HAS BEEN TAKEN FROM THE BEST AVAILABLE AS-BUILT INFORMATION. EXISTING CONDITIONS, LOCATIONS OF EQUIPMENT TO BE INSTALLED AND EXACT ROUTINGS OF CONDUIT SHALL BE VERIFIED IN THE FIELD PRIOR TO ANY FABRICATION, ORDERING MATERIAL OR PERFORMING WORK. DEVIATIONS FROM THE LOCATIONS SHOWN ON THE CONTRACT DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. LOCATIONS OF EQUIPMENT AND DEVICES AND ALL DETAILS OF WORK SHALL BE COORDINATED TO ACHIEVE A COMPLETE, FUNCTIONAL INSTALLATION.
3. STRUCTURAL, ARCHITECTURAL, TRAFFIC, AND CIVIL INFORMATION SHOWN WITHIN THE TRAFFIC STANDARD DETAILS ARE FOR REFERENCE ONLY. REFER TO THE APPROPRIATE SECTIONS OF THE CONTRACT DRAWINGS FOR ALL PROPER DIMENSIONING, ROADWAY ALIGNMENTS, AND STRUCTURAL ASPECTS.
4. UNLESS OTHERWISE NOTED, EQUIPMENT TO BE FURNISHED AND INSTALLED UNDER THIS CONTRACT IS SHOWN IN HEAVY LINES. EXISTING INFRASTRUCTURE (CABLE AND CONDUIT INCLUDED) TO REMAIN OR INSTALLED UNDER OTHER CONTRACTS BY OTHERS IS SHOWN IN LIGHT LINES.
5. SUBMIT A WORK PLAN WITH SCHEDULE AND DURATIONS OF WORK 14 WORKING DAYS IN ADVANCE TO THE ENGINEER FOR APPROVAL. NO WORK MAY BE PERFORMED WITHOUT AN APPROVED SCHEDULE. WORK SHALL NOT DISRUPT THE AUTHORITY'S STANDARD OPERATIONS WITHOUT WRITTEN CONSENT.
6. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE DISCIPLINE SPECIFIC AUTHORITY HAVING JURISDICTION AND THE MOST CURRENT ACCEPTED VERSIONS OF THE OSHA REGULATIONS, ADA AND ALL OTHER CODES AND REGULATIONS WHICH WOULD HAVE JURISDICTION IF THE PANYNJ/PATH WERE A PRIVATE CORPORATION.
7. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST AUTHORITY ACCEPTED VERSION OF THE NATIONAL ELECTRICAL CODE.
8. EQUIPMENT & MATERIALS TO BE FURNISHED AND INSTALLED SHALL BE NEW AND BEAR UL LISTING AND LABELING WHERE SUCH A STANDARD HAS BEEN ESTABLISHED FOR THAT TYPE OF EQUIPMENT/MATERIAL.
9. CAUTION SHOULD BE EXERCISED TO PREVENT DAMAGE WHEN WORKING ADJACENT TO EXISTING INFRASTRUCTURE INCLUDING BUT NOT LIMITED TO STRUCTURAL, MECHANICAL AND ELECTRICAL EQUIPMENT. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING, AT NO COST TO THE AUTHORITY, ANY DAMAGES CAUSED BY THEIR ACTIVITIES TO NEW OR EXISTING EQUIPMENT. THE REMEDIATION SHALL BE TO THE COMPLETE SATISFACTION OF THE ENGINEER.
10. MAINTAIN THE INTEGRITY OF ALL CIRCUITS IN SERVICE THAT MAY BE AFFECTED BY THE WORK OF THIS CONTRACT. IDENTIFY ALL SOURCES OF POWER AND DE-ENERGIZE REQUIRED CIRCUITS BEFORE WORKING WITH THEM. PERFORM ALL DISCONNECTIONS AND INTERRUPTIONS OF ELECTRICAL SERVICE ACCORDING TO THE CONSTRUCTION STAGING SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. ANY SCHEDULE OF INTERRUPTIONS AND SHUTDOWNS, INDICATING AFFECTED AREAS, SHALL BE KEPT TO A MINIMUM. THE SCHEDULE SHALL BE SUBMITTED A MINIMUM OF TWO WEEKS BEFORE ANY ANTICIPATED INTERRUPTION. THE SCHEDULE WILL BE APPROVED BY THE ENGINEER BEFORE ANY INTERRUPTION IS PERMITTED. PORT AUTHORITY PERSONNEL TO DISCONNECT ALL EXISTING ACTIVE EQUIPMENT AS NEEDED.
11. WHILE POWER REQUIREMENTS FOR THE EQUIPMENT SHOWN ON THE DRAWINGS HAVE PREVIOUSLY BEEN DETERMINED TO BE ADEQUATE, THE CONTRACTOR SHALL RE-VERIFY THE POWER REQUIREMENTS PRIOR TO ANY INSTALLATION. IF ADDITIONAL CAPACITIES ARE REQUIRED, THE CONTRACTOR SHALL SUBMIT A REQUEST TO THE ENGINEER IN WRITING.
12. UNLESS OTHERWISE NOTED, ALL POWER WIRE SHALL BE 600V, 1/C COPPER, TYPE USE-RHH-RHW WITH OUTER JACKET ACCORDING TO SPECIFICATION SECTION 16120. ALL THE AFOREMENTIONED CABLES SHALL CONFORM TO UL44. SEE LIST OF APPROVED MANUFACTURERS.
13. ALL CONDUITS SHALL CONTAIN AN INSULATED GROUND WIRE BONDED TO ALL ENCLOSURES AND SIZED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEC.
14. ANY PORTION OF A CABLE OR WIRE DAMAGED DURING INSTALLATION SHALL BE REPLACED WITHOUT ADDITIONAL COST TO THE AUTHORITY. NO ADDITIONAL SPLICES SHALL BE INTRODUCED TO REPAIR CABLES. LUBRICATE AS REQUIRED.
15. ALL SPLICING AND TERMINATING MATERIALS SHALL BE COMPATIBLE. SEE LIST OF APPROVED MANUFACTURERS. NO SPLICES EXCEPT THOSE SHOWN ON THE DRAWINGS ARE PERMITTED.
16. UNLESS OTHERWISE NOTED, ALL WIRING SHALL BE INSTALLED IN RACEWAYS OR CONDUITS. ALL CONDUIT ENTRIES FROM BOTTOM AND SIDES SHALL BE THREADED AND SEALED. TOP PENETRATIONS ARE NOT PERMITTED FOR EXPOSED OUTDOOR LOCATIONS.
17. UNLESS OTHERWISE NOTED, ALL OUTDOOR EXPOSED CONDUITS SHALL BE MINIMUM 1" DIAMETER PVC COATED RIGID METALLIC CONDUIT. ALL CONDUIT RUNS SHALL BE RUN PARALLEL OR PERPENDICULAR TO STRUCTURAL BEAMS. OUTDOOR EXPOSED CONDUIT BODIES SHALL BE PVC COATED RIGID METAL. FASTENERS AND SUPPORTS SHALL BE STAINLESS STEEL AND SHALL BE RATED FOR USE WITH THE ASSOCIATED CONDUIT TYPE. FASTENERS SHALL INCLUDE SHAKE-PROOF (EXTERNAL STAR) LOCK WASHERS. ALL BOLTS SHALL HAVE LOCK WASHERS, ELASTIC STOP NUTS IN ADDITION TO REGULAR NUTS. CONDUITS CROSSING EXPANSION JOINTS OR SEISMIC JOINTS SHALL BE EQUIPPED WITH EXPANSION/DEFLECTION FITTINGS. THE USE OF SPLIT COUPLINGS AND EMT CONDUIT ARE NOT PERMITTED.
18. CUT STEEL CONDUIT ENDS SQUARE, REAM SMOOTH AND PAINT MALE THREADS OF FIELD THREADED CONDUIT WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH CONDUIT COUPLINGS.
19. JUNCTION BOXES, PULL BOXES, AND ENCLOSURES SHALL BE NEMA 4X STAINLESS STEEL FOR OUTDOOR USE. LOCATE AS INDICATED ON THE CONTRACT DRAWINGS OR WHEREVER NECESSARY, PER NEC, TO FACILITATE PULLING AND SPLICING OF WIRE. COORDINATE LOCATION WITH EXISTING INFRASTRUCTURE. COVERS OF JUNCTION AND PULL BOXES SHALL BE ACCESSIBLE.
20. SUPPORT PANELS, JUNCTION AND PULL BOXES INDEPENDENTLY WITH NO WEIGHT BEARING ON CONDUITS.
21. ALL UNUSED OPENINGS IN CONDUIT BOXES, DISCONNECT SWITCHES, CABINETS PANELBOARDS, ETC., SHALL BE CLOSED IN A MANNER APPROVED BY THE ENGINEER AND IN ACCORDANCE WITH THE NEC.
22. UPDATE PANEL DIRECTORIES FOR PANELS WITH REVISED OR ADDED CIRCUITS.
23. CONDUIT SIZES ARE BASED UPON SPECIFIC MANUFACTURER'S CABLE AND WIRE DIAMETERS. FINAL CONDUIT INSTALLED SHOULD BE SIZED IN ACCORDANCE WITH THE NEC AND BASED UPON THE ENGINEER APPROVED MANUFACTURER'S CABLE DIAMETERS.
24. ALL RIGID METAL CONDUIT (RMC) SHALL BE GALVANIZED ACCORDING TO SPECIFICATION SECTION 16110.

LEGEND:

SYMBOL		DESCRIPTION
EXISTING	NEW	
		COMMUNICATIONS HANDHOLE
		JUNCTION BOX
		COMMUNICATIONS MANHOLE
		ELECTRICAL MANHOLE
		TRAFFIC SIGNAL CONTROLLER CABINET
		INSTALLATIONS
		COMMUNICATIONS CONDUIT
		FIBER OPTIC CABLE
		CABINETS/ENCLOSURE
		UNDERGROUND CONCRETE ENCASED DUCTBANK

3 - INDICATES # OF CONDUITS

3" - INDICATES SIZE OF CONDUITS

◎ - INDICATES CABLES TO BE INSTALLED

⊗ - INDICATES CABLES TO BE REMOVED AND INSTALLED

⊖ - INDICATES EXISTING CABLES

- INDICATES BOTTOM OF DUCTBANK

- INDICATES VIEWING DIRECTION

S=SECTION
D=DETAIL
E=ELEVATION

SECTION NO., DETAIL NO., OR ELEVATION NO.

-=SHOWN ON THIS DWG
DWG NO.=DWG SHOWN ON OR REFERENCED FROM
BLANK=REFERENCED FROM MULTIPLE DWG

LIST OF MANUFACTURERS

SPEC. SECTION	EQUIPMENT	MANUFACTURERS	SPEC. SECTION	EQUIPMENT	MANUFACTURERS
16110	CONDUIT RGS	1. ALLIED TUBE AND CONDUIT 2. TRIANGLE PWC INC. 3. WHEATLAND TUBE CO. OR APPROVED EQUAL	16190	SUPPORTING DEVICES	1. APPLETON 2. B-LINE SYSTEMS INC. 3. COOPER INDUSTRIES INC. OR APPROVED EQUAL
16110	CONDUIT RGS PVC COATED	1. PERMACOTE 2. ROBROY INDUSTRIES 3. KOR-KAP NO SUBSTITUTION PERMITTED	16190	CABLE SUPPORTS, SLEEVE AND SEALS	1. B-LINE SYSTEMS 2. O.Z. GEDNEY, DIV. OF GENERAL SIGNAL 3. THUNDERLINE/LINK SEAL OR APPROVED EQUAL
16120	WIRES AND CABLES	1. AMERICAN INSULATED WIRE CORP. 2. OKONITE COMPANY 3. PRYSMIAN CABLES AND SYSTEMS (FORMERLY PIRELLI) OR APPROVED EQUAL	16450	GROUNDING	1. HARGER 2. ERICO PRODUCTS 3. O.Z. GEDNEY, DIV. OF GENERAL SIGNAL OR APPROVED EQUAL
16120	CABLE SPLICING AND TERMINATION	1. BURNDY CORPORATION 2. CADWELD (ERICO PRODUCTS INC.) 3. THOMAS & BETTS CORPORATION OR APPROVED EQUAL	16475	OVERCURRENT PROTECTIVE DEVICES	1. GENERAL ELECTRIC COMPANY 2. CUTLER HAMMER 3. SQUARE D COMPANY OR APPROVED EQUAL
16133	CONTROL PANELS, ENCLOSURES/CABINETS AND TERMINAL BOXES	1. HOFFMAN ENGINEERING INC. 2. ROBROY INDUSTRIES OR APPROVED EQUAL	16140	WIRING DEVICES	1. COOPER INDUSTRIES INC. 2. GENERAL ELECTRIC COMPANY 3. HUBBELL INC. OR APPROVED EQUAL
16135	BOXES AND FITTINGS	1. APPLETON ELECTRIC 2. COOPER INDUSTRIES INC. 3. HUBBELL INC. OR APPROVED EQUAL			

Sheet 1 of

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

ITS GENERAL NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS

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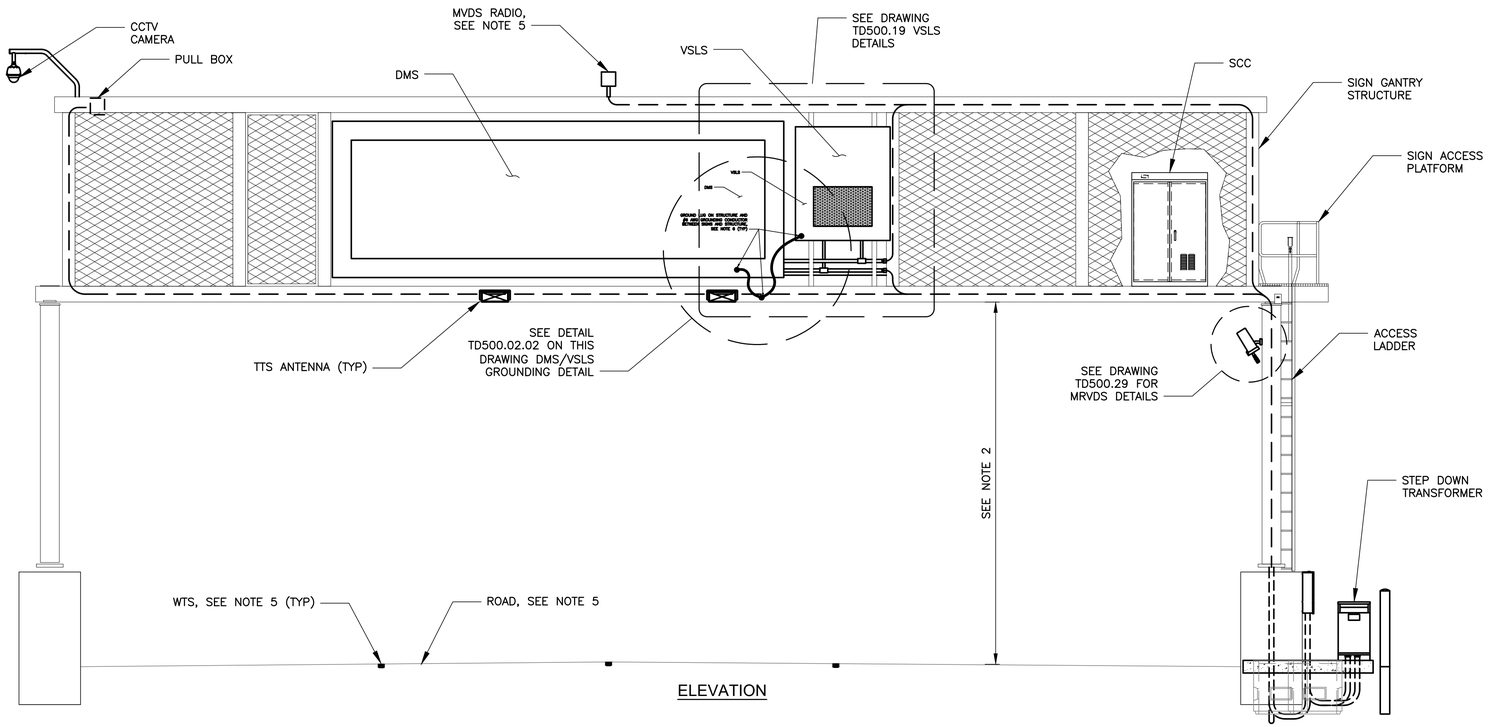
Date 07 / 15 / 2024

Drawing Number TD500.01

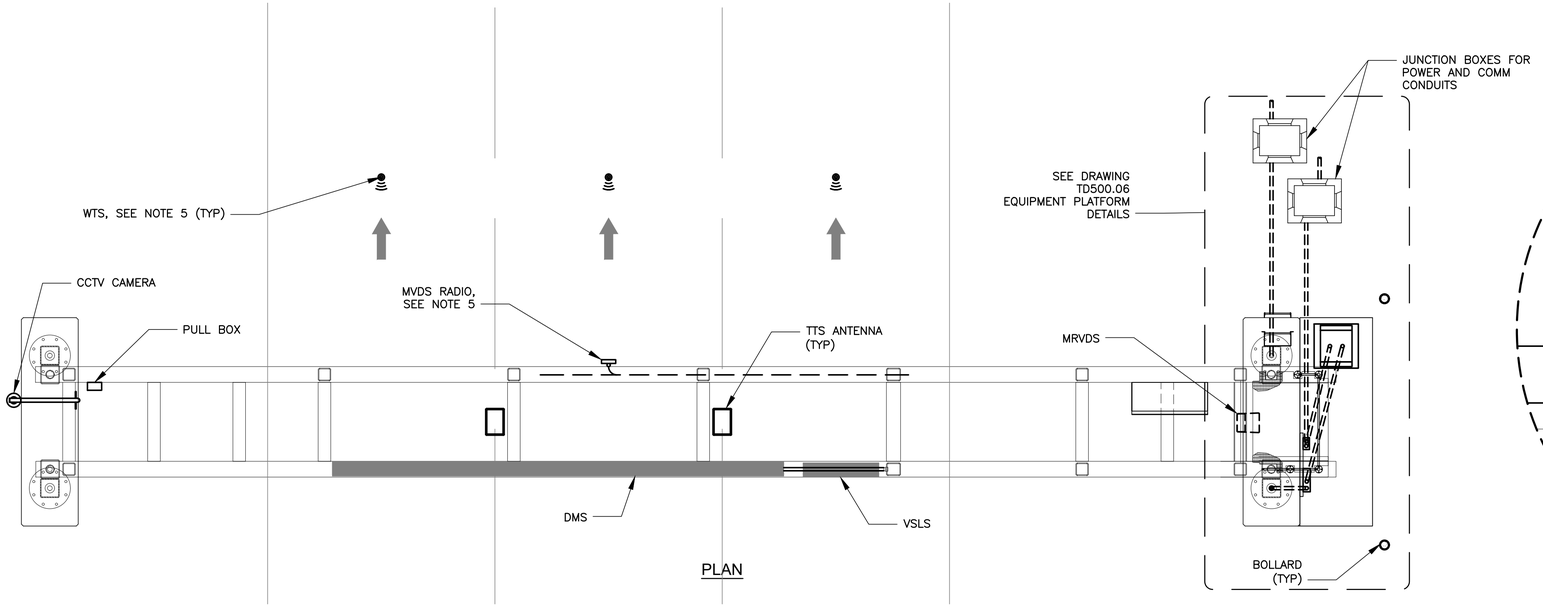


ELEVATION

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. THE MINIMUM HEIGHT OF THE SIGN STRUCTURE SHALL BE AS SHOWN ON THE STRUCTURAL DRAWINGS.
3. FOR INFORMATION ON THE WIDTH OF THE ROADWAY AND SHOULDERS SEE THE CIVIL DRAWINGS.
4. THE DIRECTION OF INCOMING SERVICE CABLES WILL VARY. SEE UTILITY DRAWINGS FOR DETAILS.
5. INSTALL WTS IN ROADWAY AS SHOWN ON THE CONTRACT DRAWINGS. SEE DRAWINGS TD500.22 AND TD500.23 FOR DETAILS.
6. FURNISH AND INSTALL GROUNDING LUG ON SIGN STRUCTURE AND GROUNDING WIRE/BOND JUMPER BETWEEN DMS AND SIGN STRUCTURE.

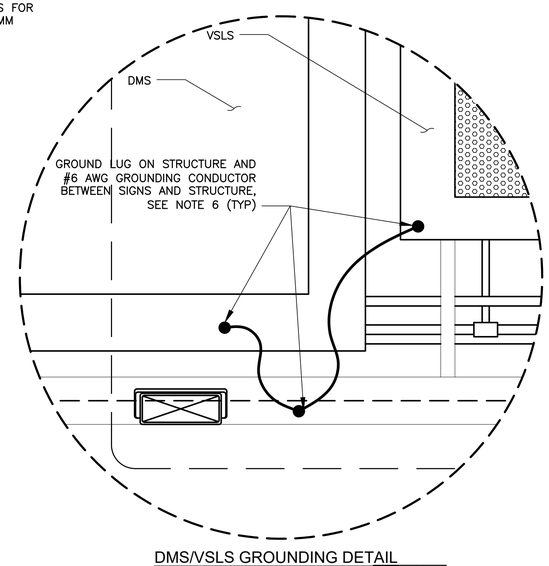
NOTES TO DESIGNER (REMOVE FROM DRAWING)



PLAN

GANTRY MOUNT DMS TD500.02.01

0 4 8
SCALE IN FEET



DMS/VSLS GROUNDING DETAIL TD500.02.02

0 1 2 3
SCALE IN FEET

Sheet 2 of

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

GANTRY DMS DETAILS - 1

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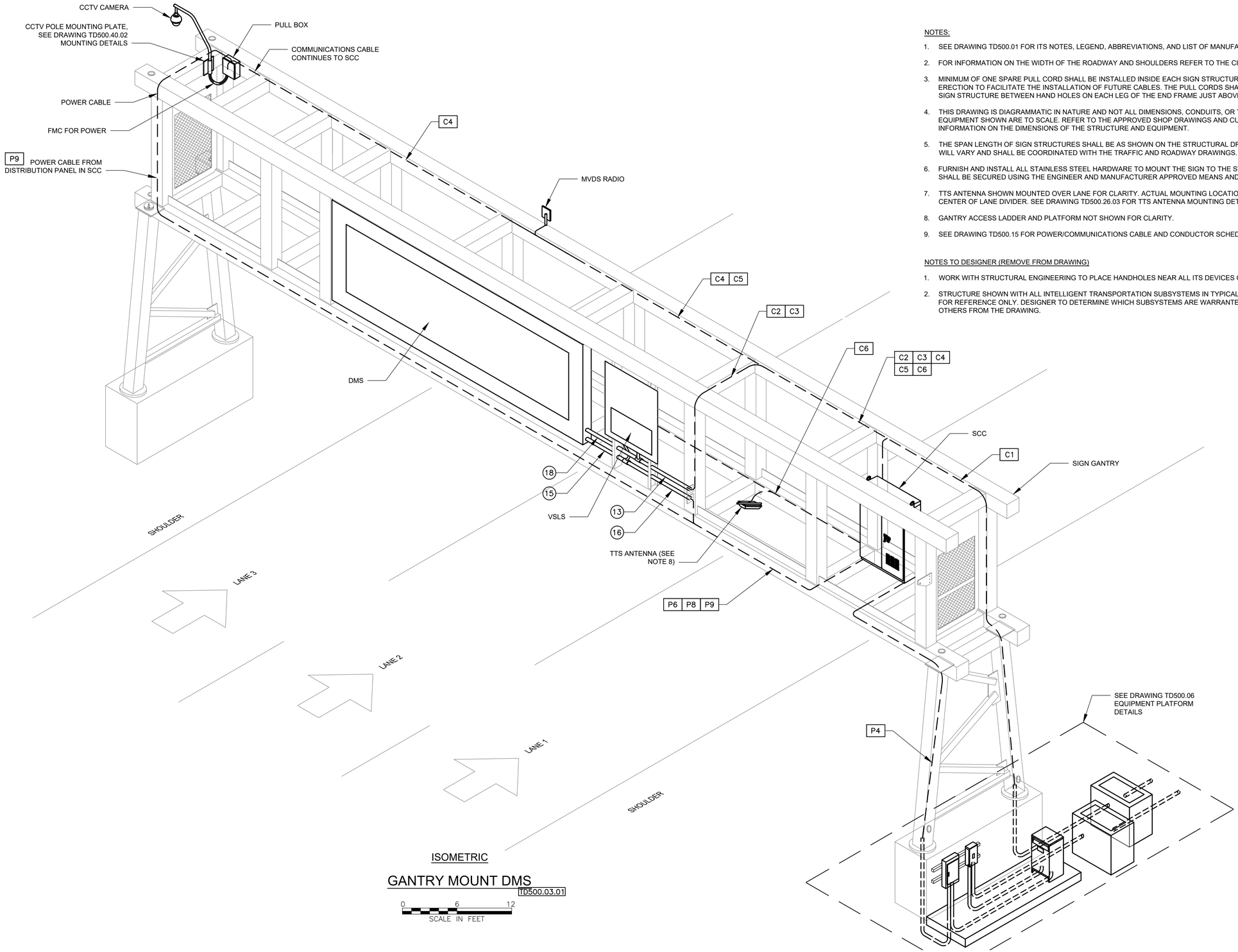

ISOMETRIC

GANTRY MOUNT DMS TD500.03.01

0 6 12
SCALE IN FEET

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. FOR INFORMATION ON THE WIDTH OF THE ROADWAY AND SHOULDERS REFER TO THE CIVIL DRAWINGS.
3. MINIMUM OF ONE SPARE PULL CORD SHALL BE INSTALLED INSIDE EACH SIGN STRUCTURE CHORD DURING ERECTION TO FACILITATE THE INSTALLATION OF FUTURE CABLES. THE PULL CORDS SHALL SPAN ACROSS EACH SIGN STRUCTURE BETWEEN HAND HOLES ON EACH LEG OF THE END FRAME JUST ABOVE THE FOUNDATION.
4. THIS DRAWING IS DIAGRAMMATIC IN NATURE AND NOT ALL DIMENSIONS, CONDUITS, OR THE LOCATION OF EQUIPMENT SHOWN ARE TO SCALE. REFER TO THE APPROVED SHOP DRAWINGS AND CUT SHEETS FOR INFORMATION ON THE DIMENSIONS OF THE STRUCTURE AND EQUIPMENT.
5. THE SPAN LENGTH OF SIGN STRUCTURES SHALL BE AS SHOWN ON THE STRUCTURAL DRAWINGS. SIGN SPANS WILL VARY AND SHALL BE COORDINATED WITH THE TRAFFIC AND ROADWAY DRAWINGS.
6. FURNISH AND INSTALL ALL STAINLESS STEEL HARDWARE TO MOUNT THE SIGN TO THE STRUCTURE. THE DMS SHALL BE SECURED USING THE ENGINEER AND MANUFACTURER APPROVED MEANS AND METHODS.
7. TTS ANTENNA SHOWN MOUNTED OVER LANE FOR CLARITY. ACTUAL MOUNTING LOCATION SHALL BE OVER CENTER OF LANE DIVIDER. SEE DRAWING TD500.26.03 FOR TTS ANTENNA MOUNTING DETAILS.
8. GANTRY ACCESS LADDER AND PLATFORM NOT SHOWN FOR CLARITY.
9. SEE DRAWING TD500.15 FOR POWER/COMMUNICATIONS CABLE AND CONDUCTOR SCHEDULES.

NOTES TO DESIGNER (REMOVE FROM DRAWING)

1. WORK WITH STRUCTURAL ENGINEERING TO PLACE HANDHOLES NEAR ALL ITS DEVICES ON GANTRY STRUCTURE.
2. STRUCTURE SHOWN WITH ALL INTELLIGENT TRANSPORTATION SUBSYSTEMS IN TYPICAL MOUNTING LOCATIONS FOR REFERENCE ONLY. DESIGNER TO DETERMINE WHICH SUBSYSTEMS ARE WARRANTED AND REMOVE THE OTHERS FROM THE DRAWING.

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

GANTRY DMS DETAILS - 2

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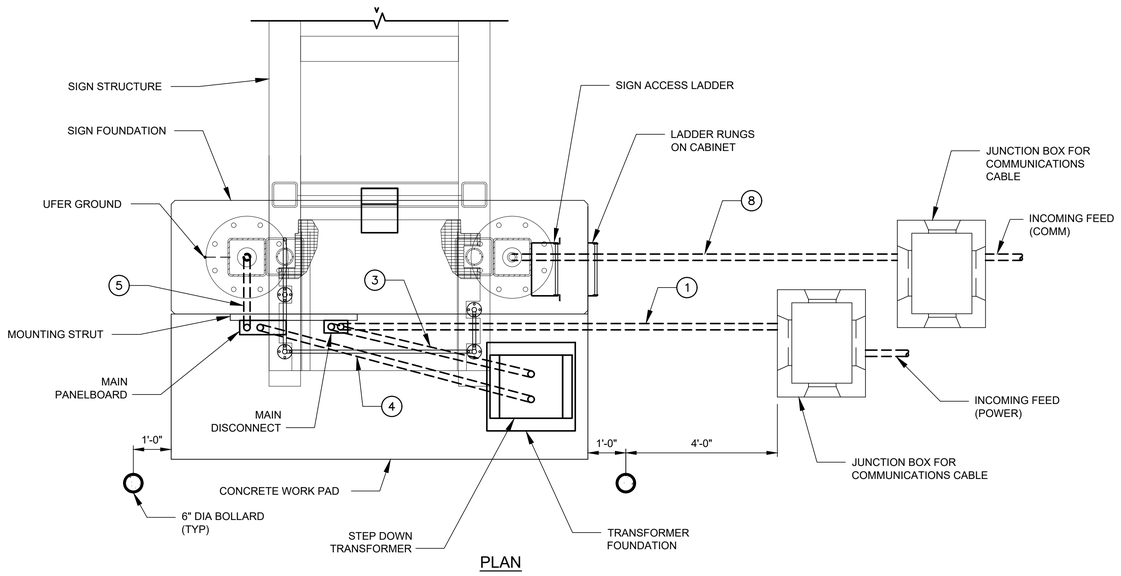
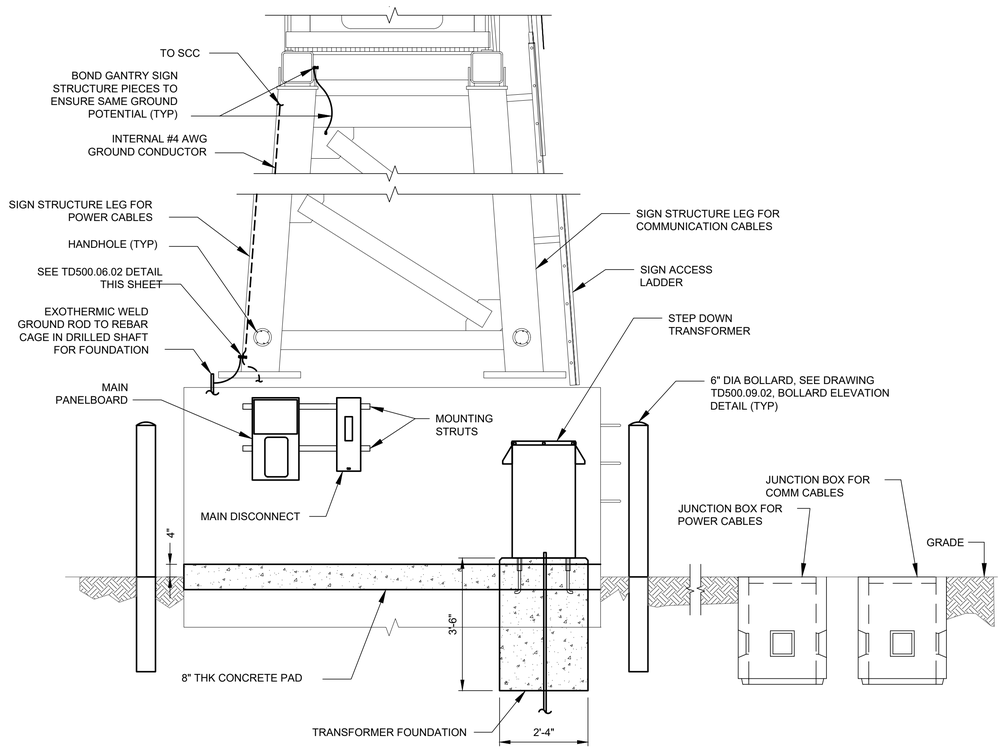


PLAN



ELEVATION

DMS/HYBRID SIGN EQUIPMENT PLATFORM

TD500.06.01

0 2 4

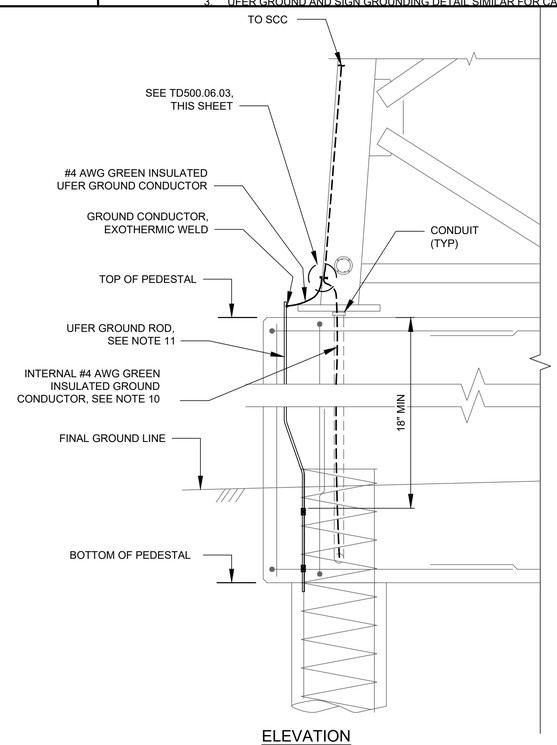
SCALE IN FEET

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. THE STEP DOWN TRANSFORMER SHALL BE INSTALLED ON THE SIDE OF THE FOUNDATION OPPOSITE TRAFFIC.
3. THERE SHALL BE A MINIMUM OF 3' OF CLEARANCE BETWEEN AND IN FRONT OF ALL ELECTRICAL EQUIPMENT.
4. THE HEIGHT OF THE SIGN FOUNDATION ABOVE GRADE WILL VARY FROM SITE TO SITE. THE BOTTOM OF ANY ELECTRICAL EQUIPMENT MOUNTED TO THE SIGN FOUNDATION SHALL BE A MINIMUM OF 24" ABOVE THE CONCRETE WORK PAD.
5. THE ELECTRICAL EQUIPMENT MOUNTED TO THE SIGN FOUNDATION FACE SHALL BE LEFT JUSTIFIED AND SEPARATED BY 6", AT A MINIMUM, BETWEEN PANELS.
6. SEE ADDITIONAL CONDUIT ROUTING DETAILS ON DRAWINGS TD500.02 THROUGH TD500.05. SEE DRAWING TD500.15 FOR CONDUIT AND CABLE SCHEDULES.
7. JUNCTION BOX SHALL BE INSTALLED A MINIMUM OF 2 FEET FROM WORK PAD.
8. ALL GROUNDING HARDWARE SHALL BE STAINLESS STEEL.
9. WHERE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IS NOT SHOWN ON THE DRAWINGS, PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.
10. SCC SHALL BE GROUNDED THROUGH AN INTERNAL GROUND CONDUCTOR TAPPED TO THE SIGN STRUCTURE LEG. TRANSFORMER, MAIN PANELBOARD, AND MAIN DISCONNECT SHALL BE TAPPED TO THE SIGN STRUCTURE LEG VIA GROUND CONDUCTOR INSTALLED INSIDE THE CONDUIT. SIGN STRUCTURE SHALL BE GROUNDED TO THE GROUND ROD INSTALLED INSIDE THE FOUNDATION AS SHOWN ON THE TD500.06.02 UFER GROUND DETAIL.
11. GROUND ROD SHALL BE INSTALLED INSIDE THE CONCRETE FOUNDATION AND ATTACHED TO DRILLED SHAFT AT TWO PLACES, MINIMUM 12" APART. GROUND ROD SHALL BE ATTACHED TO DRILLED SHAFT USING COMPRESSION GROUND TAP CONNECTOR, AS MANUFACTURED BY BLACKBURN OR APPROVED EQUAL. GROUND ROD SHALL HAVE SLIGHT "S" BEND TO AVOID INTERFERENCE WITH ANCHOR BOLTS. GROUND ROD SHALL NOT BE EXTENDED BEYOND 3" ABOVE FINISHED FOUNDATION PEDESTAL. ALTERNATIVE GROUND CONNECTION METHODS SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER.
12. ALL GROUNDING CONDUCTORS SHALL HAVE GREEN OUTER INSULATION.

NOTES TO DESIGNER (REMOVE FROM DRAWING)

1. PASS THE FOLLOWING TYPICAL NOTES ON TO THE CIVIL ENGINEER DESIGNING THE EQUIPMENT PADS:
   - 1.1. THE CONCRETE WORK PAD SHALL BE A MINIMUM OF 8" THICK AND SHALL HAVE AN EXPOSED LIP OF 4" ABOVE GRADE. IT SHALL BE CONSTRUCTED WITH A LAYER OF WWF6 x 6-W11 x W11 FABRIC ALONG ITS BOTTOM. THE SIZE AND DEPTH OF THE CONCRETE WORK PAD WILL VARY DEPENDING ON FIELD CONDITIONS. A 6" LAYER OF AGGREGATE COARSE BASE SHALL BE INSTALLED UNDER THE WORK PAD. A FOUNDATION FOR THE SCC AND TRANSFORMER SHALL BE PROVIDED ALONG WITH THE WORK PAD, INCLUDING ANCHOR BOLTS, SIZED AS REQUIRED BY THE MANUFACTURER.
   - 1.2. CONSTRUCT THE CONCRETE WORK PAD WITH AN EXPANSION JOINT IN-LINE WITH POINT WHERE THE PAD MAKES A 90° BEND AROUND THE SIGN FOUNDATION.
   - 1.3. EQUIPMENT PLATFORM SHALL BE CONSTRUCTED WITH A 2% SLOPE. FOUNDATIONS SHALL BE CAST SEPARATELY AND RAISED 2" ABOVE CONCRETE PLATFORM.
2. COORDINATE THE PLACEMENT OF THE IN FOUNDATION GROUND ROD WITH THE CIVIL ENGINEER IN CHARGE OF FOUNDATION DESIGN.
3. UFER GROUND AND SIGN GROUNDING DETAIL SIMILAR FOR CANTILEVER, OVERHEAD, AND BUTTERFLY SIGN STRUCTURES.



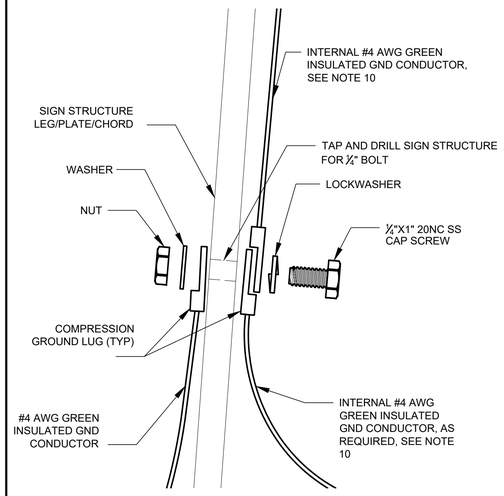
ELEVATION

DRILLED SHAFT PEDESTAL UFER GROUND

TD500.06.02

0 2 4

SCALE IN FEET



SIGN GROUNDING DETAIL

TD500.06.03

0 1 2 3

SCALE IN INCHES

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

DMS/HYBRID SIGN EQUIPMENT PLATFORM

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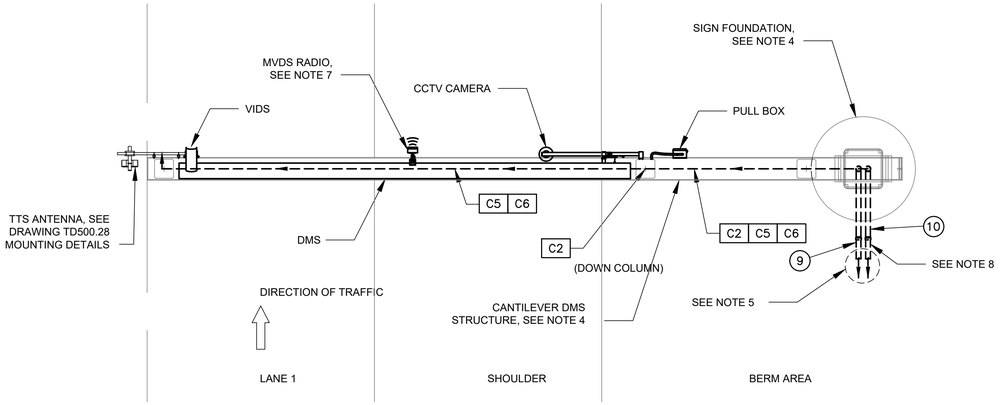
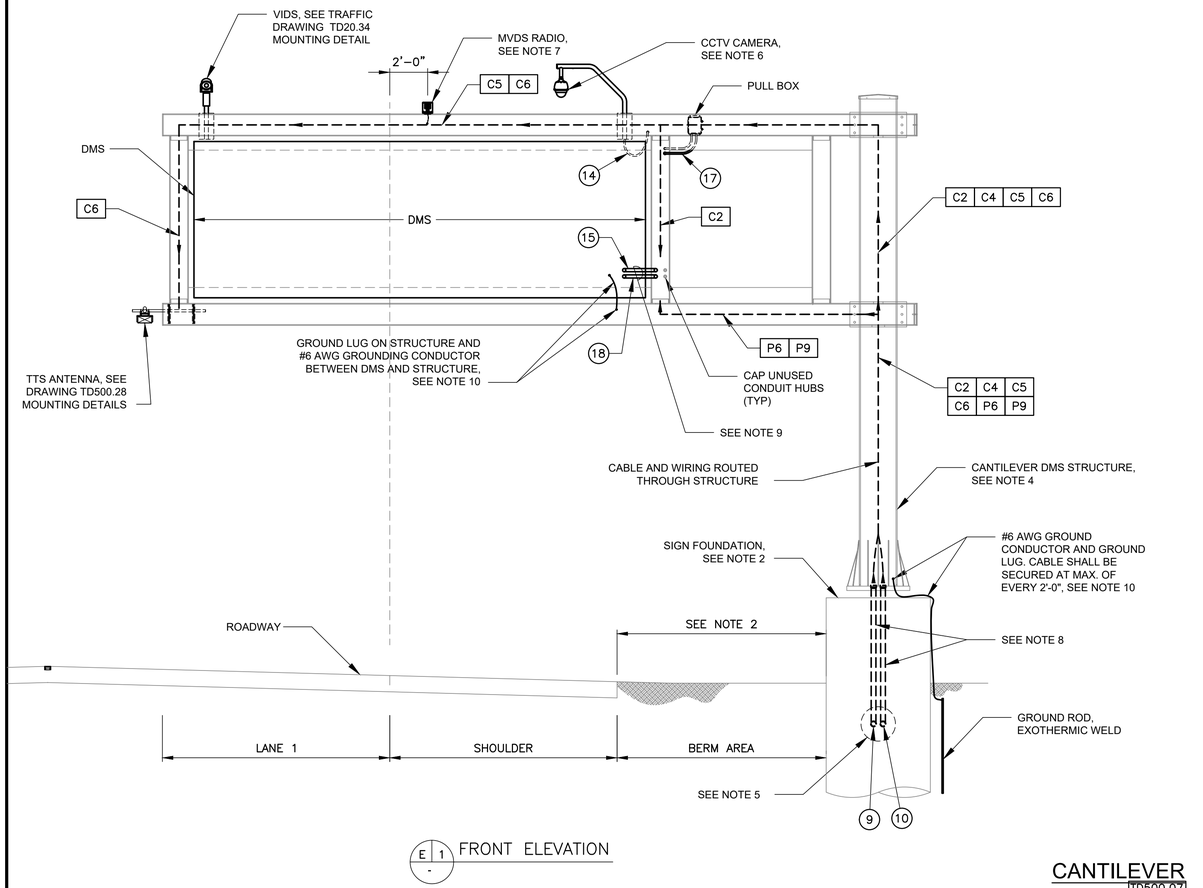


D 1 - PLAN



E 1 - FRONT ELEVATION

CANTILEVER TD500.07

0 4 8

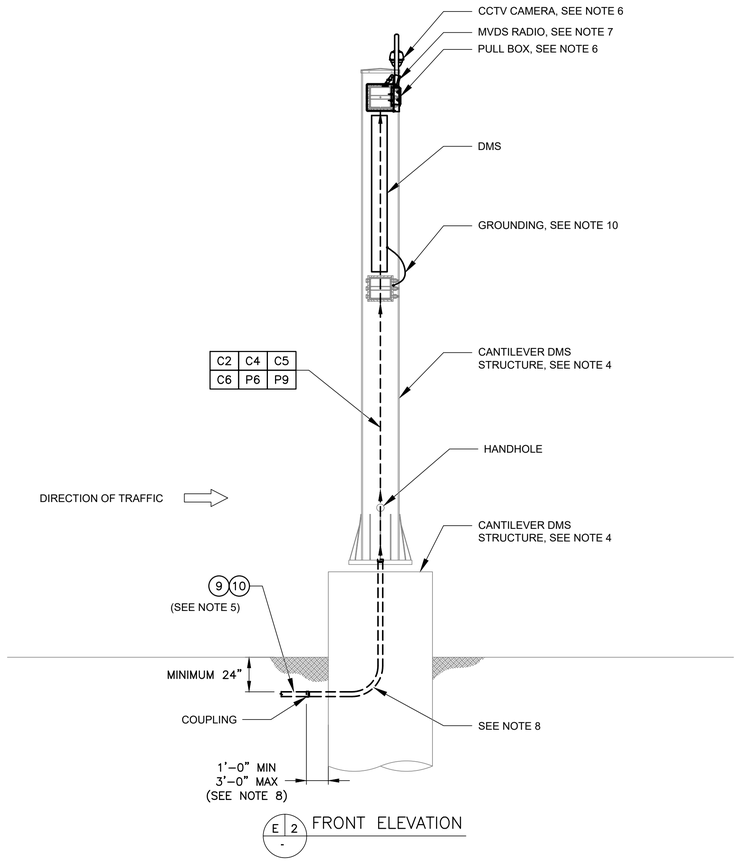
SCALE IN FEET

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. SEE CIVIL DRAWINGS FOR LOCATION AND INSTALLATION OF GUIDE RAIL.
3. THREE (3) WIRELESS TRAFFIC SENSORS SHALL BE INSTALLED ALONG THE CENTERLINE OF EACH TRAVEL LANE OF TRAFFIC AS SHOWN ON THE DRAWINGS. SEE DRAWINGS TD500.22 AND TD500.23 FOR MORE INFORMATION.
4. FOR DETAILS OF THE CANTILEVER SIGN STRUCTURE AND FOUNDATION SEE STRUCTURAL DRAWINGS.
5. POWER AND COMMUNICATIONS CONDUITS SHALL CONTINUE AS SHOWN ON THE ITS DRAWINGS. SEE DRAWING TD500.09 FOR ADDITIONAL DETAILS ON THE EQUIPMENT PAD. CONDUIT(S) MAY BE MODIFIED TO ENTER THE SIGN FOUNDATION FROM AN ALTERNATE DIRECTION FROM THAT SHOWN ON THIS DETAIL WHERE APPROVED BY THE ENGINEER.
6. THE CCTV CAMERA MOUNT AND PULL BOX SHALL BE FURNISHED AND INSTALLED ON THE REAR OF THE CANTILEVER STRUCTURE IN SIMILAR FASHION TO THE DETAILS SHOWN ON DRAWING TD500.37.
7. SEE DRAWING TD500.22 AND TD500.23 FOR INSTALLATION DETAILS OF MVDS RADIO.
8. CONDUITS 9 AND 10 SHALL TRANSITION FROM RNMC TO PCRMC AS THEY ENTER THE SIGN STRUCTURE FOUNDATION. GROUND CONDUIT AS REQUIRED PER NEC.
9. CONDUITS 13 AND 18 SHALL BE INSTALLED UTILIZING LB TYPE FITTINGS BETWEEN THE STRUCTURE AND DMS.
10. FURNISH AND INSTALL GROUNDING LUG ON SIGN STRUCTURE AND GROUNDING WIRE/BONDING JUMPER BETWEEN DMS AND SIGN STRUCTURE.

NOTES TO DESIGNER (REMOVE FROM DRAWING)

1. WORK WITH STRUCTURAL ENGINEERING TO PLACE HANDHOLES NEAR ALL ITS DEVICES ON STRUCTURE.
2. STRUCTURE SHOWN WITH ALL INTELLIGENT TRANSPORTATION SUBSYSTEMS IN TYPICAL MOUNTING LOCATIONS FOR REFERENCE ONLY. DESIGNER TO DETERMINE WHICH SUBSYSTEMS ARE WARRANTED AND REMOVE THE OTHERS FROM THE DRAWING.



E 2 - FRONT ELEVATION

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

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Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

CANTILEVER DMS DETAILS

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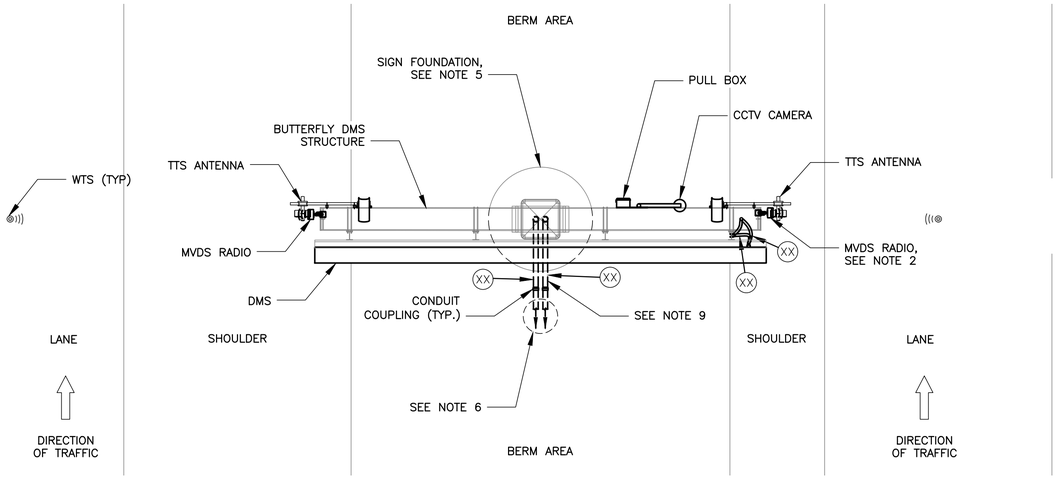
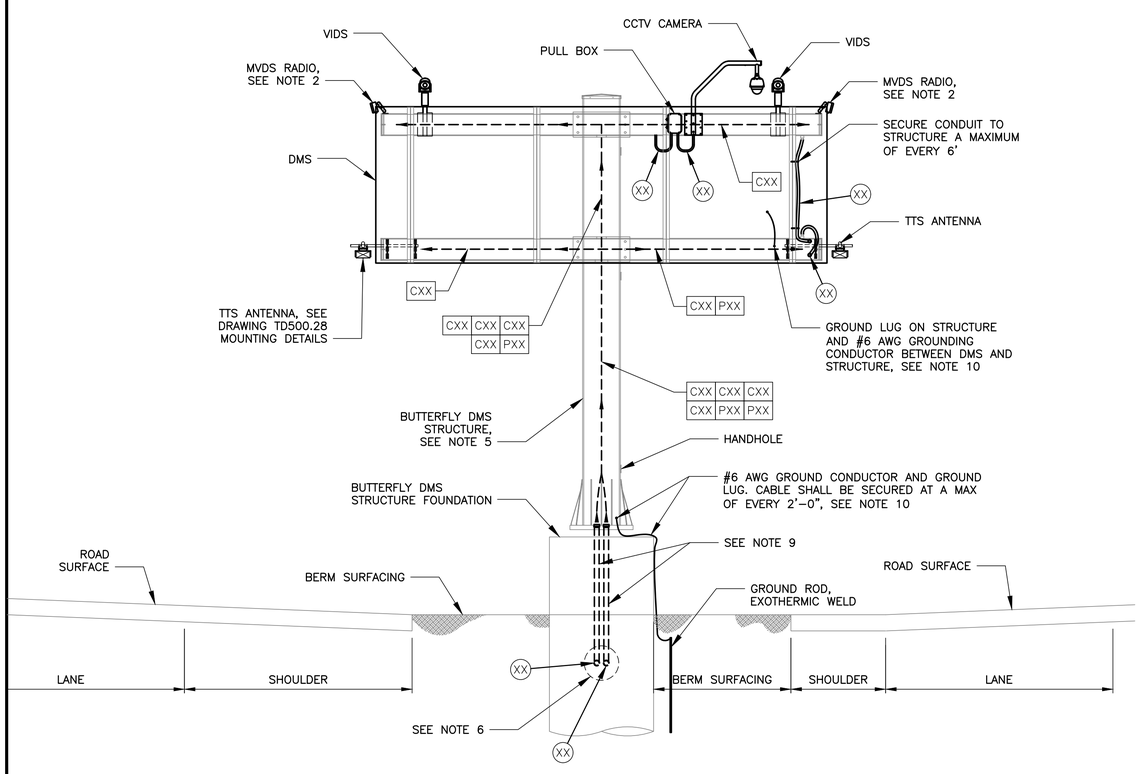


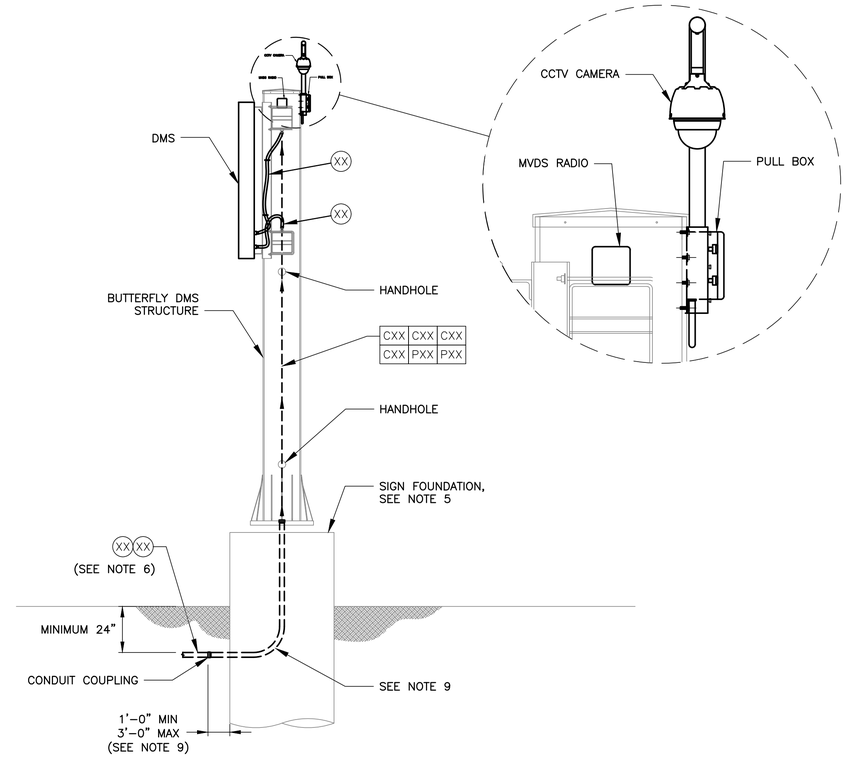
NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. SEE DRAWINGS TD500.22 AND TD500.23 FOR MVDS INSTALLATION DETAILS.
3. SEE CIVIL DRAWINGS FOR LOCATION OF GUIDE RAIL.
4. THREE (3) WIRELESS TRAFFIC SENSORS SHALL BE INSTALLED ALONG THE CENTERLINE OF EACH TRAVEL LANE. SEE DRAWING TD500.23 FOR DETAILS.
5. FOR DETAILS OF THE BUTTERFLY SIGN STRUCTURE AND FOUNDATION SEE STRUCTURAL DRAWINGS.
6. POWER AND COMMUNICATIONS CONDUIT SHALL CONTINUE AS SHOWN ON THE ITS DRAWINGS. SEE DRAWING TD500.09 FOR ADDITIONAL DETAILS ON THE EQUIPMENT PAD. CONDUIT(S) MAY BE MODIFIED TO ENTER THE SIGN FOUNDATION FROM AN ALTERNATE DIRECTION FROM THAT SHOWN ON THIS DETAIL WHERE APPROVED BY THE ENGINEER.
7. THE CCTV CAMERA AND PULL BOX SHALL BE MOUNTED AND INSTALLED SIMILAR TO THE DETAILS SHOWN ON DRAWING TD500.40. FINAL LOCATIONS TO BE COORDINATED WITH THE ENGINEER.
8. DIMENSIONS OF LANES, SHOULDERS AND CHARACTERISTICS OF ROADWAY WILL VARY DEPENDING ON FIELD CONDITIONS. SEE CIVIL DRAWINGS FOR LOCATIONS TO INSTALL BUTTERFLY DMS STRUCTURES.
9. CONDUITS 9 AND 10 SHALL TRANSITION FROM RNMC TO PCRMC AS THEY ENTER THE SIGN STRUCTURE FOUNDATION. GROUND CONDUIT AS REQUIRED PER NEC.
10. FURNISH AND INSTALL GROUNDING LUG ON SIGN STRUCTURE AND GROUNDING WIRE/BONDING JUMPER BETWEEN DMS AND SIGN STRUCTURE.
11. SEE DRAWING TD500.15 FOR CONDUIT AND CABLE SCHEDULES.

NOTES TO DESIGNER (REMOVE FROM DRAWING)

1. WORK WITH STRUCTURAL ENGINEERING TO PLACE HANDHOLES NEAR ALL ITS DEVICES ON STRUCTURE.
2. STRUCTURE SHOWN WITH ALL INTELLIGENT TRANSPORTATION SUBSYSTEMS IN TYPICAL MOUNTING LOCATIONS FOR REFERENCE ONLY. DESIGNER TO DETERMINE WHICH SUBSYSTEMS ARE WARRANTED AND REMOVE THE OTHERS FROM THE DRAWING.





BUTTERFLY SIGN
TD500.08

0 4 8
SCALE IN FEET

Sheet 8 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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1	06/27/2024	DISCLAIMER ADDED	

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PANYNJ DETAILS

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INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

BUTTERFLY DMS DETAILS

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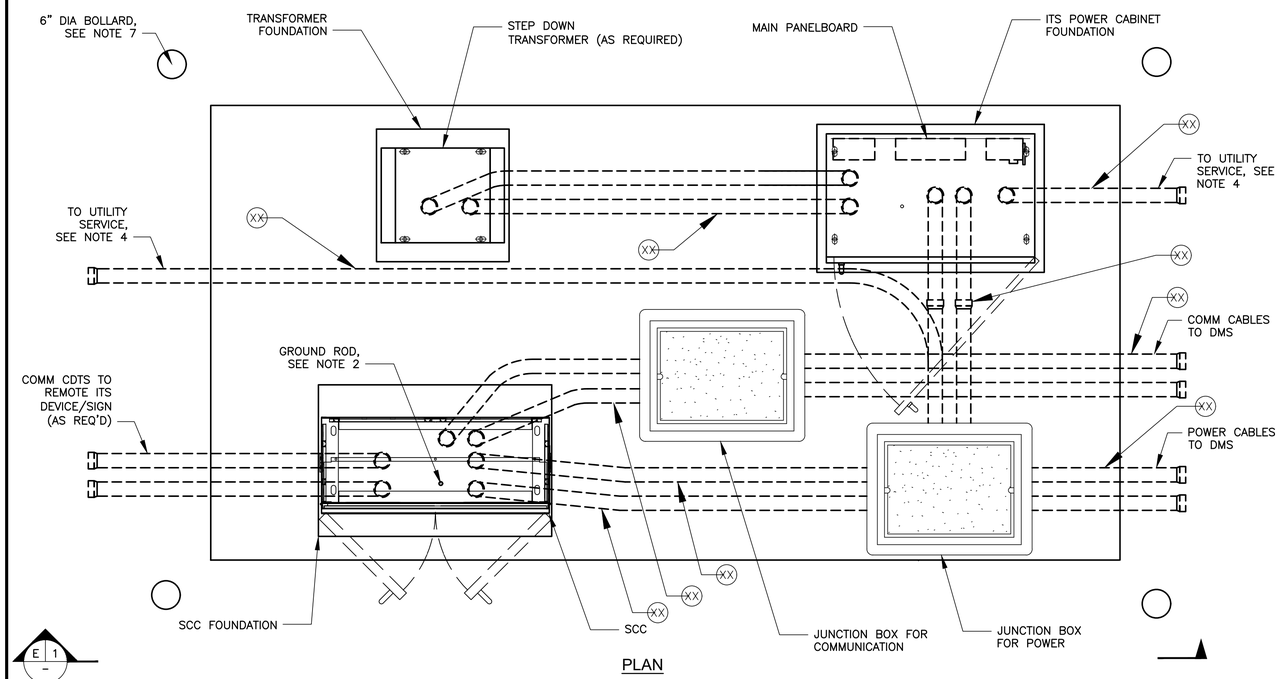
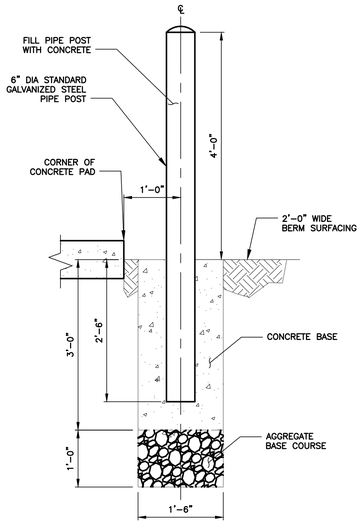


PLAN



BOLLARD ELEVATION DETAIL TD500.09.02

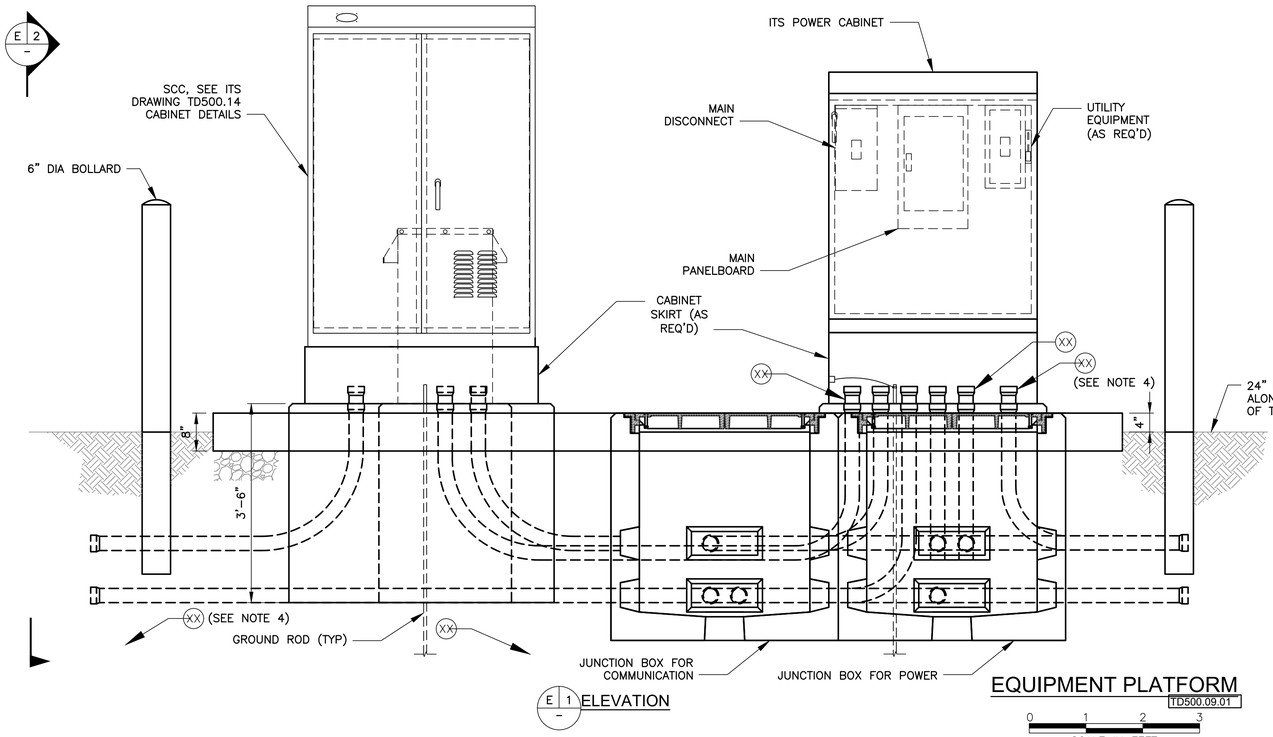
SCALE IN FEET 0 1 2

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. INSTALL A 10' X 3/4" GROUND ROD THROUGH THE FOUNDATION OF THE LOAD CENTER. SEE SECTION 16450 OF THE STANDARD SPECIFICATIONS FOR MORE INFORMATION.
3. THE STEP DOWN TRANSFORMER AND MAIN DISCONNECT WITH ASSOCIATED WIRING SHALL BE INSTALLED WHERE REQUIRED AND DIRECTED ON THE DRAWINGS.
4. EITHER CONDUIT MAY BE USED TO PULL CABLES DEPENDING ON THE DIRECTION FROM WHICH THE INCOMING UTILITY SERVICE ENTERS THE INSTALLATION SITE.
5. ALL CONDUIT SHOWN ON THIS SHEET SHALL BE 3" RNMC-40 UNLESS NOTED OTHERWISE.
6. SPARE CONDUIT(S) NOT LABELED OR IDENTIFIED ON THIS SHEET SHALL BE 3" RNMC-40 AND BE CAPPED FOR FUTURE USE. USE AS DIRECTED ON THE CONTRACT DRAWINGS.
7. SPARE CONDUIT SHALL BE STUBBED AND CAPPED APPROXIMATELY 18"-24" AWAY FROM WORK PAD AND ANY FOUNDATIONS.
8. SEE DRAWING TD500.15 FOR CONDUIT AND CABLE SCHEDULES.

NOTES TO DESIGNER (REMOVE FROM DRAWING)

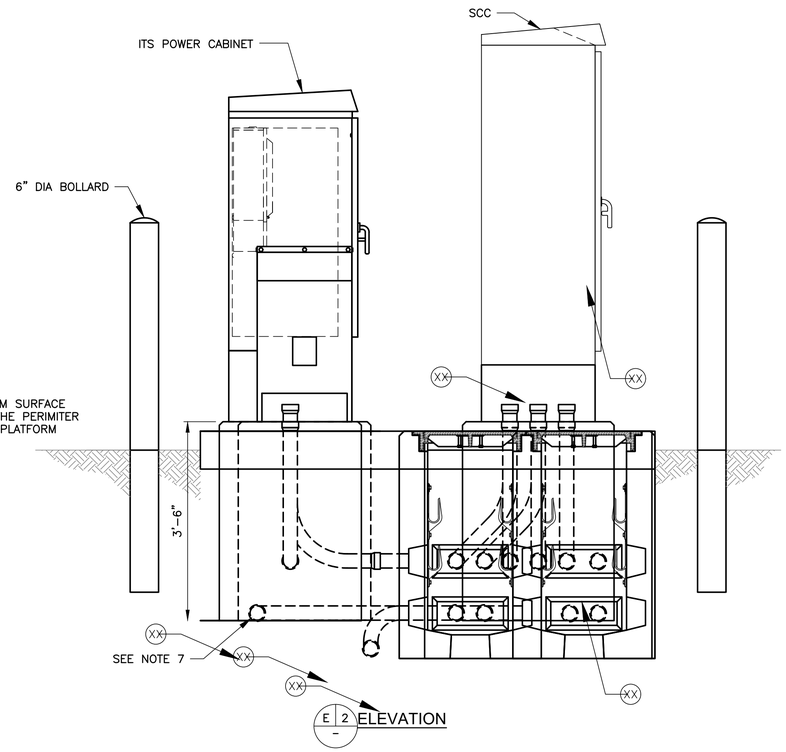
1. A TYPICAL BOLLARD LAYOUT FOR PROTECITON OF EQUIPMENT IS SHOWN. WORK WITH CIVIL ENGINEERING TO PROVIDE THE FINAL LAYOUT. SEE TD500.09.02 FOR TYPICAL BOLLARD DETAIL.
2. PASS THE FOLLOWING TYPICAL NOTES ON TO THE CIVIL ENGINEER DESIGNING THE EQUIPMENT PAD AND BOLLARDS:
   - 2.1. THE CONCRETE WORK PAD SHALL BE A MINIMUM OF 8" THICK AND SHALL HAVE AN EXPOSED LIP OF 4" ABOVE GRADE. IT SHALL BE CONSTRUCTED WITH A LAYER OF WWF6 X 6-W11 X W11 FABRIC ALONG THE BASE. THE SIZE AND DEPTH OF THE CONCRETE WORK PAD WILL VARY DEPENDING ON FIELD CONDITIONS.
   - 2.2. A 6" LAYER OF AGGREGATE BASE COURSE SHALL BE INSTALLED UNDER THE CONCRETE WORK PAD.
   - 2.3. ALL EQUIPMENT PLATFORMS SHALL BE CONSTRUCTED WITH 2% SLOPE. EQUIPMENT FOUNDATIONS SHALL BE LEVEL AND RAISED 1-2" ABOVE PLATFORM AND SHALL BE CONSTRUCTED WITH ANCHOR BOLTS TO SECURE EQUIPMENT TO FOUNDATION.
3. COORDINATE THE PLACEMENT OF THE IN FOUNDATION GROUND ROD WITH THE CIVIL ENGINEER IN CHARGE OF FOUNDATION DESIGN.



ELEVATION

EQUIPMENT PLATFORM TD500.09.01

SCALE IN FEET 0 1 2 3



ELEVATION

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

CANTILEVER/BUTTERFLY DMS EQUIPMENT PAD DETAILS

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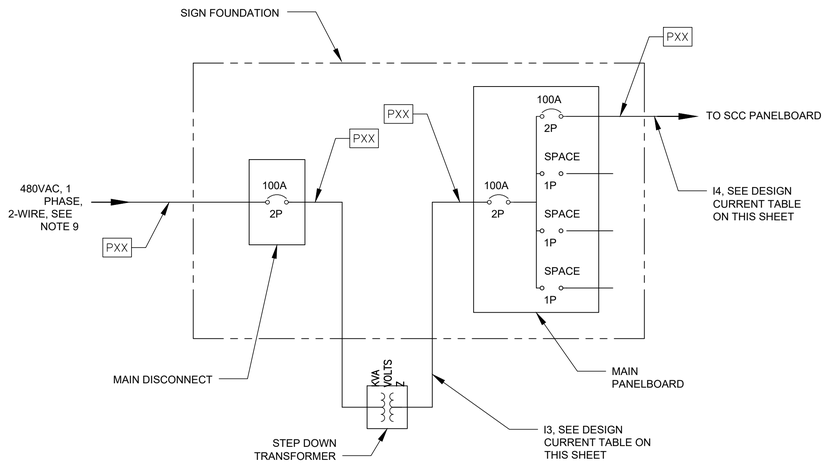


SINGLE DMS SIGN 480VAC POWER SOURCE

TD500.10.02

SCC PANELBOARD DESIGN LOAD (VA)*			
EQUIPMENT	LEG A	LEG B	TOTAL
DMS	6667	4445	11112
UPS	-	2222	2222
SPARE	2933	2933	5866
TOTAL	9600	9600	19200

DESIGN CURRENT (A)					
I1	I2	I3	I4	I5	I6
80	156		56	25	15

MAIN DISCONNECT		
POWER DISTRIBUTION FOR:	CIRCUIT BREAKER:	ENCLOSURE:
120/240VAC	SQUARE D # FAL22100	SQUARE D # FA100RB
480VAC	SQUARE D # FAL24100	SQUARE D # FA100RB

POWER DESIGN VALUES

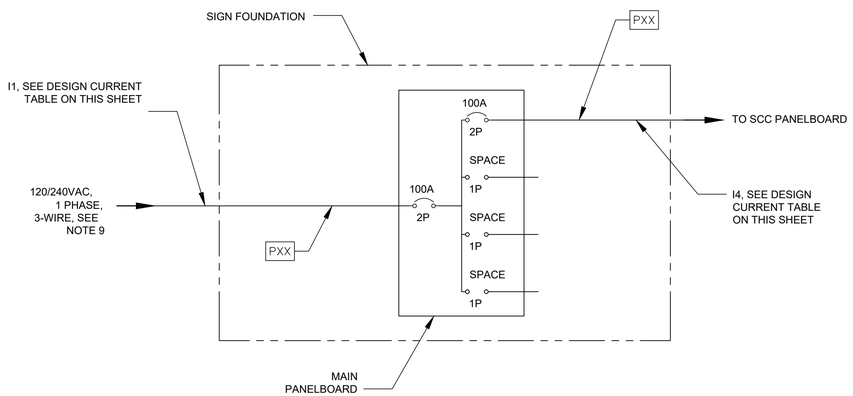
TD500.10.03

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. SEE THE RESPECTIVE ITS DRAWINGS FOR LOCATIONS OF ITS EQUIPMENT AND ROUTING OF CONDUIT IDENTIFIED ON THIS DRAWING.
3. REFER TO PANEL SCHEDULES FOR EXACT EQUIPMENT AND CIRCUIT BREAKER LAYOUTS.
4. JUNCTION BOXES AND CONDUIT SHALL BE INSTALLED AS REQUIRED ON THE CONTRACT DRAWINGS FOR POWER DISTRIBUTION.
5. ALL REQUIRED EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH ARTICLE 250 OF THE NEC WHETHER SPECIFICALLY IDENTIFIED OR NOT.
6. SEE DMS INSTALLATION DETAILS FOR INFORMATION ON CONDUITS AND CABLES AS WELL AS EQUIPMENT SHOWN ON THIS SHEET.
7. FOR DETAILS ON THE TYPE OF ELECTRONIC EQUIPMENT INSTALLED IN THE SCC, SEE DRAWING TD500.14.
8. SEE DRAWING TD500.11 FOR COMMUNICATIONS DIAGRAM.

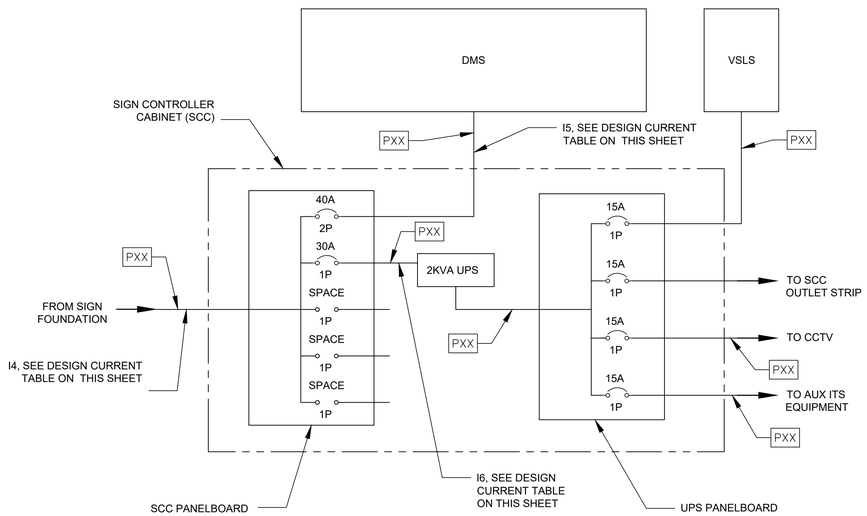
NOTES TO DESIGNER (REMOVE FROM DRAWING)

1. THE POWER DISTRIBUTION DIAGRAMS ARE BASED UPON TYPICAL DESIGN LOADS DESIGNER SHALL FINALIZE ALL VALUES BASED UPON ACTUAL MANUFACTURERS LOADS UTILIZED AS THE BASIS FOR THE DESIGN.
2. POWER EQUIPMENT, SUCH AS METER CABINETS, SHALL BE COORDINATED WITH THE UTILITY HAVING JURISDICTION. OTHER POWER EQUIPMENT SHALL BE AS SHOWN ON DRAWINGS TD500.06 AND TD500.09 .
3. CURRENT AND LOAD VALUES PROVIDED FOR USE IN DESIGN. ALL WIRES SHALL BE SIZED TO ACCOMMODATE A 3% MAXIMUM VOLTAGE DROP. FOR 120/240 VOLT DISTRIBUTION, VOLTAGE DROP SHALL BE PERFORMED AT 120 VOLTS, ASSUMING FULL DESIGN CURRENT RETURNING ON THE NEUTRAL CONDUCTOR.
4. IDENTIFY WHERE ADDITIONAL BREAKERS ARE NECESSARY TO POWER ADDITIONAL SCCs AS REQUIRED BY THE DESIGN.
5. I2 DESIGNATION AND VALUES RESERVED FOR A GANTRY SIGN STRUCTURE WITH TWO (2) FULL MATRIX DMS SIGNS.



SINGLE DMS 120/240VAC POWER SOURCE

TD500.10.01



SINGLE DMS ONE-LINE DIAGRAM

TD500.10.04

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

DMS POWER DISTRIBUTION DIAGRAMS

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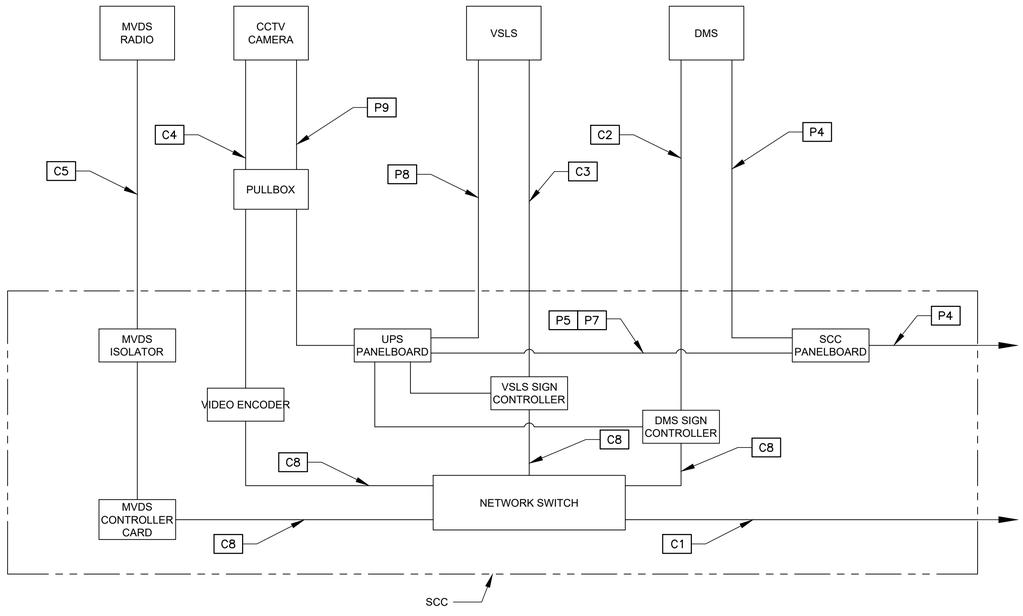

ITSS COMMUNICATIONS BLOCK DIAGRAM
TD500.11

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. SEE THE RESPECTIVE ITS DRAWINGS FOR LOCATIONS OF ITS EQUIPMENT AND ROUTING OF CONDUIT IDENTIFIED ON THIS DRAWING.
3. FOR CCTV INSTALLATION DETAILS, SEE DRAWINGS TD500.39 THROUGH TD500.42.
4. FOR CLARITY, NOT ALL POWER CABLE INSIDE THE SCC CABINET HAS BEEN SHOWN. SEE DRAWING TD500.12 FOR POWER DIAGRAMS.
5. SEE DRAWING TD500.15 FOR CONDUIT AND CABLE SCHEDULES.

NOTES TO DESIGNER (REMOVE FROM DRAWING)

1. POWER EQUIPMENT, SUCH AS METER CABINETS, SHALL BE COORDINATED WITH THE UTILITY HAVING JURISDICTION. OTHER POWER EQUIPMENT SHALL BE AS SHOWN ON DRAWINGS TD500.06 AND TD500.09.
2. TYPICAL BLOCK DIAGRAM IS SHOWN. ADD OR DELETE COMPONENTS AS WARRANTED BY THE DESIGN.

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INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

DMS COMMUNICATIONS DIAGRAM

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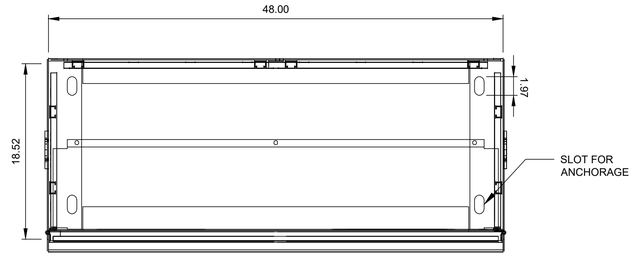

PLAN

SCC BOTTOM VIEW

TD500.14.03

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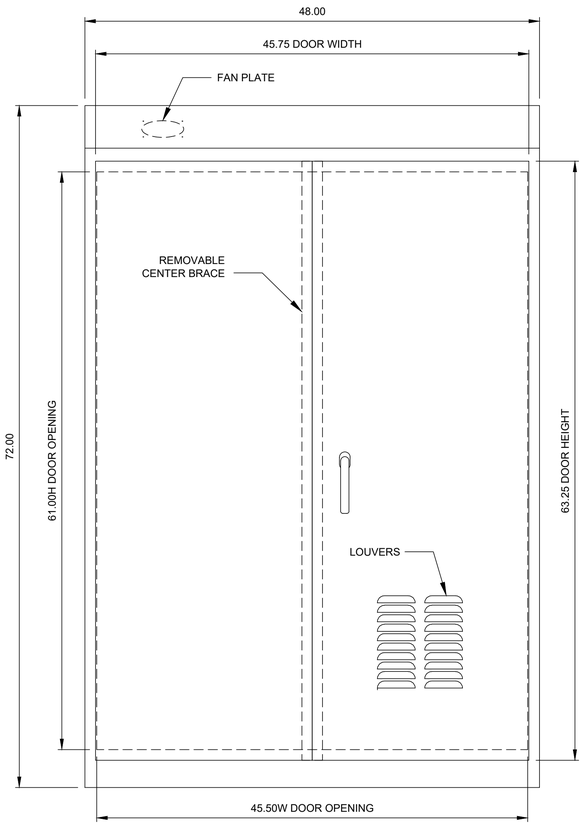
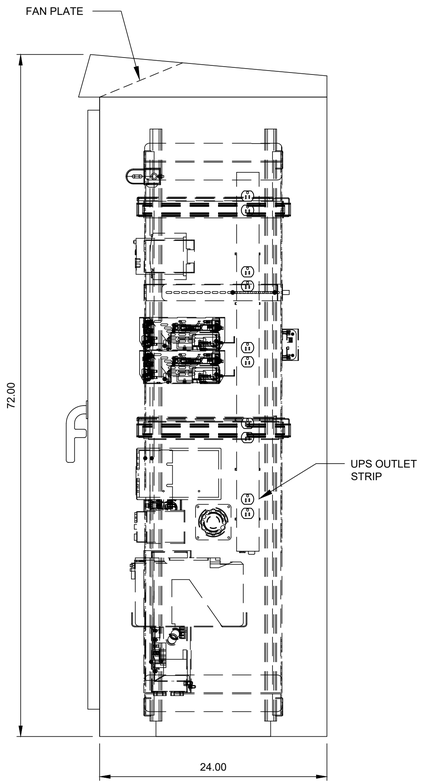
SCALE IN FEET



FRONT ELEVATION



SIDE ELEVATION

SYSTEMS CONTROL CABINET (SCC)

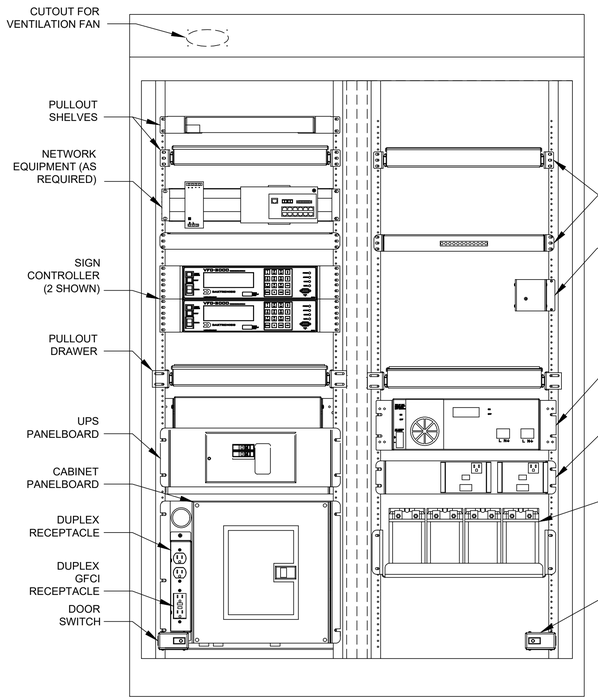
TD500.14.01

0 .5 1 2

SCALE IN FEET

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. THE SCC SHALL BE A FREE STANDING DOUBLE DOOR, VENTED, .125" THICK ALUMINUM CABINET WITH TWO INTERNAL 19" EQUIPMENT RACKS THAT STAND AT LEAST 5'-6" HIGH.
3. THE CONFIGURATION AND DETAILS OF THE CABINET ANCHOR BOLT PATTERN SHALL BE AS PROVIDED BY THE CABINET MANUFACTURER.
4. WHERE THE CABINET IS MOUNTED ON A GANTRY STRUCTURE, PROVIDE AN ENCLOSED BASED TO MINIMIZE DEBRIS FROM ENTERING THROUGH THE BOTTOM OF THE CABINET.
5. CONDUITS ENTERING THE BOTTOM OF THE SCC SHALL BE STUBBED A MINIMUM OF 3" INTO THE BOTTOM OF THE CABINET.
6. SEE THE ITS DRAWINGS FOR POSITIONING THE SCC.
7. THE SCC EQUIPMENT SHALL BE SELECTED ON A PER SITE BASIS. THE EQUIPMENT DETAILED ON THIS SHEET IS A DIAGRAMMATIC REPRESENTATION OF WHAT WOULD TYPICALLY BE INSTALLED.
8. SCC(S) MAY BE USED FOR MULTIPLE FUNCTIONS AND PURPOSES. THE SCC SHOWN ON THIS SHEET IS CONFIGURED FOR A DMS INSTALLATION. THE SCC MAY HAVE HARDWARE REMOVED OR ADDED AS REQUIRED BY THE DRAWINGS.
9. WHERE AN SCC IS MOUNTED TO A CONCRETE FOUNDATION, INSTALL A 1/4" RUBBER GASKET AROUND THE BASE OF THE CABINET ENCLOSURE AND THE JOINT BETWEEN THE CABINET BASE AND CABINET.
10. FOR GROUND MOUNT APPLICATIONS, CONDUIT ENDS SHALL BE SEALED WITH GREAT STUFF FIRE PROOF FOAM, OR APPROVED EQUAL, AS A RODENT BLOCKER AFTER CABLE AND WIRING INSTALLATION.
11. WHERE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IS NOT SHOWN ON THE CONTRACT DRAWINGS, PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH THE NEC.



FRONT ELEVATION

SCC EQUIPMENT LAYOUT

TD500.14.02

0 .5 1 2

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ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

SYSTEMS CONTROL CABINET DETAILS

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Drawing Number TD500.14

POWER CABLES

DESIGNATION	CABLES	FROM	TO
P1	SEE NOTE 3	METER CABINET	MAIN DISCONNECT\MAIN PANELBOARD
P2	2 - #2 AWG + #4 AWG GND	MAIN DISCONNECT	TRANSFORMER
P3	3 - #3/0 AWG + #4 AWG GND	TRANSFORMER	MAIN PANELBOARD
P4	3 - #2 AWG + #4 AWG GND	MAIN PANELBOARD	SCC PANELBOARD
P5	2 - #12 AWG + #12 AWG GND	SCC PANELBOARD	UPS
P6	3 - #4 AWG + #6 AWG GND	SCC PANELBOARD	DMS
P7	2 - #12 AWG + #12 AWG GND	UPS	UPS PANELBOARD
P8	2 - #10 AWG + #10 AWG GND	UPS PANELBOARD	VSLS
P9	2 - #14 AWG + #14 AWG GND	UPS PANELBOARD	CCTV CAMERA
P10	2 - #14 AWG + #14 AWG GND	UPS PANELBOARD	AUX ITS EQUIPMENT
P11	#4 AWG GND	VARIOUS	GND ROD
P12	2 - #8 AWG + #8 AWG GND	SCC PANELBOARD	DRUM SIGN
P13	2 - #8 AWG + #8 AWG GND	SCC PANELBOARD	AUX DRUM SIGN
P14	2 - #14 AWG + #14 AWG GND	UPS PANELBOARD	AUX ITS EQUIPMENT

COMMUNICATIONS CABLES

DESIGNATION	CABLES	FROM	TO
C1	INCOMING FIBER	PAWANET	SCC
C2	(1) 6-FIBER OPTIC MULTIMODE CABLE	SCC	DMS
C3	(1) 6-FIBER OPTIC MULTIMODE CABLE	SCC	VSLS
C4	(1) 4 TWISTED PAIR #24 AWG (OUTDOOR NETWORK CABLE)	SCC	CCTV
C5	(1) 4 TWISTED PAIR #24 AWG (OUTDOOR NETWORK CABLE)	SCC	MVDS RADIO
C6	(1) COAXIAL CABLE	SCC	TTS ANTENNA
C7	AS RECOMMENDED BY THE MANUFACTURER	SCC	ITS DEVICE
C8	ETHERNET PATCH CORD (SEE NOTE 4)	VARIES	NETWORK SWITCH
C9	AS RECOMMENDED BY THE MANUFACTURER	SCC	DRUM SIGN
C10	AS RECOMMENDED BY THE MANUFACTURER	SCC	AUX DRUM SIGN

CONDUITS

DESIGNATION	SIZE AND TYPE	CABLES
1	3" RNMC-40	P1
2	2" PCRMC	P1
3	2" PCRMC	PXX
4	2½" PCRMC	P3
5	2" PCRMC	P4
6	2" PCRMC	P1 P4
7	3" RNMC-40	P2 P3
8	3" RNMC-40	C1
9	3" RNMC-40	C2 C4 C5 C6
10	3" RNMC-40	P6 P9
11	2" FMC	P8
12	2" FMC	C3
13	2" PCRMC	C2 C3
14	2" FMC	C4
15	2" FMC	P6
16	2" PCRMC	P6 P8
17	2" FMC	P9
18	2" FMC	C2
19	2" FMC	P12 P13
20	2" FMC	C9 C10

LEGEND:

P##
C##
ITEMS SHOWN DASHED MAY VARY BY INSTALLATION.

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. UNLESS OTHERWISE NOTED, POWER AND COMMUNICATION CABLES SHALL BE OF THE MAKE AND MODEL AS DESCRIBED IN SPECIFICATION SECTIONS 16120, 16126, AND 16127.
3. SIZE AND QUANTITY OF THE INCOMING SERVICE WIRES SHALL BE COORDINATED WITH THE UTILITY HAVING JURISDICTION.
4. ETHERNET PATCH CORDS SHALL BE RATED CAT5E OR BETTER AND SHALL BE TERMINATED WITH FACTORY RJ45 CONNECTORS. FIELD TERMINATED PATCH CABLING IS NOT ACCEPTABLE.

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ENGINEERING DEPARTMENT

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DETAILS

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Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

POWER/ COMMUNICATIONS CABLE AND CONDUIT SCHEDULES

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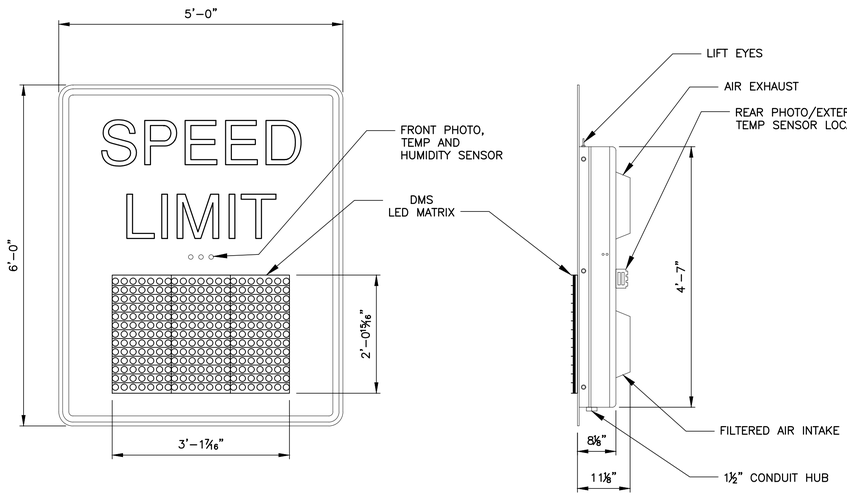


FRONT VIEW

SIDE VIEW

VSLS DETAILS

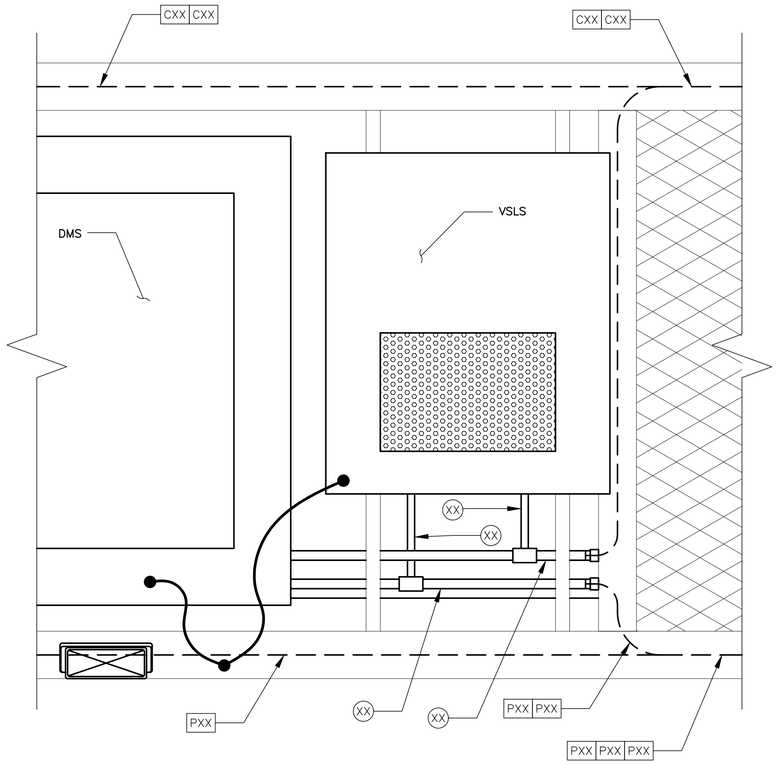
TD500.19.01

0 1 2 3

SCALE IN FEET

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. VSLS TO BE FABRICATED IN ACCORDANCE WITH THE MUTCD STANDARDS SECTION 2B–13 FOR VARIABLE SPEED LIMIT SIGNS.



VSLS CONDUIT DETAILS

TD500.19.01

0 1 2 3

SCALE IN FEET

Sheet 19 of

PORT AUTHORITY NY NJ
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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

VARIABLE SPEED LIMIT SIGN DETAILS

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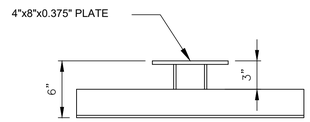
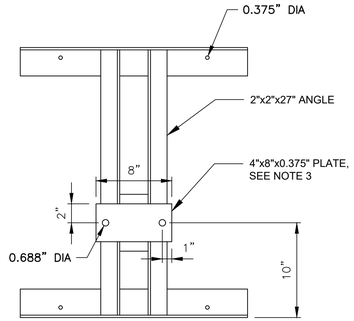
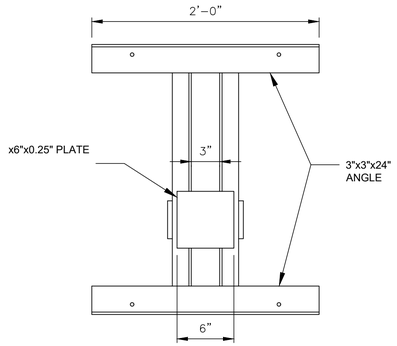
Drawing Number TD500.19



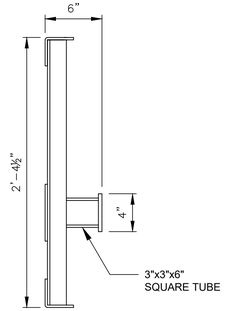
PLAN



REAR ELEVATION



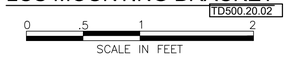
FRONT ELEVATION



SIDE ELEVATION

LCS MOUNTING BRACKET

TD500.20.02

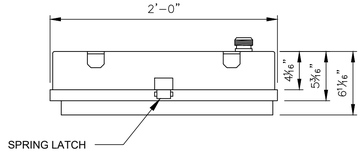


NOTES:

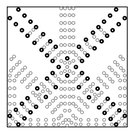
1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. LANE-USE CONTROL SIGNAL CABINET SHALL BE CONSTRUCTED OF CORROSION RESISTANT ALUMINUM. FACE SHALL BE CONSTRUCTED OF IMPACT RESISTANCE ⅛" THICK POLYCARBONATE.
3. SUBMIT ANCHORAGE SHOP DRAWINGS WITH THE LANE-USE CONTROL SIGNAL MOUNTING BRACKET TO THE ENGINEER FOR APPROVAL.
4. SIGNALS TO BLANKOUT WHEN TURNED OFF TO ELIMINATE CONFUSION.
5. INTEGRATED SOLID STATE POWER SUPPLY WITH OPERATION AT 120VAC.
6. UNLESS OTHERWISE NOTED, ALL HARDWARE SHALL BE STAINLESS STEEL.

NOTES TO DESIGNER (REMOVE FROM DRAWING)

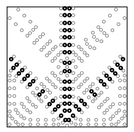
1. WORK WITH STRUCTURAL ENGINEERING TO PROVIDE MOUNTING BRACKET CALCULATIONS. CALCULATIONS SHALL BE SIGNED AND STAMPED BY AN ENGINEER CERTIFIED IN THE STATE OF THE INSTALLATION.



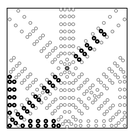
PLAN



RED



AMBER



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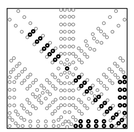

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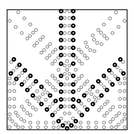
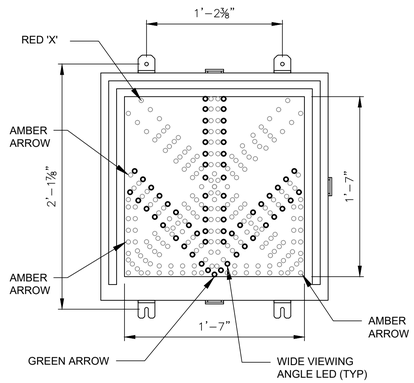
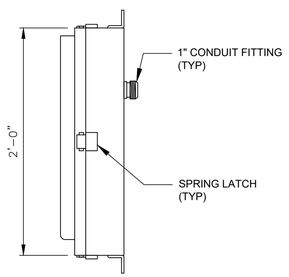


GREEN



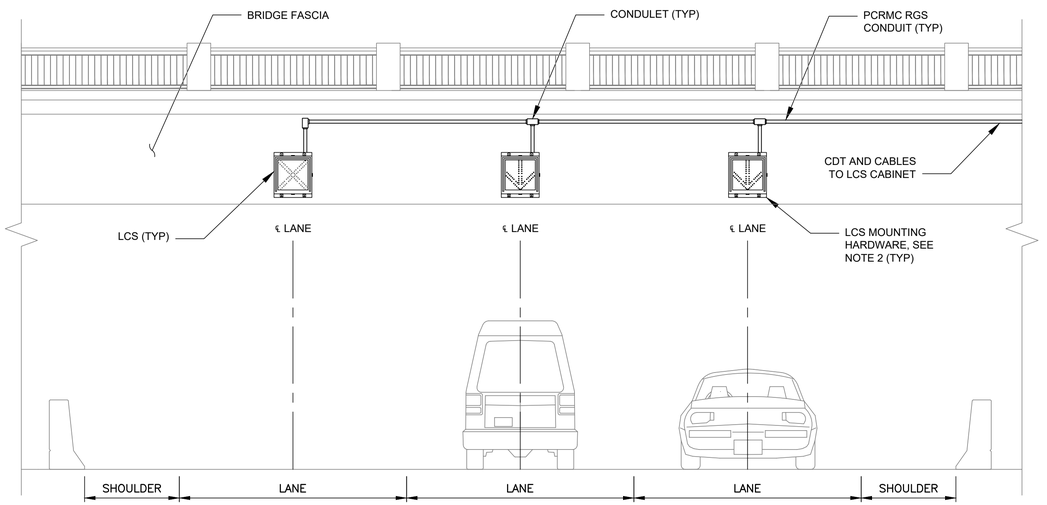
FRONT ELEVATION



SIDE ELEVATION

LANE-USE CONTROL SIGNAL DETAILS

TD500.20.01



LANE-USE CONTROL SIGNAL ON STRUCTURE - ELEVATION

TD500.20.03

Sheet 20 of

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INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

LANE-USE CONTROL SIGNAL DETAILS - 1

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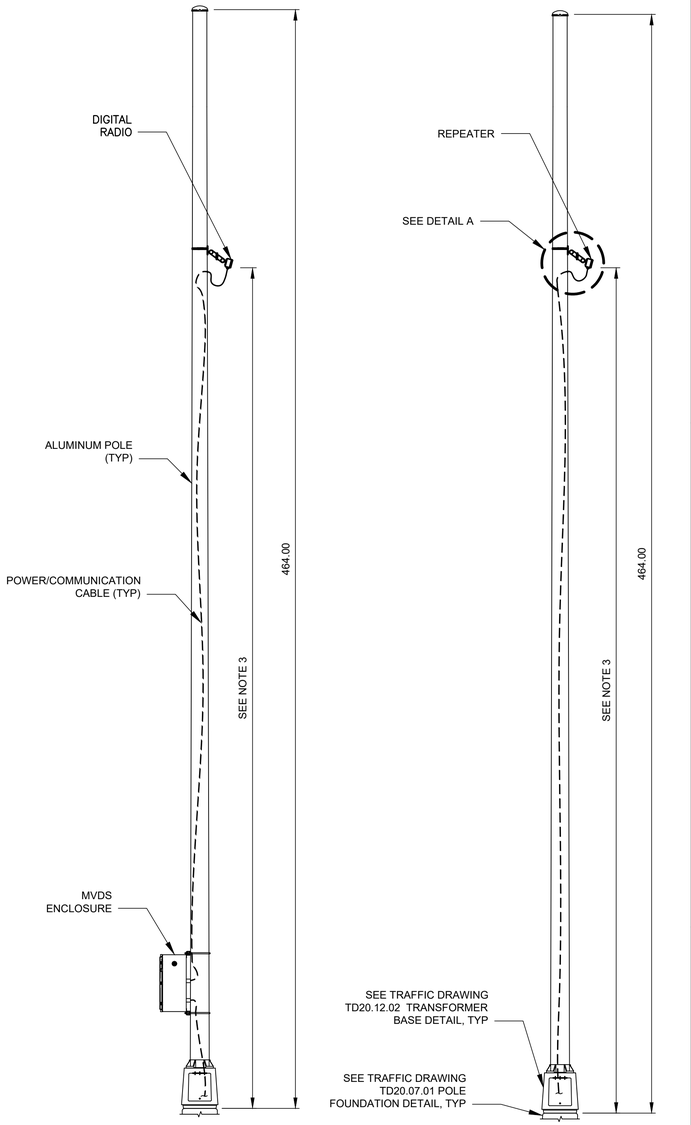
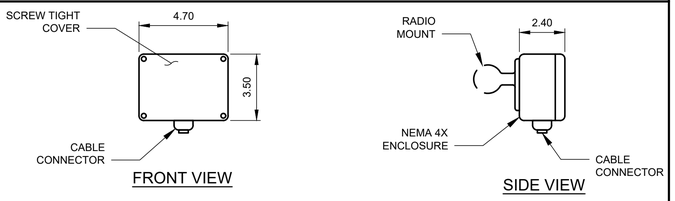


RADIO/REPEATER - POLE MOUNTED

TD500.22.01

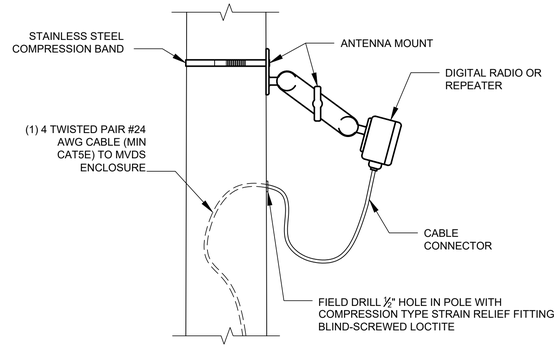
SCALE IN FEET: 0, 3, 6



MVDS DIGITAL RADIO

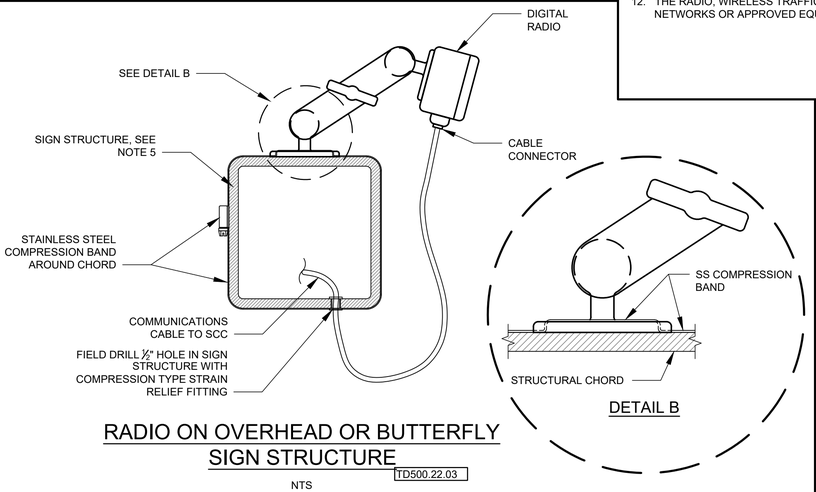
TD500.22.02

SCALE IN FEET: 0, .25, .5, 1



DETAIL A

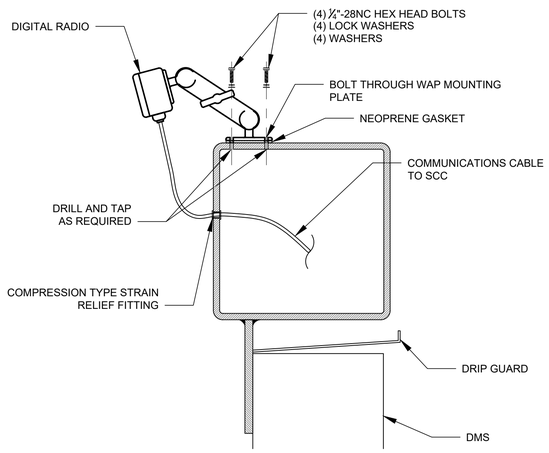
NTS



RADIO ON OVERHEAD OR BUTTERFLY SIGN STRUCTURE

TD500.22.03

NTS



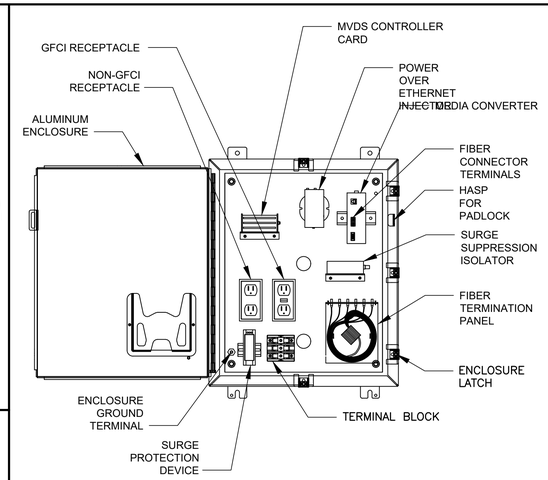
RADIO ON CANTILEVER SIGN STRUCTURE

TD500.22.04

NTS

NOTES:

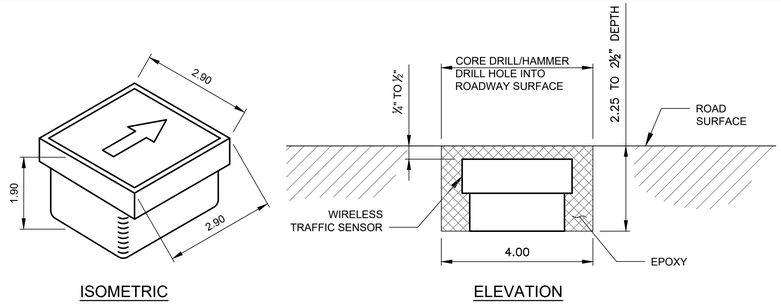
1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. COMPRESSION DOUBLE JOINT MOUNT HARDWARE SHALL BE AS PROVIDED BY RADIO/REPEATER MANUFACTURER.
3. HEIGHT OF INSTALLATION FOR THE RADIO AND REPEATER SHALL BE A MINIMUM OF 28'-0" ABOVE GRADE. SEE CONTRACT DRAWINGS FOR LOCATIONS.
4. PROVIDE PRE-MANUFACTURED FIBER JUMPER CABLES AND SC FIBER CONNECTORS AS REQUIRED BETWEEN EQUIPMENT IN ITS ENCLOSURE.
5. SEE STRUCTURAL CONTRACT DRAWINGS FOR FINAL LOCATION OF RADIO WHEN INSTALLED ON SIGN STRUCTURE.
6. CABLE CONNECTOR SHALL BE AS SUPPLIED BY RADIO MANUFACTURER OR APPROVED EQUAL. CONTRACTOR SHALL INSTALL CONNECTOR AS DIRECTED BY THE MANUFACTURER. THE CONTRACTOR SHALL NOT ATTEMPT TO DISASSEMBLE THE CONNECTOR WITHOUT THE EXTRACTION TOOL SPECIFIED BY THE MANUFACTURER. THE CONNECTOR SHALL BE REPLACED AT NO EXPENSE TO THE AUTHORITY IN THE EVENT IT IS DAMAGED IN ANYWAY BY IMPROPER ASSEMBLY OR INSTALLATION. WRAP CONNECTOR AND APPROXIMATELY 3" OF THE CABLE WITH A SINGLE HALF-LAPPED LAYER OF VINYL ELECTRICAL TAPE.
7. NO WIRING OR CABLES SHALL BE REQUIRED FOR THE REPEATER. INSTALL IN LOCATIONS AS SHOWN ON THE CONTRACT DRAWINGS.
8. TRAFFIC SENSORS SHALL BE INSTALLED SUCH THAT THE DIRECTION MARKING POINTS IN THE DIRECTION OF TRAFFIC FOR THE LANE IN WHICH IT IS INSTALLED.
9. SEE CONTRACT DRAWINGS FOR TYPE AND ROUTING OF POWER AND COMMUNICATIONS CABLING BACK TO THE SCC.
10. LOCATION OF EQUIPMENT WITHIN THE POLE MOUNTED ITS ENCLOSURE IS DIAGRAMMATIC. FINAL PLACEMENT MAY REQUIRE MODIFICATIONS BASED ON EQUIPMENT APPROVED FOR USE.
11. THE POLE MOUNTED MVDS ENCLOSURE SHALL HAVE MVDS EQUIPMENT ARRANGED TO ACCOMMODATE ADDITIONAL CCTV CAMERA EQUIPMENT WHERE SHOWN ON THE CONTRACT DRAWINGS. SEE TD500.39 FOR CCTV CAMERA EQUIPMENT.
12. THE RADIO, WIRELESS TRAFFIC SENSOR, CONTROLLER CARD, AND WIRELESS REPEATER SHALL BE AS MANUFACTURED BY SENSYS NETWORKS OR APPROVED EQUAL.



POLE MOUNTED MVDS ENCLOSURE

TD500.22.05

SCALE IN FEET: 0, .5, 1, 2



WIRELESS TRAFFIC SENSOR DETAIL

TD500.21.06

SCALE IN FEET: 0, .125, .25, .5

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

MAGNETOMETER VEHICLE DETECTION SUBSYSTEM - 1

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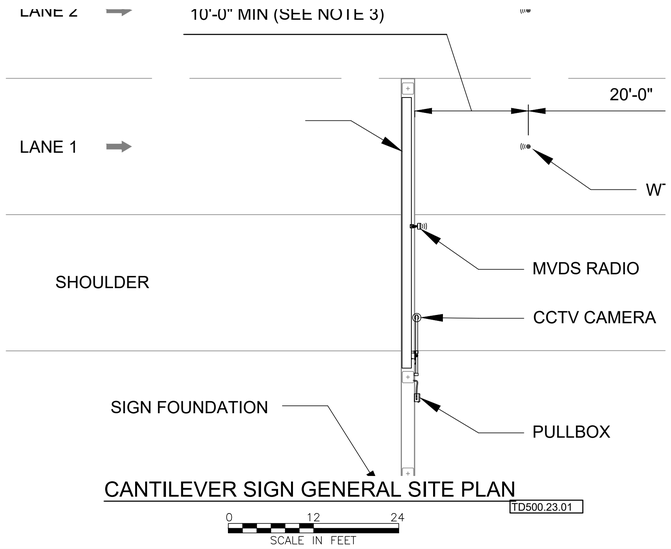
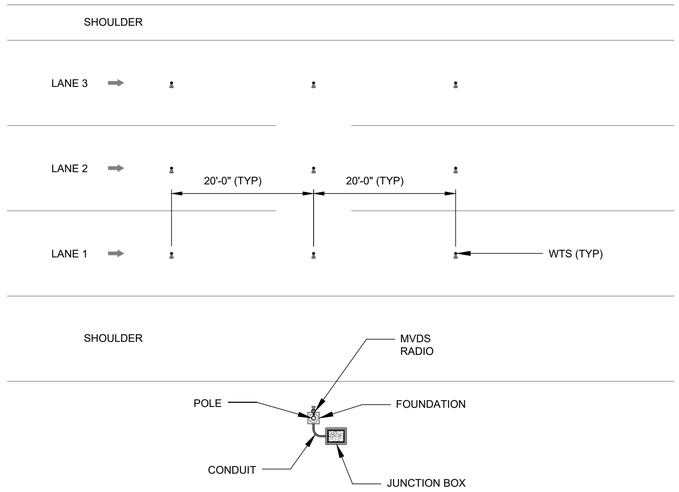


CANTILEVER SIGN GENERAL SITE PLAN TD500.23.01

0 12 24
SCALE IN FEET



POLE MOUNTED GENERAL SITE PLAN TD500.23.03

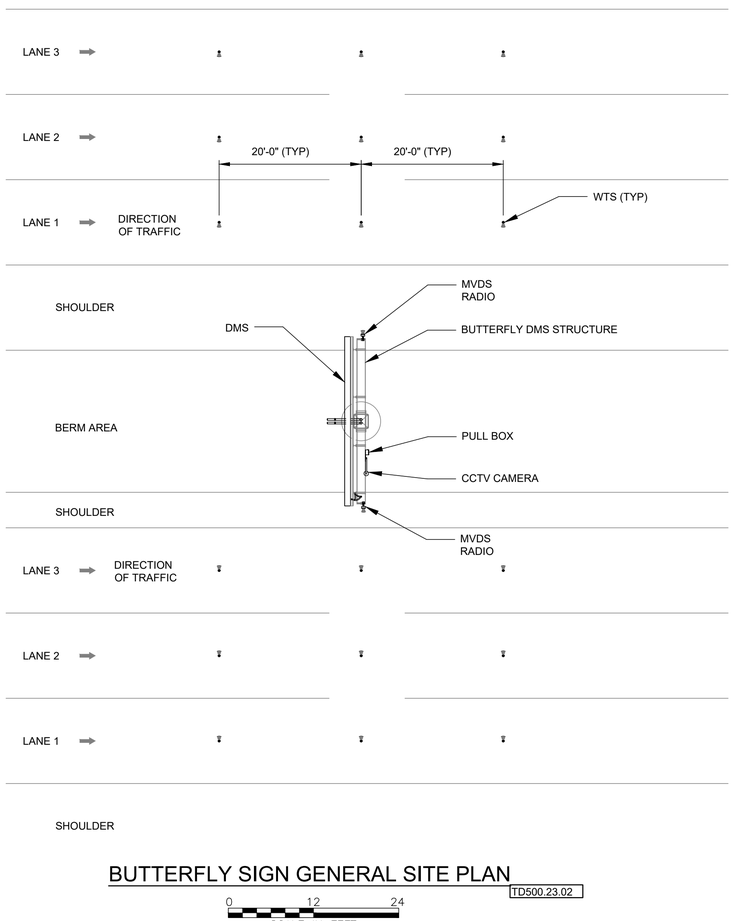
0 12 24
SCALE IN FEET

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. SENSORS SHALL BE INSTALLED ALONG THE CENTERLINE OF THE TRAVELED LANES.
3. THE NEAREST TRAFFIC SENSOR SHALL BE INSTALLED NO LESS THAN 10FT FROM SIGN STRUCTURES OR THE RADIO.
4. ROADWAY AND LANE CONFIGURATIONS WILL VARY IN THE FIELD. SEE THE CIVIL CONTRACT PLANS FOR DIMENSIONS OF LANES, SHOULDERS, AND MEDIAN.

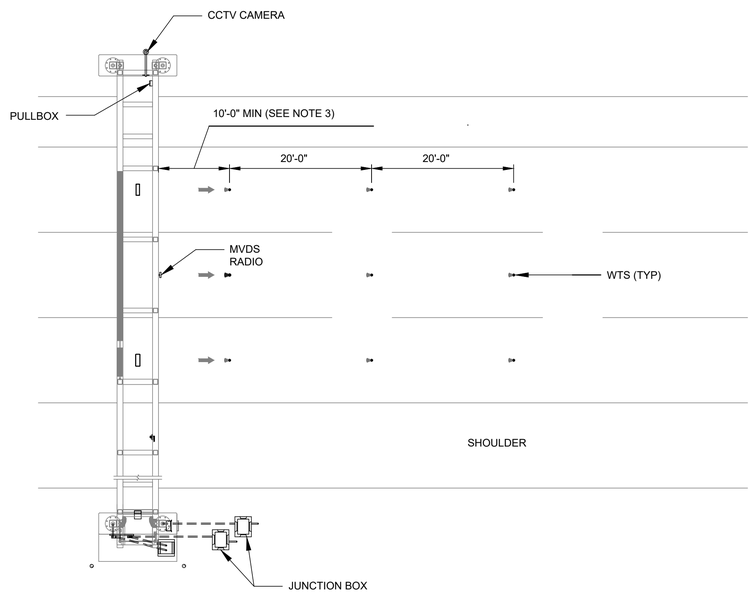
NOTES TO DESIGNER (REMOVE FROM DRAWING)

1. TYPICAL MVDS LAYOUTS SHOWN. COORDINATE DESIGN WITH ACTUAL ROAD GEOMETRY.
2. LEFT HAND SIDED CANTILEVER MVDS INSTALLATIONS SHALL MIRROR THAT OF RIGHT HAND SIDED CANTILEVER INSTALLATIONS AS SHOWN ON THIS DRAWING



BUTTERFLY SIGN GENERAL SITE PLAN TD500.23.02

0 12 24
SCALE IN FEET



SINGLE DMS SIGN GENERAL SITE PLAN TD500.23.04

0 12 24
SCALE IN FEET

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INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

MAGNETOMETER VEHICLE DETECTION SUBSYSTEM - 2

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E 2 – SIDE ELEVATION

E 3 – CABINET DOOR (INSIDE FACE)

E 1 – FRONT ELEVATION

READER CABINET EQUIPMENT LAYOUT
TD500.24.01

0 .5 1 2
SCALE IN FEET

READER CABINET POWER DIAGRAM
TD500.24.03

E 4 – POST MOUNT

E 5 – WALL MOUNT

READER CABINET MOUNTING DETAILS
TD500.24.02

0 .5 1 2
SCALE IN FEET

E 6 – FRONT ELEVATION

E 7 – SIDE ELEVATION

READER CABINET
TD500.24.04

0 .5 1 2
SCALE IN FEET

Sheet 24 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

TRAVEL TIME
SUBSYSTEM DETAILS - 1

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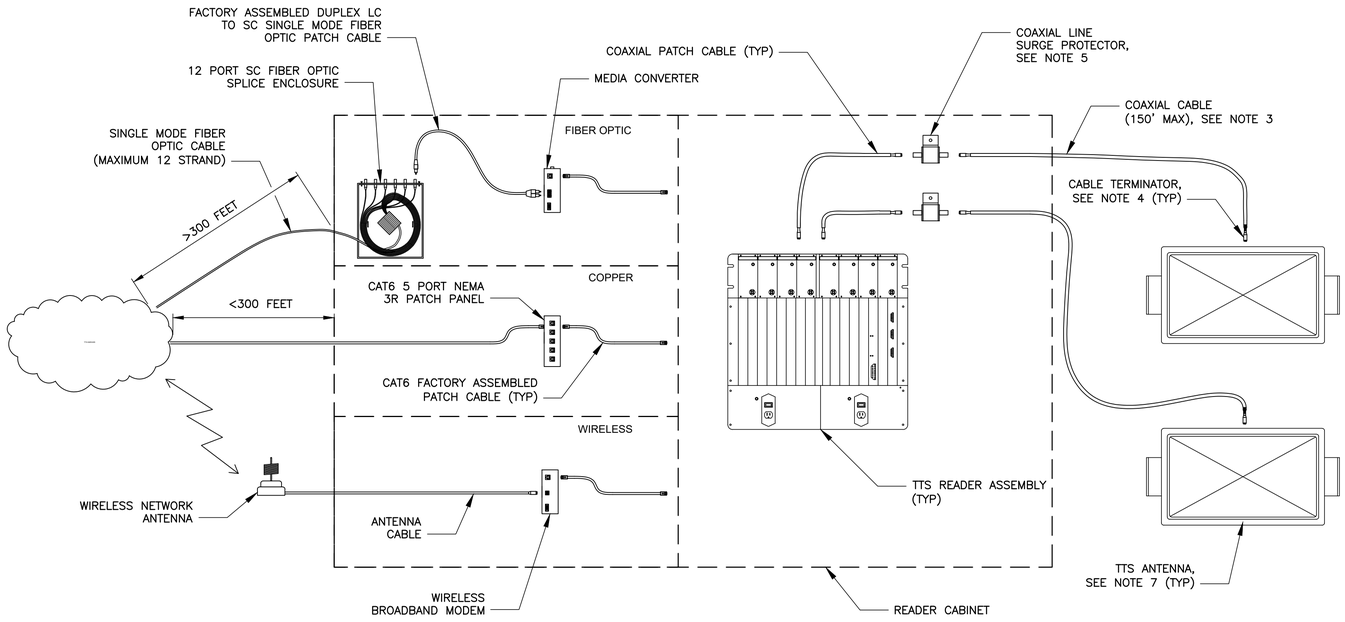
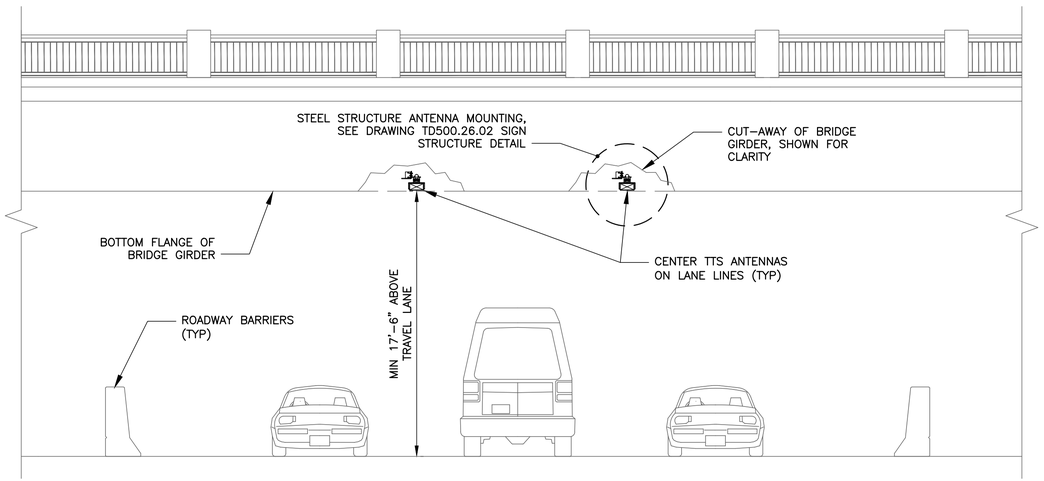


COMMUNICATIONS BLOCK DIAGRAM

TD500.25.01



TYPICAL OVERPASS SITE PLAN

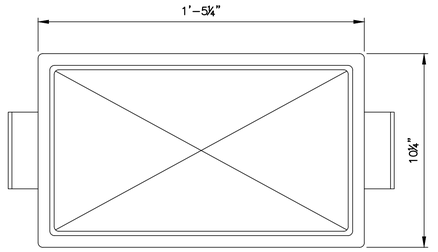
TD500.25.02

0 4 8

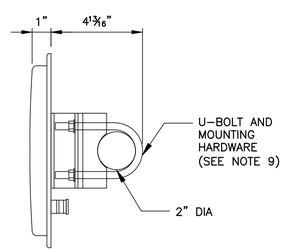
SCALE IN FEET

NOTES:

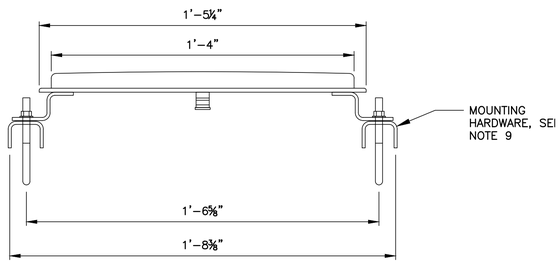
1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. TTS ANTENNA SHALL BE AS MANUFACTURED BY KAPSCH MODEL VRC.
3. COAXIAL CABLE SHALL BE ANDREW HELIAX FSJ4-50B OR APPROVED EQUAL.
4. COAXIAL CABLE SHALL BE TERMINATED WITH ANDREW TYPE N MALE CONNECTORS OR APPROVED EQUAL.
5. COAXIAL LINE SURGE PROTECTORS SHALL BE A POLYPHASER IS-50NX-C2 OR APPROVED EQUAL.
6. THE MINIMUM CLEARANCE BETWEEN THE ANTENNA AND ROADWAY SURFACE SHALL BE 17'-6", UNLESS SHOWN OTHERWISE ON CONTRACT DRAWINGS.
7. COMMUNICATIONS BLOCK DIAGRAM DEPICTS THE CONNECTION OF ONLY TWO LANE KITS/ANTENNAS. TTS READERS ASSEMBLIES MAY ACCOMMODATE UP TO EIGHT LANE KITS/ANTENNAS PER LOCATION.
8. COMMUNICATIONS FOR EACH SITE SHALL BE AS SHOWN ON CONTRACT DRAWINGS.
9. MOUNTING HARDWARE AND U-BOLT ARE SUPPLIED BY ANTENNA MANUFACTURER.



D 1 / - PLAN



E 1 / - SIDE ELEVATION



E 2 / - FRONT ELEVATION

ANTENNA DETAILS

TD500.25.03

0 .25 .5 1

SCALE IN FEET

Sheet 25 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

TRAVEL TIME SUBSYSTEM DETAILS - 2

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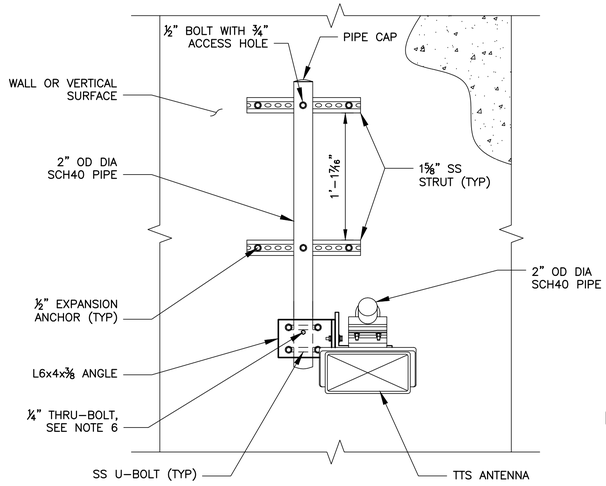
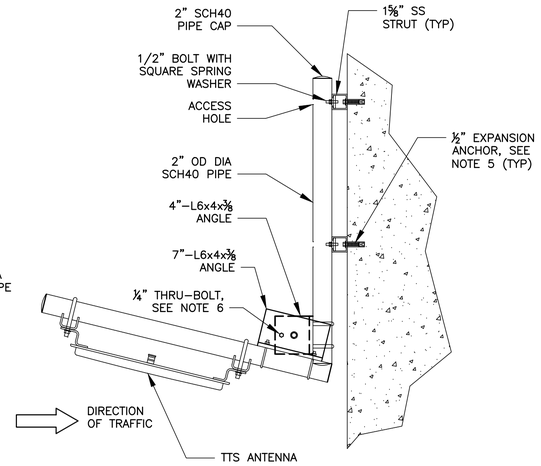
Date 07 / 15 / 2024

Drawing Number TD500.25



E 1 - FRONT ELEVATION



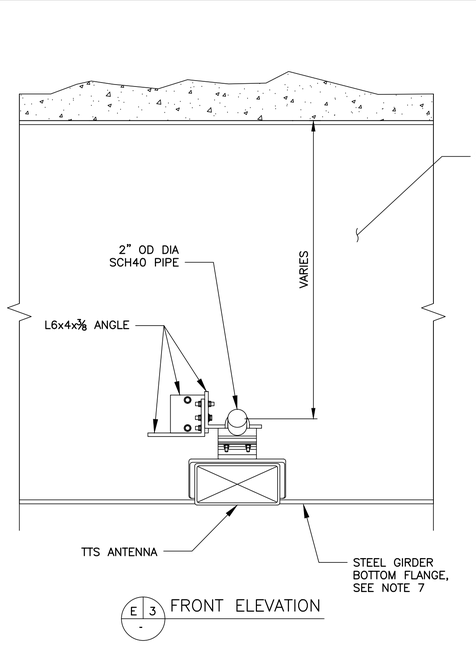
E 2 - SIDE ELEVATION

CONCRETE FASCIA

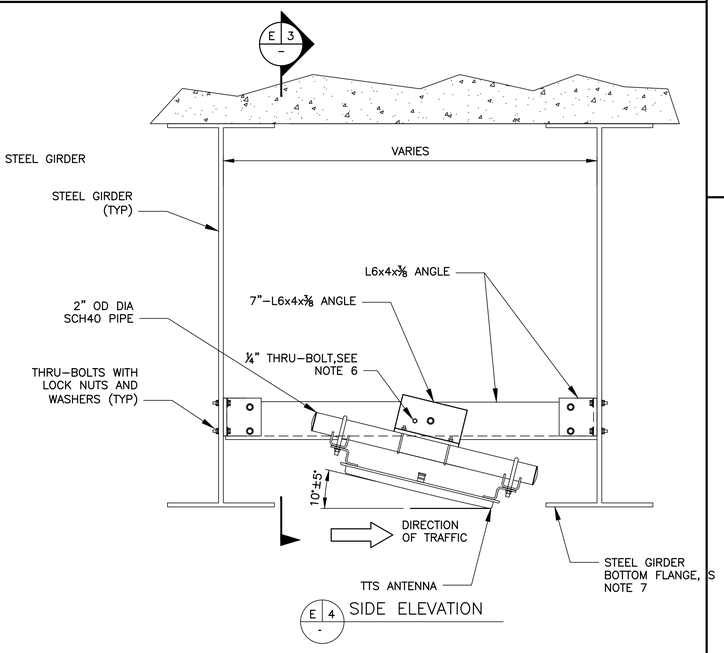
TD500.26.01

0 .5 1 2

SCALE IN FEET



E 3 - FRONT ELEVATION



E 4 - SIDE ELEVATION

STEEL STRUCTURE

TD500.26.02

0 .5 1 2

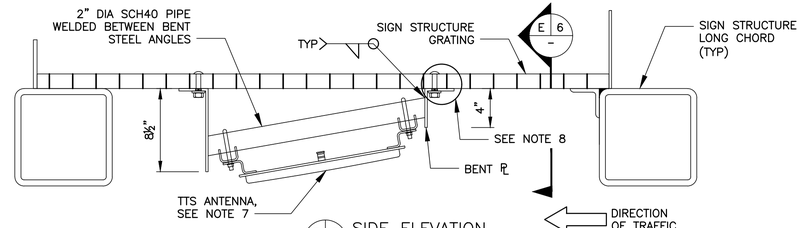
SCALE IN FEET

NOTES:

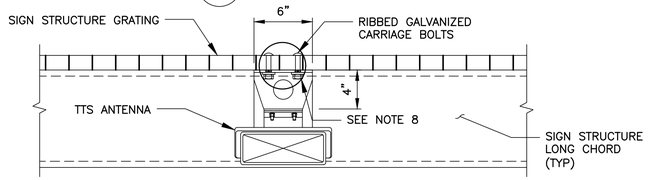
1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. ALL HARDWARE ATTACHING ANTENNA FRAMES AND STRUCTURAL MEMBERS SHALL BE STAINLESS STEEL. U-BOLTS SHALL BE PROPERLY SIZED TO ACCOMMODATE 2" SCHEDULE 40 GALVANIZED PIPE.
3. ANCHOR BOLTS SHALL BE AS MANUFACTURED BY HILTI AND HAVE A MINIMUM DIAMETER OF ¼".
4. UNLESS OTHERWISE NOTED ALL PIPE FOR MOUNTING BRACKETS SHALL BE ASTM A53 SCHEDULE 40 STEEL, AND ALL STEEL ANGLES SHALL BE A MINIMUM ASTM A36.
5. SUBMIT ALL ANTENNA MOUNTING DETAILS TO THE ENGINEER FOR APPROVAL. DETAIL ALL EMBEDMENT DEPTHS FOR ANCHORAGE HARDWARE.
6. FIELD DRILL ¼" THRU-BOLTS TO SECURE ANTENNA MOUNTS AFTER FINAL ANGLES AND MOUNTING HEIGHTS HAVE BEEN DETERMINED.
7. FINAL ANTENNA HEIGHTS MAY NOT EXTEND BELOW BRIDGE OR SIGN STRUCTURE STRUCTURAL ELEMENTS.
8. PROVIDE STEEL PLATES TO ADJUST ANTENNA ANGLE AS NECESSARY.

NOTES TO DESIGNER (REMOVE FROM DRAWING)

1. WORK WITH STRUCTURAL ENGINEERING TO PROVIDE CALCULATIONS FOR ALL ANTENNA MOUNTING DETAILS. CALCULATIONS SHALL BE SIGNED AND STAMPED BY AN ENGINEER CERTIFIED IN THE STATE OF THE INSTALLATION. DETAIL ALL EMBEDMENT DEPTHS FOR ANCHORAGE HARDWARE.



E 5 - SIDE ELEVATION



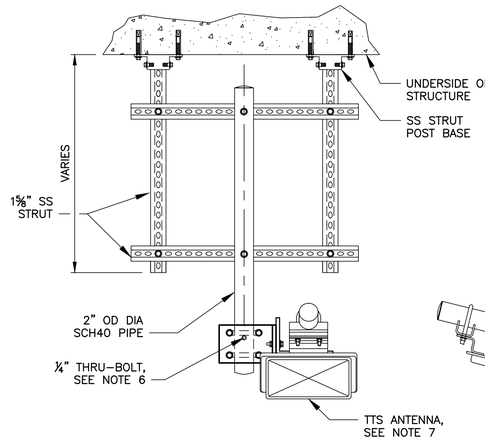
E 6 - FRONT ELEVATION

SIGN STRUCTURE

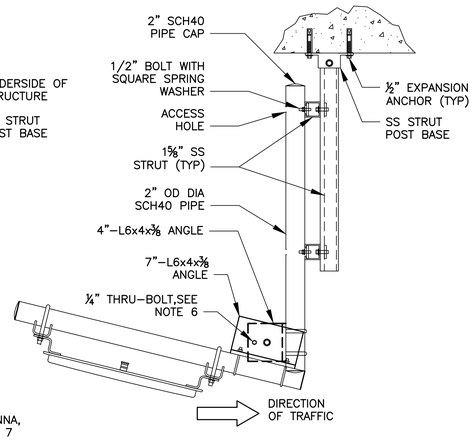
TD500.26.03

0 .5 1 2

SCALE IN FEET



E 7 - FRONT ELEVATION



E 8 - SIDE ELEVATION

UNDERDECK

TD500.26.04

0 .5 1 2

SCALE IN FEET

Sheet 26 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

TRAVEL TIME SUBSYSTEM DETAILS - 3

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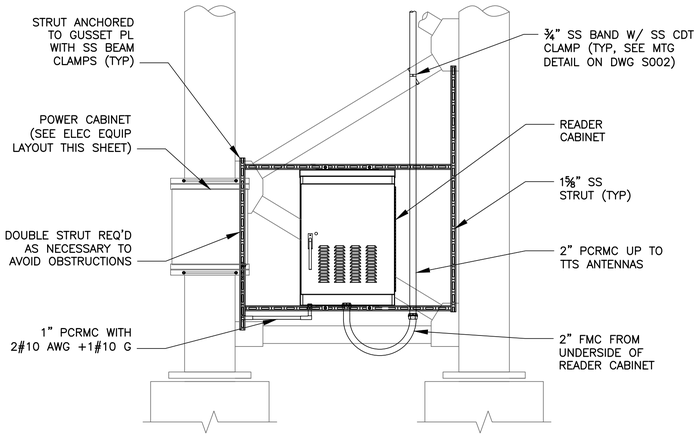


READER CABINET MOUNTING DETAIL

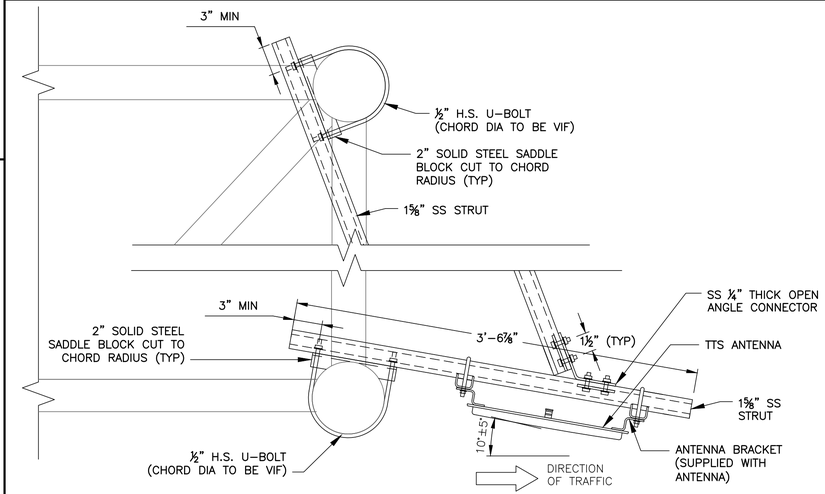
TD500.27.02

0 2 4

SCALE IN FEET

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. THE CLEARANCE BETWEEN THE ANTENNA AND ROADWAY SURFACE SHALL BE MINIMUM 17'. ANTENNAS SHALL NOT BE INSTALLED WHERE CLEARANCE IS SMALLER.
3. HIGH STRENGTH U–BOLTS SHALL CONFORM TO ASTM A325X, TYPE 1, WITH NUTS AND WASHERS CONFORMING TO ASTM F436. ALL BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.

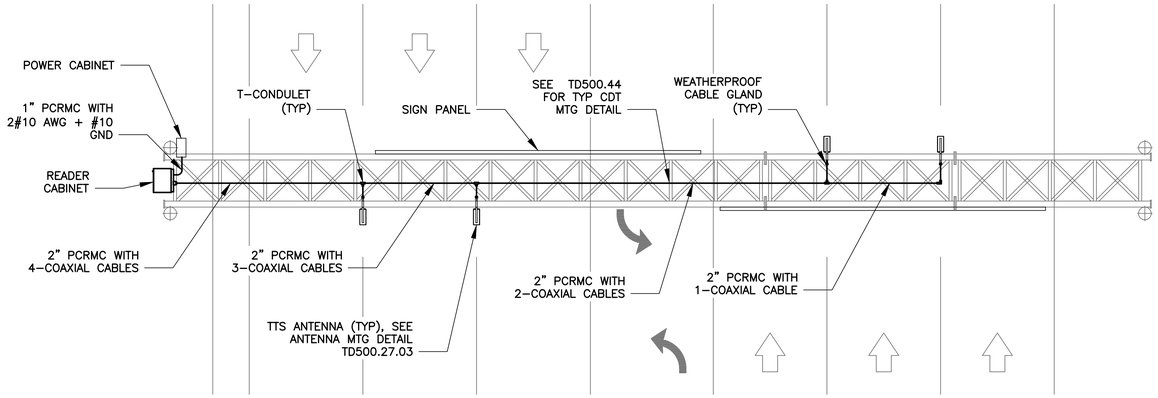


ANTENNA MOUNTING DETAIL

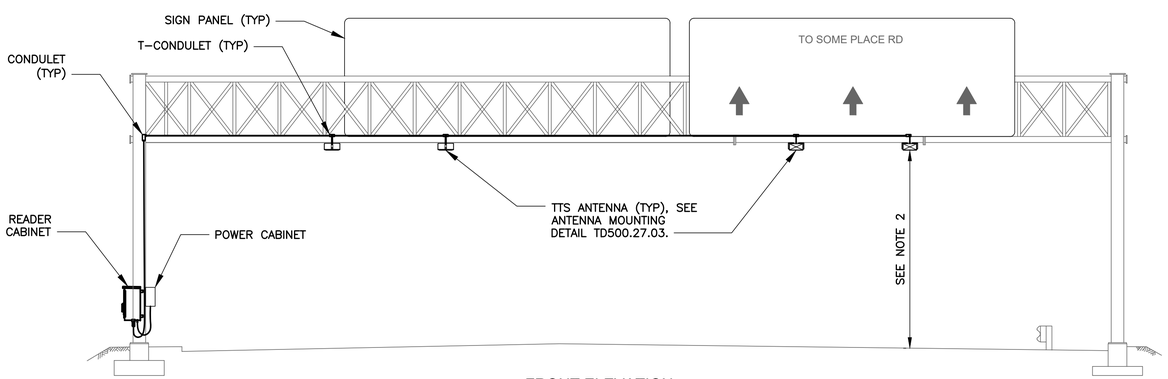
TD500.27.03

0 .5 1 2

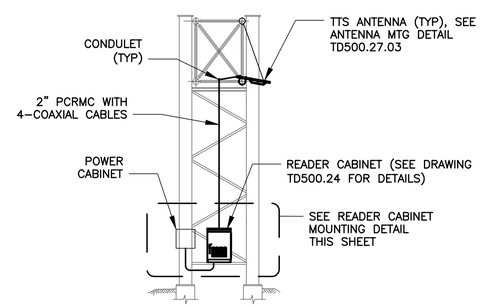
SCALE IN FEET



PLAN VIEW



FRONT ELEVATION



SIDE ELEVATION

OVERHEAD SIGN STRUCTURE INSTALLATION

TD500.27.01

0 8 16

SCALE IN FEET

Sheet 27 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

TRAVEL TIME SUBSYSTEM DETAILS - 4

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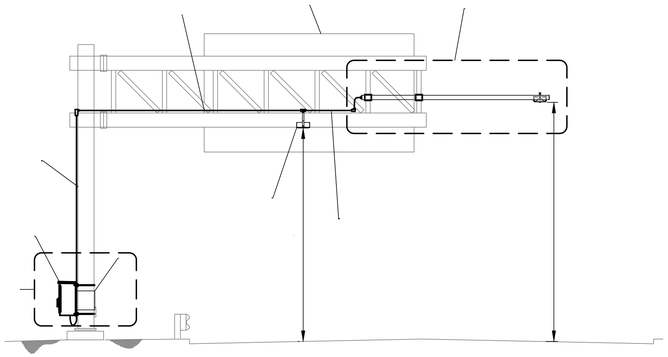
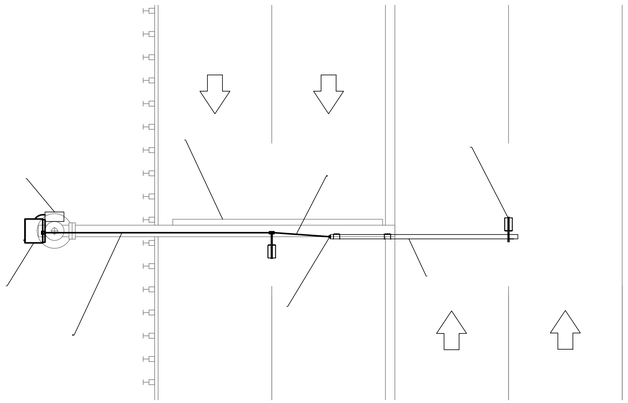
Drawing Number TD500.27



REAR ELEVATION



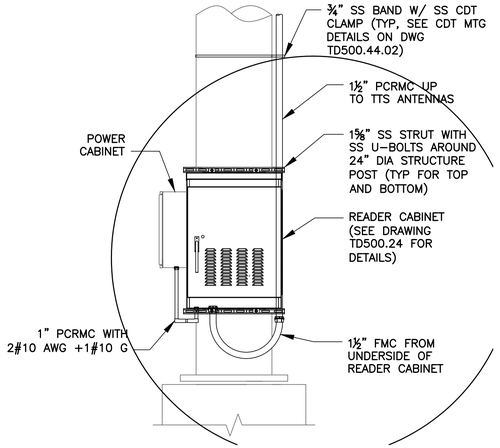
PLAN VIEW

CANTILEVER SIGN STRUCTURE INSTALLATION

TD500.28.01

0 8 16

SCALE IN FEET



FRONT DETAIL ELEVATION

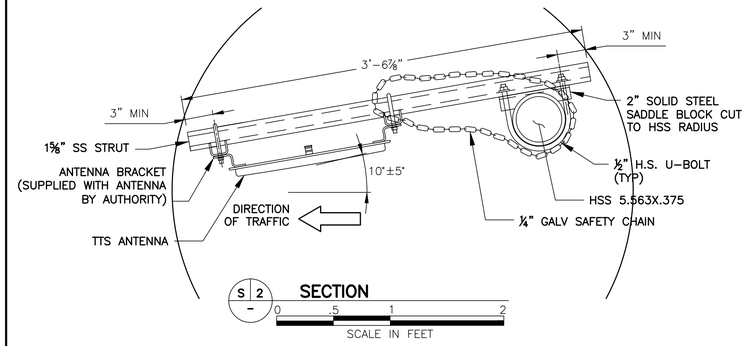
TD500.28.02

0 2 4

SCALE IN FEET

NOTES:

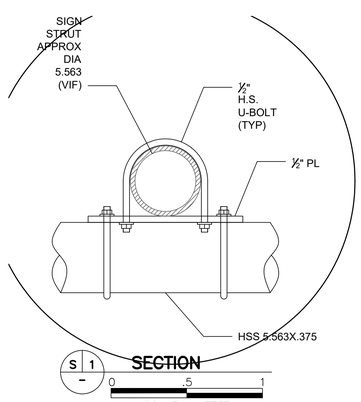
1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. THE CLEARANCE BETWEEN THE ANTENNA AND ROADWAY SURFACE SHALL BE MINIMUM 17'. ANTENNAS SHALL NOT BE INSTALLED WHERE CLEARANCE IS SMALLER.
3. UNLESS OTHERWISE NOTED, ALL HOLLOW STRUCTURAL SECTIONS SHALL BE ASTM A500 GRADE B FY=42KSI.
4. UNLESS OTHERWISE NOTED, ALL PLATES SHALL BE ASTM A36 STEEL.
5. UNLESS OTHERWISE NOTED, ALL HARDWARE SHALL BE 304 STAINLESS STEEL WITH LOCKING NUTS AND WASHERS.
6. HIGH STRENGTH U-BOLTS SHALL CONFORM TO ASTM A325X, TYPE 1, WITH NUTS AND WASHERS CONFORMING TO ASTM F436. ALL BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
7. SUBMIT ALL ANTENNA MOUNTING DETAILS TO THE ENGINEER FOR APPROVAL.



S 2 – SECTION

0 .5 1 2

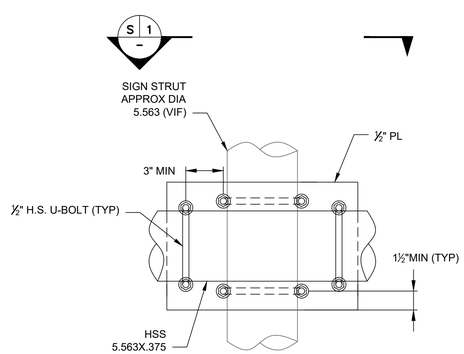
SCALE IN FEET



S 1 – SECTION

0 .5 1

SCALE IN FEET

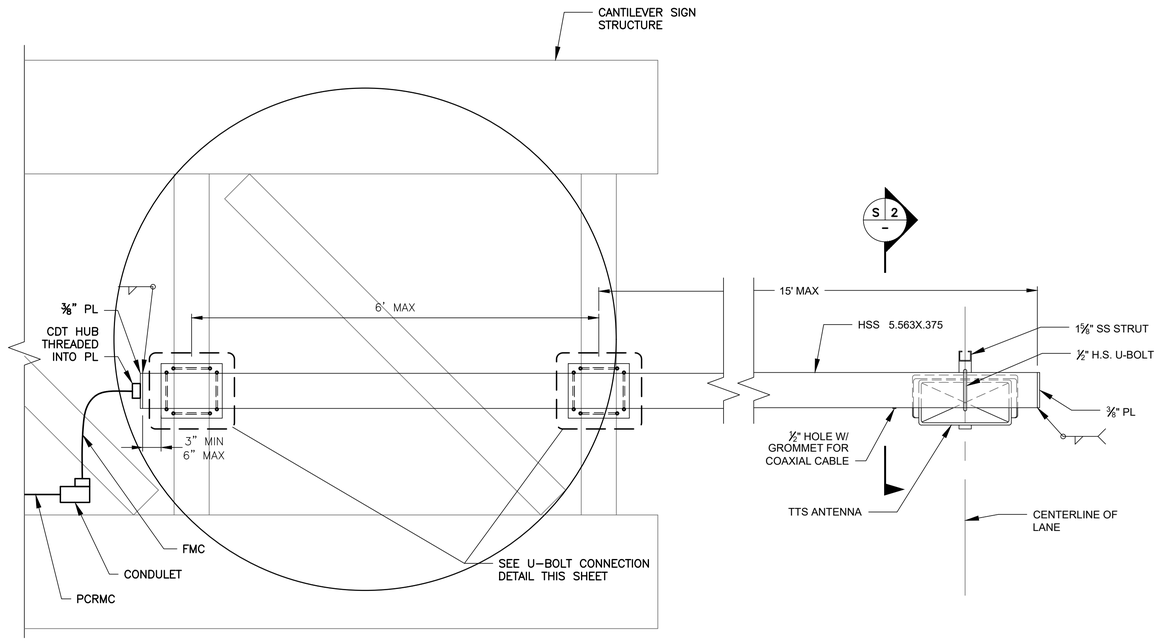


U-BOLT CONNECTION DETAIL

TD500.28.03

0 .5 1

SCALE IN FEET



S 2 –

CANTILEVER STRUCTURE ANTENNA MAST ARM MOUNTING ELEVATION

TD500.27.04

0 1 2

SCALE IN FEET

Sheet 28 of

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

TRAVEL TIME SUBSYSTEM DETAILS - 5

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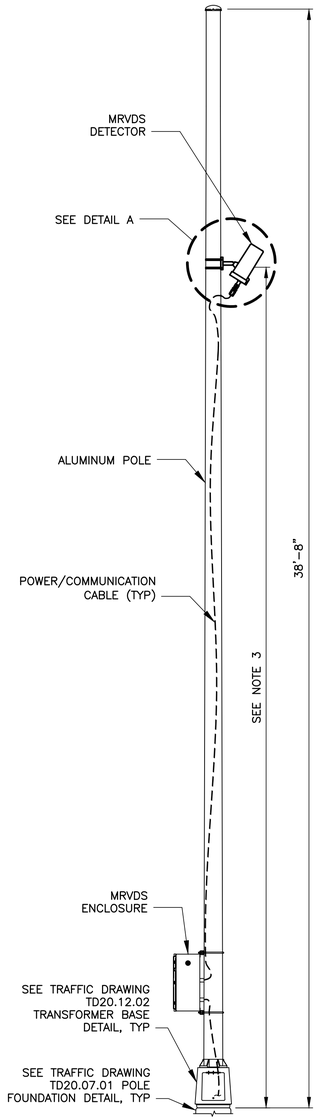
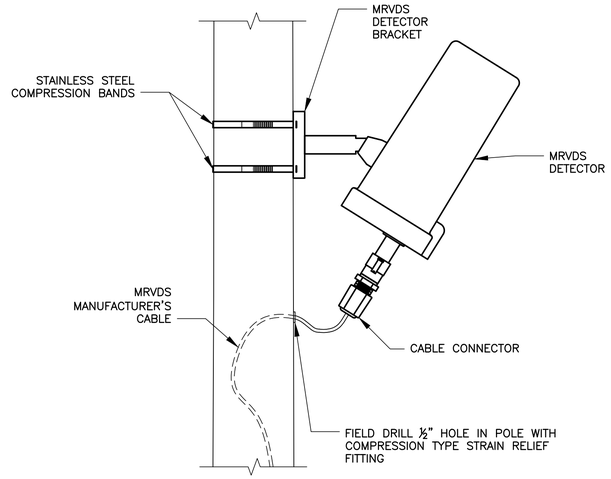


MRVDS - POLE MOUNTED

TD500.29.01

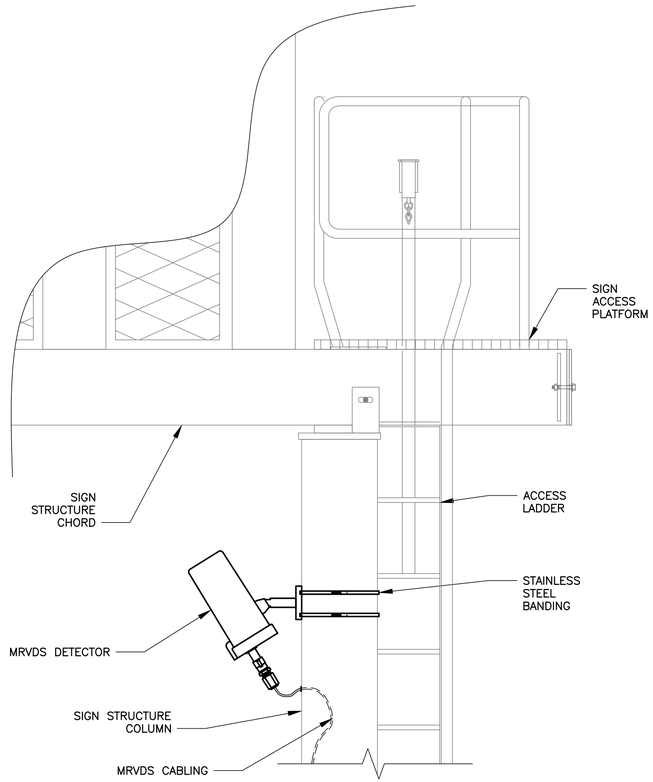
0 3 6

SCALE IN FEET



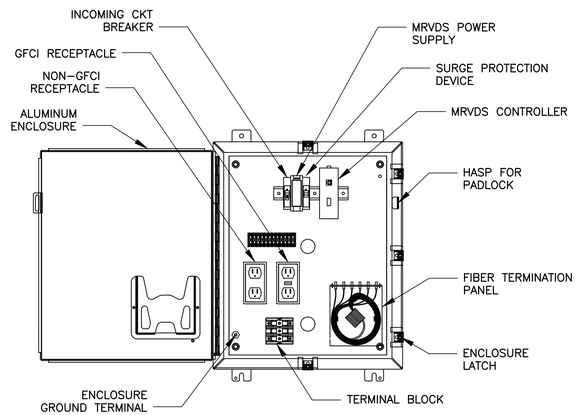
DETAIL A

NTS



MRVDS DETECTOR ON SIGN STRUCTURE

NTS TD500.29.02



POLE MOUNTED MRVDS ENCLOSURE

TD500.29.03

0 .5 1 2

SCALE IN FEET

Sheet 29 of

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

MICROWAVE RADAR VEHICLE DETECTOR SUBSYSTEM

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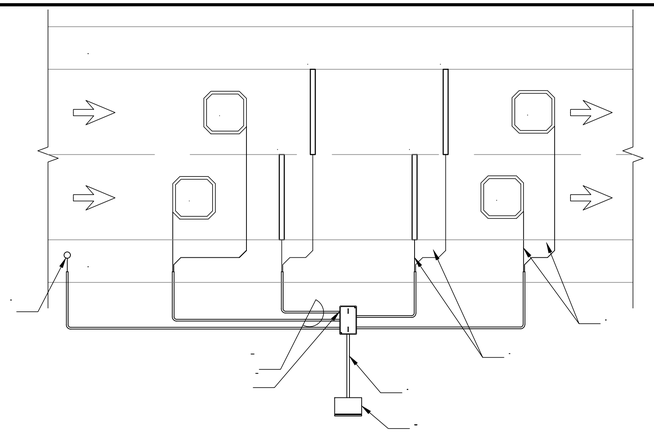
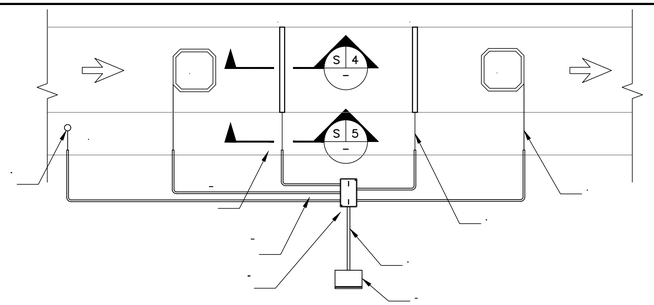


2 LANE SENSOR LAYOUT PLAN

0 12 24

SCALE IN FEET

TD500.30.03

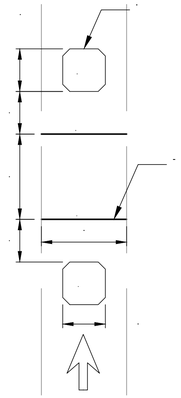


1 LANE SENSOR LAYOUT PLAN

0 12 24

SCALE IN FEET

TD500.30.04



TYPICAL SENSOR LAYOUT PLAN FOR WEIGH-IN-MOTION SITES

0 12 24

SCALE IN FEET

TD500.30.02

NOTES:

1. IDENTIFY EACH LOOP AND PIEZOELECTRIC SENSOR WITH DURABLE IDENTIFICATION TAGS. AFFIX THE LETTERS AS FOLLOWS:

a) TAG THE LEADING LOOP AS "L1" AND LEADING PIEZOELECTRIC SENSOR AS "P1"(RIGHT MOST TRAVELING LANE) AND TAG THE ENDING LOOP AS "L2" AND THE ENDING PIEZOELECTRIC SENSOR AS "P2" IN THE SAME LANE.

b) IDENTIFY LOOPS AND SENSORS IN GROUPS, WITH THE LEADING LOOP AND SENSOR IN THE DIRECTION OF TRAVEL ALWAYS IDENTIFIED BY THE FIRST NUMBER IN THE GROUP. ASSIGN THE GROUPS BY LANE, IN ASCENDING NUMERICAL ORDER, OUTWARD TOWARD THE LEFT MOST TRAVELING LANE.

c) DESIGNATE ADDITIONAL LOOPS AND SENSORS IN THE OPPOSITE DIRECTION IN A SIMILAR FASHION, WITH THE RIGHT MOST LANE IDENTIFIED WITH THE NEXT NUMERICAL NUMBER AND ASCENDING TO THE LEFT MOST TRAVELING LANE.

2. TYPICAL SENSOR SPACING IS SHOWN. ACTUAL SENSORS SHALL BE SPACED ACCORDING TO THE ROAD GEOMETRY AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

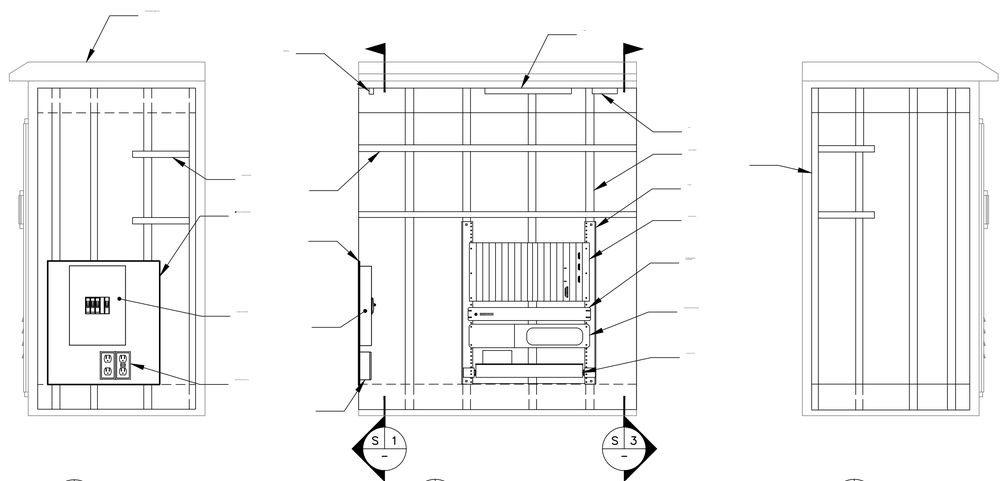
3. USE THIN WALLED PLASTIC TUBING TO CONTAIN THE SENSOR LEAD WIRE. INSTALL THE TUBING FROM THE END OF THE SENSOR SLOT TO A POINT 6-12 INCHES INSIDE THE JUNCTION BOX OR CONDUIT END.

4. PROVIDE EACH SENSOR WITH A SUFFICIENT LENGTH OF SHIELDED LEAD CABLE FOR TERMINATION AT THE CONTROLLER IN THE WIM CABINET WITHOUT SPLICING.

5. INSTALL TEMPERATURE SENSOR IN SHOULDER PER MANUFACTURER'S RECOMMENDATION. SUPPLY ONE TEMPERATURE SENSOR PER WIM CABINET.

6. REFER TO TRAFFIC STANDARD DETAILS TD20.26 FOR LOOP DETECTOR INSTALLATION DETAILS.

7. CCTV AND STILL CAMERAS MAY BE INSTALLED AS PART OF THE WIM SYSTEM. INSTALL ALL CAMERAS AS SHOWN ON THE CONTRACT DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



S 1 LEFT WALL

S 2 REAR WALL

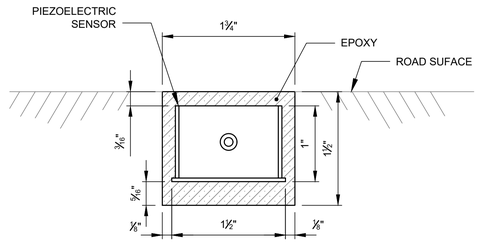
S 3 RIGHT WALL

WIM CABINET EQUIPMENT LAYOUT

0 1 2

SCALE IN FEET

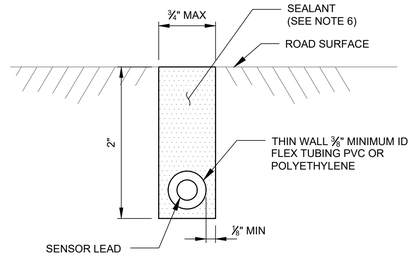
TD500.30.01



S 4 SECTION

0 1 2 3

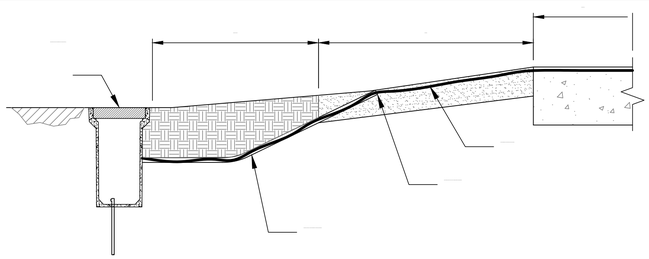
SCALE IN INCHES



S 5 SECTION

0 1 2 3

SCALE IN INCHES



LOOP LEAD/SENSOR LEAD CABLE ROUTING DETAILS

0 2 4

SCALE IN FEET

TD500.30.05

Sheet 30 of

PORT AUTHORITY NY NJ

AIR LAND RAIL SEA

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

WEIGH-IN-MOTION DETAILS - 1 (PIEZOELECTRIC SENSOR)

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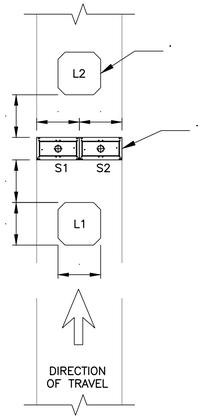
Date 07 / 15 / 2024

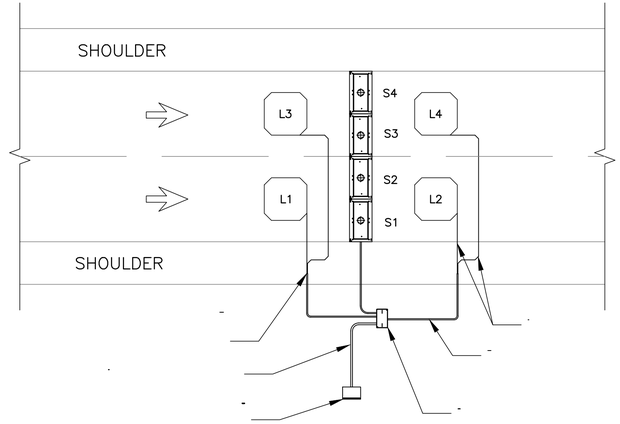
Drawing Number TD500.30



SINGLE LANE LOAD CELL LAYOUT PLAN

TD500.31.01

0 12 24
SCALE IN FEET



2 LANE LOAD CELL LAYOUT PLAN

TD500.31.02

0 12 24
SCALE IN FEET

NOTES:

1. IDENTIFY EACH LOOP AND SINGLE LOAD CELL SENSOR WITH DURABLE IDENTIFICATION TAGS. AFFIX THE LETTERS AS FOLLOWS:

a) TAG THE LEADING LOOP AS "L1" (RIGHT MOST TRAVELING LANE) AND TAG THE ENDING LOOP AS "L2" IN THE SAME LANE.

b) TAG THE RIGHT MOST SINGLE LOAD CELL SENSOR AS "S1" AND THE LEFT MOST SINGLE LOAD CELL AS "S2" IN THE SAME LANE. REPEAT THE TAGGING PROCESS FOR ANY ADDITIONAL LANES.

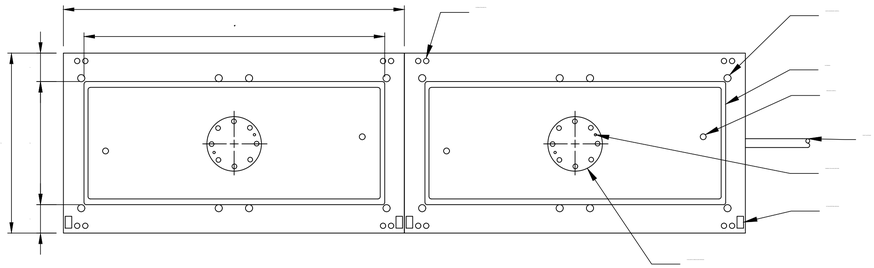
c) IDENTIFY LOOPS AND SENSORS IN GROUPS, WITH THE LEADING LOOP AND SENSOR IN THE DIRECTION OF TRAVEL ALWAYS IDENTIFIED BY THE FIRST NUMBER IN THE GROUP. ASSIGN THE GROUPS BY LANE, IN ASCENDING NUMERICAL ORDER, OUTWARD TOWARD THE LEFT MOST TRAVELING LANE.

d) DESIGNATE ADDITIONAL LOOPS AND SENSORS IN THE OPPOSITE DIRECTION IN A SIMILAR FASHION, WITH THE RIGHT MOST LANE IDENTIFIED WITH THE NEXT NUMERICAL NUMBER AND ASCENDING TO THE LEFT MOST TRAVELING LANE.

2. TYPICAL LAYOUT IS SHOWN. TYPE AND NUMBER OF SENSORS MAY BE REQUIRED TO SUIT SITE CONDITIONS AND MANUFACTURER'S RECOMMENDATION.
3. TYPICAL SENSOR SPACING IS SHOWN. ACTUAL SENSORS SHALL BE SPACED ACCORDING TO THE ROAD GEOMETRY AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. MAKE ALL CONNECTIONS BETWEEN SENSORS CABLES AND LEAD CABLES IN JUNCTION BOX.
5. CABLES MUST BE PROTECTED BY PVC SLEEVES WHERE THEY CROSS PAVEMENT JOINTS/CRACKS.
6. FOUNDATION SHOWN IS REPRESENTATIVE OF A TYPICAL LOAD CELL. VARIATIONS MAY BE REQUIRED AS DICTATED BY LOCAL GEOTECHNICAL CONDITIONS. SUBMIT ALL FOUNDATION DETAILS TO THE ENGINEER FOR APPROVAL.
7. INSTALL 1⅛"x16" EPOXY COATED DOWELS IN 1¼"x8" DEEP HOLE AT 16" ON CENTER. SECURE DOWELS WITH HILTI HVAA EPOXY OR APPROVED EQUAL.
8. REFER TO TRAFFIC STANDARD DETAILS TD500.33 FOR WIM CABINET EQUIPMENT LAYOUT.
9. REFER TO TRAFFIC STANDARD DETAILS TD20.26 FOR LOOP DETECTOR INSTALLATION.
10. DRAIN PIPE SHALL BE MIN 3% SLOPED TOWARD DRAINAGE PIT.

NOTES TO DESIGNER (REMOVE FROM DRAWING)

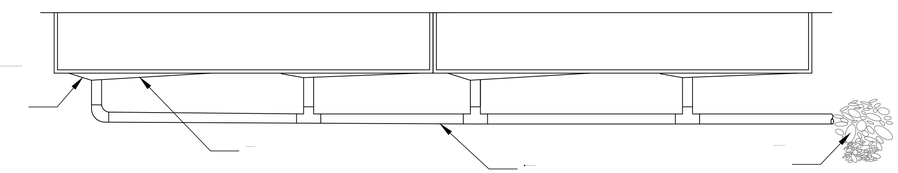
1. CCTV AND STILL CAMERAS MAY BE INSTALLED AS PART OF THE WIM SYSTEM. VERIFY ALL CAMERAS ARE SHOWN ON THE CONTRACT DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



SINGLE LOAD CELL PLAN

TD500.31.03

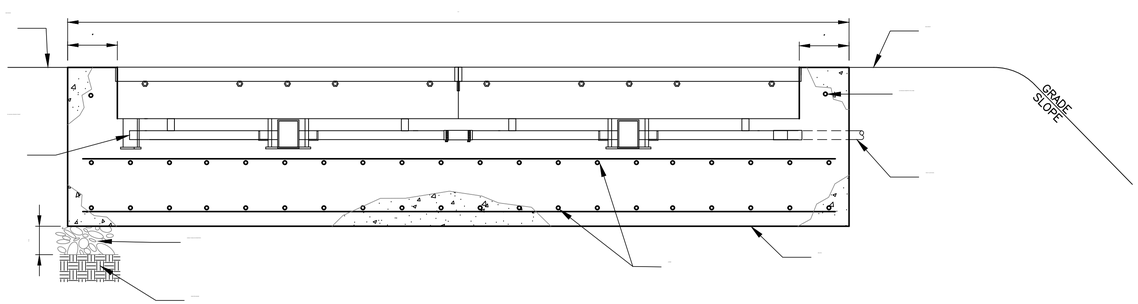
0 1 2 3
SCALE IN FEET



DRAIN DETAIL

TD500.31.05

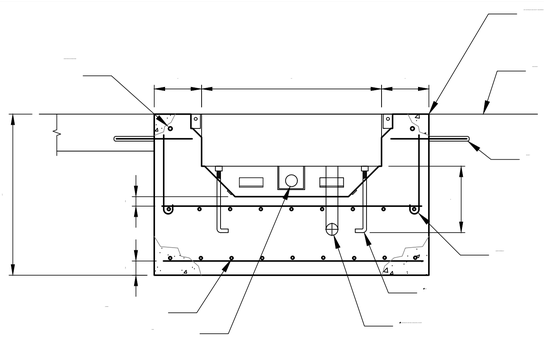
0 1 2 3
SCALE IN FEET



SINGLE LOAD CELL SIDE VIEW

TD500.31.04

0 1 2 3
SCALE IN FEET



SINGLE LOAD CELL SIDE VIEW

TD500.31.06

0 1 2 3
SCALE IN FEET

Sheet 31 of

PORT AUTHORITY NY NJ
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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

WEIGH-IN-MOTION DETAILS - 2 (SINGLE LOAD CELL SENSOR)

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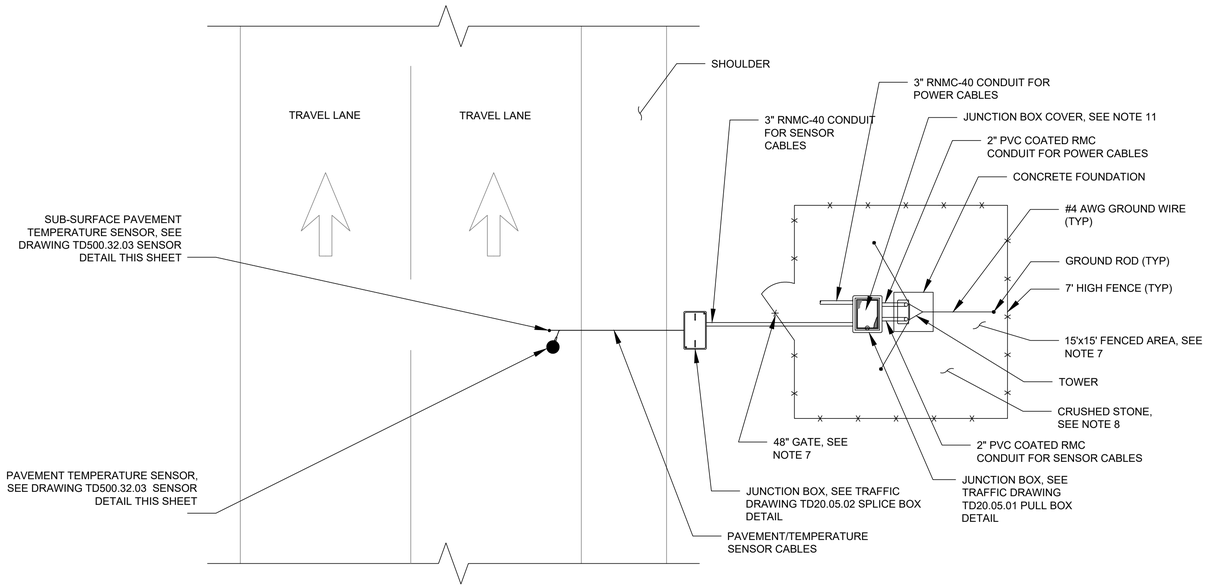
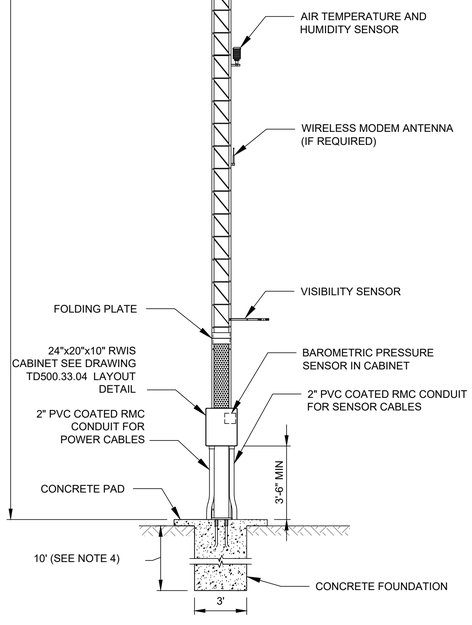


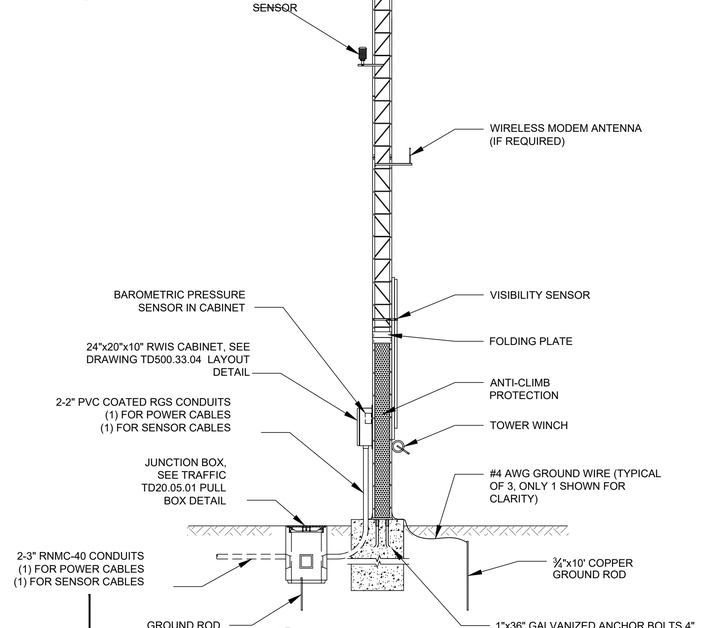
ROAD WEATHER INFORMATION SYSTEM PLAN

TD500.32.02

0 6 12
SCALE IN FEET



E 1 FRONT ELEVATION



E 2 SIDE ELEVATION

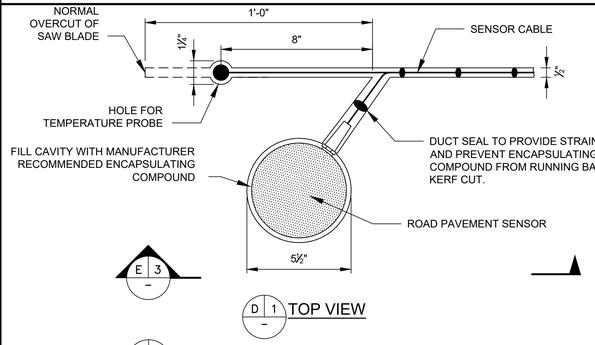
ROAD WEATHER INFORMATION SYSTEM TOWER

TD500.32.01

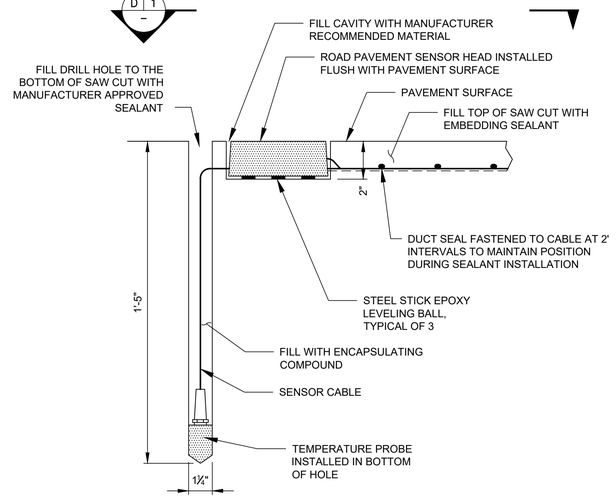
0 4 8
SCALE IN FEET

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. ROAD WEATHER INFORMATION SYSTEM TOWER SHALL BE INSTALLED AT LEAST 30 FEET AWAY FROM THE NEAREST TRAVELING LANES TO AVOID INACCURATE WIND SPEED CALCULATIONS. SLIGHT RELOCATIONS ARE PERMITTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND APPROVAL OF THE ENGINEER.
3. GROUND RESISTANCE SHOULD MEET CRITERIA IN SPECIFICATION SECTION 16450, AS SPECIFIED BY THE MANUFACURER, OR AS SPECIFIED IN THE NEC. WHICHEVER IS MOST STRINGENT.
4. TYPICAL FOUNDATION DETAIL SHOWN. FOUNDATION SHALL BE DESIGNED BASED UPON THE LOCAL GEOTECHNICAL CONDITIONS. SUBMIT ALL FOUNDATION DETAILS TO THE ENGINEER FOR APPROVAL.
5. TYPE SIZE AND NUMBER OF ANCHOR BOLTS SHALL BE DETERMINED BY THE RWIS MANUFACTURER.
6. BOTH ENDS OF THE CONDUITS BETWEEN JUNCTION BOXES AND THE RWIS CABINET SHOULD BE SEALED WITH FOAM OR WIRE MESH TO PREVENT RODENT INTRUSION.
7. FENCE AND GATE SHALL BE GALVANIZED COATED EXCEPT FOR PORT FACILITIES WHERE IT SHALL BE ALUMINUM COATED. REFER TO SPECIFICATION SECTION 02832, METALLIC-COATED STEEL CHAIN LINK FENCE AND GATES FOR FURNISHING AND INSTALLATION REQUIREMENTS.
8. FENCED AREA SHALL BE COVERED WITH A WEED BLOCKING MATERIAL AND A 6" THICK LAYER OF CRUSHED STONE.
9. PAVEMENT AND SUB-SURFACE TEMPERATURE SENSORS SHALL BE LOCATED IN THE TRAVEL LANE AS PER THE MANUFACTURER'S RECOMMENDATIONS.
10. MAXIMUM CABLE DISTANCE BETWEEN SENSORS (TEMPERATURE AND PAVEMENT) AND THE RWIS CABINET IS 5000 FEET.
11. JUNCTION BOX COVER TO BE EMBOSSED WITH THE FOLLOWING 2" LETTERS: "PA E/C"



E 3 D 1 TOP VIEW



E 3 SIDE VIEW

ROAD PAVEMENT AND SUBSURFACE PAVEMENT TEMPERATURE SENSOR DETAILS

TD500.32.03

0 .25 .5 1
SCALE IN FEET

Sheet 32 of

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

ROAD WEATHER INFORMATION SUBSYSTEM DETAILS - 1

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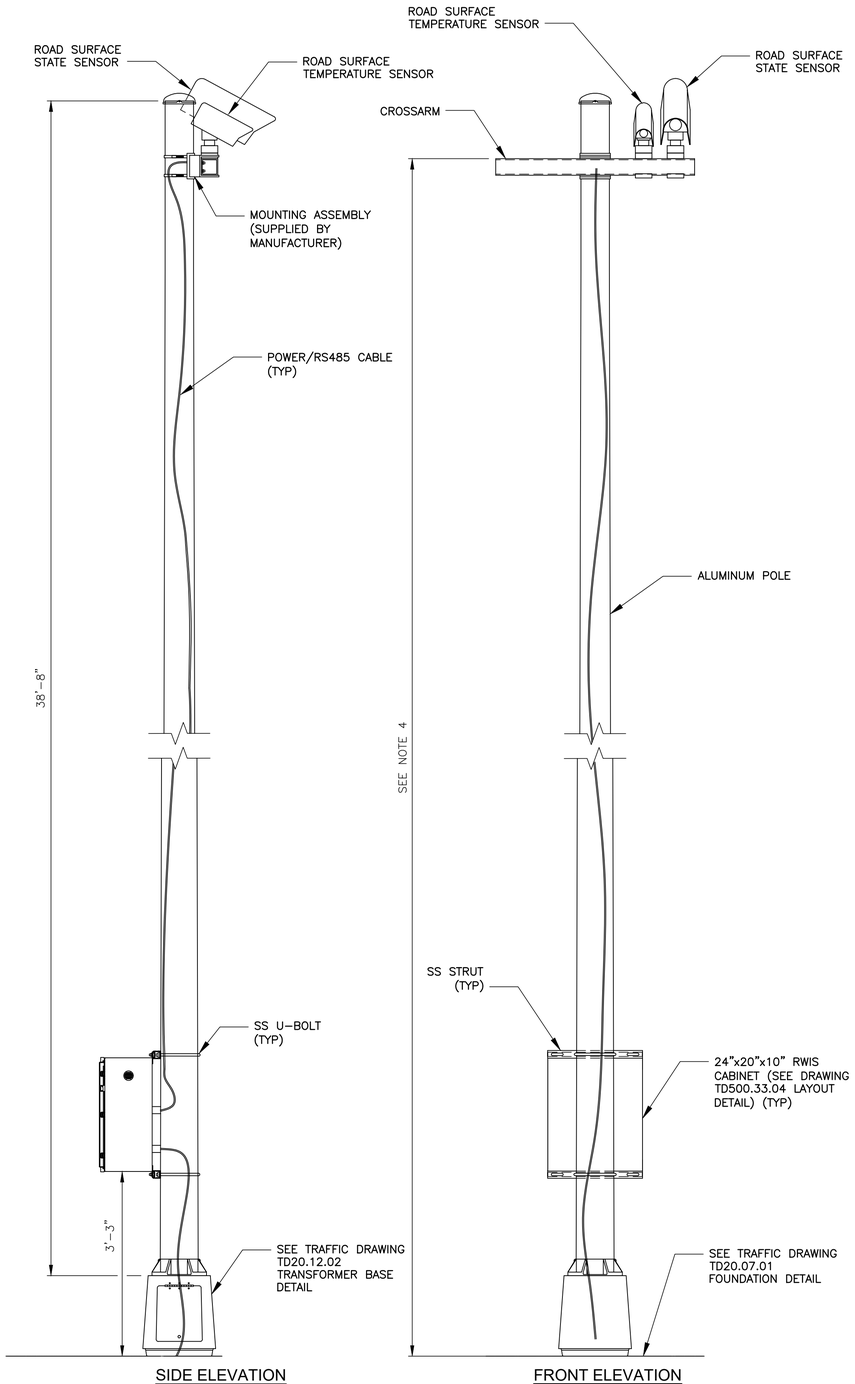
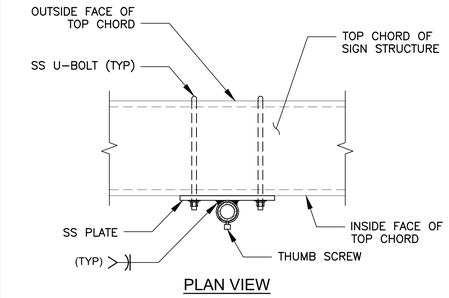


POLE MOUNTED NON-INTRUSIVE SENSOR

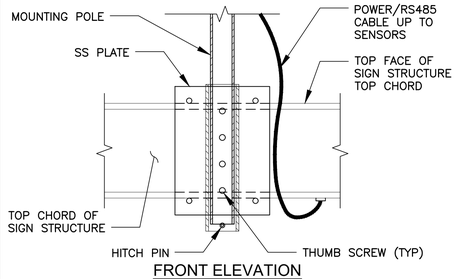
TD500.34.01

0 1 2

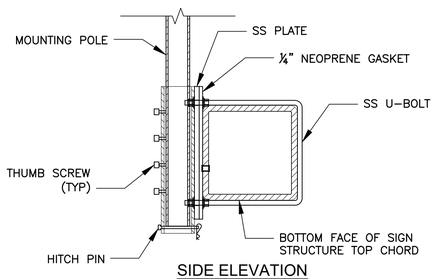
SCALE IN FEET



PLAN VIEW



FRONT ELEVATION



SIDE ELEVATION

POLE MOUNTING DETAIL

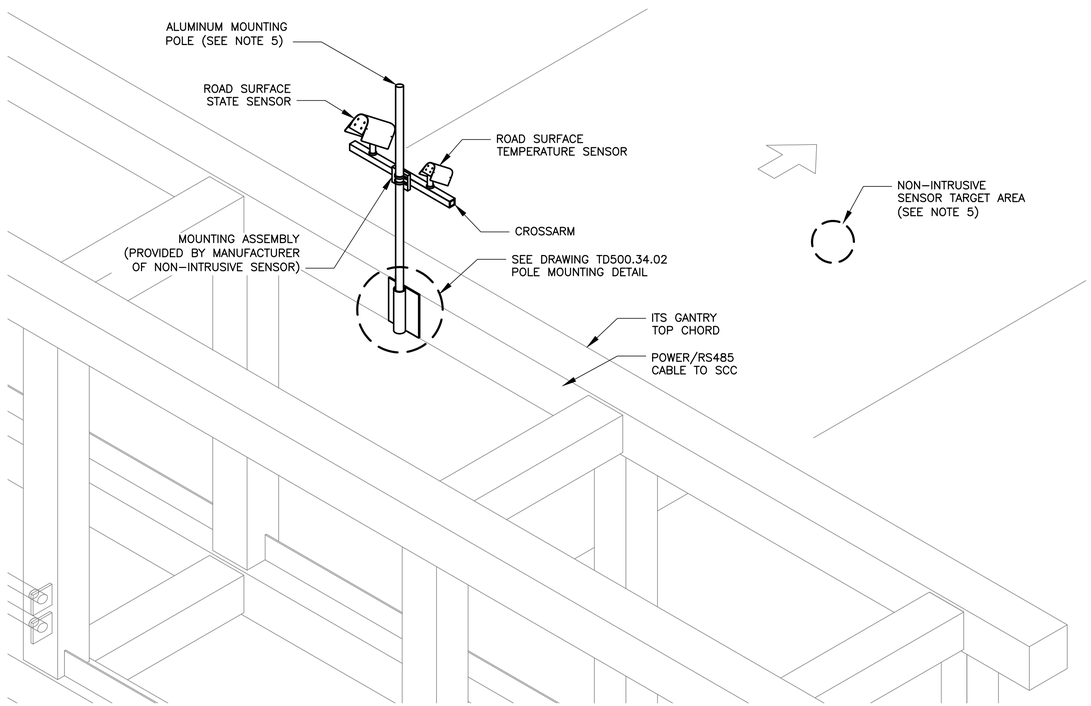
TD500.34.02

0 .5 1 2

SCALE IN FEET

NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. THIS DETAIL IS TO BE USED FOR NON-INTRUSIVE SENSOR INSTALLATION ON THE POLE OR ITS GANTRY ONLY.
3. THE ROAD SURFACE STATE AND TEMPERATURE SENSORS SHALL BE POSITIONED TO HAVE A LINE OF SITE OF THE PAVEMENT SURFACE TARGET AREA.
4. THE SENSOR MOUNTING HEIGHT AND POLE SET BACK DISTANCE FROM EDGE OF THE NEAREST TRAVELING LANE SHALL BE AS RECOMMENDED BY THE MANUFACTURER TO PROVIDE A CLEAR AND UNOBSTRUCTED VIEW OF THE PAVEMENT.
5. THE POLE HEIGHT SHALL BE DETERMINED BASED ON THE ITS GANTRY HEIGHT AND SENSOR'S MOUNTING HEIGHT AS RECOMMENDED BY THE MANUFACTURER TO PROVIDE A CLEAR AND UNOBSTRUCTED VIEW OF THE PAVEMENT.
6. PROVIDE GROUNDING CONDUCTORS FOR POLE AND CABINET IN ACCORDANCE WITH THE NEC.
7. ALL HARDWARE AND MATERIAL SHALL BE STAINLESS STEEL.



ITS GANTRY MOUNTED SENSOR DETAIL

TD500.34.03

0 .5 1 2

SCALE IN FEET

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

ROAD WEATHER INFORMATION SUBSYSTEM DETAILS - 3

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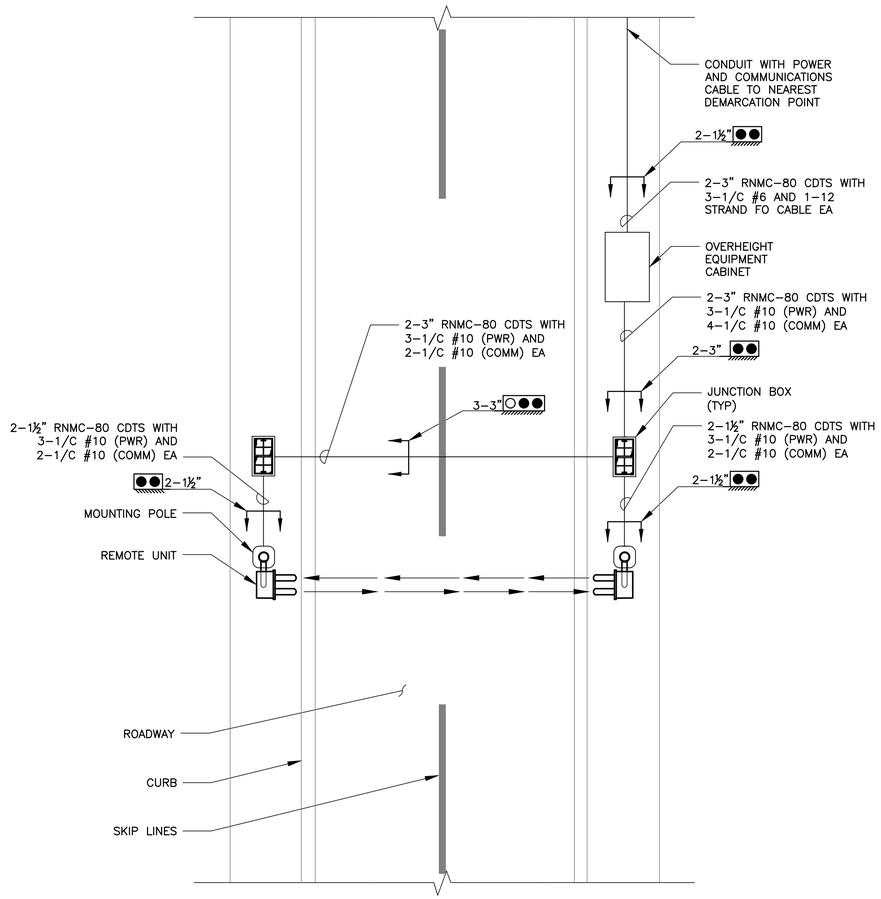
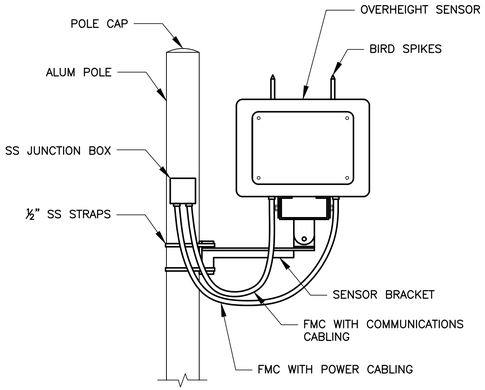


TYPICAL SITE PLAN

TD500.37.01

0 4 8

SCALE IN FEET

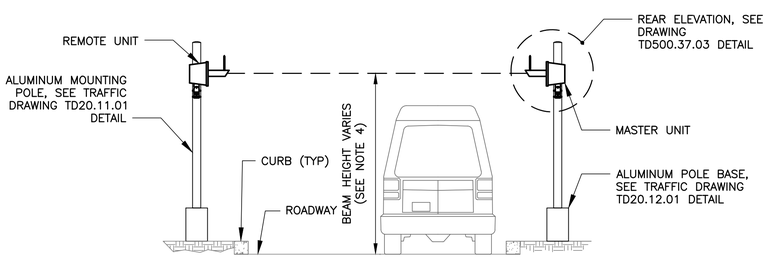


REAR ELEVATION DETAIL

TD500.37.03

0 1 2

SCALE IN FEET

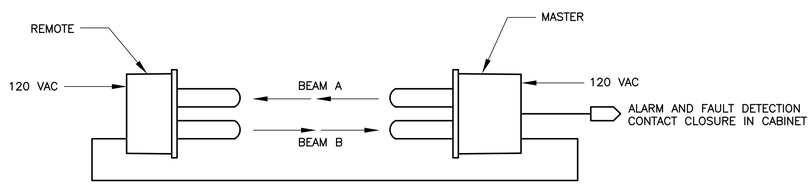


TYPICAL ELEVATION

TD500.37.02

0 4 8

SCALE IN FEET



OVERHEIGHT WIRING DIAGRAM

NTS

TD500.37.04

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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

OVERHEIGHT DETECTION DETAILS - 1

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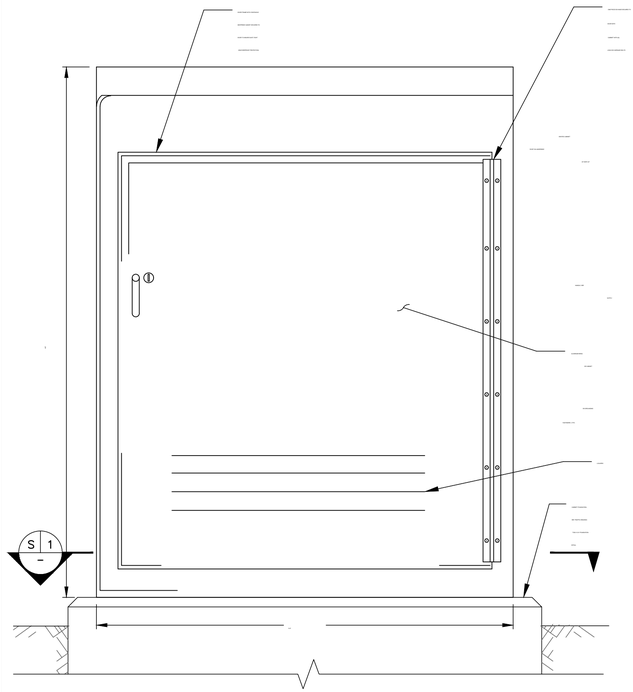
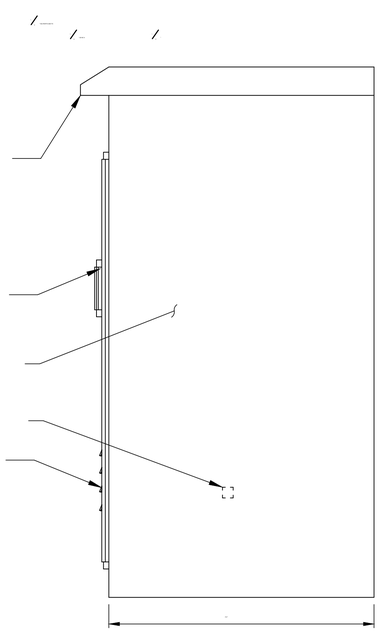
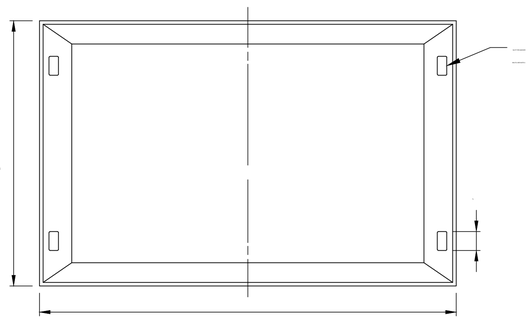


E 1 - FRONT ELEVATION



E 2 - SIDE ELEVATION



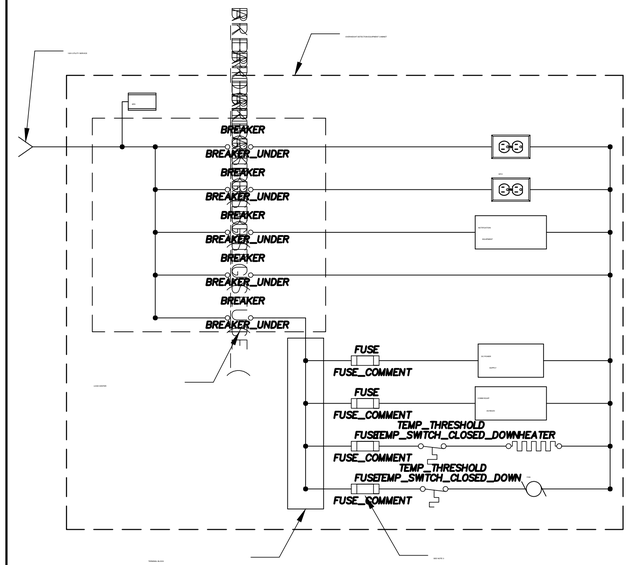
S 1 - BOTTOM VIEW / ANCHOR BOLT LAYOUT

OVERHEIGHT DETECTION CABINET

TD500.38.01

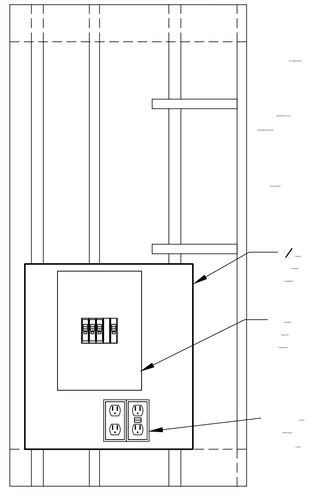
0 .5 1 2

SCALE IN FEET

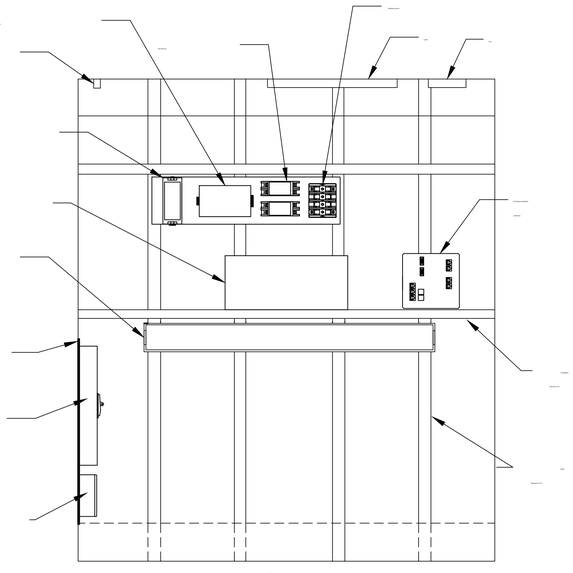


OVERHEIGHT DETECTION CABINET POWER DIAGRAM

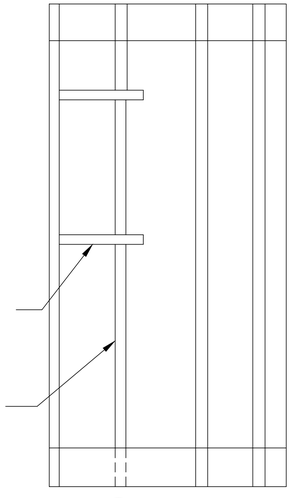
TD500.38.03



E 3 - LEFT WALL



E 4 - REAR WALL



E 5 - RIGHT WALL

OVERHEIGHT DETECTION CABINET EQUIPMENT LAYOUT

TD500.38.02

0 .5 1 2

SCALE IN FEET

Sheet 38 of

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

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Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

OVERHEIGHT DETECTION DETAILS - 2

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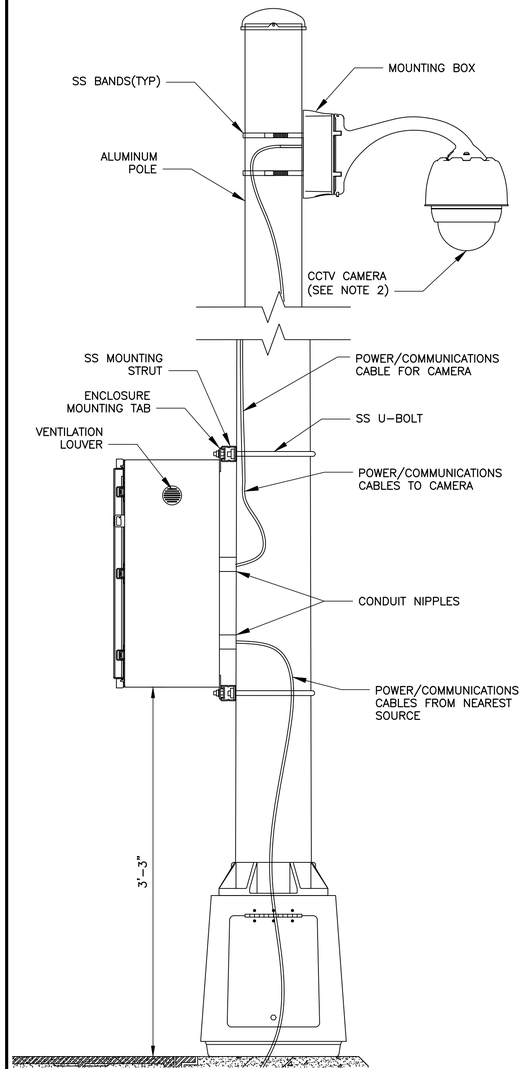
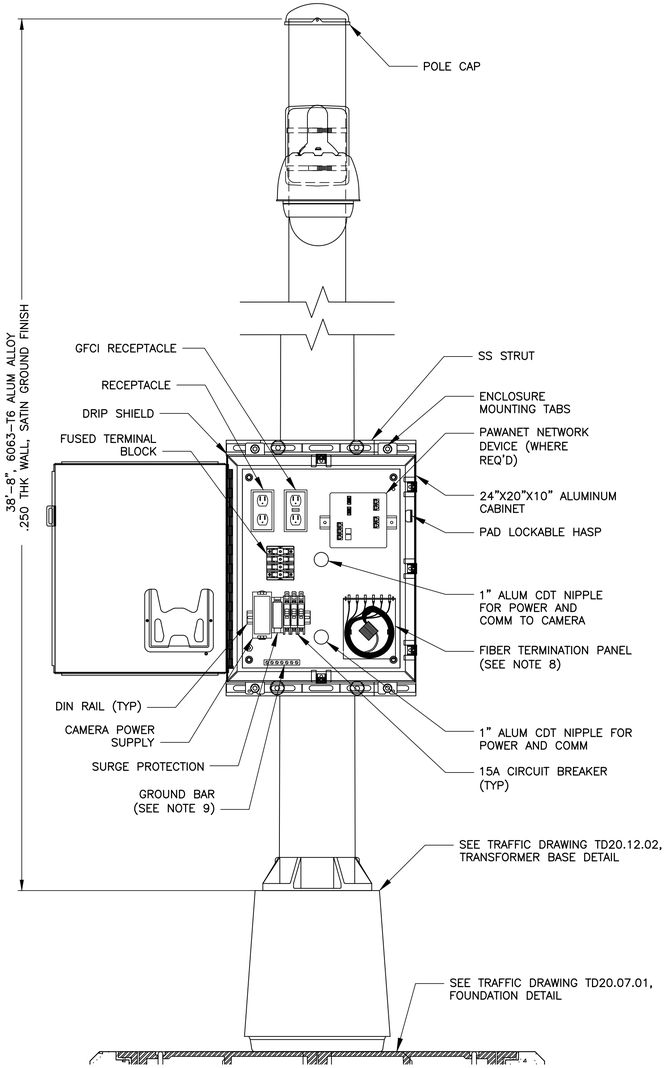
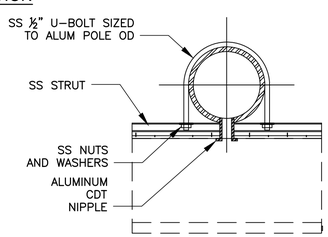


SIDE ELEVATION



FRONT ELEVATION



PLAN

POLE MOUNTED CCTV CAMERA - CABINET LAYOUT/MOUNTING DETAILS

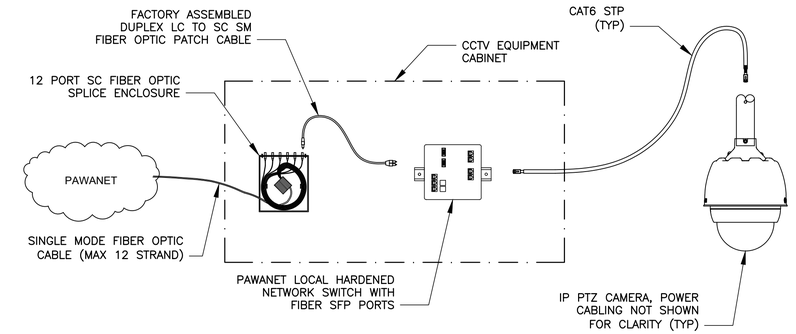
TD500.39.01

0 .5 1 2

SCALE IN FEET

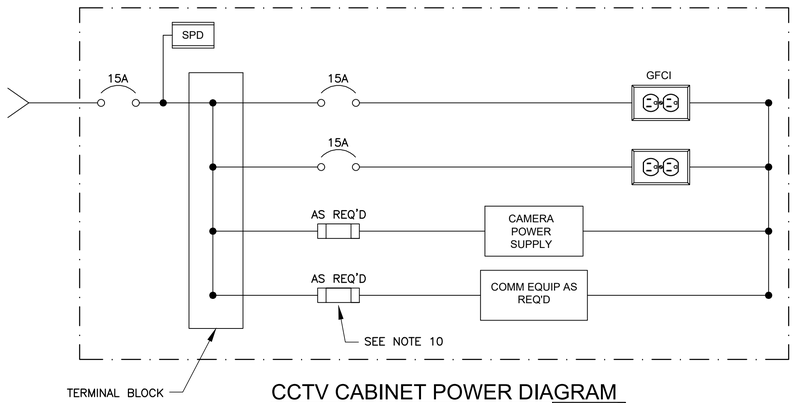
NOTES:

1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. THE TRAFFIC SURVEILLANCE CCTV CAMERA SHALL BE A DAY/NIGHT COLOR MODEL HOUSED IN AN ENVIRONMENTALLY SEALED ENCLOSURE. THE CAMERA SHALL HAVE PAN, TILT, AND ZOOM CAPABILITIES TO ADJUST FOR THE DESIRED FIELD OF VIEW.
3. THE CAMERA SHALL BE MOUNTED ON A QUICK DISCONNECT MAST FOR EASE OF MAINTENANCE.
4. CCTV CAMERA MOUNTING HEIGHT SHALL BE SELECTED TO PROVIDE THE OPTIMAL FIELD OF VIEW. POLE HEIGHT SHALL BE A MINIMUM OF 38'-8" UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
5. SECURE THE CABINET TO THE POLE UTILIZING STAINLESS STEEL U-BOLTS. CABLING SHALL ENTER THROUGH FIELD DRILLED AND TAPPED 1" ALUMINUM CONDUIT NIPPLES. ALL OTHER HARDWARE SHALL BE STAINLESS STEEL UNLESS OTHERWISE NOTED. SEAL CONDUIT PENETRATIONS WITH NON-SHRINK UV RESISTANT SILICONE TO PREVENT WATER FROM ENTERING THE ENCLOSURE AND POLE.
6. ORIENT THE CCTV CABINET TO OPEN PERPENDICULAR TO EDGE OF THE NEAREST TRAVELING LANE WHEN INSTALLED NEAR ROADWAYS TO ALLOW FOR MAINTENANCE PERSONNEL TO SEE ONCOMING TRAFFIC WITH THE CABINET OPEN.
7. ARRANGEMENT 0F EQUIPMENT WITHIN THE CCTV CAMERA POLE MOUNTED CABINET IS DIAGRAMMATIC. FINAL PLACEMENT MAY REQUIRE MODIFICATIONS BASED ON EQUIPMENT APPROVED FOR USE BY THE ENGINEER.
8. FURNISH AND INSTALL FIBER JUMPER CABLES AND SC FIBER CONNECTORS TO CONNECT EQUIPMENT IN THE CABINET TO THE FIBER TERMINATION PANEL AS REQUIRED.
9. FURNISH AND INSTALL GROUNDING CONDUCTORS FOR POLE AND CABINET IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
10. FURNISH AND INSTALL FUSES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



COMMUNICATIONS BLOCK DIAGRAM

TD500.39.02



CCTV CABINET POWER DIAGRAM

TD500.39.03

CAMERA SCHEDULE

CAMERA NO.	LOCATION	VIEW	MOUNTING TYPE	REFERENCE DWG NO.
1	RT. 495 MP2.0	EASTBOUND TRAFFIC	40' POLE	TD002
2	RT. 495 MP2.0	WESTBOUND TRAFFIC	SIGN STRUCTURE	TD003
3	SAMPLE	SAMPLE	SAMPLE	SAMPLE

SAMPLE CAMERA SCHEDULE

TD500.39.04

Sheet 39 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

CCTV SURVEILLANCE SYSTEM DETAILS (POLE MOUNT)

DISCLAIMER:

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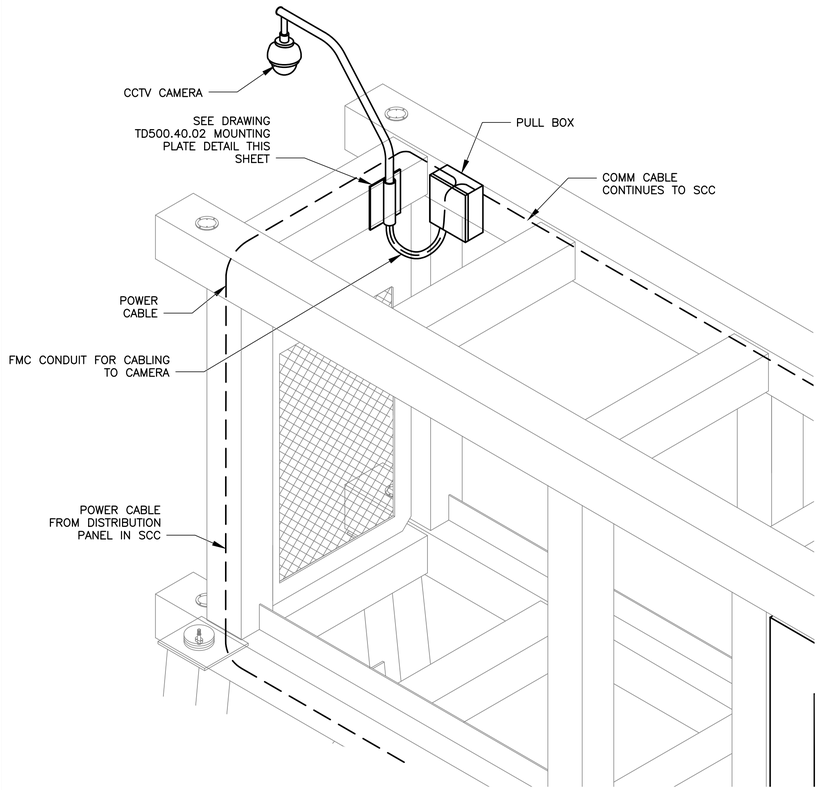
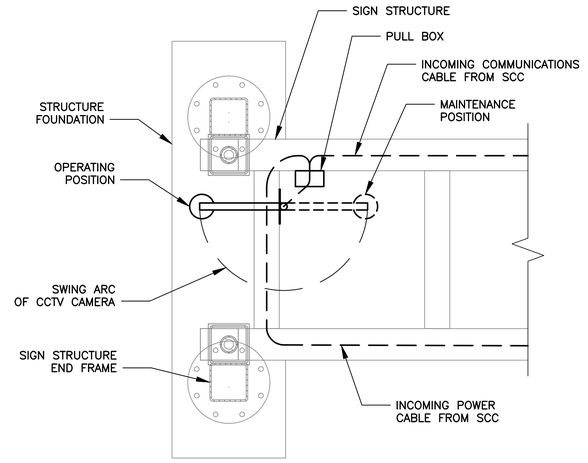
Date 07 / 15 / 2024

Drawing Number TD500.39



ISOMETRIC VIEW



PLAN VIEW

NOTES:

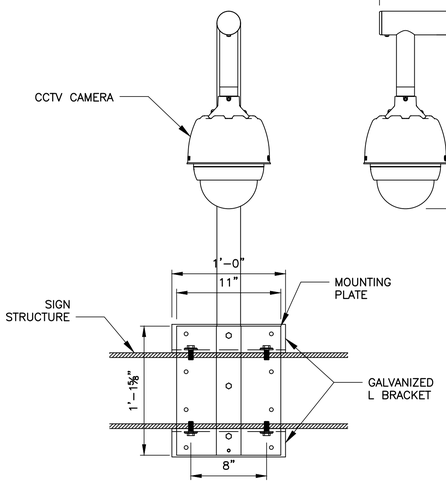
1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. THE CCTV CAMERA MOUNT SHALL ALLOW THE CAMERA TO BE LOWERED OR REMOVED WHEN IN MAINTENANCE POSITION.
3. THE CCTV CAMERA SHALL BE MOUNTED AT A MINIMUM HEIGHT OF 1'-0' ABOVE THE SIGN STRUCTURE.
4. IF THE CAMERA VIEW IS OBSTRUCTED BY LOCATING THE CAMERA AS SHOWN ON THESE DRAWINGS, SUBMIT AN ALTERNATE LOCATION FOR APPROVAL BY THE ENGINEER.
5. THE CAMERA MOUNT SHALL BE FURNISHED WITH HARDWARE FROM THE MANUFACTURER TO SECURE THE CAMERA MOUNTING POST INSIDE OF THE SLEEVE ON THE CAMERA MOUNTING PLATE.
6. A ¼" THICK NEOPRENE PAD SHALL BE FURNISHED AND INSTALLED BETWEEN THE CAMERA MOUNTING PLATE AND THE SIGN CHORD. IT SHALL BE LARGE ENOUGH TO COVER THE CONTACT SURFACE BETWEEN THE MOUNTING PLATE AND SIGN CHORD.
7. BOLTS SECURING THE MOUNTING PLATE SHALL NOT PROTRUDE INSIDE THE SIGN CHORD FURTHER THAN $\frac{1}{16}$".
8. MOUNTING HARDWARE FOR SECURING THE CAMERA MOUNT TO THE SIGN STRUCTURE SHALL BE STAINLESS STEEL TYPE 304 ASTM A193 GRADE B8.
9. ANGLE BRACKETS FOR SECURING THE CAMERA MOUNT TO THE SIGN STRUCTURE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM A36 AND BE HOT DIP GALVANIZED.

CCTV CAMERA MOUNTING - SIGN STRUCTURE

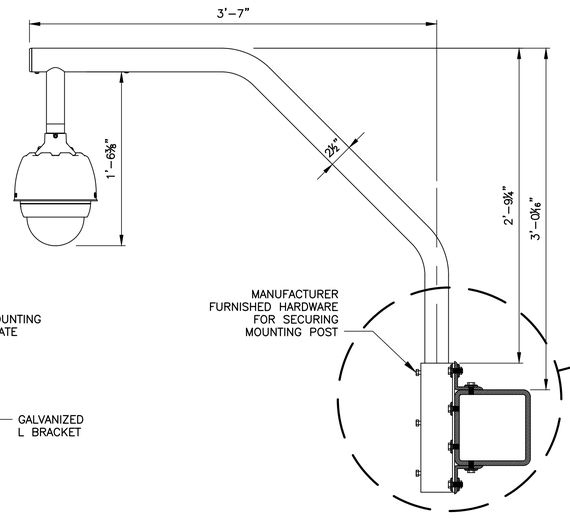
TD500.40.01

0 2 4

SCALE IN FEET



FRONT ELEVATION



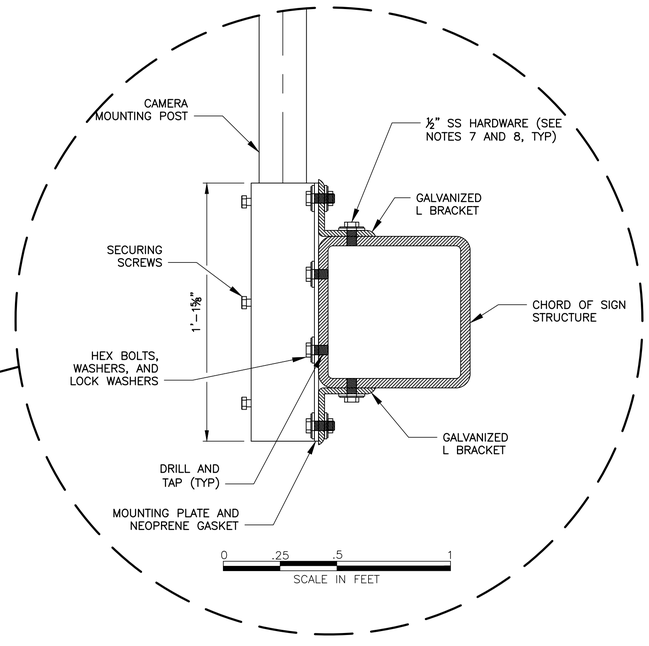
SIDE ELEVATION

MOUNTING DETAIL

TD500.40.02

0 .5 1 2

SCALE IN FEET



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1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

CCTV SURVEILLANCE SYSTEM DETAILS (STRUCTURE/GANTRY MOUNT)

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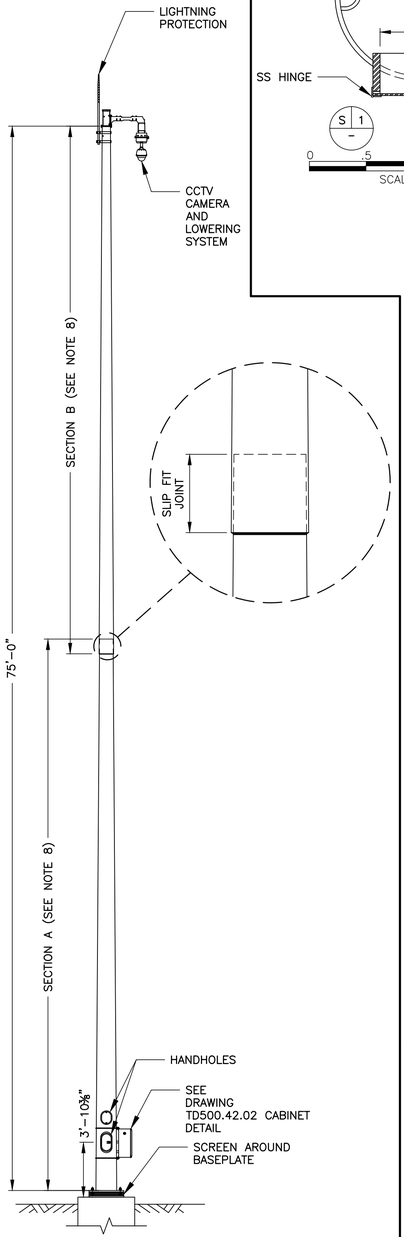
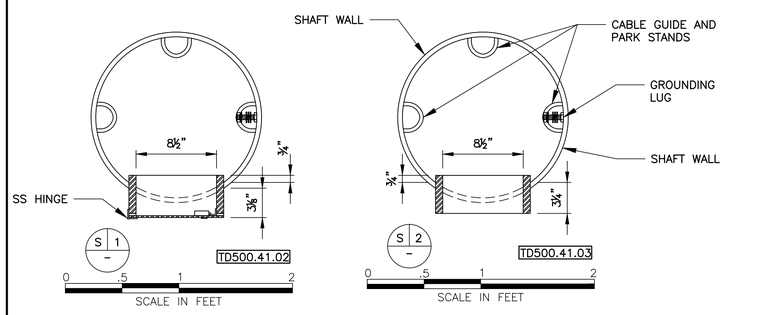
Drawing Number TD500.40

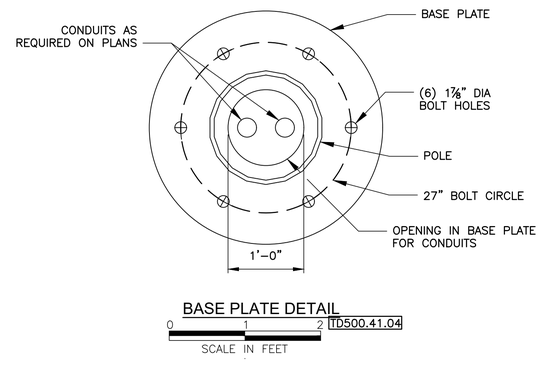


75' CAMERA POLE WITH LOWERING DEVICE

TD500.41.01

SCALE IN FEET



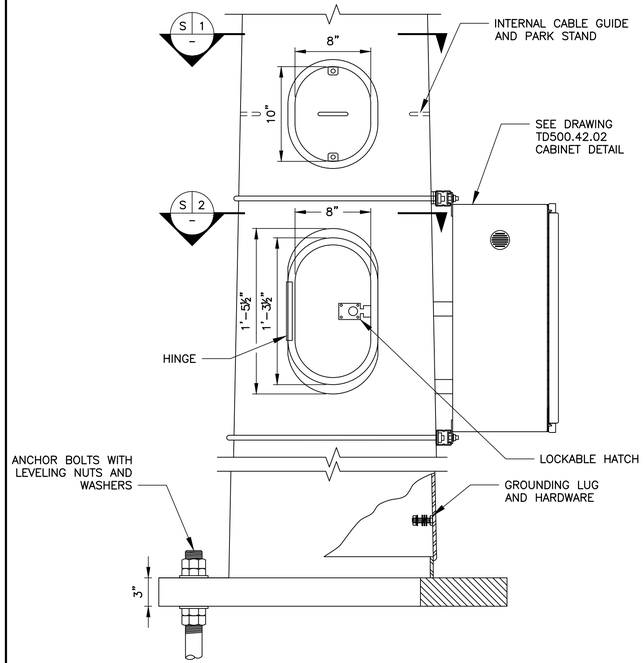


BASE PLATE DETAIL

TD500.41.04

0 1 2

SCALE IN FEET



BASE PLATE AND HANDHOLE DETAILS

TD500.41.05

0 .5 1 2

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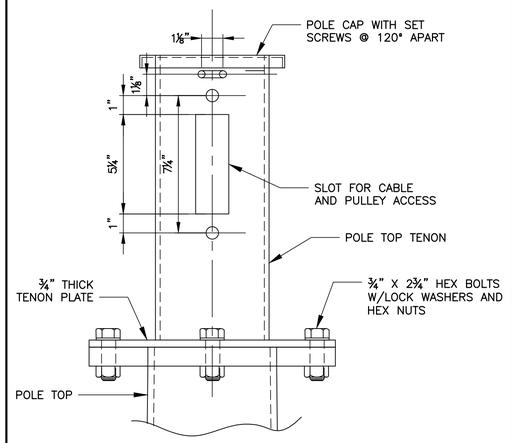
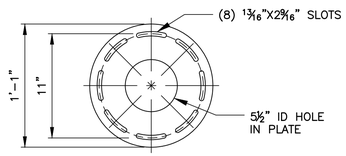


TOP CONNECTION DETAIL

TD500.41.06

0 .25 .5 1

SCALE IN FEET

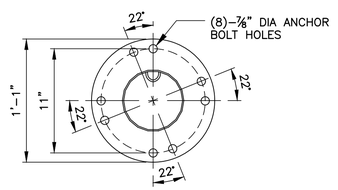


TENON PLATE DETAIL

TD500.41.07

0 .5 1 2

SCALE IN FEET

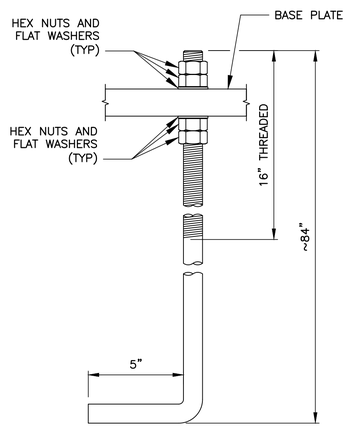


TOP PLATE DETAIL

TD500.41.08

0 .5 1 2

SCALE IN FEET



ANCHOR BOLT DETAIL

TD500.41.09

0 .25 .5 1

SCALE IN FEET

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PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

CCTV SURVEILLANCE SYSTEM DETAILS (POLE MOUNT W/ LOWERING DEVICE - 1)

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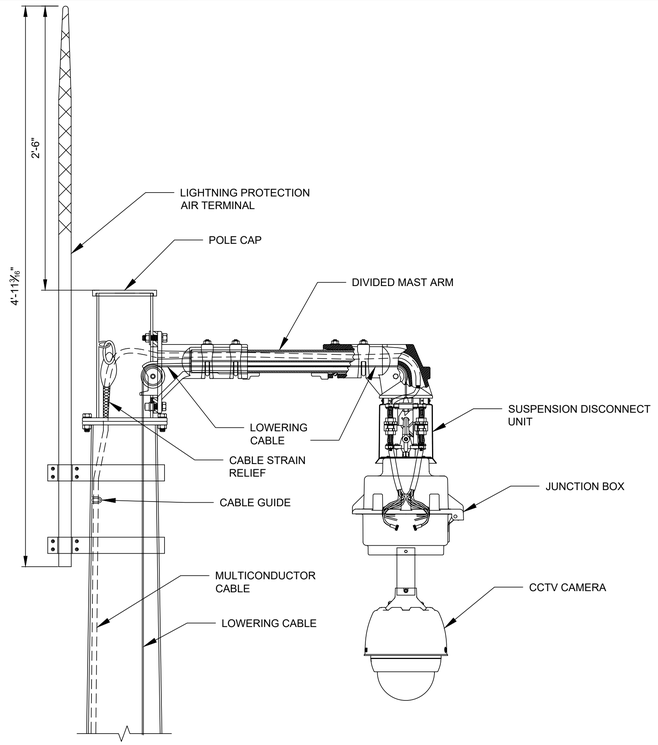
Drawing Number TD500.41

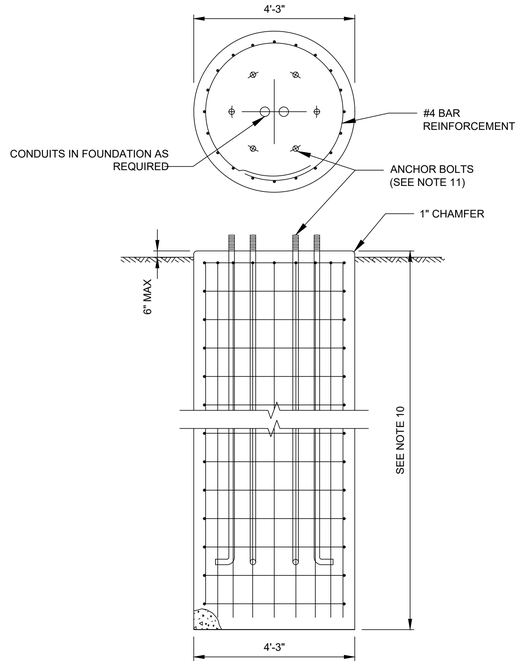


LOWERING DEVICE DETAIL

TD500.42.01

0 .5 1 2

SCALE IN FEET



FOUNDATION DETAIL

TD500.42.04

0 2 4

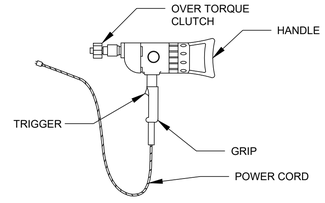
SCALE IN FEET

NOTES:

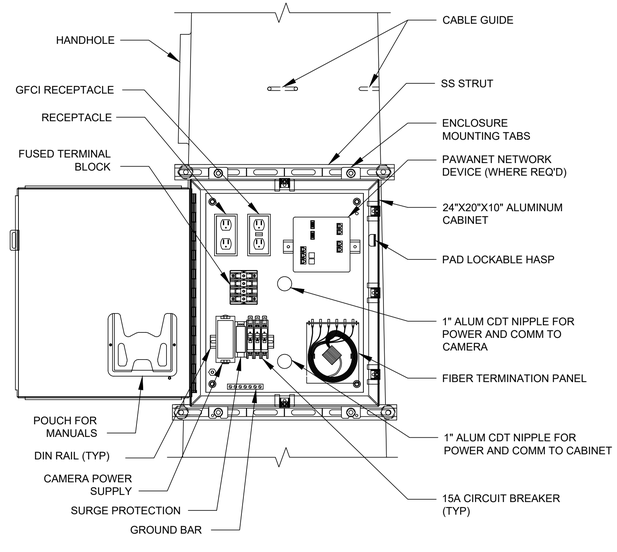
1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. FURNISH AND INSTALL SEALED, SELF LUBRICATED BEARINGS, OIL TIGHT BRONZE BEARINGS OR SINTERED BRONZE BUSHINGS WITH ALL PULLEYS FOR THE CAMERA LOWERING DEVICE AND PORTABLE LOWERING TOOL.
3. ENSURE THE LOWERING CABLE HAS A MINIMUM OF 1/8" DIAMETER STAINLESS STEEL AIRCRAFT CABLE WITH A MINIMUM BREAKING STRENGTH OF 1740 POUNDS WITH (7) STRANDS OF 19 WIRE EACH.
4. PROTECT ALL ELECTRICAL AND VIDEO COAXIAL CONNECTIONS BETWEEN THE FIXED AND LOWERABLE PORTION OF THE SUSPENSION DISCONNECT UNIT FROM EXPOSURE TO THE WEATHER WITH A WATERPROOF SEAL TO PREVENT DEGRADATION OF THE ELECTRICAL CONTACTS.
5. THE COMPOSITE SIGNAL CABLE SHALL CONTAIN THE FOLLOWING (AT A MINIMUM):

5.1. (1) RG6 75Ω COAXIAL CABLE OR (1) CATEGORY 5E CABLE
5.2. (3) #16 AWG POWER CABLES
5.3. (2) #18 AWG TWISTED PAIR WITH DRAIN

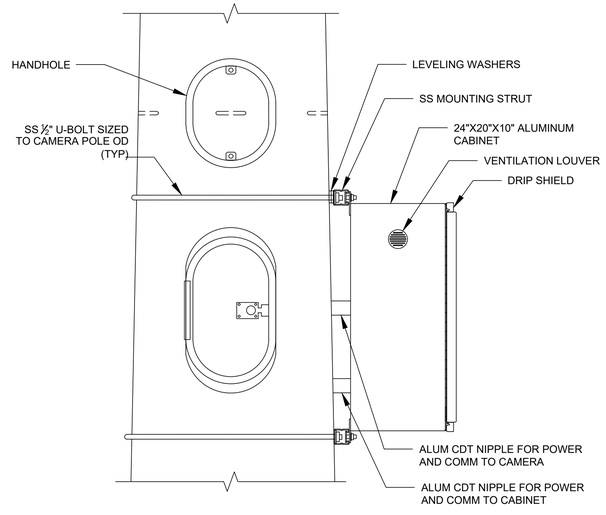
6. INTERFACE AND LOCKING COMPONENTS SHALL BE MADE OF STAINLESS STEEL.
7. ENSURE THE SUSPENSION DISCONNECT UNIT HAS LOAD CAPACITY OF 200 POUNDS WITH A MINIMUM OF 4 TO 1 SAFETY FACTOR.
8. SUPPLY AN ADAPTOR FOR A STANDARD 1/2" ELECTRIC DRILL CHUCK.
9. SUBMIT WINCH ASSEMBLY AND CAMERA CABINET ENCLOSURE MOUNTING DETAILS FOR APPROVAL.
10. THE LIGHTNING ROD SHALL BE ATTACHED TO THE POLE WITH A GROUNDING LUG EITHER UNDERNEATH THE POLE TOP DOME OR DIRECTLY TO THE POLE SHAFT. WHEN CONNECTED TO THE POLE SHAFT THE GROUNDING LUG SHALL BE WELDED TO THE POLE. COPPER CABLE CONNECTING THE ROD TO THE POLE SHALL BE BARE-COPPER.
11. THE DRILLED SHAFT LENGTH AND DIAMETER SHOWN IS REPRESENTATIVE OF A TYPICAL 75' CCTV CAMERA POLE FOUNDATION. LARGER DRILLED SHAFT DIAMETERS MAY BE REQUIRED AS DICTATED BY LOCAL GEOTECHNICAL CONDITIONS. SUBMIT ALL FOUNDATION DETAILS TO THE ENGINEER FOR APPROVAL.
12. POLE FABRICATOR SHALL FURNISH AND INSTALL STEEL ANCHOR BOLT TEMPLATE FOR FOUNDATION CONSTRUCTION.



1/2" REVERSIBLE DRILL



FRONT ELEVATION



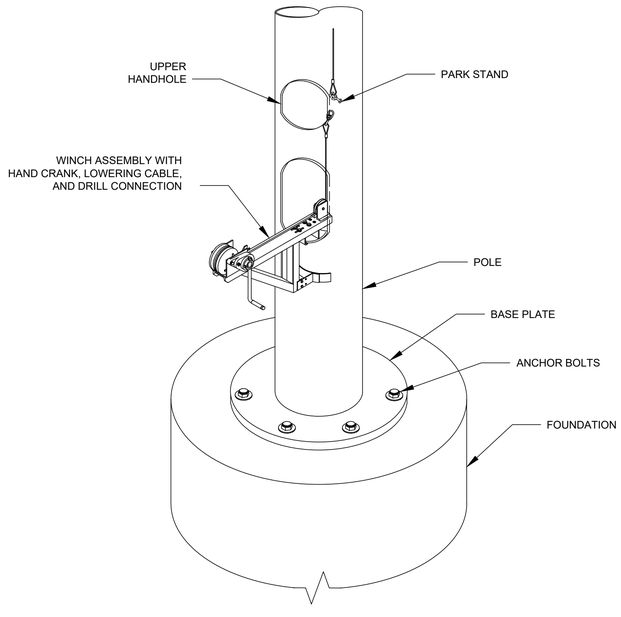
SIDE ELEVATION

POLE MOUNTED CABINET

TD500.42.02

0 .5 1 2

SCALE IN FEET



WINCH ASSEMBLY DETAIL

LOWERING ASSEMBLY DETAIL

TD500.42.03

0 1 2 3

SCALE IN FEET

Sheet 42 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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ORIGINAL SIGNEE

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No.	Date	Revision	Approved
1	06/27/2024	DISCLAIMER ADDED	

ENGINEERING DEPARTMENT

PANYNJ
DETAILS

TRAFFIC

Title
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

CCTV SURVEILLANCE SYSTEM DETAILS (POLE MOUNT W/ LOWERING DEVICE - 2)

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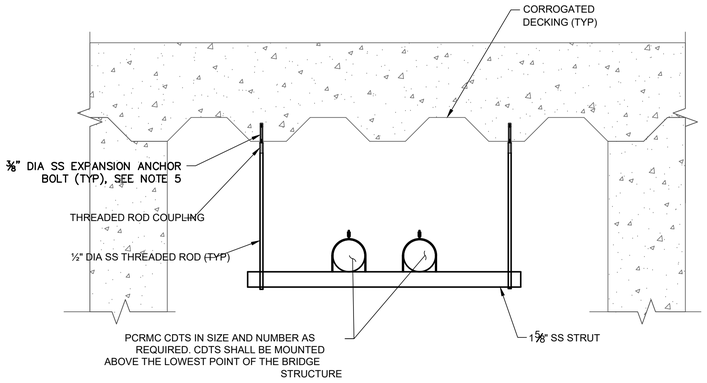
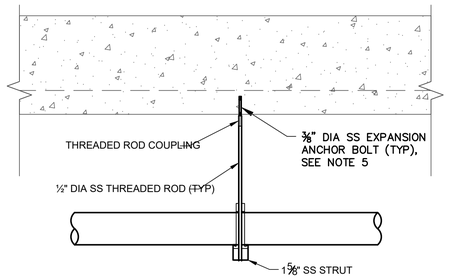
Drawing Number TD500.42



FRONT VIEW



PARTIAL SIDE VIEW

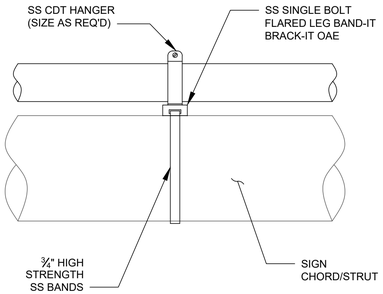
NOTES:

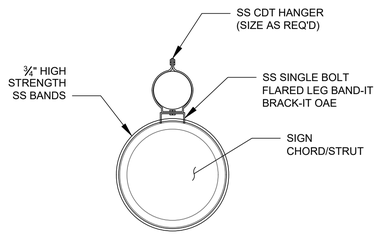
1. SEE DRAWING TD500.01 FOR ITS NOTES, LEGEND, ABBREVIATIONS, AND LIST OF MANUFACTURERS.
2. NO EQUIPMENT SHALL BE MOUNTE BELOW THE BOTTOM FLANGE OF ANY BRIDGE GIRDER.
3. ANY PENETRATIONS THROUGH STEEL NEED TO BE COORDINATED WITH STRUCTURAL AND APPROVED BY THE ENGINEER.
4. UNLESS OTHERWISE NOTED, ALL STEEL ANGLES AND PLATES SHALL BE ASTM A36.
5. USE HILTE KWIK BOLT 3 EXPANSION ANCHORS WITH MINIMUM OF 2" EMBEDMENT IN SOLD CONCRETE; OR APPROVED EQUAL.

CONDUIT HANGER DETAIL - CONCRETE GIRDER

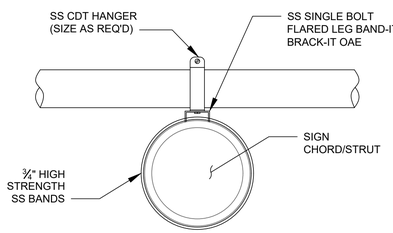
NTS

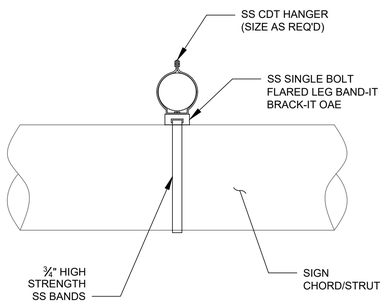
TD500.44.01





PARALLEL INSTALLATION





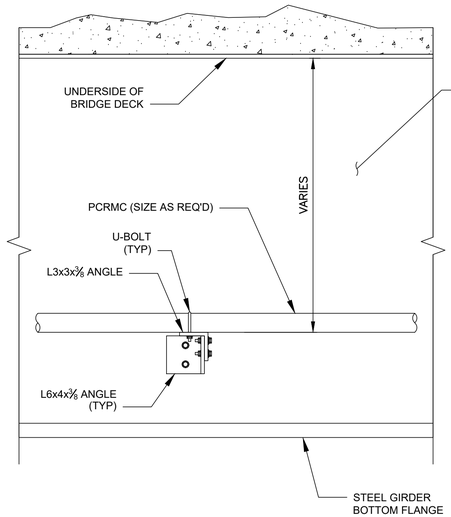
PERPENDICULAR INSTALLATION

CONDUIT MOUNTING DETAILS

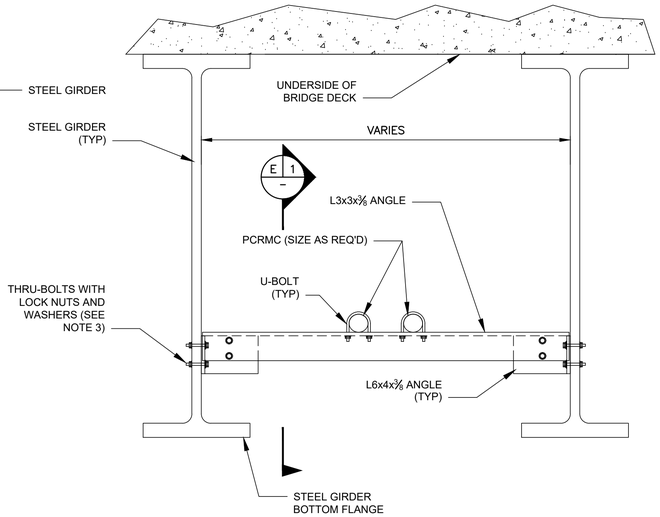
TD500.44.02

0 .25 .5 1

SCALE IN FEET



E 1 - FRONT ELEVATION



E 2 - SIDE ELEVATION

CONDUIT HANGER DETAIL - STEEL GIRDER

TD500.44.03

0 .5 1 2

SCALE IN FEET

Sheet 44 of

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

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ENGINEERING DEPARTMENT

PANYNJ DETAILS

TRAFFIC

Title

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

CONDUIT MOUNTING DETAILS

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DES DRN CHK

Date 07 / 15 / 2024

Drawing Number TD500.44