**ONLY STANDARD SHEETS MARKED WITH AN "✓" ARE IN THIS PROJECT #** L079-0004

****REVISED OR ADDED**

| | SHEET NO. | TITLE | APPROVAL DATE** |
|---|---|---|---|
| ☐ | TR-1000_01 | GENERAL CLAUSES (TEST PROCEDURES) | 1/2014 |
| ☑ | TR-1001_01 | TRENCHING & BACKFILLING, ELECTRICAL CONDUIT | 2/2024 |
| ☐ | TR-1002_01 | TRAFFIC CONTROL FOUNDATIONS | 2/2024 |
| ☐ | TR-1010_01 | CONCRETE HANDHOLE | 2/2024 |
| ☑ | TR-1102_01 | PEDESTALS, PEDESTRIAN SIGNALS | 4/2012 |
| ☐ | TR-1105_01 | TRAFFIC SIGNALS AND CABLE ASSIGNMENTS | 8/2018 |
| ☑ | TR-1107_01 | PEDESTRIAN PUSH BUTTON | 8/2018 |
| ☐ | TR-1108_01 | CONTROLLERS | 5/2013 |
| ☐ | TR-1111_01 | LOOP VEHICLE DETECTOR AND SAWCUT | 4/2014 |
| ☐ | TR-1113_01 | CONTROL CABLE | 4/2014 |
| ☐ | TR-1114_01 | BONDING & UTILITY POLE ATTACHMENT DETAILS, SIGN HANGER, "Y" CLAMP DETAILS | 8/2018 |

| | SHEET NO. | TITLE | APPROVAL DATE** |
|---|---|---|---|
| ☑ | TR-1208_01 | SIGN PLACEMENT AND RETROREFLECTIVE STRIP DETAILS | 8/2018 |
| ☑ | TR-1208_02 | METAL SIGN POSTS AND SIGN MOUNTING DETAILS | 6/2017 |

**STANDARD SHEETS SHALL BE USED WITH STANDARD SPECIFICATIONS**

NOT TO SCALE

SIGNATURE BLOCK:
Ronald Sacchi
GM2 Associates, Inc.
rsacchi@gm2inc.com
2026.10.29
08:43:08-04'00'

SUBMITTED BY:

APPOVED BY:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

CTDOT STANDARD SHEET

STANDARD SHEET TITLE:
**TRAFFIC STANDARD SHEET INDEX**

STANDARD SHEET NO.:
**TR-STD_INDEX**

DOCUMENT ALL LOOP DETECTOR VALUES BOTH CALCULATED AND MEASURED.

DEFINITIONS:

LOOP: #14 AWG WIRE IN SAWCUT, TERMINATED IN HANDHOLE, IMSA SPEC 51-7.
LEAD-IN: 14/2 SHIELDED TWISTED PAIR CABLE FROM HANDHOLE TO CONTROLLER, IMSA SPEC 50-2.
LOOP CIRCUIT: LOOP SAWCUT WIRE SPLICED TO 14/2 LEAD-IN CABLE.
AMPLIFIER: ELECTRONIC DEVICE CONNECTED TO LOOP CIRCUIT. SENSES CHANGE IN RESONANT FREQUENCY AND CREATES AN OUTPUT TO THE CONTROLLER.
MEGOHMETER: INSTRUMENT SPECIFICALLY DESIGNED TO TEST THE INSULATION RESISTANCE OF A CIRCUIT. COMMON MANUFACTURERS: AMEC®, AMPROBE®, FLUKE®, MEGGER®.

1: RESISTANCE:

1a: INSULATION RESISTANCE: PERFORM A 600 VOLT (MINIMUM) MEGOHMETER TEST ON LOOP CIRCUIT. THE LOOP AMPLIFIER MUST BE DISCONNECTED FROM THE LOOP CIRCUIT OR THE LOOP AMPLIFIER WILL BE DAMAGED. THE RESISTANCE OF THE LOOP WIRE TO GROUND MUST BE GREATER THAN 100 MEG OHMS.

1b: WIRE RESISTANCE: MEASURE THE DC RESISTANCE OF THE LOOP CIRCUIT. THE LOOP CIRCUIT MUST BE DISCONNECTED FROM THE AMPLIFIER. USING AN OHMMETER CONNECTED ACROSS THE LOOP CIRCUIT, MEASURE THE DC RESISTANCE OF THE CONDUCTORS. THE RESISTANCE SHOULD BE LESS THAN 4 OHMS.

NOTE: ALL TESTS SHALL BE DONE AT THE CONTROLLER ASSEMBLY (CA), HOWEVER IT IS RECOMMENDED TO PERFORM A PRELIMINARY MEGOHMETER TEST AT THE HANDHOLE PRIOR TO SEALING THE SAWCUT AND SPLICING TO THE LEAD-IN. IF A DEFECTIVE LOOP WIRE IS FOUND, IT MAY BE EASILY REPLACED.

2: LOOP CIRCUIT INDUCTANCE:

2a: CALCULATE INDUCTANCE OF LOOP ($L_{LOOP}$) AND LEAD-IN CABLE ($L_{14/2}$).

LOOP INDUCTANCE (ENGLISH)

$L_{LOOP} = (P/4)(N^2 + N)$

LEAD-IN INDUCTANCE

$L_{14/2} = (0.24\,\mu H/FT)(D)$

LOOP INDUCTANCE (METRIC)

$L_{LOOP} = (3.28P/4)(N^2 + N)$

LEAD-IN INDUCTANCE

$L_{14/2} = (0.78\,\mu H/m)(D)$

WHERE:

$L_{LOOP}$ = INDUCTANCE OF INDIVIDUAL LOOP SEGMENTS IN MICROHENRIES (μh).
$L_{14/2}$ = INDUCTANCE OF LEAD-IN CABLE.
P = PERIMETER OF INDIVIDUAL LOOP SEGMENT, IN FEET OR METERS.
N = NUMBER OF TURNS.
D = LENGTH OF LEAD-IN CABLE FROM SPLICE IN HANDHOLE TO CONTROLLER, IN FEET OR METERS.
$L_T = L_1 + L_2 + L_3$ etc.,
(TOTAL INDUCTANCE OF SEGMENTED LOOP SPLICED IN SERIES.)
$L_T = 1 / [(1 / L_1) + (1 / L_2) + (1 / L_3) + \text{etc.}]$,
(TOTAL INDUCTANCE OF SEGMENTED LOOP SPLICED IN PARALLEL.

WHERE:

$L_T$ = TOTAL INDUCTANCE OF THE SEGMENTED ARRANGEMENT.
$L_1, L_2, L_3$ = INDUCTANCE OF INDIVIDUAL LOOP SEGMENTS.

EXAMPLE: (IN ENGLISH)

6' x 6', 4 TURNS, APPROXIMATELY 300' FROM THE CONTROLLER

$L_{LOOP} = (24/4)(4^2 + 4)$
$L_{LOOP} = (6)(20)$
$L_{LOOP} = 120\,\mu h$

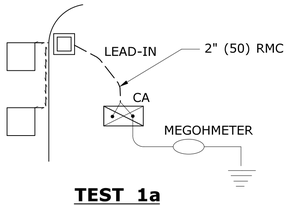
$L_{14/2} = (0.24\,\mu H/FT)(300)$
$L_{14/2} = (0.24)(300)$
$L_{14/2} = 72\,\mu h$

2b: MEASURE INDUCTANCE OF LOOP AND LEAD-IN AT CONTROLLER. USE INSTRUMENT DESIGNED TO MEASURE LOOP CIRCUIT INDUCTANCE.

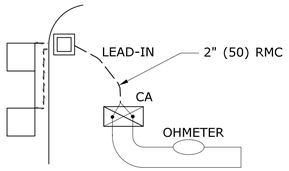
3: POWER INTERRUPTION:

AFTER THE AMPLIFIER HAS TUNED AND IS OPERATING, DISCONNECT POWER BY REMOVING FUSE OR HARNESS CONNECTOR. RETURN POWER TO THE AMPLIFIER AND CONFIRM IT RE-TUNES AUTOMATICALLY WITHOUT ANY MANUAL ADJUSTMENTS.

## INDUCTIVE LOOP TEST PROCEDURE




**TEST 1a**




**TEST 1b**

PROJECT:
TOWN: LOCATION:

| LOOP NUMBER | RESISTANCE OHMS | | INDUCTANCE MICROHENRIES (μh) | | AMPLIFIER POWER INTERRUPTION |
|---|---|---|---|---|---|
| | TO GROUND (1a) | LOOP WIRE (1b) | CALCULATED (2a) | MEASURED (2b) | PASS/FAIL (3) |
| D1 FRONT | | | | | |
| D1 REAR | | | | | |
| D2A | | | | | |
| D2B | | | | | |
| D4A FRONT | | | | | |
| D4B REAR | | | | | |
| D5 | | | | | |
| D6A | | | | | |
| D6B | | | | | |

## LOOP CIRCUIT TEST DATA (EXAMPLE)

| PIN | COLOR | FUNCTION |
|---|---|---|
| A | WHITE | 110 VAC Neutral |
| B | BROWN | Output Relay Common (moving contact) |
| C | BLACK | 110 VAC (Fused) |
| D | RED | Loop |
| E | ORANGE | Loop |
| F | YELLOW | Output Relay Contact (Closes with moving contact when detecting vehicle) |
| G | BLUE | Output Relay Contact (Opens with moving contact when detecting vehicle) |
| H | GREEN | Chassis Ground |
| J | GREY | 110 VAC Delay/Extend Override |
| Shell | | Ground (shall be connected to pin H in the connector) |

## DETECTOR AMPLIFIER PIN DESIGNATION

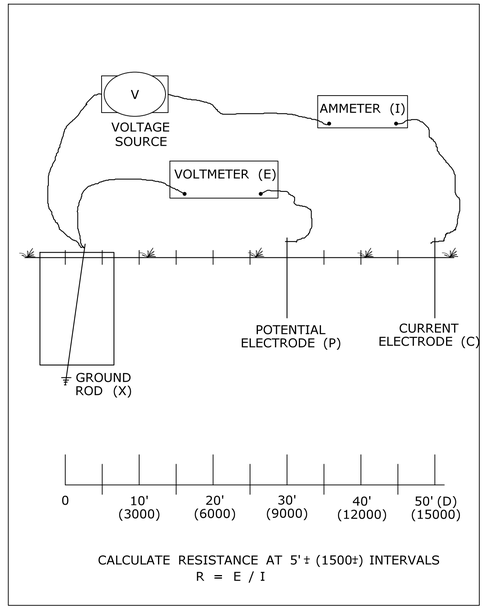
TEST PROCEDURE:

- INSERT ELECTRODE (C) A DISTANCE (D) FROM THE FOUNDATION. RECOMMEND A MINIMUM 50'.
- CONNECT A VOLTAGE SOURCE AND AMMETER BETWEEN THE FOUNDATION GROUND ROD (X) AND C.
- MEASURE THE CURRENT FLOW (I) BETWEEN X AND C.
- INSERT POTENTIAL ELECTRODE (P) AT 5'(1500) INTERVALS IN A STRAIGHT LINE TO ELECTRODE C.
- MEASURE VOLTAGE (E) AT EACH LOCATION OF P.
- CALCULATE RESISTANCE (R) AT EACH LOCATION OF P USING THE FORMULA R=E/I.
- PLOT THE VALUES ON A RxD GROUND RESISTANCE CHART.
- THE ACTUAL GROUND RESISTANCE IS WHERE THE PLOTTED CURVE IS RELATIVELY FLAT, USUALLY AT 62%± OF D. SEE EXAMPLE CHART: CURVE FLATTENS OUT AT 10 OHMS, APPROXIMATELY 30'(9000) FROM FOUNDATION.
- IF GROUND RESISTANCE IS GREATER THAN 10 OHMS, PERFORM CORRECTIVE ACTION AND RE-TEST.

SUGGESTED CORRECTIVE ACTION:

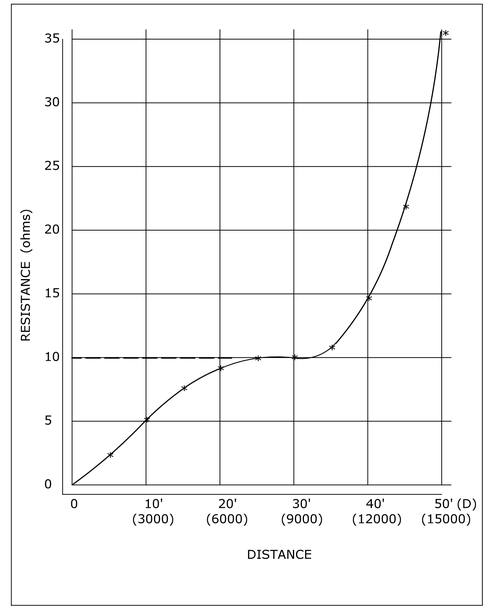
A. INSTALL ADDITIONAL 10'(3000) GROUND ROD(S).
REFER TO NESC SECTION 09, RULE 94.B.2.
DRIVE ADDITIONAL GROUND RODS NO CLOSER TO FOUNDATION THAN 6'(1800). IF MORE THAN ONE IS NEEDED, SPACE MINIMUM 6'(1800) APART.
BONDS TO ADDITIONAL GROUND ROD(S) SHALL BE MADE BY A CLAMP DESIGN FOR DIRECT BURIAL OR BY EXOTHERMIC WELDING TECHNIQUE.
TOP OF ADDITIONAL GROUND ROD(S) SHALL BE 6" (150) BELOW GRADE.

B. IN AREAS OF SHALLOW BEDROCK, INSTALL A GROUND GRID OR ARRAY CONSISTING OF BURIED WIRE, RODS, STRIPS OR PLATES.
REFER TO NESC SECTION 09, RULE 94.B.3.
REFER TO NEC SECTION 250.
MINIMUM DEPTH OF 18" (450).
GRID CONNECTIONS AND BONDS ON GROUND GRID SHALL BE MADE BY CLAMPS DESIGNED FOR DIRECT BURIAL OR BY EXOTHERMIC WELDING TECHNIQUE.




CALCULATE RESISTANCE AT 5'± (1500±) INTERVALS
R = E / I

## 3 POINT GROUND RESISTANCE TEST CIRCUIT




## GROUND RESISTANCE CHART (EXAMPLE)

NOTES:
1. WHEN REQUESTED BY THE ENGINEER, MEASURE RESISTANCE-TO-GROUND OF GROUND ROD AT TRAFFIC CONTROL FOUNDATIONS. SEE FALL-OF-POTENTIAL METHOD. IF LESS THAN 10 ohms, INSTALL SUPPLEMENTAL ELECTRODES AS REQUIRED. NEC ARTICLE 250.
2. DURING THE TEST, THE GROUND ROD SHOULD NOT BE BONDED TO ANY RMC IN THE FOUNDATION.
3. THE VOLTAGE SOURCE, VOLTMETER, AMMETER, ELECTRODES P AND C, AND CONNECTING CABLES ARE AVAILABLE AS A SPECIALIZED TEST INSTRUMENT.
4. REFER TO NATIONAL ELECTRICAL SAFETY CODE (NESC) SECTION 09, GROUNDING METHODS FOR ELECTRIC SUPPLY AND COMMUNCATIONS FACILITIES.
5. REFER TO NATIONAL ELECTRICAL CODE (NEC) CHAPTER 2, ARTICLE 250, GROUNDING.

## 3 POINT FALL-OF-POTENTIAL GROUND RESISTANCE TEST

LEGEND AS SHOWN ON TRAFFIC CONTROL SIGNAL PLAN:
- INDUCTIVE LOOP DETECTOR
- SAW CUT
- RIGID METAL CONDUIT
- HANDHOLE

| REV. | DATE | REVISION DESCRIPTION |
|---|---|---|
| 2 | 1-2014 | REVISED GROUND RESISTANCE NOTES. |
| 1 | 4-2012 | MINOR REVISIONS. |

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 1/7/2014

DIMENSIONS ARE IN ENGLISH ('-") & METRIC UNITS (mm). METRIC DIMENSIONS ARE ROUNDED:
- OVER 1" TO NEAREST 5 mm
- UNDER 1" TO NEAREST 1 mm.

NOT TO SCALE

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: CTDOT_TRAFFIC_STD.DGN Model: TR-1000_01

SUBMITTED BY: NAME/DATE/TIME:
Tracy L. Fogarty 2014.01.07 16:11:26-05'00'

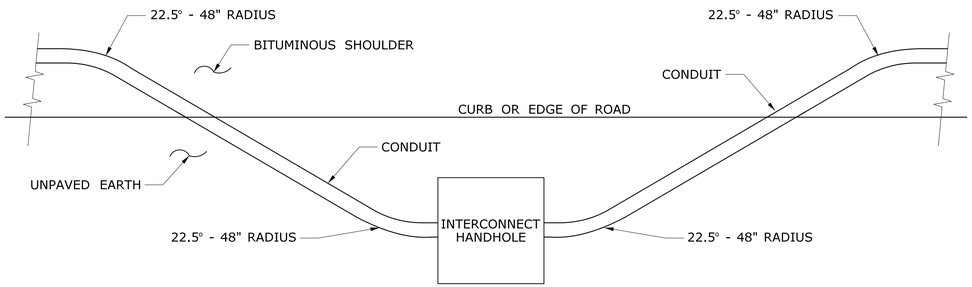
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Charles S. Harlow 2014.01.08 09:02:11-05'00'

CTDOT STANDARD SHEET

OFFICE OF ENGINEERING

STANDARD SHEET TITLE:
GENERAL CLAUSES (TEST PROCEDURES)

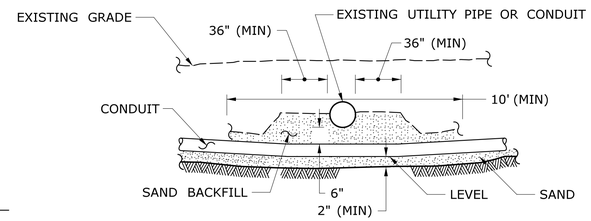
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TR-1000_01




## INTERCONNECT TYPICAL CURB CROSSING

NOTES:

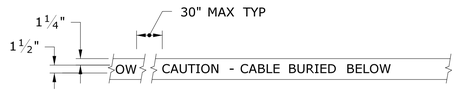
1. RESTORE AREAS DISTURBED BY TRENCH TO ORIGINAL CONDITION.




## CROSSING UNDER EXISTING UTILITY

NOTES:

1. WHEN ENCOUNTERED AT APPROXIMATELY THE SAME DEPTH, CROSS BENEATH.
2. PROTECT & SUPPORT EXPOSED EXISTING UTILITY.

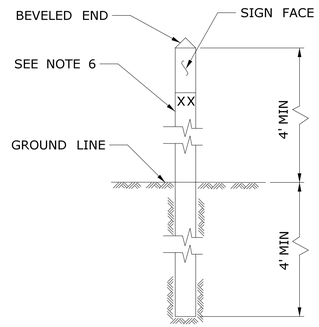



## DETECTABLE WARNING TAPE

NOTE:

STANDARD SPECIFICATIONS, ARTICLE: 1.05.15

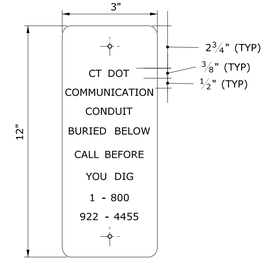
1. TAPE COLORS:
   COMMUNICATION - ORANGE BACKGROUND / BLACK LEGEND
   POWER - RED BACKGROUND / BLACK LEGEND




## INTERCONNECT CONDUIT IDENTIFICATION POST

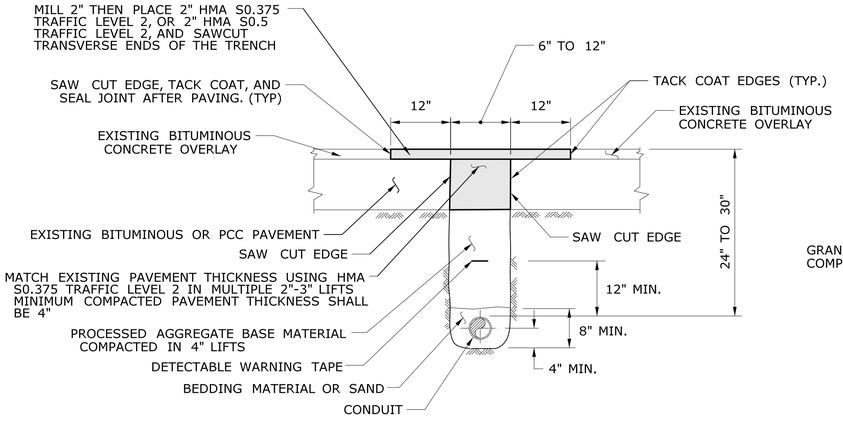
NOTES:

1. 4" x 4" NOMINAL, PRESSURE TREATED WOOD POST.
2. ATTACH SIGN TO POST WITH ¼" x 1¼" STAINLESS STEEL LAG SCREW WITH NYLON WASHER ON FACE OF SIGN.
3. SIGN COLORS: BACKGROUND - ORANGE (RETROREFLECTIVE)
   LEGEND - BLACK (OPAQUE).
4. INSTALL POST APPROX 24" FROM RMC IN VICINITY OF EACH INTERCONNECT HANDHOLE.
5. INSTALL ADDITIONAL POST(S) WHERE SPACING BETWEEN INTERCONNECT HANDHOLES IS GREATER THAN 1500' APART.
6. PERMANENTLY ATTACH STAINLESS STEEL NUMBERS INDICATING DISTANCE IN FEET TO TRENCH CONTAINING COMMUNICATION CABLE. ATTACH NUMBERS TO SIDE OF POST FACING CONDUIT.
7. IDENTIFICATION POSTS WITH SIGNS SHALL BE PAID UNDER THE COMMUNICATION CABLE ITEM.




## SIGN FACE DETAIL

SIGN # 41-4669

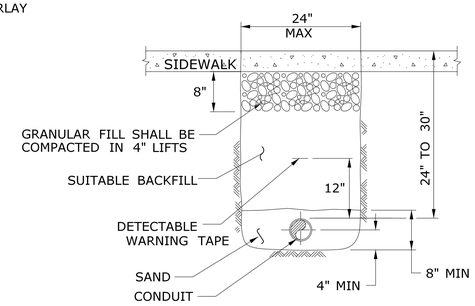



## PAVEMENT - BITUMINOUS CONCRETE OR OVERLAYED PORTLAND CEMENT CONCRETE

NOTES:

STANDARD SPECIFICATION, SECTION 3.04 AND STANDARD SPECIFICATION, ARTICLE 4.06.03

1. TOTAL HOT MIX ASPHALT (HMA) THICKNESS TO MATCH EXISTING BITUMINOUS CONCRETE AND PORTLAND CEMENT CONCRETE (PCC) THICKNESS.
2. WHEN ALLOWED BY ENGINEER, USE CONTROLLED LOW STRENGTH MATERIAL (CLSM) AS BEDDING MATERIAL. TOP OF CLSM SHALL BE AT LEAST 20" BELOW SURFACE.

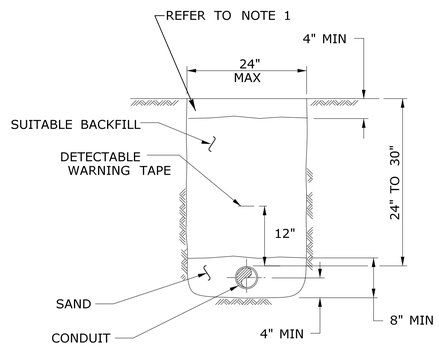



## SIDEWALK

NOTES:

STANDARD SPECIFICATIONS, SECTIONS 9.21 & 9.22

1. WHERE CONCRETE SIDEWALK IS DAMAGED OR CUT, REPLACE THE ENTIRE SECTION BETWEEN JOINTS. REPLACEMENT SIDEWALK IS PAID FOR UNDER THE ITEM "CONCRETE SIDEWALK".




## EARTH

NOTES:

STANDARD SPECIFICATIONS, SECTION 9.50 OR SEEDING TYPE CALLED OUT ON THE PLANS.

1. IN MOWED AREAS: PLACE TOPSOIL, FERTILIZER, SEED, & MULCH.

GENERAL NOTES:

1. TOP OF CONDUIT AT LEAST 24" DEEP.
2. COMPACT BACKFILL IN ≤6" LIFTS. HAND COMPACTION NOT PERMITTED.

LEGEND AS SHOWN ON TRAFFIC CONTROL SIGNAL PLAN:

———— PROPOSED RMC (RIGID METAL CONDUIT)

-•—•— EXISTING RMC (RIGID METAL CONDUIT)

NOT TO SCALE

SIGNATURE BLOCK:
OFFICE OF ENGINEERING
2800 BERLIN TURNPIKE
NEWINGTON, CT 06111

SUBMITTED BY:
Lisa N. Conroy, P.E.
2024.01.23
08:17:40-05'00'

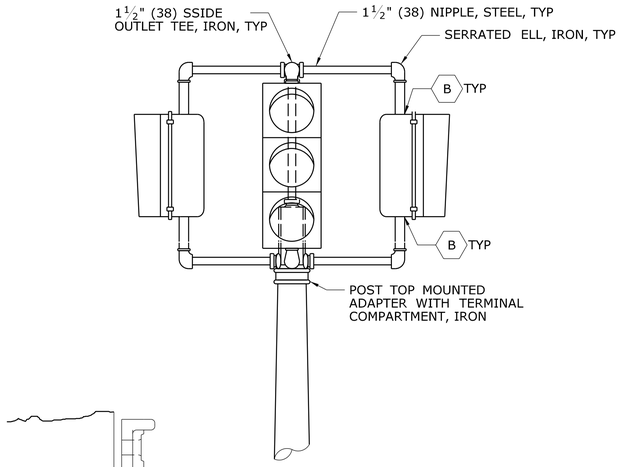
APPOVED BY:
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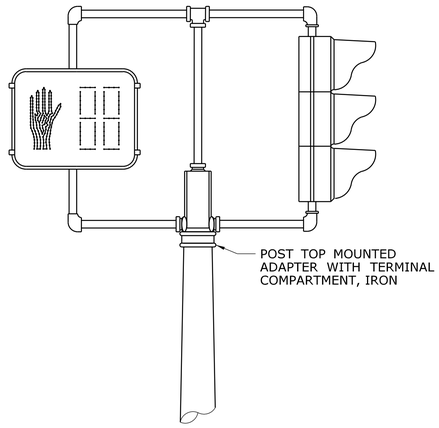
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

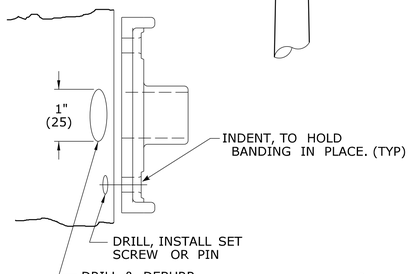
CTDOT STANDARD SHEET

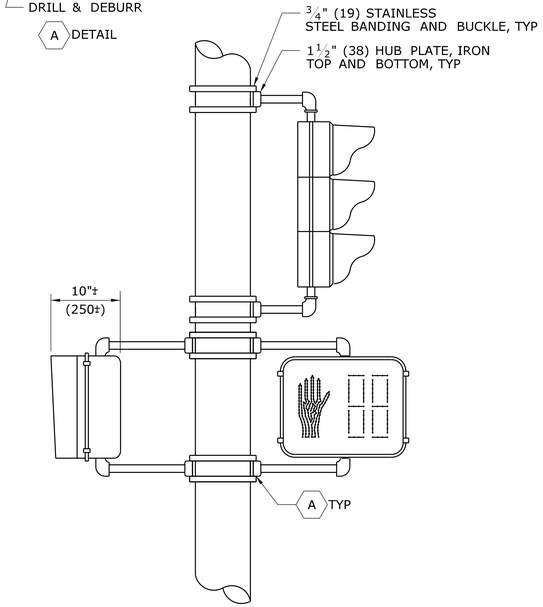
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TRENCHING & BACKFILLING, ELECTRICAL CONDUIT

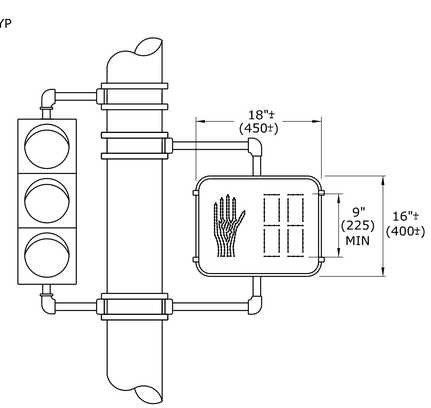
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TR-1001_01

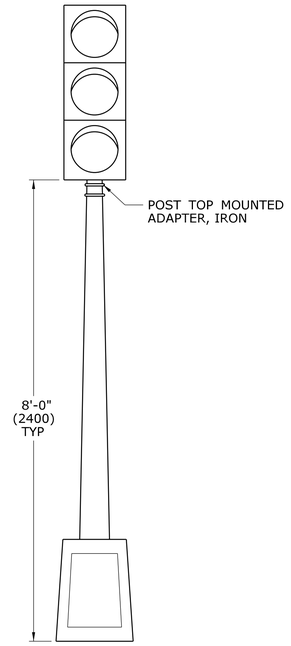


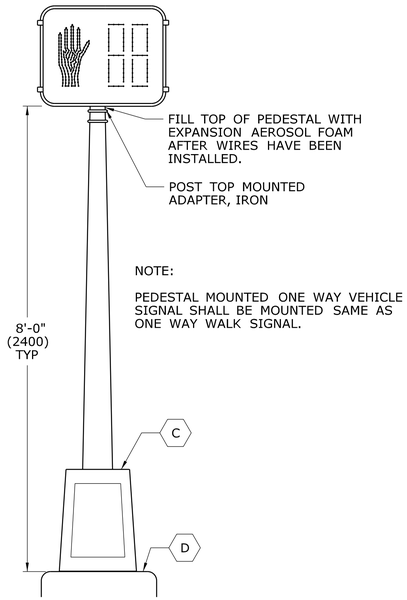



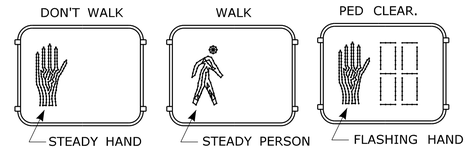

**ONE WAY TRAFFIC SIGNAL PEDESTAL MOUNTED**




NOTE:

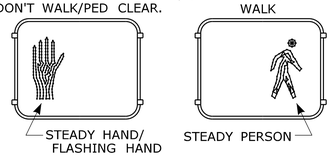
PEDESTAL MOUNTED ONE WAY VEHICLE SIGNAL SHALL BE MOUNTED SAME AS ONE WAY WALK SIGNAL.

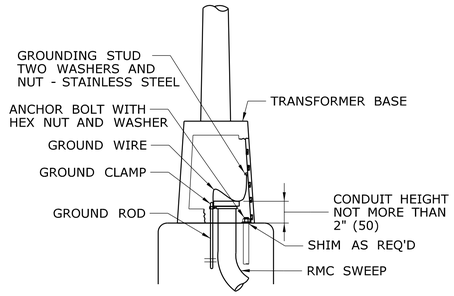
**ONE WAY WALK SIGNAL PEDESTAL MOUNTED**



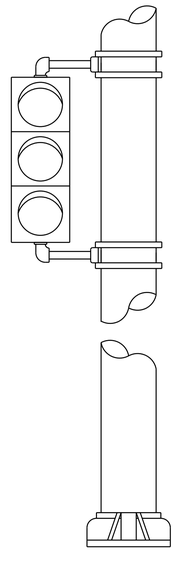

TYPICAL INDICATION WHEN LIT

NON-COUNTDOWN DISPLAY, ONLY WHEN SHOWN ON PLAN.

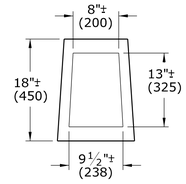


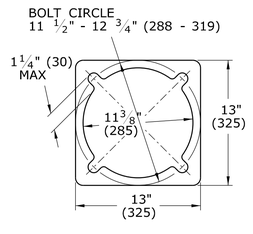

**ALUMINUM PEDESTAL INSTALLATION DETAIL**



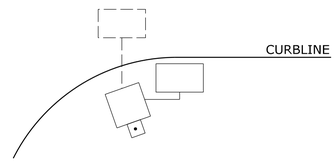
**ONE WAY TRAFFIC SIGNAL POLE MOUNTED**




**ALUMINUM PEDESTAL DOOR OPENING DETAIL**




**PEDESTAL BASE PLAN**




WHEN PEDESTALS OR SPAN POLES ARE INSTALLED CLOSE TO THE CURB, SIDE MOUNT PEDESTRIAN OR TRAFFIC SIGNALS TO AVOID VISOR DAMAGE FROM TURNING VEHICLES.

NOTES:

A. SECURE LOWER HUB PLATE WITH STAINLESS STEEL SET SCREW OR PIN PRIOR TO BANDING TO PREVENT MOVEMENT. INSTALL CABLE THROUGH BOTTOM OF HUB PLATE.

B. REFER TO CTDOT TRAFFIC STANDARD SHEET, TR-1105_01, TRAFFIC SIGNALS & CABLE ASSIGNMENTS.

C. IF THREADED, MIN 1" (25) THREADED INTO BASE, SECURED WITH STAINLESS STEEL SET SCREWS.

D. BASE DESIGNED AS BREAK-AWAY.

INCANDESCENT WALK SIGNAL LAMPS ARE 67 WATTS, RATED AT 8000 HOURS LAMP LIFE. LED WALK SIGNAL LAMPS ARE MAXIMUM 15 WATTS, WARRANTEED AT 5 YEAR LIFE.

LEGEND AS SHOWN ON TRAFFIC CONTROL SIGNAL PLAN:
- STEEL SPAN POLE, MAST ARM ASSEMBLY SHAFT
- ALUMINM PEDESTAL
- TRAFFIC SIGNAL
- PEDESTRIAN SIGNAL
- PEDESTAL MOUNTED, TRAFFIC & PEDESTRIAN SIGNALS
- POLE MOUNTED, TRAFFIC & PEDESTRIAN SIGNALS

| REV. | DATE | REVISION DESCRIPTION |
|---|---|---|
| 2 | 4-2012 | MINOR REVISIONS. |
| 1 | 1-2010 | INCLUDED COUNTDOWN PEDESTRIAN SIGNALS. |

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 4/14/2012

DIMENSIONS ARE IN ENGLISH (".") & METRIC UNITS (mm). METRIC DIMENSIONS ARE ROUNDED: - OVER 1" TO NEAREST 5 mm - UNDER 1" TO NEAREST 1 mm.

NOT TO SCALE

**STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION**

Filename: CTDOT_TRAFFIC_STD.dgn Model: TR-1102_01

SUBMITTED BY: NAME/DATE/TIME:
Tracy L. Fogarty 2012.05.01 12:55:27-04'00'

APPROVED BY: NAME/DATE/TIME:
Timothy M. Wilson 2012.05.09 10:24:58-04'00'

**CTDOT STANDARD SHEET**

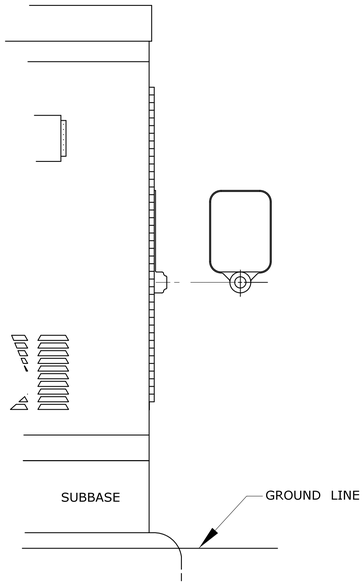
**OFFICE OF ENGINEERING**

STANDARD SHEET TITLE:

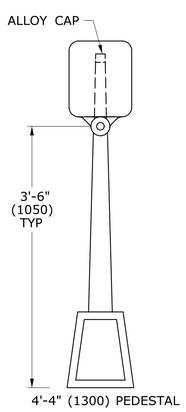
# PEDESTALS, PEDESTRIAN SIGNALS

STANDARD SHEET NO.:

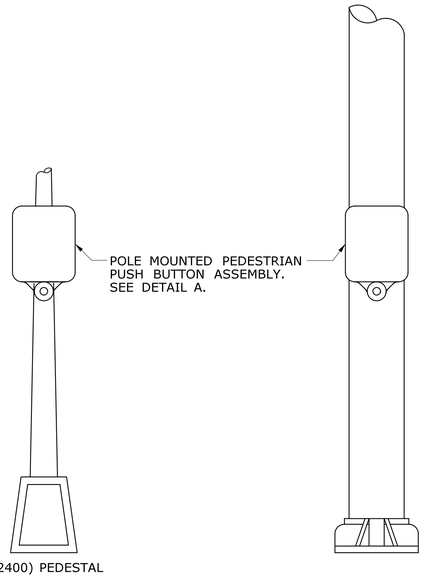
**TR-1102_01**



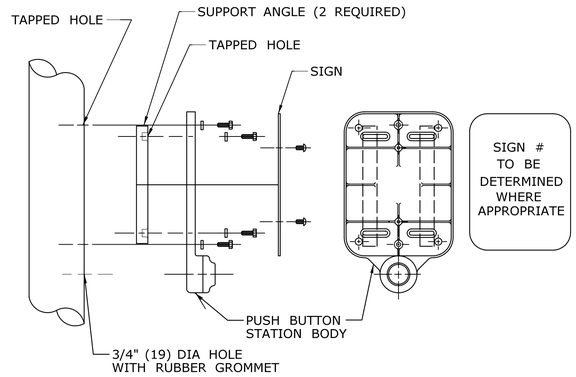

**SURFACE MOUNTED**




**PEDESTAL MOUNTED**




**SPAN POLE/MAST ARM MOUNTED**




**DETAIL A**




SIGN # 31-0833
USE APPROPRIATE LEFT OR RIGHT ARROW

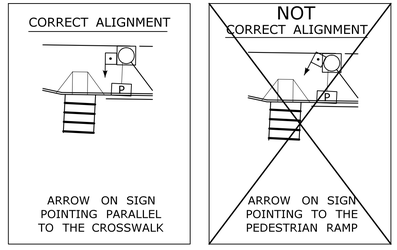



SIGN # 31-0835

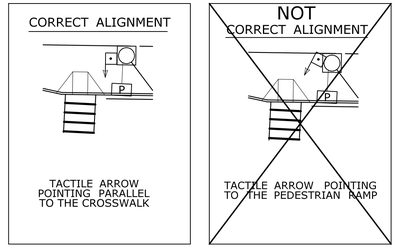
**FOR CROSSING WITH SIDE STREET GREEN**

GENERAL NOTES:

3'-6" (1050) FROM FINISHED GRADE SUCH AS SIDEWALK TO CENTER OF PUSH BUTTON.
PUSH BUTTON INSTALLATIONS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS FOR ACCESSIBLE DESIGN, CURRENT EDITION GOVERNS.
4'-4" (1300) PEDESTAL TO INCLUDE ALLOY CAP SECURED WITH STAINLESS STEEL SET SCREW.

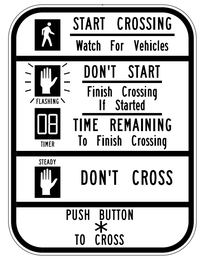



PEDESTRIAN PUSH BUTTON ALIGNMENT




ACCESSIBLE PEDESTRIAN SIGNAL AND DETECTOR

**EXAMPLE ALIGNMENTS FOR EXCLUSIVE PEDESTRIAN PHASE**




*USE APPROPRIATE ARROW UNLESS OTHERWISE NOTED ON PLAN.

FOR NEW PUSHBUTTON HOUSING, USE 9" x 15" SIGN NO. 31-0856.

FOR EXISTING PUSHBUTTON HOUSING, WITH 9" x 12" SIZE, USE SIGN NO. 31-0845.

LEGEND AS SHOWN ON TRAFFIC CONTROL SIGNAL PLAN:
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN PUSH BUTTON, PEDESTAL MOUNTED
- PEDESTRIAN PUSH BUTTON, POLE MOUNTED

| REV. | DATE | REVISION DESCRIPTION |
|---|---|---|
| 3 | 8-2018 | UPDATED PEDESTRIAN SIGN LEGENDS AND NOTES. |
| 2 | 4-2014 | ADDED PEDESTRIAN EXAMPLE ALIGNMENTS |
| 1 | 4-2012 | MINOR REVISIONS & UPDATED SIGN #31-0845. |

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 8/9/2018

DIMENSIONS ARE IN ENGLISH (.") & METRIC UNITS (mm).
METRIC DIMENSIONS ARE ROUNDED:
- OVER 1" TO NEAREST 5 mm
- UNDER 1" TO NEAREST 1 mm.

NOT TO SCALE

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: CTDOT_TRAFFIC_STD_2018-01-25.dgn Model: TR-1107_01

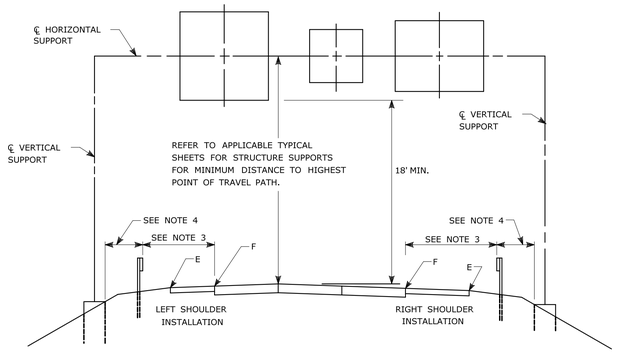
SUBMITTED BY: NAME/DATE/TIME:
Tracy L. Fogarty, P.E. 2018.08.16 12:13:35-04'00'

APPROVED BY: NAME/DATE/TIME:
Mark F. Carlino, P.E. 2018.08.21 07:46:57-04'00'

CTDOT STANDARD SHEET
OFFICE OF ENGINEERING

STANDARD SHEET TITLE:
**PEDESTRIAN PUSH BUTTONS**

STANDARD SHEET NO.:
**TR-1107_01**



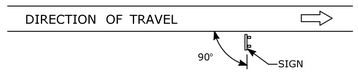

## TYPICAL PLACEMENT OF OVERHEAD SIGNS ON SIGN SUPPORTS

NOTES:

1) FOR PLACEMENT OF CANTILEVER SIGN SUPPORT USE APPLICABLE PORTION OF ABOVE DETAIL.
2) BARRIER SYSTEMS MAY BE REQUIRED FOR BOTH SIDES OF SUPPORTS IN MEDIANS.
3) IMPACT PROTECTION SHALL BE PROVIDED FOR THE SIGN SUPPORTS LOCATED WITHIN CLEAR ZONE.
4) SIGN SUPPORT FOUNDATIONS SHALL BE LOCATED OUTSIDE OF BARRIER SYSTEMS DEFLECTION AREA.
5) ALL SIGNS ARE TO BE LEVEL, REGARDLESS OF CAMBER IN SUPPORT.

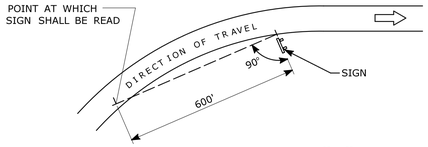
FOR MAXIMUM EFFECTIVENESS, POSITION SIDE MOUNTED SIGNS ON STRUCTURAL STEEL BREAKAWAY SIGN SUPPORTS AS FOLLOWS:

ON A TANGENT SECTION, POSITION THE SIGN SO THE VERTICAL AXIS IS PLUMB AND THE HORIZONTAL AXIS IS AT AN ANGLE OF 90° WITH THE TRAFFIC LANE WHICH THE SIGN SERVES. SIGNS LOCATED 30 FT OR MORE FROM THE EDGE OF THE ROAD SHALL BE TURNED APPROXIMATELY 3° TOWARD THE ROAD.



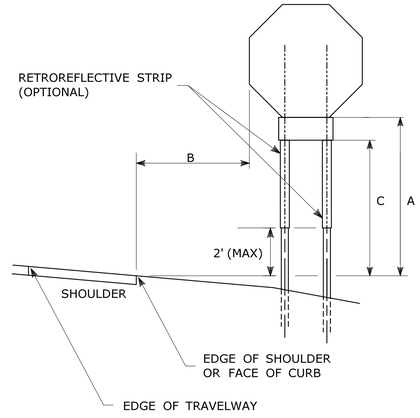

### DIAGRAM "A"

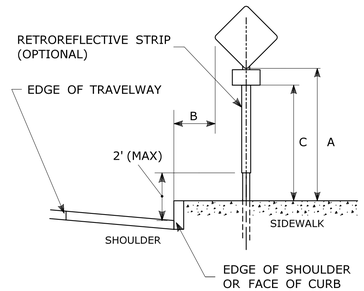
ON A HORIZONTAL CURVE SECTION, POSITION THE SIGN SO THE VERTICAL AXIS IS PLUMB AND THE HORIZONTAL AXIS IS AT AN ANGLE OF 90° WITH A STRAIGHT LINE BETWEEN THE SIGN AND THE POINT AT WHICH THE SIGN SHALL BE READ.

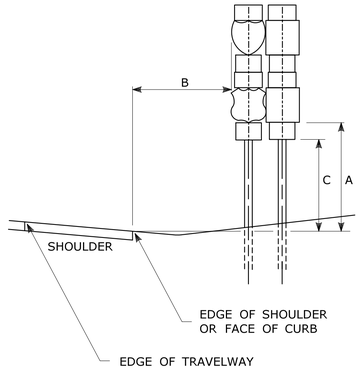



### DIAGRAM "B"

## SIGN ORIENTATION DETAILS FOR SIDE MOUNTED SIGNS ON STRUCTURAL STEEL BREAKAWAY SIGN SUPPORTS




## TYPICAL SIGN PLACEMENT DETAIL

NOTES:

ALL SIGNS AND SHIELDS ON DIRECTIONAL ASSEMBLIES SHALL ABUT VERTICALLY.

REFER TO STANDARD SHEET No. TR-1208_02 "METAL SIGN POSTS AND SIGN MOUNTING DETAILS" FOR SIGN POSTS AND SIGN MOUNTING.

IF A RETFOREFLECTIVE STRIP IS USED ON SIGN SUPPORT, IT SHALL BE PLACED FOR THE FULL LENGTH OF THE SUPPORT FROM THE BOTTOM OF THE SIGN TO WITHIN 2 FT ABOVE THE EDGE OF THE ROADWAY.

PARKING SIGNS TYPICALLY USE 45° MOUNTING BRACKET.

| DIM."A" MIN SIGN HEIGHT | DIM."B" MIN LATERAL OFFSET (1) | DIM."C" MIN PLAQUE HEIGHT (1) | ASSEMBLY LOCATION |
|---|---|---|---|
| 7' (2) | 6'<br>12' (3) | 5' | SIGNS ON FREEWAYS AND EXPRESSWAYS EXCEPT CHEVRON ALIGNMENT SIGNS, ONE-DIRECTION LARGE ARROW SIGNS, DO NOT ENTER SIGNS, AND WRONG WAY SIGNS |
| 5' | 2' | 4' | • SIGNS IN RURAL AREAS<br>• DO NOT ENTER AND WRONG WAY SIGNS ALONG EXIT RAMPS<br>• DO NOT ENTER AND WRONG WAY SIGNS ON LIMITED ACCESS HIGHWAYS |
| 5' | 2' | N/A | • CHEVRON ALIGNMENT SIGNS LOCATED ON FREEWAYS, EXPRESSWAYS, RAMPS, AND IN RURAL AREAS<br>• ONE-DIRECTION LARGE ARROW SIGNS LOCATED ON FREEWAYS, EXPRESSWAYS, RAMPS, AND IN RURAL AREAS |
| 4' | 6'<br>12' (3) | N/A | INCIDENT MANAGEMENT SIGNS AND MILE POST MARKER ASSEMBLIES LOCATED ON FREEWAYS AND EXPRESSWAYS |
| 4' | 2' | 4' | CENTRAL ISLANDS OF ROUNDABOUTS |
| 7' | 2' (4) | 6' | BUSINESS & RESIDENTIAL AREAS WHERE PARKING OR OTHER OBSTRUCTIONS LIMIT VISIBILITY |
| 7' | 2' (4) | 7' | SIDEWALKS (5) |

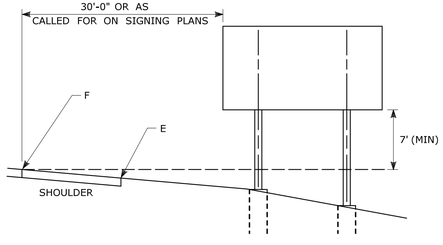
(1) OR AS DIRECTED BY THE ENGINEER

(2) 8 FT MINIMUM HEIGHT REQUIRED IF A SUPPLEMENTAL PLAQUE IS SUBMOUNTED BELOW THE MAJOR SIGN.

(3) 6 FT FROM EDGE OF SHOULDER, WHEN SHOULDER IS OVER 6 FT WIDE
12 FT FROM EDGE OF TRAVELWAY, WHEN SHOULDER IS LESS THAN 6 FT WIDE.

(4) A LATERAL OFFSET OF AT LEAST 1 FT FROM THE FACE OF THE CURB MAY BE USED WHERE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING UTILITY POLES ARE CLOSE TO THE CURB.

(5) A CLEAR PATH OF NOT LESS THAN 4 FT SHALL BE PROVIDED IN SIDEWALK AREAS.



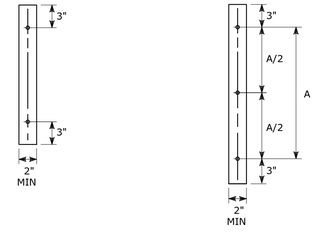

## TYPICAL PLACEMENT OF SIDE MOUNTED SIGNS ON STRUCTURAL STEEL BREAKAWAY SIGN SUPPORTS

NOTES:

1) MIN. VERTICAL CLEARANCE ABOVE SIDEWALKS SHALL BE 7'.
2) WHERE GUIDE RAIL IS USED, THE OFFSET TO THE NEAR EDGE OF SIGN FACE SHALL BE AS SHOWN ELSEWHERE IN THE CONTRACT PLANS.
3) ON INTERSECTING ROADS AT RAMP TERMINI, THE OFFSET TO THE NEAR EDGE OF OF SIGN FACE SHALL BE 6' MIN. FROM POINT "E".
4) IF 30'-0" MIN. CANNOT BE MET, PLEASE CONTACT THE ENGINEER.

RETROREFLECTIVE STRIPS 48" LONG OR LESS:

RETROREFLECTIVE STRIPS OVER 48" LONG:




## RETROREFLECTIVE STRIP DETAIL

NOTES:

RETROREFLECTIVE STRIPS WHICH ARE 48 IN LONG OR LESS SHALL BE ATTACHED USING 2 BOLTS AND RETROREFLECTIVE STRIPS OVER 48 IN LONG SHALL BE ATTACHED USING 3 BOLTS AS SHOWN ON THE DETAILS ABOVE.
REFER TO STANDARD SHEET No. TR-1208_02 "METAL SIGN POSTS AND SIGN MOUNTING DETAILS" FOR MOUNTING DETAILS.

RETROREFLECTIVE STRIP COLOR SHALL MATCH THE BACKGROUND COLOR OF THE SIGN, EXCEPT THAT THE COLOR OF THE STRIP FOR "YIELD" AND "DO NOT ENTER" SIGNS SHALL BE RED.

| REV. | DATE | REVISION DESCRIPTION |
|---|---|---|
| 3 | 8-2018 | INCLUDED INCIDENT MANAGEMENT AND MILE MARKER SIGNS. |
| 2 | 4-2017 | MINOR REVISIONS. |
| 1 | 2-2011 | MINOR REVISIONS. |

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Plotted Date: 8/10/2018

NOT TO SCALE

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: TR_1208_01_1_2018.dgn Model: TR-1208_01

SUBMITTED BY: NAME/DATE/TIME:
Mark F. Makuch, P.E.
2018.08.17 09:06:06-04'00'

APPROVED BY: NAME/DATE/TIME:
Mark F. Carlino, P.E.
2018.08.21 07:48:06-04'00'

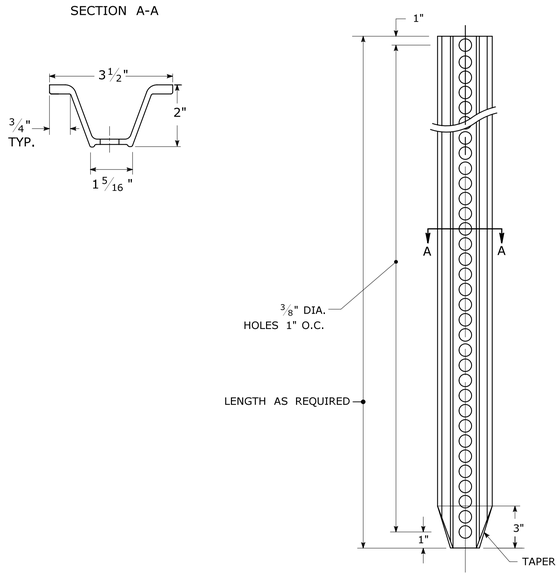
CTDOT STANDARD SHEET

OFFICE OF ENGINEERING

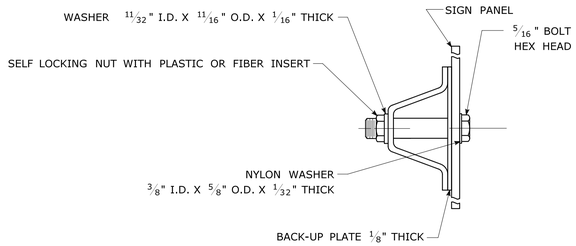
STANDARD SHEET TITLE:
SIGN PLACEMENT AND RETROREFLECTIVE STRIP DETAILS

STANDARD SHEET NO.:
TR-1208_01

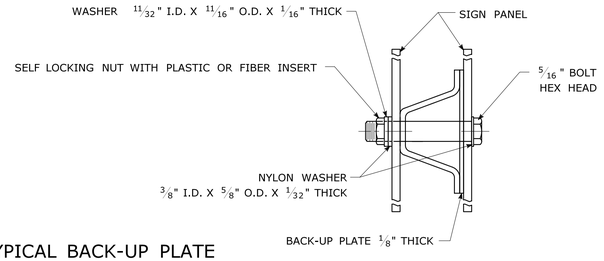
## TYPICAL METAL SIGN POSTS



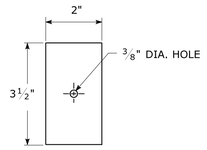

## TYPICAL SIGN PANEL ATTACHMENT




## TYPICAL BACK TO BACK SIGN PANEL ATTACHMENT



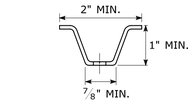

## TYPICAL BACK-UP PLATE



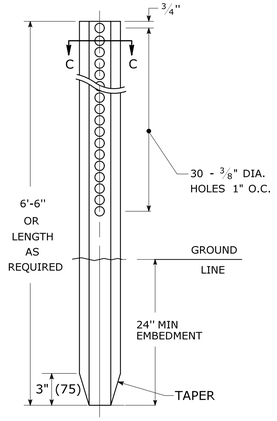

BOLTS - STAINLESS STEEL CONFORMING TO ASTM F593, ALLOY GROUP 1 OR 2 (ALLOY TYPES 304 OR 316).
SELF LOCKING NUTS - STAINLESS STEEL CONFORMING TO ASTM F594, ALLOY GROUP 1 OR 2 (ALLOY TYPES 304 OR 316).
WASHERS - STAINLESS STEEL CONFORMING TO ASTM A240, (ALLOY TYPES 304 OR 316).

## METAL DELINEATOR POST

WT./FT. = 1.12 LBS./FT. MIN.




SECTION C-C

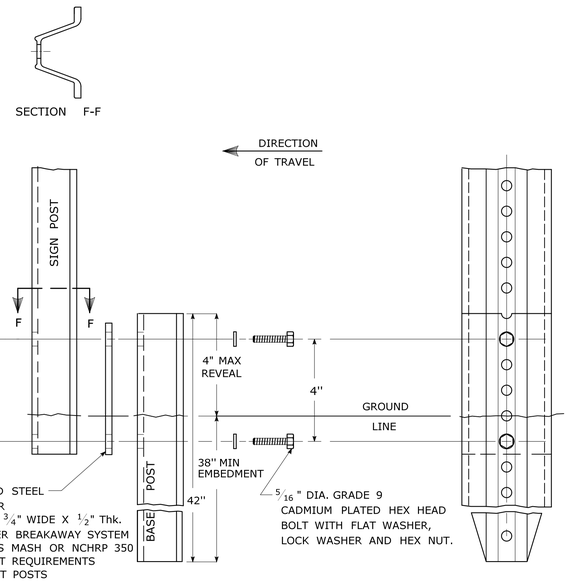



## GENERAL NOTES:

1. STEEL FOR DELINEATOR POSTS SHALL BE ASTM A36 STEEL. STEEL FOR ALL OTHER POSTS SHALL CONFORM TO THE MECHANICAL REQUIREMENTS OF ASTM A 499 GRADE 80 AND TO THE CHEMICAL REQUIREMENTS OF ASTM A1 CARBON STEEL TEE RAIL HAVING NOMINAL WEIGHT (MASS) OF 91 LBS. OR GREATER PER LINEAR YARD.
2. AFTER FABRICATION, ALL STEEL POSTS, STRAPS AND PLATES SHALL BE GALVANIZED TO MEET THE REQUIREMENTS OF ASTM A123.
3. WASHERS FOR BREAKAWAY INSTALLATIONS SHALL MEET ASTM F436, TYPE 1.
4. SPACER BAR FOR BREAKAWAY INSTALLATION SHALL CONFORM TO THE MECHANICAL REQUIREMENTS OF ASTM A36.
5. ALL BOLTS, NUTS, AND WASHERS FOR BREAKAWAY INSTALLATIONS SHALL BE GALVANIZED TO MEET THE REQUIREMENTS OF ASTM A153.
6. ALL SIGN POSTS SHALL HAVE BREAKAWAY FEATURES THAT MEET AASHTO REQUIREMENTS CONTAINED IN THE CURRENT "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS." THE BREAKAWAY FEATURES SHALL BE STRUCTURALLY ADEQUATE TO CARRY THE SIGNS SHOWN IN THE PLANS AT 60 mph WIND LOADINGS. INSTALLATIONS SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
7. SIGN POSTS SHALL BE 4 LBS./FT.

## BREAKAWAY INSTALLATION

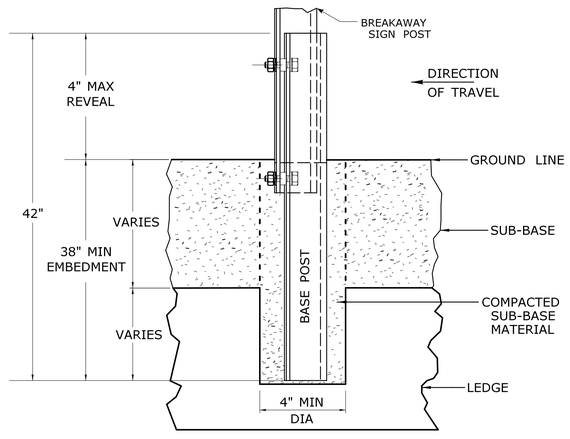
FOR 4 LBS./FT. POSTS



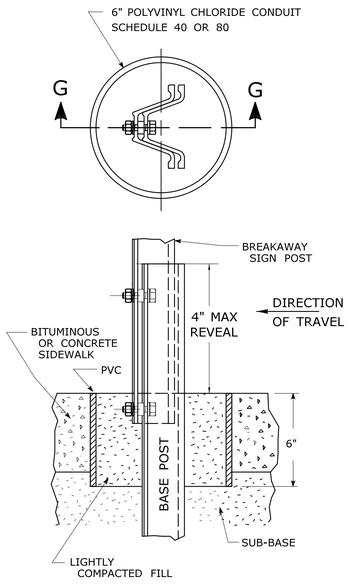

## TYPICAL SIGN POST INSTALLATION IN LEDGE

LEDGE SHALL BE REMOVED TO DRIVE THE BASE POST TO A DEPTH OF 38".

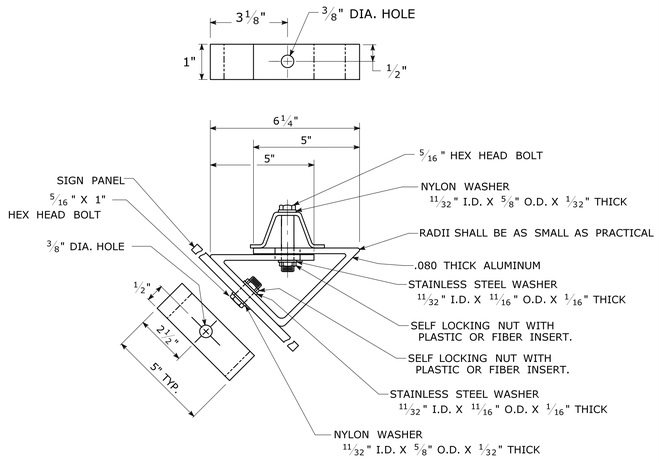
HOLE SHALL BE FILLED WITH SUB-BASE MATERIAL AND COMPACTED WITH A TAMPING BAR, OR TECHNIQUE APPROVED BY THE ENGINEER, PRIOR TO BASE POST INSTALLATION.




## TYPICAL SLEEVE FOR PAVED AREAS




## 45° MOUNTING BRACKET FOR INSTALLATION OF PARKING SIGNS




| REV. | DATE | REVISION DESCRIPTION |
|---|---|---|
| 2 | 6-2017 | SIGN POST REVISIONS. |
| 1 | 2-2011 | MINOR REVISIONS. |

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 6/6/2017

NOT TO SCALE

**STATE OF CONNECTICUT**
**DEPARTMENT OF TRANSPORTATION**

Filename: TR-1208_02_May_2017_Revision.dgn Model: TR-1208_02

| SUBMITTED BY: | NAME/DATE/TIME: |
|---|---|
| Mark Makuch | Mark F. Makuch, P.E. 2017.06.07 07:30:30-04'00' |
| Mary E. Baker | Mary E. Baker, P.E. 2017.06.13 15:28:14-04'00' |
| APPROVED BY: | NAME/DATE/TIME: |
| Gregory M. Dorosh | Gregory M. Dorosh, P.E. 2017.06.15 09:27:29-04'00' |

**CTDOT STANDARD SHEET**

**OFFICE OF ENGINEERING**

STANDARD SHEET TITLE:

# METAL SIGN POSTS AND SIGN MOUNTING DETAILS

GUIDE SHEET NO.:

**TR-1208_02**