06 - TRAFFIC MONITORING STATION PLANS

INDEX OF DRAWINGS

DRAWING NUMBER	DRAWING TITLE	DRAWING NUMBER	DRAWING TITLE
IND-01	INDEX OF DRAWINGS		
TMS-01 TO TMS-02	TMS LAYOUT PLAN		
TMS-03	TMS STANDARD LAYOUT DETAILS		
TMS-04	TYPICAL LOOP DETECTOR SAWCUT AND LEAD-IN		
TMS-05	CONCRETE HANDHOLE AND APPURTENANCES		
TMS-06	TRAFFIC CONTROLLER CABINET AND FOUNDATION		

Digitally signed by Arnold D. Rubenstein
DN: E=arubenstein@mjengineers.com, CN=Arnold D. Rubenstein, O="M & J Engineering, P.C.", L=New Hyde Park, S=New York, C=US
Date: 2022.07.12 13:24:43-04'00'

REVISION DESCRIPTION | DATE | REV.

DESIGNER/DRAFTER: KP/NR CHECKED BY: RR

SIGNATURE/ BLOCK:

M&J ENGINEERING P.C.
"INNOVATIVE AND STATE-OF-THE-ART SOLUTIONS"
2003 Jericho Turnpike
New Hyde Park, N.Y. 11040
Tel: 516.821.7300

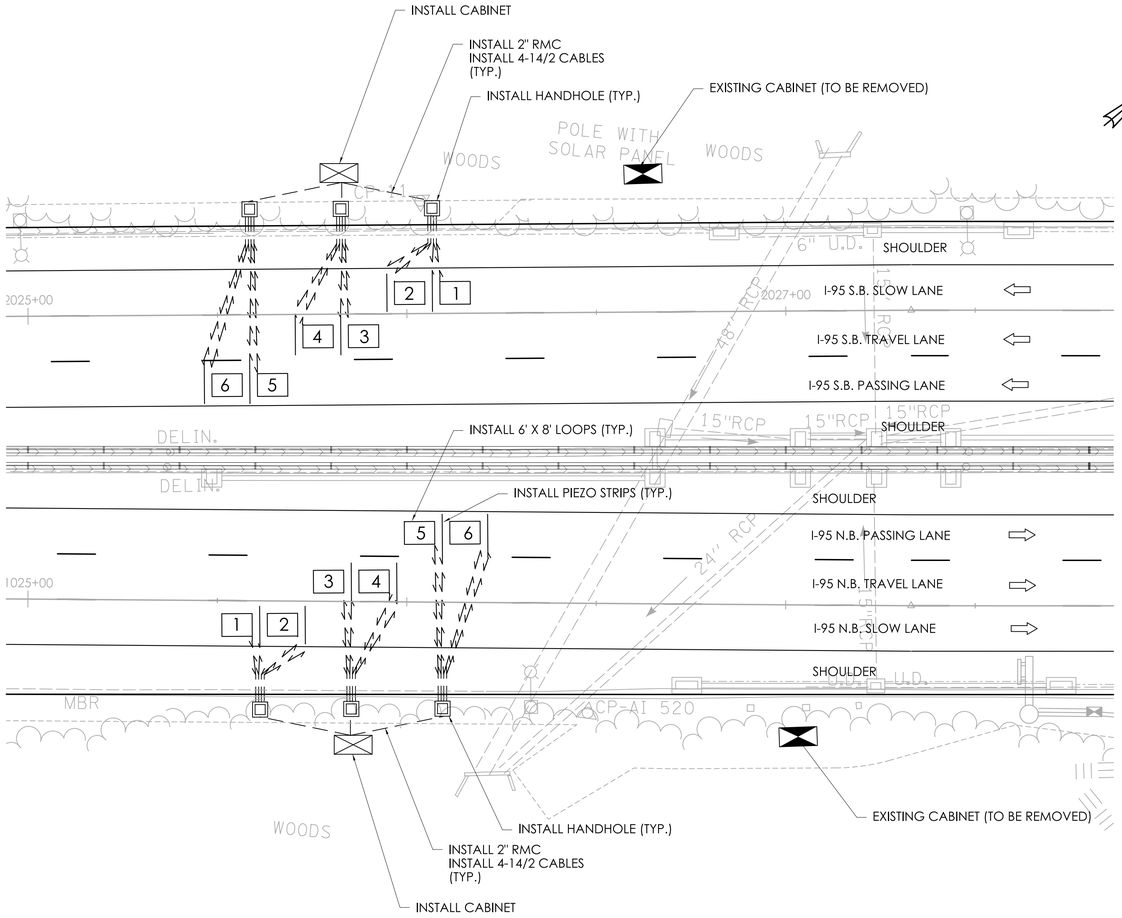
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0056-0316
PROJECT DESCRIPTION: Resurfacing, Bridge Rehabilitation and Safety Improvements on I-95
TOWN(S): Greenwich and Stamford
DRAWING TITLE: Traffic Monitoring Station Index of Drawings

DRAWING NO. IND-01
SHEET NO. **06.001**

LASTED SAVED BY: Kushal G. Patel **FILE NAME:** C:\Users\kusha\M&J Engineering\0056-0316_I95_CTDOT - Documents\Execution\CAD\Plans\HW_MSH_0056-0316_IND-TMSdgn.dgn
PLOTTED DATE: 7/11/2022

LEGENDS	
SYMBOL	DESCRIPTION
⊠	TRAFFIC CONTROLLER CABINET AND FOUNDATION
◘	CONCRETE HANDHOLE
— — ·	RIGID METAL CONDUIT/LIQUIDTIGHT FLEXIBLE NONMETAL CONDUIT
⇆ ⇆ ⇆	SAW CUT
□	LOOP DETECTOR



NOTES:

1. EXISTING CABINET AND FOUNDATION SHALL BE REMOVED AND A NEW CABINET AND FOUNDATION SHALL BE INSTALLED AT THE LOCATION SHOWN ON THE SITE PLAN.
2. EXISTING HANDHOLES, CONDUITS AND WIRING SHALL BE REMOVED AND REPLACED WITH NEW HANDHOLES, CONDUITS AND WIRING.
3. ALL WIRING WITHIN THE CABINET SHALL BE NEAT, FIRM, LABELED, AND CONNECTED TO THE APPROPRIATE TERMINAL BLOCKS.
4. THE CONTRACTOR SHALL CLEARLY MARK EACH LOOP DETECTOR CABLE TO IDENTIFY THE LOOP DETECTOR TO WHICH IT IS CONNECTED, AS SHOWN IN THE "TWO PIEZOS (TYPE 1) AND TWO LOOPS PER LANE" DETAIL ON DRAWING NO. TMS-03.
5. THE CONTRACTOR SHALL PROPERLY IDENTIFY ALL LOOP DETECTORS AT THE TERMINALS WITH STRIP TAGS AS LABELED ON THE SITE PLAN.
6. THE CONTRACTOR SHALL INSTALL TWELVE 6' X 8' LOOP DETECTORS. LOOP DETECTORS SHALL BE INSTALLED IN FINAL PAVEMENT COURSE AND SPLICED TO NEW 14/2 CABLES IN HANDHOLES.
7. THE CONTRACTOR SHALL INSTALL 1" LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT FROM HANDHOLE EXTENDING 1' INTO SHOULDER.
8. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER WHEN ALL TRAFFIC MONITORING STATION WORK IS COMPLETED TO SCHEDULE A SEMI-FINAL INSPECTION WITH OFFICE OF ROADWAY INFORMATION SYSTEM TRAFFIC MONITORING SECTION.
9. REFER TO DRAWING NO. TMS-03 DETAIL "TWO PIEZOS (TYPE 1) AND TWO LOOPS PER LANE" FOR STANDARD INSTALLATION DETAILS.

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: KP/NR CHECKED BY: RR

0 20' 40'
HORIZONTAL SCALE
1" = 20'

SIGNATURE/ BLOCK:
M&J ENGINEERING P.C.
"INNOVATIVE AND STATE-OF-THE-ART SOLUTIONS"
2003 Jericho Turnpike
New Hyde Park, N.Y. 11040
Tel: 516.821.7300

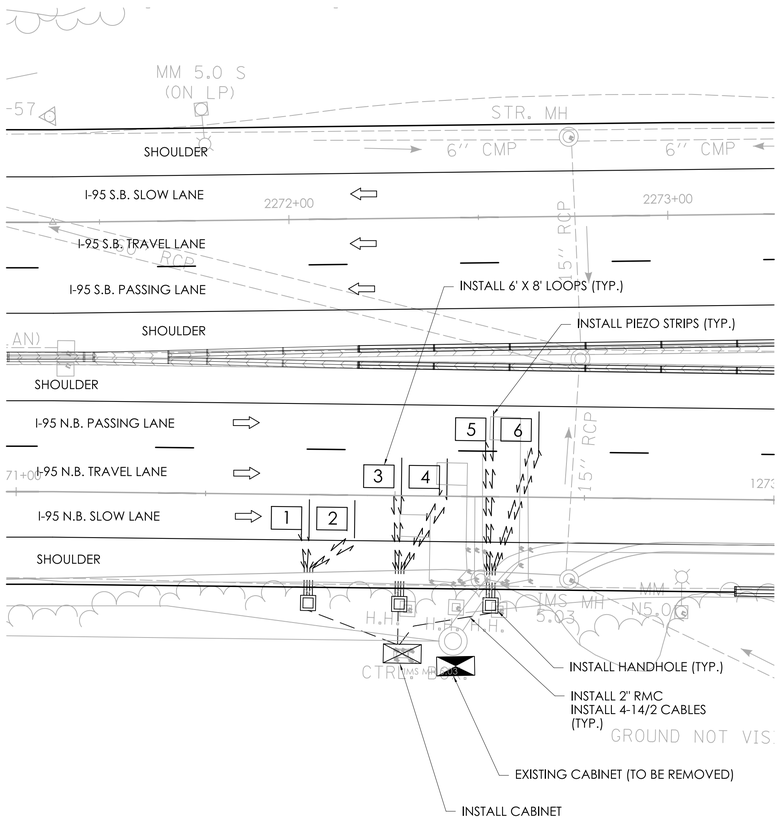
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

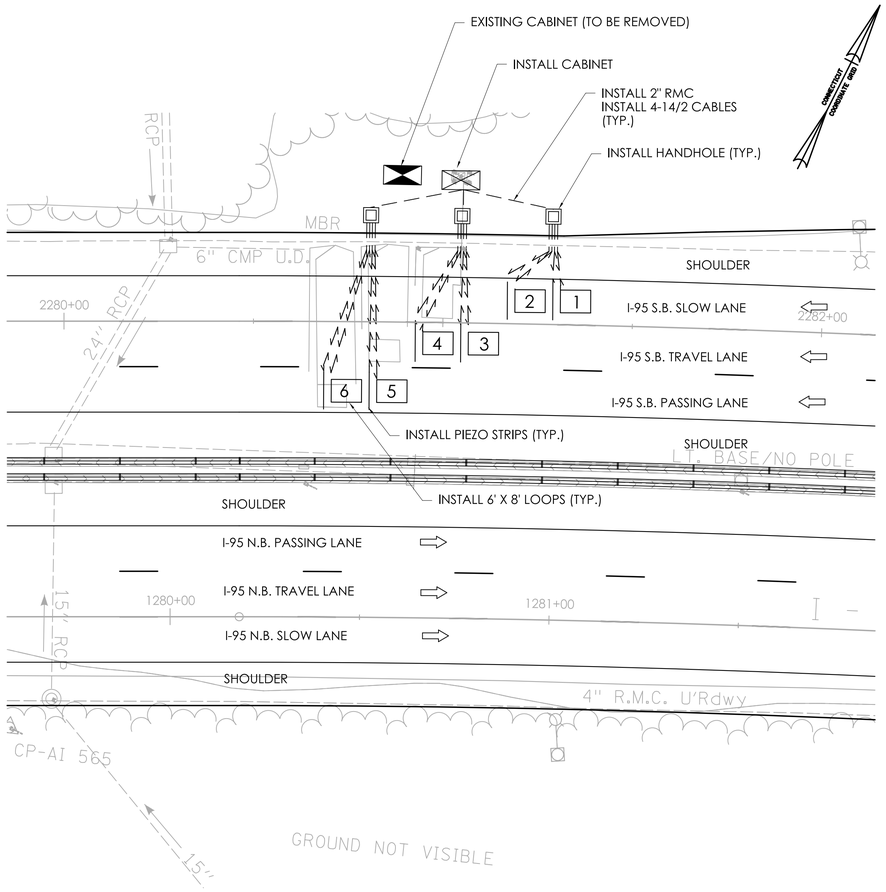
PROJECT NUMBER: 0056-0316
PROJECT DESCRIPTION: Resurfacing, Bridge Rehabilitation and Safety Improvements on I-95
TOWN(S): Greenwich and Stamford
DRAWING TITLE: TMS Layout Plan

DRAWING NO. TMS-01
SHEET NO. 06.002

LASTED SAVED BY: Kushal G. Patel **FILE NAME:** C:\Users\kusha\M&J Engineering\0056-0316_I95_CTDOT - Documents\Execution\CAD\Plans\HW_MSH_0056-0316_TMS-01.dgn
PLOTTED DATE: 7/7/2022

LEGENDS	
SYMBOL	DESCRIPTION
⊠	TRAFFIC CONTROLLER CABINET AND FOUNDATION
◘	CONCRETE HANDHOLE
— — ·	RIGID METAL CONDUIT/LIQUIDTIGHT FLEXIBLE NONMETAL CONDUIT
⇆ ⇆ ⇆	SAW CUT
□	LOOP DETECTOR





NOTES:

1. THE CONTRACTOR SHALL REPLACE THE LOOP DETECTORS AT EXISTING TRAFFIC MONITORING STATION SITE WHICH WILL BE DISTURBED AS A RESULT OF MILLING AND PAVING ON I-95.
2. EXISTING CABINET AND FOUNDATION SHALL BE REMOVED AND A NEW CABINET AND FOUNDATION SHALL BE INSTALLED AT THE SAME LOCATION OF THE OLD CABINET.
3. EXISTING HANDHOLES, CONDUITS AND WIRING SHALL BE REMOVED AND REPLACED WITH NEW HANDHOLES, CONDUITS AND WIRING INSTALLED IN THEIR PLACE.
4. ALL WIRING WITHIN THE CABINET SHALL BE NEAT, FIRM, LABELED, AND CONNECTED TO THE APPROPRIATE TERMINAL BLOCKS.
5. THE CONTRACTOR SHALL CLEARLY MARK EACH LOOP DETECTOR CABLE TO IDENTIFY THE LOOP DETECTOR TO WHICH IT IS CONNECTED, AS SHOWN IN THE "TWO PIEZOS (TYPE 1) AND TWO LOOPS PER LANE" DETAIL ON DRAWING NO. TMS-03.
6. THE CONTRACTOR SHALL PROPERLY IDENTIFY ALL LOOP DETECTORS AT THE TERMINALS WITH STRIP TAGS AS LABELED ON THE SITE PLAN.
7. THE CONTRACTOR SHALL INSTALL TWELVE 6' X 8' LOOP DETECTORS. LOOP DETECTORS SHALL BE INSTALLED IN FINAL PAVEMENT COURSE AND SPLICED TO NEW 14/2 CABLES IN HANDHOLES.
8. THE CONTRACTOR SHALL INSTALL 1" LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT FROM HANDHOLE EXTENDING 1' INTO SHOULDER.
9. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER WHEN ALL TRAFFIC MONITORING STATION WORK IS COMPLETED TO SCHEDULE A SEMI-FINAL INSPECTION WITH OFFICE OF ROADWAY INFORMATION SYSTEM TRAFFIC MONITORING SECTION.
10. REFER TO DRAWING NO. TMS-03 DETAIL "TWO PIEZOS (TYPE 1) AND TWO LOOPS PER LANE" FOR STANDARD INSTALLATION DETAILS.

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: KP/NR CHECKED BY: RR

0 20' 40'
HORIZONTAL SCALE
1" = 20'

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STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0056-0316
PROJECT DESCRIPTION: Resurfacing, Bridge Rehabilitation and Safety Improvements on I-95
TOWN(S): Greenwich and Stamford
DRAWING TITLE: TMS Layout Plan

DRAWING NO. TMS-02
SHEET NO. 06.003

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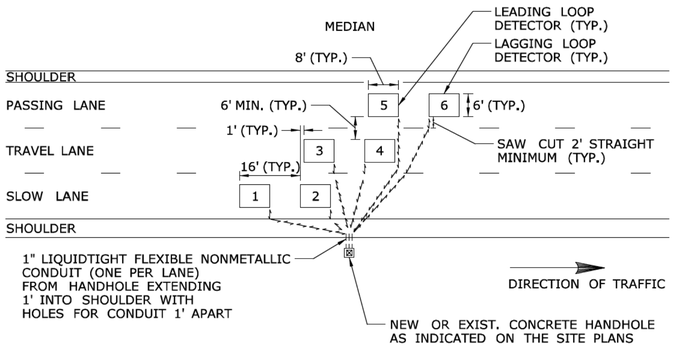
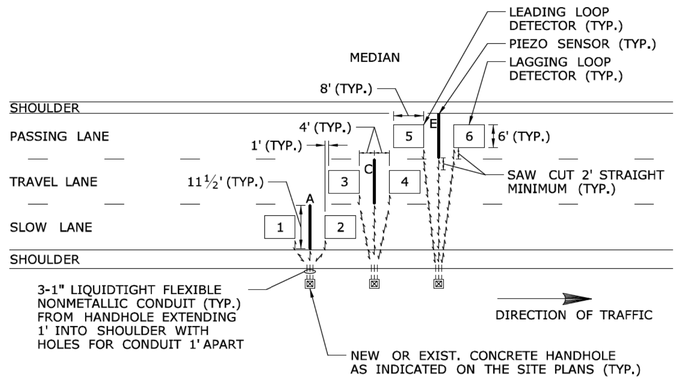
PLOTTED DATE: 7/7/2022



1. LOOP DETECTORS TO BE 6' X 8', 4 TURNS EACH, UNLESS NOTED.
2. LOOP DETECTORS TO BE INSTALLED IN THE CENTER OF EACH LANE, UNLESS NOTED.
3. LOOP DETECTORS TO BE FIELD LOCATED SO THAT NO SAW CUTS WILL BE MADE THROUGH CONCRETE EXPANSION JOINTS OR POOR PAVEMENT.
4. ALL SAW CUT HOME RUNS SHALL BE A MINIMUM 1' APART.
5. LOOP CABLES SHALL HAVE 2' OF SLACK IN HANDHOLES.
6. ALL LEAD-IN WIRE PAIRS SHALL BE TWISTED TOGETHER FIVE (5) TURNS PER FOOT WHEN IN CONDUIT.
7. ALL LOOP DETECTOR LEADS SHALL BE COLOR CODED WITH TAPE IN CABINET, HANDHOLES, AND JUNCTION BOXES AS FOLLOWS:
   LEADING LOOPS = 1 BAND OF TAPE
   LAGGING LOOPS = 2 BANDS OF TAPE

LOOP NO.	TAPE COLOR
1, 2	RED
3, 4	BLUE
5, 6	ORANGE
7, 8	YELLOW
9, 10	BROWN
11, 12	PURPLE
13, 14	GRAY
15, 16	PINK

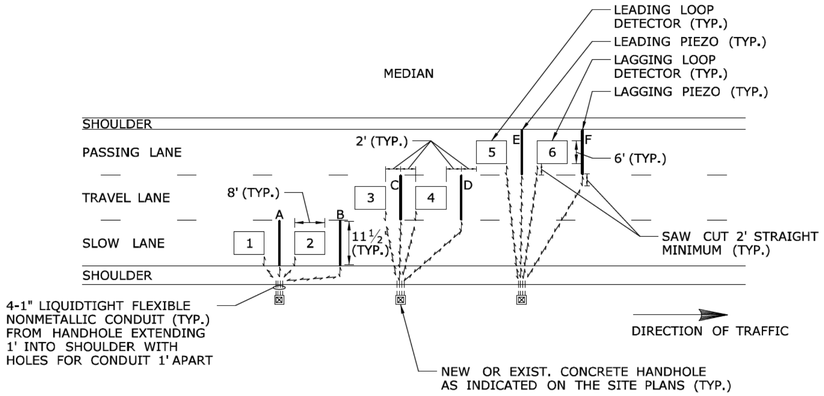
TWO LOOPS PER LANE



1. LOOP DETECTORS TO BE 6' X 8', 4 TURNS EACH, UNLESS NOTED.
2. LOOP DETECTORS AND PIEZO SENSORS TO BE INSTALLED IN THE CENTER OF EACH LANE, UNLESS NOTED.
3. LOOP DETECTORS AND PIEZO SENSORS TO BE FIELD LOCATED SO THAT NO SAW CUTS WILL BE MADE THROUGH CONCRETE EXPANSION JOINTS OR POOR PAVEMENT.
4. ALL SAW CUT HOME RUNS SHALL BE A MINIMUM 1' APART.
5. LOOP CABLES SHALL HAVE 2' OF SLACK IN HANDHOLES.
6. ALL LEAD-IN WIRE PAIRS SHALL BE TWISTED TOGETHER FIVE (5) TURNS PER FOOT WHEN IN CONDUIT.
7. ALL LOOP DETECTOR & PIEZO SENSOR LEADS SHALL BE COLOR CODED WITH TAPE IN CABINET, HANDHOLES, AND JUNCTION BOXES AS FOLLOWS:
   LEADING LOOPS & PIEZOS = 1 BAND OF TAPE
   LAGGING LOOPS = 2 BANDS OF TAPE

LOOP NO.	PIEZO	TAPE COLOR
1, 2	A	RED
3, 4	C	BLUE
5, 6	E	ORANGE
7, 8	G	YELLOW
9, 10	I	BROWN
11, 12	K	PURPLE
13, 14	M	GRAY
15, 16	O	PINK

ONE PIEZO (TYPE 1) AND TWO LOOPS PER LANE



1. LOOP DETECTORS TO BE 6' X 8', 4 TURNS EACH, UNLESS NOTED.
2. LOOP DETECTORS AND PIEZO SENSORS TO BE INSTALLED IN THE CENTER OF EACH LANE, UNLESS NOTED.
3. LOOP DETECTORS AND PIEZO SENSORS TO BE FIELD LOCATED SO THAT NO SAW CUTS WILL BE MADE THROUGH CONCRETE EXPANSION JOINTS OR POOR PAVEMENT.
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7. ALL LOOP DETECTOR & PIEZO SENSOR LEADS SHALL BE COLOR CODED WITH TAPE IN CABINET, HANDHOLES, AND JUNCTION BOXES AS FOLLOWS:
   LEADING LOOPS & PIEZOS = 1 BAND OF TAPE
   LAGGING LOOPS & PIEZOS = 2 BANDS OF TAPE

LOOP NO.	PIEZO	TAPE COLOR
1, 2	A, B	RED
3, 4	C, D	BLUE
5, 6	E, F	ORANGE
7, 8	G, H	YELLOW
9, 10	I, J	BROWN
11, 12	K, L	PURPLE
13, 14	M, N	GRAY
15, 16	O, P	PINK

TWO PIEZOS (TYPE 1) AND TWO LOOPS PER LANE

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: KP/NR CHECKED BY: RR

0 20' 40'
HORIZONTAL SCALE
1" = 20'

SIGNATURE/ BLOCK:
M&J ENGINEERING P.C.
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New Hyde Park, N.Y. 11040
Tel: 516.821.7300

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0056-0316
PROJECT DESCRIPTION: Resurfacing, Bridge Rehabilitation and Safety Improvements on I-95
TOWN(S): Greenwich and Stamford
DRAWING TITLE: TMS Standard Layout Details

DRAWING NO. TMS-03
SHEET NO. **06.004**

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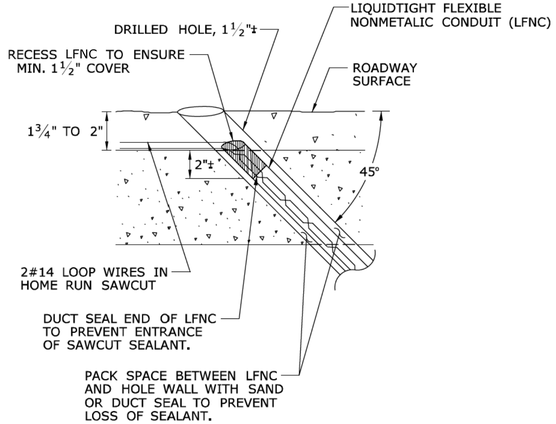
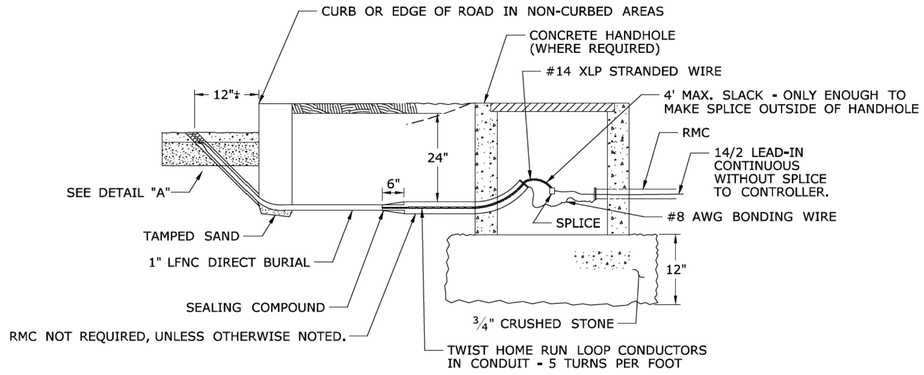
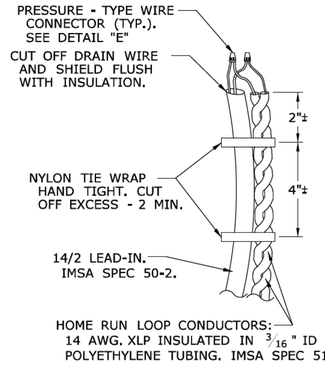
PLOTTED DATE: 7/7/2022

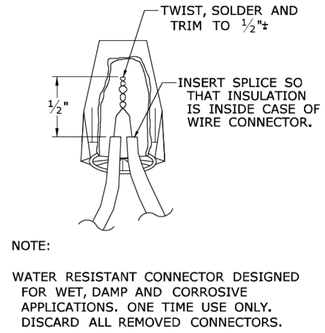


DETAIL "A"



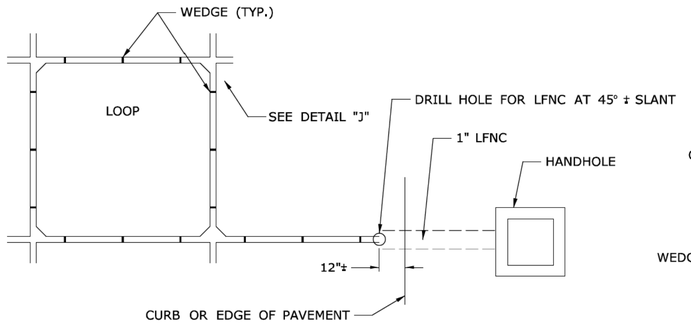
TYPICAL ELEVATION VIEW
LOOP DETECTOR LEAD-IN



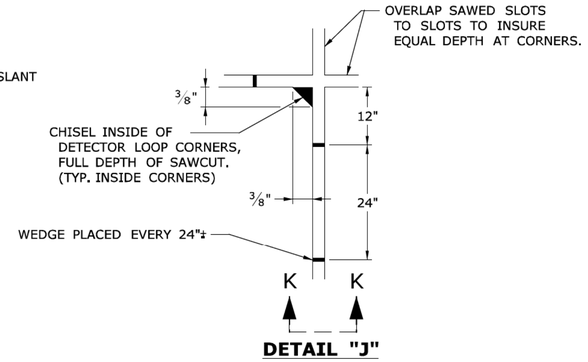


DETAIL "E"

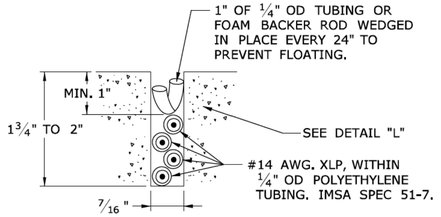
LOOP DETECTOR SPLICES



TYPICAL PLAN VIEW
LOOP DETECTOR SAWCUT AND LEAD-IN



DETAIL "J"



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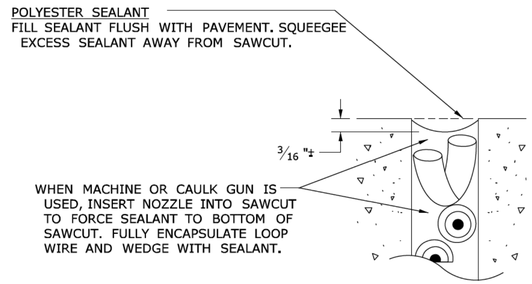
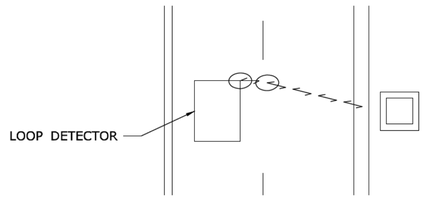
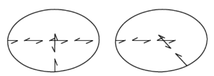
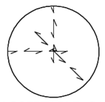


DETAIL "L"





ACCEPTABLE SAW CUT



NOT ACCEPTABLE SAW CUT

DO NOT OVERLAP MORE THAN TWO SAWCUTS.

NOTES:
PERFORM 600 VOLT MEGGER TEST PRIOR TO SEALING SAWCUT. RESISTANCE TO GROUND NOT LESS THAN 100 MEG. OHMS.
ONLY USE POLYESTER COMPOUND AS SEALANT, UNLESS OTHER TYPE IS APPROVED BY ENGINEER.
WET SAW CUT ONLY; DRY SAW CUT NOT PERMITTED.
RECOMMENDED SAW BLADE: 14" x ⅜" PRODUCES 7/16" SLOT.
SAW CUT LOOP & HOME RUN DEPTH TO ENSURE MIN. 1" SEALANT COVERAGE.

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: KP/NR CHECKED BY: RR

0 20' 40'
HORIZONTAL SCALE 1" = 20'

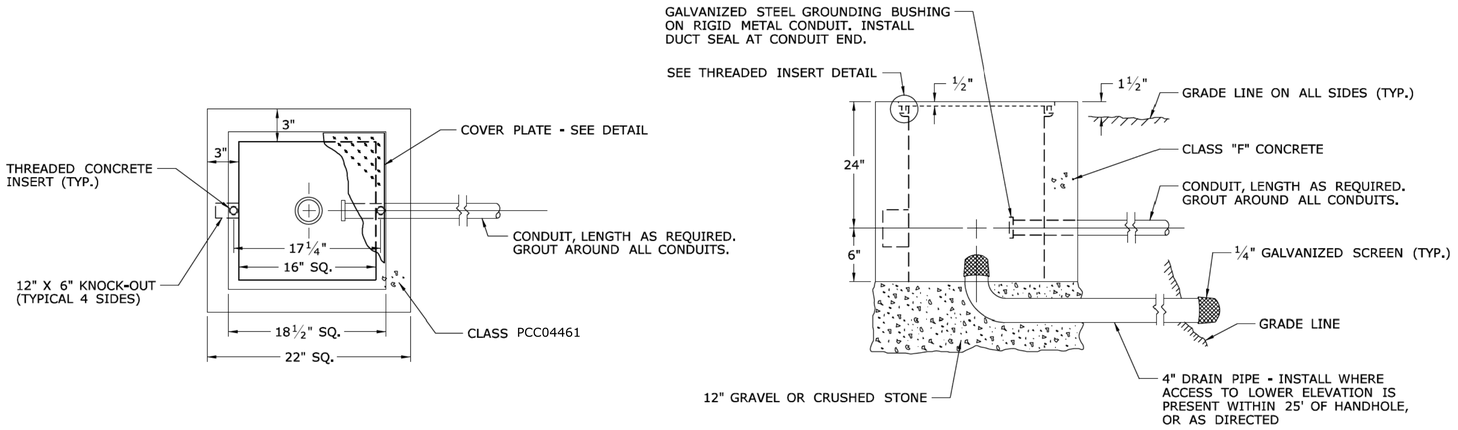
SIGNATURE/ BLOCK: M&J ENGINEERING P.C.
"INNOVATIVE AND STATE-OF-THE-ART SOLUTIONS"
2003 Jericho Turnpike, New Hyde Park, N.Y. 11040 Tel: 516.821.7300

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

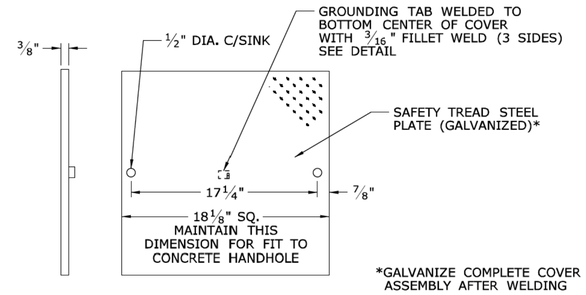
PROJECT NUMBER: 0056-0316
PROJECT DESCRIPTION: Resurfacing, Bridge Rehabilitation and Safety Improvements on I-95
TOWN(S): Greenwich and Stamford
DRAWING TITLE: TYPICAL LOOP DETECTOR SAW CUT AND LEAD-IN

DRAWING NO. TMS-04
SHEET NO. **06.005**

LASTED SAVED BY: Kushal G. Patel **FILE NAME:** C:\Users\kusha\M&J Engineering\M&J Engineering\0056-0316_I95_CTDOT - Documents\Execution\CAD\Plans\HW_MSH_0056-0316_TMS-04.dgn
PLOTTED DATE: 7/7/2022

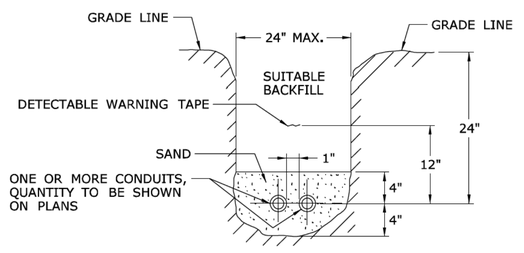


CONCRETE HANDHOLE - TYPE III

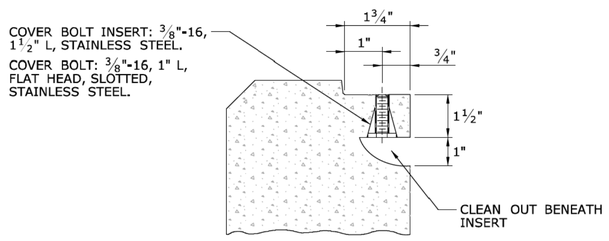


RECESSED COVER TO BE USED IN MEDIAN, IN PAVEMENT, IN SIDEWALK, OR WHERE INDICATED ON PLANS.

RECESSED TYPE COVER



BURIED CONDUIT



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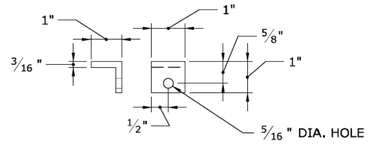

NOTE:
ATTACH 72" LENGTH OF NO. 8 GROUND WIRE TO GROUNDING TAB WITH ONE HOLE LUG, ¼" x ¾" LG. SST HEX HEAD BOLT, AND SST FLAT WASHER. ATTACH FREE END OF GROUND WIRE TO NO. 8 BARE GROUND WIRE IN HANDHOLE.

STEEL GROUNDING TAB

REV. | DATE | REVISION DESCRIPTION

DESIGNER/DRAFTER: KP/NR CHECKED BY: RR

HORIZONTAL SCALE 1" = 20' (0, 20', 40')

SIGNATURE/ BLOCK:

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PROJECT NUMBER: 0056-0316
PROJECT DESCRIPTION: Resurfacing, Bridge Rehabilitation and Safety Improvements on I-95
TOWN(S): Greenwich and Stamford
DRAWING TITLE: CONCRETE HANDHOLE AND APPURTENANCES

DRAWING NO. TMS-05
SHEET NO. 06.006

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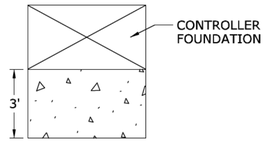
PLOTTED DATE: 7/7/2022



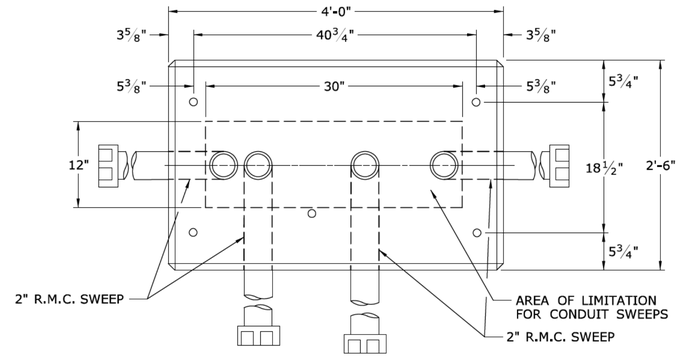
INSTALL PRECAST OR CAST-IN-PLACE CONCRETE SIDEWALK ON CABINET DOOR SIDE OF CONTROLLER FOUNDATION.

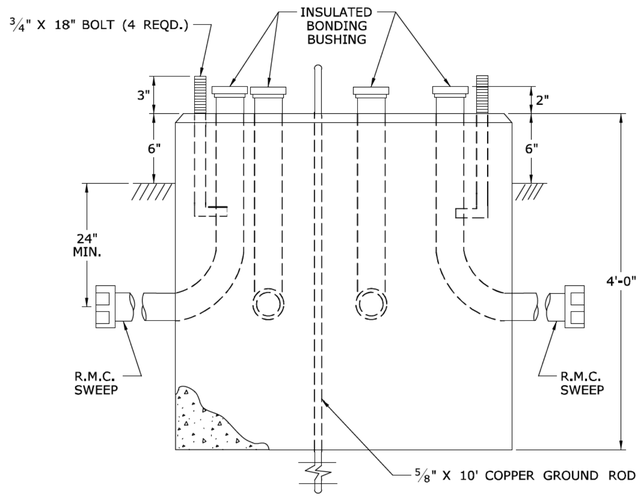
MINIMUM 3" THICK SLAB

MINIMUM 6" GRAVEL OR MISCELLANEOUS AGGREGATE BASE COMPACTED

PITCH SIDEWALK $\frac{1}{4}$" PER FOOT AWAY FROM THE CONTROLLER FOUNDATION.

TYPICAL CONCRETE SIDEWALK AT CONTROLLER FOUNDATION

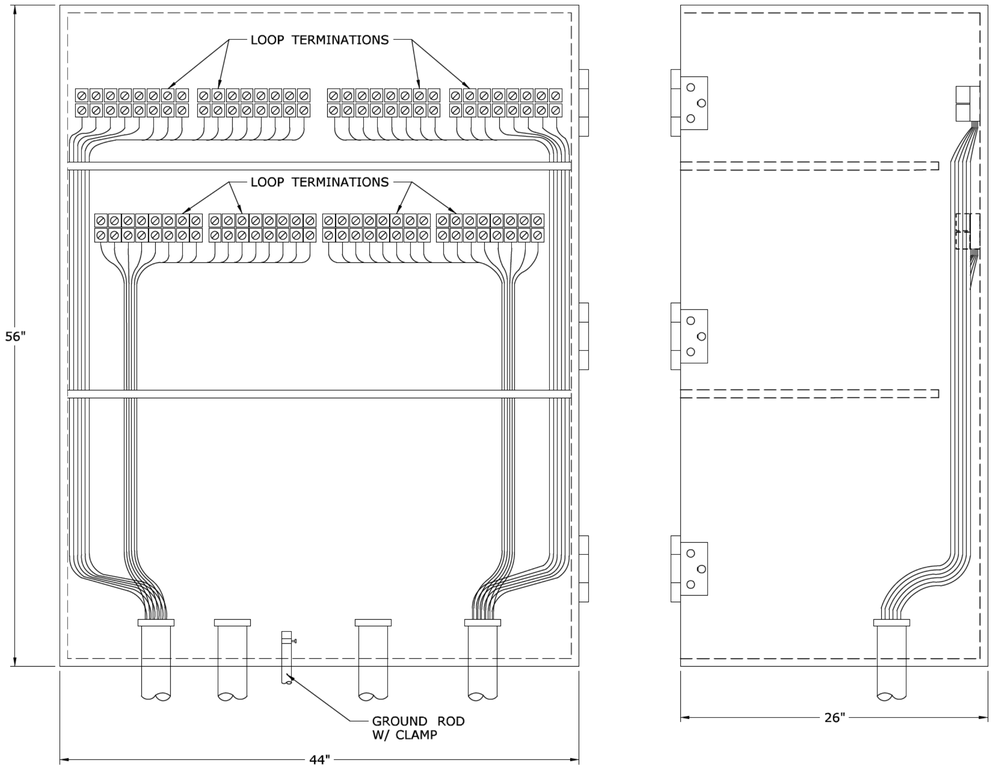




NOTES:

1. DIRECTION OF CONDUIT SWEEPS SHALL BE AS REQUIRED. INSTALL ALL CONDUIT SWEEPS.
2. LOCATION OF BOLTS SHALL BE VERIFIED TO MATCH CABINET.

TRAFFIC CONTROL FOUNDATION CONTROLLER TYPE IV



NOTES:

1. CABINET DOOR NOT SHOWN.
2. ALL CONDUIT SHALL BE 2" RMC.

TRAFFIC CONTROLLER CABINET

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: KP/NR CHECKED BY: RR

HORIZONTAL SCALE 1" = 20' (0, 20', 40')

SIGNATURE/ BLOCK: M&J ENGINEERING P.C. "INNOVATIVE AND STATE-OF-THE-ART SOLUTIONS"
2003 Jericho Turnpike, New Hyde Park, N.Y. 11040 Tel: 516.821.7300

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0056-0316
PROJECT DESCRIPTION: Resurfacing, Bridge Rehabilitation and Safety Improvements on I-95
TOWN(S): Greenwich and Stamford
DRAWING TITLE: TRAFFIC CONTROLLER CABINET AND FOUNDATION

DRAWING NO. TMS-06
SHEET NO. 06.007

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PLOTTED DATE: 7/7/2022