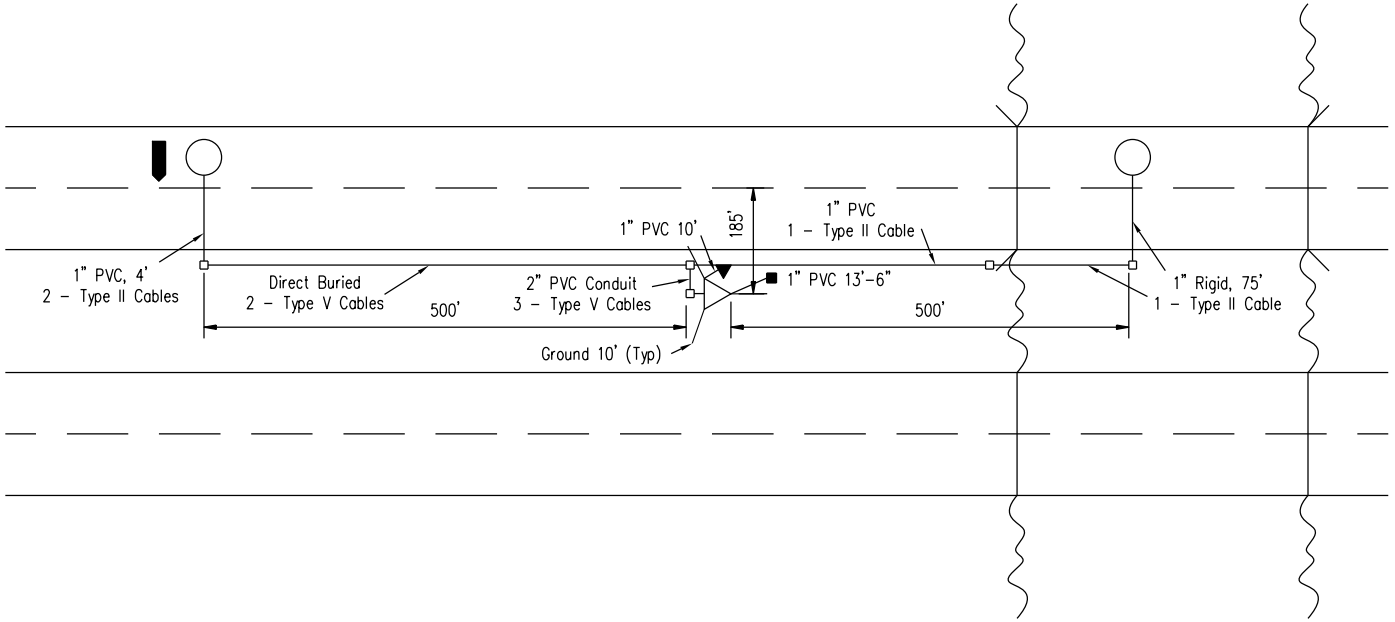
Site 9



▼ Telephone Pedestal

■ Electrical Pedestal

□ 12"x24" Quazit J-Box

▽ ESS Tower

◯ Pavement Sensor

▮ Sub-Temp Probe

▨ Sub-Soil Temp Sensor

Equipment:

1 – Tower 30'
2 – Pavement Sensor
1 – Sub-Temp Probe
1 – AT/RH
1 – WS/D
1 – WIVIS
2 – Splice Kit
1 – Barometric Sensor

Hwy: I-90
MP: 118.6
Lat.: 43 39 46.973
Lon.: 94 07 20.758
Rel.: 1.1 mi W of Blue Earth & Jct. 169

AS-BUILT
Sept. 2000

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. WITH THE FOLLOWING TOLERANCES:
FRACTIONS ±1/64 | DECIMALS ±.005 | ANGLES ±1°

SSI
Sensing the Future
Surface Systems, Inc.
11612 Lilburn Park Road
St. Louis, MO 63146-3535

PART/ITEM
Minnesota
Department of Transportation
Statewide R/WIS

SCALE: NONE
SHEET 8 OF 76

FILE NAME: SITE9.DWG

$STATION$ TMS
PLOTTED:$PLOTTED$ ON $TIME$

① F&I 1.5" NMC AND 1-FO CABLE (36SM)

② F&I PULL VAULT, OUTDOOR SPLICE ENCLOSURE AND FO CABLE SPLICING (ALLOW SLACK PLACEMENT IN FIBER CABLE TO ACCOMODATE THE AFFECT OF THE BRIDGE EXPANSION AND CONTRACTION)

③ F&I 1.5" NMC AND 1-FO PIGTAIL (6SM)

④ F&I ELECTRIC SERVICE CABINET AND FOUNDATION

⑤ F&I 2" NMC AND 1-3/C #12

⑥ F&I CCTV HARDWARE, FOUNDATION CAM#XXX
F&I CCTV POLE CABINET AND PIGTAIL TERMINATION

⑦ INPLACE 4" RSC (SEE BRIDGE PLAN)
F&I 1.5" NMC AND 1-FO CABLE (36SM) INTO INPLACE 4"RSC (SEE BRIDGE PLANS)

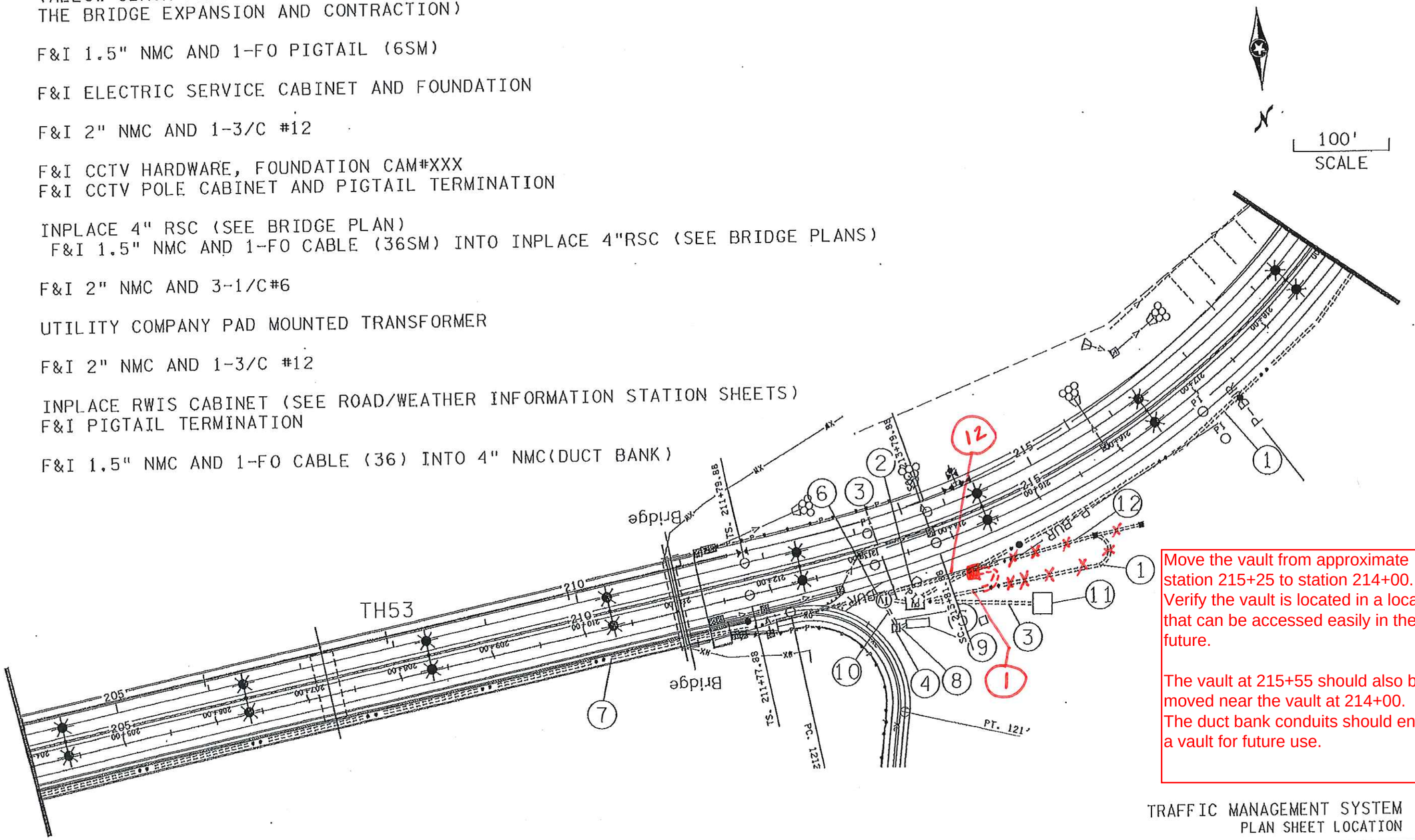
⑧ F&I 2" NMC AND 3-1/C#6

⑨ UTILITY COMPANY PAD MOUNTED TRANSFORMER

⑩ F&I 2" NMC AND 1-3/C #12

⑪ INPLACE RWIS CABINET (SEE ROAD/WEATHER INFORMATION STATION SHEETS)
F&I PIGTAIL TERMINATION

⑫ F&I 1.5" NMC AND 1-FO CABLE (36) INTO 4" NMC(DUCT BANK)



Move the vault from approximate station 215+25 to station 214+00. Verify the vault is located in a location that can be accessed easily in the future.

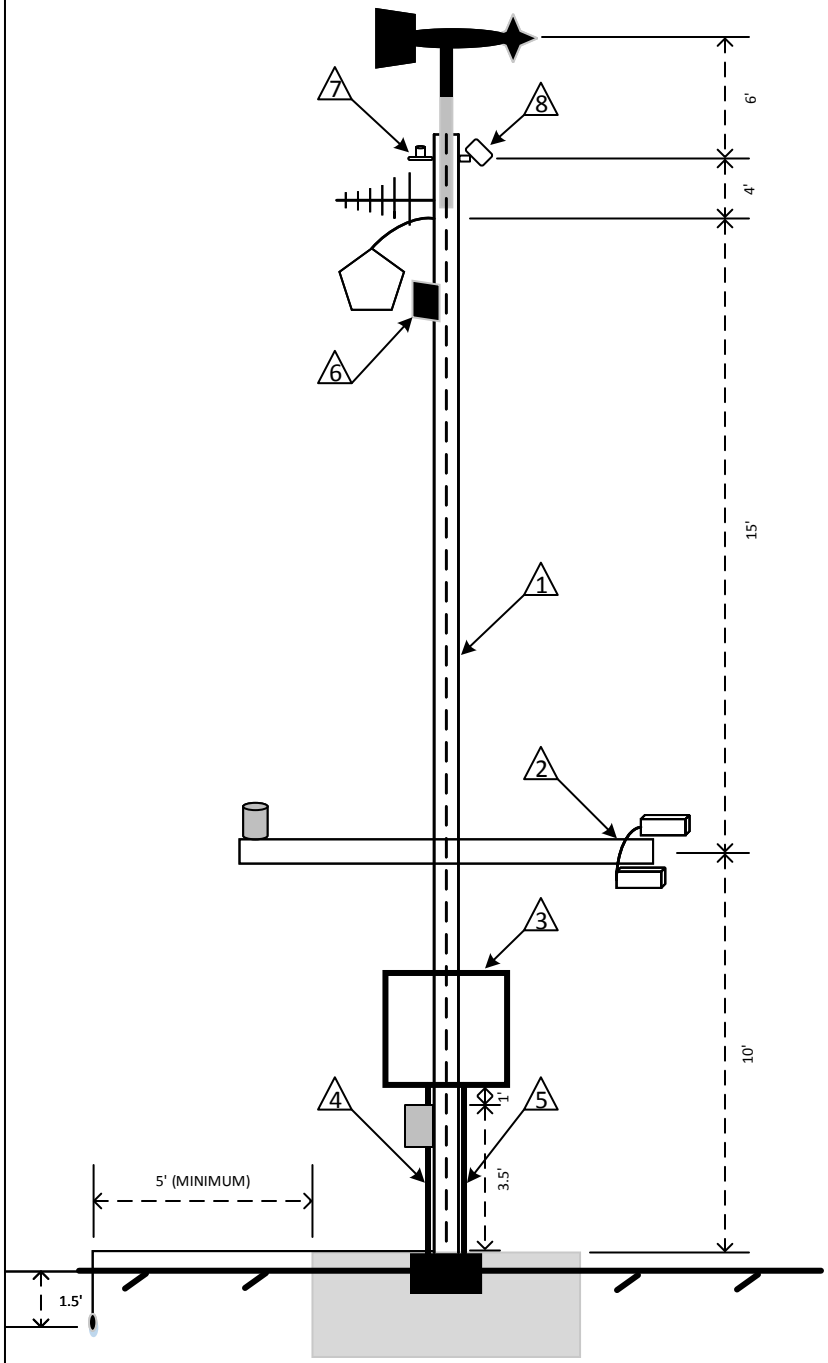
The vault at 215+55 should also be moved near the vault at 214+00. The duct bank conduits should end in a vault for future use.

TRAFFIC MANAGEMENT SYSTEM
PLAN SHEET LOCATION

REV. NO. A	DATE: 10/4/2016	TIFIED BY _____ LICENSED PROFESSIONAL ENGINEER	LIC.NO. 40469 SEPT 23 2015	STATE PROJ. NO. 6918-86 (TH 53) SHEET NO. 632 OF 724 SHEETS
REV. NO.	DATE: / /			

$FILE$

NOT TO SCALE



LEGEND:

- GROUND SURFACE
- TOWER FOUNDATION
- RWIS-ESS TOWER
- ADJUSTABLE ANEMOMETER MOUNTING POLE
- MOUNTING ARM
- ENCLOSURE/RPU
- POWER METER
- 2" CONDUIT
- 12" X 24" POLYMER CONCRETE JUNCTION BOX
- ANEMOMETER
- DIRECTIONAL ANTENNA (IF NEEDED)
- CAMERA
- IR ILLUMINATOR
- PRESENT WEATHER DETECTOR
- TEMPERATURE/RELATIVE HUMIDITY
- SUB-SURFACE TEMPERATURE SENSOR
- NON-INVASIVE ROAD SURFACE SENSOR
- SOLAR RADIATION SENSOR

DETAIL NOTES:

1. DESIGN PLAN CALLS FOR 30' TOWER; ATTACHMENT HEIGHT MEASUREMENTS ARE APPROXIMATE.
2. SENSORS/DEVICES ATTACHED TO TOWER WITH MOUNTS PROVIDED BY MANUFACTURER.
3. ATTACH ENCLOSURE ON THE SOUTH SIDE OF THE TOWER. *PRESSURE SENSOR MOUNTED INSIDE OF ENCLOSURE.*
4. 2" CONDUIT CONTAINS ELECTRICAL CONDUCTORS FROM SERVICE PEDESTAL.
5. 2" CONDUIT CONTAINS INVASIVE SURFACE SENSOR WIRE; RUNS FROM JUNCTION BOX TO BOTTOM OF ENCLOSURE.
6. IR ILLUMINATOR TO BE MOUNTED DIRECTLY BELOW CAMERA.
7. SOLAR RADIATION SENSOR PLACED NEAR TOP OF TOWER WITH NO OBSTRUCTIONS FROM THE SUN.
8. NON-INVASIVE ROAD SENSOR PLACED ONE FOOT FROM TOP OF TOWER; MAXIMUM DISTANCE TO TARGET IS 50'; ANGLE OF SENSOR MUST BE BETWEEN 30-60 DEGREES

RFC

DESIGN JC CHECK 6/20/17 DRAWN CHECK QUALITY CHECK

THE NARWHAL GROUP

MNDOT
RWIS-ESS SITE DESIGN PROJECT

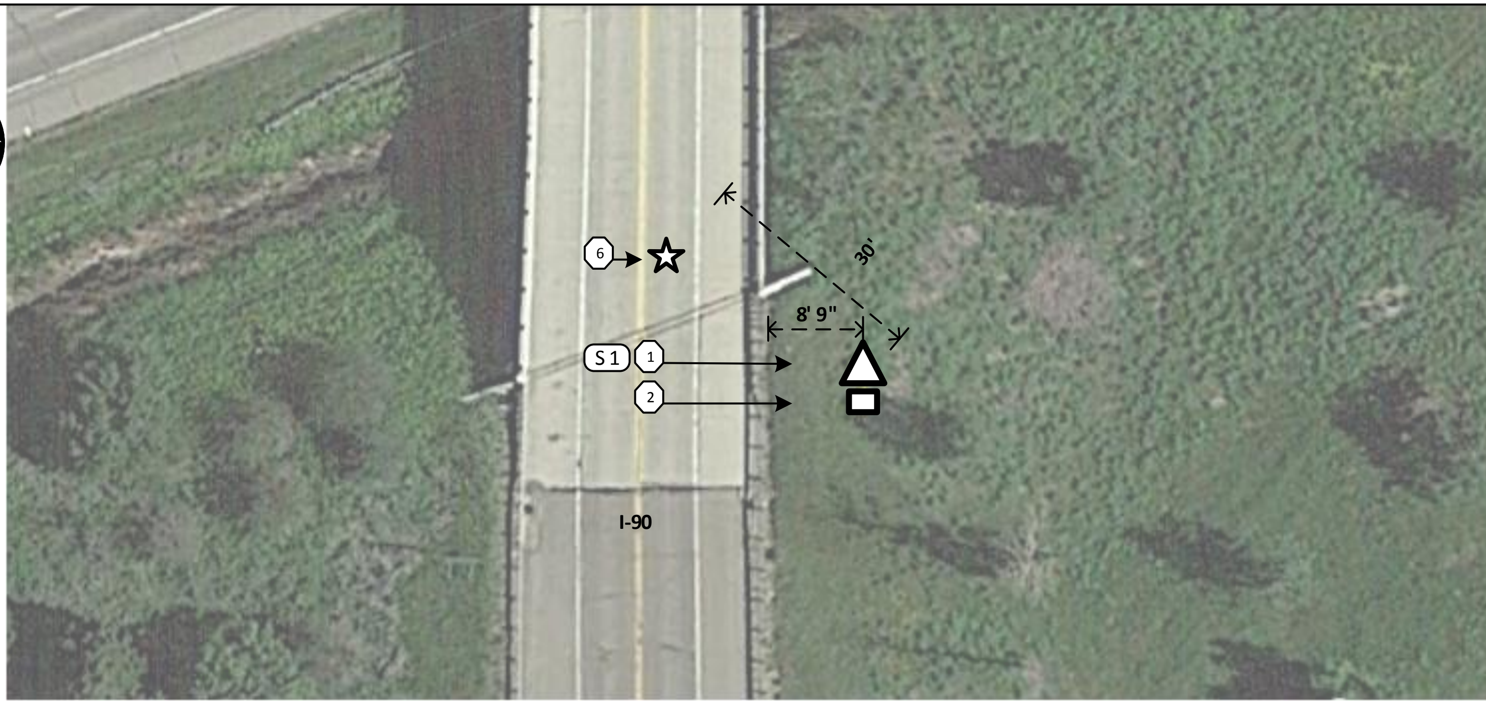
RIWS-ESS TOWER DETAIL

PROJECT NUMBER

SHEET NO. DT-11

NOT TO SCALE

N



LEGEND:

- RWIS-ESS FOUNDATION AND TOWER (DT-03)
- 12" X 24" POLYMER CONCRETE JUNCTION BOX
- NON-INVASIVE PAVEMENT SENSOR TARGET

NON-INVASIVE SENSOR NOTES:

S1 INSTALL NON-INVASIVE PAVEMENT SENSOR ~29' UP TOWER TO HIT CENTER OF NEAREST TRAVEL LANE. SENSOR ANGLE MUST BE WITHIN MANUFACTURER SPECIFICATIONS.

SHEET NOTES:

1. INSTALL FOUNDATION, GROUNDING, TOWER, AND ENSURE A FLAT FACE OF TOWER FACES SOUTH. INSTALL BOTTOM OF ENCLOSURE 4.5' ABOVE FOUNDATION ON THE TOWER SO THAT IT OPENS TO THE SOUTH. FOR ADDITIONAL TOWER INSTALLATION NOTES/PROCEDURES REFER TO APPENDIX A FOR SPECIFICATIONS PROVIDED BY MANUFACTURER.
2. INSTALL 12" X 24" POLYMER CONCRETE JUNCTION BOX ON SOUTH SIDE OF TOWER FOUNDATION SO THAT YOU ARE STANDING ON IT WHEN LOOKING INTO THE ENCLOSURE; INSTALL FLUSH WITH TOWER FOUNDATION. JUNCTION BOX DEPTH SHOULD BE IN COMPLIANCE WITH MNDOT STANDARDS. INSTALL 2" CONDUIT FROM JUNCTION BOX TO BOTTOM OF ENCLOSURE.
6. NON-INVASIVE SURFACE SENSOR TARGET SHOULD BE IN MIDDLE OF NEAREST TRAVEL LANE.

RFC

DESIGN SJ/JC 5/9/17 CHECK DATE

DRAWN JC 6/20/17 CHECK BY

QUANT. CHECK

THE NARWHAL GROUP

MNDOT
RWIS-ESS SITE DESIGN PROJECT

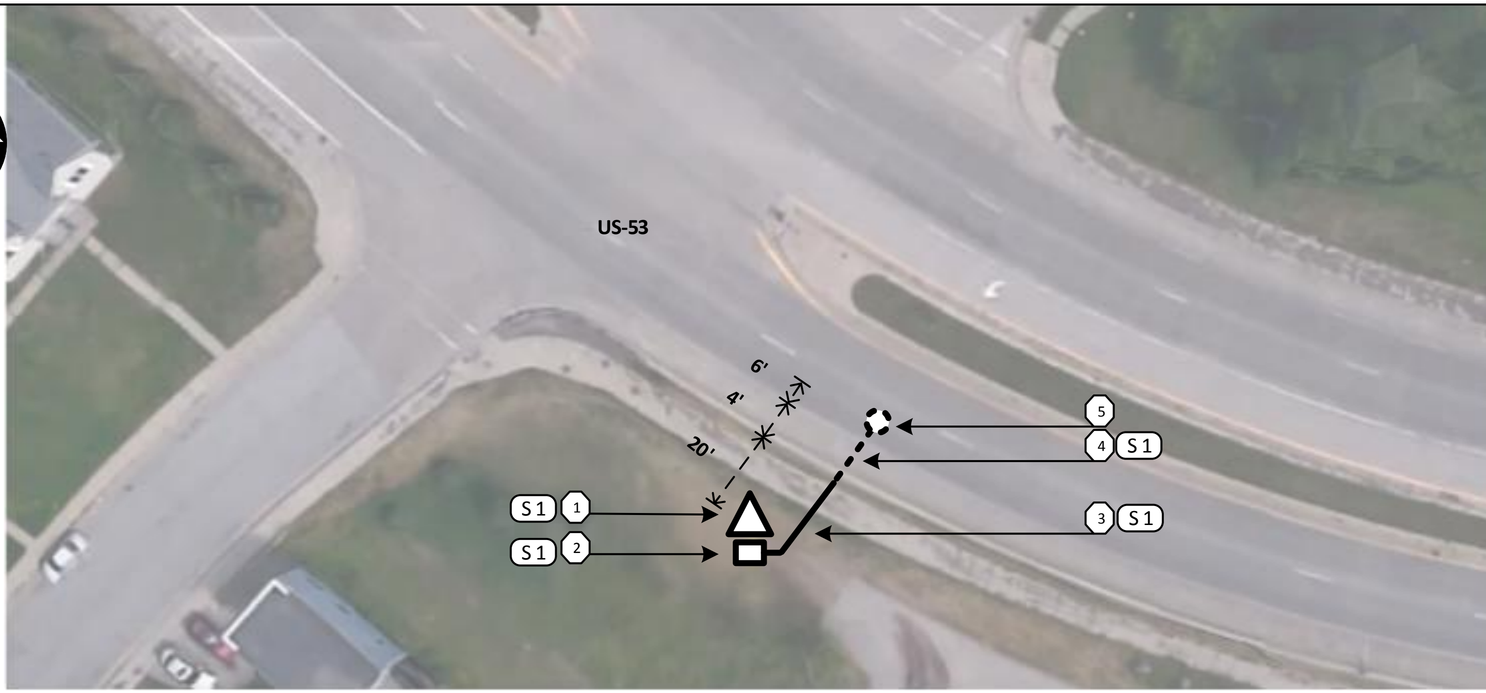
SITE PLAN

MN0149 – WELLS; 43.65757, -93.7282

PROJECT NUMBER

SHEET NO. SP-149

NOT TO SCALE



LEGEND:

- RWIS-ESS FOUNDATION AND TOWER (DT-03)
- 12" X 24" POLYMER CONCRETE JUNCTION BOX
- IN-PAVEMENT SENSOR
- 2" CONDUIT – SCHEDULE 40
- PAVEMENT CUT

CONDUIT/PAVEMENT CUT NOTES:

S1 INSTALL SENSOR CABLE FROM SENSOR TO JUNCTION BOX TO ENCLOSURE.

SHEET NOTES:

1. INSTALL FOUNDATION, GROUNDING, TOWER, AND ENSURE A FLAT FACE OF TOWER FACES SOUTH. INSTALL BOTTOM OF ENCLOSURE 4.5' ABOVE FOUNDATION ON THE TOWER SO THAT IT OPENS TO THE SOUTH. FOR ADDITIONAL TOWER INSTALLATION NOTES/PROCEDURES REFER TO APPENDIX A FOR SPECIFICATIONS PROVIDED BY MANUFACTURER.
2. INSTALL 12" X 24" POLYMER CONCRETE JUNCTION BOX ON SOUTH SIDE OF TOWER FOUNDATION SO THAT YOU ARE STANDING ON IT WHEN LOOKING INTO THE ENCLOSURE; INSTALL FLUSH WITH TOWER FOUNDATION. JUNCTION BOX DEPTH SHOULD ACCOUNT FOR CONDUIT DEPTH IN SHEET NOTE 3. INSTALL 2" CONDUIT FROM JUNCTION BOX TO BOTTOM OF ENCLOSURE.
3. INSTALL 2" CONDUIT FROM JUNCTION BOX INTO GROUND AT PROPER DEPTH. RUN CONDUIT AT PROPER DEPTH TO EDGE OF PAVEMENT CUT. CONDUIT DEPTH SHOULD BE IN COMPLIANCE WITH MNDOT STANDARDS.
4. CUT PAVEMENT FROM PAVEMENT EDGE TO CENTER OF TRAVEL LANE; CUT MADE IN ACCORDANCE TO SURFACE SENSOR MANUFACTURER SPECIFICATIONS.
5. INSTALL INVASIVE SURFACE SENSOR AND PAVEMENT SEALANT ACCORDING TO MANUFACTURER SPECIFICATIONS. SENSOR MEASUREMENT FROM FOG LINE IS PRECISE TO ENSURE SENSOR IS LOCATED IN THE CENTER OF THE TRAVEL LANE.

RFC | DATE | BY
DESIGN AL/SP 5/9/17 | CHECK
DRAWN JC 6/20/17 | CHECK
QUANT. | CHECK

THE NARWHAL GROUP

MNDOT
RWIS-ESS SITE DESIGN PROJECT

SITE PLAN
MN095 – PIEDMONT AVE; 46.77136, -92.13752
PROJECT NUMBER
SHEET NO. SP-095