

IOWA COMMUNICATIONS NETWORK

CONSTRUCTION DRAWINGS FOR:
FIBER INSTALLATION ALONG 4TH AVENUE NE
IN SIOUX CENTER FOR CONNECTIONS
TO AEA BUILDING AND DORDT COLLEGE.
(SIOUX COUNTY)

PROJECT OVERVIEW:

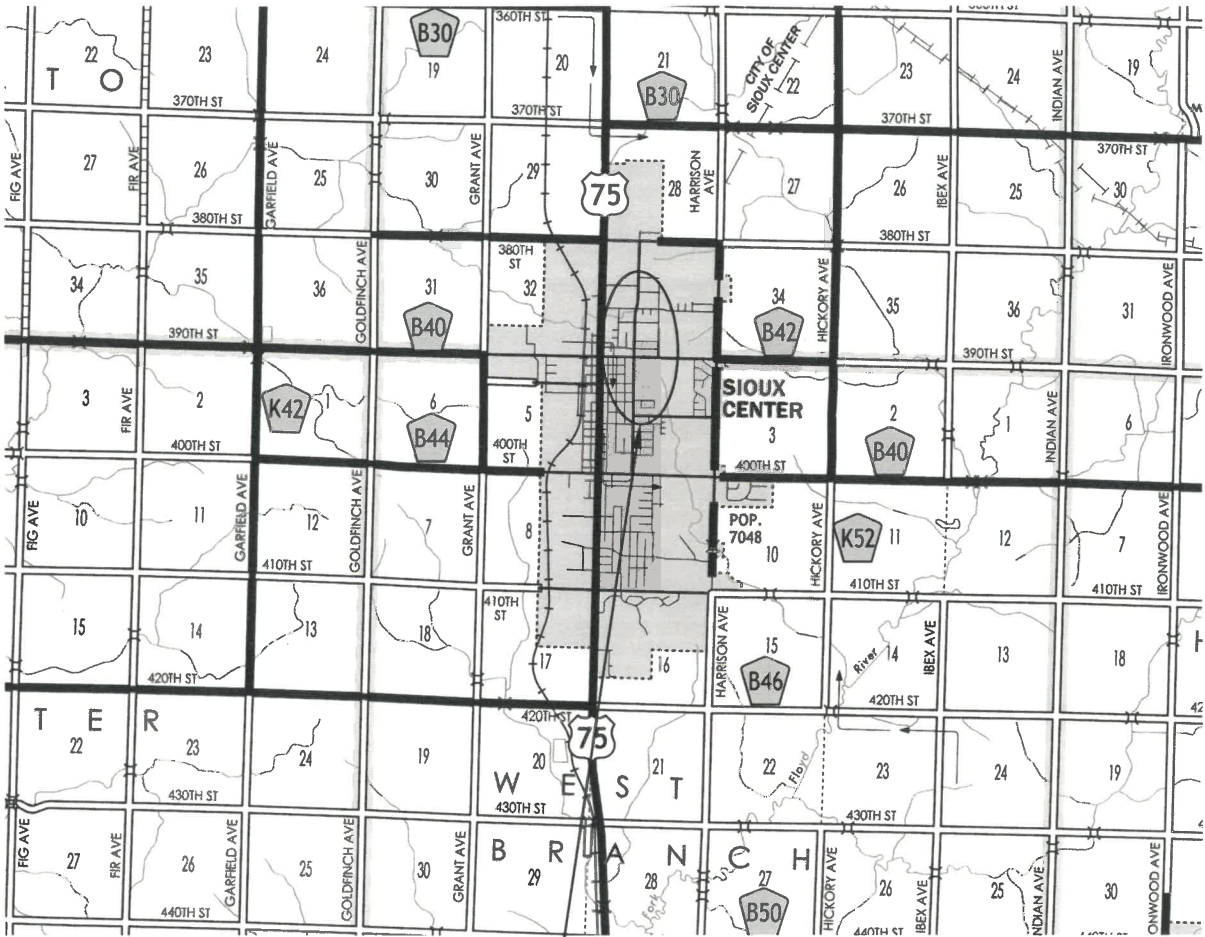
NEW INSTALLATION OF ARMORED 12-STRAND OSP FIBER CABLE THROUGH NEW 2" HDPE CONDUIT ALONG 4TH AVENUE NE IN SIOUX CENTER, IOWA. NEW CONDUIT WILL RUN FROM EXISTING DORDT COLLEGE HANDHOLE AT 5TH STREET NE TO AN EXISTING AEA BUILDING HANDHOLE NORTH OF 12TH STREET NE. APPROXIMATELY 3924' OF NEW DUCT AND FOUR NEW 24X36X36 HANDHOLES WILL BE REQUIRED TO CONNECT THE EXISTING BUILDING HANDHOLES. THE HDPE CONDUIT SHALL BE NO LESS THAN 42 INCHES DEEP IN ALL AREAS. A 12-STRAND ARMORED CABLE WILL BE PULLED IN FROM THE AEA BUILDING TO THE NEW HANDHOLE AT THE CORNER OF 4TH AVENUE NE AND 5TH STREET NE. AT THIS HANDHOLE A SPLICE CLOSURE AND ISO-LEVER LOCATE STATION WILL BE INSTALLED AND A 12-STRAND DIELECTRIC INDOOR/OUTDOOR CABLE WILL BE PULLED INTO THE DORDT COLLEGE RIBBENS CENTER BUILDING. RESTORE RIGHT-OF-WAY AND REMOVE ANY DEBRIS FROM THE CONSTRUCTION AREA.

SHEET INDEX	
1	TITLE PAGE (THIS SHEET)
2	MATERIALS
3-8	CONSTRUCTION DRAWING
9-12	BUILDING ENTRANCE DETAILS
ATTACHMENTS	ICN TYPICAL DETAILS FOR:
	-HANDHOLES -BUILDING ENTRANCE

CONTACTS*				
COMPANY	TYPE	NAME	PHONE	EMAIL
Iowa Communications Network (ICN)	OSP Engineer	Tim Flickinger	515-725-4699	timothy.flickinger@iowa.gov
Iowa Communications Network (ICN)	ICN Materials	Paul Damge	515-725-4749	paul.damge@iowa.gov
City of Sioux Center	City Permit	Josh Dorhout	712-722-0761	joshd@siouxcenter.org
Dordt College	Building Connection	Arlan Nederhoff	712-722-6015	arlan.nederhoff@dordt.edu

*THIS CONTACT LIST IS NOT ALL-INCLUSIVE. CONTRACTOR IS RESPONSIBLE FOR REQUESTING LOCATES OF ALL UTILITIES.

PROJECT LOCATION



PROJECT LOCATION



LICENSED PROFESSIONAL ENGINEER

GREGORY T. SEIB

23179

IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Gregory T. Seib 5-3-2019

Signature Date

Gregory T. Seib

Printed or Typed Name

23179

License Number

My license renewal date is December 31, 2020

Pages or sheets covered by this seal: 1-12



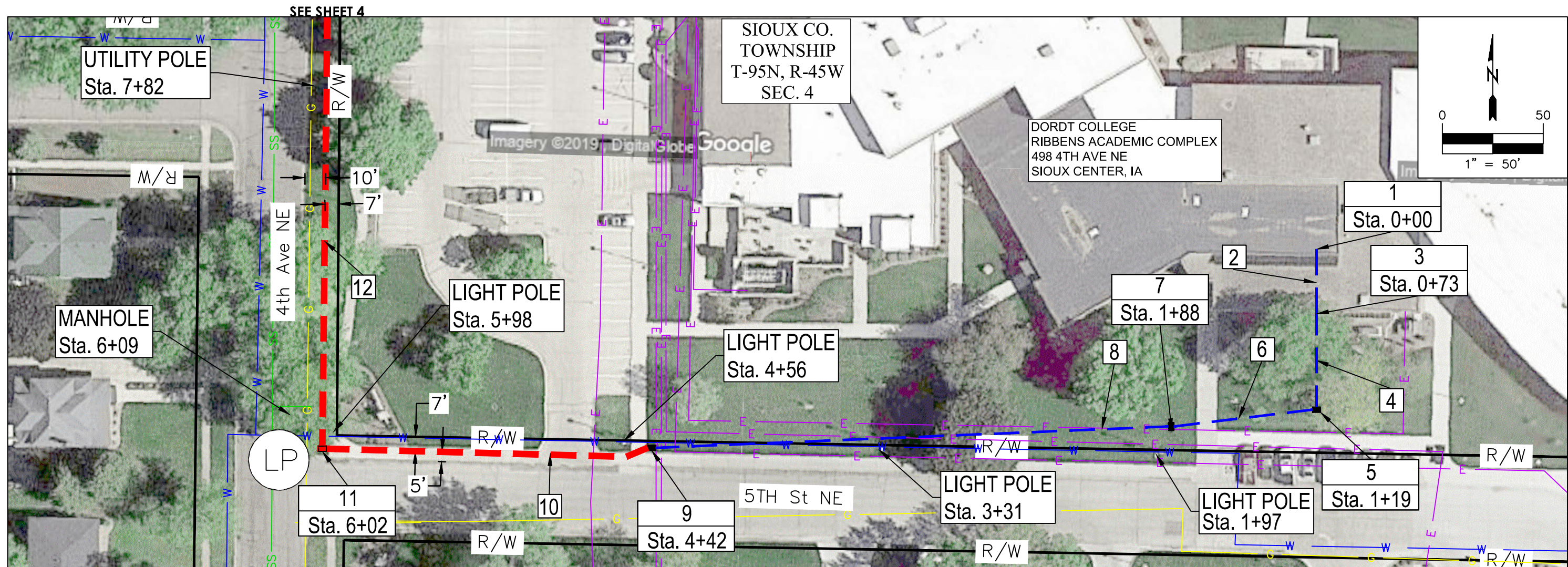
DORDT COLLEGE RIBBENS COMPLEX CONNECTION SIOUX CENTER IOWA				IOWA COMMUNICATIONS NETWORK 400 EAST 14TH STREET GRIMES STATE OFFICE BUILDING DES MOINES, IOWA 50319 ICN © 2019, COPY WITH PERMISSION
1	PRELIMINARY	04-22-19		
2	FINAL	05-03-19		
3				
4				

Iowa Communications Network		Date:	04/29/19
Project Name: Sioux Center, Dordt College Ribbens Complex			
Project Number: 84190105			
ICN Provided Material List (Warehouse Contact Paul Damge 515.725.4749)			
Item	ICN Part Number	Qty	Notes
FIBER CABLE			
12 strand Armored SM fiber		5400	
12 strand Indoor/Outdoor OFNR Dielectric SM fiber		850	
HANDHOLES AND LIDS			
Bulk 24"x36"x36" with lid Tier 22	BULKU2436360061001	4	
Bulk Puck ICN Logo Black	ACC7734-125	3	
Bulk Puck ICN Logo Orange	ACC7334OR-125	1	Locate point only
LOCATE FACILITIES			
LOCATE STATIONS			
IsoLever (Rhino Marker Isolation Lever only, no post)	EM9125-OR	1	Mount in handhole
ISO Lever Locate Box (pre-fabricated unit)	ISOLOCBOX	1	
GROUNDING			
Erico 1/2" x 6' Ground Rod (Graybar)	611360	2	
Burndy 1/2" Ground Rod Clamp (Anixter)	GRC12	2	
WIRE			
12 AMG Copperhead 30 MIL Insulated Orange Copper Clad Steel Tracer Wire***	1230NHS1000	602	
MARKERS FLAGS DECALS			
ICN Snap Around Vulcan 4"x4" 15Mil Coiled Pvc (ICN-4X4-SA)	1502345 (ICN-4x4-SA)	12	
TERMINATION ITEMS: FDP, BULKHEADS, TRAYS, & RELATED			
Closet Connector Housing (CCH), 1 rack unit, holds 2 CCH cassettes	CCH-01U	1	
Wall-Mountable Connector Housing (WCH), Holds 2 CCH connector panels	WCH-02P	1	
CCH Pigtailed Splice Cassette, 12 F, SC UPC Duplex, SM, SF PRE-ASSEMBLED	CCH-CS12-59-P00RE	1	
CCH Pigtailed Splice Cassette, 6 F, SC UPC Simplex, SM PRE-ASSEMBLED	CCH-CS06-3C-P00RE	1	
Leviton storage ring 24-inch	48900-OFR	2	
SPLICING MATERIALS			
SPLICE CLOSURES			
450BS FOSC450-BS-6-NT-0-B0V	F34112-000	1	
SPLICE TRAYS			
A TRAY 12 FOSC-ACC-A-TRAY-12 TRAY WITH 12 FUSION SPLICE HOLDER	497817-000	1	BS case
BONDING & TRACING HARDWARE			
FOSC Closure Sealing Kit FAK-MULDRP-45-4P/CBL-ATT	1F6818-000	1	
3M Scotchlok Shield Bond Connector 4460-D	4460-D	1	

NOTE ON HDPE CONDUIT AND SPLICES:

1. HDPE SHALL BE ORANGE SMOOTH WALL SDR 13.5
2. DUCT SPLICES SHALL BE MADE OF THE FOLLOWING (IN ORDER OF PREFERENCE.)
 - CRIMP ON
 - CLAMP ON / BOLT ON (SPLIT COUPLINGS)
 - PUSH ON
3. **ALL SPLICES SHALL BE AIR AND WATER TIGHT**
4. DUCT SPLICES SHALL BE OF A TYPE MADE SPECIFICALLY FOR JOINING HDPE CONDUIT
5. ALL DUCT SPLICES SHALL BE MADE IN SUCH MANNER AS TO ALLOW CONTINUOUS PULLING OF CABLE THROUGH DUCT.

ANY EXCEPTIONS MUST BE AGREED UPON IN WRITING PRIOR TO CONSTRUCTION:



NOTES:

1. IT ROOM
SEE DETAILS ON SHEET 9-10
2. 73' FROM STA. 0+00 TO STA. 0+73
EXISTING 4" DORDT COLLEGE CONDUIT
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE
3. STA. 0+73
EXISTING DORDT COLLEGE JUNCTION BOX
50' COIL OF 12 F/D INDOOR/OUTDOOR
4. 46' FROM STA. 0+73 TO STA. 1+19
EXISTING 4" DORDT COLLEGE CONDUIT
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE
5. STA. 1+19
EXISTING DORDT COLLEGE HANDHOLE (30"x48"x36")
LEAVE 1 LOOP OF CABLE FOR SLACK
6. 69' FROM STA. 1+19 TO STA. 1+88
EXISTING 4" DORDT COLLEGE CONDUIT
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE
7. STA. 1+88
EXISTING DORDT COLLEGE HANDHOLE (30"x48"x36")
LEAVE 1 LOOP OF CABLE FOR SLACK
8. 254' FROM STA. 1+88 TO STA. 4+42
EXISTING 4" DORDT COLLEGE CONDUIT
(CONTRACTOR TO VERIFY CONDUIT SEGMENT
BEFORE INSTALLING FIBER)
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE
9. STA. 4+42
EXISTING DORDT COLLEGE HANDHOLE (30"x48"x36")
LEAVE 1 LOOP OF CABLE FOR SLACK
10. 160' FROM STA. 4+42 TO STA. 6+02
2" CONDUIT (BORED)
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE
11. STA. 6+02
INSTALL HANDHOLE, 24" X 36" X 36",
4' NORTH OF BOC AND 8' EAST OF BOC
ISO-LEVER LOCATE STATION
MS410-A - TYCO 450BS SPLICE CLOSURE
75' COIL OF 12 F/D INDOOR/OUTDOOR
75' COIL OF 12 F/A
12. 1012' FROM STA. 6+02 TO STA. 16+14
2" CONDUIT (BORED)
LINK 0410 - 12 F/A


LEGEND

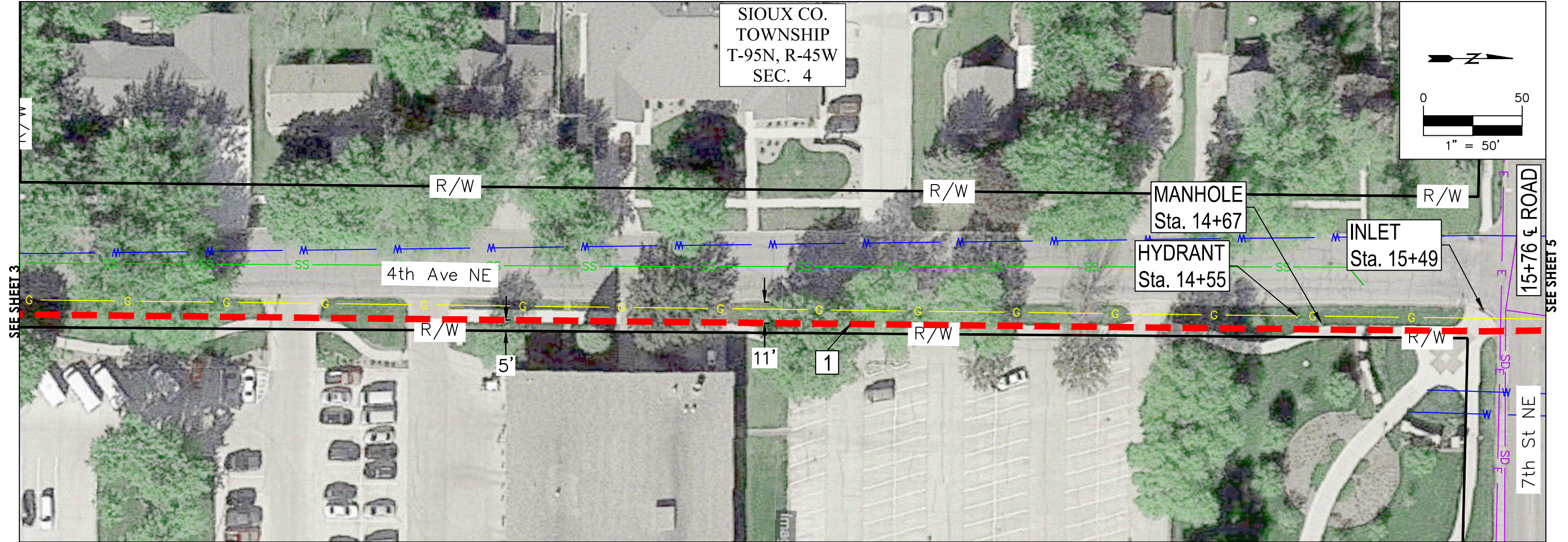
EXISTING DUCT	---
PROPOSED ICN DUCT	---
RIGHT-OF-WAY	R/W
EXISTING HANDHOLE	■
PROPOSED ICN HANDHOLE	■
EXISTING WATER	W
EXISTING STORM SEWER	SS
EXISTING ELECTRIC	E
EXISTING GAS	G

GENERAL NOTES:

1. DUCT TO BE INSTALLED MINIMUM 48" DEPTH
EXCEPT WHERE NOTED

CONSTRUCTION DOCUMENT

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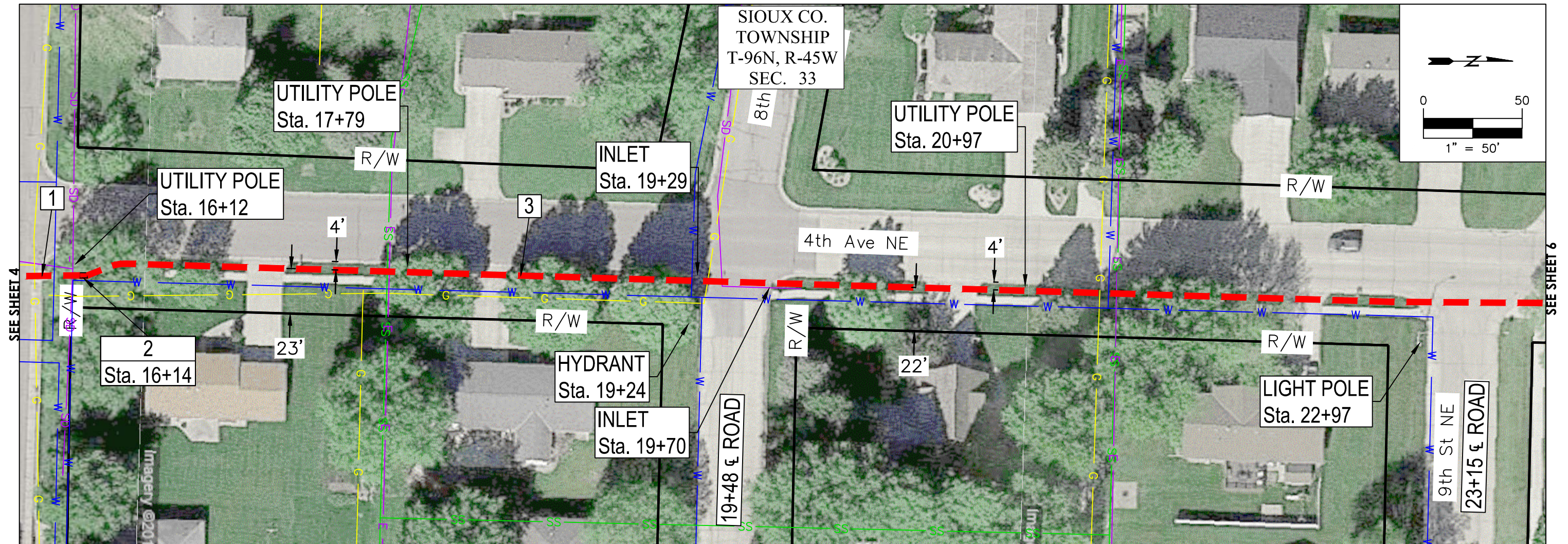
NOTES:
1. 2" HDPE, LINK 0410 - 12 F/A

LEGEND	
EXISTING DUCT	---
PROPOSED ICN DUCT	---
RIGHT-OF-WAY	---
EXISTING HANDHOLE	■
PROPOSED ICN HANDHOLE	■
EXISTING WATER	---
EXISTING STORM SEWER	---
EXISTING ELECTRIC	---
EXISTING GAS	---

GENERAL NOTES:
1. DUCT TO BE INSTALLED MINIMUM 48" DEPTH EXCEPT WHERE NOTED

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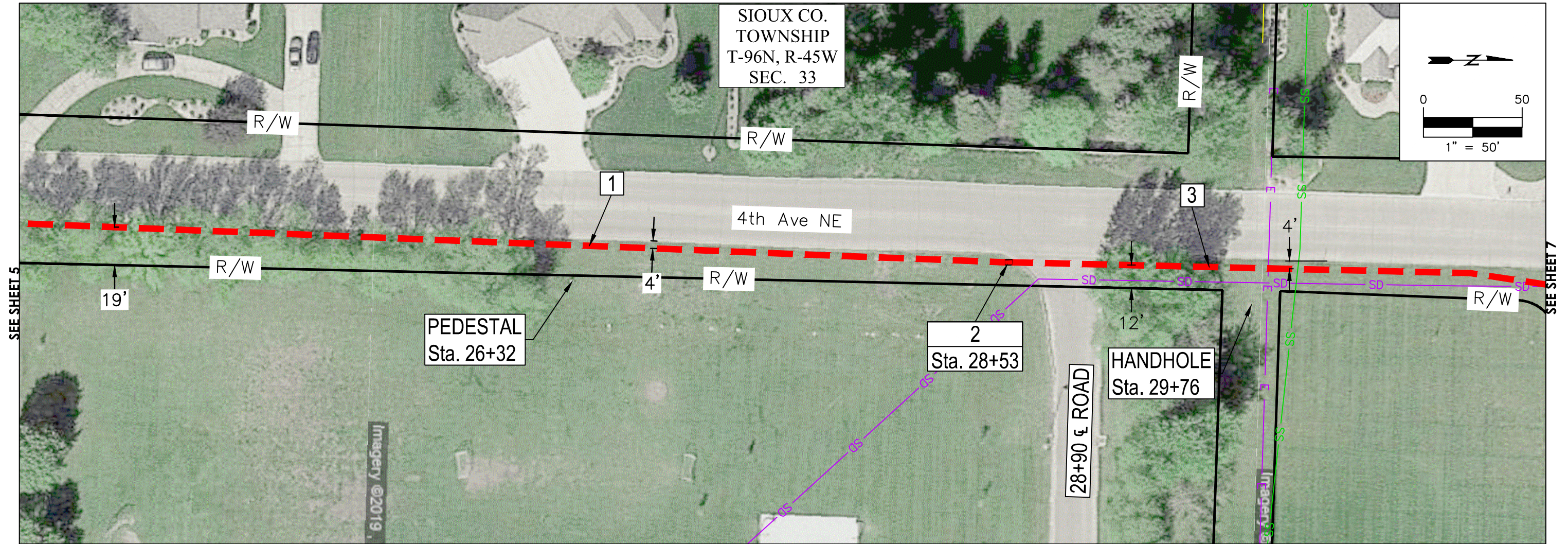
- NOTES:
- 2" HDPE, LINK 0410 - 12 F/A
 - STA. 16+14
INSTALL HANDHOLE, 24" X 36" X 36"
20' NORTH OF BOC AND 12' EAST OF BOC
150' COIL OF 12 F/A
 - 1239' FROM STA. 16+14 TO STA. 28+53
2" CONDUIT (BORED)
LINK 0410 - 12 F/A

LEGEND	
EXISTING DUCT	---
PROPOSED ICN DUCT	---
RIGHT-OF-WAY	R/W
EXISTING HANDHOLE	■
PROPOSED ICN HANDHOLE	■
EXISTING WATER	W
EXISTING STORM SEWER	SS
EXISTING ELECTRIC	E
EXISTING GAS	G

- GENERAL NOTES:
- DUCT TO BE INSTALLED MINIMUM 48" DEPTH EXCEPT WHERE NOTED

CONSTRUCTION DOCUMENT

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NOTES:

- 2" HDPE, LINK 0410 - 12 F/A
- STA. 28+53
INSTALL HANDHOLE, 24" X 36" X 36"
6' SOUTH OF BOC AND 4' EAST OF BOC
150' COIL OF 12 F/A
- 1001' FROM STA. 28+53 TO STA. 38+54
2" CONDUIT (BORED)
LINK 0410 - 12 F/A


LEGEND

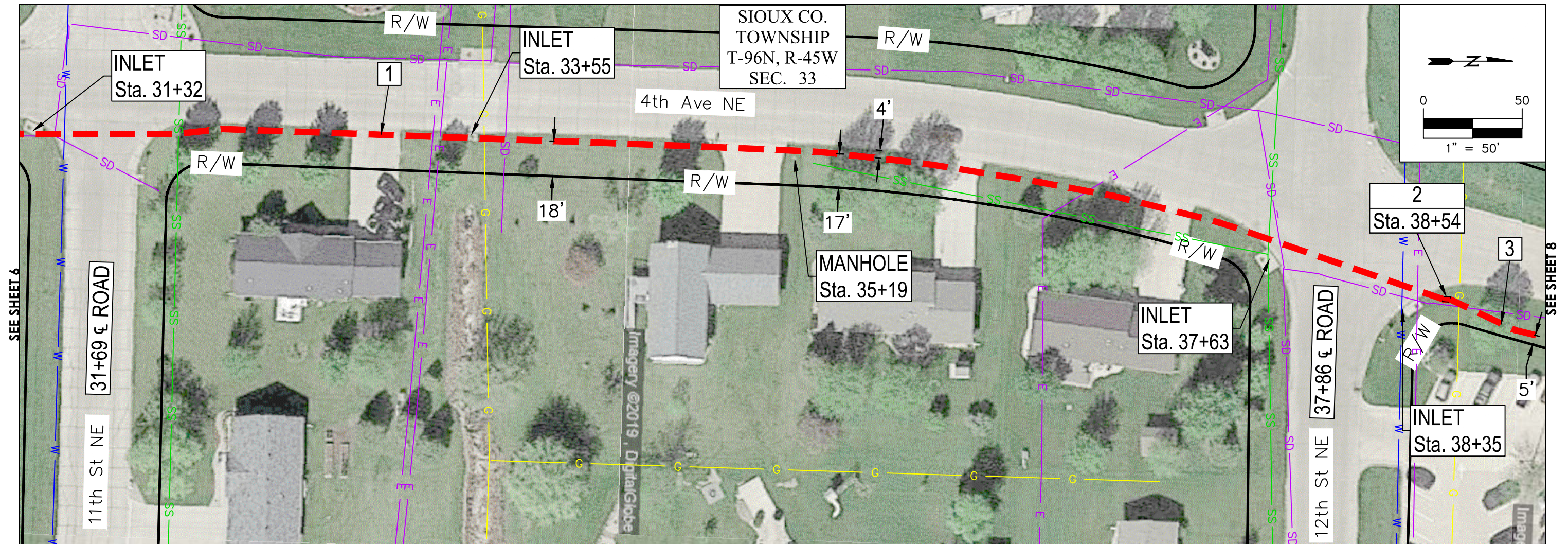
EXISTING DUCT	---
PROPOSED ICN DUCT	---
RIGHT-OF-WAY	R/W
EXISTING HANDHOLE	■
PROPOSED ICN HANDHOLE	■
EXISTING WATER	W
EXISTING STORM SEWER	SS
EXISTING ELECTRIC	E
EXISTING GAS	G

GENERAL NOTES:

- DUCT TO BE INSTALLED MINIMUM 48" DEPTH
EXCEPT WHERE NOTED

CONSTRUCTION DOCUMENT

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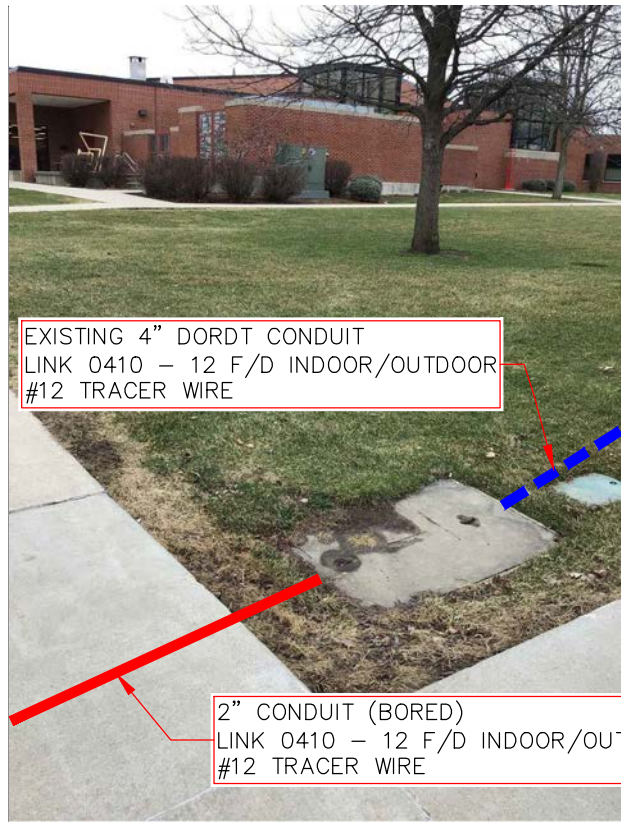
- NOTES:
- 2" HDPE, LINK 0410 - 12 F/A
 - STA. 38+54
INSTALL HANDHOLE, 24" X 36" X 36"
15' NORTH OF BOC AND 6' EAST OF BOC
150' COIL OF 12 F/A
 - 672' FROM STA. 38+54 TO STA. 42+35
2" CONDUIT (BORED)
LINK 0410 - 12 F/A

LEGEND	
EXISTING DUCT	---
PROPOSED ICN DUCT	---
RIGHT-OF-WAY	R/W
EXISTING HANDHOLE	■
PROPOSED ICN HANDHOLE	■
EXISTING WATER	W
EXISTING STORM SEWER	SS
EXISTING ELECTRIC	E
EXISTING GAS	G

- GENERAL NOTES:
- DUCT TO BE INSTALLED MINIMUM 48" DEPTH EXCEPT WHERE NOTED

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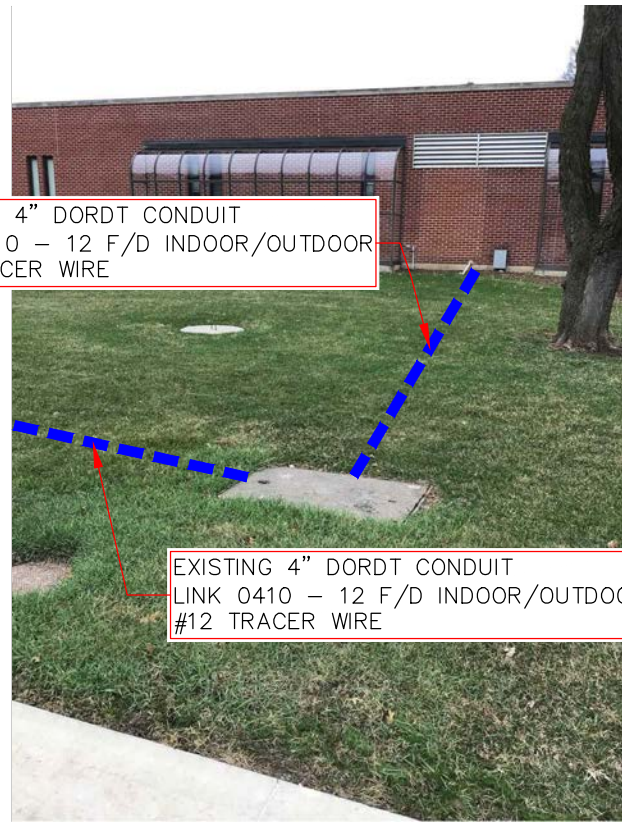
EXISTING 4" DORDT CONDUIT
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE

2" CONDUIT (BORED)
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE

9.1 EXISTING DORDT HANDHOLE
LOOKING NORTH
ICN STA. 4+42



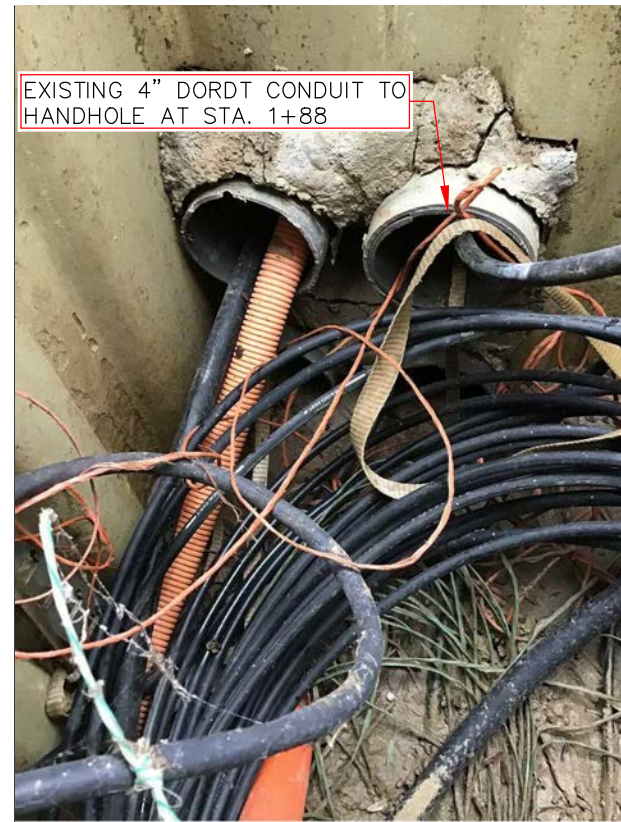
9.2 EXISTING DORDT HANDHOLE
LOOKING NORTH
ICN STA. 1+88



EXISTING 4" DORDT CONDUIT
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE

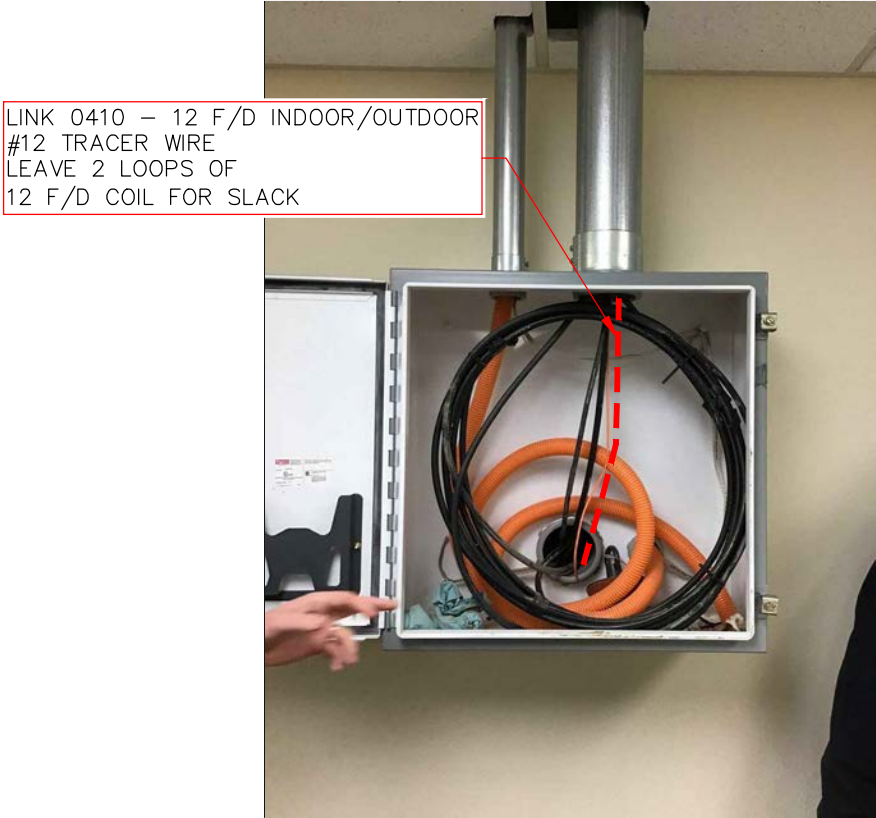
EXISTING 4" DORDT CONDUIT
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE

9.3 EXISTING DORDT HANDHOLE
LOOKING NORTH
ICN STA. 1+19



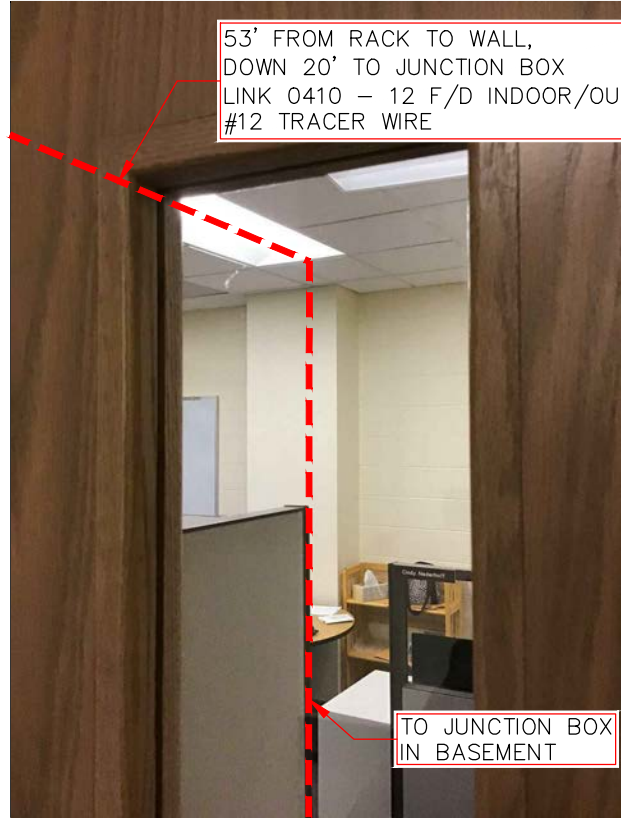
EXISTING 4" DORDT CONDUIT TO
HANDHOLE AT STA. 1+88

9.4 EXISTING DORDT HANDHOLE
LOOKING WEST
ICN STA. 1+19



LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE
LEAVE 2 LOOPS OF
12 F/D COIL FOR SLACK

9.5 EXISTING DORDT JUNCTION BOX
TO HH OUTSIDE SCHOOL WALL
ICN STA. 0+73



53' FROM RACK TO WALL,
DOWN 20' TO JUNCTION BOX
LINK 0410 - 12 F/D INDOOR/OUTDOOR
#12 TRACER WIRE

TO JUNCTION BOX
IN BASEMENT

9.6 INDOOR ROUTING

DORDT COLLEGE RIBBENS COMPLEX EXTERIOR/INTERIOR

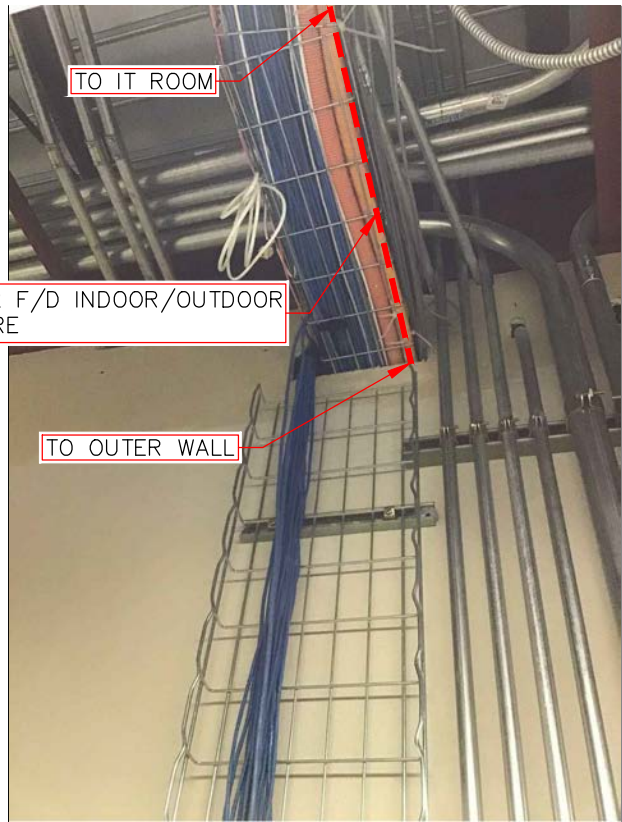
CONSTRUCTION DOCUMENT

DORDT COLLEGE RIBBENS COMPLEX CONNECTION
SIOUX CENTER IOWA

1	PRELIMINARY	04-22-19
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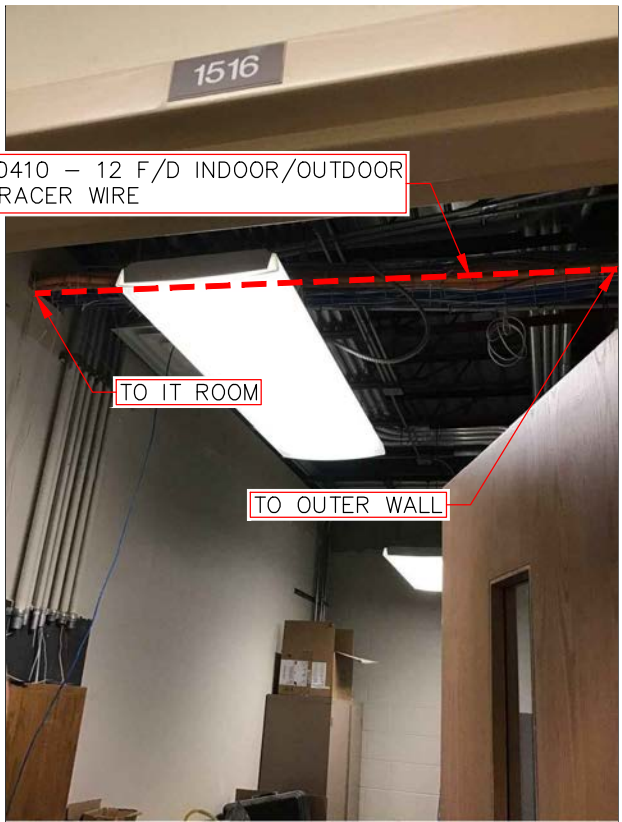
LINK 0410 - 12 F/D INDOOR/OUTDOOR #12 TRACER WIRE

TO OUTER WALL

TO IT ROOM

10.1

INDOOR ROUTING RACEWAY IN ROOM 1516



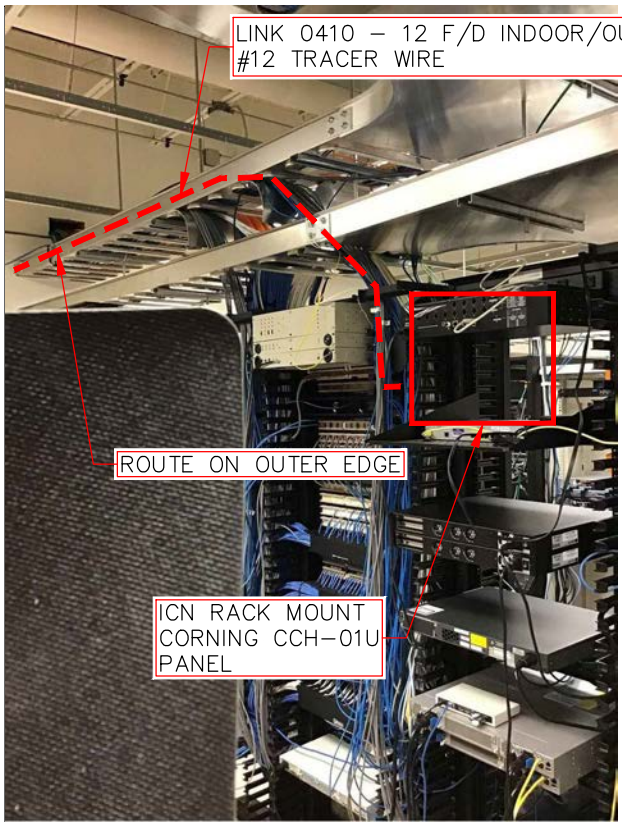
LINK 0410 - 12 F/D INDOOR/OUTDOOR #12 TRACER WIRE

TO IT ROOM

TO OUTER WALL

10.2

INDOOR ROUTING ROOM 1516



LINK 0410 - 12 F/D INDOOR/OUTDOOR #12 TRACER WIRE

ROUTE ON OUTER EDGE

ICN RACK MOUNT CORNING CCH-01U PANEL

10.3

INDOOR ROUTING RACK DETAIL



GROUND TRACER WIRE AT MAIN GROUND BAR

10.4

INDOOR ROUTING RACK DETAIL

DORDT COLLEGE RIBBENS COMPLEX INTERIOR

CONSTRUCTION DOCUMENT

DORDT COLLEGE RIBBENS COMPLEX CONNECTION
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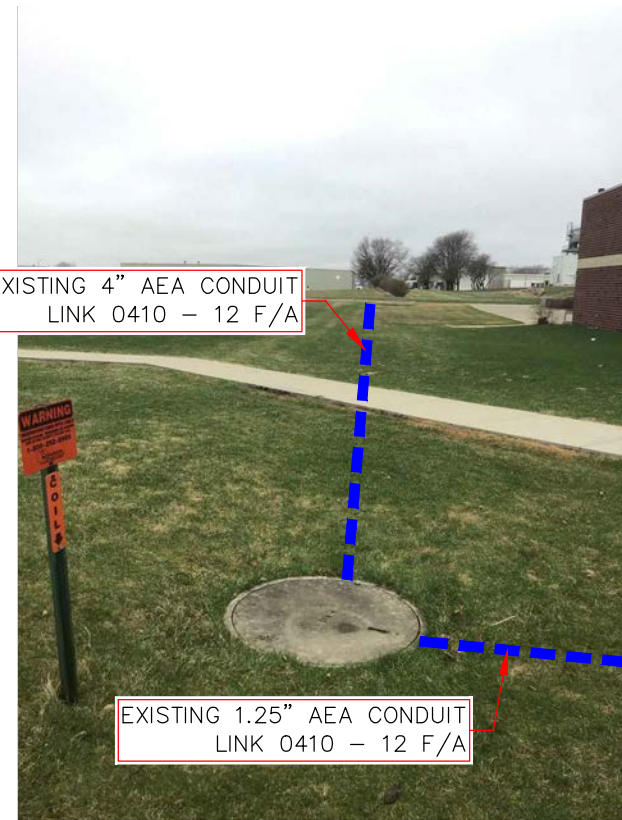




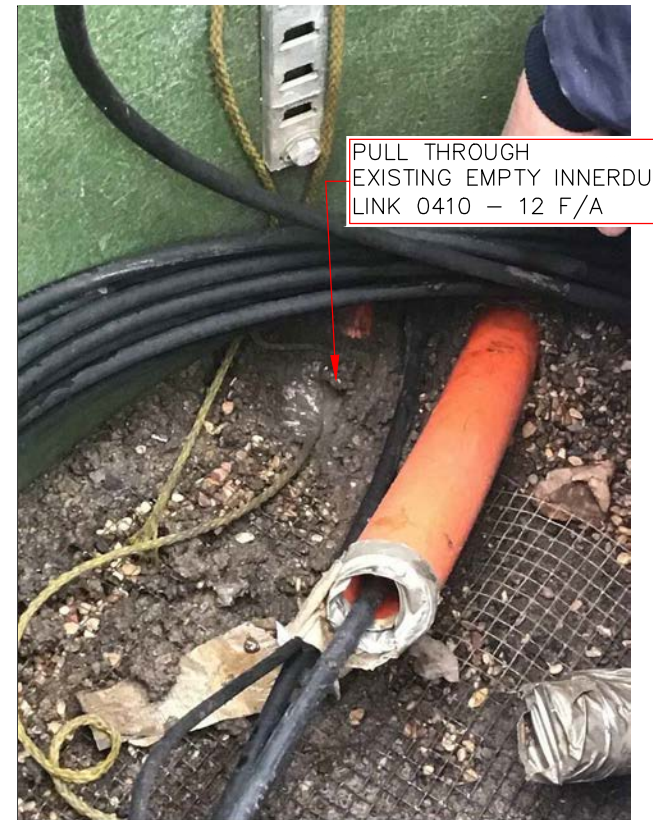
11.1 EXISTING HANDHOLE 48" ROUND
LOOKING EAST
STA. 42+35



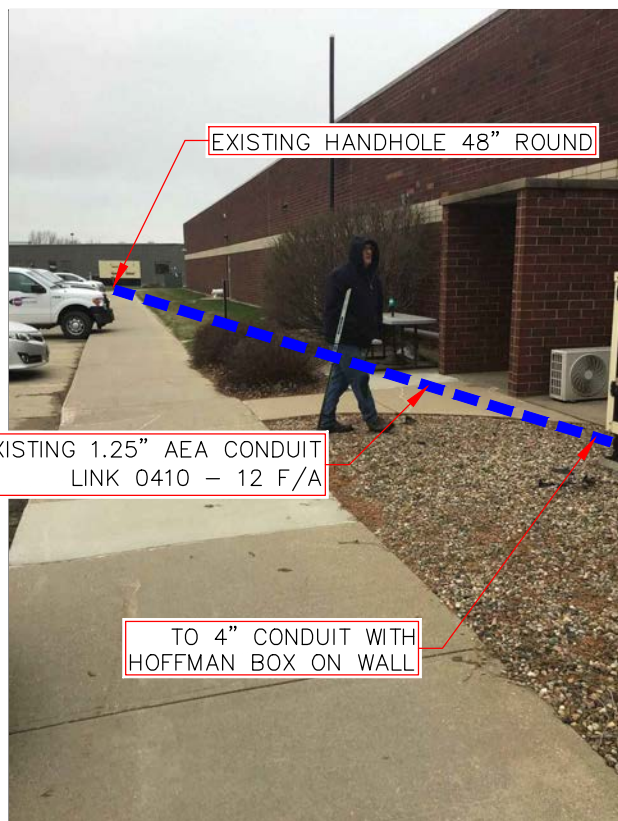
11.2 EXISTING HANDHOLE 48" ROUND
LOOKING EAST
STA. 42+35



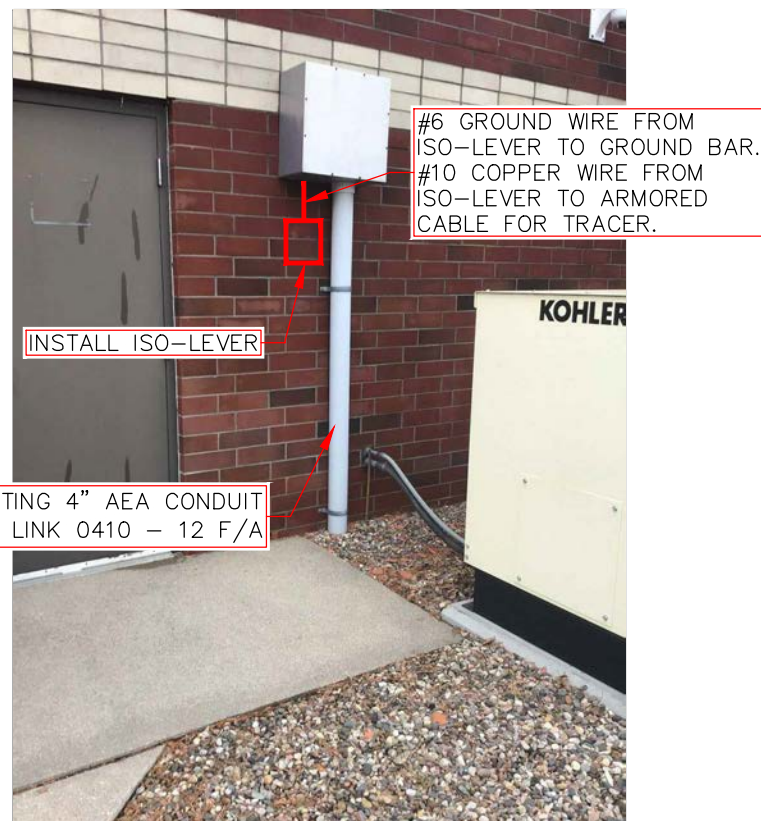
11.3 EXISTING HANDHOLE 48" ROUND
LOOKING WEST
STA. 44+33



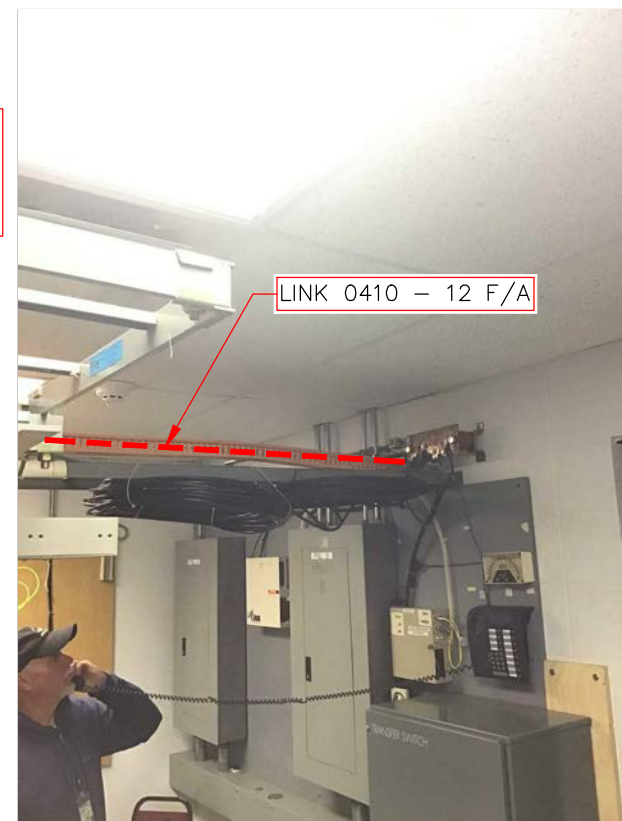
11.4 EXISTING HANDHOLE 48" ROUND
LOOKING WEST
STA. 44+33



11.5 EXISTING AEA CONDUIT ROUTE
LOOKING SOUTH



11.6 EXISTING AEA JUNCTION BOX
LOOKING WEST
STA. 46+82



11.7 INDOOR ROUTING

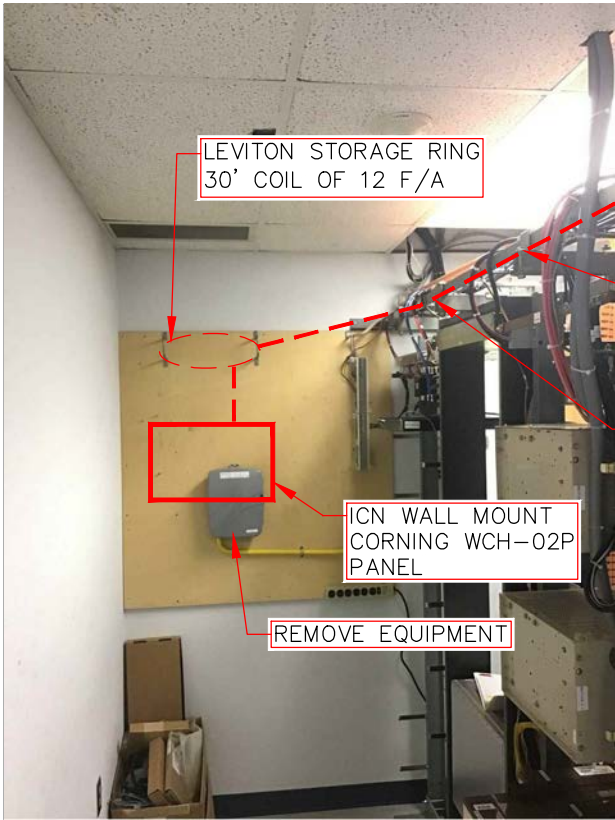
NORTHWEST IOWA AEA EXISTING BUILDING ENTRY

CONSTRUCTION DOCUMENT

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12.1 GROUND BAR

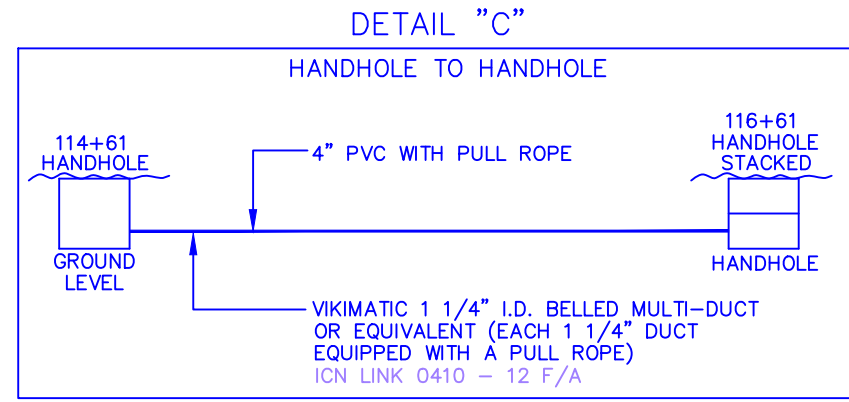
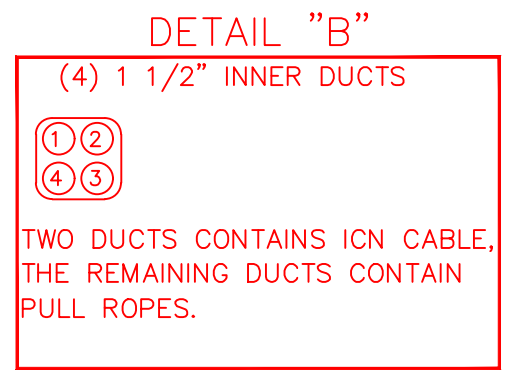
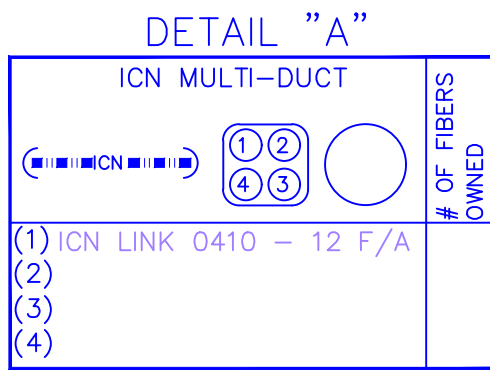
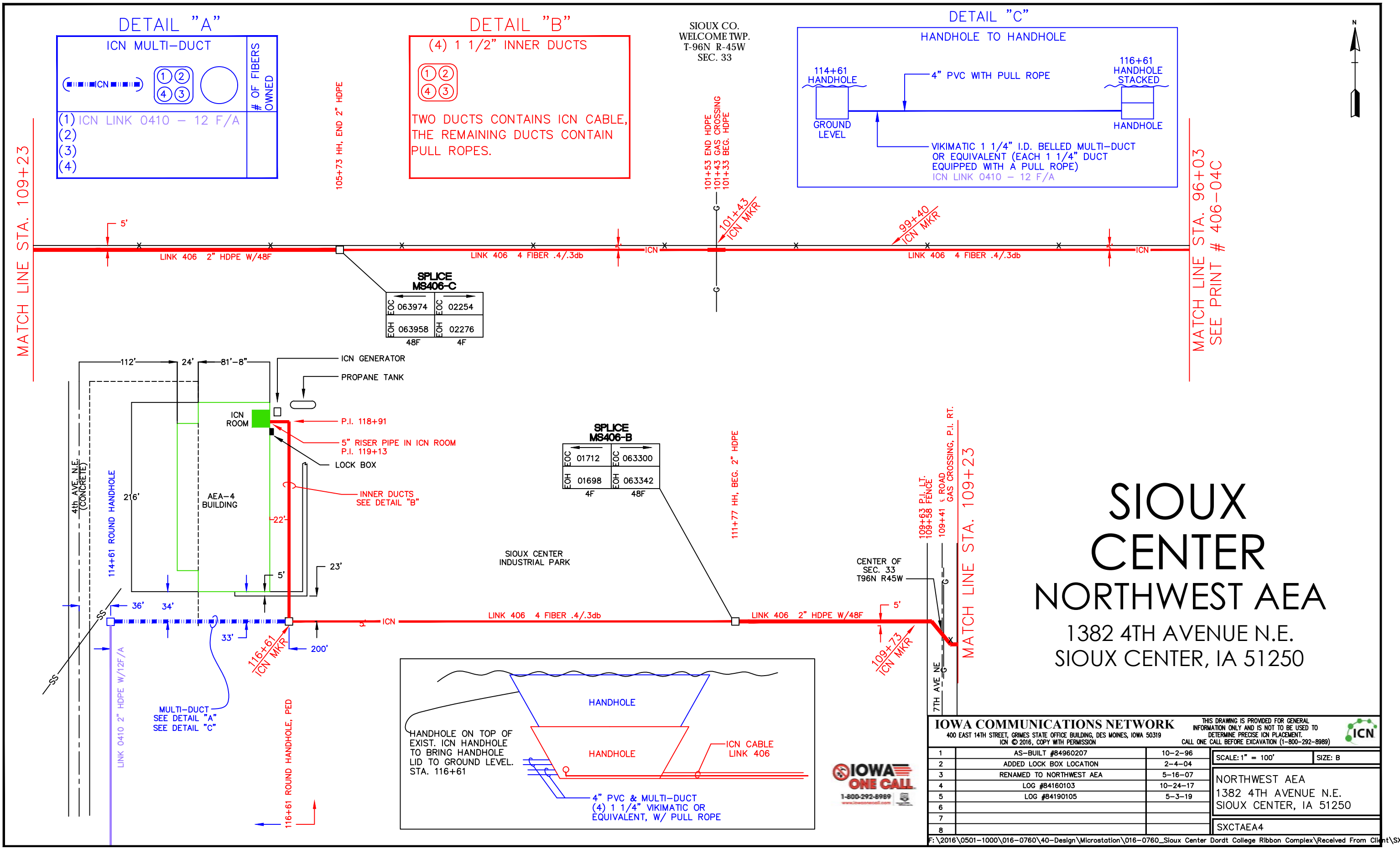


12.2 INDOOR ROUTING

NORTHWEST IOWA AEA
EXISTING BUILDING ENTRY

CONSTRUCTION DOCUMENT

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SPLICE MS406-C

EOC 063974	EOC 02254
EOH 063958	EOH 02276
48F	4F

SPLICE MS406-B

EOC 01712	EOC 063300
EOH 01698	EOH 063342
4F	48F

IOWA COMMUNICATIONS NETWORK

400 EAST 14TH STREET, GRIMES STATE OFFICE BUILDING, DES MOINES, IOWA 50319

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1	AS-BUILT #84960207	10-2-96
2	ADDED LOCK BOX LOCATION	2-4-04
3	RENAMED TO NORTHWEST AEA	5-16-07
4	LOG #84160103	10-24-17
5	LOG #84190105	5-3-19
6		
7		
8		

SCALE: 1" = 100'

SIZE: B

NORTHWEST AEA

1382 4TH AVENUE N.E.

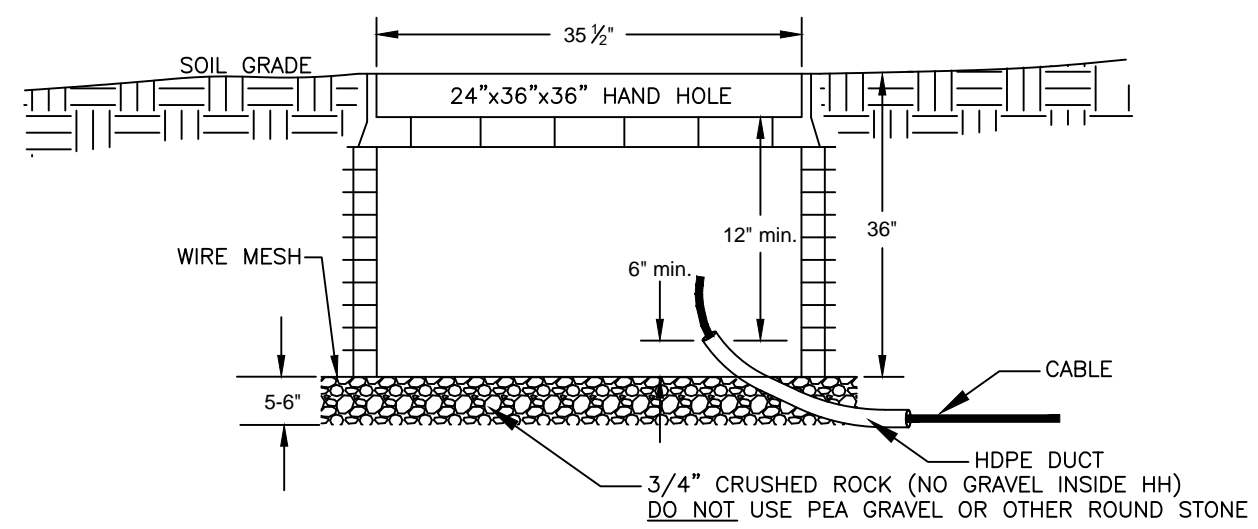
SIOUX CENTER, IA 51250

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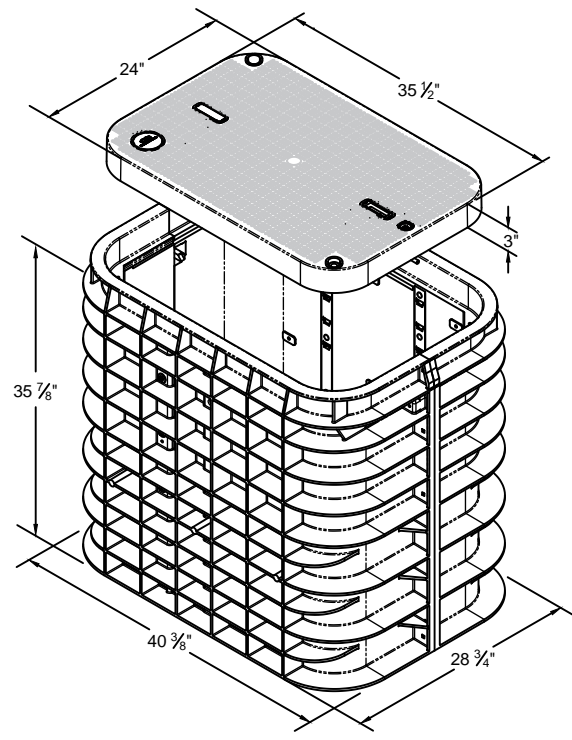
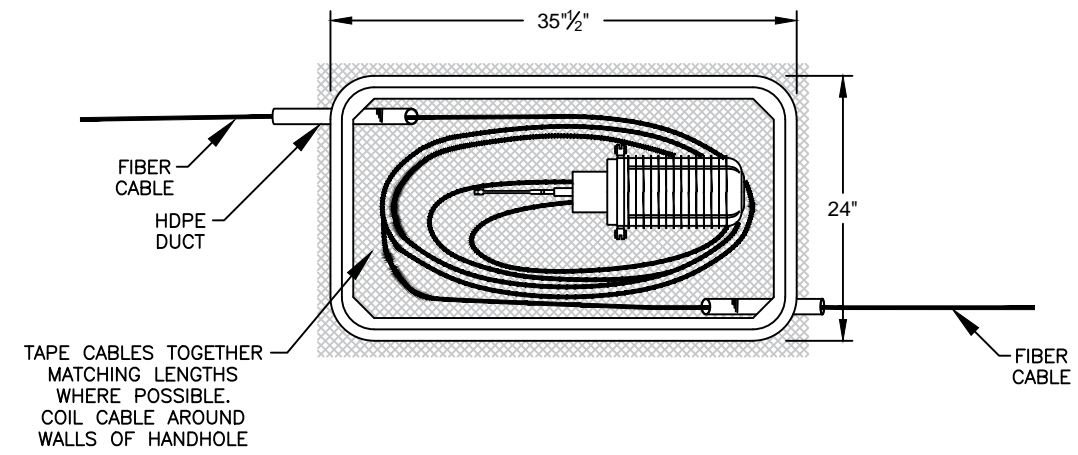
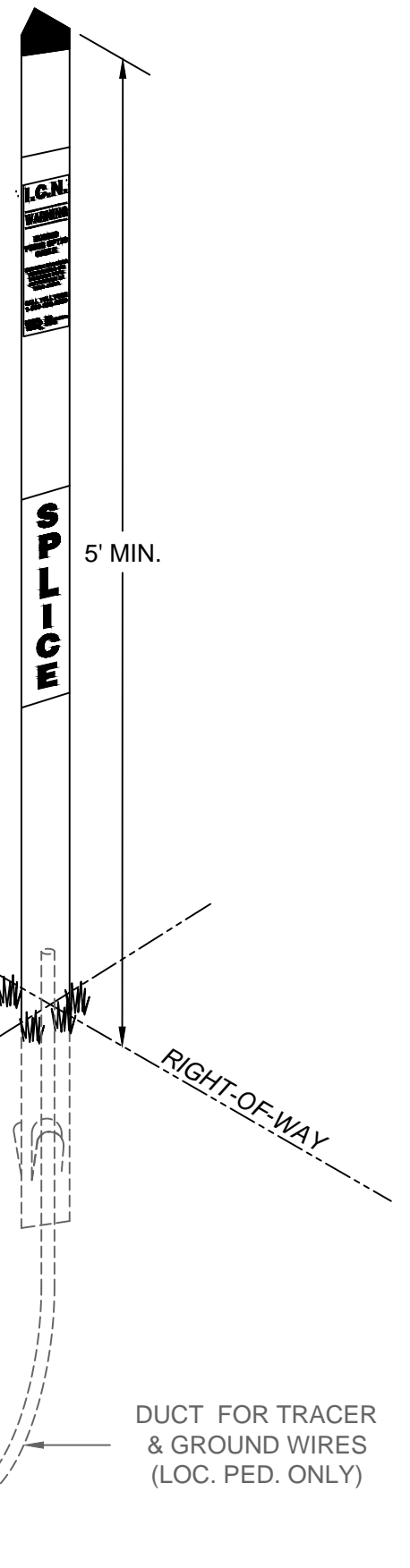
HANDHOLE PLACEMENT TYPICAL

24" X 36" X 36" HAND HOLE

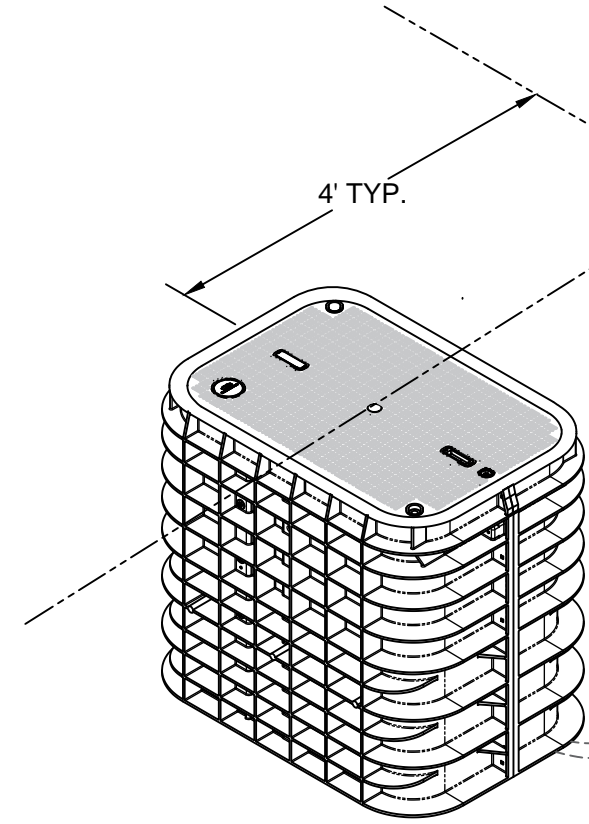


SEE INSTALLATION INSTRUCTIONS FOR PROPER PLACEMENT OF CHANNELL BULK HANDHOLE

TYPICAL TRIVIEW LOCATE PEDESTAL OR WARNING MARKER



BULK HANDHOLE TYPICAL 24"X36"X36"





INSTALLATION INSTRUCTION

Install Channell BULK Vaults

Date: 5/12/15

Installation Considerations

This Installation Instruction provides general information useful for installing the Channell BULK line of below-grade handhole vaults. This guide cannot anticipate all situations that could be encountered in the field and thus represents information applicable to common installation conditions. Please consult local company practice for proper product configuration for each application.

Site Preparation

1. Ensure that all local, state, federal, OSHA and company-specific regulations are met prior to beginning and throughout the installation process.
2. Plan the excavation approximately 12 to 16 inches in length and width larger than the actual dimensions of the handhole to be installed. **(See Figure 1)**
3. Excavate the hole 6 to 8 inches in depth more than the overall height dimension of the handhole with the cover in place. Tamp the floor of excavated pit using either a hand tamp tool and/or a mechanical tamper. (Remember: if the handhole is to be set in concrete, the polymer ring must be included in this dimension.)
4. Place 5 to 6 inches of 3/4" crushed rock over the entire floor. The rock should be free of soil and other organic matter. This important step prevents subsistence of the vault over time, aids in drainage, and provides a solid foundation for the handhole. **(See Figure 2)**
 - a. As an alternative, a dry mix of cement and crushed rock in a 1:10 ratio may be used to form a higher strength foundation.
 - b. NOTE: Do not use "pea gravel" or other "round stone" for this step.
5.
 - a. Place the handhole body into the pit. **(See Figure 3)**
 - b. Center the handhole body in the excavated pit parallel to the sidewalk and/or curb if applicable.
 - c. Level and adjust the height of the handhole body to grade, as required, by adding more crushed rock.

FOR THE PURPOSE OF THIS ILLUSTRATION, THIS HANDHOLE IS BEING PLACED AT A SITE THAT WILL HAVE A FUTURE SIDEWALK; THEREFORE, THE COMPOSITE RING IS REQUIRED. THE RING IS ONLY REQUIRED AT SITES WHERE THE HANDHOLE IS BEING PLACED IN AND SURROUNDED BY CONCRETE.

6. Place the cover on the handhole body to prevent the backfill dirt from entering the inside of the handhole. The cover should be level with the ground. Bolting of the cover is recommended but is not a requirement for this step; however, the cover must always be bolted down prior to departure of the site. **(See Figure 4)**
7. The excess soil removed from the excavated pit shall be used during the backfill of the pit. The backfill shall be tamped continuously during the filling process to prevent settling around the sides of the handhole. **(See Figure 5)**

During the filling process of the soil around the handhole, stones that are 3" and larger shall be removed from the soil and not used.

8. The final backfill shall be tamped with a slope away from the handhole. All excess backfill material shall be removed from the installation site. **(See Figure 6)**

Figure 1



Figure 2



Figure 3



Figure 4



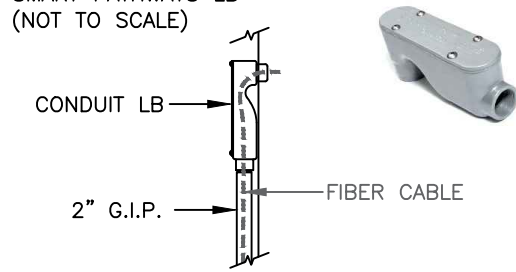
Figure 5



Figure 6

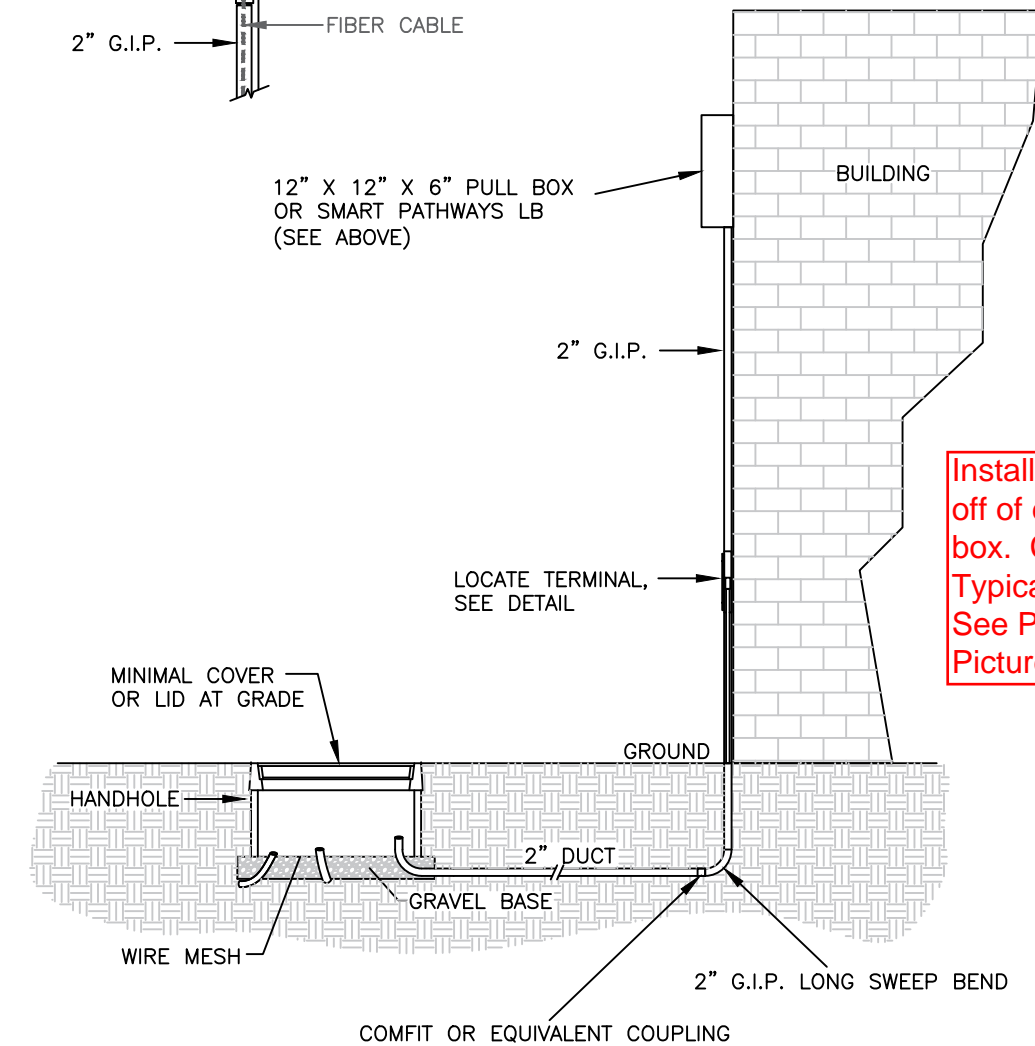


ALTERNATIVE TO PULL BOX:
SMART PATHWAYS LB
(NOT TO SCALE)

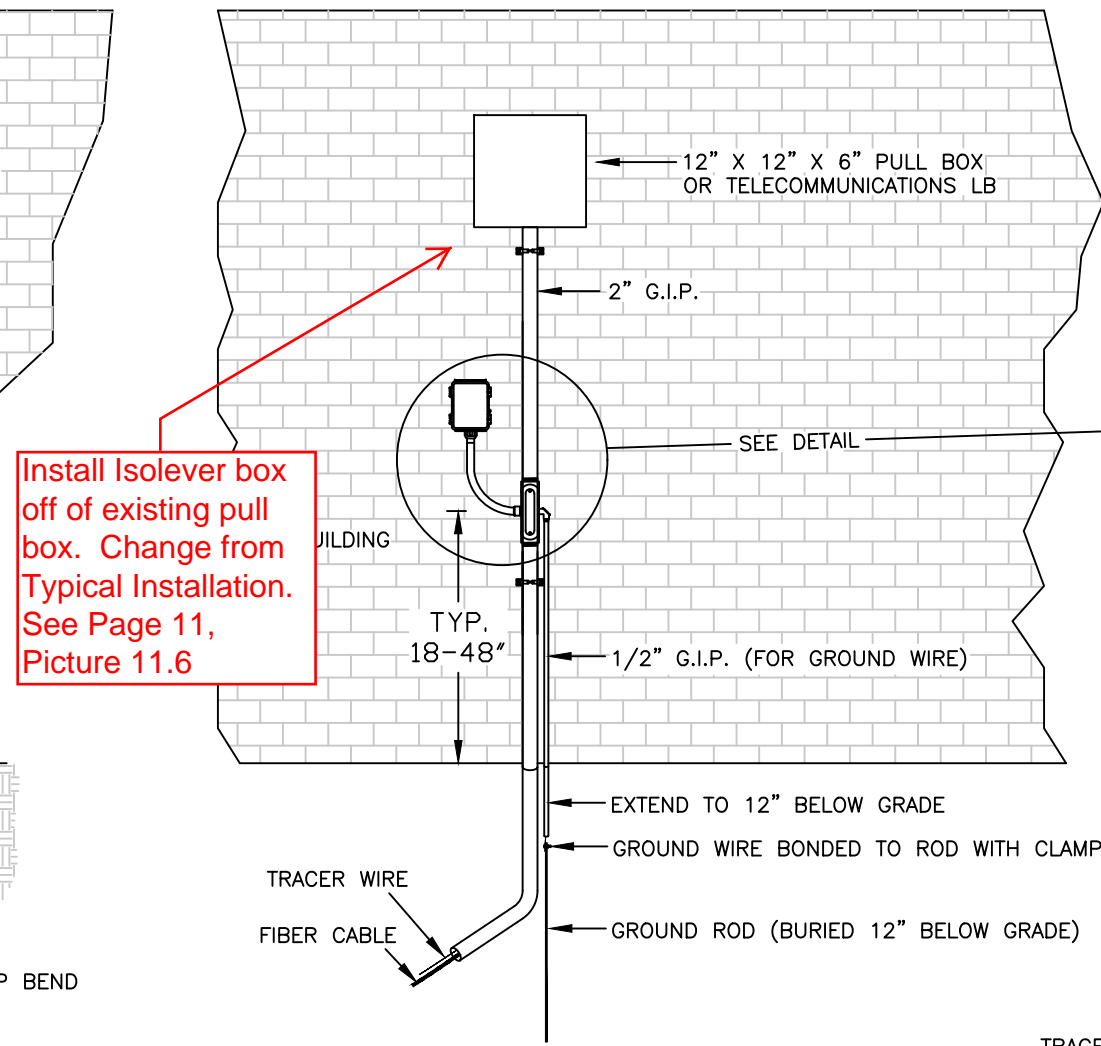


TYPICAL ABOVE GROUND BUILDING ENTRANCE WITH LOCATE TERMINAL

PROFILE

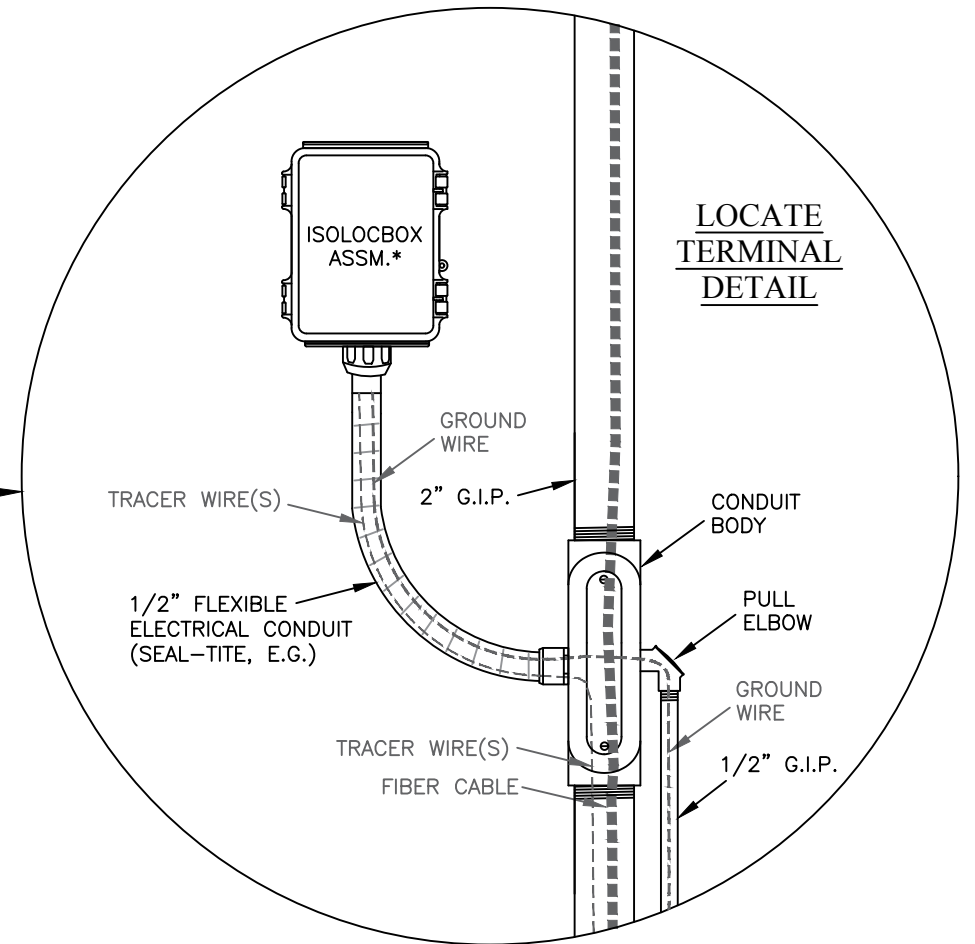


ELEVATION



Install Isolever box
off of existing pull
box. Change from
Typical Installation.
See Page 11,
Picture 11.6

LOCATE
TERMINAL
DETAIL

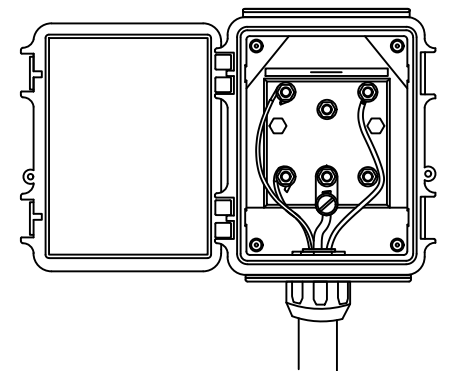


LOCATE TERMINAL
ISOLOCBOX ASSM.*

TRACER WIRE TERMINATION DETAIL

TERMINATION OF THE LOCATE WIRE AT A LOCATE
PEDESTAL, LOCATE TERMINAL, OR IN A SPLICE CASE
SHALL BE MADE IN THE FOLLOWING FASHION:

STRIP OFF A MINIMUM OF 3/4" OF INSULATION. USING
A NEEDLE NOSE PLIERS, BEND A WIRE "EYELET" ON
THE WIRE END IN A CLOCKWISE MANNER. USE A FLAT
WASHER ON BOTH SIDES OF THE WIRE EYELET WHEN
CINCHING IT DOWN ON THE STUD. FLAT WASHERS
SHALL BE OF APPROPRIATE SIZE SUCH THAT THE
HOLE MATCHES THE DIAMETER OF THE STUD AND THE
OUTSIDE OF DIAMETER OF THE FLAT WASHER MATCHES
REASONBLY CLOSE TO THE EYELET DIAMETER.



*NOTE: ISOLOCBOX ASSEMBLY INCLUDES:
BOX, ISOLEVER, PVC STAND-OFF, AND 1-FEET
OF FLEXIBLE CONDUIT WITH CONNECTORS

NOTES:

1. PLACE 2" G.I.P. WITH SWEEP TOWARDS NEW PULL BOX
2. (1) CORE HOLE THROUGH EXTERIOR WALL TO ACCOMMODATE 2" G.I.P.
3. PLUG ALL DUCTS WITH JACK MOON OR EQUIVALENT
4. BUILDING ENTRANCE SHALL HAVE WATER-TIGHT SEAL
5. ANCHOR 2" G.I.P. TO WALL WITH 2-HOLE STRAPS, SPACED NO MORE THAN 5- FEET APART
6. ALL COMPONENTS SHALL BE G.I.P. OR DIE CAST ALUMINUM
7. EMT AND PLASTIC ARE NOT ALLOWED
8. MOUNT LOCATE STATION A MINIMUM OF 18" ABOVE GRADE
9. SEAL ANY ACCESS HOLES DRILLED IN THE LOCATE STATION TO ROUTE WIRES WITH SILICONE
10. ALL COUPLINGS MUST ALLOW FOR BLOWING OR PULLING WITH NO OBSTRUCTION