

**Illinois Tollway Standard Drawings Revisions**

| Section L    |   | Fiber Optic           |  |
|--------------|---|-----------------------|--|
| Standard     | Modification Summary  | Effective: 03-01-2025 |  |
| <b>L1-07</b> | <b>Fiber Optic System Typical and Drawings</b>  |                       |  |
| Sheet 1      | Remove "or compression" from Note 3.  |                       |  |
|              | Added "If conduit is not under the maintenance of the contractor, the contractor shall coordinate with the Illinois Tollway Fiber Optic Maintenance Vendor to perform the cutting & splicing of conduit" to Note 3. |                       |  |
|              | Updated all details to show locate/tracer wire inside its dedicated conduit.  |                       |  |
|              | Updated Note 5 to state "locate/trace wire shall be installed inside of it's dedicated conduit in continuous lengths without splicing".   |                       |  |
|              | Changed callout in on the "Bored Conduit With Fiber Optic Cable..." detail from "conduit as specified" to "conduit as required and specified".  |                       |  |
|              |   |                       |  |
| Sheet 2      | Remove "or compression" from Note 4.  |                       |  |
|              | Added "If conduit is not under the maintenance of the contractor, the contractor shall coordinate with the Illinois Tollway Fiber Optic Maintenance Vendor to perform the cutting & splicing of conduit" to Note 4. |                       |  |
|              | Added "Foam plug shall extend inside of casing 12" from end of casing. Cap the casing by placing the foam around the casing, creating an 8" "mushroom" shape plug" to Note 8.                                       |                       |  |
|              | Updated "Profile View" detail to show the tracer wire inside of the conduit.  |                       |  |
|              | Split the 8" measurement into two 4" measurements for clarity on the "Profile View" detail.   |                       |  |
|              | Updated "Side View" detail to show locate/tracer wire inside its dedicated conduit.   |                       |  |
|              | Reposition the 6" measurement of sand fill from top of casing to bottom of casing in the profile view.  |                       |  |
| Sheet 4      | Added "for oil or gas utility, a minimum of 18in to 24in separation between pipe and conduit (or as required by utility owner)" to Note 2.  |                       |  |
|              | Removed note that stated "minimum 18" to 24" separation for oil, gas utility between pipe and conduit (or as required by utility owner).  |                       |  |
|              | Updated detail to show warning post.  |                       |  |
|              | Removed locate wire from detail.  |                       |  |
|              | Replaced "12" Min" with "See Note 2" on detail.   |                       |  |
| Sheet 5      | Removed the "compression coupling" detail.  |                       |  |
|              | Removed Note 2 from general notes.  |                       |  |
|              | Removed "new" from Note 1.  |                       |  |
| Sheet 6      | Removed the "48"x72" Handhole" detail.  |                       |  |
|              | Added details for installing a handhole on a slope.   |                       |  |
| Sheet 7      | Added "locking bar" callout to Torsion Assist Cover detail.   |                       |  |
|              | Added Note 2.   |                       |  |
|              | Added Note 3.   |                       |  |
|              | Removed statement "for fiber optic cable splice locations and slopes greater than or equal to 1:4".   |                       |  |
| Sheet 8      | Removed "Table A".  |                       |  |
|              | Updated minimum depth below handhole rim from 42" to 48" on detail drawing.   |                       |  |
|              | Deleted cable tags from detail.   |                       |  |
|              | Removed "Sample Cable Tag".   |                       |  |
|              | Added "reference the ITS Labeling Guide" in Note 1.   |                       |  |
|              | Replaced "meets the values in Table A" with "does not exceed manufacturer specifications" in Note 3.  |                       |  |
| Sheet 9      | Removed note that stated "manufacturer's specifications of minimum bend supersede Table A".   |                       |  |
|              | Removed "containing a splice enclosure" from Note 8.  |                       |  |
|              | Change "pea gravel" to "coarse aggregate" in the "Locate Warning Post" detail.  |                       |  |
|              | Updated "Locate Warning Post" detail to show the ground rod being flushed to the bottom of handhole.  |                       |  |

**Illinois Tollway Standard Drawings Revisions**

| Section L |   | Fiber Optic           |  |
|-----------|---|-----------------------|--|
| Standard  | Modification Summary  | Effective: 03-01-2025 |  |
| Sheet 9   | Inserted "at maximum, 3ft away from..." to Note 1.  |                       |  |
|           | Inserted "displaying milepost..." to Note 12.   |                       |  |
|           | Added Note 14.  |                       |  |
|           | Changed "solid" to "stranded" in the callout of the "Box and Cover Section" detail.   |                       |  |
|           | Changed "#8" to "#7" on the "Box and Cover Section" detail.   |                       |  |
| Sheet 10  | Updated measurement from "1-1/4" to "2" on the Box and Cover Section detail.  |                       |  |
|           | Inserted "at maximum, 3ft away from..." to Note 1.  |                       |  |
| Sheet 12  | Updated measurement associated to the warning locate post on the "Third Party Handhole" detail to be consistent with the measurement on the "Illinois Tollway Handhole" detail. |                       |  |
|           | Replaced "stainless steel" with "galvanized rigid steel" in Note 1.   |                       |  |
| Sheet 13  | Added callout "PVC, minimum schedule 40 or better" to "Manhole Penetration" detail.   |                       |  |
|           | Replaced "stainless steel" with "galvanized rigid steel" in "Below Grade Penetration" detail.   |                       |  |
|           | Removed "tri-colored" from all associated details.  |                       |  |
|           | Changed "5' Max" to "2' Max" on all associated details for the placement of the marker with respect to the FOC line.  |                       |  |
|           | Added Note 3.   |                       |  |
| Sheet 14  | Removed "warning sticker on pole" from Figure 5.  |                       |  |
| Sheet 15  | Warning Post 2 Stickers were relocated in Figure 5.   |                       |  |
|           | Inserted "sign &" into the "Installation of Warning Post" note title.   |                       |  |
|           | Removed "Flush Disc Marker".  |                       |  |

 New Sheet

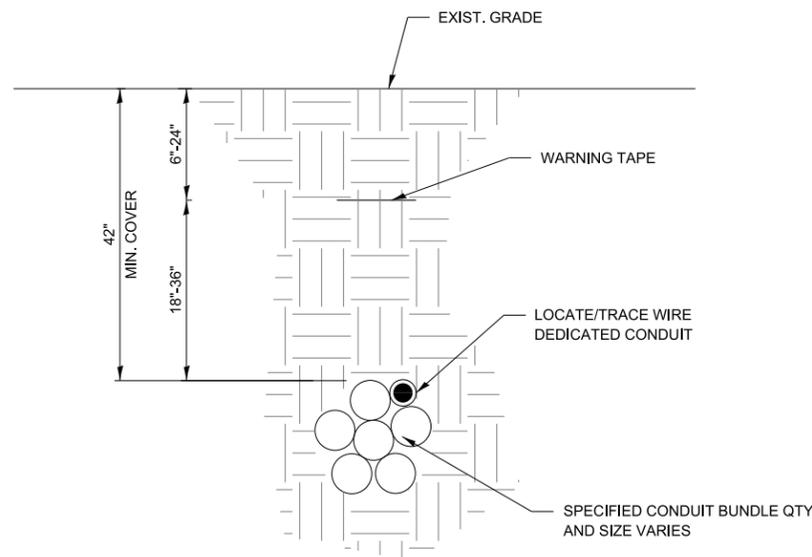
 Retired Standard

**TYPES OF BURY**  
**CABLE AND CONDUIT**  
**BORED, TRENCHED, AND PLOWED**

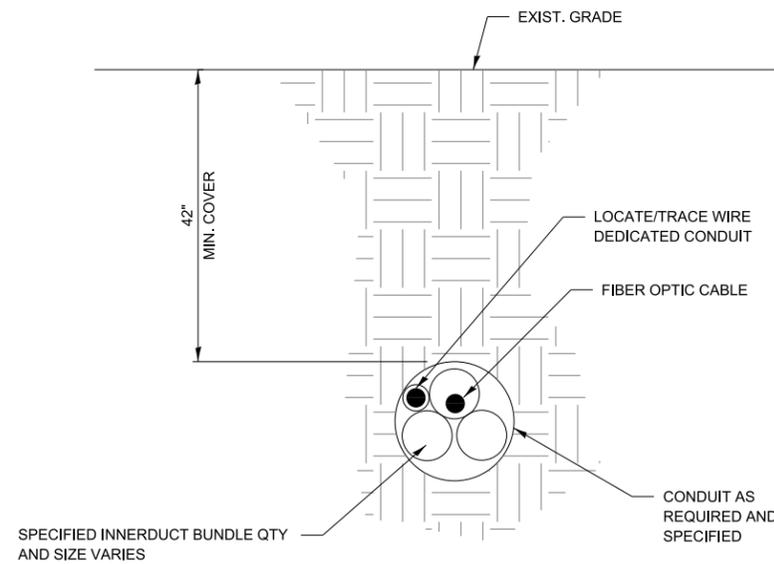
**GENERAL NOTES:**

1. UNDERGROUND CONDUIT SHALL BE PLACED AT 42" MINIMUM COVER UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. UNDERGROUND CONDUIT SHALL BE PLACED AT 48" MINIMUM COVER UNDER STREAM, CREEK AND DRAINAGE DITCHES UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3. IF WHILE LOWERING THE CONDUIT THERE IS NOT ENOUGH SLACK, ADDITIONAL CONDUIT SHALL BE ADDED. EMPTY CONDUITS CAN BE CUT AND HAVE NEW CONDUIT FUSED COUPLED ON. CONDUITS WITH FIBER INSTALLED SHALL BE RING CUT WITH A TUBE CUTTER SO AS NOT TO DAMAGE THE FIBER. IF CONDUIT IS NOT UNDER THE MAINTENANCE OF THE CONTRACTOR, THE CONTRACTOR SHALL COORDINATE WITH THE ILLINOIS TOLLWAY FIBER OPTIC MAINTENANCE VENDOR TO PERFORM THE CUTTING & SPLICING OF CONDUIT.
4. CONDUIT USED ABOVE GROUND SHALL BE STAINLESS STEEL OR FIBERGLASS REINFORCED EPOXY (FRE) CONDUIT. UNDERGROUND CASINGS SHALL BE FRE PER THE SPECIAL PROVISIONS OR HDPE.

5. LOCATE/TRACE WIRE SHALL BE INSTALLED INSIDE OF ITS DEDICATED CONDUIT IN CONTINUOUS LENGTHS WITHOUT SPLICING.
6. WHEN AN OPTIC FIBER CONDUIT SEPARATES FROM A CONDUIT BUNDLE OR DUCT BANK, AN ADDITIONAL LOCATE WIRE SHALL BE INSTALLED WITH THAT SEPARATE CONDUIT PATH GOING BACK TO THE PREVIOUS HANDHOLE.
7. ALL LOCATE/TRACE WIRE WILL BE TESTED PRIOR TO ANY FIBER BEING INSTALLED.
8. ALL UNUSED CONDUIT SHALL HAVE 1200 LB MULE TAPE INSTALLED FOR FUTURE USE.



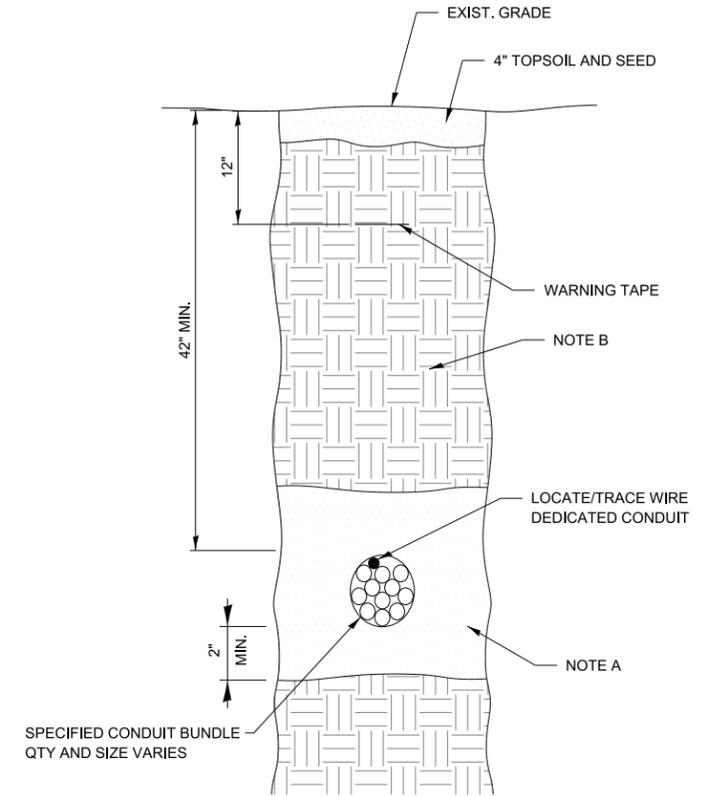
**PLOWED CONDUIT BUNDLES**  
**QTY VARIES**



**BORED CONDUIT WITH FIBER OPTIC CABLE AND/OR MULTIPLE INNERDUCTS**  
**AS REQUIRED**

**NOTE:**

THE PICTURE ABOVE IS A CONCEPT LAYOUT.



**CONSTRUCTION NOTES TRENCHED CONDUIT BUNDLES**

- A. A MINIMUM OF 2" OF SAND SHALL BE PLACED UNDER THE CONDUIT. SAND SHALL TRANSITION TO BACKFILL ACCORDING TO NOTE B 4" ABOVE CONDUIT.
- B. BACKFILL SHALL BE ACCORDING TO ARTICLE 810.04 OF THE STANDARD SPECIFICATIONS.

**TRENCHED CONDUIT BUNDLES**

APPROVED BY: *Manar Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025

| REVISIONS  |                           |
|------------|---------------------------|
| DATE       | DESCRIPTION               |
| 03-01-2025 | UPDATED NOTES AND DETAILS |
|            |                           |
|            |                           |
|            |                           |



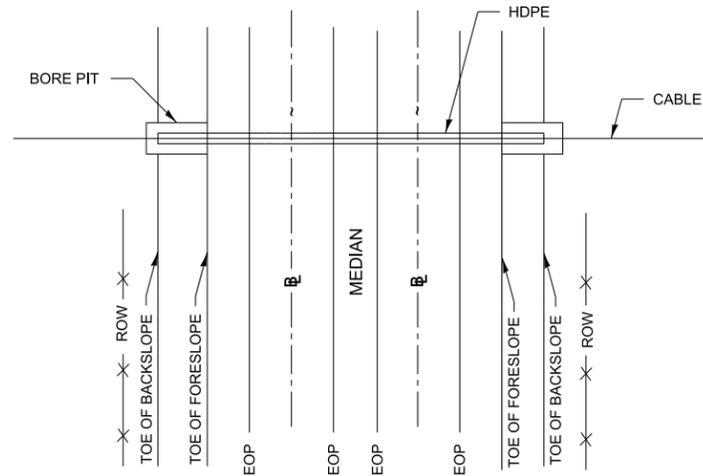
**FIBER OPTIC SYSTEM**  
**TYPICALS AND DRAWINGS**

|                     |                    |                   |
|---------------------|--------------------|-------------------|
| VERSION:<br>2025-03 | STANDARD:<br>L1-07 | SHEET:<br>1 OF 15 |
|---------------------|--------------------|-------------------|

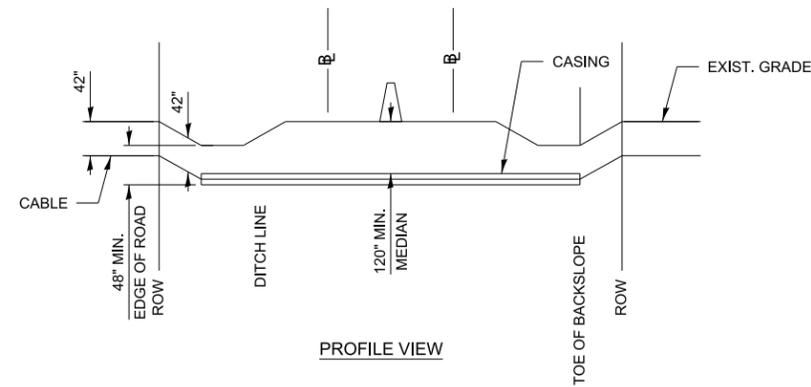
## TYPICAL ROAD CROSSINGS

### GENERAL NOTES:

1. UNDERGROUND CONDUIT SHALL BE PLACED AT 42" MINIMUM COVER UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. UNDERGROUND CONDUIT SHALL BE PLACED AT 48" MINIMUM COVER UNDER STREAM, CREEK AND DRAINAGE DITCHES UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3. THE MINIMUM COVER UNDER A PUBLIC ROADWAY, ILLINOIS TOLLWAY HIGHWAY AND RAMPS SHALL BE 120" OR SUCH GREATER DEPTH AS MAY BE REQUIRED TO CLEAR THE PAVEMENT STRUCTURE.
4. IF WHILE LOWERING THE DUCTS, THERE IS NOT ENOUGH SLACK IN THE DUCTS, ADDITIONAL DUCT SHALL BE ADDED. EMPTY DUCTS CAN BE CUT AND HAVE NEW DUCT FUSED COUPLED ON. DUCTS WITH FIBER INSTALLED SHALL BE RING CUT WITH A TUBE CUTTER SO AS NOT TO DAMAGE THE FIBER. IF CONDUIT IS NOT UNDER THE MAINTENANCE OF THE CONTRACTOR, THE CONTRACTOR SHALL COORDINATE WITH THE ILLINOIS TOLLWAY FIBER OPTIC MAINTENANCE VENDOR TO PERFORM THE CUTTING & SPLICING OF CONDUIT.
5. HDPE CASING SHALL EXTEND FROM TOE OF BACK SLOPE TO TOE OF BACK SLOPE UNLESS OTHERWISE APPROVED.
6. BORE AND RECEIVING PITS SHALL BE A MINIMUM OF 30 FEET FROM THE EDGE OF SHOULDER ON TOLL HIGHWAYS UNLESS OTHERWISE APPROVED.
7. TOP OF CASING SHALL BE A MINIMUM OF 48" BELOW THE DESIGNED DITCH GRADES ON EACH SIDE OF HIGHWAY.
8. ENDS OF ALL CASING SHALL BE FOAM PLUGGED. (ARNCO HYDRA-SEAL S-60 OR ENGINEER APPROVED EQUAL). FOAM PLUG SHALL EXTEND INSIDE OF CASING 12" FROM END OF CASING. CAP THE CASING BY PLACING THE FOAM AROUND THE CASING, CREATING AN 8" "MUSHROOM" SHAPE PLUG.
9. PITS FOR BORING ARE NOT PERMITTED IN THE HIGHWAY MEDIAN.
10. CONDUIT USED ABOVE GROUND SHALL BE STAINLESS STEEL OR FIBERGLASS REINFORCED EPOXY (FRE) CONDUIT. UNDERGROUND CASINGS SHALL BE FRE PER THE SPECIAL PROVISIONS OR HDPE.
11. HANDHOLES SHALL BE INSTALLED ON BOTH SIDERS OF ANY STREAM, CREEK, OR RAILROAD CROSSING.
12. BORE HOLES SHALL BE LIMITED TO THE MINIMUM DIAMETER NECESSARY FOR INSTALLATION OF THE DUCT BUNDLE OR CASING.

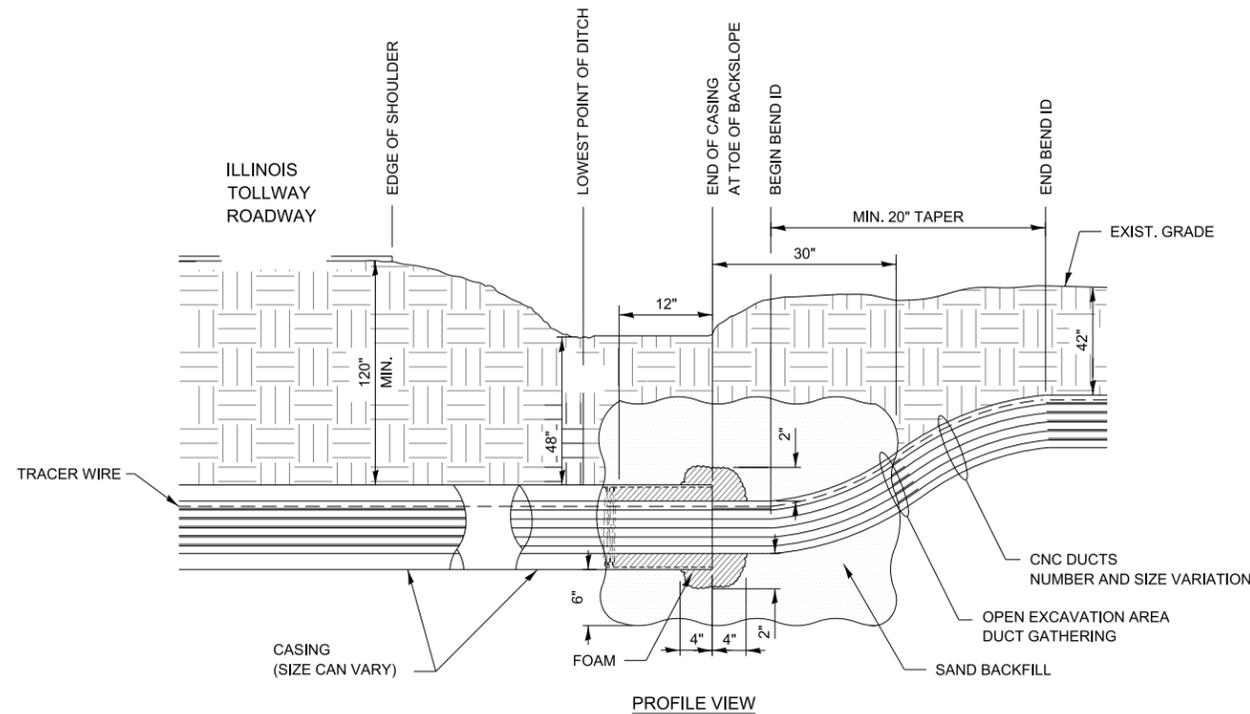


PLAN VIEW

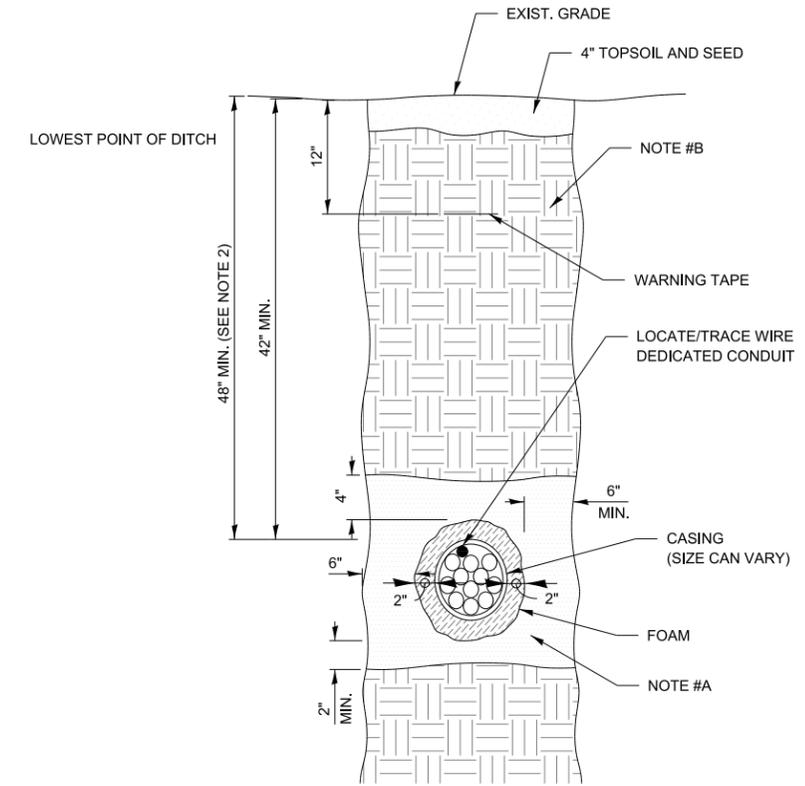


PROFILE VIEW

### TYPICAL ROAD CROSSING



PROFILE VIEW



SIDE VIEW

### CONSTRUCTION NOTES TRENCHED HDPE BUNDLES

- A. A MINIMUM OF 2" OF SAND SHALL BE PLACED UNDER THE CONDUIT. SAND SHALL TRANSITION TO BACKFILL ACCORDING TO NOTE B 4" ABOVE CONDUIT.
- B. BACKFILL SHALL BE ACCORDING TO ARTICLE 810.04 OF THE STANDARD SPECIFICATIONS.

APPROVED BY: *Manar Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025

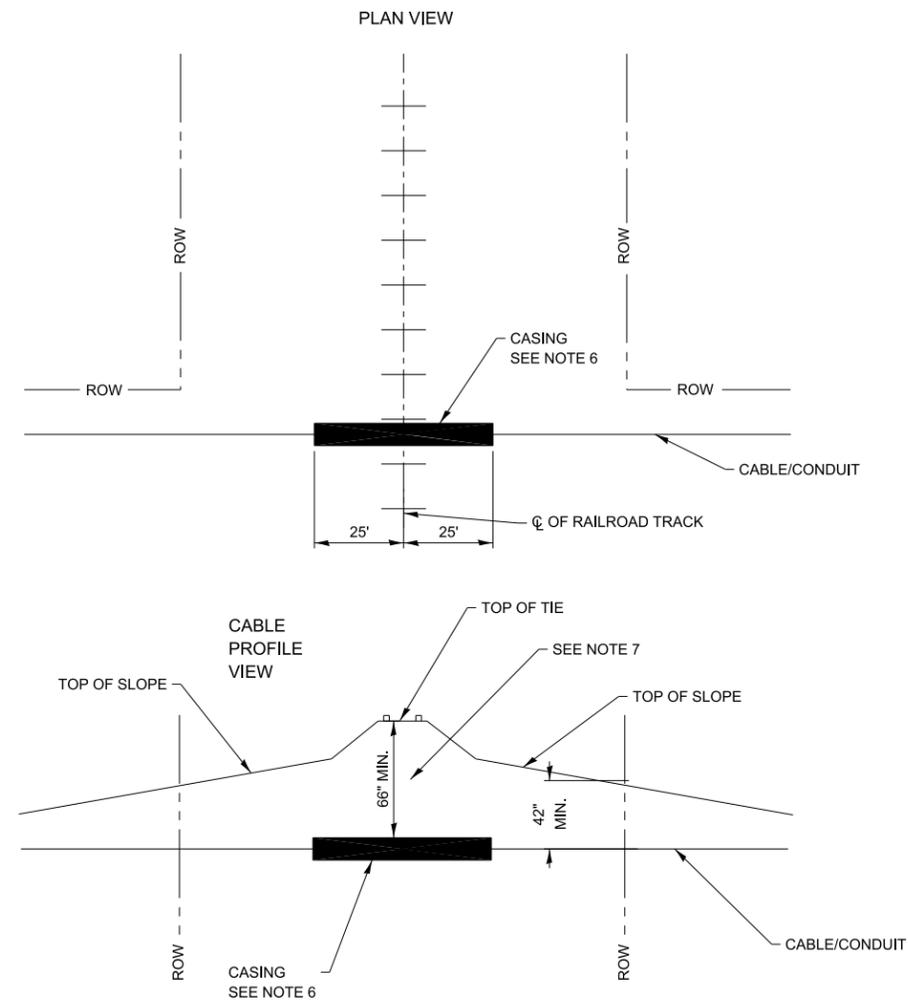


**FIBER OPTIC SYSTEM  
TYPICALS AND DRAWINGS**

VERSION: 2025-03      STANDARD: L1-07      SHEET: 2 OF 15

OUTSIDE PLANT TYPICAL BORES

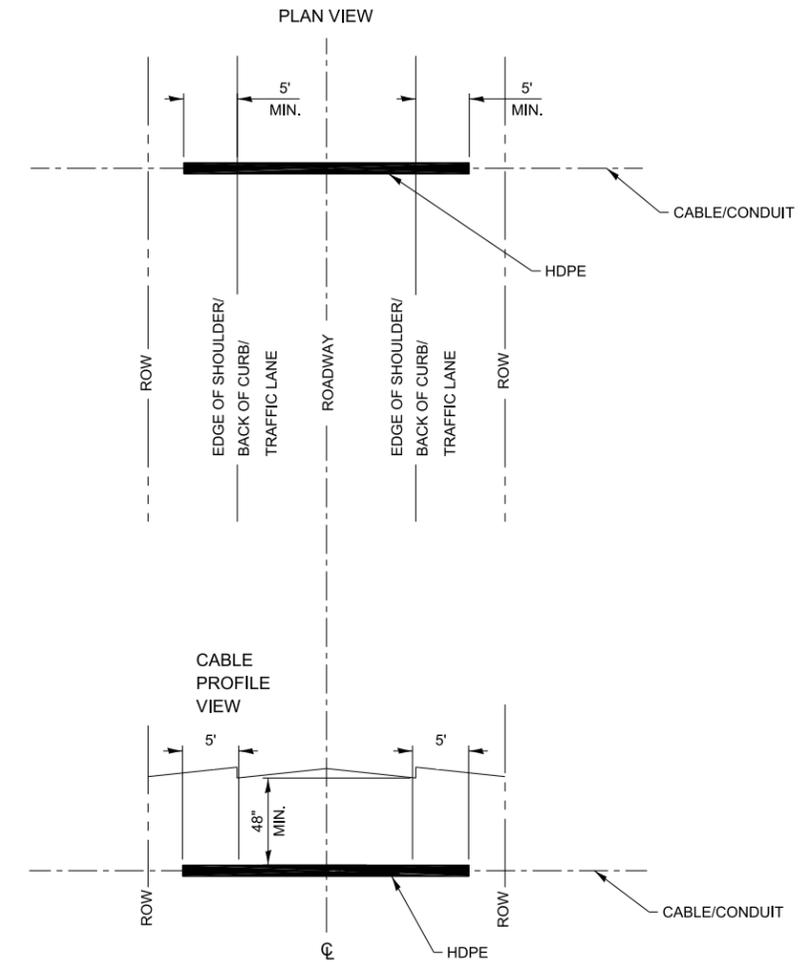
TYPICAL RAILROAD BORE OR JACK



NOTES FOR RAILROAD BORE OR JACK

1. CASING SHALL EXTEND 25 FT. EACH SIDE OF  $\phi$  OF OUTERMOST TRACK OR AS DICTATED BY RAILROAD PERMIT.
2. R.R. BALLAST SHALL NOT BE DISTURBED.
3. BORE AND RECEIVING PITS SHALL NOT BE EXCAVATED CLOSER THAN 10 FT. FROM THE TOE OF SLOPE ON EACH SIDE OF TRACK.
4. ENDS OF ALL CASING SHALL BE FOAM PLUGGED (ARNCO HYDRA-SEAL S-60 OR ENGINEER APPROVAL EQUAL). SEE SHEET 2 OF THIS SERIES.
5. ALL OPERATIONS SHALL MEET REGULATING AGENCY REQUIREMENTS.
6. CASING AS REQUIRED BY CUSTOMER OR RAILROAD OWNER.
7. DEPTH FROM TOP OF CASING TO TOP OF RR TIE MAY BE GREATER THAN 66" AS REQUIRED BY RAILROAD OWNER, NEVER LESS THAN 66".

TYPICAL CITY ST. AND DRIVEWAY BORE OR JACK



NOTES FOR CITY STREET AND DRIVEWAY BORE OR JACK

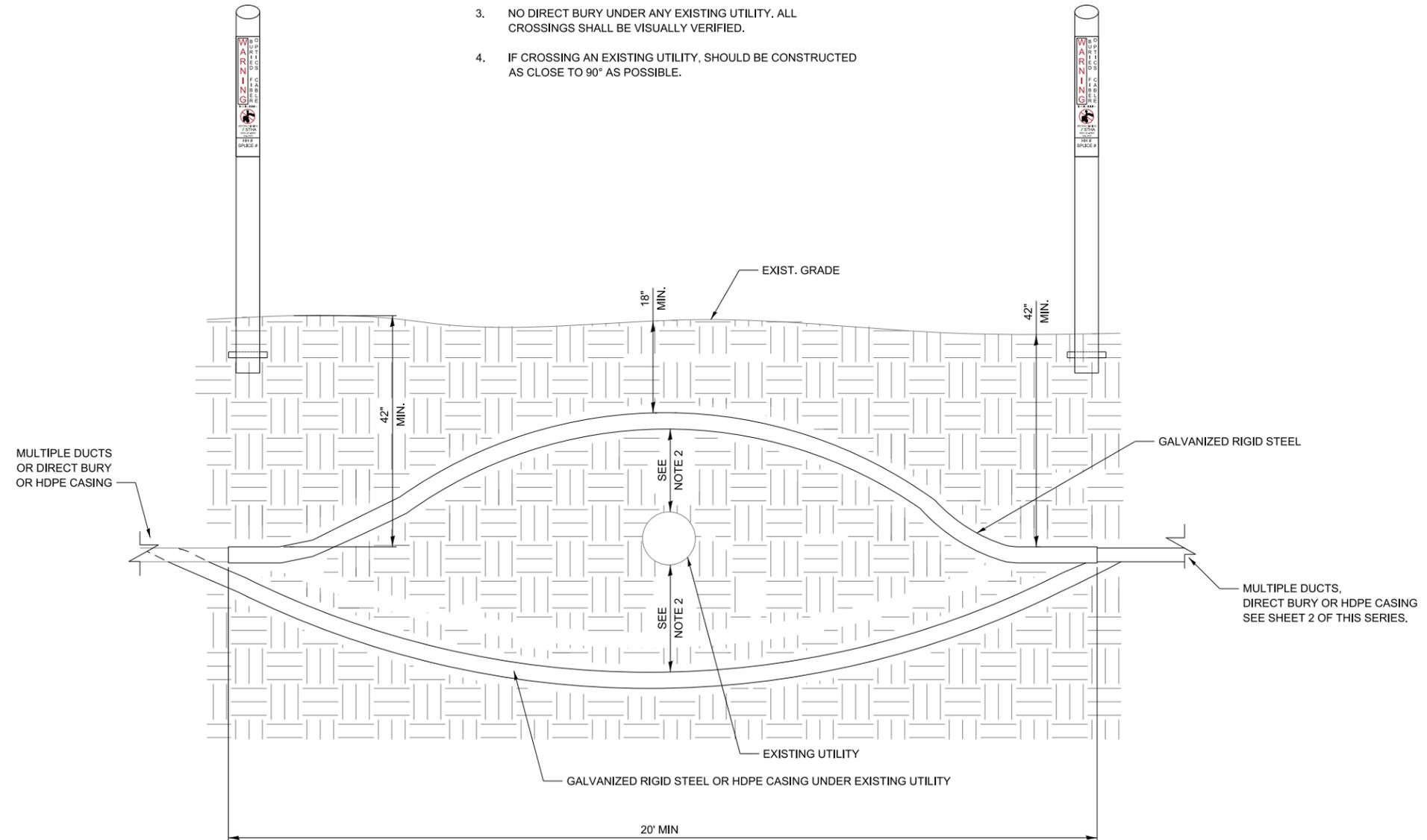
1. HDPE SHALL EXTEND 5 FT. EACH SIDE OF EDGE OF SHOULDER/BACK OF CURB.
2. BORE AND RECEIVING PITS SHALL NOT BE EXCAVATED WITHIN 5 FT. OF EDGE OF SHOULDER/BACK OF CURB.
3. ENDS OF ALL HDPE SHALL BE FOAM PLUGGED. (ARNCO HYDRA-SEAL S-60 OR ENGINEER APPROVED EQUAL). SEE SHEET 2 OF THIS SERIES.
4. ALL OPERATIONS SHALL MEET REGULATING AGENCY REQUIREMENTS.

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 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025

### UTILITY AVOIDANCE DETAIL

**NOTES:**

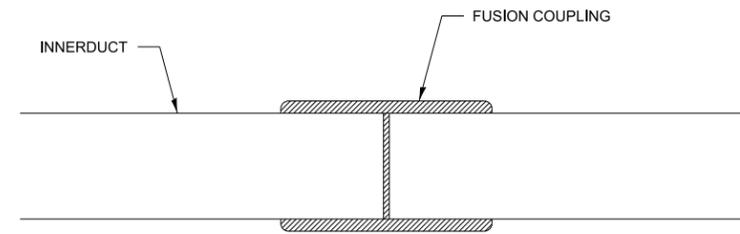
1. IF 18" MIN COVER CANNOT BE ACHIEVED, HDPE(S) MUST BE PLACED UNDER EXISTING UTILITY.
2. 12" MIN SEPARATION MUST BE ADHERED TO BETWEEN GALVANIZED RIGID STEEL/CASING HDPE AND EXISTING UTILITY. FOR OIL OR GAS UTILITY, A MINIMUM OF 18" TO 24" SEPARATION BETWEEN PIPE AND CONDUIT (OR AS REQUIRED BY UTILITY OWNER).
3. NO DIRECT BURY UNDER ANY EXISTING UTILITY. ALL CROSSINGS SHALL BE VISUALLY VERIFIED.
4. IF CROSSING AN EXISTING UTILITY, SHOULD BE CONSTRUCTED AS CLOSE TO 90° AS POSSIBLE.



APPROVED BY: *Manar Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025

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| <b>FIBER OPTIC SYSTEM<br/>TYPICALS AND DRAWINGS</b>                                   |                    |                   |
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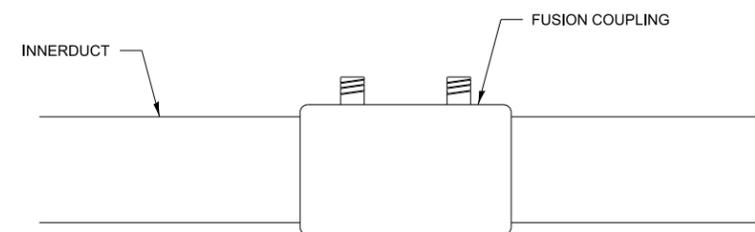
COUPLINGS DETAILS



NOTE:

IN A PROPER ELECTROFUSION JOINT, MOLTEN MATERIAL FLOWS TO THE COLD ZONE WHERE IT SOLIDIFIES AND FREEZES OFF THE ESCAPE PATH. WITH THE MOLTEN MATERIAL CONTAINED, MELT PENETRATION WILL BUILD INTERFACE PRESSURE. WIRE WINDINGS WILL FLOW IN A DESIGNED AND CONTROLLED PATTERN AND A PROPER BONDING OF MATERIALS CAN BE OBTAINED.

PROPER FUSION DETAIL



GENERAL NOTES

1. FUSION COUPLING SHALL BE USED FOR ALL INSTALLATION OF DUCT.

FUSION STANDARD JOINING PROCEDURES

1. SHALL INSTALL PER FUSION COUPLING MANUFACTURER RECOMMENDATIONS.
2. THE PIPE SHALL HAVE A SQUARE EVEN CUT.
3. REMOVE ANY BURRS OR SHAVING FROM THE PIPE ENDS THAT MAY HAVE DEVELOPED DURING THE CUTTING PROCESS.
4. CLEAN PIPE ENDS INSIDE AND OUT WITH A CLEAN CLOTH TO REMOVE ANY DIRT OR CONTAMINANTS.
5. PIPE PREPARATION AND CONTAMINATION ARE VERY IMPORTANT CONSIDERATIONS IN THE ELECTROFUSION PROCESS. THEREFORE, CAREFUL ATTENTION SHALL BE GIVEN TO PROPER SCRAPING AND CLEANING PROCEDURES.
6. SCRAPE PIPE ENDS TO REMOVE ANY OXIDATION OR SURFACE CONTAMINATION. FOR BEST RESULTS, SECURE TOOL ON PIPE AND MAKE TWO REVOLUTIONS.
7. DISCONNECT LEADS FROM FITTING. CLAMPING DEVICE SHALL REMAIN IN PLACE TO SECURE PIPE AND FITTING DURING THE RECOMMENDED COOLING TIME. AFTER REMOVING CLAMP, ADDITIONAL COOLING TIME SHALL BE ALLOWED BEFORE SUBJECTING THE JOINT TO BENDING, BURYING, PRESSURE TESTING, OR SIMILAR HANDLING AND BACKFILL STRESS.

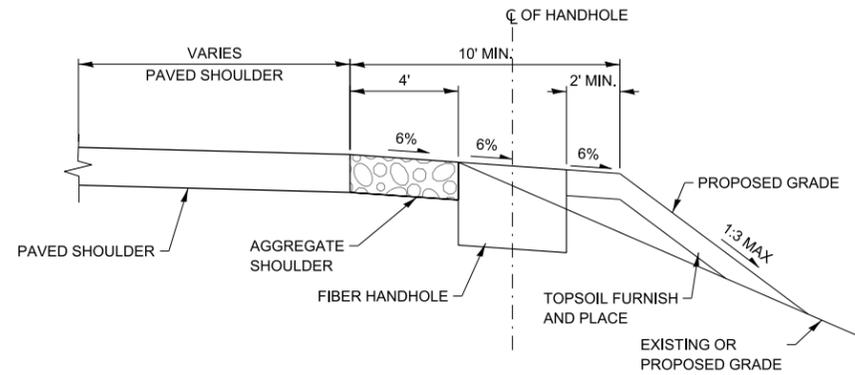
NOTE: IN THE EVENT OF OUT-OF-ROUND PIPE, IT IS IMPORTANT TO ASSURE AN ADEQUATE AND EVEN SCRAPE IS ACHIEVED AROUND THE ENTIRE CIRCUMFERENCE OF THE PIPE. A RUBBER PIPE STOPPER CAN BE PLACED IN THE END OF THE PIPE TO AID IN ROUNDING THE AREA TO BE SCRAPED.

8. MULTIPLE DUCTS FUSION SHALL BE STAGGERED AND AFTER COMPLETION SHALL BE BOUND TOGETHER WITH TY-STRAPS (AT 5' SPACING) SO TO OCCUPY MINIMUM POSSIBLE SPACE AND THEN BACKFILLED.

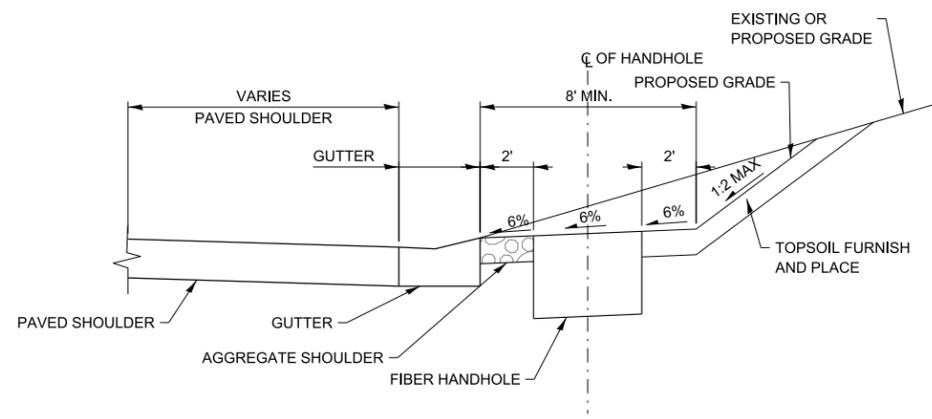
APPROVED BY: *Manan Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025

|   |                    |                   |
|---|--------------------|-------------------|
|  |                    |                   |
| <b>FIBER OPTIC SYSTEM<br/>                 TYPICALS AND DRAWINGS</b>                  |                    |                   |
| VERSION:<br>2025-03   | STANDARD:<br>L1-07 | SHEET:<br>5 OF 15 |

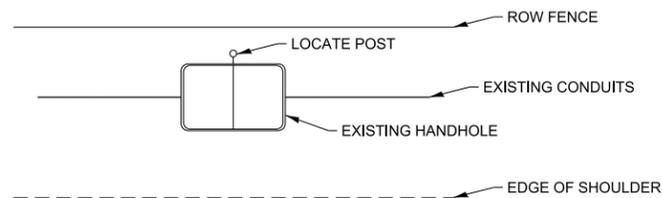
**HANDHOLE**



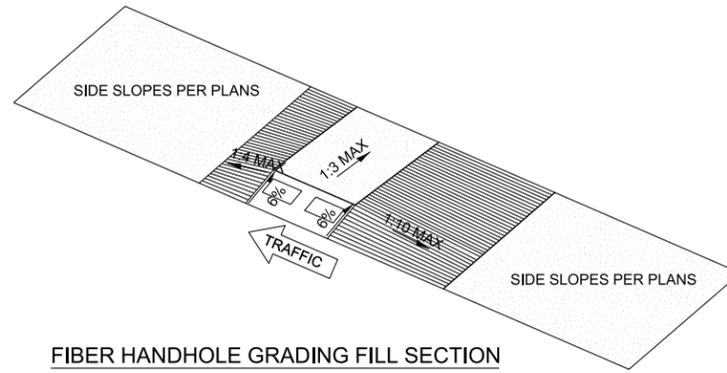
**FIBER HANDHOLE GRADING FILL SECTION**



**FIBER HANDHOLE GRADING CUT SECTION**



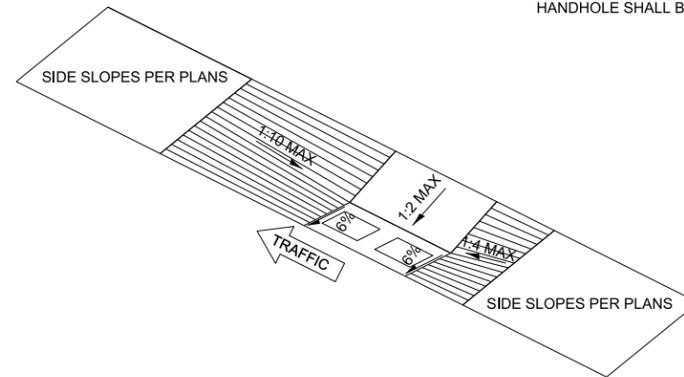
**TYPICAL LOCATE POST PLACEMENT (PLAN VIEW)**



**FIBER HANDHOLE GRADING FILL SECTION (PERSPECTIVE VIEW)**

**NOTE:**

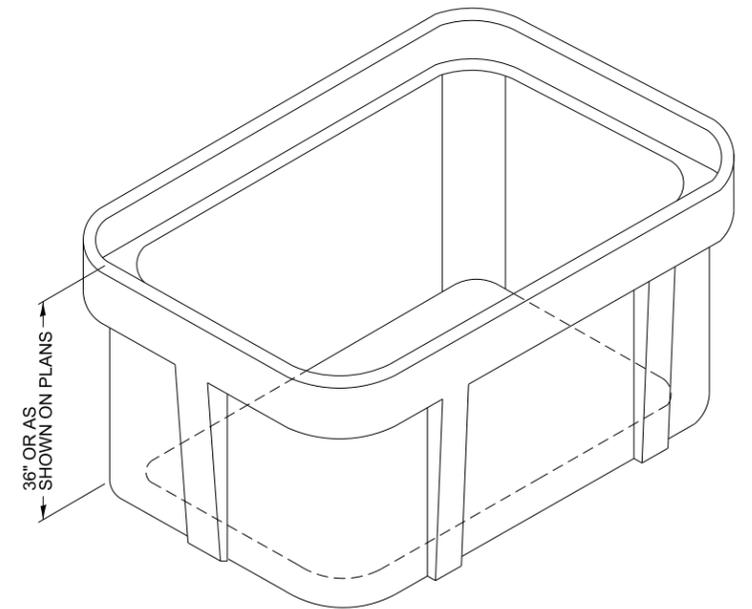
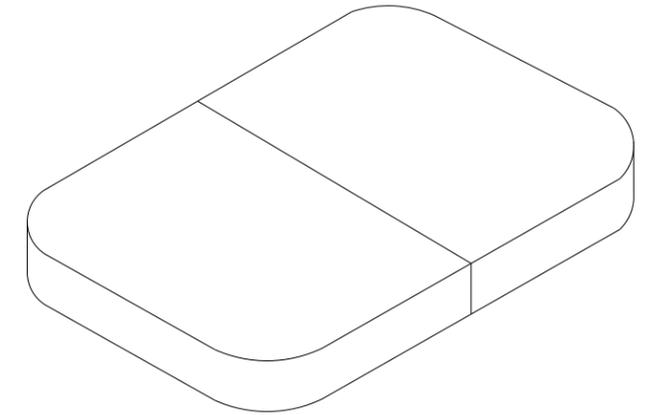
1. NO CORING/DRILLING OR ALTERATION OF HANDHOLE SHALL BE ALLOWED.



**FIBER HANDHOLE GRADING CUT SECTION**

**NOTES:**

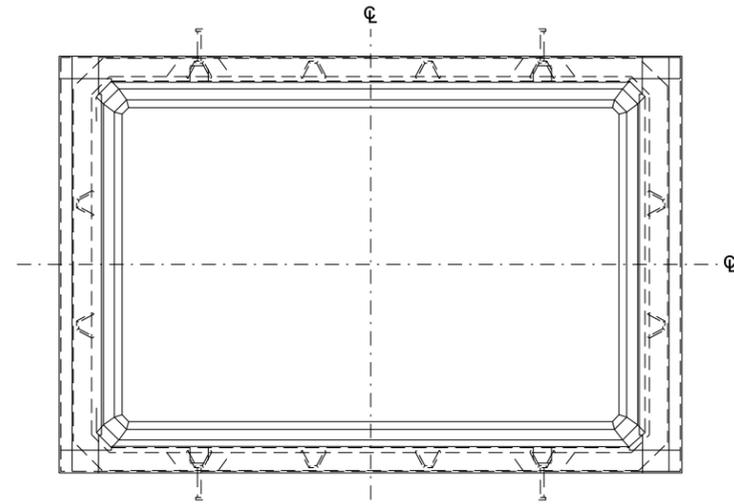
1. TRANSITIONAL LONGITUDINAL SLOPE FACES SHALL BE A MAXIMUM OF 1:4 FOR SLOPE FACING AWAY FROM TRAFFIC (TRAILING EDGE OF DETAIL ON A FILL SLOPE CONDITION OR LEADING EDGE OF DETAIL ON A CUT SLOPE CONDITION) AND A MAXIMUM OF 1:10 FOR SLOPE FACING TRAFFIC (LEADING EDGE OF DETAIL ON A FILL SLOPE CONDITION OR TRAILING EDGE OF DETAIL ON A CUT SLOPE CONDITION).
2. WHERE FIBER HANDHOLES ARE INSTALLED ADJACENT TO LIGHT POLES THE HANDHOLE GRADING SHALL BE LENGTHENED TO ACCOMMODATE THE LIGHT POLE GRADING AND CROSS-SLOPE GRADING SHALL BE REVISED TO ZERO-PERCENT (LEVEL GRADED AREA) IN ACCORDANCE WITH LIGHT POLE GRADING REQUIREMENTS OF ILLINOIS TOLLWAY STANDARD DRAWING H1. LEVEL GRADED AREA SHALL BE AGGREGATE SHOULDERS WITH FILTER FABRIC, TYPE B, 4" MEETING OFFSET AND LIMITS REQUIREMENTS OF ILLINOIS TOLLWAY STANDARD DRAWING H1.



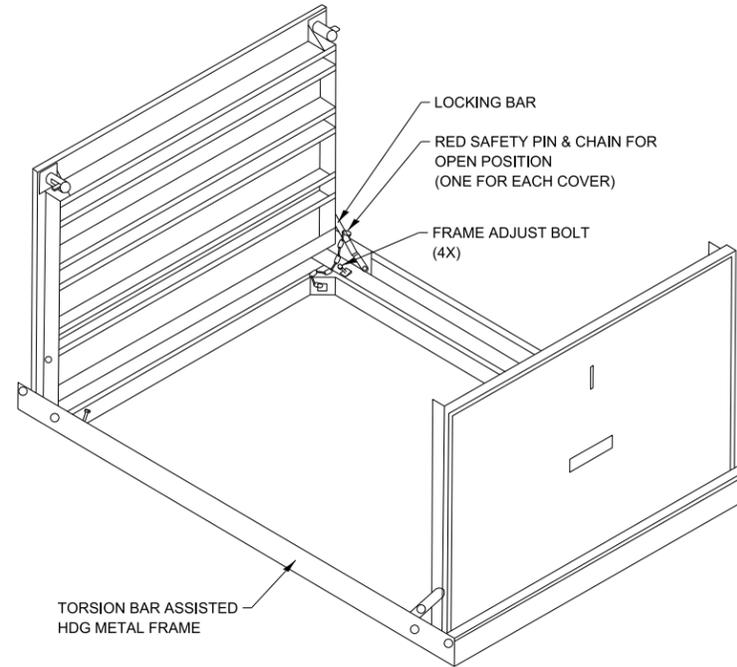
**36"x60" HANDHOLE  
2 SECTION SPLIT LID  
LESS THAN 5 DUCTS**

APPROVED BY: *Manar Nashif*  
CHIEF ENGINEERING OFFICER  
DATE: 03/01/2025

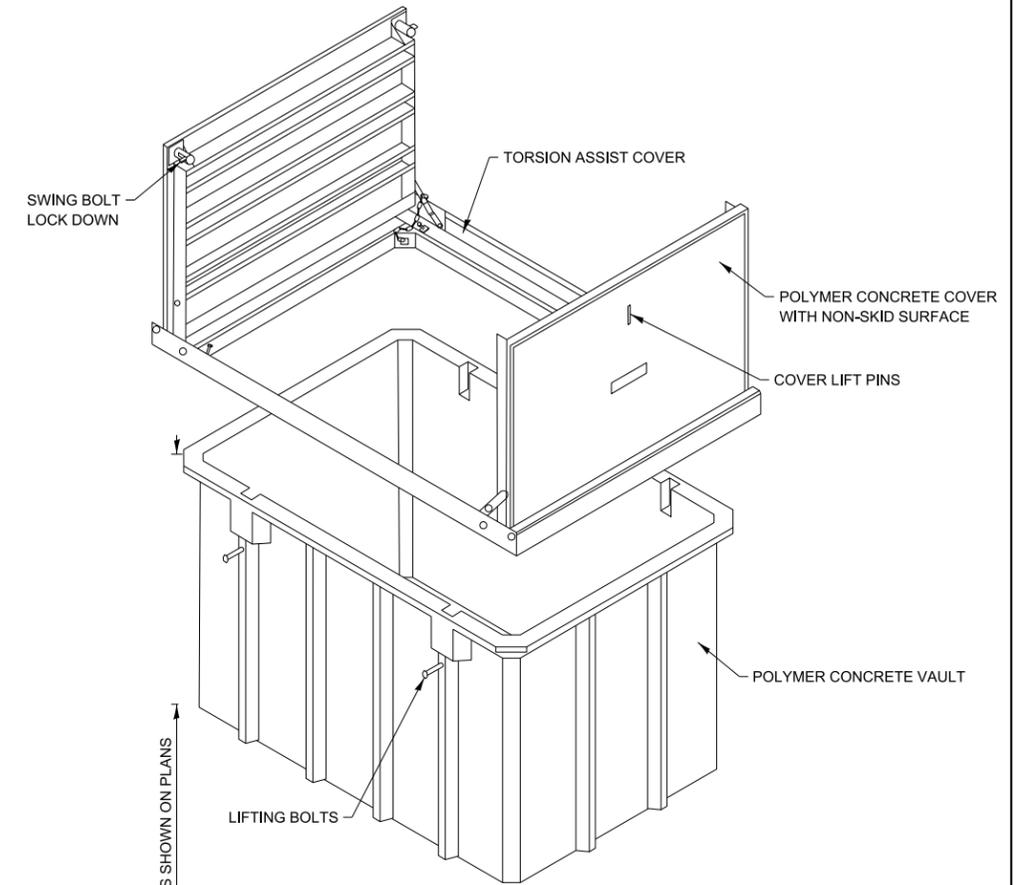
**HANDHOLE**



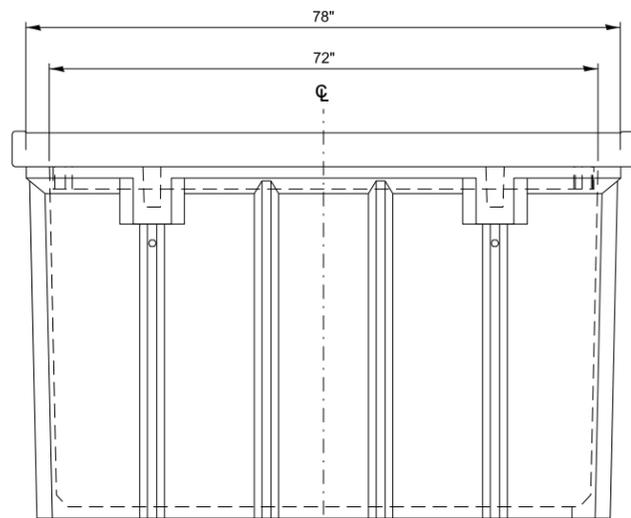
**TOP VIEW**



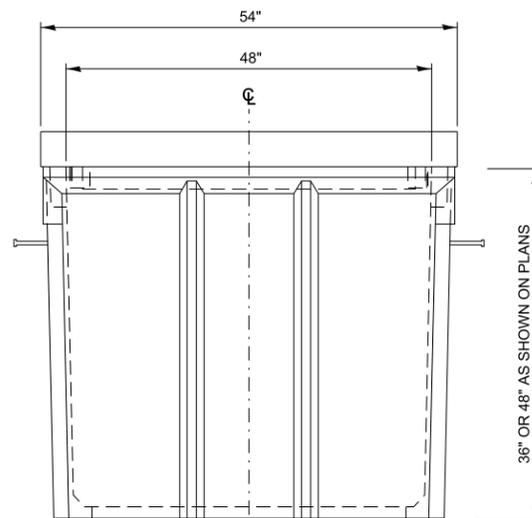
**TORSION ASSIST COVER**



**48"X 72" TORSION ASSIST**



**SIDE VIEW**



**END VIEW**

**NOTES:**

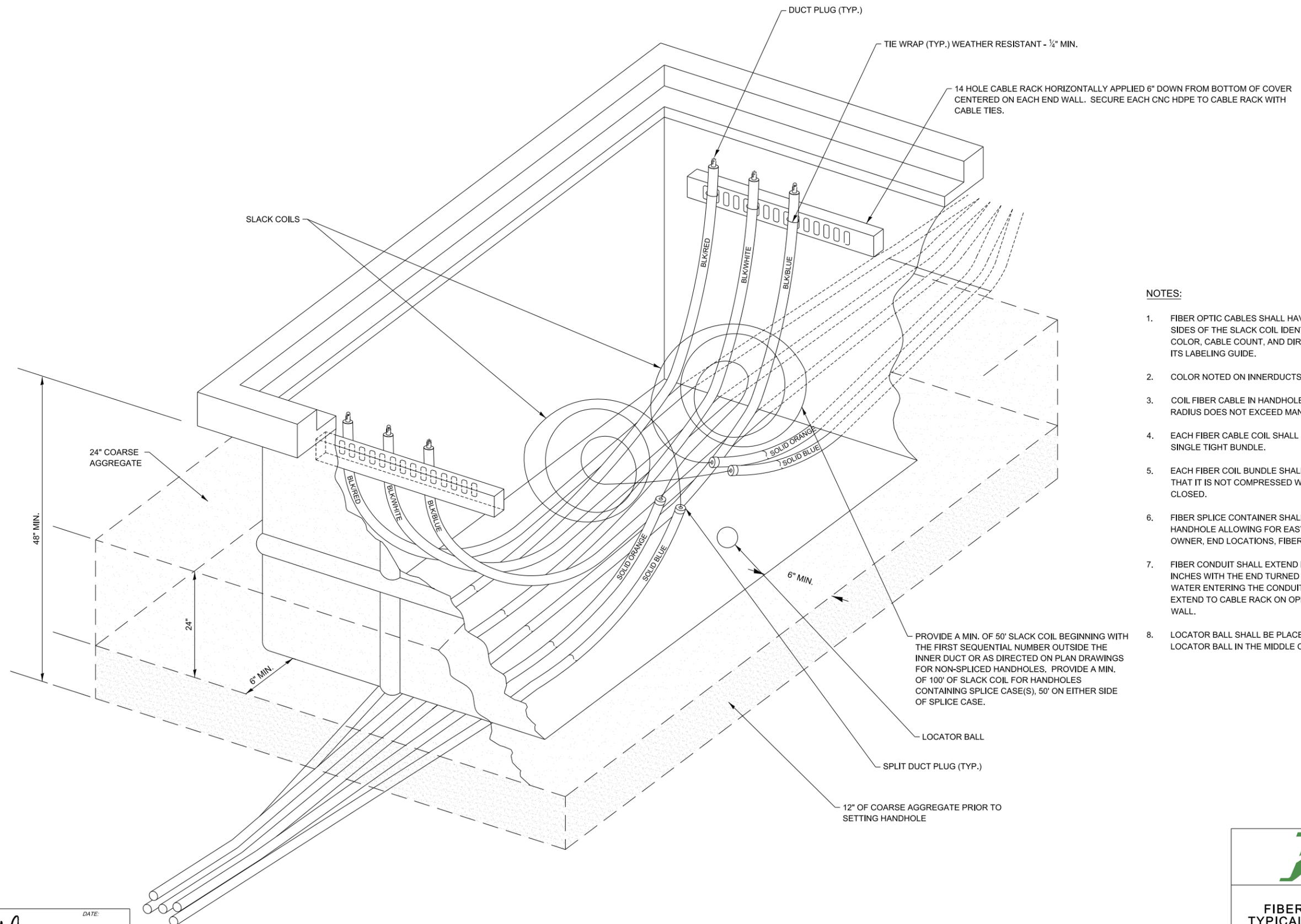
1. NO CORING/DRILLING OR ALTERATION OF HANDHOLE SHALL BE ALLOWED
2. IN CONFINED SPACES, RELOCATE THE RED SAFETY PIN & CHAIN, AND LOCKING BAR TO THE SIDE OF THE LID THAT IS OPEN TO TRAFFIC.
3. HAND TIGHTENING OF THE SWING BOLT LOCK DOWN MECHANISM IS RECOMMENDED. DO NOT EXCEED MANUFACTURER SPECIFICATIONS FOR TIGHTENING OF BOLTS.

APPROVED BY: *Manar Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025



**FIBER OPTIC SYSTEM  
 TYPICALS AND DRAWINGS**

HDPE AND FIBER OPTIC CABLE PLACEMENT IN HANDHOLE



NOTES:

1. FIBER OPTIC CABLES SHALL HAVE A CABLE I.D. TAG ON BOTH SIDES OF THE SLACK COIL IDENTIFYING THE OWNER, DUCT COLOR, CABLE COUNT, AND DIRECTION. REFERENCE THE ITS LABELING GUIDE.
2. COLOR NOTED ON INNERDUCTS IS FOR REFERENCE ONLY.
3. COIL FIBER CABLE IN HANDHOLE ENSURING THAT THE BEND RADIUS DOES NOT EXCEED MANUFACTURER SPECIFICATIONS.
4. EACH FIBER CABLE COIL SHALL BE TIED TOGETHER IN A SINGLE TIGHT BUNDLE.
5. EACH FIBER COIL BUNDLE SHALL BE COILED TIGHTLY ENOUGH THAT IT IS NOT COMPRESSED WHEN THE HANDHOLE LID IS CLOSED.
6. FIBER SPLICE CONTAINER SHALL BE PLACED IN THE HANDHOLE ALLOWING FOR EASY ACCESS AND LABELED WITH OWNER, END LOCATIONS, FIBER TYPE, AND FIBER COUNT.
7. FIBER CONDUIT SHALL EXTEND INTO THE HANDHOLE 12 TO 18 INCHES WITH THE END TURNED UP AND SEALED TO MINIMIZE WATER ENTERING THE CONDUIT. SPARE CONDUITS SHALL EXTEND TO CABLE RACK ON OPPOSITE WALL.
8. LOCATOR BALL SHALL BE PLACED IN HANDHOLES. PLACE LOCATOR BALL IN THE MIDDLE OF HANDHOLE.

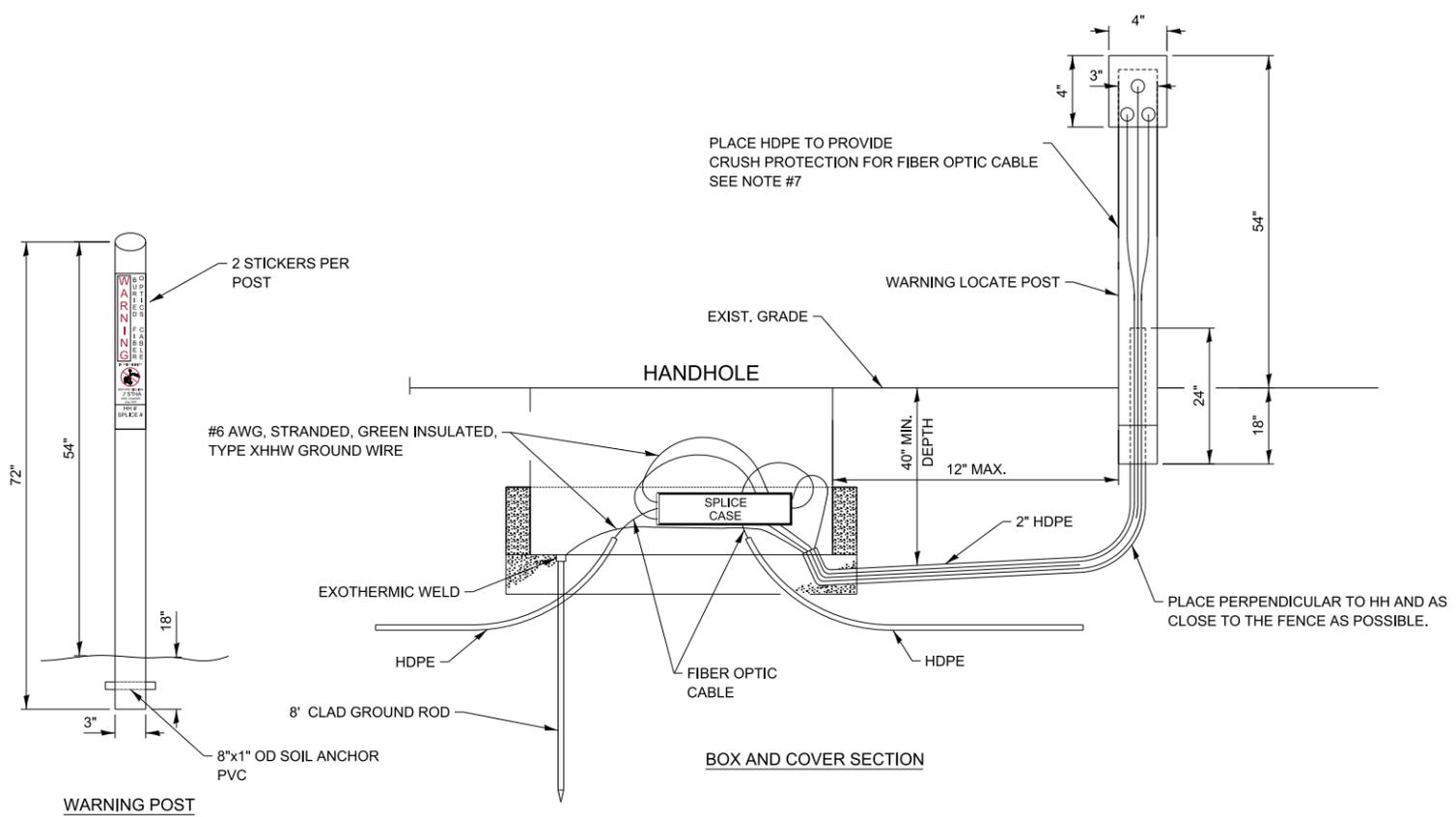
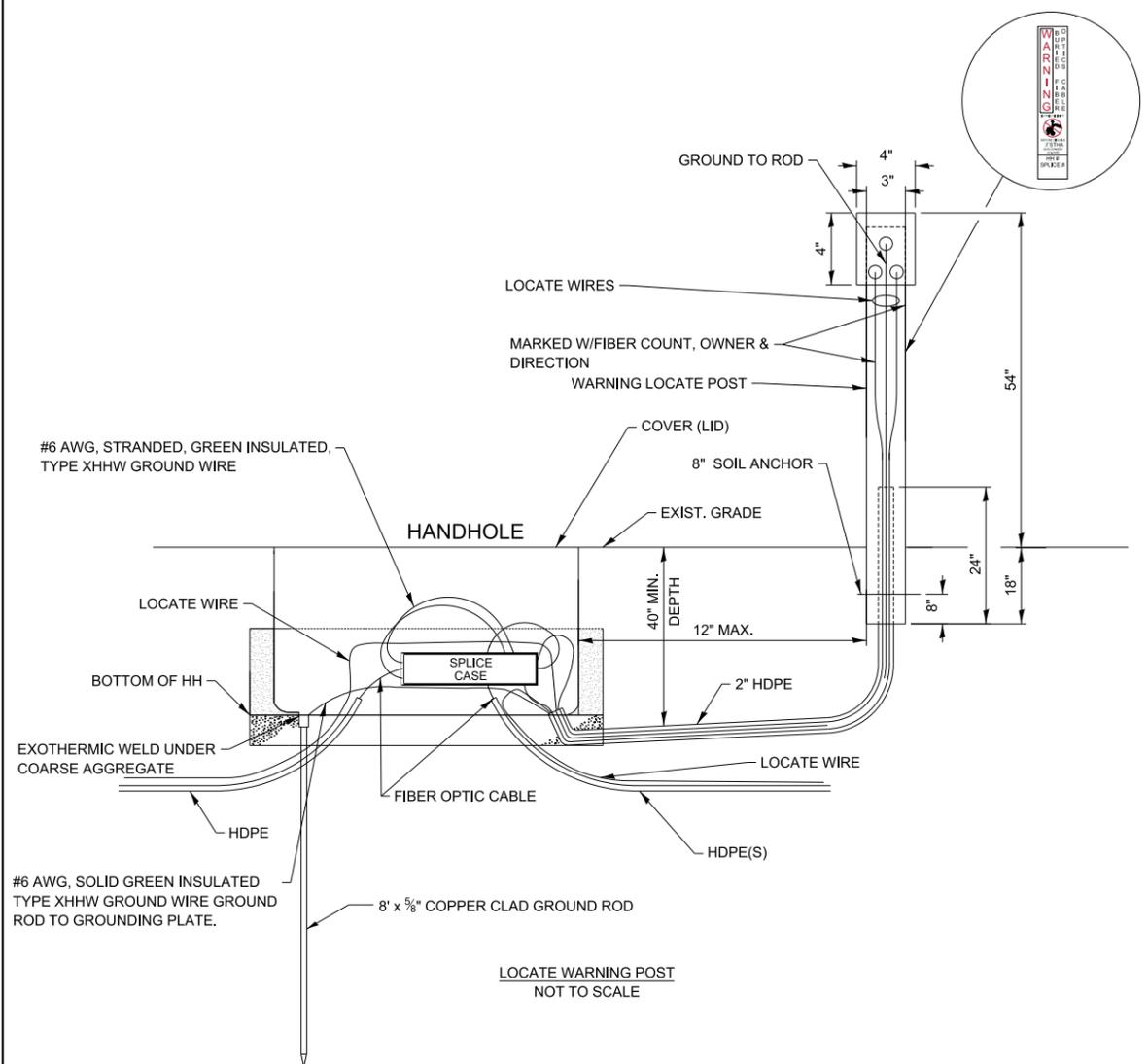
APPROVED BY: *Manar Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025

**Illinois Tollway**

FIBER OPTIC SYSTEM  
 TYPICALS AND DRAWINGS

|                     |                    |                   |
|---------------------|--------------------|-------------------|
| VERSION:<br>2025-03 | STANDARD:<br>L1-07 | SHEET:<br>8 OF 15 |
|---------------------|--------------------|-------------------|

FIBER HANDHOLE SITE DETAIL AND GROUNDING



GENERAL NOTES

- LOCATE WARNING POST SHALL BE PLACED 1 FOOT FROM HANDHOLE OR AT MAXIMUM 3 FOOT AWAY FROM FENCE LINE OR RIGHT-OF-WAY LINE IF POSSIBLE.
- AREA AROUND THE HANDHOLE SHALL BE BACKFILLED ONLY TO THE TOP OF THE BOX. FLUSH TO EXISTING GRADE.
- COIL FIBER CABLE IN HANDHOLE ENSURING THAT THE BEND RADIUS SHALL NOT EXCEED VALUES LISTED IN TABLE A ON SHEET 8.
- INSTALL GROUND ROD & EXOTHERMIC WELD AS PER MANUFACTURER'S INSTRUCTIONS. PLACE THE #6 GROUND WIRE (TYPE XHHW, SOLID, GREEN INSULATED) THAT HAS BEEN ATTACHED TO THE GROUND ROD AND TO THE CENTER LUG OF THE LOCATE POST.
- BACKFILL MATERIAL SHALL BE COMPACTED TO THE SATISFACTION OF THE ENGINEER.
- GROUND WIRE SHALL BE BONDED TO BOTH SHEATHS OF ARMORED FIBER OPTIC CABLE IN THE SPLICE ENCLOSURE USING #6 GROUND STRANDED, GREEN INSULATED WIRE. EACH GROUND SHALL BE ISOLATED WITHIN THE ENCLOSURE.
- INSTALL 2" HDPE CONDUIT FROM HANDHOLE TO WARNING POST TO ALLOW GROUNDING CABLE AND LOCATE TRACE WIRES TO BE INSTALLED.
- NO HANDHOLES WILL BE ALLOWED IN PAVED ROADWAYS OR SHOULDERS.
- THE TOPS OF ALL HANDHOLES SHALL BE FLUSH WITH THE EXISTING GRADE.
- A WATER PROOF SEALING SIMPLEX DUCT PLUG SHALL BE INSTALLED AROUND THE FIBER OPTIC TO SEAL AROUND THE CONDUIT. A WATER PROOF SEALING PLUG SHALL BE INSTALLED IN ALL VACANT CONDUIT.
- ANY WORK IN AN EXISTING SINGLE MODE HANDHOLE OR INVOLVING AN EXISTING SINGLE MODE DUCT AND FIBER SHALL BE COORDINATED WITH THE TOLLWAY FIBER OPTIC CONTRACTOR. USING A-36 PROCESS.
- FOR ALL SPLICE AND HANDHOLE, NUMBER DECALS DISPLAYING MILEPOST SHALL BE APPLIED AFTER INSTALLATION IS COMPLETED.
- PLACEMENT OF SIGNS IS PREFERRED OVER POSTS. SIGNS SHALL BE USED ON LOCATIONS WHERE FENCE IS VISIBLE FROM ROAD. POSTS SHALL ONLY BE USED WHERE SIGN WOULD NOT BE VISIBLE FROM ROAD.
- POSTS SHOULD BE PLACED SO THAT IT DOES NOT IMPEDE THE LID FROM OPENING OR SLIDING BACK.

APPROVED BY: *Manar Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025

**Illinois Tollway**

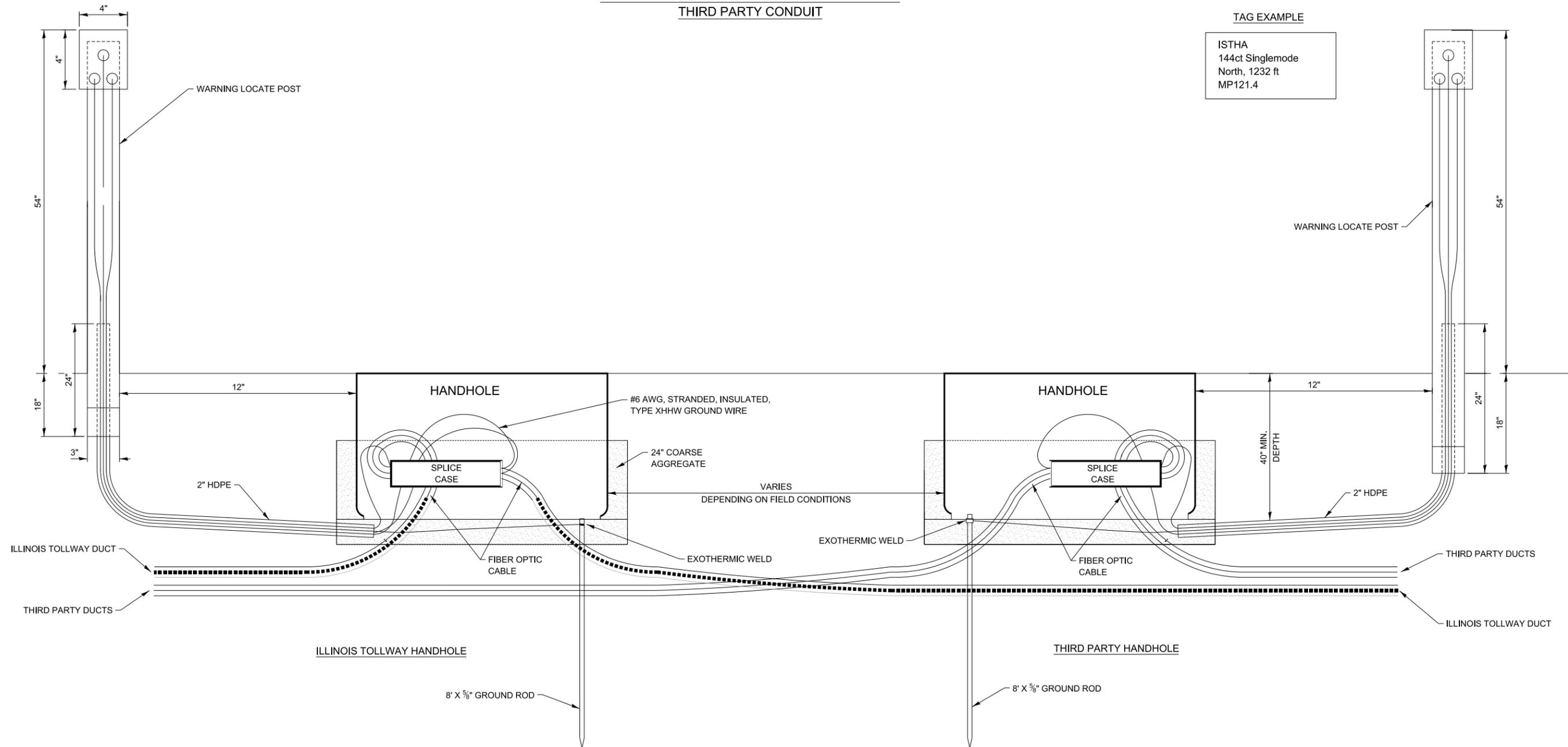
FIBER OPTIC SYSTEM  
 TYPICALS AND DRAWINGS

VERSION: 2025-03      STANDARD: L1-07      SHEET: 9 OF 15

FIBER HANDHOLE SITE DETAIL AND GROUNDING  
THIRD PARTY CONDUIT

TAG EXAMPLE

ISTHA  
144ct Singlemode  
North, 1232 ft  
MP121.4



NOTES:

1. WARNING LOCATE POST SHALL BE PLACED 1 FOOT FROM HANDHOLE OR AT MAXIMUM 3 FOOT AWAY FROM FENCE LINE IF POSSIBLE.
2. AREA AROUND HANDHOLE SHALL BE BACKFILLED ONLY TO THE TOP OF THE BOX FLUSH TO EXISTING GRADE.
3. INSTALL GROUND ROD & EXOTHERMIC WELD AS PER MANUFACTURER'S INSTRUCTIONS. PLACE THE #6 GROUND WIRE (TYPE XHHW, SOLID, GREEN INSULATED) THAT HAS BEEN ATTACHED TO THE GROUND ROD ON THE CENTER LUG OF THE WARNING LOCATE POST.
4. GROUND WIRE SHALL BE BONDED TO BOTH SHEATHS OF ARMORED FIBER OPTIC CABLE IN THE SPLICE ENCLOSURE USING #6 STRANDED GREEN INSULATED TYPE XHHW GROUND WIRE. EACH GROUND SHALL BE ISOLATED WITHIN THE ENCLOSURE.
5. PLACE HDPE OVER FIBER OPTIC CABLE TO PROVIDE CRUSH PROTECTION EXTEND HDPE 1' INSIDE HANDHOLE.
6. NO HANDHOLES SHALL BE ALLOWED IN PAVED ROADWAYS OR SHOULDERS.
7. THE TOPS OF ALL HANDHOLES SHALL BE FLUSH WITH THE EXISTING GRADE UNLESS THE SLOPE IS GREATER THEN 1:4. IF SO, THE HANDHOLE SHALL BE PLACED LEVEL WITH THE EARTH GRADED AROUND IT SO NO PART OF THE SIDES OF THE HANDHOLE IS EXPOSED.
8. A WARNING LOCATE POST SHALL BE INSTALLED AT ALL HANDHOLES.
9. LOCATE WIRE SHALL BE TESTED FROM HANDHOLE TO HANDHOLE PRIOR TO ANY FIBER BEING INSTALLED IN CONDUIT.
10. LOCATE WIRES SHALL BE TAGGED INSIDE LOCATE POST. THE TAG SHALL SHOW THE FIBER OWNER, FIBER COUNT, FIBER TYPE, DIRECTION (N,S,E,W), DISTANCE TO NEXT LOCATE POST, AND MILE POST AT THAT LOCATION.

APPROVED BY: *Manar Nashif*  
CHIEF ENGINEERING OFFICER  
DATE: 03/01/2025

**Illinois Tollway**

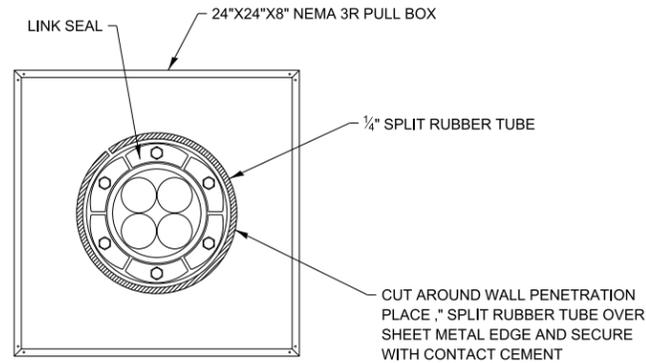
FIBER OPTIC SYSTEM  
TYPICALS AND DRAWINGS

VERSION: 2025-03      STANDARD: L1-07      SHEET: 10 OF 15

**NOTE:**

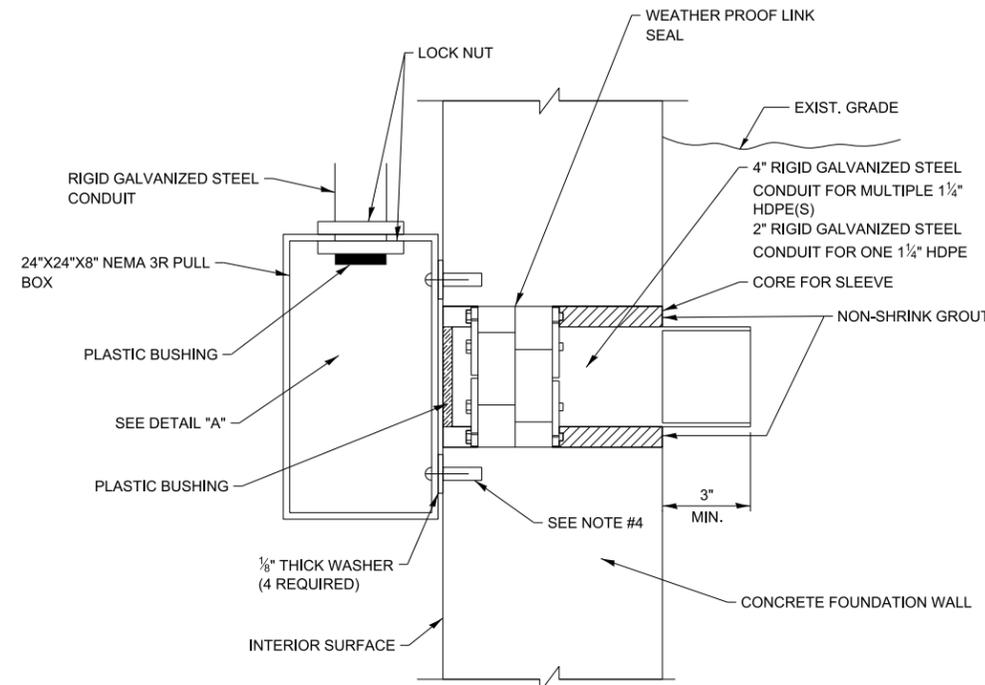
THE MAXIMUM PIPE STRAP SPACING SHALL BE 30" MAX. VERTICAL AND 18" HORIZONTAL MAXIMUM DISTANCE. A MINIMUM OF TWO PIPE STRAPS SHALL BE PLACED FOR ANY CONDUIT PLACED HIGHER THAN 4' ABOVE GRADE.

**WALL PENETRATION DETAIL**



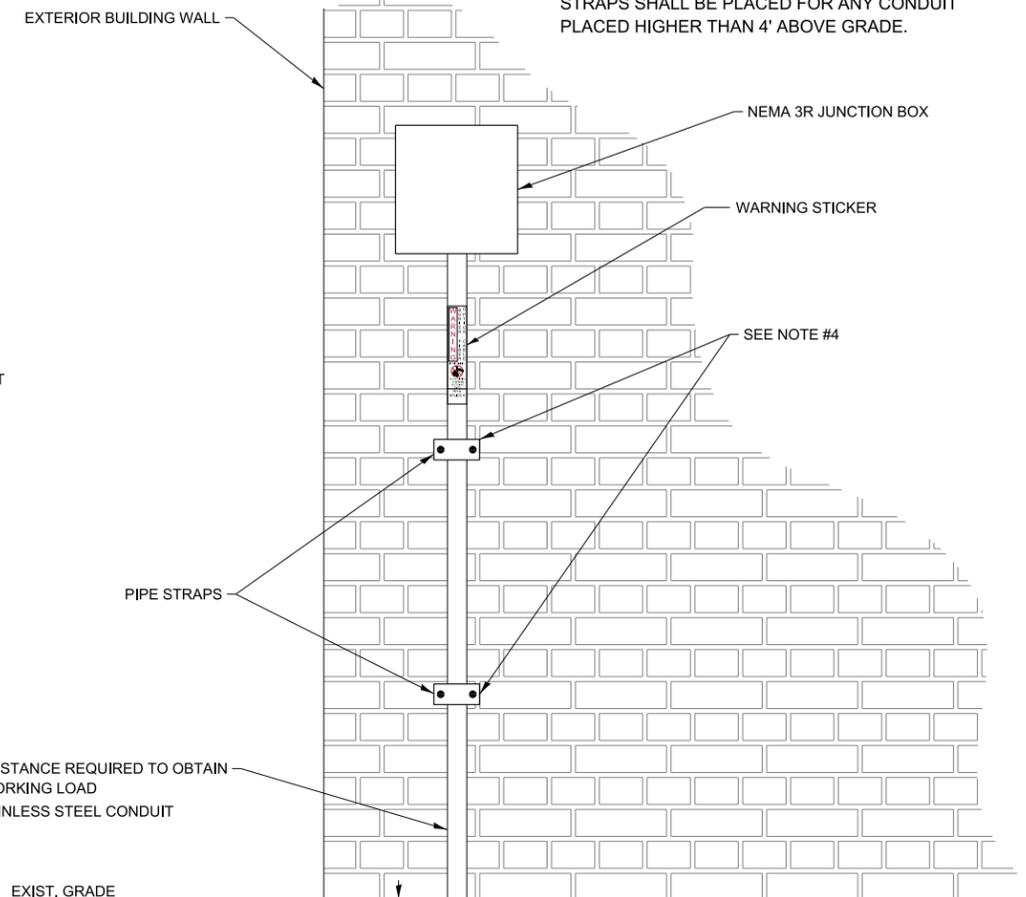
**DETAIL A**

FRONT VIEW  
BELOW GRADE  
BUILDING ENTRANCE PULL BOX



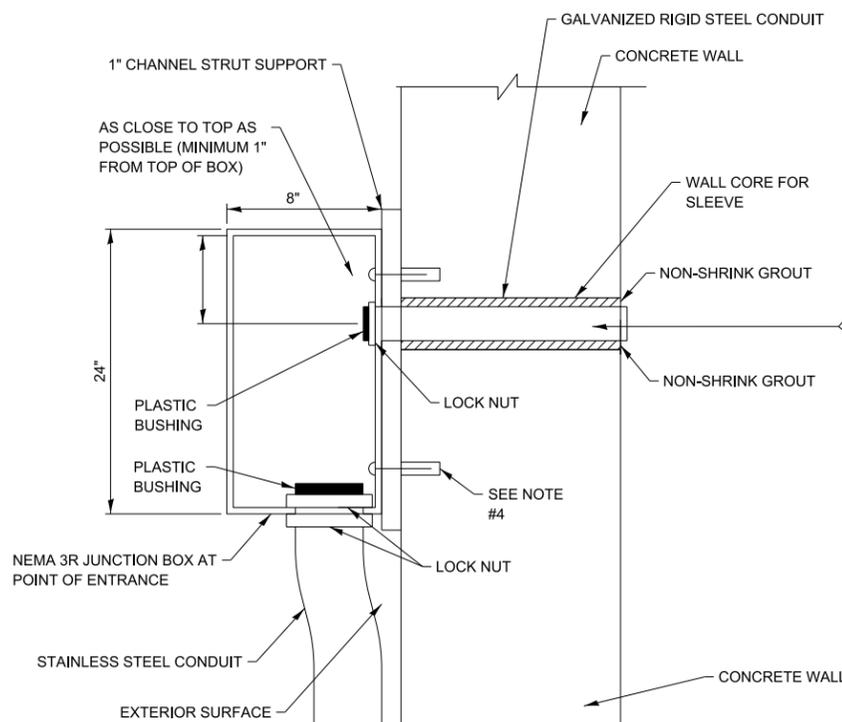
**DETAIL B**

SIDE VIEW  
BELOW GRADE  
BUILDING ENTRANCE PULL BOX



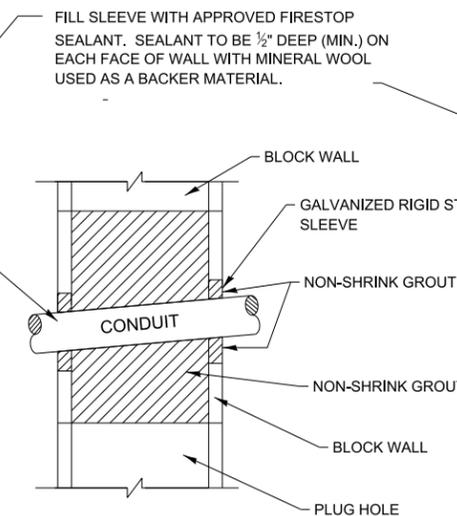
**DETAIL C**

ABOVE GRADE  
BUILDING ENTRANCE  
CONDUIT



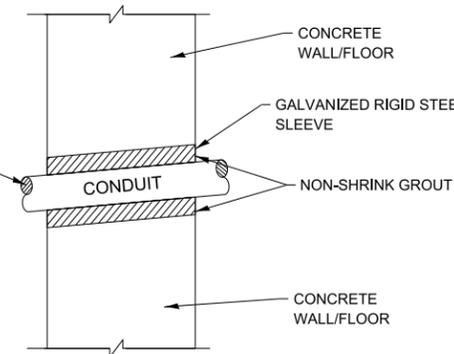
**DETAIL D**

ABOVE GRADE  
BUILDING ENTRANCE PULL BOX



**DETAIL E**

BLOCK WALL PENETRATION



**DETAIL F**

CONCRETE WALL/FLOOR PENETRATION BUILDING PENETRATIONS SPECIFIED AS DETAIL F MAY BE A COMBINATION OF POURED OR HOLLOW CONCRETE BLOCK WITH A BRICK EXTERIOR. IF HOLLOW BLOCK IS ENCOUNTERED COMPLETE INSTALLATION PER DETAIL E THIS SHEET.

**GENERAL NOTES:**

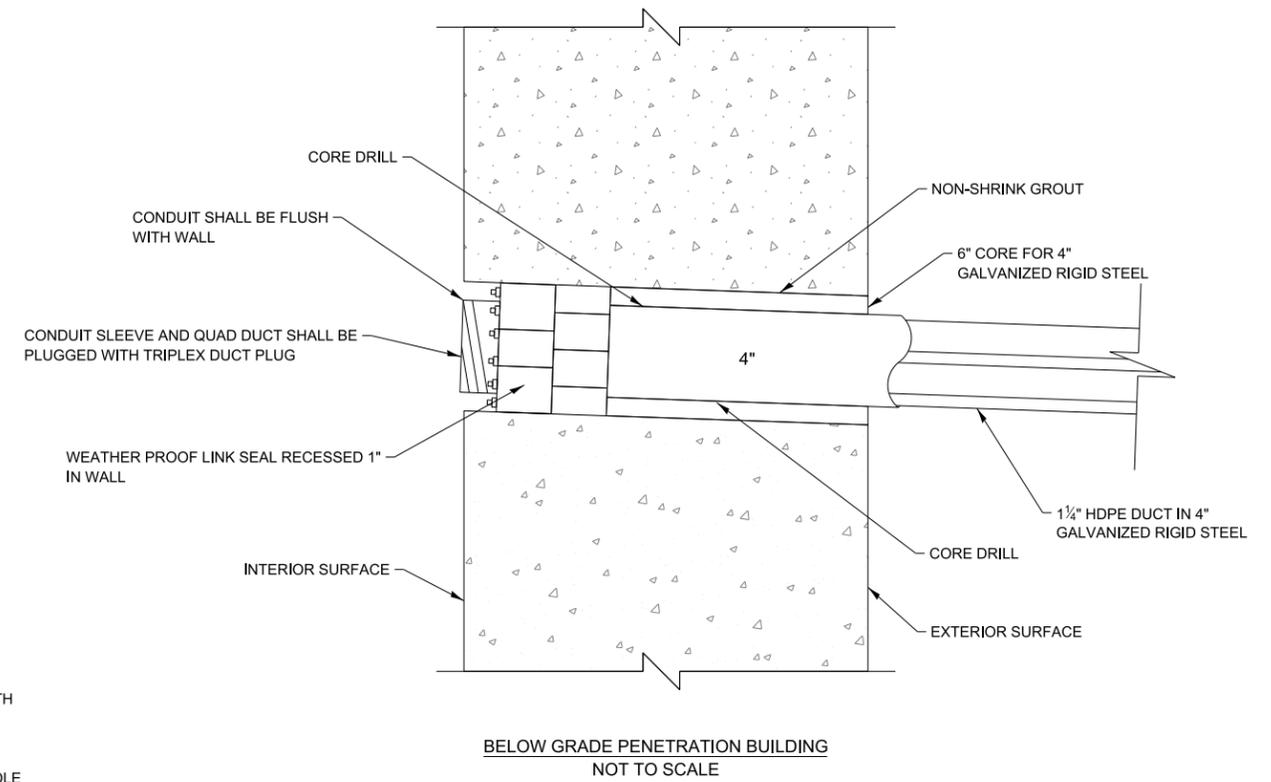
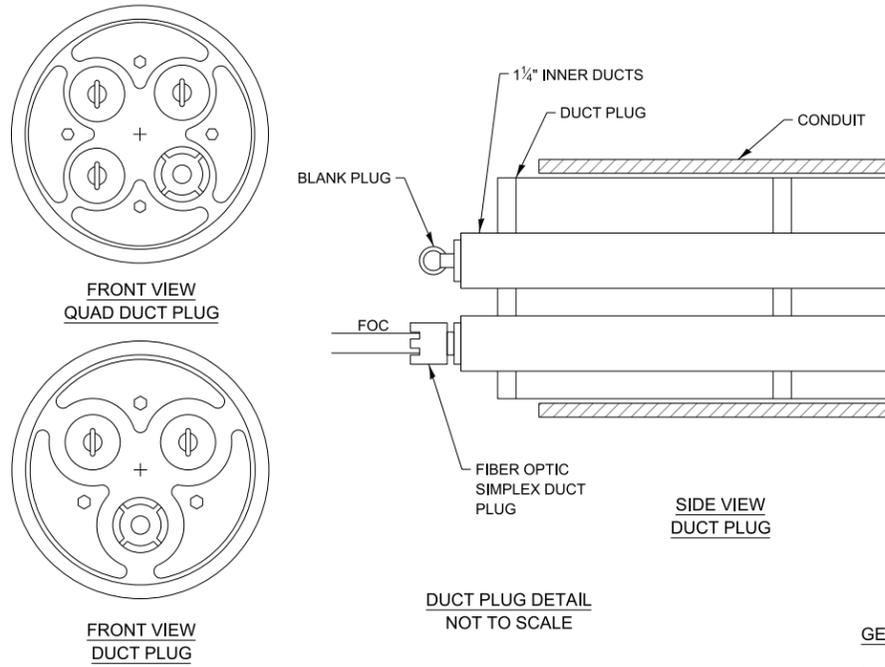
1. ALL PENETRATIONS SHALL UTILIZE EXISTING UNUSED BUILDING PENETRATIONS TO THE MAXIMUM EXTENT POSSIBLE.
2. ALL EXTERIOR MATERIALS SHALL BE STAINLESS STEEL UNLESS OTHERWISE NOTED.
3. ALL ANCHORS SHALL BE INSTALLED IN SOUND CONCRETE OR MASONRY.
4. USE APPROVED MASONRY ANCHOR.
5. ALL CONDUITS ENTERING THE BUILDING SHALL BE PITCHED AWAY FROM BUILDING.

APPROVED BY: *Manar Nashif*  
CHIEF ENGINEERING OFFICER  
DATE: 03/01/2025

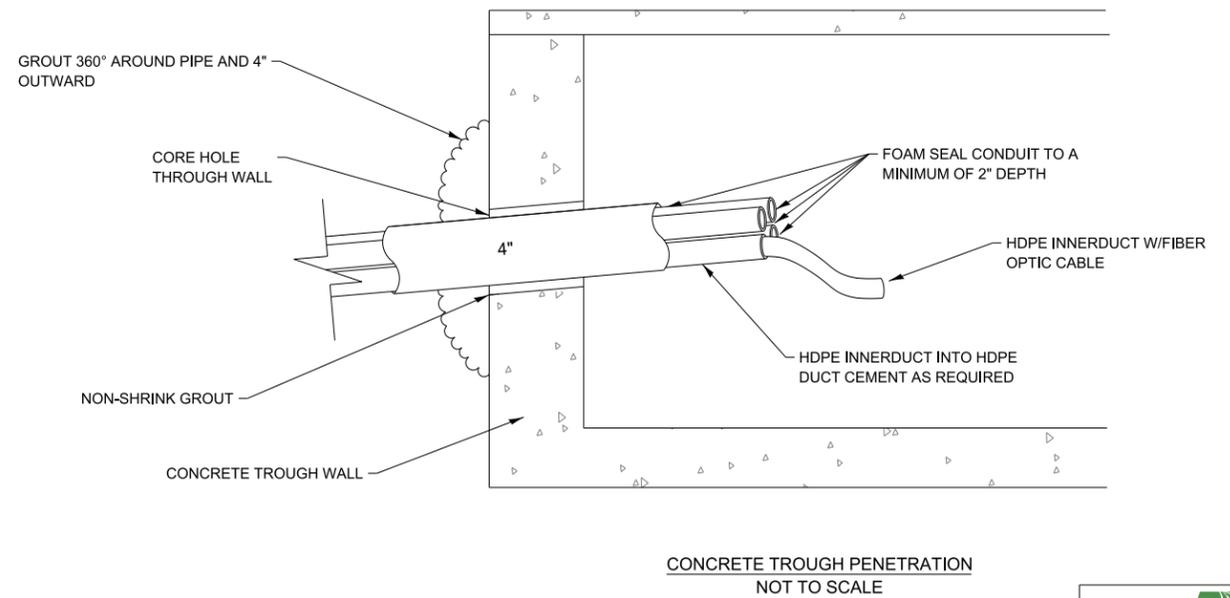
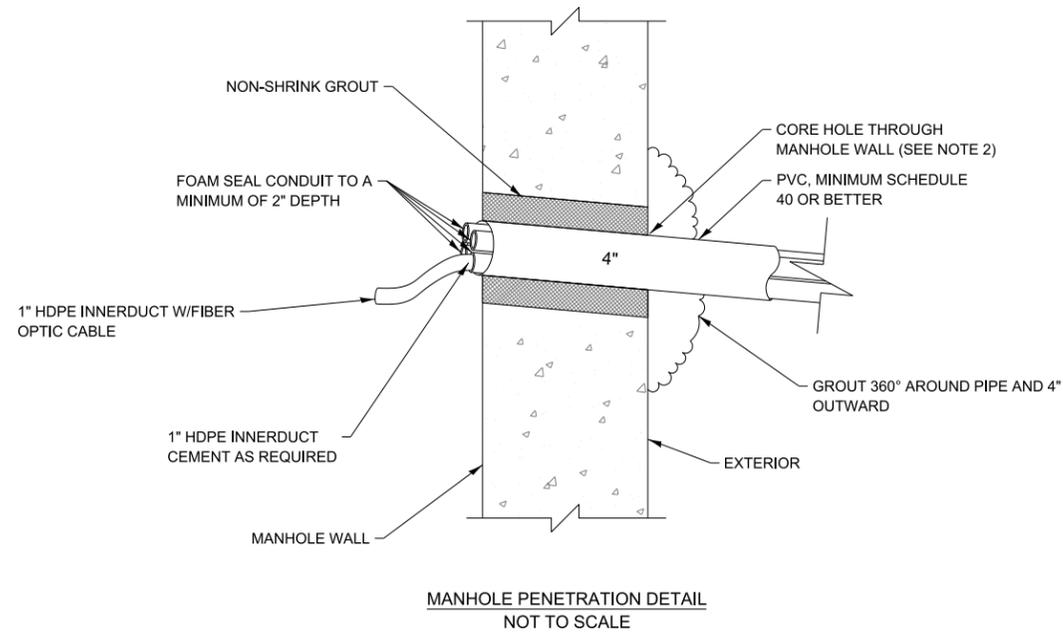


**FIBER OPTIC SYSTEM  
TYPICALS AND DRAWINGS**

**UNDERGROUND PENETRATION DETAIL**



- GENERAL NOTES:**
1. GALVANIZED RIGID STEEL CONDUIT EXTENDING THROUGH FOUNDATION WALL SHALL BE ONE CONTINUOUS PIECE (NO COUPLINGS), SQUARE WITH BUILDING AT A SLIGHT ANGLE TO THE EXTERIOR TO PREVENT WATER SEEPAGE.
  2. MANHOLE CORES SHALL NOT BE THROUGH MANHOLE CONE.



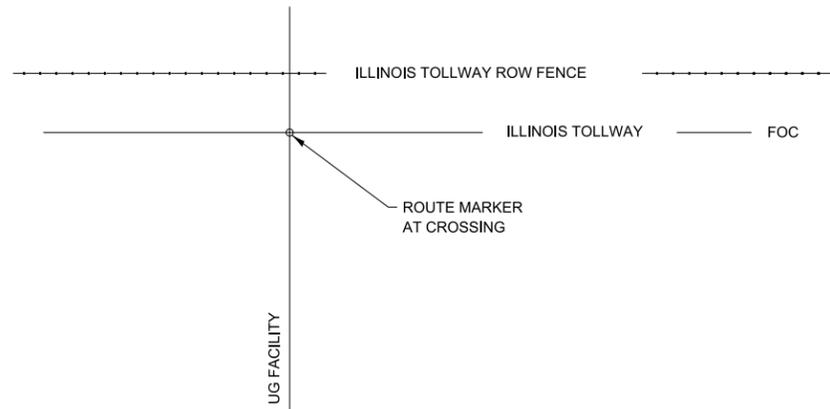
APPROVED BY: *Manan Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025



**FIBER OPTIC SYSTEM  
 TYPICALS AND DRAWINGS**

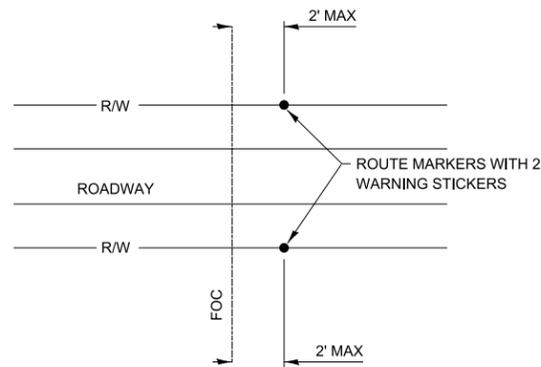
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|---------------------|--------------------|--------------------|
| VERSION:<br>2025-03 | STANDARD:<br>L1-07 | SHEET:<br>12 OF 15 |
|---------------------|--------------------|--------------------|

GAS, TELE, POWER, WATER, PIPELINE,  
SEWER, CATV, ETC.

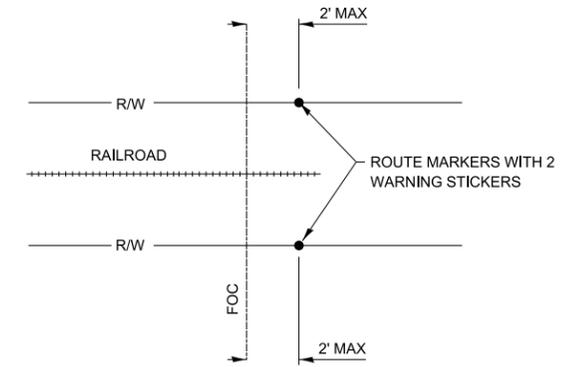


FACILITY CROSSING  
FIG. 1

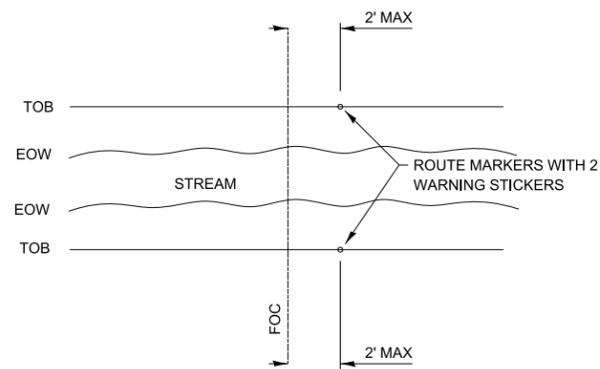
BURIED CABLE SIGNAGE



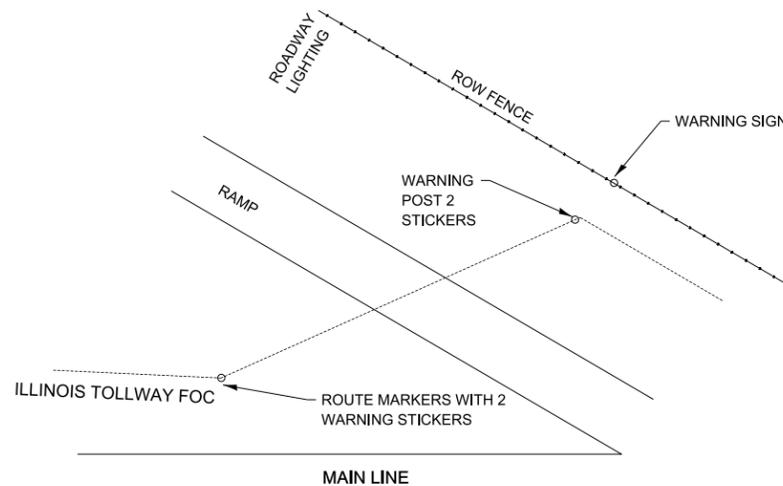
TYPICAL MARKER PLACEMENT AT ROAD AND BRIDGE CROSSING  
FIG. 2



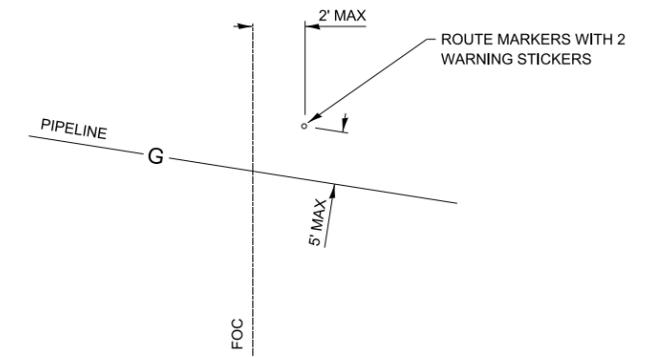
TYPICAL MARKER PLACEMENT AT RAILROAD CROSSING  
FIG. 3



TYPICAL MARKER PLACEMENT AT RIVER,  
CREEK & DRAINAGE DITCH CROSSING  
FIG. 4



ON/OFF RAMP CROSSING  
FIG. 5



TYPICAL MARKER PLACEMENT AT PIPELINE CROSSING  
FIG. 6

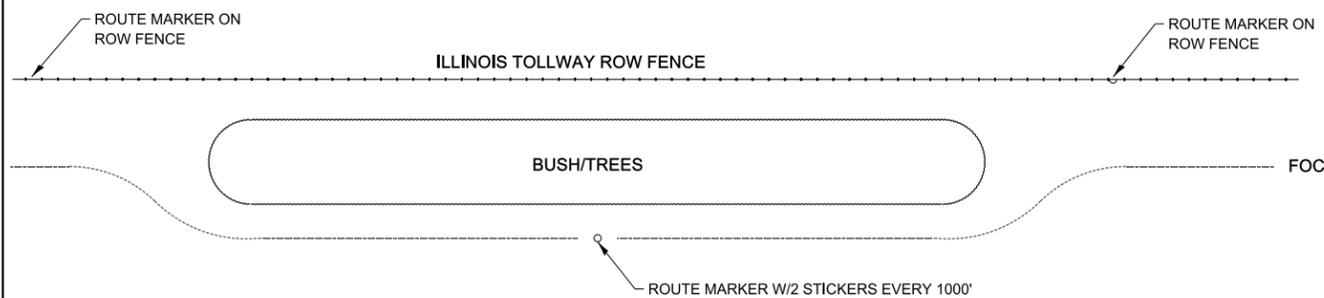
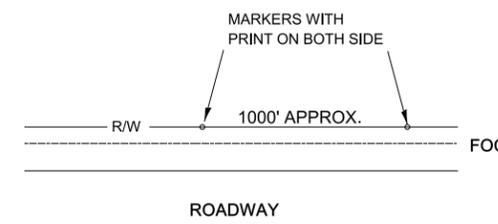


FIG. 7



TYPICAL MARKER PLACEMENT  
TO BE PLACED NEXT TO R.O.W. FENCE LINE  
FIG. 8

GENERAL NOTES:

1. MAINTAIN A MAXIMUM DISTANCE OF 2' FROM ANY UTILITY POLE OR PEDESTAL SIGN, MARKER POLE, OR ANY OTHER STRUCTURE.
2. WARNING MARKERS SHALL BE PLACED AT 1000' INTERVALS AND AT CHANGES IN CABLE LOCATION/DIRECTION OR AT CROSSING POINT OF OTHER UNDERGROUND FACILITIES. THE CONTRACTOR SHALL ADJUST EXCAVATION AS NECESSARY TO AVOID HIDDEN OBSTACLES AND TO MAINTAIN MAXIMUM DISTANCE FROM THE EDGE OF PAVEMENT. ALL DEVIATIONS SHALL BE APPROVED BY THE ENGINEER.
3. FOR CONGESTED AREAS WITH MULTIPLE UTILITY CROSSINGS WITHIN A SHORT LENGTH, MARKER POSTS SHOULD BE PLACED NO CLOSER THAN 50' APART FROM EACH OTHER ALONG THE RUNNING LINE OF THE FOC.

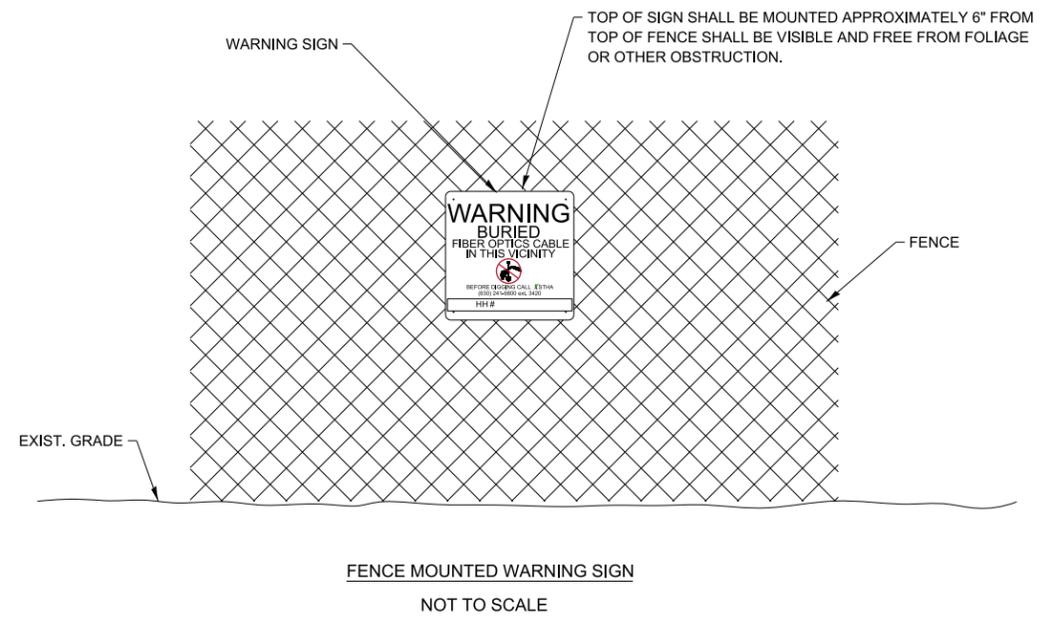
APPROVED BY: *Manar Nashif*  
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025



FIBER OPTIC SYSTEM  
TYPICALS AND DRAWINGS

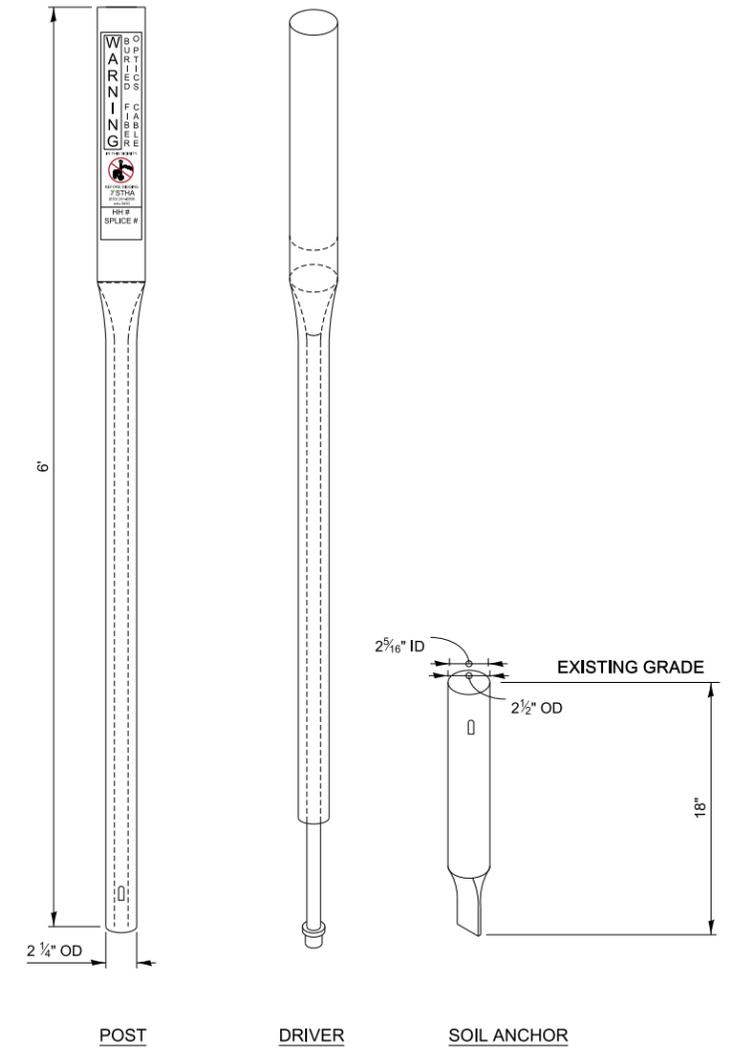
ROUTE MARKER INSTALLATION PROCEDURE



FENCE MOUNTED WARNING SIGN  
NOT TO SCALE

INSTALLATION OF WARNING SIGN & POST:

1. INSTALL WARNING POST ACCORDING TO MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS.
2. PLACEMENT OF POST SHALL NOT INTERFERE WITH THE REMOVAL OF HANDHOLE LIDS
3. WARNING SIGN SHALL BE ATTACHED TO ROW FENCE WHEREVER POSSIBLE. UV STABILIZED BLACK NYLON CABLE TIES (14" LENGTH, .30" WIDTH, 120 LBS TENSILE STRENGTH), (4 EA.) 3 WRAPS EACH TIE, SHALL BE USED TO ATTACH WARNING SIGN TO FENCE.
4. SEE SHEET 15 OF THIS SERIES FOR FIBER WARNING LABEL AND WARNING SIGN DETAILS.



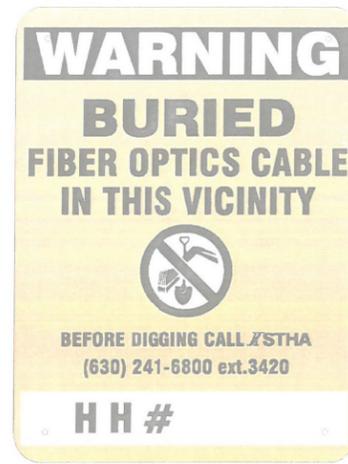
POST

DRIVER

SOIL ANCHOR

APPROVED BY: *Manar Nashif*  
CHIEF ENGINEERING OFFICER  
DATE: 03/01/2025

FIBER WARNING LABEL & WARNING SIGN DETAILS



FENCE SIGN

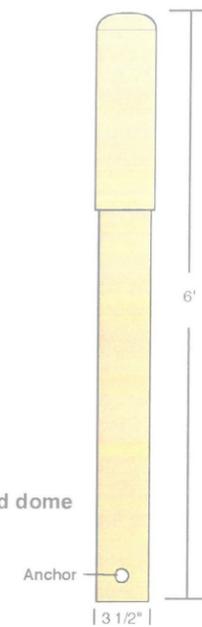


Products provided by:



Part #: SA-ISTHA  
 Size: 12" T X 9" W  
 Material: Polyethylene  
 Color: Black text with Orange bkgd, with white  
 Holes: 4 - 3/16"

Part #: PP6-ISTHA  
 Size: 6'  
 Material: Polydome  
 Color: Orange Post and dome



ROUTE MARKER POST



Part #: PTP466000-ISTHA - 4" X 6,000', 6MIL Orange with black text  
 WARNING TAPE

ROUTE MARKER POST DECAL



Part #: D-314-ISTHA  
 Size: 14" x 3"  
 Material: Decal  
 Color: Orange with black text, Black "Warning" panel with white text, White no dig  
 Scale: Shown @ 50%

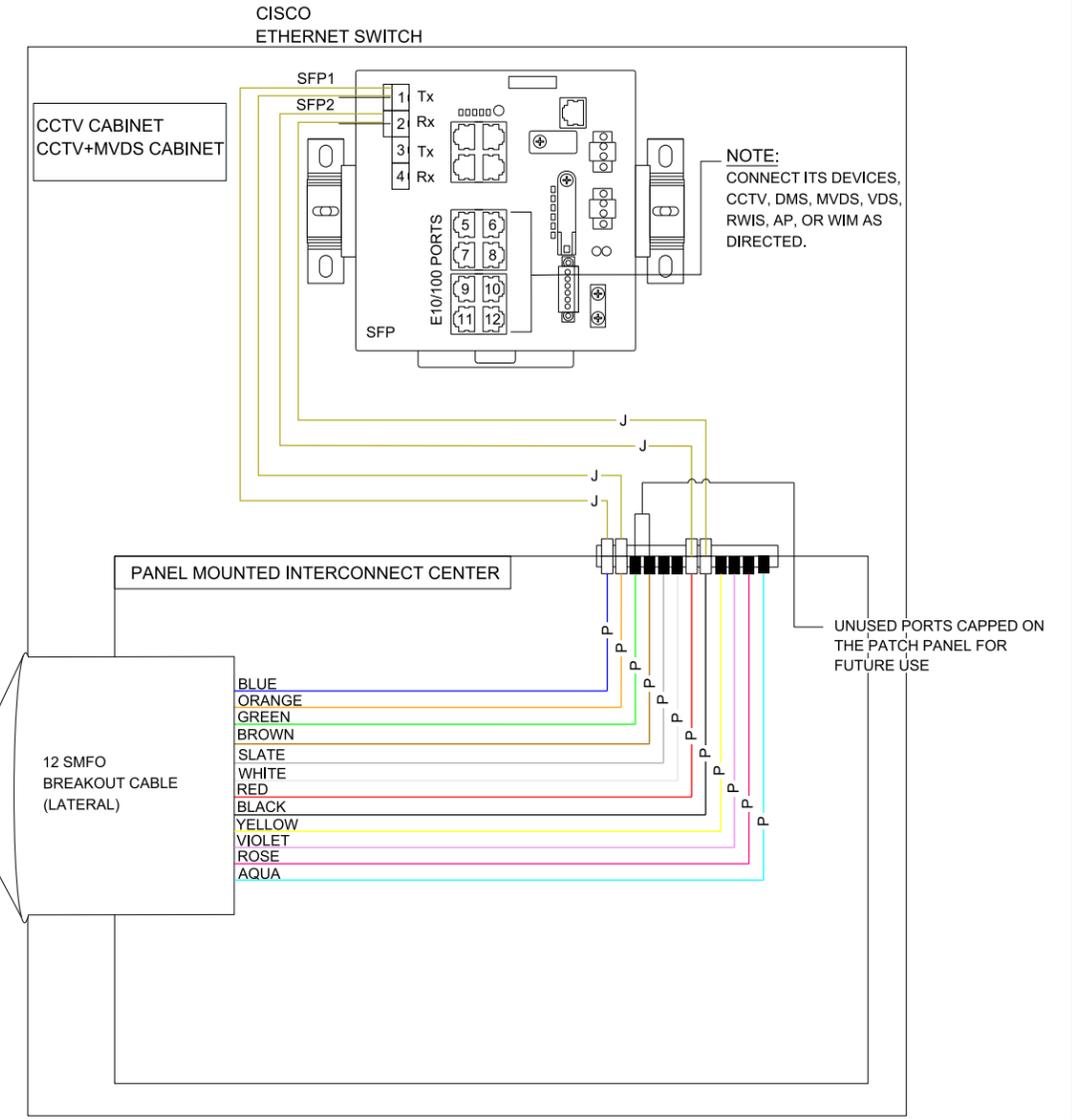
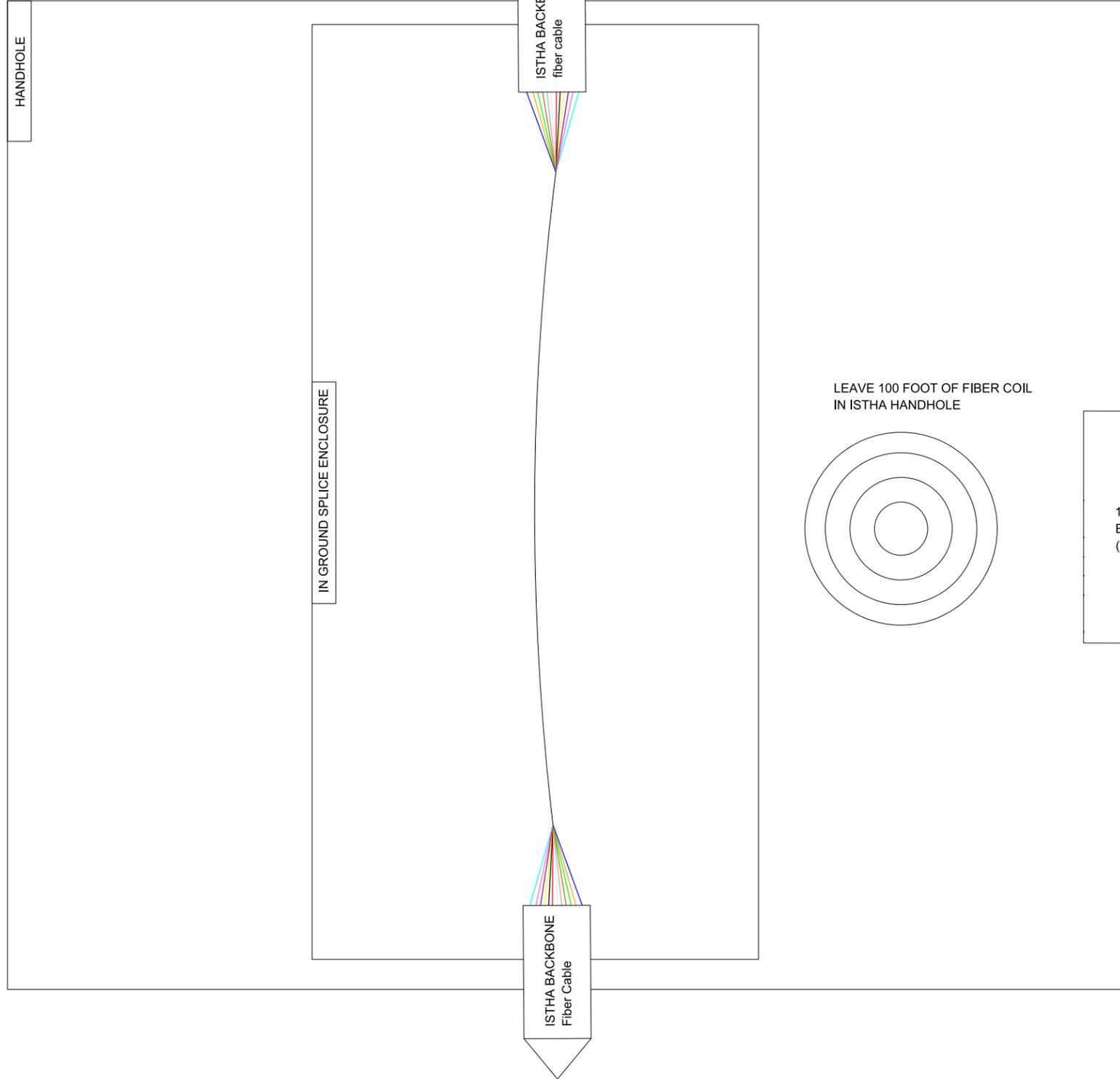
NOTE:

SIGN AND LABEL SHOWN IS AVAILABLE THROUGH ACP INTERNATIONAL. ALTERNATE SIGN LABELS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

APPROVED BY: *Manar Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2025

SMFO ISTHA COMMUNICATIONS CABLE TO NEXT UP-STREAM NODE LOCATION

**ITS CABINET FIBER CONNECTION DETAILS**



- NOTES:**
1. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND THE ILLINOIS TOLLWAY FIBER OPTIC MANAGER FOR FINAL PORT ASSIGNMENTS DURING INSTALLATION AND INTEGRATION.
  2. CONTRACTOR SHALL LABEL ALL NETWORK SWITCHES, DATA CABLES, FIBER OPTIC CABLES AND JUMPERS AS PER THE LATEST ILLINOIS TOLLWAY "ITS LABELING GUIDELINE".
  3. CONTRACTOR SHALL MAKE ALL NETWORK SWITCH CONNECTIONS, UNLESS OTHERWISE NOTED.
  4. THE COLOR VERSION OF THE L2 STANDARD DRAWINGS ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE.
  5. CONTRACTOR SHALL COMPLETE AND SUBMIT AN A-36 WATCH AND PROTECT REQUEST WHEN ACCESSING A FIBER HANDHOLE WITHIN ILLINOIS TOLLWAY RIGHT-OF-WAY FOR ANY PURPOSE.

**LEGEND**

|  |                                       |
|--|---------------------------------------|
|  | FIBER OPTIC JUMPER, SINGLE MODE       |
|  | FIBER OPTIC PIGTAIL, SINGLE MODE      |
|  | BARE FIBER LEFT COILED IN SPLICE TRAY |
|  | FIBER OPTIC FUSION SPLICE             |
|  | FIBER PATCH PANEL, SC CONNECTORS      |

**REVISIONS**

| DATE       | DESCRIPTION   |
|------------|---|
| 03-01-2024 | MODIFIED DRAWING, MODIFIED NOTE 1, MODIFIED NOTE 2. |
| 03-01-2022 | CHANGED TO 12 FIBER LATERAL.                        |
| 03-01-2021 | UPDATED ETHERNET SWITCH AND PANELS.                 |

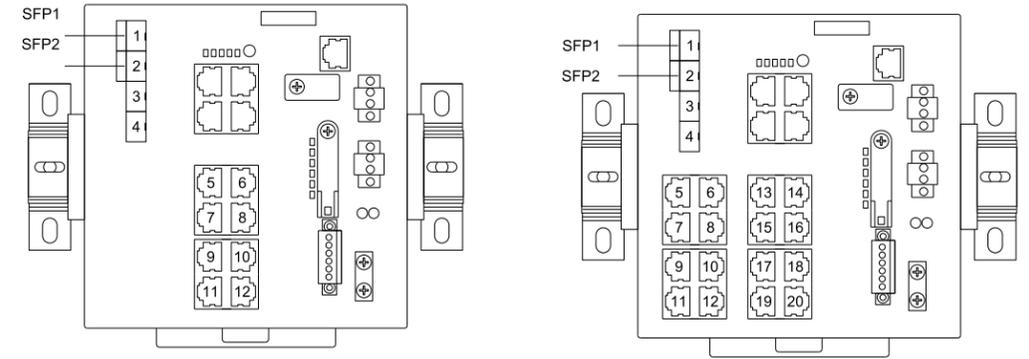
APPROVED BY: *Manar Nashif*  
 CHIEF ENGINEERING OFFICER  
 DATE: 03/01/2024

SMFO ISTHA COMMUNICATIONS CABLE TO NEXT DOWNSTREAM NODE LOCATION

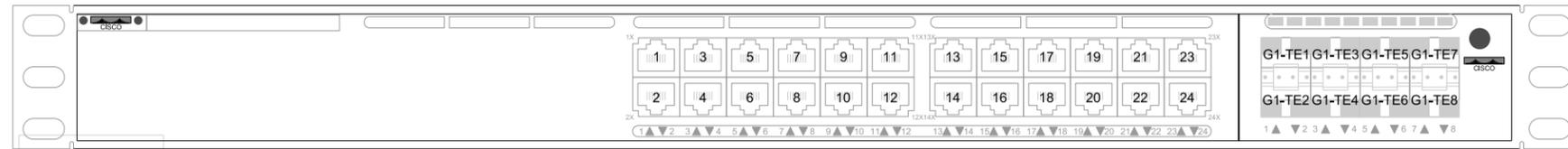
**FIBER OPTIC SPLICING DETAILS**

VERSION: 2024-03      STANDARD: L2-04      SHEET: 1 OF 2

PROPOSED NETWORK SWITCH PORT ASSIGNMENT SCHEMATIC



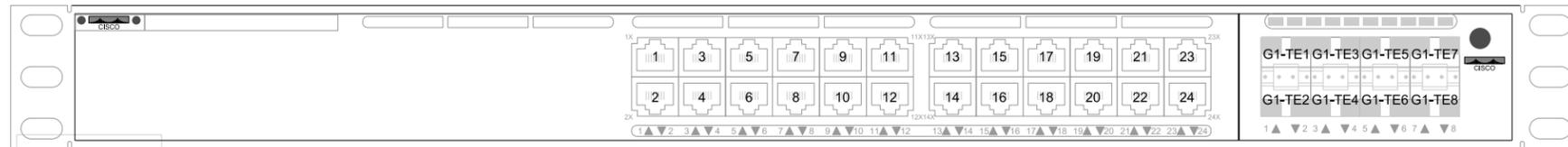
CISCO ETHERNET SWITCH  
10/100/1000 SFP PORT ARRANGEMENT



CISCO ETHERNET SWITCH  
10/100/1000 ETHERNET AND 10G SFP PORT ARRANGEMENT

| PORT NUMBER             | PORT ASSIGNMENT                     | PORT NUMBER | PORT ASSIGNMENT            | PORT NUMBER | PORT ASSIGNMENT            | PORT NUMBER | PORT ASSIGNMENT |
|-------------------------|-------------------------------------|-------------|----------------------------|-------------|----------------------------|-------------|-----------------|
| TENGIGABITETHERNET1/1/1 | PRIMARY N/E LAYER 3 UPLINK          | G11/0/1     | TECH ACCESS                | G11/0/9     | RESERVED - IT DEVICE - TBD | G11/0/17    | OPEN            |
| TENGIGABITETHERNET1/1/2 | SECONDARY N/E LAYER 2 UPLINK        | G11/0/2     | RESERVED - IT DEVICE - TBD | G11/0/10    | RESERVED - IT DEVICE - TBD | G11/0/18    | OPEN            |
| TENGIGABITETHERNET1/1/3 | N/E LAYER 2 - CAMERA AND VDS        | G11/0/3     | RESERVED - IT DEVICE - TBD | G11/0/11    | OPEN                       | G11/0/19    | OPEN            |
| TENGIGABITETHERNET1/1/4 | N/E LAYER 2 - ATM/DMS               | G11/0/4     | RESERVED - IT DEVICE - TBD | G11/0/12    | OPEN                       | G11/0/20    | OPEN            |
| TENGIGABITETHERNET1/1/5 | N/E LAYER 2 - VWIM                  | G11/0/5     | RESERVED - IT DEVICE - TBD | G11/0/13    | OPEN                       | G11/0/21    | OPEN            |
| TENGIGABITETHERNET1/1/6 | FUTURE/TBD                          | G11/0/6     | RESERVED - IT DEVICE - TBD | G11/0/14    | OPEN                       | G11/0/22    | OPEN            |
| TENGIGABITETHERNET1/1/7 | FUTURE/TBD                          | G11/0/7     | RESERVED - IT DEVICE - TBD | G11/0/15    | OPEN                       | G11/0/23    | OPEN            |
| TENGIGABITETHERNET1/1/8 | SECONDARY N/E TO S/W LAYER 3 UPLINK | G11/0/8     | RESERVED - IT DEVICE - TBD | G11/0/16    | OPEN                       | G11/0/24    | OPEN            |

| PORT NUMBER | 12 PORT SWITCH (CCTV/VDS/DMS) PORT ASSIGNMENT | 12 PORT SWITCH (VWIM) PORT ASSIGNMENT | 20 PORT SWITCH (CCTV/VDS/DMS) PORT ASSIGNMENT (SEE NOTE 3) | 20 PORT SWITCH (FULL ATM/GANTRY) PORT ASSIGNMENT |
|-------------|---|---------------------------------------|--|--|
| G11/1       | UPLINK/DOWNLINK                               | UPLINK/DOWNLINK                       | UPLINK/DOWNLINK  | UPLINK/DOWNLINK                                  |
| G11/2       | UPLINK/DOWNLINK                               | UPLINK/DOWNLINK                       | UPLINK/DOWNLINK  | UPLINK/DOWNLINK                                  |
| G11/3       | RESERVED                                      | RESERVED                              | RESERVED   | RESERVED   |
| G11/4       | RESERVED                                      | RESERVED                              | RESERVED   | RESERVED   |
| G11/5       | TECH ACCESS                                   | VWIM CONTROLLER                       | TECH ACCESS  | TECH ACCESS                                      |
| G11/6       | CAMERA #1                                     | VWIM VIRTUAL WEB SERVER               | MODEM (IF INSTALLED)                                       | WEST/SOUTH - ATM LCS CONTROLLER #1               |
| G11/7       | CAMERA #2                                     | CAMERA #1                             | DMS  | WEST/SOUTH - ATM LCS CONTROLLER #2               |
| G11/8       | SENSYS AP                                     | CAMERA #2                             | VWIM   | WEST/SOUTH - ATM LCS CONTROLLER #3               |
| G11/9       | DMS CONTROLLER                                | IP RELAY                              | RESERVED   | WEST/SOUTH - ATM LCS CONTROLLER #4               |
| G11/10      | MVDS #1                                       | UPS                                   | RESERVED   | WEST/SOUTH - ATM LCS CONTROLLER #5               |
| G11/11      | MVDS #2/UPS                                   | TECH ACCESS                           | UPS  | WEST/SOUTH - ATM LCS CONTROLLER #6               |
| G11/12      | IP RELAY                                      | TECH ACCESS                           | IP RELAY   | SHOULDER   |
| G11/13      | N/A   | N/A                                   | CAMERA #1  | IP RELAY   |
| G11/14      | N/A   | N/A                                   | CAMERA #2  | EAST/NORTH - ATM LCS CONTROLLER #1               |
| G11/15      | N/A   | N/A                                   | RESERVED   | EAST/NORTH - ATM LCS CONTROLLER #2               |
| G11/16      | N/A   | N/A                                   | RESERVED   | EAST/NORTH - ATM LCS CONTROLLER #3               |
| G11/17      | N/A   | N/A                                   | MVDS #1  | EAST/NORTH - ATM LCS CONTROLLER #4               |
| G11/18      | N/A   | N/A                                   | MVDS #2  | EAST/NORTH - ATM LCS CONTROLLER #5               |
| G11/19      | N/A   | N/A                                   | MVDS #3  | EAST/NORTH - ATM LCS CONTROLLER #6               |
| G11/20      | N/A   | N/A                                   | SENSYS AP  | EAST/NORTH - ATM LCS CONTROLLER SHOULDER         |



CISCO EXPANSION SWITCH  
10/100/1000 ETHERNET AND 10G SFP PORT ARRANGEMENT

| PORT NUMBER             | PORT ASSIGNMENT                     | PORT NUMBER | PORT ASSIGNMENT             | PORT NUMBER | PORT ASSIGNMENT             | PORT NUMBER | PORT ASSIGNMENT |
|-------------------------|-------------------------------------|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------|
| TENGIGABITETHERNET1/1/1 | PRIMARY S/W LAYER 3 UPLINK          | G11/0/1     | TECH ACCESS                 | G11/0/9     | RESERVED - ITS DEVICE - TBD | G11/0/17    | OPEN            |
| TENGIGABITETHERNET1/1/2 | SECONDARY S/W LAYER 2 UPLINK        | G11/0/2     | RESERVED - ITS DEVICE - TBD | G11/0/10    | RESERVED - ITS DEVICE - TBD | G11/0/18    | OPEN            |
| TENGIGABITETHERNET1/1/3 | S/W LAYER 2 - CAMERA AND VDS        | G11/0/3     | RESERVED - ITS DEVICE - TBD | G11/0/11    | OPEN                        | G11/0/19    | OPEN            |
| TENGIGABITETHERNET1/1/4 | S/W LAYER 2 - ATM/DMS               | G11/0/4     | RESERVED - ITS DEVICE - TBD | G11/0/12    | OPEN                        | G11/0/20    | OPEN            |
| TENGIGABITETHERNET1/1/5 | S/W LAYER 2 - VWIM                  | G11/0/5     | RESERVED - ITS DEVICE - TBD | G11/0/13    | OPEN                        | G11/0/21    | OPEN            |
| TENGIGABITETHERNET1/1/6 | FUTURE/TBD                          | G11/0/6     | RESERVED - ITS DEVICE - TBD | G11/0/14    | OPEN                        | G11/0/22    | OPEN            |
| TENGIGABITETHERNET1/1/7 | FUTURE/TBD                          | G11/0/7     | RESERVED - ITS DEVICE - TBD | G11/0/15    | OPEN                        | G11/0/23    | OPEN            |
| TENGIGABITETHERNET1/1/8 | SECONDARY S/W TO N/E LAYER 3 UPLINK | G11/0/8     | RESERVED - ITS DEVICE - TBD | G11/0/16    | OPEN                        | G11/0/24    | OPEN            |

NOTES:

- SEE SHEET 1 OF 2 FOR NOTES.
- ALL NETWORK SWITCH FIBER CONNECTIONS SHOWN ON THIS SHEET SHALL BE PERFORMED BY THE TOLLWAY MAINTENANCE TEAM, IN COORDINATION WITH THE ENGINEER.
- PORT ASSIGNMENT INCLUDED FOR REFERENCE FOR EXISTING ITS SITES WITH 20 PORT SWITCH.
- THE CONTRACTOR SHALL MAKE LOCAL/COPPER CAT-6 CONNECTIONS PER THE PORT ASSIGNMENTS SHOWN ON THIS SHEET, OR AS DIRECTED BY THE ENGINEER. THE ENGINEER SHALL VERIFY CORRECT PORT CONNECTIONS HAVE BEEN MADE DURING SITE TESTING.

APPROVED BY: *Manan Nashif*  
CHIEF ENGINEERING OFFICER  
DATE: 03/01/2024

**Illinois Tollway**

**FIBER OPTIC SPLICING DETAILS**

VERSION: 2024-03      STANDARD: L2-04      SHEET: 2 OF 2