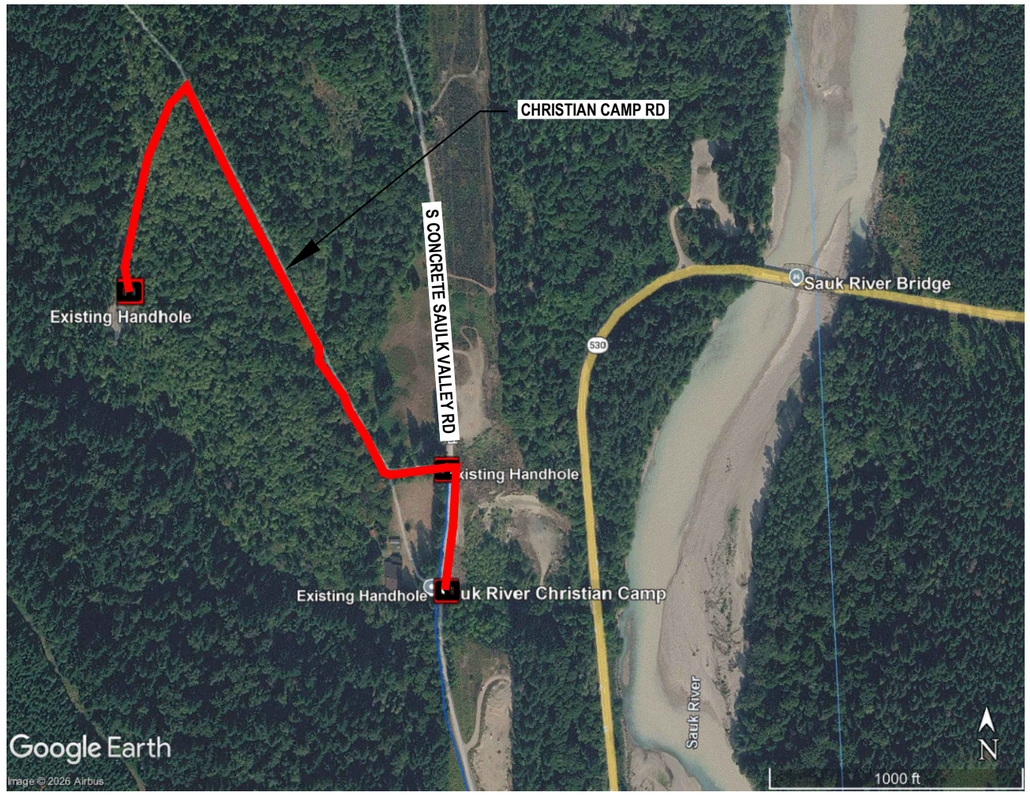
# SKAGIT 911

# FIBER COMMUNICATION SYSTEM




**LOCATION MAP**
NOT TO SCALE

PREPARED BY:

TRC

1833 MCGEE ST
KANSAS CITY, MO 64108
PHONE: (860) 295-4161

CONTACTS:
MATTHEW NIENHAUS
FIBER OPTIC DESIGNER
PHONE: (816) 652-0869

PETER HYSTEAD
TELECOMMUNICATIONS PROGRAM MANAGER
PHONE: (816) 534-3264

PROJECT INFORMATION:

PROJECT LOCATION:
SKAGIT COUNTY, WA

OWNER:
SKAGIT COUNTY

CONTACT:
MIKE VOSS
TECHNICAL SERVICE MANAGER
SKAGIT 911
(360) 982-8105

| REV | DATE | DESCRIPTION |
|---|---|---|
| 2 | 09-09-26 | ISSUED FOR APPROVAL |
| 1 | 09-03-26 | ISSUED FOR PRELIMINARY DESIGN IFR-2<br>FIBER COMMUNICATION SYSTEM - MN/PH/TRC |
| 0 | 03-20-26 | ISSUED FOR PRELIMINARY DESIGN IFR-1<br>FIBER COMMUNICATION SYSTEM - MN/PH/TRC |

TRC
1833 MCGEE STREET
KANSAS CITY, MO 64108
PHONE: (860) 295-4161

| REV. | W.O. | DESCRIPTION | DATE | APP'D DRAFT | APP'D ENGR. |
|---|---|---|---|---|---|

SKAGIT911 DRAWING NO. CCR T-1 REV.

TITLE SKAGIT 911 CHRISTIAN CAMP ROAD FIBER
LOCATION SKAGIT COUNTY
DETAIL COVER SHEET
W.O./ACCT. NO.

DRAWN: PVT/TRC
ENGINEER: MN/TRC
APPROVED: XXX/TRC
DATE: 09-09-26
SCALE: NONE

SHEET 1

# DRAWING INDEX

| DRAWING NUMBER | SHEET NUMBER | SITE NAME | SHEET TITLE |
|---|---|---|---|
| CCR T-1 | 1 | SKAGIT 911<br>CHRISTIAN CAMP ROAD FIBER | COVER SHEET AND AREA OVERVIEW |
| CCR G-1 | 2 | SKAGIT 911<br>CHRISTIAN CAMP ROAD FIBER | DRAWING INDEX |
| CCR G-2 | 3 | SKAGIT 911<br>CHRISTIAN CAMP ROAD FIBER | GENERAL NOTES AND LEGEND |
| CCR G-3 | 4 | SKAGIT 911<br>CHRISTIAN CAMP ROAD FIBER | SHEET OVERVIEW |
| CCR M-1 | 5 | SKAGIT 911<br>CHRISTIAN CAMP ROAD FIBER | BILL OF MATERIALS |
| CCR C1-3 | 6-8 | SKAGIT 911<br>CHRISTIAN CAMP ROAD FIBER | UNDERGROUND WORKPRINTS AND PROFILES |
| CCR C4 | 9 | SKAGIT 911<br>CHRISTIAN CAMP ROAD FIBER | SITE PLAN |
| CCR D-1 | 10 | SKAGIT 911<br>CHRISTIAN CAMP ROAD FIBER | EXISTING EQUIPMENT LOCATION PHOTOS |
| CCR D-2 | 11 | SKAGIT 911<br>CHRISTIAN CAMP ROAD FIBER | COMMUNICATIONS HANDHOLE DETAILS |

| REV | DATE | DESCRIPTION |
|---|---|---|
| 2 | 09-09-26 | ISSUED FOR APPROVAL |
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TRC
1833 MCGEE STREET
KANSAS CITY, MO 64108
PHONE: (860) 295-4161

DESCRIPTION | W.O. | REV.

APP'D ENGR. | APP'D DRAFT | DATE

SKAGIT911 DRAWING NO. CCR G-1 | SHEET 2

TITLE SKAGIT911 CHRISTIAN CAMP ROAD FIBER
LOCATION SKAGIT COUNTY
DETAIL DRAWING INDEX
W.O./ACCT. NO.

DRAWN: PVT/TRC
ENGINEER: MN/TRC
APPROVED: XXX/TRC
DATE: 09-09-26
SCALE: NONE

## GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, ORDINANCES AND STANDARDS HAVING JURISDICTION. IF THERE ARE ANY QUESTIONS OR CONFLICTS CONCERNING COMPLIANCE WITH SUCH CODES, REGULATIONS, ORDINANCES OR STANDARDS, THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE ENGINEER BEFORE PROCEEDING WITH THE WORK IN QUESTION. ALL NECESSARY PERMITS, LICENSES, CERTIFICATES, TESTS, ETC. SHALL BE PROCURED AND PAID FOR BY THE CONTRACTOR.

2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE USED AS AN INTEGRATED PACKAGE. ANY CONTRADICTIONS BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL BE IDENTIFIED BY THE CONTRACTOR FOR RESOLUTION BY THE ENGINEER. IN THE CASE OF NO RESOLUTION, THE MOST STRINGENT REQUIREMENT SHALL APPLY.

3. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS BEFORE COMMENCING WORK. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES OR CONFLICTS THAT ARISE DUE TO UNDOCUMENTED EXISTING CONDITIONS. VERIFYING EXISTING CONDITIONS INCLUDES CONTACTING 811 FOR LOCATING SERVICES, AS WELL AS IDENTIFYING AND CONTACTING UTILITIES THAT DO NOT PARTICIPATE IN 811. TEST PITS FOR LOCATING UTILITIES SHALL BE DUG WHERE APPLICABLE AND ALLOWED BY REGULATING AUTHORITY.

4. ALL PENETRATIONS THROUGH FIRE RATED WALLS, ENCLOSURES, OR BULKHEADS SHALL BE RESTORED TO THE ORIGINAL FIRE RATING AFTER CONSTRUCTION IS COMPLETE REGARDLESS OF ANY PREVIOUS CODE VIOLATION. ALL FIRE STOP PROCEDURES SHALL BE IN COMPLIANCE WITH ASTM E814 AND ALL LOCAL CODES.

5. THE REQUIREMENTS OF THE WASHINGTON STATE DEPARTMENT OF LABOR & INDUSTRIES (WSDOLI) APPLY TO ALL EXCAVATIONS, TRENCHING, AND DITCHING OPERATIONS ON THIS PROJECT. ALL TRENCHES FOUR FEET (4') IN DEPTH OR GREATER SHALL BE SHORED IN COMPLIANCE WITH APPLICABLE FEDERAL AND/OR STATE REGULATIONS.

6. THE EXISTENCE AND LOCATION OF EXISTING FACILITIES WITHIN THE CONSTRUCTION LIMITS OF WORK, WHICH MAY BE INDICATED ON THE DRAWINGS, IS BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH EXISTING FACILITIES. SKAGIT911 AND ENGINEER DISCLAIM ALL RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS OF THE INFORMATION INDICATED. CONTRACTOR SHALL CONDUCT HIS OPERATIONS ON THE BASIS THAT FACILITIES MAY EXIST THAT ARE NOT INDICATED ON THE DRAWINGS.

7. IN THE EVENT THAT CONTRACTOR DAMAGES AN EXISTING FACILITY, THE SKAGIT911 REPRESENTATIVE MUST BE NOTIFIED IMMEDIATELY. A COPY OF ANY DOCUMENTATION REGARDING THE UTILITY DAMAGE SHALL BE SUBMITTED TO SKAGIT911.

8. PROPER SIGNING, FLAGGING, AND BARRICADING SHALL BE PROVIDED BY THE CONTRACTOR. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO WSDOT STANDARDS OR AS DIRECTED BY SKAGIT911.

9. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES FOR THE MAINTENANCE OF STREETS AND OTHER UTILITIES AFFECTED BY CONSTRUCTION OPERATIONS. DEBRIS AND RUBBISH SHALL NOT BE PERMITTED TO ACCUMULATE AND ALL PREMISES SHALL BE MAINTAINED IN A NEAT AND WORKMANLIKE CONDITION.

10. FIBER CABLES THAT ARE BEING REPLACED BY THE NEW CIRCUIT ARE TO REMAIN IN OPERATION DURING CONSTRUCTION. CUT-OVER TO THE NEW CABLE SHALL COMMENCE AFTER TESTING OF NEW INSTALLED CABLE AND COORDINATED WITH SKAGIT911 AND THE ENGINEER.

11. ALL INSTALLATION MATERIALS, ITEMS, EXCEPT WHERE NOTED, TO BE SUPPLIED BY THE CONTRACTOR. THESE INCLUDE MOUNTING HARDWARE, CONDUIT, HANDHOLE PULL-BOXES, AND RESTORATION MATERIALS.

## CONSTRUCTION NOTES

1. TRENCHED EXCAVATION TO BE A MINIMUM OF 5' FROM EASEMENT / ROW BORDER.

2. TRENCHED EXCAVATION TO BE A MAXIMUM OF 24" BELOW GRADE WITH ORANGE, PLASTIC WARNING TAPE 12" BELOW GRADE INSIDE COMMUNICATIONS TOWER FENCE LINE, IF APPLICABLE.

3. DIRECTIONAL BORE TO BE HDPE, 2", SDR-11, ORANGE. 10 GAUGE LOCATE WIRE WITH CONDUIT ON OUTSIDE OF DUCT. at 48" BELOW GRADE – UNLESS OTHERWISE NOTED.

4. TRACE-WIRE, PULL-TAPE, AND INNER-DUCT TO BE INSTALLED IN CONDUIT WHERE NOTED.

5. INSTALL 48 CT. LOOSE TUBE, SINGLE MODE, OUTDOOR FIBER. PLACE 100' SLACK IN ALL HANDHOLES.

6. REFER TO SHEET 10, CCR D-2 FOR TYPICAL HANDHOLE DETAILS.

7. SHOWN UTILITIES ARE APPROXIMATE LOCATIONS ONLY. INSTALLATION CONTRACTOR TO VERIFY LOCATION OF UTILITIES AND FOLLOW 811 / CALL BEFORE YOU DIG PROTOCOL

8. VIBRATORY PLOW INSTALLATION MAY BE USED IN PLACE OF OPEN EXCAVATION. MINIMUM DEPTH OF 24" TO BE MAINTAINED.

### LEGEND

| | |
|---|---|
| PROPOSED SPLICE POINT | RECOMMENDED BORE EQUIPMENT LOCATION |
| PROPOSED SLACK STORAGE – 100ft UNLESS OTHERWISE NOTED | SHEET BOUNDARY |
| PROPOSED UNDERGROUND CABLE | FENCELINE |
| EXISTING UNDERGROUND CABLE | RAILROAD (RR) |
| TRANSITION FROM OVERHEAD TO UNDERGROUND | PARCEL & NUMBER |
| PROPERTY LINE & NUMBER | SPAN LENGTH |
| TREE TRIMMING REQUIRED | STATION NUMBER |
| EXISTING TREE | CRUDE LINE |
| PROPOSED HANDHOLE (HH)/PULLBOX | UG ELECTRICAL |
| EXISTING HANDHOLE (HH) | EDGE-OF-GRAVEL |
| WOOD POLE | EDGE-OF-PAVEMENT |
| STEEL POLE | RIGHT-OF-WAY (EASEMENT) |
| T-LINE TOWER | ENVIRONMENTAL STUDY AREA |
| SIDEWALK | WATERWAY |

P18704

[XXX'WW]

XX+00

2008 / 57A — DETAIL MARKER; DRAWING NUMBER; DETAIL NUMBER

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TRC
1833 MCGEE STREET
KANSAS CITY, MO 64108
PHONE: (860) 295-4161

DESCRIPTION | APP'D ENGR. | APP'D DRAFT | DATE | REV.

W.O.

REV.

SKAGIT911 DRAWING NO. CCR G-2 SHEET 3

TITLE SKAGIT 911 CHRISTIAN CAMP ROAD FIBER

LOCATION SKAGIT COUNTY

DETAIL GENERAL NOTES AND LEGEND

W.O./ACCT. NO.

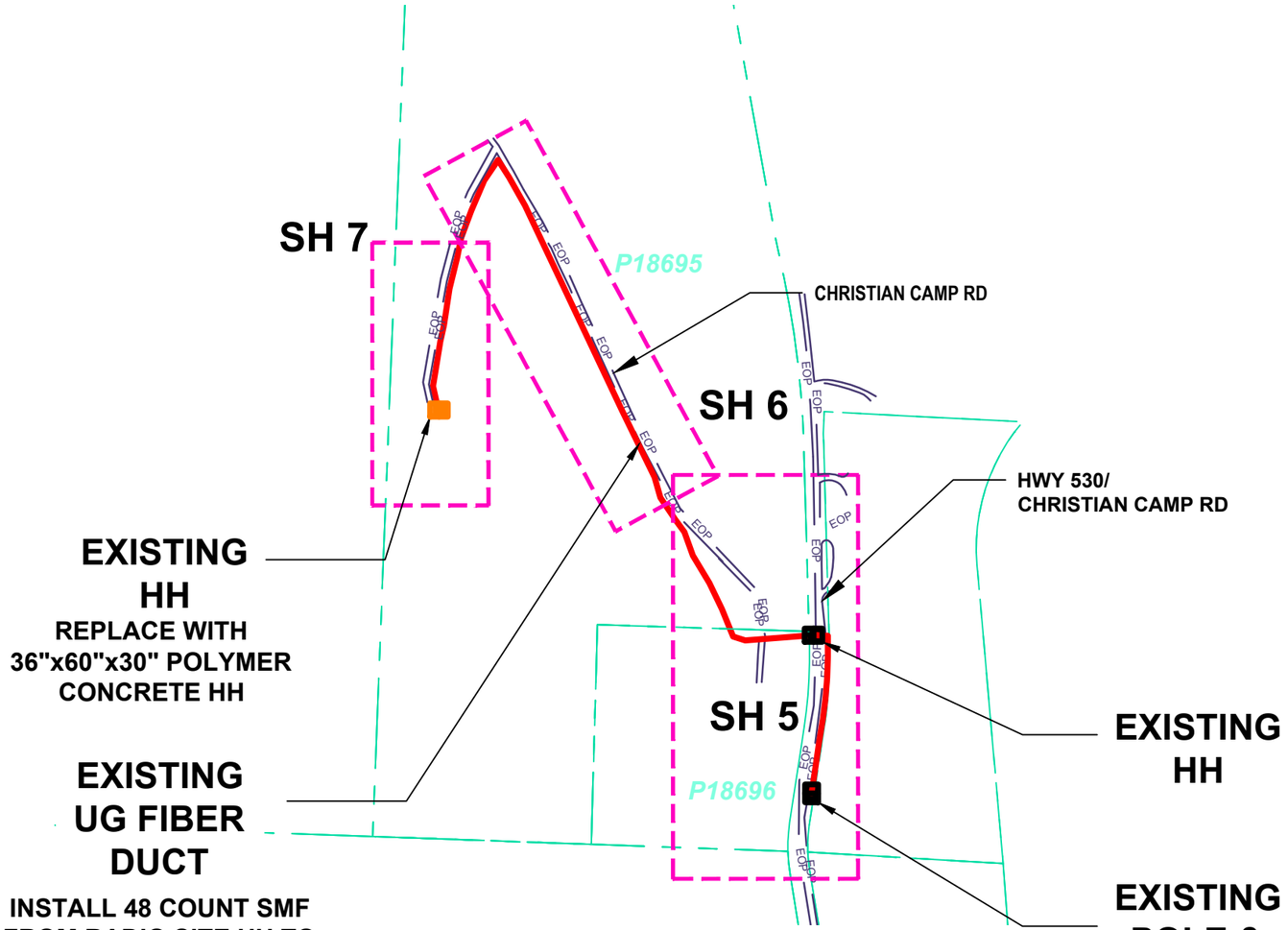
DRAWN: PVT/TRC

ENGINEER: MN/TRC

APPROVED:XXX/TRC

DATE: 09-09-26

SCALE: NONE




SHEET OVERVIEW

NOT TO SCALE

## GENERAL LOCATION MAP




| REV | DATE | DESCRIPTION |
|---|---|---|
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TRC
1833 MCGEE STREET
KANSAS CITY, MO 64108
PHONE: (860) 295-4161

| DESCRIPTION | DATE | APP'D DRAFT | APP'D ENGR. |
|---|---|---|---|
| | | | |

| REV. | W.O. |
|---|---|
| | |

SKAGIT911 DRAWING NO. CCR G-3 REV.

SHEET 4

| | |
|---|---|
| TITLE | SKAGIT 911 CHRISTIAN CAMP ROAD FIBER |
| LOCATION | SKAGIT COUNTY |
| DETAIL | SHEET OVERVIEW |
| W.O./ACCT. NO. | |

| | | | |
|---|---|---|---|
| DRAWN: | PVT/TRC | | |
| ENGINEER: | MN/TRC | | |
| APPROVED: | XXX/TRC | | |
| DATE: | 09-09-26 | | |
| SCALE: | NONE | | |

# BILL OF MATERIALS

| # | UOM | QTY | QTY w/ADDER | PART NUMBER | MANUFACTURER | DESCRIPTION |
|---|---|---|---|---|---|---|
| 1 | FT | 3900 | 4100 | 048EU4-T4100D20 | CORNING | FREEDM LOOSE TUBE GEL-FREE CABLE, RISER, 48 F SINGLE-MODE (OS2) |
| 2 | EA | 1 | - | UCA4-KT-AHD | CORNING | MOUNTING BRACKET KIT |
| 3 | EA | 1 | - | 266348-000\|FOSC450-D6-6-72-1-DOV | COMMSCOPE | FIBER OPTIC SPLICE CLOSURE GEL CABLE SEALING, 1 PRE-INSTALLED 72-SPLICE TRAY, WITH TEST VALVE, 10 IN. DIA., 29.646 IN. DOME LENGTH, 0.4 IN. TRAY HEIGHT STACKER |
| 5 | FT | 46 | 60 | 2037069130 | DURALINE | HDPE, 2 IN. SDR-11, ORANGE COLOR (IF ORANGE UNAVAILABLE, REQUEST GUIDANCE) |
| 6 | PKG | 1 | - | 2806031-01 | CORNING | HEAT-SHRINK FUSION SPLICE PROTECTOR, SINGLE SPLICE, 60 MM LONG, QTY 50/PACKAGE |
| 7 | EA | 1 | - | T306036SEETHTCU | CHARLES | 30.2 CU. FT., TRUE TIER 22, GREY COMPOSITE BELOW-GRADE ENCLOSURE W/ 36"X60" SPLIT COVER AND 36" DEPTH; INCL. HEX-HEAD BOLTS, TELEPHONE EMS, AND "SKAGIT911" NAMEPLATE |
| 8 | EA | 1 | - | TRUE-LFTHOOK | CHARLES | ENCLOSURE LID LIFTING HOOK |
| 9 | EA | 1 | - | SCF-MBR-CMS | CORNING | LARGE CENTRAL MEMBER TUBE STRAIN-RELIEF KIT, 2 BARRELS AND SCREWS |
| 10 | EA | 1 | - | 20005880 | DURALINE | 2 IN. SDR-11 - 90 DEG. SWEEP, HDPE, GRAY UV-RESISTANT |
| 11 | EA | 1 | - | 20000123 | DURALINE | SHUR-LOCK II COUPLER, 2 IN. HDPE |
| 12 | EA | | - | 571430 | PURCHASE ON DESCRIPTION | CEMENT, ALL WEATHER, "QUICK SET", CLEAR SOLVENT, QUART W/ DAUBER TOP |

| REV. | DATE | APP'D DRAFT | APP'D ENGR. |
|---|---|---|---|
| | | | |

SKAGIT911 DRAWING NO. CCR M-1 SHEET 5

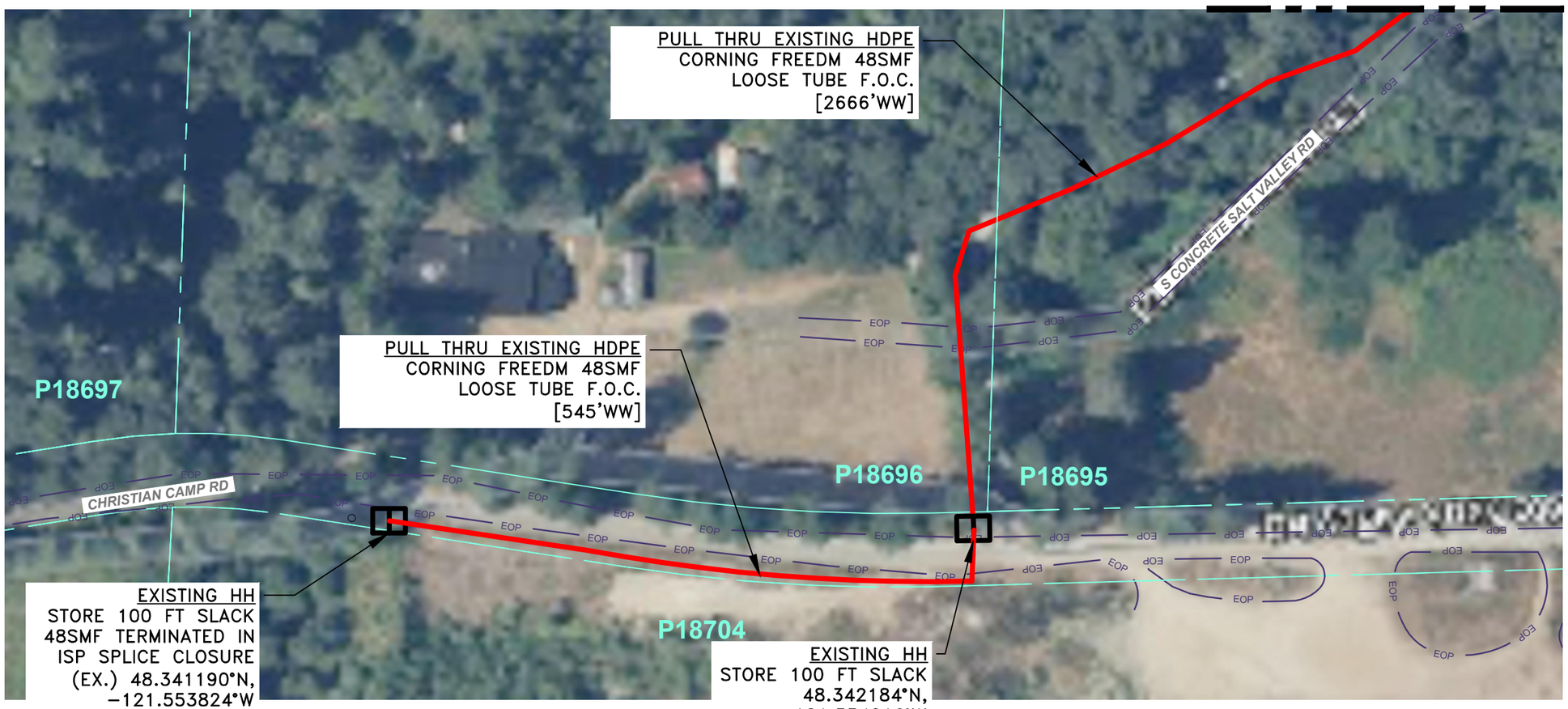
911 CHRISTIAN CAMP ROAD FIBER
SKAGIT COUNTY
BILL OF MATERIALS

| REV. | DESCRIPTION |
|---|---|
| W.O. | |

| REV | DATE | DESCRIPTION |
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| 2 | 09-09-26 | ISSUED FOR APPROVAL |
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TRC
1833 MCGEE STREET
KANSAS CITY, MO 64108
PHONE: (860) 295-4161

| | |
|---|---|
| DRAWN: | PVT/TRC |
| ENGINEER: | PH/TRC |
| APPROVED: | XXX/TRC |
| DATE: | 09-09-26 |
| SCALE: | NONE |
| TITLE | SKAGIT 911 C |
| LOCATION | |
| DETAIL | BI |
| W.O./ACCT. NO. | |




CCR C-1

SCALE: HORIZONTAL 1"=100'

| REV | DATE | DESCRIPTION |
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| 2 | 09-09-26 | ISSUED FOR APPROVAL |
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PHONE: (860) 295-4161

| REV. | W.O. | DESCRIPTION | APP'D DRAFT | APP'D ENGR. |
|---|---|---|---|---|
| | | | DATE | |

SKAGIT911 DRAWING NO. CCR C-1 | REV.

SKAGIT 911 CHRISTIAN CAMP ROAD FIBER
SKAGIT COUNTY
WORKPRINT

SHEET 6 | NO.

| | |
|---|---|
| DRAWN: PVT/TRC | TITLE SKAGIT 911 |
| ENGINEER: MN/TRC | LOCATION |
| APPROVED: XXX/TRC | DETAIL |
| DATE: 09-09-26 | |
| SCALE: 1"=100' | W.O./ACCT. NO. |

MATCH LINE SEE SH-5




MATCH LINE SEE SH-7

CCR C-2

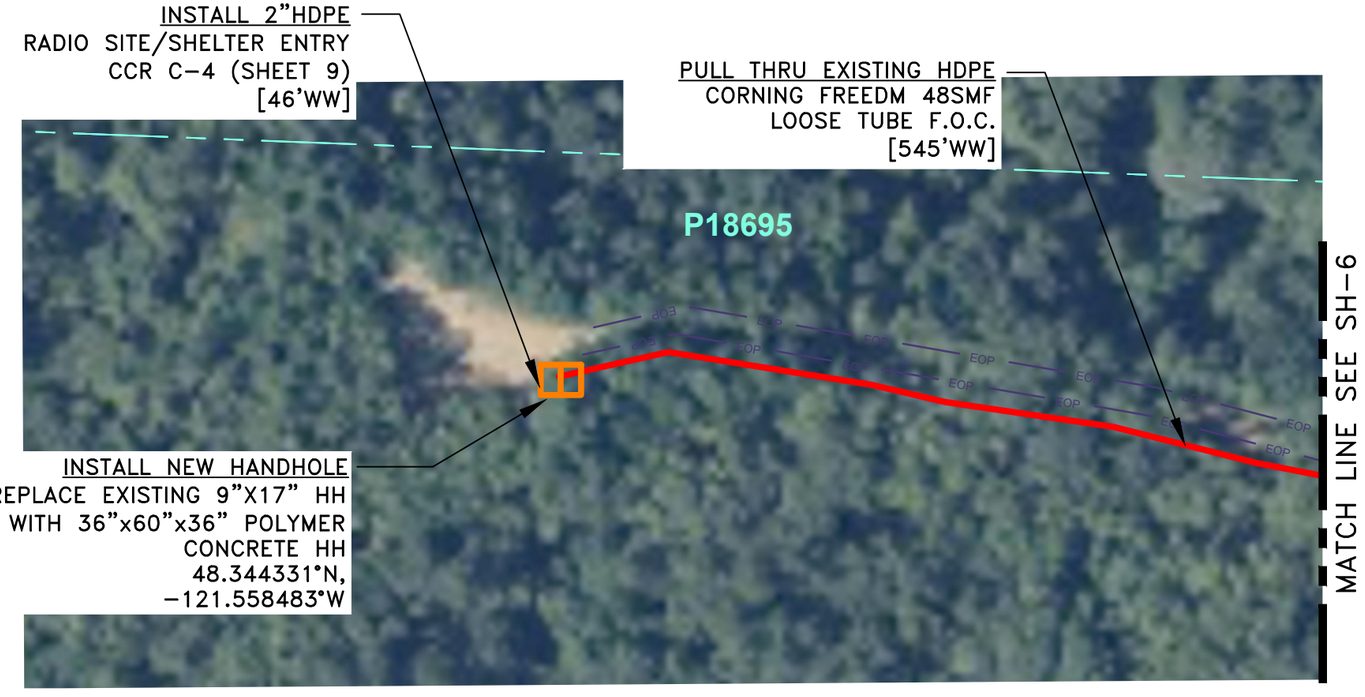
SCALE: HORIZONTAL 1"=100'

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| REV. | W.O. | DESCRIPTION | DATE | APP'D DRAFT | APP'D ENGR. |
|---|---|---|---|---|---|
| | | | | | |

| | | | |
|---|---|---|---|
| DRAWN: PVT/TRC | TITLE SKAGIT 911 CHRISTIAN CAMP ROAD FIBER | SKAGIT911 DRAWING NO. | REV. |
| ENGINEER: MN/TRC | LOCATION SKAGIT COUNTY | CCR C-2 | |
| APPROVED: XXX/TRC | DETAIL WORKPRINT | | |
| DATE: 09-09-26 | | | |
| SCALE: 1"=100' | W.O./ACCT. NO. | SHEET 7 | |




## CCR C-3

SCALE: HORIZONTAL 1"=100'

| REV | DATE | DESCRIPTION |
|---|---|---|
| 2 | 09-09-26 | ISSUED FOR APPROVAL |
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TRC
1833 MCGEE STREET
KANSAS CITY, MO 64108
PHONE: (860) 295-4161

| REV. | W.O. | DESCRIPTION | DATE | APP'D DRAFT | APP'D ENGR. |
|---|---|---|---|---|---|

| | |
|---|---|
| DRAWN: PVT/TRC | TITLE SKAGIT 911 CHRISTIAN CAMP ROAD FIBER |
| ENGINEER: MN/TRC | LOCATION SKAGIT COUNTY |
| APPROVED: XXX/TRC | DETAIL WORKPRINT |
| DATE: 09-09-26 | |
| SCALE: 1"=100' | W.O./ACCT. NO. |

SKAGIT911 DRAWING NO. CCR C-3 REV.

SHEET 8

62'–6"
LEASE FENCE

40'–0"
LEASE FENCE

36'–0"

SKAGIT 911 40kW
GENERATOR
4'x10'

20'–0"
COMMS. SHELTER

10'–0"
COMMS.
SHELTER

36"

24"

INSTALL 2" HDPE 90
DEG. SWEEP TO EXISTING
FIBER ENTRY WALL
PENETRATION

INSTALL 2" HDPE WITH SHUR–LOCK
II COUPLER TO 2" HDPE SWEEP
PRE–TERMINATED TAIL PULLED THRU
CONDUIT BY ISP (BY OTHERS)
COMMS. SHELTER
[46' WW]

11'–6"

8"

32"

1'–0"

12'–0"

INSTALL FOSC–450
TERMINATE 48SMF,
SPLICE TO PRE–TERM.
TAIL PULLED FROM
COMMS. SHELTER

REPLACE EX. 9"X17"
HH WITH NEW
36"x30"x36"
POLYMER CONCRETE
HH

EX. POWER
TRANSFORMER
PAD 42"x42"

EX. POWER
X–CONNECT
41"x19"

EX. POWER H–FRAME

CHRISTIAN CAMP RD C–SUB SITE 26

1 – SITE PLAN
NOT TO SCALE

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DESCRIPTION
W.O.
REV.

APP'D ENGR.
APP'D DRAFT
DATE
REV.

SKAGIT911 DRAWING NO.
CCR C–4
SHEET 9

TITLE SKAGIT 911 CHRISTIAN CAMP ROAD FIBER
LOCATION SKAGIT COUNTY
DETAIL SITE PLAN
W.O./ACCT. NO.

DRAWN: PVT/TRC
ENGINEER: MN/TRC
APPROVED: XXX/TRC
DATE: 09–09–26
SCALE: AS NOTED



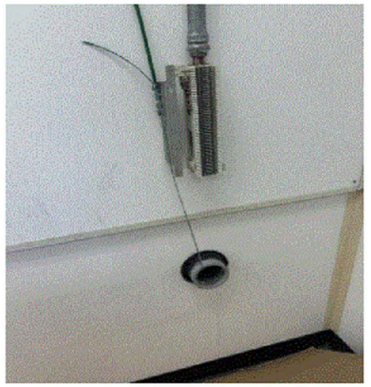
Existing Vault – Radio Site



Existing Vault – Radio Site



Existing Vault – Bottom of Hill



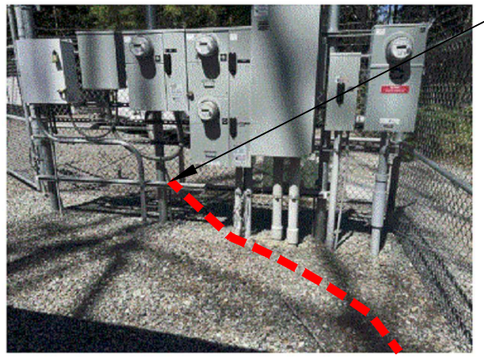
Shelter Penetration Inside View



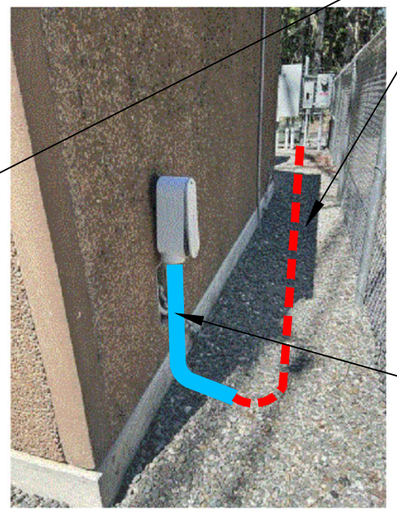
Meet – Me Vault ZIPLY FIBER



Meet – Me Vault ZIPLY FIBER



H-Fram with Vault in Background



Outside View Shelter Penetration

EXISTING CONDUIT BELOW GRADE
12 CT PRE–TERM. TAIL PULLED THRU DUCT BY ISP (BY OTHERS) [46'WW]
TO NEW POLYMER CONCRETE HH OUTSIDE OF FENCELINE

INSTALL 2" HDPE SDR–11 90 DEG. SWEEP TRANSITION FROM CONDUIT TO EX. BLDG. ENTRY PORT

Notes: Distance from Radio site vault to shelter penetration location is approximately 50'. Install 2" duct using sweep 90's where necessary.

2 – EXISTING EQUIPMENT LOCATIONS
NOT TO SCALE

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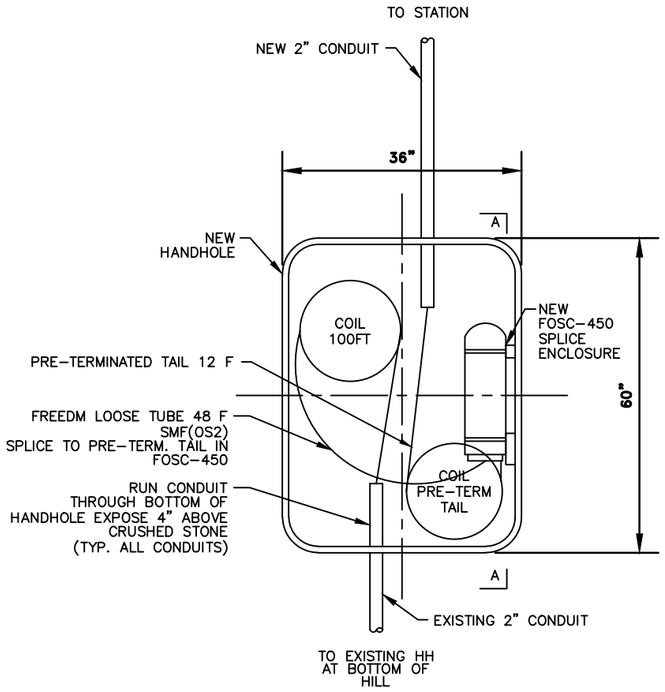
| | DATE | APP'D DRAFT | APP'D ENGR. | REV. |
|---|---|---|---|---|
| | | SKAGIT911 DRAWING NO. | CCR D–1 | |
| | | | SHEET 10 | |

TITLE SKAGIT 911 CHRISTIAN CAMP ROAD FIBER
LOCATION SKAGIT COUNTY
DETAIL EXISTING EQUIPMENT LOCATION PHOTOS
W.O./ACCT. NO.

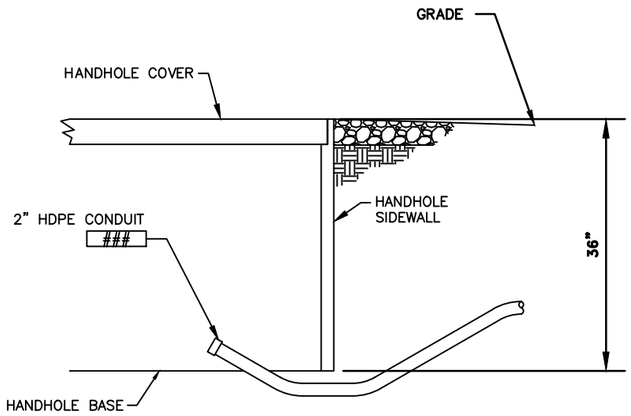
DRAWN: PVT/TRC
ENGINEER: MN/TRC
APPROVED: XXX/TRC
DATE: 09–09–26
SCALE: AS NOTED

W.O.
REV.

| FIBER | | | | | | | |
|---|---|---|---|---|---|---|---|
| CABLE TYPE | OUTER DIAMETER–CABLE (INCHES) | OUTER DIAMETER–CONNECTORS (INCHES) | TENSILE STENGTH (LBF) | COMPRESSIVE–LOADING (LB/IN) | WEIGHT (LB/1000FT) | MIN BEND RADIUS–INSTALLATION (INCHES) | MIN BEND RADIUS–OPERATION (INCHES) |
| CORNING ALTOS LOOSE TUBE GEL-FREE CABLE, OUTDOOR, 48F, SINGLE MODE (OS2) | 0.4100 | N/A | 606.9800 | * | 49.0500 | 12.44 | 8.27 |
| *NOT AVAILABLE ON SPEC SHEET | | | | | | | |




DETAIL PLAN CCR D–3A
HANDHOLE FIBER PULL THRU – PLAN
LINEAR HANDHOLE
SCALE: N.T.S.




DETAIL PLAN CCR D–3B
FIBER RUN TO NEW POLYMER CONCRETE HH
CCR C–3 SH. 7
SCALE: N.T.S.

| REV | DATE | DESCRIPTION |
|---|---|---|
| 2 | 09-09-26 | ISSUED FOR APPROVAL |
| 1 | 09-03-26 | ISSUED FOR PRELIMINARY DESIGN IFR-2 FIBER COMMUNICATION SYSTEM - MN/PH/TRC |
| 0 | 03-20-26 | ISSUED FOR PRELIMINARY DESIGN IFR-1 FIBER COMMUNICATION SYSTEM - MN/PH/TRC |


TRC
1833 MCGEE STREET
KANSAS CITY, MO 64108
PHONE: (860) 295-4161


## LEGEND

BILL OF MATERIAL ITEM THIS DWG

## CONSTRUCTION NOTES:

1. CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTOR(S)) PERFORMING THE WORK.
2. FIELD TO DRILL & MOUNT SPLICE ENCLOSURE TO HANDHOLE WALL WHERE SPECIFIED.
3. SEE DRAWING CCR G–2 FOR GENERAL NOTES.

## NOTE:

1. SEE SPLICE ENCLOSURE INSTALLATION MANUAL FOR FIBER SPLICE ENCLOSURE MATERIAL & MOUNTING INFORMATION.
2. FIBER CONDUIT TO BE BURIED 24" BELOW FINISHED AND EXISTING GRADE AT RADIO TOWER SITE.
3. REFER TO CONDUIT PLAN & SCHEDULE FOR SPECIFIC FIBER OPTIC CABLE TYPES.

REV. | W.O. | DESCRIPTION | DATE | APP'D DRAFT | APP'D ENGR. | REV.

SKAGIT911 DRAWING NO. CCR D–2 SHEET 11

TITLE SKAGIT 911 CHRISTIAN CAMP ROAD FIBER
LOCATION SKAGIT COUNTY
DETAIL COMMUNICATIONS HANDHOLE DETAILS

DRAWN: PVT/TRC
ENGINEER: MN/TRC
APPROVED: XXX/TRC
DATE: 09–09–26
SCALE: AS NOTED
W.O./ACCT. NO.

# FREEDM® Loose Tube, Gel-Free Cable, Riser 48 F, Single-mode (OS2)

CORNING

**Part Number:**
**048EUF-T4100D20**

Corning FREEDM® loose tube gel-free riser cables are flame-retardant, indoor/outdoor, riser-rated cables designed for interbuilding and intrabuilding backbones in aerial, duct and riser applications. These cables are protected against water penetration by innovative waterblocking materials that swell to absorb water. Waterblocking without the use of messy gels provides more efficient and craft-friendly cable preparation. It also makes cable access easier and simplifies the use of buffer tube fan-out kits. The buffer tubes and fibers in each tube are color coded for quick, easy identification. The SZ-stranded, loose tube design isolates fibers from installation and environmental rigors and allows for easy mid-span access. The cable design is also National Electrical Code® (NEC®) listed (OFNR and FT-4). The all-dielectric cable construction requires no grounding or bonding, and the UV-resistant, flame-retardant jacket is rugged, durable and easy to strip. Note: This cable is available in 12 different jacket colors – blue, orange, green, brown, slate, white, red, black, yellow, violet, rose and aqua. The colored jacket allows for easy visual identification of the cables while still providing all of the required environmental protection of an indoor/outdoor cable jacket. Black is the standard jacket color using the part numbers shown here. Contact Customer Care at 1-800-743-2675 to order other color options.

## Features and Benefits

**Gel-free waterblocking technology**
Craft-friendly cable preparation

**Loose tube design**
Stable performance and compatibility with all common fiber types

**Color-coded tubes and fibers**
Quick and easy identification

**All-dielectric construction**
Requires no grounding or bonding

**Common installations**
Outdoor lashed aerial and duct

# FREEDM® Loose Tube, Gel-Free Cable, Riser 48 F, Single-mode (OS2)

CORNING

## Specifications

| General Specifications | |
|---|---|
| Installation Methods | Aerial, Direct Buried, Duct, Horizontal, Riser |
| Cable Type | Loose Tube |
| Environment | Indoor/Outdoor |
| Product Type | Dielectric |
| Fiber Category | Single-mode (OS2) |
| Flame Rating | Riser (OFNR) |
| Cable geometry | Round |

| Standards | |
|---|---|
| RoHS | Free of hazardous substances according to RoHS 2011/65/EU |
| Approvals and Listings | National Electrical Code® (NEC®) OFNR, CSA OFN FT-4 |
| Design and Test Criteria | ANSI/ICEA S-104-696 |

| Environmental Conditions | |
|---|---|
| Temperature Range, Installation | -10 °C to 60 °C (14 °F to 140 °F ) |
| Temperature Range, Operation | -40 °C to 70 °C (-40 °F to 158 °F ) |
| Temperature Range, Storage | -40 °C to 70 °C (-40 °F to 158 °F ) |

| Cable Design | |
|---|---|
| Central Element | Dielectric |
| Fiber Count | 48 |
| Number of Ripcords | 2 |
| Outer Jacket Color | Black |
| Outer Jacket Material | Flame-Retardant, UV-Resistant |
| Buffer Tube Diameter | 2.5 mm (0.1 in) |
| Number of Active Tubes | 4 |

# FREEDM® Loose Tube, Gel-Free Cable, Riser 48 F, Single-mode (OS2)

CORNING

| Cable Design | |
|---|---|
| Number of Filling Elements | 2 |
| Number of Tube Positions | 6 |
| Tape | Water-swellable |
| Fiber Coloring | Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose, Aqua |
| Fibers per Tube | 12 |
| Color Code Standards | Telcordia |

| Mechanical Specifications | |
|---|---|
| Max. Tensile Strength, Long-Term | 810 N (182.1 lbf) |
| Max. Tensile Strength, Short-Term | 2700 N (606.98 lbf) |
| Min. Bend Radius Installation | 195 mm (7.68 in) |
| Min. Bend Radius Operation | 130 mm (5.12 in) |
| Nominal Outer Diameter | 13 mm (0.51 in ) |

| Optical Characteristics | |
|---|---|
| Fiber Code | E |
| Performance Option Code | 00 |
| Fiber Category | OS2 |
| Fiber Type | Single-mode (OS2) / 250 µm |
| Fiber Name | Single-mode (OS2) |
| Maximum Attenuation | 0.35 dB/km / 0.35 dB/km / 0.25 dB/km |
| Wavelengths | 1310 nm / 1383 nm / 1550 nm |
| Fiber Compliance | ITU-T G.652.D |

| Dimensions | |
|---|---|
| Cable Weight | 146 kg/km (98.11 lb/1000 ft) |

# FREEDM® Loose Tube, Gel-Free Cable, Riser 48 F, Single-mode (OS2)

CORNING

RoHS COMPLIANT

Corning Optical Communications LLC • 4200 Corning Place • Charlotte, NC • 28216 • United States
800-743-2675 • FAX: 828-325-5060 • International: +1-828-901-5000 • www.corning.com/opcomm

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# 266348-000 | FOSC450-D6-6-72-1-D0V



FOSC® 450 D6 Fiber Optic Splice Closure, Gel Cable sealing, one pre-installed 72-splice tray, with test valve

- Single-ended, O-ring sealed dome closure for splicing feeder and distribution cables
- Gel cable sealing technology allows easy adding or removing of a wide size range of cables
- Compatible with most common cable types: e.g. loose tube, central core, ribbon fiber
- FOSC splice trays hinged for access to any splice without disturbing other trays
- Closure can be used in aerial, pedestal and underground (up to 5 meters) environments
- Compatible with CommScope's CWDM modules and optical splitter trays

## Product Classification

| | |
|---|---|
| **Regional Availability** | Latin America \| North America |
| **Product Type** | Single-ended, round fiber closure |
| **Product Brand** | FOSC® |
| **Product Series** | FOSC 450 |

## General Specifications

| | |
|---|---|
| **Cable Entry Drop Port Style** | Round |
| **Cable Entry Main Port Style** | Round |
| **Cable Ports Quantity, total** | 6 round ports |
| **Cable Sealing Type** | Compressed gel |
| **Closure Sealing Type** | Dome-to-base clamp with O-ring |
| **Closure Style** | Single-ended |
| **Color** | Black |
| **Fiber Storage Basket Type** | D6 standard size |



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Revised: July 17, 2026

| | |
|---|---|
| **Flash Test Valve** | Pre-installed |
| **Ground Feed-through** | None |
| **Mounting** | Pole \| Strand \| Wall |
| **Network Area Type** | Feeder |
| **Splice Tray Included, quantity** | 1 |
| **Splice Tray Type Included** | 72-way, heat shrink |
| **Splicing Capacity, Mass Fusion, maximum** | 3456 |
| **Splicing Capacity, maximum** | 3456 |
| **Splicing Capacity, Single Fusion, maximum** | 768 |
| **Splicing Capacity, Single Splice, 12 fibers, maximum** | 576 |
| **Splicing Capacity, Single Splice, 6 fibers, maximum** | 288 |
| **Splicing Type, Supported** | Mass fusion \| Single fusion |

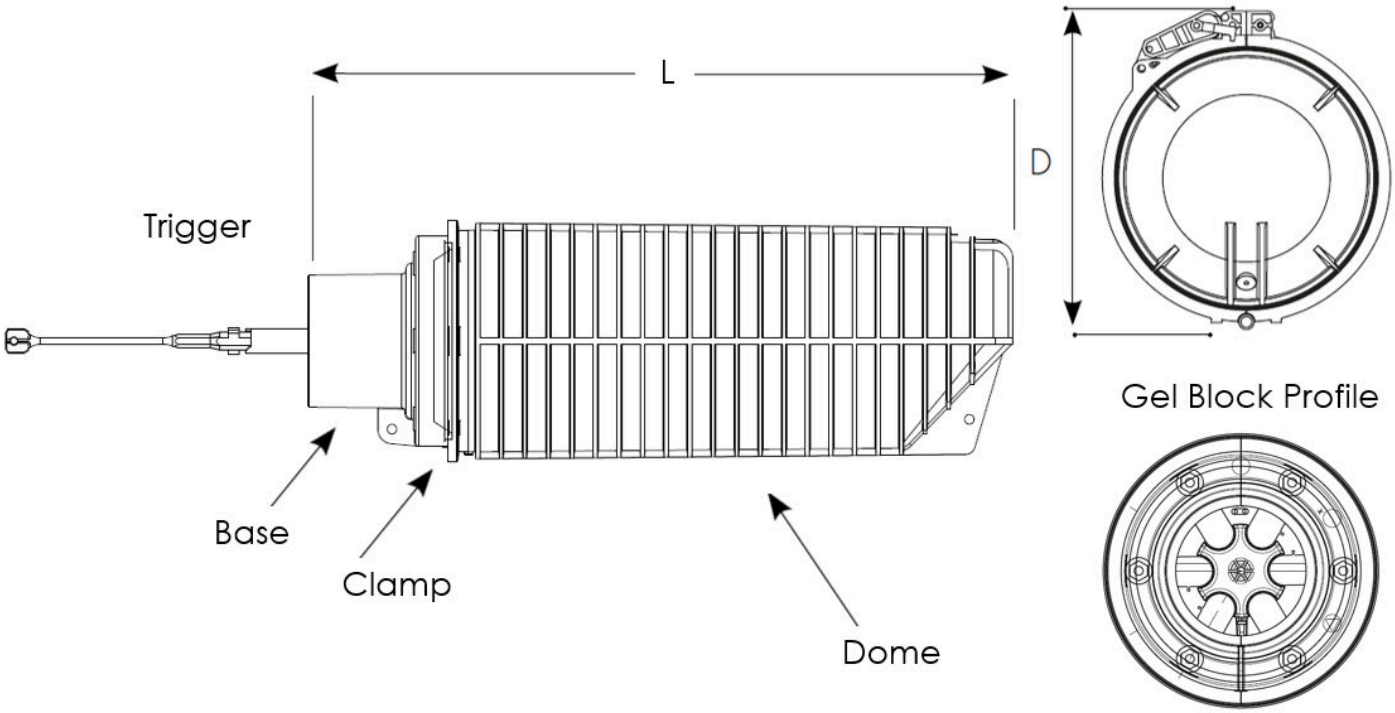
## Dimensions

| | |
|---|---|
| **Length** | 753 mm \| 29.646 in |
| **Diameter** | 254 mm \| 10 in |
| **Diameter, with clamp** | 292 mm \| 11.496 in |
| **Main Cable Diameter, maximum** | 25 mm \| 0.984 in |



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## Dimension Drawing






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## Ordering Tree

FOSC 450 - XX - X - XX - X - X X X

**Closure Size (inches)**

| | |
|---|---|
| A4 | 4 cable entry ports; 8 dia. x 19 long |
| BS | 6 cable entry ports; 9 dia. x 19.5 long |
| B6 | 6 cable entry ports; 10 dia. x 24 long |
| C6 | 6 cable entry ports; 11.5 dia. x 23 long |
| D6 | 6 cable entry ports; 11.5 dia. x 30 long |

**Termination Hardware Quantity for the Kit**

| | |
|---|---|
| 2 | 2 cable attachments included |
| 4 | 4 cable attachments included |
| 6 | 6 cable attachments included (N/A for A size) |

**Capacity and Type of Splice Tray**

| | |
|---|---|
| NT | No tray installed in factory |
| 12 | A, B, or C tray with two SM6 splice modules |
| 24* | A, B, or C tray with two SM12 splice modules |
| 36 | D tray with six SM6 splice modules |
| 72* | D tray with six SM12 splice modules |
| R1 | A, B size ribbon tray (accommodates 12 ribbons/144 fibers) |
| R2 | D size ribbon tray (24 ribbons/288 fibers) |
| R3 | C size ribbon tray (18 ribbons/216 fibers) |
| SF | Stackable single fusion trays (12 splices) |

*Note: SMOUV (1120-01) splice protection sleeves are highly recommended for use with SM12 splice modules.

**Quantity of Splice Trays Factory Installed**

| | |
|---|---|
| 0 or 1 is standard | Choose either "0" trays (no trays installed) or "1" tray installed. Additional trays sold separately. |

**Valve for Flash Testing**

| | |
|---|---|
| V | Valve (standard) |
| N | No Valve |

Note: We recommend flash test valves for FOSC closures. However, non-valved closures are available upon request.

**Number of Ground Feed-through Lugs**

| | |
|---|---|
| 0 | No grounding |
| 1 | 1 ground feed-through lug (A4 only, N/A for BS) |
| 3 | 3 ground feed-through lugs (B6, C6, and D6 closures only, N/A for BS) |
| 6 | 6 ground feed-through lugs (C6 and D6 closure only, N/A for BS) |

Note: FEG and MEG kits provide optional ground isolation for FOSC 450 closures.

**Slack Basket Type**

| | |
|---|---|
| N | No Basket |
| A | A4 Standard Size |
| B | B6, BS Standard Size |
| C | C6 Standard Size |
| D | D6 Standard Size |
| E | Special Bulkhead Basket arrangement for B, BS closures only |
| T | Tall Size |
| S | Stackable Trays in D Closure |

Note: D-size closures with "N" option include backbone used to route ribbons to ribbon trays. A and B-size closures include storage "socks".

## Material Specifications

| | |
|---|---|
| **Material Type** | Impact-resistant polymer |



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## Environmental Specifications

| | |
|---|---|
| **Environmental Space** | Below ground \| Buried |
| **Qualification Standards** | IEC 61300, 5 m waterhead \| Telcordia GR-771-CORE |
| **Water Resistance** | Flash test valve at 5 psi (40 kPa) |

## Packaging and Weights

| | |
|---|---|
| **Packaging quantity** | 1 |
| **Packaging Type** | Box \| Carton |
| **Weight, net** | 9.07 kg \| 19.996 lb |

## Regulatory Compliance/Certifications

| Agency | Classification |
|---|---|
| CHINA-ROHS | Above maximum concentration value |
| ISO 9001:2015 | Designed, manufactured and/or distributed under this quality management system |
| REACH-SVHC | Compliant as per SVHC revision on www.commscope.com/ProductCompliance |
| ROHS | Compliant/Exempted |
| UK-ROHS | Compliant/Exempted |






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Revised: July 17, 2026

# TRUE™ 15 and TRUE™ 22 Series Advanced Composite Material Enclosures

## Tier Rated Underground Enclosures for Driveway / Parking Lot / Off-Roadway Applications

Charles' Tier Rated Underground Enclosures™ (TRUE) are crafted from an advanced composite using a unique molding and gelcoat process, resulting in enclosures that are both lightweight and durable. These enclosures offer superior ease of handling and installation, with a tapered wall design that maximizes usable volume compared to similar polymer concrete models.

TRUE 15 and 22 series provide additional volume and can be stacked for efficient shipping and storage, reducing freight and handling costs significantly. Despite being up to 75% lighter than polymer concrete alternatives, TRUE enclosures maintain a durable gelcoat finish that resists UV damage andhydrolysis.

They are available in Utility Green or Graystone, with customizable colors upon request. Both TRUE 15 and 22 series meet and exceed the SCTE ANSI/SCTE-77 2013 standards for underground enclosure integrity, ensuring reliable performance under specific load conditions.



TRUE

### FEATURES

- BEAD/BABAA compliant product
- Designed to meet or exceed ANSI/SCTE-77 Tier 15 ratings (TRUE 15 Series) or Tier 22 ratings (TRUE 22 Series) for various traffic applications
- Structurally rugged, non-metallic advanced composite material construction produces enclosures that are durable, lightweight, easy to install, and resistant to chemicals and water
- Tapered wall sides create maximum usable interior space
- Interior walls can support splice case and other mounting brackets using epoxy adhesive kits
- Deep well bottom edges provide long-term stability in grade level placements
- Units are available in two standard molded-in colors: Utility (Munsell) Green and Graystone, with many other special-order colors available
- Stainless steel hardware, including hex-head or penta head bolts
- Integrated EMS detection available

### APPLICATIONS

- Fiber optic, copper and coaxial slack cable coiling and storage
- Access to sealed cases (splice cases, repeaters, load coils, SmartCoils™, etc.)
- Meter boxes / junction boxes
- Irrigation system and other waterway control valves
- Traffic and railway signal controls
- Ground rods

### MARKETS SERVED:

- ☐ Telecom / FTTX
- ☐ Utility
- ☐ Wireless
- ☐ Broadband Cable

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| Cover Size | 17" x 30" | | | | 24" x 36" | | | | 30" x 48" | | | | 30" x 60" | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth | 18" | 24" | 30" | 36" | 18" | 24" | 30" | 36" | 18" | 24" | 30" | 36" | 18" | 24" | 30" | 36" |
| Volume | N/A | 7.8ft³ | N/A | N/A | 9ft³ | 12ft³ | 15.1ft³ | 18.3ft³ | N/A | 20ft³ | N/A | 30.2ft³ | N/A | N/A | N/A | 20 lbs. |
| Cover Wgt. (T15) | | 26 lbs. | | | 50 lbs. | 50 lbs. | 50 lbs. | 50 lbs. | | 82 lbs. | | 82 lbs. | | | | 94 lbs. (47x2) |
| Base Wgt. (T15) | | 52 lbs. | | | 44 lbs. | 66 lbs. | 71 lbs. | 79 lbs. | | 87 lbs. | | 120 lbs. | | | | 161 lbs. |
| Total Wgt. (T15) | | 78 lbs. | | | 94 lbs. | 116 lbs. | 121 lbs. | 129 lbs. | | 169 lbs. | | 202 lbs. | | | | 255 lbs. |
| Cover Wgt. (T22) | N/A | 26 lbs. | N/A | N/A | 50 lbs. | 50 lbs. | 50 lbs. | 50 lbs. | N/A | 82 lbs. | N/A | 82 lbs. | N/A | N/A | N/A | 100 lbs. (50x2) |
| Base Wgt. (T22) | | 58 lbs. | | | 48 lbs. | 72 lbs. | 82 lbs. | 89 lbs. | | 94 lbs. | | 130 lbs. | | | | 161 lbs. |
| Total Wgt. (T22) | | 84 lbs. | | | 98 lbs. | 122 lbs. | 132 lbs. | 149 lbs. | | 176 lbs. | | 212 lbs. | | | | 261 lbs. |
| Pallet Qty. | | 8/pallet | | | 8/pallet | | 6/pallet | | | 8/pallet | | 6/pallet | | | | 4/pallet |
| Split Cover | Not Available | | | | Available | | | | Available | | | | Split Cover Only | | | |

## Cover Options

| Cover Size | Tier 15 | Tier 22 | One-Piece Split Cover | Two-Piece Split Cover | 6" Sq. Ped Cut-Out | 8" Sq. Ped Cut-Out | 10" Sq. Ped Cut-Out | 12" Sq. Ped Cut-Out |
|---|---|---|---|---|---|---|---|---|
| 17"x30" | X | X | X | | | | | |
| 24"x36" | X | X | X | X | X | X | X | |
| 30"x48" | X | X | X | X | X | X | X | X |
| 30"x60" | X | X | | X | | | | |

## Standard Colors

Utility Green

Graystone

Amphenol BEAD BABAA COMPLIANT

**Looking for other BABA compliant products for BEAD funded projects?** Please inquire with us for more information.

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# The TRUE Advantage!

- **Strength and Durability** — TRUE 15 Series meets ANSI/SCTE-77 Tier 15 Rated Loadings specifications, TRUE 22 Series meets ANSI/SCTE-77 Tier 22 Rated Loadings specifications
- **Significantly Lighter Weight** — Ease of handling and placement, less risk of worker injury
- **Stackability** — Lowers transportation cost and reduces storage space in warehouse or garage
- **Mobility** — Heavy machinery is not required to move units around at the warehouse or the job-site
- **Space** — Comparable or more useable volume under a given industry standard cover size
- **Improved Ergonomics** — Covers can be removed with little physical effort, and useable volume is closer to the surface for easier and safer access and retrieval of internal equipment; meets 2010 ADA Standards for Accessible Design

# Usable Volume Comparison (Charles Tier 15 Series vs. Competitors)

| Amphenol Charles TRUE-15 | | | | | Competitive Polymer Concrete T-15* | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Cover Size | Depth (in) | Weight (lbs) | Cover Weight (lbs) | Useable Space | Useable Space | Cover Weight (lbs) | Weight (lbs) | Depth (in) | Cover Size |
| 17"x30" | 24 | 78 | 26 | 7.8 ft³ | 5.4 ft³ | 83 | 190 | 24 | 17"x30" |
| 24"x36" | 18 | 94 | 50 | 9.7 ft³ | 6.4 ft³ | 115 | 270 | 18 | 24"x36" |
| 24"x36" | 24 | 116 | 50 | 12.0 ft³ | 8.1 ft³ | 115 | 310 | 24 | 24"x36" |
| 24"x36" | 30 | 134 | 50 | 15.4 ft³ | 11.2 ft³ | 115 | 320 | 30 | 24"x36" |
| 24"x36" | 36 | 129 | 50 | 18.6 ft³ | 14.4 ft³ | 115 | 370 | 36 | 24"x36" |
| 30"x48" | 24 | 174 | 80 | 20.2 ft³ | 18.5 ft³ | 206 | 444 | 24 | 30"x48" |
| 30"x48" | 36 | 212 | 80 | 30.2 ft³ | 24.5 ft³ | 206 | 600 | 36 | 30"x48" |
| 30"x60" | 36 | 253 | 94 (47x2) | 41.4 ft³ | 34.9 ft³ | 346 | 911 | 36 | 30"x60" |

**Average findings from competitive offerings of OldCastle® H-Series, Quazite® and NewBasis PC (2013 study).*



Optional split lid covers facilitate lid removal, access, and technician safety



Stability flange keeps enclosure firmly planted in ground and level



Recessed bolt locks with multiple stainless steel bolt types



Vault mount pedestal lid cover option accommodates Charles' vault mount square base 6", 8", 10" and 12" diameter pedestals



Lift pins aid in safe and quick cover removal




Optional nameplate/ customer ID insets

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# TRUE 15 Series and TRUE 22 Series Part # Nomenclature

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

**1 – Product**

C = C-Series (Tier 15)
T = T-Series (Tier 22)

**2 – Size - Width***

17 = 17 inches
24 = 24 inches
30 = 30 inches

**3 – Size - Length***

30 = 30 inches
36 = 36 inches
48 = 48 inches
60 = 60 inches

**4 – Size - Depth***

18 = 18 inches
24 = 24 inches
30 = 30 inches
36 = 36 inches
XX = Cover Only

**For #2-#5, see Page 2 "Features and Specifications" for valid size combinations, and "Cover Options" for valid covers per enclosure size.*

**5 – Type***

A = Base/1-Piece Cover
S = Base/2-Piece Split Cover
H = Base/2-Piece Split Cover with OHC-288/432 cut-out
J = Base/2-Piece Split Cover with CFITH-144 cut-out
X = Base/2-Piece Split Cover & 6" Sq. Base Cut-Out
Q = Base/2-Piece Split Cover & 8" Sq. Base Cut-Out
P = Base/2-Piece Split Cover & 10" Sq. Base Cut-Out
T = Base/2-Piece Split Cover & 12" Sq. Base Cut-Out
B = Base Only
C = Cover Only

**6 – Base Color**

E = Graystone
G = Green
X = No Base

**7 – Cover Color**

E = Graystone
G = Utility Green
X = No Cover

**8 – Option**

T = Tapered (std.)
M = Mouse Hole
X = No Base
Z = Custom Configuration

**9 – Bolt Type**

H = Hex-head
R = 7/8" Penta-head
X = No Hardware

**10 – EMS Detection**

T = Telephone
P = Power
X = None

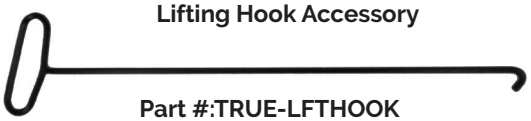
**11 – Name Plate/Customer ID****

CA = CATV
CU = COMMUNICATIONS
EL = ELECTRIC
FO = FIBER OPTIC
TE = TELEPHONE
XX = Blank (Filler)

***Nameplate codes may not be available on all product types. Nameplates can be molded directly into cover upon request.*

Additional sizes/configurations available per custom order. Please call (847) 806-6300 for sales assistance and additional product information; including availability of custom lid colors, pedestal mount lids, interior mounting brackets and other options and accessories.

**Lifting Hook Accessory**



**Part #:TRUE-LFTHOOK**

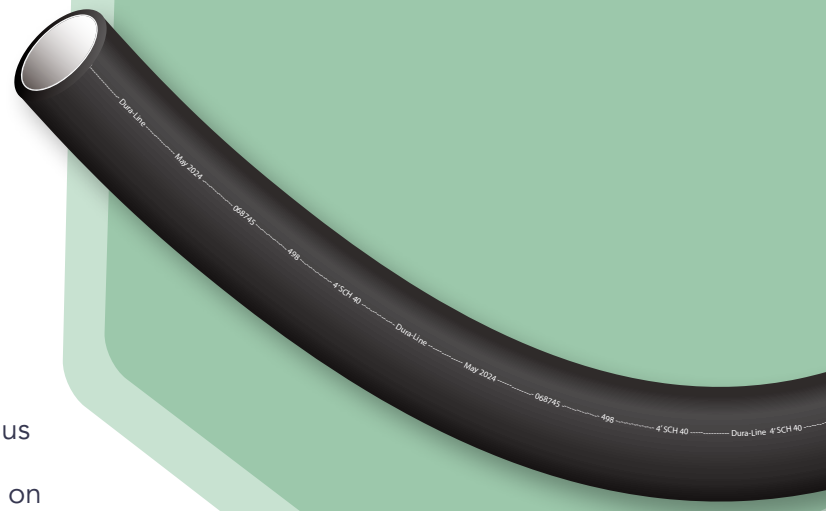
Used to safely grab onto lid lift pin for easy cover removal.
31" length, steel construction.

**Charles Industries, LLC**
*An Amphenol Company*
1450 American Lane, 20th Floor, Schaumburg, IL 60173

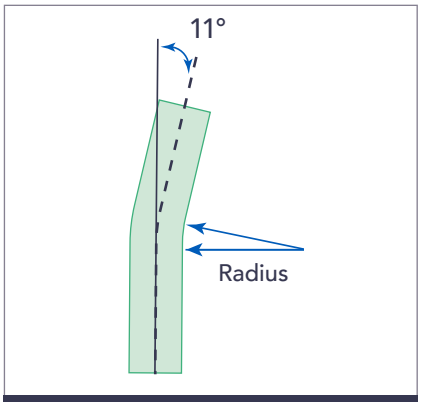
mktserv@charlesindustries.com
(847) 806-6300

STANDARD ACCESSORIES

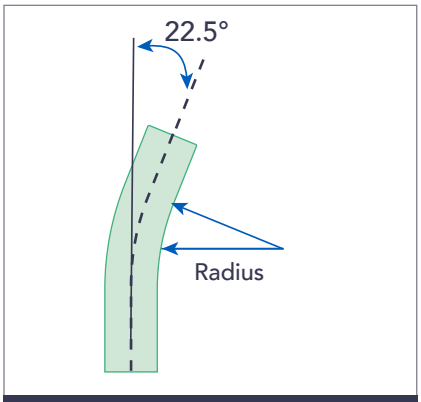
# SWEEPS



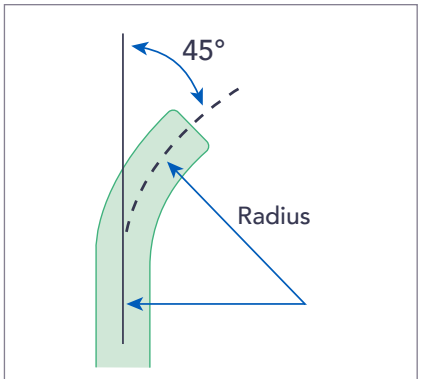

- Manufactured from flexible HDPE
- Available in sizes 2" - 8"
- Excellent low-temperature properties allows for installation in cold climates
- Standard bend angles of 45° and 90° with 36" Radius
- Co-extruded with SILICORE® ULF permanent lining on 2"- 6" sizes to reduce friction on cable installs
- Custom options available upon request
- Certain sizes are ETL Listed / Conform to UL Standard 651A



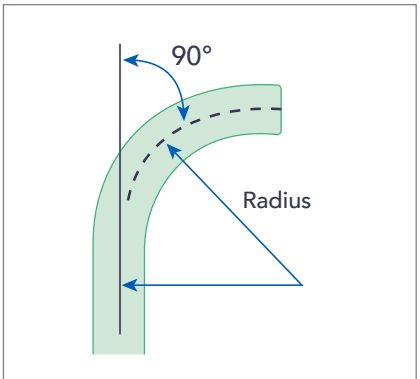

11° Degree Bends




22.5° Degree Bends




45° Degree Bends




90° Degree Bends

## ORDER REFERENCE

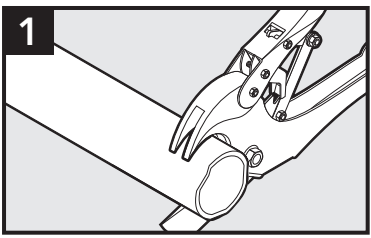
| SIZE/WALL TYPE | | ANGLE (DEGREES) | RADIUS (IN) | PALLET QTY (EA) | COLOR | PART # |
|---|---|---|---|---|---|---|
| 2" SDR 9 | | 45 | 36 | 150 | | 20095835 |
| 2" SDR 9 | | 90 | 36 | 150 | | 20095834 |
| 2" SDR 11 | | 45 | 36 | 150 | | 20005879 |
| 2" SDR 11 | | 90 | 36 | 150 | | 20005880 |
| 2" SDR 13.5 | | 45 | 36 | 150 | | 20005881 |
| 2" SDR 13.5 | | 90 | 24 | 150 | | 20096229 |
| 2" SDR 13.5 | | 90 | 36 | 150 | | 20005882 |
| 2" SDR 13.5 | | 90 | 36 | 150 | | 20094814 |
| 2" SCH 40 | | 22.5 | 36 | 150 | | 20096032 |
| 2" SCH 40 | | 45 | 36 | 150 | | 20094686 |
| 2" SCH 40 | | 90 | 36 | 150 | | 20094685 |
| 2" SCH 40 | | 90 | 36 | 150 | | 20094904 |
| 2 1/2" SDR 13.5 | | 45 | 36 | 150 | | 20094431 |
| 2 1/2" SDR 13.5 | | 90 | 36 | 150 | | 20094432 |
| 2 1/2" SDR 13.5 | | 90 | 36 | 150 | | 20094905 |
| 2 1/2 SCH 40 | | 90 | 36 | 150 | | 20094906 |
| 3" SDR 11 | | 45 | 24 | 80 | | 20097494 |
| 3" SDR 11 | | 45 | 36 | 75 | | 20005883 |
| 3" SDR 11 | | 90 | 24 | 60 | | 20097495 |
| 3" SDR 11 | | 90 | 36 | 70 | | 20005884 |
| 3" SDR 13.5 | | 45 | 36 | 75 | | 20094433 |
| 3" SDR 13.5 | | 90 | 36 | 75 | | 20094434 |
| 3" SDR 13.5 | | 90 | 36 | 75 | | 20094815 |
| 3" SCH 40 | | 22.5 | 36 | 150 | | 20096033 |
| 3" SCH 40 | | 45 | 36 | 75 | | 20094688 |
| 3" SCH 40 | | 90 | 36 | 75 | | 20094687 |

## ORDER REFERENCE

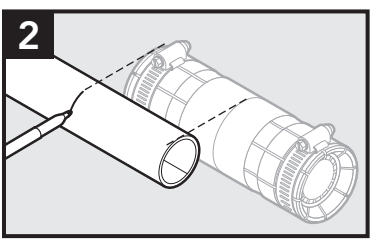
| SIZE/WALL TYPE | ANGLE (DEGREES) | RADIUS (IN) | PALLET QTY (EA) | COLOR | PART # |
|---|---|---|---|---|---|
| 4" SDR 11 | 45 | 36 | 60 | | 20094652 |
| 4" SDR 11 | 90 | 36 | 50 | | 20094435 |
| 4" SDR 13.5 | 45 | 36 | 60 | | 20005887 |
| 4" SDR 13.5 | 90 | 36 | 50 | | 20005888 |
| 4" SDR 13.5 | 90 | 36 | 50 | | 20094937 |
| 4" SCH 40 | 11 | 36 | 80 | | 20097899 |
| 4" SCH 40 | 22.5 | 36 | 60 | | 20094770 |
| 4" SCH 40 | 45 | 36 | 60 | | 20005885 |
| 4" SCH 40 | 90 | 24 | 50 | | 20096992 |
| 4" SCH 40 | 90 | 36 | 50 | | 20005886 |
| 4" SCH 40 | 90 | 36 | 50 | | 20094938 |
| 4" SCH 40 | 90 | 48 | 50 | | 20096993 |
| 4" SCH 80 | 22.5 | 36 | 60 | | 20096311 |
| 4" SCH 80 | 45 | 36 | 60 | | 20096034 |
| 4" SCH 80 | 90 | 36 | 50 | | 20096035 |
| 5" SDR 13.5 | 45 | 36 | 25 | | 20096189 |
| 5" SDR 13.5 | 90 | 36 | 20 | | 20094577 |
| 6" SDR 11 | 45 | 36 | 25 | | 20094735 |
| 6" SDR 11 | 90 | 36 | 10 | | 20094436 |
| 6" SDR 11 | 45 | 60 | 20 | | 20094527 |
| 6" SDR 11 | 90 | 60 | 10 | | 20094528 |
| 6" SDR 13.5 | 90 | 60 | 10 | | 20094939 |
| 6" SCH 40 | 45 | 36 | 25 | | 20096497 |
| 6" SCH 40 | 90 | 36 | 10 | | 20096498 |
| 6" SCH 40 | 90 | 48 | 20 | | 20096994 |
| 6" SCH 40 | 90 | 60 | 20 | | 20096995 |
| 6" SCH 80 | 45 | 36 | 25 | | 20096500 |
| 6" SCH 80 | 90 | 36 | 10 | | 20096501 |
| 8" SDR 11 | 90 | 24 | 10 | | 20094437 |

# Shur-Lock II

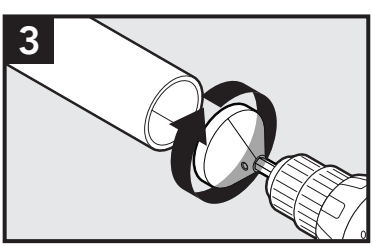
## Installation Instructions



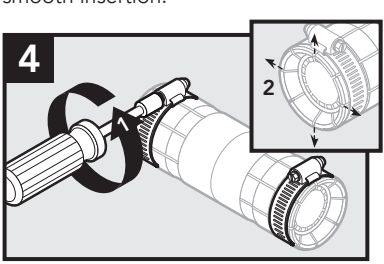

Cut conduit flush with duct cutters.




Align both ducts at the center of the coupler and mark ends.

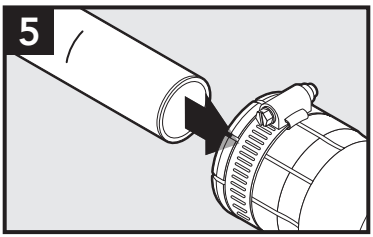



Chamfer the end to allow for smooth insertion.

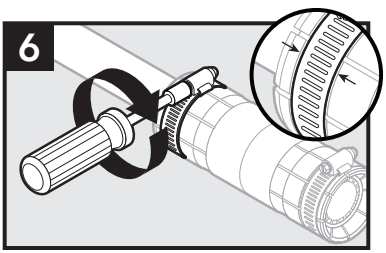



Loosen the band clamps to allow spreading of the split segments on the end of the coupler during insertion.

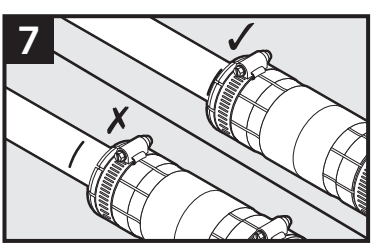
# Installation Instructions




Push conduit into coupler past the metal teeth to the mark to ensure O-ring is seated around the duct.




Verify the band clamp is positioned in the groove and fully tighten it down with a 5/16" nut driver. Never use a drill to tighten clamp.




Repeat process with second piece of duct.

Dura-Line Corporation
11400 Parkside Drive, Suite 300
Knoxville, TN 37934

dura·line

STANDARD ACCESSORIES

# SHUR-LOCK II COUPLER



- Designed for coupling HDPE & PVC conduit
- Can also be used to couple dissimilar conduits such as HDPE to PVC, threaded or non-threaded metal conduit, or fiberglass (FRP) conduit
- Stainless steel band clamps (hand tightened using a 5/16" nut driver) and locking ring
- Pre-lubricated O-ring forms an air-tight seal to withstand 125 PSI
- One person installation; re-enterable, no special tools required
- Air- and water-tight
- No ID reduction
- UV resistant
- Excellent pull-out strength on HDPE, PVC, FRP and steel
- No-Stop version available for confined areas or repairs (*NS)
- Specialized for use by electrical installers requiring ETL listing
- ETL Listed / Conforms to UL Standard 514B
- ETL Listed / Certified to CSA Std. C22.2 18.3-04

NOTE: Certain sizes ETL-listed for use with HDPE and PVC for underground and concrete encased applications only! Not for use with PVC in above-ground applications. Not premise (indoor) rated.

## AVAILABLE IN

- Classic
- No-Stop (NS)
- Transition

## RECOMMENDED ACCESSORY: SHUR-LOCK SPREADER TOOL

Used to spread the tabs of large OD Shur-Locks for easier installation.



| DESCRIPTION | PACKAGING | PART # |
|---|---|---|
| 3" Shur-Lock Spreader Tool | Each | 20095364 |
| 4" Shur-Lock Spreader Tool | Each | 20095365 |
| 6" Shur-Lock Spreader Tool | Each | 20095366 |

## ORDER REFERENCE

| CLASSIC SHUR-LOCK II COUPLERS | | | | | | | |
|---|---|---|---|---|---|---|---|
| DESCRIPTION | NOM OD (IN) | DUCT OD WORKING RANGE (IN) | PULL-OUT STRENGTH (LBS) | HEIGHT (IN) | PACKAGING | CASE QTY | PART # |
| 1" Shur-Lock II | 1.315" | 1.295" - 1.335" | 600 | 5.70 | Case | 10 | 20000118 |
| 1 1/4" Shur-Lock II | 1.660" | 1.640" - 1.680" | 700 | 5.70 | Case | 10 | 20000120 |
| 1 1/4" HYB Shur-Lock II | 1.590" | 1.570" - 1.610" | 700 | 5.70 | Case | 10 | 20000121 |
| 1 1/2" Shur-Lock II | 1.900" | 1.880" - 1.920" | 700 | 5.70 | Case | 10 | 20000122 |
| 2" Shur-Lock II | 2.375" | 2.355" - 2.395" | 700 | 5.70 | Case | 10 | 20000123 |
| 2" EXT Shur-Lock II | 2.375" | 2.355" - 2.395" | 700 | 8.25 | Case | 10 | 20000264 |
| 2 1/2" Shur-Lock II | 2.875" | 2.855" - 2.895" | 1,000 | 9.25 | Case | 6 | 20000172 |
| 3" Shur-Lock II | 3.500" | 3.480" - 3.520" | 1,000 | 10.75 | Case | 6 | 20000173 |
| 4" Shur-Lock II | 4.500" | 4.480" - 4.520" | 1,000 | 12.00 | Case | 4 | 20000245 |
| 5" Shur-Lock II | 5.563" | 5.543" - 5.583" | 1,000 | 14.25 | Case | 2 | 20000254 |
| 6" Shur-Lock II | 6.625" | 6.605" - 6.645" | 1,000 | 14.25 | Case | 2 | 20000256 |

Please specify if ETL listing is required



## ORDER REFERENCE

### NO-STOP SHUR-LOCK II COUPLERS

Center stop is removed to allow the coupler to be pulled back over the end of the duct for limited clearance installations.

| DESCRIPTION | NOM OD (IN) | DUCT OD WORKING RANGE (IN) | PULL-OUT STRENGTH (LBS) | HEIGHT (IN) | PACKAGING | CASE QTY | PART # |
|---|---|---|---|---|---|---|---|
| 1" NS Shur-Lock II | 1.315" | 1.295" - 1.335" | 600 | 5.70 | Case | 10 | 20002340 |
| 1 1/4" NS Shur-Lock II | 1.660" | 1.640" - 1.680" | 700 | 5.70 | Case | 10 | 20000236 |
| 1 1/2" NS Shur-Lock II | 1.900" | 1.570" - 1.610" | 700 | 5.70 | Case | 10 | 20002341 |
| 2" NS Shur-Lock II | 2.375" | 2.355" - 2.395" | 700 | 5.70 | Case | 10 | 20000237 |
| 2 1/2" NS Shur-Lock II | 2.875" | 2.855" - 2.895" | 1,000 | 9.25 | Case | 6 | 20000238 |
| 3" NS Shur-Lock II | 3.500" | 3.480" - 3.520" | 1,000 | 10.75 | Case | 6 | 20000239 |
| 4" NS Shur-Lock II | 4.500" | 4.480" - 4.520" | 1,000 | 12.00 | Case | 4 | 20000260 |
| 5" NS Shur-Lock II | 5.563" | 5.543" - 5.583" | 1,000 | 14.25 | Case | 2 | 20001531 |
| 6" NS Shur-Lock II | 6.625" | 6.605" - 6.645" | 1,000 | 14.25 | Case | 2 | 20000261 |

### TRANSITION SHUR-LOCK II COUPLERS

| DESCRIPTION | NOM OD (IN) | DUCT OD WORKING RANGE (IN) | PULL-OUT STRENGTH (LBS) | HEIGHT (IN) | PACKAGING | CASE QTY | PART # |
|---|---|---|---|---|---|---|---|
| 1" - 1 1/4" Transition Shur-Lock II | 1.315" / 1.660" | 1.295" - 1.335"/ 1.640" - 1.680" | 600 | 5.70 | Case | 10 | 20096421 |
| 1 1/4" - 1 1/2" Transition Shur-Lock II | 1.660" / 1.900" | 1.640" - 1.680"/ 1.880" - 1.920" | 700 | 5.70 | Case | 10 | 20097278 |
| 1 1/4" - 2" Transition Shur-Lock II | 1.660" / 2.375" | 1.640" - 1.680"/ 2.355" - 2.395" | 700 | 5.70 | Case | 10 | 20097282 |
| 1 1/2" - 2" Transition Shur-Lock II | 1.900" / 2.375" | 1.880" - 1.920"/ 2.355" - 2.395" | 700 | 5.70 | Case | 10 | 20097281 |