

STATEMENT OF WORK (SOW)

For

Fiber Optic Cable (FOC) to Manzano Node Plant/Phase 2

At

Kirtland AFB NM

12/19/22

Prepared By

38 ES/ENII

4064 Hilltop Road

Tinker AFB OK 73145-2713

1.0 SCOPE.

This SOW defines the requirement for the Contractor to engineer, furnish, install and test (EFI&T) the

following:

- Install a new 36-Strands (St), Single Mode (SM) Fiber Optic Cable (FOC) from Bunker-37100 to pole (1821-F2P81).
- At pole (1821-F2P81), splice the new 36-St FOC into an existing 72-St FOC (F450), which feeds ITB-B30158.
- This will provide a new connection from ITB-B30158 to Bunker-37100 with new 36-St FOC.
- The Contractor shall provide all equipment, tools, materials, supplies, transportation, labor, supervision, management, and other incidentals necessary to meet the requirements as stated in this SOW. All equipment, supplies, and materials to be installed shall be new and not refurbished.

2.0 REQUIREMENTS.

2.1 GENERAL REQUIREMENTS

2.1.1 Safety Requirements

2.1.2 Site Coordination

The Contractor shall meet with the base safety officer immediately upon arrival on site for review of the specific safety requirements prior to installation.

2.1.2.1 Confined Space

The Contractors entering spaces on Kirtland AFB are responsible for the safety of their personnel and for their own confined spaces permit program as outlined in AFI 91-203. All confined space operations must be coordinated with the Base Safety Office prior to start of work.

2.1.2.2 Accident/Incident Reporting and Investigation

The Contractor shall record and report all available facts relating to each instance of injury to the Base Safety Office. The Contractor shall secure the scene of any accident and wreckage until released by the accident investigative authority through the Base POC. If the Government elects to conduct an investigation of the incident, the Contractor shall cooperate fully and assist the Government personnel until the investigation is completed.

2.1.2.3 Work Area(s)

At day's end, the Contractor shall remove all debris and surplus materials from the work place. Safety barriers shall be in place to protect unfinished work site at the end of the day. All open holes or trenches shall be completely enclosed by flexible orange construction safety fencing, or other safety barriers, at the end of the work day. Equipment and materials required to complete the work effort may remain on site as long as they are organized/stored in a manner that does not cause a safety hazard.

2.1.2.4 Traffic control

In the event base vehicular traffic is to be disrupted by trenching or horizontal directional boring, the Contractor shall make appropriate notifications NLT 10 calendar days in advance to 377 MSG/SCX, Kirtland AFB of the planned disruptions.

2.1.3 Security Requirements

The Contractor shall process and provide a Site Visit Request Letter to 377 MSG/SCX within 5 calendar days after contract award. All information is required (2) weeks prior to anyone arriving on base to start work. This spreadsheet shall identify the names (as shown on the driver's license), a photo copy of the driver's license, birth date and SSN of the personnel who will be performing work under this SOW, company name, address, phone number and contract number, start date and end date. This information is required to grant access to the base. If required by the base, the Contractor shall provide identification badges for their employees. All Contractor personnel shall wear these badges while on duty on the Government site. The badges shall identify the individual, company name, and be clearly and distinctly marked as Contractor and be in accordance with base regulations.

2.1.3.1 Security Clearances

Stated work and associated products shall be performed at the UNCLASSIFIED level. However, some of this work will take place in secure areas where Contractor employees must be escorted at all times. The Contractor must coordinate access to secure areas at least five (5) working days ahead of time. It is the Government's responsibility to provide escorts.

2.1.3.2 Operational Security (OPSEC).

Network infrastructure drawings (MHDS, MH/HH locations, fiber paths, etc.) are on the Base Communications Division Critical Information List and must be protected. The Contractor shall take appropriate measures to protect detailed information pertaining to the EFI&T effort, to include appropriate marking of documents as "For Official Use Only (FOUO)," and ensuring limited distribution of documents and schematics/drawings to only those individuals with a valid need to know. IAW AFI 10-701, OPSEC Considerations, the contractor shall develop an OPSEC plan to ensure the protection of FOUO data either furnished by the government or produced by the contractor. The contractor's OPSEC plan provided in the RFP shall be incorporated into the SOW in accordance with (IAW) CDRL A007.

2.1.4 Environmental Compliance

The Contractor shall comply with the most stringent environmental federal, state, and local laws and regulations; and Air Force policies, instructions, and plans. The federal Government is not exempt from compliance with environmental regulations. The contractor shall maintain an awareness of changing environmental regulatory requirements to avoid environmental deficiencies for activities on Kirtland AFB.

2.1.5 Permits

The Contractor shall complete and process all permits required to complete the installation prior to any trenching, or modifications to a facility, Maintenance hole or hand hole; for example, the Base Civil Engineering Work Clearance Request, a digging permit, (AF Form 103) and Base Civil Engineer Work Request (AF Form 332). AF Form 103 and AF Form 332 {and any other required permits (as determined by Base Civil Engineering (BCE) and/or Kirtland AFB Comm Squadron, etc.)} shall be submitted at IAW local procedures. All utility markings, flags, etc. shall be maintained by the contractor after the responsible work center/shop identifies/locates them. If a utility is severed or damaged due to neglect or if attributed to the fault of the contractor, then the contractor shall repair and return the utility back to the same condition it was in prior to the damage. The form(s)/permits shall be submitted within 10 calendar days after award.

2.1.6 Integrated Process Team (IPT)

The Contractor shall chair a weekly IPT meeting that includes Contractor representatives, Base Contracting Officer (CO), the 38 ES Cyberspace Integrator-Base (CSI-B), CSI-E, the Kirtland AFB Comm Squadron Project Manager (PM), and other base personnel as required. The 377th Communications PM will set up a teleconference capability for the duration of the project. The purpose of the IPT meeting is to discuss project progress, problems being encountered, and other information necessary/beneficial to ensure success and timely completion of contract requirements. The Contractor shall record meeting minutes and distribute to the attendees.

2.1.7 Quality Assurance

The Contractor shall provide Quality Assurance Support for the life of the project. The Contractor's quality assurance evaluator shall assist the Government representative in performing random spot checks and system acceptance tests. The Contractor shall be responsible for identifying system and outside plant deficiencies and /or discrepancies throughout the life of the project. A weekly report (soft copy) shall be submitted indicating progress/status and listing any deficiencies/discrepancies found and actions to correct them.

2.1.8 Contractor Personnel

2.1.8.1 Project Management

The Contractor shall provide a Project Manager (PM) and alternate(s) responsible for contract performance and continuity. The Contractor shall identify the Project Manager's or alternate's range of authority to act for the Contractor relating to daily contract operation.

2.1.8.2 Site Point of Contact (POC)

The Contractor shall designate the Contractor's on-site team leader and alternate(s) as the Site POC for individual projects in their Site Visit Request Letter. The Site POC or alternate(s) shall be on site during duty hours until project completion and shall oversee all facets of the installation tasks. The Site POC shall be the interface for all work site communications with the Government, including quality, safety, and discrepancy matters.

2.1.8.3 Personnel Requirements

The Project Manager, Site POC, and respective alternate(s) shall be able to read, write, speak, and understand English. All reporting and documentation shall be in English.

2.1.8.4 Electronic Contractor Manpower Reporting Application (ECMRA)

The contractor shall report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract for "BAN FO Infrastructure Upgrade" via a secure data collection site. The contractor is required to completely fill in all required data fields using the following web address

<http://www.ecmra.mil>

Reporting inputs will be for the labor executed during the period of performance during each Government fiscal year (FY), which runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year. Contractors may direct questions to the ECMRA help desk.

2.1.9 Warranty

The Contractor shall provide a one year warranty or manufacturer's standard commercial warranty, whichever is longer. This warranty shall include a one year workmanship warranty. The warranty period shall start from the date of system and/or project acceptance. The Contractor shall provide written procedures and required information for warranty services at or prior to site acceptance.

2.1.10 Manuals and Practices.

The Contractor shall provide the latest version of operation, installation, and maintenance manuals and practices/users guide for each system installed as provided by the original manufacturer with all new equipment.

2.2 SPECIFIC REQUIREMENTS

- Install a new 36-St, SM FOC from Bunker-37100 to pole (1821-F2P81).
- Test existing fiber from pole 30158 to pole 1821-F2P81 prior to cable installation.
- At pole (1821-F2P81), splice the new 36-St FOC into an existing 72-St FOC (F450), which feeds Information Transfer Building (ITB)-B30158.
- This will provide a new connection from ITB-B30158 to Bunker-37100 with new 36-St FOC
- See Sketch-1 of a logical diagram of the specific requirement.

2.2.1 Maintenance Holes (MHs) and Handholes (HHs)

The Contractor shall pump out water as required. Water shall be drained IAW BCE and base environmental requirements.

2.2.2 Measurements

Any distances provided in this SOW are approximations and in feet. The distances should **NOT** be used for ordering materials or determining duct lengths.

2.2.3 Splice Conductors

All fiber splicing shall be performed in accordance with RUS Bulletin 1735F-401, Standards for Splicing Fiber Cable. The fusion splice method shall be used for all splicing and terminations of fiber optic cable. The preferred method is that fiber optic cables shall be terminated via fusion splice directly to the connector (LC is the preferred connector type); however, fusion splice to a pigtail is also acceptable.

2.2.4 Cable Racks, Cable Rack Supports and Splice Cases

Cable racks/support/hook/strap shall be installed in MH, HH and Pole as required – this includes new and existing MHs/HHs and Poles. Splice Cases shall NOT be supported by the cables that enter each end of the splice case. The splices shall be supported by cable hooks under the splice case. Telecommunications industry standard cable hooks of the appropriate length shall be provided to support cables and splice cases. The cable hooks shall be secured using cable rack locking clips. All cables shall be supported using racking clips, cable racks, and cable hooks. All splice cases must be Preformed (or equivalent) line products such as Coyote

(or equivalent). All splice cases must be weatherproof and protected/covered by Coyote Defender (or equivalent) with vertical cable storage accessories (or equivalent). All splice cases and defender (if new) must be verified and approved by 377 MSG/SCX before purchasing. See Sketch-5 for example of approved of splice case and defender.

2.2.5 Labeling

The Contractor shall label all equipment and cables they install and cables identified for re-use IAW TIA-606-B-2012 and as directed by the base communications organization. New ducts shall be permanently labeled on the wall of each building/Maintenance hole indicating the connecting building/Maintenance hole at the other end of the duct (for example, "To MH-200"). Tagging and labeling of new cables shall be IAW the following:

A48L8.3F
FO 1234-5678, 1-12

Line One: A = Armored Sheath (otherwise leave blank) 48 = Fiber Count. L = Loose Tube Buffer or T = Tight Tube Buffer. 8.3 = Single Mode. F = Filled core (otherwise leave blank).

Line Two: 1234-5678 = From-To Building numbers. 1-12 = Cable/strand Count.

2.2.6 Cable Tags

All tags shall be permanently labeled, easily visible and corrosion resistant. The Contractor shall install cable tags in all Maintenance holes/Handholes, cable vaults, pull boxes and building entrance terminal locations. When cables pass through a Maintenance hole, the contractor shall place a tag on the cable, approximately 2 feet from each duct entrance. Information on the cable tag shall identify cable by size, type, cable number and count. See Para 2.2.5 (above) for nomenclature for tagging.

Pulling Tape

If any new Pulling Tape is installed it shall be a waterproof, corrosion resistant, pre-lubricated flat woven polyester pull tape with sequential footage markings (1250 lb. pulling strength) for future cable installations. The pull tape shall extend into the Maintenance holes/Handholes and be secured to a cable rack or pulling iron, etc.

2.2.7 Cable Terminations

Fiber optic cables shall be terminated via fusion splice directly to the connector (with LC connector preferred). The pigtails shall be sized the same as the OSP fiber they are spliced to, i.e., 8.3/125 micron. The pigtails shall be duplex (or simplex) unless otherwise agreed to by Kirtland AFB Comm Squadron.

2.2.8 FOC Maintenance Loop (s)

The Contractor shall install a minimum of a 50 foot fiber optic cable Maintenance loop at the first MH/HH from the building, at every splice point MH/HH/Pole location. The Maintenance loop slack shall be properly labeled, securely supported to the cable ladder and off the MH floor. Maintenance loop for every tenth pole?

2.2.9 New Maintenance Holes/Handholes (Reserved)

2.2.10 Grounding

Grounding hardware such as corrosion resistant wire, bonding ribbon, clamps, ground rod, etc. necessary to properly bond/ground the cable in MHs/HHs shall be provided by the contractor. Reference TIA 607.

2.2.11 Underground Conduit System: (Reserved)

2.2.12 Fiber Optic Distribution Panel (FODP) Marking.

Each FODP shall be stenciled/marked with black ink or paint or adhesive backed decals in letters and numbers. The cover of all new fiber optic distributions (FODPs) shall be labeled to conform to the system used by local maintenance personnel to identify FODPs that terminate fiber. If the manufacturer has not identified the sequence in which ports on FODPs (pigtail modules) are counted, the Contractor shall provide designation labels/strips to identify the sequence in which they are counted. Each splice tray shall be marked to identify the fiber count contained in the splice tray. The marking shall identify the FODP by number (building number), cable number, and count.

2.2.13 Outside Plant Installation

The Contractor shall design and install "Customer-Owned outside Plant Telecommunications Infrastructure" in accordance with ANSI/TIA-758-B. Each cable installation shall be coordinated with Kirtland AFB Comm Squadron so that the impact on the building users is properly coordinated. The sequence of installation is at the Contractor's discretion.

2.2.13.1 Infrastructure Installation

The Contractor shall install the following new infrastructure. All new locations and distances are approximate.

2.2.13.1.1 Maintenance Holes (MH)/Hand Holes (HH) and Pole installation.

There are three (3) questionable power poles on the run. The contractor is required to provide and install these three (3) new poles to replace these questionable poles. The contractor shall provide all the necessary materials/tools and associated messengers cable required to install these poles. The contractor is required to re-install all the existing cable on these poles. The exact location/number of these power poles will be determine/verify during walk-through and must be approved by 377 MSG/SCX.

2.2.13.1.2 Ductbank Infrastructure

No new Ductbank is required

2.2.13.1.3 Geo-textile Fabric Innerduct (Max-Cell or equivalent) Installation

No new Geo-textile fabric innerduct is required.

2.2.13.2 Fiber Optic Cable Installation

The contractor shall install outside plant FOC as described in the following paragraphs. The cable shall be all dielectric, loose buffer tube, water blocked, single mode, outside plant (OSP) cable suitable for underground/aerial applications. The contractor shall install any/all necessary messenger cable (between the existing poles) required to install the new aerial cable. The Contractor shall coordinate each cable installation with the 377 MSG/SCX, Kirtland AFB to minimize the impact on building users. The intent is to install the cable in one continuous length, to the extent that it is practical besides the locations where a splice case is intentionally requested. The splice cases on the pole will be weatherproof Coyote (or equivalent) and shall be protected by Coyote Defender (or equivalent). The current Kirtland AFB has existing splice cases and defender on pole, the installer is required to survey the current splice cases, the protecting boxes and their set-up. The contractor is required to set up their new splices as the same/current set-ups (if new splice case is required). All splice cases, defender and pole location must be verified and approved by 377 MSG/SCX. If a splice case leaks, it shall be reinstalled and retested. A coil of 50 feet of cable shall be provided on each cable entering or leaving a splice case (see the existing set-ups).

2.2.13.2.1 (Installation Detail):

1. The Contractor shall EFI&T a new 36-St, SM FOC from Bunker-37100 to pole (1821-F2P81). The entire path will be aerial, by using existing electric/communication poles.
2. This route involves 22 different poles before reaching pole (1821-F2P81).
3. The approximate distance is 9,500 feet. At pole (1821-F2P81), splice the new 36-St FOC into an existing 72-St FOC (F450), which feeds ITB-B30158.
4. This will provide a new connection from ITB-B30158 to Bunker-37100 with new 36-St FOC.
5. Refer to Sketch-3 & 4 (Cable Route-1 & 2) for more information.
6. The route/path/number of poles shown here is for reference/suggestion only. The actual path will be designed by the installer and must be approved by 377 MSG/SCX.
7. The contractor shall remove and dispose of any AIP copper cable existing on the pole, run from Bunker-3700 to Pole (1821-F2P81)

2.2.13.3 Bunker-37100

- The contractor shall install one (1), 7-feet, Network (NW) lockable cabinet at the communication room ("Q"). See Sketch-2 (Bunker-37100) for suggested location of the new cabinets.
- The contractor shall install one new 36-port Fiber Optic Distribution Panel (FODP) in one of the newly install cabinets.
- The contractor shall terminate the new 36-St FOC cable into the FODP using fusion splice to the connector with LC type connectors.
- The cabinet location is for suggestion only the final location will be determined during walk-through.

2.2.13.2.4 Path/route for the new 36-St FOC from the 1st pole outside Bunker-37100 to Communication room ("Q").

- At Bunker-37100 the installer will use an existing entry to install the new cable. After entering inside the bunker from the outside pole to inside building the cable will be transferred from OSP to ISP Plenum cable (transition splice) and then from the transiting splice location to the new cabinet location (the new ISP Plenum cable can be strapped/secured to existing pipes).
- 2 wall penetrations may be required for this route.
- The cable route shown here is for recommendation only, the final route will be designed by the installer and approved by 377 MSG/SCX.
- The distance from the 1st entry point at the bunker to the new cabinet location is approx. 400-feet.
- See Sketches-3 & 4 for suggested/reference cable route.

2.2.13.2.5 Path/route from the 1st pole, outside Bunker-37100 to Pole-(1821-F2P81).

- See para 2.2.13.2.1 (Installation detail).

Installation Notes:

1. The cable route shown on this sketches is for reference/recommendation/suggestion only, the final route (selection of pole and splice location) will be determined by the installer and approved by 377 MSG/SCX.
2. The contractor will install all the necessary messenger cable (between the poles) required to install the new aerial cable.
3. The distances provided in this SOW is for reference only, the contractors are required to verify all the distances provided here.
4. The installation of guide wire at an existing pole will be determined during the walk-through. It is the job of the installer to determine the poles which requires guide wire (with approval of 377 MSG/SCX) and also, it is the job of the installer to provide and install the required guide wire.
5. Test the FOC from starting to end point per para: 2.2.20.1 and provide the text result to 377 MSG/SCX.
6. (If required/necessary). All the new splice cases and defender set up will follow exactly the same as the current/existing set-up and will be installed per para 2.2.4 and also be verified/approved by 377 MSG/SCX.

2.2.14 Site Restoration/Debris Removal

The Contractor shall restore all disturbed grounds to the "as found" condition or better after installation. Base grounds restoration requirements shall be complied with. Common use areas shall be restored to their original condition. The Contractor shall be responsible for disposing of all residues from this project, including AIP copper cable (See Sec: 2.2.13.2.1, #7) off base and in accordance with Federal, state and base environmental laws and regulations. All residue produced by directional drilling operations (i.e., slurry) shall be disposed of off base on the same day the residue is produced, at an appropriate disposal facility at the contractor's expense, IAW federal, state, local and Kirtland AFB environmental laws and regulations. Under no circumstances will the contractor stage or store boring residue in slurry ponds or other containment areas on Kirtland AFB.

2.2.15 Service Outages

The Contractor shall be responsible for preventing any unscheduled (i.e. cutting or disabling any in-service cables or equipment.), Contractor-caused, interruptions of communications capabilities that are properly identified. The Contractor shall coordinate planned outages with the site POC at least 10 calendar days in advance of the outage if the implementation necessitates disruption of service, (e.g., communications, electrical, or other utilities).

2.2.16 Identification/Marking

The Contractor shall clearly mark all Contractor-Furnished Property and Equipment (CFP/CFE) with their company's name. The Contractor shall place an easily read, very visible, sign (minimum 8.5 inches x 11 inches) on large containers, construction equipment, or un-manned rental vehicles while on the Government installation indicating the company name and both the Contractor and Site POC's names and local telephone numbers.

2.2.17 Installation Schedules

The Contractor shall provide a complete milestone schedule that denotes project activities to include time-phased start and completion dates for the project and sub-projects associated with the installation of the components and system.

2.2.18 Weekly Status Reports

The Contractor shall prepare and distribute a Weekly Status Report in English. The purpose of the report is to inform IPT members of project progress, problems being encountered, and other topics necessary/beneficial to ensure success and timely completion of the contract requirements.

2.2.19 As-Built Drawings

The Contractor shall submit red line drawings showing the "as-built" configuration in format specified by base SCX project manager. The base communications squadron will provide baseline drawings. The Contractor shall provide As-Built Rack Elevation, Inside Cable Plant and Outside Cable Plant drawings and distribute.

2.2.20 Test and Acceptance/Installation Test Plan

The Contractor shall provide a test plan as to how the system shall be pre-tested, in-progress-tested and post-tested to demonstrate to the Government that the system is fully operational ready to be placed into service. The Contractor shall test the system to demonstrate to the Government quality assurance representative. These tests shall be accomplished prior to the system being placed into service.

2.2.20.1 Fiber Optic Tests.

All strands of all fiber optic cables shall be tested in accordance with TIA 526-7, Measurement of Optical Power Loss of Installed Single-mode Fiber Cable Plant, or equivalent. As a minimum, the following tests shall be performed. Both Optical Time Domain Reflectometer (OTDR) and Optical Power Meter tests will be used for all end-to-end circuits. Between FODPs, bi-directional testing at 1310 nm and 1550 nm is required. For incomplete circuits that end in Maintenance Holes, only one way OTDR testing is required.

2.2.20.1.1 Optical Attenuation.

End to end attenuation tests shall be conducted on all fiber optic cable strands. Tests shall be accomplished to ensure the installed cable is within the specified parameters.

2.2.20.1.2 Distance.

Test to determine the installed cable length between optical patch panels. All strands of all fiber optic cables shall be tested.

2.2.20 Acceptance/Installation Test Report

The Contractor shall provide an installation test report of the results of the testing accomplished under the installation test plan.

2.2.21 Final Acceptance

The Contractor shall schedule a final project walk-through with the Kirtland AFB Comm Squadron. This should be scheduled 10 calendar days prior to acceptance.

2.2.22 As-Built Documentation in CVC

The Contractor shall record geospatial data and provide as-built documentation (shape files) of all new installed Maintenance hole system components (including metadata) compatible with the Cyberspace Infrastructure Planning System (CIPS) Visualization Component (CVC) drawing system. Data points shall be recorded at the center of each Maintenance/Handholes lid and at intervals not to exceed 25 feet along cable routes. Sufficient data points shall be recorded to capture any change in direction

along the route. All GPS coordinates shall have +/- 3 feet accuracy for all readings. The government is responsible for providing the Contractor with a copy of the installation's most current GeoBase Common Installation Picture (CIP), and current CVC drawings of the areas of interest. The government will review the shape files in CVC and transcribe the information to the CVC system. Shape files shall be delivered upon project completion.

3.0 GENERAL INFORMATION

3.1 Period of Performance

The period of performance for the project shall be determined based upon the proposed schedule and actual contract award date.

3.2 Place of Performance

The place of performance is Kirtland AFB.

3.3 Hours of Operation

The Contractor shall routinely work during normal duty hours of the site. However, mission requirements may necessitate work outside normal hours (nights and/or weekends), especially if existing service must be interrupted. Any site work requested by the Contractor to be performed outside of normal duty hours shall be coordinated with the Kirtland AFB Comm Squadron and approved by the Contracting Officer at least 10 calendar days in advance.

3.4 Holidays/Down Days

The Contractor shall not perform any work under this contract on federal holidays or site-unique down-days unless expressly authorized by the CO and coordinated with the Kirtland AFB Comm Squadron Project Manager.

3.5 Base Support

The Contractor shall identify any base support requirements (for example, laydown and storage areas) necessary to complete this project in their proposal. The Contractor shall return all government furnished lay-down and storage areas to their original condition upon completion of the project.

3.6 Minimum Contractor Qualifications.

All work shall be performed by an experienced Telecommunications Contractor. The Contractor shall have a minimum of 3 years of experience in Telecommunications Systems installations.

APPENDIX A: APPLICABLE STANDARDS

Kirtland Materials Submittals (will be provided by 377 MSG/SCX)

Kirtland AFB Communications Specification (will be provided by 377 MSG/SCX)

The following list is not all-exclusive. The Contractor shall comply with applicable commercial code and standards

AFI 91-203 – Air Force Consolidated Occupational Safety Instruction

OSHA CFR 29 Part 1910-268 – Telecommunications

NEMA TC 2- Electrical Polyvinyl Chloride (PVC) Tubing and Conduit

ANSI/TIA-606-B Administration Standard for Telecommunications Infrastructure

TIA-568-C Commercial Building Telecommunications (568C.1, 568C.2, 568C.3) Cabling Standard

ANSI/TIA-607-B Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications

TIA-569-C - Commercial Building Standard for Telecommunications Pathways and Spaces

TIA-570-C –Residential Telecommunications Infrastructure Standard

TIA-758 B - Customer-owned Outside Plant Telecommunication Infrastructure Standard

BICSI TDM Manual - Building Industries Consulting Services International Telecommunications Distribution Methods (TDM) Manual

BICSI – Outside Plan Design Reference Manual

RUS Bulletin 1751F-643 - Underground Plant Design

RUS Bulletin 1751F-644 - Underground Plant Construction Telecommunications Engineering Shield Continuity and Construction Manual (TE&CM) 451.2

RUS Bulletin 1751F-801 – Electrical Protection Fundamentals

RUS Bulletin 1753F-151 (515b) - Specifications and Drawings for Underground Cable Installation

NFPA 70 - National Electric Code

FGDC-STD-007.3-1998 - Geospatial Positioning Accuracy Standards Part 3: National Standard for Spatial Data Accuracy

Unified Facilities Criteria 3-260-01

APPENDIX B: LIST OF DELIVERABLES

All deliverables are subject to Government acceptance and approval. They shall meet professional standards and the requirements set forth in this SOW. All deliverables shall be produced using recommended software tools/versions as accepted by the Government. The Contractor shall submit the following deliverables: As Built, Work Schedule, Status Report, Meeting Minutes, Test Plan, Test Report and OPSEC Plan.

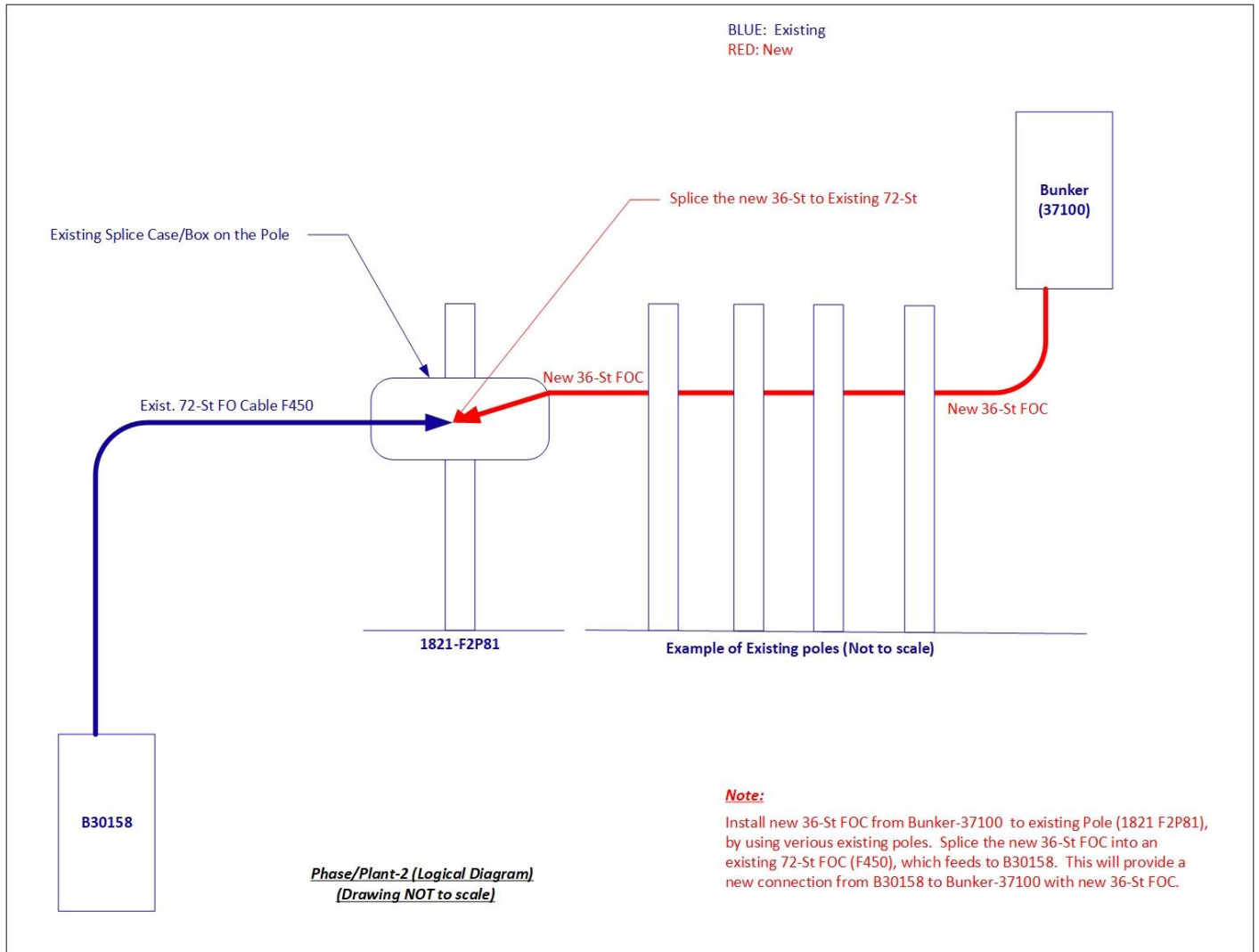
Appendix C: LIST OF ACRONYMS

AASHTO American Association of State Highway and Transportation Officials

| | |
|---------|---|
| AFM | Airfield Management (BaseOPS) |
| Approx. | Approximately |
| ATC | Air Traffic Control Tower |
| ATCALS | Air Traffic Control and Landing Systems |
| BCE | Base Civil Engineering |
| CDRL | Contract Deliverable |
| CFE | Contractor-Furnished Equipment |
| CFP | Contractor-Furnished Property |
| CIP | Common Installation Picture |
| CIPS | Cyberspace Infrastructure Planning System |
| CMA | Controlled Movement Area |
| CMHDS | Communications Maintenance Hole Duct System |
| CO | Contracting Officer |
| Comm | Communications |
| CS | Communications Squadron |
| CSI-B | Cyberspace Integrator-Base |
| CVC | CIPS Visualization Component |
| ECMRA | Contractor Manpower Reporting Application |
| EFI&T | Engineer, Furnish, Install and Test |
| FOC | Fiber Optic Cable |
| FODP | Fiber Optic Distribution Panels |
| FOUO | for Official Use Only |
| FY | Fiscal Year |
| HDPE | High Density Polyethylene |
| HH | Hand Hole |
| IAW | In Accordance With |
| ID | Inside Diameter |
| ILS | Instrument Landing System |
| IPT | Integrated Process Team |
| LMR | Land Mobile Radio |
| MH | Maintenance Hole |
| MHDS | Maintenance Hole Duct System |
| NLT | No Later Than |
| NPDES | National Pollution Discharge Elimination System |
| OEM | Original Equipment Manufacturer |
| OPSEC | Operational Security |
| OSHA | Occupational Safety & Health Administration |
| OSP | outside Plant |
| OSS | Operations Support Squadron |
| OTDR | Optical Time Domain Reflectometer |
| PDF | Portable Document Format |
| PM | Project Manager |
| POC | Point Of Contact |
| Prime | Prime Contractor |

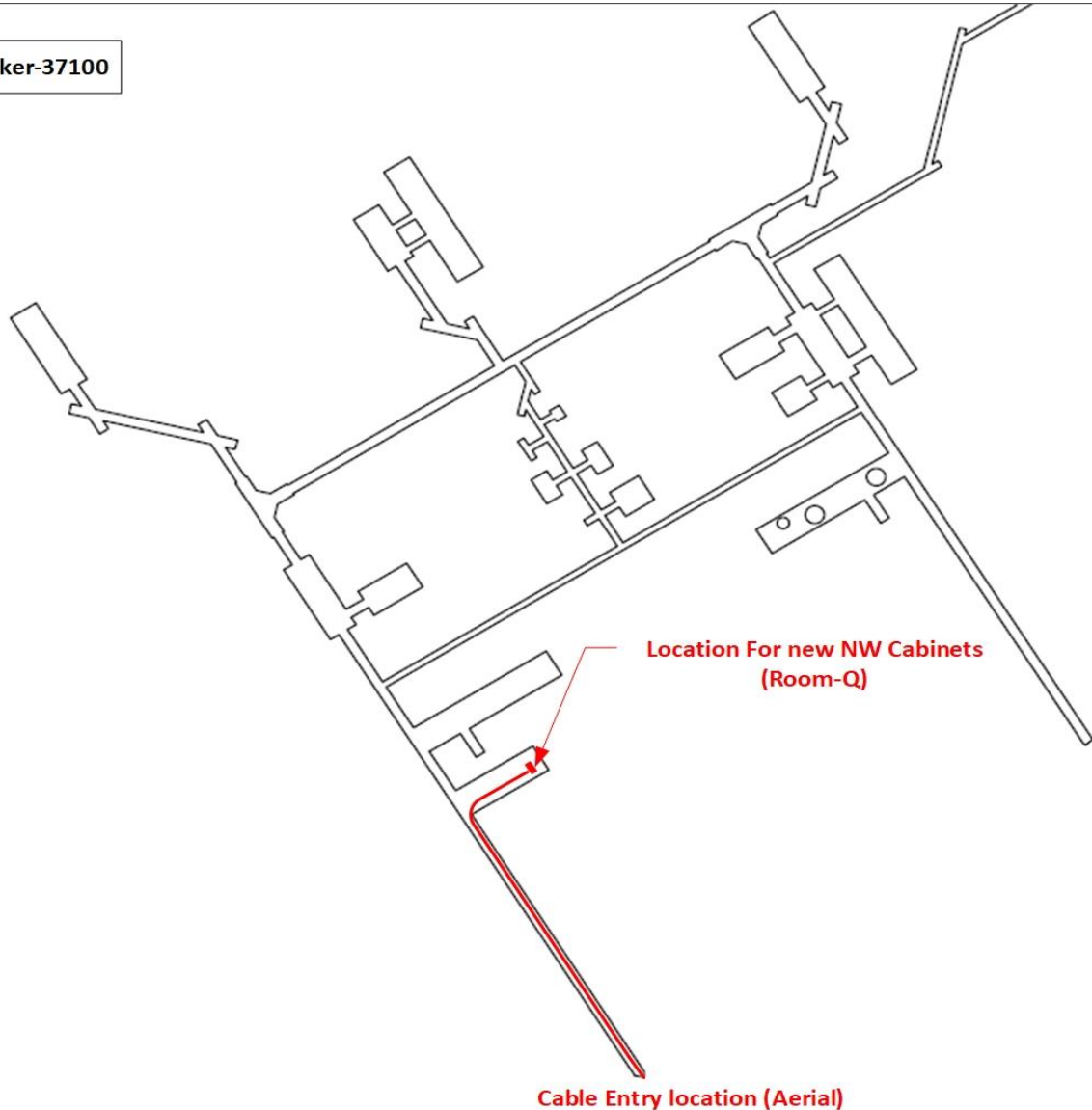
| | |
|-------|---|
| PSI | Pounds per Square Inch |
| PVC | Polyvinyl Chloride |
| QAE | Quality Assurance Evaluator |
| QCM | Quality Control Manager |
| Qty | Quantity |
| RUS | Rural Utilities Service Bulletin |
| SCOW | Supply Chain Operations Wing |
| SCX | Scheduler Planner |
| SE | System Engineer |
| SM | Single Mode |
| SOW | Statement of Work |
| Sub | Sub-Contractor |
| SWPPP | Storm Water Pollution Prevention Plan |
| TIA | Telecommunications Industry Association |
| TMGB | Telecommunication Main Ground Bus-Bar |
| TRD | Technical Requirements Document |

Appendix D: Sketches



Sketch-1 (Logical Diagram)

Bunker-37100

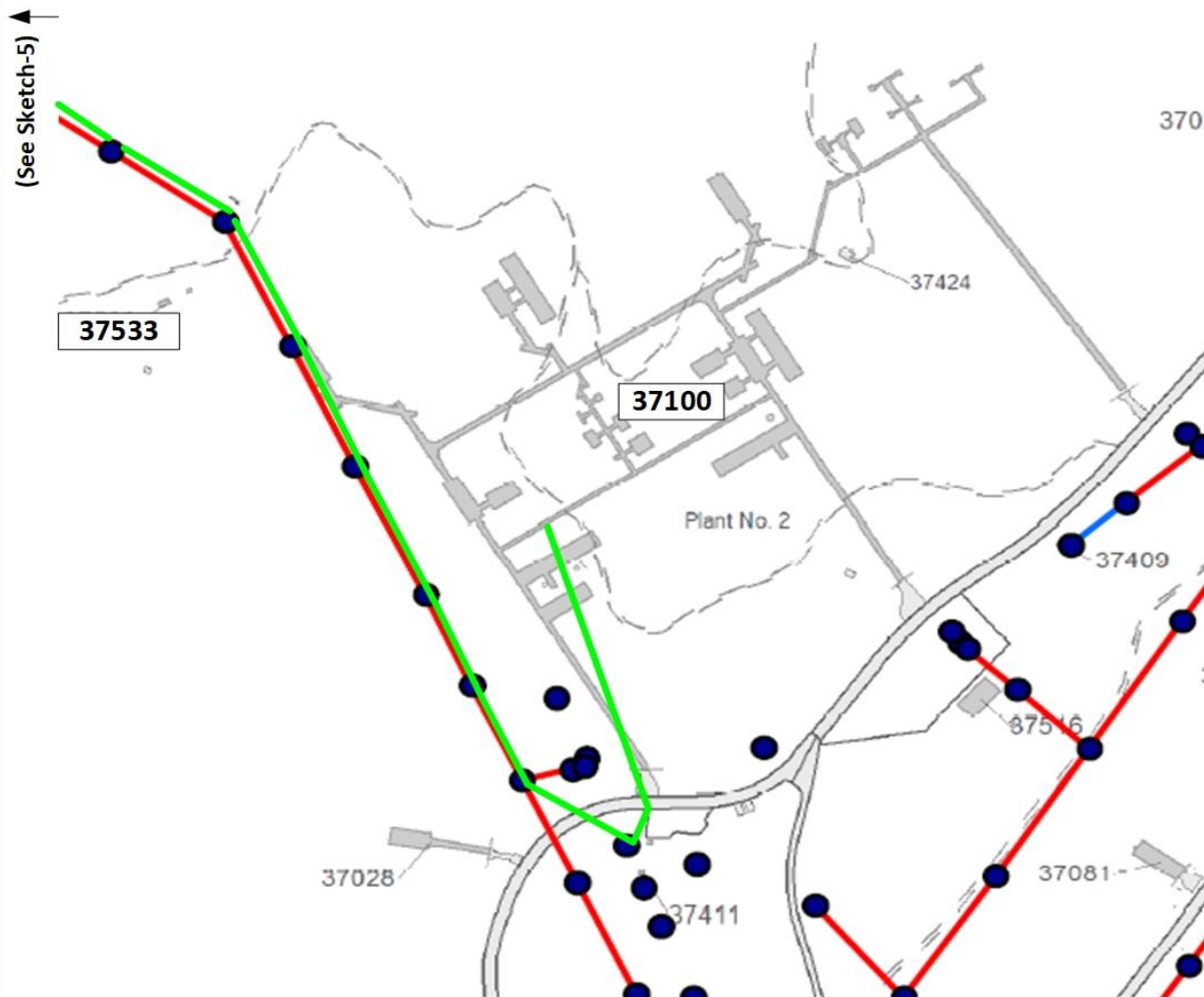


Notes:

1. At Bunker-37100 the installer will use an existing entry to install the new cable. After entering inside the bunker from the outside pole to inside building the cable will be transferred from OSP to ISP Plenum cable (transition splice) and then from the transition splice location to the new cabinet location (the new ISP Plenum cable can be strapped/secured to existing pipes). Two (2) wall penetrations may be required for this route.
2. The cable route shown here is for recommendation only, the final route will be designed by the installer and approved by 377 MSG/SCX.
3. The cabinet location is for suggestion only the final location will be determined during walk-through.
4. The distance from the 1st entry point at the bunker to the new cabinet location is approx. 400-feet.

Sketch-2 (Bunker-37100, Top View)

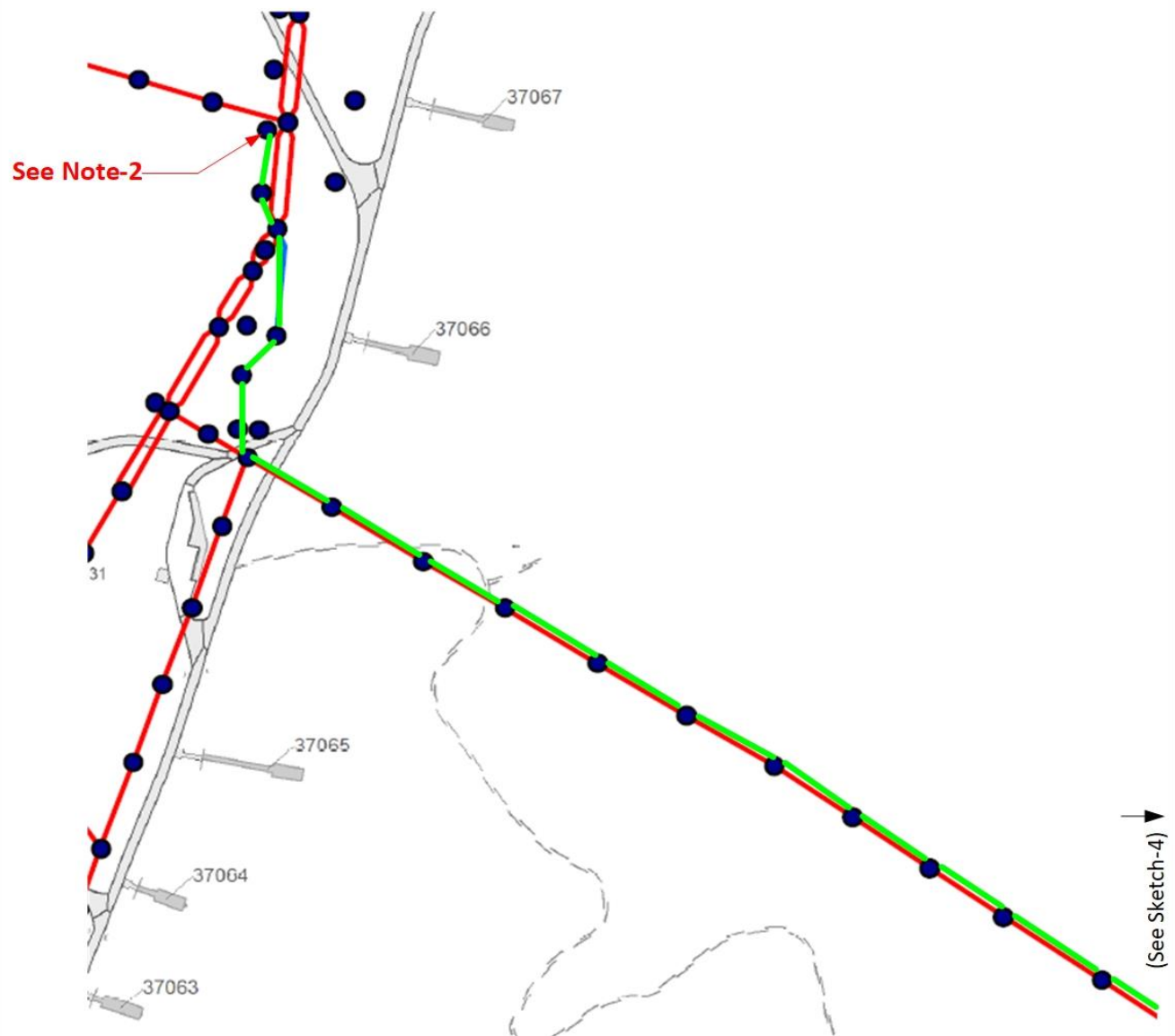
(Drawing NOT to Scale)



Notes:

1. Install the new 36-St FOC through several existing poles to existing Pole (1821 F2P81). Splice the new 36-St FOC into an existing 72-St FOC (F450), which feeds to B30158.
3. The route (selection of pole & Poles #) shown on this sketch is for reference only, the final route (selection of poles & #) will be determined by the installer and approved by 377 MSG/SCX.

Sketch-3 (Cable-1)

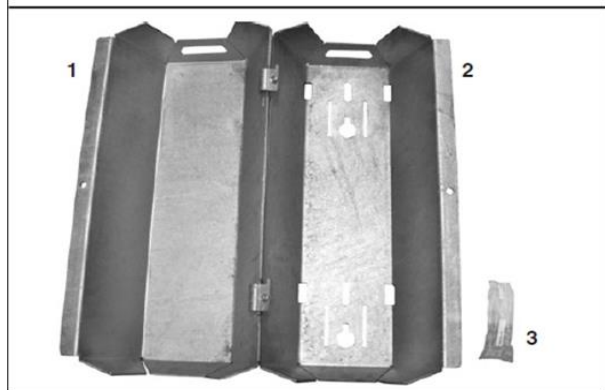


Notes:

1. New 36-St FOC
2. At this pole (1821 F2P81), there is an existing 72-St FOC Cable (F450) in an existing splice case which is coming from B30158. Splice the new 36-St FOC coming from Bunker 37100 into an existing 72-St FOC (F450), which coming from B30158.
3. The route (selection of poles) shown on this sketch is for reference only, the final route (selection of poles) will be determined by the installer and approved by 377 MSG/SCX.

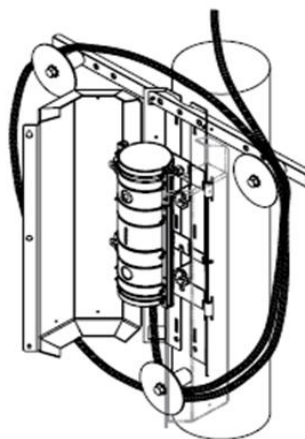
(Drawing NOT to Scale)

Sketch-4 (Cable Route-2)



NOMENCLATURE

1. Defender Cover Door (Front)
2. Defender Mounting Door (Back)
3. Hardware Bag (self-tapping screws & bolt to close doors)



**Kit With One Cable
Storage Assembly
and One Spool***



Sketch-5 (Example of Splice Case & Defender)