FIBER CONNECT
UNDERGROUND CONSTRUCTION

ISSUING DIVISION: SVP Fiber Engineering **Signed by Joseph Pâté**

SVP SPONSOR: Ted Salazar, Program Manager **Date Signed 07/20/21**

SECTION: Underground Construction FO-1900

Table of Contents

1. Scope of Standard

a. This standard is intended for use by Developers as required by City ordinance, Contractors under contract to the City of Santa Clara and City forces. Due to the similarities with materials and methods in underground construction, this standard is meant to compliment SVP standard UG-1000. Its purpose is to:

   i. Provide a uniform substructure construction standard for new fiber installations within the City of Santa Clara.
   ii. Define material requirements for fiber substructures.
   iii. Define Developer's substructure work requirements for fiber installations.
   iv. Provide a guide, with respect to utility substructures, for new fiber projects and for changes to existing facilities.
   v. Act as a supplement the SVP UG-1000 standards and to detailed design drawings prepared by Fiber Connect.

2. Purpose of Revision

a. Not Applicable. This is a new document with Fiber Connect.

3. References

a. City of Santa Clara Public Works standards
   i. Current standards location - (www.santaclaraca.gov)
   ii. Search for Technical Documents or goto Engineering and Technical Documents in the menus
b. SVP UG-1000 – Revision 06/18/04
c. ANSI F 512 - 77 "Smooth-Wall PVC conduit and Fittings for Underground Installation"
d. ANSI C 857-95
e. ANSI/SCTE 77 2002 "Specification for Underground Enclosure Integrity" ASTM C 94
f. ASTM C 150
g. National Electric Code
h. NEMA TC-8

i. NEMA TC-9

j. Western Utility Committee Guide 3.1 “Plastic Conduit and Fittings”

k. Western Utility Committee Guide 3.6 “Non-Concrete Enclosures”

l. State of California PUC General Order 128 “Rules for Construction of Underground Systems”

m. Silicon Valley Power, City of Santa Clara, Rules and Regulations

n. Caltrans Standard Specification 19-3.025

4. Rescissions

a. Not Applicable. This is a new document with Fiber Connect.

5. Definition of Terms

a. **Building Inspector**: City of Santa Clara Building Dept. Inspector, responsible for verifying proper installation and repair of all private building facilities. This includes the electric service entrance and meter service panel.

b. **Contractor**: The person or persons, firm, partnership, corporation or combination thereof, who has entered into a contract with the City of Santa Clara.

c. **City**: City of Santa Clara or the City Council of the City of Santa Clara.

d. **City Engineer**: City Engineer of the City of Santa Clara.

e. **Fiber Connect**: Fiber Connect is Division within Silicon Valley Power. Fiber Connect specializes in the design and installation of fiber systems and supporting infrastructure.

f. **Fiber Connect Inspector**: Silicon Valley Power Fiber Inspector responsible for verifying proper installation of Fiber substructures installed for use by Fiber Connect.

g. **Meet Me Box (MMB):** A customer owned vault, handhole, manhole or equivalent structure that is often the tie in point from structures owned and maintained by Fiber Connect. The MMB often serves as the tie in point for conduits that access into the building.

h. **Public Works Inspector**: City of Santa Clara Public Works Dept. Inspector, responsible for verifying proper installation and repair of all facilities within City right of ways and easements.

i. **Service Entrance**: The underground electric service conductors and duct(s) between the customer's main switch and the utility connection point.

j. **Silicon Valley Power (SVP)**: Municipal Electric Department of the City of Santa Clara.

k. **SVP Inspector**: Silicon Valley Power Electric Inspector responsible for verifying proper installation of communication substructures installed for use by Fiber Connect.

l. **Utility Electric (UE)**: All conduits and structures owned and maintained by Fiber Connect. The Utility Electric network also includes systems for alarm and control circuits, fire alarm, SCADA, fiber optic cable, protection circuits, etc.

6. Work Requirements

a. The Developer, Contractor or Fiber Connect shall furnish and install all facilities as shown and specified on the detailed drawing(s).

b. Developer or Contractor shall run underground facility conduit(s) and fiber optic cables (FOC) to connection point(s) as shown on detailed drawing(s).

c. If this is a service connection to a building/customer, then the customer, or building owner, shall provide an entrance conduit into the building. When customer conduits tie into UE system substructures, it will be the line of demarcation. The nearest connected customer enclosure is often called a "Meet Me Box" and is usually denoted as MMB on prints and drawings. The MMB will be determined by a written agreement and shown on detailed drawings. The Service Entrance conduits shall be "privately" owned, installed, and maintained per City Building Inspection Division Codes.

7. Materials

a. For contractor work authorized by Fiber Connect or structures that will be provided by Developers for use by SVP or Fiber Connect, Materials as outlined in UG-1000 (Materials) will be used. Materials may be substituted with similar or higher grade quality and only if approved by Fiber Connect or SVP engineers or inspectors.

8. Workmanship

a. Quality of work will follow the same specifications as outlined in UG-1000.

9. Inspection

a. Work in a public right of way or public easement
    i. The Public Works Inspector shall be responsible for inspection. The Public Works Inspector will inspect all backfill. The Fiber Connect Inspectors will be responsible only for inspecting UE system structures.
        1. Phone: Public Works Inspector *408-615-3000* (Provide permit number)
        2. Phone: Fiber Connect Inspector *408-548-7741* (Provide Job number).

b. Work outside public right of way or public easement
    i. Fiber Connect Inspectors will be responsible for inspecting all UE system work including backfill.
    ii. Phone: Fiber Connect *408-548-7741* (Provide FWM Job number).

c. Inspector shall be informed
    i. The Inspector shall be informed at least **24** hours in advance before commencing any item of construction or installation of material in order to permit proper inspection of materials and workmanship. No work shall be embedded, backfilled or otherwise covered until such time as it has been inspected and approved by the Inspector. Any material and / or workmanship failing to meet the requirements of this Specification, good acceptable engineering or construction practices, or installed without prior notice to Inspector shall be subject to rejection. If required by the Inspector, the Developer or Contractor shall, at his own expense, remove rejected work, finish and install approved material and /or workmanship.

d. Safety regulations
    i. It is the responsibility of the Developer and the Contractor to comply with all applicable Safety Regulations.
    ii. Call 811 before you dig for locates of existing structures and cables.

10. Permits

a. The same permitting requirements noted in UG-1000 (Permits) shall apply to this document as well.

11. Bonds

a. The same bonding requirements noted in UG-1000 (Bonds) shall apply to this document as well.

12. Acceptance

a. The Contractor shall install all cable, inner duct, mule tape, trace wire, and other equipment that Fiber Connect deems necessary for the betterment of the system. Detail Construction drawings will show all work to be done and items to be placed.

b. Upon completion of improvements, City (Fiber Connect Inspectors) must accept the work as satisfactory. A full set of as-built drawings will be delivered to the Fiber Connect inspector within 10 working days of completion by the contractor.

13. Guarantee

a. It shall be the responsibility of the Contractor to repair and correct any defects or deficiencies due to workmanship or material, which are discovered within one year from date of acceptance by the City. Repairs and corrections will be made at no charge to Fiber Connect or the City of Santa Clara.

b. In the event that Fiber Connect must make repairs before the Contractor can be notified, or when Fiber Connect determines that it is not practicable for the Contractor to make the necessary repairs, Fiber Connect reserves the right to make the necessary repairs or replacements at the expense of the Developer. Fiber Connect will, as much as it is practicable, preserve the available evidence of cause of the failure for examination by the Contractor.

14. Details

a. General

   i. UG-1000 defines the details and parameters for the installation of underground structures. In addition to the standards presented in UG-1000, the following changes or additions should be noted.

ii. For all enclosures that require an inscribed sign, Fiber Connect lids will be inscribed with the annotation of “UTILITY ELECTRIC”.

b. Handholes
   i. Be aware that handholes are often noted by the following identifiers:
   ii. N36 - 17”x30” – Non-Traffic Rated handhole
   iii. N40 - 24”x36” – Non-Traffic Rated handhole
   iv. N52 - 36”x60” – Non-Traffic Rated handhole
   v. N48SQ - 48”x48” – Non-Traffic Rated handhole
   vi. Details for the installation of N36, N40, N52 and N48SQ are noted in UG-1000 in the applicable section.

c. Maintenance Holes (aka Manholes)
   i. For Fiber Connect, there are only two kinds of Maintence Hole configurations.
      1. T4x4N
         a. Traffic rated, 4 foot by 4 foot precast fiber/concrete enclosure. This unit is designed to provide for an access point in which to house fiber spice enclosures or fiber slack coils for expansion or maintence.
         b. See details in section 16
      2. T2x5I
         a. Traffic rated, 3 foot by 5 foot precast fiber/concrete enclosure. This unit is designed to access an existing cable run without the need to cut the cable to move it into the enclosure.
         b. See details in section 17

d. Risers
   i. Install per UG-1000 (Riser Pole Details). 4” UE duct risers will be installed similar to 5” Duct Risers.

e. Trench
   i. Refer to UG-1000 (Trench Cross Sections, Joint Trench Configuration and Street Crossing Trench Details), UG-340 (Conduit Spacers),and UG-345 (Electric Trench Backfill) for relevant installation parameters and distances.

ii. When UE ducts are the only ducts to be placed in the trench, ensure the following:

1. 3” sand Backfill on bottom of trench
2. 3” separation between adjacent UE ducts or trench walls
3. 3-6” sand cover above duct(s) closest to the grade (ie: top duct(s))

f. Street Paving Requirements

i. 8 Inches of asphalt unless otherwise specified in Public Works ST-26

g. Existing Structure Clearance Requirements

i. SVP Electric UG-1250

ii. City of Santa Clara Water Department STD-32

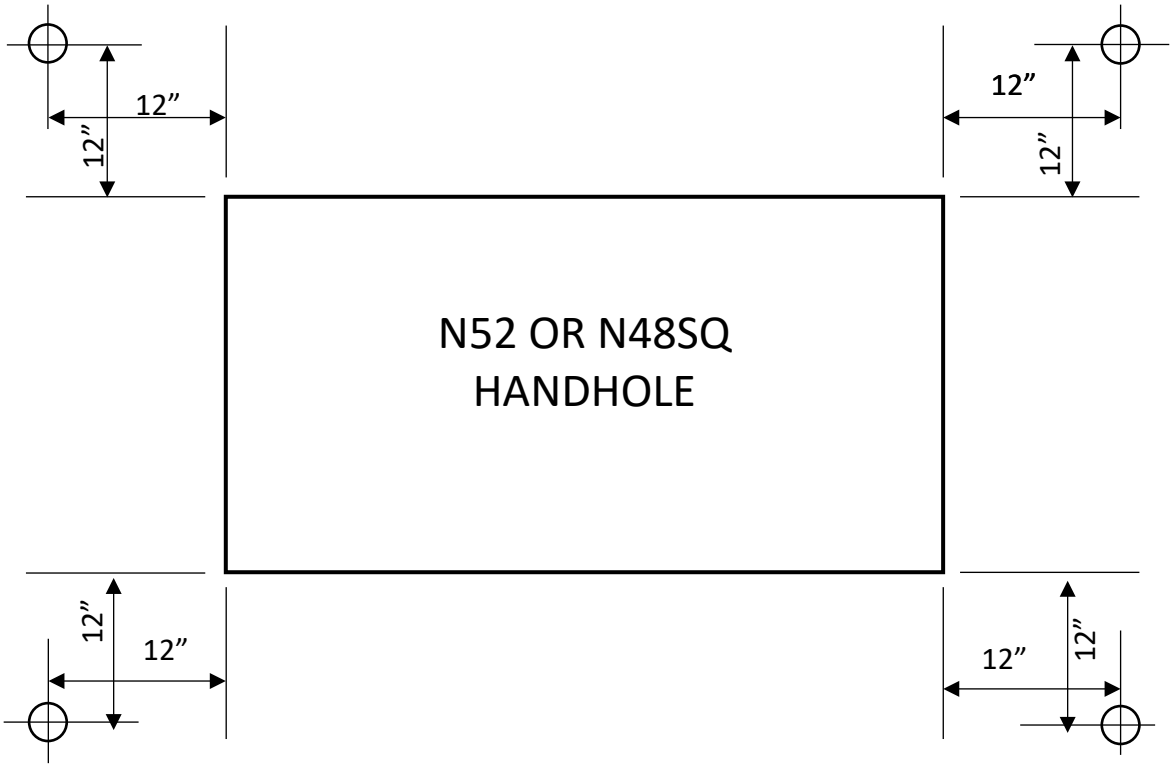
15. Barrier Pipe Placement - Handholes

a. Construction Notes:

i. Follow UG-1000 (Barrier Pipe Placement) notes as applicable.

ii. When placing barrier pipes around handholes, use the measurements as defined in the following sketch as a guide.

iii. Construction drawings will indicate whether holes are permanent or removable.



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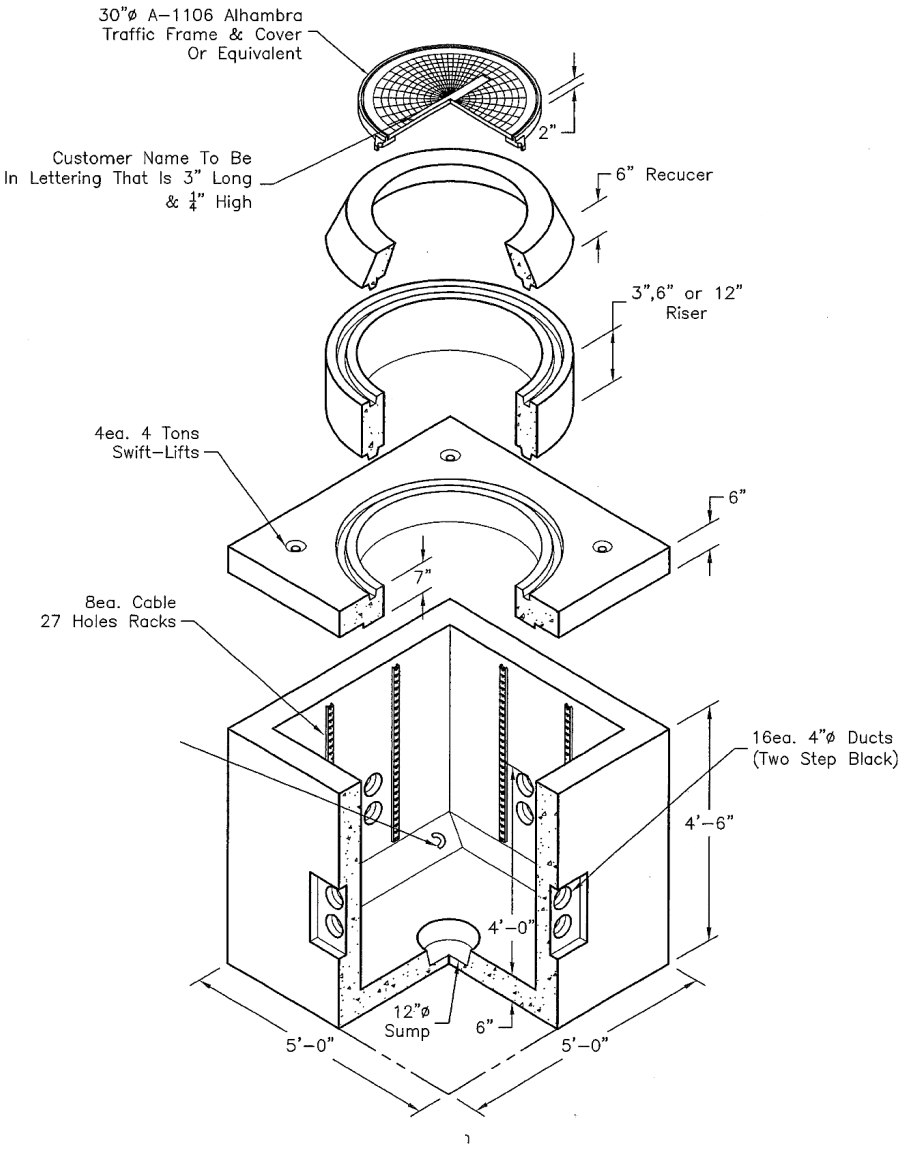
Ted Salazar	**UNDERGROUND CONSTRUCTION**	**FO-1900** Rev. 0

16. T4X4N – Traffic Rated 48”X48” Non-Intercepting Vault

a. Make: Old Castle
b. Model: MH4X4 Custom*
c. Top Slab Weight: 1600#
d. Vault Weight: 7450#
e. Installation Notes:
   i. Base Material- Please refer to UG-315. .
   ii. Top of lid must be equal to asphalt or concrete grade at completion. Concrete Apron- Please refer to UG-0337.
   iii. Lid must be inscribed with “UTIILTY ELECTRIC”
   iv. All new ducts are to be terminated in box using the knock outs and grouted (3 parts sand to 1 part cement) for water ingress prevention.
   v. All ducts to be terminated with bell housings and temporary conduit plugs.
   vi. If maintence hole requires risers, follow methods outlined in UG-1000 (Manhole and Pullbox Risers).
   vii. Install unit on compacted 1½” Drain Rock (minimum 6” thick)



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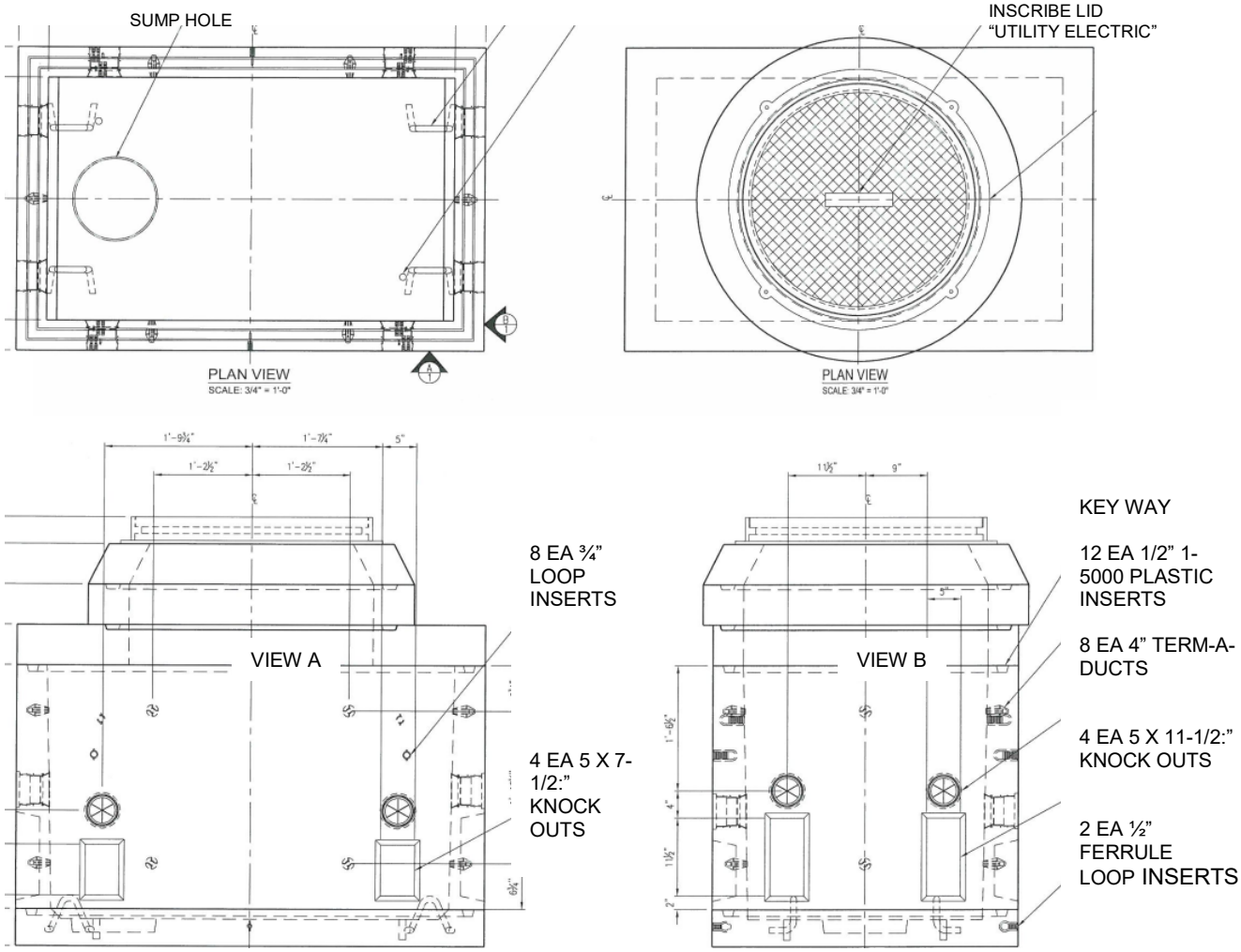
Ted Salazar	**UNDERGROUND CONSTRUCTION**	**FO-1900** Rev. 0

17. T3X5I – Traffic Rated 36”X60” Intercepting Vault

a. Make: OldCastle; Model: 3x5x3 AT&T Intercept
b. Top Slab Weight: 1290#
c. Vault Weight: 3010#
d. Bottom Weight: 1230#
e. Installation Notes:
   i. Refer to UG-0337 for details on Frames and covers.
   ii. Lid must be inscribed with “UTIILTY ELECTRIC”
   iii. All new ducts are to be terminated in box using knock outs and grouted (3 parts sand to 1 part cement) for water ingress prevention.
   iv. All ducts to be terminated with bell housings and temporary conduit plugs.
   v. If manhole requires risers, follow methods in UG-1000 (Manhole and Pullbox Risers).
   vi. Install unit on compacted 1½” Drain Rock (minimum 6” thick)



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