Hetch Hetchy
Regional Water System
Services of the San Francisco Public Utilities Commission

# HETCH HETCHY WATER AND POWER ENGINEERING REQUIREMENTS FOR PROJECT APPLICATIONS

1. **Drawings and Specifications:**
   a. Drawings submitted with initial application do not require a stamp but should show location of proposed work relative to existing roads, utilities, property lines, and other key locations.
   b. Final drawings for project approval shall be prepared and signed by a professional engineer licensed by the State of California, to scale, and submitted in 11"x17" pdf. The drawings must include the following: vicinity map, SFPUC right-of-way (ROW) boundaries, existing utilities, project boundary, plan and profile of proposed work within the SFPUC ROW, access routes and staging areas, and detail drawings.
   c. Engineering specifications shall be prepared and signed by a professional engineer licensed by the State of California. Specifications must include materials of construction, reference standards, and requirements for field workmanship and quality control during construction. Specifications shall be submitted on 8.5”x11” pdf or included in the drawings.
   d. Upon completion of construction, applicant shall submit final as-built drawings to SFPUC in both pdf and CAD format.

2. **Utility Locates:** Location of existing utilities is subject to verification. Potholing and surveying of adjacent manholes may be necessary to verify actual vertical and horizontal location of SFPUC pipelines. Follow permit procedures for requesting potholing and surveying. If site conditions vary from drawings, applicant must revise and resubmit drawings showing actual conditions before starting any work.

3. **Clearance:**
   a. Minimum clearance from SFPUC pipeline is 24 inches when using an open cut method, and 36 inches when using trenchless installation. If clearances cannot be adhered to by going over SFPUC pipeline, then new crossing must go under using trenchless methods.
   b. Crossings shall be at minimum 60 feet from any tower and 40 feet from any valve box.
   c. All crossings shall be as close to perpendicular as possible to SFPUC utilities. No utility is allowed to run parallel to SFPUC utilities within the SFPUC ROW.
   d. No valves, vaults, pull boxes, or junction boxes shall be installed within SFPUC ROW.
   e. Utility crossing generally shall be outside of the middle third of any HH Power Transmission Span in order to avoid the lowest portion of the conductor span, to minimize risk during construction and effects of surface grade changes.
   f. All sewer or recycled water pipeline crossings must comply with separation requirements in the California Waterworks Standards (California Code of Regulations, Title 22, Division 4, Chapter 16).

4. **Wet utilities / pressure pipes:** Show direction of flow for wet utilities. For pressure pipes, indicate pipe rating and pressure the pipe will be subjected to.

5. **Sewer:** Sewer lines within SFPUC ROW shall be encased in pipe.

6. **Regulated (gas) pipelines:** These shall meet all Federal and State requirements for regulated pipelines with the following additional requirements:
    a. Provide an engineering narrative report describing the basis of design for the regulated pipeline at the crossing and measures taken to protect SFPUC pipelines. Include calculations that show soils information, shoring of jacking and receiving pits, settlement calculations, and other pertinent information.
    b. Identify the method to be used for installation. Show locations of jacking and receiving pits.
    c. Casing shall be used if required by code (see casing requirements below).

7. **Casing Requirements:**
    a. If a casing is required, casing shall span the entire SFPUC ROW and beyond a sufficient distance to allow future excavation to access ends of casing to occur off SFPUC property. A general rule is that end of casing shall be placed at a 2H:1V slope from the edge of SFPUC ROW.
    b. For utilities installed in a steel casing, casing joints shall be butt welded the entire circumference. Minimum wall thickness shall be 0.25-inches; calculations shall be submitted to SFPUC to support intended casing wall thickness.
    c. The casing shall be insulated from the carrier pipe and sealed.
    d. Carrier pipes containing flammable liquids shall include vents on the casing located outside of the SFPUC ROW.
    e. Regulated pipelines encased in steel shall have robust protective coatings and dielectric shield at the crossing point.

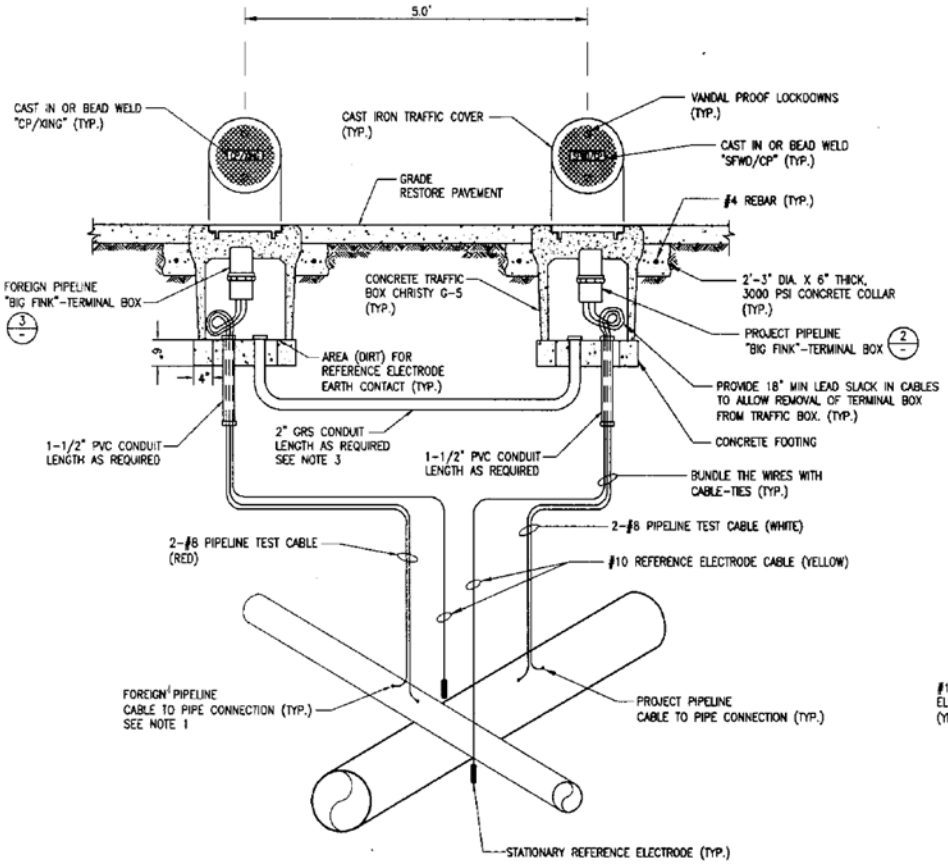
8. **Cathodic Protection:** Applicants are advised that SFPUC pipelines may have impressed current cathodic protection; it is the applicant's responsibility to provide suitable test and mitigation facilities for its pipeline. Any metallic pipeline with cathodic protection crossing SFPUC pipelines must include test stations as shown on Attachment A at a minimum. Future cooperative testing of cathodic protection at the crossing will be required.

9. **Identification:**
    a. Install marker at each end of the utility crossing at the SFPUC ROW property line. Standard fiberglass marker, 4 feet tall with color to match type of utility, including contact for utility owner.
    b. Install insulated tracer wire minimum 12-gage copper attached to top of pipe, with ties at least every 2 feet, color of insulation to match utility per USA811.
    c. Install metallic warning tape 1 foot above utility pipe or casing.

10. **Grade Changes:** For crossings requiring grade changes due to fill or cut, approach slopes may not exceed 20H:1V. Drainage patterns for existing and final grades must be shown on drawings.

11. **Maximum External Loading:** Calculations to show existing and new imposed loads on SFPUC pipe shall be submitted for review and approval. Maximum external loading over SFPUC pipelines is AASHTO H-10 loading with a minimum of 3 feet of cover. AASHTO H-20 loading requires 4-feet of cover. In no case shall the proposed crossing impose a greater load on SFPUC pipeline than current conditions.

12. **Grading and compaction near SJPL:** No mechanical excavation or grading is allowed within 2 feet vertical and 4 feet horizontal of SFPUC pipelines. Any necessary digging within these limits must be done with hand tools and only with written approval from SFPUC. No vibratory compaction equipment may be used within SFPUC ROW without written approval. Compaction equipment must not impose a significant load or vibration to the SFPUC pipelines.

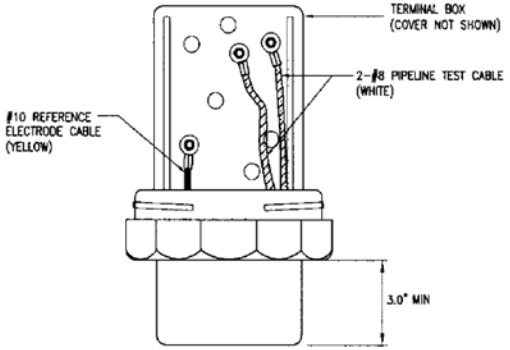



NOTES:

1. COORDINATE WITH FOREIGN UTILITY OWNER PRIOR TO CADWELDING TEST LEADS TO THE FOREIGN PIPELINE.
2. ALL CONDUITS SHALL HAVE BUSHING AT EACH END.
3. THIS CONDUIT IS FOR FUTURE CATHODIC PROTECTION INTERFERENCE MITIGATION OF THE TWO PIPELINES AT THE CROSSING. INSTALL 4-#10 AWG WIRES WITH COLORS AS FOLLOWS: WHITE, BLACK, RED AND BLUE. WIRE SHALL EXTEND 2' BEYOND EACH END OF THE CONDUIT.

**FOREIGN PIPELINE CROSSING TEST STATION DIAGRAM**

DETAIL 1/- NOT TO SCALE

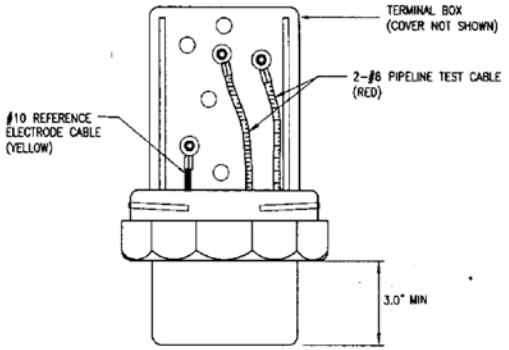



NOTES:

1. COVER OF THE TERMINAL BOX IS NOT SHOWN FOR CLARITY.
2. SEAL THE END OF THE LOWER PIECE OF THE TERMINAL BOX WITH DUXSEAL, SEALING PUTTY.

**PROJECT PIPELINE "BIG FINK"-TERMINAL BOX**

DETAIL 2/- NOT TO SCALE




NOTES:

1. COVER OF THE TERMINAL BOX IS NOT SHOWN FOR CLARITY.
2. SEAL THE END OF THE LOWER PIECE OF THE TERMINAL BOX WITH DUXSEAL, SEALING PUTTY.

**FOREIGN PIPELINE "BIG FINK"-TERMINAL BOX**

DETAIL 3/- NOT TO SCALE

# ATTACHMENT A

FOREIGN PIPELINE CROSSING TEST STATION DETAIL