

# CITY OF BURBANK BURBANK WATER AND POWER

## SPECIFICATIONS FOR THE CONSTRUCTION OF UNDERGROUND ELECTRICAL SYSTEMS INCLUDING DIVISIONS OF RESPONSIBILITY

1. SCOPE OF WORK

All work involving the construction of the electrical underground conduit system, which will include the following: securing excavation permit; cutting and removal of existing pavement; installation of concrete-encased duct sections; excavating for and installing precast electric manholes and other substructures; trenching (including shoring); backfilling; traffic control (including signs and barricades); temporary paving; permanent pavement; restriping of traffic lanes; and all items called for in these specifications whether specifically mentioned in this paragraph or not.


2. WORK TO BE PERFORMED BY THE CITY OF BURBANK

The following work shall be performed by the City of Burbank:

- a. Design, layout, and, if in the public right-of-way, surveying and horizontal control
- b. Inspection of overall job
- c. Restriping of traffic lanes only for projects under the Annual Contract.
- d. Pulling and installing all electric primary cables and wire
- e. Relocation of water services that interfere with manhole installations (at the contractors expense). Contact BWP Water Division at (818) 238-3500.

3. CODES AND STANDARDS

- a. The contractor shall perform his work in accordance with these specifications and all standards referred to herein. The installation of conduits shall be in accordance with Section 5 entitled "Conduit Work."
- b. All work shall be in accordance with the applicable section of the latest edition of the "Standard Specifications for Public Works Construction," and all the latest supplements thereto, except as herein called for in these Specifications or except as called for in related

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standards of the City of Burbank Public Works Department. These standards can be purchased at the Public Works Department, 150 N. Third St. P.O. Box 6459, Burbank, 91510.


4. NOTICE FOR STARTING WORK

The following City of Burbank departments shall be notified by the contractor at least 48 hours in advance of beginning any work in the public right-of-way:

Police, Traffic Bureau	(818) 238-3100
Fire, Dispatcher's Office	(818) 238-3473
Public Works, Traffic Engineer	(818) 238-3965
Public Works, Inspector	(818) 238-3955
Burbank Water and Power, Electrical Dist.	(818) 238-3590
Underground Service Alert, Inc.	(800) 227-2600

5. CONDUIT WORK


- a. Prior to any installation, contractor will contact the BWP inspector at least 48 hours in advance at 818-238-3590.
- b. The contractor shall furnish and install all conduits, fittings, spacers, and other appurtenances necessary to fulfill the requirements of these specifications.
- c. The polyvinyl chloride (PVC) conduit furnished hereunder shall be minimum schedule 40 for the pad-mount projects and db100 for any other projects, with heavy wall and rated for 90°C, in accordance with astm standard f-512 for utilities duct. The conduit shall be carlon or approved equal. Horizontal sweeps should be as specified on the plans with a minimum 48" radius for 4" conduit and minimum 60" radius for 5" and 6" conduits.
- d. Pipe joints must be made in accordance with standard practice for making solvent-cemented joints with polyvinyl chloride (PVC) pipe and fittings as described in astm standard d2855 or its latest revision. A suitable primer must be used before the cement is applied.
- e. Plastic spacers shall be used to maintain the required minimum 3" clearance between and around the conduits. The spacers shall be placed at intervals not exceeding 6 feet and shall be Carlon or approved equal.
- f. Construction joints in the concrete envelope surrounding the duct package shall be so located that duct joints do not occur closer than one (1) foot from said construction joint.

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- g. All conduits shall be installed by the contractor according to the details on the drawings. Stakes or rods shall be driven into the soil at intervals of eight (8) feet and wired at the top to hold conduits in alignment during pouring of the concrete enclosure.
- A minimum 48" cover is required for all sub-transmission duct banks installed in City right-of-ways and in private property.
  - A minimum 36" cover is required for all high voltage duct banks installed in City right-of-ways and in private property.
  - A minimum 36" cover is required for all low voltage (below 600V) duct banks installed in City right-of-ways.
  - A minimum 24" cover is required for all low voltage (below 600V) duct banks installed in private property.
- h. The conduit package shall be encased with a red concrete mix that consists of the following batch weights per cubic yard of concrete:

Cement (3.5 sacks)	329 lbs.
3/8" aggregate	1,618 lbs.
Sand	1,637 lbs.
Red oxide	7.5 lbs


- i. Concrete mix shall be delivered and poured no later than 1 1/2 hours from the time the concrete truck leaves the concrete plant. Any concrete delivered past this time limit will be rejected.
- j. In placing concrete around the conduit, adjust the delivery chute so the fall of concrete into the trench is minimal. Use a splash-board to divert the flow of concrete away from the trench sides to avoid dislodging soil and stones. When placing concrete, encase from one end of the duct bank toward the other end. Do not encase from each end of the duct bank toward the center.
- k. All conduit stubs shall be terminated with an approved type cap/plug.
- l. All temporary and permanent conduit terminations shall be sealed tightly during non-working hours.
- m. After sand and slurry backfill is completed, the contractor shall rod all conduits in the presence of a City of Burbank representative to ascertain that all conduits are clean and free. A conduit brush shall be pulled through the conduit first with a mandrel of approved size to follow. Any blocked conduit shall be cleared and repaired at the contractor's expense.

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- n. All conduit which is extended from existing stubs shall be brushed and mandrelled for the entire length. If any new conduit is blocked, conduit shall be cleared and repaired at the contractor's expense.
- o. A 1/4-inch polypropylene pull rope shall be installed in each conduit run and secured at both ends.
- p. Where applicable, precast manholes, switch pads and enclosures, as well as compatible hardware and grounding shall be installed by the contractor and must conform to all requirements called for on the City of Burbank drawings. The contractor shall adjust manhole covers and pads to appropriate grade.
- q. For most applications, the conduit sweeps at the riser pole shall be Schedule 80 PVC, with a minimum 48" radius bend for 4" conduits and a minimum 60" radius bend for 5" and 6" conduits. The contractor shall extend each conduit up the riser pole, 10 feet above the elbow couplings, also using Schedule 80 PVC. For details of this type of installation, refer to City of Burbank Drawing S-461.
- r. Utilizing hand tools or power tools to "chip", break, or remove concrete near existing electrical conduit that contains energized primary cable (2.4kV and above) is not allowed.

**6. SWITCH AND TRANSFORMER SLAB BOX INSTALLATION**

- a. Prior to any installation, the contractor will contact the BWP inspector at least 48 hours in advance at 818-238-3590.
- b. Slab-box for switch and transformer will be placed on a minimum of 6 inches of crushed rock. Excavation around it will be filled with slurry. The contractor will install the ground rods and grounding system while in the presence of the BWP inspector and to the satisfaction of the requirements detailed in the latest version of the National Electric Code, Articles 250-83 and 250-84.
- c. The contractor must install protective barrier posts around any transformer or switch pad installation that is subject to vehicular traffic or as deemed necessary by BWP. See BWP Drawing S-458.
- d. Pad-mount switches shall rest on a 10'-6" x 7' x 8" reinforced concrete pad with an 8'-6" x 5' vault below the pad. A 8' minimum working clearance is required directly in front of a switch pad; an 8' minimum working clearance is required directly in the back of the pad and a 4' minimum from both sides. Vertical clearance must be 14' minimum from the switch pad level. See BWP Drawing S-462. For the combined pad-mount switch/transformer pad required clearances and orientation see BWP drawings S-600 through S-606.

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- e. For three-phase transformer installations the contractor is required to install either a 6' x 8'-6"x 6" or 8' x 10' x 6" reinforced concrete pad as dictated by BWP with a 4' x 7' vault below the pad. A 5' minimum working clearance is required directly in front of the pad and 3' minimum from both sides and back. Vertical clearance must be 14' minimum from the transformer pad level. Details are shown on BWP Drawings S-330 and S-723.
- f. For single-phase transformer installations, the contractor must install a 4'-6" x 4' x 4" reinforced concrete pad with 2' x 3' pull box without a floor below the pad. The contractor must also install a 3' x 4' x 4" maintenance pad in front of the transformer pad. An 8' minimum working clearance is required directly in front of the pad and a 2' minimum from both sides and back. Vertical clearance must be 12' minimum from the transformer pad level. See BWP Drawing S-464.

7. PULL BOXES

- a. Pull boxes will be placed on a minimum of 6" of compacted rock or gravel. Excavation around the pull box will be filled with slurry. Prior to any installation, contractor will contact the BWP inspector at least 48 hours in advance.
- b. Pull box covers will be marked "Burbank Electric" and will have a pull box I.D. number permanently attached to the cover. The contractor will provide to the manufacturer at the time of order the I.D. number obtained from BWP Engineering and will allow at least three weeks lead time for delivery.
- c. Traffic rated pull box covers will be galvanized steel, slip resistant, and non-spring assisted. Non-traffic rated (parkway and sidewalk use) pull boxes will be spring assisted. Covers for pull boxes installed in parkways and sidewalks where there is a potential exposure to traffic will be traffic rated.
- d. Pull boxes will be installed per applicable specifications: S-460, S-615, S-670, S-726, and S-729. The appropriate specification number will be shown on the construction drawing.


8. MANHOLES

- a. Manholes will be placed on a minimum of 6" of compacted rock or sand. Excavation around the manhole will be filled with sand slurry. Prior to any installation, contractor will contact the BWP inspector at least 48 hours in advance.
- b. Manholes will be supplied per applicable specifications: S-730 and S-731. A detail drawing for each manhole will be provided by BWP Engineering.

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9. CONSTRUCTION METHODS

- a. Removals shall be performed per Subsection 300-1.3 of the Public Works Standard Specifications. If the pavement edges are not clean, straight lines in the opinion of the Public Works Inspector, the contractor shall saw cut the edges at no extra cost.
- b. Concrete curb, walks, gutters, cross gutters, driveways, and alley intersections shall be replaced in accordance with the standards of Burbank Public Works and per Subsection 303-5 of the Standard Specifications. The Public Works Inspector shall be notified at least one day in advance of the fieldwork requiring inspection at 818- 238-3955.
- c. Excavations shall be supported in the manner set forth in the rules, orders, and regulations prescribed by the Industrial Accident Commission of the State of California. Trenches and manhole pits shall be to the depths shown on drawing and shall be flat on the bottom. The trench width shall not be wider than the width of the concrete envelope plus one foot. Such extra excavation shall be filled to the correct subgrade with 3.5 sack concrete. When cutting pavement, the contractor shall avoid points and slivers. The minimum width of pavement remaining between trenches shall be five feet for asphalt and three feet for PCC.
- d. Backfill shall be one-sack sand slurry and shall be done in the following manner: on pavement, backfill to subgrade in accordance with Subsection 301-1 of the standard Specifications; on landscaped areas backfill to one foot below grade. Backfill around manholes shall be brought up uniformly on all sides and be done in such a manner that there is no damage to the structure.
- e. Shoring shall be in accordance with the latest revision of Title 8, Industrial Relations, of the California Administrative Code. The contractor shall assume responsibility for his work, making good any damage caused by improper supports or failure of shoring in any respect. Where trenches are four feet or more in depth, the contractor shall submit notification of work to be performed to the district office of the California Division of Industrial Safety with a copy for the engineer. If the contractor elects to use a shoring plan that differs from the State shoring system standards, the contractor shall submit a plan for approval to the City that is prepared by a registered civil engineer. Submission of such a plan does not allow the use of a shoring system less effective than the construction safety orders.
- f. Placement of the ducts shall be such that the horizontal deviations shall not exceed 1" from the control points as furnished by the City surveyors.
- g. Resurfacing of the trench shall be in accordance with Sections 306-1.5.1 and 306-1.5.2 of the Standard Specifications and City of Burbank Public Works Department "Asphaltic Concrete and PCC Street Repair Standards." Contact Public Works to obtain resurfacing requirements. Generally, permanent paving shall be the same type as existing and same thickness plus one additional inch. Temporary resurfacing shall be installed and maintained

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for at least 14 days but no longer than 30 days before permanent resurfacing. The Public Works Inspector shall be notified at least one day prior to start of permanent resurfacing at 818-238-3955.

10. WARRANTY OF RESURFACING

By acceptance of this contract, the contractor warrants backfill, compaction and pavement for a period of five years from the date of completion. If, in the judgement of the Public Works Director of the City of Burbank, any resurfacing fails due to defects in workmanship of the backfill, compaction or paving during that five-year period, the contractor shall repair such defects and any subsequent damage and shall install new pavement, all at the contractor's expense and without cost to the City. Such repair must be made to the satisfaction of the Public Works Director.


11. PERMITS

The contractor shall be responsible for securing all permits required and for obtaining a business tax registration from the City of Burbank Building Division. Call 818-238-5220.

12. INSPECTION

The work of the contractor shall at all times be subject to inspection by the City of Burbank to make certain the installation is in accordance with these specifications and with current practice for this type of installation. The presence or absence of an inspector does not in any way relieve the contractor of any of his obligations or liabilities under this contract. Negligence to obtain any required inspection may result in removal of substructure and reinstallation with proper inspection.

- a. High voltage and low voltage conduits will be inspected by the BWP inspector. Call BWP at 818-238-3590 to discuss BWP requirements and to schedule inspection.
- b. Low voltage conduits will be inspected by the BWP inspector up to the service entrance pull section.
- c. Building Division will be responsible for:
  - Structural inspection inside the building and compliance with the Building Code (concrete encasements, fire walls, support of the conduit package, etc.)
  - Inspection of conduits beyond the underground pull section. Call the Building Division at 818-238-5220 to schedule inspection.
- d. Public Works will inspect pavement resurfacing. Call Public Works at 818-238-3955 to schedule inspection.

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13. QUALIFICATIONS AND SUPERVISION

The contractor must have experience in underground electric conduit work. In the case of work performed in the public right-of-way, the contractor must have sufficient experience in performing such work. The contractor may be required or should be able to provide appropriate references and documentation. The contractor or his authorized representative, who must be technically competent to supervise and direct the progress of work, shall be in personal attendance during its performance, and such representative shall be authorized to act for the contractor in all matters relating to the work.

14. ENVIRONMENTAL COMPLIANCE AND CLEANUP

The contractor shall not discharge or permit to be discharged to any street, channel, river, storm drain, or any appurtenances thereof, any non-rain water or other fluid substance from the project or from operations pertaining to the project site without first securing a valid National Pollutant Discharge Elimination System (NPDES) permit unless the discharge is specifically listed as exempt or conditionally exempt in the current list issued by the Regional Water Quality Control Board, Los Angeles Region. In such case, the Contractor shall implement all necessary Best Management Practices (BMPs) to ensure that any conditionally exempt discharge meets all current requirements of the Regional Water Quality Control Board and the City of Burbank. Furthermore, he shall at all times keep the premises free from accumulation of waste material or rubbish caused by his employees during the performance of work, and upon its completion, shall remove all his rubbish, tools, shoring, and surplus materials from and about the work area, leaving the site "broom clean."

15. TRAFFIC CONTROL

Traffic safety is of primary importance. Traffic control shall be as required by the City of Burbank Traffic Engineer at 818-238-3965, in accordance with Subsection 7-10 of the Standard Specifications and the latest work area traffic control handbook. To ensure public safety, the Traffic Engineer may at any time order changes in traffic control. The contractor will immediately comply with the Traffic Engineer requirements. For large scale projects, Public Works will require an engineered traffic control plan. The contractor will need to submit the plan before an excavation permit can be pulled from the Public Works Department and before the pre-construction meeting.

16. RECORDS

The contractor will provide as-builds marked clearly on the construction drawing, showing all necessary dimensions including actual cover and location of all crossing utilities exposed.

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