100
GENERAL

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N New Standard
R Redrawn Standard
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SECTION 100

GENERAL INFORMATION

1. Purpose of Construction Standards

   The purpose of Clark Public Utilities Construction Standards is to promote safe, economical, and uniform practices in the design, construction, and maintenance of the Utilities' electrical systems. The Utilities' plant and efficiency are expected to benefit from the use of these standards.

   The Construction Standards have been incorporated into the Rapid Information On-line (RIO) Work Order Management System. RIO provides a common interface between Engineering, Accounting, Stores, and Construction. The RIO material lists are generated from coded inputs, various Accounting categories are credited, stores inventories are checked, and labor and material charges are accumulated.

2. Scope of Construction Standards

   The CPU Construction Standards provide information applicable to design and construction of the CPU transmission and distribution systems.

   CPU Standards are intended to cover the majority of typical installations. They do not cover every possible situation or "one of a kind" installations. The lack of a Standard should not pose a problem if good engineering judgment and construction practices are followed.

3. Electrical Codes

   All design and construction practices shall meet the provisions of the Washington State Electrical Construction Code and the National Electrical Safety Code in so far as they are applicable. Nothing in these Standards is intended to be interpreted so as to conflict with the regulations of the state of Washington or any other regulatory bodies having jurisdiction.

4. Use of Standards

   - Standards shall be adhered to on new construction.

   - Standards shall be compiled with on rebuilding or maintenance. When such practice is impractical, or not economically feasible, changes or additions to the standard practice will be permissible.

   - Each Department and each individual is expected to become familiar with those Standards pertaining to their work and to adhere to those Standards. It is not the intent of standardization to, in any way, impede progress in adopting new ideas in materials, methods, or designs. On the contrary, it is expected that standardization will stimulate the use of such ideas, and through a program of trial use, incorporate into our Standards those items which improve design and construction practices.

5. Deviation from Standards

When deviations from the CPU Standards are deemed necessary, the individual responsible for the deviations must provide good reasons and make the changes only with the approval of their supervisor. The Standards Engineer shall be notified of any deviations from the Standards that are expected to be repetitive.

While it is desirable that Standards be adhered to as much as possible, it is also recognized that items of material and methods of assembly andconstruction become obsolete because of price changes, improvements, and developments of new materials. New and/or better methods of performing work are constantly being derived.

So that the CPU Standards can be updates to take advantage of new and improved materials and methods, employees are urged to submit suggestions for improvements. Construction Standards, Request for Change form is provided at the end of this Section 100 to make it easy to submit suggestions. The form should be duplicated, completed, and submitted to the Standards Engineer. Good reasons in support of the proposed change or new Standard should be provided when submitting the suggestion. As a courtesy to the submitter, the Standards Committee will review all suggestions and provide a response to the individual originally providing the suggestion.

6. Responsibility

Responsibility for adherence to Standards rests with the individual directly in charge of the work.

Construction Standards books are the property of CPU and are to be cared for by the person to whom assigned. Updated editions will be issued periodically.

7. Cooperation

All Section and Department heads, as well as employees who use the Standards in their work, are expected to give the standards program full cooperation and assistance and to help resolve problems that arise.

8. Feedback

The Constructions Standards program is flexible. Users re encouraged to use the previously mentioned Construction Standards, Request for Change form to submit suggestions for improvements. Alternative methods of submitting suggestions are to contact the Standards Engineer directly or to express your ideas to a Standards Committee representative.

STANDARDS COMMITTEE

PURPOSE

The purpose of Standards is to provide a consistent basis for design and construction.

The purpose of a Standards Committee is to provide a forum for the exchange of information between all affected departments and to provide a means of approval of utility construction and materials.

It is recognized that there may be diverse opinions among experienced personnel. It is important for the smooth operation of the utility that there be a general or standard means of constructing repetitive installations. It is also important that any change to existing standards be reviewed by all affected departments to ensure that solutions for one group do not adversely impact another group. The overall efficiency and reliability of the utility should be considered before the adoption or change of any standard.

The following groups should be included in a Standards Committee:

1. Operations - Responsible for the Work Practices and Installation of the Standard.

2. Engineering - Responsible for the Design to include strength, reliability, economic impact, and existing construction codes.

3. Purchasing - Responsible for costing and availability of materials.

4. Stores - Responsible for packaging and handling of materials. Stores is also the first-line contact for inspection of received material and samples of failed material.

5. Drafting - Responsible for Drawings and records of the Standards.

6. Construction Services - Responsible for communication between the utility, contractors, and customers.

STANDARDS COMMITTEE

OPERATING GUIDELINES

1. The Committee will consider any proposed Construction Standard presented and will determine by majority vote whether to proceed with development f the Standard.

2. The Standards Engineer will develop a proposed Standard after consulting with any affected group.

3. The proposed Standard will be reviewed by all groups before final adoption.

4. Engineering will identify a job site for evaluation of the proposed Standard.

5. The Standards Engineer will work with Purchasing to obtain any new material for the Proposed Standard.

6. The proposed Standard will be constructed and evaluated by Operations.

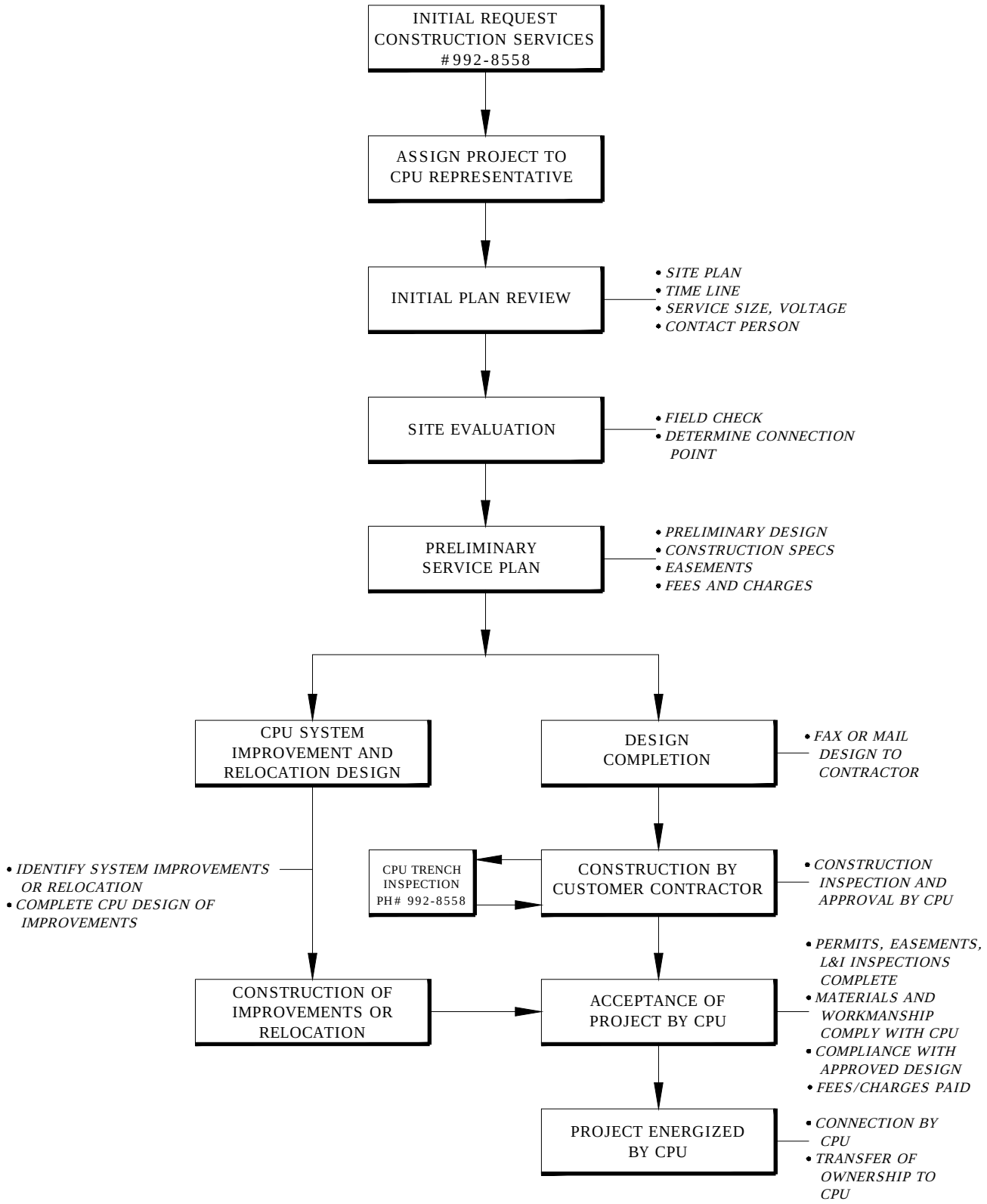
7. The result of the above steps will be reviewed by the Standards Engineer and presented to the Committee for adoption, rejection, or modification.

8. Drafting will develop the final Standard drawing and distribute copies as needed.

9. A Standard may be proposed by any Employee using the "Construction Standards - Request for Change Form".

10. Minutes of the Committee meeting will reflect the action taken and the philosophies behind any Standard.

RESIDENTIAL, COMMERCIAL AND INDUSTRIAL NEW CONSTRUCTION PROCESS



Clark Public Utilities

CONSTRUCTION STANDARDS

RESIDENTIAL COMMERCIAL AND INDUSTRIAL NEW CONSTRUCTION PROCESS

REVISIONS			
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CLARK PUBLIC UTILITIES
RESIDENTIAL, COMMERCIAL AND INDUSTRIAL

GENERAL REQUIREMENTS

FEBRUARY 2005

- References to developer apply to individual customers, developers or developer's contractor.
- The developer will supply labor and material to install underground primary electrical systems
- The developer will supply labor and material to install underground secondary electrical systems. CPU will provide labor and material to install overhead secondary electrical systems at the developer's expense.
- All facilities shall be installed with reference to final grade. Burial depths in excess of 48 inches shall be subject to CPU approval.
- Only CPU approved materials and supplies may be installed by the contractor. CPU will provide lists of the approved materials and associated vendor locations.
- The contractor shall guarantee the installation for a period of one year from the date of energization against defects in workmanship.
- All bolts used for electrical connections shall be Stainless Steel, Grade 5, USA manufactured and shall be applied with Belleville style washers.
- All street and road crossings shall be in Schedule 40 PVC electrical conduit or CPU approved polyethylene of equal strength.
- All conduit sections are to be fastened with glue designed for the conduit material which is installed.
- Conduit sweeps shall be minimum 24" radius for secondary conductors and minimum 36" radius for primary.
- Unused or future conduits shall have locate discs installed at the ends, be plumbed above grade with 90 degree elbows that are not glued and capped with primary enclosure per CPU specification ULE – Loop Enclosure.
- Sufficient select backfill shall be placed to prevent crushing of conduits due to trucks or other heavy equipment. CPU may select backfill at the time of construction.
- Street crossings shall be buried at a minimum depth of 42"below final grade and a maximum of 48".
- Conduit systems are to be continuous. Developer's contractor shall contact CPU at (360) 992-8839 to open padmounted equipment to plumb conduits

into equipment. CPU requires two (2) working days of notification to open padmounted equipment. Contractor to have sufficient manpower on site to plumb conduit into equipment.

- Primary conduits shall be buried per CPU standard UA1 – Basic Trench Requirements.
- Secondary conduits shall be buried per CPU standard UA3 – Secondary Trench Requirements and Diagram.
- Primary and secondary cables are to be installed without splices
- All primary and secondary cable shall be identified per CPU standard UID2 – Underground Conductor Identification Tags.
- Transformers shall be installed on foundations that are adequate to prevent movement during their first year of operation. When setup is complete backfill with a minimum of 1-1/2 yards of 1" minus crushed rock under transformer pads. 5/8" crushed rock is preferred.
- Transformers and trench routes shall be oriented for minimum obstruction for future equipment operation, access and maintenance. Transformers shall be placed with the doors/door facing the access roadway.
- If a transformer must be located where it is susceptible to vehicular contact, protective barriers shall be installed per CPU specification UTP9 – Typical Barrier Installation To Protect Padmounted Equipment.
- Transformers installed on sloping terrain shall be protected from erosion and earth movement with side hill barriers per CPU specification HB1 – Hillside Barrier.
- All cable shall be installed in conduit per CPU standard UC1 – Conduit Requirements.
- Trench routes are to follow parallel with roadways unless alternate routes have been approved by CPU.
- On single residences and subdivisions, CPU will determine at the time of trench inspection the need for select backfill or conduit.

SUBDIVISIONS

- Developer is responsible to have an approved design firm engineer the new underground facilities to serve the development.
- Transformers and pedestals shall be installed on lot lines
- All street and road crossings shall be at property lines extended to the edges of the R.O.W.
- Bottom of transformer pads shall be installed at an elevation of 4" above the top of the curb.

MULTI FAMILY, CONDOMINIUM AND MOBILE HOME PARKS

- Developer is responsible to have an approved design firm engineer the new underground facilities to serve the development.
- All primary conductors shall be installed in 2” Schedule 40 PVC
- All secondary conductors shall be installed in 3” schedule 40 PVC
- Developer to provide and maintain services from CPU pedestals and secondary junction boxes to individual units.
- Developer to permanently mark each meter socket and service panel with building and unit number with 1” x 1” phenolic tags. Felt markers are not acceptable.

COMMERCIAL AND INDUSTRIAL

- All primary conductors shall be in 2” or 4” Schedule 40 PVC. Project engineer shall indicate size of conduit on design.
- Developer shall extend the trench to the base of the utility pole and coil sufficient cable at the base of the pole. CPU will provide and install the riser incorporating coiled cable at the developer’s expense. Splices are not permitted .
- Developer shall install conduit system and primary cable into padmounted transformer, junction box or switch. CPU will terminate the primary cable at the source at the developer’s expense.