TOWN OF FALMOUTH, MAINE

CONTRACT AND SPECIFICATIONS

for

ROUTE ONE SOUTH UTILITY PROJECT

Prepared by:
STANTEC
482 Payne Road
Scarborough Maine 04074

January 2018
# ROUTE ONE SOUTH UTILITIES PROJECT
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NOTICE TO CONTRACTORS
Route One South Utility Project
Town of Falmouth, Maine

1. Receipt of Bids
   The Town of Falmouth will accept sealed bids at the offices of Stantec, 482 Payne Road, Scarborough, Maine 04074-8928 until 1pm, prevailing local time, on February 5, 2018 at which time the bids will be opened and read aloud.

   All questions shall be directed in writing ONLY to the Engineer’s offices of Stantec, 482 Payne Road, Scarborough, Maine 04074-8928 and be received at least three business days prior to the bid opening date (Fax 207-883-3376 or email bill.moore@stantec.com). Questions received after this time will not be addressed. Responses from the Town that substantially alter this bid will be issued in the form of a written addendum to all plan holders registered in the Engineer’s office. Written addendums, if issued, will be either sent via certified mail or email (return receipt requested) no later than two (2) days prior to the date for receiving bids. Oral explanations or interpretations given before the award of contract shall not be binding.

   All proposals shall be submitted on the attached form and are to remain open for sixty (60) days after their opening. Late bids, bids without the required amount or form of surety, bids not signed and facsimile bids will not be accepted.

2. Project
   In general, the project involves utility infrastructure improvements along an approximately 1,000 foot long stretch of the Route 1 corridor, extending north from 168 Route 1 to 182 Route 1.

   Base Bid – Installation of a complete underground duct bank and manhole system for relocation of all existing overhead utility services (electrical, telephone and communications) and associated parking lot and landscaping restoration. It is noted that empty conduits were constructed underneath Route 1 for these services during the original construction completed in 2015.
3. **Bid Bond**
   A certified check or bank draft payable to the Town of Falmouth or a satisfactory Bid Bond executed by the Bidder and a Surety company in the amount equal to five percent (5%) of the Base Bid Amount shall be submitted with each Bid.

4. **Award of Contract**
   The Owner reserves the right to reject any or all bids, negotiate with the successful bidder for a reduced scope of work, to waive any irregularities in the bidding process and award the contract to the lowest responsible bidder on the basis of the Base Bid Schedule. The successful bidder will be required to furnish the necessary Performance and Payment Bonds and Insurance Certificates. Bonds shall be in the amount of 100 percent of the total contract bid amount (including base bid and any bid alternates selected by the Town).

5. **Project Completion**
   The project must be completed within 111 consecutive calendar days from signing of the date in the Notice to Proceed.

6. **Pre-Bid Meeting**
   A mandatory pre-bid meeting will be held January 18, 2018 at 1pm in the Engineer’s offices of Stantec, 482 Payne Road, Scarborough, Maine 04074-8928.

7. **Plan Availability**
   The contract documents may be viewed at the following locations:
   - Department of Public Works Office, 101 Woods Road, Falmouth, ME 04105
   - Stantec, 482 Payne Road, Scarborough, Maine 04074-8928

   Copies of the Contract Documents may be obtained only at the office of Stantec, 482 Payne Road, Scarborough, Maine 04074-8928 on or after January 7th, upon payment of $130.00, non-refundable, for each set picked up. **Checks should be made payable to Stantec.**

   **Each prospective bidder will be required to obtain from the Engineer a complete copy of the Contract Documents. Partial sets will not be issued.**
PROPOSAL

Proposal of

Name

Address

The name and address shown on the above lines shall be the official name and address of the person, partnership or corporation submitting this bid and shall agree with the "Signature of Bidder" in the case of an individual; the "Name of Firm or Partnership" in the case of a firm or partnership; the "Name of Bidder" in case of a corporation.

To the Town of Falmouth (hereinafter called the “OWNER”).

The undersigned having carefully examined the site of the work; the Plans; Standard Specifications, including all current amendments or revisions there of; the Supplemental Specification, Special Provisions; Contract Agreement and Contract Bonds contained herein for the Route One Infrastructure Project on which proposals will be received until the time specified in the “Notice to Contractors”, this work being situated at the location described in the “Notice to Contractors” and in case of award, do(es) hereby propose and offer to enter into a contract to supply all the materials, tools, equipment and labor required to perform and construct the whole of the work in strict accordance with the terms and conditions of this contract at the unit prices stated in the following “Bid Forms” submitted by the undersigned.

This Proposal may be accepted by the Owner at any time within sixty (60) calendar days after opening of the bids.

(Fill out prices in ink, in writing and in figures; in case of a discrepancy between prices in writing and prices in figures, the writing shall govern. In case of discrepancy between total of items and total of bid amount stated, total of items shall govern. Use the pages in this document when submitting proposal and submit contract document intact.)

Bidder acknowledges receipt of the following ADDENDUM:

<table>
<thead>
<tr>
<th>Addendum Number</th>
<th>Addendum Date</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
The undersigned also agrees as follows:

FIRST: To do any extra work, not covered by the above schedule of items, which may be ordered, and to accept as full compensation therefore such prices as may be agreed upon in writing by the Engineer and the Contractor; or in case no agreement is made, to accept as full compensation the amount determined upon a "force account" basis as provided in the State of Maine Department of Transportation Standard Specifications, November 2014 Edition.

SECOND: To begin work on the date specified in the Engineer's "Notice to Commence Work" as stated in the Agreement and the Notice to Proceed and to prosecute said work in such a manner as to complete it within a period of one hundred and eleven (111) consecutive calendar days or within the time limits given in the Special Provisions. Further, that monies will be deducted as liquidated damages at the rate specified in the Agreement for each day that the work shall remain uncompleted after the time herein specified for completion of the work.

THIRD: That this offer is to continue open to acceptance until the formal contract is executed by the successful bidder of this work, and the Owner may at any time without notice accept this proposal whether any other proposal has previously been accepted or not. Provided, however, that the Owner will accept, in writing, one of the proposals made, or reject all proposals made, within sixty (60) calendar days after the date of opening of the proposals.

The undersigned as Bidder, declares that the only persons or parties interested in this Proposal are those named herein; that the bidder is not financially interested in, or otherwise affiliated in a business way with any other bidder on this contract; and that this Proposal is made without collusion with any other person, firm or corporation.

The undersigned declares that any person(s) employed by the Owner, who has direct or indirect personal or financial interest in this proposal or in any portion of the profits which may be derived therefrom, has been identified and the interest disclosed by separate attachment. (Please include in your disclosure any interest which you know of. An example of a direct interest would be a Town employee who would be paid to perform services under this proposal. An example of an indirect interest would be a Town employee who is related to any officers, employees, principal or shareholders of your firm or you.) If in doubt as to status or interest, please disclose to the extent known.

Respectfully submitted this _____________ day of _______________________, 20 ______

IF AN INDIVIDUAL, SIGN HERE

Signature of Bidder ________________________________________________________________

Address ________________________________________________________________

______________________________________________________________

(Signatures for a Firm, Partnership or Corporation on next page.)
IF A FIRM OR PARTNERSHIP, SIGN HERE

Signature of Bidder ____________________________________________

Name of Firm or Partnership ______________________________________

Business Address ______________________________________________

______________________________________________________________

Telephone Number_________ Fax Number ________________

Soc. Sec. No. or Tax I.D. Number ________________________________

Names and Addresses of Members of Firm or Partnership:

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

IF A CORPORATION, SIGN HERE

Name of Bidder _________________________________________________

Authorized Signature ____________________________________________

(name) (title)

Business Address ______________________________________________

_________________________________________________________________

Telephone Number_________ Fax Number ________________

Soc. Sec. No. or Tax I.D. Number ________________________________

Incorporated under the Laws of the State of ____________________________

Names and Addresses of Officers of the Corporation:

President _______________________________________________________

Secretary _________________________________________________________

Treasurer _________________________________________________________

______________________________________________________________ ss

Before me, personally appeared __________________________ and acknowledged that
the signature to the preceding bid is his/her signature in his/her official capacity.

Date: ____________________________  _______________________________________

Notary Public - Signature and Seal

D-3
ALL CORPORATIONS MUST SIGN THIS FORM AND SUBMIT WITH THE BID PROPOSAL

(Insert copy of that part of the records of the corporation wherein authority is given to the officer of that corporation to sign this bid on behalf of the corporation.)

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

_________________________ (date)

The above is a true copy of the records of the Corporation, which records are in my legal custody.

__________________________________________________________

Officer having custody of the records

__________________________________________________________ ss

Before me appeared, __________________________________________, ________________

________________________________________ of the ________________________________ Corporation, and made

oath that the above statement is true.

__________________________________________________________

Notary Public - Signature and Seal
NOTICE

(This Must Be Filled Out)

The full names and residences of all persons interested in this bid as principals are as follows:
(In case of Corporation, include and identify President, Treasurer, Manager)

________________________________________  ________________________________

________________________________________  ________________________________

________________________________________  ________________________________
ALL CONTRACTORS SHALL FILL IN THE FOLLOWING INFORMATION
BEFORE SUBMITTING BID

<table>
<thead>
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<th>Name and Address of Supplier</th>
<th>Products to be Supplied</th>
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<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
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<td></td>
</tr>
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<td>7</td>
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</table>

<table>
<thead>
<tr>
<th>Name and Address of Contractor</th>
<th>Service or Trades to be Supplied</th>
<th>Anticipated $ Amount</th>
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<td>1</td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
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<tr>
<td>7</td>
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</tbody>
</table>
Note: This proposal shall be filled in by the Bidders, with the Unit Prices written in words and numerals and the extensions shall be made by him. For complete information concerning these items, see the Specifications.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Quantity</th>
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<th>Unit</th>
<th>Amount</th>
<th>Quantity</th>
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<td>700</td>
<td>Hot Bituminous Pavement Restoration (Private Driveways, Etc.)</td>
<td>S.Y.</td>
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<td>700</td>
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<td>Transplanting Shrub</td>
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<td>1</td>
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<td></td>
<td></td>
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<tr>
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<td>10</td>
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<td>Each</td>
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<td>10</td>
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<td></td>
<td></td>
</tr>
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<td>Each</td>
<td></td>
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<tr>
<td>670.197</td>
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<td>L.F.</td>
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<td>#250 KCMIL Copper Wire</td>
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<td></td>
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<td>24&quot;x24&quot;x18&quot; Handhole</td>
<td>Each</td>
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<td>CCTV 24&quot;x36&quot;x24&quot; Handhole</td>
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<tr>
<td>683.156</td>
<td>6</td>
<td>Comm. 2&quot; Riser Drop</td>
<td>Each</td>
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<td></td>
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<td>The Unit Price of $</td>
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<tr>
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<td>4</td>
<td>Comm. 32-1/4&quot;x19-1/4&quot;x18&quot; Handhole</td>
<td>Each</td>
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<td></td>
<td>The Unit Price of $</td>
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TOTAL AMOUNT OF BASE BID:

(AMOUNT IN WORDS)

The Owner reserves the right to reject any or all bids, negotiate with the successful bidder for a reduced scope of work, to waive any irregularities in the bidding process and award the contract to the lowest responsible bidder on the basis of the Base Bid Schedule with or without consideration of any Bid Alternates.
1. **Defined Terms**

Terms used in these Instructions to Bidders which are defined in the General Conditions of the Construction Contract, have the meanings assigned to them in the General Conditions. The term "Successful Bidder" means the lowest, qualified, responsible Bidder to whom Owner on the basis of Owner's evaluation, as hereinafter provided, makes an award. The term "Bidding Documents" includes the Notice to Contractors, Instructions to Bidders, the Proposal Bid Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

2. **Copies of Bidding Documents**

Complete sets of the Bidding Documents may be obtained from the Engineer.

Complete sets of bidding Documents shall be used in preparing bids; neither Owner nor Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of bidding Documents.

Owner and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining bids on the work and do not confer a license or grant for any other use.

3. **Qualifications of Bidders**

To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit within five days of Owner's request written evidence, such as financial data, previous experience, present commitments and other such data as may be requested by the Owner. Each bid must contain evidence of Bidder's qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the contract.

4. **Examination of Contract Documents and Site**

It is the responsibility of each Bidder before submitting a Bid, to:

(a) examine the Contract Documents thoroughly;
(b) visit the site to become familiar with local conditions that may in any manner affect cost, progress, performance or furnishing of the work;
(c) consider federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress, performance or furnishing of the Work;
(d) study and carefully correlate Bidder's observations with the Contract Documents and
(e) notify Engineer of all conflicts, errors or discrepancies in the Contract Documents.

Before submitting a Bid, each Bidder will be responsible to make or obtain such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance or furnishing of the work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.
On request in advance, Owner will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up, and restore the site to its former conditions upon completion of such explorations.

The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage materials and equipment are to be provided by Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.

The submission of a bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the work.

5. Interpretations and Addenda

No interpretation of the meaning of the plans, specifications, or other Contract Documents will be made to any bidder orally. All questions shall be directed in writing ONLY to the Engineer’s offices of Stantec, 482 Payne Road, Scarborough, Maine 04074-8928 and be received at least three business days prior to the bid opening date (Fax 207-883-3376 or email bill.moore@stantec.com). Questions received after this time will not be addressed. Responses from the Town that substantially alter this bid will be issued in the form of a written addendum to all plan holders registered in the Engineer’s office. Written addendums, if issued, will be either sent via certified mail or email (return receipt requested) no later than two (2) days prior to the date for receiving bids. Oral explanations or interpretations given before the award of contract shall not be binding. Failure of any bidder to receive any such addendum or interpretation shall not relieve any bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

6. Bid Security

Each bid must be accompanied by Bid security made payable to Owner in an amount of five percent of the Bidder's maximum Bid price and in the form of a certified or bank check or a bid bond (on form attached) issued by a surety meeting the requirements of Paragraph 5.1 of the General Conditions.

The Bid security of the Successful bidder will be retained until such Bidder has executed the Agreement and furnished the required contract security, whereupon the Bid security will be returned. If the Successful Bidder fails to execute the Agreement and furnish the required contract security within ten days after the Notice of Award, Owner may annul the Notice of Award and the bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the Effective Date of the Agreement or the thirty-first day after the Bid opening, whereupon bid security furnished by such Bidders will be returned. Bid security with Bids which are not competitive will be returned within seven days after the Bid opening.

7. Contract Time
The numbers of days within which, or the dates by which, the work is to be substantially completed and also completed and ready for final payment (the Contract Time) are set forth in the Bid Form and the Agreement.

8. **Liquidated Damages**

Provisions for liquidated damages are set forth in the Agreement.

9. **Substitute or "Or-Equal" Items**

The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute “or-equal” items of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement. The procedure for submission of any application by Contractor and consideration by Engineer is set forth in paragraph 6.7 of the General Conditions and may be supplemented in the General Requirements.

10. **Subcontractors, Suppliers and Others**

The apparent Successful Bidder, and any other Bidder so requested, will within five (5) days after the day of the Bid opening submit to Owner a list of all Subcontractors and other persons and organizations who are to furnish the principal items of material and equipment. Such list shall be accompanied by an experience statement with pertinent information as to similar projects and other evidence of qualification for each such Subcontractor, person and organization. If Owner or Engineer after due investigation has reasonable objection to any proposed Subcontractor, other person or organization, either may before giving the Notice of Award request the apparent Successful bidder to submit an acceptable substitute without an increase in Bid price. If the apparent Successful Bidder declines to make any such substitution, the contract may not be awarded to such Bidder, but his declining to make any substitution will not constitute grounds for sacrificing his Bid Security. Any Subcontractor, other person or organization so listed and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer.

No Contractor shall be required to employ any Subcontractor, other person or organization against whom he has reasonable objection.

11. **Bid Form**

The Bid Form is attached hereto; additional copies may be obtained from Engineer.

All blanks on the Bid Form must be completed in ink or by typewriter.

Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
Bids by partnerships must be executed in the partnership name and signed by a general partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

All names must be typed or printed below the signature.

The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

The address and telephone number for communications regarding the Bid must be shown.

12. Submission of Bids

Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be included in an opaque sealed envelope, marked with the Project Title and name and address of the Bidder and accompanied by the Bid Security and other required documents. If the Bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

13. Modification and Withdrawal of Bids

Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

14. Opening of Bids

Bids will be opened and read aloud publicly. An abstract of the amounts of the base Bids and major alternative (if any) will be made available to Bidders after the opening of Bids.

15. Bids to Remain Subject to Acceptance

All bids shall remain subject to acceptance for sixty (60) days after the day of the Bid opening, but Owner may, in its sole discretion, release any Bid and return the Bid Security prior to that date.

16. Award of Contract

Owner reserves the right to reject any and all Bids, to waive any and all informalities not involving price, time or changes in the Work and to negotiate contract terms with the Successful Bidder (not applicable to FHWA Contracts), and the right to disregard all nonconforming, nonresponsive, unbalanced or conditional Bids. Also, Owner reserves the right to reject the bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner. Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct SUM.

In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternates and unit prices if requested in the Bid
Forms. The Basis for Award of the contract will be to the lowest responsible bidder on the basis of the Base Bid Schedule with or without consideration of any Bid Alternates. It is the Owner's intent to accept Bid Alternates (if any are accepted) in the order in which they are listed in the Bid Form, but Owner may accept them in any order or combination.

Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations as may be required.

Owner may conduct such investigations as he deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time. Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

If the Contract is to be awarded, it will be awarded to the lowest bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.

If the Contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within sixty (60) days after the day of the Bid opening.

17. Contract Security

The Successful Bidder shall furnish a Performance Bond and a Payment Bond, each in the amount of 100% of the contract price with a corporate surety approved by the Owner. When the Successful Bidder delivers the executed Agreement to the Owner it will be accompanied by the required Contract Security. A maintenance bond equal to 5% of the value of the completed contract will be required prior to final payment. The Owner reserves the right to change the form of the performance and payment bonds to meet local requirements.

Attorneys-in-fact who sign Bid Bonds or Payment Bonds and Performance Bonds must file with each bond a certified and effective dated copy of their power of attorney.

18. Insurances

Contractors should obtain such construction insurance (i.e., fire and extended coverage, workman's compensation, public liability and property damage, and "all risk" builders insurance) as is customary and appropriate. Minimum insurances for which certificates will be required are defined in the general conditions of the contract.

19. Signing of Agreement / Notice to Proceed

When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by at least three unsigned counterparts of the Agreement and all other Contract Documents. Within ten (10) days thereafter Contractor shall sign and deliver at least three counterparts of the Agreement to Owner with all other Contract Documents attached. Within fifteen (15) days thereafter Owner will deliver one fully signed counterpart to Contractor. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.
Should the Owner not execute the Agreement within such period, the Bidder may by written notice withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice of the Owner.

The Notice to Proceed shall be issued within 10 days of the execution of the Agreement by the Owner. Should there be reasons why the Notice to Proceed cannot be issued with such period, the time may be extended by mutual agreement between the Owner and Contractor. If the Notice to Proceed has not been issued within the 10-day period or within the period mutually agreed upon, the Contractor may terminate the Agreement without further liability on the part of either party.

20. Laws and Regulations

The Bidders attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdictions over construction of the project shall apply to the contract throughout and they will be deemed to be included in the contract the same as though herein written out in full.

21. Excessive Unit Quantities

The Bidder is advised that the approximate quantities given in the Bid Form represent the Engineer's pre-construction estimate for the quantities anticipated under this Contract. In the event that the actual quantities encountered in the field exceed these stated on the Bid Form by more than a factor of 1.15, then the Owner reserves the right to negotiate the unit price with the Contractor to achieve a fair and reasonable unit price.

22. Regard for Private Property

Unless specific easements are obtained, the Contractor shall not enter any private property without the written permission of the property owner. If said permission is granted, the Contractor shall perform the work in a professional manner and leave the property in the state in which it was found. In no circumstances shall the contractor hold the Owner or Engineer liable for any damage to private property. The limits of this contract are the right-of-way lines as shown on the Contract Drawings.

Abutting property owners shall be notified by the Contractor sufficiently in advance of any construction activity affecting vehicular/pedestrian access to the private property as well as any changes/modifications to points of access to the property.

23. Disposal of Excess Materials

Contractors should be aware that often residents or land owners in the project area may desire the fill material to be generated from the project. The Owner has no objection to the disposal of excess materials in this manner, but the contractor should be aware that it is done so at their risk. All relevant permits, if any, for the disposal of fill are the responsibility of the contractor. The Owner assumes no risk in this process.
24. **Traffic Regulation**

The Contractor shall be responsible for the maintenance and protection of all vehicular and pedestrian traffic at all times during construction and shall erect suitable warning signs, flashers, barriers or temporary lighting devices of sufficient size and number to afford protection to the traveling public. The Contractor shall be held responsible for all damage to the work due to any failure of the warning devices to properly protect the work from the traffic, pedestrians or other causes.

Guidelines for the construction and erection of barricades, lighting devices, warning signs, etc. may be found in the most recent edition of “Manual on Uniform Traffic Control Devices for Streets and Highways” published by the Department of Transportation of the Federal Highway Administration.

In general, all roadways shall be opened to two-way traffic at all times during the hours of 6AM to 9PM and shall abide by MaineDOT traffic regulation standards; lane closures between 9PM and 6AM shall be at the discretion of the Town. The Contractor is responsible for providing flaggers and traffic control as needed to maintain a safe working environment. The Contractor shall be responsible for preparing and submitting a traffic control plan to the Town prior to the start of construction. As always, emergency vehicles shall be given the necessary right-of-way or assistance in negotiating the construction area.

In addition, the Contractor shall be responsible for maintaining vehicular and pedestrian access throughout the Route One corridor and all abutting business and side streets at all times throughout the construction process.

25. **Coordination with Others**

The Contractor shall be required to coordinate all activities with the abutting property owners to inform each property owner of upcoming planned construction activities. Furthermore, the Contractor shall be responsible for coordinating the any work on private property including any activities that impact or restrict vehicular and pedestrian access to the site with the property owner. It is anticipated that work on private property may be required to be done after normal business hours to minimize impacts to these businesses. The Contractor shall take this into account in the preparation of their bid proposal.

The Contractor shall also be required to coordinate the installation of the underground duct bank systems with each of the franchise utilities in an effort to avoid any unnecessary delays in to the performance of the franchise utilities installation and activation of the underground systems.

26. **Observance of Permits**

Reserved

27. **Bid Bond**

A certified check or bank draft payable to the OWNER or a satisfactory Bid Bond executed by the Bidder and a Surety Company in the amount equal to five percent (5%) of the Bid shall be submitted with each bid. No bid may be withdrawn for at least 60 days after receipt of bids unless released by the OWNER.
28. **Minority and Woman Business Enterprises Requirements**

Each bidder shall take special notice of the Guidance for use of Minority and Woman Business Enterprises in sub-agreements. Failure to complete the requirements of this program may result in finding that the bidder is non-responsible and therefore, not entitled to award of this contract. Complete requirements are detailed in the Bid Documents.

29. **Nondiscrimination in Employment and Labor Standards.**

Bidders on this work will be required to comply with the President's Executive Order No. 11246 and amendments or supplements to that Order. The requirements for Bidders and Contractors under this Order are explained in the Information for Bidders.

30. **Federal Requirements**


The Contractor must comply with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h), section 508 of the Clean Water Act (33 U.S.C. 1368), and Executive Order 11738.

31. **Disclaimer**

Any contract awarded under this Advertisement for Bids is expected to be funded in part by a State Revolving Loan and/or State Grant. Neither the State of Maine nor any of its departments, agencies, or employees is or will be a party to this Contract.

32. **Manufacturers Experience**

Wherever it may be written that an equipment manufacturer must have a specified period of experience with his product, equipment which does not meet the specified experience period can be considered if the equipment supplier or manufacturer is willing to provide a bond or cash deposit for the duration of the specified time period which will guarantee replacement of that equipment in the event of failure.

33. **Sales Tax**

This project is exempt from State Sales and Use or Excise Taxes to the extent allowed by law.

34. **Wage Rates**

State and Federal wage rates do not apply to this project.

35. **Safety and Health Regulations**
This project is subject to all the Safety and Health Regulations (CFR 29 Part 1926 and all subsequent amendments) as promulgated by the US. Department of Labor on June 24, 1974. Contractors are urged to become familiar with the requirements of these regulations.

The operations of the Contractor shall be governed by the construction safety rules and regulations as adopted by the Board of Construction Safety, Augusta, Maine, and in particular parts A to M.

All equipment used on the project must be maintained and operated so as to provide maximum safety for workers and the public. The Contractor will be required to have adequate exhaust silencers on all powered equipment in close proximity to residential structures.

This project is subject to all of the Safety and Health Regulations (CFR 29 Part 1926 and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974. Contractors are urged to make themselves familiar with the requirements of these regulations.

36. Occupancy

The Owner also reserves the right to occupy certain finished portions of the work before final acceptance. If such right is exercised, the owner will assume all responsibility for his damage to the structure, but assumption of such responsibility by the Owner in no way relieves the Contractor of his obligation as defined under the General Conditions.

37. Blasting

Blasting, if required, shall be performed only after approval has been given by the Owner for such operation.

All blasting shall be performed in accordance with all pertinent provisions of regulations adopted by the State of Maine. Blasting through the over burden will not be allowed.

The Contractor shall conduct a Pre-Blast Survey of all structures within the Blasting Area and provide the Engineer a written report of the Pre-Blast Survey.

The Contractor shall provide the Engineer with a Blasting Log for the work. The Blasting Log shall contain the following information:

1. Location
2. Time and date
3. Number of holes
4. Amount and type of explosives used per hole
5. The names of persons, companies, corporations, or public utilities contacted, owning, leasing, or occupying property or structures in proximity to the site of the work of the Contractor's intention to use explosives.

Drilling equipment will be equipped with suitable dust control apparatus which must be kept in repair and used during all drilling operations.

38. Workmanship
Workmanship shall, at all times, be of a grade expected from skilled mechanics in each trade. Fitting of all materials shall be done to preserve the strength and durability of the materials and to present a clean, well worked appearance. The standards of all work shall be such as to produce first-class results throughout. Where different materials abut, or where it is necessary to cut or pass through one material with another, care must be taken not to injure or deface one material in placing the other. Various trades shall, at all times, cooperate in the installation of their work to complete the whole in a satisfactory, acceptable manner.

39. **Overtime Work**

If, in the opinion of the Engineer, the progress of the work is such that the completion date of the Contract cannot be met for causes other than those provided in the General Conditions, he may request the Contractor to work additional men, additional hours, or both. The cost of all such overtime shall be borne by the Contractor.

40. **Handling Materials**

The Contractor, or his subcontractors, shall be responsible for the proper care and protection of all of his materials, equipment, etc., during transportation and after delivery at the site. The Contractor and each subcontractor shall handle all material as directed so that it may be inspected by the Engineer. All materials capable of being injuriously affected by weather shall be protected from injury while being transported to the site as well as while being stored there.

41. **Protection From Inclement Weather**

The Contractor shall take such action as may be required to protect labor, materials and equipment including the land, trench and appurtenances in any way connected with the project, from the effect of extremes of heat and cold, wind and rain; and other climatological conditions. Such actions by the Contractor shall meet the requirements of the Engineer. Special attention will be given to protection of concrete from freezing laying of pipe in frozen ground, protecting the clay subgrades by proper drainage and covering with sand shells in advance of inclement weather, etc.

42. **Protection of Utilities**

Prior to commencement of work, the Contractor, by careful examination, must make himself familiar with all utilities in the work area, both underground and overhead. The locations shown on the Plan are based on the best information available, but the Owner and the Engineer do not warrant their accuracy in either horizontal or vertical locations, nor do they warrant that all existing utilities are shown. Certain relocation work may be required by existing utilities to allow installation of the work of this Contract. The Contractor shall make arrangements with such utilities for proper on-site coordination of construction.

The project includes construction in close proximity to existing water and sewer utilities including service laterals to abutting properties. During construction, the Contractor shall carefully protect all utilities from damage, and will notify appropriate representatives of utilities when work is to be accomplished in proximity to their facilities. The Contractor shall be fully responsible for all utility coordination, protection of existing utility infrastructure and any damage to existing utilities as a result of the work at no additional cost to the Town.

43. **Environmental Requirements**
The Contractor shall include in the appropriate contract bid items costs for compliance with State and local environmental protection requirements including, but not limited to, the following:

1. Control of dust from excavations and spillage of materials on highways and dust from rock drilling operations.
2. Compliance with local ordinances on burning.
3. Control of erosion and washing of materials from excavated slopes and embankments.
4. Prevention of stream turbidity from dewatering and general earthwork operation.

In general, construction of necessary temporary erosion and sedimentation control devices will be in conformance with the best management practices adopted by the State of Maine Department of Environmental Protection or subsequent revisions thereto.

44. Temporary Enclosures and Facilities

The Contractor shall provide such temporary enclosures as the work may warrant. In addition, he shall provide the necessary temporary office, heat, utilities, telephone, and sanitary facilities, as required by the job, the Contractor, or the Engineer.

45. Statutory Requirements in General

The Contractor shall keep himself fully informed of all existing and future State and Federal laws and municipal ordinances and regulations in any manner affecting those engaged or employed in the work, or the materials used or employed in the work, or in any way affecting the conduct of the work, and of all such orders and decrees having any jurisdiction or authority over the same and of all provisions required by law to be a part of this Contract, all of which provisions are hereby incorporated by reference and made a part thereof. If any discrepancy or inconsistency is discovered in the Drawings or Specifications or Contract for this work in relation to any such law, ordinance, regulation, order or decree, he shall report the same to the Engineer in writing.

He shall at all times himself observe and comply with, and shall cause all his agents and employees to observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees; and shall protect and indemnify the owner and Engineer and all of their officers, agents and servants against any claim or liability arising from or based on the violation of such law, ordinance, regulation, order or decree, whether by himself or his employees' subcontractors.

46. Responsibility for Damage Claims

The Contractor and his surety shall indemnify and save harmless the Owner, his officers and employees, from all suits, actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the said Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in construction of the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act", or of any other law, ordinance, order or decree; and so much of the money due the said Contractor under and by virtue of his contract as shall be considered necessary by the Owner for such purpose, may be retained; or in case no money is due, his surety
may be held until such suits or suit, action or actions, claim or claims, for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the Owner.

The Contractor shall promptly pay all bills for labor, materials, machinery, water, tools, equipment, trucks, automobiles, freight, fuel, light and power and for all other things, contracted for or used by him on account of the work herein contemplated, and if at any time during the progress of the work or before final payment of any money due the Contractor under the terms of this Contract, any claim for labor, materials, water, tools, equipment, trucks, automobiles, freight, fuel, light and power, or for any other things specified as aforesaid, or for damage by reason of any acts, omissions, or neglect of said Contractor in the prosecution of the work, shall be presented to said Owner, the Owner may retain such sum or sums from the monies due the Contractor under this Contract as would be necessary to discharge all claims whether for labor, materials, or damages as aforesaid, and until the validity of such claims shall be established and finally determined, and if determined and finally established as valid, all such claims shall be paid from the amount so retained if it be sufficient for that purpose; otherwise, or if at any time the Owner shall be satisfied that any of such claims are invalid and groundless, any amount so retained shall be paid to said Contractor, or in case of default of Contract to the Contractor's surety, and the said owner shall not be liable to any individual, firm, or party if he does not hold and retain any money due under this Contract for the purpose of payment of such claim.

If the monies so retained under this Contract are insufficient to pay all such claims presented to said Owner and adjudged by any court of competent jurisdiction to be valid obligations of said Contractor, the Owner may at its discretion pay the same and the Contractor shall repay the Owner all sums so paid. The Owner, at its option, may also use any monies due or to become due under this Contract for the Purpose of Paying any claims Presented to said Owner. Should the Contractor neglect to Pay any undisputed claim, made in writing to the owner, within thirty (30) days after the completion of the work, but continuing unsatisfied for a period of ninety (90) days, the Owner may pay such claim and deduct the amount thereof from the balance due the Contractor.

47. **Sanitary Regulations**

Sanitary conveniences, in sufficient numbers, for the use of all persons employed on the work, and properly screened from public observation, shall be provided and maintained at suitable locations, in accordance with State and local ordinances. When no longer required, they shall be removed from the site and the contents shall be removed and disposed of in a satisfactory manner, as the occasion requires. The Contractor shall rigorously enforce the use of the approved sanitary facilities provided.

The Contractor shall supply sufficient drinking water to all his employees from approved sources. He shall obey and enforce other local sanitary regulations and orders, and shall take such precautions against infectious diseases as may be deemed necessary.

48. **Special Scheduling Requirements**

Refer to paragraph 24 – Traffic Regulation above for special timing requirements associated with performance of work within the Route One corridor as well as on private property. In accordance with paragraph 24, the Contractor is required to perform certain aspects of the construction work during nighttime hours (9PM to 6AM) and may elect to perform additional construction activities during nighttime hours. Five days of advance notice, in writing, is required prior to any elective nighttime work. The Contractor shall be responsible for coordinating nighttime work activities with the utilities.
The Contractor shall excavate test pits prior to beginning any work that may be impacted, affected or reliant on the results of the test pit results. If the test pit reveals a utility conflict with the proposed facilities, the Engineer will issue revised plans within 7 calendar days of the test pit exploration. Work shall not begin until revised plans, if required, have been made available to the Contractor.

The Contractor shall be required to meet the following schedule requirements with respect to pavement restoration:

1. Upon completion of utility trench excavation or backfilling of disturbed pavement areas, a temporary surface of compacted pavement grindings shall be placed and maintained,
2. Within public roadways, all utility trenches shall be restored to binder pavement grade (within 1-1/2” of existing pavement surface) within 3 business days.
3. Within private property, all utility trenches shall be restored to binder pavement grade (within 1-1/2” of existing pavement surface) within 5 business days.
4. Final surface pavement shall be placed within 21 business days for all utility trenches regardless of whether it is on public and private property.

The Contractor shall also be responsible for coordination of the following to perform electrical service reconnects:

1. Coordinate access to the property to open/close the main circuit breaker with the property owner.
2. The shutdowns will be performed during off hours unless otherwise approved by the property owner.
3. Coordinate with Central Maine Power as to the date, time and duration of the shutdown.
4. Coordinate with the property owner as to the number of hours for the shutdown and the need for temporary power during the shutdown.

49. Testing and Inspection

Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except the following:

a) Tests related to submittals for approval of materials to be used in the project. Such costs for these tests are incidental to the Contract. Such inspections, tests, or approvals shall be performed by organizations acceptable to the Owner and Engineer.

b) Tests related to quality assurance and quality control for paving.
AGREEMENT

THIS AGREEMENT is dated as of the ______ day of ____________ in the year 2018 by and between the
Town of Falmouth (hereinafter called the Owner) and ____________________________ (hereinafter
called the Contractor). Owner and Contractor in consideration of the mutual covenants hereinafter set forth,
agree as follows:

ARTICLE 1. WORK

Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is
generally described as follows:

ARTICLE 2. ENGINEER

The Engineer is to act as Owner's representative, assuming all duties and responsibilities and have the
rights and authority assigned to Engineer in the Contract Documents in connection with completion of
the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIME

3.1 The Work will be substantially completed within One Hundred and Eleven (111) days from the
date when the Contract Time commences to run as provided in paragraph 2.3 of the General
conditions, and completed and ready for final payment in accordance with paragraph 14.13 of the
General Conditions.

3.2 Liquidated Damages. Owner and Contractor recognize that time is of the essence in the
performance of the work of this contract and the Owner will suffer financial loss if the Work is
not complete within the time specified in Article 3.1, plus any extensions of time agreed to by
both parties in accordance with Article 12 of the General Conditions. They also recognize the
delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual
loss suffered by the Owner if the Work is not completed on time. Accordingly, instead of
requiring any such proof, Owner and Contractor agree that as liquidated damages for each delay
(but not as a penalty) Contractor shall pay owner Five Hundred ($500.00) dollars for each day
that expires after the time specified in paragraph 3.1 for completion and readiness for final
payment.

ARTICLE 4  CONTRACT PRICE

Owner shall pay Contractor for performance of the Work in accordance with the Contract Documents
in current funds as follows:

Lump sum and unit prices as shown on the attachment.
ARTICLE 5. PAYMENT PROCEDURES

Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

5.1 Progress Payments. Owner shall make progress payments on account of the contract Price on the basis of Contractor's Applications for Payment as recommended by Engineer, within 30 days of presentation of an approved partial payment estimate. All progress payments will be on the basis of the progress of the Work measured by the schedule of values and in the case of Unit Price Work based on the number of units completed.

5.1.1. Prior to fifty (50) percent completion, progress payments shall be in an amount equal to:

Ninety (90) percent of the work completed, and ninety (90) percent of materials and equipment not incorporated in the work but delivered and suitably stored, less in each case the aggregate of the payments previously made.

5.1.2. At 50% completion, further partial payments shall be made in full to the Contractor and no additional amounts may be retained unless the Engineer certifies that the job is not proceeding satisfactorily, but amounts previously retained shall not be paid to the Contractor.

At 50% completion or anytime thereafter when the progress of the work is not satisfactory, additional amounts may be retained, but in no event shall the total retainage be more than 10% of the value of the work completed.

5.1.3. The Owner may at his discretion and at any time, reduce payment to Contractor to ninety percent of the work completed and materials and equipment on hand if Engineer determines that Contractor is not making satisfactory progress.

5.2. Final Payment. Upon final completion and acceptance of the work in accordance with paragraph 14.13 of the General Conditions, Owner shall pay the remainder of the Contract Price, less 2% of the total contract amount, to be held in escrow for a period of one year as project guarantee, as recommended by Engineer as provided in said paragraph 14.13. Owner shall make final payment on account of the Contract Price on the basis of Contractor's Application for Final Payment as recommended by Engineer, within 30 days of submittal of an approved final payment estimate.

ARTICLE 6. DELETED

ARTICLE 7. CONTRACTOR'S REPRESENTATIONS

In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

7.1. Contractor has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

7.2. Contractor has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in paragraph 4.2 of the General Conditions, and accepts the determination set forth in
paragraph SC-4.2 of the Supplementary Conditions of the extent of the technical data contained in such reports and drawings upon which Contractor is entitled to reply.

7.3. Contractor has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in paragraph 7.2 above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as Contractor considered necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.2 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by Contractor for such purposes.

7.4. Contractor has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, data in respect of said Underground Facilities are or will be required by Contractor in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.

7.5. Contractor has correlated the results of all observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

7.6. Contractor has given Engineer written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Contractor.

**ARTICLE 8. CONTRACT DOCUMENTS**

The Contract Documents which comprise the entire Agreement between the Owner and the Contractor concerning the Work consist of the following:

8.1 Agreement

8.2 Exhibits to this Agreement

8.3 Performance and Payment Bonds and Insurance Certificate

8.4 Notice of Award

8.5 General Conditions

8.6 Supplementary Conditions

8.7 Federal Guidelines and Conditions as may be attached.

8.8 Specifications prepared by Stantec dated January 2018 bearing the titles and consisting of the divisions and pages as listed in the Table of Contents
8.9 Drawings prepared by Stantec dated January 2018 with Sheets 1 through 113 bearing the general title: Route One Infrastructure Project

8.10 Contractor's Bid Form

8.11 Documentation submitted by Contractor prior to Notice of Award.

8.12 The following which may be delivered or issued after the Effective Date of this Agreement and are not attended hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraphs 3.4 and 3.5 of the General Conditions.

8.13 The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above.)

8.14 Addenda:

No.   dated
No.   dated
No.   dated

There are no Contract Documents other than those listed above in this Article.

ARTICLE 9 MISCELLANEOUS

9.1 Terms used in this Agreement which are defined in the General Conditions shall have the meanings indicated in the General Conditions.

9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3 Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.
IN WITNESS WHEREOF, OWNER AND CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to Owner, Contractor and Engineer. All portions of the Contract Documents have been signed or identified by Owner and Contractor or by Engineer on their behalf.

This Agreement will be effective on ______________, 2018.

Owner: _____________________________     Contractor: _____________________________________
(by)              (by)
___________________________________                       ______________________________________
(representing)                                                                          (representing)

Attest:_____________________________        Attest:_________________________________________
By: _______________________________        By:____________________________________________

Address for giving notices:                Address for giving notices:
__________________________________ ______________________________________________
__________________________________ ______________________________________________
__________________________________ ______________________________________________
PAYMENT BOND

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

**CONTRACTOR** (Name and Address):  
**SURETY** (Name and Principal Place of Business):

**OWNER** (Name and Address):

**CONSTRUCTION CONTRACT**

  Date:  
  Amount:  
  Description (Name and Location):

**BOND**

  Date (Not earlier than Construction Contract Date):  
  Amount:  
  Modifications to this Bond:  
  □ None  
  □ See Page _____

**CONTRACTOR AS PRINCIPAL**  
**SURETY**

  Company:  
  Company:

  Signature: ________________________  
  Signature: ________________________

  Name and Title:  
  Name and Title:
1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

2. With respect to the Owner, this obligation shall be null and void if the Contractor:

   2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

   2.2 Defends, indemnities and holds harmless the Owner from claims, demands, liens, or suit by any person or entity whose claim, demand, lien, or suit is for the payment for labor, materials or equipment furnished for use in the performance of the Contraction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4. The Surety shall have no obligation to Claimants under this Bond until:

   4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

   4.2 Claimants who do not have a direct contract with the Contractor:

      4.1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

      4.2 Have either received a rejection in whole or in part from the Contract or, or not received within 30 days of finishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and

      4.3 Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the data received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15 DEFINITIONS

15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in
the terms "labor, materials, or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

(FOR INFORMATION ONLY - Name, Address, and Telephone)
AGENT OR BROKER:

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party)
Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond: □ None □ See Page _____

CONTRACTOR AS PRINCIPAL

Company:

Signature: ________________________

Name and Title: ________________________

SURETY

Company:

Signature: ________________________

Name and Title: ________________________
1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

   3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and

   3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and Surety have received notice as provided in Subparagraph 3.1; and

   3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract in accordance with the terms of the contract with the Owner.

4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

   4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or

   4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or

   4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or

   4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

   4.5 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or

   4.6 Deny liability in whole or in part and notify the Owner citing reasons therefor.
5. If the Surety does not proceed as providing in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and

6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators or successors.

8. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

9. Any proceeding, legal or equitable, under this bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
12. DEFINITIONS

12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATION TO THIS BOND ARE AS FOLLOWS:

(FOR INFORMATION ONLY - Name, Address, and Telephone)
AGENT OR BROKER:

OWNER’S REPRESENTATIVE
(Architect, Engineer or other party):
NOTICE OF AWARD

Description of Work: Route One South Utility Project, Town of Falmouth, Falmouth, Maine

This project is hereby awarded to:

The Owner has considered the Proposal submitted by your firm for the above project in response to its Notice to Contractors dated January 7th, 2018.

It is in the best interest of the Owner to accept your proposal in the amount of $_______

You are hereby notified that your proposal has been accepted.

You are required by the Notice to Contractors to execute the contract within ten days from the date of the delivery of this Notice of Award to you.

Dated this ______ day of ____________, 2018

Town of Falmouth
Owner

by: ________________________________

________________________________
Title

Acceptance of Notice

Receipt of the Notice of Award is hereby acknowledged:

This ____ day of ________________, 2018.

by: ________________________________

________________________________
Title
NOTICE TO PROCEED

Project: Route One South Utility Project

To:

Date: _____, 2018

You are hereby notified to commence WORK in accordance with the Agreement dated______________, 2018, on or before ________________, 2018, and you are to complete the WORK within 111 consecutive calendar days thereafter.

The date of completion of all WORK is therefore set at July 1, 2018.

Owner

by:_____________________________________

Title

Acceptance of Notice

Receipt of the above Notice to Proceed is hereby acknowledged.

This _____ day of __________, 2018.

Contractor

by:___________________________________

Title
Change Order #

Project: Route One South Utility Project
Owner: Town of Falmouth
Contractor: 
Engineer: Stantec
Date of Issuance: 

The contractor is directed to make the following changes in the Contract Documents:

Description:

Purpose of Change Order:

Attachments:

<table>
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<th>Change in Contract Price</th>
<th>Change in Contract Time</th>
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<td>Contract Time with All Approved Change Orders</td>
</tr>
<tr>
<td>$</td>
<td>calendar days</td>
</tr>
</tbody>
</table>

Recommended:   Approved:   Approved:
by______________________ by _____________________ by ______________________
Engineer   Owner    Contractor
SAMPLE FINAL INSPECTION

Date:

Addressee:

RE: Route One South Utility Project

Dear:

The subject project was inspected on ______________________, by ________________________________________, and was found to be fully completed in accordance with the contract plans and specifications.

The work is hereby approved and accepted by the Town of Falmouth as of ________________, which begins the one year guarantee period. At this point it is essential that the town is provided with the attached statement and lien waiver *(as well as subcontractor/supplier lien waivers) certifying that all the obligations for equipment rentals, materials and supplies purchased, and labor employed on this project have been discharged. If you have any questions please feel free to call me at (207) 781-3919 or via the internet at jreynolds@town.falmouth.me.us

Yours truly,

TOWN OF FALMOUTH

Jay Reynolds
Public Works Director

Attachment
WAIVER OF LIEN
MATERIAL OR LABOR

State of _________________
County of _________________
To all whom it may concern:

The undersigned ___________________________ has been employed to furnish __________________________ for the project known as Route One Infrastructure Project, Town of Falmouth, County of Cumberland, State of Maine.

The undersigned for and in consideration of the sum of $ ________________ and other good and valuable consideration the receipt whereof is hereby acknowledged, do hereby waive and release any and all rights and liens, or claim of right to lien on said above described project under the statutes of the State of Maine relating to Mechanic's Lien on account of Labor or Material or both furnished or which may be furnished by the undersigned to or on account of said _______________________ for said building and premises.

This Waiver of Lien shall become effective upon the issuance of a check by the City of Portland payable to _____________________ and ______________________________ in the amount of ________________________.

Given under oath, my hand and seal this ___________ day of ______________, 20 _____.

By: __________________________

______________________________
(print or type name)

Its __________________________

Notarized: ______________________ this __________ day of __________________, 20 _________.
My commission expires __________________________
WAIVER OF LIEN
(Subcontractor/supplier/employee)

The undersigned has performed labor and furnished materials and/or performed services for ___________________________ on behalf of the Town of Falmouth, in performance of the contractor's agreement of _________________ with the Town of Falmouth for the Route One Infrastructure Project.

In consideration of the sum of $ _________________, the undersigned hereby waives all rights and liens, including, but not limited to, liens pursuant to 10 M.R.S.A. Sec. 3251, et. seq., which the undersigned may now or hereafter claim or assert against the above described project; and the Town of Falmouth.

This Waiver of Lien shall become effective upon the issuance of a check by the Town of Falmouth payable to ________________________ in the amount of $__________________.

IN WITNESS WHEREOF the undersigned has hereto set its hand this ________ day of __________________________, 20_________.

By: __________________________
______________________________
(print or type name)

Its __________________________

State of Maine
______________________________, ss

Before me appeared ______________________ and acknowledged that the signature to the preceding waiver is his/her signature in his/her official capacity.

Date: _______________________

__________________________
(Notary Public)
GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda - Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the bidding documents or the Contract Documents.

Agreement - The written agreement between OWNER and CONTRACTOR covering the Work to be performed, other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment - The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Bid - The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bonds - Bid, performance, and payment bonds and other instruments of security.

Change Order - A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

Contract Documents - The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S bid (including documentation accompanying the Bid and any post - Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications, and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements issued pursuant to paragraphs 3.4 and 3.5 on or after the Effective Date of the Agreement.

Contract Price - The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

Contract Time - The number of days (computed as provided in paragraph 17.2) or the date stated in the Agreement for the completion of the Work.

Contractor - The person, firm, or corporation with whom OWNER has executed the Agreement.

Defective - An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).
Drawings - The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER - The person, firm or corporation named as such in the Agreement.

Field Order - A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Time.

General Requirements - Sections of Division 1 of the Specifications.

Laws and Regulations - Laws or Regulations - Laws, rules' regulations, ordinances, codes and or orders.

Notice of Award - The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

Notice to Proceed - A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.

OWNER - The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

Partial Utilization - Placing a portion of the Work in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the Work.

Project - The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Resident Project Representative - The authorized representative of ENGINEER who is assigned to the site of his part thereof.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.
Substantial Completion - The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended: or if there be no such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

Supplementary Conditions - The part of the Contract Documents which amends or supplements these General Conditions.

Supplier - A manufacturer, fabricator, supplier, distributor, material man or vendor.

Underground Facilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

Unit Price Work - Work to be paid for on the basis of unit prices.

Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

Work Directive Change - A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.22. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in paragraph 10.2.

Written Amendment - A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the non-engineering or non-technical rather than strictly Work-related aspects of the Contract Documents.

**ARTICLE 2 -- PRELIMINARY MATTERS**

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.
Copies of Documents:

*2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Time; Notice to Proceed:

2.3. The Contract Time will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Time commence to run later than the seventy-fifth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Project:

2.4. CONTRACTOR shall start to perform the Work on the date when the contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. An estimated progress schedule indicating the starting and completion dates of the various stages of the Work:

2.6.2. A preliminary schedule of Shop Drawing submissions; and

2.6.3. A preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission.

2.7 Before any Work at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with paragraphs 5.3 and 5.4 and OWNER shall deliver to CONTRACTOR certificates (and other evidence of insurance requested by...
CONTRACTOR) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7.

* See Supplementary General Conditions

Pre-construction Conference

2.8. Within twenty days after the Effective Date of the Agreement, but before CONTRACTOR starts the Work at the site, a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to discuss the schedules referred to in paragraph 2.6., to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

Finalizing Schedules

2.9. At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to finalize the schedules submitted in accordance with paragraph 2.6. The finalized progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility therefor. The finalized schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE 3 -- CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary: what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2 It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals, or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids for, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or performance of
the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.

3.3 If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to ENGINEER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

Amending and Supplementing Contract Documents

3.4. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.4.1. A formal Written Amendment.

3.4.2. A Change Order (pursuant to paragraph 10.4), or

3.4.3. A Work Directive Change (pursuant to paragraph 10.1).

As indicated in paragraphs 11.2 and 12.1. Contract Price and Contract Time may only be changed by a Change Order or a Written Amendment.

3.5 In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.5.1 A Field Order (pursuant to paragraph 9.5),

3.5.2. ENGINEER's approval of a Shop Drawing or sample (pursuant to paragraphs 6.26 and 6.27), or

3.5.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents

3.6. Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without a written consent of OWNER and ENGINEER and specific written verification or by ENGINEER.
Availability of Lands

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. IF CONTRACTOR believes that any delay in OWNER's furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

Physical Conditions

*4.2.1. Explorations and Reports: Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon nontechnical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6. CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2 Existing Structures: Reference is made to the Supplementary Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6 CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3. Report of Differing Conditions: If CONTRACTOR believes that:

4.2.3.1. Any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2. Any physical condition uncovered or revealed at the site differs materially from that indicated, reflected or referred to in the Contract Documents.

CONTRACTOR shall, Promptly after becoming aware thereof and before performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.22, notify OWNER and ENGINEER in writing about the inaccuracy or difference.

4.2.4. ENGINEER'S Review: ENGINEER will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise
OWNER in writing(with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. Possible Document Change: If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Work Directive Change or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6. Possible Price and Time Adjustments: In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference. If OWNER and CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.

* See Supplementary General Conditions

Physical Conditions - Underground Facilities

4.3.1. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data: and.

4.3.1.2. CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for fine safety and protection thereof as provided in paragraph 6.20 and repairing any damage hereto resulting from the Work, the cost of all of which will be considered as have been included in the Contract Price.

4.3.2. Not Shown or Indicated. If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could be reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.22), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been
expected to be aware of. If the parties are unable to agree as to the amount or length thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Reference Points

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified in the General Requirements), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

ARTICLE 5 - BONDS AND INSURANCE

Performance and Other Bonds

5.1. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All bonds shall be in the forms prescribed by Law or Regulation or by the contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent in its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to OWNER.

Contractor's Liability Insurance

*5.3. CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

*5.3.1. Claims under workers' or workmen's compensation, disability benefits, and other similar employee benefit acts;

*5.3.2. Claims for damages because of bodily injury, occupational sickness or disease, or death of any person other than CONTRACTOR's employees;
*5.3.3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than the CONTRACTOR's employees;

*5.3.4. Claims for damages insured by personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (b) by any other person for any other reason;

*5.3.5. Claims for damages, other than the Fork itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom:

*5.3.6. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

*5.3.7. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle.

The insurance required by this paragraph 5.3 shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be canceled, materials changed, or renewal refused until at least thirty days' prior written notice has been given to OWNER and ENGINEER by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with paragraph 13.12. In addition, CONTRACTOR shall maintain such completed operations insurance for at least two years after final payment and furnish OWNER with evidence of continuation of such insurance at final payment and one year thereafter.

* See Supplementary General Conditions

Contractual Liability Insurance

5.4. The comprehensive general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to CONTRACTOR's obligations under paragraphs 6.30 and 6.31.

Owner's Liability Insurance

*5.5 OWNER shall be responsible for purchasing and maintaining OWNER's own liability insurance and, at OWNER's option, may purchase and maintain such insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

* See Supplementary General Conditions
*5.6 Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER's consultants in the Work, all of whom shall be listed as insureds or additional insured parties, shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

*5.7 OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER AND ENGINEER's consultants in the Work, all of whom shall be listed as insured or additional insured parties.

*5.8 All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty days' prior written notice has been given to CONTRACTOR by certified mail and will contain waiver provisions in accordance with paragraph 5.11.2.

*5.9 OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are provided in the Supplementary Conditions. The risk of loss within the deductible amount, will be borne by CONTRACTOR, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

*5.10 If CONTRACTOR requests in writing that other special insurance be included in the property insurance policy, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

* See Supplementary General Conditions

Waiver of Rights

*5.11.1 OWNER and CONTRACTOR waive all rights against each other for all losses and damages caused by any of the perils covered by the policies of insurance provided in response to paragraphs 5.6 and 5.7 and any other property insurance applicable to the Work, and also
waive all such rights against the Subcontractors, ENGINEER, ENGINEER's consultants and all other parties names as insured in such policies for losses and damages so caused. As required by paragraph 6.11, each subcontract between CONTRACTOR and a Subcontractor will contain similar waiver provisions by the Subcontractor in favor of OWNER, CONTRACTOR, ENGINEER, ENGINEER's consultant and all other parties named as insured. None of the above waivers shall extend to the rights that may of the insured parties may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

*5.11.2. OWNER and CONTRACTOR intend that any policies provided in response to paragraphs 5.6 and 5.7 shall protect all of the parties insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any of the parties named as insured or additional insured, and if the insurers require separate waiver forms to be signed by ENGINEER or ENGINEER's consultant OWNER will obtain the same and if such waiver forms are required of any Subcontractor, CONTRACTOR will obtain the same.

* See Supplementary General Conditions

Receipt and Application of Proceeds

*5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as trustee for the insured, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

*5.13. OWNER as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, OWNER as trustee shall upon the occurrence of an insured loss, give bond for the proper performance of such duties.

* See Supplementary General Conditions

Acceptance of Insurance

5.14. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.3 and 5.4 on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7. If CONTRACTOR has any objection to the coverage afforded by or other provisions of the policies of insurance required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 on the basis of their not complying with the contract Documents. CONTRACTOR shall notify OWNER in writing thereof within ten days of the
date of delivery of such certificates to CONTRACTOR in accordance with paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided by each as the other may reasonably requires. Failure by OWNER or CONTRACTOR to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by the other as complying with the Contract Documents.

Partial Utilization - Property Insurance

Partial Utilization - Property Insurance

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10: provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changed in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence

6.1. CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of Persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary
facilities and all other facilities and incidentals necessary for the furnishing, performance, testing start up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER's consultants agents of employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

Adjusting Progress Schedule

6.6. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in Paragraph 2.9) adjustments to the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

Substitutes or "Or-Equal" Items

6.7.1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by ENGINEER if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by ENGINEER will include the following as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR's expense additional data about the proposed substitute.

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6.7.2. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to ENGINEER, if CONTRACTOR submits sufficient information to allow ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in paragraph 6.7.1 as applied by ENGINEER and as may be supplemented in the General Requirements.

6.7.3. ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute. ENGINEER will record time required by ENGINEER and ENGINEER's consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's consultants for evaluating each proposed substitute.

Concerning Subcontractors, Suppliers and Others

6.8.1 CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.8.2 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER and ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be increased by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

6.9. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors. Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER and ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on
the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontract which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER and contains waiver provisions as required by paragraph 5.11. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to paragraphs 5.6 and 5.7.

Patent Fees and Royalties

6.12 CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees and court and arbitration costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses, OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work, except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.
6.14.2. If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Laws or Regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs, arising therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the Project which are applicable during the performance of the Work.

Use of Premises

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or areas contiguous thereof, resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequently out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.
6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. All employees on the Work and other persons and organizations who may be affected thereby:

6.20.2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.21. CONTRACTOR shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR's superintendent unless otherwise designated in writing by CONTRACTOR to OWNER.
Emergencies

6.22. In emergencies affecting the safety or protection of persons or the work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER or OWNER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document the consequences of the changes or variations.

Shop Drawings and Samples

6.23. After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, CONTRACTOR shall submit to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9), or for other appropriate action if so indicated in the Supplementary Conditions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to review the information as required.

6.24. CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material. Supplier, pertinent data such as catalog numbers and the use for which intended.

6.25.1. Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

6.25.2. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents (in addition, shall cause a specific notation to be made on each Shop Drawing submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER's review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or
required by the Contract Documents) or to safety precautions or programs incident thereto. The
review and approval of a separate item as such will not indicate approval of the assembly in which
the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall
return the required number of corrected copies of Shop Drawings and submit as required new
samples for review and approval. CONTRACTOR shall direct specific attention in writing to
revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or samples shall not relieve CONTRACTOR
from responsibility for any variation from the requirements of the Contract Documents unless
CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of
submission as required by paragraph 6.25.2 and ENGINEER has given written approval of each
such variation by a specific written approval of each such variation by a specific written notation
thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any
approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the
Shop Drawings or from the responsibility for having complied with the provisions of paragraph
6.25.1.

6.28. Where a Shop Drawing or sample is required by the Specifications, any related Work performed
prior to ENGINEER's review and approval of the pertinent submission will be the sole expense and
responsibility of CONTRACTOR.

Continuing the Work

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or
disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any
disputes or disagreements, except as permitted by paragraph 15.5 or as CONTRACTOR and
OWNER may otherwise agree in writing.

Indemnification

6.30. To the fullest extent permitted by Laws and Regulations CONTRACTOR shall indemnify and hold
harmless OWNER and ENGINEER and their consultants, agents and employees from and against
all claims, damages, losses and expenses, direct, indirect or consequential (including but not
limited to fees and charges of engineers, architects, attorneys and other professional and court and
arbitration costs arising out of or resulting from the performance of the Work, provided that any
such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death,
or to injury to or destruction of tangible property (other than the Work itself) including the loss of
use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of
CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by
any of them to perform or furnish any of the Work or anyone for whose acts any of them may be
liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by
or is imposed by Law and Regulations regardless of the negligence of any such party.

6.31. In any and all claims against OWNER or ENGINEER or any of their consultants, agents or
employees by any employee of CONTRACTOR, any Subcontractor, any person or organization
directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for
whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 shall
not be limited in any way by any limitation on the amount or type of damages, compensation or
benefits payable by or for CONTRACTOR or any such Subcontractor or other person or
organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

6.32. The obligations of CONTRACTOR under paragraph 6.30 shall not extend to the liability of ENGINEER. ENGINEER's consultants, agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports surveys, Change Orders, designs or specifications.

ARTICLE 7 - OTHER WORK

Related Work at Site

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

7.2. CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the WORK that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If any part of CONTRACTOR's Work depends for proper excavation or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper excavation and results. Contractors failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or nonapparent defects and deficiencies in the other work.

Coordination

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibilities will be provided, in the Supplementary Conditions. Unless otherwise provided in the Supplementary Conditions, neither OWNER nor ENGINEER shall have any authority or responsibility in respect of such coordination.
ARTICLE 8 – OWNER’S RESPONSIBILITIES

8.1. OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER. Any dispute in connection with such appointment shall be subject to further legal action.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.8.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

Owner's Representative

9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on site observations as an experienced and qualified design professional, ENGINEER will keep
OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

**Project Representation**

*9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER's agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Supplementary Conditions.*

* See Supplementary General Conditions

**Clarifications and Interpretations**

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, CONTRACTOR may make a claim therefore as provided in Article 11 and Article 12.

**Authorized Variations in Work**

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER, and also on CONTRACTOR who shall perform the Work promptly. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 and 12.

**Rejecting Defective Work**

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

**Shop Drawings, Change Orders and Payments**

9.7. In connection with ENGINEER's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.29 inclusive.

9.8. In connection with ENGINEER's responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9. In connection with ENGINEER's responsibilities in respect of Applications for Payment, etc., see Article 14.
Determinations for Unit Prices

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decisions thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other party to the Agreement and to ENGINEER written notice of intention to appeal from such a decision.

Decisions on Disputes

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

9.12. When functioning as interpreter and Judge under Paragraphs 9.10 and 0.11. ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such Capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 and 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

Limitations on ENGINEER's Responsibilities

9.13. Neither ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

9.14. Whenever in the Contract Documents the terms "as ordered", "as directed, "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable, "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise. The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or
authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

9.15. ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.16. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

ARTICLE 10 - CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Written Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.22 and except in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders (or Written Amendments) covering:

10.4.1. Changes in the Work which are ordered by OWNER pursuant to paragraph 10.1 are required because of acceptance of defective Work under paragraph 13.13 or correcting defective Work under paragraph 13.14, or are agreed to by the parties;

10.4.2. Changes in the contract Price or Contract Time which are agreed to by the parties; and

10.4.3. Changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

Provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provi-
sions of any bond to be given to a surety, the giving of any such notice will be CONTRACTORS responsibility, and the amount of each applicable bond will be adjusted accordingly.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1 through 11.9.3 inclusive).

11.3.2. By mutual acceptance of a lump sum (which may include an allowance for overhead and profit and necessarily in accordance with paragraph 11.6.2.1).

11.3.3. On the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's Fee for overhead and profit (determined as provided in paragraphs 11.6 and 11.7).

Cost of the Work

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social
security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR's Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing Laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof - all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for caused other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
11.4.5.6. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's Fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER in accordance with paragraph 5.9.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4 - all of which are to be considered administrative costs covered by the CONTRACTOR's Fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9. above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective work, disposal of materials or equipment wrongly supplied and making good any damage to property.
11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

CONTRACTOR's Fee

11.6. The CONTRACTOR's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. A mutually acceptable fixed fee, or if none can be agreed upon.

11.6.2. A fee based on the following percentages of the various portions of the Cost of the Work.

11.6.2.1. For costs incurred under paragraphs 11.4.1 and 11.4.2., the CONTRACTOR's Fee shall be fifteen percent:

11.6.2.2. For costs incurred under Paragraph 11.4.3. the CONTRACTOR's Fee shall be five percent and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent:

11.6.2.3. No fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5.

11.6.2.4. The amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR's Fee by an amount equal to ten percent of the net decrease; and

11.6.2.5. When both additions and credits are involved in any one change, the adjustment in CONTRACTOR's Fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.4, inclusive.

11.7. Whenever the cost of any Work is to be determined pursuant to paragraph 11.4 or 11.5. CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER, CONTRACTOR agrees that:

11.8.1. The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes, and

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in
the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

**Unit Price Work**

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of bids and determining an initial contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3. Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof. CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the amount of any such increase.

**ARTICLE 12 - CHANGE OF CONTRACT TIME**

12.1. The Contract Time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2. The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefor as provided in paragraph i2.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 7, or to fires, floods. Labor disputes, epidemics, abnormal weather conditions or acts of God.
12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) for delay by either party.

ARTICLE 13 - WARRANTY AND GUARANTEE: TESTS AND INSPECTIONS: CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee

13.1. CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to CONTRACTOR. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to Work

13.2. ENGINEER and ENGINEER's representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

Tests and Inspections

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates of inspection, testing or approval. CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER's or ENGINEER's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR's purchase hereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by OWNER (unless otherwise specified).

13.5. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

13.6. If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.
13.7. Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR's obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals), and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Owner May Stop the Work

13.10. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been climated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

Correction or Removal of Defective Work

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, removal it from the site and replace it with nondefective work CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

One Year Correction Period

*13.12. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with nondefective Work. If CONTRACTOR does not promptly comply with the terms
of such instructions or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

Acceptance of Defective Work

13.13. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work: and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the Parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work

13.14. If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct and to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficient. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work: and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professional, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's defective Work. CONTRACTOR shall not be allowed an extension of the
Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payment and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment

14.2. At least twenty days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment

*14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will continue a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the Work in progress as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of ENGINEER's knowledge, information and
belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10 and to any other qualifications stated in the recommendation); and that CONTRACTOR is entitled to payment of the amount recommended. However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality of the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER's recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make such representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7.1. The Work is defective, or completed work has been damaged requiring correction or replacement,

14.7.2. The Contract Price has been reduced by Written Amendment or Change Order,

14.7.3. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.14. or

14.7.4. Of ENGINEER's actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work or Liens have been filed in connection with the Work as there are other items entitling OWNER to a set-off against the amount recommended, but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action.

* See Supplementary General Conditions

Substantial Completion

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will
notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objection, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization

14.10. Use by OWNER of any finished part of the Work, which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraph 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. OWNER may at any time request CONTRACTOR in writing to permit OWNER to take over operation of any such part of the Work although it is not substantially complete. A copy of such request will be sent to ENGINEER and within a reasonable time thereafter OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the
Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to OWNER and ENGINEER that such part of the Work is not ready for separate operation by OWNER, ENGINEER will finalize the list of items to be completed or corrected and will deliver such list to OWNER and CONTRACTOR together with a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the Work which will become binding upon OWNER and CONTRACTOR at the time when OWNER takes over such operation (unless they shall have otherwise agreed in writing and so informed ENGINEER). During such operation and prior to Substantial Completion of such part of the Work, OWNER shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related Work.

14.10.3. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection

14.11. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked up record documents (as provided in paragraph 6.19) and other documents - all as required by the Contract Documents and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 14.16). CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full: an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or supplier fails to furnish a release or receipt in full. CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance

*14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract documents have been
fulfilled. ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.16.

Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance, and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14. If through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

* See Supplementary General Conditions

Contractor's Continuing Obligation

14.15. CONTRACTOR's obligations to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of claims

14.16. The making and acceptance of final payment will constitute:

14.16.1. A waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR's continuing obligations under the Contract Documents; and
14.16.2. A waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

**ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION**

**Owner May Suspend Work**

15.1. OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approval claim therefor as provided in Articles 11 and 12.

**Owner May Terminate**

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. If CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency:

15.2.2. If a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency:

15.2.3. If CONTRACTOR makes a general assignment for the benefit of creditors:

15.2.4. If a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR's creditors:

15.2.5. If CONTRACTOR admits in writing an inability to pay its debts generally as they become due:

15.2.6. If CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as revised from time to time):

15.2.7. If CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.8. If CONTRACTOR disregards the authority of ENGINEER; or

15.2.9. If CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;
OWNER may, after giving CONTRACTOR (and the surety, if there be one) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other rights or remedy, elect to abandon the Work and terminate the Agreement. In such case CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

Contractor May Stop Work or Terminate

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted, or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 6.29 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

ARTICLE 16 - ARBITRATION

16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of, or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.16) may be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the
American Arbitration Association then obtaining subject to the limitations of this Article 16 at the Owners discretion. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.11 will be made until the earlier of (a) the date on which ENGINEER has rendered a decision or (b) the tenth day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.11; and the failure to demand arbitration within said thirty days' period shall result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any such claim, dispute or other matter in question will be made later than thirty days after the date on which ENGINEER has rendered a written decision in accordance with paragraph 9.10.

16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty day or ten day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.4. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joiner or in any other manner any other person or entity (including ENGINEER, ENGINEER's agents, employees or consultants) who is not a party to this contract unless:

16.4.1 The inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration.

16.4.2. Such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.4.3. The written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph, but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

16.5. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and will not be subject to modification or appeal except to the extent permitted by Sections 10 and 11 of the Federal Arbitration act (9 U.S.C. SS 10.11).
These Supplemental General Conditions amend or supplement the General Conditions and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

SC-2.2. Amend the first sentence of paragraph 2.2 of the General Conditions to read as follows:

Owner shall furnish to Contractor up to four copies of the Contract Documents.

and as so amended paragraph 2.2 remains in effect.

SC-4.2.1 and 4.2.2 There are no reports of explorations and tests of subsurface conditions or drawings of physical conditions other than those included in these Contract Documents.

SC-5.3 The limits of liability for the insurance required by paragraph 5.3 of the General Conditions shall provide coverage for not less than the following amount or greater where required by Laws and Regulations:

SC-5.3.1 CONTRACTOR'S General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting the CONTRACTOR from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the CONTRACT DOCUMENTS, whether such operations be by the CONTRACTOR or by any SUBCONTRACTOR employed by the CONTRACTOR or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR employed by the CONTRACTOR. For General Liability coverage, Commercial General Liability in the amount of One Million ($1,000,000) per occurrence and Two Million ($2,000,000) aggregate is required. In addition, Excess Liability Umbrella is preferred. For Vehicle Liability, coverage that includes Scheduled Autos, Hired Autos, and Non-owned Autos is required, also in the amount of $1,000,000 per occurrence and $2,000,000 aggregate. Coverage for Any Auto is preferred. Worker’s Compensation and Employer’s Liability Insurance is required for the Contractor, and for any and all subcontractors, to meet Maine State requirements. Statutory Limits of coverage are acceptable.

SC-5.3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

SC-5.3.3 The CONTRACTOR shall acquire and maintain, at the CONTRACTOR'S own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the WORK is performed, Workmen's Compensation insurance, including occupational disease provisions, for all of the CONTRACTOR'S employees at the site of the PROJECT and in case any WORK is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statute, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of its employees not otherwise protected.
SC-5.5 Delete 5.5 of the General Conditions in its entirety and insert the following in its place: Contractor shall provide endorsement to policy to name Owner and Engineer as Also Named Insured.

SC-5.6 Delete paragraph 5.6 of the General Conditions in its entirety.

SC-5.7 Delete paragraph 5.7 of the General Conditions in its entirety.

SC-5.8 Delete paragraph 5.8 of the General Conditions in its entirety.

SC-5.9 Delete paragraph 5.9 of the General Conditions in its entirety.

SC-5.10 Delete paragraph 5.10 of the General Conditions in its entirety.

SC-5.11 Delete paragraph 5.11 of the General Conditions in its entirety.

SC-5.12 Delete paragraph 5.12 of the General Conditions in its entirety.

SC-5.13 Delete paragraph 2.13 of the General Conditions in its entirety.

SC-9.8 Add the following paragraphs immediately after paragraph 9.8 which are to read as follows:

A Listing of the Duties, Responsibilities and Limitations of Authority of Resident Project Representative.

A. General. Resident Project Representative (RPR) will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding his actions. Resident Project Representative's dealings in matters pertaining to the on-site Work shall in general be only with Engineer and contractor, and dealings with subcontractors shall only be through or with the full knowledge of contractor. Written communication with Owner will be only through or as directed by the Engineer.

B. Duties and Responsibilities.

Resident Project Representative will:

1. Schedules: Review the progress schedule, schedule of Shop Drawing submittals and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.

2. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.

3. Liaison:

   a. Serve as Engineer's liaison with Contractor, working principally through Contractor's superintendent and assist in understanding the intent of the Contract Documents; and assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-site operations.

   b. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
4. Shop Drawings and Samples:
   a. Record date of receipt of Shop Drawings and samples.
   b. Receive samples which are furnished at the site by Contractor, and notify Engineer of availability of samples for examination.
   c. Advise Engineer and Contractor of the Commencement of any Work requiring a Shop Drawing or sample if the submittal has not been approved by Engineer.

5. Review of Work, Rejection of Defective Work, Inspections and Tests:
   a. Conduct on-site observations of the Work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
   b. Report to Engineer whenever RPR believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of Work that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing inspection or approval.
   c. Verify that tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that Contractor maintains adequate records thereof; and observe, record and report to Engineer appropriate details relative the test procedures and startups.
   d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to Engineer.

6. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report then with RPR's recommendations to Engineer. Transmit to Contractor decisions as issued by Engineer.

8. Records:
   a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples, reproductions of original Contract Documents including all Work Directive Changes, Addenda, Change orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, Engineer's clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.
   b. Keep a diary or log book, recording Contractor hours on the job site, weather conditions, data relative to questions of Work Directive Changes, Change Orders or changed conditions, list of job site visitors, daily activities, decisions, observations in general and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
c. Record names, addresses and telephone numbers of all Contractors, subcontractors and major suppliers of materials and equipment.

9. Reports:
   a. Furnish Engineer periodic reports as required of progress of the work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and sample submittals.
   b. Consult with Engineer in advance of scheduled major tests, inspections or start of important phases of Work.
   c. Draft proposed Change Orders and Work Directive Changes, obtaining backup material from Contractor and recommend to Engineer Change Orders, Work Directive Changes, and Field Orders.
   d. Report immediately to Engineer and Owner upon the occurrence of any accident.

10. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the schedule of values, work completed and materials and equipment delivered at the site but not incorporated in the Work.

11. Certificates, Maintenance and Operations Manuals: During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to Engineer for review and forwarding to Owner prior to final payment for the Work.

12. Completion:
   a. Before Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.
   b. Conduct final inspection in the company of Engineer, Owner and Contractor and prepare a final list of items to be completed or corrected.
   c. Observe that all items on final list have been completed or corrected and make recommendations to Engineer concerning acceptance.

C. Limitations of Authority.

Resident Project Representative:

1. Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment, unless authorized by Engineer.

2. Shall not exceed limitations on Engineer's authority as set forth in the contract Documents.

3. Shall not undertake any of the responsibilities of Contractor, subcontractors or Contractor's superintendent.
4. Shall not advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.

5. Shall not advise on, or issue directions regarding or assume control over safety precautions and programs in connection with the Work.

6. Shall not accept Shop Drawing or sample submittals from anyone other than Contractor.

7. Shall not authorize Owner to occupy the Project in whole or in part.

8. Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by Engineer.

SC-14.2 Add the following statement with regard to Progress Payments:

Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the WORK have been applied on account to discharge CONTRACTOR’S legitimate obligations associated with prior Applications for Payment (i.e. a lien waiver).

SC-14.4 Amend the third sentence of paragraph 14.4. of the General Conditions to read as follows:

Owner shall, within 30 days of presentation to him of an approved application for Payment, pay Contractor the amount approved by the Engineer.

and as so amended, paragraph 14.4 remains in effect.

SC-14.13 Amend the fourth sentence of paragraph 14.13 of the General Conditions to read as follows:

After presentation to Owner of the Application and accompanying documentation, in appropriate form and substance, and with Engineer's recommendation and notice of acceptability, the amount recommended by Engineer become due and will be paid by Owner to contractor in accordance with Article 5 of the Agreement.

and as so amended, paragraph 14.3 remains in effect.
STANDARD SPECIFICATIONS

The Town of Falmouth, Maine has adopted for this project the "State of Maine, Department of Transportation, Standard Specifications (for) Highways and Bridges, Revisions of December 2002", including all current additions or modifications thereof.


Unless otherwise noted in the Supplemental Specifications and Special Provisions, the description of work, method of measurement, and basis of payment for each specification section pertains to the base bid and each bid alternate included in this contract and specifications.
SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS

The following Supplemental Specifications and Special Provisions shall amend the "State of Maine, Department of Transportation, Standard Specifications (for) Highways and Bridges, Revision of April, 1995". In case of conflicts, these Supplemental Specifications (1) and Special Provisions (2) shall take precedence and shall govern.

(1) Supplemental Specifications - modifications, additions and deletions to the existing Standard Specifications.

(2) Special Provisions - specifications in the contract which are for additional items not covered in the Standard Specifications.
BURIED FITTING OR SERVICE LATERAL LOCATION FORM

Date Installed: ______________________  Town of: ______________________

Type/Size of Service Pipe: _______________  Street: _______________

Connection at Sewer Main: _______________  Dwelling No: _______________

Depth, end of Service Pipe: _______________  Occupant: _______________

Length of Service Pipe Laid: _______________  Owner: _______________

Measured, Located by: _____________________  _____________________

________________________________________  _____________________

Project Contractor: __________________________

Location Diagram
(Provide 3 Ties to Permanent Objects)

Remarks _______________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________
SUPPLEMENTAL SPECIFICATION
SECTION 101
CONTRACT INTERPRETATION

The provisions of Division 100 of the Standard Specifications shall apply with the following additions or modifications are made to Section 101:

101.2 DEFINITIONS:

The following definitions shall be modified:

COMMISSIONER: Commissioner shall mean the Director of Public Works, Town of Falmouth, Maine.

DEPARTMENT: Department shall mean the Department of Public Works, Town of Falmouth acting through its Director of through his duly authorized representative.

This subsection is amended by the addition of the following: whenever the word "Department" or the words "Highway Department" or "Department of Transportation" or the words or phases which, by context or usage are clearly intended to mean the same thing, appear in the Standard Specifications, Special Provisions or in or on any plan or other contract document, they shall mean the Town of Falmouth, Department of Public Works.

CHIEF ENGINEER: Chief Engineer shall mean the Department of Public Works, Town of Falmouth acting through its Director of through his duly authorized representative, who is responsible for the inspection of the construction.
SUPPLEMENTAL SPECIFICATION
SECTION 102
BIDDING

102.1 ELIGIBILITY TO BID:
The Town of Falmouth reserves the right to reject any bid if the evidence submitted by, or the investigation of such bidder, fails to satisfy the Town that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. The Town reserves the right to reject any or all bids if it would be in the public interest to do so. A proposal which includes a combination of abnormally low and abnormally high unit prices, which results in an unbalanced bid, may be rejected. “The Town of Falmouth reserves the right to substantiate bidder’s qualifications, capability to perform, availability, past performance record and to verify that the bidder is current in its financial obligations to the Town.”

102.03 EXAMINATION OF DOCUMENTS, SITE AND OTHER INFORMATION:
This subsection shall be amended by the addition of the following paragraph:

All questions shall be directed in writing ONLY to the Engineer’s offices of Fay, Spofford & Thorndike, 778 Main Street, Suite 8, South Portland, Maine 04106 and be received at least three business days prior to the bid opening date (Fax 207-879-0896 or email jlaveriere@fstinc.com). Questions received after this time will not be addressed. Responses from the Town that substantially alter this bid will be issued in the form of a written addendum to all plan holders registered in the Engineer’s office. Written addendums, if issued, will be either sent via certified mail or email (return receipt requested) no later than two (2) days prior to the date for receiving bids. Oral explanations or interpretations given before the award of contract shall not be binding.

102.06 BID GUARANTY:
This subsection shall be revised as follows:

Bids must be accompanied by a certified check or bank draft payable to the Town of Falmouth or a satisfactory Bid Bond executed by the Bidder and a Surety company in the amount equal to five percent (5%) of the Base Bid Amount.

102.07 DELIVERY OF BIDS:
This subsection is revised to read as follows:

Each proposal shall be submitted, document intact, in a sealed envelope. The envelope shall be clearly marked to indicate the name of the Bidder, contract name and be addressed to:

Town of Falmouth
Public Works Department
101 Woods Road
Falmouth, Maine 04105

Proposals may be mailed or delivered in person, but they shall be filed prior to the time and at the place specified in the Notice to Contractors. Proposals received after the time for opening of bids will be returned to the bidder unopened.
103.4 NOTICE OF AWARD:
This subsection shall be revised to read as follows:

The award of contract, if it be awarded, shall be made within sixty (60) days after the opening of proposals to the lowest responsible and qualified bidder whose proposal complies with all the requirements prescribed. The successful bidder will be notified by mail at the address shown on his proposal, that his bid has been accepted and that he has been awarded the contract.

103.5.1 PERFORMANCE AND PAYMENT BONDS:
This subsection is amended by the addition of the following:

The successful bidder will be required to furnish the necessary Performance and Payment Bonds and Insurance Certificates. Bonds shall be in the amount of 100 percent of the total contract bid amount (including base bid and any bid alternates selected by the Town).

103.5.2 INSURANCE CERTIFICATES:
This subsection reads as follows:

Before work is started under the contract, the Contractor will be required to file with the Town of Falmouth, a Certificate of Insurance, executed by an insurance company or companies satisfactory to the Town and licensed by the State of Maine Insurance Department to do business in the State of Maine, stating that the Contractor carries insurance in accordance with the insurance requirements stipulated in the General and Supplemental General Conditions.

Termination or Change of Insurance: Each insurance policy shall be endorsed to provide that the insurance company shall notify the Town by certified mail at least 30 days in advance of cancellations or of any change in the policy. No change shall be made without prior written approval of the Town.

The Contractor shall keep all the required insurances in continuous effect until 31 days after the date of final acceptance of the project or until such time as may be established by the Town of Falmouth.
SUPPLEMENTAL SPECIFICATION  
SECTION 104  
GENERAL RIGHTS AND RESPONSIBILITIES

104.2.4 AUTHORITY OF RESIDENTS AND INSPECTORS:  
This subsection shall be revised to read as follows:

The residents and inspectors will not be responsible for nor issue directions regarding the Contractor's safety precautions or programs; nor will he issue directions relative to, or assume control over any aspect of the methods, techniques or procedures of construction.

104.3.8 WAGE RATES AND LABOR LAWS:  
This subsection shall be revised to read as follows:

Minimum Federal and State Wage Rates do not apply to this project.

104.4.6 UTILITY COORDINATION:  
This subsection shall be revised with the addition of the following:

At points where the Contractor's operations are adjacent to properties of railways, telephone, gas, water and/or power companies, or are adjacent to other property, damage to which might result in considerable expense, loss or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

It is anticipated that utility poles will not be relocated prior to commencement of contract work. The Contractor is advised to schedule his work to accommodate the possibility of utility pole and overhead wire obstructions.

The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable, and the duplication or rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

No person, firm, or corporation, including Town forces, shall make or cause to be made any opening or excavation until contact has been made with all utilities to locate any existing underground gas, water, telephone, power or other installations. When gas or other flammable service to buildings is discontinued, the existing service line for such service shall be terminated at a point outside the building.

In the event of interruption to water or utility services as a result of accidental breakage, or as a result of being exposed or supported, the Contractor shall promptly notify the proper authority. He shall cooperate with the same authority in the restoration of such service as promptly as possible.

Water lines, gas lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals and all other utility appurtenances within the limits of the proposed construction are to be moved by the owners with or without expense to the Contractor, unless otherwise provided for, or as noted in the plans.
The Contractor shall ascertain the location of existing utilities and any other necessary information by direct inquiry at the office of the following utility owners:

**Electric:**
Central Maine Power Company  
162 Canco Road  
Portland ME 04103  
ATT: Mr. Paul DuPerre  
Tel: 207.828.2882

**Water:**
Portland Water District  
225 Douglass Street  
Portland ME 04101  
ATT: Mr. Rico Spugnardi  
Tel: 207.774.5961

**Telephone:**
Fairpoint Communications  
5 Davis Farm Road  
Portland ME 04103  
ATT: Mr. Marty Pease  
Tel: 207.797.1119

**Sewer:**
Town of Falmouth  
Wastewater Department  
96 Clearwater Drive  
Falmouth, ME 04105  
ATT: Mr. Robert Clark  
Tel: 207.781.4462

**Cable TV:**
Charter Spectrum  
118 Johnson Road  
Portland ME 04102  
ATT: Mr. Mark Pelletier  
Tel: 207.253.2324

**Storm Drain:**
Town of Falmouth  
Department of Public Works  
101 Woods Road  
Falmouth, ME 04105  
ATT: Mr. Jay Reynolds  
Tel: 207.781.3919

**Communications:**
First Light Fibre  
491 Lisbon Street  
Lewiston, ME 04240  
ATT: Mr. Michael Ellingwood  
Tel: 207.333.3471

**Natural Gas:**
Summit Utilities  
P.O. Box 270868  
7810 Shaffer Pkwy #120  
Littleton, CO 80127  
ATT: Mr. Zdenko Novkovic  
Tel: 720.981.2123

**Communications:**
OTT Communications  
56 Campus Drive  
New Gloucester, ME 04260  
ATT: Mr. Jim Taplin  
Tel: 207.688.8824

The completeness of the above listing is not guaranteed by the Town of Falmouth.
SPECIAL PROVISION
SECTION 416
HOT BITUMINOUS PAVEMENT RESTORATION

416.01 DESCRIPTION:
This work shall consist of the permanent restoration of pavement surfaces within Public and Private properties (driveways, parking areas, etc.) excluding pavement restoration associated with installation of new or resetting of existing curb, which is incidental to the curb pay items. The work of this section shall include placement and compaction of all gravels and pavement courses in accordance with the typical pavement restoration details contained in the plans.

416.02 MATERIALS AND CONSTRUCTION REQUIREMENTS:
The materials, their use, and the construction requirements shall conform to the requirements of Sections 403 and 703 of the Standard Specifications and as supplemented below.

All existing bituminous asphalt pavement shall be cut with a saw in relatively straight lines parallel to the trench excavation.

All vertical cuts in existing pavements shall be treated with an approved asphaltic tack coat material. The surface of the trench when completed shall be flush with the existing pavement.

The bituminous pavement and gravel in the trench shall be constructed as shown on the typical trench detail.

416.03 PROTECTION OF EXISTING PAVEMENT SURFACES:
On paved surfaces the Contractor shall not use or operate tractors, bulldozers, or other power-operated equipment the treads or wheels of which are so shaped as to cut or otherwise injure such surfaces.

All surfaces, outside the trench payment limits, which have been injured by the Contractor's operations including those pavement surfaces disturbed or destroyed by his blasting operations shall be restored to a condition at least equal to that in which they were found immediately before work was begun.

No separate payment will be made for this restoration work.

416.04 METHOD OF MEASUREMENT:
Hot Bituminous Pavement Restoration, including Bituminous Asphalt and base and subbase gravels, will be measured by the square yard in place, laid to neat lines as shown on the plans and as outlined herein. It shall not include pavement replacement in areas disturbed outside the limits as specified in the trench details.

416.05 BASIS OF PAYMENT:
The accepted quantities of Hot Bituminous Pavement Restoration will be paid for at the contract unit price per square yard for the bituminous pavement, including gravel, complete in place.

<table>
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<th>Pay Item</th>
<th>Pay Unit</th>
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<td>416.01</td>
<td>Hot Bituminous Pavement Restoration (Public Roadways)</td>
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<td>416.02</td>
<td>Hot Bituminous Pavement Restoration (Private Driveways, etc.)</td>
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</table>
SUPPLEMENTAL SPECIFICATIONS
SECTION 622
TRANSPLANTING SHRUBS, HEDGES AND TREES

622.01 DESCRIPTION:
Under this item the Contractor shall dig up, move and replant existing shrubs, hedges, and trees called to be reset to street line, in accordance with these specifications including Section 621 and in conformity with the plans.

622.03 CONSTRUCTION REQUIREMENTS:
Digging: The earth of shrubs, hedges, and trees to be moved and replanted shall be carefully hand-dug with a solid ball of earth as is customary in good nursery practice. Minimum size of the rootball shall be as indicated in the current edition of the "American Standard of Nursery Stock".

Moving: The earth rootball shall be maintained as a solid unit during the moving. In order to assure protection from breaking or cracking, the rootball shall be tightly wrapped with burlap material and tightly bound with cord or rope.

Replanting: The plants shall be replanted immediately after digging in the designated new location at the same depth below ground as before they were moved.

Watering: As soon as the plants are replanted, they shall be watered to the point where the roots and the surrounding earth are well saturated.

622.05 MAINTENANCE:
The Contractor shall be responsible to protect and care for the plants during the life of the Contract. The Contractor will be required to replace the plants, if they show such signs of loss of health or appear to be in danger of dying, with others of the same type and variety.

622.07 METHOD OF MEASUREMENT:
Transplanting shrubs and trees will be measured by each, complete in place. Transplanting hedge will be measured by the linear foot, complete in place.

622.08 BASIS OF PAYMENT:
The accepted quantities of transplanting hedges, shrubs, and trees will be paid for at the contract unit price which payment shall include digging, binding, moving, replanting, loam, watering, care and maintenance, and if required, replacement.

Payment will be made under:

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<td>Transplant Hedge</td>
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ITEM 670.197  2-1/2” PVC SCHEDULE 40 CONDUIT  LF

GENERAL

The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

PVC Conduit shall be concrete encased under roadway, direct buried elsewhere, and meet the requirements specified in section 715-03 of the standard specifications.

INSTALLATION

Conduit shall be installed as specified in section 626-033 of the standard specifications.

Where noted on Sheet 3 of the plans, a hole shall be created under the parking lot retaining wall large enough to accommodate the conduit by jacking, drilling or pushing a conduit under the retaining wall. The conduit shall be extended through the opening and connected to the conduit in the open area.
The contractor shall place the push pit without disturbance to the adjacent sidewalk. The push pit shall be backfilled and compacted.

MEASUREMENT AND PAYMENT

Payment will be made at the unit price per linear foot, which price shall constitute full compensation for all labor, tools, and equipment, required for furnishing and installing PVC Schedule 40 conduit, fittings, expansion fittings used at bridge expansion bearings, bends, clamps, couplings, condulets, supports, inclusive of conduit supports, trench excavation (except rock and sidewalk), jacking, drilling or pushing conduit and backfilling (except where Engineer requires gravel borrow backfill), joint encasement, de-watering, pull ropes, penetrations into new and existing handholes, connection to existing conduits, warning tape and surface restoration. Surface restoration shall include, but is not limited to, restoration of sidewalk surface and grass areas, and all incidental costs required for the proper completion of the work specified herewith, as shown on the plans, or as required by the Engineer, complete in place.
ITEM 670.156 2-1/2” RISER DROP  EA

GENERAL

The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

Riser poles shall consist of a rigid galvanized steel sweep and shall be 2-1/2” rigid galvanized steel prior to exiting the ground to 10’ above finished grade. 10’ above finished grade shall be 2-1/2” schedule 40 PVC.

INSTALLATION

PVC Conduit shall be installed as specified in section 626-033 of the standard specifications. Rigid Galvanized Steel conduit shall be installed as specified in section 626.032 of the standard specifications

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer.

Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.

ITEM 670.177 24”x24”x18” HANDBOICE  EA

GENERAL

The Contractor shall furnish and install polymer concrete handholes as indicated on the Contract Drawings. The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

Loadings comply with ANSI/ACTE 77. These enclosures, with a design load of 22,500 lbs. and a test load of 33,750 lbs., meet and exceed ANSI tier 22 test provisions. Enclosures and covers shall be concrete gray color and rated for no less than 22,500 lbs. over a 10”x10” area and be designed and tested to temperatures of –50 degrees F. Covers shall have a minimum coefficient of friction of .5.

INSTALLATION

All handholes must be installed as shown on the Drawings to the approved grade, except
as approved deviations may be required to meet field conditions. The top of the handhole
and cover shall be set flush with the finished grade.

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the
Engineer.

Payment shall be at the contract unit bid price for each unit, complete in place, which price
shall include all labor, tools, equipment, materials, all wiring and connections, and all
incidental costs required to complete the work.

ITEM 670.802 100A METER SOCKET EA
ITEM 670.803 200A METER SOCKET EA

GENERAL

The work under this Item shall conform to the relevant provisions as indicated in
Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and
Meter Installations” dated January 1st 2009 appended to Section 680.

MATERIALS

Meter sockets shall meet the requirements specified in section VIII as indicated in
Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and
Meter Installations” dated January 1st 2009 appended to Section 680.

INSTALLATION

Meter sockets shall be installed as specified in Section VIII as indicated in Attachment 1 -
Central Maine Power “Handbook of Requirements for Electrical Service and Meter
Installations” dated January 1st 2009 appended to Section 680.

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the
Engineer.

Payment shall be at the contract unit bid price for each unit, complete in place, which price
shall include all labor, tools, equipment, materials, all wiring and connections, and all
incidental costs required to complete the work.

ITEM 670.316 #250 KCMIL COPPER WIRE LF
ITEM 670.317 #3/0 AWG COPPER WIRE LF
ITEM 670.318 #2/0 AWG COPPER WIRE LF
ITEM 670.319 #2 AWG COPPER WIRE LF
GENERAL

All work performed under these Items shall be in accordance with the relevant provisions of Section 634 of the Standard Specifications. The Contractor shall be required to furnish and install all materials, equipment and labor necessary to completely wire and operate the street lighting system. All materials and wiring procedures shall conform to the specifications contained herein and to the requirements and standard practices of the Section 634 and the following:

All wire and connectors shall conform to the standards of the National Electrical Manufacturers Association or the Underwriters’ Laboratories, Inc., whichever is applicable. All materials and workmanship shall conform to the requirements of the National Electrical Code, Standards of the American Society for Testing and Materials, and any local ordinances that may apply.

Wherever any reference is made to the standards mentioned above, the reference should be construed to mean the standard that is in effect on the day the Notice to Proceed to the Contractor for the work is dated.

Wire sizes shall be based on American Wire Gage (AWG), as applied to copper conductors.

MATERIALS

The cable shall be UL listed and listed as THW and conform to section 715.07 of the standard specifications.

Wire and cable furnished and used shall be new and shall have the size, grade of insulation, voltage and manufacturer’s name permanently marked on the outer covering at regular intervals. Wire and cable shall be delivered to the site in complete coils or reels with identifying size, type and insulation tags. Wire and cable shall be protected from weather and damage during storage and handling.

Splicing Materials:

Shall be in accordance with Section 715.07 of the standard specifications. Splice kits shall be submersible rated and shall be suitable for connecting copper to aluminum conductors.

CONSTRUCTION METHODS

No wire shall be drawn in to any conduit until all work that may cause damage to the wire is complete.

All wire shall be continuous from handhole to handhole without running splices in conduits. All wires shall extend 2 feet above the handhole, connected at ends and rolled back into the handhole.
All wire terminals, taps and splices shall be made secure with connectors, splicing materials and methods as hereinafter specified.

Grounding:

Coatings and rust on conduits shall be removed at the location where the ground fittings are to be installed.

The bare copper conductor shall be connected to the continuous insulated bonding lead, which shall be identified with green plastic marking tape as noted in the specifications. Bonding leads for lighting fixtures on poles shall be an insulated #10 AWG, marked green, which shall be extended to the nearest handhole and interconnected to the bare copper ground wire in the handhole of gauge shown on the contract drawings and the pig tail conductor shall be connected to the ground rod.

A conductor with the same insulation of the power leads shall be installed in all conduits as a continuous bond wire. All bonding leads from fixtures, pole, control boxes, fittings and ground rods shall be connected to the continuous insulated bonding lead which shall be identified with green plastic marking tape as noted in the specifications.

All grounding shall conform to the applicable provisions of the National Electrical Code and section 634.081 of the standard specifications.

Field Tests:

All conductors shall be tested in accordance with section 634.09 of the standard specifications.

All tests and any necessary repairs or replacements that are indicated by the Engineer to produce a fault-free system will be performed at the Contractor's expense.

NOTE: The Contractor shall be completely responsible for all maintenance, repairs and replacement of damaged equipment during the functional test and throughout the performance warranty period.

If, within 48 hours after notification by the Engineer of a malfunction, and the Contractor fails to make such repairs as necessary, the Engineer will undertake repairs of which all costs are to be borne by the Contractor. The cost of any maintenance necessary, except electrical energy, shall be at the Contractor's expense and will be considered as included in the price paid for the Contract item involved and no additional compensation will be allowed therefore.

**MEASUREMENT AND PAYMENT**

Payment will be made at the respective unit price and be measured by the foot along the center line of the conduit in which the conductor is placed, complete-in-place, which price shall constitute full compensation for furnishing, installing and connecting the street lighting
cables, the grounding of the system, testing the lighting circuit wiring, grounding wire testing, and for furnishing any equipment and/or materials required.

No allowance will be made for the necessary lengths of slacked cable laid around the sides of manholes, handholes, junction boxes, pull boxes, or extending from foundations for making splices, taps in cable, and connecting the internal components of control cabinets. No allowance will be made for cable in controllers, light poles or other items other than conduit.

The cost of any maintenance necessary to include testing, replacement of lamps, luminaires, wiring splices, grounding, and all appurtenances, except electrical energy, shall be at the Contractor's expense and will be considered as included in the price paid for the contract item.

SERVICE RECONNECTS

The electrical contractor shall be responsible for coordination of the following to perform service reconnects:

1. Coordinate access to the property to open/close the main circuit breaker with the property owner.
2. The shutdowns will be performed during off hours unless otherwise approved by the property owner.
3. Coordinate with Central Maine Power as to the date, time and duration of the shutdown.
4. Coordinate with the property owner as to the number of hours for the shutdown and the need for temporary power during the shutdown.
ITEM 680.100 5” PVC SCHEDULE 40 DUCTBANK – 2 DUCTS  LF

GENERAL

The work under this Item shall conform to the relevant provisions as indicated in Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and Meter Installations” dated January 1st 2009 appended to this section.

MATERIALS

PVC Conduit shall meet the requirements specified in Section 910 of Attachment 1 - Central Maine Power "Handbook of Requirements for Electrical Service and Meter Installations" dated January 1st 2009 and the contract drawings.

INSTALLATION

PVC Conduit shall be concrete encased and installed as specified in section 909 of Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and Meter Installations” dated January 1st 2009 and the contract drawings.

MEASUREMENT AND PAYMENT

Payment will be made at the unit price per linear foot, which price shall constitute full compensation for all labor, tools, and equipment, required for furnishing and installing PVC Schedule 40 conduit, fittings, expansion fittings used at bridge expansion bearings, bends, clamps, couplings, condulets, supports, inclusive of conduit supports, trench excavation (except rock and sidewalk) and backfilling (except where Engineer requires gravel borrow backfill), joint encasement, de-watering, pull ropes, penetrations into new and existing handholes, connection to existing conduits, warning tape and surface restoration. Surface restoration shall include, but is not limited to, restoration of sidewalk surface and grass areas, and all incidental costs required for the proper completion of the work specified herewith, as shown on the plans, or as required by the Engineer, complete in place.

ITEM 680.150 5” RISER DROP  EA

GENERAL

The work under this Item shall conform to the relevant provisions as indicated in Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and Meter Installations” dated January 1st 2009.
MATERIALS

Riser poles shall meet the requirements specified in Illustrations 28, 29, and Section 914 of Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and Meter Installations” dated January 1st 2009.

INSTALLATION

Riser poles shall be installed as specified in specified in Illustrations 28, 29, and Section 914 of Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and Meter Installations” dated January 1st 2009.

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer.

Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.

ITEM 680.160 4’x4’ SINGLE PHASE TRANSFORMER PAD EA

GENERAL

The work under this Item shall conform to the relevant provisions as indicated in Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and Meter Installations” dated January 1st 2009.

MATERIALS

Transformers shall meet the requirements specified in Illustrations 23, 24, & 25 of Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and Meter Installations” dated January 1st 2009.

INSTALLATION

Transformers shall meet the requirements specified in Illustrations 23, 24, & 25 of Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and Meter Installations” dated January 1st 2009.

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer.
Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.

**ITEM 680.140 4’x6’ HEAVY DUTY JUNCTION BOX EA**

**GENERAL**

The work under this Item shall conform to the relevant provisions as indicated in Attachment 1 - Central Maine Power “Handbook of Requirements for Electrical Service and Meter Installations” dated January 1st 2009.

**MATERIALS**

4’x6’ Heavy Duty Junction Boxes shall meet the requirements specified in the contract drawings.

**INSTALLATION**

4’x6’ Heavy Duty Junction Boxes shall be installed as defined in the contract drawings.

**MEASUREMENT AND PAYMENT**

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer.

Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.
HANDBOOK
OF
REQUIREMENTS
FOR
ELECTRIC SERVICE AND
METER INSTALLATIONS

CENTRAL MAINE
POWER

EFFECTIVE JANUARY 1, 2009
Dear Handbook Users,

I am pleased to offer you this revised Handbook of Requirements. Again this year, we asked employees, contractors and engineers to tell us how we could improve this book. Many offered great suggestions, comments and insights.

As a result, a number of improvements have been made that will save both time and money, while still offering customers safe and reliable electric service.

I want you to know we always welcome your comments and suggestions. Working together, we can do a better job meeting the needs of customers.

Sincerely,

Sara J. Burns
President
PREFACE

This handbook is effective January 1, 2009 and is a revision of an earlier edition dated April 25, 2006. Major changes are indicated by marginal lines. Minor editorial changes in certain cases are not indicated. As you read this handbook, you will see the words “Company” and “we” used many times referring to "Central Maine Power Company." All earlier editions of, and supplements to, this handbook are superseded and should be destroyed.

If you need additional copies of this handbook, please call or write to us at:

Central Maine Power Company
Meter Services Department
83 Edison Drive
Augusta, ME 04336
Tel. 207-623-3521 Ext. 2617
E-mail: suzanne.hinkley@cmpco.com

You may also view this handbook on line at http://www.cmpco.com/handbook then click on CMP’s Handbook of Requirements link. Use the “Bookmarks” tab to get to specific sections.

TERRITORY SERVED

Central Maine Power Company provides electric service to 350 cities and towns in Maine. The counties served include: Androscoggin, Cumberland, Franklin, Hancock, Kennebec, Knox, Lincoln, Oxford, Penobscot, Piscataquis, Sagadahoc, Somerset, Waldo, and York.

Our general offices are located at:
83 EDISON DRIVE
AUGUSTA, MAINE 04336
TEL. 207-623-3521
To contact us for information or assistance, please use these toll-free phone numbers:

**To request service or conduct other business**
- **1-800-750-4000** (for RESIDENTIAL)
- or **1-800-565-3181** (for COMMERCIAL & INDUSTRIAL)

**To report a power outage** or other electrical trouble:
- **1-800-696-1000**

**DIG SAFE LAW**

Maine’s Dig Safe law establishes requirements that excavators and others must follow when using power tools or equipment to penetrate the ground. For a copy of the rule, call the MPUC at 1-800-452-4699, or visit www.state.me.us/mpuc.

**Before digging, notify DIG SAFE at:** **1-888-344-7233**

**OVERHEAD HIGH-VOLTAGE LINE SAFETY NOTICE**

In accordance with Maine Law (Title 35-A M.R.S.A., Chapter 7-A) a person may not erect, construct, operate, maintain, transport or store any equipment or item within 10 feet of an overhead high-voltage line (except as allowed for in the Law). When it is necessary to carry on any work or activity near an overhead high-voltage line, the person responsible for the work or activity must notify CMP by calling 1-800-696-1000 at least three (3) business days in advance (except in emergency situations). After mutually acceptable arrangements are negotiated, CMP will make the necessary precautionary safety arrangements.

Primary voltage cutouts or disconnecting switches, installed by customers for their own use on privately owned systems, must be operated by a qualified (as defined by OSHA) individual.
The following is a **private** toll-free number for contractors and electricians to use to coordinate service installations.

**1-866-225-4200**

or e-mail: gettingconnected@cmpco.com

**Service Center Mailing Addresses:**

**Alfred**
438 Sanford Rd  
Alfred, ME 04002

**Lewiston (including Bridgton)**
740 Main Street  
Lewiston, ME 04240

**Brunswick**
280 Bath Road  
Brunswick, ME 04011

**Portland**
162 Canco Road  
Portland, ME 04103

**Fairfield (Including Augusta)**
205 Center Road  
Fairfield, ME 04937

**Rockland (Including Belfast)**
24 Gordon Drive  
Rockland, ME 04841

**Farmington (Including Skowhegan and Dover)**
209 Whittier Road  
Farmington, ME 04938
# CENTRAL MAINE POWER TOWNS SERVED

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   D. 120/208 volts, three-phase, four-wire, wye
   E. 120/240 volts, three-phase, four-wire, delta
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I. INTRODUCTION

100. PURPOSE
The intent of this handbook is to provide information to customers, electrical contractors, engineers and architects in order that electrical installations may be connected to the Company’s system in a safe and uniform manner. This handbook is filed with the Maine Public Utilities Commission (MPUC), and it is in conformance with the MPUC’s Chapter 320, Service Standards for Electric Utilities.

101. CODE REQUIREMENTS
The Company, by law (Title 35-A M.R.S.A. Section 2305-A), is required to design, construct, operate and maintain its lines and equipment in conformance with the applicable provisions of the most recent edition of the National Electrical Safety Code (NESC). The customer requirements of this handbook are based upon the applicable provisions of the most recent edition of the National Electrical Code (NEC), as approved by the National Fire Protection Association, and said Code is hereby made a part of this handbook by reference. Any additional requirements are established in the interests of safety and convenience. Municipal and State requirements, insofar as they may conflict with anything contained herein, will take precedence. The local or State electrical inspector is the “authority having jurisdiction” and is, therefore, responsible for interpretation and enforcement of the NEC. In accordance with NEC Section 90.4, the “authority having jurisdiction” may, by special permission (written consent), waive specific requirements in the NEC or permit alternative methods.
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102. REVISIONS OF REQUIREMENTS

The contents of this handbook are effective January 1, 2009, and supersede all similar requirements previously issued. Revisions of this information will be made when necessary, and the Company reserves the right to make such revisions. The Company will endeavor to notify those concerned when such changes are made, but cannot guarantee to give such notice to all persons who may have received this handbook. It is urged that all architects, engineers, contractors, electricians, and others who are interested submit their names and addresses to be included on the mailing list to:

Central Maine Power Company
Meter Services Department
83 Edison Drive
Augusta, ME 04336
E-mail: suzanne.hinkley@cmpco.com

103. COMPLIANCE WITH REQUIREMENTS

The customer's installation, before being connected to the lines of the Company, shall be in compliance with the requirements contained in this handbook, the NEC, and any other requirements mandated by State law or local ordinance.

104. SPECIAL CASES

Special cases may warrant departure from the requirements in this handbook. Any such departure will not be considered as establishing a precedent, nor be considered as a waiver of the Company's right to enforce any of the requirements contained herein.

105. WRITTEN CONFIRMATION

The Company will confirm in writing, upon request, all information given regarding service characteristics, applicable rate, service entrances and meter locations. The Company is not
responsible for misunderstandings of any nature which may result from information given orally, unless confirmed in writing. In order to avoid delays and possible expensive changes, the above information should always be obtained before purchasing equipment or starting construction.

106. APPLICATION OF REQUIREMENTS

These requirements apply to all new installations and to any existing installations which are being significantly altered or which are specifically covered hereinafter.

107. ADVISORY SERVICE

All persons are encouraged to make use of the advisory services provided by the Company. This assistance may avoid delays in service installation and suggestions regarding energy management and application of electrical equipment may result in greater satisfaction and more efficient use of electric service.

108. APPEAL TO MAINE PUBLIC UTILITIES COMMISSION

If, after consultation with the appropriate Company personnel, there continues to be a dispute about the application of any of these requirements, the customer may appeal to the Maine Public Utilities Commission for assistance in resolving the dispute. It is not intended that the MPUC will interpret any provision of the National Electrical Code.
II. General Requirements

200. APPLICATION FOR SERVICE

Applications for new service connections or for alterations in existing connections shall be made by calling 1-800-750-4000 (for RESIDENTIAL) or 1-800-565-3181 (for COMMERCIAL & INDUSTRIAL). The application shall be made as far in advance as possible to assure lead time and availability of necessary materials. Advice will be given as to the applicable CMP rates and type of service available. The location for the service entrance, meter, point of attachment of the Company's service drop, as well as, Company transformers and poles, must be reviewed and approved by the Company before any wiring is installed. NOTE: The customer may be billed whenever wiring installed without prior Company approval results in an additional expense to the Company.

Wiring should not be started, equipment purchased, nor any load added to existing services until all necessary negotiations have been completed and the Company has advised that it can supply the required service. Customers' specifications and contracts for electric wiring and equipment should conform to these Requirements. Plans and specifications for industrial and commercial facilities and multiple occupancy buildings, including housing, shall be submitted in duplicate, indicating the size of the building in square feet and listing the connected load by class, such as cooking, heating, lighting, motors' (indicate largest size), etc., to the Company's local Service Center or Marketing & Sales (M&S) Department.
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201. MUNICIPAL AND STATE CERTIFICATION

A. Form 1190

The Company cannot install services to any lot until it receives written authorization from the municipality that the lot complies with all applicable shoreland zoning and subdivision laws, or other written arrangements have been made between the Company and the municipal officers as stated in Title 30-A M.R.S.A. Section 4406 and Title 38 M.R.S.A. Section 444. Services should not be installed until an authorized municipal officer issues the required certification on CMP form 1190, unless the Company gives the contractor written notification that it is not necessary to obtain form 1190.

B. Form 1360 or State Single-Family Dwelling Application

Maine law (Title 32 M.R.S.A. § 1105) prohibits the Company from activating the electricity to a newly constructed single-family dwelling until the Company receives certification by a State or local electrical inspector, master electrician or limited electrician in house wiring; that the wiring complies with the NEC. Note: the Law requires certification for any new (first time) electrical installation/electric service made in/on a single-family dwelling constructed after July 1, 1987. The Law does not apply to the installation of mobile/manufactured or modular home wiring or services.

CMP form 1360 is used where there is no local electrical inspector and the electrician is certifying the complete wiring installation. The State Single-Family
Dwelling Application is used when the homeowner does the wiring and the State inspector certifies the wiring.

202. SERVICE REQUIRING EXTENSION OF LINES

Line extensions shall be in accordance with the provisions of the MPUC’s Chapter 395 “Construction Standards and Ownership and Cost Allocation Rules for Electric Distribution Line Extensions,” and, the Company’s filed tariff or Term & Condition (T&C) on “Extensions.” See paragraph 219 of this handbook for more details on customer constructed/owned lines.

203. INSTALLATION OF SERVICE-SUPPLY LINES

The Company is not required to install service-supply lines prior to the time that the wiring of the premises is actually in progress and the structure sufficiently completed to provide a safe and suitable terminus for the service-supply lines.

204. TEMPORARY SERVICE

Customers taking service on a temporary basis are required to pay an amount equivalent to the cost of installing and removing the Company's service facilities, including the nonsalvable costs of material used. Temporary service, provided typically for building construction purposes, is intended to be used for a limited time period at a location where the facilities devoted especially to the service are not expected to have further usefulness at that location after the temporary period. There shall be no other attachments to the temporary structure; and, if it becomes unsafe, service may be disconnected (See paragraph 209). In special cases advance payment is required. See Illustration No. 7 in Section XII for overhead temporary service structure requirements. See Par. 918 and Illustration No.s 9 and 11 for underground temporary or permanent service structure requirements.
205. INSTALLATION CONTRACTS

When contracts for electric wiring or equipment are prepared by contractors, architects or engineers, it is suggested that such contracts include the specification that "all materials, labor and workmanship be in full accordance with the latest requirements of: the NEC, all municipal, State and National authorities having jurisdiction, and Central Maine Power Company."

206. NOTICE OF CHANGE IN LOAD

The customer shall give proper notice to the Company's local Service Center or Marketing & Sales (M&S) Department of an increase or decrease proposed in connected load or of any proposed change in characteristics, purpose of use, or location of load.

207. INSPECTION REQUIREMENTS

In municipalities where electrical inspections are required by local authorities, certificates of approval must be received in Company's local Service Center before installations will be connected to the Company's distribution system. Such certificates are to be obtained from the “authority having jurisdiction” by the customer or contractor.

Where local authorities do not require inspection certificates, any required State permits or certificate of inspection shall be received in the Company's local Service Center before temporary, new or upgraded services are connected. Refer to paragraph 201 for specific certification requirements. The customer is advised to contact the Company's local Service Center to verify the inspection requirements.

The Company shall not be responsible for the installation or maintenance of the customer's electrical equipment, nor shall there
be any duty or obligation on the part of the Company to inspect the same.

208. CAPACITY LIMIT

The Company reserves the right to install protective apparatus to disconnect service if the Company's capacity at that point is exceeded.

209. DISCONNECTION FOR VIOLATIONS

Subject to the Maine Public Utilities Commissions' Chapters 810 and 860, the Company may refuse to connect or continue service already connected if in its judgment the customer's equipment, or use thereof, creates a dangerous condition, or, might detrimentally affect the equipment of the Company or adversely affect service to other customers.

210. MOVING OF EQUIPMENT

When electrical equipment is brought into the territory served by the Company, or is moved within said territory, it must be adapted by the customer to the characteristics of the service available at the new location.

211. POINT OF DELIVERY

The Company will designate a point at which the customer shall terminate his wiring and facilities for connection to the service-supply lines of the Company, but such information does not constitute an agreement or obligation on the part of the Company to furnish service.

The NEC refers to this point as the "Service Point" and defines it as: "the point of connection between the facilities of the serving utility and the premises wiring."
The Company may have some of its equipment, such as metering, on the customer’s side of the Point of Delivery/Service Point.

212. RELOCATION OF DELIVERY POINT

In the event the Company is required to place underground any portion of its distribution system, or is required to change the location of any poles or its overhead distribution system, a new point of delivery will, if necessary, be designated by the Company and the customer will be required, at his own expense, to make any change in his wiring system in connection therewith.

The Company will reimburse the customer or pay for the cost of such changes if the delivery point is changed for the reasons stated above at the sole request and convenience of the Company.

The Company will charge a customer for all work performed by it at the customer's request in changing the location of any poles, services, meters or other equipment owned and installed by the Company.

213. CUSTOMER'S PREMISES

The Company shall not be liable for damage to the person or property of the customer or any other persons arising from the use of electricity or the presence of the Company's equipment on the customer's premises. All property owned by the Company and located on the customer's premises shall be deemed to be personal property and title thereto shall remain with the Company, and the Company shall have the right at the termination of service to remove all of its property whether affixed to the realty or not.
214. CUSTOMER'S RESPONSIBILITY

The customer shall be responsible for the safekeeping of the property of the Company on the customer's premises and, in the event of damage to it, shall pay to the Company any cost of inspection and repairs. The customer shall protect the equipment of the Company on the premises and shall not permit any person, except an authorized representative of the Company, to break any seals, do any work on or attach anything to any meter or other Company apparatus located on the customer's premises except with the written authorization of the Company. The customer should notify the Company for operation, maintenance, or relocation of Company owned equipment.

The customer shall provide transportation of all Company line material, tools, employees and equipment from the point of reasonable access to the location where service is to be performed whenever operation and maintenance is required on extensions located in remote areas where access by standard Company transportation is not possible. In lieu thereof, the customer or customers served by the line shall pay the transportation costs incurred directly by the Company. See paragraph 219 for details on customer constructed lines.

215. ACCESS TO PREMISES

The Company shall have the right of access, by the Company's standard vehicles and equipment, to a customer's premises and to all property furnished by the Company installed therein at all reasonable times during which service is furnished to the customer, and on or after its termination, for the purpose of reading meters, or inspection and repair of devices used in connection with its service, or removing its property, or for any other proper purpose.

The customer, at their expense, shall maintain suitable and safe access, by the Company's standard vehicles and equipment, to
all equipment owned by the Company on the customer’s property. If the customer’s property is secured by a gate, chain or similar device, the customer shall install the device to allow installation of a Company owned lock for access to this property.

216. CONTINUITY OF SERVICE

The Company will use reasonable diligence to provide a continuous, regular and uninterrupted supply of service. Conditions may arise when the supply of service is subject to interruption, impairment, or change from normal standards of delivery for such reasons as accidents, strikes, or causes beyond its control, or to curtailment or change in characteristics of delivery when considered necessary for protection of life or property, for repairs or improvements to facilities, or for the best interests of customers in general. When interruptions are necessary for repairs or improvements to facilities, the Company shall give reasonable notice to the customers affected if practicable; or in an emergency when such notification would be impracticable, such interruptions will be made without notice.

Should the supply of service be so curtailed or changed, or should it be interrupted or become impaired because of accident, strike, legal process, Federal, State or municipal interference or any cause whatsoever beyond the Company's control, and except as caused by willful default or willful neglect on its part, the Company shall not be liable for damages, direct or consequential, resulting from such interruption, impairment, curtailment or change.

217. PROTECTIVE EQUIPMENT

In cases of emergency it may become necessary to interrupt service for short periods without notice when repairs or changes require such procedure, and also to restore service without notice when such work is completed. Any equipment which might endanger life or damage property under the above conditions must
be provided with suitable automatic protective devices by the customer.

All motors and electronic equipment such as computers and microprocessors, shall be controlled and protected, by the customer, from damage caused by single phasing or abnormal voltage conditions. Such disturbances are inherent in all supply systems.

The Company cannot be held responsible for damages caused by the customer’s failure to provide adequate protection.

218. CUSTOMER GENERATION

The following general requirements apply to customer generating facilities designed to operate in parallel with the Company's electrical system and those which are designed to operate isolated from the Company's system. Specific requirements and specifications for various types and sizes of customer facilities shall be obtained from the Company prior to installation.

A. PARALLEL OPERATION

The Company will permit customers to operate generating equipment in parallel with its electric system whenever it can be done without adversely affecting the general public or Company equipment or personnel. Operating in parallel means the customer's generator is interconnected to simultaneously serve the same load as the Company's system. Such interconnection must be in compliance with Federal, State and local regulations as well as Company requirements and NEC Article 705.

All such installations must be inspected and approved in writing by the Company before being
allowed to operate in parallel with the Company's electrical system.

A contract/agreement is required for all generators that operate in parallel with the Company.

Inquiries for interconnection of customer-owned generation should be referred to the Marketing & Sales (M&S) Department for coordination.

B. NON-PARALLEL OPERATION (EMERGENCY OR STANDBY)

Where a customer makes provision for or installs a generator for the purpose of supplying all or a part of the load in the event of an interruption in supply of service from the Company's circuit, the customer's wiring shall be so arranged that no electrical connection can occur between the Company's service and the customer's emergency or standby source of supply. This will require the installation of a double throw switch, or an equivalent arrangement approved by the Company, that will insure the safety of both Company employees and the customer.

The customer must notify the Company's local Service Coordinator in advance of installing generating equipment and obtain approval of the method of connection. See paragraph 603 for more details on equipment and connection requirements for emergency or standby power connected to service entrance conductors or equipment.
219. CUSTOMER CONSTRUCTED/OWNED LINES

A. GENERAL

Electric distribution line extensions may be constructed by a contractor and owned by the customer in accordance with: the provisions of the MPUC's Chapter 395, "Construction Standards and Ownership and Cost Allocation Rules for Electric Distribution Line Extensions and the Company's filed tariff (T&C) on "Extensions."

Customers must contact the Company prior to the start of construction of "Customer Constructed/Owned Lines" to insure that the line will be built in such a manner that it can be connected to CMP's distribution system in accordance with all applicable rules and regulations.

B. CONSTRUCTION

Extensions may be constructed by a private line contractor, and owned by the customer, if the line will serve only one customer (as defined in the MPUC's Chapter 395). In this case, the property owner may retain ownership of the line and the Company will then have no responsibility for repair and maintenance of the line, including tree trimming and storm damage repair.

In the event the line will serve multiple customers, such as in a development or subdivision, the line may be constructed by a private line contractor; however, it shall be owned by the Company. In this case, the customer shall be responsible for all costs associated with the transfer of ownership as specified in the MPUC's Chapter 395 and the Company's filed tariff (T&C) on "Extensions."
For any customer-owned line extension, the customer may locate the service equipment, including the meter enclosure, on the final pole of the line extension. This pole may also be the location of CMP's transformer, under the following conditions:

- All secondary conductors on the pole shall be run in conduit;
- The service equipment will be relocated off the pole at the owner's expense should the line be conveyed to CMP for any reason (the customer should contact the Company prior to relocating any service equipment to discuss the new location);
- No non-utility attachments (i.e. satellite dishes, clotheslines, basketball hoops, animal runs, etc.) shall be allowed on the pole;
- Access by standard utility vehicles to the pole shall be maintained at all times by the owner at his/her expense.

When the customer-owned line includes a primary underground that is feeding a single customer and owned by that customer, it may be constructed as a radial (in lieu of a loop) feed system. (See also, the Company's Terms & Conditions 7.4 (B)(11) (i), 7.4 (B)(12) (iii) and 7.5 (E); and paragraph 904 of this handbook.

C. CUSTOMER OBLIGATIONS

Prior to purchasing materials, the contractor should contact the Company to determine the appropriate wire size and type and the appropriate insulation level for the proposed line.

Before the Company shall be obligated to energize a private line extension, the contractor or customer shall:
• Provide the Company a plan of the line extension sufficient for the Company to include the private line on the Company’s property records, or reimburses the Company for the cost of preparing such a plan. The plan should detail the location or placement of the materials used, as identified in a materials list (or other such documentation) showing that the materials are listed on the Company’s Contractor Item Catalog contained in CMP’s Distribution Construction Standards for private line construction. To purchase a copy of the Item Catalog and Construction Standards, contact the Company’s Manager of Distribution Engineering.

• Build the line extension in accordance with the NESC, the Company's line construction standards, and any other requirements contained in the Company's filed tariffs on "Extensions."

• Provide tree/vegetation clearance from any overhead primary line per the following specification: a minimum of 8 feet horizontally, 15 feet vertically above and to the ground beneath, any conductor.

• Enter into a customer-owned line extension contract which the Company will record at the appropriate Registry of Deeds.

• Obtain: a) inspection by a qualified Company employee to determine whether the line extension is safe; or b) certification in writing by a Maine licensed Professional Engineer (or other person licensed by the State to certify electric distribution line extensions) that the line extension is safe, reliable, and constructed in compliance
The plan should detail the location or placement of the materials used, as identified in a materials list (or other such documentation) showing that the materials are listed on the Company's Contractor Item Catalog contained in CMP's Distribution Construction Standards for private line construction. To purchase a copy of the Item Catalog and Construction Standards, contact the Company's Manager of Distribution Engineering.

- Build the line extension in accordance with the NESC, the Company's line construction standards, and any other requirements contained in the Company's filed tariffs on "Extensions."

- Provide tree/vegetation clearance from any overhead primary line per the following specification: a minimum of 8 feet horizontally, 15 feet vertically above and to the ground beneath, any conductor.

- Enter into a customer-owned line extension contract which the Company will record at the appropriate Registry of Deeds.

- Obtain: a) inspection by a qualified Company employee to determine whether the line extension is safe; or b) certification in writing by a Maine licensed Professional Engineer (or other person licensed by the State to certify electric distribution line extensions) that the line extension is safe, reliable, and constructed in compliance with the Company's property records, or reimburses the Company for the cost of preparing such a plan.

- Provide the Company a plan of the line extension sufficient for the Company to include the private line on their records.

- Provide to the Company documentation of the total labor, total equipment, and total material costs.
III. STANDARD CHARACTERISTICS

300. STANDARD SERVICE CHARACTERISTICS

The following service characteristics are generally standard; however, all types of service are not available in all localities, those that are available shall be obtained from the Company before any wiring is installed or equipment purchased. In cases of multiple occupancy installations, the combined load may be such that the characteristics of the service required will be different from that which the individual customer's loads might indicate. In such cases the Company reserves the right to determine the type of service which will be supplied at 60 hertz. The maximum capacities as listed below may be exceeded, under certain conditions, with prior Company approval. Metering note: see para. 809 and 810 of this handbook for metering options.

A. 120 volts, single-phase, two-wire, (up to and including 60 Amp)--

For highway signs, trailers, traffic controllers, CATV amplifiers or other small power loads. The service from the Company's facilities up to, and including, the meter shall be a 120/240 volt, single-phase, three-wire circuit. Company approval must always be obtained in advance. Refer to Para. 409 for special requirements for travel trailers.

B. 120/240 volts, single-phase, three-wire--

For general lighting and/or heating and cooking, and small power loads with individual motors generally not over 5 hp. Where the total load exceeds 50 KVA, the Company may, at its option, require the customer to arrange the wiring for three-phase service.
C. 120/208 volts, single-phase (network), three-wire, (from four-wire system)--

For general lighting and/or heating and cooking, and small power loads with motors generally not over 5 hp. Where the total load exceeds 40 KVA, the Company may, at its option, require the customer to arrange the wiring for three-phase, four-wire service.

D. 120/208 volts, three-phase, four-wire, wye--

For large lighting loads, or combination lighting, heating/cooking and power. Single-phase load shall be balanced between phases in accordance with Para. 305. See also Para. 302.

E. 120/240 volts, three-phase, four-wire, delta--

For combination 120/240 volts, three-wire, single-phase and 240 volts, three-phase service, where the load of either class substantially exceeds that of the other (not available from Company padmount transformers). See also Para. 302.

F. 240 volts, three-phase, three-wire--

For installations supplying a total of not less than 5 hp. in polyphase motors, and/or large commercial heating equipment (not available from Company padmount transformers). Wherever three-phase service is already available, the Company may, at its option and without obligation to continue such service indefinitely, accept additional installations requiring service for three-phase motors of less than 5 hp. total. Note: due to the increase in electronics used in motor drives which may require a stable grounded neutral, the Company recommends four wire
service (whenever possible) for this application (see Para. D & E, above). See also Para. 302.

G. 277/480 volts, three-phase, four-wire, wye--

For power and general service installations typically having demands in excess of 50 KVA. Single-phase load shall be balanced between phases in accordance with Para. 305.

H. 240/480 volts, single-phase, three- wire--

For power and general service where the higher voltage is required to limit voltage drop in secondary feeds and three-phase power is not readily available (available from Company padmount transformers where load does not exceed 50 KVA).

I. 480 volts, three-phase, three-wire--

Normally for power installations having demands of not less than 50 KVA (not available from Company padmount transformers).

Note: to limit the available voltage-to-ground, the Company recommends four wire, wye service (whenever possible) for this application. See Para. G, above.

J. Service voltages higher than 480 volts--

Available only by negotiation with the Company. The size and type of customer's load must warrant such an installation.
301. DIRECT CURRENT OR TWO-PHASE SERVICE

No new service installation or provisions for increased loads will be made for either direct current or two-phase alternating current services.

302. VOLTAGE VARIATION

The Company will maintain the voltage delivered to its customers within the limits prescribed in "A" and "B" below, as required in the MPUC’s Chapter 320. This voltage will be maintained to the customer’s service entrance panel, provided that all systems up to that point meet CMP Standards. For three phase services, this "maintained" voltage can only be assured when all three primary phases are utilized and all three transformer windings are connected. Therefore, three primary phases will be required for the three phase services listed in paragraph 300. For residential services, refer to the Table on Illustration No. 31 in Section XII for “Allowable Secondary and Service Length.”

A. For service rendered principally for residential or commercial purposes the normal voltage variation shall not exceed plus or minus five percent (+ or - 5%) from the standard voltage for any period longer than one (1) minute.

B. For service rendered principally for power purposes the normal voltage variation shall not exceed plus or minus ten percent (+ or - 10%) from the standard voltage for any period longer than one (1) minute.

303. SPECIAL INSTALLATIONS

The customer will be required to pay the cost of any special installation necessary for service at other than the standard voltages listed previously or for service with closer voltage regulation than required for standard practice.
304. TRANSFORMER VAULTS AND METAL ENCLOSURES

Where high capacity services are required, or where an open outdoor location for transformers is not available, the Company may require the customer to furnish and properly maintain a suitable vault or metal enclosure on the premises for the necessary transformers and protective equipment. Such transformer vaults or enclosures must meet the requirements of the NEC and be provided with safe, secure and readily accessible outside access. Vault and enclosure specifications are subject to advance approval by the Company. Information will be furnished on request.

305. UNBALANCED LOAD

The customer shall at all times take and use energy in such a manner that the load will be balanced between phases to within nominally 10%. In the event of unbalanced polyphase loads, the Company reserves the right to require the customer to make the necessary changes at the customer's expense to correct the unsatisfactory condition, or to compute the demand used for billing purposes on the assumption that the load on each phase is equal to that on the greatest phase.
**IV. OVERHEAD SERVICE**

400. SERVICE DROP

For single phase service, the company will furnish, install, own and maintain the overhead service drop, running from its secondary distribution system to a designated point on the customer's premises. It shall be the responsibility of the owner or contractor to have the point of attachment determined by the Company so that a solid fastening for the service drop may be incorporated in the building. The customer shall install a standard hook or eye bolt, furnished by the Company, in accordance with NEC, Section 230.54(C). For services to low buildings or where the style of building construction does not readily permit the installation of the standard hook or eye bolt, the customer will, with Company approval, install a mast type service or provide an alternate means of attachment for the service drop. Refer to Illustration No. 3, in Section XII for a Mast Type Service.

In accordance with NEC Section 230.27, service drops shall be attached to buildings or other structures by fittings identified for use with service conductors. Per NEC Section 230.10, “vegetation such as trees shall not be used for support of overhead service conductors.”

For polyphase service, the customer shall be responsible for the cost of any overhead service drop.

401. SERVICE DROP CLEARANCE

In general, the ground clearance for triplex and quadruplex service drops, including drip loops, shall be not less than 12 feet for spaces accessible to pedestrians only, 15 feet over residential driveways, 18 feet over public ways, and 24 feet over railroads. Additionally, a 20-foot clearance over State/State Aid roads is
recommended to provide adequate clearance for future highway construction.

Where the height of attachment to a building does not permit the service drop, including the drip loop, to meet the above clearances, the ground clearance for building services, including the drip loop, with voltages of **150 volts or less to ground** and consisting of triplex or quadruplex cable may be reduced to 10 feet over areas accessible to pedestrians only and 12 feet over residential driveways. For temporary services, see Illustration No. 7 in Section XII.

The above clearances are the minimum required at 120°F final sag or 32°F and 1/2 inch ice, whichever produces the greatest sag (NESC requirement).

In order to obtain satisfactory clearances with low types of buildings, it may be necessary that special construction, as needed to provide a suitable point of attachment for the service drop, be furnished and installed by the customer, subject to the Company's approval. See Illustration No. 3 in Section XII for rigid steel mast type construction.

The above clearances are based upon NESC and NEC minimum requirements.

**402. RIGID CONDUIT**

In order to avoid damage to meter enclosures or service entrance equipment, rigid conduit shall not be installed between a pole and a building where the pole is not solidly attached to the building and independent movement might occur.
403. SINGLE SERVICE DROP

Only one service drop connected to the same overhead mains will be attached to any one building, and only one set of service entrance conductors shall be connected to each service drop except in cases specifically permitted by the NEC, Section 230.2, or where special permission has been obtained from the authority having jurisdiction.” The drop may consist of parallel service cables for capacity. Overhead services may be provided up to and including 1000 Ampere total switch frame capacity unless limited by construction problems. Overhead secondaries shall be limited to two - four conductor (three phase and one neutral / messenger) cables 336.4 kcm (or smaller). Where greater capacity is required, other types of construction such as underground service must be used. Refer to Section IX.

404. SERVICE/METER POLE

In lieu of running a regular service drop to a building, the Company may terminate its electric service conductors on a customer owned pole or structure suitably located on the customer's property. In such event, the customer shall furnish, install, own and maintain all facilities beyond this pole.

The Company requires the meter enclosure (and recommends the service disconnect) to be mounted on the service/meter pole. Although a disconnect and overcurrent device (on the pole) may not be required (by the NEC) for all applications, it is highly recommended since it provides protection for the customer’s cable and allows the customer to disconnect and maintain their conductors without the cost of a Company line crew visit. Note: Metered and unmetered wires are not allowed in the same conduit, raceway or gutter. A riser (only) pole is not considered to be a service/meter pole. Refer to Illustration No. 4 (single meter) or No. 5 (multiple meter) in Section XII for construction details.
Refer to paragraph 219 for the requirements on interconnecting Company lines with customer-owned line extensions.

405. NEW AND UPGRADED SERVICE ENTRANCE

A. GENERAL

Company seals will be cut or removed only by qualified Company employees.

Any expenses in connection with the relocation or change of Company facilities as a result of a customer change or relocation of the service entrance shall be borne by the customer.

The customer shall be responsible for installing the service entrance which encompasses the weatherhead through the service disconnecting device/overcurrent protection, and includes the service entrance grounding.

A Company employee will work with the customer and/or electrician in determining a suitable meter location, point of attachment of the service drop and location of the service head. The meter must be in a safe and readily accessible location.

All service entrance installations must be approved by the Company and a State or municipal inspector. Any required local or State permits or certificates of inspection shall be received by the Company before new or upgraded services are connected.

All electrical connections to Company secondaries must be made by a Company employee. Outdoor work may be affected by weather, and scheduling may be subject to change.
B. NEW SERVICE ENTRANCE

1. Only the customer may apply for new service and should do so by calling 1-800-750-4000 (for Residential) or 1-800-565-3181 (for Commercial & Industrial).

2. In the case where a municipal inspection is not required, the customer/electrician (having obtained any required State permits or certificate of inspection) will notify the Company when the service entrance is ready for connection and the Company will arrange to inspect the service entrance for compliance with Company requirements. Following Company approval, the Company will install the service drop and meter, and energize the service.

C. UPGRADED SERVICE ENTRANCE IN A NEW LOCATION

1. The customer or customer's electrician must notify the Company by calling 1-800-750-4000 (for Residential) or 1-800-565-3181 (for Commercial & Industrial) of intent to upgrade the service entrance.

2. The electrician will install the new service entrance. Where rewiring requires service from the new location on a temporary basis, a jumper cable should be installed by the electrician to energize the load side of the new main switch from the load side of the old main switch. The new main switch will remain in the open position.

3. In the case where a municipal inspection is not required, the customer/electrician will advise when the new equipment is ready for connection and the Company will arrange to inspect the service entrance for compliance with
Company requirements. Following approval, the Company will install the new service drop and meter, and energize the service. The old main switch will be opened, the old cable cut clear and the new main switch closed to provide service from the new installation. The customer/electrician must arrange for access to the premises and may be required to do the necessary switching.

4. If, in the opinion of the electrician, the procedure in paragraphs 2 and 3 above presents undue safety risk, the Company will work with the electrician to make other mutually acceptable arrangements to de-energize and re-energize the service.

D. UPGRADED SERVICE ENTRANCE IN THE SAME LOCATION

1. The customer or customer's electrician must notify the Company by call 1-800-750-4000 (for Residential) or 1-800-565-3181 (for Commercial & Industrial) of intent to upgrade the service entrance.

2. Upon request, the Company will float the meter enclosure and reseal the meter enclosure so that the electrician may install the new enclosure and riser cable in the same location on the building.

3. The electrician will install the new enclosure and service entrance cable and the new main switch. In order to maintain service, the electrician may provide a temporary jumper to energize the load side of the new main switch from the load side of the old main switch, leaving the new main switch in the open position.
4. The electrician will make an appointment with the Company for the Company to disconnect the old service drop while the electrician is removing the old service entrance conductors and installing the new conductors between the new meter enclosure and the new main switch using the same hole in the building. Any switching of the customer's equipment and the removal of the temporary jumper will be the responsibility of the electrician.

5. If, in the opinion of the electrician, the procedure in paragraphs 3 and 4 above presents undue safety risk, the Company will work with the electrician to make other mutually acceptable arrangements to de-energize and re-energize the service.

406. AGRICULTURAL CENTRAL DISTRIBUTION POINT SERVICE

Services to more than one agricultural building may be supplied from a central distribution point in accordance with NEC Section 547.9. When services to agricultural buildings are located on the opposite sides of the public way, they shall be supplied through separate meters.

Generally, the Company’s secondary distribution will be terminated on a centrally located service pole from which customer-owned service drops may be connected. For this arrangement, the disconnecting means and overcurrent protection is located at the load (building) end of each service drop where normal service equipment and grounding standards apply. Additionally, NEC Section 547.9(A) requires a properly marked and identified disconnecting means at the central distribution point where two or more buildings are supplied from that point. This disconnecting means shall be classified as a “site-isolating device” and shall have provisions for bonding the grounding electrode.
conductor to the neutral. Metering will be located on the service pole in accordance with Section VIII of this handbook.

Prior Company approval is required for a central distribution point service. Prior approval of the “authority having jurisdiction” is advised.

407. MANUFACTURED BUILDINGS AND MODULAR HOMES

A **manufactured building** [a building made or assembled in manufacturing facilities for installation, or for assembly and installation, on the building site] **may have the service equipment installed in or on the structure**; provided the structure is of sufficiently sound construction and complies with applicable building codes, such as, "BOCA." Manufactured buildings are covered in NEC Article 545, and electrical service to them shall comply with the standard services in this handbook and NEC Article 230.

A "manufactured building" that complies with NEC Article 545 and the applicable building codes as approved by the Maine Manufactured Housing Board, **may be designed and constructed for use as a dwelling unit** (usually referred to as a **modular home**). These homes, as defined in Maine law (Title 10, Chapter 951, Manufactured Housing Act, § 9002), are "Manufactured housing," type B, "meaning structures, transportable in one or more sections, which are **not constructed on a permanent chassis** and are designed to be used as dwellings on foundations." Typically, there is a label/information sheet (inside the cabinet below the kitchen sink) indicating the applicable codes to which the building was constructed, as well as, certification of compliance as State of Maine "**certified manufactured housing.**" A modular home is typically a ranch or Cape Cod style home furnished with a main panel/disconnect and overcurrent device "suitable for use as service equipment," and therefore, may
be served in the same manner as a "stick-built" (on-site) home (per NEC Article 230).

408. MOBILE HOMES AND MANUFACTURED HOMES

A. MOBILE HOMES

A mobile home [factory-assembled structure or structures, transportable in one or more sections, that is built on a permanent chassis (heavy I-beams) and designed to be used as a dwelling without a permanent foundation] shall have the service equipment mounted separate from the structure in accordance with NEC Section 550.32 (A) and Illustration No.s 4, 5 or No. 9 in Section XII of this handbook. Note, the term "mobile home" (for purposes of this handbook) refers to a structure built prior to June 15, 1976. Company approved prewired combination meter and service equipment may be used (See the “Supplement” located in the inside back cover of this handbook).

The Company is not responsible for enforcement of the rules, e.g. NEC, beyond the service disconnecting means/overcurrent protection and service grounding; therefore, the Company will not be determining whether or not an additional disconnect is required (within 30 feet of the unit) as a condition for activation of the electric service. As with any service, however, the Company reserves the right to refuse connection when doing so would create a dangerous or unsafe condition. Grounding at the disconnecting means shall be in accordance with NEC Section 250.32. The service cable installation (on the line side of the service disconnecting means) must meet all Company standards for underground service, as applicable.

In accordance with NEC Article 550, the service equipment shall be rated at not less than 100 amperes, and provisions shall be made for connecting a mobile home "feeder assembly" (4 insulated conductors) by a permanent wiring method. Power
outlets used as mobile home service equipment shall also be permitted to contain receptacles rated up to 50 amperes with appropriate overcurrent protection.

B. MANUFACTURED HOMES

A manufactured home [a structure, transportable in one or more sections, that when erected on site is 320 square feet, or more; is built on a chassis (heavy I-beams) and labeled “manufactured home”; and is designed to be used as a dwelling with or without a permanent foundation], in accordance with NEC Section 550.32 (B), is permitted to have the service equipment installed in or on the structure, provided that all of the conditions of 1 thru 7 below are met. [Note, the term "manufactured home" (for purposes of this handbook) refers to a structure built since June 15, 1976; which should have a HUD label indicating that it complies with the Federal standard (HUD 24 CFR, Part 3280). These homes are still often called mobile homes (single-wide or double-wide)].

1. In accordance with the manufacturer's written instruction: the manufactured home must be secured in place by an anchoring system, or, installed on and secured to a permanent foundation in a manner acceptable to the Authority Having Jurisdiction (AHJ) or the local code enforcement officer;

2. The service equipment is located in accordance with the manufacturer’s instruction and is installed in compliance with NEC Article 230 and Section VI of this handbook, and, is acceptable to the AHJ [Note, "service equipment" shall be marked "suitable for use as service equipment" and shall include a "service disconnect" per NEC Sections 230.66 and 230.70;]
3. Means are provided for the connection of a grounding electrode conductor to the service equipment and routing it outside the structure.

4. Bonding and grounding of the service are in accordance with NEC Article 250 and Section VII of this handbook;

5. Grounding the service equipment complies with the manufacturer’s written installation instructions;

6. The minimum size grounding electrode conductor complies with the manufacturer’s instruction; and

7. A red warning label is mounted on or adjacent to the service equipment stating the following:

   WARNING
   DO NOT PROVIDE ELECTRICAL POWER UNTIL THE GROUNDING ELECTRODE(S) IS INSTALLED AND CONNECTED (SEE INSTALLATION INSTRUCTIONS).

NOTE: Where the service equipment is not installed in or on the unit (service equipment is mounted separate from the structure), the installation shall comply with the provisions of paragraph 408. (A) of this handbook.

If the Company fails a "manufactured home" service because it believes any of the above rules have not been met, and the customer/electrician does not agree; then, the issue should be referred to the AHJ (State or local electrical inspector).

409. TRAVEL TRAILERS AND OTHER STRUCTURES NOT SUITABLE FOR DIRECT SERVICE ATTACHMENT

An approved raintight service disconnecting means rated at not less than 60 amperes and with appropriate overcurrent
protection shall be installed at the meter location. (Refer to Illustration No.s 4, 5 or 9 in Section XII.) For recreational vehicles, the disconnecting means shall generally be located near the point of entrance of supply conductors in compliance with NEC Article 551.
V. SERVICE ENTRANCE CONDUCTORS

500. GENERAL

For overhead service, the service entrance conductors comprise that part of the service which extends from the point of attachment of the overhead service drop on the building or structure to the service equipment, i.e., disconnecting means and overcurrent protection (breaker or switch-fuse). For underground service, the service entrance conductors run from the “point of connection” of the underground service lateral to the service equipment. The service lateral typically terminates in the meter enclosure on the outside of the building wall. Where there is no meter enclosure or terminal box, the “point of connection” is considered to be where the conductors penetrate the building wall.

All service entrance conductors shall be service entrance cable or conductors installed in rigid or intermediate metal conduit, steel electrical tubing, or rigid non-metallic conduit recognized for use above ground as permitted by NEC Article 352. See Par. 504 of this Handbook for conduit details. Conduit is suggested where the exterior construction of the building consists of rough stone, stucco or metal siding.

On the line side of the meter, service entrance cable or conduit shall not be installed within the building wall or concealed in any way. On the load side of the meter, service entrance cable or conduit may be concealed but must be protected against physical damage per NEC Sections 230.50 and 300.4 and supported per 230.51(A). All services shall be installed in accordance with NEC Article 230.

For overhead service entrance conductors 4/0 and smaller size, the conductors must extend at least 24 inches beyond the weatherhead to accommodate connection to the Company's service drop. For larger than 4/0 size (or paralleled), the
conductors must extend at least 36 inches beyond the weatherhead. Current transformer installations require at least 48 inch leads. The weatherhead should be installed above the level of the point of attachment of the service drop with suitable drip loops provided to prevent the entrance of moisture.

For overhead service connection, the Company will provide and install connectors and covers for conventional copper or aluminum conductors up to and including 500 kCM or multiples thereof. For service entrance conductors larger than 500 kCM, the customer must provide connectors and insulating covers which are acceptable to the Company. Advance approval is recommended.

501. CONDUCTOR IDENTIFICATION

The neutral or grounded conductor shall be positively identified (generally by white color) in accordance with NEC Section 200.6.

Note: In no case shall a phase conductor be identified with white or gray.

The conductor with the higher phase voltage to ground on a four-wire delta service shall be positively identified (orange color) in accordance with NEC Section 230.56.

502. LOCATION FOR PROPER CLEARANCES

Meter enclosures, service entrance cable, conduit and drip loops, shall always be located so that the proper clearances will be provided for rain spouts, fire escapes, telephone wires, windows, blinds, and lightning rod conductors, as required by other sections of this handbook and the NEC.
503. ATTACHMENT METHODS

Service entrance cable or conduit shall be securely fastened to the building with suitable rustproof clips and fasteners. Expansion shields or their equivalent shall be used in brick, concrete or other masonry construction. Cable entrances into buildings shall be not less than six inches above final grade, adequately protected if exposed to physical damage, and weatherproofed at the point of building entrance.

All conduit fittings, on the line side of the meter, which contain service entrance conductors shall be placed so as to be fully exposed to view. Fittings shall be made watertight unless installed at the bottom of a vertical run, in which case they shall be raintight and designed to drain. They shall be placed not less than six inches above final grade.

504. SERVICE ENTRANCE CONDUIT

**Aluminum conduit** shall not be used under the following conditions:

A. When bare copper conductors are used.

B. For mast type construction.

C. In contact with the earth.

**Rigid non-metallic** sunlight resistant conduit recognized for use above ground may be used as permitted by NEC Article 352, with the following added restrictions:

A. It shall not be used in **mast type services**. (See Paragraph 505, below.)

B. Only schedule 80 may be used at locations which are subject to physical damage (per the NEC).
505. SERVICE MAST CONSTRUCTION

Unless otherwise approved by the Company, masts shall be constructed of rigid steel conduit or steel intermediate metal conduit (IMC) with an inside diameter of no less than 2 inches. Refer to Illustration No. 3 in Section XII.

Aluminum conduit, rigid non-metallic conduit or electrical metallic tubing (EMT) shall not be used for masts.

Because the mast is grounded through the meter socket hub, it should not be bonded to the neutral (grounded conductor) at the top end.
VI. SERVICE (ENTRANCE) EQUIPMENT

600. DISCONNECTING MEANS

A suitable service disconnecting means must be provided for each customer's source of supply. In multiple occupancy buildings a main service disconnecting means, where required by the NEC or as specified by local ordinances, shall also be installed so as to completely disconnect all of the interior wiring at one point. In accordance with NEC Section 230.71, there shall be not more than six disconnects (without a main), per service, grouped in any one location. Each service disconnect shall be permanently marked to identify it as a service disconnect. The disconnecting means must be located in a readily accessible place either outside of a building or structure or inside nearest the point of entrance of the service conductors (per NEC Section 230.70). The disconnecting means shall plainly indicate whether it is in the open (OFF) or closed (ON) position per NEC Section 230.77. Where a circuit breaker is utilized and the handle is operated vertically, the "up" position shall be the "on" position (per NEC Section 240.81).

The service equipment for permanent services shall be of a type and size as required by NEC Article 230 and shall be marked "suitable for use as service equipment" per NEC Section 230.66. The Company reserves the right to seal any service disconnecting means as a general safety measure and as a protection against tampering by unauthorized persons. The Company will not be responsible for sizing service equipment.

Mounting provisions for service disconnecting means and associated equipment shall be furnished and installed by the customer. They shall solidly support the equipment and provide anchorage for cables and conduits attached to the service equipment. Where located in basements, an air space shall be provided at the back when next to an outside wall. They shall be
of sufficient size to readily accommodate the equipment to be mounted upon them. All layouts in multiple occupancy buildings shall be subject to approval by the Company.

601. SEQUENCE OF DISCONNECTING MEANS AND METER EQUIPMENT

The location of the service disconnecting means shall be on the load side of the metering equipment (meter-switch-fuse sequence, i.e., metered “hot sequence”).

Exception #1: On the Portland downtown network and other similar urban underground systems, the sequence shall be switch-fuse-meter.

Exception #2: In multiple meter locations where the NEC requires a main disconnect, the sequences shall be main disconnect-meter-switch-fuse.

Exception #3: The Company may allow a switch-fuse- meter sequence in switchgear. Prior Company approval is required.

When N.F.P.A regulations require fire alarm systems to be tapped onto the line side of the main disconnect, then the metering shall be on the line side of all disconnecting means (meter-fire alarm-switch-fuse sequence).

The contractor shall be required to furnish and install multiple conductor terminal lugs of the correct size when necessary.

602. METERED AND UNMETERED WIRES

All unmetered wires, except those used as service entrance conductors in cable, shall be run in steel or aluminum conduit,
steel electrical metallic tubing, standardized metal troughs or suitable rigid non-metallic conduit as permitted by the NEC.

Metered and unmetered wires shall not be run in the same conduit, raceway or gutter. Exception: where the meter is pole mounted and the service is to pole mounted equipment, both sets of wires may be installed in a single vertical conduit run. Refer to Illustration No. 6, CATV Power Supply Installation, in Section XII. Coded conductors should always be used for positive identification.

603. EMERGENCY OR STANDBY POWER

Where a customer makes provisions for or installs an emergency or standby source of electric service, whether permanently mounted or portable, which is designed to energize the normal wiring system at the service entrance, the customer shall notify the Company in advance by calling 1-800-750-4000 (for Residential) or 1-800-565-3181 (for Commercial & Industrial). No electrical connection shall be made to the service entrance conductors or equipment until approved by the Company. All installations must comply with the applicable sections of the NEC. See NEC Article 700 "Emergency Systems" (legally required), 701 "Legally Required Standby Systems", or 702 "Optional Standby Systems" (permanent or portable). Exception, the State of Maine amended the 2008 NEC 702.5(B), (2) as follows:

For optional standby systems that supply single-family dwellings, the standby source shall not be required to be capable of supplying the full load that is transferred by the automatic transfer equipment.

A positive acting, “listed” (by UL or other organization acceptable to the “authority having jurisdiction”)
A double-throw switch or other transfer device which meets all of the following requirements shall be used.

A. When service is transferred, it must be so arranged as to open all ungrounded conductors from the normal supply from the Company before any connection is made to the emergency or standby supply.

B. The double-throw switch or transfer device must be so constructed and connected as to positively prevent any possibility of power from the customer's emergency source feeding back into the Company's distribution system.

C. A sign/label shall be placed at the service entrance equipment (as prescribed by the NEC) indicating the type and location of the on-site emergency or standby power sources. CMP highly recommends this sign/label be placed conspicuously outside of the building on the service entrance equipment or meter enclosure.

When it is desired to energize all of the customer's distribution circuits from the emergency or standby source, the above switch may, if acceptable to the "authority having jurisdiction," be connected on the line side of the regular service disconnecting means; provided, in accordance with the NEC, the equipment is marked as “suitable for use as service equipment” and is installed per its “listing.” Additionally, for the case of automatic transfer, there must be a manual disconnecting means (suitable for use as service equipment) on the line (CMP) side of the auto-transfer device. This disconnect may be an integral part of the transfer device. Where equipment is exposed to the weather, it must be of a raintight construction.

Conductors that may be energized by emergency or standby generating equipment shall not be located in the
same conduit or raceway as service entrance conductors from the Company's system.

When the emergency or standby generator is arranged to serve only specific equipment by use of separate circuits that are not connected to the normal wiring system, a main transfer switch will not be required.

In accordance with NEC Section 702.6 (Exception), "Temporary connection of a portable generator without transfer equipment shall be permitted where conditions of maintenance and supervision ensure that only qualified persons service the installation and where the normal supply is physically isolated by a lockable disconnect means or by disconnection of the normal supply conductors."

604. CHANGES IN THE SERVICE ENTRANCE

Any expenses in connection with the relocation or change of Company facilities as a result of a customer change or relocation of the service entrance shall be borne by the customer.
VII. GROUNDING AND BONDING

700. GENERAL

Service entrance grounding must be in compliance with the NEC and all applicable municipal and State requirements. NEC Section 250.4 covers the “General Requirements for Grounding and Bonding.”

A grounded electrical system shall have its neutral connected to earth in a manner that will limit voltage imposed by lightning or line surges; as well as, stabilize the voltage during normal operation. Electrical enclosures and other electrically conductive material likely to become energized shall be installed in a manner that creates an effective ground-fault current path; as defined in NEC 250.2, "an intentionally constructed, permanent, low-impedance electrically conductive path designed and intended to carry current, under ground-fault conditions, from the point of a ground fault on a wiring system to the electrical supply source . . ."

In accordance with NEC Section 250.24, any grounded ac system operating at less than 1,000 volts, shall have the grounded conductor (neutral) run to each service disconnecting means and bonded to each disconnecting means enclosure or assembly. Additionally, the neutral (for a grounded system) and service equipment enclosures (for a grounded or ungrounded system) shall be bonded together and connected by a grounding electrode conductor to the grounding electrode system. Connection of the grounding electrode conductor to the service neutral may be made at any accessible point from the load end of the service drop or service lateral to, and including, the neutral terminal or bus at the service disconnecting means. This connection is normally made to the service entrance panel neutral bus or meter enclosure neutral/ground lug, whichever will result in the shortest grounding
electrode conductor and is acceptable to the “authority having jurisdiction.”

For all ungrounded services (3 phase, 3 wire), the bonding must provide a permanent, low-impedance path (from the service disconnect) all the way back to the electrical supply source (CMP grounded primary system neutral). The earth shall not be considered as an effective fault-current path. Note: the customer/electrician must provide the necessary bonding/equipment grounding from the service disconnect to the "point of delivery/service point." This may include metal conduit with appropriate "listed" bonding clamps or a fourth grounding/bonding wire.

This bonding requirement for ungrounded services not only provides for an effective ground-fault current path "should a second fault occur;" it also ensures that a "hazardous potential difference" will not exist between the Company's grounding system and the customer's service entrance grounding. See paragraph 702 of this handbook for more details on "bonding."

701. GROUNDING ELECTRODE SYSTEM

In accordance with NEC Section 250-III, the service grounding electrode system shall consist of all items 1 through 7, that are available, bonded together per NEC Sections 250.64(A), (B), (E); 250.66 and 250.70. If none of the items 1 through 7 are available, then one or more of items 4 thru 8 shall be installed and used.

1. Under **ground metal water pipe** in direct contact with the earth for at least 10 feet supplemented with at least one additional item below (2 thru 8). Where the supplemental electrode is a rod, pipe, or plate; it shall comply with Note 2, below, i.e., NEC Section 250.56.
2. **Metal frame of building or structure**, where effectively grounded.

3. **Concrete-encased electrode** consisting of at least 20 feet of 1/2 inch reinforcing bar or #4 AWG copper wire encased within and near the bottom of a concrete footing or foundation.

4. **Ground ring** consisting of a minimum of 20 feet of bare copper wire not smaller than #2 AWG, in direct contact with the earth, buried at least 30 inches deep all the way around the building or structure.

5. Driven **ground rod or pipe**, which must be at least 8 feet long; consisting of rod not smaller than 5/8 inch diameter made of galvanized steel, or copper clad steel; or pipe not smaller than 3/4 inch trade size and protected from corrosion. At least 8 feet of electrode must be in contact with the soil, and it must be driven vertically or up to a 45° angle where rock is encountered. As an alternative, the electrode may be buried in a trench that is at least 30 inches deep. **See Notes 1 and 2**, below.

6. **Other listed electrodes** for grounding shall be permitted.

7. Metal **plate electrode** with at least 2 square feet of surface in contact with soil and buried at least 30 inches deep. Iron or steel plates shall be at least ¼ inch thick; nonferrous plates at least 0.06 inch thick. **See Notes 1 and 2**, below.

8. **Local underground metal piping system** or tank (a gas piping system shall NOT be used as a grounding electrode).
Notes:

1. Aluminum electrodes are NOT permitted.

2. Per NEC Section 250.56, where a single made electrode (5, 6 or 7 above) exceeds 25 ohms resistance to ground, an additional electrode consisting of any one of 2 through 8 must be utilized. When this additional electrode is a made electrode (5, 6 or 7), it shall be installed at least 6 feet away from, and bonded together with, the first electrode. Although the NEC requires a minimum separation of only 6 feet, the Company highly recommends a minimum separation of 16 feet (between 8 foot ground rods) in order to maximize the paralleling effectiveness.

For much of Central Maine Power Company’s service territory, meeting the “25 ohms or less” requirement is highly unlikely; therefore, installation of an additional electrode should be anticipated. It is the responsibility of the customer/electrician to verify the 25 ohms, or less, resistance and/or install the additional electrode.

3. See NEC Sections 250.50 thru 250.70 for further details on grounding electrode systems.

702. BONDING

To prevent any potential differences from occurring between them, all of the grounding electrodes listed in paragraph 701, as well as, CATV, communications or any other system grounding electrodes that are available on the premises, shall be bonded together. Intersystem bonding shall be installed in accordance with NEC 250.94 and shall have the capacity for at least 3 intersystem bonding conductors. It is the responsibility of the customer/electrician to ensure intersystem bonding provisions are provided. In the case where the grounding
ed shall be bonded in accordance with NEC Section 250.104. Bonding on the line side of the service overcurrent device must be "ensured." Metal conduit and enclosures containing service conductors shall be effectively bonded together in accordance with the requirements of NEC Section 250.92. Suitable bonding methods include, but are not limited to: threaded couplings and hubs, listed bushings with bonding jumpers, and listed bonding-type locknuts. Bonding jumpers shall be used around concentric or eccentric knockouts. Standard locknuts or bushings shall not be the sole means for the bonding required for services. All bonding jumpers (intended to conduct fault current), on the line side of the service overcurrent device, shall be sized in accordance with NEC Section 250.102 (C); i.e., sized to NEC Table 250.66, the same as, grounding electrode conductors.

Bonding is effective as a means to prevent or mitigate problems due to the phenomenon commonly called stray voltage. The Company recommends that provisions be made to bond any steel reinforcing mesh or rod to the electrical grounding system whenever any concrete slabs are poured. This is particularly important for dairy barns and houses constructed on concrete slab foundations. Refer to NEC Section 547.10 for information regarding bonding and equipotential planes in agricultural buildings.

It is recommended that, whenever work is in progress on any premises, contractors inspect the condition of all grounds and bonds and call the owner's attention to any which may be broken or missing. The connection to a metal underground water system
shall be on the street side of the water meter, if practical, otherwise bonds shall be placed around all parts which may be disconnected, between the point of attachment and the street side of the water meter.

703. GROUNDING ELECTRODE CONDUCTOR

The grounding electrode conductor shall always be rigidly supported, protected from physical damage and be securely attached to the grounding electrode with a cast metal clamp or other device listed for the material of the grounding electrode and grounding electrode conductor (See NEC Section 250.70 for further details).

The grounding electrode conductor attachment (to a ground rod) must be flush with or below ground level or otherwise protected against physical damage as specified in NEC Section 250.10.

The size of the conductor must meet the minimum requirements of NEC Section 250.66. **For additional protection of electronic equipment, it is recommended that the grounding electrode conductor be no smaller than No. 4 AWG, stranded, copper and be as short as possible.** Refer to IEEE Standard 1100 (Emerald Book) for the Recommended Practice for Powering and Grounding Sensitive Electronic Equipment.

Whenever connection of the grounding electrode conductor is made in the self-contained meter enclosure, it must be connected to the grounded service conductor (neutral) per NEC Section 250.24 (A). The enclosure itself shall not be part of the grounding electrode conductor.

704. LIGHTNING PROTECTION SYSTEM

In accordance with NEC Section 250.106, lightning protection system ground terminals (rods) shall be bonded to the
building or structure grounding electrode system. All grounding electrodes shall be bonded together. Electric equipment metal raceways and enclosures should be bonded to lightning protection conductors, or separated from lightning protection conductors in accordance with the “Standard for the Installation of Lightning Protection System,” NFPA 780. Separation from lightning protection conductors is typically 72 inches through air or 36 inches through wood or masonry. The ground connection from a television antenna for the purpose of lightning protection should be treated the same as a lightning rod ground.

705. SERVICE SURGE PROTECTION

Protection from lightning or power surges at the service entrance is the responsibility of the customer. NEC Article 285 governs the use of surge protective devices (SPD’s). Specific installation requirements for SPD’s (surge arresters or transient voltage surge suppressors, TVSS) can be found in NEC 285.23 through 285.25. These devices shall not be installed in or on the meter enclosure or on the line side of any metering equipment, unless they are Company owned and maintained.
VIII. METERING EQUIPMENT

800. GENERAL

The customer shall furnish and install Company-approved meter mounting devices, including outdoor enclosures, instrument transformer cabinets and indoor test or connection block cabinets in accordance with the requirements in this handbook and NEC Article 312. Refer to the "Supplement" for meter mounting equipment requirements and options (see inside back cover of this handbook). All such enclosures must be sealable with padlock type seals and such seals shall be removed only by qualified Company employees.

All metallic equipment used for metering purposes shall be properly bonded and grounded as required by Section VII and the applicable Illustration in Section XII of this handbook, and NEC Article 250. For services with instrument transformer-rated metering, an overall meter enclosure as approved by the Company is generally required. See Illustrations No.s 14, 15, 16 and 17 in Section XII.

A meter socket (enclosure) shall be permanently and solidly mounted before the meter will be installed. All outside meter enclosures must be secured by screws, #12 minimum, which are stainless steel or zinc or cadmium coated (no washers allowed). Wherever a meter enclosure is mounted on siding (no backboard), use of screws that accommodate a Phillips and/or slotted style screwdriver is requested. Self-contained meter sockets attached to a building shall not be secured such that cables will prevent subsequent access to the mounting screws. This requirement is to allow for future “floating” of the meter socket.

The Company will furnish and install all meters. When required, current transformers (CTs), voltage transformers (VTs),
test switches and control cable for installation in the customer's approved equipment will be furnished by the Company.

In accordance with MPUC's Chapter 320, "whenever practicable, all electricity sold (delivered) to **one customer on one billing** will be measured (metered) at **one point.**" Furthermore, the metering should be located at, or near, the point of delivery and at delivery voltage whenever it is practicable to do so. For any alternative arrangements, contact the Company's Marketing & Sales (M&S) Department.

The customer shall make reasonable effort to separate residential and non-residential use for metering purposes.

**801. METERING MULTI-TENANT BUILDINGS**

**A. RESIDENTIAL SERVICE**

As a general rule, in accordance with the Public Utility Regulatory Policies Act of 1978 (PURPA), each dwelling unit in a building that contains more than one residential dwelling unit will be separately metered. Inquiries regarding application of/exception to, this rule should be referred to the Company's Marketing & Sales (M&S) Department.

If the building is master metered, then for residential rate application, there shall be no three-phase load on the residential master meter; however, the service to the building and the residential master meter itself may be three-phase.

**B. GENERAL (NON-RESIDENTIAL) SERVICE**

As a general rule, in accordance with PURPA, each separately leased or owned unit in a building that contains more than one non-residential (commercial) unit will be separately
metered. Inquiries regarding application of/exception to, this rule should be referred to the Company's M&S Department.

802. METER LOCATION

The location of all metering equipment must be approved by the Company prior to installation. Meters shall be installed in safe and readily accessible outdoor locations when such a location is available. Neither meters nor enclosures shall be attached to padmount transformers or fences.

Whenever it is necessary to install meters indoors, the location shall be chosen with regard to safety, accessibility for reading and maintenance. In general, the meter shall be installed on the ground floor. In certain cases they may be installed in groups, in rooms reserved for this purpose on other floors. Unmetered conductors supplying meters in separate meter rooms shall be installed in separate metallic conduit. Meters shall not be installed in storage rooms, cabinets, closets or other locations that may be locked or otherwise made inaccessible.

803. METER POSITION

All meter mounting devices shall be installed so that the meters will be upright (plumb). They shall generally be installed with the top of the meter not less than 48 inches or more than 60 inches from the floor or final grade. Exceptions to this height requirement are for installation of group or modular metering (see Illustration No. 12 in Section XII), and transformer-rated overall meter enclosures (see Illustration No. 14, 15, 16, or 17 in Section XII).

Level grade shall be maintained for a minimum of 36 inches in front of the meter enclosure to provide a safe working space. In order to meet this requirement on uneven terrain, as an option, the customer may install a pressure treated wood platform. For modular metering, see Illustration No. 12 in Section XII.
804. POLE MOUNTED METERS

Pole mounted meters shall, generally, be installed on a customer owned service/meter pole, as previously indicated in paragraph 404. Refer to Illustration No. 4 (single meter) or No. 5 (multiple meter) in Section XII for construction details.

All pole mounted meter enclosures shall be grounded to a ground rod at the base of the pole. If a ground rod is already in place for grounding other equipment on the pole, a connection shall be made to it, otherwise a "supplementary" ground rod (5/8" x 8' min.) shall be installed for this purpose by the customer/electrician.

If a service disconnect is installed on this pole, then the grounding must meet all requirements of Section VII of this handbook and NEC Article 250 for service entrance grounding.

The installation of a meter on a Company pole requires advance approval by the Company, and will only be allowed in special cases such as for CATV power supplies (See Illustration No. 6 in Section XII). The installation shall be made to minimize interference with climbing space, and conductors shall be enclosed in metallic conduit. Schedule 40 or 80 PVC may be used above the meter.

805. METER PEDESTALS

Meter pedestals used with underground services for the exclusive use of electric metering and communication circuits must be approved in advance by the Company. Metering of gas, oil, and other services will not be permitted except by remote meter register. Although a disconnect and overcurrent device (on the meter pedestal) may not be required (by the NEC) for all applications, it is highly recommended since it provides protection for the customer’s cable and allows the customer to disconnect and maintain their conductors without the cost of a Company line.
crew visit. Refer to Illustration Nos 9 and 11 in Section XII for details of a pedestal service.

All pedestal mounted meter enclosures **shall be grounded** (at a minimum) to a "supplementary" ground rod (5/8" x 8' min.) installed by the customer/electrician. If a service disconnect is installed, then the grounding must meet all requirements of Section VII of this handbook and NEC Article 250 for service entrance grounding.

A Company approved prewired combination meter socket and service disconnect pedestal may be used. It must include a stabilizing means to extend below the frost line (to a minimum of 48" below finished grade). The meter pedestal must be installed so that the top of the meter will not be more than 60 inches or less than 48 inches above the finished grade or ground line. Metered and unmetered conductors shall not be run in the same raceway or gutter. Refer to the "Supplement" for prewired pedestal requirements (see inside back cover of this handbook). Refer to paragraphs 408 and 409 of this handbook for service requirements to mobile homes, manufactured homes, and travel trailers.

806. MULTICONNECTION POINTS

Single terminals of meter sockets, or meter connection blocks, shall not be used as connection points for more than one conductor. Where multiple conductors are used, suitable terminal lugs that comply with the NEC and are acceptable to the Company shall be furnished and installed by the contractor. Stud type terminals are generally required to accommodate double (twin) lug arrangements. Refer to the “Supplement” for meter mounting equipment options (see inside back cover of this handbook).

807. IDENTIFICATION OF METERS

Wherever there is more than one meter installed on any one premise, it shall be the Customers' responsibility to clearly
identify the area served by each meter. Each room or apartment number, floor or other area, shall be neatly and plainly marked on the service equipment and, if the meter and disconnect are not a single unit, on the inside and outside of the meter enclosure (not on the cover) with paint or permanent marker. The customer shall notify the Company of any changes. Other identifications, such as street address and service classifications (light, heat or power) when not readily obvious, shall also be provided. For sequence in multiple meter installations, see Illustration No. 12 in Section XII.

808. CLEARANCE FOR METERING EQUIPMENT

Not less than 36 inches of clear, unobstructed working space shall be provided and maintained under and in front of all metering equipment in accordance with NEC Section 110.26. In the case of unguarded moving machinery, changes in floor level, etc., a clearance of 72 inches shall be provided in front of all meters. A clearance of at least 6 inches shall be provided between the nearest obstruction above and on each side of any single meter or group of meters.

In case space is limited where meters are mounted in a group, special layouts shall be obtained from the Company before proceeding with the installation of equipment. Sufficient clearance shall be provided in choosing the location of all metering equipment so that the doors of all cabinets and switches can be completely opened. For clearance requirements in multiple meter installations, see Illustration No. 12 in Section XII.

The National gas codes and standards (NFPA-54, NFPA-58 and 49 CFR 192) cover the requirements for gas equipment clearances. When locating or relocating electric service equipment, where gas equipment has already been installed, the following guidelines should be used to ensure compliance with the minimum separation required between the electric meter or combination meter/disconnect (ignition sources) and any gas
identify the area served by each meter. Each room or apartment in multiple meter installations, see Illustration No. 12 in Section XII.

The National gas codes and standards (NFPA-54, NFPA-58) cover the requirements for gas equipment clearances. When locating or relocating electric service equipment, the following guidelines should be used to ensure compliance required between the electric meter and disconnect (ignition sources) and any gas container/system type:

<table>
<thead>
<tr>
<th>Gas Container/System Type</th>
<th>Minimum Separation</th>
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</thead>
<tbody>
<tr>
<td>Propane tank (exchanged)</td>
<td>5 feet</td>
</tr>
<tr>
<td>Propane tank (filled on-site)</td>
<td>10 feet</td>
</tr>
<tr>
<td>Propane regulators</td>
<td>5 feet</td>
</tr>
<tr>
<td>Natural gas (piped) vented equipment</td>
<td>5 feet</td>
</tr>
</tbody>
</table>

809. SELF-CONTAINED METERING

A. GENERAL

Self-contained meters shall generally be used for the following services:

Single-Phase:

<table>
<thead>
<tr>
<th>Volts</th>
<th>Max. Amps</th>
<th>Wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>60</td>
<td>2 (3-wire meter)</td>
</tr>
<tr>
<td>120/240</td>
<td>400</td>
<td>3</td>
</tr>
<tr>
<td>240/480</td>
<td>200</td>
<td>3</td>
</tr>
<tr>
<td>120/208</td>
<td>200</td>
<td>3 (network meter)</td>
</tr>
</tbody>
</table>

Polyphase:

<table>
<thead>
<tr>
<th>Volts</th>
<th>Max. Amps</th>
<th>Wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>120/208</td>
<td>400</td>
<td>4 (4-wire wye)</td>
</tr>
<tr>
<td>277/480</td>
<td>200</td>
<td>4 (4-wire wye)</td>
</tr>
<tr>
<td>120/240</td>
<td>400</td>
<td>4 (4-wire delta)</td>
</tr>
<tr>
<td>240</td>
<td>200</td>
<td>3</td>
</tr>
</tbody>
</table>

Refer to Illustration No. 13 in Section XII for self-contained meter socket connections.

Whenever connection of the grounding electrode conductor is made in the self-contained meter enclosure, it must be...
“connected to the grounded service conductor (neutral)” per NEC Section 250.24(A). The enclosure itself shall not be part of the grounding electrode conductor per NEC Sections 250.62 and 250.64.

For underground **residential** service installations, meter sockets for use with #4/0 or larger service cable shall be of the "side-wired" (or otherwise wired out away from the meter line side terminals) underground type. For **non-residential** underground application and for “continuous conduit systems,” the "side-wired" socket is not required; however, it is highly recommended since the meter socket base is less likely to be damaged by frost action. Refer to the "Supplement" for meter socket requirements and options (see inside back cover of this handbook).

**B. METER BY-PASS REQUIREMENTS**

A **Residential*** 100, 125, 150 or 200 amp socket does not require a bypass; however, a single handle lever operated by-pass is permitted. Since it allows for testing and changing-out of the meter without interrupting service, a lever operated **by-pass is recommended** wherever minimization of possible interruption of service, during normal business hours is important, such as in the case of a home office or certain community/house loads.

A single hand lever operated **by-pass is highly recommended** for residential locations with pump operated septic/sewer systems.

*Note: The following types of services are considered by the Company to be "residential" use:
• Any dwelling unit, garage, storage building, shelter/gazebo, water pump, or, other structure or equipment that is used **solely** for private (non-business) purposes.

A **Residential** 320 amp socket **requires a** single handle lever operated **by-pass** which locks the meter blades in the socket jaws.

A **Non-residential** (Industrial or Commercial) self-contained meter socket **requires a by-pass** as follows:

<table>
<thead>
<tr>
<th><strong>Meter Socket</strong></th>
<th><strong>By-Pass</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Phase:</td>
<td></td>
</tr>
<tr>
<td>100, 125 or 150 amp</td>
<td><strong>Single handle lever operated by-pass required.</strong></td>
</tr>
<tr>
<td>200 amp</td>
<td><strong>Single handle lever operated by-pass which locks the meter blade in the socket jaws required.</strong></td>
</tr>
<tr>
<td>320 amp</td>
<td>Single handle lever operated by-pass which locks the meter blade in the socket jaws required.</td>
</tr>
</tbody>
</table>

**The reason for the by-pass requirement is to enable the Company to test or change-out the meter without causing an interruption of service. The clamp jaw type by-pass has the additional benefit of insuring a good electrical connection between the meter blades and socket jaws, thereby preventing loose (HOT) socket. The by-pass is particularly important for use during the Company’s normal business hours. Therefore, the following types of **non-residential** services (200A or less) are **exempt** from these requirements.**
by-pass requirements and the residential socket (non by-pass) may be utilized:

- Temporary service.
- Outdoor lighting (ball field, tennis court, etc.)
- CATV or Telephone power supply/amplifier.
- Any other non-residential facility that is not "in use" during the Company's normal business hours.

Note: a by-pass is required for traffic signal light power supply services.

Three-Phase:

- 100 or 125 amp Single handle lever operated by-pass required.
- 200 or 320 amp Single handle lever operated by-pass which locks the meter blades in the socket jaws required.

Refer to the "Supplement" for more details on meter socket and by-pass requirements (see inside back cover of this handbook).

810. INSTRUMENT TRANSFORMER METERING

A. CURRENT TRANSFORMERS (CTs)

The following services shall generally be arranged for metering with CTs only (no VTs):

<table>
<thead>
<tr>
<th>Single-Phase</th>
<th>Polyphase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volts</strong></td>
<td><strong>Volts</strong></td>
</tr>
<tr>
<td>120/240</td>
<td>120/208</td>
</tr>
<tr>
<td>greater than 400</td>
<td>greater than 400</td>
</tr>
<tr>
<td>Wire</td>
<td>Wire</td>
</tr>
<tr>
<td>3</td>
<td>4 (4-wire wye)</td>
</tr>
<tr>
<td></td>
<td>4 (4-wire delta)</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>
B. CURRENT AND VOLTAGE TRANSFORMERS (CTs & VTs)

Installations (except for "self-contained", paragraph 809) where the voltage of the incoming line is greater than 150 volts to ground (on a grounded line) or greater than 300 volts between conductors (on an ungrounded line) shall generally be arranged for metering with both CTs and VTs.

**NOTE:** With prior Company approval, 277/480 volt, greater than 200 amp, four-wire wye services may be arranged for CTs only (no VTs) metering.

Customers will not be allowed to connect any equipment to the metering terminals of instrument transformers.

C. METER MOUNTING DEVICES (TRANSFORMER-RATED)

The customer shall supply and install all meter mounting devices as required. Refer to the "Supplement" for meter mounting equipment requirements and options (see inside back cover of this handbook). All transformer-rated meter mounting devices shall have provisions for mounting a test switch.

Meter mounting devices shall be properly bonded and grounded, by the customer, in accordance with Section VII, "Grounding" and NEC Article 250. This generally requires connection to a grounding electrode with a grounding electrode conductor no smaller than No. 4, stranded copper. Additionally, there must be appropriate bonding to provide an effective ground-fault current path to the (voltage) source neutral. See Illustration No. 14, 15, 16 or 17 in Section XII for further details.
Meter mounting devices shall be located as near as possible to the instrument transformers at a location approved by the Company. They must not be located in vaults. Advance Company approval is required for any metering conduit runs in excess of 35 feet.

In the case of primary metering, where the meter enclosure is to be mounted on a pole, the customer shall furnish and install at their own expense the 1 1/4 inch conduit between the instrument transformers on the pole and the meter mounting equipment.

Where danger of plow or traffic damage exists, barriers consisting of concrete filled 6 inch IPS steel posts set a minimum of 48 inches deep must be installed for protection of the meter/meter mounting equipment. The posts shall be located so as not to interfere with the opening of doors/covers or restrict access to enclosures.

811. INSTRUMENT TRANSFORMER CABINETS

For installations where the service voltage does not exceed 480 volts, cabinets for instrument transformers shall be furnished by the customer and be constructed and installed so as to meet the requirements of NEC Article 312. See Illustration No. 14 in Section XII for instrument transformer cabinet installation details. Cabinet size will be as specified by the Company. Refer to the "Supplement" for cabinet sizing requirements and options (see inside back cover of this handbook).

All cabinets shall be constructed so that the cover can be readily opened. The cover shall be attached with hinges. The cabinet must be mounted so that the cover does not interfere with installation or maintenance work. For outdoor locations, cabinets shall be weatherproof or rain tight.
Provision must be made so that the cabinet can be securely sealed with a padlock type seal when the cover is closed. Only Company owned devices may be installed in any cabinets housing meter connection devices or instrument transformers.

All instrument transformer cabinets must be mounted on substantial wood backboards or contain suitable mounting provisions (inside) such that the instrument transformers can be readily installed and removed. Transformers shall be mounted so that a clearance of at least 2 inches is provided between all transformers, cables and the sides and top of the cabinet.

All line conductors, including the neutral, shall pass through the instrument transformer cabinet. In addition, all line conductors in the cabinet must be clearly identified (by the customer/electrician), as to, "phase" and "line" or "load." A neutral connector shall be installed by the customer to provide for connection of the metering neutral. The customer shall mount all instrument transformers and make all primary connections. Secondary (metering) wires are furnished and installed by the Company.

A separate 1 1/4 inch minimum metallic conduit for metering wires between instrument transformer cabinets and meter mounting devices shall be furnished and installed by the customer. This conduit shall be either rigid metal conduit (RMC) or intermediate metal conduit (IMC) and be properly bonded to provide an effective ground-fault current path (per Section VII and NEC Article 250). Advance approval must be obtained from the Company for special construction before installing conduit runs in excess of 35 feet.

Where danger of plow or traffic damage exists, barriers consisting of concrete filled 6 inch IPS steel posts set a minimum of 48 inches deep must be installed for protection of the meter/meter mounting equipment. The posts shall be located so as
not to interfere with the opening of doors/covers or restrict access to enclosures.

For locations where the service voltage exceeds 480 volts, advance Company approval of the instrument transformer installation is required. See paragraph 814 for Switchgear Installations.

812. MAST OR BUILDING MOUNTED CT INSTALLATION

Mounting of CTs / VTs on the customer's service mast or on the building adjacent to the weatherhead is not permitted.

Note: Except for the case of primary metering, CTs shall not be mounted on poles or pole mounted brackets.

813. PADMOUNT TRANSFORMER INSTALLATIONS

Provided there will be only one customer served from the padmount transformer, the CTs may be mounted inside the padmount transformer enclosure. VTs shall not be installed in the padmount transformer enclosure. The VTs may, with prior Company approval, be installed in a separate weatherproof cabinet adjacent to the meter enclosure.

814. SWITCHGEAR INSTALLATIONS

When instrument transformers are to be installed in switchgear, advance Company approval of transformer compartment plans is required.

Following are the requirements for switchgear instrument transformer compartments:

- “Hot sequence” metering is the standard arrangement.
• The compartment shall be isolated by barriers; and, metered and unmetered busses shall be separated by barriers.

• Bus arrangements for low voltage (below 600) shall accommodate 12 inch long CT bars (multiple bars are ¼” x 3” x 12”).

• Units with voltage above 300 (phase-to-phase), shall have provisions for mounting VTs.

• Any removable or hinged covers over unmetered busses or connections shall have sealing provisions or approved tamper-proof fasteners.

Upon installation of the switchgear, any existing removable CT links/supports must be removed. For all switchgear or transclosure installations, it shall be the responsibility of the customer to install instrument transformers and make primary connections.

For an installation where the neutral conductor does not pass through the instrument transformer compartment, an insulated stranded copper neutral conductor, not smaller than #12 AWG, shall be brought into and connected to an insulated terminal in the instrument transformer compartment.

A 1 1/4 inch minimum metallic conduit, furnished and installed by the customer, shall be run continuous from the meter enclosure to the instrument transformer compartment. This conduit shall be either rigid metal conduit (RMC) or intermediate metal conduit (IMC) and be properly bonded to provide an effective ground-fault current path (per Section VII of this handbook and NEC Article 250). Note: the metering cable/conduit shall not pass thru any other vertical sections/compartment of the switchgear.
The mounting of Company meters in switchgear is not recommended and generally will not be approved. Requests for special permission for such installations shall be accompanied by detailed plans showing arrangements of all cables, busses and other apparatus which are adjacent to the proposed meter locations.

All switchgear arrangement drawings must be submitted to the Company’s Meter Engineer for approval.
IX. UNDERGROUND SERVICE

900. GENERAL

The Company will, subject to the availability of material and transformers, and in compliance with certain special requirements hereinafter described, provide underground service directly from its distribution lines.

For added protection and ease of cable replacement, the Company strongly recommends that all underground cables be installed in conduit. Any direct buried primary cable shall not be permitted within five (5) feet of the traveled way. Contact the Company's local Service Center or Marketing & Sales (M&S) Department for conduit installation details not contained in this handbook.

All installations connected to Company owned facilities shall comply with the installation specifications contained herein. These requirements are based on the NESC or NEC, and considered to be good engineering practice.

The Illustrations in Section XII of this handbook provide the required trench, riser and transformer foundation details.

Direct-buried conductors and cables emerging from grade shall be protected from damage in accordance with NEC 310.5 (D) (1).

Any work listed as being the “responsibility” of the customer means that the customer will be required to complete the work involved to meet Company standards and specifications. All work performed by the customer shall be subject to inspection by the Company prior to energizing the installation.
901. CUSTOMER RESPONSIBILITY

It shall be the customer's responsibility to:

- Notify DIG SAFE at 1-888-344-7233 prior to any excavation.
- Make arrangements for the installations by other utilities.
- Provide the trench excavation, back fill and all conduit installation in accordance with this handbook section (IX). (See paragraph 910 for conduit requirements/specifications.)
- Provide and install a transformer pad(s) and primary junction box (es) meeting the Company's specifications as outlined in Illustrations No.s 22, 23, 24, 25, 26 and 34 in Section XII. Pad designs must conform to Company specifications to ensure interchangeability with spare transformers.
- Provide the necessary permanent easements and permits (including environmental) to cover the location of the Company’s facilities including aerial lines, underground cable and equipment and transformers. This includes municipal and State permits for conduit under the public way.
- Keep the route of any underground cable clear of structures, bushes or trees.
- Pay any additional expenses the Company incurs as a result of severe weather conditions or frost in the ground during underground construction between November 1 and April 1. This charge will be in addition to all other costs.

902. COMPANY RESPONSIBILITY

It shall be the Company's responsibility to:

- Provide specifications for the underground service.
- Approve all layouts for underground service.
• Furnish and install (at the customer’s expense) the primary cable in conduit furnished by the customer or direct buried.
• Provide a padmount transformer of adequate capacity.

903. CUSTOMER COSTS

The customer shall pay for all costs for the installation of single-phase secondary underground (UG) service provided by the Company as determined on a flat rate basis in accordance with the Company’s filed tariffs.

Should it be necessary for the Company to install a road crossing pole specifically for an underground service installation which would not be provided for an equivalent overhead service, the customer shall be assessed a fee to cover the additional cost.

The payment for the underground construction costs must be received by the Company prior to the scheduling of the construction.

904. LOOP FEED REQUIREMENT

When providing primary underground service to be owned by the Company or located in a public way, the construction will be a Loop Feed System or contain a spare cable. A primary underground line feeding a single customer and owned by that customer may be constructed as a radial feed system. See paragraph 219 of this handbook for more information on customer constructed/owned lines.

A Loop Feed System serves loads from one source circuit, through two separate cables or sets of cables. Ideally, the risers would be on separate poles, but when economic or physical conditions prevent the utilization of two separate poles, it shall be
acceptable to mount the riser(s) on a common pole. Loop Feed Systems shall be from the same phase of the same circuit. If this is not possible, written approval from the Company shall be required for a Loop Feed System fed from different phases or circuits. A spare cable may be used in certain applications in polyphase construction, and requires the installation of an additional primary cable in a common conduit. The use of a spare cable versus a Loop Feed System will be at the Company’s discretion, and shall be determined prior to the design phase of the construction project.

An Alternate Feed System involves two distinctly separate feeds, in separate conduit systems, and from separate circuits. This type of system is designed to be operated primarily from one of the sources, with the other source being for emergency or back-up purposes. Alternate Feed Systems shall require the written approval of the Company.

905. RESIDENTIAL SECONDARY SERVICES

Residential underground services to operate below 150 volts to ground may be installed in customer owned conduit or direct buried in trench provided by the customer and meeting Company standards and specifications as outlined in Illustrations No.s 30, 8, 9, 10, 11 and 33 in Section XII.

The required cable may be furnished and installed by the Company subject to the cost provisions of paragraph 903. Following are the standard underground services available from the Company:
If the cable is furnished and installed **by the customer**, particular notice should be made of the maintenance provisions of Paragraph 916. The maximum length of customer owned residential underground secondary shall be in accordance with Illustration No. 31 in Section XII. For services or conductor sizes other than those listed in Illustration No. 31, contact the Company's local Service Coordinator. Where service runs exceed the lengths listed in Illustration No. 31 in Section XII, or become impractical, a primary underground feed to a padmount transformer will be required.

There shall not be more than eight (8) conductors per spade for a three phase padmount. There shall not be more than six (6) conductors per spade for a single phase padmount. Cases involving more conductors than these limits must be referred to the company for special design and prior approval.
The Company will make all connections to padmount transformers. However, on customer owned cable, the customer must provide all lugs and associated hardware and install them on the cable.

For any underground service, splices or taps should be avoided. If splices or taps (as permitted in NEC Section 230.33 and 230.46) are required, then they must be in an enclosure, or, direct buried using a splice "listed" for direct burial and for the cable type used. Any splices on CMP's side of the meter socket must be accessible for inspection (by CMP). Note, by choosing the appropriate meter socket, splicing for the purpose of "downsizing" conductors may be avoided (refer to the "Supplement," paragraph 1.10.5).

906. NON-RESIDENTIAL SECONDARY SERVICES

All underground secondary cable (including transformer interconnecting cables) and terminal lugs required must be provided and owned by the customer whether from overhead or padmount transformer installations. Except as noted in Paragraph 914, “Risers”, cable will be installed by the customer.

Three phase service from a pole mounted three-phase unit or banked arrangement of transformers may be provided for total switch(s) capacity not to exceed 1,000 amperes. Note: Overhead secondary will be limited to two-four conductor (three phase conductors and one neutral/messenger) cables 336.4 kcmil (or smaller). Underground secondaries consisting of cables with conductors 4/0 AWG and smaller shall have no more than four conductors per phase. Underground secondaries consisting of cables with conductors larger than 4/0 AWG shall have no more than two conductors per phase. The owner of the secondary cables shall provide all terminal lugs and transformer secondary interconnecting cable and connectors. Cable support and positioning brackets may be required at the discretion of the
Company’s local Line Supervisor. If required, the support and positioning brackets shall be provided by the cable owner.

There shall not be more than eight (8) conductors per spade for a three phase padmount. There shall not be more than six (6) conductors per spade for a single phase padmount. Cases involving more conductors than these limits must be referred to the company for special design and prior approval.

Cases involving more than one customer per transformer or exceeding the above number of conductors per phase must be referred to the Company for special design. Secondary connections to padmount and vault transformers are to be coordinated with the local Service Coordinator; normally the customer (contractor) will terminate the cables, position and support the cables to minimize the weight load on the transformer bushings and assemble all connectors on the transformer bushings.

Where multiple customers are supplied from one transformer, each service must be properly identified. The neutral conductor must be properly identified. See paragraph 501 of this handbook and Section 200.6 of the NEC.

All highway lighting secondary underground circuits shall be installed in galvanized steel or heavy-wall non-metallic conduit (Schedule 40 minimum).

907. UNDERGROUND RESIDENTIAL DISTRIBUTION (URD) DEVELOPMENTS

The Company will provide an underground distribution system in a residential development where: (1) such system is requested by a builder or developer who meets the requirements outlined herein, (2) where soil and terrain conditions, in the opinion of the Company, would permit such a system, and (3) no
other distribution system exists or will be required in the future which would result in duplication of facilities.

The development shall be laid out in such manner that there will be a continuous distribution system to the most remote location requiring service.

Transformer pads will generally be located adjacent to the property line and between ten and twenty feet in from the street lines in accordance with Illustration No. 21 in Section XII.

Construction of the URD system will not normally be undertaken until all grading is completed and services which are installed at a lower grade (sewer, water, gas) are already in place. Electric service will not normally be installed in advance of the requirement for use.

A. RESPONSIBILITY OF THE COMPANY

The Company will:

- Determine the location and provide specifications for the underground electrical distribution system, including primary and secondary circuits, transformers and customer services.

B. RESPONSIBILITY OF BUILDER, DEVELOPER, OR CUSTOMER

For a URD system, as described herein, the builder or developer will:

- Furnish to the Company a complete site plan of the development (in hard copy and if available in electronic
form) as approved by the municipality; such plan to show the grading, layout and dimensions of lots, sidewalks and curbs, and the location of all other utilities and other underground structures.

- Install lot boundary pins or markers in the area under development prior to the start of trenching for the URD.

- Notify the Company of the completion of rough grade, installation of other facilities at grades below URD and the schedule of desired electric service connections so that the Company will have adequate time to install its facilities.

- Provide trenching and conduit or conduit systems as required. See paragraph 901 for a list of such requirements and paragraph 910 for conduit requirements/specifications.

908. PADMOUNT TRANSFORMERS

Installation of padmount transformers is limited to cases meeting the following specifications:

1. Single-phase three-wire services, (a) operating at 120/240 volts and requiring transformer capacity of not more than 167 kVA, or (b) operating at 240/480 volts and requiring transformer capacity of not more than 50 KVA; or

2. Three-phase four-wire services operating at 120/208 volts or 277/480 volts Wye and requiring transformer capacity of not more than 2500 KVA. (Larger units may be available by special arrangement.)
In cases not meeting the preceding specifications, the customer shall provide a Company approved transformer vault or yard. Additional information will be furnished upon request.

Padmount transformer foundations must be supplied by the Customer and pad designs must conform to Company specifications to ensure interchangeability with spare transformers. See Illustrations No.s 23, 24, 25 and 26 in Section XII.

Padmount transformer locations shall be graded for proper drainage and that drainage shall be maintained by the customer. In addition, the location must be readily accessible by truck at all times without causing site damage.

A ¾ inch by 8 foot galvanized ground rod will be furnished (available at the local Service Center) by the Company and installed by the customer. It is to be located 6 inches in front of the left front corner of the foundation. The ground rod should be left 6 inches exposed above grade until all ground connections are made and inspected. Prior to back filling around the foundation base, the customer will furnish and install a bare #4 stranded copper for grounding of the transformer. The conductor must be of sufficient length (10 ft. of grounding conductor will be required for single-phase and small (7’ x 7’) three-phase installations, larger three-phase (9’ x 9’) or greater will require 20 ft. of grounding conductor) to connect the transformer neutral and ground to the ground rod. The conductor will extend from the interior of the base, through the ground wire hole (if available) or one of the cable holes (bond outs) in the wall of the base, to the ground rod location. It is NOT to be installed on top of the base or slab (foundation) such that the transformer or slab will bear directly on the conductor.
Where danger of plow or traffic damage exists, barriers consisting of concrete filled 6 inch IPS steel posts set 4 feet deep must be provided for protection (Pressure treated 6 x 6 inch (minimum) timber posts may be substituted in residential areas). The protective posts shall be located so as not to interfere with opening the doors or restrict access to the transformer cabinet. Generally the posts will be located near the corners of the padmount transformer.

Minimum clearances to buildings and other obstructions (including trees, shrubs and fences) shall be 3 feet from the rear, 5 feet from the sides, and 10 feet from the front of the transformer pad. There shall be no openings in the building wall in back of, beside, or over the transformer, unless the transformer is a minimum of 10 feet from the building. Side clearances from doors or windows shall not be less than 10 feet. There shall be a minimum of 10 feet between the transformer and any gas meter/regulator, gas relief valve, gas vent discharge, gas filling connection, or propane tank. Some insurance companies may require increased clearances.

Transformers are to be located far enough away from building overhang so that they will not be subject to damage by falling ice and snow.

When padmount transformers are not installed immediately upon the installation of the cable in the transformer pad, the customer/developer shall provide and install a Company approved concrete, steel or fiberglass cover over the pad opening to eliminate exposure of the cable.

909. INDUSTRIAL AND COMMERCIAL PRIMARY INSTALLATIONS

The Company may provide primary voltage service at 12.47Y/7.2 kV or 34.5Y/19.9 kV up to 200 ampere capacity.
Primary service requiring higher amperage or voltage ratings is beyond the scope of this policy. Information for such service may be obtained by contacting the Company's local Service Coordinator.

All industrial and commercial primary 3 phase underground distribution will be installed in a conduit system. The conduit system will consist of standard size concrete manholes/handholes as needed to splice joints, junctions, or to meet cable pulling requirements. The ducts will be a minimum of schedule 40 PVC of a diameter adequate for the largest cable that may be necessary to serve the total anticipated load. The conduit system will include an adequate number of ducts for all necessary cables plus one spare duct (capped at both ends), and will provide a loop or alternate feed cable configuration. The conduit will be properly pitched to ensure water drainage into manholes/handholes. Conduit configuration will be limited to a single horizontal layer, if encased in sand. Multiple layer configurations must be encased in concrete. In urban areas or where site conditions make digging for repair of ducts impracticable or cost prohibitive, the conduit system will be encased in concrete regardless of conduit configuration.

The Company's Distribution Engineer must approve all conduit layouts prior to construction and will provide the design requirements (number and size of ducts, size and location of manholes and splice boxes) upon request.

910. CONDUIT REQUIREMENTS/SPECIFICATIONS

A. GENERAL

The customer shall furnish, install, own and maintain the necessary ducts which must conform to the specifications of the
Company. The Company recommends that all underground cable be installed in conduit.

Galvanized steel conduit or heavy-wall non-metallic conduit (Schedule 40 minimum) shall be used where the ducts are under public streets or ways, paved areas, driveways and all transmission rights-of-way. Where subject to physical damage, non-metallic conduit shall be schedule 80 minimum (per the NEC).

In developments or subdivisions, conduit shall be installed extensively enough to provide a cable raceway under any existing or anticipated street or driveway. In addition, for any buildable lot where the driveway has not been determined by rough grading or curb opening, the conduit shall extend across the entire lot.

Conduit under the public way shall be at least 36 inches below grade and extend at least 48 inches beyond the street limits or paved areas. For State roads, it is the customer/developer’s responsibility to comply with the Maine Department of Transportation’s Utility Accommodation Policy for conduits within the Maine Department of Transportation’s right-of-way.

Conduit placed under private driveways and walks shall be at least 30 inches below grade and shall extend at least 24 inches beyond the traveled way.

Non-metallic conduit shall be of approved heavy-wall (Schedule 40) design unless encased in a minimum of 3 inches of concrete. All non-metallic conduit used above grade (risers) shall be of sunlight resistant material, and where subject to physical damage, shall be schedule 80 minimum (per the NEC).

Back-fill within 6 inches of conduit shall consist of soil containing no rocks greater than 4 inches in diameter per NESC
Upon installation, all ducts shall be clean and free of debris. Any empty ducts shall be capped. An acceptable pull rope must be provided by the customer in all ducts to facilitate the installation of cable. A 1/4 inch polypropylene rope, or other line of equal or greater strength, is required.

Conduit installed through a building wall shall have internal and external seals intended to prevent the entrance of gas into the building insofar as practical (NESC 322 B 4).

B. CONTINUOUS CONDUIT SYSTEMS

Continuous conduit runs should not normally exceed 200 feet, with not more than the equivalent of two 90° and one 45° bends (225° total) in the run. Longer runs require engineering review. Multiple layer conduit configurations must be encased in concrete. Conduit will be properly pitched (3" per 100' min) for drainage and provisions will be made to allow the conduit to drain. The Company may require splice boxes or manholes at the riser pole and in the conduit run for drainage and to facilitate cable installation. Refer to Illustration No. 10 in Section XII for Underground Secondary Service Continuous Conduit. Note: To comply with NEC Section 300.5 (J), a conduit slip or expansion joint shall be provided under the meter socket as shown on Illustration No. 10 in Section XII. The Company will provide design requirements and specifications for other conduit systems.
All 90° bends will be galvanized steel and have the following minimum radii:

<table>
<thead>
<tr>
<th>CONDUIT SIZE</th>
<th>MINIMUM RADIUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>2 1/2&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>36&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
<td>48&quot;</td>
</tr>
<tr>
<td>5&quot;</td>
<td>48&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>48&quot;</td>
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</table>

(Two (2) 45° PVC bends shall not be used in lieu of a steel 90° bend.)

911. DIRECT BURIAL PRIMARY CABLE

Single-phase direct burial primary cable may be furnished and installed by the Company (at the customer’s expense) in the customer's trench or duct as provided below. Direct burial cable may be furnished and installed by the customer; however, particular notice should be made of the maintenance provisions of Paragraph 916.

Direct burial cable shall be protected for 6 inches above and below by a bedding of soil containing no rocks. The remainder of the back-fill shall consist of clean fill containing no rocks larger than 4 inches in diameter. Bedding and back fill shall be free of roots, stumps and other debris. During back-filling of the trench, a plastic ‘ELECTRIC’ marker tape (furnished by the Company if Company owned cable) shall be installed approximately 12 inches below final grade (and at least 12 inches above the cable per NEC Section 300.5).

A suitable duct must be installed under public streets or ways, paved areas, driveways and all transmission rights-of-way.
Customers electing to install conduit for additional protection for direct buried cable will be required to meet all direct buried trench requirements unless the conduit used meets the Company's conduit specifications for a continuous conduit system.

912. BURIAL DEPTHS

A minimum ground cover of 30 inches for cable operating above 600 volts phase to phase and 24 inches when operating at or below 600 volts phase to phase shall be provided. (Refer to Illustrations No.s 18, 19 and 20 in Section XII).

Galvanized steel conduit or heavy-wall, non-metallic conduit (Schedule 40 or 80) shall be used under public streets or ways, paved areas, driveways and all transmission rights-of-way. It shall be placed at least 36 inches below grade and shall extend at least four feet beyond street limits or paved areas.

Conduit placed under private driveways and walks shall be at least 30 inches below grade and shall extend at least 24 inches beyond the traveled way.

Conduit may be used by the Customer outside public streets, ways, or paved areas and if used shall be galvanized steel or heavy-wall non-metallic at least 30 inches below grade for cable operating above 600 volts and at least 24 inches below grade for cable operating at or below 600 volts phase to phase.

Where ledge excavation is necessary and subject to advance Company approval, a reduction of cover may be allowed where supplemental protection is provided as permitted by NESC Section 352 D or NEC Sections 300.5 and 300.50.

913. SEPARATION OF FACILITIES

The separation of direct buried secondary or primary cables and ducts containing secondary or primary cable from all other
underground facilities (such as telephone, sewer and water) will be in accordance with NESC Sections 320 and 353 and subject to approval by the Company and the other utilities involved.

A minimum radial separation of 12 inches between the secondary or primary cables or ducts containing secondary or primary cables and all other utilities is required. For added safety, a minimum separation of 24 inches between primary cable/conduit and gas lines should be maintained wherever practicable. See Illustrations 19 and 20 in Section XII. This separation is required to permit access to, and maintenance of, either facility without damage to the other.

914. RISERS (POLE)

Risers on any pole shall be constructed in accordance with Illustration No. 29 or 30 in Section XII. Additionally, when more than one conduit per utility is to be installed on a single Company pole or where future customers are likely to be served from the same pole, standoff brackets are required, and the riser shall be constructed in accordance with Illustration No. 28 in Section XII. This requirement includes the spare conduit (where required) which shall be run to the first standoff bracket (at least 8 feet above grade) and capped. If it is necessary to install brackets below the 8 foot level during construction, the brackets must be installed below finish grade or removed upon construction completion (before energization). This will insure compliance with NESC requirements.

Bends at the foot of the pole, if required, shall be made of galvanized steel and have a minimum radius as specified by the Company (See paragraph 910).

Before any conduit is installed on a Company owned pole, the Company shall be contacted to determine a suitable location for the riser conduit. Once the riser location has been
determined (in consultation with the Company), the customer is responsible for installing the first 10' section or sections of conduit on the pole, including any conduit elbows or standoff brackets as required. Any additional sections of conduit will be installed on the pole by the Company at the customer's expense. The customer is responsible for supplying all conduit and related hardware.

If the conductors are to be owned by the Company, then the riser conduit (once installed on the pole) will generally become the property of, and will be maintained by, the Company.

Galvanized steel conduit starting at a minimum of 18 inches below grade shall be provided wherever cable is extended above ground. In some cases, sunlight resistant schedule 40 or 80 PVC conduit, suitable for the purpose, may be substituted on the riser as detailed on Illustrations No.s 28, 29 and 30 in Section XII.

Proper consideration must be given to possible frost action in the selection of type and method of installation of ducts.

For a **customer owned primary** voltage riser, the customer is responsible for installing and owning the riser pole. This pole and the attached riser and conduits shall be constructed in accordance with the Company’s Construction Standards to include Illustrations No.s 28 and 29 in Section XII. With prior Company approval, the riser may be attached to a Company owned pole but the Company will perform all installation and maintenance work on the riser at the customer’s expense. The customer may also be assessed an annual pole attachment fee.

When the riser pole is located in a State road right-of-way, it is the customer/developer’s responsibility to comply with the Maine Department of Transportation’s Utility Accommodation Policy for conduits within the Maine Department of Transportation’s right-of-way.
915. MULTIPLE SERVICES FROM ONE POLE

Multiple underground services from one pole will normally require separate service cables installed in separate conduits. Standoff brackets are required when more than one conduit is used, or is likely to be used, for any one utility. Refer to Illustration No. 28 in Section XII for specifications and materials for multiple risers on one pole. Where additional customers request service of similar characteristics through underground cable from a pole with an existing underground service, the Company may, with Distribution Engineer approval and subject to the cost provisions of paragraph 903:

- Furnish and install a single conduit of adequate size for all the service cables, or
- Furnish and install a single conduit and cable to a handhole for connection of the service cables, or
- Furnish and install conduits and primary cables to a padmount transformer suitably located for connection of the service cables.

916. CABLE AND DUCT MAINTENANCE

The Company will repair and maintain cable and duct systems owned by it. Repairs to Company owned cable and duct due to normal hazards will be made at Company expense including excavation, back fill, seeding and temporary service arrangements if necessary. The Company will not be responsible for restoring major landscaping features (such as stone walls) that are damaged during repairs. Repair of Company owned cable and duct caused by damage attributable to negligence on the part of another party will be billed to the party responsible for the damage.

The customer will be responsible for repair and maintenance of all cable and/or duct lines owned by the customer. The Company will generally repair customer owned underground
service only if it is built to Company specification, using standard Company specification cable. (Refer to cable Specifications in Illustration No. 32 in Section XII). Such repairs will be billed to the customer.

At the customer's option, the Company will provide a new underground service with Company standard cable (see paragraph 905) to be Company owned and maintained and requiring that the customer provide the trenching/back fill and conduit as required and pay costs per paragraph 903.

Any temporary arrangements made by the Company to provide service to a customer because of failure of a customer owned underground, will be billed to the customer regardless of the ultimate repair/replacement of the permanent underground.

917. TRANSFORMER VAULTS AND YARDS

Where high capacity services are required, or where otherwise deemed appropriate by the Company, the customer may be required to furnish, install, and maintain a suitable vault or fenced yard (including busses, raceways, and associated equipment) on the premises for the necessary transformers and protective equipment.

Such transformer vaults or fenced yards must meet the requirements of the NEC and NESC and be provided with outside easy access.

Specifications are subject to advance approval by the Company. Information will be furnished upon request.

918. TEMPORARY SERVICE FROM UNDERGROUND FACILITIES

Temporary service in underground (UG) areas will be installed only upon payment of the costs of installation and
removal including the cost of all material not salvageable for reuse. Provision for temporary service can not be made until primary conductors and transformers have been installed.

Where the UG system is already in place the contractor may provide a suitable support for a meter and switch adjacent to the transformer. The customer/contractor will provide and install the secondary cable from the transformer to the meter. All connections to the transformer will be completed by qualified Company employees.

Cable furnished by the contractor will not be maintained by the Company.

For details of a UG service structure, see Illustration No.s 9 and 11 in Section XII.

Where the UG system is to be installed as a part of a residential development, the contractor may provide a suitable support for a meter at the approximate location of the permanent service and thereby avoid installation and removal costs of a temporary installation. NOTE: the UG service must be built to permanent service standards in order to take advantage of this method (See Illustration No. 8, 9 or 11 in Section XII). The Company may furnish and install the URD cable in its permanent location with sufficient slack to allow for transfer onto the building, subject to the cost provisions of paragraph 903 and including payment for the final transfer. The contractor must arrange to protect the cable from damage and assume responsibility for the cost of any repairs or replacement required.
X. SERVICE FROM UNDERGROUND MAINS - URBAN

1000. GENERAL

In areas where the Company maintains an **urban underground** distribution system, other than Underground Residential Distribution (URD), and the customer arranges to take service at the existing available voltage, the underground service connection between the Company's mains and the customer's service entrance equipment will be furnished and installed in accordance with the requirements of this Section.

1001. DUCT LINE INSTALLATION

The Company will normally perform all necessary excavation and back-fill; as well as, furnish, install, own and maintain duct lines within the limits of the public street or highway.

The customer does, however, have the option to construct (in accordance with the Company provided design and specifications), **own** and maintain the duct line within the limits of the public street or highway in accordance with the provisions of the MPUC’s Chapter 395 on “Construction Standards and Ownership and Cost Allocation Rules for Electric Distribution Line Extensions,” and, the Company’s filed tariff (T&C) on “Extensions.” See paragraph 219 of this handbook for more details on customer constructed/owned lines.

1002. TERMINAL BOX

Wherever a terminal box is required on the customer's premises, it will be furnished and installed by the customer to meet the Company specifications.
1003. SERVICE CONDUCTORS

A. Secondary Voltage - The Company will furnish, install, own and maintain all conductors necessary from the point of connection to its underground mains to the nearest readily accessible point inside the customer's building where either the service entrance equipment or a suitable terminal box may be located. However, the customer may be required to contribute the cost of the installation. The customer shall furnish and install all necessary conductors beyond the terminal box.

B. Primary Voltage - The Company will furnish, install, own and maintain all conductors necessary from the point of connection to its underground mains to the nearest readily accessible point inside the customer's vault (See Par. 304 of this handbook). However, the customer may be required to contribute the cost of the installation.

1004. PROTECTIVE EQUIPMENT

The interrupting capacity required of service entrance equipment fed from underground mains should always be checked with the Company before installing new services. Current limiters may be required in certain cases at the customer's cost. Service equipment fed from the Portland network system may be required to have 100,000 amperes interrupting capacity.
XI. UTILIZATION EQUIPMENT SPECIFICATIONS

1100. GENERAL

Electric service must not be used in such manner as to cause unusual fluctuations or disturbances in the Company's supply system. Operation of the customer's equipment shall not cause more than a 3% voltage fluctuation on the Company's primary distribution system. In the case of violation of this rule and subject to the Maine Public Utilities Commissions' Chapters 810 and 860, the Company may refuse to connect service, may discontinue service or require the customer to make modifications or install approved controlling devices. Motor and other installations connected to the Company's lines may be restricted in the use of starting or inrush current and must conform to the requirements of the Company and the NEC as to wiring, kind of equipment and control devices. The Company will make the necessary calculations to determine the effect utilization equipment may have on its system.

1101. MOTOR SPECIFICATIONS

A. Limitation of size. The Company reserves the right to refuse service to the following:

1. Single-phase motors larger than 5 hp. Single-phase motors of larger rating may be permitted, provided the Company's facilities are adequate to supply the service and provided the use of such motor or motors does not interfere with the quality of service rendered to other customers.

2. Polyphase motors larger than 5 hp. operated from a single-phase service by use of a phase converter.
XI. UTILIZATION EQUIPMENT

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2. Polyphase motors larger than 5 hp. operated from a single-phase service by use of a phase converter.
3. The Company further reserves the right to limit the size of the largest motor which may be operated on any part of its system.

B. Single-Phase Motors

1. In general, single-phase motors up to 1 hp. may be operated on 120 volts. In certain cases, however, it may be necessary to operate these motors on 240 volts to obtain satisfactory results. All motors over 1/2 hp. should be operated on the higher voltage wherever feasible. Motors which are rated for 230 volts may not operate satisfactorily on 208 volts.

2. Motors are available in different types, designed for various kinds of loads and operating conditions. The manufacturer's recommendations should always be followed in determining the type of motor to be installed. In all cases, the requirements of paragraph 1100 above, regarding fluctuations and disturbances in the Company's supply system must be met.

C. Polyphase Motors

1. Standard "squirrel-cage" motors rated at 10 hp. and less may be started at full line voltage. For larger motors, the Company reserves the right to require the customer to limit the motor starting current by the use of reduced voltage starters or other acceptable means.

1102. PROTECTION AND CONTROL SPECIFICATIONS

A. The customer shall be responsible for protection against low voltage or phase loss wherever low voltage, phase loss, or unexpected restarting could cause damage to the customer's equipment or result in personal injury.
B. Overload protective devices shall be installed for all motors in accordance with the provisions of the NEC Section 430-III.

C. Control apparatus equipped with reverse-phase relays of approved type shall be installed by the customer on all polyphase motor installations for elevators, hoists, cranes and those manufacturing processes where accidental reversal of rotation is liable to cause injury to persons or damage to machinery, equipment or work in process.

D. It is recommended that customers protect their electrical equipment from voltage transients caused by such events as lightning and internal and external switching. For more information about protecting electrical and electronic equipment, see the Company's on-line publication at http://www.cmpco.com/handbook then click on CMP’s Power Quality link.

1103. POWER FACTOR CORRECTION

The use of equipment by the customer for power factor correction must conform to requirements of the Company as to electrical characteristics of equipment and its operation and control. The customer may be required to limit the size of static capacitor installations or to maintain effective control of the capacitors or other corrective equipment in order to prevent the use of such equipment from causing excessive voltage at the service. Corrective equipment installed by the customer must be located on the load side of the service disconnecting device and metering.
1104. HARMONIC LOADS

Equipment that draws current with a high harmonic content can have a serious impact on the quality of the Company's service. The Company requires that any service comply with the maximum harmonic current distortion limits given in IEEE Standard 519-1992. Table 10.3 of that standard provides the limits for individual harmonic distortion and Total Demand Distortion as a percent of maximum demand load current. A maximum Total Demand Distortion of 5% is generally required at the point of common coupling as defined in IEEE Standard 519-1992.

Examples of equipment that draw high harmonic content current include variable speed and variable frequency drives, computer power supplies, electronic lighting ballasts and rectifiers.
XII. ILLUSTRATION No. 1

SINGLE-PHASE CABLE SERVICE
200 AMP MAX.

WEATHERHEAD

SERVICE DROP

HOOK (BELOW WEATHERHEAD)

CONNECTORS (BELOW WEATHERHEAD)

CLIPS AS REQUIRED BY NEC

SERVICE ENTRANCE CABLE

RINGLESS METER SOCKET (SEE HANDBOOK 'SUPPLEMENT')

SEE 'HANDBOOK' PARA. 401 FOR SERVICE DROP CLEARANCE

METER

SEALLED/SILL PLATE 60' MAX, 48' MIN.

FINISHED GRADE

GROUNGING & BONDING (SEE 'HANDBOOK' SECTION VII & NEC ARTICLE 250)

SERVICE EQUIPMENT

CENTRAL MAINE POWER CO.

METERING CONSTRUCTION STANDARDS
XII. ILLUSTRATION No. 2

- Hook (Below Weatherhead)
- Weatherhead
- Service Drop
- Connectors (Below Weatherhead)
- Clamps as required by NEC
- Conduit
- Meter Socket (See Handbook "Supplement")
- Ringless Meter Socket
- Conduit "LB"
- Finished Grade
- Service Equipment

See "Handbook" Para. 401 for Service Drop Clearance

Grounding & Bonding (See "Handbook" Section VII & NEC Article 250)

Central Maine Power Co. Metering Construction Standards
XII. ILLUSTRATION No. 3

RIGID STEEL MAST TYPE SERVICE TO LOW BUILDING

CONDUIT CLAMP/GUY WIRE HOLDER (OR EYE BOLT ON UNIVERSAL WEATHERHEAD)
PORCELAIN CONDUIT CLAMP/WIREHOLDER IDENTIFIED FOR USE WITH SERVICE CONDUCTORS ATTACH 6" BELOW WEATHERHEAD

GUY: 3/16" MIN. HS STEEL GUY AS REQUIRED. MUST BE GUYED IF POINT OF ATTACHMENT IS MORE THAN 30' ABOVE TOP SUPPORT.

TOP SUPPORT: REINFORCING BLOCKING BETWEEN RAFTERS OR RIGID STEEL ROOF MOUNTING PLATE.

2 HOLE CLAMPS OR CENTER HOLE CONDUIT HANGERS. NOT MORE THAN 30' APART, (SCREW OR BOLT TO STUDS OR TIMBERS).

REDUCER IF REQUIRED

RINGLESS METER SOCKET (SEE HANDBOOK 'SUPPLEMENT')

CONDUIT "LB"


ATTACHMENT NOTE:
THE SERVICE MAST IS FOR SUPPORT OF THE POWER SERVICE DROP ONLY (NEC 230.28).

GROUNDING NOTE:
FOR SERVICE GROUNDING & BONDING (NOT SHOWN) SEE 'HANDBOOK' SECTION VII & NEC ARTICLE 250.

METERING CONSTRUCTION STANDARDS CENTRAL MAINE POWER CO.
XII. ILLUSTRATION No. 4

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<tr>
<td>980-31.1.6.1</td>
<td>POLE MOUNTED SERVICE/METER</td>
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**Items Supplied and Installed by CMP:**
- a. Service drop
- b. Service drop connectors
- c. Service drop hook
- d. Meter

**Items Supplied by Customer and Installed by CMP:**
- e. (2) Preforemed or equivalent guy grips, 5/16" ft.
- f. Guy wire 7 strand 5/16' EHS x required length (allow for bonding to NEUTRAL)
- g. Guy marker PVC 8 ft.

**Items supplied and installed by Customer:**
- h. Pole, pressure treated (see Note 4)
- i. Weatherhead
- j. Clamps, (two hole on a round pole), spaced as required by NEC.
- k. Meter backboard (see Note 2)
- l. Meter socket, ringless (see Handbook 'Supplement')
- m. Condur, (highly recommended) or cable.
- n. Rain-tight service equipment (see Note 1)
- o. Grounding conductor (see Note 3)
- p. Ground rod, 5/8" x 8' copperweld or galvanized steel (minimum)
- q. Ground rod clamp
- r. Feeder or Supply cord per NEC (see note 1)
- s. Anchor, No-wrench screw type, one piece, 3/4' rod, 6' helix, 66' overall length

**or**
- t. Anchor, expanding with a minimum area of 70 sq. in. when expanded. Anchor must be expanded

**or**
- u. Anchor, steel crossplate with a minimum area of 150 sq. in.
- v. Guy hook for 5/16' stranded guy
- w. Bolt, machine square galvanized 5/8' x required length
- x. Bolt, toe 1/2" x 4"

*(Items v, w and x may be replaced by using an angle type thimble eye bolt.)*

**NOTES:**
1. This Standard is typically for a mobile home service (Handbook, para. 408A), but may be applied anywhere that overhead service conductors terminate on a customer owned service/meter pole (Handbook, para. 404). The service disconnect and overcurrent device under the meter may not be required for all applications, but it is highly recommended in order to allow the customer to disconnect and maintain their underground conductors without the cost of a CMP line crew visit. See ‘Handbook’ Illustration No. 31 for allowable customer owned residential service lengths.

2. A Meter backboard is recommended (especially for round pole) and should be securely mounted and sealed with paint or preservative (or be pressure treated).

3. Service bonding and grounding shall be as required by ‘Handbook’ section VII and NEC article 250. For meter only (no disconnect) installations, the meter enclosure shall be grounded (at a minimum) to a ‘supplementary’ ground rod (5/8' X 8').

4. The pole shall be pressure treated full length (or untreated cedar), have a minimum diameter of 8" at ground line and 6" at top, and be of sufficient height to provide proper service drop clearance. A 6"x6" (or larger) pressure treated timber is acceptable. The guy ‘lead’ dimension shall be a minimum of 10 feet or 1/3 the height of the pole (above ground), whichever is greater.

5. The anchor and rod are a one piece galvanized unit. To manually install anchor, place a turning bar through the rod eye and rotate anchor clockwise. If full-depth installation cannot be achieved by this method, then a hole may be dug to full-depth, anchor placed and the hole backfilled and tamped with stones and dirt.

**6.** For the expanding anchor and the crossplate anchor, an anchor rod with a minimum diameter of 5/8’ and a minimum length of 6 feet must be ordered separately in addition to the anchor.

METERING CONSTRUCTION STANDARDS

CENTRAL MAINE POWER CO.
XII. ILLUSTRATION No. 5

**Description**

MULTI-METER SERVICE POLE/PEDESTAL

**Notes:**

1. THIS STANDARD IS TYPICALLY FOR A MULTIPLE MOBILE HOME TYPE SERVICE ARRANGEMENT (SEE 'HANDBOOK' PARAGRAPH 408A).

2. FOR DETAILS ON THE OVERHEAD 'SERVICE/METER' POLE INSTALLATION, SEE METERING STANDARDS 980-31.1.6.1 & 980-31.1.6.2 (‘HANDBOOK’ ILLUSTRATION NO. 4).

3. FOR MORE DETAILS ON THE UNDERGROUND ‘METER PEDESTAL’ SERVICE INSTALLATION, SEE METERING STANDARD 980-31.3.2.1 (‘HANDBOOK’ ILLUSTRATION NO. 9).
NOTES:

1. 3 WIRE 20/240V REQ'D TO METER.

2. ALL ENCLOSURES MUST BE WEATHERPROOF OR RAINTIGHT.

3. ALL METAL ENCLOSURES SHALL BE BONDED AND GROUNDED.

4. THE DPDT SWITCH AND RECESS RECEPTACLE ARE REQUIRED ONLY WHEN THE POWER SUPPLY IS DESIGNED FOR GENERATOR/SERVICE CONNECTION.

5. THE SERVICE GROUND SHALL UTILIZE THE SAME GROUND ROD AS THE 'POLE GROUND' (OR BE SEPARATE AND BONDED TOGETHER WITH).
TEMPORARY SERVICE STRUCTURE - FOR USE DURING BUILDING CONSTRUCTION

*TEMPORARY SERVICE DROP
*HOOK (BELOW WEATHERHEAD)
*CONNECTORS
BRACES 48" FROM TOP
CLIPS AS REQUIRED BY NEC
POLE
CABLE & CLIPS
METER SOCKET (RINGLESS)
METER
RAINTIGHT SERVICE DISCONNECTING DEVICE WITH PROVISION FOR LOCKING
BONDING AND GROUNDING PER NEC ARTICLE 250

REAR BRACE IN LINE WITH SERVICE DROP
ALL WOOD BRACES 2' X 4' MIN
ALL STAKES 2' X 4' X 36' MIN
60' MAX, 48' MIN
36' MIN
5/8" X 8' MIN GROUND ROD
8'
8'
8'
8'

NOTES:
1. SERVICE LOCATION AND TYPE OF CONSTRUCTION MUST BE APPROVED IN ADVANCE BY A CMP REPRESENTATIVE. THE TYPE OF STRUCTURE SHOWN HERE MAY BE USED ONLY WHERE THE TEMPORARY SERVICE DROP LENGTH DOES NOT EXCEED 75 FEET. SEE METERING STANDARDS 980-31.1.6.1 & 980-31.1.6.2 ("HANDBOOK" ILLUS. NO. 4) FOR GREATER DISTANCES OF TEMPORARY SERVICE OR FOR PERMANENT SERVICE.
2. THE POLE MUST BE AT LEAST 5' IN DIAMETER AT THE TOP, OR BE A 6' X 6' TIMBER (A 4' X 4' TIMBER MAY BE USED WHEN DISTANCE TO THE CMP POLE IS LESS THAN 25 FEET.)
3. THE POLE MUST BE TALL ENOUGH TO PERMIT THE ATTACHMENT POINT TO BE AT LEAST 12 FEET ABOVE GROUND WITH A MINIMUM OF 36" IN GROUND. ADDITIONAL HEIGHT MAY BE REQUIRED FOR PROPER CLEARANCE WHEN THE TEMPORARY SERVICE IS ON THE OPPOSITE SIDE OF THE STREET OR HIGHWAY FROM THE CMP POLE. (SEE "HANDBOOK", PARA. 401 FOR SERVICE DROP CLEARANCES).
4. ALL EQUIPMENT, EXCEPT THE SERVICE DROP, HOOK, CONNECTORS AND METER, ARE TO BE SUPPLIED, INSTALLED AND MAINTAINED BY THE CONTRACTOR.
5. INSTALLATION OF A TEMPORARY SERVICE ON A CONSTRUCTION SHACK, MAY BE PERMITTED WITH THE APPROVAL OF A CMP REPRESENTATIVE. PER NEC 230.10. TREES SHALL NOT BE USED FOR SUPPORT OF OVERHEAD SERVICE CONDUCTORS.

CENTRAL MAINE POWER CO.
XII. ILLUSTRATION No. 8

NOTES:

1. A 6' BEDDING OF SOIL CONTAINING NO ROCKS SHALL BE PLACED BELOW AND ABOVE CABLE. BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS AND OTHER DEBRIS. A PLASTIC 'ELECTRIC' MARKER TAPE SHALL BE INSTALLED APPROXIMATELY 12' BELOW GRADE (AND AT LEAST 12' ABOVE THE CABLE PER NEC SECTION 300.5)

2. SEE 'HANDBOOK' PARA. 905 FOR AVAILABLE CMP STANDARD UNDERGROUND SERVICE OPTIONS. SEE 'HANDBOOK' ILLUSTRATION NO. 3! FOR ALLOWABLE CUSTOMER-OWNED RESIDENTIAL SERVICE LENGTHS AND MINIMUM CONDUIT SIZES. IF PVC IS USED AND IT IS SUBJECT TO PHYSICAL DAMAGE, SCHEDULE 80 IS REQUIRED.

3. FOR SERVICE GROUNDING & BONDING (NOT SHOWN) SEE 'HANDBOOK' SECTION VII AND NEC ARTICLE 250.
### XII. ILLUSTRATION No. 9

#### Meter Pedestal Service 200 Amperes Max.

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<td>METER PEDESTAL SERVICE 200 AMPERES MAX.</td>
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- **4" x 6" Min. Posts**
  - Pressure Treated
  - HORIZONTAL FRAMING
  - SEE (NOTE 4)
- **Underground Ringless Combination**
  - Meter Socket/Disconnect
  - (SEE HANDBOOK 'SUPPLEMENT')
  - 15 FT Min. to CMP Pole
  - Or Padmount Transformer
- **Conduit Clamp(s)**
  - As Req'd By NEC
  - 60' Max.
  - 48' Min.
- **Rigid Steel, Steel IMC or PVC Approved**
  - For the Purpose
  - (NOTE 3)
- **Finished Grade**
  - Marker Tape
  - (NOTE 11)
- **Bonding and Grounding**
  - (SEE HANDBOOK SECTION VII & NEC ART. 250)
- **Ground Rod**
  - 5/8" x 8" Min.
  - 48" Min.
- **Insulated Bushing**
  - For Steel Conduit
  - 12" Min.
- **Service Cable:**
  - LAY SLACK FULL LENGTH OF TRENCH
  - DO NOT PULL CABLE OUT STRAIGHT (NOTE 3)
  - CLEAT BOLTED TO POST
  - TO PREVENT FROST HEAVE

#### NOTES:

1. A 6' BEDDING OF SOIL CONTAINING NO ROCKS SHALL BE PLACED BELOW AND ABOVE THE CABLE. BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS AND OTHER DEBRIS. A PLASTIC 'ELECTRIC' MARKER TAPE SHALL BE INSTALLED APPROXIMATELY 12' BELOW GRADING AND AT LEAST 12" ABOVE THE CABLE PER NEC SECTION 300.5).

2. THIS STANDARD IS TYPICALLY FOR A MOBILE HOME SERVICE (HANDBOOK, PARA. 408A.) BUT MAY BE APPLIED ANYWHERE THAT 200 AMP MAX. UNDERGROUND SERVICE LATERALS TERMINATE ON A CUSTOMER OWNED METER PEDESTAL. THE SERVICE DISCONNECT AND OVERCURRENT DEVICE ON THE PEDESTAL MAY NOT BE REQUIRED FOR ALL APPLICATIONS, BUT IT IS HIGHLY RECOMMENDED IN ORDER TO ALLOW THE CUSTOMER TO DISCONNECT AND MAINTAIN THEIR UNDERGROUND CONDUCTORS WITHOUT THE COST OF A CMP LINE CREW VISIT. ANY CABLE INSTALLATION ON THE LINE SIDE OF THE DISCONNECTING MEANS MUST MEET ALL THE REQUIREMENTS OF THE 'HANDBOOK' AND THE NEC FOR UNDERGROUND SERVICE.

3. SEE 'HANDBOOK' PARA. 905 FOR AVAILABLE CMP STANDARD UNDERGROUND SERVICE OPTIONS. SEE 'HANDBOOK' ILLUSTRATION NO. 31 FOR ALLOWABLE CUSTOMER-OWNED RESIDENTIAL SERVICE LENGTHS AND MINIMUM CONDUIT SIZES. IF PVC IS USED AND IT IS SUBJECT TO PHYSICAL DAMAGE, SCHEDULE 80 IS REQUIRED.

4. THE HORIZONTAL FRAMING SHALL BE 1-5/8" X 1-5/8" 12 GA. MIN. GALV. OR 'GOLDSHIELD' (OR EQUIVALENT) STEEL CHANNEL/STRUT.
### XII. ILLUSTRATION No. 10

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<td>CONTINUOUS CONDUIT</td>
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**NOTES**

1. FOR DETAILS ON THE SERVICE RISER PULL AND METER SOCKET INSTALLATIONS, SEE DISTRIBUTION STANDARDS 361-1 AND METERING STANDARD "HANDBOOK" ILLUSTRATION No. 30 AND NO. 81.

2. A WEATHERHEAD IS REQUIRED UNLESS PRIOR APPROVAL TO Omit IS OBTAINED FROM THE AUTHORITY HAVING JURISDICTION.

3. ALL 90° CONDUIT BENDS SHALL BE GALVANIZED STEEL WITH MINIMUM RADIUS PER "HANDBOOK" PARA. 910.

4. THE CONDUIT FROM THE POLE TO THE BUILDING (EXCEPT FOR 90° BENDS) ARE NON-METALLIC, SCHEDULE 40 MINIMUM, AS Required WHERE SHEET METAL IS SUBJECT TO PHYSICAL DAMAGE.

5. PROVIDE FOR DRAINAGE BY PROVIDING AT THE FLOOR OF THE BUILDING OR BY INSTALLING DRAINAGE TAPES OR DRAINPIPES AS REQUIRED.

6. A 6" DIXON ING BONDING OF ALL CONDUIT MATERIALS ON THE CONDUIT NEAR THE SUPPORT POINT WILL PROVIDE A PLASTIC ELECTRIC MARKER TAPE ABOVE THE CONDUIT PER NEC 300.9.

7. A PVC CONDUIT SLIP RISER OR "LISTED" STEEL EXPANSION JOINT SHALL BE PROVIDED UNDER THE METER BOX TO ALLOW FOR TRENCH SETTLEMENT OR INSTALLATION OF CONDUIT CLAMP A CLAMP IN THE TOP PIECE OF CONDUIT UNDER THE METER ONLY.

8. ALL ABOVE GROUND AND BELOW GROUND VERTICAL LAY-OF PVC SURFACE STEEL CONDUIT, AND ALL SPECIAL STEEL CONDUIT, SHALL BE BONDED AND GROUNDED PER "HANDBOOK" ILLUSTRATION No. 30.

---

**DIAGRAM**

- **2"** GALV. STEEL CONDUIT (NOTES 1 & 8)
- **FINISHED GRADE**
- **STONE NOTE B**
- **CONDUIT CLAMP** (NOTES 7 & 8)
- **CONDUIT CLAMP** (NOTE 8)
- **WEATHERHEAD** (NOTE 2)
- **WEATHERHEAD** (NOTE 2)

**CENTRAL MAINE POWER CO.**

**REGISTERED PROFESSIONAL ENGINEER**

**LADD** 3910

**METERING CONSTRUCTION STANDARDS**

**STATE OF MAINE**

**12/9/05**
XII. ILLUSTRATION No.11

METER PEDESTAL SERVICE
400 AMPERE MAX.

(2) 4" X 6" MIN. POSTS
PRESURE TREATED

LAG SCREWS
FRONT VIEW.

HORIZONTAL FRAMING
(SEE NOTE 4)

UNDERGROUND RINGLESS COMBINATION
METER SOCKET/DISCONNECT
(SEE HANDBOOK 'SUPPLEMENT')

15 FT MIN. TO CMP POLE
OR PADMOUNT TRANSFORMER

GALV. BOLTS
FEEDER PER NEC

CONDUIT CLAMP(S)
AS REQ'D BY NEC

RIGID STEEL, STEEL
IMC, OR PVC APPROVED
FOR THE PURPOSE
( NOTE 3)

FINISHED GRADE
MARKER TAPE
( NOTE 11)

BONDING AND GROUNDING
(SEE "HANDBOOK" SECTION
VII & NEC ART. 250)

GROUND ROD
5/8" X 8" MIN.

60" MAX.
48" MIN.

48" MIN.

INSULATED BUSHING
FOR STEEL CONDUIT

12" MIN.

6' SEE NOTE 1

18" MIN.
21" MAX.
TO 48' FROM
BUILDING

24" MIN.

36" MIN.

72" MIN.

72" MIN.

48" MIN.

SERVICE CABLE;
LAY SLACK FULL LENGTH OF TRENCH.
DO NOT PULL CABLE OUT STRAIGHT (NOTE 3)
CLEAT BOLTED TO POST
TO PREVENT FROST HEAVE

OPTIONAL CONDUIT
(BUSHING AS REQUIRED)

LINE (SOURCE) SIDE

NOTES:

1. A 6' BEDDING OF SOIL CONTAINING NO ROCKS SHALL BE PLACED BELOW AND ABOVE THE CABLE BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS AND OTHER DEBRIS. A PLASTIC "ELECTRIC" MARKER TAPE SHALL BE INSTALLED APPROXIMATELY 12' BELOW GRADE (AND AT LEAST 12' ABOVE THE CABLE PER NEC SECTION 300.5).

2. THIS STANDARD IS TYPICALLY FOR A MOBILE HOME SERVICE (HANDBOOK, PARA. 408A.) BUT MAY BE APPLIED ANYWHERE THAT UNDERGROUND SERVICE LATERALS TERMINATE ON A CUSTOMER OWNED METER PEDESTAL. THE SERVICE DISCONNECT AND OVERCURRENT DEVICE ON THE PEDESTAL MAY NOT BE REQUIRED FOR ALL APPLICATIONS, BUT IT IS HIGHLY RECOMMENDED IN ORDER TO ALLOW THE CUSTOMER TO DISCONNECT AND MAINTAIN THEIR UNDERGROUND CONDUCTORS WITHOUT THE COST OF A CMP LINE CREW THE COST OF A CMP LINE CREW VISIT. ANY CABLE INSTALLATION ON THE LINE (SOURCE) SIDE OF THE DISCONNECTING MEANS MUST MEET ALL THE REQUIREMENTS OF THE "HANDBOOK" AND THE NEC FOR UNDERGROUND SERVICE.

3. SEE "HANDBOOK" PARA. 905 FOR AVAILABLE CMP STANDARD UNDERGROUND SERVICE OPTIONS. SEE "HANDBOOK" (ILLUSTRATION NO. 3I FOR ALLOWABLE CUSTOMER-OWNED RESIDENTIAL SERVICE LENGTHS AND MINIMUM CONDUIT SIZES. IF PVC IS USED AND IT IS SUBJECT TO PHYSICAL DAMAGE, SCHEDULE 80 IS REQUIRED.

4. THE HORIZONTAL FRAMING SHALL BE 1-5/8" X 1-5/8" 12 GA. MIN. GALV. OR "GOLDFIEND" (OR EQUIVALENT) STEEL CHANNEL/STRUT.

METERING CONSTRUCTION
STANDARDS
CENTRAL MAINE POWER CO.
XII. ILLUSTRATION No.12

UL LISTED MODULE WITH RINGLESS METER SOCKETS (SEE HANDBOOK ‘SUPPLEMENT’)

PERMANENT IDENTIFICATION OF METER/UNIT (SEE NOTE 2)

TO OVERHEAD SERVICE (IF APPLICABLE)

METER (TYPICAL)

METERING CENTERLINE

MAIN SERVICE BREAKER

UNIT BREAKER (TYPICAL)

UNDERGROUND SERVICE (TYPICAL)

FINISHED GRADE OR FLOOR

GROUNDED & BONDING (SEE HANDBOOK SECTION VII & NEC ARTICLE 250)

NOTES:

1. THIS INSTALLATION IS TO BE USED ONLY WITH PRIOR COMPANY APPROVAL.

2. IN GENERAL, METERS SHOULD BE ARRANGED SUCH THAT THERE IS A LOGICAL LEFT-TO-RIGHT AND TOP-TO-BOTTOM NUMBERING SEQUENCE. WHERE APPLICABLE, A STORAGE HEAT (RATE A-LM) METER SHALL FOLLOW, IN SEQUENCE, IT’S ASSOCIATED RESIDENCE (RATE A OR A-TOU) METER.

3. IF DOORS ARE INSTALLED IN FRONT OF METERS, THE FOLLOWING CLEARANCES APPLY:
   - 12" MINIMUM IN FRONT OF MODULE COVER PLATE.
   - 24" MINIMUM ABOVE FINISHED GRADE (TO BOTTOM OF DOORS).
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<tr>
<td>(A)</td>
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<tr>
<td>(B)</td>
<td>120/240V, 1-Phase, 3-Wire (as req'd)</td>
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<td>(C)</td>
<td>120/208V, 1-Phase (network), 3-Wire (from 4-Wire System)</td>
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<td>120/208V, 3-Phase, 4-Wire, Wye</td>
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<td>277/480V, 3-Phase, 4-Wire, Wye</td>
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<td>(E)</td>
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<tr>
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<td>240 Volt, 3-Phase, 3-Wire</td>
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XII. ILLUSTRATION No.14

PAGE 980-31.2.4  DESCRIPTION WALL MOUNTED OUTDOOR CT CABINET & OVERALL METER ENCLOSURE  MACRO

OVERHEAD SERVICE (IF APPLICABLE)

CT CABINET RAINTIGHT (NEMA 3R) (SEE NOTE 2 & 3)

UNDERGROUND SERVICE (TYP.)

CONDUIT CLAMPS (AS REQ'D)

IF CONDUIT IS CONTINUOUS USE A SLIP JOINT (SEE ILLUS.10)

NOTES:
1. THIS STANDARD IS 'TYPICAL' FOR A CURRENT TRANSFORMER (CT) CABINET AND TRANSFORMER-RATED OVERALL METER ENCLOSURE MOUNTING ON A BUILDING WALL, AND IS TO BE USED ONLY WITH PRIOR COMPANY APPROVAL.

2. CT CABINETS MAY BE USED WHERE MAINS DO NOT EXCEED 1200 AMPERES OR 480 VOLTS. WHERE MAINS ARE GREATER THAN 1200 AMPERES OR 480 VOLTS, INSTRUMENT TRANSFORMERS SHOULD BE INSTALLED IN SWITCHGEAR (SUBJECT TO ADVANCE COMPANY APPROVAL OF COMPARTMENT PLANS). REFER TO 'HANDBOOK' PARAGRAPH 814, SWITCHGEAR INSTALLATIONS.

3. FOR MORE DETAILS ON INSTRUMENT TRANSFORMER/CT CABINETS, SEE 'HANDBOOK' PARAGRAPH 811 AND THE HANDBOOK 'SUPPLEMENT'.

4. THE 1 1/4" (MINIMUM) CONDUIT SHALL BE EITHER RIGID METAL CONDUIT (RMC) OR INTERMEDIATE METAL CONDUIT (IMC) AND BE PROPERLY BONDED TO PROVIDE AN EFFECTIVE GROUND-FAULT CURRENT PATH.

5. METALLIC CONDUIT AND ENCLOSURES SHALL BE BONDED AND GROUNDED PER 'HANDBOOK' SECTION VII AND NEC ARTICLE 250. ADDITIONALLY, THE METER ENCLOSURE SHALL BE GROUNDED PER THE COMPANY'S TRANSFORMER-RATED METERING GROUNDING STANDARD. BONDING TO THE XFRM/SERVICE GROUND IS REQUIRED.

6. STEEL CHANNEL (STRUT TYPE) IS REQUIRED FOR MOUNTING THE METER ENCLOSURE AND CT CABINET TO A METAL OR MASONRY BUILDING WALL.

CENTRAL MAINE POWER CO.
XII. ILLUSTRATION No.15

POLY-MOUNTED OUTDOOR OVERALL METER ENCLOSURE MOUNTING

**NOTES:**

1. THIS INSTALLATION IS TO BE USED ONLY WITH PRIOR COMPANY APPROVAL.

2. THIS INSTALLATION IS TYPICAL FOR A PRIMARY METERING POLE.

3. THE METER ENCLOSURE SHALL BE GROUNDED, AS SHOWN, PER THE COMPANY'S TRANSFORMER-RATED METERING GROUNDING STANDARD. THE METERING GROUND SHALL UTILIZE THE SAME GROUND ROD AS THE "POLE GROUND" (OR BE SEPARATE AND BONDED TOGETHER WITH).

4. THE HORIZONTAL BACKING STRIPS SHALL BE GALVANIZED OR "GOLDGUARD" STEEL CHANNEL (STRUT TYPE IS ACCEPTABLE) SHIMMED AS REQUIRED TO PLUMB ENCLOSURE. GALVANIZED FLAT BAR SHALL BE FORMED AROUND BACK OF POLE TO PROVIDE LATERAL BRACING.

5. A LEVEL UNOBSERVED AREA SHALL BE MAINTAINED FOR A MINIMUM OF 36" IN FRONT OF THE METER ENCLOSURE.

6. TELEPHONE CONDUIT, IF REQUIRED, SHALL EXTEND TO A MINIMUM OF 10' ABOVE GRADE WITH A WEATHERHEAD ON TOP.
NOTES:
1. THIS INSTALLATION IS TO BE USED ONLY WITH PRIOR COMPANY APPROVAL.
2. A MINIMUM OF 24" CLEARANCE IS REQUIRED BETWEEN THIS METERING STRUCTURE AND A PADMOUNT TRANSFORMER FOUNDATION. A MINIMUM OF 15' CLEARANCE IS REQUIRED BETWEEN THIS METERING STRUCTURE AND A CMP POLE.
3. METALLIC CONDUIT AND ENCLOSURES SHALL BE BONDED AND GROUNDED PER 'HANDBOOK' SECTION VII AND NEC ARTICLE 250. ADDITIONALLY, THE METER ENCLOSURE SHALL BE GROUNDED, AS SHOWN, PER THE COMPANY'S TRANSFORMER-RATED METERING GROUNDING STANDARD. BONDING TO THE TRANSFORMER OR SERVICE GROUND FOR ALL CT ONLY (NO VTS) INSTALLATIONS; AS WELL AS, BONDING TO ANY OTHER NEARBY GROUNDING SYSTEM, IS REQUIRED.
4. THE HORIZONTAL FRAMING SHALL BE 1-5/8" X 1-5/8" 12 GA. MIN. GALV. OR 'GOLGUARD' (OR EQUIVALENT STEEL CHANNEL/STRUT.
5. A PVC CONDUIT SLIP JOINT (AS SHOWN) OR A 'LISTED' STEEL EXPANSION JOINT SHALL BE PROVIDED. IF PVC IS USED, SCH. 80 IS REQUIRED WHEREVER SUBJECT TO PHYSICAL DAMAGE.
6. A LEVEL UNOBSTRUCTED AREA SHALL BE MAINTAINED FOR A MINIMUM OF 36' IN FRONT OF THE METER ENCLOSURE.
XII. ILLUSTRATION No. 17

MACRO

DESCRIPTION

UNDERGROUND OUTDOOR OVERALL
METER ENCLOSURE MOUNTING (1-DDOUBLE)

PAGE

980-32.3.2

NOTES:

1. THIS INSTALLATION IS TO BE USED ONLY WITH PRIOR COMPANY APPROVAL.

2. A MINIMUM OF 24' CLEARANCE IS REQUIRED BETWEEN THIS METERING STRUCTURE AND A PADMOUNT TRANSFORMER FOUNDATION. A MINIMUM OF 15' CLEARANCE IS REQUIRED BETWEEN THIS METERING STRUCTURE AND A CMP POLE.

3. METALLIC CONDUIT, ENCLOSURES AND STEEL FRAMING SHALL BE BONDED AND GROUNDED PER 'HANDBOOK' SECTION VII AND NEC ARTICLE 250. ADDITIONALLY, THE METER ENCLOSURE SHALL BE GROUNDED, AS SHOWN, PER THE COMPANY'S TRANSFORMER-RATED GROUNDING STANDARD. BONDING TO THE TRANSFORMER OR SERVICE GROUND FOR ALL CT ONLY (NO VTs) INSTALLATIONS AS WELL AS BONDING TO ANY OTHER NEARBY GROUNDING SYSTEM, IS REQUIRED.

4. THE POSTS SHALL BE 2-1/2' GALVANIZED STEEL PIPE WITH GALVANIZED STEEL CAPS OR 3' X 3' GALVANIZED STEEL ANGLE (OR EQUIVALENT) SET IN CONCRETE AS SHOWN (LARGE FOOTING TO PREVENT FROST HEAVE). PRESSURE TREATED 4' X 6' POST MAY BE SUBSTITUTED FOR STEEL ANGLE OR PIPE, PROVIDED THEY ARE ANCHORED IN THE CONCRETE WITH BOLTS OR SPIKES.

5. THE HORIZONTAL FRAMING SHALL BE 1-5/8' X 1-5/8' 12 GA. MIN. GALVANIZED OR 'COLDGUARD' (OR EQUIVALENT) STEEL CHANNEL (STRUT TYPE IS ACCEPTABLE) MOUNTED TO THE BACK OF THE POST. PRESSURE TREATED WOOD 4' X 4' MAY BE SUBSTITUTED FOR STEEL CHANNEL HORIZONTAL FRAMING. SHIM AS REQUIRED TO PLUMB ENCLOSURE.

6. A PVC CONDUIT SLIP JOINT (AS SHOWN) OR A 'LISTED' STEEL EXPANSION JOINT SHALL BE PROVIDED. IF PVC IS USED, SCH. 80 IS REQUIRED WHEREVER SUBJECT TO PHYSICAL DAMAGE.

7. A LEVEL UNOBSTRUCTED AREA SHALL BE MAINTAINED FOR A MINIMUM OF 36' IN FRONT OF THE METER ENCLOSURE.

CENTRAL MAINE POWER CO. METERING CONSTRUCTION STANDARDS
UNDERGROUND CABLE INSTALLATION
TRENCH OCCUPIED BY CENTRAL MAINE POWER COMPANY ONLY

Primary Cable Installation

Finish Grade

Plastic 'electric' marker tape placed approx. 12' below finish grade and no less than 12 inches above cable or conduit.

Clean backfill containing no rocks larger in diameter than 4 inches and free of roots, stumps and other debris.

Primary Cable (conduit as required)

Secondary or Service Cable (conduit as required)

Bedding of soil containing no rocks, roots, stumps of debris.

Secondary or Service Cable Installation

Finish Grade

Plastic 'electric' marker tape placed approx. 12' below finish grade and no less than 12 inches above cable or conduit.

Clean backfill containing no rocks larger in diameter than 4 inches and free of roots, stumps and other debris.

Secondary or Service Cable (conduit as required)

Bedding of soil containing no rocks, roots, stumps of debris.
UNDERGROUND CABLE INSTALLATION

JOINTLY USED TRENCH - HORIZONTAL SEPARATION

IN SITUATIONS WHERE THE TRENCH IS TO BE SHARED AGREEMENT MUST BE OBTAINED BETWEEN JOINT USERS

Trench shall be a minimum of 24’ wide
UNDERGROUND CABLE INSTALLATION

JOINTLY USED TRENCH - VERTICAL SEPARATION

IN SITUATIONS WHERE THE TRENCH IS TO BE SHARED
AGREEMENT MUST BE OBTAINED BETWEEN JOINT USERS

NOTES:
1. Installation should not allow the inter-twining of cables.
2. Bedding and backfill shall be free of roots, stumps and other debris.
3. Communication cable and power cable shall have no less than 12 inches of radial separation.
Preferred layout of a padmount transformer and direct buried underground distribution system. Prior CMP approval is required for any deviation from this layout.

At each transformer location a level 10 foot by 10 foot (minimum) area will be provided. The elevation of this area shall be sufficiently high to always be above the highest expected water level and at or above the top of any nearby ditch slope. The transformer foundation shall be installed so the top of the foundation is 6 inches above this elevation. The transformer foundation shall be installed no more than 20 feet from a road surface.
PRIMARY JUNCTION BOX FIBERGLASS COVER

1. The fiberglass pad CU C6UDJBFP (MID#6000673961) is suitable for both 7.2/12.47kV and 20/34.5kV single phase junction boxes.

2. Use fiberglass flat cover CU C6UDJBFCF (MID#6000673931)

3. Fiberglass flat cover CU C6UDJBFCF (MID#6000673931) requires a minimum of 2 one-time locks (MID#6000821013) installed opposite each other.
## XII. ILLUSTRATION No. 23

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<td>SINGLE PHASE CONCRETE TRANSFORMER FOUNDATION 25 TO 167 KVA</td>
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**NOTES:**

1. FRONT denotes the side on which the access doors are located. The concrete base shall be set on a suitable gravel base and located so the FRONT is accessible by truck and suitably protected from plow and traffic damage.

2. Before installing or requiring any active drainage structure (e.g., drain pipe) into the foundation or pad, the contractor, CMP Line Supervisor, or CMP Distribution Engineer must contact Central Maine Power Company’s Environmental Services Department at 623-3521 ext. 3479 to request a site inspection.

3. Finish grade shall be graded in such manner to allow surface water to flow away from the pad.

4. Concrete foundation is suitable for both 7200/12470 volt and 20/34.5Kv single phase transformer and primary junction box installations.

5. Provide 6’ square cable holes (bond out) 3’ up the wall from the base. One per wall.

6. Conduit entering concrete structures shall be set back from the inside wall 1 to 2 inches and the space within the knockout surrounding the conduits completely filled with mortar to prevent soil from entering structure. Inside the structure the mortar shall be finished and beveled from the conduit ends to the inside wall face to cover and smooth the edges of the knockouts.

7. A 3/4” x 8’ galvanized ground rod is to be installed 6’ in front of the left front corner of transformer foundation. The top of the ground rod is to be 6’ below final grade.

8. A ground wire shall be installed from the ground rod through the 1/2” ground wire hole provided or the cable hole at the bottom of the pad. 10 feet of ground wire shall be provided so that it can be installed through the two grounding lugs and connected to the neutral spade.

9. Pulling eye insert, for use with 3/4” national course thread eye bolt (Richmond LCB-1 or equivalent). Located opposite each cable hole and approximately 16’ from the bottom.
## XII. ILLUSTRATION No. 24

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<td>SMALL (7' X 7') THREE PHASE TRANSFORMER FOUNDATION</td>
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**NOTES:**

1. **FRONT** denotes the side on which the access doors are located. The concrete base shall be set on a suitable gravel base and located so the FRONT is accessible by truck and suitably protected from plow and traffic damage.

2. Before installing or requiring any active drainage structure (e.g., drain pipe) into the foundation or pad, the contractor, CMP Line Supervisor, or CMP Distribution Engineer must contact Central Maine Power Company's Environmental Services Department at 623-3521 ext. 3479 to request a site inspection.

3. Finish grade shall be graded in such manner to allow surface water to flow away from the pad.

4. Provide 8'' x 24'' cable holes (bond cuts) 8' up the wall from the base. Locate one cable hole per wall, more if necessary. Line up cable holes with trench.

5. Conduits entering concrete structures shall be set back from the inside wall 1 to 2 inches and the space within the knockout surrounding the conduits completely filled with mortar to prevent soil from entering structure. Inside the structure, the mortar shall be finished and beveled from the conduit ends to the inside wall face to cover and smooth the edges of the knockouts.

6. A 3/4"x 8" galvanized ground rod is to be installed six inches in front of the left FRONT corner of the foundation. The top of the ground rod is to be 6 inches below final grade.

7. A ground wire shall be installed from the ground rod through the cable hole at the bottom of the pad. 10 Feet of ground wire shall be provided so that it can be installed through the two grounding lugs and connected to the neutral spade.

8. Concrete compressive strength shall be 4000 PSI @ 28 days. For cast-in-place early high strength may be used with a minimum of seven day cure time.

9. Reinforcing steel to have: FY = 60 KSI.

10. For precast units: The precast supplier shall provide lifting lugs in the slab (foundation) and base; the precast supplier shall assemble the slab to the base prior to shipping to the site to ensure that the slab and base fit properly (with no rocking of the slab evident).

11. A 16'' x 24'' x 1/4'' galvanized steel plate to cover a portion of the cable hole when the transformer does not completely cover it. Cut the steel plate to fit, if necessary.

   a. 7-
   b. 2-4 Corner diagonal rebar 2'-0' long top and bottom.
   c. 4'' x 4'' x 1/2'' angle 6'' long with 2-3/4'' diameter expansion anchors typical - 4 places (two piece precast only).
   d. Chamfer typical.
   e. 2' Concrete cover over top rebar.
   f. 3' Concrete cover over bottom rebar.
   g. 5 L-Bar @ 12' (cast-in-place only).
   h. 16'' x 24''x1/4' galvanized steel plate. M10*6000621790
   i. 5 Rebar on 12' centers.
   j. Pulling eye insert, for use with national course thread eye-bolt, (Richmond LCB-1 or equivalent). Located opposite each cable hole and 2' (two feet) from the bottom.
   k. All rebar ends to be covered by 1' of concrete, minimum.
XII. ILLUSTRATION No. 24

MACRO

DESCRIPTION
SMALL 7' x 7' THREE PHASE TRANSFORMER FOUNDATION

PAGE
364-8

16" X 24" X 1/4"
GALVANIZED STEEL PLATE
SEE NOTE 11

1' - 0"
2' - 0"
1' - 0"
7' - 0"

* FRONT

1' - 6"
2' 6"

BASE: TYPICAL CORNER VIEW

APPLICATION CHART
7' X 7' PADS:
75 - 500 KVA - 15 KV
75 - 150 KVA - 35 KV

SECT. A-A

CENTRAL MAINE POWER CO.

DISTRIBUTION CONSTRUCTION STANDARDS
XII. ILLUSTRATION No. 25

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<td>LARGE (9' x 9') THREE PHASE TRANSFORMER FOUNDATION</td>
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NOTES:

1. *FRONT denotes the side on which the access doors are located. The concrete base shall be set on a suitable gravel base and located so the FRONT is accessible by truck and suitably protected from plow and traffic damage.

2. Before installing or requiring any active drainage structure (e.g., drain pipe) into the foundation or pad, the contractor, CMP Line Supervisor, or CMP Distribution Engineer must contact Central Maine Power Company's Environmental Services Department at 623-3521 ext. 3479 to request a site inspection.

3. Finish grade shall be graded in such a manner to allow surface water to flow away from the pad.

4. Provide 8' x 24' cable holes (bond outs) 8' up the wall from the base, locate one cable hole per wall, more if necessary. Line up cable holes with trench.

5. Conduits entering concrete structures shall be set back from the inside wall 1 to 2 inches and the space within the knockout surrounding the conduits completely filled with mortar to prevent soil from entering structure. Inside the structure the mortar shall be finished and beveled from the conduit ends to the inside wall face to cover and smooth the edges of the knockouts.

6. A 3/4' x 8' galvanized ground rod is to be installed six inches in front of the left FRONT corner of the foundation. The top of the ground rod is to be 6 inches below final grade.

7. A ground wire shall be installed from the ground rod through the cable hole at the bottom of the pad. 20 feet of ground wire shall be provided so that it can be installed through the two grounding lugs and connected to the neutral spade.

8. Concrete compressive strength shall be 4000 PSI @ 28 days. For cast-in-place early high strength may be used with a minimum of seven day cure time.

9. Reinforcing steel to have: FY = 60 KSI.

10. For precast units: The precast supplier shall provide lifting lugs in the slab (foundation) and base; the precast supplier shall assemble the slab to the base prior to shipping to the site to ensure that the slab and base fit properly (with no rocking of the slab evident).

11. Use a 24' x 24' x 1/4' galvanized steel plate to cover a portion of the cable hole when the transformer does not completely cover it. Cut the steel plate to fit, if necessary.

a. 9-5 Rebar evenly spaced each way top to bottom.

b. 2-4 Corner diagonal rebar 2'-0' long top and bottom.

c. 4' x 4' x 1/2' angle 6' long with 2-3/4' diameter expansion anchors typical - 4 places (two places precast only).

d. Chamfer typical

e. 24 Concrete cover over top rebar.

f. 3' Concrete cover over bottom rebar.

g. 5 L-Bar @ 12' (cast-in-place only).

h. 24' x 24' x 1/4' galvanized steel plate. MID#6000621795

i. 5 Rebar on 12' centers.

j. Pulling eye insert, for use with 3/4' national course threaded eye-bolt, (Richmond LCB-1 or equivalent). Located opposite each cable hole and 2' (two feet) from the bottom.

k. All rebar ends to be covered by 1' of concrete, minimum.
XII. ILLUSTRATION No. 26

FIBERGLASS BOX PAD

TRANSFORMER INSTALLATIONS

1. The fiberglass 43' x 38' x 32' pad CU C6TDFB (MID#6000673961) is suitable for both 7.2/12.47kV and 20/34.5kV single phase transformer installations.

2. FRONT denotes the side on which the access doors are located. The base shall be located so the FRONT is accessible by truck and suitably protected from plow and traffic damage.

3. Before installing or requiring any active drainage structure (e.g., drain pipe) into the foundation or pad, the contractor, CMP Line Supervisor, or CMP Distribution Engineer must contact Central Maine Power Company's Environmental Services Department at 623-3521 ext. 3479 to request a site inspection.

4. Finish grade shall be graded in such manner to allow surface water to flow away from the pad.

5. A 3/4' x 8' galvanized ground rod is to be installed 6' in front of the left corner of the transformer foundation. The top of the ground rod shall be 6' below final grade.

PRIMARY JUNCTION BOX

1. The fiberglass pad CU C6UDJBF (MID#6000673961) is suitable for both 7.2/12.47kV and 20/34.5kV single phase junction boxes.

2. Use fiberglass flat cover CU C6UDJBF (MID#6000673931), or URO cabinet CU C6UDCUTI (MID#6000621460) to cover the pad opening on single phase installations.

3. Finish grade shall be graded in such manner to allow surface water to flow away from the pad.
### XII. ILLUSTRATION No. 27

#### TABLE 1: Conduit Sizes for Jacketed Cable

Minimum size required in inches.

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Cable Size</th>
<th>Number of Conductors</th>
</tr>
</thead>
<tbody>
<tr>
<td>15KV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>URD</td>
<td>2 1/2'</td>
<td>3'</td>
</tr>
<tr>
<td></td>
<td>2 1/2'</td>
<td>3'</td>
</tr>
<tr>
<td>4/0 XLP</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>Power</td>
<td>500 KCM XLP</td>
<td>5'</td>
</tr>
<tr>
<td>750 KCM XLP</td>
<td>5'</td>
<td>6'</td>
</tr>
<tr>
<td>35KV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>URD</td>
<td>1/0 XLP</td>
<td>4'</td>
</tr>
<tr>
<td></td>
<td>2 1/2'</td>
<td>4'</td>
</tr>
<tr>
<td>4/0 XLP</td>
<td>3'</td>
<td>5'</td>
</tr>
<tr>
<td>Power</td>
<td>500 KCM XLP</td>
<td>5'</td>
</tr>
<tr>
<td></td>
<td>3'</td>
<td>6'</td>
</tr>
</tbody>
</table>

**Notes:**

1. On any straight runs (no bends including no bend at the base of the pole) less than 200 ft - 2 Inch conduit may be substituted for 2 1/2 inch conduit.
2. Contact local CMP Distribution Engineer

#### TABLE 2: Minimum wire sizes for connections between system neutral and urd cable neutral

<table>
<thead>
<tr>
<th>Cable Size</th>
<th>Pole Neutral Cu</th>
</tr>
</thead>
<tbody>
<tr>
<td>*2</td>
<td>C6UDCU4TWAS</td>
</tr>
<tr>
<td>1/0</td>
<td>C6UDCU2TWAS</td>
</tr>
<tr>
<td>4/0</td>
<td>C6UDCU2/0TWAS</td>
</tr>
<tr>
<td>Larger Than 4/0</td>
<td>C6UDCU4/0TWAS</td>
</tr>
</tbody>
</table>

**Notes:**

1. Minimum clearance between top of pin terminal and primary conductor shall be 16" for 7.2KV and 21" for 19.9KV to allow grounding of cable.
2. If all steel conduit, insulated ground bushing is required.
3. All cutouts on riser pole feeding urd cables shall be normally closed.
XII. ILLUSTRATION No. 28

NOTES

1. Standoff brackets are required when more than one conduit per utility is to be installed on a pole.

2. All three phase primary risers, whether standoff brackets are used or not, shall be rigid steel for the first section.

3. On single phase primary, secondary and service URD risers using stand off brackets, rigid steel or schedule 80 may be used.

4. Where rigid steel or schedule 80 PVC is used for the riser, one bracket shall be used to support each section of conduit up to 10 feet in length. Each bracket is to be placed just below the riser conduit coupling.

5. Conduit sections for single phase or three phase risers using stand off. Brackets shall be rigid steel or schedule 80 PVC conduit only (See note #2), with the exception that schedule 40 PVC sunlight resistant conduit may be used for the top section of the riser (not longer than 10''). If top section is longer than 24'' it must be supported with a minimum of one standoff bracket. If top section is schedule 40 PVC and longer than 72'' it must be supported by no fewer than two standoff brackets.

6. Where PVC is used for the riser, each standoff bracket supporting the PVC shall be grounded. Where steel is used for the riser one standoff bracket supporting the steel is required to be grounded.

7. Sweeps, when used, are required to be steel.

8. If riser is all steel conduit, install insulated grounding bushing at top of riser.

9. Lowest bracket shall be a minimum of 8 feet above finished grade.

10. Alternate location for communication cable if run in metal conduit or schedule 80.

11. Communication cable may be attached directly to pole adjacent to brackets.
XII. ILLUSTRATION No. 28

MACRO CONDUIT STANDOFF BRACKET FOR MULTIPLE RISERS ON 1 POLE

MATERIALS:

Stand Off Brackets
- Aluma-Form: 6CSO-12, 6CSO-24
- Hubble: C6-CSO-12, C6-CSO-24
- Ceran (Porcelain Products): 8610

Channel
- Included

Conduit Strap Kit
- 2 STK-2
- 2.5 STK-2.5
- 3 STK-3
- 3.5 STK-3.5
- 4 STK-4
- 5 STK-5
- 6 STK-6

Central Maine Power Co.

DISTRIBUTION CONSTRUCTION STANDARDS
## XII. ILLUSTRATION No. 29

<table>
<thead>
<tr>
<th>PAGE</th>
<th>DESCRIPTION</th>
<th>MACRO</th>
</tr>
</thead>
<tbody>
<tr>
<td>361-2A</td>
<td>PRIMARY URD RISER SINGLE CONDUIT</td>
<td></td>
</tr>
</tbody>
</table>

1. Seal top of conduit with polyurethane sealer. Top of conduit must extend 4' above the neutral. If all steel, top of conduit must have an insulated grounding bushing.

2. If top section of riser is less than 5 feet in length, it must be supported with at least one steel U clip with 5/16th inch holes. If top section of riser is PVC and greater than 5 feet in length, it must be supported with no less than two steel U clips with 5/16th inch holes.

3. Coupling of same material as upper conduit is not required if using conduit with belled end installed down over lower conduit.

4. If steel conduit, a conduit ground connector made of either copper alloy or galvanized steel material of suitable design shall be used. Install pole ground if one doesn’t exist.

5. Two hole steel U clips with 5/16” holes are required at top and middle of each section of PVC conduit that is over 60 inches in length. If the riser is all steel, two hole U clips with 5/16th inch holes are required at the bottom and top of first section and at the top of each section, there after. The steel U clips shall be secured to the pole with 5/16th X 3 inch lag screws.

   **Bottom Section:**
   - (2) clips if steel conduit,
   - (3) clips if schedule 80 pvc conduit

   **Middle Section:**
   - (1) clip if steel conduit,
   - (2) clips if pvc conduit

   **Top Section:**
   - (1) clip if steel conduit,
   - (1) clip if pvc conduit less than 5ft.,
   - (2) clips if pvc conduit greater than 5ft.

6. Rigid steel, steel IMC, Schedule 80 PVC, or Schedule 40 PVC rated for outdoor use may be used on riser. However, first section of riser shall be rigid steel or schedule 80 PVC. All three phase primary risers shall be rigid steel for the first section.

7. Use threaded/non-threaded coupling or insulated bushing at the bottom of riser.

8. Standoff brackets will be required where future customers are likely to be served from the same pole.
XII. ILLUSTRATION No. 29

MACRO: PRIMARY URD RISER SINGLE CONDUIT

Page: 361-2B

Diagram of a pole with cables and conduit, showing dimensions and grades:
- Min. Cable depth: 30" below initial and finish grades
- Min. Depth: 6'
- Min. Width: 3'
- Optional conduit with end bell

Central Maine Power Co. Distribution Construction Standards
XII. ILLUSTRATION No. 30

<table>
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<th>PAGE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>361-1A</td>
<td>SECONDARY OR SERVICE URD RISER</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SINGLE CONDUIT</td>
<td></td>
</tr>
</tbody>
</table>

1. Seal top of conduit with polyurethane sealer. Top of conduit must extend 4' above the neutral. If all steel, top of conduit must have an insulated grounding bushing.

2. If top section of riser is less than 5 feet in length, it must be supported with at least one steel U clip with 5/16th inch holes. If top section of riser is PVC and greater than 5 feet in length, it must be supported with no less than two steel U clips with 5/16th inch holes.

3. Coupling of same material as upper conduit is not required if using conduit with belled end installed down over lower conduit.

4. If steel conduit, a conduit ground connector made of either copper alloy or galvanized steel material of suitable design shall be used. Install pole ground if one doesn’t exist.

5. Two hole steel U clips with 5/16' holes are required at top and middle of each section of PVC conduit that is over 60 inches in length. If the riser is all steel, two hole U clips with 5/16th inch holes are required at the bottom and top of first section and at the top of each section, there after. The steel U clips shall be secured to the pole with 5/16th X 3 inch lag screws.

   - **Bottom Section:** (2) clips if steel conduit,
     (3) clips if schedule 80 pvc conduit
   - **Middle Section:** (1) clip if steel conduit,
     (2) clips if pvc conduit
   - **Top Section:** (1) clip if steel conduit,
     (1) clip if pvc conduit less than 5ft,
     (2) clips if pvc conduit greater than 5ft.

6. Rigid steel, steel IMC, Schedule 80 PVC, or Schedule 40 PVC rated for outdoor use may be used on riser. However first section of riser shall be rigid steel or schedule 80 PVC.

7. Use threaded/non-threaded coupling or insulated bushing at the bottom of riser.

8. Standoff brackets will be required where future customers are likely to be served from the same pole.
ALLOWABLE SECONDARY AND SERVICE LENGTHS IN FEET FOR VARIOUS (CUSTOMER OWNED RESIDENTIAL) SERVICE SIZES AND CONDUCTOR TYPES
(120/240 VOLT, SINGLE-PHASE, 3-WIRE SERVICE)

<table>
<thead>
<tr>
<th>Conductor Size</th>
<th>100 Amp Service</th>
<th>150 Amp Service</th>
<th>200 Amp Service</th>
<th>400 Amp Service</th>
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<tbody>
<tr>
<td></td>
<td>Aluminum</td>
<td>Copper</td>
<td>Aluminum</td>
<td>Copper</td>
</tr>
<tr>
<td>#2</td>
<td>135</td>
<td>--</td>
<td>140</td>
<td>--</td>
</tr>
<tr>
<td>1/0</td>
<td>210</td>
<td>--</td>
<td>235</td>
<td>--</td>
</tr>
<tr>
<td>2/0</td>
<td>295</td>
<td>435</td>
<td>290</td>
<td>300</td>
</tr>
<tr>
<td>3/0</td>
<td>360</td>
<td>530</td>
<td>240</td>
<td>330</td>
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<td>4/0</td>
<td>440</td>
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<td>500</td>
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<td>1150</td>
<td>580</td>
<td>765</td>
</tr>
<tr>
<td>2 - 4/0</td>
<td>885</td>
<td>1300</td>
<td>585</td>
<td>865</td>
</tr>
<tr>
<td>2 - 250</td>
<td>1015</td>
<td>1450</td>
<td>675</td>
<td>965</td>
</tr>
<tr>
<td>2 - 350</td>
<td>1320</td>
<td>1835</td>
<td>885</td>
<td>1225</td>
</tr>
</tbody>
</table>

Notes:
1 - "na" indicates conductor not adequate for the load/service.
   Refer to NEC Table 318.20 & 75° C (per CMP cable insulation spec.) for overhead conductors;
   Refer to NEC Table 310.15 (B) (6) for underground conductors;
   For more than 3 current carrying conductors an 80% de-rating applies per NEC Table 310.15 (B) (2) (a).
2 - Calculations are based on 80% loading of service and 3% voltage drop.
3 - Distances are total circuit feet from service transformer terminals to customer’s service entrance panel.
4 - Some conductors may require oversized, or special ordered meter enclosure with 3/8" stud type connections.
5 - Overhead secondary conductors run pole to pole are subject to all requirements of the customer owned line extension policy.
6 - See Handbook paragraph 905 for CMP Standard underground service sizes and lengths.
XII. ILLUSTRATION No. 32

<table>
<thead>
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<th>MACRO</th>
<th>DESCRIPTION</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CABLE SPECIFICATION FOR SECONDARY UNDERGROUND RESIDENTIAL SERVICE</td>
<td></td>
</tr>
</tbody>
</table>

S/C 20-0368  
Revised 11/01/95  
Revised 12/29/98

CABLE URO 600V 3C 2 *2 & *4 AL POLYETHYLENE TRIPLEXED

This cable shall consist of two *2 AWG seven strand concentric compressed round aluminum phase conductors, per ASTM B-231, with 30 mils of low density polyethylene or cross-linked polyethylene insulation plus a 30 mil abrasion resistant high density polyethylene jacket over each; triplexed with one *4 seven strand concentric compressed round aluminum neutral conductor, per ASTM B-231, with 30 mils of low density polyethylene or cross-linked polyethylene insulation plus a 30 mil abrasion resistant high density polyethylene jacket.

Identification shall consist of continuous red surface mark extruded into the jacket on one phase and a continuous yellow surface mark extruded into the jacket of the neutral.

Outside diameter of phases shall be 0.405+ 0.010 inches with a minimum average of 0.405 inches. Outside diameter of the neutral shall be 0.346+ 0.010 inches with a minimum average of 0.346 inches.

S/C 20-0420  
Revised 12/29/98  
Revised 12/14/01

CABLE URO 600V 3C 2 *4/0 & 1 *2/0 POLYETHYLENE TRIPLEXED

This cable shall consist of two *4/0 AWG 19 strand concentric compressed round aluminum phase conductors, per ASTM B-231, with 30 mils of low density polyethylene or cross-linked polyethylene insulation plus a 50 mil abrasion resistant high density polyethylene jacket over each; triplexed with one *2/0 19 strand concentric compressed round aluminum neutral conductor, per ASTM B-231, with 30 mils of low density polyethylene or cross-linked polyethylene insulation plus a 50 mil abrasion resistant high density polyethylene jacket.

Identification shall consist of continuous red surface mark extruded into the jacket on one phase and a continuous yellow surface mark extruded into the jacket of the neutral.

Outside diameter of phases shall be 0.675+ 0.010 inches with a minimum average of 0.675 inches. Outside diameter of the neutral shall be 0.569+ 0.010 inches with a minimum average of 0.569 inches.
XII. ILLUSTRATION No. 33

UNDERGROUND SERVICE CUSTOMER
OWNED TYPE MC CABLE

NOTES:
1. A 6' BEDDING OF SOIL CONTAINING NO ROCKS SHALL BE PLACED BELOW AND ABOVE CABLE. BEDDING AND BACKFILL SHALL BE FREE OF ROOTS, STUMPS AND OTHER DEBRIS. A PLASTIC 'ELECTRIC' MARKER TAPE SHALL BE INSTALLED APPROXIMATELY 12' BELOW GRADE (AND AT LEAST 12' ABOVE THE CABLE PER NEC SECTION 300.5).

2. SEE 'HANDBOOK' ILLUSTRATION NO. 31 FOR ALLOWABLE CUSTOMER-OWNED RESIDENTIAL SERVICE LENGTHS. IF PVC CONDUIT IS SUBJECT TO PHYSICAL DAMAGE, SCHEDULE 80 IS REQUIRED.

3. FOR SERVICE GROUNDING & BONDING (NOT SHOWN) SEE 'HANDBOOK' SECTION VII AND NEC ARTICLE 250.

4. PER NEC SECTION 312.5(C) & 330.40, CABLE SHALL BE CONNECTED TO THE METER ENCLOSURE UTILIZING A LISTED MC CABLE CONNECTOR. THE METALLIC SHEATH AND BARE GROUNDING CONDUCTOR SHALL BE BONDED AND GROUNDED AT THE METER ENCLOSURE END (ONLY) IN ACCORDANCE WITH THE METHODS OF NEC 250.92 (B).

5. THE MC SERVICE CABLE SHALL BE TERMINATED ON THE POLE/TRANSFORMER END AS SHOWN IN THE ‘POLE DETAIL’ ON THIS STANDARD. THE CONDUIT RISER SHALL BE CONSTRUCTED AS SHOWN ON DISTRIBUTION STANDARDS 361-1 OR 361-3 (HANDBOOK ILLUSTRATION NO. 30 OR 28); ADDITIONALLY, A WEATHERHEAD IS REQUIRED.

NOTES:

1) Junction box shall be designed to withstand H2O wheel loading with 6 inches of overburden. The design shall also comply with National Electrical Safety Code Section 323A. Provide shop drawings stamped by a State of Maine Registered Professional Engineer upon request.

2) For use with CMP's Type "B" casting. CMP S/C62-1780, 62-1785, & 62-1880. (Min. one course of brick to grade.)

3) Junction box and slab shall be set on a suitable gravel base.

SECTION A - A
SUPPLEMENT

TO

THE HANDBOOK OF REQUIREMENTS

METER MOUNTING
EQUIPMENT REQUIREMENTS
AND OPTIONS

Central Maine Power Company
Effective August 1, 2013
SUPPLEMENT
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<td>13</td>
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<td>Group or Modular Metering</td>
<td>14</td>
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<td>III. List of Approved Equipment - Commercial</td>
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<td>18-19</td>
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<td>Combination Meter Socket/Disconnect</td>
<td>20-21</td>
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<td>Combination Meter Socket/Disconnect Pedestal</td>
<td>21-22</td>
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<tr>
<td>Group or Modular Metering</td>
<td>22-23</td>
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<tr>
<td>Transformer-Rated Socket</td>
<td>24</td>
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<tr>
<td>Transformer-Rated Overall Cabinet</td>
<td>24</td>
</tr>
<tr>
<td>Meter Test Switch Cabinet</td>
<td>25</td>
</tr>
<tr>
<td>Instrument Transformer Cabinet</td>
<td>25</td>
</tr>
</tbody>
</table>

Note:
This Handbook Supplement may be viewed on line at http://www.cmpco.com/handbook then click on CMP’s Handbook of Requirements link. Use the “Bookmarks” tab to get to the “Meter Mounting Equipment Requirements and Options” (Supplement).
This Supplement dated August 1, 2013 supersedes the Supplement dated October 1, 2010. Changes are indicated by marginal lines. This Supplement is scheduled to be revised annually.

The word "Company" as used in this document refers to "Central Maine Power Company":

1.1 A **U.L. Label** is required on all meter sockets.

1.2 Meter sockets are required to be the **ringless type**, unless noted otherwise in Section II of this Supplement. For specialized equipment where ring type is listed as acceptable in Section II of this Supplement, the ring must be stainless steel.

1.3 All meter enclosures, instrument transformer cabinets and test switch cabinets must be **sealable** with padlock type seals. The Company reserves the right to modify such enclosures or cabinets to add protective locking, or other devices.

1.4 **Hubs** must be specified when required.

1.5 A **triple neutral** is required for all permanent individual self-contained meter sockets.

1.6 Meter sockets for use on three-wire 120/208 volt **network** must have a fifth terminal located (preferably) in the 9 o'clock position.

1.7 Meter sockets for use on 240 volt, three-wire, **three-phase** must have a fifth terminal located in the 6 o'clock position.

1.8 **By-passes** are permitted or required as follows:

1.8.1 A **Residential** 100, 125, 150 or 200 amp socket does not require a bypass; however, a single handle lever operated by-pass is permitted. Since it allows for testing and changing-out of the meter without interrupting service, a lever operated by-pass is **recommended** wherever minimization of possible interruption of service, during normal business hours is important, such as in the case of a home office.

*Note: The following types of services are considered by the Company to be "residential" use:
I. GENERAL REQUIREMENTS

- Any dwelling unit, garage, storage building shelter/gazebo, water pump, or, other structure or equipment that is used solely for private (non-business) purposes.

1.8.2 A **Residential** 320 amp socket requires a single handle lever operated by-pass which locks the meter blades in the socket jaws.

1.8.3 A **Non-residential** (Industrial or Commercial) self-contained meter socket requires a by-pass as follows:

<table>
<thead>
<tr>
<th>Meter Socket</th>
<th>By-Pass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Phase:</td>
<td></td>
</tr>
<tr>
<td>100, 125 or 150 amp</td>
<td>*Single handle lever operated by-pass required.</td>
</tr>
<tr>
<td>200 amp</td>
<td>*Single handle lever operated by-pass which locks the meter blades in the socket jaws required.</td>
</tr>
<tr>
<td>320 amp</td>
<td>Single handle lever operated by-pass which locks the meter blades in the socket jaws required.</td>
</tr>
</tbody>
</table>

* The reason for the by-pass requirement is to enable the Company to test or change-out the meter without causing an interruption of service. The clamp jaw type by-pass has the additional benefit of insuring a good electrical connection between the meter blades and socket jaws, thereby preventing loose (HOT) socket. The by-pass is particularly important for use during the Company’s normal business hours. Therefore, the following types of **non-residential** services (200A or less) are **exempt** from these by-pass requirements and the residential socket (non by-pass) may be utilized:
  - Temporary service.
  - Outdoor lighting (ball field, tennis court, etc.).
  - CATV or Telephone power supply/amplifier.
  - Any other non-residential facility that is **not** “in use” during the Company’s normal business hours.

Note: a **by-pass is required** for traffic signal light power supply services.
I. GENERAL REQUIREMENTS

Three-Phase:

100 or 125 amp  
Single handle lever operated by-pass required.

200 or 320 amp  
Single handle lever operated by-pass which locks the meter blades in the socket jaws required.

1.8.4 For single handle manual by-passes, it must not be possible to override the by-pass by replacing the cover when the operating handle is in the by-passed position. Also, the by-pass operating mechanism must be visible when the meter is installed. Automatic, horn type, sliding type, auxiliary straps and jumpers are not acceptable as by-pass devices.

1.9 A safety flash shield is required on all non-residential (industrial or commercial) meter positions.

1.10 Meter socket sizing requirements:

1.10.1 No meter socket shall be less than 9 inches in height.

1.10.2 All 100, 125 and 150 amp underground sockets must be a minimum of 8 inches in width and have a 2 inch (conduit size) minimum knockout.

NOTE: A 100 amp underground service over 150 feet will require a 200 amp socket. (See “Handbook” para. 905 for CMP Standard UG residential service and Illustration No. 31 for customer owned service sizes and lengths).

1.10.3 All 200 amp underground sockets must be a minimum of 11 inches in width and have 2 1/2 inch (conduit size) minimum knockouts. Additionally, underground Residential sockets, for use with #4/0 or larger cable, shall be of the “side-wired” (or otherwise wired out away from the meter line side terminals) type. The “Side-wired” socket is not required for non-residential, nor for “continuous conduit,” underground application; however, it is highly recommended since the meter socket base is less likely to be damaged by frost action.
NOTE: A 200 amp underground service over 220 feet will require a 320 amp socket or a special 200 amp socket with 3/8 inch studs and twin lugs for line side connections (See "Handbook" para. 905 for CMP Standard UG residential service and Illustration No. 31 for customer owned service sizes and lengths).

1.10.4 All 320 amp underground sockets must be a minimum of 13 inches in width, be the "side-wired" type, and have a 4 inch (conduit size) minimum knockout.

1.10.5 Following is a guideline for typical residential underground meter socket connector accommodations:

<table>
<thead>
<tr>
<th>SOCKET SIZE</th>
<th>CONNECTOR TYPE</th>
<th>MAXIMUM WIRE SIZE</th>
<th>LUG OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/125 AMP</td>
<td>LAY-IN</td>
<td>2/0</td>
<td>---</td>
</tr>
<tr>
<td>150 AMP</td>
<td>LAY-IN</td>
<td>250</td>
<td>---</td>
</tr>
<tr>
<td>200 AMP (SW)</td>
<td>LAY-IN</td>
<td>350</td>
<td>---</td>
</tr>
<tr>
<td>*200 AMP (SW)</td>
<td>3/8&quot; STUD</td>
<td>350</td>
<td>SINGLE SM.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) 350</td>
<td>TWIN (SM.)</td>
</tr>
<tr>
<td>320 AMP (SW)</td>
<td>3/8&quot; STUD</td>
<td>350</td>
<td>SINGLE (SM.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>600</td>
<td>SINGLE (LG.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) 350</td>
<td>TWIN (SM.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) 600</td>
<td>TWIN (LG.)</td>
</tr>
</tbody>
</table>

(SW) indicates a side-wired type socket, which is required for 4/0 and larger UG service cable.

* Asterisk indicates 200 AMP socket with line side 3/8" stud type connectors intended to accommodate twin lugs. (See pages 8 & 11).

1.11 Group or modular metering units:

1.11.1 The maximum distance allowed between top and bottom meter (center-to-center) is 43 inches.

1.11.2 Each meter position shall have an individual ringless cover. Design shall be such that removal of the individual cover will expose the socket terminals and wiring.

1.11.3 Unmetered compartments must be sealable with padlock type seals.

1.11.4 Units to be installed outdoors must be raintight.
1.11.5 Group or modular metering arrangements require prior Company approval (see also "Handbook" Illustration No. 12).

1.12 Hot sequence metering is normally required. Other arrangements require advance Company approval.

NOTE: Hot sequence metering means the service disconnect is on the load (customer's) side of the meter.

1.13 Custom-built meter centers and switchgear with instrument transformer enclosures must have individual Company approval prior to installation. Arrangement drawings must be submitted to the Meter Engineer. See "Handbook" paragraph 814 for further details on "Switchgear Installations."

1.14 Metered and Unmetered conductors shall not run in the same raceway or gutter.

1.15 All transformer-rated meter mounting devices shall have provisions for mounting a test switch.

1.16 Approved Equipment List:

1.16.1 Basic catalog numbers shown herein may have different or additional suffix numbers or letters indicating variations in hubs, addition of fifth terminal, and left or right wiring extension.

1.16.2 Equipment not listed herein will be considered for approval. Drawings and Specs must be submitted to the Meter Engineer. Samples may be required.

1.17 The word "commercial" used hereinafter includes all non-residential services.
### METER SOCKET

**SINGLE-PHASE • RESIDENTIAL • RINGLESS**

(3-wire 120/240 volt and 3-wire 120/208 volt network)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Pos.</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 or 125 AMP:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>1</td>
<td>OH</td>
<td>EN12L41GRST MS76</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>UG</td>
<td>EN12L42GRST</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>EN12L43GRST</td>
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<td>1</td>
<td>OH</td>
<td>EC12L41GR1N</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(lever by-pass)</td>
</tr>
<tr>
<td></td>
<td>2****</td>
<td>OH</td>
<td>VEN10432CGRST</td>
</tr>
<tr>
<td></td>
<td>2-3</td>
<td>OH</td>
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<td>HEN10412LGRST MS68</td>
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<td>3</td>
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<td>HEN10413LGRST MS68</td>
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<td>4</td>
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<td>HEN10414LGRST MS68</td>
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<td></td>
<td>2-4</td>
<td>OH/UG+</td>
<td>HEN10432LGRST thru</td>
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<td></td>
<td>HEN10434LGRST</td>
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<tr>
<td></td>
<td>3-5***</td>
<td>OH/UG</td>
<td>HEN12433CGRSTOL thru</td>
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<td></td>
<td></td>
<td></td>
<td>HEN12435CGRSTOL</td>
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<tr>
<td>Durham/</td>
<td>1</td>
<td>OH</td>
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</tr>
<tr>
<td>Square D/</td>
<td>1</td>
<td>OH/UG</td>
<td>UT-RS111*</td>
</tr>
<tr>
<td>CutlerHammer/</td>
<td>2-6</td>
<td>OH/UG</td>
<td>UT-2R1121 thru</td>
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<td>Midwest</td>
<td></td>
<td></td>
<td>UT-6R1131*</td>
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<tr>
<td>Eaton/Cutler Hammer</td>
<td>1</td>
<td>OH</td>
<td>UT-RS101_E</td>
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<td>Talon/</td>
<td>1</td>
<td>OH</td>
<td>UAT111-BC**</td>
</tr>
<tr>
<td>Landis &amp; Gyr/</td>
<td>1</td>
<td>OH</td>
<td>UAT111-OG**</td>
</tr>
<tr>
<td>Siemens</td>
<td>1</td>
<td>UG</td>
<td>UAT111-PG**</td>
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<td></td>
<td>1</td>
<td>OH</td>
<td>UAT111-XG</td>
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<td>OH/UG</td>
<td>UAT411-XG**</td>
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<td>OH/UG</td>
<td>UA2311G thru UA4311OG**</td>
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<td>3-5***</td>
<td>OH/UG</td>
<td>UA3X11ZG thru UA5X11ZG</td>
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<td>2</td>
<td>OH</td>
<td>UA2B11-XG</td>
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<td>UA3B11-XG</td>
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<td>3</td>
<td>OH</td>
<td>UA2411-DG thru UA6411-DG</td>
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<td></td>
<td>2-6</td>
<td>OH</td>
<td>UA2411-XG thru UA6411-XG</td>
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</table>
## II. LIST OF APPROVED EQUIPMENT RESIDENTIAL

**METER SOCKET**

**SINGLE-PHASE • RESIDENTIAL • RINGLESS**

(3-wire 120/240 volt and 3-wire 120/208 volt network)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>No. of</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>100 or 125 AMP (cont'd):</strong></td>
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</tr>
<tr>
<td>Milbank</td>
<td>1</td>
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<td>U7487-RL-TG</td>
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<tr>
<td></td>
<td>1</td>
<td>UG</td>
<td>U7487-O-TG</td>
</tr>
<tr>
<td></td>
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<td>OH</td>
<td>U2272-RL-5T9-BL</td>
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<td>(Lever by-pass)</td>
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<td></td>
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<td>OH/UG</td>
<td>U2860-XL-5T9-QG</td>
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<td>(Lever by-pass)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>OH</td>
<td>U2692-XL</td>
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<td>2-6</td>
<td>OH</td>
<td>U7362DL thru U7366DL</td>
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<td>2-6</td>
<td>OH/UG+</td>
<td>U8212XL thru U8216XL</td>
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<td>OH/UG</td>
<td>U3763XL thru U3765XL</td>
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<td>RN401</td>
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<tr>
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<td>OH</td>
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<td>UG</td>
<td>UT-RS512*</td>
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<td>OH/UG</td>
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<td>Gyr/Siemens</td>
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<td>UAT414-XG**</td>
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<td>2-4</td>
<td>OH/UG</td>
<td>UA2313OG thru</td>
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<td>UA4313OG**</td>
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<td></td>
<td>5</td>
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<td>UA5719KG**</td>
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<td></td>
<td>6</td>
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<td>UA6719KG**</td>
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<td><strong>200 AMP:</strong></td>
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<tr>
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<td>EN20L41GRST</td>
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<tr>
<td></td>
<td>1</td>
<td>OH</td>
<td>EN20L43GRST</td>
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<tr>
<td></td>
<td>1</td>
<td>UG</td>
<td>EN20L44GRST</td>
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<td></td>
<td>2$</td>
<td>OH/UG</td>
<td>HEN20432CGRST (Line side studs)</td>
</tr>
<tr>
<td></td>
<td>2$$</td>
<td>OH</td>
<td>HEN21432LGRST</td>
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<tr>
<td></td>
<td>2$$$</td>
<td>OH</td>
<td>VEN21432CGRSTOL</td>
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</tbody>
</table>
II. LIST OF APPROVED EQUIPMENT - RESIDENTIAL

METER SOCKET
SINGLE-PHASE • RESIDENTIAL • RINGLESS
(3-wire 120/240 volt and 3-wire 120/208 volt network)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>No. of Pos.</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham/</td>
<td>1 OH</td>
<td></td>
<td>UT-RS202*</td>
</tr>
<tr>
<td>Square D/</td>
<td>1 OH</td>
<td></td>
<td>UT-RS213*</td>
</tr>
<tr>
<td>CutlerHammer/</td>
<td>1 UG</td>
<td></td>
<td>UT-RS223A*</td>
</tr>
<tr>
<td>Midwest</td>
<td>2-6 OH/UG</td>
<td></td>
<td>UT-2R2332 thru UT-6R2392*</td>
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<tr>
<td>Eaton/Cutler</td>
<td>1 OH</td>
<td></td>
<td>UTRS213_E</td>
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<tr>
<td>Hammer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talon/</td>
<td>1 OH</td>
<td></td>
<td>UAT317-OG**</td>
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<tr>
<td>Landis &amp; Gyr/</td>
<td>1 OH</td>
<td></td>
<td>UAT417-XG**</td>
</tr>
<tr>
<td>Siemens</td>
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<td></td>
<td>40405-025</td>
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<td>(Lever by-pass)**</td>
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<tr>
<td></td>
<td>1 OH</td>
<td></td>
<td>41505-02QG</td>
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<tr>
<td></td>
<td>1 UG</td>
<td></td>
<td>UAS278-PG (Line side 3/8&quot; studs)**</td>
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<td></td>
<td>1 UG</td>
<td></td>
<td>UAS27A-PG</td>
</tr>
<tr>
<td></td>
<td>1 OH/UG</td>
<td></td>
<td>UAS817-PG**</td>
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<td>1 OH/UG</td>
<td></td>
<td>UAS877-PG**</td>
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<td>UA2717YG thru UA3717YG</td>
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<td>4 OH/UG</td>
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<td>UA4719YG**</td>
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<td>U7040-XL-TG</td>
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<td>U4413-0</td>
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<td>1 UG</td>
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<td>U2569-O (Line side 3/8&quot; studs)**</td>
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<td>1 UG</td>
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<td>U5777-0</td>
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<td>1 OH/UG</td>
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<td>U3924-XL (lever by-pass)</td>
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<td></td>
<td>2 OH/UG</td>
<td></td>
<td>U1252-X-K1</td>
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<td>3 OH/UG</td>
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<td>U1253-X-K3</td>
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<td>U1254-X-K3</td>
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<td>U1255-X-K4</td>
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<td>U1256-X-K4</td>
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<tr>
<td></td>
<td>2$$ OH</td>
<td></td>
<td>U2601-XL</td>
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<tr>
<td></td>
<td>2$$§§ OH</td>
<td></td>
<td>U2264-XL</td>
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</table>
II. LIST OF APPROVED EQUIPMENT - RESIDENTIAL

METER SOCKET
SINGLE-PHASE • RESIDENTIAL • RINGLESS
(3-wire 120/240 volt and 3-wire 120/208 volt network)

<table>
<thead>
<tr>
<th>No. of</th>
<th>Manufacturer</th>
<th>Pos.</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
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<tbody>
<tr>
<td>400 AMP (cont'd):</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Murray</td>
<td>1</td>
<td>OH</td>
<td>RS103AXF or WRS103AXF#</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>UG</td>
<td>RL109A</td>
<td></td>
</tr>
<tr>
<td>2-6</td>
<td>OH/UG</td>
<td></td>
<td>RM201AR thru RM601AR</td>
<td></td>
</tr>
</tbody>
</table>

320 AMP: See “Single-Phase Commercial” sect. of this list.

* Durham catalog numbers: suffix “SQD” is added for Square D, suffix “CH” for CutlerHammer, and suffix “MEP” for Midwest.

** Landis & Gyr catalog numbers: prefix “S” is added for Siemens.

*** 3 to 5 gang; one position with lever by-pass.

****2 gang (vertical) socket for OH application only.

+ May be used for underground application only when line side conductors are #3/0 or smaller; or, #4/0 or larger and in “continuous conduit.”

$ Studs will accommodate twin lugs.

$$ 2-gang (horizontal) socket with (1) 100 Amp and (1) 200 Amp position.

$$ 2-gang (vertical) socket with (1) 100 Amp and (1) 200 Amp position; 200 Amp has a lever by-pass.

# Murray: “W” means manufactured as Siemens label.
### COMBINATION METER SOCKET/DISCONNECT
**SINGLE-PHASE • RESIDENTIAL • RINGLESS**
(3-wire 120/240 volt and 3-wire 120/208 volt network)

- For all UG applications, provisions must be made to run unmetered conductors in a separate raceway or sealable gutter from metered conductors.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>100,125 or 150 AMP:</strong></td>
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</tr>
<tr>
<td>Cooper B-Line</td>
<td>OH/UG</td>
<td>ENCB10L24A3GRST</td>
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<td>OH/UG</td>
<td>EN4C10L24A3GRST</td>
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<td>OH/UG</td>
<td>ENCB15L24A3GRST</td>
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<td>CutlerHammer</td>
<td>OH</td>
<td>UP120N0B</td>
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<td>OH/UG</td>
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<td>OH/UG</td>
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<td>UP140W0B</td>
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<td>Milbank</td>
<td>OH/UG</td>
<td>U3499-XL-100</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>U5168-XTL-100</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>U3989-XL</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>U3995-XL-100 (Lever by-pass)</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>U3995-XL-150 (Lever by-pass)</td>
</tr>
<tr>
<td>Murray</td>
<td>OH</td>
<td>JR102AR</td>
</tr>
<tr>
<td>Talon</td>
<td>OH/UG</td>
<td>MM0202L1125RC</td>
</tr>
<tr>
<td>Landis &amp; Gyr</td>
<td>OH/UG</td>
<td>MM0202L1125RLC</td>
</tr>
<tr>
<td>Siemens/Murray##</td>
<td>OH/UG</td>
<td>MM0202L1150RLC</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>UAB111-XG</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>UAB111-100</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>UAB417-150</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>UAB417-XPG</td>
</tr>
<tr>
<td>Square D</td>
<td>OH/UG</td>
<td>QC816F125C</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>QC816F150C</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>RC816F150C</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>RC8L125S</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>RC1624M125CH ++++</td>
</tr>
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</table>
## II. LIST OF APPROVED EQUIPMENT - RESIDENTIAL

**COMBINATION METER SOCKET/DISCONNECT**  
**SINGLE-PHASE • RESIDENTIAL • RINGLESS**  
(3-wire 120/240 volt and 3-wire 120/208 volt network)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>200 AMP:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>OH++</td>
<td>ENCB20L24A3GRST</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>ENCB20L24A4GRST</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>ENCB20C24A4GRST</td>
</tr>
<tr>
<td>CutlerHammer</td>
<td>OH</td>
<td>MBB200BTSC</td>
</tr>
<tr>
<td></td>
<td>OH</td>
<td>MB_ _ _B200BTS</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>CHMMB200BTS ++++</td>
</tr>
<tr>
<td>Midwest</td>
<td>OH</td>
<td>R281C</td>
</tr>
<tr>
<td></td>
<td>OH</td>
<td>R282C</td>
</tr>
<tr>
<td></td>
<td>OH</td>
<td>RS250C</td>
</tr>
<tr>
<td></td>
<td>OH</td>
<td>R256E</td>
</tr>
<tr>
<td>Milbank</td>
<td>OH</td>
<td>U3784-RL</td>
</tr>
<tr>
<td></td>
<td>OH++</td>
<td>U5168-XTL-200</td>
</tr>
<tr>
<td></td>
<td>OH++</td>
<td>U3491-RL-200</td>
</tr>
<tr>
<td></td>
<td>OH++</td>
<td>U3990-XL-200</td>
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<td></td>
<td>OH++</td>
<td>U2288-RXL</td>
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<tr>
<td></td>
<td>UG</td>
<td>U5757-O-200 $</td>
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<td></td>
<td>OH/UG</td>
<td>U3995-XL-200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Lever by-pass)</td>
</tr>
<tr>
<td>Murray</td>
<td>OH++</td>
<td>JR904CZ</td>
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<tr>
<td>Talon/Landis&amp;Gyr</td>
<td>OH</td>
<td>UAB111-OPCH</td>
</tr>
<tr>
<td>Siemens/Murray##</td>
<td>OH</td>
<td>UAB317-OPCH</td>
</tr>
<tr>
<td></td>
<td>OH++</td>
<td>UAB417-XG</td>
</tr>
<tr>
<td></td>
<td>OH++</td>
<td>MM0406ML1221R</td>
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<tr>
<td></td>
<td>OH</td>
<td>MC0816B1200RT</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>MC0816B1200RTD</td>
</tr>
<tr>
<td></td>
<td>OH++</td>
<td>MC0606ML1200R</td>
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<td>MC0606L1200R</td>
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<td>OH++</td>
<td>MC0606L1200RN</td>
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<td>OH++</td>
<td>MM0202L1200RL</td>
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<tr>
<td></td>
<td></td>
<td>(Lever by-pass)</td>
</tr>
<tr>
<td></td>
<td>OH</td>
<td>UAB417-200</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>UAB877-200</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>UAB877-PG</td>
</tr>
</tbody>
</table>
II. LIST OF APPROVED EQUIPMENT - RESIDENTIAL

COMBINATION METER SOCKET/DISCONNECT
SINGLE-PHASE • RESIDENTIAL • RINGLESS
(3-wire 120/240 volt and 3-wire 120/208 volt network)

200 AMP (cont’d):

| Square D   | OH++  | QC12L200C  |
|            | OH++  | QC816F200C |
|            | OH++  | RC12L200C  |
|            | OH++  | RC816F200C++ |
|            | OH++  | RC816D200C++ |
|            | OH++  | RC2040M200CH++ |

320 AMP (120/240 V only):

| Cooper B-Line | OH++  | ELCB32C24A5GR1N |
|               | UG    | ELCB32C24A4GRST |
| GE            | UG    | TSDR040UFCU    |
|               | UG    | TSDR840UFCU    |
| Milbank       | OH    | U4835-X-2/200BL |
|               | UG    | U4031-(2)-200-0 |
| Murray        | OH++  | JC0404L1400RL  |
| Talon/Landis&Gyr | OH++ | MM0404L1400RLM |
| Siemens/Murray## | OH++ | MM0404B1400RLM |
|               | OH    | MC0408B1400RLTM |
|               | OH    | MC0408B1400RLTM |
|               | OH    | MM0404L1400SDL  |
| Square D      | UG    | QU12L400CL     |

++ These units are for OH application only (regardless of manufacturer's application notation), unless the line side conductors are in "continuous conduit."

## Murray label Cat. No. begins with "JA" OR "JC" not "MC" OR "MM".

+++ Units acceptable if horn by-passes are removed.

### These units are shown for OH; they may be utilized for UG if the line side conductors are sleeved (with conduit) through the lower (breaker) section.

$ Milbank U5757 Line side studs accommodate twin lugs.
# LIST OF APPROVED EQUIPMENT - RESIDENTIAL

## COMBINATION METER SOCKET/TRANSFER (SWITCH OR PANEL)
**SINGLE-PHASE • RESIDENTIAL • RING OR RINGLESS**
(3-wire 120/240 volt)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eylander</td>
<td>OH/UG</td>
<td>WMTS-M-200</td>
</tr>
<tr>
<td>Milbank</td>
<td>OH</td>
<td>U4834-XL-200 *</td>
</tr>
<tr>
<td>Ronk</td>
<td>OH</td>
<td>7215-MSL-OH *</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>7215-MSL-SS *</td>
</tr>
</tbody>
</table>

* Prior approval of the "authority having jurisdiction" (AHJ) is advised.

## METER SOCKET/DISCONNECT PEDESTAL
**SINGLE-PHASE • RESIDENTIAL • RINGLESS**
(3-wire 120/240 volt and 3-wire 120/208 volt network)

- Unless units are solidly attached to a building or other suitable structure, pedestals must have a post extension and stabilizer foot to extend to 48" below grade.

- For all meter pedestals, provisions must be made to run unmetered conductors in a separate raceway or sealable gutter from metered conductors (this usually requires the "headpost" design).

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midwest</td>
<td>UG</td>
<td>R100CP6HP-(2)EK129-FBEM9</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>R101CP6HP-(2)EK129-FBEM9</td>
</tr>
<tr>
<td>Milbank</td>
<td>UG (2 Pos.)</td>
<td>U3727-O (w/100A BKRS)</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U3730-O (w/100A BK)</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U5925-O-100 (w/100A BK)</td>
</tr>
</tbody>
</table>

## 100 or 125 AMP:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milbank</td>
<td>UG</td>
<td>U3727-O</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U3730-O</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U5926-O-200 (w/200A BK)</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U4322-O-BL (Lever by-pass)</td>
</tr>
<tr>
<td></td>
<td>UG (2 Pos.)</td>
<td>U4323-O-BL (Lever by-pass)</td>
</tr>
</tbody>
</table>

## 200 AMP:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milbank</td>
<td>UG</td>
<td>U3727-O</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U3730-O</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U5926-O-200 (w/200A BK)</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U4322-O-BL (Lever by-pass)</td>
</tr>
<tr>
<td></td>
<td>UG (2 Pos.)</td>
<td>U4323-O-BL (Lever by-pass)</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Max. No. of Positions High*</td>
<td>Series or Cat. No.</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td></td>
<td>125 AMP</td>
<td>200 AMP</td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CutlerHammer</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>G.E.</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milbank</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Siemens</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Square D</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

* The maximum vertical distance allowed between the centerline of the bottom meter and the centerline of the top meter is 43 inches.

** All meter sockets must be the ringless type.

_ The underscores are for numbers or letters that may represent: bus rating/# of positions/phase/socket rating/etc...

NOTE: Where a circuit breaker is utilized as a disconnecting means and the handle is operated vertically, the “up” position shall be the “on” position.
SELF-CONTAINED METER SOCKET
SINGLE-PHASE • COMMERCIAL • RINGLESS
(3-wire 120/240 volt and 3-wire 120/208 volt network)

- CAUTION: For 240/480 volt applications, the meter socket must be 600 volt rated.

- Lever operated by-pass required for single-phase commercial sockets (see paragraph 1.8.3, page 2, for exemptions to this by-pass requirement).

- 200 amp sockets may be used on 200, 150, and 100 amp Services.

- Jaw release lever operated by-pass required for 200 amp and 320 amp sockets.

<table>
<thead>
<tr>
<th>No. of Manufacturer</th>
<th>Pos.</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100, 125 or 150 AMP:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>1</td>
<td>OH</td>
<td>EC12L41GR1N</td>
</tr>
<tr>
<td></td>
<td>2-4</td>
<td>OH/UG</td>
<td>HEC10432CGR1N thru</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>HEC10434CGR1N</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EC12L43GR2N</td>
</tr>
<tr>
<td>Durham/</td>
<td>1</td>
<td>OH</td>
<td>UT-C4203/UT-C5203*</td>
</tr>
<tr>
<td>Square D/</td>
<td>1</td>
<td>OH/UG</td>
<td>UT-C4213/UT-C5213*</td>
</tr>
<tr>
<td>CutlerHammer/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talon/</td>
<td>1</td>
<td>OH</td>
<td>40205-01NU**</td>
</tr>
<tr>
<td>Landis &amp; Gyr/</td>
<td>1</td>
<td>OH/UG</td>
<td>40605-01NU**</td>
</tr>
<tr>
<td>Siemens</td>
<td>1</td>
<td>OH</td>
<td>48405-02NU</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH</td>
<td>48205-01NU</td>
</tr>
<tr>
<td></td>
<td>2-6</td>
<td>OH/UG</td>
<td>484052-023NU thru</td>
</tr>
<tr>
<td></td>
<td>4-6</td>
<td>ON/UG</td>
<td>484054-223NU thru</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>484056-223NU</td>
</tr>
<tr>
<td>Milbank</td>
<td>1</td>
<td>OH</td>
<td>U2272-RL-5T9-BL</td>
</tr>
<tr>
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<td>1</td>
<td>OH/UG</td>
<td>U2860-XL-5T9-QG</td>
</tr>
<tr>
<td></td>
<td>2-6</td>
<td>OH/UG</td>
<td>U2752-X THRU U2756-X</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>****</td>
<td>U5112-X-BL</td>
</tr>
</tbody>
</table>

200 AMP:

| Cooper B-Line       | 1    | OH      | EL20L41GR1N            |
|                     | 1    | OH/UG   | EL20L43GRST            |
|                     | 1    | OH/UG   | EL20L43GR2N            |
|                     | 1    | UG      | EL20L44GRST            |
|                     | 2-4  | OH/UG   | HEL20432CGR1N thru     |
|                     |      |         | HEL20434CGR1N          |
## III. LIST OF APPROVED EQUIPMENT - COMMERCIAL

### SELF-CONTAINED METER SOCKET

**SINGLE-PHASE • COMMERCIAL • RINGLESS**

(3-wire 120/240 volt and 3-wire 120/208 volt network)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>No. of Pos.</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham/ Square D/</td>
<td>1</td>
<td>OH/UG</td>
<td>UT-H4203/UT-H5203*</td>
</tr>
<tr>
<td>CutlerHammer/ Midwest</td>
<td>1</td>
<td>OH/UG</td>
<td>UT-H4213/UT-H5213*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UT-H5233*</td>
</tr>
<tr>
<td>Eaton/Cutler Hammer</td>
<td>1</td>
<td>OH/UG</td>
<td>UTE5213CCH</td>
</tr>
<tr>
<td>Talon/ Landis &amp; Gyr/</td>
<td>1</td>
<td>OH</td>
<td>40804-01NU</td>
</tr>
<tr>
<td>Siemens</td>
<td>1</td>
<td>OH/UG</td>
<td>40804-016**</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>40804-015**</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>OH/UG</td>
<td>408052-023NU**</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>OH/UG</td>
<td>408053-023NU**</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>OH/UG</td>
<td>408054-223NU**</td>
</tr>
<tr>
<td></td>
<td>5</td>
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</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>48804-02NU</td>
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<tr>
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<td>1</td>
<td>OH/UG</td>
<td>42104-02QG</td>
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<tr>
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<td>1</td>
<td>OH</td>
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<td>1</td>
<td>OH/UG</td>
<td>U9801R-XL-QG</td>
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<td>OH/UG</td>
<td>U3924-XL-QG</td>
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<tr>
<td></td>
<td>2-6</td>
<td>OH/UG</td>
<td>U2872-XT thru U2876-XT</td>
</tr>
<tr>
<td>Murray</td>
<td>1</td>
<td>OH/UG</td>
<td>RH173CR</td>
</tr>
</tbody>
</table>

### 320 AMP (120/240V only):

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>No. of Pos.</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper B-Line</td>
<td>1</td>
<td>OH/UG</td>
<td>EL32T46GRST</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>UG</td>
<td>EL32T44GRST</td>
</tr>
<tr>
<td>Durham/ Square D/</td>
<td>1</td>
<td>OH</td>
<td>UT-H4300*</td>
</tr>
<tr>
<td>CutlerHammer/ Midwest</td>
<td>1</td>
<td>OH/UG</td>
<td>UT-H4330*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### III. LIST OF APPROVED EQUIPMENT - COMMERCIAL

**SELF-CONTAINED METER SOCKET**
**SINGLE-PHASE • COMMERCIAL • RINGLESS**
(3-wire 120/240 volt and 3-wire 120/208 volt network)

<table>
<thead>
<tr>
<th>No. of Manufacturer</th>
<th>Pos.</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>320 AMP (120/240V only) (cont’d):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talon/</td>
<td>1</td>
<td>OH</td>
<td>42704-01NU**</td>
</tr>
<tr>
<td>Landis &amp; Gyr/</td>
<td>1</td>
<td>OH/UG</td>
<td>44701-01NU**</td>
</tr>
<tr>
<td>Siemens</td>
<td>1</td>
<td>OH/UG</td>
<td>44704-01NU**</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH ++</td>
<td>47704-01NU**</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>48704-82GP**</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>48704-02</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH</td>
<td>47604-02QG</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>49604-02NU</td>
</tr>
<tr>
<td>Milbank</td>
<td>1</td>
<td>OH/UG</td>
<td>U2448-X</td>
</tr>
<tr>
<td>Murray</td>
<td>1</td>
<td>OH</td>
<td>RK173AH</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>RK178A</td>
</tr>
</tbody>
</table>

* Durham catalog numbers: suffix “SQD” is added for Square D, suffix “CH” for CutlerHammer, and suffix “MEP” for Midwest.

** Landis & Gyr catalog numbers: prefix “S” is added for Siemens.

**** 2 gang (vertical) socket for OH application only.

++ This unit is for OH application only, regardless of manufacturer's application notation.
III. LIST OF APPROVED EQUIPMENT - COMMERCIAL

SELF-CONTAINED METER SOCKET
THREE-PHASE • COMMERCIAL • RINGLESS

CAUTION: For 277/480 volt applications, the meter socket must be 600 volt rated.

- Lever operated by-pass required for all three-phase sockets.
- 200 Amp sockets may be used on 200, 150, and 100 Amp Services.
- Jaw release lever operated by-pass required for 200 amp and 320 amp sockets.

<table>
<thead>
<tr>
<th>Manuf.</th>
<th>No. of Pos.</th>
<th>Service</th>
<th>3-Ph, 3-W, 5th Term.@ 6:00</th>
<th>3-Ph, 4-W, Y or Δ 7-Term.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 or 125 AMP:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>1</td>
<td>OH</td>
<td>(use 200A)</td>
<td>EC12L71GRST</td>
</tr>
<tr>
<td>Milbank</td>
<td>1</td>
<td>OH</td>
<td>(use 200A)</td>
<td>U7573-RL</td>
</tr>
<tr>
<td>200 AMP:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>1</td>
<td>OH</td>
<td>EL20L51GRST</td>
<td>EL20L71GR1N</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>EL20L53GRST</td>
<td>EL20L73GRST</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>--</td>
<td>EL20L73GR2N</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>OH/UG</td>
<td>--</td>
<td>HEL20732CGR1N</td>
</tr>
<tr>
<td>Durham/</td>
<td>1</td>
<td>OH</td>
<td>UT-H5203*</td>
<td>UT-H7203*</td>
</tr>
<tr>
<td>Square D/</td>
<td>1</td>
<td>OH/UG</td>
<td>UT-H5213*</td>
<td>UT-H7213*</td>
</tr>
<tr>
<td>CutlerHammer/</td>
<td>1</td>
<td>OH/UG</td>
<td>UT-H5233*</td>
<td>-</td>
</tr>
<tr>
<td>Midwest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eaton/CutlerHammer</td>
<td>1</td>
<td>OH/UG</td>
<td>UTE5213-CH</td>
<td>UTE7213-CH</td>
</tr>
<tr>
<td>Talon/Landis&amp;</td>
<td>1</td>
<td>OH</td>
<td>40005-01**,</td>
<td>40007-01NU**</td>
</tr>
<tr>
<td>Gyr/Siemens</td>
<td>1</td>
<td>OH/UG</td>
<td>40405-015**,</td>
<td>40407-01NU**</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>40405-02QG**</td>
<td>40407-02QG**</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>40405-025**</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>OH/UG</td>
<td>--</td>
<td>404072-023NU**</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>OH/UG</td>
<td>--</td>
<td>404073-023NU**</td>
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<tr>
<td></td>
<td>4</td>
<td>OH/UG</td>
<td>--</td>
<td>404074-223NU**</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>OH/UG</td>
<td>--</td>
<td>404075-223NU**</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>OH/UG</td>
<td>--</td>
<td>404076-223NU**</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>--</td>
<td>48807-02NU</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>41605-02QG</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>40405-0BNU</td>
<td>-</td>
</tr>
</tbody>
</table>
SELF-CONTAINED METER SOCKET
THREE-PHASE • COMMERCIAL • RINGLESS

CAUTION: For 277/480 volt applications, the meter socket must be 600 volt rated.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>No. of</th>
<th>Pos.</th>
<th>Service</th>
<th>Term. @ 6:00</th>
<th>7-Term.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milbank</td>
<td>240 V</td>
<td>Only</td>
<td>3-Ph, 3-W, 5th</td>
<td>U9550+++</td>
<td>U9700-QG</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3-Ph, 4-W, Y or Δ</td>
<td>U9551+++</td>
<td>U9701-QG</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>U2732-XT thru</td>
<td>U2736-XT</td>
</tr>
<tr>
<td>Murray</td>
<td>200 AMP</td>
<td>1</td>
<td>OH/UG</td>
<td>RH173CR</td>
<td>RH173GR</td>
</tr>
<tr>
<td></td>
<td>cont’d:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

320 AMP (120/208V Y or 120/240V, 4W Δ):

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>No. of</th>
<th>Pos.</th>
<th>Service</th>
<th>Term. @ 6:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper B-Line</td>
<td>1</td>
<td>OH/UG</td>
<td>EL32T76GRST</td>
<td></td>
</tr>
<tr>
<td>Durham/Square D/CutlerHammer/Midwest</td>
<td>1</td>
<td>OH/UG</td>
<td>UT-H7300*</td>
<td></td>
</tr>
<tr>
<td>Gyr/Siemens</td>
<td>1</td>
<td>OH/UG</td>
<td>UT-H7330*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH++</td>
<td>44707-01NU**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>47707-01NU**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH</td>
<td>48707-82GP**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>49607-02NU</td>
<td></td>
</tr>
<tr>
<td>Milbank</td>
<td>1</td>
<td>OH/UG</td>
<td>U2594-X</td>
<td></td>
</tr>
<tr>
<td>Murray</td>
<td>1</td>
<td>OH</td>
<td>RK173GH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>OH/UG</td>
<td>RK178G</td>
<td></td>
</tr>
</tbody>
</table>

* Durham catalog numbers: suffix “SQD” is added for Square D, suffix “CH” for CutlerHammer, and suffix “MEP” for Midwest.

** Landis & Gyr catalog numbers: prefix “S” is added for Siemens.

++ This unit is for OH application only, regardless of manufacturer’s application notation.

+++ Note: Milbank U9550 and U9551 must have the grounding strap removed for 3 phase, 3 wire application.
COMBINATION METER SOCKET/DISCONNECT
COMMERCIAL • RINGLESS

- For all UG applications, provisions must be made to run unmetered conductors in a separate raceway or sealable gutter from metered conductors.

- Lever operated by-pass required for commercial sockets (see paragraph 1.8.3, page 2, for single phase exemptions).

- Jaw release lever operated by-pass required for 200 amp and 320 amp sockets.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100 or 125 AMP, Single-Phase (3-Wire 120/240 V.) or Network (3-Wire 120/208 V.):</td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>OH/UG</td>
<td>ECCB10L24A3GR1N</td>
</tr>
<tr>
<td>Talon/Landis&amp;</td>
<td>OH/UG</td>
<td>MM0202L1125RL</td>
</tr>
<tr>
<td>Gyr/Siemens</td>
<td>OH/UG</td>
<td>MM0202L1125RLC</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>MM0202B1125RLC</td>
</tr>
<tr>
<td></td>
<td>ON/UG</td>
<td>MM0202L1100RLC</td>
</tr>
<tr>
<td></td>
<td>ON/UG</td>
<td>MM0202B1100RLC</td>
</tr>
<tr>
<td>Milbank</td>
<td>OH/UG</td>
<td>U3741-XL-100-BL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200 AMP, Single-Phase (3-Wire 120/240 V.) or Network (3-Wire 120/208 V.):</td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>OH/UG</td>
<td>ELCB20L24A5GR1N</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>EL6C20L24A6GRST</td>
</tr>
<tr>
<td>Talon/Landis&amp;</td>
<td>OH/UG</td>
<td>MM0202L1200RL</td>
</tr>
<tr>
<td>Gyr/Siemens</td>
<td>OH/UG</td>
<td>MM0202B1200RLC</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>MM202L1200RLC</td>
</tr>
<tr>
<td>Milbank</td>
<td>OH/UG</td>
<td>U3791N-RXL-200-BL</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>U5140-RXL-200-BL</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>U3995-XL-200</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>U5871-xl-200</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U5898-0-200</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100 or 125 AMP, Three-Phase (4-Wire Y, 120/208 Volt, 7-Terminal):</td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>OH/UG</td>
<td>ECCB10L27A3GRST</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>ECCB10L27A3GR1N</td>
</tr>
<tr>
<td>Talon/Landis&amp;</td>
<td>OH/UG</td>
<td>MM0303L3100RLC</td>
</tr>
<tr>
<td>Gyr/Siemens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milbank</td>
<td>OH/UG</td>
<td>U3771-XL-100-BL</td>
</tr>
</tbody>
</table>

* If 5th terminal, bring terminal directly to the neutral bus.
III. LIST OF APPROVED EQUIPMENT - COMMERCIAL Page 21

COMBINATION METER SOCKET/DISCONNECT
COMMERCIAL • RINGLESS

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 AMP. Three-Phase (4-Wire, 120/208 Volt, 7-Terminal):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>OH/UG</td>
<td>ELCB20L27A5GR1N</td>
</tr>
<tr>
<td>Talon/Landis&amp;</td>
<td>OH/UG</td>
<td>MM0303B3200RLC</td>
</tr>
<tr>
<td>Gyr/Siemens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milbank</td>
<td>OH/UG</td>
<td>U5750-RXL-200-BL</td>
</tr>
<tr>
<td>320 AMP. Single-Phase (3-Wire 120/240 Volt):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper B-Line</td>
<td>OH</td>
<td>ELCB32C24A5GR1N</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>ELCB32C24A4GRST</td>
</tr>
<tr>
<td>Talon/Landis&amp;</td>
<td>OH</td>
<td>MC0408B1400RLTM</td>
</tr>
<tr>
<td>Gyr/Siemens</td>
<td>OH</td>
<td>MC0816B1400RLTM</td>
</tr>
<tr>
<td>Milbank</td>
<td>OH</td>
<td>U4835-X-2/200BL</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>U4031-(2)-200-O</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>U5891-X-2/200-BL</td>
</tr>
<tr>
<td>Murray</td>
<td>OH</td>
<td>JC0404L1400RL</td>
</tr>
<tr>
<td>Square D</td>
<td>UG</td>
<td>QU12L400CL</td>
</tr>
</tbody>
</table>

METER SOCKET/DISCONNECT PEDESTAL
SINGLE PHASE • COMMERCIAL • RINGLESS
(3-wire 120/240 volt and 3-wire 120/208 volt network)

- Unless units are solidly attached to a building or other suitable structure, pedestals must have a post extension and stabilizer foot to extend to 48" below grade.

- For all meter pedestals, provisions must be made to run unmetered conductors in a separate raceway or sealable gutter from metered conductors (this usually requires the "headpost" design).

- Lever operated by-pass required for commercial sockets (see paragraph 1.8.3, page 2, for single phase exemptions); jaw release lever operated by-pass required for 200 and 320 amp sockets.
### III. LIST OF APPROVED EQUIPMENT - COMMERCIAL

**METER SOCKET/DISCONNECT PEDESTAL**

**SINGLE PHASE • COMMERCIAL • RINGLESS**

(3-wire 120/240 volt and 3-wire 120/208 volt network)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milbank</td>
<td>UG</td>
<td>U4322-O-BL</td>
</tr>
<tr>
<td></td>
<td>UG (2 Pos.)</td>
<td>U4323-O-BL</td>
</tr>
<tr>
<td>Talon/</td>
<td>UG</td>
<td>MP0606L1200R+</td>
</tr>
<tr>
<td>Landis &amp; Gyr</td>
<td>UG</td>
<td>MP0406B1200R+</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>MP0606L1200RJL</td>
</tr>
<tr>
<td></td>
<td>UG</td>
<td>MP0406B1200RJL</td>
</tr>
</tbody>
</table>

+ Only permitted at single phase locations that are exempt from lever operated by-pass requirements (see paragraph 1.8.3, page 2).

---

**GROUP OR MODULAR METERING**

**COMMERCIAL • RINGLESS**

- 125 Amp meter sockets must have lever operated by-pass (jaw release required for 3-phase).

- 200, 225 or 320 Amp meter sockets must have jaw release lever operated by-pass (320 Amp for 120/240 volt 1-Phase 3-Wire or 120/208 volt 3-Phase 4-Wire Y only).

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Max.Pos. High*</th>
<th>Series or Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper B-Line</td>
<td>3</td>
<td>VELMP2043__GRST5K9**</td>
</tr>
<tr>
<td>CutlerHammer</td>
<td>4</td>
<td>35MM__R12**</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>37MM__R12**</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>WCMS (switchgear)**</td>
</tr>
<tr>
<td>G.E.</td>
<td>4</td>
<td>Meter Mod III</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(TMPR__R)**</td>
</tr>
<tr>
<td>Milbank</td>
<td>3</td>
<td>U4372-X Thru U4376-X**</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>U5112-X-5T9-BL</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>U5113-X-5T9-BL</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>U5972-XT Thru U5976-XT**</td>
</tr>
</tbody>
</table>
### III. LIST OF APPROVED EQUIPMENT - COMMERCIAL

#### GROUP OR MODULAR METERING

**COMMERCIAL • RINGLESS**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Max. Pos. High</th>
<th>Series or Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siemens</td>
<td>4</td>
<td>WML_ _ _ _ _ RJ</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>WML_ _ _ _ _ _ _ RJ</td>
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<td></td>
<td>2</td>
<td>WML_ 400 RJ</td>
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<td>MMS (switchgear)**</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>SP_ _12RJL</td>
</tr>
<tr>
<td>Square D</td>
<td>4</td>
<td>MPL_ _ _ _ _ **</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>EZML**</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>CME (switchgear)**</td>
</tr>
<tr>
<td>Westinghouse</td>
<td>4</td>
<td>W35M_ _ _ _R**</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>W37M_ _ _ _R**</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>WCMS (switchgear)**</td>
</tr>
</tbody>
</table>

* The maximum vertical distance allowed between the centerline of the bottom meter and the centerline of the top meter is 43 inches. For all Class 320 units, the "maximum number of positions high" is one (1).

** All meter sockets must be the ringless type.

_ The underscores are for numbers or letters that may represent: bus rating/# of positions/phase/socket rating/etc.

NOTE: Where a circuit breaker is utilized as a disconnecting means and the handle is operated vertically, the "up" position shall be the "on" position.
### TRANSFORMER-RATED METER SOCKET • RINGLESS
(SOCKET WITH PROVISIONS FOR TEST SWITCH)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Service</th>
<th>Series or Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SINGLE-PHASE:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durham/Square D/</td>
<td>OH/UG</td>
<td>USTS6-2C*</td>
</tr>
<tr>
<td>Cutler Hammer/Midwest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talon/Landis &amp; Gyr/Siemens</td>
<td>OH/UG</td>
<td>9837-8203</td>
</tr>
<tr>
<td>Meter Devices</td>
<td>OH/UG</td>
<td>3060C6-L</td>
</tr>
<tr>
<td>Milbank</td>
<td>OH/UG</td>
<td>UC7532-XL</td>
</tr>
<tr>
<td><strong>POLYPHASE:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durham/Square D/</td>
<td>OH/UG</td>
<td>USTS8-2C*</td>
</tr>
<tr>
<td>Cutler Hammer/Midwest</td>
<td></td>
<td>USTS13-2C*</td>
</tr>
<tr>
<td>Talon/Landis &amp; Gyr/Siemens</td>
<td>OH/UG</td>
<td>9837-8403</td>
</tr>
<tr>
<td>Meter Devices</td>
<td>OH/UG</td>
<td>3060C8-L</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>3060C13-L</td>
</tr>
<tr>
<td>Milbank</td>
<td>OH/UG</td>
<td>UC7448-XL</td>
</tr>
<tr>
<td></td>
<td>OH/UG</td>
<td>UC7449-XL</td>
</tr>
</tbody>
</table>

* Durham catalog numbers: suffix "SQD" is added for Square D, suffix "CH" for CutlerHammer, and suffix "MEP" for Midwest.

### TRANSFORMER-RATED OVERALL OUTDOOR
METER CABINET WITH DEMAND RESET COVERS

- All units must have top hinge, support arms, and 3/4" plywood backboard.
- All two position units must have 7" x 7" demand reset Cover.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Pos.</th>
<th>Dimensions</th>
<th>Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meter Devices</td>
<td>1</td>
<td>34&quot;Hx15&quot;Wx14&quot;D</td>
<td>7033</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>34&quot;Hx28&quot;Wx11&quot;D</td>
<td>7034</td>
</tr>
<tr>
<td>Milbank</td>
<td>1</td>
<td>34&quot;Hx15&quot;Wx14&quot;D</td>
<td>S2718FB-XL-C</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>34&quot;Hx28&quot;Wx11&quot;D</td>
<td>S3390FB-XL-C7</td>
</tr>
</tbody>
</table>
# III. LIST OF APPROVED EQUIPMENT - COMMERCIAL

## METER TEST SWITCH CABINET

**INDOOR • FOR USE WITH A-BASE METERS**

<table>
<thead>
<tr>
<th>Manuf.</th>
<th>No. of</th>
<th>Dimensions</th>
<th>Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meter</td>
<td>1</td>
<td>10 1/2&quot;Hx12 1/2&quot;Wx4 1/2&quot;D</td>
<td>1190</td>
</tr>
<tr>
<td>Devices</td>
<td>2</td>
<td>15 1/2&quot;Hx22 3/8&quot;Wx4 1/2&quot;D</td>
<td>1132</td>
</tr>
<tr>
<td>Milbank</td>
<td>1</td>
<td>10&quot;Hx14&quot;Wx4 1/2&quot;D</td>
<td>S1857</td>
</tr>
</tbody>
</table>

## INSTRUMENT TRANSFORMER CABINET

**FOR SERVICES NOT EXCEEDING 1200 AMPS OR 480 VOLTS**

Instrument transformer cabinets for CTs and VTs shall have hinged covers, "sealing" provisions, backboard, and individual Company approval prior to installation. Outdoor cabinets must be of weatherproof or raintight design (NEMA 3R). See "Handbook" paragraph 811 for further instrument transformer cabinet details. The following table shows the minimum size requirements:

- 2 current, 2 voltage transformers 36"H x 36"W x 12"D
- 3 current, 3 voltage transformers 48"H x 48"W x 12"D


CT only cabinets with mounting rack and connectors to accommodate 12" bars, are approved as follows:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Amp</th>
<th>Rating</th>
<th>Dimensions</th>
<th>Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper B-Line</td>
<td>400-800</td>
<td>36&quot;Hx37&quot;Wx13&quot;D</td>
<td>363612DDHRTCT1N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>400-800</td>
<td>48&quot;Hx49&quot;Wx13&quot;D</td>
<td>484814DDHRTCT1N</td>
<td></td>
</tr>
<tr>
<td>Meter Devices</td>
<td>400-800</td>
<td>36&quot;Hx36&quot;Wx12&quot;D</td>
<td>7038</td>
<td></td>
</tr>
<tr>
<td></td>
<td>48&quot;Hx48&quot;Wx12&quot;D</td>
<td>7039</td>
<td></td>
<td></td>
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<tr>
<td>Milbank</td>
<td>400-800</td>
<td>36&quot;Hx36&quot;Wx12&quot;D</td>
<td>S-1855-O</td>
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<tr>
<td></td>
<td>800-1200</td>
<td>48&quot;Hx48&quot;Wx12&quot;D</td>
<td>S-1856-O</td>
<td></td>
</tr>
<tr>
<td>GE</td>
<td>400-1200</td>
<td>62&quot;Hx30&quot;Wx15&quot;D</td>
<td>SE22-HS*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>400-1200</td>
<td>62&quot;Hx30&quot;Wx15&quot;D</td>
<td>SE42-HS*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>400-1200</td>
<td>62&quot;Hx30&quot;Wx15&quot;D</td>
<td>SE46-HS*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>400-1200</td>
<td>78&quot;Hx35&quot;Wx15&quot;D</td>
<td>FSE42-HS*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>400-1200</td>
<td>78&quot;Hx35&quot;Wx15&quot;D</td>
<td>FSE44-HS*</td>
<td></td>
</tr>
<tr>
<td>Talon/Landis&amp;</td>
<td>400-1200</td>
<td>36&quot;Hx36&quot;Wx12&quot;D</td>
<td>LG123636CTS2</td>
<td></td>
</tr>
<tr>
<td>Gyr</td>
<td>400-1200</td>
<td>48&quot;Hx48&quot;Wx12&quot;D</td>
<td>LG124848CTS2</td>
<td></td>
</tr>
</tbody>
</table>

* These units are service entrance cabinets with a fusible main or main breaker.
ITEM 681.196  UGT 2” PVC SCHEDULE 40 CONDUIT  LF

GENERAL

The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

2” PVC Conduit shall be concrete encased under paved areas, direct buried elsewhere, and shall meet the requirements specified in Section 715-03 of the standard specification.

INSTALLATION

2” PVC Conduit shall be installed as specified in Section 626-033 of the standard specifications. The conduit shall run from the telephone pedestal to the building. At the building the conduit shall be changed over to rigid galvanized steel conduit, shall stub 6” out of the ground, be capped, and have a nylon pull string installed.

Where noted on Sheet 3 of the plans, a hole shall be created under the parking lot retaining wall large enough to accommodate the conduit by jacking, drilling or pushing a conduit under the retaining wall. The conduit shall be extended through the opening and connected to the conduit in the open area.

The contractor shall place the push pit without disturbance to the adjacent sidewalk. The push pit shall be backfilled and compacted.

MEASUREMENT AND PAYMENT

Payment will be made at the unit price per linear foot, which price shall constitute full compensation for all labor, tools, and equipment, required for furnishing and installing PVC Conduit Schedule 40, fittings, expansion fittings, bends, clamps, couplings, condulets, supports, inclusive of conduit supports, trench excavation (except rock and sidewalk), jacking, drilling or pushing conduit and backfilling (except where Engineer requires gravel borrow backfill), joint encasement, de-watering, pull ropes, penetrations into new and existing handholes, connection to existing conduits, warning tape and surface restoration. Surface restoration shall include, but is not limited to, restoration of sidewalk surface and grass areas, and all incidental costs required for the proper completion of the work specified herewith, as shown on the plans, or as required by the Engineer, complete in place.
ITEM 681.156 UGT 2” RISER DROP EA

GENERAL

The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

Riser poles shall consist of a rigid galvanized steel sweep and shall be 2” rigid galvanized steel prior to exiting the ground to 10’ above finished grade. 10’ above finished grade shall be 2” schedule 40 PVC.

INSTALLATION

PVC Conduit shall be installed as specified in Section 626-033 of the standard specifications. Rigid Galvanized Steel conduit shall be installed as specified in Section 626.032 of the standard specifications.

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer.

Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.

ITEM 681.177 UGT 24”x24”x18” HANDHOLE EA

GENERAL

The Contractor shall furnish and install polymer concrete handholes as indicated on the Contract Drawings. The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

Loadings comply with ANSI/ACTE 77. These enclosures, with a design load of 22,500 lbs. and a test load of 33,750 lbs., meet and exceed ANSI tier 22 test provisions. Enclosures and covers shall be concrete gray color and rated for no less than 22,500 lbs. over a 10”x10” area and be designed and tested to temperatures of –50 degrees F. Covers shall have a minimum coefficient of friction of .5.

INSTALLATION

All handholes must be installed as shown on the Drawings to the approved grade, except
as approved deviations may be required to meet field conditions. The top of the handhole and cover shall be set flush with the finished grade.

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer.

Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.
SUPPLEMENTAL SPECIFICATION
SECTION 682
CCTV SERVICE RECONNECTS

ITEM 682.196 2” PVC SCHEDULE 40 LF

GENERAL

The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

2” PVC Conduit shall be concrete encased under paved areas, direct buried elsewhere, and shall meet the requirements specified in section 715-03 of the standard specification.

INSTALLATION

2” PVC Conduit shall be installed as specified in section 626-033 of the standard specifications. The conduit shall run from the CCTV junction box to the building. At the building the conduit shall be changed over to rigid galvanized steel conduit, shall stub 6” out of the ground, be capped, and have a nylon pull string installed.

Where noted on Sheet 3 of the plans, a hole shall be created under the parking lot retaining wall large enough to accommodate the conduit by jacking, drilling or pushing a conduit under the retaining wall. The conduit shall be extended through the opening and connected to the conduit in the open area. The contractor shall place the push pit without disturbance to the adjacent sidewalk. The push pit shall be backfilled and compacted

MEASUREMENT AND PAYMENT

Payment will be made at the unit price per linear foot, which price shall constitute full compensation for all labor, tools, and equipment, required for furnishing and installing PVC Conduit Schedule 40, fittings, expansion fittings, bends, clamps, couplings, condulets, supports, inclusive of conduit supports, trench excavation (except rock and sidewalk), jacking, drilling or pushing conduit and backfilling (except where Engineer requires gravel borrow backfill), joint encasement, de-watering, pull ropes, penetrations into new and existing handholes, connection to existing conduits, warning tape and surface restoration. Surface restoration shall include, but is not limited to, restoration of sidewalk surface and grass areas, and all incidental costs required for the proper completion of the work specified herewith, as shown on the plans, or as required by the Engineer, complete in place.
ITEM 682.156  2” RISER DROP  EA

GENERAL

The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

Riser poles shall consist of a rigid galvanized steel sweep and shall be 2” rigid galvanized steel prior to exiting the ground to 10’ above finished grade. 10’ above finished grade shall be 2” schedule 40 PVC.

INSTALLATION

PVC Conduit shall be installed as specified in section 626-033 of the standard specifications. Rigid Galvanized Steel conduit shall be installed as specified in section 626.032 of the standard specifications.

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer.

Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.

ITEM 682.177  24”x24”x18” HANDHOLE  EA

GENERAL

The Contractor shall furnish and install polymer concrete handholes as indicated on the Contract Drawings. The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

Loadings comply with ANSI/ACTE 77. These enclosures, with a design load of 22,500 lbs. and a test load of 33,750 lbs., meet and exceed ANSI tier 22 test provisions. Enclosures and covers shall be concrete gray color and rated for no less than 22,500 lbs. over a 10”x10” area and be designed and tested to temperatures of –50 degrees F. Covers shall have a minimum coefficient of friction of .5.

INSTALLATION

All handholes must be installed as shown on the Drawings to the approved grade, except as approved.
deviations may be required to meet field conditions. The top of the handhole and cover shall be set flush with the finished grade.

**MEASUREMENT AND PAYMENT**

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer.

Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.
ITEM 683.196  COMM. 2” PVC SCHEDULE 40 CONDUIT  LF

GENERAL

The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

2” PVC Conduit shall be concrete encased under paved areas, direct buried elsewhere, and shall meet the requirements specified in Section 715-03 of the standard specification.

INSTALLATION

2” PVC Conduit shall be installed as specified in Section 626-033 of the standard specifications.

Where noted on Sheet 3 of the plans, a hole shall be created under the parking lot retaining wall large enough to accommodate the conduit by jacking, drilling or pushing a conduit under the retaining wall. The conduit shall be extended through the opening and connected to the conduit in the open area. The contractor shall place the push pit without disturbance to the adjacent sidewalk. The push pit shall be backfilled and compacted.

MEASUREMENT AND PAYMENT

Payment will be made at the unit price per linear foot, which price shall constitute full compensation for all labor, tools, and equipment, required for furnishing and installing PVC Conduit Schedule 40, fittings, expansion fittings, bends, clamps, couplings, condulets, supports, inclusive of conduit supports, trench excavation (except rock and sidewalk), jacking, drilling or pushing conduit and backfilling (except where Engineer requires gravel borrow backfill), joint encasement, de-watering, pull ropes, penetrations into new and existing handholes, connection to existing conduits, warning tape and surface restoration. Surface restoration shall include, but is not limited to, restoration of sidewalk surface and grass areas, and all incidental costs required for the proper completion of the work specified herewith, as shown on the plans, or as required by the Engineer, complete in place.

ITEM 683.156  COMM. 2” RISER DROP  EA

GENERAL

The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS
Riser poles shall consist of a rigid galvanized steel sweep and shall be 2” rigid galvanized steel prior to exiting the ground to 10’ above finished grade. 10’ above finished grade shall be 2” schedule 40 PVC.

INSTALLATION

PVC Conduit shall be installed as specified in Section 626-033 of the standard specifications. Rigid Galvanized Steel conduit shall be installed as specified in Section 626.032 of the standard specifications.

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer. Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.

ITEM 683.177 COMM. 24”x24”x18” HANDHOLE EA

GENERAL

The Contractor shall furnish and install polymer concrete handholes as indicated on the Contract Drawings. The work under these Items shall conform to the relevant provisions Section 600 and 700 of the Standard Specification and the following:

MATERIALS

Loadings comply with ANSI/ACTE 77. These enclosures, with a design load of 22,500 lbs. and a test load of 33,750 lbs., meet and exceed ANSI tier 22 test provisions. Enclosures and covers shall be concrete gray color and rated for no less than 22,500 lbs. over a 10”x10” area and be designed and tested to temperatures of –50 degrees F. Covers shall have a minimum coefficient of friction of .5.

INSTALLATION

All handholes must be installed as shown on the Drawings to the approved grade, except as approved deviations may be required to meet field conditions. The top of the handhole and cover shall be set flush with the finished grade.

MEASUREMENT AND PAYMENT

Measurement shall be made per each unit complete in place, tested, and accepted by the Engineer. Payment shall be at the contract unit bid price for each unit, complete in place, which price shall include all labor, tools, equipment, materials, all wiring and connections, and all incidental costs required to complete the work.