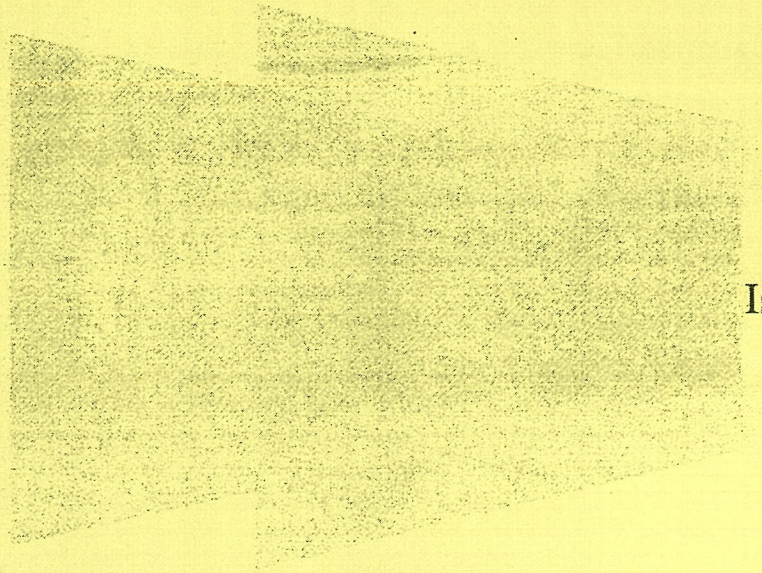
CET SPECIFICATIONS AND SKETCHES



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(NO TEXT ON THIS PAGE)

GENERAL PROVISIONS FOR PRIVATE UTILITY FACILITIES

1. This document contains the current list of standard CET specifications and CET sketches issued by the utility companies to support, protect, maintain, adjust, remove and replace private utility facilities during the performance of City of New York sponsored contracts. These specifications and sketches are to be used in conjunction with City of New York contracts that contain Section U. These specifications and sketches provide descriptions of the CET items that have been included in Section U. These specifications and sketches may be revised or amended at any time and such revisions or amendments will be included in Section U.

2. The facility operator(s) shall provide to the Contractor, where specified all specialized materials necessary to accomplish the work specified in Section U. The Contractor shall notify the facility operator(s) of the installation schedule at least five (5) business days before such materials are required on the site.

3. All materials supplied by the facility operator(s) shall be delivered F.O.B. to the Contractor's requested location. The Contractor is required to provide a written list of the types and quantities of all materials to be delivered a minimum of five (5) business days in advance of the requested delivery date. It shall then be the Contractor's responsibility and expense to unload, handle, store, deliver and /or distribute the material supplied by the facility operator(s) to the required job location(s) for the duration of the contract. The Contractor is required to accommodate all delivery vehicle sizes, as provided by the Utilities. It shall also be the Contractor's responsibility to inspect and verify upon delivery that the correct quantity of material has been delivered and advise the facility operator(s), through its authorized representative, of all damaged material. Any material which is damaged or lost after the Contractor's inspection and acceptance shall be replaced by the Contractor at no additional expense to the facility operator(s).

4. Modification of any sheeting, forms, supports, decking, bridging, pontoon and other required methods of construction shall be designed, furnished and installed in accordance with accepted construction industry standards and practices by the contractor in full compliance with State of New York and Federal Safety code requirements and in compliance with all applicable specifications and any additional directives by the Facility Operator.

5. All cost associated with the modification of any methods of operation and use of specialized equipment by the Contractor is deemed included in the applicable CET unit price. Further all costs associated with the maintenance of traffic including, furnishing and installing plates, opening and closing of plates, and all other requirements for compliance with New York City Department of Transportation (NYCDOT) is deemed included in the CET unit prices. CET prices shall also cover any extended performance, loss of productivity, special protective measures, delays, change in sequencing and scheduling, and any other costs that may be incurred by the contractor.

6. Credit or Adjustments shall be taken when components of CET items overlap City work or other CET items, including those of other utilities if applicable.

7. The document titled "Con Edison Guideline for Safe Entry into Sub-Surface Structures (Electric Enclosed Space), Removal of Conduit from Cables, and Moving Energized Underground Cables Performed by Pubic Improvement Contractors" (05/09/05, Rev. 0) is an integral part of this document, and shall be adhered to when performing interference work for Con Edison.

8. In the event conflicts should arise between the specifications, provision and drawings the more stringent shall apply.

CET 100 - 116 - TRENCH CROSSINGS SUPPORT AND PROTECTION OF UTILITY FACILITIES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to support and maintain and protect and accommodate the integrity of utility facilities, including but not limited to:

1. Conduits;
2. Conductors;
3. Concrete Encased Conduit Banks;
4. Steel Pipes; Steam Facilities:
5. Oil-o-Static Facilities; and
6. Non-Cost Sharing Gas;

of various sizes and configurations, crossing at various angles as shown on the Contract Documents above the sewer, catch basin chute connection pipes, water main trench excavation at the locations shown in the contract documents or as encountered during construction. The support, maintenance, protection, and accommodation of utility facilities encountered during performance of test pits as ordered by the City are also covered under this item.

The above reference to facilities crossing at "various angles" shall mean that such facilities are crossing sewer, water and catch basin chute excavations at a 90 degree angle to the proposed sheeting line or side of excavation (for unsheeted trenches) with an allowable deviation of 60 degrees in any direction. For crossings greater than 60 degrees and not completely parallel to the trench line, see the guidelines in "Section D" of this CET item. The only exceptions to this definition shall be where greater angles are shown on the contract documents.

B. Materials

All materials used to support and protect shall be as indicated on the attached standard Sketches CET 100 A, A-1, B, C, C-1, D, E and F shall be supplied by the Contractor and approved by the facility operator.

C. Methods of Construction

The Contractor shall support and protect all utility facilities crossing excavations as shown on the Standard sketches. Sketches CET 100A and CET 100A-1 are to be used as a guide. Alternate methods and/or one or a combination of methods shown on the CET sketches shall be permitted if proposed by the Contractor and approved by the facility operator. It is the intent of this item to support and maintain and protect and accommodate the integrity of utility facilities and all combinations and configurations of utility facilities encountered in the course of the work. Support Requirements for utility facilities crossing Items (Sketch CET 100A) are intended to support the actual square

foot cross section area of the utility facilities. Where multiple facilities are measured for payment purposes as one facility, conditions may require that each facility be supported separately. Sketch CET 100A can be used as a guide to determine support requirements.

The facility operator shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the facilities and to ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation and/or sheeting operations. Upon exposing the affected utilities sufficiently at the sole discretion of the facility operator, to determine relationships and/or dimensions, the contractor shall be permitted to proceed with a combination of hand and machine excavation, as appropriate, with a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each utility crossing or interference.

Combination of hand and hand and machine excavation may be required within the limits of the city trench under and between zones of protection and/or between utility facilities and other existing structures.

D. Method of Measurement

For crossings up to 60 degrees in any direction:

Single duct(s) or ductbanks

The quantity to be measured for payment shall be each (EA) type of utility facility crossing any new sewer, catch basin chute connection pipe or water pipe trench excavation. The various types of facility crossings (described below) shall be defined as "ranges" of their cross sectional areas, measured is square feet (SF) cutting through the trench for the water / sewer and catch basin chute connection pipe trench.

Multiple ducts

When multiple utility facilities are within one foot of each other and overlap at any point along the trench crossing, either vertically or horizontally (except oil o static lines which shall be less than two feet of each other). The utility facilities involved shall be considered, for the purposes of this section, as one utility crossing limited by the outside limits of the extreme pipes, conduits, ducts, and or ductbanks. The cross sectional area to be measured shall be a rectangle or square plane enclosing and touching the outside limits of the utility as shown on the attached sketch CET 100 E. The cross sectional area to be selected at the point of the greatest area along the utility spanning the trench excavation and as shown in attached Sketch CET 100 E. Multiple ducts greater than one foot of each other shall be paid separately as described above in the "Single duct(s) or ductbanks" description.

Type .1 = Cross sectional area of utility up to and including 0.75 SF
Type .2 = Cross sectional area of utility over 0.75 SF, up to and including 2.0 SF
Type .3 = Cross sectional area of utility over 2.0 SF, up to and including 6.0 SF
Type .4 = Cross sectional area of utility over 6.0 SF, up to and including 10.0 SF
Type .5 = Cross sectional area of utility over 10.0 SF, up to and including 15.0 SF
Type .6 = Cross sectional area of utility over 15.0 SF, up and including 20.0 SF
Type .7 = Cross sectional area of utility over 20.0 SF

For Single or Multiple Duct(s) crossings greater than 60 degrees in any direction:

For facilities crossing the trench excavation at an angle greater than 60 degrees from a theoretical 90 degree angle, the applicable crossing shall be paid based on its cross sectional area measured in square feet and CET 330 measured along the length of the excavation based on where the facility enters and exits the trench excavation.

This item shall not apply to facilities that are parallel to the trench (i.e., when the city facility does not cross under the utility facilities). In those situations only CET 330 shall apply.

E. Price to Cover

The price shall cover the cost of all labor, material, equipment, insurance, and incidentals necessary to completely support and maintain and protect and accommodate the integrity of the utilities without disruption of service to the customers and in accordance with contract documents. The price shall also include the cost of: supports, slings and beams installed for utility support; additional supports necessary for multiple facilities that for payment purposes are measured as one facility; changes of sheeting method and configuration where necessary to accommodate the utility; installation of new sewer, water, and catch basin chute connection pipes under the utilities; (including the removal of any abandoned existing facilities to be removed under the City Contract as shown on the Contract Drawings) a combination of hand and hand and machine excavation within the zone of protection, backfilling and compacting around, over, under and between the zones of protection of the utilities; and removal of sheeting around the utilities, and the cost of any impact with maintenance and protection of traffic. The price shall also cover any additional excavations, including hand and hand and machine excavations under and in between zones of protection for single and multiple utilities; tunneling; additional pipe cutting and joining; removal of existing city facilities; snaking and/or in between utility facilities and other existing structures.

F. References

1. Sketches CET 100A, A-1, B, C, C-1, D, E and F
2. NYS Industrial Code Rule 753

(NO TEXT ON THIS PAGE)

CET 200 -EXTRA DEPTH EXCAVATION OF CATCH BASIN CHUTE CONNECTION PIPES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance, and incidentals required to install catch basin chute connection pipes at a depth greater than specified in order to accommodate the integrity of utility facilities. These facilities of various sizes and configurations will cross the catch basin chute connection at various angles as shown on the Contract Documents. The support and maintenance and protection and accommodation of facilities encountered during the performance of this item shall be paid under other CET items. This item includes the additional excavation, material and effort(s), above and beyond the theoretical alignment for the installation of catch basin chute connection pipes caused by interference with utility facilities.

B. Material – N/A

C. Methods of Construction

Upon supporting and maintaining and protecting and accommodating the affected utilities sufficiently at the sole discretion of the facility operator(s) as deemed included under other CET items, the contractor shall be permitted to proceed with a combination hand and machine excavation, as appropriate, within and below a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each utility crossing or interference. Combination of hand and hand and machine excavation may be required within the limits of the City trench under and in between the zones of protection and/or between utility facilities and other existing structures.

D. Method of Measurement

The measurement for payment shall be the linear footage (L.F.) of catch basin chute connection pipe actually installed at a depth greater than specified. This shall be at an upstream invert depth lower than four feet six inches (4'-6") for Type II Catch Basins and five (5'-0) for Type III Catch Basins from the proposed pavement grade because of interference from private utility facilities as shown on Sketches CET 200 A and B measured from the inside face of the catch basin to the inside face of the manhole, along the center line of the catch basin chute connection pipe at locations where the catch basin sewer chute connection pipes are installed. Utility facility owners will jointly determine the percentage of ownership when two or more facilities with different owners cause the extra depth.

Type .1 = Upstream invert depth greater than four feet six inches(4'-6") and up to five (5) feet for Type II Catch Basins and greater than four feet six inches and up to five feet six inches for Type III Catch Basins from the proposed pavement elevation.

Type .2 = Upstream invert depth greater than five (5) and up to six (6) feet for Type II Catch Basins and greater than five feet six inches and up to six feet six inches for Type III Catch Basins from the proposed pavement elevation.

E. Price to Cover

The price shall cover the cost of all additional labor, material, equipment, insurance, and incidentals necessary to install catch basin chute connections at a depth greater than specified in order to accommodate the integrity of the utility facilities without disruption of service to the customers. The price shall further include the additional cost of sheeting; changes of sheeting method and configuration to accommodate the utilities; installation and snaking of catch basin chute pipes under the utilities; all additional hand and machine excavations, backfilling and compacting around, over, under and between the zone of protection for single and multiple utility facilities and/or in between utility facilities and other existing structures of the utilities; tunneling; removal of sheeting around the utilities; and the cost of any impact with maintenance and protection of traffic. The price shall also cover the cost of breaking out the new POE (point of entry); modifying the existing POE; sealing the existing abandoned POE opening; and all other additional items necessary to perform all work incidental thereto; including widening of the trenches to facilitate the above work; subsequent additional backfill; additional sheeting and/or changing sheeting method to accommodate chute connection pipe and utility crossings; and installing traffic plates that may be required to temporarily close and/or complete the work.

F. References

1. Sketches CET 200A and 200B

CET 225 - INSTALLATION AND REMOVAL OF CATCH BASINS WITH UTILITY INTERFERENCES

A. Description

Under this section, the Contractor shall provide all incremental labor, materials, equipment, insurance and incidentals required to support and/or protect the integrity of utility facilities required during the excavation, installation and removal of catch basins within maximum excavation limits shown on Sketch No. CET 225. This shall include but not be limited to the following types of utility facilities:

1. Conduits;
2. Conductors;
3. Concrete Encased Conduit Banks;
4. Steel Pipes;
5. Oil-o-Static Facilities;
6. Non Cost Sharing Gas; and

encroaching catch basin excavation and sheeting lines as described further in this section and attached sketch CET 225. This item also includes the use of slurry backfill adjacent to catch basins within the maximum excavation limits shown on Sketch No. CET 225, in accordance with attached NYSDOT Specification Item No. 17502.9503 (Low Strength Slurry Backfill.) All backfill within the maximum excavation limits shown in Sketch No. CET 225 shall be slurry backfill in compliance with NYSDOT Item No. 17502.9503, and its cost shall be deemed included under Item CET-225.

B. Materials

Furnish slurry fill or backfill as required and specified in NYSDOT Specification Item No. 17502.9503 (Low Strength Slurry Backfill.) All materials used to support and protect utility facilities shall be as indicated on standard Sketches CET 100 A, A-1, B, C, C-1 and D, contained elsewhere in this contract, shall be supplied by the Contractor and approved by the facility operator(s).

C. Methods of Construction

The Contractor shall use sheeting methods that permit maintenance and support and protection of all utility facilities covered by this section. It is the intent of this item to support and maintain and protect any and all combinations and configurations of utility facilities located within limits indicated on Sketch No. CET 225. For the construction of Type III basins, the spillway shall be constructed in a separate stage where the excavation limits may be waived after the basin structure has been installed and backfilled. Excavation for the spillway shall not exceed 3' beyond the exterior finished surface of the proposed spillway. Excavation method for spillway construction shall be done by hand. Utility facilities located closer than the established minimum limits (as shown on Sketch CET 225) are not covered by this section and shall be removed or adjusted by the Contractor under other CET items within this contract or by facility operator at their own expense. This section shall then cover the adjusted facilities.

Utility facilities located beyond the established maximum excavation limits are not affected by work specified and shall not be disturbed during any type of catch basin installation and/or removal. Contractor shall be solely and totally responsible for disturbances and/or any damages to such facilities. The facility operator(s) shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the facilities and to ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected utilities sufficiently at the sole discretion of the facility operator(s), to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with a combination of hand and machine excavation, as appropriate, within a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each utility interference.

D. Method of Measurement

The quantity to be measured for payment shall be each basin where utility facilities are located within the limits indicated on CET Sketch No. CET 225. Utility facilities located closer than the established minimum limits (as shown on Sketch CET 225) shall be removed or adjusted by the contractor under other CET items within this contract. This section shall then cover the adjusted facilities. Payment will be made only one time at locations where a new basin is to be installed at the same location as a pre-existing basin as specified on contract drawings. For the purpose of this item, "same location" shall mean within 10ft of the pre-existing basin location.

CET 225.1A - Installation and removal of catch basins with utility interferences. (EA.)

CET 225.1B - Installation of catch basins with utility interferences. (EA.)

CET 225.1C - Removal of catch basins with utility interferences. This item shall be applied in those situations only where the catch basin is being removed and not replaced. This item requires complete removal of the basin including the floor. (EA.)

CET 225.2A - Installation and removal of catch basin with utility interference at an additional depth of up to 3 feet. (EA.)

CET 225.2B - Installation of catch basins with utility interferences at an additional depth of up to 3 feet. (EA.)

E. Price to Cover

CET 225.1A and CET 225.1B: The price shall cover the cost of all labor, material, equipment, insurance and incidentals necessary to completely support and protect and maintain the integrity of the utilities without disruption of service to the customers and in accordance with other types of utility items. The price shall also include the cost of: supports, slings and beams installed for utility support; changes of sheeting method and

configuration where necessary to accommodate the utility; a combination of hand and machine excavation within the excavation limits specified; the disposal of excess backfill material; the placing of backfill material and/or slurry backfill adjacent to catch basins within the maximum excavation limits shown on Sketch 225; backfilling and compacting around over, under and in between utility facilities; installation and removal of sheeting around facilities; support and protection of utility facilities encountered during construction of the spillway; and the cost of any impact with maintenance and protection of traffic. The price shall also cover any additional excavations including hand and hand and machine excavations under and in between single and multiple facilities; and/or in between utility facilities and other existing structures. The unit price shall be deemed to cover all incremental cost for all labor, material, equipment, and incidentals necessary to excavate, install and/or remove specified catch basins while completely supporting, protecting, maintaining and/or adjusting the catch basin to accommodate the integrity of the encroaching utility facilities without disruption of service to the customers in accordance with the contract documents. All cost to support maintain, protect, and accommodate the integrity of utility facilities shall be deemed included in the price for this item. The price shall also cover all additional restricted excavating, sheeting, backfilling, and compaction around, over, under, and between utility facilities and all other existing structures and/or newly installed and/or removed catch basin.

For CET 225.1A and CET225.1B, if tight sheeting is not utilized for the installation of the catch basin this CET pay item shall be reduced by 60%.

CET 225.2A and CET 225.2B: The price to cover shall include all work as described in price to cover for CET 225.1 plus installation of the catch basin at an additional depth of up to three feet.

Payment for all work herein specified shall be made on a one-time basis only; no payment for work herein specified shall be made for the same area more than one time. Payment will be made only one time if the Contractor elects to install new basins next to existing basins to accommodate their operations. No payment will be made for the removal of the existing basins if performed at a later sequence.

For CET 225.2A and CET225.2B, if tight sheeting is not utilized for the installation of the catch basin this CET pay item shall be reduced by 60%.

F. References

1. Sketch CET 225, 225-S
2. Item 17502.9503 – Low Strength Slurry Backfill
3. Sketches CET 100-A, A-1, B, C, C-1 and D
4. NYS Industrial Code Rule 753

ITEM 17502.9503 - LOW STRENGTH SLURRY BACKFILL
(For reference only. See SECTION CET 225)

DESCRIPTION:

The work shall consist of furnishing and placing a slurry backfill composed of fly ash, cement and water as shown on the plans or as directed by the Engineer, in writing, and in accordance with this Specification. This slurry backfill material shall have a 28-day compressive strength of between 40 psi and 140 psi.

MATERIALS:

The fly ash shall be tested for toxicity pursuant to a testing protocol approved by New York State Department of Environmental Conservation (NYSDEC) and certified to be non-toxic. The Engineer shall be provided with a copy of documentation issued by NYSDEC attesting to its conformance with applicable NYSDEC rules and regulations.

The materials used for slurry backfill material shall meet the requirements of the following subsections:

Portland Cement, Type 1 or Type 2	701-01
Water	712-01

Fly Ash shall conform to the chemical and physical requirements for mineral admixture, Class F listed in A.S.T.M. C618 including Table 2 (except for Footnote A). The loss on ignition shall be waived.

CONSTRUCTION DETAILS:

Prior to mixing of any slurry backfill material the Contractor shall submit to the Deputy Chief Engineer, Technical Services results of laboratory tests, or results of tests made previously on slurry backfill used for other work. Test results shall show source and type or class of materials, batch proportions and conformance to the strength requirements.

All equipment for this work shall be subject to approval of the Engineer at all times. No work under this section will be permitted until all equipment and the processing facilities are established, inspected and approved.

The materials shall be mixed at a stationary mixing plant. The mixer shall be either a continuous or a batch type plant, designed to accurately proportion either by volume or by weight, so that when the fly ash material and cement are incorporated in the mix, a thorough and uniform mix will result. The mixer shall be capable of providing accurate control at all times of the amount of fly ash, cement and water entering the mixer per time interval. The mixer shall be equipped to mechanically interlock the fly ash feed with the cement feed, such that the uniformity of the mixtures is assured at all times.

The mix may be transported in open haul units when the material is placed within 30 minutes of the end of mixing. Material placed in excess of 30 minutes after the end of mixing shall be transported in a rotating drum unit capable of 2 - 6 rpm.

Cylinders shall be cast in accordance with Materials Method 9.2 to verify that compressive strength is within the specified limits. The frequency of test specimens will be determined by the Regional Soils Engineer.

The method of placing of slurry backfill material shall be as approved by the Engineer.

The slurry backfill material shall be accepted on the basis of inspection and approval by the Engineer.

(NO TEXT ON THIS PAGE)

CET 300 - SPECIAL CARE EXCAVATION AND BACKFILLING

A. Description

Under this section, the Contractor shall provide all incremental labor, materials, equipment, insurance and incidentals required for trench excavation when protecting and maintaining and accommodating the integrity of utility facilities, including but not limited to:

1. Conduits;
2. Conductors;
3. Concrete Encased Conduit Banks;
4. Steel Pipes; Steam Facilities and
5. Non Cost Sharing Gas;

of various sizes and configurations, encroaching (partially exposed) or paralleling (not exposed) within 6" of the approved City trench lines for all phases of contract excavation as shown on contract drawings or as encountered during construction, except excavations to the ultimate depth for curbs, sidewalks and roadway/base/sub-base removal which are covered under specific CET items. This item shall also apply for facilities that cross excavations for water service installation and extensions or excavations for water tap searches. The contract items specified under this section shall not be measured for payment in conjunction with any other types of utility items. All work shall be performed in accordance with the contract plans, specifications, the attached Sketch CET 300 A and at the directions of the facility operator(s).

B. Materials – N/A

C. Method of Construction

The Contractor shall maintain and protect and accommodate the integrity of all utility facilities encroaching/paralleling within excavations as schematically shown on the attached Sketches CET 300 A. The facility operator(s) shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the facilities and ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected utilities sufficiently at the sole discretion of the facility operator(s) to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with a combination of hand and machine excavation, as appropriate, within a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each utility encroaching.

D. Method of Measurement

The unit price for this work item shall be based on the volume (CY) of special care excavation calculated as follows:

- For paralleling facilities (not exposed): Depth shall be measured from the bottom of the existing roadway base to 5'-0" below existing street surface grade or bottom of trench, whichever is less. The width shall be measured as 1 foot from the face of excavation toward the center of excavation. The length shall be measured as the length of the parallel facility. (see Sketch CET 300 A.)

- For encroaching facilities; Depth as defined above multiplied by the width of encroachment (pipe partially or fully exposed) plus 1 foot, multiplied by the length of facility encroachment. (see Sketch CET 300 A.)

- For facilities crossing water service excavations; Depth as defined above multiplied by the width taken as the outside diameter of or width of structure plus one foot on either side (2 feet) multiplied by the length of the exposed facility crossing the trench.

The volume calculation shall in all cases include, the volume occupied by the utility proper within the payment area described above. Overlapping volume dimensions measured as described above may occur when multiple utilities are encroaching trench excavations. In such cases, all such utilities shall be counted as one utility limited by the maximum encroachment of pipes, conduit(s), and conduit banks faces. The volume shall then be calculated as described above and shown on attached Sketch CET 300 A. Utilities identified as abandoned by the facility operator prior to be beginning of excavation, are not included for payment under this item.

E. Price to Cover

The price shall cover the cost of all labor, material, equipment, insurance and incidentals necessary to completely protect and maintain and accommodate the integrity of the facilities without disruption of service to the customers and in accordance with contract documents. The price shall also include the cost of: difficulties encountered during the performance of contract work items under, over and around the facilities, loss of productivity due to slower rate of excavation (special care) during excavation, including water tap search excavations and the use of such methods as hand excavation around existing single and multiple facilities; backfilling and compaction around, over and under the utilities including the use of special methods; installation and removal of sheeting from around the facilities; and traffic plates that may be required to temporarily close and/or complete the work.

F. References

1. Sketch CET 300A
2. NYS Industrial Code Rule 753

CET 301 - SPECIAL CARE EXCAVATION AND BACKFILLING FOR OIL-O-STATIC PIPES

A. Description

Under this section, the Contractor shall provide all incremental labor, materials, equipment, insurance and incidentals required for trench excavation when maintaining, protecting, and accommodating the integrity of the facility operator's oil-o-static pipe(s). This system consists of steel pipes containing the high tension cables and cooling oil (oil-o-static pipes) encroaching (partially exposed) or paralleling (not exposed) within 12 inches of the face of the approved city excavations for all phases of contract excavation as encountered during construction, except excavations to the ultimate depth for curbs, sidewalks and roadway/base/subbase which are covered under specific contract items. The work shall be performed in accordance with the contract plans, specifications, attached Sketch CET 301 A and at the directions of the facility operator.

B. Materials

Backfill material to be used around oil-o-static pipes will be paid for under Item CET-303.

C. Method of Construction

The Contractor shall maintain, protect and accommodate the integrity of oil-o-static pipes encroaching/paralleling excavations as schematically shown on attached Sketch CET 301 A. The facility operator shall identify the locations of oil-o-static pipe(s) within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the oil-o-static pipe(s) and ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected oil-o-static pipe(s) sufficiently at the sole discretion of the facility operator to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with hand excavation only, within a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each oil-o-static encroaching/paralleling.

D. Method of Measurement

The unit price for this work shall be based on the volume (C.Y.) of special care excavation calculated as follows:

- For paralleling (not exposed) oil-o-static pipe(s) within 12 inches of the outside edge of the approved City trench line, the volume included for payment shall be calculated as the depth from below the existing pavement base to the bottom of the unsheeted trench excavation or to the bottom of the oil-o-static pipe whichever is greater, multiplied by the width, measured as one foot from the face of the excavation toward the center of excavation, multiplied by the length of the parallel oil-o-static line. See Sketch CET 301 A.

For encroaching (exposed) oil-o-static pipe(s) the volume shall be calculated as the width of the encroachment (facility partially or fully exposed in the trench) plus one foot, multiplied by length of the encroachment, multiplied by the depth as defined above. See Sketch CET 301 A.

The volume calculation shall in all cases include, the volume occupied by the utility proper within the payment area described above. Overlapping volume dimensions measured as described above may occur when multiple utilities are encroaching trench excavations. In such cases, all such utilities shall be counted as one utility limited by the maximum encroachment of pipes, conduit(s), and conduit banks faces. The volume shall then be calculated as described above and shown on attached Sketch # CET 300 A. Utilities identified as abandoned by the facility operator prior to be beginning of excavation, are not included for payment under this item.

E. Price to Cover

The price shall cover the cost of all incremental labor, material, equipment, insurance and incidentals necessary to completely protect, and maintain; and accommodate the integrity of oil-o-static pipe(s) without disruption of service to the customers and in accordance with contract documents. The price shall also include the cost of: difficulties encountered during the performance of contract work items under, over and around the oil-o-statics; installation and removal of sheeting; loss of productivity due to slower rate of excavation (special care) during excavation, including the use of such methods as hand excavation around existing oil-o-static pipe(s); trucking and disposing of unsuitable fill; backfilling and compaction around, over and under the facilities including the use of special methods; and traffic plates that may be required to temporarily close and/or complete the work.

F. References

1. Sketch CET-301A
2. CET-303
3. NYS Industrial Code Rule 753

CET 302 – FIELD COATING OF OIL-O-STATIC FEEDER PIPES

A. Description

Under this section, the Contractor shall provide all labor, tools, equipment, insurance and incidentals required to apply field coating and wrapping on Oil-O-Static feeder pipes at various locations within the contract limits in accordance with the specifications and as directed by the facility operator. The Oil-O-Static system consists of steel pipes containing high voltage cables and cooling oil. All work shall be in accordance with the Con Edison requirement G-8209, System B.

B. Materials

All materials required to apply coatings and wrappings as referenced in G-8209 shall be supplied by Con Edison.

C. Method of Construction

Some of the existing coatings on Oil-O-Static pipes may consist of coal tar wrap and may contain asbestos and/or PCB's. The Con Edison representative prior to backfilling must visually inspect all Oil-O-Static lines that are exposed during the performance of this contract. The Contractor shall notify the Con Edison representative to perform this inspection. Con Edison shall be allowed to perform an electrical spark test (jeeping) inspection of these pipes and obtain a sample of the coating for testing. The electrical spark test will indicate the amount of coating required to be applied and the sample test will determine the coating materials. If the tests are negative, the Con Edison representative will direct the Contractor to perform the required amount of coating prior to the pipes being backfilled. If the tests reveal the presence of asbestos and/or PCB's, the work will be considered "specialty work" and be performed by Con Edison forces or by a specialty Contractor hired by Con Edison. The Contractor will coordinate his operations to allow this work to be performed.

The work shall be performed in accordance with Con Edison specification G-8209, which is included within this section. System B will be the only method that will be allowed. The coating shall be verified and accepted by the Con Edison representative prior to backfilling.

D. Method of Measurement

The quantity to be measured for payment shall the actual number of linear feet (L.F.) of each Oil-O-Static pipe for which coating is applied by the Contractor as prescribed.

E. Price to Cover

The price shall cover the cost of all labor, tools, equipment, insurance and incidentals necessary to unload, store and handle the necessary material and to perform all associated work to coat and wrap the Oil-O-Static lines as outlined in Con Edison specification G-8209, System B. The price shall also include the cost of all difficulties encountered to apply the coating in the area of other underground facilities and the

additional excavation that may be required to obtain the necessary clearances to apply the coating; coordination with Con Edison forces or their Specialty Contractor; modifications to work methods or construction sequencing, any impact with maintenance and protection of traffic, and loss of productivity.
Payment for all work herein specified shall be made on a one-time basis only; no payment for work herein specified shall be made for the same area more than one time. If the Contractor subsequently damages any coatings paid for under this contract, the pipe shall be recoated in accordance with this item at the Contractor's expense.

F. References

1. Con Edison Gas Operations Standard G-8209 – Field Coating of Steel Pipe and Fittings Installed Underground and in Subsurface Structures

CET 303 - FURNISH, DELIVER AND INSTALL TYPE 3/8 CLEAN SAND BACKFILL

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install Type 3/8 clean sand backfill for use around utility facilities at various locations within the contract limits as directed by the facility operator.

B. Materials

The Contractor shall supply Type 3/8 clean sand backfill. Type 3/8 clean sand backfill shall have a pH value greater than 5.5 and shall be free of cinders, ashes, vegetable matter, rubbish or any foreign matter. The sand must conform to the following sieve analysis.

Percent Passing	Sieve Size
3/8 inch	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#200	0

C. Method of Construction

The Contractor shall furnish, deliver and install Type 3/8 clean sand for use as backfill material around utility facilities. The amount of Type 3/8 clean sand backfill material shall extend one foot under, around, and over the facilities or as directed by the facility operator.

D. Method of Measurement

The quantity to be measured for payment shall the actual number of cubic yards (CY) of Type 3/8 clean sand backfill in place after compaction as ordered by the facility operator. The amount measured for payment is not to exceed the limits of one foot under, around, and over the facilities unless approved by the facility operator.

E. Price to Cover

The price shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install Type 3/8 clean sand backfill for use around utility facilities. The price shall also include the incremental cost for all labor, material, equipment, insurance and incidentals necessary and required to place, compact, sample and test the backfill material.

(NO TEXT ON THIS PAGE)

CET 304 – FURNISH, DELIVER AND INSTALL CONCRETE PAVEMENT FOR ROADWAY OR SIDEWALK

A. Description

Under this section the contractor shall provide all labor, materials, equipment, Insurance and incidentals necessary to furnish, deliver and install concrete pavement for roadway or sidewalk restoration as directed by the facility operator.

B. Materials

The contractor shall supply concrete material for roadway or sidewalk restoration in compliance with the requirements of the governmental authority having jurisdiction.

C. Method of Construction

The contractor shall furnish, deliver and install concrete pavement for roadway or sidewalk restoration as directed by the facility operator and in compliance with the requirements of the governmental authority having jurisdiction. During unfavorable weather, pavement surfaces shall be protected by approved methods. The protective materials shall remain in place until the concrete has hardened sufficiently to warrant their removal.

D. Method of Measurement

The quantity to be measured for payment shall be the actual number of cubic yards (CY) of concrete pavement in place, as ordered by the facility operator.

CET 304 A – Furnish, deliver, and install concrete road base. Measurement shall be in cubic yards (CY).

CET 304 B – Furnish, deliver and install concrete sidewalk. Measurement shall be in cubic yards (CY).

CET 304 C - Break, remove, and dispose concrete sidewalk. Measurement shall be in cubic yards (CY).

E. Price to Cover

The price shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install concrete pavement for roadway or sidewalk restoration as directed by the facility operator.

(NO TEXT ON THIS PAGE)

CET 305 – FURNISH, DELIVER AND INSTALL ASPHALT PAVING MIXTURES

1. Description

Under this section, the contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install asphalt-paving mixtures for road restoration as directed by the facility operator.

2. Material

The contractor shall supply asphalt paving material mixtures for roadway restoration in compliance with the requirements of the governmental authority having jurisdiction.

3. Method of Construction

The contractor shall furnish, deliver and install asphalt-paving mixtures for roadway restoration as directed by the facility operator and in compliance with the requirements of the governmental authority having jurisdiction. After the proper installation, the contractor shall compact the asphalt paving mixtures to the appropriate thicknesses, as directed by the facility operator.

4. Method of Measurement

The quantity to be measured for payment shall be the actual number of tons (ton) of asphalt paving mixtures in place after compaction to the appropriate thicknesses, as directed by the facility operator.

5. Price to Cover

The price shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install asphalt paving mixtures for roadway restoration as directed by the facility operator.

(NO TEXT ON THIS PAGE)

CET 330E - SUPPORT AND PROTECTION OF ELECTRIC, GAS AND STEAM FACILITIES DURING EXCAVATION OF CITY TRENCH WHEN FACILITIES LIE WITHIN TRENCH LIMITS

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to support and maintain and protect and accommodate the integrity of electric, gas and steam utility facilities when facilities lie completely within the trench limits, including but not limited to:

1. Conduits;
2. Conductors;
3. Concrete Encased Conduit Banks;
4. Steel Pipes; Steam Facilities:
5. Oil-o-Static Facilities; and
6. Non-Cost Sharing Gas;

of various sizes and configurations, as shown on the contract documents or as encountered during construction. The facility operator through its authorized representatives shall be solely responsible for the approval of methods used by the contractor to support and protect utility facilities. All work shall be performed without risking the integrity of the utility facility and be done consistent with all applicable safety standards as directed by the facility operator.

B. Materials

All materials used to support and protect shall be as indicated on the attached standard Sketches CET 100 A, A-1, B, C, C-1 and D shall be supplied by the Contractor and approved by the facility operator.

C. Methods of Construction

The Contractor at the direction of the facility operator shall support, breakout conduit and/or enclosure, and protect all electric, gas and steam utility facilities which lie completely and parallel within the trench limits as shown on the standard sketches. Sketches CET 100A and CET 100A-1 are to be used as a reference guide in determining the appropriate support and protection requirements. Alternate methods and/or one or a combination of methods shown on the CET sketches shall be permitted if proposed by the Contractor and approved by the facility operator. It is the intent of this item to support and maintain and protect and accommodate the integrity of electric, gas and steam utility facilities and all combinations and configurations of the utility facilities encountered in the course of the work. Support Requirements for electric, gas and steam utility facilities which lie completely and parallel within the trench limits (Sketch CET 100A) are intended to support intact the actual square foot cross section area of the utility facilities, where possible. If it is not possible to support the duct system intact, the ducts shall be broken out and cables supported in accordance with this guide. In addition, this item shall include all labor and incidental materials necessary to install split ducts around existing cables and spare ducts as directed by the facility operator. Where multiple facilities are measured for payment purposes as one facility, conditions may require that each facility be supported separately. Sketch 100A can be used as a reference guide to determine support requirements.

The facility operator shall identify the locations of all electric, gas and steam utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the facilities and to ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation and/or sheeting operations. Upon exposing the affected utilities sufficiently at the sole discretion of the facility operator, to determine relationships and/or dimensions, the contractor shall be permitted to proceed with a combination of hand and machine excavation, as appropriate, with a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of the electric, gas and steam utility facility that lie completely within the trench limits.

Combination of hand and hand and machine excavation may be required within the limits of the city trench under and between zones of protection and/or between utility facilities and other existing structures.

This item shall not apply and not be paid when the city trench is widened to accommodate the city facility. In this situation CET 331 shall apply.

D. <u>Method of Measurement</u>

The quantity to be measured for payment under each item shall be Linear Trench Foot (L.F.) of electric, gas and steam utility facility actually excavated, conduit enclosure broken out and removed and conductor supported and protected. The various types of utility facilities encountered (described below) shall be defined as "ranges" of their cross sectional areas, measured in square feet (SF) along a plane cutting through the City trench parallel. The area shall be a rectangle or square vertical plane enclosing and touching the outside limits of the utility. The sides of the rectangle or square shall be approximately level and plumb as shown on attached Sketch CET 100 E. When electric, gas and steam utility facilities are located and overlap at any point along the utility spans crossing the trench excavation and are over, or under and within one foot of each other, both horizontally and vertically, (except oil-o-static lines which shall be within two feet of each other), the utility facilities involved shall be considered, for the purposes of this section, as one utility facility limited by the outside faces of the extreme pipes, conduits, ducts, and/or duct banks. The cross sectional area to be measured shall be selected at the point of the greatest area along the utility spanning the trench excavation, as previously described, and as shown on the attached Sketch CET 100 E. Each type of utility facility encountered shall be paid for separately. The types of electric, gas and steam utility facilities are defined as follows:

CET 330E-A City excavations for the installation of city facilities that do not require sheeting (L.F.)

CET 330E-B City excavations for the installation of city facilities that require sheeting (L.F.)

Type .1 = Cross sectional area of utility up to and including 0.75 SF
Type .2 = Cross sectional area of utility over 0.75 SF, up to and including 2.0 SF
Type .3 = Cross sectional area of utility over 2.0 SF, up to and including 6.0 SF
Type .4 = Cross sectional area of utility over 6.0 SF, up to and including 10.0 SF
Type .5 = Cross sectional area of utility over 10.0 SF, up to and including 15.0 SF
Type .6 = Cross sectional area of utility over 15.0 SF, up and including 20.0 SF
Type .7 = Cross sectional area of utility over 20.0 SF

E. Price to Cover

The unit price under each item shall cover the cost of all labor, material, equipment, insurance, and incidentals necessary to completely breakout conduit and/or enclosure, support and maintain and protect and accommodate the integrity of the electric, gas and steam utilities facilities, which lie completely within the City trench without disruption of service to the customers and in accordance with contract documents. The price shall also include the cost of: supports, slings and beams installed for electric, gas and steam utility support; additional supports necessary for multiple facilities that for payment purposes are measured as one facility; any changes to the contractor's proposed or standard methods of operation, changes of sheeting method and configuration where necessary to accommodate the utility; installation of new sewer, water, and catch basin chute connection pipes under, parallel to or near the utilities, and associated house connections; (including the removal of any abandoned existing facilities to be removed under the City Contract as shown on the Contract Drawings) a combination of hand and hand and machine excavation within the zone of protection, backfilling and compacting around, over, under and between the zones of protection of the utilities; and removal of sheeting around the utilities, and the cost of any impact with maintenance and protection of traffic. The price shall also cover any additional excavations, including hand and hand and machine excavations under and in between zones of protection for single and multiple utilities, replacement and restoration of any and all conduits and their encasements which may have been temporarily removed during the course of work in order to facilitate supporting and protecting the integrity of the utility facility; any new ducts which may have been installed; tunneling; additional pipe cutting and joining; removal of existing city facilities; snaking and/or in between electric, gas and steam utility facilities and other existing structures.

F. References

1. Sketches CET 100A, A-1, B, C, C-1, D, E, F, 330-A and 330-E
3. NYS Industrial Code Rule 753

(NO TEXT ON THIS PAGE)

CET 330T - SUPPORT AND PROTECTION OF COMMUNICATION UTILITY FACILITIES DURING EXCAVATION OF CITY TRENCH WHEN FACILITIES LIE IN OR IN CLOSE PROXIMITY TO TRENCH LIMITS

A. Description

Under this section, the Contractor shall provide all incremental labor, materials, equipment and incidentals required for trench excavation when protecting, maintaining and accommodating the integrity of Communication utility facilities of various sizes and configurations, which may include but not limited to:

Conduits
Conductors
Concrete Encased Conduit Banks
Steel Pipes

When:
(1) Paralleling Communication facilities lie completely in the proposed trench.
(2) Paralleling Communication facilities lie adjacent to trench and Contractor modifies trench and or sheeting.

The contract items specified under this section shall **not** be measured for payment in conjunction with any other types of utility items. All work shall be performed in accordance with Contract plans, specifications, attached sketches CET 330A, CET 330B and CET 330C. Construction method guidelines for other CET Items, although not used for payment purposes, shall be used as specified or as deemed applicable by the facility operator. The facility operator through its authorized representatives shall be solely responsible for the approval of methods used by the contractor to support and protect utility facilities. All work shall be performed without risking the integrity of the utility facility but be done consistent with all applicable safety standards as directed by the facility operator.

B. Materials

Contractor shall assume that all materials used shall be supplied by the contractor and approved by the facility operator(s). All materials subject to approval by NYC shall comply with all applicable NYC DEP/DOT/DDC Specifications.

C. Method of Construction

The Facility operator shall identify the locations of all Communication utility facilities within the Contract area as required by New York State Industrial Code Rule 753. The limits of the proposed city trenches shall be determined as per DEP/DDC Standards. Before the start of excavation, the Contractor shall locate the Communication utility facility in question to the utility operator(s) satisfaction, whether via test pitting or other means, the facility operator(s) may direct the Contractor to expose the facility. If so directed, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the top and 1 foot of each side of the Communication facilities, in order to ascertain the numerical relationships and/or dimensions of these facilities with respect to the proposed excavation. Dependant on the findings, the Contractor shall proceed as follows:

(1) **Paralleling Communication facilities lie completely in the proposed trench**

The Contractor, after having successfully exposed the Communication facilities to the satisfaction of the utility operator, and confirming that the facilities lie within the proposed city trench limits, see Sketch CET 330A, shall support, maintain and protect these facilities using methods and materials approved by the facility operator. The contractor shall have the option, with the concurrence of the facility operator and dependent on the conduit material, to modify the Communication utility facility, such as remove concrete encasement or cables from their conduits. This operation and the final restoration of the conduit shall be performed as described in applicable CET Items, or shall be a method approved by the facility operator.

(2) **Paralleling Communication facilities lie adjacent to proposed trench and Contractor modifies trench**

Once the location of the Communication utility facility has been identified to the satisfaction of the facility operator(s) and the Communication facility is outside but adjacent to the proposed trench excavation limit, the Contractor shall confer with the facility operator(s) to determine any possible damage to the integrity of the facility due to the proposed trench. If the facility operator determines that the utility integrity is in question – even though the utility facility shall be outside the limits of the proposed excavation:

(2.1) Communication Facility operator(s) requests the trench be widened

The Contractor shall develop a method, satisfactory to the Communication facility operator, to capture the utility facility within the proposed trench. In addition, the contractor shall develop a support method satisfactory to the facility operator and consistent with the Contract drawings. The contractor shall then be permitted to widen the proposed trench in order to excavate around the Communication facility. Refer to Sketch CET 330B. This special care excavation denoted as Area 'A' shall be done with a combination of hand, and hand and machine excavation as described in (1) above. Prior to starting work the Contractor shall notify and obtain the approval of the Resident Engineer for trench modification

(2.2) Communication Facility operator(s) requests the trench and/or sheeting be modified

The Contractor shall develop a method, satisfactory to the facility operator, to exclude the Communication facility from the proposed trench and sheeting. The contractor shall, as part of his investigation, obtain the approval of the NYC Resident Engineer for his proposed sheeting modification. If deemed feasible by both the utility operator and the Resident Engineer the Contractor may proceed.

Refer to Sketch CET 330C.

D. Method of Measurement

(1) Paralleling Communication facilities lie completely in the proposed trench

The contractor shall be paid per Linear Foot (L.F.) of trench actually excavated to the limits directed and to the satisfaction of the Communication facility operator(s).

(2) Paralleling Communication facilities lie adjacent to proposed trench and Contractor modifies trench

(2.1) Communication Facility operator(s) requests the trench be widened

The contractor shall be paid per Linear Foot (L.F.) of trench actually excavated to the limits directed and to the satisfaction of the Communication facility operator(s).

(2.2) Communication Facility operator(s) requests the trench/sheeting be modified

The Contractor shall be paid per Linear Foot (L.F.) of trench/sheeting modified, to the limits directed and to the satisfaction of the Communication facility operator(s).

E. Price to Cover

The price shall include the cost of all labor, material, equipment, insurance, and incidentals necessary to completely expose, support, maintain, protect and accommodate the integrity of the Communication utility without disruption of service to the utility customers and in accordance with contract documents, associated maintenance of traffic and traffic plates and the modification of sheeting method and means, the cutting, breaking and removal of various thickness of surface and base pavement beyond the limits of the contract bid items, the excavation by hand to expose existing structures, the furnishing, placing and tamping of backfill when vertical and/or horizontal adjustments are required. The price shall also include the cost of: supports, slings and beams installed for Communication utility support; additional supports necessary for multiple facilities that may require their support to be modified, changes of sheeting method and configuration where necessary to accommodate the Communication utility and any changes to the contractor's proposed or standard method of operation; installation of new sewer, water, catch basin chute connection pipes and associated house connections under the Communication utility; (including the removal of any abandoned existing facilities to be removed under the City Contract as shown on the Contract Drawings) a combination of hand and hand and machine excavation within the zone of protection, backfilling and compacting around, over, under and between the zones of protection of the utility; and removal of sheeting around the utility, cost of any temporary pavement and the cost of any impact to the maintenance and protection of traffic. The price shall also cover any additional excavations, including hand and hand and machine excavations under and in between zones of protection for single and multiple Communication utility; tunneling;

additional pipe cutting and joining; removal of existing city facilities; snaking and/or in-between utility facilities and other existing structures.

Where the facility operator has determined that additional excavation is required for the horizontal and/or vertical adjustment required beyond the trench limits, the price will also cover the cost of: breaking out, removal and disposal of plain or reinforced concrete encasement and conduits, replacement with field split, split and solid conduits, adapters, clamps, straps and couplings, unloading and storage of the same, furnish and install concrete encasement, supports, slings and beams for Communication utility support, changes of sheeting method and/or configuration when required and where necessary to accommodate the utility during all phases of contract work, cost of any additional excavation and restoration, both temporary and permanent, any and all lost productivity costs related to installation of proposed City facility, and removal of sheeting around the utility and all else necessary and required to complete the work. The price shall also include any additional cost arising from the contractor's loss of productivity, bonus or delay incentives, weather related losses, time delays or any changes to the contractor's standard or proposed methods due to the modification of trench measurements to accommodate the utility.

F. <u>References</u>

1. Sketches CET 300A, 300B and 300C
2. NYS Industrial Code Rule 753
3. NYC Standard Water Main Specification
4. NYC Standard Sewer Specification

CET 331E - TRENCH EXCAVATION FOR WIDENING CITY TRENCHES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to widen a city trench.

The additional width shall be determined by the facility operator in order to accommodate the interferences. The work shall be performed in accordance with the specifications, and at the directions of the facility operator(s).

B. Materials

All materials necessary to excavate and prepare trenches shall be supplied by the Contractor.

C. Methods of Construction

The Contractor shall sawcut, break and remove various thickness of surface and base pavement, excavate by hand to expose, support and protect all utility facilities within the trench and then furnish and tamp backfill after work has been completed by the parties indicated under other Sections. The facility operator(s) shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. The additional width of the trench shall be as directed by the facility operator.

D. Method of Measurement

The Contractor shall be paid per cubic yard (C.Y.) of additional trench width actually excavated to the limits directed and to the satisfaction of the facility operator(s). When two or more utility facilities require this additional width of city trench, the facility operators shall jointly determine the percentage of ownership of the trench.

E. Price to Cover

The price for excavation shall include the cost of all labor, materials, equipment, insurance, and incidentals necessary to completely expose, support and protect and maintain the integrity of the facilities without disruption of service to the customers and in accordance with the Contract Documents, associated maintenance of traffic, and traffic plates and sheeting that may be required, sawcut, break and remove various thickness of surface and base pavement, excavate by hand to expose existing structures, furnish, place and tamp backfill after required vertical and/or horizontal adjustments have been completed under other Sections. Any required removing, trucking, storing, and disposing of material shall be deemed included in the unit price. The price shall also include the cost of providing temporary pavement restoration. Permanent pavement restoration shall be paid under other CET items. The price shall also include the cost of locating and supporting and protecting all utilities encountered including slings and beams installed for utility support when required. This item shall include all costs associated with finding and connecting all service taps. This item will not be paid in conjunction with any other CET items such as CET 300, CET 301, CET 330E and CET 330T. All costs associated with special care excavation and / or support of utilities shall be deemed included in this item.

(NO TEXT ON THIS PAGE)

CET 350 – OVERHEAD ACCOMMODATION PROTECTION OF OVERHEAD FACILITIES, POLES AND APPURTENANCES

A. Description

The Contractor shall provide all supervision, labor, materials, tools, equipment and incidentals required to perform its work in the presence of overhead utilities, including, but not limited to, Electric Facilities (primary, secondary and service connections), telephone facilities, cable television facilities, fiber optic communications facilities, utility poles and equipment on the poles and related appurtenances. These utilities are subsequently referred to in this specification as "overhead facilities". Tree pruning and removal work under CET 352 and CET 353 as well as utility pole supports under CET 351 are not included in this specification.

B. Materials – N/A

C. Method of Construction

The Contractor shall inspect the site prior to bidding and shall utilize sketches CET-350A-1, CET-350B-1, CET-350C-1 to evaluate the potential impact, if any, of overhead facilities upon performance of the work. The Contractor shall employ a method of operation, including use of appropriate equipment and tools that will enable him to maintain adequate clearances from the overhead facilities during all phases of construction. The Contractor is responsible for performing the work in accordance with all applicable Federal, New York State and Local regulations. The Contractor and/or his agents shall be solely responsible for damages to any overhead lines and appurtenances due to failure to comply with applicable rules, procedures, and practices.

D. Method of Measurement

The quantity to be measured for payment shall be a lump sum measurement to complete the work in the presence of overhead facilities.

E. Price to Cover

The price shall be a lump sum for all supervision, labor, materials, tools, equipment and incidentals required to perform the work in the presence of overhead utilities and to maintain adequate clearance from the overhead facilities during all phases of construction. The price includes, but is not limited, to modification of any methods of operation, use of appropriate equipment, maintenance of traffic, extended performance, loss of productivity, protective measures, delays, change in sequencing and scheduling, and any other costs that may be incurred by the Contractor. Partial payments shall be made in proportion to the percentage (%) of contract completion as determined by the facility operator.

F. References

1. New York City DDC Protocol for Implementation of Working Near Con Edison Energized Overhead Electric Distribution Systems
2. Con Edison Overhead Electric Condition Report included with contract plans
3. Guidelines for Working Near Con Edison Energized Overhead Electric Distribution Systems
4. Copy of the OSHA Letter dated August 9, 2004
5. Sketch CET-350A-1
6. Sketch CET-350B-1
7. Sketch CET-350C-1

New York City DDC Protocol for Implementation of Working near Con Edison Energized Overhead Electric Distribution Systems

The following sequence of events shall be followed so that communication of required information can be provided to address safety concerns without adverse impact to the project while working near Con Edison Energized Overhead Electrical Distribution Systems.

Section U Projects

1. NYC DDC and Con Edison will consider the impact of the Overhead Electrical Distribution System during the design phase. The Con Edison representatives should come to the alignment meeting with an evaluation of all overhead facilities and be prepared to discuss these impacts so that changes can be made to the City design if necessary.

2. After the alignment meeting, Con Edison will submit a Condition Report/Drawing for inclusion with the Section "U" bid package. The Condition Report/Drawing will provide an assessment of all overhead wires. The assessment will be dated and include but not limited to voltages, closest approach distance, repair, relocation, shielding and/or de-energizing of all overhead wires. The contract will include a statement that the Contractor has reviewed the Condition Report/Drawing for this project and has determined that the work can be performed as long as the Condition Report/Drawing is met.

3. Upon identification of the "apparent low bidder" the NYC DDC shall notify Con Edison of the pending award.

4. After the award, arrangements for a field walk will be made between the contractor, Con Edison, and the DDC Engineer-In-Charge (EIC). The field walk will be scheduled by the EIC and must take place before any contract work starts.

5. During the field walk the contractor will identify the sequence of the contract work activities, estimated timing of when the contractor will be working in specific areas, type of equipment, and other pertinent information so that the proper course of action by both contractor and Con Edison can be taken.

6. Con Edison will be required to inform the contractor and DDC of any sequencing they may require as a result of the field meeting before the contract order to work date.

7. Negotiation between Con Edison and the contractor will attempt to resolve how the project will be conducted and the best course of action to be followed for safety concerns while minimizing delays and costs.

8. Section "U" dispute resolution protocol will be followed if Con Edison and the contractor cannot reach agreement.

9. Con Edison will submit in writing the criteria and the updated, if required, Condition Report/Drawing for the project to the contractor and the EIC, before the contract order to work date. Con Edison can amend in writing the criteria and the Condition Report/Drawing at any time.

10. In the event Con Edison does not submit the criteria and Condition Report/Drawing in writing to DDC and the contractor, the EIC will notify the A/C of Construction. The A/C will issue an "Order-Out" notice to Con Edison for all overhead electric facilities that fall within the minimum distance of 10 feet from the accepted contractor's means and method of construction. The contractor will proceed if possible with the contract work and stay a minimum distance of 10 feet from all Con Edison overhead electric facilities until Con Edison provides written final criteria and updated Condition Report.

11. In the event the DDC resident engineer observes noncompliance by the contractor, the resident engineer will immediately notify the contractor and Con Edison of the condition. If the contractor does not comply the resident engineer will issue a stop work order for the operation.

12. During the course of the project any further clarification requested by the contractor or DDC (if required) shall be made in writing. Con Edison will provide a response within 5 working days from receipt of the request.

Consolidated Edison Company of New York
Guidelines for Working near Energized Overhead Electric Distribution Systems

Disclaimer: *In all cases no guidance given within this document is intended to replace, conflict with, or override any current OSHA, Federal, State or local laws, rules and regulations. In the event of a conflict between this document and any such law, rule, or regulation, the law, rule or regulation must be followed.*

This document is only a general guideline and should not be used as the procedure to allow construction operations to proceed around energized overhead electric distribution facilities. The information provided shall be used by the Contractor to determine the appropriate methods for construction on each project.

Purpose
To provide additional guidance to facilitate the coordination and performance of New York City Department of Design and Construction projects that are performed in areas serviced by Con Edison overhead electrical distribution systems.

Introduction
This General Guideline Document contains practices for working near energized Con Edison overhead electrical system conductors or equipment. It applies to construction operations that could cause employees or equipment to contact or enter into dangerous proximity to energized overhead electrical systems.

When working near energized overhead electrical lines or equipment, appropriate measures shall be employed to maintain required clearances and avoid contact with such lines or equipment.

Two important assumptions must always be made: 1) overhead electric lines are "live" (energized); and 2) carry 50 volts or more. Electrical lines can only be considered "dead" (de-energized) when verified as such, by Con Edison.

When there is any question about the nature, type, voltage and location of energized electrical lines or equipment within the geographical limits of the NYC DDC project work, Con Edison must be notified in advance of the work. Under no circumstance shall the contractor be permitted to connect or tie off other utility cables and wires, such as telephone, cable TV and fire alarm, to the Con Edison overhead facilities.

Con Edison Overhead Electrical Distribution Systems
The Con Edison overhead electric distribution system consists of two voltage classifications. They are the Primary System and the Secondary System. The primary system has voltages in excess of 2000 volts AC between any single conductor and ground, and a voltage differential greater than 4000 volts between any pair of conductors. Secondary systems have voltages ranging from 120 volts to 477 volts and normally service streetlights, traffic signals, and provide power to customer premises.

Primary Systems

Primary system conductors are found at the upper part of the poles and are connected to step down transformers that provide lower secondary system voltage to customers. The primary conductors may be covered or uncovered (bare) wire. The covering that may be present is designed to provide system protection against incidental contact with nearby trees and is not intended to offer any personal protection or insulating value against electrical hazard. Con Edison considers this cable "un-insulated" for the purpose of providing safe working distances and protection of personnel or equipment. Therefore, no personnel or equipment shall come within 10 feet of the closest conductor.

The other type of primary overhead electrical distribution system that Con Edison operates utilizes an "aerial cable". This cable is underground type cable that is installed on messenger wire, is electrically insulated, and has an exterior metallic sheath that is grounded. The contractor should maintain a clearance of 3 feet from these facilities.

Secondary Systems

Secondary systems throughout the Con Edison service area are typically 120 volts per conductor. These conductors are normally found on poles above the telephone cables and cable TV wires. They provide power to customer service points through several configurations that may consist of single or multiple conductors.

The secondary systems and the service connections ("service drops") may have cables that are covered or uncovered. Precautions similar to those employed for primary conductors shall be utilized. All efforts shall be made to maintain a clearance of 10 feet around these wires.

Primary and Secondary Risers

The contractor may encounter locations where there is a transition of cable systems from overhead to underground. These conductors are insulated and are housed in conduit that acts as a barrier. In these cases the contractors' personnel and equipment are to avoid contact with these facilities.

Closer Approach Distances

Primary Systems – Each project will include a Condition Report/Drawing that will specifically state the maximum approach distances and the methods to be employed by Con Edison to permit these closer approach distances. Methods may include providing adequate temporary insulation, de-energizing, or relocation of the wires or a combination of any of the three alternatives. If the installation of temporary insulation is the selected alternative, the temporary insulation will have a design value that will be commensurate with the voltages involved. The contractor will be required to maintain a maximum working distance whenever physically possible but no less than 3 feet as a minimum. The 3 feet minimum is intended to provide a "margin of safety" for operator error. Should the condition report not permit closer approach distances then the contractor will be required to maintain the aforementioned 10-foot clearance.

Secondary Systems and Services - Each project will include a Condition Report/Drawing that will specifically state the maximum approach distances and the methods to be employed by Con Edison to permit these closer approach distances. If it is ascertained that the wires are covered with intact insulation, an exclusion zone of 3 feet will be established. This zone will be established as a "margin of safety" to preclude contact between the contractors equipment and the secondary/service conductor. Under no circumstances shall the contractor personnel or equipment come in contact with the wires. Should the condition report not permit closer approach distances then the contractor will be required to maintain the aforementioned 10-foot clearance.

U.S. Department of Labor

Occupational Safety and Health Administration
Washington, D.C. 20210

Reply to the Attention of:

AUG - 9 2004

Mr. Mathew McFarland
Section Manager
Consolidated Edison Company
of New York. Inc.
4 Irving Place
New York, N.Y. 10003

Dear Mr. McFarland:

This is in response to your June 11, 2004, letter to the Occupational Safety and Health Administration in which you ask for an interpretation of section 1926.550(a)(15).

We have paraphrased your questions as follows:

Question (1): *Is preventing electric shock or electrocution of employees the intent of section 1926.550(a)(15)?*

Answer

29 CFR 1926.550(a)(15) states:

> Except where electrical distribution and transmission lines have been deenergized and visibly grounded at point of work or where insulating barriers, not a part of or an attachment to equipment or machinery, have been erected to prevent physical contact with lines, equipment or machines shall be operated proximate to power lines only in accordance with the following:...[Emphasis added].

Preventing electric shock and electrocution are the purposes of the requirement.

Question (2): *Some electrical distribution or transmission lines consist of an electrical conductor with a manufacturer applied coating of insulation. In some cases that insulation is rated with a dielectric strength sufficient to prevent electrical contact. If this insulation remains intact, would this be an insulated barrier as described in section 1926.550(a)(15)?*

Answer

Under 1926.550(a)(15), one of the options for complying with the provision is to use an "insulating barrier." The answer to your question – whether the factory-installed insulation on the conductor is an "insulating barrier" – depends on two factors: (1) whether the employer has sufficient information to confirm that the factory-installed insulation is sufficient to prevent the passage of current and is intact, and (2) whether, in light of the circumstances (including the type of equipment and tools being used) it is reasonably foreseeable that the insulation would be damaged while doing the work.

Typically, the type of insulation you refer to is found on some secondary lines (lines carrying nominal voltages of 480 V or less). In most cases the employer will not be able to determine if such a line has sufficient insulating properties (both with respect to the type of insulation and its condition) to prevent electric shock and electrocution without consulting with the utility owner/operator.

Damage to the insulation must not be reasonably foreseeable

If the employer determines from the utility owner/operator that the factory-installed insulation on such a line has sufficient insulating properties to prevent electric shock and electrocution, the employer must then determine if it is reasonably foreseeable that the insulation would be damaged while doing the work. This assessment must be based on an evaluation of the tools and equipment being used and, if they were to come in contact with the line, the likelihood that the insulation would be cut or otherwise compromised. Reliance on the insulation is permitted if the insulating properties are sufficient and such damage is not reasonably foreseeable.

However, at voltages of more than 480 V, where there is factory-installed insulation on the conductor, in most cases even slight damage could result in shock/electrocution. Consequently, for these lines, the factory-installed insulation may not be suitable for meeting this requirement. In those situations an outer covering or external insulating barrier in addition to the factory-installed insulation would have to be used to meet the insulating barrier requirement.[1]

Question (3): *Scenario: an electrical distribution or transmission line has either a sufficient (and undamaged) factory-installed insulation as described in the previous question, or a separate, insulating barrier (such as line hose, line guards, etc.) that has been applied in the field. The minimum approach distance under 1926.550 (a)(15) is 10 feet. Earth moving equipment, such as a backhoe, is being used. Such equipment is typically capable of knocking down power lines (or even a utility pole). Is it permissible in such circumstances for such machinery to work closer than 10 feet to the energized line?*

Answer

Earthmoving equipment such as the equipment you describe is typically capable of knocking down power lines. Nonetheless, 1926.600(a)(6) of the *Motor Vehicles, Mechanized Equipment, and Marine Operations* standard states:

> All equipment covered by this subpart shall comply with the requirements of section 1926.550(a)(15) when working or being moved in the vicinity of power lines or energized transmitters.

[1] A type of insulated cable for lines over 480 V that typically does have sufficient insulation, and would not need a field-added insulated barrier, is a type that is, in effect, underground cable which is continued into the overhead system ("aerial cable"). It is supported by a "messenger system" (usually rings that hang from a steel wire). This cable has an internal conductor, surrounded by insulation fully rated for the voltage, which in turn is surrounded by an outer covering. However, as with all lines, it is essential that the employer consult with the utility owner/operator to determine if the type and condition of the insulation and outer covering is sufficient.

By its terms, 1926.600(a)(6) permits earthmoving equipment to work within the minimum approach distance of an energized power line as long as the precautions specified in 1926.550(a)(15) are met. As explained in questions (1) and (2) above, one of the options for complying with 1926.550(a)(15) is to use an insulating barrier. Therefore, the purpose of the insulating barrier is to prevent energization of the earthmoving equipment from touching or coming too close to the energized conductor – not to prevent the line from being knocked down.

Whether the factory-installed insulation and outer covering or a line hose/guard is sufficient for purposes of complying with these provisions will depend on whether it is reasonably foreseeable that they will prevent energization of the machinery. The assessment must be made in light of the specific circumstances, including the type of protective covering used[2], the position of the machinery (i.e., does the machinery as used present pinch points to the line?) and type of machinery surfaces involved (i.e., whether the surfaces are sharp, rounded, etc.).

In light of the above discussion, 1926.600(a)(6) does not address the hazard of shock/electrocution from machinery knocking down a power line. Under Section 5(a)(1) of the Occupational Safety and Health Act, employers are required to protect employees from recognized hazards with feasible means of protection. In the type of situation you describe, the employer must institute measures designed to protect against the line being accidentally knocked down. The measures necessary will vary depending on the circumstances. Examples of such measures may include one or more of the following: instructing the equipment operator on precise routes for the machine's operation, use of warning flags, use of a spotter, positioning equipment to minimize the risk of contact, and similar precautions.

Sincerely,

Russell B. Swanson

Russell B. Swanson, Director
Directorate of Construction

NOTE: OSHA requirements are set by statute, standards and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA's interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at http://www.osha.gov.

[2] The fiberglass type line hose/guard is designed to protect the line from brushing-type contact. The rubber type line hose is less resistant to cutting-type contact then the fiberglass type.

CET 351 - UTILITY POLE SUPPORTS

A. Description

This section describes the temporary supports for utility poles at locations directed by the facility operator(s), in order to maintain such poles in their existing upright position without disturbing attached wires and equipment. The Contractor shall provide all labor, material, equipment, insurance, and incidentals required to construct, install and maintain an effective support system that will meet the stated objective.

B. Materials – N/A

C. Method of Construction

Where directed by the utility representative, the Contractor shall furnish, install and remove utility pole supports and maintain utility poles as shown on Sketch CET 351. Alternate methods proposed by the Contractor will be permitted if approved by the facility operator.

D. Method of Measurement

The quantity of utility pole supports to be measured for payment shall be the number of utility poles supported. The Contractor will be paid only once for each utility pole supported and maintained no matter how many different construction operations have an impact on the pole.

E. Price to Cover

The price shall cover the cost of all labor, material, equipment, insurance, and incidentals necessary to furnish, install, maintain and remove utility pole supports to completely support, maintain, protect, and accommodate the integrity of utility poles without disruption of service to customers. The price bid shall also include all additional impact cost associated with working around utility pole supports, poles and appurtenances.

Separate payment will be made for the protection of Overhead Facilities under the Item "Overhead Accommodation" (CET-350).

F. References

1. Sketch CET-351
2. CET-350

(NO TEXT ON THIS PAGE)

CET 352E/352T – SPECIAL CARE OPERATIONS FOR TREE REMOVAL

A. Description

Under this Section, the Contractor shall be required to modify work methods of tree removal in order to maintain, protect and accommodate the integrity of overhead electric (CET352E) and telephone (CET 352T) utility lines where existing, as directed by the utility operator(s).

B. Materials – N/A

C. Method of Operation

The Contractor shall exercise extreme caution when removing trees where their sway during removal might cause damage to overhead electric and telephone utility lines, as determined by the utility operator(s). Exercising extreme caution shall mean the careful clearing of branches over, under and around overhead electric and telephone utility lines prior to removal of trees and the topping of trees as may be necessary to avoid damage to utility lines.

All equipment, methods, and maintenance and protection provisions shall require full authorization by the utility operator(s). The Contractor is warned that overhead utility lines are electrified and require equipment used in their vicinity to be isolated from the ground.

D. Method of Measurement

The quantity of "Special Care Operations for Tree Removal" to be measured for payment shall be the number of trees actually removed during the Contract in accordance with these specifications.

E. Price to Cover

The prices for "Special Care Operations for Tree Removal Work" shall be a unit price for all tree size groups, equal to the incremental cost difference of all labor, materials, equipment, insurance, and incidentals required to maintaining, protecting, and accommodating the integrity of existing overhead utilities during the performance of tree removal operations (under Contract Item 4.16 AA, 4.16 AB, 4.16 AC, 4.16 AD, 4.16 ADE or 4.16 AE) where the felling of said tree may cause damage to existing overhead utility lines as determined by the utility operator(s); all in accordance with the plans, the specifications and the directions of the utility operator(s).

Payment for all work specified herein shall be made separately by each utility that is affected by the tree removal and shall be on a one-time basis only.

F. References

1. N/A

(NO TEXT ON THIS PAGE)

CET 353E/353T – SPECIAL CARE OPERATIONS FOR TREE PRUNING

A. Description

Under this Section, the Contractor shall be required to modify work methods of tree pruning in order to maintain, protect and accommodate the integrity of overhead electric (CET353E) and telephone (CET353T) utility lines where existing, as directed by the utility operator.

B. Materials – N/A

C. Method of Operation

The Contractor shall exercise extreme caution when pruning trees where the sway of branches during pruning might cause damage to overhead electric and telephone utility lines, as determined by the utility operator. Exercising extreme caution shall mean the careful pruning of branches over, under and around overhead electric and telephone utility lines so as not to cause damage to existing utility lines.

All equipment, methods, and maintenance and protection provisions shall require full authorization by the utility operator(s). The Contractor is warned that overhead utility lines are electrified and require equipment used in their vicinity to be isolated from the ground.

D. Method of Measurement

The quantity of "Special Care Operations for Tree Pruning" to be measured for payment shall be the number of trees actually pruned during the Contract in accordance with these specifications.

E. Price to Cover

The contract prices bid for "Special Care Operations for Tree Pruning" shall be a unit price for all tree size groups, equal to the incremental cost difference of all labor, materials, equipment, and incidentals required to maintaining, protecting, and accommodating the integrity of existing overhead utilities during the performance of tree pruning operations (under Contract Item 4.18 A, 4.18 B, 4.18 C or 4.18 D) where the pruning of said trees may cause damage to existing overhead utility lines as determined by the utility operator(s); all in accordance with the plans, the specifications and the directions of the facility operator.

Payment for all work specified herein shall be made separately by each utility that is affected by the tree pruning and shall be on a one-time basis only.

F. References

1. N/A

(NO TEXT ON THIS PAGE)

CET 400 - TEST PITS FOR UTILITY FACILITIES

A. Description

Under this section, the contractor shall furnish all labor, materials, equipment, insurance and incidentals necessary to excavate, sheet and maintain test pits at locations approved by the facility operator. Test pits shall be dug in order to ascertain exact locations, cover, and invert elevations, configurations, clearances, alignment and operating status of existing utility facilities. The contractor shall inspect jointly with the facility operator, utility facilities and other structures uncovered, take all relevant measurements and elevations as directed by the facility operator(s). Tests to determine operating status of utility facilities shall be performed by facility operator. The pits shall be covered with steel plates during non-working hours, and uncovered, as required, until the inspection work is completed. Testing of utility facilities may require a maximum of 4 hours. Then, the pits shall be backfilled with clean fill, and resurfaced with temporary pavement. All traffic shall be maintained and all safety measures as stipulated shall be complied with.

B. Materials – N/A

C. Methods of Construction

1. Excavation – Existing pavement to be removed shall be neatly cut along lines of removal with a saw or pneumatic tools or other approved equipment as directed by the facility operator which leaves a neat straight joint line along the juncture with subsequently replaced pavement. Excavation in the vicinity of utilities and other structures shall be performed using hand tools. Use of hand operated pneumatic and electric jackhammers will be permitted only for breaking pavement and removal of masonry, concrete and boulders, or as otherwise directed by the facility operator. All materials excavated from test pits shall be properly disposed of away from site by the contractor. Test pits shall be excavated at locations as directed by the facility operator. All test pits shall be excavated to a depth and size necessary to locate the existing facilities. All facilities that are encountered during the excavation of the test pit shall be supported and protected in a manner suitable to the facility operator. Sheeting shall be used when depth of excavation exceeds five feet. The sheeting required should be furnished and installed in full compliance with the State of New York and Federal Safety Codes requirements and as specified in contract, whichever is more stringent.

Care shall be taken that no existing utility facilities or other structures are broken or damaged. All broken or damaged facilities shall be reported immediately to facility operator who shall decide whether such facilities shall be repaired or replaced by company forces or by City contractor. Contractor shall excavate all material encountered, including large masses of concrete, cemented masonry and boulders, as directed by the facility operator. Any type of excavation protection used shall satisfy the following:

- Industrial Code Rule 753.
- Prevent injury to workers and the public, and avoid damage to existing utility facilities and structures, and to pavements and their foundations, from caving or sliding banks within the excavation.

Should it become necessary, as determined by the facility operator, to enlarge any test pit in any dimension after sheeting has been placed, the contractor shall remove portions of the sheeting, as necessary, enlarge the test pits as directed, and replace the sheeting without additional compensation for this work other than for the additional volume of material excavated.

2. Maintenance of Test Pits - Excavated test pits shall be maintained free of debris and kept dry by the contractor in order to permit the inspection and measurements and to determine the locations of facilities. In order to accomplish this, contractor shall, upon completion of excavation and placement of sheeting (if depth greater than five feet), furnish and install adequate steel plates and posting over the excavated pits and shall temporarily remove all equipment debris and workers, and relocate barricades in order to open the full width of street to traffic during non-working hours. The contractor shall then, at no additional cost, relocate such barricades barrels, cones and other warning devices and remove steel plates, as and when directed by the facility operator to facilitate the inspection of exposed facilities. When work is being performed and the pits are not covered with steel plates, the contractor shall provide complete and safe access to the test pits as may be required, and he shall provide construction barricades and maintain traffic at all times as shown or as directed by the facility operator. Upon completion of test pit inspection by the facility operator, the pit shall be backfilled by the contractor in accordance with Contract requirements and all backfill material shall conform to contract specifications for such purpose.

3. Pavement and Sidewalk Restoration - After backfilling is completed, the contractor shall construct a temporary pavement consisting of six inches (6") thick asphaltic concrete mixture in roadway areas or a two inches (2") thick asphaltic concrete mixture in sidewalk areas in order to maintain existing pedestrian and vehicular traffic. This temporary pavement shall be maintained until permanent replacement as specified in contract.

D. Method of Measurement

The quantity to be measured for payment shall be the number of cubic yards of material removed from within the limits of the pit dimensions as directed by the facility operator. The volume occupied by existing pipes or other structures remaining within the maximum payment lines will not be deducted from the total volume measured except, where the cross sectional area of these facilities exceeds four (4) square feet. As determined by the facility operator(s), the quantity measured for payment may be proportioned among the facility operator(s) involved in total volume excavated.

E. Price to Cover

The contract price bid per cubic yards for test pits shall cover all additional costs of labor, material, equipment, insurance and incidentals required to excavate test pits, including removal and disposal of excavated materials, sheeting, steel plating, backfill and compaction all in accordance with the specifications and at the direction of the facility operator. The price shall also cover the cost of providing temporary pavements and sidewalks. The price shall also include the cost of providing safe access to the excavation by facility operator for the performance of certain test to determine operating status of utility facilities prior to City work. The price shall also include the necessary support and protection of all utility facilities crossing, paralleling and /or encroaching the test pit excavation.

F. References

1. NYS Industrial Code Rule 753

(NO TEXT ON THIS PAGE)

CET 401 - TRENCH EXCAVATION FOR ADJUSTMENT OF UTILITY FACILITIES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to excavate by hand to locate and expose subsurface utilities encountered during construction in preparation for horizontal and vertical movement (covered by other Sections), and to support and maintain and protect the integrity of utility facilities including but not limited to:

1. Conduits;
2. Conductor(s) and/or cable(s);
3. Concrete Encased Conduit Bank(s);
4. Steel Pipe(s)

The trench to be excavated shall be determined by the size of the utility and the extent of adjustment required to avoid interferences as detailed on Sketch CET 402 A during all phases of contract work. The work shall be performed in accordance with the specifications, and at the directions of the facility operator(s).

B. Materials

All materials used to support and maintain and protect shall be similar to those indicated on Sketches CET 100 A and 100 A-1 and shall be supplied by Contractor and be approved by the facility operator(s).

C. Methods of Construction

The Contractor shall cut, break and remove various thickness of surface and base pavement, excavate by hand to expose, support and protect all utility facilities within the trench and then furnish and tamp backfill after work has been completed by the parties indicated under other Sections. The facility operator(s) shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the utility. Upon exposing the affected utilities sufficiently to determine relationships and/or clearances at the sole discretion of the facility operator(s), the Contractor shall be permitted to proceed with a combination of hand and machine excavation sufficiently to wingback all interferences of cable and conduit. The trench shall be adjusted so as to provide a nominal cover of 24" over the highest conduit. The width of the trench shall be as directed by the facility operator. The bottom of the trench shall be graded smooth and tamped to minimize initial settlement and to avoid "point" support of conduits. All stones projecting into the trench bottom shall be removed, and the voids backfilled before conduits are placed. Where streets are not to final grade, the cover shall be measured from the final grade, or the existing grade, whichever provides the deeper trench.

D. Method of Measurement

The Contractor shall be paid per cubic yard (C.Y.) of trench actually excavated to the limits directed as detailed in Sketch CET 402 A and to the satisfaction of the facility operator(s). The volume occupied by existing pipes or other structures remaining within the maximum payment lines will be deducted from the total volume measured. When two or more utility facilities requiring horizontal or vertical adjustment with different owners are in the same trench, the facility operators shall jointly determine the percentage of ownership of the trench.

E. Price to Cover

The price for excavation shall include the cost of all labor, materials, equipment, insurance, and incidentals necessary to completely expose, support and protect and maintain the integrity of the facilities without disruption of service to the customers and in accordance with the Contract Documents, associated maintenance of traffic, and traffic plates and sheeting that may be required, cut, break and remove various thickness of surface and base pavement, excavate by hand to expose existing structures, furnish, place and tamp backfill after required vertical and/or horizontal adjustments have been completed under other Sections. Any required removing, trucking, storing, and disposing of material shall be deemed included in the unit price. The price shall also include the cost of providing temporary pavement restoration. Permanent pavement restoration shall be paid under other items. The price shall also include the cost of locating and supporting and protecting all utilities encountered including slings and beams installed for utility support when required.

F. References

1. N/A

CET 401A - SPECIAL CARE PAVEMENT EXCAVATION FOR ADJUSTMENT OF UTILITY FACILITIES CONNECTED TO THE BASE PAVEMENT

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, and incidentals required to carefully excavate pavement to locate, expose, maintain and protect subsurface utilities within or connected to the pavement structure prior to roadway reconstruction or trench excavation. This work shall be performed to separate existing ducts and or cables to remain from the existing pavement. The facilities include, but are not limited to:

1. Conduits
2. Cables
3. Concrete encased or partially encased conduit banks or cables
4. Steel Pipes

located both beneath and within the existing pavement, base and/or sub base. The work shall be performed at the direction of the facility operator.

B. Material – N/A

C. Methods of Operation/Construction

Once the clearances have been verified by available records, Code *53* and/or information obtained from test pits, or any combination thereof, to the sole satisfaction of the facility operator, the Contractor shall exercise extreme caution, by utilizing appropriate methods of operation/construction, by employing specialized construction equipment and special operations and sequencing, within the area designated for protection and accommodation of utility facilities as shown on the plans or where the aforementioned utility structure is connected to or within the pavement structure, or as otherwise directed by the facility operator. The work shall incorporate the removal of temporary and existing pavement, base material, and a portion of the duct encasement. Trench width shall be no less than 1'6" to either side of the duct centerline alignment, all as determined by the facility operator. Pavement connecting the duct or cable shall be removed using hand operated tools using whatever methods necessary to protect the facility from damage, regardless of the pavement composition. Only excavators working off or from adjacent undisturbed pavement may assist the operation of moving the hand excavated material from the trench area. All equipment and methods and maintenance and protection provisions shall require approval by the facility operator.

D. Method of Measurement

The quantity of Special Care Excavation for Adjustment of Utility Facilities to be measured for payment shall be the number of cubic yards of (C.Y.) of Trench excavated. Modifications to work methods required adjacent to any existing structure/curb shall not be measured for payment and are deemed to be included in the price bid for this item.

E. Price to Cover

The contract price bid per cubic yard *(C.Y.)* for Special Care Excavation for Adjustment of Utility Facilities, shall include the cost of all labor, materials, time, equipment, and incidentals required for excavation and disposal of pavement, base and a portion of the duct encasement material, hand excavation, backfill and compaction, all together with necessary incidentals, in accordance with the directions of the facility operator. The price shall also cover the cost of providing temporary pavements and sidewalks. The price bid shall further include the cost of maintaining, protecting, and accommodating the integrity of utility facilities during the work within the areas designated on the plans or as directed by the facility operator.

Payment for all work herein specified shall be made on a one-time basis only; no payment for work herein specified shall be made for the same conduit or cable more than one time. No payments will be made under this item if the Contractor excavates beyond the limits specified in the contract, unless directed by the facility operator. In addition, work under this item may be paid in combination with other utility or facility accommodation items under other contract items.

F. References

1. NYS Industrial Code Rule 753
2. Sketch CET 401AC

CET 401AC - SPECIAL CARE PAVEMENT EXCAVATION FOR ADJUSTMENT OF CABLE TV FACILITIES CONNECTED TO THE BASE PAVEMENT

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, and incidentals required to carefully excavate pavement to locate, expose, maintain and protect subsurface cable TV facilities within or connected to the pavement structure prior to roadway reconstruction or trench excavation. This work shall be performed to separate existing ducts and or cables to remain from the existing pavement. The facilities include, but are not limited to:

1. Conduits;
2. Cables;
3. Concrete encased or partially encased conduit banks or cables;
4. Steel Pipes;

located both beneath and within the existing pavement, base and/or subbase. The work shall be performed in accordance with the plans, specifications and at the directions of the facility operator.

B. Material – N/A

C. Methods of Operation/Construction

Once the clearances have been verified by available records, Code 53 and/or information obtained from test pits (excavated under other contract items), or any combination thereof, to the sole satisfaction of the facility operator, the Contractor shall exercise extreme caution, by utilizing appropriate methods of operation/construction, by employing specialized construction equipment and special operations and sequencing, within the area designated for protection and accommodation of utility facilities as shown on the plans or where the aforementioned utility structure is connected to or within the pavement structure, or as otherwise directed by the facility operator. The work shall incorporate the removal of temporary and existing pavement, base material, and the duct encasement in a manner commensurate with CET 401AC sketches. Trench width shall be no less than 1'6" to either side of the duct centerline alignment, all as determined by the facility operator. Where two or more parallel ducts are less than five feet apart, the interspaced pavement and 1'6" to the outside of them shall be removed under this item. The outside limits of excavation shall be saw cut to the full depth of the pavement unless approved otherwise by the facility operator. Pavement connecting the duct or cable shall be removed using hand-operated/hand held tools using whatever methods necessary to protect the facility from damage, regardless of the pavement composition. Hand operated/hand held tools shall include jackhammers, chisels and sledgehammers. Only machine excavators and backhoes working off or from adjacent undisturbed pavement may assist the operation of moving the hand-excavated material from the trench area. All equipment and methods and maintenance and protection provisions shall require full authorization by the facility operator.

D. Method of Measurement

The quantity of Special Care Excavation for Adjustment of Cable TV Facilities to be measured for payment shall be the number of cubic yards of (C.Y.) of trench excavated. Modifications to work methods required adjacent to any existing structure/curb shall not be measured for payment and are deemed to be included in the price bid for this item.

E. Price to Cover

The contract price bid per cubic yard (C.Y.) for Special Care Excavation for Adjustment of Cable TV Facilities, shall include the cost of all labor, materials, time, equipment, and incidentals required for excavation and disposal of pavement, base and a portion of the duct encasement material, to include hand excavation, machine excavation, backfill, compaction, saw cutting, chiseling, chipping, jack hammering, maintenance and protection of traffic, temporary pavement, lighting, insurance and all necessary incidentals, in accordance with the plans, the specifications and as directed by the facility operator. The price bid shall further include the cost of maintaining, protecting, and accommodating the integrity of utility facilities during the work within the areas designated on the plans or as directed by the facility operator. Adjustment of the ducts after this work is complete is to be paid under other contract items, as applicable.

Payment for all work herein specified shall be made on a one-time basis only; no payment for work herein specified shall be made for the same conduit or cable more than one time. No payments will be made under this item if the Contractor excavates beyond the limits specified in the contract, unless directed by the facility operator. In addition, work under this item may be paid in combination with other utility or facility accommodation items under other contract items.

F. References

1. NYS Industrial Code Rule 753

CET 402 - HORIZONTAL AND VERTICAL ADJUSTMENT OF UTILITY FACILITIES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to adjust and support and protect and maintain and accommodate the integrity of utility facilities including but not limited to:

1. Conduit(s);
2. Conductors and/or Cables;
3. Concrete Encased Conduit Banks

The work shall be performed in accordance with the specifications, the attached Sketch # CET 402 A and at the directions of the facility operator(s).

B. Materials

All materials used to adjust and support and protect and maintain and accommodate the integrity of utility facilities shall be similar to those indicated on the standard Sketches CET 100 A & 100 A-1 and shall be supplied by the Contractor and be approved by the facility operator(s).

Materials used for replacing conduit(s) removed under this item shall be supplied by the facility operator(s) and installed by the Contractor and shall include but not be limited to the following:

1. Bends
2. Split and Solid Conduit(s)
3. Couplings and Adapters
4. Straps or plastic ties

Materials supplied by the facility operator shall be delivered to the contractor's designated storage area. Contractor shall comply with Sections 2 and 3 of the General Provisions for Private Utility Facilities.

C. Methods of Construction

Methods of construction shall include but not be limited to the following:

1) Removal and Support

   a. Break with hand held power tools, remove and dispose of plain or reinforced concrete encasement (excluding concrete conduit(s)).

   b. Break with hand held power tools, remove and dispose of conduit(s) enclosures and conduit that contain conductor(s) and/or cable(s).

   c. Support and protect conductor(s) and/or cable(s) as shown in Sketch 100A-1.

2) Adjust or Move Conductor(s) and/or cables(s) and support

   a. Cable shall be relocated horizontally and/or vertically as directed by the facility operator and in accordance with Sketch # CET 402 A.

   b. Support and protect conductors and/or cables as shown on Sketch 100 A-1.

3) Replacement, Encasement, Protection and Support

   a. Replace vacant and loaded conduit(s) with solid and/or split conduit(s) and adapters.

      i. Vacant Conduit - Repairs to conduits shall not be permitted. All damaged or impaired lengths of conduit(s) shall be removed and replaced with new conduit(s).

      ii. Loaded Conduit - Replacement of conduits which are removed from around existing conductors and/or cable(s) shall be accomplished with precast concrete conduit field split or split plastic. When a concrete conduit is field split for installation around existing conductor(s) and/or cable(s), either singly or in banks of conduit, it shall be secured with clamps or straps. Where split and solid plastic conduit is used, the conduit(s) shall be spaced 1½ inches from each other and the conduit bank shall be encased in 3200 PSI concrete to two (2) inches outside the limits of the plastic conduit. Encasement shall overlap a minimum of two (2) feet beyond the adapter. The concrete conduits, which are double male end types, shall be joined with a force fit plastic coupling. The plastic coupling, when used for split concrete conduit, shall be cut and wrapped around the ends. Plastic conduit shall be joined with plastic couplings.

      iii. Adapting - Joining new precast concrete conduit and plastic conduit to existing conduits of other diameters or material shall be done using single or multiple adapters (supplied by facility operator(s)).

   b. If due to subsurface conditions, the cover is less than 20" from finished grade, the duct shall be protected with steel plates furnished by the facility operator(s) and measured for payment under Item CET-403.

   c. Support and protect cable(s) and/or conductor(s) and conduit(s).

   d. Encase plastic conduit with concrete.

D. Method of Measurement

The quantity to be measured for breaking out conduits, removing concrete, moving, protecting and supporting conductors and replacing conduits with split and solid conduit, shall be paid for by the linear foot (L.F.) of each conduit. A linear foot of conduit shall be defined as one (1) single conduit measured along its longitudinal axis that has been broken out or moved from its original location either horizontally and/or vertically and measured in its final location between the limits shown on Sketch CET 402A. Where multiple separate conduits exist within a single enclosed unit similar to Murray or multiple tile conduits, each

separate conduit within the enclosed unit shall be measured for payment under this item. All conduits removed and not restored shall be covered for payment under the appropriate bid items for Removal of Abandoned Masonry for Utility Facilities and/or Removal of Abandoned Utility Conduits.

Each type of utility adjustment shall be paid for separately; the types of utility adjustments are defined as follows:

CET-402.1 Existing Occupied Concrete Encased Conduits Placed in Final Position without Concrete Encasement. (L.F.)

CET-402.1A Existing Occupied Concrete Encased Conduits Placed in Final Position with Concrete Encasement. (L.F.)

CET-402.2 Existing Occupied Non-Concrete Encased Conduits Placed in Final Position without Concrete Encasement. (L.F.)

CET-402.2A Existing Occupied Non-Concrete Encased Conduits Placed in Final Position with Concrete Encasement. (L.F.)

CET-402.V1 Existing Vacant Concrete Encased Conduits Placed in Final Position without Concrete Encasement. (L.F.)

CET-402.V1A Existing Vacant Concrete Encased Conduits Placed in Final Position with Concrete Encasement. (L.F.)

CET-402.V2 Existing Vacant Non-Concrete Encased Conduits Placed in Final Position without Concrete Encasement. (L.F.)

CET-402.V2A Existing Vacant Non-Concrete Encased Conduits Placed in Final Position with Concrete Encasement. (L.F.)

E. Price to Cover

The Contract price per linear foot (L.F.) of conduit shall cover the cost of all labor, material, equipment, insurance, and incidentals necessary to shift, adjust, support, protect, maintain and accommodate the integrity of utilities without disruption of service to the customers and in accordance with contract documents. The price bid shall also include the cost of: breaking out, removal and disposal of plain or reinforced concrete encasement and conduits, replacement with field split, split and solid conduits, adapters, clamps, straps and couplings supplied by facility operator(s); furnish and install concrete encasement, supports, slings and beams for utility support; changes of sheeting method and/or configuration when required and where necessary to accommodate the utilities during all phases of contract work; any impact associated with maintenance and protection of traffic; and removal of sheeting around the utilities, and all else necessary and required to complete the work. The support and protection of utilities crossings encountered while installing/removing the affected city facility shall be included in this CET item. No additional payment shall be made for utility crossings.

F. References

1. Sketches CET 100A and 100A-1
2. Sketch CET 402A
3. CET 403

CET 402T - HORIZONTAL AND VERTICAL ADJUSTMENT OF TELECOMMUNICATIONS FACILITIES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to adjust and support and protect and maintain and accommodate the integrity of utility facilities including but not limited to:

1. Conduit(s);
2. Cables and Air Pipe
3. Concrete Encased/Capped Conduit Banks

The work shall be performed in accordance with the specifications, the attached Sketch # CET 402 A and at the direction of the facility operator(s).

B. Materials

All materials used to adjust and support and protect and maintain and accommodate the integrity of utility facilities shall be similar to those indicated on the standard Sketches CET 100 A & 100 A-1 and shall be supplied by the Contractor and be approved by the facility operator(s).

Materials used for replacing conduit(s) removed under this item shall be supplied by and installed by the Contractor and shall include but not be limited to the following:

1. Bends
2. Split and Solid Conduit(s): PVC and Steel
3. Couplings and Adapters: PVC, Tile and Steel
4. Straps or plastic ties

PVC conduit and fittings shall be as supplied by American Pipe and Plastics, Type "C" or approved equal.
Steel Pipe and fittings shall conform to ASTM A53 Schedule 40
Tile to PVC adaptors shall be as supplied by American U-Tel or approved equal.

C. Methods of Construction

Lengths of "wing-back" shall be approved by the facility operator(s). All work performed prior to that approval shall be at the contractor's risk.

Methods of construction shall include but not be limited to the following:

1) Removal and Support

a. Break with hand held power tools, remove and dispose of plain or reinforced concrete encasement

b. Break with hand held power tools, remove and dispose of conduit(s) enclosures and conduit that contain conductor(s) and/or cable(s) except steel/Iron conduits, inner ducts and 1 ¼" to 1 ½" PVC "quad ducts. Breaking – "ringing and ripping" - of steel/iron conduits belonging to ECS shall be performed by ECS forces only. Contractor shall make safe the work area to accommodate the ECS forces.

c. Support and protect exposed conduits, cables, innerduct and airpipe as shown in Sketch CET 100A-1 and approved by the facility operator(s).

d. Facility operator(s) cables may require inspection, testing and encapsulation before they can be shifted. Contractor shall make safe the work area to accommodate these forces. Contractor shall be notified by the facility operator(s) of requirements before the conduits are broken-out.

2) Adjust or Move Conductor(s) and/or cable(s) and support

a. Cable shall be relocated horizontally and/or vertically as directed by the facility operator and in accordance with Sketch # CET 402 A.

b. Support and protect conductors and/or cables as shown on Sketch CET 100 A-1 and/or as directed by the facility operator(s).

3) Replacement, Encasement, Protection and Support

a. Replace vacant and loaded conduit(s) with solid and/or split conduit(s) and adapters.

i. Vacant Conduit - Repairs to conduits shall not be permitted. All damaged or impaired lengths of conduit(s) shall be removed and replaced with new conduit(s). The number of vacant conduits replaced shall be confirmed by the facility operator(s).

ii. Loaded Conduit - Replacement of conduits which are removed from around existing cable(s) or inner duct(s) shall be accomplished with split plastic (PVC) or split steel conduits as directed by the facility operator(s). Where split and solid plastic or steel conduit is used, the conduit(s) shall be spaced 1½ inches from each other. All split PVC shall be secured with plastic straps spaced at a maximum distance of eighteen (18") inches. Plastic conduit shall be joined

with plastic couplings. It may be feasible for Contractor to leave conduit intact and break conduit joint(s) to clear the interference. Contractor must replace broken joint.

iii. Adapting - Joining plastic conduit to existing conduits of other diameters or material shall be done using single or multiple adapters, (supplied by contractor).

b. If due to subsurface conditions, the cover is less than 20" from finished grade, the duct shall be protected with steel plates furnished by the facility operator(s) and measured for payment under Item CET 403.

c. Support and protect cable(s) and/or conductor(s) and conduit(s).

d. Encase all exposed conduit with concrete (f'c = 1200 to 1500 psi maximum) with slump commensurate to completely fill voids around conduits. Concrete encasement shall extend to two (2") inches beyond the limits of the duct bank vertically and horizontally.

D. Method of Measurement

The quantity to be measured for breaking out conduits, removing concrete, moving, protecting and supporting cables and replacing conduits with split and solid conduit, shall be paid for by the linear foot (L.F.) of each conduit replaced. A linear foot of conduit shall be defined as one (1) single conduit measured along its longitudinal axis that has been broken out or moved from its original location either horizontally and/or vertically and measured in its final location between the limits shown on Sketch CET 402 A. Where multiple separate conduits exist within a single enclosed unit similar to multiple tile duct, each separate conduit within the enclosed unit shall be measured for payment under this item. Quad PVC ducts produced as one unit shall be consider one duct for each quad unit. All conduits removed and not restored shall be covered for payment under the appropriate items for Removal of Abandoned Masonry for Utility Facilities and/or Removal of Abandoned Utility Conduits.

Each type of utility adjustment shall be paid for separately. The types of utility adjustments are defined as follows:

CET-402T.1 - Existing Occupied Concrete Encased Conduits Placed in Final Position without Concrete Encasement. (L.F.)

CET-402T.1A - Existing Occupied Concrete Encased Conduits Placed in Final Position with Concrete Encasement. (L.F.)

CET-402T.2 - Existing Occupied Non-Concrete Encased Conduits Placed in Final Position without Concrete Encasement. (L.F.)

CET-402T.2A - Existing Occupied Non-Concrete Encased Conduits Placed in Final Position with Concrete Encasement. (L.F.)

CET-402T.V1 - Existing Vacant Concrete Encased Conduits Placed in Final Position without Concrete Encasement. (L.F.)

CET-402T.V1A - Existing Vacant Concrete Encased Conduits Placed in Final Position with Concrete Encasement. (L.F.)

CET-402T.V2 - Existing Vacant Non-Concrete Encased Conduits Placed in Final Position without Concrete Encasement. (L.F.)

CET-402T.V2A - Existing Vacant Non-Concrete Encased Conduits Placed in Final Position with Concrete Encasement. (L.F.)

CET-402T.J1 - Existing Occupied Concrete Encased Conduits Placed in Final Position without Concrete Encasement (L.F.) in Which Only Conduit Joints are Broken Out and Conduits Remain Intact.

CET-402T.J1A - Existing Occupied Concrete Encased Conduits Placed in Final Position with Concrete Encasement (L.F.) in Which Only Conduit Joints are Broken Out and Conduits Remain Intact.

CET-402T.J2 - Existing Occupied Non-Concrete Encased Conduits Placed in Final Position without Concrete Encasement (L.F.) in Which Only Conduit Joints are Broken Out and Conduits Remain Intact.

CET-402T.J2A - Existing Occupied Non-Concrete Encased Conduits Placed in Final Position with Concrete Encasement (L.F.) in Which Only Conduit Joints are Broken Out and Conduits Remain Intact.

E. Price to Cover

The Contract price per linear foot (L.F.) of conduit under each item shall cover the cost of all labor, material, equipment, insurance, and incidentals necessary to shift, adjust, support, protect, maintain and accommodate the integrity of utilities without disruption of service to the facility operator's customers and in accordance with contract documents. The price bid shall also include the cost of: breaking out, removal and disposal of plain or reinforced concrete encasements and conduits, replacement with field split, split and solid

conduits, adapters, clamps, straps and couplings; furnish and install concrete encasement, supports, slings and beams for utility support; changes of sheeting method and/or configuration when required and where necessary to accommodate the utilities during all phases of contract work; any impact associated with maintenance and protection of traffic; and removal of sheeting around the utilities, and all else necessary and required to complete the work. The support and protection of utility crossings encountered while installing/removing the affected city facility shall be included in this CET item. No additional payment shall be made for utility crossings.

F. References

1. Sketches CET 100A and 100 A-1
2. Sketch CET 402 A
3. CET 403
4. American Pipe and Plastics, P.O. Box 577, Binghamton, N.Y. 13902
5. American U-Tel, 9760 Smith Rd., Willoughby, Ohio 44094

(NO TEXT ON THIS PAGE)

CET 403 - PLACING STEEL PROTECTION PLATES FOR UTILITY FACILITIES

A. Description

Under this Section, the Contractor shall place permanent Steel protection plates supplied by the facility operator(s) over utility facilities where directed by the facility operator(s).

B. Materials

Materials shall be supplied and delivered by the facility operator(s) to the job site or Construction Yard as directed by the Contractor.

C. Method of Construction

Steel protection plates shall be placed in accordance with the attached Standard Sketch # CET 403 A.

D. Method of Measurement

The quantity for payment shall be the area of permanent steel plating protection installed and measured in Square Feet (S.F.).

E. Price to Cover

The price shall cover the cost of all labor, material, equipment, insurance, and incidentals necessary to complete the work.

F. References

1. Sketch CET 403A

(NO TEXT ON THIS PAGE)

CET 404 - PIER AND PLATE METHOD OF PROTECTION FOR DUCTILE IRON WATER MAINS AND OTHER SHALLOW FACILITIES

A. Description

Under this section the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to protect ductile iron water mains that are installed with a cover of 24 inches or less crossing over various utility facilities. This section shall also apply for other facilities with shallow cover where protection plates are not sufficient and pier and plate method is required. The work shall be performed in accordance with the contract plans, specifications and at the direction of the facility operator.

B. Materials

The Contractor shall supply all material (concrete, beams, plates, etc.) necessary to provide the pier and plate method of protection as shown on BWS Standard Drawing No. 46464-Z.

C. Method of Construction

The Contractor shall provide pier and plate protection in accordance with BWS Standard Drawing No. 46464-Z. The Contractor shall support, maintain and accommodate the water main and all other utility facilities during the installation of the pier and plating components. The Contractor shall be solely and totally responsible for disturbances and/or any damages to such facilities.

D. Method of Measurement

The quantity to be measured for payment shall be the additional amount of square foot (S.F.) of steel plate required to be installed to protect ductile iron water mains crossing over utility facilities with a cover of 24 inches or less, or for other shallow facilities where the pier and plate method may be required, as directed by the Facility Operator.

E. Price to Cover

The price shall cover the cost of all supervision, labor, material, equipment, and incidentals necessary to construct the specified method of protection. The work shall also cover the cost to cut, break and remove additional pavement, additional excavation, special care excavation around utilities, sheeting, maintenance of traffic, traffic plates, and to furnish and install additional backfill and pavement restoration.

F. References

1. BWS Standard Drawing No. 46464-Z

(NO TEXT ON THIS PAGE)

CET 405 - EXCAVATION FOR INSTALLATION OF UTILITY FACILITIES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to excavate and maintain trenches for the installation of new Utility Facilities including but not limited to:

1. Conduits;
2. Non Cost Sharing Gas facilities;
3. Steam Mains;
4. Steel Pipe(s)

The trench to be excavated shall be determined by the size of the utility facility to be installed. The work shall be performed in accordance with applicable specifications, at the direction of the facility operator.

B. Materials

All materials used to excavate and prepare trenches shall be supplied by the Contractor and be approved by the facility operator.

C. Methods of Construction

1. Excavation – The Contractor shall saw cut and/or break and remove existing roadway which may include but is not limited to, asphalt, concrete and cobblestone, utilizing approved equipment that leaves a neat straight joint line along the juncture with subsequently replaced pavement. The Contractor shall be permitted to excavate utilizing a combination of machine and hand excavation, as field conditions warrant and as directed by the facility operator. The trench shall be adjusted so as to provide for a nominal cover of 24" over the new utility facilities or as required based on field conditions, applicable specifications, or as directed by the facility operator. The width of the trench shall be as directed by the facility operator. The bottom of the trench shall be graded smooth with a minimum cushion of 3 inches of sand or in conformance with applicable specification and be compacted, to minimize initial settlement and to avoid "point" support of new utility facilities. All stones projecting into the trench bottom shall be removed, and the voids backfilled before the new utility facilities are installed. Where streets are not to final grade, the cover shall be measured from the final grade, or the existing grade, whichever provides the deeper trench. Excavation in the vicinity of utilities and other structures shall be performed using hand tools. The contractor shall properly dispose of all materials excavated away from site. Size and location of excavation shall be as directed by the facility operator. Trenches shall be excavated to a depth and size necessary to facilitate the installation of the new utility facility and in conformance with the applicable specification. All existing facilities that are encountered during trench excavating shall be protected in a manner suitable to the facility operator. Tight sheeting shall be used, as required, based on field conditions and/or when the depth of excavation is equal to or greater than five feet. Skeleton type sheeting will not be permitted. The sheeting required shall be furnished and installed in full compliance

with the State of New York and Federal Safety Code requirements and in compliance with applicable specifications and/or as directed by the facility operator.

Care shall be taken that no existing utility facilities or other structures are broken or damaged. Contractor shall excavate all material encountered necessary to facilitate the installation of the new utility facilities, and as directed by the facility operator. Care should be taken to avoid damage to existing utility facilities and structures, and to pavements and their foundations, and to avoid caving or sliding banks within the excavation.

2. Maintenance of Trench Excavation - Excavated trenches shall be maintained free of debris and kept dry by the contractor. In order to accomplish this, contractor shall, upon completion of excavation and placement of sheeting (as required and/or if depth is equal to or greater than five feet), furnish and install adequate steel plates, as directed by the facility operator, and posting over the excavated trenches and shall temporarily remove all equipment debris and workers, and relocate barricades in order to open the full width of street to traffic during non-working hours, as required based on DOT requirements. The Contractor shall then, at no additional cost, relocate such barricades barrels, cones and other warning devices and remove steel plates, as and when directed by the facility operator to facilitate the installation of the new utility facility. When work is being performed and the excavations are not covered with steel plates, the Contractor shall provide complete and safe access to the trench as may be required, and shall provide construction barricades and maintain traffic at all times as shown or as directed by the facility operator. Upon completion of installation of the new utility facility, the trench excavation shall be backfilled by the contractor in accordance with Contract requirements and all backfill material shall conform to contract specifications for such purpose.

3. Pavement and Sidewalk Restoration - After backfilling is completed, the contractor shall install temporary pavement consisting of six inches (6") thick asphaltic concrete mixture in roadway areas or a two inches (2") thick asphaltic concrete mixture in sidewalk areas in order to maintain existing pedestrian and vehicular traffic. This temporary pavement shall be maintained until permanent replacement as specified in contract.

D. Method of Measurement

The quantity to be measured for payment shall be the number of cubic yards (C.Y.) of trench actually excavated as directed by the facility operator. The volume occupied by existing pipes or other structures will not be deducted from the total volume measured.

CET 405.1 Trench Excavations for installation of Utility Facilities with total depths less than five feet (C.Y.)

CET 405.2 Trench Excavations for Utility Facilities with total depths equal to or greater than five feet (C.Y.)

E. Price to Cover

The unit price bid for the various trench excavation items shall include the cost of all labor, materials, equipment, insurance, and incidentals necessary to completely expose, protect and maintain the integrity of the facilities without disruption of service to the customers and in accordance with the Contract Documents. The price shall also include, associated maintenance of traffic, and traffic plates and openings and closings of plates as may be required in order to provide access to trench, and installing, removing and maintaining tight sheeting that may be required, cut, break and remove various thickness of surface and base pavement, excavate by hand to expose existing structures, furnish, place and compact, in compliance with DOT requirements, clean backfill following installation of utility facility and/or required vertical and/or horizontal adjustments have been completed under other Sections. Any required removing, trucking, storing, and disposing of material shall be deemed included in the unit price. The price shall also include the cost of providing temporary pavement restoration. Permanent pavement restoration shall be paid under other items. The price shall also include the cost of locating and protecting all utilities encountered as required.

Sand backfill material shall be used around gas facilities and oil-o-static pipes and will be paid for under item CET 303.

F. References

1. CET 303

(NO TEXT ON THIS PAGE)

CET 406 - EXCAVATION FOR UTILITY STRUCTURE

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to excavate and maintain excavations for the installation and/or removal of Utility Structures including but not limited to:

1) Manholes
2) Service Boxes
3) Vaults
4) Splice Boxes

The size of excavation shall be determined based on the utility structure being installed and/or removed, under other contract items. The work shall be performed in accordance with applicable utility specifications, and/or at the direction of the facility operator.

B. Materials

All materials used to excavate and prepare excavations shall be supplied by the Contractor and be approved by the facility operator.

C. Methods of Construction

Excavation for Utility Structure – The Contractor shall saw cut and/or break and remove existing roadway which may include but is not limited to, asphalt, concrete and cobblestone, utilizing approved equipment that leaves a neat straight joint line along the juncture with subsequently replaced pavement. The Contractor shall be permitted to excavate utilizing a combination of machine and hand excavation, as field conditions warrant and as directed by the facility operator. The excavation shall be adjusted as directed by the facility operator. Excavation in the vicinity of utilities and other structures shall be performed using hand tools only. The Contractor shall properly dispose of all materials excavated away from site. Size and location of excavation shall be as directed by the facility operator. The excavation depth and size shall be adjusted to facilitate the installation and/or removal of the utility structure and in conformance with applicable utility specifications. All existing underground facilities that are encountered during excavating for the installation and/or removal of the Utility Structure shall be protected in a manner suitable to the facility operator. Tight sheeting shall be used, as required, based on field conditions and/or when the depth of excavation exceeds five feet. Skeleton type sheeting will not be permitted. The sheeting required shall be furnished and installed in full compliance with the State of New York and Federal Safety Codes requirements and in compliance with applicable utility specifications and/or as directed by the facility operator.

Contractor shall excavate all material encountered necessary to facilitate the installation and/or removal of the utility structures, and as directed by the facility operator. Care shall be taken to avoid damage to existing utility facilities and adjacent structures, and to pavements and their foundations, and to avoid caving or sliding banks within the excavation.

Maintenance of excavation to install and/or remove Utility Structures - Excavation shall be maintained free of debris and kept dry by the Contractor. In order to accomplish this, contractor shall, upon completion of excavation and placement of sheeting (as required and/or if depth of excavation is equal to or greater than five feet), furnish and install adequate steel plates, if required and as directed by the facility operator, and shall temporarily remove all equipment debris and workers, and relocate barricades in order to open the full width of street to traffic during non-working hours, in conformance with City DOT requirements. The Contractor shall then, at no additional cost, relocate such barricades, barrels, cones and other warning devices and remove steel plates, as and when directed by the facility operator to facilitate the installation and/or removal of the utility structure. When work is being performed and the excavations are not covered with steel plates, the Contractor shall provide complete and safe access to the excavation as may be required, and shall provide construction barricades and maintain traffic at all times as shown or as directed by the facility operator. Upon completion of installation and/or removal of the utility structure, the contractor shall furnish and install backfill and compact the excavation around the new structure in accordance with Contract requirements. All backfill material shall conform to contract specifications for such purpose.

Pavement and Sidewalk Restoration - After backfilling and compaction is completed, the Contractor shall install temporary pavement consisting of six inches (6") thick asphaltic concrete mixture in roadway areas or two inches (2") thick asphaltic concrete mixture in sidewalk areas, and in compliance with DOT requirements and as directed by the Facility operator. This temporary pavement shall be maintained, at no additional cost, until permanent replacement of roadway is installed as specified in contract.

D. Method of Measurement

The quantity to be measured for payment shall be the number of cubic yards (C.Y.) of material actually excavated and removed in order to facilitate the installation and/or removal of the utility structure and as directed by the facility operator. The volume occupied by existing pipes, conduits and cables in the excavation will not be deducted from the total volume measured.

E. Price to Cover

The unit price bid shall cover the cost of all labor, materials, equipment, insurance, and incidentals necessary to excavate and prepare area in order to install and/or remove utility structures. The unit price shall also include the cost to completely expose, protect and maintain the integrity of existing facilities without disruption of service to utility customers and in accordance with applicable contract documents. The unit price shall also include, associated maintenance of traffic, and traffic plates and openings and closings of plates as may be required in order to provide access to excavation, and installing, removing and maintaining tight sheeting that may be required, cut, break and remove various thickness of surface and base pavement, of various types, excavate by hand to expose existing structures, furnish, place and compact backfill after installation and/or removal of the utility structure. Any required removing, trucking, storing, and disposing of all materials shall be deemed included in the unit price. The unit price shall also include the cost of providing temporary pavement restoration and also include the cost of locating and protecting all utilities facilities encountered, as required. Permanent pavement restoration shall be paid under other contract items.

F. References

1. Applicable Utility Specifications

(NO TEXT ON THIS PAGE)

CET 410 – MASS EXCAVATION

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to mass excavate, while maintaining and protecting all subsurface facilities, at locations approved by the Facility Operator. The Contractor will encounter various underground facilities while performing the mass excavation and will be required to excavate over, under, adjacent to, around, in between and in close proximity of various congested configurations of multiple facilities. The facilities encountered may include but are not limited to:

1. Conduits
2. Water Mains
3. Conductors
4. Sewers
5. Concrete Encased Conduit Banks
6. Catch Basin Connections
7. Steel Pipes
8. House Services
9. Gas Facilities
10. Traffic Conduits
11. Steam Facilities
12. Manholes, Vaults, Structures
13. Oil-o-static Facilities
14. Transit Authority Facilities

The actual size to be mass excavated shall be determined based on test pit data and/or available utility records or other available documents and shall be performed in accordance with the contract plans (see mass excavation plan), specifications or as determined based on actual field conditions and solely at the direction of the facility operator.

B. Materials

All materials used to mass excavate and prepare trenches and to support and maintain and protect existing facilities, similar to those indicated on Sketches CET 100 A and 100 A-1, shall be supplied by the Contractor and be approved by the facility operator.

C. Methods of Construction

1 - Roadway Removal - Removal of the existing roadway pavement shall be completed prior to commencing with the mass excavation operation. The Removal of the existing roadway pavement shall be as per other applicable City contract items, as required.

2 - Excavation - Once the roadway pavement is removed, the Contractor shall excavate by hand only or, if field conditions allow and only if directed by the facility operator, utilizing a combination of machine and hand excavation. Alternate methods and/or a combination of methods to mass excavate shall be permitted if proposed by the

Contractor and approved by the facility operator. The excavation may be adjusted based on field conditions as directed by the facility operator. Excavation depth and size shall be determined in order to facilitate any required modification of utility facilities and in conformance with applicable specifications. Alterations to the Utility facilities that may be required, including but not limited to horizontal and/or vertical utility facility adjustments, removal of various conduits and pipes and/or the installation of new utility conduits and/or pipes shall be paid under other CET items and is not included in this item. Existing facilities that are encountered during mass excavating shall be supported and protected similar to those indicated on Sketches CET 100 A and 100 A-1 and in a manner acceptable to the facility operator and are deemed included in this item. Excavations in the vicinity of utilities and all other structures shall be performed using hand tools. The Contractor shall properly dispose of all materials excavated away from the job site.

Sheeting shall be used, as required, for excavation depths less than five feet, based on field conditions and as directed by the facility operator. Sheeting shall be installed for all excavation depths that are equal to or greater than five feet. The sheeting required shall be furnished and installed in full compliance with State of New York and Federal Safety Code requirements and in compliance with applicable specifications and as directed by the facility operator.

Contractor shall excavate all material encountered necessary to fully expose the utility facilities, and as directed by the facility operator. Care should be taken to avoid damage to existing utility facilities and structures, and to adjacent curbs, sidewalks, pavements and their foundations, and to avoid caving or sliding banks within the excavation.

Should it become necessary, as determined by the facility operator, to enlarge any excavation in any dimension after sheeting has been placed, the Contractor shall remove portions of the sheeting, as necessary, enlarge the excavation as directed, and replace the sheeting without additional compensation for this work other than for the additional volume of material excavated.

3 – Maintenance of Mass Excavation – Mass Excavations shall be kept free of debris and water and be maintained by the Contractor. The Contractor shall provide adequate maintenance and protection for vehicular and pedestrian traffic and may be required to furnish and install steel plates and/or provide other means necessary to adequately protect the underground facilities from damage during the mass excavation operation. The Contractor shall provide access to the mass excavation to the facility operator(s) and specialty contractors as directed by the facility operator. The Contractor, at no additional cost, may be required to temporarily remove all equipment, debris and workers, and relocate maintenance of traffic set-up including barricades, cones and other warning devices and install traffic plates and/or provide other means necessary in order to open the full width of street or any segment of the street or sidewalk to traffic, which may include but is not limited to full width decking, pontoons, recessed plating and/or other alternate methods proposed by the Contractor and approved by the facility operator, during working or non-working hours as required, based on DOT traffic stipulations or as directed by the governmental authority having jurisdiction. The Contractor shall at no additional cost, relocate such barricades barrels, cones and other warning devices and remove steel plates, as required and when directed by the facility operator. When others are performing work and the excavations are open, the contractor

shall provide complete and safe access to the excavation as may be required, and shall provide construction barricades and maintain traffic at all times as shown and as directed by the facility operator.

4 – Backfilling and Compaction - Upon completion of the work to the underground utility facilities, which may include but is not limited to modify, adjust, alter, remove, install, inspect and/or test, which may require the utilization of the facility operator's own forces or specialty contractors, the mass excavation may be backfilled utilizing special care operations including all hand or a combination of hand and machine operations as directed by the facility operator and in accordance with Contract requirements. The backfill material shall conform to contract specifications and based on the facility operator's specifications. Furnishing and installing backfill and compaction of the mass excavation shall be paid under other applicable City contract items, as required.

Areas around gas mains and oil-o-static facilities shall be backfilled with type 3/8 clean sand backfill, as directed by the facility operator and paid under item CET 303.

5 – Pavement and Sidewalk Restoration – Pavement and Sidewalk restoration of the mass excavation shall be under other applicable CET items, as required.

D. Method of Measurement

1 – Quantity - The quantity to be measured for payment shall be the number of cubic yards (C.Y.) of mass excavation area actually excavated, measured from below the roadway base, as directed by the facility operator. The volume occupied by existing pipes, including but not limited to conduits, cables, steel pipes, gas mains, steam mains or other structures encountered will not be deducted from the total volume measured for payment.

2 – Type – The unit type to be measured for payment is based on the average underground facility congestion as determined based on test pit data and/or available utility records or other available documents and found in the contract plans (see mass excavation plan), specifications and/or based on actual field conditions as determined by the facility operator.

Note: Only one measurement type will be permitted for each designated mass excavation area

Type .1 = Mass excavation with an average area occupied by utilities having a volume up to and including 20% of the total excavated volume, with maximum depths, measured from the top of roadway, less than five feet.

Type .2 = Mass excavation with an average area occupied by utilities having a volume over 20%, up to and including 40% of the total excavated volume, with maximum depths, measured from the top of roadway, less than five feet.

Type .3 = Mass excavation with an average area occupied by utilities having a volume over 40%, up to and including 60% of the total excavated volume, with maximum depths, measured from the top of roadway, less than five feet.

Type .4 = Mass excavation with an average area occupied by utilities having a volume over 60%, up to and including 80% of the total excavated volume, with maximum depths, measured from the top of roadway, less than five feet.

Type .5 = Mass excavation with an average area occupied by utilities having a volume up to and including 20% of the total excavated volume, with maximum depths, measured from the top of roadway, equal to or greater than five feet.

Type .6 = Mass excavation with an average area occupied by utilities having a volume over 20%, up to and including 40% of the total excavated volume, with maximum depths, measured from the top of roadway, equal to or greater than five feet.

Type .7 = Mass excavation with an average area occupied by utilities having a volume over 40%, up to and including 60% of the total excavated volume, with maximum depths, measured from the top of roadway, equal to or greater than five feet.

Type .8 = Mass excavation with an average area occupied by utilities having a volume over 60%, up to and including 80% of the total excavated volume, with maximum depths, measured from the top of roadway, equal to or greater than five feet

E. Price to Cover

The unit price for the various mass excavation items shall include the cost of all labor, materials, equipment, insurance, and incidentals necessary to mass excavate and completely expose, support, protect and maintain the integrity of subsurface facilities without disruption of service to the general public, utility customers and in accordance with the Contract Documents. The price shall also include, associated maintenance and protection of pedestrian and vehicular traffic, and traffic plates and openings and closings of plates, and cones, barrels, arrow-boards, etc. and installing, shifting, moving and relocating cones, barrels, arrow-boards, etc. as may be required in order to provide access to excavations. The unit price shall also include full width decking, pontoons, recessed plating and/or other alternate methods proposed by the Contractor and approved by the facility operator, in order to provide partial and/or full width vehicular and/or pedestrian traffic access to the work site area, during working or non-working hours as required, based on DOT traffic stipulations or as directed by the governmental authority having jurisdiction. The unit price shall also include any and all sheeting, including tight sheeting that may be required, and excavating by hand to expose existing structures. Any required removing, trucking, storing, and disposing of material shall be deemed included in the unit price. The unit price shall also include the cost of supporting and protecting all utilities encountered in the mass excavation area including slings and beams installed for utility supports, as required. The price shall also include alternate methods for mass excavating, which may include changes in equipment and special

operations, and sequencing and the use of only all hand-held tools due to existing field conditions. Any and all Contractor method changes and operation modifications employed for mass excavation for Utility Facilities are deemed to be included in the price for this item.

The Removal of the existing roadway pavement, furnishing and installing backfill and compaction, and pavement and sidewalk restoration of the mass excavation shall be paid under other applicable CET items, as required.

F. References

1. Sketches CET 100A, A-1
2. NYS Industrial Code Rule 753
3. Item CET 303

(NO TEXT ON THIS PAGE)

CET 450 – CONSTRUCTION FIELD SUPPORT

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to provide construction field support, while maintaining and protecting surface and subsurface facilities, at various locations approved solely by the Facility Operator. The Contractor shall encounter various surface and subsurface utility facilities while performing various construction field support operations, which may include but are not limited to working over, under, adjacent to, around, in between and in close proximity of:

1. Conduits;
2. Conductors;
3. Concrete Encased Conduit Banks;
4. Steel Pipes;
5. Gas Mains;
6. Steam Mains;
7. Oil-o-static Facilities;
8. Utility Structures and Covers

The actual construction field support operation to be performed by the Contractor shall be performed in accordance with the contract plans, specifications or as determined based on actual field conditions and at the sole discretion and direction of the facility operator. This item shall apply to various field support operation tasks for which there are no other applicable CET Items to cover the required work. This item will not apply and will not be paid when there are other applicable CET items available either partly or completely covering tasks described below as determined solely by the facility operator.

B. Materials

All materials used to provide construction field support shall be supplied by the Contractor and be approved by the facility operator.

C. Methods of Construction

It is the intent of this item that the Contractor provides field support construction crews suffice to perform various item type tasks required as described below. The Contractor shall provide all labor and equipment necessary to perform the required task as described below under existing field conditions at various locations and at the sole discretion and direction of the facility operator. The Contractor shall perform the necessary construction field support, while maintaining and protecting surface and subsurface facilities. The Contractor shall employ approved methods of operation, including the use of appropriate equipment and tools that will enable him to complete the field support operation work as described in the Item Type description below. Existing facilities that are encountered during the construction field support operation shall be supported and protected similar to those indicated on Sketches CET 100 A and 100 A-1 and in a manner suitable to the facility operator and are deemed included in this item. The Contractor shall properly dispose of all materials excavated away from site, which may require the use of hand held tools and equipment in order to ensure that the

integrity of the underground utility facilities is not jeopardized. Care should be taken to avoid damage to existing utility facilities and structures, and to adjacent curbs, sidewalks, pavements and their foundations, and to avoid caving or sliding banks within excavations.

D. Method of Measurement

1 – Quantity - The quantity to be measured for payment shall be the number of actual crew hours (Crhrs.) provided by the Contractor for performing the various types of construction field support operation as directed by the facility operator.

2 – Type – The unit type to be measured for payment shall be based on the actual task performed by the contractor and covered by the applicable Item Type. The tasks described within the CET Item Type below are provided as a guide only as to the general nature of the various functions included, but these examples in no way limit the use of the item to these functions only. The contractor should use this information in order to approximate the various required crew sizes necessary to perform the work covered by this item in a productive, safe and efficient manner. The actual construction crew size required to perform the field support operation shall be determined solely by the contractor in order to perform the required construction field support operation. It is the responsibility of the contractor to provide appropriate field support crews capable of performing required tasks in a productive, safe and efficient manner. The actual crew performing the operation will not be considered by the facility operator when determining the applicable CET unit item type which shall be only as per the task performed.

Note: Only one measurement type will be used for each defined construction field support area.

Type .1 = Construction Field Support requiring an average size Survey Crew that will perform typical field survey functions and provide quality data analysis reports.

Type .2 = Construction Field Support requiring an average small size crew capable of performing various tasks, which may include but are not limited to: opening/closing subsurface structure cover(s), setting/resetting MPT setup(s), assisting Utility Facility/Specialty crew(s), performing conduit occupancy identification, clean-up storage work-site area, etc.

Type .3 = Construction Field Support requiring an average medium size crew capable of performing various tasks, which may include but are not limited to: excavations due to cable failures, including emergency type excavations, construct manhole enclosures, installing support system for utility facilities, dewatering utility structures and excavations, opening/closing traffic and/or pedestrian plates (when not already included and covered in other applicable CET items), etc.

E. Price to Cover

The unit price for the various construction field support items shall include the cost of all labor, materials, equipment, insurance, and incidentals necessary to provide construction field support, which may include but is not limited to working over, under, adjacent to, around, in between and in close proximity of surface and subsurface utility facilities and exposing, supporting, protecting and maintaining the integrity of the facilities without disruption of service to the general public, utility customers and in accordance with the Contract Documents at various locations approved by the Facility Operator. The unit price shall also include, associated maintenance and protection of pedestrian and vehicular traffic, and traffic plates and openings and closings of plates, and cones, barrels, arrow-boards, etc. and installing, shifting, moving and relocating cones, barrels, arrow-boards, etc. as may be required in order to provide access to excavations and during specialty work being performed by others. The unit price shall also include excavating by hand to expose existing structures. Any required removing, trucking, storing, and disposing of material shall be deemed included in the unit price. The unit price shall also include the cost of supporting and protecting all utilities encountered during the construction field support operation, as required. The unit price shall also include alternate methods for construction field support, which may include changes in equipment and special operations, and sequencing and the use of only all hand-held tools due to existing field conditions, including potential delays and extended performance. Any and all Contractor method changes and operation modifications employed for construction field support are deemed to be included in the unit price for this item. Work under this item may be paid in combination with other utility or other applicable facility accommodation items under other contract items.

F. References

1. Sketches CET 100A, A-1

(NO TEXT ON THIS PAGE)

CET 500 - REMOVAL OF ABANDONED UTILITY CONDUITS (NON-CONCRETE ENCASED)

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to remove all abandoned conduit(s), including but not limited to:

1. Conduit(s) (non-concrete encased)

The work shall include the breaking, removal and disposal of conduits (all types excluding steel pipes) and including backfill with clean earth.

B. Materials

All materials including but not limited to clean backfill shall be supplied by Contractor and as approved by the facility operator(s).

C. Methods of Construction

The facility operator(s) shall identify the locations of utilities that are abandoned within the contract area that are to be removed under this item. The authorized field representative of the facility operator shall certify in a timely manner which facilities are abandoned. The Contractor shall remove and properly dispose of all conduit(s) material encountered.

D. Method of Measurement

The quantity to be measured for payment shall be the linear footage (L.F.) of total number of conduit(s) removed.

E. Price to Cover

The price shall cover the cost of all labor, material, equipment, insurance and incidentals necessary to remove the abandoned conduit(s). The price shall also include the cost of removal and disposal of conduit(s); backfilling with clean earth approved by the facility operator(s); sealing the existing abandoned conduit(s) openings; and all other items necessary to perform all work incidentals thereto.

F. References

1. N/A

(NO TEXT ON THIS PAGE)

CET 500.1 - REMOVAL OF ABANDONED PVC CABLE TELEVISION DUCT BANKS ATTACHED TO THE PAVEMENT BASE, CONCRETE ENCASED

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to remove all abandoned conduit(s), including but not limited to:

1. Concrete encased duct structure attached to the base pavement;

The work shall include the breaking, removal and disposal of PVC conduits, abandoned coaxial and fiber optic cable, and including backfill with clean earth and compaction.

B. Materials

All materials including but not limited to clean backfill shall be supplied by Contractor and as approved by the facility operator(s).

C. Methods of Construction

The facility operator(s) shall identify the locations of utilities that are abandoned within the contract area that are to be removed under this item. The authorized field representative of the facility operator shall certify in a timely manner which facilities are abandoned. The Contractor shall remove and properly dispose of all conduit(s), concrete encasement and cable material encountered. A diagram of a typical duct bank is contained in CET Sketch 500.1.

D. Method of Measurement

The quantity to be measured for payment shall be the linear footage (L.F.) of total number of duct bank removed, up to and including 2 - 1 ¼" PVC ducts contained therein, and as per typical configuration of ducts and encasement as shown on CET Sketch 500.1.

E. Price to Cover

The price shall cover the incremental cost of all labor, material, equipment, insurance and incidentals necessary to remove the abandoned duct bank(s), as necessary and in the course work under other contract items. The price shall also include the cost of removal and disposal of conduit(s); backfilling with clean earth in consultation with the facility operator(s); insurance; sealing the existing abandoned conduit(s) openings, as necessary; clean earth fill; compaction, and all other items necessary to perform all work incidental thereto.

F. References

1. N/A

(NO TEXT ON THIS PAGE)

CET 501 - REMOVAL OF ABANDONED MASONRY FOR UTILITY FACILITIES

A. Description

Under this Section the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to remove all abandoned plain or reinforced concrete and/or masonry including but not limited to:

1) Abandoned Utility Manholes and Service Boxes;
2) Concrete (Fully or Partially Encased) Conduit Banks

The work shall include the breaking, removal and disposal of plain or reinforced masonry, and including backfill with clean earth.

B. Materials

Clean backfill to fill voids shall be supplied by the Contractor and as approved by the facility operator(s).

C. Methods of Construction

The facility operator(s) shall identify the locations of utilities abandoned within the trench area that are to be removed under this item. The authorized field representative of the Facility Operator shall certify in a timely manner which facilities are abandoned. The contractor shall remove and properly dispose of all material encountered.

D. Method of Measurement

The quantity to be measured for payment shall be the actual volume of plain or reinforced concrete and/or masonry removed measured in Cubic Yards (C.Y.). No deduction will be made for conduit(s) openings in concrete encased conduit lines.

E. Price to Cover

The price shall cover the cost of all labor, material, equipment, insurance and incidentals necessary to remove the abandoned masonry and/or concrete without disruption of service to the customers and in accordance with contract documents. The price bid shall also include the cost: of removal and disposal of all materials, backfilling with clean earth, sealing the existing abandoned conduit openings in manholes if required; and all other items necessary to perform all work incidental thereto.

F. References

1. N/A

(NO TEXT ON THIS PAGE)

CET 501.1 - REMOVAL OF ABANDONED CABLE TELEVISION SIDEWALK PULL BOXES

A. Description

Under this Section the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to remove all abandoned cable television pull boxes including but not limited to:

1) Abandoned pull box boxes, frames and covers;
2) Sealing the existing abandoned conduit openings, as necessary.

The work shall also include the breaking of sidewalk, temporary restoration of pavement (as necessary), removal and disposal of the pull box and related hardware, and backfilling with clean earth and compaction.

B. Materials

Clean backfill to fill voids shall be supplied by the Contractor and as approved by the facility operator(s).

C. Methods of Construction

The facility operator(s) shall identify the locations of pull boxes abandoned within the contract limits that are to be removed under this item. The authorized field representative of the Facility Operator shall certify in a timely manner which facilities are abandoned. The contractor shall remove and properly dispose of all material encountered. A diagram of a typical cable television pull box is contained in CET Sketch 501.1.

D. Method of Measurement

The quantity to be measured for payment shall be the number of pull boxes each (EA) to be removed and disposed of.

E. Price to Cover

The price shall cover the incremental cost of all labor, material, equipment, insurance and incidentals necessary to remove the abandoned pull box and/or surrounding sidewalk and in accordance with contract documents, as necessary and in the course work under other contract items. The price bid shall also include the cost: of removal and disposal of all materials, backfilling with clean earth in consultation with the facility operator(s) sealing the existing abandoned conduit openings in manholes if required; and all other items necessary to perform all work incidental thereto.

F. References

1. N/A

(NO TEXT ON THIS PAGE)

CET 501.2 - ADJUSTMENT OF CABLE TELEVISION SIDEWALK PULL BOXES

A. Description

Under this Section the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to adjust cable television pull boxes including but not limited to:

1) Adjustment of existing modular, one-piece pull boxes, frames and covers, located in the sidewalk and,
2) Maintenance of existing active cables and facilities, as per the Facility Operator.

The work shall include the breaking of sidewalk; maintenance and protection of traffic; excavation; support and maintenance of the existing pull box, cables and related hardware during excavation; relocation of existing pull boxes not to exceed six feet horizontally; vertical adjustment of the entire box to proposed grades; reconnection of attached ducts; furnish and install any incidental industry-standard hardware such as couplings, connectors, caps, sleeves, bends, etc. for re-attaching existing ducts to the box; disposal of any incidental debris or hardware; backfill with clean earth and compaction; temporary restoration of pavement (as necessary). Adjustment and realignment of attached ducts shall be paid under separate CET items 401, 402 and 403.

B. Materials

Clean backfill and any incidental hardware or material shall be supplied by the Contractor and as approved by the Facility Operator.

C. Methods of Construction

The facility operator shall identify the locations of pull boxes to be relocated within the contract limits under this item. The authorized field representative of the Facility Operator shall certify in a timely manner, which facilities are to be relocated. The contractor shall remove and properly dispose of all extraneous material encountered. A diagram of typical cable television pull boxes is contained in CET Sketch 501.1.

D. Method of Measurement

The quantity to be measured for payment shall be the number of pull boxes each (EA) to be relocated.

E. Price to Cover

The price shall cover the incremental cost of all labor, material, equipment, insurance and incidentals necessary to adjust the pull box and restore surrounding pavement or sidewalk without disruption of service to the customers and in accordance with contract documents, as necessary and in the course work under other contract items. The price bid shall also include the cost of: insurance; adjusting the location of the pull box; excavation; maintenance and protection of traffic; maintenance and support of the box and related facilities and cables; removal and disposal of all materials, backfilling with clean earth as approved by the facility operator(s); and all other items necessary to perform all work incidental thereto.

F. References

1. CET 401
2. CET 402
3. CET 403
4. Sketch CET 501.1

CET 600 - INSTALL CONDUIT IN UNPAVED AREA

A. Description

Under this Section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to install conduit in an unpaved area for the purpose of installing the facility operator's utilities. For the purpose of this item, "Unpaved Area" shall be defined as an area where sidewalk or roadway pavement has been removed/excavated as part of this contract under other contract item(s).

B. Materials

The Contractor shall supply all material (Mortar, Brick, etc.) to make repairs to opening(s) as approved by the facility operator. All conduit including sleeves, couplings, pulling lines, etc. shall be supplied to the Contractor's requested location by the facility operator for work under this item.

C. Method of Construction

The Contractor shall excavate a trench as shown on Sketches CET 600.1-A and CET 600.2-A to install conduit in an unpaved area from designated facility operator service points and/or structures to City-owned boxes, street light and traffic light foundations, install said conduit, 'rod, mandrel and wire' the new conduits (install pulling lines), and backfill and compact with the existing trench materials removed, in accordance with the contract plans and specifications. When conduit pipes are to be connected to existing underground ducts, manholes, or boxes, the Contractor, using hand-held tools only, shall cut existing conduit, to pick-up existing underground conduits with new conduits, make openings into manholes or boxes, install/connect the conduit, and make repairs to seal the openings in the structure. The work shall be performed in accordance with the contract plans, specifications, and at the directions of the facility operator.

D. Method of Measurement

The quantity to be measured for payment shall be the number of linear feet (LF) of conduit trench:

1. CET 600.1 - Install 1 ea. 2", 4" or 5" Conduit (all types) in unpaved area.
2. CET 600.2 - Install 2 ea. 2", 4" or 5" Conduits (all types) in unpaved area.
3. CET 600.3 - Install 4 ea. 4" or 5" Conduits (all types) in unpaved area.
4. CET 600.4 - Install 6 ea. 4" or 5" Conduits (all types) in unpaved area.
5. CET 600.5 - Install 8 ea. 4" or 5" Conduits (all types) in unpaved area.

E. Price to Cover

The unit price per linear foot of Conduit trench shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to unload, store, handle, excavate, install, backfill, compact, rod, mandrel, wire and perform any other associated work required to install the conduit completely in place. Where conduits are to be connected to ducts, manholes or boxes, the cost of cutting and/or breaking into the ducts, manholes or boxes, installing and sealing the conduit; and making repairs to the openings in the structure shall be considered as included in the unit price bid for the installation of the

conduit. No additional payment will be made if the Contractor elects to perform this work prior to roadway and/or sidewalk being removed under other contract items.

F. References

1. Sketches CET 600.1A and CET 600.2A

CET 601 - INSTALL CONDUIT IN PAVED AREA

A. Description

Under this Section, the Contractor shall provide all labor, materials, equipment, insurance, and incidentals required to install conduit in a paved area for the purpose of installing the facility operator's utilities. For the purpose of this item, "Paved Area" shall be defined as an area where the sidewalk or roadway pavement has not been removed/excavated as part of this contract under other contract item(s).

B. Materials

The Contractor shall supply all material (Mortar, Brick, etc.) to make repairs to opening(s) as approved by the facility operator. All conduit including sleeves, couplings, pulling lines, etc. shall be supplied to the Contractor's requested location by the facility operator for work under this item.

C. Method of Construction

The Contractor shall saw cut and/or break and remove existing asphalt and concrete, excavate a trench, as shown on Sketches CET 601.1-A and CET 601.2-A to install conduit in a paved area from designated facility operator service points and/or structures to other facility structures, City-owned boxes, street light and traffic light foundations. The Contractor shall install the specified conduit, rod, and mandrel and wire the new conduits (install pulling lines), and backfill and compact with the existing trench materials and provide temporary and/or permanent restoration in accordance with the contract plans and specifications. When conduit pipes are to be connected to existing underground ducts, manholes, or boxes, the Contractor, using hand-held tools only, shall cut existing conduit, to pick-up existing underground conduits with new conduits, make openings into manholes or boxes, install/connect the conduit, and make repairs to seal the openings in the structure.

The work shall be performed in accordance with the contract plans, specifications, and at the directions of the facility operator.

D. Methods of Measurement

The quantity to be measured for payment shall be the number of linear feet (LF) of conduit trench:

1. CET 601.1 - Install 1 ea. 2", 4" or 5" Conduit (all types) in paved area.
2. CET 601.2 - Install 2 ea. 2", 4" or 5" Conduits (all types) in paved area.
3. CET 601.3 - Install 4 ea. 4" or 5" Conduits (all types) in paved area.
4. CET 601.4 - Install 6 ea. 4" or 5" Conduits (all types) in paved area.
5. CET 601.5 - Install 8 ea. 4" or 5" Conduits (all types) in paved area.

E. Price to Cover

The unit price per linear foot of Conduit trench in paved area shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to unload, store, handle, excavate, install, backfill, compact, rod, rope, and perform any other associated work required to install the conduit completely in place. Where conduits are to be connected to ducts, manholes or boxes, the cost of cutting and/or breaking into the ducts, manholes or boxes, installing and sealing the conduit; and making repairs to the openings in the structure shall be considered as included in the unit price bid for the installation of the conduit. The price shall also include the cost of temporary and/or permanent pavements and sidewalk restoration necessary to meet the contract requirements.

F. References

1. Sketches CET 601.1-A and CET 601.2-A

CET 603E - INSTALL UTILITY CONDUIT

A. Description

Under this Section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to install utility conduit(s), excluding telecommunication conduits.

B. Materials

The Contractor shall supply all material (Mortar, Brick, etc.) to make repairs to opening(s) as approved by the facility operator. All conduit(s) including sleeves, couplings, pulling lines, etc. shall be supplied to the Contractor's requested location by the facility operator for work under this item.

C. Method of Construction

The Contractor shall install conduit(s), as shown on sketches CET 603E.1, .2, .3, .4, from designated facility operator service points and/or structures to other facility structures, City-owned boxes, street light and traffic light foundations, install said conduit, rod, mandrel and wire the new conduit(s) and (install pulling lines) in accordance with the contract plans and specifications. When conduit pipes are to be connected to existing underground ducts, manholes, or boxes, the Contractor, using hand-held tools only, shall cut existing conduit, to pick-up existing underground conduits with new conduits, make openings into manholes or boxes, install/connect the conduit, and make repairs to seal the openings in the structure. The work shall be performed in accordance with the contract plans, specifications, and at the direction of the facility operator.

Conduits that require concrete encasement shall be encased in 3200-PSI concrete to two (2) inches outside the limits of the conduit bank. Encasement shall overlap a minimum of two (2) feet beyond the adapter, as required.

If due to subsurface conditions, the cover is less than 20" from finished grade, the conduits shall be protected with steel plates furnished by the facility operator and measured for payment under Item CET-403.

D. Method of Measurement

The quantity to be measured for payment shall be the number of total linear feet (LF) of 2", 4" and/or 5" conduit(s) installed of various types, sizes and configurations.

CET 603E.1 Conduits Placed in Final Position without Concrete Encasement. (L.F.)

CET 603E.2 Conduits Placed in Final Position with Concrete Encasement. (L.F.)

E. Price to Cover

The unit price bid per linear foot of conduit(s) installed with or without concrete encasement shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to unload, store, handle, install, rod, mandrel, wire and perform any other associated work required to install the conduit(s) completely in place. Where conduits are to be connected to ducts, manholes or boxes, the cost of cutting existing conduit, to pick-up existing underground conduits with new conduits, make openings into manholes or boxes, installing and sealing the conduit; furnishing and installing forms and concrete encasement, removing forms and making repairs to the openings in the structure, all associated maintenance and support of traffic shall be considered as included in the unit price bid for the installation of the conduit(s).

F. References

1. Sketches CET 600.1-A, 600.2-A, 601.1-A, 601.2-A
2. Item CET 403

CET 636 E - ADJUSTMENT OF UTILITY HARDWARE

A. Description

This section describes the work of adjusting existing utility manholes, street hardware including vaults, etc., and valve boxes to the proposed grade by either building up or lowering the installation and resetting the castings, as and where directed by the facility operator.

Building up or lowering the installation and resetting the castings shall consist of removing the existing frame and cover, building up or decreasing the existing installation, replacing the frame and/or cover if damaged, as determined by the facility operator, with a new frame and/or cover furnished by the facility operator, and setting the frame and cover to the new elevation.

B. Materials

Materials used shall comply with the Standards of the facility operator having jurisdiction over the installations. Where high-early strength concrete is required by the Resident Engineer to be placed adjacent to utility installations then the requirement for mortar shall be quick setting mortar capable of obtaining a minimum compressive strength of 1,500 psi in two (2) hours, and the requirement for concrete shall be high-early strength complying with current N.Y. State Department of Transportation, Standard Specifications for Class F concrete.

New castings of the various sizes required and deemed by the facility operator to be replaced shall be furnished by the facility operator to the Contractor. The Contractor shall be required to inform the Utility in advance of the need for the castings. Materials supplied by the facility operator shall be delivered to the contractor's designated storage area. Contractor shall comply with Sections 2 and 3 of the General Provisions for Private Utility Facilities.

C. Methods of Construction

The Contractor shall breakout and dispose of sidewalk, curb, pavement and/or pavement base around existing casting, excavate as required to remove casting and install existing or replacement casting, remove casting, protect opening, reinstall existing casting or install new casting to the proposed grades, backfill, grade and compact fill around casting, install base concrete and or sidewalk pavement and curb, tack coat around frame, install and remove temporary pavement around casting where directed by the facility operator; and install and compact asphalt binder and wearing course or other permanent pavement around casting and perform all work in accordance with the contract plans and the specifications.

Setting or resetting the castings shall be done with bricks plus mortar and/or by raising or lowering adjustable castings according to the standards of the utility owner having jurisdiction over the installation. Work shall be done in a workmanlike manner. Any damage resulting from the Contractor's operations to the existing installation which is to remain shall be satisfactorily corrected at the Contractor's own expense, as directed by the facility operator. Castings, which are deemed unacceptable for resetting, shall become the property of the Contractor and shall be removed and disposed of by him away from the site.

No traffic shall be allowed on adjusted utility hardware until permitted by the facility operator.

D. Method of Measurement

The quantity to be measured for payment shall be the number of utility hardware units (EA) in each size group actually adjusted as specified under each item. The size of each utility hardware unit, measured in width, shall be defined as the diameter of circular covers, the major axis of elliptical covers, or the larger length or width of rectangular covers.

For Castings in Roadway

1. Item CET 636 EA RD - Adjustment of Utility Hardware (Under 7" Width)
2. Item CET 636 EB RD - Adjustment of Utility Hardware (7" to under 14" Width)
3. Item CET 636 EC RD - Adjustment of Utility Hardware (14" to under 30" Width)
4. Item CET 636 ED RD - Adjustment of Utility Hardware (30" to under 34" Width)
5. Item CET 636 EE RD - Adjustment of Utility Hardware (34" to under 41" Width)
6. Item CET 636 EG RD - Adjustment of Utility Hardware (41" to under 75" Width)
7. Item CET 636 EH RD - Adjustment of Utility Hardware (75" to under 125" Width)
8. Item CET 636 EI RD - Adjustment of Utility Hardware (125" to under 170" Width)

For Castings in Sidewalk

1. Item CET 636 EA SW - Adjustment of Utility Hardware (Under 7" Width)
2. Item CET 636 EB SW - Adjustment of Utility Hardware (7" to under 14" Width)
3. Item CET 636 EC SW - Adjustment of Utility Hardware (14" to under 30" Width)
4. Item CET 636 ED SW - Adjustment of Utility Hardware (30" to under 34" Width)
5. Item CET 636 EE SW - Adjustment of Utility Hardware (34" to under 41" Width)
6. Item CET 636 EG SW - Adjustment of Utility Hardware (41" to under 75" Width)
7. Item CET 636 EH SW - Adjustment of Utility Hardware (75" to under 125" Width)
8. Item CET 636 EI SW - Adjustment of Utility Hardware (125" to under 170" Width)

E. Price to Cover

The price for regrading utility hardware shall be the unit price per each and shall cover the cost of furnishing all labor, materials, plant, equipment, insurance maintenance and protection of traffic, and incidentals required to remove existing frames and covers; build up the existing installations with brick and mortar, or lower the existing installations by removing bricks and mortar; replace damaged frames and/or covers with frames and/or covers furnished by others; break out pavement and/or pavement base; protect existing opening and installation; set the frames and covers to new elevations; grade and compact fill; install base concrete; tack coat frame; install, remove, and dispose temporary pavement; install and compact asphalt binder and wearing course or other permanent pavement; repair minor structural damage to existing installations prior to resetting frames; unloading of furnished castings at the Contractor's yard and transporting castings from the Contractor's yard to the job site as required; and complete the work in accordance with the plans, the specifications, and the directions of the facility operator.

F. References

1. NYS DOT Standard Specs for Class F Concrete

(NO TEXT ON THIS PAGE)

CET 636 M - MODIFICATION OF WORK METHODS TO ACCOMMODATE UTILITY HARDWARE DURING PAVEMENT MILLING AND RESURFACING OPERATIONS

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance, and incidentals required to maintain, protect, and accommodate the integrity of utility hardware during pavement milling and resurfacing operations. Hardware includes castings, frames, and covers on utility structures, valve box cover castings, concrete collars around steam castings, and all other hardware protecting utility facilities.

B. Materials – N/A

C. Method of Construction

Removal of existing pavement around utility hardware shall be performed by the Contractor with extreme caution by utilizing appropriate methods of operation, by employing specialized construction equipment, and by special operations and sequencing.

The Contractor shall not mill existing pavement within 12" of the perimeter of utility hardware. Removal of pavement within 12" of the perimeter of utility hardware shall be by cutting with pavement breakers or other methods as proposed by the Contractor. All methods shall be presented to the facility operator by the Contractor prior to the start of construction and shall be approved by the facility operator.

During removal of existing pavement and for the duration of project, the Contractor shall protect utility hardware from damage by the Contractor's operations and traffic. Contractor shall also provide all necessary protection to pedestrians to prevent injury to pedestrians when crossing utility hardware during the project. Utility street hardware damaged by the Contractor or others during the project shall be replaced by the Contractor at Contractor's expense.

The Contractor shall not place any paving materials over utility hardware during the project.

D. Method of Measurement

The quantity to be measured for payment shall be the number of utility hardware units (ea) in each size group actually adjusted as specified under each item. The size of each hardware unit, measured in width, shall be defined as either the diameter of circular covers, the major axis of elliptical covers, or the larger length or width of rectangular covers.

1. Item CET 636 MA – Modification of Work Methods to Accommodate Utility Hardware (Under 7" Width)
2. Item CET 636 MB – Modification of Work Methods to Accommodate Utility Hardware (7" to under 14" Width)
3. Item CET 636 MC – Modification of Work Methods to Accommodate Utility Hardware (14" to under 30" Width)
4. Item CET 636 MD – Modification of Work Methods to Accommodate Utility Hardware (30" to under 34" Width)
5. Item CET 636 ME – Modification of Work Methods to Accommodate Utility Hardware (34" to under 41" Width)
6. Item CET 636 MG – Modification of Work Methods to Accommodate Utility Hardware (41" to under 75" Width)
7. Item CET 636 MH – Modification of Work Methods to Accommodate Utility Hardware (75" to under 125" Width)
8. Item CET 636 MI – Modification of Work Methods to Accommodate Utility Hardware (125" to under 170" Width)
9. Item CET 636 SMB – Modification of Work Methods to Accommodate Utility Steam Hardware (Under and including 8" Width)
10. Item CET 636 SMC – Modification of Work Methods to Accommodate Utility Steam Hardware (Above 8" to 34" Width)

1. Price to Cover

The price to modify work methods to accommodate Utility Hardware during pavement milling and resurfacing operations shall include the cost of all incremental labor, materials, time, equipment, insurance and incidentals required for removal and disposal of existing pavement, installation and compaction of base and wearing course materials, installation and compaction and removal of temporary asphalt concrete mixture, tack coating; in accordance with the plans, the specifications and the directions of the facility operator. The price to cover shall further include the cost of maintaining, protecting, and accommodating the integrity of utility street hardware during the project and during the performance of milling and resurfacing and the incremental additional work and effort made necessary to protect pedestrians from injury when crossing utility hardware during the project. The price to cover shall further include additional areas of modification of work methods beyond 12" of the perimeter of the utility street hardware due to the milling equipment and the location of other utility hardware, city street hardware, utility poles, street lights, traffic signals, curbs, sidewalks, medians, guide rails, pavement stops, cobblestones, and pavers. The price to cover for Items CET 636 SMB and CET 636 SMC shall also include modification of work methods due to existing concrete collars surrounding these castings.

Payment for all work herein specified shall be made on a one-time basis only; no payment for work herein specified shall be made for the same area more than one time. Adjustment to utility hardware shall be paid for under the appropriate CET 636E item.

F. References

N/A

CET 636 RM - Rebuilding and Modifications to Utility Structures

A. Description

This section describes the work of performing the rebuilding of utility structures by rebuilding the existing structures using methods approved by the facility operator. This section also describes the work of performing modifications to utility structures to accommodate changes in roadway or sidewalk grades that cannot be accomplished by adjustment of frames and covers, as described by Section 636 E, in the judgment of the facility operator. The existing structures shall be modified using methods approved by the facility operator.

Rebuilding and or modifications of utility structures, which include boxes, manholes, vaults and valve boxes; shall be as directed by the facility operator and for structures with a monolithic roof shall include:

- Removing the existing frame and cover, followed by
- Demolition of all or a portion of the walls, floor, and monolithic roof, followed by
- Rebuilding of all or a portion of the floor, followed by
- Rebuilding:
- A portion of the walls or
- A portion of the walls plus a vertical extension or
- All of the walls or
- All of the walls plus a vertical extension, followed by
- Rebuilding all or a portion of the monolithic roof or replacement with a non-monolithic roof.

Rebuilding and or modifications of utility structures, which include boxes, manholes, vaults and valve boxes; shall be as directed by the facility operator and for structures with a non-monolithic roof shall include:

- Removing the existing frame, cover, and roof slab, followed by
- Demolition of all or a portion of the walls and floor, followed by
- Rebuilding:
- A portion of the walls or
- A portion of the walls plus a vertical extension or
- All of the walls or
- All of the walls plus a vertical extension, followed by
- Installation of the existing roof slab or a new non-monolithic roof slab.

B. Materials

All materials used shall comply with the standards of the facility operator. The Contractor shall obtain pre-cast roofs that are available from a facility operator's vendor from that vendor.

C. Method of Construction

All work shall comply with the specifications, plans, and standards of the facility operator.

The Contractor shall perform the necessary rebuilding of the floor, walls, and roof of the existing utility structure as directed by the facility operator. New roof slabs shall be monolithic or non-monolithic as directed by the facility operator. New non-monolithic roofs shall be removable and cast on site or pre-cast as directed by the facility operator. No traffic shall be allowed on modified structures until permitted by the facility operator.

The Contractor shall perform the necessary modifications to the walls and roof of the existing utility structure to accommodate changes in roadway or sidewalk grades that cannot be accomplished by the adjustment of frames and covers as directed by the facility operator. New roof slabs shall monolithic or non-monolithic as directed by the facility operator. New non-monolithic roofs shall be removable and cast on site or pre-cast as directed by the facility operator. No traffic shall be allowed on modified structures until permitted by the facility operator.

Adjusting existing or new frames and covers shall be as described in CET 636E.

All work shall be done in a workmanlike manner and any damage resulting from the Contractor's operations shall be satisfactorily corrected as directed by the facility operator and at the Contractor's expense.

D. Method of Measurement

The quantity to be measured for payment shall be the number of cubic yards (CY) of concrete, pre-cast concrete, brick, and mortar in place to the nearest hundredth of a cubic yard. No deductions will be made for the spaces occupied by steel reinforcement.

E. Price to Cover

The contract price bid under this item shall be a unit price per cubic yard (CY) of concrete, pre-cast concrete, brick, and mortar placed in the utility structure. The unit price shall cover the cost of all labor, materials, plant, equipment, insurance, maintenance and protection of traffic and incidentals required to rebuild or modify privately owned utility structures, including all pavement breaking, pavement removal and disposal, excavation, haul away, and disposal, furnish and install and compact backfill, sheeting and bracing, removing of frames and covers. The price shall also include demolition of the private utility structure, haul away and disposal of demolished materials, formwork, installation of concrete, bricks, mortar, steel reinforcement, structural steel beams, furnish and install pre-cast roofs, removal and installation of interior hardware, support and protection of all utility facilities within the excavation and structure, and the furnishing of samples, as required. All work shall comply with the plans, specifications, standards, and directions of the facility operator. Resetting of new or existing street hardware shall be paid under CET 636E.

F. References

1. CET 636E

CET 636 RS – STRUCTURAL REPAIR TO UTILITY STRUCTURES

A. Description

This section describes the work of performing the necessary repairs to utility structures by repairing the existing structures using methods approved by the facility operator. Repairs of utility structures, which include boxes, manholes, vaults and valve boxes, shall consist of removing the existing frame and cover followed by repairing the existing walls, floors, and roof as directed by the facility operator. Repairs shall include removing and repairing spalled and loose concrete, removing and replacing or resetting loose bricks, and repairing of damaged surfaces in the area where the chimney or street hardware frame rests on the privately owned utility structure, and similar repairs as directed by the facility operator.

B. Materials

All materials used shall comply with the standards of the facility operator.

C. Methods of Construction

All work shall comply with the specifications, plans, and standards of the facility operator. The Contractor shall perform the necessary repairs to the floor, walls and roof of the existing utility structure as directed by the facility operator. No traffic shall be allowed on repaired structures until permitted by the facility operator.

Adjusting existing or new frames and covers shall be as described in CET 636E.

All work shall be done in a workmanlike manner and any damage resulting from the Contractor's operations shall be satisfactorily corrected as directed by the facility operator and at the Contractor's expense.

D. Method of Measurement

The quantity to be measured for payment shall be the number of cubic yards (CY) of concrete and brick and mortar in place to the nearest hundredth of a cubic yard. No deductions will be made for the spaces occupied by steel reinforcement.

E. Price to Cover

The contract price bid under this item shall be a unit price per cubic yard (CY) of concrete, brick, and mortar placed in the utility structure. The unit price shall cover the cost of all labor, materials, plant, equipment, insurance, maintenance and protection of traffic, and incidentals required to repair utility structures including all pavement breaking, pavement removal and disposal, excavation, haul away, and disposal, furnish and install and compact backfill, necessary to remove the frame and cover. The price shall also include removal of all damaged, spalled and loose concrete, bricks, and mortar, formwork, installation of concrete, bricks, and mortar, support and protection of all utility facilities within the structure, and the furnishing of samples, as required. All work shall comply with the plans, specifications, standards and directions of the facility

operator. Resetting of new or existing street hardware shall be paid under Section CET 636E.

F. References

1. CET 636E

CET 636 S–ADJUSTMENT OF UTILITY STEAM HARDWARE

A. Description

This section describes the adjustment of existing utility steam castings requiring a concrete collar and the installation of a concrete collar around the adjusted steam castings. Building up or lowering the installation and resetting the steam castings shall consist of removing the existing frame and cover, building up or decreasing the existing installation, replacing the frame and/or cover if damaged, as determined by the facility operator, with a new frame and/or cover furnished by the owner, setting the frame and cover to the new elevation and placing a concrete collar around the steam casting all in accordance with the plans, the specifications, and the directions of the facility operator.

B. Materials

Concrete for collar shall comply with the requirement of Section 3.05, Class A-40, Type IIA; Cement shall be Type II Portland; Sand - Type 1A; coarse aggregate - Type 1, Grade B or Type 2, Size No. 57. An approved air-entraining agent shall be added at the time concrete ingredients are mixed with water.

Reinforcement shall be welded steel wire fabric complying with the requirements of ASTM Designation A185, with wire spacing and sizes shown on the plans.

Material used for vertical adjustment of castings shall comply with the standards of the facility operator having jurisdiction over the installations.

New steam castings of the various sizes required and deemed by the facility operator to be replaced shall be furnished to the Contractor. The Contractor shall be required to inform the facility operator in advance of the need for the castings. Materials supplied by the facility operator shall be delivered to the contractor's designated storage area. Contractor shall comply with Sections 2 and 3 of the General Provisions for Private Utility Facilities.

C. Method of Construction

The contractor shall breakout pavement and/or pavement base around existing casting, remove casting, protect opening, reinstall existing castings or install new castings to the proposed grades, grade and compact fill around casting, install concrete collar around casting, tack coat around frame, install and remove temporary pavement around casting when required and perform all work in accordance with the contract plans and the specifications.

Setting or resetting the castings shall be done with brick and mortar according to the standards of the facility operator having jurisdiction over the installation. Work shall be done in a workmanlike manner. Any damage resulting from the Contractor's operations to the existing installation which is to remain shall be satisfactorily corrected at the Contractor's own expense, as directed by the facility operator. Castings, which are deemed unacceptable for resetting, shall become the property of the contractor and shall be removed and disposed of by him away from the site.

Placement of reinforced concrete to form a collar around the steam castings shall be done in accordance with the details shown on the plans, Sections 4.05.4, 4.05.5, and 4.05.6 of the Standard Specifications, and the directed by the facility operator.

No traffic shall be allowed on adjusted street hardware until permitted by the Resident Engineer.

During the course of adjusting or replacing castings, the facility operator may direct the contractor to perform minor structural repairs to any damaged utility structures prior to resetting the castings and that work shall be done and paid for in accordance with other items.

D. Method of Measurement

1. **CET 636 SA -** The quantity of concrete collars around steam castings to be measured for payment shall be the number of square feet (SF) of concrete collar constructed, measured in place, and adjusted for thickness and strength deficiencies in accordance with Section 1.05.4. In determining the quantity of area to be paid, the areas occupied by castings will be deducted when they measure more than one (1) square foot and will not be deducted when they measure one (1) square foot or less. Also, the area of concrete haunch to be paved over with 3" asphalt concrete pavement shall be included in the area of measurement for the concrete collar.

2. **CET 636 SB and SC -** The quantity of adjusted steam castings to be measured for payment shall be the actual number (ea) of steam castings requiring a concrete collar that are adjusted to the proposed roadway grade. The size of each street hardware unit, measured in width, shall be defined as either the diameter of circular covers or the larger length or width of rectangular covers.

E. Price to Cover

1. **Item 636 SA -** The contract price for Item SA per square foot (SF) of Concrete Collar Around Steam Castings shall cover the cost of furnishing all labor, materials, plant, equipment, maintenance and protection of traffic, insurance and incidentals required to complete the work, including furnishing and placing reinforced concrete, inclusive of steel, supports, curing, etc., to furnish such samples for testing and to provide such testing laboratory space and facilities as may be required and to maintain the collar in good conditions as specified in Section 1.05.5 of the Standard Highway Specifications, and completing the work in accordance with the plans, the specifications and the directions of the facility operator.

2. **Items CET 636 SB and CET 636 SC -** The contract price for:

   1. Item CET 636 SB - Adjustment of Utility Steam Castings (Under and including 8" Width)
   2. Item CET 636 SC - Adjustment of Utility Steam Castings (Above 8" to 34" Width)

   Shall cover the cost of furnishing all labor, materials, plant, equipment, insurance and incidentals required to remove existing frames and covers; build up the existing installations with brick and mortar, or lower the existing installations by removing bricks and mortar; replace damaged frames and/or covers with frames and/or covers furnished by others; break out pavement and/or pavement base; protect existing opening and installation; set the frames and covers to new elevations; grade and compact fill; install base concrete; tack coat frame; install and remove temporary pavement; repair minor structural damage to existing installations prior to resetting frames; unloading of furnished castings at the contractor's yard and transporting castings from the contractor's yard to the job site as required; and complete the work in accordance with the plans, the specifications, and the directions of the facility operator's representative.

   Adjustment of steam castings not requiring concrete collars shall be paid for under the appropriate CET 636 E item.

F. <u>References</u>

1. ASTM A185
2. CET 636 E

(NO TEXT ON THIS PAGE)

CET 638N – INSTALLATION OF FIELD CONSTRUCTED UTILITY STRUCTURE

A. Description

This section describes the work of performing the installation of field constructed utility structures approved by the facility operator. The utility structure shall be field constructed and installed in compliance with standard utility specifications and/or methods approved by the facility operator.

Installation of field constructed utility structure shall comply with utility standard specification and/or as directed by the facility operator and shall include:

- Service Boxes (various sizes)
- Manholes (various sizes)
- Vaults (various sizes)
- Valve Boxes (various sizes)

B. Materials

All materials used shall be supplied by the Contractor and comply with the standards of the facility operator. Where applicable, the Contractor shall obtain pre-cast roofs that are available from the facility operator's vendor.

C. Method of Construction

All work shall comply with the utility specifications, plans, and standards of the facility operator.

The Contractor shall perform the necessary field construction of the floor, walls, and roof of the utility structure as directed by the facility operator. New roof slabs shall be monolithic or non-monolithic as directed by the facility operator. New non-monolithic roofs shall be removable and cast on site or pre-cast as directed by the facility operator. No traffic shall be allowed on the structure until permitted by the facility operator.

Field conditions may require the Contractor to modify the standard specifications of the floor, walls and roof of the utility structure, as directed by the facility operator.

Refer to specification CET 636E for guideline relating to the installation of new frames and covers.

All work shall be done in a workmanlike manner and any damage resulting from the Contractor's operations shall be satisfactorily corrected as directed by the facility operator and at the Contractor's expense. The Contractor shall perform the installation of the utility structure while maintaining, supporting, and protecting and accommodating the integrity of all utility facilities (without disruption of service) located within the areas of the excavation and the field constructed structure.

D. Method of Measurement

The quantity to be measured for payment shall be the number of cubic yards (CY) of concrete, cast on site concrete, brick, and mortar in place to the nearest hundredth of a cubic yard. No deductions will be made for the spaces occupied by steel reinforcement.

E. Price to Cover

The unit price bid under this item shall be a unit price per cubic yard (CY) of concrete, cast on site concrete; brick and mortar placed in the field constructed utility structure. The unit price shall cover the cost of all labor, materials, plant, equipment, insurance; maintenance and protection of traffic and incidentals required to field construct a privately owned utility structure. The unit price shall also include all formwork, installation of concrete, bricks, mortar, steel reinforcement, structural steel beams, furnish and install pre-cast roofs, chimney, and installation of interior hardware and exterior hardware, including frames and covers. The unit price shall further include the cost of maintaining, supporting, protecting and accommodating the integrity of all utility facilities (without disruption of service) during the work within the areas of excavation and the field constructed structure, and the furnishing of samples, as required. All work shall comply with the plans, specifications, standards, and directions of the facility operator.

Demolition of the existing utility structure, including haul away and disposal of demolished materials and any formwork, concrete, bricks, mortar, steel reinforcement, structural steel beams, interior hardware, exterior hardware and frames and covers shall be paid under item CET 638R, if required.

All pavement breaking, pavement removal and disposal, excavation, haul away, and disposal, furnish and install backfill, temporary pavement, sheeting, bracing, and all necessary incidentals shall be paid under item CET 406, only if required.

F. References

1. CET 406
2. CET 636E
3. CET 638R
4. Utility Specification Drawings

CET 638R – BREAK OUT AND REMOVE UTILITY STRUCTURE

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to partially or totally break out and remove existing utility structures using methods approved by the facility operator. Breaking out and removing existing utility structures shall be performed while maintaining and protecting all subsurface facilities, at locations approved by the Facility Operator. The Contractor will encounter various underground facilities, located both inside and outside the utility structure, while partially or totally breaking out and removing existing utility structures and will be required to excavate and perform work over, under, adjacent to, around, in between and in close proximity of various congested configurations of multiple facilities, conduits, pipes and cables.

All work required to partially or totally break out and remove existing utility structures shall comply with standard utility specifications and/or as directed by the facility operator and shall include but not be limited to:

- Service Boxes (various sizes)
- Manholes (various sizes)
- Vaults (various sizes)
- Valve Boxes (various sizes).

B. Materials

All materials used shall be supplied by the Contractor and comply with the standards of the facility operator.

C. Method of Construction

The Contractor shall perform the necessary breaking out and removal of the existing utility structure while maintaining and protecting all subsurface facilities. The Contractor will encounter various underground facilities located both inside and outside the utility structure, while partially or totally breaking out and removing existing utility structures and will be required to excavate and perform work over, under, adjacent to, around, in between and in close proximity of various congested configurations of multiple facilities, conduits, pipes and cables, as directed by the facility operator. All work shall be done in a workmanlike manner and any damage resulting from the Contractor's operations shall be satisfactorily corrected as directed by the facility operator and at the Contractor's expense.

This item shall also apply when partially or totally breaking out and removing an existing utility structure.

D. Method of Measurement

The quantity to be measured for payment shall be the number of cubic yards (CY) of concrete, reinforced concrete, brick, and mortar of the existing utility structure broken out, removed and disposed to the nearest hundredth of a cubic yard. No deductions will be made for the spaces occupied by steel reinforcement.

E. Price to Cover

The unit price bid under this item shall be a unit price per cubic yard (CY) of concrete, reinforced concrete, brick, and mortar of the existing utility structure broken out, removed and disposed. The unit price shall also cover the cost of all labor, materials, plant, equipment, insurance, maintenance and protection of traffic and incidentals required to partially or totally break out, remove and dispose of existing utility structure. The unit price shall also include demolition of the existing utility structure, haul away and disposal of demolished materials, formwork, concrete, bricks, mortar, steel reinforcement, structural steel beams, interior hardware, exterior hardware, including frames and covers. The unit price shall further include the cost of maintaining, supporting, protecting and accommodating the integrity of all utility facilities (without disruption of service) during the work within the areas of excavation and the existing structure. All work shall comply with the plans, specifications and standards, provided by and at the directions of the facility operator.

All pavement breaking, pavement removal and disposal, excavation, haul away, and disposal, furnish and install backfill, temporary pavement, sheeting, bracing, and all necessary incidentals shall be paid under item CET 406, only if required.

F. References

1. CET 406

CET 700 - SPECIAL MODIFICATION OF WORK METHODS TO ACCOMMODATE /PROTECT UNDERGROUND FACILITIES WITH LIMITED COVER

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to maintain, protect and accommodate the integrity of utility facilities that include, but are not limited to:

1. Conduits;
2. Conductors;
3. Concrete encased Conduit banks;
4. Steel Pipes;
5. Oil-o-static Facilities; and
6. Non-cost Sharing Gas Facilities;

Located within a zone beneath the existing pavement, base and/or sub-base. The zone shall be defined, for Utilities, as 12 inches of cover or less from the ultimate depth of excavation. The provisions of this item shall be applicable during the removal of existing and temporary pavement and other in-place material, backfilling or filling where required, grading, preparation of sub-grade, compacting, and installation of concrete base material and/or compatible sub-base material and temporary restoration material where applicable. The work shall be performed in accordance with the contract plans (see special care excavation plan), specifications and at the directions of the facility operator(s).

B. Materials – N/A

C. Methods of Operation/Construction

Once the clearances have been verified by available records, to the sole satisfaction of the facility operator(s), the Contractor shall exercise extreme caution, by utilizing appropriate methods of operation/construction, by employing specialized construction equipment and special operations and sequencing, within the area designated for protection and accommodation of utility facilities as shown on the plans or where the cover on the aforementioned subject utilities is equal to or less than 12" inches measured from the ultimate depth of excavation, or as otherwise directed by the facility operator(s). All work shall incorporate, but not be limited by the following restrictions:

1. Removal of Existing Pavement

   Removal of temporary and existing pavement, base material, and all in-place material shall be performed by cutting, undermining and lifting, or any combination thereof, with excavators working off or from adjacent undisturbed pavement. This method shall be used in lieu of using earth moving excavator equipment to remove the existing roadway and/or base material by lifting and/or pushing pavement, or any combination thereof, ahead of it while the equipment is supported and/or running on the exposed earth, sub-grade or sub-base. All equipment and methods and maintenance and protection provisions shall require full authorization by the facility operator(s).

2. Preparation and Installation of New Pavement Base and Temporary Restoration Material

The backfilling, grading, and installation of base, compatible materials, (or other pavement material) in the areas designated within the specific zones of protection, shall be performed utilizing materials, equipment and methods of construction that will insure the integrity of the utility facilities which shall, for the purpose of this item, include the provision that the loading on the utilities including any impact loads, shall not be greater than a total of 4 kips and at the same time meet all requirements for this work as specified in other sections of this contract.

3. Compaction

The Contractor shall compact all sub-grade, new sub-base and temporary restoration material in the areas designated within the specified zones of protection by utilizing native and/or blended fill material, equipment and methods of construction that shall insure the integrity of the Utilities and at the same time meet all requirements for compaction as specified in other sections of this contract. The Contractor shall be required to initiate a test strip compaction operation in selected areas on site to verify the materials, procedures and equipment producing a sub-grade that is in compliance with contract specifications.

4. Powered Excavating Equipment Limitations

The Contractor shall not employ powered or mechanical excavating equipment over or closer than twelve inches in any direction from the staked, marked or otherwise designated or known, outside envelope or perimeter of said utilities unless permitted in writing. Such written permission shall be furnished to the excavator through the facility operator(s) (where applicable) and only where the Contractor has provided certified documentation, by a New York State licensed Professional Engineer, that loading(s), including impact, on facilities due to his/her operations is not greater than that during normal traffic conditions on the existing pavement. The Contractor shall not be permitted to store, stand and/or travel equipment/vehicles on specified unpaved zoned protection areas.

D. Method of Measurement

The quantity of Special Modification of Work Methods to Accommodate/Protect underground facilities with limited cover to be measured for payment shall be the number of cubic yards (C.Y.) of existing pavement and sub-grade material of whatever nature encountered, actually removed and disposed of from the existing roadway zone of protection area, measured in place between the top of existing surface and the ultimate depth of excavation necessary for the installation and or removal of pavement, and/or additional compatible material.

The horizontal zone of protection shall be defined, for the purpose of this item, as the boundary/area designated on the plans or a boundary/area 3 feet from the outer edge of each of the designated facilities, on a block-by-block basis based upon available records. Where overlapping of the zones occurs due to multiple facilities, the boundary/area shall be modified to one zone measured from the outside limits. Where

the 3-foot area falls beyond the curb line, the outside boundary shall be the curb line. The areas measured for payment under this item shall be made for work related to the removal of existing pavement, all in-place material, and installation of new pavements and/or compatible materials within a designated zoned protection. Installation and removal of the temporary restoration material shall not be measured for payment under this item. Modifications to work methods required in areas in between zones of protection for multiple utilities or CET facilities adjacent to any existing structure/curb shall not be measured for payment and are deemed to be included in the price bid for this item.

E. Price to Cover

The contract price bid per cubic yard (C.Y.) for Special Modification of Work Methods, etc., shall include the cost of all incremental labor, materials, time, equipment, insurance and incidentals required for excavation and disposal of pavement, all in-place material, installation of concrete base material to new sub-grade, grading, preparation of sub-grades, hand excavation, backfilling, removal of temporary asphalt concrete mixture, and compaction; all together with necessary incidentals, in accordance with the plans, the specifications and the directions of the facility operator(s). The price shall further include the cost of maintaining, protecting, and accommodating the integrity of utility facilities during the performance of roadway reconstruction within the areas designated on the plans or as encountered and directed by the facility operator(s), and the incremental additional work and effort made necessary to furnish and place an acceptable fill material, as may be required, install and remove temporary restoration material and install the new pavement (base concrete or other pavement as applicable) under other contract items.

Payment for all work herein specified shall be made on a one-time basis only; no payment for work herein specified shall be made for the same area more than one time. No payments will be made under this item if the Contractor excavates beyond the limits specified in the contract and enters the 12-inch zone of protection, unless directed by the facility operator(s). In addition, work under this item shall be paid in combination with other utility or facility accommodation items under other contract items.

F. References

1. N/A

(NO TEXT ON THIS PAGE)

CET 710 - REMOVAL OF ABANDONED UTILITY STEEL/CAST IRON/PLASTIC PIPES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required for the removal and disposal of abandoned steel and cast iron pipelines of various sizes, up to and including 20" diameter, and their appurtenances for non-cost sharing utility facilities. The item specified under this section shall not be measured for payment in conjunction with any other types of CET items. All work shall be performed in accordance with the contract plans, the specifications, and the directions of the facility operator.

B. Materials

All materials, including but not limited to clean backfill, shall be supplied by the Contractor and comply with the filling and backfilling requirements of Section 4.11 of the Standard Highway Specifications.

C. Method of Construction

The Contractor shall excavate all materials of whatever nature encountered to remove abandoned pipe. Where necessary around and under other City and privately owned facilities, the Contractor shall be required to excavate by hand, using hand-held power tools. Removal of abandoned pipe shall be done by normal excavation equipment. Steel pipe shall be cut with torch or saw at intervals convenient for its removal. Prior to cutting any pipe whose end is not open and visible, the Facility Operator shall test and certify in a timely manner that the abandoned pipeline is free of combustible gas and/or live cable prior to removal. The Contractor shall notify facility operator through its authorized representative 48 hours in advance of work in areas where pipelines have been abandoned, as identified by the authorized facility operator representative. The Contractor shall then seal open end of pipe remaining in the excavation with concrete or caps (caps to be provided by the facility operator), where directed by the facility operator, and backfill the area with clean fill.

D. Method of Measurement

Removal of Abandoned Utility Steel/Cast Iron/Plastic Pipes shall be measured for payment per linear foot (LF) of pipe removed, measured in place along its axis between the inner faces of the pipe. Each pipe size classification will be paid for separately. The size classifications are defined as follows:

1. CET 710.1 Up to and including 12" diameter pipes.
2. CET 710.2 Over 12" and up to and including 20" diameter pipes.
3. CET 710.3 Over 20" diameter pipes.

E. Price to Cover

The contract price bid per linear foot for Removal of Abandoned Utility Steel/Cast Iron/Plastic Pipes shall cover the cost of all labor, equipment, insurance and incidentals required for the removal and disposal of abandoned steel and cast iron pipelines of various sizes, up to and including 20" diameter pipe, and their appurtenances for non cost sharing utility facilities in accordance with the plans, specifications, and the directions of the facility operator. Payment shall include but not be limited to the cost of excavation by hand around and other City and facility operator owned properties and, where necessary, support and protection of such properties, the breaking, cutting, and/or burning of abandoned pipes and their disposal from the site, sealing open ends remaining in the excavation with concrete or caps (caps top to be provided by the facility operator), and backfilling of the area with clean backfill where the pipeline has been removed.

F. References

1. N/A

CET 711 - USE SHEETING LINE AS FORM

A. Description

Under this item, the Contractor shall provide all labor, equipment, materials, insurance and incidentals necessary to utilize/modify the trench sheeting - as provided for NYC-DDC - as formwork for one side of the proposed sewer cradle. The required side is defined in the Contract Drawings. All work shall be in accordance with this specification and all applicable NYC Department of Environmental Protection (DEP) Standard Sewer Specification, including Section 4.05.4 (C).

B. Materials

The sheeting, within the limits of the cradle, shall be covered with a material selected by the Contractor that will allow the removal of the sheeting as required by NYC-DEP specification.

Materials shall conform to the applicable NYC-DEP design specifications for sheeting and formwork.

Submittals & Approvals - The Contractor shall submit a P.E. approved sheeting plan and calculations that comply with DEP design specifications for sheeting systems and include this requirement. Submittals for approval shall be made to the applicable private utility.

C. Methods of Construction

Where any existing utilities or facilities are indicated on the plans or in NYS Industrial Code Rule 753 mark-outs adjacent to the proposed work, trenches shall be excavated as per the requirements of NYS Industrial Code Rule 753 to determine the limits of the existing facilities. This excavation and any excavation to remove any material which stops the driving of sheeting are included in this Item. Sheeting shall only be driven when the limit of adjacent utilities or facilities is known. It shall be the Contractor's responsibility to install sheeting in conformance with City, State and Federal Safety Codes.
Sheeting placed under this item shall be tight and continuous. Skeleton sheeting will not be permitted.

Where applicable, the excavation method and sheeting type and method of placement shall take into account the removal or maintenance of the existing sewer, if required by NYC-DDC.

The formwork shall be lined in such a manner to prevent the infiltration of soil and water and to allow the removal of the sheeting upon hardening of the concrete.

During sheeting removal, place and tamp clean sand into the void created by the removal of the formwork.

The Contractor shall take all necessary precautions to prevent the undermining of adjacent utilities and facilities.

D. Method of Measurement

The quantity to be paid for under this item will be the number of linear feet of trench where the modified sheeting system is installed.

E. Price to Cover

The price per linear foot of trench where modified sheeting is installed shall include the cost of all labor, equipment, materials, insurance and incidentals necessary to modify/install and remove the sheeting as form work including associated maintenance of traffic and furnishing, placing and tamping sand backfill over and above that paid under NYC-DDC Item(s). Payments to support and protect private utility facilities will be paid under the applicable CET Item. The price to locate all private utilities that are parallel or encroaching on the proposed trench shall be paid under the CET Test Pit Item.

F. References

1. NYS Industrial Code Rule 753

CET 781 - Removable Curb Sidewalk Panel for Access to Utility Structure Openings

A. Description

This section describes the work required for construction of removable curb sidewalk panels for access to utility structure openings in accordance with the plans, the specifications, and directed by the facility operator.

The work shall consist of unloading, handling, storing, and installing curb panels (panels to be supplied by facility operator) over the existing structures to provide a continuation of the adjacent curbs over the structures and permit the removal of the curb piece for access to the structure covers. The work also includes the concrete foundation under the panel frame and all excavation required for the above operations.

B. Materials

Concrete shall be Class B-32, Type IIA; cement - Type II, Portland; sand - Type IA; and coarse aggregate - Type I, Grade B, or Type 2, Size No. 57 in accordance with the Standard Highway Specification. An approved air-entraining agent shall be added at the same time concrete ingredients are mixed with water.

All other materials shall conform to the requirements of the Consolidated Edison Company Drawing No. EO-13147-B, Rev. 10 "Removable Curb Sidewalk Panel for Access to Manhole Openings".

C. Method of Construction

Excavation shall comply with the requirements of Section 6.02 of the Con Edison Standard Specifications. All excess material resulting from excavation shall be removed from the site immediately.

All concrete work shall comply with the requirements of Section 4.06 of the Con Edison Standard Specifications.

The Contractor shall comply with Sections 2 and 3 of the General Provisions for Private Utility Facilities except that the contractor shall notify the facility operator's representative on the site at least two (2) weeks in advance as to when he requires delivery of the panels.

The installation of each panel must conform to actual field measurements and to the requirements of the Consolidated Edison Company Drawing No. EO-13147-B, Rev. 10 "Removable Curb Sidewalk Panel for Access to Manhole Openings."

D. Method of Measurement

The quantity to be measured for payment shall be the number of each (EA) Removable Curb Sidewalk Panel, actually incorporated into the work, complete to the satisfaction of the facility operator.

E. Price to Cover

The unit price per each of the Removable Curb Sidewalk Panel shall cover the cost of furnishing all labor, materials, plant, equipment, insurance and incidentals required and completing the work including excavation; excess removal; concrete work; grouting; unloading, handling, storing, and installing of curb panels to be furnished by the facility operator; field measurements; field painting; curbing; and all necessary incidental work, in accordance with the plans, the specifications and directed by the facility operator.

F. References

1. Con Ed Drawing EO-13147-B Rev. 10
2. Section 6.02 Con Edison Standard Spec
3. Section 4.06 Con Edison Standard Spec

CET 798 - MODIFICATION OF NON CONCRETE YOKE TROLLEY STRUCTURES REMOVAL WHEN CROSSING UTILITY FACILITES

A. Description

This CET item shall only be applied to trolley structure systems that do not contain concrete yoke foundations. This CET item shall only be used for trolley systems that have rails and wood ties only.

Under this section, the Contractor shall provide all incremental labor, equipment, insurance and incidentals required to maintain and protect and accommodate the integrity of utility facilities that include but are not limited to:

1. Conduits;
2. Conductors;
3. Concrete encased Conduit banks;
4. Steel Pipes; Steam Facilities;
5. Oil-o-static Facilities;
6. Non-cost Sharing Gas Facilities;
7. Steam Facilities;

of various sizes and configurations crossing trolley structures at various angles located within a zone of protection, as indicated on Sketch CET 798, during the removal of trolley structures and subsequent backfilling operations. Utility facilities that run parallel to trolley structures are not included within this item and will be paid for under the appropriate CET item. The work shall be performed in accordance with the contract plans, the specifications, and as encountered during construction and directed by the facility operator.

B. Materials – N/A

C. Method of Construction

The Contractor shall maintain, protect, and accommodate the integrity of all utility facilities of various sizes and configurations crossing trolley structures within a zone of protection as indicated in Sketch CET 798, during removal of trolley structures and subsequent backfilling and compaction operations under other contract item(s). The facility operator shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the utility and ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected utilities sufficiently, and at the sole discretion of the facility operator to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with care to remove existing trolley structure within the zone of protection whose limit shall be defined as a distance of 24 inches from the outside face of each utility crossing.

D. Method of Measurement

The quantity to be measured for payment shall be the number of linear feet of modified trolley structure removal within the zone of protection as indicated on CET Sketch 798, measured along the centerline of trench. The trench is defined as one track set containing two rails. The zone of protection shall be defined, for the purpose of this agreement, as the boundary/area designated on the plans or a boundary/area 24 inches to either side of each of the designated facilities, based upon available records and/or information obtained from prior or new test pits, or any combination thereof. Where overlapping of the zones occurs due to multiple facilities, the boundary/area shall be modified to one zone measured from the outside limits. The contract item specified under this section shall not be measured for payment in conjunction with other types of utility items. Modifications to work methods required in areas between zones of protection for multiple utilities or CET facilities shall not be measured for payment and are included in the price bid for this item.

E. Price to Cover

The unit price per linear foot shall include the incremental cost for all labor, equipment, insurance and incidentals required to maintain and protect and accommodate the integrity of utility facilities during the removal of trolley structures (including rails, timber ties, trolley conduits and main conduit), and backfilling and compacting within a zoned area designated for protection of utilities by the facility operator.

The price shall include any additional cutting, removing and disposing of roadway materials; hand or machine excavation; trucking and disposing of excavated materials, installation and removal of sheeting; and furnishing, installing and compacting backfill that may be required to support, protect, maintain and accommodate the integrity of utility facilities. The price shall also include means to ascertain the numerical relationship between utility and the trolley structure and the incremental cost for providing all vehicular and pedestrian traffic maintenance necessary to perform the work.

The Contractor shall be responsible for any and all damages resulting from and/or due to trolley demolition operations that are not performed in accordance with the specifications.

F. References

1. NYS Industrial Code Rule 753
2. CET 798

CET 799 - MODIFICATION OF NON CONCRETE TROLLEY STRUCTURES REMOVAL PARALLEL TO UTILITY FACILITIES

A. Description

This CET item shall only be applied to trolley structure systems that do not contain concrete yoke foundations. This CET item shall only be used for trolley systems that have rails and wood ties only.

Under this section, the Contractor shall provide all incremental labor, equipment, insurance and incidentals required to maintain, protect, support and accommodate the integrity of utility facilities that include but are not limited to:

1. Conduits;
2. Conductors;
3. Concrete encased Conduit banks;
4. Steel Pipes; Steam Facilities;
5. Oil-o-static Facilities; and
6. Non-cost Sharing Gas Facilities;
7. Steam Facilities.

of various sizes and configurations paralleling or encroaching trolley structures located within a zone of protection, as indicated on the Plans or as directed by the field representative, during all trolley structure removal operations and subsequent backfilling operations. Utility facilities which cross over, under and between the trolley structures are not included within this item and will be paid for under the appropriate CET item. The work shall be performed in accordance with the contract plans, the specifications, and as encountered during construction and directed by the facility operator(s).

B. Materials – N/A

C. Method of Construction

The Contractor shall maintain, protect, support and accommodate the integrity of all utility facilities of various sizes and configurations paralleling or encroaching trolley structures within a zone of protection as indicated on the Plans or as directed by the field representative, during removal of trolley structures and subsequent backfilling and compaction operations under other contract item(s). The facility operator(s) shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the utility and ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected utilities sufficiently, and at the sole discretion of the facility operator(s) to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with care to remove existing trolley structure within the zone of protection whose limit shall be defined as a distance of 24" inches from the outside face of each utility to the edge of the trolley structure.

D. Method of Measurement

The quantity to be measured for payment shall be the number of linear feet of modified trolley structure removal within the zone of protection as indicated on the plans, measured along the centerline of trench. The trench is defined as one track set containing two rails. The contract item specified under this section shall not be measured for payment in conjunction with other types of utility items. Modifications to work methods required in areas between zones of protection for multiple utilities or CET facilities shall not be measured for payment and are included in the price bid for this item.

E. Price to Cover

The unit price per linear foot shall include the incremental cost for all labor, equipment, insurance and incidentals required to maintain, protect, support and accommodate the integrity of utility facilities paralleling or encroaching trolley structures during the removal of trolley structures (including rails, timber ties, trolley conduits, and main conduits), and backfilling and compacting within a zoned area designated for protection of utilities by the facility operator(s).

The unit price shall also include any additional cutting, removing and disposing of roadway materials; hand or machine excavation; trucking and disposing of excavated materials, installation and removal of sheeting; and furnishing, installing and compacting backfill that may be required to support, protect, maintain and accommodate the integrity of utility facilities. The price shall also include means to ascertain the numerical relationship between utility and the trolley structure, and the incremental cost for providing all vehicular and pedestrian traffic maintenance necessary to perform the work.

The Contractor shall be responsible for any and all damages resulting from and/or due to trolley demolition operations that are not performed in accordance with the specifications.

F. References

1. NYS Industrial Code Rule 753
2. CET 799

CET 800 - MODIFICATION OF CONCRETE YOKE TROLLEY STRUCTURES REMOVAL WHEN CROSSING UTILITY FACILITES

A. Description

This CET item shall only be applied to trolley structure systems that contain concrete yoke foundations. This CET item shall not be used for trolley systems that have rails and wood ties only.

Under this section, the Contractor shall provide all incremental labor, equipment, insurance and incidentals required to maintain and protect and accommodate the integrity of utility facilities that include but are not limited to:

1. Conduits;
2. Conductors;
3. Concrete encased Conduit banks;
4. Steel Pipes; Steam Facilities;
5. Oil-o-static Facilities; and
6. Non-cost Sharing Gas Facilities;
7. Steam Facilities.

of various sizes and configurations crossing trolley structures at various angles located within a zone of protection, as indicated on Sketch CET 800, during the removal of trolley structures and subsequent backfilling operations. Utility facilities that run parallel to trolley structures are not included within this item and will be paid for under the appropriate CET item. The work shall be performed in accordance with the contract plans, the specifications, and as encountered during construction and directed by the facility operator.

B. Materials – N/A

C. Method of Construction

The Contractor shall maintain, protect, and accommodate the integrity of all utility facilities of various sizes and configurations crossing trolley structures within a zone of protection as indicated in Sketch CET 800, during removal of trolley structures and subsequent backfilling and compaction operations under other contract item(s). The facility operator shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the utility and ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected utilities sufficiently, and at the sole discretion of the facility operator to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with hand held power tools to remove existing trolley structure within the zone of protection whose limit shall be defined as a perimeter located 36 inches from the outside face of each utility crossing.

D. Method of Measurement

The quantity to be measured for payment shall be the number of linear feet of modified trolley structure removal within the zone of protection as indicated on CET Sketch 800, measured along the centerline of trench. The trench is defined as one track set containing two rails. The zone of protection shall be defined, for the purpose of this agreement, as the boundary/area designated on the plans or a boundary/area 3 feet to either side of each of the designated facilities, based upon available records and/or information obtained from prior or new test pits, or any combination thereof. Where overlapping of the zones occurs due to multiple facilities, the boundary/area shall be modified to one zone measured from the outside limits. The contract item specified under this section shall not be measured for payment in conjunction with other types of utility items. Modifications to work methods required in areas between zones of protection for multiple utilities or CET facilities shall not be measured for payment and are included in the price bid for this item.

E. Price to Cover

The unit price per linear foot shall include the incremental cost for all labor, equipment, insurance and incidentals required to maintain and protect and accommodate the integrity of utility facilities during the removal of trolley structures (including rails, timber ties, yokes, trolley conduits, main conduit, rail and yoke foundations), and backfilling and compacting within a zoned area designated for protection of utilities by the facility operator.

The unit price shall also include any additional cutting, removing and disposing of roadway materials; hand or machine excavation; trucking and disposing of excavated materials, installation and removal of sheeting; and furnishing, installing and compacting backfill that may be required to support, protect, maintain and accommodate the integrity of utility facilities. The unit price shall also include the incremental cost for providing all vehicular and pedestrian traffic maintenance necessary to perform the work.

The Contractor shall be responsible for any and all damages resulting from and/or due to trolley demolition operations that are not performed in accordance with the specifications.

F. References

1. NYS Industrial Code Rule 753
2. Sketch CET 800

CET 801 - MODIFICATION OF CONCRETE YOKE TROLLEY STRUCTURES REMOVAL PARALLEL TO UTILITY FACILITIES

A. Description

This CET item shall only be applied to trolley structure systems that contain concrete yoke foundations. This CET item shall not be used for trolley systems that have rails and wood ties only.

Under this section, the Contractor shall provide all incremental labor, equipment, insurance and incidentals required to maintain, protect, support and accommodate the integrity of utility facilities that include but are not limited to:

1. Conduits;
2. Conductors;
3. Concrete encased Conduit banks;
4. Steel Pipes; Steam Facilities;
5. Oil-o-static Facilities; and
6. Non-cost Sharing Gas Facilities;
7. Steam Facilities;

of various sizes and configurations paralleling or encroaching trolley structures located within a zone of protection, as indicated in sketch CET 801 or as directed by the field representative, during all trolley structure removal operations and subsequent backfilling operations. Utility facilities which cross over, under and between the trolley structures are not included within this item and will be paid for under the appropriate CET item. The work shall be performed in accordance with the contract plans, the specifications, and as encountered during construction and directed by the facility operator(s).

B. Materials – N/A

C. Method of Construction

The Contractor shall maintain, protect, support and accommodate the integrity of all utility facilities of various sizes and configurations paralleling or encroaching trolley structures within a zone of protection as indicated in sketch 801 or as directed by the field representative, during removal of trolley structures and subsequent backfilling and compaction operations under other contract item(s). The facility operator(s) shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the utility and ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected utilities sufficiently, and at the sole discretion of the facility operator(s) to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with hand held power tools to remove existing trolley structure within the zone of protection whose limit shall be defined as a perimeter located 36 inches from the outside face of each utility.

D. Method of Measurement

The quantity to be measured for payment shall be the number of linear feet of modified trolley structure removal within the zone of protection as indicated on the plans, measured along the centerline of trench. The trench is defined as one track set containing two rails. The contract item specified under this section shall not be measured for payment in conjunction with other types of utility items. Modifications to work methods required in areas between zones of protection for multiple utilities or CET facilities shall not be measured for payment and are included in the price bid for this item.

E. Price to Cover

The unit price per linear foot shall include the incremental cost for all labor, equipment, insurance and incidentals required to maintain, protect, support and accommodate the integrity of utility facilities paralleling or encroaching trolley structures during the removal of trolley structures (including rails, timber ties, yokes, trolley conduits, main conduit, rail and yoke foundations), and backfilling and compacting within a zoned area designated for protection of utilities by the facility operator(s).

The unit price shall also include any additional cutting, removing and disposing of roadway materials; hand or machine excavation; trucking and disposing of excavated materials, installation and removal of sheeting; and furnishing, installing and compacting backfill that may be required to support, protect, maintain and accommodate the integrity of utility facilities. The unit price shall also include the incremental cost for providing all vehicular and pedestrian traffic maintenance necessary to perform the work.

The Contractor shall be responsible for any and all damages resulting from and/or due to trolley demolition operations that are not performed in accordance with the specifications.

F. References

1. NYS Industrial Code Rule 753
2. Sketch CET 801.

CET 802 - SPECIAL MODIFICATION OF WORK FOR INSTALLATION OF NEW CURBS AND SIDEWALKS

A. Description

Under this Section, the Contractor shall be required to modify work methods of installing new curb and sidewalk in order to maintain, protect and accommodate the integrity of private Utility Facilities located within a zone of protection immediately beneath existing sidewalk and curb designated to be replaced under other Contract items. The zone of protection shall define an area of curb and sidewalk where: work is within the vicinity of private Utility Facilities as shown on the Special Care Excavation Plan or where utilities are encountered during construction that are within 18 inches of either face of curb and/or 12 inches of the base material of proposed curb and/or sidewalk.

B. Materials – N/A

C. Method of Operation/Construction

Once clearances have been verified by available records to the satisfaction of the facility operator, the Contractor shall exercise extreme caution to install new curb and sidewalks within zoned areas of protection. Exercising extreme caution shall mean utilizing appropriate methods of operation/construction, special operations and sequencing, and by employing hand labor, using hand held tools only, under the personal direction of the appropriate facility operator. The work shall incorporate, but not be limited by, the following restrictions:

1. Removal of Existing Curb and Sidewalk

Removal of existing curb and sidewalk material shall be performed by saw cutting the curb and sidewalk, for a depth of not less than 2", to assist the Contractor in breaking up the concrete curb and sidewalk for removal by hand. Curb and sidewalk removal shall be done with hand labor, using hand held tools only while working from adjacent undisturbed sidewalk and/or pavement. Furthermore, it shall be understood to mean that digging and/or excavating directly with power-mechanized earth moving equipment will not be permitted. Power mechanized earth moving equipment may only be used as a depository of material removed from the excavation by hand as described above. All equipment, methods, and maintenance and protection provisions shall require full authorization by the facility operator.

2. Preparation and Installation of New Curb and Temporary and New Sidewalk

Backfilling, filling, grading of sub base, and installation of new curb and both temporary and new sidewalk, as required under other Contract Items, shall be performed utilizing materials, equipment and methods of construction that will insure the integrity of the private utility facilities and at the same time meet all requirements for this work as specified in other sections of this contract.

3. Compaction

The Contractor shall compact all sub-grade and new sub-base materials by utilizing native and/or blended fill material, equipment and methods of construction that will ensure integrity of private Utility Facilities and at the same time meet all requirements for compaction as specified in Section 4.11 of the Standard Highway Specifications.

4. Powered Excavating Equipment Limitations

The Contractor shall not employ powered or mechanical excavating equipment within the zone of protection. Powered or mechanical excavating equipment may only be used as a depository for material removed from the excavation by hand as described above.

The Contractor shall not be permitted to store, stand and/or travel equipment/vehicles on specified unpaved zoned protection areas.

D. Method of Measurement

1. ITEM CET 802A

The quantity of "Special Care Excavation and Restoration for Sidewalk Work" to be measured for payment shall be the number of square feet (SF) of new sidewalk actually installed under other contract items within the zone of protection areas requested by the facility operator. For payment purposes, the horizontal limits for a zone of protection area shall be defined as the area designated on the plans or an area equal to the length of the designated facility multiplied by its width plus 18 inches on each side. Where overlapping of zones occur due to multiple facilities, the area will be modified to one zone measured from the outside limits. Where the 18-inch area falls beyond the curb line the outside boundary shall be the curb line.

2. ITEM CET 802B

The quantity of "Special Care Excavation and Restoration for Curb Work" to be measured for payment shall be equal to the number of linear feet (LF) of new curb actually installed under other contract items within the zone of protection areas requested by the facility operator.

E. Price to Cover

1. ITEM 802A

The contract price per square foot for "Special Care Excavation and Restoration for Sidewalk Work" shall be the incremental cost difference of all labor, materials, equipment, insurance and incidentals required for excavation and disposal of pavement, base and all other material to new sub-grade within and adjacent to zone of protection areas; saw cutting, grading, preparation of sub-grades, backfilling and compaction within zone of protection areas; all in accordance with the plans, the specifications and the directions of the facility operator. The price shall further include the cost of maintaining, protecting and accommodating the integrity of private Utility Facilities during the performance of sidewalk reconstruction (under other Contract Items) within zone of protection areas designated on the plans or as directed by the facility operator.

2. ITEM 802B

The contract price per linear foot for "Special Care Excavation and Restoration for Curb Work" shall be the incremental cost difference of all labor, materials, equipment, insurance and incidentals required to install new curbs and temporary restoration material under other Contract items, within and adjacent to zone of protection areas; all in accordance with the plans, the specifications and the directions of the facility operator. The price shall further include the cost of maintaining, protecting, and accommodating the integrity of private Utility Facilities during the performance of curb reconstruction (under other Contract Items) within zone of protection areas designated on the plans or as directed by the facility operator.

Payment for all work specified herein shall be made on a one-time basis only; no payment will be made for the same area of sidewalk or length of curb more than one time. In addition, work under these items shall not be paid in combination with other utility items.

F. References

1. Section 4.11 Standard Highway Specification

(NO TEXT ON THIS PAGE)

CET 803 - LINE CUT BY PNEUMATIC TOOLS IN LIEU OF SAW CUT ASSOCIATED WITH ROADWAY REMOVAL OPERATIONS

A. Description

Under this section, the Contractor shall provide all incremental labor, equipment, insurance and incidentals required to maintain, protect, support and accommodate the integrity of utility facilities that include but are not limited to oil o static facilities, and any other facilities of various sizes and configurations paralleling or crossing proposed saw cut areas located within a zone of protection associated with roadway removal operations, as determined by the utility operator. Utility facilities which cross under and between the saw cut area are included within this item. The work shall be performed in accordance with the contract plans, the specifications, and as encountered during construction and determined by the facility operator(s).

B. Materials – N/A

C. Method of Construction

The Contractor shall maintain, protect, support and accommodate the integrity of all utility facilities of various sizes and configurations paralleling or crossing the saw cut area within a zone of protection as determined by the Facility Operator, during the roadway saw cut. The facility operator(s) shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use pneumatic tools to line cut the pavement in lieu of saw cut by machine. It is the sole discretion of the facility operator(s) to determine relationships and/or dimensions, and advise the Contractor to proceed with pneumatic tools to line cut existing roadway structure.

D. Method of Measurement

The quantity to be measured for payment shall be the number of linear feet of line cut performed by pneumatic tools measured along the length of cut. The contract item specified under this section shall not be measured for payment in conjunction with other types of utility items. Modifications to work methods required in areas between zones of protection for multiple utilities or CET facilities shall not be measured for payment and are included in the price bid for this item.

CET 803.1 Line cut Asphalt Roadway (LF)
CET 803.2 Line cut any combination of Asphalt and Concrete Roadway (LF)
CET 803.3 Line cut any combination of Asphalt, Concrete, and Belgium Block (LF)

E. Price to Cover

The unit price per linear foot shall include the incremental cost for all labor, equipment, insurance and incidentals required to maintain, protect, support and accommodate the integrity of utility facilities paralleling or crossing the saw cut area associated with the removal of roadway designated for protection of utilities by the facility operator(s).

The unit price shall also include any additional cutting, removing and disposing of roadway materials; and any backfill that may be required to support, protect, maintain and accommodate the integrity of utility facilities. The price shall also include the incremental cost for providing all vehicular and pedestrian traffic maintenance necessary to perform the work.

The Contractor shall be responsible for any and all damages resulting from and/or due to saw cutting operations that are not performed in accordance with the specifications.

F. References

1. NYS Industrial Code Rule 753

CET 1006V - 1020V VERTICAL OR ROLLED WATERMAIN OFFSET

A. Description

Under this section, the contractor shall provide all incremental labor, materials, equipment, insurance and incidentals required to offset water mains for vertical or rolled movement around exposed subsurface utilities encountered during construction. The work shall be performed in accordance with the contract plans, specifications and at the direction of the facility operator, upon written approval from the resident engineer. The trenches to be excavated shall be determined by the size of the water main and the extent of adjustment required to avoid utilities interferences during all phases of contract work. This work shall be performed in accordance with all the applicable City and utility specifications, and at the direction of the facility operator.

B. Materials

The contractor shall supply all materials necessary to offset the city water main(s) in accordance with the City standard water main specifications and approved by the facility operator.

C. Methods of Construction

The contractor shall cut, break and remove various thicknesses of surface and base pavement, excavate by hand to expose all utility facilities within the trench. Upon exposing the affected utility(s) determine clearances at the sole discretion of the facility operator. The contractor shall then be permitted to proceed with a combination of hand and machine excavation sufficient to accommodate the appropriate water main offset(s) under or above all utility facilities interfering with the installation of the water main as directed by the facility operator.

The contractor shall layout, measure, load and transport, unload, job store, as necessary, handle and lay fittings or portion of pipe, including labor, equipment and material for the complete installation of a water main offset including, but not limited to, fittings, all types of joints, retainer glands, rods and bands.

D. Method of Measurement

The quantity to be measured for vertical or rolled water main offset(s) shall be each (ea) water main offset which shall be defined as one (1) vertical or rolled water main offset in its final location with four (4) fittings and all appurtenances to avoid a single or multiple utility interference as directed by the facility operator. Each type of water main offset shall be paid for separately. The types of water main offsets are defined as follows:

1. CET-1006V – 6" Vertical or rolled water main offset
2. CET-1008V – 8" Vertical or rolled water main offset
3. CET-1012V – 12" Vertical or rolled water main offset
4. CET-1016V – 16" Vertical or rolled water main offset
5. CET-1020V – 20" Vertical or rolled water main offset

E. Price to Cover

The price for a water main offset shall include the cost of all labor, materials, equipment, insurance, and incidentals necessary to completely install a full water main offset inclusive of, but is not limited to, four (4) fittings, all types of joints, retainer glands, rods and bands. If less than four (4) fittings are used, payment for this item shall be proportional to the number of fittings installed. For example, if 2 fittings are installed payment for this item shall be 50% of the applicable price. The contractor shall protect and maintain the integrity of the interfering facilities without disruption of service to the utility facility customers and in accordance with the contract documents. All associated maintenance of traffic, traffic plates, sheeting, cutting, breaking and removal of various thickness of surface and base pavement, excavating by hand to expose existing facilities, widening the trench, and any extra depth to facilitate the work, snaking, furnish, place and tamp backfill after water main installation, required removing, trucking, storing, and dispensing of material shall be deemed included in the unit price. The price shall also include the cost of providing temporary pavement restoration, as required. Permanent pavement restoration if applicable shall be paid separately. The support and protection of utilities crossings encountered while performing this work shall be included in this CET item. No additional payment shall be made for utility crossings.

E. References

1. Sketch CET 1000V

CET Reference Sketches

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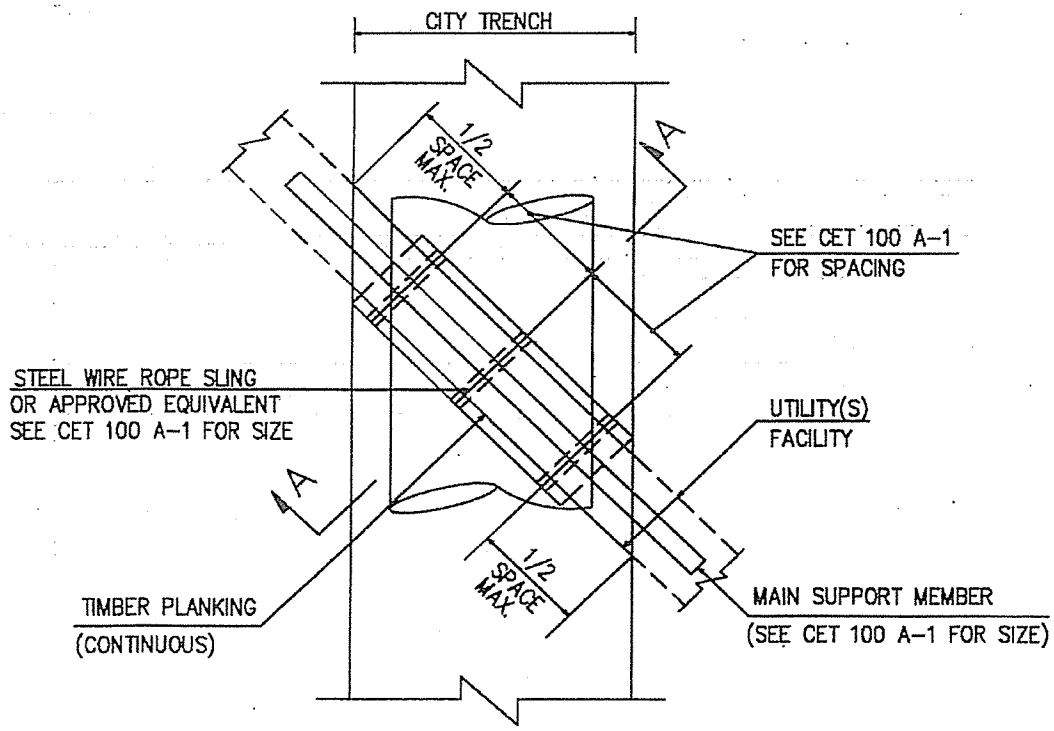
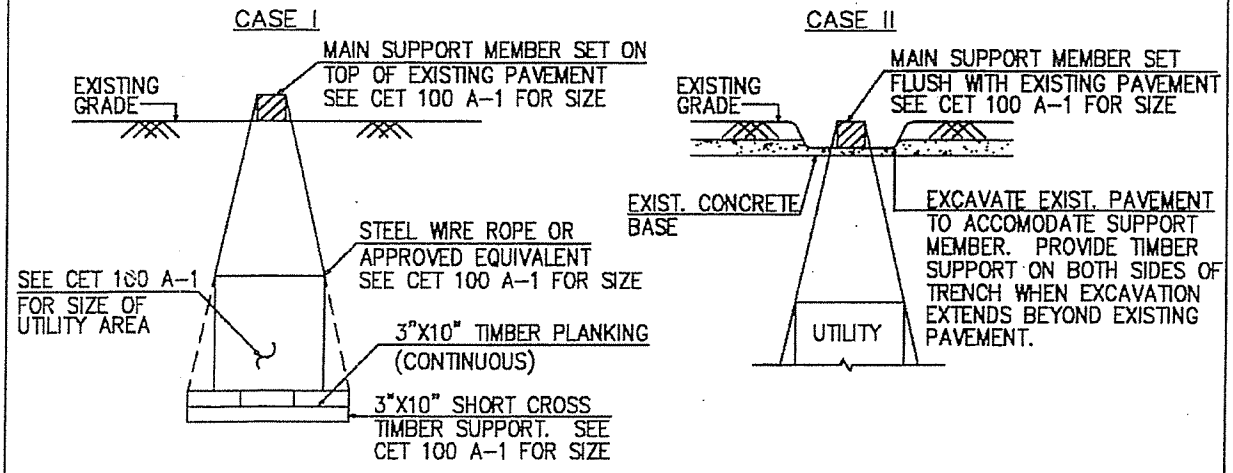


PLAN

N.T.S.



SECTION A–A

N.T.S.

NOTE:
VARIOUS ANGLES AND DEPTH ARE AS DEFINED IN ITEM CET 100–116.

REVISIONS
11–07–03

CET SKETCH

TEMPORARY SUPPORT OF UTILITY(S) CROSSING CITY TRENCH

CONTRACT NO.	SKETCH NO.
	CET 100 A

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WATER/ SEWER DIAM.	CROSS SECTION AREA OF PRIVATE UTILITIES	INTERMEDIATE SUPPORT SLING *		NUMBER OF MAIN TIMBER SUPPORT MEMBERS				MAIN STEEL SUPPORT MEMBERS	TIMBER SHORT SIZE SEE NOTE 1
		NUMBER REQUIRED	UTILITY SUPPORT LENGTH	4" X 4"	4" X 8"	3" X 10"	4" X 12"	1 REQUIRED	1 PER SLING
D<12"	A<=0.75 S.F.	1	7.1 FT	1	–	–	–	W 4 X 13	2" X 4"
	0.75<A<=2.00 S.F.	2	7.1 FT	–	1	–	–	W 6 X 15	3" X 4"
	2.00<A<=6.00 S.F.	3	7.1 FT	–	–	2	–	W 6 X 15	4" X 4"
	6.00<A<=10.0 S.F.	4	7.1 FT	–	–	3	–	W 8 X 18	3" X 10"
	10.0<A<=15.0 S.F.	4	7.1 FT	–	–	–	2	W 6 X 25	3" X 10"
	15.0<A<=20.0 S.F.	4	7.1 FT	–	–	–	3	W 6 X 25	4" X 10"
	>20.0 S.F.	(METHOD OF SUPPORT TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY FACILITY OPERATOR)							
12"<D<24"	<=0.75 S.F.	1	8.5 FT	2	–	–	–	W 4 X 13	2" X 4"
	0.75<A<=2.00 S.F.	2	8.5 FT	–	1	–	–	W 6 X 15	3" X 4"
	2.00<A<=6.00 S.F.	4	8.5 FT	–	–	3	–	W 8 X 18	4" X 4"
	6.00<A<=10.0 S.F.	5	8.5 FT	–	–	4	–	W 8 X 18	3" X 10"
	10.0<A<=15.0 S.F.	5	8.5 FT	–	–	–	3	W 6 X 25	3" X 10"
	15.0<A<=20.0 S.F.	5	8.5 FT	–	–	–	4	W 6 X 25	4" X 10"
	>20.0 S.F.	(METHOD OF SUPPORT TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY FACILITY OPERATOR)							
24"<D<36"	A<=0.75 S.F.	1	9.9 FT	2	–	–	–	W 4 X 13	2" X 4"
	0.75<A<=2.00 S.F.	3	9.9 FT	–	1	–	–	W 6 X 15	3" X 4"
	2.00<A<=6.00 S.F.	4	9.9 FT	–	–	3	–	W 8 X 18	4" X 4"
	6.00<A<=10.0 S.F.	6	9.9 FT	–	–	5	–	W 8 X 18	3" X 10"
	10.0<A<=15.0 S.F.	6	9.9 FT	–	–	–	4	W 6 X 25	3" X 10"
	15.0<A<=20.0 S.F.	6	9.9 FT	–	–	–	5	W 8 X 31	4" X 10"
	>20.0 S.F.	(METHOD OF SUPPORT TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY FACILITY OPERATOR)							
36"<D<48"	A<=0.75 S.F.	2	11.3 FT	3	–	–	–	W 4 X 13	2" X 4"
	0.75<A<=2.00 S.F.	3	11.3 FT	–	2	–	–	W 6 X 15	3" X 4"
	2.00<A<=6.00 S.F.	5	11.3 FT	–	–	4	–	W 8 X 18	4" X 4"
	6.00<A<=10.0 S.F.	7	11.3 FT	–	–	7	–	W 8 X 18	3" X 10"
	10.0<A<=15.0 S.F.	7	11.3 FT	–	–	–	5	W 8 X 31	3" X 10"
	15.0<A<=20.0 S.F.	7	11.3 FT	–	–	–	7	W 8 X 31	4" X 10"
	>20.0 S.F.	(METHOD OF SUPPORT TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY FACILITY OPERATOR)							
48"<D<54"	A<=0.75 S.F.	2	12.0 FT	3	–	–	–	W 4 X 13	2" X 4"
	0.75<A<=2.00 S.F.	3	12.0 FT	–	2	–	–	W 6 X 15	3" X 4"
	2.00<A<=6.00 S.F.	5	12.0 FT	–	–	5	–	W 8 X 18	4" X 4"
	6.00<A<=10.0 S.F.	7	12.0 FT	–	–	8	–	W 8 X 18	3" X 10"
	10.0<A<=15.0 S.F.	7	12.0 FT	–	–	–	6	W 8 X 31	3" X 10"
	15.0<A<=20.0 S.F.	7	12.0 FT	–	–	–	7	W 10 X 33	4" X 10"
	>20.0 S.F.	(METHOD OF SUPPORT TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY FACILITY OPERATOR)							
⇔ 54"<D<60"	A<=0.75 S.F.	2	12.7 FT	3	–	–	–	W 4 X 13	2" X 4"
	0.75<A<=2.00 S.F.	4	12.7 FT	–	2	–	–	W 6 X 15	3" X 4"
	2.00<A<=6.00 S.F.	6	12.7 FT	–	–	5	–	W 8 X 18	4" X 4"
	6.00<A<=10.0 S.F.	8	12.7 FT	–	–	9	–	W 8 X 18	3" X 10"
	10.0<A<=15.0 S.F.	8	12.7 FT	–	–	–	6	W 8 X 31	3" X 10"
	15.0<A<=20.0 S.F.	8	12.7 FT	–	–	–	8	W 10 X 33	4" X 10"
	>20.0 S.F.	(METHOD OF SUPPORT TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY FACILITY OPERATOR)							
60"<D<72"	A<=0.75 S.F.	2	14.1 FT	4	–	–	–	W 4 X 13	2" X 4"
	0.75<A<=2.00 S.F.	4	14.1 FT	–	2	–	–	W 6 X 15	3" X 4"
	2.00<A<=6.00 S.F.	7	14.1 FT	–	–	6	–	W 8 X 18	4" X 4"
	6.00<A<=10.0 S.F.	9	14.1 FT	–	–	10	–	W 8 X 31	3" X 10"
	10.0<A<=15.0 S.F.	9	14.1 FT	–	–	–	8	W 10 X 45	3" X 10"
	⇔15.0<A<=20.0 S.F.	9	14.1 FT	–	–	–	10	W 10 X 45	4" X 10"
	>20.0 S.F.	(METHOD OF SUPPORT TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY FACILITY OPERATOR)							
72"<D<84"	A<=0.75 S.F.	2	15.5 FT	5	–	–	–	W 4 X 13	2" X 4"
	0.75<A<=2.00 S.F.	5	15.5 FT	–	3	–	–	W 6 X 15	3" X 4"
	2.00<A<=6.00 S.F.	7	15.5 FT	–	–	8	–	W 8 X 18	4" X 4"
	6.00<A<=10.0 S.F.	10	15.5 FT	–	–	12	–	W 8 X 31	3" X 10"
	10.0<A<=15.0 S.F.	10	15.5 FT	–	–	–	9	W 10 X 45	3" X 10"
	15.0<A<=20.0 S.F.	10	15.5 FT	–	–	–	12	W 10 X 45	4" X 10"
	>20.0 S.F.	(METHOD OF SUPPORT TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY FACILITY OPERATOR)							
> 84"	A<=0.75 S.F.	2	15.5 FT	5	–	–	–	W 4 X 13	2" X 4"
	0.75<A<=2.00 S.F.	5	15.5 FT	–	3	–	–	W 6 X 15	3" X 4"
	2.00<A<=6.00 S.F.	7	15.5 FT	–	–	8	–	W 8 X 18	4" X 4"
	6.00<A<=10.0 S.F.	10	15.5 FT	–	–	12	–	W 8 X 31	3" X 10"
	10.0<A<=15.0 S.F.	10	15.5 FT	–	–	–	9	W 10 X 45	3" X 10"
	15.0<A<=20.0 S.F.	10	15.5 FT	–	–	–	12	W 10 X 45	4" X 10"
	>20.0 S.F.	(METHOD OF SUPPORT TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY FACILITY OPERATOR)							

NOTES

1. TIMBER SHORT CROSS SIZE SUPPORTING 3"x10" CONTINUOUS TIMBER PLANKS
2. THIS SKETCH SHALL NOT BE USED FOR COMPUTATION OF PAYMENT LINES. FOR PAYMENT SEE CET SKETCH 100E.

* SLING SHALL BE 2" WIDE NYLON STRAP OR EQUIVALENT (SLING CAPACITY SHALL BE 6,000 LBS.) ONE (1) TIMBER SHORT CROSS REQUIRED AT EACH SLING SUPPORTING 3"x10" CONTINUOUS TIMBER PLANKS.

ASSUMPTIONS

1. ASSUME CROSS SECTION AREAS ARE SOLID CONCRETE AT 150lb./C.F.
2. ASSUME ALLOWABLE BENDING STRESS FOR TIMBER MEMBERS IS 1200 PSI.
3. ASSUME ALLOWABLE TIMBER SHEER STRESS IS 90 PSI.
4. ASSUME ALLOWABLE SHEAR STRESS FOR STEEL MEMBERS IS 1000 PSI.

⇔ ALSO APPLIES FOR 9'x9' EXCAVATIONS FOR CATCHBASINS UNDER ITEM CET 225

REVISIONS
11–07–03

CET SKETCH

SUPPORT REQUIREMENTS FOR PRIVATE UTILITY CROSSING ITEMS (PLAN & SECTION A–A SKETCH NO. 100 A)

CONTRACT NO.	SKETCH NO.
	CET 100 A–1

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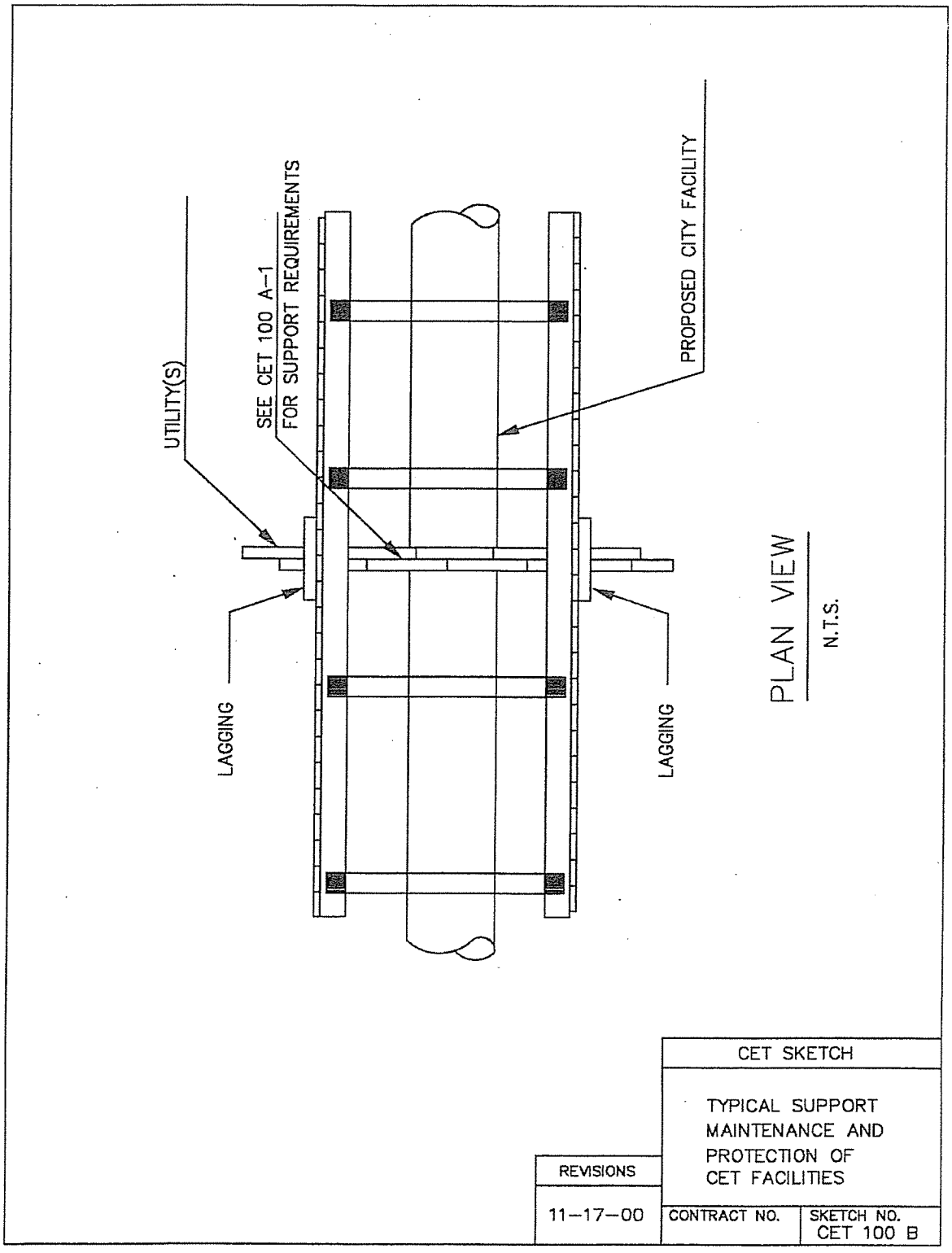
UTILITY(S)
SEE CET 100 A-1
FOR SUPPORT REQUIREMENTS
PROPOSED CITY FACILITY
LAGGING
LAGGING
PLAN VIEW
N.T.S.
CET SKETCH
TYPICAL SUPPORT
MAINTENANCE AND
PROTECTION OF
CET FACILITIES
REVISIONS
11-17-00
CONTRACT NO.
SKETCH NO.
CET 100 B

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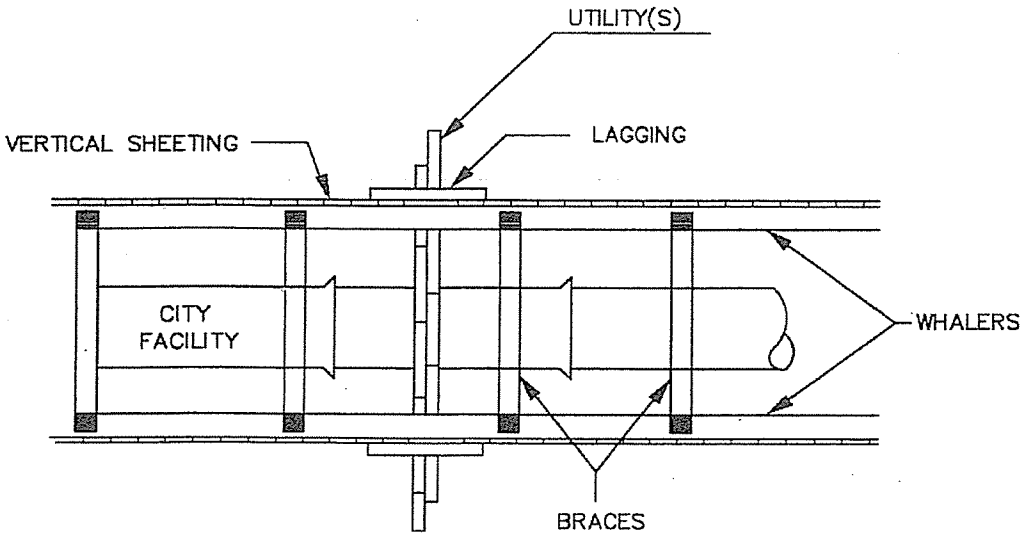
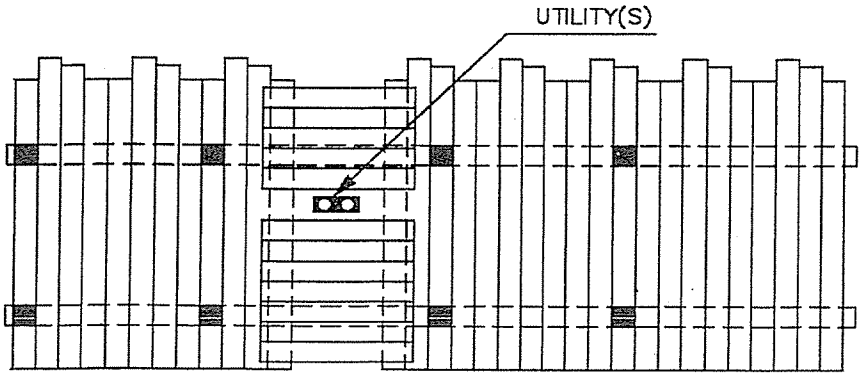


PLAN VIEW

N.T.S.



PROFILE VIEW

N.T.S.

CET SKETCH	
LAGGING	
REVISIONS	
11-17-00	CONTRACT NO. / SKETCH NO. CET 100 C

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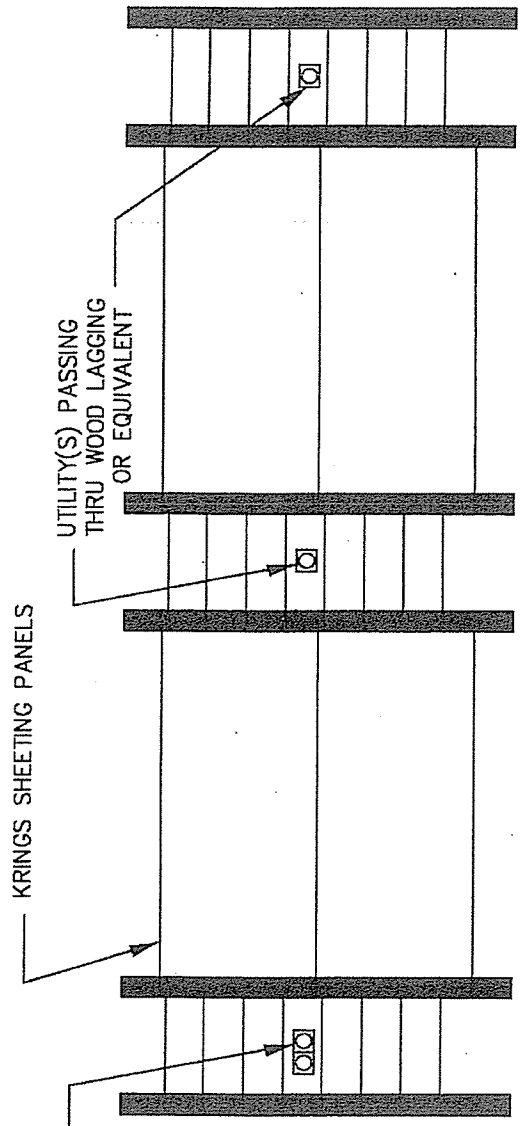

PROFILE VIEW

N.T.S.

CET SKETCH	
PROFILE VIEW OF KRINGS SHEETING	
REVISIONS	
11-17-00	CONTRACT NO. / SKETCH NO. CET 100 C-1

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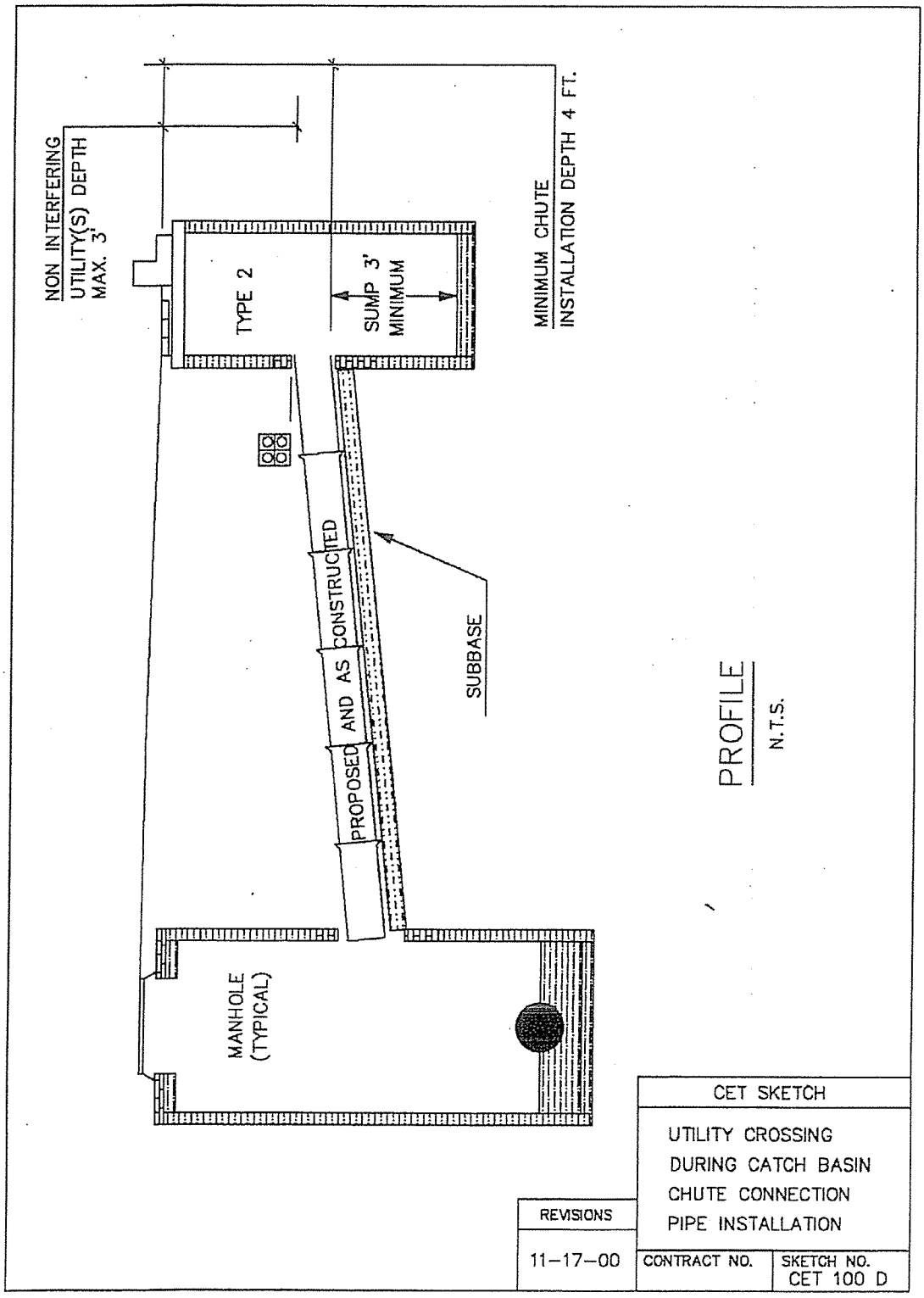
NON INTERFERING
UTILITY(S) DEPTH
MAX. 3'
TYPE 2
SUMP 3'
MINIMUM
MINIMUM CHUTE
INSTALLATION DEPTH 4 FT.
PROPOSED AND AS CONSTRUCTED
SUBBASE
MANHOLE
(TYPICAL)
PROFILE
N.T.S.
CET SKETCH
UTILITY CROSSING
DURING CATCH BASIN
CHUTE CONNECTION
PIPE INSTALLATION
REVISIONS
11-17-00
CONTRACT NO.
SKETCH NO.
CET 100 D

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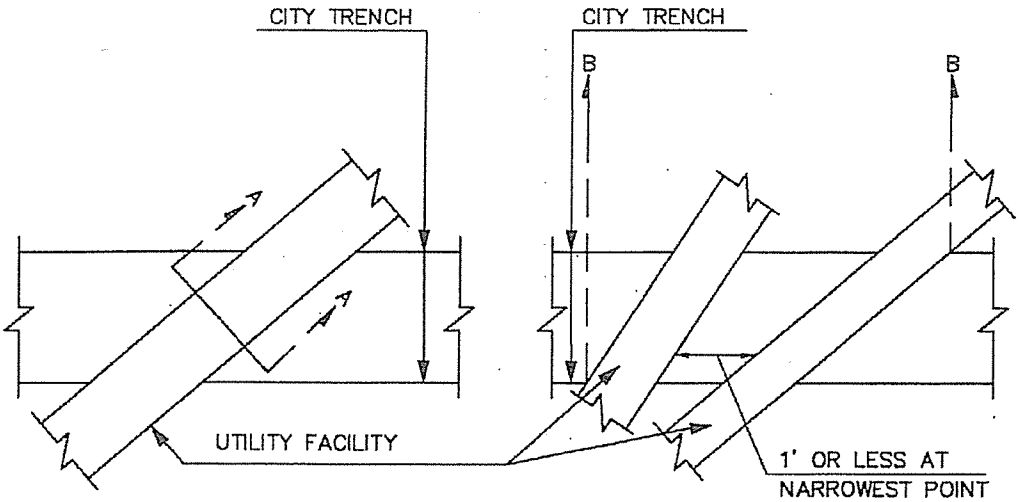
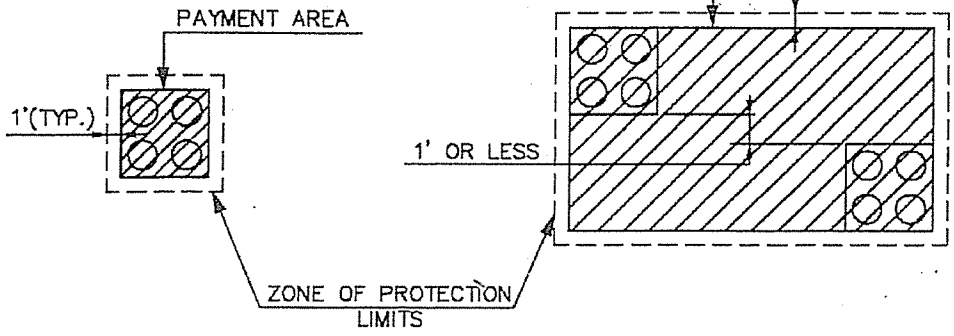


SINGLE UTILITY CROSSING

NOT TO SCALE

MULTIPLE UTILITY CROSSING

NOT TO SCALE



SECTION A–A

NOT TO SCALE

SECTION B–B

(AT WIDEST POINT)

NOT TO SCALE

NOTE:
VARIOUS ANGLES AND DEPTH ARE AS DEFINED IN ITEM CET 100–116.

CET SKETCH	
TYPICAL METHOD OF MEASUREMENT FOR UTILITY(S) CROSSING	
REVISIONS	
5/7/10	CONTRACT NO. / SKETCH NO. CET 100 E

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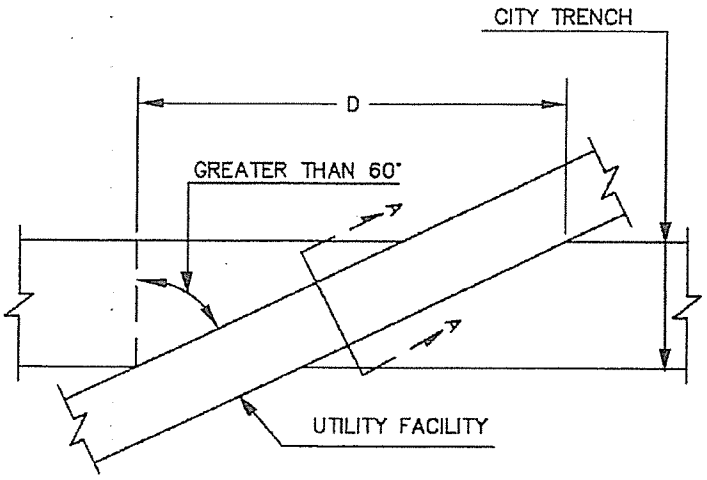
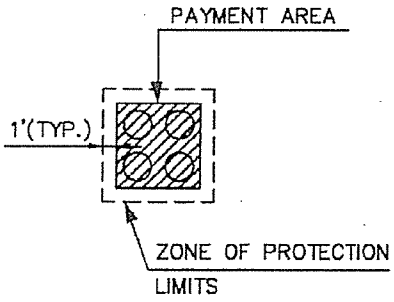


UTILITY CROSSING GREATER THAN 60°

NOT TO SCALE



SECTION A–A

NOT TO SCALE

PAYMENT = [CROSSING ITEM BASED ON CROSS SECTIONAL AREA OF UTILITY] + CET 330 USING D AS THE LENGTH BETWEEN ENTRY AND EXIT OF TRENCH

NOTE:
VARIOUS DEPTH AND ANGLES GREATER THAN 60°

REVISIONS
5–7–10

CET SKETCH	
TYPICAL METHOD OF MEASUREMENT FOR UTILITY(S) CROSSING GREATER THAN 60°	
CONTRACT NO.	SKETCH NO. CET 100–F

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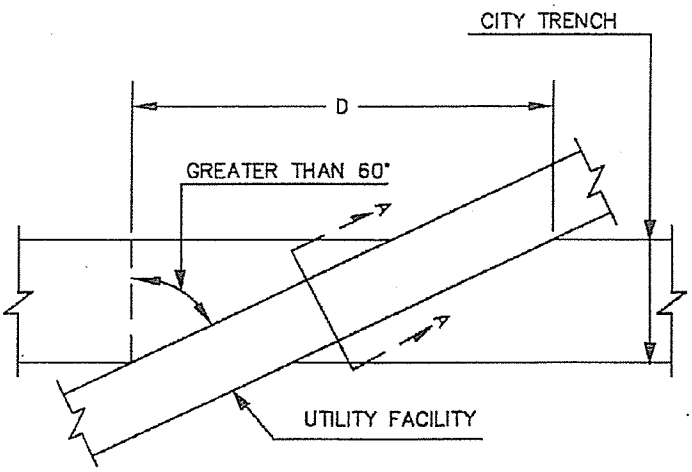
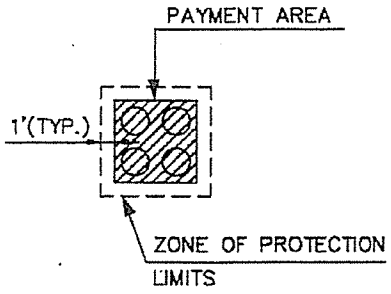


UTILITY CROSSING GREATER THAN 60°

NOT TO SCALE



SECTION A–A

NOT TO SCALE

PAYMENT = [CROSSING ITEM BASED ON CROSS SECTIONAL AREA OF UTILITY] + CET 330 USING D AS THE LENGTH BETWEEN ENTRY AND EXIT OF TRENCH

NOTE:
VARIOUS DEPTH AND ANGLES GREATER THAN 60°

REVISIONS
5–7–10

CET SKETCH	
TYPICAL METHOD OF MEASUREMENT FOR UTILITY(S) CROSSING GREATER THAN 60°	
CONTRACT NO.	SKETCH NO. CET 100–F

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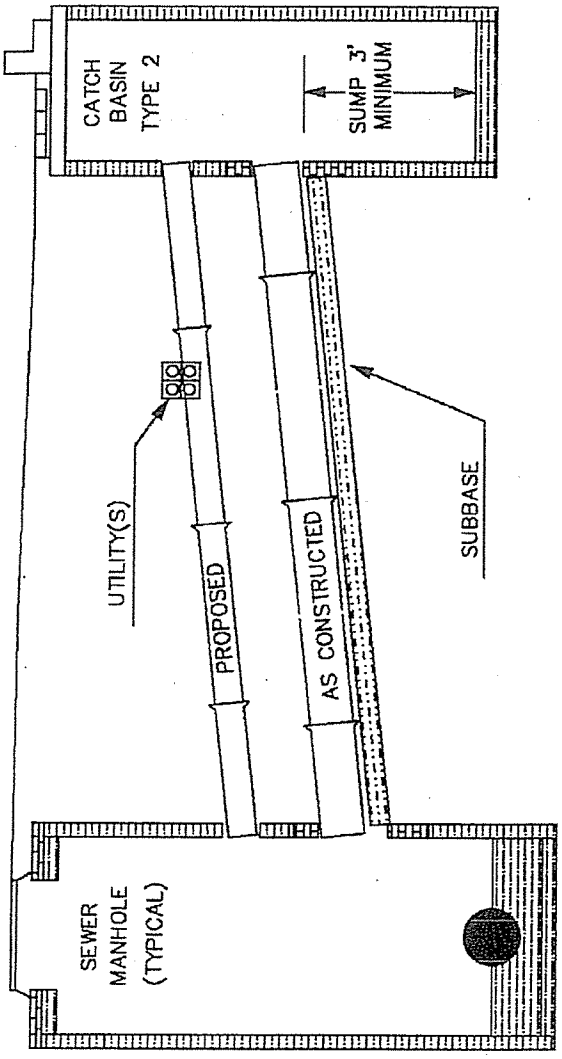

PROFILE

N.T.S.

NOTE:
VARIOUS ANGLES ARE AS DEFINED IN CET 200.

CET SKETCH	
ACCOMODATIONS OF UTILITIES DURING CATCH BASIN CHUTE CONNECTION PIPE INSTALLATION	
REVISIONS	
11-17-00	CONTRACT NO. / SKETCH NO. CET 200 A

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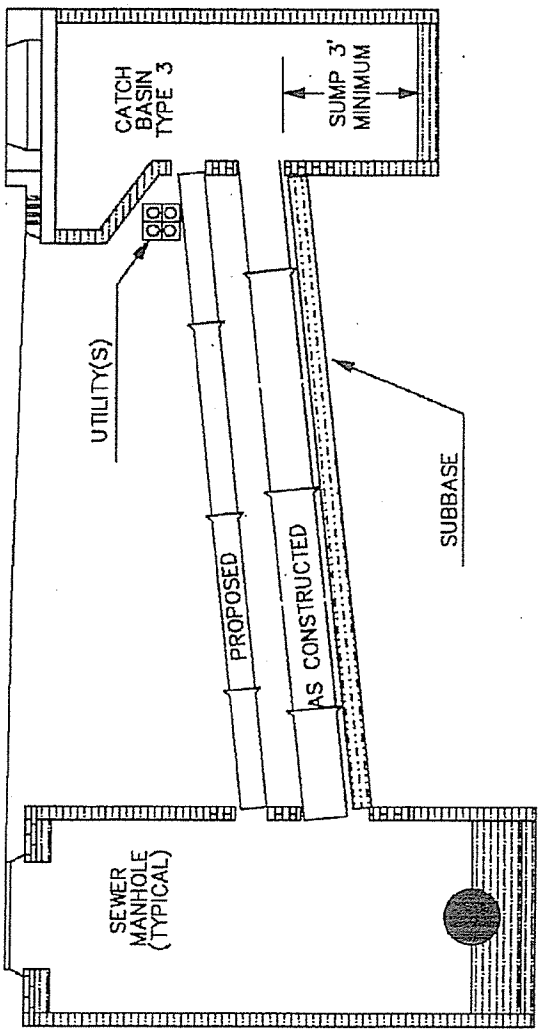

PROFILE

N.T.S.

NOTE:
VARIOUS ANGLES ARE AS DEFINED IN CET 200.

REVISIONS	CET SKETCH	
11–17–00	ACCOMODATIONS OF UTILITIES DURING CATCH BASIN CHUTE CONNECTION PIPE INSTALLATION	
	CONTRACT NO.	SKETCH NO. CET 200 B

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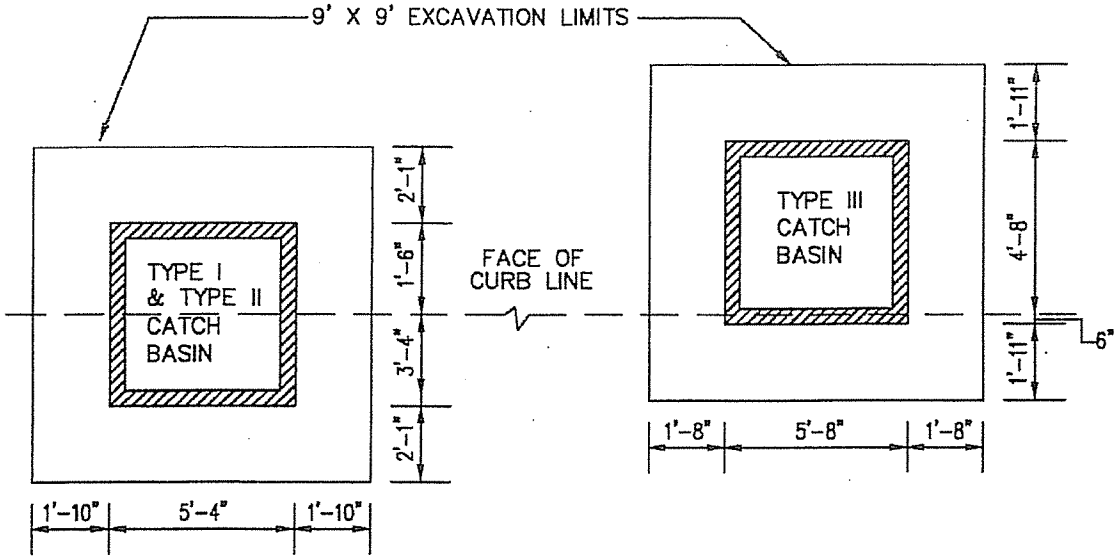

CATCH BASIN ORIENTATION TO CURB LINE WITH EXCAVATION LIMITS CONCENTRIC TO BASINS

N.T.S.

CET 225 PAY LIMITS

CATCH BASIN TYPE	DIMENSION TO CET FACILITY PARALLEL FROM FACE OF CURB INTO STREET	DIMENSION TO CET FACILITY PARALLEL FROM FACE OF CURB INTO SIDEWALK	DIMENSION TO CET FACILITY PERPENDICULAR TO CURB FROM FACE OF CATCH BASIN
TYPE 1 & 2 TYPE 3	3'-6" TO 5'-5" 0'-8" TO 2'-5"	1'-8" TO 3'-7" 4'-10" TO 6'-7"	0'-2" TO 1'-10" 0'-2" TO 1'-8"

NOTES:

1. CET FACILITIES WILL NOT ACCEPT ANY PAYMENT LIABILITY BEYOND THE 9'x9' EXCAVATION LIMITS.
2. IN ADDITION THE LIMITS OF EXCAVATION FOR NEW CATCH BASINS UNDER THIS CONTRACT SHALL NOT EXCEED THE STANDARD MAXIMUM EXCAVATION LIMITS AS SHOWN AND NO ENLARGMENT OF EXCAVATION WILL BE GRANTED FOR SHEETING. SUCH TRENCH WIDTH RESTRICTIONS, SPECIFIED ABOVE. FOR NEW CATCH BASINS MAY BE WAIVED UPON ENCOUNTERING AN OBSTRUCTION THAT NECESSITATES A SHIFT IN THE CATCH BASIN OR CONNECTING LOCATION, AS DIRECTED BY THE ENGINEER, AND THERE SHALL BE NO ADDITIONAL COST TO THE CITY FOR THE ENLARGMENT OF THE EXCAVATION OR ADJUSTMENTS.

REVISIONS	CET SKETCH	
12/24/09	INSTALLATION OF CATCH BASINS TO ACCOMODATE CET FACILITIES	
	CONTRACT NO.	SKETCH NO. CET 225

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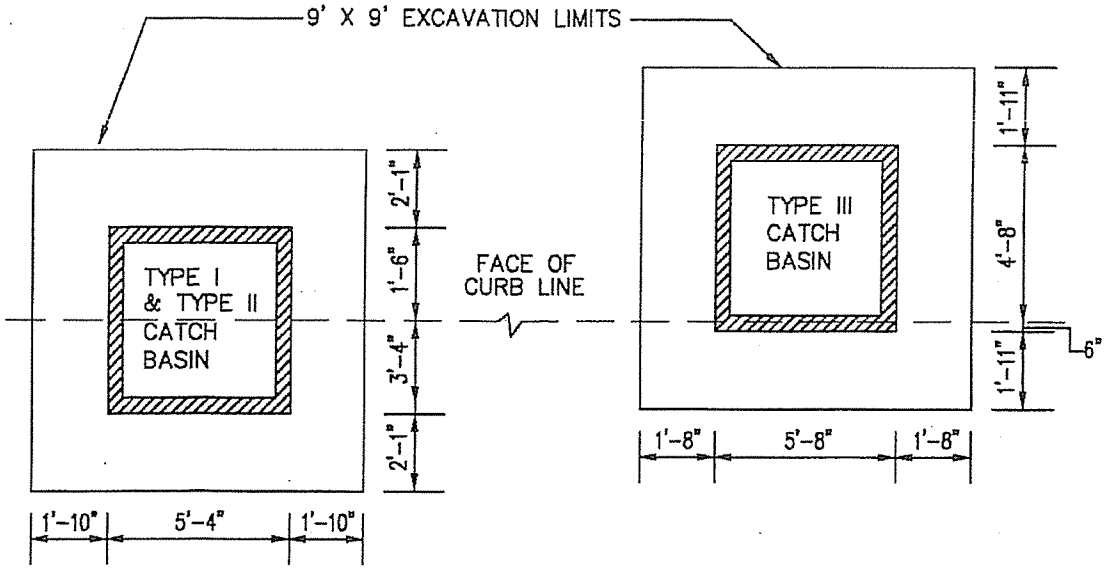

CATCH BASIN ORIENTATION TO CURB LINE WITH EXCAVATION LIMITS CONCENTRIC TO BASINS

N.T.S.

CET 225 PAY LIMITS

CATCH BASIN TYPE	DIMENSION TO CET FACILITY PARALLEL FROM FACE OF CURB INTO STREET	DIMENSION TO CET FACILITY PARALLEL FROM FACE OF CURB INTO SIDEWALK	DIMENSION TO CET FACILITY PERPENDICULAR TO CURB FROM FACE OF CATCH BASIN
TYPE 1 & 2 TYPE 3	3'-6" TO 5'-5" 0'-8" TO 2'-5"	1'-8" TO 3'-7" 4'-10" TO 6'-7"	0'-2" TO 1'-10" 0'-2" TO 1'-8"

NOTES:

1. CET FACILITIES WILL NOT ACCEPT ANY PAYMENT LIABILITY BEYOND THE 9'x9' EXCAVATION LIMITS.
2. IN ADDITION THE LIMITS OF EXCAVATION FOR NEW CATCH BASINS UNDER THIS CONTRACT SHALL NOT EXCEED THE STANDARD MAXIMUM EXCAVATION LIMITS AS SHOWN AND NO ENLARGMENT OF EXCAVATION WILL BE GRANTED FOR SHEETING. SUCH TRENCH WIDTH RESTRICTIONS, SPECIFIED ABOVE. FOR NEW CATCH BASINS MAY BE WAIVED UPON ENCOUNTERING AN OBSTRUCTION THAT NECESSITATES A SHIFT IN THE CATCH BASIN OR CONNECTING LOCATION, AS DIRECTED BY THE ENGINEER, AND THERE SHALL BE NO ADDITIONAL COST TO THE CITY FOR THE ENLARGMENT OF THE EXCAVATION OR ADJUSTMENTS.

REVISIONS	CET SKETCH
5/7/10	INSTALLATION OF CATCH BASINS TO ACCOMODATE CET FACILITIES
	CONTRACT NO. / SKETCH NO. CET 225

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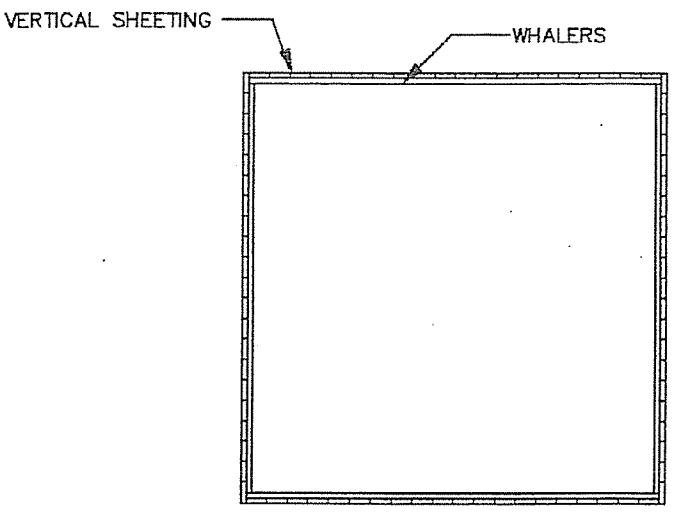
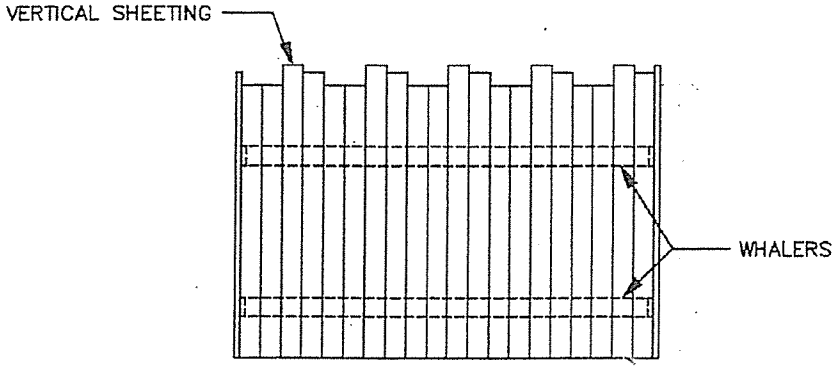


PLAN VIEW

N.T.S.



PROFILE VIEW

N.T.S.

CET SKETCH	
TIGHT SHEETING	
REVISIONS	
5/7/10	
CONTRACT NO.	SKETCH NO. CET 225-S

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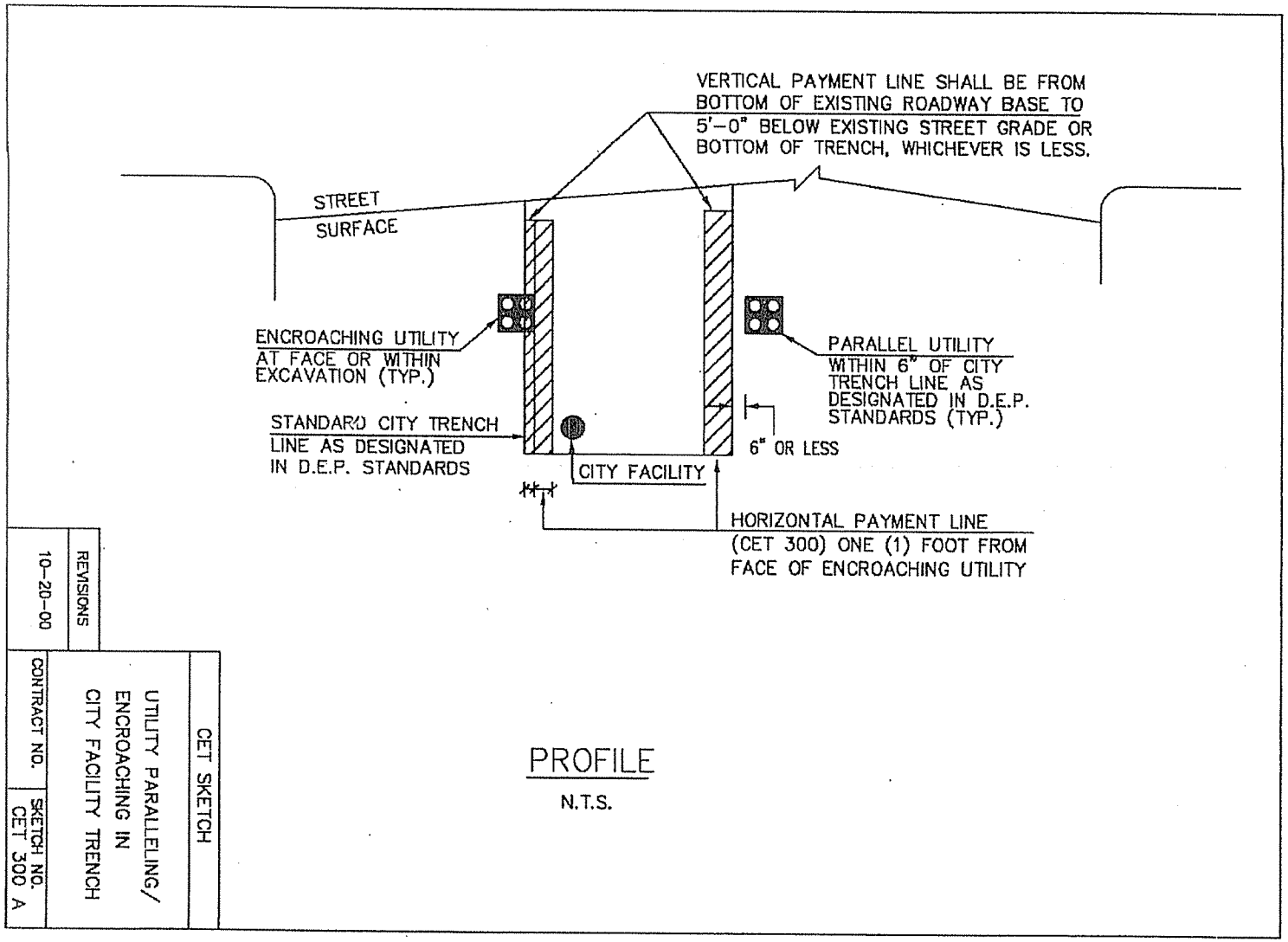
VERTICAL PAYMENT LINE SHALL BE FROM BOTTOM OF EXISTING ROADWAY BASE TO 5'-0" BELOW EXISTING STREET GRADE OR BOTTOM OF TRENCH, WHICHEVER IS LESS.
STREET SURFACE
ENCROACHING UTILITY AT FACE OR WITHIN EXCAVATION (TYP.)
PARALLEL UTILITY WITHIN 6" OF CITY TRENCH LINE AS DESIGNATED IN D.E.P. STANDARDS (TYP.)
STANDARD CITY TRENCH LINE AS DESIGNATED IN D.E.P. STANDARDS
6" OR LESS
CITY FACILITY
HORIZONTAL PAYMENT LINE (CET 300) ONE (1) FOOT FROM FACE OF ENCROACHING UTILITY
PROFILE
N.T.S.
REVISIONS
10-20-00
CONTRACT NO.
SKETCH NO. CET 300 A
UTILITY PARALLELING/ ENCROACHING IN CITY FACILITY TRENCH
CET SKETCH

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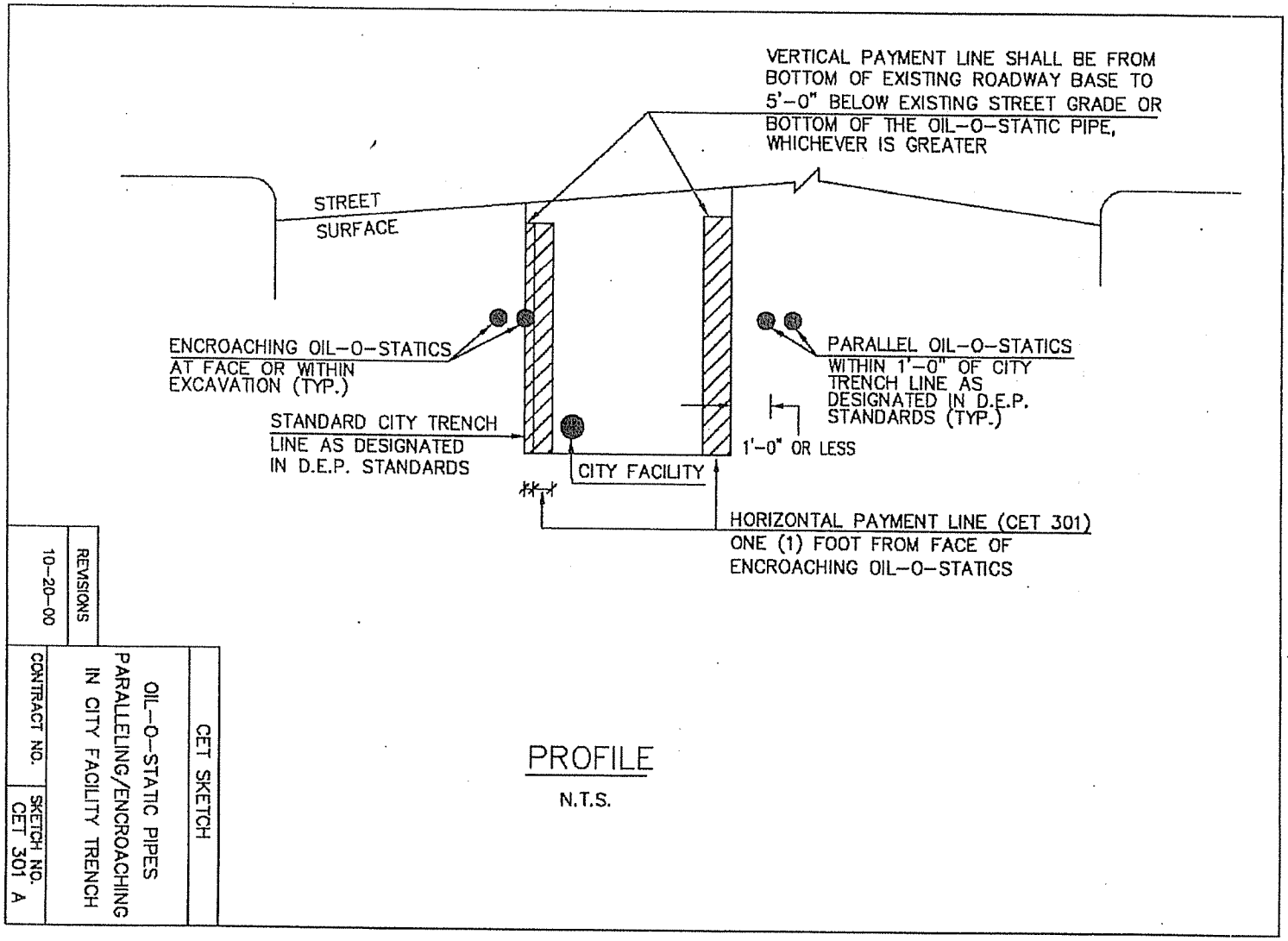
VERTICAL PAYMENT LINE SHALL BE FROM BOTTOM OF EXISTING ROADWAY BASE TO 5'-0" BELOW EXISTING STREET GRADE OR BOTTOM OF THE OIL-O-STATIC PIPE, WHICHEVER IS GREATER
STREET SURFACE
ENCROACHING OIL-O-STATICS AT FACE OR WITHIN EXCAVATION (TYP.)
STANDARD CITY TRENCH LINE AS DESIGNATED IN D.E.P. STANDARDS
CITY FACILITY
PARALLEL OIL-O-STATICS WITHIN 1'-0" OF CITY TRENCH LINE AS DESIGNATED IN D.E.P. STANDARDS (TYP.)
1'-0" OR LESS
HORIZONTAL PAYMENT LINE (CET 301) ONE (1) FOOT FROM FACE OF ENCROACHING OIL-O-STATICS
PROFILE
N.T.S.
10-20-00
REVISIONS
CONTRACT NO.
SKETCH NO. CET 301 A
OIL-O-STATIC PIPES PARALLELING/ENCROACHING IN CITY FACILITY TRENCH
CET SKETCH

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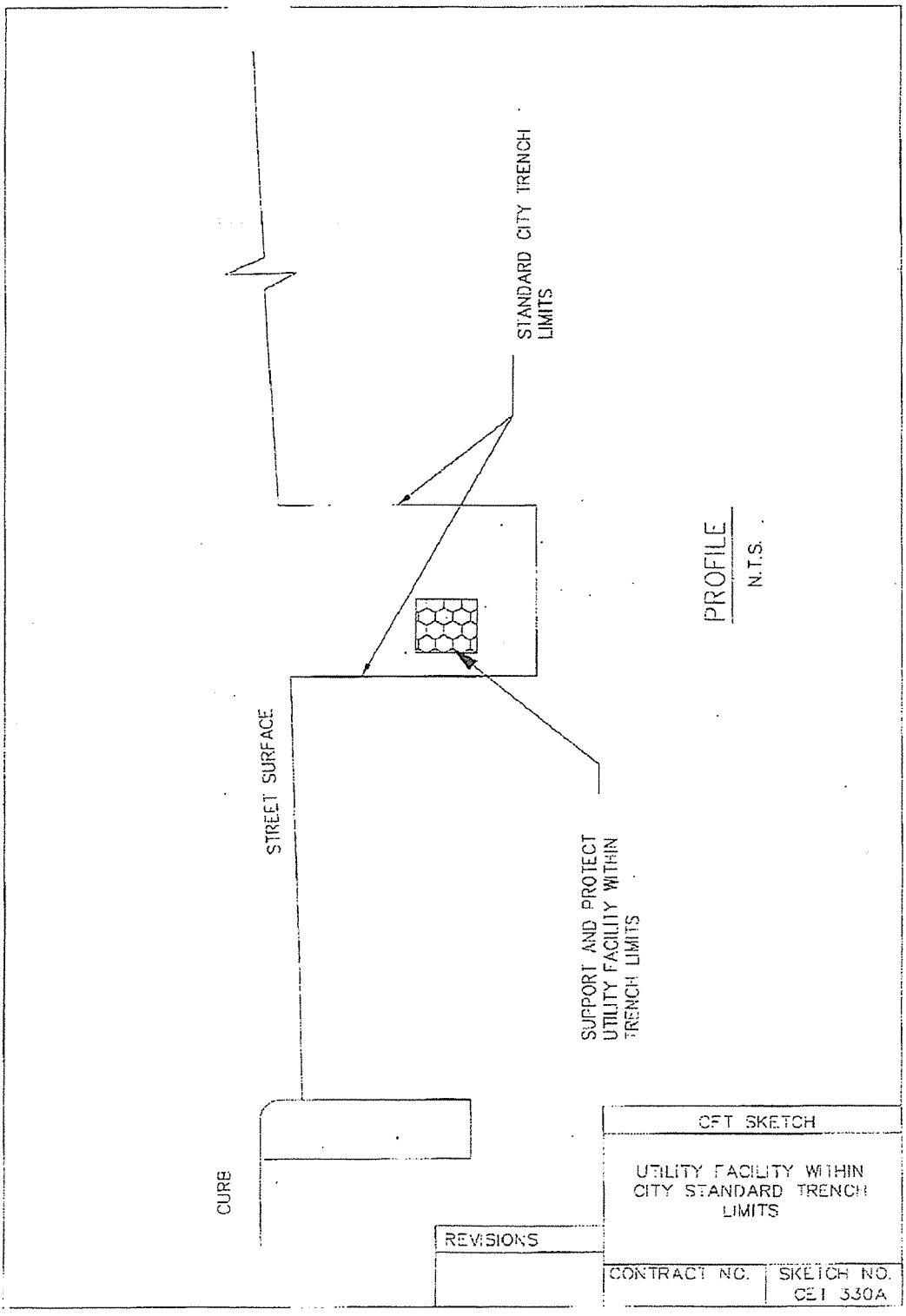
STANDARD CITY TRENCH LIMITS
PROFILE
N.T.S.
STREET SURFACE
SUPPORT AND PROTECT UTILITY FACILITY WITHIN TRENCH LIMITS
CURB
CFT SKETCH
UTILITY FACILITY WITHIN CITY STANDARD TRENCH LIMITS
REVISIONS
CONTRACT NO.
SKETCH NO. CFT 330A

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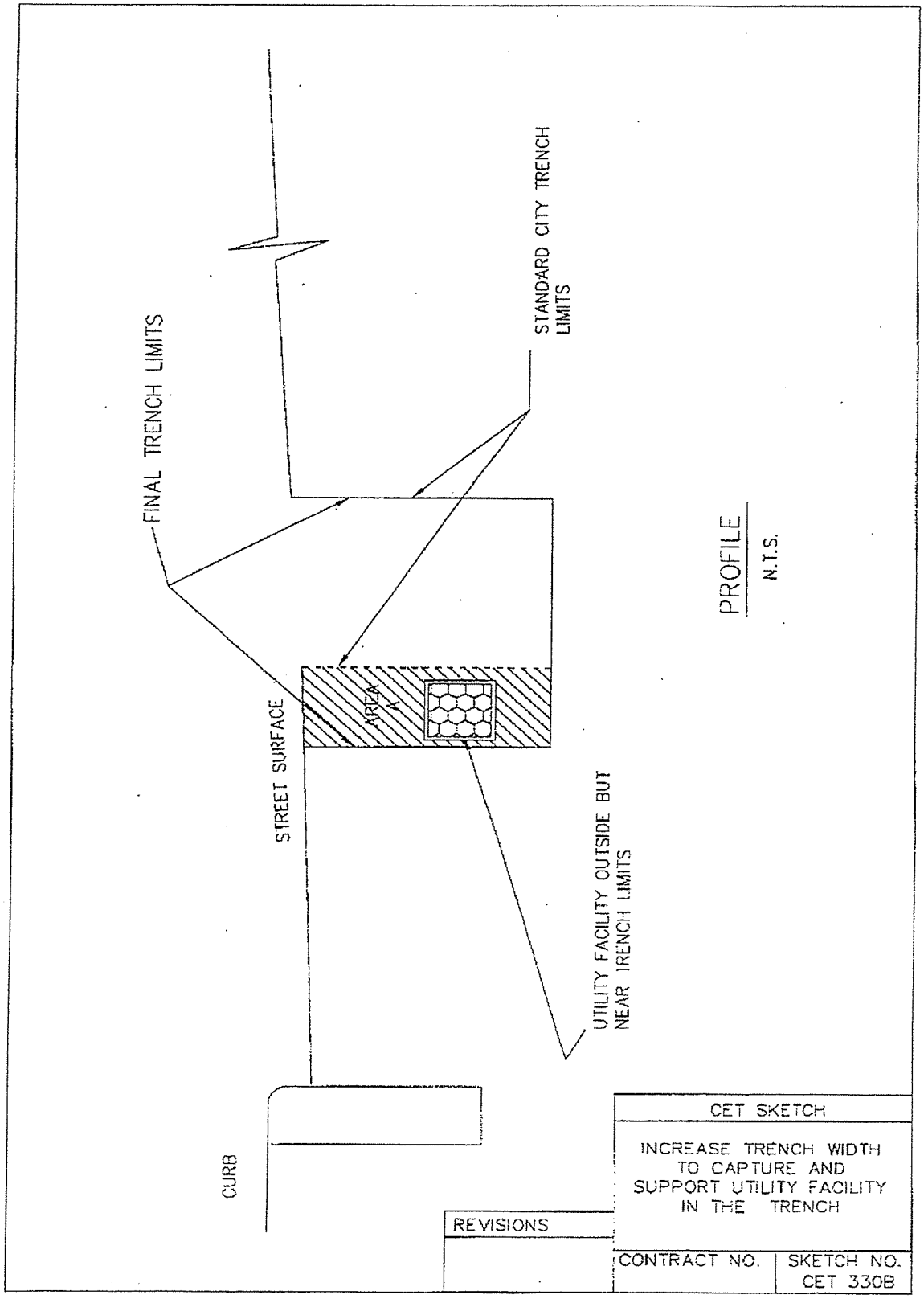
FINAL TRENCH LIMITS
STANDARD CITY TRENCH LIMITS
PROFILE
N.T.S.
STREET SURFACE
AREA
UTILITY FACILITY OUTSIDE BUT NEAR TRENCH LIMITS
CURB
CET SKETCH
INCREASE TRENCH WIDTH TO CAPTURE AND SUPPORT UTILITY FACILITY IN THE TRENCH
REVISIONS
CONTRACT NO.
SKETCH NO. CET 330B

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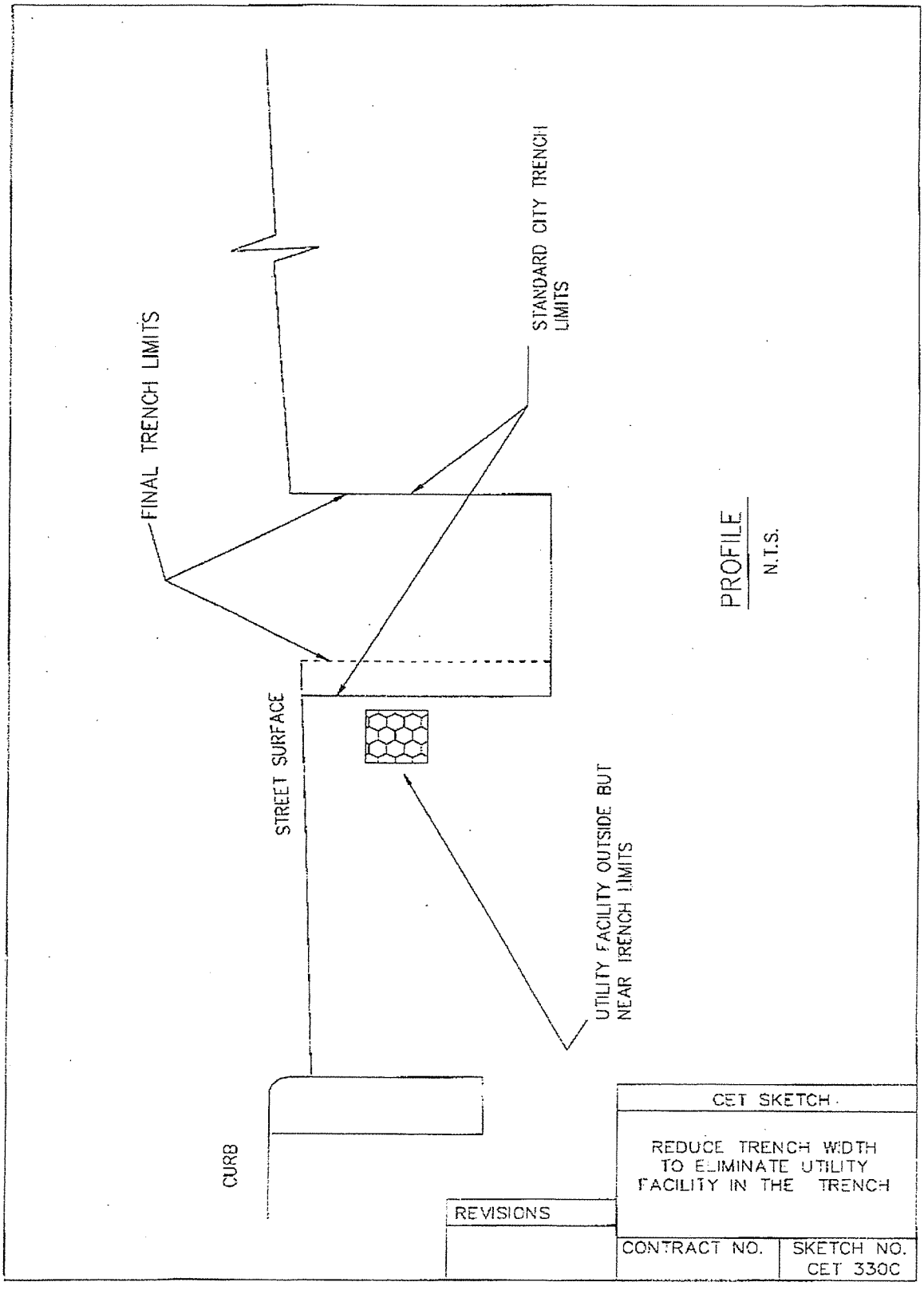
FINAL TRENCH LIMITS
STANDARD CITY TRENCH LIMITS
PROFILE
N.T.S.
STREET SURFACE
UTILITY FACILITY OUTSIDE BUT NEAR TRENCH LIMITS
CURB
CET SKETCH
REDUCE TRENCH WIDTH TO ELIMINATE UTILITY FACILITY IN THE TRENCH
REVISIONS
CONTRACT NO.
SKETCH NO. CET 330C

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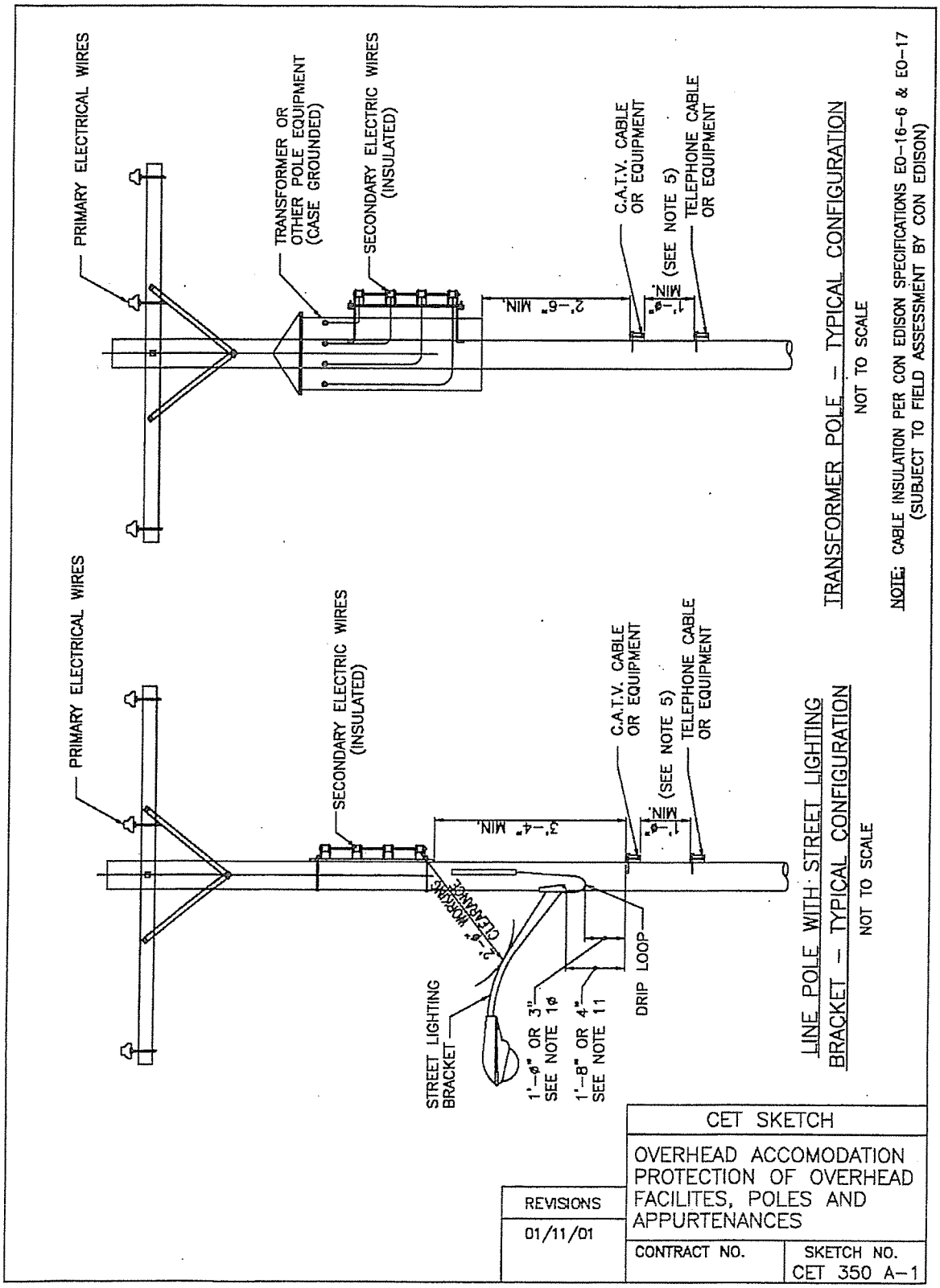
PRIMARY ELECTRICAL WIRES
TRANSFORMER OR OTHER POLE EQUIPMENT (CASE GROUNDED)
SECONDARY ELECTRIC WIRES (INSULATED)
C.A.T.V. CABLE OR EQUIPMENT
TELEPHONE CABLE OR EQUIPMENT
(SEE NOTE 5)
1'-0" MIN.
2'-6" MIN.
TRANSFORMER POLE - TYPICAL CONFIGURATION
NOT TO SCALE
NOTE: CABLE INSULATION PER CON EDISON SPECIFICATIONS EO-16-6 & EO-17 (SUBJECT TO FIELD ASSESSMENT BY CON EDISON)
PRIMARY ELECTRICAL WIRES
SECONDARY ELECTRIC WIRES (INSULATED)
C.A.T.V. CABLE OR EQUIPMENT
TELEPHONE CABLE OR EQUIPMENT
(SEE NOTE 5)
1'-0" MIN.
3'-4" MIN.
2'-6" MIN. CLEARANCE
STREET LIGHTING BRACKET
1'-0" OR 3" SEE NOTE 1ø
1'-8" OR 4" SEE NOTE 11
DRIP LOOP
LINE POLE WITH STREET LIGHTING BRACKET - TYPICAL CONFIGURATION
NOT TO SCALE
CET SKETCH
OVERHEAD ACCOMODATION PROTECTION OF OVERHEAD FACILITES, POLES AND APPURTENANCES
REVISIONS
01/11/01
CONTRACT NO.
SKETCH NO.
CET 350 A-1

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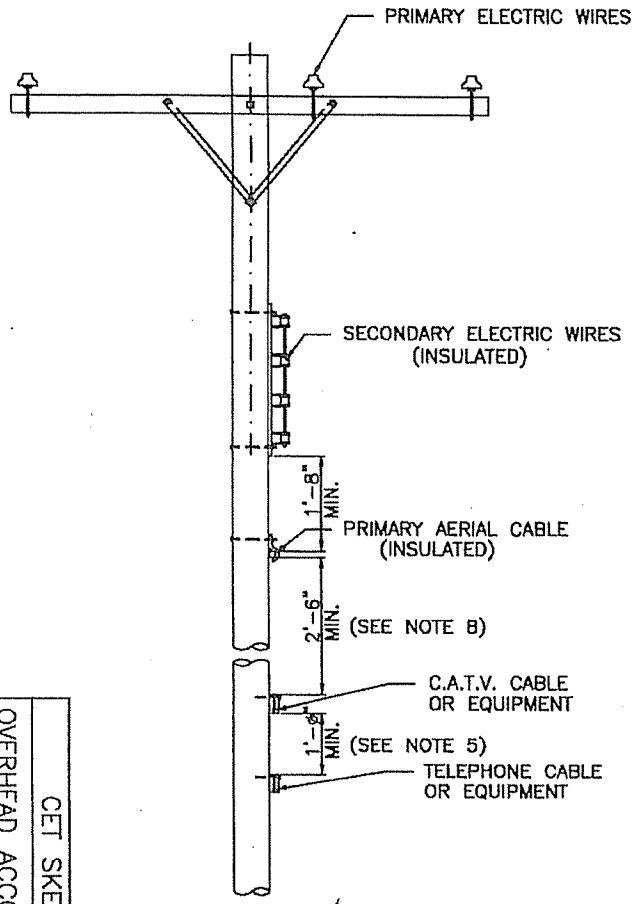

LINE POLE
TYPICAL CONFIGURATION
NOT TO SCALE

NOTES:

1. ALL CLEARANCES ALSO APPLY TO ARMLESS CONSTRUCTION.
2. WHERE PRIMARY AERIAL CABLE IS INSTALLED, MAINTAIN 2'-6" MIN. CLEARANCE BETWEEN THIS PRIMARY CABLE AND C.A.T.V. FACILITIES.
3. C.A.T.V. RISERS NOT ALLOW ON POLES WHERE POWER OR TELEPHONE RISERS ARE PRESENT OR PROPOSED.
4. POLE STEPS ARE LIMITED TO POLES CARRYING EQUIPMENT OTHER THAN WIRES. LOWEST STEP SHALL BE 9'-ø" ABOVE GROUND.
5. THIS DIMENSION IS IN AGREEMENT WITH BELL SYSTEM MANUAL OF CONSTRUCTION PROCEDURES. WHERE COMMUNICATION EQUIPMENT IS MOUNTED ON BOTH SIDES OF POLE, REFER TO THIS MANUAL FOR REQUIRED CLEARANCE.
6. A 2'-6" SQUARE CLIMBING SPACE SHALL BE PROVIDED TANGENT TO THE POLE AND SHALL BE KEPT CLEAR OF SERVICE DROPS. ITS HEIGHT AND DEPTH SHALL EXTEND AT LEAST 3'-4" ABOVE AND BELOW ANY COMMUNICATION CABLE OR FACILITY. VARIOUS TYPICAL CLIMBING CONFIGURATIONS ARE SHOWN IN BELL SYSTEM MANUAL OF CONSTRUCTION PROCEDURES.
7. ONE CURBSIDE QUADRANT SHOULD BE KEPT CLEAR OF SERVICE DROPS TO FACILITATE POLE REPLACEMENT.
8. MINIMUM MID-SPAN CLEARANCE OF 0'-10" BETWEEN UTILITY AERIAL CABLE AND C.A.T.V.
9. GROUND FOR STREET LIGHT SHALL BE #6 AWG COPPER FROM BOTTOM OF STREET LIGHT BRACKET TO NEUTRAL.
10. 3" IF DRIP IS COVERED BY SUITABLE 1/2 " NON-METALLIC COVERING (STK.NO.596-ø745) WHICH EXTENDS AT LEAST 2" BEYOND THE LOOP.
11. 4" IF LIGHTING BRACKET IS EFFECTIVELY GROUNDED AND DRIP LOOP IS COVERED BY A SUITABLE 3/4 " NON-METALLIC COVERING (STK.NO.596-ø737).
12. CABLE INSULATION PER CON EDISON SPECIFICATIONS EO-16-6 & EO-17 (SUBJECT TO FIELD ASSESSMENT BY CON EDISON)

REVISIONS	01/11/01
CONTRACT NO.	
SKETCH NO.	CET 350 B-1

OVERHEAD ACCOMODATION
PROTECTION OF OVERHEAD
FACILITES, POLES AND
APPURTENANCES

CET SKETCH

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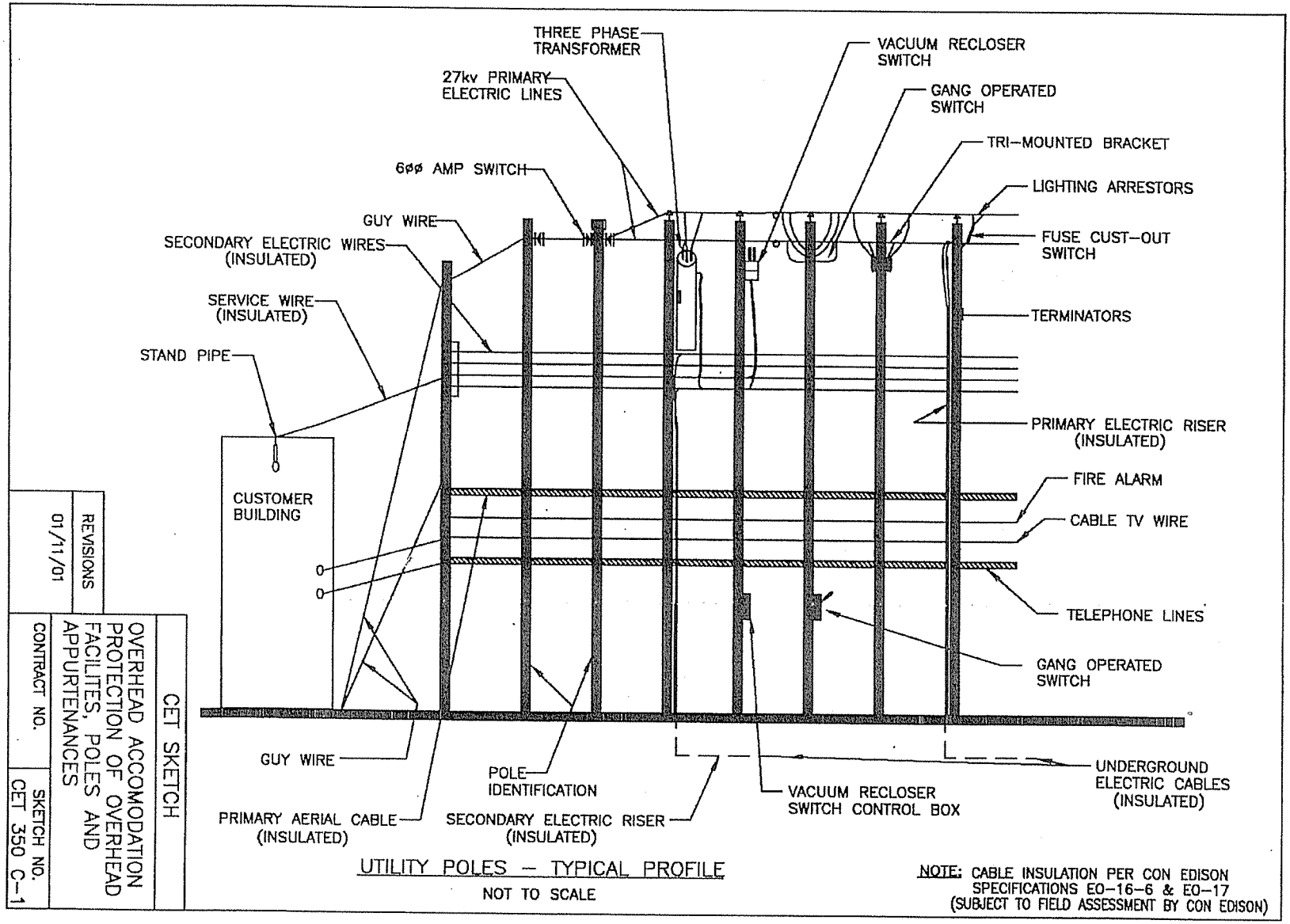
THREE PHASE TRANSFORMER
VACUUM RECLOSER SWITCH
27kv PRIMARY ELECTRIC LINES
GANG OPERATED SWITCH
TRI-MOUNTED BRACKET
6øø AMP SWITCH
LIGHTING ARRESTORS
GUY WIRE
SECONDARY ELECTRIC WIRES (INSULATED)
FUSE CUST-OUT SWITCH
SERVICE WIRE (INSULATED)
TERMINATORS
STAND PIPE
PRIMARY ELECTRIC RISER (INSULATED)
CUSTOMER BUILDING
FIRE ALARM
CABLE TV WIRE
TELEPHONE LINES
GANG OPERATED SWITCH
GUY WIRE
POLE IDENTIFICATION
UNDERGROUND ELECTRIC CABLES (INSULATED)
VACUUM RECLOSER SWITCH CONTROL BOX
PRIMARY AERIAL CABLE (INSULATED)
SECONDARY ELECTRIC RISER (INSULATED)
UTILITY POLES – TYPICAL PROFILE
NOT TO SCALE
NOTE: CABLE INSULATION PER CON EDISON SPECIFICATIONS EO-16-6 & EO-17 (SUBJECT TO FIELD ASSESSMENT BY CON EDISON)
REVISIONS
01/11/01
CET SKETCH
OVERHEAD ACCOMODATION PROTECTION OF OVERHEAD FACILITES, POLES AND APPURTENANCES
CONTRACT NO.
SKETCH NO.
CET 350 C-1

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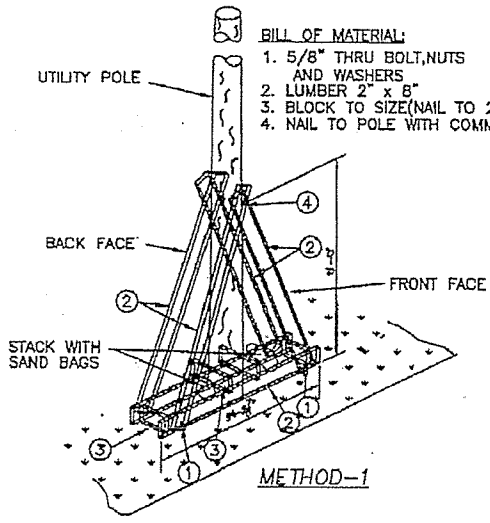
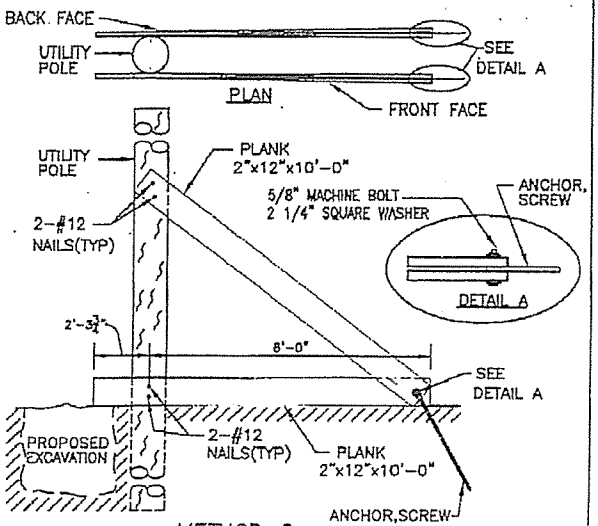
METHODS OF SHORING UTILITY POLES

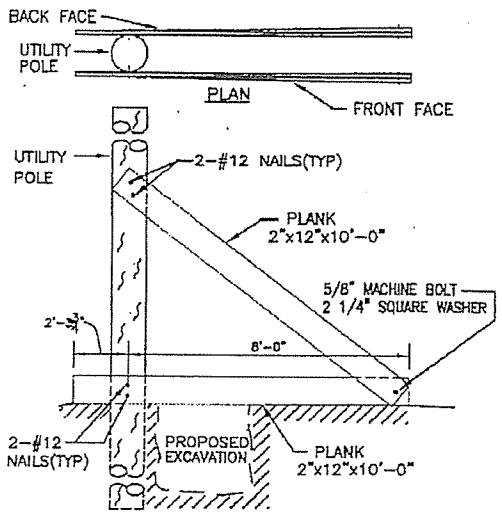


METHOD–1



METHOD–2

(FRONT FACE SHOWN,BACK FACE OPPOSITE HAND)



METHOD–3

(FRONT FACE SHOWN,BACK FACE OPPOSITE HAND)

NOTES:

1. THESE METHODS OF SHORING ARE GENERAL GUIDES. FIELD CONDITIONS WILL DICTATE WHICH METHOD WILL BE USED.VARIATIONS OF THESE METHODS WHICH ACCOMPLISH THE SAME PURPOSE MAY ALSO BE UTILIZED WHEN APPROVED BY OVERHEAD CONSTRUCTION DEPARTMENT.
2. ANY INFORMATION NOT SHOWN WILL BE DETERMINED IN THE FIELD TO SUIT THE FIELD CONDITIONS WHEN APPROVED BY THE OVERHEAD CONSTRUCTION DEPARTMENT.

REVISIONS
01/11/01

CET SKETCH	
METHODS OF SHORING UTILITY POLES	
CONTRACT NO.	SKETCH NO. CET 351

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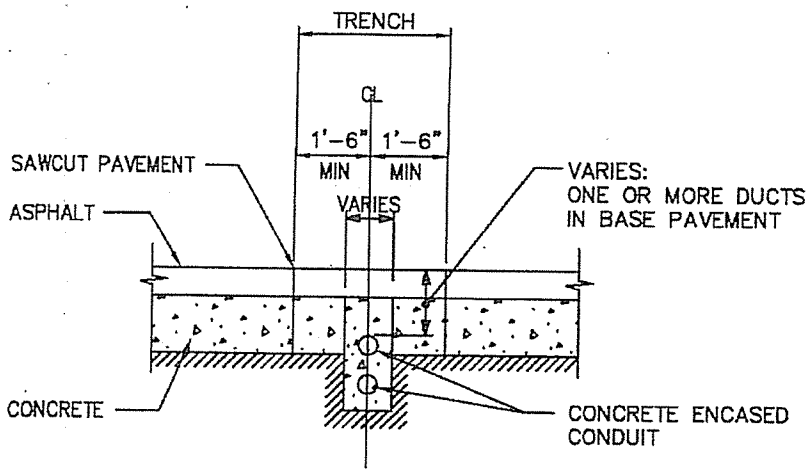
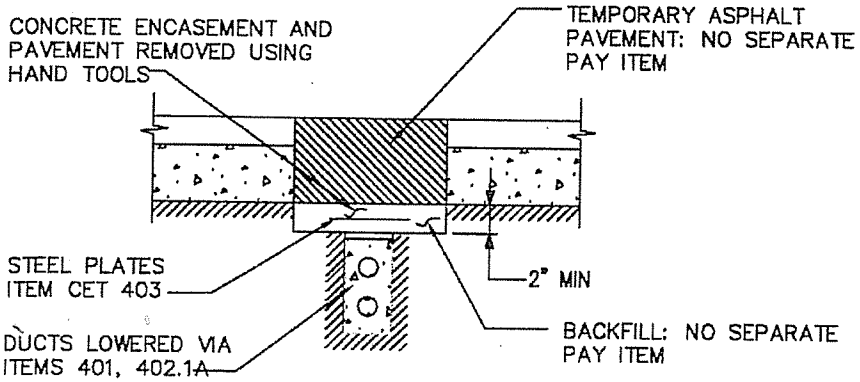
SKETCH 1 OF 2



DUCTS WITHIN BASE PAVEMENT
EXISTING TYPICAL SECTION
N.T.S.



DUCTS WITHIN BASE PAVEMENT
PROPOSED TYPICAL SECTION
N.T.S.

CET SKETCH	
SPECIAL CARE PAVEMENT EXCAVATION FOR ADJUSTMENT OF CABLE TV. FACILITIES CONNECTED TO THE BASE PAVEMENT	
REVISED 11/15/00	CONTRACT NO. / SKETCH NO. CET 401AC

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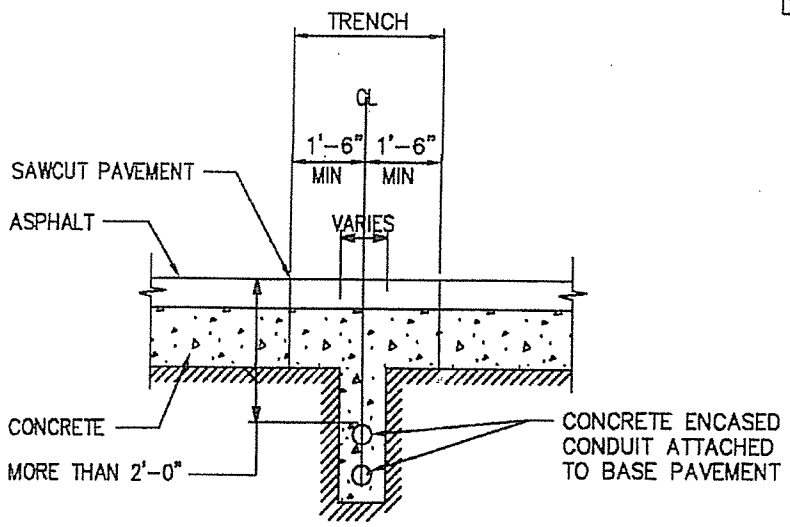
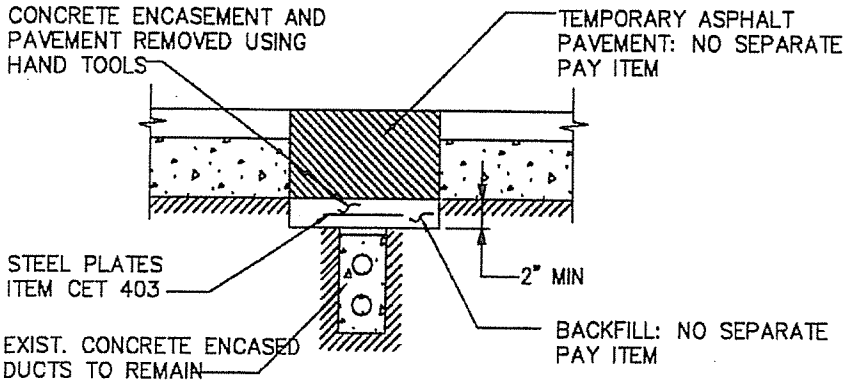
SKETCH 2 OF 2



DUCTS BELOW BASE PAVEMENT
EXISTING TYPICAL SECTION

N.T.S.



DUCTS BELOW BASE PAVEMENT
PROPOSED TYPICAL SECTION

N.T.S.

CET SKETCH	
SPECIAL CARE PAVEMENT EXCAVATION FOR ADJUSTMENT OF CABLE TV. FACILITIES CONNECTED TO THE BASE PAVEMENT	
REVISED 11/15/00	CONTRACT NO. / SKETCH NO. CET 401AC2

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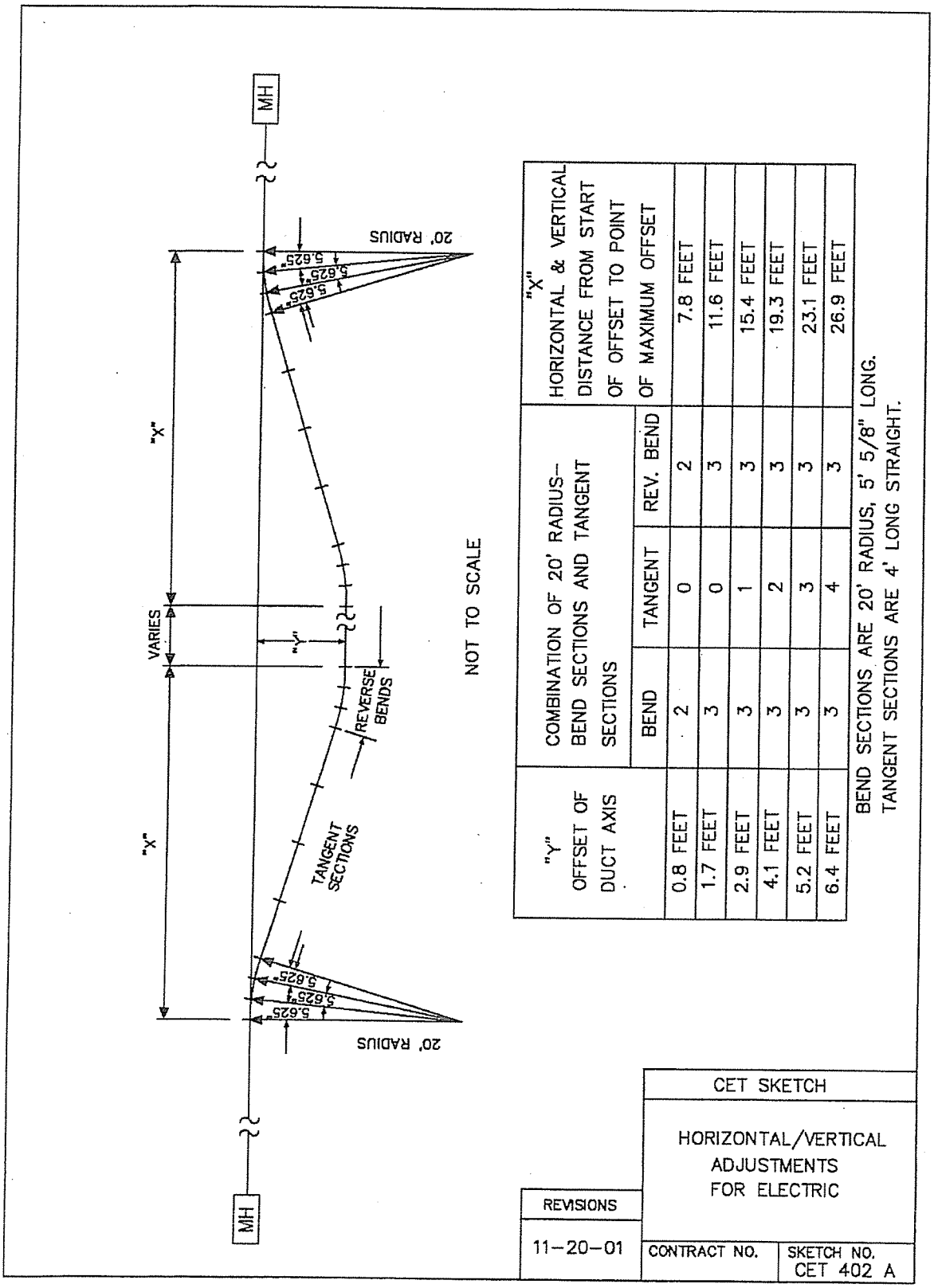

NOT TO SCALE

"Y" OFFSET OF DUCT AXIS	COMBINATION OF 20' RADIUS–BEND SECTIONS AND TANGENT SECTIONS			"X" HORIZONTAL & VERTICAL DISTANCE FROM START OF OFFSET TO POINT OF MAXIMUM OFFSET
	BEND	TANGENT	REV. BEND	
0.8 FEET	2	0	2	7.8 FEET
1.7 FEET	3	0	3	11.6 FEET
2.9 FEET	3	1	3	15.4 FEET
4.1 FEET	3	2	3	19.3 FEET
5.2 FEET	3	3	3	23.1 FEET
6.4 FEET	3	4	3	26.9 FEET

BEND SECTIONS ARE 20' RADIUS, 5' 5/8" LONG.
TANGENT SECTIONS ARE 4' LONG STRAIGHT.

REVISIONS	CET SKETCH
11–20–01	HORIZONTAL/VERTICAL ADJUSTMENTS FOR ELECTRIC
	CONTRACT NO. / SKETCH NO. CET 402 A

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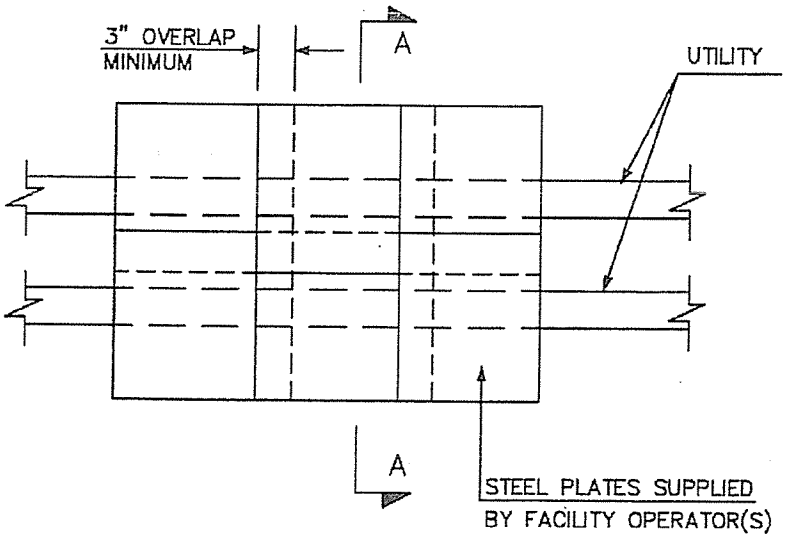
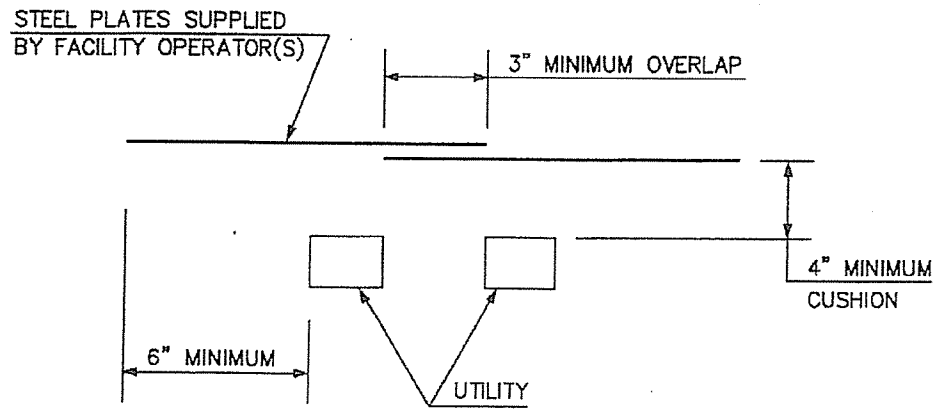


PLAN

NOT TO SCALE



SECTION A–A

NOT TO SCALE

TYPICAL PLATE SIZES:
15" x 21" x 3/8"
16" x 24" x 3/8"
21" x 27" x 3/8"

REVISIONS	CET SKETCH
11–17–00	PLACING STEEL PROTECTION PLATES FOR ELECTRIC AND TELEPHONE FACILITIES
CONTRACT NO.	SKETCH NO. CET 403 A

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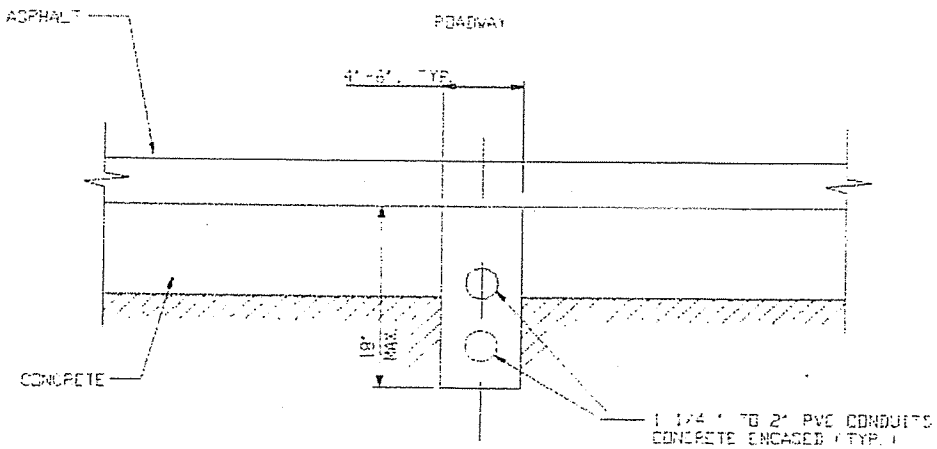
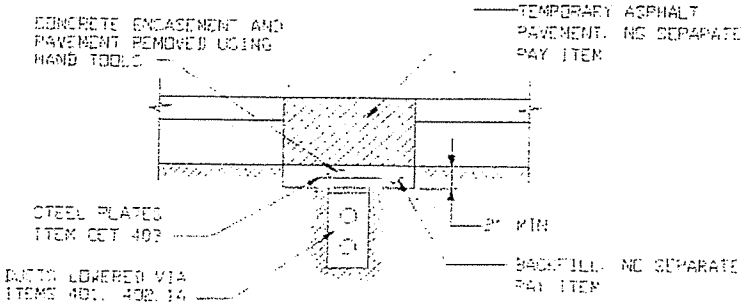


TYPICAL SECTION CABLE TELEVISION DUCTS
ATTACHED TO BASE PAVEMENT

N.T.S.



DUCTS WITHIN BASE PAVEMENT
PROPOSED TYPICAL SECTION

N.T.S.

	CET SKETCH
	CABLE TELEVISION DUCT BANK ATTACHED TO BASE PAVEMENT (TYPICAL)
NEW	
11 19 03	CONTRACT NO. SKETCH NO. CET 5000.1

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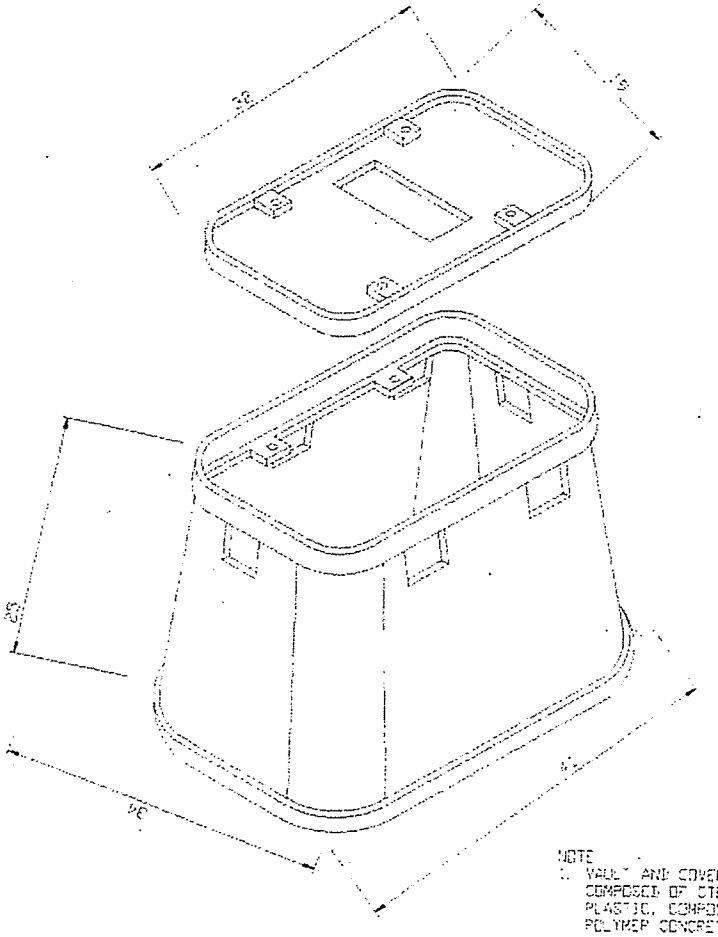

NOTE
1. VAULT AND COVER MAY BE COMPOSED OF STEEL, PLASTIC, COMPOSITES AND/OR POLYMER CONCRETE MATERIALS
2. VAULT BOTTOMS ARE OPEN-ENDED AND FILLED WITH GRAVEL

CABLE TELEVISION SIDEWALK VAULT - TYPICAL

NTS

	CET SKETCH
	CABLE TELEVISION SIDEWALK VAULT (TYPICAL)
REVISIONS	
11/19/03	CONTRACT NO. / SKETCH NO. CET-0001

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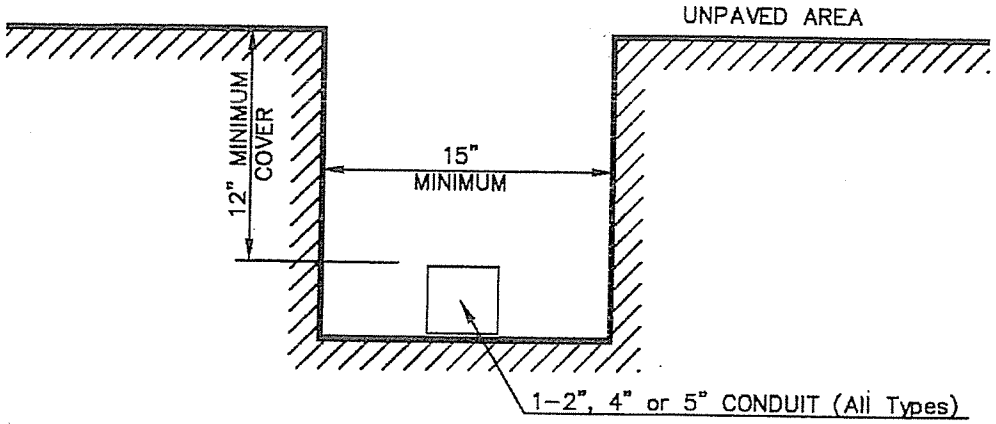

EXCAVATION OF THE TRENCH –

THE BOTTOM OF THE TRENCH SHALL BE GRADED SMOOTH AND TAMPED TO MINIMIZE INITAL SETTLEMENT AND TO AVOID "POINT" SUPPORT OF CONDUITS. ALL STONES PROJECTING INTO THE TRENCH SHALL BE REMOVED FROM THE TRENCH BOTTOM AND THE VOIDS BACKFILLED BEFORE CONDUIT INSTALLATION. THE CONDUIT INSTALLATION SHALL BE IN AS STRAIGHT ALIGNMENT AS POSSIBLE WITH CONTINUOUS CONCENTRIC BORES AND FLUSH JOINTS TO PERMIT SMOOTH, EASY PULLING OF CABLE WITHOUT DAMAGE. THE INTERIOR OF THE CONDUIT MUST BE FREE OF IMPERFECTIONS AND CARE SHALL BE EXERCISED TO PREVENT INTRODUCTION OF FOREIGN MATERIAL.

COUPLINGS –

SLIP OR PLASTIC COUPLINGS SHALL BE USED AS REQUIRED, TO JOIN ALL CONDUIT.

CET SKETCH	
TRENCH EXCAVATION FOR 1–2", 4" or 5" CONDUIT (All Types)	
REVISIONS	
11/07/03	CONTRACT NO. / SKETCH NO. CET–600.1–A

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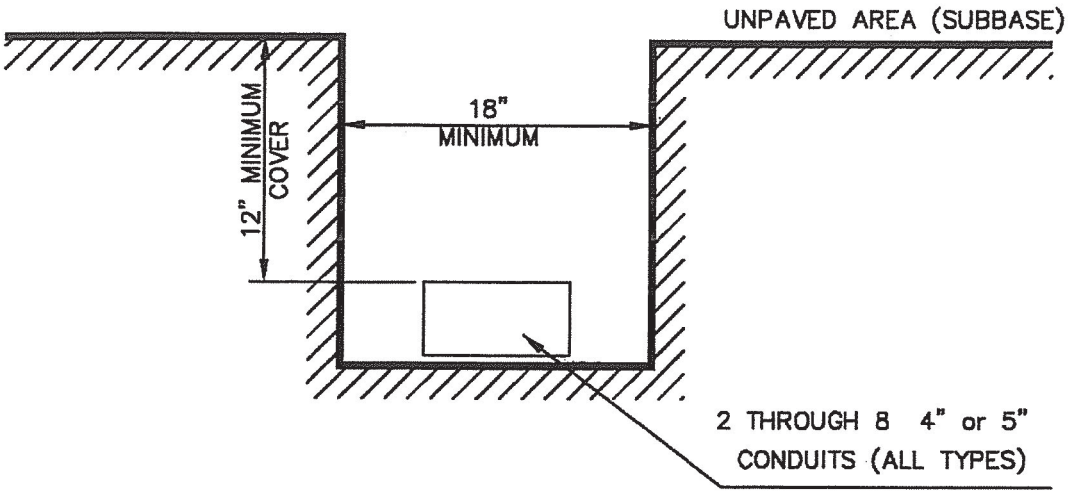

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COUPLINGS –

PLASTIC COUPLINGS SHALL BE USED TO JOIN ALL CONDUIT.

	CET SKETCH
	TRENCH EXCAVATION FOR 2 Through 8 Conduits (ALL TYPES)
REVISIONS	
11–07–03	CONTRACT NO. / SKETCH NO. CET–600.2–A

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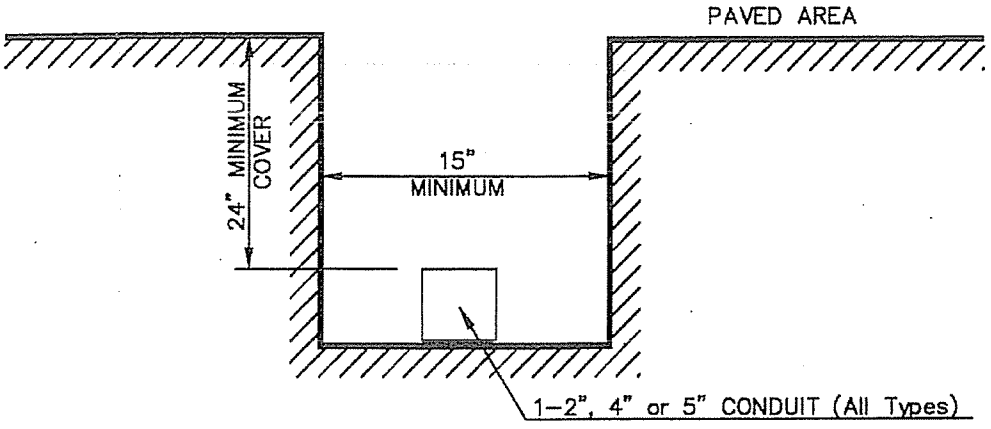

EXCAVATION OF THE TRENCH –

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COUPLINGS –

SLIP OR PLASTIC COUPLINGS SHALL BE USED AS REQUIRED, TO JOIN ALL CONDUIT.

	CET SKETCH	
	TRENCH EXCAVATION FOR 1-2", 4" or 5" CONDUIT (ALL TYPES)	
NEW		
11-07-03	CONTRACT NO.	SKETCH NO. CET-601.1-A

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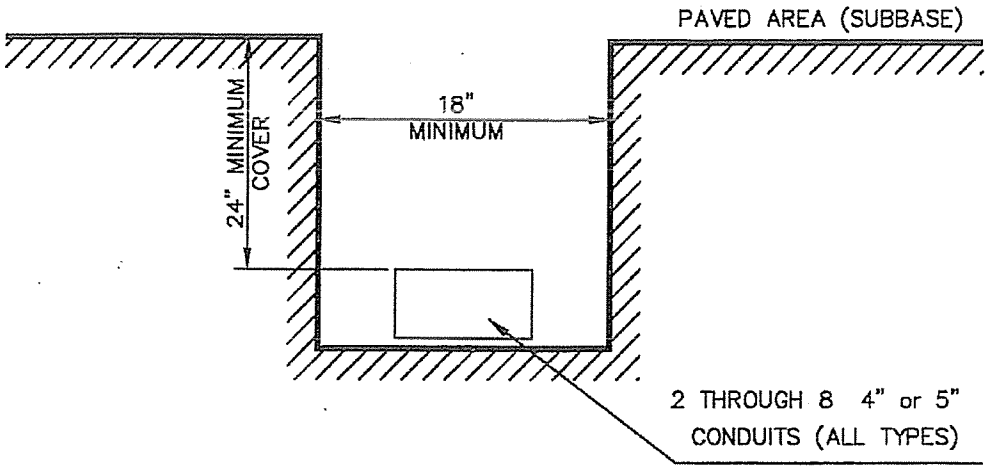

EXCAVATION OF THE TRENCH –

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COUPLINGS –

PLASTIC COUPLINGS SHALL BE USED TO JOIN ALL CONDUIT.

	CET SKETCH	
	TRENCH EXCAVATION FOR 2 Through 8 Conduits (ALL TYPES)	
NEW		
11–07–03	CONTRACT NO.	SKETCH NO. CET–601.2–A

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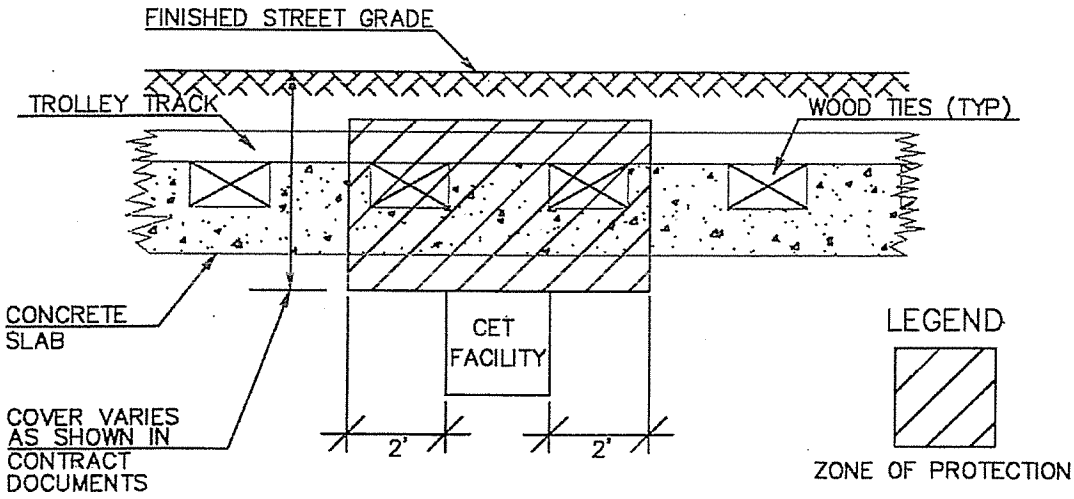
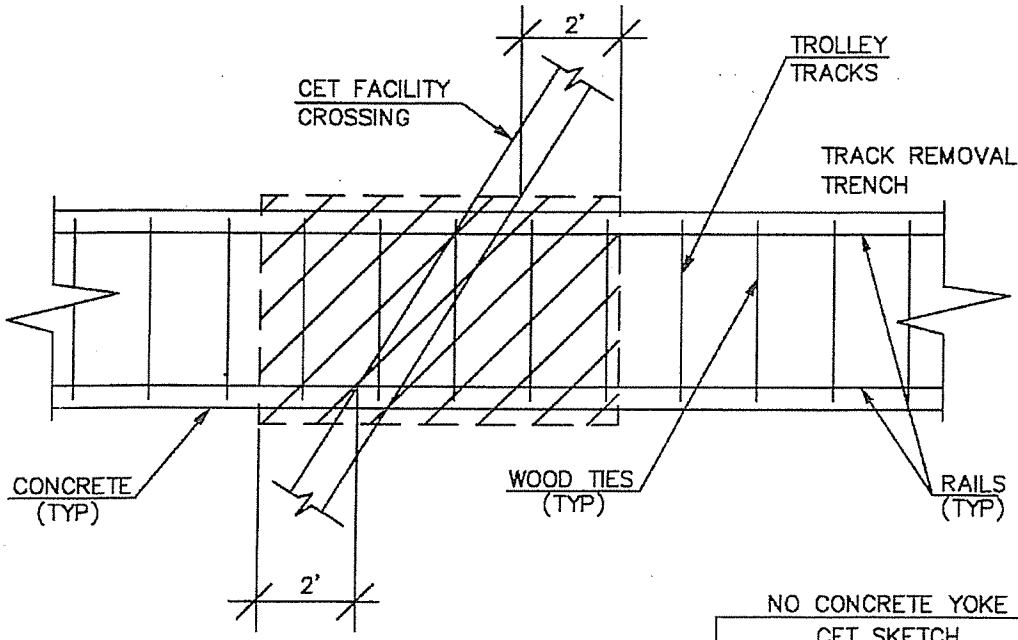


SECTION OF CET FACILITIES CROSSING TROLLEY TRACKS



PLAN OF CET FACILITIES CROSSING TROLLEY TRACKS

NO CONCRETE YOKE

CET SKETCH	
CET ACCOMODATION SECTIONS CROSSING TROLLEY RAILROAD STRUCTURES	
CONTRACT NO.	SKETCH NO. CET 798

REVISIONS
06-01-10

NTS

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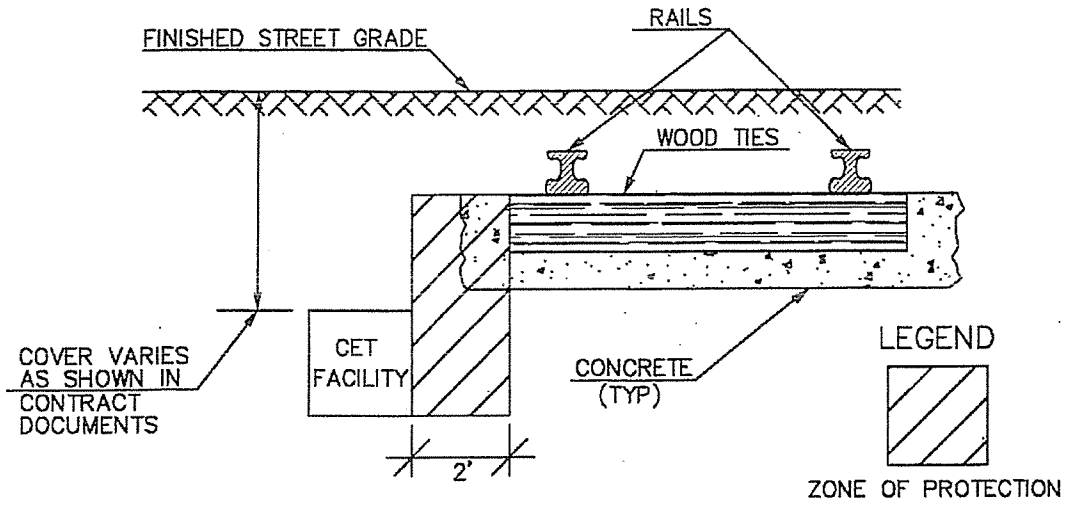
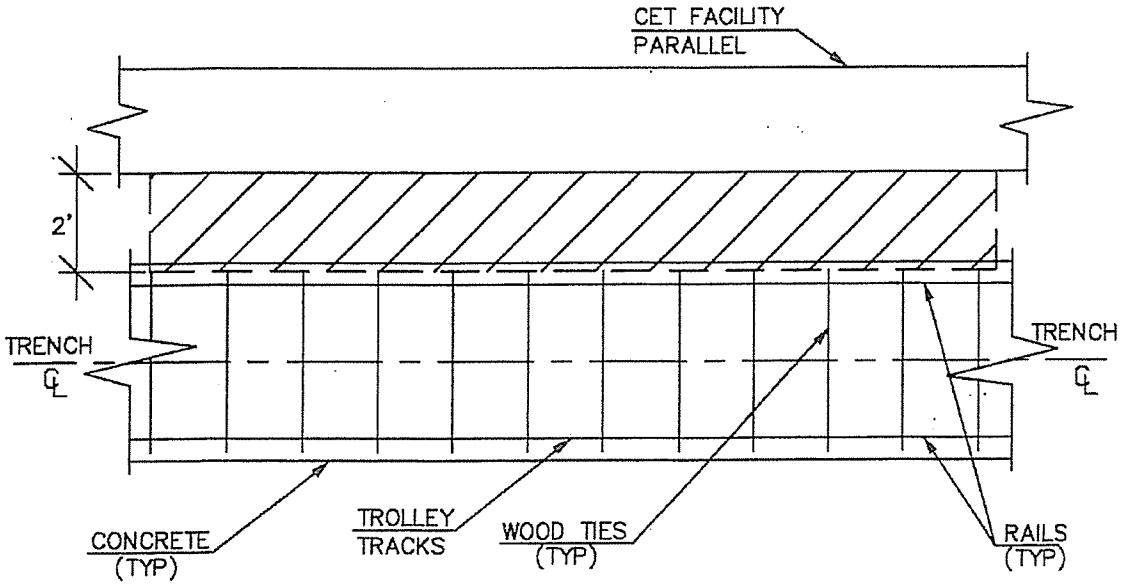


SECTION OF CET FACILITIES PARALLELING TROLLEY TRACKS



PLAN OF CET FACILITIES PARALLELING TROLLEY TRACKS

NO CONCRETE YOKE

CET SKETCH	
CET ACCOMODATION FACILITIES PARALLEL TROLLEY RAILROAD STRUCTURES	
CONTRACT NO.	SKETCH NO. CET 799

REVISIONS
06-01-10

NTS

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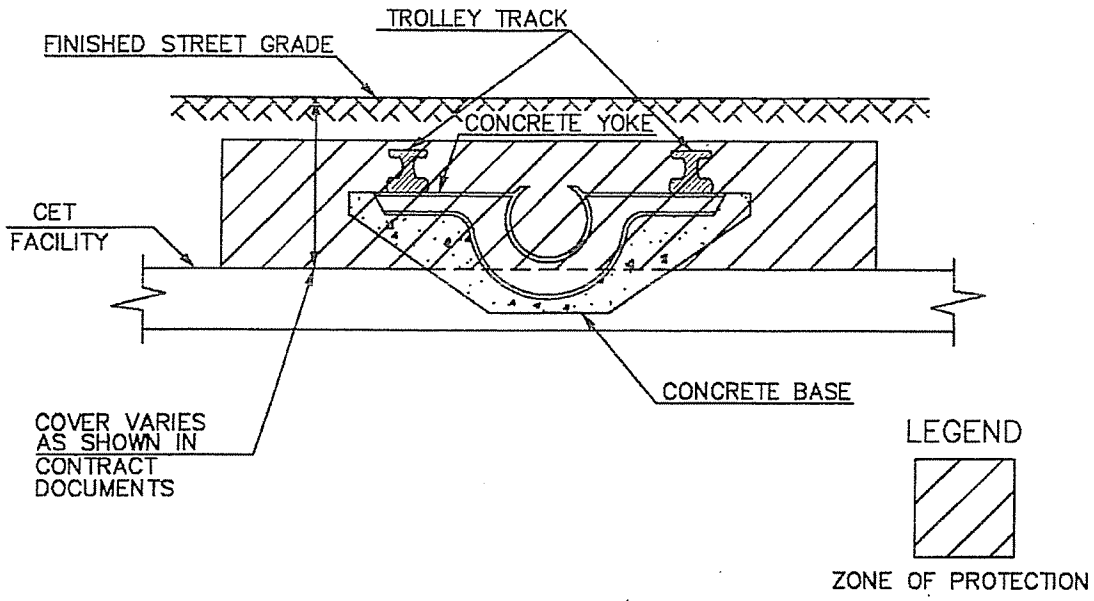
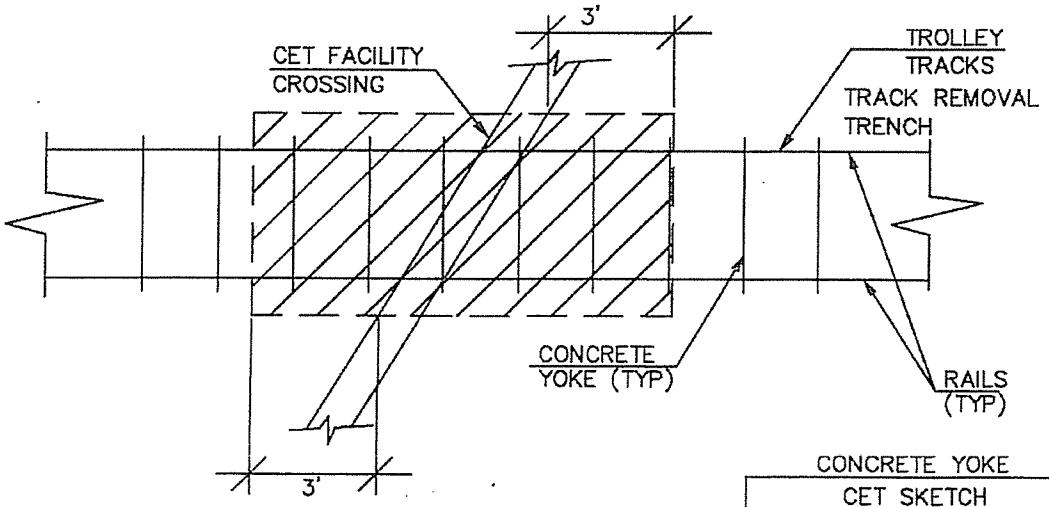


SECTION OF CET FACILITIES CROSSING
TROLLEY TRACKS



PLAN OF CET FACILITIES
CROSSING TROLLEY TRACKS

CONCRETE YOKE

CET SKETCH	
CET ACCOMODATION SECTIONS CROSSING TROLLEY RAILROAD STRUCTURES	
REVISIONS	
06-01-10	CONTRACT NO. / SKETCH NO. CET 800

NTS

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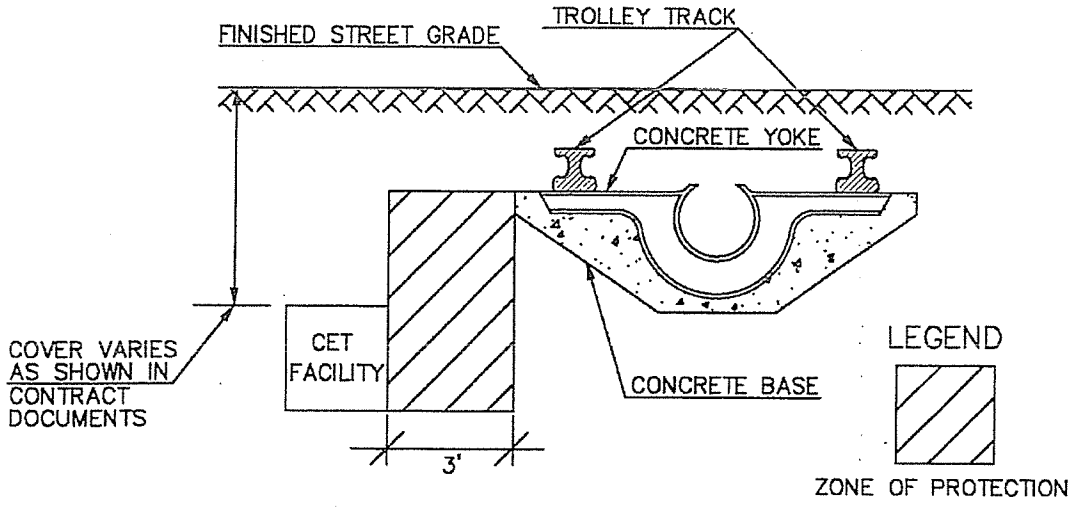
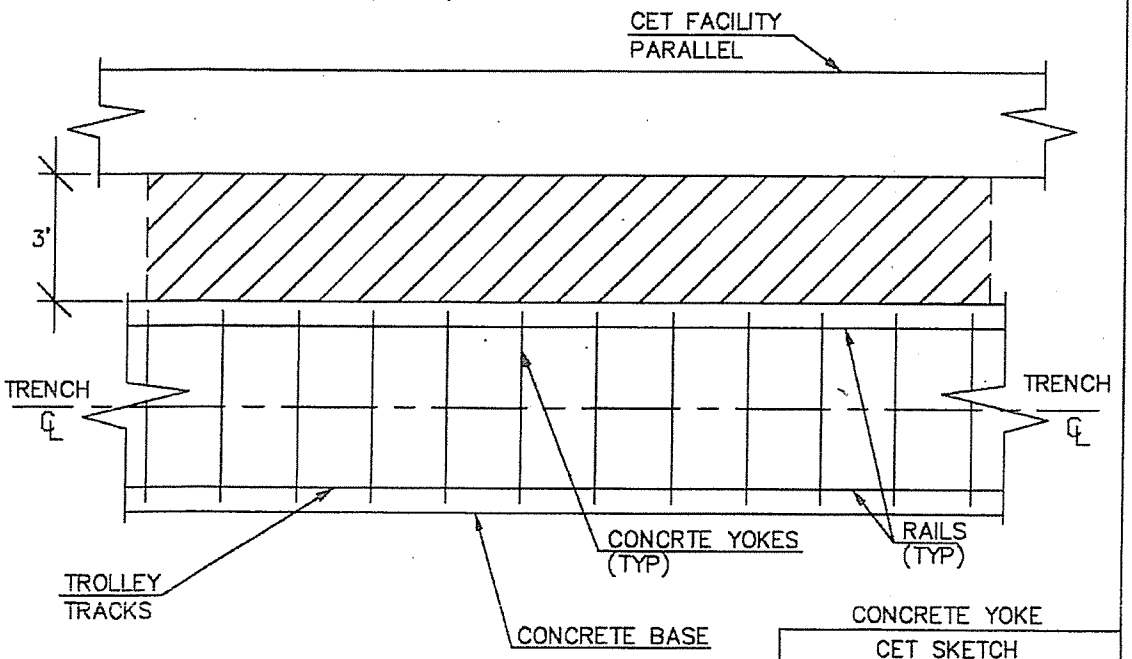


SECTION OF CET FACILITIES PARALLELING TROLLEY TRACKS



PLAN OF CET FACILITIES PARALLELING TROLLEY TRACKS

CONCRETE YOKE

CET SKETCH	
CET ACCOMODATION FACILITIES PARALLEL TROLLEY RAILROAD STRUCTURES	
CONTRACT NO.	SKETCH NO. CET 801

REVISIONS
06-01-10

NTS

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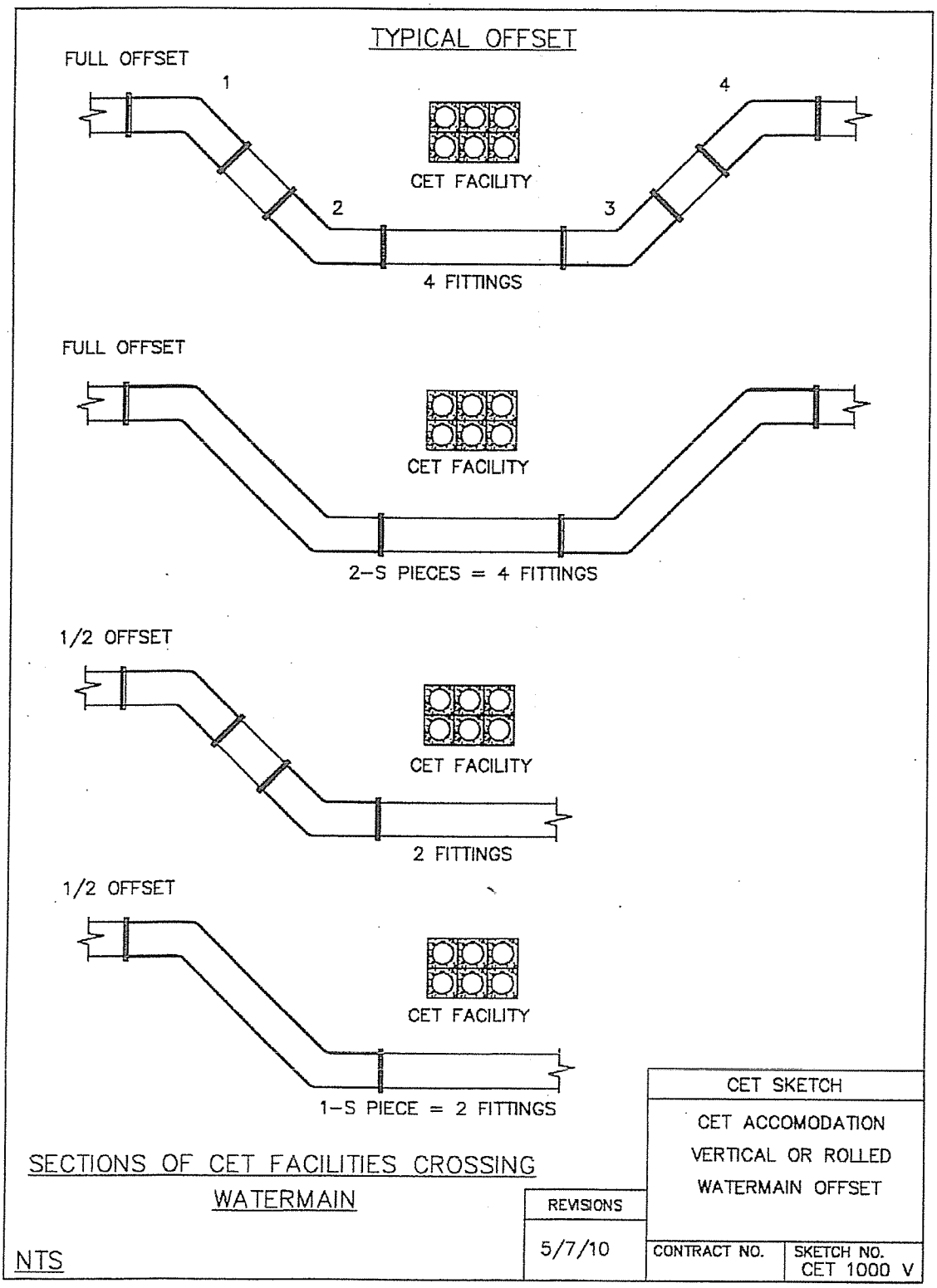
TYPICAL OFFSET
FULL OFFSET
1
2
3
4
CET FACILITY
4 FITTINGS
FULL OFFSET
CET FACILITY
2-S PIECES = 4 FITTINGS
1/2 OFFSET
CET FACILITY
2 FITTINGS
1/2 OFFSET
CET FACILITY
1-S PIECE = 2 FITTINGS
SECTIONS OF CET FACILITIES CROSSING WATERMAIN
NTS
CET SKETCH
CET ACCOMODATION
VERTICAL OR ROLLED
WATERMAIN OFFSET
REVISIONS
5/7/10
CONTRACT NO.
SKETCH NO.
CET 1000 V