SECTION 8 INCIDENTAL CONSTRUCTION

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SECTION 8
INCIDENTAL CONSTRUCTION

The purpose of this Specification Section is to present standards for certain elements of work that are incidental to, or commonly included in other bid items, but which require further definition.

1.0 CONSTRUCTION STAKING (CONSTRUCTION SURVEY)

1.1 DESCRIPTION. The Contractor is responsible for furnishing, placing and maintaining all construction stakes necessary for the proper prosecution and inspection of the Work.

1.2 CONSTRUCTION METHODS. Prior to commencing Work, the City Engineer will furnish the Contractor permanent horizontal alignment and vertical control points throughout the Work and permanent benchmarks within 200 feet of the beginning and the end of the Work limits. For work on major streets and bridges, the City Engineer will also provide centerline horizontal and vertical control points if applicable.

1.2.1 Layout. The Contractor shall provide field forces and shall set all additional stakes needed, such as offset stakes, reference point stakes, slope stakes, pavement and curb line and grade stakes, stakes for bridges, sewers, roadway drainage, pipe underdrains, paved gutter, fence, culverts of other structures and any other horizontal or vertical controls necessary to secure a correct layout of the work. The Contractor shall also perform all layout work and shall set stakes necessary for carrying out utility changes when such utility changes are required during the Work

1.2.2 Lines, Grades, and Locations. Stakes for line and grade shall be adequate to maintain the specified tolerances for the Work. The station number and distance from the centerline of construction shall be marked on all grade stakes. The City Engineer may at any time check for the correctness of the Contractor's staking by using a spot check method. When significant errors occur, the Contractor shall re- survey to the satisfaction of the City Engineer. Any inspection or checking of the Contractor's layout by the City Engineer and the acceptance of all or any part shall not relieve the Contractor of its responsibility for the Work.

1.2.3 Grading and Excavation Quantities. If and when grading or excavation quantities are specified to be paid as plan quantity, the Contractor will be required to furnish original cross-sections. When such quantities are specified to be paid by field measurement, the Contractor shall furnish both original and final cross-section field notes.

1.2.4 Maintain and Report Original and Final Field Data. The Contractor shall have the sole responsibility for the preservation of all horizontal alignment and vertical control stakes, benchmarks and construction stakes. The Contractor shall, at its own expense, replace any horizontal alignment, vertical control, construction stakes and benchmarks when damaged, lost, displaced or removed. The Contractor shall furnish the original copy of all survey records to the City Engineer for calculation of quantities and permanent file. These records shall be furnished as they are completed during the Work. The records shall be permanently bound in field books and formatted in a manner commonly accepted by surveyors or they shall be provided in an AutoCad format and transmitted by flash drive. At the conclusion of the project, the Contractor shall perform an as-built survey. This survey shall be turned over to the Engineer of Record. This survey shall be used for final as-built record drawings and calculations of final quantities.

1.3 METHOD OF MEASUREMENT. Measurement for all construction stakes will be made on a lump sum basis. All construction staking Work performed shall be paid for at the Contract lump sum Bid price. The Bid price shall be full compensation for furnishing all labor, materials, tools, equipment and incidentals necessary to complete the Work. Payments will be made on a pro-rated basis over the time of the contract.

1.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

CONSTRUCTION STAKING LS

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

2.0 CONSTRUCTION SIGNING AND TRAFFIC CONTROL

2.1 GENERAL. All signs, barricades, warning lights, and other traffic control devices used for construction traffic control shall meet the requirements of the latest edition of the Manual on Uniform Traffic Control Devices For Streets and Highways as pertains to shape, size, color, mounting height, and placement. All sign sheeting materials shall meet or exceed the requirements of Section 6.

2.2 CONSTRUCTION METHODS. If not included in the Plans, the Contractor shall submit a Traffic Control Plan to the Engineer prior to the start of construction. The Traffic Control Plan shall include types and locations of all traffic control devices to be used for the construction zone, and detour plans when applicable. If construction involves more than one phase requiring relocation of traffic control devices, traffic control plans shall be submitted for each phase. Field adjustment of the Traffic Control Plan shall be permitted with approval of the Engineer.

2.3 METHOD OF MEASUREMENT. All signs, barricades, warning lights, and other traffic control devices used for construction traffic control shall be measured as a lump sum. Accepted signs, barricades, warning lights, and other traffic control devices used for construction traffic control will be paid for at the contract price. Which shall be full compensation for furnishing all materials, equipment, labor, and incidentals necessary to complete the work as specified.

2.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

CONSTRUCTION TRAFFIC CONTROL LS

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

3.0 MOBILIZATION

3.1 DESCRIPTON. This work shall consist of construction preparation operations, including preconstruction conference, the movement of personnel and equipment to the project site and for the establishment of the Contractor's offices, buildings, and other facilities necessary to begin work on a substantial phase of the Contractor.

3.2 METHOD OF MEASUREMENT. Measurement for mobilization will be made on a lump sum basis.

3.3 BASIS OF PAYMENT. Mobilization, measured as provided above, will be paid for at the contract price as follows:

MOBILIZATION LS

Such payment shall be full compensation for performing the work specified and the furnishing of all materials, labor, tools, equipment, and incidentals necessary to mobilize and subsequently demobilize the construction preparatory operations. Payment for this item will be made in one installment on the first estimate following completion of substantial mobilization.

4.0 CLEARING AND RIGHT OF WAY RESTORATION

4.1 DESCRIPTION. This section covers the clearing of the right of way or project alignment in preparation for construction works, removal and disposal of trees, stumps, brush, roots, vegetation, logs, rubbish, and other objectionable matter from the designated area, except such objects as are designated to remain or to be removed in accordance with other sections of these specifications. This section also covers all restoration work necessary for the project clean-up that is otherwise not included in another right of way related enhancement work item.

4.2 CONSTRUCTION METHODS. The entire right-of-way shall be cleared of all trees, brush, logs, rubbish, except such trees and shrubs as may be designated by the Engineer for preservation. Trees and shrubs designated to be left in place shall be carefully trimmed as directed and shall be protected from scarring, barking or other injuries during construction operations. The limbs shall be treated by painting the exposed ends with an approved asphaltic material.

4.2.1 Areas Required for Embankment Construction. Roadway, structural excavations, borrow sites and material sources shall be cleared and grubbed. On areas required for roadway, channel, or structural excavation, all stumps, roots, etc., (except for designated trees and shrubs) shall be removed to a depth of at least 2 feet below the lower elevation of the excavation. On areas required for embankment construction, all stumps, roots, etc., (except for designated trees and shrubs) shall be removed to a depth of at least 2 feet below the existing ground surface. All holes remaining after clearing and grubbing shall be backfilled and tamped as directed by the Engineer and the entire area bladed to prevent ponding of water and to provide drainage except in areas to be immediately excavated. When permitted by the plans, trees and stumps may be cut off as close to natural ground as practicable on areas which are to be covered by at least 2 feet of embankment. Areas required for borrow sites and material sources, stumps, roots, etc., (except for designated trees and shrubs) shall be removed to the complete extent necessary to prevent objectionable matter to become mixed with the material to be used in construction. All cleared and grubbed material shall be disposed of in a matter satisfactory to the Engineer.

4.2.2 Right of Way Clearing. The contractor shall endeavor to clear no more of the right of way or alignment than necessary for the execution of the work, particularly where such works or repairs are undertaken in established developments, residential subdivisions, urban business areas, and landscaped properties. Landscaping features, fencing and other items in the right of way which are not to be disturbed, or which if disturbed shall be replaced, shall be called-out on the plans.

4.3 METHOD OF MEASUREMENT. The work prescribed under this item shall be paid for at the unit price bid for each linear foot of line installed or, for non-linear projects, by lump sum for the project. If the plans and contract include the item of clearing and grubbing and provide for payment therefore, this work shall be measured by the acre or square yard at the locations designated on the plans or directed by the Engineer. The amount of completed and accepted work, measured as provided above, shall be paid for at the contract unit price bid which prices shall be full compensation for furnishing all labor, materials, equipment, tools, and incidentals necessary to complete the work.

4.4 BASIS OF PAYMENT The items measured as provided above will be paid for at the contract unit price bid for one or more distinct items below:

RIGHT OF WAY CLEARING AND RESTORATION	LF
CLEARING AND GRUBBING	LS
CLEARING AND RESTORATION	AC
CLEARING AND RESTORATION	LS

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

5.0 REMOVAL OF EXISTING STRUCTURES

5.1 DESCRIPTION. This section covers the removal and disposal of old structures or portions of old structures as noted on the plans and will include all excavation and backfilling necessary to complete the removal. This section also covers distinct linear features which may need to be removed such as segments of water and sewer lines, etc. The work shall be done in accordance with the provisions of these specifications.

5.2 CONSTRUCTION METHODS

5.2.1 Culverts, Storm Sewers, Water Lines, or Sewer Lines. Linear features such as pipe shall be removed by careful excavation of all dirt on top and sides and the structure removed or abandoned. Those pipes which are deemed unsatisfactory for reuse by the Engineer may be removed in any manner the Contractor may select.

5.2.2 Concrete Structures. Concrete structures or concrete portions of structures may be removed by mechanical means, crushing, etc. Concrete portions of structures below the permanent groundline, which will not interfere in any manner with the proposed construction, may be left in place but removal shall be carried at least 2 feet below the permanent groundline and neatly squared off. Reinforcement shall be cut off close to the concrete. The bottom of such structures shall be perforated or broken to prevent the entrapment of water.

5.2.3 Steel Structures. Steel structures or steel portions of structures shall be dismantled in sections as determined by the Engineer or called for on the plans. The sections shall be of such weight and dimensions as will permit convenient handling, hauling, and storing. Rivets and bolts connecting steel railing members, steel beams or beam spans and steel stringers of truss spans shall be removed by cutting the heads with a "cold cut" and punching or drilling from the hole, or by such other method as will not injure the members for reuse and will meet the approval of the Engineer. The removal of rivets and bolts from connections of truss members, bracing members, and other similar members in the structure will not be required unless specifically called for on the plans or special provisions and the Contractor shall have the option of dismantling these members

by flame cutting the members immediately adjacent to the connections. Flame cutting will not be permitted, however, when plans or special provisions call for the structure unit to be salvaged in such manner as to permit reerection. In such case, all members shall be carefully matchmarked with paint in accordance with diagram furnished by the Engineer prior to dismantling, and all rivets and bolts shall be removed from the connections in the manner specified in the first portion of this paragraph.

5.2.4 Timber Structures. Timber structures or timber portions of structures shall be removed in such a manner that the damage to the timber will be minimum. All bolts and nails shall be removed from such lumber as deemed salvable by the Engineer. Unless specified otherwise on the plans, timber piles shall be either pulled or cut off at a point not less than 2 feet below groundline, with the choice between these two methods resting with the Contractor.

5.2.5 Brick or Stone Structures. Brick or stone structures or stone portions of structures shall be removed by mechanical means, bulldozing, etc. and/or sledging the masonry into sizes which can be buried or hauled away by the contractor. Portions of such structures below the permanent groundline which will not in any manner interfere with the proposed construction may be left in place, but removal shall be carried at least 2 feet below the permanent groundline and neatly squared off.

5.2.6 Salvage. All materials such as pipe, timbers, railings, etc., which the Engineer deems as salvagable for reuse, and all structural steel shall be carefully placed in neat piles along the right-of-way at convenient loading points which will not interfere with traffic or construction. All of these materials shall be the property of the City.

- The I-beams, stringers, etc., which are specified to be dismantled without damage for reuse, and all steel members when matchmarked and dismantled for reuse, shall be blocked off the ground in an upright position to protect the members against further damage.

- Materials which are not deemed salvable by the Engineer shall become the property of the Contractor and shall be removed to suitable disposal sites off of the right-of-way and disposed of by the Contractor in a manner satisfactory to the Engineer.

- Where temporary structures are necessary for a detour adjacent to the present structure, the Contractor will be permitted to use the material in the old structure for the detour structure, but he shall dismantle and stack or dispose of the material as required above as soon as the new structure is opened for traffic.

5.2.7 Backfill. All excavation made in connection with this item and all openings below the natural groundline caused by the removal of old structures or portions thereof shall be backfilled to the level of the original groundline, unless provided otherwise on the plans.

- The portion of the backfill which will support any portion of the new structures, lines, roadbed or embankment shall be placed in layers of the same depth as those required for placing embankment. Material in each layer shall be wetted uniformly if required and shall be compacted to the density required in the adjoining embankment. In places inaccessible to blading and rolling equipment, mechanical or hand tamps, or rammers shall be used to obtain the required compaction.

- That portion of the backfill which will not support any portion of the roadbed or embankment shall be placed as directed by the Engineer in such manner and to such state of compaction as will preclude objectionable amounts of settlement.

5.3 METHOD OF MEASUREMENT. The work as provided for by this section shall be measured as each individual structure to be removed or, in the case of linear structures such as water, sanitary and storm sewers, such may be measured by the linear foot. When measured by either method, removal shall include all appurtenances thereto. The work as prescribed for in this section shall be paid for at the unit price bid each for the various types of structures as shown on the proposal or per linear foot when pipe is to be removed. This price shall be full compensation for all work, labor, tools, equipment, excavation, backfilling, materials, and incidentals necessary to complete the work.

5.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

STRUCTURE REMOVAL (TYPE)	LS
STRUCTURE REMOVAL (TYPE)	LF

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

6.0 REMOVAL OF PAVING, SIDEWALKS, DRIVEWAYS, CURBS, ETC.

6.1 DESCRIPTION. This section covers the removal of existing paving, sidewalks, driveways, curbs, or items of similar nature, composed of concrete, asphalt, brick, or any other material, and the disposal of same all in accordance with these specifications and as shown on the plans or as directed by the Engineer. For purpose of classification, all gutters, whether combined or separate from curb, shall be considered as part of the curbs.

6.2 CONSTRUCTION METHODS. In removal of any paving, sidewalks, driveways, curbs, gutters, etc., care shall be taken to leave a straight, smooth edge, perpendicular to the surface of the portion left in place at the location given by the Engineer. Any breakage outside the lines given by the Engineer shall be replaced by the Contractor at his expense. All materials designated by the Engineer as salvageable, including broken concrete bricks, manhole frames and grates, catch basin frames and grates, and all sewer and culvert pipe, shall be hauled and stored as directed by the Engineer. Gravel surfacing shall, as nearly as practicable, be removed separately from dirt or other materials, and where desired for use on other streets or alleys, shall be disposed of at sites designated by the Engineer.

6.3 METHOD OF MEASUREMENT. The various items of this section when classified for payment as contract pay items, will be measured by the unit designated on the plans or as set out in the proposal. The various items of this section when classified for payment will be measured as provided above and will be paid for at the contract unit price for:

- Existing paving removed;
- Existing asphalt wearing surface removed, variable thickness;
- Concrete sidewalk removed;
- Existing driveway removed;

- Existing concrete or limestone curb removed;

as the case may be and such payment shall be full compensation for all materials, equipment, tools, labor and incidentals necessary for completing the removal and disposal of the item specified.

6.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

REMOVE PAVEMENT (TYPE) (THICKNESS)	SY
REMOVE SIDEWALK (WIDTH)	SY
REMOVE CURB AND GUTTER	LF

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

7.0 REMOVE (AND REPLACE) DRIVEWAY

7.1 DESCRIPTION. This section covers the reconstruction of driveways where called for on the plans.

7.2 CONSTRUCTION METHODS. Unless otherwise specified this work shall include:

7.2.1 Concrete driveways constructed in accordance with the "Standard Details for Driveways". Driveways shall be constructed joint to joint unless otherwise called for.

7.2.2 Asphalt driveways shall be 3-inches of Type "A" mix laid on 6-inches of prepared subgrade as a minimum otherwise match existing.

7.2.3 Gravel driveways shall be 4-inches of crushed stone laid on 6-inches of prepared subgrade. Subgrade shall be prepared and compacted to a minimum of 95% Standard Proctor Test (ASTM D698). Crushed stone shall meet the gradation requirements of ASTM C33, No. 67, and be compacted accordingly.

7.3 METHOD OF MEASURMENT. Payment for "Removing and Replacing Driveway" shall be made at the unit price bid per square yard for each driveway type. The prices established shall be full compensation for the removal and replacement of driveways and, where applicable, shall include saw cut, support of adjacent slabs , materials, labor, tools, equipment and all incidentals necessary to complete this item of work.

7.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

REMOVE DRIVEWAY	SY
REMOVE AND REPLACE DRIVEWAY	SY

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

8.0 PAVEMENT CUT AND PERMANENT REPAIR

8.1 DESCRIPTION. This section covers the construction of a reinforced concrete slab over trench in paved areas, or where called for on the plans.

8.2 CONSTRUCTION METHODS. All construction shall be in accordance with the "Standard Detail for Paving Cut and Permanent Repair". Where concrete repair is specified, the repair shall be from joint to joint.

8.3 METHOD OF MEASUREMENT. Payment for "Paving Cut and Permanent Repair" shall be made at the unit price bid per square yard for each pavement type. The price established shall be full compensation for saw cut, removal of existing pavement, sand backfill, reinforced concrete slab, tools, labor, equipment, and incidentals necessary to complete this item of work. Curb and gutter shall be paid for separately.

8.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

PAVEMENT CUT AND PERMANENT REPAIR (TYPE) SY

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

9.0 Not Used.

10.0 REMOVE (AND REPLACE) SIDEWALK PAVEMENT

10.1 DESCRIPTION. This section covers removing and replacing sidewalks.

10.2 CONSTRUCTION METHODS. The affected concrete sidewalks shall be replaced in accordance with the "Standard Details for Sidewalk Pavement". The removal and replacement of sidewalks shall be from joint to joint unless otherwise designated on the plans.

10.3 METHOD OF MEASUREMENT. Payment for "Replacing Sidewalk Pavement" shall be made at the unit price bid per square yard. The price established shall be full compensation for replacement of sidewalk, excavation, backfill, compaction, support of adjacent slab, tools, labor, equipment, materials and incidentals necessary to complete this item of work.

10.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

REMOVE SIDEWALK (WIDTH) SY
REMOVE AND REPLACE SIDEWALK (WIDTH) SY

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

11.0 REMOVE AND REPLACE PARKING LOT PAVING

11.1 DESCRIPTION. This section covers removing and replacing of existing concrete, asphalt, and gravel parking lots.

11.2 CONSTRUCTION METHODS

11.2.1 Concrete Parking Lots. The affected area of concrete parking lot shall be replaced with a minimum pavement section consisting of 6-inches of concrete pavement, over 6-inches of crushed stone base over prepared and compacted subgrade. Removal and replacement of concrete parking lot pavement shall be from joint to joint unless otherwise designated on the plans.

11.2.2 Asphalt Parking Lots. The affected area of asphalt parking lot shall be replaced with a minimum pavement section consisting of 1-1/2-inch surface course Type "B" Mix and 2-3/4-inch of Type "A" Mix with 6-inches of crushed stone base over 6-inches of prepared subgrade.

11.2.3 Gravel Parking Lots. The affected area of gravel parking lot shall be replaced with a minimum pavement section consisting of 4-inches of crushed stone over 6-inches of prepared (compacted) subgrade.

11.2.4 General. Each layer of the replacement section shall be equal to the existing parking lot pavement section layer and not be less than the minimum sections described above. Subgrade shall be prepared and compacted to a minimum of 95% Standard Proctor Test (ASTM D698). Crushed stone shall meet the gradation requirements of ASTM C33, No. 67.

11.3 METHOD OF MEASUREMENT. Payment for "Removing and Replacing Parking Lot Paving" shall be made at the unit price bid per square yard for each pavement type. The price established shall be full compensation for complete repair and replacement of the parking lot, including the removal and proper disposal of spoil and the support of adjacent slabs. Concrete parking lot paving shall also include curb and gutter if applicable. For other types, curb and gutter shall be paid for separately.

11.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

REMOVE AND REPLACE PARKING LOT PAVEMENT (TYPE) SY

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

12.0 INCIDENTAL PAVING REPAIR AND REPLACEMENT. TBP.

13.0 ADJUSTMENT OF EXISTING STRUCTURES

13.1 DESCRIPTION. This section will cover the necessary adjustment, alteration or resetting to the required grade and alignment of existing structures, equipment or appurtenances which are not to be removed or abandoned and which are not the property of a private company, firm or corporation required to move their own property.

13.2 CONSTRUCTION METHODS. The materials and workmanship necessary in raising, lowering and otherwise adjusting or resetting existing structures shall conform to the requirements of the City's standard specifications for the class of work involved, unless otherwise provided for in these specifications. Whole bricks, salvaged in good condition from structures, may be used in rebuilding such structures provided the bricks are cleaned to the satisfaction of the Engineer. Existing structures shall be rebuilt accurately to correct grade and alignment and such

work shall be completed in advance of the construction of new work abutting when required by the Engineer.

13.2.1 Waterlines, Valves, Meters, Fire Hydrants, etc. The Contractor shall make complete arrangements with the City's Utility Department for lowering or relocating of all waterlines and resetting of water valves and meters, and fire hydrants. Where the Contractor is to perform the actual work such work shall conform strictly to these specifications.

13.2.2 Electric Traffic Signals. The Contractor shall make proper arrangements with the City for the moving and resetting of any electric traffic signals, conduits, cables, etc. Where the Contractor is to perform the actual work, such work shall conform strictly to the requirements of the City.

13.2.3 Manholes and Inlets. Manholes, rings, plates, inlets, grates, covers, and brick in good condition, removed from the manholes and inlets in the process of adjustment may be reused. All additional materials necessary for the completion of work (adjustment of existing structures) shall be included in price bid. Water, sanitary sewer and storm sewer vaults and manholes frames within the area to be paved or graded will be set to finished surface grade by the Contractor.

Manholes or inlet rings, covers, plates, and grates shall be removed carefully and the contact areas shall be cleaned of all mortar and grease. Rings, covers, plates, or grates broken in the process of removal and cleaning shall be replaced in kind by the Contractor at his expense.

Where manholes are to be built up a distance of 1 foot or less to a new grade, the walls may be carried up vertically. Where the walls are to be built up a distance exceeding 1 foot, the existing walls shall first be removed to the bottom of the batter section of the walls or to such elevation that the inside diameter of the manhole is not less than 3'-6". The manhole shall then be rebuilt in conformity with the size and shape of requirements for new manholes.

13.2.4 Manholes in Asphalt Pavement. Manhole frames within the pavement area shall be set to final grade prior to paving. The surrounding area from which the pavement, base or subgrade has been removed shall be backfilled to within 2-inches of the surface with concrete. The remaining 2-inches shall be backfilled with asphalt concrete wearing surface and compacted. The work shall be so performed as to present a neat and thoroughly workmanlike appearance upon completion.

13.2.5 Manholes in Concrete Pavement. Existing manhole castings and covers shall be adjusted to the grade of the new pavement before placement of the new pavement, using brick, mortar, and/or concrete for raising or lowering the manhole.

13.2.6 Inlets. Inlets which are to be adjusted shall be adjusted to the grade shown on the plans. All additional materials necessary for the completion of work (adjustment of existing structures) shall be included in price bid.

13.3 METHOD OF MEASUREMENT. Where payment is to be made on the unit price basis, vertical measurements of structures raised or lowered to grade will include only the actual net distance the structure is raised or lowered and will not include sections of wall removed and rebuilt. There will be no measurement of basement repair as such, however, the concrete used in the repair will be measured in cubic yards and the steel in pounds. Where adjustment of manholes exceeds 1 foot or manholes are to be offset, measurement will be made by the linear foot for sections of wall removed and rebuilt. Payment will be made at the unit price or lump sum price basis, as the case may be, for the adjustment of the particular class of structure involved, other than repair of basements. Basement repair will not be paid for as such but the cost of the repair

will be included in the price bid per cubic yard for "Formed Reinforced Concrete in Special Structures", and the price bid per pound for "Reinforcing Steel" used in the repair. Such price or prices shall be compensation in full for all labor, materials, tools, equipment and incidentals necessary to complete the work in accordance with the plans and these specifications.

13.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

ADJUST EXISTING STRUCTURE (TYPE) EA

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

14.0 MACHINE SAW CUT

14.1 DESCRIPTION. This section will cover the sawing of bituminous or concrete pavement, curb, gutter, sidewalk or driveways.

14.3 CONSTRUCTION METHODS. Sawing shall be in accordance with the requirements of this item unless shown otherwise on the plans or in the special provisions.

14.3.1 Equipment. The saw shall be power driven, shall be manufactured especially for the purpose of sawing concrete, shall be suitable for the work to be performed, and shall be maintained in good operating condition. Saw blades shall make a clean, smooth cut, producing a groove 1/8-inch 1/4-inch wide and to the full depth required by these specifications or as shown on the plans.

- The saw shall be mounted on a sturdy frame supported on rubber tired wheels and of a size weight and capacity to perform the extent of work required. Portable handheld saws may also be used provided they can meet the requirements of this section.

- The operator of the saw shall have been trained and designated by the contractor to operate the equipment and shall not be trained on the City project at hand. Such training shall have included the proper and habitual use of eye protection, the absence of which shall indicate a training and supervisory failure.

14.3.2 Removing Pavement, Curb, Gutter, Sidewalk and/or Driveways. Pavement and appurtenances shall be removed to neatly sawed edges. Saw cuts shall be made to a minimum depth of 1-1/2-inches. The edges of pavement and appurtenances which are damaged subsequent to sawing shall again be saw cut to neat straight lines for the purpose of removing the damaged areas.

- Concrete sidewalk or driveway to be removed shall be neatly sawed in straight lines either parallel to the curb or at right angles to the alignment of the sidewalk. No section to be replaced shall be smaller than 30-inch in either length or width unless otherwise approved by the Engineer.

- Weakened Plane Joints (Contraction Joints). Weakened plane joints shall be saw cut at the locations shown on the plans or as directed by the Engineer. The groove shall be cut to a minimum depth of 1-1/2-inches. Any portion of the membrane curing compound which

has been disturbed by sawing operations shall be restored by spraying the areas with additional membrane curing compound.

- Curb and Gutter. Saw on a neat line at right angles to the curb face.

14.4 METHOD OF MEASUREMENT. Machine saw cut shall be measured for payment by the linear foot. Such compensation as outlined above shall be payment in full for all labor, equipment, and materials necessary to complete the item of work.

14.5 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

SAWCUT PAVEMENT (TYPE) LF

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

15.0 PAVEMENT PLANING AND DIAMOND GRINDING

15.1 DESCRIPTION. This section covers planing or diamond grinding existing pavement surfaces with equipment meeting the requirements hereinafter specified which removes or reduces pavement surface irregularities so as to adjust the pavement grade, improve or modify drainage or provide a smooth riding surface. The planed or ground surface shall be free from gouges, grooves, ridges, sooting, oil film and other imperfections of workmanship and shall have a mosaic appearance that clearly shows 75% of the surface aggregate sheared by the cutting blades having a desirable bonding surface.

15.2 EQUIPMENT. The planing or grinding work shall be performed with pavement planing or diamond grinding machines designed for the needed task:

15.1 Cold Planing. Cold planing, for the purposes of these specifications, shall be employed where pavement requires both surface improvement, gross profile changes or removal of joint dislocations in advance of an overlay or micro-surfacing. The planing machine shall be designed and built for this type of work.

- The equipment shall be self-propelled with sufficient power, traction and stability to maintain accurate depth of cut and slope, with automatic grade and slope controls capable of producing a finished profile within 1/4-inch. The machine shall be equipped with an integral loading and reclaiming means to immediately remove material being cut from the surface of the roadway and discharge the cuttings into a truck, all in one operation or adequate back-up equipment (sweepers, loaders, water truck, etc.) and personnel will be provided to insure that all cuttings are removed from street surface daily. Stock piling of planed material will not be permitted on the project site.

- The machine shall be capable of producing a minimum coverage of 2,000 square yards per hour to a depth of 1/4- to 1/2-inch. It shall be equipped with means to control dust created by the cutting action and be able to cut flush to all curbs, inlets, manholes or other obstructions within the paved area.

15.2 Diamond Grinding. Diamond grinding shall be employed where required to remove surface irregularities, restore surface of new or repaired pavement, and correct minor profile problems.

The diamond grinding machine shall be designed and built for this type of work. The equipment shall be self-propelled with sufficient power, traction and stability to maintain accurate depth of cut and slope, with automatic grade and slope controls capable of producing a finished profile within 1/4-inch.

- Use a self-propelled grinding machine with depth, grade, and slope controls designed for grinding and texturing concrete, outfitted with diamond blades and a vacuum system capable of removing liquid and solid residue.

- The machine assembly shall weigh not less than 30,000 lbs so as to provide needed grinding force capable of grinding a 4 foot strip. It shall be capable of producing a surface that is true in grade, uniform in appearance and smooth texture.

15.3 CONSTRUCTION METHODS. The temperatures at which the work is performed, the nature and condition of the equipment, and the manner of performing the work shall be such that the pavement is not torn, gouged, shoved, broken, sooted, oil coated, burned or otherwise injured by the planing operation. Sufficient passes, or cuts shall be made such that all irregularities of high spots are eliminated and that 100% of the surface area has been planed to the desired grade or to the satisfaction of the Engineer. Where the pavement is planed and thereafter to be resurfaced, a 2-inch shoulder shall be cut along the gutter line to eliminate the necessity of feathering the edge of the new surface.

15.4 METHOD OF MEASUREMENT. Pavement planing performed and provided above shall be measured by the square yard of variable depth up to a maximum of 1-1/2 inches below the surface. Additional depth shall be paid for on a pro-rated basis for areas requiring extra depth in increments of 1-inch. Pavement diamond grinding shall be measured by the square yard. Payment for the planing or diamond grinding of pavement shall be made at the unit price bid per square yard which shall include all labor, equipment, materials, supplies, mobilization, and traffic control.

15.5 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

PAVEMENT PLANING (UP TO 1-1/2-INCH)	SY
DIAMOND GRINDING	SY

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

16.0 PAVEMENT REINFORCING FABRIC

16.1 DESCRIPTION. This section covers the application of pavement reinforcement fabric in accordance with these specifications and in reasonably close conformity with the locations and dimensions shown on the plans or established by the Engineer.

16.2 MATERIALS. Material shall meet the requirements of the Materials Section.

16.3 EQUIPMENT. Equipment and tools necessary for performing all parts of the work shall be on the job site prior to commencement of work and shall be maintained in first class operating condition.

16.3.1 Distributors. Distributors shall be designed, equipped, and maintained so that bituminous material at even heat may be applied uniformly on variable widths of surface up to 26 feet at readily determined and controlled rates from 0.1 - 1.0 gallons per square yard with uniform pressure and with an allowable variation from any specified rate not to exceed 0.3 gallon per square yard. A check of distribution rate and uniformity of distribution shall be made when directed by the Engineer. Distributor equipment shall include a tachometer, pressure gauges, accurate volume measuring devices or a calibrated tank, and a thermometer for measuring temperatures of tank contents. Distributors shall be equipped with a power unit for the pump and full circulation spray bars adjustable laterally and vertically and shall be equipped with a hand spray with single nozzle and positive shut off valve.

16.3.2 Fabric Laydown. Fabric laydown equipment shall be capable of handling full or partial rolls of fabric and shall be capable of laying the fabric smoothly without wrinkles and/or folds. When manual laydown is required Contractor shall use suitable roll tension devices for roll handling. Miscellaneous equipment shall include stiff bristle brooms to smooth the fabric, scissors or blades to cut the fabric, and brushes as required for use in applying asphalt binder to fabric overlap at spliced joints.

16.4 CONSTRUCTION METHODS

16.4.1 The surface on which the fabric is to be placed shall be free of dirt, dust, water, oil or other foreign matter.

16.4.2 Application of Bituminous Binder. The bituminous binder material shall be heated and uniformly spray applied over the area to be fabric covered. Double rate application shall be applied along an overlap area. The minimum application temperature of the bituminous binder shall not be less than 290ºF. If the fabric is oversprayed the maximum application temperature shall not exceed 325°F to avoid damage to the fabric.

- The bituminous binder shall be applied at the rate of 0.20 to 0.35 gallons per square yard or as established by the Engineer. Application of the bituminous material shall be accomplished with an asphalt distributor. Areas not accessible to the distributor shall be hand sprayed. The distributor shall be started and stopped over paper or roofing felt to provide neat cutoff lines.

- The width of binder application shall be 2 to 6-inches wider than the fabric width. Care shall be exercised in the application of the binder to avoid spills or excessive application to cause flushing of the bituminous material. Asphalt binder shall not be applied for installation of the fabric when the air temperature is less than 50°F.

16.4.3 Placement of Reinforcement Fabric. The fabric shall be placed after the bituminous binder has been applied and before the binder has cooled and lost tackiness. The fabric shall be unrolled and placed into the binder with the unfused (fuzzy) side down with a minimum of wrinkles. Every effort shall be made to lay the fabric as smooth as possible.

- The fabric shall be broomed to remove air bubbles and maximize fabric contact with the pavement surface. Wrinkles shall be cut and laid out flat. If misalignment of the fabric occurs the fabric shall be cut, realigned and jointed. Overlap of fabric at joints shall be between 2 and 4-inches.

- Transverse joints shall be shingled in the direction of paving to prevent edge pickup by the paver. Additional binder shall be applied to joints by hand spraying or brushing. The reinforcement fabric shall be embedded into the bituminous binder and bonded to the pavement. Self-propelled pneumatic-tired rollers may be used if deemed necessary.

16.4.4 Pavement Overlay. Tack coat, if required for the pavement overlay, bituminou material type, grade, rate of application and temperature shall be applied in accordance with the Pavements Section. Cut-Back asphalt or emulsified asphalt containing petroleum distillate additives shall not be used.

- Placement of the asphalt concrete pavement overlay should closely follow fabric laydown unless otherwise permitted by the Engineer. Any damage or disbonding of the fabric reinforcement membrane caused by traffic or wet weather conditions due to unnecessary delay shall be repaired. In the event excess binder bleeds through the fabric before the overlay is placed, the excess material shall be blotted by spreading sand on the affected area.

- The temperature of the paving mix at time of placement on the reinforcement fabric membrane shall not exceed 325°F to prevent damage to the fabric. The turning of pavers or other vehicles should be gradual and kept to a minimum to avoid damage to the fabric. Should equipment tires pick up the fabric or the paver cause movement of the membrane during paving operations asphalt paving mix may be broadcast ahead of trucks and the paver to prevent damage. Any damage to the reinforcement membrane due to equipment shall be repaired by the Contractor.

16.5 METHOD OF MEASUREMENT. Pavement reinforcing fabric will be measured by the square yard complete in place. The pavement reinforcing fabric shall be paid for at the contract unit price bid per square yard. Such payment shall be full compensation for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

16.6 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

PAVEMENT REINFORCING FABRIC SY

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

17.0 CONCRETE SIDEWALKS AND DRIVEWAYS

17.1 DESCRIPTION. This section covers concrete sidewalks and driveways constructed as herein specified and in conformity with the lines and grades as established by the Engineer and the details as shown on the plans.

17.2 MATERIALS. All materials and requirements for concrete shall conform to the requirements of "Concrete Curb and Gutter" in these specifications. Standard construction details shall also provide the requirements for expansion joints, forming, curing, and other incidental construction items related to the placing of concrete for sidewalks and driveways.

17.3 CONSTRUCTION METHODS. Concrete sidewalks and driveways shall be constructed in accordance with the current Ardmore Engineering Department Construction Standards Details.

The Contractor shall furnish all materials, labor and equipment, and construct sidewalks and driveways, conforming to line, grade, location, and design as indicated on the plans and in these specifications, or as established by the Engineer. Excavation required for the construction of sidewalks and driveways shall be to the lines and grades as established by the Engineer, or as shown on the plans. The Contractor shall do all necessary filling, leveling, and fine grading required to bring the subgrade to the exact grades specified. Concrete sidewalks and driveways shall be finished to a true, even surface. They shall be troweled with a steel trowel and then brushed transversely to obtain a smooth uniform brush finish. Joint and sides shall be edged with suitable tools. Expansion joints for sidewalks and driveways shall be formed using pre-molded expansion joint material of an approved type. Expansion joints shall be placed in the sidewalk at 50 foot intervals maximum distance. Expansion joints shall also be placed at all intersections or sidewalks with concrete driveways, poles, curbs, buildings, and other sidewalks. All expansion joints shall be 3/4-inch in thickness and shall be sealed. The edges of all construction and expansion joints and the outer edges of all sidewalks shall be finished to 1/2-inch radius with a suitable finishing tool. Contraction joints shall be saw cut in accordance with standard details. Cure as described in other paragraphs of these specifications, "Concrete Curb and Gutter".

17.4 METHOD OF MEASUREMENT. Measurement for sidewalks and/or driveways complete in place will be by the square yard. Concrete sidewalks and driveways shall be paid for at the contract unit price bid, which price shall be full compensation for excavating and preparing the subgrade; furnishing and placing all materials, including expansion joint materials; and for all preparation, labor, tools, equipment, and incidentals necessary to complete the work.

17.5 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

SIDEWALK (WIDTH)	SY
DRIVEWAY (WIDTH)	SY

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

18.0 TEMPORARY SURFACING

18.1 DESCRIPTION. This section covers the placing of temporary surfacing on areas to be used as temporary crossings and temporary routes of ingress and egress to residences and places of business adjacent to or near the project. Two types of temporary surfacing materials may be used as follows; asphalt when called for, shall be type "A" mix placed a minimum of 3-inches on a compacted subgrade; or, aggregate, when called for, shall be placed a minimum of 4-inches and compacted on a prepared subgrade.

18.2 CONSTRUCTION METHODS. This work shall be constructed on a prepared subgrade in reasonable close conformity with the existing surfaces or established by the Engineer. Cross streets, side streets, approach streets, and temporary driveways to residences or places of business shall be shaped to a reasonable cross section to prevent ponding of water. Holes, waves and undulations which develop shall be corrected by blading and adding more material. The shaping of the surface material shall be continued until it is well compacted, free from ruts, waves, and undulations. The completed temporary surface shall be maintained in this condition until permanent repairs are constructed.

18.3 METHOD OF MEASUREMENT. Payment for "Temporary Surfacing" shall be made at the

unit price bid per ton for each material type. The price established shall be full compensation for excavation, materials, labor, tools, equipment and incidentals necessary to complete this item of work.

18.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

TEMPORARY SURFACING (TYPE) SY

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

19.0 RIPRAP

19.1 DESCRIPTION. This section covers the furnishing and placing of riprap protection of the type specified at the locations and in reasonably close conformity with the lines and dimensions shown on the plans or established by the Engineer. The types of riprap are as follows:

Type 1	Plain Riprap
Type 2	Plain Riprap with Filter Blanket
Type 3	Special Plain Riprap
Type 4	Special Plain Riprap with Filter Blanket
Type 5	Laid Up Riprap
Type 6	Grouted Riprap

19.2 MATERIALS. Materials shall meet the requirements specified in the Earthwork and Materials specifications. [Portland Cement Concrete, fine aggregate, stone for riprap and filter blanket

19.3 CONSTRUCTION METHODS. The slopes, ditches, and areas to be protected shall be shaped and dressed to the lines and grades shown on the plans. Where Type V or Type VI construction is specified, the base shall be compacted before the riprap is placed.

- Filter blanket, when specified, shall be placed as indicated on the plans.

- Each layer shall be spread uniformly on the prepared base in a satisfactory manner to the neat lines indicated. Damage to the surface of the filter blanket during placing of the blanket shall be repaired before proceeding with the work. Compaction of the filter blanket will not be required, but it shall be finished to present a reasonably even surface free from mounds or windrows.

- For Types 1, 2, 3, and 4, the areas to be protected shall be dressed approximately to the lines and grades shown on the plans prior to placing riprap or the filter blanket, when a filter blanket is specified.

- Plain riprap and special plain riprap, graded so that the smaller stone is uniformly distributed throughout the mass, may be dumped over the area designated until the required depth is attained. Hand or machine placing will be required as is necessary to deposit the stones to the general lines and to the thickness shown on the plans.

- Type 5 foundation for riprap shall be excavated below probable scour or to the elevation shown on the plans, and no stone shall be laid or concrete placed until the footing is approved by the Engineer. The stones or blocks shall be placed with their beds at the approximate angle to the slopes as indicated on the plans. They shall be laid in close contact and so as to break joints, and the individual stones shall be thoroughly keyed into the wall. Spaces between stones shall be filled with spalls securely rammed into place. The finished wall shall present an even, tight and reasonably plain surface of the contour required. Points of stones projecting beyond the surface of the wall shall be broken off.

- Type 6 foundation for riprap shall be excavated below probable scour or to the elevation shown on the plans, and no stone shall be laid or concrete placed until the footing is approved by the Engineer. The stones or blocks shall be placed with their beds at the approximate angle to the slopes as indicated on the plans. They shall be laid in close contact and so as to break joints, and the individual stones shall be thoroughly keyed into the wall. Care shall be taken during placing to keep earth or sand from filling the spaces between the stones.

- After the stones or blocks are in place, the exposed surfaces of the rock shall be "painted" with a dilute detergent or release agent and immediately thereafter the spaces between them shall be completely filled with grout from bottom to top and the surface swept with a stiff broom.

- No riprap shall be grouted in freezing weather and in hot, dry weather the work shall be protected from the sun and kept moist for at least 3 days after grouting. Grout for grouted riprap shall consist of 1 part of Portland Cement and 3 parts of fine aggregate by volume thoroughly mixed with water to produce grout having the proper consistency. Retempering of grout will not be permitted.

19.4 METHOD OF MEASUREMENT. Type 1 and Type 2, Plain Riprap or Plain Riprap and Filter Blanket, will be measured separately by the cubic yard determined by multiplying and specified thickness of each type of material by the actual area of the surfaces on which each material is acceptably placed, or by the ton. Type 3 and Type 4, Special Plain Riprap or Special Plain Riprap and Filter Blanket will be measured separately by the cubic yard determined by multiplying the specified thickness of each type of material by the actual area of the surfaces on which each material is acceptably placed, or by the ton. Type 5, Laid Up Riprap will be measured by the square yard. This measurement covers the whole face area, regardless of thickness, and including additional thickness at base of walls. Type 6, Grouted Riprap will be measured by the square yard. This measurement covers the whole face area, regardless of thickness, and including additional thickness at base of walls. Accepted Riprap, measured as provided above, will be paid for at the contract unit price which shall be full compensation for furnishing all materials, equipment, labor and incidentals to complete the work as specified.

19.5 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

(TYPE) PLAIN RIPRAP	CY
(TYPE) PLAIN RIPRAP	TON
(TYPE) FILTER BLANKET	CY
(TYPE) FILTER BLANKET	TON
(TYPE) FILTER BLANKET	SY

(TYPE) SPECIAL PLAIN RIPRAP	CY
(TYPE) SPECIAL PLAIN RIPRAP	TON
(TYPE) LAID-UP RIPRAP	SY
(TYPE) GROUTED RIPRAP	SY

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

20.0 Not Use.

21.0 GUARDRAIL

21.1 DESCRIPTION. This work shall consist of the construction of guard rail and guide posts in accordance with these Specifications and in reasonably close conformity with the lines and grades shown on the Plans or established by the Engineer. The types of guard rail are designated as follows:

- Beam Guard Rail-Steel-W-Beam-Single
- Beam Guard Rail-Steel-W-Beam-Double Transition Section
- Guard Rail Anchor Unit
- Guard Rail Extruder Terminal
- Cable Guard Barrier
- Wrought Iron Chain Guard Barrier

21.3 CONSTRUCTION METHODS. Provide and install guardrails in strict accordance with Oklahoma Department of Transporation Standard Specifications. Set posts for guardrail in accordance with the Plans.

21.4 METHOD OF MEASUREMENT. Cable Guard Barrier, Beam Type Guardrail (Single), Beam Type Guardrail (Double Faced) and Wrought Iron Chain Guard Barrier will be measured by the linear foot between end section. Guardrail Anchor Units will be measured separately as unit shown on the standard drawings. Fittings will not be measured separately but included as incidental to the type specified. Guide Posts will be measured by the number of posts, including reflective sheeting.

21.5 BASIS OF PAYMENT. The accepted quantities of the various items, measured as provided above, will be paid for at the contract unit price for:

BEAM-TYPE GUARDRAIL (SINGLE)	LF
BEAM-TYPE GUARDRAIL (SINGLE)(SHOP CURVED)	LF
GUARDRAIL ANCHOR UNIT, TYPE "A"	EA
GUARDRAIL ANCHOR UNIT, TYPE "B"	EA
GUARDRAIL ANCHOR UNIT, TYPE "C"	EA
GUARDRAIL ANCHOR UNIT, TYPE "D"	EA
GUARDRAIL ANCHOR UNIT, TYPE "E"	EA
GUARDRAIL ANCHOR UNIT, TYPE "F"	EA
GUARDRAIL ANCHOR UNIT, TYPE "G"	EA
GUARDRAIL ANCHOR UNIT, TYPE "GE"	EA
NEW GUARDRAIL EXTRUDER TERMINAL	EA
ATTENUATOR (UP TO 42" WIDE)	EA

ATTENUATOR (WIDE)(42" AND WIDER)	EA
CABLE GUARD BARRIER	LF
WROUGHT IRON CHAIN GUARD BARRIER	LF
GUIDE POSTS	EA

which shall be full compensation for furnishing all materials, equipment, labor and incidentals to complete the work as specified.

22.0 FENCES

22.1 DESCRIPTION. This section covers the construction of fence and gates in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or established by the Engineer. The type of fence will be as shown on the plans. The types are designated as follows:

- Type 1 Fence
- Type 2 Standard Chain Link Fence
- Type 3
- Type 4 Glare Deflector Fence

Fence gates shall be of the type and size as shown on the plans and shall be hung at locations shown on the plans or directed by the Engineer, and in accordance with the plans.

22.2 MATERIALS. Materials shall meet the requirements of the Materials Specifications. The kind of materials selected shall be used throughout any one project

22.3 CONSTRUCTION METHODS.

22.3.1 General. The Contractor shall perform such clearing and grubbing as may be necessary to construct the fence to the required grade and alignment. At locations where breaks in a run of fencing are required, or at intersections with existing fences, appropriate adjustment in post spacing shall be made to conform to the requirements for the type of closure indicated. When the plans require that posts, braces or anchors be embedded in concrete, the Contractor shall install temporary guys, or braces as may be required to hold the posts in proper position until such time as the concrete has set sufficiently to hold the posts.

- Materials shall not be installed on posts or strain placed on guys and bracing set in concrete until 5 days have elapsed from the time of placing of the concrete. The tops of all posts shall be set approximately to the required grade and alignment. Cutting of the tops of the posts will be allowed only with the approval of the Engineer. Wire or fencing of the size and type required shall be firmly attached to the posts and braces in the manner indicated. All wire shall be stretched taut and be installed to the required elevations.

- At each location where an electric transmission, distribution or secondary line crosses any of the types of fences covered by the specifications, grounding of the fencing will be accomplished in accordance with the following. A galvanized or copper coated steel ground rod eight feet (8') long having a minimum diameter of 1/2-inch shall be installed directly below the point of crossing. The rod shall be driven vertically until the top is flush with the ground surface. A No. 6 solid copper conductor or equivalent shall be used to connect each fence element to the grounding rod. The connections shall be either brazed

or fastened with approved non-corrosive clamps. When a power-line runs parallel or nearly parallel to and above the fence, the fence shall be grounded at each end or gate post or at intervals not to 1000 feet.

22.3.1 Fence Type I. The plan sheets shall show the general alignment, angles, corners and attachment types at culverts. In general, fence shall be constructed 1 foot inside and parallel to the permanent right-of-way line and wire usually will be attached to the property side of the fence posts. On curves, wire fabric shall be placed on that side of the post which will maintain the wire where the location of the fence is to be constructed and shall be cleared of obstructions and ground leveled of minor irregularities so the fence can be free of excessive number of anchor posts and fans. Line posts shall be of the size indicated on the plans and shall be set a minimum of one foot (1') inside the permanent right-of-way or to a line shown on the plans or set by the Engineer, and in reasonably true line on the property owner's side to which wire generally is to be attached. They shall be embedded in the ground to the depth shown on the plans and shall be well tamped and firmly set. Spacing between line posts shall not exceed the dimensions shown on the plans. Additional posts shall be set at each abrupt change in grade. Extra length posts will be required at small depressions where it is not practicable for the fence to follow closely to the contour of the ground. At such small ground depressions the Contractor shall close the space below the bottom of the fence fabric with barbed wire, stretched taut between posts, either on horizontal lines or fanned at six inch (6") maximum spacing, as shown on the plans or as directed by the Engineer. The wires shall be stretched taut and securely fastened to the posts to prevent vertical movement of the wires. Concrete for encasing posts as indicated on the plans may be poured without forming if the excavation is of sufficient stability to receive the concrete without caving or sliding in. If specified by the Engineer, footings shall be formed. Barbed wire shall be stretched uniformly tight by means of an approved mechanical tensioning device and in conformity to the location of the posts as designated on the plans.Splicing or barbed wire and wire fabric shall be made by a mechanical device of an approved type or a wire splice may be made in the following manner. The ends of the wires shall be carried two inches (2") past the splicing tools and wrapped around both wires backward from the tool for at least five (5) turns.Woven wire fabric shall be stretched uniformly tight by means of an approved mechanical tensioning device and in conformity to the location on the posts as designated on the plans. Parallel stays shall be straight and uniformly spaced as shown on the plans. Each woven fabric wire and barbed wire shall be stapled to wood posts or fastened with approved fittings to steel posts.Woven wire shall be cut and spliced at stretcher or wood posts as required to prevent buckling or undue stretching.Attachment assemblies shall be built according to the plans. When it is necessary to make attachments to culvert or bridge end-walls after the culvert is constructed, the hole shall be drilled with a drill of the same size as the expansion device and the holes shall be neat without chipping or breaking the concrete.

22.3.2 Standard Chain Link Fence Type 2. Setting Posts and Placing Fencing - Post holes shall be dug to minimum size and spacing as shown on the plans. Posts shall be set plumb, centered in the hole and to the lines shown on the plans. Posts shall be placed in the concrete before initial set, thoroughly puddled and supported plumb until concrete has set. Wire shall not be stretched until concrete in post holes is at least five (5) days old. Wire shall be stretched slightly above the tension recommended by the manufacturer for the season of the year in which construction takes place and allowed to slack away slightly when pullers are released. Pullers shall attach to wire full width and ties made in at least seven (7) places on each post before releasing. If desired, pulls may be made from two ways and jointed by inserting one picket. All post braces shall be set before placing any wire. Tension and barb wire shall be placed after plan size of fabric is placed. Wire shall be placed on the outside of the posts with respect to the road except on curves where the wire shall be placed on the outside of the post with respect to the center of the curve.

22.3.3 Fence Type 3. Fence Type 3 shall be a barbed wire fence constructed in the same manner as Fence Type 1 except the fencing fabric shall consist of the same number of strands as the existing fence unless otherwise shown on the plans and shall be set 1 foot inside the right-of-way line.

22.3.4 Fence Type 4 Glare Deflector Fence. All line posts shall be spaced equal distance in the fence line or a maximum of 12 foot centers. Posts shall be plumb and the top of the posts properly aligned. Posts shall be attached to the guardrail posts by the use of clamps and/or bolts as shown on the plans. Horizontal braces shall be provided at all terminal posts. Braces shall be securely fastened to the terminal posts and adjoining line posts by brace ends and brace bands. Diagonal braces shall be trussed from the brace end of the line post back to the terminal post and fastened to it by a brace band. Glare deflector fence fabric shall be installed as shown on the plans and securely fastened to the line posts with 9 gauge fabric ties spaced at approximately 12-inch intervals, and to the top and bottom tension wire with fabric ties or hog rings at a maximum of 12-inch intervals. The chain link glare deflector fence shall be tightened to provide a smooth, uniform appearance. Stretcher bar bands shall be installed at a maximum of 12-inch intervals. Terminal posts shall be spaced at maximum one hundred foot (100') intervals or as shown on the plans.

22.4 METHOD OF MEASUREMENT. Fence will be measured by the linear foot. Measurement will be along the ground line of the fence from outside to outside of end posts for each continuous run of fence.

22.5 BASIS OF PAYMENT. The accepted quantities of fence, measured as provided above, will be paid for at the contract unit price per linear foot for fence and per each for gates of the types and sizes specified for:

FENCE (TYPE 1(	LF
FENCE (TYPE 2)	LF
FENCE (TYPE 3)	LF
GLARE DEFLECTOR FENCE (TYPE 4)	LF
GATE (TYPE 1)	EA
GATE (TYPE 2)	EA
GATE (TYPE 3)	EA
GATE (TYPE 4)	EA

which shall be full compensation for furnishing all materials, equipment, labor and incidentals to complete the work as specified.

23.0 SODDING AND SPRIGGING

23.1 DESCRIPTION. This section covers the furnishing and planting of viable bermuda grass sod or sprigs in accordance with these specifications and in reasonably close conformity with the areas and locations shown on the plans.

23.2 MATERIALS. See Materials Section.

23.3 CONSTRUCTION METHODS

23.3.1 Solid Slab Sodding. Preparation of areas to be sodded shall include filling, reshaping of

eroded areas, cleaning ditches, refinishing slopes and medians to the established grading section. The area shall be cleared of all litter and debris. The location, placement and seasonal requirements for areas to be solid slab sodded will be as described in these specifications or as shown on the plans. Sod shall be placed at the earliest time possible after soil disturbance and final placement of the subgrade. Topsoil shall be placed where excavation and backfill operations have left soil unsuitable for sod establishment. The slabs of sod shall be placed soil side down. They shall be placed in rows, which on slopes shall run parallel to the roadway. Each slab shall fit tightly against the edge of adjoining slabs and shall be placed so that the vertical joints are not continuous across adjoining horizontal rows. Voids shall be filled with additional sod. All slabs shall be thoroughly pressed into firm contact with the soil underneath. After the slabs have been placed, the sodded area shall be thoroughly watered. When sufficiently dry, additional voids shall be filled with good soil and watered again. The area shall then be thoroughly watered daily for a period of at least 7 days after placement.

23.3.2 Row Sprigging. Preparation of areas to be row sprigged shall consist of tilling the specified areas to a depth of at least 4-inches with an offset disk plow or a tandem disk plow. Following tilling spread fertilizer as called for on the plans. The sprigs shall be planted with an automatic sprig planter except that hand planting may be used in areas where the sprig planter cannot operate. The sprigs shall be planted in furrows parallel to the approximate contour lines of the slopes. The distance between furrows shall not exceed 20-inches. The sprigs shall be placed approximately 3-inhes deep at the rate of approximately 30 bushels per acre with the ends of sprigs meeting or overlapping. Immediately following planting, the soil shall be compacted by rolling. The rolling of slopes shall be along approximate contour lines. All sprigged areas shall be rolled the same day they are planted. The row sprigged areas shall be watered immediately after rolling.

23.3.3 Broadcast Sprigging Operations.

- Broadcast Sprigging Type A. Preparation of areas for broadcast sprigging, Type A, shall consist of tillage with either a tandem disk plow or an offset disk plow until the areas are suitable for sprig planting. The depth of tillage shall be approximately six inches (6”). If rains or other conditions should pack the soil before being planted, the tillage shall be repeated. At least 80 bushels of sprigs shall be planted per acre unless shown otherwise on the plans. The sprigs shall be broadcast evenly and uniformly on the soil surface and immediately pressed into the soil. The planting depth mechanism shall be adjusted to cause the disk wheels to penetrate four inches (4”) deep. Within two (2) hours after the sprigs have been planted the areas shall be disked to a depth of approximately three inches (3”) with either a tandem or offset disk plow.

- Broadcast Sprigging Type B. At least 12 bushels of sprigs shall be thoroughly incorporated into 100 cubic yards of stockpiled Type A or Type B salvaged topsoil. During mixing operations both the soil and sprigs shall be kept moist. Preparation of areas for broadcast sprigging, Type B, shall consist of scarifying on the contour with approved equipment, the designated areas shown on the plans prior to placing the soil sprig mixture. The soil sprig mixture shall be spread on the designated areas 4-inches thick within 4 hours of manipulation.

- The following procedures shall be used for both methods of Broadcast Sprigging. Fertilizer shall be applied per the plans. The planted areas shall be rolled and compacted with equipment designed for these operations. Rolling of slopes shall be along approximate contour lines and in a manner approved by the Engineer. The sprigged areas shall be

watered immediately after rolling.

23.3.4 Planting Season and Weather.

- Time of Sodding. Kentucky bluegrass sod may be planted during the periods of March 1 to June 15 and September 1 to November 15. Buffalo grass sod may be established any time that the soil is workable with the exception of hot dry weather during July and August. Bermuda grass sod strips or plugs and Bermuda grass sod retards shall be planted between April 1 and August 15. Divided Bermuda grass roots (rhizomes) shall be planted between April 15 and June 15.

- Soil Moisture Requirements. Soil moisture shall exist throughout the zone from 1-inch below the surface to at least 5-inches below the surface at the time of planting. The required moisture content of the soil may be estimated and judged closely by the hand squeeze test. The soil should readily form a tight cast when squeezed in the hand. The cast should break into 2 pieces without crumbling and without leaving excess water on the hand after casting. Sodded or sprigged areas shall be watered for 30 days after planting unless otherwise directed. The depth of watering with moving equipment shall be carried out on short sections until the soil is moist throughout the top 1-inch. The application rate and fineness of the spray shall be adjusted according to wind velocity to provide uniform infiltration without appreciable erosion or excessive runoff. Fertilizer shall not be placed on hard or glazed surfaces.

- Repair and Maintenance. The Contractor shall be responsible for repairs and maintenance of areas designated for sodding or sprigging until all work on the contract or designated portion thereof has been completed and approved for final acceptance. Repair work shall include recovery, replacement and compaction of soil that has been removed by erosion; filling and reshaping eroded areas; cleaning ditches; and refinishing slopes and medians to the approximate typical grading section shown on the plans or as determined by the Engineer. Repair shall include resodding or sprigging, refertilizing, and watering damaged areas which shall be performed during the specified planting season. Maintenance work shall consist of weed control by mowing, hand cutting, herbicides or other approved methods. Weed growth on sodded areas shall be removed as often as determined by the Engineer. If herbicides are used, they shall be used in accordance with label instructions and shall have prior approval from the Engineer.

23.5 METHOD OF MEASUREMENT. Solid Slab Sodding, Row Sprigging and Broadcast Sprigging, Method A, and Broadcast Sprigging, Method B, will be measured by the square yard of sodded area. For water line and sanitary sewer construction, the maximum width of solid slab sod replacement paid for shall be 20 feet measured astride the centerline of the pipe placement. Additional sodding beyond this limit shall be placed at the contractor's expense.

23.6 BASIS OF PAYMENT. Accepted Sodding, measured as provided above will be paid for at the contract unit price for:

SOLID SLAB SODDING	SY
ROW SPRIGGING	SY
BROADCAST SPRIGGING, METHOD A	SY
BROADCAST SPRIGGING, METHOD B	SY

The contract unit price shall be the total compensation for furnishing and placing all sod; for all

rolling and tamping; watering and fertilizer; for disposal of all surplus materials; and for all materials, labor, equipment, tools and incidentals necessary to complete the work, all in accordance with the plans and these specifications.

24.0 SEEDING

24.1 DESCRIPTION. This section covers the furnishing and planting of seeds in accordance with these specifications and in reasonably close conformity with those areas and locations shown on the plans or established by the Engineer.

24.3 EQUIPMENT. The Contractor shall furnish equipment in satisfactory working condition and in sufficient quantity to perform the work as specified using the desired planting and seeding methods. The equipment shall be on the project site and approved by the Engineer before work on the corresponding item begins.

24.4 CONSTRUCTION METHODS

24.4.1 Seedbed Preparation. Preparation of areas to be seeded shall include filling and reshaping eroded areas, cleaning ditches, refinishing slopes and medians to the established typical grading section. Seedbed preparation shall consist of eliminating all live plants by mowing and disking. Thick layers of previously applied mulching materials or residues of vegetation shall be completely incorporated into the soil by disking unless otherwise directed. Soil shall be tilled on the contour to a depth of 4-inches. All clods larger than 1-inch in diameter shall be crushed and then packed. The tillage shall consist of disking, harrowing and rolling. Where necessary, water shall then be applied. When hydraulic seeding is specified, the seedbed surface shall be left rough or made sufficiently rough before seeding.

24.4.2 Planting Methods. All seed shall be planted uniformly at the specified rate. When several species are specified and cannot be combined due to different characteristics such as size, weight, hulled or unhulled, the seed shall be planted separately to obtain the specified seeding rate. Equipment shall not be operated on areas where rutting or slippage would mar the soil surface. Seeding may be performed by means of Hydraulic Seeder, Grass Seed Drill Method or Corrugted Roller Seeder Method. Hand broadcasting shall not be used except in areas that are too small or inaccessible to accommodate the specified equipment.

24.4.3 Planting Season and Weather Restrictions. Soil moisture shall exist throughout the zone from 1 to 5-inches below the surface at the time of planting. The required moisture content of the soil may be estimated and judged closely by the hand squeeze test. The soil should readily form a tight cast when squeezed in the hand. The cast should break into two (2) pieces without crumbling and without leaving excess water on the hand after casting. Watering of the areas seeded shall be performed if called for on the plans or as determined by the Engineer.

24.4.4 Repairs and Maintenance. The Contractor shall be responsible for repairs and maintenance of areas designated for seeding until all work on the contract or designated portion thereof has been completed and approved for final acceptance. Repair work shall include the restoration of all eroded areas to the approximate typical grading section shown on the plans or as determined by the Engineer. Repair shall include seeding, fertilizing, and watering damaged areas, which shall be performed during the specified planting season. Maintenance work shall consist of weed control by mowing, hand cutting, herbicides or other approved methods. Weed growth on sodded areas shall be removed as often as determined by the Engineer. If herbicides are used, they shall be used in accordance with label instructions and shall have prior approval

from the Engineer.

24.5 METHOD OF MEASUREMENT. For areas larger than 1 acre, seeding will be measured by the acre. For areas less than 1 acre, seeding will be measured by the square yard. Work and material used in repair of seeding will not be measured for payment. Water used as a carrier for seed in hydraulic seeding operations and for post-planting watering is considered incidental to “seeding" and will not be measured for payment. Fertilizer will be measured and paid for per paragraph 25.0.

24.6 BASIS OF PAYMENT. Accepted seeding measured as provided above will be paid for at the contract unit price bid for:

SEEDING	AC	[For more than 1 acre]
SEEDING	SY	[For less than 1 seeded acre]

which shall be full compensation for furnishing all materials, equipment, labor and incidentals to complete the work as specified.

25.0 FERTILIZER

25.1 DESCRIPTION. This section covers providing and distributing fertilizer over such areas as are designated on the plans and in accordance with these specifications.

25.2 MATERIALS. All fertilizer used shall be delivered in bags or containers clearly labeled showing the analysis. The fertilizer is subject to the applicable requirements of the Oklahoma Department of Agriculture. A pelleted or granulated fertilizer shall be used with an analysis of 16-20-0 or 16-8-8 or having the analysis shown on the plans. The figures in the analysis represent the percent of nitrogen, phosphoric acid, and potash nutrients respectively as determined by the methods of the Association of Official Agricultural Chemists. In the event it is necessary to substitute a fertilizer of a different analysis, it shall be a pelleted or granulated fertilizer with a lower concentration. Total amount of nutrients furnished and applied per acre shall equal or exceed that specified for each nutrient.

25.3 CONSTRUCTION METHODS. When an item for fertilizer is included in the plans and proposal, pelleted or granulated fertilizer shall be applied uniformly over the area specified to be fertilized and in the manner directed for the particular item of work. Fertilizer shall be dry and in good physical condition. Fertilizer that is powdered or caked will be rejected. Distribution of fertilizer as a particular item of work shall meet the approval of the Engineer. Unless otherwise indicated on the plans, fertilizer shall be applied uniformly at the average rate of 300 pounds per acre for all types of "Sodding" and 400 pounds per acre for all types of "Seeding".

25.4 METHOD OF MEASUREMENT. Work and acceptable material for "fertilizer" shall be measured by the ton (2,000 pounds). Work performed and materials furnished and measured as provided under Measurement will not be paid for directly but included in the price bid for "Sodding" or "Seeding".

26.0 TREE REPLACEMENT.

26.1 DESCRIPTION. This section covers the planting of trees as specifically shown on the plans or as directed by the Engineer. "Tree Replacement" quantities are established by the Engineer based on the City's desire to replace trees damage or removed due to construction

activities as well as augment or add new growth trees in excess of those removed by construction.

26.2 CONSTRUCTION METHODS. Replaced and new trees shall be planted both inside and outside of public easements in accordance with good environmental and horticultural practices. The type and location of the trees shall be determined in the field by the Engineer if not otherwise specifically shown on the plans. The trees shall be replaced either in kind or by one of the following listed below. All trees planted shall be a minimum of 3-inch caliper.

Crepe Myrtle	Red Oak
Lace Bark Elm	Austrian Pine
Shademaster Honey Locust	Japanese Black Pine
Sweet Gum	Red Bud
Hackberry	Bradford Pear
Mulberry	Crabapple
Northern Oak	Russian Olive

The Contractor shall guarantee the trees for one growing season.

26.3 METHOD OF MEASUREMENT. Payment for "Tree Replacement" shall be made at the unit price bid per each tree. The price established shall be full compensation for removal and replacement of tree, planting of new tree, materials, water, fertilizer, tools, equipment, labor and incidentals necessary to complete this item of work.

26.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid

TREE REPLACEMENT EA

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

27.0 HEDGE REPLACEMENT

27.1 DESCRIPTION. This section covers replacement of hedge with the same kind and in a location as those which will be or may have been damaged during construction as determined by the Engineer.

27.2 CONSTRUCTION METHODS. Hedges replaced shall be planted outside of public easements in accordance with good horticultural practices. The Contractor shall guarantee the hedge for one growing season.

27.3 METHOD OF MEASUREMENT. Payment for "Hedge Replacement" shall be made at the unit price bid per lineal foot. The minimum linear feet of hedge to be replaced shall be 10 feet unless shown otherwise on the plans. The price established shall be full compensation for the complete replacement of hedges, including material, water, fertilizer, tools, equipment, labor and incidentals necessary to complete this item of work.

27.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

HEDGE REPLACEMENT LF

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

28.0 SHRUB REPLACEMENT

28.1 DESCRIPTION. This section covers replacement of shrubs with the same kind and in a location determined by the Engineer. Shrubs may be replaced with the same kind of planting or, with the approval of the Engineer, by the planting of crepe myrtle delivered and configured as bushes.

28.2 CONSTRUCTION METHODS. Shrubs replaced shall be planted outside of public easements in accordance with good horticultural practices. The Contractor shall guarantee the shrub for one growing season.

28.3 METHOD OF MEASUREMENT. Payment for "Shrub Replacement" shall be made at the unit price bid per each. The price established shall be full compensation for the replacement of shrubs, including material, water, fertilizer, tools, equipment, labor and incidentals necessary to complete this item of work.

28.4 BASIS OF PAYMENT. The items measured as provided above will be paid for at the contract unit price bid:

SHRUB REPLACEMENT EA

Such payment shall be compensation in full for furnishing all materials, labor, equipment, tools and incidentals, and for performing the work in accordance with these specifications.

29.0 INCIDENTAL CONSTRUCTION STANDARD BID ITEMS. This section covers Standard Bid Items used in the contract documents for construction. Additional bid items may be called out in the Special Provisions, other sections of the Standard Specifications, or as directed by the Engineer for additional work covered and change orders.

PARA	DESCRIPTION	UNIT
	CONSTRUCTION STAKING	
	CONSTRUCTION TRAFFIC CONTROL	
	CLEARING AND GRUBBING	
	STRUCTURE REMOVAL (TYPE)	

	REMOVE PAVEMENT (TYPE) (THICKNESS)	
	REMOVE SIDEWALK (WIDTH)	
	REMOVE CURB AND GUTTER	
	REMOVE DRIVEWAY	
	REMOVE AND REPLACE DRIVEWAY	
	PAVEMENT CUT AND REPAIR	
	REMOVE ALLEY P AVING (TYPE)	
	REMOVE AND REPLACE ALLEY PAVING (TYPE)	
	REPLACE SIDEWALK (WIDTH)	
	REMOVE AND REPLACE PARKING LOT PAVEMENT	
	BASE REPAIR (PAVEMENT TYPE)	
	ADJUST EXISTING STRUCTURE (TYPE)	
	SAWCUT PAVEMENT (TYPE)	
	PLANE PAVEMENT (UPTO 11/2 INCH)	
	PLANE PAVEMENT (GREATER THAN 1 1/2 INCH)	
	PAVEMENT REINFORCING FABRIC	
	SIDEWALK (WIDTH)	
	DRIVEWAY (WIDTH)	
	TEMPORARY SURFACING (TYPE)	
	(TYPE) PLAIN RIPRAP	
	(TYPE) PLAIN RIPRAP	
	(TYPE) FILTER BLANKET	
	(TYPE) FILTER BLANKET	
	(TYPE) FILTER BLANKET	
	(TYPE) SPECIAL PLAIN RIPRAP	
	(TYPE) SPECIAL PLAIN RIPRAP	
	(TYPE) LAID -UP RIPRAP	
	(TYPE) GROUTED RIPRAP	
	BEAM-TYPE GUARDRAIL (SINGLE)	
	BEAM-TYPE GUARDRAIL (SINGLE)(SHOP CURVED)	
	GUARDRAIL ANCHOR UNIT, TYPE "A" (SEE STD. GRAU -	
	GUARDRAIL ANCHOR UNIT, TYPE "B" (SEE STD. GRAU -	
	GUARDRAIL ANCHOR UNIT, TYPE "C" (SEE STD. GRAU -	
	GUARDRAIL ANCHOR UNIT, TYPE "D(BF)" (SEE STD.	
	GUARDRAIL ANCHOR UNIT, TYPE "E" (SEE STD. GRAU -	
	GUARDRAIL ANCHOR UNIT, TYPE "F" (SEE STD. GRAU-	
	GUARDRAIL ANCHOR UNIT, TYPE "G" (SEE STD. GRAU -	
	GUARDRAIL ANCHOR UNIT, TYPE "GE" (SEE STD. GRAU	
	NEW GUARDRAIL EXTRUDER TERMINAL	
	ATTENUATOR (UP TO 42" WIDE)	
	ATTENUATOR (WIDE) (42" AND WIDER)	
	CABLE GUARD BARRIER	
	WROUGHT IRON CHAIN GUARD BARRIER	
	GUIDE POSTS	

	FENCE - TYPE I	
	GATES - TYPE I	
	FENCE - TYPE II	
	GATES - TYPE II	
	FENCE - TYPE III	
	GLARE DEFLECTOR FENCE - TYPE IV	
	SOLID SLAB SODDING	
	ROW SPRIGGING	
	BROADCAST SPRIGGING, METHOD A	
	BROADCAST SPRIGGING, METHOD B	
	SEEDING	
	TREE REPLACEMENT (SIZE)	
	HEDGE REPLACEMENT	
	SHRUB REPLACEMENT	