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AUGLAIZE SOIL AND WATER CONSERVATION DISTRICT
110 Industrial Drive, Suite G
Wapakoneta, Ohio 45895

GENERAL CONDITIONS

RIGHT OF WAY

Subsurface Drain:

The width of construction right-of-way shall be 60 feet on each side of the proposed tile outlet. A greater distance may be needed for installation of submain or laterals as directed by the contracting officer.

SUPERVISION

1. This contract will be administered by the Auglaize County Commissioners.
2. The contracting officer shall be the authorized representative of the County Commissioners.
3. The responsibility of construction inspection will be with the Natural Resource Conservation Service Engineer or his authorized representative and the Auglaize Soil and Water Conservation District.

ALTERATIONS OF WORK

4. Should there be any discrepancy discovered between the intentions of these specifications and the special plans prepared for this contract, the contracting officer shall be the deciding authority, and the decision shall be final.
5. The right is reserved by the contracting officer to correct any error or omissions in the plans or specifications. The contractor shall be paid for extra work on unit price bid. The right is also reserved for non-performance and shall be deducted from contract at unit price bid.

LIABILITIES OF CONTRACTOR

6. The contractor shall be held entirely responsible for the conduct of his employees, on the job, and any damage that may arise there-from.
7. The contractor shall be held liable for all damages resulting from the use of explosives, mechanical equipment or other devices used in the prosecution of the work, or unnecessary damage to crops or land. However, the contractor is subject only to the plans and specifications, and the direction of the engineer. Landowners or other interested parties have no authority to dictate or give any orders relative to the prosecution of the work, but should report any violation of the specifications to the engineer in charge.

Construction Specification 2—Clearing and Grubbing

1. Scope

The work consists of clearing and grubbing and disposal of trees, snags, logs, brush, stumps, shrubs, and rubbish from the designated areas.

2. Protection of existing vegetation

Trees and other vegetation designated to remain undisturbed shall be protected from damage throughout the duration of the construction period. Any damages resulting from the contractor's operations or neglect shall be repaired by the contractor.

Earthfill, stockpiling of materials, vehicular parking, and excessive foot or vehicular traffic shall not be allowed within the drip line of vegetation designated to remain in place. Vegetation damaged by any of these or similar actions shall be replaced with viable vegetation of the same species, similar condition, and like size unless otherwise approved by the contracting officer.

Any cuts, skins, scrapes, or bruises to the bark of the vegetation shall be carefully trimmed and local nursery accepted procedures used to seal damaged bark.

Any limbs or branches 0.5 inch or larger in diameter that are broken, severed, or otherwise seriously damaged during construction shall be cut off at the base of the damaged limb or branch flush with the adjacent limb or tree trunk. All roots 1-inch or larger in diameter that are cut, broken, or otherwise severed during construction operations shall have the end smoothly cut perpendicular to the root. Roots exposed during excavation or other operations shall be covered with moist earth or backfilled as soon as possible to prevent the roots from drying out.

3. Marking

The limits of the area(s) to be cleared and grubbed will be marked by stakes, flags, tree markings, or other suitable methods. Trees to be left standing and uninjured will be designated by special markings placed on the trunk about 6 feet above the ground surface.

4. Clearing and grubbing

All trees not marked for preservation and all snags, logs, brush, stumps, shrubs, rubbish, and similar materials shall be cleared from within the limits of the designated areas. Unless otherwise specified, all stumps, roots, and root clusters that have a diameter of 1 inch or larger shall be grubbed out to a depth of at least 2 feet below subgrade for concrete structures and 1 foot below the ground surface at embankment sites and other designated areas.

5. Disposal

All materials cleared and grubbed from the designated areas shall be disposed of at locations shown on the drawings or in a manner specified in section 7. The contractor is responsible for complying with all local rules and regulations and the payment of any and all fees that may result from disposal at locations away from the project site.

6. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the cleared and grubbed area is measured to the nearest 0.1 acre. Payment for clearing and grubbing is made for the total area within the designated limits at the contract unit price. Such payment will constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Method 2—For items of work for which specific unit prices are established in the contract, the length of the cleared and grubbed area is measured to the nearest full station (100 feet) along the line designated on the drawing or identified in the specifications. Payment for clearing and grubbing is made for the total length within the designated limits at the contract unit price. Such payment will constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Method 3—For items of work for which specific unit prices are established in the contract, each tree, stump, and snag having a diameter of 4 inches or larger and each log having a diameter of 4 inches or larger and a length of 10 feet are measured before removal. The size of each tree and snag is determined by measuring its trunk at breast height above the natural ground surface. The size of each log is determined by measuring the butt and by measuring its length from butt to tip. The size of each stump is measured at the top. Diameter is determined by dividing the measured circumference by 3.14.

Payment for clearing and grubbing of each tree, stump, and snag having a diameter of 4 inches or larger and each log having a diameter of 4 inches or larger and a length of 10 feet or larger is made at the contract unit price for its size designation as determined by the following schedule:

Measured diameter (in)	Size designation (in)
4 to 8	6
8 to 12	10
12 to 24	18
24 to 36	30
36 to 60	48
Over 60	60

The sum of such payments shall constitute full compensation for clearing and grubbing (including the clearing and grubbing of smaller trees, stumps, snags, logs, brush, shrubs, and roots), applicable permits and associated fees, and rubbish removal. Such payment shall constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Method 4—For items of work for which specific lump sum prices are established in the contract, payment for clearing and grubbing is made at the contract lump sum price. Such payment shall constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

All Methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 7.

7. Items of work and construction details

7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and construction details therefore are:

Bid Item 1 Clearing and Grubbing

This item shall consist of the clearing and grubbing of trees where needed to install the tile main in the location designated on the engineering drawings. All removed trees will be piled and burned and the remains will be buried.

Selected trees to be used for lumber or firewood can be removed by the landowner prior to construction of this project. Failure to remove desirable trees prior to this time will result in awarding the contractor possession of all woodland products.

Burning operations shall be subject to all public laws governing such operation. All buried materials must have a minimum cover of 24 inches above normal ground elevations.

Measurement and payment shall be by Method 4.

Construction Specification 21—Excavation

1. Scope

The work shall consist of the excavation required by the drawings and specifications and disposal of the excavated materials.

2. Classification

Excavation is classified as **common excavation**, **rock excavation**, or **unclassified excavation** in accordance with the following definitions.

Common excavation is defined as the excavation of all materials that can be excavated, transported, and unloaded using heavy ripping equipment and wheel tractor-scrapers with pusher tractors or that can be excavated and dumped into place or loaded onto hauling equipment by excavators having a rated capacity of one cubic yard or larger and equipped with attachments (shovel, bucket, backhoe, dragline, or clam shell) appropriate to the material type, character, and nature of the materials.

Rock excavation is defined as the excavation of all hard, compacted, or cemented materials that require blasting or the use of ripping and excavating equipment larger than defined for common excavation. The excavation and removal of isolated boulders or rock fragments larger than 1 cubic yard encountered in materials otherwise conforming to the definition of common excavation shall be classified as rock excavation. The presence of isolated boulders or rock fragments larger than 1 cubic yard is not in itself sufficient cause to change the classification of the surrounding material.

For the purpose of these classifications, the following definitions shall apply:

Heavy ripping equipment is a rear-mounted, heavy duty, single-tooth, ripping attachment mounted on a track type tractor having a power rating of at least 250 flywheel horsepower unless otherwise specified in section 10.

Wheel tractor-scraper is a self-loading (not elevating) and unloading scraper having a struck bowl capacity of at least 12 cubic yards.

Pusher tractor is a track type tractor having a power rating of at least 250 flywheel horsepower equipped with appropriate attachments.

Unclassified excavation is defined as the excavation of all materials encountered, including rock materials, regardless of their nature or the manner in which they are removed.

3. Blasting

The transportation, handling, storage, and use of dynamite and other explosives shall be directed and supervised by a person(s) of proven experience and ability who is authorized and qualified to conduct blasting operations.

Blasting shall be done in a manner as to prevent damage to the work or unnecessary fracturing of the underlying rock materials and shall conform to any special requirements in section 10 of this specification. When specified in section 10, the contractor shall furnish the engineer, in writing, a blasting plan before blasting operations begin.

4. Use of excavated material

Method 1—To the extent they are needed, all suitable material from the specified excavations shall be used in the construction of required permanent earthfill or rockfill. The suitability of material for specific purposes is determined by the engineer. The contractor shall not waste or otherwise dispose of suitable excavated material.

Method 2—Suitable material from the specified excavations may be used in the construction of required earthfill or rockfill. The suitability of material for specific purposes is determined by the engineer.

5. Disposal of waste materials

Method 1—All surplus or unsuitable excavated materials are designated as waste and shall be disposed of at the locations shown on the drawings.

Method 2—All surplus or unsuitable excavated materials are designated as waste and shall be disposed of by the contractor at sites of his own choosing away from the site of the work. The disposal shall be in an environmentally acceptable manner that does not violate local rules and regulations.

6. Excavation limits

Excavations shall comply with OSHA Construction Industry Standards (29CFR Part 1926) Subpart P, Excavations, Trenching, and Shoring. All excavations shall be completed and maintained in a safe and stable condition throughout the total construction phase. Structure and trench excavations shall be completed to the specified elevations and to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work. Excavations outside the lines and limits shown on the drawings or specified herein required to meet safety requirements shall be the responsibility of the contractor in constructing and maintaining a safe and stable excavation.

7. Borrow excavation

When the quantities of suitable material obtained from specified excavations are insufficient to construct the specified earthfills and earth backfills, additional material shall be obtained from the designated borrow areas. The extent and depth of borrow pits within the limits of the designated borrow areas shall be as specified in section 10 or as approved by the engineer.

Borrow pits shall be excavated and finally dressed to blend with the existing topography and sloped to prevent ponding and to provide drainage.

8. Overexcavation

Excavation in rock beyond the specified lines and grades shall be corrected by filling the resulting voids with portland cement concrete made of materials and mix proportions approved by the engineer. Concrete that will be exposed to the atmosphere when construction is completed shall meet the requirements of concrete selected for use under Construction Specification 31, Concrete for Major Structures, or 32, Structure Concrete, as appropriate.

Concrete that will be permanently covered shall contain not less than five bags of cement per cubic yard. The concrete shall be placed and cured as specified by the engineer.

Excavation in earth beyond the specified lines and grades shall be corrected by filling the resulting voids with approved, compacted earthfill. The exception to this is that if the earth is to become the subgrade for riprap, rockfill, sand or gravel bedding, or drainfill, the voids may be filled with material conforming to the specifications for the riprap, rockfill, bedding, or drainfill. Before correcting an overexcavation condition, the contractor shall review the planned corrective action with the engineer and obtain approval of the corrective measures.

9. Measurement and payment

For items of work for which specific unit prices are established in the contract, the volume of each type and class of excavation within the specified pay limits is measured and computed to the nearest cubic yard by the method of average cross-sectional end areas or by methods outlined in section 10 of this specification. Regardless of quantities excavated, the measurement for payment is made to the specified pay limits except that excavation outside the specified lines and grades directed by the engineer to remove unsuitable material is included. Excavation required because unsuitable conditions result from the contractor's improper construction operations, as determined by the engineer, is not included for measurement and payment.

Method 1—The pay limits shall be as designated on the drawings.

Method 2—The pay limits shall be defined as follows:

- a. The upper limit shall be the original ground surface as it existed before the start of construction operations except that where excavation is performed within areas designated for previous excavation or earthfill, the upper limit shall be the modified ground surface resulting from the specified previous excavation or earthfill.
- b. The lower and lateral limits shall be the neat lines and grades shown on the drawings.

Method 3—The pay limits shall be defined as follows:

- a. The upper limit shall be the original ground surface as it existed before the start of construction operations except that where excavation is performed within areas designated for previous excavation or earthfill, the upper limit shall be the modified ground surface resulting from the specified previous excavation or earthfill.
- b. The lower and lateral limits shall be the true surface of the completed excavation as directed by the engineer.

Method 4—The pay limits shall be defined as follows:

- a. The upper limit shall be the original ground surface as it existed before the start of construction operations except that where excavation is performed within areas designated for previous excavation or earthfill, the upper limit shall be the modified ground surface resulting from the specified previous excavation or earthfill.
- b. The lower limit shall be at the bottom surface of the proposed structure.
- c. The lateral limits shall be 18 inches outside of the outside surface of the proposed structure or shall be vertical planes 18 inches outside of and parallel to the footings, whichever gives the larger pay quantity, except as provided in d below.
- d. For trapezoidal channel linings or similar structures that are to be supported upon the sides of the excavation without intervening forms, the lateral limits shall be at the underside of the proposed lining or structure.
- e. For the purposes of the definitions in b, c, and d, above, any specified bedding or drainfill directly beneath or beside the structure will be considered to be a part of the structure.

All methods—The following provisions apply to all methods of measurement and payment.

Payment for each type and class of excavation is made at the contract unit price for that type and class of excavation. Such payment will constitute full compensation for all labor, materials, equipment, and all other items necessary and incidental to the performance of the work except that extra payment for backfilling overexcavation will be made in accordance with the following provisions.

Payment for backfilling overexcavation, as specified in section 8 of this specification, is made only if the excavation outside specified lines and grades is directed by the engineer to remove unsuitable material and if the unsuitable condition is not a result of the contractor's improper construction operations as determined by the engineer.

Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10 of this specification.

10. Items of work and construction details

10. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and construction details therefore are:

Top soil is to be separated out during excavation and placed on top for backfilling.

The centerline of the improvement shall be approximately the centerline of the existing ditch unless otherwise shown on the drawings or as specified by the engineer. The excavated surfaces shall be reasonably smooth. Teeth on the excavation bucket are required.

All excavations shall be constructed to the lines and grades shown on the drawings, as staked in the field or required for proper installation.

All suitable excavated materials shall be used as needed for the construction of earth fill or backfill. The engineer will determine the suitability of materials.

Bid Item 2 Scalping Hills

This item shall consist of cutting down hills along the centerline of proposed tile main in order to obtain a reachable cut with a ditching machine to install tile. Excavated material is to be stockpiled and then replaced after tile main installation.

Measurement and payment shall be by unit price bid.

Bid Item 3 Exploratory Trench

This item shall consist of digging and backfilling an exploratory trench deep enough to find any tiles in the area shown on the drawings.

Measurement and payment shall be by Method 1

Construction Specification 46—Tile Drains

1. Scope

The work consists of furnishing and installing drain tile and necessary fittings and appurtenances.

2. Material

Unless otherwise specified, the drain tile and fittings shall conform to the requirements of Material Specification 543, Nonreinforced Concrete Pipe, or Material Specification 544, Clay Pipe and Drain Tile, whichever is applicable.

3. Excavation

Unless otherwise specified, excavation for the installation of each tile line shall begin at the outlet end and progress upstream.

The trench or excavation for the tile shall be constructed to the depths and cross-sections shown on the drawings. The trench width may be increased above the top of the tile at the option of the contractor.

Trench shields, shoring and bracing, or other methods necessary to safeguard construction personnel and to prevent damage to the existing improvements shall be furnished, placed, and subsequently removed by the contractor.

4. Preparing the tile bed

Method 1—In stable soils the tile shall be firmly and uniformly bedded throughout its entire length to the specified depth and in the specified manner.

When the bottom of the trench does not provide a sufficiently stable or firm foundation for the drain tile, cradles for the tile (constructed of timber or fabricated lumber of a cleat-and-rail type construction), a sand-gravel mix, or other approved material shall be used to stabilize the bottom of the trench.

Drain tile shall not be laid on a rock foundation. In the event that boulders, rocks or ledge rock, or cemented material that prevents satisfactory bedding are encountered at the required grade with the trench cross-section, the trench shall be excavated to a minimum depth of 6 inches below grade and backfilled to grade with a sand-gravel mixture or other approved material. The bedding material shall be shaped to grade and compacted.

Method 2—Tile shall be bedded as shown on the drawings or as specified in section 10 of this specification.

5. Laying tile and joint covering

Method 1—Gaps between tile ordinarily shall be from 1/8 inch to 1/4 inch in clay, clay loam, and cohesive soil. Tile is laid without gaps in sandy soils and on lines to convey water with no intention of providing drainage.

Where tile is installed with the width of joint opening exceeding the limits stated above for noncohesive silts and fine and medium sands, the joint shall be covered with a permanent type material, such as coal tar pitch treated roofing paper, fiber glass sheet or mat, or plastic sheeting.

For tile installations on a curve alignment, the outside tile gap shall be covered with tile bats (broken tile) or covered as described above when the gap exceeds the recommended gap for the type of soil encountered. To maintain the gap within the allowable range, the inside pipe lip may be chipped and fitted to secure the required joint opening.

The ends and inside surface of all tiles shall be kept clean during installation. All earth or other extraneous material within the tile shall be removed before installation of the next tile section. At the end of work each day and when laying has been temporarily suspended, the inlet end shall be blocked so that earth or other extraneous material cannot enter the tile. The upper end of each tile line shall be blocked with permanent type material following satisfactory completion of tile installation.

Method 2—Tile shall be laid and joints shall be covered in the manner shown on the drawings or as specified in section 10 of this specification.

6. Connections

Lateral connections are made with manufactured junctions comparable in strength with the specified tile unless otherwise specified.

Where existing tile lines not shown on the drawings are crossed, they shall be bridged across the new trench or they shall be connected into the new tile lines, as directed by the engineer.

7. Blinding or filter material

Method 1—As soon as the tiles are placed satisfactorily, they shall be blinded by covering with friable soil material to a minimum depth of six inches. Material used for blinding shall not be frozen and, unless otherwise specified in section 10 of this specification, shall contain no rocks or stones that when dropped may cause tile damage. Sandy and other noncohesive soil shall not be used for blinding unless the joints are covered. All tile placed during any day shall be blinded at the completion of the work activities that day.

Method 2—Tile shall be covered with sand and gravel meeting the gradation, quality, quantities, and dimensions requirements and installed as shown on the drawings or as specified in section 10 of this specification. Material used for blinding shall not be frozen or contain rocks or stones that when dropped may cause tile damage. All tile placed during any day shall be blinded at the completion of the work activities that day.

Method 3—Unless otherwise specified, tile shall be covered with material obtained from required trench excavations.

8. Backfilling

Backfilling of the trench shall be completed as rapidly as consistent with the soil conditions.

Automatic backfilling machines may be used only when approved by the engineer. Backfill shall extend above the ground surface and be well rounded and centered over the trench.

Unless otherwise specified, where drain tile is installed under roads and at other designated locations shown on the drawings, the backfill shall be placed in successive layers of not more than 6 inches and each layer shall be compacted before the next layer is placed. The density of the compacted backfill shall not be less than the density of the surrounding adjacent earth material unless otherwise specified in section 10 of this specification.

9. Measurement and payment

For items of work for which specific unit prices are established in the contract, the quantity of each kind, size, and class of tile is determined to the nearest foot of length measured along the centerline of the installed tile. Payment for each kind, size, and class of tile is made at the contract unit price for that kind, size, and class of tile. Such payment constitutes full compensation for furnishing, transporting, and installing the tile, including excavation, shoring, backfill, and all fittings, appurtenances, and other items necessary and incidental to the completion of the work. Payment for appurtenances listed separately in the bid schedule is made at the contract prices for the sizes and types of appurtenances listed.

Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10 of this specification.

10. Items of work and construction details

10. ITEMS OF WORK AND CONSTRUCTION DETAILS

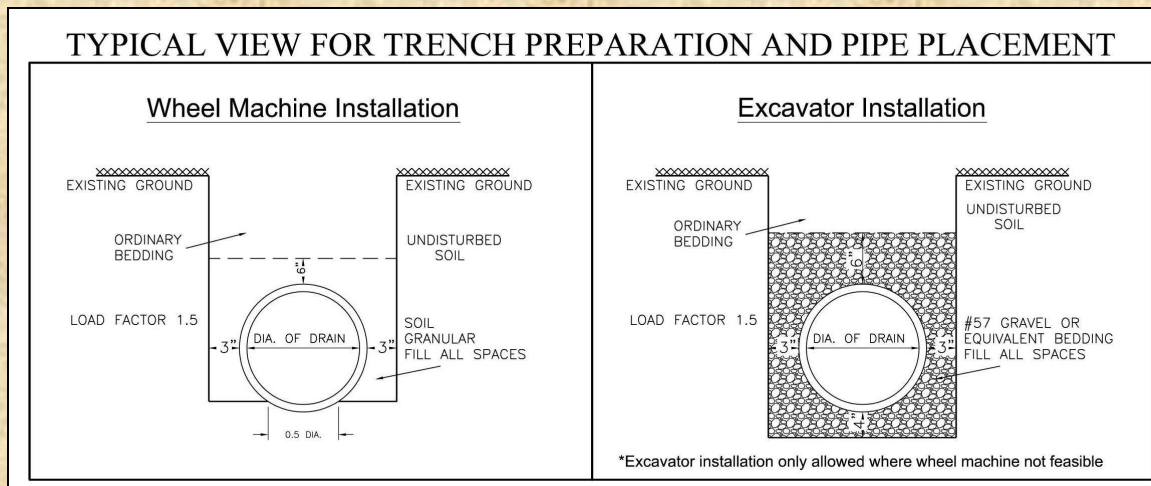
Items of work to be performed in conformance with this specification and the construction details therefore are:

It shall be required that the trench bottom or "shoe" of the trenching machine, or of the trench box cage, if so equipped, be conformed and shaped to the specific diameter size of the pipe being installed.

It will be required that 100% of the trench be backfilled with granular soil material no larger than 2"-3" in diameter. Chunks, clods, or masses of dirt, soil, or debris any larger than this will not be permitted to be backfilled into the excavated trench. The trench will be backfilled at an angle of 45 degrees to the alignment of the trench in order to promote proper enveloping of the backfill material over and around the installed pipe.

A backhoe or excavator can only be used on this project for the following purposes: (1) to install pipe at the upper and lower terminus of the project to make end connections (2) to place the first length of pipe leading into or out of a catch basin or receiver (3) to place the first length of pipe leading into or out of a premanufactured elbow fitting (4) in any areas which a trench has unstable sub-grade or base and requires additional excavation and placement of bedding materials (5) to install pipe through a road or driveway, where the trench will be totally backfilled with stone aggregates (6) making lateral connections

All pipe which has been installed by a backhoe or excavator in the accepted conditions as listed above, shall be bedded and backfilled over and under the installed pipe as shown on the typical trench detail of the engineering plans, profiles, and specifications.



Bid Item 4 Perforated Corrugated Plastic Smooth Interior Pipe 18 Inch

This item shall consist of furnishing and installing 18 inch perforated corrugated plastic smooth interior pipe as shown on the engineering drawings.

Measurement and payment shall be by unit price bid

Bid Item 5 Perforated Corrugated Plastic Smooth Interior Pipe 15 Inch

This item shall consist of furnishing and installing 15 inch perforated corrugated plastic smooth interior pipe as shown on the engineering drawings.

Measurement and payment shall be by unit price bid

Bid Item 6 Perforated Corrugated Plastic Smooth Interior Pipe 10 Inch

This item shall consist of furnishing and installing 10 inch perforated corrugated plastic smooth interior pipe as shown on the engineering drawings.

Measurement and payment shall be by unit price bid

Bid Item 7 NON-Perforated Corrugated Plastic Smooth Interior Pipe 10 Inch

This item shall consist of furnishing and installing 10 inch NON-perforated corrugated plastic smooth interior pipe as shown on the engineering drawings.

Measurement and payment shall be by unit price bid

Bid Item 8 Perforated Corrugated Plastic Smooth Interior Pipe 8 Inch

This item shall consist of furnishing and installing 8 inch perforated corrugated plastic smooth interior pipe as shown on the engineering drawings.

Measurement and payment shall be by unit price bid

Bid Item 9 NON-Perforated Corrugated Plastic Smooth Interior Pipe 8 Inch

This item shall consist of furnishing and installing 8 inch NON-perforated corrugated plastic smooth interior pipe as shown on the engineering drawings.

Measurement and payment shall be by unit price bid

Bid Item 10 18" to 10" Reducer

This item shall consist of furnishing and installing a 18-inch to 10-inch reducer to connect a 18-inch diameter pipe to a 10-inch diameter pipe at the locations indicated on the engineering drawings.

Measurement and payment will be by unit price bid.

Bid Item 11 10" to 8" Reducer

This item shall consist of furnishing and installing a 10-inch to 6-inch reducer to connect a 10-inch diameter pipe to a 6-inch diameter pipe at the locations indicated on the engineering drawings.

Measurement and payment will be by unit price bid.

Bid Item 12 Pre-Manufactured 18 Inch Elbow for Turn

This item shall consist of furnishing and installing 18-inch elbows as shown on the engineering drawings.

Measurement and payment will be by unit price bid.

Bid Item 13 Pre-Manufactured 15 Inch Elbow for Turn

This item shall consist of furnishing and installing 15-inch elbows as shown on the engineering drawings.

Measurement and payment will be by unit price bid.

Bid Item 14 Pre-Manufactured 10 Inch Elbow for Turn

This item shall consist of furnishing and installing 10-inch elbows as shown on the engineering drawings.

Measurement and payment will be by unit price bid.

Bid Item 15 Plastic 4" Diameter

This item shall consist of furnishing and installing (4) four inch diameter perforated plastic drains as shown on the engineering drawings.

This tile has the capacity to handle three clean 4" tile hook ups. Once the tile has reached the maximum capacity the tile is to be terminated and plugged at the end. The submain will then continue by hooking back into the new main.

Measurement and payment shall be by unit price bid.

Bid Item 16 Plastic 6" Diameter

This item shall consist of furnishing and installing (6) six inch diameter perforated plastic drains as shown on the engineering drawings.

This tile has the capacity to handle six clean 4" tile hook ups or one clean 6" hook up. Once the tile has reached the maximum capacity the tile is to be terminated and plugged at the end. The submain will then continue by hooking back into the new main.

Measurement and payment shall be by unit price bid.

Bid Item 17 Connections into Large Main Outlet

All encountered existing tile laterals shall be connected to the new main or submain with insert-a-tee connectors. The connected tile shall be hole-sawed into the new main at an angle of 45 degrees above horizontal in the upper 1/3rd of the pipe being connected to, if possible.

The insert-a-tee connection shall not protrude more than 1/2" into the main tile being connected to. The excavated trench leading to the encountered tile lateral shall be dug at a 45 degree angle from horizontal until the elevation of the existing tile lateral is met. The entire connection shall be bedded and backfilled to a point 12" over the top of all exposed pipe material.

Measurement and payment will be by unit price bid.

Bid Item 18 Connections into Small Submain Outlet

Where smaller diameter tile lines not shown on the drawings are crossed with the submain, they shall be connected into the new submain line or as directed by the engineer. Any lateral larger than the submain will be run across and hooked directly into the new main.

Measurement and payment will be by unit price bid.

Bid Item 19 Removal of Old Tile

This item shall consist of destroying the existing main tile line as shown on the engineering drawings. This shall be accomplished by excavating the existing drain and burying the tile bats at least two feet below the existing ground surface

Measurement and payment will be by unit price bid.

Bid Item 20 Leveling trenches after settling, filling around settled catch basins

This item shall consist of leveling tile trenches after settling, filling around settled catch basins after settling.

Measurement and payment shall be by unit price bid.

Bid Item 21 Gravel Bedding

This item will consist of furnishing and installing gravel backfill (#57, #67, or equivalent) where needed to stabilize soil conditions and tile drain grades.

CONSTRUCTION SPECIFICATION

401. PRECAST CONCRETE DROP BOX

1. SCOPE

The work shall consist of supplying and installing precast concrete drop boxes.

2. MATERIALS

The drop boxes shall be precast by an approved source. All walls shall be a minimum of (4) four inches thick, number (3) three reinforcing bars shall be spaced (12) twelve inches on center in both directions, all reinforcing steel will be bent around the corners, and all splices will be a minimum of (12) twelve inches.

Materials for concrete shall conform to Material Specifications 522, 531, 532.

All concrete shall be air entrained.

Drop boxes shall be manufactured to the dimensions and configurations shown in the drawings. Openings shall be provided to accommodate all pipe connections shown. After the drop box and pipe is installed the connection shall be mortared in as approved by the Engineer.

The manufacturer has the option of casting a short section of pipe into the drop box in lieu of leaving openings as mentioned above. All pipe must be of similar material and configuration as the pipe it will be connected to.

3. INSTALLATION

The drop box shall be installed in the manner and at the locations shown in the drawings.

4. MEASUREMENT AND PAYMENT

The work will not be measured. Payment will be by lump sum, and will include compensation for all labor, materials, equipment, and all other items necessary and incidental to the performance of the work.

5. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefore are:

Bid Item 22 Furnishing and Installing Surface Inlet

This item shall consist of furnishing installing a 36"x36"x60" concrete catch basin with grated lid as shown on the drawings.

Measurement and payment shall be by unit price bid

Bid Item 23 Furnishing and Installing Surface Inlet

This item shall consist of furnishing installing a 36"x36"x114" concrete catch basin with grated lid as shown on the drawings.

Measurement and payment shall be by unit price bid.

Material Specification 521—Aggregates for Drainfill and Filters

1. Scope

This specification covers the quality of mineral aggregates for the construction of drainfill and filters.

2. Quality

Drainfill and filter aggregates shall be sand, gravel, or crushed stone or mixtures thereof. Aggregates shall be composed of clean, hard, durable, mineral particles free from organic matter, clay balls, soft particles, or other substances that would interfere with the free-draining properties of the aggregates.

Coarse aggregate may be crushed limestone or other material that has limestone particles included. Aggregates from crushed limestone shall be thoroughly washed and screened to remove limestone dust, limestone fines, and fine soil particles. For coarse aggregate containing limestone, the total portion finer than the No. 4 sieve shall not contain more than 3 percent by weight of limestone. Limestone shall not be used for fine aggregates except in combination with other material, such that not more than 5 percent of the portion finer than the No. 4 sieve shall be limestone.

Aggregates shall be tested for soundness according to ASTM Method C 88 and shall have a weighted average loss in 5 cycles of not more than 12 percent when sodium sulfate is used or 18 percent when magnesium sulfate is used.

3. Grading

Drainfill and filter aggregates shall conform to the specified grading limits after being placed or after being compacted when compaction is specified. Grading shall be determined by ASTM Method C 136. The percentage of material finer than the No. 200 sieve shall be determined by the method in ASTM Designation C 117.

4. Storing and handling

Drainfill and filter aggregates shall be stored and handled by methods that prevent segregation of particle sizes or contamination by mixing with other material.

Material Specification 548—Corrugated Polyethylene Tubing

1. Scope

The specification covers the quality of corrugated polyethylene tubing and fittings.

2. Tubing

Corrugated polyethylene tubing shall conform to the requirements of ASTM F 405, ASTM F 667, ASTM F 894, AASHTO M 252, or AASHTO M 294 for the appropriate tubing sizes and fittings.

3. Fittings

ASTM F 405	3-6 inch diameter pipe and fittings
ASTM F 667	8-, 10-, 12-, 15-, 18-, and 24-inch diameter pipe and fittings
ASTM F 894	18- to 120-inch diameter pipe and fittings
AASHTO M 252	3- to 10-inch diameter N12 pipe and fittings
AASHTO M 294	12- to 36-inch diameter N12 pipe and fittings