

SPECIAL SPECIFICATIONS TABLE OF CONTENTS

SS.1	WATER FOR CONSTRUCTION.....	2
SS.2	RESTORATION OF PROPERTY.....	2
SS.3	INSPECTIONS AND TESTS.....	2
SS.4	DENSITIES FOR PAVEMENT SUBGRADE.....	2
SS.5	REMOVALS AND ADJUSTMENTS.....	2
SS.6	PORTLAND CEMENT CONCRETE.....	2
SS.7	SUBGRADE, SUBBASE, AND BASE PREPARATION.....	2
SS.8	LINES AND GRADES.....	2
SS.9	RIGHT-OF-WAY PREPARATION.....	2
SS.10	SODDING.....	2
SS.11	SEEDING.....	2
SS.12	PRESERVATION AND PROTECTION OF PLANT MATERIALS.....	3
SS.13	CEMENT TREATED BASE.....	3
SS.14	PAVEMENT MARKERS.....	3
SS.15	UNCLASSIFIED STREET EXCAVATION.....	3
SS.16	UNCLASSIFIED EXCAVATION.....	3
SS.17	BARRICADES, TRAFFIC CONTROL, PROTECTION OF PUBLIC.....	4
SS.18	DETAILED CROSS SECTIONS.....	4
SS.19	MOBILIZATION.....	4
SS.20	FIELD OFFICES TO BE PROVIDED.....	4
SS.21	INCREASED OR DECREASED QUANTITIES OF WORK.....	4
SS.22	PROJECT SITE SIGNAGE.....	4
SS.23	STORM WATER POLLUTION PREVENTION PLAN (SWPPP).....	4
SS.24	WORK ON PRIVATE PROPERTY AND RESIDENTIAL LEADWALKS.....	4
SS.25	TOPSOIL.....	4
SS.26	STONE MASONRY.....	4
SS.27	MASONRY MORTAR.....	6
SS.28	PROTECTIVE COATINGS FOR BRIDGE RAILING.....	6
SS.29	STRUCTURAL STEEL.....	6
SS.30	BRIDGE RAILINGS.....	6
SS.31	CAST STONE.....	6

SS.1 WATER FOR CONSTRUCTION

Standard Specifications for Public Works Construction-Item 107.12, shall be modified to include the following:

Water used for the mixing of concrete, testing, flushing or any other purpose incidental to the construction of this project may be obtained from existing City of Richardson fire hydrants at no cost to the Contractor. The Contractor shall make the necessary arrangements with the City of Richardson Customer Service Department to secure a temporary water meter which shall be requested by the Contractor and approved by the OWNER prior to installation. **A deposit of One Thousand Dollars (\$1,000.00)** (refundable upon return of meter) is to be left with the Customer Service Department at 411 W. Arapaho, Suite 101, Richardson, Texas. Water shall only be taken in a manner and at such times so as not producing a traffic hazard or a harmful drain or decrease of pressure in the City water supply. In the event the City determines the water is not being used as part of this Project, or in any way feels the Contractor is misusing the water in conjunction with this Project, the City shall notify the Contractor and the Contractor shall be responsible for all charges and fines as determined by the City.

SS.2 RESTORATION OF PROPERTY

Standard Specifications for Public Works Construction-Item 107.26 'Restoration of Property' shall be modified to include the following:

It shall be the responsibility of the Contractor to provide for the care and repair of any sprinkler systems damaged in connection with this work at the Contractor's expense.

During normal work hours, it will be the Contractor's responsibility to repair any water or sanitary sewer main line rupture or service line leak that occurs within the project limits until the completion of the project. If damage is not a result of Contractor's operation or negligence, repair shall be paid for at the contract unit price. If damage to the main or service line is the result of the Contractor's negligence or results from the Contractor's operation, the repair shall be made at the Contractor's expense.

The OWNER may prevent the Contractor from working on other parts of the project until the repairs are complete. No time extension will be allowed for the restoration of property or for any delays associated with suspension of work until the repairs are made.

SS.3 INSPECTION AND TESTS

Standard Specifications for Public Works Construction-Item 106.5 'Samples and Test of Materials' shall be modified to include the following:

Retesting: When initial test indicates non-compliance with the contract documents, subsequent retesting occasioned by the non-compliance shall be performed by the same testing agency, and costs thereof will be deducted by the OWNER from the moneys due the Contractor.

Contractor's Convenience Testing: Inspection or testing performed exclusively for the Contractor's convenience shall be performed by the laboratory under contract with the OWNER, and the cost shall be deducted from the moneys due the Contractor.

SS.4 DENSITIES FOR PAVEMENT SUBGRADE

Densities for pavement subgrade will be taken no earlier than forty-eight (48) hours in advance of placement of concrete or asphalt pavement. As an alternate to this requirement, an emulsified asphalt treatment can be used to seal the subgrade immediately after densities have passed. This method can be used up to eighty-four (84) hours prior to paving. For periods longer than eighty-four (84) hours, density retests will be required at the Contractors expense. Emulsified asphalt treatments shall be mixed at a 4:1 ratio and distributed at a rate of 0.25 gallons per square yard of subgrade.

SS.5 REMOVALS AND ADJUSTMENTS

Standard Specifications for Public Works Construction-Item 402.2 'Sawing', shall be modified with the following clarification:

The City requires full depth saw cuts for removal of pavement. If the Contractor fails to leave a neat and uniform edge or joint during pavement removal, the pavement shall be resawed and removed at the Contractor's expense. Resawing of pavement shall be from longitudinal or transverse joint to longitudinal or transverse joint, or as direct by the OWNER.

All of the concrete removed on this project will become the property of the Contractor and be disposed of by him outside of the limits of the right-of-way at his own expense.

Standard Specifications for Public Works Construction-Item 502.1.4. 5. 'Grade Adjustment Risers' shall be modified to include the following:

Where manholes are to be adjusted upward to meet a new grade, the vertical rise in the manhole neck may be adjusted to a maximum of eighteen (18) inches. This rise shall be measured from the top of the manhole lid down to the top of the cone section of the manhole. The vertical measurement shall include all vertical rise previously installed on an existing manhole. Where this maximum is exceeded, the existing walls shall first be removed down to the bottom of the cone section of the walls, or to such an elevation that the inside diameter of the manhole is not less than three and one-half (3-1/2) feet. The manhole shall then be rebuilt in conformity with the size and shape requirements for new manholes. Salvaged materials in good condition may be used in rebuilding such structures upon approval from the OWNER.

SS.6 PORTLAND CEMENT CONCRETE

Standard Specification Item 303.2.1.3-Coarse Aggregates, first sentence is deleted and replaced as follows:

"Coarse aggregates shall be 100% Crushed stone."

Standard Specification Item 303.2.4 - Mineral Admixtures, shall be modified to include the following:

Fly ash may be used in Class C and Class A Concrete Pavement.

Fly ash shall not be used in concrete mix designs where high early strength is desired.

Standard Specification Item 303.2.5 - Mineral Filler, shall be deleted. No mineral filler is allowed.

Standard Specification Item 303.2.6 - Fibrous Reinforcement, shall be deleted. No fibrous reinforcement is allowed.

SS.7 SUBGRADE, SUBBASE, AND BASE PREPARATION

Any reference to density or compaction in Standard Specification Item 301 shall be replaced with the following City Standard:

Unless otherwise shown on the plans, earth embankments shall be placed in horizontal layers not exceeding eight (8) inches loose depth. All fill shall be compacted to at least ninety-five (95) percent of the maximum density as determined by Standard Proctor (ASTM D-698). Moisture contents shall range from -2 to +4 percent of the optimum value.

SS.8 LINES AND GRADES

The first sentence of Standard Specifications for Public Works Construction-Item 105.4 'Construction Stakes' shall be deleted and replaced with the following:

The OWNER will furnish the contractor with sufficient information on the plan sheets relating to lines and grades to establish project control. Control Points referenced on the plan sheets shall be set by the OWNER sufficiently in advance of the work to avoid delay.

Standard Specifications for Public Works Construction-Item 105.4 'Construction Stakes' shall be clarified with the following:

The Contractor shall furnish and set all construction stakes and other materials and templates necessary for making and maintaining points and lines, including layout stakes, line and grade stakes for grading, paving, culverts, utilities, storm sewer lines, bridges, etc. and all other appurtenances.

SS.9 RIGHT-OF-WAY PREPARATION

The description and construction methods for this item shall be those set forth in Standard Specifications for Public Works Construction Item 203.3 "General Site Preparation". Measurement and Payment shall be in according to the bid schedule. In the event no bid item exists this work shall be considered subsidiary to other bid items.

SS.10 SODDING

Standard Specifications for Public Works Construction Item 202.5.3.4. 'Watering and Finishing Sod', shall be modified to add the following:

In the event the area is not adjacent to an existing irrigation system. The Contractor will be required to provide a temporary watering system (water truck application) to provide consistent moisture of the newly planted sod until the OWNER has accepted the grass. The Contractor shall submit a written description of proposed watering method to the OWNER prior to sodding. Watering is considered subsidiary to other bid items.

Standard Specifications for Public Works Construction Item 202.4.4 'Measurement and Payment' shall be clarified with the following

No separate measurement or payment shall be made for fertilizer materials or application. This item shall be considered subsidiary to the various sodding items.

SS.11 SEEDING

Standard Specifications for Public Works Construction Table 202.6.3.(a) 'Seeding Turfgrass'- Type I, Seed and Rate, shall be deleted and replaced with the following:

Bermuda Grass, hulled, **110** lb. PLS per acre

Standard Specifications for Public Works Construction Item 202.6.5 'Measurement and Payment', delete the second paragraph and replace with the following:

The price shall be full compensation for furnishing of all materials, including fertilizer, water for seed-fertilizer slurry and hydraulic mulching; and for performing all operations necessary to complete the work, including fertilizer and watering until established.

Standard Specifications for Public Works Construction Item 202.4.4 'Measurement and Payment' shall be clarified with the following

No separate measurement or payment shall be made for fertilizer materials or application. This item shall be considered subsidiary to the various seeding items.

SS.12 PRESERVATION AND PROTECTION OF PLANT MATERIALS

Standard Specifications for Public Works Construction Item 202.1. REMOVAL, PROTECTION, AND REPLACEMENT OF TREES, SHRUBBERY, PLANTS, SOD, AND OTHER VEGETATION, Paragraphs 2, 4, and 6 shall be deleted and the following shall be added:

It is the intention of this specification that all native plant material at this project site, not specifically indicated on the plans for removal, be protected and preserved. Take all necessary precautions to avoid damage or removal of trees, shrubs and other plant materials that are to remain following construction. Specimen trees and other plants within and closely adjacent to construction sites shall be adequately protected by the Contractor. Additional protective measures may be installed by the Contractor, at his option, to preclude damage by his workmen and equipment.

Do not store, stack or place equipment, material, chemicals or supplies within twenty-five (25) feet from edge of canopy of any plant materials that are to remain.

Unwarranted damages to plant material shall be evaluated by a member of the OWNER'S staff and instructions issued for the necessary repairs. The Contractor shall accomplish the corrective work as ordered, or may at his option, provide monetary reimbursement by change order reduction to the contract. The value established by the OWNER will be final and based on repairs by a qualified technician, approved by the OWNER. Plant material destroyed or removed by the Contractor, or damaged beyond corrective repair will be evaluated and assessed as outlined above for repairable damage. In the event large irreplaceable plants are destroyed, the OWNER will establish a fair value and may, at his discretion, require replacement by installation of several trees or other plants equaling the fair value of the tree(s) or plant(s) destroyed.

The value of plant materials will be determined utilizing \$20.00 per square inch of trunk cross-sectional area taken four feet six inches (4'-6") above grade.

Plant protection requirements cited above, include authorized pruning and cutting of limbs and major roots. The Contractor is cautioned not to cut, prune or otherwise remove plant parts without prior approval and guidance by the OWNER.

As directed by the Engineer, the Contractor may make alignment revisions around trees when possible to minimize damage to tree roots.

No separate measurement or payment will be made for preservation and protection of plant materials. This item shall be considered subsidiary to the other various items bid for the project.

SS.13 CEMENT TREATED BASE

Standard Specification Item 301.3.3.3 "Plant-Mixed Cement Treated Base" shall be modified to include the following:

Cement shall be Type 1. Aggregate shall all pass the 2" sieve. Unconfined compressive strength shall be more than 400 psi at age of seven days.

SS.14 PAVEMENT MARKERS

Pavement markers shall be of the type shown on the plans. Markers of the same type shall be of the same manufacture. Adhesive shall conform to the Item "Epoxy" (575) of the current State Department of Highways and Public Transportation Specifications.

The portion of the road surface to which the marker is attached by the adhesive shall be prepared by any method approved by the engineer in order to be free of dirt, curing compound, grease, oil, moisture, loose or unsound pavement and any other material which would adversely affect the bond of the adhesive.

The wet epoxy shall be applied in sufficient quantity so as to insure the following:

1. 100% of the bonding area of the marker shall be in contact with epoxy.
2. The marker itself shall not contact the pavement surface, but shall sit on an epoxy "cushion".
3. When the marker is pressed onto the pavement, adhesive shall be forced out around its entire perimeter.

Any excess adhesive or other foreign material on or in front of the reflective face(s) of the marker shall be removed so that reflectiveness will not be impaired.

When the project is complete, the markers shall be firmly bonded to the pavement, lines formed by the markers shall be true and the entire installation shall present a neat appearance.

Pavement markers will be measured as each pavement marker complete in place. The work performed and material furnished as prescribed by this item, measured as provided above shall be paid for at the unit price bid for "Pavement Markers (Type)" of the type specified, which price shall be full compensation for furnishing all materials, all preparation and installation and for all labor, equipment, tools and incidentals necessary to complete the work.

SS.15 UNCLASSIFIED STREET EXCAVATION

When excavating in rock, the Contractor may either;

- (1) undercut and fill any voids with concrete during paving while maintaining minimum pavement thickness, or
- (2) undercut and fill any voids with compacted pulverized rock.

Standard Specifications for Public Works Construction Item 203.4.7 'Measurement and Payment' first sentence is deleted and replaced by the following:

Final payment for this work will be computed from the quantity specified in the proposal (plan quantity) unless there has been a change in the lines or grades which will increase or decrease in the work, then the

area so affected will be cross-sectioned by the OWNER and the volume of such increase or decrease will be computed in cubic yards by the average end area method. Extra depth excavation as required when rock is encountered will be subsidiary to this item and there will be no change in plan quantity on account of this.

SS.16 UNCLASSIFIED EXCAVATION

This item shall consist of all excavation necessary to construct the work as described in Standard Specifications for Public Works Construction Item 203.4 "Unclassified Street Excavation"

Standard Specifications for Public Works Construction Item 203.4.7 'Measurement and Payment' shall be deleted and replaced with the following:

Excavation for all construction items in this contract shall be paid for at **cubic yard** bid for "unclassified excavation," which price shall constitute payment in full for excavation, placing excavated material in embankment, loading and hauling, finishing slopes, for all maintenance blading or scarifying the ground surface, and for furnishing all labor, tools, equipment materials and incidentals necessary to complete the work.

Final payment for this work will be computed from the quantity specified in the proposal (plan quantity) unless there has been a change in the lines or grades which will increase or decrease in the work, then the area so affected will be cross-sectioned by the OWNER and the volume of such increase or decrease will be computed in cubic yards by the average end area method.

SS.17 BARRICADES, TRAFFIC CONTROL, PROTECTION OF PUBLIC

Standard Specifications for Public Works Construction-Items 107.19 and 801.1, shall be modified to include the following:

All construction shall be performed in a manner and sequence to minimize the disruption of traffic whenever possible. A Traffic Control Plan (TCP) shall be submitted by the CONTRACTOR for approval by the City Engineer, three days prior to any re-routing, detouring, blocking or disruption of traffic. The Contractor shall be responsible for providing traffic control during the construction of this project consistent with the provisions set forth in the latest Edition of the Texas Manual on Uniform Traffic Control Devices (MUTCD), with the following modifications:

1. Unless otherwise approved in writing, access to adjacent properties, driveways, alleys and intersecting streets shall be maintained at all times.
2. Closure of main traffic lanes will only occur between 9:00 AM and 3:30 PM Central Time, unless written permission is granted by the OWNER
3. SPECIAL REQUIREMENTS FOR THE USE OF HIGH INTENSITY REFLECTIVE MATERIALS - All guidance devices, such as vertical panels, drums, barricades, etc., shall meet the Minimum Specific Intensity per Unit Area (SIA) as shown in Table V-A, FP-79, 1979.
4. Any street with a posted Speed Limit of 35 mph, or greater, shall require the use of Flashing Arrow Panels for any lane closure or traffic modification.

Prior to beginning work, the Contractor shall designate, in writing, a competent person who will be responsible and available on the project site or in the immediate area to insure compliance with the TCP. The Contractor shall plan his work in accordance with the TCP, and/or as indicated in the plans. Any revision to the TCP must receive the OWNER'S approval prior to beginning work.

The Contractor will not remove any regulatory signs, instructional signs, street name signs or other signs which have been erected by the City. If it is determined that a sign must be removed to permit required construction, the Contractor shall contact the City of Richardson. In the case of regulatory signs, the

Contractor must replace the permanent sign with a temporary sign, meeting the requirements of the above referenced manual, and such a temporary sign must be installed prior to the removal of the permanent sign. If the temporary sign is not installed correctly or if it does not meet the required specifications, the permanent sign shall be left in place until the temporary sign requirements are met. When construction work is completed to the extent that the permanent sign can be reinstalled, the Contractor shall again contact the City three days prior to reinstall the permanent sign and shall leave his temporary sign in place until such reinstallation is completed.

Unless otherwise indicated on the Bid Schedule, there will be no separate pay item for all of the above and price for the same will be reflected in other bid items.

SS.18 DETAILED CROSS SECTIONS

Detailed cross sections are available for review in the office of the City Engineer, City of Richardson. The Contractor may secure a set of prints by paying for the cost of reproduction.

SS.19 MOBILIZATION

This item shall consist of the mobilization of personnel, equipment and supplies at the project site in preparation for beginning work on other contract items. Mobilization shall include, but is not limited to, the movement of equipment, personnel, material, supplies, etc., to the project site and the establishment of office and other facilities necessary. Measurement of the item will be by the "lump sum," as the work progresses, and partial payments of the lump sum bid for mobilization will be as follows:

- (1) When thirty (30) days of contract time have elapsed, fifty (50) percent of the mobilization lump sum bid or five (5) percent of the total contract amount, whichever is less, will be paid on the following monthly payment.
- (2) When paving operations begin, or a portable batch plant is erected, ninety (90) percent of the mobilization lump sum bid or fifteen (15) percent of the total contract amount, whichever is less, will be paid on the following monthly payment. Previous payment under this item will be deducted from the above amount.
- (3) Upon completion of all work under this contract, payment for the remainder of the lump sum bid for mobilization will be made.

SS.20 FIELD OFFICES TO BE PROVIDED

Contractor's Office

The Contractor shall maintain an office on the job site during the entire period of construction. Plans, working drawings, and contract documents shall be maintained at this office at all times. Telephone services shall be maintained in the office and shall be available for use to the OWNER.

Inspector's Office

A temporary office building, separate and detached from the Contractor's office shall be erected for use by the City's project inspector. It shall contain at least 200 square feet of floor space and shall be well lighted and ventilated, and provisions shall be made for maintaining a comfortable temperature within the office at all times. Sanitary facilities and drinking water shall be provided for the Inspector's office. Telephone service shall also be maintained in this office. Office furniture shall include a desk and a layout or drafting table. The costs of furnishing the above described offices and the services and utilities provided shall be incidental to the various bid items for the project, and no separate payment will be allowed.

SS.21 INCREASED OR DECREASED QUANTITIES OF WORK

Standard Specifications for Public Works Construction Item 104.2.1. 'Increased or Decreased Quantities of Work' shall be modified to include the following:

The OWNER reserves the right to increase (beyond 125%), decrease (below 75%), or entirely delete the quantity of work listed under the following items without altering any unit bid prices:

<u>ITEM</u>	<u>DESCRIPTION</u>
-------------	--------------------

SS.22 PROJECT SITE SIGNAGE

Standard Specifications for Public Works Construction Item 107.20. 'Project Signs' shall be modified to add the following:

Contractor shall provide a sign at locations as directed by the OWNER. The sign shall show the city name and logo with the graphics identity package and artwork being furnished to the Contractor. The sign shall also show the project name, start date, finish season (i.e., winter 2001), name of Contractor and contact phone number for Contractor. Sign size shall be a minimum of 4'x4' with a minimum of two inch (2") letters for information and four inch (4") for project description, signs shall be mounted on at least two (2) 4" x 4" lumber.

SS.23 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

The Texas Commission On Environmental Quality (TCEQ) TPDES General Permit NO. TXR150000 shall be attached to, and all sections and provisions made part of, the contract of the successful bidder. In addition, Standard Specifications for Public Works Construction Item 201 'Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control' shall be modified to add the following.

1. Construction Site Notice/Notice of Intent.

Prior to commencing construction activities the contractor must submit the proper notifications and forms as detailed in TPDES General Permit NO. TXR150000. If the construction activity is less than five (5) acres, the contractor must submit a completed Construction Site Notice to the OWNER. If the construction activity is greater than five (5) acres, the contractor must submit and Notice of Intent (NOI) and applicable fees to the TCEQ, with a copy submitted to the OWNER.

The Contractor must post the completed Construction Site Notice, or NOI if applicable, near the main entrance of the construction site, unless another location is determined in writing by the OWNER. The Construction Site Notice shall be posted on a sign with a minimum dimension of 2' x 3' mounted on at least two (2) 2" x 4" lumber with 2" lettering labeling the sign as "SWPPP Information". The CONTRACTOR shall furnish, install, and maintain a rain gauge that shall be installed in a location adjacent to the project site and as directed by the OWNER.

2. Inspection Reports

In accordance with the General Permit the CONTRACTOR is responsible for the inspection of the erosion control methods and the storm water pollution prevention plan. After each inspection, a copy of the report and actions shall be provided to the OWNER.

Standard Specifications for Public Works Construction Item 201.18. 'Measurement and Payment' Paragraphs 1,2,3, and 4 shall be deleted and replaced with the following:

1. If Bid Items are in the Bid Schedule:

When provided for in the bid proposal and Contract, payment for temporary erosion, sedimentation, water pollution prevention and work performed under this specification shall be made at the unit price as specified for the Contract pay items provided which price shall be considered full compensation for: (1) all clearing and grubbing, removals, excavation and backfill required for installation, (2) installation, maintenance, removals and restoration, and (3) all materials, labor, tools, equipment, overhead, profit and incidentals necessary to complete the work in accordance with plans, SWPPP, and special provisions and this specification.

2. If Bid Items are not in the Bid Schedule (Considered Subsidiary):

Unless otherwise provided in the Contract or bid proposal as separate pay items, no separate payment shall be made for temporary erosion, sedimentation, and water pollution prevention and control work required in the plans, SWPPP, special provisions or this specification, but such work shall be considered as incidental work and the cost thereof shall be included in the Contract pay items provided in the proposal and Contract.

SS.24 WORK ON PRIVATE PROPERTY AND RESIDENTIAL LEAD WALKS

The work called for in this Contract will necessarily result in the reconstruction of portions of private drives, drive accesses and lead walks. In such circumstances, the owner(s) of such private drives, drive accesses and lead walks may desire reconstruction or repaving of portions of or the entire drive approach or lead walk exceeding the scope of work called for in this Contract. The Contractor hereby agrees to use best efforts to negotiate with and perform such additional work for and on behalf of the owners of such private drives, accesses and lead walks at the sole cost and expense of said owners. In all such cases, the City shall not be responsible or liable for any such additional work, the

Contractor's sole remedy being against the owners of the private drives, accesses and lead walks and on terms and conditions specified in the Contractor's separate agreements with such owners. None of the terms, provisions and conditions of this Contract shall apply to such additional work. In connection with each such additional contract, under no circumstances shall the City be deemed an agent of Contractor or of the owner of the private drive or access, and each such contract shall so state in a conspicuous manner.

SS.25 TOPSOIL

GENERAL

This section governs the preparation of the ground surface for topsoil application, removal of topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placement of the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the OWNER.

MATERIALS

Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth or hazardous to humans and animals, and it shall be free from subsoil and stumps, roots, brush, stones one (1) inch or more in diameter, clay lumps or similar objects. Brush and other vegetation which will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sods and herbaceous growth such as grass and weeds are not to be removed, but shall be thoroughly broken up and intermixed with the soil during handling operations. The topsoil or soil mixture, unless otherwise specified or approved, shall have a PH range of approximately 5.5 PH to 7.6 PH when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall be not less than 2% nor more than 20% as determined by the wet-combustion method (chromic acid reduction). There shall be not less than 20% nor more than 80% of the material passing the 200 mesh sieve as determined by the wash test in accordance with AASHTO T11.

On-site existing natural topsoil may be amended by the Contractor with approved materials and methods to meet the above specifications.

Ten (10) days prior to stripping topsoil for use or reuse on-site, the OWNER'S representative shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine the depth to which stripping will be permitted. At this time, the Contractor may be required to take representative soil samples from several locations within the area under consideration and to the proposed stripping depths for testing

CONSTRUCTION

Areas to receive topsoil include all areas disturbed by construction which are to be revegetated, as indicated on the Drawings, or as instructed by the OWNER in writing. Suitable equipment necessary for proper preparation and treatment of the ground surface, stripping of topsoil, and for the handling and placing of all required materials shall be on hand, in good condition, and approved by the OWNER before the various operations are started.

1. PREPARING THE GROUND SURFACE

- A. Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened by discs or spike-tooth harrows, or by other means approved by the OWNER, to a minimum depth of two (2) inches to facilitate bonding of the topsoil to the covered subgrade soil. The surface of the area to be topsoiled shall be cleared of all stones larger than two (2) inches in any dimension and all litter or other material, which may be detrimental to proper bonding, the rise of capillary moisture, or the proper growth of the desired planting. Limited areas, as shown on the plans, which are too compact to respond to these operations shall receive scarification by the use of small tillers or hand tools.
- B. Grades on the areas to be topsoiled which have been established by others, as shown on the plans, shall be maintained in a true and even condition. Where grades have not been established, the areas shall be smooth-graded and the surface left at the prescribed grades in an even and properly compacted condition to prevent, insofar as practical, the formation of low places or pockets where water will stand.

2. OBTAINING TOPSOIL

- A. Prior to the stripping of topsoil from designated areas, any vegetation, briars, stumps and large roots, rubbish or stones found on such areas which may interfere with subsequent operations shall be removed using methods approved by the OWNER. Heavy sod or other cover which cannot be incorporated into the topsoil by discing or other means shall be removed.
- B. When suitable topsoil is available on the site, the Contractor shall remove this material from the designated areas and to the depth as directed by the OWNER. The topsoil shall be spread on areas already tilled and smooth-graded, or stockpiled in areas approved by the OWNER. Any topsoil that has been stockpiled on the site by others, and is required for topsoiling purposed, shall be removed and placed by the Contractor. The site of all stockpiles and areas adjacent thereto which have been disturbed by the Contractor shall be graded if required, and put into a condition acceptable for seeding.
- C. When suitable topsoil is secured off the site, the Contractor shall locate and obtain the supply subject to the approval of the OWNER. The Contractor shall notify the OWNER sufficiently in advance of operations in order that necessary measurements and tests can be made. The Contractor shall remove the topsoil from approved areas and to the depth as directed. The topsoil shall be hauled to the site of the work and placed for spreading, or spread as required. Any topsoil hauled to the site of the work and stockpiled shall be rehandled and placed without additional compensation.

3. PLACING TOPSOIL

- A. The topsoil shall be evenly spread on the prepared areas to a uniform depth of four (4) inches after compaction unless otherwise shown on the plans. Spreading shall not be done when the ground or topsoil is frozen, excessively wet or otherwise in a condition detrimental to the work. Spreading shall be carried on so that turfing operations can proceed with a minimum of soil preparation or tilling.
- B. After spreading, any large stiff clods and hard lumps shall be broken with a pulverizer or by other effective means, and all stones or rocks one (1) inch or more in diameter, roots, litter or any foreign matter shall be raked up and disposed of by the Contractor. After spreading is completed, the topsoil shall be satisfactorily compacted to 90% Standard Proctor Density by rolling with a cultipacker or by other means approved by the OWNER. The compact topsoil surface shall conform to the required lines, grades and cross sections. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

MEASUREMENT AND PAYMENT

Topsoil shall be measured by the square yard compacted in place. All work performed as ordered and measured as provided for under this item shall be paid for at the unit price bid for topsoil. The price shall be full compensation for excavating, loading, hauling, placing and for furnishing all labor, equipment, tools, supplies, and incidental necessary to complete the work.

SS.26 STONE MASONRY

GENERAL

Furnish all materials, equipment and labor necessary to construct stone masonry as indicated on the drawings. Furnish not less than five (5) individual rocks as samples, showing extreme variations in color and texture, for approval by OWNER. Store masonry rock off ground to prevent contamination by mud, dust, oil or materials likely to cause staining or other defects.

MATERIALS

Milsap Sandstone

1. Stone shall be of rectangular shape, ten (10) to twenty-two (22) inches long, three (3) to five (5) inches wide, and four (4) to six (6) inches high for the random broken course ashlar pattern.
2. Stone for the flagstone pattern shall be irregular in shape and shall range in size from 4" to 16" in width and length. The stone shall be between 3" and 5" thick and shall be "builder's" type stone and not sawed flagstone.
3. Stone shall have uniform parallel edges and be free from segregations, cracks, seams or other structural defects or imperfections tending to destroy its resistance to weather.

CONSTRUCTION

A. Shaping Stone

The stones shall be roughly squared on joints, beds and faces. Selected stone, roughly squared and pitched to line, shall be used at all angles and ends of walls. All shaping or dressing of stone shall be done before the stone is laid in the wall, and no dressing or hammering which will loosen the stone will be permitted after it is placed.

B. Laying Stone

1. Stone masonry shall not be constructed in freezing weather thirty-five degrees (35°F) and rising or forty degrees (40°F) and falling or when the stone contains frost, except by written permission of the Engineer and subject to such conditions as he may require. Use wetting methods which ensure that each masonry unit is nearly saturated, but surface dry when laid. Mortar bed shall be clean and well-moistened prior to placement of stones.

2. Lay up walls plumb and true with courses level, accurately spaced and coordinated with other work. The bottom or foundation courses shall be composed of larger, selected stones and all courses shall be laid with bearing beds parallel to the natural bed of the material. Prior to installation of stone work, erect sample wall panel mockup using materials, bond and joint finishing required for final work. Build three (3) mockups for the "ledgestone" pattern at the site where directed by OWNER, indicating the proposed ranges of color, texture and workmanship to be expected in the completed work. Obtain OWNER'S acceptance of visual qualities of the mockup before start of subsequent stone work in question. If initial mockup is unacceptable to OWNER, remove and rebuild until acceptable. Retain accepted mockup during construction as a standard for judging completed stone work. Do not alter, move or destroy mockup until work is completed. Use mockup to test cleaning procedures. The mockup shall be the following size:

Contractor shall construct two (2) mock-ups, one (1) for the random broken course ashlar and one (1) for the flagstone pattern *or other specified pattern*. Mock-ups shall be four (4) feet by four (4) feet to represent each type of stone work for the project. Mock-ups for the stone pilaster and walls shall include samples of the cast stone caps.

3. Generally, joints will be three-quarter (3/4) inch thick. Make joints straight and uniform, particularly where exposed to view. Cut exposed joints, compress and finish smooth with a round pointing tool. Joints to be concave three-quarter (3/4) inch deep.

4. Lay stone in freshly made mortar with completely filled bed, head and collar joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints. Settle stones carefully in place before the mortar has set.

5. Provide weep holes in head joints at base course of masonry. Leave head joint free and clean of mortar. Space weep holes twenty-four (24) inches centers.

6. In case any stone is moved or the joint broken, the stone shall be taken up, the mortar thoroughly cleaned from bed and joints, and the stone reset in fresh mortar.

C. Pointing

Pointing shall not be done in freezing weather or when the stone contains frost. At completion of work, point holes in joints of exposed masonry surfaces. Completely fill with mortar and tool properly. After pointing has set and hardened, wet the exposed surfaces and clean with water and stiff fiber brushes. Mortar joints shall be well tooled and tight throughout. After the pointing is completed and the mortar set, the wall shall be thoroughly cleaned and left in a neat and workmanlike condition.

SCAFFOLDING

Provide scaffolding and staging required for masonry installation. Construct and maintain scaffolding in compliance with applicable ordinances and regulations. Scaffolding shall be sufficiently substantial to support workmen and necessary equipment and materials. Provide adequate guard rails for protection of property, workmen and passersby.

MEASUREMENT AND PAYMENT

Stone masonry shall be measured by the exposed square foot of completed and accepted work. Payment shall include all labor, equipment, materials, tools and incidentals necessary to complete the work.

SS.27 MASONRY MORTAR

MATERIALS

Store mortar materials in a dry place, off the ground, under cover. Use the same source or brand of masonry mortar materials for the duration of the Project. Materials to acceptable for Masonry Mortar include:

1. Portland Cement: ASTM C 150, Type I. Use Type III high-early strength for laying masonry in cold weather.
2. Masonry Cement: ASTM C 91, with twelve percent (12%) maximum air content by volume.
3. Hydrated Lime: ASTM C 201, Type S.
4. Aggregates: ASTM C 144.
5. Mortar for Unit Masonry. ASTM C 270.
6. Water: Clean, free of deleterious amounts of acids, alkalies or organic materials.

MORTAR MIXES

1. Do not lower the freezing point of mortar by use of admixtures or anti-freeze agents. The use of calcium chloride in mortar is not permitted.
2. Masonry Cement. one (1) part masonry cement to three (3) parts sand, proportioned by volume.

CONSTRUCTION

1. Mix mortar with sufficient water for minimum of three (3) minutes in a drum type batch mixer. Mix mortar thoroughly and only in such quantity as needed for immediate use. Use mortar within *one hour* after mixing. Discard mortar not used within specified time. Clean mixer after four (4) or five (5) batches have been mixed.
2. Add water to lime at least twenty-four (24) hours before mixing it with other materials.
3. Mortars that have stiffened within time interval stated above because of evaporation of moisture may be retempered to restore work ability by adding water. Do not retemper mortar that has reached initial set.
4. Measure materials by volume or equivalent weight, do not measure by shovel.

MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for this item. This item shall be considered subsidiary to the other various items bid for the project.

SS.28 PROTECTIVE COATINGS FOR BRIDGE RAILING

GENERAL

Furnish all labor, materials, tools and equipment to provide protective coatings for Bridge Railing. Where a particular type of material or method is specified, no other type of material or method will be permitted.

SUBMITTALS

Prior to delivery any painting materials to the job site, submit the following to the Engineer.

1. Color Selection Chart: Three (3) copies minimum for each type of paint used.

2. Manufacturer's data on each type of paint to be used.

PAINT

The following painting schedule established various paints and primers required under this specification. Specific instructions in other detail specifications supersede paint schedule for shop-coated materials and equipment. Substitutions of paints are not allowed unless specifically approved in advance. Any substitute submitted must equal or exceed the performance criteria of the specified paint system. Copies of this performance criteria are supplied at the end of this section. Include with request for substitution, complete information as to formulation, coverage, application, etc. Surfaces not specifically listed and not excluded by other sections of this specification shall be painted so as to perform a complete job.

SYMBOL	MIN.DRYMIL THICKNESS PER COAT	BRAND OR MANUFACTURER OR APPROVED EQUAL
A	5.0	Series 66 Hi-Build Epoxyline
B	4.0	Series 73, Endurashield III Tnemec Co., Inc.

TYPE OF SURFACE	SURFACE PREPARATION (2)	PRIMER COAT	FINISH COAT	TOTAL (1)
--------------------	----------------------------	----------------	----------------	-----------

Bridge Railing	SSPC-SP6 A	B	9.0	
----------------	------------	---	-----	--

Bolts and Threaded Rods --Hot Dipped Galvanized--

- (1) Minimum dry film thickness of total paint system applied.
- (2) Steel structures painting council specification.

CONSTRUCTION

1. Workmanship

Employ only skilled workmen to apply paints and finish materials. Apply paints with brush or spray equipment in even and thorough coats without runs, sags or other blemishes. Allow all coats of paint, regardless of material used, to dry thoroughly before application of succeeding coat, except when manufacturer recommends otherwise. Properly sand painted surfaces between coats or enamel, paint or shellac when applied to any surface other than masonry. Apply paints in accordance with manufacturer's recommendations.
2. Preparation of Surfaces

Metal Surfaces - Unless otherwise designated, surface preparation shall be in accordance with the preparation as specified in Section 1302.1 per the Steel Structures Painting Council.
3. Application of Paint
 - a. Use one (1) convenient location for storing and mixing of paint materials, and keep fire extinguisher available in this area as long as it is used for such purpose. Protect floor in this area and all other areas where painting is done with suitable drop cloths. Remove oily rags and waste from building or site at close of day. On completion of painting operations, clean off all paint spots, oil and stain from all surfaces and leave entire project in perfect condition as far a painting work is concerned. Remove from premises all containers and debris resulting from painting operations.
 - b. Thoroughly dry each coat of paint before successive coat is applied. Allow full dry time between coats as specified by manufacturer of particular paint involved.
 - c. Apply at rate recommended by manufacturer.
 - d. Deliver to site in original (unbroken) sealed containers with manufacturer's label attached.

- e. Use only those thinners and solvents specified in paint formulas of paint being used, and mix in proportions as recommended by paint manufacturer.
- f. Brush Application: (Not permitted, except for minor touch-up)
 - i. Use first quality hog hair or suitable synthetic bristle brushes. Use of horse hair bristle brushes not permitted. Keep brushes clean and free from accumulation of dried paint or dirt, and when brushes for oil or varnish base paints are not in use, keep them suspended in raw linseed oil bath. Clean brushes with turpentine or mineral spirits before reuse.
 - ii. Apply in uniform thickness consistent with specified coverage, and with sufficient cross-brushing to insure filling of surface irregularities. Exercise particular care in painting around rivet heads, bolt heads and nuts, and in corners and other restricted spaces.
- g. Spray Application: Apply with adjustable air gun equipped with suitable water trap to remove moisture from compressed air, and with paint pot having hand agitator. Apply with width of spray not less than twelve (12) inches nor more than eighteen (18) inches, and with suitable pressure for particular type of paint being used. Make frequent checks to insure correct spreading rate and coating, and apply without sags, runs, or "orange peel" effect. Correct all such imperfections. Take special care to cover edges, corners and rivet heads without bridging over paint film.
- h. Shop-Coated Metal Surfaces
 - i. After delivery to site of work and prior to installation, keep all shop-coated metal work clean and free from corrosion where directed. Clean and retouch or repaint damaged areas with additional primer.
 - ii. After erection or installation of shop-coated metal work, clean and retouch all rust spots, all places where paint has been rubbed or scraped off, and all field rivets, bolt heads and nuts. After previously applied paint has hardened, and when surfaces to receive succeeding coats of paint have been perfectly cleaned and dried, apply paint in accordance with painting schedule. Allow five (5) days for hardening of final coat before submerging in water.
- i. Galvanizing shall conform to the requirements of ASTM Standards A123, A120 and A153. Abraded or otherwise damaged surfaces and cut ends of galvanized members shall touch-up with a single component, non-toxic zinc rich compound with ninety-five percent (95%) zinc in the dried film, such as "Drygalv" by American Solder and Flux Company.

MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for this item. This item shall be considered subsidiary to the other various items bid for the project.

SS.29 STRUCTURAL STEEL

GENERAL

Furnish all labor, materials, equipment and related items required to erect all structural steel as indicated on the drawings. Construction minimum standards: Texas State Department of Highways and Public Transportation, "Standard Specifications for the Construction of Highways, Streets and Bridges." Should conflicts arise between the standard specifications of government agencies mentioned herein and Contract Documents, Contract Documents shall govern. Immediately notify Engineer of all conflicts.

SUBMITTALS

The following items shall be submittal for review to the office of the Engineer:

1. Fabrication and erection shop drawings in accordance with the Standards
2. Mill test reports, certifications and test reports in accordance with the Standards
3. Welding procedures. Certification of welders in required.

CONSTRUCTION

1. Materials shall be specified in the referenced items of State Specifications as modified herein.

2. Ferrous metals shall conform to Item 442 of State Specifications and as indicated on the Drawings, except as noted below:
 - a. Article 442.14: Delete the second sentence that begins "Paint and painting shall be in accordance..."
3. High strength bolts shall conform to Item 447 of State Specifications
4. Fabrication and erection of structural steel and steel structures shall be in accordance with Item 441 of State Specifications except as noted below:
 - a. Article 441.3:
 - i. Paragraph 3. Delete second sentence
 - ii. Delete paragraph 4, 5, 8, 9 and 11.
 - iii. Revise paragraph 10 to read as follows:

"When structural members are to be fabricated by welding, a welding procedure in accordance with TXDOT Bulletin C-5 shall be submitted to the Engineer for review before any welding or fabrication is performed."
 - b. Article 441.5:
 - i. Delete paragraphs 2, 3, 6 and 7.
 - ii. Revise paragraph 4 to read as follows:

"Prior to beginning fabrication, the Fabricator shall furnish the Engineer mill test reports. The mill test reports shall reflect:

 - a. Specification to which material is produced
 - b. Heat number of material
 - c. Chemical and physical properties of the material required by the material specification.
 - d. Impact test data when required
 - e. Grain size or statement that fine grain practice was used when required."
 - c. Article 441.34; Paragraph 3: Delete reference to "Protection System II."
 - d. Article 441.26:
 - i. Delete the first two paragraphs and replace with the following:

"The Contractor shall be responsible for the method of erection used and the adequacy and safety of all equipment and procedures thereto."
 - ii. Last Paragraph: Delete the sentence:

The methods to be used shall be submitted on the erection drawings.
 - e. Article 441.28:
 - i. Revise the first paragraph to read as follows:

"441.28 Falsework. It shall be the responsibility of the Contractor to ensure that the falsework shall be properly designed for the loads to be supported and shall be substantially and safely constructed and properly maintained."
 - ii. Delete Paragraphs 2 and 3
 - f. Article 441.36: Delete
 - g. Article 441.37: Delete
5. Bolting of steel structures shall be in accordance with Item 447 of State Specifications, except as noted previously.

MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for this item. This item shall be considered subsidiary to the other various items bid for the project..

SS.30 BRIDGE RAILINGS

GENERAL

Furnish materials, labor, equipment and incidentals to construct concrete, steel, or aluminum railing or a combination of these materials on bridges, culverts, walls, or incidental structures as shown on the plans.

QUALITY ASSURANCE

1. Construction minimum standards: Texas State Department of Highways and Public Transportation, "Standard Specifications for the Construction of Highways, Streets and Bridges."
2. Should conflicts arise between the standard specifications of government agencies mentioned herein and Contract Documents, immediately notify Engineer

SUBMITTALS

1. Paint color shall be selected by the Engineer from a color chart furnished by the Contractor.
2. Before fabrication, the Contractor shall submit shop drawings for review by the Engineer.
3. The following items as called for in the related work specifications shall be submitted for review to the office of the Engineer.

PRODUCTS

1. Materials for bridge railing shall conform to the requirements of Item 450 of State Specifications, except as modified below:
 - a. Article 450.4: Delete
 - b. Article 450.5; Paragraph 1: Delete the second sentence.
 - c. Articles 450.6 and 450.7: Delete
2. Structural Tubing: All structural tubing for bridge rails shall be of the size shown on the Drawings and shall meet the requirements of ASTM A500, Grade B.
3. Material for base plates shall meet the requirements of ASTM A36.

CONSTRUCTION

1. Construction and fabrication methods and procedures shall be in accordance with Item 450 of State Specifications.
2. All railing shall have a primer coat of five mil minimum thickness Series 66 Hi-Build Epoxy line or approved equal and a finish coat of four mil minimum thickness Series 73 Endurashield III or approved equal. Minor touch up will be permitted by brush.

MEASUREMENT AND PAYMENT

Bridge railings shall be measured as the number of linear feet of completed and accepted railing. Payment shall be made at the contract bid price for railing, which price shall be full compensation for all structural shapes, paint, labor, tools and equipment; and all incidentals necessary for the completed railing in conformity with the plans and their specifications.

SS. 31 CAST STONE

GENERAL

Furnish all labor, materials, tools and equipment, including necessary inserts and anchors to install all cast stone.

SUBMITTALS

The manufacturer of cast stone shall have a minimum of five (5) years continuous operation, having experience, adequate facilities and capacity to furnish the quality, sizes and quantity of cast stone required for the project. Prior to construction, the CONTRACTOR shall submit the following items:

1. Samples of cast stone for review by Owner for texture and color
 - a. Fine grain texture similar to natural stone
2. A mix design which achieves both the strength and the surface finished desired.

- a. Compressive strength shall be not less than 4000 p.s.i.
- b. Water absorption shall not exceed eight percent (8%) by weight
- 3. Testing laboratory reports to Owner
 - a. Perform four (4) sets of tests at random times during the manufacture of cast stone
 - b. Test results shall be determined by an average of four (4) specimens per test
 - c. Testing shall be done using 6" x 12" cylinders in accordance with ASTM-C-31-69-(80), ASTM C39-81 and ASTM C642-81
 - d. When the largest aggregate in the mix design is 5/8" or smaller, tests may be performed using 2" x 2" cubes in accordance with ASTM-C170 and C97
 - e. All testing shall be at the expense of the Contractor

MATERIALS

- 1. Cement - Portland Type I or III white and/or gray meeting ASTM C150.
- 2. Fine Aggregate - Carefully graded and swashed natural sand, or manufactured granite, quartz or limestone sand meeting ASTM C33.
- 3. Coarse Aggregate - Carefully graded and washed natural gravels or crushed graded limestone or other durable stone meeting ASTM C33. Gradation may vary to achieve desired finish or texture.
- 4. Color - All colors added shall be inorganic (natural or synthetic) iron oxide pigments meeting ASTM C979 excluding the use of a cement grade carbon black pigment, and shall be guaranteed by the pigment manufacturer to be lime-proof. The amount of pigment shall not exceed ten percent (10%) by weight of the cement used.
- 5. Pointing Mortar - One (1) part non-staining cement ASTM C91, one (1) part hydrated lime ASTM C209, Type S and four (4) parts clean washed sand.
- 6. Sealant - One (1) part polyurethane joint sealant such as Percora "Dynatrol I."
- 7. Provide reinforcing as required for safe handling, setting and structural stress
 - a. New billet steel meeting ASTM A615, Grade sixty (60)
 - b. Cold-drawn steel wire meeting ASTM A82, welded wire fabric conforming with ASTM A185 or A497. Steel bar or rod material conforming with ASTM A184
- 8. Provide anchors and inserts as shown on drawings
 - a. Inserts and anchors shown on drawings are generally Hohmann and Barnard, Inc.

EXECUTION

SETTING

- 1. Set all stone accurately and in accordance with shop and setting drawings
- 2. Unless otherwise shown, set cast stone in full bed of mortar with all vertical joints flush full
- 3. Place all anchors and dowels and fill all anchor holes, dowel holes and similar holes completely with mortar.
- 4. Drench all stones with clear water just prior to setting.
- 5. After each stone has been set, all joints shall be raked to a depth of 3/4" from the face for pointing. Sponge off the face of each stone to remove any splashed mortar or mortar smears.
- 6. Set copings with unfilled vertical joints. The exterior vertical profile of these joints shall be packed with foram rod, and after wetting the ends of the stone thoroughly fill the joint full from above with mortar grout to within 3/4" of top. After mortar has set, remove packing for pointing or sealant.

PATCHING AND CLEANING

- 1. Repair of chipped or damaged cast stone shall be done by mechanics skilled in this class of work, with materials furnished by the stone manufacturer and according to his direction.
- 2. Before pointing, the face of all cast stone shall be scrubbed with a fiber brush using soap powder and water, and shall then be thoroughly rinsed with clean running water.
- 3. Remove any mortar from the face of the stone. No acids or prepared cleaners shall be used without the approval of the cast stone manufacturer.

POINTING AND CAULKING

1. Dampen all joints and carefully point to a slight concave finish. No pointing shall be done in freezing weather or in locations exposed to hot sun, unless protected properly.
2. Caulk head joints in copings with joint sealant in accordance with manufacturers instructions.

INSPECTION AND ACCEPTANCE

1. Acceptance of cast stone finish requires that color and texture shall be equal to the approval sample when viewed in good typical lighting at a distance of ten (10) feet.
2. Cast stone shall show no obvious repairs or imperfections, other than minimal color variations when viewed at a distance of twenty (20) feet.

MEASUREMENT AND PAYMENT

Payment shall be made for the Contract price for Cast Stone, which price shall be full compensation for all labor, tools, equipment, and all incidentals necessary for the completed Cast Stone in conformity with the plans and specifications