

CITY OF ALLEN, TEXAS
SPECIAL PROVISIONS
TO THE
NORTH CENTRAL TEXAS STANDARD SPECIFICATIONS
FOR PUBLIC WORKS CONSTRUCTION

CONSTRUCTION METHODS

PART III: CONSTRUCTION METHODS

The North Central Texas Standard Specifications shall be modified and clarified by the addition of the following requirements to the various items. Except when specifically stated, none of the requirements of Part III - CONSTRUCTION METHODS shall be deleted.

PART III: DIVISION 200 -SITE PROTECTION AND PREPARATION

ITEM 202.2.3 CONSTRUCTION METHODS

Add the following:

A Minimum of six (6) inches of topsoil shall be provided on all major thoroughfare medians and rights-of-way and on all earthen channel slopes.

ITEM 202.6.1 DESCRIPTION

Add the following:

The Contractor shall maintain the seeded areas including watering until a "Stand of Grass" is obtained. A "Stand of Grass" shall consist of 90% coverage, a minimum of one (1) inch in height. Re-seeding will be required in washed areas.

ITEM 202.6.3 PLANTING SEASON AND APPLICATION RATES

Delete the mixture, rate, and planting dates and substitute:

Type I: Bermuda Grass - Hulled
100 lbs/acre (April - June)

Type II: Annual Rye Grass
200 lbs/acre (September - December)

Type III: Bermuda Grass – Unhulled
80 lbs/acre (January - March/July - August)

ITEM 203.4.3 CONSTRUCTION METHODS

Add to the second paragraph the following: Unless otherwise approved in writing by the City of Allen, where excavation to grade established in the field by the Owner terminates in loose or solid rock, the Contractor shall excavate 6 inches below the required subgrade elevations for the entire roadbed width and shall backfill with suitable selected materials as indicated on the plans. Suitable selected material shall include lime treated subgrade or a base material having a plasticity index not greater than 12. Payment for such work will be made under the items of unclassified street excavation, lime treated subgrade and hydrated lime. The 6-inch lime treated subgrade or base shall be compacted to 95% density.

ITEM 203.7.3 DENSITY

Add: Embankment in the City of Allen shall be compacted to not less than 95% of the maximum density.

PART III: **DIVISION 300 - CONSTRUCTION**

ITEM 301.2.3 CONSTRUCTION METHODS

301.2.3.1 General

301.2.3.3.1 Treatment for Materials in Place

Add the following: Prior to final compaction of subgrade, samples of the subgrade material shall be collected by a testing laboratory approved by the City, and laboratory tests made to determine the amount of lime required.

The application rate for hydrated lime shall be selected to obtain at least the optimum lime percentage indicated by test method ASTM C977-83a, Appendix X1; however, not less than 30 lbs. per S.Y. shall be applied. A Geotechnical Engineer's report reflecting the recommended application rate and including supporting test data shall be submitted in writing to the CITY, for approval prior to beginning any lime treatment. Laboratory test may be waived provided a minimum of 36 lbs. per S.Y. is applied.

ITEM 301.2.3.6 COMPACTION

Add the following: The lime treated subgrade shall be moist cured until covered by other base or pavement up to fourteen (14) days after final compaction. After 14 days without covering an application of 0.10 to 0.20 gallons per square yard emulsified asphalt shall be applied at the Contractor's expense. Reapplication of

emulsified asphalt maybe required if lime treated subgrade is not covered shortly after first application. Lime treated subgrade may be covered by other base or pavement when density of 95% of maximum at optimum moisture content is obtained.

ITEM 301.3 PORTLAND CEMENT TREATMENT

Add the following: Portland cement modification of subgrade soils is not approved in Allen. Subgrade soils means natural ground or embankment encountered in the construction.

ITEM 303.3 MIX DESIGN AND MIXING CONCRETE FOR PAVEMENT

303.3.5 Mixing and Delivery

303.3.5.3 Central Mixing Plant

Add the following: When a fly ash admixture is used with Type I cement in the production of Portland cement concrete, separate silos shall be provided for fly ash and cement and provisions shall be made for individual measurements.

303.5.6 Finishing

Delete 303.5.6.1 and add the following: The finished concrete pavement construction under these specifications is expected to meet certain quality standards for surface of the concrete including the durability, texture, riding surface and appearance. The surface must be durable, firm, dense and well bonded to the aggregate to maintain an appearance and texture which is satisfactory to the Owner. Concrete pavement having a poor surface which has spalled (exposed aggregate) due to poor quality paste, high water-cement ratio, over-vibration, improper curing, extreme weather or any other reason, or does not have a satisfactory riding surface shall be removed and replaced at the Contractor's expense. It is extremely important that the pavement have a good rideable surface, free from undulations and rough joints. The City Engineer shall determine the acceptability of the pavement.

303.5.6.1 Machine Finishing

Machine finishing of pavement shall include the use of power-driven spreaders, reciprocating type power-driven vibrators, power-driven transverse strike-off, and screed.

The concrete pavement shall be consolidated by a reciprocating type mechanical vibrator. As soon as the concrete has been spread between the forms, the mechanical vibrator shall be operated to consolidate the

concrete and remove all voids. Hand manipulated vibrators shall be used for areas not covered by the mechanical vibratory unit.

The transverse finishing machine shall first be operated to compact and finish the pavement to the required section and grade, without surface voids. The machine shall be operated over each area as many times and at such intervals as directed. At least two trips will be required and the last trip over a given area shall be a continuous run of not less than 40 feet. After completion of finishing with the transverse finishing machine a transverse drag float may be used.

After the floating has been completed and the excess water removed, but while the concrete is still plastic, the surface of the concrete shall be tested for trueness with an approved 10-foot steel straightedge furnished by the Contractor. The straightedge shall be operated from the side of the pavement, placed parallel to the pavement centerline and passed across the slab to reveal any high spots or depressions. The straightedge shall be advanced along the pavement in successive stages of not more than one-half its length. Practically perfect contact of the straightedge with surface will be required, and the pavement shall be leveled to this condition, in order to insure conformity with the surface test required below after the pavement has fully hardened and to insure a smooth rideable surface. Any correction of the surface required shall be accomplished by adding concrete if required and by operating the longitudinal float over the area. The surface test with the straightedge shall then be repeated.

After completion of the straightedge testing and surface correction, the surface of the pavement shall be finished by an approved method. Methods available for pavement surface finish include a burlap drag finish, a broom finish or belt finish. Unless otherwise shown on the plans, the pavement surface shall be finished with the burlap drag.

303.5.6.1.4. Burlap Drag Finish

Add the following as 303.5.6.1.4: If the surface texture is to be a drag finish, a drag shall be used; it shall consist of a seamless strip of damp burlap or cotton fabric, and it shall produce a uniform surface of gritty texture after dragging it longitudinally along the full width of pavement. For pavement 16 feet or more in width, the drag shall be mounted on a bridge which travels on the forms. The diameter of the drag shall be such that a strip of burlap or fabric at least 3 feet wide is in contact with the full width of pavement surface while the drag is used. The drag shall consist of not less

than two layers of burlap with the bottom layer approximately 6 inches wider than the upper layer. The drag shall be maintained in such a condition that the resultant surface is of uniform appearance and reasonable free from grooves over 1/16-inch in depth. Drags shall be maintained clean and free from encrusted mortar. Drags that cannot be cleaned shall be discarded and new drags substituted.

303.5.6.1.5: Broom Finish

Add the following as 303.5.6.1.5: If the surface texture is to be a broom finish, it shall be applied when the water sheen has practically disappeared. The broom shall be drawn from the center to the edge of the pavement with adjacent strokes slightly overlapping. The broom operation shall be so executed that the corrugation produced in the surface shall be uniform in appearance and not more than 1/16-inch in depth. Brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation. The surface thus finished shall be free from rough and porous areas, irregularities, and depressions resulting from improper handling of the broom. Brooms shall be the quality, size, and construction and shall be operated to produce a surface finish meeting the approval of the Owner. Subject to the approval of the Owner, the Contractor may be permitted to substitute mechanical brooming in lieu of the manual brooming as herein described.

303.5.6.1.6: Belt Finish

Add the following as 303.5.6.1.6: If the surface texture is to be belt finish, when straightedging is completed and after sheen has practically disappeared and just before the concrete becomes non-plastic, the surface shall be belted with a 2-ply canvas belt not less than 8 inches wide and at least 3 feet longer than the pavement width. Hand belts shall have suitable handles to permit controlled, uniform manipulation. The belt shall be operated with short strokes transverse to the centerline and with a rapid advance parallel to the centerline.

303.5.6.2 Hand Finishing

Hand finishing of concrete pavement will be permitted in areas where it is not practical or possible to construct with finishing machines. These areas include, but are not limited to, intersections, left turn lanes, crossovers, transition areas and where the pavement width is not uniform. In all hand finished areas, one (1) extra sack of cement per cubic yard of concrete

shall be used in the mix. In hand finished areas, the concrete shall be struck off with an approved strike-off screed to such elevation that when consolidated and finished the surface of the pavement shall conform to the required section and grade. The strike template shall be moved forward with a combined transverse and longitudinal motion in the direction the work is progressing, maintaining a slight excess of material in front of the cutting edge. The concrete shall then be tamped with an approved tamping template to compact the concrete thoroughly and eliminate surface voids and the surface screeded to required section. After completion of a strike-off, consolidation and transverse screeding; a hand-operated longitudinal float shall be operated to test and level the surface to the required grade.

Workmen shall operate the float from approved bridges riding on the forms and spanning the pavement. The longitudinal float shall be held in contact with the surface and parallel to the centerline and operated with short longitudinal strokes while being passed from one side of the pavement to the other. If contact with the pavement is not made at all points, additional concrete shall be placed, if required, and-screeded, and the float shall be used to produce a satisfactory surface. Care shall be exercised to keep the ends of the float from digging into the surface of the pavement. After a section has been smoothed so that the float maintains contact with the surface at all points in being passed from one side to the other, the bridges may be moved forward half the length of the float and the operation repeated. Other operations and surface tests shall be as required for machine finishing.

303.5.6.1.2 Edging at Forms and Joints

After the final finish, but before the concrete has taken its initial set, the edges of the pavement along each side of each slab, and on each side of transverse expansion joints, formed joints, transverse construction joints, and emergency construction joints shall be worked with an approved tool and rounded to the radius required by the plans. A well-defined and continuous radius shall be produced and a smooth, dense, mortar finish obtained. The surface of the slab shall not be unduly disturbed by tilting of the tool during use.

At all joints, any tool marks appearing on the slab adjacent to the joints shall be eliminated by brooming the surface. In doing this, the rounding of the edge shall not be disturbed. All concrete on top of the joint filler shall be completely removed.

All joints shall be tested with a straightedge before the concrete has set, and correction shall be made if one side of the joint is higher than the other or if they are higher or lower than the adjacent slabs.

ITEM 303.8 PAVEMENT TESTING AND EVALUATION

303.8.2 Pavement Thickness Test

Delete in its entirety and substitute therefore the following:

Upon completion of the work and before final acceptance and final payment shall be made, pavement thickness tests shall be made by the Contractor. Tests shall be made at 400 foot spacings along the length of the pavement. In the event a deficiency in the thickness of pavement is revealed, two (2) subsequent tests necessary to isolate the deficiency shall be made - one at a jointed section prior to the deficient station and one at a jointed section following the deficient station. Additional tests shall be obtained as necessary, at jointed section intervals to isolate the deficient area. Removal and replacement of concrete shall extend to joint boundaries, the full width of pavement section. If the average thickness of pavement in a particular section is less than called for on the plans, the pavement section shall be removed and replaced with the correct thickness, extending to joint boundaries, the full width of the pavement section, at the Contractor's entire expense. No additional payment over the contract unit price shall be made for any pavement of a thickness exceeding that required on the plans.

303.8.3 Pavement Strength Test - Amend the first paragraph to read: During the progress of the work, the Inspector or a commercial laboratory shall cast test cylinders or beams to maintain a check on the strengths of the concrete being placed. Add the following sentence and table: A table titled "PAVEMENT STRENGTH REQUIREMENTS", is provided showing the required pavement thickness, 7-day strength, 28-day strength, minimum cement factor and maximum slump for each street type to be constructed in Allen. Requirements for high strength pavement and less thickness is also shown, if required by the City.

Add to the 5th paragraph: Test cores shall be obtained within five (5) working days after the 28-day test results have been provided by the commercial laboratory. All test cores shall be obtained by a commercial laboratory, at the Contractors expense. One (1) core shall be obtained in the immediate area of the deficiency and two (2) additional cores shall be obtained - one at a jointed section prior to the deficient station and one at a jointed section following the deficient station: Additional cores shall be obtained as necessary, at jointed

section intervals to isolate the deficient area. Removal and replacement of concrete shall extend to joint boundaries, the full width of pavement section.

Amend the last paragraph on Page 293 to read "Pavement not meeting the minimum specified 28-day strength after cores have been tested shall be removed and replaced at the Contractor's expense." Delete the table and the paragraph below it at the top of Page 294.

DIVISION 500: UNDERGROUND CONSTRUCTION AND APPURTENANCES

ITEM 504.3.1 EXCAVATION

504.3.1.1 General

On construction projects in the City of Allen in which excavation will exceed a depth of five feet, the bid documents and the contract must include provisions specifications for detailed plans for excavation safety systems. The term "excavation" includes trenches, structural or any construction which has earthen excavation made below the surface of the ground whereby the depth is greater than the width, but the width is less than 15 feet. A trench may consist of the void between the wall of the excavation and the wall of a structure, concrete form, pipe, etc., provided the structure wall or other type of structure is within 15 feet of the excavation wall.

Prior to execution of a contract the Contractor will be required to submit an excavation safety plan for the project. This excavation safety plan must be designed and sealed by a professional engineer registered in the State of Texas. The professional engineer registered in the State of Texas. The professional engineer shall not be a principal in the contracting company nor have a monetary interest in the Contractor's firm. The Contractor is responsible for obtaining borings and soil analysis as required for plan design. The excavation safety plan shall be designed in conformance with occupational Safety and Health Administration (OSHA) standards and regulations. Contracts will not be awarded with unsatisfactory safety records. Evaluation will be based on:

- (a) Contractors' safety record based on Occupational Safety and Health Administration (OSHA) records.
- (b) Based on past performance related to safety on City of Allen projects.
- (c) Contractors will be required to submit a notarized affidavit with their bid attesting to their safety record.

After evaluation of the excavation safety plan, the City Engineer will forward the reviewed plan to the appropriate City construction division for use in inspection. Plans for construction will not be released by the City Engineer until this plan is reviewed. Changes in the excavation safety plan after initiation of construction may not be cause for extension of time or change order, and will require the same review process. Contractor accepts sole responsibility for compliance with all applicable safety requirements. The review is only for general conformance with OSHA safety standards. Release of the excavation safety plan by the City Engineer does not relieve Contractor from any or all construction means, methods, techniques and procedures; and any property damage or bodily injury (including death) that arises from use of the excavation safety plan from Contractor's negligence in performance of contract work, or from City's failure to note exceptions to the excavation plan, shall remain the sole responsibility and liability of the Contractor. The Contractor agrees to indemnify and hold harmless the City, its officers, employees and agents from and against any and all claims for property damage or bodily injury (including death) that arise out of or result from any act or omission pertaining to any excavation work, whether or not caused in whole or in part by the negligent act or omission of the City, its officers, employees of agents. A separate pay item for excavation safety and support shall be included in the bid documents. A separate pay item for the Engineer's design of the safety and support system shall also be included.

Contractors have three ways to meet OSHA Standards for excavation safety. They are as follows:

- (1) Minimum Angle of Repose - the greatest angle above the horizontal plane at which a material will lie without sliding.
- (2) Utilization of Trench Box.
- (3) Shoring, Sheet piling and Bracing Methods.

The following minimum design criteria must be followed by Contractors electing to utilize the Minimum Angle of Repose:

- (1) Geotechnical Professional Engineers design including:
 - (a) Soil borings of sufficient number and depth to determine appropriate soil and water conditions.

- (b) Soil pressure diagrams and angle of repose, if appropriate, for all soil condition encountered.
 - (c) Minimum loading criteria for incorporation into design.
 - (d) Plans and specifications signed, sealed and dated by Professional Engineer.
- (2) A detailed plan of the excavation area and the impact on existing right-of-way and infrastructure, if any.

Contractors electing to utilize a Trench Box must submit:

- (1) Physical dimensions, materials, position in the trench, expected loads, and the strength of the box, sealed by a Registered Professional Engineer.

Contractors electing to utilize Shoring, Sheeting, and Bracing must submit:

- (1) Dimensions and materials of all uprights, stringers, cross-bracing and spacing required to meet OSHA requirements, sealed by a Registered Professional Engineer.

504.3.1.2 Measurement and Payment

Add the following as 504.3.1.2: Measurement and Payment of Excavation Safety System installed shall be based on the lump sum amount as provided in the Proposal and Bid Schedule for Furnishing and Installing Excavation Safety Systems. The payment shall be full compensation for all planning, materials, equipment, fabrications, installation, recovery and all incidental work required. All excavation and backfill in addition to that specified elsewhere in these specifications shall be considered subsidiary to this bid item.

Measurement and Payment of Excavation Safety System Design shall be based on a lump sum amount as shown in the Proposal and Bid Schedule. The payment shall be full compensation for boring, testing, design and preparation of a Site Specific Excavation Safety Plan.

ITEM 504.4.6 GRADES (Add the Following)

Construction stakes furnished by the Owner shall be limited to establishment of benchmarks and centerline or baseline survey at one hundred feet intervals with cut stakes and hubs.

ITEM 504.5 EMBEDMENT (Add the Following)

504.5 Embedment: Rock Cuttings or Sand will not be permitted in the pipe bedding for sanitary sewer or waterlines in the City of Allen.

504.5.2.15 Class "H" Embedment: The embedment consists of a completely encased pipe with Standard Crushed Stone, Grade 4. Class "H" Embedment shall be used on the P.V.C. Sanitary Sewer Pipe installed within the City of Allen.

After the trench has been cut to a depth below the barrel of the pipe a distance of 1/8 Bc (3 inches minimum and 6 inches maximum), the bedding layer shall be brought to a point slightly above grade with compacted crushed stone. Bell holes shall be formed and the pipe laid and joined as specified. The stone shall be brought up in uniform layers of six inches to a point six inches over the top of the pipe when compacted. On PVC Pipe 18 inches through 27 inches in diameter the crushed stone shall be brought up in uniform layers to a point nine inches over the top of the pipe when compacted.

ITEM 504.7.2.2 FINAL TRENCH BACKFILL (Add the Following)

The material used in the backfill shall be pulverized to the extent necessary to produce a free flowing material free of clay balls larger than 6-inch diameter.

ITEM 506 WATER CONDUIT INSTALLATION

506.3 Laying Water Conduit: Delete Paragraph No. 3 in its entirety and substitute therefore the following: Valves for installation in the City's distribution system shall be installed by direct burial as shown on the standard detail sheets and shall be provided with valve boxes for operation of the valve.

506.5 Hydrostatic Test: Delete in Its entirety and substitute the following:

Before being accepted, all gray iron, ductile iron, plastic, and asbestos-cement pipe lines constructed shall be tested with a hydraulic test pressure of not less than 150 psi (1034.3 kPa) maintained over a period of not less than four hours unless otherwise specified by the OWNER. Concrete pressure pipe shall be tested with a hydraulic test pressure of 120 percent of the design pressure. Steel pressure pipe shall be tested with a hydraulic test pressure not to exceed 150 percent and not less than 120 percent of the designed working pressure. The rate of leakage of all pipe tested shall not exceed 11.65 gallons per inch of nominal diameter of pipe per mile (0.01 cu. m. per cm of nominal diameter per km) over a 24-hour period. Water lines of materials in combination shall be tested for the type of pipe (material) with the least stringent hydraulic test pressure and maintained over a period of not less than four hours. Refer to the

provided table, "Allowable Leakage for 4 Hours at Test Pressure of 150 PSI," to determine acceptable test values.

All newly laid pipe, or any valved section thereof, shall be subjected to the above test with the gage located at the lowest point, a correction factor of minus 0.431b/vert. ft. (0.64 kg/vert. m) shall be made.

If the tests indicate a leakage in excess of the above rate, then the CONTRACTOR shall be required to find the leak and repair same. Even if the test requirements are met, all apparent leaks shall be stopped. Allowance for valve leakage to the atmosphere may be determined as no more than 0.0078 gal/hr/in (0.012 l/hr/cm) of nominal valve size. The OWNER cannot guarantee that an old existing system valve shall hold the required pressure. The CONTRACTOR has the option of plugging the new main prior to tying onto the existing system and testing against the old valve. If the old valve does not hold against the test pressure, the CONTRACTOR must cut and plug the new main; hydrostatic test the new main; then complete the tie-in. Internal test plugs may be used in larger R.C. mains in lieu of plugging prior to making a tie-in.

The cost of testing, repairing and the leaks, including all uncovering, repairing, backfilling and incidental work, shall be at the expense of the CONTRACTOR.

506.7 Purging and Disinfection of Water Mains

General: Delete in its entirety and substitute therefore:

On all water lines installed in the City of Allen the Contractor shall be responsible for Purging, Testing and Sterilization of the completed lines.

506.7.3.1 (b)(1) Delete in its entirety and substitute:

The "polly-pig" method of purging shall be used for all water main construction by the Contractor. The "polly-pig" shall be a soft bare swab two pounds per cubic foot. (2 lbs/ft³), double dish design with polypropylene rope, both ends. "Polly-Pig" will be pulled at time of installation.

506.9.2 Payment:

Concrete blocking shall not be paid for separately but shall be included in the various items of the Proposal and Bid Schedule.

PART III: DIVISION 700 - STRUCTURES

ITEM 702 STRUCTURES

Heading for Table on Page 702.4 shall read: TABLE 702.2.4..2(a) - CLASSES OF CONCRETE.

PART III: DIVISION 800 - MISCELLANEOUS CONSTRUCTION AND MATERIALS

ITEM 801.2 METAL BEAM GUARD FENCE

Add the following: Reflectorized Marking shall be applied to metal beam guardrail at locations shown on the plans. To apply properly, the following, equipment and accessories are recommended:

801.2.1 Heat Activated Adhesive

- (1) Heat lamp vacuum applicator with temperature control.
- (2) Remove protective liner from adhesive and place glossy side of liner over the sign face. Sheeting and liner may require perforation to aid in air evaluation.

801.2.2 Pressure Sensitive Adhesive

- (1) 48" Interstate Squeeze Roll Applicator.
- (2) Hand application. To obtain maximum initial adhesion use firm pressure with 2" (5 cm) rubber roller or plastic squeeze. Multiple, heavy overlapping strokes should be used. Resqueeze all edges.

ITEM 804.2.3 PREPARING STRUCTURES FOR PAINT

804.2.3.1 Descaling, Cleaning and Preparation of Surfaces - Add the following: Prior to painting concrete or masonry walls the surface must be thoroughly cured and dry for proper adhesion of paint. Preparation of work shall include either of the' following:

- (1) The surface shall be thoroughly washed with a solution of one (1) gallon Muratic Acid to ten (10) gallons H₂O (Caution: (Always add acid to H₂O rather than H₂O to acid). Rinse thoroughly with clear water and paint while damp.
- (2) Treatment of surface with masonry conditioner such as a clear alkali-resistant soya alkyd binder type sealer or as recommended by paint manufacturer.

804.2.5.5 Finish Coats - Add the following: On masonry walls which are painted, the total dry film thickness shall be 6 mils (2 coats applied at 8 mils wet and spreading rate = 200 square feet per gallon based on 36% + 2% Volume Solids). The thickness shall be tested using a Wet Film Thickness Gage.

ITEM 805.3.1 MATERIALS GENERAL

Add the following: In the City of Allen, conduit for street lighting shall be 1-1/2 inch PVC pipe and for traffic control shall be 3-inch PVC pipe, meeting the requirements of Special Provision, Item 2.12.22.