8.0 CONCRETE FOUNDATIONS FOR SIGNAL STRUCTURES

8.1 Concrete foundations for signal structures shall be located so that the closest structure leg is a minimum of six (6) feet from the face of vertical curbs. The Contractor shall probe before excavating foundations to determine the location of utilities and structures. Foundations shall be paid for once, regardless of extra work caused by obstructions. The Contractor shall furnish all supplementary items necessary for its proper installation.

8.2 Excavation for all required foundations shall be done in accordance with lines and depths indicated on the plans. All loose material shall be removed from the excavation before the concrete is placed. Any water shall be removed by pumping or bailing. The use of explosives will not be permitted.

8.3 Foundations shall be constructed to the dimensions shown on the plans or as directed by the Traffic Engineer. The Contractor shall be required to insure that the top of the finished foundation is exactly level and formed. Anchor bolts and conduits shall be held rigidly in place by a template until the concrete is set. A mechanical vibrator shall be used for compacting and working the concrete. After the concrete has been placed and the top struck off, it shall be covered with wet cotton or burlap mats, for not less than ninety-six hours. All bracing and templates for anchor bolts shall remain in place for ninety-six (96) hours after the concrete is poured. During that time, the anchor bolts and conduit shall not be subjected to any applied strain. The Contractor shall furnish the Traffic Engineer a level for the purpose of inspecting the foundation. Signal pole shall not be installed on any foundations until approval has been given by the Traffic Engineer.

8.4 Backfill shall be tamped with mechanical tamps in 6-inch layers to the density of the surrounding ground. Where excavation is made in the surfaced shoulder, the shoulder shall be replaced with material equal to the original composition.

8.5 All excavated material not required for backfill shall be promptly removed and disposed of by the Contractor outside the limits of the project. The work site shall be kept clean and neat at all times.

8.6 No concrete shall be placed when the atmospheric temperature is at or below 40 degrees F. (taken in shade away from artificial heat) unless permission to do so is given by the Traffic Engineer.

9.0 INSTALLATION OF TRAFFIC SIGNAL STRUCTURE

9.1 The Contractor shall provide a complete traffic signal structure location plan/or schedule showing all pertinent details for each standard. This plan shall be approved by the Traffic Engineer before any structure in installed.

9.2 The Contractor shall examine foundations, which are to receive traffic signal standards, to assure proper anchorage alignment. Report any discrepancies to the Traffic Engineer.

9.3 Signal poles shall be leveled and tightly secured to the foundation before the structure is placed on the base. If shims are required for leveling, total shim height shall not exceed 1/2 inch. Foundation anchor bolts shall extend a minimum of three (3) threads through each nut in the base.

9.4 Except as modified herein, erection shall be in accordance with the applicable Specifications and Standards of the AISC Manual of Steel Construction. Erecting equipment shall be suitable for the work and shall be in first class condition. Where parts cannot be assembled or fitted properly as a result of errors in fabrication or deformation due to handling or transportation, such condition shall be reported immediately to the Traffic Engineer for approval of the method of correction obtained. The straightening of plates and angles or other shapes shall be approved methods. Bent or damaged heat-treated parts will be rejected. Steel work shall be drained properly. Pockets in structures exposed to the weather shall be filled with an approved waterproof material. The erector will be responsible for shrinkage and distortion of all butt welds. Moment connections in the field on beams and girders shall have a minimum of 3/16 inch root opening for all flange preparations prior to welding. Loose joints shall be corrected by cutting with a hand guided torch if necessary.

9.5 The steel structure frame shall be carried up true as shown and all match marking shall be followed. Temporary bracing shall be used wherever necessary to support all loads to which the structure may be subjected, including equipment, operation, and material loading. Such bracing shall be left in place as long as may be required for safety. The various members, after being assembled, shall be aligned and adjusted accurately before being fastened. Fastening of splices on compression members shall be done after the abutting surfaces have been brought completely into contact. No welding or bolting shall be done until as much of the structure as will be stiffened thereby has been aligned properly.

9.6 Bearing surfaces and surfaces which will be in permanent shall be cleaned before the members are assembled. Bearing plates shall be set in exact position and shall have a full and even bearing upon the concrete. As erection progresses, the work shall be bolted to take care of all dead load, wind and erection stresses. Splices will be permitted only where indicated. All erection bolts used in welded construction may be tightened securely and left in place. If removed, the holes shall be filled with plug welds.

9.7 Field bolting shall be in accordance with the requirements specified for shop fabrication. Unfair holes shall be corrected by reaming. Where the surface of a bolted part has a slope of more than 1:20 a beveled washer shall be used to compensate for the lack of parallelism. Bolt heads and nuts shall be drawn tight against the work with a suitable wrench not less than 15 inches long. Bolt heads shall be tapped with a hammer while the nut is being tightened.

9.8 Field welding shall be as specified for shop fabrication of welded construction. Any shop paint on surfaces adjacent to joints to be field welded shall be wire brushed to reduce the paint film to a minimum.

9.9 Field Painting: Surfaces where the shop coat of paint has been damaged shall be retouched using the same system as the original shop painting. The cleaning, pretreatment, and priming of welds and the areas adjacent thereto shall be done promptly after the acceptance of the weld as specified under the shop painting. If required, Controller cabinets shall be painted. Cabinets must be cleaned and treated with a bonding agent before finish coat is applied. Bonding agent shall be of the type condusive for adherence of paint to aluminum surfaces, and shall be approved by the Traffic Engineer before use is permitted.

9.10 Contractor shall furnish bonding agent at his expense. Contractor shall be required to follow manufacturer's specifications and directions for use of all materials used in the painting process.

9.11 High Strength Steel Bolts: The allowable working stresses for A325 bolts shall be given in Table 2 of the Specifications for Structural Joints using ASTM A325-N or A490-N bolts.

9.12 Bolted parts shall fit solidly together when assembled and shall not be separated by gaskets or any other interposed compressible material. When assembled, all joint surfaces, including those adjacent to the bolt heads, nuts or washers, shall be free of scale, except tight mill scale, and shall also be free of burrs, dirt and other foreign material that would prevent solid seating of the parts. Each fastener shall be tightened to provide, when all fasteners in the joint are tight, at least the minimum bolt tension shown in Table 3 in the Specifications for Structural Joints using ASTM A325 or A490 bolts for the size of fastener used. Threaded bolts shall be tightened with properly calibrated wrenches or by the "turn-of-nut" method. Bolts may be installed without hardened washers when tightening is by the "turn-of-bolt" method. Any bolt tightened by the calibrated wrench method (or by torque control) shall have a hardened washer under the element (nut or bolt head) turned in to a point not closer than 7/8 of the bolt diameter from the center of the washer. Calibrated wrench tightening and "turn-of-nut" tightening shall conform to the Specifications for Structural Joints using ASTM A325 or A490 bolts.

9.13 Grouting: The Contractor shall perform all work required to complete the grout work associated with installing the signal structure and furnish all supplementary items necessary for its proper installation. A waterproof sealer shall be required between the controller cabinet and the controller foundation.

10.0 INSTALLATION OF SIGNAL HEADS

10.1 The Contractor shall be required to assemble all signal head units as specified in the plans or as directed by the Engineer. The Contractor shall mount the signal heads within standards level and plumb. The Contractor shall position and secure the signal heads so they are visible at a minimum of 200 feet from the stop bar.

10.2 No Alternate signal head mounting hardware will be acceptable by the Traffic Engineer.

10.3 All signal heads or parts of heads not in operation shall be covered with burlap until placed into operation. When the signal heads become operational, all existing heads no longer required shall be removed immediately.

10.4 All mast arm heads installed shall require ASTRO-BRAC mounting. The Contractor shall be required to drill the mast arm at the point where the wire enters the mast arm.

10.5 All pipework in each signal head assembly shall be completely tight. Signal and pedestrian heads shall be securely tightened immediately after signal head assembly has been installed. If any signal head assembly is found to be loose or asymmetrical in any manner, the Contractor shall be required to remove and rebuild the signal head assembly to the satisfaction of the Engineer.

10.6 All signal cables from the heads to the pole base shall be totally enclosed within the signal mounting hardware.

11.0 INSTALLATION OF GRAPHICS/SIGNS

11.1 Perform all work required to compelte the identifying graphics/signs indicated by the plan details and furnish all supplementary items necessary for their proper installations.

11.2 Installation: The Contractor shall clean all surfaces to which graphics are to be applied according to manufacturer's written instructions. Level grid lines of tape shall be incorporated for graphic application. All copy shall be set in normal letter spacing and standard inter-work spacing shall be made as required by the Traffic Engineer.

12.0 PAINT AND PAINTING

12.1 All poles and bases shall be painted with two coats of Town of Addison "Brushing Brown" paint at the time of installation. The metal-pipe conduit and exposed conduit fittings which are not galvanized shall be given one coat of No. 802 Aluminum paint after they are in place.

12.2 No painting will be required for the signal heads black in color except those parts on which the paint has been scratched or marred, and such parts shall be given two coats of high-grade enamel or paint of the same color as the factory paint.

13.0 PRESERVATION OF LANDSCAPING, SPRINKLER SYSTEMS, AND OTHER PRIVATE PROPERTY / PUBLIC PROPERTY

13.1 The Contractor shall assume full responsibility for the preservation of the existing landscaping (sod, private property at the site during the installation of items in this Contract Document. Damaged landscaping, sprinkler systems and other private property shall be replaced by the Contractor at his own expense, to the satisfaction of the Traffic Engineer.

14.0 REMOVAL AND REPLACEMENT OF CURBS AND WALKS

14.1 The Contractor shall secure permission from the proper authority and the approval of the Traffic Engineer before cutting into or removing any walks or curbs which might be required in making the installation.

14.2 After the work is completed, the Contractor shall restore any curbs or walks which have been removed to the equivalent of, or better than, their original condition and to the satisfaction of the Traffic Engineer.

15.0 SAMPLING AND TESTING

15.1 Initial testing of all materials, construction items, or products incorporated in the work will be performed at the direction and expense of the authority including initial compaction and density tests deemed necessary in connection with the construction of embankment, backfill of structures, excavation.

15.2 In the event a material, construction item, product incorproated in the work, embankment, backfill, excavation or any other item tested fails to satisfy the minimum requirements of the initial test described above, appropriate prove-out tests shall be made as directed by the Traffic Engineer to determine the extent of the failure and to verify that the corrective measures have brought the item up to specification requirements. The cost of all testing necessary to determine the extent of the failure and the adequacy of the corrective measures shall be the responsibility of the Contractor.

15.3 The failure of the proper authority to make any tests of materials shall in no way relieve the Contractor of his responsibility of furnishing materials conforming to the specifications.

NO.	REVISION	BY	DATE

DESIGNED BY: ________
DRAWN BY: ________
CHECKED BY: ________
SCALE: ________
DATE: ________

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GENERAL NOTES

Scale : NONE

SHEET NO.
OF SHEETS
JOB NO.