15.4 Tests, unless otherwise specified, shall be made in accordance with the latest methods of the American Society for Testing and Materials. The Contractor shall provide such facilities, as the Traffic Engineer may require, for the collecting and forwarding of samples and shall not use the materials represented by the samples until tests have been made. The Contractor shall furnish adequate samples without charge.

15.5 Concrete

15.5.1 All concrete materials, reinforcing steel, and preparation shall be in accordance with the requirements of the Standard Specifications for Public Works Construction, North Central Texas.

15.6 Vehicle Loop Detectors

15.6.1 Prior to termination of the shielded, twisted pair loop lead-in cables at the controller cabinet, insulation tests shall be made with an insulation test set applying not less than 500 volts D.C. to the completed loop detector. A minimum resistance of 1 megohm shall be obtained.

15.6.2 After the above insulation tests are completed and the lead-in cable has been terminated in the cabinet, the Contractor shall assist the Traffic Engineer in determining the loop inductance of each loop detector installation. The Contractor shall furnish a loop detector analyzer which shall determine the total inductance of the loop in the pavement and the associated lead-in cable and shall also be used in determining the percentage shift in loop inductance for various size vehicles that may be actuating the detector.

15.7 Signal Cables

15.7.1 All cables shall be checked for insulation resistance upon installation and prior to termination. The tests shall be made with a test set operating at a minimum of 500 volts D.C. applied to the conductors.

15.7.2 Each conductor in the multiconductor signal cables shall be tested for insulation resistance relative to each other and to the outer covering of the cable. The following minimum acceptance values for insulation resistance shall be obtained:

No. 8 AWG, Type THW	592 Megohms/1000 Ft.
No. 12 AWG, Type THW	668 Megohms/1000 Ft.
12, NO. 12 AWG Conductors	1018 Megohms/1000 Ft.
15, No. 12 AWG Conductors	1018 Megohms/1000 Ft.
20, No. 12 AWG Conductors	1141 Megohms/1000 Ft.
25, No. 12 AWG Conductors	1141 Mehohms/1000 Ft.

16.0 WARRANTIES/GUARANTEES

16.1 The Contractor guarantees all work performed and materials furnished under this project for a period of twelve (12) months following the date of acceptance. In addition, he shall furnish any normal manufacturer warranties with effective beginning dates the same as the date of final project acceptance.

17.0 TRAFFIC SIGNAL MAINTENANCE DURING CONSTURCTION

17.1 While performing work under this contract, Contractor bears the sole rise of loss for damage to or destruction of any traffic signal equipment, appurtenances, on operations that were not to be replaced or installed under this contract but which are damaged or destroyed through the fault or negligent act of Contractor, and Contractor shall replace such damaged or destroyed equipment, etc., at no cost to the authority, regardless of whether or not the damaged or destroyed equipment, etc., was a part of this contract or any warranties under this contract. Upon written acceptance by the authority of a particular intersection of work, Contractor's responsibility for the intersection under this paragraph shall cease.

17.2 The Contractor shall provide, at his expense, tempory signal cable systems and signals mounted on the span wires, mast arms, portable bases, or other locations as necessary during the project to insure that signal head displays are always in operation. All such temporary signals shall be finished in apperance, meet the requirements of the Texas Manual on Uniform Traffic Control Devices (TMUTCD), and be approved by the Traffic Engineer.

17.3 The Contractor's responsibility for full operation and maintenance of all traffic signal equipment shall begin when he starts any type of work which affects active intersection control at the first intersection and shall extend through the period of project final acceptance of each intersection. This maintenance responsibility includes existing controllers/masters, existing interconnect and cabling system, existing signal hardware installed, new cabling controllers/masters, new signal hardware installed, new cabling system, and other hardware elements which are considered part of either the existing or new traffic signal system.

17.4 The Contractor shall utilize qualified personnel to respond to all trouble calls and to repair any malfunctions. A local telephone number (not subject to frequent changes) where trouble calls are to be received on a 24-hour basis shall be provided to the Traffic Engineer by the Contractor. The Contractor's response to reported trouble calls shall be within a reasonable travel time from an Addison address, but not more than two (2) hours maximum. Appropriate repairs shall be made within 12 hours.

17.5 It is recognized that the City may continue to make a first response to any trouble call. Action on such response will, however, be limited to placing the intersection on flash, replacing load switches or detector amplifiers, erecting temporary control devices, requesting immediate traffic control by uniformed police officer, or other such action deemed necessary to provide a safe operation. Such action will in no way relieve the Contractor of his operation and maintenance responsiblity.

17.6 The Contractor shall be required to provide adequate police traffic control assistance for planned controller change-outs or any other operational procedures, when requested by the Engineer. Police assistance shall be arranged by the Contractor directly, at least twenty-four (24) hours in advance. If the Engineer discovers that the Contractor has failed to provide adequate police assistance, the Engineer may order additional assistance. Police traffic control assistance, for any purpose, shall be the financial responsibility of the Contractor, regardless of who obtains the assistance.

18.0 BARRICADES

18.1 The Contractor shall comply with all the requirements of the TMUTCD.

18.2 The Contractor shall have the responsibility to provide and maintain all warning devices and take all precautionary measures by law to protect persons and property while said persons or property are approaching, leaving, or within the work site of any area adjacent to said work site. No separate compensation will be paid to the Contractor for the installation or maintenance of any warning devices, barricades, lights, signs, or any other precautionary measure required by law for the protection of persons or property, including off duty police officers.

18.3 The Contractor shall assume all duties owed by the authority to the general public in connection with the general public's immediate approach to and travel through the work site and the area adjacent to said work site.

18.4 Where the work is carried on, in, or adjacent to, any street, alley, sidewalk, public right-of-way or public place, the Contractor shall at his own cost and expense provide flagmen and watchmen and shall furnish, erect, and maintain such warning devices, barricades, lights, signs, and other precautionary measures which shall not cease until the project has been accepted by the governing Authority.

19.0 AS-BUILT DRAWINGS

19.1 The City shall furnish two (2) sets of Construction Drawings to the Contractor at the time construction is commenced. These prints shall be marked-up by the Contractor throughout the construction period, indicating all changes, revisions, and additions to the work, including field relocations of work concealed from view and conductor cable lengths. Upon completion of the work at each intersection, the Engineer shall deliver the As-Built drawings to the Traffic Engineer within ten (10) working days after the turn-on/cut-over date.

20.0 MEASUREMENT AND PAYMENT

20.1 The traffic signal installation as indicated on the Plans and as described herein, when installed, will be measured as a completed installation and payment will be made at the contract unit bid price for "Traffic Signal(s)", which price shall be full compensation for furnishing, placing, and testing all materials and equipment and for all tools, labor, equipment, and incidentals necessary to complete the work. Portions of the work that have not been approved by Engineer will not be considered complete, and payment shall be withheld until the Contractor has corrected the work to the satisfaction of the Engineer.

21.0 EXPERIENCE AND QUALIFICATIONS

21.1 The low bidder shall be required to furnish the Engineer a written assessment of previous experience in the installation of traffic signal systems. The response shall include the name and population of the city or area served, Contract name and/or number, date of installed, date of Contract completion, Contract delays and discrepancies, liquidated damages and the name, address, and phone number of a specific individual representing the client who is in a position to verify such experience. The response shall be delivered to the Engineer within ten (10) working days after bid opening.

21.2 The Bidder shall also furnish information as required above for each major subcontractor (i.e., manufacturer or fabrication of traffic signal structures) that could be active in the project.

22.0 MISCELLANEOUS NOTES

22.1 THE LOCATIONS OF DRIVEWAYS, SIDEWALKS, DRAIN GUTTERS, ETC., AS SHOWN ON THESE PLANS ARE APPROXIMATE. ACCURATE LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION.

22.2 THE LOCATIONS OF TRAFFIC SIGNAL FOUNDATIONS, BASES, CONDUIT DETECTORS, ETC., SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL GIVE THE GOVERNING TRAFFIC AUTHORITY 48 HOURS NOTICE OF HIS INTENTION TO ESTABLISH THE FINAL LOCATION OF ANY FOUNDATIONS, BASES, CONDUIT, DETECTORS, ETC., AND HAVE THE LOCATIONS APPROVED ON THE GROUND BY THE TRAFFIC ENGINEER OR HIS DULY AUTHORIZED REPRESENTATIVE.

22.3 NO TREES SHALL BE CUT EXCEPT UPON THE SPECIFIC AUTHORITY OF THE ENGINEER.

22.4 WHERE POSSIBLE, DIG UNDER SIDEWALKS. IF THE CONTRACTOR CHOOSES TO REMOVE OR CUT THE SIDEWALK THE CONCRETE MUST BE SAWED AND BROKEN OUT AND THEN RESTORED TO AN EQUAL OR BETTER CONDITION THEN THE ORIGINAL.

22.5 REMOVAL OF MAIL BOXES IN THE WAY OF CONSTRUCTION REQUIRES 48 HOURS ADVANCE NOTICE TO THE POST OFFICE.

22.6 PIPELINES, STORM SEWERS, POWER CABLES, SHTRUCTURES, AND OTHER UNDERGROUND ITEMS BOTH PUBLICLY AND PRIVATELY OWNED EXIST ADJACENT TO THE CONSTRUCTION LIMITS OF THIS PROJECT. THE CONTRACTOR SHALL MAKE HIS OWN INVESTIGATION AS TO THE LOCATION OF THESE UNDERGROUND ITEMS AND SHALL HOLD THE AUTHORITY EXEMPT FROM ANY SUITS OR CLAIMS RESULTING FROM DAMAGE BY THE CONTRACTOR'S OPERATIONS TO ANY UNDERGROUND INSTALLATION. THE CONTRACATOR SHALL COMPLY WITH ALL UTILITY CLEARANCES.

22.7 ALL CONDUIT RUNS SHALL BE CONTINUOUS OF THE SAME MATERIAL (METAL ONLY OR PVC ONLY). WHERE TYING INTO EXISTING CONDUIT, THE CONTRACTOR MUST CONTINUE WITH THE SAME MATERIAL (METAL TO METAL OR PVC TO PVC).

22.8 ON ALL INTERCONNECT CONDUIT RUNS, THE CONTRACTOR SHALL INSTALL PULLBOXES AT INTERVALS OF 250 FEET TO PREVENT DAMAGE OR BREAKAGE TO THE CABLE BEING INSTALLED. ANY INCREASE OR DECREASE IN DISTANCE BETWEEN PULLBOXES, UNLESS SHOWN ON THE PLANS, MUST BE APPROVED BY THE TRAFFIC ENGINEER OR HIS DULY AUTHORIZED REPRESENTATIVE.

23.0 ACCEPTANCE NOTES

23.1 PRIOR TO FINAL ACCEPTANCE BY THE TOWN OF ADDISION:
1. A TEXAS REGISTERED PROFESSIONAL ENGINEER SHALL CERTIFY THAT THE PROJECT WAS CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE TOWN OF ADDISON.

2. THE OWNER SHALL PROVIDE 1 REPRODUCIBLE SET OF AS-BUILTS (SEALED AND CERTIFIED BY A TEXAS REGISTERED ENGINEER) AND 2 BLUE LINE SETS.

23.2 PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES TO LOCATE EXISTING FACILITIES. THESE INCLUDE BUT MAY NOT BE LIMITED TO THE FOLLOWING:
1. TOWN OF ADDISON
2. LONE STAR GAS
3. SOUTHWESTERN BELL
4. STORER CABLE
5. PLANNED CABLE SYSTEMS
6. TU ELECTRIC

23.3 PRIOR TO BEGINNING CONSTRUCTION, THE OWNER OR HIS AUTHORTISED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE BETWEEN THE TOWN OF ADDISON, CONSULTING ENGINEER, CONTRACTORS, UTILITY COMPANIES AND ANY OTHER AFFECTED PARTIES. NOTIFY BRUCE ELLIS 450-2847 AT LEAST 48 HOURS PRIOR TO THE TIME OF CONFERENCE AND 48 HOURS PRIOR TO BEGINNING OF CONSTRUCTION.

23.4 ANY EXISTING PAVEMENT, CURBS, AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.

23.5 AT INTERSECTIONS THAT HAVE VALLEY DRAINAGE, THE CROWN OF THE INTERSECTING STREETS WILL CULMINATE IN A DISTANCE OF 40 FEET FROM THE INTERSECTING CURB LINE UNLESS OTHERWISE NOTED.

23.6 CONTRACTOR SHALL OBTAIN A RIGHT-OF-WAY PERMIT BY THE TOWN OF ADDISON FOR WORKING WITHIN THE PUBLIC RIGHT-OF-WAY.

23.7 DURING CONSTRUCTION, THE OWNER SHALL PROVIDE A QUALIFIED GEOTECHNICAL LAB TO PERFORM MATERIALS TESTING DURING THE CONSTRUCTION, AT THE REQUEST OF THE TOWN OF ADDISON.

23.8 THE CONTRACTOR SHALL SUBMIT MATERIAL SHEETS TO THE TOWN OF ADDISON FOR APPROVAL PRIOR TO INCORPORATING MATERIALS INTO THE JOB.

23.9 THE CONTRACTOR SHALL PROVIDE INTEGRATION OF THE NEW CONTROLLER DATA BASE AND INTERSECTION / SUB-SYSTEM GRAPHICS INTO THE TOWN OF ADDISON'S ON STREET MASTER SIGNAL SYSTEM.

NO.	REVISION	BY	DATE

DESIGNED BY: ____
DRAWN BY: ____
CHECKED BY: ____
SCALE: ____
DATE: ____

ESPEY, HUSTON & ASSOCIATES, INC.
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GENERAL NOTES

Scale : NONE
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SHEET NO.
OF SHEETS
JOB NO.