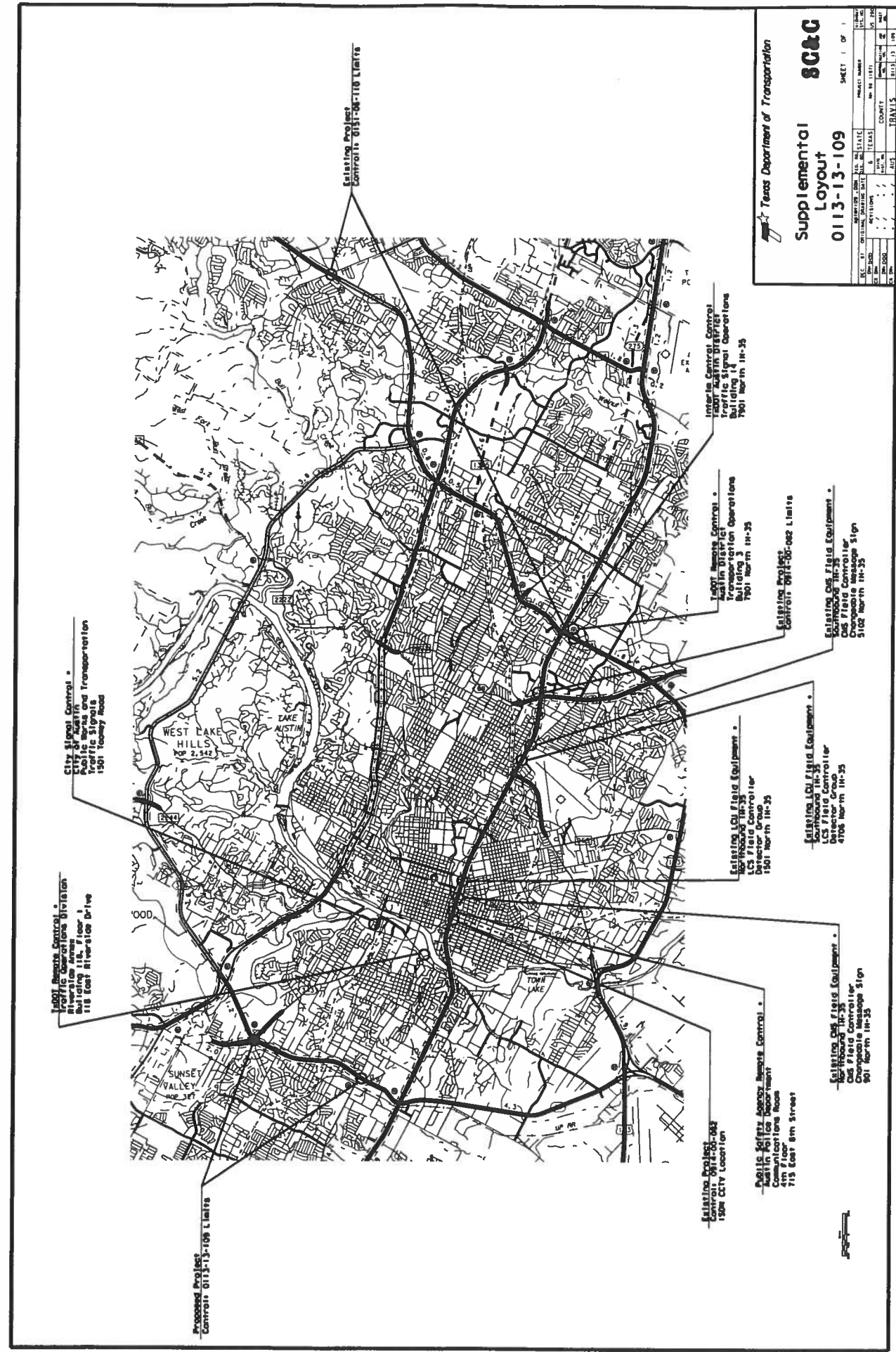


APPENDIX VIIA

IH 35 PS&E





City Signal Control -
Public Works and Transportation
Traffic Signals
1501 Tennyson Road

Interim Control -
Traffic Operations Division
Alvarado Annex
Building 116, Floor 1
110 East Riverstone Drive

WEST LAKE
HILLS
POP 2,542

SUNSET
VALLEY
POP 307

Existing Project
Control No. 0113-06-110 Limits

Interim Control
Interim District
Traffic Signal Operations
Building 14
7901 North IH-35

Interim Control -
Austin District
Traffic Signal Operations
Building 14
7901 North IH-35

Existing Project
Control 0113-06-062 Limits

Existing CMS Field Equipment -
CMS Field Controller
Sourwood 111-35
5102 North IH-35

Existing LCU Field Equipment -
LCU Field Controller
Detector Group
1501 North IH-35

Existing LCU Field Equipment -
LCU Field Controller
Detector Group
4106 North IH-35

Existing Project
Control 0113-06-043
150M CCTV Location

Public Safety Agency, Interim Control -
Austin Police Department
4th Floor
715 East 8th Street

Existing CMS Field Equipment -
CMS Field Controller
Compatible Message Sign
901 North IH-35

Texas Department of Transportation

Supplemental Layout 0113-13-109

SHEET 1 OF 1

PROJECT NUMBER	0113-13-109
DATE	02/04/98
PROJECT NAME	TRAFFIC SIGNALS
PROJECT NUMBER	0113-13-109
DATE	02/04/98
PROJECT NAME	TRAFFIC SIGNALS

0113-13-109

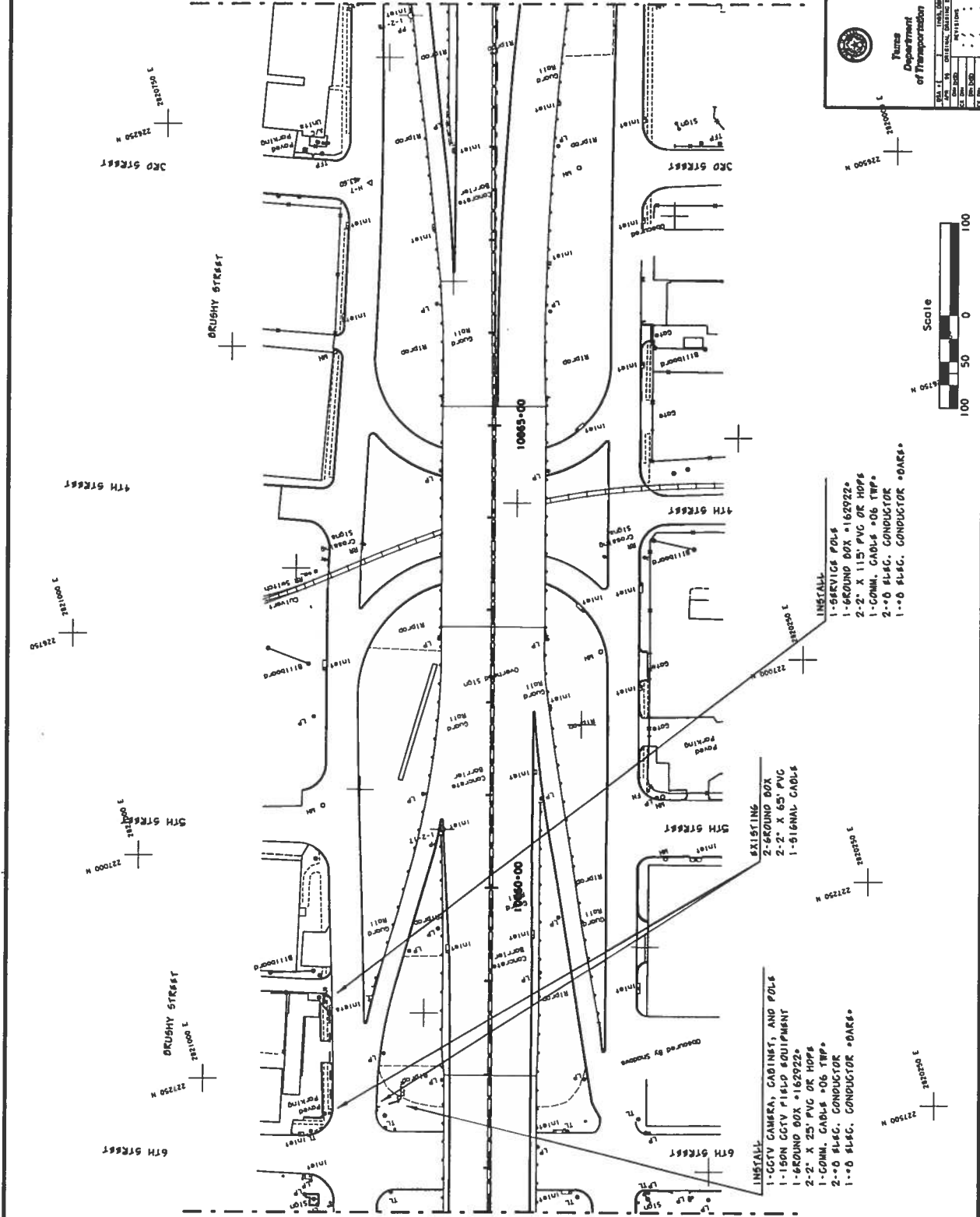


SG&C
System Layout
IH 0035

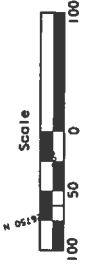
Texas Department of Transportation

PROJECT NO.	10085-00	SHEET NO.	OF
DATE	01/14/98	PROJECT NAME	
DESIGNED BY	10085-00	CITY	HOUSTON
CHECKED BY		COUNTY	HARRIS
DATE		STATE	TEXAS
SCALE	1" = 40'	DISTRICT	10
PROJECT	10085-00	SECTION	10085-00
DATE	01/14/98	BY	
SCALE	1" = 40'	CHECKED	
PROJECT	10085-00	DATE	

Match Line, sta=10869-52.71



Match Line, sta=10895-52.71



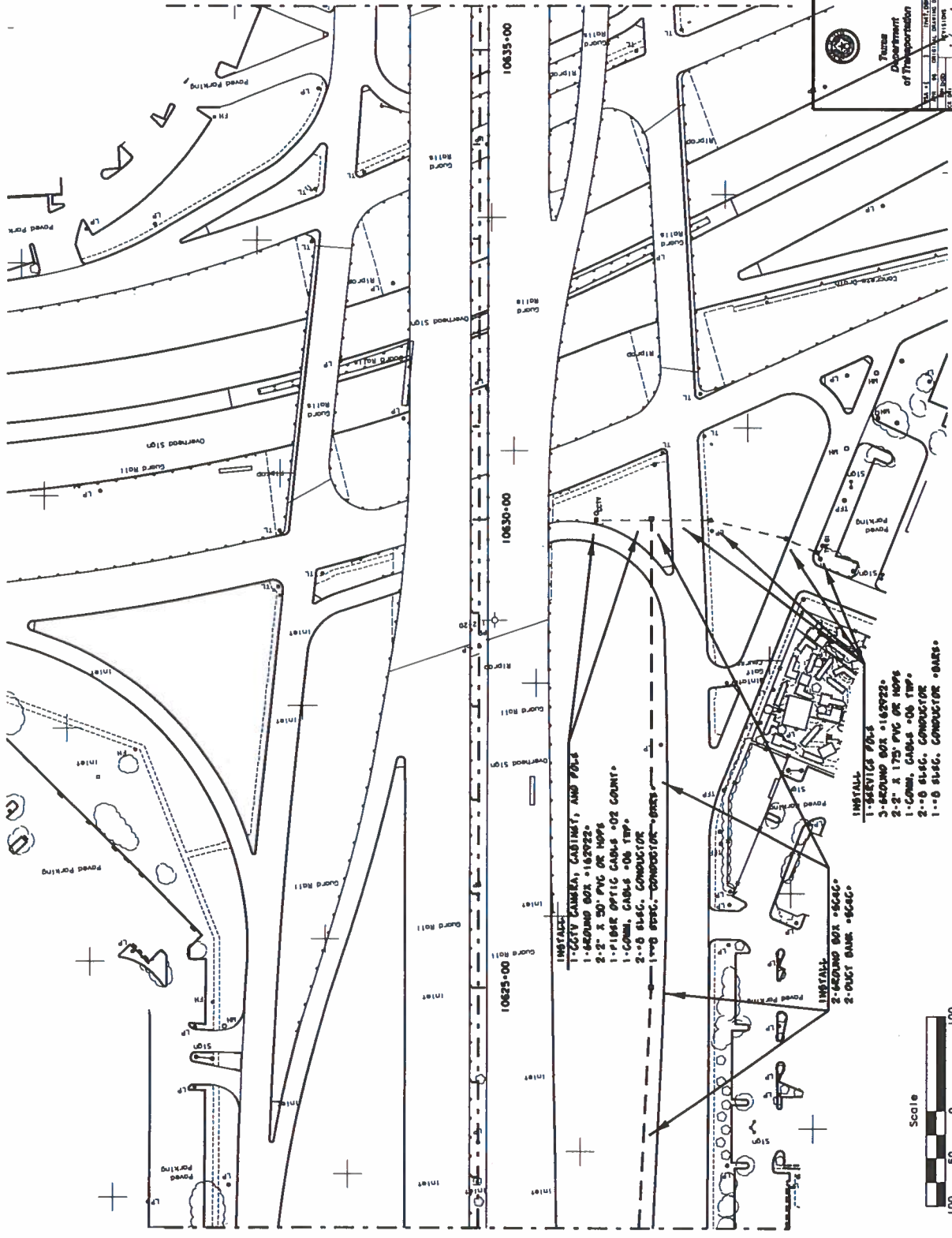
- EXISTING**
- 2-GROUND BOX
 - 2-2" X 65' PVC
 - 1-616NAL CABLE

- INSTALL:**
- 1-CCV CAMERA, CABINET, AND POLE
 - 1-150N CCTV FIELD EQUIPMENT
 - 1-600N BOX = 162922
 - 2-2" X 25' PVC DE HOPS
 - 1-COMM. CABLE =06 TRP
 - 2-00 SLEG. CONDUCTOR =0ARS

- INSTALL:**
- 1-SERVICE POLE =162922
 - 1-600N BOX =162922
 - 2-2" X 115' PVC DE HOPS
 - 1-COMM. CABLE =06 TRP
 - 2-00 SLEG. CONDUCTOR
 - 1-00 SLEG. CONDUCTOR =0ARS

Match Line, sta=10622+46.25

Match Line, sta=10635+46.25



SC&C
System Layout

Project: IH 0035
SHEET 7 OF 14

Texas Department of Transportation

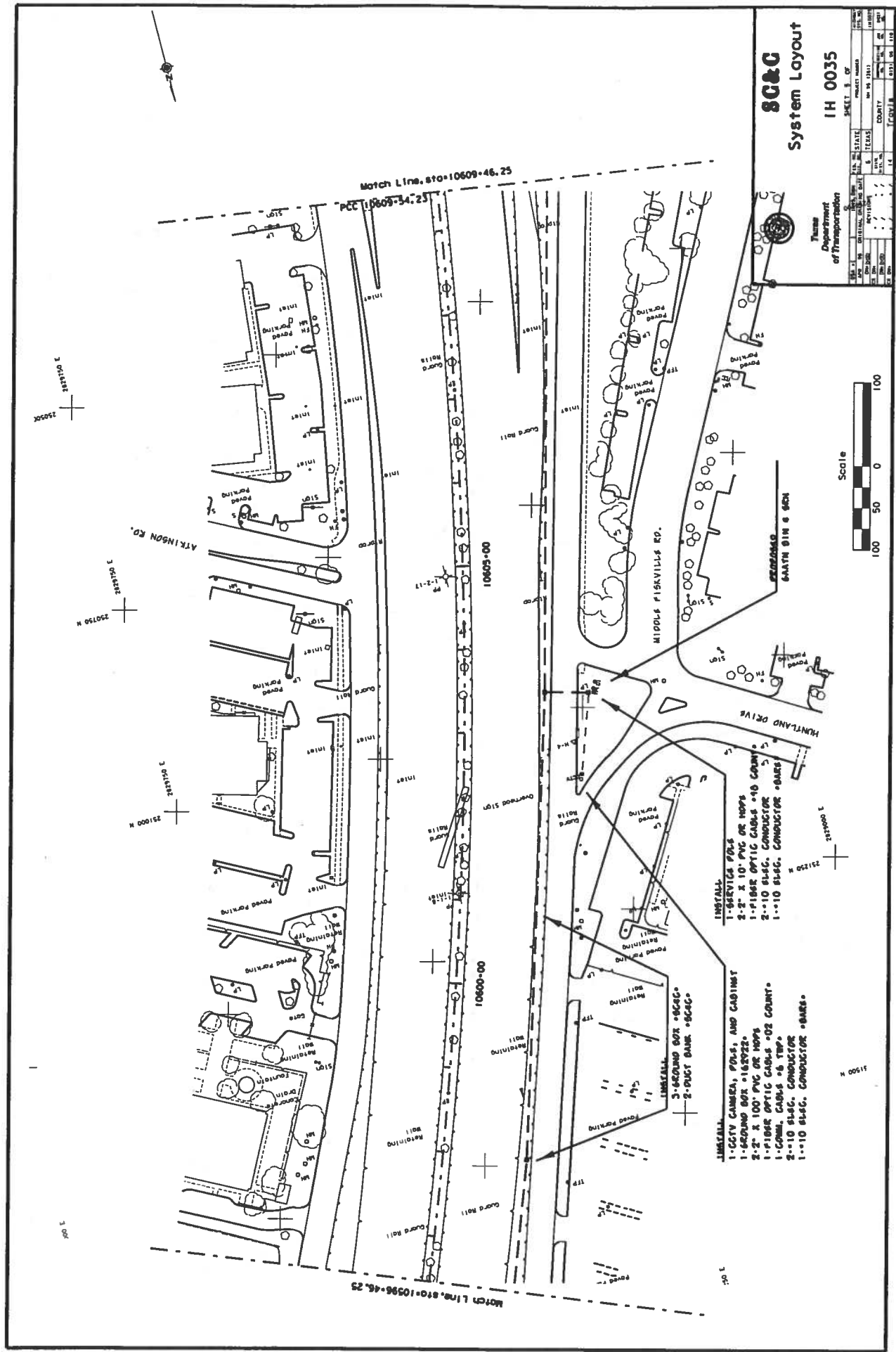
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10/12/90	DL	DL	DL
10/13/90	DL	DL	DL
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10/15/90	DL	DL	DL
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10/28/90	DL	DL	DL
10/29/90	DL	DL	DL
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10/31/90	DL	DL	DL

STATE OF TEXAS
COUNTY: TARRANT
PROJECT NUMBER: IH 0035
SHEET 7 OF 14

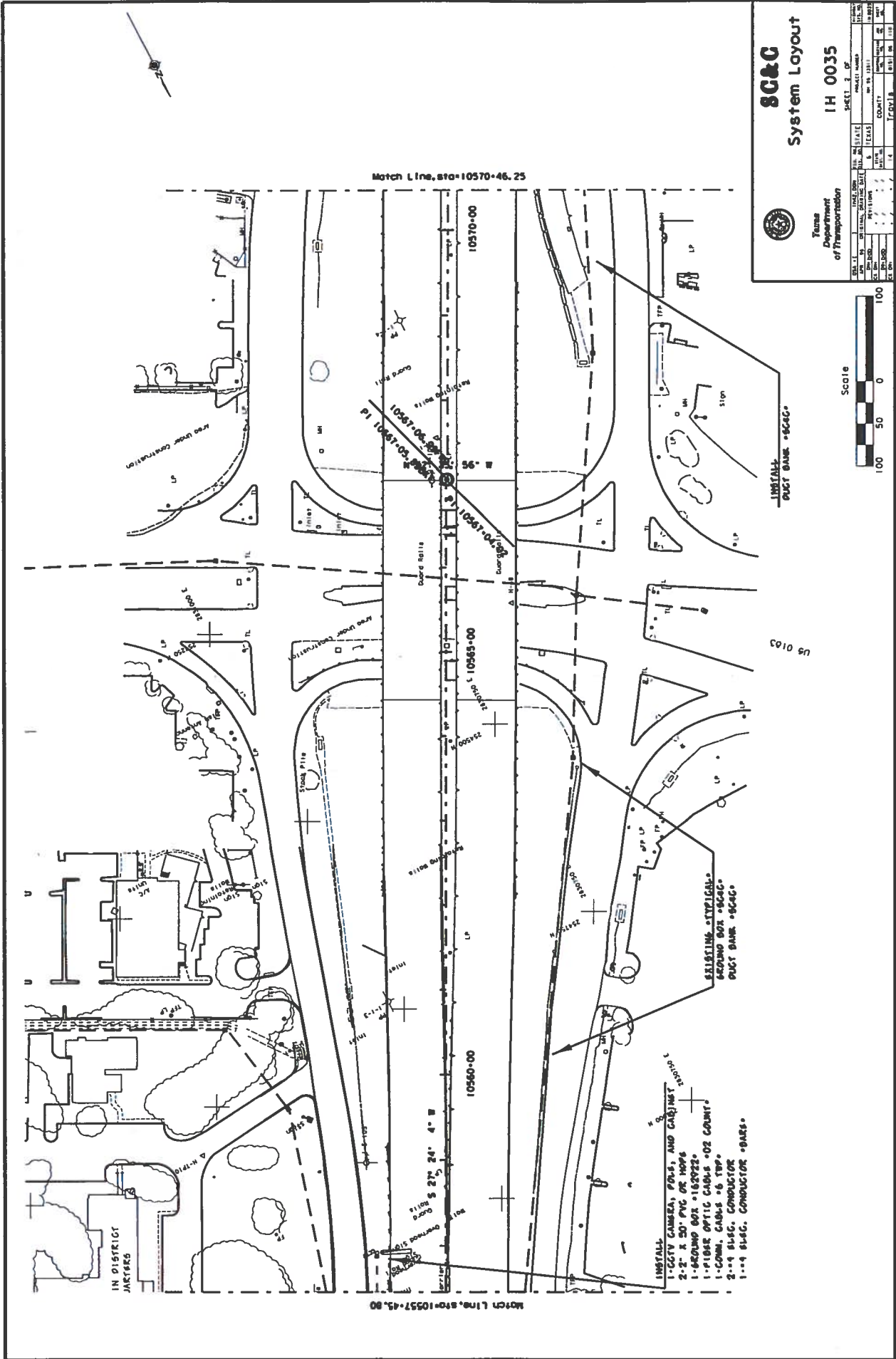
SC&C System Layout

IH 0035

Texas Department of Transportation	
DATE	10/11/98
BY	SC&C
CHECKED BY	SC&C
DATE	10/11/98
PROJECT NUMBER	IH 0035
STATE	TEXAS
COUNTY	TARRANT
SHEET NO.	14
TOTAL SHEETS	14
DATE	10/11/98
BY	SC&C
CHECKED BY	SC&C
DATE	10/11/98



- INSTALL**
- 1-CCTV CAMERA, PDS, AND CABINET
 - 1-GROUND BOX -162922
 - 2-2" X 100' PVC OR NOPS
 - 1-FIBER OPTIC CABLE -02 COUNT
 - 1-COMM. CABLE -8 TWP.
 - 2--10 SL-EG. CONDUCTOR -BARS
 - 1--10 SL-EG. CONDUCTOR -BARS
- INSTALL**
- 3-6000 BOX -8C4C
 - 2-DUCT BANK -8C4C
- INSTALL**
- 1-SERVICES PDS
 - 2-2" X 10' PVC OR NOPS
 - 1-FIBER OPTIC CABLE -46 COUNT
 - 2--10 SL-EG. CONDUCTOR -BARS
 - 1--10 SL-EG. CONDUCTOR -BARS



Match Line, sta=10570+46.25

Match Line, sta=10557+45.80

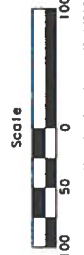
SC&C
System Layout

IH 0035

SHEET 2 OF

Texas Department of Transportation

DATE	BY	CHKD	APP'D	PROJECT NUMBER
10/11/90	B. J. HARRIS	B. J. HARRIS	B. J. HARRIS	10557-00-00
DATE	BY	CHKD	APP'D	PROJECT NUMBER
10/11/90	B. J. HARRIS	B. J. HARRIS	B. J. HARRIS	10557-00-00
DATE	BY	CHKD	APP'D	PROJECT NUMBER
10/11/90	B. J. HARRIS	B. J. HARRIS	B. J. HARRIS	10557-00-00

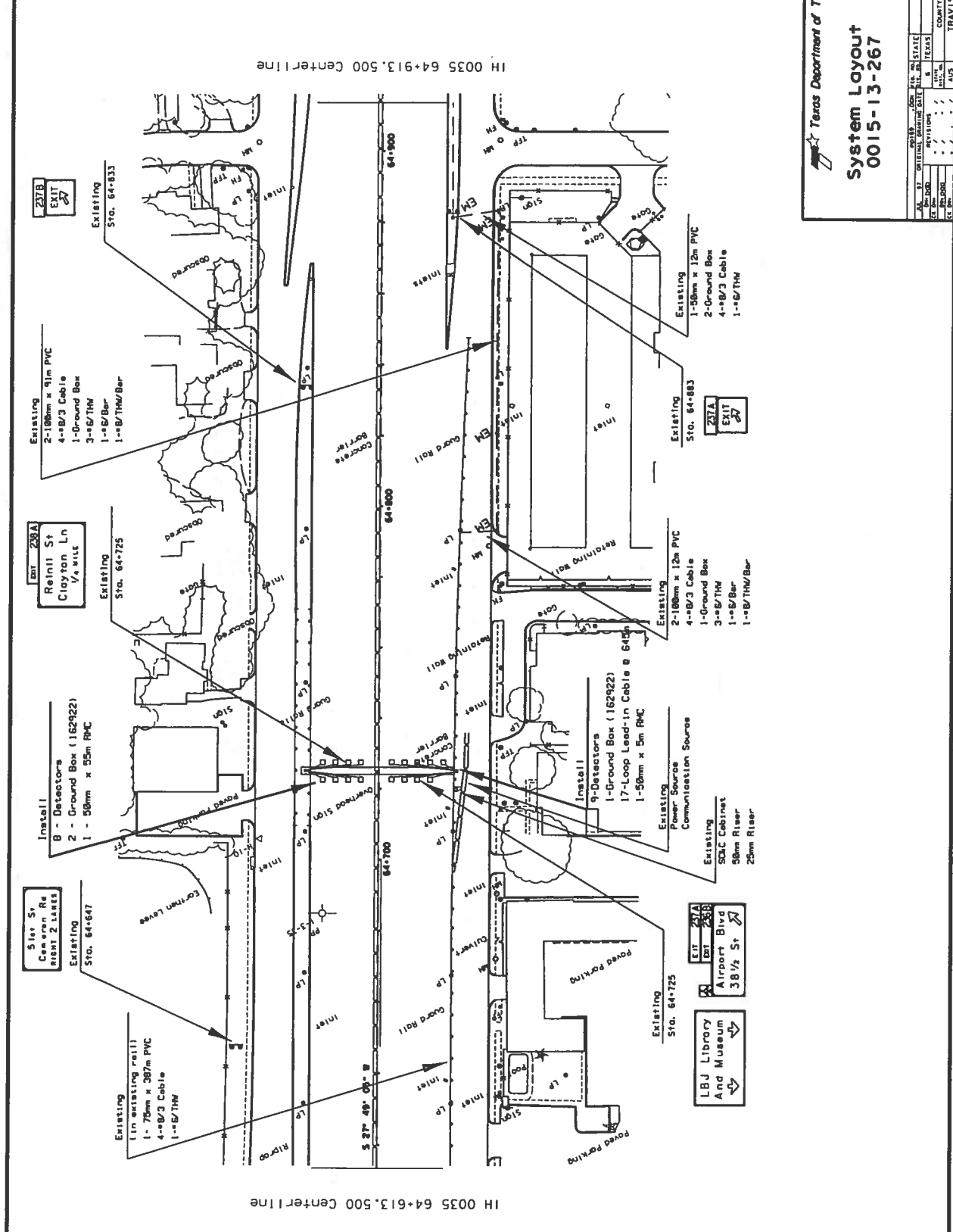


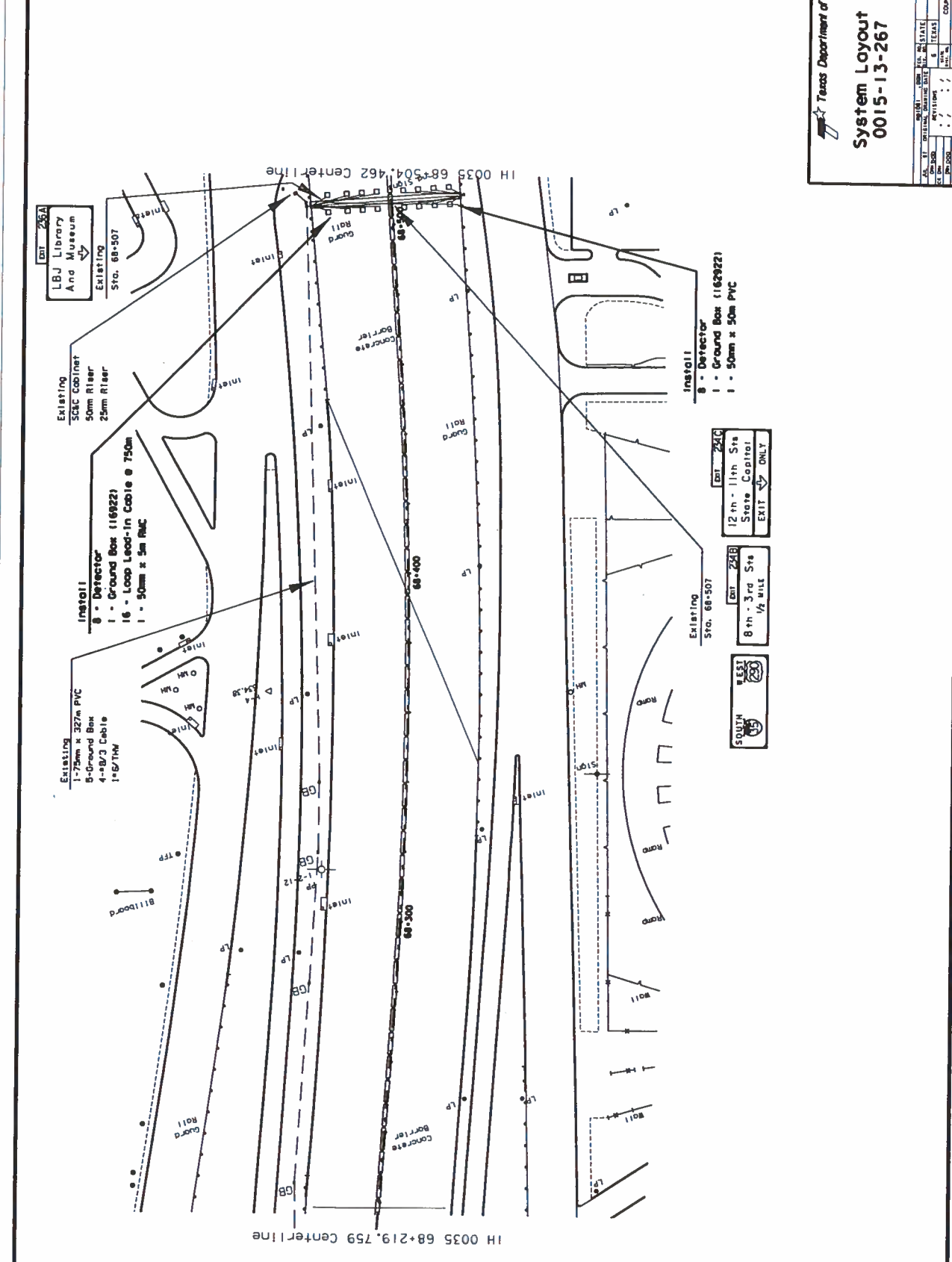
- INSTALL
- 1-CCTV CAMERA, P.O.L.S. AND CABINETS
 - 2-2" X 50' PVC OR HDPE
 - 1-ALIGNING BOX #159022
 - 1-118K OPTIC CABLE #02 COUNT
 - 1-COMM. CABLE #6 TRP
 - 2-4 5/8" BLEG. CONDUCTOR #946
 - 1-4 5/8" BLEG. CONDUCTOR #946

INSTALL OPTICAL-ALIGNED BOX #159022 PUCT BANK #946

INSTALL PUCT BANK #946

US 0103





LBJ Library
 And Museum
 Existing
 Sta. 68+507

Existing
 SCAC Cabinet
 50mm Riser
 25mm Riser

Install
 8 - Detector
 1 - Ground Box (169221)
 16 - Loop Lead-In Cable @ 750m
 1 - 50mm x 5m PVC

Existing
 1-75mm x 327m PVC
 5-Ground Box
 4-80/3 Cable
 1-6/THW

Install
 8 - Detector
 1 - Ground Box (169221)
 1 - 50mm x 5m PVC

Existing
 Sta. 68+507

DAT 251C
 12th - 11th Sta
 State Capitol
 EXIT ONLY

DAT 241B
 8th - 3rd Sta
 1/2 MILK

SLOAN
 B.E.S.

Texas Department of Transportation
System Layout
0015-13-267

SHEET 10 OF 13

PROJECT NUMBER	0015-13-267
STATE	TEXAS
COUNTY	TRAVIS
DATE	02/05/98
SCALE	AS SHOWN

SPECIAL SPECIFICATION

ITEM 6682

CCTV FIELD EQUIPMENT

- 1.0 Description. This Item shall govern for the furnishing and installation of Closed Circuit Television (CCTV) Field Equipment in designated field locations and equipment enclosures as shown on the plans and as detailed in the Special Specifications.
- 2.0 Materials.
- 2.1 General Requirements. All materials furnished, assembled, fabricated, or installed under this Item shall be new, corrosion resistant, and in strict accordance with the details shown on the plans and in the Specifications.

The CCTV Field Equipment shall include, but not be limited to, the following:

- Color video camera unit;
- Camera lens, filter, control circuit, and accessories;
- Camera housing (environmentally controlled with heater)
- Nitrogen bottle with required equipment for servicing/recharging the camera housing;
- Heavy duty pan and tilt unit;
- Camera control receiver unit;
- Camera control panel for local controls;
- Video and camera control cable harness and connectors;
- Equipment for accommodating presets; and
- All necessary coaxial, control, and power cables.

- 2.2 Functional Requirements. The CCTV Field Equipment together with the CCTV Central Equipment in the Control Center will form a complete CCTV system which shall meet the following requirements.

The CCTV Field Equipment shall have 525 lines per frame, interlaced 2:1, per EIA-170A Standard. No interlace, jitter, or pairing on the viewing monitor shall be discernible. The frame frequency shall be 30 frames per second. The width to height aspect ratio shall be 4:3. The system limiting resolution shall conform to EIA-250C for medium haul broadcast signals. The system shall be capable of providing clear, bloom-free, and lag-free video pictures under all conditions from bright sunlight to night time scene illumination of 0.06 footcandle (fc.). Color

quality shall be maintained by a continuous through the lens automatic white balance for color temperatures between 2850 K and 5800 K with less than 10 IRE units unbalance.

All field equipment installed shall be operational in all weather conditions and shall be able to withstand a wind load of the speed indicated in the plans without permanent damage to mechanical and electrical equipment.

Equipment used shall be identical at each field location and shall be completely interchangeable.

2.3 Electrical and Mechanical Requirements.

2.3.1 Color Video Camera Unit.

All video cameras shall be of solid state design and shall meet the following requirements:

1. Image pickup device: 1/4 inch solid state color CCD utilizing microlens interline transfer technology with a minimum of 768 (H) x 494 (V) pixels.
2. Pickup device blemishes: When viewing a uniform white field, there shall be no blemishes for any iris opening producing any signal level between 7.5 and 100 IRE.
3. Sensitivity and S/N: The camera shall maintain one volt peak-to-peak video signal with 0.6 lux (at maximum f stop) measured with 3200 K incandescent illumination on the sensor face plate at a minimum of 47 dB signal-to-noise (AGC off).
4. Resolution: A minimum of 350 lines vertical and 460 composite lines horizontal, measured per EIA-170 Standard.
5. Over exposure protection: The camera shall not sustain any permanent damage when pointed directly at strong light sources, including the sun, maintaining a 1000:1 light overload.
6. Peak-average clipping circuits: The camera shall have a peak average clipper circuit to limit the output of any highlights to a preset level.
7. Sync generator: EIA-170A Standard. /Tb21 8. Encoded NTSC Video signal format: EIA-170 Standard, video output 1 Volt p-p composite. Shall have 0 to 20 db AGC (peak average adjustable) and gamma consistent with the camera sensor.
9. Output impedance: 75 Ohms per EIA-170A.
10. Aspect ratio: 4:3.
11. Geometric Distortion: Zero.
12. Automatic light compensation: The video output shall not change more than 2:1 with light level change of 4,000,000:1 when using the specified zoom lens with auto iris and neutral density filter.

13. Camera shall accept standard "C" or "CS" mount lenses.
14. Electronic Shutter: Switch selectable, 1/60 second to 1/10,000 second (8 steps).
15. Auto Lens Output: Peak-average characteristic tracks AGC adjustment to eliminate AGC/auto lens interaction.

2.3.2 Camera Lens and Accessories.

1. The Contractor shall provide with each camera a f/1.4 glass multi-coated zoom lens. The lens shall have a variable focal length as shown in the plans.
2. Motorized automatic iris control with manual override shall be provided with each lens.
3. The camera shall have minimum effective aperture range of f1.4 to f22 or wider.
4. The lens shall be equipped for remote control of zoom, focus, and iris operations. Mechanical or electrical means shall be provided to protect the motors from overrunning in extreme positions. Lens mount shall be the standard 16 mm "C" or "CS" mount and compatible with the camera. The lens shall be capable of both auto iris and remote manual iris operation. The lens shall have a follower (preset) potentiometers on the zoom and focus. Iris must be "motorized" as opposed to "auto iris" type, for system control compatibility.
5. Any coaxial cable, entering or leaving any unit, shall be protected with static discharge protection (lightning arrestor) at each end. A ground loop isolator shall be provided at one end of any coax which enters or leaves a unit. These devices shall be of a gas discharge type specifically designed for CCTV type service and shall not degrade the quality of the signal. CB type lightning arrestors are not acceptable.

2.3.3 Camera Housing. The Contractor shall furnish and install an environmental resistant and tamperproof enclosure with 5 psi dry nitrogen with Schrader purge fitting and 20 psi relief valve for each camera.

The Contractor shall furnish nitrogen bottle, charging gauges, and equipment required to service/recharge this housing.

Except for the viewing window, the enclosure shall be constructed of anodized aluminum of at least 0.063 inch thickness.

The housing shall be equipped with an internal 115 VAC, 50 Watt or less low temperature heater with its own thermostat control. The thermostat shall be set as directed by the Engineer.

The viewing window shall be constructed in such a way that unrestricted camera views can be obtained at all camera and lens positions.

A sun visor shall be provided on the top of the housing.

Cables and harness shall enter at the rear and/or the bottom of the housing, with gaskets at entry points to form a water and air tight seal. A right angle cable connector, positioned a six o'clock, may be used.

A sun shield shall be provided to shield the entire housing from direct sunlight. It shall be constructed in such a way as to allow the free passage of air between the housing and the shield, but shall not induce an excessive load on the pan/tilt unit in high winds.

- 2.3.4 Pan-Tilt Unit. The Contractor shall furnish and install a heavy duty, anodized aluminum weather-proof and pan-and-tilt unit at each camera site on top of the camera pole. The Contractor shall be responsible for providing any mounting adapter and/or attachment required to install the pan-and-tilt unit. The mounting shall be designed for the camera housing and the pan-and-tilt unit to withstand wind loading of the speed indicated in the plans.

The unit shall provide vertical movement of plus or minus 90 degrees and horizontal movement of 360 degrees. Tilt speed shall be in the range of 3 to 4 degrees per second and the pan speed shall be 5 to 6 degrees per second. The unit shall be capable of simultaneous pan and tilt movements.

The unit shall have a load rating compatible with that of the camera housing, camera, and all cabling under wind conditions of the wind speed shown on the plans and conforming to the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals", with Interim Specifications thereto and with additional interpretations as applied by the Department. The Contractor shall provide analysis of the loading on the pan-and-tilt assembly based on the above criteria.

Drive motors shall be capable of instantaneous reversing and shall have overload protection.

Braking shall be provided in both pan and tilt movements to enable fast stop and reversal and to reduce drifting.

Limit switches or stops shall be provided to limit the range of vertical and horizontal movements, which shall be adjustable individually. The camera shall be mounted in such a way that the camera line of sight is at the center line of the desired field of view when the camera is at the mid-point of its mechanical motion. The field of view of each camera and the limit settings of its vertical and horizontal movements will be provided by the Engineer prior to installation.

The pan-and-tilt unit shall have seals and gaskets to protect the motors, gears, and cables. Seals and gaskets shall be resistant to ozone, ultraviolet radiation, and other pollutants inherent to all local environmental conditions.

- 2.3.5 Camera Controller. The Contractor shall furnish and install at each camera site a camera controller to control all of the camera, pan/tilt, and lens functions.

The controller shall decode the digital signals from the communications interface shown in the plans and then transform to appropriate drive signals for the different camera, pan/tilt, and lens mechanisms.

The camera controller shall meet the following specific requirements:

1. Camera remote control functions: The unit shall provide, as a minimum, control and drive circuits for the following functions:
 - Pan Left;
 - Pan Right;
 - Tilt Up;
 - Tilt Down;
 - Zoom In;
 - Zoom Out;
 - Focus Near;
 - Focus Far;
 - Iris Override;
 - Iris Open;
 - Iris Close;
 - Pan/Tilt Position Reset;
 - Camera Power (Latching); and
 - One (1) Auxiliary Output.
2. Controller Address: Each unit shall have a unique address which is changeable by changing connector harness, switch settings, or plug-in modules. The unit shall respond to the central command if and only if it is addressed.
3. Power Supplies: All power supplies required to operate the camera, pan/tilt, and lens movement shall be included with the controller.
4. Control Panel: A control panel with pan/tilt and lens functions described above shall be provided to control the camera, pan/tilt unit, and lens motion locally. The control panel shall be mounted inside the enclosure where the camera controller is housed.

5. Communications Interface: The Camera Controller shall interface to the communications backbone through an EIA-232C/D port. Communications signals, data exchange protocol and timing shall be compatible with the communications equipment and with the master controllers in the control center. A user selectable baud rate between 2400 and 19,200 bps shall be used. Data shall be sent asynchronously as either 8 bit with no parity or 7 bit plus even parity. Each block of data shall include a camera identifier and be accompanied by a checksum calculated on the entire block. Blocks with a bad checksum shall be ignored or NAKed. If the field unit must transmit data to the control unit at the control center, it shall raise the RTS line and keep it raised until all data has been sent. The field unit shall not transmit data unless the CTS line from the communications equipment is raised. The Camera Controller connectors and harness shall be provided to connect to the communication interface shown on the plans. Complete hardware interface and protocol description shall be supplied to the Department as part of the required documentation.
6. Power Input: 115 plus or minus 10%, 60 plus or minus 3 Hz, 40 watts maximum.
7. Packaging: The controller shall be packaged in an enclosure with size not exceeding 19 inches x 8 inches x 12 inches fabricated of anodized aluminum of at least 1/16 inch thickness.
8. Connectors: Connectors shall be provided and installed which are compatible with the communications equipment interface. Connectors shall be used for connectors at the control unit and at the camera, lens, and pan/tilt mechanisms. All connector pins and mating connectors shall be plated with not less than 20-30 microns of gold.

2.3.6 Surge Protection. The camera installation shall meet the following requirements:

1. Pole mounting adapter-Electrically bonded to pole.
2. Pan/tilt mechanism-Electrically bonded to adapter.
3. Camera ground strap-Number 6 AWG braided conductor to connect enclosure to pole mounting adapter.

2.3.6.2 Power and Control Cable Surge Protector. Each power conductor and each control conductor (including return conductors) shall be protected by the appropriate surge protector. All protective

devices shall be housed in each equipment enclosure shown on the plans for CCTV Field Equipment.

- 2.3.7 Power Requirements. The CCTV Field Equipment shall meet all of its specified requirements when the input power is 115 VAC plus or minus 10% VAC, 60 plus or minus 3 Hz. The maximum power required, including the heater, shall not exceed 350 watts.

The equipment operations shall not be affected by transient voltages, surges, and sags normally experienced on commercial power lines. It is the Contractor's responsibility to check the local power service to determine if any special design is needed for the equipment.

- 2.3.8 Primary Input Power Interruption. The CCTV Field Equipment shall meet all the requirements in Section 2.1.4 "Power Interruption" of the National Electrical Manufacturers Association (NEMA) Standard TS1-1989 for Traffic Control System, latest revision.

- 2.3.9 Power Service Transients. The CCTV Field Equipment shall meet the requirements of Section 2.1.6, "Transients, Power Service" of the NEMA Standard TS1-1989, latest revision.

- 2.3.10 Wiring. All wiring shall meet the requirements of the National Electric Code. All wires shall be cut to proper length before assembly. No wire shall be doubled-back to take up slack. Wires shall be neatly laced into cable with nylon lacing or plastic straps. Cables shall be secured with clamps. Service loops shall be provided at all connections.

Coaxial cable between the camera and the surge protector in the CCTV cabinet at base of the camera pole shall be of the RG-59 type with a solid center conductor. All coaxial cable shall have a cellular polyethylene dielectric.

- 2.3.11 Transient Suppression. All DC relays, solenoids, and holding coils shall have diodes across the coils for transient suppression.

- 2.3.12 Power Service Protection. The equipment shall contain readily accessible, manually resettable, or replaceable circuit protection devices (such as circuit breakers or fuses) for equipment and power source protection.

Circuit breakers or fuses shall be provided and sized such that no wire, component, connector, PC board, or assembly shall be subjected to sustained current in excess of their respective

design limits upon the failure of any single circuit element or wiring.

2.3.13 Fail Safe Provision. The equipment shall be designed such that the failures of the equipment shall not cause the failure of any other unit of equipment.

2.3.14 Modular Design. The CCTV Field Equipment shall be modular in design such that major portions may be readily replaced in the field.

Modules and assemblies shall be clearly identified with name, model number, serial number, and any other pertinent information required to facilitate equipment maintenance.

2.3.15 Connectors and Harnesses. All external connections shall be made by means of connectors. The connectors shall be keyed to preclude improper hookups. All wires to and from the connectors shall be color coded and/or appropriately marked.

Connecting harness of appropriate length and terminated with matching connectors shall be provided for interconnection with the communication interface shown in the plans.

All pins and mating connectors shall be plated with 20-50 microns of gold. Connectors utilizing solder type connections shall have each soldered connection covered by a piece of heat shrink tubing securely shrunk to insure that it protects the connection.

2.4 Environmental Design Requirements. The equipment shall meet all its specified requirements during and after subjecting to any combination of the following conditions:

- * Ambient temperature range of 0 to 140 F.
- * Temperature shock not to exceed 30 F per hour, during which the relative humidity shall not exceed 95%.
- * Relative humidity range not to exceed 95% over the temperature range of 40 to 110 F.
- * Moisture condensation of all surfaces caused by temperature changes.

3.0 Construction Methods.

3.1 General. The equipment design and construction shall utilize the latest available techniques with a minimum number of parts, subassemblies, circuits, cards, and modules to maximize standardization and commonality.

The equipment shall be designed for ease of maintenance. All component parts shall be readily accessible for inspection and maintenance. Test points shall be provided for checking essential voltages and waveforms.

3.2 Electronic Components. All electronic components shall comply with Special Specification Item, "Electronic Components."

3.3 Mechanical Components. All external screws, nuts, and locking washers shall be stainless steel; no self-tapping screws shall be used unless specifically approved by the Engineer.

All parts shall be made of corrosion resistant material, such as plastic, stainless steel, anodized aluminum, or brass.

All materials used in construction shall be protected from fungus growth and moisture deterioration.

Dissimilar metals shall be separated by an inert dielectric material.

3.4 Testing, Training, Documentation, Final Acceptance, and Warranty. Testing, Training, Documentation, Final Acceptance, and Warranty of the CCTV Field Equipment shall comply with Special Specification Item, "Testing, Training, Documentation, Final Acceptance and Warranty."

4.0 Measurement. The color camera unit will be measured as each unit furnished, installed, made fully operational with the other CCTV Field Equipment, and tested in accordance with these Special Specifications.

The camera lens and accessories will be measured as each unit, of the size and type shown on the plans, furnished, installed, made fully functional with the other CCTV Field Equipment, and tested in accordance with these Special Specifications.

The camera housing will be measured as each unit furnished, installed, made fully functional with the other CCTV Field Equipment, and tested in accordance with these Special Specifications.

The pan/tilt unit will be measured as each unit furnished, installed, made fully functional with the other CCTV Field Equipment, and tested in accordance with these Special Specifications.

The camera control receiver shall be measured as each unit furnished, installed, made fully functional with the other CCTV

Field Equipment, and tested in accordance with these Special Specifications.

- 5.0 Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for each "CCTV Camera", "CCTV Camera Lens" of various types and sizes, "CCTV Camera Housing", "CCTV Pan/Tilt", and "CCTV Camera Controller". This price shall be full compensation for all equipment described under this Item with all cables and connectors; all documentation and testing; and furnishing all labor, materials, training, and equipment necessary to complete the work.

SPECIAL SPECIFICATION

ITEM 6691

COMPRESSED VIDEO (ISDN) FIELD EQUIPMENT

1.0 Description. This Item shall govern for the furnishing and installation of Compressed Video (ISDN) Field Equipment as specified for each camera site in designated field locations and equipment cabinets as shown the plans and as detailed in the Special Specifications.

2.0 Materials.

2.1 General Requirements. All materials furnished, assembled, fabricated or installed under this item shall be new, corrosion resistant and in strict accordance with the details shown on the plans and in the specifications.

The compressed video field equipment shall include, but not be limited to, the following:

- Video image compression unit
- ISDN Network Termination Units.

2.2 Functional Requirements. The Contractor shall furnish and install compressed video field equipment to capture images, compress and transmit compressed video images to the control center, and to control video cameras in the field. The compressed video field equipment together with the compressed video central equipment in the control center will form a complete compressed video system which shall meet the following requirements.

Equipment used shall be identical at each field location and shall be completely interchangeable.

2.3 Electrical and Mechanical Requirements.

2.3.1 Video Image Compression Unit. The video compression unit shall be a microprocessor-based industrial digital controller based on a 32 bit PCI passive backplane, and consisting of a central processing card, video codec card, RS-232 interface, graphics display card, fixed disk drive, and floppy disk drive.

2.3.1.1 Digital Controller Chassis. The digital controller chassis shall consist of a 10 slot AT-compatible passive backplane chassis, with a minimum 150 watt power supply. The backplane shall be 4 layer, low capacitance with 6 full length PCI expansion slots and 4 full length AT expansion slots. A filtered air intake shall be provided, with two cooling fans at least 30CFM capacity each. The power supply shall also have an internal cooling fan at least 20CFM capacity.

Front panel controls shall include a standard DIN connector for an AT keyboard, power on/off switch, and a reset switch. Front panel LED's shall provide indicators of hard disk access activity, power on, and a separate indicator of each power supply input. An amplifier circuit shall be provided for the chassis speaker, to allow internal adjustment of volume.

An IDE hard disk shall be mounted in the chassis, with a minimum 200 MB capacity and minimum of 12 millisecond access time. The hard disk shall be designated as the DOS "C:" Drive. A 1.44 MB, 3.5 inch floppy disk drive with front panel access shall be mounted in the chassis. The floppy disk shall be designated as the DOS "A:" Drive.

2.3.1.2 Central Processing Card. The central processing card shall consist of an Intel, Cyrix, or equivalent Pentium, 100 MHz microprocessor with 16 MB of 70 ns. or faster memory with selectable PCI bus speeds of 8.25, 11.0, or 16.5 MHz. External cache RAM of at least 128K shall be provided.

The card shall provide integral controllers for two IDE fixed disks, two floppy disks, two serial ports, one parallel port, one keyboard port, and one speaker port. A watchdog timer feature shall be included, with jumper enable/disable.

A heat sink/fan combination unit shall be installed on the CPU chip.

2.3.1.3 Video Codec Card. The video codec card shall perform the functions of color video image digitization and digitized image compression, all on a single PCI card. The card shall have its own processor for audio and video coding.

The video codec shall accept standard NTSC color video input. The full image shall be captured by a minimum resolution of 352 pixels wide by 288 pixels high. The area represented by the pixels shall be square. The frame rate shall be a minimum of 6 frames per second for a traffic

scene composed of vehicles in motion in 30 percent of the scene.

The brand and model of the video codec card shall be the same as that used in the video image decompression unit in the control center. The video codec shall be compatible with the TSS standard H.320 (px64), with video coding according to the H.261 standard and video channel according to the H.221 standard.

The video codec shall operate under the latest version of Microsoft Windows, and shall interface to the VESA compatible graphics card through a VESA advanced feature connector (VAFC) cable. The video codec shall have an integral ISDN basic rate interface (BRI, 2B+D) on the card, with RJ-45 female connector for connection to the NT-1. Transmission speed shall be 128 Kbps.

The video output shall be VESA compliant super VGA (SVGA) graphics output up to 1024 x 768 x 256 color noninterlaced. After power loss, restoration of power shall automatically re-boot the system, initiate loading of Windows, load the video codec application software, and place the video codec in an auto-answer mode for ISDN communication.

The Contractor shall supply the video codec manufacturer's latest version of software for image capture, image compression, compressed image transmission via ISDN lines, image decompression, and image display. These functions shall be controllable, either singly or in combination, through Windows screen selection by mouse or keyboard.

2.3.1.4 Graphics Display Card. The PCI bus graphics display card shall be compatible with the video codec card, and shall be connected to the video card by a VESA advanced feature connector (VAFC) cable. The graphics display card shall be capable of displaying VGA 640 x 480 x 256 color, SVGA 800 x 600 x 256 color, and XGA 1024 x 768 x 256 color.

2.3.1.5 Operating System Software. The Contractor shall supply the latest version of Microsoft DOS and Microsoft Windows for each video image compression unit. The software shall be supplied on 3 1/2 inch disks. An original User's Guide shall be supplied for both DOS and Windows.

2.3.1.6 Keyboard. The Contractor shall supply one small footprint Windows keyboard and connecting cable for each video image compression unit.

2.3.1.7 RS-232 Interface. The Contractor shall fabricate an electronic interface for receiving coded data via the audio channel of the video codec, representing RS-232 asynchronous commands from the master camera controller. The data communication rate shall be 2400 bits per second (bps). The interface shall not be code sensitive, i.e., all combinations of 8 bit binary data shall be permitted. Total data transmission delay of camera commands from the master camera controller to the camera receiver shall not exceed 500 milli seconds, and shall be constant for each character transmitted. The output of the electronic interface shall be RS-232 compatible, and shall be directed to the camera control receiver. No video codec software shall be required for operation of this interface. The error rate for this interface shall be less than one bit per one million bits transmitted.

At the discretion of the Engineer, this function may be performed by software supplied by the Contractor. This would be implemented by receiving RS-232 data from the video image decompression unit via the ISDN channel, and transmitting these data through first serial port of the video image compression unit to the camera control receiver. In this instance, the Contractor would be expected to use the video codec manufacturer's system Developers Tool Kit for implementation. The error rate required for this software approach shall be less than one bit per ten million bits transmitted.

2.3.2 ISDN Network Termination Unit. The ISDN Network Termination Unit shall be a fully compliant 2B1Q Basic Rate Network Termination 1 (NT-1) unit as described in ANSI specification T1.601-1991. It shall provide the conversion of a 2-wire echo canceled 2B1Q U interface line code, to a 4-wire S/T pseudoternary line code with capability of performing all required maintenance functions. The NT-1 shall connect with the ISDN termination as supplied by the local exchange provider, and with the video codec.

The U interface shall have the following features:

- Fully compliant with ANSI standard T1.601-1991
- Performs all embedded operation channel (EOC) functions
- U interface metallic termination (sealing current)
- Remote activated quiet mode and insertion loss tests
- Local power loss "dying gasp"
- Supports warm-start activation
- Operating distance up to 18000 feet on 26 AWG transmission line

The S/T interface shall have the following features:

- Fully compliant with ANSI standard T1.605-1991
- Performs Q and S bit signaling (multiframing) functions
- Strap selected S/T terminating resistors
- Supports various wiring configurations:
 - Point to point
 - short passive bus
 - extended passive bus
 - branched passive bus
- Provides power via power source 1 or 2 .

The monitor/control/configuration shall have the following features:

- DTE monitor/control/configuration port
- Network management provided in shelf mounted units via Local View.

The NT-1 shall be a stand alone unit, and an AC power supply shall be included.

- 2.3.3 Multiscan Monitor. A minimum thirteen inch (13") diagonal multiscan monitor shall be provide for field site monitoring. This monitor shall remain a part of the equipment resident in each field cabinet. A video distribution amplifier shall be furnished to accept as input the NTSC color signal from the camera, with outputs wired to both the video codec and the multiscan monitor. The NTSC video signal from the camera shall not be degraded by the permanent connection of both the video codec and the multiscan monitor, and while the multiscan monitor is either in a power on or off condition.

The multiscan monitor shall be equipped with multiscan capability to cover a wide range of line frequencies, from 15KHz to 36KHz horizontally, and 50 Hz to 100 Hz vertically. The multiscan monitor shall accept both NTSC composite color input as well as VGA image mode from the video image compression unit. The video input resolution shall be 600 TV lines, and RGB input maximum viewable pixels shall be 1024 x 768 pixels.

- 2.3.4 Power Surge Protection.

- 2.3.4.1 Power and Control Cable Surge Protector. Each power conductor and each control conductor (including return conductors) shall be protected by the appropriate surge protector. All the protective devices shall be housed in each of the equipment enclosures.

2.3.4.2 Telephone Service Surge Protection. The Contractor shall provide individual telephone line surge protection for each telephone circuit installed in the field cabinet. This surge protection shall be installed on the telephone interface panel, with direct connection to a ground rod and shall not degrade the data communication characteristics of the ISDN line.

2.3.4.3 Second Stage Power and Telephone Line Surge Protection. A second stage of power and data line surge protection shall be supplied by two conventional computer power and modem surge protectors. This surge protector units shall each consist of 4 NEMA 5-15R AC receptacles and two RJ-11 modular jacks for data line input and output, combined in a case attached to a 3 conductor power cord.

The AC surge protected circuits shall be rated as follows:

- 15 amperes per socket
- Transient suppression for up to 13,000 ampere spikes
- Instantaneous response time
- Initial clamping voltage of 140 volts AC RMS
- Protection shall be provided for all three modes: Hot to neutral, hot to ground, and neutral to ground
- High energy noise suppression shall be greater than 20 dB at 50Khz, greater than 40 dB at 150Khz, greater than 80 dB at 1Mhz, and greater than 30 dB from 6Mhz to 1000Mhz.

The data line surge protected circuit shall be rated as follows:

- Clamping voltage of 200 V peak plus or minus 10 percent
- Response time of 5 nanoseconds
- Peak transient input voltage of 6KV, 10 microseconds.

Each of the high speed modems shall be connected to a separate surge protection unit, and the power input for the video image compression unit shall be connected to one of the surge protection units. The surge protector shall have an on/off switch for AC power, and the switch shall be backlighted to indicate the on position.

2.3.5 Power Requirements. The compressed video field equipment shall meet all of its specified requirements when the input power is 115 VAC plus or minus 10%, 60 Hz plus or minus 3 Hz. The maximum power required shall not exceed 300 watts.

The equipment operations shall not be affected by the transient voltages, surges and sags normally experienced on

commercial power lines. It is the Contractor's responsibility to check the local power service to determine if any special design is needed for the equipment. The extra cost, if required, shall be included in the bid of this item.

2.3.6 Primary Input Power Interruption. The compressed video field equipment shall meet all the requirements in Section 2.1.4 "Power Interruption" of the National Electrical Manufacturers Associations (NEMA) Standard TS1-1989, latest revision.

2.3.7 Power Service Transients. The compressed video field equipment shall meet the requirements of Section 2.1.6, "Transients, Power Service" of the NEMA Standard TS1-1989, or the latest revision.

2.3.8 Wiring. All wiring shall meet the requirements of the National Electric Code. All wires shall be cut to proper length before assembly. No wire shall be doubled-back to take up slack. Wires shall be neatly laced into cable with nylon lacing or plastic straps. Cables shall be secured with clamps. Service loops shall be provided at all connections.

Coaxial cable between the camera and the video image compression unit shall be of the RG-59 type with a stranded center conductor and 100 percent shield coverage. All coaxial cable shall have a cellular polyethylene dielectric.

2.3.9 Transient Suppression. All DC relays, solenoids and holding coils shall have diodes or other protective devices across the coils for transient suppression.

2.3.10 Power Service Protection. The equipment shall contain readily accessible, manually resettable or replaceable circuit protection devices (such as circuit breakers or fuses) for equipment and power source protection.

Circuit breakers or fuses shall be provided and sized such that no wire, component, connector, PC board or assembly shall be subjected to sustained current in excess of their design limits upon the failure of any single circuit element or wiring.

2.3.11 Fail Safe Provision. The equipment shall be designed such that the failures of the equipment shall not cause the failure of any other unit of equipment.

- 2.3.12 Modular Design. The compressed video field equipment shall be modular in design to allow portions to be readily replaced in the field.

Modules and assemblies shall be clearly identified with name, model number, serial number and any other pertinent information required to facilitate equipment maintenance.

- 2.3.13 Connectors and Harnesses All external connections shall be made by means of connectors. The connectors shall be keyed to preclude improper hookups. All wires to and from the connectors shall be color coded and/or appropriately marked.

Connecting harnesses of appropriate length and terminated with matching connectors shall be provided for interconnection with the communications interface shown in the plans.

All pins and mating connector shall be plated with not less than 30 microns of gold. Connectors utilizing solder type connections shall have each soldered connection cover by a piece of heat shrink tubing securely shrunk to insure that it protects the connection.

- 2.3.14 Software. Software drivers for the operating system(s) shall be supplied for each card in the video compression unit.

- 2.4 Environmental Design Requirements. The equipment shall meet all its specified requirements during and after subjecting to any combination of the following conditions:

- Ambient temperature range of 0 to 140 degrees F (-17 to 60 degrees C).
- Temperature shock not to exceed 30 degrees F (1 degree C) per hour, during which the relative humidity shall not exceed 95%.
- Relative humidity range not to exceed 95% over the temperature range of 40 to 110 degrees F (4 to 43 degrees C).
- Moisture condensation on all surfaces caused by temperature changes.

- 3.0 Construction Methods.

- 3.1 General. The equipment design and construction shall utilize the latest available techniques with a minimum number of parts, subassemblies, circuits, cards, and modules to maximize standardization and commonality.

The equipment shall be designed for ease of maintenance. All component parts shall be readily accessible for inspection and maintenance. Test points shall be provided for checking essential voltages and waveforms.

3.2 Electronic Components. All electronic components shall comply with Special Specification "Electronic Components".

3.3 Mechanical Components. All external screws, nuts and locking washers shall be stainless steel; no self-tapping screws shall be used unless specifically approved by the Engineer.

All parts shall be made of corrosion resistant material, such as plastic, stainless steel, anodized aluminum or brass.

All materials used in construction shall be protected from fungus growth and moisture deterioration.

Dissimilar metals shall be separated by an inert dielectric material.

4.0 Testing, Training, Documentation, Final Acceptance, and Warranty. Testing, training, documentation, final acceptance, and warranty shall be in accordance with Special Specification Item "Testing, Training, Documentation, Final Acceptance and Warranty." Testing shall also include the following:

1. To verify operation of the RS-232 link from the central site to the field site, the Contractor shall set up the video image compression and decompression units side by side at a site designated by the Engineer. The site shall be at a location which has two ISDN lines available for this test. The Contractor shall furnish bit error rate test (BERT) equipment to measure data errors on the RS-232 link originating at the first serial port of the video image decompression unit and terminating at the first serial port of the video image compression unit. This test of the RS-232 link shall confirm that the RS-232 link, operating at 2400 bps, has an error rate not to exceed 1 bit per 10 million bits transmitted and is not code sensitive. Additionally, the Contractor shall supply a dual trace oscilloscope and demonstrate that the time delay of characters transmitted over the RS-232 link do not exceed 500 milliseconds, and that the delay experienced is relatively constant to within 10 milliseconds.

2. To verify operation and interchangeability of the field site and central site codecs, together with operation of their ISDN link, the Contractor shall demonstrate that video images can be transmitted at a satisfactory rate from the central location to the field location. The Contractor shall supply a video cassette recorder (VCR) and tape of traffic scenes for this test. The VCR shall be connected to the central site codec and the traffic scene tape shall be played back, providing input to the central site codec. The Contractor shall demonstrate that the traffic scene is being received at the field site and in a window on the multiscan monitor. Further, there shall be a screen indication at both the field and office sites that the ISDN B channels are bonded. The frame rate demonstrated at the field site shall be at least 6 frames per second for a traffic scene which has 30 percent of the scene being updated by moving vehicles.

5.0 Measurement. The compressed video field equipment will be measured as each unit furnished, installed, made fully operational and tested in accordance with these special specifications.

6.0 Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement," will be paid for at the unit bid price for "Compressed Video (ISDN) Field Equipment". This price shall be full compensation for all equipment described under this Item, all cables and connectors, all documentation and testing and furnishing all labor, materials, warranty, training and equipment necessary to complete the work.

SPECIAL SPECIFICATION

ITEM 6184

LOOP DETECTOR FOR SURVEILLANCE,
COMMUNICATION AND CONTROL (SC&C)

1. DESCRIPTION. This Item shall govern for the minimum requirements of furnishing and installing loop detector wire, loop detector cable, conduit, sealant, and preformed conduit encased loop detectors of the various sizes and types as shown on the plans.
2. MATERIALS. All materials furnished, assembled, fabricated or installed under this item shall be new. Materials shall conform to the pertinent requirements of the following items:

Item 618, "Conduit"
Item 620, "Electrical Conductors"
Item 684, "Traffic Signal Cables"
Item 688, "Traffic Signal Detectors"

Manufacturer data sheets for preformed loop detectors shall be submitted to the Engineer for approval no less than 30 days prior to installation.

Each Loop wire and loop lead-in shall be labeled as shown on the plans. Labels shall be black characters on a white, heat-shrinkable, polyolefin material.

3. CONSTRUCTION METHODS. Loop detectors located at overlay or new pavement locations shall not be saw cut in the final pavement layer, but incorporated into pavement placement operations. Loop detector wire, loop detector cable, and preformed loop detectors shall be encased in conduit of the size necessary to contain the number of turns shown on the plans and as directed by the Engineer when incorporated into pavement placement operations. Loops incorporated into hot asphalt pavement placement operations shall be encased in a high temperature resistant conduit.

Construction methods for saw cutting loops in existing pavement shall conform to the pertinent requirements of Item 688, "Traffic Signal Detectors".

The minimum number of turns for a loop detector will vary depending on the type of pavement, depth in pavement, lead-in length, and the potential for crosstalk. The minimum number of turns shall be as shown on the plans or as determined by the Engineer.

Loop wire within the conduit shall not be twisted. Loop wires shall be adequately stabilized to prevent movement of the wires with respect to one another. The wire bundle shall not be allowed to move within the conduit.

Each loop wire and its lead-in wires shall be separate and independent from one another. Loop wires and its lead-in wires shall not be placed adjacent to one another unless shielded and encased in a separate conduit.

At no time shall loops be placed across or in any expansion joint. If dimensions on the plans should place a loop wire across or in any expansion joint, the loop shall be relocated as directed by the Engineer without additional compensation.

All conduit connections shall be sealed to prevent moisture penetration. Conduit ends shall be sealed to prevent entry of water and debris immediately upon installation. Sealant shall not be adversely affected by surrounding environment or moisture. Open conduit ends shall not be allowed in the field for any period of time.

Labels shall be printed by mechanical device specifically designed for labeling wire. The printer and label shall be capable of printing and containing at least 15 characters. Label shall be printed with black ink. Hand lettering is not acceptable.

4. TESTING. Each loop detector shall be tested in the final pavement structure. Loops incorporated into pavement placement operations shall also be tested prior to placement of pavement. Tests shall be conducted at the termination of a 152 meters lead-in cable. Each test report shall include, at a minimum, the date of installation, date of test, location, manufacturer, number of turns, environmental conditions at installation, environmental conditions at time of test, inductance, resistance, leakage, frequency (20-50 kHz), sensitivity, phasing, and the Quality Factor as defined in the latest edition of the Traffic Detector Handbook published by the Federal Highway Administration (FHWA).

The Contractor shall furnish test data forms containing the sequence of conducting tests, data to be taken, quantitative results for all tests, as well as, certification signature blocks as needed. The test data forms shall be submitted to the Engineer at least 30 days prior to the day the tests are to begin. The test procedures shall have the approval of the Engineer prior to submission of loop detectors for testing. The completed test data form shall be signed by the Contractor's representative responsible for installation. At least one (1) copy of the completed test data forms shall be sent to the Engineer. Any or all tests may be verified at the option of the Engineer.

If any loop detector fails to meet intended functional criteria, the loop detector shall be corrected or another loop detector substituted in its place and the entire test successfully repeated at no additional cost to the Department or extension of the contract period. If a loop detector is modified as a result of a test failure a report shall be generated describing the nature of the failure and the corrective action taken. This report shall be immediately delivered to the Engineer.

5. MEASUREMENT. This Item will be measured by each loop detector installed in the pavement structure, successfully tested, and functional.

6. PAYMENT. Work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Loop Detector (SC&C)", of the various sizes and types shown on the plans. This price shall be full compensation for furnishing all materials; placing all loop detector wires, loop detector cables, conduit, saw cutting the pavement, clearing the saw cuts of loose debris, sealing the saw cuts; installing preformed loop detectors; testing; and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work.



CONTRACT NO. 11963043
 PROJECT NH 96(631)
 CONTROL 0151-06-110
 HIGHWAY US 183
 COUNTY TRAVIS
 DISTRICT 14

PROJECT AGREEMENT ESTIMATE
 TEXAS DEPARTMENT OF TRANSPORTATION

CONTRACTOR FLORIDA TRAFFIC CONTROL DEVICES, INC.

ADDRESS HOUSTON TX

ITEM NO.	DESC	S.P. CODE	NO.	ALT	DESCRIPTION	UNIT	ESTIMATED QUANTITY	PRICE PER UNIT	AMOUNT
DISTRICT 14 COUNTY TRAVIS CONTROL 0151-06-110 LENGTH 6.252 NH 96(631)									
TYPE: INSTALL FRWY TRAFFIC MANAGEMENT SYSTEM									
LIMITS FROM: BALCONES WOODS									
TO : E OF IH 35									
ROADWAY NET LENGTH 6.252 MILES									
0160	0506				FURN AND PLAC TPSL (CL 2) (4 ")	SY	3,900.000	6.500	25,350.00
0162	0509	001			BLOCK SOD (ST AUGUSTINE)	SY	400.000	2.650	1,060.00
0164	0541	001			BRDCST SEED (PERM)(URBAN)(CLAY)	SY	3,500.000	.200	700.00
0168	0501				VEGETATIVE WATERING	MG	77.000	13.150	1,012.55
0416	0506	001			DRILL SHAFT (36 IN)	LF	270.000	138.000	37,260.00
0416	0519	001			DRILL SHAFT (48 IN)(SIGN MTS)	LF	120.000	245.000	29,400.00
0500	0501				MOBILIZATION	LS	1.000	313,500.000	313,500.00
0502	0501	003			BARRICADES, SIGNS AND TRAF HANDLE	MO	12.000	2,625.000	31,500.00
0540	0501				MTL BEAM GD FEN (12 GA)	LF	350.000	10.450	3,657.50
0540	0504				MTL BEAM GD FEN (BLKOUT)(12 GA)	LF	150.000	11.750	1,762.50
0618	0511				CONDUIT (PVC)(SCHD 40)(2 ")	LF	25,840.000	4.400	113,696.00
0618	0514				CONDUIT (PVC)(SCHD 40)(4 ")	LF	290.000	8.550	2,479.50
0618	0532				CONDUIT (PVC)(SCHD 40)(2 ")(BORE)	LF	4,620.000	9.950	45,969.00
0620	0501				ELEC CONDUCTOR (NO. 12) BARE	LF	10,660.000	.250	2,771.60
0620	0502				ELEC CONDUCTOR (NO. 10) BARE	LF	5,125.000	.280	1,435.00
0620	0503				ELEC CONDUCTOR (NO. 8) BARE	LF	4,495.000	.380	1,708.10
0620	0504				ELEC CONDUCTOR (NO. 6) BARE	LF	3,100.000	.430	1,333.00
0620	0505				ELEC CONDUCTOR (NO. 4) BARE	LF	2,990.000	.580	1,734.20
0620	0506				ELEC CONDUCTOR (NO. 2) BARE	LF	9,135.000	.710	6,485.85
0620	0507				ELEC CONDUCTOR (NO. 12) INSULATED	LF	166,640.000	.310	51,658.40
0620	0508				ELEC CONDUCTOR (NO. 10) INSULATED	LF	81,590.000	.340	27,740.60
0620	0509				ELEC CONDUCTOR (NO. 8) INSULATED	LF	22,750.000	.450	10,237.50
0620	0510				ELEC CONDUCTOR (NO. 6) INSULATED	LF	12,060.000	.490	5,909.40
0620	0511				ELEC CONDUCTOR (NO. 4) INSULATED	LF	9,065.000	.650	5,892.25
0620	0512				ELEC CONDUCTOR (NO. 2) INSULATED	LF	25,025.000	.810	20,270.25
0620	0513				ELEC CONDUCTOR (NO.1/0) BARE	LF	6,065.000	1.400	8,491.00
0620	0514				ELEC CONDUCTOR (NO. 1/0) INSULATED	LF	16,635.000	1.450	24,120.75
0622	0509				DUCT CABLE (3/4 IN)(PULL ROPE)	LF	645.000	4.100	2,644.50
0622	0510				DUCT CABLE (1 1/4 IN)(PULL ROPE)	LF	645.000	4.100	2,644.50

ITEM NO.	DESC CODE	S.P. NO.	ALT	DESCRIPTION	UNIT	ESTIMATED QUANTITY	PRICE PER UNIT	AMOUNT
0624	0504			GROUND BOX TY D (162922) W/APRON	EA	121.000	\$ 525.000	63,525.00
0624	0509			GROUND BOX TY D (162922)	EA	14.000	410.000	5,740.00
0628	0545			EL SV TYD (120/240) 070 (NS)GS(T)TP(O)	EA	8.000	1,000.000	8,000.00
0628	0596			ELEC SERV TYD(120/240)100(NS)GS(T)TP(O)	EA	6.000	1,050.000	6,300.00
0628	0595			ELEC SERV TYD(120/240)200(NS)GS(T)TP(O)	EA	8.000	1,110.000	8,880.00
0650	0509	1		OVHD SGN SUPT (25 FT BAL TEE) (21.0 HT)	EA	8.000	17,000.000	136,000.00
0654	0501			SGN WLKWAY W/HNDRL (24 IN)	LF	80.000	73.000	5,840.00
0656	0510			FND FOR TRAF SIG (24 IN DRILL SHFT)	LF	75.000	115.000	8,625.00
0656	0518			TRAF SIG CNTRL FND	CY	9.000	600.000	5,400.00
0684	0544			TRAF SIG CBL (TY C) (2 CONDR) (14 AWG)	LF	51,445.000	280.000	23,664.70
5012	0511			BKH WRK OR FRNT END LDR WRK (EC)(CL 1)	HR	1.000	280.000	280.00
5249	0501			TEMP SEDMT CONT FENCE	LF	500.000	1.300	650.00
5249	0502			TEMP SEDMT CONT FENCE (REMOVE & REPLAC)	LF	500.000	1.700	850.00
5249	0503			TEMP SEDMT CONT FENCE (REMOV)	LF	500.000	5.00	2,500.00
5280	0503			ANTI-GRAFFITI COATING-TYPE II	SF	2,240.000	1.750	3,920.00
5382	0501			SINGLE GDRAIL TERM	EA	3.000	1,900.000	5,700.00
5390	0501			AXLE SENSOR	EA	62.000	715.000	44,330.00
6008	0501			PEDESTAL POLE ASSEM	EA	28.000	350.000	9,800.00
6031	0501			COMMUN CABLE (6 PAIR) (19 AWG)	LF	67,940.000	7.00	47,558.00
6031	0503			COMMUN CABLE (12 PAIR) (19 AWG)	LF	26,580.000	1.000	26,580.00
6031	0509			COMMUN CABLE (18 PAIR) (19 AWG)	LF	29,090.000	1.550	45,089.50
6519	0501			DETECTOR UNIT	EA	162.000	190.000	30,780.00
6519	0502			DETECTOR CARD RACK (8 SLOTS)	EA	34.000	425.000	14,450.00
6519	0503			POWER SUPPLY	EA	34.000	235.000	7,990.00
6574	0501			LOOP DETECTOR (SC&C)	EA	100.000	485.000	48,500.00
6617	0501			DUCT BANK (SC&C)	LF	8,460.000	27.350	231,381.00
6681	0501			COMMUN HUB BULDG (CONCRETE) (8' X 12')	EA	7.000	31,900.000	223,300.00
6682	0501			CCTV CAMERA	EA	18.000	980.000	17,640.00
6682	0502			CCTV CAMERA CONTROLLER	EA	18.000	2,180.000	39,240.00
6682	0503			CCTV CAMERA HOUSING	EA	18.000	575.000	10,350.00
6682	0504			CCTV CAMERA LENS (8-80 MM ZOOM)	EA	18.000	895.000	16,110.00
6682	0505			CCTV PAN/TILT	EA	18.000	1,615.000	29,070.00
6683	0501			CCTV CENTRAL CONTROL PANEL	EA	1.000	1,750.000	1,750.00
6683	0502			CCTV CENTRAL CONTROLLER	EA	1.000	14,300.000	14,300.00
6683	0503			CCTV CENTRAL VCR	EA	1.000	2,200.000	2,200.00
6683	0504			CCTV CENTRAL VIDEO MONITOR	EA	6.000	1,920.000	11,520.00
6683	0506			CCTV VIDEO SIGNAL GENERATOR	EA	1.000	1,820.000	1,820.00
6683	0507			CCTV VIDEO TIMING METER	EA	1.000	495.000	495.00
6684	0501			CAMERA POLE STRUCTURE (40 FT)	EA	12.000	3,800.000	45,600.00
6684	0502			CAMERA POLE STRUCTURE (60 FT)	EA	7.000	5,500.000	38,500.00
6685	0501			ADD/DROP MULDEM	EA	9.000	5,500.000	49,500.00
6689	0501			DATA FIBER OPTIC TRANS (SINGLE MODE)	EA	15.000	3,150.000	47,250.00
6692	0501			FIBER OPTIC CABLE(SINGLE MODE) (2 FIBER)	LF	43,185.000	.840	36,275.40
6692	0502			FIBER OPTIC CABLE(SINGLE MODE) (48FIBER)	LF	46,905.000	2.280	106,943.40
6693	0501			CABINET (CCTV) (POLE MOUNT)	EA	19.000	2,750.000	52,250.00
6693	0502			CABINET (IA) (PEDESTAL MOUNT)	EA	30.000	3,850.000	115,500.00
6694	0501			SYSTEM SUPPORT EQUIPMENT	LS	1.000	159,800.000	159,800.00
6695	0501			LOCAL CONTROL UNIT	EA	22.000	2,450.000	53,900.00
6697	0501			LANE CONTROL SIGNAL HEAD (18 IN)	EA	31.000	2,700.000	83,700.00
6697	0502			LANE CONTROL SIGNAL PANEL	EA	9.000	5,800.000	52,200.00
6698	0501			GROUND BOX (SC&C)	EA	21.000	3,800.000	79,800.00
6699	0501			LIMITED DISTANCE MODEM (STAND ALONE)	EA	68.000	425.000	28,900.00
6699	0502			LIMITED DISTANCE MODEM (RACK MOUNT)	EA	7.000	660.000	4,620.00

ITEM NO.	SC CODE	S.P. NO.	ALT	DESCRIPTION	UNIT	ESTIMATED QUANTITY	PRICE PER UNIT	AMOUNT
6700	0501			PREP OF EXIST CONDUIT	LF	113,435.000	\$.200	22,687.00
6700	0502			GROUND BOX COVER (ADJUST)	EA	3.000	1,120.000	3,360.00
6700	0503			CABLE RACK ASSEMBLY	EA	124.000	30.000	3,720.00
6701	0501			VIDEO FIBER OPTIC TX (S/M)	EA	18.000	525.000	9,450.00
6701	0502			VIDEO FIBER OPTIC RX (S/M)	EA	18.000	690.000	12,420.00
6708	0501			TRANSP MANAGEMENT CONSOLE	EA	1.000	19,800.000	19,800.00
6711	0501			TIS/HAR SYSTEM (TRIAD)	EA	2.000	34,200.000	68,400.00
6712	0501			VOICE COMMUN EQUIP	LS	1.000	690.000	690.00

ALTERNATE NO. 1A
 OVHD SGN SUPT(20 FT BAL TEE)(RECT TUBE) EA 8.000

SUB-TOTAL \$ 3,035,447.95
 SUBTOTAL \$ 3,035,447.95
 ENGINEERING AND CONTINGENCIES 212,481.36

TOTAL ROADWAY \$ 3,247,929.31

MATERIAL FURNISHED BY THE STATE (PART)
 02 EA SYSTEM SERVER
 02 EA CLIENT WORKSTATION
 01 EA RAID STORAGE SYSTEM
 01 EA NETWORK HARDWARE
 01 EA WORKGROUP EQUIPMENT
 01 EA SYSTEM SOFTWARE
 01 EA MAPPING & CAMREA CONTROL SYS
 10 EA FIBER OPTIC CMS FIELD EQUIP
 01 EA FIBER OPTIC CMS MASTER EQUIP

MATERIAL FURNISHED BY THE STATE (PART) LS 1.000 \$ 1,155,000.00
 TOTAL \$ 1,155,000.00
 TX

CONTRACTOR FLORIDA TRAFFIC CONTROL DEVICES, INC. ADDRESS HOUSTON

ITEM NO.	DESC CODE	S.P. NO.	ALT	DESCRIPTION	UNIT	ESTIMATED QUANTITY	PRICE PER UNIT	AMOUNT
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DISTRICT 14 COUNTY TRAVIS CONTROL 0151-06-109 LENGTH 2.386 NH 96(631)

TYPE: INSTALL FTM
 LIMITS FROM: WILLIAMSON C/L
 TO : BALCONES WOODS
 CONTROL 0151-06-109 WILL BE COMBINED INTO
 CONTROL 0151-06-110 AND CHARGED 18.8% OF GROUP A0

ROADWAY NET LENGTH 2.386 MILES

0160 0506 FURN AND PLAC TPLS (CL 2)(4 ") SY 400.000 \$ 6.500 \$ 2,600.00

ITEM NO.	DESC CODE	S.P. NO.	ALT	DESCRIPTION	UNIT	ESTIMATED QUANTITY	PRICE PER UNIT	AMOUNT
0164	0541	001		BRDCST SEED (PERM) (URBAN) (CLAY)	SY	400.000	.200	80.00
0168	0501			VEGETATIVE WATERING	MG	8.000	13.150	105.20
0416	0506	001		DRILL SHAFT (36 IN)	LF	75.000	138.000	10,350.00
0416	0519	001		DRILL SHAFT (48 IN) (SIGN MTS)	LF	30.000	245.000	7,350.00
0618	0511			CONDUIT (PVC) (SCHD 40) (2 ")	LF	6,960.000	4.400	30,624.00
0618	0514			CONDUIT (PVC) (SCHD 40) (4 ")	LF	40.000	8.550	342.00
0618	0532			CONDUIT (PVC) (SCHD 40) (2 ") (BORE)	LF	280.000	9.950	2,786.00
0620	0501			ELEC CONDUCTOR (NO. 12) BARE	LF	2,440.000	.260	634.40
0620	0502			ELEC CONDUCTOR (NO. 10) BARE	LF	35.000	.280	9.80
0620	0503			ELEC CONDUCTOR (NO. 8) BARE	LF	1,495.000	.380	568.10
0620	0504			ELEC CONDUCTOR (NO. 6) BARE	LF	1,705.000	.430	733.15
0620	0505			ELEC CONDUCTOR (NO. 4) BARE	LF	2,275.000	.580	1,319.50
0620	0506			ELEC CONDUCTOR (NO. 2) BARE	LF	3,545.000	.710	2,516.95
0620	0507			ELEC CONDUCTOR (NO. 12) INSULATED	LF	36,220.000	.310	11,228.20
0620	0508			ELEC CONDUCTOR (NO. 10) INSULATED	LF	980.000	.340	333.20
0620	0509			ELEC CONDUCTOR (NO. 8) INSULATED	LF	5,805.000	.450	2,612.25
0620	0510			ELEC CONDUCTOR (NO. 6) INSULATED	LF	14,255.000	.490	6,984.95
0620	0511			ELEC CONDUCTOR (NO. 4) INSULATED	LF	7,300.000	.650	4,745.00
0620	0512			ELEC CONDUCTOR (NO. 2) INSULATED	LF	8,890.000	.810	7,200.90
0620	0513			ELEC CONDUCTOR (NO. 1/0) BARE	LF	1,960.000	1.400	2,744.00
0620	0514			ELEC CONDUCTOR (NO. 1/0) INSULATED	LF	5,850.000	1.450	8,482.50
0622	0509			DUCT CABLE (3/4 IN) (PULL ROPE)	LF	1,000.000	4.100	4,100.00
0622	0510			DUCT CABLE (1 1/4 IN) (PULL ROPE)	LF	1,000.000	4.100	4,100.00
0624	0504			GROUND BOX TY D (162922) W/APRON	EA	17.000	525.000	8,925.00
0624	0509			GROUND BOX TY D (162922)	EA	4.000	410.000	1,640.00
0628	0545			EL SV TYD (120/240) 070 (NS)GS(T)TP(O)	EA	5.000	1,000.000	5,000.00
0628	0596			ELEC SERV TYD(120/240)100(NS)GS(T)TP(O)	EA	2.000	1,050.000	2,100.00
0628	0595			ELEC SERV TYD(120/240)200(NS)GS(T)TP(O)	EA	2.000	1,110.000	2,220.00
0650	0509	1		OVHD SGN SUPT (25 FT BAL TEE) (21.0 HT)	EA	2.000	17,000.000	34,000.00
0656	0510			FND FOR TRAF SIG (24 IN DRIL SHFT)	LF	45.000	115.000	5,175.00
0656	0518			TRAF SIG CNTRL FND	CY	2.000	600.000	1,200.00
0684	0544			TRAF SIG CBL (TY C) (2 CONDR) (14 AWG)	LF	9,190.000	.460	4,227.40
5012	0511			BKH WRK OR FRNT END LDR WRK (EC) (CL 1)	HR	1.000	280.000	280.00
5249	0501			TEMP SEDMT CONT FENCE	LF	170.000	1.300	221.00
5249	0502			TEMP SEDMT CONT FENCE (REMOVE & REPLAC)	LF	170.000	1.700	289.00
5249	0503			TEMP SEDMT CONT FENCE (REMOV)	LF	170.000	.500	85.00
5280	0503			ANTI-GRAFFITI COATING-TYPE II	SF	960.000	1.750	1,680.00
6008	0501			PEDESTAL POLE ASSEM	EA	16.000	350.000	5,600.00
6031	0501			COMMUN CABLE (6 PAIR) (19 AWG)	LF	10,605.000	.700	7,423.50
6031	0503			COMMUN CABLE (12 PAIR) (19 AWG)	LF	17,475.000	1.000	17,475.00
6031	0509			COMMUN CABLE (18 PAIR) (19 AWG)	LF	10,435.000	1.550	16,174.25
6519	0501			DETECTOR UNIT	EA	80.000	190.000	15,200.00
6519	0502			DETECTOR CARD RACK (8 SLOTS)	EA	16.000	425.000	6,800.00
6519	0503			POWER SUPPLY	EA	16.000	235.000	3,760.00
6574	0501			LOOP DETECTOR (SC&C)	EA	12.000	485.000	5,820.00
6617	0501			DUCT BANK (SC&C)	LF	225.000	27.350	6,153.75
6681	0501			COMMUN HUB BULDG (CONCRETE) (8' X 12')	EA	3.000	31,900.000	95,700.00
6682	0501			CCTV CAMERA	EA	5.000	980.000	4,900.00
6682	0502			CCTV CAMERA CONTROLLER	EA	5.000	2,180.000	10,900.00
6682	0503			CCTV CAMERA HOUSING	EA	5.000	575.000	2,875.00
6682	0504			CCTV CAMERA LENS (8-80 MM ZOOM)	EA	5.000	895.000	4,475.00
6682	0505			CCTV PAN/TILT	EA	5.000	1,615.000	8,075.00
6683	0504			CCTV CENTRAL VIDEO MONITOR	EA	2.000	1,920.000	3,840.00

ITEM NO.	SC CODE	S.P. NO.	ALT	DESCRIPTION	UNIT	ESTIMATED QUANTITY	PRICE PER UNIT	AMOUNT
6684	0501			CAMERA POLE STRUCTURE (40 FT)	EA	5.000	\$ 3,800.000	19,000.00
6685	0501			ADD/DROP MULDEM	EA	3.000	5,500.000	16,500.00
6689	0501			DATA FIBER OPTIC TRANS (SINGLE MODE)	EA	5.000	3,150.000	15,750.00
6692	0501			FIBER OPTIC CABLE(SINGLE MODE)(2 FIBER)	LF	5,510.000	.840	4,628.40
6692	0502			FIBER OPTIC CABLE(SINGLE MODE)(48FIBER)	LF	13,300.000	2.280	30,324.00
6693	0501			CABINET (CCTV)(POLE MOUNT)	EA	5.000	2,750.000	13,750.00
6693	0502			CABINET (IA)(PEDESTAL MOUNT)	EA	16.000	3,850.000	61,600.00
6695	0501			LOCAL CONTROL UNIT	EA	10.000	2,450.000	24,500.00
6697	0501			LANE CONTROL SIGNAL HEAD (18 IN)	EA	7.000	2,700.000	18,900.00
6697	0502			LANE CONTROL SIGNAL PANEL	EA	2.000	5,800.000	11,600.00
6698	0501			GROUND BOX (SC&C)	EA	1.000	3,800.000	3,800.00
6699	0501			LIMITED DISTANCE MODEM (STAND ALONE)	EA	17.000	425.000	7,225.00
6699	0502			LIMITED DISTANCE MODEM (RACK MOUNT)	EA	3.000	660.000	1,980.00
6700	0501			PREP OF EXIST CONDUIT	LF	30,655.000	.200	6,131.00
6700	0503			CABLE RACK ASSEMBLY	EA	31.000	30.000	930.00
6701	0501			VIDEO FIBER OPTIC TX (S/M)	EA	5.000	525.000	2,625.00
6701	0502			VIDEO FIBER OPTIC RX (S/M)	EA	5.000	690.000	3,450.00
6712	0501			VOICE COMMUN EQUIP	LS	1.000	690.000	690.00

ALTERNATE NO. 1A
 OVHD SGN SUPT(20FT BAL TEE)(RECT TUBE) EA 2.000

ENGINEERING AND CONTINGENCIES \$ 637,557.40

TOTAL ROADWAY \$ 44,629.02

SUMMARY: CONTROL 0151-06-110 PROJECT NH 96(631)

ROADWAY	ESTIMATED COST	LENGTH
MATERIAL FURNISHED BY THE STATE (PART)	\$ 3,247,929.31	6.252
CONTR BID ITEMS	\$ 1,155,000.00	
TOTAL CONTROL	\$ 4,402,929.31	6.252

FUNDING TOTALS

APPN-CODE	APPL-PCT	TOTAL-PROJ-COST	FED-PERCENT	FEDERAL-FUNDS	STA-PERCENT	STATE-FUNDS	LOC-PERCENT	LOCAL-FUNDS
315	100.0	\$ 4,402,929.31	80.0	\$ 3,522,343.44	20.0	\$ 880,585.86	0.0	\$ 0.00

ROADWAY

APPN-CODE	APPL-PCT	TOTAL-PROJ-COST	FED-PERCENT	FEDERAL-FUNDS	STA-PERCENT	STATE-FUNDS	LOC-PERCENT	LOCAL-FUNDS
		\$ 682,186.42		\$ 682,186.42				2.386
		\$ 637,557.40		\$ 637,557.40				2.386
		\$ 682,186.42		\$ 682,186.42				2.386

FUNDING TOTALS

APPN-CODE	APPL-PCT	TOTAL-PROJ-COST	FED-PERCENT	FEDERAL-FUNDS	STA-PERCENT	STATE-FUNDS	LOC-PERCENT	LOCAL-FUNDS
315	100.0	\$ 682,186.42	80.0	\$ 545,749.13	20.0	\$ 136,437.28	0.0	\$ 0.00

TOTAL PROJECT
TOTAL BID ITEMS

\$ 5,085,115.73
\$ 3,673,005.35

8.638



CONTRACT NO. 11963043
 PROJECT STP 95(361)MM
 CONTROL 0914-00-082
 HIGHWAY VA
 COUNTY TRAVIS
 DISTRICT 14

PROJECT AGREEMENT ESTIMATE
 TEXAS DEPARTMENT OF TRANSPORTATION

CONTRACTOR FLORIDA TRAFFIC CONTROL DEVICES, INC.

ADDRESS HOUSTON TX

ITEM NO.	DESC	S.P.	ESTIMATED QUANTITY	PRICE PER UNIT	AMOUNT
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DISTRICT 14 COUNTY TRAVIS CONTROL 0914-00-082 LENGTH .100 STP 95(361)MM
 TYPE: INCIDENT MANAGEMENT-INSTALL CAMERAS
 LIMITS FROM: ON IH 35 IN AUSTIN TRANSPORTATION STUDY CONTROL 0914-00-082 WILL BE COMBINED INTO
 TO : (ATS) BOUNDARIES CONTROL 0151-06-110 AND CHARGED 02.0% OF GROUP A0

ROADWAY NET LENGTH .100 MILES

0160	0506		FURN AND PLAC TPSL (CL 2)(4 ")	SY	150.000	\$ 6.500	975.00
0164	0541	001	BRDCST SEED (PERM)(URBAN)(CLAY)	SY	150.000	.200	30.00
0168	0501		VEGETATIVE WATERING	MG	3.000	13.150	39.45
0416	0506	001	DRILL SHAFT (36 IN)	LF	30.000	138.000	4,140.00
0618	0511		CONDUIT (PVC)(SCHD 40)(2 ")	LF	580.000	4.400	2,552.00
0618	0532		CONDUIT (PVC)(SCHD 40)(2 ") (BORE)	LF	200.000	9.950	1,990.00
0620	0503		ELEC CONDUCTOR (NO. 8) BARE	LF	495.000	.380	188.10
0620	0509		ELEC CONDUCTOR (NO. 8) INSULATED	LF	990.000	.450	445.50
0624	0504		GROUND BOX TY D (162922) W/APRON	EA	5.000	525.000	2,625.00
0624	0509		GROUND BOX TY D (162922)	EA	1.000	410.000	410.00
0628	0545		EL SV TYD (120/240) 070 (NS)GS(T)TP(O)	EA	2.000	1,000.000	2,000.00
6031	0501		COMMUN CABLE (6 PAIR)(19 AWG)	LF	225.000	.700	157.50
6682	0501		CCTV CAMERA	EA	2.000	980.000	1,960.00
6682	0502		CCTV CAMERA CONTROLLER	EA	2.000	2,180.000	4,360.00
6682	0503		CCTV CAMERA HOUSING	EA	2.000	575.000	1,150.00
6682	0504		CCTV CAMERA LENS (8-80 MM ZOOM)	EA	2.000	895.000	1,790.00
6682	0505		CCTV PAN/TILT	EA	2.000	1,615.000	3,230.00
6684	0501		CAMERA POLE STRUCTURE (40 FT)	EA	2.000	3,800.000	7,600.00
6690	0501		COMPRESSED VIDEO (ISDN) CENT EQUIP	EA	1.000	12,500.000	12,500.00
6691	0501		COMPRESSED VIDEO (ISDN) FIELD EQUIP	EA	1.000	12,500.000	12,500.00
6693	0501		CABINET (CCTV)(POLE MOUNT)	EA	2.000	2,750.000	5,500.00
6699	0501		LIMITED DISTANCE MODEM (STAND ALONE)	EA	1.000	425.000	425.00
6701	0501		VIDEO FIBER OPTIC TX (S/M)	EA	1.000	525.000	525.00
6701	0502		VIDEO FIBER OPTIC RX (S/M)	EA	1.000	690.000	690.00

ENGINEERING AND CONTINGENCIES \$ 67,782.55

TOTAL ROADWAY \$ 72,527.33

SUMMARY: CONTROL 0914-00-082 PROJECT STP 95(361)MM

ESTIMATED COST

ROADWAY \$ 72,527.33

TOTAL PROJECT \$ 72,527.33

TOTAL BID ITEMS \$ 67,782.55

LENGTH

.100

.100

CONTRACT SUMMARY

	ESTIMATED COST	LENGTH
0151-06-110 NH 96(631)		
ROADWAY		
MATERIAL FURNISHED BY THE STATE (PART)	\$ 3,247,929.31	6.252
	\$ 1,155,000.00	
TOTAL 0151-06-110	\$ 4,402,929.31	6.252
0151-06-109 NH 96(631)		
ROADWAY	\$ 682,186.42	2.386
TOTAL 0151-06-109	\$ 682,186.42	2.386
0914-00-082 STP 95(361)MM		
ROADWAY	\$ 72,527.33	.100
TOTAL 0914-00-082	\$ 72,527.33	.100
TOTAL BID ITEMS	\$ 3,740,787.90	
ENGINEERING AND CONTINGENCIES	261,855.16	
TOTAL MISCELLANEOUS COST	1,155,000.00	
TOTAL COST	\$ 5,157,643.06	8.738

TEXAS DEPARTMENT OF TRANSPORTATION

CONTRACT SUMMARY

CONTRACT NUMBER	PROJECT NUMBER	COUNTY	TOTAL BID	TOTAL BID + E&C
11963043	NH 96(631), ETC.	227	\$ 3,740,787.90	\$ 4,002,643.05
TOTALS			\$ 3,740,787.90	\$ 4,002,643.05

CONTROL 0151-06-110 WILL BE COMBINED INTO CONTROL 0151-06-110 AND CHARGED 79.2% OF GROUP A0
CONTROL 0151-06-109 WILL BE COMBINED INTO CONTROL 0151-06-110 AND CHARGED 18.8% OF GROUP A0
CONTROL 0914-00-082 WILL BE COMBINED INTO CONTROL 0151-06-110 AND CHARGED 02.0% OF GROUP A0

CONTRACT NO. 11973016
 PROJECT NH 97(530)
 CONTROL 0015-13-266
 HIGHWAY IH 35
 COUNTY TRAVIS
 DISTRICT 14

PROJECT AGREEMENT ESTIMATE
 TEXAS DEPARTMENT OF TRANSPORTATION

CONTRACTOR MICA CORPORATION

ADDRESS FORT WORTH TX
 ESTIMATED QUANTITY PRICE PER UNIT AMOUNT

ITEM NO. DESC CODE NO. ALT DESCRIPTION UNIT LENGTH NET LENGTH .001 NH 97(530)

DISTRICT 14 COUNTY TRAVIS CONTROL 0015-13-266 LENGTH .001 NH 97(530)

TYPE: REPLACE LANE CONTROL SIGNALS
 LIMITS FROM: US 290
 TO : COLORADO RIVER

PREPARED BY DIRECTOR OF TRANSPORTATION OPERATIONS

LANE CONTROL SIGNALS NET LENGTH .001 KILOMETERS

0500 5001	MOBILIZATION	LS	1.000	\$	11,000.000	\$	11,000.00
0502 5001	BARRICADES, SIGNS AND TRAF HANDLE	MO	2.000		4,020.000		8,040.00
6183 5001	LCS HEAD (457 MM) (6 MESSAGE)	EA	15.000		3,500.000		52,500.00

ENGINEERING AND CONTINGENCIES
 SUBTOTAL \$ 71,540.00
 \$ 7,869.40

TOTAL LANE CONTROL SIGNALS \$ 79,409.40

CONTRACTOR MICA CORPORATION

ADDRESS FORT WORTH TX
 ESTIMATED QUANTITY PRICE PER UNIT AMOUNT

ITEM NO. DESC CODE NO. ALT DESCRIPTION UNIT LENGTH NET LENGTH .001 NH 97(530)

DISTRICT 14 COUNTY TRAVIS CONTROL 0015-13-267 LENGTH .001 NH 97(530)

TYPE: INSTALL SURVEILLANCE SYSTEM
 LIMITS FROM: US 290
 TO : COLORADO RIVER

SURVEILLANCE SYSTEM NET LENGTH .001 KILOMETERS

0618 5005 CONDUIT (RM) (50 MM) M 115.000 \$ 34.000 \$ 3,910.00

ITEM NO.	DESC CODE	S.P. NO.	ALT	DESCRIPTION	UNIT	ESTIMATED QUANTITY	PRICE PER UNIT	AMOUNT
0624	5004			GROUND BOX TY D (162922) W/APRON	EA	1.000	\$ 700.000	700.00
0624	5009			GROUND BOX TY D (162922)	EA	4.000	650.000	2,600.00
0684	5044			TRAF SIG CBL (TY C) (2 CONDR) (14 AWG)	M	1,395.000	3.000	4,185.00
5012	5001			TEMP SEDMT CONT FENCE	M	3.000	30.000	90.00
5012	5003			TEMP SEDMT CONT FENCE (REMOVE)	M	3.000	20.000	60.00
6024	5001			DETECTOR UNIT	EA	17.000	215.000	3,655.00
6024	5002			DETECTOR CARD RACK (8 SLOTS)	EA	4.000	865.000	3,460.00
6024	5003			DETECTOR CARD RACK POWER SUPPLY	EA	4.000	1,400.000	5,600.00
6184	5001			LOOP DETECTOR (SC&C)	EA	33.000	255.000	8,415.00

ENGINEERING AND CONTINGENCIES \$ 32,675.00

TOTAL SURVEILLANCE SYSTEM \$ 36,269.25

SUMMARY: CONTROL 0015-13-266 PROJECT NH 97(530)

LANE CONTROL SIGNALS	ESTIMATED COST	LENGTH
CONTR BID ITEMS	\$ 79,409.40	.001
TOTAL CONTROL	\$ 79,409.40	.001

FUNDING TOTALS

APPN-CODE	APPL-PCT	TOTAL-PROJ-COST	FED-PERCENT	FEDERAL-FUNDS	STA-PERCENT	STATE-FUNDS	LOC-PERCENT	LOCAL-FUNDS
Q05	100.0	\$ 79,409.40	80.0	\$ 63,527.52	20.0	\$ 15,881.88	0.0	\$ 0.00

SURVEILLANCE SYSTEM CONTROL 0015-13-267 PROJECT NH 97(530)

CONTR BID ITEMS	ESTIMATED COST	LENGTH
CONTR BID ITEMS	\$ 36,269.25	.001
TOTAL CONTROL	\$ 36,269.25	.001

FUNDING TOTALS

APPN-CODE	APPL-PCT	TOTAL-PROJ-COST	FED-PERCENT	FEDERAL-FUNDS	STA-PERCENT	STATE-FUNDS	LOC-PERCENT	LOCAL-FUNDS
Q05	100.0	\$ 36,269.25	80.0	\$ 29,015.40	20.0	\$ 7,253.85	0.0	\$ 0.00

TOTAL PROJECT	AMOUNT
TOTAL PROJECT	\$ 115,678.65
TOTAL BID ITEMS	\$ 104,215.00

CONTRACT SUMMARY

	ESTIMATED COST	LENGTH
0015-13-266 NH 97(530)		
LANE CONTROL SIGNALS	\$ 79,409.40	.001
TOTAL 0015-13-266	\$ 79,409.40	.001
0015-13-267 NH 97(530)		
SURVEILLANCE SYSTEM	\$ 36,269.25	.001
TOTAL 0015-13-267	\$ 36,269.25	.001
TOTAL BID ITEMS	\$ 104,215.00	
ENGINEERING AND CONTINGENCIES	11,463.65	
TOTAL MISCELLANEOUS COST	0.00	
TOTAL COST	\$ 115,678.65	.002

TEXAS DEPARTMENT OF TRANSPORTATION

CONTRACT SUMMARY

CONTRACT NUMBER	PROJECT NUMBER	COUNTY	TOTAL BID	TOTAL BID + E&C
11973016	NH 97(530), ETC.	227	\$ 104,215.00	\$ 115,678.65
TOTALS			\$ 104,215.00	\$ 115,678.65