

**STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND
DEVELOPMENT**

LETTER BID PROPOSAL



**STATE PROJECT NO. 737-36-0018
DMS PHASE 2 RETROFIT
(NO PHASE 1B VULTRON)**

I-10 & I-610

ORLEANS PARISH



Elizabeth Delaney
26 March 2009

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NOTICE TO CONTRACTORS

Sealed paper bids for the following project will be received by the Department of Transportation and Development (DOTD). Paper bids shall be delivered to Louisiana Department of Transportation and Development, ITS Section, DOTD Annex Building 2nd Floor, 1212 East Highway Drive, Baton Rouge, Louisiana 70802 until 10:00 a.m. on **Thursday, April 16, 2009**. Electronic bids will not be allowed. Beginning at 10:00 a.m., all bids will be publicly opened and read in the ITS Section Conference Room. No bids will be received after 10:00 a.m. Any person requiring special accommodations shall notify the DOTD at (225) 379-2516 not less than 3 business days before bid opening.

STATE PROJECT NO. 737-36-0018

DESCRIPTION: **DMS PHASE 2 RETROFIT
(NO PHASE 1B VULTRON)**

ROUTE: I-10, I-610

PARISH: ORLEANS

TYPE: INSTALLATION OF DOTD FURNISHED EQUIPMENT

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
(Contracting Agency)

ESTIMATED COST RANGE: \$250,000 to \$499,999

PROJECT ENGINEER: TBD

PROJECT MANAGER: Ms. Elizabeth Delaney, P.E., Louisiana Department of Transportation and Development, ITS Section, DOTD Annex Building 2nd Floor, 1212 East Highway Drive, Baton Rouge, Louisiana 70802. Phone: (225) 379-2519.

PROJECT COORDINATOR: Mr. Steve Strength, P.E., Louisiana Department of Transportation and Development, 1440 US Hwy 90, Bridge City, Louisiana 70094. Phone: (504) 437-3100.

COST OF PROPOSAL FORMS: FREE

COST OF PLANS: Included in proposal (no additional charge).

Bids must be prepared and submitted in accordance with Section 102 of the 2006 Louisiana Standard Specifications for Roads and Bridges as amended by the project specifications, and must include all information required by the proposal.

NOTICE TO CONTRACTORS (CONTINUED)

Plans and/or proposals may be obtained at Louisiana Department of Transportation and Development, ITS Section, DOTD Annex Building 2nd Floor, 1212 East Highway Drive, Baton Rouge, Louisiana 70802, or by contacting the DOTD; Email elizabeth.delaney@la.gov, Phone (225) 379-2519, FAX: (225) 379-2521. Proposals will not be issued later than 24 hours prior to the time set for opening bids. Plans and/or specifications may be seen at the Project Manager's office in Baton Rouge. Upon request, the Project Manager will show the work.

The U. S. Department of Transportation (DOT) operates a toll free "Hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., Eastern Time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should call 1-800-424-9071. All information will be treated confidentially and caller anonymity will be respected.

STATE PROJECT NO. 737-36-0018
SPECIAL PROVISIONS

GENERAL BIDDING REQUIREMENTS: The specifications, contract and bonds governing the construction of the work are the 2006 Edition of the Louisiana Standard Specifications for Roads and Bridges, together with any supplementary specifications and special provisions attached to this proposal.

Bids shall be prepared and submitted in accordance with Section 102 of the Standard Specifications. **ONLY PAPER BIDS WILL BE ACCEPTED ON THIS PROJECT.**

The plans herein referred to are the plans approved and marked with the project number, route and Parish, together with all standard or special designs that may be included in such plans.

The bidder declares that the only parties interested in this proposal as principals are those named herein; that this proposal is made without collusion or combination of any kind with any other person, firm, association, or corporation, or any member or officer thereof; that careful examination has been made of the site of the proposed work, the plans, Standard Specifications, supplementary specifications and special provisions above mentioned, and the form of contract and payment, performance, and retainage bond; that the bidder agrees, if this proposal is accepted, to provide all necessary machinery, tools, apparatus and other means of construction and will do all work and furnish all material specified in the contract, in the manner and time therein prescribed and in accordance with the requirements therein set forth; and agrees to accept as full compensation therefore, the amount of the summation of the products of the quantities of work and material incorporated in the completed project, as determined by the engineer, multiplied by the respective unit prices herein bid.

It is understood by the bidder that the quantities given in this proposal are a fair approximation of the amount of work to be done and that the sum of the products of the approximate quantities multiplied by the respective unit prices bid shall constitute gross sum bid, which sum shall be used in comparison of bids and awarding of the contract.

The bidder further agrees to perform all extra and force account work that may be required on the basis provided in the specifications.

The bidder further agrees that within 15 calendar days after the contract has been transmitted to him, he will execute the contract and furnish the Department satisfactory surety bonds.

If this proposal is accepted and the bidder fails to execute the contract and furnish bonds as above provided, the proposal guaranty shall become the property of the Department; otherwise, said proposal guaranty will be returned to the bidder; all in accordance with Subsection 103.04.

DEFINITIONS AND TERMS (07/07): Subsection 101.03 of the Standard Specifications is amended as follows.

The definition for "Proposal/Bid Guaranty" is deleted and following substituted.

Proposal/Bid Guaranty. The required security furnished with a bid. The only form of security acceptable is a Bid Bond.

BIDDING REQUIREMENTS (07/07) Section 102 of the Standard Specifications and the Supplemental Specifications thereto, is amended as follows.

Subsection 102.02, CONTRACTORS' LICENSING LAWS is amended to include the following requirements.

The contractor shall be licensed as follows:

STATE PROJECT NO. 737-36-0018
SPECIAL PROVISIONS

- HIGHWAY, STREET AND BRIDGE CONSTRUCTION
- ELECTRICAL WORK (STATEWIDE)
- SPECIALTY: TELECOMMUNICATIONS
- SPECIALTY: ELECTRICAL SIGNS, SCOREBOARDS, DISPLAYS, BILLBOARD CONSTRUCTION

Subsection 102.09, Proposal/Bid Guaranty is deleted and the following substituted.

102.09 PROPOSAL/BID GUARANTY. Each bid shall be accompanied by a proposal/bid guaranty in an amount not less than five percent of the total bid amount when the bidder's total bid amount as calculated by the Department in accordance with Subsection 103.01 is greater than \$50,000. No proposal/bid guaranty is required for projects when the bidder's total bid amount as calculated by the Department is \$50,000 or less. The official total bid amount for projects that include alternates is the total of the bidder's base bid and all alternates bid on and accepted by the Department. The proposal/bid guaranty submitted by the bidder shall be a bid bond made payable to the contracting agency as specified on the bid bond form provided in the construction proposal. No other form of security will be accepted.

The bid bond shall be on the "Bid Bond" form provided in the construction proposal, on a form that is materially the same in all respects to the "Bid Bond" form provided, or on an electronic form that has received Department approval prior to submission. The bid bond shall be filled in completely, shall be signed by an authorized officer, owner or partner of the bidding entity, or each entity representing a joint venture; shall be signed by the surety's agent or attorney-in-fact; and shall be accompanied by a notarized document granting general power of attorney to the surety's signer. The bid bond shall not contain any provisions that limit the face amount of the bond.

The bid bond will be written by a surety or insurance company that is in good standing and currently licensed to write surety bonds in the State of Louisiana by the Louisiana Department of Insurance and also conform to the requirements of LSA-R.S. 48:253.

All signatures required on the bid bond may be original, mechanical reproductions, facsimiles or electronic. Electronic bonds issued in conjunction with electronic bids must have written Departmental approval prior to use. The Department will make a listing of approved electronic sureties providers on the Bidx.com site.

MAINTENANCE OF TRAFFIC (11/13/08): Subsection 104.03 of the 2006 Standard Specifications is amended to include the following requirements.

The contractor shall provide for and maintain through and local traffic at all times and shall conduct his operations in such manner as to cause the least possible interference with traffic at junctions with roads, streets and driveways.

PAYMENT ADJUSTMENT (12/08): Section 109, Measurement and Payment of the 2006 Standard Specifications, and the supplemental specifications thereto, is amended to add the following.

This project is not designated for payment adjustments for asphalt cements or fuels.

CONTRACT TIME (03/05): The entire contract shall be completed in all details and ready for final acceptance in accordance with Subsection 105.17(b) within **SIXTY (60) calendar days**.

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Prior to assessment of contract time, the contractor will be allowed 10 calendar days from the date stipulated in the Notice to Proceed to commence with portions of the contract work including but not limited to assembly periods, preparatory work for materials fabrications such as test piles, or other activities which hinder progress in the beginning stages of construction. Prior to issuance of the Notice to Proceed, the Department will consider extending the assembly period upon written request from the contractor justifying the need for additional time.

The contractor shall be responsible for maintenance of traffic from the beginning of the assembly period. During the assembly period, the contractor will be allowed to do patching and other maintenance work necessary to maintain the roadway with no time charges when approved by the engineer.

If the contractor begins regular construction operations prior to expiration of the assembly period, the assessment of contract time will commence at the time construction operations are begun.

LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
SUPPLEMENTAL SPECIFICATIONS
(FOR 2006 STANDARD SPECIFICATIONS)

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**LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
SUPPLEMENTAL SPECIFICATIONS**

The 2006 Louisiana Standard Specifications for Roads and Bridges and supplemental specifications thereto are amended as follows.

PART I – GENERAL PROVISIONS

SECTION 101 – GENERAL INFORMATION, DEFINITIONS, AND TERMS:

Subsection 101.03 – Definitions (07/07), Pages 3 – 13).

Delete the definition for “Proposal/Bid Guaranty” and substitute the following.

Proposal / Bid Guaranty. The required security furnished with a bid. The only form of security acceptable is a Bid Bond.

SECTION 102 – BIDDING REQUIREMENTS:

Subsection 102.09 – Proposal / Bid Guaranty (07/07), Page 19.

Delete the contents of this subsection and substitute the following.

PROPOSAL/BID GUARANTY. Each bid shall be accompanied by a proposal/bid guaranty in an amount not less than five percent of the total bid amount when the bidder’s total bid amount as calculated by the Department in accordance with Subsection 103.01 is greater than \$50,000. No proposal/bid guaranty is required for projects when the bidder’s total bid amount as calculated by the Department is \$50,000 or less. The official total bid amount for projects that include alternates is the total of the bidder's base bid and all alternates bid on and accepted by the Department. The proposal/bid guaranty submitted by the bidder shall be a bid bond made payable to the contracting agency as specified on the bid bond form provided in the construction proposal. No other form of security will be accepted.

The bid bond shall be on the "Bid Bond" form provided in the construction proposal, on a form that is materially the same in all respects to the "Bid Bond" form provided, or on an electronic form that has received Department approval prior to submission. The bid bond shall be filled in completely, shall be signed by an authorized officer, owner or partner of the bidding entity, or each entity representing a joint venture; shall be signed by the surety's agent or attorney-in-fact; and shall be accompanied by a notarized document granting general power of attorney to the surety's signer. The bid bond shall not contain any provisions that limit the face amount of the bond.

The bid bond will be written by a surety or insurance company that is in good standing and currently licensed to write surety bonds in the State of Louisiana by the Louisiana Department of Insurance and also conform to the requirements of LSA-R.S. 48:253.

All signatures required on the bid bond may be original, mechanical reproductions, facsimiles or electronic. Electronic bonds issued in conjunction with electronic bids must have written Departmental approval prior to use. The Department will make a listing of approved electronic sureties providers on the Bidx.com site.

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SECTION 107 – LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:

Subsection 107.05 – Federal Aid Participation (04/08), Pages 57 and 58.

Delete the second paragraph.

SECTION 108 – PROSECUTION AND PROGRESS:

Subsection 108.04 – Prosecution of Work (03/05) Pages 74 and 75.

Add the following sentence to the third paragraph of Heading (b).

Should the surety or the Department take over prosecution of the work, the contractor shall remain disqualified for a period of one year from the completion of the project, unless debarment proceedings are instituted.

When the Department of Transportation and Development is not the contracting agency on the project, the second paragraph under Heading (c) is deleted.

PART II – EARTHWORK

SECTION 202 – REMOVING OR RELOCATING STRUCTURES AND OBSTRUCTIONS:

Subsection 202.06 – Plugging or Relocating Existing Water Wells (03/04), Page 105.

Delete the first sentence and substitute the following.

All abandoned wells shall be plugged and sealed at the locations shown on the plans, or as directed by the engineer, in accordance with the “Water Well Rules, Regulations, and Standards, State of Louisiana.” This document is available at the Department of Transportation and Development, Water Resources Section, P. O. Box 94245, Baton Rouge, Louisiana 70804-9245. The Water Resource Section’s telephone number is (225) 274-4172.

PART III – BASE COURSES

SECTION 302 – CLASS II BASE COURSE:

Subsection 302.05 – Mixing (08/06), Pages 152 and 153.

Delete the first sentence of Subheading (b)(1), In-Place Mixing, and substitute the following.

In-place mixing shall conform to Heading (a)(1) except that the percentage of Type I portland cement required will be 6 percent by volume.

SECTION 305 – SUBGRADE LAYER:

Subsection 305.06 – Payment (01/08), Page 184.

Delete the contents of this subsection and substitute the following.

305.06 Payment. Payment for subgrade layer will be made at the contract unit price which includes lime, lime treatment, cement, cement treatment, water, stone, recycled portland cement concrete, crushed slag, blended calcium sulfate, asphaltic concrete, and asphalt curing membrane or prime coat, subject to the payment adjustment provisions of Section 1002 for specification deviations of asphalt materials and Subsection 303.11(a) for density deficiencies of cement treated materials. Adjustments in pay for increase or decrease in the percent cement ordered by the engineer will be in accordance with Subsection 303.13. Adjustments in pay for

increase or decrease in the percent lime ordered by the engineer will be based on the price of lime shown on paid invoices (total of all charges). The Materials and Testing Section will provide the payment adjustment percentage for properties of asphalt materials.

Payment for geotextile fabric will be included in the contract unit price for subgrade layer.

Payment will be made under:

Item No.	Pay Item	Pay Unit
305-01	Subgrade Layer _____ in (mm) Thick	Square Yard (Sq m)

SECTION 307 – PERMEABLE BASES:

Subsection 307.02 – Materials (09/07), Pages 187 and 188.

Delete the contents of Subheading (b), Asphalt, and substitute the following.

(b) Asphalt: The asphalt for asphalt treated permeable base shall be an approved polymer modified asphalt cement, PG 76-22m, or PG 82-22rm complying with Section 1002. The percentage of asphalt cement shall be 2.0 percent to 4.0 percent by weight (mass) of the total mixture. Asphalt cement content and mixing process shall be such that all aggregates are visibly coated. The mixture shall retain 90 percent coating when tested in accordance with DOTD TR 317.

A job mix formula shall be submitted and approved in accordance with Section 502.

SECTION 308 – IN-PLACE CEMENT TREATED BASE COURSE:

All Subsections within Section 308 – (07/07), Pages 191 – 198.

Whenever the reference to “DOTD TR-432, Method D” is used, it shall mean “DOTD TR-432”.

PART V – ASPHALTIC PAVEMENTS

SECTION 502 – SUPERPAVE ASPHALTIC CONCRETE MIXTURES:

Subsection 502.02 – Materials (08/06) (11/07), Pages 210 – 213.

Delete Table 502-2, Superpave Asphalt Cement Usage under Subheading (a) and substitute the following.

Table 502-2
Superpave Asphalt Cement Usage

Current Traffic Load Level	Mixture Type	Grade of Asphalt Cement
Level 1	Wearing Course	PG 70-22m
	Binder Course	PG 70-22m
	Base Course	PG 64-22
Level 2	Wearing Course	PG 76-22m
	Binder Course	PG 76-22m
Level A	Incidental Paving	PG 70-22m

Note: A PG 82-22 rm, Waste Tire Rubber Modified Asphalt, may be substituted for any other grade of asphalt cement.

Delete Table 502-3, Aggregate Friction Rating under Subheading (c)(1) and substitute the following.

Table 502-3
Aggregate Friction Rating

Friction Rating	Allowable Usage
I	All mixtures
II	All mixtures
III	All mixtures, except travel lane wearing courses with plan ADT greater than 7000 ¹
IV	All mixtures, except travel lane wearing courses ²

¹ When plan current average daily traffic (ADT) is greater than 7000, blending of Friction Rating III aggregates and Friction Rating I and/or II aggregates will be allowed for travel lane wearing courses at the following percentages. At least 30 percent by weight (mass) of the total aggregates shall have a Friction Rating of I, or at least 50 percent by weight (mass) of the total aggregate shall have a Friction Rating of II. The frictional aggregates used to obtain the required percentages shall not have more than 10 percent passing the No. 8 (2.36 mm) sieve.

² When the average daily traffic (ADT) is less than 2500, blending of Friction Rating IV aggregates with Friction Rating I and/or II aggregates will be allowed for travel lane wearing courses at the following percentages. At least 50 percent by weight (mass) of the total aggregate in the mixture shall have a Friction Rating of I or II. The frictional aggregates used to obtain the required percentages shall not have more than 10 percent passing the No. 8 (2.36 mm) sieve.

Subsection 502.14 – Lot Sizes (11/07), Pages 232 and 233.

Delete the first sentence of the first paragraph and substitute the following.

A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for the Department at a specific plant, delivered to a specific DOTD project.

SECTION 508 – STONE MATRIX ASPHALT:

Subsection 508.01 – Description (09/07), Page 274.

Delete this subsection and substitute the following.

508.01 DESCRIPTION. This work consists of furnishing and constructing Stone Matrix Asphalt (SMA) which is a plant mixed asphalt concrete wearing course for high traffic applications. This mixture is a rut resistant hot mix design with stone on stone contact. The mixture shall be composed of a PG 76-22m, or PG 82-22rm asphalt cement and a gap graded coarse aggregate structure. Mineral filler and/or fibers shall be used to control draindown. This work shall be in accordance with these specifications, plan details, and as directed. All requirements of Section 502 apply to Stone Matrix Asphalt, except as modified herein. All plant and paving equipment and processes must meet the requirements of Section 503.

Mixture used for shoulder may be Stone Matrix Asphalt or any mixture type shown in Table 502-5.

Subsection 508.02 – Materials (09/07), Page 274.

Delete the contents of subheading (a), Asphalt Cement and substitute the following.

(a) Asphalt Cement: Asphalt cement shall be PG 76-22m, or PG 82-22rm as listed on QPL 41 and complying with Section 1002.

PART VI – RIGID PAVEMENT

SECTION 602 – PORTLAND CEMENT CONCRETE PAVEMENT

REHABILITATION:

Subsection 602.17 – Payment (09/07), Pages 341 – 344.

Delete the last paragraph of Subheadings (d), Full Depth Corner Patching of Jointed Concrete Pavement, (e) Full Depth Patching of Jointed Concrete Pavement, and (g) Patching Continuously Reinforced Concrete Pavement, and substitute the following.

Payment for deteriorated base course removed as directed by the engineer and replaced with concrete will be made as follows: The value per inch (mm) thickness will be determined by dividing the contract unit price per square yard (sq m) by the plan thickness. Thickness of patches will be measured from the surface that exists at the time of patching. Payment for the additional thickness will be made at 50 percent of the value per inch (mm) thus determined.

PART VII – INCIDENTAL CONSTRUCTION

SECTION 701 – CULVERTS AND STORM DRAINS:

All Subsections within Section 701 (08/07), Pages 347 – 358.

Delete Section 701, Culverts and Storm Drains and substitute the following.

SECTION 701
CULVERTS AND STORM DRAINS

701.01 DESCRIPTION. This work consists of furnishing, installing, and cleaning pipe, pipe arch, storm drains and sewers, also referred to as culverts or conduit, in accordance with these specifications and in conformity with lines and grades shown on the plans or established.

701.02 MATERIALS. Materials shall comply with the following sections and subsections:

Usable Soil	203.06(a)
Selected Soil	203.06(b)
Plastic Soil Blanket	203.10
Mortar	702.02
Flowable Fill	710
Portland Cement Concrete	901
Reclaimed Asphaltic Pavement (RAP)	1003.01 & 1003.04(d)
Stone	1003.03(b)
Recycled Portland Cement Concrete	1003.03(c)
Granular Material	1003.07
Bedding Material	1003.08
Concrete Sewer Pipe	1006.02
Reinforced Concrete Pipe	1006.03
Reinforced Concrete Pipe Arch	1006.04
Gasket Materials	1006.06
Plastic Pipe	1006.07
Split Plastic Coupling Bands	1006.07(d)(4)
Plastic Yard Drain Pipe	1006.09
Bituminous Coated Corrugated Steel Pipe and Pipe Arch	1007.02
Structural Plate for Pipe, Pipe Arch and Arch	1007.04
Corrugated Aluminum Pipe and Pipe Arch	1007.05
Coupling Bands	1007.09
Reinforcing Steel	1009
Geotextile Fabric	1019

(a) Side Drain Pipe or Side Drain Pipe Arch: When the item for Side Drain Pipe or Side Drain Pipe Arch is included in the contract, the contractor has the option of furnishing reinforced concrete pipe or reinforced concrete pipe arch, corrugated metal pipe or corrugated metal pipe arch, or plastic pipe, as allowed by EDSM II.2.1.1 or unless otherwise specified.

(b) Cross Drain Pipe or Cross Drain Pipe Arch: When the item for Cross Drain Pipe or Cross Drain Pipe Arch is included in the contract, the contractor has the option of furnishing reinforced concrete pipe or reinforced concrete pipe arch, corrugated metal pipe or corrugated metal pipe arch, or plastic pipe, as allowed by EDSM II.2.1.1 or unless otherwise specified.

(c) Storm Drain Pipe or Storm Drain Pipe Arch: When the item for Storm Drain Pipe or Storm Drain Pipe Arch is included in the contract, the contractor has the option of furnishing reinforced concrete pipe or reinforced concrete pipe arch, or plastic pipe, as allowed by EDSM II.2.1.1 or unless otherwise specified.

(d) Yard Drain Pipe: When the item for Yard Drain Pipe is included in the contract, the contractor has the option of furnishing concrete sewer pipe, plastic yard drain pipe or plastic pipe in accordance with Section 1006 unless otherwise specified.

(e) Material Type Abbreviations:

(1) Reinforced Concrete Pipe:

RCP	Reinforced Concrete Pipe
RCPA	Reinforced Concrete Pipe Arch

(2) Corrugated Metal Pipe:

CAP	Corrugated Aluminum Pipe
CAPA	Corrugated Aluminum Pipe Arch
CMP	Corrugated Metal Pipe
CMPA	Corrugated Metal Pipe Arch
CSP	Corrugated Steel Pipe
CSPA	Corrugated Steel Pipe Arch
BCCSP	Bituminous Coated Corrugated Steel Pipe
BCCSPA	Bituminous Coated Corrugated Steel Pipe Arch

(3) Plastic Pipe:

PP	Plastic Pipe
PVCP	Polyvinyl Chloride Pipe
RPVCP	Ribbed Polyvinyl Chloride Pipe
CPEPDW	Corrugated Polyethylene Pipe Double Wall

(f) Joint Type Abbreviations:

T1	Type 1 Joint
T2	Type 2 Joint
T3	Type 3 Joint

(g) Quality Assurance for Pipe: Manufacturing plants will be periodically inspected for compliance with specified manufacturing methods, and material samples will be randomly obtained for laboratory testing for verification of manufacturing lots. Materials approved at the manufacturing plant will be subject to visual acceptance inspections at the jobsite or point of delivery.

701.03 EXCAVATION. For all pipe, when the sides of the trench are stable as evidenced by the sides of the trench being able to maintain a vertical cut face, the minimum trench width at the bottom of the excavation will be 18 inches (460mm) on either side of the outside diameter of the pipe. If the sides of the trench are unstable, the width of the trench at the bottom of the excavation, for plastic or metal pipe, shall be a minimum width of at least 18 inches (460mm) or one pipe diameter on each side of the outside diameter of the pipe, which ever is greater. Surplus material or excavated material that does not conform to the requirements of Subsection 203.06(a) shall be satisfactorily disposed of in accordance with Subsection 202.02. Moisture controls

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including backfill materials selection and dewatering using sumps, wells, well points or other approved processes may be necessary to control excess moisture during excavation, installation of bedding, over-excavated trench backfilling, pipe placement and pipe backfill.

(a) Over-excavation: When unsuitable soils as defined in Subsection 203.04 or a stable, non-yielding foundation cannot be obtained at the established pipe grade, or at the grade established for placement of the bedding, unstable or unsuitable soils below this grade shall be removed and replaced with granular material meeting the requirements of Subsection 1003.07, bedding materials meeting the requirements of Subsection 1003.08 or Type A backfill. All granular, backfill materials placed below the established pipe or bedding grade shall be placed in lifts not exceeding 8 inches (200 mm) thick and sufficiently compacted by hand or a dynamic mechanical hand compaction device over the surface of each lift to form a stable, non-yielding foundation at the surface of the established bedding or pipe grade.

When rock is encountered, it shall be removed below grade and replaced with material complying with Subsection 1003.07, bedding materials meeting the requirements of Subsection 1003.08 or Type A backfill. The compacted earth cushion shall have a thickness under the pipe of at least 1/2 inch per foot (40 mm/m) of fill height over the top of the pipe with a minimum thickness of 8 inches (200 mm). All granular, backfill materials placed below the established pipe or bedding grade shall be placed in lifts not exceeding 8 inches (200 mm) thick and sufficiently compacted by hand or a dynamic mechanical hand operated compaction device over the surface of each lift to form a stable, non-yielding foundation at the surface of the established bedding or pipe grade.

Materials used to backfill in an over-excavated portion of a trench do not require encasement in a Geotextile Fabric.

Density of approved materials placed in over-excavated trenches will not be measured or determined.

701.04 FORMING PIPE BED. Bedding material, when specified, shall be constructed in accordance with Section 726. Materials allowed for bedding shall be as specified in Subsection 1003.08 or may be Type A backfill materials. When bedding materials are specified, additional excavation shall be performed below established pipe grade and the bedding material placed in lifts not exceeding 8 inches (200 mm) thick and lightly compacted by hand or a dynamic hand compaction device over the surface of each lift.

When the bottom of the pipe is not laid in a trench but is constructed above natural soils, a uniform bed shall be constructed as specified for the bottom of a trench.

Density of approved bedding materials will not be measured or determined.

701.05 LAYING PIPE. Pipe laying shall begin at the downstream end of the line. The pipe shall be in contact with the foundation throughout its length. Bell or groove ends of pipe and outside circumferential laps of riveted metal pipe shall be placed facing upstream. Riveted seam metal pipe shall be placed with longitudinal laps at sides. Pipes in each continuous line shall have the same wall thickness. Metal pipes provided with lifting lugs shall be handled only by these lugs.

After pipe has been laid and before backfill is placed, the engineer will inspect the pipe for alignment, grade, integrity of joints, and coating damage.

701.06 JOINING PIPE.

(a) Joint Usage:

(1) Type 1 (T1) joints shall be used for side drains under drives and similar installations.

(2) Type 2 (T2) joints shall be used for cross drains under roadways, including turnouts.

(3) Type 3 (T3) joints shall be used for closed storm drain systems, flumes and siphons.

(b) Concrete Pipe: Concrete pipe may be either bell and spigot, or tongue and groove. The method of joining pipe sections shall be such that ends are fully entered and inner surfaces are flush and even.

An approved mechanical pipe puller shall be used for joining pipes over 36 inches (900 mm) in diameter. For pipe 36 inches (900 mm) or less in diameter, any approved method for joining pipe may be used which does not damage the pipe.

Joints shall comply with Subsection 1006.05, and shall be sealed with gasket material installed in accordance with the manufacturer's recommendations.

(c) Metal Pipe: Metal pipe shall be firmly joined by coupling bands. Bands shall be centered over the joint.

For Type 1 joints, approved gasket material shall be placed in one corrugation recess on each side of the joint at the coupling band and on each band connection in such manner to prevent leakage.

When Type 2 or 3 joints are specified, joining of metal pipe sections shall conform to the following provisions:

(1) General: Band joints shall be sealed with gasket material. Gasket material shall be placed in accordance with the plan details.

(2) Circular Section: Connecting bands shall be of an approved design and shall be installed in accordance with plan details.

(3) Arch Section: Connecting bands shall be a minimum of 12 inches (300 mm) wide for pipe arch less than 36 inches (900 mm) round equivalent diameter, and a minimum of 21 inches (525 mm) wide for 36 inches (900 mm) round equivalent diameter pipe arch and greater. Bands shall be connected at the ends by approved angle or strap connections. Connecting bands used for 36 inches (900 mm) round equivalent diameter pipe arch and above shall be 2-piece bands.

(d) Plastic Pipe: Joints for plastic pipe shall be either bell and spigot or split coupling bands.

(1) Bell and Spigot Type Joint System: The method of joining pipe sections shall be such that ends are fully entered and inner surfaces are flush and even.

Any approved method for joining pipe may be used which does not damage the pipe.

Joints shall be approved and shall be sealed with a gasket system utilizing gasket material complying with Subsection 1006.06(a).

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(2) Split Coupling Type Joint System: Split coupling bands shall comply with all dimensional and material requirements of Subsection 1006.07. The bands shall be centered over the joint. The split coupling band shall be secured to the pipe with a minimum of five stainless steel or other approved corrosion resistant bands.

Joints shall be approved and shall be sealed with gasket material. Gasket material shall be placed in the first two corrugation recesses on each side of the pipe connections. Gasket material shall also be placed on each band connection to prevent leakage. When flexible plastic gasket material is used it shall be a minimum of 1/2 inch (13 mm) in size. The bands shall be tightened to create overlap of the band and shall adequately compress the gasket material.

(e) Connections: Approved connections shall be used when joining new pipes to existing pipes. When concrete collars are required in order to extend the ends of existing pipes that have been damaged or to join different types or sizes of pipes, the concrete collars shall be constructed in accordance with plan details, the applicable requirements of Section 901, and as directed.

(f) Geotextile Fabric, Pipe Joints: For concrete, metal and plastic pipes, Types 2 and 3 joints shall be wrapped with geotextile fabric for a minimum of 12 inches (300 mm) on each side of joint for pipe 36 inches (900 mm) or less in diameter and a minimum of 18 inches (450 mm) on each side of the joint for pipe greater than 36 inches (900 mm) in diameter. Ends of the fabric shall be lapped at least 10 inches (250 mm). The edges and ends of fabric shall be suitably secured for the entire circumference of the pipe.

701.07 RELAYING PIPE. If specified or directed, existing pipes shall be removed and suitable sections relaid as specified for new pipes.

701.08 BACKFILLING.

(a) General: Prior to backfilling, pipes found to be damaged or out of alignment or grade shall be removed and reinstalled, or replaced.

Type A backfill material shall be stone, recycled portland cement concrete, flowable fill, or RAP.

Type B backfill materials are selected soils. Where Type B backfill materials are called for, Type A backfill materials may be substituted.

When corrugated metal pipe is used, the backfill material shall be tested and shall have a resistivity greater than 1500 ohm-cm and a pH greater than 5 when tested in accordance with DOTD TR 429 and DOTD TR 430 respectively.

When Type A backfill material is used, geotextile fabric surrounding this backfill shall be placed in accordance with Subsection 726.03 between the aggregate backfill material and all other natural or placed soils in the trench or embankment. Care shall be taken to prevent damage to geotextile fabric during placement of backfill material. For concrete pipe, the fabric shall enclose not only the initial backfill but shall be wrapped over the top of the pipe with at least 12 inches (300 mm) of overlap.

When a trench box or trench sheeting is used in unstable soils and/or for worker safety, and when moved during backfilling operations, filling and additional compaction of the disturbed zone of backfill must take place immediately and in a manner acceptable to the engineer.

Initial backfill is a structural backfill encasing the pipe from the bottom of the pipe to the springline for concrete pipe and to a point one foot (0.3 m) above the top of the pipe for both metal and plastic pipe. Final backfill is not a structural backfill and shall extend from the top of the initial backfill to the top of the natural ground or subgrade in cut areas or to the top of existing ground in fill areas. Any fill required above the final backfill is considered and treated as embankment.

(b) Backfill Applications: For projects using A+B+C bidding method where rigid and flexible pavement alternates are considered, backfill application (2) below, “Cross Drains Under Flexible Pavements”, shall apply for either rigid or flexible pavements.

(1) Under Concrete Pavements: Type B backfill may be used as initial and final backfill for all pipes, culverts or drains under concrete pavements. Placement and compaction shall be as specified in Heading (d) below.

(2) Cross Drains Under Flexible Pavements: All reaches, exclusive of those portions of the pipe which are under shoulders, of cross drains and all other culverts, pipes or drains that cross the centerlines of the new roadway or centerlines of existing roadways, such as intersections and are under flexible pavements shall receive an initial backfill of Type A material. Type B backfill materials may be used as final backfill for all pipes. Placement and compaction shall be as specified in Heading (c) and (d) below. Where the subgrade is above existing ground, embankment material as specified for the remainder of the project shall be used from the top of the final backfill to the top of the established embankment grade.

(3) Other Drains Under Flexible Pavements: All reaches of all culverts, pipes or drains under flexible pavements that do not cross the centerlines of new roadway or centerlines of existing roadways, and exclusive of those portions of the pipe which are totally under shoulders, shall receive an initial and final backfill of Type B material. Placement and compaction shall be as specified in Heading (d) below. Where the subgrade is above existing ground, embankment material as specified for the remainder of the project shall be used from the top of the final backfill to the top of the established embankment grade.

(4) Other Areas: All culverts, pipes or drains in nonpaved areas or paved areas that serve as driveways or shoulders shall receive an initial and final backfill of Type B material. Placement and compaction shall be as specified in Heading (d) below.

(5) Pipes Subject to Construction Traffic; The embankment or pipe backfill shall be constructed to a minimum of 24 inches (600 mm) over the pipe before heavy construction equipment is allowed to cross the installation. Where practical, installations with less than 24 inches (600 mm) of cover over the top of the pipe shall be constructed after heavy hauling is completed over the pipe location. After completion of hauling operations, the contractor shall remove excess cover material. Pipe damaged by hauling and backfilling operations shall be removed and reinstalled, or replaced, at no direct pay.

(c) Placement and Compaction; Type A Backfill: For all pipes, culverts and conduits under paved and nonpaved areas, where Type A backfill material is used, the Type A backfill shall be thoroughly hand compacted under the pipe haunches and then dynamically compacted in layers not exceeding 8 inches (200 mm) compacted thickness. Compaction under the haunches of the pipe shall initially be by hand tamping or other acceptable means, until a level is reached that the dynamic tamping can commence. Each lift shall be compacted by applying at least eight

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passes of a hand operated, dynamic mechanical compaction device over the surface of each lift. With approval of the engineer, layer thickness may be increased to 12 inches (300 mm) with verification of satisfactory installation and performance. If flowable fill is used it shall be furnished, placed and consolidated in accordance with Section 710. The contractor shall control placement operations during initial backfill operations so as not to damage protective coatings on metal pipes. The contractor shall repair damaged coatings at no additional pay.

(d) Placement and Compaction; Type B Backfill: For all pipes, culverts and conduits, where Type B backfill is allowed, the Type B material shall be placed in layers not exceeding 8 inches (200 mm) compacted thickness. Compaction shall be with suitable mechanical equipment. With approval of the engineer, layer thickness may be increased to 12 inches (300 mm) with verification of satisfactory installation and performance.

(e) Placement and Compaction; Trenchless or Partial Trench Condition: All pipes, culverts, drains and conduits placed with any portion of the pipe above existing ground must also comply with Subsections (a),(b) (c) and (d) above for the portion of the pipe within a trench and that portion of the pipe not constructed in a trench. The width of initial and final backfill of that portion above existing ground and not within a trench will be constructed to such a width that the requirements for placement, compaction and density are met.

(f) Density Requirements: The in place density of Type A backfill materials and bedding materials, will not be measured or determined. Type A backfill, exclusive of RAP and flowable fill, shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or 418. RAP materials shall be placed and compacted in a slightly moist condition.

The maximum dry density of initial or final Type B backfill under all paved areas which are to be under traffic will be determined in accordance with DOTD TR 415 or TR 418 and in-place density determined in accordance with DOTD TR 401. Initial and final Type B backfill under all paved areas, under traffic, shall be placed at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Each layer shall be compacted by approved methods prior to the placement of a subsequent layer. The engineer will approve the compaction method based upon validation that such method, including moisture control, will achieve at least 95 percent of maximum dry density as determined in accordance with DOTD TR 401. With approval of the engineer, density testing may be waived on subsequent layers with backfill installation in accordance with approved compaction methods and continued satisfactory performance.

Initial and final backfill in unpaved areas or paved areas such as shoulders or driveways, shall be placed evenly and compacted along the length of the culvert, pipe or drain from the top of the initial backfill to the top of the subgrade. Layered backfill shall be compacted at least to the density of the adjoining existing soils or the compaction required of the laterally adjoining layers of soil immediately outside the trench for embankment elevations. Initial and final backfill shall be placed and compacted at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418.

701.09 INSPECTION OF PIPES. After completion of embankment and prior to roadway surfacing, the engineer shall inspect pipes for proper alignment and integrity of joints. Any misaligned pipe or defective joints shall be corrected by the contractor at no direct pay.

(a) Plastic Pipe: Installed plastic pipe shall be tested to ensure that vertical deflections do not exceed 5.0 percent. Maximum allowable deflections shall be governed by the mandrel requirements stated herein.

Deflection tests shall be performed no sooner than 30 calendar days after installation and compaction of backfill. The pipe shall be cleaned and inspected for offsets and obstructions prior to testing.

For pipe 36 inches (900 mm) and less in diameter, a mandrel shall be pulled through the pipe by hand to ensure that maximum allowable deflections have not been exceeded. The mandrel shall be approved by the engineer prior to use. Use of an unapproved mandrel or a mandrel altered or modified after approval will invalidate the test. If the mandrel fails to pass, the pipe is overdeflected.

Unless otherwise permitted, overdeflected pipe shall be uncovered and, if not damaged, reinstalled. Damaged pipe shall not be reinstalled, but shall be removed and replaced with new pipe. Any pipe subjected to any method or process other than removal, which attempts, even successfully, to reduce or cure any overdeflection, shall be removed and replaced with new pipe.

The mandrel shall be a rigid, nonadjustable, odd-numbered legged (minimum 9 legs) mandrel having a length not less than its nominal diameter or 24 inches (600 mm), whichever is less. The minimum diameter at any point shall be 5.0 percent less than the base inside diameter of the pipe being tested. The mandrel shall be fabricated of steel, aluminum or other approved material fitted with pulling rings at each end. The nominal pipe size and outside diameter of the mandrel shall be stamped or engraved on some segment other than a runner. A suitable carrying case shall be furnished.

For pipe larger than 36 inches (900 mm) in diameter, deflection shall be determined by a method approved by the engineer. If a mandrel is selected, the minimum diameter, length, and other requirements shall conform to the above requirements.

Mandrel testing shall be conducted by the contractor in the presence of the engineer. Mandrel testing shall be at no direct pay.

(b) Metal Pipe: If the inside diameter of metal pipe or rise dimension of metal pipe arch deflects more than 5.0 percent from original dimensions, they shall be removed and reinstalled, unless they do not rebound or are damaged. Pipe or pipe arch which are damaged or do not rebound shall be removed and replaced at no direct pay. Measurement of deflection will be made by the engineer away from rerolled ends.

701.10 CLEANING PIPES.

(a) Existing Pipes: Pipes designated to be cleaned shall be cleaned of soil, debris and other materials to the invert of the pipe. Designated pipes shall be cleaned by approved methods that will not damage the pipes. Any damage caused by the contractor's operations shall be satisfactorily repaired at no direct pay.

Removed soil, debris and other materials shall be disposed of in accordance with Subsection 202.02 or as otherwise approved in writing.

(b) Contractor Installed Pipes: Prior to final acceptance, pipes shall be cleaned of all debris and soil to the invert of the pipe at no direct pay.

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Removed soil, debris and other materials shall be disposed of in accordance with Subsection 202.02 or as otherwise approved in writing.

701.11 STUBBING AND PLUGGING PIPES. When it is required that pipes be plugged, such plugs shall be constructed of Class R concrete complying with Section 901. Thickness of plug and method of construction shall be as directed.

When new pipes are to be stubbed into new or existing pipes or other structures, the connection shall be made with approved mortar complying with Subsection 702.02.

701.12 MEASUREMENT. Pipe, both new and relaid, will be measured in linear feet (lin m) as follows unless stated otherwise.

(a) Pipe not confined by fixed structures will be measured by the number of joints at the nominal length of each joint.

(b) Pipe confined by fixed structures will be measured along the pipe between the termini of pipe in structure walls.

(c) Pipe confined by a fixed structure on one end and unconfined at the other end will be measured along the pipe from the terminus of pipe in the structure wall to the unconfined end of pipe.

(d) Fabricating of pipe tees, elbows and other fittings will be measured per each fitting. The length of pipe in such fittings will be included in the pay length measurement of pipes of which they form a part.

(e) Excavation required for installation of pipes will not be measured for payment, except as otherwise specified in Subsection 203.14.

(f) Furnishing and placing backfill material below existing ground level for pipes will not be measured for payment. Backfill material needed to complete backfill above natural ground and around pipes that extend above natural ground will be measured and payment will be made under applicable earthwork items. When specified, flowable fill will be measured and paid for in accordance with Section 710.

(g) Plugging and stubbing of pipes will not be measured for payment.

(h) Cleaning existing pipes will be measured by the length of pipe cleaned and accepted.

(i) Concrete collars will be measured per each.

701.13 PAYMENT.

(a) Payment for pipe will be made at the contract unit price per linear foot (lin m) of the types and sizes specified.

When plastic pipe is specified on the plans or elected to be used by the contractor, payment will be made at the contract unit price per linear foot (lin m) of the types and sizes specified in accordance with the payment schedule of Table 701-1.

Table 701-1
Payment Schedule for Plastic Pipe

Percent Payment	Stage of Completeness
75	After placement and backfill has been completed
25	After the pipe has met vertical deflection requirements in accordance with Subsection 701.09(a)

(b) Payment for fabricating pipe tees, elbows and other fittings will be made at the contract unit price per each fitting.

(c) When unstable conditions are encountered, the additional excavation will not be measured for payment; however, the additional materials furnished and placed for the pipe foundation will be measured and paid for as follows:

(1) Granular Materials: Payment will be made under the embankment item. The net section volume of the materials will be multiplied by 3 to determine the pay volume. When the contract does not include a pay item for embankment, payment will be made in accordance with Subsection 104.02.

(2) Bedding Material: Measurement and payment will be made in accordance with Section 726. When the contract does not include a pay item for bedding material, payment will be made in accordance with Subsection 104.02.

(d) Payment for cleaning existing pipes will be made at the contract unit price per linear foot (lin m).

(e) Payment for concrete collars will be made at the contract unit price per each.

Payment will be made under:

Item No.	Pay Item	Pay Unit
701-01	Cross Drain Pipe (Size & Type)	Linear Foot (Lin m)
701-02	Cross Drain Pipe Arch (Size & Type)	Linear Foot (Lin m)
701-03	Storm Drain Pipe (Size & Type)	Linear Foot (Lin m)
701-04	Storm Drain Pipe Arch (Size & Type)	Linear Foot (Lin m)
701-05	Side Drain Pipe (Size)	Linear Foot (Lin m)
701-06	Side Drain Pipe Arch (Size)	Linear Foot (Lin m)
701-07	Yard Drain Pipe (Size)	Linear Foot (Lin m)
701-08	Relaying Pipe	Linear Foot (Lin m)
701-09	Fabricating Pipe Fittings	Each
701-10	Reinforced Concrete Pipe (Extension)	Linear Foot (Lin m)
701-11	Reinforced Concrete Pipe Arch (Extension)	Linear Foot (Lin m)
701-12	Corrugated Metal Pipe (Extension)	Linear Foot (Lin m)
701-13	Corrugated Metal Pipe Arch (Extension)	Linear Foot (Lin m)

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701-14	Cleaning Existing Pipes	Linear Foot (Lin m)
701-15	Concrete Collar	Each
701-16	Plastic Pipe (Extension)	Linear Foot (Lin m)

SECTION 704 – GUARD RAIL:

Subsection 704.03 – General Construction Requirements (01/05), Pages 368 and 369.

Add the following to Heading (d), Guard Rail End Treatments.

All end treatments shall bear a label indicating the manufacturer and exact product name of the end treatment along with its assigned NCHRP 350 test level. This label shall resist weathering and shall be permanently affixed to the railing in such a way as to be readily visible.

SECTION 706 – CONCRETE WALKS, DRIVES AND INCIDENTAL PAVING:

All Subsections within Section 706 (04/08), Pages 375 – 377.

Delete Section 706, Concrete Walks, Drives and Incidental Paving and substitute the following.

SECTION 706
CONCRETE WALKS, DRIVES AND INCIDENTAL PAVING

706.01 DESCRIPTION. This work consists of furnishing and constructing portland cement concrete walks, handicapped curb ramps, drives and incidental paving slabs in accordance with these specifications and in conformity with lines, grades and dimensions shown on the plans or established.

706.02 MATERIALS. Materials shall comply with the following Section or Subsections.

Portland Cement Concrete (Class M)	901
Joint Filler	1005.01(c)
Reinforcing Steel	1009.01
Curing Materials	1011.01

706.03 CONSTRUCTION REQUIREMENTS.

(a) Excavation: Excavation shall be made to required depth and width. The top of the subgrade shall be shaped and compacted to a firm, even surface conforming to the section shown on the plans. Unsuitable material shall be removed and disposed of in accordance with Subsection 202.02 and replaced with approved material at no direct pay.

(b) Forms: Forms shall be of wood or metal and shall extend the full depth of concrete. Forms shall be straight, clean and of sufficient strength to resist the pressure of concrete. Bracing of forms shall be such that forms remain in horizontal and vertical alignment until their removal.

Concrete may be placed by slip-form methods. Slip-formed concrete shall be placed with an approved machine designed to spread, vibrate, consolidate and finish concrete in one pass of the machine in such manner that minimum hand finishing is necessary. Sliding forms shall be

rigidly held together to prevent spreading of forms. After the passing of the side forms there shall be no noticeable slumping of concrete.

(c) Subgrade: The subgrade shall be thoroughly moistened immediately prior to placing concrete.

(d) Placing and Finishing: Concrete shall be placed on the subgrade, struck off to required thickness and tamped sufficiently to bring the mortar to the surface. The surface shall be finished with a wood float or steel trowel followed by brushing to a slightly rough finish. Joints and edges shall be rounded with an edging tool having a 1/4-inch (6 mm) radius.

(e) Joints:

(1) Expansion Joints: Expansion joints shall be filled with 1/2 inch (13 mm) thick preformed expansion joint filler. Expansion joints shall be installed at maximum 100-foot (30 m) intervals, and between intersecting paving and any fixed structure such as a building, bridge or curbing, and between intersecting paving and the handicapped curb ramps. Expansion joint material shall extend for the full width and depth of paving.

(2) Weakened Plane: Weakened planes shall be formed by a jointing tool or other acceptable means. Weakened planes shall extend into concrete for at least 1/4 of the depth and shall be approximately 1/8 inch (3 mm) wide.

a. Walks: Spacing of weakened planes for walks shall be equal to the width of walk.

b. Drives: A longitudinal weakened plane shall be formed along the centerline of drives more than 16 feet (5 m) wide, and transverse weakened planes shall be formed at not more than 16-foot (5 m) intervals.

c. Incidental Paving: Weakened planes for incidental paving shall be formed at intervals not exceeding 30 times the thickness of the concrete in length or width. Incidental paving poured adjacent to jointed concrete shall be jointed to match existing joints, with intermediate joints formed as necessary not to exceed the maximum joint spacing.

(3) Construction Joints: Construction joints shall be formed around manholes, utility poles, etc., extending into paving and 1/4 inch (6 mm) thick preformed expansion joint filler shall be installed in these joints.

(4) Tie-ins: Tie-ins of existing concrete shall be made by full depth sawing at no direct pay.

(f) Curing: Concrete shall be cured in accordance with Subsection 601.10.

(g) Detectable Warning Surface for Handicap Ramps and At-Grade Sidewalk Intersections: Sidewalks, when intersecting with roadways, shall be equipped with a detectable warning surface system consisting of raised truncated domes as a transition between the sidewalk and the street as required by the Americans with Disabilities Act, 28 CFR Part 36, ADA Standards for Accessible Design.

Detectable warnings (truncated domes) shall be installed on the ramp surface over the full width of the ramp throat for a distance of 24 inches (600 mm) in the direction of travel from the back of the curb. Detectable warnings (truncated domes) shall also be installed on at-grade sidewalks intersecting with roadways for a distance of 36 inches (900 mm) in the direction of travel from the end of the sidewalk. Truncated domes shall be laid out on a square grid in order to allow enough space for wheelchairs to roll between the domes.

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Light reflectance of the truncated domes and the underlying surface must meet the 70 percent contrast requirement of ADAAG.

706.04 MEASUREMENT. Quantities of concrete walks, drives and incidental paving slabs for payment will be the design quantities as specified on the plans and adjustments thereto. Design quantities will be adjusted if the engineer makes changes to adjust to field conditions, if design errors are proven or if design changes are made. Design areas are based on the horizontal dimensions shown on the plans. Excavation, backfill, reinforcing steel and joint materials will not be measured for payment.

Handicapped curb ramps, including the detectable surface warning system, will be measured per each.

Detectable surface warning systems for at-grade sidewalk intersection will not be measured for payment.

706.05 PAYMENT. Payment for concrete walks, drives and incidental paving will be made on a lot basis at the contract unit price per square yard (sq m), adjusted in accordance with the following provisions. Payment for each lot will be made in accordance with Table 901-6. Size, sampling, and testing of each concrete lot shall be in accordance with the Materials Sampling Manual.

Payment for handicapped curb ramps, including the detectable surface warning system, will be made by each and shall include, but not limited to, curb transitions, detectable warning system, gutter, landing and base.

Payment will be made under:

Item No.	Pay Item	Pay Unit
706-01	Concrete Walk (inch (mm) Thick)	Square Yard (Sq m)
706-02	Concrete Drive (inch (mm) Thick)	Square Yard (Sq m)
706-03	Incidental Concrete Paving (inch (mm) Thick)	Square Yard (Sq m)
706-04	Handicapped Curb Ramps	Each

SECTION 713 – TEMPORARY TRAFFIC CONTROL:

Subsection 713.06 – Pavement Markings (08/06), Pages 400 – 403.

Delete Table 713-1, Temporary Pavement Markings and substitute the following.

**Table 713-1
Temporary Pavement Markings^{1,2}**

		Two-lane Highways	Undivided Multilane Highways	Divided Multilane Highways
S H O R T T E R M	ADT<1500; or ADT>1500 and time<3 days	Lane lines 4-foot (1.2 m) tape on 40-foot (12 m) centers; with "Do Not Pass" and "Pass With Care" signs as required		
	ADT>1500; Time>3 days and<2 weeks	Lane lines 4-foot (1.2-m) tape on 40-foot (12-m) centers with no passing zone markings		
	All ADT's with time <2 weeks		Lane lines 4-foot (1.2m) tape on 40-foot (12 m) centers; double yellow centerline	Lane lines 4-foot (1.2 m) tape on 40-foot (12 m) centers
L O N G T E R M	All ADT's with time >2 weeks	Standard lane lines, no-passing zone markings, legends and symbols and when pavement width is 22 feet (6.7 m) or greater, edge lines	Standard lane lines, centerlines, edge lines, and legends and symbols	Standard lane lines, centerlines, edge lines, and legends and symbols.

¹No-passing zones shall be delineated as indicated whenever a project is open to traffic.
²On all Asphaltic Surface Treatments that are open to traffic and used as a final wearing course or as an interlayer, temporary pavement markings (tabs) on 20-foot (6 m) centers shall be used, in lieu of the 4-foot (1.2 m) tape, on 40-foot (12 m) centers.

SECTION 729 – TRAFFIC SIGNS AND DEVICES:

Subsection 729.02 – Materials (04/08), Pages 456 and 457.

Delete the contents of Heading (a), Sign and Marker Sheeting, and substitute the following.

(a) Sign and Marker Sheeting: Sheeting material for sign panels, delineators, barricades and other markers shall comply with Section 1015. All permanent signs shall meet the requirements of ASTM D 4956, Type X.

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Subsection 729.04, Fabrication of Sign Panels and Markers (04/08), Pages 458 – 460.

Delete the third paragraph of Heading (c), Sheeting Application and substitute the following.

ASTM D 4956 Type X reflective sheeting shall be applied with an orientation determined by the engineer to obtain the optimum entrance angle performance. Fabricated vertical splices in ASTM D 4956 Type X reflective sheeting will be allowed only when the horizontal dimension of the sign face or attached shield is in excess of the maximum manufactured width of the sheeting. Fabricated vertical splices in ASTM D 4956 Type X reflective sheeting will also be allowed when the specified orientation will create excessive sheeting waste.

SECTION 804 – DRIVEN PILES:

Subsection 804.08 – Construction Requirements (04/07), Pages 548 – 554.

Delete the first sentence of Heading (a), Preboring and substitute the following.

Preboring by augering, wet-rotary drilling, or other methods used to facilitate pile driving will not be permitted unless specified in the plans or allowed by the engineer.

Delete the first sentence of Heading (b), Jetting and substitute the following.

Jetting will not be permitted unless allowed in the plans or allowed by the engineer.

SECTION 901 – PORTLAND CEMENT CONCRETE:

Subsection 901.06 – Quality Control of Concrete (08/06), Pages 726 – 731.

Add the following to the contents of Heading (b), Quality Control Tests.

The contractor shall be responsible for monitoring the components (cement, mineral and chemical admixtures, aggregates) in their mix to protect against any changes due to component variations. As component shipments arrive, the contractor shall verify slump, air content and set time by testing at ambient temperatures. The contractor shall make adjustments to the mix design to rectify any changes which would adversely affect constructability, concrete placement or the specifications. The contractor shall submit test results to the Department for review each day of paving. Testing to validate component consistency will be documented on the control logs. Conformance or variation in mix parameters (workability, set times, air content, etc.) shall be noted on the control logs. The contractor shall provide a copy of the proposed testing plan to the engineer for record. Acceptance of the plan does not relieve the contractor's responsibility for consistency.

Subsection 901.08 – Composition of Concrete (12/05), Pages 732 – 734.

Add the following to Heading (a).

The blended cement containing up to 50 percent of grade 100 or grade 120 ground granulated blast-furnace slag must be in compliance with Subsection 1001.04 for portland blast-furnace slag cement.

SECTION 1001 – HYDRAULIC CEMENT:

Subsection 1001.01 – Portland Cement (09/07). Page 749.

Delete the contents of this subsection and substitute the following.

1001.01 PORTLAND CEMENT. Portland cement shall be from an approved source listed in QPL 7 and shall comply with AASHTO M 85.

Alkali content calculated as sodium oxide equivalent shall not exceed 0.60 percent by weight for all types of cement.

SECTION 1003 – AGGREGATES:

Subsection 1003.02 – Aggregates for Portland Cement Concrete and Mortar (07/07).

Pages 763 – 766.

Delete the contents of Heading (c), Aggregates for Types B and D Pavements, and substitute the following.

(c) Aggregates for Types B and D Pavements: For the combined aggregates for the proposed portland cement concrete pavement mix, the percent retained based on the dry weight (mass) of the total aggregates shall meet the requirements of Table 1003-1A for the type of pavement specified in the plans. Additionally, the sum of the percents retained on any two adjacent sieves so designated in the table shall be at least 12 percent of the total combined aggregates. The maximum amounts by weight (mass) of deleterious materials for the total aggregate shall be the same as shown in Subsection 1003.02(b).

Table 1003-1A
Aggregates for Types B and D Pavements

U.S. Sieve	Metric Sieve	Percent Retained of Total Combined Aggregates	
		Pavement Type	
		Type B	Type D
2 1/2 inch	63 mm	0	0
2 inch	50 mm	0	0-20
1 1/2 inch	37.5 mm	0-20	0-20
1 inch	25.0 mm	0-20	5-20
3/4 inch	19.0 mm	5-20	5-20
1/2 inch	12.5 mm	5-20	5-20
3/8 inch	9.5 mm	5-20	5-20
No. 4	4.75 mm	5-20	5-20
No. 8	2.36 mm	5-20	5-20
No. 16	1.18 mm	5-20	5-20
No. 30	600 μm	5-20	5-20
No. 50	300 μm	0-20	0-20
No. 100	150 μm	0-20	0-20
No. 200	75 μm	0-5	0-5

Note: For the sieves in the shaded areas, the sum of any two adjacent sieves shall be a minimum of 12 percent of the total combined aggregates.

Each type of aggregate to be used in the proposed mixture shall be sampled and tested individually. The percent of total combined aggregates retained shall be determined mathematically based on the proportions of the combined aggregate blend. All gradation calculations shall be based on percent of dry weight (mass).

SECTION 1005 – JOINT MATERIALS FOR PAVEMENTS AND STRUCTURES:

Subsection 1005.04 – Combination Joint Former/Sealer (11/05), Pages 782 and 783.

Delete Heading (a) and substitute the following.

(a) Description: This joint former/sealer is intended for use in simultaneously forming and sealing a weakened plane in portland cement concrete pavements.

The material shall consist of an elastomeric strip permanently bonded either mechanically or chemically at the top of each of two rigid plastic side frames and covered with a removable plastic top cap. Side frames shall be of such configuration that when the sealer is inserted into plastic concrete and vibrated, a permanent bond forms between side frames and concrete.

Delete Heading (b)(1) and substitute the following.

(1) Elastomer: The elastomer strip portion of the material shall be manufactured from vulcanized elastomeric compound using polymerized chloroprene or thermoplastic vulcanizate as the base polymer, and shall comply with the following requirements:

<u>Property</u>	<u>ASTM Test Method</u>	<u>Requirements</u>	
		<u>Polymerized Chloroprene</u>	<u>Thermoplastic Vulcanizate</u>
Tensile Strength, kPa, Min.	D 412	12,400	7,400
Elongation at Break, % Min.	D 412	200	400
Hardness, Shore A	D 2240	65 ± 10	65 ± 10
Properties after Aging, 70 h @ 100°C	D 573		
Tensile Strength, % Loss, Max.		20	20
Elongation, % loss, Max.		25	25
Hardness, pts. increase, Max.		10	10
Ozone Resistance, 20% strain or bentloop, 300 pphm in air, 70 h @ 40°C	D 1149	no cracks	no cracks
Oil Swell, IRM 903, 70 h @ 100°C, wt change, % Max.	D 471	45	75

Delete Headings (b)(2) and (b)(3) and substitute the following:

(2) Bond of Elastomer to Plastic: The force required to shear the elastomer from the plastic shall be a minimum of 5.0 pounds per linear inch (90 g/mm) of sealer when tested in accordance with DOTD TR 636.

(3) Bond of Plastic to Cement Mortar: This bond will be evaluated and shall meet the following requirements:

The force required to separate the cement mortar from the plastic shall be a minimum of 5.0 pounds per linear inch (90 g/mm) of sealer when tested in accordance with DOTD TR 636.

SECTION 1006 – CONCRETE AND PLASTIC PIPE:

Subsection 1006.09 – Plastic Yard Drain Pipe (06/07), Page 789.

Delete the contents of Subheading (a)(3), Ribbed Polyvinyl Chloride Pipe (RPVCP) and substitute the following.

Ribbed Polyvinyl Chloride Pipe (RPVCP): Ribbed Polyvinyl Chloride Pipe shall comply with ASTM F 794, Series 46 or ASTM F 949 (46 psi).

SECTION 1013 – METALS:

Subsection 1013.09 – Steel Piles (08/06) Page 822.

Delete the title and references to “Steel Piles” in this subsection and substitute “Steel H Piles”.

SECTION 1015 – SIGNS AND PAVEMENT MARKINGS:

Subsection 1015.04 – Sign Panels (05/07), Pages 832 and 833.

Delete the contents of Heading (a), Permanent Sign Panels and substitute the following.

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(a) Permanent Sign Panels: Flat panels shall be aluminum sheets or plates complying with ASTM B 209, Alloy 6061-T6 or Alloy 5052-H38. Extruded aluminum panels shall comply with ASTM B 221 (ASTM B 221M), Alloy 6063-T6 and after fabrication, have a flatness equal to or less than 0.031 inch per foot of length and 0.004 inch per inch of width.

Subsection 1015.05 - Reflective Sheeting (04/08), Pages 833 – 838.

Delete the contents of this subsection and substitute the following.

1015.05 REFLECTIVE SHEETING.

(a) Permanent and Temporary Standard Sheeting: Reflective sheeting shall be one of the following standard types as specified on the plans and complying with ASTM D 4956 except as modified herein. Permanent warning, regulatory, guide and supplemental guide sign sheeting shall meet the requirements of ASTM D 4956 Type X. Reflective sheeting for temporary signs and devices shall meet the requirements of ASTM D 4956 Type III except as noted in Subsection 1015.05(f). Reflective sheeting shall be an approved product listed in QPL 13.

Type III - A high-intensity retroreflective sheeting that is typically encapsulated glass-bead retroreflective material.

Type VI - An elastomeric high-intensity retroreflective sheeting without adhesive. This sheeting is typically a vinyl microprismatic retroreflective material.

Type X - A super high-intensity retroreflective sheeting having highest retroreflectivity characteristics at medium distances. This sheeting is typically an unmetalized microprismatic retroreflective element material.

(b) Fluorescent Pink Retroreflective Sheeting: Signs for temporary control of traffic through incident management areas shall be Type VI fluorescent pink retroreflective sheeting and shall comply with the MUTCD. Temporary traffic control signs for incident management shall be placed to notify motorists of upcoming incidents on the roadway, and shall be removed from public view once the incident has been managed. Physical properties shall comply with ASTM D 4956. Photometric properties shall be as follows.

(1) Retroreflectivity: Minimum Coefficients of Retroreflection shall be as specified in Table 1015-1.

Table 1015-1
Coefficients of Retroreflection for Fluorescent Pink Sheeting¹

Observation Angle, degrees	Entrance Angle, degrees	Fluorescent Pink
0.2	-4	100
0.2	+30	40
0.5	-4	40
0.5	+30	15

¹Minimum Coefficient of Retroreflection (R_A) ($\text{cd lx}^{-1} \text{m}^{-2}$)

(2) Color and Daytime Luminance: Color Chromaticity Coordinates and Daytime Luminance Factors shall be as specified in Table 1015-2.

Table 1015-2
Fluorescent Pink Color Specifications Limits (Daytime)

Chromaticity Coordinates (corner points) ¹								Luminance Factor, min.
1		2		3		4		Y%
x	y	x	y	x	y	x	y	25
0.450	0.270	0.590	0.350	0.644	0.290	0.536	0.230	

¹The four pairs of chromaticity coordinates measured with CIE 2° Standard Observer and 45/0 (0/45) geometry and CIE D65 Standard Illuminant.

(c) Adhesive Classes: The adhesive required for retroreflective sheeting shall be Class 1 (pressure sensitive) as specified in ASTM D 4956.

(d) Accelerated Weathering: Reflective sheeting, when processed, applied and cleaned in accordance with the manufacturer's recommendations shall perform in accordance with the accelerated weathering standards in Table 1015-3.

Table 1015-3
 Accelerated Weathering Standards¹

Type	Retroreflectivity ²				Colorfastness ³	
	Orange/ Fluorescent Orange		All colors, except orange/Fluorescent Orange		Orange/ Fluorescent Orange	All colors, except orange/Fluorescent Orange
III	1 year	80 ⁴	3 years	80 ⁴	1 year	3 years
III (for drums)	1 year	80 ⁴	1 year	80 ⁴	1 year	1 year
VI	1/2 year	50 ⁵	1/2 year	50 ⁵	1/2 year	1/2 year
X	1 year	80 ⁶	3 years	80 ⁶	1 year	3 years

¹At an angle of 45° from the horizontal and facing south in accordance with ASTM G 7 at an approved test facility in Louisiana or South Florida.

²Percent retained retroreflectivity of referenced table after the outdoor test exposure time specified.

³Colors shall conform to the color specification limits of ASTM D 4956 after the outdoor test exposure time specified.

⁴ASTM D 4956, Table 8.

⁵ASTM D 4956, Table 13.

⁶ASTM D 4956, Table 4.

(e) Expected Sign Life Data and Performance: The sheeting manufacturer shall supply expected retroreflectivity service life curves for each of the following sign sheeting colors: white, green, blue, brown, red, and yellow. The service life curves shall be plots of the 95 percent expected life plotted on an x-y graph with life years on the x-axis and retroreflectivity on the y-axis. The expected life shall account for worst case installations, equivalent to an installation in South Louisiana with the sign facing to the South. The sheeting manufacturer shall also supply a table of expected life values taken from the service life curves for Revision Number 2 to the 2003 Edition of the MUTCD minimum reflectivity requirements published in the Federal Register on December 21, 2007. Reflective sheeting for signs, when processed, applied and cleaned in accordance with the manufacturer's recommendations shall perform outdoors in accordance with the performance standards in Table 1015-4.

Table 1015-4
 Reflective Sheeting Performance Standards

Type	Retroreflectivity ¹ -- Durability ²				Colorfastness ³
	Orange/ Fluorescent Orange		All colors, except orange/Fluorescent Orange		
III	3 years	80 ⁴	10 years	80 ⁴	3 years
X	3 years	80 ⁵	7years	80 ⁵	3 years

¹Percent retained retroreflectivity of referenced table after installation and the field exposure time specified.

²All sheeting shall maintain its structural integrity, adhesion and functionality after installation and the field exposure time specified.

³All colors shall conform to the color specification limits of ASTM D 4956 after installation and the field exposure time specified.

⁴ASTM D4956, Table 8.

⁵ASTM D 4956, Table 4.

(f) Temporary Signs, Barricades, Channelizing Devices, Drums and Cones: Reflective sheeting for temporary signs, barricades and channelizing devices, shall meet the requirements of ASTM D 4956, Type III except that temporary warning construction signs used on the mainline of freeways and expressways shall be fluorescent orange and meet the requirements of ASTM D 4956, Type X.

Reflective sheeting for vertical panels shall meet the requirements of ASTM D 4956, Type III.

Reflective sheeting for drums shall be a minimum of 6 inches (150 mm) wide and shall meet the requirements of ASTM D 4956, Type III, and the Supplementary Requirement S2 for Reboundable Sheeting as specified in ASTM D 4956. Reflective sheeting for traffic cone collars shall meet the requirements of ASTM D 4956, Type III or Type VI.

(g) Sheeting Guaranty. The contractor shall provide the Department with a guaranty from the sheeting manufacturer stating that if the retroreflective sheeting fails to comply with the performance requirements of this subsection, the sheeting manufacturer shall do the following:

Table 1015-5
 Manufacturer's Guaranty-Reflective Sheeting

Type	Manufacturer shall restore the sign face in its field location to its original effectiveness at no cost to the Department if failure occurs during the time period ¹ as specified below		Manufacturer shall replace the sheeting required to restore the sign face to its original effectiveness at no cost to the Department if failure occurs during the time period ¹ as specified below
	Orange/Fluorescent Orange	All colors, except orange/Fluorescent Orange	All colors, except orange/Fluorescent Orange
III	<3 years	<7 years	7-10 years
X	<3 years	<5 years	5-7 years

¹ From the date of sign installation.

Replacement sheeting for sign faces, material, and labor shall carry the unexpired guaranty of the sheeting for which it replaces.

The sign fabricator shall be responsible for dating all signs with the month and year of fabrication at the time of sign fabrication. This date shall constitute the start of the guaranty obligation period.

Subsection 1015.11 - Preformed Plastic Pavement Marking Tape (06/07), Pages 842 – 844.

Delete the contents of this subsection and substitute the following.

1015.11 PREFORMED PLASTIC PAVEMENT MARKING TAPE.

(a) General: Preformed plastic pavement marking tape shall be approved products listed on QPL 64 and shall comply with ASTM D4505 Retroreflectivity Level I or Level II, or DOTD Intersection Grade (as specified below), except as modified herein. The marking tape shall be Class 2 or 3. The type and color shall be in accordance with the plans and the MUTCD.

(b) Thickness: All preformed plastic pavement marking tape shall have a minimum overall thickness of 0.060 inches (1.5 mm) when tested without the adhesive.

(c) Friction Resistance: The surface of the Retroreflectivity Level II preformed plastic pavement marking tape shall provide a minimum frictional resistance value of 35 British Polish Number (BPN) when tested according to ASTM E303. The surface of the Retroreflectivity Level I and DOTD Intersection Grade preformed plastic pavement marking tape shall provide a minimum frictional resistance value of 45 BPN when tested according to ASTM E303. Values for the Retroreflectivity Level I material with a raised surface pattern as defined in ASTM D4505 are calculated by averaging values taken at downweb and at a 45 degrees angle from downweb.

(d) Retroreflective Requirements: The preformed plastic pavement marking tape shall have the minimum initial specific luminance values shown in Table 1015-7 when measured in accordance with ASTM D 4061.

Table 1015-7
 Specific Luminance of Preformed Plastic Tape

Type	Observation Angle, degrees	Entrance Angle, degrees	Specific Luminance (mcd/sq m/lx)	
			White	Yellow
Retroreflectivity Level I	1.05	88.76	500	300
DOTD Intersection Grade	1.05	88.76	375	250
Retroreflectivity Level II	1.05	88.76	250	175

(e) Durability Requirements: The DOTD Intersection Grade preformed plastic pavement marking tape shall show no appreciable fading, lifting or shrinkage for a least 12 months after placement when placed in accordance with the manufacturer's recommended procedures on pavement surfaces having a daily traffic count not to exceed 15,000 ADT per lane.

The Retroreflectivity Level I preformed plastic pavement marking tape shall show no appreciable fading, lifting or shrinkage for a least 4 years after placement for longitudinal lines and at least 2 years after placement for symbols and legends.

The Retroreflectivity Level I preformed plastic pavement marking tape shall also retain the following reflectance values for the time period detailed in Table 1015-8.

Table 1015-8
 Retained Specific Luminance for Retroreflectivity Level I
 Preformed Plastic Pavement Marking Tape

Time	Observation Angle, degrees	Entrance Angle, degrees	Specific Luminance (mcd/sq m/lx)	
			White	Yellow
1 year	1.05	88.76	400	240
4 years (2 years for symbols and legend)	1.05	88.76	100	100

(f) Plastic Pavement Marking Tape Guaranty (DOTD Intersection Grade and Retroreflectivity Level I): If the plastic pavement marking tape fails to comply with the performance and durability requirements of this subsection within 12 months for DOTD Intersection Grade and 4 years for Retroreflectivity Level I, the manufacturer shall replace the plastic pavement marking material at no cost to the Department.

SECTION 1020 – TRAFFIC SIGNALS:

Subsection 1020.01 – Traffic Signal Heads (06/07), Pages 873 – 884.

Delete the contents of Heading (a), General Requirements and substitute the following.

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(a) General Requirements: Traffic signal sections, beacon sections and pedestrian signal sections shall be of the adjustable type. Materials and construction of each section shall be the same.

Signals shall be constructed for either 8 or 12-inch (200 mm or 300 mm) lens in accordance with the plans. Signal sections shall have three to five sections per face and beacon sections have only one section per face. Signal sections and associated brackets shall be finished inside and out with two coats of high grade dark olive green enamel, color number 14056 according to Federal Standard No. 595b with each coat independently baked. Visors shall be coated green on the outside and black on the inside. Edges shall be deburred and smooth with no sharp edges.

Subsection 1020.04 – Poles for Traffic Signal Systems (06/07), Pages 890 – 894.

Delete the sixth paragraph of Heading (a), Pedestal Support Signal Poles, and substitute the following.

Pedestals shall be finished with at least one coat of rustproofing primer, applied to a clean surface and one coat of dark olive green enamel, color number 14056 according to Federal Standard No. 595b.

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General Requirements

01 General Project Requirements

01.01 Project Description

This Project, DMS Phase 2 Retrofit (NO Phase Ib Vultron) (hereafter referenced as “ITS”), requires the construction of a fully operational Intelligent Transportation System in conformity with the requirements, definitions, and specifications listed herein and in the plans and as directed by the Project Engineer. The Contractor shall remove, install, and integrate the equipment and materials specified herein and provide all additional materials and equipment deemed necessary for the construction of a fully functional and operational ITS.

The following terminology is utilized throughout these specifications:

- *Department* – Louisiana Department of Transportation and Development (LADOTD).
- *DMS* – Dynamic Message Sign.
- *ITS* – the Intelligent Transportation System operating in conformity with the requirements, definitions, and specifications listed herein and in the plans and as directed by the Project Engineer.
- *Post Delivery Testing* – a validation that the DMS and controller function as per manufacture’s specification and that the items were not damaged during shipping.
- *Commissioning Testing* - a validation that all site installed equipment and material function as per manufacture’s specification and the technical requirements and specifications contained herein.
- *System Integration Test* - a validation that all installed equipment and material operate as per their defined functionality in the field and in the networking environment, i.e., the ITS is fully operational.
- *Notice to Proceed (NTP)* – is the Contractor’s official notice to begin the Project.
- *Project* - the construction of a fully operational ITS.
- *Standard Specifications* - Louisiana Standard Specifications for Roads and Bridges, 2006 Edition, Louisiana Department of Transportation and Development, Baton Rouge, LA.

The following is an overview of project deliverables:

- A fully operational ITS
- A Project Work Plan
- Communication Plan
- Engineering drawings (Shop and As-Built)
- Manufacturer’s equipment and material brochures
- Plans for traffic control where construction interferes with traffic
- Post Delivery Testing plan and script
- Site Commissioning Testing plan and script
- System Integration Test plan and script
- Post Delivery Testing Report
- Site Commissioning Testing Report
- System Integration Test Report
- Warranties as defined
- Other requirements as defined

Component requirements and specifications of the Project are included in the following S-Item sections:

- Item S-001 – Dynamic Message Sign Site
- Item S-002 – System Integration and Documentation

The objectives of the ITS are as follows:

- Prepare a Project Work Plan.
- Install five (5) Dynamic Message Sign (DMS) sites.
- All constructed ITS Devices will communicate via wireless communications. All ITS field devices will receive electrical power from the local electric utility.
- Coordinate, plan, install, test, commission, and provide a fully functional ITS complete, in place, and ready for use as described in the plans and these specifications.
- Incidental parts which are not shown on the plans, specified herein or in the project specifications, and which are necessary to complete the ITS shall be furnished and installed as though such parts were shown on the plans or specified herein. All systems shall be complete and in operation to the satisfaction of the Project Engineer at the time of acceptance of the installation.
- The work shall include all conduit, junction boxes, structures, supports, foundations, wiring and cabling, signage, antennas, attachments, or other related item or work necessary to produce a complete and operating ITS.
- The Contractor will provide all the necessary software and hardware needed to fully integrate all of the electronic equipment and field devices into a functioning and reliable ITS.

01.02 Document Requirements

A. Construction Progress Schedule

The Contractor shall submit to the Project Engineer a Project Work Plan starting with the date of NTP and extending through the date of ITS Partial Acceptance using Microsoft Project or Primavera. Specifically, the Work Plan shall identify the detailed tasks, start dates, duration, due dates, and shall be used as a working document (periodically updated) to trace the progress of the Project.

B. Communications Plan

The Contractor shall submit to the Project Engineer a Communication Plan with the initial Project Work Plan submittal. This plan shall detail the procedures to be followed for communications between the Project Engineer and the Contractor. The Communication Plan shall apply to all correspondences and submittals.

C. Correspondence

All correspondence shall be labeled with an identifier for tracking purposes and other identifiers as required by the Department. All correspondence IDs shall begin with a two-letter prefix denoting the originator and the addressee and a hyphenated sequential number beginning with 1001. A letter “E” for the Project Engineer and “C” for the Contractor will constitute the prefix. The numeric scheme shall be employed to serialize correspondence between two parties. For example, the first correspondence originated by the Contractor, addressed to the Project Engineer, shall be labeled CE-1001.

All correspondence shall be clearly labeled with the date of the correspondence in the upper right-hand corner. A correspondence log shall be maintained by the Contractor denoting these numbers and the subject of the correspondence. An updated copy of this log will be forwarded with the Contractor’s Progress Reports.

D. Engineering Drawings

Engineering Drawings shall include shop, working, and as-built drawings. These drawings shall include, but not limited to, detail drawings, top assembly, and subassembly drawings, installation assembly drawings, electrical and electronic diagrams, wiring diagrams, interconnection diagrams, logic diagrams, cable assembly, and layout drawings.

Engineering drawings shall conform to current approved industry standards. The Contractor shall submit drawings for review and approval of the Project Engineer. The documentation package shall include all engineering drawings as are required to fully and accurately address and identify each deliverable component of ITS.

E. Equipment and Material Submittals

The Contractor shall preface all submittals with a transmittal form. The submittal shall be **limited to a single subject** item clearly identified on the transmittal form. The transmittal form shall contain the following identifiers:

- Correspondence identification number (defined above)
- Project Number
- Project Name
- Contractor Name
- Subject
- Date
- Referenced Specification Section
- Intended Use

Successive submittals, due to revisions, on the same item shall indicate the current number of revisions on the transmittal form. Revision levels shall be indicated in numeric format prefixed with "Rev", such as "Rev 01", "Rev 02", etc. Also, the revised submittal shall reference the most recently preceding revision correspondence ID number.

The Contractor shall submit shop drawings and equipment brochures within thirty (30) days of the NTP for all of the Project installations to the Project Engineer for review and approval prior to commencing work or contracting for the purchase of any material. Materials shall be released for fabrication only after the aforementioned submittals are approved by the Project Engineer. Nine (9) prints of the submittal package shall be submitted and shall detail fully the fabrication and installation of each of the ITS components suitable for installation. These components will be listed in a Bill of Materials containing the manufacturer's name, catalog number, number of components, and any other descriptive data as necessary to clearly define and describe where the product will be used in the performance of the work.

Drawings submitted shall show construction details, dimensions, and ratings. Each sheet of every submittal shall be identified with the submittal requirements and the fabricator's or manufacturer's name if applicable. The Contractor shall stamp and sign each submittal stating that he has checked each submittal and certifies that the drawing requirements and specifications are met.

Drawings and submittals shall measure 8-1/2 inches x 11 inches or 11 inches x 17 inches. Corrections and/or comments made on submittals are not intended to relieve the Contractor from compliance with the plans and specifications. The review of drawings and equipment submittals is to insure that the quality of the equipment and materials meets the requirements and specifications.

Approval by the Project Engineer of the brochures and drawings does not imply that the equipment described is complete, can be constructed or installed, will operate successfully, or will coordinate with existing or other equipment specified. The Contractor shall remain responsible for confirming and correlating all quantities and dimensions; for selecting fabrication processes and construction techniques; for coordination of the work; for performing the work in a safe and satisfactory manner; and for satisfactory installation and operation of equipment.

F. As-Built Drawings

The Contractor shall furnish one (1) set of As-Built Drawings that reflect the final as-built condition of the project. A complete and comprehensive set of schematics, wiring diagrams and operation manuals shall be included in this submittal. The drawings shall show the exact location of the underground wiring, junction

boxes, service poles, controllers and conduits or cables. Underground equipment shall be located by dimensioning to fixed objects.

These plans shall be submitted in hard copy form, on a reproducible media, and on electronic media in a computer aided drafting package format as approved by the Project Engineer. Drawings shall measure 11 inches x 17 inches and have a title block showing project number, project name, contractor name and date. The drawings shall reflect all plan and/or field changes and shall include a Bill of Materials containing the manufacturer's name, catalog number, number of components, and any other descriptive data applicable to the construction of the ITS.

As-built drawings shall be submitted to the Department no later than 60 days after partial acceptance.

G. *Manufactures' Warranties*

All manufacturers' warranties shall be provided to the Project Engineer in a single binder upon Partial Acceptance of the ITS.

01.03 ITS Testing

The ITS will require Post Delivery Testing, Commissioning Testing, and System Integration Testing as detailed herein.

LADOTD DMS manufacturer is Daktronics, Inc. The Contractor shall coordinate with and obtain on-site assistance from Daktronics, Inc. during the ITS Testing and System Integration phases. All costs for services provided by Daktronics, Inc. shall be included within the price bid for Item S-002 – System Integration and Documentation.

A. *Post Delivery Testing*

The new DMS enclosures will be shipped by Daktronics, Inc. to the New Orleans area. The Contractor shall be responsible for offloading the DMS enclosures into secure storage until installation. The Contractor shall closely coordinate with Daktronics, Inc. and the Project Engineer during this process.

Once offloaded from the shipping vehicle, each DMS shall be tested in the presence of the Project Engineer, the Contractor, and a representative from Daktronics, Inc. The Contractor, in coordination with Daktronics, Inc., shall provide the testing method and procedure that will prove DMS operability. The controller for each particular DMS shall be utilized during this phase of testing. Power for testing shall be provided by the Contractor. Results of the testing shall be submitted to the Project Engineer within two (2) business days.

The purpose of this testing is to ensure that the DMS enclosures were not damaged during shipment.

B. *Commissioning Testing*

The following criteria define Commissioning Testing:

1. Purpose

Commissioning Testing is performed for each site on all ITS items. The primary purpose is to ensure that the installed site components operate in a local environment and meet all requirements' definitions and specifications.

The Commissioning Testing is a validation that all site installed equipment and material function as per manufacturer's specification and the technical requirements and specifications contained herein.

2. Test Approach

The Contractor will develop a Commissioning Test plan following a step-by-step test script that will demonstrate that all the site components are installed and operate correctly. The test script shall reference specification sections and manufacturers specific features. The test script will be optimized to accomplish the maximum level of testing with the fewest steps (tasks). The script will contain step numbers, space for a date, time, pass/fail designation, and comment along with the task. The test

script will be delivered to the Project Engineer for review and approval at least ten (10) days prior the start of the test.

The Project Engineer and other designated principals will witness the testing. The results of each test step in the script will be assessed using pass/fail designators. At the completion of each commissioning test for a particular site, the site will be deemed commissioned.

The Contractor shall have on site during the testing, all applicable documentation concerning the devices being tested.

C. Commission Test Entry and Exit Criteria

The following criteria will be met before test entry of each site and completion of the Commission Test:

1. Entry Criteria

- The Contractor has installed all required site components.
- The Contractor has inspected and tested sites for operational anomalies.
- The commissioning test plan has been approved by the Project Engineer.
- The Contractor will have all vendor documentation and all vendor and/or proprietary software and hardware ready for validating the site installed components.

2. Exit Criteria

- The commission test activity has been evaluated via a pass/fail designator.
- The Contractor has provided to the Project Engineer the results of the Commissioning Test and a course of action for resolving any anomalies.
- All equipment and material discrepancies, inconsistencies, shortages, and failures to meet the Project requirements and specifications have been identified, documented, and have a resolution, and/or agreed-upon schedule of resolution.
- In the event of a requirement deficiency requiring repair or replacement of an ITS component, the Project Engineer may require a repeat test by revisiting the applicable script.

Upon achievement of criteria, the Project Engineer will grant completion. Six (6) copies of the Commissioning Test results must be submitted to the Project Engineer within 15 days of test completion for approval. The Contractor can commence with energizing the ITS components only after written approval notification is received from the Project Engineer.

D. System Integration Test (SIT)

The following criteria define System Integration Testing:

1. Purpose

The System Integration Test is performed in order to demonstrate that the energized ITS is fully operational in accordance with the plan detail, specifications, and as directed by the Project Engineer. The test will verify that the sites are integrated so that the ITS is operable and controllable via dial up telephone service both local and long distance. The primary purpose is to ensure that ITS components are installed, integrated, and functionally operational meeting all requirements and specifications.

The SIT is a validation that all installed equipment and material operate as per their defined functionality in the field and in the networking environment, i.e., the ITS is fully operational.

2. Test Approach

The Contractor will develop a System Integration Test plan following a step-by-step test script that will demonstrate the functionality of the ITS. Specification sections and manufacturers specific

features shall be referenced by the test script. The test script shall contain written procedures so as to demonstrate each feature of the ITS. The test script will be optimized to accomplish the maximum level of testing with the fewest steps (tasks). The script will contain step numbers, space for a date, time, pass/fail designation, and comment along with the task. The test script will be delivered to the Project Engineer for review and approval at least ten (10) days' prior the start of the test.

The Project Engineer and other designated principals will witness the testing. The results of each test step in the script will be assessed using pass/fail designators. The SIT is successful when the criteria have been met. Once all sites are commissioned as detailed above and the test reports are approved by the Project Engineer, the ITS will be deemed commissioned.

The Contractor shall have on site during the testing, all applicable documentation concerning the devices being tested.

E. SIT Entry and Exit Criteria

The following criteria will be met before test entry and successful completion of SIT:

1. Entry Criteria

- The Commissioning Test has been approved.
- The Contractor has inspected and tested the ITS for operational anomalies.
- The SIT plans have been approved by the Project Engineer.
- The Contractor will provide all material, vendor supplied documentation for the field devices, vendor developed software, all vendor and/or proprietary software, and hardware to conduct the test.

2. Exit Criteria

- The SIT script procedure activity has been evaluated via a pass/fail designator.
- The Contractor has provided to the Project Engineer the results of SIT and a course of action for resolving any anomalies.
- All discrepancies, inconsistencies, shortages, and failures to meet the ITS requirements and specifications have been identified, documented, and have a resolution, and/or agreed-upon schedule of resolution.
- In the event of a requirement deficiency of the ITS, the Project Engineer may require revisiting the applicable script or a complete retest.

Upon completion of criteria, the Project Engineer will grant SIT acceptance and, hence, Partial Acceptance of the ITS. Six (6) copies of the SIT Report must be submitted to the Project Engineer within 15 days of SIT acceptance for approval. The report will contain the results of SIT and a problem tracking list for all deficiencies identified in the test along with a resolution schedule.

F. Inspection Testing

The Contractor shall furnish the instruments, wiring, labor, and incidentals necessary to perform the required tests and adjustments for electrical/electronic systems and equipment. Upon completion of the test, systems and equipment shall be in satisfactory working order. Adjustments or replacements necessary to accomplish this shall conform to the requirements specified herein. Tests shall be performed in the presence of the Project Engineer. The Project Engineer shall be notified in writing two weeks in advance of scheduled test. Test results shall be submitted to the Project Engineer prior to energizing the equipment. Six copies of each test report shall be provided to the Project Engineer within 15 days after the performance of each test. Tests shall be signed by the Contractor and shall include the date and time of testing.

The following installation tests shall be performed after the Contractor's equipment has been installed to ensure that the equipment has not been damaged or has failed in shipment or storage and that it has been properly

installed and is operating as designed. The Contractor shall perform the installation tests. The installation tests shall include but not be limited to the following:

Receptacle Tests: After completion of the electrical system, the Contractor shall test each receptacle for proper polarity and continuity of the ground.

Special Tests: The Contractor shall conduct special tests when equipment or systems are suspected of improper operation, or when additional data is necessary to determine proper operation.

Insulation Tests: The Contractor shall conduct megohm tests on all AWG #10 and larger conductors. Tests shall be made after the conductors are installed and before connecting equipment that may be damaged by the tests. Readings below 50 megohms, when measured with a 1000 volt DC insulation tester will be considered defective and shall require repair or replacement as directed by the Project Engineer. Other tests as required elsewhere in these specifications.

02 Construction Requirements

02.01 Sequence of Construction and Minimum Construction Signing

The plans include drawings prepared to assist the Contractor that show minimum construction signing for areas where the Contractor may be required to either shift lanes of traffic or work adjacent to a lane of traffic. It will be the responsibility of the Contractor to furnish adequate protection for his working personnel and adequate warning for local motorists. Additional signs may need to be installed and protection provided as local conditions dictate. If additional construction signing or sequence of construction scheme is required, the contractor shall prepare and submit an alternate plan for approval. See the attached LaDOTD Traffic Control Details for details of various traffic control devices and signing situations.

All existing permanent signs in conflict with construction activities shall be removed or covered at no direct pay.

Minimum construction signing: Any other signs or traffic control devices indicated in the Manual on Uniform Traffic Control Devices (M.U.T.C.D.) shall be installed.

Advance warning signs or regulatory signs when placed on the bridge structure during the construction period shall be mounted on special brackets so that the inside edge of the signs is offset from the edge of the travel lanes as permitted by the MUTCD.

Lane closures will only be allowed at night. Single lane closures may begin at 8:00 PM and must be reopened by 5:00 AM the following morning.

During the lane closure periods, all available lanes of through traffic must be maintained.

No lane closure will be allowed between 5:00 AM Friday and 8:00 PM on Sunday.

All work requiring a lane closure and the performance of the lane closure shall be closely coordinated with the Project Engineer and LADOTD. LADOTD District 02 and the Project Engineer shall be given two (2) working days notice prior to a lane closure so that appropriate notifications can be distributed.

Construction activities behind guardrail will be allowed at all times except during the holiday periods defined herein.

Failure to meet the requirements of opening all lanes to traffic by the times defined herein shall result in a stipulated damage penalty of \$5000.00 per hour for each lane not opened up to a maximum of four hours whereupon a penalty of \$25,000.00 per day for each lane not opened will be assessed. Stipulated damages will be assessed for each occurrence and will be assessed from the partial estimates prior to payment.

No work will be allowed during Easter or Memorial Day and periods as defined by the Project Engineer. Holiday periods shall include the calendar day of the holiday and may include an appropriate number days before and after the holiday as directed by the Project Engineer.

During DMS installation, the time between field installation of the sign enclosure and DMS commissioning testing shall be no more than ten (10) calendar days. During those days in which the sign is not active, the Contractor shall display the following message on the display face: "TEST" or another message as dictated by the Project Engineer. Subsequent to this ten (10) day time period and prior to final acceptance, Contractor shall post messages on the sign face as directed and approved by the Project Engineer or District Traffic Operations Engineer (DTOE).

02.02 Codes and Regulations

In addition to the requirements of these plans and specifications, material and work shall conform to the latest requirements of NFPA No. 70, National Electrical Code, and ANSI C2, National Electrical Safety Code, the Standards of IEEE, NFPA, ASTM, ANSI, NEMA, RMA, MUTCD, OSHA, UL, ITE, IMSA, EIA, TIA, and Bellcore, except where superseded by applicable laws. The term code as referred to in this document shall be the NFPA No. 70, National Electrical Code, and ANSI C2, National Electrical Safety Code. Discrepancies between codes or standards and these specifications shall be resolved in accordance with Subsection 105.04 of the Standard Specifications.

Installation shall comply with all applicable local, state, and federal government rules, regulations, codes, and laws.

02.03 Equipment and Materials

The drawings shall be considered as diagrammatic and do not show the exact locations and size of equipment. They do however show the general arrangement and locations of cables, foundations, etc. The drawings shall be followed as closely as practicable; however, the final location may be adjusted in the field to avoid interference after prior approval, in writing, obtained from the Project Engineer. All work shall be coordinated to avoid interference and conflicts. The final arrangement of the DMS Sites shall be approved by the Project Engineer.

Items shall be installed in their proper locations as shown on the plans, rigid and secure, plumb and level where appropriate, and in true alignment with related and adjoining work. Electrical materials shall not be welded for attachment or support except for exothermic welded ground attachments.

The Contractor shall check mounting space, equipment dimensions, and installation requirements before ordering equipment. The Contractor shall establish the electrical circuit requirements of all equipment to be served before ordering material. Where circuits are to serve specific appliances, equipment or feeders, the Contractor shall verify the electrical requirements and the exact location of connection before installing the service to the equipment.

Equipment and materials shall be suitable for the intended use and shall be furnished with all necessary hardware and components.

References to a specific manufacturer's name and/or catalog number are intended to denote the quality of the equipment or material and not to specifically exclude other acceptable products. When specified model or catalog numbers are in conflict with descriptive specifications, plans or system compatibility shall govern.

Except for those products designated as fabricated or those that are no longer produced, all specified products shall be manufactured by companies that are regularly engaged in the production of the specified products.

The products specified shall be specifically designed, tested and manufactured for the purpose for which they will be used. Modification of equipment for other than design purposes will be permitted only when no currently manufactured products meet the specifications.

All equipment and materials shall be new. Like equipment and materials shall be made by the same manufacturer. When existing systems are to be modified, the existing material shall be incorporated into the revised system, salvaged or abandoned, as specified.

The item descriptions and specifications do not necessarily include or define everything necessary for a complete and operational item. When required, the Contractor shall provide any modifications, fabrications, extra hardware, and equipment necessary for the satisfactory installation and operation of the ITS to coordinate with other items or conditions at no direct pay.

Materials shall conform to the following Sections and Subsections of the Standard Specifications:

- Structural Metals 807
- Painting and Protective Coatings 811
- Welding 815
- Portland Cement Concrete (Class M) 901
- Reinforcing Steel 1009
- Metals 1013 & 1015
- Anchor Bolts, Nuts & Washers 1015.02(c)(1)
- Ground Rods 1018.05
- Stainless Steel Hardware 1018.08(c)
- Conduit 1018.09
- Electrical Conductors 1018.10
- Stone or Recycled Base Course 302
- Aggregate Surface Course 401
- Drilled Shaft Foundations 814

02.04 Electrical Service

Electrical service for each DMS Site is currently established and is provided by Entergy.

Power Usage: Power usage during construction and testing shall originate from the existing electrical service for each DMS Site.

02.05 Electrical and Communications Conduit and Conductors

A. General Requirements

Support cable, metallic cable sheaths, conduit, transformer cases, metal poles and pedestals shall be made mechanically and electrically secure and grounded. Bonding and grounding jumpers shall be properly sized as per the NEC and in no case shall they be smaller than #6 AWG wire.

B. Conduit and Conductor Installation

Conduit of the type and size specified shall be installed at the locations shown on the plans or as directed by the Project Engineer. "Conduit" shall mean either metallic or nonmetallic pipe, tube, or duct. "RGS" shall mean rigid galvanized steel conduit.

Generally accepted practices and standards for installing electrical conductors shall be followed during the installation. All appropriate precautions to prevent cable kinks and breaks shall be followed. Once the cable manufacturer has been selected, their specifications regarding tensile strength, pulling capacity, and bending radius, etc. shall not be violated.

During installation of the electrical conductors, a minimum of 10'-0" of slack shall be coiled within each underground pullbox, controller cabinet, etc.

Ends of metallic conduit shall be reamed after threads are cut. All ends shall be cut square and shall butt solidly in the joints to form a smooth raceway for cables.

Conduit joints shall be made in such a manner to form a watertight seal. Conduit connections shall use threaded couplers and shall be sealed with a waterproof sealant. Coupling of new conduit to existing conduit shall be with a three-piece coupling. All conduit runs shall contain an equipment-grounding conductor.

Threads shall be clean cut, straight and true and of sufficient length to permit full-depth coupling. Excessive threads will not be permitted. Couplings shall be tightened until the conduit ends are together. Damaged coatings in exposed threads shall be repaired in accordance with Subsection 811.12 of the Standard Specifications. Exposed threaded ends of conduit shall be terminated with an insulated-throat, ground-type bushing.

Bushings shall be installed in conduit where necessary for protection of the conductors.

The Contractor may install larger size conduit at no direct pay. No reducing couplings will be permitted in a conduit run.

C. Rigid Steel Conduit

Rigid galvanized steel conduit shall conform to ANSI C80.1 specifications.

All accessories including couplings and bends shall be manufactured from the same material as the straight sections of conduit.

D. Conductors

Electrical power conductor characteristics are 600V rated cross-linked polyethylene insulation, high heat, and moisture resistance conforming to ICEA S66-524. Conductors shall be UL Listed Type XHHW-2 rated for conduit, direct burial, and sunlight resistance. Other characteristics shall include suitability for operation at 600 volts or less in wet or dry locations and at temperatures not to exceed 90°C. Conductors shall be annealed copper and shall be stranded. Phase and neutral conductors shall be sized according to the plans and color-coded according to NEC requirements. Ground conductors shall be sized according to the plans and colored green.

Wires in cabinets shall be neatly laced into cables with nylon lacing or plastic straps.

Conductors shall be installed in conduit except where the run is inside poles or suspended from support cable. When wire and cable is brought up into the base of a foundation, sufficient slack shall be left to enable the connections to be made outside the foundation.

Cables in conduits shall be carefully pulled into place using approved methods so that the cable will be installed free from electrical or mechanical injury. Powdered soapstone, talc, or other approved inert cable lubricant shall be used in placing conductors in conduit. Conductors shall be handled and installed in such a manner as to prevent kinks, bends, or other distortion, which could cause damage to the conductor or outer covering. All wires and cables within a single conduit shall be pulled at the same time. When cables are pulled through hand holes, in pole shafts, etc., a pad of firm rubber or other suitable material shall be placed between the cable and the edges of the opening to prevent cable damage. Cable entrances into panels, transformers, and conduit outlets shall be sealed from moisture, insects, rodents, and foreign material with a sealing compound manufactured for this application.

Splices and taps for circuits rated below 600 volts shall be performed in accordance with the National Electrical Code and materials shall be used that will be compatible with the sheath and insulation of the cable and suitable for direct burial. Straight splices shall be made with compression crimp connectors according to plan details. Compression connectors shall be crimped with the connector manufacturer's recommended compression tool and die. The compression tool shall be of the type, which will prevent removal of the tool until the crimp has been completely closed.

02.06 Supporting Foundations

Supporting foundations of the design, kind and size specified shall be installed in accordance with, and at the locations shown on the plans.

A foundation hole shall be excavated to the size and depth as needed to meet support design requirements. All excavated material shall be removed and disposed of as directed by the Project Engineer.

Conduits in foundations shall extend a minimum of 2' outside the foundation, be accurately placed, oriented in the proper direction to accommodate service cable, and securely held to avoid displacement.

The supporting foundations shall be plumb and grounded with driven ground rods as detailed in the plans.

02.07 Grounding

Support cable, metallic cable sheaths, conduit, metal poles, pedestals, and other devices and appurtenance as directed by the Project Engineer shall be made mechanically and electrically secure and grounded. Bonding and grounding jumpers shall be properly sized as per the NEC and in no case shall they be smaller than #6 AWG copper wire. An existing ground ring is installed beneath each DMS Site and this system shall be connected to a new grounding system per plan details.

The only grounding methods and techniques that are allowed on this project are exothermic welds, with proper molds and metals, and compression crimp connections.

The grounding conductor shall be continuous and of the type and size shown on the plans. The grounding conductor shall be connected to the ground system at all supporting structures, to each sign support assembly, and to each grounding conductor in a multi-conductor cable assembly. All connections shall be made in accordance with the manufacturer's specifications. Grounding splices shall not be insulated.

Single ground rods shall be installed according to plan details. A length of copper conductor shall be attached to the ground rod, utilizing the specified grounding methods, and connected to the grounding system.

Metal raceways, metal enclosures of electrical devices, lighting fixtures, panelboards, and other non-current carrying metallic parts of equipment shall be securely grounded.

02.08 Restoration of Site

The Contractor shall reshape, reseed, and apply vegetative mulch to areas disturbed during the performance of work. The costs incurred in reseeding, resodding, and otherwise restoring areas to their original condition shall be at no direct pay.

02.09 Cutting and Patching

Should any cutting of walls, floors, ceilings, partitions, paving, sidewalks, driveways, curb and gutters, paved shoulders, etc. be required for proper installation of electrical work, such cutting and restoring of the work to its original condition shall be done by the Contractor in a manner acceptable to the Project Engineer. The costs incurred for cutting and restoring shall be at no direct pay.

02.10 Site Clean Up

During the progress of the work, Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the work. At the completion of the work Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. Contractor shall leave the site clean and ready for occupancy by the Department at partial acceptance of the work. Contractor shall restore to original condition all property not designated for alteration by the contract documents.

02.11 Safety and Protection

Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

- All persons on the work site or who may be affected by the work.

- All the work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
- Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and underground facilities not designated for removal, relocation, or replacement in the course of construction.

02.12 Use of Premises

Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the work. Should any claim be made by any such owner or occupant because of the performance of the work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the work or adjacent property to stresses or pressures that will endanger it.

END OF SECTION

Item S-001 Dynamic Message Sign Site**S-001.01 Scope of Work**

This Item consists of removal and disposal of components as noted and installing replacement components at five (5) Dynamic Message Sign (DMS) Sites and all appurtenances required for the ITS in accordance with plan details, specifications, and as directed by the Project Engineer. Several items will be furnished by LADOTD and these are detailed herein.

During DMS installation, the time between field installation of the sign enclosure and DMS commissioning testing shall be no more than ten (10) calendar days. During those days in which the sign is not active, the Contractor shall display the following message on the display face: "TEST" or another message as dictated by the Project Engineer. Subsequent to this ten (10) day time period and prior to final acceptance, Contractor shall post messages on the sign face as directed and approved by the Project Engineer or District Traffic Operations Engineer (DTOE).

The Dynamic Message Sign sites are located as follows:

- DMS Site #1 – I-10 Eastbound at North Claiborne Ave
- DMS Site #2 – I-610 Eastbound near Elysian Fields Exit #3
- DMS Site #3 – I-10 Westbound near Louisa Exit #239A
- DMS Site #4 – I-10 Westbound near Chef Menteur Exit #240B
- DMS Site #5 – I-10 Westbound near Morrison Exit #241

All equipment shall be new and constructed using the highest quality, commercially available components and techniques to assure high reliability and minimum maintenance. The Contractor shall submit, prior to installation, a complete set of shop drawings of the DMS System and a list of equipment included as part of the installation. This is covered in greater detail elsewhere in this specification.

The DMS site shall utilize existing structures for mounting and shall consist of the following major components:

LADOTD shall provide the following:

- DMS enclosure and display
- DMS controller
- Electrical distribution panelboard
- Dialup Communications equipment and appurtenances
- Existing post support and pile supported foundation

Contractor shall provide the following:

- Installation and integration of the items provided by LADOTD
- Controller cabinet and foundation
- Conduits, cabling, and connections
- Grounding and Lightning protection system
- Electrical equipment and appurtenances
- Mounting brackets and hardware

S-001.02 General Requirements

LADOTD will provide to the Contractor, the items noted above, for installation and integration. Other items to be provided by the Contractor are detailed herein.

LADOTD DMS manufacturer is Daktronics, Inc. The Contractor shall coordinate with and obtain on-site assistance from Daktronics, Inc. during the ITS Testing and System Integration phases. All costs for services provided by Daktronics, Inc. shall be included within the price bid for Item S-002 – System Integration and Documentation. Daktronics, Inc. contact is Mr. Keith Zelinski, Transportation Project Manager, 605-692-0200 – extension #57268, kzelins@daktronics.com.

The new DMS enclosures will be shipped by Daktronics, Inc. to the New Orleans area. The Contractor shall be responsible for offloading the DMS enclosures into secure storage until installation. The Contractor shall closely coordinate with Daktronics, Inc. and the Project Engineer during this process.

Once offloaded from the shipping vehicle, each DMS shall be tested according to 01.03 ITS Testing.

S-001.03 DMS Location Photographs

Refer to Appendix A for photographs of each DMS location.

S-001.04 Dynamic Message Sign Enclosure Mounting Requirements

The DMS enclosure is the weatherproof housing, which encloses, or has attached, all other DMS components and will be provided to the Contractor by LADOTD. The DMS enclosure shall be mounted to an existing single post support structure. Structural details of the existing pole support and top plate are included in the plans for informational purposes.

The DMS connection to the single post support structure shall be designed by the Contractor's Engineer in accordance with the American Association of State Highway and Transportation Officials (AASHTO) standard "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 4th Edition with interims. The Dynamic Message Signs are considered essential facilities and are to be designed with a Recurrence Interval of 100 years. Wind load is to be based on Exposure Category C and a basic wind speed of 130 miles per hour from any direction.

The Contractor shall submit three (3) copies of the calculations and shop drawings for the enclosure connection to the single post support structure to the Project Engineer for review prior to manufacture. All calculations and shop drawings shall be stamped by a professional civil engineer registered in the state of Louisiana. Submittals shall be in writing according to submittal requirements detailed herein. All drawings shall be original tracings conforming to Section 801.03 of the Louisiana Standard Specifications for Roads and Bridges.

Review of the working drawings by the Project Engineer does not relieve the Contractor of his responsibility. Said review is a general review for conformance with the design concept and general compliance with the requirements of the plans and specifications only. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods, coordination of the work with other trades, or construction safety precautions, all of which are the sole responsibility of the Contractor. The completeness and correctness of the design calculations is solely the responsibility of the Contractor, the DMS Manufacturer, and the Contractor's Engineer of Record who sealed the calculations. Furthermore, this review is not an approval for the structural integrity of the DMS Enclosure or its connection to the DMS support structure.

The Project Engineer's review shall be conducted with reasonable promptness while allowing sufficient time in the Project Engineer's judgment to permit adequate review. Review of a specific item shall not indicate that the Project Engineer has reviewed the entire assembly of which the item is a component. The Project Engineer shall not be responsible for any deviations from the plans or specifications not brought to the attention of the Project Engineer in writing by the Contractor. The Project Engineer shall not be required to review partial submissions or those for which submissions of correlated items have not been received.

S-001.05 Sign Controller**S-001.05.01 General Operational Requirements**

For each DMS site, the Contractor shall install, interconnect, and make operational the sign controller and associated equipment required for the electronic manipulation of the sign display. The sign controller will be provided to the Contractor by LADOTD. Contractor shall install the sign controller within the new DMS Controller Cabinet.

Control cabling between the new controller cabinet and the DMS enclosure shall be installed by the Contractor with specifications as required by Daktronics, Inc.

S-001.06 DMS Controller Cabinet**S-001.06.01 General Requirements**

Installed cabinet shall be oriented such that the door faces away from the roadway.

Shop drawings detailing the controller cabinet and appurtenances shall be submitted to the Project Engineer for approval.

Prior to construction, the Project Engineer shall approve the orientation and location of all controller cabinets.

The Contractor shall remove the existing DMS controller cabinet and mounting pad and install in its place a new DMS controller cabinet and mounting pad. Existing underground conduit shall be preserved and extended into the new DMS controller cabinet. New conduit shall match existing.

For DMS Sites #4 and #5, incidental concrete paving shall be removed as required in order to install the new mounting pad. Once the installation is complete, the Contractor shall repair the area to match the surrounding paving.

S-001.06.02 Materials

A stainless steel insulated controller cabinet shall be provided to house current and future electrical, electronic, and fiber optic control apparatus. Each controller cabinet shall have hinged door fronts with latches and shall be equipped to eliminate the ingress of dust and moisture while maintaining a climate suitable for the normal operation of interior equipment. All fasteners used shall be stainless steel. The controller cabinet shall have the following features:

- Door activated, internal LED light panel illumination utilizing (6) 1-watt high output, white (5,500 to 6,500 °K) LEDs - two panels (power shall be derived from one 24 volt power supply fed from the local panelboard). Relume Light Panel or approved equal.
- 316 Stainless steel and rated NEMA 4X.
- Sized and detailed according to the plans.
- Mounting foot kits for securing the cabinet to the foundation.
- Locking mechanism for each door handle, all locks to be #2 keyed.
- Foundation and other features as described in the plans.
- Controller cabinets shall be sealed against entry by ants, rodents, snakes, spiders, etc.
- Controller cabinets shall be installed as located and detailed on the plans.
- Side-mounted air conditioning unit.
- Fully insulated with 5/16" thick reflective insulation with 97% reflectivity to radiant heat and minimum R-value of 9.8. Reflectix Type BP or approved equal.

S-001.06.03 Side-mounted Air Conditioning Unit

Air conditioning unit shall be industrial type closed-loop system and shall be housed in a 16 gauge Type 316 stainless steel NEMA 4X enclosure. The unit shall be of rugged construction and designed for outdoor use. The unit shall be side-

mounted and shall have sufficient gaskets between the unit and controller cabinet to prevent water incursion. In addition, the unit shall meet the following minimum requirements.

- UL Listed
- 4000 BTUH cooling capacity
- 120 volts, single phase 60Hz
- Digital temperature controller with programmable set points
- Visible alarm indicators
- Low & high refrigerant cutoffs with fault indication
- Compressor anti short cycle protection
- Remote Controller for mounting inside controller cabinet
- Electrocoated internal evaporator and condenser coils
- ISC Cat. No. ISC-NE-040-126-4X-OD or equal

S-001.07 DMS Electrical Power System

S-001.07.01 General Requirements

The manufacturer, upon request by the Department, shall grant access to the manufacturing facility for all products specified herein.

Each DMS Site will receive electrical power from an existing electrical service point.

Shop drawings showing the details for each component shall be submitted for approval prior to construction.

All non-current carrying metal parts of the DMS site shall be grounded per NEC specifications. In addition, all non-current carrying metal parts shall have a voltage potential of zero relative to reference ground. This reference ground shall be achieved via the equipment-grounding conductor.

All signs shall be equipped with appropriate surge protection as detailed herein and in the plans.

Power cabling between the existing electrical service point and the new controller cabinet and between the new controller cabinet and the DMS enclosure shall be installed by the Contractor with specifications as required by plan details.

S-001.07.02 Site Disconnect

DMS site disconnect shall be UL listed, rated at 240 volts, single phase, three wire, and shall have a 100 amp frame size with 100 amp main circuit breaker. Enclosure shall be stainless steel and rated NEMA 4X. Conduit shall enter and exit the enclosure through Myers stainless steel hubs.

S-001.07.03 Wireway

The wireway shall be sized according to plan details and shall have the following characteristics:

- Hoffman – Stainless Steel Type 3R, or approved equal.
- Mounted utilizing standard accessories.
- Enclosure shall be rated NEMA 3R.
- Hinged cover and integral locking mechanism.

S-001.07.04 DMS Site Distribution Panelboard

The DMS site distribution panelboard (delivered to the Contractor by LADOTD) has the following characteristics:

- Square D, type NQOD
- 100 amp
- Copper bus bars and neutral and equipment grounding busses
- 240/120 volt, single phase
- Enclosure rated NEMA 3R
- 24 circuit capability
- UL listed

Main breaker and branch circuit breakers shall be provided by the Contractor. Bolt-in type, heavy-duty, quick-make, quick-break, single- and multi-pole circuit breakers of the types specified herein and in the plans, shall be provided for each circuit with toggle handles that indicate when unit has tripped.

Circuit breakers shall be thermal magnetic type with common trip handle for all multiple pole circuit breakers. Circuit breakers shall be minimum 100-ampere frame and through 100-ampere trip sizes shall take up the same pole spacing. Circuit breakers shall be UL listed as type SWD for lighting circuits.

The Contractor shall provide a surge suppression panel protector as manufactured by Joslyn, model SurgeBan, or approved equal, and shall have the following characteristics.

- All-mode protection ensuring 100% protection by safeguarding all electrical modes, as applicable (line to neutral; line to ground; line to line; neutral to ground).
- Surge current capacity of 200kA per phase.
- Status indicator lights on the front panel with commercial power status (amber/power on) and suppressor status (green/protection available).
- Form "C" relay contacts to enable remote monitoring of the suppressor and commercial power status.
- Audible alarm with silence switch.
- Surge Counter with eight digits.
- MOV/SAD/Filter hybrid.
- Operating temperature of -40°C to +70°C (-40°F to +160°F).
- Operating humidity of 5% to 95% (non-condensing).
- 10 year warranty.

S-001.07.05 Encapsulated Surge Protectors

Encapsulated protectors consisting of gas discharge tubes, metal oxide varistors, zener diodes or suitable components shall be installed at the incoming electrical service lines. Wiring diagrams and internal operation description shall be provided for all submitted protectors. Under no circumstances will epoxy coated protectors be considered. Encapsulated surge protectors shall have the following features:

- Designed and approved for outdoor applications and installations on service entrances.
- Parallel protective devices from each line to ground.
- Weatherproof and UV resistant.
- Compliant with ANSI/IEEE C62.11 for Category "C" locations.
- UL listed.

- Housed and mounted for ease of replacement.

S-001.07.06 *Electrical Power Conductors and Conduit*

Electrical power conductors and conduit shall be of the size and type according to plan details and shall conform to the requirements of Specification Section 02.05 Electrical and Communications Conduit and Conductors.

All power system wiring and cabling shall be within the mounting pole or shall be within conduit. No exposed wiring or cabling shall be acceptable.

All site wiring and cabling shall be within conduit and shall not be exposed. From the existing controller cabinet to the DMS foundation, existing conduit is run underground and enters the mounting pole through the foundation. Within the mounting pole, wiring and cabling shall either be run within existing conduit or existing wireway and appropriate strain relief shall be provided.

The Contractor shall remove the existing DMS controller cabinet and mounting pad and install in its place a new DMS controller cabinet and mounting pad. Existing underground conduit shall be preserved and extended into the new DMS controller cabinet. New conduit shall match existing.

Prior to installing new conductors, all existing conduit shall be cleaned of debris and foreign matter that could potentially damage new conductors.

S-001.08 *DMS Communications System***S-001.08.01 *General Requirements***

Shop drawings showing the details for each component shall be submitted for approval prior to construction.

The DMS Site communications will be wireless communications utilizing Code Division Multiple Access (CDMA).

All site wiring and cabling shall be within conduit and shall not be exposed. From the existing controller cabinet to the DMS foundation, existing conduit is run underground and enters the mounting pole through the foundation. Within the mounting pole, wiring and cabling shall either be run within existing conduit or existing wireway and appropriate strain relief shall be provided.

The Contractor shall supply the network elements, prepare the sizes, install and test all components and operations as well as supporting documentation. Each of these is covered in greater detail elsewhere in this specification.

Access to the manufacturing facility for all products specified herein shall be granted by the manufacturer upon request by the Department.

S-001.08.02 *CDMA Modem and Appurtenances*

CDMA modem, antenna, reset timers, and cabling will be provided by LADOTD for installation and integration by the Contractor. Antenna shall be mounted within or on the DMS controller cabinet according to the manufacturer's requirements and as approved by the Project Engineer.

S-001.09 *Mounting Pole and Foundation*

The DMS enclosure shall be mounted to an existing single post support structure for each DMS site.

Structural details of the existing single post support and top plate are included in the plans for informational purposes. Once the existing DMS is removed from the existing post support, the details of the top plate shall be verified. Contractor shall coordinate with Daktronics, Inc. for the purpose of matching the bolt pattern of the existing top plate to the new DMS enclosure mounting plate.

S-001.10 Grounding and Surge Protection

The contractor shall provide a grounding and surge protection system to protect from electrical power surges caused by lightning or disruptions in the power supply system. System components and appurtenances shall be as detailed in the plans and as required by these specifications. Surge protectors in communication devices shall be as recommended and supplied by the device manufacturer and approved by the Project Engineer.

All non-current carrying metal parts of the DMS site shall be grounded per NEC specifications. In addition, all non-current carrying metal parts shall have a voltage potential of zero relative to reference ground. This reference ground shall be achieved via the equipment grounding conductor.

S-001.11 Removal Requirements

Items described herein shall become the property of the Contractor, unless otherwise directed by the Project Engineer. All removed equipment, materials, and items shall be relocated beyond the limits of construction and shall be disposed of properly.

The Contractor shall remove the following items from each existing DMS site:

- DMS enclosure and contents mounted atop the mounting pole.
- Controller cabinet (and appurtenances mounted within) and mounting pad.
- Power and control cable between the DMS enclosure and the controller cabinet.
- Power cable between the controller cabinet and the electrical service point.

The existing DMS mounting pole, underground conduit, electrical service point and associated apparatus shall remain in place and shall be utilized as part of the new system.

S-001.12 Miscellaneous Materials and Devices

Contractor shall provide and install the new conduit sections, control cable, and power cable. Power cable shall be installed from the existing electrical service point to the new controller cabinet and from the new controller cabinet to the new DMS enclosure atop the existing mounting pole. Control cable shall be installed from the new controller cabinet to the new DMS enclosure atop the existing mounting pole. Control cabling shall be provided by the Contractor and the specification shall be as required by Daktronics, Inc. Conduit and power conductors shall be as specified herein. Appropriate strain relief shall be provided when running these cables within the mounting pole.

S-001.13 System Integration and Documentation

Refer to Specification Section S-002 for System Integration and Documentation details.

S-001.14 Measurement and Payment***S-001.14.01 General Requirements***

The intent of this section is to provide a means for accounting for the periodic payments to the Contractor. The intent of the contract is to provide for the installation of a fully operational ITS, complete, in place, as described in this contract. Nothing in this section of the specification is to conflict with that intent. In the event that an item is not specifically identified for payment, it shall be considered to be included in the most appropriate bid item.

For Lump Sum pay items exceeding \$20,000, the Contractor shall submit a complete breakdown of the Lump Sum for the use of the Project Engineer in evaluating the contractor's request for payment. The breakdown of any required lump sum item shall be submitted to the Department for review. If additional information is required and/or any changes or additions deemed necessary by the Department, these shall be incorporated into the breakdown. The Contractor shall resubmit the breakdown and if all changes are satisfactorily performed, the breakdown format will be approved. If not, resubmission shall occur. The exact quantities and values used in the breakdowns will not be the basis for increases or

decreases in quantity or value of work in place. The Project Engineer may, however, rely on the proportions of the price breakdown in evaluating changes or additions to the Work, if any.

S-001.14.02 Measurement

1. S-001-01 DMS Site #1 – I-10 Eastbound at North Claiborne Ave.

This item will be measured per lump sum and will include providing all labor, equipment, materials, and incidentals required for the furnishing and installation of the DMS Site #1 – I-10 Eastbound at North Claiborne Ave. as detailed in the plans and as described in the specifications. Included in this item is the installation of the DMS assembly (provided by LADOTD) on the existing mounting structure, ground mounted controller cabinet and foundation, conduits, cabling, and connections, grounding and surge protection system, electrical equipment and components, communications equipment and components, electrical and electronic wiring and components, mounting brackets and hardware, connection to existing electrical service, installation of items provided by LADOTD, removal of existing DMS site materials and components, factory and manufacturing inspection, testing, storage, packaging, shipping, warranty, and all work, equipment, and appurtenances as required to effect the full operation and control of the DMS Site #1 – I-10 Eastbound at North Claiborne Ave. complete in place and ready for use.

2. S-001-02 DMS Site #2 – I-610 Eastbound near Elysian Fields Exit #3

This item will be measured per lump sum and will include providing all labor, equipment, materials, and incidentals required for the furnishing and installation of the DMS Site #2 – I-610 Eastbound near Elysian Fields Exit #3 as detailed in the plans and as described in the specifications. Included in this item is the installation of the DMS assembly (provided by LADOTD) on the existing mounting structure, ground mounted controller cabinet and foundation, conduits, cabling, and connections, grounding and surge protection system, electrical equipment and components, communications equipment and components, electrical and electronic wiring and components, mounting brackets and hardware, connection to existing electrical service, installation of items provided by LADOTD, removal of existing DMS site materials and components, factory and manufacturing inspection, testing, storage, packaging, shipping, warranty, and all work, equipment, and appurtenances as required to effect the full operation and control of the DMS Site #2 – I-610 Eastbound near Elysian Fields Exit #3 complete in place and ready for use.

3. S-001-03 DMS Site #3 – I-10 Westbound near Louisa Exit #239A

This item will be measured per lump sum and will include providing all labor, equipment, materials, and incidentals required for the furnishing and installation of the DMS Site #3 – I-10 Westbound near Louisa Exit #239A as detailed in the plans and as described in the specifications. Included in this item is the installation of the DMS assembly (provided by LADOTD) on the existing mounting structure, ground mounted controller cabinet and foundation, conduits, cabling, and connections, grounding and surge protection system, electrical equipment and components, communications equipment and components, electrical and electronic wiring and components, mounting brackets and hardware, connection to existing electrical service, installation of items provided by LADOTD, removal of existing DMS site materials and components, factory and manufacturing inspection, testing, storage, packaging, shipping, warranty, and all work, equipment, and appurtenances as required to effect the full operation and control of the DMS Site #3 – I-10 Westbound near Louisa Exit #239A complete in place and ready for use.

4. S-001-04 DMS Site #4 – I-10 Westbound near Chef Menteur Exit #240B

This item will be measured per lump sum and will include providing all labor, equipment, materials, and incidentals required for the furnishing and installation of the DMS Site #4 – I-10 Westbound near Chef Menteur Exit #240B as detailed in the plans and as described in the specifications. Included in this item is the installation of the DMS assembly (provided by LADOTD) on the existing mounting structure, ground mounted controller cabinet and foundation, conduits, cabling, and connections, grounding and surge protection system, electrical equipment and components, communications equipment and components, electrical and electronic wiring and components, mounting brackets and hardware, connection to existing electrical service, installation of items provided by LADOTD, removal of existing DMS site materials and components, factory and manufacturing inspection, testing, storage, packaging, shipping, warranty, and all work, equipment, and appurtenances as required to effect the full operation and control of the DMS Site #4 – I-10 Westbound near Chef Menteur Exit #240B complete in place and ready for use.

5. S-001-05 DMS Site #5 – I-10 Westbound near Morrison Exit #241

This item will be measured per lump sum and will include providing all labor, equipment, materials, and incidentals required for the furnishing and installation of the DMS Site #5 – I-10 Westbound near Morrison Exit #241 as detailed in the plans and as described in the specifications. Included in this item is the installation of the DMS assembly (provided by LADOTD) on the existing mounting structure, ground mounted controller cabinet and foundation, conduits, cabling, and connections, grounding and surge protection system, electrical equipment and components, communications equipment and components, electrical and electronic wiring and components, mounting brackets and hardware, connection to existing electrical service, installation of items provided by LADOTD, removal of existing DMS site materials and components, factory and manufacturing inspection, testing, storage, packaging, shipping, warranty, and all work, equipment, and appurtenances as required to effect the full operation and control of the DMS Site #5 – I-10 Westbound near Morrison Exit #241 complete in place and ready for use.

S-001.14.03 Payment

Payment for Dynamic Message Sign Site work will be made at the Contract unit price under:

Item Number	Pay Unit	Pay Item
S-001-01	Lump Sum	DMS Site #1 – I-10 Eastbound at North Claiborne Ave.
S-001-02	Lump Sum	DMS Site #2 – I-610 Eastbound near Elysian Fields Exit #3
S-001-03	Lump Sum	DMS Site #3 – I-10 Westbound near Louisa Exit #239A
S-001-04	Lump Sum	DMS Site #4 – I-10 Westbound near Chef Menteur Exit #240B
S-001-05	Lump Sum	DMS Site #5 – I-10 Westbound near Morrison Exit #241

END OF SECTION

Item S-002 System Integration and Documentation**S-002.01 Scope of Work**

This Item consists of providing System Integration and Documentation required for the ITS in accordance with plan details, specifications, and as directed by the Project Engineer.

The Contractor is required to assemble and install all necessary material and equipment and to furnish a complete and operational ITS in accordance with these plans, specifications, and as directed by the Project Engineer. All items that are required to complete the installation shall be secured by the contractor.

Also included in this item is any required hardware for the control and programming of field devices and all appurtenances required for the ITS in accordance with plan details, specifications, and as directed by the Project Engineer.

LADOTD DMS manufacturer is Daktronics, Inc. The Contractor shall coordinate with and obtain on-site assistance from Daktronics, Inc. during the ITS Testing and System Integration phases. All costs for services provided by Daktronics, Inc. shall be included within the price bid for Item S-002 – System Integration and Documentation.

S-002.02 System Integration

The ITS will be operated and controlled utilizing vendor supplied software. The contractor is responsible for providing an ITS as described in these plans and specifications that will communicate and be compatible with the existing statewide TMC equipment and software.

Prior to commencement of system integration, the Contractor shall initiate and hold a meeting between all involved parties (LADOTD ITS, Project Engineer, etc.) for the purpose of discussing system configuration, default parameters, and other items dealing with system setup.

Software for the DMS will be provided by Daktronics, Inc. and software for the CDMA communications system will be provided by LADOTD. The Contractor shall be responsible for software installation and field device programming.

S-002.02.01 DMS Software

The Contractor, in association with Daktronics, Inc., shall install on a computer as directed by the Project Engineer the vendor supplied software for DMS configuration and operations. Configuration notes and details shall be provided in writing to the Project Engineer at the time of installation and configuration.

The contractor shall submit a written request a minimum of two weeks in advance for IP addressing information. This request shall be made for all signs at one time. The contractor shall verify sign configuration parameters with the Project Engineer prior to actual configuration.

S-002.02.02 Modem Software

The contractor, in association with the Department, shall install on a computer as directed by the Project Engineer the vendor supplied software for modem configuration and communications. Configuration notes and details shall be provided in writing to the Project Engineer at the time of installation and configuration.

The contractor shall verify modem configuration parameters with the Project Engineer prior to actual configuration.

S-002.03 Documentation***S-002.03.01 General Requirements***

Manuals shall be supplied for all equipment and components of the ITS. The manuals supplied shall be from the original source/manufacturer. The manuals shall be comprehensive, easy to use and understand, and completely descriptive of the product.

The Contractor shall furnish the Department seven (7), bound, copies of a booklet, 8-1/2 inches x 11 inches in size, containing descriptive leaflets and drawings as described in this section (one set for each DMS site and two office sets). These booklets shall also be furnished in portable document format (pdf) on a CD-ROM disk.

Each sheet of the package shall be laminated or the overall package shall be sealed to resist humidity.

All drawings shall measure 11"x17" and shall be provided in the native program in which they were created as well as in pdf format.

This booklet shall include catalog numbers indicated, printed or typewritten statements prepared by the equipment manufacturer covering the proper method of adjusting and otherwise maintaining each item, a concise statement of the necessary operating functions in proper sequence, a detailed description of the functions of each item in connection with the various operating steps, and reduced copies of conduit and wiring diagrams. The booklet shall designate each wire and item of equipment by the numbers and symbols used on the drawings.

S-002.03.02 *Equipment Assembly Drawings*

A pictorial drawing showing the physical location and identification of each component shall be provided for each different electrical/electronic assembly and each different subassembly of each assembly.

S-002.03.03 *Cabinet, Rack, and Site Wiring Diagrams*

A wiring diagram shall be provided for each different cabinet, equipment rack, junction box containing wire terminals, and twisted wire pair cable termination box identified by location.

In addition, each DMS Site shall be furnished with a complete set of reproducible wiring diagrams that detail the overall connectivity of the site from an electrical and communications standpoint.

If the same diagram serves more than one location, it shall be labeled with all appropriate locations. If a set of drawings is provided, each serving more than one location, a separate laminated sheet shall be included that shows a cross index by location and drawing.

S-002.03.04 *Electrical Schematic, Wiring, and Logic Diagrams*

An electrical schematic, wiring diagram and a logic diagram shall be provided for each different type or model of equipment supplied by the Contractor. A stage-by-stage explanation of the circuit theory shall be provided with the circuit wiring diagrams.

If the same diagram serves more than one location, it shall be labeled with all appropriate locations. If a set of similar drawings is provided, each showing more than one location, a separate laminated sheet shall be included that shows a cross-index by location and drawing.

Schematic wiring diagrams of all electrical components and electronic circuit board schematic diagrams of all electronic components shall also be provided to the Department.

S-002.03.05 *Manufacturer's Warranties*

The Contractor shall transfer and assign to the Department all of its rights under any and all warranties, guaranties, and any similar provisions from the manufacturer's or vendor of the ITS or any component part or equipment thereof and shall take all steps necessary to ensure that said manufacturer or vendor recognizes the Department as a beneficiary of any such warranty, guaranty, etc.

Warranties are required in a number of locations herein and the Contractor shall provide documentation to the Department to that effect.

S-002.04 Measurement and Payment**S-002.04.01 General Requirements**

The intent of this section is to provide a means for accounting for the periodic payments to the Contractor. The intent of the contract is to provide for the installation of a fully operational ITS, complete, in place, as described in this contract. Nothing in this section of the specification is to conflict with that intent. In the event that an item is not specifically identified for payment, it shall be considered to be included in the most appropriate bid item.

For Lump Sum pay items exceeding \$20,000, the Contractor shall submit a complete breakdown of the Lump Sum for the use of the Project Engineer in evaluating the contractor's request for payment. The breakdown of any required lump sum item shall be submitted to the Department for review. If additional information is required and/or any changes or additions deemed necessary by the Department, these shall be incorporated into the breakdown. The Contractor shall resubmit the breakdown and if all changes are satisfactorily performed, the breakdown format will be approved. If not, resubmission shall occur. The exact quantities and values used in the breakdowns will not be the basis for increases or decreases in quantity or value of work in place. The Project Engineer may, however, rely on the proportions of the price breakdown in evaluating changes or additions to the Work, if any.

S-002.04.02 Measurement

1. S-002-01 System Integration and Documentation

This item will be measured per lump sum and will include providing all labor, equipment, materials, and incidentals required for the furnishing and installation of System Integration and Documentation as detailed in the plans and as described in the specifications. Included in this item is the establishment of a complete and operational ITS as described, documentation, and all work, equipment, and appurtenances as required to effect the full operation and control of System Integration and Documentation complete in place and ready for use.

S-002.04.03 Payment

Payment for System Integration and Documentation work will be made at the Contract unit price under:

Item Number	Pay Unit	Pay Item
S-002-01	Lump Sum	System Integration and Documentation

END OF SECTION

Appendix A DMS Location Photographs

DMS Site #1 – I-10 Eastbound at North Claiborne Ave



DMS Site #2 – I-610 Eastbound near Elysian Fields Exit #3



DMS Site #3 – I-10 Westbound near Louisa Exit #239A



DMS Site #4 – I-10 Westbound near Chef Menteur Exit #240B



DMS Site #5 – I-10 Westbound near Morrison Exit #241



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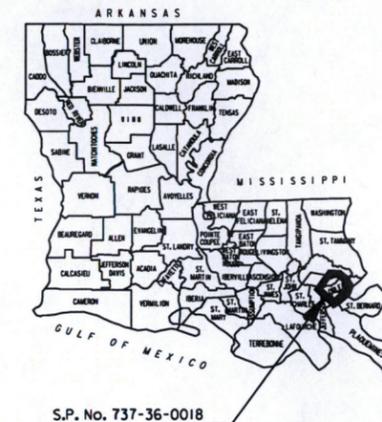
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INDEX TO SHEETS

SHEET NO.	DESCRIPTION
1	GENERAL NOTES, QUANTITIES, & INDEX
2	DMS LOCATION MAP
3	DMS #1, #2, #3, #4 AND #5 REDUCED PLANS
4	SYSTEM INFORMATION TABLE
5	DMS COMMUNICATION DIAGRAM
6	DMS #1, #2, AND #3 CONFIGURATION DIAGRAM
7	DMS #4 AND #5 CONFIGURATION DIAGRAM
8	DMS ONE LINE DIAGRAM
9	DMS SCHEMATIC WIRING DIAGRAM
10	DMS CONTROLLER CABINET DETAILS
11	DMS CONTROLLER CABINET MOUNTING PAD
12	MISCELLANEOUS DETAILS - GENERAL
13	EXISTING DMS GENERAL ARRANGEMENT
14	EXISTING 20' DMS SIGN SUPPORT
15	EXISTING 45' DMS SIGN SUPPORT
16-19	TC DETAILS

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT PLANS OF PROPOSED STATE HIGHWAY PROJECT

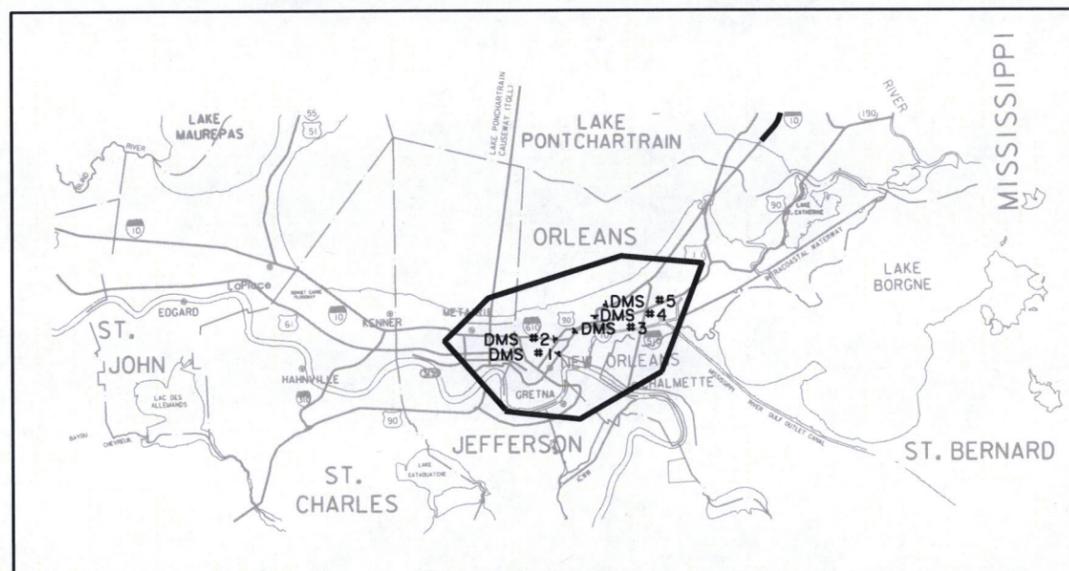
STATE PROJECT No. 737-36-0018



S.P. No. 737-36-0018

VICINITY MAP

DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)



DATE	REVISION	DATE	RECOMMENDED	DATE	APPROVED

SCHEDULE OF REVISIONS

TYPE OF CONSTRUCTION:
TECHNOLOGY; INTELLIGENT TRANSPORTATION SYSTEMS

LAYOUT MAP

NOTE:
THE 2006 LOUISIANA DOTD STANDARD SPECIFICATIONS
FOR ROADS AND BRIDGES, AS AMENDED BY THE PROJECT
SPECIFICATIONS, SHALL GOVERN ON THIS PROJECT

PLANS PREPARED BY AND
RECOMMENDED FOR APPROVAL

G.E.C.
G.E.C./INC.

DATE 3/20/2009

APPROVED

Cary A. Bourgeois
District Administrator/Section Head

Date: 3/20/2009



SHEET NUMBER	0			
PARISH	ORLEANS	FEDERAL PROJECT	-	STATE PROJECT
				737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)				
COVER				
DESIGNED	E.P.C./T.C.C.	CHECKED	T.C.C./C.A.B.	DATE
DETAILED	T.C.C./B.A.C.	CHECKED	E.P.C./C.A.B.	SHEET
				MARCH 2009 COVER-PH1B.DGN
REVISION DESCRIPTION				
NO.	DATE			

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GENERAL NOTES:

GENERAL REQUIREMENTS:

- SEVERAL ITEMS IN THE PLANS AND SPECIFICATIONS REQUIRE THE CONTRACTOR TO CONFIGURE ACCORDING TO CERTAIN REQUIREMENTS. IN EACH INSTANCE, THIS CONFIGURATION SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL.
- ALL WORK TO BE DONE SHALL BE TIMELY AND IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
- ALL WORK SHALL BE DONE IN COMPLIANCE WITH ALL PREVAILING CODES.
- SHOULD A CONFLICT OCCUR BETWEEN A PREVAILING CODE AND THESE PLANS AND SPECIFICATIONS, THESE PLANS AND/OR SPECIFICATIONS SHALL PREVAIL.
- NO SUBSTITUTIONS SHALL BE MADE EITHER IN MATERIAL OR DESIGN UNLESS WRITTEN PERMISSION HAS BEEN RECEIVED FROM THE PROJECT ENGINEER.
- ALL EQUIPMENT, MATERIAL, AND APPARATUS SHALL BE AS SHOWN OR THE APPROVED EQUAL.
- ALL EQUIVALENT MATERIALS SHALL BE APPROVED BY THE PROJECT ENGINEER BEFORE USE. FAILURE TO COMPLY SUBJECTS THE CONTRACTOR TO MAKING CORRECTIONS AT HIS OWN EXPENSE.
- THE LAYOUTS ARE DIAGRAMMATIC AND DO NOT SHOW THE EXACT LOCATION OF CONDUIT RUNS, JUNCTION BOXES, ETC. THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS SHOWING THE APPROXIMATE LOCATIONS OF THE EQUIPMENT AND ANY CHANGES, CORRECTIONS, ETC. ON THE "AS BUILT" DRAWINGS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING WITH THE VARIOUS UTILITY COMPANIES TO DETERMINE AND/OR VERIFY THE EXACT LOCATIONS OF ALL UTILITIES PRIOR TO STARTING EXCAVATION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY HIS EMPLOYEES AND/OR EQUIPMENT TO ANY UTILITIES, TO THE SATISFACTION OF THE UTILITY COMPANY.
- THE PLANS DO NOT NECESSARILY SHOW ALL UNDERGROUND FACILITIES. BEFORE BEGINNING EXCAVATION, THE CONTRACTOR SHALL CHECK THE AREA FOR EVIDENCE OF UNDERGROUND FACILITIES. THE DEPARTMENT WILL NOT BE RESPONSIBLE FOR DAMAGE TO ANY UNDERGROUND FACILITIES CAUSED BY THE CONTRACTORS OPERATIONS.
- EQUIPMENT AND MATERIALS SHALL BE SUITABLE FOR THE INTENDED PURPOSE AND SHALL BE FURNISHED WITH ALL NECESSARY HARDWARE AND COMPONENTS.
- ALL EQUIPMENT AND MATERIALS UNLESS OTHERWISE NOTED SHALL BE NEW. LIKE EQUIPMENT AND MATERIALS SHALL BE MADE BY THE SAME MANUFACTURER.
- THE ITEM DESCRIPTIONS, DRAWINGS, AND SPECIFICATIONS DO NOT NECESSARILY INCLUDE OR DEFINE EVERYTHING NECESSARY FOR A COMPLETE AND OPERATIONAL ITEM. WHEN REQUIRED, THE CONTRACTOR SHALL PROVIDE ANY MODIFICATIONS, FABRICATIONS, EXTRA HARDWARE AND EQUIPMENT NECESSARY FOR THE SATISFACTORY INSTALLATION AND OPERATION OF THE SYSTEM AND TO COORDINATE WITH OTHER ITEMS OR CONDITIONS AT NO DIRECT PAY.
- EQUIPMENT AND MATERIALS SHALL NOT BE ORDERED OR INSTALLED UNTIL APPROVED BY THE PROJECT ENGINEER.
- THE PROJECT ENGINEER SHALL APPROVE THE ORIENTATION OF ALL ITS CABINETS PRIOR TO CONSTRUCTION.
- ALL DIMENSIONS AND SCALES ARE BASED ON FULL SIZE PLANS.
- THE CONTRACTOR SHALL MAINTAIN ALL CONSTRUCTION WITHIN THE STATE OR PARISH RIGHT-OF-WAY. THE CONTRACTOR WILL BE RESPONSIBLE TO VERIFY RIGHT-OF-WAY.

CONDUIT, CONDUCTORS, AND TERMINATIONS:

- CONDUCTORS SHALL BE STRANDED COPPER WITH 600 VOLT RATED CROSS-LINKED POLYETHYLENE INSULATION CONFORMING TO ICEA S66-524 (UL TYPE XHHW). THE MINIMUM SIZE OF CONDUCTORS SHALL BE AS SHOWN IN THE PLANS.
- INSULATED GROUNDING CONDUCTORS SHALL BE GREEN XHHW PROPERLY IDENTIFIED AS PER NEC 310-12B.
- GREEN INSULATED COPPER GROUNDING CONDUCTORS SHALL BE INSTALLED IN ALL CONDUITS.
- ALL WIRE TERMINATIONS SHALL BE IRREVERSIBLE COMPRESSION CRIMP *ONLY*.
- ALL CONDUITS ENTERING THE GROUND SHALL BE RIGID GALVANIZED STEEL ANSI C80.1. UNDERGROUND CONDUITS SHALL HAVE NO VERTICAL BENDS OR RUNS.
- SPLICES IN CONDUCTORS WILL NOT BE ALLOWED AT ANY LOCATION IN THE POWER SYSTEM, UNLESS OTHERWISE NOTED.

GENERAL NOTES (CONTINUED):

GROUNDING

- ALL GROUND CONNECTIONS BELOW GRADE, EITHER WIRE TO WIRE OR WIRE TO ROD, SHALL BE EXOTHERMIC, OTHERWISE THEY SHALL BE IRREVERSIBLE COMPRESSION CRIMP.
- GROUNDING ELECTRODE CONDUCTORS SHALL BE RUN UNBROKEN FROM THE EARTH POINT TO THE NEUTRAL BUS AS SPECIFIED. THE TERMINATION SHALL BE COMPRESSION CRIMP ONLY.

TRENCHING:

- TRENCHES SHALL NOT BE LEFT OPEN OVERNIGHT AND SHALL BE BACKFILLED TO THE SATISFACTION OF THE PROJECT ENGINEER.
- CONDUITS SHALL BE HAND PLACED INSIDE THE TRENCH AND THE TRENCH BACKFILLED TO THE SATISFACTION OF THE PROJECT ENGINEER THAT SAME DAY.
- RED WARNING TAPE SHALL BE INSTALLED IN ALL TRENCHES ACCORDING TO PLAN DETAILS.

CONSTRUCTION SPECIFICATION:

- CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, 2006, EXCEPT AS SUPPLEMENTED OR AMENDED BY THE PLANS, SUPPLEMENTAL SPECIFICATIONS AND/OR SPECIAL PROVISIONS.

DIMENSIONS:

- ALL DIMENSIONS ARE HORIZONTAL, UNLESS OTHERWISE NOTED, AND ARE GIVEN AT NORMAL TEMPERATURE (68 DEGREES F.).

SITE CLEANLINESS AND RESTORATION:

- ALL VEGETATION, DEBRIS, CONCRETE, AND OTHER UNSUITABLE MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR BEYOND THE LIMITS OF CONSTRUCTION.
- CLEARING AND GRUBBING, AND TRIMMING OF TREES NECESSARY TO CONSTRUCT THE SYSTEM SHALL BE KEPT TO A MINIMUM.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING THE AREAS OF CONSTRUCTION THAT GET DISTURBED BECAUSE OF CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL RETURN THE DISTURBED AREA TO ITS ORIGINAL STATE.

CONSTRUCTION SIGNING:

- ALL CONSTRUCTION SIGNING AND ANY OTHER SIGNS OR TRAFFIC CONTROL DEVICES INDICATED IN THESE PLANS, TEMPORARY TRAFFIC CONTROL DETAILS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) SHALL BE INSTALLED AND PAID FOR UNDER ITEM S-001-XX.

SUMMARY OF ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
S-001-01	DMS SITE #1 - I-10 EASTBOUND AT NORTH CLAIBORNE AVE.	LUMP SUM	LUMP SUM
S-001-02	DMS SITE #2 - I-610 EASTBOUND NEAR ELYSIAN FIELDS EXIT #3	LUMP SUM	LUMP SUM
S-001-03	DMS SITE #3 - I-10 WESTBOUND NEAR LOUISA EXIT #239A	LUMP SUM	LUMP SUM
S-001-04	DMS SITE #4 - I-10 WESTBOUND NEAR CHEF MENTEUR EXIT #240B	LUMP SUM	LUMP SUM
S-001-05	DMS SITE #5 - I-10 WESTBOUND NEAR MORRISON EXIT #241	LUMP SUM	LUMP SUM
S-002-01	SYSTEM INTEGRATION AND DOCUMENTATION	LUMP SUM	LUMP SUM

SHEET INDEX

- 1 - GENERAL NOTES, QUANTITIES, & INDEX
- 2 - DMS LOCATION MAP
- 3 - DMS #1, #2, #3, #4 AND #5 REDUCED PLANS
- 4 - SYSTEM INFORMATION TABLE
- 5 - DMS COMMUNICATION DIAGRAM
- 6 - DMS #1, #2, AND #3 CONFIGURATION DIAGRAM
- 7 - DMS #4 AND #5 CONFIGURATION DIAGRAM
- 8 - DMS ONE LINE DIAGRAM
- 9 - DMS SCHEMATIC WIRING DIAGRAM
- 10 - DMS CONTROLLER CABINET DETAILS
- 11 - DMS CONTROLLER CABINET MOUNTING PAD
- 12 - MISCELLANEOUS DETAILS - GENERAL
- 13 - EXISTING DMS GENERAL ARRANGEMENT
- 14 - EXISTING 20' DMS SIGN SUPPORT
- 15 - EXISTING 45' DMS SIGN SUPPORT
- 16-19 - TC DETAILS



ORLEANS PARISH FEDERAL PROJECT STATE PROJECT 737-36-0018

DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)

GENERAL NOTES, QUANTITIES, & INDEX

DESIGNED: E.P.C./T.C.C. CHECKED: C.A.B./D.S.G. RETAINED: T.C.C. CHECKED: E.P.C. DATE: MARCH 2009 SHEET: DMS-NOTES2.DGN

NO. DATE REVISION DESCRIPTION

SCALE: 1" = 4000'



LEGEND:

 DYNAMIC MESSAGE SIGN



3/6/09

NO.	DATE	REVISION DESCRIPTION	BY

DESIGNED	I.C.C.
CHECKED	E.P.C.
DETAILED	I.C.C.
CHECKED	E.P.C.
DATE	MARCH 2009
SHEET	DMS 1-5 KEY.DGN



DMS PHASE 2 RETROFIT
(NO PHASE 1b VULTRON)

DMS LOCATION MAP



PARISH	ORLEANS
FEDERAL PROJECT	-
STATE PROJECT	737-36-0018

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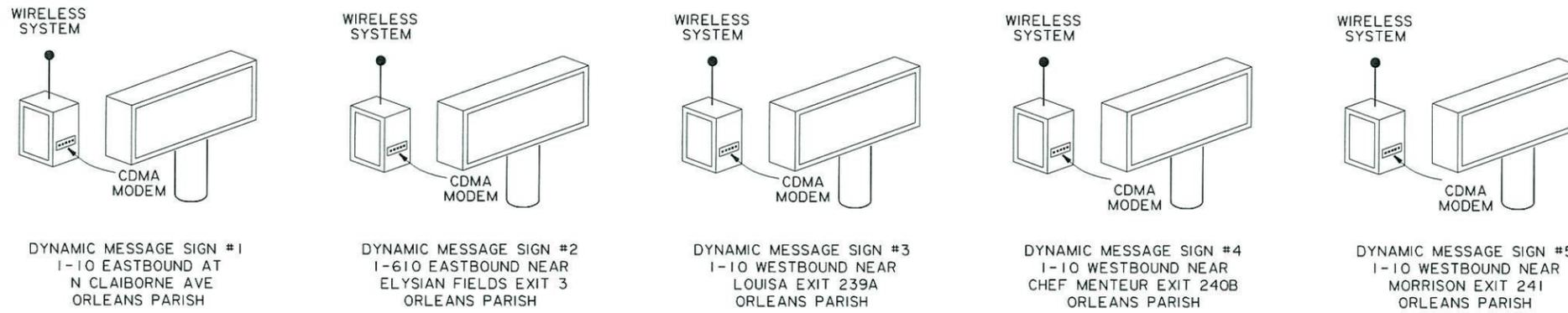
DYNAMIC MESSAGE SIGN INFORMATION							
ITEM NUMBER	DRAWING DESIGNATION	LOCATION	APPROXIMATE MILE POST	TYPE	ELECTRICAL SERVICE	COMMUNICATIONS	SHEET
S-001-01	DMS #1	I-10 EASTBOUND AT NORTH CLAIBORNE AVE.	234.8	POLE MOUNTED ON EXISTING SUPPORT DMS PROVIDED BY LADOTD	240 VOLTS FROM LOCAL SERVICE EXISTING	DIAL UP COMMUNICATIONS EQUIPMENT PROVIDED BY LADOTD	-
S-001-02	DMS #2	I-610 EASTBOUND NEAR ELYSIAN FIELDS EXIT #3	3.5	POLE MOUNTED ON EXISTING SUPPORT DMS PROVIDED BY LADOTD	240 VOLTS FROM LOCAL SERVICE EXISTING	DIAL UP COMMUNICATIONS EQUIPMENT PROVIDED BY LADOTD	-
S-001-03	DMS #3	I-10 WESTBOUND NEAR LOUISA EXIT #239A	237.1	POLE MOUNTED ON EXISTING SUPPORT DMS PROVIDED BY LADOTD	240 VOLTS FROM LOCAL SERVICE EXISTING	DIAL UP COMMUNICATIONS EQUIPMENT PROVIDED BY LADOTD	-
S-001-04	DMS #4	I-10 WESTBOUND NEAR CHEF MENTEUR EXIT #240B	239.7	POLE MOUNTED ON EXISTING SUPPORT DMS PROVIDED BY LADOTD	240 VOLTS FROM LOCAL SERVICE EXISTING	DIAL UP COMMUNICATIONS EQUIPMENT PROVIDED BY LADOTD	-
S-001-05	DMS #5	I-10 WESTBOUND NEAR MORRISON EXIT #241	240.9	POLE MOUNTED ON EXISTING SUPPORT DMS PROVIDED BY LADOTD	240 VOLTS FROM LOCAL SERVICE EXISTING	DIAL UP COMMUNICATIONS EQUIPMENT PROVIDED BY LADOTD	-

CABLE AND CONDUIT SCHEDULE										
SHEET NUMBER	ITS DEVICE	CONDUIT INFORMATION		POWER CONDUCTOR INFORMATION					NOTES	
		TYPE	QUANTITY	QUANTITY	AWG	TYPE	VOLTAGE	GROUND		LENGTH
3	DMS #1	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	150'	FROM EXISTING MAIN SERVICE DISCONNECT TO NEW SITE DISCONNECT
	DMS #1	-	-	3	#2	XHHW-2	600	1-#2	10'	FROM NEW SITE DISCONNECT TO NEW DMS SITE DISTRIBUTION PANELBOARD
	DMS #1	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	100'	FROM NEW DMS SITE DISTRIBUTION PANELBOARD TO NEW DMS PANELBOARD
	DMS #2	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	150'	FROM EXISTING MAIN SERVICE DISCONNECT TO NEW SITE DISCONNECT
	DMS #2	-	-	3	#2	XHHW-2	600	1-#2	10'	FROM NEW SITE DISCONNECT TO NEW DMS SITE DISTRIBUTION PANELBOARD
	DMS #2	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	100'	FROM NEW DMS SITE DISTRIBUTION PANELBOARD TO NEW DMS PANELBOARD
	DMS #3	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	150'	FROM EXISTING MAIN SERVICE DISCONNECT TO NEW SITE DISCONNECT
	DMS #3	-	-	3	#2	XHHW-2	600	1-#2	10'	FROM NEW SITE DISCONNECT TO NEW DMS SITE DISTRIBUTION PANELBOARD
	DMS #3	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	100'	FROM NEW DMS SITE DISTRIBUTION PANELBOARD TO NEW DMS PANELBOARD
	DMS #4	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	150'	FROM EXISTING MAIN SERVICE DISCONNECT TO NEW SITE DISCONNECT
	DMS #4	-	-	3	#2	XHHW-2	600	1-#2	10'	FROM NEW SITE DISCONNECT TO NEW DMS SITE DISTRIBUTION PANELBOARD
	DMS #4	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	100'	FROM NEW DMS SITE DISTRIBUTION PANELBOARD TO NEW DMS PANELBOARD
	DMS #5	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	150'	FROM EXISTING MAIN SERVICE DISCONNECT TO NEW SITE DISCONNECT
	DMS #5	-	-	3	#2	XHHW-2	600	1-#2	10'	FROM NEW SITE DISCONNECT TO NEW DMS SITE DISTRIBUTION PANELBOARD
	DMS #5	EXISTING	EXISTING	3	#2	XHHW-2	600	1-#2	100'	FROM NEW DMS SITE DISTRIBUTION PANELBOARD TO NEW DMS PANELBOARD

NOTE: OTHER MISCELLANEOUS CONDUCTORING AND CABLING SHALL BE PROVIDED AND INSTALLED AS SPECIFIED.

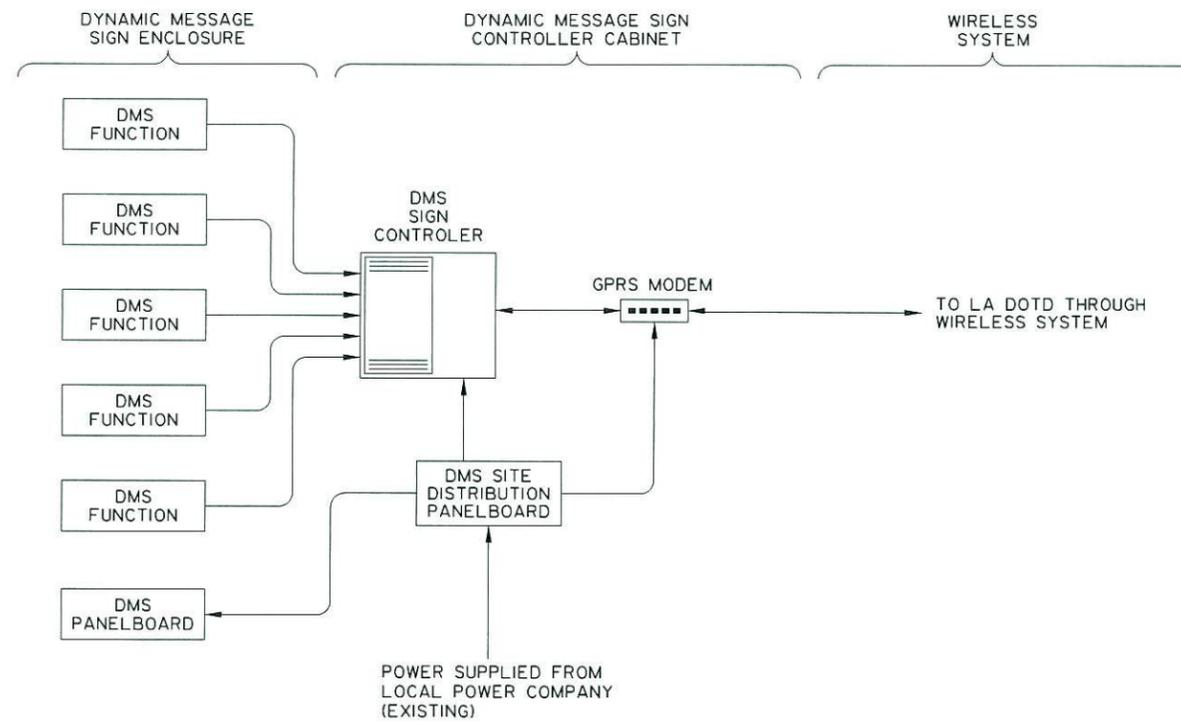


SHEET NUMBER	4
ORLEANS	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
SYSTEM INFORMATION TABLE	
DESIGNED	E.P.C./T.C.C.
CHECKED	E.P.C./E.D.D.
DATE	MARCH 2009
BY	SysinfoTbl.dgn
NO.	
DATE	
REVISION DESCRIPTION	



COMMUNICATIONS DIAGRAM

SCALE: NONE



**BLOCK DIAGRAM
DYNAMIC MESSAGE SIGN**

SCALE: NONE

3/6/09

SHEET NUMBER	5
PARISH	ORLEANS
FEDERAL PROJECT	-
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
DMS COMMUNICATION DIAGRAM	
DESIGNED	T.C. COERVER
CHECKED	E.P. CHAMPAGNE
DETAILED	T.C. COERVER
CHECKED	T.C. ROSS
DATE	MARCH 2009
SHEET	COMM-DMS.DGN
BY	
DATE	
DESCRIPTION	

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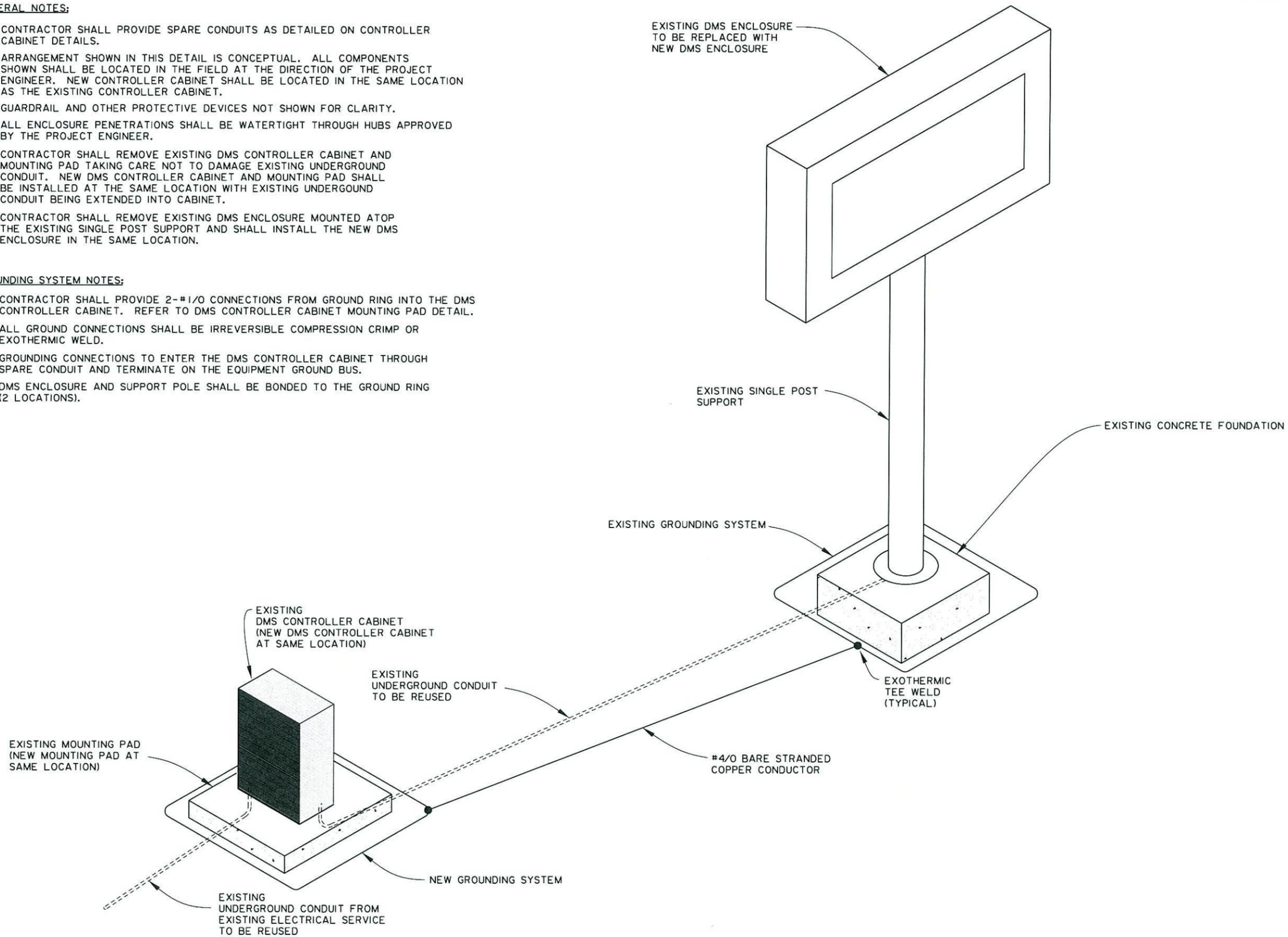
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GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE SPARE CONDUITS AS DETAILED ON CONTROLLER CABINET DETAILS.
2. ARRANGEMENT SHOWN IN THIS DETAIL IS CONCEPTUAL. ALL COMPONENTS SHOWN SHALL BE LOCATED IN THE FIELD AT THE DIRECTION OF THE PROJECT ENGINEER. NEW CONTROLLER CABINET SHALL BE LOCATED IN THE SAME LOCATION AS THE EXISTING CONTROLLER CABINET.
3. GUARDRAIL AND OTHER PROTECTIVE DEVICES NOT SHOWN FOR CLARITY.
4. ALL ENCLOSURE PENETRATIONS SHALL BE WATERTIGHT THROUGH HUBS APPROVED BY THE PROJECT ENGINEER.
5. CONTRACTOR SHALL REMOVE EXISTING DMS CONTROLLER CABINET AND MOUNTING PAD TAKING CARE NOT TO DAMAGE EXISTING UNDERGROUND CONDUIT. NEW DMS CONTROLLER CABINET AND MOUNTING PAD SHALL BE INSTALLED AT THE SAME LOCATION WITH EXISTING UNDERGROUND CONDUIT BEING EXTENDED INTO CABINET.
6. CONTRACTOR SHALL REMOVE EXISTING DMS ENCLOSURE MOUNTED ATOP THE EXISTING SINGLE POST SUPPORT AND SHALL INSTALL THE NEW DMS ENCLOSURE IN THE SAME LOCATION.

GROUNDING SYSTEM NOTES:

1. CONTRACTOR SHALL PROVIDE 2-#1/0 CONNECTIONS FROM GROUND RING INTO THE DMS CONTROLLER CABINET. REFER TO DMS CONTROLLER CABINET MOUNTING PAD DETAIL.
2. ALL GROUND CONNECTIONS SHALL BE IRREVERSIBLE COMPRESSION CRIMP OR EXOTHERMIC WELD.
3. GROUNDING CONNECTIONS TO ENTER THE DMS CONTROLLER CABINET THROUGH SPARE CONDUIT AND TERMINATE ON THE EQUIPMENT GROUND BUS.
4. DMS ENCLOSURE AND SUPPORT POLE SHALL BE BONDED TO THE GROUND RING (2 LOCATIONS).



DMS CONFIGURATION DIAGRAM - DMS #1, #2, AND #3
SCALE: NONE

3/6/09

SHEET NUMBER	6
ORLEANS	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
DMS #1, #2, AND #3 CONFIGURATION DIAGRAM	
DESIGNED	E.P.C./T.C.C.
CHECKED	C.A.B./D.S.G.
DATE	MARCH 2009
DRAWN	T.C.C.
CHECKED	E.P.C.
DATE	MARCH 2009
SHEET	DMS-CFG-DIAG.DGN
NO.	
DATE	
REVISION DESCRIPTION	
BY	

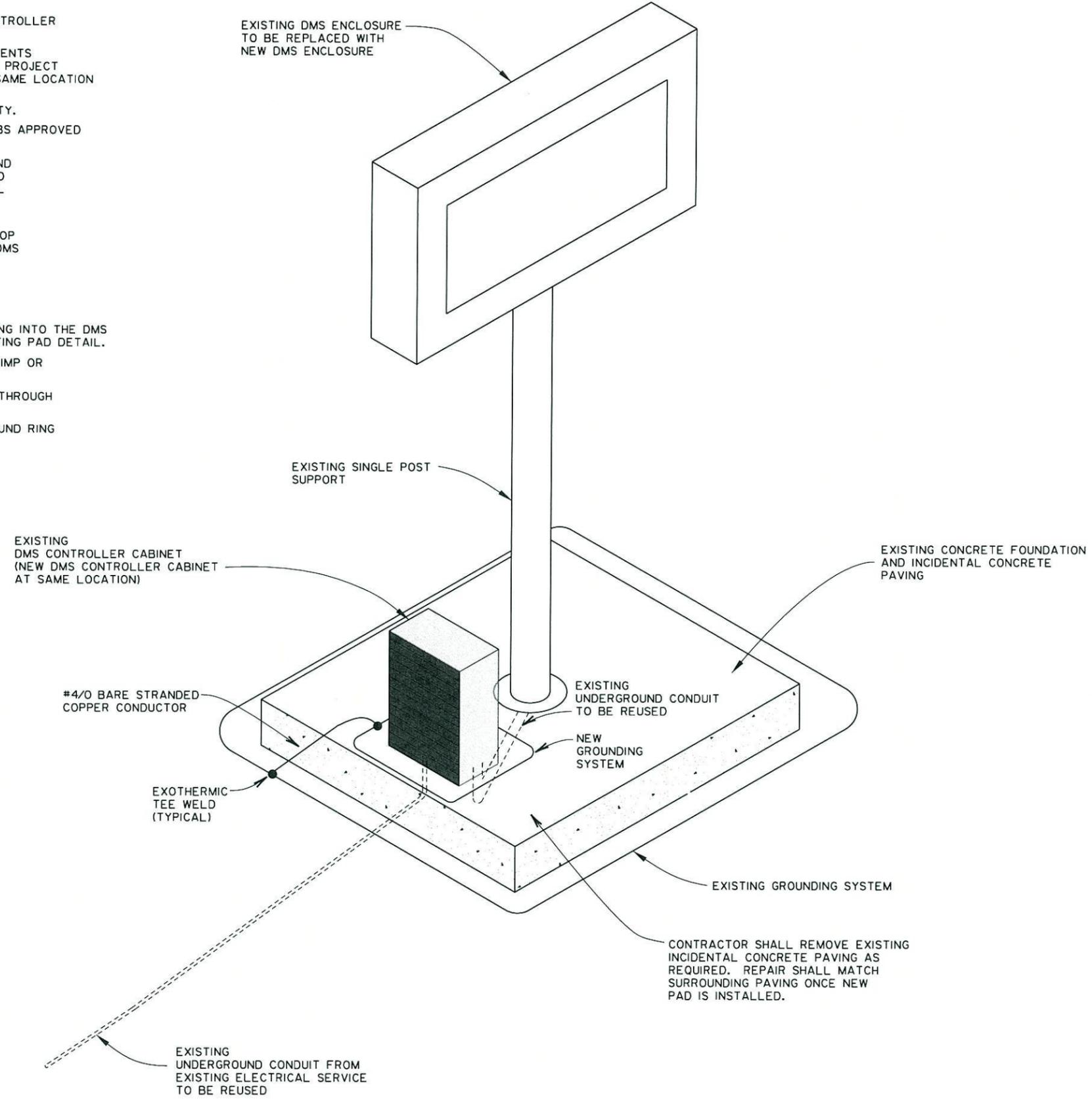
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GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE SPARE CONDUITS AS DETAILED ON CONTROLLER CABINET DETAILS.
2. ARRANGEMENT SHOWN IN THIS DETAIL IS CONCEPTUAL. ALL COMPONENTS SHOWN SHALL BE LOCATED IN THE FIELD AT THE DIRECTION OF THE PROJECT ENGINEER. NEW CONTROLLER CABINET SHALL BE LOCATED IN THE SAME LOCATION AS THE EXISTING CONTROLLER CABINET.
3. GUARDRAIL AND OTHER PROTECTIVE DEVICES NOT SHOWN FOR CLARITY.
4. ALL ENCLOSURE PENETRATIONS SHALL BE WATERTIGHT THROUGH HUBS APPROVED BY THE PROJECT ENGINEER.
5. CONTRACTOR SHALL REMOVE EXISTING DMS CONTROLLER CABINET AND MOUNTING PAD TAKING CARE NOT TO DAMAGE EXISTING UNDERGROUND CONDUIT. NEW DMS CONTROLLER CABINET AND MOUNTING PAD SHALL BE INSTALLED AT THE SAME LOCATION WITH EXISTING UNDERGROUND CONDUIT BEING EXTENDED INTO CABINET.
6. CONTRACTOR SHALL REMOVE EXISTING DMS ENCLOSURE MOUNTED ATOP THE EXISTING SINGLE POST SUPPORT AND SHALL INSTALL THE NEW DMS ENCLOSURE IN THE SAME LOCATION.

GROUNDING SYSTEM NOTES:

1. CONTRACTOR SHALL PROVIDE 2-#1/0 CONNECTIONS FROM GROUND RING INTO THE DMS CONTROLLER CABINET. REFER TO DMS CONTROLLER CABINET MOUNTING PAD DETAIL.
2. ALL GROUND CONNECTIONS SHALL BE IRREVERSIBLE COMPRESSION CRIMP OR EXOTHERMIC WELD.
3. GROUNDING CONNECTIONS TO ENTER THE DMS CONTROLLER CABINET THROUGH SPARE CONDUIT AND TERMINATE ON THE EQUIPMENT GROUND BUS.
4. DMS ENCLOSURE AND SUPPORT POLE SHALL BE BONDED TO THE GROUND RING (2 LOCATIONS).

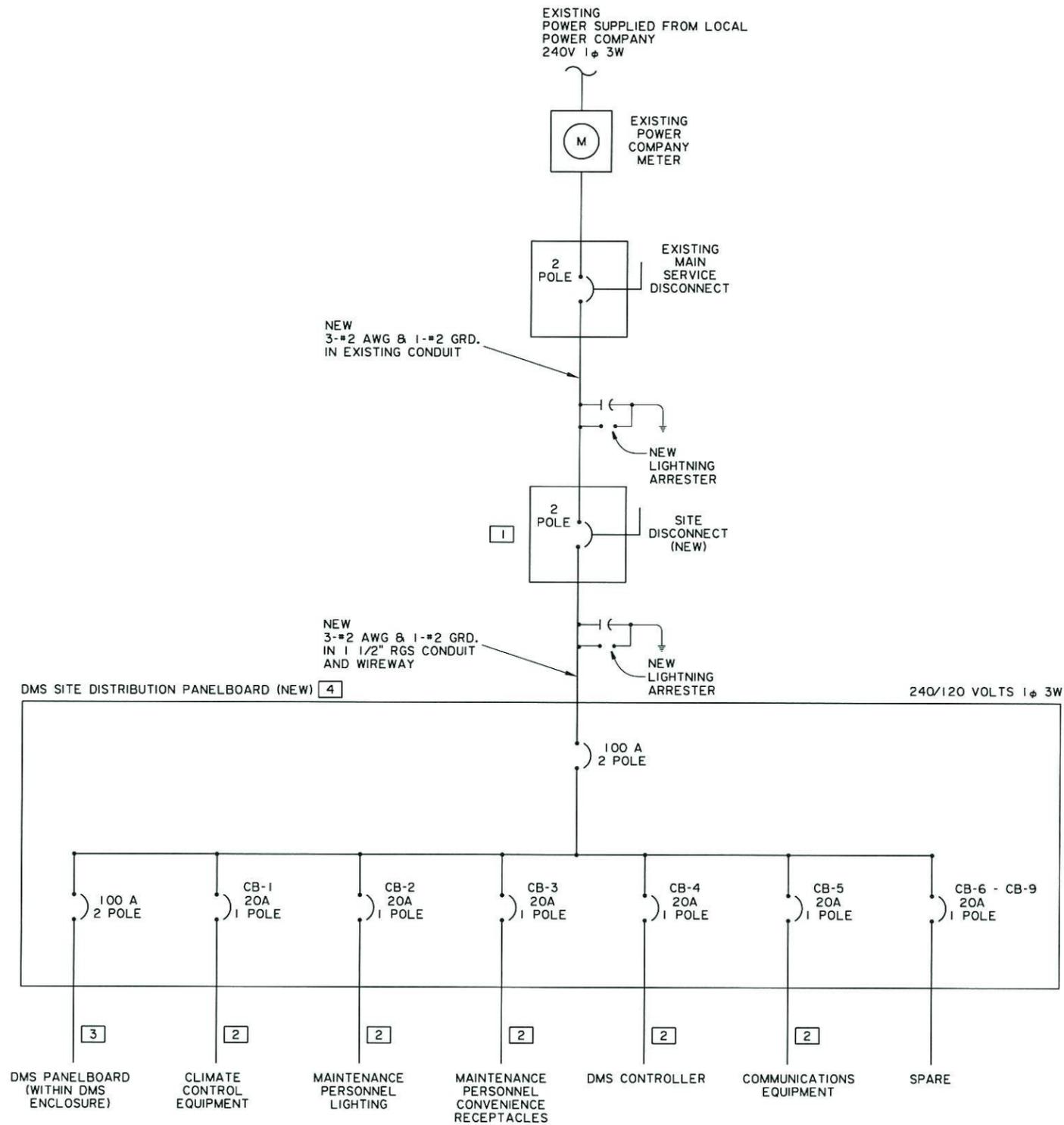


DMS CONFIGURATION DIAGRAM - DMS #4 AND #5

SCALE: NONE

3/6/09

SHEET NUMBER	7
ORLEANS	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
DMS #4 AND #5 CONFIGURATION DIAGRAM	
DESIGNED	E.P.C./T.C.C.
CHECKED	C.A.B./D.S.G.
DATE	MARCH 2009
REVISION DESCRIPTION	
NO.	DATE
BY	



SPECIFIC NOTES:

- 1 SITE DISCONNECT SHALL HAVE A 100A FRAME SIZE WITH A 100A CIRCUIT BREAKER.
- 2 2-#12 AWG AND 1-#12 GROUND
- 3 3-#2 AWG AND 1-#2 GROUND
- 4 DMS SITE DISTRIBUTION PANELBOARD WILL BE PROVIDED BY LADOTD AND INSTALLED BY THE CONTRACTOR WITHIN THE NEW CONTROLLER CABINET. MAIN AND BRANCH CIRCUIT BREAKERS SHALL BE PROVIDED BY THE CONTRACTOR. CIRCUIT BREAKERS SHALL BE SIZED AS NOTED AND SHALL CONFORM TO SPECIFICATION REQUIREMENTS.

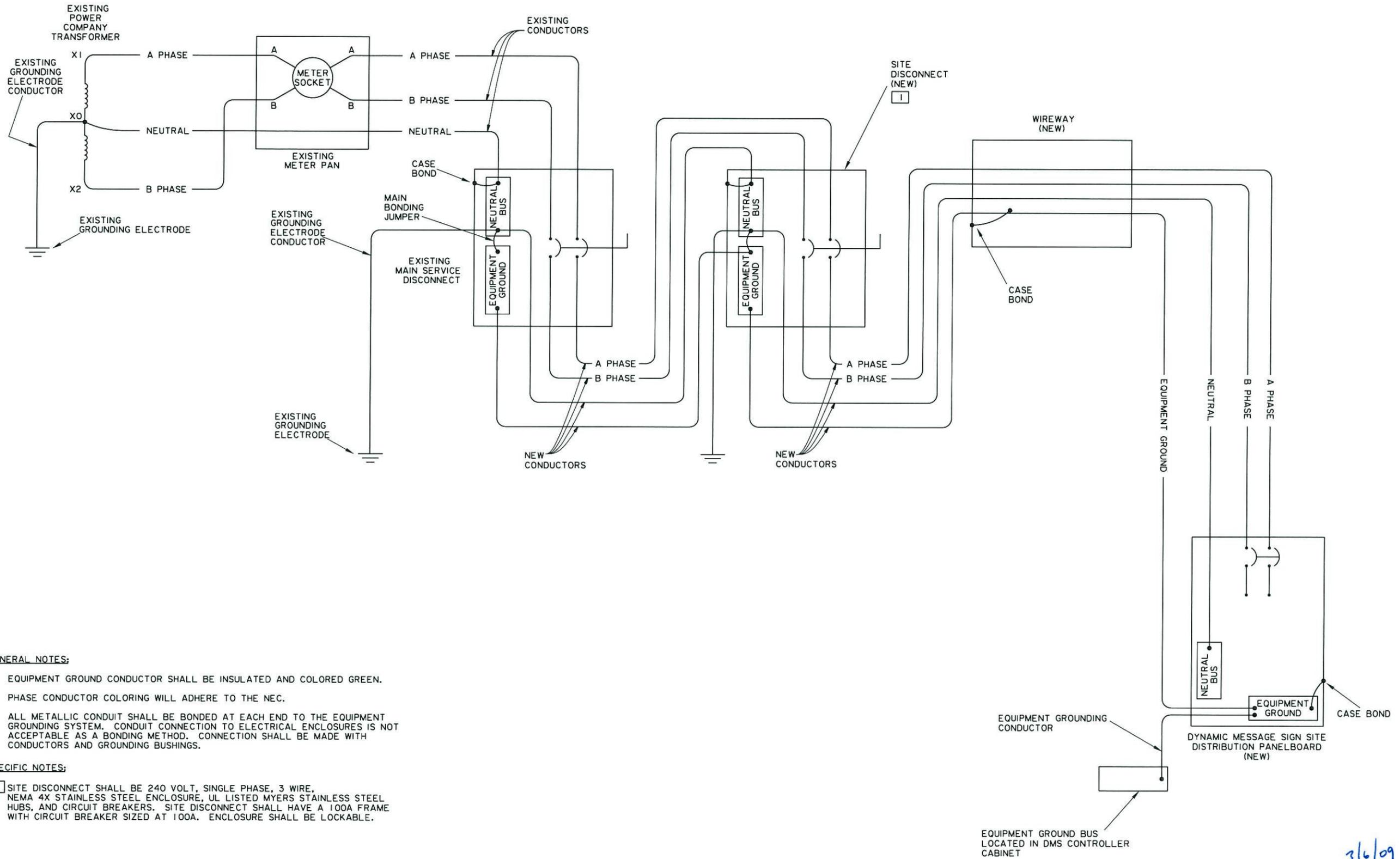
GENERAL NOTES:

- 1. SEE THE SPECIFICATIONS FOR CHARACTERISTICS OF THE SITE DISCONNECT, WIREWAY, AND CIRCUIT BREAKERS.
- 2. ENCAPSULATED PROTECTORS SHALL BE INSTALLED ON THE PRIMARY. THESE PROTECTORS SHALL BE SUITABLY HOUSED AND MOUNTED FOR EASE OF REPLACEMENT.

**DYNAMIC MESSAGE SIGN
ONE-LINE DIAGRAM**
SCALE: NONE



SHEET NUMBER	8
ORLEANS	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
DMS ONE LINE DIAGRAM	
DESIGNED	E.P.C./I.C.C.
CHECKED	C.A.B./D.S.G.
DATE	MARCH 2009
REVISION DESCRIPTION	
NO.	
DATE	
BY	



GENERAL NOTES:

1. EQUIPMENT GROUND CONDUCTOR SHALL BE INSULATED AND COLORED GREEN.
2. PHASE CONDUCTOR COLORING WILL ADHERE TO THE NEC.
3. ALL METALLIC CONDUIT SHALL BE BONDED AT EACH END TO THE EQUIPMENT GROUNDING SYSTEM. CONDUIT CONNECTION TO ELECTRICAL ENCLOSURES IS NOT ACCEPTABLE AS A BONDING METHOD. CONNECTION SHALL BE MADE WITH CONDUCTORS AND GROUNDING BUSHINGS.

SPECIFIC NOTES:

1. SITE DISCONNECT SHALL BE 240 VOLT, SINGLE PHASE, 3 WIRE, NEMA 4X STAINLESS STEEL ENCLOSURE, UL LISTED MYERS STAINLESS STEEL HUBS, AND CIRCUIT BREAKERS. SITE DISCONNECT SHALL HAVE A 100A FRAME WITH CIRCUIT BREAKER SIZED AT 100A. ENCLOSURE SHALL BE LOCKABLE.

**DYNAMIC MESSAGE SIGN
SCHEMATIC WIRING DIAGRAM**

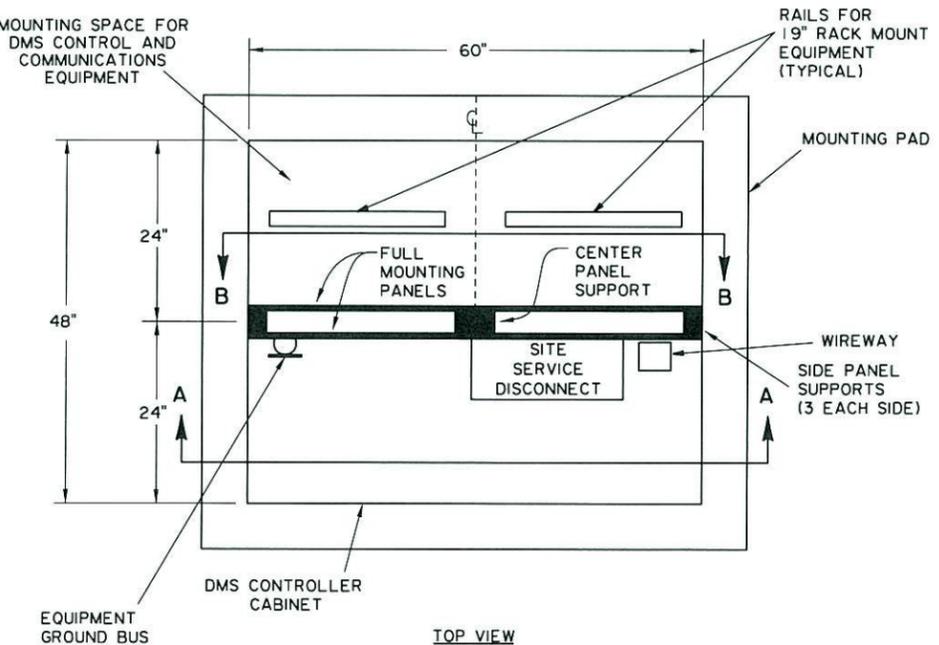
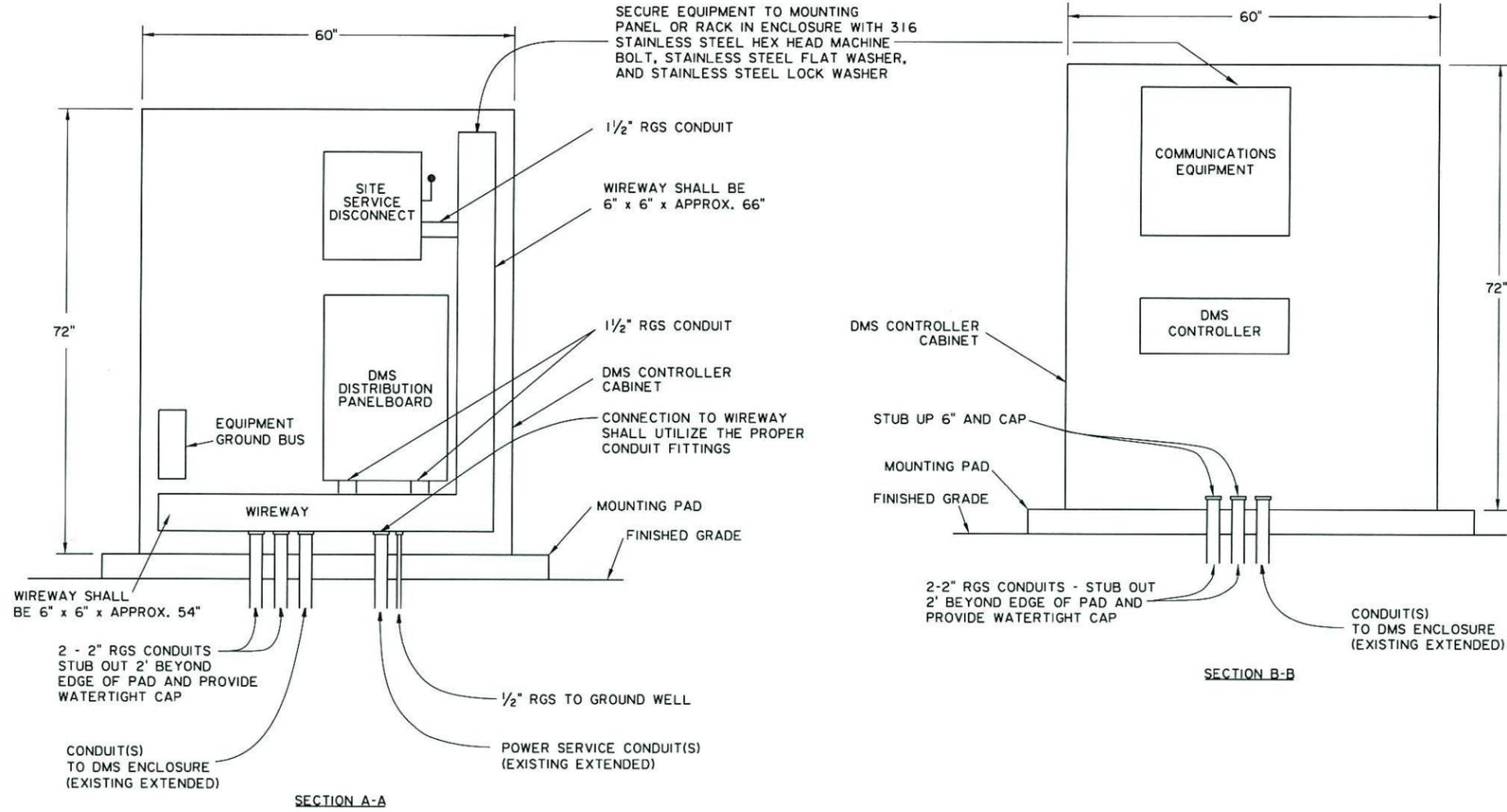
SCALE: NONE



SHEET NUMBER	9
ORLEANS	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
DMS SCHEMATIC WIRING DIAGRAM	
DESIGNED	E.P.C./T.C.C.
CHECKED	C.A.B./D.S.G.
DATE	MARCH 2009
DESIGNED	T.C.C.
CHECKED	E.P.C.
DATE	
SHEET	DMS-SCHM-240V.DGN
NO.	
DATE	
BY	
REVISION DESCRIPTION	

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GENERAL NOTES:

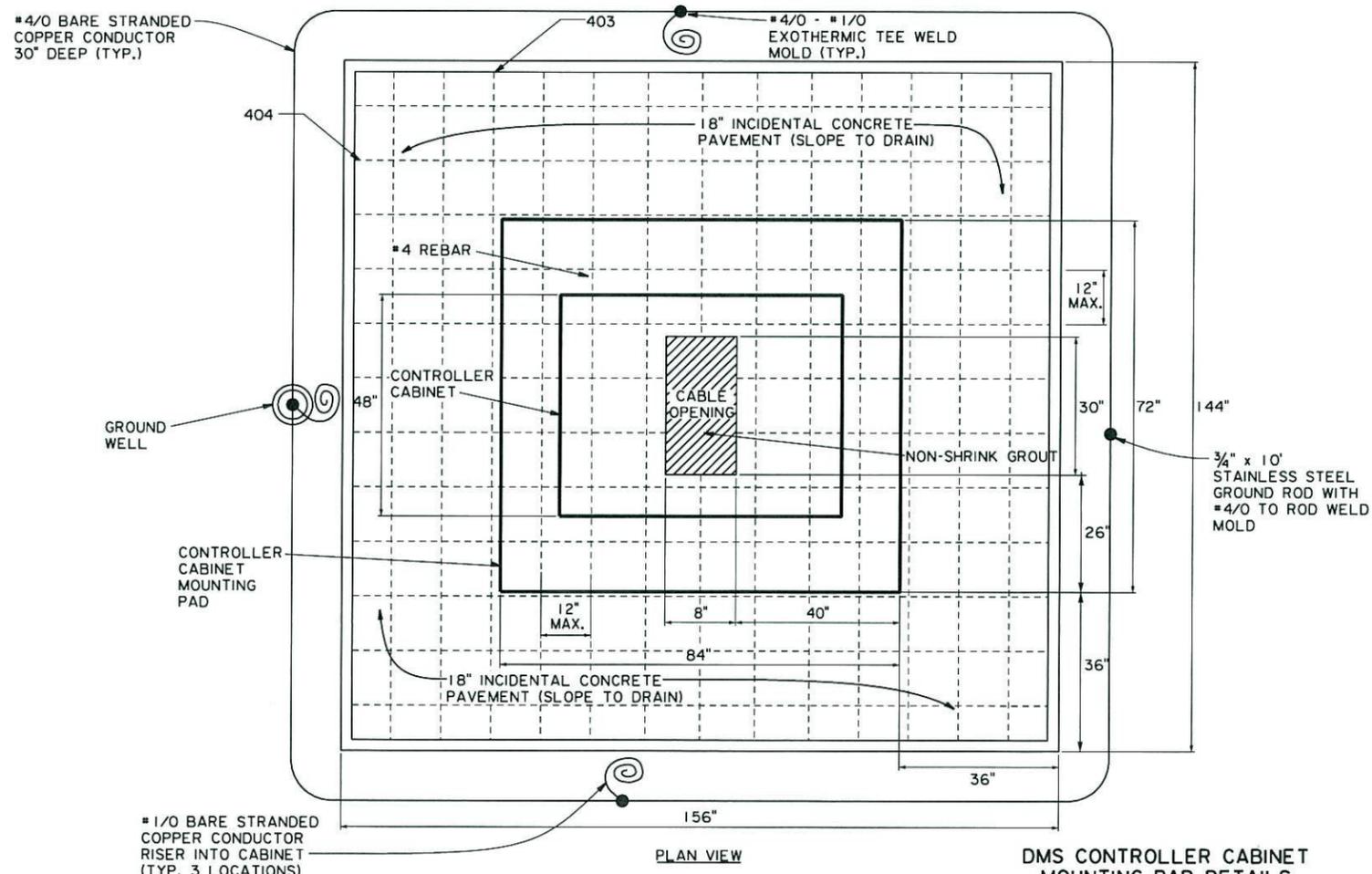
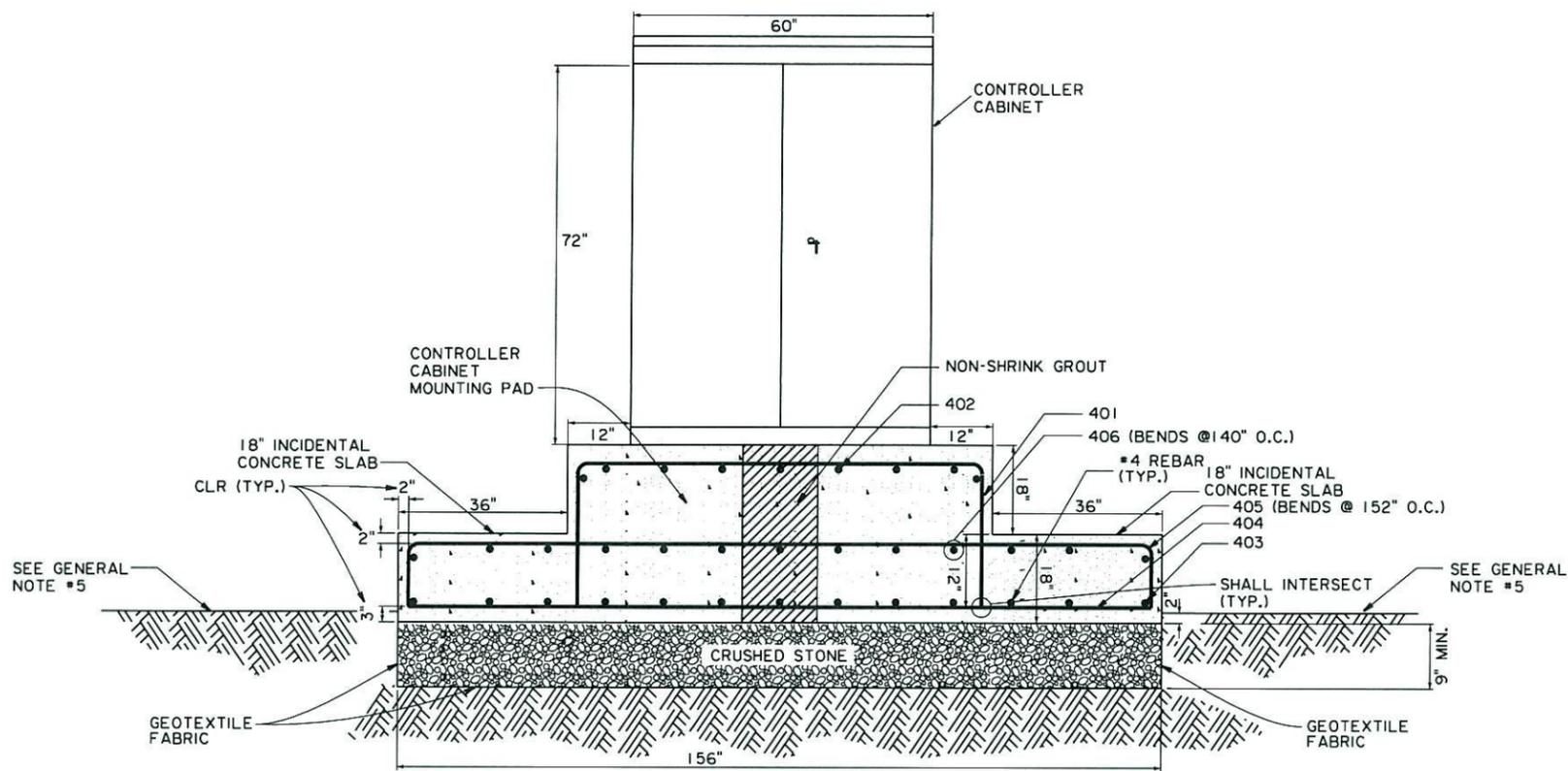
- DMS CONTROLLER CABINET SHALL BE SIZED AS INDICATED AND RATED NEMA 4X. ENCLOSURE SHALL BE STAINLESS STEEL WITH TWO DOORS EACH SIDE, DUAL ACCESS. FULL MOUNTING PANELS AND RAILS (FOR 19" RACK MOUNT EQUIPMENT) SHALL BE PROVIDED WITH THREE SUPPORTS ON EACH END AND A CENTER PANEL SUPPORT. MOUNTING PANELS SHALL BE CAPABLE OF HOLDING THE REQUIRED LOAD FROM ALL INSTALLED EQUIPMENT.
- INTERNAL ENCLOSURE WIRING SHALL BE IN ACCORDANCE WITH SCHEMATIC WIRING DIAGRAM FOUND ELSEWHERE, THIS PLAN SET.
- DMS CONTROLLER CABINET SHALL BE SECURED TO THE MOUNTING PAD USING 316 STAINLESS STEEL HARDWARE.
- WHERE CABINET AND MOUNTING PAD JOIN, CONTRACTOR SHALL PROVIDE A WATERTIGHT SEAL.
- CABINET SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR. (TWO LOCATIONS)
- CONTRACTOR SHALL PROVIDE THE DEPARTMENT A SKETCH SHOWING THE STUB OUT LOCATIONS OF ALL SPARE CONDUIT.
- CONTRACTOR SHALL PROVIDE AND INSTALL TWO SURFACE MOUNT QUADRIplex RECEPTACLES WITHIN THE CABINET. BOTH RECEPTACLES SHALL BE FED FROM THE DMS DISTRIBUTION PANELBOARD. (ONE RECEPTACLE EACH SIDE).
- POWER WIRING WITHIN THE DMS CONTROLLER CABINET SHALL BE NEAT AND WITHIN THE WIREWAY. COMMUNICATIONS WIRING SHALL BE NEAT AND UTILIZE WIRE MANAGEMENT DEVICES AND TECHNIQUES.
- CONTRACTOR SHALL PROVIDE AN EQUIPMENT GROUND BUS IN EACH DMS CONTROLLER CABINET ACCORDING TO DETAILS THIS PLAN SET.
- AT A MINIMUM, A 4000 BTU AIR CONDITIONER SHALL BE PROVIDED.
- CONTRACTOR SHALL PROVIDE A SLIDING LAPTOP TRAY IN THE COMMUNICATIONS SIDE OF THE CONTROLLER CABINET.

DYNAMIC MESSAGE SIGN CONTROLLER CABINET DETAILS

SCALE: NONE



SHEET NUMBER	10
ORLEANS	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
DMS CONTROLLER CABINET DETAILS	
DESIGNED	E.P.C./T.C.C.
CHECKED	C.A.B./D.S.G.
DATE	MARCH 2009
REVISION DESCRIPTION	
NO.	DATE



DMS CONTROLLER CABINET MOUNTING PAD DETAILS

SCALE: NONE

MOUNTING PAD SPECIFICATIONS:

- CONCRETE MATERIALS:**
CEMENT USED SHALL BE A STANDARD BRAND OF PORTLAND CEMENT, TYPE II, CONFORMING TO ASTM C-150, LATEST EDITION. AGGREGATES SHALL CONSIST OF NATURAL SANDS AND GRAVELS, CRUSHED ROCK, CRUSHED SLAG, OR OTHER INERT MATERIALS HAVING CLEAN, UNCOATED GRAINS OF STRONG DURABLE MATERIAL WHICH CONFORMS TO ASTM A-185.
- CONCRETE QUALITY:**
STRENGTH AT TWENTY-EIGHT DAYS SHALL BE AT LEAST 4000 LBS. PER SQUARE INCH. PROPORTIONING SHALL BE SUCH AS TO PRODUCE THE REQUIRED STRENGTH AND SLUMP OF NOT MORE THAN FOUR INCHES. WATER CONTENT SHALL NOT EXCEED SIX GALLONS PER 94 LB. BAG OF CEMENT. THERE SHALL BE A MINIMUM OF SIX BAGS OF CEMENT PER YARD OF CONCRETE. READY MIXED CONCRETE SHALL CONFORM TO STANDARD SPECIFICATION ASTM 94
- FORMS:**
FORMS MAY BE OF WOOD OR METAL SELECTED TO PRODUCE A SMOOTH SURFACE FINISH. THEY SHALL BE CONSTRUCTED SUFFICIENTLY TIGHT TO PREVENT LEAKAGE OF MORTAR, AND SECURELY BRACED AND SHORED TO PREVENT DISPLACEMENT AND SAFELY SUPPORT CONSTRUCTION LOADS. FORMS SHALL BE REMOVED IN A MANNER AND AT A TIME WHICH WILL ENSURE THE COMPLETE SAFETY OF THE STRUCTURE.
- COLD WEATHER REQUIREMENTS:**
WHEN THE AIR TEMPERATURE IS BELOW FORTY DEGREES FAHRENHEIT, CONCRETE SHALL BE AT LEAST SIXTY DEGREES FAHRENHEIT WHEN POURED, AND SHALL BE MAINTAINED AT LEAST AT FIFTY DEGREES FAHRENHEIT FOR 72 HOURS. THE GROUND AND FORMS SHALL BE FROST FREE.
- SURFACES:**
THE FINISHED SURFACE SHALL BE FLAT AND FREE OF AGGREGATE POCKETS AND HONEYCOMB. WHERE MINOR DEFECTS OCCUR, THEY SHALL BE PAINTED WITH CEMENT GROUT, PATCHED WITH A ONE-TO-ONE CEMENT/SAND MIXTURE, AND FINISHED TO MATCH ADJACENT SURFACES WHILE THE CONCRETE IS STILL GREEN.
- CURING:**
ALL CONCRETE SHALL BE CURED FOR NOT LESS THAN SEVEN DAYS BY KEEPING THE SURFACE WET BY SPRINKLING. MEMBRANE COMPOUND MAY BE USED IN LIEU OF WATER CURING.
- AIR ENTRAINMENT:**
APPROVED AIR ENTRAINING AGENTS SHALL BE USED TO PROVIDE AN AIR CONTENT BETWEEN THREE AND SIX PERCENT IN THE CONCRETE.
- STEEL REINFORCEMENT:**
#4 BARS SHALL BE PLACED AT 12" O.C. EACH DIRECTION AND SHALL HAVE 2" MINIMUM COVER. CUT BARS TO FIT AROUND CABLE OPENING AND GROUND WELL. BARS SHALL BE PROVIDED AS FOLLOWS:
401 - 141" WITH 2-90° BENDS, 80" O.C., 2" CLR
402 - 129" WITH 2-90° BENDS, 68" O.C., 2" CLR
403 - 140" STRAIGHT BAR, 3" CLR
404 - 152" STRAIGHT BAR, 3" CLR
405 - 177" WITH 2-90° BENDS, 152" O.C., 2" CLR
406 - 165" WITH 2-90° BENDS, 140" O.C., 2" CLR

CONTRACTOR NOTES:

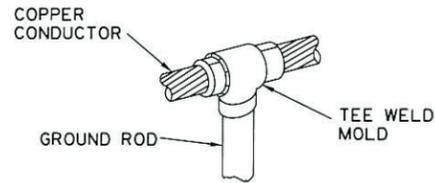
- CONCRETE:**
STEEL REINFORCEMENT SHALL BE #4 BARS, PLACED ACCORDING TO THE DRAWING. THE PAD MUST BE POURED AT LEAST SEVEN FULL DAYS PRIOR TO SETTING THE CONTROLLER CABINET. THE FINISHED SURFACE MUST BE COMPLETELY FLAT AND LEVEL. SEE MOUNTING PAD SPECIFICATIONS, THIS DETAIL, FOR MORE INFORMATION ON CONCRETE.
- SLAB AND PEDESTAL SHALL BE POURED TOGETHER WITH NO MORE THAN 30 MINUTES BETWEEN POURS.** CONCRETE SHALL BE PLACED IN ACCORDANCE WITH 2006 LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES.
- PREFABRICATION:**
THE PAD MAY EITHER BE CONSTRUCTED ON THE SITE OR PREFABRICATED ACCORDING TO THE SPECIFICATIONS.
- CONDUIT WINDOW LAYOUT:**
DO NOT PUT ANY CONCRETE IN OR UNDER THE CONDUIT WINDOW. USE SOIL TO SEPARATE CONDUITS.
- CABLE OPENING:**
FILL WITH NON-SHRINK GROUT.

GENERAL NOTES:

- THIS DETAIL IS A TYPICAL MOUNTING PAD REPRESENTATION. THE CONTRACTOR SHALL CREATE A SHOP DRAWING OF THE PADS SHOWING CONSTRUCTION DETAILS MEETING THE REQUIREMENTS AS SET FORTH IN THIS DETAIL. SHOP DRAWINGS SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL.
- EQUIPMENT SHALL BE CENTERED ON PAD WITH A 12" SPACE ON ALL SIDES.
- AN 18" APRON (INCIDENTAL CONCRETE SLAB) SHALL BE CONSTRUCTED AROUND THE MOUNTING PAD AS DETAILED.
- CRUSHED STONE MUST COMPLY WITH 2006 LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES SECTION 1003.03 BASE COURSE AGGREGATES (b) STONE.
- EXISTING GROUND - DMS #1, #2, AND #3. EXISTING INCIDENTAL CONCRETE PAVING - DMS #4 AND #5.

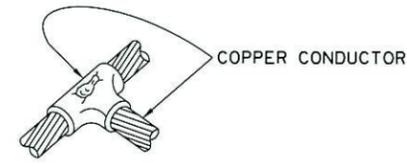


SHEET NUMBER	11
ORLEANS	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
DMS CONTROLLER CABINET MOUNTING PAD	
DESIGNED	E.P.C./T.C.C.
CHECKED	T.C.R./C.A.B.
DETAILED	T.C.C./B.A.C.
CHECKED	E.P.C./C.A.B.
DATE	MARCH 2009
SHEET	DMS-MTG-PAD.DGN
NO.	
DATE	
REVISION DESCRIPTION	



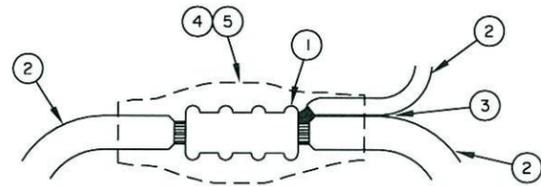
CABLE TO GROUND ROD CADWELD

SCALE: NONE



CABLE TO CABLE TEE CONNECTION WELD

SCALE: NONE



KEYNOTES:

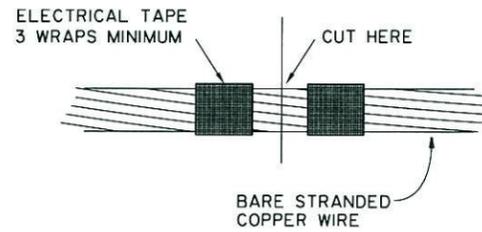
- 1 COMPRESSION CRIMP CONNECTOR
- 2 CONDUCTORS
- 3 SCOTCH SEAL #2229 MASTIC TAPE. PLACE TAPE BETWEEN CONDUCTORS AND WRAP ENTIRE CONNECTOR.
- 4 TIGHT WRAP 2 LAYER SCOTCH SUPER 33+.
- 5 HEAT SHRINK TUBING OVERALL.

GENERAL NOTES:

- 1. AFTER A CONDUCTOR SPLICE IS MADE, IT SHALL BE INSULATED WITH A RUBBER INSULATING TAPE, AND THEN COVERED WITH MATERIAL SUITABLE FOR DIRECT BURIAL. THE TAPE SHALL BE APPLIED HALF LAP WITH A MINIMUM OF TWO FULL LAPS OF EACH TAPE, TO A POINT APPROXIMATELY THREE INCHES FROM THE CONDUCTOR SPLICE. ALL SHARP POINTS AND EDGES OF THE CONNECTOR SHALL BE PADDED, AND ALL VOIDS FILLED WITH INSULATING PUTTY. THE TAPE SHALL NOT BE STRETCHED EXCESSIVELY NOR IN SUCH A MANNER AS TO CAUSE CREEPING. ALL SPLICED JOINTS SHALL BE WATERTIGHT.
- 2. COMPRESSION CONNECTORS SHALL BE CRIMPED WITH THE CONNECTOR MANUFACTURER'S RECOMMENDED COMPRESSION TOOL AND DIE. THE COMPRESSION TOOL SHALL BE OF THE TYPE WHICH WILL PREVENT REMOVAL OF THE TOOL UNTIL THE CRIMP HAS BEEN COMPLETELY CLOSED.
- 3. SPLICES IN THE EQUIPMENT GROUNDING CONDUCTOR, IF ANY, SHALL CONTAIN ONLY THE COMPRESSION CRIMP CONNECTOR AND AN OVERALL LAYER OF GREEN SCOTCH SEAL #2229 MASTIC TAPE.

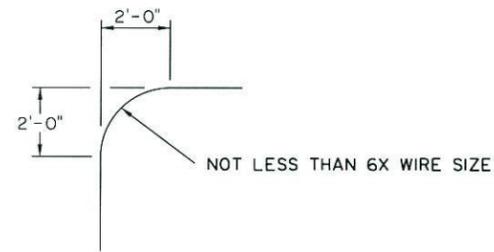
CONDUCTOR SPLICING DETAIL

SCALE: NONE



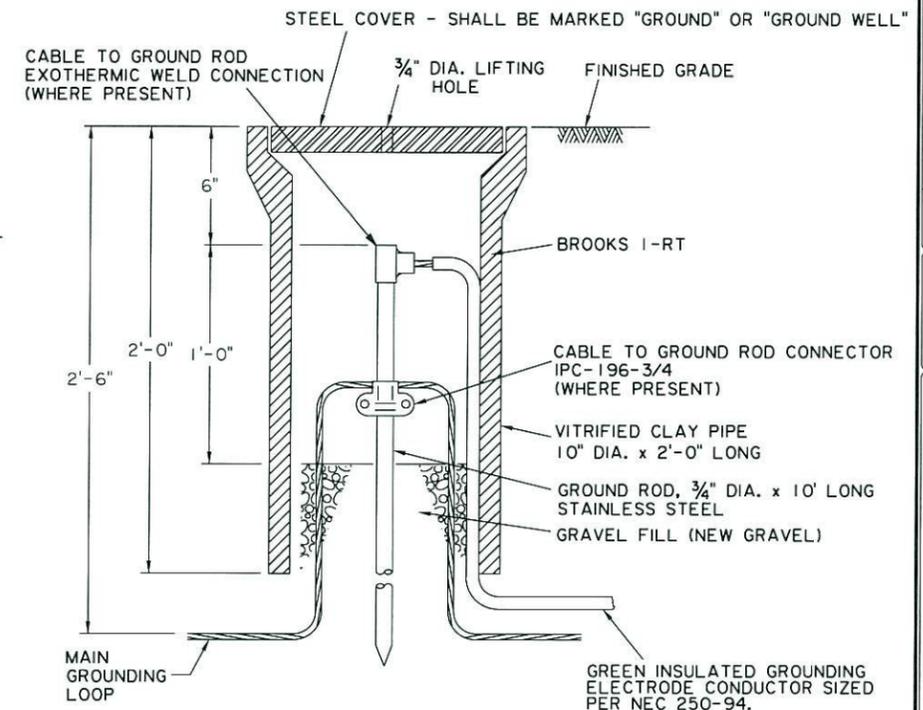
CUTTING BARE STRANDED COPPER CONDUCTORS

SCALE: NONE



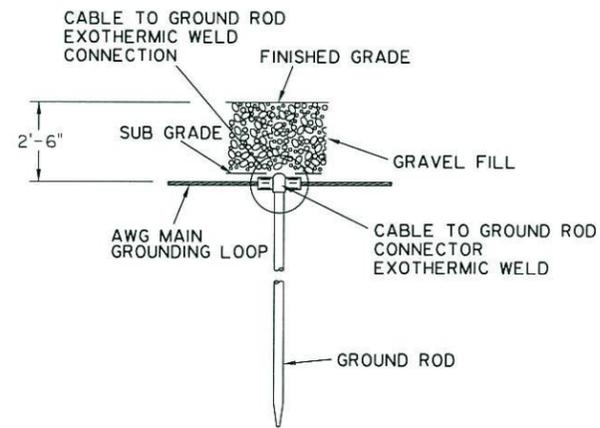
GRID CONDUCTOR BENDING RADIUS

SCALE: NONE



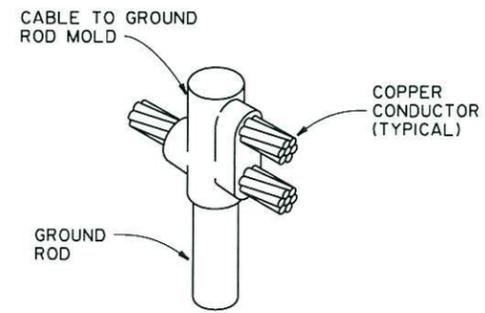
TYPICAL GROUND WELL INSTALLATION

SCALE: NONE



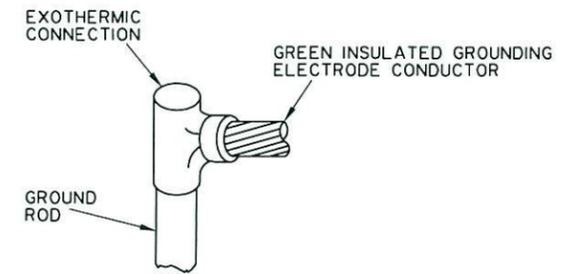
TYPICAL GROUNDING ROD INSTALLATION

SCALE: NONE



DOUBLE CABLE TO GROUND ROD CADWELD

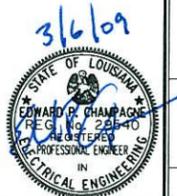
SCALE: NONE



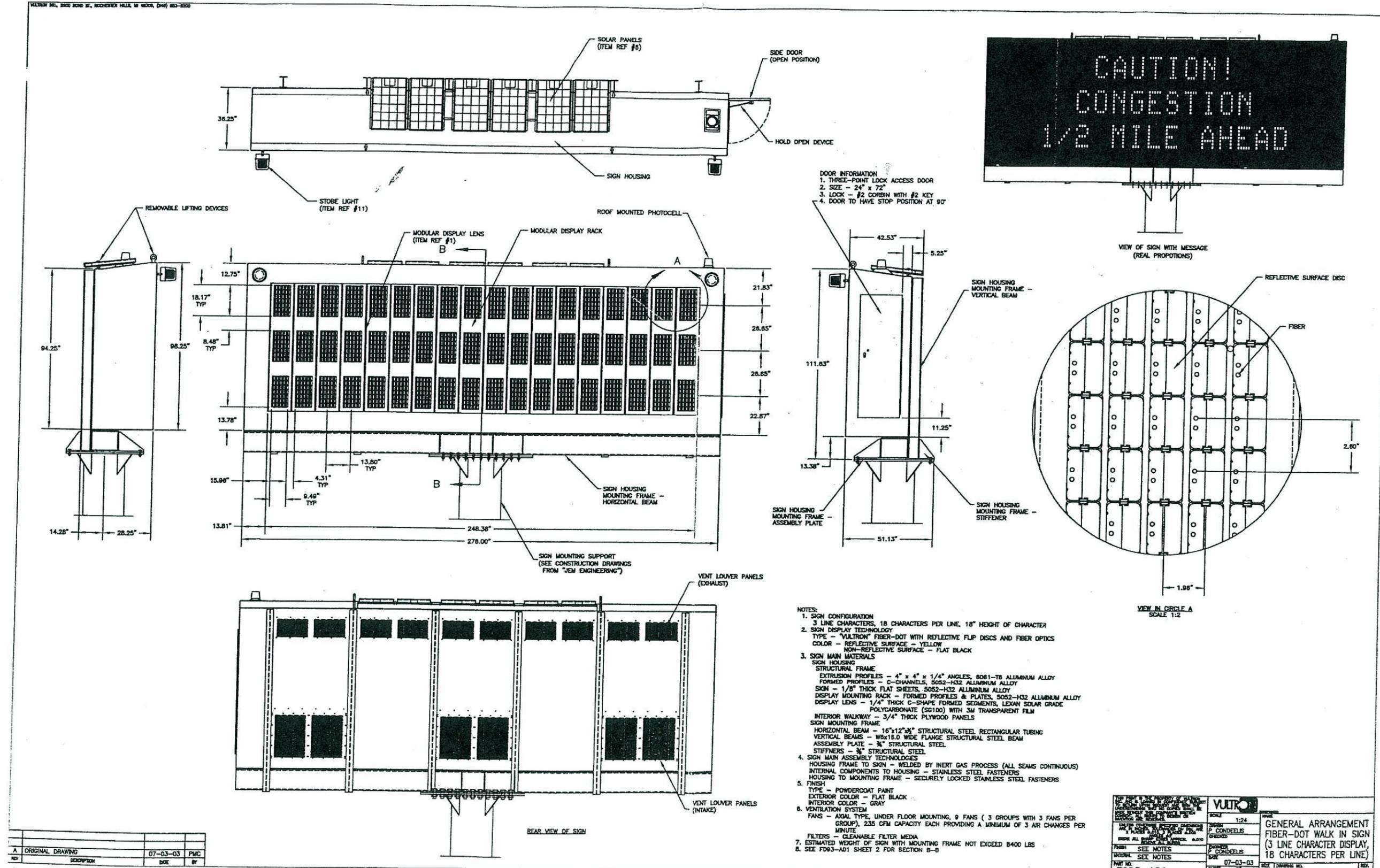
CABLE TO GROUND ROD EXOTHERMIC WELD CONNECTION

SCALE: NONE

CONTRACTOR SHALL USE THE PROPER MOLD AND WELD METAL FOR THE TYPE AND SIZE OF CONDUCTOR BEING USED.



SHEET NUMBER	12
ORLEANS	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
MISCELLANEOUS DETAILS - GENERAL	
DESIGNED	E.P.C./T.C.C.
CHECKED	C.A.B./D.S.G.
DATE	MARCH 2009
REVISION DESCRIPTION	
NO.	
DATE	
BY	



REV	DESCRIPTION	DATE	BY
A	ORIGINAL DRAWING	07-03-03	PMC

		SCALE: 1:24 DRAWN: P. CONDELLS CHECKED: P. CONDELLS ENGINEER: P. CONDELLS DATE: 07-03-03 SHEET: 1 OF 2
GENERAL ARRANGEMENT FIBER-DOT WALK IN SIGN (3 LINE CHARACTER DISPLAY, 18 CHARACTERS PER LINE)		DRAWING NO.: F093-A01 REV: A

FOR INFORMATIONAL PURPOSES ONLY

SHEET NUMBER 13

ORLEANS

DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)

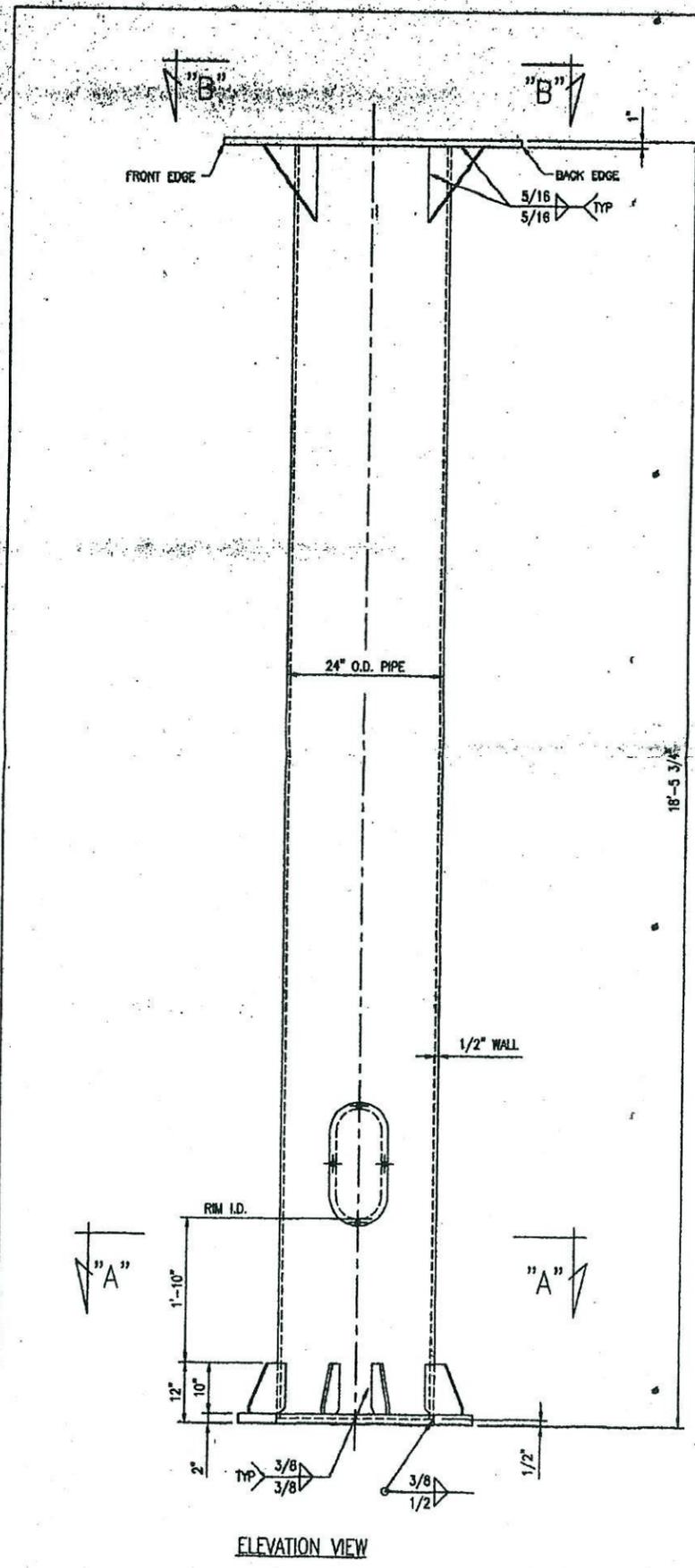
EXISTING DMS GENERAL ARRANGEMENT

MARCH 2009

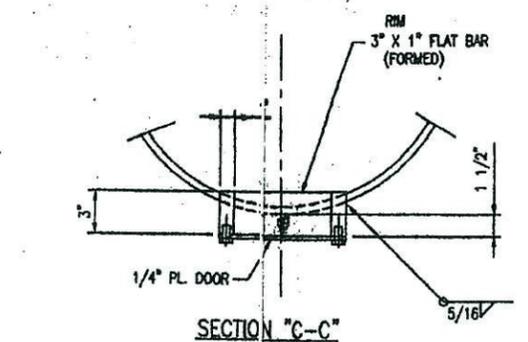
DMS FIBER-DOT.DGN

DESIGNED CHECKED DETAILED CHECKED DATE SHEET BY

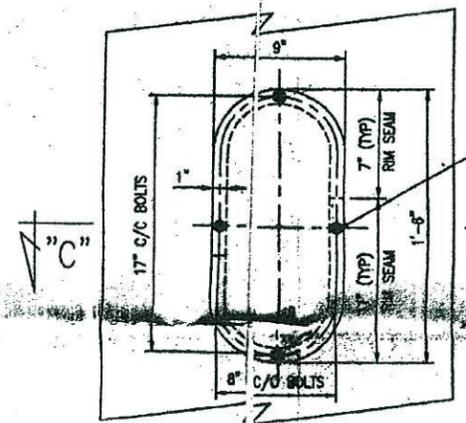
REVISION DESCRIPTION



ELEVATION VIEW

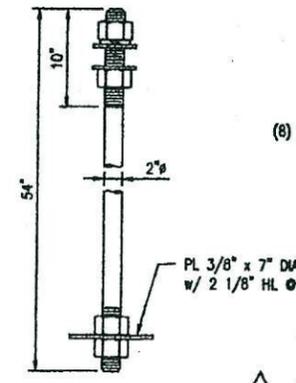


SECTION "C-C"

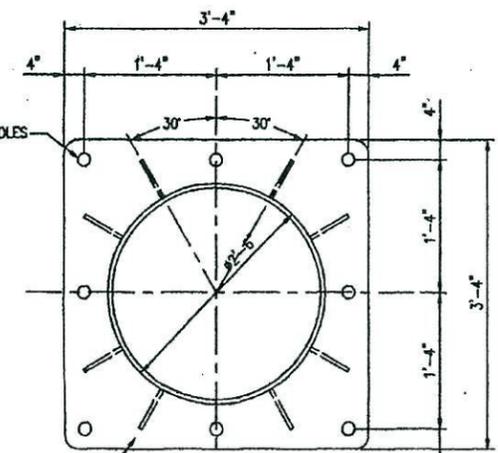


SECTION "A-A"
BASE PLATE DETAIL

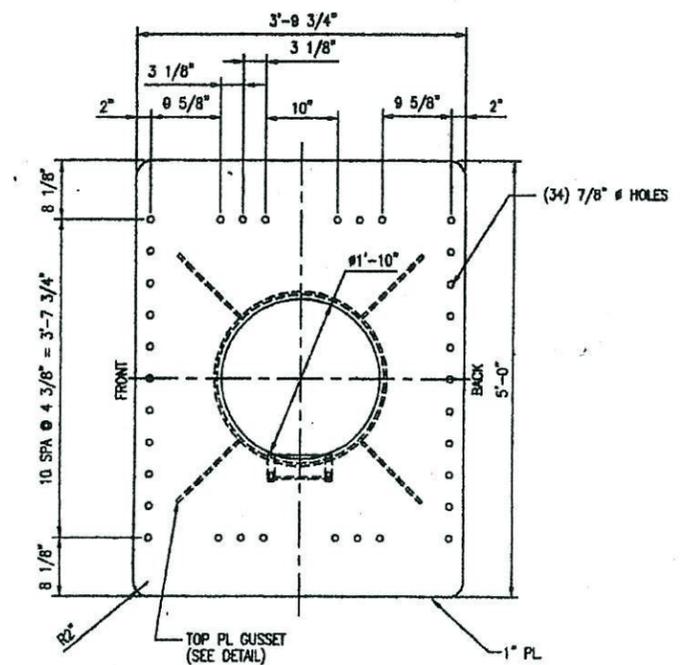
2" BOLT
w/ (4) HEX NUTS
(2) FLAT WASHERS
& (1) LOCK WASHER
PER BOLT



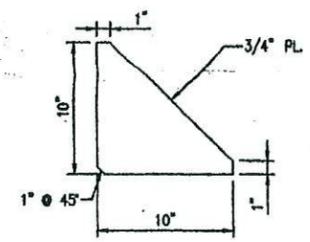
ANCHOR BOLT DETAIL



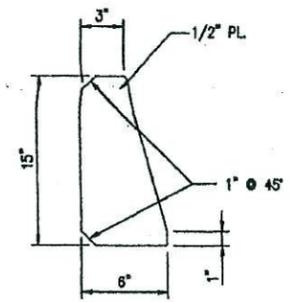
SECTION "A-A"
BASE PLATE DETAIL



VIEW "B-B"
TOP PLATE DETAIL



BASE PL GUSSET
(8 REQ'D)



BASE PL GUSSET
(8 REQ'D)

2 REQ'D

GENERAL NOTES

- MATERIAL:
 - (A) POLE SHAFTS - A53 GR B
 - (B) BASE & FLANGE PLATES - A36 OR A572-50 OR A36M50
 - (C) HANDHOLE RINGS - A36 OR A572-50 OR A36M50
 - (D) ANCHOR BOLTS - A36 MOD 55 (THREAD PER UNC SERIES)
 - (E) ALL OTHER BOLTS - A325 (THREAD PER UNC SERIES)
 - (F) ALL OTHER STEEL - A36 (UNLESS NOTED)
 - (G) TOP PLATE - A36 PLATE
- FINISH:
 - (A) EACH ASSEMBLY TO BE GALVANIZED TO ASTM A153
 - (B) ALL THREADED FASTENERS GALVANIZED TO ASTM A153

FOR APPROVAL JUN 13

JEM ENGINEERING & MANUFACTURING
TULSA, OKLAHOMA

PROJECT: MASTEC NORTH AMERICA, INC
TX LA 0517-1466

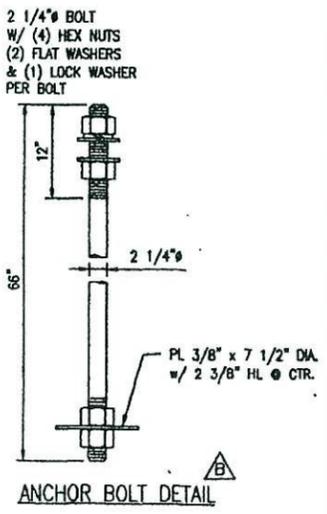
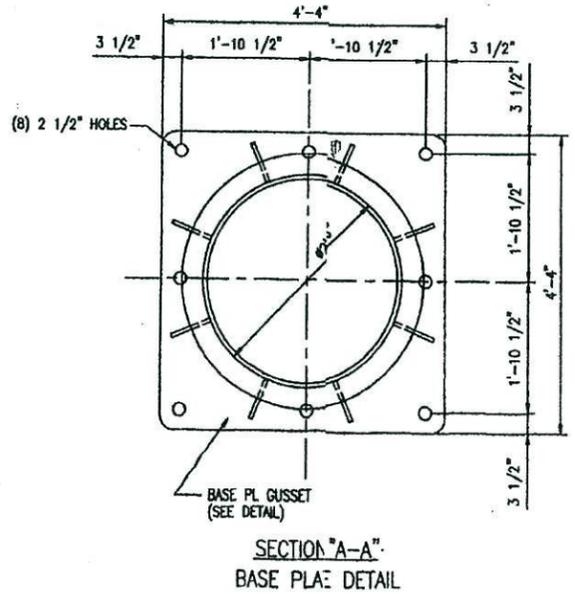
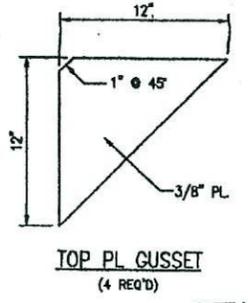
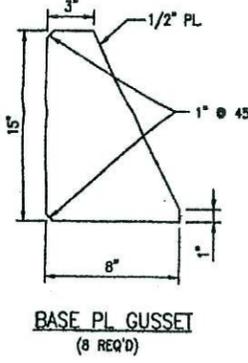
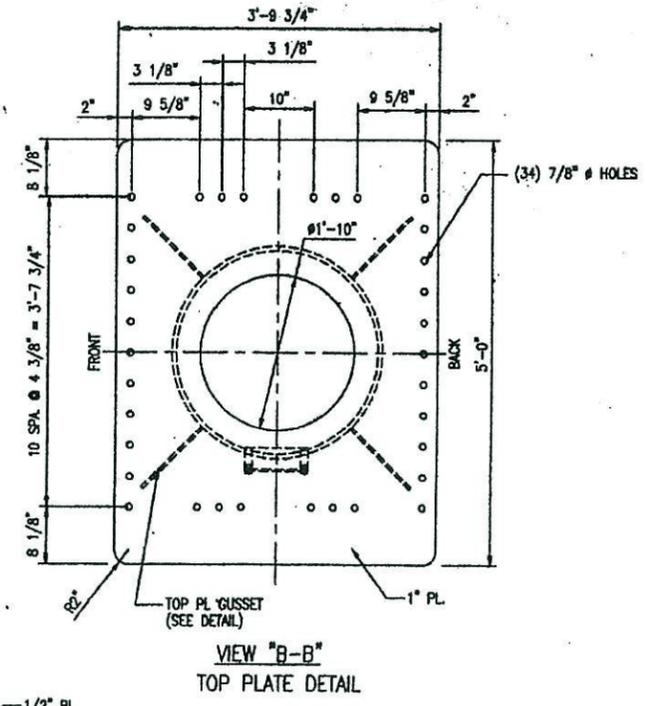
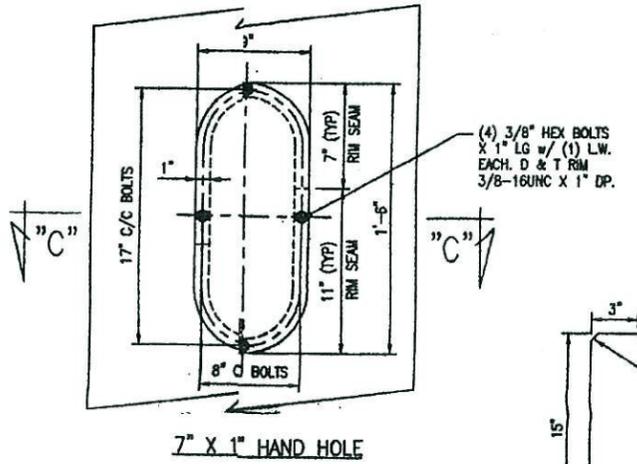
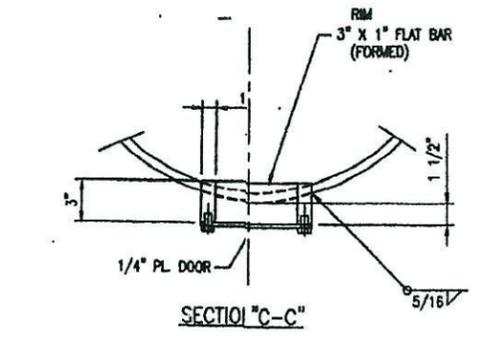
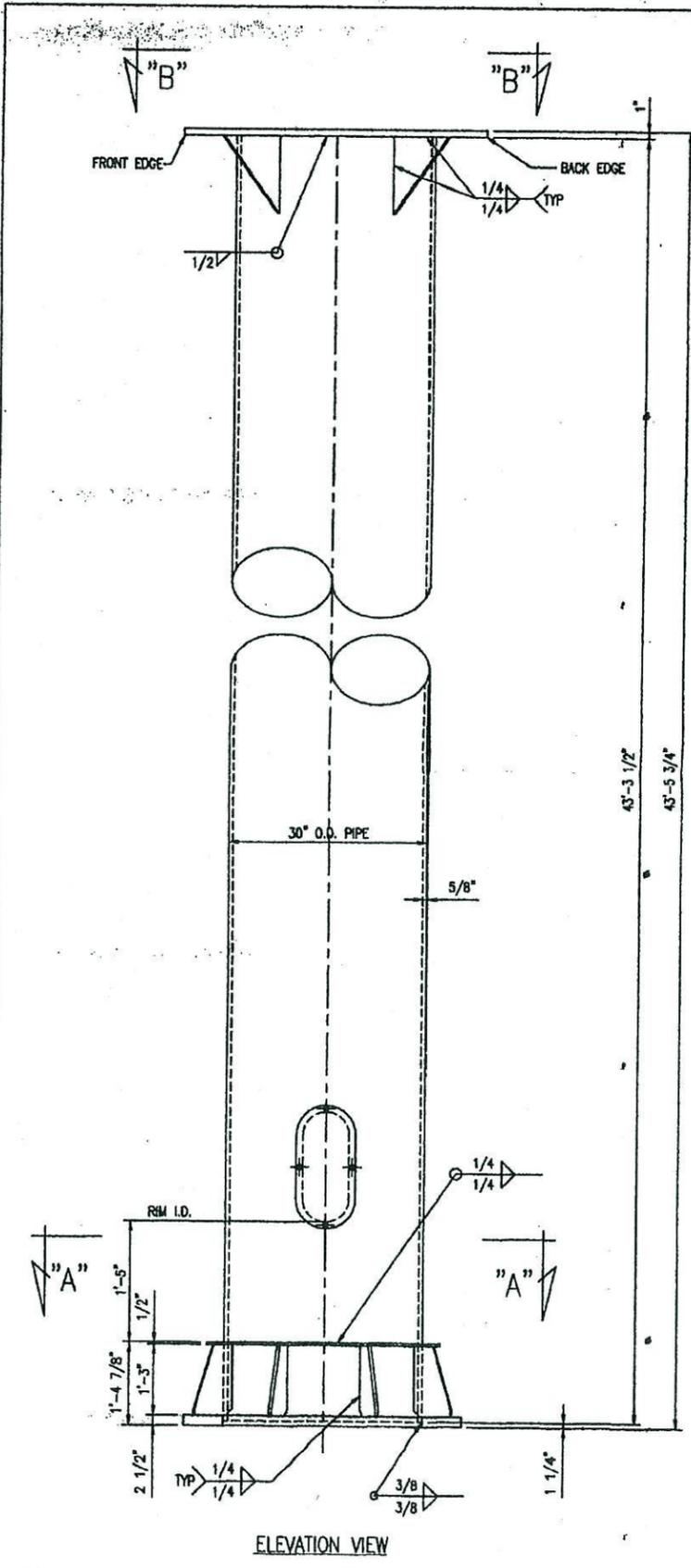
747-99-0538 NEW ORLEANS, LA

20' DMS SIGN SUPPORT

1 OF 2

FOR INFORMATIONAL PURPOSES ONLY

SHEET NUMBER	14
ORLEANS	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	737-36-0018
DMS PHASE 2 RETROFIT (NO PHASE 1b VULTRON)	
EXISTING 20' DMS SIGN SUPPORT	
DESIGNED	
CHECKED	
DATE	MARCH 2009
Detailed	
CHECKED	
DATE	DMS SUPPORT 20.DGN
SHEET	
BY	
NO.	
DATE	
REVISION	
DESCRIPTION	



3 REQUIRED JUN 13 REVISION

GENERAL NOTES

- MATERIAL:
 - (A) POLE SHAFTS - A53 GR B
 - (B) BASE & FLANGE PLATES - A36 OR A572-50 OR A36MS0
 - (C) HANDHOLE RINGS - A36 OR A572-50 OR A36MS0
 - (D) ANCHOR BOLTS - A36 MOD 55
 - (E) ALL OTHER BOLTS - A325 (THREAD PER UNC SERIES)
 - (F) ALL OTHER STEEL - A36 (UNLESS NOTED)
 - (G) TOP PLATE - A36 PLATE
- FINISH:
 - (A) EACH ASSEMBLY TO BE GALVANIZED TO ASTM A123.
 - (B) ALL EXPOSED FASTENERS TO BE GALVANIZED TO ASTM A123.

FOR APPROVAL

JEM ENGINEERING & MANUFACTURING
TULSA, OKLAHOMA

MASTEC NORTH AMERICA, INC
TX LA 0517-1466

747-99-0538 NEW ORLEANS, LA

45' DMS SIGN SUPPORT

REV.	DATE	DESCRIPTION	BY	CHK

FOR INFORMATIONAL PURPOSES ONLY

GENERAL PROVISIONS

- All Temporary Traffic Control Devices used shall be in accordance with the LaDOTD Standard Specifications for Roads and Bridges, the Manual on Uniform Traffic Control Devices (MUTCD), and shall meet the National Cooperative Highway Research Program (NCHRP) 350 for Test Level 3 requirements.
- Materials used for Temporary Traffic Controls shall be in accordance with the LaDOTD Standard Specifications for Roads and Bridges and when applicable the LaDOTD Qualified Products List (QPL).
- No temporary traffic controls shall be erected without the approval of the Project Engineer and until work is about to begin.
- No lane closures, lane shifts, or detours shall occur without the authorization of the Project Engineer.
- Responsibility is hereby placed upon the contractor for the installation, maintenance, and operation of all temporary traffic control devices called for in these plans or required by the Project Engineer for the protection of the traveling public as well as all Department and construction personnel.
- The contractor shall also be responsible for the maintenance of all permanent signs and pavement markings left in place as essential to the safe movement and guidance of traffic within the project limits.
- The District Traffic Operations Engineer (DTOE) shall serve as a technical advisor to the Project Engineer for all Traffic Control matters.
- "Road Work XX Miles" sign shall be required on all projects and located at beginning of project unless otherwise noted.

SPEED LIMITS

- Speed limits shall be lowered by 10 mph for any construction, maintenance, or utility operation that requires one or more of the following:
 - (A) the condition of the original highway is degraded due to milled surfaces or uneven pavements;
 - (B) work is in progress in the immediate vicinity of the travel way requiring lane closures, lane width reductions, or low speed diversions;
 - (C) workers present on the shoulder within 2' of the edge of traveled way without barrier protection.
- The reduced speed zone shall only apply to those portions of the project limits affected.
- At the end of the reduced speed zone, a speed limit sign displaying the original speed limit before construction shall be installed.
- If conditions warrant, the District Traffic Operations Engineer may authorize the reduction of the speed limit by more than 10 mph.

TYPE III BARRICADES

- All barricades shall use Type 3 High Intensity Sheeting on both sides of the barricade.
- All Type III Barricades shall be a minimum of 8 feet in length and must meet NCHRP 350 requirements.
- When signs and lights are to be mounted to a barricade, they must meet NCHRP 350 requirements.

LIGHTING (see QPL)

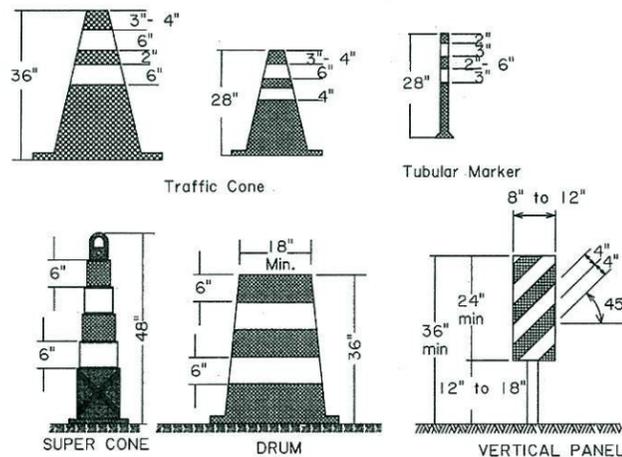
- Lighting shall supplement all barricades that are placed in a closed lane or that extend across a highway. Two Type B High Intensity lights shall be used per lane closed in rural areas. In urban areas two Type A Low Intensity Lights may be used where adequate ambient lighting is available.
- One Type B High Intensity light shall be used to supplement the first sign (or pair of signs) that gives warning about a lane closure during night time operations.
- Type C steady burn lights shall be used on all channelizing devices in the taper as well as the first two devices in the transition.

SIGNS

- All signs used for temporary traffic controls shall follow the Department's Traffic Control (TC) details and the MUTCD. Signs shown in the TC illustrations are typical and may vary with each specific condition.
- More appropriate signing for a specific condition may be required or substituted with the approval of the Project Engineer and reviewed by the District Traffic Operations Engineer.
- When projects are separated by less than one mile, they shall be signed as one project or as directed by the Project Engineer.
- At no time shall signs warning against a particular operation be left in place once the operation has been completed or where the obstacle has been removed.
- Signs over 10 sq ft shall be mounted on two post and signs over 20 sq ft shall be mounted on at least three post.
- Signs shall have a minimum of two bolts per post.
- Permanent signs no longer applicable or in conflict shall be removed or covered with a strong, lightweight, opaque material.
- Warning signs used for temporary traffic control, shall meet the following guidelines unless otherwise noted in the plans: (A) size shall be 48" x 48", (B) see the Departments Standard Specifications and the QPL for sheeting information, (C) a minimum of a 2 lb U-Channel post may be used driven to a minimum depth of 3', (D) sign height above roadway surface shall be 7' urban and 5' rural, (E) lateral distance of signs shall be a minimum of 6' from the edge of shoulder or edge of pavement if no shoulder exist and 2' from the back of curb in urban areas.
- Vinyl Roll Up signs will be allowed for short term (less than 12 hours) daytime work provided that they meet all size, color, retroreflectivity requirements, and NCHRP 350.
- Rollup signs shall not be used when workers are not present. Mesh rollup signs shall not be allowed.
- All signs shall be removed or covered in a manner approved by the Project Engineer when no longer applicable.
- Contractor shall use caution not to damage existing signs which remain in place. Any DOTD signs damaged by work operations shall be replaced at the contractor's expense.

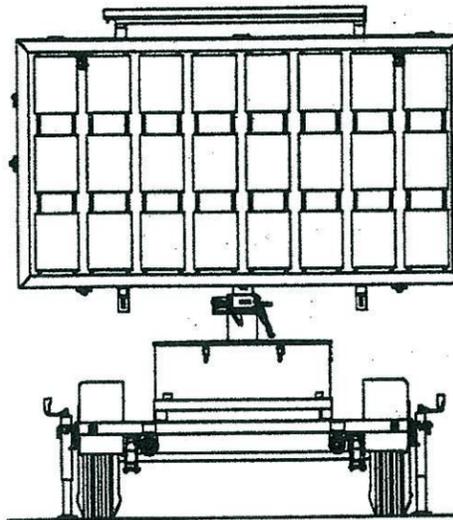
CHANNELIZING DEVICES

- The following devices may be used: Tubular Markers, Vertical Panels, Cones, Drums, and Super Cones. Drums (at standard spacing) and Super Cones (at standard spacing) are the only devices allowed to be used in taper areas on the interstate system.
- The spacing of channelizing devices in a taper should not exceed a distance in feet equal to 1.0 times the speed limit in mph (with a maximum of 50 feet).
- The spacing of channelizing devices in a tangent should not exceed a distance in feet equal to 2.0 times the speed limit in mph (with a maximum of 100 feet) unless otherwise noted.
- Retroreflective material pattern used on super cones shall match that used on drums.



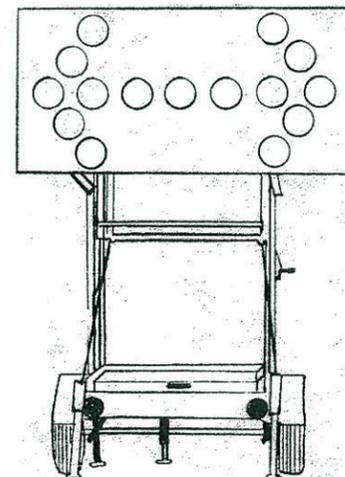
DYNAMIC MESSAGE SIGNS

- Dynamic Message Signs (DMS) shall be used on all Interstate Highways and on all other roadways with an ADT greater than 20,000, and will be paid for by each.
- When used in advance of a lane closure or a lane shift, the DMS should be placed on the right hand side of the road a minimum distance of 2 miles in advance of the taper.
- If vehicles are queing beyond the 2 mile DMS, an additional DMS should be placed on the right hand side of the road a minimum distance of 5 miles in advance of the taper.
- Standard Dynamic Message Sign messages shall be approved by the District Traffic Operations Engineer (DTOE).



FLASHING ARROW PANELS

- Flashing Arrow Panels shall be used for lane closures on all facilities with 2 or more lanes in a single direction and a speed limit greater than 35 mph.
- When used, flashing arrow panels should be located on the shoulder at the beginning of the taper.
- Where the shoulder width is limited, the flashing arrow panel should be placed within the closed lane as close to the beginning of the taper as practical.
- All Flashing Arrow Panels used on high speed roadways (45 mph and greater) shall be 4' x 8' Type C.
- When no longer needed, the arrow panel shall be removed from the right-of-way or adequately protected by a NCHRP 350 approved method.

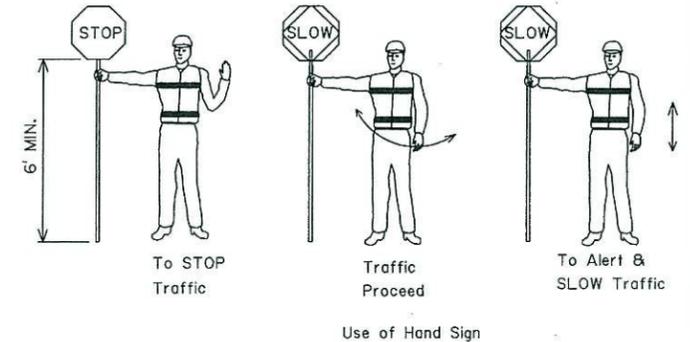


PAVEMENT MARKINGS (see QPL)

- All pavement markings within the limits of the project that are in conflict with the project signing or the required traffic movements shall be removed from the pavement by blast cleaning or grinding (Existing striping shall not be painted over with black paint or covered with tape).
- If, in the opinion of the Project Engineer, special pavement markings are needed, they shall be reflectorized, removable, and accompanied by the proper signage.
- Temporary Raised Pavement Markers (RPMs) may be added to supplement temporary striping in areas of transition, in tapers, in detours, and in other areas of need as directed by the Project Engineer.
- Materials and placement of temporary pavement markings shall conform to section 713 of the Standard Specifications. If no pay item exists, temporary markings will be considered incidental to traffic control.

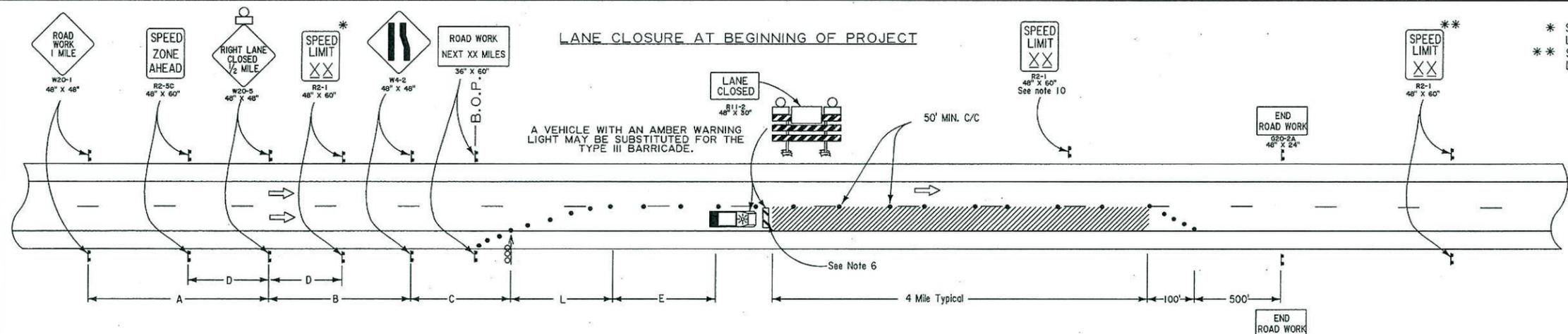
FLAGGERS

- When utilized, a flagger shall use a minimum 18 inch sign on a minimum 6' stop/slow paddle and wear ANSI Class 2 Lime Green colored vest during day time operations and ANSI Class 3 Lime Green ensemble during night operations. In all flagging operations, the flagger must be visible from flagger advance warning sign. Flaggers shall be properly trained.

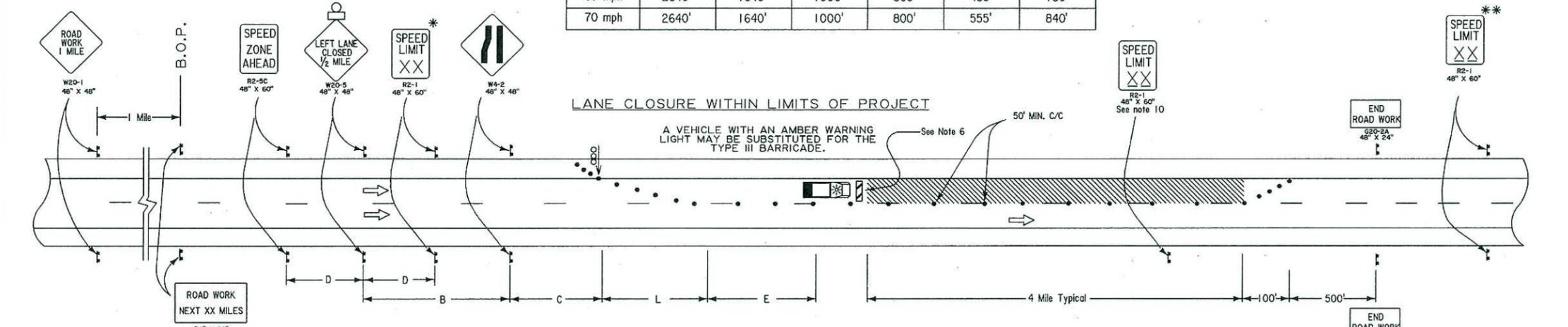


MUTCD Website:
<http://mutcd/fhwa.dot.gov/>

SHEET NUMBER	16
DESIGNED	C. ADAMS
CHECKED	P. ALLAIN
DATE	04/15/04
BY	
REVISION DESCRIPTION	
NO.	
DATE	
STATE OF LOUISIANA	
REGISTERED PROFESSIONAL ENGINEER	
IN	
TRAFFIC ENGINEERING	
TEMPORARY TRAFFIC CONTROL GENERAL NOTES SHEET	
TC-00	



SPEED LIMIT	MINIMUM SPACING					
	'A'	'B'	'C'	'D'	'E'	'L'
45 mph	1140'	1000'	500'	500'	220'	540'
55 mph	2640'	1640'	1000'	800'	335'	660'
60 mph	2640'	1640'	1000'	800'	415'	720'
65 mph	2640'	1640'	1000'	800'	485'	780'
70 mph	2640'	1640'	1000'	800'	555'	840'



* SPEED LIMIT IS TO BE 10 MPH LESS THAN LEGALLY POSTED SPEED LIMIT.
 ** SPEED LIMIT IS TO BE RETURNED TO LEGALLY POSTED SPEED LIMIT.

- LEGEND**
- ⊠ Traffic Sign
 - Channelizing Devices
 - ▨ Type III Barricades
 - ⚡ Flashing Arrow Panel
 - ▨ Work Area
 - ⊞ Type B Light

NOTES

- THIS SHEET SHALL BE USED WITH THE "TEMPORARY TRAFFIC CONTROL GENERAL NOTES SHEET (TC-00)".
- SPEED LIMIT REFERS TO THE LEGALLY ESTABLISHED SPEED LIMIT BEFORE CONSTRUCTION.
 - WHEN DOING ANY INTERSTATE WORK, OR THE AVERAGE DAILY TRAFFIC (ADT) EXCEEDS 20,000 VEHICLES PER DAY OR WHEN THE TRAFFIC QUEUES BEYOND THE ADVANCED SIGNING, A MINIMUM OF TWO DYNAMIC MESSAGE SIGNS PER DIRECTION SHALL BE PLACED IN ADVANCE OF THE LANE CLOSURE. GUIDANCE AS TO PLACEMENT IS SHOWN ON TC-00; HOWEVER, SPECIFIC DISTANCES TO BE SET BY THE PROJECT ENGINEER.
 - DOWNSTREAM TAPERS SHALL BE 100' PER LANE WITH CHANNELIZING DEVICES SPACED AT A SPACING OF 20'.
 - TYPE III BARRICADES SHALL BE PLACED IN THE CLOSED LANE AT A 1000' INTERVAL BEFORE AND AFTER THE ACTIVE WORKSPACE AND WHERE HOLES OR UNCURED CONCRETE EXIST.
 - IF A RAMP ENTRANCE OR EXIT TAPER FALLS WITHIN THE WORK AREA, REFER TO STANDARD ROAD PLANS TC-08 AND TC-09 FOR TRAFFIC CONTROL DETAILS.
 - A VEHICLE WITH A FLASHING AMBER LIGHT AND A TRUCK MOUNTED ATTENUATOR SHALL BE USED IN ADVANCE OF AREAS WHERE WORKERS ARE PRESENT WITHOUT POSITIVE BARRIER PROTECTION.

- UNDER NORMAL CLOSURE CONDITIONS, DEVICES SHOULD BE PLACED 2' FROM CENTERLINE INTO THE CLOSED LANE. CHANNELIZING DEVICES MAY ENCROACH UP TO 2 FEET FROM CENTERLINE INTO THE OPEN LANE ONLY AT SPECIFIC LOCATIONS WHERE ACTUAL WORK ACTIVITY IS TAKING PLACE. CHANNELIZING DEVICES SHALL BE RETURNED TO THE CLOSED LANE WHEN THE WORK ACTIVITY HAS PASSED. IN NO CASE SHALL THE MAINLINE WIDTH OF THE TRAVEL LANE BE LESS THAN 10'.
- A FLAGGER SHALL BE USED TO ALERT MOTORISTS WHEN EQUIPMENT OR WORKERS ENCROACH WITHIN 2 FEET OF AN OPEN LANE. THE FLAGGER SHALL BE POSTED ADJACENT TO THE OPEN TRAVEL LANE AND IMMEDIATELY UPSTREAM OF EACH OPERATION. ENCROACHMENT SHALL BE HELD TO A MINIMUM.
- WHEN THE LENGTH OF CLOSURE IS GREATER THAN 1 MILE, INSTALL SPEED LIMIT SIGNS AT 1 MILE INTERVALS.
- IF CONDITIONS RESULT IN A DROPOFF OR RISE, BETWEEN LANE CLOSURE AND TRAVEL LANE, WHICH EXCEEDS 2 INCHES OVERNIGHT, THE CONTRACTOR SHALL PLACE A TEMPORARY EDGE LINE IN THE OPEN LANE, A MINIMUM OF 1 FOOT FROM THE DROPOFF OR RISE. IF THE CONTRACTOR CHOOSES TO USE DRUMS FOR THE CHANNELIZING DEVICES, THE TEMPORARY EDGE LINE MAY BE OMITTED AS LONG AS THE DEVICE SPACING IS 50' OR LESS. IN EITHER CASE, THE CHANNELIZING DEVICES SHALL BE PLACED IN THE CLOSED LANE DURING NONWORKING HOURS.

- HIGH INTENSITY FLASHING LIGHTS SHALL BE USED TO MARK THE SECOND ADVANCE WARNING SIGN (LANE CLOSED 1/2 MILE). LOW INTENSITY FLASHING LIGHTS SHALL BE USED TO MARK ALL OTHER HAZARDS OFF THE TRAVEL WAY. STEADY BURNING LIGHTS SHALL BE USED ON ALL TRAFFIC CONTROL DEVICES USED FOR MERGING TAPER, INCLUDING THE FIRST TWO DEVICES AFTER THE TAPER ENDS. FIRST LIGHT IN A MERGING TAPER SHALL BE FLASHING.
- THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A MERGING TAPER AND SHIFTING TAPER SHALL NOT BE GREATER THAN 50'.
- ANY SIGNS IN CONFLICT WITH CONSTRUCTION SIGNING SHALL BE REMOVED OR COVERED.
- MINIMUM CONSTRUCTION SIGNING: ANY ADDITIONAL SIGNS SHOWN IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND REQUIRED BY THE PROJECT ENGINEER SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE DEPARTMENT.

STATE OF LOUISIANA
 CHARLES W. ADAMS, III
 REG. No. 27440
 REGISTERED PROFESSIONAL ENGINEER
 CIVIL ENGINEERING
Charles W. Adams, III
 4/15/04

SHEET NUMBER 17

DESIGNED BY C. ADAMS
 CHECKED BY P. ALLAIN
 DETAILED BY D. SOWARDS
 CHECKED BY C. ADAMS

DATE 04/15/04

PARISH PROJECT STATE PROJECT

REVISION DESCRIPTION

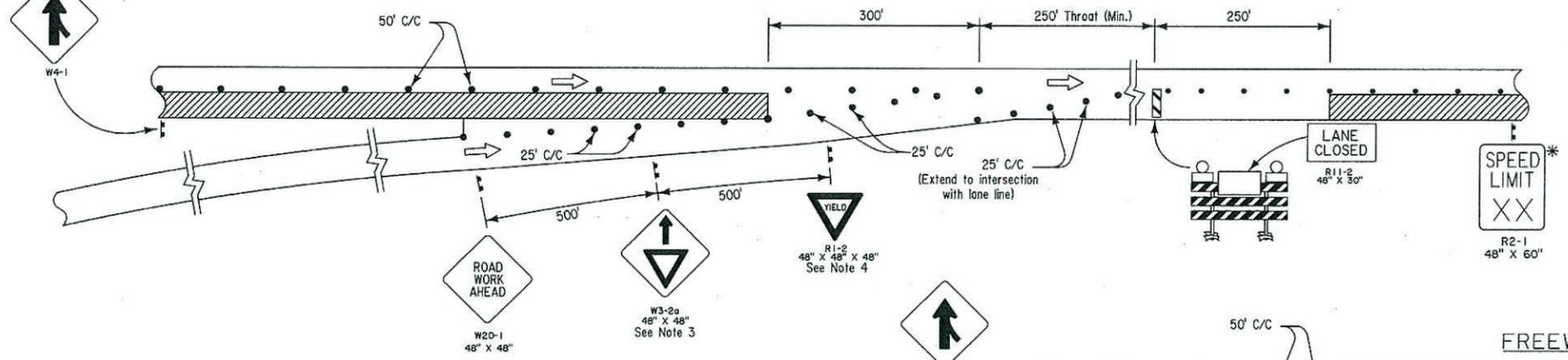
NO. DATE

TRAFFIC CONTROL LAYOUT FOR LANE CLOSURES ON DIVIDED HIGHWAY

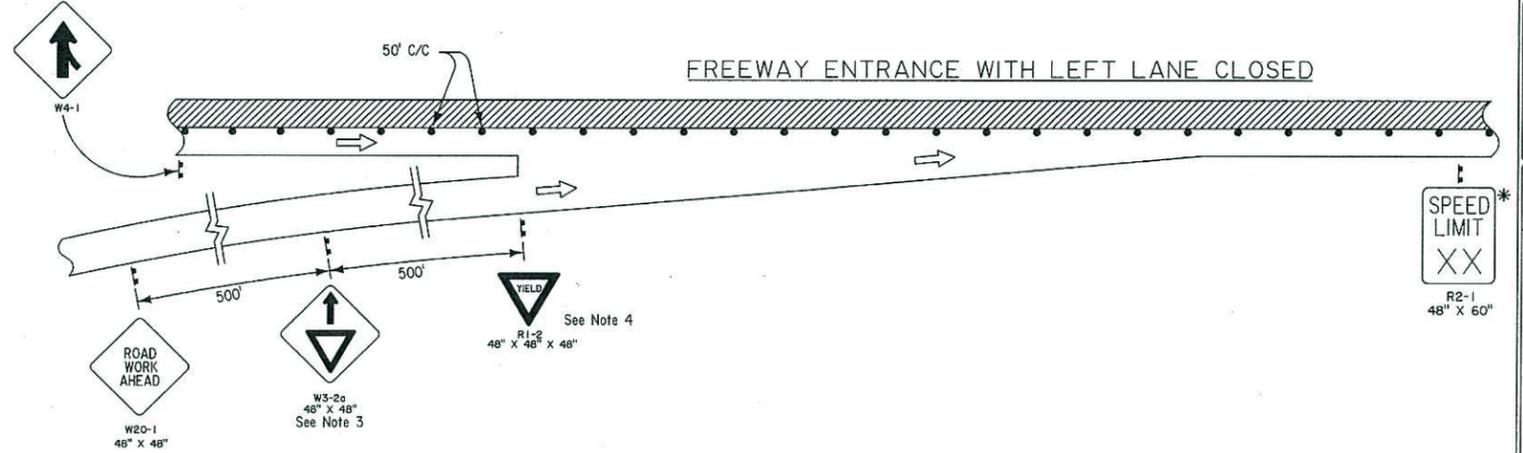
TC-06

TRAFFIC ENGINEERING

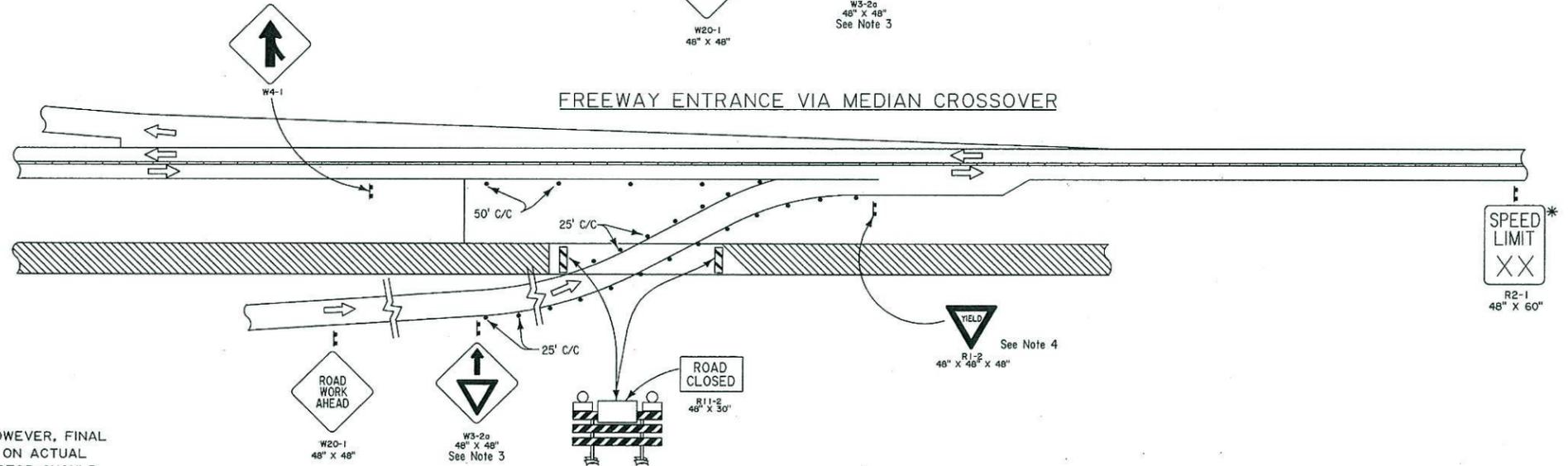
FREEWAY ENTRANCE WITH RIGHT LANE CLOSED



FREEWAY ENTRANCE WITH LEFT LANE CLOSED



FREEWAY ENTRANCE VIA MEDIAN CROSSOVER



* SPEED LIMIT IS TO BE 10 MPH LESS THAN ORIGINAL SPEED

NOTE
 TYPICAL APPLICATIONS; HOWEVER, FINAL DESIGN SHOULD BE BASED ON ACTUAL GEOMETRICS. THE CONTRACTOR SHOULD CONSULT WITH THE PROJECT ENGINEER.

- LEGEND**
- Traffic Sign
 - Channelizing Devices
 - Type III Barricades
 - Work Area
 - Type B Light

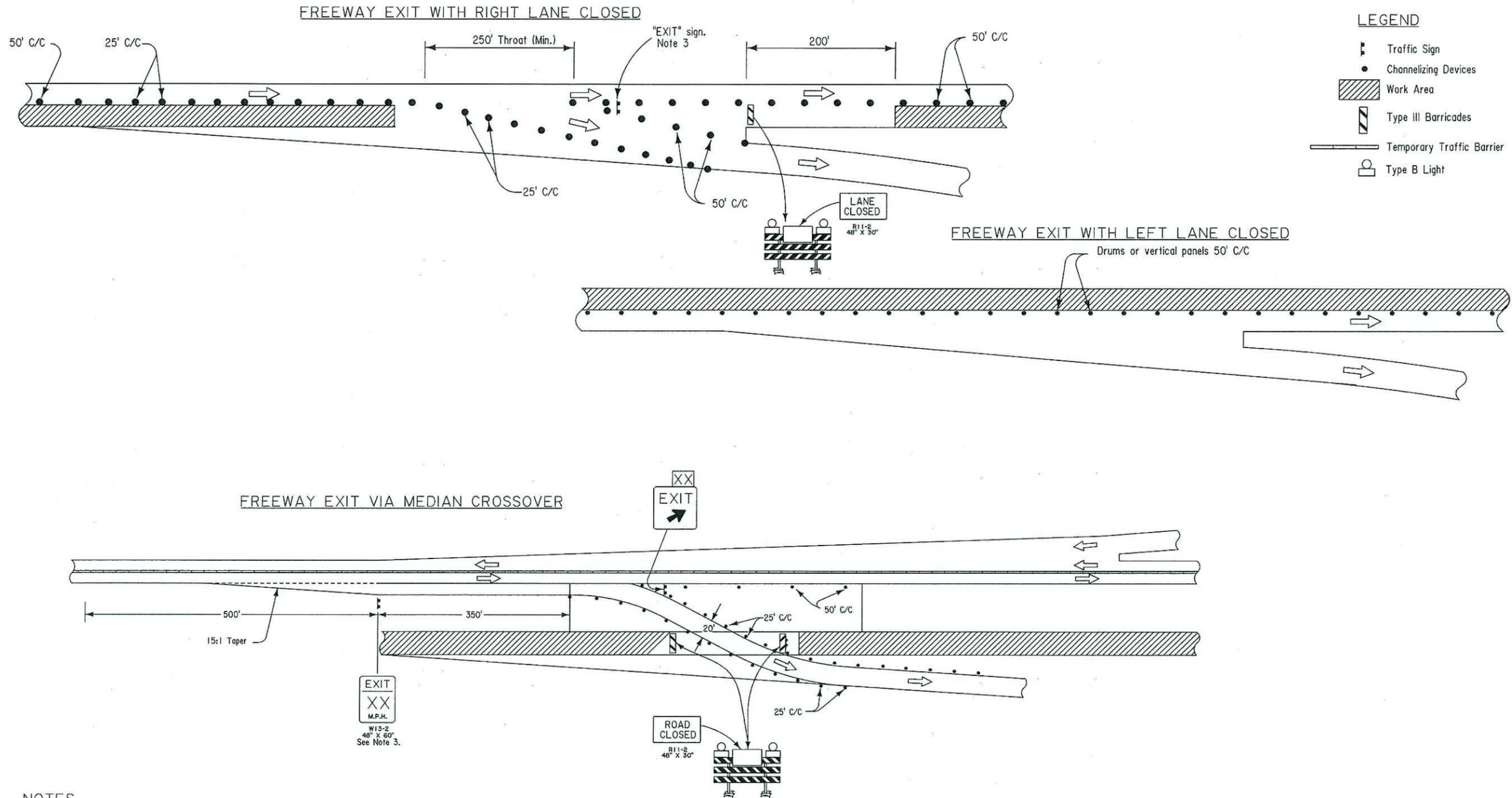
NOTES

- THIS SHEET SHALL BE USED WITH THE "TEMPORARY TRAFFIC CONTROL GENERAL NOTES SHEET (TC-00)".
1. FOR MAINLINE LANE CLOSURES SEE OTHER SHEETS.
 2. CHANNELIZING DEVICES ON THE LANE LINE SHALL BE OF THE SAME TYPE. CHANNELIZING DEVICES IN EACH TAPER SHALL BE OF THE SAME TYPE.
 3. THE "YIELD AHEAD" SIGN IS REQUIRED EXCEPT FOR SHORT TERM MAINTENANCE OPERATIONS WHERE ITS USE MAY BE AN OPTION AS DETERMINED BY THE PROJECT ENGINEER.

4. USE EXISTING "YIELD" SIGN IF PRESENT, OTHERWISE FURNISH "YIELD" SIGN. WHERE INADEQUATE ACCELERATION DISTANCE EXISTS FOR THE TEMPORARY ENTRANCE, THE YIELD SIGN SHALL BE REPLACED WITH STOP SIGNS (ONE ON EACH SIDE OF THE APPROACH), AND STOP AHEAD SIGNS SHALL REPLACE THE YIELD AHEAD SIGNS.
5. LOCATION OF CHANNELIZING DEVICES WITHIN THE GORE AREA TO BE BASED ON DRIVER SIGHT DISTANCE. TO BE DETERMINED BY THE DISTRICT TRAFFIC OPERATIONS ENGINEER.
6. ANY SIGNS IN CONFLICT WITH CONSTRUCTION SIGNING SHALL BE REMOVED OR COVERED.

7. MINIMUM CONSTRUCTION SIGNING: ANY ADDITIONAL SIGNS SHOWN IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND REQUIRED BY THE PROJECT ENGINEER SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE DEPARTMENT.

STATE OF LOUISIANA
 REGISTERED PROFESSIONAL ENGINEER
 CHARLES W. ADAMS, III
 REG. NO. 27440
 CIVIL ENGINEERING
 4/15/04



LEGEND

- Traffic Sign
- Channelizing Devices
- Work Area
- Type III Barricades
- Temporary Traffic Barrier
- Type B Light

NOTES

THIS SHEET SHALL BE USED WITH THE "TEMPORARY TRAFFIC CONTROL GENERAL NOTES SHEET (TC-00)".

1. FOR MAINLINE LANE CLOSURES SEE OTHER SHEETS.
2. CHANNELIZING DEVICES ON THE LANE LINE SHALL BE OF THE SAME TYPE. CHANNELIZING DEVICES IN EACH TAPER SHALL BE OF THE SAME TYPE.
3. THE MOUNTING HEIGHT OF THE TEMPORARY "EXIT" SIGN SHALL BE A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN. THE EXISTING GREEN AND WHITE "EXIT" SIGN SHALL BE COVERED. IF THE TEMPORARY "EXIT" SIGN WILL BE IN PLACE FOR MORE THAN ONE DAY, AN "EXIT NUMBER PANEL" DISPLAYING THE PROPER EXIT NUMBER SHALL BE PLACED ABOVE THE TEMPORARY "EXIT" SIGN.
4. EXIT SPEED TO BE SET ACCORDING TO DESIGN CRITERIA FOR THE CROSSOVER.
5. ANY SIGNS IN CONFLICT WITH CONSTRUCTION SIGNING SHALL BE REMOVED OR COVERED.
6. MINIMUM CONSTRUCTION SIGNING: ANY ADDITIONAL SIGNS SHOWN IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND REQUIRED BY THE PROJECT ENGINEER SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE DEPARTMENT.

STATE OF LOUISIANA
 CHARLES W. ADAMS, III
 REG. No. 27440
 REGISTERED PROFESSIONAL ENGINEER
 CIVIL ENGINEERING
Charles W. Adams, III
 4/15/04

SHEET NUMBER	19
DESIGNED	C. ADAMS
CHECKED	P. ALLAIN
DATE	04/15/04
REVISION DESCRIPTION	
NO.	
DATE	
BY	
TRAFFIC CONTROL LAYOUT FOR WORK AREA THROUGH RAMP EXIT TAPER	
SPECIAL TC-09	
TRAFFIC ENGINEERING	

**STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND
DEVELOPMENT**



**CONSTRUCTION PROPOSAL
RETURNABLES
FOR**

STATE PROJECT NO. 737-36-0018

**DMS PHASE 2 RETROFIT
(NO PHASE 1B RETROFIT)**

I-10, I-610

ORLEANS PARISH

BID BOND

A Bid Bond is required when the bidder's total bid amount as calculated by the Department in accordance with Subsection 103.01 is greater than \$50,000. (*See Section 102 of the Project Specifications.*)

_____, as Principal (Bidder) and _____, as Surety, are bound unto the State of Louisiana, Department of Transportation and Development, (hereinafter called the Department) in the sum of five percent (5%) of the bidder's total bid amount as calculated by the Department for payment, of which the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, as solidary obligors.

Signed and sealed this _____ day of _____, 20_____.

The condition of this obligation is such that, whereas the Principal has submitted a bid to the Department on a contract for the construction of **STATE PROJECT NO. 737-36-0018 DMS PHASE 2 RETROFIT (NO PHASE 1B VULTRON), I-10, I-610 ORLEANS PARISH**, if the bid is accepted and the Principal, within the specified time, enters into the contract in writing and gives bond with Surety acceptable to the Department for payment and performance of said contract, this obligation shall be void; otherwise to remain in effect.

Principal (Bidder or First Partner to Joint Venture)
By _____
Authorized Officer-Owner-Partner

Typed or Printed Name

If a Joint Venture, Second Partner
By _____
Authorized Officer-Owner-Partner

Typed or Printed Name

Surety
By _____ (Seal)
Agent or Attorney-in-Fact

Typed or Printed Name

To receive a copy of the contract and subsequent correspondence / communication from LA DOTD, with respect to the bid bonds, the following information must be provided:

Bonding Agency or Company Name

Address

Agent or Representative

Phone Number / Fax Number

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
SCHEDULE OF ITEMS

LEAD PROJECT: 737-36-0018
OTHER PROJECTS:

DATE:

ITEM NUMBER	APPROXIMATE QUANTITY	UNIT OF MEASURE	PAY ITEM UNIT PRICE (IN WORDS, INK OR TYPED)
S-001-01	LUMP	LUMP	DMS SITE #1 - I-10 EASTBOUND AT NORTH CLAIRBORNE AVE.
S-001-02	LUMP	LUMP	DMS SITE #2 - I-610 EASTBOUND NEAR ELYSIAN FIELDS EXIT #3
S-001-03	LUMP	LUMP	DMS SITE #3 - I-10 WESTBOUND NEAR LOUISA EXIT #2339A
S-001-04	LUMP	LUMP	DMS SITE #4 - I-10 WESTBOUND NEAR CHEF MENTEUR EXIT #240B
S-001-05	LUMP	LUMP	DMS SITE #5 - I-10 WESTBOUND NEAR MORRISON EXIT #241
S-002-01	LUMP	LUMP	SYSTEM INTEGRATION AND DOCUMENTATION

CONSTRUCTION PROPOSAL SIGNATURE AND EXECUTION FORM

THIS FORM, THE SCHEDULE OF ITEMS, AND THE PROPOSAL GUARANTY MUST BE COMPLETED AS INDICATED AND SUBMITTED TO THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT (DOTD) TO CONSTITUTE A VALID BID

STATE PROJECT NO(S). 737-36-0018

FEDERAL AID PROJECT NO(S). N/A

NAME OF PROJECT DMS PHASE 2 RETROFIT (NO PHASE 1B VULTRON)

I (WE) HEREBY CERTIFY THAT I (WE) HAVE CAREFULLY EXAMINED THE PROPOSAL, PLANS AND SPECIFICATIONS, INCLUDING ANY AND ALL ADDENDA, AND THE SITE OF THE ABOVE PROJECT AND AM (ARE) FULLY COGNIZANT OF ALL PROPOSAL DOCUMENTS, THE MASTER COPY OF WHICH IS ON FILE AT DOTD HEADQUARTERS IN BATON ROUGE, LA., AND ALL WORK, MATERIALS AND LABOR REQUIRED THEREIN, AND AGREE TO PERFORM ALL WORK, AND SUPPLY ALL NECESSARY MATERIALS AND LABOR REQUIRED FOR SUCCESSFUL AND TIMELY COMPLETION OF THE ABOVE PROJECT AND TO ACCEPT THE SUMMATION OF THE PRODUCTS OF THE UNIT PRICES BID ON THE SCHEDULE OF ITEMS ATTACHED HERETO AND MADE A PART HEREOF MULTIPLIED BY THE ACTUAL QUANTITY OF UNIT OF MEASURE PERFORMED FOR EACH ITEM, AS AUDITED BY DOTD, AS FULL AND FINAL PAYMENT FOR ALL WORK, LABOR AND MATERIALS NECESSARY TO COMPLETE THE ABOVE PROJECT, SUBJECT TO INCREASE ONLY FOR PLAN CHANGES (CHANGE ORDERS) APPROVED BY THE DOTD CHIEF ENGINEER OR HIS DESIGNEE. THIS BID IS SUBMITTED IN ACCORDANCE WITH THE GENERAL BIDDING REQUIREMENTS IN THE CONSTRUCTION PROPOSAL AND ALL SPECIAL PROVISIONS, PLANS, SUPPLEMENTAL SPECIFICATIONS, AND THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES (2006 EDITION). I (WE) UNDERSTAND THAT THE SUMMATION OF THE PRODUCTS OF THE UNIT PRICES BID ON THE SCHEDULE OF ITEMS MULTIPLIED BY THE ESTIMATED QUANTITY OF UNIT OF MEASURE FOR EACH ITEM, ALONG WITH ANY OTHER FACTORS SPECIFIED TO BE APPLICABLE SUCH AS CONSTRUCTION TIME AND/OR LANE RENTAL, SHALL BE THE BASIS FOR THE COMPARISON OF BIDS. I (WE) UNDERSTAND THAT THE SCHEDULE OF ITEMS MUST CONTAIN UNIT PRICES WRITTEN OUT IN WORDS AND THAT THE SCHEDULE OF ITEMS SUBMITTED AS PART OF THIS BID IS ON THE FORM SUPPLIED BY DOTD IN THE BID PROPOSAL. MY (OUR) PROPOSAL GUARANTY IN THE AMOUNT SPECIFIED FOR THE PROJECT IS ATTACHED HERETO AS EVIDENCE OF MY (OUR) GOOD FAITH TO BE FORFEITED IF THIS BID IS ACCEPTED BY DOTD AND I (WE) FAIL TO COMPLY WITH ANY REQUIREMENT NECESSARY FOR AWARD AND EXECUTION OF THE CONTRACT, AS WELL AS, SIGN AND DELIVER THE CONTRACT AND PAYMENT/PERFORMANCE/RETAINAGE BOND AS REQUIRED IN THE SPECIFICATIONS.

NONCOLLUSION DECLARATION (APPLICABLE TO FEDERAL-AID PROJECTS)

I (WE) DECLARE UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE UNITED STATES AND THE STATE OF LOUISIANA THAT I (WE) HAVE NOT DIRECTLY OR INDIRECTLY, ENTERED INTO ANY AGREEMENT, PARTICIPATED IN ANY COLLUSION, OR OTHERWISE TAKEN ANY ACTION IN RESTRAINT OF FREE COMPETITIVE BIDDING IN CONNECTION WITH THE CONTRACT FOR THIS PROJECT NOR VIOLATED LA. R.S. 48:254.

BIDDER'S DBE GOAL STATEMENT (APPLICABLE TO DBE GOAL PROJECTS)

IF THIS PROJECT IS DESIGNATED BY SPECIAL PROVISION AS A DISADVANTAGED BUSINESS ENTERPRISE (DBE) GOAL PROJECT IN ACCORDANCE WITH THE DBE PROVISIONS OF THIS CONTRACT, THE BIDDER ASSURES DOTD THAT HE/SHE WILL MEET OR EXCEED THE DBE CONTRACT GOAL, OR IF THE BIDDER CANNOT MEET THE REQUIRED DBE GOAL, THE BIDDER ASSURES DOTD THAT HE/SHE HAS MADE AND CAN DOCUMENT GOOD FAITH EFFORTS MADE TOWARDS MEETING THE GOAL REQUIREMENT IN ACCORDANCE WITH THE CONTRACT AND DBE PROGRAM MANUAL INCORPORATED HEREIN BY REFERENCE.

THE APPARENT LOW BIDDER SHALL COMPLETE AND SUBMIT TO THE DOTD COMPLIANCE PROGRAMS OFFICE, FORM CS-6AAA AND ATTACHMENT(S) AND, IF NECESSARY, DOCUMENTATION OF GOOD FAITH EFFORTS MADE BY THE BIDDER TOWARD MEETING THE GOAL, WITHIN TEN BUSINESS DAYS AFTER THE OPENING OF BIDS FOR THIS PROJECT. RESPONSIVENESS OF INFORMATION SUPPLIED IN THIS SECTION OF THIS CONSTRUCTION PROPOSAL SIGNATURE AND EXECUTION FORM IS GOVERNED BY THE DBE REQUIREMENTS INCLUDED WITHIN THE SPECIFICATIONS AND DBE PROGRAM MANUAL.

CERTIFICATION OF EMPLOYMENT OF LOUISIANA RESIDENTS TRANSPORTATION INFRASTRUCTURE MODEL FOR ECONOMIC DEVELOPMENT (TIME) PROJECTS (APPLICABLE TO TIME PROJECTS)

IF THIS PROJECT IS DESIGNATED BY SPECIAL PROVISION AS A TRANSPORTATION INFRASTRUCTURE MODEL FOR ECONOMIC DEVELOPMENT (TIME) PROJECT AS DEFINED IN ACT NO. 16 OF THE 1989 FIRST EXTRAORDINARY SESSION OF THE LEGISLATURE WHICH ENACTED PART V OF CHAPTER 7 OF SUBTITLE II OF TITLE 47 OF THE LOUISIANA REVISED STATUTES OF 1950, COMPRISED OF R.S. 47:820.1 THROUGH 820.6.

THE BIDDER CERTIFIES THAT AT LEAST 80 PERCENT OF THE EMPLOYEES EMPLOYED ON THIS TIME PROJECT WILL BE LOUISIANA RESIDENTS IN ACCORDANCE WITH LOUISIANA R.S. 47:820.3.

NON PARTICIPATION IN PAYMENT ADJUSTMENT (ASPHALT CEMENT AND FUELS) STATEMENT

IF THIS PROJECT IS DESIGNATED BY SPECIAL PROVISION AS BEING SUBJECT TO PAYMENT ADJUSTMENT FOR ASPHALT CEMENT AND/OR FUELS, THE BIDDER HAS THE OPTION OF REQUESTING EXCLUSION FROM SAID PAYMENT ADJUSTMENT PROVISIONS THAT ARE ESTABLISHED BY SPECIAL PROVISION ELSEWHERE HEREIN.

IF THE BIDDER DESIRES TO BE EXCLUDED FROM THESE PAYMENT ADJUSTMENT PROVISIONS,

THE BIDDER IS REQUIRED TO MARK HERE

FAILURE TO MARK THIS BOX PRIOR TO BID OPENING WILL CONSTITUTE FORFEITURE OF THE BIDDER'S OPTION TO REQUEST EXCLUSION.

CS-14A
08/06

BIDDER SIGNATURE REQUIREMENTS (APPLICABLE TO ALL PROJECTS)

THIS BID FOR THE CAPTIONED PROJECT IS SUBMITTED BY:

(Name of Principal (Individual, Firm, Corporation, or Joint Venture))

(If Joint Venture, Name of First Partner)

(Louisiana Contractor's License Number of Bidder or First Partner to Joint Venture)

(Business Street Address)

(Business Mailing Address, if different)

(Area Code and Telephone Number of Business)

(Telephone Number and Name of Contact Person)

(Telecopier Number, if any)

(If Joint Venture, Name of Second Partner)

(Louisiana Contractor's License Number of Second Partner to Joint Venture)

(Business Street Address)

(Business Mailing Address, if different)

(Area Code and Telephone Number of Business)

(Telephone Number and Name of Contact Person)

(Telecopier Number, if any)

ACTING ON BEHALF OF THE BIDDER, THIS IS TO ATTEST THAT THE UNDERSIGNED DULY AUTHORIZED REPRESENTATIVE OF THE ABOVE CAPTIONED FIRM, CORPORATION OR BUSINESS, BY SUBMISSION OF THIS BID, AGREES AND CERTIFIES THE TRUTH AND ACCURACY OF ALL PROVISIONS OF THIS PROPOSAL, INCLUSIVE OF THE REQUIREMENTS, STATEMENTS, DECLARATIONS AND CERTIFICATIONS ABOVE AND IN THE SCHEDULE OF ITEMS AND PROPOSAL GUARANTY. EXECUTION AND SIGNATURE OF THIS FORM AND SUBMISSION OF THE SCHEDULE OF ITEMS AND PROPOSAL GUARANTY SHALL CONSTITUTE AN IRREVOCABLE AND LEGALLY BINDING OFFER BY THE BIDDER.

(Signature)

(Printed Name)

(Title)

(Date of Signature)

(Signature)

(Printed Name)

(Title)

(Date of Signature)

CONTRACTOR'S TOTAL BASE BID \$ _____

IT IS AGREED THAT THIS TOTAL, DETERMINED BY THE BIDDER, IS FOR PURPOSES OF OPENING AND READING BIDS ONLY, AND THAT THE LOW BID FOR THIS PROJECT WILL BE DETERMINED FROM THE EXTENSION AND TOTAL OF THE BID ITEMS BY DOTD.

CS-14AA
08/06