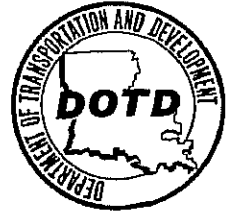




BOBBY JINDAL
GOVERNOR

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245
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225-379-1485



WILLIAM D. ANKNER, Ph.D.
SECRETARY

July 22, 2009

STATE PROJECT NO. 064-01-0040
FEDERAL AID PROJECT NO. 5201(600)
CAMINADA BAY BRIDGE
ROUTE LA 1
JEFFERSON PARISH

SUBJECT: ADDENDUM NO. 11 (CONSTRUCTION PROPOSAL REVISION)

Gentlemen:

The following proposal revision dated 07/22/09 on the captioned project for which bids will be received on Wednesday, July 29, 2009 has been posted on <http://www.dotd.la.gov/cgi-bin/construction.asp>.

1. Revised the Technical Specifications for Instrumentation Installation Integral Bridge Abutment. (10 pages)

Please note this revision in the proposal and bid accordingly. Mandatory electronic bidding is required for this project, and electronic bids and electronic bid bonds must be submitted via www.bidx.com for this letting date.

Sincerely,

RANDAL D. SANDERS, P. E.
CONTRACTS & SPECIFICATIONS ENGINEER

Attachments

cc: Mr. Brian Buckel
Mr. Michael Stack
Mr. Gary Gisclair
Mr. Brian Delatte
Mr. Eric Burges
Mr. Masood Rasoulain

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
PROPOSED PROJECT

STATE PROJECT NO. 064-01-0040
FEDERAL AID PROJECT NO. 5201(001)

CAMINADA BAY BRIDGE
JEFFERSON PARISH

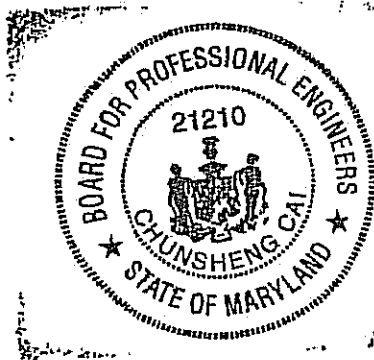
The following technical specifications have been prepared by or under the direct supervision of the licensed Civil Engineer whose seal/stamp appears below.

**Instrumentation Installation Specifications for
LTRC Project No. 07-4ST
Research S. P. No. 736-99-1439
Integral Bridge Abutment for Louisiana's Soft Soil**

Name: Dr. Chunsheng Cai

Date: December 22, 2008

Discipline: Civil Engineering



Revised by

A handwritten signature in black ink, appearing to be "Chunsheng Cai".

Date

7/21/09

Dec. 22, 2008

Approved by

A handwritten signature in black ink, appearing to be "Brian DeGatto".

Date

7/21/09

S. P. # 064-01-0040

Addendum No. 11

(Rev. 07/22/09) Page 1 of 10

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Instrumentation Installation Specifications for
LTRC Project No. 07-4ST
Research S. P. No. 736-99-1439
Integral Bridge Abutment for Louisiana's Soft Soil

DESCRIPTION: This item consists of furnishing all equipment, materials, labor and incidental work necessary to complete the installation of the instrumentation for the Integral Bridge Abutment.

General Note:

1. The contractor will seek the company BDI, which is the supplier for instrumentation as a single source, subcontractor. Their contact information is:

Bridge Diagnostic, Inc.
1965 57th Court, Suite 106
Boulder, CO 80301-2826
Office: (303) 494-3230
Fax: (303) 494-5027

2. The cost of instrumentation installation will be paid by the bridge contractor.
3. The instrumentation provider (BDI) will be selected as a sub-contractor to install all instrumentation on the super structure and sub structure of the bridge.
4. The instrumentation will be purchased through the state research project (LTRC 07-4ST) to LSU, in compliance with these LTRC project requirements.
5. In addition, members of the research team will accompany BDI personnel during the instrumentation installation process.
6. Other than the during installation of each gauge, the contractor will need to be aware to avoid damage to the instrumentation cables at all stages of construction. The contractor will be financially responsible for both the cost and labor of the replacement of the gages, wires, and equipment if the damage is due to the contractor's negligence.

CONSTRUCTION REQUIREMENTS:

Item NO. 1, Pile Instrumentation (at the precast plant)

This item consists of installing 32 strain sensors in two of the precast piles that are supporting the abutment at Bent # 1, at the pile manufacturing facility.

These "Sister Bar" strain gages will be installed by BDI during the construction process and careful coordination is needed between the research team, the BDI, and construction contractor(s). The contractor shall inform BDI 30 days in advance regarding the construction schedule so BDI personnel will have sufficient time to prepare the gage installation.

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During the subsequent concrete casting and installation processes, the contractor shall not damage the gages, wires that are connected to the gages, data acquisition systems, and any other experimental equipment.

Item NO. 2, Vibrating Wire Strain Gages in Piles

This item consists of installing vibrating wire strain gages in selected piles. These gage locations were selected primarily to monitor any bending forces induced in the concrete piles. Since these are precast piles, the gages will need to be installed by BDI personnel at the precast location prior to the concrete being poured. As shown in the instrumentation plan (figures 1 and 2), a gage will be attached to the rebar cage in each corner of the pile and the cables should be bar-tied along the reinforcement. This will allow bending forces to be measured in both directions. BDI personnel will install the sensors and will need to ensure that once the gages are installed that their cables are routed to their exit point out the side of the pile to ensure that damage to the cables does not occur during installation. At the exit point, conduit boxes provided by BDI personnel must be installed by the contractor to protect the cables during transportation and driving. Each gage will require at least one to two hours for installation and proper cable routing.

During the pouring process the contractor must ensure that proper care is taken to ensure that the sensors and cables are not damaged.

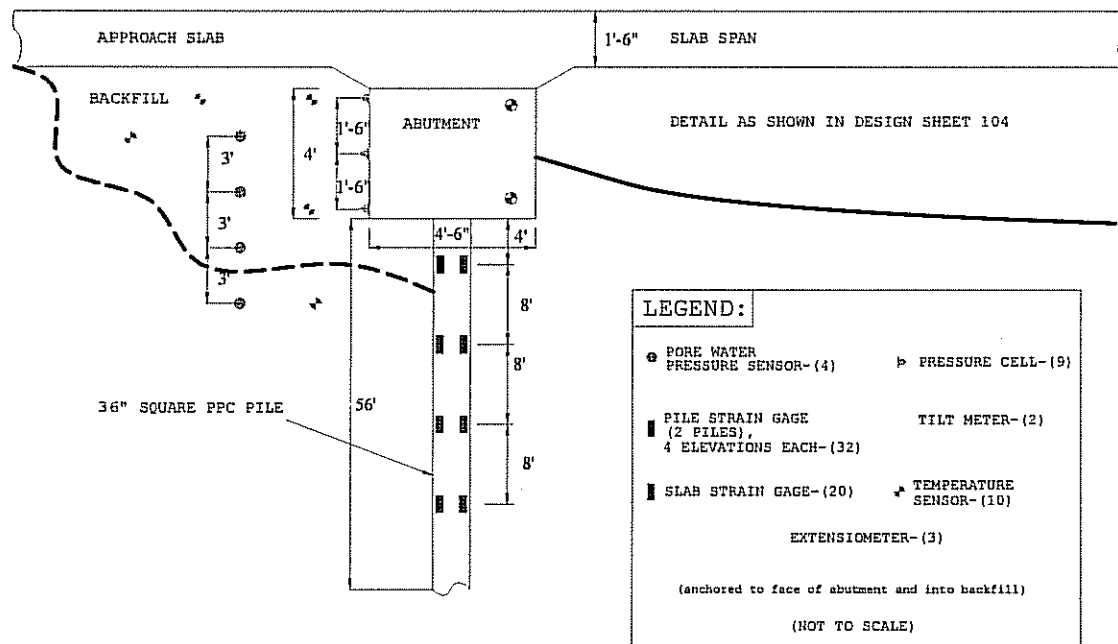


Figure 1: Instrumentation Plan for Caminada Bay Bridge –Substructure
(Bent 1, LADOTD Design Sheets 104 and 147)

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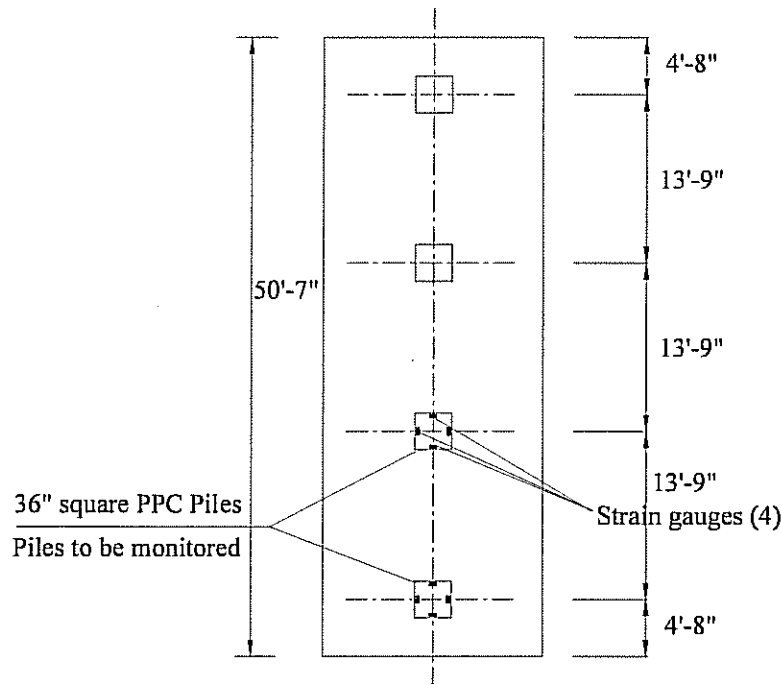


Figure 2: Plan view of piles (Bent 1, LADOTD Design Sheet 109)

Item NO. 3, Substructure (Abutment and Surrounding)

This item consists of installing: (a) 9 pressure cells, (b) 3 Extensometers, and (c) 4 Pore Water Pressure sensors. These gauges will be installed by BDI personnel during the construction process and careful coordination is needed between the research team and construction contractor(s). The contractor shall inform the research team 30 days in advance regarding the construction schedule so the research team will have sufficient time to prepare the gage installation.

During the construction process, the contractor shall not damage the gages, wires that connected to the gages, data acquisition systems, and any other experimental facilities. The contractor will be financially responsible for the replacement of these gauges, wires, and equipment if the damage is due to the contractor's negligence.

Item NO. 4, Pressure Cells on Backwall of Abutment

This item consists of installing pressure cells on the backwall of the abutment. These cells are being installed by BDI personnel and the research team to monitor soil pressure variations behind the backwall as they are expected to change as longitudinal forces are applied by the superstructure expansion/contraction with temperature. After the backwall cap has been cast, each pressure cell will be mounted by BDI personnel at the shown locations using stainless mounting hardware. In addition, the contractor shall provide a mason for a small pad of mortar to be placed behind each cell during installation to ensure that it is making uniform contact with the concrete surface. The cable will then need to be anchored along its length to its exit from behind the abutment and routed to the data logger location. Note that if any foam is installed on the backwall, it will need to be cut out large enough to accommodate the pressure cells. The cells shall be installed prior to any foam. The backfill material around the cells shall be placed in a

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manner that would not damage any instrumentation. Each pressure cell can be installed in approximately 2-3 hours.

Item NO. 7, Pore Water Pressure Sensors

This item consists of installing pore water pressure sensors. These will be installed by the contractor and research team during the backfill process and the contractor must use care in routing and protecting the cables during installation. Similar to the soil pressure cells, large objects will need to be removed around the sensors. BDI estimates installation time to be about one hour per gauge.

Item NO. 8, Superstructure

This item pertains to the instrumentation of the superstructure. As shown in the following Figure 3, the superstructure instrumentation includes 12 embedded strain gages, eight surface mount strain gages, and two tilt meters. These gauges will be installed by BDI personnel during the construction process and careful coordination is needed between BDI personnel and construction contractor(s). The contractor shall inform BDI personnel 30 days in advance regarding the construction schedule so BDI personnel will have sufficient time to prepare the gage installation.

During the construction process, the contractor shall not damage the gages, wires that connected to the gages, data acquisition systems, and any other experimental facilities. The contractor will be financially responsible for the replacement of these gauges, wires, and equipment if the damage is due to the contractor's negligence.

Item NO. 9, Installation of Embedded Sensors "Sister Bars"

BDI personnel and the research team will install the embedded gages (sister bar strain gages) on the bridge slab reinforcement after it has been laid out and before concrete is cast. The contractor shall provide a time window of three days and appropriate support for BDI personnel to access the construction site in order to actually install the embedded gages. The 12 embedded sensors will be installed by BDI personnel on the positive moment rebars (bottom rebars) at the mid-span of Approach Span, Spans 1, 3, and 6, each section with two rebars installed. The other four embedded sensors will be installed by BDI personnel on the negative rebars (top rebars) at Bents 1 and 6, each section with two rebars installed. BDI estimates installation time to be about one to two hours per gauge.

During the concrete casting process, the contractor shall take proper precautions not damage the embedded gages. The construction contractor shall inform BDI personnel 7 days in advance before the concrete is cast so BDI personnel can monitor the concrete casting process to ensure no damage will be caused during construction process. The contractor will be financially responsible for the replacement of these gauges, wires, and equipment if the damage is due to the contractor's negligence.

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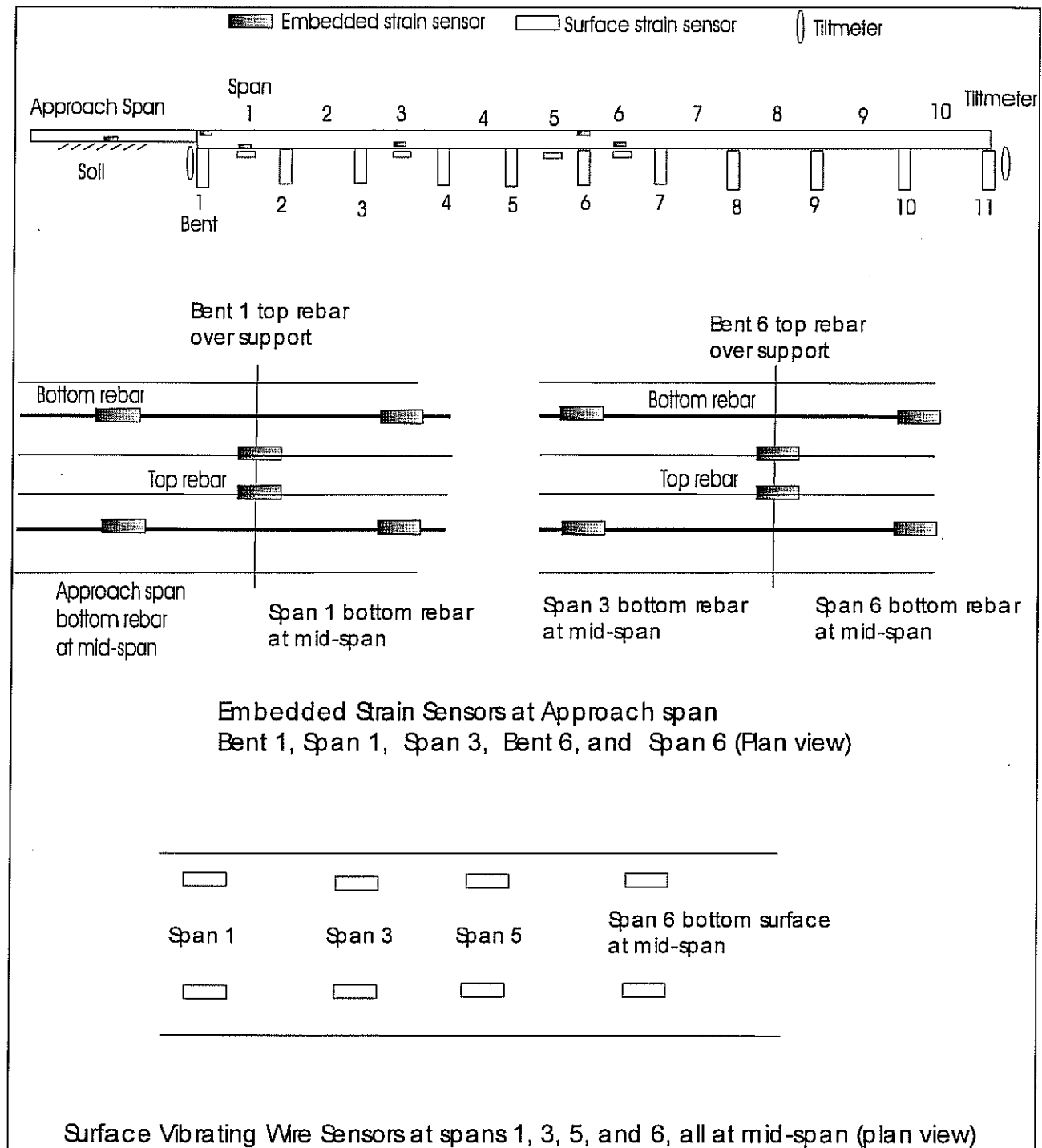


Figure 3: Instrumentation plan for the superstructure at Caminada Bay Bridge

Item NO. 10 Surface Mount Sensors and Installation of Data logger

Phase 4 consists of (a) Surface Mount Strain Gages and (b) 2 Tilt meters. These gauges will be installed by BDI personnel after the completion of the superstructure and careful coordination is needed between BDI personnel and construction contractor(s). The contractor shall inform BDI personnel 30 days in advance regarding the construction schedule so BDI personnel will have sufficient time to prepare the gage installation. During this installation BDI personnel and

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research team will need access to both the top and bottom portions of the structure. The contractor will provide adequate access, 110AC power for tools, and other support for this installation procedure.

During the construction process, the contractor shall not damage the gages, wires that connected to the gages, data acquisition systems, and any other experimental facilities. The contractor will be financially responsible for the replacement of these gauges, wires, and equipment if the damage is due to the contractor's negligence.

Item NO. 11, Surface Strain Sensors

No special preparation is required for these as they are mounted with standard concrete anchors. BDI estimates installation time to be about two hours per gauge. See the diagram under Phase 3 for Strain Sensor locations.

Item NO. 12, Tilt meters

No special preparation is required for these as they are mounted with standard concrete anchors. BDI estimates installation time to be about two hours per gauge. See the diagram under Phase 3 for Tilt meter locations.

Item NO. 13, Data logger and Components

BDI personnel and the research team will install all components of the data logger. This will take approximately 2 days at which time the contract is required to provide an electrician to install conduit between various components of the system and to install an 110V power line to the data logger location and terminated inside the cabinet with a standard outlet box. In addition, a phone line will be installed and routed to the data logger cabinet by the contractor.

Installation of Instrumentation Cables: This effort will require the contractor to install conduit in some locations and other cable mounting hardware in other locations. The goal will be to protect the instrumentation cables from future damage from vandals, weather, wildlife, etc. This effort will require contractor to use standard cable pulling tools and label cable ends as they are installed and routed from each sensor to the data logger cabinet.

A stainless steel weatherproof cabinet will need to be installed by the contractor that will allow future access by the research team. Preferably, this will consist of a standard traffic cabinet installed on a small concrete slab to be constructed by the contractor.

Item NO. 14, General support required from contractor for the instrumentation effort

BDI personnel and the research team will do their best to accommodate the contractor's schedule for each phase of installation, however, it is imperative that the contractor maintain excellent communication with BDI personnel and the research team throughout the effort and provide the required advance warnings.

General support required by contractor for instrumentation installations will always include a contractor's representative to oversee the effort and to provide any necessary safety equipment such as harnesses and to ensure that proper safety procedures are being followed. BDI personnel and the research team will be responsible for providing their own hardhats, safety glasses, boots, and safety vests at all times.

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Other items required during various phases of the sensor installations will be provided and paid for by contractor and these items include:

- Electrician, all necessary conduits, and components (corners, mounting hardware, etc.) for protection of all embedded and external sensors cables.
- Access to the instrumentation points such as manlifts, forklifts, or ladders.
- Power generator and extension cords for operating standard power tools such as hammer drills.
- Carpentry capabilities for fabricating temporary housings and other protective items from plywood, etc.
- Shovels, soil compaction/sifting equipment and operators.

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Itemized Instrumentation List

Item	Description	Quantity
1	96- Channel Logger System Configured to read Vibrating Wire Sensors plus temperatures. Includes Data logger, Battery –pack Power Supply, 16-channel MUXs, VW and Temperature Signal Conditioning, PC Communication Interface and Cables, Wired up and housed in 16” x 18” fiberglass housing.	1
2	Remote PVC MUX Housing : BDI –MUXPCV One per multiplexer needed if all sensors are not wired back to the main data logger enclosure	1
3	Cellular Phone Modem: BDI CD- LINK Digital cellular Modem includes mounting kit. NOTE: Modem requires data plan. This must be purchased separately through the proper carrier and monthly charges for the phone service will be incurred by LTRC.	1
4	Cell Antenna: BDI CD-Yag Antenna for use with Cellular Modem, includes 10’of cable	1
6	VW Embedded Temperature Thermistor	20
7	VW piezometer	6
8	VW Soil Pressure cells	9
9	VW Rebar Strainmeters (“Sisterbars”): BDI VW 4911 VW Strain gage mounted between two sections of rebar designed to be tied to the rebar cage before concrete is poured.	24
10	VW Strain Gauges: BDI VW 4000 Surface mount VW Strain Gauge 3” gage length w/10’ BDI BC -250 cable, includes custom mounts, BDI aluminum cover.	32
11	VW Tilt meter : BDI VW 6350 VW Tilt meter w/10’ BDI- BC-250 Cable, includes bracket mount, BDI aluminum cover.	2
12	VW Extension cable : BDI-BC-250 Rugged Blue VW Sensor –to –MUX Interconnect cable: *Additional sensor cable ,first 10’ included in sensor price*	4,000 ft
13	MUX Cable : BDI –MUX -550 Interconnect cable for remote MUX	200 ft

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MEASUREMENT. This item consists of furnishing all equipment, materials, labor and incidental work necessary to complete the installation of the instrumentation. Measurement and payment for this item will be per Lump Sum.

PAYMENT. Payment for this item will be made at the contract unit price under:

Item No.	Pay Item	Pay Unit
NS-800-00300	Instrumentation Installation for Integral Bridge Abutment	Lump Sum